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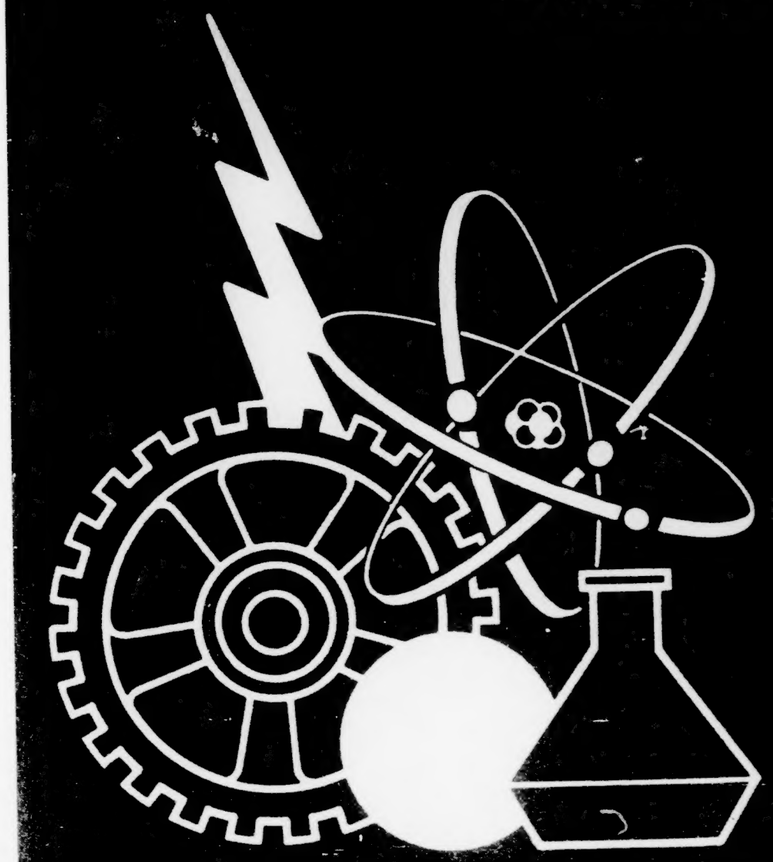
of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

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August 2, 1988



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 2, 1988 Volume 1093 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1093 OG 2
Status of Appeal Cases	1093 OG 2
Notice of Maintenance Fees Payable	1093 OG 3
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1093 OG 3
Notification of Acceptance of Delayed Payment of Maintenance Fees	1093 OG 5
Reissue Applications Filed	1093 OG 5
Requests for Reexaminations Filed	1093 OG 5
Service by Publication	1093 OG 6
Board of Patent Appeals and Interferences Vacancies	1093 OG 6
Patent Certificates of Correction	1093 OG 7
Disclaimers	1093 OG 7
Disclaimer and Dedication	1093 OG 7
Special Boxes for Mail	1093 OG 8
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1093 OG 9
Condition of Patent Applications	1093 OG 10
Reexamination	1
Statutory Invention Registrations	3
Reissue Patents Granted (32,722)	9
Plant Patents Granted (6,236)	11
Patents Granted	
General and Mechanical (4,760,610)	13
Chemical (4,761,161)	207
Electrical (4,761,516)	303
Design Patents Granted (296,950)	415
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design, Plant Patentees and Statutory Invention Registrations	PI 47
Classification of	
Patents (Including Reissues and Reexamination)	PI 51
Designs, Plants and Statutory Invention Registration Applications	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexamination)	PI 55
Designs and Statutory Invention Registration Applications	PI 56
Change of Address Form and Subscription Order Form	Back Page

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VOL 1093 ISS 1 AG 2 1988 UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Mar. 15, 1988, and was announced in the *Official Gazette* at 1087 O.G. 24 on Feb. 16, 1988.

Domestic PCT Fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1300.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(1) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Mar. 21, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel For A Decision Without a Hearing as of June 30, 1988.

Chemical Discipline	–	June 1, 1987
Mechanical Discipline	–	July 25, 1986
Electrical Discipline	–	March 12, 1986

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of June 30, 1988.

Chemical	–	March 3, 1986
Electrical	–	March 5, 1986
Mechanical	–	March 4, 1986

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the month of June 1988.

Affirmed	208
Affirmed-in-Part	41
Reversed	162
Total Decided	411

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on July 30, 1985, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,531,241 through 4,532,652
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 15, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,447,912	06/466,225	5/15/84
4,447,913	06/400,607	5/15/84
4,447,915	06/345,380	5/15/84
4,447,916	06/294,471	5/15/84
4,447,921	06/389,411	5/15/84
4,447,922	06/341,879	5/15/84
4,447,932	06/341,839	5/15/84
4,447,945	06/411,677	5/15/84
4,447,950	06/364,742	5/15/84
4,447,953	06/406,352	5/15/84
4,447,954	06/474,974	5/15/84
4,447,956	06/411,874	5/15/84
4,447,962	06/381,357	5/15/84
4,447,967	06/361,494	5/15/84
4,447,971	06/350,157	5/15/84
4,447,972	06/330,941	5/15/84
4,447,974	06/404,084	5/15/84
4,447,976	06/378,530	5/15/84
4,447,977	06/344,762	5/15/84
4,447,986	06/379,483	5/15/84
4,447,993	06/369,125	5/15/84
4,447,995	06/370,529	5/15/84
4,447,999	06/318,959	5/15/84
4,448,005	06/424,383	5/15/84
4,448,010	06/330,217	5/15/84
4,448,015	06/405,953	5/15/84
4,448,020	06/398,431	5/15/84
4,448,024	06/303,385	5/15/84
4,448,025	06/286,006	5/15/84
4,448,039	06/419,225	5/15/84
4,448,041	06/426,926	5/15/84
4,448,046	06/445,950	5/15/84
4,448,069	06/337,710	5/15/84
4,448,071	06/345,350	5/15/84
4,448,072	06/345,352	5/15/84
4,448,073	06/392,461	5/15/84
4,448,078	06/444,006	5/15/84
4,448,079	06/359,912	5/15/84
4,448,081	06/295,021	5/15/84
4,448,086	06/380,451	5/15/84

VOL 1093 ISS 1 AG 2 1988 UMI

Patent Number	Serial Number	Issue Date
4,448,087	06/241,028	5/15/84
4,448,095	06/355,529	5/15/84
4,448,103	06/317,255	5/15/84
4,448,107	06/363,287	5/15/84
4,448,108	06/374,036	5/15/84
4,448,109	06/311,090	5/15/84
4,448,110	06/313,234	5/15/84
4,448,111	06/222,721	5/15/84
4,448,113	06/428,006	5/15/84
4,448,116	06/376,548	5/15/84
4,448,118	06/448,981	5/15/84
4,448,128	06/408,262	5/15/84
4,448,132	06/303,157	5/15/84
4,448,137	06/447,974	5/15/84
4,448,139	06/315,415	5/15/84
4,448,142	06/316,782	5/15/84
4,448,143	06/343,100	5/15/84
4,448,147	06/271,173	5/15/84
4,448,150	06/418,555	5/15/84
4,448,153	06/307,790	5/15/84
4,448,170	06/388,359	5/15/84
4,448,173	06/469,715	5/15/84
4,448,181	06/386,782	5/15/84
4,448,184	06/346,256	5/15/84
4,448,186	06/313,382	5/15/84
4,448,187	06/378,692	5/15/84
4,448,203	06/422,927	5/15/84
4,448,205	06/355,589	5/15/84
4,448,209	06/359,203	5/15/84
4,448,214	06/443,751	5/15/84
4,448,223	06/331,922	5/15/84
4,448,224	06/304,851	5/15/84
4,448,229	06/355,210	5/15/84
4,448,231	06/405,625	5/15/84
4,448,246	06/397,516	5/15/84
4,448,247	06/414,903	5/15/84
4,448,251	06/448,117	5/15/84
4,448,255	06/408,764	5/15/84
4,448,268	06/286,826	5/15/84
4,448,277	06/301,726	5/15/84
4,448,282	06/441,293	5/15/84
4,448,288	06/317,089	5/15/84
4,448,289	06/392,057	5/15/84
4,448,292	06/226,137	5/15/84
4,448,293	06/350,348	5/15/84
4,448,294	06/248,061	5/15/84
4,448,295	06/292,450	5/15/84
4,448,297	06/275,115	5/15/84
4,448,298	06/456,799	5/15/84
4,448,299	06/311,730	5/15/84
4,448,304	06/362,600	5/15/84
4,448,305	06/413,221	5/15/84
4,448,310	06/464,413	5/15/84
4,448,314	06/388,458	5/15/84
4,448,319	06/371,496	5/15/84
4,448,325	06/397,070	5/15/84
4,448,327	06/404,453	5/15/84
4,448,329	06/326,901	5/15/84
4,448,333	06/350,110	5/15/84
4,448,339	06/327,237	5/15/84
4,448,340	06/349,263	5/15/84
4,448,347	06/328,905	5/15/84
4,448,348	06/409,667	5/15/84
4,448,350	06/406,049	5/15/84
4,448,352	06/358,251	5/15/84
4,448,356	06/361,583	5/15/84
4,448,365	06/363,235	5/15/84
4,448,373	06/216,460	5/15/84
4,448,376	06/299,636	5/15/84
4,448,377	06/379,806	5/15/84
4,448,379	06/368,617	5/15/84
4,448,382	06/408,439	5/15/84
4,448,384	06/451,486	5/15/84
4,448,391	06/481,790	5/15/84
4,448,397	06/440,850	5/15/84
4,448,398	06/353,018	5/15/84
4,448,399	06/254,812	5/15/84
4,448,400	06/355,986	5/15/84
4,448,411	06/457,402	5/15/84
4,448,421	06/339,850	5/15/84
4,448,422	06/351,240	5/15/84
4,448,423	06/419,756	5/15/84
4,448,424	06/444,490	5/15/84
4,448,427	06/503,173	5/15/84
4,448,432	06/275,253	5/15/84
4,448,433	06/370,045	5/15/84
4,448,439	06/365,371	5/15/84
4,448,442	06/336,610	5/15/84
4,448,453	06/395,609	5/15/84
4,448,454	06/341,421	5/15/84
4,448,456	06/354,583	5/15/84
4,448,458	06/324,102	5/15/84
4,448,463	06/362,504	5/15/84
4,448,469	06/380,138	5/15/84
4,448,486	06/337,350	5/15/84
4,448,489	06/378,745	5/15/84
4,448,490	06/233,867	5/15/84
4,448,502	06/278,169	5/15/84
4,448,503	06/256,140	5/15/84
4,448,519	06/388,734	5/15/84
4,448,520	06/360,208	5/15/84
4,448,522	06/435,969	5/15/84
4,448,545	06/354,012	5/15/84
4,448,550	06/398,070	5/15/84
4,448,558	06/502,027	5/15/84
4,448,562	06/337,665	5/15/84
4,448,565	06/359,004	5/15/84
4,448,569	06/276,416	5/15/84
4,448,570	06/304,498	5/15/84
4,448,571	06/325,751	5/15/84
4,448,577	06/344,101	5/15/84
4,448,596	06/456,235	5/15/84
4,448,602	06/418,396	5/15/84
4,448,612	06/491,251	5/15/84
4,448,628	06/398,133	5/15/84
4,448,638	06/426,973	5/15/84
4,448,639	06/391,627	5/15/84
4,448,640	06/345,697	5/15/84
4,448,652	06/431,552	5/15/84
4,448,661	06/476,621	5/15/84
4,448,700	06/383,585	5/15/84
4,448,706	06/376,283	5/15/84
4,448,723	06/432,102	5/15/84
4,448,724	06/451,523	5/15/84
4,448,725	06/407,790	5/15/84
4,448,727	06/298,662	5/15/84
4,448,760	06/428,540	5/15/84
4,448,775	06/422,440	5/15/84
4,448,776	06/341,035	5/15/84
4,448,788	06/394,114	5/15/84
4,448,795	06/369,017	5/15/84
4,448,806	06/490,611	5/15/84
4,448,812	06/432,947	5/15/84
4,448,823	06/427,233	5/15/84
4,448,833	06/388,660	5/15/84
4,448,834	06/368,354	5/15/84
4,448,836	06/524,359	5/15/84
4,448,841	06/428,559	5/15/84
4,448,857	06/416,448	5/15/84
4,448,862	06/232,386	5/15/84
4,448,866	06/369,949	5/15/84
4,448,883	06/401,812	5/15/84
4,448,886	06/325,652	5/15/84
4,448,889	06/389,895	5/15/84
4,448,905	06/430,573	5/15/84
4,448,912	06/349,840	5/15/84
4,448,913	06/437,651	5/15/84
4,448,914	06/448,841	5/15/84
4,448,920	06/326,059	5/15/84
4,448,926	06/416,926	5/15/84
4,448,936	06/366,689	5/15/84
4,448,946	06/418,717	5/15/84
4,448,951	06/458,283	5/15/84
4,448,952	06/458,286	5/15/84
4,448,961	06/382,526	5/15/84
4,448,965	06/408,291	5/15/84
4,448,966	06/405,852	5/15/84
4,448,968	06/351,095	5/15/84
4,448,975	06/311,675	5/15/84
4,448,984	06/458,890	5/15/84
4,448,992	06/416,117	5/15/84
4,449,000	06/467,714	5/15/84
4,449,020	06/295,907	5/15/84
4,449,030	06/392,075	5/15/84
4,449,053	06/287,028	5/15/84
4,449,083	06/390,615	5/15/84
4,449,105	06/265,129	5/15/84
4,449,112	06/447,779	5/15/84
4,449,113	06/506,726	5/15/84
4,449,140	06/334,382	5/15/84
4,449,155	06/321,336	5/15/84
4,449,156	06/422,828	5/15/84
4,449,167	06/501,147	5/15/84
4,449,177	06/354,099	5/15/84
4,449,193	06/256,929	5/15/84
4,449,200	06/243,216	5/15/84
4,449,203	06/238,178	5/15/84
4,449,235	06/398,131	5/15/84
4,449,241	06/382,608	5/15/84
4,449,242	06/413,296	5/15/84
4,449,243	06/415,739	5/15/84
4,449,249	06/423,708	5/15/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patents listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,403,506	06/310,933	9/13/83	10/13/81	6/28/88
4,425,220	06/346,522	1/10/84	2/8/82	6/30/88

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,201,557 Re. S.N. 193,238, Filed May 11, 1988, Cl. 055, PRECLEANER, Ross K. Petersen, Owner of Record: *Marion Manufacturing Co. Inc.*, Attorney or Agent: Jay F. Moldovanyi, Ex. Gp.: 135

4,487,198, Re. S.N. 202,249, Filed June 6, 1988, Cl. 127/46.3, PROCESS FOR PRODUCING A HIGH PURITY MALTOSE, Toshio Miyake, Owner of Record: *Kabushiki Kaisha Hayasibara Seibutsu Kagaky Kenkyujo, Okayama-shi, Japan,* Attorney or Agent: Sheridan Neimark, Ex. Gp.: 116

4,592,627, Re. S.N. 201,495, Filed June 1, 1988, Cl. 350/432, SINGLE COLLIMATOR LENS HAVING ONE ASPHERICAL SURFACE, Albert Smid, Owner of Record: *U.S. Philips Corp., New York, N.Y.,* Attorney or Agent: William L. Botjer, Ex. Gp.: 257

4,613,934, Re. S.N. 204,421, Filed June 9, 1988, Cl. 363/131, POWER SUPPLY FOR GAS DISCHARGE DEVICES, David B. Pacholok, Owner of Record: *Inventor,* Attorney or Agent: William M. Lee, Jr., Ex. Gp.: 212

4,627,301, Re. S.N. 200,957, Filed June 6, 1988, Cl. 74/333, CHANGE SPEED TRANSMISSION, Wilfred N. Bainbridge, et al., Owner of Record: *Automotive Products PLC, Leamington, SPA., Warwickshire, England,* Attorney or Agent: Solon B. Kemon, Ex. Gp.: 352

4,648,860 Re. S.N. 200,530 Filed May 31, 1988, Cl. 493/195, ENVELOPE WITH POUCH AND METHOD OF MANUFACTURE THEREOF, Russel A. Cassey, Owner of Record: *Trigon Packaging Systems Ltd.,* Attorney or Agent: None, Ex. Gp.: 323

4,691,814, Re. S.N. 200,976, Filed June 1, 1988, Cl. 192, CLUTCH RELEASE MECHANISM, Maurice J. Wimbush, Owner of Record: *Automotive Products PLC, Leamington SPA, Warwickshire, England,* Attorney or Agent: Solon B. Kemon, Ex. Gp.: 352

4,694,920, Re. S.N. 772,244, Filed June 10, 1988, Cl. 177/25, COMBINATION WEIGHING SYSTEM AND METHOD, Kazufumi Naito, et al., Owner of Record: *Ishida Scales Mfg. Co. Ltd., Shiga, Japan,* Attorney or Agent: Paul D. Flehr, Ex. Gp.: 216

4,711,950, Re. S.N. 204,563, Filed June 9, 1988, Cl. 528/409, POLYETHER POLYMER OR COPOLYMER MONOMER THEREFOR, AND PROCESS FOR PRODUCTION THEREOF, Katsuhito Miura, et al., Owner of Record: *Osaka Soda Co. Ltd., Osaka, Japan,* Attorney or Agent: Richard A. Steinberg, Ex. Gp.: 153

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,297,310, Reexam. No. 90/001,538, Requested: June 22, 1988, Cl. 264/83, PROCESS FOR PRODUCING ELECTRIC CONDUCTORS COATED WITH CROSSLINKED POLYETHYLENE RESIN, Susumu Akutsu, et al., Owner of Record: *Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan,* Attorney or Agent: Koda & Androlia, Ex. Gp.: 130, Requester: Owner

4,683,291, Reexam. No. 90/001,537, Requested: June 20, 1988, Cl. 530/324, PLATELET BINDING INHIBITORS, Theodore S. Zimmerman, et al., Owner of Record: *Scripps Clinic & Research Foundation, La Jolla, Calif.,* Attorney or Agent: Morgan & Finnegan, Ex. Gp.: 150, Requester: Owner

4,701,051, Reexam. No. 90/001,539, Requested: June 25, 1988, Cl. 356/336, LASER-DOPPLER-APPARA-

VOL
1093
ISS
1
AG
2
1988
UMI

TUS FOR DETERMINING THE SIZE OF MOVING SPHERICAL PARTICLES IN A FLUID FLOW, Preben Buchhave, et al., Owner of Record: *Dantec Electronik, Medicinsk OG, Skovlunde, Denmark,* Attorney or Agent: Larson & Taylor, Ex. Gp.: 250, Requester: Aerometrics Inc., Sunnyvale, Calif.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Auto Guard, Inc., Glenshaw, Pa., Reg. No. 961,771, for the mark "AUTO GUARD", Canc. No. 16,986.
Benrus Corp., Ridgefield, Conn., Reg. No. 622,701, for the mark "VOYAGER", Canc. No. 17,076.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Patent and Trademark Office
Board of Patent Appeals
and Interferences Vacancies

The Board of Patent Appeals and Interferences will be filling a number of Examiner-in-Chief vacancies over the next several months. Positions are available in chemical, electrical, and mechanical technologies. Persons interested in being considered for these vacancies are invited to submit individual applications for each of the following vacancy announcements: PTO-88-A11 — chemical technology, PTO-88-A12 — electrical technology, and PTO-88-A13 — mechanical technology. There is no deadline for submitting applications. However, candidates are urged to apply as soon as possible since applications will be accepted only until the positions are filled.

Excerpts from the vacancy announcements describing the duties of the position, qualification requirements, factors to be used in evaluating candidates, and necessary application material are listed below.

Duties: Serves as a member of the Board of Patent Appeals and Interferences of the Patent and Trademark Office. As an Examiner-in-Chief, participates in the Board's appellate and administrative responsibilities and exercises independent judgment on all matters before him/her on appeal, subject to administrative and policy direction of the Commissioner, and may be responsible for conducting interlocutory proceedings in interference and for determining questions of priority of invention and patentability between interference parties. Appeals filed in accordance with 35 USC 134 and interference declared in accordance with 35 USC 135 involve complex legal and technical questions. The Board of Patent Appeals and Interferences has the sole power to:

(1) hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patents, for reissue of patents, and for reexamination of patents;
(2) to declare and to conduct proceedings in interferences; and
(3) to determine priority of invention.

Final decisions of the Board, if unfavorable to an applicant, or to a party to an interference, may be appealed to the United States Court of Appeals for the Federal Circuit or civil action may be taken in accordance with 35 USC 145, or 35 USC 146.

Qualification Requirements: In addition to a technical degree, candidates must possess:

(1) A minimum of five years of comprehensive patent experience of which at least two years involved the excerise of independent judgment in a responsible position as typified by the exercise of Full Signatory Authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office;
(2) A law degree and membership in good standing of the bar in any state, D.C., Puerto Rico, or any territorial court under the Constitution;
(3) A high degree of demonstrated competence in chemical, electrical or mechanical technology;
(4) A high degree of demonstrated competence and knowledge of interference law and practice;
(5) Demonstrated ability to determine whether or not tests which are submitted in evidence are technically suf ficient to prove the question at hand;
(6) Demonstrated ability to write clearly, and to write logically developed opinions;
(7) Demonstrated ability to use legal and technical background to evaluate testimony of witnesses;
(8) Demonstrated ability to deal effectively with people within and outside the Patent and Trademark Office; and
(9) Comprehensive experience in patent prosecution, examination, or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

Factors Which Will Be Considered In Evaluating Qualified Candidates: Candidates will be evaluated on the total range of their education, training and experience as well as supervisory appraisals and questionnaire responses.

Interested Candidates Should Submit The Following:

(1) Application for Federal Employment, SF-171;
(2) Merit Program Interest Statement, CD-261 (PTO employees only);
(3) Current supervisory appraisal on your agency's form or on CD-362 (letters of reference for outside candidates);
(4) Annual narrative performance rating, or equivalent;
(5) Examiner-in-Chief Questionnaires (two documents); and
(6) Samples which evidence your writing ability.

Questions concerning this notice and requests for application materials should be directed to Ms. Suzanne Waddill, Office of Personnel, One Crystal Park, Ste. 700, Arlington, Va., telephone (703) 557-3631.

June 20, 1988

JEFFREY M. SAMUELS,
Acting Assistant Secretary and
Commissioner of Patents
and Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 2, 1988

Re. 32,624	4,694,844	4,714,711	4,727,524
D. 292,377	4,695,750	4,715,798	4,727,573
D. 293,389	4,695,830	4,716,029	4,727,594
D. 294,497	4,696,276	4,716,048	4,727,951
D. 294,664	4,696,530	4,716,147	4,727,952
B1 4,354,007	4,697,227	4,717,185	4,728,096
4,150,195	4,697,289	4,717,643	4,728,142
4,425,785	4,698,027	4,717,884	4,728,227
4,440,148	4,698,406	4,717,931	4,728,472
4,444,675	4,698,434	4,718,040	4,728,686
4,496,987	4,698,751	4,718,090	4,728,706
4,506,081	4,698,821	4,718,360	4,728,990
4,515,813	4,699,642	4,718,507	4,729,036
4,567,467	4,699,984	4,718,773	4,729,120
4,578,475	4,700,085	4,719,078	4,729,326
4,599,347	4,700,708	4,719,272	4,729,393
4,602,436	4,701,456	4,719,473	4,729,642
4,607,581	4,701,482	4,719,501	4,729,756
4,607,958	4,703,393	4,719,532	4,730,144
4,608,372	4,703,838	4,719,589	4,730,335
4,610,678	4,704,121	4,719,834	4,730,370
4,622,210	4,704,166	4,719,959	4,730,934
4,635,638	4,704,357	4,720,061	4,730,963
4,644,138	4,704,718	4,720,173	4,731,395
4,644,531	4,704,947	4,720,484	4,731,967
4,647,566	4,705,017	4,720,514	4,732,143
4,649,173	4,705,128	4,720,657	4,732,709
4,652,991	4,705,702	4,721,153	4,732,741
4,654,207	4,705,826	4,721,440	4,732,856
4,654,425	4,705,888	4,721,473	4,732,921
4,660,952	4,706,300	4,721,672	4,733,310
4,661,818	4,707,075	4,721,688	4,733,320
4,663,743	4,708,117	4,722,406	4,733,326
4,664,736	4,708,153	4,722,429	4,733,384
4,667,693	4,709,011	4,722,579	4,733,730
4,668,332	4,710,412	4,722,638	4,733,775
4,669,554	4,710,500	4,722,706	4,733,786
4,670,838	4,710,506	4,722,796	4,734,047
4,670,929	4,710,696	4,722,861	4,734,328
4,671,816	4,710,960	4,723,505	4,734,444
4,672,968	4,711,136	4,723,879	4,734,531
4,675,009	4,711,222	4,724,096	4,734,676
4,676,951	4,711,289	4,724,248	4,734,677
4,678,705	4,711,369	4,724,752	4,734,845
4,678,894	4,711,548	4,724,776	4,734,864
4,680,792	4,711,658	4,724,869	4,735,103
4,681,662	4,711,710	4,724,894	4,735,208
4,681,667	4,711,965	4,725,095	4,735,676
4,682,148	4,712,293	4,725,305	4,735,795
4,682,368	4,712,545	4,725,493	4,735,969
4,683,136	4,712,604	4,726,197	4,736,519
4,684,021	4,712,695	4,726,451	4,736,850
4,684,969	4,713,342	4,726,832	4,737,126
4,687,062	4,714,308	4,726,939	4,738,449
4,688,976	4,714,689	4,727,177	4,739,456

Disclaimers

Re. 29,513.—*Lennart B. Johnson,* Milford, N.H. ELECTRICIAL CONNECTION APPARATUS. Patent dated Jan. 10, 1978. Disclaimer filed May 6, 1988, by the assignee, *Teradyne, Inc.*

Hereby enters this disclaimer to claim 19 of said patent.

4,659,565.—*Kim R. Smith; Raymond O. Johannessen; James E. Borland,* all of Baton Rouge, La. AMINE OXIDE HAIR CONDITIONER. Patent dated Apr. 21, 1987. Disclaimer filed June 6, 1988, by the assignee, *Ethyl Corp.*

Hereby enters this disclaimer to claims 14-17 of said patent.

4,712,924.—*Fabrizio Agostini,* Florence, Italy. WATCH FOR DISPLAYING A LINE ON THE DIAL. Patent dated Dec. 15, 1987. Disclaimer filed May 4, 1988, by the assignee, *Trast Enterprise S.r.l.*

Hereby enters this disclaimer to claims 1-6 of said patent.

4,721,289.—*Ransom J. Hennells,* Plymouth, Mich. COMBINE CHECK AND EXHAUST VALVE FOR HIGH PRESSURE GAS SPRING. Patent dated Jan. 26, 1988. Disclaimer filed Mar. 7, 1988, by the assignee, *Rantom, Inc.*

The term of this patent subsequent to May 5, 2004, has been disclaimed.

4,726,095.—*Norman L. Bissell, Jr.,* Flint; *Robert L. Breece,* Clio; and *Robert T. Griffiths,* Ortonville, all of Mich. BUCKET FISH SCALER. Patent dated Feb. 23, 1988. Disclaimer filed May 19, 1988, by the *inventors.*

Hereby enters this disclaimer to the entire term of said patent.

Disclaimer and Dedication

4,590,071.—*Patrick J. Scannon,* Davis; *Lynn E. Spitler,* Tiburon; *Howard M. Lee* and *Russell T. Kawahata,* San Francisco; and *Ronald P. Mischak,* Palo Alto, all of Calif. HUMAN MELANOMA SPECIFIC IMMUNOTOXINS. Patent dated May 20, 1986. Disclaimer and Dedication filed May 27, 1988, by the assignee, *Xoma Corp.*

Hereby disclaims and dedicates to the Public claims 15, 16, 17 and 18 of said patent.

VOL
1093
ISS
1
AG
2
1988
UMI

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Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to reexamination.
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PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions,* and provides technical staff assistance in their use to aid the public, in gaining effective access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

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Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7140
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California	Los Angeles Public Library	(213) 612-3200
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2347
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North Carolina	Raleigh: D. H. Hill Library, North Carolina State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
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Pennsylvania	Philadelphia, Free Library of	(215) 686-5330
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
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	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin -Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

VOL
1093
ISS
1
AG
2
1988
UMI

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 18, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	12-9-86
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	10-24-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-8-86
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-14-85
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-6-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	1-12-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	10-3-86
DESIGN, GROUP 290—K. L. CAGE, Director	6-26-85
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-13-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	10-04-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	4-9-86
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-20-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-1-87

Expiration of patents: The patents within the range of numbers indicated below expire during June 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,581,312 to 3,590,387, inclusive
Plant Patents . . . . . None

REEXAMINATIONS

AUGUST 2, 1988

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,636,818 (906th)

CARBONLESS SYSTEM INCLUDING SOLVENT-ONLY MICROCAPSULES

Richard J. Jerabek, Grand Island, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Reexamination Request No. 90/001,268, Jun. 26, 1987.

Reexamination Certificate for Patent No. 4,636,818, issued Jan. 13, 1987, Ser. No. 742,113, Jun. 5, 1985.

Int. Cl.[4] **B41M** *5/16, 5/22*

U.S. Cl. 503—213

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6** are cancelled.

[1. In a carbonless copying system having a recording substrate, first and second mark-forming components capable of reacting with each other to produce a colored reaction product, and microcapsules having generally continuous walls encapsulating a first fill material, the first fill material comprising a solution or suspension containing the first mark-forming component, the improvement in combination therewith comprising,

microcapsules having generally continuous walls encapsulating a second fill material, the second fill material consisting of solvent capable of dissolving either the first or the second mark-forming component or both, the microcapsules encapsulating the first fill material, the microcapsules encapsulating the second fill material, and the second mark-forming component being arranged in juxtaposed pressure-sensitive contact with respect to one another such that the application of marking pressure upon the carbonless system causes a colored marked to form on the recording substrate.]

VOL
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STATUTORY INVENTION REGISTRATIONS

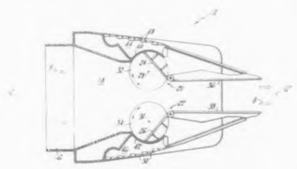
PUBLISHED AUGUST 2, 1988

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H500
EXHAUST NOZZLE FLAP ASSEMBLY

Claude R. Stogner, Palm Beach Gardens, and William M. Madden, Palm Springs, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 27, 1987, Ser. No. 19,996
Int. Cl.[4] B64C *15/04*
U.S. Cl. 239—265.25 **5 Claims**



1. A nested flap assembly for a 2-D, thrust vectoring gas turbine engine exhaust nozzle having an axially flowing stream of engine exhaust gas passing therethrough, comprising:

first and second transversely oriented, flow directing flaps, each flap being pivotable about a common pivot axis oriented transversely with respect to the exhaust gas stream;

the first flap being generally planar in shape and further being offset with respect to the common pivot axis and selectively pivotable about the common pivot axis for redirecting the flowing exhaust gases,

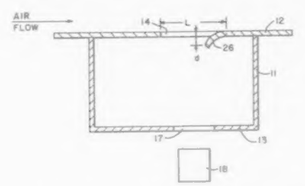
the second flap being semi-cylindrical in shape for nestingly receiving the first flap therewithin, the second flap further being pivotable about the common pivot axis for selectably opening and closing an alternate exhaust gas flow path within the exhaust nozzle; and

first and second thrust bearings, disposed between the first and second flaps proximate the span ends thereof and adapted to prevent relative transverse displacement between the respective span ends of the first and second flaps.

H501
APPARATUS FOR ACOUSTICAL QUIETING OF A CAVITY

Donald V. Rubin, Huntsville, and Billy J. Walker, Madison, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 27, 1987, Ser. No. 24,092
Int. Cl.[4] B64C *1/14*
U.S. Cl. 244—1 R **5 Claims**



1. Apparatus for the transmission and sensing of optical signals unimpeded through the surface of an aircraft body moving through the atmosphere at subsonic speeds, comprising:

(a) an enlongated opening in said aircraft surface having a leading edge and a trailing edge separated by a length L, said leading edge terminating in the plane of said surface;

(b) a cavity disposed within said aircraft body in unimpeded communication with said elongated opening;

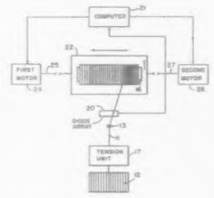
(c) said trailing edge terminating in an arcuate flange which protrudes into said cavity a distance not less then 0.11 L; and

(d) sensing and transmitting means in unimpeded communication with said cavity and said elongated opening for sensing and transmitting optical signals without distortion or hindrance from turbulence within the cavity.

H502
HIGH SPEED PRECISION OPTICAL FIBER WINDING SYSTEM

Crawford D. Mabee, III, deceased, late of Union Grove, Ala. (by Marilyn N. Mabee, executrix); Harold V. White; Paul B. Ruffin, both of Huntsville, Ala., and James C. Hung, Knoxville, Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1987, Ser. No. 136,053
Int. Cl.[4] B65H *54/00, 55/04, 57/28*
U.S. Cl. 242—18 R **2 Claims**



1. A process for terminating the winding of one fiber layer being wound on a bobbin in one direction and beginning the winding of another layer in the opposite direction, comprising;

a. providing: a fiber supply, a bobbin onto which the filer is to be wound, a fiber guide positioned adjacent to the bobbin, means for rotating the bobbin, means for traversing the bobbin back and forth past the guide, means positioned between the guide and the bobbin for sensing the angle between the fiber and a line extending through the guide and tangent to the bobbin, and means connected to the sensing means for controlling the rotation and traversing means,

b. rotating and traversing the bobbin to form said one layer to a desired point on the bobbin and then stopping the rotation and traversing of the bobbin to terminate the formation of said one layer,

c. traversing the bobbin until the sensed angle is about +0.2 to +0.5 degrees, and then stopping said traversing,

d. rotating the bobbin until the sensed angle is substantially zero and then stopping said rotating,

e. traversing the bobbin until the sensed angle is about +2 to +3 degrees and then stopping said traversing,

f. rotating the bobbin until the sensed angle is reduced to about +1.6 to +2.1 degrees and then stopping said rotating,

VOL 1093 ISS 1 AUG 2 1988 UMI

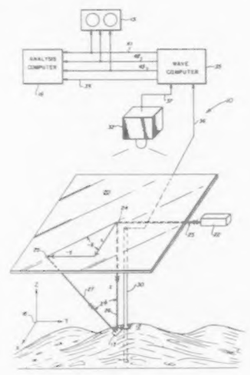
g. traversing the bobbin until the sensed angle is reduced to about +0.5 to +0.9 degrees and then stopping said traversing,
h. rotating the bobbin until the sensed angle is about −0.075 to −0.095 degrees and,
i. winding said another layer while traversing the bobbin to maintain the sensed angle at about −0.075 to −0.095 degrees.

H503

WAVE SURFACE CHARACTERIZATION

David J. Keller, Inyokern, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 26, 1988, Ser. No. 160,988
Int. Cl.[4] G01C *1/00*; G01F *23/00*; G08B *21/00*
U.S. Cl. 356—152 **4 Claims**



1. A method of characterizing a time varying wave surface, comprising:
directing a beam reflectable by said surface along a predetermined first path toward said surface so that the beam is reflected from an element of said surface along a second path determined by the instantaneous two dimensional slope of said element;
determining the two dimensional angular relation between said paths; and
calculating said slope from said angular relation.

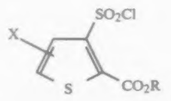
H504

PROCESS FOR THE PREPARATION OF ALKYL 3-CHLOROSULFONYLTHIOPHENE-2-CARBOXYLATE

George Levitt, and Richard V. Pater, both of Wilmington, Del., and Company assignors to E. I. Du Pont de Nemours, Wilmington, Del.

Continuation-in-part of Ser. No. 613,783, May 24, 1984, abandoned. This application Mar. 7, 1985, Ser. No. 707,622
Int. Cl.[4] C07D *333/32*, *333/34*
U.S. Cl. 549—64 **9 Claims**

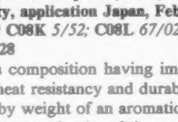
1. A process for the preparation of thiophene compounds of Formula I



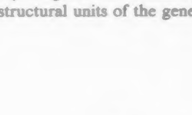
I

wherein
R is C_1–C_3 alkyl; and
X is H, Cl, Br or CH_3;

said process comprising:
(a) contacting a thiophenamine of Formula II suspended in excess aqueous hydrochloric acid and a cosolvent selected from acetic, formic or propionic acid with sodium or potassium nitrite, optionally in the presence of a mineral acid booster selected from gaseous hydrochloric acid, concentrated sulfuric acid or oleum, to produce a diazonium salt of Formula III;



II



III

and, (b) contacting a solution of the diazonium salt of Formula III with sulfur dioxide in the presence of cupric or cuprous chloride, or bromide, to produce said compound of Formula I.

H505

BORON UPTAKE IN TUMORS, CEREBRUM AND BLOOD FROM [10B]NA4B24H22S2

Daniel N. Slatkin, Bayside; Peggy L. Micca, Patchogue, and Ralph G. Fairchild, Setauket, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1986, Ser. No. 838,494
Int. Cl.[4] A61N *5/12*; A61K *43/00*, *41/00*
U.S. Cl. 424—1.1 **3 Claims**

1. A method of utilizing boron neutron capture therapy for treatment of brain tumors which comprises slowly infusing a radiotherapeutically effective amount of $[^{10}B]Na_4B_{24}H_{22}S_2$ at an infusion rate of approximately 1 μg ^{10}B per gram of body weight per hour into the patient and thereafter exposing the diseased area to neutron irradiation.

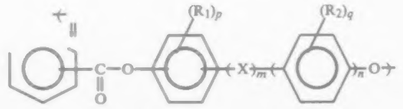
H506

RESINOUS COMPOSITION AND PROCESS FOR PRODUCING SHAPED ARTICLES USING SAME

Masashiro Asada, and Junji Takase, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

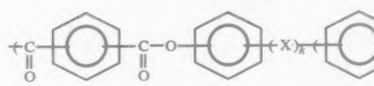
Continuation of Ser. No. 703,566, Feb. 20, 1985, abandoned. This application Apr. 17, 1987, Ser. No. 39,828
Claims priority, application Japan, Feb. 20, 1984, 59-31050
Int. Cl.[4] C08K *5/52*; C08L *67/02*; C08G *63/18*
U.S. Cl. 524—128 **12 Claims**

1. A resinous composition having improved discoloration, processability, heat resistancy and durability comprising:
A. 100 parts by weight of an aromatic polyester containing recurring structural units of the general formulae (I) and (II),



(I)

-continued



(II)

wherein
X=C_1–C_{10} alkylene, C_5–C_{15} cycloalkylene or cycloalkylidene, —O—, —S—, —CO— or —SO_2—
R_1,R_2=C_1–C_{20} alkyl, aryl, ararkyl, alkoxyl, aryloxyl or arylalkoxyl
p, q; p+q=integer of 1 to 8 ($1 \leqq p$, $q \leqq 4$)
m, n=0 or 1 (if m=1, n≠0)
k, l=0 or 1 (if k=1,l≠0), and
molar ratio (I)/(I)+(II)=1–0.01,
B. 0.01 to 5 parts by weight of a phosphite compound having general formula (VI);

$$(R_7O)_3P \text{ or } (R_7O)_2P—OR_8—O—P—(OR_7)_2 \quad \text{(VI)}$$

wherein
R_7=C_8–C_{30} alkyl, cycloalkyl, aryl, arylalkyl or alkylaryl
R_8=C_1–C_{50} aromatic or aliphatic (each substituent may or may not be the same),
or wherein the phosphite compound comprises an oligomer or a polymer having the general formula;

$$—R_9—O—P(OR_{10})—O—_n \quad \text{(VII)}$$

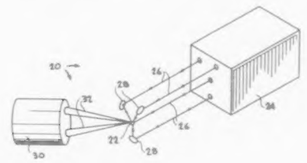
wherein
R_9=same as R_8
R_{10}=same as R_7
n=integer of 3–50.
C. 0.01 to 0.1 part by weight of a carboxylic acid metal salt.

H507

DERIVATIZED STARCH PRODUCTS AS PROTECTIVE COLLOIDS IN EMULSION POLYMERIZATION PROCESSES

Norman A. Portnoy, Decatur, Ill., and Frank T. Orthoefer, Lafayette, La., assignors to A. E. Staley Manufacturing, division of Staley Continental, Inc., Decatur, Ill.

Continuation-in-part of Ser. No. 850,792, Apr. 11, 1986, abandoned. This application Apr. 20, 1987, Ser. No. 42,614
Int. Cl.[4] C08F *2/26*; C08L *3/00*
U.S. Cl. 526—200 **10 Claims**



1. A method for emulsion polymerizing one or more addition polymerizable monomer materials, said method being characterized by the use as a protective colloid in said emulsion polymerization of from about 0.05 to about 2 weight percent on a total batch weight basis of a methylated, ethylated or carboxymethylated starch material which has an average degree of methyl, ethyl or carboxymethyl substitution in the range of from about 0.03 to about 1.0 of such substituents per anhydroglucose unit in the starch molecule and which contains, on a starch material dry solids weight basis, a combined total of less than 0.8 weight percent of anions selected from the group consisting of polyvalent inorganic anions, monovalent inorganic anions and methylsulfate and ethylsulfate anions.

H508

HYBRID-DRIVE IMPLOSION SYSTEM FOR ICF TARGETS

James W. Mark, Danville, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 14, 1987, Ser. No. 108,183
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—103 **4 Claims**

1. A driver for an ICF target that comprises a hollow spherical ablator surroundingly disposed around a quantity of fusion fuel, the driver comprising:
a laser system, that provides laser beams for compressing the ablator to higher density; and
an ion beam system, that provides ion beams for delivering energy into the compressed ablator, so that the ablator implodes and compresses the quantity of fusion fuel to conditions wherein fusion reactions occur.

H509

PREPARATION OF ADHESIVES

Hung-Ya Chao, 10 Presidio Pl., Williamsville, Erie, N.Y. 14221

Filed Dec. 22, 1987, Ser. No. 136,325
Int. Cl.[4] C08F *26/10*, *20/06*, *120/06*, *220/06*
U.S. Cl. 526—264 **4 Claims**

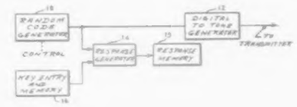
1. An adhesive composition which comprises a copolymer of (a) isodecyl acrylate or 2-ethylhexyl acrylate, and (b) acrylic acid, or vinyl pyrrolidone, the ratio of (a) to (b) by weight being from 99:1 to 85:15.

H510

AUTOMATIC AUTHENTICATION FOR VOICE TRANSMISSIONS

Marvin R. Clinch, Oneida, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 24, 1983, Ser. No. 469,373
Int. Cl.[4] G07D *7/00*; G06F *7/04*; H04K *1/00*; H04L *9/02*
U.S. Cl. 340—825.34 **7 Claims**



1. An automatic authentication apparatus comprising in combination:
means for generating a random code, said random code generating means generating a plurality of random codes, said random code generating means randomly providing one random code of said plurality of random codes as a code output signal,
means for generating signals receiving said code output signal from said random code generating means, said signal generating means converting said code output sig-

VOL 1093 ISS 1 AG 2 1988 UMI

nal to an audio code signal, said audio code signal to be transmitted to a remote station,

a response generating means receiving said code output signal from said random code generating means, said response generating means providing a code response signal in response to said code output signal,

a memory means receiving said code response signal from said response generating means, said memory means storing said code response signal,

a signal converting means to receive a challenge response signal from said remote station that is being challenged by said audio code signal, said signal converting means converting said challenge response signal to a response answer signal, and,

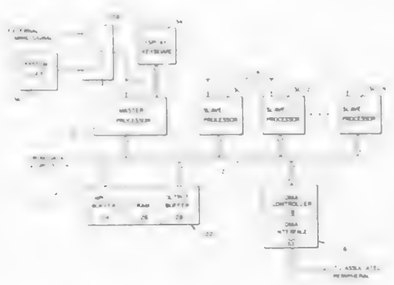
means for comparing signals receiving said code response signal from said memory means and receiving said response answer signal from said signal converting means, said comparing means comparing said code response signal with said response answer signal, said signal comparing means providing an authentication signal when said code response signal and said response answer signal are identical.

H511

DATA COLLECTION SYSTEM

Samuel L. Stello, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 9, 1984, Ser. No. 629,284
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 6 Claims



1. A data collection system for collecting and distributing data from a plurality of data sources 1 through N comprising:

a system data/address/control bus;

a system interrupt line;

a direct memory access (DMA) unit operatively connected to said system data/address/control bus configured so as to allow data transfers independently according to a predetermined program;

a memory device, operatively connected to said system data-/address/control bus and being configured to allow data to be stored or retrieved;

a plurality of slave processors 1 through N operatively connected between said system data/address/control bus and said system interrupt line, each one of said plurality of slave processors 1 through N being independent and dedicated to collecting data only from corresponding ones of the data sources 1 through N, and each one of said plurality of slave processors 1 through N having a predetermined program customized for the corresponding ones of said plurality of data sources 1 through N; and

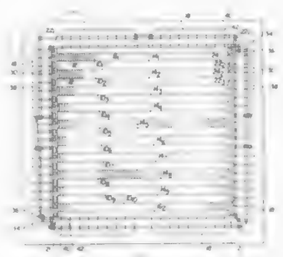
a master processor operatively connected between said system data/address/control bus and said system interrupt line, said master processor having a predetermined program for controlling the timing and interpreting commands for said plurality of slave processors 1 through N.

H512

AUTOMATED UNIVERSAL ARRAY

Fred Borgini, Haddonfield, and Richard Noto, Maple Shade, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 305,825, Sep. 28, 1981, abandoned. This application Feb. 18, 1986, Ser. No. 831,732
Int. Cl.[4] H01L *27/04*
U.S. Cl. 357—42 20 Claims



1. A universal array of active and passive circuit components formed on a semiconductor chip and adapted for single level interconnection to provide a desired circuit implementation, comprising in combination:

plural first direction rows of identical symmetrical inner cells of uncommitted circuit components;

a bordering configuration of peripheral cells for providing an off-chip interface;

a first roadbed area on each side of said plural rows of inner cells, said first roadbed area having a second direction tunnel pattern including at least three sets of plural parallel conductive tunnels mutually spaced apart in said second direction for permitting first and second type interconnections between adjacent tunnel sets for second direction signal routing within the array and having respective predetermined conductive tunnel lengths permitting plural parallel first direction conductive wiring channels crossing thereover for first direction signal routing within the array;

a second roadbed area at each end of said plural rows of inner cells as well as said first roadbed area, said second roadbed area having a first direction tunnel pattern adjacent each first roadbed area and including a set of plural parallel first direction conductive tunnels and having respective predetermined tunnel lengths permitting plural parallel second direction conductive wiring channels crossing thereover for second direction signal routing within the array, and a second direction tunnel pattern adjacent each row of inner cells and aligned with said first direction tunnel pattern and including a set of plural parallel second direction conductive tunnels for selective connection of said second direction conductive channels of said first direction tunnel pattern and having respective predetermined tunnel lengths permitting at least one first direction conductive wiring channel crossing thereover; and

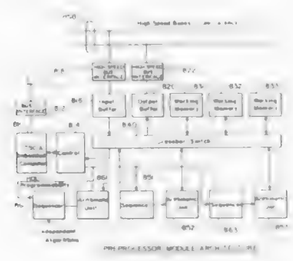
a pair of peripheral power busses connecting opposite polarity potentials to said plurality of inner and peripheral cells, said power busses running parallel and spaced across said peripheral cells around four sides of said array and including a plurality of branch busses in said first direction connected to respective power busses and crossing over said second direction tunnel pattern adjacent each row of inner cells and running through said array for applying said opposite polarity potentials to said plural first direction rows of inner cells, a pair of bonding pads at one corner for connecting an external power source to respective said power busses, and a bridge over one power buss for connecting the other power buss to one bonding pad while maintaining separation from the one buss and the other bonding pad, said peripheral cells each including a plurality of tunnels crossing under one said power buss and providing connections between said peripheral cells and inner cells, a further bonding pad for connection to external circuit means, and a pair of high impedance devices connected between said power busses and said peripheral cells.

H513

ECM PREPROCESSOR OR TRACKER USING MULTI-PROCESSOR MODULES

Timothy Dunne, Baltimore, and James F. Gentry, Glen Burnie, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 30, 1986, Ser. No. 880,242
Int. Cl.[4] G01S *13/00*
U.S. Cl. 364—516 1 Claim



1. A preprocessor unit for use in a multiprocessor system having bus means, for processing data from a plurality of sources, said preprocessor unit comprising:

control means used as a subsystem request handler, including an input buffer and a system interface, which provides means for inputting address and data information from the bus means, when the address information includes a "name" designating said preprocessor unit;

processing means including parameter memory means and arithmetic means, the arithmetic means comprising a plurality of chip sets, each chip set comprising an arithmetic unit and a micro-sequencer individually associated with that arithmetic unit, providing each arithmetic unit with its own independent microcontrol memory and controller, so that job timing and microprogram sequencing is independent for each arithmetic unit;

and an output buffer used as a vector buffer, which provides means for outputting processed data onto the bus means;

internal coupling means for coupling addresses and data from said control means to each of the micro-sequencers and the parameter memory means, for coupling data from the parameter memory means to each of the arithmetic units, from each of the arithmetic units to the parameter memory means, and from the arithmetic units to the output buffer;

the parameter memory means being subdivided into blocks, said control means having microcode for designating a block of memory for a particular source, designating addresses for storing each of a plurality of parameters at a particular location in the block used for that source at an offset location relative to a starting location of the block.

H514

COMPACT RANGE FOR VARIABLE-ZONE MEASUREMENTS

Walter D. Burnside; Roger C. Rudduck, both of Columbus, Ohio, and Jiuan S. Yu, Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 27, 1987, Ser. No. 19,836
Int. Cl.[4] H01Q *3/00*
U.S. Cl. 342—360 10 Claims



1. A compact range apparatus comprising:

a parabolic reflector having

a focal point lying on a reflector axis extending to a central point of intersection with said reflector and

a feed line extending from said focal point to a reflection point on said reflector, said feed line being angularly offset from said reflector axis; and

source means, located on said feed line, for directing divergent primary waves towards said reflector, said primary waves reflecting symmetrically about a reflected beam center line extending parallel to said reflector axis through the reflection point, said primary waves obeying the laws of geometrical optics with respect to said reflector;

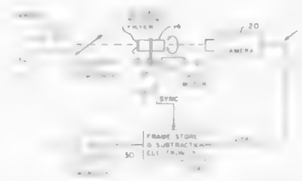
a measurement volume, for containing a device under test, being illuminated by the reflected waves, said reflected waves being spherical waves, the radius of said spherical waves being a function of the distance from said source to said reflector.

H515

POLARIZED TARGET DETECTOR

Harold H. Holt, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 8, 1988, Ser. No. 154,256
Int. Cl.[4] H04N *7/18*
U.S. Cl. 358—108 3 Claims



1. A system for enhancing targets viewed through a TV tracker system comprising, a TV camera mounted for viewing a target, said TV tracker being connected at its output to a frame store and subtraction electronics and said frame store and subtraction electronics being connected to a TV monitor, a polarized filter mounted in front of said TV camera and means for rotating said polarized filter at about 2 to about 4 revolutions per second, and interlocking means connecting said motor drive means to said frame store and subtraction electronics so that the rotation of the polarized filter and the frame store and subtraction electronics can be synced.

VOL 1093 ISS 1 AG 2 1988 UMI

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,722

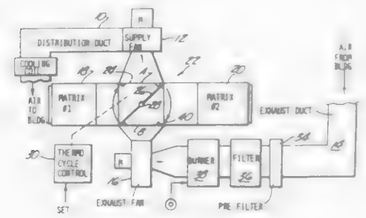
VENTILATION SYSTEM WITH THERMAL ENERGY RECOVERY

Arthur C. W. Johnson, Troy, Mich., assignor to Combustion Research Corp., Pontiac, Mich.

Original No. 4,049,404, dated Sep. 20, 1977, Ser. No. 600,620, Jul. 31, 1975. Application for reissue Jan. 22, 1985, Ser. No. 693,539

Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—387 7 Claims



1. A forced air, non-recirculating ventilation system for an enclosure in which a thermal energy gradient relative to outside ambient air temperature has been produced by the expenditure of energy, said system comprising:

first means defining a distribution duct [from an outside air source to] *having an inner end positioned within* said enclosure *and an outer end;*

first air-flow-forcing means operatively associated with said [first] *distribution* duct for producing a substantially continuous, unidirectional flow of substantially exclusively outside air to said enclosure *through said distribution duct;*

second means defining an exhaust duct [from] *having an inner end positioned in* said enclosure [to the outside air source] *and an outer end;*

second air-flow-forcing means operatively associated with said [second] *exhaust* duct for producing a substantially continuous, unidirectional flow of inside air from said enclosure substantially completely to the outside *of said enclosure through said exhaust duct;*

first and second matrices of thermal energy absorbing material, each being characterized by a high surface area to volume ratio and low hydraulic resistance;

[housing means for said] *first and second matrix housings respectively receiving said first and second* matrices [and arranged for air flow therethrough, to and from outside air *and each defining an inlet opening and a discharge opening on opposite sides of the respective matrix positioned therewithin;*

and valve means connecting said [housing means] *matrix housings* to said [first and second duct means] *distribution and exhaust ducts* for alternately reversely hydraulically connecting the [duct means] *ducts* to respective matrices thereby to draw outside air into said enclosure to ventilate same through one matrix while complementally exhausting inside air from said enclosure through the other matrix;

said valve means including:

a valve housing for said valve means positioned centrally between said matrix housings and said outer ends of said ducts with said inlet openings of said matrix housings and said outer ends of said ducts circumferentially arrayed about said valve housing, said valve housing having four ports arranged in opposite pairs, the ports of one opposite pair being connected to respective inlet openings of said matrix housings and the ports of the other opposite pair being respectively connected to the outer ends of said exhaust and distribution ducts; and

an air flow regulation means comprising a partition in the form of a rigid vane rotatably mounted within said valve housing, and means for driving said vane between two alternate positions for intermittently making said alternate reverse hydraulic connections.

Re. 32,723

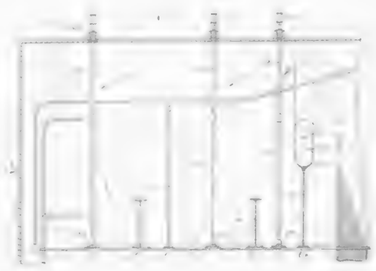
APPARATUS FOR DESLAGGING STEAM GENERATOR TUBES

Mark Neundorfer, Houston, Tex., assignor to Neundorfer, Inc., Willoughby, Ohio.

Original No. 4,497,282, dated Feb. 5, 1985, Ser. No. 554,616, Nov. 23, 1983. Application for reissue Feb. 4, 1987, Ser No. 11,333

Int. Cl. 722B *37/18*

U.S. Cl. 122—379 19 Claims



1. Apparatus for deslagging parallel tubes in a steam generator by application of high frequency shock energy comprising vibrator means for producting high frequency shock energy, base plate means extending across and contacting portions of each of a pluralty of said parallel tubes for distributing said high frequency shock energy over a relatively large area of said plurality of tubes, means connecting said vibrator means to said base plate means for transmitting high frequency shock energy from said vibrator means to said base plate means, [said connecting means including at least one interference fit tapered connection,] and wherein means are provided for securing the base plate means in a position against the plurality of tubes to effect good transmission of high frequency shock energy while permitting thermal expansion of the tubes during operation of said steam generator.

VOL 1093 ISS 1 AG 2 1988 UMI

Re. 32,724

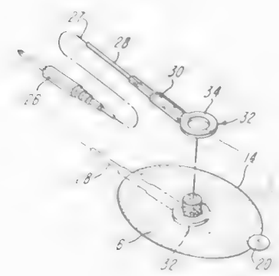
REUSABLE MEDICAL ELECTRODE HAVING DISPOSABLE ELECTROLYTE CARRIER

James V. Cartmell, Dayton, Ohio, assignor to American Hospital Supply Corporation, Evanston, Ill.

Original No. 4,319,579, dated Mar. 16, 1982, Ser. No. 215,277, Dec. 11, 1980. Continuation of Ser. No. 590,182, Mar. 16, 1984, abandoned, which is a continuation of Ser. No. 50,626, Jun. 21, 1979, abandoned. Application for reissue Oct. 11, 1985, Ser. No. 786,710

Int. Cl.[4] A61B 5/04

U.S. Cl. 128—640 20 Claims



17. In combination:

a one-piece, imperforate and moisture impervious pliant plastic sheet;

an adhesive layer completely coating one side of said sheet;

an aggregate comprising an electrolyte and a shaped body for containing said electrolyte, said body having a planar end surface facing toward said sheet and said body being adhered to a part of said adhesive layer which is spaced from the margin of said sheet by engagement of the entirety of said planar surface with said part; and

relatively moisture impevious means providing a support having a supporting surface, said supporting surface being adhesively engaged to peripheral portions of said adhesive layer surrounding said part,

said sheet and said adhesive layer thereby cooperating with said support-providing means to seal said aggregate from the atmosphere surrounding said support-providing means.

Re. 32,725

WATER-SOLUBLE VEGETABLE PROTEIN AGGREGATES

Paulette A. Howard; Michael Campbell, and David T. Zollinger, all of Decatur, Ill., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Original No. 4,234,620, dated Nov. 18, 1980, Ser. No. 973,195, Dec. 26, 1978. Application for reissue May 9, 1985, Ser. No. 732,088

Int. Cl.[4] A23J 3/00

U.S. Cl. 426—656 4 Claims

1. A process for improving the water-solubility of a vegetable protein product said process comprising the steps of:

(A) supplying an aqueous vegetable seed feedstream to a homogenizer with said feed stream containing on a dry solids basis at least 30% by weight vegetable seed protein and a sufficient amount of base to maintain the feed stream within said homogenizer at a pH between about 6.5 to 9.0,

(B) increasing (*i*) the water-solubility, *as ascertained by NSI, and* (*ii*) *the aggregate molecular weight* of the vegetable seed protein by subjecting the aqueous feed stream in the homogenizer to successive pressure and cavitation cycling at a temperature between about 50° C. to about 150° C.; and

(C) recovering the vegetable protein product having an improved water-solubility therefrom, *said feed stream being homogenized in a centrifugal homogenizer, the aqueous vegetable feed stream comprising a soy protein concentrate characterized as having an NSI of less than 25, containing (on a buffered ash extractables weight basis) carbohydrate constituents of less than* 5×10^6 *molecular weight as the major carbohydrate and less than 20% by weight carbohydrates of a molecular weight greater than* 1.5×10^6, *said soy protein concentrate containing as its most predominant water soluble constituent, a protein within either the less than* 5×10^6 *M.W.,* $5\times10^6-3.7\times10^5$ *M.W. or* $3.7\times10^5-1\times10^6$ *M.W. regions, the pH ranging from about 6.8 to about 8.5, the temperature ranging from at least 65° C. to about 115° C. with said temperature and pH being sufficient to provide a PIS of at least 55% as determined by the following equation:* $PIS=5.7459C-0.01717C^2-0.22932C\ pH+606.5\ pH-37.8169\ pH^2-2574.6$

wherein "PIS" represents the percentage of protein in solution for the product of step (B), "C" represents the centrifugal homogenization processing temperature in centigrade degrees and "pH" represents the pH of the product as discharged from the centrifugal homogenizer, said product having an NSI of at least 55% *and containing (on a buffered-salt-extractable protein weight basis) protein aggregates of a molecular weight greater than* 1.5×10^6 *as a predominant protein constituent relative to the weight percent of protein constituents respectively within either the less than* 5×10^6 *molecular weight region, the* $3.7\times10^5-1\times10^6$ *molecular weight region or the* $1\times10^6-1.5\times10^6$ *molecular weight region; and the weight percent protein aggregates having a molecular weight greater than* 1.5×10^6 *exceeding the weight percent proteins in each of the other regions by at least 10 weight percent and is at least three times greater than the weight percent of protein within the* $1\times10^6-1.5\times10^5$ *molecular weight region.*

PLANT PATENTS

GRANTED AUGUST 2, 1988

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,236

MINIATURE ROSE PLANT NAMED 'RUISETO'

Gijsbert De Ruiter, Hazerswoude, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Jul. 21, 1986, Ser. No. 887,704

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized by being a dwarf, compact, free blooming plant, having blooms with petals of heavy substance and of orange-red color approximately 40 millimeters in diameter, and being suitable for use as a pot plant as well as for garden decoration.

6,237

MINIATURE ROSE PLANT NAMED 'RUIFIFTY'

Gijsbert De Ruiter, Hazerswoude, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Jul. 21, 1986, Ser. No. 887,705

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—10 1 Claim

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized by being a dwarf, compact, free blooming plant, having blooms of Poppy Red color, approximately 1¼ inch in diameter, with petals of heavy substance, and being suitable for use as a pot plant as well as for garden decoration.

6,238

CHRYSANTHEMUM PLANT NAMED PENNY LANE

Jacques C. M. Van der Knaap, De Lier, Netherlands, assignor to Fides, Handelskwekerij, De Lier, Netherlands

Filed Jan. 22, 1986, Ser. No. 821,471

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct Chrysanthemum plant named Penny Lane, as described and illustrated, and particularly characterized by its light pink ray floret color and contrasting, generally dark orange diac florets; nine week response; anemone capitulum; and, excellent flower production.

6,239

CHRYSANTHEMUM PLANT NAMED SUNNY CASSA

Jacques C. M. Van der Knaap, De Lier, Netherlands, assignor to Fides, Handelskwekerij, De Lier, Netherlands

Filed Jan. 22, 1986, Ser. No. 821,534

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct Chrysanthemum plant named Sunny Cassa, as described and illustrated, and particularly characterized by its flat capitulum form and single daisy capitulum type; dark yellow ray floret color; diameter across the face of the capitulum of 35–55 mm, and yellow-green to yellow disc florets.

6,240

CHRYSANTHEMUM PLANT NAMED DAYMARK

Jacques C. M. Van der Knaap, De Lier, Netherlands, assignor to Fides., Handelskwekerij, De Lier, Netherlands

Filed Jan. 22, 1986, Ser. No. 821,536

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—74 1 Claim

1. A new and distinct Chrysanthemum plant named Daymark, as described and illustrated, and particularly characterized by its anemone capitulum; white ray floret color; yellow-green to yellow disc florets which become petaloids, and by its low temperature tolerance.

6,241

CHRYSANTHEMUM PLANT NAMED BIJOUX

Jacques C. M. Van der Knaap, De Lier, Netherlands, assignor to Fides, Handelskwekerij, De Lier, Netherlands

Filed Jan. 22, 1986, Ser. No. 820,781

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—76 1 Claim

1. A new and distinct Chrysanthemum plant named Bijoux. as described and illustrated, and particularly characterized by its soft pink tubular ray floret color; nine week response; spider/anemone capitulum form and excellent flower production

6,242

CHRYSANTHEMUM PLANT NAMED LILAC BIJOUX

Jacques C. M. Van der Knaap, De Lier, Netherlands, assignor to Fides, Handelskwekerij, De Lier, Netherlands

Filed Jan. 22, 1986, Ser. No. 821,537

Int. Cl.[4] A01H 5/00

U.S. Cl. Plt.—76 1 Claim

1. A new and distinct Chrysanthemum plant named Lilac Bijoux, as described and illustrated, and particularly characterized by its lavender-pink ray floret color; nine week response; spider/anemone capitulum form and excellent flower production.

VOL
1093

ISS
1

AG
2

1988

UMI

PATENTS

GRANTED AUG. 2, 1988

ERRATA

For CLASS	See PATENT NO.
060-039	4,760,662
106-001	4,761,224
525-074	4,761,463
429-112	4,761,487
568-011	4,761,493
313-595	4,761,794

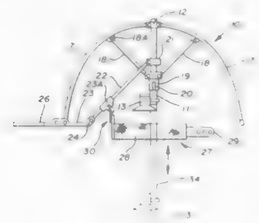
VOL
1093
ISS
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AG
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1988
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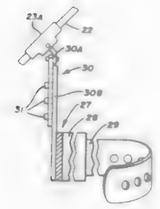
PATENTS

GRANTED AUGUST 2, 1988

GENERAL AND MECHANICAL

4,760,610
UMBRELLA CAP HAT
Bing T. Wu, and Mei-Ling Wu, both of 12335 Elgers St., Cerritos, Calif. 90701
Filed Sep. 24, 1987, Ser. No. 100,613
Int. Cl.[4] A42B *1/18*
U.S. Cl. 2—209.1 3 Claims

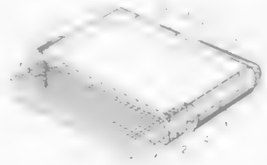




1. An improvement for an umbrella, the umbrella having a support shaft, a handle portion of the shaft, a canopy defined by a plurality of canopy support ribs and a rib deployment mechanism which includes a sleeve, a water repellent material secured to and over said canopy support ribs, a brim canopy extending around a portion of the perimeter of the canopy, the brim canopy comprising a number of brim ribs, separate material covering said brim ribs, a plurality of brim canopy deployment support arms pivotally secured to said brim ribs, the improvement comprises a flexible head band, a plurality of head band support straps secured tc said head band and to said brim ribs, means for adjusting said support straps, a telescopically extensible shaft portion interengaging said handle portion of the shaft, a head engageable cup on said telescopically extensible shaft portion, and means for adjusting said head band.

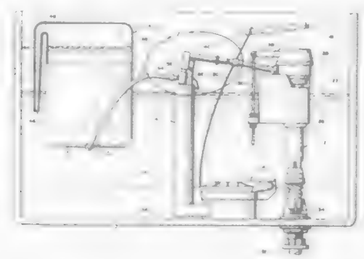
4,760,611
ARMOR ELEMENTS AND METHOD
Roger Huet, Grenoble, and Philippe Perrier, Meylan, both of France, assignors to Aluminum Company of America, Pittsburgh, Pa.
Continuation of Ser. No. 690,755, Jan. 11, 1985, abandoned. This application Aug. 20, 1986, Ser. No. 898,833
Claims priority, application France, Jan. 12, 1984, 84 00398
Int. Cl.[4] F41H *1/02*
U.S. Cl. 2—2.5 10 Claims

1. In a method of providing anti-projectile armoring protection to an object, the improvement comprising placing a plurality of armor element tiles side by side to form a layer for protecting the object, without there being a continuous cast matrix



between the tiles, each of the tiles comprising a ceramic core and a cast metallic envelope pressing against the ceramic core.

4,760,612
AIR REGULATED CLEANER DISCHARGE DEVICE FOR TOILETS AND THE LIKE
Oscar R. Dufau, Fullerton, Calif., assignor to Fluidmaster, Inc., Anaheim, Calif.
Continuation of Ser. No. 842,116, Mar. 20, 1986, abandoned. This application Apr. 22, 1987, Ser. No. 42,580
Int. Cl.[4] E03D *9/02*
U.S. Cl. 4—225 10 Claims



1. In an air regulated cleaner discharge device of the type which comprises a toilet water tank, the water tank having a ballcock for discharging water to fill the tank from a minimum water level to a maximum water level, a flush valve connected to a toilet bowl for flushing water therein from the tank, and an overflow pipe projecting above the maximum water level having a ballcock refill tube connected thereto for directing water to refill the toilet bowl after said flushing; the cleaner discharge device in combination therewith including a container in said water tank for receiving a concentrated liquid cleaner that is corrosive to the components inside of the water tank, including the flush valve or ballcock, therein; an air supply tube having an inlet end opening into said tank and spaced above said minimum water level and below said maximum water level and an outlet end opening into said container at an upper portion thereof, a portion of the length of said air supply tube spaced from said inlet end thereof being above said maximum water level preventing the water in the tank from mixing with the concentrated liquid cleaner; a liquid cleaner supply tube connected into said container at a lower portion thereof spaced below said air supply tube outlet end; said air supply tube from said inlet end thereof and through said container and through said liquid cleaner supply tube all being essentially air tight; liquid flow means operably connecting said liquid cleaner supply tube into said ballcock refill tube for creating a low pressure acting upon said liquid cleaner in said container and in said liquid cleaner supply tube to thereby flow

VOL 1093 ISS 1 AG 2 1988 UMI

said liquid cleaner into said refill tube as long as water is flowing in said refill tube and air is flowing into said container air supply tube inlet end, said liquid cleaner flow into said refill tube being prevented when the water level in said tank is at a level between a point above said container air supply tube inlet and said maximum water level, preventing the flow of air into said container air supply tube inlet.

4,760,613

HYGIENIC TOILET SEAT ASSEMBLY

Tadeusz Bobak, San Francisco, Calif., assignor to Incorema, San Francisco, Calif.

Filed Jan. 4, 1988, Ser. No. 140,406
Int. Cl.[4] A47K *13/19, 13/20, 13/22*
U.S. Cl. 4—247 13 Claims



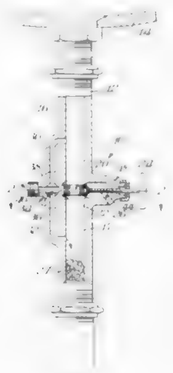
1. A hygienic toilet seat assembly comprising a toilet seat of open overlapping split-ring shaped configuration, a protective sleeve adapted to slide as a tube over the said toilet seat, and protective sleeve entrainment means, wherein said toilet seat has the configuration of a closed loop with superimposed end portions at the rear region of said seat, thus providing a complete covering of the seat by said protective sleeve, the infeed sense of said protective sleeve into said seat having substantially the same direction as the outlet sense.

4,760,614

DRAINAGE PIPE STOPPAGE DISPLACER

C. L. Scott Harrison, 31 Riverside Dr., Wilmington, Del. 19809

Filed Oct. 23, 1987, Ser. No. 113,467
Int. Cl.[4] E03D *11/00*
U.S. Cl. 4—255 8 Claims



1. A device for removing blockage in a pipe system comprising a central tube attached at each end to the system; said central tube having an upper chamber and lower chamber and a gate valve positioned between the upper and lower chamber and having an open and closed position whereby the central tube can be closed when the gate valve is closed and thereby blocking the central tube; and upper and lower tube way each having two ends and being connected to and communicating through a three-way valve means connected to one of their ends and wherein the other end of the upper tube way is connected to and communicates with the upper chamber and the lower tube way is connected to and communicates with the lower chamber; and wherein the threeway valve has an external connector whereby fluid, under pressure can be directed into the three-way valve means and thereafter the three-way valve means can be positioned to direct fluid into either the upper or lower tube way such that when the gate valve is closed, fluid under pressure is directed toward blockages located above or below the device and displaces or washed them away so the system is opened.

4,760,615

LIFT FOR USE WITH PATIENTS

Josephine Furniss, 2856 Lakewood Dr., Redding, Calif. 96001

Filed Dec. 24, 1986, Ser. No. 946,371
Int. Cl.[4] A61G *7/00, 7/08*
U.S. Cl. 5—63 6 Claims

1. A lift for lifting and transporting patients, comprising:
a bottom frame having a front end, a back end, a top and a bottom;
a top frame positioned above said bottom frame having a front end, a back end, a top and a bottom, said top frame being positioned with its front and back ends oriented substantially the same as are said front and back ends of said bottom frame;
a lift mechanism positioned substantially between said top of said bottom frame and said bottom of said top frame so that, when said lift mechanism is operated, said top frame rises or lowers with respect to said bottom frame;
a platform positioend on top of said top frame and pivotally attached thereto so that said platform tilts with respect to said top frame, thereby facilitating positioning of a patient thereon, said platform having:
a center platform section pivotally attached to said top frame;
a head platform section pivotally attached to said center platform section;
first positioning means for positioning said head platform section at different orientations with respect to said center platform section and said top frame;
a foot platform section pivotally attached to said center platform section so that said foot platform section lowers with respect to said center platform section and said top frame to increase the comfort of an individual being transported, and
second positioning means for holding said foot platform section substantially stationary with respect to said center platform section consisting substantially of a support slidably attached to said lift so that in a first position said support holds said foot platform section substantially stationary with respect to said center platform section and in a second position said support releases said foot platform section so that said foot platform section lowers with respect to said center platform section, and

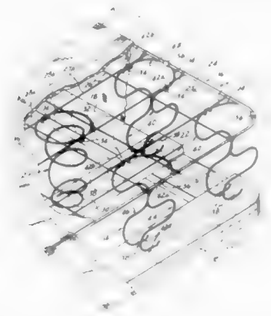
rollers attached to said bottom frame whereby said lift is easily moved.

4,760,616

BEDDING FOUNDATION HAVING SINUOUS WIRE SPRINGS

Sidney A. Hiatt, and Henry Zapletal, both of Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Apr. 15, 1987, Ser. No. 38,503
Int. Cl.[4] A47C *23/02*
U.S. Cl. 5—246 6 Claims



1. A bedding foundation comprising,
a bottom substantially rectangular, base frame having side and end members and slats extending between said side members,
a substantially planar rectangular top wire grid, said grid comprising a border wire and first and second sets of wires, said border wire being of rectangular configuration and surrounding said first and second sets of wires, said first set of wires comprising a plurality of longitudinally extending, spaced, parallel wires and said second set of wires comprising a plurality of transversely extending, spaced, parallel wires, said first and second sets of wires intersecting one another and being fixedly connected to said border wires,
a plurality of sinuous wire springs interconnecting said base frame and said wire grid, said sinuous wire springs each comprising a sinuous spring strip made from wire bent back and forth to have oppositely facing edge loops interconnected by straight torsion bar sections, each of said strips being formed into a generally U-shaped configuration having substantially vertical legs interconnected by a substantially flat horizontal section, said flat section of each of said sinuous wire springs being fixedly secured to said wire grid and the ends of said vertical legs of each of said sinuous springs remote from said flat section being fixedly secured to said base frame,
each of said vertical legs of each of said U-shaped sinuous wire springs consisting of three edge loops interconnected by a pair of straight torsion bars, the lowermost one of the edge loops being connected to a third free end straight torsion bar, and said flat section of each of said U-shaped sinuous wire springs consisting of a single edge loop and a pair of straight torsion bars connected to opposite ends of said single edge loop,
a fabric pad overlying said top wire grid, and
an upholstered covering surrounding said base frame, top wire grid, sinuous wire springs, and said fabric pad.

4,760,617

LEVEL DYEING OF A FILAMENT BUNDLE WITH A DYE SOLUTION

Franz Trendl, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 22, 1986, Ser. No. 887,943
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1985, 3527799
Int. Cl.[4] D06B *3/04*
U.S. Cl. 8—151.2 1 Claim



1. A process for the level dyeing of a bundle of a plurality of filaments with a dye solution during the continuous dyeing of the filament bundle, which comprises opening the filament bundle during dyeing in the horizontal and vertical direction by means of a driven roll having a sawtoothlike thread profile across its entire width thereby splitting said bundle into many narrow ribbons.

4,760,618

APPARATUS FOR CLEANING THE INTERIOR OF A MOUSE

Stephen R. Chapin, Jr., 3809 Chesterwood Dr., Silver Spring, Md. 20906

Continuation of Ser. No. 768,383, Aug. 22, 1985, Pat. No. 4,673,440. This application Apr. 14, 1987, Ser. No. 38,182
Int. Cl.[4] B08B *9/02*
U.S. Cl. 15—104.93 3 Claims



1. Apparatus for cleaning an interior cavity of an electro-mechanical device wherein the interior cavity has electro-magnetic transducers therein and a spherical surface, the apparatus comprising:
a ball covered with VELCRO material arranged as an array of hooks, and
a pad of VELCRO material arranged with an array of loops complementing the hooks of the VELCRO material on the shpere whereby when the sphere is placed in the recess and rolled on the pad, dirt and debris is picked up by the hooks on the sphere and transferred to the loops on the pad.

VOL 1093 ISS 1 AG 2 1988 UMI

4,760,619

CLEANING-DEVICE COMBINATION FOR CLEANING OIL-CONTAMINATED SHORE WATER AND SHORE AREA

Lars Lundin, Porvoo, Finland, assignor to Oy Lars Lundin Patent Ab, Finland

PCT No. PCT/FI86/00117, § 371 Date Jan. 4, 1987, § 102(e) Date Jan. 4, 1987, PCT Pub. No. WO87/02401, PCT Pub. Date Apr. 23, 1987
PCT Filed Oct. 15, 1986, Ser. No. 65,215
Claims priority, application Finland, Oct. 15, 1985, 854008
Int. Cl.[4] E01H *12/00*; E02B *15/04*
U.S. Cl. 15—142 11 Claims



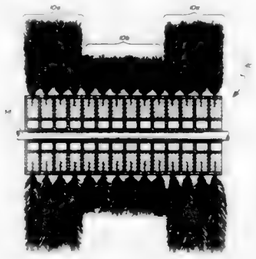
1. A cleaning-device combination for cleaning shore water and shore area contaminated with oil, the combination comprising at least one manually operated brush having an arm, and a collecting container having a scraper for removing from the brush the oil adhering to the brush and for directing the oil into the container; wherein the brush comprises a substantially cylindrical bristled part and an arm centrally secured to it in the manner of an axle, and that the cleaning device for the bristled part, mounted in connection with the container, on the other hand comprises a mantle part which is open at one end and substantially corresponds to the outer shape of the bristled part and inside which there is mounted on a bearing a scraper part which pushes between the bristles of the bristled part and, when the brush is being rotated in one direction or when the brush is being pulled out, scrapes oil from the bristles, directing the oil into said container.

4,760,620

FEATHER BRUSH AND METHOD FOR THE FABRICATION THEREOF

Patrick H. Lamore, 2577 Belle View Dr., Rochester, Mich. 48064

Filed May 18, 1987, Ser. No. 50,558
Int. Cl.[4] A46B *3/02*; B60S *3/06*
U.S. Cl. 15—181 13 Claims



1. A feather brush comprising:

a resilient member adapted to be penetrated by the shaft of a feather;

a disk-shaped hub having said resilient member affixed to the perimeter thereof;

a plurality of feathers, the shafts of which are inserted into said resilient member in a predetermined pattern corresponding to the radius of the hub, so that a portion of each of said shaft penetrates the resilient member and projects from a second side thereof; and

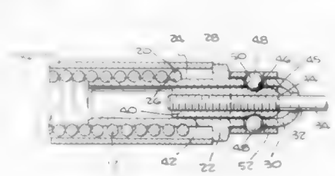
a body of adhesive material disposed on the second side of the resilient member and affixing said shafts so that they cannot be removed therefrom.

4,760,621

COMBINATION DOORSTOP, HOLDOPEN AND SHOCK ABSORBER

Michael E. Stromquist, Encino, Calif., assignor to Anthony's Manufacturing Co., Inc., San Fernando, Calif.

Filed May 27, 1986, Ser. No. 867,525
Int. Cl.[4] E05C *17/12*; B65D *43/24*
U.S. Cl. 16—85 21 Claims



1. A doorstop and holdopen for a door hingably-attached to a door frame, comprising:

a tubular guide having means at one end for attaching said guide for pivotal movement to one of said door or said frame, and a closed second end containing an aperture therethrough;

an elongated member having a first end and a second end said first end having means thereat for attaching said member for pivotal movement to the other of said door or said frame, said member extending through said aperture into said guide and having an enlarged portion at said second end slidably-retained therein for aligning said member axially during protractive and retractive sliding movement relative to said guide and for stopping said member against further protractive movement when said portion is in abutment with said closed end of said guide, said enlarged portion having camming means thereon for exerting radial forces with axial movement of said member; and

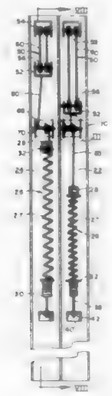
follower means unconnected to both said enlarged portion of said elongated member an said guide mounted in said second end of said guide for cooperating with said camming means on said enlarged portion of said member to exert an axial force against retractive displacement of said member when said member is in a fully-protracted position and hold said member in said position, and for releasing said force upon a protractive displacement of said member with a predetermined axial force in the opposite direction.

4,760,622

COMPOUND WINDING APPARATUS AND COUNTERBALANCE SYSTEMS

Henry Rohrman, Jenkintown, Pa., assignor to Schlegel Corporation, Chester, N.Y.

Filed Jul. 31, 1986, Ser. No. 892,704
Int. Cl.[4] E05D *13/00*; B65H *75/48*
U.S. Cl. 16—196 25 Claims



1. A compound counterbalance system for window sashes and the like comprising:

biasing means for easing operation of a window sash and the like, the biasing means being movable at an inherently variable rate of force;

a first biasing force transmission means, connected intermediately of the window sash and the like and the biasing means, for increasing the effective range of movement of the biasing means; and,

a second biasing force transmission means connected intermediately of the window sash and the like and the biasing means, the second biasing force transmission means having a variable rate of operation predetermined to automatically compensate for the variability of the biasing means to provide substantial constancy of the biasing force.

4,760,623

HINGE

Hiroaki Toyama, Yamanashi, Japan, assignor to Kabushiki Kaisha Murakoshi Seiko, Tokyo, Japan

Filed Oct. 22, 1986, Ser. No. 921,531
Claims priority, application Japan, Mar. 20, 1986, 61-41508[U]; Mar. 20, 1986, 61-41509[U]
Int. Cl.[4] E05D *7/04*, *7/06*, *7/12*
U.S. Cl. 16—238 9 Claims

1. In a hinge of the type wherein a rotor is connected to a front part of a base by link arms in such a manner as to be capable of rotating with respect to the base, and said base is fitted to the main body of the furniture or the like by a fitting member, the improvement characterized by comprising:

a set screw equipped with a ring-like engagement portion at the tip thereof and fixed to the front part of said base;

an elongated hole formed at a rear part of said base in such a manner as to extend in a longitudinal direction;

a sliding member equipped with hook portions and pawl portions and fitted to said base by a screw inserted through said elongated hole;

a notch formed on said fitting member so that said ring-like engagement portion of said set screw engages with said notch from forward side;

recesses formed on said fitting member in such a manner as to engage with said hook portions of said sliding member; and



a lever having grooves engaging with said pawl portions of said sliding member from the forward side, urged forward by a spring and rotatably disposed on said fitting member.

4,760,624

CLOSER/HOLDER WITH ACCESS SLIT

Ivan Fish, 2804 Carolina, NE., Albuquerque, N. Mex. 87110-3312

Continuation-in-part of Ser. No. 647,973, Sep. 6, 1984, Pat. No. 4,644,610. This application Sep. 24, 1986, Ser. No. 911,351
Int. Cl.[4] B65D *77/10*; F16B *2/20*
U.S. Cl. 24—30.5 S 5 Claims



1. A closing or holding device comprising:

a main body, said main body comprising a flexible material;

at least one orifice in said main body in which an object, when provided, is to be closed or held, said orifice comprising gripping means at its surface, said gripping means comprising teeth which are inwardly disposed from said orifice and spaced equidistant around the orifice so that the space between each tooth is approximately equal; and

at least one access and retaining slit having opposing, zig-zag shaped members, said zig-zag shaped access and retaining slit extending from outside said main body into said orifice, wherein said zig-zag shaped access and retaining slit separates to provide access into said orifice from outside said main body for allowing the object to be pushed through said zig-zag shaped access and retaining slit and into said orifice, after which said zig-zag shaped access and retaining slit closes to retain the object in the orifice.

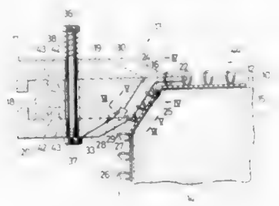
VOL 1093 ISS 1 AG 2 1988 UMI

4,760,625

METHOD FOR PRODUCING HOOKS ON HOOK-AND-LOOP FASTENERS

Ryuichi Murasaki, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Dec. 12, 1986, Ser. No. 940,956
Claims priority, application Japan, Dec. 12, 1985, 60-279492
Int. Cl.[4] A44B *18/00*; D06C *13/08*
U.S. Cl. 26—9 1 Claim



1. A method of producing hooks on hook-and-loop fasteners, comprising the steps of:

(a) introducing a plurality of parallel spaced first stationary cutting comb teeth of a stationary blade into loops projecting from a foundation fabric of a loop sheet as the loop sheet is fed along a path;

(b) cutting the loops from the outside thereof on one of the legs thereof at a first point near heads of the respective loops by reciprocating a plurality of parallel spaced first movable cutting comb teeth of a first movable blade in a direction perpendicular to the axes of the first stationary cutting comb teeth while the loops are guided in a first plane along the first stationary cutting comb teeth, thereby producing a hook from each loop thus severed;

(c) then guiding the severed leg and the hook of each severed loop in a second, different plane to move in and along an adjacent pair of parallel spaced guide grooves defined in the stationary blade and extending from the first stationary cutting comb teeth; and

(d) thereafter, further cutting the severed leg from the outside of each severed loop at a second point near the foundation fabric by reciprocating a plurality of parallel spaced second movable cutting comb teeth of a second movable blade in a direction perpendicular to the axes of a plurality of second stationary cutting comb teeth disposed on the stationary blade at one end of the guide grooves remote from the first stationary cutting comb teeth while the severed leg is held in one of the two adjacent guide grooves.

4,760,626

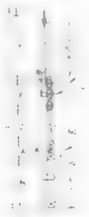
GUIDING AND SPREADING DEVICE

Wolfgang Lönner, Neusäss, and Franz Mair, Augsburg, both of Fed. Rep. of Germany, assignors to Erhardt & Leimer GmbH, Augsburg, Fed. Rep. of Germany

Filed Mar. 5, 1987, Ser. No. 22,242
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1986, 3607233
Int. Cl.[4] D06C *3/06*
U.S. Cl. 26—75 4 Claims

1. In a device for guiding and spreading out a moving material web, consisting of a guide station for guiding the material web on the desired running course including, a plurality of guide rolls movable parallel to the plane of the web and crosswise relative to the moving direction of the web for correcting the run of the web, a spreading station, including at least one spreading roll arranged downstream from the guide station for spreading out the material web transversely to the moving direction thereof, at least one edge-sensing system downstream from the guide station and being in signal-transmitting communication with driving elements for the guide rolls, and a fixing roll for the material web arranged downstream from the spreading roll, the improvement comprising:

a further spreading roll arranged in said spreading station parallel to said at least one spreading roll so that the material web is maintained in the shape of an "S" therethrough,



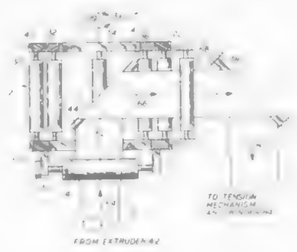
and said spreading station and said fixing roll being arranged in a plane defined by at least the axes of the first and the last guide rolls so that the segments of the material web approaching the guide station and the fixing roll run in a straight line.

4,760,627

APPARATUS FOR AN OSCILLATING PINCH ROLL ASSEMBLY UTILIZED IN THE EXTRUSION OF BLOWN FILMS

Enrique Schele, Asturias 349, Santiago, Chile

Filed Mar. 23, 1987, Ser. No. 28,866
Int. Cl.[4] B29C *53/20*; D06C *3/06*
U.S. Cl. 26—87 16 Claims



1. A web handling apparatus for flattening and laterally distributing any longitudinal imperfections in a moving continuous, flexible, tubular web comprising:

a rotatable spindle having an input accepting said tubular web, said tubular web having said longitudinal imperfections at a constant circumferential position, and outputting a flattened web with said imperfections laterally distributed to a fixed idler roller, said spindle including:

a pinch roller means for flattening said tubular web disposed at the input of said spindle;

a turning bar means mounted coplanar with said flattened web as said web exits said pinch roller means, said turning bar means for coplanarly turning said web substantially 90 degrees;

a plurality of rollers circumferentially disposed about said turning bar means having axes of rotation substantially parallel to an axis of rotation of said spindle and substantially laterally aligned with said flattened web, said flattened web always traveling first over a first roller of said plurality of rollers and periodically traveling over one or more other rollers of said plurality of rollers along an outer periphery of said spindle, that is defined by a plurality of idler rollers, to said fixed idler roller; and,

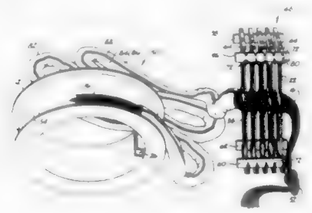
means for rotating said spindle through a predetermined angle of 360° about an axis of said tubular web such that a relative position of said imperfection with respect to a defined position on said turning bar means changes thereby laterally distributing said imperfection along a longitudinal run of said flattened web.

4,760,628

DRAWING-IN OF HEDDLES REMOTE FROM A LOOM HARNESS FRAME

Frank H. Kaufmann, Travelers Rest; Charles F. Kramer; James D. Grigsby, both of Greenville, and Stephen J. Root, Mauldin, all of S.C., assignors to Steel Heddle Manufacturing Corp., Greenville, S.C.

Filed Sep. 15, 1986, Ser. No. 907,367
Int. Cl.[4] D03J *1/00*
U.S. Cl. 28—201 8 Claims



1. A method of drawing warp yarns through the eyes of a plurality of heddles which are supported in a plurality of rows by a plurality of heddle bars on a plurality of harness frames on a loom, each of said heddles having at least two spaced alignment openings therein, said method comprising the steps of:

(a) aligning said harness frames at an intermediate point where said heddle bars are aligned;

(b) separating a portion of said heddles on each of said heddle bars;

(c) engaging said portion of said heddles with a heddle holder, which holder comprises a pair of upper and lower transverse frame members which extend transversely of said rows of heddles along each side of said portion, and further comprises inserting upper and lower support shaft means for each row of said heddles, extending longitudinally through openings in said transverse frame members and through said alignment openings in said heddles whereby said portion of said heddles are securely held by said holder;

(d) sliding said portion of said heddles off one end of said heddle bars;

(e) supporting said holder and said portion of said heddles on a warp drawing-in machine;

(f) drawing warp yarns through the eyes of said heddles from a canister of warp yarn;

(g) supporting said canister of warp yarn on said loom and sliding said portion of said heddles held by said holder onto the heddle bars of a harness frame of said loom; and

(h) removing said heddle holder from engagement with said heddles, whereby drawn-in heddles and their respective warp yarn canisters are loaded on said loom.

4. A method of attaching heddles, each having an upper slot and a lower slot, to an upper heddle rod and a lower heddle rod of a harness frame, said method comprising:

supporting the heddles side-by-side on a heddle holder so that the upper slot of each heddle is substantially in parallel alignment with one another and so that the lower slot of each heddle is substantially in parallel alignment with one another;

removing an upper removable rod section from the upper heddle rod;

removing a lower removable rod section substantially opposite said upper removable rod section from the lower heddle rod;

positioning the heddle rod holder adjacent where said upper removable rod section was removed from said upper heddle rod so that the upper slots of the heddles are in substantial alignment with the upper heddle rod for engagement thereon;

positioning the heddle rod holder adjacent where said lower removable section was removed from the lower heddle rod so that the lower slots of the heddles are in substantial alignment with the lower heddle rod for engagement thereon;

moving the heddles while supported by the heddle holder so that the upper slots of the heddles slide into the upper heddle rod and the lower slots of the heddles slide into the lower heddle rod; and

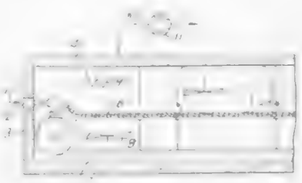
removing said heddle holder from the heddles so that the heddles are supported by the upper and lower heddle rod.

4,760,629

PROCESS FOR THE TREATMENT OF A FILAMENT CABLE

Dieter Paulini; Wolfram Wagner, both of Dormagen; Peter Schnitz-Bastian, Erftstadt-Liblar, and Robert Brück, Erftstadt-Ahrem, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 920,481, Oct. 17, 1986, abandoned.
This application Nov. 19, 1987, Ser. No. 122,629
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1985, 3538871
Int. Cl.[4] D02G *1/16, 1/20*
U.S. Cl. 28—256 10 Claims



1. In a process for the treatment of a filament cable in an installation into which it is introduced, in which the cable is crimped, treated with a gas, and withdrawn, the improvement wherein: the cable having a weight of between 5 and 500 ktex is introduced at a speed of 100 to 2000 m/min and is crimped using a gas-dynamically operated crimping device which has been mounted into a front face of the installation is introduced into the installation in the manner of a sluice, folded via a slide with an S-shaped section having an incline to the horizontal of between 30° and 70° and a transition radius at the upper and lower end of between 50 and 200 mm onto a gas-permeable, horizontally transporting base as a crimping cake with a buckling factor of 2 to 25 and a piling-up factor of between 1 to 100, treated with the gas and withdrawn from the installation.

VOL 1093 ISS 1 AG 2 1988 UMI

4,760,630

THERMAL DEBURRING SYSTEM

Hans-Jürgen Conrad, Rutesheim; Hanns Kurz, Stuttgart; Helmut Martini, Weil der Stadt, and Gerhard Neumann, Kornwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

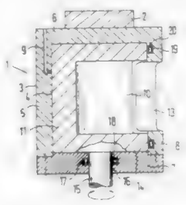
PCT No. PCT/DE86/00087, § 371 Date Nov. 21, 1986, § 102(e) Date Nov. 21, 1986, PCT Pub. No. WO86/05730, PCT Pub. Date Oct. 9, 1986

PCT Filed Mar. 6, 1986, Ser. No. 9,338

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1986, 3512015

Int. Cl.[4] B21D *26/02*; B24C *9/00*; C21D *7/00*

U.S. Cl. 29—33 A 7 Claims



1. An apparatus for treating workpieces by temperature and pressure shocks from ignition of a combustible gas mixture, particularly for thermal deburring, the apparatus comprising:

a closable treatment chamber having an inner hollow member and an outer hollow member, said outer hollow member having a wall, said inner hollow member forming at least one combustion space and having an opening communicating with said combustion space, said members being movable relative to each other between a first position, in which said opening is accessible and the workpieces are insertable through said opening to said combustion space, and a second position, in which said opening faces and is closed by said wall of said outer hollow member; and

means for sealably closing said combustion space and including seals (**19**, **33**, **42**, **43**) arranged between said inner hollow member (**4**, **29**, **37**) and said outer hollow member (**3**, **22**, **53**) and formed as inflatable tubes, each of said tubes being fillable with one of a fluid and a gaseous pressure medium prior to an implementation of a deburring process.

4,760,631

ROLL

Bernhard Brendel, Grefrath-Mulhausen, Fed. Rep. of Germany, assignor to Eduard Kusters Maschinenfabrik GmbH & Co. KG, Krefeld, Fed. Rep. of Germany

Filed Jul. 31, 1986, Ser. No. 892,359

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1985, 3527398

Int. Cl.[4] B21B *27/00*

U.S. Cl. 29—116.1 13 Claims

1. Apparatus for pressure treatment of webs, comprising:

pressure roll means, formed as a hollow cylinder;

shaft means, generally cylindrical in form, concentrically disposed within said pressure roll and having an outside diameter smaller than the inside diameter of said pressure roll;

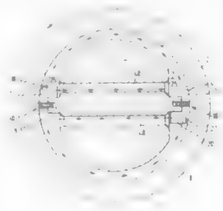
at least two longitudinal seal means carried on said shaft and bearing against the inner surface of said pressure roll, thereby defining at least one longitudinal chamber between said pressure roll and said shaft means;

hydraulic system means for introducing and maintaining a preselected fluid pressure within said chamber, whereby said pressure roll is rotatably supported on said shaft;

wherein rotation of said pressure roll in a direction from a first said longitudinal seal toward a second said longitudinal seal results in a rotational flow of said fluid from said first seal toward said second seal, thereby creating a high pressure zone within said longitudinal chamber adjacent said second seal and a low pressure zone adjacent said first seal; and

return flow means for carrying a return flow of said fluid from said high pressure zone to said low pressure zone, said return flow being isolated from said rotational flow.

11. A method for reducing turbulence in a swimming roll apparatus, having a first longitudinal seal and a second longitudinal seal, used for pressure treatment of material webs, wherein the rotation of the pressure roll portion of the apparatus relative to the shaft portion entrains a rotational flow of fluid within the apparatus, thereby creating zones of high pressure adjacent said second longitudinal seal and zones of low pressure adjacent said first longitudinal seal within the apparatus, comprising the steps of:



providing a return flow path for fluid to flow from a zone of high pressure adjacent said second longitudinal seal within the swimming roll apparatus to a zone of low pressure adjacent to said first longitudional seal; and

isolating said return flow from the rotational flow.

4,760,632

METHOD AND APPARATUS FOR JOINING PLATES BY STAMPING PRESSING AND SWAGING DIES

Eugen Rapp, Max-Reger-Str. 4, 7981 Berg, Fed. Rep. of Germany

Filed Sep. 15, 1986, Ser. No. 906,870

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1985, 3532899

Int. Cl.[4] B23P *11/00*

U.S. Cl. 29—432.1 8 Claims



1. A method for joining at least two stacked thin plates, in particular metallic sheets, comprising the steps of:

(1) orienting and aligning the stacked plates between an upper stamping die having shaped cutting edges and a bottom die having a shaped recess with cutting edges of complemental shape to said stamping die and provided with a swaging die having a diametrically-notched circular top portion, said bottom die having diametrically opposed inwardly tapered slots adjacent and aligned with said diametrically-notched circular top portion;

(2) depressing the stamping die upon the stacked plates so as to press them against the bottom die thereby severing longitudinal plate portions from said stacked plates and further pressing a first lower longitudinal plate portion of a lower plate into the shaped recess in said bottom die and said diametrically-notched circular top portion of said swaging die;

(3) continuing to exert pressure via said stamping die upon said bottom die thereby causing the swaging die to be depressed overcoming an upwardly exerted force supplied by an elastic return means, the swaging die traveling a predetermined extent to abut a stop means and the stamping die traveling into a position just below a plane defined by an underside of the lower plate;

(4) exerting still further pressure upon the plate sections whereupon a material comprising a second longitudinal upper plate portion is swaged to form tab means over the circular top portion of said swaging die which adjoin the underside of said lower plate; and

(5) retracting the stamping die causing the elastic return means to eject the thus joined plates from a work station.

2. An apparatus for joining overlapped plate sections in a stamping, pressing, and swaging operation, comprising a bottom die disposed on a press means, said bottom die including an outer planar end and a circular central bore, a swaging die disposed in said central bore and arranged to be axially displaceable relative to said bottom die, said swaging die including a transverse groove having edges that define a cutting die on its upper end, a stamping and pressing die positioned axially above said bottom die and adapted to be reciprocably driven by the press means, said bottom die further including diametrically opposed radially inwardly tapered slots having cutting edges juxtaposed said cutting die, said swaging die including a collar, an elastic element disposed in said central bore beneath said collar, said elastic element being supported on a bottom element stop and adapted to render said swaging die displaceable from a first position during a stamping and pressing working stroke of the stamping and pressing die to a second position resting on said bottom element stop during a swaging working stroke of the stamping and pressing die, said cutting die is provided with an upper substantially circular end face oriented toward the plate sections to be worked, said end face further having said transverse groove in alignment with said tapered slots of said bottom die serving as a matrix during pressing and further having cutting edges thereon for severing a portion of said plate sections during stamping, said cutting edges being defined on oppositely-disposed longitudinal edges of said transverse groove and having a width corresponding to a width of a plate portion to be severed, said transverse groove having a depth at least the thickness of a first plate section associated therewith from which a first plate portion is severed, said transverse groove being adapted to receive said first severed plate portion, and wherein a second upper plate section is stamped, pressed and swaged to define a second swaged plate portion from which swaged material flows to fill a circular void defined between a wall of said central bore in said bottom die and the upper circular end face of the swaging die into the transverse groove of which the first severed plate portion has previously been received.

4,760,633

METHOD FOR BODY PANEL ATTACHMENT

Ernest A. Dacey, Jr., Highland, Mich., assignor to Utica Enterprises, Inc., Sterling Heights, Mich.

Continuation of Ser. No. 810,045, Dec. 17, 1985, abandoned. This application Oct. 14, 1987, Ser. No. 106,957

Int. Cl.[4] B23P *11/00*

U.S. Cl. 29—432.1 7 Claims

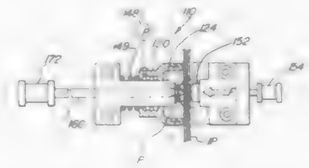
1. The method of reforming a relatively imprecisely positioned member having a first support surface and a second surface which is opposed to said first support surface to permit the attachment, at a more precisely determined position, of a second member to said first support surface of said imprecisely positioned member, said method comprising the steps of:

positioning an anvil on a net locating apparatus at a predetermined fixed position;

providing locating means on opposite sides of said anvil such as to straddle said anvil;

advancing said locating means towards said imprecisely positioned member until said locating means comes into contact with said imprecisely positioned member;

continue advancing said locating means towards said first support surface of said imprecisely positioned member, said net locating apparatus permitting said locating means to float with respect to said imprecisely positioned member during the continuing advancement of said locating



means such that said locating means finds the location of said first support surface of said imprecisely positioned member;

locking said locating means in position against said first support surface of said imprecisely positioned member; and

imposing a load, through a pad forming block, adjacent said second surface of said imprecisely positioned member generally in alignment with said predetermined fixed positioned anvil to deform the portion of said imprecisely positioned member against said anvil while said portion is supported by said locating means, whereby said portion of said imprecisely positioned member is precisely positioned with respect to said predetermined fixed positioned anvil.

4,760,634

METHOD OF CONNECTING THIN PLATES

Eugen Rapp, Max-Reger-Str. 4, 7981 Berg, Fed. Rep. of Germany

Filed Sep. 15, 1986, Ser. No. 906,871

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1985, 3532900; Apr. 19, 1986, 3613324

Int. Cl.[4] B21D *39/00*; B23P *11/00*

U.S. Cl. 29—509 2 Claims



1. A method for connecting stackable sheet-metal plates by a deep drawing and swaging operation by passing said sheet metal plates between a pair of upper and lower die elements at least one of which has an extension with an end face and a shoulder zone with the other having a blind opening having a closed end to thereby create an interlock between said plates, the steps of:

VOL 1093 ISS 1 AG 2 1988 UMI

introducing said sheet-metal plates between said upper and lower die elements;

applying a force on said upper die element to achieve a deformation of the said sheet-metal plates whereby a lower one of said plates is pressed into said blind opening and against said closed end thereof and a portion of an upper one of said sheet-metal plates enters a recess formed in said lower plate, continuing to apply force onto said plates to bring about swaging and further deformation of the sheet-metal plates;

preventing radial expansion of said upper and lower plates within said blind opening,

applying further force to said upper die element to bring about engagement of said shoulder zone of said upper die element into contact with said upper one of said sheet-metal plates to thereby prevent an outward flow of the metal from the blind opening and cause radial flow of the metal between said upper die element and the closed end of the blind opening of said lower die element to interlock the deformed portions of the plates adjacent the closed end of the blind opening of said bottom die, whereby a seam connection between said sheet-metal plates is created; and

said seam connection has a peripheral face which extends in the deep drawing direction.

4,760,635

METHOD OF FORMING A HELICAL BALL SCREW MEMBER

Michael A. Miller, Metamora, Mich., assignor to 20th Century Machine, Sterling Heights, Mich.

Continuation-in-part of Ser. No. 578,379, Feb. 8, 1984, Pat. No. 4,638,548. This application Oct. 3, 1986, Ser. No. 914,981
The portion of the term of this patent subsequent to Jan. 27, 2004, has been disclaimed.
Int. Cl.[4] B23P *13/04*
U.S. Cl. 29—558 16 Claims



1. A method of forming a ball screw member from a workpiece having a first end, a second end opposite said first end, a longitudinal axis extending from said first end to said second end, a cylindrical portion interposed said first end and said second end, and a cylindrical outer surface on said cylindrical portion, said method comprising:

a first machining step of machining end treatments on said workpiece adjacent said first end of said workpiece; and

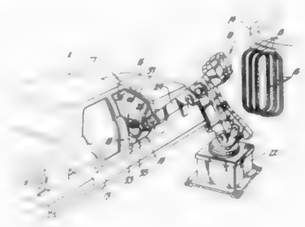
a second machining step of machining a helical ball screw thread in said cylindrical outer surface, said helical ball screw thread being located during said second machining step relative to said end treatments, said helical ball screw thread having a partial circular cross-sectioned helical groove and a helical crest surface adjacent thereto.

4,760,636

APPARATUS OF A ROBOT FOR INSTALLING WEATHER STRIPPING IN A DOOR OR LIKE OPENING

Stephen St. Angelo, Jr., Rochester Hills, Mich.; George C. Carver, Albany; David W. Patterson, Duluth, both of Ga., and Owen K. Fremont, Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 888,238, Jul. 18, 1986, Pat. No. 4,715,110. This application Dec. 22, 1986, Ser. No. 944,649
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.[4] B23P *21/00*; B23Q *15/00*
U.S. Cl. 29—701 3 Claims



1. A robot for installing a fixed length of weather stripping stored in a loading station into a body opening, said robot in combination comprising:

an arm movable in both horizontal and vertical planes;

means on the end of said arm to load said fixed length to said arm from said loading station; and

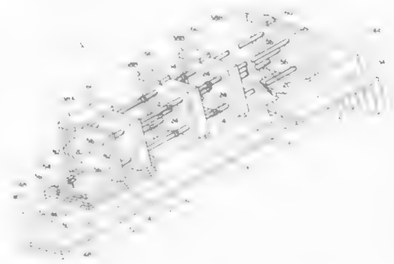
affixing means on the end of said arm and moved by said robot arm for interacting with the opening of said body and guiding and applying said fixed length whereby said fixed length is affixed to the opening of said body.

4,760,637

REDUCED STRESS FUEL ASSEMBLY FABRICATION APPARATUS AND METHOD

John S. Kerrey, and John H. Smith, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 6, 1987, Ser. No. 46,328
Int. Cl.[4] B23P *19/00*; G21C *21/00*
U.S. Cl. 29—723 8 Claims



1. In a fuel assembly fabrication apparatus, the combination comprising:

(a) an elongated stationary support fixture;

(b) a slide fixture shorter in length than said support fixture and mounted to one end portion thereof for movement therealong; and

(c) a plurality of clamp structures disposed in spaced relation longitudinally along said stationary support fixture, one of said clamp structures being mounted on said movable slide fixture and adapted to support a top nozzle and an uppermost one of a plurality of grids of a fuel assembly, the remaining clamp structures in said plurality thereof being mounted on said stationary support fixture and adapted to support said bottom nozzle and each of the remaining grids of the fuel assembly;

(d) said one and said remaining clamp structures being adapted to respectively support the top nozzle and uppermost grid and the bottom nozzle and remaining grids in generally parallel relationship with a plurality of passageways defined in the top and bottom nozzles and a plurality of sleeves connected on the grids being aligned for slidably receiving therethrough a plurality of elongated tubular members of the fuel assembly for attachment to the nozzles and grid sleeves;

(e) each of said clamp structures including

(i) a framework defining a central opening,

(ii) clamp members being disposed on said framework about the perimeter of said central opening for supporting therebetween one of said grids and nozzle in said opening, and

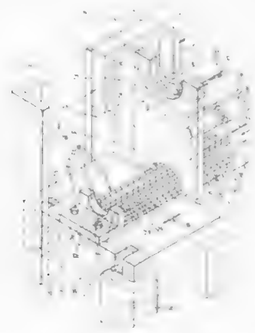
(iii) means mounting at least some of said clamp members to said framework for movement toward and away from others of said clamp members for clamping therebetween one of said grids and nozzles in said opening.

4,760,638

APPARATUS FOR PREPARING STACKS OF ARMATURE DISKS

Gernot Ott; Stefan Oppermann, both of Vocklabruck; Gottfried Riedl, Timelkam, and Walter Sticht, Attnang-Puchheim, all of Austria, assignors to STIWA-Fertigungstechnik Sticht Gesellschaft m.b.H., Attnang-Puchheim, Austria

Continuation of Ser. No. 771,173, Sep. 3, 1985, abandoned, which is a continuation of Ser. No. 548,625, Nov. 4, 1983, abandoned. This application Sep. 15, 1986, Ser. No. 908,876
Claims priority, application Austria, Nov. 15, 1982, 4140/82
Int. Cl.[4] H02K *15/00*
U.S. Cl. 29—732 14 Claims



1. An apparatus for preparing stacks of plate-shaped structural parts having a thickness, each one of the parts having flat side faces and a peripheral face extending substantially perpendicularly thereto over the thickness thereof, the perpendicularly extending faces forming sharp edges, which comprises

(a) a guide track receiving and guiding successive ones of the structural parts in a direction extending perpendicularly to the side faces thereof, the successive parts forming a stack having opposite ends,

(b) a drive arranged to push against one of the opposite stack ends to advance the stack of structural parts in said direction along the guide track and to exert pressure thereon in said direction, and

(c) a device for receiving and removing a predetermined portion of the stack of structural parts adjacent the stack end opposite to the one stack end, the device including

(1) a displaceable support forming a portion of the guide track and receiving the predetermined portion of the stack,

(2) rectilinear guide means for the displaceable support,

(3) a displacement drive for displacing the support in a displacement path along the guide means,

(4) an abutment arranged on the displaceable support in line with the guide track to stop the opposite stack end driven thereagainst by the drive, the structural parts being held under said pressure against the abutment with adjacent ones of the flat sides and sharp edges of the structural parts in contact with each other and the pressure forcing the contacting structural parts to assure an erect position perpendicularly to said direction,

(5) a separating abutment arranged along the guide track and having a side face spaced from the abutment on the support and extending parallel to the side faces of the structural parts, the displacement path of the support extending parallel to, and alongside of, the separating abutment side face, the separating abutment being immobile in a direction transverse to the guide track and the abutments being spaced at a fixed distance to predetermine the removed portion of the stack, and the separating abutment including retaining means for engagement with the peripheral face of a respective one of the structural parts upon displacement of the support alongside the separating abutment side face whereby displacement of the support along the displacement path along the separating abutment side face removes the predetermined stack portion while the retaining means retains the ones structural part,

(6) a guide for the separating abutment, the guide extending parallel to the direction of the guide track,

(7) an adjustment drive connected to the separating abutment for rectilinearly positioning the separating abutment parallel to the guide track along an adjustment path, the adjustment path being shorter than the thickness of the structural parts, and

(8) a control for the adjustment drive for retracting the separating abutment along the adjustment path in response excess pressure exerted upon the stack portion by the separating abutment side face when the support is displaced alongside thereof whereby jamming is avoided when the stack portion is removed.

4,760,639

APPARATUS FOR EQUIPPING CIRCUIT BOARDS

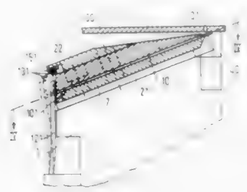
Martin Richter, Marloffstein, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 21, 1986, Ser. No. 899,176
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1985, 3530452
Int. Cl.[4] H05K *3/30*
U.S. Cl. 29—566.3 13 Claims

1. Apparatus for equipping circuit boards having predetermined apertures with electronic components having terminal pins that are inserted into selected apertures in the circuit board, the apparatus comprising: an anvil for supporting the circuit board; cutting means for bending and severing the terminal pins including a stationary knife and a movable knife; monitoring means for the terminal pin ends protruding from the apertures on a side of the circuit board, the monitoring means comprising a push rod for each terminal pin, the push rods occupying a plane parallel to the circuit board on the anvil, each push rod being moved while its terminal pin is being bent and being cut to length by the cutting means; a magnetic field-dependent sensor being associated with each

VOL 1093 ISS 1 AG 2 1988 UMI

terminal pin, an activation magnet associated with each terminal pin being secured to each push rod and being moved during the bending and cutting to length of the terminal pin; and the



sensor detecting the movement of the activation magnet and producing an output for monitoring the movement of its associated push rod responsive to its terminal pin.

4,760,640

INSULATOR-JACK FOR REPLACING INSULATOR DISKS

William G. Lawrence, 525 Mill Grove Dr., Audubon, Pa. 19403

Filed Oct. 2, 1986, Ser. No. 914,630
Int. Cl.[4] B23P *19/00*; B25B *1/00*
U.S. Cl. 29—760 8 Claims



1. An apparatus for replacing electric insulators in a string of insulators, said apparatus comprising:

(a) a pair of threaded rods disposed in substantially parallel relation to one another;

(b) a first insulator clamping means rigidly affixed to one end of each of each said threaded rods, said first insulator clamping means comprising:

(1) a hinged-split cylindrical collar adapted to engage an insulator in a string of insulators;

(2) a pair of L-shaped arms rigidly affixed to generally opposite sides of said hinged-split cylindrical collar and extending outwardly therefrom, each of said L-shaped arms further being affixed to one end of one of said threaded rods, whereby said threaded rods are maintained in substantially perpendicular orientation to said hinged-split cylindrical collar and in substantially parallel relation to one another.

(3) fastening means for securing said hinged-split cylindrical collar in a clamped closed position about an insulator;

(c) a second insulator clamping means connected to the other end of each of said threaded rods for movement therealong, said second insulator clamping means comprising:

(1) a hinged-split cylindrical collar adapted to engage an insulator in a string of insulators;

(2) a pair of bars rigidly affixed to generally opposite sides of said hinged-split cylindrical collar and extending outwardly therefrom;

(3) a pair of ratchet collars, each of which is affixed to a terminal end of one of said bars and disposed about one of said threaded rods;

(4) fasterning means for securing said hinged-split cylindrical collar in a clamped closed position about an insulator; and

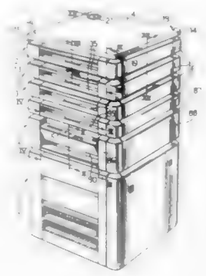
(d) means for selectively moving said second insulator clamping means along said threaded rods, whereby the distance between said first and second insulator clamping means is selectively variable to vary tension between insulators in a string of insulators disposed intermediate insulators clamped within said first and second insulator clamping means.

4,760,641

APPARATUS FOR LOADING AND UNLOADING X-RAY FILM CASSETTES

Rino Gandolfo, Roccavignale, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 10, 1987, Ser. No. 24,180
Claims priority, application Italy, Mar. 12, 1986, 19728 A/86
Int. Cl.[4] B23P *19/00*
U.S. Cl. 29—806 14 Claims



1. An apparatus for day-light loading and unloading of an x-ray film cassette, comprising first light-tight housing means for a feeding magazine including unexposed x-ray films, second light-tight housing means for the cassette, magazine handling means operating in said first housing means for removing an unexposed x-ray film from the feeding magazine, cassette handling means operating in said second housing means for removing an exposed x-ray film from the cassette and introducing an unexposed x-ray film into the cassette, powered actuator means for said magazine and cassette handling means and interfunctional service means for said actuator means and cassette and magazine handling means, characterized by comprising:

(a) a plurality of distinct and superimposed units, each comprising a self-supporting structure (6,7,8), said plurality including:

i. one ground unit (1), containing a major portion of said interfunctional service means,

ii. one cassette-carrying unit (2), containing said second housing means and said cassette handling means,

iii. at least one magazine-carrying unit (3), containing said first housing means and said magazine handling means,

(b) light-tight connecting means between superimposed units.

4,760,642

DEVICE FOR RAZOR AND TOOTHBRUSH CONTAINING SHAVING CREAM DISPENSERS THEREIN

Kyu H. Kwak, 11308 Grandview Ave., Wheaton, Md. 20902

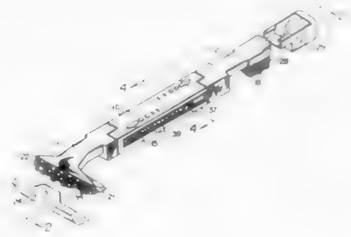
Filed Apr. 28, 1987, Ser. No. 43,357
Int. Cl.[4] B26B *21/44*; A45D *40/00*
U.S. Cl. 30—123 8 Claims

1. A razor and toothbrush assembly containing a shaving cream and toothpaste dispensers therein, respectively, which comprises:

a main body member containing first and second chambers, said shaving cream dispenser disposed in said first chamber and said toothpaste dispenser disposed in said second chamber,

a razor member containing a razor head chamber communicating with said first chamber and an outlet of the shaving cream dispenser disposed therein,

a toothbrush member containing a toothbrush head chamber communicating with said second chamber and an outlet of the toothpaste dispenser disposed therein,



said shaving cream dispenser and said toothpaste dispenser containing stop members at one end thereof for providing a fixed communication between said respective dispensers and said respective head chambers,

handle means slidably disposed along the side of the first and second chambers of the main body member, said handle means extending into said first and second chambers, whereby the shaving cream and toothpaste are dispersed from the shaving cream and toothpaste dispensers through the head chambers by pressing the handle means against the shaving cream and toothpaste dispensers, respectively.

4,760,643

HOLE SAW

Mahmad A. M. Juma, Blangstedgårdsvej 12, 5220 Odense S0, Denmark

Continuation-in-part of Ser. No. 567,187, Dec. 30, 1983, abandoned. This application Jan. 21, 1986, Ser. No. 820,323
Int. Cl.[4] B23D *45/00*
U.S. Cl. 30—166 A 10 Claims



1. A hole drilling implement of the cylindrical saw blade type mountable on a drill bit for use with a drilling machine having a chuck with a clamping means, the implement comprising a cylindrical saw blade having at one end a circular row of saw teeth and connected at an opposite end thereof with a carrier element having a central hole for receiving a drill bit held in the clamping means of the drilling machine chuck, said carrier element being provided with an axially split, relatively narrow sleeve portion projecting from the carrier element concentrically with the cylindrical saw blade to the other side of the carrier element, the sleeve portion having a general shape of an elongate and substantially smooth cylinder of a small wall thickness operable to be radially clamped between the shank portion of the drill bit held in the clamping means and the clamping means of the drilling machine chuck whereby both an axial and non-rotational anchoring between the chuck, drill bit, and sleeve portion is solely provided by the radial clamping.

4,760,644

HYDRAULIC CUTTER

Benyamin Yirmiyahu, Maimon 52, Bnei Brak, Israel, and Mordechai Yirmiyahu, Anzio Serasi 17, Givatayim, Israel

Filed Jan. 24, 1986, Ser. No. 877,920
Int. Cl.[4] B23D *29/02*
U.S. Cl. 30—180 5 Claims



1. A hydraulic cutter comprising:

a housing;

a first pair of arms secured at one end to one side of said housing and extending therefrom in spaced parallel relationship;

a second pair of arms secured at one end to the opposite side of said housing and extending in parallel spaced relationship to each other and to said first pair of arms;

a first plated fixed by a pair of pins to, and transversely across, the opposite ends of said first pair of arms;

a second plate fixed by said pair of pins to, and transversely across, the opposite ends of said second pair of arms;

a pair of jaws pivotably mounted to said pair of pins between said transversely extending plates;

each of said jaws being formed with a rounded cam surface at the end facing said housing, and with a cutting edge at the opposite end;

a spring connected to the pair of jaws between their pivotal mountings and their rounded ends for urging apart their cutting edges;

means for inletting a hydraulic fluid into said housing; and a piston of triangular configuration having a head extending from said housing and movable towards said jaws, said piston head being engageable with the rounded cam surfaces of the pair of jaws to cam them apart, thereby forcing the cutting edges of the jaws towards each other, upon the movement of said piston towards said jaws when said hydraulic fluid is inletted into said housing.

4,760,645

POLE MOUNTED PRUNING TOOL WITH ADJUSTABLE LENGTH OPERATING LEVER

Richard E. Davis, Pasadena, Calif., assignor to S.M.S. Industries, Inc., Glendale, Calif.

Filed Mar. 2, 1987, Ser. No. 20,474
Int. Cl.[4] B26B *13/00*
U.S. Cl. 30—249 3 Claims

1. A pruning tool, comprising:

a first jaw having a first cutting edge defining an open notch;

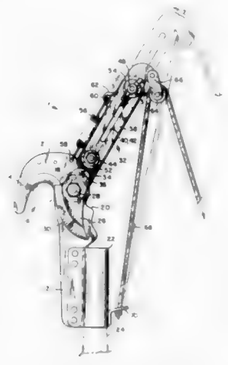
a second jaw having a second cutting edge, said second jaw being pivotally adjustable in relation to said first jaw between an open position permitting a branch or the like to be received in said notch, and a cutting position at which said first and second cutting edges coact to sever said branch;

spring means for yieldably biasing said second jaw into said open position;

mounting means associated with said first jaw for removably mounting said tool on the end of an elongated pole, thereby permitting the tool to be employed at elevated locations;

VOL
1093
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a lever having first and second portions, said first lever portion being fixed in relation to said second jaw and having a first hole and a first elongated slot, said second lever portion having a second hole and a second elongated slot, said slots being aligned one with the other, a guide bolt extending through said first slot and second hole, a clamping bolt extending through said first hole and said second slot, a first nut coacting with said guide bolt to hold said lever portions together while permitting said second lever portion to slide longitudinally with respect to said first lever portion along the length of said slots, and a second nut coacting with said clamping bolt to releasably fix and second lever portion relative to said first lever portion



a sheave carried by said second lever portion at a radial distance from the pivotal axis of said second jaw, the longitudinal sliding movement of said second lever portion relative to said first lever portion being effective to vary said radial distance; and

a rope-like flexible elongated element extending around said sheave, the arrangement of said lever and sheave being such that a tensile force applied to said elongated element will act through a mechanical advantage afforded by said radial distance to exert a cutting torque which overcomes the biasing action of said spring means and which pivotally urges said second jaw into said cutting position.

4,760,646
TREE PRUNER AND HEDGE TRIMMER
Frederick Siegler, 444 S. Citrus Ave., Los Angeles, Calif. 90036
Filed Jan. 9, 1987, Ser. No. 1,959
Int. Cl.[4] B27B *17/08*
U.S. Cl. 30—382 18 Claims

1. A portable apparatus for pruning tree limbs, comprising:

a cutting head having a chain bar mounted on a chain bar carrier with a chain saw driven by a drive sprocket and having a central hole and a cavity for receiving and holding oil;

means for angular adjustment of said chain bar to an infinite plurality of rotary positions relative to said cutting head;

means contained in said cutting head for metering oil to lubricate said chain saw during the cutting of a tree limb;

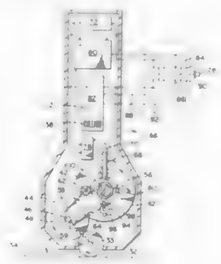
means for providing intermittent unidirectional rotary motion to said drive sprocket;

blocking member means contacting a tree limb during the cutting operation of said apparatus and generating an equal and opposite reaction to the cutting forces generated by said cutting head; and



safety means mounted on said chain bar carrier and rendering the cutting operation of said apparatus inoperable upon removal of said safety means.

4,760,647
LINEAR MEASURING APPARATUS
David P. Gillis, #3 Washington Pl., Norwich, Conn. 06360
Filed Nov. 12, 1987, Ser. No. 119,672
Int. Cl.[4] G01B *7/02*
U.S. Cl. 33—141 E 18 Claims



1. Hand-held linear measuring apparatus comprising:

a wheel mounted for rotation as it is drawn in engagement with, and across, a surface to be measured;

pulsing means responsive to rotation of said wheel for generating a series of pulses numerically proportional to the distance traveled by said wheel along said surface; and

counter means for summing up the pulses from said pulsing means and for visually displaying a value equivalent to the distance traveled by said wheel along the surface;

said pulsing means including actuating means selectively adjustable for determining the particular unit of measurement to be displayed by said counter means;

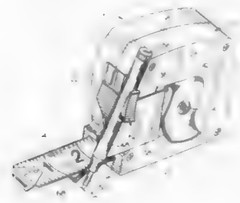
said actuating means including:

a rotatable selector disk drivingly engaged with said wheel;

a plurality of electrical contact members releasably mounted to said selector disk on a common radius for a selected unit of measurement of azimuthally equally spaced locations; and

a substantially fixed electrical pick-up member adjacent said selector disk successively engageable with said contact members upon rotation of said selector disk.

4,760,648
MARKING DEVICE
Sid W. Doak, 1301 Country Club Dr., McCook, Nebr. 69001, and Shawn P. Suiter, 2209 Jones St., Omaha, Nebr. 68102
Filed Oct. 20, 1986, Ser. No. 920,767
Int. Cl.[4] G01B *3/10*
U.S. Cl. 33—668 2 Claims



1. In combination,

a tape measure comprising a tape housing having a measuring tape coiled therein for extension therefrom through a tape-issuing opening, said housing having a top portion, bottom portion, forward end, rearward end, and opposite sides, said tape housing having a generally rectangular recessed area formed in one side thereof,

a marking device mounted on said housing for marking an article being measured,

said marking device comprising a support means secured within the recess in the side of said housing and extending forwardly therefrom, an elongated upstanding hollow tubular housing means positioned on the forward end of said support means and having upper and lower ends, the lower end of said tubular housing means being positioned laterally of said tape-issuing opening, the lower end of said tubular housing means having an opening formed therein, a marking member selectively vertically movably mounted in said tubular housing means, means for selectively vertically moving said marking member downwardly in said tubular housing means and through said opening in said tubular housing means so that the lower end of said marking member may be moved into marking contact with an article being measured, and means for moving said marking member upwardly in said tubular housing means so that said marking member is moved out of marking contact with an article being measured,

an indicator means rigidly affixed to said marking device support means, for indicating the relationship of the lower end of said marking member with respect to said measuring tape, and

a spring belt clip secured to said support means and said tape housing laterally of said recessed area and spaced away from said marking member.

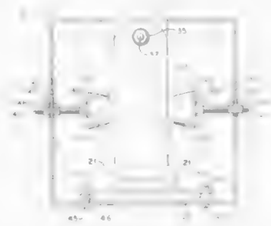
4,760,649
TRAVEL TRAILER LEVEL INDICATOR
Corlis E. Preston, 209 E. Duane Ave., and Victor K. Hsia, 208 E. Eaglewood Ave., both of Sunnyvale, Calif. 94086
Filed Dec. 11, 1986, Ser. No. 940,297
Int. Cl.[4] G01C *9/06*; B60Q *1/52*
U.S. Cl. 33—333 4 Claims

1. A mechanical/electronic device which detects and optically indicates the horizontal or longitudinal level attitude of a travel trailer comprising:

a sensor unit housing mounted upon the front (first) horizontal frame cross-member, or suitable longitudinal frame position of said travel trailer; unit detects and transmits an electrical signal indicating said horizontal or longitudinal level attitude of said travel trailer to a control/receiver mounted within the driver's compartment of the tow vehicle;

a printed circuit board mounted within said sensor unit housing upon which is mounted two opto-electrical switches and ancillary circuitry to provide an open/closed circuit when actuated;

a free-swinging rectangular compound pendulum, mounted upon a sensitive bearing, supported by a cantilever structure within said sensor unit housing; said opto-electrical switches mounted on said printed circuit board on either side of said rectangular compound pendulum; said rectangular compound pendulum centers between said opto-electrical switches when said rectangular compound pendulum is in a position perpendicular to the horizontal plane; said sensitive bearing, permits said rectangular



compound pendulum to swing freely between the emitters and detectors of said opto-electrical switches; when said travel trailer is in an imbalance condition, said rectangular compound pendulum will be moved off-center causing either the right or left opto-electrical switches to be activated; this action generates a specific signal indicating which side, or end, of said travel trailer requires elevating to attain a level attitude; if said travel trailer is level, said rectangular compound pendulum will remain in a centered position and neither said right or left opto-electrical switches will be activated and said sensor unit circuitry will send a signal indicating said travel trailer is positioned in a level attitude;

a signal/power cable carries said signals from said sensor unit circuitry to a connector that will mate with a connector on said tow vehicle, near bumper.

4,760,650
METHOD OF DRYING PARTICULATE MATERIAL
Hans Theliander, 21 B Övre Husargatan, S-413 14 Göteborg, and Urban Grén, 3 Tvärgatan, S-431 36 Mölndal, both of Sweden
Filed Nov. 22, 1985, Ser. No. 800,707
Claims priority, application Sweden, Nov. 27, 1984, 8405982
Int. Cl.[4] F26B *3/10*
U.S. Cl. 34—35 14 Claims

1. Method of drying a particulate material which is subsequently heat-treated by a process in which heat energy is first generated and then partially absorbed by the material so that excess heat is present, the material and a gaseous drying medium being brought into direct contact with each other in a drying apparatus, where water is made to pass from the material to the drying medium by heating, characterized in that a

VOL 1093 ISS 1 AG 2 1988 UMI

pressure above atmospheric is maintained in the drying apparatus, the drying medium in the drying apparatus consists substantially of steam, and the heating is carried out by means of the excess heat formed in the heat treatment.



4,760,651

AIR-VENTILATING SHOE PAD HAVING SHOE-LIFT EFFECT

Chi Pou-Tzu, 3F, No. 8-2, 411 Lane An-Ching St., San-Chung City, Taiwan

Filed Jan. 29, 1987, Ser. No. 8,530
Int. Cl.[4] A43B *7/06, 13/38, 11/00*
U.S. Cl. 36—3 B 2 Claims



1. A shoe pad adapted to fit in a shoe comprising:
an upper plate having air vents formed therethrough, a lower plate and a pleated side wall circumferentially disposed between said upper and lower plates, defining an oblique wedge-shaped pocket body serving as an air-blowing chamber;
a spring added between said upper and lower plates;
a tongue plate protruding on a rear end portion of said upper plate; and
plural guide slots each concave downwardly from said upper plate serving as passages of the air circulating in said air-blowing chamber and each said air vent of said upper plate formed in said guide slot,
the improvement which comprises:
said tongue plate formed on the rear portion of said upper plate having plural concave slots longitudinally formed on the back portion of said tongue plate communicated with said air-blowing chamber, said tongue plate formed as a shoe-lift for helping the wearing of said shoe.

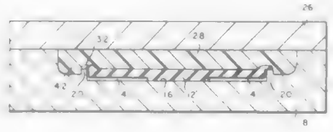
4,760,652

COMPOSITE OUTSOLE

Arnold S. Austin, Brookfield, Mass., assignor to Quabang Corporation, North Brookfield, Mass.

Filed Jun. 4, 1987, Ser. No. 57,301
Int. Cl.[4] A43B *5/06, 5/00*
U.S. Cl. 36—30 R 5 Claims

1. A composite outsole comprising:
a substantially planar first element formed of a first material, said first element having a bottom tread surface, a top surface spaced from said bottom surface by the thickness of said first element, an outwardly facing side edge extending around said bottom tread surface, said bottom tread surface being interrupted by a plurality of grooves extending to said side edge, and a lip extending around said top surface, said lip having an underside protruding laterally beyond said side edge; and
a second element molded onto the top surface of said first element, said second element consisting of a second material which is different from said first material, said second element having a peripheral portion overlapping said lip in a manner allowing only the underside thereof to remain exposed, said peripheral portion having an inwardly facing side edge spaced laterally from the outwardly facing side edge of said first element to define a downwardly open groove therebetween, with the underside of said lip defining the base of said groove.

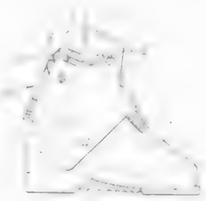


4,760,653

DEVICE FOR CLOSING THE QUARTERS OF SKI BOOTS

Giorgio Baggio, S. Martino Di Lupari, Italy, assignor to Nordica SpA, Montebelluna, Italy

Filed Dec. 1, 1986, Ser. No. 936,864
Claims priority, application Italy, Dec. 24, 1985, 24249/85[U]
Int. Cl.[4] A43B *5/04;* A43C *11/00*
U.S. Cl. 36—117 20 Claims



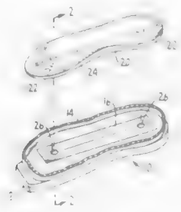
1. In combination, a ski boot and a device for closing the quarters of said ski boot, said ski boot comprising a shell, and quarters including a front quarter and a rear quarter, said front quarter and said rear quarter being pivotally connected to said shell, said quarters each defining a longitudinal extension, said device for closing said quarters of said ski boot comprising a recovery apparatus including at least one recovery spool, at least one cable, at least one lever having an upper end, at least one saw toothed crown, at least one plate defining a counter toothing, comprising a recovery apparatus including at least one recovery spool,at least one slider, elastic biasing means, said recovery apparatus being supported by said rear quarter and adapted for recovering at least a portion of said at least one cable, said cable interconnecting said front quarter and said rear quarter in at least two separate zones, said separate zones being spaced apart from each other along said longitudinal extension of said quarters, said upper end of said lever being pivotally coupled to said rear quarter and adapted for supporting said recovery spool, said saw-toothed crown being rigidly associated with said recovery spool and engaging said counter toothing defined on said plate, said plate being supported by said slider, said slider being slideably mounted on said lever, said elastic biasing means being interposed between said slider and said lever, said recovery spool being adapted for winding said cable on and unwinding said cable from said spool, said cable defining a winding direction and an unwinding direction, said counter toothing being adapted for engagement with said said saw-toothed crown to removably prevent rotation of said spool in said unwinding direction defined by said cable, and for ratchet-like engagement with said saw-toothed crown during rotation of said spool in said winding direction defined by said cable.

4,760,654

APPARATUS FOR LOCATING AN ORTHOTIC IN A SKI BOOT SHELL

Robert C. Limbach, 49 Bellevue, Belvedere, Calif. 94920

Continuation-in-part of Ser. No. 807,272, Dec. 10, 1985, Pat. No. 4,665,576, which is a continuation-in-part of Ser. No. 645,507, Aug. 30, 1984, Pat. No. 4,567,617. This application Jun. 9, 1986, Ser. No. 872,261
Int. Cl.[4] A43B *5/04, 13/38*
U.S. Cl. 36—117 1 Claim



1. A ski boot comprising a shell; a bladder removably mounted in the shell; an orthotic removably mounted in the bladder so as to be completely surrounded thereby and with said bladder positioned between the orthotic and the shell to such an extent that the bladder cannot be removed from the shell without also removing the orthotic from the shell; and indexing means on the orthotic and the shell; said indexing means being in alignment and adapted to engage with each other.

4,760,655

INSOLE

Walter Mauch, Klemensplatz 10, D-4000 Duesseldorf 31, Fed. Rep. of Germany

Filed Jul. 7, 1986, Ser. No. 882,503
Int. Cl.[4] A43B *13/40, 13/38*
U.S. Cl. 36—44 22 Claims



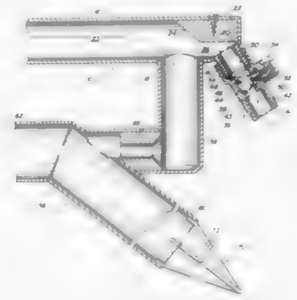
1. An insole comprising a yielding base sole corresponding to the contour of a foot having reflex zones, and further having yielding cushions in the region of the reflex zones on an upperside facing the sole of the foot, and a yielding cover sole which adapts itself to the cushions and covers substantially the total surface of the base sole, the base sole comprising a material having a hardness of 30 to 35° Shore A and a specific weight of 0.12–0.20 g/cm³, the cushions comprising a rubber resilient foam material having a hardness of 12 to 30° Shore A and a specific weight of 0.15 to 0.60 g/cm³, the height of the cushions in the center in an unloaded state being 10% to 20% of a cushion central diameter, the cover sole comprising a material having a hardness of 55 to 70° Shore A and a specific weight of 1.10 to 1.40 g/cm³, and having a uniform relief formed by burls or ribs, small in proportion to the length and width of the insole and positioned closely juxtaposed, forming an interrupted support surface for the foot on at least a partial surface of the upperside of the insole.

4,760,656

PLACER MINING APPARATUS WITH PUDDLING NOZZLE

Vernoy A. East, 915 W. 16th St., Tempe, Ariz. 85281

Filed Aug. 11, 1987, Ser. No. 84,436
Int. Cl.[4] E02F *3/88*
U.S. Cl. 37—57 3 Claims



1. A hand-held placer mining apparatus for picking up and delivering a slurry of water and ore bearing soils to an ore separating structure and for selectively supplying water to produce the slurry in dry areas, said apparatus comprising:
(a) a water inlet conduit defining a bore and having an intake end for receiving pressurized water from a remote source, said water inlet conduit defining a first outlet port and a second outlet port at spaced apart locations opposite the intake end thereof;
(b) an injector conduit defining a bore and having one end integrally joined to the first outlet port of said water inlet conduit and having an opposite end;
(c) A suction nozzle integral with the opposite end of said injector conduit, said suction nozzle having a suction end for intaking the slurry with the suction end defining a longitudinal axis and disposed at an acute angle with respect to the opposite end of said injector conduit, said suction nozzle also including an outlet end which extends from the suction end thereof for delivering the slurry intaken by the suction end to the ore separating structure with the outlet end being in axial alignment with the opposite end of said injector conduit;
(d) digging means at the suction end of said suction nozzle for burrowing into the soil, said digging means comprising a plurality of rods extending from the suction end of said suction nozzle and converging toward one another to form a point;
(e) a venturi restrictor in the opposite end of said injector conduit for producing a low pressure within the suction end of said suction nozzle for slurry intaking purposes;
(f) a puddling nozzle for ejecting at least some of the water received in said water inlet conduit and directing said water to a dry area in the vicinity of the suction end of said

VOL 1093 ISS 1 AG 2 1988 UMI

suction nozzle for producing the slurry, said puddling nozzle being mounted in the second outlet port of said water inlet conduit and defining a longitudinal axis that is convergent with the longitudinal axis of the suction end of said suction nozzle, said puddling nozzle having an outlet end located above the suction end of said suction nozzle;

(g) a deflection member mounted in the bore of said water inlet conduit and having a guide surface in spaced facing relation to the intake end thereof for directing incoming water toward the first outlet port of said water inlet conduit, said deflection member further defining a relief area in the bore of said water inlet conduit for allowing fluid communication with the second outlet port of said water inlet conduit; and

(h) control means for switching said puddling nozzle from a bypass mode in which said puddling nozzle is closed to an operation mode in which said puddling nozzle is at least partially open.

4,760,657

SNOW SWEEPING METHOD AND APPARATUS

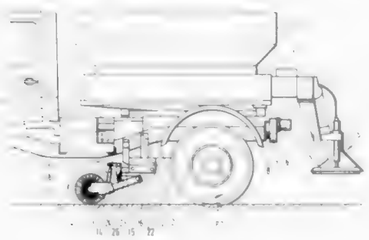
Herbert Ganzmaan, and Gunther Pastari, both of Hansern, Fed. Rep. of Germany, assignors to Ing. Alfred Schmidt GmbH, Blasien, Fed. Rep. of Germany

Filed Jul. 28, 1986, Ser. No. 890,407

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1985, 3526883

Int. Cl.⁴ E01H *5/04*

U.S. Cl. 37—232 **19 Claims**



1. A snow sweeping vehicle including wheels for locomotion and a detachable snow-sweeping roller, comprising means for suspending said roller about a settable slant axis relative to the direction of travel of said vehicle, first hydraulic means for raising and lowering said roller, second hydraulic means for adjusting said slant axis relative to said vehicle, means for rotating said roller in a direction opposite the forward rotation of said wheels, and variable speed driving means including electronic control means operable to adjust the speed of the driving means responsive to the speed (f) of said vehicle in a ratio range of about one to two, when moving, with the minimum speed of said roller occuring when said vehicle is stationary or slowly moving.

4,760,658

STEAM-IRON DRIP-FEED VALVE

Hans Emig, Würzberg; Bernd Lindstaedt, Dietzenbach; Gunter Strein, Erbach; Helmut Uhrig, Erbach-Lauerbach, and Willi Volk, Erbach, all of Fed. Rep. of Germany, assignors to Rowenta-Werke GmbH, Fed. Rep. of Germany

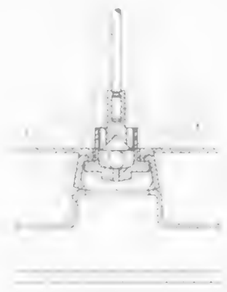
Filed Mar. 2, 1987, Ser. No. 20,666

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607291

Int. Cl.⁴ D06F *71/08*

U.S. Cl. 38—77.7 **3 Claims**

1. A feed valve for a steam iron having a valve stem for opening and closing said valve, said feed valve being disposed between a water tank for said steam iron and a vaporization chamber for said steam iron, said valve including a valve body and a closing device for cutting off and releasing a flow of water from said tank to said chamber, said closing device including a concave surface of said valve body disposed on the water tank side and a ball, said valve having a through bore,



said ball having a diameter larger than the width of said through bore and a diameter smaller than the diameter of said concave surface, said ball being mounted on said concave surface, said valve stem having a hollow truncated core at its lower end engagable over the ball to center it to thereby close the valve bore.

4,760,659

DISPLAY PLATE FOR A PRINTED CIRCUIT BOARD

Nobora Watabe, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 31, 1985, Ser. No. 815,235

Claims priority, application Japan, Jan. 25, 1985, 60-8883[U]; Sep. 9, 1985, 60-138451[U]

Int. Cl.⁴ G09F *9/00*; **F16B** *13/04*

U.S. Cl. 40—124.1 **4 Claims**



1. A display plate for a printed circuit board which carries at one end thereof a plurality of light-emitting elements for providing visible representations of operating conditions of a circuit which is mounted on the printed circuit board, the display plate being formed with a plurality of openings at said one end, said display plate comprising:

a frame member having a rectangular flat portion provided with a plurality of openings which are positioned to accommodate a predetermined number of a plurality of light-emitting elements which could be fixed on the printed circuit board and having first and second major surfaces which face each other, at least two spaced pairs of tongues protruding from said second major surface of said flat portion, at least two pairs of aligned openings formed in said tongues, and at least two columnar lugs, each of said lugs being integrally fixed by a thin webbing on one of the tongues in each pair of tongues, said frame member being made of a plastic; and

a thin designation card fitting on the first major surface of the flat portion of the frame member and formed with a plurality of openings which correspond to positions of the light-emitting elements which are actually arranged on the one end of the printed circuit board, representations indicative of operating conditions which are assigned to the light-emitting elements, said representations being provided on said designation card adjacent to said openings, respectively, the card masking any remaining openings in said plurality of openings provided at the flat portion which remaining openings are not actually used to accommodate said light emitting elements;

whereby when said one end of the board is to be rigidly fit between the tongues in each of the pairs of the frame member, the columnary lug associated with said pair is separated from the thin webbing associated therewith to be received in the openings of said tongues and the opening of the board.

4,760,660

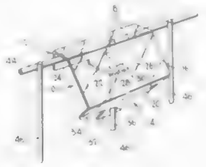
LABEL HOLDER FOR USE WITH WIRE ROD-TYPE STRUCTURES

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317

Filed Jan. 21, 1987, Ser. No. 5,910

Int. Cl.⁴ G09F *3/00*

U.S. Cl. 40—308 **5 Claims**



1. A label holder for attachment to a wire rod structure, the holder comprising a card of sheet material having an upper attachment portion, a lower attachment portion, and a label panel between the upper and lower portions, transverse fold means separating the label panel from the respective upper and lower portions, and a wire rod-gripping aperture and slit in each of the upper and lower portions, the slit extending from the respective aperture to a respective edge of the holder for engaging the aperture on a wire rod wherein the fold means between the label panel and the upper attachment portion comprises a pair of transverse fold lines.

4,760,661

COPY STAND

Takashi Yoshikoshi, Tokyo; Katsuhira Marumori, Nagareyama, and Tsunefusa Gunji, Matsudo, all of Japan, assignors to Tokyo Electronics Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1986, Ser. No. 871,229

Claims priority, application Japan, Jun. 28, 1985, 60-098492[U]; Jul. 5, 1985, 60-102679[U]; Aug. 27, 1985, 60-130655[U]

Int. Cl.⁴ B41J *11/64*

U.S. Cl. 40—356 **4 Claims**

1. A copy stand comprising: a board for mounting a copy, a cursor for indicating one line of copy on said board, a cursor holder for supporting said cursor and shifting said cursor along one end of said board, said cursor holder having a rigid curved coupling portion, an endless belt, a motor driving said endless belt, control means for actuating said motor and coupling means including a rigid element bending said endless belt over said rigid curved coupling portion and pressing said endless belt against said cursor holder whereby said cursor is more strongly coupled with said endless belt when said endless belt is driven by said motor and less strongly coupled and movable



relative to said endless belt when said motor is not driving said endless belt.

4,760,662

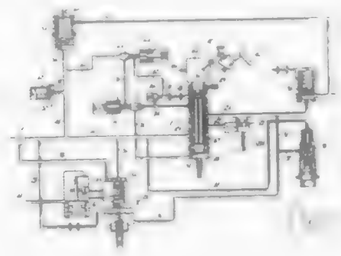
HYBRID FUEL METERING SYSTEM

Gerald P. Dyer, Enfield, Conn.; Gerald J. Gorneault, Palm Harbor, Fla.; Charles F. Stearns, East Longmeadow, Mass., and Robert H. Perkinson, Somers, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 24, 1987, Ser. No. 41,909

Int. Cl.⁴ F02C *9/28*

U.S. Cl. 60—39.281 **8 Claims**



1. A fuel metering system for providing fuel from a source to gas turbine engine characterized by:

a metering valve for metering fuel to said engine;

a control valve for receiving said fuel from said source, and for directing said fuel to said metering valve or for metering said fuel to said engine;

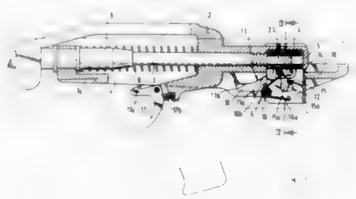
a first circuit means for positioning said control valve means such that fuel is communicated to said metering valve;

a second circuit means for positioning said control valve means such that fuel is metered to said engine such that an engine overspeed condition is corrected; and

a third circuit means for positioning said control valve means such that said control valve means may be manipulated to meter fuel to said engine.

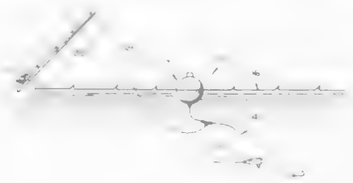
VOL 1093 ISS 1 AG 2 1988 UMI

4,760,663
FIREARM
Ulrich Zedrosser, Steyr, Austria, assignor to Steyr-Daimler-Puch AG, Vienna, Austria
Filed Dec. 17, 1987, Ser. No. 134,174
Claims priority, application Austria, Dec. 19, 1986, 3388/86
Int. Cl.[4] F41C *7/00*
U.S. Cl. 42—15 6 Claims



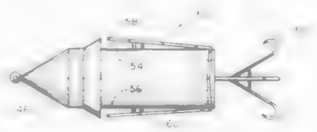
1. In a firearm comprising
a housing,
a barrel, which is carried by said housing and extends in a first direction,
a trigger, which is mounted in said housing,
a chamber member, which contains a chamber and is separate from said barrel and is mounted in said housing for a movement in a second direction that is transverse to said first direction, and
an actuating mechanism for reciprocating said chamber member in said second direction between a predetermined loading position and a predetermined firing position, in which said chamber is aligned with said barrel,
wherein said actuating mechanism comprises a slider, which is mounted in said housing for reciprocation in said second direction between an initial position and a stand-by position and is formed with a cam opening that is defined by a cam face that extends over the width traversed by said chamber member between said firing and loading positions,
said actuating mechanism also comprises an actuating pin, which extends through said cam opening in a third direction, which is transverse to said first and second directions and is adapted to cooperate with said cam face and is coupled to said chamber member for moving the latter from said firing position to said loading positions as said slider moves from said initial position to said stand-by position,
means for moving said slider from said initial position to said stand-by position, and
a return spring opposing the movement of said slider from said initial position to said stand-by position,
the improvement residing in that
said actuating mechanism comprises a spring drive for moving said chamber member from said loading position to said firing position,
said cam opening is designed to permit of a lost motion of said slider relative to said actuating pin and said chamber member in the direction from said initial position to said stand-by position and has substantially the configuration of a right-angled triangle having a hypotenuse and two legs, which respectively extend in said first and second directions and which meet at an apex and at said apex define a coupling stop for cooperating with said actuating pin, said hypotenuse defining said cam face,
said chamber member is formed with a coupling slot that extends in said first direction,
said housing is formed with two guide slots, which are spaced apart and aligned in said third direction,
said actuating pin is a sliding fit in said coupling slot and in said guide slots, and
each of said guide slots comprises an intermediate guide slot portion, which extends in said second direction, and two mutually opposite retaining end portions, which extend in mutually opposite senses in said first direction.

4,760,664
FISHING LURE LIGHTED
Frank Amendola, 6147 W. Marshall, Chicago Ridge, Ill. 60415
Filed Mar. 12, 1987, Ser. No. 25,178
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—17.5 13 Claims



1. A fishing lure comprising,
a body component and hook component, both adapted to be cast into the water and remain there in the complete fishing operation,
a PC board unit, including a flasher IC chip, in the body component
a battery removably mounted in operable position in the body component in electrical engagement with the circuitry thereon including said IC chip,
an inside coaxial cable in the body component having a first end in operable engagement with said circuitry and having an extended end adjacent the outer surface of the body component,
the hook component including an outside coaxial cable with a first end detachably mounted on the body component and thereby connected with the extended end of the inside coaxial cable,
a light in the hook component and thereby on the extended end of the outside coaxial cable and operably connected therewith,
fishhooks on the hook component, and
means on the hook component for connection with a fish line, and the hook component thereby being capable of receiving the pulling force from the fish line, in pulling in the line.

4,760,665
FISHHOOK SHIELDS
George P. Stueber, Box 146, Searles, Minn. 56084
Filed Feb. 25, 1987, Ser. No. 19,188
Int. Cl.[4] A01K *83/02*
U.S. Cl. 43—36 1 Claim



1. A new and improved fishing hook shield assembly comprising;
hook means wherein said hook means includes a circular plate means attached thereto and said circular plate means including at least one finger member extending outwardly through an elongated slot in a shield means slidably positionable over said hook means to prevent said hook means from becoming tangled with various objects and debris during a retrieval of said hook means by fisherman;
spring means for controlling a positioning of said shield means relative to said hook means, said spring means being normally in a compressed position during a retrieval of said hook means, said hook means being effectively retained within said shield means in a protective manner when said spring means is compressed, and
trigger means being engageable with said finger member when said spring means is in said compressed position, said trigger means further including arms extending substantially around a complete circumferential portion of said shield means; said trigger means effecting an extensible release of said spring means from said compressed position in response to a strike from a fish, said trigger means being mounted in a pivotal manner on an exterior portion of said shield means and being normally engageable with said hook means when said spring means is in said compressed position.

4,760,666
WATERING DEVICE FOR PLANTS
Joonho Han, 816 Gregorio Dr., Silver Spring, Md. 20901
Filed Apr. 29, 1987, Ser. No. 43,756
Int. Cl.[4] A01G *25/00, 9/02*
U.S. Cl. 47—79 6 Claims



1. An autmoatic watering device for plants adapted to suspended from a wall or ceiling which comprises:
a horizontal pivot rod including a plurality of slots disposed at the end portions thereof, a plant container hanging from the slots at one end portion of the horizontal pivot rod, said horizontal pivot rod being pivotably provided at one portion thereof with a T-shaped supporting member for supporting the water reservoir tank, said T-shaped supporting member being provided with a fixed rod for limiting the pivotal action of the horizontal pivot rod,
an adjusting weight member hanging a channel disposed at the other end portion of the horizontal pivot rod, said adjusting weight member and said plant container being positioned in said slots to balance each other,
a water reservoir tank adapted to contain a supply of water, said horizontal pivot rod being pivotably attached to said water reservoir, said water reservoir tank containing transfer means for conveying water from said water reservoir tank to said plant container, and
valve means operatively associated with said transfer means for controlling the conveyance of water from said tank to said plant container, said valve means being connected to said horizontal pivot rod, whereby upon the loss of water from the plant container, the horizontal pivot rod is caused to pivot, which opens the valve means permitting water to flow through the transfer means to the plant container until the balance is re-established causing the valve to close.

4,760,667
PROCESS AND APPARATUS FOR THE PREPARATION OF SYNTHESIS GAS
Gunter K. Eckstein, and Kurt Schleyer, both of Hamburg, Fed. Rep. of Germany, assignors to Shell Oil Company, Houston, Tex.
Continuation of Ser. No. 696,661, Jan. 30, 1985, abandoned. This application Nov. 3, 1986, Ser. No. 928,606
Int. Cl.[4] C10J *3/54, 3/56*
U.S. Cl. 48—69 10 Claims



1. A process for the preparation of synthesis gas comprising partially combusting a carbonaceous fuel with an oxygen-containing gas in a reactor, producing synthesis gas and molten slag; removing molten slag through a slag discharge in the bottom portion of the reactor and passing the slag by gravity into a water bath where it is solidified by quenching; removing slag floating on the water of the water bath by lowering the water level of the water bath to a level below the lower end of a baffle, the baffle being arranged in the water bath and dividing the water bath into an upper quenching zone and a lower capturing zone, and by raising the water level again to above the upper end of the baffle to capture floating slag under the baffle; and discharging captured slag from the water bath through an outlet arranged at or near the top of the capturing zone.

6. An apparatus for the partial combustion of a carbonaceous fuel with an oxygen-containing gas comprising a reactor which is equipped with a slag discharge in the bottom; a water bath vessel, said water bath vessel positioned so that molten slag from the reactor may be removed through said slag discharge and passed by gravity into the water bath vessel, the water bath vessel being provided with an interior baffle which divides the water bath vessel into an upper quenching zone and a lower capturing zone; means for lowering and raising the water level in the water bath vessel; and an outlet for floating slag and water in the wall of the water bath vessel at or near the top of the capturing zone.

4,760,668
SURFACE GRINDING MACHINE AND METHOD
Alfred Schlaefli, Verger-en Joran 14, 2074 Marin, Switzerland
Filed Jan. 23, 1987, Ser. No. 65,477
Claims priority, application Switzerland, Jul. 2, 1986, 2658/86
Int. Cl.[4] B24B *7/02, 53/00*
U.S. Cl. 51—5 D 19 Claims

1. A machine for grinding a flat surface, comprising:
a frame supporting at least one rotary grinding-wheel,
means for rotating said grinding-wheel about an axis of rotation,

VOL 1093 ISS 1 AG 2 1988 UMI

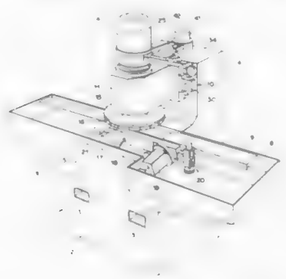
positioning means for receiving at least one workpiece having a surface to be ground,

translatory displacement means for effecting relative displacement between said rotary grinding-wheel and said workpiece disposed in said positioning means, and

a diamond cutter-wheel for dressing or redressing said grinding wheel,

said grinding-wheel being a bell grinding-wheel having an abrasive rim and a recessed inner area of a predetermined diameter, said grinding-wheel having its said axis of rotation substantially perpendicular to said surface to be ground,

said positioning means and said translatory displacement means being arranged to dispose the surface of said workpiece to be ground in a grinding path that is substantially



perpendicular to said axis of rotation of said bell grinding-wheel and to move said surface along said path in facing relationship to said grinding-wheel, said path being narrower than the diameter of said inner area of said grinding wheel and intersecting said rim of said grinding-wheel at two diametrically opposed points thereon,

said diamond cutter-wheel being disposed on one side of said path under said rim for engaging said rim with a dressing generatrix in the plane of said surface to be ground, and

means for imparting to said grinding-wheel a slow axial movement, corresponding at least to the attrition of said grinding-wheel as said surface is ground, for ensuring continuous dressing of said abrasive rim of said grinding-wheel by said cutter-wheel, at a level that continuously corresponds to the plane of grinding of said surface to be ground.

4,760,669

MACHINE FOR GRINDING THE BRAKE DISCS OF MOTOR-VEHICLES

Galeazzo Maccaferri, 5, Via G.F. Barbieri, and Giuseppe Giberti, 75, Via Cremona, both of Pieve di Cento (Bologna), Italy

Filed May 12, 1986, Ser. No. 862,489

Claims priority, application Italy, May 14, 1985, 12492 A/85

Int. Cl.⁴ B24B *7/17*

U.S. Cl. 51—117 4 Claims

1. A machine for grinding a brake disc of a motor vehicle while the brake disc is mounted in a normal operating position on an axle journal of the vehicle, the vehicle including connections to which a hydraulic caliper cooperating with the brake disc is normally secured, the machine comprising:

a frame which is precisely secured to the connections after removal of the caliper whereby a portion of said frame has a pre-established and exact positioning with respect to the brake disc, said frame leaving a rear face portion and a front fact portion of the brake disc uncovered;

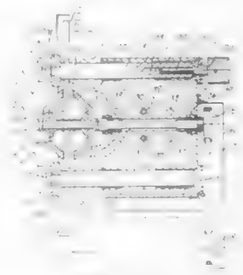
a working unit mounted on said portion of said frame, said working unit including

(a) a tool shaft,

(b) a grinding tool mounted on said tool shaft and having an abrading face parallel to the face portions of the brake disc,

(c) an axial displacement means for displacing said tool shaft axially to bring said abrading surface into engagement with one of the front face portion and rear face portion,

(d) a first drive means for rotating said tool shaft and hence said abrading face of said grinding tool, and for producing a rotating force on the brake disc when said abrading face contacts the one of the front face portion and rear face portion, and



(e) a second drive means for driving the brake disc in rotation in the same direction as the rotating force produced by said first drive means, said second driving means including a drive shaft with a driving dog attached adjacent an end thereof, a small motor means for rotating said driving dog about an axis of said drive shaft, and an adjustment means for adjusting the position of said end to be adjacent a center of the brake disc and with said driving dog engaging a wheel stud of brake disc.

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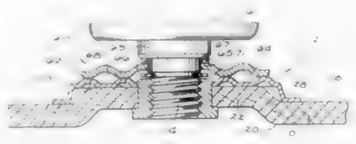
DISPOSABLE DEPRESSED CENTER GRINDING WHEEL HAVING AN INTEGRAL MOUNTING HUB

Joseph H. MacKay, Jr., 17551 Cabela Dr., San Diego, Calif. 92127

Continuation-in-part of Ser. No. 847,793, Apr. 3, 1986, Pat. No. 4,694,615. This application Jan. 21, 1987, Ser. No. 5,812

Int. Cl.⁴ B24B *45/00*

U.S. Cl. 51—168 16 Claims



1. A finishing article having a disposable drive member non-removably affixed thereto for mounting on a threaded rotatable spindle of a power tool comprising:

a finishing article having a face and a back and having a first centrally disposed aperture therethrough:

a backing flange having an inner and outer surface and a diameter smaller than the diameter of said finishing article and defining a second centrally disposed aperture therethrough, at least a portion of said backing flange inner surface seated on said back of said finishing article with said first and second apertures alinged;

a retaining nut having a hollow internally threaded body having first and second ends and a first radially outwardly extending flange extending from said first end of said body, said body extending through said first and second apertures from said face toward said back of said finishing article with said radial flange seated against said face;

means protruding outwardly from said second end of said body to non-removably secure said retaining nut and said backing flange together on said finishing article without the use of adhesive and allowing relative axial movement between said retaining nut and said backing flange; and

base means for attachment to said threaded spindle for engaging at least a portion of said outer surface of said backing flange when said finishing article is threadably affixed to and seated on said spindle to apply force to said backing flange, so that relative axial movement between said retaining nut and said backing flange toward each other is permitted to thereby increasingly compress said finishing article between said outwardly extending flange on said nut and said backing flange as operative loads are applied to said article during use on said power tool.

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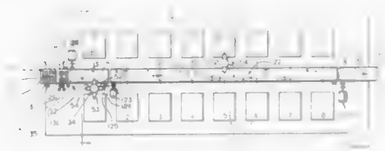
METHOD OF AND APPARATUS FOR AUTOMATICALLY GRINDING CATHODE RAY TUBE FACEPLATES

William R. Ward, Columbus, Ohio, assignor to Owens-Illinois Television Products Inc., Toledo, Ohio

Filed Aug. 19, 1985, Ser. No. 766,721

Int. Cl.⁴ B24B *47/22*

U.S. Cl. 51—215 AR 64 Claims



1. Apparatus for distributing workpieces to a plurality of at least three aligned workstations for the workpieces comprising a conveyor for workpieces for conveying workpieces along a path adjacent said plurality of workstations; a loader for transferring workpieces between said conveyor and said workstations; and means to move said loader along said conveyor to positions for transferring workpieces between said conveyor and each individual workstation of said plurality of workstations; wherein said loader has a station for engagement of a workpiece on said conveyor, a station for release of a workpiece in said workstation, and a station for a workpiece intermediate said workpiece engagement station and said workpiece release station.

4,760,672

SIMULTANEOUSLY GRINDING AND POLISHING PREFORMS FOR OPTICAL LENSES

Charles M. Darcangelo, Corning; Robert M. Hujar, Painted Post; Paul S. Schmitt, Corning, and Harold G. Shafer, Jr., Rock Stream, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 10, 1986, Ser. No. 940,275

Int. Cl.⁴ B24B *13/00*

U.S. Cl. 51—284 R 9 Claims

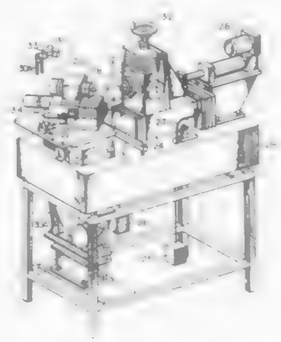
7. A method of generating an optical quality polished surface which comprises:

providing a resilient grinding tool having diamond grit impregnated in resin about an annulus;

rotating said grinding tool about a first axis by means of a first air bearing spindle;

rotating a glass work piece about a second axis by means of a second air bearing spindle;

setting said first and second axes at an angle with respect to each other such that said grinding annulus passes substantially centrally of said rotating work piece;



urging said grinding tool and said work piece into relative contact with each other under a constant force;

moving said work piece into contact with said grinding tool at a desired feed rate by means of an air slide and a remotely mounted drive motor means for controlling the feed rate without inducing vibration to said spindles; and

maintaining said work piece in contact with said grinding tool by means of said constant force for generating an optical quality polished surface on said work piece.

4,760,673

LEAD FRAME FINISHING APPARATUS

Tomio Tsuchiya, Shizuoka, Japan, assignor to Fuji Seiki Machine Works, Ltd., Shizuoka, Japan

Filed May 6, 1987, Ser. No. 47,839

Claims priority, application Japan, Jun. 3, 1986, 61-83620[U]

Int. Cl.⁴ B24C *3/12*

U.S. Cl. 51—418 12 Claims



1. A lead frame finishing apparatus which comprises a tool supporting base on which a plurality of lead frame finishing tools are provided; two frames supporting a lead frame transfer means, which transfer means clamps the lead frames at their edges and has an adjustable width; linkage means which con-

VOL 1093 ISS 1 AUG 2 1988 UMI

nects at least one of the frames to the tool supporting base and moves said tool supporting base to correspond the effective width covered by said tools to the width between the two frames which support the lead frame transfer means.

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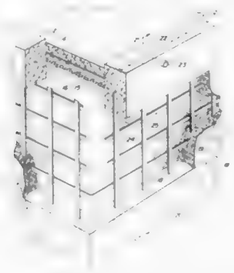
APPARATUS FOR AND METHOD OF CONSTRUCTING AN IMPROVED FOUNDATION STRUCTURE

Scott R. Brand, 4605 S. Priest Rd., Tempe, Ariz. 85282, and Dennis M. Duffy, 10038 N. 49th Dr., Glendale, Ariz. 85302

Continuation of Ser. No. 785,441, Oct. 7, 1985, abandoned. This application Mar. 19, 1987, Ser. No. 27,626

Int. Cl.[4] E02D *19/00*

U.S. Cl. 52—169.5 3 Claims



1. A system for reducing the expansive effects of unsaturated subsurface soil underlying large area foundation structures due to variation in moisture content, which comprises:

(a) a horizontal pervious layer placed upon the surface of the soil for the passage of vapor phase moisture therethrough;

(b) a horizontal impervious channel member placed in contact with said pervious layer, said channel member including a multiplicity of spaced elevated regions forming a corresponding multiplicity of horizontal communicating channels therebelow;

(c) a horizontal areal slab located in contact with and supported by said multiplicity of spaced elevated regions;

(d) removal means for circulating air from without said soil in said horizontal communicating channels and thereby removing vapor phase moisture therefrom, said means reducing the moisture content in the horizontal region of the unsaturated soil adjacent said pervious layer to thereby reduce the expansive effects of said soil on the slab; and

(e) a perimetric footing adjacent said slab and extending into said soil below the channel member, said footing located adjacent the horizontal channels of said channel member whereby said channels terminate at said footing and said removal means extends through the foundation structure to an external environment above the soil surface.

4,760,675

POWER COMPARTMENT AND METHOD OF FABRICATING

Timothy S. Bowman, Parkersburg, W. Va., and Charles N. Domigan, Coolville, Ohio, assignors to Butler Manufacturing Company, Kansas City, Mo.

Filed Dec. 24, 1986, Ser. No. 945,821

Int. Cl.[4] E04B *5/48*

U.S. Cl. 52—221 4 Claims

1. The method of forming a blank into a power compartment for use over a cellular raceway having a power cell and a pair of communication cells on opposite sides of the power cell wherein the crest of the power cell is off-set downwardly from the crests of the communication cells, comprising the steps of:

forming a flat, rectangular-shaped piece of metal having first and second spaced-apart, parallel longitudinal outer edges and first and second transverse outer edges each normal to the longitudinal outer edges:

making a contoured cut-out in said piece as by:

forming first and second longitudinal inner edges which face on another, are spaced apart, are parallel to each other, and are of the same length;

forming third and fourth longitudinal inner edges which face one another, are spaced apart, are respectively parallel to said first and second longitudinal inner edges, are of the same length, and are respectively spaced outwardly from said first and second longitudinal inner edges;

forming a first reverse bend edge between said first longitudinal inner edge and said third longitudinal inner edge;

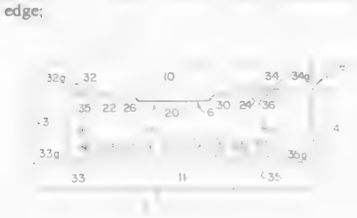
forming a second reverse bend edge between said second longitudinal inner edge and said fourth longitudinal inner edge;

forming fifth and sixth longitudinal inner edges which face one another, are spaced apart, the respectively parallel to said first and second longitudinal inner edges, are of the same length, and are respectively spaced outwardly from said third and fourth longitudinal inner edges;

forming a first transverse inner edge parallel to said first outer transverse edge and extending between said fifth and sixth longitudinal inner edges;

forming a third reverse bend between said third longitudinal inner edge and said fifth longitudinal inner edge;

forming a fourth reverse bend between said fourth longitudinal inner edge and said sixth longitudinal inner edge;



forming seventh and eighth longitudinal inner edges which face one another, are spaced apart, are respectively parallel to said first and second longitudinal inner edges, are of the same length, and are respectively spaced outwardly from said first and second longitudinal inner edges;

forming a fifth reverse bend edge between said first longitudinal inner edge and said seventh longitudinal inner edge;

forming a sixth reverse bend edge between said second longitudinal inner edge and said eighth longitudinal inner edge;

forming a second transverse inner edge parallel to said second transverse outer edge;

forming ninth and tenth longitudinal inner edges which face one another, are spaced apart, are parallel to said first and second longitudinal inner edges, are of the same length, and are respectively spaced outwardly from said seventh and eighth longitudinal inner edges;

forming a seventh reverse bend edge between said seventh longitudinal inner edge and said ninth longitudinal inner edge;

forming an eighth reverse bend between said eighth longitudinal inner edge and said tenth longitudinal inner edge;

the projections of said fifth and sixth inner edges in a direction toward said first outer transverse edge respectively constituting first and second bend lines and the projections of said ninth and tenth inner edges in a direction toward said second transverse outer edge respectively constituting third and fourth bend lines respectively coaxial with the first and said second bend lines; and

bending the blank along each said bend line whereby for each bend line the blank material outboard of the bend line forms a compartment side wall and the material inboard of the bend line forms a concrete blocker.

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SYSTEM OF PREFABRICATED COMPONENTS FOR CONSTRUCTING MODULAR HOUSES

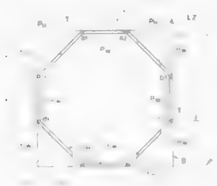
Mieko Goto, Shizuoka, Japan, assignor to Minamifuji Sangyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 740,750, Jun. 3, 1985, abandoned. This application Jun. 25, 1986, Ser. No. 880,943

Claims priority, application Japan, Jun. 6, 1984, 59-114498

Int. Cl.[4] E04H *1/00*

U.S. Cl. 52—236.1 7 Claims



1. A system of prefabricated components for constructing modular houses of various configurations on an area of land determined by a square of predetermined dimensions, said system comprising:

first panels having a width equal to ½ the length of a side of said square;

second panels having a width equal to the square root of 2 times the width of said first panels; and

support columns for both said first and second panels, whereby houses of various configurations can be constructed on said square by positioning said columns at points dividing each side of said square into three equal parts and by attaching selected combinations of said panels to said columns.

4,760,677

SUSPENDED CEILING HAVING A CONCEALED SUSPENSION GRID AND LAY-IN METAL PANELS SUPPORTED THEREON

Martin Nassof, Cliffside Park, N.J., assignor to Simplex Ceiling Corp., Hoboken, N.J.

Continuation-in-part of Ser. No. 875,944, Jun. 19, 1986, Pat. No. 4,696,141. This application Apr. 3, 1987, Ser. No. 34,785

The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.

Int. Cl.[4] E04B *5/52*

U.S. Cl. 52—484 6 Claims



1. A suspended ceiling system for a room which comprises a plurality of inverted T-shaped members suspended from the structural ceiling of the room and extending across the room, each said T-shaped member having a horizontal base portion;

a plurality of open metal ceiling panels having opposed first and second side walls, opposed first and second end walls and a bottom wall;

said first side wall of said panel having a flange projecting therefrom in a direction away from said second side wall, said flange being parallel to and spaced from said bottom wall, said first side wall further having a plurality of longitudinally spaced apart detents formed therein and projecting in a direction away from said second side wall, and said second side wall has a plurality of open notches therein spaced apart such that the detents of said panel will be received in the notches of an adjacent abutting panel, said flange and said detents being spaced apart to define a slot therebetween;

said end walls of a said panel having first and second ends adjacent said first and second side walls, respectively, said end walls having a lower portion integral with said bottom wall and an upper portion spaced from said lower portion at said end wall second end to define an open slot in each said end wall parallel to and spaced from said bottom wall, the opening of each said slot facing said second lower portion at each said end wall second end; and

said panels being supported by said inverted T-shaped members with the flange of a said panel resting on and supported by one side of the horizontal base portion of a said T-shaped member, said one side being received in said slot formed between said flange and said detents while the other side of said horizontal base portion is received in the slots of the end walls of an adjacent abutting panel, whereby the joints between adjacent panels are aligned.

4,760,678

ANCHORING DEVICE

John T. Chambers, Redditch, England, assignor to Baker & Finnemore Limited, Birmingham, England

Filed Mar. 13, 1987, Ser. No. 25,613

Claims priority, application United Kingdom, Mar. 15, 1986, 8606431; Aug. 20, 1986, 8620208

Int. Cl.[4] F16B *13/06*

U.S. Cl. 52—562 24 Claims



1. An anchoring device adapted to be fitted in a hole drilled in a structure to which the device is to be secured comprising an elongate tubular body, a plunger axially movable in the bore of the tubular body and having at least one inclined portion engageable with gripping means comprising transverse dogs disposed in openings in the wall of the tubular body, the dogs being metal plates sandwiched between metal guide plates of which at least the outer ones are supported in the openings in the wall of the tubular body, the arrangement being such that, in use, after fitting the anchoring device in the hole axial movement of the plunger causes the dogs to project through the openings in the wall of the tubular body to grip the surface of the hole.

4,760,679

ROOFING PANEL AND METHOD

Peter B. Thompson, Swiss Cottage, Nordrach, Blagdon Bristol BS186XW, England

Filed May 8, 1986, Ser. No. 861,222

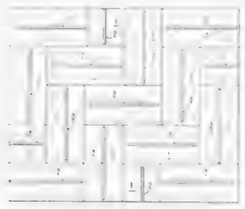
Int. Cl.[4] E04B *5/00*

U.S. Cl. 52—573 7 Claims

1. A roofing panel suitable for use on a flat roof, the panel

VOL 1093 ISS 1 AG 2 1988 UMI

being a body of substantially lamellar form and being made of plastics material, wherein one or more ridges made of plastics material different from that of the panel body are provided inwardly of the periphery of the panel and extend across a major part of the width or length of the panel as an integral part of the panel for accommodating expansion or contraction



of the panel relative to a substrate on which it is laid and transverse to the ridge or ridges, each ridge terminating at two free lengthwise ends short of edges of the panel such that the periphery of the panel lies substantially in a single plane, each ridge being disposed such that the panel is devoid of any substantial, fully ridge-enclosed area.

4,760,680

FIBERGLASS GRATING FORMED OF INTERLOCKED PULTRUDED FIBERGLASS GRATING BARS

Robert E. Myers, 18507 Prince Wm La., Houston, Tex. 77058

Filed Apr. 27, 1987, Ser. No. 42,904
Int. Cl.[4] E04C 2/42
U.S. Cl. 52—669 2 Claims



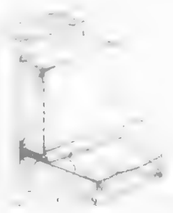
1. A fiberglass reinforced molded resin grating comprising:
first and second sets of mutually parallel, interlocking fiberglass reinforced molded resin bars, which sets extend transversely to one another;
said first set of bars comprising underlying bearing bars of rectangular cross section having opposite sides and upper and lower edges, being of a thickness T and having a height H, each bearing bar, including at longitudinally spaced positions within said upper edge, inverted U-shaped notches of vertical depth D including oppositely directed, downwardly and outwardly oblique slots, said oblique slots terminating adjacent the upper edge of said bearing bar in outwardly and upwardly diverging, oblique cam surfaces which are spaced apart at said top edge by a distance W", said second self interlocking fiberglass reinforced molded bars constituting cross bars, being of inverted U-shaped cross section including integrally, a horizontal base portion and a pair of downwardly and outwardly diverging legs of a thickness equal to the width of the diverging slots of the inverted U-shaped notches within said bearing bars and being of a vertical height H', in excess of the vertical depth D of said inverted U-shaped notches within said bearing bars, said cross bars having a flat horizontal upper edge, and oblique outwardly diverging sides, said cross bars including, at longitudinally spaced positions, rectangular locking notches within respective legs and being of a width W' which is generally equal to the thickness T of the bearing bar and of a height H' which is less than the vertical height H" of said cross bars, said locking notches forming laterally opposed vertical edges which contact the opposite sides of the bearing bars and forming horizontal edges for said rectangular locking notches within the legs of the cross bars, which horizontal edges, are spaced from each other by a distance S on opposite sides of said cross bars which is less than the distance W" between the upper edges of the oppositely oblique camming surfaces at the upper ends of the oppositely oblique slots of the inverted U-shaped notches within the bearing bars, whereby; the portion of the cross bar legs above the locking notches are deflected inwardly during forced insertion of the cross bars at the locking notches into the inverted U-shaped notches of the bearing bars by camming action of the camming surfaces at the upper end of the oblique slots to momentarily deform the cross bar legs to permit entry thereof into the inverted U-shaped notch slots of the bearing bars whereupon, said cross bar is joined to the bearing bars with the oblique legs of the cross bars snapping flush with oblique surfaces of the downwardly and outwardly oblique slots within the bearing bars thereby preventing removal of the cross bars from the bearing bar inverted U-shaped notches by frictional surface contact and resilient pressure between the oblique legs of the cross bars and the slots within the bearing bars, after completion of assembly of the grating.

4,760,681

BACK-SPLASH MOLDING

Walter L. Harrison, Eastlake, Ohio, assignor to K B & H, Inc., Cleveland, Ohio

Filed Aug. 13, 1986, Ser. No. 896,593
Int. Cl.[4] E04F 19/04
U.S. Cl. 52—716 4 Claims



1. A device for sealing and integrating a pair of panels in substantial right angle alignment one with the other wherein one panel is substantially vertical and the other panel is substantially horizontal to define an internal right angle, said device comprising: a deformable molding having an elongated portion substantially rectangular in cross section and adapted to engage the lower edge of said vertical panel and a top surface of said horizontal panel; said elongated portion of said deformable molding being sized to substantially approximate the width of the lower edge of said vertical panel; lip means secured to one edge of said elongated portion adapted to make pressure sealing contact against a surface of said vertical panel and against a surface of said horizontal panel, said vertical and horizontal surfaces forming an internal intersection of said panels, and first and second tape integrating means secured to opposite sides of said elongated portion and with pressure sensitive adhesive means adapted to integrate said pair of panels by bonding said elongated portion therebetween.

4,760,682

TUBULAR RACK BEAM AND METHOD OF MAKING SAME

John R. King, West Bloomfield, Mich., assignor to S & K Enterprises Inc., Detroit, Mich.

Filed May 5, 1987, Ser. No. 46,081
Int. Cl.[4] E04C 3/30
U.S. Cl. 52—731 9 Claims



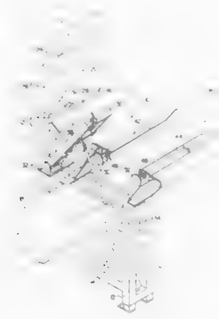
1. A tubular beam comprising:
a pair of opposed, elongated, generally U-shaped, bent sheet metal channels forming an outer channel having a base and spaced apart integral outer legs and an inner channel having a base and spaced apart inner legs;
the free edge of one of said outer legs terminating in an integral bent cover flange extending towards the opposite outer leg;
the inner legs have free edge portions arranged between the outer legs and overlapped by and snugly held against their adjacent outer leg surfaces so that the channels are tightly interfitted to form a hollow, tubular shape;
an integral bent corner-like shoulder formed in, and extending along the length of, the inner leg that is adjacent the outer leg havign said flange, and said flange fitting over and engaging said shoulder;
and an adhesive material arranged between, and adhesively bonding together the adjacent, overlapping inner and outer leg surfaces.

4,760,683

BAG INSERTER

Baldur Hirschberger, Delta, and Michael Mack, Richmond, both of Canada, assignors to Crown Forest Industries Limited, Vancouver, Canada

Filed Mar. 12, 1987, Ser. No. 25,324
Claims priority, application Canada, Nov. 21, 1986, 523598
Int. Cl.[4] B65B 41/13
U.S. Cl. 53—170 3 Claims



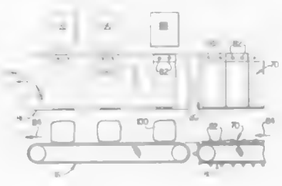
1. Bag inserter apparatus for inserting a liquid filled bag into a pre-selected position within a container, said apparatus comprising:
(a) a funnel for receiving and guiding said bag into said container, said funnel comprising:
(i) a bag receiving aperture for guiding said bag into a tapered bag forming section of said funnel;
(ii) a bag discharge chute beneath said bag forming section;
(iii) a bag deflector plate at the lower end of said chute;
(iv) a bag discharge aperture formed at a substantial vertical angle across the lower end of said chute; and,
(b) container positioning means for offset positioning of said container relative to said chute with a bag receiving aperture of said container adjacent said discharge aperture and with a wall of said container opposite said container bag receiving aperture at approximately said angle.

4,760,684

[illegible]

Denis G. Crosby, Greenwich, Conn., assignor to Princeton Packaging, Inc., Greenwich, Conn.

Filed Jan. 14, 1987, Ser. No. 3,849
Int. Cl.[4] B31B 1/64; B65B 43/04
U.S. Cl. 53—459 12 Claims



1. An improved method for manufacturing a bag from a sheet, comprising the steps of:
(a) folding the sheet longitudinally off the center line of the sheet to define facing bag portions and a flap portion;
(b) forming a pair of holes through the flap portion;
(c) bonding the facing bag portions of the sheet together transverse the longitudinal direction of the sheet at uniform spacing along the sheet to form individual bags with side seals;
(d) perforating the sheet between the side seals of adjacent bags;
(e) indexing the individual bags with indexing structure extending through the pair of holes in the flap portion of each bag to a loading machine for loading each bag with a product; and
(f) accelerating the indexing structure indexing each bag relative to the adjacent bag to separate the bags along the line of perforations.

4,760,685

LAWN MOWER WITH COMBINED ENGINE BRAKE AND IGNITION CONTROL

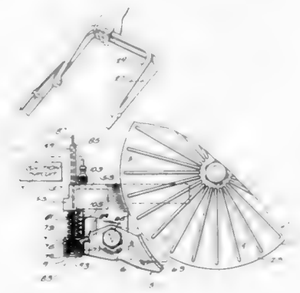
LaVerne D. Smith, Watuga, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 559,937, Dec. 9, 1983, abandoned, which is a continuation of Ser. No. 291,013, Aug. 7, 1981, Pat. No. 4,419,857. This application Nov. 24, 1986, Ser. No. 935,102
Int. Cl.[4] A01D 69/10
U.S. Cl. 56—11.3 4 Claims

1. A rotary lawn mower comprising a housing supported for rotation along the gound, an engine mounted on said housing and including a rotatably mounted crankshaft extending from the bottom of said engine into said housing, and a flywheel located at the top of said engine and having common rotation with said crankshaft, a cutter blade located in said housing and fixed to said crankshaft, a braking surface located on said flywheel, a brake arm supported for movement relative to said engine between a braking position and a non-braking position,

VOL 1093 ISS 1 AG 2 1988 UMI

said brake arm having thereon a brake surface which is engageable with said braking surface when said brake arm is in said braking position, means biasing said brake arm toward said braking position, and means operably connected to said brake arm for moving said brake arm into said non-braking position against the action of said brake arm biasing means and including an actuating linkage having a linkage portion engageable



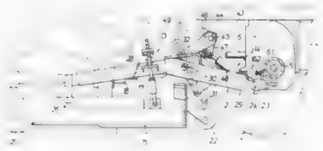
with said brake arm to displace said brake arm toward said non-braking position, and a lost motion connection between said linkage portion and said brake arm, said lost motion connection including means yieldably biasing said linkage portion away from said brake arm so as to afford limited initial movement of said actuating linkage relative to said brake arm prior to effecting movement of said brake arm from said braking position.

4,760,686

ATTACHMENT DEVICE FOR FRONT-MOUNTABLE WORKING IMPLEMENT

Kazuo Samejima; Teruo Shimamura; Takao Sakatsuji; Yoshikazu Togoshi; Masatami Fukuda, and Hideo Kida, all of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Jan. 12, 1987, Ser. No. 2,226
Claims priority, application Japan, Feb. 4, 1986, 61-23309
Int. Cl.[4] A01D *34/66*
U.S. Cl. 56—15.8 9 Claims



1. An attachment device for a front-mountable working implement for performing work while following a ground surface and while being positioned in front of a vehicle, said attachment device comprising:

a pair of opposed inflexible links having front and rear ends, each of said links being pivoted at their rear ends to the front of said vehicle and each link being upwardly and downwardly movable about a pivot at said front of said vehicle, each of said front ends of said links pivotably supporting a front portion of said working implement about a lateral pivot thereon;

a pair of opposed suspenders each mounted on one of said links at an intermediate portion thereof, said suspenders suspending a rear portion of said working implement, each of said suspenders having a rod assembly, a compressible resilient member and a restraining member, each of said rod assemblies being pivotably connected to the rear portion of said working implement and being inserted through one of said links in order for each of said links to have one rod assembly therethrough, each of said rod assemblies being longitudinally reciprocable to permit upward and downward movement of the rear portion of said working implement about said lateral pivot between the front portion of said working implement and the front ends of said links, each of said restraining members being fixed on one of said rod assemblies in order for each rod assembly to have one restraining member thereon, said link members being positioned between said restraining members and said working implement, each of said compressible resilient members extending between one of said links and one of said restraining members and each of said compressible resilient members being elastically deformable; and

a lift unit provided between said vehicle and said links for raising and lowering the working implement through the links and suspenders, the lift unit having means for permitting upward and downward and sideways tilting movement of the working element due to pivotal movement of each of the links independent of one another.

4,760,687

MOWER DECK HEIGHT AND CLUTCH CONTROL

Rudolf Siegrist, Valley City, Ohio, assignor to MTD Products Inc., Cleveland, Ohio

Filed Jun. 1, 1987, Ser. No. 56,227
Int. Cl.[4] A01D *34/66*
U.S. Cl. 56—15.8 10 Claims
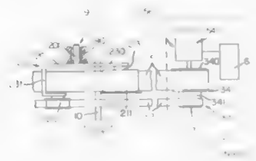


1. An improved control linkage for a lawn mower having a mower deck selectively moveable upwards and downwards in respect to a frame in a range of operative positions and further moveable substantially parallel to the ground to a non-operative position, the control linkage comprising a lockout bolt, said lockout bolt having two ends, one means to connect one end of said lockout bolt to the frame, another means to connect the other end of said lockout bolt to the mower deck, one of said one means or said another means including a lost motion connection, said lost motion connection allowing said lockout bolt to engage between the frame and mower deck when the distance between the frame and mower deck is equal to the operative length of said lockout bolt, said one end of said lockout bolt being displaced from said other end of said lockout bolt in a direction opposite to the movement of the mower deck substantially parallel to the ground to a non-operative position of the mower deck, and said operative length of said lockout bolt being such that the mower deck can be moved freely through its range of operative positions without compromise to the operability of the mower deck while the motion of the mower deck upwards of the range of operative positions connects both of said ends of said lockout bolt to the frame and deck causing said lockout bolt to force the mower deck substantially parallel to the ground to its non-operative position.

4,760,688

OPEN-END SPINNING MACHINE WITH PLURAL SPINNING STATIONS AND THREAD JOINING PROCESS THEREFOR

Kurt Beitzinger, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer Maschinenfabrik, Ingolstadt, Fed. Rep. of Germany

PCT No. PCT/DE85/00548, § 371 Date Jul. 31, 1986, § 102(e) Date Jul. 31, 1986, PCT Pub. No. WO86/03792, PCT Pub. Date Jul. 3, 1986
PCT Filed Dec. 20, 1985, Ser. No. 897,782
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447428
Int. Cl.[4] D01H *1/26, 15/02*
U.S. Cl. 57—92 45 Claims



1. Open-end spinning machine with a plurality of spinning stations located next to each other, each station having a respective spinning unit, comprising:

one collective drive adapted for collectively driving said spinning units;

a stationary auxiliary drive, which instead of said collective drive, can be associated with the spinning unit of each spinning station individually; and

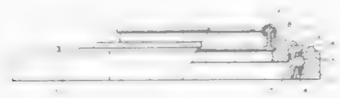
a drive motor for driving said collective drive directly and for driving said auxiliary drive via a step-up gear.

4,760,689

IMPROVEMENTS IN SPINNING RING ASSEMBLY FOR TEXTILE TWISTING APPARATUS

Raúl O. Arce, Calle Cordovanes No. 25, San Jose Insurgentes Mexico, DF Mexico, Mexico

Filed Dec. 15, 1986, Ser. No. 941,735
Claims priority, application Mexico, Dec. 16, 1985, 98424014
Int. Cl.[4] D01H *7/56*
U.S. Cl. 57—124 1 Claim



1. A spinning ring assembly for a textile twisting apparatus useable in a thread making machine including a rotatable spindle, said spinning ring assembly comprising:

a support structure including means for attaching said support structure to the thread making machine;

a ball bearing assembly secured to and carried on an inner surface of said support structure;

an inside friction ring having an outer circumferential groove which contacts balls of said ball bearing assembly, said inside friction ring being sustained in free rotation by said ball bearing assembly;

an intermediate free support ring support on an inner projection of said inside friction ring;

a spinning ring carried by said intermediate support ring; and

a traveler freely carried on an upper surface of said spinning ring.

4,760,690

PROCESS FOR THE PRODUCTION OF A WEFT FIBER OF POLYESTER-POY

Bruno Lang, Baliwil, and Paul Schaffner, Kriens, both of Switzerland, assignors to Viscosuisse SA, Emmenbruecke, Switzerland

Filed Nov. 20, 1986, Ser. No. 936,648
Claims priority, application Switzerland, Nov. 20, 1985, 04 844/85
Int. Cl.[4] D02G *3/48, 3/00*
U.S. Cl. 57—243 10 Claims

1. Process for the production of a multifilament weft yarn of polyester-POY with at least 90% polyethylene terephthalate, with a coarse non-sliding surface for a tire cord web, comprising twisting the yarn with 40 to 200 tpm, and continuously relaxing and tempering the twisted yarn over a period of 0.1 to 30 seconds, at a dry heat temperature between 180° and 250° C., to an extent from 20 to 55%.

4,760,691

PARTIALLY ORIENTED NYLON YARN AND PROCESS

John M. Chamberlin; Edward W. Chilvers, Jr.; Walter J. Nunning, and John H. Southern, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 788,303, Oct. 17, 1985, abandoned, which is a division of Ser. No. 594,522, Apr. 2, 1984, Pat. No. 4,583,357, which is a continuation-in-part of Ser. No. 554,021, Nov. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 546,127, Oct. 27, 1983, abandoned, which is a continuation-in-part of Ser. No. 488,490, Apr. 25, 1983, abandoned. This application Jun. 23, 1987, Ser. No. 65,447
Int. Cl.[4] D02G *3/02*
U.S. Cl. 57—243 4 Claims



1. A false-twist heatset textured nylon 66 yarn having a denier less than 250, an R.V. greater than 53, less than 10 broken filaments per kilogram of yarn, and an initial crimp development greater than 19%.

4,760,692

DEVICE FOR THE STRANDING, OR STRANDING-ON, OF STRANDING ELEMENTS

Gerhard Ziemek; Friedrich Schatz, and Lothar Werwitzke, all of Langenhagen, Fed. Rep. of Germany, assignors to kabelmetal electro Gesellschaft mit beschränkter Haftung, Hanover, Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,612
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609146
Int. Cl.[4] D01H *9/00;* D07B *3/00*
U.S. Cl. 57—314 23 Claims

1. A device for stranding or stranding-on, of stranding elements of a cable, comprising

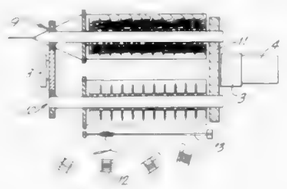
a driveable stranding member and storage receivers for the stranding elements; and wherein

the stranding member and the storage receivers are con-

VOL 1093 ISS 1 AG 2 1988 UMI

structed as a unit, there being two such units, the two units being interchangeable; and wherein

one of said units has storage receivers which have just been filled to serve as an active part of the device, and the



second of said units has storage receivers which are to be filled to serve as a passive part of the device; said device further comprising

means for interchanging one of said units with the other of said units during a stranding operation.

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PROCESS AND DEVICE FOR OPEN-END FRICTION SPINNING

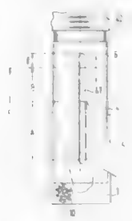
Werner Biliner, Ingolstadt, Fed. Rep. of Germany, assignor to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Jul. 16, 1986, Ser. No. 886,982

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1985, 3527212

Int. Cl.[4] D01H *7/892, 7/898, 1/135*

U.S. Cl. 57—401 19 Claims



1. A method for open-end friction spinning, comprising the steps of:

(a) providing a pair of rotatable friction rollers in parallel with one another and in relatively close proximity to define a spinning nip;

(b) forming a plurality of perforations in the periphery of at least one of said friction rollers so as to form a suction roller;

(c) disposing a suction insert inside said suction roller, said insert having a suction slit with a variable length suction orifice, said suction orifice being defined as that portion of said suction slit which is subjected to suction during spinning operation, and said suction slit being disposed generally alongside said spinning nip;

(d) providing an opening cylinder and fiber feeding channel with an outlet end for feeding fiber materials therefrom to said spinning nip in a fiber feeding zone thereof, said fiber feeding zone being generally of a non-changing length defined by said outlet end of said fiber feeding channel;

(e) selecting the thickness of yarn to be produced by the spinning operation in a twisting zone residing in said spinning nip and substantially co-axially aligned with said fiber feeding zone in end-to-end relationship therewith, said suction slit extending substantially over both said fiber feeding zone and said twisting zone;

(f) adjusting in only said twisting zone the length of said suction orifice of said suction slit in accordance with the selected thickness of yarn; and

(g) commencing spinning operation to produce yarn of said selected thickness, which operation includes at least feeding fiber material to said spinning nip for yarn formation therein, while rotating said friction rollers in the same direction and while supplying suction to said suction roller through said suction insert, including said suction slit with variable suction orifice thereof, and subsequently drawing formed yarn off from said spinning nip.

13. An apparatus for open-end friction spinning, comprising:

two friction rollers forming a spinning nip and being rotatably driven in the same direction, at least one of said rollers being perforated to define a suction roller;

a suction insert received in said perforated roller and having suction directed thereto, said insert being provided with a suction slit extending alongside a yarn-forming line, which is associated with said spinning nip, said suction slit extending over a generally predetermined, non-changing length fiber feeding zone and a twisting zone of said nip, such zones residing substantially in co-axial alignment and end-to-end relationship in said nip; and

means for adjusting the length of that portion of said suction slit extending over said twisting zone, exposed to suction during spinning operation of said apparatus, in accordance with the thickness of yarn to be produced.

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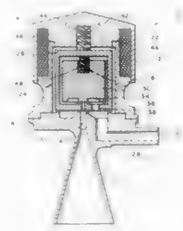
BI-LEVEL THRUSTER

Willard A. Gillon, Jr., Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 27, 1986, Ser. No. 923,615

Int. Cl.[4] F02G *1/00, 3/00*

U.S. Cl. 60—200.1 3 Claims



1. A thruster assembly for producing pre-determined levels of impulse comprising:

(a) a thruster housing including a core portion, a base portion, a nozzle base, a nozzle and a nozzle exit;

(b) an inner thruster assembly chamber formed by the thruster housing and nozzle base, the assembly chamber further comprising an outer cylindrically-shaped armature slidably seated within the thruster assembly chamber and an inner cylindrically-shaped armature slidably seated within the outer cylindrically-shaped armature;

(c) a bi-valve double piston assembly slidably mounted within the chamber;

(d) fluid annuli formed within the chamber communicating with the piston assembly and nozzle;

(e) fluid passageways formed within the chamber interconnecting and communicating with the piston assembly, fluid annuli and nozzle;

(f) a fluid inlet formed within the nozzle base communicating with the fluid annuli, passageways and a fluid conduit associated with the nozzle;

(g) resilient means associated with the piston assembly; and

(h) driving means for energizing the assembly disposed within the thruster housing in surrounding relation to the piston assembly.

4,760,695

ACOUSTIC OSCILLATORY PRESSURE CONTROL FOR RAMJET

Robert S. Brown, Santa Clara, and Roger Dunlap, Sunnyvale, both of Calif., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 901,117, Aug. 28, 1986. This application Jun. 23, 1987, Ser. No. 65,483

Int. Cl.[4] F02K *7/10*

U.S. Cl. 60—204 8 Claims



1. A method for controlling the acoustic oscillatory pressures generated by gas flow at the combustor inlet to a ramjet engine, said inlet including a sudden geometry expansion, said method characterized by;

restricting the inlet at the sudden expansion geometry such that the gas flow separates upstream and has a vena contracta downstream of said restricted inlet.

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FUEL SYSTEM FOR GAS TURBINE ENGINES

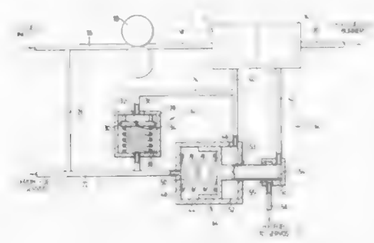
John V. Rooks, Derby, and Russell A. Loxley, Leicester, both of England, assignors to Rolls-Royce plc, London, England

Filed Jul. 28, 1986, Ser. No. 889,958

Claims priority, application United Kingdom, Sep. 4, 1985, 8521993

Int. Cl.[4] F02C *9/26*

U.S. Cl. 60—39.281 10 Claims



1. A fuel system for a gas turbine engine having a high pressure pump, a means for supplying low pressure fuel to the high pressure pump, a fuel flow regulator, a fuel spill valve, at least one fuel burner manifold and at least one fuel servo, a fluid flow line interconnecting the high pressure pump and the fuel flow regulator and a fluid flow line interconnecting the high pressure pump and the fuel spill valve for supplying high pressure fuel from the high pressure pump to the fuel flow regulator and the fuel spill valve, respectively, a fluid flow line interconnecting the fuel flow regulator and the at least one fuel burner manifold for supplying high pressure fuel from the fuel flow regulator to the at least fuel burner manifold and the associated fuel burners, a fluid flow line interconnecting the fuel spill valve to the upstream low pressure side of the high pressure pump for returning excess fuel from the fuel spill valve to the upstream low pressure side of the high pressure pump, a fluid flow line interconnecting the at least one fuel servo and a point downstream of the high pressure pump for supplying the at least one fuel servo with high pressure fuel from downstream of the high pressure pump, control means for sensing when the flow of excess fuel from the fuel spill valve to the upstream low pressure side of the high pressure pump reaches a predetermined value, the control means allowing the supply of high pressure fuel to the at least one fuel servo when the flow of excess fuel is greater than the predetermined value.

4,760,697

MECHANICAL POWER REGENERATION SYSTEM

William S. Heggie, Dyfed, Wales, and Anthony S. Davies, Gloucester, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed Aug. 13, 1986, Ser. No. 896,102

Int. Cl.[4] F16D *31/02*

U.S. Cl. 60—408 2 Claims



1. A mechanical power regeneration system for a movable object having a primary power transmission connecting a prime mover to a load, said system being separate and distinct from the primary power transmission, comprising:

(a) a variable displacement hydraulic pump assembly including a pump in the power regeneration system,

(b) said hydraulic pump being positively driven by the movable object in at least one operational mode of said movable object,

(c) a first check valve connected between the output said of said pump and a first hydraulic line of a high pressure accumulator unit,

(d) a second hydraulic line of a low pressure accumulator unit,

(e) a second check valve connected between said second hydraulic line and the input side of said pump,

(f) a first controlled valve connected between said first hydraulic line and said input side of said pump,

(g) a second controlled valve connected between said second hydraulic line and said output side of said pump,

(h) whereby, in operation, when said movable object is to be slowed down by placing it in a braking mode said first and second controlled valves are controlled by a controller unit to be closed and hydraulic fluid is transferred by said pump from said low pressure accumulator to said high pressure accumulator through said second check valve and said first check valve, and

(i) when the movable object is placed in a drive mode and requires a positive traction force said controller unit controls said first and second controlled valves to open and stored hydraulic energy in said high pressure accumulator is transferred via hydraulic fluid through said first controlled valve to the input side of said pump to apply a positive traction force to said movable object, the return path of said hydraulic fluid pump being from its output

VOL 1093 ISS 1 AG 2 1988 UMI

side through said second controlled valve to said low pressure accumulator unit,

(j) a third check valve connected in series with a controlled relief valve across the input and output sides of said pump, and

(k) said microcumputer unit providing a control signal to said controlled relief valve when the movable object is in a reverse mode whereby when the movable object is reversed, hydraulic fluid is recirculated around the pump through said controlled relief valve.

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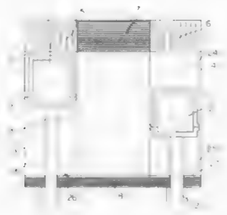
STIRLING ENGINE

Carlo M. Bartolini, Senigallia; Vincenzo Naso, and Ferdinando Saraci, both of Rome, all of Italy, assignors to Comitato Nazionale per la Ricerca e per lo Sviluppo del' Energia Nuclere e Delle Energie Alternative, Rome, Italy

Filed Jul. 21, 1987, Ser. No. 75,977

Int. Cl.[4] F02G *1/04*

U.S. Cl. 60—526 4 Claims



1. Improved Stirling engine, having an expansion piston and a compression piston sliding into respective cylinders and defining an upper side and a lower side therein, a heater and a cooler on the upper side of said cylinders, and a regenerator in communication between said heater and cooler, comprising:

a piston rod integral with each piston and moving coaxially to the cylinder axis;

a bottom on the lower side of each cylinder for forming respective lower chambers, said rods being slidingly and sealingly engaged through said bottoms;

labyrinth dynamic seals formed on said expansion piston, for allowing a seepage of fluid from the upper to the lower side of said cylinder, whereby by means of absorbtion by said fluid in said lower side of the cylinder, of the heat transferred by conduction from the walls of said cylinder and said expansion piston, a lower Stirling cycle is established in said lower chambers, which produces a double-action effect with heat recovery and work production; and

a second regenerator in communication with said two lower chambers.

4,760,699

THERMOSTATIC SERVO-MOTOR, PARTICULARLY FOR VALVES

Flan Jacobsen; Jens J. Molbaek; Jan Zangenberg, all of Nordborg, and Poul S. Dam, Augustenborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

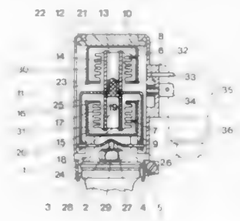
Filed Mar. 29, 1984, Ser. No. 594,814

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1983, 3314000

Int. Cl.[4] F03G *7/06*

U.S. Cl. 60—531 7 Claims

1. A thermal valve actuating servomotor, comprising, a casing, valve actuating means, first and second operating elements each having fixed and moveable parts forming an expansible chamber with said fixed parts being connected to said casing and said moveable parts being bellows connected to said valve actuating means, each of said fixed parts of each of said operating elements forming a rigid outer shell in surrounding relation to the respective said moveable part, said operating elements being thermally insulated from each other, a temperature dependent filling in each of said elements, first and second



electric resistance heating means respectively wound around said shells of said operating elements for respectively thermally influencing said fillings, said first and second heating means being independently operable to selectively heat said fillings to operate said valve actuating means.

4,760,700

MASTER CYLINDER FOR VEHICLE BRAKING SYSTEMS

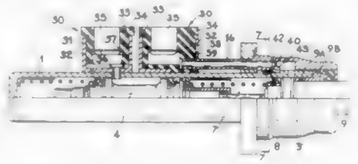
John F. Pickering, Rugby, England; Peter Schlüter, Koblenz, and Bernd Wagner, Ruescheid, both of Fed. Rep. of Germany, assignors to Lucas Industries Public Limited Company, Birmingham, England

Continuation of Ser. No. 850,429, Apr. 8, 1986, abandoned, which is a continuation of Ser. No. 560,450, Dec. 12, 1983, abandoned. This application Jul. 31, 1987, Ser. No. 80,216

Claims priority, application United Kingdom, Dec. 14, 1982, 8235575

Int. Cl.[4] B60T *11/26*

U.S. Cl. 60—585 9 Claims



1. A master cylinder for a hydraulic pressure system comprising a pressure cylinder having a longitudinal axis, an open end, a reservoir communicating with the interior of the cylinder of means of a transverse opening through the peripheral cylinder wall, and a closure member mounted on the cylinder and closing said open cylinder end, the closure member being positively coupled to the cylinder body by a coupling device for transmitting force resulting from pressure applied to the interior of the closure member to the cylinder wherein the coupling device is in the form of a locking ring housed in a groove of the cylinder, the groove being formed circumferentially in an outer cylindrical wall of the cylinder which is parallel with said longitudinal axis, the locking ring having outwardly inclined resilient peripheral teeth extending radially outwardly from the groove, the closure member having an inner cylindrical wall fitting over the outer cylindrical wall of the cylinder, the inner cylindrical wall having means engaging said teeth to positively lock the closure member on the cylinder in a manner which precludes subsequent removal of the closure member and to transmit axial force applied to the interior of the closure member to the cylinder.

4,760,701

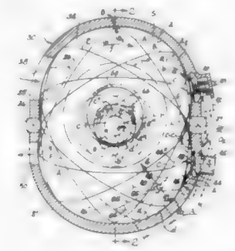
EXTERNAL COMBUSTION ROTARY ENGINE

Constant V. David, 4952 Field St., San Diego, Calif. 92110

Continuation-in-part of Ser. No. 866,944, May 27, 1986, Pat. No. 4,702,205, and a continuation-in-part of Ser. No. 866,945, May 27, 1986, Pat. No. 4,672,813, and a continuation-in-part of Ser. No. 866,946, May 27, 1986, Pat. No. 4,665,703, which is a continuation-in-part of Ser. No. 789,451, Oct. 21, 1985, Pat. No. 4,653,274, which is a continuation-in-part of Ser. No. 586,812, Mar. 6, 1984, Pat. No. 4,561,252. This application Aug. 6, 1986, Ser. No. 893,701

Int. Cl.[4] F02B *71/04*

U.S. Cl. 60—595 28 Claims



1. A rotary piston external combustion engine, comprising:

means for compressing air and expanding combusted gas;

a shaft connected to the compressing and expanding means for delivering power by means of an external drive shaft;

an air inlet port opening for admitting ambient air in the air compressing means;

an outlet valve for venting the compressed air out when the pressure thereof exceeds the air pressure downstream of the valve;

an exhaust port opening in an external structure for venting the combusted gas out of the gas expanding means;

means for receiving compressed air from the air compressing means, means for mixing a fuel with the compressed air, means for igniting the mixture to produce combusted gas, and means for delivering the combusted gas to the expanding means,

the compressing and expanding means including a plurality of rotor bodies, a plurality of generally oval-shaped hollow external structures surrounding and enclosing the rotor bodies, flange means for rotatably supporting the rotor bodies by the hollow external structures about the shaft axis, each one set of rotor body and associated hollow structure being positioned between two adjacent flanges, each external hollow structure having a continuously curved surface and each rotor body having three identical side curved surfaces positioned to face cooperating portions of the curved surface of the hollow external structure, any two adjacent side curved surfaces forming an intersection line parallel to the rotor rotational axis of symmetry and all such parallel lines thus formed being equidistant from one another and continuously substantially coinciding with a generatrix of the corresponding continuous curved surface of its associated external structure, each rotor side curved surface defining a variable volume sealed space in cooperation with the flange means and the external structure curved surface, seals positioned at locations where the side curved surfaces and the external structure curved surface come into sliding contact, the shaft having a plurality of off-centered cylindrical journal bearing lands and each rotor having a corresponding centered cylindrical journal bore for rotation around a cooperating journal bearing land, each rotor having one centered internal gear and one of the two flanges associated with said rotor having a pinion gear for engaging said internal gear of larger pitch circle diameter, the curvatures and relative positions of the facing surfaces being such that four of the sealed spaces are formed and progressively vary in volume as the rotor rotates, one set of two of said four spaces decreasing in volume while the other set of two spaces increase in volume, as relative displacement of the facing surfaces takes place, wherein the generally oval-shaped curved surface of each hollow structure has two orthogonal planes of symmetry defining two generatrices of the external structure curved surface that are the farthest opposed and two generatrices of the external structure curved surface that are the most closely opposed where two seals are located, one for each generatrix, for sealing sliding contact with the rotor curved sides that form three apices at their junction and three lobes therebetween, each apex being provided with a seal in continuous sliding contact with the external structure curved surface, and wherein four port openings are provided, one on each of the to sides of each one of the two most closely opposed generatrices, one first port being used as air inlet, the diametrically opposed second port being used as combusted gas inlet, a third port located substantially symmetrically to the first port with respect to the longest axis of the oval shape being used as compressed air outlet, and a fourth port located substantially diametrically opposed to the third port being used as expanded combusted gas exhaust port, whereby air admission occurs after a rotor apex has passed the first port while the inlet-vented sealed space volume increases, air compression occurs after the inlet is closed off by the rotor next apex and said volume then decreases, combusted gas admission occurs after one rotor apex has passed the second port, combusted gas admission occurs thereafter until a combusted gas inlet valve in control of the second port closes and then enables the combusted gas to expand until the rotor apex opens the fourth port or exhaust port;

means for detecting the position of a rotor lobe and associated apex after said apex has passed the second port;

means for utilizing said rotor lobe position to monitor the actuation of the combusted gas inlet valve; and

means for actuating said combusted gas inlet valve;

whereby the gearing ratio between the pinion gear and the internal gear is two thirds, each rotor has three curved sides and three apices, and the oval-shaped internal surfaces of the hollow external structures is shaped like two intersecting and symmetrical quasi-circular arcs, each one arc covering over half of a full circle, said intersections defining the locations of the most closely opposed generatrices.

4,760,702

SUPERCHARGED MARINE DIESEL ENGINE

Hansrudolf Ammann, Oberentfelden; Hans J. Egger, St. Gallen, and Adrian Streuli, Schinznach-Bad, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, [illegible]

Filed Feb. 11, 1987, Ser. No. 13,556

Claims priority, application Switzerland, Feb. 27, 1986, 793/86

Int. Cl.[4] F02B *37/00*

U.S. Cl. 60—605.2 6 Claims

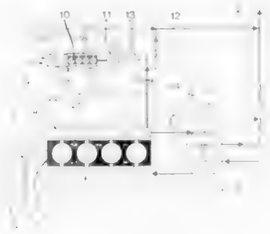
1. Supercharged marine diesel engine (2):

having at least one exhaust-gas turbocharger (6, 7) comprising a compressor (6) and a supercharging turbine (7) and a separate utility turbine (12) which is connected in parallel with the supercharging turbine (7) and delivers power, and having at least one auxiliary diesel engine (10) which drives a synchronous generator (11) supplying the ship's electrical system with electrical energy and which has at

VOL 1093 ISS 1 AG 2 1988 UMI

least one exhaust-gas turbocharger (19,20) comprising a compressor (20) and a supercharging turbine (19),

with said separate utility turbine (12) being coupled to a free shaft end of the auxiliary diesel/generator unit (10, 11),



a small portion of the exhaust gases of the marine diesel engine (2) being fed via a feed line (21) into the exhaust-gas system on the inlet side of said supercharging turbine of said auxiliary diesel engine (10).

4,760,703

INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

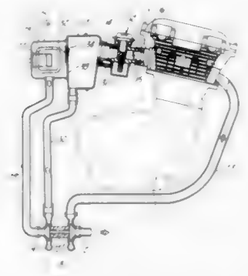
Shunji Minami, Fukuroi; Yasuo Nakao, and Kazuhiko Nomura, both of Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Oct. 19, 1981, Ser. No. 312,679

Claims priority, application Japan, Oct. 25, 1980, 55-149936; Dec. 26, 1980, 55-188950; Dec. 26, 1980, 55-188951; Apr. 16, 1981, 56-57751

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—605.1 27 Claims



1. In an induction system for a supercharged internal combustion engine having an intake, an inlet passage to a chamber of said engine, means for cyclically opening and closing the communication of said inlet passage and said chamber for causing pulsating pressure variations in said inlet passage, a supercharger having an inlet, a compressor element and an outlet, and passage means communicating said intake with said inlet passage without flowing across said supercharger compressor element, communicating said intake with said supercharger inlet, and communicating said supercharger outlet with said inlet passage, the improvement comprising reed valve means for restricting the flow through a portion of said passage means until the pressure thereacross exceeds a predetermined value, and a plenum chamber interposed in said passage means between said reed valve means and said inlet passage, said plenum chamber having sufficient volume to dampen the pulsating pressure variations and prevent their transmission to said reed valve means.

4,760,704

MULTI-CYLINDER ENGINE WITH TURBOCHARGER

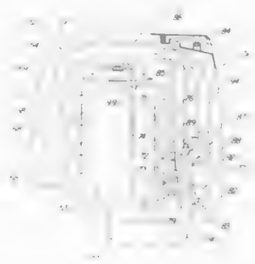
Katsumi Torigai, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 4, 1986, Ser. No. 870,614

Claims priority, application Japan, Jun. 4, 1985, 60-199827

Int. Cl.⁴ F02B *37/00*

U.S. Cl. 60—612 19 Claims



1. In a turbo-charger for an internal combustion engine comprising a first bank of cylinders having a plurality of exhaust ports all discharging into a first exhaust conduit, a second bank of cylinders not in line with said first bank of cylinders having a plurality of exhaust ports all discharging into a second exhaust conduit, said first and said second exhaust conduits being disposed in parallel, side-by-side relationship, a first turbo-charger having a turbine stage having an exhaust inlet communicating with one of said exhaust conduits, and a second turbo-charger having a turbine stage having an exhaust inlet communicating with the other of said exhaust conduits, said turbine exhaust inlets communicating with the respective exhaust conduits at different downstream locations along the length of the respective exhaust conduits.

4,760,705

RANKINE CYCLE POWER PLANT WITH IMPROVED ORGANIC WORKING FLUID

Amnon Yogev, Rehovot, and David Mahlab, Tel Aviv, both of Israel, assignors to Ormat Turbines Ltd., Yavne, Israel

Continuation of Ser. No. 759,520, Jul. 29, 1985, abandoned, which is a continuation of Ser. No. 499,557, May 31, 1983, abandoned. This application Nov. 19, 1986, Ser. No. 933,349

Int. Cl.⁴ F01K *25/10*

U.S. Cl. 60—651 25 Claims



1. In a Rankine cycle power plant having a boiler for vaporizing an organic working fluid which is applied to a turbine in which vaporized working fluid produced by the boiler expands and produces work, a condenser for condensing expanded vaporized working fluid exhausted by the turbine and producing condensate, and means for returning the condensate to the boiler, the improvement comprising:

(a) operating the boiler so that the organic fluid vaporizes at substantially constant pressure and a temperature not exceeding 400° C.;

(b) applying only vaporized working fluid to the turbine; and

(c) using as the working fluid, a compound selected from the group consisting of bicyclic hydrocarbons, substituted bicyclic aromatic hydrocarbons, heterobicyclic aromatic hydrocarbons, substituted heterobicyclic aromatic hydrocarbons, bicyclic compounds where one ring is aromatic and the other condensed ring is nonaromatic, and their mixtures.

4,760,706

METHOD AND SYSTEM FOR CURRENT GENERATION

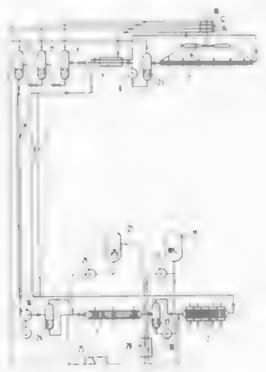
Gamal E. Nasser, Egenhofer Strasse 2, 8039, Puchheim, Fed. Rep. of Germany

Filed Apr. 20, 1987, Ser. No. 40,358

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613725

Int. Cl.⁴ F01K *7/00*

U.S. Cl. 60—675 31 Claims



1. A method for power generation utilizing a coolant circuit comprising:

(A) evaporating a liquid coolant into a coolant vapor at a first level position;

(B) causing said coolant vapor to rise to a second level position, located above said first level position;

(C) said coolant vapor being cooled close to the saturation limit in a counterflow cooling system;

(D) said coolant vapor being liquified into a liquid coolant in at least one forced-draught type air cooler;

(E) said liquid coolant being driven through a pump wherein the pressure of said liquid coolant upon release from said air cooler is increased;

(F) said liquid coolant running through said counterflow cooling system; and

(G) said liquid coolant flowing down to said first level position, wherein said liquid coolant drives a hydraulic turbine which is connected to a generator.

4,760,707

THERMO-CHARGER FOR MULTIPLEX AIR CONDITIONING SYSTEM

Richard D. Dennis, Bridgeport, and John D. Manning, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 780,466, Sep. 26, 1985, abandoned. This application Jun. 3, 1987, Ser. No. 57,673

Int. Cl.⁴ F25B *5/00*

U.S. Cl. 62—197 7 Claims

1. In a multizone air conditioning system of the type having multiple fan coils with fixed orifice refrigerant expansion devices, a portion of which fan coils are inactive at times, an improved bypass apparatus for diverting refrigerant from a high pressure line upstream of an active fan coil to a low pressure line downstream of the fan coil comprising:

means for sensing the temperature of the refrigerant in the low pressure line;

valve means responsive thereto for diverting a portion of liquid refrigerant from the high pressure line to the low pressure line when said sensed temperature reaches a predetermined level;



a bypass refrigerant expansion device disposed between said valve means and the low pressure line to cause said diverted portion to flash to a vapor; and

a heat exchanger for placing said vapor from said bypass refrigerant expansion device in heat exchange relationship with the high pressure line to thereby cool the refrigerant flowing directly to the fixed orifice expansion devices at a pressure substantially equal to that in the high pressure line.

4,760,708

REFRIGERATED SHOWCASE

Masashi Karashima, 88-5, Nakano, Ebina-shi, Kanagawa-ken, Japan

Filed Feb. 2, 1987, Ser. No. 10,840

Claims priority, application Japan, Oct. 29, 1986, 61-255769

Int. Cl.⁴ A47F *3/04*

U.S. Cl. 62—256 4 Claims



1. A refrigerated showcase for circulating refrigerated air to refrigerate goods displayed therein and for preventing ambient air from flowing therein, said showcase comprising:

a front wall having an opening extending therethrough open to the ambient air,

said front wall comprising a duct, a first portion of the duct having an intake port open to said opening through which ambient air is introduced into the duct, and a second portion of the duct having a blow-out port open to said opening and disposed across said opening from said intake port;

a bottom wall extending from said front wall,

said bottom wall comprising a duct open to and extending

VOL 1093 ISS 1 AG 2 1988 UMI

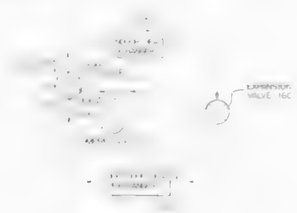
from said first portion of the duct of which the front wall is comprised so as to be continuous therewith;
a rear wall extending from said bottom wall and spaced from said front wall;
said rear wall comprising a duct open to and extending from the duct of which said bottom wall is comprised so as to be continuous therewith,
a top wall extending from said rear wall to said front wall,
said top wall comprising a duct open to and extending between the duct of which said rear wall is comprised and said second portion of the duct of which said front wall is comprised such that a continuous flow path extends in a direction from said intake port through said front wall, said bottom wall, said rear wall, and said top wall to said blow-out port and across said opening;
a gas-permeable spacer extending in said display space and spaced from the duct of which said rear wall is comprised so as to define a refrigerated air introducing space therebetween that is separated from but open to said continuous flow path, said spacer also spaced from said front wall so as to define a display space therebetween in which the goods are displayed; and
air circulating means for circulating refrigerating air along said continuous flow path and into said air introducing space from said continuous flow path so that the refrigerating air permeates said gas-permeable spacer and flows into said display space,
said air circulating means including a shelf extending from said gas-permeable spacer toward said opening extending through said front wall and into the portion of the continuous flow path that extends across said opening for deflecting a portion of the refrigerating air circulating along the continuous flow path into said refrigerated air introducing space.

4,760,709

FIVE-WAY VALVE HAVING SIMULTANEOUS DEFROSTING AND HEATING FUNCTIONS

Tadashi Aoki; Tadatoshi Ashikaga; Hiroshi Kuno; Masakazu Isobe, all of Tokyo, and Hideaki Ohhira, Sayama, all of Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Sep. 10, 1987, Ser. No. 95,391
Claims priority, application Japan, Sep. 11, 1986, 61-212756; May 11, 1987, 62-112504; May 15, 1987, 62-117095; May 15, 1987, 62-117096
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—324.6 27 Claims



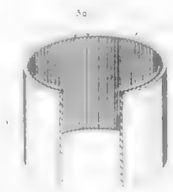
1. A five-way valve operable in a refrigerant flow reversing system comprising:
a hollow valve body;
piston means slidably provided within said hollow valve body to divide the same into a high pressure chamber and a first pressure converting chamber, and having a pressure equalizer for equalizing pressures between said high pressure chamber and said first pressure converting chamber, said high pressure chamber including a first valve port communicating with an outlet of a compressor to receive a high temperature and high pressure refrigerant, a second valve port communicating with an inlet of said compressor, a third valve port communicating with an outdoor heat exchanger, and a fourth valve port communicating with an indoor heat exchanger;
slider valve means slidably provided within said high pressure chamber and mechanically connected to said piston means, for selectively communicating said second valve port for said inlet of the compressor with one of said third and fourth valve ports, whereby said indoor and outdoor heat exchangers are selectively changed for selectively heating and cooling ambient atmosphere thereof;
defrosting valve means provided within said hollow valve body to define a second pressure converting chamber, said second pressure converting chamber including a fifth valve port communicating with said outdoor heat exchanger to pass said high temperature and high pressure refrigerant induced in said high pressure chamber to said outdoor heat exchanger, said defrosting valve means having a passage to receive a high pressure of said refrigerant induced in said high pressure chamber;
a first connecting member for connecting said first pressure converting chamber to said second pressure converting chamber so as to equalize pressures in said first and second pressure converting chambers with each other;
a second connecting member for connecting said first pressure converting chamber to said second valve port for said inlet of the compressor; and,
electromagnetic valve means for selectively opening and closing a passage of said second connecting member so as to communicate said first and second pressure converting chambers with said second valve port in cooperation with said second connecting member, whereby when said electromagnetic valve means opens the passage of said second connecting member to produce a lower pressure than the pressure in said high pressure chamber at least in said second pressure converting chamber, said defrosting valve means is actuated to pass said high temperature and high pressure refrigerant in said high pressure chamber to said outdoor heat exchanger via said fifth valve port while said indoor heat exchanger receives the high temperature and high pressure refrigerant from said high pressure chamber to heat the ambient atmosphere thereof.

4,760,710

ICE MAKING MACHINE

Akishito Takagi, Tokyo, Japan, assignor to Takagi Sangyo Yugen Kaisha, Tokyo, Japan

Filed Apr. 22, 1987, Ser. No. 41,058
Claims priority, application Japan, Nov. 14, 1984, 59-171716
Int. Cl.[4] F25C *1/14*
U.S. Cl. 62—354 7 Claims



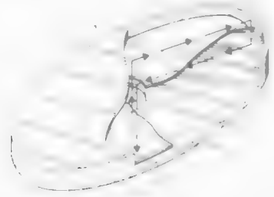
1. An ice making machine comprising: a drum member having an inner wall, said inner wall being formed with surface irregularities over the entire inner peripheral surface thereof; an adiabatic member disposed at an outer peripheral surface of said drum, said inner wall and said adiabatic member defining a cooling medium chamber divided into a plurality of compartments; a plurality of cooling medium inlet and outlet pipes each connected to respective one of said compartments; a rotary shaft rotatably disposed at a central portion of said drum member; a drive member for driving said rotary shaft about its axis; an ice scraping blade fixed to said rotary shaft and extending along a length of said cooling medium chamber; an ice scraping plate following said ice scraping blade and fixed to said rotary shaft; a water sprinkling means for sprinkling water onto said inner wall of said drum; and, a water supply means for feeding water from a water tank to said water sprinkling means.

4,760,711

MULTILAYER COOLING DISC FOR USE IN HIGH TEMPERATURE PROCESSING

Nelson E. Kopatz, Sayre, Pa., and Philip E. Stermer, Waverly, N.Y., assignors to GTE Products Corporation, Stamford, Conn.

Filed Aug. 3, 1987, Ser. No. 81,050
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—373 4 Claims



1. A cooling disc rotatably mounted to spinning means to allow said disc to spin, said disc comprising a top layer, a middle layer, and a bottom layer, said top layer being placed proximate to a high temperature reactor and at least the outer surface of which is made of a material which allows it to act as a substrate against which molten particles are impacted to microatomize said particles, said layers being positioned one above the other with a first space between the bottom surface of said top layer and the top surface of said middle layer, and a second space between the bottom surface of said middle layer and the top surface of said bottom layer, said top and said bottom layers being joined together and stabilized by a peripheral wall around the circumferential edge of said top and said bottom layers, said middle layer being fixedly mounted to said bottom layer, said middle layer being smaller in diameter than the diameters of said top and said bottom layers so that a third space is defined between the inner surface of said peripheral wall and the circumferential edge of said middle layer, said bottom layer and said middle layer having openings through which a cooling fluid passes to said first space to cool said top layer, and thereafter passes by centrifugal force generated by the spinning of said disc and the motion of said fluid through said third space, and exits said disc through said second space.

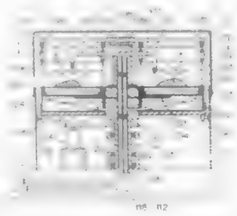
4,760,712

FREEZING APPARATUS

Masahide Hashimoto, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 8, 1987, Ser. No. 47,391
Claims priority, application Japan, May 30, 1986, 61-125537
Int. Cl.[4] F25D *25/02*
U.S. Cl. 62—381 5 Claims

1. A chilling apparatus for chilling articles substantially from the entire surface of each article for quick contact chilling or contact freezing while the articles are being conveyed along a circular passage, which comprises:
a housing having an article passage formed in a side thereof;
a rotary chilling plate in said housing which receives the articles successively on the upper surface thereof, is driven for rotation in a horizontal plane, and is chilled over the lower surface thereof by a refrigerant;
an annular tube formed of a flexible sheet, placed over the rotary chilling plate so as to cover the articles in contact with the upper and lateral surfaces of each article, and chilled by a refrigerant circulated through the interior thereof;



means for synchronously rotating the chilling plate and the annular tube about a vertical axis; and means adjacent said article passage for continuously lifting said annular tube from said chilling plate to permit articles to be fed to and taken out from the space therebetween.

4,760,713

MULTIPLE HEAT SINK COOLING SYSTEM FOR A BURST POWER FUEL CELL

John C. Trocciola, Glastonbury, and Donald R. McVay, Simsbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 17, 1986, Ser. No. 931,593
Int. Cl.[4] F25D *17/02*
U.S. Cl. 62—434 8 Claims



1. A multiple heat sink cooling system for a space based heat generating device characterized by: a coolant; means for containing said coolant; a plurality of heat sinks, each heat sink having a frozen medium disposed therein and in mutual fluid communication with said device; means for directing said coolant from said containment means, through said device to a first heat sink, wherein said coolant is contacted with said frozen medium disposed therein, such that a desired coolant stream temperature is achieved; means for directing said cooled coolant from said first heat sink through said heat generating device to a second heat sink; and, means for controlling the sequential progression of coolant flow through said device, such that cooling is effected by the progressive consumption of said frozen medium disposed within the plurality of heat sinks.

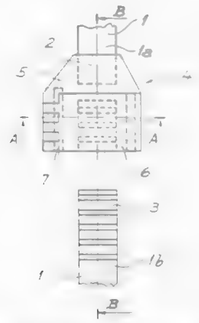
VOL 1093 ISS 1 AG 2 1988 UMI

4,760,714

ARTEFACT BAND WITH BONDED CLASP

Elmar Mock, Pery, and Jean-Marie Hotz, Frinvillier, both of Switzerland, assignors to ETA SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Mar. 26, 1986, Ser. No. 844,439
Claims priority, application France, Apr. 2, 1985, 85 05108
The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.
Int. Cl.[4] A44C 5/00
U.S. Cl. 63—3 14 Claims



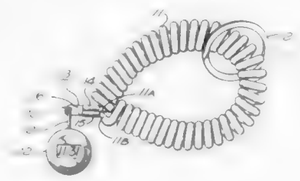
1. An artefact including at least a first band of generally elongated shape and a clasp secured to a first end of said first band to connect said first end to a second end of said first band or to one end of another band, wherein said first end of said first band is made of a first thermoplastic plastic material having a first melting temperature, wherein said clasp comprises a first portion which is made of a second thermoplastic plastic material having a second melting temperature greater than said first melting temperature and having at least a part thereof surrounding and immovably bonded to said first end of said first band, wherein said clasp comprises a second portion hingedly mounted on said first portion and movable relatively thereto to open and close said clasp, said first and second clasp portions defining therebetween, when the clasp is closed, a cavity for receiving said second end of said first band or said one end of said other band, and wherein at least one of said first and second clasp portions comprises means able to cooperate with compatible means provided on said second end of said first band or on said one end of said other band to fasten said second end of said first band or said one end of said other band in said cavity when the clasp is closed.

4,760,715

RESILIENT WRIST BRACELET

Philip M. Ramos, Jr., 15315 Cornet Ave., Santa Fe Springs, Calif. 90670

Filed May 19, 1986, Ser. No. 864,535
Int. Cl.[4] A44C 5/04, 5/00
U.S. Cl. 63—5.2 4 Claims



1. A helical loop plastic bracelet comprising:

a helix length of substantially moisture impervious resilient material having a pair of ends and a central opening within the turns of said helix length of predetermined inside diameter;

a ring encircling said helix length providing a support for objects such as keys to be carried by said bracelet;

an end tab for joining said ends together to form a closed bracelet comprising an elongated body of deformable material such as metal defining a pair of passages for confining said ends in rigid relationship;

said end tab including an extension having a opening therethrough for securing an additional object to be carried on said bracelet;

said end tab having a maximum dimension transverse to the length of said elongated body less than the inside diameter of said helix length whereby said end tab may be stored within said helix when not in use carrying an object.

4,760,716

METHOD AND CIRCULAR KNITTING MACHINE FOR PRODUCING KNIT GOODS WITH COMBED-IN FIBERS

Peter Artzt; Gerhard Egbers, both of Reutlingen; Helmut Grimm, Neckartailfingen; Klaus Kunde, Kohlberg; Adolf Seidel, Reutlingen; Helmut Hascher, Stuttgart; Wolfgang Kolb, Reutlingen; Erwin Schäberle, Gäufelden, and Peter Wachsmuth, Leinfelden, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Filderstadt, Fed. Rep. of Germany

Filed Sep. 13, 1985, Ser. No. 775,523
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433642
Int. Cl.[4] D04B 9/12
U.S. Cl. 66—9 B 10 Claims



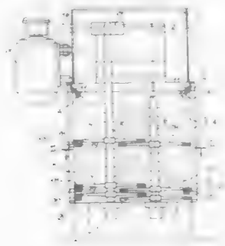
1. A method of producing knit goods having combed-in fibers with a preselected fiber density on a circular knitting machine having a needle cylinder with needles and a carding unit with a feeding means for feeding a band of fibers, a separating cylinder for receiving said band, a detachment zone and a combing-in zone, comprising the steps of: rotating said needle cylinder at a variable rotary speed for moving said needles through said combining-in zone; rotating said separating cylinder independently of said needle cylinder rotary speed at such a high speed that said band is separated into single fibers and said fibers are substantially fully detached from said separating cylinder within said detachment zone and contactlessly inserted into said needles within said combining-in zone; delivering an amount of said band to said separating cylinder in correspondence with said preselected fiber density at a rate synchronous with the needle cylinder rotary speed; and substantially keeping constant said preselected fiber density when the needle cylinder rotary speed abruptly changes by reducing said synchronous rate when the rotary speed of the needle cylinder abruptly decreases, and by increasing said synchronous rate or limiting to a preselected value the acceleration of the needle cylinder, when the rotary speed thereof abruptly increases.

4,760,717

WASHING MACHINE FOR WASHING OFF OR SEPARATING PLASTIC FILM FROM PAPER OR CELLULOSE FIBERS OR OTHER POLLUTANTS AND METHOD RELATING THERETO

Giuseppe Ponzielli, Milan, Italy, assignor to Fibropolimeri S.R.L., Italy

Filed Jan. 2, 1985, Ser. No. 688,169
Claims priority, application Italy, Jan. 10, 1984, 19094 A/84
Int. Cl.[4] D21D 5/28
U.S. Cl. 68—181 R 5 Claims



1. A washing machine for separating plastic material pieces from contaminants, the latter being smaller in size than said pieces, by a batch process comprising

a container having a substantially flat bottom for receiving said plastic materials pieces, contaminants and water, said container having a concentric internal wall bearing a plurality of apertures spaced apart from an external wall to form an annular chamber surrounding the interior of said container;

rotary shaft means comprising first and second rotary shafts mounted vertically within said container, said rotary shaft means including a plurality of agitators mounted radially about and disposed along said shafts from the flat bottom of said container for washing and separating said plastic material pieces from said contaminants, said shafts rotating in opposite directions with respect to each other and the agitators of said first shaft overlapping the agitators of said second shaft substantially at a center of said container;

drive means for rotating said rotary shaft means;

inlet means for introducing a water stream into said container;

normally opened fluid outlet means located in the lower section of said external wall substantially at the level of said flat bottom to permit removal of said water and contaminants; and

normally closed gate means located substantially at the level of said flat bottom in the lower part of said container extending through said internal wall and adapted to be opened after said removal of water and contaminants for allowing the forcible centrifugal ejection of washed plastic material pieces from the interior of said container through said opened gate means by limited rotation of said agitators.

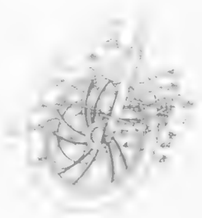
4,760,718

WHEEL LOCK FOR VEHICLES

Yasuyuki Muramatsu, Iwata, and Shoji Nakamichi, Hamakita, both of Japan, assignors to Kabushiki Kaisha Aisishi, Iwata, Japan

Filed Sep. 5, 1986, Ser. No. 904,509
Claims priority, application Japan, Sep. 6, 1985, 60-1970133
Int. Cl.[4] E05B 73/00
U.S. Cl. 70—18 7 Claims

1. A wheel lock for a vehicle wheel having at least one opening, said lock comprising a plurality of rigid rod shaped members pivotably connected to each other at adjacent ends by a pivot connection, said rod shaped members having a cylindrical portion formed at at least one of their ends, said pivotal connections including a pivot pin which is concealed within the adjacent cylindrical ends of said rod members to



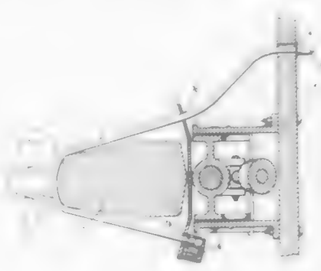
prevent attack, at least two of said rod members being detachable connected to each other so as to permit said members to be inserted through an opening in a wheel and around another element for restraining said wheel relative to said other element.

4,760,719

NON-KEY LOCKING CABLE LOCK FOR MARINE VESSEL

Daniel S. Evans, 1327 Tamarisk Dr., West Linn, Oreg. 97068, and Lawrence P. Hall, 2601 SE. 170th St., Portland, Oreg. 97236

Continuation-in-part of Ser. No. 945,000, Dec. 22, 1986, Pat. No. 4,693,098. This application Aug. 12, 1987, Ser. No. 84,128
Int. Cl.[4] E05B 73/00
U.S. Cl. 70—18 5 Claims



1. A non-key locking cable-lock device for securing an outboard motor to a marine vessel without a key comprising:

a cable passed through an opening in a transom and prevented from completely passing through said opening by a solid ferrule attached at one end and having a phallic head with grooves therein at another end that is passed through a hole on one side of a steel plate on a marine vessel, and is looped around a drive shaft housing of said vessel, and passed through another hole at an opposite end of said plate to which the opening of a locking mechanism is affixed;

said locking mechanism comprising a sliding latch plate biased in a rest position by a spring, said latch plate having in its lower part a semi-circular opening with an arc at the midpoint of the semi-circle into which said phallic head is inserted to push the latch plate upwardly against said spring until the groove in said phallic head plug is aligned with the semi-circle, said mechanism having a lock plug rotatable cylinder at the opposite end and above said semi-circular opening to release said plug upon rotation of

VOL 1093 ISS 1 AG 2 1988 UMI

a key inserted in an opening of said lock plug rotatable cylinder.

4,760,720
PADLOCK PROTECTOR
Juan Grille, 116 E. 51 Place, Hialeah, Fla. 33013
Filed Mar. 9, 1987, Ser. No. 23,837
Int. Cl.[4] E05B 67/38
U.S. Cl. 70—54 2 Claims

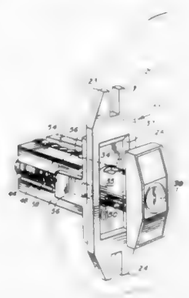


1. A device for protecting padlocks having a shackle member and being removably secured to a latching device, comprising:

A. a tubular cylindrical housing member substantially enclosing said padlock having an inner and an outer end and an inner surface and said housing including cut out portions on said inner end that cooperatively conforms with the shape and dimensions of said latching device the diameter of said inner surface being slightly larger than the width of the padlock; and

B. a locking rod mounted to said inner surface perpendicularly to the longitudinal axis of said tubular housing member and sufficiently close to said inner end so that when said housing member is positioned over said padlock and said rod being mounted within a sufficient close proximity to said latching device to allow said shackle to secure said latching device and said rod and at the same time sufficiently separated from said cut out portions so that exposure of said shackle member.

4,760,721
HANDLE FLANGE ASSEMBLY
Robert Steinbach, Glendale Heights, Ill., assignor to Chicago Lock Company, Chicago, Ill.
Continuation-in-part of Ser. No. 822,838, Jan. 27, 1986, abandoned. This application Mar. 27, 1987, Ser. No. 30,560
Int. Cl.[4] E05B 13/10
U.S. Cl. 70—208 2 Claims



1. In a handle lock assembly of the type including a handle formed integrally with a handle lock barrel reciprocally carried relative to a lock stud, the lock stud having an interiorly threaded end for threadedly engaging a fixed stud aperture, the handle lock barrel and lock stud being carried within a fixed lock guide formed integrally with a handle flange which includes a handle recess into which the handle may be lockingly secured by a bolt provided in the lock carried in the handle for securing said handle within the confines of the handle shaft, the improvement comprising,

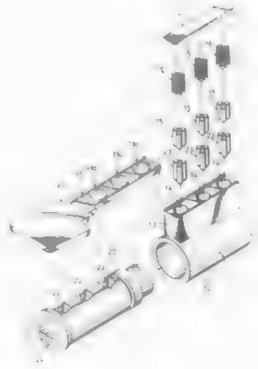
bolt shield means carried on said lock guide extending for a short distance down the length of said lock guide sufficient to prevent access to the bolt securing the handle relative to the handle flange when in the locked position,

said bolt shield means formed integrally with said lock guide,

said bolt shield means and said lock guide together totally encircling and enclosing that portion of the lock guide wherein the bolt securing the handle relative to the handle flange is positioned,

whereby unauthorized access to the bolt securing the handle lock within the handle recess when in the locked position is obviated.

4,760,722
CYLINDER LOCK
Yaw-Shin Fann, Chiayi, and Rong-Fan Wu, Chiayi Hsien, both of Taiwan, assignors to Tong Lung Metal Industry Co. Ltd., Chiayi, Taiwan
Filed May 21, 1987, Ser. No. 52,382
Int. Cl.[4] E05B 27/02
U.S. Cl. 70—358 17 Claims



1. A cylinder lock comprising,

a housing,

a cylindrical body mounted rotatably in said housing,

at least one group of first pin-tumblers in said cylindrical body, said group of said first pin-tumblers including sub-groups of said first pin-tumblers, each of said sub-groups comprising at least one central first pin-tumbler and at least three surrounding first pin-tumblers which are adjacent side by side to each other, the axes of said first pin-tumblers lying in different parallel longitudinal planes normal to a diametrical plane of said cylindrical body,

at least one group of second pin-tumblers comprising a sub-group of second pin-tumblers disposed in said housing complimentary and aligned with said first pin-tumblers and comprising at least one second central pin-tumbler and at least three second surrounding pin-tumblers,

at least one group of first tumbler bores disposed in said cylindrical body, each of said first tumbler bores receiving each sub-groups of said first pin-tumblers,

at least one group of second tumbler bores in said housing complimentary and aligned with said first tumbler bores,

means for urging said second pin-tumblers to extend into said first bores so as to prevent rotation of said cylindrical body, said first pin-tumblers being moved into a key hole by said second pin-tumblers, and

a key complimentary with said key hole and having at least one planar side on which are provided projections or recesses adapted for moving said first pin-tumblers to move in turn said second pin-tumblers out of said first bore so as to thereby permit said cylindrical body to rotate.

4,760,723
ELONGATION CONTROL SYSTEM
Yoshiaki Nakagawa, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Jul. 8, 1986, Ser. No. 883,045
Claims priority, application Japan, Jul. 9, 1985, 60-151893
Int. Cl.[4] B21B 37/12
U.S. Cl. 72—8 3 Claims



1. A system for controlling the elongation of a work to be rolled by a rolling mill through control of the rolling load in said rolling mill and control of tension on said work, comprising:

an elongation detector for measuring the actual elongation of said work being rolled by said rolling mill,

an elongation control unit for controlling a press-down device of said rolling mill in accordance with the difference between said actual elongation measured by said elongation detector and a preset reference elongation,

a device for holding the rolling load of said press-down device as it is when the elongation detected by said elongation detector accords with said reference elongation,

a plurality of feed rate controllers, provided respectively on the exit side and on the entrance side of said rolling mill, for controlling the rates of feed of said work by work feeders based on tensions detected by tension detectors which detect the tension on said work on the exit side of said rolling mill and the tension on said work on the entrance side of said rolling mill, respectively, and

a feed rate corrective controller for correcting the feed rate control of said feed rate controllers, according to the difference between the press-down position of said press-down device corresponding to the rolling load held in said rolling load holding device and a target press-down position.

4,760,724
METHOD OF AND APPARATUS FOR CONTROLLING OPERATION OF A CROSS HELICAL ROLLING MILL
Shuji Okazaki; Mikio Kodaka; Masahiro Kagawa; Shiro Hatakeyama; Teruo Kobayashi; Kingo Sawada, all of Aichi, and Shobei Kanari, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Mar. 6, 1986, Ser. No. 836,977
Claims priority, application Japan, Mar. 13, 1985, 60-048135; Nov. 1, 1985, 60-243894; Dec. 25, 1985, 60-290764
Int. Cl.[4] B21B 19/04
U.S. Cl. 72—19 2 Claims



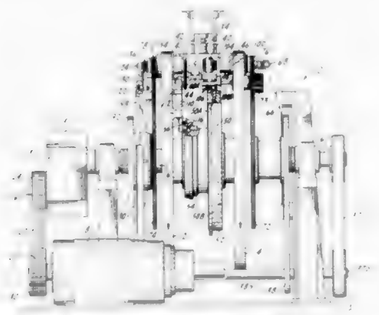
1. A method of controlling the operation of a cross helical rolling mill of the type having a pair of work rolls arranged at respective predetermined lead angles, and a pair of power-driven drive roller shoes arranged obliquely at predetermined lead angles on both sides of the rolling region formed between both work rolls, said method comprising: controlling the rotation speed of each of said drive roller shoes in synchronism with the speed of rotation of the rolled material such that the difference in peripheral speed between each of said drive roller shoe and said rolled material falls within a predetermined range; simultaneously with the control of the speed, controlling the driving torque applied to each of said drive roller shoes; and maintaining the torques of said drive roller shoes higher during the rolling of both longitudinal end portions of said material than during the rolling of longitudinal intermediate portions of said material.

4,760,725
SPIN FLOW FORMING
Andrew Halasz, Crystal Lake, Ill., assignor to Ball Corporation, Muncie, Ind.
Filed May 2, 1986, Ser. No. 859,026
Int. Cl.[4] B21D 19/06
U.S. Cl. 72—84 28 Claims

1. A cyclically operable machine for imparting a predetermined necked-in configuration to the open ends of thin cylindrical metal shells while spinning the shells about their axes and rolling the configuration, said machine having: spaced coaxial tools for spinning a shell and configuring its open end respectively including a rotatable spindle-mounted chuck for clamping the end of the shell opposite said open end to spin the shell and, for said open end, a rotatable mandrel eccentrically carried on a radially oscillatable mandrel shaft and positionable inside the shell in opposition to an external die forming roller provided to cooperate with the mandrel to impart said configuration, said die forming roller being capable of radial movement mechanically independent from movement of the corresponding mandrel; a shell support to locate a shell thereon between the tools, with the tooling repeated in identical sets are regular intervals about and supported between a pair of rotatable wheels synchronized for rotation about a common axis; a first substantially annular cam track presented by a first

VOL 1093 ISS 1 AG 2 1988 UMI

stationary cam drum, said first cam track being substantially centered on the axis of the wheels, said chuck and its spindle of each set of tooling being carried by a corresponding slide for lateral movement toward and away from the mandrel of the corresponding set of tooling, and said slide having a cam follower engaged with said first cam track to induce such lateral movement to present said open end of a shell in encompassing relation to the mandrel and afterwards to withdraw the shell from the mandrel; a second substantially annular cam track presented by a second stationary cam drum, said second cam track being substantially centered on the axis of the wheels, each set of tooling further including support means supporting the corresponding external die forming roller for said radial movement toward and away from the open end of a shell, said die roller support means of each set of tooling including a second cam follower coupled with said second cam track to induce such movement of said support means for the corresponding die roller; said first and second cam tracks being oriented wherein, as the wheels revolve a set of tooling about



said common axis of the wheels and first and second cam tracks to cause the corresponding first and second cam followers to follow the associated cam tracks, the first cam track causes the corresponding slide and supported shell to laterally advance toward the corresponding mandrel until the mandrel is inside the open end of the shell, the second cam track then causes the corresponding die forming roller to advance toward and engage the outside of the shell and thereby cooperate with the mandrel to impart the predetermined necked-in configuration to said open end of the shell while it is spinning, and the first cam track finally causes the slide and shell to retract laterally away from the mandrel, sequentially; means to oscillate the shaft on which the internal mandrel is eccentrically mounted thereby to orbit the internal mandrel into contact with the inside of the shell at said open end thereof at least as of the time the forming roller is to become engaged with the shell, and to radially orbit said mandrel out of contact after said predetermined necked-in configuration has been imparted and prior to the retraction of the slide and shell laterally away from the mandrel; and means to spin the chuck to spin the shell.

4,760,726

BEND ARM APPARATUS FOR TUBE BENDING MACHINE WITH CAMMED CLAMP DIE ARRANGEMENT

Zeno P. Traub, Vista, Calif., assignor to Eaton Leonard Technologies, Inc., Carlsbad, Calif.

Filed Sep. 25, 1987, Ser. No. 101,063
Int. Cl.[4] B21D *7/04*
U.S. Cl. 72—149 32 Claims

1. A bend arm apparatus for a bending machine, the bend arm apparatus being pivotable relative to a pivot axis with a bend die on the pivot axis, the bend die having a groove therein for at least partially receiving a workpiece therein, said apparatus comprising:

housing means coupled to the bending machine for pivoting about said pivot axis;

clamp die means including a clamp die having a groove therein for mating coaction with the groove of the bend die for defining a workpiece clamping opening generally for clamping the workpiece within the opening;

means for mounting said clamp die means to said housing means for at least partially controlling the movement of said clamp die means relative to said housing means in a first direction generally perpendicular to said pivot axis,



and in a second direction generally transverse to said first direction;

motive means; and

cam means in cooperative interengagement with said motive means and said clamp die means for (a) at least partially controlling movement of said clamp die means in said first and second directions, and (b) for controllably transferring the force of said motive means to said clamp die with said clamp die aligned with said bend die and moving in said first direction for providing clamping pressure of the clamp die to the bend die with the workpiece in said opening.

4,760,727

ELECTRIC BEND HEAD FOR BENDING TUBES

Thomas A. Van Landingham, Wyoming, Mich., assignor to McInerney Incorporated, Grand Rapids, Mich.

Filed Jun. 29, 1987, Ser. No. 67,370
Int. Cl.[4] B21D *7/04*
U.S. Cl. 72—149 6 Claims



1. In an electric bend head for bending tubes:

a frame;

a gear box housing mounted upon said frame;

a main shaft rotatable upon a first axis extending through said frame and journaled through and upon said housing and outwardly thereof;

a secondary shaft coaxial of said main shaft and journaled within and upon said housing and projecting therefrom;

a rotatable worm gear within said housing coaxially mounted upon and secured to said secondary shaft;

a worm drive gear journaled within and upon said housing upon a second axis laterally spaced from and at right angles to said first axis and in mesh with said worm gear;

a variable speed reversible electric motor upon said frame having a drive shaft;

transmission means between and interconnecting said drive shaft and worm drive gear;

a secondary circular drive plate outwardly of said housing coaxial to, mounted upon and secured to said secondary shaft and rotatable therewith;

a circular main drive pate spaced from and overlying said secondary plate coaxial to, mounted upon and secured to said main shaft;

a bend die of semicircular shape having an outwardly opening channel of semicircular cross-section of a radius corresponding to the radius of the tube to be bent, adapted to receive a portion of said tube, coaxial of, mounted upon and secured to said main plate;

a clamp die slidably mounted upon said main drive plate having upon one side a laterally opening channel of corresponding cross-sectional shape having a retracted position and a pipe clamping position engaging said bend die and retainingly engaging said tube therebetween;

a follower between and interconnecting said plates whereby initial power rotation of said secondary plate cams said follower and clamp die to a clamping position, and successively rotates said bending die over a predetermined arc with the radius of the bend in said tube corresponding to the radius of said bend die; and

a servo-controlled variable speed drive connected to said motor drive shaft, having a position command capability to facilitate present bend angle programming.

4,760,728

METHOD FOR REDUCING WIDTHS OF HOT SLABS

Hideyuki Nikaido; Takayuki Naoi, both of Kurashiki; Atsushi Komori, and Mitsuo Nihei, both of Hitachi, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Hitachi, Ltd., Tokyo, both of, Japan

Filed Oct. 21, 1986, Ser. No. 921,549
Claims priority, application Japan, Nov. 22, 1985, 60-261307
Int. Cl.[4] B21J *5/00*
U.S. Cl. 72—407 3 Claims

1. A method of reducing widths of hot slabs using eccentric presses for reciprocatively driving through sliders width reduction heads to which are respectively attached a pair of anvils movable toward and away from each other in width directions of the hot slabs, each said anvil having a parallel portion in parallel to a feeding direction of the hot slabs and an inclined portion on an entry side in the feeding direction, comprising steps of setting a distance to reduce a widths of a slab either side by said anvils by moving said width reduction heads toward and away from said sliders, and feeding the hot slab intermittently with a pitch determined by a shape of said anvils and reducing conditions to effect the reduction in width of the slab in succession, wherein the method comprises steps of setting a distance between said anvils corresponding to a lower dead point of a crankshaft of each of said eccentrical presses at a value somewhat wider than a width of the hot slab, then feeding the hot slab to a predetermined position relative to the anvils, adjusting each of said width reduction heads in a direction opening the anvils during an opening stroke of the slider to obtain a distance to be reduced by one anvil in a first stage preforming, then effecting the first stage preforming during a closing stroke of the slider, thereafter adjusting each of said width reduction heads to obtain a distance according to an aimed reduced distance in the same manner as in the first stage preforming and effecting preforming during a closing stroke of the slider in the same manner as in the first stage in required times, and wherein the method further comprises steps of making a minimum distance between the anvils equal to the aimed reduced distance in steady width reduction of the hot slab, setting the distance to be reduced of the hot slab



within a range in which the anvils and the hot slab do not interfere with each other during its advancing, feeding the hot slab during the opening stroke of the slider through a distance determined by the distance to be reduced and an angle of the inclined portion on the entry side, and repeating the cycle for reducing to the aimed reduced distance during the closing stroke of the slider to effect the reduction in width progressively.

4,760,729

DUAL RAM PRESS

Elton G. Kaminski, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Continuation of Ser. No. 845,222, Mar. 27, 1986, abandoned.
This application Jan. 6, 1988, Ser. No. 140,878
Int. Cl.[4] B21D *51/44*
U.S. Cl. 72—456 4 Claims

1. A metalworking press comprising:

(a) a primary ram for suspending an upper tooling member, said primary ram secured to upper ends of a plurality of driving rods designed to reciprocate vertically;

(b) a primary press bed stationarily positioned beneath said primary ram for mounting a lower tooling member, said primary press including a plurality of holes for permitting said driving rods to reciprocate therethrough;

(c) a secondary ram positioned beneath said primary press bed for suspending another upper tooling member, said secondary ram secured to lower portions of said plurality of driving rods;

(d) a secondary press bed stationarily positioned beneath said secondary ram for mounting another lower tooling member, said secondary press bed having a plurality of holes, whereby said driving rods extend past said secondary ram and into said holes in said secondary press bed to insure proper alignment between said secondary ram and said secondary press bed and to prevent lateral movement of said secondary ram;

(e) means to vertically reciprocate said primary ram with

VOL 1093 ISS 1 AG 2 1988 UMI

said secondary ram whereby when said means moves said primary ram downwardly, said secondary ram moves downwardly and when said means moves said primary ram upwardly, said secondary ram moves upwardly, said means comprising said driving rods secured to said primary ram and said secondary ram so that said rams move in unison;

(f) an endless belt mounted about a driven drum and a free-



wheeling drum, said drums mounted on said primary press bed, said endless belt including a means to secure at least one workpiece thereon, said endless belt traversing a path which extends between said primary ram and said primary press bed; and

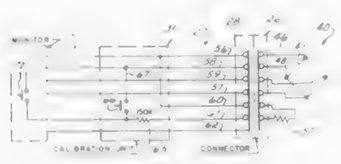
(g) means mounted on said secondary press bed for feeding a strip of sheet material between said secondary ram and said secondary press to form a plurality of components from said strip of sheet material.

4,760,730

CALIBRATION SYSTEM FOR BLOOD PRESSURE TRANSDUCER

Thomas P. Frank, Dublin, and Jeffrey L. Thompson, Columbus, both of Ohio, assignors to Medex, Inc., Hilliard, Ohio

Filed Jul. 14, 1987, Ser. No. 72,909
Int. Cl.[4] G01L *27/00*
U.S. Cl. 73—4 R 6 Claims



1. In a physiological pressure transducing system having a monitor, a transducer assembly including a six contact first connector and bridge-type transducer element having four legs, two excitation leads and two signal leads between said monitor and said bridge, said leads being connected to four of said contacts, a calibration system comprising:

a factory adjusted calibration resistor mounted on said transducer assembly and connected to the two remaining connector contacts,

a monitor cable connected to said monitor and having six leads and a second connector for connecting said leads to said six contacts,

a calibration unit connected in said monitor cable, said unit including

a shunt resistor having one side connected to one side of said calibration resistor,

a switch connected between the other side of said shunt resistor and one side of one of said bridge legs,

and means connecting the other side of said calibration resistor to the other side of said one bridge leg, whereby, closing of said switch connects said calibration and shunt resistors in series across said one bridge leg

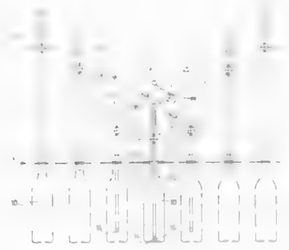
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4,760,731

METHOD AND APPARATUS FOR THE STRESS TESTING OF GLASS CONTAINERS ARRANGED HANGING

Hans-Ulrich Bogatzki, Zurich, Switzerland, assignor to Elpatronic AG, Switzerland

Filed Jun. 3, 1987, Ser. No. 57,489
Claims priority, application Switzerland, Jun. 3, 1986, 02247/86
Int. Cl.[4] G01N *3/34*
U.S. Cl. 73—12 14 Claims



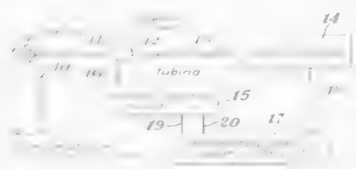
1. A method for the stress testing of glass containers, which are arranged hanging, by impulse action on the bottom of the container by means of an impacting rod, characterised in that the impacting rod is placed down on the bottom of the container and then the impulse action is effected by an adjustable action of force on the impacting rod resting on the bottom of the container.

4,760,732

FLOW PROGRAMMER FOR GAS CHROMATOGRAPHY

Robert A. Bredeweg; Jeffrey R. Larson, and Stephen W. Barr, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 29, 1987, Ser. No. 67,836
Int. Cl.[4] G01N *30/32*
U.S. Cl. 73—23.1 1 Claim



1. In an improved flow programmer for gas chromatography comprising means for controlling the flow rate of a gas chromatography carrier gas controllable at a selected carrier gas flow rate program by an electrical input thereto and a means for generating the electrical input, the means for controlling the flow rate of a gas chromatography carrier gas

incorporating a mass flow meter, wherein the improvement comprises:

that the means for generating the electrical input consists essentially of an analog electrical circuit which produces a selected voltage input program, the circuit comprising at least one operational amplifier and at least one electrical capacitor.

4,760,733

METHOD OF DETECTING CYLINDER PRESSURE IN INTERNAL COMBUSTION ENGINE

Akira Tanaka, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,172
Claims priority, application Japan, Dec. 2, 1985, 60-271123
Int. Cl.[4] G01L *23/22*
U.S. Cl. 73—35 4 Claims



1. A method of detecting cylinder pressure in an internal combustion engine, comprising the steps of:

digitally sampling the output data of a cylinder pressure sensor;

calculating a current rate of change in the cylinder pressure by dividing a difference in the sampled data between consecutive points of the digitally sampled output data of cylinder pressure sensor by a time interval and comparing the current rate of change with a previous rate of change obtained one time earlier;

determining that knocking has occurred if the current rate of change exceeds the previous rate of change by a predetermined amount;

determining whether the difference between the sampled data becomes zero after determining that knocking has not occurred;

defining the maximum value of the sampled digital data to be the maximum cylinder pressure when the difference between the sampled data becomes zero; and

determining whether the difference between the sampled data has turned negative and if negative, determining the crankshaft angle at which the maximum cylinder pressure occurs from a position at which the difference between the sampled data has turned negative.

4,760,734

APPARATUS FOR MEASURING THE RHEOLOGICAL PROPERTIES OF MATERIALS

Bryce Maxwell, 19 McCosh Cir., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 826,955, Feb. 7, 1986, abandoned. This application Dec. 19, 1986, Ser. No. 944,296
Int. Cl.[4] G01N *3/24*
U.S. Cl. 73—60 10 Claims

1. An improved apparatus for measuring the rheological properties of materials which comprises:

(a) a frame means;

(b) a first member mounted for low friction rotation with respect to said frame means, said first member defining an axis extending vertically about which said first member is rotationally movable, said first member defining an upper hole means and a lower hole means therein to facilitate low friction rotation thereof;

(c) a second member mounted on said frame means about said axis, said second member being positioned adjacent said first member to define therebetween an intervening space to receive therein a specimen of material to be tested;

(d) a rotational drive means to drive said first member about said axis to allow relative rotational movement between said first member and said second member to cause shearing of the specimen positioned therebetween within said intervening space;

(e) a releasable retaining means to selectively prevent and permit rotation of said first member;

(f) a stop means to selectively halt operation of said rotational drive means and stop rotation of said first member;

(g) an upper bearing means including a generally cylindrical upper pin means of smaller external diameter than said upper hole means, said upper pin means being fixedly



secured with respect to said frame means and being positioned co-axially with respect to said vertically extending axis of said first member, said upper pin means extending into said upper hole means defined in said first member to a depth that is substantially less than the depth of said upper hole means to spatially dispose said upper pin means from the bottom of said upper hole means to prevent contact therebetween responsive to said first member being thermally expanded vertically due to being heated to test temperature;

(h) a lower bearing means including a lower pin means fixedly secured with respect to said second member and extending upwardly therefrom, said lower pin means being positioned co-axially with respect to said vertically extending axis, said lower pin means extending into said lower hole means defined in said first member; and

(i) an angular position monitoring system for recording the movement of said first member with respect to said frame means.

4,760,735

METHOD AND APPARATUS FOR INVESTIGATING DRAG AND TORQUE LOSS IN THE DRILLING [illegible]

Michael C. Sheppard, Shudy Camps, England, and Christian Wick, Bergen, Norway, assignors to Anadrill, Inc., Sugar Land, Tex.

Filed Oct. 7, 1986, Ser. No. 916,268
Int. Cl.[4] E21B *47/00*
U.S. Cl. 73—151 15 Claims

1. A method for investigating conditions under which a drill string and drill bit excavate a borehole including:

repeatedly measuring the torque applied to the drill string at the earth's surface as the drill bit passes successive depths in the borehole;

substantially simultaneously with the above step, measuring the effective torque acting on the drill bit; and

VOL 1093 ISS 1 AG 2 1988 UMI

comparing the measured applied torque to the measured effective torque to determine the amount of torque lost as



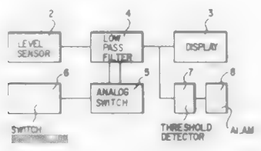
the applied torque is transferred down the drill string and recording the measurements as a function of depth.

4,760,736

ON BOARD INDICATOR FOR MOTOR VEHICLES

Tan D. Huynh, Champs sur Marne, France, assignor to Veglia, Paris, France

Filed Dec. 22, 1986, Ser. No. 946,913
Claims priority, application France, Dec. 30, 1985, 85 19396
Int. Cl.[4] G01D *3/02*
U.S. Cl. 73—430 6 Claims



1. An on board indicator for vehicles, for checking the slow variations of a physical magnitude affected with rapid parasite variation, including a sensor detecting said physical magnitude, with electric output magnitude, means connected to said sensor for displaying said output magnitude and means for damping the parasite variations of the indication thus obtained of said physical magnitude, wherein said damping means include an electric low pass filter disposed between said sensor and said display means and means, controlled for a given time after switch on of the vehicle, for increasing the cut off frequency of said filter.

4,760,737

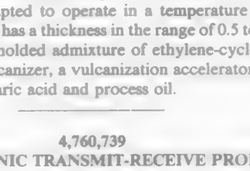
PROCEDURE FOR FLAW DETECTION IN CAST STAINLESS STEEL

David S. Kupperman, Oak Park, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1986, Ser. No. 902,912
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—622 16 Claims

1. A method of detecting flaws in the wall of a tubular metal component in which the microstructure of the metal of the component may vary at different locations on the metal component from elastically isotropic with equiaxed grains to elastically anisotropic with columnar grains and further in which there is a plurality of ultrasonic flaw detection means each of which alternately provide the most effective result as applied to the different microstructures of the metal comprising:

determining at one location on the component the nature of the microstructure of the metal by an ultrasonic method;



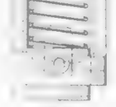
inspecting said tubular metal component at the one location for flaws with the one ultrasonic flaw detection means of the plurality of ultrasonic flow detection means which provides the most effective result based upon the microstructure so determined whereby the component can be inspected for flaws at a particular location.

4,760,738

CONTACT MEDIUM FOR USE IN PROBE OF ULTRASONIC FLAW DETECTOR

Akihiko Katamine, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jul. 8, 1986, Ser. No. 883,220
Int. Cl.[4] G01H *11/08*
U.S. Cl. 73—644 1 Claim



1. A sensor for an ultrasonic flaw detector comprising,

an ultrasonic probe having a leading end,

a contact medium attached to the leading end by an adhesive and adapted to contact a surface of an object to be tested,

wherein said contact medium has a bulk modulus of elasticity in the range of 0.30×10^{10} to 2.00×10^{10} dynes/cm^2, has an acoustic impedance in the range of 1.80×10^5 to 2.67×10^5 g./cm^2-sec, is adapted to operate in a temperature range of $-20°$ C. to 60° C., has a thickness in the range of 0.5 to 2.0 mm, and comprises a molded admixture of ethylene-cyclopentadiene, carbon, a vulcanizer, a vulcanization accelerator, an antioxidant, ZnO, stearic acid and process oil.

4,760,739

ULTRASONIC TRANSMIT-RECEIVE PROBE

Kouji Ichino, Tokyo, Japan, assignor to Kaijo Kenki Co., Ltd., Japan

Filed Jun. 23, 1986, Ser. No. 877,217
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—661 18 Claims

1. An ultrasonic transmit-receive probe comprising:

a probe housing;

said probe housing being formed with at least one through-hole via which the interior of said probe housing communicates with ambient atmosphere;

an oscillator housing received in one end of said probe housing;

an oscillator received in said oscillator housing;

a plug electrically connected to said oscillator and received in the other end of said probe housing so as to outwardly project therefrom; and



enclosing means arranged in said probe housing in a manner to be sealedly connected between said oscillator housing and said plug to sealedly isolate at least said oscillator in said oscillator housing from an interior of said probe housing;

wherein said enclosing means comprise an enclosing tube airtightly or sealingly connected at one end thereof to said oscillator housing so as to communicate therewith and at the other end thereof to said plug, and being spaced from an inner surface of said probe housing in the interior thereof.

4,760,740

VACUUM COUPLED TRANSDUCER

Jesse R. Meisterling, East Hampton, Conn., assignor to Raymond Engineering Inc., Middletown, Conn.

Filed Jul. 22, 1987, Ser. No. 76,773
Int. Cl.[4] G01N *29/00*
U.S. Cl. 73—761 5 Claims



1. Apparatus for attaching a transducer to a fastener element, the apparatus including:

housing means for containing a transducer;

transducer means within said housing means;

seal means at an end of said housing means intended to be mounted on a fastener element;

passage means through said housing means, said transducer means and said seal means; and

vacuum means connected to said passage means to pull a vacuum to bring the transducer into firm engagement with a fastener when mounted on the fastener.

4,760,741

BOREHOLE DILATOMETER WITH INTENSIFIER

Robert Koopmans, R.R. #2, Acton, Ontario, Canada L7J 2L8, and Robin W. Hughes, 65 Waterford Dr., TH 805, Weston, Ontario, Canada M9R 2N7

Filed Feb. 3, 1986, Ser. No. 825,333
Int. Cl.[4] G01N *33/24*
U.S. Cl. 73—784 15 Claims



1. In combination with a borehole dilatometer head having an expandable portion defining an internal cavity, a pressure intensifier for pressurizing the dilatometer head, the pressure intensifier being rigidly interconnected with the dilatometer head and forming therewith a composite unit to be lowered into a borehole, the intensifier comprising, in combination;

a housing for the pressure intensifier defining first and second axially aligned interconnecting cylinders, said first cylinder being of larger diameter than said second cylinder;

connecting means for establishing fluid communication between said second cylinder and said internal cavity of the dilatometer;

a piston having a head portion mounted for non-rotational linear reciprocation within the first cylinder so as to define a first chamber of variable volume ahead of the head portion, and a rearwardly extending plunger portion mounted for simultaneous linear reciprocation within the second cylinder so as to define a second chamber of variable volume rearwardly of said plunger portion;

means for introducing a first hydraulic working fluid into said first chamber;

means for pressurizing the first working fluid within the first chamber so as to displace the head portion linearly in the rearward direction, thereby pressurizing a second working fluid within the second chamber;

means for measuring the linear displacement of the piston and for providing an electrical signal indicative thereof; and

transducer means attached to the pressure intensifier within the borehole for downhole sensing and for measuring pressure changes of the second working fluid and for providing an electrical signal indicative thereof, said linear displacement measuring means comprising a shaft encoder fixedly mounted in the housing, the encoder being coupled to an axially extending shaft journalled for rotation within the housing, said shaft being coupled to the piston by motion translating means for effecting rotational displacement of the shaft in response to axial displacement of the piston.

13. In combination with a borehole dilatometer head having an expandable body portion defining an internal cavity, a

VOL 1093 ISS 1 AG 2 1988 UMI

pressure intensifier for pressurizing the dilatometer head, the pressure intensifier being rigidly interconnected with the dilatometer head and forming therewith a composite unit to be lowered into a borehole, the intensifier comprising, in combination;

a cylindrical housing for the pressure intensifier having upper and lower ends;

a hollow insert located within the housing adjacent the lower end of said housing and defining within the housing upper and lower axially aligned interconnecting cylinder, said upper cylinder being of larger diameter than said lower cylinder;

connecting means for establishing fluid communication between said lower cylinder of the intensifier and said internal cavity of the dilatometer head;

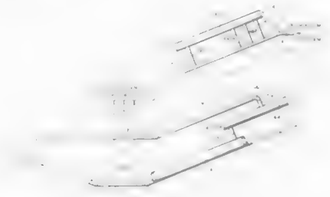
wherein said connecting means comprises a rigid shaft providing an internal passageway communicating with said internal cavity, the shaft having a coupling head at one end, the coupling head extending through an opening at the lower end of said cylindrical housing, and said hollow insert provides an internal passageway communicating with said second chamber, and further provides an external socket into which said coupling head extends.

4,760,742

MULTI-PHASE PETROLEUM STREAM MONITORING SYSTEM AND METHOD

Gregory J. Hatton, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 10, 1987, Ser. No. 36,951
Int. Cl.[4] G01F *15/08, 1/74*
U.S. Cl. 73—861.04 9 Claims



1. An inline multiphase petroleum stream pipeline monitor comprising:

stratifying means connected to an upstream section of the pipeline for stratifying the petroleum stream by causing the stream to flow down a decline at a predetermined angle to the horizontal,

trap means connected to the stratifying means for forming a gas trap,

liquid exit means connected to the trap means and to another section of the pipeline for allowing liquid to exit from the trap means to a downstream section of the pipeline;

accumulator means connected to the stratifying means and to the trap means for accumulating gas from the stratifying means and the trap means,

gas exit means connected to the accumulator means and to the downstream section of the pipeline for allowing gas to exit from the accumulator means to the other section of the pipeline so as to recombine the petroleum stream;

gas flow rate means connected to the gas exit means for providing a signal corresponding to the gas flow rate,

liquid flow rate means connected to the liquid exit means for providing a signal corresponding to the liquid flow rate, and

water cut means connected to the liquid exit means for providing a signal corresponding to the water cut of the liquid; and in which the liquid exit means includes a pipe arranged in a horizontal position and has one end connected to the trap means and whose diameter is less than the diameter of the stratifying means pipe,

a length of pipe connecting the pipe of the liquid exit means to the downstream section of the pipeline having the same diameter as the pipe in the pipeline, and

the liquid flow rate means and the water cut means are connected to the pipe in the liquid exit means.

4,760,743

ACOUSTIC SCINTILLATION LIQUID FLOW MEASUREMENT

Steven F. Clifford, Boulder, Colo., and David M. Farmer, Saanichton, Canada, assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation of Ser. No. 751,118, Jul. 2, 1985, abandoned. This application Apr. 14, 1987, Ser. No. 40,683
Int. Cl.[4] G01F *1/70;* G01P *5/18*
U.S. Cl. 73—861.06 14 Claims



1. A system using acoustic signals for measuring the flow characteristics of water flowing through a predetermined area, said predetermined area having at least first and second opposed sides and a bottom with the distance between the sides being such that an acoustic signal transmitted through said water therebetween would include a direct acoustic signal path and at least one reflected acoustic signal path formed by said acoustic signal reflecting from at least one of the surface of said water and said bottom of said predetermined area, said system comprising:

a receiver array located at said first side of said predetermined area, said receiver array including at least two receivers spaced with respect to one another in a direction having at least one component parallel to the direction of flow of said water through said predetermined area;

a projector array located at said second side of said predetermined area, said projector array including at least two transducers spaced with respect to one another in a direction having at least one component parallel to the direction of flow of said water through said predetermined area, said projector array being mounted with respect to said receiver array so that at least a portion of the acoustic signals transmitted from said transducers pass through said water in a direction substantially perpendicular to the direction of flow of said water so as to be modified relative to flow direction before being received by said receivers;

timing signal generating means for generating signals providing both phase and amplitude references;

acoustic signal generating means connected with said timing signal generating means and said projector array to cause each of said transducers to transmit pulsed acoustic signals through said water; and

signal processing means including signal selecting means, said signal processing means being connected with said timing signal generating means and said receiver array to receive signals from said receivers indicative of received acoustic signals travelling through said direct and reflected acoustic signal paths between said projectors and said receivers, said signal selecting means including separately selecting received acoustic signals from said direct and reflected paths and utilizing at least received acoustic signals travelling through said direct acoustic signal paths for derivation of phase and amplitude information therefrom relative to said phase and amplitude references of said timing signal generating means so that, responsive thereto, said signal processing means provides an output indicative of the speed of said water flowing through said predetermined area.

4,760,744

MASS FLOW METER BASED ON THE CORIOLIS PRINCIPLE

Jens K. Simonsen, Nordborg, and Frands W. Voss, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Sep. 15, 1986, Ser. No. 907,103
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1985, 3534288
Int. Cl.[4] G01F *1/84*
U.S. Cl. 73—861.38 16 Claims



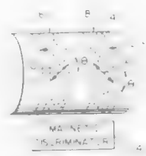
1. A mass flow meter based on the Coriolis principle, comprising, two rectilinear measuring tubes juxtaposed in parallel and mechanically connected at adjacent ends thereof, an oscillation generator connected to said tubes between said ends for driving said tubes in opposite directions, sensor means connected to said tubes on opposite sides of said generator for sensing and signalling relative oscillations of said tubes indicative of the flow through said tubes, individual masses connected to said measuring tubes to make the natural frequency f_n of at least the first harmonic of said measuring tubes different from the natural frequency f_0 of the fundamental oscillation by a factor x which differs from a whole number by at least 0.1.

4,760,745

MAGNETOELASTIC TORQUE TRANSDUCER

Ivan J. Garshelis, Cheshire, Mass., assignor to Mag Dev Inc., Pittsfield, Mass.

Filed Dec. 5, 1986, Ser. No. 938,404
Int. Cl.[4] G01L *3/10*
U.S. Cl. 73—862.36 42 Claims



38. In a method of sensing the torque applied to a member having a ferromagnetic and magnetostrictive region, including the steps of endowing a pair of axially spaced-apart annular bands within said region with respectively symmetrical right and left hand helically directed magnetic anisotropy, applying a cyclically time varying magnetic field to said bands, and sensing the permeability difference between said bands resulting from the application of torque to said member, the difference being indicative of the magnitude of the applied torque, the improvement comprising:

defining said bands at the surface of said member and endowing said bands with magnetic anisotropy of sufficiently large magnitude compared with the random magnetic anisotropy in said member that the contribution to total magnetic anisotropy of any random anisotropy is negligible by instilling a residual stress distribution in each band which is sufficiently extensive that at least one circumferential region within each band is free of residually unstressed areas over at least 50% of its circumferential length.

4,760,746

TORQUE TO YIELD INDICATOR AND METHOD

Gregory M. Kruse, Morton Grove, and Harold P. Patton, Crystal Lake, both of Ill., assignors to Fel-Pro Incorporated, Skokie, Ill.

Filed Feb. 17, 1987, Ser. No. 15,364
Int. Cl.[4] B25B *23/142*
U.S. Cl. 73—862.23 11 Claims



11. A method for insuring specified torquing of a threaded element to a preselected number of degrees of rotation after torquing to a first predetermined amount with a torque wrench, the method comprising the steps of:

providing a torque wrench having a driven shank,

providing an elongated adaptor defining a driven shank receiving socket at one end complementary in shape to said driven shank for corotation therewith, said adaptor further defining a shank at its other end for cooperation with a bit having a complementary socket,

providing a pair of rotatable members coaxial with the driven shank of the torque wrench on said adaptor between said ends, one of which members is secured for corotation with said driven shank and one of which is freely rotatable relative to said driven shank, said rotatable members defining indicia providing a circular scale on one member and an indicator on the other member, and

holding the freely rotatable member against rotation as the driven shank is rotated,

whereby said indicator will signify when rotation by the preselected number of degrees as shown by said circular scale has occurred.

4,760,747

LIQUID SAMPLING AND MEASURING DEVICE

Dale J. Fackler, Boise, Id., assignor to Petro Sales Corporation, Boise, Id.

Filed Apr. 6, 1987, Ser. No. 35,490
Int. Cl.[4] G01N *1/12*
U.S. Cl. 73—864.65 12 Claims

1. A liquid sampling and measuring device comprising:

a tubular casing for holding a liquid, said casing including a liquid conduction port at a lowermost end thereof; and valve means located within said tubular casing, said valve means including a valve seat surrounding said port; a spring biased piston having a seal operable to engage said valve seat for closing said port; a foot member attached to said piston and extending through said port; cam means operable to rotate said piston about its longitudinal axis

VOL 1093 ISS 1 AG 2 1988 UMI

upon retraction of said piston by pressure on said foot member; and piston retention means for holding said



piston in a selected retracted or extended position to open or close said port.

4,760,748

OPTICAL DETERIORATION-ACCELERATING WEATHER AND OPTICAL RESISTANCE TESTING APPARATUS

Shinichi Katayanagi, and Taro Mori, both of Tokyo, Japan, assignors to Suga Test Instruments Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1986, Ser. No. 948,061
Claims priority, application Japan, Apr. 7, 1986, 60-80591
Int. Cl.[4] G01N *17/00*
U.S. Cl. 73—865.6 12 Claims



1. An optical deterioration-accelerating weather and optical resistance testing apparatus for testing the weather and optical resistance of a sample, said apparatus comprising:

a testing vessel;

a light source within said vessel at a central portion thereof;

a sample rotating frame disposed around said light source and rotatably mounted within said vessel for rotating about said light source, said sample rotating frame having a plurality of air vents extending therethrough;

adjusting means for adjusting the degree of opening of said plurality of air vents extending through said sample rotating frame,

a sample holder attached to said sample rotating frame and spaced from said plurality of air vents, said sample holder securing the sample to said sample rotating frame for exposing a front surface of the sample to said light source;

a cold air guide within said testing vessel and disposed around said sample rotating frame so as to enclose said sample holder therein, a rear surface of the sample attached to said sample holder exposed within said cold air guide; and

cold air supply means connected to said cold air guide for introducing cold air into said cold air guide which first cools the rear surface of the sample, passes through said plurality of air vents and then cools the front surface of the sample thereby inhibiting thermal deterioration of the sample by radiant heat generated by said light source during optical resistance testing of the sample.

4,760,749

MOLD PRESSURE SENSOR BODY

Rodney J. Groleau, 1753 Apache Pass, Traverse City, Mich.

Filed Jan. 27, 1987, Ser. No. 7,183
Int. Cl.[4] G01L *5/00*; B29C *45/76*
U.S. Cl. 73—866.5 24 Claims



1. A mold pressure sensor body comprising in plan view two smoothly curving lobes joined by a narrowed neck portion therebetween connecting the lobes together, and means extending from one of the lobes to insert and withdraw the body through a channel in a mold assembly.

4,760,750

VIBRATION ABSORPTION APPARATUS FOR RECIPROCATING OBJECT

Shiroh Kondoh, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 288,783
Claims priority, application Japan, Aug. 1, 1980, 55-105973
Int. Cl.[4] F16H *27/02*
U.S. Cl. 74—89.2 7 Claims



1. A vibration absorption apparatus for an object driven in reciprocating motion comprising: an endless belt; moving means connected to said endless belt, said object being connected to said endless belt for driven motion by said moving means over one path of reciprocation; and a counterweight member connected to said endless belt for driven motion in a direction opposite to said object over another path of reciprocation parallel to said one path of said object.

4,760,751

ROTARY DRIVING MECHANISM

Taisuke Kasamatsu, Maebashi, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Jul. 8, 1986, Ser. No. 883,520
Claims priority, application Japan, Jul. 12, 1985, 60-106526[U]
Int. Cl.[4] F16H *3/34*
U.S. Cl. 74—354 10 Claims



1. A rotary drive mechanism for selectively and rotationally driving at least first and second bodies which are to be driven, said rotary drive mechanism comprising:

a single motor rotatable in forward and reverse directions;

an arm structure pivotally supported on an output shaft rotated by said motor, said arm structure having first, second and third rotary positions;

a first rotation transmitting body fixed to said output shaft;

a second rotation transmitting body rotatably supported on said arm structure, said second rotation transmitting body comprising a first transmitting part which is constantly linked to said first rotation transmitting body and a second transmitting part; and

a third rotation transmitting body having a predetermined rotary load, said third rotation transmitting body being linked to said second transmitting part when said arm structure is in said first rotary position whereby the predetermined load is sufficient to allow the second transmitting part to roll thereon when driven by the first rotation transmitting body,

said second transmitting part disengaging from said loaded third rotation transmitting body when said motor rotates in the forward direction, and said first transmitting part engaging and rotationally driving said first body when said arm structure rotates from said first rotary position to said second rotary position,

said second transmitting part disengaging from said loaded third rotation transmitting body when said motor rotates in the reverse direction, and said first transmitting part engaging and rotationally driving said second body when said arm structure rotates from said first rotary position to said third rotary position.

4,760,752

PLASTIC DEFORMATION RELIEF

Paul J. Wield, and Curt N. Torgerson, both of San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 1, 1987, Ser. No. 33,318
Int. Cl.[4] F16H *55/10*; B23P *19/02*
U.S. Cl. 74—434 7 Claims

1. A press-fit part having a substantially circular body having a substantially circular, central aperture for receiving a shaft therethrough and defining an inner aperture wall, comprising:

deforming means, projecting inwardly from one semicircle region of said wall, for deforming upon insertion of said shaft; and

compensating means in said body, in radially-spaced proximity to a region of said wall which is substantially diametrically opposing said one semicircle wall region, for relieving deformation of said body caused by said shaft, wherein the rotational center axis of said body is offset from the geometrical center rotational axis of said body toward said compensating means such that said part rotates concentrically to said shaft's rotational axis.



4,760,753

SWIVEL HEAD FOR INDUSTRIAL ROBOTS

Ulrich Vetter, Unterschleissheim, and Jürgen Neumeier, Munich, both of Fed. Rep. of Germany, assignors to Hans Heynau GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 801,981, Nov. 26, 1985, abandoned.
This application Apr. 24, 1987, Ser. No. 45,807
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 3444478
Int. Cl.[4] B25J *17/02*
U.S. Cl. 74—479 1 Claim



1. Swivel head for industrial robots with two degrees of freedom and, correspondingly, first and second drive shafts whose axes are coincident, and which are provided, respectively, for swiveling and rotating a tool and are driven by other drive shafts with bevel gears, characterized in that there is provided

a fork-shaped one-piece support housing (1) having first and second spaced arm portions, with the space therebetween defined by generally parallel generally planar surfaces, said arm portions having aligned openings therethrough on a given axis

a swivel housing (2) configured for receiving said second rotating drive shaft therein and having spaced generally parallel generally planar side surfaces insertable into the space between said arm portions in proximate relation with said parallel surfaces of said support housing, said swivel housing being adapted to the shape of the support housing and

means for pivotally mounting said swivel housing to said support housing, said means including a generally hollow cover (3) having a portion thereof insertable through one of said openings in said arm portion, said cover being

VOL 1093 ISS 1 AG 2 1988 UMI

pivotally engaged with said swivel housing, and a bearing bracket (4) insertable through the other of said openings in said arm portions, said bearing bracket being pivotally engaged with said swivel housing, said bearing bracket being configured for rotatably supporting said first drive shaft therein on said given axis, and wherein said cover is configured for receiving at least some of the other drive shafts therein.

4,760,754

APPARATUS FOR TRANSMITTING TORQUE BETWEEN FLYWHEELS IN THE POWER TRAIN BETWEEN THE ENGINE AND THE TRANSMISSION OF A MOTOR VEHICLE

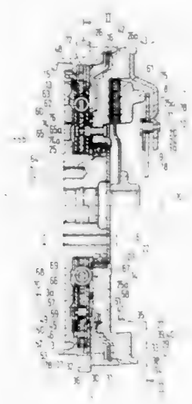
Oswald Friedmann, Lichtenau, Fed. Rep. of Germany, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Feb. 24, 1987, Ser. No. 17,734

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1986, 3606299

Int. Cl.⁴ F16F *15/12*; F16D *3/14*

U.S. Cl. 74—574 **28 Claims**



1. Apparatus for transmission of torque between two flywheels which are rotatable relative to each other, the first of which is connectible with an output element of an engine and the second of which is connectable with an input element of a change-speed transmission in a motor vehicle, comprising a friction generating device having means for opposing rotation of the flywheels relative to each other through a predetermined angle without biasing the flywheels counter to their directions of rotation relative to each other, at least within a portion of said predetermined angle; and two dampers operating in series with one another and with said friction generating device.

4,760,755

DRIVE AXLE HOUSING BLANK

David E. Peck, Rochester, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1986, Ser. No. 844,658

Int. Cl.⁴ F16H *57/02*; B21D *39/00*; B23K *31/02*

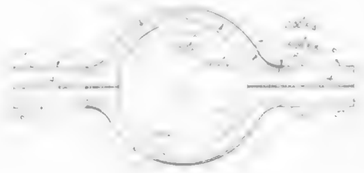
U.S. Cl. 74—606 R **5 Claims**

1. A flat blank for a half of a drive axle housing which is composed of sheet steel cut from a rectangularly shaped strip having a length substantially equal to the length of said housing and of the banjo between the right and left arm portions of said housing, said blank having a width dimension which corresponds to the cross-section of half of said drive axle housing and said blank comprising:

a right arm portion and a left arm portion of said blank along the length dimension thereof at both top and bottom edges of said blank between which there is provided a nodal portion and internodal portion with two top nodes aligned opposite two bottom nodes along the top and bottom edges of said blank, said nodal and internodal portions defining the banjo area;

said right arm portion and left arm portion taken together having a length which is slightly less than the length of the nodal portion and internodal portion taken together;

the right arm portion and the left arm portion of the blank having a uniform width of between 68 and 73% of the width between the upper and lower aligned nodal portions measured at a top of the nodes which is the same as the width of said blank;



the internodal length measured between the top of the nodes being about 33% of a total length of the blank;

a steep slope on an inner nodal portion and a gradual slope on an outer nodal portion of each left and right node to provide a long taper on the outside of the nodes and a short taper on the inside of the node; and

a notch portion of minimum width of about 55–60% of the internodal width located near the center of the internodal length comprising a notch at the top and bottom edges of the blank so that the blank provides a single notch located in the internodal portion of the blank when the blank is bent into a U-shape with the opposite nodes facing each other.

4,760,756

COMBINED ENGAGEMENT-DISENGAGEMENT DEVICE FOR TWO SPEED REDUCTION GEARS WITH COAXIAL SHAFTS

Otto Pabst, Meransen, Italy, assignor to Leitner, S.p.A., Bolzano, Italy

Filed Mar. 10, 1987, Ser. No. 24,085

Claims priority, application Italy, Mar. 11, 1986, 21191/86[U]

Int. Cl.⁴ F16H *37/06*

U.S. Cl. 74—665 L **8 Claims**



1. A combined engagement-disengagement device for two speed reduction gears with coaxial shifts, said device comprising a fixed support interposed between said two speed reduction gears and housing a first hollow shaft which is coaxial to said shafts of said speed reduction gears and in which there is rotatably housed a second independent shaft coaxial to said shafts of said speed reduction gears, there being provided two pulleys rotatably mounted on said first hollow shaft, characterized in that said pulleys are rigid with toothed flanges which engage frontally in internally splined tubular elements within which sleeves slide coaxially but externally to said two shafts of said speed reduction gears, said sleeves being provided with means for their engagement with said shafts and with said tubular elements.

4,760,757

CONTINUOUSLY VARIABLE BELT DRIVEN TRANSMISSION FOR MOTOR VEHICLES WITH A COMPACT PLANETARY GEARING AND CLUTCH AND BRAKE ASSEMBLY

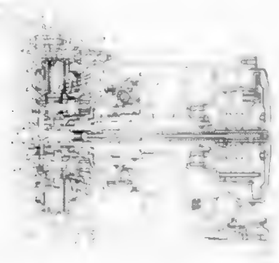
Eugen Svab, Cologne, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 23, 1987, Ser. No. 6,519

Claims priority, application Fed. Rep. of Germany, May 2, 1986, 3603401

Int. Cl.⁴ F16H *37/00*

U.S. Cl. 74—689 **3 Claims**



1. In an infinitely variable belt and pulley drive for an engine powered vehicle;

an engine driven input memer and an output pulley adapted to be connected to a driven member;

a variable pitch driving pulley mounted for rotation on an axis parallel to the axis of said driven member, said driving and output pulleys being adapted to be connected driveably by a drive belt;

a simple planetary gear unit mounted coaxially with respect to said driving pulley between said input member and one side of said driving pulley, said planetary gear unit comprising a sun gear adapted to be connected to said driving pulley, a ring gear and a planetary carrier with pinions connected to said input member;

brake means for selectively braking said ring gear and clutch means for selectively connecting two elements of said planetary gear to establish a driving ratio of unity therein;

a pressure supply pump adjacent the other side of said driving pulley and coaxial therewith;

a pump drive shaft extending through said driving pulley and connecting said input member with said pump;

a clutch servo for engaging said clutch means comprising an annular cylinder connected to said sun gear and an annular piston in said cylinder defining an annular clutch pressure chamber;

said planetary gear unit being located radially inward and generally in the radial plane of said clutch and servo thereby forming a gear unit and clutch servo assembly of minimal axial dimension;

a fluid pressure supply passage in said pump drive shaft, a pressure passage in said carrier communicating with said supply passage, a radial pressure passage extending through said carrier on the side of said planetary gear unit remote from said driving pulley and an axially extending passage extending through said carrier between said pinions not communicating with said clutch pressure chamber.

4,760,758

TRANSMISSION SYSTEM FOR VEHICLE HAVING PLANETARY GEAR TYPE FORWARD AND BACKWARD DRIVE SWITCHING APPARATUS

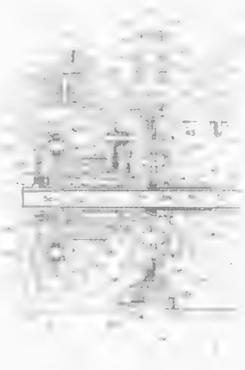
Yoshinobu Murayama, Osaka, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Sep. 10, 1986, Ser. No. 906,236

Claims priority, application Japan, Sep. 11, 1985, 60-200978; Sep. 11, 1985, 60-200979

Int. Cl.⁴ F15H *57/10*

U.S. Cl. 74—764 **17 Claims**



1. A planetary gear type forward and backward drive switching apparatus for a vehicle comprising,

a first and second propelling line transmission shaft mounted coaxially for transmitting output of an engine to means for running the vehicle;

a sun gear mounted on the first propelling line transmission shaft;

a carrier supporting a plurality of planetary gears meshing with said sun gear, and rotatable about said first and second transmission shafts;

a ring gear meshing with said plurality of planetary gears and rotatable about said first and second transmission shafts,

means for selectively frictionally braking said carrier and said ring gear, the means for braking including;

an annular main brake body having at least one braking face for acting on said carrier and said ring gear, said main brake body being shiftable axially along said first and second transmission shafts for selectively braking said carrier and said ring gear, and

brake trigger means for operating the main brake body,

clutch means including a main clutch body having an engaging member for selectively transmitting rotational outputs of said carrier and said ring gear to said second transmission shaft said clutch means further including a clutch trigger for operating said clutch body, and

a forward and backward drive switching lever for operating the forward and backward drive switching apparatus, wherein said forward and backward switching lever is operatively connected to said brake trigger means and clutch trigger means,

said brake trigger means acting on said main brake body so as to brake said ring gear, and said clutch trigger means concurrently acting on said main clutch body so as to operatively connect said carrier to said second transmission shaft in response to a displacement of said forward

VOL 1093 ISS 1 AG 2 1988 UMI

and backward drive switching lever, as a result of which a forward drive is produced, and

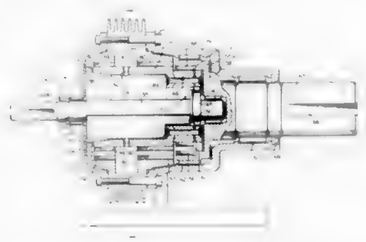
said brake trigger means acting on said main brake body so as to brake said carrier, and said clutch trigger means acting on said main clutch body so as to operatively connect said ring gear to the second transmission shaft in response to another displacement of said forward and backward drive switching lever, as a result of which a backward drive is produced.

4,760,759

GEARED RATIO COUPLING

William L. Blake, 4121 NE. 26th Ave., Fort Lauderdale, Fla. 33308

Filed Apr. 15, 1986, Ser. No. 852,235
Int. Cl.[4] F16H *1/28*
U.S. Cl. 74—804 5 Claims



1. A geared ratio reducer coupling for receiving an input force and rotational speed from an external power source and by an internal gear arrangement reduce an input shaft speed to a determined output speed, this ratio coupling including:

(a) an input shaft and means to receive and rotate said shaft in response to input power;

(b) an eccentric means driven by the input shaft and rotated at the same speed as and with the input shaft;

(c) a floating pinion spool adapted to be orbited in a circular path and eccentrically moved as the eccentric means is rotated, said pinion spool having first and second ring-like gear row portions of outwardly, like-shaped extending gear teeth, with each of the first and second gear portions having the same number of teeth, and with this pinion also having at least one spaced relief between the first and second rows providing a fluid pathway and accumulating means, said pinion also having a third extending row of gear teeth with a different number of teeth than said first and second rows, the first, second and third rows of gear teeth on this pinion spool having a common center line which is a selected distance offset from the center line of the input shaft;

(d) an outer fixed housing which includes a housing cap adapted to receive and retain said input shaft; a central portion having two rows of inwardly-extending gear teeth having a pitch and shape to mate with and engage the first and second rows of gear teeth on the pinion spool, these two rows having a like number of teeth that is greater than the number of teeth as provided on the pinion spool, said outer housing having means to rotatably retain an output shaft on the same center line as the input shaft, said housing having at least in part external fins adapted to dissipate heat generated by the operation of said geared ratio reducer coupling;

(e) means for arraying said output shaft as freely turning and independent of the outer fixed housing by which it is carried, this output shaft carried by at least two anti-friction bearing assemblies mounted in said fixed housing;

(f) means for making the assembled outer housing substantially oil-tight and within said housing providing a determined quantity of gear lubricating fluid, and during actuation of said gear ratio reducer coupling causing said lubrication to flow inwardly and outwardly through apertures provided in the floating spool, with one array of apertures extending through and in communication with the spaced relief in the floating pinion spool, and

(g) a row of inwardly-extending gear teeth carried on the output shaft, the row of teeth having a configuration to mate with the third row of teeth on the floating pinion, the number of teeth on said output shaft greater or less than the number of teeth in the two rows in said fixed housing, which housing in an assembled condition is maintained by a plurality of screws an the like.

4,760,760

CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Motohisa Miyawaki, Chofu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 16, 1986, Ser. No. 907,871
Claims priority, application Japan, Sep. 20, 1985, 60-209711
Int. Cl.[4] B60K *41/16*
U.S. Cl. 74—866 18 Claims



1. A control system for a continuously variable transmission for transmitting the power of an internal combustion engine to driving wheels of a motor vehicle through a clutch, having a drive pulley including a hydraulically shiftable disc and a first hydraulic cylinder for shifting the disc, a driven pulley including a hydraulically shiftable disc and a second hydraulic cylinder for operating the disc, a belt engaged with both pulleys, a transmission ratio control valve having ports and a spool, a first hydraulic circuit having a pump for supplying oil to the first cylinder, through the transmission ratio control valve and to the second cylinder, the system comprising:

first means for detecting operating conditions of said engine and for producing a first signal;

second means responsive to the first signal for shifting the spool of the transmission ratio control valve so as to change the transmission ratio;

third means for detecting closing of a throttle valve of the engine and for producing a closed throttle signal;

fourth means responsive to the closed throttle signal for producing an upshift signal when a value of fluctuation of engine speed at closing of the throttle valve is smaller than a predetermined value for a predetermined time;

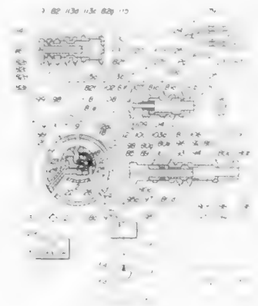
fifth means responsive to the upshift signal for causing the second means to shift the spool of the transmission ratio control valve in upshift direction to upshift the transmission ratio.

4,760,761

CONTROL SYSTEM FOR A DIRECT-COUPLING MECHANISM IN HYDRAULIC POWER TRANSMISSION MEANS OF A TRANSMISSION FOR AUTOMOTIVE VEHICLES

Masao Nishikawa, Nerima; Yoshimi Sakurai, Tanashi, and Takashi Aoki, Fujimi, all of Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Feb. 1, 1985, Ser. No. 697,349
Claims priority, application Japan, Feb. 6, 1984, 59-19792
Int. Cl.[4] B60K *41/02*
U.S. Cl. 74—867 10 Claims



1. In a transmission for an automotive vehicle, of the type including a hydraulic power transmission means having an input member coupled to an internal combustion engine of said vehicle having an intake system and a throttle valve arranged in said intake system, an output member, and a direct-coupling mechanism arranged between said input and output members and operable to mechanically engage said input and output members with each other, a control system for controlling said direct-coupling mechanism, comprising:

first sensor means for detecting a value of the valve opening of said throttle valve;

control means adapted to compare the value of the valve opening of said throttle valve detected by said first sensor means with a predetermined reference value which increases from a value corresponding to a minimum opening of said throttle valve with increase of the speed of said vehicle, and cause said input and output members to engage with each other if the detected value of said valve opening is larger than said predetermined reference value, and cause then to disengage from each other if the detected value of said valve opening is smaller than said predetermined reference value:

second sensor means for detecting a value of the speed of said vehicle; and

reference value setting means for setting said predetermined reference value to a larger value, as the detected value of the speed of said vehicle becomes larger.

4,760,762

METHOD OF MAKING DIE SET LINE

Ivan E. Rudnev, and Viktor V. Kulikov, both of Tolyatti, U.S.S.R., assignors to Volzhskoe Obiedinenie Po Proizvodstvu Legkovykh Avtomobilei, Tolyatti, U.S.S.R.

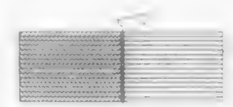
PCT No. PCT/SU85/00025, § 371 Date Aug. 1, 1986, § 102(e) Date Aug. 1, 1986, PCT Pub. No. WO86/05731, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 27, 1985, Ser. No. 903,576
Int. Cl.[4] B23H *9/12*
U.S. Cl. 76—107 R 1 Claim

1. A method of making a die set line comprising the following steps:

producing a blank by electric discharge machining with a wire tool electrode following a program composed in accordance with the theoretical contour of the blank.

stamping said blank in subsequent die sets;

adjusting the program of electric discharge machining in



accordance with the results of stamping said blank in the subsequent die sets; and

making tool electrodes in accordance with said adjusted program for electric discharge machining of the working parts of the blanking die set, the first one in the line.

4,760,763

SELF-GRIPPING CAP REMOVER FOR CHILD RESISTANT MEDICATION CONTAINERS

O. Lee Trick, 10002 Green Tree, Houston, Tex. 77042, and Royel F. Montieth, 3615 Cobleskill La., Missouri City, Tex. 77459

Filed Nov. 12, 1986, Ser. No. 929,604
Int. Cl.[4] B67B *7/44*
U.S. Cl. 81—3.09 9 Claims



1. A hand tool for removing a closure of a child resistant type from a container neck, said closure having the profile of a short cylinder with inwardly directed container engaging means and requiring both downward and rotary action for removal, said tool comprising:

a body of resilient material having a three dimensionally curved upper surface of transition and an oppositely directed planar lower surface having therein at least one recess adapted to recieve said closure therein, a high friction profiled surface on at least an inner end wall of said recess whereby with a closure recieved in said cavity, downward and rotational pressure applied by the palm of the hand on said top surface without the requirement of finger gripping action or finger pressure exertion will cause the release and removal of said child resistant closure by said tool.

4,760,764

PROCESS FOR THE CONTINUOUS MANUFACTURE HOUR GLASS-SHAPED PADS

Raphael De Jonckheere, Bondues, and Jean L. Rousseau, La Croix, both of France, assignors to Boussac Saint Freres B.S.F., Lille, France

Filed Aug. 26, 1986, Ser. No. 900,658
Claims priority, application France, Aug. 27, 1985, 8512807
Int. Cl.[4] B26D *7/32*
U.S. Cl. 83—23 4 Claims

1. A method for continuous manufacture of hourglass-shaped absorbent pads from an absorbent material in the form of a initial continuous strip of uniform thickness and uniform width, having two parallel straight longitudinal edges, comprising continuously feeding said initial strip in a longitudinal path and, while feeding said initial strip in said longitudinal

VOL 1093 ISS 1 AG 2 1988 UMI

path, continuously dividing said strip in the longitudinal direction along a continuous wavy cutting line extending symmetrically relative to the longitudinal median line of said strip and periodically intersecting said longitudinal median line, the period of said wavy cutting line corresponding to the length of an absorbent pad to be manufacturing, into two partial strips of periodically variable width each having one straight longitudinal side edge defined by one of said side edges of the said initial strip and one opposite wavy longitudinal side edge defined by the said wavy cutting line, continuously offsetting the partial strips relative to each other in the transverse direction of the initial strip by a distance at least as great as the minimum width of each said partial strip so as to superpose the said partial strips one on the other, and in the longitudinal direction of the initial



strip by a distance equal to ½, 1½, 2½, etc. periods of the said wavy cutting line, to obtain a composite strip the two longitudinal side edges of which corresponding to the said wavy longtudinal side edges of said partial strips are wavy in a symmetrical fashion, the said composite strip having a continuous central part defined between the said straight side edges of said two superposed partial strips, and two lateral parts defined between the said wavy side edges of said two superimposed partial strips, the said continuous central part having a thickness twice that of said lateral parts, and successively cutting the said composite strip at intervals corresponding to one period of said wavy cutting line, in the transverse direction in the zones of maximum width of said composite strip, into discrete hourglass-shaped absorbent pads.

4,760,765

MOVABLE STACKER FOR A FOOD LOAF SLICING MACHINE

Yoshitaka Nishimoto, and Kanji Tamaki, both of Wakayama, Japan, assignors to Ryowa Reiki Seisakusho, Ltd., Japan

Filed Oct. 13, 1987, Ser. No. 106,867
Claims priority, application Japan, Mar. 20, 1987, 62-67441
Int. Cl.⁴ B26D *7/32*
U.S. Cl. 83—92 **5 Claims**

1. In a food loaf slicing machine including a slicing station into which a food loaf is advanced generally downwardly and in which slices of generally uniform thickness are cyclically sliced from the lower end of the loaf, the slices being allowed to drop down as they are cut, conveyor means disposed below the slicing station and in spaced apart relation therewith for receiving the slices thereon and transporting them outward from the position at which they are received, and a stacker having stack supports disposed between the slicing station and the conveyor means for receiving the slices on its stack supports at a position right under the slicing station, as they are dropped from above, so as to form stacks of N slices thereon and for discharging each stack, as it is formed, onto the conveyor means at a position substantially right below the stacker, said stacker comprising:

1. a pair of rotary shafts disposed at both sides of said conveyor means, one on each side, said rotary shafts being rotatable and up and down movable and having, at their respective upper ends, stack supports mouned thereon, one on each shaft;
2. each of said stack supports being movable along a predetermined closed-loop path downwardly from an intial slice receiving position right below the slicing station at which the stack support receives a first food loaf slice as the slice drops substantially freely from the slicing station, through a range of N−1 additional slice receiving positions each displaced approximately one additional slice thickness downwardly from said initial slice receiving position, rotatably outwardly from the final one of the additional slice receiving positions, then upwardly to same level as the initial slice receiving position, and rotatably to the initial slice receiving position;
3. stack support drive means connected to said pair of rotary shafts for moving said pair of stack supports along the closed-loop path in 2N slicing cycles, said drive means comprising elevation drive means for elevating one of the stack supports from the level of the final slice receiving



position and to the level of the initial slice receiving position, while the other stack support is in downward movement from the initial slice receiving position and to the final slice receiving position, outside said slice receiving positions and at a velocity faster than the velocity of downward movement of said other stack support, and rotation drive means for rotating one of the stack supports outwardly of the final slice receiving position after said one stack support has reached said final slice receiving position and, simultaneously therewith, rotating the other stack support at its most elevated position and toward the initial slice receiving position; and

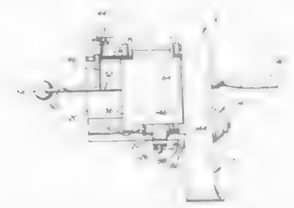
4. the upper surface of said stack supports each having a coefficient of friction to the cut surface of each food loaf slice which is smaller than that between the cut surfaces of food loaf slices so as to enable a stack of slices on the stack support to relatively slip on the stack support at the most lowered position thereof, when the stack support is rotated, so that the stack of slices is freely dropped generally downwardly, said stack support rotation drive means being able to rapidly rotate the stack support momentarily by a force which exceeds the frictional force exerted between the underside of the stack of slices on the stack support and the upper surface of the stack support.

4,760,766

MANUAL PRODUCE CUTTER

R. Stanford Short, Bryan, Ohio, assignor to Nemco, Incorporated, Hicksville, Ohio

Filed Jun. 19, 1986, Ser. No. 876,162
Int. Cl.⁴ B26D *5/20, 1/12;* **B23D** *35/00*
U.S. Cl. 83—356.3 **10 Claims**



1. A produce cutter including a mount, bearing means on said mount, a shaft assembly having first and second ends, said shaft assembly and bearing means including coacting means journalling said shaft assembly from said bearing means against axial shifting relative thereto, disc cutter means carried by the first end of said shaft assembly for rotation therewith, said disc cutter means including abutment disc and cutter blade portions, one of said portions being mounted on said shaft assembly against axial shifting relative thereto and the other of said portions being mounted on said shaft assembly for adjustable shifting axially along said shaft assembly, the second end of said shaft assembly including an axial threaded adjustment screw journalled therefrom against axial shifting relative thereto and including a threaded connection with said other portion.

4,760,767

APPARATUS FOR DETECTING STRING STOP POSITION

Tooru Tsurubuchi, Osaka, Japan, assignor to Roland Corporation, Osaka, Japan

Filed Aug. 12, 1986, Ser. No. 895,640
Claims priority, application Japan, Aug. 27, 1985, 60-188963
Int. Cl.⁴ G10H *3/00*
U.S. Cl. 84—1.16 **4 Claims**



1. An apparatus for detecting at least one stop position in string instruments having at least one tightened string and a plurality of frets for detecting a sound pitch comprising:
electric current supply means for supplying an electric current to at least one string;
each of said plurality of frets being connected to ground;
coil means for surrounding the electric current path from the string and through the fret to ground; and
detecting means operatively coupled with said coil means for detecting the stopped position of the string in response to the voltage generated in the coil means from electric current flowing through a corresponding fret to ground when said corresponding fret and the string contact one another.

4,760,768

MECHANISM FOR SUPPRESSING BOUND OF SWINGABLE ELEMENTS ON A KEY MUSICAL INSTRUMENT

Jun Yamamoto, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Oct. 31, 1985, Ser. No. 793,627
Claims priority, application Japan, Nov. 9, 1984, 59-169180; Nov. 9, 1984, 59-169181; Apr. 12, 1985, 60-76596
Int. Cl.⁴ G10C *3/18*
U.S. Cl. 84—236 **12 Claims**



1. An improved mechanism for suppressing rebound of a pluraity of swingable hammers of a piano from their initial rest position after striking a piano string, said mechanism comprising a plurality of swingable hammers, a seat detached from its corresponding one of said swingable hammers, said swingable hammers having an initial rest position supported by said seat, and at least one pneumatic damper having an air vent and arranged directly supporting said seat where one of said swingable hammers assumes its initial rest position, said pneumatic damper acting under the principle of fluid viscous resistance, said damper upon being acted upon by said hammer after striking a string of said piano suppresses the tendency of said hammer from rebounding from said seat such that said hammer assumes its initial rest position upon said seat.

4,760,769

HIGH-POWER, RAPID FIRE RAILGUN

Louis J. Jasper, Jr., Ocean, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 27, 1987, Ser. No. 43,270
Int. Cl.⁴ F41F *1/02*
U.S. Cl. 89—8 **6 Claims**



1. A projectile launcher comprising:
first and second parallel spaced apart disks, each disk having a periphery and a hole in its respective center and a gap extending from its said center to its said periphery;
said first disk being made of conductive material and having an inner and outer surface;
said second disk having two portions made of conductive material and having two portions made of insulating material and having an inner and outer surface and having a recess in its said outer surface for holding said projectile;
a rotator having a hub concetric with said first and second

VOL 1093 ISS 1 AG 2 1988 UMI

disks, said rotator having first and second arms, spaced a fixed angle apart, said first and second arms each being in contact with said inner surfaces of said first and second disks;

said first arm being made of conductive material; and

said second arm having a conductive material in contact with said inner surface of said second disk and having insulating material in contact with said inner surface of said first disk so that application of a voltage to said first disk and to a conductive portion of said second disk causes said rotator to rotate and creates oppositely directed parallel currents through said disks and causes said projectile to be ejected.

4,760,770

FIRE CONTROL SYSTEMS

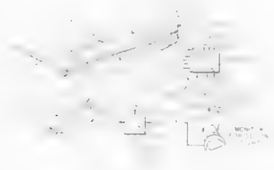
Ralph H. Bagnall-Wild, Helensburgh, Scotland; Clinton E. Evans, Taunton, England, and Gordon R. Smith, Glasgow, Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Oct. 3, 1983, Ser. No. 544,865

Claims priority, application United Kingdom, Nov. 17, 1982, 8232786

Int. Cl.[4] F41G *1/00*; F41H *7/00*

U.S. Cl. 89—41.19 5 Claims



3. A fire control system comprising a platform on which are mounted for elevational movement a gun and a sighting device, the sighting device incorporating generator means providing an electronically-generated graticule therein, having its sight line nominally aligned with the barrel axis of the gun, and being interconnected with the gun by a first tracking link which is arranged to provide for elevational adjustments to the effective in common, and wherein the gun has a muzzle reference mirror at its muzzle end and a direction-finder is carried by the platform adjacent the gun mounting, the direction-finder being mounted for elevational movements, being interconnected with the gun by a second tracking link which is arranged to provide for elevational adjustments to be effective in common, and having its sighting axis directed towards the muzzle reference mirror throughout the range of elevational movements of the gun, the direction-finder being arranged to provide an electrical signal representative of the position of the muzzle reference mirror axis with respect to a datum position throughout the range of elevational movements of the gun, control means being arranged to receive the electrical signal from the direction-finder and being coupled to control said generator means so as continuously and automatically to adjust the position of the graticule in the sighting device to compensate for alignment errors.

4,760,771

PISTONS WITH OIL RETAINING CAVITIES

Alberto Felici, Moncalieri, Italy, and Michael L. P. Rhodes, Rugby, England, assignors to AE PLC, Warwickshire, England
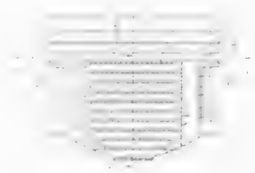
PCT No. PCT/GB86/00103, § 371 Date Dec. 8, 1986, § 102(e) Date Dec. 8, 1986, PCT Pub. No. WO86/05249, PCT Pub. Date Sep. 12, 1986

PCT Filed Feb. 27, 1986, Ser. No. 930,265

Claims priority, application United Kingdom, Mar. 2, 1985, 8505411

Int. Cl.[4] F01B *31/10*

U.S. Cl. 92—159 14 Claims





1. A piston for lubricated reciprocation in an internal combustion engine or a compressor comprising:

a crown,

a gudgeon pin bore,

two skirt portions on opposite sides of said gudgeon pin bore,

a plurality of side-by-side rows of cavities which are formed in each said skirt portion and which are rectangular in shape with two shorter axially extending sides and two longer circumferentially extending sides interconnecting said shorter sides, adjacent cavities in a row having a common shorter side,

a land of generally rectangular shape formed by said skirt portions and extending circumferentially between adjacent rows of cavities for transmitting lateral loads from said piston to an associated cylinder, whereby the cavities hold lubricating oil for passage over said lands and for damping lateral movement of the piston.

4,760,772

VEHICLE AIR-CONDITIONING CONTROL APPARATUS

Hiyosei Horiguchi, and Akira Tezuka, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1987, Ser. No. 127,755

Int. Cl.[4] B60H *1/00*

U.S. Cl. 98—2.01 17 Claims

1. A vehicle air-conditioning control apparatus comprising:

a sunlit illumination sensor including a plurality of photodetectors which have sensitivity characteristics varying with an incident angle of light and which are arranged such that their light receiving surfaces are oriented differently;

a sunlit illumination correction controlling unit responsive to output signals of said plurality of photodetectors to produce sunlit illumination correction controlling signals; and

an air conditioning unit for controlling temperatures in a room of a vehicle in accordance with the sunlit illumination correction controlling signals,

said sunlit illumination correction controlling unit including incident angle calculation means which calculates, on the basis of the output signals of said plurality of photodetectors, an angle the sunlight ray makes to either of the righthand side and lefthand side of the vehicle and an angle of



elevation of the sun relative to a horizontal plane of said vehicle and produces calculation results as the sunlit illumination correction controlling signals,

said air conditioning unit including flow rate distribution control means, responsive to the calculated angle and the angle of elevation, for controlling air supply amounts to be distributed to the righthand and lefthand sides on a horizontal plane within the vehicle room.

4,760,773

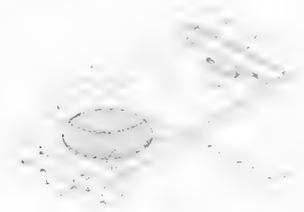
VENTILATOR CLOSURE

Michael F. Pezzulli, 717 N. Harwood St.; Suite 1200, Dallas, Tex. 75201

Filed Nov. 17, 1986, Ser. No. 931,403

Int. Cl.[4] F24F *7/02*

U.S. Cl. 98—42.16 7 Claims



1. A roof ventilation closure assembly comprising:

an elongate plate member having opposed parallel tracks formed along opposed edges;

an opening formed in said plate member at one end thereof;

a door member positioned adjacent the surface of said plate and having opposed edges engaging the parallel tracks for slidable movement along said plate member for selective opening and closing of the opening in said plate, the tracks formed along opposed edges of said elongate plate member extending the entire length of slidable movement of said door member to provide stability and guidance thereto over its full range of movement;

means for restraining the movement of said door past one end of said plate; and

means for mounting the surface of said plate opposite said door adjacent the interior opening of a ventilation means of a roof structure with the opening of the plate in alignment therewith to permit the selective opening and closing of the air passageway of the ventilation means with the slidable movement of said door.

4,760,774

ESPRESSO AND DRIP COFFEE MAKER

Sheng-Chi Lin, Kaohsiung Hsien, Taiwan, assignor to Tsann Kuen Enterprise Co., Ltd., Taiwan

Filed Dec. 22, 1987, Ser. No. 137,379

Int. Cl.[4] A47J *31/30, 31/34*

U.S. Cl. 99—299 4 Claims

1. An espresso and drip coffee maker comprising:

a body including a coupling means provided thereon for mounting removably a coffee bean container on said body;

a water container mounted fixedly on said body and including a cover mounted removably thereon;

a conduit mounted fixedly on said body and communicated with said water container for passage of water from said water container therethrough;

a first heating means for providing heat to said conduit;

an accumulating chamber formed in said body and communicated with said water container for passage of water from said water container therethrough;

a second heating means for providing heat to said accumulating chamber;

a two-way valve mounted between said water container and said conduit and between said water container and said accumulating chamber for guiding water flowing from said water container into either said conduit or said accumulating chamber;

a steam chamber, formed in said body, communicated with said coffee bean container and with said conduit and with said accumulating chamber; and

a check valve for preventing water or steam from flowing back to said water container through said conduit.

4,760,775

METHOD AND APPARATUS FOR HANDLING SHAPED FOOD PRODUCT

Robert W. Hoskins, Jarrettsville, Md., assignor to McCormick & Company, Inc., Hunt Valley, Md.

Filed Feb. 12, 1987, Ser. No. 13,783

Int. Cl.[4] A47J *37/12*

U.S. Cl. 99—353 5 Claims

1. Apparatus for handling a food product treated in a cooking apparatus of the type having a conveying means for receiving an uncooked food material and which shapes the material and conveys the shaped material through a cooking zone to a discharge station, the improvement comprising guide means for controlling the movement and orientation of the shaped and cooked food material between said cooking zone and said discharge station, said conveying means including pulley means, the conveying means being disposed to move around said pulley means to return to a starting position, said pulley means having a generally horizontal axis, said discharge station including a conveyor disposed to move in a plane located vertically below said horizontal axis of said pulley means, diverter means disposed between said pulley means and said conveyor adjacent said discharge station, said diverter means being operable to orient each shaped food material moving from said guide means to the conveyor, said conveying means

VOL 1093 ISS 1 AG 2 1988 UMI

including a plurality of individual food item carrying members, each carrying member having a surface means for imparting a selected shape to a food item at a point prior to entering the cooking zone and to maintain the selected shape as said conveying means moves about said pulley means, said conveying means being an endless conveyor with said carrying members spaced generally equally apart from one another along said endless conveyor, said surface means of each carrying member being employed to move a carried food item while a said respective carrying member is disposed upstream of said pulley means but being effective to release, under the influence of gravity, the respective food item upon movement of the respective carrying member about said pulley means through an angle greater than approximately 90°, said guide means comprising a guide surface extending about said pulley means and



having an end point and being spaced radially outwardly from said horizontal axis a predetermined radial distance corresponding to a perpendicular extent determined by the extent to which said carrying members extend from said endless conveyor so that, as said carrying members move through an angle greater than 90° about said pulley means, an individual food item carried by a said respective carrying member will be permitted to at least partially disengage from said carrying member to engage at least a portion of said guide means until said carrying member passes said end point of said guide means whereupon said respective food item will pass under the influence of gravity downwardly to engage said diverter means disposed substantially vertically beneath said end point of said guide means, said diverter means being effective to orient said respective food item prior to passage of said respective food item to said conveyor adjacent said discharge station.

4,760,776

MOBIL BARBEQUE CART

Donald Beidler, R.D. #2, Box 341, Douglassville, Pa. 19518

Filed Jul. 25, 1986, Ser. No. 890,163

Int. Cl.[4] A47J *37/04*

U.S. Cl. 99—421 H 4 Claims

1. A barbecue cart for broiling comestibles on spits over an open fire in which the barbecue cart includes a structure having a floor, sides, end walls and a removable top; the structure supporting in order of ascending height within the structure:

a plurality of elongated burner tubes each having a single line of gas orifices spaced along the principal axis of the tubes;

a flame shield spaced above the gas jets;

a plurality of spits mounted for rotation adjacent their ends and upon which comestibles may be skewered;

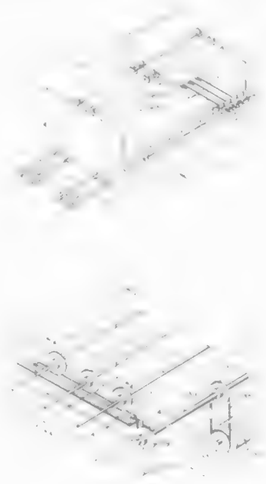
the improvement comprising:

an open hole in an upstanding wall of the barbeque cart adapted to receive one end of a spit;

a slot open at its upper end on a side wall of the barbeque cart adapted to receive the other end of the spit;

a spit sprocket wheel mounted adjacent the other end of the spit and adapted to be positioned outboard of the side wall when the spit is inserted in the slot;

an endless chain drive adapted to engage the lower portion of the spit sprocket wheels extending horizontally and



supported for rotation at their one end by a drive gear and at their other end by an idler gear;

a horizontal disposed U shaped channel chain support guiding the upper portion of the endless chain in driving relationship with the lower teeth of the sprocket wheels; and

motor means associated by means of appropriate mechanical power transmitting devices with the drive gear to cause the drive gear, the chain, the sprocket wheels and the spits to rotate.

4,760,777

TORTILLA STACKER

Richard S. Welsh, Sparks, Nev., assignor to Famoso Equipment Company, Sparks, Nev.

Filed Dec. 18, 1985, Ser. No. 811,889

Int. Cl.[4] A21C *15/00*

U.S. Cl. 99—450.2 19 Claims



1. Apparatus for stacking dough members comprising

a loading unit having a discharge means for forming a lateral depression in each of a series of the dough members without folding the dough members and for projecting the dough members substantially horizontally in a direction perpendicular to said lateral depression, and

a container having a bottom loading surface, said container positioned at said discharge means of said loading unit into which each of said dough members are projected and stacked one-on-top-of-the-other on said loading surface by said loading unit.

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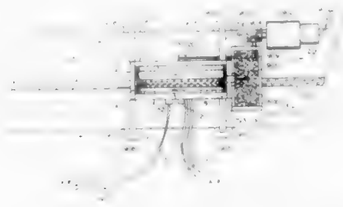
PEANUT APPLICATOR AND PROCESS OF MAKING A CONFECTIONERY PRODUCT

William J. Simeunas, Glen Rock, and Agostino Aquino, Paterson, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 20, 1984, Ser. No. 632,823

Int. Cl.[4] A21C *9/04*; A23P *1/00*

U.S. Cl. 99—450.1 20 Claims



1. An apparatus for applying discrete articles, such as peanuts, raisins or the like, to an outer surface of a moving continuous rope of a comestible material, comprising:

(a) a hollow rotatable cylinder having a horizontal axis, an inner surface and an outer surface, wherein said outer surface is provided with a groove, said groove being adapted to closely abut surfaces of the continuously moving rope;

(b) air passages extending from the inner surface of the cylinder to the outer surface within the groove;

(c) means for rotating the cylinder;

(d) means for applying vacuum to the inner surface of the cylinder to retain the articles on the air passages within the groove as the cylinder passes by a hopper for supplying the articles to the cylinder;

(e) means for interrupting the vacuum on the articles as the cylinder delivers the discrete articles to the rope of comestible material.

4,760,779

DISTRIBUTION MEANS

Christopher P. Morris, Carlton, United Kingdom, assignor to Hambro Machinery Limited, United Kingdom

Continuation of Ser. No. 930,956, Nov. 12, 1986, abandoned, which is a continuation of Ser. No. 844,220, Mar. 21, 1986, abandoned, which is a continuation of Ser. No. 651,064, Sep. 13, 1984, abandoned. This application Aug. 18, 1987, Ser. No. 88,025

Claims priority, application United Kingdom, Sep. 16, 1983, 8324888; Dec. 7, 1983, 8332648

Int. Cl.[4] A23B *4/04*

U.S. Cl. 99—475 18 Claims

1. In a conditioning apparatus utilizing a fluidized bed for conditioning material such as tea and tobacco or the like, and comprising a material conditioning zone disposed above a distribution means, and means for supplying a gaseous medium to said zone through said distribution means, the improved distribution means comprising:

a perforated plate, said perforated plate having a plurality of apertures, wherein the cross-sectional area of each aperture is in the range of 20×10^{-6} square inches to 1000×10^{-6} square inches, and the total area of the apertures is in the range of 1% to 4% of the total area of the perforated plate, the perforated plate thereby providing a resistance to flow of the gaseous medium through the plate which increases as the rate of flow through the distribution means increases.



so that the tendency to produce localized increases in flow rate through the fluidized bed is counteracted by the increasing resistance to flow through the perforated plate.

4,760,780

APPARATUS FOR LOOSENING THE SKIN OF MOISTURE BEARING FRUIT

Jesus A. Silvestrini; Jose E. Barbier, and Juan C. Morsucci, all of Mendoza, Argentina, assignors to Imdec S.R.L., Mendoza, Argentina

Filed Sep. 5, 1986, Ser. No. 904,878

Claims priority, application Argentina, Sep. 6, 1985, 301530; Feb. 19, 1986, 303179

Int. Cl.[4] A23N *7/00*

U.S. Cl. 99—584 5 Claims



1. Apparatus for loosening the skin of moisture bearing fruit whose skin has been heated at a first pressure to a predetermined temperature, said apparatus comprising

fruit introducing means for introducing said fruit into the apparatus;

means located adjacent said fruit introducing means for holding said fruit and moving said fruit along a predetermined path, said fruit holding and moving means comprising a generally cylindrical structure having a generally horizontal central axis and being rotatably driven about an axis of rotation substantially coincident with said central axis and including a plurality of fruit holding chambers angularly spaced about said axis of rotation, said fruit holding chambers being defined by

a plurality of partition members each extending generally outwardly from points generally proximal said cylindrical structure central axis;

end portions extending between adjacent said partition members adjacent the respective innermost and outermost extremities thereof, said partition members and said end portions having predetermined axial dimensions measured parallel to said cylindrical structure axis and between the opposing axial extremities of said partition members and also between the opposing axial extremities of said end portions; and

VOL 1093 ISS 1 AG 2 1988 UMI

opposing cover means engaging said opposing axial extremities of said partition members and of said end portions to define the walls of said fruit holding chambers extending trasnverse to said partition members and said end portions, with at least one of said opposing cover means being nonrotatably mounted to the apparatus and slidably and sealingly engaging one of said axial extremities of each said partition member and said end portion;

means positioned along said path for reducing the pressure surrounding said fruit sufficiently below said first pressure to effect expansion of moisture borne by said fruit adjacent and inside the skin thereof; and

means for discharging said fruit from said holding and moving means at generally ambient pressure, both said fruit introducing means and said fruit discharging means being located on the same axial side of said cylindrical structure.

4,760,781

OVERLOAD PROTECTING APPARATUS FOR A PRESS

Hidemi Moriyama, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,686
Claims priority, application Japan, Dec. 26, 1985, 60-292126
Int. Cl.[4] B30B *15/16, 15/28*
U.S. Cl. 100—53 7 Claims



1. An overload protection apparatus for a press having a plurality of slide points for supporting a slide of the press and means for moving said slide relative to said slide points to apply pressure in said press, each said slide point having at least one working fluid chamber in which pressure is generated in proportion to the pressure applied by said press as said slide is moved relative to said slide points, and a protector valve having a piston dividing said protector valve into a first working fluid chamber which is in communication with each of said working fluid chambers of said slide points through respective passages and a second working fluid chamber which is in communication with a compressed air source, said overload protection apparatus further comprising:

logic valve means disposed in said passages between said working fluid chambers of said slide points and said first working fluid chamber of said protector valve for preventing working fluid from flowing from said first working fluid chamber of said protector valve to said working fluid chambers of said slide points; and

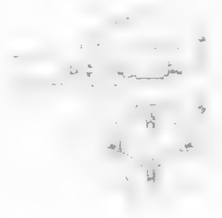
pressure sensor means provided at each chamber of said slide points for detecting the pressure of the working fluid in said chambers of said slide points.

4,760,782

DENTAL AMALGAM PRESS

Molly A. Squire, P.O. Box 2312, Malibu, Calif. 90265

Filed Mar. 30, 1987, Ser. No. 31,859
Int. Cl.[4] B30B *9/06*
U.S. Cl. 100—116 7 Claims



1. A dental amalgam press for expressing mercury from an amalgam mixture, comprising:

a transparent housing;

a press operably carried inside said housing having a stationary base and a movable press member defining a press cavity therebetween for receiving said amalgam;

movable means for actuating said movable press member towards and away from said stationary member to close said cavity and pressably engage with said amalgam to express mercury therefrom;

said movable means including a handle external of said housing from one side thereof for manual manipulation by the user and connectable to said movable member within said housing; and

said housing having a semi-sealed port located on its side opposite to its side associated with said movable means allowing insertable introduction of said amalgam into said press cavity by said user.

4,760,783

COMPRESSION APPARATUS HAVING A MAIN COMPRESSION DEVICE AND A TAPERED PRECOMPRESSION DEVICE

Katsutoshi Torita, Handa, and Kojuro Yamamoto, Inazawa, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Apr. 27, 1987, Ser. No. 42,786
Claims priority, application Japan, Jul. 9, 1986, 61-159552
Int. Cl.[4] B30B *7/00, 15/04;* G21F *9/36*
U.S. Cl. 100—137 2 Claims



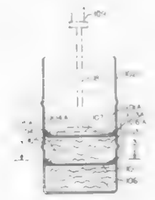
1. A compression and volume reduction treatment apparatus for solid waste comprising a compression device having a compression sleeve for receiving therein a cylindrical vessel filled with solid waste and a press ram for compressing downward said cylindrical vessel filled with solid waste, said apparatus further comprising a pre-compression device, having a pre-compression press ram and a pre-compression tapered sleeve, said cylindrical vessel having an outer diameter larger than an inner diameter of said compression sleeve, said pre-compression tapered sleeve having at a lowermost end an inner diameter smaller than the inner diameter of said compression sleeve, an inner circumferential surface of said pre-compression tapered sleeve and an outer circumferential surface of said pre-compression press ram being formed with grooves and ridges slidably cooperating with each other.

4,760,784

COMPACTING PLATE LOCKING DEVICE USED FOR PACKAGING EXPANSIBLE MATERIAL

Richard W. Whiteside, Florence, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Jul. 15, 1987, Ser. No. 73,619
Int. Cl.[4] B30B *15/06*
U.S. Cl. 100—220 19 Claims



1. A compacting device of the type adapted to be closely fitted within a container having one end thereof closed and having an opening at the opposite end thereof, and adapted for compacting material within said container with a ram head and maintaining the material in compacted condition, said compacting devise comprising:

(1) at lease one generally non-removable compacting plate member having a top surface, a bottom surface, a peripheral configuration complementary to the cross-sectional dimensions of said container, and adapted to be placed withing said opening of said container, and

(2) a plurality of locking means secured to said compacting plate, juxtaposed the peripheral edge thereof and disposed in movable engagement with the inside walls of said container to permit movement of said compacting plate towards the closed end of said container while preventing movement of said compacting plate in the opposite direction, said locking means comprising:

(a) angle brackets having a first and a second leg with said first leg having a substantial top and bottom surface and a portion thereof juxtaposed and fixedly secured to the upper surface of said compacting plate, and

(b) locking tabs comprising a resilient material having a first portion thereof juxtaposed the top surface of said compacting plate and the bottom surface of at least a portion of said first leg of said angle bracket which is not in contact with said plate surface but is substantially parallel therewith, and a second portion of said locking tab extending substantially beyond said peripheral edge of said compacting plate.

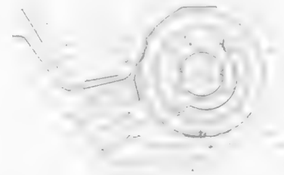
4,760,785

PRINTER WITH ROTATING HAMMERS

Fumihisa Hori, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Dec. 2, 1986, Ser. No. 937,048
Claims priority, application Japan, Dec. 25, 1985, 60-198213[U]; Dec. 25, 1985, 60-198211[U]
Int. Cl.[4] B41J *1/32, 9/26*
U.S. Cl. 101—93.28 2 Claims

1. A printer comprising a plurality of type wheels arranged in parallel on a common rotational axis, each provided with a set of type elements on the periphery thereof, means for selectively stopping said type wheels to hold selected ones of the type elements on said type wheels at a printing position aligned in one row parallel to the axis of said type wheels, a hammer facing opposite the row of type elements of said type wheels at said printing position, means for feeding a recording paper between said type wheels and said hammer at said printing position, and means for actuating said hammer so that said hammer presses the recording paper against the type elements in the one row for printing on the recording paper, wherein



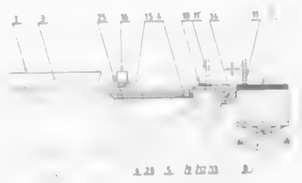
said hammer is formed as a single body rotatable on a shaft having an axis parallel to the axis of said type wheels, and said single body is integrally form with a plurality of chevron shaped thrusting portions arranged in a row spaced apart in a comb-like configuration parallel to the shaft axis and extending therefrom and corresponding to the spacing of the type elements, and said means for actuating said hammer including means for rotating said shaft to bring said row of thrusting portions to said printing position to press the recording paper against said row of type elements.

4,760,786

APPARATUS FOR THE AUTOMATIC FEEDING OF SILK SCREEN PRINTING MACHINES WITH RUN-OUT PLATEN

Dany Freminet, Zone Commerciale Route de Saintes, F-17200 Royan, France

Filed May 26, 1987, Ser. No. 53,616
Claims priority, application France, May 23, 1987, 86 07510
Int. Cl.[4] B41F *21/12*
U.S. Cl. 101—126 19 Claims



1. Automatic feeder apparatus for a silk screen printing machine with an extension printing platen comprising:

a storage magazine for sheets to be printed;

a printing platen moving in a plane;

a positioning support in the plane of said printing platen;

feeding means for seizing and transferring a sheet from said storage magazine onto said positioning support;

positioning means for frontally and laterally positioning said sheet on said positioning support; and

positioned sheet transfer means for transferring a positioned sheet from said positioned support onto said printing platen, wherein said positioning means comprises:

a transverse bar supported by said apparatus;

frontal stops for positioning a frontal edge of said sheet on said positioning support;

frontal detection means for detecting said frontal edge when abutting said frontal stops;

VOL 1093 ISS 1 AG 2 1988 UMI

sheet manipulation means to seize and lift said frontal edge in response to control by said frontal detection means;

bar displacement means for displacing said transverse bar perpendicularly to printing platen motion in response to control by said frontal detection means and a lateral detections means;

said lateral detection means being located on said apparatus and for (1) detecting a lateral edge of said sheet both on said positioning surface and after seizure by said sheet manipulation means, (2) stopping bar movement, and (3) maintaining said bar in position; and

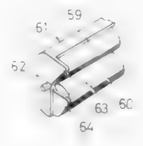
extension control means for actuating extension of said printing platen.

4,760,787

MULTICOLOR INKING MECHANISM FOR A PRINTER

Fumihisa Hori, Takizawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Dec. 22, 1986, Ser. No. 945,391
Claims priority, application Japan, Feb. 5, 1986, 61-21898
Int. Cl.[4] B41F *31/18, 31, 34*
U.S. Cl. 101—205 3 Claims



1. A printer for two-color printing comprising:

a plurality of type wheel in parallel with each other and rotatable on a common axis, each type wheel having a first set and a second set of type elements on respective first and second circumferentially spaced sections facing radially outward on its outer periphery;

first means for rotating said type wheels together for inking of a selected set of type elements with a selected color ink;

a changeover cam rotatable on said axis and provided integrally with one of said type wheels, having a first cam section oriented radially on its outer periphery which is positioned circumferentially corresponding to the first section of type elements on said type wheels rotated together, and a second cam section oriented radially on the outer periphery which is positioned circumferentially corresponding to the second section of type elements on said type wheels rotated together and axially offset from said first cam section;

a single roll carrier supporting first and second ink rolls on respective axes having a first color ink and a second color ink, respectively, said roll carrier being supported for pivotal movement about an axis intermediate the axes of said ink rolls and extending axially in parallel with said plurality of type wheels, said roll carrier further having biasing means for biasing it radially toward said type wheels, a first cam pawl on said roll carrier axially aligned and engageable with said first cam section of said changeover cam so as to pivot said roll carrier radially toward said type wheel to bring the first ink roll in contact with said first set of type elements, and a second cam pawl on said roll carrier axially aligned and engageable with said second cam section, and axially offset from said first cam pawl, so as to pivot said roll carrier radially toward said type wheel to bring the second ink roll in contact with said second set of type elements of said type wheels, whereby separate inking of the respective sets of type elements for multi-color printing is effected.

4,760,788

RECIPROCATING PRINT HEAD MARKING APPARATUS

Alfred A. Marozzi, 444 William St., East Orange, N.J. 07017, and Thomas A. Sapinski, Rochelle Park, N.J., assignors to Alfred A. Marozzi, Pine Brook, N.J.

Filed Oct. 1, 1986, Ser. No. 914,157
Int. Cl.[4] B41K *1/42*
U.S. Cl. 101—333 14 Claims



1. In an apparatus for marking a target on a work surface, including a frame mounted in operative relation to the work surface, a powered actuator, an ink storing device having a wet inking surface positioned in predetermined spaced relation to the work surface, a print head alternatively engageable with said inking surface and a target on the work surface and a drive mechanism responsive to operation of the powered actuator for displacing and reorientating the print head between inking and marking positions respectively engaging the inking surface and the target, said drive mechanism having a force transmitting element connected to the powered actuator, a holder on which the print head is mounted, a cam track fixed to the frame establishing a path of travel having acceleration and deceleration portions and cam follower means pivotally interconnecting the force transmitting element and the holder in the cam track for constraining movement of the holder along said path of travel during each operational cycle of the powered actuator, the improvement comprising means for dividing the acceleration portion of the travel path into at least two sections along which the cam follower means is sequentially displaced at respectively different velocities and shock absorbing means engageable with the holder along the deceleration portion of the travel path for stabilizing orientation of the print head during approach to the marking position, the shock absorbing means including a guide roller.

4,760,789

ADJUSTABLE ROLLER SYSTEM FOR PRINTING OR DUPLICATING MACHINES

Stanley Witczak, Chicago, Ill., assignor to AM International, Inc., Chicago, Ill.

Filed Jul. 10, 1986, Ser. No. 884,241
Int. Cl.[4] B41F *13/20, 13/26, 13/36*
U.S. Cl. 101—348 15 Claims

1. In a printing, duplicating or like machine which includes a fluid system having a plurality of distribution rollers for distributing fluid to the printing couple of the machine, the system comprising:

a pair of spaced rollers rotatably mounted for rotation about a generally parallel, fixed axes;

a removable roller positionable by adjustable mounting means in juxtaposition to the spaced rollers to define fluid distribution gaps between the removable roller and each spaced roller, the adjustable mounting means including

a pair of adjustable members forming a V-shaped yoke for receiving and positioning the removable roller, each of said adjustable members being pivotably mounted for adjusting movement independent of each other, and each adjustable member having at least a portion thereof extending generally tangentially of a respective one of said spaced rollers,

means for independently adjusting each adjustable member



to move the tangentially extending portion thereof and, therefore, the removable roller generally radially toward and away from the respective spaced roller, and

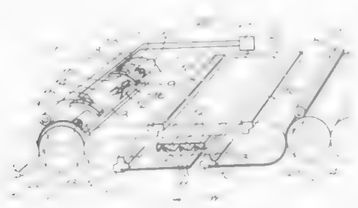
clamp means for holding the removable roller in the V-shaped yoke.

4,760,790

PRINTING PRESSES

John N. Birkett, Aylesbury, United Kingdom, assignor to Reed Packaging Limited, England

Filed Mar. 5, 1986, Ser. No. 836,647
Claims priority, application United Kingdom, Mar. 5, 1985, 8505557
Int. Cl.[4] B41M *5/00*
U.S. Cl. 101—470 14 Claims



1. A web printing apparatus comprising a web feed means, at least two printing stations arranged to print radiation-curable ink onto a web and primary radiation source arranged to radiate said web with an ink-curing radiation after said web has passed a first said printing station and before said web passes the subsequent printing station, wherein said apparatus further comprises a plurality of secondary radiation sources each extending part way across the width of said web and each being arranged to radiate a part of said width after said web has passed said first printing station and before it has passed said subsequent printing station, and wherein at least one of said secondary radiation sources is provided with source driving means capable of moving it transverse to the web feed direction of the said apparatus.

4,760,791

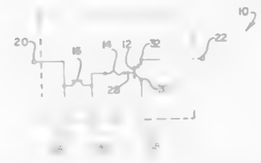
ELECTRICAL SEQUENTIAL FIRING SYSTEM

Immo E. Bock, Vandia Grove, South Africa, assignor to Johannesburg Construction Corp. Limited, Transvaal Province, South Africa

Filed Jul. 30, 1987, Ser. No. 79,670
Int. Cl.[4] F42D *1/04*
U.S. Cl. 102—200 33 Claims

1. An electrically operable sequential activation module for supplying an activating signal to a device which has a low resistance prior to being activated and a high reaistance thereafter, the module being connectable in a series with other similar modules to sequentially activate a number of devices, the module including

a first convertible element which has three terminals and in its normal first state has a high resistance in at least one direction between its first terminal and its second terminal and which changes to a second state in which it has a low resistance in both directions between its first and second terminals when a first signal having a predetermined characteristic is applied across the first and second terminals, the first element thereafter having the low resistance value in both directions between the first and second terminals when the first signal is removed and the first element further having in its normal first state a high resistance in at least one direction between its first terminal and its third terminal, the first element changing to a third state in which it has a low resistance in both directions between its first and third terminals when a second signal having a predetermined characteristic is applied across the first and



third terminals, the first element thereafter having the low resistance value in both directions between the first and third terminals when the second signal is removed;

a first power terminal connectable to an electrical power source for supplying the first signal, the second signal and the activating signal;

a first and a second device terminal by means of which the device is connectable to the module;

an input steering terminal; and

an output steering terminal which is connectable to the input steering terminal of a succeeding module in a series thereof;

with the first device terminal being connected to the input steering terminal;

the second device terminal being connected to the first terminal of the first element;

the second terminal of the first element being connected to the first power terminal; and

the third terminal of the first element being connected to the output steering terminal.

4,760,792

PYROTECHNIC DELAY FOR HIGH G'S APPLICATION

Ghislain M. Dumas; Roger Laverta, both of Ste-Foy, Canada, and Jean-Francois Drolet, McLean, Va., assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Filed Mar. 25, 1987, Ser. No. 29,801
Claims priority, application Canada, Jun. 26, 1986, 512815
Int. Cl.[4] F42C *19/08*
U.S. Cl. 102—204 7 Claims

1. An acceleration resistant pyrotechnic delay unit in the form of a delay cup housing a pyrotechnic train, wherein the delay cup comprises:

a primer cavity;

a delay cavity;

a passage extending from the primer cavity to an upstream end of the delay cavity, the passage having a downstream end opening into the delay cavity that is substantially smaller in area than the upstream end of the delay cavity, thus forming a shoulder at the upstream end of the delay

VOL 1093 ISS 1 AG 2 1988 UMI

cavity circumscribing the said passage downstream end opening; and

a detonator cavity adjoining the delay cavity at the downstream end thereof, the pyrotechnic train comprising:

a primer in the primer cavity;



a delay column filling the delay cavity, the material of the delay column being packed up against said shoulder to assure support of said material during acceleration and deceleration; and

a pellet of detonator composition filling the detonator cavity.

4,760,793

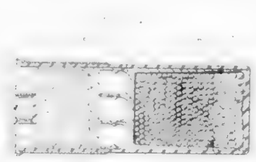
MULTI-RANGE SHOT SHELL

Edward I. Herring, III, Cabot, Ark., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 894,203, Jan. 9, 1987, abandoned. This application Oct. 28, 1987, Ser. No. 113,436

Int. Cl.[4] F42B *7/02*

U.S. Cl. 102—460 7 Claims



1. A shot shell having a head end and a mouth end, a wad and a stratified payload of shot positioned in the wad, the payload comprising a charge of larger diameter shot and one or two charges of smaller diameter shot, the larger diameter shot charge being closer to the mouth end of the shell than each charge of smaller diameter shot, the charge of larger diameter shot comprising about from 20 to 35% by weight of the entire shot payload, each pellet of the charge of larger diameter shot being at least about 25% greater in weight than each pellet in the charge of smaller diameter shot, the charges of larger diameter shot and smaller diameter shot being free from separatory barriers or membranes between the charges.

4,760,794

EXPLOSIVE SMALL ARMS PROJECTILE

Norman Allen, P.O. Box 26185, Arcadia 0007, South Africa

Filed Apr. 21, 1982, Ser. No. 370,202

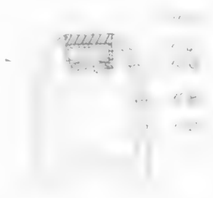
Int. Cl.[4] F42B *11/10*

U.S. Cl. 102—473 7 Claims

1. An explosive small arms projectile, comprising:

a unitary, one-piece jacket formed of metal having a specific gravity greater than 13, and inlcuding a base and a generally tapered, cylindrical side wall extending from said base, said side wall defining a transverse cross-sectional diameter for the projectile and being thin relative to said cross-sectional diameter, said base and side wall defining a cavity therebetween, said cavity being a major proportion of the volume of the projectile, a minor proportion of the projectile being occupied by said side wall;

an explosive charge in said cavity; and



detonation means for detonating said explosive charge in said cavity.

4,760,795

EXPLOSIVE PROJECTILES

Frederick M. Young, Chorley, England, assignor to Royal Ordnance plc, London, England

Filed Oct. 6, 1986, Ser. No. 915,757

Claims priority, application United Kingdom, Oct. 22, 1985, 8526048

Int. Cl.[4] F42B *11/22*

U.S. Cl. 102—473 18 Claims



1. An explosive projectile comprising a projectile casing, a high explosive charge filling a portion of the space inside the casing, said explosive charge being of a type of material which is solid at room temperature and exudes as a flowable mass at elevated temperatures, an impervious case filling a part of said space not occupied by said exlosive charge, said impervious case defining a detonation device cavity adjacent to a surface of the explosive charge, and a pre-formed solid elastic sealant ring located adjacent to said surface of the explosive charge and extending between the inside wall of the projectile casing and the outer wall of the impervious case, said sealant ring sealing said explosive material to prevent leakage thereof along a gap between said casing and said impervious case, said casing having a shape adjacent a region at which said sealant ring is located such that a separation distance between said casing and said impervious case decreases with increasing distance away from said explosive charge, said seal effected by the sealant ring between the projectile casing and the impervious case being tightened responsive to an increase in pressure on the sealant ring from the material of the explosive charge when said material begins to exude at elevated temperatures.

16. A method of sealing a high explosive charge located in an explosive projectile which comprises a projectile casing, a high explosive charge filling a portion of the space inside the casing, said explosive charge being of a type of material which is a solid at room temperature and exudes as a flowable mass at elevated temperatures, an impervious case filling a part of said space not occupied by said explosive charge, said impervious case defining a detonation device cavity adjacent to a surface of the explosive charge, and a pre-formed solid elastic sealant ring located adjacent to said surface of the explosive charge and extending between the inside wall of the projectile casing and the outer wall of the impervious case, said sealant ring sealing said explosive material to prevent leakage thereof along a gap between said casing and said impervious case, said casing having a shape adjacent a region at which said sealant ring is located such that a separation distance between said casing and said impervious case decreases with increasing distance away from said explosive charge, said seal effected by the sealant ring between the projectile casing and the impervious case being tightened responsive to an increase in pressure on the sealant ring from the material of the explosive charge when said material begins to exude at elevated temperatures, said method comprising (i) inserting said pre-formed solid elastic sealant ring through an opening of the casing and locating the ring in the space adjacent to the explosive charge and (ii) depositing said impervious case defining said detonation device cavity adjacent to the charge in the region within said casing not occupied by the sealant ring, insertion and location of the sealant ring being carried out in a step occurring one of (a) before, (b) during and (c) after deposition of the impervious case so that the sealant ring occupies said space.

4,760,796

BALLAST CLEANING MACHINE WITH COMPACTING DEVICE

Josef Theurer, Vienna, and Manfred Brunninger, Altenberg, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Feb. 12, 1987, Ser. No. 13,708

Claims priority, application European Pat. Off., Apr. 2, 1986, 8689088.7

Int. Cl.[4] E01B *27/20*

U.S. Cl. 104—7.3 9 Claims



1. A mobile ballast cleaning machine mounted for mobility in an operating direction on a track consisting of rails fastened to ties to excavate ballast supporting the track, to clean the excavated ballast and to redistribute the cleaned ballast under the track, which comprises a machine frame supporting

(a) a ballast excavating and conveying chain having a section passing transversely under the track for excavating the ballast at an excavating site,

(b) a screening installation arranged to receive the excavated ballast from the ballast excavating and conveying chain and to separate waste from the excavated ballast to produce cleaned ballast,

(c) a cleaned ballast redistributing apparatus arranged to receive the cleaned ballast from the screening installation and to redistribute the cleaned ballast at a ballast discharge site behind the ballast excavating site, and

(d) a cleaned ballast compacting device arranged at the ballast discharge site, the compacting device comprising

(1) a plate-shaped compacting beam extending below the track ties and parallel thereto at the ballast discharge site, the compacting beam having opposite ends projecting beyond the track,

(2) a carrier post supporting each compacting beam end on the machine frame, and

(3) a drive connected to each carrier post for continuously reciprocating the compacting beam in a pendulum motion in a plane extending substantially parallel to the track whereby the cleaned ballast at the discharge site is moved and compacted under the ties in a direction opposite to the operating direction.

4,760,797

METHOD AND APPARATUS FOR AUTOMATED TIE DETECTION AND TAMPING

John L. Stubbs, Charlotte, N.C.; Wesley H. Patton, Atlanta, and Jeffrey L. Thompson, Lawrenceville, both of Ga., assignors to Southern Railway Company, Atlanta, Ga.

Filed Feb. 20, 1985, Ser. No. 703,567

Int. Cl.[4] E01B *27/16*; B61L *3/22*

U.S. Cl. 104—12 49 Claims



21. A method for automatically detecting and tamping crossties, comprising:

moving a motor driven tamper vehicle (MDTV) and tie detector means along railroad track having crossties to be tamped;

controlling the movement of said MDTV and tie detector means; and

controlling the movement of said MDTV and tie detector means in response to the detection of said tie plates to position tamping heads mounted on said MDTV over a succession of ties to be tamped, and blocking detection of a previously detected tie subsequent to the detection of said previously detected tie in a series of ties to prevent erroneous tie detections.

34. Apparatus for automatically detecting at least one metallic object in a series of metallic objects lying along a path in a repetitive pattern, comprising:

means for detecting the location of said at least one metallic object and being mounted on a vehicle for movement along said path;

means for controlling movement of said vehicle and including means responsive to said detecting means for positioning said vehicle over a detected metallic object, and means for generating a forward permissive signal for blocking detection of a previously detected metallic object subsequent to the detection of said previously detected metallic object to prevent erroneous metallic object detections; and

means for initiating different travel modes of movement of said vehicle, said travel modes including a fast travel mode to move said vehicle in a forward direction along said path at an optimum speed and controlling deceleration of said vehicle for accurately positioning it at a detected one of said metallic objects.

39. Automated tie finder and tamping apparatus, comprising:

motor drive tamper vehicle (MDTV) means for providing motive power and including means for tamping ties;

a tie detector cart (TDC) made of pultruted plastic material and including a pair of metal tie plate detectors mounted in spaced relationship such that each metal plate detector detects tie plates of a respective rail with movement of said MDTV and TDC; and

means for controlling the movement of said MDTV and TDC and responsive to said tie plate detecting means for positioning said tamping means over a succession of ties to be tamped

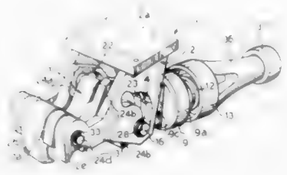
VOL 1093 ISS 1 AG 2 1988 UMI

4,760,798

DEVICE FOR THE AUTOMATIC CONNECTION OF A VEHICLE TO THE CABLE OR TO EACH OF THE TWO CABLES OF A CONTINUOUSLY MOVING CABLEWAY

Sergio Blengini, Mondovi, Italy, assignor to Agudio S.p.A., Leini, Italy

Filed Feb. 20, 1987, Ser. No. 16,898
Claims priority, application Italy, Feb. 21, 1986, 67134 A/86
Int. Cl.[4] B61B 12/12
U.S. Cl. 104—209 2 Claims



1. A device for the automatic connection of a vehicle having a suspension system to a cable or to each of two cables of a continuously moving cableway, of the type comprising a clamp constituted by inner and outer movable jaws carried by the upper end of the vehicle suspension system, resilient means for closing the clamp so that it automatically engages the cable, and cam means located at each station of the cableway for automatically opening the clamp and simultaneously loading the resilient means, so as to cause the temporary unhooking of the vehicle from the cable on its arrival at a said station and the closure of the clamp on the departure of the vehicle from the station, wherein the device further includes:

an operating lever which carries the outer movable jaw and defines an axial slot, the lever being operated directly by the cam means located at the station;

a support member to which the operating lever is pivoted and which includes two parallel plates defining cam slots and fixable to the vehicle structure;

a pin on which the operating lever is pivoted to the support member;

a cylindrical shank carried by the end of the operating lever opposite that carrying the outer movable jaw;

a helical spring carried by said shank;

a fixed plate against which one end of the spring reacts;

a movable plate slidable on the shank and against which the other end of the spring reacts;

a fork fixed to the movable plate;

a pin supported by the fork and slidable in the axial slot in the operating lever so that the pivoting of the operating lever in the sense corresponding to opening of the clamp, which is driven by the cam means at the station, causes the simultaneous outward pivoting of the respective jaw and loading of the spring, respective ends of the pin supported by the fork engaging in the cam slots defined by the two parallel plates of the support member;

two aligned half-jaws constituting the inner movable jaw;

an intermediate rocker arm including two plates which carry the half-jaws, the rocker arm being pivoted to the support member on the same pin as the operating lever and being located between the operating lever and the two plates of the support member, and

respective cam slots defined by the plates of the intermediate rocker arm and having shapes concordant with those of the slots of the support member, the cam slots being passed through by the pin supported by the fork.

4,760,799

LIGHTWEIGHT RAILWAY VEHICLE TRUCK

Keith L. Jackson, Creve Coeur; Richard B. Polley, St. Charles, both of Mo., and Dallas L. Schmitt, Fairview Heights, Ill., assignors to GSI Engineering, Inc., St. Louis, Mo.

Filed Mar. 23, 1987, Ser. No. 29,206
Int. Cl.[4] B61F 5/08
U.S. Cl. 105—182.1 12 Claims



1. A railway vehicle truck comprising a pair of wheeled axles, resilient means supported from the end portions of said axles, sideframes having end portions supported on said resilient means and center portions depressed to a lower level than said end portions, a main frame having side portions overlying said center portions of said sideframes, flat elastomeric pad means positioned between said sideframes and the ends of said main frame side portions and inclined in opposite directions lengthwise of the truck to provide resilient support of said main frame on said sideframes and to accommodate tipping of said sideframes in their longitudinal vertical planes with respect to said main frame and to each other for load equalizing purposes, said inclined pad means having their effective centers spaced longitudinally of the truck between said axles and the longitudinal center of said sideframes and vertically of the truck from the neutral axes of said sideframe center portions and being inclined such that the summation of moments about the sideframe neutral axis at the sideframe center, consisting respectively of the products of (1) the vertical force component transmitted through the inclined pad device and the horizontal distance from the pad device center to the sideframe center, (2) the vertical reaction force through the point of support of the sideframes on said resilient means and the horizontal distance from the effective centers of said axle-supported resilient means to the sideframe center, and (3) the horizontal force component transmitted through the inclined pad device and the vertical distance from the pad device center to the sideframe neutral plane, is minimized, whereby to eliminate substantial bending moments on said sideframe center portions and place the same in tension, said inclined pad means being oriented horizontally transversely of the truck whereby to minimize lateral thrust between the sideframes and the main frame at the level of said inclined pad means because of the relatively low lateral shear rate of said inclined pad means, and transversely opposing lateral thrust means with a substantially higher lateral rate than said inclined pad means between said main frame and said sideframes, said lateral thrust means being positioned at a lower level than said inclined pad means whereby to produce a resultant lateral force substantially coplanar with the effective lateral reaction point of said axle-supported resilient means and elimination of any substantial lateral overturning moment on the sideframes.

4,760,800

REVERSIBLE KNICK KNACK SHELF

Palmer Hanson, 1708 Susan Ct., SE., Tumwater, Wash. 98501

Filed Feb. 9, 1987, Ser. No. 12,149
Int. Cl.[4] A47B 47/04, 96/02
U.S. Cl. 108—111 5 Claims

1. A reversible knick knack, knock down shelf comprising a plurality of spaced parallel horizontally disposed support members of different sizes, hollow tubular spacers interposed between said support members, there being aligned openings in said support members registering with said spacers, vertically disposed rods extending through said openings and spacers, fasteners engaging threaded portions of said rods, said support members having continuous flanges thereon, said support members being of different sizes so that a stepped effect is provided, each of said support members including a main flat section, and each support member including portions arranged



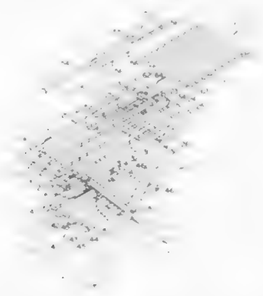
at right angles with respect to each other, there being apertures on the flanges of the support members, said apertures adapted to receive securing elements for permitting the reversible knick knack shelf to be fastened to inner and outer corners of walls.

4,760,801

OUTDOOR COOKING TABLE

Ernest L. Campbell, 8129 High Oaks La., Matthews, N.C. 28105

Filed Jul. 20, 1987, Ser. No. 75,632
Int. Cl.[4] A47B 3/02
U.S. Cl. 108—119 4 Claims



1. A table comprising two pairs of pivotally interconnected legs, a tabletop between the two pairs of legs, mean pivotally connecting one end of the tabletop to the legs, a support bar extending between the upper ends of opposing legs and at least one retainer bar extending transversely beneath the tabletop and engageable with the support bar, said tabletop being formed from a first group of pieces extending parallel with the longitudinal axis of the table, said first group of pieces being elongated and corresponding in length with the normal length of the table, means supporting the first group of pieces in horizontally spaced relation to each other, a removable extension of the tabletop normally supported on top of the first group of pieces at one end of the table, said extension comprising a second group of relatively closely spaced pieces extending perpendicularly to the said first group of pieces and frame members uniting the second group of pieces and extending perpendicularly to the said second group of pieces and positioned between adjacent pieces in said first group of pieces in the tabletop, said frame members resting on said transversely extending retainer bar, an anchor arm fastened to the under surface of the second group of pieces in spaced parallel relation between said frame members and extending between adjacent pieces in said first group of pieces in the tabletop, and a locking lug pivotally connected to and depending from the anchor arm for movement between an inactive position parallel with the anchor arm when the extension is supported on one end of the table and a locking position transverse to the anchor arm for engagement with the under surfaces of pieces in said first group of pieces to anchor the extension in cantilever fashion beyond said one end of the table.

4,760,802

TABLE AND STOOL ASSEMBLY

Po S. Leong, Canoga Park, Calif., assignor to Walter Fleisher Company, Van Nuys, Calif.

Filed Aug. 24, 1987, Ser. No. 88,597
Int. Cl.[4] A47B 13/02
U.S. Cl. 108—157 6 Claims



1. A table comprising: a right cylindrical column formed of two sheets of resilient material positioned diametrically opposite to one another, with the sheets having radially inwardly extending flanges formed at the adjacent edges thereof; a rigid table top having a circular groove in the underside thereof for receiving the upper lip of the column; and a rigid base having a circular groove in the top side thereof for receiving the lower lip of the column.

4,760,803

PROCESS FOR GENERATING ENERGY IN A FURNACE OR COMBUSTION ENGINE

Johann G. Schulz, 201 Conover Rd., Pittsburgh, Pa. 15208

Continuation-in-part of Ser. No. 790,530, Oct. 23, 1985, Pat. No. 4,668,243. This application Jan. 16, 1987, Ser. No. 4,542
The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.
Int. Cl.[4] F23B 7/00; F02C 3/20; C10L 1/00
U.S. Cl. 110—341 63 Claims

17. The process for generating energy in a furnace or a combustion engine which comprises burning in said furnace or said combustion engine the fuel composition containing (1) the alcohol-soluble product obtained as a result of the mild reaction of a lignin-containing material with nitric acid, and (2) a component selected from the group consisting of water, methanol, ethanol, mixtures thereof, mixtures of lower alcohols, and a hydrocarbon fuel.

18. The process of claim 17 wherein said lignin-containing material is peat.

4,760,804

AIR INJECTION CULTIVATOR

Teruhisa Kobashi; Ichiro Kobashi, and Masanori Iwai, all of Okayama, Japan, assignors to Kobashi Kogyo Co., Ltd., Okayama and Fuji Robin Kabushiki Kaisha, Tokyo, both of, Japan

Filed Oct. 6, 1986, Ser. No. 916,019
Claims priority, application Japan, Dec. 12, 1985, 60-279949
Int. Cl.[4] A01B 37/00
U.S. Cl. 111—7 5 Claims

1. A cultivator comprising:

a frame;

first means for connecting the frame to a tractor;

at least one blade secured to the frame, the blade being

VOL 1093 ISS 1 AG 2 1988 UMI

downwardly porjected from the frame and having an edge at the forward side thereof;
an injector provided at a lower portion of the blade;
a compressor mounted on the frame drivable by a power take-off shaft of the tractor;
an air tank communicating with the compressor for storing air compressed by the compressor;
a first unloading valve provided for discharging air in the air tank when the pressure of the air in the air tank becomes higher than a first predetermined value;
pneumatic circuit means for supplying the compressed air in the air tank to the injector;



a second unloading valve provided in the pneumatic circuit means so as to open when the pressure in the air tank is higher than a second predetermined value which is smaller than the first predetermined value;
a fluid-operated master valve provided in the circuit means for passing the compressed air to the injector when said master valve is opened;
a mechanical valve in the circuit means for passing the compressed air passing through the second unloading valve to the master valve to open the master valve when the injector is inserted in the soil a predetermined depth, whereby air is injected from the injector when the pressure in the air tank is higher than the second predetermined value at the predetermined depth of the injector.

4,760,805

APPLICATOR APPARATUS AND METHOD

Wayne H. Smith, R.R. 190 2, Leoti, Kans. 67861

Filed May 12, 1986, Ser. No. 861,840
Int. Cl.[4] A01C *23/02*; G01F *11/10*
U.S. Cl. 111—7.2 12 Claims

1. An apparatus for dispensing matter into the ground comprising
a rod means;
a body conduit means terminating at one end into a funnel and terminating at another end into a body aperture, said rod means slidably passes through said body aperture and into said body conduit, and said body conduit having a structure defining a body opening situated between the body aperture and the funnel;
a sleeve means coaxially and rotatably disposed around said body conduit means and adapted to be rotated around said body conduit means;
a cylinder reservoir means coaxial with and bound to said body conduit below said body aperture and above said body opening with said sleeve means rotatably and coaxially extending into said cylinder reservoir means from outside of said cylinder reservoir means, said cylinder reservoir means including an upper plate means having a structure defining an upper plate aperture and a lower plate means spacedly positioned with respect to said upper plate means and having a structure defining a lower plate aperture;
a dispensing conduit means interconnecting said lower plate aperture with said body opening to conduct and channel matter from said lower plate aperture and into said body conduit through said body opening; and
a means for measuring and holding a certain quantity of matter from said cylinder reservoir means and bound to said sleeve means between said upper plate means and said lower plate means and rotatable with said sleeve means therebetween to dispense the certain quantity of matter through said lower plate aperture and into said dispensing conduit means when rotated by the sleeve means over the



lower plate aperture; a body collar bound around the upper part of the body conduit outside of said cylinder reservoir means; said body collar comprises a collar notch and said sleeve means comprises a sleeve recess with recess walls outside of said cylinder reservoir means, and said collar notch resides in said sleeve recess outside of said cylinder reservoir means such that the side walls of the recess walls may abut with the collar notch to prevent the sleeve means from rotating; and said sleeve recess has a predetermined arcuate length to define the boundaries that the sleeve means rotated in any given direction.

4,760,806

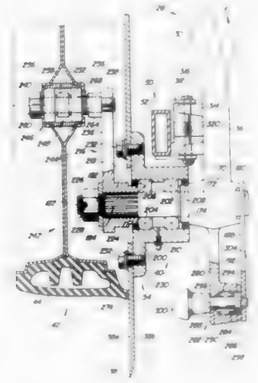
CONSERVATION OPENER

Marvin L. Bigbee, Ankeny; Marvis L. Ridgely, Des Moines, and Michael D. Snyder, Ankeny, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 22, 1986, Ser. No. 866,543
Int. Cl.[4] A01C *5/06*
U.S. Cl. 111—87 25 Claims

1. A single disk opener assembly adapted for attachment to a frame and movable forwardly over a field where trash is present for opening a furrow in the soil, the assembly comprising:
drawbar means having a first end adapted for atachment to the frame, and a second end;
a single disk blade connected to the second end of the drawbar means for rotation about an axis offset at an angle to the direction transverse to the forward direction for forming a furrow, the angled blade thus defining forwardly and rearwardly directed blade surfaces;
a seed tube located closely adjacent the rearwardly directed surface for depositing material in the formed furrow;
a gauge wheel, and means connecting the gauge wheel to the drawbar for rotation adjacent the forwardly directed surface of the blade about an axis generally parallel to but offset from the disk blade axis to limit the depth of penetration of the blade, said gauge wheel including axially

projecting means for cleaning the forwardly directed blade surface; and
depth adjusting means for adjusting the gauge wheel relative to the disk blade including a shaft having a first end portion rotatably supported by the second end of the drawbar means and rotatable about an axis corresponding to the disk blade axis, said shaft including a distal end portion



projection through the disk blade, an arm connected to the distal end portion and extending generally perpendicular to the shaft, and wherein the means connecting the gauge wheel includes means for rotatably mounting the gauge wheel on the arm, and means for selectively securing the shaft in one of a plurality of angularly rotated positions, said means for securing located adjacent the rearwardly directed blade surface.

4,760,807

HAND PRESSURE OPERATED SEED PLANTER

Paul Keller, Coon Rapids, Minn., assignor to Keller Engineering Co. Inc, San Diego, Calif.

Filed Aug. 17, 1987, Ser. No. 85,738
Int. Cl.[4] A01C *7/02*
U.S. Cl. 111—92 7 Claims



1. A hand pressure operated seed planter including a planter body,
said planter is a long narrow tube having a seed storage compartment and a seed dispensing member at the bottom of the body, said member having a bottom wall with a plurality of circumferentially spaced seed dispensing holes therein,
a moveable seed dispensing closure member positioned adjacent the seed dispensing hole to cover the holes,
said planter having a portion to be grasped in the hand to define a handle adapted to be pressed downwardly during operation to press the seed dispensing member against the ground,
rotation imparting means mounted for reciprocation within the planter along an axis thereof, said means being operatively associated between the handle and the closure member to actuate the closure when the handle is pressed downwardly by moving the closure member so as to open the holes in the bottom wall of the planter thereby allowing seeds to be dispensed on the ground from the storage compartment,
a plurality of vertically disposed circumferentially spaced apart downwardly projecting cleats on the bottom wall of the dispensing member, said cleats being spaced apart from each other, said circumferentially spaced apart seed dispensing holes and the cleats being circumferentially alternately interrelated around the periphery of the dispensing member whereby each of the cleats is adjacent one of the dispensing holes for producing a plurality of recesses in the ground to receive the seeds dispensed from each of the adjacent seed dispensing holes when the planter is used.

4,760,808

DEVICE AND METHOD FOR FORMING A PIPED OPENING IN A GARMENT

Norbert Hülsmann, VS-Schwenningen, Fed. Rep. of Germany, assignor to Beisler GmbH, Fed. Rep. of Germany

Filed Sep. 3, 1986, Ser. No. 903,269
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1985, 3531895
Int. Cl.[4] D05B *3/10*
U.S. Cl. 112—68 7 Claims



1. In an apparatus for making a piped opening in a garment where a piping strip is transferred from a preparation station onto a piece of fabric lying on a table of a sewing machine, the improvement comprising:
said preparation station including cutting means for forming first and second collinear cuts in the piping strip, said first cut extending from a first point and running outwardly to an edge of the strip, and said second cut extending from a second point outwardly to an opposite edge of the piping strip; and
receiving means for holding the piping strip in the preparation station while the collinear cuts are made and for transferring the cut strip onto said fabric lying on the table whereby an incision for a garment opening can be made between the first and second points through both the piping strip and fabric, with the piping being subsequently

VOL 1093 ISS 1 AG 2 1988 UMI

pulled through the incision to form a piped opening in the garment.

4,760,809

APPARATUS FOR FEEDING FABRIC TO SEWING MACHINE

Toshio Nakatani, and Atsumi Ohshima, both of Aichi, Japan, assignors to Nakanihon Juki Co., Ltd., Japan

Filed May 8, 1987, Ser. No. 47,382
Claims priority, application Japan, Jan. 7, 1987, 62-1386
Int. Cl.[4] D05B *21/00, 35/04, 1/24*
U.S. Cl. 112—121.15 7 Claims



1. In a sewing machine having a sewing portion including a needle, a looper, a presser foot, and a feed gear,

an apparatus for feeding a piece of fabric to said sewing machine comprising:

a. left and right supports fixed to said sewing portion and extending horizontally therefrom in parallel with each other;

b. a first right clamp plate opposed in the left and right direction to the lowered position of said presser foot and reciprocally movable toward and away from said right support;

c. a first left clamp plate disposed to the left of said left support and movable to the left and right toward and away from said left support and also movable back and forth in parallel to said left support, and a second left clamp plate movable to the left and right toward and away from said first left clamp plate and also movable back and forth together with said first left clamp plate;

d. a third left-clamp plate disposed to the left of said left support and movable to the left and right toward and away from said left support and also movable back and forth in parallel to said left support, and a fourth left clamp plate movable to the left and right toward and away from said third left clamp plate and also movable back and forth together with said third left clamp plate;

e. a second right clamp plate disposed to the right of said right support and movable to the left and right toward and away from said right support and also movable back and forth in parallel to said right support, and a third right clamp plate movable to the left and right toward and away from said second right clamp plate and also movable back and forth together with said second right clamp plate; and

f. a fourth right clamp plate disposed to the right of said right support and movable to the left and right toward and away from said right support and also movable back and forth in parallel to said right support, and a fifth right clamp plate movable to the left and right toward and away from said fourth right clamp plate and also movable back and forth together with said fourth right clamp plate;

said apparatus successively performing the steps of:

sewing one edge of a piece of flat-shaped fabric to the opposite edge thereof so as to make said piece of fabric into a cylindrical shape;

inserting the inner periphery of said cylindrical piece of fabric around a holder extending from a sewing portion of the sewing machine from the side of said holder that is away from said sewing portion forward to said sewing portion so as to support said cylindrical piece of fabric around said holder;

first clamping left and right portions of the longitudinally forward portion of said cylindrical piece of fabric which is closer to said sewing portion respectively from the inside and outside and subsequently stretching the thus first clamped portions of said cylindrical piece of fabric from the inside toward the outside, so that the thus stretched portions are slightly expanded in the left and right directions;

second clamping left and right portions of a longitudinally intermediate portion of the outer periphery of said cylindrical piece of fabric onto said holder from the outside;

moving said stretched portions of said piece of fabric in the stretched state toward the thus second clamped intermediate portions until said stretched portions are disposed over the outside of said second clamped intermediate portions, so that said cylindrical piece of fabric is folded twice and the edge of said piece of fabric on the outermost side slightly projects longitudinally from the edge of an inner folded clamped portion of said piece of fabric;

first pressing left and right portions of the thus folded portion of said piece of fabric respectively from the inside and outside;

releasing the first clamping and then the stretching of said piece of fabric while said piece of fabric is being subjected to the first pressing;

moving the thus first pressed portion of said piece of fabric in the pressed state forwardly to said sewing portion in parallel with said holder;

second pressing an upper surface of said first pressed portion of said piece of fabric and a lateral portion of said first pressed portion of said piece of fabric onto said holder;

releasing the second clamping and then the first pressing of said folded portion of said piece of fabric; and

releasing the second pressing of said piece of fabric.

4,760,810

HULL FOR SMALL WATERCRAFT

Noboru Kobayashi, Kosai, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 21, 1986, Ser. No. 933,626
Claims priority, application Japan, Nov. 21, 1985, 60-261838
Int. Cl.[4] B63B *1/20*
U.S. Cl. 114—56 6 Claims

1. A watercraft hull for increasing stability and handling comprising a generally flat undersurface extending for a portion of the width of said hull on both sides of its longitudinal center line, a first pair of curved sections each formed transversely outwardly of the respective side of said flat undersurface and having a concave configuration for generating a reduced pressure area on opposite sides of said flat undersurface for reducing frictional losses and increasing stability, the outer periphery of said first pair of curved sections in transverse cross sections of said hull being defined by a raised chine, a second pair of curved sections formed transversely outwardly of the first pair of chines and having a concave configuration, the outer periphery of said second pair of curved sections in transverse cross sections of said hull being defined by a second pair of chines, and a third pair of curved sections

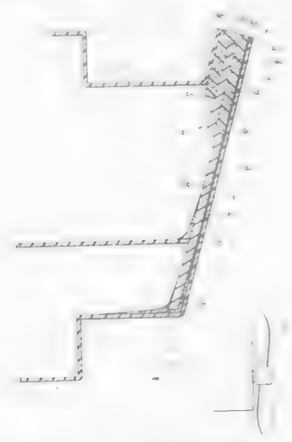
curving convexly from said second pair of chines and extending transversely outwardly of second pair of chines, the outer periphery of said third pair of curved sections being defined by a third pair of chines in transverse cross sections of said hull.

4,760,811

FRP (FIBER REINFORCED PLASTIC) TRANSOM REINFORCEMENT

Randy W. Hopper, Rte. A, Box 188, Flippin, Ark. 72634

Filed Mar. 26, 1987, Ser. No. 30,383
Int. Cl.[4] B63B *5/24*
U.S. Cl. 114—65 R 9 Claims



1. In combination with a fiber reinforced plastic boat hull of the type having a splash well and propelled by a transom mounted, outboard propulsion unit, the improvement comprising; a generally rectangular, unit handled, fiber reinforced plastic transom reinforcement side bonded to said hull on three side edges thereof, including the lower side edge, and face bonded to said transom; the upper side edge of said transom reinforcement spanning said splash well; and the fiber to resin weight ratio of said transom reinforcement being at least 60/40.

4,760,812

MINIATURE PULLEY BLOCK ASSEMBLY

Larry Stanley, Kailua, Hi., and Frank Tidswell, Santa Barbara, Calif., assignors to Mainland Windsurfing Hawaii, Inc., Goleta, Calif.

Filed Aug. 31, 1987, Ser. No. 90,853
Int. Cl.[4] B63H *9/04*
U.S. Cl. 114—108 22 Claims



1. A pulley block assembly for releasable attachment to a sheet end and requiring no overhang beyond the sheet end comprising:

(a) a first pulley block housing having planar, parallel, spaced side portions and including a first half of interconnection means for releasably interconnecting said first pulley block housing in side-by-side parallel relationship to a second pulley block housing;

(b) a first pulley roller rotatably mounted between said side portions of said first housing so that a line can pass over said first pulley roller;

(c) a second pulley block housing having planar, parallel, spaced side portions and including a mating second half of said interconnection means disposed for interconnecting said first and second pulley block housings, said interconnection means including interconnecting means for attaching the sheet to and between said first and second pulley blocks; and,

(d) a second pulley roller rotatably mounted between said side portions of said second housing so that a line can pass over said second pulley roller.

4,760,813

DEVICE FOR ELIMINATING DISTURBING HEELING OF SHIPS AT LOADING AND UNLOADING

Bo Wärmling, Karlstad, Sweden, assignor to O. F. Ahlmark & Co. EFTR. AB, Karlstad and Nils Olsson Hydraulmontage AB, Sjalevad, both of, Sweden

Continuation of Ser. No. 822,300 filed as PCT SE 85/00140 on Mar. 28, 1985, published as WO 85/04378 on Oct. 10, 1985, abandoned. This application Apr. 1, 1987, Ser. No. 32,970
Claims priority, application Sweden, Apr. 3, 1984, 8401837
Int. Cl.[4] B63B *21/16*
U.S. Cl. 114—121 10 Claims



1. A Device for eliminating distrubing heeling during loading and unloading of a ship lying at a quay with one side of the ship facing the quay, said device comprising a motor-operated winch arranged on the ship above the surface of water and having a drawing member in the form of at least one wire, belt or the like, characterized in that said drawing member is disposed to run out from the side of the ship facing the quay at a location below the surface of water for attachment to the quay above said surface of water.

4,760,814

COMPONENT LAYOUT FOR SMALL WATERCRAFT

Noboru Kobayashi, Kosai, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 26, 1986, Ser. No. 935,337
Claims priority, application Japan, Nov. 26, 1985, 60-265886
Int. Cl.[4] B63B *35/00*
U.S. Cl. 114—270 4 Claims



1. A small watercraft comprising a hull and a deck defining a longitudinal center line and an engine compartment extending transversely across said longitudinal center line, an engine positioned within said engine compartment and lying on said longitudinal center line and at its longitudinal midpoint, a jet propulsion unit positioned rearwardly of said engine and driven by said engine, a single rider's area positioned contigu-

VOL 1093 ISS 1 AUG 2 1988 UMI

ous to said engine and adapted to accommodate a single rider in straddle fashion, and a plurality of heavy supporting components for said engine juxtaposed longitudinally adjacent to said engine and disposed outwardly on opposite sides of the engine relative to the longitudinal center line and within said hull for achieving side to side balance.

4,760,815

APPARATUS FOR DISPLACING AIR THROUGH A CABINET FOR SPRAYING PAINT

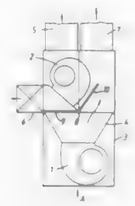
Ludwig G. Rockx, Rietven, Netherlands, assignor to NIRO Atomizer B.V., Apeldoorn, Netherlands

Filed Apr. 1, 1987, Ser. No. 32,525

Claims priority, application Netherlands, Apr. 1, 1986, 8600771

Int. Cl.[4] B05B *15/12*

U.S. Cl. 118—326 8 Claims



1. Apparatus for displacing air through a cabinet for spraying paint and cooperable with a fresh air supply and an air exhaust, comprising:

first and second fans; and

air flow directing means,

such air flow directing means, in a first configuration thereof, comprising means for causing fresh air to be drawn from the fresh air supply by said first fan and discharged therefrom into the interior of the cabinet, and for causing air to be drawn from the cabinet by said second fan and discharged therefrom to the air exhaust,

said air flow directing means being changeable to a second configuration thereof and, in achieving said second configuration, comprising means for substantially simultaneously:

closing the discharge of said first fan,

interrupting the discharge of said second fan into the air exhaust, and

communicating the discharge of said second fan into the interior of the cabinet.

4,760,816

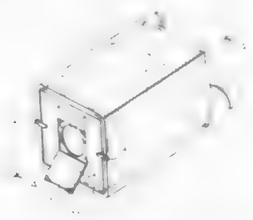
KITTY LITTER

Andrew Rhodes, 51 Watson Ave., Ossining, N.Y. 10562

Filed Apr. 24, 1986, Ser. No. 855,478

Int. Cl.[4] A1K *23/00*

U.S. Cl. 119—1 12 Claims



1. An animal litter device comprising a horizontally longitudinally collapsible expandable chamber unit containing a particulate animal litter and including opposite front and rear vertical end walls and a longitudinally contractable extendible peripheral wall extending between and joined to said end walls, said front end wall having means providing access for a cat to the interior of said chamber through said front wall; and

a support member defining a separate unit separably engaging said chamber and releasably maintaining said chamber in its expanded condition.

4,760,817

FLUIDIZED BED COMBUSTION CHAMBER IN A POWER PLANT

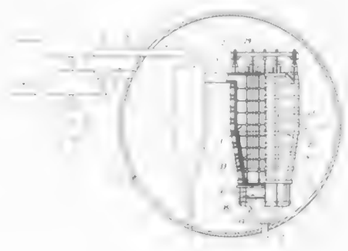
Arne Jonsson, Finspong, Sweden, assignor to Asea Stal Aktiebolag, Finspong, Sweden

Filed Dec. 2, 1987, Ser. No. 127,301

Claims priority, application Sweden, Dec. 3, 1986, 8605200

Int. Cl.[4] F22B *37/24*

U.S. Cl. 122—510 10 Claims



1. A PFBC power plant including:

a pressure plant;

a bed vessel enclosed within the pressure vessel, means in the bed vessel to create a fluidized bed of particulate material therein and to burn fuel in the said bed, the bed vessel being defined by walls which meet at corners of the bed vessel;

a framework of beams supported within the pressure vessel and surrounding the bed vessel, and

a plurality of links extending substantially perpendicularly to the walls of the bed vessel, said links being connected both to the bed vessel walls and to the framework, said links being adapted to transmit forces, acting on the bed vessel walls to the framework;

characterized in that

at the corners of the bed vessel auxiliary beams are provided which are substantially parallel to beams of the framework and are articulately connected to the framework at their ends located furthest away from the corners,

and in that each of the two walls of the bed vessel which meet at a corner are connected to a respective one of said auxiliary beams by at least two bars.

4,760,818

VAPOR PHASE INJECTOR

Mark A. Brooks, Sterling Heights, and Robert E. Fallis, Milford, both of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 16, 1986, Ser. No. 942,526

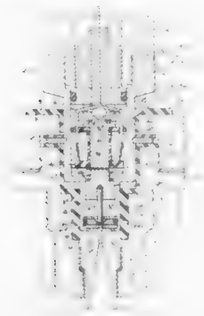
Int. Cl.[4] F02P *19/00*; F02B *9/08*

U.S. Cl. 123—298 27 Claims

1. A fuel injector comprising:

means including exit means for ejecting fuel through said exit means;

first means, adapted to be heated by external energy, positioned in surrounding relation to said exit means for receiving said fuel, for vaporizing said fuel and for causing said fuel to flow therethrough in a turbulent manner.



4,760,819

SHORT PIPE MANIFOLD FOR FOUR-STROKE ENGINES

Peter C. Vorum, 6254 E. State, Rte. 40, Lot 56, Tipp City, Ohio 45371

Filed Jul. 16, 1987, Ser. No. 74,117

Int. Cl.[4] F02B *75/18*

U.S. Cl. 123—52 MB 12 Claims



1. A four-stroke internal combustion engine, comprising;

(a) a first plurality of no more than four cylinders. including a first cylinder, each cylinder having a piston and an intake port, wherein the volume of a cylinder with its piston at mildstroke is defined as a primary voume:

(b) a second plurality of no more than four primary runners, each primary runner having a first end, a second end and a preselected length-to-area ratio, connected at each primary runner first end to a respective cylinder at the cylinder at the cylinder intake port, wherein the total volume of all primary runners, other than the primary runner connected to the first cylinder, and all intake ports connected to one of said primary runners, othe than the intake port for the first cylinder, is defined as a secondary volume;

(c) a secondary runner having a first end, a second end and a preselected length-to-area ratio, connected at its first end to the second ends of the primary runners, the second end of the secondary runner leading to the atmosphere;

(d) wherein the ratio of the length-to-area ratio of the secondary runner divided by the length-to-area ratio of any primary runner is at least 0.15; and,

(e) wherein the ratio of the secondary volume divided by the primary volume is at least 2.0.

4,760,820

PLASMA JET IGNITION APPARATUS

Luigi Tozzi, 4566 Springbrook Dr., Columbus, Ind. 47203

Continuation of Ser. No. 636,169, Jul. 31, 1984, abandoned, which is a continuation of Ser. No. 515,557, Jul. 20, 1983, Pat. No. 4,471,732. This application Dec. 23, 1986, Ser. No. 946,145

Int. Cl.[4] F02P *3/08, 33/00*; F02B *19/10, 17/00*

U.S. Cl. 123—143 B 9 Claims



1. A plasma ignition apparatus for generating plasma and for propelling said plasma from said ignition apparatus for ignition external to said ignition apparatus, said ignition apparatus comprising:

means defining a cavity;

electrical energy discharge means cooperatively arranged with said cavity and arranged for generating an electrical energy discharge in said cavity, said electrical energy discharge being at a level sufficient to generate plasma within said cavity and below a level at which the generated plasma is propelled from the cavity and capable of ignition external to the cavity; and

magnetic field generation means establishing a magnetic field within said cavity, said magnetic field providing a supplemental propelling force on said generated plasma, the strength of said magnetic field being predetermined based upon the energy level of said discharge and the geometry of said cavity so as to propel the generated plasma from the cavity for ignition external to the cavity, whereby electrode erosion is minimized and ignition and flame propagation are enhanced.

4,760,821

INTAKE SPIRAL DEVICE AND/OR TURBULENCE DEVICE FOR COMBUSTION ENGINES

Hans Aupor, Munich, and Wilhelm Müller, Neufahrn, both of Fed. Rep. of Germany, assignors to Motoren-Werke Mannheim AG vorm. Benz Abt. stat. Motorenbau., Mannheim, Fed. Rep. of Germany

Filed Nov. 5, 1986, Ser. No. 3,382

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507767; PCT Int'l Appl., Mar. 4, 1986, PCT/DE86/00081

Int. Cl.[4] F02B *31/00*

U.S. Cl. 123—308 10 Claims



1. An intake spiral and/or turbulence device for a fuel combustion engine with fuel injection and with a cylinder which is

VOL 1093 ISS 1 AG 2 1988 UMI

provided with at least one inlet channel and with a cylinder head which has a combustion chamber, said device comprising:

a first intake channel which is formed as a spiral channel through which charge air can flow into said chamber, said first intake channel having a first end and a second end, with said first end being provided with a mouth which is disposed around a first inlet valve and which is closable in said combustion chamber in said cylinder head by a first valve disk which is disposed on a portion of said first inlet valve which extends into said cylinder, and

a second intake channel which is formed as a filling channel through which charge air can flow into said chamber, said second intake channel having a first end and a second end, with said first end being provided with a mouth which is disposed around a second inlet valve and which is closable in said combustion chamber in said cylinder head by a second valve disk which is disposed on a portion of said second inlet valve which extends into said cylinder, and with said second intake channel further being provided with an adjustable flow control part which is arranged in its second end, said flow control part being controlled as a function of at least one engine parameter, further, with said flow control part being in a rest position during a fully loaded performance of said engine and in a working position during a partially loaded operation of said engine, wherein said flow control part has no effect on the flow of charge air through said second intake channel while said flow control part is in said rest position, and wherein said flow control part, while in its working positions, adjusts to at least partially close said second intake channel and to deflect the charge air flow from said second valve disk in such a way that the intake spiral and turbulence of said device is strengthened.

4,760,822

METHOD FOR CONTROLLING THE AIR/FUEL RATIO OF AN INTERNAL COMBUSTION ENGINE WITH A FUEL CUT OPERATION

Toshiyuki Mieso; Toyohei Nakajima; Yasushi Okada, and Nobuyuki Oono, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 946,023
Claims priority, application Japan, Dec. 26, 1985, 60-294408
Int. Cl.[4] F02D *41/14*
U.S. Cl. 123—325 10 Claims



1. A method for controlling an air/fuel ratio of an internal combustion engine having an air/fuel ratio control system for controlling a mixture to be supplied to said engine, comprising:

normally operating said air/fuel ratio control system by controlling an air/fuel ratio of said mixture by a feedback control operation toward a target air/fuel ratio in accordance with an oxygen concentration in an exhaust gas of said engine;

placing said air/fuel ratio control system in a fuel cut mode when a condition for a fuel cut operation is satisfied; and

resuming operation of said air/fuel ratio control system by performing said feedback control operation while controlling said target air/fuel ratio, for a predetermined time period after said fuel cut operation is terminated and said fuel supply is resumed, to be larger than a target air/fuel ratio value to be used after an elapse of said predetermined time period.

4,760,823

METHOD FOR CONTROL OF IDLE ROTATIONS OF INTERNAL COMBUSTION ENGINE

Akimasa Yasuoka; Takeo Kiuchi, and Takahiro Iwata, all of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 22, 1986, Ser. No. 865,692
Claims priority, application Japan, Jun. 24, 1985, 60-137446; Jun. 24, 1985, 60-137447
Int. Cl.[4] F02D *41/16*
U.S. Cl. 123—339 13 Claims



1. A method for the control of the idling rotational speed of an internal combustion engine provided with a control valve adapted to control the amount of inlet air to said internal combustion engine during an idling operation thereof by allowing the degree of opening of said control valve to be controlled proportionately to the value of a control valve command obtained on the basis of the sum of a feedback control term and an addition correction term conforming to the load of an automatic transmission, the method comprising:

sensing the current rotational speed of the engine,

determining a target number of idling rotations of the engine,

calculating the deviation of said current rotational speed from said target number of idling rotations,

calculating said feedback control term in accordance with said deviation of the current rotational speed,

sensing whether said automatic transmission is in its drive range or in its neutral range, the automatic transmission being provided with a pump impeller of a torque converter connected to the engine and a turbine runner connected to an output shaft, and

calculating the addition correction term when the automatic transmission is in its drive range, the addition correction term consisting of a predetermined value fixed for a standard load of the automatic transmission on the engine and at least one correction value obtained on the basis of the difference between the standard operating state and an actual operating state of the internal combustion engine at the time said control valve command is generated,

said method including the further steps of:

detecting an internal pressure in the intake manifold of the engine on the downstream side of the throttle valve of the engine while said control valve is under feedback control,

calculating a learnt value based on the value of said internal pressure in the intake manifold while said internal combustion engine is in a no-load state, and

fixing said addition correction term on the basis of the difference between said internal pressure in the intake manifold and said learnt value while said internal combustion engine is in a loaded state.

4,760,824

AUXILIARY AIR VOLUME CONTROL DEVICE FOR INTERNAL-COMBUSTION ENGINE

Hidetoshi Sakurai, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1987, Ser. No. 343
Claims priority, application Japan, Feb. 13, 1986, 61-29390
Int. Cl.[4] F02D *41/08*
U.S. Cl. 123—339 2 Claims



1. An auxiliary air control device for a liquid cooled internal-combustion engine, comprising a control valve disposed in an air bypass that communicates between the upstream and downstream sides of a throttle valve inserted in an inspired air passage of said internal-combustion engine, said control valve including a solenoid valve whose degree of opening is responsive to the magnitude of an electric current which flows through a solenoid coil associated with said valve thereby to vary the amount of air flowing through said bypass substantially in proportion to the value of a command that is supplied to said control valve, arithmetic means for calculating the value of the command that is supplied to said control valve so as to cause the number of revolutions of said engine to agree with a target number of idling revolutions, trouble detecting means for detecting a malfunction of said arithmetic means, means for generating a predetermined fixed command value, switch means responsive to the detection of a malfunction by said trouble detecting means for supplying said predetermined fixed command value to said control valve in place of the command valve from said arithmetic means, and means for circulating the engine cooling liquid around the periphery of said solenoid valve to vary the resistance of said solenoid coil with changes in the temperature of the engine cooling liquid, so that the magnitude of the electric current flowing through said solenoid coil, and accordingly the degree of opening of said control valve when there is a malfunction of said arithmetic means, is a joint predetermined desired function of said fixed command value and the temperature of the engine cooling liquid.

4,760,825

SYSTEM FOR CONTROLLING AN ENGINE AND METHOD THEREFOR

Tatsuo Morita, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation-in-part of Ser. No. 761,842, Aug. 2, 1985, Pat. No. 4,625,690. This application Oct. 2, 1986, Ser. No. 914,734
Claims priority, application Japan, Aug. 3, 1984, 59-163636; Aug. 6, 1984, 59-164589; Aug. 8, 1984, 59-121538
The portion of the term of this patent subsequent to Dec. 2, 2003, has been disclaimed.
Int. Cl.[4] F02D *41/14*
U.S. Cl. 123—340 6 Claims



1. A system for controlling an engine, comprising:

(a) first means for adjusting an intake air quantity supplied to the engine according to an opening angle thereof;

(b) second means for actuating said first means to adjust the opening angle according to an angular displacement thereof;

(c) third means for detecting a pseudo value corresponding to an indicated mean effective pressure for each engine cylinder, the pseudo value being correlative to the engine output;

(d) fourth means for detecting the angular displacement of said second means;

(e) fifth means for detecting an engine speed;

(f) sixth means for deriving a target value of the pseudo value from the angular displacement of said second means and engine speed detected by said fourth and fifth means;

(g) seventh means for comparing the derived target value of the pseudo value by said sixth means with the detected value of pseudo value by said third means;

(h) eighth means for calculating the opening angle value of said first means on the basis of a comparison result of said seventh means; and

(i) ninth means for further actuating said first means to adjust the opening angle of said first means according to the calculated opening angle of said eighth means in addition to the adjustment of the opening angle of said first means by means of said second means so that the detected pseudo value by said third means coincides with the calculated target value thereof by said sixth means.

4,760,826

ENGINE THROTTLE VALVE CONTROL DEVICE

Nagahisa Fujita; Itaru Okuno, and Tadashi Kaneko, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 8, 1987, Ser. No. 59,748
Claims priority, application Japan, Jun. 12, 1986, 61-137124
Int. Cl.[4] F02D *9/08, 41/02*
U.S. Cl. 123—399 7 Claims

1. Engine throttle valve control device comprising accelerator position detecting means for detecting the amount of the operation of an accelerator pedal, throttle opening determining means for determining a desired throttle opening of the throttle valve in accordance with the detected amount of operation of the pedal, pulse generating means which generates a drive signal in the form of pulses for driving a step motor in response

VOL 1093 ISS 1 AG 2 1988 UMI

to the desired throttle opening, a step motor which is applied with said drive signal and rotates to operate the throttle valve connected thereto so that a desired throttle opening is obtained, detecting means for detecting the need for changing the



rotational direction of the step motor, and delaying means which delays the supply of the drive signal to the step motor for a predetermined period when the need for changing the rotational direction of the step motor is detected by the detecting means.

4,760,827

APPARATUS AND METHOD FOR THE IDENTIFICATION OF ANGULAR PULSES

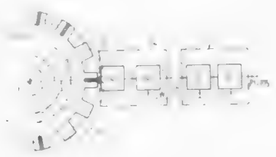
Hans Schreiber, Lappersdorf, and Marek Molin, Neutraubling, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 25, 1986, Ser. No. 934,702

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1986, 3541624

Int. Cl.[4] F22D *1/00*

U.S. Cl. 123—414 7 Claims



1. Apparatus for the identification of angular pulses comprising in combination;

timing means including a disk coupled to a shaft of an internal combustion engine,

said timing disk having a plurality of angular marks distributed about the periphery of said timing disk at intervals defined by code element angles,

a plurality of code sectors distributed about the periphery of said timing disk at intervals defined by a plurality of consecutive code elements,

said code elements being of variable length with at least some of said code elements containing one or more code marks,

each of said code sectors having a unique combination of code marks within its code elements,

a pulse generator juxtaposed with said timing disk for sensing said angular marks and for producing pulses in response to said angular marks and said code marks,

a decoder connected to said pulse generator, said decoder containing a counter for counting code pulses occurring between two successive angular marks, and

means connected to said counter for producing one of a plurality of signals at the end of every code element to identify an angular mark.

4,760,828

IGNITION TIMING CONTROLLER FOR MULTI-CYLINDER ENGINE

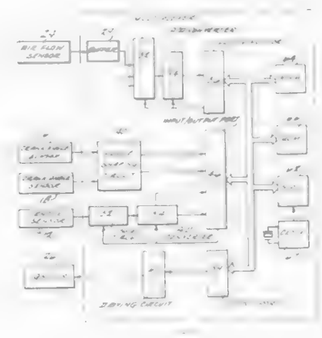
Shiro Shimada; Hiroshi Haraguchi, both of Kariya, and Toshiharu Iwata, Nukata, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 20, 1987, Ser. No. 16,936

Claims priority, application Japan, Feb. 21, 1986, 61-37682

Int. Cl.[4] F02P *5/04*

U.S. Cl. 123—425 6 Claims



1. An ignition timing arrangement for a multi-cylinder internal combustion engine, comprising:

knock detecting means for detecting knocks generated in the individual cylinders of said engine;

first discriminating means for comparing the frequency of knocking detected with a predetermined value, and generating a continuous knocking signal when the frequency of knocking is greater than the predetermined value, and generating a sporadic knocking signal when the frequency of knocking is less than the predetermined value;

second discriminating means for discriminating which cylinder among the plurality of cylinders is knocking and generating a same cylinder signal when the same cylinder is determined to be knocking as successive engine cycles and generating a different cylinder signal when it is determined that different cylinders are knocking on successive engine cycles;

ignition timing control means for delaying the ignition timings for all the cylinders in response to the different cylinder signal, and for delaying individually the ignition timing for only the knocking cylinder when that one cylinder is sporadically knocking or the same cylinder signal is generated indicating continuous knocking of that cylinder.

4,760,829

FUEL CONTROL APPARATUS FOR A FUEL INJECTION SYSTEM OF AN INTERNAL COMBUSTION ENGINE

Yoshiaki Kanno; Katsuya Nakamoto, and Jiro Sumitani, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 7, 1987, Ser. No. 46,640

Claims priority, application Japan, May 9, 1986, 61-107204

Int. Cl.[4] F02M *51/00*

U.S. Cl. 123—488 2 Claims

1. A fuel control apparatus for a fuel injection system of an internal combustion engine having at least one fuel injector for supplying fuel to corresponding cylinders of said engine, said fuel control apparatus comprising:

air flow sensing means for sensing a rate of air flowing into an air intake pipe of the engine and producing an electrical output signal having a frequency proportional to said air flow rate;

crank angle sensing means for producing an electrical output pulse each time a crankshaft of the engine is at a prescribed crank angle;

frequency division means for producing an output having a frequency which is one-half the output signal frequency of said air flow sensing means by performing frequency division of the output signal of said air flow sensing means



when engine load exceeds a prescribed value and for producing an output having the same frequency as the output signal of said air flow sensing means when engine load is below said prescribed value; and

control means for determining an actual rate of air flowing into the cylinders of said engine based on the output of said frequency division means and the output pulse of said crank angle sensing means and for controlling the fuel injector based on said previously determined air flow rate.

4,760,830

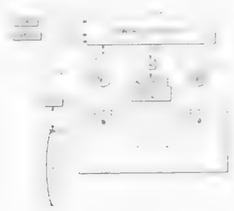
METHOD AND APPARATUS FOR CONTROLLING FUEL INJECTION TIMING IN A COMPRESSION IGNITION ENGINE

Robert H. Bullis, Avon, Conn.; Robert A. DiDomenico, Ludlow, Mass.; John A. Kimberley, East Granby, Conn.; Thomas M. McHugh, Manchester, Conn.; Christopher A. Parent, West Springfield, Mass.; James R. Voss, Wilbraham, Mass., and Walter J. Wiegand, Glastonbury, Conn., assignors to Ambac Industries, Incorporated, Springfield, Mass.

Continuation of Ser. No. 791,891, Jan. 14, 1985, abandoned, which is a continuation of Ser. No. 532,293, Sep. 14, 1983, abandoned, which is a continuation of Ser. No. 286,130, Jul. 23, 1981, abandoned. This application Aug. 19, 1987, Ser. No. 88,474

Int. Cl.[4] F02P *5/04*; F02M *39/00*

U.S. Cl. 123—501 7 Claims



1. A system for controlling the timing of injection of diesel fuel into a combustion chamber of a diesel engine, comprising:

light-transmissive means having a light-input portion confronting the interior of the part of said combustion chamber in which initial combustion of said fuel normally takes place, to receive and transmit light produced by said combustion in said chamber;

photoresponsive means supplied with light from said light transmissive means and responsive thereto to produce a substantially instantaneous increase in its electrical output upon the start of said combustion;

signal shaping means responsive to said electrical output of said photoresponsive means for producing a start-of-combustion signal substantially simultaneously with said substantially instantaneously increase in said electrical output;

electrical control means responsive to said start of combustion signal for controlling said timing of injection of said diesel fuel;

and means supporting said light input portion of said light transmissive means in a position where it is exposed to said light produced in said combustion chamber, said supporting means providing a high enough temperature and a great enough rate of combustion gas flow across said light input portion to effect self-cleaning of it.

4,760,831

ADJUSTMENT MECHANISM FOR CHANGING DISCHARGE INITIATION AND TIMING OF AN INTERNAL COMBUSTION ENGINE

Joachim Altdorf, Cologne, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Apr. 20, 1987, Ser. No. 40,140

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1986, 3614281

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—501 15 Claims



1. In combination with a casing, a camshaft and a plunger mounted on said casing and reciprocated by a cam of said camshaft in a direction radial to said camshaft, an adjustment mechanism for displacing the plunger tangentially relative to said camshaft comprising:

a support body mounted on said casing for translational shifting movement on an oblique axis disposed at an acute angle to the direction of the reciprocative movement of said plunger effected by said cam,

a borehole in said support body in surrounding and guiding relation to said plunger, said borehole being parallel to the diection of movement of said plunger and

an operating component connected to said support body operable to shift the latter axially on said oblique axis thereby translationally displacing said plunger tangentially relative to said camshaft.

VOL 1093 ISS 1 AG 2 1988 UMI

4,760,832

METERING OF FUEL TO AN ENGINE

Darren A. Smith, Scarborough; Michael L. McKay, Willetton, and Christopher N. F. Sayer, Ferndale, all of Australia, assignors to Orbital Engine Company Proprietary Limited, Balcatta, Australia

Filed Oct. 14, 1986, Ser. No. 918,312

Claims priority, application Australia, Oct. 14, 1985, PH2900; May 22, 1986, PH6040

Int. Cl.[4] F02M *21/02*

U.S. Cl. 123—525 35 Claims



1. A method of delivering fuel to an engine including circulating fuel through a metering chamber to prepare a metered quantity of fuel in said chamber, and discharging the metered quantity of fuel from the metering chamber for delivery to the engine by the admission of gas to the metering chamber to displace the metered quantity of fuel therefrom, the improvement comprising controlling the fuel circulation by means operable to terminate the circulation in response to a predetermined pressure of the gas available for admission to the metering chamber, cyclically supplying gas at at least said predetermined pressure, to effect termination of fuel circulation and to said metering chamber to displace the fuel therefrom, in a sequence so that circulation of the fuel is terminated before the gas is admitted to the metering chamber.

4,760,833

ENGINE CRANKCASE VACUUM CHECK VALVE SYSTEM FOR INTERNAL COMBUSTION ENGINES

Alfred F. Tatyrek, 27 Orchard Rd., Maplewood, Essex County, N.J. 07040

Filed Sep. 2, 1986, Ser. No. 903,814

Int. Cl.[4] F02M *25/06*

U.S. Cl. 123—574 11 Claims

1. In a piston engine comprising a piston-cylinder means defining a combustion chamber, said piston and cylinder cooperatively defining a piston-cylinder interface, an air induction duct for supplying clean air to the combustion chamber in response to vacuum forces developed by reciprocable motion of the piston, a throttle valve operable to vary the vacuum force in the air induction duct, valve means operated in timed relation to the piston to control air flow into the combustion chamber, a crankcase containing liquid lubricant for the engine, said crankcase being in continuous open communication with the piston whereby blowby vapors can pass from the combustion chamber through said piston-cylinder interface to contaminate the crankcase lubricant:

The improvement comprising means for maintaining a substantially continuous vacuum force on said crankcase measuring at least one inch of Mercury, said vacuum-maintaining means comprising means for venting the crankcase to remove blowby vapors therefrom; said venting means including a passage means interconnecting the crankcase and a point in the air induction duct downstream from the aforementioned throttle valve, a check valve in said passage means permitting unthrottled flow of vapors from the crankcase to the air induction duct while preventing reverse flow from the air induction duct to the crankcase;



and a normally continuously closed vacuum relief valve permitting inflow of air from ambient atmosphere to the crankcase only when the vacuum therein exceeds a predetermined value greater than one inch of Mercury, said normally continuously closed vacuum relief valve being operable to prevent excessively high vacuum forces from developing in the crankcase while otherwise sealing said crankcase against crankcase oil leakage to the ambient atmosphere.

4,760,834

CLIP WITH RIB STOP MECHANISM FOR SUPPLYING PROJECTILES TO GUN

Martin A. Chevalier, Hudson, Wis., assignor to BallistiVet, Inc., White Bear Lake, Minn.

Filed Feb. 12, 1987, Ser. No. 13,701

Int. Cl.[4] F41C *25/00*

U.S. Cl. 124—51 R 21 Claims



1. A clip for supplying hygienic projectiles to a ballistic implant gun, said gun having a bolt at the rear of its bore, said clip comprising:

(a) a rectangular structure having a plurality of chambers with parallel axes, each chamber being capable of separately storing a hygienic projectile;

(b) indexing means associated with each of said chambers for aligning said chambers with a firing chamber in said gun and for indexing said chambers consecutively after each said projectile has been fired from said gun; and

(c) stopping means for preventing engagement of said bolt with a chamber when said chambers are empty.

4,760,835

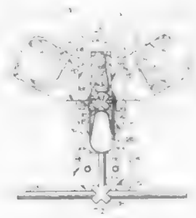
BALL THROWING DEVICE

Kerry K. Paulson, 44 SW. Eagle Crest Dr. #18; John G. Paulson, 2896 SW. Lakeview Blvd., both of Lake Oswego, Oreg. 97034, and John K. Paulson, deceased, late of Lake Oswego, Oreg. (by Kerry K. Paulson, John G. Paulson, executors)

Filed Oct. 29, 1985, Ser. No. 792,654

Int. Cl.[4] F41B *3/04*

U.S. Cl. 124—78 8 Claims





1. A ball throwing device, comprising:

(a) a base member,

(b) ball projecting means mounted on the base member and operable to project a ball therefrom in a plane thereof,

(c) a base support having a central vertical axis

(d) an elongated, one-piece, rigid support arm mounted at its bottom end on the base support, said support arm having an oblique angular bend intermediate its ends and having a portion thereof extending along said vertical axis of said base support,

(e) a universal mounting ball on the upper end of the support arm,

(f) a ball-receiving socket on the base member, and

(g) clamp means on the base member releasably engaging the mounting ball for releasably securing the base member to the mounting ball for adjusting the plane of the ball projecting means between a substantially horizontal position above the mounting ball and a substantially vertical position to the side of the support arm.

4,760,836

SPARK IGNITION SAFETY SYSTEM FOR A GAS BARBEQUE

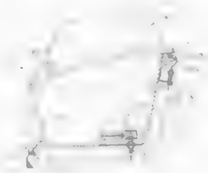
Terrence R. Witzel, Waterloo, Canada, assignor to Onward Multi-Corp., Inc., Kitchener, Canada

Filed Sep. 25, 1987, Ser. No. 101,381

Int. Cl.[4] F24C *3/12*

U.S. Cl. 126—42 5 Claims

1. In a gas barbeque comprising a bottom casting having a base and upstanding walls circumscribing the base, an electrically conductive lid pivotally hinged thereto to pivot between closed position resting on the upper edges of the walls of the bottom to form an enclosed cooking chamber, and open position, a gas burner element supported on the base and an internal electrode positioned within the bottom in proximity to the burner element for generating a spark across a gap in the electrode and igniting gas fed to the burner element and a spark generation means electronically associated by means of appropriate circuitry electronically associated with the electrode to cause the electrode to spark when the spark generation means is manipulated by an operator, the improvement characterized by the barbeque being provided with a spark ignition safety



system comprising a second electrode secured externally to the barbeque, electronically associated with the spark generation means and mechanically associated with the lid and bottom so that a spark is only generated through this second electrode when the lid is in closed position and a spark is only generated through the internal electrode when the lid is in open position.

4,760,837

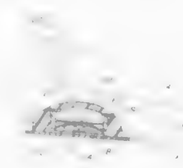
APPARATUS FOR VERIFYING THE POSITION OF NEEDLE TIP WITHIN THE INJECTION RESERVOIR OF AN IMPLANTABLE MEDICAL DEVICE

Michael G. Petit, Santa Barbara, Calif., assignor to Inamed Development Company, Santa Barbara, Calif.

Filed Feb. 19, 1987, Ser. No. 16,251

Int. Cl.[4] A61B *19/00*

U.S. Cl. 128—1 R 9 Claims



1. An improved bi-directional fill port for use in conjunction with a hypodermic needle for emptying and filling a subcutaneous fluid reservoir comprising a housing defining a reservoir wherein at least a portion of said housing further comprises a fluid impermeable needle-penetrable septum, the improvement comprising (A) a flexible first member disposed within said reservoir substantially underlying said septum such that when said needle pierces said septum and enters said reservoir said needle will push against said first member causing it to move; and (B) A second member disposed in juxtaposition to said first member, said first and second members providing noise making means such that movement of said first member against said second member produces an extracorporeally detectable mechanical vibration with at least one frequency component being within the range of 0–20 KHZ.

VOL 1093 ISS 1 AUG 2 1988 UMI

4,760,838

ENDOSCOPE APPARATUS AND AIR-/LIQUID-SUPPLY DEVICE THEREFOR

Hiroyuki Fukuda, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 2, 1987, Ser. No. 56,998
Claims priority, application Japan, Jun. 12, 1986, 61-89552[U]
Int. Cl.[4] A61B 1/12
U.S. Cl. 128—4 7 Claims



1. An endoscope apparatus comprising: an endoscope body including

an operation section,

an insertion section extending from the operation section,

an observation window arranged at a distal end portion of the insertion section,

a spray nozzle provided at the distal end portion of the insertion section and directed toward the observation window,

an air-supply pipe extending through the operation section and insertion section, and connected to the nozzle, and

a liquid-supply pipe extending through the operation section and insertion section, and connected to the nozzle; and

an air-/liquid-supply device for supplying air and a liquid to said air- and liquid-supply pipes, respectively, the air-/liquid-supply device including

a liquid storage tank for storing a liquid,

a partition member arranged in the tank, to divide a space defined by the surface of the liquid and the inner surface of the tank into a first chamber on the liquid side and a second chamber, the partition member having communicating means for enabling the first chamber to communicate with the second chamber,

a first supply pipe having one end connected to the air-supply pipe and the other end communicating with the second chamber,

a second supply pipe having one end connected to the liquid-supply pipe and the other end dipped in the liquid stored in the tank,

first air-supply means, for supplying compressed air to the space, so as to supply the compressed air to the first supply pipe and to supply the liquid stored in the tank to the second supply pipe,

second air-supply means, for supplying air having a pressure higher than that of the first air-supply means, to the second chamber, and further, to the first supply pipe, and

regulating means for preventing compressed air supplied from the second air-supply means to said second chamber from flowing into the first chamber.

4,760,839

MESH PATTERN ERASER FOR ENDOSCOPE

Tatsuo Nagasaki, Musashino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 657,272, Oct. 3, 1984, abandoned. This application Oct. 24, 1986, Ser. No. 922,801
Claims priority, application Japan, Oct. 3, 1983, 58-184682
Int. Cl.[4] A61B 1/06; H04N 9/04
U.S. Cl. 128—6 27 Claims



10. An endoscope comprising:

an inserting member having an inserted end and a rear end;

an image guide composed of a bundle of optical fibers regularly arranged in a two-dimensional pattern having adjacent fibers linearly arranged along a plurality of axes and having a spatial frequency resolution determined by said linear arrangement, said image guide being arranged in said inserting member for transferring an optical image from said inserted end to said rear end;

an image forming optical system in said inserted end for creating an optical image on an image receiving end face of said image guide at said inserted end;

an eye lens optical system for observing said optical image at an exit end face of said image guide at said rear end; and

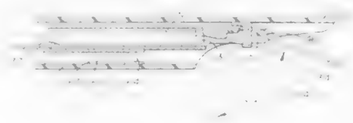
a means in said endoscope to cut off interference in said created optical image, said means consisting of an optical low pass filter, having at least one transparent double refracting optical element of a thickness such that it passes only spatial frequency components lower than a predetermined spatial frequency, positioned at said image receiving end face of said image guide, and low pass optical filter means at said exit end face of said image guide to eliminate a mesh pattern in an observed image.

4,760,840

ENDOSCOPIC LASER INSTRUMENT

George R. Fournier, Jr., San Francisco; Andrew H. Kung, Moraga, and Jack W. McAninch, Mill Valley, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 16, 1986, Ser. No. 942,362
Int. Cl.[4] A61B 17/36
U.S. Cl. 128—303.1 27 Claims



1. An endoscopic laser instrument, having a longitudinal axis, for treating a selected area of body tissue comprising

an outer tubular sheath having open proximal and distal ends,

endoscopic means mounted in said sheath and having an eyepiece and a viewing lens disposed adjacent to the proximal and distal ends of said sheath, respectively, for providing a visual field having a wide viewing angle of at least 30°,

laser light transmitting means mounted in said sheath and terminating at a distal end thereof disposed adjacent to the distal end of said sheath for emitting a laser beam from said instrument,

reflecting means, disposed entirely forwardly of and having an area substantially larger than said viewing lens and further disposed adjacent to and in facing relationship relative to the distal end of said laser light transmitting means, for receiving and reflecting said laser beam without changing the character or the divergence thereof after said beam exits said laser light transmitting means and impinges on said selected area of body tissue, said viewing lens disposed longitudinally between the distal end of said laser light transmitting means and said reflecting means to permit said laser beam to intersect said visual field prior to its reflection by said reflecting means, and

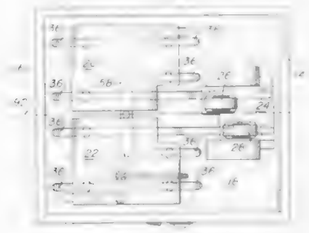
adjustment means for selectively tilting said reflecting means to direct said reflected laser beam within the range of said visual field.

4,760,841

METHOD AND APPARATUS FOR LOWER BACK MANIPULATION

H. Stanford Holler, General Delivery, Unionville, Pa. 19375

Filed Apr. 1, 1987, Ser. No. 33,143
Int. Cl.[4] A61H 1/00; A61F 5/00
U.S. Cl. 128—52 15 Claims



1. An apparatus for manipulation of the lower back comprising: two pelvic carriages each positioned adjacent one another and adapted to support opposite sides of the rear of the pelvis, a roller carriage having two rollers adapted for contacting the lower back adjacent the center line of the spine when the pelvic carriages are supporting the pelvis, means for causing a reciprocating movement of the pelvic carriages with respect to one another in opposite directions, means for simultaneously causing a reciprocating motion of the roller carriage in a timed relationship with respect to the movement of the pelvic carriages with the rollers adapted to contact and move along the lumbosacral portions of the spine during reciprocation.

4,760,842

THERAPEUTIC TRACTION DEVICE

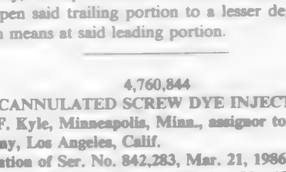
Kenneth E. Holmes, 16871 Saybrook La., Huntington Beach, Calif. 92649

Filed Feb. 5, 1987, Ser. No. 10,919
Int. Cl.[4] A61F 5/00
U.S. Cl. 128—75 12 Claims

1. A therapeutic traction device comprising:

a rigid support adapted to be placed beneath a person's neck while the person is lying on his back on a support surface;

said support including rigid side walls and a similarly rigid top wall having a central area that is engaged by the person's neck and an end portion at each end of said central area, said central area being recessed relative to said end portions, the height of said support being sufficient to raise the person's head so that the weight is primarily on the neck and a traction effect is applied to the spine; and



said recessed central area including a shallow groove adapted to be aligned with and receive a portion of the person's spine to relieve the direct pressure on the spine.

4,760,843

CONNECTOR FOR FRACTURED BONES

Artur Fischer, Weinhalde 34, D-7244 Waldachtal 3/Tumlingen, and Wolfgang Kramer, Feldbergstrasse 10, D-7031 Oberjettingen, both of Fed. Rep. of Germany

Filed Jul. 2, 1986, Ser. No. 884,103
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1985, 8520206[U]; Oct. 28, 1985, 3538238
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—92 YF 10 Claims



1. A connector for fractured bones, comprising a plug sleeve adapted for inserting into a bore formed in a fractured bone for bridging the fracture thereof, and having a leading portion adapted to be located in one bone fragment and a trailing portion adapted to communicate with the other bone fragment; an expander screw insertable and engageable in said plug sleeve, said plug sleeve having an outer surface having a shape of a thread, said sleeve being expandable at said leading portion and at said trailing portion, said screw having a head which is faced by said trailing portion in assembly; and expansion means provided at said trailing portion and said leading portion, respectively, the expansion means at said trailing portion being able to open said trailing portion to a lesser degree that the expansion means at said leading portion.

4,760,844

CANNULATED SCREW DYE INJECTOR

Richard F. Kyle, Minneapolis, Minn., assignor to Ace Medical Company, Los Angeles, Calif.

Continuation of Ser. No. 842,283, Mar. 21, 1986, abandoned. This application Dec. 4, 1987, Ser. No. 132,624
Int. Cl.[4] A61F 5/01
U.S. Cl. 128—92 YQ 2 Claims

1. A method of determining break out of a orthopedic hip fixation cannulated lag screw having threads and a cannula opening at a distal and a head at a proximal end extending through the ball head portion of a femur bone, comprising the steps of:

implanting said orthopedic hip fixation cannulated lag screw into said ball head portion of said femur bone;

inserting a needle end of a cannulated screw dye injector into a head end of said orthopedic hip fixation cannulated lag screw;

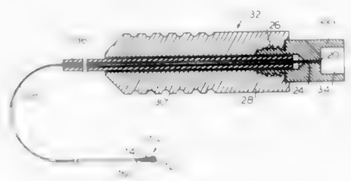
VOL 1093 ISS 1 AG 2 1988 UMI

inserting a syringe filled with a dye into a flange end of said cannulated screw dye injector;
communicating said dye under pressure from said syringe, through said cannulated screw dye injector, through said



cannula opening of said orthopedic hip fixation cannulated lag screw, and possibly into a hip socket; and
photographing said hip socket for the presence of said dye in said hip socket.

4,760,845
LASER ANGIOPLASTY PROBE
Steven W. Kovalcheck, San Diego, Calif., assignor to HGM Medical Laser Systems, Inc., Salt Lake City, Utah
Filed Jan. 14, 1987, Ser. No. 3,209
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—303.1 21 Claims



21. A laser-energizable thermal probe device, comprising:
(a) an optical fiber having a proximal end portion connectable to a laser energy source, for transmission of laser energy therethrough to a distal end portion thereof; and
(b) a probe assembly connected to said distal end portion of said optical fiber, and comprising:
(i) a thermally conductive probe body including a curvoidal tip and a neck portion joined to said tip and extending proximally therefrom, with an interior passage in said probe body extending through said neck portion containing said distal end portion of said optical fiber, whereby laser energy transmitted by said optical fiber to said probe body and converted to thermal energy is transmittable by said tip thereof to a selected site in contact with said tip; and
(ii) a thermally conductive material formed with a distal portion mounted on said neck portion and a proximal portion mounted on said optical fiber to provide an extended heat transfer dissipation path for heat generated by said probe assembly in use.

4,760,846
RADIAL ARTERY CLAMP
William C. Mers Kelly, Beavercreek, and Robert F. Freund, Centerville, both of Ohio, assignors to Freund Medical Products, Inc., Dayton, Ohio
Filed Mar. 23, 1987, Ser. No. 29,218
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—327 12 Claims



1. An artery clamp comprising:
a band member, placeable around the arm of a patient, and,
a pressure pad member, mounted on said band member, said pressure pad member including
a first leg for applying pressure to the radial artery of the arm of a patient, and
a second leg, spaced from said first leg, for contacting the arm of the patient to stabilize said pad member, said second leg being disposed and sized so as not to apply sufficient pressure to the ulnar artery of the arm of the patient to totally block the flow of blood therethrough, said first and second legs each defining a skin contacting surface, the area of the skin contacting surface of said first leg being substantially greater than the area of the skin contacting surface of said second leg, whereby circulation of blood to the hand of the patient is maintained.

4,760,847
DEPTH MEASURING DEVICE
Vincent Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039
Filed Aug. 18, 1986, Ser. No. 897,747
Int. Cl.[4] A61B *17/34*
U.S. Cl. 128—329 R 13 Claims



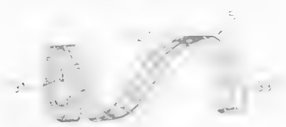
1. A depth measuring device for an implanted vascular access port comprising
a holder;
a straight needle of solid construction secured in said holder and having a sharp end for penetrating through a skin layer into and bottoming on an implanted vascular access port;
a rider slidably mounted on said needle;
a tube removably mounted on said holder over said needle, said tube being removable from said holder to expose said needle for penetration through a skin layer; and
a graduated scale on said tube for measuring the distance of said rider to said sharp end of said needle after withdrawal of said needle from the vascular access port and remounting of said tube on said holder to indicate the depth of penetration of said needle into the vascular access port.

4,760,848
ROTATIONAL SURGICAL INSTRUMENT
Harrith M. Hasson, P.O. Box 14898, Chicago, Ill. 60614
Filed Nov. 3, 1986, Ser. No. 925,900
Int. Cl.[4] A61B *17/00*; A47F *13/06*; B25B *1/00*
U.S. Cl. 128—340 15 Claims



1. An improved instrument of the type having a longitudinal casing, an exposed working head with an associated element that is moveable between an open position and a closed position, an actuating link slidably mounted relative to the longitudinal casing for moving said element selectively between said open and closed positions, and an actuator mechanism for sliding said actuating link, the improvement comprising:
means biasing the actuating link so that the working head element is urged towards said closed position,
said actuator mechanism including means responsive to a laterally directed force to move the actuating link against a force exerted by the biasing means to move the working head element toward said open position.

4,760,849
PLANAR BLANK AND A COIL SPRING MANUFACTURED THEREFROM
Laurent Kropf, Penthaz, Switzerland, assignor to Medinvent S.A., Lausanne, Switzerland
Filed Mar. 31, 1986, Ser. No. 846,220
Claims priority, application Sweden, Apr. 10, 1985, 8501762
Int. Cl.[4] A61M *29/00*
U.S. Cl. 128—341 8 Claims



1. A coil spring for intraluminal implantation and having an essentially helix-shaped configuration, the spring material being radially flattened as seen in an axial cross section and comprising a mid section of circular cylindric shape and two integral end sections having, relative to the mid section, lower pitch, one end section consists of several turns which, in a direction perpendicular to the centre line of the coil spring, lie in essentially a common plane and which in a direction towards a free end of said one end section have a progressively decreasing radius of curvature.

4,760,850
METHOD FOR BALANCING ASSISTANCE
Chandler A. Phillips, Tipp City, and Jerrold S. Petrofsky, Beavercreek, both of Ohio, assignors to Wright State University, Dayton, Ohio
Filed May 15, 1986, Ser. No. 863,744
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—432 W 6 Claims



1. Method of assisting a spinal-cord-injured person to maintain a balanced stance comprising the steps of:
securing braces to both legs of said person,
generating four balance signals corresponding to the loads created by the weight of said person at forward and rearward portions of both feet,
applying tactile stimuli corresponding to said balance signals in a spaced pattern on a sensitive skin area of said person for enabling said person to maintain a balanced stance.

4,760,851
3-DIMENSIONAL DIGITIZER FOR SKELETAL ANALYSIS
Gregory A. Fraser, Dollard des Ormeaux, and Simon Raab, Lorraine, both of Canada, assignors to Faro Medical Technologies Inc., Montreal, Canada
Filed Mar. 31, 1986, Ser. No. 846,244
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—774 12 Claims



1. A method of performing 3-dimensional skeletal analysis on a patient using an apparatus which includes digitizer means, said digitizer means comprising a plurality of rotatable transducers, a plurality of link members linking said rotatable transducers, and a digitizer tip having a free end, said digitizer means accepting either a scanning digitizer tip or a point digitizer tip, said scanning tip comprising means at the free end thereof for performing scans, said point digitizer tip compris-

VOL 1093 ISS 1 AG 2 1988 UMI

ing a point at the free end thereof for performing single point landmark digitizations, said method comprising the steps of:

(A) placing the patient in a variety of positions relevant to musculoskeletal problems, the position of said patient being changed, as required, between the performance of the steps as recited in paragraph (B) below;

(B) performing a series of scans, with said scanning digitizer tip, by moving said scanning digitizer tip along lines of interest on the surface of said patient's body, and performing single point landmark digitizations of musculoskeletal landmarks, with said point digitizer tip, by moving said point of said point digitizer tip to points of interest on the surface of said patient's body, to obtain 3-dimensional skeletal data;

(C) analyzing said data in order to provide clinically relevant 3-dimensional information relating to musculoskeletal quantitites and imbalances.

4,760,852

HEART PACEMAKER ELECTRODE HAVING TWO PORTIONS OF DIFFERENT CONDUCTIVE PROPERTIES FOR STIMULATING AND SENSING

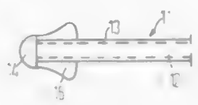
Anders Lekholm, Bromma, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 4, 1986, Ser. No. 904,101

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1985, 3532084

Int. Cl.[4] A61N *1/04*

U.S. Cl. 128—785 4 Claims



1. An electrode head for a distal, heart-proximate end of a heart pacemaker lead comprising:

a high conductivity tip portion of said electrode head and a low conductivity tail portion of said electrode head, said high and low conductivity portions being disposed adjacent to each other and being electrically connected, said high conductivity tip portion comprising a tip area of said electrode head that is substantially smaller in area than said low conductivity tail portion, said low conductivity portion including conductive flexible plastic projections that extend rearwardly from said tip area adapted for engaging heart trabeculae to retain said tip and tail portions in electrical contact with heart tissue, said high conductivity portion having a conductivity selected for applying stimulation pulses to said heart primarily only via said high conductivity tip portion, and said low conductivity tail portion having a conductivity selected such that both high conductivity and low conductivity portions of said electrode head are effective for sensing signals from said heart, said low conductivity tail portion being effective for sensing signals from a larger area within said heart than is said high conductivity tip portion.

4,760,853

DEVICE FOR FEEDING CIGARETTES TO THE WRAPPING LINE OF A PACKAGING MACHINE

Antonio Gamberini, Bologna, Italy, assignor to G.D. Societá per Azioni, Bologna, Italy

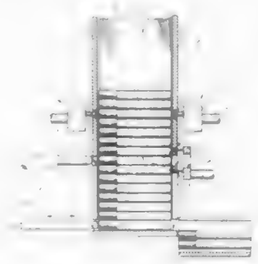
Filed Dec. 9, 1983, Ser. No. 559,825

Claims priority, application Italy, Dec. 22, 1982, 3628 A/82

Int. Cl.[4] A24C *5/35*; B07C *5/34*

U.S. Cl. 131—283 2 Claims

1. A device for feeding cigarettes to the wrapping line of a packaging machine, the device comprising: a hopper for feeding cigarettes to said machine, said hopper being divided into channels each having a width substantially equal to the diameter of one cigarette and through which the cigarettes disposed in piles descend stepwise; sensor means in each of said channels for checking for defective cigarettes; at least one expulsion device controlled by said sensor means for expelling the defective cigarette from said hopper; means for retaining the cigarettes both above and below the defective cigarette during expulsion thereof in a fixed position, the means for retaining



being driven in a forward and backward movement relative to the hopper, the means for retaining further being provided with engagement means constituted by needles parallel to the cigarettes contained in the hopper, the engagement means engaging the cigarettes; and operating means for said retaining means to activate the retaining means in synchronism with stages during which the piles of cigarettes are halted along said channels.

4,760,854

TOBACCO EXPANSION PROCESS

John N. Jewell, and Kevin R. Korte, both of Louisville, Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 2, 1985, Ser. No. 803,450

Int. Cl.[4] A24B *3/18*

U.S. Cl. 131—291 13 Claims

12. An improved tobacco treating process comprising ordering tobacco with a mixture of glycerin and water wherein said tobacco has a moisture content of approximately 25% by weight; contacting the ordered tobacco with gaseous carbon dioxide at pressure in the range of approximately 370 psig to approximately 425 psig and temperature in the range of approximately 14° F. to approximately 23° F.; contacting the ordered tobacco with liquid carbon dioxide; and reducing the pressure sufficiently to freeze the moisture in the tobacco; and, subjecting the tobacco to pre-separator and separator vaporization with the pre-separator residence time being approximately in the range of 0.01 to 0.1 seconds to provide an exit tobacco having a moisture content of approximately 11% oven volatiles and fill values at least equivalent to fill values of tobaccos dried to a lower moisture content not exceeding 6% at a pre-separator residence time greater than 0.1 seconds.

4,760,855

HAIRDRESSING CAP

Antonio DiLorenzo, 21 Bedford St., Methuen, Mass. 01844

Filed Jul. 27, 1987, Ser. No. 77,807

Int. Cl.[4] A45D *19/18*

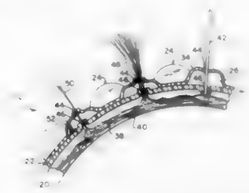
U.S. Cl. 132—9 11 Claims

1. A device for selectively treating strands of hair with a treating solution comprising:

a fluid impervious flexible sheet material adapted to conform to the head of a person in generally overlying relationship to the hair thereof and having an inner surface and an outer surface;

said sheet material having a plurality of air cells disposed in spaced relationship about the outer surface of said sheet material;

said air cells being formed of a generally dome-shaped flexible wall and having a base wall integral with said sheet material;



said air cells being puncturable through said dome wall and said base wall to form upper and lower perforations permitting strands of hair to be pulled therethrough for treatment with said treating solution;

said punctured air cell walls forming seal means around said strands of hair, whereby to prevent the penetration of treating solution to the hair below said sheet material.

4,760,856

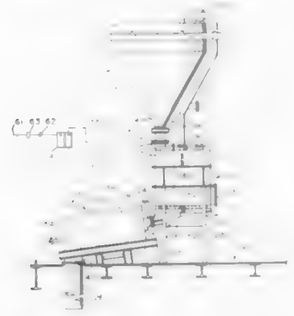
METHOD AND APPARATUS FOR CONDITIONING FLY ASH

Richard W. Jocsak, Easton, Pa., assignor to Fuller Company, Bethlehem, Pa.

Continuation of Ser. No. 599,389, Apr. 12, 1984, abandoned. This application Oct. 20, 1986, Ser. No. 919,562

Int. Cl.[4] B08B *3/04*

U.S. Cl. 134—56 R 5 Claims



1. Apparatus for emptying bulk material from a vessel having an outlet comprising:

a material conditioner having an inlet flow connected to the outlet of a vessel to be emptied and an outlet for wetted material;

a level box positioned between the outlet of the vessel and the inlet of the material conditioner including an inlet for receiving material from the vessel and an outlet for discharging material to the conditioner;

means for supplying a liquid to the conditioner for wetting the material therein;

means for sensing the rate of flow of material from the vessel to the material conditioner including means for continuously sensing the depth of material in the level box;

valve means for controlling the flow of material from the vessel to the level box;

first controller means operatively connected to the means for sensing the depth of material in the level box and responsive to variations in the depth of material in the level box for controlling said valve means so that as the depth of material in the level box decreases, the valve means opens to permit an increase in the rate of flow of material from the vessel to the level box to maintain substantially constant the rate of flow of material from the level box to the conditioner; and

second controller means operatively connected to the means for sensing the depth of material in the level box and responsive to the depth of material in the level box for controlling the quantity of liquid supplied to the conditioner so that the quantity of liquid supplied to the conditioner is responsive to the rate of flow of material from the vessel to the conditioner.

4,760,857

WASHING DEVICE FOR A ROLLER PART IN A MACHINE UNIT AND THE LIKE

Noriyuki Shiba, Tokyo, and Tomoshi Kawata, Kanagawa, both of Japan, assignors to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Sep. 10, 1986, Ser. No. 906,276

Claims priority, application Japan, Sep. 12, 1985, 60-139716[U]

Int. Cl.[4] B08B *3/02*; B41F *35/04*

U.S. Cl. 134—144 8 Claims



1. A washing device for a plurality of roller parts in a machine unit, each said roller part comprising at least one roller, said washing device comprising;

a washing solvent storage tank located remote from said roller parts,

a used washing solvent storage tank located closely adjacent to said washing solvent storage tank,

a washing solvent transferring means for transferring washing solvent in said washing solvent storage tank up to said machine unit with a plurality of roller parts, said washing solvent transferring means further comprising a main pipe connected to a plurality of branch pipes, each said branch pipe leading to a said roller part and having valve means for regulating washing solvent transfer to said branch,

a washing solvent supplying means for supplying washing solvent as needed to a said roller part arranged at an end point of a said branch of said washing solvent transferring means,

a used washing solvent collecting means for collecting used washing solvent from a roller part, and

a used washing solvent discharging means for discharging collected used washing solvent to said used washing solvent storage tank, said discharging means further comprising a main discharge pipe branched to at least one collecting gutter in each said roller part of said machine unit, and a discharge pump for discharging used washing solvent into said used washing solvent storage tank.

4,760,858

FUEL VAPOR CONTROL VALVE

Emil Szlaga, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 837,152, Mar. 7, 1986, Pat. No. 4,655,238. This application Sep. 24, 1986, Ser. No. 911,243

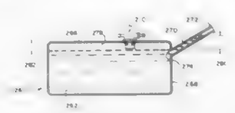
Int. Cl.[4] F16K *17/36*

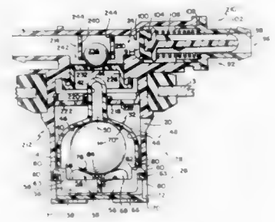
U.S. Cl. 137—43 7 Claims

1. In a fuel vapor recovery system of a motor vehicle including a fuel tank having a filler neck, a fuel vapor recovery

VOL 1093 ISS 1 -AG 2 1988 UMI

canister and conduit leading from the fuel tank to the canister and a roll-over valve assembly for closing the conduit in response to tilting of the vehicle, the improvement comprising a fuel overfill valve assembly situated in the roll-over valve assembly, the fuel overfill valve comprising a chamber having a first opening to the fuel tank and a second opening to the





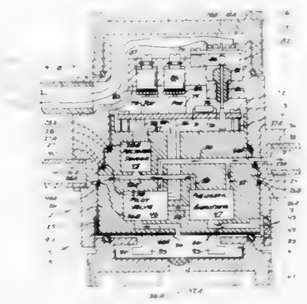
conduit, a closing means for closing the first opening, the closing means having a mass selected to effect a first closing pressure on the first opening when the vehicle is stationary, the closing means having a size selected relative to the chamber to permit movement therein and thereby effect a second closing pressure less than the first closing pressure when the vehicle is subjected to vibration due to normal operation of the vehicle.

4,760,859

MODULAR PRESSURE INSTRUMENT

Gregory C. Brown, Minnetonka, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed May 18, 1987, Ser. No. 52,018
Int. Cl.[4] G05D *16/00*
U.S. Cl. 137—84 **17 Claims**



1. A pressure instrument providing an adjustable control function between a fluid pressure in a conduit and a signal on a line, comprising:

a housing having a wall surrounding a cavity in the housing, the wall having a port therethrough connected to the conduit, the wall further having a bore therethrough;

a shaft sealingly disposed in the bore and having a portion opening into the cavity;

control means removably inserted in the cavity and coupled to the line and the port, the control means having an adjustment input with a set point; and

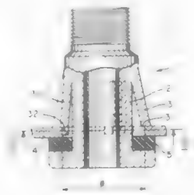
coupling means disposed between the shaft and the adjustment input for removably coupling the shaft to the adjustment input such that the control means can be inserted in the cavity of the housing without separately aligning the adjustment input relative to the shaft.

4,760,860

VALVE FOR TUBELESS TIRE

Gilbert Madroua, Sauviat, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Filed Jul. 9, 1987, Ser. No. 71,480
Claims priority, application France, Jul. 24, 1986, 86 10872
Int. Cl.[4] B60C *29/02*
U.S. Cl. 137—223 **6 Claims**





1. A valve for tubeless tires, of the type having a valve body around which elements which are elastic in radial direction and rigid in axial direction are arranged, the elastic elements being capable of moving towards the valve body in order to pass through a valve hole provided in a rim and then move apart towards their final position to assure the fastening of the valve on the rim, characterized by the fact that the radial dimension of each elastic element, in final position after passing through the valve hole, is greater than the clearance formed by one-half of the difference between the diameter of the valve hole and the outside diameter of the valve body, the clearance decreasing the radial dimensions of the elastic elements on passing through the valve hole, the elastic elements reassuming their full dimensions when the elastic elements pass through the valve hole so that at least parts of the inner ends of the elements overlie and engage the rim surface.

4,760,861

FAUCET MANIFOLD

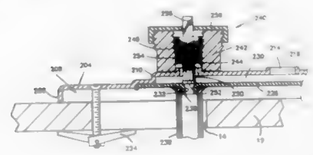
Irlin H. Botnick, 3155 Kersdale, Pepper Pike, Ohio 44124

Continuation-in-part of Ser. No. 057,118, Jun. 3, 1987, which is a continuation-in-part of Ser. No. 735,664, May 20, 1985, Pat. No. 4,671,316. This application Jun. 8, 1987, Ser. No. 59,115
Int. Cl.[4] E03C *1/04*
U.S. Cl. 137—315 **15 Claims**

1. A method for making a faucet manifold, comprising the steps of:

stamping a cover to form a plate having a skirt extending downwardly from the periphery of the plate, the plate including a raised area and first and second openings in an upper surface of the raised area spaced from each other;

stamping a substantially flat channel member, the channel member being of a size and shape to underlie the first and second openings, the channel member including a first opening;



aligning the first opening in the channel member with the first opening in the raised area;

fitting the channel member into the raised area; and

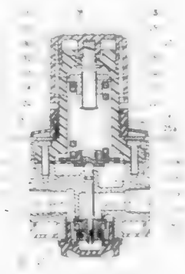
establishing a fluidtight seal between the raised area and the channel member to define a flow passage therebetween.

4,760,862

AIR PRESSURE REGULATOR

Yoshiichi Mutou, Kakamigahara, and Eiji Uematsu, Nagoya, both of Japan, assignors to CKD Kabushiki kaisha, Aichi, Japan

Filed Feb. 13, 1987, Ser. No. 14,297
Claims priority, application Japan, Feb. 17, 1986, 61-21261; Feb. 17, 1986, 61-21262
Int. Cl.[4] G05D *16/06*; **F16K** *31/60*
U.S. Cl. 137—315 **13 Claims**



1. An air pressure regulator including

a body having a valve port defined between a primary chamber communicating with an inlet and a secondary chamber communicating with an outlet and a pressure chamber formed in one outer side in communication with said secondary chamber;

a diaphragm extending across said one outer side so as to close said pressure chamber of said body;

a valve block being movable in operative associated with said diaphragm to open and close said valve port;

a cylindrical support secured to said one outer side of said body;

an adjustment spring disposed within said cylindrical support and adapted to exert an elastic force on the outer surface of said diaphragm; and

an adjustment screw extending through an end surface of said cylindrical support and rotatably supported thereby, said adjustment screw being provided along a portion thereof inserted into said cylindrical support with a male thread on which a retaining member is threaded to compress said adjustment spring and having a portion extending exterior of said cylindrical support, to which an adjustment knob is connected;

wherein a compression of said adjustment spring is adjusted by rotating said adjustment screw with said adjustment knob gripped in hand so as to move said retaining member along said male thread and wherein said diaphragm is so deformed that a balance is established between a compressive force of said adjustment spring and a pressure prevailing within said secondary chamber acting upon said pressure chamber and thereby said valve block opens and closes said valve port so as to maintain said pressure prevailing within said secondary chamber at a constant value, characterized in that

said adjustment knob is cylindrical and includes elastic lock claws depending from its top wall substantially in parallel to its inner peripheral surface so that said elastic lock claws may be engaged into a circumferential groove formed in the outer peripheral surface of said cylindrical support by pressing said adjustment knob onto said cylindrical support to rotatably mount said adjustment knob around the upwardly projecting end of said cylindrical support, and said cylindrical support is provided in the outer peripheral surface of a portion thereof adjacent the end secured to said body with a male thread in cooperation with which there is provided a female-threaded member so that, in the course of unscrewing said female-threaded member along said male thread, said female-threaded member bears against and urges an end surface of said adjustment knob and said elastic lock claws deforming elastically and disengaging from said circumferential groove so that the female-threaded member is removed from said cylindrical support.

4,760,863

PRESSURE VACUUM VALVE, MORE PARTICULARLY TO THE STORAGE TANKS FOR VOLATILE LIQUIDS

Peter C. Broer, 32 Bay Road, Mount Gambier, 5290, Australia

Filed Mar. 5, 1987, Ser. No. 22,092
Claims priority, application Australia, Jun. 16, 1986, PH6425
Int. Cl.[4] F16K *24/00*
U.S. Cl. 137—493.8 **4 Claims**



1. A pressure vacuum valve arrangement for the fitting to the vent pipe of a storage tank for volatile fuel, said valve arrangement comprising a housing for attachment to the vent pipe, said housing including a branch pipe opening into the interior of the housing and extending downwardly parallel to the vent pipe, a first valve means in said housing situated above said branch pipe and adapted to open on increase of pressure in the storage tank and vent pipe, a sleeve attached to the upper end of said housing, said sleeve being concentric to said hous-

VOL 1093 ISS 1 AUG 2 1988 UMI

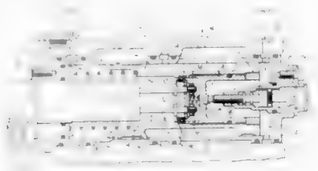
ing and spaced from the side walls of the said housing, an inverted conical water trap in said sleeve, said water trap being spaced from the internal walls of said sleeve, second valve means in the lower end of said branch pipe, said second valve means being adapted to open on decrease of pressure within said tank and vent pipe, and a bag filter attached to the end of said branch pipe.

4,760,864

DEVICES FORMING PARTS OF REGULATORY SYSTEMS FOR PROVIDING AN OUTPUT IN THE FORM OF RECTILINEAR MOTION WITH AN INPUT OF BOTH ROTARY AND RECTILINEAR MOTION

Henry R. Leclerc, Juvisy sur Orge, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation "S. N. E. C. M. A.", Paris, France

Filed Feb. 9, 1987, Ser. No. 12,485
Claims priority, application France, Feb. 19, 1986, 86 02220
Int. Cl.[4] F16K *37/00, 31/122*
U.S. Cl. 137—552 8 Claims



1. In a device for transmitting simultaneously to two parallel rods a motion with a single degree of freedom as a longitudinal translational motion from a sleeve surrounding the rods and which is itself subject to two degrees of freedom, a translational and a rotary motion, the improvement comprising:

a plate interconnecting the ends of the parallel rods, the plate lying perpendicularly to the axis of translational motion of the rods, and

connecting means between the plate and the sleeve such that the connecting means are capable of transmitting only the translational motion to the plate, wherein the connecting means between the plate and the sleeve comprises a ball bearing having an inner race and an outer race, the connecting plate having an annular seating between a shoulder and a holding plate or washer, the internal race of the ball bearing being in abutment against the circular seating and the outer race cooperating with an internal cylindrical abutment of the sleeve.

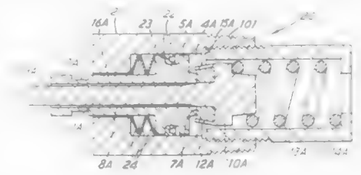
4,760,865

CONTAINER VALVE

John W. Rilett, Hilltop House, Old Quarry, Bilbury, Gloucestershire GL7 5ND, United Kingdom

PCT No. PCT/GB86/00539, § 371 Date Apr. 21, 1987, § 102(e) Date Apr. 21, 1987, PCT Pub. No. WO87/01785, PCT Pub. Date Mar. 26, 1987
PCT Filed Sep. 11, 1986, Ser. No. 51,744
Claims priority, application United Kingdom, Sep. 11, 1985, 8522401
Int. Cl.[4] F16K *24/00*
U.S. Cl. 137—588 13 Claims

1. A fluid valve characterized by having a longitudinal axis about which there is disposed a chamber which has at one end thereof an inlet for a fluid from a container and at its other end an outlet for said fluid; a valve piston member sealingly guided and movable within said chamber; and a valve member which is also movable within said chamber; one of said members having a valve seat element and the other of said members having a valve seal element arranged for sealingly cooperating with said valve seat element; and a passageway leading from said last-mentioned element to said outlet, said valve member



being biased against said last-mentioned element to close said passageway.

4,760,866

COMBINATION STOP AND PRESSURE REDUCING VALVE AND STOP COCK VERSION

Hans Adler, New York, N.Y., assignor to H. Adler Associates, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 96,335, Nov. 21, 1979, abandoned, and a continuation-in-part of Ser. No. 96,336, Nov. 21, 1979, abandoned, and a continuation-in-part of Ser. No. 96,337, Nov. 21, 1979, Pat. No. 4,305,423, each is a division of Ser. No. 920,014, Jun. 28, 1978, Pat. No. 4,284,102. This application Dec. 17, 1981, Ser. No. 331,671
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—614.17 2 Claims



1. A combination shut-off and adjustable pressure reducing valve, suitable for use in water supply lines between a high pressure source and a fixture such as a faucet requiring reduced pressure, comprising:

a. a valve body, said valve body defining a hollow interior space for a valve bonnet, between an inlet and an outlet,

b. a valve bonnet, said valve bonnet being at least partially hollow and in rotatably sealed engagement with and protruding from said valve body for rotation with respect to said valve body, and comprising a cylindrical bore with an opening in a side wall thereof communicating with said inlet when in open position and being sealed from said inlet when rotated with respect to said valve body to closed position, said cylindrical bore further comprising an upper end and an open bottom opposite said upper end, said bottom defining a piston engaging face inside the valve body and forming the valve seat, said cylindrical bore being open to said outlet and having a diameter at said valve seat substantially equal to the diameter at said upper end thereof,

c. piston means, said piston means being located for movement axial of said valve bonnet, limited by contact with said piston engaging face,

d. adjusting means, said adjusting means comprising an adjusting screw in engagement with said valve bonnet at its protruding end for axial movement relative thereto,

e. a spring, said spring being engaged with said adjusting means and said piston means to provide spring bias between said partially hollow valve bonnet and said piston means, whereby said axial adjusting movement serves to adjust the amount of spring bias,

f. whereby said spring biases said piston means to open and the water pressure on the outlet side of the valve biases said piston means into closing engagement with said valve seat,

g. said piston means comprising a balanced double piston comprising an upper cylindrical end secured in pressure-tight sliding engagement with said cylindrical bore of said valve bonnet, engaging said spring and having substantially the same diameter as that of said upper end of said cylindrical bore of said valve bonnet said piston further comprising a lower end having means to seal against said valve seat, and being closeable by an outlet pressure force greater than said spring bias,

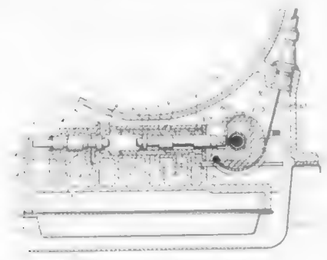
h. the portion of said cylindrical bore above said upper cylindrical end of said piston containing said spring and being vented.

4,760,867

PRESSURE MODULATOR VALVE DEVICE

Shigeo Takahashi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Kaisha, both of Toyota, Japan

Division of Ser. No. 708,948, Mar. 6, 1985, Pat. No. 4,609,013. This application May 2, 1986, Ser. No. 858,813
Claims priority, application Japan, Mar. 30, 1984, 59-061003
The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.
Int. Cl.[4] B60K *17/00, 41/00*
U.S. Cl. 137—637 2 Claims



1. A pressure modulator valve device disposed in an oil pressure circuit of an automatic transmission, comprising:

first and second modulator valve means each having a valve body and a plunger slidably fitted within each valve body, said first and second modulator valve means being positioned so as to be adjacent each other;

a shaft interconnecting said first and second modulator valve means;

a single fixed supporting member having first and second opposed side wall portions upon which said shaft is interconnectingly mounted, wherein each of said first and second modulator valve means further comprises a sleeve within which said plunger is disposed and wherein said single supporting member interconnects said sleeve of each of said first and second modulator valve means so as to maintain said sleeve within each valve body, respectively;

first and second rotatable cam means for engaging each said plunger and rotatably mounted on and rotatable around said shaft;

a connecting member for interconnecting each of said first and second cam means; and

an input member connected to said first cam and interconnecting said first cam means to an accelerator pedal and for rotating said first cam means around said shaft;

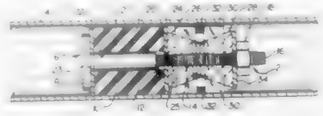
wherein an input supplied from said accelerator pedal is transmitted to said second cam means via said input member, said first cam means and said second connecting member in order.

4,760,868

HIGH CONFIDENCE TUBE PLUG

Edward G. Saxon, 230 Rampart Blvd., New Kensington, Pa. 15068

Filed Sep. 21, 1987, Ser. No. 99,133
Int. Cl.[4] F16L *55/10*
U.S. Cl. 138—89 10 Claims



1. A high confidence tube plug for insertion in the bore of a fluid carrying tube, pipe or the like comprising,

a shoulder bolt having a flange at one end, a threaded shaft at the other end and an enlarged shank portion having a shoulder region therebetween;

a cylindrically shaped resilient sleeve positioned on said enlarged shank portion of said bolt having an end spaced from said shoulder region;

a segmented mechanical gripper element positioned on said bolt adjacent said sleeve adapted to expand in a radial direction to grippingly engage said tube bore when an axial force is applied thereto;

a drive washer slidably positioned on said bolt shaft between said resilient sleeve and the mechanical gripper element;

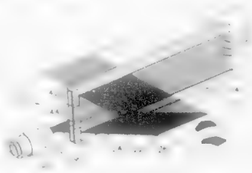
a nut threadably positioned at the end of said threaded shaft adapted, when moved axially along the bolt, to exert a compressive axial force on said drive washer, said resilient sleeve and said mechanical gripper element to establish a fluid seal with said sleeve within the bore when said drive washer moves to a position in contact with said shoulder region, whereupon, continued movement of said nut transfers additional compressive axial force to said mechanical gripper element, to the exclusion of said resilient sleeve, to radially expand said gripper element to establish a mechanical grip within said bore independent of the axial force acting on said resilient sleeve.

4,760,869

LOOM REED

Charles B. Jenkinson, Jr., Greenwood, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed May 22, 1987, Ser. No. 53,030
Int. Cl.[4] D03D *49/60*
U.S. Cl. 139—188 R 7 Claims



1. An improved reed for a weaving machine comprising: an upper channel member, a lower channel member, a plurality of dents mounted between said channel members and spaced

VOL 1093 ISS 1 AG 2 1988 UMI

apart from one another and means mounting an elongated strip between said channel chambers at one end of said reed said strip having a ceramic material mounted between the ends thereof facing in an outward direction.

4,760,870

AUTOMATIC DADO AND SCORING MACHINE

Dwight L. Speck, 8130 Havens Corners Rd., Blacklick, Ohio

Filed Mar. 5, 1987, Ser. No. 21,980
Int. Cl.[4] B27C 9/00
U.S. Cl. 144—3 R 3 Claims



1. Apparatus for cutting dados in sheet materials, and comprising:

a. a flat work surface;

b. sheet material guide means mounted on said flat work surface;

c. a pair of rotatable and adjustable spaced-apart circular saw blades mounted in fixed location relative to said guide means;

d. a rotatable and adjustable primary dado cutter means mounted in aligned relation relative to said circular saw blades and in fixed location relative to said guide means;

e. adjustable feed roller means mounted in fixed relation relative to said guide means; and

f. drive means rotating said spaced-apart circular saw blades, said primary cutter means, and said feed roller means in the same rotational direction,

said circular saw blades contacting sheet material prior to said dado cutter means as the sheet material is fed in one direction along said guide means.

4,760,871

LOWER BEAD BREAKER REMOVAL AND ADJUSTMENT APPARATUS

Tumkur R. Vijay, Conway, Ark., assignor to FMC Corporation, Chicago, Ill.

Continuation of Ser. No. 754,381, Jul. 11, 1985, abandoned. This application Sep. 8, 1986, Ser. No. 906,555
Int. Cl.[4] B60C 25/06
U.S. Cl. 157—1.28 9 Claims

1. a manually actuated quick release for a lower bead breaker apparatus on a tire changing machine which is used for separating a tire from a wheel rim, wherein a bead breaker lever having a lower bead breaking shoe pivotally mounted thereon is driven toward and away from a position on the tire changing machine adjacent a wheel rim support table which is adapted to mount a wheel rim and tire assembly, comprising

a shoe pivot shaft having a shaft pivot diameter and two smaller spaced release diameters thereon,

a pair of lower bead breaking shoe support arms attached to the lower bead breaking shoe separated by the same distance as the spacing between said release diameters and having aligned shoe bearing openings formed therein configured to accept said shaft pivot diameter,

said support arms each having a keyway cut between the edge thereof and said bearing openings, said keyways each having a width smaller than said pivot diameter and larger than said release diameters,

a locking cap at one end of said pivot shaft manually displaceable between a lock position and a release position, and



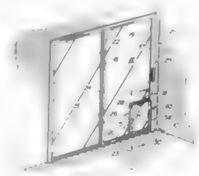
means for yieldably urging said lock cap toward said lock position, whereby manual movement of said lock cap to said release position and of said shaft laterally in said shoe bearing openings aligns said release diameters simultaneously with said support arm keyways and thereby frees the lower bead breaking shoe so that it may be manually withdrawn from the tire changing machine.

4,760,872

SECURITY PET DOOR

Seymour B. Hale, Jr., 5220 W. Acapulco La., Glendale, Ariz. 85306

Filed Mar. 30, 1987, Ser. No. 31,565
Int. Cl.[4] E06B 3/32
U.S. Cl. 160—90 7 Claims



1. A pet door assembly comprising, in combination:

(a) a rectangular pane of glass having a top edge. a bottom edge, and a pair of spaced apart opposite side edges, said pane having had a rectangular portion removed from one of its lower corners to define an intermediate vertical edge parallel to the spaced apart side edges of said pane, and an intermediate horizontal edge parallel to the top and bottom edges of said pane;

(b) a rectangular frame for surrounding said pane, said frame including:

(i) a U-shaped top channel for receiving said to edge of said pane,

(ii) a U-shaped bottom channel for receiving said bottom edge of said pane, and

(iii) a pair of spaced apart U-shaped side channels for receiving said side edges of said pane;

(c) a rectangular mounting element for attachment to said panel, said mounting element defining a passageway and including,

(i) an H-shaped in cross section top channel member having an upwardly opening portion in which said intermediate horizontal edge of said glass pane is mounted and a downwardly opening portion which faces into the passageway of said mounting element,

(ii) an H-shaped in cross section bottom channel member having an upwardly opening portion which faces into the passageway of said mounting element and a downwardly opening portion,

(iii) a first H-shaped in cross section side channel member, said first H-shaped side channel member having an outwardly opening portion in which the intermediate vertical edge of said glass pane is mounted and an inwardly opening portion which faces into the passageway of said mounting element,

(iv) a second H-shaped in cross section side channel member, said second H-shaped side channel member having an outwardly opening portion and an inwardly opening portion which faces into the passageway of said mounting element,

(v) a first insert member mounted in the outwardly opening portion of said second H-shaped side channel member and projecting into one of said pair of U-shaped side channel members of said frame, and

(vi) a second insert member mounted in said downwardly opening portion of said H-shaped bottom channel member and projecting into said U-shaped bottom channel member of said frame; and

(d) a rectangular flap member mounted for swinging movement in said mounting element to selectively provide and block access through the passageway defined thereby, said flap member having a top edge mounted in the downwardly opening portion of said H-shaped top channel member of said mounting element, and free bottom and side edges.

4,760,873

ROLLING SHUTTER FOR ROOF WINDOW

Richard Babendorff, Rue des Acacias, 68220 Hegenheim Haute-Rhin, France

Filed Sep. 30, 1986, Ser. No. 913,345
Claims priority, application France, Oct. 23, 1985, 85 15936; Jan. 8, 1986, 86 00246
Int. Cl.[4] E04F 10/06
U.S. Cl. 160—32 11 Claims



1. The rolling shutter for a roof window, comprising:

(a) an apron adapted for substantial displacement and comprising a plurality of adjacent blades, each of said blades comprising;

(i) a lateral end;

(ii) a plurality of dogs projecting from said lateral end, adjacently situated dogs being separated by a variable distance;

(b) a first rotating shaft, onto which said apron is wound, and from which said apron is unwound;

(c) a second rotating shaft, situated downstream of said first rotating shaft, for driving said apron underneath said second rotating shaft to wind onto and unwind from said first rotating shaft;

(d) a cam wheel mounted at one end of said second shaft, said cam wheel comprising radial teeth for engaging said dogs, said radial teeth providing a backlash consistent with said variable distance separating said adjacently situated dogs;

(e) forced guide means:

(i) for facilitating said apron to reverse its winding direction between said first rotating shaft and said second rotating shaft; and

(ii) for guiding said apron upwardly to wind onto and unwind from the top of said first rotating shaft;

at least a portion of said forced guide means being situated between said first rotating shaft and said second rotating shaft;

(f) a casing enclosing said first rotating shaft, said second rotating shaft, and said forced guide means, said casing being pivotably mountable, by a first axis situated upstream of said first rotating shaft, on a sash frame of said roof window, and said casing comprising:

(i) a bottom surface adapted to be situated below the plane of the top surface of said sash frame; and

(ii) a lateral guide rail for guiding said apron, said lateral guide rail having an upper end and a lower end, and each of said blades being slideably engaged in said lateral guide rail;

wherein said lateral end of each of said blades is slideably engaged, for guiding said apron;

(g) a lug for securing said casing to said sash frame; and

(h) damping means for maintaining said rolling shutter, when pivotably mounted on said sash frame, in the position to which it has been pivoted, said damping means being situated at the lower end of said lateral guide rail.

4,760,874

METHOD AND APPARATUS FOR FORMING DISK WHEEL LIKE FORMED PARTS

Takeshi Mihara, Ube, Japan, assignor to UBE Industries, Ltd., Japan

Filed Mar. 9, 1987, Ser. No. 23,820
Claims priority, application Japan, Apr. 16, 1986, 61-86078; Apr. 16, 1986, 61-86079; Dec. 1, 1986, 61-284219
Int. Cl.[4] B22D 17/32
U.S. Cl. 164—457 6 Claims



1. A method for forming a molded metal part in the shape of a disk wheel comprising:

(a) placing the mold axis of a metal mold cavity in a vertical direction which corresponds to the axis of rotation of said disk wheel, injecting molten metal into said cavity from the bottom of said cavity in the direction of said axis; and

(b) controlling the injection speed by a process comprising:

(i) injecting said molten metal at a designated first injection speed when said molten metal has reached the inlet of said cavity;

(ii) injecting said molten metal at a second injection speed which is lower than or equal to said first injection speed and which corresponds to a gas discharge ability of a degassing unit provided in association with said metal

VOL 1093 ISS 1 AUG 2 1988 UMI

mold, from the time when said molten metal passes a disk wheel hub equivalent portion of said cavity until it passes the greater part of a disk wheel rim equivalent portion of said cavity; and

(iii) closing the valve of said degassing unit to prevent the discharge of gas from said cavity into the atmosphere after said molten metal has passed the greater part of said rim equivalent portion, allowing said molten metal to completely fill said cavity.

4,760,875

CONTROLLING SEAL SYSTEM IN ROTARY REGENERATIVE AIR PREHEATERS

Stanley Gibson, Bangor, and Colin Tindall, Ballynahinch, both of Northern Ireland, assignors to Davidson & Company Ltd., Belfast, Northern Ireland

Division of Ser. No. 646,703, Aug. 30, 1984, Pat. No. 4,610,297. This application Feb. 19, 1986, Ser. No. 830,764

Claims priority, application United Kingdom, Sep. 23, 1983, 8325511

The portion of the term of this patent subsequent to Sep. 9, 2003, has been disclaimed.

Int. Cl.[4] F28D *17/04*

U.S. Cl. 165—4 4 Claims



1. A rotary regenerative air preheater comprising: means for sealing between relatively rotatable parts of the pre-heater, said relatively rotatable parts being a stationary heat exchange matrix and a rotating part having at least one gas conducting hood, a plurality of drive means on said hood for driving the sealing means in a predetermined axial gap relationship said drive means being spaced apart in the path of relative rotation of the parts, control means comprising a plurality of electrical sensors placed sequentially in stationary position on the stationary part in the path of relative rotation of the parts, an electrical control circuit common to said sensors and drive means, each of said sensors being electrically linked through the circuit to at least one associated said drive means, the circuit including means for comparing the sensed axial gap relationship at each sensor with a signal representative of a predetermined axial gap relationship and driving the appropriate drive means around said path to bring the sealing means to the predetermined axial gap relationhsip, and power supply means to the drive means including slip rings about the axis of rotation of the hood, whereby the sealing means is sequentially checked on a plurality of occasions during each relative rotation by comparing the sensed axial gap relationship at each sensor with the predetermined axial gap relationship, and said sealing means is adjusted as necessary.

4,760,876

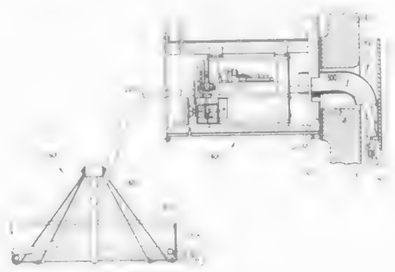
REMOTE INSPECTION DEVICE TRANSPORT SYSTEM

Patrick M. Minogue, Shaler, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 2, 1986, Ser. No. 902,807

Int. Cl.[4] G21C *17/00*

U.S. Cl. 165—11.2 12 Claims



12. A drive system for an inspection device, having an inspection cable, for inspecting a steam generator having a handhole through a steam generator shell and having a tube wrapper spatially confronting the handhole, said drive system comprising:

an end effector adapted for holding the inspection device and controlled by a drive cable;

a flexible conduit connected to the end effector through which the drive cable and inspection cable pass;

a rotatable L-shaped deflector, coupled to the handhole, forcing the end effector and flexible conduit between the steam generator shell and the tube wrapper;

a slidable drive assembly, coupled to the handhole, including a rotatable drive box having drive rollers axially driving said flexible conduit and gripping said flexible conduit while the rotatable drive box is rotated, thereby rotating said flexible conduit and drive box in a fixed spatial relationship to the slidable drive assembly;

a conduit basket collecting said flexible conduit as it leaves the slidable drive assembly; and

a drive cable tensioning and control device attached to said conduit basket, said flexible conduit and said drive cable.

4,760,877

AIR CONDITIONER WITH MOTOR CONTROLLED DOOR

Shiro Kondo; Michitada Akazawa, and Akinori Ito, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Oct. 2, 1986, Ser. No. 914,285

Claims priority, application Japan, Oct. 4, 1985, 60-220365

Int. Cl.[4] F25B *29/00;* B60H *3/00;* F16K *31/02*

U.S. Cl. 165—24 4 Claims

1. In a device for moving a door to control air flow in an air conditioner by moving the door in one or the other of two door directions to variably open and close a passage in response to setting an operating lever of a control panel to a selected control position,

the improvement comprising:

a switch slidably mounted in said control panel and connected to the operating lever so that it is moved therewith to a switch position corresponding to the selected control position in one or the other lateral directions of the control panel, said switch having a projecting movable switch arm;

a cam follower slidably mounted in said control panel so as to be movable in parallel with the switch, said cam follower having a cam surface which is engageable from either direction with the switch arm of the switch;

an electric motor having an output actuator mechanically connected by first linking means to said door for moving the door in either door direction upon rotation of the motor in either corresponding direction, said motor being electrically connected to the switch so that it is turned on to rotate the actuator in one or the other direction when the switch arm is moved from a neutral position and is turned off when the switch arm is moved to the neutral position;

second linking means mechanically connecting the actuator of the electric motor to the cam follower for moving the cam follower to a cam position in either lateral direction of the control panel in accordance with rotation of the actuator, and



said cam surface of the cam follower engaging the switch arm to move it to the neutral position when the cam follower is moved into alignment with the switch, and moving the switch arm from the neutral position when the switch is moved out of alignment from the cam follower, whereby when the operating lever is set to the selected control position, the switch is moved out of alignment with the cam follower to a corresponding switch position, the motor is turned on to rotate the actuator in a corresponding direction, the door and the cam follower are correspondingly moved by the actuator until the cam follower is moved back into alignment with the switch, the switch arm is thereby moved to the neutral position to turn off the motor, and the door is stopped in a position in the passage corresponding to the selected control position of the operating lever.

4,760,878

PROCESS FOR PRODUCING HEAT PIPE

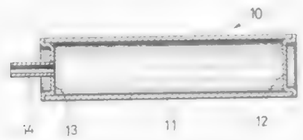
Koichiro Fukui; Yuichi Furukawa, and Kazunari Noguchi, all of Sakai, Japan, assignors to Showa Aluminum Corporation, Osaka, Japan

Filed Dec. 5, 1986, Ser. No. 938,191

Claims priority, application Japan, Dec. 13, 1985, 60-281694; Dec. 13, 1985, 60-281695

Int. Cl.[4] F28D *15/02;* F28F *19/02*

U.S. Cl. 165—104.27 9 Claims



1. A process for producing a heat pipe comprising the steps of treating the inner surface of a steel container with an aqueous solution of a vanadate with heating to form a protective layer over the container inner surface, drawing off the aqueous solution of said vanadate, and enclosing in the container a working liquid prepared by adding an alkalinizing pH adjusting agent free from any alkali metal or alkaline earth metal to pure water and having an adjusted pH of 8 to 12.

9. A heat pipe produced by the process of claim 1.

4,760,879

CHOKE AND KILL CONTROL SYSTEM

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Nov. 27, 1987, Ser. No. 126,137

Int. Cl.[4] E21B *23/03, 34/10*

U.S. Cl. 166—117.5 9 Claims



1. A control system for a choke and kill safety valve for use in a well conduit, in which the valve includes a housing having a bore therethrough, a sleeve telescopically movable in the housing about the bore, a valve closure member positioned in the housing and connected to the sleeve and movable between open and closed positions in the bore, a flow tube longitudinally movable in the housing for controlling the movement of the valve closure member, means between the sleeve and the flow tube for biasing the flow tube in a direction for causing the valve closure member to move to the closed position,

VOL 1093 ISS 1 AG 2 1988 UMI

releasable latch means between the sleeve and the flow tube initially holding the flow tube in position holding the valve closure member in the open position, a biased piston and cylinder assembly initially engaging the releasable latch and holding the latch engaged, said assembly being exposed on one side to pressure in the housing, and said housing and said sleeve including openings which when aligned by movement of the sleeve by well pressure allows fluid to be inserted into the bore from the outside of the housing comprising,



a sidepocket mandrel having a bore in communication with the bore of the housing, and having a sidepocket, said sidepocket including an inlet port for receiving a control fluid from the well surface, and said sidepocket having an output port in communication with the second side of the piston and cylinder assembly, and

flow control means releasably positioned in the sidepocket for the control of fluid between the inlet and the outlet port for controlling the piston and cylinder assembly.

4,760,880

COMBINATION ANCHOR

Clark M. Sample, Bakersfield, Calif., assignor to Steve Lichfield, Santa Maria, Calif.

Filed Jun. 15, 1987, Ser. No. 61,558
Int. Cl.[4] E21B *23/02, 33/12*
U.S. Cl. 166—118 **11 Claims**



1. A combination anchor including a removable plug device adapted for placement in conjunction with a tubing string, rod string and gas anchor in a well bore, which comprises:

a. a tubular member adapted to be connected to the bottom end of said gas anchor, said member including a circular shoulder formed around the inside of the bore thereof;

b. a plug means;

c. a seat ring adapted to be connected to said plug means;

d. a conical sleeve member having a plurality of compressible legs depending therefrom;

e. a cap member; and,

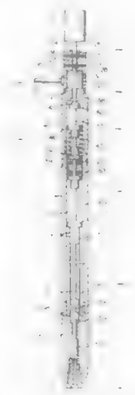
f. a mandrel adapted to be connected at one end thereof to said ring and said plug, and at the other end thereof to said conical sleeve member and said cap.

4,760,881

DOWNHOLE STEAM SAMPLER

Stephen L. Long, and Gene L. Christ, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,834
Int. Cl.[4] E21B *49/08*
U.S. Cl. 166—165 **8 Claims**



1. In a downhole steam sampler for collecting the liquid phase component from a flow of wet steam which is injected into a substrate reservoir by way of a borehole formed into said substrate, which sampler includes an elongated casing having opposed upper and lower ends, and which define a steam flow passage, an inlet port at the casing upper end for receiving a flow of wet steam,

an outlet port in the casing lower end for discharging steam without the liquid phase component, from the casing,

upper and lower control valve means in said steam flow passage, being actuatable between open and closed modes to regulate the flow of steam through said steam flow passage,

separate upper and lower valve shafts extending from the flow control valve means longitudinally of the elongated casing, and

detent means engaging said respective upper and lower valve shafts with said casing to maintain the respective flow control valve means in open position, said detent means being displaceable to disengage the valve shafts from the casing to permit the respective valves to be actuated to closed position.

4,760,882

METHOD FOR PRIMARY CEMENTING A WELL WITH A DRILLING MUD WHICH MAY BE CONVERTED TO CEMENT USING CHEMICAL INITIATORS WITH OR WITHOUT ADDITIONAL IRRADIATION

Lucille H. Novak, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Feb. 2, 1983, Ser. No. 463,216
Int. Cl.[4] E21B *33/14*
U.S. Cl. 166—295 **31 Claims**



1. A method for drilling and primary cementing a well comprising the steps of:

drilling a well using a hollow drill string having a drill bit with at least one orifice communicating between the inside of the hollow drill string and the outside and located at the lower end of said drill string so as to produce a wellbore,

circulating, while drilling, a drilling fluid comprising:

at least one polymeric material containing at least one double bond and capable of being cross-linked with a monomeric cross-linking agent, said polymeric material being selected from the group consisting of: vinyl-, hydroxyl-, carboxyl-terminated butadiene acrylonitrile copolymers, metharylic acid-methacrylate ester copolymers; polyethylene; polyacrylamide; polybutadiene; hydroxyl- or carboxyl-terminated polybutadiene; hydroxyl-terminated epichlorohydrin polymers; polybutadiene oxide; polyvinyl alcohol; or polybutadiene acrylonitrile acrylic acid copolymer,

at least one monomeric cross-linking agent containing at least one double bond and being selected from the group consisting of: ethylene glycol diacrylate, tetraethylene glucol diacrylate, neopentyl glycol diacrylate, tetrapropylene glycol diacrylate, trimethylolpropane triacrylate, ethylene glycol dimethyacrylate, triethylene glycol dimethacrylate, tetraethylene glycol diomethacrylate, trimethylolpropane trimethacrylate, dicyclopentenyl oxyethyl methacrylate, divinyl benzene, 1,6-hexandiol diacrylate, tripropylene glycol diacrylate, diehyleneglycol divinyl ether,

water, and

at least one clay,

down the inside of said drill string and out said at least one orifice,

withdrawing said drill string from said wellbore,

installing a float shoe having an upper seating surface on the lower end of a first section of well casing,

assembling a casing string by sequentially attaching additional sections of casing to said first section of well casing and inserting the casing string farther into the wellbore,

inserting a bottom plug into said casing string, said bottom plug having a longitudinal passage closed on an upper end by a rupturable diaphragm,

pumping an additional amount of said drilling fluid containing a chemical initiator adapted to harden said drilling fluid into said casing string above said bottom plug, thereby moving said bottom plug downward in said casing string,

inserting a closing plug into said casing string, said closing plug having circumferential wipers,

moving said closing plug down said casing string above said closing plug so as to rupture said rupturable diaphragm and to substantially displace said drilling fluid from the inside of said casing string,

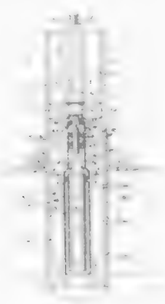
whereby the drilling fluid remaining on the outside of the casing string cures into a cementitious material.

4,760,883

WELLBORE PERFORATING

Michael D. Dunn, Houston, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 2, 1984, Ser. No. 637,190
Int. Cl.[4] E21B *37/00, 43/116*
U.S. Cl. 166—297 **4 Claims**



1. In a method for perforating at least one mineral producing zone in a wellbore in the earth wherein at least one perforating gun is set in said wellbore adjacent said at least one zone and then detonated to perforate said at least one zone, said wellbore initially containing a wellbore liquid therein adjacent said at least one zone, the improvement comprising providing an assembly comprising a packer having a hollow sub fixed thereto which extends below said packer, at least one of said packer and sub having latch means for fixing said sub to production tubing which extends from said sub to the earth's surface, said sub having ports therein below said packer for admitting liquid from the exterior of said sub to the interior of said sub, said sub carrying below said ports seal means for sealing around injection tubing which passes through the interior of said production tubing and is inserted into hollow interior of said sub, said sub carrying below said seal means a hollow housing in essentially longitudinally axial alignment with said sub, said housing being adapted to receive and support internally thereof at least one perforating gun, said housing being sized so that space is provided in at least one location to allow liquid flow from the interior of said sub below said seal means through said space and out from a lower portion of said housing into said wellbore, lowering said assembly into said wellbore on said production tubing, actuating said packer to fix said assembly in said wellbore so that said at least one perforating gun in said assembly is adjacent said at least one zone to be perforated and so that the portion of the wellbore below said packer is separated in a liquid tight manner from the portion of the wellbore above said packer, lowering injection tubing through the interior of said production tubing and into sealing engagement with said seal means carried by said sub,

VOL 1093 ISS 1 AG 2 1988 UMI

said injection tubing being sufficiently smaller than said production tubing to provide an annulus for liquid flow outside said injection tubing and inside said production tubing, said annulus being in fluid communication with the ports in said sub but not below said seal means in said sub, circulating displacement liquid from the earth's surface down the interior of said injection tubing into the interior of said sub below said seal means in said sub, passing said displacement liquid through said space in said housing and out into said wellbore below said housing and packer, passing said displacement liquid in said wellbore upwardly in said wellbore outside said housing up to and through said ports in said sub and into said annulus between said production tubing and injection tubing, recovering said displacement liquid from said annulus between said production tubing and injection tubing at the earth's surface, said displacement liquid being essentially nondeleterious to said at least one zone to be perforated so that said wellbore liquid which is initially present in said wellbore below said packer and adjacent said at least one zone is essentially replaced by said nondeleterious displacement liquid before said zone is perforated, and thereafter detonating said at least one perforating gun to perforate said at least one zone.

4,760,884

AIR CHAMBER ACTUATED DUAL TUBING RELEASE ASSEMBLY

David M. Haugen, Houston; Flint R. George, Katy, and Kevin R. George, Columbus, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 16, 1986, Ser. No. 908,833
Int. Cl.[4] E21B *23/00*
U.S. Cl. 166—377 **12 Claims**



1. An apparatus to releasably connect and release when actuated a portion of conduit string to and from another portion thereof, said conduit string being installed in a well bore, said conduit string and said well bore having fluid therein, said apparatus comprising:

a tubing release assembly means being installed in said conduit string connecting said portion of said conduit string to said another portion thereof and capable of being actuated to release said one portion of said conduit string from said another portion thereof upon the communication of a fluid pressure to the tubing release assembly means which is less than the hydrostatic pressure of either of said fluid in said conduit string or said well bore at the location in said conduit string at which the tubing release assembly means is installed in said conduit string, the tubing release assembly means including:

a first member connected to said portion of said conduit string;

a second member connected to said another portion of said conduit string, said second member having a portion thereof releasably secured to a portion of said first member; and

a release member which is movable from a first position with respect to said first member and said second member having a portion thereof engaging said first member and said second member to cause said first member and said second member to be releasably secured to each other to a second position with respect to said first member and said second member having a portion thereof remaining in engagement with said portion of said first member and disengaging from said portion of said second member upon the communication of said fluid pressure to said tubing release assembly means to allow the release of said first member from said second member by the movement of said release member from said first position to said second position whereby said second member releases from engagement from said first member; and

an independent actuating tool means for use with said tubing release assembly means, said actuating tool means when actuated and in communication with said release assembly means causing said fluid pressure to be communicated to the tubing release asssembly means which is less than either the hydrostatic fluid pressure of said fluid in said conduit string or said well bore at the location in said conduit string at which said tubing release assembly means is installed in said conduit string, said actuating tool means adapted to be conveyed through said portion of said conduit string, said actuating tool means including:

a member having a chamber therein capable of retaining a desired level of fluid pressure therein; and

means to communicate said desired level of fluid pressure in said chamber of said member to said tubing release assembly means to cause the actuation thereof when said actuating tool means is releasably engaged therewith.

8. An actuating tool for use with a tubing release assembly installed in a conduit string installed, in turn, in a well bore, said conduit string and said well bore having fluid therein, said actuating tool comprising:

a member having a chamber therein capable of retaining a desired level of fluid pressure therein, the member having a chamber therein including:

a housing;

a lower end plug having a portion thereof connected to a portion of the housing;

a match drill assembly having a portion thereof connected to the housing;

a setting mandrel having a portion thereof slidably, sealingly engaging a portion of the housing and releasably connected to the match drill assembly;

an upper element cone slidably, releasably retained on a portion of the setting mandrel;

a retrieving mandrel slidably, releasably connected to a portion of the setting mandrel; and

an upper end plug having a portion thereof connected to a portion of the setting mandrel and having a portion thereof slidably engaging a portion of the retrieving mandrel; and

means to communicate the desired level of fluid pressure in the chamber of the member to said tubing release assembly to cause actuation thereof.

10. A method of releasing a fluid filled tubing string in a fluid filled well bore comprising the steps of:

assembling a tubing release assembly in said tubing string;

running the tubing release assembly assembled into said tubing string into said well bore, said tubing string having said fluid therein said well bore having said fluid therein;

providing an actuating assembly capable of actuating the tubing release asssembly;

running the actuating assembly into said tubing string;

retaining within the actuating assembly as fluid pressure level which is less than either the hydrostatic pressure level of said fluid in said tubing string or the hydrostatic pressure level of said fluid in said well bore at the location in which the tubing release assembly is located in said tubing string in said well bore; and

actuating the actuating assembly to cause the tubing release assembly to release a portion of said tubing string form another portion of said tubing string by communicating the pressure level retained within the actuating assembly to the tubing release assembly.

4,760,885

RACING-TYPE HORSESHOE

James M. Benning, 1857 Tilton Dr., Pittsburgh, Pa. 15241

Continuation-in-part of Ser. No. 735,523, May 20, 1985, Pat. No. 4,645,008. This application Oct. 15, 1986, Ser. No. 917,171
The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.
Int. Cl.[4] A01L *1/04*
U.S. Cl. 168—11 **15 Claims**



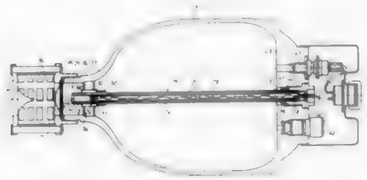
13. A horseshoe comprising a sole plate having holes in it for receiving nails to affix the plate to a horse's hoof in contact with the hoof a cushioned base plate adapted to be attached to said sole plate for ground contacting purposes and covering the heads of the nails which affix the sole plate to the hoof, with said base plate comprising a substantially flat support plate for attachment to said sole plate with a plurality of threaded means and an elastomeric ground plate having a flat upper surface bonded to said support plate.

4,760,886

FAST DISCHARGE FIRE EXTINGUISHER AND A METHOD OF FABRICATING SAME

Pierre Sassier, Bercheres sur Vesgre, France, assignor to Thomson-CSF, Paris, France

Filed Jun. 25, 1986, Ser. No. 878,439
Claims priority, application France, Apr. 25, 1986, 86 06024
Int. Cl.[4] A62C *35/02, 35/08*
U.S. Cl. 169—28 **9 Claims**



1. A fire extinguisher with high speed discharge including a container having generally cylindrical sidewalls, a bottom, and a narrowed outlet, said container containing an inhibiting liquid which vaporizes when it is expanded and a pressurized gas such as nitrogen, a cover closing the container, and an explosive charge for tearing the cover by a shock wave and which is disposed in the vicinity of the cover at first end of a pyrotechnical stick coaxial with the container with another end fixed to the bottom thereof, said stick secured to a side wall of the container by means of a support piece, wherein the support piece for the pyrotechnical stick is disposed in the narrowed outlet substantially near the first end of the stick of the container, this support piece further centering the explosive charge along the axis of the container.

4,760,887

DRILL ELEMENT FOR PERCUSSION DRILLING

Kjell-Ove L. Jansson; Lars E. Liljeblad, both of Sandviken, and Bernt S. Liljekvist, Storvik, all of Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Continuation-in-part of Ser. No. 816,327, Jan. 6, 1986, abandoned. This application Feb. 21, 1986, Ser. No. 831,634
Claims priority, application Sweden, Jan. 7, 1985, 8500049
Int. Cl.[4] F16B *7/18;* E21B *17/02*
U.S. Cl. 173—132 **16 Claims**



1. Drill element for percussion drilling, said drill element defining a longitudinal axis and having a rope thread with an external diameter less than 30 mm, and one single entry, said drill element adapted to be coupled to another element included in a percussion drill string, said rope thread including a crown and a root which are radiused as viewed in longitudinal cross-section, said crown having a constant radius of curvature less than 6 mm, and said root having a constant radius of curvature, the pitch of the screw thread being less than 12 mm, the shoulder angle of said screw thread being less than 90°, and the pitch angle of said screw thread being less than 11° but more than 5.6°.

4,760,888

DRILL BIT FOR CORE BORING

Makoto Saito, Chiba, Japan, assignor to Tone Boring Company Limited, Tokyo, Japan

Filed Oct. 3, 1986, Ser. No. 914,926
Claims priority, application Japan, Apr. 1, 1986, 61-75172; Apr. 28, 1986, 61-98845
Int. Cl.[4] E21B *10/66*
U.S. Cl. 175—259 **10 Claims**

1. A drill bit for core boring of the type provided with a multi-layered bit head, comprising:

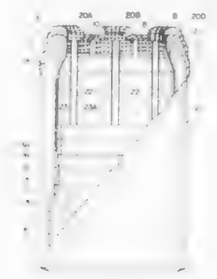
a cylindrical bit body provided at the tip portion thereof with a bit head having cutting blades and at an inner surface thereof with at least one protruding portion;

an upper layer bit head having upper layer blades super-

VOL 1093 ISS 1 AG 2 1988 UMI

posedly fitted on said cutting blades, a plurality of legs each fixed at one end thereof to the corresponding one of said upper layer blades and extending in the axial direction of said bit body, and at least one ring extending in the circumferential direction of said bit body in such a manner as to be connected to at least part of said legs and engageable with said at least one protruding portion, the diameter of said ring being capable of reduction; and

a disengaging mechanism received within said bit body and operable to disengage the engagement of said at least one ring with said at least one protruding portion,



said cutting blades of said bit body having an outer peripheral surface of an irregular configuration,

said upper layer blades having an inner peripheral surface of a configuration transferred from said irregular configuration of the outer peripheral surface of said cutting blades of said bit body,

said protruding portion of said bit body being provided with a portion shearably attached thereto, said portion adapted to be sheared off by shearing force of said ring of said upper layer bit head which works circumferentially when the diameter of said ring is reduced.

4,760,889

HIGH BENDING STRENGTH RATIO DRILL STRING COMPONENTS

Roy L. Dudman, P.O. Box 1281, Luling, Tex. 78648

Filed Sep. 19, 1986, Ser. No. 909,164
Int. Cl.[4] E21B 17/00
U.S. Cl. 175—320 15 Claims



1. A drill string component adapted to be threadedly connected as part of a rotary drill string which extends downwardly within a well bore to a drill bit at its lower end, comprising

a tubular joint having a body portion which extends a major portion of the entire length of the component and which is of uniform outside diameter throughout substantially its entire length,

a box portion including a box at the lower end of the body portion, and

a pin portion at the upper end of the body portion including a pin and a fishing neck having a uniform outside diameter which extends downwardly from the pin and which is smaller than the outside diameter of the box portion,

each of the box and pin having threads of the same size and type for connecting with similarly threaded drill string components.

6. A plurality of drill string components adapted to be connected as part of a rotary drill string which extends downwardly within a well bore to a drill bit at its lower end, comprising

a first component including a tubular joint having a pin portion at its upper end and a box portion at its lower end,

a second component including a tubular joint having a pin portion at its upper end adapted to be connected to the box portion of the first component and a box portion at its lower end adapted to be connected to the pin portion of a third component,

the pin portion of each component including a pin and a fishing neck having a uniform outside diameter which extends downwardly from the pin,

the outer diameter of the box portion of each component being larger than that of the fishing neck of the pin portion thereof,

the outer diameter of the box portion of the first component being larger than that of the fishing neck of the second component, and

one of the components having a body portion intermediate the fishing neck and box portion which extends a major portion of the entire length thereof.

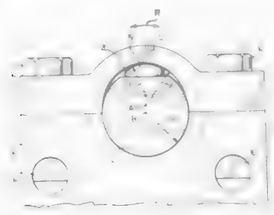
4,760,890

CUTTER ASSEMBLY FOR ROTARY BORING OF EARTH

William C. Saxman, Dallas, Tex., assignor to Tamrock Inc., Northbrook, Ill.

Filed May 18, 1987, Ser. No. 50,443
Int. Cl.[4] E21B 10/10, 10/20
U.S. Cl. 175—363 11 Claims

1. A cutter assembly for rotary boring of earth, comprising a boring head, at least one rotating cutter having a shaft, end portions of which protrude from the ends of the cutter; a mounting member secured in the boring head for the rotating cutter and provided with two mutually spaced legs, the free ends of which are provided with first curved counter surfaces for receiving the end portions of the shaft of the rotating cutter; and a pair of fastening elements each provided with a second curved counter surface, the fastening elements being arranged at the free ends of the legs of the mounting member such that said second curved counter surfaces cooperate with said first curved counter surfaces for fastening the shaft of the rotating cutter to the mounting member, the curvature of the middle portion of the second curved counter surface provided on each of the fastening elements being so formed that a gap narrowing in the direction of the periphery of the shaft is defined between each end portion of the shaft and the middle portion of the counter surface of the respective fastening element, and the assembly further comprising a rigid clutching part provided at each end portion of the shaft and extending outside the outer periphery of the shaft in the radial direction toward the middle portion of the second counter surface of the fastening element, each clutching part being pressed against a corresponding second counter surface of a respective fastening





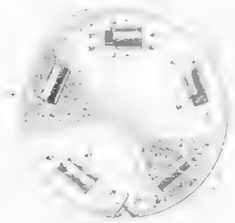
element when the shaft turns, thus preventing the turning movement of the shaft in this direction.

4,760,891

WHEEL MOTOR COVER

Michael D. Moss, P.O. Box 582, Kearny, Ariz. 85237

Filed Feb. 2, 1987, Ser. No. 9,799
Int. Cl.[4] B60K 7/00
U.S. Cl. 180—65.5 9 Claims



1. A cover for an electric motor driving a wheel of a wheeled vehicle, which cover is adapted to permit cooling air to be expelled from the motor and for inhibiting the entry of foreign material into the motor, said cover comprising a generally disc-shaped cover sheet of flexible, air impervious material, said cover sheet having an opening therein to permit cooling air to pass therethrough, a foramenous sheet over said cover sheet opening to inhibit the passage of foreign material through said opening, a reinforcing member secured to the perimeter of the cover sheet, and means for expanding and contracting the circumference of said reinforcing member.

4,760,892

VARIABLE ASSIST POWER STEERING SYSTEM USING ELECTRONIC PRESSURE CONTROL

James J. Duffy, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 2, 1986, Ser. No. 902,919
Int. Cl.[4] B62D 5/08
U.S. Cl. 180—142 3 Claims



1. In a power steering system for an automotive vehicle having a gear rack adapted to be connected to a vehicle steering linkage, a drive pinion engageable with said rack, a driver controlled steering shaft and torsion bar connection between said steering shaft and said driving pinion whereby steering forces are distributed from said steering shaft to said rack;

a rotary valve assembly comprising a valve sleeve connected to and rotatable with said driving pinion, an inner valve element received in said valve sleeve and connected to and rotatable with said steering shaft;

a power steering pump, hydraulic pressure operated fluid motors having a pressure operated member connected to said rack whereby a fluid pressure force may be applied to said rack to supplement the manual steering effort, thereby providing the vehicle operator with a power assist;

a fluid pressure circuit connecting said pump to said fluid motor, said steering valve assembly being located in and defining in part said fluid pressure circuit whereby pressure is distributed to either one side of said fluid motor or the other depending upon the direction of torque applied to said steering shaft, said fluid pressure circuit comprising a high pressure passage connecting a high pressure side of said pump to the inlet side of said steering valve assembly and a low pressure return flow passage connecting the outlet side of said steering valve assembly with the inlet side of said pump;

an electronically controlled throttling valve located in parallel disposition in said fluid pressure circuit between the inlet side of said pump and the outlet side of said pump whereby a bypass flow path is established in parallel relationship with respect to the fluid flow path through said steering valve assembly;

an electronic central processor unit connected to said electronically controlled throttling valve, a steering torque sensor connected to said central processor unit, a steering pressure sensor in said hydraulic pressure circuit connected to said central processor unit;

a vehicle speed sensor connected to said central processor unit, said central processor unit having an electronic memory with stored vehicle speed, steering torque and steering pressure data, the relationship between said data indicating the optimum electrical voltage signal which when distributed to the electronically controlled throttle valve effects a controlled bypass of fluid from the high pressure side of said pump to the inlet side of said pump thereby effecting a controlled power assist that depends upon vehicle speed;

said electronically controlled throttling valve comprising a regulating valve having a regulating valve sleeve and a

VOL 1093 ISS 1 AG 2 1988 UMI

regulating valve spool located in said sleeve, a metering orifice having one side thereof communicating with the outlet side of said pump and the downstream side thereof communicating with the low pressure side of said pump, said regulating valve spool registering with said metering orifice and controlling its effective area as it is shifted within said regulating valve sleeve, a solenoid valve comprising a solenoid valve spool and a solenoid valve sleeve receiving said solenoid valve spool, said solenoid valve sleeve and solenoid valve spool having registering valve lands that define in part said fluid pressure circuit on the high pressure side of said pump and the fluid pressure circuit on the low pressure side of said pump, a fluid passage connecting one side of said regulating valve spool with said solenoid valve sleeve, said solenoid valve spool upon movement relative to said solenoid valve sleeve controlling the degree of communication between the high pressure side of said pump and said passage and the degree of communication between said passage and the return side of said pump, pressure distributor passages connecting said passage with one end of said solenoid valve spool and connecting the other end of said solenoid valve spool with the low pressure side of said pump, solenoid valve windings surrounding a solenoid armature connected to the solenoid valve spool whereby displacement of said solenoid valve spool relative to said solenoid valve sleeve is determined by the magnitude of the electromagnetic force developed by said solenoid windings, said solenoid windings being connected to said central processor unit, said solenoid valve spool thereby functioning as a pilot valve that triggers the operation of said regulating valve.

4,760,893

METHOD OF CONTROLLING SLIPPING OR SPINNING OF A VEHICLE WHEEL

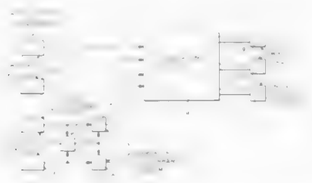
Alfred Sigl, Sersheim, and Thomas Isella, Waldbronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 17, 1986, Ser. No. 921,325

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1985, 3537452

Int. Cl.[4] B60K *31/00;* B60T *8/08*

U.S. Cl. 180—197 21 Claims



1. A method of controlling slipping or spinning of a wheel of a vehicle, wherein the vehicle has

driven wheels and non-driven or rolling wheels, and

a slip control system for the driven wheels,

comprising the steps of

sensing if a respective driven wheel slips or spins above a predetermined slip level, or rotates under conditions indicating a tendency to slip or spin above said predetermined slip level;

monitoring the speed of at least one of the rolling wheels and deriving rolling wheel output signals representative of said monitored speed;

sensing the speed of at least one driven wheel and deriving driven wheel output signals representative of said sensed speed;

generating a reference parameter signal representative of the speed of the at least one rolling wheel;

comparing the driven wheel output signals with the reference parameter and deriving a comparison signal indicative of slip or incipient slip;

decreasing the speed of rotation of said respective driven wheel when said comparison signal representative of slip indicates wheel slip above said predetermined slip level;

in successive time steps, testing the rolling wheel output signals representative of the speed of the rolling wheel to determine if the signal has a characteristic indicative of change of speed of the rolling wheel which is not physically possible, and

if the test indicates a condition of the signal representative of a physically impossible condition,

generating, as the comparison signal, a new signal which is representative of at least a lesser change of speed than the rolling wheel output signal representative of said monitored speed.

4,760,894

EXHAUST MUFFLER WITH ANGULARLY ALIGNED INLETS AND OUTLETS

Jon W. Harwood; James W. Emrick; Bruno A. Rosa, and Bruce G. Kratzer, all of Toledo, Ohio, assignors to AP Industries, Inc., Toledo, Ohio

Filed Jun. 11, 1987, Ser. No. 61,876

The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.

Int. Cl.[4] F01N *1/02, 7/18*

U.S. Cl. 181—282 25 Claims



1. An exhaust muffler for connection to at least one exhaust pipe and at least one tail pipe of a vehicle, said muffler comprising:

a pair of internal plates disposed in generally face to face relationship, said internal plates being formed to define an array of tubes therebetween, with portions of said array of tubes being perforated, said tubes defining at least one inlet to said array of tubes connectable to said exhaust pipe and at least one outlet from said array of tubes connectable to said tail pipe, said outlet being angularly aligned with respect to said inlet with the respective alignments of said inlet and said outlet being selected to achieve efficient alignment of the exhaust pipe and tail pipe of the vehicle; and

a pair of external shells securely connected to one another and surrounding and enclosing said internal plates, said external shells being formed to define at least one inlet and at least one outlet in register with each said respective inlet and outlet of said internal plates, said external shells defining at least one expansion chamber surrounding the perforated portions of said internal plates.

4,760,895

ELECTRIC ACTUATORS

David J. Wickham, Chippenham, Great Britain, assignor to Westinghouse Brake and Signal Company Limited, United Kingdom

Filed Apr. 29, 1987, Ser. No. 43,817

Claims priority, application United Kingdom, May 17, 1986, 8612061; Oct. 9, 1986, 8624235

Int. Cl.[4] F03G *1/00;* B60T *13/04;* F16D *65/56*

U.S. Cl. 185—40 R 10 Claims



1. A spring applied force actuator having an output member movable from a first position to a second output position, a first power spring by which can be generated on the output member an output force when the member is in its second position, first power means by which potential energy can be generated in the first spring therein to be held until the spring is released to apply its stored force as an output force on the output member, a second spring release of potential energy stored in which moves the output member from its first position to its second output position, and second power means by which the output member can be moved back from its second output position to its first position thereby, at the same time, generating in the second spring the potential energy subsequently to move the output member back to its second output position upon the subsequent release of that second spring.

4,760,896

APPARATUS FOR PERFORMING GROUP CONTROL ON ELEVATORS

Toru Yamaguchi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Sep. 29, 1987, Ser. No. 102,587

Claims priority, application Japan, Oct. 1, 1986, 61-231265; Oct. 23, 1986, 61-252291; Oct. 23, 1986, 61-252293

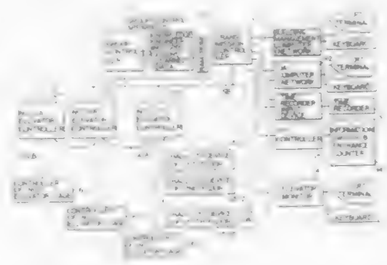
Int. Cl.[4] B66B *1/18*

U.S. Cl. 187—124 7 Claims

1. An apparatus for performing a group control on elevators, by which a total operation of the elevators for respective floors of building is controlled, said apparatus comprising:

condition-instruction table means for providing a condition-instruction table which contains a plurality of predetermined control rules being defined by given conditions and given instructions; and

elevator control means, coupled to said condition-instruction table means, for detecting, in accordance with a specific rule selected from said control rules, a degree of establishment of said given conditions to provide a detected condition, and generating, in accordance with said detected condition, an elevator control instruction used for performing said group control.



4,760,897

SPRING FOR ASSEMBLING A DRUM BRAKE

Eric Michoux, Villiers Sur Marne, and Michel Dearee, Aulnay Sous Bois, both of France, assignors to Bendix France, Drancy, France

Filed Jul. 15, 1987, Ser. No. 73,922

Claims priority, application France, Jul. 23, 1986, 86 10694

Int. Cl.[4] F16D *65/56*

U.S. Cl. 188—79.51 2 Claims



1. A spring for assembling a drum brake of the type comprising two shoes stressed towards the drum by a brake motor acting, counter to a restoring first spring, on first ends of the said shoes, while the other ends interact with an anchoring block, one of the shoes carrying a handbrake lever articulated on a pivot adjacent to the first end of the one shoe, the lever being connected to the other shoe by means of a spacer one end of which is laid against the lever by means of a second spring, the lever having a stop which interacts with the web of the one shoe and which acts counter to the second spring in order to define a rest position of the lever, characterized in that the second spring consists of a V-shaped elastic metal wire (R1, R2, R3) having one end of one branch of which forms a hook which engages the pivot to ensure retention of the lever thereon, the branch passing through a passage, provided in the spaces in order to stress the spaces elastically towards the lever in interaction with the other branch of the V which has means of anchoring on the web of the one shoe and the lever.

4,760,898

ARMATURE ASSEMBLY

Stephen Nyquist, Simsbury, Conn., assignor to Inertia Dynamics, Inc., Collinsville, Conn.

Filed Mar. 13, 1987, Ser. No. 25,530

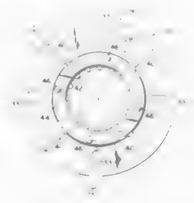
Int. Cl.[4] F16D *65/10*

U.S. Cl. 188—161 14 Claims

1. An armature assembly comprising a circular armature plate having a central opening therethrough defined by a cir-

VOL 1093 ISS 1 AG 2 1988 UMI

cumaxial series of radially inwardly projecting armature teeth, the inner ends of said armature teeth defining a coaxial crest circle, and a splined hub attached in fixed position to a central portion of said armature plate, said splined hub having a central aperture smaller than said central opening and defined by a circumaxial series of radially inwardly extending spline teeth, the radially outer extremities of said spline teeth defining a root circle having a diameter greater the diameter of said crest circle.



4,760,899

BRAKING DEVICE FOR VEHICLE

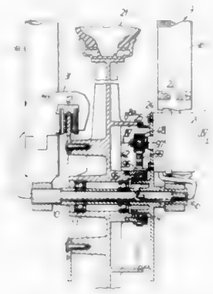
Tsutomu Hayashi, Tokyo; Takeshi Kawaguchi, and Tetsuo Tsuchida, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 738,675, May 28, 1985, Pat. No. 4,694,938. This application Apr. 28, 1987, Ser. No. 43,344

Claims priority, application Japan, May 30, 1984, 59-109835

Int. Cl.[4] B60T *8/34*

U.S. Cl. 188—181 A 6 Claims



1. In a motorcycle having a body and a pair of front and rear road wheels, said wheels being carried on the body via supporting systems for rotation around respective axles,

a braking device for use with one of the wheels, comprising:

a brake operable by a hydraulic pressure form a master cylinder for applying a brake power to said one wheel; and

an antilock control unit with a sensor built therein which is driven from said one wheel, said control unit controlling hydraulic brake pressure for said brake in accordance with an output from the sensor;

wherein said brake and said antilock control unit are disposed on opposite sides of said one road wheel.

4,760,900

FRICTION BRAKES

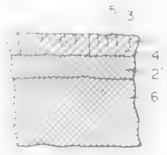
Takashi Shima, Tokyo; Katuro Takasawa, Saitama; Tomoharu Ashikawa, Kanagawa; Taro Tsujimura, Tokyo; Yasuo Takenaka, Kanagawa, and Shunichi Tomizuka, Hokkaido, all of Japan, assignors to The Japan Steel Works, Ltd. and Japanese National Railways, both of Tokyo, Japan

Filed Mar. 12, 1981, Ser. No. 243,110

Claims priority, application Japan, Mar. 25, 1980, 55-36873

Int. Cl.[4] F16D *69/02*

U.S. Cl. 188—251 M 3 Claims



1. A friction brake which comprises: a brake plate or brake drum, said plate or drum having a sliding friction surface metal layer comprising grey cast iron; an intermediate metal layer co-extensive with at least a portion of said surface layer and comprising a high strength different metal having high tensile stress resistance and a high crack transmission resistance; and a third layer co-extensive with at least a portion of said intermediate metal layer and comprising a metal material, said grey cast iron layer being metallurgically bonded to said high strength different metal layer at their interface, and said high strength different metal layer being metallurgically bonded to said metal material layer at their interface, wherein said intermediate high strength different metal layer prevents cracks formed in said surface metal layer from spreading.

4,760,901

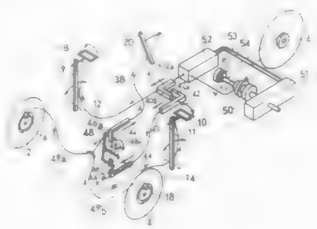
HYDRAULIC BRAKING SYSTEM PARTICULARLY USEFUL IN HUMAN POWERED VEHICLES

Shmuel Levavi, Keren Kayemet L'Yisrael Street 18, Givatayim, Israel

Filed Feb. 20, 1987, Ser. No. 17,097

Int. Cl.[4] F16D *57/06*

U.S. Cl. 188—291 15 Claims



1. A hydraulic braking system for braking a driven device, comprising:

a hydraulic pump;

a clutch coupling said hydraulic pump to the driven device when the clutch is acutated;

a hydraulic circuit for a liquid including a flow restricor restricing the flow of the liquid therethrough;

a hydraulic connection from said pump to said hydraulic circuit such that, when said clutch is actuated to couple the pump to the driven device, the flow restrictor imposes a hydraulic load on the driven device thereby braking it; and a control device including a control member manually movable by the operator, and a cam member coupled to said control member for movement therewith;

said cam member including a first cam surface coupled to said clutch and effective, upon the initial movement of said control member, to actuate said clutch to couple the hydraulic pump to the driven device, and a second cam surface, coupled to said flow restrictor, effective upon further movement of said control member, to vary the flow restrictor and thereby the hydraulic load imposed by it according to the magnitude of movement of the control member by the operator.

4,760,902

CLUTCH ENGAGEMENT CONTROL SYSTEM

Regis Bellanger, Mississauga, Canada, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

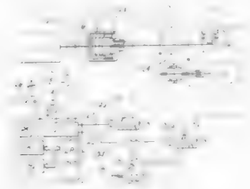
PCT No. PCT/EP85/00143, § 371 Date Nov. 22, 1985, § 102(e) Date Nov. 22, 1985, PCT Pub. No. WO85/04697, PCT Pub. Date Oct. 24, 1985

PCT Filed Apr. 1, 1985, Ser. No. 803,286

Claims priority, application United Kingdom, Apr. 5, 1984, [illegible]

Int. Cl.[4] F16D *25/14;* G05D *13/62*

U.S. Cl. 192—0.033 8 Claims



1. A tractor power take-off drive line including a friction clutch having an input portion which is driven from an engine and an output portion which drives a power take-off output shaft, fluid pressure operated clutch engaging means, a solenoid-operated valve for supplying pressurised fluid to the engaging means, and a system for controlling the engagement of the clutch, said system comprising a pulse width modulation function for providing a series of electrical pulses to the solenoid of the valve in successive predetermined time intervals during engagement of the clutch, each pulse having an "on" period during which the valve connects the engaging means to a source of pressurized fluid and an "off" period during which the valve connects the engaging means to a dump line, sensing means to provide signals indicative of the input and output speeds of the clutch, and processing means for establishing for successive time intervals the ratio between the input and output speeds of the clutch and the change in this ratio by comparison with said ratio for a previous time interval, said processing means comparing said change in input to output speed ratio with a target change in said ratio set by the system for the respective time interval to produce an error signal, and using said error signal to set the ratio of the "on" and "off" periods of the pulse width modulation function for the next successive time interval, said processing means also using the value of the input to output speed ratio to determine the target change in said input to output speed ratio for the next successive time interval so as to adjust the clutch engagement pressure to tend to reduce said error signal to zero.

8. A method of controlling a PTO output shaft brake comprising applying the brake for a predetermined time period, determining whether the speed of rotation of the output shaft at the end of said predetermined time is below a predetermined value indicative of the presence of a low inertial load on the shaft which can be arrested by the brake without damage, maintaining the brake continuously applied to bring the shaft to rest if the output shaft speed is below said predetermined value at the end of said predetermined time period or releasing the brake if the output shaft speed is above said value, in the event of the brake being released due to said shaft speed being above said predetermined value, the brake being re-applied after a second predetermined time period and the above process repeated until the rotational speed of the shaft is below said predetermined value whereupon the brake is continuously applied.

4,760,903

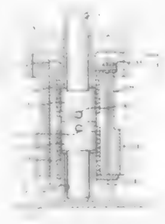
METHOD AND APPARATUS FOR EXTENDING THE LIFE OF A WRAP SPRING CLUTCH

Ulrich H. E. Stegelmeier, and Keith A. Ganton, both of Waterloo, Canada, assignors to NCR Corporation, Dayton, Ohio

Filed May 18, 1987, Ser. No. 53,885

Int. Cl.[4] F16D *13/02, 13/08*

U.S. Cl. 192—26 19 Claims



1. In a wrap spring clutch, the combination comprising:

a control collar having at least one control slot therein to receive a tang of a control spring;

a control spring having a tang on one end thereof to be inserted in said control slot of said control collar; and

an elastomeric sleeve which is positioned on said tang and is also dimensioned relative to said tang and control slot in said control collar to remove any looseness or play between said tang and said control slot when said tang with said elastomeric sleeve thereon is inserted in said control slot of said control collar.

12. The method of extending the life of a control spring in a wrap spring clutch whose control collar has at least one control slot therein to receive a tang of said control spring, said method comprising the steps of:

(a) selecting an elastomeric sleeve which is dimensioned to remove any looseness or play between said tang and said control slot when said tang with said elastomeric sleeve thereon is inserted in said control slot of said control collar; and

(b) positioning said elastomeric sleeve on said tang and inserting said tang with said elastomeric sleeve thereon in said control slot of said control collar.

16. An elastomeric sleeve for use in a wrap spring clutch having a control spring having a tang which fits into a control slot of a control collar associated with the wrap spring clutch, said elastomeric sleeve being made of polyurethane material and being dimensioned to provide an interference fit between said tang and said control slot.

4,760,904

ONE-WAY TORQUE LIMITER

Ronald E. Heiskell, Tracy, and Brian C. Bernard, Oakland, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Feb. 11, 1987, Ser. No. 13,289

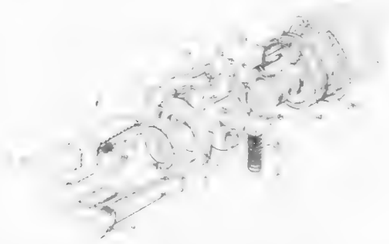
Int. Cl.[4] F16D *43/20*

U.S. Cl. 192—56 R 7 Claims

1. Torque limiting apparatus for terminating the application of rotary driving force to a rotational device upon the imposi-

VOL 1093 ISS 1 AG 2 1988 UMI

tion of a predetermined torque condition in the drive line for said rotational device comprising, in combination; housing means for operative connection to one part of said drive line and for transmitting rotational force thereto, rotor means for transmitting rotational force to said drive line and for operative connection to another part of said drive line, said drive line being selectively rotatable in first and second directions, said housing means and said rotor means having cooperatively engaged means for terminating said driving force upon reaching said predetermined torque condition when said drive line is operating in said first direction and for preventing termination



of said force upon reaching said predetermined torque condition when said drive line is operating in said second direction, said cooperatively engaged means including movable means and further including receiving means for operatively receiving said movable means, said movable means being automatically biased by forces from opposed directions to a neutral position which prevents relative movement between said housing means and said rotor means, blocking means for preventing movement of said movable means in one direction while permitting movement of said movable means in an opposite direction.

4,760,905

FLUID FRICTION CLUTCH

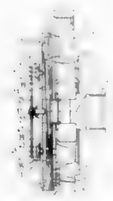
Werner Göb, Kürnach, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 24, 1987, Ser. No. 43,200

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1986, 3614297

Int. Cl.[4] F16D *35/00, 43/25*

U.S. Cl. 192—58 B 12 Claims



1. A fluid friction clutch for a cooling fan of an internal combustion engine, comprising

(a) a shaft,

(b) a rotor connected fast with the shaft,

(c) a housing for the reception of shear fluid, mounted rotatably on the shaft and enclosing the rotor, forming at least one shear gap, which housing has axially oppositely to the shaft a front extending substantially perpendicularly to the shaft axis,

(d) a control device temperature-dependently controlling the filling level of the shear fluid in the shear gap, which device comprises a bimetallic element of substantially elongated strip form arranged externally on and spaced outwardly from the front of the housing and substantially parallel to the front, said bimetallic elements having a first end and a second end spaced apart in the elongated direction,

(e) tab-like flexible retaining pieces integrally formed on the first and second ends of the bimetallic element, which said retaining pieces are bent inwardly towards the front of the housing, and retaining pieces each having an end spaced outwardly from the first and second ends with the retaining piece ends secured firmly on the front, the retaining pieces include flange tabs at the retaining piece ends located in the plane of the front and provided with a hole, and securing elements passing through the holes in the flange tabs hold the flange tabs on the front.

4,760,906

INTERNAL ASSISTED CLUTCH

Richard A. Flotow, Butler, and Thomas G. Dickson, Fort Wayne, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed May 11, 1987, Ser. No. 48,250

Int. Cl.[4] F16D *13/44, 13/75, 23/14*

U.S. Cl. 192—70.25 40 Claims



1. A spring loaded clutch cover assembly comprising

(a) a clutch cover means,

(b) a pressure plate disposed coaxially with said cover means,

(c) means connecting said cover means and said pressure plate for unitary rotation and relative axial movement,

(d) said pressure plate having an engaged position and a disengaged position wherein said pressure plate is spaced axially from said cover means a lesser distance than in said engaged position,

(e) release means for selectively moving said pressure plate from said engaged to said disengaged position, said release means including an axially movable release collar and lever means operatively connecting said release collar to said pressure plate,

(f) first resilient means reacting between said cover means and said pressure plate for biasing said pressure plate to its engaged position, and

(g) second spring means connected between said release collar and said cover means and disposed with its reactive axis perpendicularly relative to the axial direction of movement of said release collar when the latter and said pressure plate are in the engaged position,

(h) the reactive axis of said second spring means movable to

an angular relationship relative to the axial direction of movement of said collar as said collar moves toward said disengaged position.

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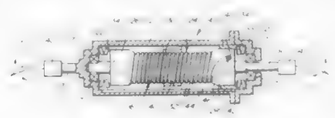
VARIABLE LEAD DIFFERENTIAL TRAVEL LIMITING MECHANISM

Eli Avny, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 29, 1986, Ser. No. 912,786

Int. Cl.[4] F16D *11/08;* F16H *25/12*

U.S. Cl. 192—141 12 Claims



9. An apparatus for limiting the relative rotation between two drive members, comprising:

a first shaft drivably connected to one drive member, and including a tubular section;

a second shaft drivably connected to the other drive member and having a section received coaxially within the tubular section, said second shaft section including a helical thread therein and having a middle section and two end sections, said middle section having a smaller diameter than the end sections;

a follower nut disposed within the tubular section and having a spline connection therewith permitting axial motion, said follower nut further having a follower on its inner periphery having a large finger and a small finger received within the thread of the second shaft section; and

means at opposite ends of the tubular section for limiting axial motion of the nut when the drive members are at a selected limit of relative rotation;

wherein the helical thread receives only the small finger along the shaft middle section, and receives the large finger in the shaft end sections when the shafts reach the selected limit of relative rotation.

4,760,908

SORTER CONVEYOR

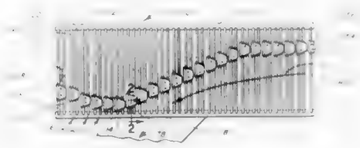
Harry E. Houghton, Orland Park, Ill., assignor to Automotion Incorporated, Alsip, Ill.

Continuation of Ser. No. 834,640, Feb. 28, 1986, abandoned.

This application Sep. 17, 1987, Ser. No. 98,765

Int. Cl.[4] B65G *47/46*

U.S. Cl. 198—365 19 Claims



1. In a sorting conveyor having article carrying tubes mounted in pairs for movement in an endless path in a direction at right angles to the length of the tubes and a guide member, an improved article pusher comprising:

a slider inside each of the tubes of a pair of tubes for movement lengthwise of the tubes;

a pusher support interconnecting the sliders inside the pair of tubes;

an article engaging pusher surface mounted on said support; and

a pusher actuator mounted on said support for engagement with the guide member to move the pusher laterally as the tubes are moved in said endless path.

4,760,909

SUCTION DIVERTER

Peter B. Dudley, 16359 Shady View La., Los Gatos, Calif. 95030, and Edmond R. Dudley, 19941 Lanark Dr., Saratoga, Calif. 95070

Filed Nov. 17, 1986, Ser. No. 931,671

Int. Cl.[4] B65G *47/46*

U.S. Cl. 198—369 4 Claims



1. A suction diverter system for removing selected articles from a horizontal conveyor, said system comprising:

a suction wheel mounted laterally adjacent the conveyor at an elevation slightly above that of the conveyor and having an innermost edge relative to the conveyor, said suction wheel having a plurality of peripheral ports at which a vacuum can be drawn for causing articles moving along the conveyor to adhere thereto;

means for rotating the suction wheel about a vertical axis with the innermost edge moving in the direction of conveyor movement and at a corresponding peripheral speed;

a manifold held stationary against rotation and that rests upon the suction wheel through which a vacuum can be drawn at the peripheral ports of the suction wheel;

inspection means for examining articles on the conveyor and providing control signals indicative of articles to be removed from the conveyor;

positioning means responsive to said control signals of the inspection means for moving the suction wheel laterally relative to the conveyor between two positions, one position having the suction wheel withdrawn from the path of articles moving along the conveyor for avoiding article contact when no articles are to be removed, and the other position having the suction wheel inserted into the path of articles moving along the conveyor for contacting articles when an article is to be removed; and

control means responsive to said control signals of the inspection means for selectively drawing a vacuum at peripheral ports of the suction wheel to hold a selected article thereto for removal from the conveyor.

4,760,910

ALIGNING AND FEEDING APPARATUS FOR ELONGATED PIECES

Masanori Suzuki, Kariya; Yasuo Hibi, Obu; Kazuaki Tanaka, and Yoshimitsu Yamaguchi, both of Anjo, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 14, 1987, Ser. No. 3,275

Claims priority, application Japan, Jan. 16, 1986, 61-5085

Int. Cl.[4] B65G *47/24*

U.S. Cl. 198—412 14 Claims

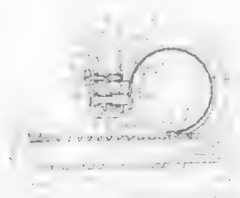
1. An apparatus for aligning and feeding elongated pieces, comprising:

a rotary drum which is provided on one side of a passage of the elongated pieces extending in the lengthwise direction of the elongated pieces and which is rotatable about an axis parallel to the passage, said drum being provided, on the outer periphery thereof, with a plurality of receiving grooves which are spaced from one another at a constant

VOL 1093 ISS 1 AG 2 1988 UMI

pitch and which extend parallel to the axis of the rotation of the drum;

means for pushing the elongated pieces into the receiving grooves of the drum one by one from the passage, said means for pushing including at least one rotary shaft mounted in said passage adjacent said rotary drum, said rotary shaft being mounted for rotation about an axis normal to a longitudinal axis of the passage, and a pushing cam member mounted to the rotary shaft, said pushing cam having a cam surface which contacts elongated pieces moving in said passage to brake the movement of



the pieces and to push the pieces in a direction normal to the direction of movement in said passage into the receiving grooves of the drum as the rotary shaft rotates;

means for preventing the elongated pieces from falling out of the receiving grooves of the drum;

means for receiving the elongated pieces from the receiving grooves of the drum and conveying said pieces in a direction perpendicular to the axis of the rotation of the drum; and

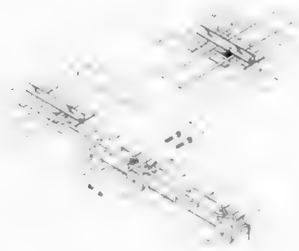
means for aligning the elongated pieces during the conveyance thereof by the receiving and conveying means.

4,760,911

CONVEYOR SYSTEM FOR USE IN A CONTINUOUS PROOFING AND BAKING APPARATUS

Carlos Bacigalupe, The Colony, and Michael J. Dobie, Plano, both of Tex., assignors to Stewart Systems, Inc., Plano, Tex.

Filed Jun. 26, 1987, Ser. No. 66,563
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—474.1 **10 Claims**



1. A conveyor system for use in a continuous proofing and baking apparatus, the conveyor system comprising:

an elongated track;

a conveyor chain for movement through the track and having a plurality of links;

a plurality of product supporting grids, each carried by one of the links of the conveyor chain;

a plurality of rockers, each mounted on a product supporting grid, for securing a bakery pan in engagement with the product supporting grid during movement of the product supporting grid along the track under the action of the conveyor chain, wherein the rocker is pivotable in a horizontal plane relative to the product supporting grid.

4,760,912

CONVEYOR HANGER WITH CIRCULAR WEDGE GRIPPER

Robert M. Vaida, Ellington, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Filed May 29, 1987, Ser. No. 56,459
Int. Cl.[4] B65G *47/74*
U.S. Cl. 198—678 **14 Claims**



1. A hanger for use in a conveyorized system for transporting limp material from work station to work station, said hanger comprising:

a body,

a substantially straight pin having a longitudinal axis and first and second ends, said pin being fixed to said body at said one end and beyond said one end extending away from said body to said second end,

a circular wedge element mounted on said pin for rotation relative to said pin about said longitudinal axis and for sliding movement relative to said pin along said longitudinal axis,

said circular wedge element having an external generally conical gripping surface concentric with said longitudinal axis of said pin and having a given general cone angle with respect to said longitudinal axis of said pin,

a generally planar fixed gripping surface on said body cooperable with said conical gripping surface of said circular wedge element to grip a work unit between said circular wedge element and said fixed gripping surface,

said fixed gripping surface being perpendicular to a reference plane containing said longitudinal axis and, as measured in said reference plane, being inclined relative to said longitudinal axis by an angle substantially equal to said cone angle, and

spring means for urging said circular wedge element along said longitudinal axis of said pin toward said fixed gripping surface of said body so as to resiliently press said circular wedge element against a workpiece inserted between said circular wedge element and said fixed gripping surface.

4,760,913

HINGED BELT SUPPORT AND ENCLOSURE SYSTEM

William H. Taschantz, Canton. Ohio, assignor to Harrison Handling, Inc., Canton, Ohio

Filed Feb. 9, 1987, Ser. No. 12,800
Int. Cl.[4] B65G *15/08*
U.S. Cl. 198—819 **30 Claims**

28. A conveyor system including:

a head pulley;

a tail pulley;

a hinged belt having a pair of end flaps and a central troughing portion, said belt extending between said head and tail pulleys and having loaded and unloaded flights;

drive means for driving said belt; and

an orienting pulley in contact with the troughing portion of the unloaded flight adjacent to and in upstream of the tail pulley in the direction of travel of said unloaded flight, said orienting pulley having a length greater than the



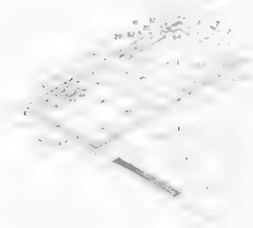
transverse width of the central troughing portion and extends transversely across the path of travel of the belt and applies a downward force against said troughing portion of the unloaded belt flight sufficient to move said troughing portion downwardly to an elevation at least equal to the plane of the troughing portion of the belt extending between the orienting pulley and tail pulley to create a flattened belt condition between said orienting pulley and tail pulley.

4,760,914

THEFT-RESISTANT RETAIL CONTAINER

Anthony Gelardi, Cape Porpoise, Me.; Alan Lowry, Canton, Mass., and Craig Lovecky, Old Orchard Beach, Me., assignors to Shape Inc., Biddeford, Me.

Filed May 29, 1987, Ser. No. 55,559
Int. Cl.[4] B65D *85/672, 85/57*
U.S. Cl. 206—1.5 **23 Claims**



1. A retail container for removably securing a substantially rigid item, comprising:

vertically elongated frame means for forming sides, top and bottom of said retail container and for forming a securing well with two side walls and a bottom wall;

front plate means, integrally formed with said frame means at the front thereof, for forming front and rear surfaces and a first aperture opening onto the securing well and for forming securing well ledges for restraining the substantially rigid item from passing through said front plate from the securing well;

securing well tab means, integrally formed with said frame means at the rear and along the side and bottom walls of the securing well, for restraining the substantially rigid item from moving in a rearward direction; and

center rib means, integrally formed on and perpendicular to the rear surface of said front plate means at the top of the securing well, said center rib means having a rear edge tapering towards the side walls of the securing well and ending before reaching the side walls, thereby forming spaces between said center rib means and the side walls of the securing well, said frame means, said front plate means and said center rib means formed from a semirigid material for flexing in response to external pressure on the rear edge of said center rib means to permit the substantially rigid item to be inserted into and removed from the securing well and substantially returning to an original position to secure the substantially rigid item when the external force is released.

17. A retail container for removably securing a substantially rigid item and a substantially planar flexible item, comprising:

a vertically elongated frame forming top, bottom and sides of said retail container and forming side walls and a bottom wall of a securing well, said frame having inner and outer surfaces;

a front plate, integrally formed with said frame, including a front plate center member integrallyformed and connected between the sides of said frame, said front plate having front and rear surfaces and a first aperture opening onto the securing well and forming securing well ledges for restraining the substantially rigid item from passing through said front plate from the securing well and a second aperture between the top of said retail container and the front plate center member, said front plate further forming display well tabs projecting into the second aperture;

securing well tabs, integrally formed with said frame at the rear and along the side and bottom walls of the securing well, for restraining the substantially rigid item from moving in a rearward direction; and

a center rib, integrally formed on and perpendicular to the rear surface of said front plate at the top of the securing well, said frame, said front plate and said center rib formed of a semirigid material flexing in response to external pressure on the rear edge of said center rib, thereby permitting the substantially rigid item to be inserted into and removed from the securing well and substantially returning to an original position to secure the substantially rigid item when the external force is released; and

display well ledges integrally formed on the inner surfaces of the top and sides of said frame and attached to the rear surface of said front plate adjacent the bottom of the second aperture, the substantially planar flexible item being removably secured by said display well tabs, said display well ledges and the inner surfaces of the top and sides formed by said frame.

19. A retail container for removably securing a substantially rigid item, comprising:

a vertically elongated frame forming sides, top and bottom of said retail container and forming a securing well with two side walls and a bottom wall, the top and bottom of said retail container having outer surfaces;

a front plate integrally formed with said frame, having front and rear surfaces and a first aperture opening onto the securing well and forming securing well ledges for restraining the substantially rigid item from passing through said front plate from the securing well;

securing well tabs, integrally formed with said frame at the rear and along the side and bottom walls of the securing well, for restraining the substantially rigid item from moving in a rearward direction;

a center rib, integrally formed on and perpendicular to the rear surface of said front plate at the top of the securing well, said frame, said front plate and said center rib formed of a semirigid material flexing in response to external

VOL 1093 ISS 1 AG 2 1988 UMI

pressure on the rear edge of said center rib, thereby permitting the substantially rigid item to be inserted into and removed from the securing well and substantially returning to an original position to secure the substantially rigid item when the external force is released; and

back card receiving slots, integrally formed on the outer surfaces of the top and bottom formed by said frame, for receiving edges of a back card substantially covering the rear of said retail container, said back card receiving slots having opposing walls with nodules integrally formed thereon projecting into said back card receiving slots with alternating spacing along the opposing walls.

20. A retail container for removably securing a substantially rigid item, comprising:

a vertically elongated frame forming sides, top and bottom of said retail container and forming a securing well with two side walls and a bottom wall;

a front plate, integrally formed with said frame, having front and rear surfaces and a first aperture opening onto the securing well and forming securing well ledges for restraining the substantially rigid item from passing through said front plate from the securing well, said securing well ledges formed by said front plate having openings therein combining with the first aperture to provide space for the substantially rigid item to pass partially through said front plate during insertion and removal of the substantially rigid item, the openings in said securing well ledges being defined at the bottom thereof by faces slanted downward toward the bottom and rear of the frame;

securing well tabs, integrally formed with said frame at the rear and along the side and bottom walls of the securing well, for restoring the substantially rigid item from moving in a rearward direction; and

a center rib, integrally formed on and perpendicular to the rear surface of said front plate at the top of the securing well, said frame, said front plate and said center rib formed of a semirigid material flexing in response to external pressure on the rear edge of said center rib, thereby permitting the substantially rigid item to be inserted into and removed from the securing well and substantially returning to an original position to secure the substantially rigid item when the external force is released.

4,760,915

LIGHT-TIGHT FILM REEL PACKAGE

Marc J. Boets, Edegem, and Raymond A. Heylen, Grobbendonk, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Oct. 29, 1986, Ser. No. 927,006

Claims priority, application European Pat. Off., Nov. 4, 1985, 85201781.3

Int. Cl.[4] B65D *85/672*

U.S. Cl. 206—303 11 Claims



1. A package containing a plurality of unexposed photographic film reels, comprising a vertical tubular mantle, a top and bottom lid, wrapping strips vertically encircling the package to secure the lids to the mantle, a vertical stack of unexposed film reels within the mantle, and spacing means at the package ends that allow entry of the forks of an elevating mechanism for the lifting up of the stack of flim reels, characterised in that the top and the bottom lid are moulded components having a peripheral groove corresponding to the cross-sectional shape of said tubular mantle, each of said top and bottom lids and said tubular mantle being formed of material that is impervious to light and moisture, said peripheral grooves opening interiorly of the package for insertion therein of the opposite end margins of said tubular mantle to form detachable tongue and groove connections therebetween, and sealing means for forming a light- and moisture-tight seal between said grooves and the mantle margins inserted therein.

4,760,916

WOUND UNIT OF AN ELECTRONIC COMPONENTS SERIES

Fumihiko Kaneko, and Katsuyuki Moriyasu, both of Nagaoka-kyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 6, 1986, Ser. No. 860,097

Claims priority, application Japan, May 8, 1985, 60-068575[U]

Int. Cl.[4] B65D *73/02*

U.S. Cl. 206—329 9 Claims



1. A wound unit comprising an electronic components series wound on a core, which maintains its shape without being retained on the core by retaining means such as a reel flange, said wound unit comprising:

a flangeless core,

a tape-shaped electronic components series wound on the periphery of said core and retaining a plurality of chip components, and

a substantially continuous adhesive strip formed on said electronic components series for adhering successive layers of said electronic components series to one another as wound on said core, whereby said wound unit maintains its shape while being free of flanges on its core.

4,760,917

INTEGRATED CIRCUIT CARRIER

Joseph I. Vitek, Baltimore, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1986, Ser. No. 934,281

Int. Cl.[4] B65D *81/02*

U.S. Cl. 206—331 30 Claims

1. A carrier device for holding an electronic component module of the type having leads extending therefrom, comprising:

a carrier body having upper and lower surfaces and a module body-receiving opening extending through said carrier body between said upper and lower surfaces and having spaced apart longitudinally extending and spaced apart widthwise extending bounding edges;

a pair of resilient beams carried by said carrier body and disposed within said module body-receiving opening, each of said beams comprising a main beam body portion and a S-shaped connection member at each end of said main beam body portion connecting said main beam body portion to said carrier body;

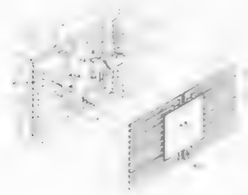
a beam accepting aperture disposed longitudinally outwardly of each of said beams; and

a tapered retainer projection extending upwardly from each of said beams and inwardly towards the other of said beams, said retainer projections being spaced apart at locations adjacent said beams a distance sufficient to accommodate therebetween the body of the module to be received in said body-receiving opening, said retainer projections being spaced apart at their uppermost locations a distance effective to prevent passage of a module past said retainer projections, said retainer projections by outward deflection of said beams into said beam accepting apertures being shiftable to permit passage of a module body to between said retainer projections and being thereafter returnable to the passage preventing position when said beams resiliently return to their undeflected positions.

10. A carrier device for holding an electronic component module of the type having leads extending therefrom, comprising:

a carrier body having upper and lower surfaces and a module body-receiving opening extending through said carrier body between said upper and lower surfaces and having spaced apart longitudinally extending and spaced apart widthwise extending bounding edges;

a pair of beams carried by said carrier body and disposed within said module body-receiving opening, each of said beams including a linear main beam body portion having



a pair of opposing end portions extending therefrom and positioned transverse to a longitudinal axis of said carrier body;

each of said beams further including non-linear resilient means connected between each said linear body end portion and an adjacent longitudinally extending bounding edge for connecting said linear main beam body portion to said carrier body and biasing said linear main beams body portions towards each other;

a beam accepting aperture disposed longitudinally outwardly of each of said beams; and

a shaped retainer projection extending upwardly from each of said linear main beam body portions and inwardly towards the other of said beams, said retainer projections being spaced apart at locations adjacent said beams a distance sufficient to accommodate therebetween the body of the module to be received in said body-receiving opening, said retainer projections being spaced apart at their uppermost locations a distance effective to prevent passage of a module past said retainer projections, said retainer projections by outward deflection of said linear main beams body portions against the bias of said non-linear resilient means into said beam accepting apertures being shiftable to permit passage of a module body between said retainer projections and being thereafter returnable to the passage preventing position as said linear main beams body portions return to their resilient means biased positions.

4,760,918

POCKETBOOK TYPE ELECTRONIC APPARATUS

Isamu Washizuka, Kyoto, and Akira Tanimoto, Kashihara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 435,271, Oct. 19, 1982, abandoned. This application May 26, 1987, Ser. No. 54,089

Claims priority, application Japan, Oct. 20, 1981, 56-156501[U]

Int. Cl.[4] B65D *73/02*

U.S. Cl. 206—328 5 Claims



1. An electronic apparatus comprising:

a pocketbook comprising first and second covers, each cover comprising an inner surface an an outer surface;

hinge means connecting said first and second covers together for relative pivotal movement between open and closed positions, said inner surfaces of said first and second covers facing each other when said pocketbook is in the closed position; and

an electronic device supported by said first cover, said electronic device comprising operating switches and said first cover comprising means for exposing said switches on the outer surface thereof and for facilitating operation of said switches when said pocketbook is in the closed position;

wherein said means for exposing and facilitating operation of said switches comprises flexible transparent locations in said first cover.

4,760,919

TAMPER-INDICATING PACKAGE

Rodger J. Pereyra, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 30, 1987, Ser. No. 79,648

Int. Cl.[4] B65D *73/00*

U.S. Cl. 206—484.2 12 Claims



1. A tamper-indicating package comprising first and second generally coextensive webs marginally joined together to define said package, each of said webs being a laminate comprising an inner layer of polymeric material, an outer layer of

VOL 1093 ISS 1 AG 2 1988 UMI

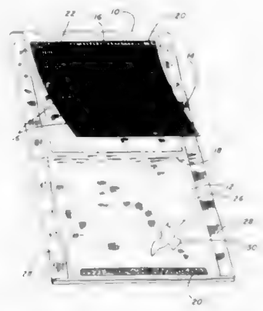
polymeric material, said webs being joined together by means of a seal so as to form a margin circumscribing the package, at least one of said inner layer or outer layer of at least one of said webs bearing a random pattern of markings.

4,760,920

EARRING PURSE

Victoria Thomsen, 4211 W. Simpson Dr., Meadowood, Dunlap, Ill. 61525

Filed Nov. 6, 1986, Ser. No. 927,674
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—495 9 Claims



1. A purse for posting and storing post earrings which comprising:

a rectangular outer protective cover having a fold at the center of said cover extending the width of said cover, said cover defining opposite end portions and having Velcro fastening means fixed to said end portions for holding said end portions together in a closed arrangement of the purse; and

a stiff rectangular panel with holes for individually receiving earring posts attached to said protective cover along one of said end portions adjacent said fastening means and extending a major portion of the distance from said one of said end portions toward said center fold of said protective cover, said panel being accessible in an open arrangement of the purse.

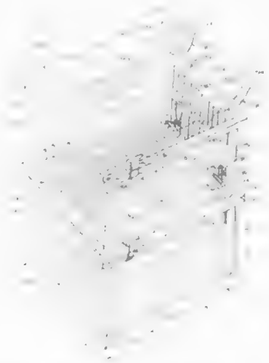
4,760,921

STACKABLE STORAGE RECEPTACLE AND MODULAR STORAGE SYSTEM MADE THEREFROM

Vito Licari, 875 Ocean Avenue, Elberon, N.J. 07740

Filed Oct. 30, 1986, Ser. No. 925,651
Int. Cl.[4] B65D *21/04*
U.S. Cl. 206—504 12 Claims

1. A plastic storage receptacle, comprising a body including opposed sidewalls, a rear wall, a bottom, a substantially open front and a substantially open top, said sidewalls and said rear wall each having a lower edge, an upper edge, a flange depending from said upper edge and an intermediate portion between said lower edge and said upper edge, said intermediate portion having a grid-like construction, wherein openings are provided therein; stacking means formed monolithically with said body for stacking said receptacle and another similar receptacle one on top of the other; and attaching means formed monolithically with said body for releaseably attaching said receptacle to said another similar receptacle when said receptacles are stacked one on top of the other, said attaching means including a plurality of T-shaped members, each T-shaped member being pivotable between a first position in which it is not engageable with said another similar receptacle, a second position in which it is engageable with said another similar receptacle through a corresponding one of the openings therein, and a third position in which it is engageable with yet another similar receptacle arranged alongside said receptacle, at least one of said T-shaped members being pivotally attached to said flange of one of said upper edges of said body and at least another of said T-shaped members being pivotally attached to said flange of another of said upper edges of said body, each T-shaped member including a stem, a cross-bar extending generally transversely of said stem, a first live hinge positioned between said stem and said flange of a corresponding one of said upper edges, and a second live hinge positioned between said first live hinge and said crossbar and each T-shaped member depending from said flange of a corresponding one of said upper edges when said T-shaped member is in its said first position, extending around and over said flange and said corresponding one of said upper edges when said T-shaped member is in its said second position, and extending generally laterally outwardly from said flange of said corresponding one of said upper edges when said T-shaped member is in its said third position.

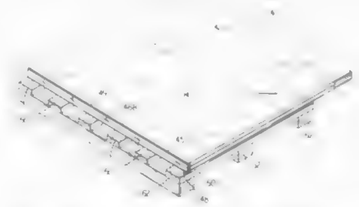


4,760,922

COMBINATION PALLET AND COLLAPSIBLE CONTAINER MOUNTED THEREON

Randall B. Northgrave, London, Canada, assignor to International Paper Company Incorporated, Ontario, Canada

Filed Jun. 30, 1987, Ser. No. 67,849
Int. Cl.[4] B65D *19/00*
U.S. Cl. 206—600 11 Claims



1. A pallet and a tube type container construction of the type wherein the container is rectangular and is collapsed onto said pallet in a flattened configuration parallel with the pallet, the container being of the flanged tube type and fashioned from a one piece blank of stiff, resilient and bendable sheet material, such as corrugated paperboard, one end of the tube being provided with a plurality of bottom flaps each having a free end and another end foldably and integrally connected to a respective side panel wall of said container, one of said bottom flaps, termed a fixing flap, having a first score line between the foldable connection joining said fixing flap to its respective side panel wall and its free end, said fixing flap being affixed to an upper surface portion of said pallet, at that area of said fixing flap which is between its free end and said first score line, each bottom flap being of a length such that the free ends of each of

the opposite pairs of bottom flaps are spaced from each other, to thereby define a partially open container bottom when the tube type container is erected from its collapsed configuration, whereby the amount of sheet material is reduced, that portion of said fixing flap between (1) said first score line and (2) the junction of said fixing flap with its respective side panel wall being termed a connecting distance portion, wherein that side panel wall opposed to said side panel wall which carries said fixing flap rests in surface contact with a surface of said fixing flap, and wherein said connecting distance portion is substantially perpendicular to said fixing flap.

4. A pallet and a tube type container construction of the type wherein the container is rectangular and is collapsible to a flattened configuration parallel with the pallet, the container being of the flanged tube type and fashioned from a one piece blank of stiff, resilient and bendable sheet material, such as corrugated paperboard, one end of the tube being provided with a plurality of bottom flaps each having a free end and another end foldably and integrally connected to a respective side panel wall of said container, one of said bottom flaps, termed a fixing flap, having a first score line between the foldable connection joining said fixing flap to its respective side panel wall and its free end, said fixing flap being affixed to an upper surface portion of said pallet, at that area of said fixing flap which is between its free end and said first score line, each bottom flap being of a length such that the free ends of each of the opposite pairs of bottom flaps are spaced from each other, to thereby define a partially open container bottom when the tube type container is erected from its collapsed configuration, whereby the amount of sheet material is reduced, the distance between (1) said first score line and (2) the junction of said fixing flap with its respective side panel wall being substantially equal to three thicknesses of said sheet material, whereby said container is foldable to a storage configuration.

7. A pallet and a tube type container construction of the type wherein the container is rectangular and is collapsible to a flattened configuration parallel with the pallet, the container being of the flanged tube type and fashioned from a one piece blank of stiff, resilient and bendable sheet material, such as corrugated paperboard, one end of the tube being provided with a plurality of bottom flaps each having a free end and another end foldably and integrally connected to a respective side panel wall of said container, one of said bottom flaps, termed a fixing flap, having a first score line between the foldable connection joining said fixing flap to its respective side panel wall and its free end, said fixing flap being affixed to an upper surface portion of said pallet, at that area of said fixing flap which is between its free end and said first score line, each bottom flap being of a length such that the free ends of each of the opposite pairs of bottom flaps are spaced from each other, to thereby define a partially open container bottom when the tube type container is erected from its collapsed configuration, whereby the amount of sheet material is reduced, the distance between (1) said first score line and (2) the junction of said fixing flap with its respective side panel wall being substantially equal to six thicknesses of said sheet material, whereby said container is foldable to a storage configuration.

8. A pallet and a tube type container construction of the type wherein the container is rectangular and is collapsible to a flattened configuration parallel with the pallet, the container being of the flanged tube type and fashioned from a one piece blank of stiff, resilient and bendable sheet material, such as corrugated paperboard, one end of the tube being provided with a plurality of bottom flaps each having a free end and another end foldably and integrally connected to a respective side panel wall of said container, one of said bottom flaps, termed a fixing flap, having a first score line between the foldable connection joining said fixing flap to its respective side panel wall and its free end, said fixing flap being affixed to an upper surface portion of said pallet, at that area of said fixing flap which is between its free end and said first score line, each bottom flap being of a length such that the free ends of each of the opposite pairs of bottom flaps are spaced from each other, to thereby define a partially open container bottom when the tube type container is erected from its collapsed configuration, whereby the amount of sheet material is reduced, the distance between (1) said first score line and (2) the junction of said fixing flap with its respective side panel wall being at least equal to six thicknesses of said sheet material, whereby said container is foldable to a storage configuration, and including a second score line on said fixing flap, parallel to said first score line on said fixing flap, said second score line being spaced from the junction of said fixing flap with its respective side panel wall by a distance at least equal to three thicknesses of said sheet material, whereby the container can be folded in either of two configurations.

11. A pallet and a tube type container construction of the type wherein the container is rectangular and is collapsible to a flattened configuration parallel with the pallet, the container being of the flanged tube type and fashioned from a one piece blank of stiff, resilient and bendable sheet material, such as corrugated paperboard, one end of the tube being provided with a plurality of bottom flaps each having a free end and another end foldably and integrally connected to a respective side panel wall of said container, one of said bottom flaps, termed a fixing flap, having a first score line between the foldable connection joining said fixing flap to its respective side panel wall and its free end, said fixing flap being affixed to an upper surface portion of said pallet, at that area of said fixing flap which is between its free end and said first score line, each bottom flap being of a length such that the free ends of each of the opposite pairs of bottom flaps are spaced from each other, to thereby define a partially open container bottom when the tube type container is erected from its collapsed configuration, whereby the amount of sheet material is reduced, each bottom flap being tapered towards its free end to thereby inhibit binding upon folding and to reduce stress, the distance between (1) said first score line and (2) the junction of said fixing flap with its respective side panel wall being at least equal to three thicknesses of said sheet material, whereby said container is foldable to a storage configuration.

4,760,923

ARRANGEMENT FOR FEEDING VALUABLE DOCUMENTS TO A STORAGE SPACE

Leif Lundblad, Huddinge; Olof L. Persson, Spanga; Hans B. A. Swegen, Farsta, and Hans Zettergren, Solna, all of Sweden, assignors to Inter Innovation AB, Stockholm, Sweden

Filed Jul. 2, 1986, Ser. No. 881,363
Claims priority, application Sweden, Aug. 1, 1985, 8503666
Int. Cl.[4] B07C *5/34, 5/36*
U.S. Cl. 209—534 3 Claims



1. An arrangement for feeding valuable documents, such as banknotes, cheques, and the like, from an externally accessible infeed opening (61, 66) to a document storage space, the arrangement comprising:

(a) detecting means located in proximity to a transport path extending between the infeed opening and said document storage space for examining documents which pass sequentially in series along the transport path, and for controlling the transportation of the documents within the arrangement;

(b) a plurality of mutually separate storage locations (26, 27)

VOL 1093 ISS 1 AG 2 1988 UMI

provided within said storage space and each having an individual infeed means (**260**, **270**), the infeed means of all of said storage locations together forming a part of the transport path;

(c) a collecting station (**22**) for receiving documents passing sequentially in series past the detecting means;

(d) a further transport path extending from the collecting station to an externally accessible outfeed opening (**62**);

(e) command means (**64**) located adjacent the infeed opening for externally controlling functions of the arrangement, and

(f) transport means (**23**) for transporting a document bundle in the collecting station either to the outfeed opening or to a feed means (**24**) arranged on the input side of a conveyor path comprising the infeed means of said storage locations, said document transport being effected in response to control signals from the command means such that upon a transportation of documents to the feed means the arrangement is immediately ready to accept the further infeed of documents through the infeed opening,

(g) wherein the feed means (**24**) includes a lifting device (**241**) for rapidly lifting a document bundle through a short distance corresponding to a suitable lifting height for a bundle containing a predetermined number of documents, and for thereafter successively lifting the bundle through a distance corresponding to the documents fed to the transport path.

4,760,924

IC TEST EQUIPMENT HAVING INPUT MAGAZINE REPLENISHER

Hiroshi Sato, and Yoshihito Kobayashi, both of Tokyo, Japan, assignors to Takeda Riken Co., Ltd., Tokyo, Japan

Division of Ser. No. 749,274, Jun. 27, 1985, Pat. No. 4,715,501. This application Jun. 2, 1987, Ser. No. 56,779

Claims priority, application Japan, Jun. 29, 1984, 59-98843; Jun. 29, 1984, 59-98847; Jun. 29, 1984, 59-98848

Int. Cl.[4] B07C *5/344*; B65G *59/06*

U.S. Cl. 209—573 9 Claims

1. IC test equipment comprising:

an IC element loading station for loading IC elements to be tested;

a testing station for testing the IC elements supplied from the IC element loading station;

a sorting station supplied with the IC elements tested in the testing station, for sorting them according to their test results; and

an accumulating station for receiving the IC elements sorted in the sorting station;

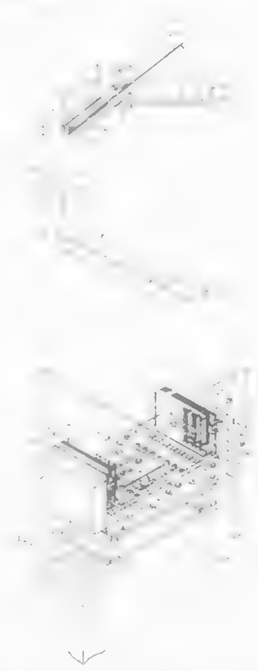
wherein the IC element loading station comprises:

a magazine stocker in which magazines, each loaded with the IC elements inserted thereinto in series, are stacked and arranged in columns at substantially equal intervals;

magazine receiving means disposed under the magazine stocker and extending in the direction of arrangement of the stacks of magazines;

a takeout mechanism provided in the magazine stocker, for bringing down the lowermost magazine from each stack of magazines onto the magazine receiving means;

stepping means whereby the magazines brought down onto the magazine receiving means are simultaneously but intermittently fed in the direction of their arrangement step by step; and



carrier means for carrying the outermost one of the thus fed magazines to an IC element supply position.

4,760,925

REFUSE SORTING APPARATUS

Wolfgang Stehle, Schlier, and Dieter Fuchs, Waldburg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Bezner GmbH & Co. KG, Ravensburg, Fed. Rep. of Germany

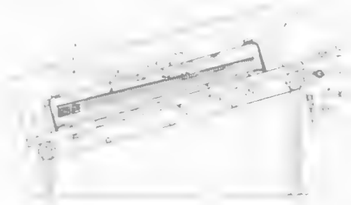
PCT No. PCT/DE85/00060, § 371 Date Oct. 23, 1985, § 102(e) Date Oct. 23, 1985, PCT Pub. No. WO85/03890, PCT Pub. Date Sep. 12, 1985

PCT Filed Feb. 27, 1985, Ser. No. 796,576

Claims priority, application European Pat. Off., Mar. 1, 1984, 84102186; Fed. Rep. of Germany, Mar. 1, 1984, 3407611; Apr. 21, 1984, 3415090

Int. Cl.[4] B07B *13/00*, *15/00*

U.S. Cl. 209—616 14 Claims



1. A sorting installation for separating a first type of articles from a second type of articles fed mixed to the sorting installation; the first type of articles being relatively light and substantially two-dimensional and the second type of articles being relatively heavy and substantially three-dimensional; comprising

(a) a belt conveyor including a travelling conveyor belt having an article-supporting surface receiving the first and second type of articles in a generally mixed state; said article-supporting surface having a length dimension and a width dimension perpendicular to said length dimension; said article-supporting surface being arranged for travel parallel to said length dimension and being inclined to the horizontal in a direction parallel to said width dimension for causing primarily said second type of articles to move by gravity downwardly on said article-supporting surface transversely to said length dimension and laterally off said article-supporting surface; said article-supporting surface sloping upwardly in said length dimension as viewed in a direction of said travel; wherein said article-supporting surface having a lower bordering edge extending parallel to said length dimension and being traversed by the articles of the second type upon their leaving said article-supporting surface;

(b) vibratory means operatively connected to said belt conveyor for imparting a vibration to said article-supporting surface to enhance movement by gravity of said second type of articles on said article-supporting surface;

(c) a catch curtain suspended above said article-supporting surface and arranged to deflect articles of the first type, moving by gravity on said article-supporting surface, for eventual entrainment by said conveyor belt and to allow articles of the second type to pass through for continuing their movement by gravity on said article-supporting surface; said catch curtain being oriented at an oblique angle to the travelling direction of said conveyor belt and extending effectively uninterruptedly substantially along the entire length dimension of said article-supporting surface; and

an additional conveyor adjoining said bordering edge and extending therealong for receiving articles of the second type from said article-supporting surface.

4,760,926

LIGHT BULB ORGANIZER AND STORAGE DEVICE

Peter Iuni, 2200 W. 121st St., Leawood, Kans. 66209

Filed Jan. 11, 1988, Ser. No. 141,913

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—13 8 Claims



1. A light bulb organizer and storage device comprising:

a. a frame adapted to be mounted in a fixed position relative to a structural wall,

b. a generally planar board,

c. means mounting a plurality of light bulbs on one surface of said board, and

d. means connecting said board movably to said frame, whereby said board may be moved between an elevated, generally horizontal storage position and a lowered, generally vertical display position.

4,760,927

LINEAR DISPLAY CABINET

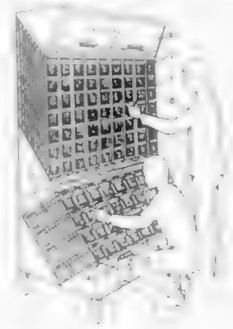
Jean-Pierre Dechirot, Balan, France, assignor to Societe Vynex SA, France

Continuation of Ser. No. 871,400 filed as PCT FR 85/00240 on Sept. 9, 1985, published as WO 86/01699 on Mar. 27, 1986, abandoned. This application Jul. 24, 1987, Ser. No. 77,947

Claims priority, application France, Sep. 12, 1984, 84 14016

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—54.1 7 Claims



1. A sales display unit comprising an upper region including a first plurality of downwardly inclined substantially parallel pegs, whereby packaged products hanging from said first plurality of pegs will hang substantially vertically and will descend along said first plurality of pegs by means of gravity so that the initial one of said packaged products on each of said first plurality of pegs will automatically be presented at the forward ends of said first plurality of pegs in a substantially vertical plane, a lower region including a second plurality of upwardly inclined pegs including return spring means for urging packaged products hanging from said second plurality of pegs upwardly along said second plurality of pegs so that the initial one of said packaged products on each said second plurality of pegs will automatically be presented at the forward ends of said second plurality of pegs, an intermediate fascia element separating said upper region from said lower region providing an intermediate space behind said intermediate fascia element, said intermediate fascia element carrying information relevant to said packaged products in said upper and lower regions, an upper fascia element extending above said upper region providing an upper space behind said upper fascia element, said upper fascia element carrying information relevant to said packaged products in said upper region, and a lower fascia element extending below said lower region providing a lower space behind said lower fascia element, said lower fascia element carrying information relevant to said packaged products in said lower region, said lower fascia element including slot means and slidable information board means inserted within said slot means, said slidable information board means including an upper end and a lower end, and including handle means at said upper end of said slidable information board means, and projection means at said lower end of said slidable information board means for retaining said slidable information board means within said slot means and providing means for

VOL 1093 ISS 1 AG 2 1988 UMI

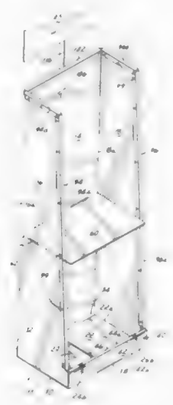
withdrawing said upper end of said slidable information board means from said upper surface of said lower fascia element so as to provide access to information contained upon said slidable information board means, whereby said intermediate, upper, and lower fascia elements may be illuminated, and said intermediate, upper, and lower spaces can provide housing for animation, information and instructional systems for said sales display unit.

4,760,928

CORRUGATED SHEET PLASTIC BEVERAGE DISPLAY CASE

Rafael T. Bustos, Alpharetta, Ga., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Sep. 15, 1987, Ser. No. 97,216
Int. Cl.[4] A47F *5/11*
U.S. Cl. 211—59.4 29 Claims



1. A beverage display case comprising

a back panel, a pair of side panels, and a bottom panel, all of said panels being manufactured from a corrugated sheet plastic material, said side panels being connected to and extending forwardly from opposite side edges of said back panel, and said bottom panel being connected to and extending forwardly from a bottom edge of said back panel,

a rigid, generally U-shaped, top reinforcement rod having a pair of side legs and a crossbar extending between said side legs, one of said side legs of said top reinforcement rod overlying an upper edge of each of said side panels and said crossbar of said top reinforcement rod overlying an upper edge of said back panel, and

an extruded plastic edge reinforcement cap secured over said U-shaped top reinforcement rod and said upper edge of said side and back panels so as to secure said rod and said upper edges of said side and back panels in an assembled relationship.

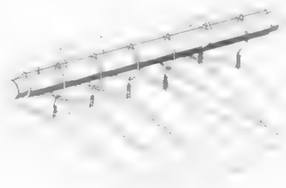
4,760,929

SPACER FOR GARMENT HANGER OR THE LIKE

James J. Fedorchak, 75 Old Orchard, Williamsville, N.Y. 14221

Filed Jan. 20, 1987, Ser. No. 4,870
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—123 1 Claim

1. Spacer means for a garment hanger or the like, said rod having an exterior surface to be engaged by the spacer means, said means comprising a body of relatively stiff, flexible material formed to be seated on and substantially encircle said rod, said body having a longitudinal slot to facilitate emplacement of the body on such rod, the spacer means further including a ridge-like portion extending along its outer surface having elements to maintain garment hangers or the like in predetermined spaced relation, and a series of gripping elements on the



interior surface of the body to grip the hanger rod to limit rotational movement of the spacer means, and maintain the spacer elements in hanger spacing position.

4,760,930

SHELVING COMPONENT

Clifford R. Fox, Chelmsford, England, assignor to CBM Display Group Limited, Hainault, England

Filed May 12, 1987, Ser. No. 51,229
Claims priority, application United Kingdom, May 13, 1986, 11620
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—153 8 Claims



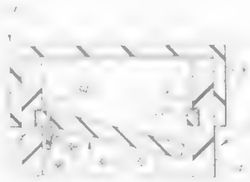
1. For use in the display, storage or sale of goods, a single piece synthetic plastics extruded shelving component comprising a flat elongate part which provides a shelf surface when in use, and a portion that (a) extends along the elongate part, at a front thereof, (b) is thicker than that part, (c) is integral therewith, and (d) provides means which entends along the extrusion and which serves to support a further shelving part when the component is in use.

4,760,931

SAFETY CONTAINER NECK INSERT

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Dec. 22, 1986, Ser. No. 944,447
Int. Cl.[4] B65D *39/02*
U.S. Cl. 215—235 6 Claims



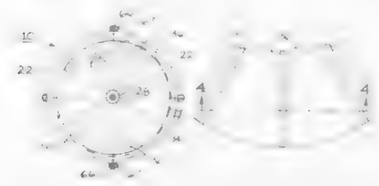
1. In combination with a container, an insert for providing a safety feature when a lid is removed from the container, said container having a cylindrical neck portion with an internal peripheral groove forming a recess therein, and said insert comprising: a circular plastic disk with an annular area around the periphery thereof for engaging said container neck recess to prevent ingress to the container without movement of a central portion of said disk relative to said container neck about a hinge joining the central portion and annular area of said disk, said annular area remaining in position in said neck recess when the central portion is moved for ingress to said container , and spring means adjacent said hinge returning said central portion to its original position preventing ingress to the container when an opening force is removed.

4,760,932

SEGMENTED, COLLAPSIBLE, RIGID LIQUID STORAGE TANK

Gilbert A. Rhodes, Jr., Clinton, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 28, 1987, Ser. No. 90,285
Int. Cl.[4] B65D *88/08*
U.S. Cl. 220—5 A 17 Claims



1. A self-supportable, rigid, liquid storage tank adaptable for relatively rapid assembly and disassembly, characterized by relatively lightweight composite top, bottom, and side wall subassembly sections which can be stowed in one or more relatively flat lightweight packages for ease of handling and transporting, with the number of side wall sections being selective to form one or more tiers to vary the tank capacity, said tank comprising in combination:

(a) generally circular, vertically spaced apart top and bottom composite wall subassemblies, each comprising a plurality of substantially identical generally pie-shape, releasably interengageable plate segments;

(b) at least one compositely formed annular side wall subassembly section, each side wall subassembly section including at least two arcuately formable side wall corrugated panels with lateral end portions adaptable to complementally mate or nest in overlapping relationship with its adjacent panel to complete a 360° enclosure forming one tier;

(c) a center pole support means interposable upright between and having means for releasably interconnecting said bottom and top wall sections;

(d) annular combination tank-supporting and tank-sealing ring means, which means includes

at least one ring subassembly disposed at the top and bottom respectively of said tank to cooperatively support, interconnect, and seal said respective top, bottom and side wall subassemblies;

said ring subassemblies each comprising at least two releasably interconnectable arcuate ring-forming members with grooves containing sealing gasket means; and

(e) said tank further including fluid inlet-outlet means to facilitate both filling and draining said tank.

4,760,933

FUEL TANK TUBE VAPOR/FUEL SEAL

Susan A. Christner, and Elaine R. Janda, both of 1235 S. Maple Rd., Apt. 301, Ann Arbor, Mich. 48103

Continuation of Ser. No. 785,339, Oct. 7, 1985, abandoned. This application Oct. 27, 1987, Ser. No. 117,360
Int. Cl.[4] B67C *3/00*
U.S. Cl. 220—86 R 3 Claims



1. A vapor/fuel seal for a fuel tank filler tube having inlet and outlet ends comprising:

an elongated seal member defining an expansible fluid flow passage having opposing tapered side edges, opposing expansible side portions integrally formed with said side edges, the tapered side edges being angularly oriented with respect to the expansible side portions, the elongated seal member further having an inlet and an outlet;

a pair of spaced annular rib means formed adjacent to the inlet of the seal member, for sealingly attaching the inlet of the seal member to the inlet end of the fuel tank filler tube;

a first normally closed seal region formed by said opposing tapered side edges and said opposing expansible side portions, said first seal region being disposed intermediately in the fluid flow passage between the inlet and outlet of the seal member capable of sealingly closing off the fluid flow passage;

a second normally closed seal region formed by said opposing tapered side edges and said opposing expansible side portions, said second seal region being disposed adjacent the outlet of the seal member for sealingly closing off the fluid flow passage, wherein the expansible fluid flow passage allows insertion of a fuel dispensing nozzle through the inlet of the seal member to successively open said first and second seal regions while successive portions of said opposing tapered side edges and said opposing expansible side portions sealingly engage with said fuel dispensing nozzle, an operable chamber being defined in said elongated seal member, said chamber being defined by said first normally closed seal region, said second normally closed seal region, said opposing expansible side portions and said opposing tapering side edges, said chamber being operable with the insertion of the fuel dispensing nozzle.

4,760,934

LIFT TAB LID WITH ACCORDIAN HINGE

Robert R. Netsch, San Francisco, Calif., assignor to Fiberplastics, Inc., Corte Madera, Calif.

Filed May 9, 1986, Ser. No. 861,541
Int. Cl.[4] B65D *41/56*
U.S. Cl. 220—269 3 Claims

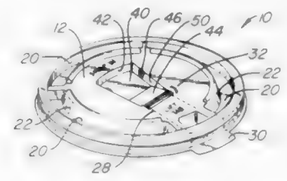
1. A beverage container lid comprising:

a lid surface having a peripheral sealing skirt for attachment of the lid to the rim of a beverage container;

a foldable tear strip flap as part of the lid formed by the peripheral sealing skirt radially inward and terminating in a multi-grooved hing, wherein said multi-grooved hinge is comprised of three shallow non-vertical walled hinge grooves;

VOL 1093 ISS 1 AG 2 1988 UMI

a recess formed in the lid surface and including two essentially vertical side walls extending radially outward from the multi-grooved hinge, an essentially vertical end wall opposite the multi-grooved hing, and a sloping wall extending from said hinge; and



a set of opposing side wall retaining lugs removed from and proximal to said end wall for securing the sides of the flap, whereby said tear strip flap skirt portion has a non-contact relationship with said recess end wall when said tear strip flap is secured by said retaining lug in an open position.

4,760,935

PLASTIC CLOSURE PLUG

Paul Christiaan H. van den Beld, Bakenbergseweg 104, NL-6814 ML Arnhem, Netherlands; Gerhard Kettenring, Ringstrasse 4, D-6751 Schopp, Fed. Rep. of Germany; Bodo Greulich, Keltenweg 76, D-6750 Kaiserlautern, Fed. Rep. of Germany, and Gunther Schmitz, Quellenstrasse 8, Eskenbach-Alsenborn 2, Fed. Rep. of Germany

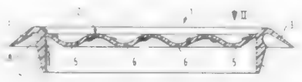
PCT No. PCT/DE85/00530, § 371 Date Aug. 15, 1986, § 102(e) Date Aug. 15, 1986, PCT Pub. No. WO86/03721, PCT Pub. Date Jul. 3, 1986

PCT Filed Dec. 18, 1985, Ser. No. 916,544

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1984, 3446151

Int. Cl.⁴ B65D *39/06*

U.S. Cl. 220—307 **7 Claims**



1. A plastic closure member for insertion into an opening formed in a panel for closing and sealing said opening comprising:

a main body portion having a generally collar shaped side wall sized and adapted for insertion into the opening in the panel;

a continuous peripheral sealing lip formed integrally with said main body portion and extending radially outwardly from adjacent a first end of said main body portion, said lip being flexible and having an end portion adapted to extend toward and engage said panel about said opening;

a peripheral retaining ring formed integrally with said main body and extending radially outwardly of said main body at a location axially spaced from said sealing lip, said retaining ring having a continuous sealing edge lying radially inwardly of the end portion of said sealing lip and adapted to engage said panel circumferential about said opening on the side of said panel opposite said sealing lip;

said main body portion further including a continuous end-wall joined to said side wall at a level generally corresponding to said sealing lip, said end wall having at least one concentrically extending corrugation which is integrally joined with and merges directly into said sealing lip.

4,760,936

VENTABLE CONTAINER

Rolf J. Mueller, Simpsonville, S.C., assignor to Textube Corporation, Greenville, S.C.

Filed Apr. 21, 1987, Ser. No. 40,648

Int. Cl.⁴ B65D *51/16*

U.S. Cl. 220—366 **4 Claims**



1. A container having a ventable cap which may be intermittently vented to relieve pressure within the container without loss of seal thereof, said container comprising:

an upper peripheral surface defined on said wall structure adjacent the opening of the container;

an outwardly projecting bead extending peripherally about said wall structure proximate said upper peripheral surface thereof, said outwardly projecting bead having an outer surface adjacent the opening of the container;

at least one vent rib attached to said outer surface of said outwardly projecting bead, said at least one vent rib projecting outwardly therefrom and extending substantially transverse thereto;

a closure, including:

a cover member for generally covering the opening of the container, said cover member having an upper surface and a lower surface, said lower surface cooperating with said upper peripheral surface for ventable sealing therewith; and

a downwardly extending skirt attached to said cover member having an inner peripheral surface, said inner peripheral surface cooperating with both said outer surface of said outwardly projecting bead for ventable sealing therewith and said at least one vent rib for continuous frictional sealing thereat of said container opening; said ventable sealing and continuous frictional sealing comprising sealing means for allowing relief of pressure from the container upon a predetermined pressure being obtained therein about said at least one vent rib and between said outer surface of said outwardly projecting bead and the closure, while allowing resealing after venting with continuous maintenance of engagement of said outwardly projecting bead by said closure.

4,760,937

SQUEEZABLE DEVICE FOR EJECTING RETAINED MATERIALS

Paul D. Evezich, 141 Johnson, Frederick, Colo. 80530

Filed Jun. 16, 1986, Ser. No. 874,676

Int. Cl.⁴ B65D *35/28*

U.S. Cl. 222—95 **8 Claims**

1. A device for dispensing a predetermined material comprising:

a readily deformable inner containment portion having a closed end and an open end for containing said material to be dispensed and a dispensing channel portion having a first one-way valve therein oriented to allow dispensing of said material from said inner containment portion but substantially precluding passage of matter into said inner containment portion through said dispensing conduit

portion, said dispensing channel portion including an inlet terminus and a base section, said inlet terminus having said first one-way valve positioned thereat and defining an inner circumference of said base section, and said base section having an outer circumference in a spaced relationship from said inner circumference, the area between said inner circumference and said outer circumference defining a curved surface therebetween extending away from said closed end of said inner containment portion, said inner containment portion adjacent said open end and said dispensing channel portion being permanently affixed at said outer circumference of said base section of said dispensing channel portion; and



a resilient outer containment portion and a nozzle said resilient outer containment portion for receiving and containing said inner containment portion without direct attachment of said readily deformable inner containment portion and said resilient outer containment portion, said dispensing channel portion and said nozzle being permanently affixed to one another, said resilient outer containment portion including a second one-way valve positioned to permit flow of matter from the exterior of said outer containment portion to the volume defined between said outer containment portion and said inner containment portion but substantially precluding passage of matter from said volume to the exterior of said outer containment portion.

4,760,938

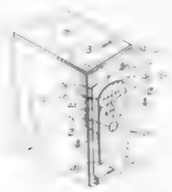
DISPENSER BOX AND SNAP OPEN/SNAP SHUT CLOSURE THEREFOR

Harry Wenger, 24 Day St., Clifton, N.J. 07011

Filed May 19, 1986, Ser. No. 864,603

Int. Cl.⁴ B65D *5/72*

U.S. Cl. 222—498 **9 Claims**



1. A closure for a dispenser box having a box wall formed with a discharge opening lying in a plane, said closure comprising:

(a) an elongated spring member having opposite end portions and an intermediate portion between the end portions,

(b) said spring member being tensioned by a longitudinal bend extending lengthwise along the elongation of the spring member,

(c) one of the end portions being stationarily mounted on the box wall,

(d) the other of the end portions being movable relative to the box wall, in response to manual pressure exerted on the intermediate portion in a direction generally normal to the longitudinal bend to reverse the longitudinal bend at the intermediate portion to form a transverse bend extending widthwise across the elongation of the spring member, from

(i) a closed position in which the other end portion overlies and closes the discharge opening, to

(ii) an open position in which the other end portion extends outwardly at a predetermined angle of inclination relative to the plane of the discharge opening,

(e) said intermediate portion having an opening which extends through the spring member and which increases the angular magnitude of said angle of inclination than that which would exist if the opening were not present,

(f) said other end portion being returnable from the open position to the closed position in response to manual pressure exerted on the other end portion in said normal direction to reverse the transverse bend and form the longitudinal bend again at the intermediate portion, and

(g) said other end portion being resiliently maintained under tension by the longitudinal and transverse bends in the closed and open positions respectively.

4,760,939

LIQUID DOSING DEVICE WITH DIGITAL DISPLAY

Graham J. Ball, Great Dunmow; William B. Hart, Ipswich, and Michael H. Hurst, Bedford, all of Great Britain, assignors to Jencons (Scientific) Limited, Leighton Buzzard, England

Filed Apr. 24, 1986, Ser. No. 855,347

Claims priority, application United Kingdom, May 4, 1985, 8511436

Int. Cl.⁴ B01L *3/02*; **B67D** *5/08*

U.S. Cl. 222—23 **9 Claims**



1. Liquid dispensing device comprising:

a cylinder;

a piston movable within the cylinder in either an intake stroke for drawing liquid into the cylinder from a reservoir of liquid, or a delivery stroke for dispensing such liquid from the cylinder;

pulse generating means linked to said piston and cylinder for producing pulses representative of the relative movement of the piston in the cylinder;

counting and readout means linked to the pulse generating means and operative to count the pulses and indicate the volume of liquid dispensed from the cylinder during a delivery stroke;

a drive system connected to said piston and said pulse generating means, and

actuating means which is manually operable to operate the drive system to cause sliding movement of the piston within the cylinder, the manually operable actuating

VOL 1093 ISS 1 AG 2 1988 UMI

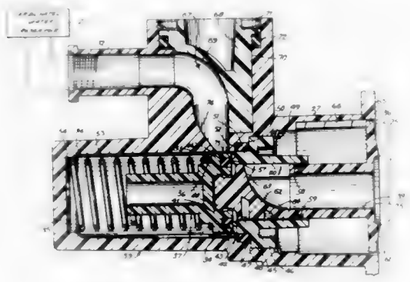
means being connected to the pulse generating means through the said drive system, whereby the number of pulses registered in the counting and readout means being representative of the amplitude of piston movement in a dispensing sense and therefore volume of liquid dispensed, said drive system including ratchet means which ensures that the pulse generating means is driven whenever the piston is moved in a direction corresponding to a delivery stroke, but which prevents the pulse generating means from being driven when the piston is moved in a direction corresponding to an intake stroke, said pulse generating means comprising an actuating member, rotation of which causes pulse to be generated, and in which the ratchet means comprises two ratchet wheels which operate in opposite rotational directions and which have the said actuating member mounted between them whereby, any relative movement of the piston in the cylinder in a direction corresponding to a delivery stroke causes the counting and readout means to indicate a corresponding volume of liquid dispensed and that during an intake stroke any inadvertent relative movement of the piston in the cylinder in a direction corresponding to a delivery stroke causes the counting and readout means to register a volume of liquid dispensed corresponding to the magnitude of the inadvertent movement.

4,760,940

CARBONATED BEVERAGE DISPENSER HAVING LOW TURBULENCE VALVE

Robert P. Wallace, Katonah; William P. Nugent, So. Salem, both of N.Y., and Kenneth C. Newton, Danbury, Conn., assignors to Brewster Plastics, Inc., Croton Falls, N.Y.

Filed Jun. 22, 1987, Ser. No. 64,536
Int. Cl.[4] B67D 5/56
U.S. Cl. 222—129.1 10 Claims



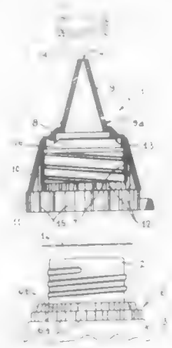
1. In a carbonated beverage dispenser for home use of the type which includes a carbonated water reservoir and a discharge spout, a low turbulence flow restrictor and dispenser poppet valve mechanism for conducting carbonated water from said reservoir to said spout comprising a valve body including a cylindrical bore having an open and a closed end, a poppet member axially movably mounted in said bore, annular seal means mounted in said bore, spring means interposed between said closed end and said poppet member for yieldingly urging said poppet member against seal means, thereby to separate said bore into a first chamber between said closed end and said seal means, and a second chamber between said seal means and said open end, said poppet member being shiftable axially in said bore toward said closed end from said sealing position to a retracted dispensing position clear of said seal means, a poppet actuator member contacting said poppet member slidably mounted in said second chamber of said bore for movement toward and away from said closed end, said actuator member including an axial passageway extending inwardly from said open end, said passageway including a laterally directed scoop portion having an arcuate guide surface, a port formed in said valve body and entering into said first chamber, said port having a reduced diameter restrictor passage outwardly of and adjacent said bore, said passage including an arcuate guide surface directed toward the axis of said bore and curving toward said open end, said guide surfaces of said poppet actuator and said restrictor passage being disposed in registry in said dispensing position of said poppet, said surfaces together defining an essentially continuous carbonated water guide surface directed toward said open end.

4,760,941

COMBINATION CONTAINER AND CLOSURE ASSEMBLY

Pierre Salmon, Lozanne; Claude Pradinas, Fontainessur Saone, and Jimmy Louvatiere, Lozanne, all of France, assignors to Societe Nouvelle de Bouchons Plastiques, Anse, France

Filed Apr. 7, 1987, Ser. No. 35,362
Claims priority, application France, Apr. 9, 1986, 86 05248
Int. Cl.[4] B67B 5/00
U.S. Cl. 222—153 8 Claims



1. A combination container and closure assembly comprising a container having a threaded neck portion, first and second generally concentric and vertically spaced teeth means surrounding said neck portion, a closure assembly threadingly engageable with said neck portion, said closure assembly including a generally annular sleeve means, a tear strip seal means extending outwardly of said sleeve means, said seal means having first locking means for selectively engaging said first teeth means so as to prevent the removal of said closure assembly from said neck portion without at least partially severing said tear strip seal means from said sleeve means when said closure assembly is in a first threaded position with respect to said neck portion, said sleeve means including second locking means for selectively engaging said second teeth means so as to prevent the rotational separation of said closure assembly from said neck portion when said closure assembly is in a second threaded position with respect to said neck portion, said tear strip seal means normally spacing said second locking means from said second teeth means until said tear strip seal means is severed from said sleeve means whereupon said closure assembly may be adjusted to said second position whereby said tear strip seal means provides a visual indication of tampering with said closure assembly and said second locking means of said sleeve means prevents access to within said container.

4,760,942

BOOT LIFTER FOR ELDERLY AND HANDICAPPED

Sandor Kadar, 84 Lakeview Ter., P.O. Box D-201, Sandy Hook, Conn. 06482

Filed Sep. 24, 1987, Ser. No. 100,404
Int. Cl.[4] A47G 25/86
U.S. Cl. 223—114 3 Claims



1. A boot lifter comprising, in combination:

first and second elongated members arranged in side-by-side relation with their lateral edges opposite each other, said first and second members having forward and rearward ends and having substantially flat coplanar surfaces thereon, each of said members having a cut away portion within its forward end extending along the lateral edge thereof and forming together with the cut away portion within the other member a substantially U-shaped opening adapted to receive the heel portion of the user's boot;

adjustable fastener means located adjacent to said forward and rearward ends of said first and second elongated members, each of said fastener means including an elongated bolt extending through aligned bores disposed transversely in said first and second elongated members for securing said members together and a bias spring urging said members apart, the arrangement of said bolt and bias spring being such as to permit relative movement of each member with respect to the other, whereby both the size and contour of said substantially U-shaped opening can be varied; and

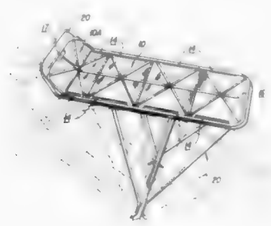
pedestal means for elavating the forward end of said first and second elongated members so that when said boot lifter is placed on a level surface, said members are inclined at an angle which will accomodate placement of the idle foot of the user onto said coplanar surfaces to thereby stabilize said boot lifter when removing a boot.

4,760,943

PLATFORM FOR BICYCLE RACK

Morton E. Bass, Reseda, and James G. Herting, San Fernando, both of Calif., assignors to Rack Mate, Inc., San Fernando, Calif.

Filed Dec. 4, 1984, Ser. No. 677,972
Int. Cl.[4] B62J 9/00
U.S. Cl. 224—39 1 Claim



1. A platform to be snapped over the open top of a bicycle carrier rack, the carrier rack being formed of a first tubular member configured to define a rectangular open top for the rack with the first tubular member forming spaced and parallel sides and spaced and parallel ends for the open top, and further tubular members secured to the first tubular member and extending downwardly from opposite sides of the top to be attached to the frame of the bicycle adjacent to one of the axles thereof; said platform comprising a rectangular strip of resilient plastic material dimensioned to extend across and close the open top of the rack, said strip having an integral hinged end portion to conform with an upwardly tilted portion of the carrier rack, and a series of resilient plastic discrete snap members integral with the underside of said strip at the respective side edges thereof, said discrete snap members extending downwardly from said strip and configured to snap over the first tubular member removably to mount the platform on the carrier rack, said strip having a series of slots therein at the respective side edges thereof for receiving staps, bungie cords, and the like, for supporting bags and panniers on the platform.

4,760,944

SLING ASSEMBLY FOR BOWS, RIFLES, AND THE LIKE

Thomas E. Hughes, Canandaigua, N.Y., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Apr. 17, 1987, Ser. No. 39,528
Int. Cl.[4] F41B 5/00
U.S. Cl. 224—205 10 Claims



1. A mounting member for mounting a sling on a bow, a gun or the like comprising a sheet of flexible material which is adapted to be wrapped around a bow or a gun stock, said sheet being folded into a generally U-shaped configuration having a bight portion and a pair of end portions, a strap extending between the end portions and secured to the end portions to maintain the U-shaped configuration of the sheet whereby the bight portion and the strap form a pocket which can be positioned against a junction between a riser and a limb of a bow or on a grip portion of a rifle stock, the end portions being adapted to be wrapped around a bow or rifle stock, securing means on the end portions of the sheet for releasably securing the end portions in the wrapped configuration, and attaching means of a sheet for attaching a sling to the sheet.

4,760,945

WEB-POSITION CONTROLLER

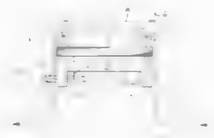
Ludwig Zerle, Mering, Fed. Rep. of Germany, assignor to Erhardt+Leimer GmbH, Augsburg, Fed. Rep. of Germany

Filed Apr. 10, 1986, Ser. No. 850,481
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1985, 3512904
Int. Cl.[4] B65H 23/03, 26/02
U.S. Cl. 226—18 18 Claims

1. In a web-position controller for regulating and controlling variations in the lateral position of a running conveyor belt comprising a regulated stretch of said material web having a guide member at one end and a controllable guiding mechanism able to laterally displace said material web passing through said regulated stretch, the control of said guiding mechanism depending on the lateral displacement of said mate-

VOL 1093 ISS 1 AG 2 1988 UMI

rial web occuring in a guided segment of said material web connected to said regulated stretch, said guided segment of said material web passing over said guide member, said guided segment being oriented approximately at a right angle to the running direction of said regulated stretch, at least one video camera whose optical axis is oriented approximately parallel to said regulated stretch of said material web, said camera having an image field within which is observed a lateral motion and course of said material web, said motion and course generating an electrical image signal in said camera, and a computer



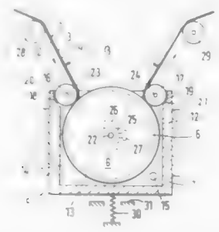
which converts said signal into a controlling command for said guiding mechanism, the improvement wherein said video camera is mounted upstream from said guide member, said camera being spaced approximately a distance equal to the length of said regulated stretch from said web as the web passes in front of as well as above the camera, and an indicating member transverse to said regulated stretch extending into an image field of said video camera provided for indicating the actual position of said guiding mechanism and thereby augmenting said electrical image signal.

4,760,946

DEVICE FOR TURNING A MOVING WEB

Altan Bassa, Dreieich, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 21, 1986, Ser. No. 842,583
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3512316
Int. Cl.[4] B65H *20/00*
U.S. Cl. 226—97 7 Claims



1. Device for turning a moving web which has inside of the device an innter surface and an outer surface, said inner surface being contact sensitive, in particular freshly coated, said web separating along its length of equidirectional curvature an inner zone adjacent to said inner surface from an outer zone adjacent to said outer surface, one of said inner and outer zones being connected to the atmosphere and the air pressure in said inner zone being higher than said outer zone under operation, and in which in the region of each of the lateral edges of the inner surface of the web a guide surface is arranged, and wherein a gap forms between said inner and guide surfaces under the influence of the pressure difference between said inner and outer zones so that air flows through the gap from the inner into the outer zone, characterized in that the outer zone is formed by said outer surface of the web and a housing which is connected to a reduced pressure source, that the inner zone is connected to the atmosphere, and that sealing elements extending across the width of the web at the beginning and at the end of the equidirectional curvature of the web interact with said outer surface of the web in order to seal said outer zone against the atmosphere.

4,760,947

SLITTER STRAND SEPARATING ROLL

Ronald J. Paquin, Elginburg, Canada, assignor to Alcan International Limited, Kingston, Canada

Filed Oct. 18, 1985, Ser. No. 788,758
Claims priority, application Canada, Oct. 31, 1984, 466757
Int. Cl.[4] B65H *20/00*
U.S. Cl. 226—190 7 Claims



1. Apparatus for separating a plurality of immediately adjacent strands of metallic sheet severed from a continuous moving flexible metallic sheet comprising:

a rotatable roll over which the adjacent strands pass, said roll having a resilient outer periphery, with a plurality of radial slots formed in said resilient periphery forming resilient annular rings therebetween, said slots being laterally spaced and being inclined inwardly toward the axis of the roll and toward the transverse central piane of the roll and said slots being of progressively increasing depths from the transverse central plane of the roll to the outer ends thereof, with said resilient rings being adapted to provide separations between adjacent strands when the strands are maintained at a constant wrap angle on the separating roll; and

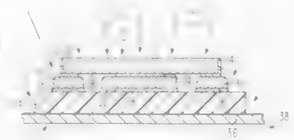
a stabilizing roll under which the separated strands pass, said stabilizing roll being positioned to maintain a constant wrap angle of the strands on the separating roll.

4,760,948

LEADLESS CHIP CARRIER ASSEMBLY AND METHOD

Ray G. Spiecker, Westford, Mass., assignor to RCA Corporation, Princeton, N.J.

Continuation of Ser. No. 945,686, Dec. 23, 1986, abandoned.
This application Jun. 23, 1987, Ser. No. 65,611
Int. Cl.[4] H05K *13/04, 3/34*
U.S. Cl. 228—180.2 6 Claims



1. A method of connecting a leadless chip carrier (LCC) to a substrate, said chip carrier having a like array of metallic pads, said substrate having a like array of metallic pads corresponding to the peripheral pads and at least one central metallic pad, said method comprising:

depositing on each said substrate pads corresponding to the peripheral pads a layer of solder paste of a given composition and thickness;

depositing on said at least one central pad a layer of said solder paste of said thickness over an area of at least about double the area of said central pad; and

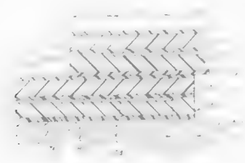
applying thermal energy to said LCC so that the LCC shades said central pad and its layer of solder paste from the thermal energy to melt the solder paste at said peripheral array of pads prior to the melting of the solder paste at said central pad, said solder at said central pad tending to form a ball to thereby lift the LCC and stretch the melted solder at said peripheral array of pads.

4,760,949

COMPOSITE CONTAINER WITH HIGH BARRIER LINER LAYER AND METHOD OF FORMING THE SAME

Thomas C. Elias, Ballwin, Mo., assignor to Sonoco Products Company, Hartsville, S.C.

Division of Ser. No. 915,549, Oct. 6, 1986, Pat. No. 4,717,374.
This application Oct. 6, 1987, Ser. No. 104,942
Int. Cl.[4] B65D *3/22*
U.S. Cl. 229—4.5 12 Claims



1. In a composite container of the type including at least one tubular helically wound fibrous body wall layer (56) having inner and outer surfaces, and a helically wound inner liner layer (60) covering said inner surface of said body wall layer, the improvement wherein said inner liner layer comprises:

(a) a base layer web (72) formed of synthetic plastic material and having a pair of longitudinal edges and a pair of opposed faces;

(b) a first high-barrier strip of metallized material (74, 174, 274) deposited on at least one face of said base layer web, said strip having a pair of longitudinal parallel edges and a width less than that of the web, said strip being parallel with and spaced at each edge at least a predetermined minimum distance (c) from the corresponding longitudinal edge of said web, said metallized strip having a thickness that is relatively thin with respect to the thickness of said base layer web;

(c) a first layer of heat sealable synthetic plastic material (76, 176, 276) completely covering the other face of said web; and

(d) a second layer of heat sealable synthetic plastic material (78, 178, 278) completely covering said metallized strip and said one web face;

(e) said base layer web being helically wound with successive edge portions arranged in overlapping relation with the corresponding synthetic plastic layers being heat seal bonded together, thereby to form a helical lapped-seamed tube, the overlapping distance of said edge portions of said base layer web being such as to cause the edges of said helically wound metallized strip to overlap a given distance (d), whereby said metallized strip extends in high barrier relation completely around the interior of the container body wall with the edges of said strip being isolated from the contents of the container.

4,760,950

PITA BREAD SANDWICH HOLDER

Lois B. Levick, 32 Savoy Rd., Framingham, Mass. 01701

Filed Jul. 21, 1986, Ser. No. 887,513
Int. Cl.[4] B65D *5/42*
U.S. Cl. 229—103 5 Claims



1. A holder for supporting a pouch type sandwich in an upright position, said holder comprising:

a. a sheet of foldable material having a front side, a back side and cut and scored to define:

i. a pair of bottom panels hingedly interconnected,

ii. a pair of four sided side panels hingedly interconnected to said bottom panels, one on a side of each bottom panel,

iii. a pair of outer panels hingedly connected to said side panels, one on a side of each side panel opposite the connections of said side panels with said bottom panels, one of said outer panels having a pair of locking slits,

iv. a pair of locking tabs hingedly connected to one of said outer panels,

v. said bottom panels forming a bottom of a pocket and said side panels forming the sides of said pocket when the sheet of foldable material is erected into a holder,

vi. said outer panels serving in a first orientation as supports for said holder and in a second orientation as a cover for said holder,

vii. said locking tabs being positioned to engage said locking slits and lock said two outer panels together when said holder is in said first orientation and in said second orientation, and

b. adhesive means on a front side of each side panel for securing a portion of said two side panels together at their front sides in facing relationship.

4,760,951

DISPOSABLE SPRAY HOOD

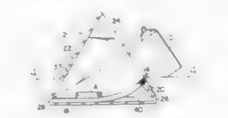
Francis W. MacGregor, Simsbury, Conn., assignor to Quad Research Inc., Avon, Conn.

Filed Aug. 6, 1986, Ser. No. 893,690
Int. Cl.[4] B65D *5/18, 5/60;* B05B *15/04*
U.S. Cl. 229—125 17 Claims

1. A disposable hood assembly for receiving an article to be spray coated and capturing over-spray from a spraying device used to apply a coating to the article and comprising a plurality of panels including a rectangular bottom panel, a rectangular front panel, a rectangular rear panel, and triangular side panels, means for connecting said front panel, said rear panel, and said side panels to said bottom panel along associated edges of said bottom panel, means for connecting each of said side panels to said rear panel along an associated side edge of said rear panel, said panels being foldable relative to each other between set-up and collapsed positions, said panels in said set-up position cooperating to define a hood enclosure having a generally rectangular frontal opening defined by free edges of said front, rear and side panels, said front panel being rearwardly and upwardly inclined relative to said bottom panel and having a free upper edge disposed a substantial distance rearwardly of the front edge of said bottom panel in said set-up position,

VOL 1093 ISS 1 AG 2 1988 UMI

means for releasably retaining said panels in said set-up position including cooperative engagement of said front panel with said side panels, said panels in said collapsed position being disposed in generally parallel relation to each other with said





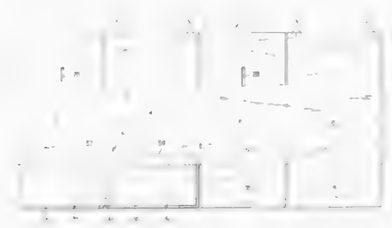
side panels between said bottom panel and said rear panel, associated portions of said front panel and said rear panel being disposed in generally face-to-face relation to each other in said collapsed position.

4,760,952

BULK BOX AND SLIP SHEET CONSTRUCTION

Richard G. Wachter, Batavia, Ill., and Rosario J. Schillaci, Spotswood, N.J., assignors to International Paper Company, N.Y.

Filed Mar. 27, 1987, Ser. No. 30,524
Int. Cl.[4] B65D *5/72, 5/48*
U.S. Cl. 229—127 4 Claims



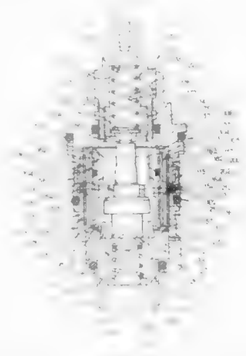
1. A bulk box blank and slip sheet construction including, a one-piece, non-erected blank formed of stiff, resilient and foldable sheet stock, such as paperboard, the blank having a plurality of main, side forming panels foldably joined to each other in serial relation, each main panel having at its lower end a bottom closure forming panel having a lower free edge to thereby define a series of bottom closure forming panels, the blank adapted to be folded and erected to form a bulk box, a slip sheet, the slip sheet glued to at least one of said bottom panels in lapped relation thereto, a portion of the slip sheet extending beyond the fold which connects said at least one bottom panel to its respective side wall forming panel to thereby define a clamping edge portion of the slip sheet, whereby, after erection of the blank to form a bulk box, the clamping edge portion of the slip sheet extends beyond that side wall of the bulk box connected to said at least one bottom panel and can be clamped and pulled towards a slip sheet lifting truck to thereby assist in mounting the erected bulk box onto the slip sheet truck for subsequent transport.

4,760,953

THERMOSTATIC MIXER DEVICES IN PARTICULAR FOR DISTRIBUTING WATER

Denis Trubert, Viroflay, France, assignor to Societe des Etablissements Rene Trubert, Viroflay, France

Filed Aug. 10, 1987, Ser. No. 83,286
Claims priority, application France, Aug. 11, 1986, 86 11587
Int. Cl.[4] G05D *23/13*
U.S. Cl. 236—122 7 Claims



7. A fluid mixer device comprising a body having:
a generally circularly cylindrical internal chamber into which there open out at least one hot fluid inlet radial orifice, at least one cold fluid inlet radial orifice, and an outlet orifice for the fluid mixture;
two sleeves of elastomer material received in the chamber,
a bush of plastic material received in the chamber over the inside of the sleeves, the bush having an outwardly projecting annular rib on its outside surface such that one of the axial ends of each of the sleeves is clamped between the rib fixed to the bush and the body, while the opposite axial end of each sleeve rests resiliently against seats provided on the inside surface of the chamber overlying the peripheries of the hot fluid inlet orifice and of the cold fluid inlet orifice respectively;
a slide in the form of a cylindrical sleeve slidably mounted over the inside surface of the bush, the slide cooperating with the body to define a hot fluid passage communicating with the hot fluid inlet orifice and a cold fluid passage communicating with the cold fluid inlet orifice; and
a thermal expansion element fixed to the slide and suitable for displacing the slide inside the chamber in order to modify the ratio between the free fluid flow sections of said fluid passages in order to maintain the outlet mixture at a predetermined temperature.

4,760,954

AUXILIARY EQUIPMENT FOR THE THERMOSTATIC VALVE OF A RADIATOR

Allan H. Hansen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 898,853, Aug. 19, 1986, abandoned, which is a continuation of Ser. No. 801,208, Nov. 25, 1985, abandoned. This application Sep. 30, 1987, Ser. No. 105,481
Int. Cl.[4] F24F *11/00*
U.S. Cl. 236—42 6 Claims

1. A room heating system for a room that has a window exposed to the sun, comprising, a radiator, a thermostatic valve for controlling the flow of heated liquid to said radiator, said valve including sensor means for sensing the ambient room temperature and regulating the throttling of heated liquid flowing through the radiator, a heating resistor mounted adjacent to the sensor means for heating the sensor means when an electric current is applied thereto, a solar cell positioned by the window for being impinged upon by rays of the sun and only



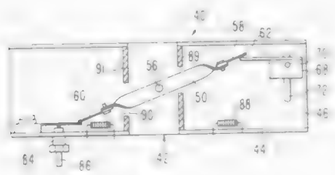
when impinged upon, produce an electric current, the solar cell being electrically connected to the heating resistor to apply electric current thereto and being the sole source of electric current to the resistor.

4,760,955

CONTROL SYSTEM FOR HEATING AND COOLING APPARATUS OF BUILDING

James H. Turner, 917 Guercus Ct., Sunnyvale, Calif. 94086

Filed Jul. 29, 1987, Ser. No. 78,948
Int. Cl.[4] G05D *23/19*
U.S. Cl. 236—68 C 20 Claims



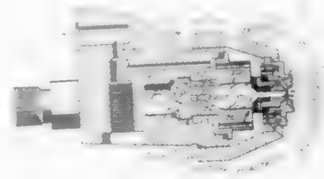
11. A control device for a fluid-actuated control system of a heating and cooling apparatus comprising:
a support;
a lever pivotably mounted on the support for rotation about a central axis intermediate the ends of the lever;
a pair of bimetallic elements secured to the lever on opposite sides of said axis;
means on a support for changing the temperature of each bimetallic element, respectively, said changing means for each bimetallic element adapted to be coupled to an actuator for selective actuation thereby;
means on the support for defining a stop engaging one of the bimetallic elements;
means on the support for defining a fluid passage;
a shiftable valve member carried by the support and being operable to open and close said fluid passage, the other bimetallic element being coupled to the valve member, there being a means biasing the valve member in a predetermined direction relative to said tube, whereby the operative positions of the bimetallic element determine the volume rate of flow of fluid through the tube.

4,760,956

INTERNAL MIX PLURAL COMPONENT SYSTEM

Gregory A. Mansfield, Indianapolis, Ind., assignor to Glas-Craft, Inc., Indianapolis, Ind.

Filed Jul. 14, 1986, Ser. No. 885,009
Int. Cl.[4] A62C *1/12;* B05B *7/06, 1/28*
U.S. Cl. 239—8 18 Claims



12. Means for forming an article from a catalyzed, resinous material, comprising:
a first source of resin;
a second source of catalyst for said resin;
spraying means comprising mixing means to mix said catalyst with said resin and an atomizer to direct a spray of mixed catalyst and resin at an article-forming substrate;
resin delivery means to provide a flow of resin from said first source to said spraying means;
catalyst delivery means to provide a flow of catalyst from said second source to said spraying means; and
air delivery means to provide a flow of compressed air to said spraying means,
said mixing means comprising a first passageway having a central portion of restricted diameter, an enlarged chamber downstream of the central portion, and an expanding portion between the central portion and enlarged chamber, and one or more second passageways opening into the central portion of the first passageway and a small rod extending across the restricted central portion of the first passageway, said first passageway being connected with the resin delivery means and said one or more second passageways being connected with said catalyst delivery means whereby the resin and catalyst are mixed in the mixing means,
said atomizer comprising a liquid nozzle for forming the mixed and flowing resin and catalyst into a fan-like film with expanding edges extending from a liquid orifice, and an air nozzle forcing the flow of compressed air to converge at an elongated orifice and to expand in a fan-like flow and to assist in the formation of resin and catalyst particles and further mix the catalyst and resin.

4,760,957

FLOW REGULATOR AND WATER SPRINKLER INCLUDING SAME

Peretz Rosenberg, Moshave Beit Shearim, Israel

Filed Feb. 20, 1987, Ser. No. 16,783
Claims priority, application Israel, Mar. 23, 1986, 78235
Int. Cl.[4] B05B *1/30*
U.S. Cl. 239—222.17 8 Claims

1. A flow regulator comprising:
a housing having a passageway for a fluid flowing therethrough from its inlet to its outlet;
a resilient sealing member circumscribing the inlet to said passageway;
and a flow regulator member overlying said passageway inlet and including a continuous, annular, side wall extending axially of and facing said annular sealing member, and a circular end wall distal from the annular sealing member and extending transversely thereof to define, between the annular sealing member and the circular end

VOL 1093 ISS 1 AG 2 1988 UMI

wall, a hollow chamber communicating with said inlet to the passageway;

said continuous, annular side wall being formed with a plurality of axially-extending teeth;

said teeth being spaced circumferentially around said passageway inlet and engageable at their outer edges with said resilient sealing member such as to define flow paths in the spaces between said teeth and to confine the flow



into the said chamber, and thereby into said inlet to the passageway, only through said flow paths;

said flow regulator member being movable axially of the passageway in response to the difference in pressure on its opposite faces to press said teeth to different depths into said resilient sealing member and thereby to regulate the flow through said flow paths by varying the dimensions of the spaces between said teeth.

4,760,958

WATER SPRINKLER

Ilan Greenberg, Haifa, Israel, assignor to Plastro Gvat and Agroteam Consultants Ltd., Ramat Yishai, Israel

Filed Jan. 27, 1987, Ser. No. 6,966
Claims priority, application Israel, Feb. 10, 1986, 77834
Int. Cl.[4] B05B *3/04, 3/08*
U.S. Cl. 239—222.21 15 Claims



1. A sprinkler comprising:

a nozzle head connectable to a source of pressurized water and including a nozzle bore through which the water issues in the form of a jet;

a rotary deflector having an underface formed with a radial array of grooves each having axially-extending inlet ends, radially-extending outlet ends, curved junctures joining the two ends, and curved bottom faces, which grooves are impinged by the water jet and deflect the jet laterally of the sprinkler while rotating the deflector;

a supporting member fixed with respect to said nozzle head;

and a mounting member carrying said rotary deflector and slidable along said supporting member for positioning the rotary deflector with its rotary axis at a large number of different positions with respect to the axis of the nozzle bore, to vary the water distribution pattern produced by the rotary deflector laterally of the sprinkler;

said supporting member comprising a bridge secured to said nozzle head and having a horizontal arm overlying the nozzle, said arm being formed with a slot slidably receiving said mounting member carrying said rotary deflector.

4,760,959

DRIVE ARM DEFLECTOR FOR A ROTARY IMPACT SPRINKLER

Moshe Gorney, Kibbutz Naan, Israel, assignor to Naan Mechanical Works, Kibbutz Naan, Israel

Filed Aug. 8, 1986, Ser. No. 894,332
Claims priority, application Israel, Aug. 11, 1985, 76072
Int. Cl.[4] B05B *3/08*
U.S. Cl. 239—233 18 Claims



1. In an impact drive sprinkler including a rotatable body arranged to rotate about a rotation axis and having a sprinkler nozzle through which water is ejected in an outward direction from said rotation axis, a deflector defining a spiral water engagement surface which extends approximately 360 degrees from an inlet location adjacent the sprinkler nozzle to an outlet location azimuthally displaced therefrom about said rotation axis.

4,760,960

LINKAGE FOR AREA CONTROLLED, THRUST VECTORING VANE CASCADE

Eric J. Ward, W. Palm Beach; Philip R. Scott, Lake Park, and Edward B. Thayer, Jupiter, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 22, 1987, Ser. No. 53,289
Int. Cl.[4] F02K *1/12*
U.S. Cl. 239—265.25 8 Claims



1. An exhaust gas thrust vectoring vane cascade having a plurality of individual cascade vanes pivotable in unison about a corresponding plurality of pivot axes, the cascade being pivotable over a thrust vectoring range of motion including a first, forward thrust position wherein the cascade vanes are pitched for discharging a flow of exhaust gas rearwardly,

a second, lateral thrust position, wherein the cascade vanes are oriented normally with respect to the cascade for discharging the exhaust gas perpendicular to the vane cascade, and

a third, rearward thrust position, wherein the cascade vanes are pitched oppositely for discharging the exhaust gas forwardly,

the cascade further being pivotble over a stowing range of motion defined between the first, forward thrust position and a stowed position wherein each vane in the cascade contacts each adjacent vane thereto in anoverlapping, gas blocking relationship,

means for providing a constant collective gas flow area through the vane cascade over the vectoring range of motion, including:

a first flow regulating vane disposed adjacent one end vane of the vane cascade and pivotable about an axis parallel to the pivot axis of the one end vane,

means for selectably pivoting the cascade vanes in unison,

means for pivoting the first flow regulating vane responsive to the pivoting of the cascade vanes, wherein

the first flow regulating vane is oriented to overlap the one end cascade vane when the cascade vanes are in the stowed position,

the first flow regulating vane pivots co-rotationally with the cascade vanes over the stowing range of motion, and

the first flow regulating vane pivots counter-rotationally with respect to the cascade vanes over the thrust vectoring range of motion, and wherein the means for pivoting the cascade vanes in unison includes:

an elongated unison link disposed adjacent the cascade,

a plurality of cascade vane drag links, each drag link secured between a corresponding cascade vane and one of a plurality of spaced-apart locations disposed along the unison link,

a linear actuator, disposed between a static structure supporting the cascade and unison link, the linear actuator operable for selectably positioning the unison link with respect to the vane cascade, and

wherein the means for pivoting the first flow regulating vane includes:

means, secured to the unison link, for imparting a bidirectional transverse motion to a driven member responsive to the longitudnal motion of the unison link, said bidirectional motion occurring in a first direction as the unison link moves from the stowed position to the first, forward thrust position, and

occurring in a second, opposite direction as the unison link moves sequentially between the first, second, and third positions, and

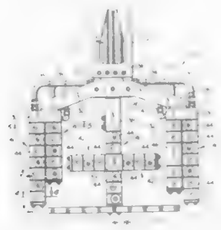
means, linking the driven member and the first flow regulating vane, for pivoting the first flow regulating vane responsive to the bidirectional motion of the driven member.

4,760,961

MODULAR SPRAYHEAD ASSEMBLY

Masashi Nagai, Gahanna, Ohio, assignor to The Snair Company, Hilliard, Ohio

Filed Feb. 13, 1987, Ser. No. 14,832
Int. Cl.[4] B05B *1/20*
U.S. Cl. 239—267 8 Claims



8. In a spraying assembly for applying a liquid coating onto the opposed mold surfaces of an article forming machine, the combination of; a plurality of substantially identical sprayhead modules, each including nozzle means to dispense said liquid coating and air actuated valve control means and each aligned in a linear extending array to dispose the nozzle means along a linear path having a variable length dependent upon the number of said modules in said linear array; a plurality of bores extending parallel to said linear array, formed in each of said modules and aligned to form common air and liquid supply passages to each of the modules in said linear array, said bores operatively communicated to each of said nozzle means and valve means in a respective one of said modules to selectively deliver a liquid spray through said nozzle means; and a connecting means extending through at least one of said aligned common supply passages of said modules to commonly connect each of said modules to one another in said linear array.

4,760,962

SPRAY GUN PAINT CUP AND LID ASSEMBLY

Roger D. Wheeler, Maumee, Ohio, assignor to The DeVilbiss Company, Toledo, Ohio

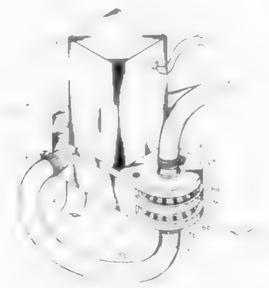
Filed Oct. 30, 1987, Ser. No. 115,126
Int. Cl.[4] B05B *15/00*
U.S. Cl. 239—289 5 Claims



1. A paint spray gun and paint cup and lid assembly for operation from a source of compressed air comprising, in combination, a spray gun having a threaded nipple and a suction paint feed tube extending from said nipple and connected to supply paint to a nozzle, a paint cup defining an open top and having a threaded end surrounding said open top, means attaching said paint cup to said spray gun with said paint feed tube extending into said paint cup including a shroud having a first end adapted to fit over said nipple and to abut the spray gun, said shroud having a second end threaded to engage said threaded paint cup end, a retainer having an internally threaded first end engaging said threaded nipple to retain said shroud on said spray gun, means cooperating between said spray gun and said shroud for indexing said shroud in either a first position or a second position relative to said spray gun, means for supplying compressed air from said spray gun to the interior of said paint cup to pressurize said paint cup when said shroud is in said first position, and means on said shroud for blocking the supply of compressed air from said gun to said paint cup and for simultaneously venting the interior of said paint cup to atmosphere when said shroud in in said second position.

VOL 1093 ISS 1 AG 2 1988 UMI

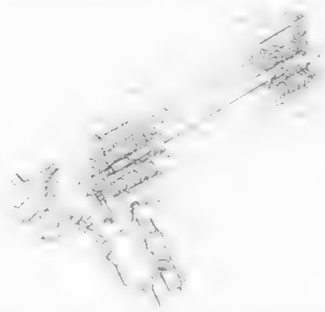
4,760,963
GROUND SPRAY APPLICATOR
John E. Waldrum, 349 Fairview Ave., Ambler, Pa. 19002
Filed Jul. 15, 1986, Ser. No. 885,773
Int. Cl.[4] B05B *3/12*
U.S. Cl. 239—245 12 Claims



1. A ground spray applicator comprising
a generally hollow spray head block having at least two liquid inlets;
a pair of generally circular first and second spray heads mounted for reciprocating arcuate movement within the block,
each spray head comprising a central core, a plurality of peripherally positioned, arcuately spaced spray nozzles, a plurality of radially oriented spray channels extending from the central core to the periphery of the spray heads, the spray nozzles of the first spray head being in fluid communication via the respective central core and spray channels with one of the liquid inlets and the spray nozzles of the second spray head being in fluid communication via the respective central core and spray channels with the other liquid inlet and said spray nozzles directing the liquid spray pattern outwardly of the spray head block,
the spray heads being coaxially positioned and being rotational about a common axis;
a motor secured to the spray head block, the motor having an output drive shaft, the drive shaft being rotational relative to the spray head block; and
first and second eccentric drive means intermediate the motor drive shaft and the respective spray heads, to arcuately reciprocate the spray heads upon motor operation;
whereby a precisely controlled spray pattern from the spray nozzles can be produced.

4,760,964
ACTUATOR SYSTEM FOR JET NOZZLE FLAP
Wesley A. Burandt, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Oct. 31, 1986, Ser. No. 925,418
Int. Cl.[4] B64D *33/04*
U.S. Cl. 239—265.19 15 Claims

1. An actuator system for a nozzle flap of an aircraft engine, comprising:
a pair of power drive units at a single location;
a geared rotary actuator driven by said power drive units through said drive transmitting gearing, said geared rotary actuator comprising a pair of axially spaced differential planetary output stages, said differential planetary output stages being operatively associated with opposite ends of said nozzle flap;
each of said differential planetary output stages having a center output ring gear in drivingly interconnected relationship with said nozzle flap, each of said differential planetary output stages also having a pair of outer fixed ring gears idsposed about said center output ring gear;
said power drive units being drivingly interconnected with said differential planetary output stages through drive transmitting gearing; and



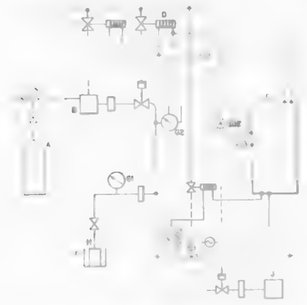
means for transmitting torque from said center output ring gears across said outer fixed ring gears to said nozzle flap;
whereby said nozzle flap is driven at opposite ends by said power drive units from a single location through said geared rotary actuator.

4,760,965
ATOMIZER FOR ELECTROSTATICALLY COATING OBJECTS
Rolf Schneider, Burgstetten, Fed. Rep. of Germany, assignor to Behr-Industrieanlagen GmbH & Co., Fed. Rep. of Germany
Filed Feb. 9, 1987, Ser. No. 12,426
Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616684
Int. Cl.[4] B05B *5/00, 1/28, 3/10*
U.S. Cl. 239—701 23 Claims



1. An atomizer for electrostatically coating objects with a sprayed coating material comprising; a housing (5) including external surfaces, a drive shaft assembly (4) operatively mounted within said housing (5); a spray head (2) mounted on said drive shaft assembly (4) rotatably in said housing (5), said spray head (2) and the object to be coated being at the same electrical potential when said unit is in operation, and characterized by a rotating housing cover (14) disposed about said housing (5) to prevent contamination of the external surfaces of said housing part located in an area where there is a danger of contamination by the sprayed coating material, the outside diameter of said housing cover portion becoming constantly smaller in the direction facing away from the object to be coated.

4,760,966
METHOD OF COMMINUTING RARE EARTH MAGNET ALLOYS INTO FINE PARTICLES
Robert D. Finnegan, W. Long Branch, and Joseph P. Klimek, South Amboy, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 28, 1987, Ser. No. 91,697
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—1 5 Claims



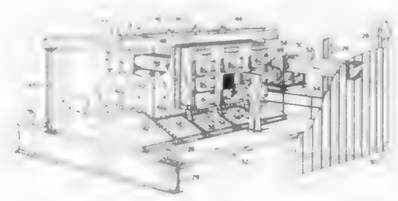
1. Method of comminuting rare earth magnet alloys into fine particles at room temperature up to about 400° C., said method including the steps of:
(A) placing the alloy into a vessel and pressurizing the vessel,
(B) hydriding the alloy,
(C) depressurizing the alloy to atmospheric pressure after the absorption of hydrogen, and
(D) evacuating the vessel so that the absorbed hydrogen is given up leaving microfissures in the alloy, and comminution of the sample alloy.

4,760,967
MULCHER-CHOPPER
Orrin C. Bendickson, Rte. 1, Mora, Minn. 55051
Filed Nov. 17, 1986, Ser. No. 931,527
Int. Cl.[4] B02C *18/12*
U.S. Cl. 241—101.7 9 Claims



1. In a mulcher-chopper including a comminuting chamber defined by an upper plate, a lower plate, and an interposed peripheral wall, a discharge chute extending from said wall, a shaft extending through both plate and journaled therein, a radially extending blade mounted fixedly on said shaft within said chamber, and means for driving said shaft, the improvement comprising the cutting edge of the blade's being made of heavy gauge metal, one edge of said blade being beveled along its entire length to provide a sharpened cutting edge, the beveled surface being positioned substantially parallel to said plates, with the sharpened edge oriented in the direction of blade rotation, said blade being further provided with generally V-shaped linear serrations so as to define teeth sharpened along the beveled edge, thereby increasing the effective cutting length of said blade and providing means for cutting at more than one angle.

4,760,968
INTEGRATED DUST CONTAINMENT SYSTEM FOR ROTARY CRUSHER/BREAKERS AND THE LIKE
Willard Binzen, Gibsonia, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.
Filed Jun. 30, 1987, Ser. No. 68,650
Int. Cl.[4] B02C *19/00*
U.S. Cl. 241—101.2 11 Claims



1. In combination, a dust containment system and a machine for sizing dusty materials comprising;
a machine housing defining a closed interior region therewithin and having inlet and outlet means communicating therewith for the introduction and discharge, respectively, of bulk material, means positioned within the machine housing for treating and sizing said bulk material for delivery to said outlet means;
said dust containment system including a substantially airtight collector enclosure having an interior defined by vertical sidewalls and a closed top wall and having an open bottom, said enclosure detachably fitted to said machine housing wherein the interior of said collector enclosure is in communication with said machine interior adjacent said treating and sizing means;
a plurality of hollow filter elements mounted within the collector enclosure;
fan means associated with the enclosure including duct means communicating with the hollow interiors of each of said filter elements to create a negative draft within said enclosure and said machine interior when said fan means is activated to capture fugitive dust generated within said machine and deposit said dust on the filter elements; and
back cleaning means associated with said collector enclosure and communicating with the hollow interiors of each of said filter elements to deliver periodic, pulsed jets of compressed air to said filter elements whereby, when activated, collected dust cake on said filters is removed by said compressed air jets and redeposited by gravity to the interior of the machine for subsequent recovery.

4,760,969
PACKAGE YARN PROCESSING DEVICE
Hiroo Otoshima, and Yasunori Hatakeyama, both of Shiga, Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan
Filed Oct. 16, 1987, Ser. No. 109,576
Claims priority, application Japan, Oct. 24, 1986, 61-253919
Int. Cl.[4] B65H *54/00*
U.S. Cl. 242—18 R 17 Claims

1. A device for processing a yarn of a package, characterized in that a device for processing the yarn of an outer yarn layer of the package and a device for processing a bunch winding yarn of the package are disposed along a feeding path for the

VOL
1093
ISS
1
AG
2
1988
UMI

package, and that said device for processing the yarn of an outer yarn layer includes a yarn knotting device for joining the yarn of the outer layer of the package at a predetermined position of a surface of the package to form a knot of the yarn while said device for processing a bunch winding yarn includes a mechanism for releasing the bunch winding yarn at an end portion of a bobbin and a mechanism for wrapping a segment of the yarn around the end portion of the bobbin in order to fix the yarn segment.

17. A yarn knotting process for knotting an end segment of a yarn of an outer yarn layer of a package including a bobbin on which the yarn is wound to an outer periphery of the package, characterized in that it comprises the steps of making the end segment of the yarn of the outer yarn layer loose to form on the outer periphery of the package an outer loop connecting to the yarn end segment and an inner loop connecting to the outer loop, forming a hooked loop from part of the yarn of the outer loop and passing the same through the inner loop, forming a drawing loop from a segment of the yarn between the hooked loop and the end of the yarn, passing the drawing loop over the inner loop and then through the hooked loop, and rotating the package in a direction to wind the yarn onto the package while the drawing loop is pulled in a direction opposite to the direction of rotation of the package to form a knot of the yarn.

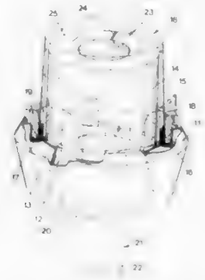


4,760,970

FEEDING OUT DEVICE FOR A MATERIAL WEB WITHDRAWABLE FROM A ROLL

Ralf Larsson, Brovaktaregatan 37, S-431 36 Mölndal, and Ove Larsson, Nedre Fogelbergsgatan 5, S-411 28 Göteborg, both of Sweden

PCT No. PCT/SE85/00392, § 371 Date Aug. 12, 1986, § 102(e) Date Aug. 12, 1986, PCT Pub. No. WO86/02247, PCT Pub. Date Apr. 24, 1986
PCT Filed Oct. 11, 1985, Ser. No. 879,127
Claims priority, application Sweden, Oct. 12, 1984, 8405108
Int. Cl.[4] B65H *19/00*
U.S. Cl. 242—55.54 11 Claims



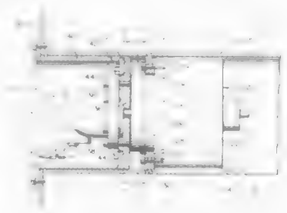
1. A dispenser for a material web, particularly a paper web, comprising a tubular roll of the web, the roll having an axis about which the web is wound, an upper end face, a lower end face, an inner side and an outer side, and a holder for supporting the roll with its axis substantially vertical, the holder having an opening therethrough which is located at a lower surface of the dispenser directly adjacent the lower end face of the tubular roll, said web having a free end depending from inside the roll at the lower end face thereof and being unwindable from the inner side of the roll in a downward direction through the opening, the weight of said free end causing a tendency for the web to unwind by gravity; and means for preventing unwanted unwinding of the web by gravity, said means including means for causing adhesion between adjacent overlying coils of the web inside the roll such that unwinding by gravity is restrained yet manual pulling downwardly on the free end overcomes the adhesion to allow unwinding of the web.

4,760,971

INTERNALLY MOUNTED DRIVE MECHANISM FOR A BELT-WINDING DRUM

Graham L. Hodgetts, Mars, Pa., assignor to Rolflor Industries, Inc., Warrendale, Pa.

Filed Mar. 11, 1987, Ser. No. 24,719
Int. Cl.[4] B66D *1/14*
U.S. Cl. 242—67.1 R 8 Claims



1. An internally mountable drive mechanism for a rotary drum having an internal cylindrical cavity for accommodating the drive mechanism, said cavity having a peripheral wall and an access opening at one end of the drum, the drive mechanism including a gearbox having a housing adapted to fit the cavity, a plurality of individual part-circular ring segments together defining ring-shaped mounting flange means having an outside diameter substantially conforming to the diameter of said wall, first fastener means for releasably attaching the flange means to a surface of the gearbox housing facing said opening, second fastener means for releasably attaching the flange means to the wall of the cavity in predetermined axial position, a motor for driving the gearbox in a manner to rotate the gearbox housing and thereby apply torque to the drum through said mounting flange means, and a motor mounting assembly for mounting the motor in driving position in the cavity adjacent an end of the gearbox facing said access opening and for supporting the motor from an anchor means externally of the drum adjacent said one end thereof.

4,760,972

RECORDING TAPE CARTRIDGE AND HUB FOR USE THEREIN AND METHOD OF MAKING THE HUB

Shigeo Sasaki, Kyoto, and Osamu Yamamoto, Takatsuki, both of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Continuation of Ser. No. 910,263, Sep. 19, 1986, abandoned, which is a continuation of Ser. No. 527,957, Aug. 31, 1983, abandoned. This application Oct. 5, 1987, Ser. No. 105,444
Claims priority, application Japan, Sep. 1, 1982, 57-133265
Int. Cl.[4] B65H *75/18, 16/10, 18/10;* G03B *1/04*
U.S. Cl. 242—68.5 10 Claims

1. A recording tape cartridge comprising a cartridge case and hub rotatably accoommodated in said cartridge case for winding a recording tape thereon, said hub comprising two separate and distinct integral elements including an inner body having a relatively large thickness in an axial direction and an outer ring thin in said axial direction fitted on an outer cylindrical surface of said inner body, said outer ring having a thickness less than the thickness of said inner body such that said thin outer ring is void of all sink marks and the entire circumferential inner surface of said thin outer ring contacts the entire outer cylindrical surface of said inner body, wherein the recording tape is wrapped around the entire outer cylindrical surface of said outer ring.



4,760,973

CAM IN THUMBSTOP FOR SPIN CAST REELS

Lorens G. Hlava, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 23, 1986, Ser. No. 889,802
Int. Cl.[4] A01K *89/01*
U.S. Cl. 242—84.2 A 13 Claims



12. In a fishing reel of the type having a thumb button, a housing with an opening for accepting the thumb button, and a centershaft mounted for movement in a fore and aft direction relative to the housing, improved structure for mounting the thumb button for pivoting movement relative to the housing comprising:

laterally extending pivot posts on each of the thumb button and housing;

a seat on each of the thumb button and housing for cooperating with the pivot posts to guide pivoting movement of the thumb button through an operating range between a fully aft position and a forward position wherein the thumb button is engaged with the center shaft with the center shaft in a fully forward operating position,

said pivot posts and seats cooperating to prevent inadvertent separation of the thumb button from the housing through said operating range.

4,760,974

FISHING REEL WITH FLIPPING CONTROL

Steven L. Swisher, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 29, 1986, Ser. No. 891,239
Int. Cl.[4] A01K *89/01*
U.S. Cl. 242—84.2 A 12 Claims



1. In a fishing reel having a housing with a closed face defined by a front cover, a rotatable spinner head retained within the housing and being displaceable axially between a rearward retrieval position and a forward casting position, the improvement comprising:

a finger trigger;

means pivotally mounting the finger trigger on the housing such that the finger trigger is operatively associated with the spinner head for effecting axial movement of the spinner head between said positions; and

selectively operable stop means for allowing full axial movement of the spinner head between said positions and for selectively limiting forward movement of the spinner head at an intermediate position between said forward casting and rearward retrieval positions.

4,760,975

SEAT BELT RETRACTOR

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Olympia Fields, Ill.

Filed Jun. 30, 1987, Ser. No. 68,254
Int. Cl.[4] B60R *22/40*
U.S. Cl. 242—107.4 A 23 Claims



1. In a retractor including a reel rotatably mounted on a frame, having at least one ratchet wheel thereon and carrying a rolled safety belt, the combination comprising:

a locking member pivotally mounted on the frame for travel into engagement with the ratchet wheel to stop protraction of the belt from the reel;

first pivot means for pivotally mounting the locking member for turning about a first axis of rotation,

an inertia member mounted on the frame and movable with inertia forces to displace a portion of the inertia member in a first direction; and

a transfer lever pivotally mounted on the frame for engage-

VOL
1093
ISS
1
AG
2
1988
UMI

ment with the locking member and with the portion of said inertia member, second pivot means spaced from said first pivot means and mounting said transfer lever to pivot about a second axis of rotation spaced from said first axis of rotation, said transfer lever including a resilient leg movable in response to displacement of the portion of said inertia member to engage the locking member for urging the same into engagement with the ratchet wheel.

4,760,976

TRANSFER TAIL RECEIVING STRUCTURE FOR A YARN CARRIER

Robert L. Barchette, Jr., P.O. Box 188, Spartanburg, S.C. 29304

Filed Dec. 28, 1987, Ser. No. 138,296
Int. Cl.[4] B65H *75/18*
U.S. Cl. 242—118.11 20 Claims



1. A transfer tail receiving structure in a yarn carrier having an end flange, the transfer tail receiving structure comprising:
means for receiving the windings of the transfer tail, said receiving means being formed in the end flange;
means for covering said receiving means; and
entry means for allowing each winding of a transfer tail to pass through said cover means and be wound in said receiving means.

4,760,977

YARN PACKAGE HOLDER

Joe Wright, Jr., P.O. Box 6763, and Lang S. Ligon, P.O. Box 5578, Station B, both of Greenville, S.C. 29606

Continuation-in-part of Ser. No. 931,266, Nov. 17, 1986. This application Oct. 28, 1987, Ser. No. 113,752
Int. Cl.[4] B65H *49/06*
U.S. Cl. 242—130 16 Claims



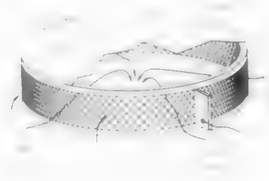
1. A holder for receiving and frictionally securing packages of yarn, wound onto hollow tubes of various inner diameters and configurations, comprising:
(a) a base support, adapted to be attached to a creel for a textile machine;
(b) a contact arm for contacting an inside wall of a hollow yarn tube, one end of which is rigidly connected to said base support, said contact arm extending from said base support in a cantilevered manner and terminating in a free end; and
(c) a contoured resilient support arm, one end of which is fixed to said free end of said contact arm, said one end extending generally transversely to the longitudinal axis of said contact arm and beyond the surface of said contact arm for a slight distance and terminating in a free edge for engaging an inside wall of the hollow tube immediately adjacent the free end of the contact arm and the other end of which extends in a cantilevered fashion towards said base at an acute angle to the longitudinal axis of said contact arm, and which terminates in a surface for contacting the inside wall of a hollow tube at a point which is opposed to the point where said contact arm contacts the inside wall of said hollow tube to assure contact between the inside wall of said tube with said contact arm.

4,760,978

ICE-FREE SCREEN FOR PROTECTING ENGINES FROM DAMAGE CAUSED BY FOREIGN BODIES IN THE INTAKE AIRSTREAM

Martin Schuyler, Hastings-on-Hudson, and John L. Cox, II, Somers, both of N.Y., assignors to Cox & Company, Inc., New York, N.Y.

Filed Nov. 19, 1986, Ser. No. 932,633
Int. Cl.[4] B64D *15/12*
U.S. Cl. 244—134 D 4 Claims



1. A heated screen for use with engine inlets and similar apparatus, comprising:
first and second terminals; and
a plurality of uninsulated and electrically conductive wires which are each of which each individual one is connected between the terminals and are physically connected to one another all the other wires at crossover points to create a plurality of wire segments which extend from one crossover point to an adjacent crossover point along a common wire, all crossover points which are connected by wire segments being at different potentials when the terminals are connected across a power source, and the screen being sufficiently rigid that it remains essentially undeformed by intake air.

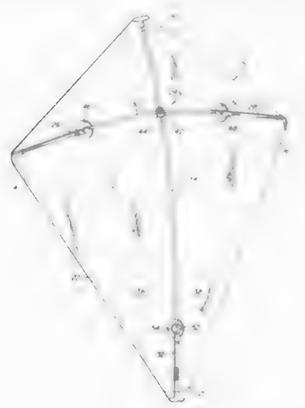
4,760,979

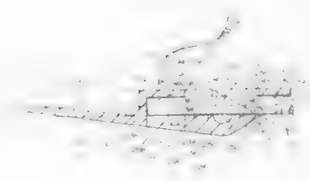
CONNECTOR AND BRACE CONNECTION SYSTEM FOR A KITE

Robert J. Mileti, 21 Taylor St., Torrington, Conn. 06790

Filed Mar. 23, 1987, Ser. No. 29,279
Int. Cl.[4] B64C *31/06*
U.S. Cl. 244—153 R 20 Claims

1. A device for interconnecting one or more structural braces of a kite and for attaching a means for securing a flying line, said structural brace for being under compression when assembled in said kite, the device comprising:
an elongate body having in one end thereof a chamber for receiving an end portion of said structural brace, said chamber having a length defined by an endwall for abutting said end portion of said brace under compression, said chamber further having a cross section sized to secure said brace therein, said body including a notch located intermediate said one end of said body and said chamber length, said notch extending inwardly from one side of said body, said notch having a floor having a depth sufficient to provide an opening between a brace assembled in said chamber and retained therein by said compression and said notch floor, said opening receiving said means for securing said flying line, said notch limiting lateral travel of said securement means inside said notch.



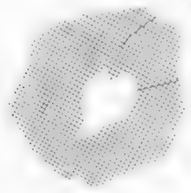


4,760,980

METHOD AND APPARATUS FOR PATCHING AN OPENING WITHIN A SCREEN

William Sharpe, Whitehall Shores, Camden, N.C. 27921

Filed Jan. 19, 1984, Ser. No. 571,931
Int. Cl.[4] A47H *3/00*
U.S. Cl. 245—2 1 Claim



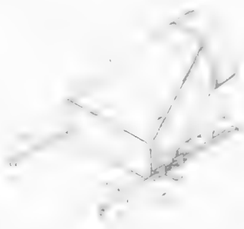
1. A method for patching and covering an opening in a screen having two sides referred to as an outside and an inside comprising the steps of:
a. placing a backside of an outside patch cover adjacent the outside of said screen and extending said outside patch cover over said opening and a surrounding portion of the screen;
b. placing a backside of an inside patch cover adjacent the inside of said screen and extending said inside patch cover over said opening and the surrounding area of said screen;
c. providing cooperable fastening means about the back of each of said outside and inside patch covers;
d. projecting said fastening means through the plane of said screen and through the opening formed therein;
e. connecting the fastening means on the back of said outside patch cover with the fastening means on the back of said inside patch cover and attaching said outside patch cover to said inside patch cover in a close side-by-side relationship such that the screen extends therebetween and the presence of said inside and outside patch cover effectively covers and patches the opening within said screen;
f. and wherein the steps of providing said fastening means comprises placing a plurality of hooks over a substantial area of the backside of one of said covers and placing loops over a substantial area of the backside of the other cover;
g. wherein the steps of projecting and connecting said fastening means comprises projecting the hooks from a respective patch cover through the plane of said screen and hooking said hooks within said loops disposed on the backside of the other respective patch cover so as to secure said outside and inside patch covers together in close back-to-back relationship and
h. wherein the steps of projecting and connecting said fastening means further includes the step of projecting said fastening means, including said hooks and loops, through the actual screen surrounding the opening.

4,760,981

HEATING BOOT HANGER ASSEMBLY

Bonnie E. Hodges, 761 Palmer Dr., Greenville, Mich. 48838

Filed Dec. 4, 1986, Ser. No. 938,048
Int. Cl.[4] F16L *5/00*
U.S. Cl. 248—57 8 Claims



1. A hanger assembly for supporting duct work, such as a heating boot, having telescoping, elongated brackets for supporting said duct work and a clip means for connecting said brackets to said duct work, the improvement comprising:
said clip means having guide straps formed integrally therefrom for slidably receiving said telescoping brackets.

4,760,982

APPARATUS FOR HOLDING A BAG OPEN

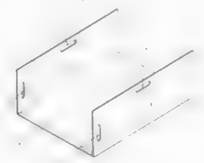
Ronald C. Cooke, Bellaire, Tex., assignor to Bag Butler, Inc., Bellaire, Tex.

Filed Mar. 19, 1987, Ser. No. 28,107
Int. Cl.[4] B65B *67/04*
U.S. Cl. 248—99 9 Claims

1. Portable apparatus for holding open bags of varied sizes to assist in the filling thereof, said apparatus comprising: a relatively rigid middle panel at opposite edges of which are attached, by hinge means, relatively rigid side panels, each of said side panels being movable, relative to said middles panel, from a coplanar flat position to a position substantially perpendicular thereto, allowing insertion of said apparatus into a bag

VOL 1093 ISS 1 AG 2 1988 UMI

to protect the interior thereof and assist in the filling thereof, each of said side panels being biased toward said flat positions



by said hinge means so that when inserted into said bag, said bag is automatically held open by said apparatus.

4,760,983

SUPPORT STRUCTURE FOR DIFFERENT TYPES OF BAGS

Francis B. McNerney, Ontario, Canada, assignor to Extrufix Inc., Ontario, Canada

Filed Oct. 28, 1986, Ser. No. 923,736
Claims priority, application Canada, Dec. 13, 1985, 497694
Int. Cl.[4] B65B *67/12*
U.S. Cl. 248—100 11 Claims



1. In a supporting structure for flexible containers comprising: retaining means for retaining the open mouth of a flexible container open under tension; means for restraining lateral movement of a container mounted in said device, said means for restraining lateral movement comprising a pair of spaced apart, opposed restraining members extending below said retaining means; flexible container bottom supporting means for supporting a bottom of said flexible container; the improvement comprising opposed flexible container handle engaging means consisting of a first loop extending upwardly towards said retaining means and spaced therefrom, and a second opposed loop connected to said first loop extending downwardly from said retaining means towards said bottom supporting means, said first and second loops forming an S-shaped hook member associated with each of said restraining members, said first loop being for engaging and retaining a handle of a flexible container and said second loop being for ready removal of said handle from said first loop.

4,760,984

QUICK DISCONNECT ASSEMBLY FOR MICROPHONE

James R. Hennessey, 7 Sunrise Hill Dr., West Hartford, Conn. 06107

Filed Mar. 26, 1987, Ser. No. 31,248
Int. Cl.[4] F16L *3/00*
U.S. Cl. 248—121 23 Claims



1. An assembly for releasably interconnecting separate components, comprising: a first part having retaining means thereon and an elongated portion projecting from one end thereof, said elogonated portion having a regular, noncircular cross section, in a plane perpendicular to its longitudinal axis, configured to provide a plurality of engagement elements, each extending generally longitudinally along its surface from the outer end thereof; and a second part having a recess therein and having engaging and locking means thereon, said recess being adapted to seat said projecting portion of said first part inserted coaxially thereinto, said engaging means being configured to interengage with said engagement elements in each of a plurality of relative angular positions of said projecting portion within said recess, to prevent rotation of said parts about said axis in each of a plurality of orientations, said assembly having means, including said locking means, for maintaining said parts against disassembly in both axial directions, said locking means being manually operable to releasably engage said retaining means of said first part to retain it in assembly with said second part against disengagement in at least the outward axial direction, with said projecting portion of said first part seated within said recess of said second part, whereby said first and second parts may be joined to separate components to enable the components to be releasably interconnected.

4,760,985

STRUT DISPENSER FOR ERECTING TRUSS STRUCTURES IN EXTRATERRESTRIAL SPACE

James P. Stewart, Cupertino, and Herbert R. Beaven, Jr., Los Altos, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Dec. 11, 1986, Ser. No. 940,678
Int. Cl.[4] F16M *11/00*
U.S. Cl. 248—176 11 Claims

1. An apparatus for dispensing struts to be used by an astronaut for erecting a truss structure in extraterrestrial space, said apparatus comprising:

(a) a frame:

(b) means attached to said frame by which the astronaut can anchor himself while erecting said truss structure;

(c) a first strut-retainer assembly attached to said frame, said first strut-retainer assembly comprising a plurality of spring-loaded receptacles, each of said receptacles being configured to secure a first end of a corresponding one of said struts, each of said receptacles being movable against a spring bias when the astronaut moves said one of said struts longitudinally toward said first strut-retaining assembly; and

(d) a second strut-retainer assembly attached to said frame, said second strut-retainer assembly having a plurality of recesses, each of said recesses being configured to secure a second end of said corresponding one of said struts, said second strut-retainer assembly being located with respect to said means by which the astronaut can anchor himself



so that the astronaut can grip a selected one of said struts adjacent said second end thereof and can thereby move the selected strut longitudinally toward said first strut-retainer assembly, said second end of the selected strut thereby being removed from the corresponding recess in said second strut-retainer assembly, whereby the astronaut can pivot the selected strut about the corresponding receptacle of said first strut-retainer assembly so that, when said second end of the selected strut is clear of said second strut-retainer assembly, said first end of the selected strut can be withdrawn from said first strut-retainer assembly.

4,760,986

MOUNT FOR PICKUP TRUCKS

Craig M. Harrison, Lawrenceville, Ga., assignor to Grip-Rite, Inc., Lawrenceville, Ga.

Continuation-in-part of Ser. No. 889,622, Jul. 28, 1986, Pat. No. 4,685,646. This application Jul. 13, 1987, Ser. No. 72,408
The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—225.31 9 Claims



1. A mount for use in mounting objects to a side of a pickup truck bed and with the mount comprising an outboard piece adapted to be mounted partially within an inverted channel-shaped top portion of the pickup truck bed side and an inboard piece adapted to be mounted to the outboard piece and clamped to the side top portion, fastening means for releasibly fastening said outboard and inboard pieces together, and wherein one of said pieces is formed with an elongated pressure distribution bar and the other piece is formed with an elongated groove sized to receive said pressure distribution bar.

4,760,987

CUP-HOLDER STABILIZER

Yung-Huei Lan, 3F, No. 32, Lane 61, Han-Chuo S. Rd., Sec 2, Taipei, Taiwan

Filed Jan. 13, 1986, Ser. No. 818,368
Int. Cl.[4] A45D *42/14*
U.S. Cl. 248—346.1 4 Claims



1. A cup-holder stabilizer comprising:

an upper holder member which has a cylindrical socket having an inner lining coating formed on an inner surface in said cylindrical socket adapted to hold a cup or glass therein, a bottom plate portion formed on a bottom portion of the upper holder member, four inner cylindrical members formed under said bottom plate portion each formed with a through hole in said inner cylindrical member, four valve members each resiliently mounted within each said inner cylindrical member and protruding downwards through the through hole of said inner cylindrical member, and four L-shaped locking arms each having a vertical section formed under said bottom plate portion and a horizontal section formed on the lower portion of the vertical section radially extending inwards towards the center line of the cylindrical socket;

a supporting base adapted to support said holder member including an upper circular plate, four outer cylinders formed under said circular plate each formed with a through hole for reciprocally engaging said inner cylindrical member therein, and four locking-arm holes formed through the circular plate to correspond the four L-shaped locking arms and each locking-arm hole having a tongue formed on a corner of said locking-arm hole adapted to obstruct said horizontal section of said L-shaped locking arm to prevent disengagement of said supporting base from said upper holder member; and

four suction cup members each including a cylindrical wall mounted under each said outer cylinder, a concave bottom portion formed on the bottom of said suction cup member having a central hole operatively sealed by said valve member of said upper holder member, and a sealing flange formed on the lowest end of said suction cup member for gripping said stabilizer on a supporting surface, whereby upon a gravitational descending of the upper

VOL 1093 ISS 1 AG 2 1988 UMI

holder member and a cup inserted therein, each inner cylindrical member is retracted into each outer cylinder and each said valve member resiliently seals a central hole on a bottom of said suction cup member for gripping said stabilizer on a supporting surface due to vacuum suction, and upon the raising of said upper holder member, said valve member opens said central hole of said suction cup member to release its vacuum for easy removal from the supporting surface.

4,760,988

SLIDE STRUCTURE FOR A MOTOR VEHICLE SEAT STRUCTURE

Francois Bianchi, Valentigney; Serge Deley, Seloncourt, and Francois Fourrey, Montbeliard, all of France, assignors to Cycles Peugeot, Valentigney, France

Filed Jun. 18, 1986, Ser. No. 875,814
Claims priority, application France, Apr. 9, 1986, 86 05070
Int. Cl.[4] B60N *1/08*
U.S. Cl. 248—430 **10 Claims**



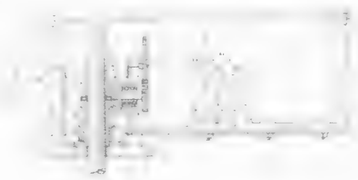
1. A slide structure for a motor vehicle seat structure, said slide structure comprising an outer fixed element and an inner movable element which includes a side wall, two sets of rollers movable parallely between the outer element and inner element, each roller having a centre bore, the inner movable element being formed at a lower end of said side wall and constituted by a partition wall which has an upper flange portion, a lower flange portion and a substantially upright intermediate flange portion interconnecting said upper flange portion and lower flange portion, said upper and lower flange portions and said intermediate portion defining a substantially S-sectioned shape, said partition wall defining inside the outer fixed element two box units in laterally side-by-side relation to each other on opposite sides of the partition wall, a set of said rollers being disposed in each box unit and in rolling engagement with one of said elements and in rolling engagement with and disposed under the other element of said elements, and a central ball inserted in said bore of each roller, on which ball the respective roller is rotatively mounted, each ball being in contact, on one side of the respective roller, with the partition wall and, on an opposite side of the respective roller, with the fixed element, the fixed element comprising a base having a first planar portion and a second planar portion parallel to and vertically spaced from the first planar portion and forming a lower raceway for one of said sets of rollers, and a cap which provides an upper and lateral cover for the two sets of rollers and has a first further planar portion and a second further planar portion parallel to and vertically spaced from said first further planar portion and forming an upper raceway for the second set of rollers, the balls of the first set of rollers being contained in a vertical plane and a horizontal plane and the balls of said second set of rollers being contained in a vertical plane and a horizontal plane, said horizontal planes and said vertical planes being spaced substantially equal distances apart.

4,760,989

VALVE OPERATOR

Lynn T. Elliott, 60 Bendwood, and Ronald G. Hune, 830 Oyster Creek Dr., both of Sugar Land, Tex. 77478

Filed Feb. 2, 1987, Ser. No. 9,875
Int. Cl.[4] F16K *31/05, 31/53;* **F16H** *25/02, 37/08*
U.S. Cl. 251—129.03 **1 Claim**



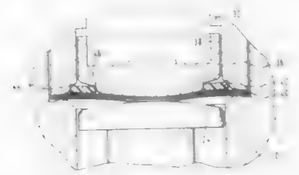
1. A valve operator comprising:
a. valve actuating means operable when driven to open or close a valve, depending on the direction of drive,
b. a motor,
c. a manually operable handwheel,
d. a pair of drive trains respectively interconnecting said motor and said handwheel to said valve actuating means whereby each may be caused to drive said valve actuating means selectively in either direction and
e. a pair of non-reversing torque control device interposed respectively in each of said drive trains, each of said torque control devices having a driving member interconnected to and driven by either said motor or said handwheel, and a driven member connecting said driving member to said valve actuating actuating means, and each being operable to allow either said motor or said handwheel to drive said valve actuating means in either direction, but to lock to prevent turning of the driven member thereof in either direction in response to torque applied to said driven member by any means other than said driving member, each of said torque control devices comprising a rotatable driving sleeve directly connected to and driven by said motor or by said handwheel, as the case may be, a rotatable driven sleeve axially aligned with said driving sleeve and connected to said valve actuating means by the remainder of its associated drive train, said driving and driven sleeves having axially extending segmental portions projecting into axially overlapping, transversely non-aligned relation, a fixed lock ring surrounding the axially overlapping segmental portions of said driving and driven sleeves, a generally straight lock bar extending generally diametrically between said axially overlapping segmental sleeve portions, and being of slightly less length than the internal diameter of said lock ring, and a spring biasing said lock bar transversely of itself toward the segmental portion of said driving sleeve to wedge between generally opposite interior walls of said lock ring to lock said driven sleeve against rotation by torque applied thereto, torque applied to said driving sleeve being operable to move said lock bar transversely of itself toward the segmental portion of said driven sleeve to release it from its wedging engagement in said lock ring, whereby rotation of said driving sleeve functions to turn said driven sleeve through said lock bar.

4,760,990

DIAPHRAGM VALVE

Leon Kerger, Helmdange; Paul Kremer, Walferdange, and Jean-Claude Schmitz, Bridel, all of Luxembourg, assignors to Ceodeux S.A., Luxembourg

Filed Jun. 5, 1987, Ser. No. 58,301
Int. Cl.[4] F16K *31/00*
U.S. Cl. 251—335.2 **17 Claims**



1. A diaphragm valve for compressed or liquified gases comprising:
a main body having an axial passage therethrough terminating at a first duct and a lateral passage communicating with said axial pasage and terminating at a second duct;
a closing member in said axial passage communicating with said lateral passage, said closing member having opposed first and second ends including sealing means on said first end for precluding communication between said first and second ducts and piston means at said second end;
elastic means acting on said piston means of said closing member to increase the amount of gas passing through said second duct;
control means having an end extending into said axial passage in alignment with said closing member;
pusher means being associated with said control means, said pusher means acting on said piston means to decrease the amount of gas passing through said second duct;
diaphragm sealing means between said pusher means and said piston means, said diaphragm sealing means having opposed sides with said pusher means acting on one side and said piston means acting on the other side;
resilient washer means between said diaphragm means and said pusher means, said resilient washer means tending to distribute the action exerted by said pusher means and piston means evenly over said diaphragm means; and
annular bushing means in said main body, said pusher means being received in said bushing means with an annular gap being defined between said pusher means and said bushing means, said resilient washer means bridging said annular gap between said pusher means and bushing means.

4,760,991

TENSING ROPE

Masaki Asai, Nagoya, Japan, assignor to Meitoh Denki Kohji Kabushiki Kaisha, Nagoya, Japan

Continuation of Ser. No. 769,000, Aug. 26, 1985, abandoned. This application Jul. 10, 1987, Ser. No. 73,365
Claims priority, application Japan, Sep. 12, 1984, 59-191233; Nov. 5, 1984, 59-232665
Int. Cl.[4] B65H *59/00*
U.S. Cl. 254—134.3 R **12 Claims**

1. A tensioning rope comprising:
an elongated rope body, said rope body including a core, said core having a plurality of enlarged portions positioned at intervals extending along a length of the rope body; and
means to insure proper tension of a guide rope including a plurality of guide rope engaging means, said engaging means being formed on each enlarged portion by a plastic layer that impregnates said core forming each engaging means as integrally formed on said rope body as an integral part of said rope body, said engaging means including fillers and frustum abutments, said frustum abutments including a shell having an outer inclined surface defining abutment wedge surface, said fillers being provided between said shells and said enlarged portions, said fillers firmly connecting the shells to the rope body.



4,760,992

ROPE TENSION DAMPER

George W. Peppel, Arlington, and Paul E. Sullivan, Bedford, both of Tex., assignors to Lockheed Corporation, Calabasas, Calif.

Continuation of Ser. No. 798,124, Jan. 6, 1986, abandoned, which is a division of Ser. No. 620,433, Jun. 14, 1984, which is a continuation-in-part of Ser. No. 373,456, Apr. 30, 1982, abandoned. This application Mar. 6, 1987, Ser. No. 22,835
Int. Cl.[4] B65H *59/26*
U.S. Cl. 254—277 **5 Claims**



1. In a vessel mooring system, the combination comprising:
(a) an inelastic flexible line means for mooring said vessel having at least a proximate end and a distal end, said proximate end being connected to said vessel and said distal end being connected to a point independent of said vessel;
(b) a frame;
(c) a rotatable arm having a first rotational axis, said arm having a zero load rotational position, and said arm assuming said zero load rotational position when said arm is at rest during the normal course of operation of said combination;
(d) an elastomeric torsion spring oriented about said first rotational axis of said arm for independently connecting said arm to said frame, said spring providing a counter-torque approximately proportional to the angular displacement of said arm from said zero load rotational position;
(e) a first sheave rotatably mounted with respect to said arm having a second rotational axis parallel to and spaced from said first rotational axis of said arm and intersecting said arm at a first location;
(f) a second sheave rotatably mounted to said arm at a second location spaced apart from said first location and having a third rotational axis parallel to and spaced from said first rotational axis of said arm; and
(g) an arm adjustment means for adjusting the zero load rotational position of said arm with respect to said frame

VOL 1093 ISS 1 AG 2 1988 UMI

such that by appropriate initial adjustment of the orientation of said arm under zero loading it is possible to vary the rate at which the effective length of said inelastic flexible line means changes with respect to a predetermined increment of tension of said elastic flexible line means; whereby said inelastic flexible line means as it passes through said device may be guided by said first sheave and by said second sheave into a generally S-shaped configuration which is gradually distorted into a relatively straight configuration as the tension applied to said inelastic flexible line means is increased and said arm is thereby caused to rotate about said first rotational axis, so that as an increase in tension in said inelastic flexible line means rotates said arm and elongates the S-shaped configuration of said inelastic flexible line means a correspondingly lesser leverage is associated with the torque couple applied to said arm by the tension in said inelastic flexible line means.

4,760,993

SNATCH BLOCK

Hercules P. Du Preez, Alberton, South Africa, assignor to Deton Engineering (Proprietary) Limited, Transvaal, South Africa

Continuation of Ser. No. 747,057, Jun. 20, 1985, abandoned. This application Jan. 13, 1987, Ser. No. 5,368

Claims priority, application South Africa, Jun. 22, 1984, 84/4739

Int. Cl.[4] B66D *3/04*

U.S. Cl. 254—411 7 Claims



1. A snatch block comprising a sheave member of a predetermined diameter rotatably mounted between a pair of cheek plates, said sheave on an axis generally orthogonal to said plates, suspension means on the cheek plates for anchoring the snatch block in use, each cheek plate having a width, as measured across its surface orthogonal to said axis, a closure plate in abutment with said cheek plates at one end thereof, said cheek plates being wider than said diameter at said one end and tapering to a width less than said diameter at their other end, opposed sides of each cheek plates being angled away from the sheave to provide a V-shaped entry to the sheave for a cable, said closure plate being in continuous abutment with at least said angled away portions of said cheek plates and generally orthogonal thereto.

4,760,994

DEVICE FOR A WELDING TORCH

Charles L. Ferguson, 931 Westview Dr., Louisville, Ky. 40214

Filed Jan. 31, 1986, Ser. No. 824,672

Int. Cl.[4] B23K *7/00*

U.S. Cl. 266—48 6 Claims

1. An arrangement useful in fuel burning torches utilizing an oxidizer and a fuel each supplied to said torch at selected pressure and mixed therein including valve assembly means having first and second chambers; first and second spool valves each located in, and moveable within said first and second chambers respectively where said first chamber has inlet means to receive said oxidizer and said fuel; and fuel outlet means and oxidizer outlet means fire extinguisher supply means to supply fire extinguisher at a selected pressure to said first chamber to hold said first spool valve in a first mode so that said oxidizer means and fuel medium are supplied through said first chamber and said fuel outlet and said oxidizer outlet to said second chamber and to said torch; and bias means located in said first chambers so upon reduction of pressure of said extinguisher medium below a selected pressure said first valve means is moved to a second mode where flow of oxidizer and flow of fuel through said second chamber are terminated wherein said second chamber includes bias means to bias said second valve to first position to allow flow of oxidizer and fuel through said second chamber to said torch, and lever means, to move said



spool assembly to second position wherein flow of oxidizer and fuel is terminated and said extinguisher medium is supplied from said first chamber through said second chamber to said torch and wherein each of said spool valve means includes solid portions to be moved in alignment with said fuel and oxidizer inlet and outlet means to block flow of fluid through said first and second chambers and include at least one segment having longitudinally extending grooves which, when in alignment with said inlet means and outlets in said first and second chamber allow flow of said selected oxidizer medium, fuel, and extinguisher medium through said chamber.

4,760,995

CONTINUOUSLY TREATING LINE FOR STEEL BANDS HAVING A HEATING FURNACE BY DIRECTLY FLAMING

Shuzo Fukuda; Masahiro Abe; Shiro Fukunaka, all of Yokohama; Michio Nakayama, Kawasaki; Shuji Kaneto; Masayuki Yamazaki, both of Fukuyama, and Kouichiro Arima, Tama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

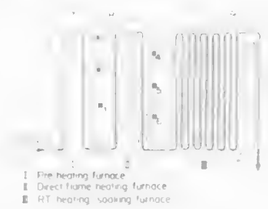
PCT No. PCT/JP86/00352, § 371 Date Mar. 2, 1987, § 102(e) Date Mar. 2, 1987, PCT Pub. No. WO87/00555, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 10, 1986, Ser. No. 27,224

Claims priority, application Japan, Jul. 18, 1985, 60-156898; Aug. 31, 1985, 60-192601; Aug. 31, 1985, 60-192603; Aug. 31, 1985, 60-192604; Aug. 31, 1985, 60-192605; Aug. 31, 1985, 60-192608; Aug. 31, 1985, 60-192611; Aug. 31, 1985, 60-192612; Aug. 31, 1985, 60-192613

Int. Cl.[4] C21D *9/56*

U.S. Cl. 266—103 52 Claims



1. A continuously treating line for a steel band having a

heating furnace by directly flaming, wherein said heating furnace is provided with a plurality of heating burners of reduction type which, in a flame, form non-equilibrium range of the air and a fuel with products in an intermediate combustion and without free oxygen, and said heating furnace is arranged with said burners such that the flame collides against the steel band on its surface perpendicularly within said non-equilibrium range, and said arrangement of the burners is made with spaces where (inner diameter of burner)/(pitch of burner) in a line direction is more than 0.3.

4,760,996

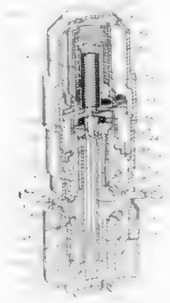
DAMPER AND ISOLATOR

Lawrence P. Davis, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 873,742, Jun. 12, 1986, abandoned. This application Oct. 9, 1987, Ser. No. 110,076

Int. Cl.[4] F16F *5/00*

U.S. Cl. 267—122 2 Claims



1. A vibration isolation and damping apparatus comprising:
- a first bellows having a first end with an end piece thereat forming a fluid seal and a second end;
- a second bellows coaxially aligned with said first bellows and having a first end with a base piece thereat forming a fluid seal and a second end;
- a shaft of predetermined length coaxially positioned with said first and second bellows and coupled to said end and base pieces, thereby maintaining a fixed predetermined separation therebetween;
- a piston having an axial bore coaxially positioned with said shaft and having a flange extension coupled to said second end of said first bellows and to said second end of said second bellows to establish fluid seals with said first and second bellows, said flange extension having flange means for coupling said apparatus to a payload, said piston forming a first fluid chamber with said first bellows, a second fluid chamber with said second bellows, and a radial gap with said shaft, said radial gap providing fluid coupling between said first and second fluid chambers;
- a fluid filling said first and second fluid chambers and said radial gap;
- spring means coiled about said first and second bellows positioned between said flange extension and said end piece and between said flange extension and said base piece for providing radial and axial stiffness, said spring means including:
  - a first spring retainer coupled to said end piece;
  - a first spring coiled about said first bellows and positioned between said first spring retainer and said flange extension;
  - a second spring retainer coupled to said base piece; and
  - a second spring coiled about said second bellows and positioned between said second spring retainer and said flange extension;
- a thermal compensator bellows having an inner chamber fluid filled and fluidly coupled to said radial gap and to said first and second fluid chambers; and
- pressure means coupled to said thermal compensator bellows for establishing positive pressure on said fluid with variations of atmospheric pressure conditions;
- said thermal compensator bellows expanding with expansions of said fluid and cooperating with said pressure means to maintain constant system pressure.

4,760,997

FIXING DEVICE FOR HEAVY COMPONENTS, ESPECIALLY ENGINES

Gunnar Fäger, Skövde, Sweden, assignor to AB Volvo, Gothenburg, Sweden

Filed Feb. 20, 1986, Ser. No. 831,426

Claims priority, application Sweden, Feb. 26, 1985, 8500940

Int. Cl.[4] B23Q *1/04*

U.S. Cl. 269—71 6 Claims



1. Fixing devices for heavy components, comprising a stand carrying a turntable, by means of which the components can be rotated, a first fixing plate solidly joined to the turntable, a second fixing plate, means on said second fixing plate for detachably connecting said second fixing plate to a said component, first and second cooperating attachment means arranged respectively on said first and second plates for detachably joining the plates to each other, which first and second attachment means can be brought into engagement with each other by moving the plates in a first direction towards each other followed by a displacement of the plates relative to each other in a second direction perpendicular to said first direction into a predetermined starting position, the second fixing plate having a first cam means which cooperates with a second cam means on the stand, said first and second cam means being releasable locking means so arranged that after an initial rotation of the turntable and first and second plates from said predetermined starting position, the plates are releasably locked together.

4,760,998

CLAMPING DEVICE

Dale Hitt, 20850 Westhaven, Southfield, Mich. 48075

Filed Jun. 19, 1987, Ser. No. 64,982

Int. Cl.[4] B23Q *3/02*

U.S. Cl. 269—138 18 Claims

1. A clamping device for clamping and accurately positioning an item at a predetermined location relative to a predetermined surface, said clamping device comprising:
- a body including securing means for fixedly securing said body relative to said predetermined surface;
- a fixed jaw fixed relative to said body, and a longitudinally movable jaw movable relative to said body in a generally longitudinal direction toward and away from said fixed jaw, said fixed and movable jaws having respective fixed

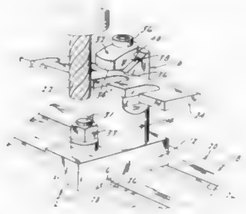
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and movable jaw surfaces extending in generally lateral outward directions and adapted for receiving and clampingly engaging the item therebetween;

a fixed locating surface fixed relative to said body and extending transversely at a generally laterally inward position between said fixed and movable jaw surfaces, said fixed locating surface being adapted to be abuttingly engaged by the item when the item is inserted laterally inwardly between said fixed and movable jaw surfaces;

resilient lateral biasing means for resiliently biasing said movable jaw in a generally outward lateral direction away from said fixed locating surface; and

clamping means selectively actuable for forcibly urging said movable jaw in a generally longitudinal direction toward said fixed jaw into forcible clamping engagement with the



item when the item is inserted between said fixed and movable jaws and for forcibly urging said movable jaw and the item in a generally laterally inward direction against the biasing force of said resilient lateral biasing means when the item is forcibly clamped between said jaws in order to forcibly urge the item laterally inwardly against said fixed locating surface and thereby accurately position the item relative to the predetermined surface, said body including a body opening extending generally longitudinally therethrough, said movable jaw having a guide portion thereon, said guide portion being slidably received in said body opening, and resilient longitudinal biasing means for resiliently biasing said movable jaw in a generally longitudinal direction away from said fixed jaw in order to urge said movable jaw away from said fixed jaw when said clamping means is deactuated.

4,760,999

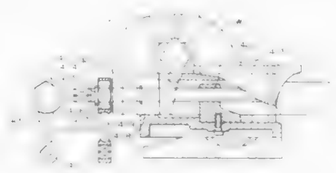
CLAMPING DEVICE

Tai-Her Yang, 5-1 Taipin Street, Si-Hu Town, Dzan-Hwa, Taiwan, Taiwan

Filed Dec. 19, 1986, Ser. No. 943,773

Int. Cl.[4] B23Q *3/02*

U.S. Cl. 269—241 **2 Claims**



1. In a pressing apparatus which includes a fixed member, a movable member, a threaded shaft passing through the fixed and movable members for moving the movable member with respect to the fixed member for pressing an object between the fixed and movable members, and a handle for turning the threaded shaft, the improvement comprising:

a pressing head located on the threaded shaft, said pressing head having an outer diameter greater than the diameter of the threaded portion of the threaded shaft and said pressing head having external threads, said head threads being finer threads than the threads of the threaded shaft,

a pressing cap having internal threads complementary with said external threads of said pressing head for engaging said head threads, whereby said pressing cap is capable of exerting stronger pressing power upon the object between the fixed and movable members after the threaded shaft has moved the movable member so that the object is pressed between the fixed and movable members,

one end of the threaded shaft includes a relatively small bolt head formation for receiving one end of the handle,

the outer surface of said pressing cap includes a fitting for a relatively large socket capable of being turned to exert the stronger pressing power after the threaded shaft has moved the movable member so that the object is pressed between the fixed and movable members, and

the handle having a relatively small socket formed therein for being removably received on the bolt head formation of the threaded shaft and a relatively large socket formed therein for being removably received on the fitting of the pressing cap.

4,761,000

SURGICAL TABLE HAVING HORIZONTALLY DISPLACEABLE TABLETOP

Kenneth J. Fisher; Eric J. Schuldt, and Thomas J. Fendya, all of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Apr. 7, 1987, Ser. No. 35,674

Int. Cl.[4] A61G *13/00*

U.S. Cl. 269—323 **9 Claims**



1. A surgical table comprising:

a. an elongated tabletop formed of a radioluscent material and having a patient support surface, said surface having a longitudinal axis and a lateral axis;

b. a base member;

c. means attached between said tabletop and said base for movably supporting said tabletop on said base member including:

(i) means for tilting said tabletop about said longitudinal axis and said lateral axis; and

(ii) translation means for supporting said tabletop so that it is manually translatable relative to said base member along both said longitudinal and lateral axes;

d. locking means which, when activated, prevents the translation of said tabletop relative to said base member and which, when deactivated, allows the translation of said tabletop relative to said base member;

e. disabling means which, when activated, prevents the tilting of said tabletop about said longitudinal axis and said lateral axis and which, when deactivated, allows the tilting of said tabletop about said longitudinal axis and said lateral axis; and

f. control means for simultaneously activating said locking means and deactivating said disabling means and for simultaneously activating said disabling means and deactivating said locking means.

4,761,001

AUTOMATIC DOCUMENT FEEDER

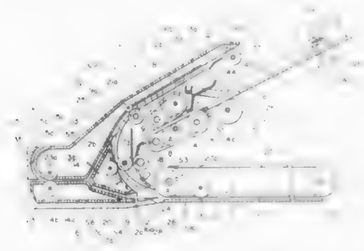
Kimiaki Hayakawa, Yokohama; Hideaki Sayama; Makoto Kitahara, both of Tokyo, and Takeshi Honjo, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1985, Ser. No. 753,029

Claims priority, application Japan, Jul. 10, 1984, 59-143474; Jul. 10, 1984, 59-143475

Int. Cl.[4] B65H *5/22*

U.S. Cl. 271—3.1 **26 Claims**



1. An automatic feeder for feeding an original to be read to a station for reading the horiginal, comprising:

an original supporting station for supporting an original to be read;

a first original passage, which is a unidirectional passage for inverting the face-orientation of and directing the original from said original supporting station to a vicinity of an end of the original reading station;

a second original passage, which is a undirectional passage, for receiving the original from the vicinity of the end ofthe original reading station;

a third original passage, which is a switching-back passage, for receiving the original from said second passage and for switching it back, said third passage being cooperative with said second passasge to invert and discharge the original;

a fourth original passage, which is a unidirectional passage, for receiving the original from said third passage after the original is switched back by said third passage;

a fifth original passage, which is a switching-back passage, for receiving the original from said fourth passage and for switching it back; and

a sixth original passage, which is a unidirectional passage, for receiving the original from said fifth passage after the original is switched back by said fifth passasge and directs the original to the vicinity of the end of the reading station.

4,761,002

DOCUMENT HANDLING AND COUNTING APPARATUS

John M. Reed, Lebanon; William Sherman, III, Medford, both of N.J., and Peter J. Loftus, Levittown, Pa., assignors to Brandt, Inc., Bensalem, Pa.

Filed Jan. 21, 1986, Ser. No. 820,981

Int. Cl.[4] B65H *7/12*

U.S. Cl. 271—111 **24 Claims**

1. A method for counting sheets employing apparatus including input and output locations and means for feeding sheets from said input location to said output location along a feed path arranged therebetween, first and second sensors spaced a predetermined distance apart along an imaginary line substantially perpendicular to said feed path, said method comprising the steps of:

initiating a count of pulses representing movement of said sheets as soon as the leading edge of a sheet passes at one of said sensors;

determining which of said sensors the leading edge of the sheet passes first;

saving the counts being generated at the time that the leading edge of said sheet passes both of said sensors as a first count;

saving the counts at the time the trailing edge of the sheet has passed each of said sensors;

obtaining a difference value of the counts between the leading edge and trailing edge for each sensor;

converting said first count to a skew value which is a trigonometric function related to the angle between leading edge of the sheet and said imaginary line;



converting the first count and the skew value into logarithmic form;

summing the logarithmic form of said skew value and said first count to obtain the logarithmic form of the true length of the document;

obtaining the antilog of the last mentioned logarithmic value to obtain the real length of the sheet;

comparing the real length of the present sheet with the real length of the previously examined sheet;

halting the sheet feeding assembly and displaying an error if the difference between the real length of the compared sheet is greater than a predetermined value.

4,761,003

PRINTED SHEET REMOVAL ASSEMBLY

Claus D. Barrois, Marktheidenfeld, and Philipp A. Dieterich, Randersacker, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Würzburg, Fed. Rep. of Germany

Filed Jul. 30, 1987, Ser. No. 79,402

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1986, 3626937

Int. Cl.[4] B65H *29/04*

U.S. Cl. 271—280 **4 Claims**



1. A printed sheet removal assembly for the selective removal of one or more sheets from a sheet delivery of a sheet fed rotary printing machine, the sheet delivery including sheet grippers having cam controller gripper opening means and gripper transport chains, said printed sheet removal assembly comprising:

a drive wheel rotatably secured in a side frame of the sheet delivery and being drivable by the gripper transport chain, said drive wheel including a central bore;

an axially slidable switch shaft carried in said wheel bore and being rotatable with said drive wheel;

VOL 1093 ISS 1 AG 2 1988 UMI

a gate type gear shift secured to a first end of said switch shaft and a limit disk secured to a second end of said switch shaft;

a two stepped axially slidable spring biased switch cylinder carried on said switch shaft and rotatable therewith, said switch cylinder being positioned intermediate said drive wheel and said limit disk;

a compression spring carried on said axially shiftable switch shaft intermediate said gate-type gear shift and said drive wheel; and

a switch lever pivotably attached to said side frame and engaging said gate-type gear shift, said switch cylinder being in rolling contact with a control roller carried by a pivotably supported gripper opening means whereby axial movement of said switch shaft in response to pivotal movement of said switch lever will operate said gripper opening means to remove a sheet from the sheet delivery.

4,761,004

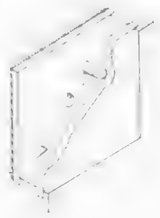
INFINITY MIRROR DISPLAY

Patrick A. Hargabus, 1709 Pattison Ave., Sarasota, Fla. 33579

Filed Jul. 8, 1986, Ser. No. 883,342

Int. Cl.[4] A63G *5/00*

U.S. Cl. 272—13 **12 Claims**



1. An infinity mirror display comprising:

a frame having a front opening defining a viewing area;

first and second mirrors;

said first mirror being partially reflecting and mounted in said frame adjacent to said front opening and displayed in said viewing area;

said second mirror having a fully reflecting surface on one side and mounted in said frame further removed from said front opening than said first mirror with said fully reflecting surface spaced from said first mirror; and

said second mirror having at least one illuminating hole passing through it.

4,761,005

SPORTS SCORING DEVICE INCLUDING A FLEXIBLE PREZOELECTRIC LAYER RESILIENT LAYER

Barry J. French, 30612 Salem Dr., Bay Village, Ohio 44140, and Clifford D. Fung, Cleveland Heights, Ohio, assignors to Barry J. French, Bay Village, Ohio

Filed Oct. 10, 1985, Ser. No. 785,969

Int. Cl.[4] A63B *67/00, 69/00*

U.S. Cl. 273—1 GC **13 Claims**

1. A scoring apparatus for indicating at least one characteristics of an externally applied impact by a sports participant to a deformable object, wherein said characteristic is at least one of velocity, force or energy of said impact, said apparatus comprising

flexible transducer means, responsive to said impact, for providing an analog output, said transducer means comprises a piezoelectric film layer comprises of a piezoelectric material, wherein said transducer means is attached to a first resilient layer of material, wherein said resilient layer is above or below said piezoelectric film layer such that said impact deforms only a portion of said film layer and only a portion of said first resilient layer; means, responsive to said analog output, for indicating said one characteristic of said impact, wherein said flexible transducer means of said apparatus comprises an active means for generating an electrical output in response to said impact.



4,761,006

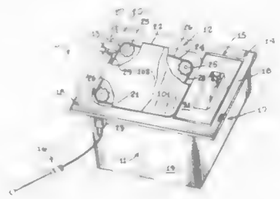
AIRCRAFT LANDING GAME

Ferman Ledbetter, 115 Lancaster Dr., St. Louis, Mo. 63105

Filed Jul. 8, 1987, Ser. No. 70,989

Int. Cl.[4] A63F *9/00*

U.S. Cl. 273—1 GC **7 Claims**



1. An aircraft landing game apparatus comprising:

a housing unit including a base member and an elevated platform member; wherein, the elevated platform member comprises a central insert member;

a first motorized unit including a closed loop track member operatively connected to a miniature airplane whereby the track member is disposed within the housing unit such that the miniature airplane will traverse a circuit around the said central insert member about a vertically disposed axis;

a second motorized unit including a moving surface unit comprising a closed loop belt member which revolves around a horizontally disposed axis; wherein, the top surface of the closed loop belt member is disposed adjacent to and in the same general plane as the elevated platform member, and the surface of the belt member is provided with at least one indicia representative of a suitable landing site for said miniature airplane.

4,761,007

DEVICE FOR REDUCING VIBRATIONS OF A TENNIS RACQUET

Louis Boschian, Le Soleil Levant - Bâtiment B 8 Avenue des Rives, 06270 Villeneuve Loubet, France

Filed May 21, 1986, Ser. No. 866,129

Claims priority, application France, May 22, 1985, 85 07830; Jul. 23, 1985, 85 11356

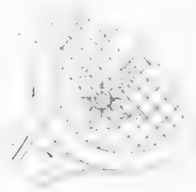
Int. Cl.[4] A63B *49/00*

U.S. Cl. 273—73 D **14 Claims**

1. The combination of a device used in conjunction with a racquet for tennis or for a similar sport, and wherein the racquet is strung with a plurality of elastic strings under a certain

tension extending in a mesh along longitudinal and transverse directions so as define a plurality of rectangles, each rectangle having sides of a predetermined dimension, and being bounded by a pair of adjoining of said strings extending along said longitudinal direction, and another pair of adjoining of said strings extending along said transverse direction, comprising in said combination

at least one plate of elastic material emplaceable in one of





said rectangles so as to engage at least two of said adjoining strings, and being of such dimensions and having such an elasticity, compared to that of said strings, so as to, upon emplacement, deform the so engaged strings so that they are spread apart by a distance exceeding said predetermined dimension by about 2 to 3 millimeters, whereby the so engaged strings are subjected to a supplemental tension exceeding said certain tension, and a weight attached to said plate.

4,761,008

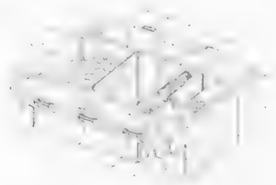
HOLDERS FOR BINGO SUPPLIES

Peter D. Huggins, Ashtabula, Ohio, assignor to Iten Industries, Ashtabula, Ohio

Filed Aug. 6, 1987, Ser. No. 82,299

Int. Cl.[4] A63F *9/00*

U.S. Cl. 273—148 R **18 Claims**



1. A bingo caddy adapted to be a combined carrying case and a compartmentalized container for holding bingo paraphernalia while resting on a horizontal playing surface during use in a bingo game, the bingo caddy comprising:

a compartmentalized container and an interconnecting matching top having an interior surface adapted to seal said container when closed;

the compartmentalized container having a plurality of individual compartments defined by interconnecting wall members of said container, the individual compartments comprising an elongated, U-shaped, shallow forward compartment stretched laterally across the front of said container, an elongated U-shaped, shallow rearward compartment stretched laterally across the rear of said container, additional compartments interposed between the U-shaped compartments across respectively the front and rear container, certain of said additional compartments being of greater depth than the U-shaped compartments and provided with flat undersurfaces:

the compartmentalized container having an exterior configuration adapted to support the open compartmentalized container at an acute angle with the playing surface, the exterior configuration having an exterior forward contact point on one of the U-shaped elongated compartments and a rearward contact point on said large full depth compartment whereby the compartmentalized container is supported by the playing surface at an angle θ relative to the playing surface.

4,761,009

GOLF PUTTING GAME DEVICE

Paul Gibree, 69 Upsala St., Worchester, Mass. 01607

Filed Feb. 25, 1987, Ser. No. 18,522

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—177 R **1 Claim**

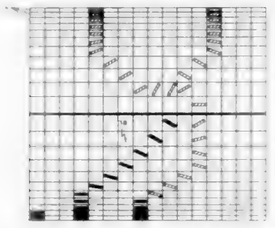


1. A golf putting game comprising:

a housing and ball receiving slot means formed in said housing for receiving golf balls therethrough wherein said slot means includes a plurality of slots where a putted golf ball may enter only one of said slots during putting, a ball return trough positioned rearwardly of said slots for returning golf balls from said housing, a ball receiving lane means positioned forwardly of said slot means for initially receiving a putted ball, said ball receiving lane means including a first lane section which is upwardly sloped so as to slow said putted ball entering said lane means and a second lane section which is downwardly sloped so as to allow said putted ball to actuate signal means for indicating where said putted ball enters said slot means wherein said signal means includes a plurality of lights wherein a single light is in overlying position to each of said plurality of slots and said plurality of lights are of various colors to indicate different levels of accuracy, and a microswitch associated with each of said plurality of slots for actuation of said single lights associated therewith, said microswitches being associated with moveable floor plates mounted on said second lane section and within said slots, said plates being moveable in response to the sensed weight of a golf ball passing thereover to activate said microswitches.

VOL 1093 ISS 1 AG 2 1988 UMI

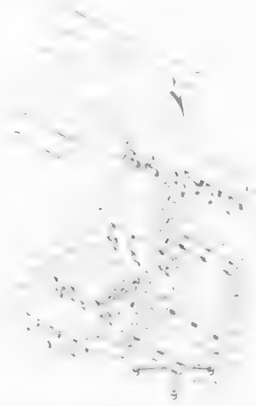
4,761,010
BOARD GAME
Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081
Filed Apr. 7, 1986, Ser. No. 848,627
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—275 9 Claims



1. A game of serial falling playing pieces for two or more players having a game board, comprising:
a plurality of rectangular game pieces, said game pieces each having the same height, width and depth as one another, said width and depth determining the size of the top and bottom of said game piece;
a rectangular game board surface having a plurality of parallel rows of rectangular game spaces thereon, each game space having two horizontal sides parallel to said rows and two vertical sides perpendicular to said rows, said game spaces forming two sides on said board, each side bounded by a base line parallel to said rows and a common center line parallel to said rows, each of said game spaces being at least the size of the bottom of one of said game pieces which can only be positioned exactly thereon within the boundaries of said game space with its width parallel to said base line and center line with selected of said game spaces being of a size larger than the bottom of one of said game pieces allowing said game piece to be set on its bottom in said larger game piece space with its width in a variety of angular positions to said center line, said game piece's height being great enough to extend across any two adjacent game spaces, said game pieces to be alternately positioned by each player in turn on its bottom on a game space, each game piece placing facing in a player-selected direction to form a chain line of game pieces in a continuous line extending from a player's base line across the board to the opposing player's base line for toppling from one player's base line to the opposing player's base line in a chain reaction when said chain line of game pieces is completed; and
wherein said game spaces near said center line are formed progressively smaller in each row from said base line toward said center line, each smaller space limiting the possible angular positioning thereon of said game pieces and wherein near said center line each of said game spaces is the size of said game piece's bottom and where no angular positioning of a game piece is possible.

4,761,011
WATER CUSHION STRESS-REDUCING ASSEMBLIES FOR CHAIRS AND OTHER SEATING DEVICES
Joel L. Sereboff, 2215 Millridge Rd., Owings Mills, Md. 21117
Filed Apr. 2, 1986, Ser. No. 847,169
Int. Cl.[4] A47C *7/02*
U.S. Cl. 297—230 4 Claims

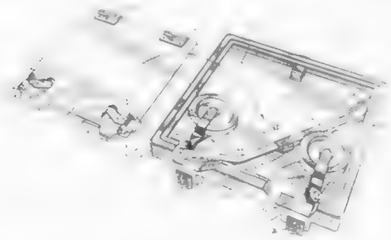
1. A fluid cushion assembly for the back of a chair, comprising an integrally molded assembly having a plurality of horizontally-disposed separate sections adapted to rest against the back of the chair forwardly thereof, each of the sections being substantially oval in cross-section and having respective convex external portions joined directly to one another, each of the sections including a respective casing adapted to be filled with fluid, valve means associated with each of the casings, whereby the level of fluid in each of the casings may be set at a predetermined level, and means for releasably securing the assembly to the back of the chair;
wherein the fluid is water;
the back of the chair including a front surface and a back surface, the front surface having a plurality of substantially horizontally-arranged scalloped recesses formed thereon, the scalloped recesses being complementary to the plurality of the sections in the assembly;
wherein three scalloped recesses are adapted to receive three respective sections of the assembly;
wherein the scalloped recesses further having an upper portion and a lower portion in the back of the chair,



wherein the back of the chair is provided with two sets of horizontally-spaced slots, one set at the upper portion of the scalloped recesses, the other set at the lower portion of the scalloped recesses, the slots each extending from the front surface to the back surface of the back of the chair, and wherein the fluid cushion assembly has a top portion and a bottom portion and is provided with two pairs of horizontally-spaced straps, one pair at the top portion of the assembly, and the other pair of the bottom portion of the assembly, the straps being adapted to be received through the respective slots in the back of the chair, and each of the straps being provided with a quick release fibrous fastener for removably securing the assembly to the back of the chair.

4,761,012
DEVICE TO TRANSPORT SUITCASES
Peter K. Dames, 66 Bond Street, Cambridge, Ontario, Canada N1R 4B6
Filed Feb. 2, 1987, Ser. No. 9,968
Int. Cl.[4] B62B *1/20*
U.S. Cl. 280—38 9 Claims

1. A hand transportable baggage carrier comprising:
(a) a main wall;
(b) a plurality of rigid, shallow peripheral wall portions extending generally transversely from said main wall, the main wall and the peripheral wall portions together defining a housing;
(c) at least one wheel rotatably mounted on an axle;
(d) a stem portion supporting said axle adjacent one end and having a substantially planar bent portion adjacent its opposite other end, said bent portion lying in a plane inclined a substantially 45 degrees to the axis of said axle;
(e) luggage attachment means affixed to the housing for securement of at least one suitcase in secured relation to said main wall;
(f) pivot means rigidly positioned within said housing and having a pivotal axis inclined at an angle of substantially 45 degrees from said main wall;
(g) said bent portion being secured to said pivot means in pivotal relation therewith for pivoting displacement of said stem portion and said axle;
(h) whereby in a first retracted position said wheel is positioned within said housing in substantially parallel relation with said main wall, and in use, in a second deployed position at which the stem portion has been pivotally displaced through 180 degrees, the wheel has rotated through only 90 degrees so as to be positioned substantially outside of the housing, in operative underlying relation thereto, and substantially at right angles to said main wall; and,
(i) locking means for securing said at least one wheel in said second position.



4,761,013
USER PROPELLED VEHICLE
Gordon H. Dowton, Toronto, Canada, assignor to The Board of Governors of Ryerson Polytechnical Institute, Toronto, Canada
Filed Mar. 30, 1987, Ser. No. 31,609
Int. Cl.[4] B62M *29/00*
U.S. Cl. 280—87.02 R 27 Claims



1. User propelled vehicle comprising a seat frame, a back pivotally connected to the rear of the seat frame about a first pivot axis, a leg support pivotally connected to the front of the seat frame about a second pivot axis parallel to the first, a support surface engaging roller on each of the seat frame and the leg support, and the leg support and seat frames rollingly approaching and retreating from one another along the support surface between a contracted position, in which the seat frame extends forwardly upwardly and the leg support extends sharply forwardly downwardly from the seat frame, and an extended position, in which the seat frame extends approximately horizontally and the leg support inclines relatively gently thereto, and means for maintaining the vehicle in said contracted and extended positions and for maintaining the back in positions extending sharply upwardly from or relatively gently inclining with respect to the seat frame, and wherein said rollers support the vehicle on the support surface with said first and second pivot axes normally generally horizontal and with the seat frame supported a short distance above the support surface so that the user occupying the seat frame can propel the vehicle by thrusting on the support surface with the user's hands.

4,761,014
PROPULSION OF SCOOTERS
Kung-Hsiung Huang, No. 37, Lane 490, Pei-Tun Rd., Pei-Tun District, Taichung City, Taiwan
Filed Apr. 28, 1987, Ser. No. 43,449
Int. Cl.[4] B62M *1/04*
U.S. Cl. 280—258 1 Claim



1. A scooter having a frame, a steering post in the front portion of the frame, a front wheel supported on the post, a fork at the rear of the frame, a rear wheel rotatably supported in the fork, a ratchet mechanism for driving the rear wheel, a stepping lever for transferring the stepping force of the rider to the ratchet mechanism, a retrieving means for raising the stepping lever to the original position as the stepping force is released therefrom and a releasing means for disengaging the ratchet mechanism, wherein the ratchet mechanism comprises a rotational ratchet wheel, a ratchet pawl for intermittently driving the ratchet wheel pitch by pitch and a set of transmission gears for amplifying and transferring the rotational length of each motion pitch of the ratchet wheel to the rear wheel, wherein the stepping lever comprises a horizontal portion, one end of which is hingedly mounted on the frame, a vertical portion extending from the other end of the horizontal portion, and a pin transversely extending from the horizontal portion for hingedly mounting said ratchet pawl whereby the ratchet pawl can be rocked by the stepping force applied on the stepping lever to intermittently push the ratchet wheel to rotate pitch by pitch, wherein the releasing means is disposed above the ratchet pawl and there is a spring stretching between the ratchet pawl and the stepping lever whereby the ratchet pawl can be moved downwardly and disengaged from the ratchet wheel by the releasing means when the stepping force is in a released state and retrieved to the original position and engaged with the ratchet wheel by the spring as the stepping force is applied on the stepping lever, and wherein the stepping lever further comprises a second horizontal portion transversely extending from an end of the vertical portion to a position above a mid-portion of the frame, a second vertical portion extending from the second horizontal portion and a pedal hingedly linked at the top end of the second vertical portion.

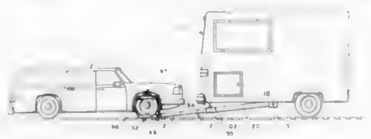
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,015

APPARATUS FOR TOWING A VEHICLE

Larrey Carr, 483 E. Springer La., Lodi, Calif. 95240, assignor to Larrey Carr, Lodi, Calif. and Fredrick R. Meyers, both of Lodi, Calif.

Filed Jun. 11, 1987, Ser. No. 60,647
Int. Cl.[4] B60P *3/06*
U.S. Cl. 280—402 9 Claims



1. An apparatus for towing a second vehicle, which is designated the towed vehicle, which apparatus is stowed underneath a first vehicle, designated the towing vehicle, said towing vehicle having an undercarriage and a frame, said apparatus comprising.

a first elongated hollow member pivotally mounted to the undercarriage of the towing vehicle extending generally longitudinally along the central longitudinal axis of the towing vehicle from a first position forwardly of the rear end of the towing vehicle to a second position adjacent the rear end of the towing vehicle and pivotally movable from a first stowed position generally parallel to the plane of the undercarriage of the towing vehicle to a second operative position angled downwardly toward the rear of said towing vehicle;

a second elongated member telescopingly mounted in said first first elongated member and movable from a first position disposed internally of said first elongated member to a second position extending out of said first elongated member away from the rear end of said towing vehicle;

said second elongated member having an end for mounting another member thereto;

first elongated member raising and lowering means operatively engaging said first elongated member for selectively raising and lowering the same;

telescoping and extending means operatively engaging said first and second elongated members for selectively telescoping and extending said second elongated member with respect to said first elongated member;

a cross-member secured to the end of said second elongated member extending out of said first elongated member and extending generally transverse thereto;

a first towed vehicle wheel support member mounted at one end of said cross-member for receiving one of the front wheels of the vehicle to be towed thereon; and

a second towed vehicle wheel support mounted at the other end of said cross-member for receiving the other of the front wheels of the towing vehicle to be towed thereon;

wherein said first elongated member raising and lowering means includes a chain having one end fixed to said first elongated member and its other end fixed to the frame of said vehicle,

and said raising and lowering means further includes a pulley rotatably mounted on the frame of said towing vehicle receiving said chain thereover, an hydraulically actuated ram mounted on the frame of said towing vehicle, which ram has a piston rod extending in a direction generally parallel to the plane of the undercarriage of the towing vehicle and having a sheave about which said chain extends between said pulley and the other end of said chain whereby,

actuation of said last-mentioned ram moves said chain to thereby selectively raise and lower said first elongated member connected to said chain.

4,761,016

AUTOMATIC VEHICLE WITH FORWARDLY MOUNTED TOOL ASSEMBLY AND STEERING SYSTEM FOR GUIDING THE TOOL ASSEMBLY

Laurent Groud, Hallignicourt, France, assignor to Champenois S.A., Eurville, France

Filed May 12, 1986, Ser. No. 863,827
Claims priority, application France, May 13, 1985, 85 07337
Int. Cl.[4] B62D *1/02;* A01B *69/08*
U.S. Cl. 280—467 2 Claims



1. An automatic vehicle with a tool assembly mounted forwardly thereof and a steering system for guiding the tool assembly

comprising a pair of steering knuckles each pivotally mounted to a frame of said vehicle, each said knuckle bearing a front wheel of said vehicle and each having an arm pivotally mounted to respectively opposite ends of a first tie rod, and said tool assembly extending forwardly of said vehicle and connected to said vehicle frame, a connecting member (7) having a first end fixed to said tool assembly and being pivotally mounted, intermediate its length, to said vehicle frame at an intermediate pivot point, said tool assembly being laterally movable with respect to said vehicle frame about said intermediate pivot point, and a second tie rod (10) having a first end pivotally mounted to one of said arms of said pair of steering knuckles and a second end pivotally mounted to a second end of said connecting member (7).

4,761,017

SUPPORT SYSTEM FOR A STEERABLE VEHICLE WHEEL WHICH MAY ALSO BE A DRIVING WHEEL, AND ITS APPLICATION, IN PARTICULAR, TO AN AMPHIBIOUS VEHICLE

Philippe Claux, 26 rue Marcelle Tinayre Palisse, 19360 Malemort Sur Correze, France

Filed Oct. 22, 1987, Ser. No. 113,126
Claims priority, application France, Oct. 31, 1986, 86 15186
Int. Cl.[4] B60G *3/22;* B60F *3/00*
U.S. Cl. 280—660 6 Claims



1. A support system for a steerable vehicle wheel, the system comprising:

an oscillating arm having a first end fitted with means for mounting the oscillating arm to pivot relative to the body of a vehicle in a direction which is substantially parallel to a longitudinal axis of the vehicle, and having a second end with a wheel bearing support mounted thereon, said wheel bearing support being mounted to swivel about a swivel axis mounted on the oscillating arm;

oscillating arm positioning means for maintaining the oscillating arm in a predetermined average position;

means for controlling the orientation of the wheel bearing support about the swivel axis;

a member for compensating the inclination of the oscillating arm, said member being mounted to pivot about a shaft which is fixed perpendicularly to the oscillating arm, and connecting the swivel axis to the oscillating arm; and

a link member hinged both to the inclination compensating member and to the vehicle body in order to constitute together with the oscillating arm a hinged parallelogram;

said link member including a longitudinal axis about which it is mounted to rotate, and the end of the link member adjacent to the inclination compensating member being connected to the wheel bearing support via a linkage structure.

4,761,018

VEHICLE WHEEL MOUNTING ASSEMBLY

Joseph A. Abbruzzi, Oakland County, Mich.; John D. Dougherty, Stark County, and Vikram M. Marballi, Warren County, both of Ohio, assignors to The Timken Company, Canton, Ohio

Filed Feb. 18, 1987, Ser. No. 16,133
Int. Cl.[4] B60B *35/00*
U.S. Cl. 280—674 4 Claims



1. In a mounting assembly for a vehicle wheel in which the mounting assembly includes a unitary inner member for connection to an axle member and presenting a flange for supporting the wheel, a unitary outer member presenting a surface to which a strut is secured for supporting the mounting assembly on the vehicle and a wheel control arm, and anti-friction bearings between the inner and outer members, the improvement in the mounting assembly wherein:

(a) said outer unitary member is formed with a plane flat surface presented to the axle member and the strut, said surfce having a recess therein opening outwardly adjacent the location of the axle member;

(b) a ball joint presented to said recess and extending outwardly from said surface; and

(c) socket means carried by said surface in position to retain said ball joint in said recess.

4,761,019

STEERING KNUCKLE ASSEMBLY

Robert G. Dubensky, Dearborn, Mich., assignor to Chrysler Motors Corporation, Highland Park, Mich.

Filed Sep. 4, 1987, Ser. No. 93,444
Int. Cl.[4] B62D *7/00*
U.S. Cl. 280—674 3 Claims



1. A steering knuckle assembly including a steering knuckle comprising a unitary sheet metal, generally cup-shaped member having a bottom wall, substantially continuous side wall structure extending outwardly in one direction from the bottom wall, a pair of generally vertically extending cup-shaped oppositely disposed control arm channels defined by the bottom wall and side wall structure, the control arm channels being symmetrical about the horizontal axis of the steering knuckle, a generally cup-shaped horizontally extending steering arm channel extending from the mid-point of the steering knuckle, the steering knuckle being usable as a left hand or right hand steering knuckle by orienting the steering arm channel to point in one direction or the other, a ball joint mounted in each of the control arm channels and steering arm channel, upper and lower control arms connected to the ball joints in the control arm channels, and a steering tie rod connected to the ball joint in the steering arm channel, the ball joints serving as structural reinforcement for the channels.

4,761,020

AIR SUSPENSION SYSTEM

Hans G. Eckel, Hirschberg, and Willi Schweikert, Heidelberg, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Mar. 30, 1987, Ser. No. 31,424
Claims priority, application Fed. Rep. of Germany, Jul. 1, 1986, 3622017
Int. Cl.[4] B60G *11/26;* F16F *15/04*
U.S. Cl. 280—714 8 Claims

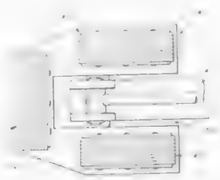


1. An air actuated system for suspension of a vibrating body on a base comprising, in combination:

VOL 1093 ISS 1 AUG 2 1988 UMI

(a) an air spring with an air filled interior and mechanically coupled between said body and said base;
(b) control valve means for selectively connecting said air spring to a compressed air reservoir or to the atmosphere, said control valve means including:
(1) a control valve, selectively connecting said interior of said air spring to said compressed air reservoir or to said atmosphere;
(2) a movable control piston having front and rear surfaces, said piston being acted upon on its front surface by an internal pressure of said air spring and on its rear surface by an adjusting pressure, said control piston being connected to actuate said control valve so as to compensate vibration-caused pressure variations in said air spring by the additional infeed or the blow off of compressed air, respectively, to and from said interior of said air spring;
(3) a pressure chamber arranged to apply said adjusting pressure against said rear surface of said movable piston;
(4) a signal responsive inlet valve selectively connecting said pressure chamber to the compressed air reservoir;
(5) a signal responsive outlet valve selectively connecting said pressure chamber to the atmosphere;
(c) means, connected to said inlet valve and said outlet valve, for determining the relative displacement of said body and said base and producing a signal representing said relative displacement;
wherein said signal is applied to said inlet valve and said outlet valve in order to prevent a slow deplacement of said body from the middle position with respect to said base.

4,761,021
STABILIZER PAD FOR EARTHMOVING APPARATUS
Andry Lagsdin, 54 King Hill Rd., Hanover, Mass. 02339
Filed Jun. 3, 1986, Ser. No. 870,099
Int. Cl.[4] B60S *9/02*
U.S. Cl. 280—764.1 12 Claims

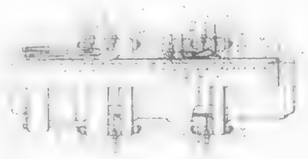


1. For an earthmoving apparatus having at least one support arm, a stabilizer comprising a plate-like piece having alternate surfaces one of which is resilient and the other of which includes a flanged web, and means pivotally supporting said piece to an end of said arm, said piece being provided with a cut-away section, said piece being revolvable through at least 180° relative to said support means between alternative positions wherein either said resilient surface is facing downwardly or said flanged web is engaging the ground, said resilient surface defined by a resilient pad means of laminate construction including a plurality of stacked pieces and means for retaining the pieces in a fixed laminate array,
said stacked pieces forming the laminate construction comprising rubber pieces with a cord base, said means for retaining comprising an open metal pocket comprised of a pair of angle irons having opposed ends between which the stacked pieces are compressed and base legs upon which the stacked pieces are held, said angle irons being forced together to compress the stacked pieces, pin means comprising a plurality of securing pins extending through holes in the opposed ends of the angle irons and also extending through holes in the laminate pieces while the angle irons are forced together, and weld means at the end of each securing pin to hold the pin at each end to the angle iron while maintaining the stacked pieces compressed.

4,761,022
SUSPENSION CONTROLLER FOR IMPROVED TURNING
Kaoru Ohashi, Okazaki; Chiaki Hamada, Susono; Hiroshi Kawakami; Yutaka Hirano, both of Toyota, and Zensaku Murakami, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan
Filed Feb. 24, 1987, Ser. No. 17,747
Claims priority, application Japan, Mar. 8, 1986, 61-51214; Aug. 6, 1986, 61-184873; Aug. 8, 1986, 61-187335; Dec. 15, 1986, 61-298530
Int. Cl.[4] B62D *9/02;* B60G *17/08*
U.S. Cl. 280—772 15 Claims

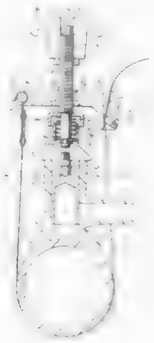
1. A controller for suspensions of a vehicle, comprising:
an actuator provided between the body and every wheel of the vehicle;
means for sensing a turning condition of the vehicle, the turning condition including a steering angle; and
control means responsive to the sensed turning condition for driving the actuators in order to control the allotment ratio between the front and the rear axles of the load shift between the right and the left wheels so as to control steering characteristics of the vehicle.

4,761,023
TELESCOPING JOINT
John N. Troxell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Dec. 24, 1986, Ser. No. 945,885
Int. Cl.[4] F16L *35/00*
U.S. Cl. 285—18 11 Claims



1. A telescoping joint comprising
an inner tubular member,
an outer tubular member having an inner diameter sufficiently large to receive the inner tubular member therein,
a plurality of seals being spaced apart axially and positioned between the interior of the outer tubular member and the exterior of the inner tubular member and having different effective sealing diameters to establish a joint extending area and a joint retracting area therebetween,
means for supplying fluid under pressure to said extending and retracting areas to cause relative extension and retraction movement of said members,
engaging means carried by said outer tubular member,
pressure responsive cam means coacting with said engaging means to lock and release said engaging means to and from said inner tubular member,
a metal-to-metal seal for sealing between said inner and outer tubular members,
said seal being positioned in an area between said tubular members which has a decreasing radial dimension in one axial direction,
said seal being U-shaped ring with its legs facing in the direction of the internal pressure from the inner tubular member, and
pressure responsive means for setting said seal by movement in the narrowing axial direction to move the seal into sealing engagement with the tubular members and for releasing said seal by movement in with widening axial direction to move the seal from its sealing engagement.

4,761,024
CLAMP ASSEMBLY
Alexander T. E. Ewes, Nazing, Great Britain, assignor to Glynwed Tubes & Fitting Limited, Great Britain
Filed Oct. 16, 1986, Ser. No. 919,847
Claims priority, application United Kingdom, Oct. 16, 1985, 8525434
Int. Cl.[4] F16L *41/00*
U.S. Cl. 285—93 15 Claims



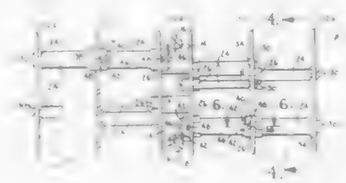
1. A clamp assembly for temporarily clamping a tapping tee saddle to a pipe, said assembly comprising a platform, a pressure member connected to the platform, flexible retaining means for extending around a portion of the pipe opposite to the tapping tee saddle and to be secured to the platform to retain the pressure member on the tapping tee saddle, control means which is adjustable relative to the platform for exerting clamping pressure in an axial direction on the tapping tee saddle through the pressure member by reaction against the flexible retaining means, and indicating means for indicating when a desired clamping pressure is being exerted on the tapping tee saddle.

4,761,025
METHOD AND APPARATUS FOR DISTRIBUTING THE LOAD BETWEEN SECTIONS OF A VERTICAL COLUMN
Erwin J. Nualist, Penfield, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio
Continuation of Ser. No. 668,588, Nov. 5, 1984, abandoned. This application Aug. 7, 1987, Ser. No. 83,704
Int. Cl.[4] F16L *13/04*
U.S. Cl. 285—114 7 Claims



1. A load sharing means for distributing the weight load in a cylindrical vertical column having a plurality of sections each having side portions and end portions comprising:
(a) a rigid radially extending annular member rigidly attached to the side portions of each section to be joined, said members positioned adjacent the end portion of each section to be joined;
(b) a sealing gasket positioned between the end portions of said adjacent sections;
(c) a clamping means contacting said adjacent sections urging said end portions into sealing engagement with said gasket;
(d) means, independent of said clamping means, to rigidly secure and maintain the annular member on an end of one section in a desired spaced relation to the annular member on an adjacent section, whereby a rigid span is formed around the juncture of the sections thereby holding said sections in a fixed, spaced, relation to each other, thereby distributing the weight load from the gasketed juncture of the sections to the side portions of the column body.

4,761,026
BALL RETRIEVER
Roland R. Warden, 301 S. Evergreen, Wichita, Kans. 67209, and Douglas R. Warden, 2221 Farmstead, Wichita, Kans. 67220
Filed Sep. 18, 1987, Ser. No. 98,383
Int. Cl.[4] A63B *47/02*
U.S. Cl. 294—19.2 20 Claims



1. A device for retrieving golf balls, comprising:
a plurality of disks;
means for connecting said disks in a manner permitting the disks to slide toward and away from one another along a longitudinal axis centered on the disks between an expanded condition wherein adjacent disks are spaced apart sufficiently to receive and grip a golf ball therebetween

VOL 1093 ISS 1 AG 2 1988 UMI

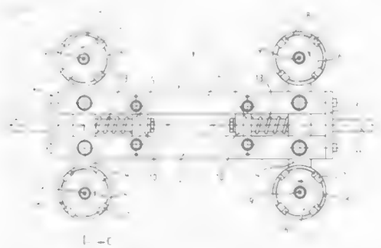
and a collapsed condition wherein the spacing between the disks is reduced;
said connecting means comprising a plurality of rigid bars each connected at one end to one of said disks and each extending parallel to and outboard of said longitudinal axis;
said connecting means further comprising means for establishing a sliding connection between each bar and disks other than the one disk to which the bar is connected to thereby permit the disks to slide longitudinally along the bars between the expanded and collapsed conditions;
a handle; and
means for coupling said handle with said disks in a manner permitting the disks to rotate relative to the handle so that the disks can roll on a surface in the expanded condition to pick up golf balls between adjacent disks.

4,761,027

DEVICE FOR PICKING UP FLEXIBLE AND/OR POROUS AND/OR STICKY FLAT ARTICLES OR SHAPES

Heinz Gehrig, Kaiserslautern, Fed. Rep. of Germany, assignor to Hoesch Maschinenfabrik Deutschland AG, Dortmund, Fed. Rep. of Germany

Filed Apr. 1, 1987, Ser. No. 33,508
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1986, 3611101
Int. Cl.[4] B65H *3/22*
U.S. Cl. 294—61 5 Claims



1. A device for picking up flexible and/or porous and/or sticky flat articles or shapes with gripping means secured to the end of a movable robot arm, comprising: at least two grippers facing each other in a plane on a frame; gripper pins mounted on said two grippers; said pins mounted on said grippers being in shape of an arc of a circle; pins associated with one gripper being oriented in form of a multiple screw thread; said grippers being rotatable about a vertical axis so that said gripper pins are insertable into and extractable from flat articles along a helical path; a centering pin positioned on each gripper in an axis of rotation of said gripper pins; opposing grippers being rotatable in opposite directions; single-layer material as well as stacks of material with a plurality of layers being grippable and transportable for one and the same gripper pin setting.

4,761,028

SINGLE-PIECE TWEEZERS

David H. Dulebohn, Tonka Bay, Minn., assignor to Andrew Tool Company, Plymouth, Minn.

Filed May 11, 1987, Ser. No. 49,110
Int. Cl.[4] A61B *17/30, 17/32*
U.S. Cl. 294—99.2 21 Claims

1. A single-piece tweezers body means comprising:
a unitary body member including a heel end portion and first and second generally parallel, elongated, spaced apart arm portions, each having first and second corresponding ends, and facing surfaces between the ends, said arm portions formed integrally with the heel end portion at said first ends, said unitary body member being comprised of one piece of high tensile strength, rigid yet resilient material;
said arm portions being comprised of rear sections generally thin, elongate, and flat with respect to the facing surfaces of the arm portions having a thin cross-section and extending from the heel end portion to handle sections,
the handle sections also being generally elongate and flat but of thicker cross-section than the rear sections, the handle sections extending to working end sections which are elongate and thin in width and length and narrower in cross-section than the handle sections;



said arms diverging slightly away from one another at or around the junction of the rear and handle sections, and converging slightly at or around the junction of the handle and working end sections; and
protrusions extending perpendicularly from the inner-facing surfaces of the handle sections of the arm portions which come into abutment upon closing the tweezers body means to serve as stops to prevent gapping of the working end sections of the arm portions of the tweezers body means

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4,761,029

SKI BOOT CARRIER

Edward J. Woodcock, 52 Concord St., Providence, R.I. 02904

Filed Aug. 31, 1987, Ser. No. 91,405
Int. Cl.[4] B65D *63/18*
U.S. Cl. 294—148 10 Claims



1. A device for holding and carrying boots such as ski boots comprising a substantially rigid upright hollow frame adapted to receive the forward portions of a pair of said boots aligned side by side, said frame including a lower run adapted to engage the soles of said pair of boots and an upper run adapted to engage upper forward portions of said pair of boots, a substantially rigid elongated carrying member having upper and lower ends, said carrying member having a gripping handle at said upper end and connected to said frame at the lower end, said carrying member extending upwardly rearwardly from said lower frame run so as to essentially divide said frame into individual boot receiving sections and adapted to extend upwardly between said pair of boots, and means for restraining the upper portions of said pair of boots connected to said carrying member proximal the upper end thereof.

4,761,030

CONVERTIBLE WINDBREAK

Kanda Boykin, 86 Barbaree Way, Tiburon, Calif. 94920

Filed Nov. 4, 1986, Ser. No. 927,330
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—1 S 6 Claims



1. A windbreaking device for a convertible automobile having seatbacks extending generally vertically relative to said automobile, said seatbacks defining a first cross-sectional area in the plane of their vertical extension, said windbreaking device comprising:
a partition member comprising an envelope member conditioned for placement over said seatbacks and to cover said seatbacks with a windblocking material, so that said partition member defines a second cross-sectional area in the plane of said seatback's vertical extension which is greater than said first cross-sectional area.

4,761,031

FLATBED SEMI-TRAILER VEHICLE

John C. Rowe, Otterbein, and Floyd D. Melchi, Remington, both of Ind., assignors to Truck Trailer Design, Inc., Remington, Ind.

Filed May 22, 1987, Ser. No. 53,257
Int. Cl.[4] B62D *33/02*
U.S. Cl. 296—182 7 Claims



1. A flatbed vehicle comprising longitudinally extending load bearing support frame means and a series of at least two cross support members extending transversely of and supported above said support frame means and extending substantially the entire width of the vehicle for receiving and supporting freight loads, said vehicle being free of any decking or the like overlying said cross support members.

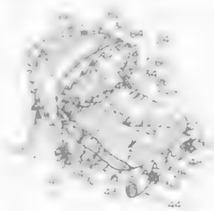
4,761,032

INFANT SEAT COVER

Florence J. Sanchez, and David L. Sanchez, both of 2381 Second St., LaVerne, Calif. 91750

Filed Mar. 27, 1987, Ser. No. 30,509
Int. Cl.[4] A47C *31/10*
U.S. Cl. 297—229 15 Claims

1. A cover for an infant seat including a relatively rigid infant body support having a seat portion with a front end, a back portion with an upper end, and upstanding side walls along the longitudinal sides of said seat and back portions, said cover comprising:
a pad having front and rear sides opposite head and foot ends, and longitudinal side wall portions for covering said body support with said foot end of the pad located adjacent the front end of said body support seat portion, the head end of the pad located adjacent the upper end of said body support back portion, and said side wall portions of the pad overlying said body support side walls,



a panel at the rear side of said pad and joined to the pad along its head end and longitudinal sides and forming with and at the rear of the pad a head end pocket for receiving the upper end of the infant seat back portion and longitudinal side pockets for receiving the infant side walls, and
a blanket joined at one end to said foot end of said pad and adapted to be folded back over the pad for covering an infant positioned in the body support and gathered at the foot end of the pad to uncover the infant.

4,761,033

CHAIR

Max Lanuzzi, Ponte Capriasca, and Fredi Dubach, Baretswil, both of Switzerland, assignors to Drabert Sohne GmbH & Co., Minden, Fed. Rep. of Germany

Filed May 20, 1987, Ser. No. 52,436
Claims priority, application Fed. Rep. of Germany, May 26, 1986, 3617624
Int. Cl.[4] A47C *1/024*
U.S. Cl. 297—316 8 Claims



1. A chair comprising:
a seat support (7);
a back rest support (14*a*) which is pivot-hinged to said seat support (7);
a seat plate (11) connected to said seat support (7) by means of a rear and a front guide rod (10,12);
a stationary back rest angle support (1) connected to said seat support (7) by means of a front and a rear parallelogram guide rod (3), said parallelogram guide rods (3) being connected with joints to each other by means of a parallel guide rod (4) extending therebetween;
a first force storage member (5) arranged to act between said seat support (7) and said back rest angle support (1); and,
a second force storage member (15) arranged to act between said back rest support (14*a*) and said seat support (7).

VOL 1093 ISS 1 AG 2 1988 UMI

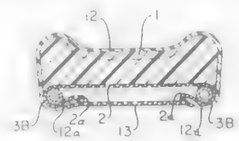
4,761,034
HEAD REST UNIT
Tetsuo Saito, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Japan
Continuation of Ser. No. 671,297, Nov. 14, 1984, abandoned. This application Jan. 16, 1987, Ser. No. 5,317
Int. Cl.[4] A47C *7/38*
U.S. Cl. 297—408 3 Claims



1. A head rest unit for use with a vehicle seat, comprising:
a head rest stay, the head rest stay being planar and being supportingly mounted on the vehicle seat, said head rest stay having an axis member mounted on the upper portion thereof and a bracket mounted on the uppermost end portion thereof, the axis member and bracket being situated on the head rest stay in spaced apart relationship, the axis member having an axis bar mounted thereon, the bracket having an axis pin mounted thereon;
a main frame pivotally mounted on said axis bar of said axis member to allow the main frame to be inclinably positionable with respect to the head rest stay, said main frame having a front surface and a rear surface opposite the front surface, and an opening formed in the front surface thereof;
friction means mounted on said main frame for providing the main frame with a given frictional resistance as the main frame moves inclinably with respect to the head rest stay;
an auxiliary frame having a width which is larger than the width of said opening of said main frame, a portion of said auxiliary frame being movably mounted within said opening in such a manner that the upper part of said portion is pivotally mounted to said main frame, the auxiliary frame being pivotally mounted to the main frame at a pivot point which is continuously disposed on only one side of the plane in which the head rest stay resides as the main frame is inclinably positioned with respect to the stay; and
a linking mechanism for causing said auxiliary frame to pivotally move toward and away from said main frame in response to the inclination of said main frame with respect to the head rest stay, said linking mechanism including arm means, said arm means being disposed adjacent to the bracket axis pin in such a manner that the lower part of said portion of said auxiliary frame is pivotally coupled to said arm means, wherein pivotable movement of the main frame causes the auxiliary frame to pivotlly move relative to the main frame to provide an unvarying contact area for supporting the head of the vehicle seat occupant.

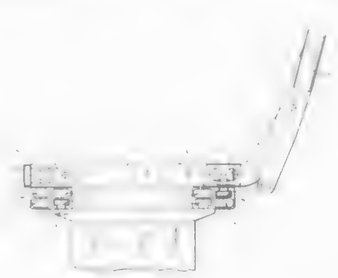
4,761,035
SEAT CUSHION ASSEMBLY
Muneharu Urai, Tokyo, Japan, assignor to Tachikawa Spring Co., Ltd., Tokyo, Japan
Continuation-in-part of Ser. No. 813,004, Dec. 24, 1985, abandoned. This application Jul. 13, 1987, Ser. No. 72,528
Int. Cl.[4] A47C *7/14, 7/18*
U.S. Cl. 297—452 9 Claims

1. A seat back assembly for automobiles comprising:
a pair of spaced vertically directed frame members,
a resilient contoured cushion member having front, side and back surfaces, said cushions member being positioned in front of said frame members,
a trim cover covering the front and sides of said cushion member and extending partly turned around said frame members,
a back cover of substantially no stretchability secured to the



edges of said trim cover providing a soft back covering to the seat back assembly, and
a stretchable, tensioned support member located between said cushion member and said back cover, said support member and said back cover being associated to form a bag which is mounted onto said frame members under tension.

4,761,036
PASSENGER SEAT SUPPORT STRUCTURE
Ignaz Vogel, Karlsruhe-Stutensee, Fed. Rep. of Germany, assignor to Ignaz Vogel GmbH Co., KG, Karlsruhe, Fed. Rep. of Germany
Filed Jul. 6, 1987, Ser. No. 70,307
Claims priority, application European Pat. Off., Oct. 1, 1986, 86113514.3
Int. Cl.[4] A47C *7/02*
U.S. Cl. 297—452 3 Claims



1. A vehicle seat support arrangement for passenger vehicles on land, water or in the air, comprising a seat support structure carrying a number of seats and backrests mounted on said seats, said seat support structure including support legs, a transverse frame structure mounted on said support legs and consisting of two essentially tubular spaced parallel profile struts of quadrilateral cross-section and at least one quadrilateral support frame mounted on said profile struts and seat and backrest members mounted on said support frame, said profile struts having two partial box spar sections each having a closed cross-sectional shape and two C-shaped track sections integral with the box spar sections, all arranged along opposite edges of said profile struts such that said C-shaped track sections overlay said partial box spar sections with their tracks being open in opposite directions, and said quadrilateral support frames comprising tubular members of quadrilateral cross-section disposed edgewise on said profile struts, said support legs and said quadrilateral support frames being mounted to said profile struts by groove bolts disposed slidably in the grooves of the C-shaped track sections of the profile struts so as to form together a rigid yet lightweight support arrangement.

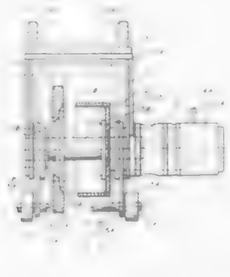
4,761,037
WATER JET DEMOLITION APPARATUS AND METHOD
Renzo Medeot, via Scapacchio, 35030 Selvazzano (Padova), Italy
Continuation-in-part of Ser. No. 746,954, Jun. 20, 1985, Pat. No. 4,637,656. This application Apr. 15, 1986, Ser. No. 852,177
Claims priority, application Italy, Jul. 3, 1984, 21737 A/84
The portion of the term of this patent subsequent to Jun. 20, 2004, has been disclaimed.
Int. Cl.[4] E21C *25/60;* E01C *23/12*
U.S. Cl. 299—1 13 Claims



1. Hydraulic demolition apparatus comprising a nozzle at one end of a hollow rod, said rod being supported by an articulated joint and connected to a device provided movement; at least one high-pressure pump for supplying water to said nozzle; means for degassing the water supply to said nozzle upstream from said pump; said degassing means comprising an elongated tank, a filtering system and a spray inducing element arranged for spraying water into said tank, said tank having a screen for preventing the drops produced by said element from passing out of said tank and a level adjuster which controls the input of water to said spraying means; means for keeping said nozzle at a constant pre-set distance from the surface to be demolished; and means for eliminating substantially all obstacles to the free flow of the water jet against the surface to be demolished.

6. A method for demolishing a surface comprising the steps of:
substantially degassing a supply of water including the steps of spraying water inside a tank having a screen therein for preventing the drops produced by the spray from passing out of the tank, sensing the level of water in the tank, and controlling the input of water to be sprayed in accordance with the sensed level of water in the tank;
pressurizing the water;
feeding the pressurized water to at least one treatment nozzle for ejection at the surface;
moving said nozzle across the surface in a predetermined pattern; and
maintaining distance between said nozzle and the surface at a predetermined amount while continuously adjusting the path of said nozzle to conform the topography of the surface.

4,761,038
SURFACE WORKING ACCESSORY
Alfred Hackmack, AM Deich 30, D-2095 Obermarschacht, Fed. Rep. of Germany
Filed Apr. 11, 1983, Ser. No. 483,494
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213898
Int. Cl.[4] E01C *23/09*
U.S. Cl. 299—10 14 Claims



1. A multi-function accessory for the boom of ground or road working equipment, comprising:
a frame arranged for attachment to said boom;
a shaft rotatably mounted in said frame;
a motor mounted on said frame for rotating said shaft; and
at least one of a plurality of functionally different rotary tools for engaging said ground or road detachably mounted on and driven by said shaft, said shaft being adapted to interchangeably support and rotate any one of said plurality of different rotary tools.

10. A method for using either one of a pair of functionally different rotary tools in a boom of ground or road working equipment having a power source, comprising the steps of:
rotatably attaching a first one of said rotary tools to said boom;
rotating said tool with power from said power source;
adjusting said boom to press said tool against a surface; and
replacing said first one of said functionally different rotary tools with a second one of said functionally different rotary tools.

4,761,039
CUTTING HEAD FOR REMOVING MATERIAL WITH A HIGH VELOCITY JET OF WORKING LIQUID
John A. Hilaris, Elmhurst, Ill., assignor to Hydro-Ergon Corporation, Chicago, Ill.
Division of Ser. No. 837,277, Mar. 7, 1986, abandoned. This application Jul. 21, 1987, Ser. No. 76,146
Int. Cl.[4] E21C *37/12, 25/60;* B05B *1/28*
U.S. Cl. 299—39 24 Claims

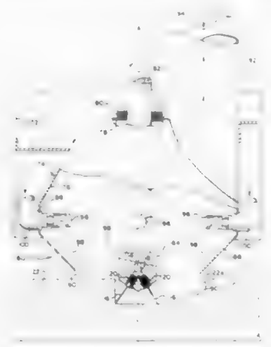
1. A liquid cutting head for removal of workpiece material with a high velocity jet of working liquid, comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

a nozzle having an inlet for receiving working liquid at high pressure from the end of a supply conduit and an outlet forming and directing said working liquid into a thin, high velocity stream for impact against said workpiece material;

suction hood means extending around said nozzle for picking up material that is removed from said workpiece along with spent working liquid from said nozzle, said suction hood means including a hood having a frustoconical segment extending outwardly around said conduit, said hood including an inlet opening around said nozzle for entry of said material and working liquid picked up from said workpiece when impacted by said high velocity liquid jet; and

liquid curtain means around said nozzle for entrapping and wetting said workpiece material for pick up by said suction hood means including means forming a flow of liquid discharged from said hood in a flowing liquid curtain around an edge of said inlet opening.



4,761,040

WHEEL COVER MOUNTING SYSTEM FOR DUAL WHEELS

W. Gordon Johnson, 1339 Greenhills Rd., Greenfield, Ind. 46140

Filed Dec. 8, 1986, Ser. No. 938,793

Int. Cl.[4] B60B 7/00

U.S. Cl. 301—37 S 7 Claims



1. A wheel cover mounting system for mounting a wheel cover on a wheel, the wheel including a center with a concentric upstanding portion which projects outwardly therefrom along the wheel's axis and terminates at a generally radially extending surface, the generally radially extending surface including a plurality of circumferentially spaced threaded holes, the mounting system including a plurality of rods having inner ends and outer ends, the inner ends being threaded for threaded engagement into respective ones of the circumferentially spaced threaded holes, the outer ends of the rods including first engagement means, a wheel cover mounting plate including complementary engagement means for engaging the first engagement means, the wheel cover mounting plate further including third engagement means and the wheel cover including complementary fourth engagement means for engaging the third engagement means, a cover for the outer end of the upstanding portion, the cover including a plurality of holes capable of alignment with respective ones of the circumferentially spaced threaded holes, the inner ends of the rods passing through selected ones of the plurality of holes in the cover, and stop means adjacent the threaded inner ends of the rods, the cover being captured between the outer end of the upstanding portion and the stop means adjacent the inner ends of the rods.

4,761,041

FLUID PRESSURE CONTROL VALVE FOR VEHICLE BRAKING SYSTEM

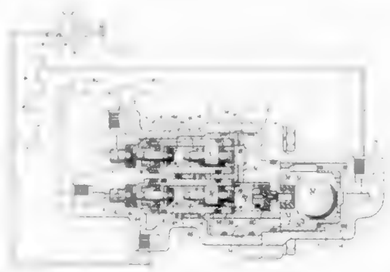
Takashi Nagashima, Aichi, and Eiji Miura, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 29, 1986, Ser. No. 925,113

Claims priority, application Japan, Oct. 29, 1985, 60-165976; Nov. 1, 1985, 60-169625

Int. Cl.[4] B60T 8/00, 13/00

U.S. Cl. 303—9.62 3 Claims



1. A fluid pressure control valve incorporated with dual hydraulic braking circuits connecting a tandem master cylinder to the left and right rear-wheel brake cylinders in a vehicle braking system, the control valve comprising:

a housing provided with first and second inlet ports respectively for connection to said master cylinder and with first and second outlet ports respectively for connection to said rear-wheel brake cylinders;

a pair of proportioning valves disposed within said housing in parallel to one another and arranged respectively between said first inlet and outlet ports and between said second inlet and outlet ports for independently modulating hydraulic pressure applied therethrough to said rear-wheel brake cylinders from said master cylinder, said proportioning valves each being urged toward an open position by means of a spring load acting thereon;

a pair of control plungers each arranged coaxially with said proportioning valves and exposed at their one ends to a hydraulic chamber in communication with one of said inlet ports, said control plungers being axially movable in response to hydraulic pressure applied to the hydraulic chamber to vary the spring load each acting on said proportioning valves; and

a single inertia-controlled valve means disposed within an inlet pressure chamber between the one of said inlet ports and the hydraulic chamber said inertia-controlled valve means being operable to interrupt the flow of fluid under pressure from the inlet pressure chamber into the hydraulic chamber when a deceleration in excess of a predetermined value is attained.

4,761,042

ANTI-LOCK HYDRAULIC BRAKE SYSTEM

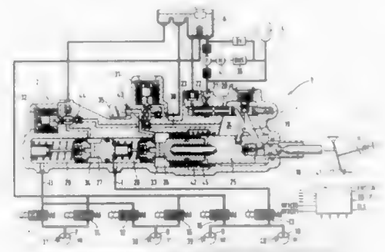
Wolfram Seibert, Pfungstadt; Norbert Ocvirk, Offenbach am Main, and Lutz Weise, Mainz, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1987, Ser. No. 17,560

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1986, 3605997

Int. Cl.[4] B60T 8/88, 8/44, 8/36

U.S. Cl. 303—92 9 Claims



1. An anti-lock hydraulic brake system for motor vehicles having vehicle wheels with wheel brakes with a pedal-actuated hydraulic brake power booster (3) having a booster chamber, with each of two hydraulically isolated static brake circuits connected to a separate working chamber of a tandem master cylinder, with each of two fluid inlet chambers of said master cylinder connected to one of said working chambers via a valve means, and with an auxiliary-pressure supply system (4, 5), wherein in the event of slip control pressure fluid is dynamically introducible into the static brake circuits by way of the booster chamber of the brake power booster, electromagnetically actuatable multi-directional control valves, said fluid inlet chambers, said valve means, and said working chambers, with inlet and outlet valves arranged in the pressure fluid paths leading from the wheel brakes to a brake pressure generator (1) and a pressure compensating reservoir, with a positioning device connected to the pedal for limiting the pedal travel and returning the pedal in the event of a control action and with wheel sensors and electronic switching circuits for the logical linkage and processing of sensor signals and for the generation of electric brake pressure control signals as a function of the rotational behavior of at least one wheel, and including pressure-controlled switches and monitoring switching circuits, wherein the front wheel brakes (7, 8) and the rear wheel brakes (9, 10) are respectively connected to one of the two static brake circuits (I, II), wherein the pressure fluid out of said auxiliary-pressure supply system (4, 5) and said brake power booster (3) is delivered into the two static brake circuits (I, II) from said booster chamber of said brake power booster (3) respectively by way of hydraulically isolated circuits having said multi-directional control valves (31, 32) respectively inserted therein which are switchable independently of each other, wherein the multi-directional control valves, in their inoperative positions, each connect the associated fluid inlet chamber with a pressure compensating reservoir, and, after having been switched over, hydraulically connect said fluid inlet chamber with the booster chamber, and wherein the positioning device (42) is connected to the rear wheel brake circuit (I) and is responsive to the multi-directional control valve (31) controlling the dynamic flow into the static brake circuit of the rear wheel brakes to translate said pedal toward its returned position.

4,761,043

METHOD AND CIRCUIT CONFIGURATION FOR THE CONTROL OF WHEEL SLIP IN VEHICLES WITH ALL-WHEEL DRIVE

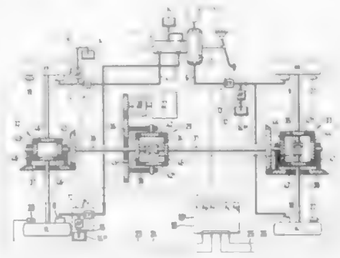
Hans Wupper, Friedrichsdorf, and Gunther Buschaman, Griesheim, both of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 1, 1986, Ser. No. 936,177

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1985, 3542417

Int. Cl.[4] B60T 8/58, 8/60; B60K 17/356, 17/35

U.S. Cl. 303—100 8 Claims



1. A method for the control of wheel slip in a vehicle having a front axle, front wheels, a rear axle, rear wheels, front wheel brakes, rear wheel brakes and a fluid/pressure system controlling said front wheel and rear wheel brakes, an all-wheel drive mechanism including a lockable distribution differential providing a disengagable fixed coupling between the front axle and the rear axle, wheel sensors, a differential lock engagement sensor, and a combining circuit responsive to signals from the wheel sensors and the lock engagement sensor, the method comprising the steps of:

(a) initiating brake slip control and a locked-up condition of said lockable distribution differential in response to a sensed rotational condition of the wheels;

(b) generating a signal indicative of a locked-up condition of said differential; and

(c) preventing any braking pressure rise in the rear wheel brakes for at least a predetermined period of time following the initiation of brake slip control in response to the presence of the differential locked-up condition signal.

4,761,044

FRAME STRUCTURE FOR HOUSING PANEL PLATES

Toyohiko Akama; Masashi Iino, both of Tokyo, and Osamu Igarashi, Yokohama, all of Japan, assignors to Nikko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1987, Ser. No. 93,626

Claims priority, application Japan, Oct. 7, 1986, 61-153117[U]

Int. Cl.[4] E05D 15/58

U.S. Cl. 312—110 4 Claims

1. A frame structure for housing panel plates, comprising:

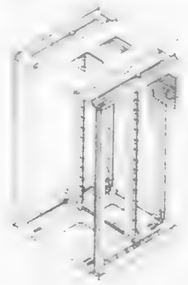
a top plate that is parallel to and spaced from a bottom plate;

a pair of side frame boards vertically disposed between said top and bottom plates, the inner surfaces of said side frame boards that face each other being provided with a plurality of lateral grooves adapted for receiving panel plates, one of said frame boards (4) being immovable and fixed to the top and bottom plates, and the other side frame (5) being movable toward or away from the immovable frame board (4) until it stops at a predetermined position;

a pair of juxtaposed guide rails (19, 19a) provided on the inner surface of each of said top and bottom plates, the movable side frame board (5) being provided with a pair

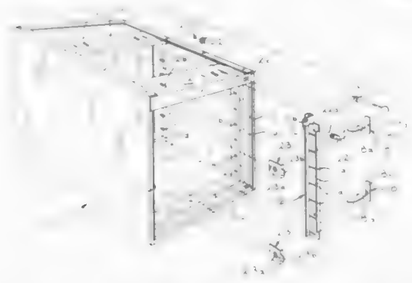
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of sliders (20) which each rides over one of the guide rails so that the movable side frame board is movable along said guide rails by engagement in a rack and pinion relationship, the pinions being rotatably mounted at the four corners of the movable side frame board and being operatively associated with one another in such a manner that the driving of one pinion causes the others to be driven



simultaneously, wherein each of said top and bottom plates is provided with a slot that extends along each guide rail, each of said sliders being provided with an outwardly extended fastening lug through which a tension rod having a flange is received by each respective slot for locking and unlocking the movable side frame board by urging the flange against the slotted plate by operation of a lock lever pivotally mounted to the tension rod.

4,761,045
DRAWER AND CABINET ASSEMBLY
George W. Paine, Manistee, Mich., assignor to Metalworks, Inc., Ludington, Mich.
Filed May 22, 1987, Ser. No. 52,990
Int. Cl.[4] E05B *65/41*
U.S. Cl. 312—219 15 Claims



1. In a drawer and cabinet assembly with an open front from which the drawers are pulled out horizontally and with side walls, a bottom and top defining the cabinet wherein the cabinet supports at least one drawer moveable into and out of the cabinet on dual sliding tracks mounted on the sides of the cabinet which telescope from the open front of the box shaped member and including stop means activated by a key and lock means which move to prevent the drawers from opening by blocking movement of one of the sliding tracks the improvement which comprises:

(a) a vertically oriented recess rectangular in cross-section on one of the sides of and inside the cabinet adjacent the open front;

(b) a rectangularly cross-sectioned slide member positioned in horizontal cross-sectional mating relationship with the recess on the one side of the cabinet with limiting means so that there is limited vertical sliding movement of the slide member in the recess, wherein the slide member has at least one opening along its length facing inside the cabinet;

(c) removable clip means mounted on the cabinet adjacent the slide member and extends across the recess which holds the slide member on the recess and allow vertical sliding movement of the slide member in the recess;

(d) at least one stop member having two perpendicular portions with one portion extending through the opening in the slide member and projecting from the slide member into the inside of the cabinet and moveable with the slide member from a first position where the stop member is vertically spaced from the sliding tracks to a second position where the stop member is in front of the tracks and prevents the sliding tracks from sliding, wherein the other portion of the stop member is a head portion which holds the stop member in the opening in the slide with the head portion extending along the recess; and

(e) lock means with a lever means which projects from the lock means and engages with the slide member, wherein the lever rotates by turning of a key in the lock to move the slide member vertically in the recess to thereby position the stop member to prevent the drawers from opening.

4,761,046
LASER BEAM RECORDING METHOD
Hiroyoshi Funato, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed Apr. 18, 1986, Ser. No. 853,780
Claims priority, application Japan, May 2, 1985, 60-094978; May 16, 1985, 60-104696
Int. Cl.[4] G02B *5/32, 26/10*
U.S. Cl. 350—3.71 27 Claims



1. A method of recording a color image on a recording medium by applying a plurality of laser beams modulated by color image signals representative of mutually differently colored images, respectively, simultaneously to a plurality of photosensitive bodies, respectively, to form latent images thereon which correspond respectively to the color image signals, developing the latent images into mutually differently colored visible images, respectively, and transferring and fixing the visible images to the recording medium, said method comprising the steps of:

providing a hologram disk comprising a circular transparent substrate and a plurality of optically equivalent hologram gratings on a surface of said circular transparent substrate in a single annular pattern;

applying said modulated laser beams to said hologram disk at mutually different positions thereon, each of which is determined by the angles defined by the equations given below:

$$\theta_1 = \frac{\alpha + 2\alpha_1}{\alpha} \times \frac{\theta_s}{?} \quad (1)$$

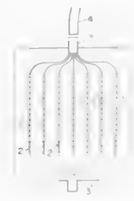
-continued

$$\theta_2 = \frac{\alpha - 2\alpha_1}{\alpha} \times \frac{\theta_s}{2} \quad (2)$$

where α_1 is an angle by which the position is displaced from a beam line on the hologram disk, α is an angle subtended by one sector-shaped hologram grating, θ_s is the entire angle in which the laser beam is scanned by the hologram disk, θ_1 is the angle in which the laser beam is scanned above an optical axis passing through said position, and θ_2 is the angle in which the laser beam is scanned above the optical axis; and

rotating said hologram disk to deflect said laser beams simultaneously.

4,761,047
LIGHT RAYS RADIATION CLOTH FOR MEDICAL TREATMENT
Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan
Filed Nov. 20, 1986, Ser. No. 934,226
Claims priority, application Japan, Jan. 13, 1986, 61-4754
Int. Cl.[4] G02B *6/00*
U.S. Cl. 350—96.1 14 Claims



1. A light rays radiation cloth for emitting light rays from only one surface for medical treatment comprising a flexible basic sheet and a flexible transparent sheet spaced from said basic sheet, a plurality of optical fiber means disposed between said basic sheet and said transparent sheet, a light rays connector for supplying light rays to said optical fiber means, said optical fiber means being in contact with said transparent sheet, said optical fiber means being spaced from said basic sheet, and a titanic oxide membrane disposed between said optical fiber means and said basic sheet such that said titanic oxide membrane precludes light rays emitted by said optical fiber means from passing outwardly through said basic sheet as said light rays emitted from said optical fiber means are dispersed by said titanic oxide membrane to pass outwardly of the radiation cloth through said transparent sheet.

4,761,048
INTEGRATED OPTICS SPECTRUM ANALYZER
Dennis J. Gregoris; Roger Arsenault, and Velimir M. Ristic, all of Toronto, Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada
Filed Apr. 13, 1987, Ser. No. 38,095
Claims priority, application Canada, Apr. 25, 1986, 507667
Int. Cl.[4] G02B *6/12, 6/10*
U.S. Cl. 350—96.11 12 Claims

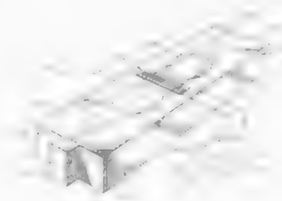
1. An optical waveguide comprising:

a substrate;

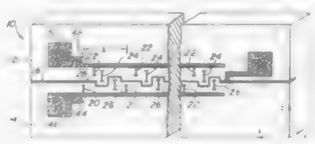
an out-diffused optical waveguide section on a first surface of said substrate;

an in-diffused optical waveguide section on a second surface of said substrate, the depth of said out-diffused section being greater than the depth of said in-diffused section by about one order of magnitude; and

a narrow transition region intimately connecting said out-diffused waveguide section and said in-diffused waveguide section, the width of said transition region along its optical axis being much greater than the wavelength of the optical signal passing through said waveguide.



4,761,049
OPTICAL WAVEGUIDE DEVICE FOR FREQUENCY SHIFTING AND MODE CONVERSION
William K. Burns, Alexandria; Nicholas J. Frigo, Arlington, both of Va., and Robert P. Moeller, Fort Washington, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 30, 1986, Ser. No. 913,430
Int. Cl.[4] G02B *6/10, 5/30*
U.S. Cl. 350—96.14 36 Claims



1. Waveguide device structure comprising:

an optical waveguide formed in an elongated region in a crystalline substrate of birefringent material;

a set of first coupler electrodes disposed along one side of said waveguide at uniform intervals;

a set of second coupler electrodes disposed along another side of said waveguide at uniform intervals;

a set of third coupler electrodes disposed along said another side of said waveguide at uniform intervals;

a set of fourth coupler electrodes disposed along said one side of said waveguide at uniform intervals;

said coupler electrodes forming cascaded stages of four coupler electrodes per stage, first, second, third and fourth coupler electrodes in any stage being so arranged that said first and fourth electrodes are both disposed on said one side of said waveguide and said second and third electrodes are both disposed on said another side of said waveguide;

said third coupler electrode being disposed over a third waveguide zone and said fourth coupler electrode being disposed over a fourth waveguide zone;

said first coupler electrode being disposed over a substrate portion on said one side of said waveguide in laterally spaced relation to a first waveguide zone and said second coupler electrode being disposed over another substrate portion on said another side of said waveguide in laterally spaced relation to a second waveguide zone;

a long electrode extending over a path paralleling said waveguide, said long electrode extending over said substrate to pass around said third and fourth coupling electrodes by winding alternately to each side of both sides of said

VOL 1093 ISS 1 AG 2 1988 UMI

waveguide, said long electrode passing by said first and second coupling electrodes;

said first and third electrodes being interconnected;

said second and fourth electrodes being interconnected.

4,761,050

OPTICAL SWITCHING DEVICE INCLUDING POLARIZATION PRESERVING COUPLER UTILIZING KERR EFFECT AND METHOD OF USING SAME

Kevin C. Byron, Bishop's Stortford, England, assignor to STC PLC, London, England

Filed May 28, 1987, Ser. No. 55,074

Claims priority, application United Kingdom, Jun. 7, 1986, 8613395

Int. Cl.[4] G02B 6/26; H01S 3/115

U.S. Cl. 350—96.15 6 Claims



1. An optical switch comprising an input for an optical signal, an input for a pump optical signal and first and second outputs, a polarisation maintaining coupler to which the two inputs are coupled and means for spatially separating two polarisation states disposed intermediate an output of the coupler and the first and second outputs, wherein in the absence of the pump signal said optical signal is coupled to the first output and wherein in the presence of a pump signal rotation of the polarisation of said optical signal is caused and the optical signal with the rotated polarisation state coupled to the second output.

4. A method of switching an input optical signal between either of two outputs, comprising the steps of applying the input optical signal to a polarisation maintaining coupler to which can be input a pump optical signal and applying the output of the coupler to means for spatially separating two polarisation states, whereby in the absence of the pump optical signal the coupler output is applied to one said output and in the presence of the pump optical signal rotation of the polarisation of the input optical signal is caused and the optical signal with the rotated polarisation state is applied to the other said output.

4,761,051

LONGITUDINAL SEALING DEVICE FOR AN OPTICAL CABLE CORE

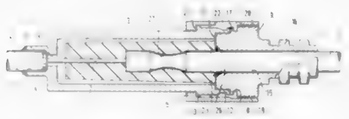
Francois Crespo Ruiz, Paris, and André Pelet, Maurepas, both of France, assignors to Alcatel Cit, Paris, France

Filed Mar. 2, 1987, Ser. No. 21,044

Claims priority, application France, Feb. 28, 1986, 86 02810

Int. Cl.[4] G02B 6/36; H02G 3/00

U.S. Cl. 350—96.20 8 Claims



1. A longitudinal sealing device for the core of an optical cable formed by a bundle of optical fibers disposed in a tube, said device being placed at a location where the tube has been cut into two separate first and second tube portions, said device comprising:

a block of plastic material molded over the optical fibers of the bundle and over the end of the first tube portion;

a sleeve placed around the block of plastic material and having one end fitted around the end of the second tube portion and fixed to said second tube portion and having an opening at an opposite end thereof; and

a plug placed around the first tube portion against the block of plastic material and fixed in a sealed manner to said first tube portion, and fixed to the sleeve and closing the sleeve opening.

4,761,052

OPTICAL FIBRE SPLICE CASE

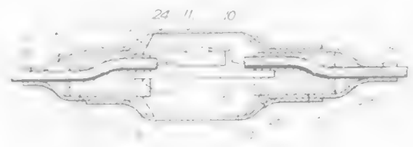
Valere Buekers, Zelem-Halen, and Joris Franckx, Bonheiden, both of Belgium, assignors to N. V. Raychem S.A., Kessel-lo, Belgium

Filed Dec. 23, 1986, Ser. No. 946,393

Claims priority, application United Kingdom, Jan. 31, 1986, [redacted]

Int. Cl.[4] G02B 6/36

U.S. Cl. 350—96.20 18 Claims



1. An optical fibre assembly for enclosing a splice between optical fibre cables, comprising:

means for securing the optical fibre splice;

means for accommodating a loop of fibre, the accommodating means including at least one substantially flat fibre organizing tray;

means for engaging a recoverable article that can be recovered to form an environmental seal that completely surrounds the tray; and

a recoverable article recovered so as to completely surround the accommodating means while maintaining the tray in a substantially flat attitude.

4,761,053

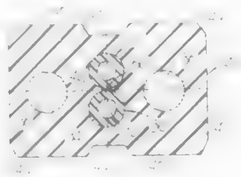
COMMUNICATIONS TRANSMISSION MEDIA

Nicholas J. Cogelia, Duluth; Brian D. Johnson, Norcross; William C. Reed, Lilburn, and Carla G. Wilson, Decatur, all of Ga., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill and AT&T Technologies, Inc., Berkeley Heights, both of, N.J.

Continuation-in-part of Ser. No. 770,041, Aug. 28, 1985, abandoned. This application Apr. 28, 1987, Ser. No. 45,749

Int. Cl.[4] G02B 6/44; H01B 7/08, 11/02

U.S. Cl. 350—96.23 14 Claims



1. A communications transmission medium, which comprises:

at least one conductor which is enclosed with a plastic material;

a jacket which comprises a plastic material and which encloses but does not bond to the plastic material which encloses said at least one conductor, said at least one conductor being adjacent to a longitudinal axis of the jacket which passes through a geometric center of each cross section of the jacket which is transverse to the longitudinal axis, and wherein each cross section is defined by a width and a height with an axis which spans each jacket cross section extending along said width and through the geometric center of the cross section, the height of end portions of the cross section being greater than the height of a center portion which connects the end portions to provide a longitudinally extending trough in said jacket which upon the application of cutting forces thereto facilitates the accessing of the conductor which becomes separated from the jacket because of the non-affinity of plastic material which encloses the conductor and of the plastic material comprising the jacket; and

two non-metallic strength members each of which comprises a plurality of filaments that are gathered together and each of which is impregnated with a plastic material that causes it to be coupled to said jacket, each of said strength members being disposed between the at least one conductor and an outer surface of said jacket and aligned with one of said end portions of said jacket such that the strength members and the longitudinal axis which is interposed therebetween are aligned and wherein each strength member passes through each cross section along the axis which spans the cross section.

4,761,054

INFRARED FIBER CABLE

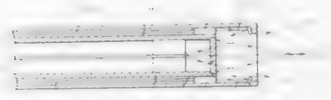
Akira Ishimori; Takashi Yamamoto, both of Hyogo, and Tsuyoshi Kinoshita, Nagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 783,824, Oct. 3, 1985. This application Oct. 7, 1987, Ser. No. 106,926

Claims priority, application Japan, Oct. 4, 1984, 59-207010; May 27, 1985, 60-113475; Jun. 12, 1985, 60-126325

Int. Cl.[4] G02B 23/26

U.S. Cl. 350—96.26 17 Claims



1. An infrared fiber cable comprising:

an infrared fiber adapted to conduct and emit an invisible light;

a light emitting means disposed around said infrared fiber and adapted to emit a visible light for collimation;

a protective tube containing said infrared fiber therein for isolating said invisible light from said visible light; and

a member having spacedly disposed externally forward and rearward surfaces disposed in the path of invisible light and for allowing said invisible light to pass from the inside to the outside of said protective tube through said member, entering said rearward surface and exiting said forward surface thereof, and for allowing said visible light to be reflected from the external forward surface of said member, wherein said light emitting means includes mirror means disposed forward of said member so as to redirect said visible light from a forwardly-directed path to a rearwardly-directed path for direction to the external forward surface of said member.

4,761,055

RETROREFLECTOR FOR THE REFLECTION OF ELECTROMAGNETIC RAYS

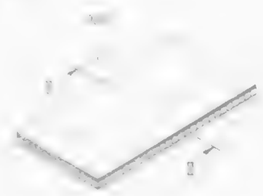
Günter H. Hatje, Hamburg, Fed. Rep. of Germany, assignor to Helmut K. Pinsch GmbH & Co.

Filed Sep. 29, 1986, Ser. No. 912,967

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1986, 8606540[U]

Int. Cl.[4] G02B 5/26, 5/122

U.S. Cl. 350—103 2 Claims



1. A retroreflector for reflecting electromagnetic rays, said retroreflector being suitable for destroying, by reflection or absorption, electromagnetic radiation which could be detrimental to magnetic or other data carriers, said retroreflector being constructed as a flat article comprising:

a base layer formed from metal in the form of a metal foil or sheet, said baselayer having juxtaposed reflectors formed therein as pyramidal point-like indentations or retractions with three boundary faces juxtaposed therein without gaps, said boundary faces forming 90° angles therebetween at engaging edges thereof, filter coatings, made from chromium, brass, silver and/or Mumetal, being applied, as a prefrabricated foil or by evaporation deposition, on the boundary faces of the juxtaposed reflectors, said filter coatings having such a thickness that is suitable for broadband filtering of X, S and VHF band waves; and

top coatings applied to an upper surface and a lower surface of said base layer, said top coatings being substantially planar and made from plastic, metal or precious metal suitable for absorbing electromagnetic radiation, said top coatings being applied as prefabricated foils or by evaporation deposition, wherein, for arranging on building walls and ceilings, said flat article is formed as a surface-covering foil web in which the top coating on the lower surface is suitable for application to a wall while said top coating on said upper surface is suitable for receiving wallpaper or an emulsion.

4,761,056

COMPACT HELMET MOUNTED DISPLAY

Charles D. Evans, Palo Alto; Andrew T. Tiruma, Santa Clara; Eric W. Larkin, Union City, and James E. Melzer, San Jose, all of Calif., assignors to Kaiser Aerospace and Electronics Corporation, Oakland, Calif.

Filed Mar. 27, 1987, Ser. No. 30,495

Int. Cl.[4] G02B 27/14, 17/00; H04N 7/18, 5/72

U.S. Cl. 350—174 12 Claims

1. A display apparatus for use with headgear comprising, in combination:

visor means adapted to attach to said headgear and having at least one concave semi-reflecting curved surface directed inwardly of the headgear and which, when the headgear is being worn, is at or is movable to a position at which it intercepts the forward line-of-sight of an eye of the wearer and is characterized in that the concave semi-reflecting surface is part of a paraboloid having an axis of rotation;

an optical projector above the level of the wearer's eyes, by means of which luminous data is directed at said semi-reflecting surface for reflection thereby to the wearer's eye so that the wearer is presented with a virtual image of

VOL 1093 ISS 1 AUG 2 1988 UMI

the luminous data within a predetermined field of view centered on the wearer's forward line-of-sight, said optical projector adapted to be attached to said headgear;

parabolic mirror means interposed in the optical path from said optical projector to said semi-reflecting surface of said visor, whose shape, dimensions and position are such that rays from said optical projector are reflected in said parabolic mirror means; and



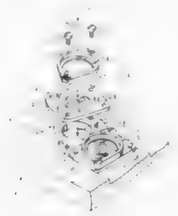
fold mirror means, including first and second fold mirrors, said first fold mirror whose shape, dimension and position enable it to receive the rays from said parabolic mirror means and to direct the rays to said second fold mirror, said second fold mirror whose shape, dimension and position enable it to direct rays received from said first fold mirror to said semi-reflecting surface of said visor.

4,761,057

APERTURE MEMBER FOR PHOTO PLOTTING APPARATUS

Gregory M. Zak, Hamilton Square, and Edward Cuomo, Trenton, both of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 19, 1987, Ser. No. 16,602
Int. Cl.[4] G02B *26/02*; G01J *3/04*
U.S. Cl. 350—273 12 Claims



1. An aperture member for photo plotting apparatus of the type including means for forming and shaping a light beam and means for supporting said member in the path of said beam to alter the beam shape in accordance with the light transmission characteristics of said member, said member comprising:

an opaque substrate; and

means for securing the substrate to said apparatus;

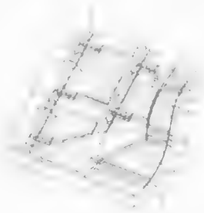
said substrate having a transparent ring which forms said beam into a light ring of uniform thickness, and a transparent cross within said ring defined by intersecting first and second transparent lines located with said ring to further form said beam into a light cross within said ring of light.

4,761,058

BIASING LIQUID CRYSTAL DISPLAYS HAVING CAPACITORS AND TRANSISTORS

Yukitoshi Okubo, Yokohama; Yoshiyuki Osada, Yokosuka; Masao Sugata, Kawasaki; Katsunori Hatanaka, Yokohama, and Takashi Nakagiri, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 632,024, Jul. 18, 1984, abandoned, which is a division of Ser. No. 547,443, Oct. 31, 1983, Pat. No. 4,470,667, which is a continuation of Ser. No. 246,161, Mar. 23, 1981, abandoned. This application Dec. 23, 1985, Ser. No. 814,277
Claims priority, application Japan, Apr. 1, 1980, 55-43101; Apr. 2, 1980, 55-44461; Apr. 8, 1980, 55-45941; May 19, 1980, [illegible]
Int. Cl.[4] G02F *1/133*; G09G *3/36*; H01L *29/78*
U.S. Cl. 350—331 T 6 Claims



1. A method for driving a liquid crystal device comprising a first substrate having a plurality of thin film transistors disposed in a matrix form, a gate line provided at every line of the matrix to connect commonly gates of the thin film transistors, a source line provided at every row of the matrix to connect commonly sources of the thin film transistors, a plurality of first electrodes which connect with every drain of the thin film transistors and serve as a plurality of picture elements, and for every line of the matrix an electroconductive film insulated from the gates and serving as counterelectrodes of respective capacitors each formed of an insulating film disposed between the respective electroconductive film and the first electrode thereof, the gate lines and the electroconductive films being arranged in a pattern such that the gate lines alternate with the electroconductive films, a second substrate having a second electrode opposed to the electrodes serving as picture elements, and a liquid crystal disposed between the first substrate and the second substrate, which method comprises:

(a) applying a driving signal to the gate lines and source lines in accordance with a line-sequential system,

(b) applying a bias voltage lower than a threshold voltage to a terminal of the electroconductive film serving as a counterelectrode of the capacitor, and

(c) changing the bias voltage.

4,761,059

EXTERNAL BEAM COMBINING OF MULTIPLE LASERS

Pochi A. Yeh, Thousand Oaks; Mark D. Ewbank, and Mohsen Khoshnevisan, both of Newbury Park, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 28, 1986, Ser. No. 890,055
Int. Cl.[4] G03H *1/02*; G02F *1/01*; G02B *5/23, 27/10*
U.S. Cl. 350—354 28 Claims

1. A coupled laser system, comprising:

a plurality of substantially parallel beams of coherent radiation;

an output beam of coherent radiation at an oblique angle with respect to the plurality of beams; and

a photorefractive element positioned to receive the plurality of beams and the output beam, the beams being frequency locked to within the photorefractive bandwidth of the photorefractive element such that laser energy is diffracted from the plurality of beams to the output beam by means of two-wave mixing.

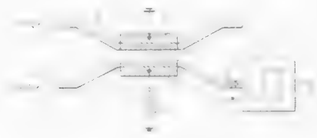


4,761,060

OPTICAL DELAY TYPE FLIPFLOP AND SHIFT REGISTER USING IT

Tsuyotake Sawano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 7, 1985, Ser. No. 795,814
Claims priority, application Japan, Nov. 7, 1984, 59-234538; Nov. 7, 1984, 59-234539
Int. Cl.[4] G02B *5/23, 6/26, 5/30*; G02F *1/01*
U.S. Cl. 350—354 11 Claims



1. An optical D type flipflop for switching incident light beams having variable intensities in response to a source of control signals comprising:

an optical switch means, having a first input end and a second input end adapted to receive said incident beam, at least one output end, and a control means, said switch means being adapted to switchably couple the incident light beams from said first and second input ends to said output end responsive to control signals applied to said control means, and

a bistable optical means optically coupled to said output end of said optical switch and responsive to the intensity of said incident light beams for generating two stable light outputs, wherein:

said incident light beams include a biasing light beam having a constant amplitude level and being incident on said first input end, an information light beam having two amplitude levels according to a logical level and being incident on said second input end, and

a clock pulse is supplied as said control signal, and

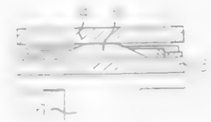
said bistable optical element outputs the logical value of said optical signal in response to said clock pulse.

4,761,061

METHOD FOR FABRICATION OF ELECTROCHROMIC DEVICE AND THE SAME FABRICATED BY THE METHOD

Hisashi Nishiyama; Seiichi Miyazaka, both of Yokohama; Tadatoshi Kamimori, Tokyo; Mamoru Mizuhashi, and Akihiko Yoshihara, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Sep. 12, 1986, Ser. No. 906,377
Claims priority, application Japan, Sep. 19, 1985, 60-205363; Sep. 19, 1985, 60-205364
Int. Cl.[4] G02F *1/01*
U.S. Cl. 350—357 34 Claims



1. A method for making an electrochromic device, said device comprising a first and a second substrate and an electrode formed on a major surface of each of said first and second substrates, said device further comprising an electrochromic substance layer and a gel-like electrolyte layer situated between said electrodes of said first and second substrates, said method comprising:

(1) forming one outer bank and at least one inner bank onto one of said substrates, said banks constituting an external frame for said substrate, using a sealing material disposed at the peripheral position of said first substrate or said second substrate, on the electrode-equipped surface thereof, wherein said outer bank comprises an uncured material and said inner bank comprises a cured material, and said banks are spaced apart;

(2) placing a gel-like electrolyte solution on the electrode-equipped surface of said first substrate;

(3) joining said second substrate with said first substrate such that the electrode-equipped surfaces of said first substrate and said second substrate are facing each other; and

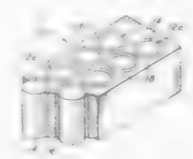
(4) contact bonding said first substrate with said second substrate.

4,761,062

GRADIENT INDEX LENS ARRAY WITH IMPROVED IMAGE QUALITY DUE TO STRAY LIGHT REDUCTION

Robert P. Loce; John A. Durbin, and William L. Lama, all of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 27, 1986, Ser. No. 923,455
Int. Cl.[4] G02B *6/04*
U.S. Cl. 350—413 5 Claims



1. A gradient index lens array comprising, in combination:

at least one row of gradient index optical fibers, the fibers having smooth surfaces;

a low transmittance, low viscosity coating formed in optical

VOL 1093 ISS 1 AG 2 1988 UMI

contact with said fiber surfaces, having an index approximately equal to that of the fiber surface; and

a low reflection material forming a binding between the coated fibers, said material filling the interstitial area between said coated fibers and the outer side of the lens array.

4,761,063

PROJECTION LENS SYSTEM

Takayuki Yoshioka, and Shinichi Hasegawa, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 20, 1987, Ser. No. 51,625
Claims priority, application Japan, Dec. 2, 1986, 61-285986
Int. Cl.[4] G02B *27/18, 9/60*
U.S. Cl. 350—432 1 Claim



1. A projection lens system comprising: in order from a screen side, a first lens unit having a positive focal length, a second lens unit having a negative focal length, a third lens unit having a positive focal length, a fourth lens unit having a positive focal length and a fifth lens unit having a negative focal length and a concave surface directed toward the screen side, and said first and second lens units being made of plastic, at least one of the lens surfaces of said first and second lens unit being aspherical, at least one of the lens surfaces of said third and fourth lens units being aspherical, said fifth lens unit being made of plastic and at least one of the lens surfaces of said fifth lens unit being aspherical, said system meeting the following conditions:

(1) $0.29f < |r_9| < 0.5f$
(2) $0.2 < \psi_1 < 0.6$
(3) $-0.6 < \psi_2 < -0.2$
(4) $0.7 < \psi_3 < 1.2$
(5) $\nu_2 < \nu_1$, $\nu_2 < \nu_3$
(6) $(dN/dT)_1 > (dN/dT)_2$

where f is the overall focal length of said lens sytem;

r_9 is the radius of curvature of a screen-side lens surface of said fifth lens unit;

ψ_1 is the refractive power of the first lens unit;

ψ_2 is the refractive power of the second lens unit;

ψ_3 is the refractive power of the third lens unit;

ν_1 is the Abbe number of the first lens unit;

ν_2 is the Abbe number of the second lens unit;

ν_3 is the Abbe number of the third lens unit;

$(dN/dT)_1$ is the variation of refractive index with temperature of said first lens unit; and

$(dN/dT)_2$ is the variation of refractive index with temperature of said second lens unit;

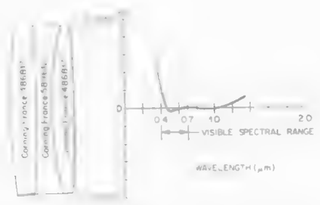
an overall refractive power ψ of said lens system being expressed as a unit 1.

4,761,064

COLOR-CORRECTED LENS SYSTEMS

Romeo I. Mercado, San Jose Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 419,705, Sep. 20, 1982. This application Dec. 19, 1986, Ser. No. 943,462
Int. Cl.[4] G02B *3/00*
U.S. Cl. 350—482 6 Claims



1. An optical system rotationally symmetric about an axis, said system comprising a lens triplet having a common focal length on said axis for four optical wavelengths, said lens triplet comprising a first lens element made of an optical material having a refractive index of approximately 1.49 and an Abbe number of approximately 81.40 at a base wavelength of 0.546 micrometers, a second lens element made of an optical material having a refractive index of approximately 1.59 and an Abbe number of approximately 60.94 at said base wavelength, and a third lens element made of the same optical material as said first lens element.

4,761,065

INSPECTION DEVICE WITH ADJUSTABLE VIEWING SCREEN

Ah Soon Lee, Apartment Block 470 Jurong West 08-443, Street 41, Singapore, Singapore 2264

Filed Jul. 7, 1986, Ser. No. 882,248
Int. Cl.[4] G02B *7/02*
U.S. Cl. 350—576 7 Claims



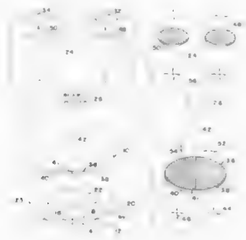
1. An inspection device adapted to permit viewing through a structure comprising opposed faces at inner and outer sides thereof, said device comprising a tube providing a light transmitting passage therethrough, said tube being adapted to be mounted relative to said structure so as to extend therethrough from said outer side to said inner side and having forward and rear ends and abutment means at said forward end adapted to abut said outer side to locate said tube relative to said structure, a collecting lens located in said passage at said forward end, a first housing adapted to be detachably mounted at said rear end coaxially with said passage and having a magnifying projection lens mounted therein, a second housing mounted on said first housing for movement axially thereof, and a viewing screen mounted in said second housing.

4,761,066

STEREOSCOPIC OPTICAL SYSTEM

William J. Carter, 445 Natoma St., San Francisco, Calif. 94103

Filed Jan. 14, 1986, Ser. No. 819,155
Int. Cl.[4] G02B *23/00, 5/08, 5/10*
U.S. Cl. 350—510 7 Claims



1. An optical system for producing stereoscopic imaging of a subject, comprising:

an objective for producing an image of the subject,

right and left ocular lenses for viewing the image through right and left eyes, respectively,

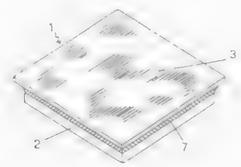
a polarizing filter device positioned adjacent the objective, between the subject and the image formed by the objective, for dividing the image produced by the objective into left and right perspective components characterized by different polarization directions, and right and left polarizing filters positioned adjacent the right and left ocular lenses, respectively, allowing the right and left perspective components to be viewed exclusively through the right and left ocular lenses, respectively.

4,761,067

MODULAR MIRROR ON CLAY SUPPORT

Vicenzo R. Di Modica, Via Gramsci, 66, 95030 Gravina di Catania, Italy

Filed Jul. 25, 1986, Ser. No. 889,550
Claims priority, application European Pat. Off., Jul. 15, 1986, 86830203.5
Int. Cl.[4] G02B *7/18;* B32B *17/00, 18/00*
U.S. Cl. 350—641 8 Claims



1. A reflective tile having a top ornamental surface, a bottom surface and a plurality of sides and being mountable to a wall, said tile comprising:

a base portion formed from a clay ceramic material to have a thickness of from 1 mm to 20 mm for providing said bottom surface, said base portion having a plurality of substantially flat sides defining a first perimeter for said base portion, and

a reflective portion disposed on said base portion for providing said ornamental surface, said reflective portion having a thickness of from 1 mm to 10 mm and a corresponding plurality of substantially flat sides defining a second perimeter larger than said first perimeter, said sides of said reflective portion and said base portion defining said sides of said tile.

4,761,068

EYEGLASS FRAME HOLDER

John Star, P.O. Box 1314, Seaford, N.Y. 11783

Filed Mar. 13, 1986, Ser. No. 839,284
Int. Cl.[4] G02C *5/14*
U.S. Cl. 351—156 1 Claim



1. An adjustable eyeglass frame holder for retaining eyeglass frames upon the head of a wearer, the holder comprising:

an eyeglass frame with two support stem; a retaining means having a pair of interlocking bands each having adjustable, self-engaging removable male-female gripping pads connected to said retaining means for securing said frame about said head, each of said bands disposed to said support stems having a deformable mushroom shaped tip disposed at said ends of said bands, said bands being penetrable into a hole located through and at the end of each of said stems, each of said bands also having a C-shaped clasp means having a plurality of resilient prongs acting in circular tension for making surface contact with each of said bands at a point on said bands between the said mushroom shaped tip and said hole in said stem.

4,761,069

CONTACT LENS AND METHOD OF MOLDING

Van-Tan Truong, Northcote, and Rodney D. Watkins, Goolwa, both of Australia, assignors to Sola International Holdings Limited, Morphett Vale, Australia

Filed Mar. 27, 1986, Ser. No. 844,662
Claims priority, application United Kingdom, Mar. 29, 1985, 8508247
Int. Cl.[4] B29D *11/00;* G02C *7/04*
U.S. Cl. 351—160 H 16 Claims



1. A soft contact lens made of a hydrated polymer, having a front surface and a rear cornea-contacting surface and an overall water content in the range of 40% to 90% by weight,

VOL 1093 ISS 1 AG 2 1988 UMI

wherein the hydrated polymer has a water content at the front surface of the lens which is at least 3 percentage points higher than the water content at its rear cornea-contacting surface, as measured by use of an Abbe refractometer.

4. A process for making a soft contact lens, comprising the steps of

(a) introducing into a lens casting mould a mixture comprising at least one monomer capable of polymerising to form a clear, transparent, partially swollen hydrogel polymer and a diluent forming from 15 to 50% by weight of the mixture, and causing the monomer or monomers to polymerise to form said hydrogel polymer, the mould cavity being formed between a convex member and a concave member, said mould members having opposed mould surfaces made of different materials chosen so that the lens formed in the mould from the hydrogel polymer has a water content at its convex front surface which is at least 3 percentage points higher than the water content at its concave rear surface, as measured by use of an Abbe refractometer,

(b) separating the mould members with the partially swollen lens adhering to the convex mould member,

(c) immersing the partially swollen lens, while still adhering to the convex mould member, in an aqueous medium so as to cause the lens to separate from the convex mould member, to substitute water for any replaceable non-aqueous diluent in the lens and to cause the lens to swell to substantially its fully hydrated state,

(d) transferring the swollen lens into saline solution to replace substantially all the water by saline solution, and

(e) packaging and sealing the lens in saline solution in a container.

4,761,070

EYE REFRACTOMETER

Yasufumi Fukuma, Tokyo, Japan, assignor to Tokyo Kogaku Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1985, Ser. No. 805,783
Claims priority, application Japan, Dec. 7, 1984, 59-258556; Jul. 25, 1985, 60-164829
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—205 7 Claims



1. An eye refractometer comprising:

a projection optical system including a light source for projecting a bundle of light rays and an objective lens disposed opposite to an eye under test and means for forming said bundle of light rays into a ring-shaped pattern, said light source projecting said bundle of rays to the eye under test through said objective lens and said ring-shaped pattern forming means and onto a peripheral area of a pupil surface of the eye under test to form a ring-shaped pattern image at the retina of the eye under test;

a light receiving optical system for receiving said ring-shaped pattern reflected from the retina onto a photo-electric detector through a central portion of said pupil; and

means for determining the coordinates of said ring-shaped pattern image formed on said photo-electric detector relative to a predetermined coordinate system, and means for determining the refractivity of the eye under test in accordance with the determined coordinates of said image

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4,761,071

APPARATUS AND METHOD FOR DETERMINING CORNEAL AND SCLERAL TOPOGRAPHY

William S. Baron, 330 Willow Rd., Menlo Park, Calif. 94025

Filed Nov. 6, 1984, Ser. No. 669,188
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—212 60 Claims



1. An apparatus for determining the topography of a surface of an eye from fluorescence emissions of a fluorescent substance applied to the surface of the eye, the apparatus comprising:

a light source, emissive of light having a wavelength capable of exciting fluorescence emissions from the fluorescent substance;

direction means for directing light emitted by the light source onto a selected area of the surface of the eye;

deflection means for varying the position of the selected area;

photoelectric detection means for selectively sensing fluorescence emissions from the fluorescent substance in the selected area and for measuring therefrom the position of the selected area; and

means for determining the topography of at least a portion of the surface of the eye using the measured position of the selected area.

4,761,072

ELECTRO-OPTICAL SENSORS FOR MANUAL CONTROL

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Ontario, Canada

Continuation of Ser. No. 913,641, Sep. 30, 1986, abandoned, which is a continuation of Ser. No. 657,262, Oct. 3, 1984, abandoned. This application Oct. 19, 1987, Ser. No. 110,589
Int. Cl.[4] G01C *3/00*
U.S. Cl. 356—1 16 Claims



1. An apparatus for providing an in-range control signal for

a non-contact distance measuring sensor of a part where the sensor and part are relatively movable comprising:

a determining means for determining if the measuring sensor is within an operating range thereof, said determining means including

(a) a light projecting means for projecting a light zone on the part,

(b) an imaging means for imaging the projected light zone, and

(c) a sensing means for sensing a characteristic of the imaged light zone indicative of the measuring sensor being within the operating range thereof; and

a signal means for providing an operating signal when said determining means determines that the measuring sensor is within the operating range thereof.

4,761,073

DISTRIBUTED, SPATIALLY RESOLVING OPTICAL FIBER STRAIN GAUGE

Gerald Meltz, Avon; William H. Glenn, Vernon, both of Conn., and Elias Snitzer, Wellesley, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 640,490, Aug. 13, 1984, abandoned. This application Oct. 3, 1986, Ser. No. 915,891
Int. Cl.[4] G01B *11/16*
U.S. Cl. 356—32 2 Claims



1. A strain sensor for measuring strain in a region within a rigid body comprising:

an optical fiber, having a single core, disposed in a predetermined path passing through said region of said rigid body,

said single core having at least one periodic optical grating, having a predetermined grating length along said fiber and a predetermined grating spacing in the visible region of the optical spectrum, formed within and throughout said core, whereby said fiber has at least one grating region containing said optical grating and said region comprises at least one discrete measurement region having a measurement region length substantially equal to said grating length;

means for passing broadband optical radiation in a predetermined wavelength range of the spectrum into said single core; and

means for processing optical radiation emerging from said at least one core to form a measurement representative of strain within said region, including means for analyzing the spectrum of radiation reflected from said at least one grating and emerging from said single core to identify a characteristic wavelength corresponding to said predetermined grating spacing and means for comparing said characteristic wavelength with a stored corresponding reference wavelength to derive therefrom a measurement of the strain within said at least one discrete region, characterized in that:

said at least one grating region has two gratings having first and second grating spacings formed therein, whereby the spectrum of radiation emerging from said core contains two characteristic wavelengths corresponding to each of said first and second grating spacings; and

said means for processing optical radiation compares said two characteristic wavelengths with two corresponding reference wavelengths to derive therefrom a temperature-corrected measurement of the strain within said at least one discrete measurement region.

4,761,074

METHOD FOR MEASURING IMPURITY CONCENTRATIONS IN A LIQUID AND AN APPARATUS THEREFOR

Yasuo Kohsaka, Sakai; Toru Niida, Minoo; Hisao Sato, Sagamihara, and Hajime Kano, Suita, all of Japan, assignors to Nihon Kagaku Kogyo Co., Ltd., Osaka and Nomura Micro Science Co., Ltd., Tokyo, both of, Japan

Filed Mar. 24, 1987, Ser. No. 29,635
Claims priority, application Japan, Mar. 24, 1986, 61-66683
Int. Cl.[4] G01N *21/01, 21/85*
U.S. Cl. 356—37 16 Claims



16. A measuring apparatus for measuring the impurity concentration of an objective liquid comprising:

an atomizer for atomizing said objective liquid and generating fine droplets having a predetermined size distribution,

an evaporator for evaporating to dryness said fine droplets and generating fine particles,

a condensation nuclei counter for counting the number of said fine particles, and

a signal processing means for processing the impurity concentration of said objective liquid based on the sensitivity characteristic of said condensation nuclei counter, the distribution of said droplet size of said atomizer, and the counted value of said condensation nuclei counter.

4,761,075

CELLULAR ANALYSIS SYSTEM

Hajime Matsushita; Ryohei Yabe, both of Katsuta; Masaaki Kurimura, Ibaraki, and Toshiaki Yokobayashi, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 8, 1986, Ser. No. 938,964
Claims priority, application Japan, Dec. 10, 1985, 60-277719
Int. Cl.[4] G01N *33/48*
U.S. Cl. 356—39 6 Claims

1. A cellular analysis system for automatically analyzing sample slides prepared for a number of samples, including sample slide sets each being prepared through predetermined different staining processes, comprising:

loading means for loading addressably and extractably said sample slides;

image forming means for automatically picking out said sample slides in sequence from said loading means to feed said slides into the field of view of a microscope to thereby

VOL 1093 ISS 1 AG 2 1988 UMI

form an image of at least one cell contained in said sample slide under observation of said microscope;

feature extracting means for extracting morphological features of said cell image as digital information by analyzing said cell image formed by said image forming means;

storage means for storing said digital information obtained through said feature extracting means together with a signal indicating an address of the associated sample slide in said loading means;

means for reading out said information derived from a set of



the sample slides for each of the samples and stored in the storage means for thereby classifying said sample into one of plural predetermined categories on the basis of a comprehensive determination, wherein one of said categories indicates necessity for more accurate analysis, said sample slides associated with said samples being classified into said one of said categories being subjected to a secondary analysis, and wherein in said secondary analysis, said feature extracting means performs analysis for a greater number of cells than that of the cells analyzed in the primary analysis.

4,761,076

MIXER

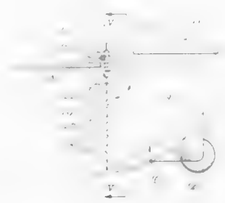
John D. Witcombe, 8, Swinley Chase, Wilmslow, Cheshire, England

Filed Jun. 5, 1985, Ser. No. 741,362

Claims priority, application United Kingdom, Jul. 3, 1984, [illegible]

Int. Cl.[4] B28C *7/16*

U.S. Cl. 366—46 13 Claims



1. A mixer adapted for connection to a driving arrangement and comprising an open topped mixing receptacle having a part circular-cylindrical cross-section having an angular extent and a center of curvature proximate the open top of the receptacle, a pivot axis extending end-to-end thereof and lying on the center of curvature of the receptacle, pivoting rotary paddle means on said pivot axis pivotable substantially over the angular extend of the cross-section and movable axially of said pivot axis so as to be moveable end-to-end thereof, said paddle means extending from said pivot axis substantially to the circumference of said part-cylindrical cross-section, and said paddle means having means for connection to said driving arrangement for driving the same in rotation for mixing material in the receptacle and means for moving the paddle means pivotally and axially of the pivot axis so as to enable the entire volume of the receptacle to be swept by the rotating paddle means.

4,761,077

MIXING APPARATUS

Roy H. Werner, Upper St. Clair, Pa., assignor to Barrett, Haentjens & Co., Hazelton, Pa.

Filed Sep. 28, 1987, Ser. No. 103,541

Int. Cl.[4] B01F *15/02*

U.S. Cl. 366—165 10 Claims



1. Mixing apparatus including a cylindrical mixing chamber having a fluid inlet at one end, a frusto-conical tubular end piece connected to the other end and flaring outwardly by progressively increasing in diameter in an outward direction to form a fluid outlet, said cylindrical mixing chamber having a plurality of rows of openings inclined inwardly towards said fluid outlet; and outer jacket surrounding said cylindrical mixing chamber in spaced relationship therewith to form a liquid receiving chamber, and inlet means shaped as to introduce liquid tangentially into said liquid receiving chamber so as to obtain greater water flow and less turbulence in said liquid receiving chamber.

4,761,078

DEFORMATION CALORIMETER

Richard J. Farris, 428 Chesterfield Rd., Northampton (Leeds), Mass. 01053, and Richard E. Lyon, 180 Summer St., Amherst, Mass. 01002

Filed May 14, 1984, Ser. No. 609,702

Int. Cl.[4] G01K *17/00*

U.S. Cl. 374—31 21 Claims



7. Apparatus for measuring heat flow with respect to a material undergoing deformation thereby to provide heat of deformation with respect to said material, that comprises:

a first sealed gas-filled chamber and a second sealed gas-filled chamber, each chamber containing a movable wire or rod which exits through a low-friction gas-tight seal from the chamber, the wire or rod in the first gas-filled chamber being adapted to attach to the material within the gas, there being means in the first gas-filled chamber for securing the material to apply a force thereto by the wire or rod to effect deformation of said material by the transmission of the force to provide said heat of deformation;

a differential gas pressure transducer connected between the first gas-filled chamber and the second gas-filled chamber, which differential gas pressure transducer is operable to produce a signal which is proportional to any difference ΔP in gas pressure between said first gas-filled chamber and said second gas-filled chamber;

means to insure that the gas pressure difference ΔP measured during material deformation is independent of the position of said material in said first gas-filled chamber;

means to insure that the gas pressure difference measured during material deformation is not the result of a differential volume change in the gas in said first gas-filled chamber and said second gas-filled chamber caused by displacing the pullwire or rod attached to the material being deformed; and

analyzing means to relate directly differential gas pressure versus time relationship to the heat flow during deformation of said material in said apparatus to permit determination of the heat of deformation directly from the measured change in gas pressure in said first chamber in the gas surrounding said material, said analyzing means being operable to relate said differential gas pressure ΔP at any time t, $\Delta P(t)$, such that the rate of heat generation $\partial Q/\partial \xi$ is given by the equation

$$\Delta P(t) = \int_0^t K(t-\xi)\frac{\partial Q}{\partial \xi}\,d\xi,$$

wherein where K(t) is a kernel function which is dependent on the geometry of said first gas-filled chamber, ξ is the time variable of integration, and $\partial Q/\partial \xi$ is an arbitrary heat flow into or out of the sample resulting from the deformation process.

4,761,079

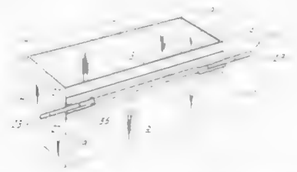
RECLOSABLE BAG

Eugene H. Wolske, Minnetonka, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Oct. 13, 1987, Ser. No. 108,939

Int. Cl.[4] B65D *33/30*

U.S. Cl. 383—62 11 Claims



1. A bag having front and back walls and a closure at one end, said bag being adapted to be opened for removal of its contents at its other end, and means for reclosing the bag at its said other end after opening thereof comprising substantially inelastic bendable strip means of a total length greater than the width of the walls of the bag bent at two points spaced a distance corresponding generally to the width of the bag walls to have two tab portions at the ends of an intermediate portion thereof, with said intermediate portion of a length corresponding generally to the width of the bag walls and with said tab portions bent back with respect to said intermediate portion, the strip means so bent having its said intermediate portion secured to the outside of one of said walls extending across said one wall generally from one side edge of said one wall to the other side edge of said one wall adjacent said other end of the bag and with said tab portions extending inwardly from the side edges of said one wall on the outside with respect to said intermediate portion and lying generally flat with respect to the outside face of said one wall, and means secured to said one wall on the outside thereof overlying and covering said folded-back tab portions, said covering means enabling bending out of said tab portions to a position for reclosing the bag after opening thereof by folding the bag over at said end and then bending said tab portions around the side edges of the bag to maintain said end folded.

4,761,080

MULTILAYER GUSSETED BAG WITH REVERSE FIN SEALS

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Jul. 29, 1983, Ser. No. 518,781

Int. Cl.[4] B65D *30/20*

U.S. Cl. 383—120 1 Claim



1. A gusseted bag comprising:

(a) a length of tubular lay-flat film having a longitudinal cut along one face and being folded across its width onto itself toward said cut face, the fold forming a seamless bottom;

(b) the film having a multi-layer structure comprising PET-/EMA/EVA layers, said fold placing the PET layer face-to-face and the EVA layer on the outside of the bag; and,

(c) longitudinal side seals forming each side of said bag, the side seals being reverse-fin-seals whereby a portion of the EVA layer is in contact with itself along a narrow seam which is heat sealed to close the sides of the bag.

4,761,081

GLIDE SYSTEM FOR MINI-LOAD WAREHOUSE RACK

Frederick A. Mulford, Lodi, N.Y., assignor to Hartman Rack Products, Inc., Waterloo, N.Y.

Filed Sep. 21, 1987, Ser. No. 98,085

Int. Cl.[4] A47B *88/00*; F16C *33/22*

U.S. Cl. 384—20 22 Claims

1. In a glide system for a tray shelf of a mini-load warehouse rack, the improvement comprising:

a. a detent formed in said shelf to extend upward from an upper surface of said shelf;

b. a resin bearing having a bearing plate thicker than the height of said detent above said upper surface of said shelf, said bearing plate having a plane bottom side for resting on said shelf and a resilient clip spaced below and confronting said bottom side;

c. said bearing plate having a through hole sized to fit around said detent; and

d. said clip being resiliently movable away from said bottom side to allow said bearing plate to be slid over said detent to position said hole around said detent while said clip slides into a gripping position against an underside of said shelf.

11. A method of making and mounting a glide on a tray supporting shelf of a mini-load warehouse rack, said method comprising:

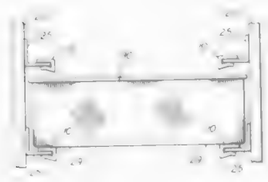
a. extruding a glide of resilient resin material to form a

VOL 1093 ISS 1 AG 2 1988 UMI

bearing plate having a flat bottom surface and a resilient clip extending along one edge of said bearing plate in a region opposite from and confronting said bottom surface;

b. forming a detent-receiving hole through said bearing plate;

c. forming a detent offset upwardly from an upper surface of said shelf; and





d. sliding said glide laterally onto said shelf so that said bearing plate moves over said detent to mate said hole with said detent and position said bottom surface of said bearing plate against said upper surface of said shelf, while said clip resiliently engages an underside of said shelf.

4,761,082

ROLLER BEARING

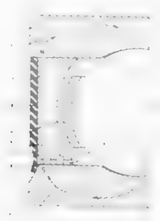
Antonio Gabelli, Ijsselstein, Netherlands, assignor to SKF Industrial Trading and Development Company, B.V., Nieuwegein, Netherlands

Filed Apr. 16, 1987, Ser. No. 39,466

Claims priority, application Netherlands, Apr. 21, 1986, 8601017

Int. Cl.[4] F16C *33/74, 33/82;* F16J *15/40*

U.S. Cl. 384—133 7 Claims



1. A rolling bearing comprising at least one outer race and at least one inner race situated coaxially therein, both races defining an annular space therebetween, and at least one row of rolling members situated in the annular space between these races and first and second seals for sealing the annular space between the races off from the outside surroundings on either side of the rolling members, to prevent a lubricant present in this space from escaping to the outside and to prevent foreign matter such as dust particles, water or similar impurities from penetrating into the annular space from outside, at least the first of said seals being generally annular and the second of said seals comprising at least one generally flat radially extending sealing lip that is in communication with one of the races and said sealing lip having an axially inwardly directed side which resiliently rests against the other race, the first annular seal having an end portion that lies behind and engages the inwardly directed side of the sealing lip of the second seal and at a short distance from the said other race thereby defining a first, open, slot-shaped annular space between the seals and the said inner race, said first slot-shaped space containing a quantity of magnetic fluid, and magnetic means forming a magnetic field to hold said fluid within the first slot-shaped annular space.

4,761,083

COMPOUND BEARING

Joseph E. Smith, Birmingham, and William H. Trudeau, Brighton, both of Mich., assignors to O & S Manufacturing Company, Whitmore Lake, Mich.

Filed Nov. 17, 1980, Ser. No. 207,215

The portion of the term of this patent subsequent to May 25, 1999, has been disclaimed.

Int. Cl.[4] F16C *11/08*

U.S. Cl. 384—208 15 Claims



1. A bearing comprising an inner member having a peripheral surface of regular predetermined contour, an outer member having an inner surface of regular predetermined contour, a metallic ring insert disposed between the peripheral surface of the inner member and the inner surface of the outer member, said ring insert having an inner surface generally conforming to the peripheral surface of said inner member and a peripheral surface generally conforming to the inner surface of said outer member, wherein said ring insert inner surface and said inner member peripheral surface are normally separated by a relatively narrow space and said ring insert peripheral surface and said outer member inner surface are normally separated by a relatively narrow space, a pair of resiliently deformable rings made each of material capable of creeping at least partially into said relatively narrow spaces, each of said resiliently deformable rings being disposed on each side of said ring insert, and means in said outer member holding said resiliently deformable rings under compression such as to firmly engage said resiliently deformable rings with a portion of the peripheral surface of said inner member, a portion of the inner surface of said outer member and a lateral surface of said ring insert, and such as to cause said material of said resiliently deformable rings to creep into said relatively narrow spaces for at least partially filling said relatively narrow spaces with said material.

4,761,084

BEARING SYSTEM WITH REDUNDANT RACE

Max D. Benton, Goleta, and Michael R. Everman, Santa Barbara, both of Calif., assignors to AEC-Able Engineering Company, Inc., Goleta, Calif.

Filed Jun. 30, 1987, Ser. No. 68,564

Int. Cl.[4] F16C *19/30*

U.S. Cl. 384—619 8 Claims



1. A redundant-race bearing system for joining two bodies together for coaxial relative rotation around a central axis, comprising;

a first and second race member, each of said race members comprising a circular ring-shaped structure concentric with said central axis, each said race member having a radial cross-section which includes a plurality of tracks, said tracks being coaxial, each said track facing externally on its respective race member;

a plurality of mounts, each mount comprising a bearing block, each bearing block bearing against a respective track of one of said race members, so disposed and arranged that the bearing block is mounted for bearing movement with respect to the race member, and the tracks and bearing blocks being so disposed and arranged that separative movement in any direction between the bearing block and the respective race member is restrained by at least one of said bearings, and a mounting block connected to each bearing block and adapted to clamp onto the other said race member; and

clamp means whereby each said mounting block is immovably joined to a respective race member, and each said bearing block is joined to its respective race member in rotary shear bearing relationship, said blocks being releasably mountable in their respective manner selectively to either one of said race members.

4,761,085

PRINTER WITH ENHANCED BIDIRECTIONAL LOGIC SEEKING FOR INCREASED THROUGH-PUT

Tim V. Angst, and Demetrios Troupes, both of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 1, 1987, Ser. No. 33,449

Int. Cl.[4] B41J *19/30*

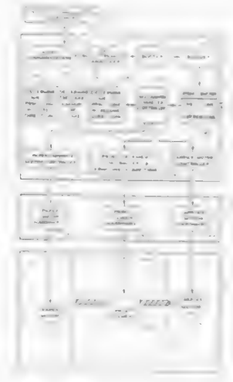
U.S. Cl. 400—323 12 Claims

1. A printer comprising:

a print element for producing characters on a plurality of print lines;

means for moving said print element in a first direction to an end position in a first print line; and,

means for moving said print element from said end position to a selected one of two ends in a next print line, said selected one of two ends determined by the minimum time for said print element to travel from said end position in



said first print line to each of said two ends in said next print line even through said selected end of said next print line is a greater distance from said end position than the other end of said next line.

4,761,086

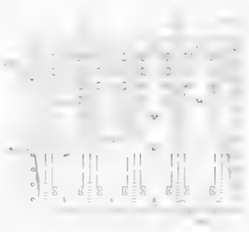
SUPPORT DEVICE FOR WIRE MARKER SLEEVES

Joseph Peterpaul, Neshanic Station, N.J., assignor to Thomas & Betts Corporation, Bridgewater, N.J.

Filed May 23, 1986, Ser. No. 867,360

Int. Cl.[4] B41J *13/12;* B65D *85/20;* B23G *3/00*

U.S. Cl. 400—531 7 Claims



1. In combination, a plurality of wire marker sleeves and a support device therefor comprising:

a plurality of elongate wire marker sleeves having opposed ends and a substantially flat central extent; and

an elongate substantially flat planar web having opposed major surfaces, said web including support elements thereon supporting said plurality of wire marker sleeves in a plurality of spaced-apart side-by-side longitudinally extending rows, said web further including an elongate continuous corrugated portion extending between at least two adjacent ones of said side-by-side rows of said wire marker sleeves, said corrugated portion having raised extents which are raised from at least one of said major surfaces of said web.

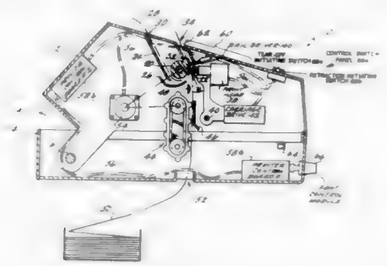
VOL 1093 ISS 1 AUG 2 1988 UMI

4,761,087

PRINTER WITH AUTOMATIC PRINTED PAPER ADVANCEMENT TO TEAR-OFF POSITION AND SUBSEQUENT RETRACTION TO NEW FIRST PRINT LINE

David O. Ward, Waynesboro, and Theodore S. Zajac, Jr., Charlottesville, both of Va., assignors to Genicom Corporation, Waynesboro, Va.

Filed Nov. 12, 1985, Ser. No. 797,121
Int. Cl.[4] B41J *11/66*
U.S. Cl. 400—621 17 Claims



1. A printer for printing on paper at a printing station said printer comprising: a downstream paper tear-off edge;

A. tear-off operation initiating means for providing a tear-off operation initiating control signal;

B. data processor means including means responsive to said tear-off operation initiating control signal for generating a paper advance signal and further including time delay means for indicating the expiration of a predetermined time delay from said tear-off initiating control signal and paper retraction initiating means for generating a paper retract signal in response to at least one of the expiration of said predetermined time delay or the actuation of an operator actuatable switch means, said paper advance signal and said paper retract signal being independent of available symbols to be printed;

C. paper advancing and retracting means, responsive to said paper advance signal, for immediately advancing a predetermined portion of said paper from a print line position to a tear-off position adjacent said tear-off edge; and

D. said paper advancing and retracting means being responsive to said paper retract signal for subsequently retracting a second predetermined portion of said paper to a new print line position.

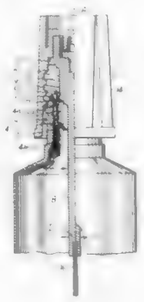
4,761,088

CLOSURE FOR A BOTTLE FOR CORRECTING FLUID

Dieter Zubek, Neussess, Fed. Rep. of Germany, assignor to Citius Buerotechnik GmbH, Augsburg, Fed. Rep. of Germany

Filed Dec. 3, 1987, Ser. No. 128,343
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1986, 8633404
Int. Cl.[4] A45D *40/00, 40/26;* A46B *11/00*
U.S. Cl. 401—122 10 Claims

1. In a closure for a bottle for correcting fluid, consisting of an insert of yieldable plastics material fitted into the bottle neck with a flange lying against the upper edge of the bottle neck and a tubular piece connected thereto, which comprises an upper, also internally cylindrical section adjoining the flange and a lower cylindrical section projecting freely into the inside of the bottle, and consisting of a brush part fitted into a closure cap, with a brush rod, in whose lower end brush hairs are inserted, and which comprises at its upper end a sealing flange cooperating with the flange of the insert, the improvement wherein the upper and lower cylindrical sections have at least approximately the same inside diameter, wherein at the lower end of the upper cylindrical section there are provided a plurality of tongues directed from the inner wall of the upper cylindrical section obliquely downwards to the axis (A) of the insert, between whose opposed inner ends a circular opening is formed for the passage of the brush rod and between whose outer ends connected to the inner wall apertures are provided opening into the lower cylindrical section, and wherein between the upper end of the brush rod and the sealing flange a piston like section is provided, whose axial length corresponds substantially to the axial length of the upper cylindrical section, whose diameter is somewhat smaller than the inside diameter of the upper cylindrical section, and which comprises at its lower end an annular wiping lip lying against the inside wall of the upper cylindrical section.



4,761,089

SYNTHETIC RESIN PEN NIB

Norigi Kurihara, Yachiyo, and Ryutaro Sakuda, Tokyo, both of Japan, assignors to Aubex Corporation, Tokyo, Japan

Continuation of Ser. No. 624,005, Jun. 25, 1984, abandoned. This application Nov. 25, 1986, Ser. No. 939,468
Claims priority, application Japan, Jun. 27, 1983, 58-114371
The portion of the term of this patent subsequent to Jul. 1, 2003, has been disclaimed.
Int. Cl.[4] B43K *1/12*
U.S. Cl. 401—198 4 Claims



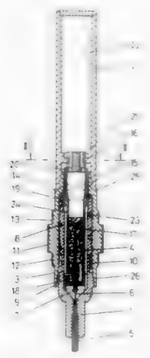
1. A pen nib for a writing instrument, consisting essentially of a rod-like core formed initially by extruding a molten thermoplastic crystalline synthetic resin into a continuous rod and rapidly cooling said rod to place it in as amorphous a state as possible, said rod-like core having axially continuous ink-conducting capillary channels of suitable cross-sectional shape wherein molecules of said synthetic resin have a mixed crystal structure which consists essentailly of molecularly-oriented crystals, non-oriented fine crystals dispersed and grown between said oriented crystals, and remaining amorphous regions, said mixed crystal structure being formed by subjecting said rod subsequent to such rapid cooling step to heat and stretching said rod while at the same time reducing the rod diameter to achieve oriented crystallization of said synthetic resin molecules and then heat treating such rods so as to cause the growth of said non-oriented fine crystals and accelerate crystallization of said amorphous regions, said amorphous regions being included in said mixed crystal structure of the synthetic resin molecules to such an extent as to form a semi-transparent or a transparent material.

4,761,090

TUBULAR WRITING PEN TIP WITH ADJUSTMENT MEANS

Djing-San Goh, Hamburg, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Continuation-in-part of Ser. No. 736,726, May 22, 1985, Pat. No. 4,662,769. This application Jul. 31, 1986, Ser. No. 891,085
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1985, 3527694
Int. Cl.[4] B43K *17/00, 1/10, 3/04*
U.S. Cl. 401—259 14 Claims



1. In a tubular writing pen having a writing fluid reservoir (2); a writing pen body (3;3″;32;32′) a forepart (1;1′;31;31′) that holds at its front a writing tube (5;5′;35,35′) into which a writing fluid conductor (6; 6′;36;36′) extends, so as to project forwardly for contact by a forward end with a drawing surface, and rearwardly for contact by a rearward end with said reservoir of writing fluid, the improvement which comprises, in combination said writing fluid conductor being fastened to a coupler element (7;7′;7″;37;37″) so that, when the writing tube is raised from the drawing surface, the coupler element makes contact with a bearing surface of an adjuster element (4;4′;34;34′) that is axially movable with respect to the forepart (1;1′;31;31′) by means of a threaded engagement with said pen body, a forepart (1;1′;31;31′) that is mounted from the front end into an axially fixed position with respect to the writing pen body (3;3′;32;32′) wherein the forepart is braced against further axial movement toward the rear by a writing pen body bearing surface (14;14′) wherein further said adjuster element (4;4′; 43;34′) is not rotatable with respect to the writing fluid reservoir (2) but is axially positioned selectively with respect to the writing pen body (3;3″;32;32′) by a rotation of the forepart (1;1′;32;31′) which is rotatable but is axially fixed with respect to said writing fluid reservoir.

4,761,091

BINDING DEVICE

Kiyoshi Ominato, and Satoshi Mizutani, both of Tokyo, Japan, assignors to King Jim Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1987, Ser. No. 42,654
Claims priority, application Japan, Apr. 28, 1986, 61-63158[U]
Int. Cl.[4] B42F *13/00, 13/12, 13/36, 3/00*
U.S. Cl. 402—76 2 Claims

1. A binding device which comprises a fixture having at least two binding rods, a cover plate having means for engaging with ends of the binding rods and an elastically displaceable connection providing a plurality of divided elastic piece members for interconnecting the fixture with the cover plate at their longitudinal ends, wherein the fixture, the cover plate and the elastic connection are integrally and displaceably formed, the elastic connection providing a hinge-like thin joint portion recessed in the reverse direction at their upper and lower end portions, a plurality of parallel hinge-like elastic piece members integrally connected with the cover plate and the fixture respectively, and a plurality of parallel elastic support plates integrally associated with the cover plate or the fixture at their one end between the hinge-like elastic piece members.

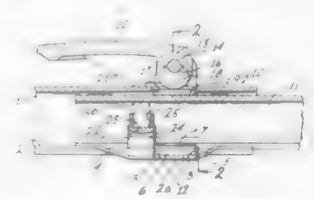


4,761,092

LOCK FOR TELESCOPING TUBULAR LEG

Koma Nakatani, 12-17 2 Chome Nakai, Shinjuku-ku Tokyo, Japan (161)

Continuation of Ser. No. 657,932, Oct. 5, 1984, abandoned. This application Jul. 31, 1986, Ser. No. 900,221
Int. Cl.[4] F16B *7/10;* F16D *1/12*
U.S. Cl. 403—104 17 Claims



1. A lockable telescoping support comprising an outer and an inner channel section, a U-shaped mounting bracket having two arms connected by a base portion with each arm having a free end; said bracket mounted to the outer channel section and held against sliding movement therealong between deformed portions of said outer section; said bracket being retained against separation from said outer section only by a camming lever pivotably mounted between said free ends of said bracket for cammingly engaging the inner channel section through a window formed in the outer channel section thereby to lock said two sections against telescoping movement; and

a stop member mounted to said inner section, said stop member being spring biased toward said outer section, longitudinally extending portions on the outer section for restraining said stop member against said spring bias during telescoping extension of said sections, said longitudinally extending portions being deformed in the vicinity of said mounting bracket for restraining the mounting bracket against sliding movement and also allowing movement of said stop member under spring bias into abutment with portions of said outer section to thereby limit further telescoping extension of said sections.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,093

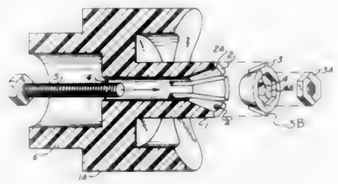
UNIFASTENER A PIPE FITTING HAVING A BLIND FASTENER

Paul F. Seymour, 1104 Stillwater Dr., Jupiter, Fla. 33458

Continuation-in-part of Ser. No. 598,033, Apr. 9, 1984, Pat. No. 4,692,055. This application Jan. 8, 1987, Ser. No. 1,568

Int. Cl.[4] F16B *7/08*

U.S. Cl. 403—190 1 Claim



1. A joint fitting for connecting a pair of tubular members, one provided with an aperture in its wall, comprising a plug having a longitudinal bore therethrough adapted to fit into an end of one of the members and having a split projection at the other end adapted to enter the aperture of the other member, and expansion means longitudinally movable in the split projection on the plug for clamping engagement with the other member; said split projection terminating in a split socket having plural segments, with each segment being tapered on the internal face, forming a socket having a generally conical taper from top to bottom; a tapered protrusion being provided on an internal top face of said taper for holding said conical wedge plug inside said formed conical socket; said wedge plug having a shape and size complimentary to said socket and having protruding side fins for non-rotating engagement with the said split socket; said wedge plug having a longitudinal bore therethrough for insertion of a threaded force means culminating in the aforesaid clamping engagement.

4,761,094

DEVICE FOR COMBINING PAIR OF STATIONERY COMPONENTS

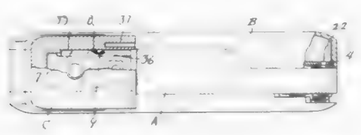
Hidefumi Amagaya, Yokohama, Japan, assignor to Pins Corporation, Tokyo, Japan

Filed Jul. 23, 1987, Ser. No. 76,834

Claims priority, application Japan, Nov. 6, 1986, 61-170703[U]

Int. Cl.[4] F16D *1/00*

U.S. Cl. 403—341 5 Claims



1. A device for connecting a pair of components that form part of a cover mounting apparatus, comprising a pair of components connected to each other at one end of the opposing surfaces of said components, each of said components having a side edge provided with respective locking portions, the locking portion of at least one of said components including a projection, the locking portion of the other of said components including a member having outwardly extending ears, and a connector having a plurality of grooves adapted to slidingly receive said ears and said projection to maintain said components together.

4,761,095

PAVING STONE

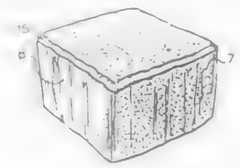
Johann Bartlechner, Kirchweidach, Fed. Rep. of Germany, assignor to Hans Bartlechner Betonwerke, Kirchweidach, Fed. Rep. of Germany

Filed Nov. 7, 1986, Ser. No. 928,411

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1985, 8531639[U]

Int. Cl.[4] E01C *5/00*

U.S. Cl. 404—41 12 Claims



1. A paving stone of concrete or artificial stone material for pavement of courtyard surfaces, pedestrian zones, garden layouts, horticultural grounds and the like, which have substantially uniform height and have in essence a four-sided-shape horizontal section with horizontal base dimensions and upright planar sides having side walls, which side walls engage relative to complementary side walls of adjoining stones during positioning of the stones into predetermined patterns collectively relative to each other, comprising:

a stone body portion having predetermined dimensions in horizontal section determined by corners of a squared surface; and

said upright planar sides including an upright surface means therewith irregularly serrated in a configuration of serrations provided between locations determined by straight lines drawn between said corners in the four-sided shape horizontal section, said serrations having a depth up to 8 mm deep retreating from the upright surface means toward the stone interior.

4,761,096

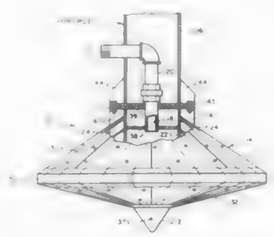
UNIVERSAL FOOTING WITH JETTING SYSTEM

Sheng S. Lin, 2859 Corte Caballos, Camarillo, Calif. 93010

Filed Feb. 24, 1987, Ser. No. 17,967

Int. Cl.[4] E02B *17/00*

U.S. Cl. 405—195 21 Claims



1. A universal footing and jetting system for supporting marine structures on various types of seafloor materials, comprising:

(a) a spud-can structure forming an enlarged footing base particularly useful in soft type sediments and operable to be mounted beneath a marine structure to provide a foundation therefor in seafloor sediments;

(b) a high-strength spike means mounted on the bottom of said spud-can structure which is operable to indent into coral and rock type seafloors for stability against sliding and for supporting said marine structure thereon;

(c) a jetting system for distributing fluid under pressure to a plurality of jet nozzles positioned about top, bottom, and side surfaces of said spud-can; said plurality of jet nozzles being selectively operative for directing jet flow in upwardly, downwardly and sideways directions;

(d) at least one high pressure source for supplying fluid under pressure to said jetting system;

(e) said fluid under pressure being operable to be expelled from said jet nozzles about said spud-can surfaces for causing fluidization and boiling of seafloor soils in the immediate area adjacent to and surrounding said spud-can structure for penetration and self burial of the universal footing into the seafloor, thereby enhancing the overall structural stability of the marine structure thus supported against sliding, overturning, and bearing failures, while minimizing the likelihood of scour damage, and wherein said jetting system nozzles are selectively used during retrieval and repositioning operations of said universal footing to reduce pullout resistance by minimizing suction and friction resistance of seafloor soils.

4,761,097

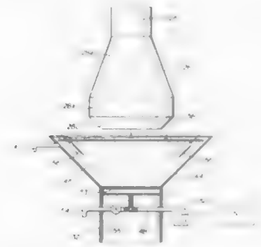
SYSTEM FOR MATING AN INTEGRATED DECK WITH AN OFFSHORE SUBSTRUCTURE

J. Ward Turner, Houston, Tex., assignor to Exxon Production Research Company, Houston, Tex.

Filed Dec. 22, 1986, Ser. No. 945,260

Int. Cl.[4] E02B *17/08;* E02D *21/00, 25/00*

U.S. Cl. 405—204 20 Claims



1. A system for mating an integrated deck structure onto an offshore substructure, comprising:

a downwardly extending leg on said integrated deck structure;

a spud can mounted to the base of said downwardly extending leg;

a corresponding upwardly extending leg on said offshore substructure; and

means mounted on said upwardly extending leg of said substructure for receiving said spud can of said downwardly extending leg, comprising:

a hollow bin mounted onto said upwardly extending leg;

a bed within said bin comprising a medium having variable stiffness and damping characteristics, said bed adapted to permit said spud can to penetrate at least part way into said medium; and

means for varying the stiffness and damping characteristics of said medium as said spud can is penetrating into said medium.

13. A method for mating an integrated deck structure onto an offshore substructure, wherein said integrated deck structure has at least one downwardly extending leg with a spud can attached thereto, and wherein said substructure has at least one corresponding upwardly extending leg with a means for receiving said spud can mounted thereon, said means for receiving said spud can comprising a hollow bin mounted onto said upwardly extending leg, a bed within said bin comprising a medium having variable stiffness and damping characteristics, and means for varying the stiffness and damping characteristics of said medium, said method comprising the steps of:

transporting said integrated deck structure mounted on a barge to said substructure;

positioning said barge proximate said substructure whereby said spud can is in approximate alignment with said bin;

decreasing the stiffness of said bed;

lowering said integrated deck structure onto said substructure, whereby said spud can is received by said bin into said bed;

increasing the stiffness of said bed as said spud can is received into said bin to transfer a portion of the load of said integrated deck structure from said barge to said substructure and to dampen relative motion between said integrated deck structure and said substructure;

disengaging said barge from said integrated deck structure when the desired portion of said load of said integrated deck structure has been transferred to said substructure upon disengagement of said integrated deck structure from said barge means; and

aligning said integrated deck structure with said substructure.

4,761,098

DRILLING MEANS SERVING AS GROUND ANCHOR AND METHOD

Itshaq Lipsker, 24 Trumpeldor St., Ramath Hasharon, Israel

Filed Jun. 18, 1987, Ser. No. 63,317

Claims priority, application Israel, Jun. 24, 1986, 79202

Int. Cl.[4] E02D *5/74*

U.S. Cl. 405—262 3 Claims



1. An assembly of drilling means which at the same time serve as ground- or soil anchor comprising a drilling tool which is attached to a tension rod, the said rod extending to the surface and being located within an elongated tubular member which has an exterior, continuous helical ridge which also serves to rotate the drilling tool, the said drilling tool being a body the rear portion of which, i.e. that which is connected to the said tension rod is tapering towards the connection with the rod, the leading end of the said tubular member being screw- or otherwise connected with the main part thereof, said leading end portion being split into at least two parts, such that on pull being exerted on the said tension rod, the said tapering portion of the drilling tool forces the parts of the said split end apart.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,099

PROCESS FOR STRENGTHENING AND SEALING GEOLOGICAL FORMATIONS

Max Maan, Odenthal; Manfred Kapps, Bergisch-Gladbach; Frank Meyer; Hans Mehesch, both of Essen; Wolfgang Cornely, Gladbeck; Bernhard Maidl, Bochum-Stiepel; Dietrich Stein, and Knud Gerdes, both of Bochum, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen and Bergwerksverband GmbH, Essen, both of, Fed. Rep. of Germany

Filed Mar. 27, 1987, Ser. No. 31,488

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1986, 3610935

Int. Cl.[4] E02D *3/12*

U.S. Cl. 405—264 8 Claims

1. A process for strengthening and sealing geological formations which are moist or contain water which comprises

(a) injecting a polyisocyanate component into said geological formation and

(b) subsequently injecting a mixture of polyol and polyisocyanate which reacts to form a polyurethane.

4,761,100

METHOD OF TAPPING ON A PRESS, AND APPARATUS FOR IMPLEMENTING THE METHOD

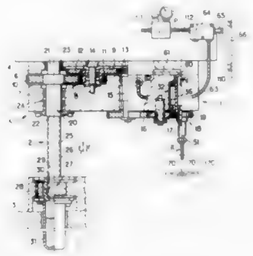
Jacques Maillard, L'Etang la Ville, France, assignor to La Telemecanique Electrique, Nanterre, France

Filed Sep. 16, 1986, Ser. No. 907,814

Claims priority, application France, Sep. 20, 1985, 85 13994

Int. Cl.[4] B23G *3/00*

U.S. Cl. 408—1 R 10 Claims



1. A method of automatically tapping parts disposed in a metal strip which is displaced stepwise between a fixed table of a cutting press and a moving element thereof, said method comprising the steps of:

providing a tapping apparatus comprising a tapping head having an axis of rotation, a tap-carrier connected to said tapping head for carrying a tap, said tap-carrier being movable relative to said tapping head; motion transforming means mounted on a movable element of a press for transforming a stroke of said movable element into a rotary motion of said tapping head to thereby apply a rotary couple to said tap as said movable element moves said tapping head along said axis of rotation, said rotary motion having an amplitude proportional to said stroke; force applying means for applying an axial pneumatic force to said tap-carrier in a direction towards the part to be tapped; and interruption means for interrupting application of said axial pneumatic force when the tap is engaged in said part over a sufficient length, thereby ensuring the tap continues to penetrate in said part solely under the effect of the rotary couple applied thereto;

before each tapping operation, applying said axial pneumatic force to said tap-carrier, said force being selected to be substantially constant and directed towards the parts to be tapped;

interrupting application of said axial pneumatic force at a moment when said tap is engaged in said part over a sufficient length for ensuring said part continues to penetrate in said part solely under the effect of said rotary couple which is communicated thereto.

4,761,101

ARRANGEMENT FOR WIRELESS SIGNAL TRANSMISSION FROM A ROTATING BODY TO A STATIONARY RECEIVING STATION

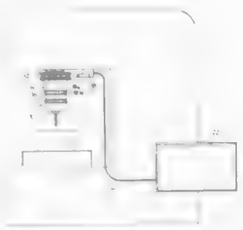
Otto Zettl, Fellenbergstr. 9, D-8969 Reicholzreid, Fed. Rep. of Germany

Filed Dec. 31, 1986, Ser. No. 948,321

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1986, 3600466

Int. Cl.[4] B23B *49/00*; G08B *21/00*

U.S. Cl. 408—6 12 Claims



1. An arrangement for wireless signal transmission from a rotating body to a stationary receiving station comprising a current supply unit at least partly incorporated within the rotating body, the rotating body further comprising a receiving unit for receiving signals from a stationary transmitting station, a signal processing unit, a high precision sensor unit for detecting infinitesimal changes of working conditions of an item carried by said rotating body, and a transmitting unit for transmitting signals to the receiving station, the signal processing unit being operatively connected to the sensor unit and the receiving and transmitting units respectively, for causing the issuance of the output signal of the transmitting unit as a result of the input signal of the receiving unit.

4,761,102

DRILLING HEAD WITH JOINTLY OR INDIVIDUALLY RADIALLY ADJUSTABLE TOOLS

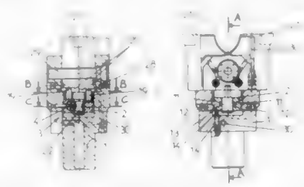
Emile Pfalzgraf, 7, rue de Neuwiller, 67330 Bouxwiller, France

Filed Dec. 30, 1986, Ser. No. 947,963

Claims priority, application France, Jan. 16, 1986, 86 00814; Aug. 1, 1986, 86 11293

Int. Cl.[4] B23B *51/00*

U.S. Cl. 408—157 13 Claims



1. Drilling head comprising a body for fastening in a mounting support, means for mounting on said body a pair of radially movable tools, a casing mounted for axial displacement along a bore in said body, said casing being rotatable relative to said body about the axis of said bore, means for rotating said casing in said bore, means for moving said casing axially along said bore, said casing carrying means which are engageable with both tools of said pair of radially movable tools and which in one axial position of the casing along the bore move both tools in opposite axial directions upon rotation of the casing and which in another axial position of the casing along the bore contact only one tool to move said one tool radially relative to the other said tool upon rotation of the casing.

4,761,103

MICRO-ADJUSTABLE BORING HEAD

Dragisa Krstovic, 6307 Westlake Ave., Parma, Ohio 44129

Filed Apr. 30, 1987, Ser. No. 44,287

Int. Cl.[4] B23B *29/03*

U.S. Cl. 408—181 18 Claims



1. A boring head comprising a body member having a working end, a diametrical bore extending through said body member adjacent said working end, a cutter holder insertable into one end of said diametrical bore, means providing for limited axial movement of said cutter holder in said diametrical bore while preventing relative turning movement, a first drive shaft rotatably mounted in the other end of said diametrical bore, said first drive shaft having threaded engagement with said cutter holder, whereby rotation of said drive shaft causes axial movement of said cutter holder in said diametrical bore for radially adjusting the position of said cutter holder relative to the axis of said body member, a second drive shaft rotatably mounted in said body member, and gear means between said first and second drive shafts whereby rotation of said second drive shaft will also cause rotation of said first drive shaft, both said first and second drive shafts having wrench engaging sockets in the outer ends thereof to permit the direct turning of said first drive shaft to provide for rough orientation of said cutter holder, and to permit indirect turning of said first drive shaft by turning said second drive shaft for more precise orientation of said cutter holder.

4,761,104

PORTABLE TUBE MILLING TOOL

Tollief O. Hillestad, P.O. Box 706, Summerland Key, Fla. 33042

Continuation-in-part of Ser. No. 402,838, Jul. 29, 1982, Pat. No. 4,620,823, which is a continuation-in-part of Ser. No. 213,814, Dec. 8, 1980, Pat. No. 4,449,871. This application Mar. 21, 1985, Ser. No. 714,372

The portion of the term of this patent subsequent to Nov. 4, 2003, has been disclaimed.

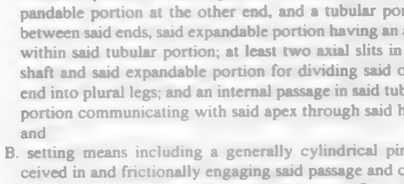
Int. Cl.[4] B23C *3/02*

U.S. Cl. 409—175 14 Claims

1. A portable milling tool, comprising:

a housing, said housing substantially enclosing an internal shaft guide, a pinion gear and a drive gear, said housing further having a shaft extending through a portion thereof, a front end of said shaft having a means for expandably engaging a sleeve, said shaft having a remaining end portion;

said remaining end portion of said shaft extending through another portion of said housing and having a feed nut means for causing said shaft to move inward or outward of said housing, said shaft guide having a bore therein, said remaining shaft end matingly engaging said shaft guide bore in an axial direction, said shaft guide having means to



prevent rotation of said shaft in said shaft guide bore, said pinion gear connected to said drive gear; means for mounting said drive gear for rotation within said housing coaxially with and coaxially spaced apart from said shaft guide, and a milling head, said drive gear connected to said milling bend.

4,761,105

BLIND FASTENER SETTABLE BY SPRING PIN

Robert B. Gardner, Camp Hill, Pa., assignor to National Rivet & Manufacturing, Company, Waupun, Wis.

Filed Aug. 8, 1983, Ser. No. 521,067

Int. Cl.[4] F16B *13/06*; B23P *11/00*

U.S. Cl. 411—57 12 Claims



1. In a settable fastener for being set in the aperture of a workpiece, said fastener comprising:

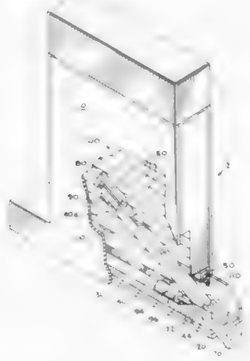
A. a generally tubular outer member disposed along an axis and having a first head at one end for bearing against a said workpiece, a coaxial, generally conical, radially expandable portion at the other end, and a tubular portion between said ends, said expandable portion having an apex within said tubular portion; at least two axial slits in said shaft and said expandable portion for dividing said other end into plural legs; and an internal passage in said tubular portion communicating with said apex through said head; and

B. setting means including a generally cylindrical pin received in and frictionally engaging said passage and capable of being driven axially against said apex to flatten said expandable portion, thereby spreading said legs radially outward to form a second head for clamping said workpiece between said first and second heads;

the improvement wherein said setting means comprises a generally tubular spring pin having first and second ends and a central portion between said ends, said central portion being resiliently circumferentially expandable for engaging said passage.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,106
PART FEEDER
Robert N. Brown, Los Gatos, and James J. Farquhar, San Jose, both of Calif., assignors to Alliance Automation Systems, Inc., Rochester, N.Y.
Filed Oct. 9, 1986, Ser. No. 917,046
Int. Cl.[4] B65G *59/06, 65/23;* H05K *13/02*
U.S. Cl. 414—125 15 Claims





1. A part feeder capable of moving individual parts to a work station from a storage tube having an internal track therein generally conforming in vertical cross-section to at least a portion of the vertical cross-section of one or more parts stored within the tube to permit said parts to freely slide along said track within the tube, said part feeder comprising:

(a) a base;

(b) a support member and means slidably mounting said support member on said base;

(c) a tiltable arm member pivotally mounted on said support member;

(d) a work station on said tiltable arm member;

(e) first means for releasably securing one end of said tube on said arm member against said work station;

(f) second means for sufficiently tilting said arm member so that said end of said tube adjacent said work station is sufficiently lower than the remainder of said tube to permit one part in said tube to slide out of said tube into said work station; and

(g) means for returning said arm member and said tube thereon back to a horizontal position.

4,761,107
APPARATUS FOR TRANSFERRING COMPONENTS TO AND FROM CONTAINERS
Edsel W. Frantti, Penn Hills Township., Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 19, 1986, Ser. No. 875,913
Int. Cl.[4] G21C *19/00*
U.S. Cl. 414—146 13 Claims

1. Apparatus for transferring components to and from containers therefor, which apparatus includes:

a stationary support frame defining a pathway;

a carriage moveable along the pathway and having at least one container compartment for receiving and holding a container and at least one component compartment for receiving and holding a component, said container compartment being spaced from said component compartment along the pathway;

two stationary stops located to delimit first and second ends of the pathway;

a movable stop located along the pathway between said stationary stops;

abutment means carried by said carriage, and disposed to cooperate with said stops so that contact between said abutment means and said stationary stops defines repective first and second end operating positions of said carriage along said pathway and contact between said abutment means and said movable stop defines at least one further operating position of said carriage along said pathway, which further position is spaced from said second end position by a distance equal to the spacing between said container compartment and said component compartment;

component transfer means for transferring a component vertically to and from a respective one of said compartments when said carriage is in a respective one of said second end and further operating positions;

signal controllable drive means connected to said carriage for moving said carriage to a selected position along said pathway;

signal controllable movable stop displacing means coupled to said movable stop for displacing said movable stop between a raised position in which said movable stop can be contacted by said abutment means and a lowered position in which said movable stop can not be contacted by said abutment means; and

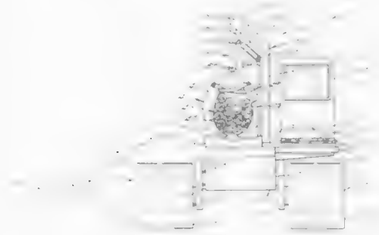
electronic data processing means connected to receive signals indicative of the desired operating position of said carriage and connected to said drive means and movable stop displacing means for operating said drive means and said movable stop displacing means for automatically displacing said carriage to the desired operating position.

4,761,108
LOW PROFILE SLAB CARRIER
Edward S. Kress; Dennis R. Thomas, and William L. LaBerdia, all of Brimfield, Ill., assignors to Kress Corporation, Brimfield, Ill.
Filed Feb. 2, 1987, Ser. No. 9,819
Int. Cl.[4] B60P *3/00*
U.S. Cl. 414—460 9 Claims



1. A heavy duty slab carrier comprising, in combination, a self-propelled tractor having a hitch and a trailer having a rear wheel assembly, said trailer including a longitudinally extending main frame pivotally supported by said tractor hitch and said rear wheel assembly, said main frame having an essentially unobstructed upper surface extending from adjacent said hitch to the rear end of the trailer and defining substantially uniformly the maximum vertical profile of the trailer, said main frame having a plurality of lift brackets depending therefrom, said rear wheel assembly including at least two wheels arranged in close fore and aft relation to each other with a space therebetween on each side of the trailer to straddle a stack of slabs, said rear wheels having inner and outer profiles respectively defining substantially the maximum slab straddle width and the maximum transport clearance width of the trailer, means including a plurality of tong arms pivotally mounted on said lift brackets and extending downwardly from said main frame for gripping a number of slabs, one of said tong arms being disposed in the space between said fore and aft wheels on each side of the trailer and pivotable to an open position substantially within the inner and outer profiles of said rear wheels, actuator means mounted on said main frame within said vertical profile of the trailer for urging said tong arms toward closed position, and lift means for raising and lowering said main trailer frame and said gripping means relative to the tractor and said rear wheel assembly.

4,761,109
FORWARDER
Per-Gustaf Mellgren, Pointe Claire, Canada, assignor to Forest Engineering Research Institute of Canada, Pointe Claire, Canada
Continuation-in-part of Ser. No. 675,182, Nov. 27, 1984, Pat. No. 4,639,186. This application Nov. 24, 1986, Ser. No. 933,863
Claims priority, application Canada, Dec. 12, 1983, 443121
Int. Cl.[4] B65G *67/02*
U.S. Cl. 414—555 8 Claims



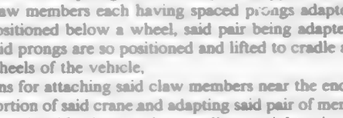
1. A vehicle with four rotatable ground engaging means comprising: a single, rigid chassis mounting a power unit, drive means and material handling and/or carrying means, the chassis having a longitudinal axis; a first two of the ground engaging means rigidly mounted on one side of the chassis at longitudinally spaced-apart locations, the axis of rotation of the first two ground engaging means located in a horizontal plane extending parallel to the longitudinal axis of the rigid chassis; the other two ground engaging means located on the other side of the chassis, a beam carrying the other two ground engaging means, one at each end of the beam, and means pivotally mounting the beam, intermediate its ends, to the other side of the chassis.

4,761,110
VEHICLE LIFTING AND TOWING APPARATUS
Roland A. Boutilier, Halifax, Canada, assignor to Tradex Limited, Canada
Continuation of Ser. No. 876,087, Jun. 19, 1986, abandoned, which is a continuation of Ser. No. 614,534, May 29, 1984, abandoned. This application Feb. 24, 1987, Ser. No. 18,838
Claims priority, application Canada, May 30, 1982, 429199
Int. Cl.[4] B60P *3/12*
U.S. Cl. 414—563 17 Claims

12. A lifting and towing apparatus adapted to be mounted below the body of a vehicle having a main frame and an axle assembly and suspension springs between the axle assembly and main frame, said apparatus comprising:

(a) bracket means including pivot means associated therewith defining a main pivot axis and mountable to rearwardly disposed transversely spaced portions of the main frame of the vehicle;

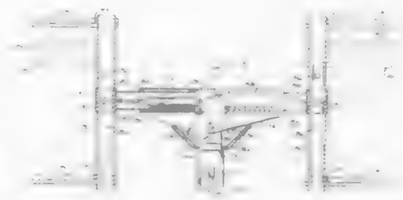
(b) a lifting frame pivotally secured to said bracket means for pivoting movement about the main pivot axis between a raised and a lowered position for raising and lowering another vehicle when secured to said lifting frame;



(c) actuator means operatively connected to said lifting means for effecting said pivoting movement of said lifting frame; and

(d) means for engaging the vehicle to be lifted and towed, said means for engaging being a vehicle bumper section and being connected to said lifting frame via a telescoping assembly, and a hydraulic actuator within said telescoping assembly for extending and retracting said means for engaging to move the means for engaging between a position in close proximity to the lifting frame to a position spaced from the lifting frame.

4,761,111
AUTOMOBILE LIFTING AND TOWING EQUIPMENT
Andrew M. Brown, 4535 E. 6th Ave., Denver, Colo. 80220
Division of Ser. No. 303,535, Sep. 18, 1981, Pat. No. 4,473,334. This application Sep. 21, 1984, Ser. No. 653,512
Int. Cl.[4] B60P *3/12*
U.S. Cl. 414—563 2 Claims



1. In an automotive vehicle lifting and towing truck equipment or the like having a rearwardly extending crane and means for positioning a substantial end portion of the crane close to the ground for vehicle lifting purposes, the improvement which comprises:

a pair of two-pronged outwardly and oppositely opening claw members each having spaced prongs adapted to be positioned below a wheel, said pair being adapted when said prongs are so positioned and lifted to cradle a pair of wheels of the vehicle,

means for attaching said claw members near the end of said portion of said crane and adapting said pair of members to be swingable about an intermediate upright axis whereby said pair of claw members may be positioned along lines at selected angles with respect to the longitudinal axis of said end portion of said crane,

means effective on positioning of said attaching means near the ground and between a pair of wheels of a vehicle to be towed for locating said claw members directly under respective wheels whereupon the lifting of said crane

VOL 1093 ISS 1 AG 2 1988 UMI

portion will lift the vehicle with the pair of wheels cradled in said claw members,

said improvement including the further improvement including means mounting said claw members slidably on said attaching means for movement of said members toward and away from each other between a position wherein the distance between the outer ends of said claw members is less than that of the spacing between the wheels of a pair of wheels of the vehicle to be lifted to a position wherein the claws of each member lie on respective sides of the ground engaging portion of the vehicle wheel, and power means for effecting the sliding movement of said claw members,

the further improvement wherein each of said prongs is straight and wherein each of said pair of said claws includes a hollow straight cross member having opposite walls and opposed pair of holes in said walls for receiving the ends of said claw members, each of said prongs having an upper notch for engaging the far wall when inserted in a pair of holes and lower notch for engaging the near wall whereby when said prongs are raised against a wheel and loaded they are locked against removal from said cross bar.

4,761,112

DEVICE FOR MOUNTING OF REMOTE CONTROL APPARATUSES

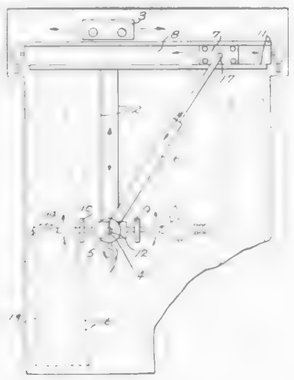
Wolfgang Hammon, Obertshausen; Wolfgang Theisen, Rodenbach, and Klaus Wegner, Hanau, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Hanau, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 924,159, Oct. 27, 1986, abandoned, which is a continuation of Ser. No. 871,133, Jun. 2, 1986, abandoned, which is a continuation of Ser. No. 770,373, Aug. 29, 1985, abandoned, which is a continuation of Ser. No. 422,179, Sep. 23, 1982, abandoned. This application Jun. 29, 1987, Ser. No. 67,439

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1981, 3138634

Int. Cl.[4] B66F *19/00*

U.S. Cl. 414—591 3 Claims



1. An apparatus suitable for mounting of remote control apparatus and tools as well as for remote controlled manipulating of loads in spaces which are hazardous for humans, especially in hot cells of industrial nuclear plants, comprising:

a crane bridge,

a crane carriage movably and guidedly mounted on top of the crane bridge,

a shaft having a crane hook roll thereon,

cable means suspending said shaft from said crane carriage,

a travelling carriage movably and guidedly mounted on a side of said crane bridge,

at least one telescopic arm having one end connected to the travelling carriage, the opposite end of said telescopic arm being connected to said shaft,

a manipulating device, and

at least one movable mounting means for carrying the manipulating device, said movable mounting means being connected through said shaft with said telescopic arm.

4,761,113

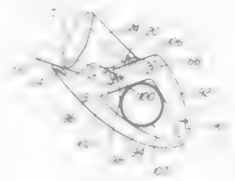
QUICK COUPLER ASSEMBLY

Wayne G. Smith, Burlington; David V. Martinez, Fort Madison; Robert E. Mozingo, and Charles B. Hanson, both of Burlington, all of Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Jun. 20, 1986, Ser. No. 876,594

Int. Cl.[4] B66C *3/04*

U.S. Cl. 414—732 2 Claims



1. A quick attachment and release assembly for attaching an implement to a lift arm, said assembly comprising:

a quick coupler pivotally attached at one end to said lift arm and having an opposite slotted end for selective engagement with a mounting pin on said implement, an intermediate portion of said quick coupler including a transverse coupler pin having opposite end portions which are laterally spaced from the sides of said quick coupler, and an actuating mechanism connected between said lift arm and said quick coupler for rotating said quick coupler relative to said lift arm;

said implement including spaced apart attachment members having slots therein which receive the opposite end portions of said coupler pin and means for locking said coupler pin end portions within said slots;

said quick coupler being movable into the space between said attachment members such that its slotted end engages the implement mounting pin and the end portions of said coupler pin enter said slots for connecting said quick coupler to said implement; and

said attachment members comprising a pair of first tangs, said first pair of tangs pivotally interconnected to a second pair of tangs, each tang of said second pair of tangs including a locking portion which engages an end portion of said coupler pin within a respective slot upon relative movement between said first and second pairs of tangs.

4,761,114

ARTICULATED HEAD FOR AN INDUSTRIAL ROBOT AND A ROBOT EQUIPPED WITH A HEAD OF THIS TYPE

Michel Barland, 32 Allées Paulmy, 64100 Bayonne, France

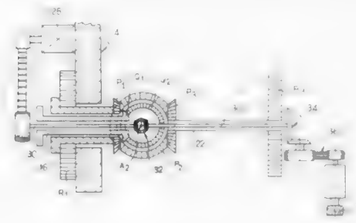
Filed Jun. 3, 1986, Ser. No. 869,880

Claims priority, application France, Jun. 10, 1985, 85 08712

Int. Cl.[4] B66C *1/00*

U.S. Cl. 414—735 13 Claims

1. An articulated head for an industrial robot, comprising: at least three movable frames mounted in succession along a longitudinal axis X—X, the first frame being carried by the free end of the robot arm and being rotatable about a first axis with respect to said arm, the second frame being carried by the first frame and rotatable about a second axis with respect to said first frame and the third frame being carried by the second frame and rotatable about a third axis with respect to the second frame, the function of said third frame being to support a tool which is positioned and oriented by the robot, the first axis and the third axis being longitudinal axes which coincide with the longitudinal axis X—X in the straight position of the articulated head and the second axis being an intermediate and transverse axis which is substantially perpendicular to the plane containing the first and third axes, wherein rotational displacement of the second frame with respect to said first frame about the second axis of rotation is controlled by a first driving element, wherein the movements of rotation of the first frame with respect to said arm about the first axis and of the



third frame with respect to said second frame about the third axis are in the same direction and are both controlled by a single common second driving element, said driving elements being carried by the robot arm, and wherein a first kinematic chain is interposed between the second driving element and the first and third frames and driven by the second driving element, without imparting any driving action upon said second frame, wherein said kinematic chain being so designed that, under the action of any movement of rotation of said second driving element, the first and third frames undergo a rotational displacement respectively about the longitudinal first and third axes through angles α_1, and α_3, respectively, with respect to the robot arm and to said second frame, wherein said angles being always proportional and having the same direction.

4,761,115

AXIAL-FLOW FAN

Reinhold Hopfensperger, Dietelskirchen, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Filed Dec. 17, 1986, Ser. No. 942,735

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609212

Int. Cl.[4] F04D *29/54*

U.S. Cl. 415—119 11 Claims



1. An axial flow fan comprising:

a frame having a central opening therein;

fan blades rotatably mounted for rotation in a plane within said frame central opening to produce an airstream through said fan;

an electric motor coupled to said blades to rotate said blades and positioned inside said central opening; and

arrowhead-shaped mounting portions connecting said frame and said electric motor to attach said motor to said frame, each of said mounting portions being V-shaped in a plane parallel to the plane of rotation of said blades and having a tip between said frame and said motor, said mounting portions being oriented so that the tips point point in a circumferential direction relative to the center of rotation of said blades;

whereby said mounting portions guide the airstream through the fan and produce an air flow separation so that the generation of siren-like noise by the fan is suppressed.

4,761,116

TURBINE BLADE WITH TIP VENT

Bruce T. Braddy, Burlington, and Sacheveral Q. Eldrid, Stoneham, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed May 11, 1987, Ser. No. 48,700

Int. Cl.[4] F01D *5/18*

U.S. Cl. 416—92 3 Claims



1. An improved turbomachine blade having spaced apart, radially extending convex and concave sidewalls connected at leading and trailing edges; a blade tip cap recessed from the radially outer end of the blade; an interior cavity within the blade; an open plenum defined by the blade tip cap and radially extending sidewalls; at least first and second holes through the blade tip cap connecting the blade interior cavity with the open plenum, said first hole being closely adjacent the leading edge of the blade and the second hole being the next following hole and wherein the improvement comprises:

an opening in the radial convex sidewall, the opening being positioned between the first and second holes.

4,761,117

TURBINE ROTOR AND A METHOD OF PRODUCING THE SAME

Isao Oda, Nagoya, and Nobuo Tsuno, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed May 28, 1986, Ser. No. 867,538

Claims priority, application Japan, Jun. 12, 1985, 60-126293

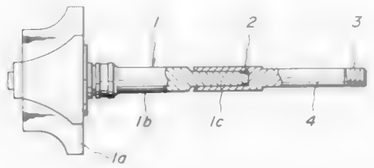
Int. Cl.[4] F01D *5/28*

U.S. Cl. 416—241 R 7 Claims

1. A turbine rotor comprising a ceramic turbine vane wheel, a ceramic shaft formed integrally with said turbine wheel, and a metallic shaft bonded to said ceramic shaft, said metallic shaft having a turbine vane wheel shaft portion adjacent said turbine vane wheel and a compressor wheel-fitting shaft portion distal of said turbine vane wheel, wherein the hardness of a portion

VOL 1093 ISS 1 AG 2 1988 UMI

of or the whole compressor wheel-fitting shaft portion is smaller than the hardness of a portion of said turbine vane



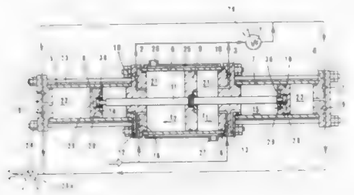
wheel shaft portion, said hardness of said compressor wheel-fitting shaft portion being between Hv 250 and Hv 400.

4,761,118

POSITIVE DISPLACEMENT HYDRAULIC-DRIVE RECIPROCATING COMPRESSOR

Franco Zanarini, Via Curiel, 27, Castelmaggiore (Bologna), Italy (40013)

Filed Feb. 7, 1986, Ser. No. 827,823
Claims priority, application Italy, Feb. 22, 1985, 3342 A/85
Int. Cl.[4] F04B *25/04*
U.S. Cl. 417—254 12 Claims



1. A positive hydraulic-drive reciprocating compressor, comprising:

at least four coaxially-disposed bulkheads and at least three coaxial cylinder barrels located between the four bulkheads;

at least three pistons reciprocated in fluid-tight fashion each in a respective barrel, of which a central piston and relative barrel are of greater diameter and bore than the remaining outer pistons and barrels and, together with at least two relative bulkheads, create at least two low pressure chambers;

a rod interconnecting the pistons and accommodated slidably and in fluid-tight association by passages located in the central bulkheads;

flow passages communicating with power chambers, and with a hydraulic power pack driving the piston-and-rod assembly, wherein such power chambers each accommodated the piston rod and are bounded, on the one hand, by one of the outer pistons, and on the other, by a corresponding central bulkhead;

gas inlet valves which connect the low pressure chambers with a source of gas and with at least one pair of high pressure chambers, said high pressure chambers being bounded by outer ones of said barrels and corresponding ones of said outer pistons, and outlet valves which connect the one pair of high pressure chambers with at least one further pair of compression chambers, or with services to which compressed gas is to be supplied.

4,761,119

COMPRESSOR HAVING PULSATING REDUCING MECHANISM

Hiroshi Nomura; Susumu Saito, and Susumu Echizen, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 831,445, Feb. 20, 1986, abandoned, and a continuation-in-part of Ser. No. 831,446, Feb. 20, 1986, abandoned. This application Apr. 8, 1987, Ser. No. 35,939
Claims priority, application Japan, Mar. 1, 1985, 60-29246[U]; Mar. 1, 1985, 60-29245[U]
Int. Cl.[4] F04B *27/08, 39/00*
U.S. Cl. 417—269 5 Claims



1. A compressor having a pulsating reducing means, said compressor comprising:

a cylinder block having a plurality of cylinder bores therein;

a plurality of pistons slidable in said cylinder bores;

means connected to said pistons for driving said pistons with a predetermined phase difference between the strokes of the respective pistons;

a valve plate on one end of said cylinder block and having a plurality of sets of at least one suction hole and at least one discharge hole, one set being positioned over the end of each of said cylinder bores;

a suction valve in each suction hole for opening and closing said suction hole;

a discharge valve in each discharge hole for opening and closing said discharge hole;

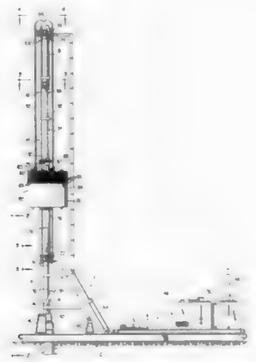
a hollow cylinder head on said one end of said cylinder block over said valve plate, said cylinder head having partitioning means for partitioning the inside of said cylinder head into a first low pressure chamber, a second low pressure chamber and a high pressure chamber, said suction holes opening into said second low pressure chamber, said discharge holes opening into said high pressure chamber and said cylinder head having an inlet opening opening into said first low pressure chamber and a discharge opening opening out of said high pressure chamber, said partitioning means having suction communicating holes between said first low pressure chamber and said second low pressure chamber, each suction communicating hole being in a non-overlapping laterally offset position, relative to the axes of the two closest adjacent cylinder bores, with respect to said suction holes and at an equal distance from the two closest adjacent suction holes.

4,761,120

WELL PUMPING UNIT AND CONTROL SYSTEM

James R. Mayer, 7558 S. Rosemary Cir., Englewood, Colo. 80112, and Robert T. Sparkman, Jr., 107 Harper's Ferry, Victoria, Tex. 77904

Filed Jun. 23, 1986, Ser. No. 877,468
Int. Cl.[4] F04B *47/04*
U.S. Cl. 417—403 32 Claims



1. In a well pumping unit for actuating a pump rod string connected to a subsurface pump:

a hydraulic fluid operated actuator including means forming opposed fluid chambers and means connecting said actuator to a pump rod string;

means for operating said actuator to reciprocate said pump rod string comprising a source of pressure fluid, a directional control valve operably connected to said opposed fluid chambers in said actuator for selectively valving fluid to said actuator to effect reciprocation of said pump rod string;

pilot valve means in communication with said source of pressure fluid for operating said directional control valve to effect operation of said actuator;

time delay relay means operable to control movement of said pilot valve means to move said directional control valve from one position to the other;

switch means responsive to the movement of the actuator in opposite directions to effect actuation of said relay means to control said pilot valve means; and

pressure switch means interconnected with said relay means and operable to effect positioning of said directional control valve on starting of said actuator to move said actuator in a predetermined direction of said pump rod string, said pressure switch means being responsive to increasing pressure in a conduit connected to said actuator to become inoperable to effect operation of said relay means upon increasing pressure in said conduit.

12. A well pumping unit for actuating a pump rod string connected to a subsurface pump comprising:

an elongated mast adapted to be supported generally above a wellhead;

a hydraulic cylinder actuator supported on said mast and including a cylinder, piston means, a lower piston rod connected to a pump rod and an upper piston rod;

counterweight means diposed around said mast for movement to counteract the weight of said pump rod string; and

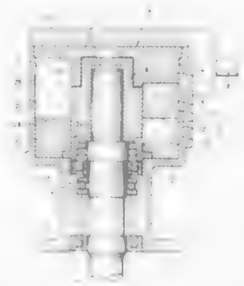
means interconnecting said upper piston rod and said counterweight means.

4,761,121

ROTARY PUMP WITH AN IMPROVED AIR EXTRACTION SYSTEM FOR SACKING GROUND MEAT

Righele G. Battista, Via Tiziano, 4, 36010 Zane' (Vicenza), and Scorzato Giuseppe, Via Prole, 48, 36035 Marano Vicentino (Vicenza), both of Italy

Filed Nov. 21, 1986, Ser. No. 933,565
Claims priority, application Italy, Dec. 17, 1985, 2417785[U]
Int. Cl.[4] F04C *2/344, 15/00*
U.S. Cl. 418—15 4 Claims



1. Rotary pump for sacking ground meat comprising a stator with a cylindrical cavity with a vertical axis and a rotor housed in a turning manner in said cylindrical cavity of the stator said rotor being formed of a higher central part and a lower peripheral part so as to describe over said peripheral part an upper annular chamber into which the ground meat is fed from a filling mouth and made to advance to a delivery mouth by pump blades housed in a vertically sliding manner in respective radial passages in the peripheral part of the rotor, said blades being driven alternately to protrude from and return into the space occupied by said peripheral part in conformity with a predetermined sequence determined by at least one fixed annular cam located in a lower annular chamber located beneath said peripheral part of the rotor and on which there rest said pump blades and being provided with an exhaust mouth for deaeration of the ground meat, characterized in that said exhaust mouth opens into said lower chamber of the pump in a position essentially diametrically opposed to said filling mouth and communicates with the overlying annular chamber through an ample passage and with a zone of said lower chamber underlying said filling mouth through a narrow passage.

4,761,122

SCROLL-TYPE FLUID TRANSFERRING MACHINE WITH SLANTED THRUST BEARING

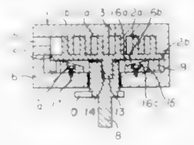
Tetsuzo Matsugi; Tsutomu Inaba, and Norihide Kobayashi, all of Wakayama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1986, Ser. No. 935,295
Claims priority, application Japan, Nov. 27, 1985, 60-268434; Nov. 27, 1985, 60-268433
Int. Cl.[4] F01C *1/04, 21/02;* F16C *17/04*
U.S. Cl. 418—55 2 Claims

1. A scroll-type fluid transferring machine provided with a stationary scroll member and an orbiting scroll member, each being in the shape of a wrap formed by an involute curve and being projectively attached onto a base plate to define a compression chamber by combining them in a manner to mutually offset said wraps; a main shaft for transmitting device force from a prime mover to said orbiting scroll member; a bearing frame to hold said orbiting scroll member and said main shaft for sharing thrust load to be imparted to each of them; a thrust bearing mounted on said bearing frame for supporting said base plate of said orbiting scroll member; and a rotation-preventing

VOL 1093 ISS 1 AG 2 1988 UMI

mechanism to prevent said orbiting scroll member from rotation around its axis and to cause it to revolve around said main shaft, said fluid transferring machine being characterized in that the surface of said thrust bearing to support the base plate of said orbiting scroll member, or the surface of said base plate of said scroll member supported by said thrust bearing is slanted in the radial direction so as to form the surface thereof in a tapered center-concave shape and to form a space gap



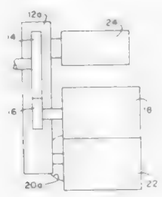
therebetween in a non-operational state, wherein the inner peripheral side is concave with respect to the outer peripheral side at a predetermined distance in the axial direction, said distance being such that when the base plate of the orbiting scroll member is deformed by the thrust load which is generated at the time of compression of the gas during operation of the compressor, the tapered surface of the thrust bearing supports the base plate of the orbiting scroll member over a bearing area.

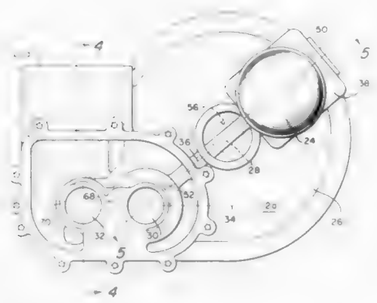
4,761,123

LUBRICATION ARRANGEMENT, IN AN AIR COMPRESSOR

Brian D. Sowards, Mocksville, and Frederick H. Emilson, Lexington, both of N.C., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jun. 11, 1987, Ser. No. 60,599
Int. Cl.⁴ F04C *18/16, 29/02;* **F01M** *11/03*
U.S. Cl. 418—89 **11 Claims**





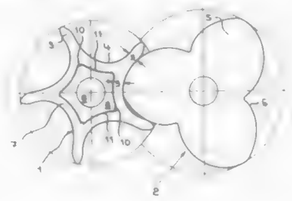
1. In an air compressor having an airend with a pair of coacting rotors, a lubrication arrangement therefor, comprising:
a gear housing; and
a pair of juxtaposed, coacting rotors;
said housing having means for rotatably journaling therein, on a horizontal plane, juxtaposed, ends of said rotors;
said housing further having a port formed therein for admitting lubricant thereinto;
said housing also having a confined passageway formed therein for conducting lubricant, which is admitted via said port, to said plane; and wherein
said passageway is disposed at an inclination along a diagonal plane which traverses said horizontal plane.
10. An airend, for an air compressor, comprising:
a pair of coacting rotors; and
a gear housing, of aluminum, die-cast formation, having means for journalling said rotors therewithin; wherein
one of said rotors is a female rotor;
the other of said rotors is a male rotor;
said female rotor is journalled in said housing outwardly, relative to said housing, in adjacency to a first, outermost end of said housing and said male rotor is journalled in said housing inboard from said female rotor, i.e., inwardly relative to said housing, and in juxtaposition with said female rotor; and further including
an air inlet conduit, integrally formed with said housing; wherein
said female rotor has a rotary axis; and
said conduit extends normal to said axis along a plane which substantially traverses said axis.

4,761,124

SCREW-TYPE ROTARY MACHINE HAVING AT LEAST ONE ROTOR MADE OF A PLASTICS MATERIAL

Karlis Timuska, Spånga, and Ulf Sjölin, Stockholm, both of Sweden, assignors to Svenska Rotor Maskiner Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE86/00109, § 371 Date Nov. 10, 1986, § 102(e) Date Nov. 10, 1986, PCT Pub. No. WO86/05555, PCT Pub. Date Sep. 25, 1986
PCT Filed Mar. 13, 1986, Ser. No. 934,445
Claims priority, application Sweden, Mar. 15, 1985, 8501280
Int. Cl.⁴ F03C *2/08;* **F04C** *18/16*
U.S. Cl. 418—153 **3 Claims**



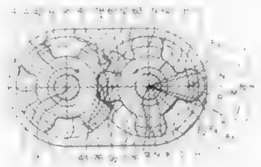
1. A screw-type rotor machine for the compression or expansion of an elastic fluid, wherein a working fluid exerts a certain pressure on lands of rotor members in the machine, comprising:
a male rotor and a female rotor, each including helically extending lands and grooves formed between adjacent ones of said lands,
wherein the female rotor comprises a metal core shaft and a plastics material having a modulus of elasticity of at most 25,000 N/mm² which material is injection molded over said core shaft, and the lands of the female rotor have a mean thickness corresponding to the modulus of elasticity of said plastics material so that the lands of the female rotor can deflect resiliently when operatively engaging the lands of said male rotor, but the lands of said female rotor do not deflect significantly solely as a result of the pressure exerted on said lands by the working fluid,
said core shaft including helically extending lands formed to project into the bases of the female rotor land;
and wherein said core shaft has concave surfaces formed between adjacent ones of the lands on the core shaft, so that said concave surfaces are spaced form the surface of the grooves formed in the molded plastics material of the female rotor by a distance substantially equal to the mean thickness of the roto- lands.

4,761,125

TWIN-SHAFT MULTI-LOBED TYPE HYDRAULIC DEVICE

Mitsuo Inagaki, Okazaki; Shigeki Iwanami, Nishio; Hideaki Sasaya, and Hiromichi Nakano, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 25, 1987, Ser. No. 30,058
Claims priority, application Japan, Mar. 29, 1986, 61-69769; Feb. 6, 1987, 62-24833
Int. Cl.⁴ F04C *18/16*
U.S. Cl. 418—201 **22 Claims**



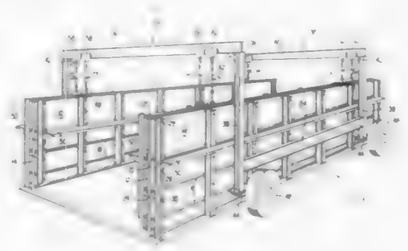
1. A hydraulic device having two shafts and multi-lobed rotors mounted to each shaft, said rotors being rotated by a drive source applied to said shafts to compress fluid, said hydraulic device comprising:
a housing having a rotor chamber defined by an inner wall, and an inlet and an outlet, said inlet and outlet being in communication with said rotor chamber;
a first shaft rotatably supported by said housing and connected to said shaft source;
a second shaft rotatably supported by said housing and operatively connected to said first shaft;
a first rotor having first rotor elements provided with at least three teeth and less than five teeth formed on the outer periphery thereof at a constant integral, each of said teeth having an arc tip portion fluid-tightly engaged with said inner wall, first and second circumferential ends of each said arc tip defining therebetween and with the center of said respective rotor element an angle θ_2, said first rotor elements having substantially the same configuration, and being adjacently fixed to said first shaft in such a manner that said first rotor elements are displaced by an angle θ_3 in the same rotational direction along the axial length of said first shaft and said teeth tip portions of first rotor elements adjacent to each other are overlapped so that the spaces between said teeth define a spiral path on the outer surface of said first rotor, said angle θ_2 being substantially equal to said offset angle θ_3; and
a second rotor having second rotor elements provided with at least three teeth and less than five teeth formed on the outer periphery thereof at a constant level, each of said teeth having an arc tip portion fluid-tightly engaged with said inner wall, first and second circumferential ends of each said arc tip defining therebetween and with the center of said respective rotor element an angle θ_2, said second rotor elements having substantially the same configuration and being adjacently fixed to said second shaft in such a manner that said second rotor elements are displaced by an angle θ_3 in the opposite direction to said first rotor elements and said teeth tip portions of second rotor elements adjacent to each other are overlapped so that spaces between said teeth define a spiral path on the outer surface of said second rotor, said teeth of said second rotor elements being in mesh with said teeth of said first rotor elements, said angle θ_2 being substantially equal to said offset angle θ_3;
said first and second rotors rotating synchronously to draw fluid in through said inlet into said rotor chamber and discharge said fluid out through said outlet.

4,761,126

TRAVELING CONCRETE CASTING MOLD

Jaime del Valle, 166 President Ramirez, Apt. 4, Hato Rey, P.R. 00919

Filed Jan. 20, 1987, Ser. No. 6,243
Int. Cl.⁴ E04G *11/34*
U.S. Cl. 425—62 **11 Claims**



1. A traveling casting mold for forming a pre-cast reinforced concrete structure comprising:
inverted U-shaped movable frame means for supporting the mold,
said frame means comprising vertical outer members joined by a cross bar member and wheel means attached to each said vertical outer member leaving the area under the cross bar substantially free from the wheel means,
moving means traveling between said outer vertical members on the crossbar of the movable frame means for movably attaching wall form means to said crossbar, and
inner wall form means and outer wall form means each attached to said moving means, for directly supporting poured concrete walls of the structure,
wherein each said inner wall form means and outer wall form means is individually movable vertically and transversely by said moving means, and wherein a concrete floor portion and at least one concrete wall are formed in a single concrete pouring and the at least one concrete wall is sufficiently cured to be self supporting before moving said inner wall form means and outer wall form means away from direct support of the said at least one concrete wall.

4,761,127

APPARATUS FOR WASTE ENCAPSULATION

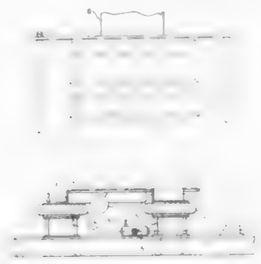
Michael J. O'Brien, Shevington, and Robert B. Rigg, Walton, both of England, assignors to British Nuclear Fuels Plc, Risley, England

Filed Jan. 20, 1987, Ser. No. 4,481
Claims priority, application United Kingdom, Jan. 28, 1986, 8607050
Int. Cl.⁴ G21F *9/36*
U.S. Cl. 425—110 **3 Claims**

1. Apparatus for the encapsulation of harmful waste products, comprising a drum formed with axially compressible rolling rings, a charge chute for the delivery of wastes and an encapsulating material into the drum, a vibratable platform supporting the drum beneath the charge chute, an inflatable support means for the platform for lifting the drum against a surface at the bottom of the charge chute and for axially compressing the rolling rings by a predetermined amount to maintain the end of the drum in sealing engagement about the

VOL 1093 ISS 1 AG 2 1988 UMI

charge chute, and vibration means for vibrating the platform to agitate the contents of the drum but without breaking the seal



at the charge chute due to the pre-compression of the rolling rings.

4,761,128

APPARATUS FOR REFORMING A FROZEN CONFECTION SLUG ON A STICK

Roscoe T. Fowler, New York, N.Y.; Arthur Hochhauser, Allentown, Pa.; Harold B. Kaufman, Jr., New York, N.Y.; John P. McCarthy, Huntington, N.Y., and Jerry Stockler, Wantagh, N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

Division of Ser. No. 196,931, Oct. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 196,705, Apr. 2, 1980, abandoned. This application Apr. 18, 1984, Ser. No. 601,108

Int. Cl.[4] A23G *9/26*; B29C *39/04*, *43/04*

U.S. Cl. 425—126.2 12 Claims



1. In a machine for manufacturing a shaped frozen confection on a stick in a high speed continuous manner having a first machine section including an elemental slug molding means for first forming an individually sized molded elemental slug of frozen confection with a stick projecting therefrom a liquid or semi-solid confection, a second machine section including at least one work station and a second conveyor means for advancing said molded slug of confection by said stick to said at least one work station, the improvement comprising: means for modifying an existing machine as set forth heretofore wherein said means comprises a frozen confection slug reforming station at said at least one work station including a pair of corresponding split mold halves movable from an open position to a closed position adapted to encompass the entire individually sized molded elemental slug of confection when in said closed position, cooperating reforming mold cavities in said reforming mold halves having an opening that substanstially circumscribes the medial cross-section of the individually sized molded confection slug and a volume substantially the same as the volume of said individually sized confection slug, and means for moving said reforming mold halves to said closed position with said reforming mold cavities around said elemental slug of confection under a pressure sufficient to cause said elemental slug of confection to assume the shape of said reforming mold cavity, which is different than the shape of said elemental slug of confection whereby the weight and volume of said shaped frozen confection is substantially the same as the weight and volume of said individually sized molded confection.

4,761,129

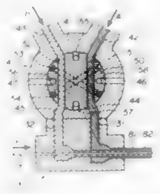
DEVICE FOR CHANGING COLOR DURING THE EXTRUSION OF A SHEATH AROUND A CONDUCTOR

Robert Aste, Yverdon-Les-Bains, and Peter Bloch, Montcherand, both of Switzerland, assignors to Swisscab E.A. Schoen S.A., Yvonand, Switzerland

Filed Jul. 7, 1987, Ser. No. 80,556

Int. Cl.[4] B29C *47/04*

U.S. Cl. 425—133.1 10 Claims



1. Apparatus for extruding a sheath of synthetic material around a conductor, said apparatus comprising an extruder head provided with at least two inlet conduits for synthetic material respectively connected to two orifices traversed by said conductor to permit extruding around said conductor a sheath formed of two layers of said material, and distributing means for selectively connecting said inlet conduits to a first and a second extruder for synthetic material, said distributing means comprising a distributor communicating with said two extruders and to a first and a second inlet conduit of said extruder head and means for control of said distributor, said distributor being provided with a mobile member which includes at least one pair of direct channels respectively providing communication of said first extruder with said first inlet conduit and of said second extruder with said second inlet conduit in a predetermined position of said mobile member, and a pair of inverted channels respectively providing communication of said first extruder with said second inlet conduit and of said second extruder with said first inlet conduit in another position of said mobile member.

4,761,130

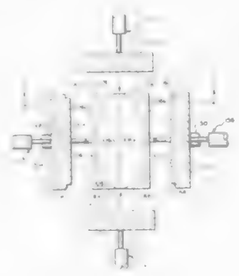
APPARATUS FOR BLOW MOLDING

Donald L. Peters, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 728,912, Apr. 30, 1985, Pat. No. 4,650,627. This application Nov. 17, 1986, Ser. No. 931,480

Int. Cl.[4] B29C *49/04*

U.S. Cl. 425—532 6 Claims



1. Apparatus comprising:

a closable mold comprising at least seven mold parts, each mold part being moveable form a mold open position to a mold closed position, said closable mold, when in the mold closed position, defining a box-shaped chamber having angular corners and edges and at least five sides, wherein the mold parts come together when the mold is in the closed position to determine the angular corners and edges of the box-shaped chamber;

an extrusion means for extruding a molten tubular parison in between the mold parts when the mold parts are in the mold open position;

an expansion means for pneumatically expanding a molten tubular parison to form a partly expanded parison prior to the mold parts being moved from the mold open position to the mold closed position; and

a means for moving the mold parts from the mold open position to the mold closed position so as pinch a portion of a partly expanded parison between adjacent mold parts being moved into the mold closed position.

4,761,131

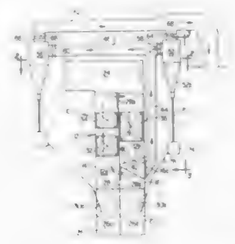
FLUIDIZED BED FLYASH REINJECTION SYSTEM

Iqbal F. Abdulally, Randolph, N.J., assignor to Foster Wheeler Corporation, Clinton, N.J.

Filed Apr. 27, 1987, Ser. No. 42,917

Int. Cl.[4] F23D *3/40*

U.S. Cl. 431—7 4 Claims



1. A fluidized bed reactor comprising an enclosure, partition means disposed in said enclosure for dividing said enclosure into a first and second chamber, a grate disposed in said enclosure for supporting a bed of particulate fuel material in each chamber, means for passing air through said grate to fluidize said material in each chamber, a first series of separating units disposed on one side of said enclosure and a second series of separating units disposed on the other side of said enclosure, means connecting said first and second chambers to said first and second series of separators, respectively, so that said separators receive a mixture of said air, the gaseous products of combustion of said fuel, and the relatively fine particulate material entrained thereby and separate said material from said mixture, first and second distributing means respectively associated with said first and second series of separating units for receiving said separated material from said separating units, respectively, and distributing said separated particulate material back to said first and second chambers, respectively at multiple locations in each chamber.

3. A method of operating a fluidized bed reactor comprising the steps of supporting two beds of particulate material including fuel, passing air to said material in each bed to fluidize said material and promote the combustion of said fuel, passing a mixture of said air, the gaseous products of combustion and the relatively fine particulate material entrained thereby to a first series of separators located adjacent one of said chambers and a second series of separators located adjacnet the other chamber, said separators, adapted to separate said material from said mixture at said locations, and distributing said separated particulate material from said first and second series of separators back to said one and said other chamber, respectively, at multiple locations.

4,761,132

OXYGEN ENRICHED COMBUSTION

Mark J. Khinkis, Morton Grove, Ill., assignor to Combustion Tec, Inc., Orlando, Fla.

Filed Mar. 4, 1987, Ser. No. 21,719

Int. Cl.[4] F23M *3/04*

U.S. Cl. 431—10 36 Claims



1. In a process for combustion of hydrocarbon fuel, the steps comprising:

introducing a first portion of about 5 to about 40 percent of the total said fuel to be cracked and combusted to a cracking chamber;

introducing to said cracking chamber oxygen-rich gas in an amount about 5 to about 50 percent of the stoichiometric requirement for complete combustion of said first portion of fuel, said oxygen-rich gas comprising greater than about 30 volume percent oxygen;

combusting and cracking said first portion of fuel with said oxygen-rich gas in said cracking combustion chamber at a temperature below about 2200° F. producing a cracked products mixture;

passing and introducing said cracked products mixture to a combustion chamber;

introducing to said combustion chamber a second remaining portion of said fuel and oxidizer comprising sufficient oxygen for substantially complete combustion of all of said fuel in said combustion chamber; and

combusting the combustible portion of said cracked products mixture and said fuel in said combustion chamber.

4,761,133

PRESSURIZED FLUIDIZED-BED COMBUSTION BURNER

Jürgen Bülbring, Gevelsberg, Fed. Rep. of Germany, assignor to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,249

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1986, 3628675

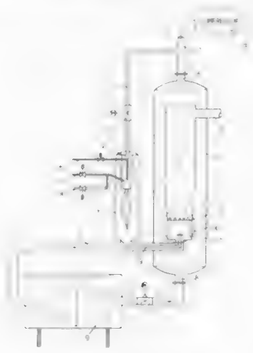
Int. Cl.[4] F23D *19/00*

U.S. Cl. 431—170 4 Claims

1. A pressurized fluidized bed burner comprising: A pressurized container with an air supply connection and having a combustion chamber with an air box for supplying combustion air to said combustion chamber; An air line connected to said pressurized container and extending into said pressurized container; A compressor attached to said air supply connection; A preliminary air heater; An air extraction connection on said pressurized container; An intake end on said preliminary air

VOL 1093 ISS 1 AG 2 1988 UMI

heater communicating with said air extraction connection; an outlet end on said preliminary air heater communicating with



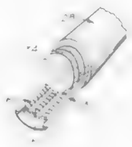
said air box of said combustion chamber through said air line which extends into said pressurized container.

4,761,134

SILICON CARBIDE DIFFUSION FURNACE COMPONENTS WITH AN IMPERVIOUS COATING THEREON

Bryan D. Foster, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 30, 1987, Ser. No. 31,500
Int. Cl.[4] F27D *5/00*
U.S. Cl. 432—253 7 Claims



1. A diffusion furnace component system comprising a liner, process tube, paddle, and at least one boat supportable on said paddle wherein said liner, process tube, paddle, and boat consist essentially of a sintered silicon carbide matrix containing 5 to 30% by weight of silicon metal, at least one surface of said liner, process tube, paddle, and boat being coated with an impervious coating of a high purity refractory material.

4,761,135

BAND CARRIER FOR ORTHODONTIC BANDS

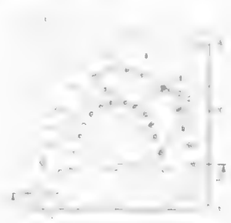
Hannelore Steinkohl, Gutenbergstrasse 11, D-8950 Kaufbeuren, Fed. Rep. of Germany

Filed Mar. 2, 1987, Ser. No. 20,554
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1986, 3609474
Int. Cl.[4] A61C *19/02*
U.S. Cl. 433—49 11 Claims

1. A band carrier assembly for supporting orthodontic bands comprising:

(a) a carrier plate, and

(b) a plurality of pins extending from at least one major surface of the plate for receiving said bands, said pins being arranged in an array commensurate with a jaw, the pins being arranged along two mutually approximately



parallel arcs which correspond to the arcuate form of upper jaw and lower jaw.

4,761,136

VISIBLE LIGHT CURED IMPRESSION MATERIAL

Narayanan Madhavan, Farmington Hills; Carole L. Groh, Dearborn Heights, and Robert L. Probst, Ann Arbor, all of Mich., assignors to Kerr Manufacturing Company, Romulus, Mich.

Continuation-in-part of Ser. No. 890,049, Jul. 28, 1986, abandoned. This application Aug. 6, 1987, Ser. No. 82,148
Int. Cl.[4] A61C *9/00;* C08F *2/50, 20/36*
U.S. Cl. 433—214 14 Claims

1. A one component photopolymerizable elastomeric impression material comprising:

		Weight Percent
(a)	a pre-polymer formed by reacting a polyol or a combination polyester/polyol with a diisocyanate, and then a hydroxyacrylate or hydroxymethacrylate;	20–65
(b)	a metal catalyst;	0.01–1.0
(c)	a plasticizer;	20–50
(d)	a photosensitizer;	0.1–1.0
(e)	a reducing agent;	0.1–1.0
(f)	a filler	5–20

4,761,137

COLOR COORDINATION CONE

John W. Taylor, 15 Alcott St., and Robert M. Sweeney, 63 Blossom St., both of Lowell, Mass. 01852

Filed Jan. 28, 1987, Ser. No. 7,910
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—99 13 Claims

1. A color coordination cone which permits a hair colorist to examine color and shading mixture before actual application, comprising:

an internally illuminated base apparatus;

a plurality of transparent, sheath-like color cones rotatably fitted over said base apparatus;

a colorless, transparent, conical sheath fitted over said color cones, said sheath having a plurality of radial tracks externally attached about its circumference; and



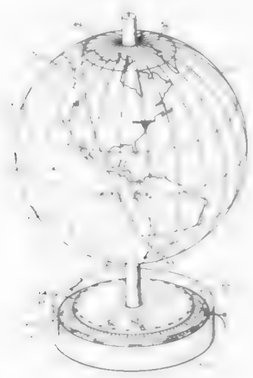
a plurality of elongated color strips slid between pairs of adjacent said tracks.

4,761,138

PLANET MODEL WITH SOLAR DISPLAY

Joseph Z. Nieuyn, 1820 Ardmore Ave. #48, Hermosa Beach, Calif. 90254

Filed Dec. 31, 1986, Ser. No. 948,101
Int. Cl.[4] G09B *27/08*
U.S. Cl. 434—143 11 Claims



1. A device for displaying a representation of sun lit areas of a planet comprising

a globe of light transmitting material,

said globe having a surface representing the surface of the planet,

means within said globe for illuminating at least substantially one half of said surface,

a first drive device for causing relative rotation between said globe and said illuminating means about the polar axis of the globe at the rate of one revolution per day of the planet,

first pivot means on said first drive device supporting said illuminating means for an oscillating movement about a second axis at right angles to said polar axis,

said second axis intersecting said polar axis,

a motion translating member,

second pivot means pivotally connecting said member to said illuminating means for movement about a third axis coincident with the intersection of said polar axis and said second axis,

a second drive device movable about an axis coincident with said intersection,

third pivot means pivotally connecting said member to said second drive device eccentrically of the axis of rotation of said second drive device, and,

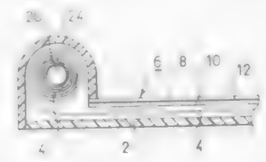
means for rotating said second drive device at a rate such that said illuminating means moves through a complete oscillation about said second axis during each orbit of the planet about the sun.

4,761,139

DRAWING BOARD TYPE AMUSEMENT DEVICE

Gideon Mashiach, Mendeli Street 4, Rehovot, Israel

Filed May 27, 1986, Ser. No. 867,019
Claims priority, application Israel, Jun. 18, 1985, 75550
Int. Cl.[4] B43L *1/12*
U.S. Cl. 434—410 19 Claims



1. A drawing board type amusement device, comprising a rigid board, a backing sheet overlying the board, and a masking member overlying the backing sheet and including a masking layer of opaque material which flows under localized pressure of a stylus or finger to expose the backing sheet along areas in which the localized pressure is applied; characterized in that said backing sheet is of longer length than said rigid board and is wound between a pair of rotatable spools at opposite ends of the board to permit different sections of the sheet to be aligned with said masking member.

4,761,140

MINIMUM INSERTION FORCE SELF-CLEANING ANTI-OVERSTRESS PLCC RECEIVING SOCKET

James F. Gelb, Smithfield, R.I., assignor to Augat Inc., Mansfield, Mass.

Filed Feb. 20, 1987, Ser. No. 17,271
Int. Cl.[4] H01R *23/72*
U.S. Cl. 439—71 24 Claims

8. An anti-overstress socket having long cycle life self-wiping contacts for plastic leaded chip carriers, comprising:

an insulative plastic leaded chip carrier receiving socket body having walls defining contact receiving openings through the socket body in a preselected geometry selected to match a J-lead geometry of a plastic leaded chip carrier to be received thereby;

said walls of each of said contact receiving openings including a partition that separates said openings into first and second chambers;

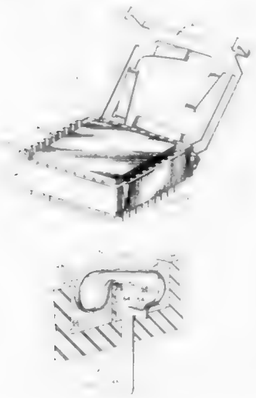
curved-beam contacts each being received in a corresponding one of said openings provided therefor in said insulative plastic leaded chip carrier receiving socket body;

each of said curved-beam contacts including a depending electrode tail slidably received in corresponding ones of said first chambers of said openings, a contacting portion coupled to said electrode tail in cantilevered relation and

VOL
1093
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at such an angle thereto that the contacting portion is inclined away from the corresponding partition, a loop defining a curved-beam-spring coupled to and depending from the cantilevered contacting portion, and a stop and reaction bearing terminal coupled to the loop defining a curved-beam-spring in confronting relation to its corresponding partition;

whereby, upon plastic leaded chip carrier insertion, plastic leaded chip carrier J-leads bear against corresponding



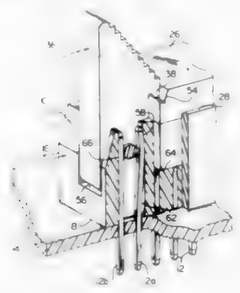
cantilevered contacting portions, which, pivoting in response thereto, move out from under the J-leads wiping same, until the J-leads drive the cantilevered contacting portions against the corresponding partitions with said terminals therebetween, which thereby limits further travel of the cantilevered contacting portions preventing overstress, and which provides a reaction force which urges the contacting portions into good mechanical and electrical contact with the corresponding J-leads, thereby ensuring maximum interconnection fidelity.

4,761,141

LOCKING LATCHING SHROUD

Gary W. Hawk, Halifax, and Joseph C. Marzili, Palmyra, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 3, 1987, Ser. No. 21,379
Int. Cl.[4] H01R *13/629*
U.S. Cl. 439—153 **22 Claims**



1. A shroud for reception on a pin array extending from a printed circuit board, comprising:

a dielectric housing, said housing having walls, a base having a bottom surface for disposition against a printed circuit board, and a plurality of pin receiving passages extending from the bottom surface of the base, said pin receiving passages corresponding in spacing to the spacing of pins in the pin array; and

camming means on the housing for deforming a pin in the pin array and for biasing the deformed pin against said housing, whereby the shroud is adapted to be received on and secured to a pin array with the bottom surface of the housing retained against a printed circuit board.

4,761,142

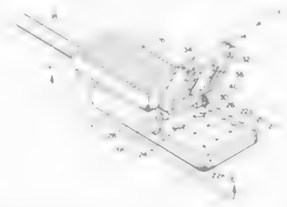
Patent Not Issued For This Number

4,761,143

ELECTRODE CLIP

Rick L. Owens, 3078 Thunder Bay Rd., Little Canada, Minn. 55117, and Michael J. Fowler, 649 Jefferson Ave., St. Paul, Minn. 55102

Filed Jan. 20, 1987, Ser. No. 4,628
Int. Cl.[4] H01R *11/11, 13/62*
U.S. Cl. 439—372 **7 Claims**



1. An electrode clip for connection to a medical electrode comprising:

a. a flat main body of insulating material having a first end with an aperture for receiving a connecting wire, a second end with a first flat integral contact pad having a portion thereof extending to said first end for connection to said connecting wire and including first and second opposing channel wall members having V grooves positioned therein;

b. first and second pivot holes oppositely positioned in said channel wall members;

c. a plurality of gripper teeth on said first contact pad;

d. at least one spring contactor on said first contact pad;

e. a slide actuator having V shaped slide bars positioned for movement along said V grooves between a first open position and a second closed position;

f. first and second catches at opposing ends of said slide actuator opposite said main body;

g. a cam bar actuator on a lower forward surface of said slide actuator base;

h. an upper contact body of insulating material having a second flat integral contact pad including gripper teeth for engagement with an inserted electrode;

i. first and second pivot pins attached to said upper contact body and adapted to rotate within said pivot holes allowing said spring contactor to electrically connect said first and second contact pads;

j. a cam bar positioned at an end of said upper contact body for interaction with said cam bar actuator to force said upper contact body towards said main body by rotation about said pivot pins causing said first and second contact pads to engage an electrode inserted therebetween and said spring contactor to electrically connect said first and second contact pads when said slide actuator is moved;

k. a first latch positioned on said main body adjacent said first end thereof for engagement with said first catch when said slide actuator is in the first, open, position; and,

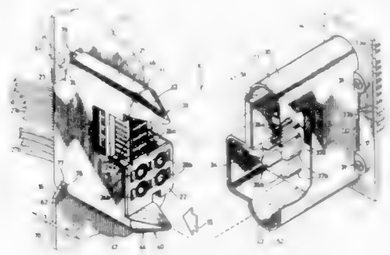
l. a second latch positioned on said upper contact body for engagement with said second catch when said slide actuator is in said second, closed, position.

4,761,144

MOUNTING MEANS FOR RACK AND PANEL CONNECTOR

Alexander Hunt, III, Harrisburg, and John M. Myer, Lancaster, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1986, Ser. No. 944,314
Int. Cl.[4] H01R *13/74*
U.S. Cl. 439—545 **12 Claims**



1. An electrical connector adapted to be inserted into and retained within an opening in a panel, at least a portion of the opening being defined by an opening defining edge of the panel, and the opening defining edge including first and second substantially opposing edge portions at least a first one which includes a recess, said connector comprising an article including:

means for defining first and second slots extending transversely into said connector from first and second substantially opposite sides of said connector for receiving first and second portions, respectively, of said opening defining edge of said panel for longitudinally retaining said connector in said panel opening; and

first and second retention means on said connector for cooperating with first and second edge features in said opening defining edge for laterally retaining said connector in said panel opening while permitting limited lateral movement of said connector relative to said panel,

said first retention means comprising an internal rib within said first slot and wherein said first edge feature comprises a first recess in said first side of said opening defining edge said internal rib extending into said first recess when said connector is positioned within said opening for laterally retaining said first side of said connector in said panel opening while permitting limited lateral movement of said first side of said connector relative to said panel.

4,761,145

HOUSING FOR ELECTRICAL CONNECTORS

Kazuhiro Goto, Markham, and Ross L. Mair, Barrye, both of Canada, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 2, 1987, Ser. No. 34,139
Int. Cl.[4] H01R *13/595*
U.S. Cl. 439—469 **9 Claims**

1. A housing for an electrical connector from which wires extend, said housing comprising:

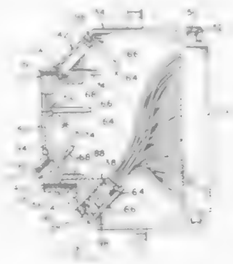
a pair of mating shells, each having a floor with a perimeter wall extending at least along the side and rear edges of said floor and a channel through said wall at a rear face, said channels cooperating to provide when said shells are mated, an opening through which wires may pass, said shells further having:

block structures integral with said perimeter wall and located to one side of said channels with one of said structures having a threaded bore extending inwardly therethrough and with the axis thereof being at an acute angle relative to said channel;

a first wall attached to said perimeter wall on the side of said channel opposite said block structure and extending inwardly to define one side of a wire receiving path, said path being coaxial with said channel in said perimeter wall;

grooves in said floors with the longitudinal axis of each said groove converging with said wire receiving path at an angle of less than ninety degrees;

a second wall attached to said block structure and extending inwardly parallel to the axis of said threaded bore and to said groove in said floor;



a clamp having rails on two opposing sides thereof and positioned within said shells when mated for movement along said second wall with said rails being received in said grooves, said clamps defining another side of said wire receiving path; and

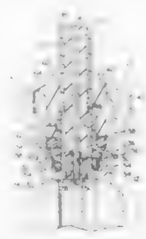
a machine screw threadedly mounted in said threaded bore to engage said clamp and when rotated in said bore to move said clamp along said second wall towards said first wall to clamp wires therebetween which may be in said wire receiving path.

4,761,146

COAXIAL CABLE CONNECTOR ASSEMBLY AND METHOD FOR MAKING

Eivind O. Soboel, East Hampton, Conn., assignor to SPM Instrument Inc., Marlborough, Conn.

Filed Apr. 22, 1987, Ser. No. 41,152
Int. Cl.[4] H01R *17/18*
U.S. Cl. 439—584 **16 Claims**



1. A connector assembly for terminating a coaxial cable having a central conductor, an annular inner insulation layer in coaxial surrounding engagement with the central conductor, an annular conducting shield in coaxial surrounding engagement with the inner insulation layer, and an outer insulation jacket coaxially surrounding the conducting shield, said connector assembly comprising a female connector having an outwardly open cylindrical connector bore for receiving an end portion of the cable and electrical contact means disposed within and centrally of said connector bore for engagement

VOL 1093 ISS 1 AG 2 1988 UMI

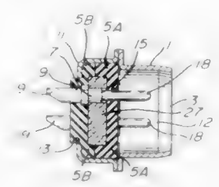
with the central conductor, and a male connector assembly including a radially expandable shield connector having a cylindrical sleeve portion, means for attaching the shield connector in fixed position to the end portion of the coaxial cable with said sleeve portion in coaxial surrounding engagement with the inner insulation layer between the inner insulation layer and said conducting shield and in electrically conducting engagement with the conducting shield and including a thread on the interior of said sleeve portion for threadable engagement with the inner insulation layer, thrust means for radially expanding said shield connector within said connector bore in response to force applied in an axial direction to said thrust means to establish electrical continuity between said conducting shield and said female connector, resilient deformable annular sealing means for positioning in coaxial surrounding engagement with the cable within said connector bore, said sealing means being radially expandable into sealing engagement with the cable and said connector bore in response to force applied in an axial direction to said sealing means, and means for applying force in said axial direction to said sealing means and said thrust means and urging the central conductor into engagement with said contact means.

4,761,147

MULTIPIN CONNECTOR WITH FILTERING

Richard Gauthier, Morin Heights, Canada, assignor to I.G.G. Electronics Canada Inc., St. Laurent, Canada

Filed Feb. 2, 1987, Ser. No. 9,861
Int. Cl.[4] H01R *13/658*
U.S. Cl. 439—607 7 Claims



1. A multipin connector comprising, a plurality of connector pins, a front shell having a front opening therein and an abutting rear shell having a rear opening therein, said front and rear shells defining between them an inner space;

and including:

a ferrite plate disposed in said inner space and in alignment with said front and rear openings, said ferrite plate being connected to a point of reference potential;

said ferrite plate comprising a plurality of lateral openings, each one of said connecting pins extending through a respective one of said lateral openings;

said connector pins being in physical contact with said ferrite plate.

4,761,148

FUSE BLOCK WITH REJECTION FEATURE

Gayle L. Sappington, Glendale, Mo., assignor to Cooper Industries, Inc., Houston, Tex.

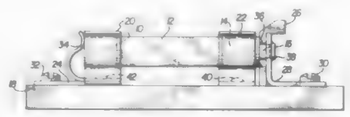
Filed Feb. 7, 1983, Ser. No. 464,701
Int. Cl.[4] H01R *13/68, 13/64*
U.S. Cl. 439—621 4 Claims

1. A rejection fuse block for a cartridge-type fuse having electrical contact elements at opposite ends, the contact element at one end including a cap, said cap having a smaller cross-sectional width than the adjacent portion of said fuse contact element; said fuse block comprising:

(a) support means;

(b) electrically conductive means mounted on said support means and having a surface for contacting said cap at said one end of said fuse and making a first electrical connection with said fuse;

(c) electrically insulated rejection means colligated with said surface of said electrically conductive means, said rejection means having a rejection opening sufficiently large to pass said cap portion therethrough into contact with said electrically conductive means but smaller than the adjacent portion of said fuse contact element to prevent passage therethrough of said adjacent portion;



(d) means mounted on said support means for contacting the contact element at the opposite end of said fuse to make a second electrical connection with said fuse and for biasing said fuse towards said electrically insulated rejection means to force said cap into contact with said electrically conductive means; and

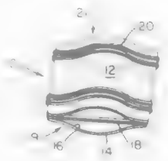
(e) dummy fuse clip means, said dummy clip means releasably retaining said one end of said fuse such that said cap is in alignment with said rejection opening in said rejection means, said dummy clip means being electrically insulated from said electrically conductive means.

4,761,149

ELK CALLING DEVICE

Donald R. Laubach, P.O. Box 127, Gardiner, Mont. 59030

Filed Mar. 14, 1986, Ser. No. 840,287
Int. Cl.[4] A63H *5/00*
U.S. Cl. 446—208 3 Claims



1. An improved elk calling device comprising:

a pair of rectangular, substantially coextensive, planar members with a longitudinal axis;

the members being bowed perpendicular to said longitudinal axes longitudinal axes thereof and positioned opposing one another with their open concave sides facing one another and flared to form a double-tapered cavity sandwiched between the two members, said cavity extending in a direction parallel to the longitudinal axes of the two members with a flared opening at each end of said longitudinal axes;

a first endless elastic band encircling the two members in a direction transverse to the longitudinal axes thereof and at a position adjacent but spaced from a first end of the device;

a second endless elastic band means encircling the two members in a direction transverse to the longitudinal axes thereof and at a position adjacent a second end of the device for resiliently holding the two members together, the second end being opposite the first end of the device;

the first endless elastic band further having a portion of the band disposed in the double-tapered cavity, which portion comprises a reed element for the device;

the two resilient members being further adapted so that when the two members are squeezed together at the first end of the device, the members at the second end of the device are caused to separate because the portions of the first elastic band extending between the two members at the longitudinal edges thereof act as a fulcrum about which the two members pivot;

the two resilient members further being constructed of flexible and resilient material and further adapted so that when the two members are squeezed together at the first end of the device, the size of the double-tapered cavity is substantially reduced beginning at the ends of the double-tapered cavity and working towards the center of the cavity and when pressure on the two members is released, the size of the double-tapered cavity is restored to its normal size.

4,761,150

MOVING EYE FOR DOLLS

Carl Lautenberger, Lakehurst, and Harvey W. Samo, Maplewood, both of N.J., assignors to Hong Kong Yung Hong Trading Co., Ltd, Hong Kong

Filed Nov. 6, 1986, Ser. No. 927,488
Int. Cl.[4] A63H *3/40*
U.S. Cl. 446—345 25 Claims



1. A movable eye for a doll, comprising:

eye enclosure means having a viewing aperture;

eye component means carrying a representation of an eye, the eye component means being pivotably supported in the eye enclosure means and being rotatable therein between a closed position and an open position at which the representation of the eye is visible through the viewing aperture, the eye component means including a notch having a first actuating cam surface and a second actuating cam surface; and

actuator means supported by the enclosure means for movement towards and away from the eye component means, said actuator means having a forward end positioned in said notch in said eye component means, motion of the actuator means selectively contacting the first actuating cam surface and the second actuating cam surface so that, when the actuator means forward end is urged towards the eye component means and contacts said second actuating cam surface, the eye component means is rotated towards the closed position, and when the actuator means forward end is urged away from the eye component means and contacts said first actuating cam surface, the eye component means is rotated towards the open position.

4,761,151

HYDRAULIC TORQUE IMPULSE GENERATOR

Gunnar C. Hansson, Stockholm, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jul. 20, 1987, Ser. No. 75,120
Claims priority, application Sweden, Jul. 24, 1986, 8603198
Int. Cl.[4] B25D *15/00*
U.S. Cl. 464—25 4 Claims

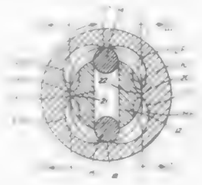
1. Hydraulic torque impulse generator, comprising:

a drive member (10) coupled to a rotation motor, said drive member (10) including a fluid chamber (11) located in said drive member (10), said fluid chamber (11) having a substantially cylindrical wall,

an ouput spindle (12) extending into said fluid chamber (11), said ouput spindle (12) being relatively rotatable with respect to said drive member (10), and

seal means (14–22) associated with said drive member (10) and said output spindle (12) and arranged to sealingly divide during certain repeated intervals of the relative rotation of said drive member (10) and said output spindle (12) said fluid chamber (11) into at least two high pressure compartments (H.P.) and at least two low pressure compartments (L.P.),

said seal means (14–22) comprising a first set of at least two helically extending seal ribs (19, 20) located on and extending throughout the axial length of the fluid chamber wall of said drive member (10), and a second set of at least two helically extending seal ribs (21, 22) located on said output spindle (12),



said seal ribs (19–22) of each of said first and second sets of seal ribs having different pitches, and

each seal rib in one of said first and second sets of seal ribs having a pitch that is substantially equal to the pitch of only one of the seal ribs in the other of said first and second sets of ribs, such that sealing alignment is obtained simultaneously between said seal ribs (19,20) on said fluid chamber wall of said drive member (10) and said seal ribs (21, 22) on said output spindle (12) only once every relative revolution between said drive member (10) and said output spindle (12).

4,761,152

FOLDABLE POWER TAKE-OFF SHAFT SHIELD

Gerald L. Wagenbach, Jr., Willowbrook, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed May 18, 1987, Ser. No. 50,688
Int. Cl.[4] F16D *3/84*
U.S. Cl. 464—176 19 Claims



1. A power take-off shaft shield assembly of the type on a tractor with at least one power take-off shaft protruding from a substantially vertical wall of the tractor, comprising:

a pair of spaced side plates attached to and projecting from the wall, one on either side of the at least one shaft;

a top plate having a substantially horizontal proximal edge hinged to the wall, the top plate dimensioned to pivot between the side plates;

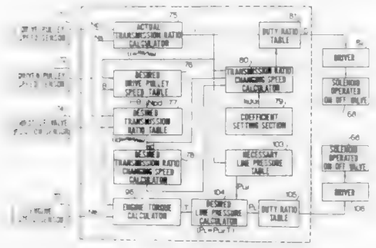
a slot in at least one of the side plates, including a pair of generally upright slot sections and an upright slot sections having closed lower ends; and

a slot follower member pivotably attached to the top plate and having at least one upright member extending below

VOL 1093 ISS 1 AUG 2 1988 UMI

the top plate, each with a slot-engaging lateral portion secured thereto.

4,761,153
TRANSMISSION RATIO CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION
Yoshihiko Morimoto, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 19, 1987, Ser. No. 27,746
Claims priority, application Japan, Mar. 25, 1986, 61-066830
The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.
Int. Cl.[4] F16H *11/02*
U.S. Cl. 474—28 4 Claims

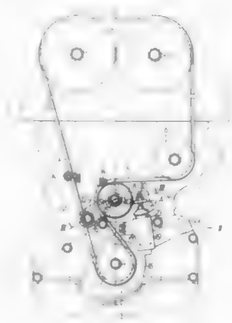


1. A control system for a continuously variable transmission for transmitting the power of an internal combustion engine to driving wheels of a motor vehicle, having a drive pulley including a hydraulically shiftable disc and a first hydraulic cylinder for shifting the disc, a driven pulley including a hydraulically shiftable disc and a second hydraulic cylinder for operating the disc of the driven pulley, a belt engaged with both pulleys, a transmission ratio control valve having ports and a spool, a first hydraulic circuit having a pump for supplying oil to the second hydraulic cylinder, and to the first hydraulic cylinder through the transmission ratio control valve, the system comprising:
first detecting means for producing a first speed signal representing input speed of the transmission;
second detecting means for producing a second speed signal representing output speed of the transmission;
third detecting means for detecting load on the engine and for producing a load signal;
first means responsive to the first and second signals for producing an actual transmission ratio signal;
second means responsive to the load signal and to the actual transmission ratio signal for producing a desired input speed signal;
third means responsive to the load signal and to the desired input speed signal for producing a desired transmission ratio signal;
fourth means responsive to the desired transmission ratio signal for shifting the spool of the transmission ratio control valve so as to provide a transmission ratio.

4,761,154
BELT TENSIONER
Robert W. Beauchamp, Leucadia, and Anthony W. Ebersole, Poway, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 28, 1987, Ser. No. 55,101
Int. Cl.[4] F16H *7/08*
U.S. Cl. 474—101 16 Claims

1. A tensioner for a belt and pulley system, comprising:
a handling means for inserting said tensioner into said system; and,
a pronged-body means connected to one end of said handling means, each prong having two substantially flat surfaces, each surface having an edge forming a substantially curved surface for a riding pulley axle.

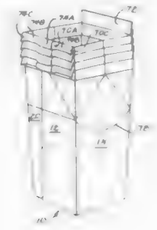
4,761,155
TENSIONER FOR WRAPPING CONNECTOR TRANSMISSION DEVICE FOR INTERNAL COMBUSTION ENGINE
Yusuke Kinoshita, Fujimi; Junichi Araki, Niiza; Itsuo Iwai, Shinminato; Eiichi Ichihara, Shakujii; Michio Sato, Tokyo, and Nobuo Anno, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Tanaka Machine Industries Co., Ltd., Toyama, both of, Japan
Filed Mar. 18, 1986, Ser. No. 840,831
Claims priority, application Japan, Mar. 19, 1985, 60-54775; Mar. 19, 1985, 60-57779; Mar. 22, 1985, 60-58062
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[4] F16H *7/12*
U.S. Cl. 474—110 29 Claims

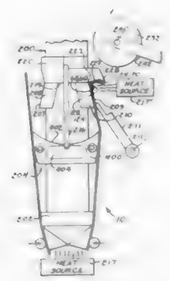


1. A tensioner for a wrapping connector type transmission device for an internal combustion engine, in which an endless transmission member is wrapped around and stretched between driving and driven wheels supported on an engine a body of the internal combustion engine,
the tensioner comprising:
an oscillating lever pivotally supported on the engine body and carrying a tensioning means thereon which is pressed against a loosening side of the transmission member;

an oil-replenished type automatic adjuster connected to the oscillating lever to urge the tensioning means against the transmission member for tensioning of the transmission member; and
an auxiliary spring connected to the oscillating lever separately from the automatic adjuster and adapted to tension the transmission member via the oscillating lever;
wherein said automatic adjuster is supported on a pump case of a lubricating oil pump for the engine.

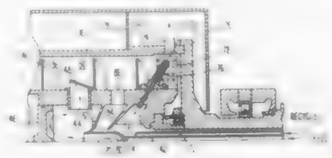
4,761,156
APPARATUS FOR FORMING A DENESTING LIP ON PAPERBOARD CONTAINERS
Jerry G. Bachner, Algonquin; Larry G. Bachner, Barrington, and John Hose, McHenry, all of Ill., assignors to Nimco Corporation, Crystal Lake, Ill.
Filed Jan. 9, 1987, Ser. No. 1,757
Int. Cl.[4] B31B *1/64*
U.S. Cl. 493—133 14 Claims





1. An apparatus for forming a denesting lip in a partially formed paperboard container having open top and bottom closure portions and one side wall of the top portion of the container having a denesting extension flap, the apparatus comprising:
mandrel means for mounting the partially formed container;
anvil means for supporting a portion of the inside surface of the top closure portion of the container;
breaker means for applying force to the outside surface of the sidewall having the denesting extension flap so as to cause the sidewall and the denesting extension flap to bend inwardly;
top stop means for engaging the inside surface of the denesting extension flap when it is bent inwardly sufficiently by said breaker means so as to cause it to bend outward with respect to the sidewall as the sidewall is bent inwardly farther and for retaining the denesting extension flap in an outwardly bent position while not restraining it from being bent farther outwardly and down toward the bottom closure portion of the container; and
bending means for engaging the inside surface of the denesting extension flap while it is retained in an outwardly bent position by said top stop means so as to bend it over farther until its outside surface contacts the outside surface the container in at least two spaced-apart locations such that in the spaced-apart locations the denesting extension flap and the sidewall are pressed together between said anvil means and said bending means and an outward bulge is formed in the bent-over denesting extension flap between the spaced-apart locations.

4,761,157
CENTRIFUGE APPARATUS
Leonard Shapiro, Doylestown, Pa., assignor to Penwalt Corporation, Philadelphia, Pa.
Filed May 18, 1983, Ser. No. 495,841
Int. Cl.[4] B04B *3/04*
U.S. Cl. 494—35 11 Claims



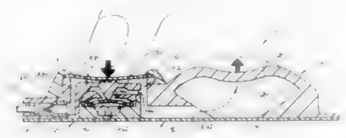
1. Centrifuge apparatus for the continuous separation of a mixture of solids and liquid into separate light phase and heavy phase components, with means for concentrating said heavy phase component, comprising: an elongated tubular bowl, having an interior at least partly defining a separation chamber for receiving said mixture for separation therein, said bowl at one end thereof defining a zone for the collection of said heavy phase component after centrifugal separation in the bowl and having a solids discharge means for discharging said heavy phase component from said zone, said bowl being further provided with means operatively independent of said zone for discharging said light phase component from the bowl, said bowl being mounted for rotation about its longitudinal axis, a screw conveyor helically and coaxially mounted within said bowl for conveying the heavy phase component separated in the separation chamber toward said zone, said screw conveyor including a hub defining therein a feed chamber having an outlet to said separation chamber, a feed pipe for conducting said mixture to said feed chamber, means for rotating said bowl and said screw conveyor at a speed differential, and wherein said solids discharge means is a plurality of first nozzles mounted on said bowl, with each first nozzle having an inlet in said zone and an outlet exteriorly of said bowl, and means including a conduit and a plurality of tubes for recycling through said hub to said zone at least a portion of the heavy phase component collected in said zone and discharged from said nozzles, said tubes being mounted on said hub with their outlets extending into said zone and their inlets communicating through the interior of said hub with said conduit.

4,761,158
SUBCUTANEOUS INFUSION RESERVOIR AND PUMP SYSTEM
Rudolf R. Schulte, Santa Barbara; Gary P. East, and Alfons Heindl, both of Goleta, all of Calif., assignors to Pudenz-Schulte Medical Research Corp., Santa Barbara, Calif.
Continuation of Ser. No. 850,943, Apr. 11, 1986, Pat. No. 4,681,560, which is a continuation-in-part of Ser. No. 590,349, Mar. 16, 1984, Pat. No. 4,588,394. This application Jul. 20, 1987, Ser. No. 75,332
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—9 19 Claims

1. A subcutaneous infusion reservior and pump system, comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

means for receiving medication into said system by injection;
a reservoir fluidly connected to said receiving means in a manner permitting the subcutaneous transfer of medication from said receiving means to said reservoir;
a catheter for directing the medication to a specific location in a body removed from said reservoir, said catheter having a catheter inlet and being positionable within the body independently of the position of said reservoir;
means for subcutaneously conducting the medication from said reservoir to said catheter inlet;
means for pumping and controlling the flow of medication



from said reservoir to said catheter, said pumping and controlling means forming a portion of said conducting means and including normally closed valve means and a pump which is separated from said reservoir and said catheter by other portions of said conducting means, wherein said normally closed valve means includes a body defining a fluid flow passageway therethrough, and a valve member positioned within the fluid flow passageway to occlude the valve means; and
means for occluding an outlet of said pumping and controlling means when said normally closed valve means is opened to fluid flow therethrough.

4,761,159
METHOD OF CHEMICAL DEODORIZATION OF ARTICLES AND SOLUTIONS USED IN MEDICAL AND BIOLOGICAL PROCEDURES
Lewis Knox, 6587 Hiawatha, Chicago, Ill. 60646
Continuation-in-part of Ser. No. 573,014, Jan. 23, 1984, Pat. No. 4,681,575. This application Mar. 18, 1987, Ser. No. 27,557
Int. Cl.[4] A61F *2/60, 13/16, 2/66*
U.S. Cl. 604—49 **14 Claims**

1. The method of deodorizing fluid and solid media and devices, instruments, appliances, articles and solutions used in connection with analytical, investigative, diagnostic and therapeutic, biological and medical procedures, said method being operative to eliminate odors derived from urine and from fecal matter and residues discharged during the carrying out of medical procedures including procedures using endoscopes and other exploratory and surgical apparatus, and urological, proctoscopic and colonoscopic procedures, said method eliminating the odors through reaction of a chemical deodorant with odor-producing groups and moieties of metabolically-produced odoriferous chemicals present in urine and fecal matter discharged during spills and "accidents" in sick rooms and during the conducting of medical procedures,
said method comprising the steps of preparing an aqueous composition containing a chemical agent as a chemical deodorant selected from the group consisting of 2,5-hexanedione, 2,3-pentanedione and mixtures thereof, and applying said composition to a substance to be deodorized.

4,761,160
HUMAN MILK RETRIEVAL SYSTEM
Richard E. Vermillion, Rte. 1, Box 474 V, Chico, Calif. 95926
Continuation of Ser. No. 821,901, Jan. 23, 1986, abandoned. This application May 13, 1987, Ser. No. 49,158
Int. Cl.[4] A61M *1/06*
U.S. Cl. 604—76 **1 Claim**



1. A human milk retrieval system and elements thereof comprising:
a breast cup;
said breast cup conically formed, sized for human use, and structured of materials sufficiently pliable to accommodate various human breast configurations, there being an aperture positioned at the vertex of said conical form through said pliable materials affixed with an external opened protrusion providing a passageway therethrough and a tube attachment fitting thereto;
a milk tube;
said milk tube structured of pliable material, diametered sufficiently for the free passage of a liquid such as human milk therethrough and sized for attachment to said tube attachment fitting affixed to said breast cup, said milk tube being of a length adequate for attachment to a separately placed receptacle with the end thereof sized for fitting receptacle attachments;
a vacuum cap;
said vacuum cap being a lipped screw-type circular cap designed to fit a commercially available baby bottle with said baby bottle used as said receptacle for said human milk; said vacuum cap having two opened tubular external protrusions affixed as extended passageways for two apertures opened through the top covering of said vacuum cap with a shorter protrusion sized for the attachment of said milk tube thereto and a longer protrusion similarly sized as an air passage through said vacuum cap and for tubing attachment;
an air tube;
said air tube of pliable material, sized similarly to said milk tube, and diametered for attachment to said longer protrusion in said top of said vacuum cap with said air tube of sufficient length for attachment and use with said separately placed receptacle;
a two piece pliable snap together saliva collector mouthpiece, said collector mouthpiece consisting of a mouthpiece section and a saliva collector section, said mouthpiece section having a circular distal base portion with an external lip ring means circumferentially about an opened and widened end thereof for snap attachment to the collector section proximal to said distal base portion of said mouth piece portion, which has a circular narrow tubular stem portion in fluid communication with said distal base portion; said saliva collector section of single unitary means composed of an external tubular collector portion having retainer edging means internally affixed at an opened widened end and a aperatured tubular longitudinally extending passageway at one end of which passes entirely within said collector portion the opposite end of which is of such dimensions that is is in fluid communication with said air tube, said tubular passageway of a lesser diameter than said external lip ring means is snapped into said retainer edging a saliva trap portion and a free air passage is formed by the connection of said saliva collector section and said mouthpiece section.

4,761,161
PROCESS FOR IMPROVING THE DYEING OF CELLULOSIC MATERIALS WITH REACTIVE OR SUBSTANTIVE DYES UTILIZING MILK PROTEIN AS A LEVELING AGENT
Dénes Pötschke, Bismarckstr. 22, 7312 Kirchheim/Teck, Fed. Rep. of Germany
Continuation of Ser. No. 518,941, Aug. 1, 1983, abandoned. This application Jul. 28, 1986, Ser. No. 892,879
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228479
Int. Cl.[4] D06P *3/66*
U.S. Cl. 8—543 **16 Claims**

1. A process for improving the dyeing of cellulosic materials with reactive or substantive dyes, comprising treating the cellulosic materials with a dye assistant composition comprising a leveling agent, said leveling agent comprising milk protein in an amount effective to level the color imparted to the cellulosic material.

4,761,162
UPGRADING AND STORAGE OF SOLID CARBONACEOUS FUEL
Charles T. Ratcliffe, LaHabra, and Geoffrey E. Dolbear, Diamond Bar, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Oct. 9, 1986, Ser. No. 916,866
Int. Cl.[4] C10L *9/08*
U.S. Cl. 44—626 **20 Claims**

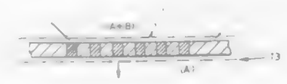
1. A method for upgrading and storing coal which comprises:
(a) heating said coal to reduce the moisture content to a chosen value, thereby producing a dried coal;
(b) determining a maximum relative humidity which will preserve said chosen moisture content in said dried coal;
(c) dehumidifying combustion gases to produce a relative humidity less than the maximum determined in step (b); and
(d) providing an atmosphere comprising said dehumidified combustion gases about said dried coal.

7. A method for upgrading and storing a solid carbonaceous fuel which contains at least about 10 weight percent moisture comprising:
(a) contacting said solid carbonaceous fuel in a drying zone with hot gases produced by the combustion of a hydrocarbon fuel in air under conditions such that the moisture content of said solid carbonaceous fuel is reduced;
(b) cooling said heated solids from step (a);
(c) passing said cooled solids to a storage enclosure; and
(d) purging said storage enclosure with a gas containing less than about 10 volume percent oxygen and having a relative humidity of less than about 50 percent.

4,761,163
METHOD FOR MAKING QUICK AGEING ABRASIVE SLURRIES FOR THE CONSTRUCTION OF GRINDING WHEELS, AND THE ABRASIVE SLURRIES MADE THEREBY
Ida Messere, Strada Adriatica, 47/p -- 70100, Bar, Italy
Filed Sep. 14, 1987, Ser. No. 96,616
Int. Cl.[4] B24D *3/00*
U.S. Cl. 51—293 **7 Claims**

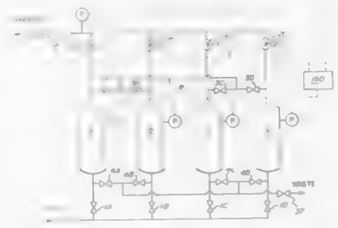
1. A method for making quick ageing abrasive slurries, particularly designed for grinding wheels, characterized in that it comprises the steps of making a slurry of magnesium carbonate, magnesium chloride, magnesium sulphate and abrasive materials and inert fillers, adding a phenolic resin, mixing so as to provide a homogeneous mass, introducing the slurry into forming molds and then subjecting the filled molds to an ageing operation by heating them to preset increasing temperatures, and finally slowly cooling the molds to the environmental temperature.

4,761,164
METHOD FOR GAS SEPARATION
Guido P. Pez, Allentown, Pa.; Richard T. Carlin, Buffalo, N.Y.; Daniel V. Laciak, Fogelsville, and James C. Sorensen, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 707,299, Mar. 1, 1985, abandoned. This application Nov. 25, 1986, Ser. No. 934,583
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—16 **20 Claims**



1. A process for separating at least component from at least one another component in a gaseous mixture in a non-electrolyte system, said process comprising passing the gaseous mixture over a membrane containing an active, non-alkali or alkaline earth oxide or carbonate, molten salt, wherein said membrane selectively permeates at least one component of the gaseous mixture due to one or more reversible reactions between the component being separated and the active, non-alkali or alkaline earth oxide or carbonate, molten salt.

4,761,165
PRESSURE SWING ADSORPTION CONTROL METHOD AND APPARATUS
Jörg Stöcker, St. Stevens-Woluwe, and Michael Whysall, Wilrijk, both of Belgium, assignors to Union Carbide Corporation, Danbury, Conn.
Filed Sep. 1, 1987, Ser. No. 91,889
Int. Cl.[4] B01D *53/04*
U.S. Cl. 55—21 **22 Claims**



1. A process for controlling product repressurization in a pressure swing adsorption vessel of a multi-bed pressure adsorption system, comprising:
supplying product gas to said vessel for product repressurization through a controllable valve at the outlet end of said vessel, said valve being the same as also employed to release product gas from said vessel during an adsorption step; and
controlling the rate of supply by adjusting said valve

18. An apparatus for controlling product repressurization in a pressure swing adsorption vessel of a multi-bed pressure adsorption system, said vessel having an inlet end and an outlet end, said apparatus comprising:
a conduit connecting said outlet end of said vessel to a product header for said system;
a continuously positionable valve in said conduit; and
means for generating a control signal to open said valve to permit flow from said product header during product repressurization and to permit flow of product from said vessel to said product header during adsorption.

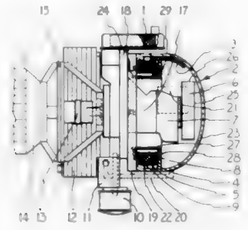
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,166

COMPRESSOR SYSTEM

Anthony J. Kitchener, Richmond, Australia, and Gerd Cromm, Dortmund, Fed. Rep. of Germany, assignors to Cash Engineering Research Pty. Ltd., Richmond, Australia

Filed Jan. 13, 1987, Ser. No. 2,945
Claims priority, application Australia, Jan. 21, 1986, PH04286; Nov. 13, 1986, PH08942
Int. Cl.[4] B01D *29/44*
U.S. Cl. 55—385 R 10 Claims



1. A compressor/separator configuration comprising a separator vessel having a circumferential wall section closed at either end by first and second end wall sections, at least one of said first and second end wall sections being removable from said circumferential wall section, a compressor mounted to or comprising said first end wall section whereby a substantial portion of the compressor is housed within said separator vessel, and a separator element having an annular wall of filter material with an axis coincident with or parallel to a longitudinal axis of said circumferential wall section of the separator vessel, said separator element being located within a substantially closed compartment within said separator vessel such that the annular wall of the separator element is arranged adjacent to the circumferential wall section of the separator vessel, access opening means establishing communication between said closed compartment and a first zone within said separator vessel into which a compressed gas and liquid mixture is discharged by the compressor, said access opening means being located adjacent an upper wall region of the circumferential wall section of the separator vessel in a position of use of the compressor/separator configuration, said separator element separating said first zone from a clean gas outlet leading from the separation vessel whereby the compressed gas and liquid mixture discharged into the first zone passes therefrom through said access opening means to said closed compartment, the compressed gas of said mixture passing through the filter material of said separator element to said clean gas outlet and the liquid of said mixture being collected in said closed apartment to be removed therefrom by drain means leading from a lower region of said closed compartment.

4,761,167

HYDROCARBON RECOVERY FROM FUEL GAS

David M. Nicholas, New Tripoli; Thomas M. Roden, Macungie, and Gerry N. Gottier, Allentown, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 12, 1986, Ser. No. 940,823
Int. Cl.[4] F25J *3/00*
U.S. Cl. 62—17 8 Claims

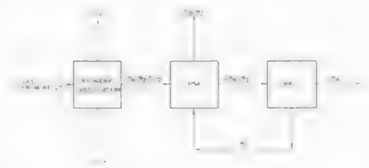
1. The method of recovering methane from a fuel gas mixture containing also nitrogen and carbon dioxide, which comprises the steps of:

(a) passing said fuel gas mixture at superatmospheric pressure through a bed of adsorbent wherein carbon dioxide is selectively adsorbed while withdrawing from said bed a stream comprised of unadsorbed components including methane and nitrogen;

(b) subjecting said stream to cryogenic distillation to separate substantially all of the nitrogen therefrom and recovering as product methane of high purity;

(c) rinsing said bed of step (a) with a stream of carbon dioxide passed through the bed in a direction co-current to that employed in initial introduction of said fuel gas mixture in step (a);

(d) recycling at least a part of the effluent obtained during said rinse of step (c) as a component of the feed gas mixture subjected to step (a);



(e) reducing the pressure in the bed of step (a);

(f) utilizing at least part of the nitrogen separated in step (b) above to purge from the bed carbon dioxide retained therein during step (a); and

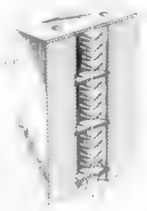
(g) repressurizing said bed of step (a) with a stream of unadsorbed components having the composition of that withdrawn during step (a).

4,761,168

OPTICAL FIBER MANUFACTURING TECHNIQUE

Lee L. Blyler, Jr., Basking Ridge; Arthur C. Hart, Jr., Chester, and Richard C. Progelhof, Berkeley Heights, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 22, 1986, Ser. No. 910,562
Int. Cl.[4] C03B *37/02, 37/023*
U.S. Cl. 65—3.1 7 Claims



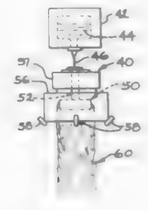
1. A process for fabricating a coated fiber comprising the steps of drawing an optical fiber from a heated glass body, cooling said drawn fiber, and coating said drawn, cooled fiber wherein a hot gas boundary layer surrounds the fiber after drawing and wherein said cooling is accomplished by a stripping apparatus comprising a plurality of stripping means for stripping hot gas away from said fiber, said plurality of means including at least a first, second and third stripping means disposed such that said fiber passes through an aperture in each means, wherein (1) said first stripping means reduces the gas boundary layer surrounding said fiber to a thickness of at most one-tenth the comparative thickness in the absence of stripping, (2) said second and third stripping means each induce stripping of the gas boundary layer to a thickness of no greater than 10 percent of the comparative thickness of the gas boundary layer in the absence of respectively said second and third stripping means, wherein the stripping of respectively said second means and of said third means begins before $(1/Re_a)(x/a)$ exceeds 1000 where x is the distance between the point of stripping of the preceding means and the inception of boundary layer reduction induced by respectively said second and third stripping means, a is the fiber radius and Re_a is the Reynold's number and (3) the minimum spacing between said first and second stripping means and between said second and third stripping means is greater than 10Δ where Δ is the average distance from the fiber surface to the stripping means or Δ is 3.2 mm, whichever is smaller.

4,761,169

CORROSION RESISTANT COBALT-BASE ALLOY CONTAINING HAFNIUM AND A HIGH PROPORTION OF CHROMIUM AND METHOD OF MAKING FIBERS

David J. Gani, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 824,682, Jan. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 746,158, Jun. 18, 1985, abandoned. This application Oct. 3, 1986, Ser. No. 914,951
Int. Cl.[4] C03B *37/04*
U.S. Cl. 65—8 15 Claims



10. In a method of making mineral or glass fibers comprising passing molten material through a foraminous wall of a metal alloy spinner to form such fibers, the improvement wherein the spinner comprises an apertured wall formed from a high-strength alloy consisting essentially of the following elements in approximate amounts expressed in weight percent:

Element	Approximate Composition, Weight %
Chromium	About 34.0 to about 38.0
Nickel	About 10.0 to about 15.0
Wolfram	About 4.0 to about 7.0
Tantalum	About 2.0 to about 5.0
Zirconium	About 0.1 to about 0.4
Silicon	Present but about 0.15 max
Carbon	About 0.65 to about 0.95
Boron	About 0.005 to about 0.02
Hafnium	About 0.4 to about 1.0
Aluminum	0.0 to about 0.2
Titanium	0.0 to about 0.2
Manganese	0.0 to about 0.05
Molybdenum	0.0 to about 0.1
Iron	0.0 to about 2.0
Cobalt	Balance

and further that:

$$32 \geq \%\,Cr - 3.5[\%\,C - (\%\,Ta + \%\,Zr + \%\,Hf + \%\,Ti)], \quad (1)$$

and

$$2.74 \geq 4.66\left(\frac{\%\,Cr}{100}\right) + 0.61\left(\frac{\%\,Ni}{100}\right) - 1.71\left(\frac{\%\,Co}{100}\right) + 4.66\left(\frac{\%\,W}{100}\right) - 2.22\left(\frac{\%\,Fe}{100}\right) - 4.66\left(\frac{\%\,Mo}{100}\right) + 6.66\left(\frac{\%\,Si}{100}\right) + 6.66\left(\frac{\%\,Ti}{100}\right) - 7.66\left(\frac{\%\,Al}{100}\right) + 3.66\left(\frac{\%\,Mn}{100}\right) \quad (2)$$

said percents of the elements in equation Nos. 1 and 2 each being atom percent.

4,761,170

METHOD FOR EMPLOYING PLASMA IN DEHYDRATION AND CONSOLIDATION OF PREFORMS

Robert J. Mansfield, Stow, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 746,742, Jun. 20, 1985, abandoned. This application May 5, 1987, Ser. No. 45,200
Int. Cl.[4] C03B *19/09, 23/20;* C03C *27/00*
U.S. Cl. 65—18.2 7 Claims



1. In a method for dehydrating and consolidating an elongated glass soot preform, the improvement comprising the steps of:

providing a vessel having interior glass walls defining a controllable environment;

drawing a partial vacuum within said vessel;

establishing a gaseous drying environment within said vessel under said partial vacuum condition;

striking a plasma within said vessel to develop temperatures within said plasma of about 30,000° C., the peripheral portions of said plasma being spaced from the interior walls of said vessel to restrict heating of said walls to on the order of several hundred degrees C so as not to have an adverse effect thereon; and

passing the elongated glass soot preform through said plasma, one end first, at a predetermined rate of movement to displace said plasma about the preform and effect a progressive lengthwise substantially water-free consolidation thereof without preform volatization.

4,761,171

APPARATUS FOR COATING GLASS

Eberhard R. Albach, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Feb. 9, 1987, Ser. No. 12,276
Int. Cl.[4] C03C *17/00*
U.S. Cl. 65—146 18 Claims

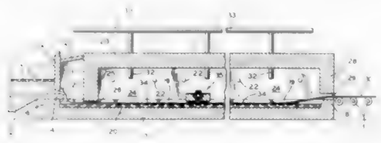
1. An apparatus for coating glass by depositing a coating material from a gas directed on a heated upper surface of a layer of glass comprising:

an elongated plenum having an inlet and an outlet for a gas;

an elongated distribution slot having an inlet opening connected to said outlet of said plenum and having an outlet

VOL 1093 ISS 1 AG 2 1988 UMI

opening adapted to be spaced above an upper surface of a layer of glass to be coated; and



a cooling fluid chamber enclosing said plenum and said distribution slot and having a generally V-shaped cross-section tapering toward said distribution slot outlet opening.

4,761,172

HERBICIDAL CYCLOHEXANOL DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

Dieter Jahn, Edingen-Neckarhausen; Rainer Becker, Bad Durkheim; Michael Keil, Freinsheim; Ulrich Schirmer, Heidelberg; Winfried Richarz, Stockstadt; Bruno Wuerzer, Otterstadt, and Norbert Meyer, Ladenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

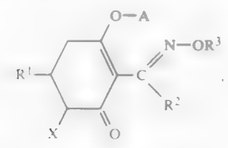
Filed Oct. 5, 1984, Ser. No. 658,432

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1983, 3336140; Nov. 25, 1983, 3342630

Int. Cl.[4] A01N *43/16, 43/18;* **C07D** *309/02, 335/02*

U.S. Cl. 71—88 **15 Claims**

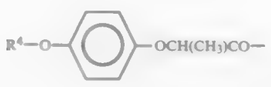
1. A cyclohexenol derivative of the formula I



(I) wherein

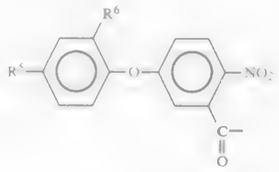
wherein R_1 is a tetrahydropyran, a tetrahydrothiopyran, a 1-oxo-tetrahydrothiopyran, or a 1,1-dioxo-tetrahydrothiopyran radical, X is hydrogen wherein R^1 is a pyran or thiopyran radical, is hydrogen or methoxycarbonyl, R^2 is alkyl of 1 to 4 carbon atoms, R^3 is alkyl of 1 to 3 carbon atoms, alkenyl of 3 or 4 carbon atoms, haloalkenyl of 3 or 4 carbon atoms and 1 to 3 halogen substituents, or propargyl, and A is a radical of the general structure DE, where D is methylene, CO or SO_2 and E is an alkyl or alkenyl radical of not more than 20 carbon atoms, unsubstituted or methyl-substituted cycloalkyl of not more than 6 carbon atoms, or styryl, or is a phenyl or benzyl radical which is unsubstituted or substituted by not more than 3 substituents from the group consisting of halogen, C_1–C_4-alkyl, C_1–C_4-alkoxy and nitro, or is a 1-methylbenzyl or 1,1-dimethylbenzyl radical which is unsubstituted or substituted by halogen or methoxy, or is haloalkyl of note more than 3 carbon atoms and not more than 3 halogen atoms, alkoxymethyl, acetoxymethyl or alkoxycarbonylalkyl, or is phenoxyalkyl which is unsubstituted or substituted in the phenoxy moiety by not more than 3 substituents from the group consisting of halogen, alkyl, alkoxy and methylsulfonyl, and which possesses a straight-chain or branched alkylene chain of not more than 5 carbon atoms, or

A is a radical of the formula



where R^4 is phenyl which is substituted by trifluoromethyl, halogen or C_1–C_4-alkyl, or

A is a radical of the formula



where R^5 and R^6 are each halogen or CF_3.

4,761,173

HERBICIDAL HETEROCYCLIC SULFONAMIDES

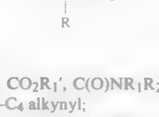
Thomas R. Dean, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 859,999, May 2, 1986, abandoned. This application Mar. 24, 1987, Ser. No. 29,731

Int. Cl.[4] C07D *239/38, 239/56, 401/12;* **A01N** *43/54*

U.S. Cl. 71—92 **41 Claims**

1. A compound having the formula:



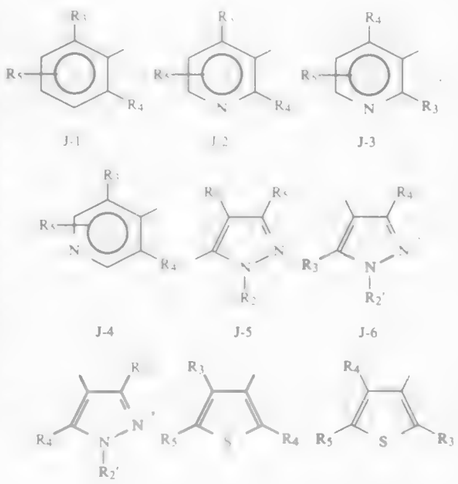
wherein

R is H, $C(O)R_1$, CO_2R_1', $C(O)NR_1R_2$, $C(S)NR_1R_2$, C_3–C_4 alkenyl or C_3–C_4 alkynyl;

R_1 is C_1–C_4 alkyl; C_1–C_4 haloalkyl; C_2–C_4 alkoxyalkyl; C_3–C_4 alkenyl; C_3–C_4 alkynyl or phenyl optionally substituted by F, Cl, Br, CH_3 or OCH_3;

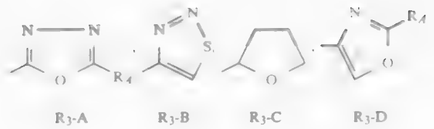
R_2 is H or C_1–C_2 alkyl;

J is

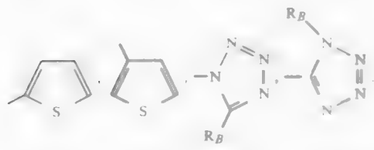


J-1 J-2 J-3 J-4 J-5 J-6 J-7 J-8 J-9

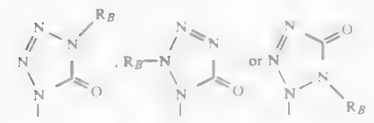
R_3 is F; Cl; Br; I; NO_2; ER_1''; C_1–C_4 alkyl; $SO_2NR_1'''R_2$; C_1–C_4 alkyl substituted by at least one F, Cl, Br or C_1–C_3 alkoxy; $C(O)R_1''''$; CO_2R_1'; OSO_2R_1'';



R_3-A R_3-B R_3-C R_3-D



R_3-E R_3-F R_3-G R_3-H



R_3-I R_3-J R_3-K

E is O, S, SO or SO_2;

R_4 is F; Cl; Br; I; NO_2; ER_1''; C_1–C_4 alkyl; C_1–C_4 alkyl substituted by at least one F, Cl, Br or C_1–C_3 alkoxy or OSO_2R_1'';

R_5 is H; F; Cl; Br; NO_2; $N(CH_3)_2$; $E(C_1$–C_2 alkyl); C_1–C_2 alkyl or C_1–C_2 alkyl substituted by at least one F, Cl, Br or OCH_3;

R_1' is C_1–C_4 alkyl, C_2–C_4 haloalkyl, C_2–C_4 alkoxyalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;

R_1'' is C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkoxyalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;

R_1''' is C_1–C_3 alkyl, allyl or propargyl;

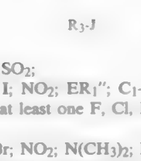
R_1'''' is C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkoxyalkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, cyclopropyl or cyclopropylmethyl;

R_2' is H, C_1–C_3 alkyl, allyl, propargyl, CF_3CH_2, or phenyl;

R_A is H or CH_3;

R_B is H, CH_3 or CH_2CH_3;

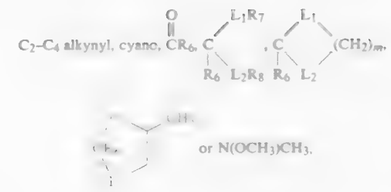
A is



A-1

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, halogen, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino or C_3–C_5 cycloalkyl;

Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl, C_1–C_4 haloalkyl, azido,



C_2–C_4 alkynyl, cyano, CR_6,

or $N(OCH_3)CH_3$.

m is 2 or 3;

L_1 and L_2 are independently O or S;

R_6 is H or C_1–C_3 alkyl;

R_7 and R_8 are independently C_1–C_3 alkyl;

Z is CH, CCH_3, CC_2H_5, CCl or CBr;

provided that

(a) when X is Cl, F, Br or I, then Y is OCH_3, CO_2H_5, $N(OCH_3)CH_3$, $NHCH_3$, $N(CH_3)_2$ or OCF_2H; and

(b) when the total number of carbon atoms of X and Y is greater than four, then the combined number of carbons of R_3, R_4 and R_5 is less than or equal to six.

31. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,761,174

TRIAZOLIN-5-ONE HERBICIDES

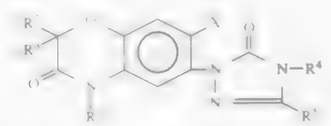
Jun H. Chang, Princeton Junction, and John W. Lyga, Somerset Co., both of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 38,169, Apr. 14, 1987, abandoned, which is a continuation of Ser. No. 3,450, Jan. 15, 1987, abandoned. This application Sep. 30, 1987, Ser. No. 104,598

Int. Cl.[4] A01N *43/84;* **C07D** *413/04*

U.S. Cl. 71—92 **10 Claims**

1. Compound of the formula



in which R^1 is H, alkyl, alkenyl, alkynyl, haloalkyl, haloalkenyl, haloalkynyl, alkoxyalkyl, alkoxyalkoxyalkyl, alkylsulfonyl, aralkyl, cycloalkyl, alkylthioalkyl, hydroxy or alkoxy;

R^2 and R^3 are independently H or alkyl;

X is H, Cl or F;

R^4 is alkyl, haloalkyl, alkenyl or alkynyl;

R^5 is alkyl or haloalkyl or H.

7. An herbicidal composition comprising an herbicidally effective amount of the compound of claim 1 in admixture with a suitable carrier.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,175

M-ANILIDO-URETHANES AND HERBICIDES CONTAINING THESE COMPOUNDS

Ulrich Schirmer, Heidelberg; Rainer Becker, Bad Duerkheim, and Bruno Wuerzer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

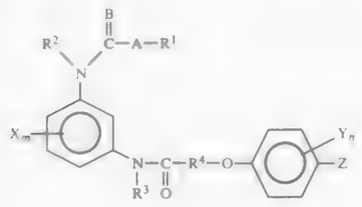
Continuation of Ser. No. 160,432, Jun. 17, 1980, abandoned. This application Jul. 5, 1983, Ser. No. 511,016

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926049

Int. Cl.[4] A01N *37/44*

U.S. Cl. 71—100 3 Claims

2. A process for combating the growth of unwanted plants, wherein the soil or the plants are treated with an m-anilido-urethane of the formula



where

A and B independently of one another are oxygen or sulfur,

R^1 is alkyl of 1 to 5 carbon atoms, which is unsubstituted or substituted by chlorine, fluorine, methoxy or methoxycarbonyl or is methylcyano or ethylcyano or is alkenyl of 2 to 4 carbon atoms which is unsubstituted or substituted by chlorine, or is alkynyl of 3 to 4 carbon atoms which is unsubstituted or substituted by chlorine or methoxy, or is cycloalkyl of 5 to 7 carbon atoms which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, or is phenyl,

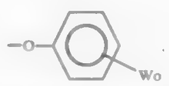
R^2 and R^3 are each independently of one another hydrogen, alkyl of 1 to 3 carbon atoms, and alkyl of 1 or 2 carbon atoms which is substituted by methoxy or halogen,

R^4 is alkylene of 1 to 6 carbon atoms which is unsubstituted or substituted by alkyl of 1 to 3 carbon atoms, methoxyalkyl or haloalkyl,

X is hydrogen, methyl, trifluoromethyl, methoxy, halogen, nitro or amino,

Y is hydrogen, alkyl of 1 to 3 carbon atoms, trifluoromethyl, halogen, methoxy, trifluoromethoxy, nitro, and

Z is



where W has, independently of Y, the meanings given for Y and

m, n and o are numbers from 1 to 4.

4,761,176

HERBICIDAL 2-HALOACETANILIDES

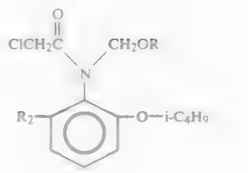
Gerhard H. Alt, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 133,696, Mar. 25, 1980, abandoned. This application Mar. 15, 1984, Ser. No. 589,983

Int. Cl.[4] A01N *37/24*

U.S. Cl. 71—118 14 Claims

4. Herbicidal compositions comprising an adjuvant and a herbicidally effective amount of a compound of the formula



wherein

R is ethyl or n-propyl and

R_2 is methyl or ethyl,

said compound being selected from the group consisting of

N-(n-propoxymethyl)-2'-isobutoxy-6'-methyl-2-chloroacetanilide and

n-(ethoxymethyl)-2'-isobutoxy-6'-ethyl-2-chloroacetanilide.

4,761,177

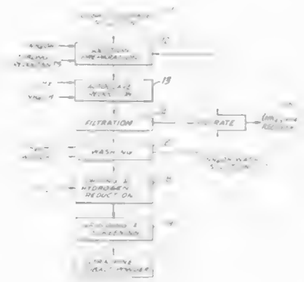
PRODUCTION OF COBALT AND NICKEL POWDER

Eddie C. Chou; Leo W. Beckstead, both of Arvada, Colo., and Luther R. Tinnin, New Orleans, La., assignors to AMAX Inc., Greenwich, Conn.

Filed Jun. 26, 1987, Ser. No. 66,437

Int. Cl.[4] C22B *23/04*

U.S. Cl. 75—0.5 AA 9 Claims



1. In the process for producing fine cobalt powder by pressurized hydrogen reduction from cobalt sulfate solution using a strong reductant from the group consisting of metal hydrides, metal borohydrides and metal borides and using a base to neutralize the acid generated during hydrogen reduction the improvement which comprises introducing said base into said solution in stages such that no more than about one-half the required amount of said base is added to said solution along with or prior to addition of said reductant with the remaining required amount of base being introduced after the addition of said reductant.

4,761,178

PROCESS FOR HEATING MOLTEN STEEL CONTAINED IN A LADLE

Neal R. Griffing, Bethlehem; Marvin H. Bayerwitz, Allentown, and Philip D. Stelts, Center Valley, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

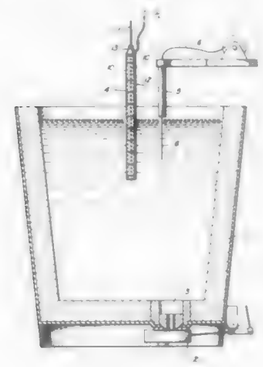
Filed Aug. 24, 1987, Ser. No. 88,443

Int. Cl.[4] C21C *7/00*

U.S. Cl. 75—51.2 7 Claims

1. A method of heating molten steel contained in an open top refractory lined ladle comprising introducing a plurality of oxygen containing gas streams beneath the surface of the molten steel to an unconfined reaction zone spaced a substantial distance from the refractory lining and introducing a quantity

of an oxidizable noncarbonaceous fuel into the reaction zone sufficient so that the oxidation thereof by the oxygen contain-



ing gas steams raises the temperature of the molten steel to a predetermined level.

4,761,179

WOOD PRESERVATIVES

Reimer Goettsche, Baden-Baden, and Hans-Norbert Marx, Buehl-Weitenung, both of Fed. Rep. of Germany, assignors to Dr. Wolman GmbH, Sinzheim, Fed. Rep. of Germany

Filed Feb. 9, 1987, Ser. No. 12,379

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1986, 3605008

Int. Cl.[4] C09D *5/14*

U.S. Cl. 106—18.32 6 Claims

1. A wood preservative based on a water-dilutable formulation of the compound di-(N-cyclohexyldiazonium-dioxy)-copper, wherein the wood preservative contains a polyamine and a tartaric acid or nitrogen-containing polycarboxylic acid in an amount such that, when the preservative is diluted with water to a conventional treatment concentration of from 0.3 to 1.5% by weight of copper, the pH of the aqueous solution is not less than 7.5.

4,761,180

DYES CONTAINING TETRAMETHYLAMMONIUM CATION FOR INK-JET PRINTING INKS

Ronald A. Aakeland, San Diego; William D. Kappele, Escondido, both of Calif.; Norman E. Pawlowski, Corvallis, Oreg., and John L. Stoffel, San Diego, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 900,953, Aug. 27, 1986, abandoned. This application Feb. 5, 1987, Ser. No. 11,190

Int. Cl.[4] C09D *11/02*

U.S. Cl. 106—22 30 Claims

1. An ink composition suitable for use in ink-jet printers comprising:

(a) a vehicle comprising about 5 to 95% water and the balance at least one member selected from the group consisting of glycols and glycol ethers; and

(b) a dye having at least one negatively charged functional group per molecule, present in an amount up to about 0.1 Molar of the vehicle composition, said dye having a plurality of anionic sites, originally associated with undesirable cations, at least a portion of said cations being replaced with tetramethylammonium cations, said portion being in an effective amount to reduce crusting of said ink without affecting kogation.

4,761,181

METHOD FOR STABILIZING ORGANIC BASE SUBSTANCES TO LIGHT

Yoshiaki Suzaki, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

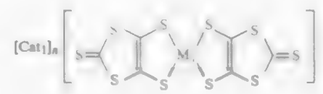
Filed Jan. 23, 1987, Ser. No. 6,364

Claims priority, application Japan, Jan. 24, 1986, 61-13396

Int. Cl.[4] C09D *11/00*

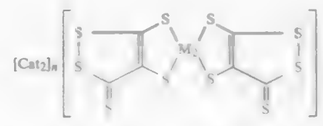
U.S. Cl. 106—22 16 Claims

1. A method for stabilizing an organic base substance to light which comprises causing an organic base substance having an absorption maximum in a range of about 300 nm to about 1,500 nm to coexist with at least one complex of the following general formula [I] or [II]



[I]

or



[II]

wherein $[Cat_1]$ and $[Cat_2]$ independently represent a cation necessary for neutralization of the complex, M_1 and M_2 independently represent nickel, copper, cobalt, palladium or platinum, and n is 1 or 2.

4,761,182

PROCESS FOR USING SLUDGE FROM GEOTHERMAL BRINE TO MAKE CONCRETE AND CONCRETE COMPOSITION

Olin D. Whitescarver, Indian Wells; Jonathan T. Kwan, Santa Maria; M. Kenneth Chan, Los Angeles, and Daniel P. Hoyer, Palm Desert, all of Calif., assignors to Union Oil Co. of California, Los Angeles, Calif.

Continuation of Ser. No. 838,537, Mar. 11, 1986, abandoned. This application Apr. 8, 1987, Ser. No. 35,922

Int. Cl.[4] C04B *18/04*

U.S. Cl. 106—98 29 Claims



1. A process for using siliceous sludge precipitated from a silica-rich geothermal brine to produce a structural concrete material, the process consisting essentially of:

a. combining the siliceous sludge precipitated from silica-rich geothermal brine with a portland type cement;

b. combining with the siliceous sludge and the portland type cement, a sufficient amount of activating media to cause the cementing material to be activated; and,

c. permitting the mixture of siliceous sludge, portland type

VOL 1093 ISS 1 AG 2 1988 UMI

cement, and activating media to cure into a structural concrete material.

12. A structural concrete material consisting essentially of:

a. a siliceous sludge precipitated from silica-rich geothermal brine;

b. a portland type cement capable of being activated by an activation media; and

c. a sufficient amount of activation media to cause the portland type cement to be activated so as to enable the mixture of sludge, cementing material and activation media to cure into a structural concrete.

4,761,183

GROUTING COMPOSITION COMPRISING SLAG

William J. Clarke, 162 Spencer Pl., Ridgewood, N.J. 07450, assignor to Geochemical Corporation and William J. Clarke, both of Ridgewood, N.J.

Filed Jan. 20, 1987, Ser. No. 4,668
Int. Cl.[4] C01B *7/14*
U.S. Cl. 106—117 17 Claims

1. A fluid composition for grouting comprising: (1) slag as a first cementitious material, the slag having a specific surface area greater than 9,500 square centimeters per gram and less than three weight percent of particles of the slag being larger than 7.8 micrometers in diameter and (2) an equal or greater weight of water.

4,761,184

FORMALDEHYDE BINDER

Efthalia V. Markessini, Karabournaki, Greece, assignor to Enigma N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 764,669, Aug. 9, 1985, abandoned, which is a continuation-in-part of Ser. No. 575,881, Feb. 1, 1984, abandoned, which is a continuation-in-part of Ser. No. 515,342, Jul. 19, 1983, abandoned. This application Feb. 11, 1987, Ser. No. 13,163
Claims priority, application United Kingdom, Jan. 29, 1985, 8502169
Int. Cl.[4] C08K *5/05;* C09J *3/14;* C08L *97/02;* C08G *12/12*
U.S. Cl. 106—203 15 Claims

1. A formaldehyde binder which comprises a solution of

(a) at least one organic hydroxy compound selected from dihydric, trihydric and petahydric alcohols contaiing up to 20 carbon atoms, pentaerythritol, monosaccharides contaiing up to 6 carbon atoms, disaccharides containing up to 12 carbon atoms and mixtures thereof,

(b) at least one amide selected from the group consisting of urea and thiourea wherein the ratio of component a to component b is 1:5 to 1:.25, and

20 to 80% by weight of water.

4,761,185

RAPID STARCH DEPOLYMERIZATION VIA SPRAY REACTORS

Esteban Chornet; Paulo G. Koeberle, both of Sherbrooke, and Ralph Overend, Vanier, all of Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Filed Nov. 14, 1986, Ser. No. 930,570
Int. Cl.[4] C13K *1/06*
U.S. Cl. 127—38 3 Claims

1. A rapid process for continuously converting an aqueous suspension of a starch containing material to starch hydrolysates which comprises injecting a fine mist of said aqueous suspension into a steam containing chamber at a pressure of from 200 to 1500 psig for a period of time not exceeding 20 seconds, said injected mist being projected against the walls of said chamber to cause said mist to flow along the walls of said chamber, thereby preventing back mixing and favoring uniform residence time distribution for the resulting projected mist, thereby producing a non-gelatinized flowing magma and



recovering said non-gelatinized magma in a lower pressure flashing reservoir.

4,761,186

METHOD OF PURIFYING STARCHES AND PRODUCTS PRODUCED THEREFROM

Robert E. Schara, Princeton Junction, and Jay H. Katcher, Cranbury, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 18, 1986, Ser. No. 897,674
Int. Cl.[4] C08B *30/00*
U.S. Cl. 127—71 6 Claims

1. A process for purifying chemically modified starches comprising the steps of:

(a) forming an aqueous slurry of chemically modified starch solids, said slurry having a starch solids content of from 35 to 43% solids by weight;

(b) adding water to a feed tank and then circulating water between the feed tank and an ultrafiltration unit, said unit containing one or more membranes which will retain starch molecules and permit passage of salts, flavors, and chemical reagents; thereafter,

(c) adding the slurry to the circulating water in the feed tank to gradually increase the starch solids level of the resultant diluted slurry circulated to the ultrafiltration unit to between 20% and about 32% by weight.

(d) continuously circulating the diluted slurry through the ultrafiltration unit and adding water to the diluted slurry in order to maintain a starch solids level of 20% to about 32% by weight, said circulating being conducted for a period of time effective to remove said salts, said flavors and said chemical reagents from the slurry; thereafter,

(e) stopping the flow of added water but continuing the circulation of the slurry through the ultrafiltration unit in order to raise the starch solids level to above 35% by weight; and then,

(f) drying the resulting purified starch slurry recovered from said ultrafiltration unit.

4,761,187

METHOD OF IMPROVING STRESS CORROSION RESISTANCE OF ALLOYS

Neil E. Paton, Thousand Oaks; Daniel P. Dennies, San Diego; Jesse B. Lumsden, Thousand Oaks, and Lillian W. Ng, Glendale, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 25, 1986, Ser. No. 900,196
Int. Cl.[4] C22C *33/00*
U.S. Cl. 148—3 9 Claims

1. A method of improving the stress corrosion resistance of an alloy comprising:

heating a martensitic stainless steel to a molten state and incorporating into said molten steel from 0.5 to 2.0 weight

percent of an additive selected from the group consisting of platinum, palladium or a mixture thereof.

4,761,188

FILIFORM CORROSION-RESISTANT PRIMER COATING COMPOSITION AND METHOD FOR PREVENTING FILIFORM CORROSION

Shigeo Miyata, Takamatsu, Japan, assignor to Kyowa Chemical Industry Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1987, Ser. No. 29,153
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[4] C23C *22/24;* C08K *3/26*
U.S. Cl. 148—6.2 13 Claims

5. A method of inhibiting filiform corrosion which may occur on the surface of a metallic substrate, which comprises applying a primer coating composition comprising a film-forming component containing a film-forming resinous material and a hydrotalcite component to the substrate surface to form a coated film layer thereon, the improvement wherein the hydrotalcite component of the coating composition is a hydrotalcite solid solution represented by the following formula (1)

$$[(Mg^{2+})_{y1}(M^{2+})_{y2}]_{1-x}M_x^{3+}(OH)_2A_{x/n}^{n-}.nH_2O$$

wherein M^{2+} represents at least one divalent metal cation selected from the group consisting of Zn, Cd, Pb, Ca and Sr, M^{3+} represents a trivalent metal cation, A^{n-} represents an anion having a valence of n, and x, y1, y2 and m represent positive numbers which satisfy the following conditions:

$0<x\leqq 0.5$,
$0<y1$,
$0<y2$,
$0.5\leqq y1+y2<1$, and
$0\leqq m<2$,

the amount of the hydrotalcite solid solution being 0.1 to 20 parts by weight per 100 parts by weight of the film-forming component.

4,761,189

PROCESS AND AQUEOUS COMPOSITIONS FOR TREATING METAL SURFACES

Raschad Mady, Pulheim; Christian Ries, Cologne, and Roland Morlock, Bergheim, all of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 773,081, Aug. 28, 1985, abandoned, which is a continuation of Ser. No. 555,323, Nov. 25, 1983, abandoned. This application May 20, 1987, Ser. No. 53,598
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247729
Int. Cl.[4] C23C *22/08*
U.S. Cl. 148—6.16 10 Claims

1. A process for treating a clean metal surface for subsequent application of an organic coating comprising the sequential steps of:

(a) applying to the surface of a metal which is aluminum, an aluminum alloy, or steel, a coating consisting of an aqueous solution of

(i) about 0.5 to 10 g/l of trivalent chromium ions,

(ii) about 0.55 to 11 g/l of fluoride ions,

(iii) about 0.15 to 500 g/l of an organic film-forming agent which is a homopolymer or copolymer of acrylic acid or methacrylic acid, containing free carboxyl groups, and

(iv) about 0.6 to 12.5 g/l of phosphate ions, the mol ratio of trivalent chromium ions to fluoride ions to phosphate ions being about 1:2.5 to 3.5:0.3 to 3.0;

(b) removing the metal surface form contact with the aqueous solution except for a thin layer of the aqueous solution which is left thereon;

(c) removing the water from said thin layer of the aqueous solution present on the metal surface to form a thin film on the metal surface; and

(d) heating the film at a temperature and for a period of time sufficient to render the film water-insoluble.

4,761,190

METHOD OF MANUFACTURE OF A HEAT RESISTANT ALLOY USEFUL IN HEAT RECUPERATOR APPLICATIONS AND PRODUCT

Gaylord D. Smith, Huntington, W. Va., assignor to Inco Alloys International, Inc., Huntington, W. Va.

Filed Dec. 11, 1985, Ser. No. 807,532
Int. Cl.[4] C22F *1/10*
U.S. Cl. 148—11.5 R 15 Claims

1. A method of manufacturing a nickel-chromium-iron isotropic alloy form having high temperature corrosion resistance, high thermal conductivity, low coefficient of expansion, a high level of ductility and strength, the method comprising:

(a) processing an alloy heat to a form of near net shape;

(b) intermediately annealing the form;

(c) cold working the form 20–80%;

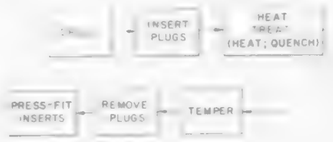
(d) finally annealing the form to retain a 20–80% increase in the yield strength over that of a solution annealed material of similar composition and retaining at least 60% of the solution annealed ductility.

4,761,191

METHOD OF FORMING CLOSELY SIZED OPENINGS

George O. Keller, Spring; Joseph J. Portugal, and Robert F. Kane, both of Houston, all of Tex., assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 23, 1986, Ser. No. 945,837
Int. Cl.[4] C21D *1/68;* B21K *5/02*
U.S. Cl. 148—12 R 15 Claims



8. The method of making a tool bit for rock drilling comprising the steps of:

(a) providing a tool bit body formed from a steel capable of being heat treated to raise its hardness to a relatively high level, said bit body having a cutting face surface;

(b) while said bit body is in a soft condition forming a plurality of openings extending into said cutting face surface;

(c) placing a plug formed from a material different than the steel forming said bit body into each said openings with each plug having a coefficient of thermal expansion different than the bit body;

(d) heat treating said bit body with said plugs therein to significantly raise the level of hardness of said bit body; and thereafter,

(e) removing said plugs and press-fitting hard cutting inserts into said openings, each such insert being sized to have a cutting end portion extending outwardly of said cutting face.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,192

METHOD OF AND APPARATUS FOR REMELTING AND HARDENING A SHAFT

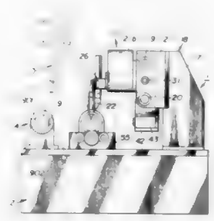
Toshihiko Saga; Akitaka Inao, and Kenji Fujii, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 865,643, May 16, 1986, abandoned, which is a continuation of Ser. No. 708,917, Mar. 6, 1985, abandoned. This application Sep. 17, 1987, Ser. No. 98,769

Claims priority, application Japan, Mar. 7, 1984, 59-44249; Apr. 6, 1984, 59-69489; Apr. 9, 1984, 59-70680; Apr. 9, 1984, 59-70681; Apr. 27, 1984, 59-85994

Int. Cl.[4] C21D *9/28, 9/30*

U.S. Cl. 148—152 12 Claims



1. A method for remelting and hardening elongate workpieces each having a plurality of axially spaced portions to be processed, said method comprising the steps of:

(a) holding one workpiece in a first position;

(b) rotating said workpiece about its own axis in said first position;

(c) heating said rotating workpiece held in said first position;

(d) thereafter, quickly transferring said heated workpiece to a second position close and parallel to said first position before said workpiece is subjected to a substantial temperature reduction;

(e) holding said workpiece in said second position;

(f) rotating said workpiece about its own axis in said second position;

(g) remelting and hardening at least a portion of the outer surface of at least one of said portions to be processed with torch means positioned at said at least one of said portions to be processed;

(h) after said at least one of said portions has been remelted and hardened moving said torch means axially along said rotating workpiece;

(i) detecting the next of said predetermined portions to be processed;

(j) stopping said torch means at said detected next portion, remelting and hardening at least a portion of the outer surface at said detected next portion;

(k) continuing said axially moving, detecting and stopping of said torch means along said wortkpiece and remelting and hardening of said portions;

(l) after all of said spaced portions to be processed have been remelted and hardened detaching said workpiece from said second position;

(m) starting said step (a) with respect to the next workpiece in timed relation of a time cycle of remelting and hardening of the portions to be processed of said one workpiece; and

(n) repeating said steps (a) to (m) until all of the elongate workpieces have been processed.

4,761,193

RECOVERABLE ARTICLE FOR ENCAPSULATION

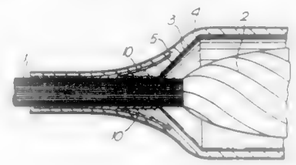
Kenneth B. Pithouse, Lesulis, France; Thomas A. Kridl, Union City, and James T. Triplett, Livermore, both of Calif., assignors to Raychem Limited, London, England

Division of Ser. No. 567,130, Dec. 30, 1983, Pat. No. 4,626,458. This application Oct. 30, 1986, Ser. No. 925,349

Claims priority, application United Kingdom, Jan. 6, 1983, 8300221; Aug. 16, 1983, 8322004

Int. Cl.[4] B32B *31/00;* B29C *41/00*

U.S. Cl. 156—85 9 Claims



1. A method of making a hollow pressure vessel around an elongate substrate, which comprises:

(A) providing around the substrate a liner having a larger central section and smaller end sections;

(B) providing around the liner a hollow article having at least one recoverable outlet portion such that the substrate extends through said outlet portion, the article comprising a composite structure recoverable by virtue of a recoverable fibre component thereof; and

(C) recovering into engagement with the substrate one or more outlet portions only of the structure.

4,761,194

METHOD OF ENVIRONMENTAL SEALING

Kenneth B. Pithouse, Lesulis, France; Thomas A. Kridl, Union City, and James T. Triplett, Livermore, both of Calif., assignors to Raychem Limited, London, England

Continuation of Ser. No. 567,128, Dec. 30, 1983, abandoned. This application Jun. 24, 1986, Ser. No. 881,505

Claims priority, application United Kingdom, Jan. 6, 1983, [redacted]

Int. Cl.[4] B29C *61/02, 63/18;* B32B *31/26*

U.S. Cl. 156—86 2 Claims



1. A method of environmentally sealing a pipe, cable or harness substrate by means of a sheet of polymeric material and a heat-recoverable fabric, which method comprises:

(a) installing around the pipe, cable or harness substrate the sheet of polymeric material (i) that will conform dimensionally with the fabric when the fabric is recovered, (ii) having a viscosity of at least 5000 poise at a temperature T, (iii) that will not flow through the fabric during recovery thereof and (iv) that has one surface that will adhere to a substrate when heated; and

(b) installing around the sheet of polymeric material a heat recoverably woven, knitted or braided fabric such that after installation the fabric has a tubular configuration around the pipe, cable or harness substrate, the fabric comprising fibres with will recover when heated to a recovery temperature (T) thereof, of from about 80°–250° C., the fibres having a tensile strength of at least 0.1 MPa at their recovery temperature; and

(c) heating the fabric to cause it to engage the pipe, cable or harness substrate, and the sheet of polymeric material and cause the sheet to adhere to the substrate.

4,761,195

TIRE BUILDING MACHINE SERVER

James M. Hart, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 24, 1986, Ser. No. 933,984

Int. Cl.[4] B29H *17/20*

U.S. Cl. 156—116 12 Claims



1. Apparatus for cutting and applying a strip of flexible material to a cylindrical body comprising a supporting structure, a strip applier assembly mounted on said structure for relative movement toward and away from said cylindrical body, means for stitching an end portion of said strip to said cylindrical body for winding a first predetermined length of said strip on said cylindrical body, clamping means on said applier for clamping said strip to said applier, a knife assembly mounted on said supporting structure at a position for cutting a portion of said strip of flexible material extending between said clamping means and said cylindrical body, said knife assembly having a reciprocating knife blade, and means for moving said applier relative to said supporting structure including primary moving means for moving said applier away from said cylindrical body after said first predetermined length of said strip is wound around said cylindrical body to provide an additional length of said strip for winding on said cylindrical body and secondary moving means for moving said applier further away from said cylindrical body after said strip has been cut and before said knife blade is retracted to prevent smearing of said flexible material at a cut end of said strip.

4,761,196

METHOD FOR OVERCOMING OPTICAL DEFICIENCIES OF SHOOTERS

Hugh L. Brown, 12053 N. Ridge Rd., Mequon, Wis. 53092, and Richard J. Stepaiewski, 10228 W. Burleigh, Wauwatosa, Wis. 53222

Filed Jan. 2, 1987, Ser. No. 44

Int. Cl.[4] B65C *1/02*

U.S. Cl. 156—247 7 Claims

1. A method of improving accuracy when shooting a weapon such as an arrow, a pistol, a rifle, a shotgun or the like while wearing glasses, comprising the steps of:

sighting with the optical axis of one eye directed along the weapon as would be done when aiming at a target,

applying an alignment disk comprised of an opaque material and approximating the size of the pupil of the other eye to one side of the lens of said glasses that is in front of said other eye and aligning said disk over said pupil on the optical axis of said other eye while continuing said sighting,



adhering a blanking disk composed of translucent material on a side of said lens opposite of the side to which said alignment disk is applied and coincident with said alignment disk, and

removing said alignment disk before shooting.

4,761,197

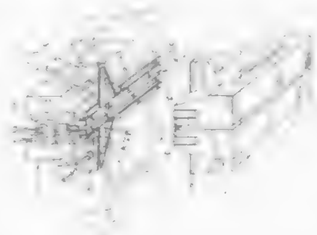
APPARATUS FOR SEALING A WEB OF FILM

William C. Christine, Catasauqua, Pa.; Josef Schmidt; Steffen Lyons, both of Libertyville, Ill.; Brian Green, Buffalo Grove, Ill., and George J. Herschman, Bath, Pa., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Jul. 28, 1986, Ser. No. 889,713

Int. Cl.[4] B32B *31/18, 31/20, 31/26*

U.S. Cl. 156—290 12 Claims



12. A method for creating a container with chevrons comprising the steps of:

providing a sealing member having two parallel heater bars and a wing bar extending from each heater bar;

providing three separate heating means, a first heating means heating a first wing bar, a second heating means heating the heater bars, and a third heating means heating a second wing bar;

separately heating with the heating means the heater bars, the first wing bar and the second wing bar; and

contemporaneously creating a side seal and chevron seal in a web of film with the sealing member

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,198

USE OF A THERMOPLASTIC ELASTIC ADHESIVE FOR ELASTIC BANDING

Catherine E. Salerno, Stirling, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Division of Ser. No. 764,829, Aug. 12, 1985, Pat. No. 4,699,941.
This application Jul. 13, 1987, Ser. No. 72,944
Int. Cl.[4] C09J 5/00; C05D 5/00
U.S. Cl. 156—334 9 Claims

1. A method for imparting elongation resistant gathers to portions of a polyethylene or non-woven film web substrate which comprises contacting a surface of the substrate with a band of a self-adhering elastic composition comprising:

(a) from 35 to 75% by weight of a rubbery block copolymer containing a rubbery polyisoprene midblock portion and a plurality of crystalline poly(vinylarene) endblocks wherein the polyvinylarene portion constitutes from 17 to 75% by weight of the copolymer;

(b) from 10 to 45% by weight of a tackifying resin selected from the group consisting of polyterpene resins having a softening point, as determined by ASTM method E28 58T, of from about 60° to 140° C.; phenolic-modified terpene resins: aliphatic petroleum hydrocarbon resins having a Ball and Ring softening point of from about 60° to 140° C.; and hydrogenated copolyaers of styrene and alpha-methyl styrene having a softening point of from 78° to 125° C.;

(c) from 5 to 25% by weight of a poly(alkyloxazoline); and

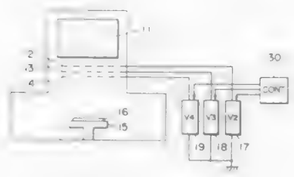
(d) from 0.2 to 2% by weight of an antioxidant.

4,761,199

SHUTTER DEVICE FOR ION BEAM ETCHING APPARATUS AND SUCH ETCHING APPARATUS USING SAME

Yasue Sato, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1986, Ser. No. 849,443
Claims priority, application Japan, Apr. 10, 1985, 60-74425; Apr. 12, 1985, 60-78781
Int. Cl.[4] C23F 1/02
U.S. Cl. 156—345 3 Claims



1. An etching apparatus using charged particles, said apparatus comprising:

generating means for generating charged particles;

electrode means for operating on said charged particles, said electrode means functioning as (1) beam forming means for operating on the charged particles generated by said generating means to form a beam of charged particles directed toward an object having a surface to be etched and (2) shutter means for blocking substantially all flow of said charged particles toward the surface of the object;

voltage producing means operable to produce an electric voltage, applied to said electrode means, that is effective to create an electric potential that either functions to block substantially all flow of charged particles toward the surface of the object or functions to form said beam of charged particles; and

control means for controlling said voltage producing means such that the electrode means will function as said shutter means.

4,761,200

APPARATUS FOR APPLYING A FLEXIBLE PLASTIC LABEL TO A ROUND CONTAINER

Walter Szeremeta, Waterville, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Feb. 20, 1987, Ser. No. 16,824
Int. Cl.[4] B05C 1/02; B65C 9/04, 9/22
U.S. Cl. 156—448 7 Claims



1. Apparatus for sequentially wrapping flexible thermoplastic labels around containers, each of said containers having one of each of said flexible thermoplastic labels wrapped thereabound by said apparatus, each of said containers having a generally cylindrical body portion, each of said flexible thermoplastic labels being wrapped around the cylindrical body portion of one of said containers by said apparatus, said apparatus comprising:

a rotatable vacuum drum;

means for rotating said rotatable vacuum drum;

means for sequentially providing said labels to said rotatable vacuum drum to successively apply a leading edge of each of said labels against said rotating vacuum drum to be temporaily retained against said rotatable vacuum drum;

rotatable gravure roll means forming a nip with said rotatable vacuum drum for applying a solvent to predetermined portions of each of said flexible thermoplastic labels as said each of said flexible thermoplastic labels passes through said nip, said solvent forming an adhesive with said predetermined portions of said each of said flexible thermoplastic labels;

means for sequentially transferring said labels from said rotatable vacuum drum to said body portions of said containers at a wrapping station to effect sequential adhesion of said labels to said body portions of said containers;

means for mounting fountain assembly means for applying a solvent to said rotatable gravure roll, said means for mounting including plate means, edge retaining means operatively associated with said plate means, and threaded fastener engaging means operatively associated with said plate means and spaced apart from said edge retaining means, said threaded fastener engaging means including a threaded fastener that is threadably movable between a first position that is away from said edge retaining means and a second position that is closer to said edge retaining means than said first position; and

fountain assembly means for applying a solvent to said rotatable gravure roll means, said fountain assembly means comprising:

a support plate having a first edge and a second edge, said first edge of said support plate being received within said edge retaining means, said second edge being engaged by said threaded fastener when said threaded fastener is in said second position to maintain said first edge of said support plate in engagement with said edge retaining means, said second edge not being engaged by said threaded fastener when said threaded fastener is in said first position, whereby said first edge can be withdrawn from said edge retaining means and said fountain assembly can be removed from said means for mounting when said threaded fastener is in said first position;

a solvent applying fountain operatively attached to said support plate, said solvent applying fountain including a fountain block with a part cylindrical face that is maintained in solvent applying, surface-to-surface engagement with said rotatable gravure roll means when said first edge of said support plate is received within said edge retaining means;

a fountain block holder, a part of said fountain block that is away from said part cylindrical face being received in said fountain block holder;

spaced fountain block adjustment devices for adjusting the position of said fountain block within said fountain block holder; and

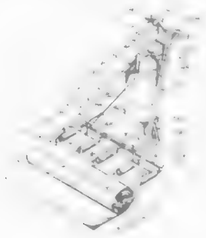
means for pivotally mounting said fountain block holder with respect to said support plate.

4,761,201

SELF CONTAINED APPARATUS TO GUIDE A ROLL OF ROOFING MATERIAL, TO HEAT THE DEPARTING ROOFING MATERIAL, AND TO ACCURATELY AND SEALABLY LAY THE HEATED ROOFING MATERIAL ON A ROOF SURFACE

Steven C. Nichols, Jr., 21808 N.E. 175th, Woodinville, Wash. 98073

Filed May 29, 1986, Ser. No. 869,381
Int. Cl.[4] B32B 35/00; B44C 7/06
U.S. Cl. 156—497 8 Claims



1. A self contained apparatus used to rotatably hold and movably unroll sheets of roofing material effectively sealably pressing the roofing material directly in place on roofing surfaces of structures, by sealably securing these sheets to the roofing surfaces and to the overlapped edges of adjacent sheets of like roofing material by preheating the roofing material about to leave the roll and using the combined pressing weight of the roll of roofing paper and the pressing cantilevered weight of the self contained apparatus, comprising:

(a) A frame to support all the components of this self contained apparatus and in turn be supported at three spaced triangular locations all of which are to be adjacent to a roofing surface, having:

(i) spaced receivers of this frame at two of these three spaced locations to receive ends of a shaft about which a roll of roofing material is positioned, and when the roll is so positioned, this frame is thereby essentially supported in a cantilevered position on the roofing surface at these two spaced locations;

(ii) a wheel subassembly of this frame at the re.naining spaced location, which in its triangular location is located opposite the midlength of a shaft on which a roll of roofing material is to be withdrawn, in a direction away from the wheel subassembly; and

(b) a heating subassembly mounted on this frame having pivotal supports, in turn having spaced heating units, which are thereby adjustably positioned to be placed at a specified distance from the ever changing diameter of a roll of roofing material being heated and sealably positioned on a roofing surface, having heating fluid distribution lines distributing heating fluid to the spaced heating units, as the heating fluid is released through a control valve of this heating subassembly, with these heating fluid distribution lines conducting heating fluid to be derived from a tank of heating fluid positioned on a holder of this heating subassembly, having an actuator of this heat subassembly used in adjustably positioning the spaced heating units, having a control valve and having a holder to receive a tank of heating fluid; and

(c) a shaft to first receive a roll of roofing material and thereafter to be placed on a roof and then to be guided by the spaced receivers of the frame.

4,761,202

PROCESS FOR CRYSTAL GROWTH OF $KTIOPO_4$ FROM SOLUTION

Peter F. Bordui, Menlo Park, Calif., and Gabriel M. Loiacono, Franklin Lakes, N.J., assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 869,170, May 30, 1986, abandoned. This application Mar. 10, 1987, Ser. No. 24,239
Int. Cl.[4] C30B 9/04, 15/00
U.S. Cl. 156—621 25 Claims

1. In a method of producing substantially flaw-free single crystals of a composition of the formula $MTiOXO_4$ wherein M is an element selected from the group consisting of K, Rb and Tl and X is an element selected from the group consisting of P and As, the steps comprising:

(a) preparing a mixture of $MTiOXO_4$ and a flux comprising the oxides of M and X in the ratio by weight of M to X in the range of 3:1 to 1:1 or of their precursors and producing a melt thereof by heating said mixture, the ratio by weight of $MTiOXO_4$ to flux at the seeding temperature being substantially equal to the saturation value of said $MTiOXO_4$ in said flux;

(b) suspending a seed crystal of said $MTiOXO_4$ in said melt;

(c) slowly decreasing the temperature of said melt while maintaining essentially spatially isothermal conditions throughout said melt, the maximum temperature difference being not greater than about 4° C., to thereby cause said $MTiOXO_4$ to crystallize from said melt on said seed crystal; and

(d) continuing decreasing the temperature of said melt until crystallization of said $MTiOXO_4$ on said seed crystal is completed.

4,761,203

PROCESS FOR MAKING EXPANDED FIBER

Kenneth D. Vinson, Germantown, Tenn., assignor to The Buckeye Cellulose Corporation, Memphis, Tenn.

Filed Dec. 29, 1986, Ser. No. 946,998
Int. Cl.[4] D21C 9/00
U.S. Cl. 162—9 6 Claims

1. A process for making expanded fiber from fibrous material having a fibrillar ultrastructure, comprising:

a. sufficiently impacting said fibrous material with a plurality of fine media, to cause fibrils to separate from said fibrous material, thereby providing expanded fiber characterized by a 50% volumetric reduction settling consistency, calculated on an aqueous slurry weight basis, of less than about 0.5%; and

b. separating said expanded fiber from said fine media.

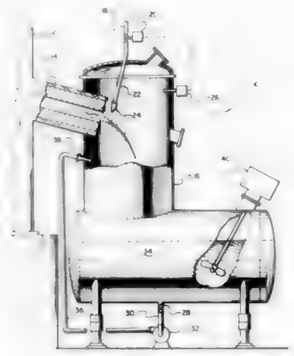
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,204

CHEMICAL RECOVERY PROCESS USING BREAK UP STEAM CONTROL TO PREVENT SMELT EXPLOSIONS

Arthur L. Kohl, Woodland Hills, and Albert E. Stewart, Eagle Rock, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 30, 1987, Ser. No. 8,989
Int. Cl.[4] D21C *11/12*
U.S. Cl. 162—30.1 12 Claims



1. In a chemical recovery process employing a furnace having a lower portion from which is discharged in a continuous yet variable quantity a stream of hot liquid smelt via a smelt spout into a dissolving tank partially filled with a pool of green liquor, the method of preventing smelt explosions in said tank comprising: maintaining a first selected superatmospheric pressure in excess of about 7 atmospheres in said tank during normal operation of the furnace, providing a steam source, a steam control valve, and a steam outlet nozzle for directing steam from said source at said stream of liquid smelt flowing from said spout, sensing the pressure in said tank with a pressure sensor which acts to maintain said control valve in the closed position during normal operation at said first superatmospheric pressure, and acts to maintain said control valve in an open position below a second selected superatmospheric pressure in said tank to discharge a high-velocity stream of steam through said nozzle in an amount sufficient to break up said stream of smelt whenever the pressure in said tank is below said second selected superatmospheric pressure, said second selected superatmospheric pressure being significantly below said first selected superatmospheric pressure, to that smelt explosions within said tank from contact of said hot smelt with the pool of green liquor are effectively eliminated during all phases of operation of the furnace.

4,761,205

SECURITY PAPER FOR CURRENCY AND BANKNOTES

Timothy T. Crane, Windsor, Mass., assignor to Crane & Co., Dalton, Mass.

Division of Ser. No. 804,825, Dec. 5, 1985, Pat. No. 4,652,015.
This application Dec. 17, 1986, Ser. No. 942,805
Int. Cl.[4] D21D *3/00;* D21H *5/10*
U.S. Cl. 162—103 6 Claims

1. A method of forming a security paper comprising the steps of:

depositing a metal layer on a continuous planar plastic film to form a metalized plastic film having reflective properties;

printing indicia on said metalized plastic film by means of an ink varnish which is resistant to a metal reactive solvent;

subjecting said printed plastic film to said metal reactive solvent to dissolve said metal layer except for said printed indicia to form a plastic film having metal indicia thereon;

inserting said plastic film and said metal indicia within a paper fiber slurry at a predetermined location in a paper-making machine during dewatering of said fiber slurry before said fiber is consolidated into a continuous paper web;

consolidating said paper fiber into a continuous paper web having said plastic film and said metal indicia contained within said paper web; and

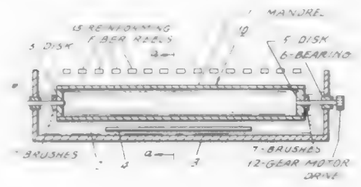
heating and pressing said paper web, said plastic film and said metal indicia to form a finished paper having a given length, said plastic film and said metal indicia being intermediate first and second opposing surfaces along said given length, said metal indicia being undetectable to the unaided eye under reflective illumination and becoming legible in transmitted illumination through both said surfaces at said predetermined location, said finished paper being essentially uniform along said given length.

4,761,206

METHOD FOR PRODUCING LARGE REINFORCED SEAMLESS CASINGS AND THE PRODUCT OBTAINED THEREFROM

Norman Forrest, 6434 Woodthrush Ct., Palm Beach Gardens, Fla. 33410

Filed Feb. 17, 1987, Ser. No. 15,644
Int. Cl.[4] C25D *1/02*
U.S. Cl. 204—9 16 Claims



1. A method for the electrolytic production of a filament-wound, reinforced metal casing having an internally attached insulation layer, which comprises the following sequential steps:

(a) coating the outer surface of a hollow mandrel with a layer of a separating material, said mandrel having dimensions slightly smaller than length and diameter dimensions of the desired filament-wound, reinforced metal casing;

(b) coating the layer of separating material with a layer of a non-conductive insulating material;

(c) coating the layer of insulating material with a thin film of electrolytically conductive material;

(d) immersing the thus prepared mandrel in an electroplating bath provided with means for rotating said mandrel at controlled speeds, and wherein said electroplating bath contains a metal salt electrolyte solution at a depth whereby not over 25% of the outer surface of said mandrel is not immersed and remains exposed;

(e) electrodepositing metal on the thus prepared outer surface mandrel while the mandrel is being rotated through said electrolyte solution;

(f) winding reinforcement fibers on the exposed outer surface of the mandrel as the mandrel is being rotated and while electrodepositing metal from said electrolyte on to the outer surface of the mandrel to form a reinforced metal casing having an internal insulation layer attached thereto; and

(g) separating said filament-wound reinforced metal casing from the mandrel by applying heat to said mandrel whereby the separating material on the outer surface of the mandrel melts thereby permitting the reinforced metal casing with the internally attached insulating layer to be separated from the mandrel.

4,761,207

CONTINUOUS SALT-BASED MELTING PROCESS

Donald L. Stewart, Jr., Hempfield Township, Westmoreland County, and Jan H. L. VanLinden, Hampton Township, Allegheny County, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 20, 1987, Ser. No. 40,132
Int. Cl.[4] C25C *3/06*
U.S. Cl. 204—67 16 Claims



1. A continuous process for melting and purifying aluminum beverage can scrap or skim containing impurities comprising:

(a) heating a molten salt in a heat bay;

(b) mixing the heated salt with an aluminum scrap or skim in a charge bay to form a molten charge mixture;

(c) separating aluminum metal from impurities in said molten charge mixture by coalescing to form a molten aluminum metal pad and a salt sludge containing separated impurities;

(d) chlorinating a portion of said salt sludge in a sufficient amount to control oxide concentration in the sludge to less than 10 wt % and to form a chlorinated salt mixture containing metal chlorides;

(e) separating and removing metal chlorides from said chlorinated salt mixture; and

(f) continuously feeding said salt mixture to said heat bay.

4,761,208

ELECTROLYTIC METHOD AND CELL FOR STERILIZING WATER

Helen F. Gram; Martin E. Muller; Ann M. Pendergrass, all of Los Alamos, N. Mex., and Phillip A. Rink, Everett, Wash., assignors to Los Alamos Technical Associates, Inc., Los Alamos, N. Mex.

Filed Sep. 29, 1986, Ser. No. 913,844
Int. Cl.[4] C25G *1/24*
U.S. Cl. 204—95 21 Claims

1. A method for electrolytically sterilizing or disinfecting water comprising the following steps:

(a) obtain an aqueous electrolytic solution;

(b) introduce the electrolytic solution into an electrolytic cell, when provided, wherein said electrolytic cell comprises:

(i) an anode, wherein the electrolytic surface of said anode comprises a Group VIII metal or a compound thereof;

(ii) an anode area comprising a chamber at said anode;

(iii) a cathode, wherein the electrolytic surface of said cathode comprises a conducting meterial;

(iv) a cathode area comprising a chamber at said cathode;

(v) at least one inlet for introducing an electrolytic solution, when provided, into said cell;

(vi) an outlet for allowing aqueous effluent from said anode to exit said electrolytic cell;

(vii) an outlet for allowing aqueous effluent from said cathode to exit said electrolytic cell;

(viii) sealing means positioned between said anode and said cathode for sealing said cell; and

(ix) flow restricting means comprising a barrier positioned between said anode and said cathode, said barrier comprising aperture means, said aperture means being large



but smaller in total cross-sectional area than either said anode or said cathode, said barrier thereby comprising at least one flow restricting body portion which extends into said cell for restrictively allowing the electrolytic solution to flow between said anode and said cathode through said aperture means;

(c) withdraw aqueous effluent from said anode area of said electrolytic cell; and

(d) introduce the aqueous anode effluent into the contaminated water to be treated.

4,761,209

SYSTEM FOR THE EXTRACTION AND UTILIZATION OF OXYGEN FROM FLUIDS

Joseph Bonaventura; Celia Bonaventura, both of Beaufort, N.C.; Joseph C. Van Ryzin, Kailua, Hi.; Bruce D. Zeaner, Beaufort, N.C., and C. William Anderson, Durham, N.C., assignors to Aquanautics Corporation, San Francisco, Calif.

Division of Ser. No. 653,850, Sep. 24, 1984, Pat. No. 4,602,987.
This application Apr. 25, 1986, Ser. No. 855,706
The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.
Int. Cl.[4] C25B *1/02*
U.S. Cl. 204—129 42 Claims



1. An apparatus for extracting oxygen from an environment surrounding said apparatus, which comprises:

a container having:

(1) a first portion which comprises a first oxygen permeable membrane which defines at least a portion of an inner space of said container, said oxygen permeable membrane having a first surface adapted to be in contact with said environment and a second surface facing said interior space;

(2) a second portion which comprises a first electrode compartment of an electrochemical cell;

VOL 1093 ISS 1 AG 2 1988 UMI

(3) a third portion which comprises a second electrode compartment of said electrochemical cell; and

(4) means for removing oxygen from said container;

said container being adapted such that a fluid confined in said container passes from said first electrode compartment to said means for removing oxygen, from said means for removing oxygen to said second electrode compartment, from said second electrode compartment to said first portion of said container, and from said first portion of said container to said first electrode compartment.

4,761,210

METHOD FOR GENERATING STRUCTURES IN MICRO-MECHANICS

Günter Ehrler, Deisenhofen; Heinz Hagen, Neubiberg, and Klaus Becker, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 16, 1986, Ser. No. 874,427

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1985, 3534860

Int. Cl.⁴ C25F *3/14*

U.S. Cl. 204—129.65 5 Claims

1. A method for generating patterned structures on a monolith substrate in micro-mechanics which comprises:

providing a plurality of etching masks of different masking configurations in superimposed relation on said substrate, said masks being selectively etchable by different etchants, the first etching mask being composed of a titanium-gold alloy and the next succeeding mask being composed of a photoresist composition,

structuring said substrate using the last mask to be applied by etching selected areas to a substantial depth,

removing said last mask after said structuring,

additionally structuring said substrate through the next to last mask to be applied by etching other selected areas to a different depth than in the original etching, and

repeating the structuring and mask removals for each of the remaining masks.

4,761,211

METHOD OF IMPROVING THE ELECTRICAL CHARACTERISTICS OF A THIN FILM

Ian R. Peterson, and Ian R. Girling, both of Middlesex, England, assignors to The General Electric Company, p.l.c., England

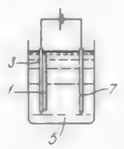
PCT No. PCT/GB86/00770, § 371 Date Aug. 10, 1987, § 102(e) Date Aug. 10, 1987, PCT Pub. No. WO87/04007, PCT Pub. Date Jul. 2, 1987

PCT Filed Dec. 17, 1986, Ser. No. 124,109

Claims priority, application United Kingdom, Dec. 20, 1985, 8531445

Int. Cl.⁴ C25F *5/00*

U.S. Cl. 204—130 7 Claims



1. A method of improving the electrical characteristics of a thin film formed on an electrically conductive substrate comprising: forming the film on the substrate by a Langmuir-Blodgett process; immersing the film in a fluid; and applying an electrical potential to the substrate such that a self-limiting electrochemical reaction within the fluid causes any voids in the film to be preferentially filled.

4,761,212

MULTIPLE COATING METHOD

Tadashi Watanabe, Hiratsuka; Yoichi Masubuchi, Yokohama; Akira Tominaga, Chigasaki; Haruo Nagaoka, Hiratsuka; Eisaku Nakatani, Hiratsuka, and Masafumi Kume, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Feb. 25, 1986, Ser. No. 832,623

Claims priority, application Japan, Feb. 27, 1985, 60-38555

Int. Cl.⁴ C25D *13/06*

U.S. Cl. 204—181.1 10 Claims

1. A coating method comprising the steps of: applying electrophoretically to an electroconductive substrate a polyisocyanate-free cationic electrophoretic primer which contains a binder resin having in its molecule at least one functional group capable of reacting with an isocyanate group under curing conditions to form a primer coat, applying by a non-electrophoretic method to the primer coat a surfacer or topcoating which consists esentially of an organic solvent having dispersed or dissolved therein a hydroxyl group-containing resin and a polyisocyanate compound to form a surfacer coat or topcoat, and curing the two coats at the same time at a temperature between room temperature and about 130° C.

4,761,213

TREATMENT FACILITY PARTICULARLY FOR PRINTED CIRCUIT BOARDS TO BE TREATED WHILE IN A HORIZONTAL PLANE

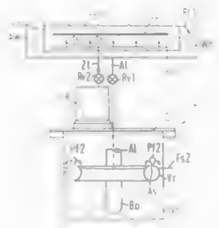
Daniel Hosten, Handzame, Belgium, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 53,707

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1986, 3625423

Int. Cl.⁴ C25D *17/00*

U.S. Cl. 204—198 19 Claims



1. In a treatment facility for treating workpieces while moving in a horizontal plane through the facility, said facility including a treatment cell for the treatment fluids, means for supplying fluid to the cell from a reservoir including a pump and feed conduit and means for discharging fluid from the cell to the reservoir and including a discharge conduit, the improvements comprising means for suppressing foaming of the fluid being returned to the reservoir, said means for suppressing including a distributor pipe being connected to the discharge conduit and having at least one exit slot, said distributor pipe being positioned in the reservoir with the exit slot being arranged above a fluid level of the fluid in said reservoir.

4,761,214

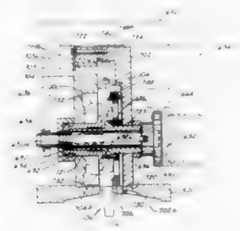
ECM MACHINE WITH MECHANISMS FOR VENTING AND CLAMPING A WORKPART SHROUD

Edmund R. Hinman, Monroe, Conn., assignor to Airfoil Textron Inc., Lima, Ohio

Continuation-in-part of Ser. No. 802,510, Nov. 27, 1985, Pat. No. 4,657,645. This application Mar. 23, 1987, Ser. No. 29,019

Int. Cl.⁴ B23H *3/00, 9/10, 7/30*

U.S. Cl. 204—224 M 22 Claims



1. In an apparatus for electrochemically machining a workpart, the combination of means for forming an electrolyte chamber for receiving a portion of the workpart, cathode tool means in the electrolyte chamber, shroud means around the workpart and exposing said portion of the workpart to be received in the electrolyte chamber, said shroud means having a lateral surface located on a respective opposite side thereof and external of said electrolyte chamber, means for relatively moving the workpart with the shroud means therearound and the electrolyte chamber forming means to position said portion of the workpart in the electrolyte chamber with the shroud means and electrolyte chamber forming means engaged, means for making said portion an anode relative to said cathode tool means, and opposing clamping means on the electrolyte chamber forming means external of the electrolyte chamber with each clamping means adjacent a respective opposite side of the shroud means for engaging a respective lateral surface on the shroud means external of the electrolyte chamber when the shroud means is engaged with the electrolyte chamber forming means to hold the shroud means and electrolyte chamber forming means in engagement.

4,761,215

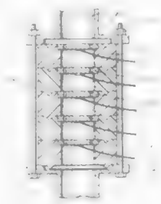
DEVICE FOR SILVERIZING WATER

Maryan Chak, 2901 Ocean Pkwy., Brooklyn, N.Y. 11235

Filed Apr. 30, 1987, Ser. No. 44,321

Int. Cl.⁴ C25C *7/00*

U.S. Cl. 204—269 6 Claims



1. A device for silverizing water, comprising

passage forming means having an inlet, an outlet and a passage extending between said inlet and said outlet so that said inlet and said outlet are open during silverizing of water and water can run from said inlet to said outlet through said passage;

a plurality of electrodes including alternatingly arranged silver-containing anodes, and cathodes formed and located relative to said inlet and said outlet so that water running from said inlet to said outlet through said passage is guided by said electrodes and continuously saturated by ions of silver emerging from said anodes; and

a plurality of housing portions which are substantially identical and arrangeable over one another so as to form a composite housing which can be easily disassembled into said housing portions when needed, each of said housing portions having an upper side and a lower side, each of said housing portions being provided with means for fitting them in one another, with means for forming a protion of said passage, means for supporting a respective one of said electrodes, and means for connecting a respective one of said electrodes with an electrical source,

said means for fitting being formed as a recess provided on one of said sides and a complementary projection provided on the other of said sides of each of said housing portions, said means for forming a portion of said passage being formed as a central opening provided in each of said housing portions, said means for supporting a respective one of said electrodes including a receptacle provided on one of said sides of each of said housing portions, and said means for connecting a respective one of said electrodes including an electrical conductor arranged in each of said housing portions in contact with a respective one of said electrodes.

4,761,216

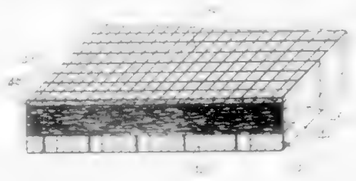
MULTILAYER ELECTRODE

David W. Cawlfield, Cleveland, Tenn., assignor to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 32,803, Apr. 1, 1987, Pat. No. 4,740,287, which is a continuation-in-part of Ser. No. 944,273, Dec. 19, 1986, Pat. No. 4,743,350, which is a continuation-in-part of Ser. No. 892,518, Aug. 4, 1986. This application Oct. 19, 1987, Ser. No. 109,896

Int. Cl.⁴ C25B *11/03, 11/12, 11/04;* **B32B** *7/00*

U.S. Cl. 204—284 28 Claims



1. An electrode compressed together and bonded by sintering in a reducing atmosphere for use in an electrochemical cell comprising in combination at least:

(a) a support layer formed of perforated material;

(b) a second layer of fibers atop of the support layer; and

(c) a third layer of fibers, the fibers being smaller in diameter than the fibers of the second layer and being positioned atop of the second layer.

4,761,217

ELECTROPLATE TO MOVING METAL

Terry E. Dorsett, 11205 Hosford Rd., Chardon, Ohio 44024, and David P. Rininger, 505 Courtland St., Fairport Harbor, Ohio 44077

Division of Ser. No. 829,283, Feb. 13, 1986, Pat. No. 4,661,213. This application Mar. 17, 1987, Ser. No. 26,992

Int. Cl.⁴ C25D *17/10*

U.S. Cl. 204—290 R 12 Claims

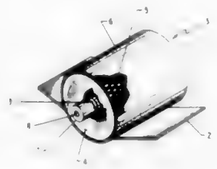
1. A roller electrode for electroplating a moving strip of metal, which electrode comprises:

a hollow valve metal cylinder in perforate, mesh form and

VOL 1093 ISS 1 AG 2 1988 UMI

having an exterior surface of electrocatalytic coating containing metal oxide;

a thermoplastic, non-conductive and acid-resistant porous resin covering in snug fit around said coated mesh cylinder, having a thickness of not substantially greater than



about 1.5 centimeter as well as having interconnected voids providing porosity of at least about 50 percent by volume; and

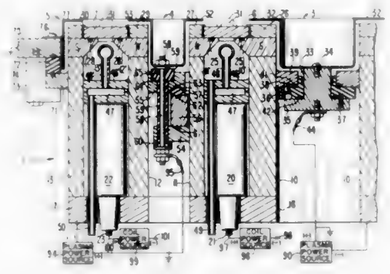
liquid supply means within said cylinder whereby liquid electrolyte is supplied to the resin covering through said perforate mesh cylinder.

4,761,218

SPUTTER COATING SOURCE HAVING PLURAL TARGET RINGS

Donald R. Boys, Cupertino, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 611,554, May 17, 1984, abandoned.
This application Apr. 4, 1986, Ser. No. 848,900
Int. Cl.[4] C23C *14/36*
U.S. Cl. 204—298 1 Claim



1. A circular magnetron sputter coating source comprising:

a plurality of electrically isolated cathode means disposed concentrically about the axial center line of said source, each cathode means including a magnetic sputter target made from the magnetic material to be deposited, means for mounting said magnetic sputter target and a magnetic field means including an electromagnet coil, an inner cylinder, an outer cylinder and a ring-shaped baseplate connecting the bottoms of the inner and outer cylinders, and a pair of ring-shaped pole pieces separated by an annular spatial gap and joined to the tops of the inner and outer cylinders, respectively, said cylinders, baseplate and pole pieces being made of ferromagnetic material, said magnetic sputter target being mounted so as to be positioned atop said pole pieces concentric with and normal to said source centerline, said gap and magnetic sputter target being configured and positioned so that the target completely bridges said annular spatial gap, whereby a continuous magnetic path between said pole pieces is provided through said target, an electric current flowing in said electromagnet coil causing magnetic field lines to be established in said yoke, pole pieces and magnetic sputter target;

at least one annular anode attached to said source and disposed between at least one adjacent pair of said plurality of concentrically disposed and electrically isolated cathode means;

electromagnet power source means connected to said plurality of cathode means for independently controlling the current in each said electromagnet coil; and

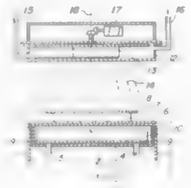
plasma power source means connected to each said sputter target on said plurality of cathode means for independently controlling the negative potential thereof with respect to said at least one anode, whereby a plurality of concentric, independently controllable toroidal plasma regions above said sputter targets are provided for the controlled sputter deposition of magnetic materials.

4,761,219

MAGNETRON SPUTTERING ETCHING APPARATUS

Naoto Sasaki, and Fumihiko Sato, both of Fuchu, Japan, assignors to Anelva Corporation, Tokyo, Japan

Filed Jul. 9, 1987, Ser. No. 71,240
Claims priority, application Japan, Jan. 23, 1987, 62-13887
Int. Cl.[4] C23C *14/34*
U.S. Cl. 204—298 3 Claims



1. A magnetron sputtering etching apparatus comprising:

a pair of electrodes opposed to each other in a vacuum vessel;

a radio-frequency power source applying radio-frequency power to the opposed electrodes for etching a surface of a to be processed substrate positioned between the electrodes by setting magnetic lines of force whose components are substantially in parallel with electric lines of force of the radio-frequency power; and

magnets arranged on rear sides of the pair of electrodes, respectively, with different poles being in opposition to each other, and at least one of the magnets rotating about an axis substantially in parallel with the electric lines of force.

4,761,220

HYDROPROCESSING CATALYST FINES AS A FIRST-STAGE CATALYST IN A TWO-STAGE, CLOSE-COUPLED THERMAL CATALYTIC HYDROCONVERSION PROCESS

Samil Beret, Danville; S. Gary Yu, Oakland, and C. Richard Hsieh, San Rafael, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1984, Ser. No. 667,503
Int. Cl.[4] C10G *65/12*
U.S. Cl. 208—59 20 Claims

1. A two -stage, close-coupled process for hydroprocessing a heavy hydrocabonaceous feedstock at least 30 volume percent of which boils above 1000° F. and which has greater than 100 parts per million by weight total metal contaminants to produce high yields of transportation fuels boiling below 650° F., which comprises:

(a) introducing said feedstock and finely ground spent hydroprocessing catalyst particles having activity sufficient to suppress adverse coke formation under coking conditions and having demetallizing activity, into a first-stage hydrothermal zone in the presence of hydrogen; wherein said feedstock and catalyst particles are introduced into said hydrothermal zone under conditions sufficient to substantially demetalate said feedstock and to convert a significant amount of the hydrocarbons in said feedstock boiling above 1000° F. to hydrocarbons boiling below 1000° F.;

(b) rapidly and without substantial reduction of pressure through the system passing a substantial portion of the substantially demetalated, spent catalyst particle-entrained effluent of said first-stage hydrothermal zone directly into a second-stage catalytic reaction zone at a reduced temperature relative to said first-stage hydrothermal zone and contacting said effluent with hydroprocessing catalyst under hydroprocessing conditions, including a temperature in the range of 650° F. to 800° F.; and

(c) recovering the effluent from said catalytic reactor zone.

4,761,221

PROCESS FOR THE DECOMPOSITION OF HALOGENATED ORGANIC COMPOUNDS

Carmela A. Rossi, Dampremy, and Philippe Nelis, Mont Saint-Guibert, both of Belgium, assignors to Labofina, S.A., Brussels, Belgium

Filed Mar. 31, 1987, Ser. No. 32,500
Claims priority, application France, Apr. 30, 1986, 86 06252
Int. Cl.[4] C10G *29/04*
U.S. Cl. 208—262 30 Claims

1. A process for the decomposition of a halogenated organic compound which comprises contacting said halogenated organic compound with a polyglycol and a hydride selected from the group consisting of alkali and alkaline-earth hydrides, under an atmosphere having a low oxygen content and at a temperature which does not exceed 100° C.

4,761,222

METHOD FOR SEPARATING NORMALLY LIQUID ORGANIC COMPOUNDS

Cecil O. Carter, Wann, Okla., and Daniel M. Coombs, Borger, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 811,192, Dec. 20, 1985, abandoned.
This application Jun. 16, 1987, Ser. No. 60,965
Int. Cl.[4] C10G *21/16, 21/28*
U.S. Cl. 208—322 5 Claims



1. A method for separating a light cycle oil to recover an aromatic and olefinic hydrocarbon fraction as an extract and a raffinate comprising diesel fuel oil, said method comprising:

(a) contacting said light cycle oil with dimethyl sulfoxide containing less than about 1 wt. % of water, under conditions sufficient to dissolve a portion of said light cycle oil in said sulfoxide to form an extract phase, comprising essentially all of said sulfoxide and said aromatic and olefinic hydrocarbon fraction, and a raffinate phase, comprising the remainder of said light cycle oil and a small amount of said sulfoxide;

(b) diluting said extract phase with water in an amount between about 4.0 and about 10.0 wt. % based on the total weight of said extract phase and said water;

(c) settling the thus diluted extract phase to produce an aqueous phase, comprising substantially all of said water and said sulfoxide, and an organic phase, comprising said aromatic and olefinic hydrocarbon fraction and minor amounts of said sulfoxide and said water;

(d) separating said aqueous phase from said organic phase by liquid-liquid separation;

(e) fractionating said organic phase, under conditions sufficient to produce a vapor phase, comprising said minor amounts of said sulfoxide and said water and a liquid phase, comprising said aromatic and olefinic hydrocarbon fraction;

(f) recycling said vapor phase to step (b);

(g) drying said aqueous phase, under conditions sufficient to remove substantially all of said water and produce a dimethyl sulfoxide containing less than about 1 wt. % of water, and;

(h) recycling said dimethyl sulfoxide produced in step (g) to step (a).

4,761,223

FROTHERS DEMONSTRATING ENHANCED RECOVERY OF FINE PARTICLES OF COAL IN FROTH FLOTATION

Richard R. Klimpel, and Robert D. Hansen, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 29, 1984, Ser. No. 646,340
Int. Cl.[4] B03D *1/14*
U.S. Cl. 209—166 1 Claim

1. A process for recovering coal from raw coal which comprises

(a) subjecting the raw coal in the form of an aqueous pulp to a flotation process in the presence of a flotation collector and a flotation frother under conditions such that the coal having a particle size of greater than 90 micrometers is recovered in the floated froth; and

(b) subjecting the tailings containing coal having a particle size of less than about 90 micrometers to a flotation process in the presence of a flotation collector, and a flotating amount of a flotation frother which comprises the reaction product of a polyhydroxy compound which corresponds to the formula $R(OH)_m$ wherein R is a $C_{1\text{-}20}$ alkane, sucrose, a monosaccharide, disaccharide or $C_{3\text{-}20}$ cycloalkane and m is an integer of about 3 to 10; and propylene oxide, or a mixture of propylene oxide and ethylene oxide wherein the mixture comprises at least 50 mole percent propylene oxide, under conditions such that the coal of a fine particle size is selectively recovered.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,224

SILVER-GLASS PASTE WITH POLY-MODAL FLAKE SIZE DISTRIBUTION AND QUICK DRY VEHICLE

Frank D. Husson, Jr., San Diego, and Kathleen E. Walter, La Jolla, both of Calif., assignors to Quantum Materials Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 837,543, Mar. 10, 1986, Pat. No. 4,636,254, which is a continuation-in-part of Ser. No. 758,471, Jul. 23, 1985, abandoned. This application Jan. 8, 1987, Ser. No. 1,661

The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.

Int. Cl.[4] C03C *3/10*

U.S. Cl. 106—1.14 19 Claims

1. A paste for attaching a silicon die to a ceramic substrate, the paste consisting of:

approximately 60 to 75% silver flake having a tap density between approximately 2.8 and 5.0 g/cc, the silver flake having a poly-modal flake size distribution with a larger flake size and a smaller flake size, the ratio of the larger flake to the smaller flake being approximately ten to one or less by weight:

approximately 12 to 20% glass frit having a softening point of less that 400 degrees C.;

approximately 0.5 to 2% organic resin; and

approximately 8 to 20% organic solvent.

4,761,225

APPARATUS FOR CONTROLLING THE REMOVAL OF LIQUID HYDROCARBONS FROM GROUNDWATER

Michael K. Breslin, 1615 Vendola Dr., San Rafael, Calif. 94903

Filed Aug. 18, 1986, Ser. No. 897,012

Int. Cl.[4] B01D *17/02;* F04F *3/00;* E21B *43/38*

U.S. Cl. 210—104 7 Claims





1. Apparatus for recovery of liquid hydrocarbon floating on water, comprising:

a pneumatically operated and powered pumping system; said system having a pneumatic control unit and a pump which are connected by a plurality of air-tight, hollow conduits; said pump having two separate chambers, one for pumping liquid hydrocarbons and the other for pumping water; said chambers each having an upper extremity and a lower extremity and a check valve which allows liquid to enter from said chamber's lower extremity and exit from said chamber's upper extremity in a one-way, upwardly-directed path;

each of said chambers having at least one said air-tight, hollow conduit which has an open end stop within said chamber; said conduit thereby providing an air passage to said pneumatic controls by which said chambers are evacuated and pressurized; said pneumatic control unit including vacuum generating means for causing said pump to fill with liquid and then supply pressurized air to said pump to force said liquids up, out of said pump; said pump having means for suspending it above the level of said water so as to draw liquid up to it through said conduits from below; and

a liquid hydrocarbon recovery unit comprising a floating body with an uppermost extremity, a lowermost extremity and several vertical bores and a flexible hollow tube through its body; one of said bores serving as a liquid hydrocarbon inlet at said floating body's uppermost extremity and a liquid hydrocarbon outlet at its lowermost extremity; said outlet being rigidly attached to said flexible hollow tube, said flexible hollow tube extending downward and then looping upward to pass slidingly through one of said bores in said floating body and then up, said tube being rigidly attached to said inlet of said hydrocarbon pumping chamber of said pump, and means for positioning said pump above said liquid hydrocarbon recovery unit.

4,761,226

CONTINUOUSLY OPERABLE POWER ACTUATED VACUUM FILTER

John L. Creps, Rudolph, Ohio, assignor to Henry Filters, Inc., Bowling Green, Ohio

Filed Sep. 30, 1986, Ser. No. 913,385

Int. Cl.[4] B01D *29/02, 29/36, 29/42*

U.S. Cl. 210—106 4 Claims

1. A filtration apparatus comprising a tank of contaminated liquid overlying a lower perforate support wall, a vacuum chamber underlying the perforate support wall, a filter medium overlying the perforate support wall, means for advancing the filter medium over the perforate support wall when the medium is clogged with contaminants, a pump located in a pump well remote from the vacuum chamber, a clean liquid tank interposed between the pump well and the vacuum chamber, a clean liquid duct extending from the vacuum chamber to the pump well and traversing said clean liquid tank, valve means in said duct moveable between a closed position to prevent communication between said clean liquid tank and said duct for normal operation and openable to a second position to accommodate such communications, power means for opening and closing said valve, and means moveable with said valve and interposed between the duct and the vacuum chamber to accommodate a restricted flow of clean liquid into the vacuum chamber when said valve is opened, so that the pump can operate continuously and the filter medium can be advanced when said valve is opened.

4,761,227

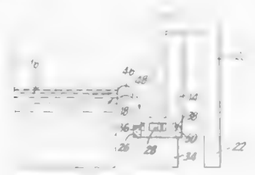
SELF PRIMING AQUARIUM FILTER

Allan H. Willinger, Oakland, and Klaus Woltmann, Demarest, both of N.J., assignors to Willinger Bros., Oakland, N.J.

Filed Mar. 27, 1987, Ser. No. 32,046

Int. Cl.[4] E04H *3/20*

U.S. Cl. 210—169 26 Claims



1. An aquarium filter for mounting externally of an aquarium tank, comprising an intake chamber for receiving contaminated aquarium water from the aquarium tank, an intake tube supplying aquarium water to the intake chamber, pump means for drawing the aquarium water into the intake chamber through the intake tube, a filtering chamber in flow communication with the intake chamber for filtering of the contaminated water to return clean water back to the aquarium tank, a partition wall between the intake chamber and the filtering chamber for the water filling the intake chamber to overflow into the filtering chamber, means for maintaining water in the filtering chamber directly on the other side of the partition wall upon draining out of the water from the intake chamber due to the filter halting its operation, and a narrow passageway means through the top of the partition wall for providing a limited reverse flow of water from the filtering chamber back to the intake chamber upon said draining to thereby self-prime the filter for restarting.

4,761,228

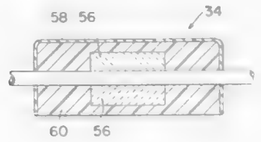
MAGNETIC FLUID CONDITIONER

Gale M. Weisenbarger, 140 Woodland Dr., Eaton, Ohio 45320, and John C. Moran, 3124 Lake Ave., Fort Wayne, Ind. 46805

Continuation of Ser. No. 756,954, Jul. 19, 1985, abandoned, which is a continuation-in-part of Ser. No. 618,816, Jun. 8, 1984, Pat. No. 4,543,186. This application Feb. 13, 1987, Ser. No. 15,520

Int. Cl.[4] C02F *1/48*

U.S. Cl. 210—222 2 Claims



1. A magnetic unit for polarizing particles in fluid being transmitted through a conduit, said magnetic unit comprising:

(a) an elongated dielectric rectangular housing having an open side;

(b) at least two elongated permanent bar magnets potted in spaced apart parallel relationship within said housing; and,

(c) an open end tube passing through and extending from opposing ends of said rectangular housing and positioned longitudinally between and parallel with said elongated bar magnets, which relationship between said magnets and said tube is permanently potted within said housing thereby preventing movement between said magnets and said tube, the extending ends of said tube comprising means for installation of said magnetic unit in said conduit.

4,761,229

MULTI-LEAF MEMBRANE MODULE

John A. Thompson, 581 Zone Street, Wyoming, Ontario, Canada (N0N 1T0), and Medi M. Hafez, 3528 Sessions Dr., Baton Rouge, La. 70816

Filed Jun. 22, 1987, Ser. No. 64,383

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—321.82 3 Claims



1. A membrane separation apparatus for separating a feed mixture into a permeate stream and a retentate stream comprising:

(a) a housing, having means for feed inlet, retentate outlet and permeate outlet;

(b) a pressure resistant compartment, having feed inlet and retentate outlets in nominal register with the feed inlet and retentate outlet of the housing, disposed within said housing;

(c) plurality of flattened tubular semipermeable membranes, arranged in a parallel stack arrangement, and separated individually by feed spacers which do not extend to the full length of the tubular membrane at each end longitudinally, each tubular membrane internally containing a permeate spacer extending the full length of said membrane tube and each flattened tube being open at both ends, the feed spacers and flattened tubes containing the permeate spacer being alternately longitudinally layered to form a stack disposed in said compartment;

(d) clamping means to seal the membrane stack ends under pressure and to prevent the feed from exiting the compartment through the membrane envelope layers to the permeate side, the clamping means longitudinally positioning and maintaining the tubular membranes stack in the compartment by clamping tubular open ends in the arrangement forming membrane-to-membrane seals, such that during operation the permeate permeating through the membranes exits internally from the membrane envelope via the permeate spacer into the permeate outlet, while the retentate exits through the retentate outlet.

4,761,230

SMALL VOLUME TANGENTIAL FLOW FILTRATION APPARATUS

John F. Pacheco, Billerica, and Donald B. Rising, Stow, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jun. 11, 1987, Ser. No. 61,846

Int. Cl.[4] B01C *13/00*

U.S. Cl. 210—321.84 24 Claims

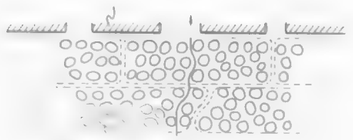


1. A filtration system particularly useful with small sample volumes comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

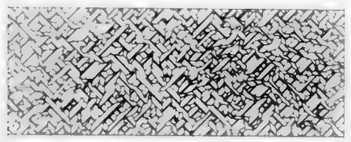
a housing having first and second sections;
a flow channel extending longitudinally between at least a portion of said first and second sections;
a membrane filter positioned between said first and second sections and forming one boundary of said flow channel;
means for supplying sample fluid to said first section and being in fluid communication with said second section;
fluid transfer means in fluid communication with said supply means and said flow channel;
said fluid transfer means including deformable chamber means adapted to hold and pump a volume of fluid therethrough and a rigid surface adjacent said chamber means for controlling the extent of deformation when fluid is pumped through said chamber means, said rigid surface being integral with one of said sections.

4,761,231
TUBULAR FLUID FILTER
Yoji Tomita, and Kenichi Mitsuhashi, both of Ibaraki, Japan, assignors to Kanebo Limited, Tokyo, Japan
Filed Aug. 4, 1982, Ser. No. 404,973
Claims priority, application Japan, Aug. 4, 1981, 56-122763
Int. Cl.[4] B01D *29/14*
U.S. Cl. 210—497.1 5 Claims



1. A tubular fluid filter comprising a winding of a bulk-textured multifilament yarn of a synthetic polymer having a take-up density of from 0.20 to 0.50 cm^3/cm^3 on a tubular bobbin having apertures for the passage of fluid provided over the peripheral surface thereof, said bulk-textured filament yarn having no twist or a low twist up to 80 T/M.

4,761,232
MACROPOROUS SUBSTRATE CONTAINING MICROPOROUS MATRIX
Donald G. Bright, Tyrone, Ga., assignor to Porex Technologies Corp. of Georgia, Fairburn, Ga.
Filed Mar. 7, 1986, Ser. No. 837,182
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—500.36 12 Claims



1. A porous structure comprising a macroporous substrate defining an interconnected network of macropores and a microporous matrix defining a network of interconnected micropores filling and contained entirely within said network of macropores so that outside edge of said microporous matrix is at the outside surface of said substrate.

4,761,233
NOVEL MEMBRANES AND PROCESS FOR MAKING THEM
Charles Linder, Rehovot; Mordechay Perry, Petach Tikvah, and Reuven Ketraro, Rishon LeZion, all of Israel, assignors to Membrane Products Kiryat Weizmann Ltd., Rehovot, Israel
Filed Mar. 10, 1987, Ser. No. 24,327
Claims priority, application Israel, Mar. 17, 1986, 78169
Int. Cl.[4] C08J *9/28*; B29C *39/10*
U.S. Cl. 210—500.37 32 Claims



1. A membrane which is composed of at least two different polymers, at least one of which is a film former, and at least another of which is a water insoluble pore former which if cast alone would form large pores or a non-uniform distribution of material; said membrane comprising a microporous surface of well defined pore shapes, which surface is integrally and continuously connected to a pore support of the same material as said surface, in which pore support there exists a non-exact distribution of materials.

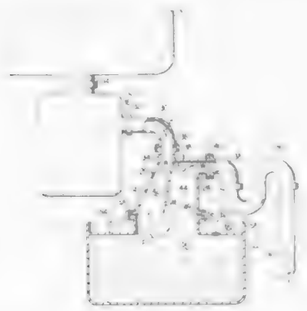
4,761,234
INTERFACIALLY SYNTHESIZED REVERSE OSMOSIS MEMBRANE
Tadahiro Uemura, Kyoto; Yoshio Himeshima, and Masaru Kurihara, both of Otsu, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed Jul. 30, 1986, Ser. No. 891,874
Claims priority, application Japan, Aug. 5, 1985, 60-171249; Aug. 26, 1985, 60-185903
Int. Cl.[4] E01D *13/00*
U.S. Cl. 210—500.38 18 Claims

1. A reverse osmosis membrane comprising a microporous substrate and an ultra-thin membrane with which the substrate is coated, characterized in that said ultra-thin membrane is composed of a cross-linked aromatic polyamide having a degree of cross-linking sufficiently high to provide a salt rejection of about at least 99% and water flux of at least 0.7–1.3 m 3/m 2.day under conditions of applied pressure of at least 15–56 Kg/cm 2 in the cases of brackish to sea water desalination, which is prepared by interfacial polycondensation of monomeric aromatic amine and monomeric aromatic acid halide and contains a tri- or higher functional aryl residue having at least two —NH— groups, and that the aryl residue does not have any carbonyl group as a substituent directly adjacent to a carbonyl group of a cross-linking amide bond.

4,761,235
WASTE COLLECTION DEVICE FOR GARBAGE GRINDER
Kathleen S. Haentjens, Hazleton, Pa., assignor to Hazleton Stainless Casting Company, Hazleton, Pa.
Filed Jan. 12, 1987, Ser. No. 2,451
Int. Cl.[4] B01D *21/00*
U.S. Cl. 210—532.1 13 Claims

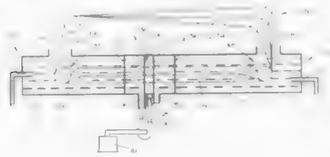
1. A container removably connected to an outlet pipe downstream of a garbage grinder to collect food waste entrained in a liquid stream, comprising:

a hollow container having an inlet opening above a top surface and an outlet;
means for removably connecting at least a portion of said hollow container in communication with the garbage grinder outlet pipe to accept the food waste entrained in the liquid stream;
a rim projecting upwardly from said top surface and extending around said removably connecting means to catch liquids escaping during removal of said hollow container from the grinder outlet pipe;



a trap formed in said hollow container between said inlet opening and said outlet;
a cap selectively fastenable to close said hollow container when said at least a portion of said hollow container is disconnected from the garbage grinder outlet pipe;
a pressure relief valve in said hollow container; and
means for carrying said hollow container when said at least a portion of said hollow container is disconnected from the grinder outlet pipe.

4,761,236
COORDINATED SORPTIVE STRAND CONTACTOR
Leland C. Dickey, 914 Hickory Dr., Blue Bell, Pa. 19422
Filed Jul. 9, 1987, Ser. No. 71,429
Int. Cl.[4] B01D *15/08, 15/02*
U.S. Cl. 210—635 17 Claims

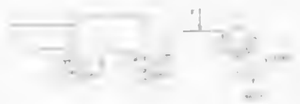


1. A process for adsorbing a component of a first liquid mixture and desorbing the component into a second liquid mixture, comprising the steps of:
(a) Providing a sorption zone and desorption zone;
(b) Providing at least one elongated sorptive strand means;
(c) Providing at least one air lock between said sorption and desorption zones,
(d) Causing a first liquid mixture to flow through said sorption zone;
(e) Causing a second liquid mixture to flow through said desorption zone;
(f) Causing said air lock to be pressurized with a gas;
(g) Passing said strand means through said sorption zone, thence through said air lock, and then through said desorption zone; and
(h) Creating conditions in said desorption zone such that the sorbed component will be desorbed.

4,761,237
PERITONEAL DIALYSIS SOLUTION CONTAINING CARBOHYDRATE POLYMERS
Steven R. Alexander, Tigard, and W. Michael Myers, Tualatin, both of Oreg., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Continuation of Ser. No. 888,263, Jul. 18, 1986, abandoned, which is a continuation of Ser. No. 282,309, Jul. 10, 1981, abandoned. This application Jun. 22, 1987, Ser. No. 65,656
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—647 4 Claims

1. A method of performing peritoneal dialysis comprising the steps of
(a) introducing into the peritoneal cavity of a patient a solution containing physiological salts in concentrations sufficient to effect the removal of solutes by diffusion from the patient's blood across the peritoneal membrane into the solution, and
(b) reducing the rate of decrease of osmotic pressure with respect to time sufficient to maintain a desired rate of ultrafiltration, by introducing in the solution nonionic starch hydrolyzate glucose polymers in concentrations sufficient to create an osmotic pressure to effect the removal of water by diffusion from the patient's blood across the peritoneal membrane into the solution, the nonionic hydrolyzate glucose polymers having an average degree of polymerization of at least 4 to sustain the osmotic pressure over time due to the relatively slow removal of the polymers by diffusion from the solution across the peritoneal membrane into the patient's blood, when compared to the removal of glucose polymers having an average degree of polymerization less than 4.

4,761,238
METHOD OF TREATMENT OF THE CIRCULATION WATER OF A PAPER MILL
Pertti K. Hyuninen, Helsinki, Finland, assignor to Kamyr AB, Karlstad, Sweden
Filed Jul. 1, 1987, Ser. No. 68,667
Claims priority, application Finland, Jul. 2, 1986, 862810
Int. Cl.[4] B01D *21/01*
U.S. Cl. 210—725 6 Claims



1. A method of treating the circulation water of a paper mill comprising: removing dissolved and colloidal substances from the circulation water by,
(a) acidifying material selected from the group consisting essentially of chemical pulp, and fiber sludge recovered from a paper manufacturing process, to a pH of approximately 1.5–2.5; and
(b) mixing the acidified material with the circulation water so that the material precipitates dissolved and colloidal substances from the circulation water.

4,761,239
WASTE WATER CLARIFICATION
Harry H. Wardell, P.O. Box 1963, New Port Richey, Fla. 33552
Continuation-in-part of Ser. No. 850,238, Apr. 10, 1986, abandoned. This application Aug. 25, 1986, Ser. No. 899,951
Int. Cl.[4] C02F *1/56*
U.S. Cl. 210—727 12 Claims

1. A process for increasing the efficacy of a primary clarifier in raw waste water clarification by reducing biological oxygen demand and suspended solids present in the influent raw waste water comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

adding to the influent raw waste water upstream of the primary clarifier in the following sequence;

first, a sufficient amount of a water soluble salt of a bi- or tri-valent metal selected from the group consisting of aluminum, iron or copper, mixtures or compositions thereof, until floccing begins;

second, fly-ash to the raw waste water upstream from the primary clarifier and downstream from the feed point of the salt, to increase the dry solids content of the influent raw waste water by about 10–50 percent;

third, a cationic, water soluble, surface active, branched polymeric polyether amine compound being provided in a composition of an aqueous solution comprising about a 25% cationic surface active polyether amine polymer (about 25% active solids) aqueous liquid composition with



a pH of 7.0, a specific gravity of 1.08, a pale yellow appearance, a solidification point of −4° C., a viscosity (Brookfield, Cps at 20° C., No. 1 spindle, 12 rpm) of 150–500 cps and being freely miscible with cold water, to the raw waste water upstream from the primary clarifier and downstream from the feed point of the fly-ash, in an amount sufficient to increase the settling rate of sludge forming material in the influent raw waste water and clarify the effluent water at the top of the primary clarifier;

allowing the sludge forming material to settle in the primary clarifier; and

recovering the reduced suspended solid and reduced biological oxygen demanding clarified waste water effluent from the primary clarifier.

4,761,240

CONTROLLING VISCOSITY OF FABRIC SOFTENING HEAVY DUTY LIQUID DETERGENT COMPOSITION CONTAINING BENTONITE

Adam A. Rothanavibhata, East Brunswick, and Richard K. Payne, Sayreville, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 889,147, Jul. 23, 1986, Pat. No. 4,715,969. This application Oct. 28, 1987, Ser. No. 113,705
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.[4] D06M *11/00*
U.S. Cl. 252—8.7 6 Claims

1. A fabric softening heavy duty liquid detergent composition of a density in the range of 1.15 to 1.35 g./ml. at room temperature, a pH in the range of 9.5 to 11, and a viscosity in the range of 1,000 to 5,000 centipoises, which does not increase to more than 6,000 centipoises on 30 days quiescent storage at room temperature, which comprises 5 to 15% of alkali metal linear or branched higher alkylbenzene sulfonate wherein the higher alkyl is of 10 to 16 carbon atoms, 1.5 to 5% of alkali metal alkyl polyethoxy sulfate wherein the alkyl is of 10 to 16 carbon atoms and the polyethoxy is of 2 to 11 ethylene oxide groups, 5 to 25% of water soluble builder salt, 5 to 20% of a swelling bentonite, 0.12 to 0.8% of a water soluble polyacrylate of molecular weight in the range of 1,000 to 5,000, and 40 to 75% of water.

4,761,241

OILY LUBRICANT FOR COLD PLASTIC PROCESSING OF METALLIC MATERIAL

Takeshi Kobori, and Shigeki Kimura, both of Yokohama, Japan, assignors to Nihon Kousakuyu Co., Ltd., Tokyo, Japan

Filed Aug. 8, 1986, Ser. No. 894,660
Claims priority, application Japan, Apr. 14, 1986, 61-85652
Int. Cl.[4] C10M *137/06*
U.S. Cl. 252—32.5 1 Claim

1. An oily lubricant for cold plastic processing of metallic material comprising:

one or both of the polymers selected from the group consisting of 2-ethyl polyacrylate-hexyl ester having an average molecular weight of 14,000 Mw and polymethacrylic acid lauryl ester having an average molecular weight of 48,000 Mw;

one or more oiliness improver selected from the group consisting of pure lard, phosphate, hindered ester, isostearic acid, or C_{18} saturated higher alcohol, said oiliness improver having a flash point of over 150° C., being in a form of a low viscosity fluid at room temperature, and being compatible with said polymer, said oiliness improver comprising 20 to 75% by weight of a total weight of said polymer and said oiliness improver; and

wherein kinematic viscosity of said lubricant at 50° C. is adjusted to 1,000 cst or less.

4,761,242

PIEZOELECTRIC CERAMIC COMPOSITION

Kazunori Suzuki, Nagoya, and Masataka Naitoh, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 29, 1986, Ser. No. 867,953
Claims priority, application Japan, May 30, 1985, 60-117169
Int. Cl.[4] C04B *35/46*
U.S. Cl. 252—62.9 14 Claims



1. A piezoelectric ceramic composition consisting essentially of:

an additive selected from the group consisting of 10–55 mol % $CaTiO_3$ and 1–15 mol % $SrTiO_3$, and the balance of the composition is $PbBi_4Ti_4O_{15}$ having a Bi-layer structure.

4,761,243

PROCESS FOR THE PREPARATION OF MAGNETIC PAINT

Yutaka Kakuishi; Kenichi Masuyama; Masaaki Fujiyama, and Toshimitu Okutu, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 8, 1986, Ser. No. 943,211
Claims priority, application Japan, Dec. 7, 1985, 60-275508
Int. Cl.[4] C04B *35/04*; H01F *1/00, 1/26*
U.S. Cl. 252—62.54 7 Claims

1. A process for the preparation of a magnetic paint comprising a ferromagnetic powder, an abrasive, a binder and a solvent, which comprises the steps of preparing an abrasive dispersion comprising the abrasive and the binder in the solvent, and then mixing said abrasive dispersion with the ferromagnetic powder, wherein said abrasive is selected from the group consisting of α-Al_2O_3, γ-Al_2O_3, Cr_2O_3, SnO_2, SiO_2, TiO_2, α-Fe_2O_3 and Fe_3O_4.

2. A process for the preparation of a magnetic paint comprising a ferromagnetic powder, an abrasive, a binder and a solvent, which comprises the steps of preparing a ferromagnetic powder dispersion comprising the ferromagnetic powder and the binder in the solvent, and then mixing said ferromagnetic powder dispersion with an abrasive dispersion comprising the abrasive and the binder in the solvent, wherein said abrasive is selected from the group consisting of α-Al_2O_3, γ-Al_2O_3, Cr_2O_3, SnO_2, SiO_2, TiO_2, α-Fe_2O_3 and Fe_3O_4.

4,761,244

ETCHING SOLUTIONS CONTAINING AMMONIUM FLUORIDE AND AN ALKYL POLYACCHARIDE SURFACTANT

Michael Scardera, Hamden, and Thomas S. Roche, Cheshire, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 27, 1987, Ser. No. 7,046
Int. Cl.[4] C09K *13/08*
U.S. Cl. 252—79.3 16 Claims

10. A process for etching a silicon dioxide coated substrate which comprises immersing the substrate in an aqueous etching solution comprised of ammonium fluoride and a wetting amount of a nonionic alkyl polysaccharide having the formula:

$$RO(R'O)_xZ_y$$

wherein R is alkyl, alkylphenol, hydroxyalkyl, hydroxy alkylphenol, or mixtures thereof and said alkyl groups contain from about 6 to about 18 carbon atoms, R'O is an alkoxide moiety which contains from 1 to about 4 carbon atoms, x is from 0 to about 5, Z is a moiety derived from a reducing sacharide containing from 5 to 6 carbon atoms, and y is from about 1 to about 5.

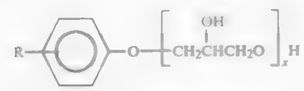
4,761,245

ETCHING SOLUTIONS CONTAINING AMMONIUM FLUORIDE AND AN ALKYLPHENOL POLYGLYCIDOL ETHER SURFACTANT

Michael Scardera, Hamden, and Thomas S. Roche, Cheshire, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jan. 27, 1987, Ser. No. 7,067
Int. Cl.[4] C09K *13/08*
U.S. Cl. 252—793 16 Claims

10. A process for etching a silicon dioxide coated substrate which comprises immersing the substrate in an aqueous etching solution comprised of ammonium fluoride and a wetting amount of a nonionic alkylphenol polyglycidol ether having the formula:



wherein R is an alkyl group having from about 4 to about 12 carbon atoms, and x is from about 3 to about 15.

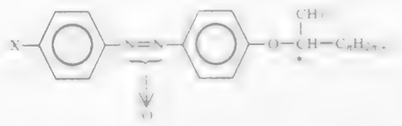
4,761,246

OPTICALLY ACTIVE AZOXY COMPOUND AND LIQUID CRYSTAL COMPOSITION

Takashi Inukai; Shinichi Saito; Hiromichi Inoue; Kazutoshi Miyazawa; Kanetsugu Terashima, and Mitsuyoshi Ichihashi, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Jan. 22, 1986, Ser. No. 821,546
Claims priority, application Japan, Feb. 9, 1985, 60-23976
Int. Cl.[4] C09K *19/24, 19/26*; C07C *105/00, 107/06*
U.S. Cl. 252—299.68 3 Claims

1. A liquid crystalline, optically active compound expressed by the formula



wherein x represents a linear chain alkoxy group of 9 to 18 carbon atoms, and n represents an integer of 3 to 6.

4,761,247

PHENOL-STABILIZED MICROBIOCIDAL COMPOSITIONS

Nuno M. Rei, Boxford, and Lawrence P. Grant, Salem, both of Mass., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Mar. 6, 1987, Ser. No. 22,456
Int. Cl.[4] B01F *1/00*; A01N *33/00, 55/02, 43/36*
U.S. Cl. 252—364 35 Claims

1. A concentrate solution comprising between about 10 and about 30 wt. percent of a microbiocide, between about 70 and about 80 wt. percent of a solvent for said microbiocide having an alkanol moiety and between about 1 and about 10 wt. percent of a phenol antioxidant, based upon the total combined weight of microbiocide, solvent and phenolic antioxidant.

4,761,248

PROCESS FOR PREPARING PARTICULATE DETERGENT PRODUCTS

V. Stanley Clift, Troas, Calif., assignor to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Nov. 6, 1986, Ser. No. 927,545
Int. Cl.[4] C11D *3/066, 3/07*
U.S. Cl. 252—527 5 Claims

1. A single-stage agglomeration process for producing agglomerated, substantially completely hydrated detergent products containing trisodium nitrilotriacetate as a hardness sequestering agent comprising the steps in sequence of:

forming, in an agglomeration zone, an admixture containing in combination at least one hydratable anhydrous condensed phosphate component, selected from the group consisting essentially of alkali metal carbonates, sulfates, pyrophosphates and metorates, and the water soluble lower fatty acids of these alkali metals, at least one hydratable anhydrous detergent builder salt component, an alkali metal silicate and water, wherein said water is present in the admixture in an amount sufficient to wet the admixture and thereby effect an agglomeration of the admixture and to induce hydration of the hydratable anhydrous components therein;

introducing into the admixture formed in the agglomeration zone, subsequent to effecting the agglomeration of said admixture and inducement of hydration of the hydratable anhydrous components therein, an aqueous solution of said hardness sequestering agent whereby an agglomerated intermediate product containing the hardness sequestering agent is produced; and

aging the agglomerated intermediate product at a tempera-

VOL 1093 ISS 1 AG 2 1988 UMI

ture ranging from about 38° C. to about 48° C. whereby agglomerated, substantially completely hydrated detergent product is produced said detergent product being characterized by a degree of hydration ranging from about 70 percent to about 100 percent of the theoretical water of hydration for said detergent product.

4,761,249

SOIL-COLLECTING CLEANING ENHANCERS IN AQUEOUS SURFACTANT LAUNDERING AND CLEANING SOLUTIONS

Karl Giede, Hilden; Brigitte Giesen; Horst Hoeffkes, both of Duesseldorf; Alfred Meffert, Monheim; Andreas Syldatk, and Johann F. Fues, both of Duesseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 23, 1986, Ser. No. 945,610

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1985, 3545990

Int. Cl.⁴ C11D *17/04, 17/06, 3/26*

U.S. Cl. 252—528 **20 Claims**

1. A soil-collecting detergency enhancer comprising a substantially water-insoluble polyfunctional quaternary ammonium compound or a water-soluble polyfunctional quaternary ammonium compound fixed to a water-insoluble solid carrier, said carrier comprising a particulate, finely-divided material having an average particle size of up to about 1 mm.

4,761,250

PROCESS FOR PREPARING 1,5-DIAZIDO-3-NITRAZAPENTANE

Milton B. Frankel, Tarzana, and Edward F. Witucki, Van Nuys, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 9, 1985, Ser. No. 764,048

Int. Cl.⁴ C07C *117/00;* **C06B** *25/34*

U.S. Cl. 260—349 **16 Claims**

1. A solvent process for making 1,5-diazido-3-nitrazapentane comprising the sequential steps of

nitrating diethanolamine with nitric acid in a first halogenated solvent to make the intermediate 1,5-dinitrato-3-nitrazapentane,

solvent transferring said intermediate from the first halogenated solvent to a second solvent selected from the group consisting of dimethylsulfoxide and dimethylformamide,

reacting said intermediate with sodium azide to form 1,5-diazido-3-nitrazapentane as product in said second solvent, and

solvent transferring said product from said second solvent to a third halogenated solvent.

4,761,251

PROCESS FOR THE PREPARATION OF VINYLPHOSPHONIC DICHLORIDE

Herbert Siegel; Erwin Weiss, both of Hofheim am Taunus, and Harald Berger, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 27, 1987, Ser. No. 89,964

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629577

Int. Cl.⁴ C07F *9/42*

U.S. Cl. 260—543 P **5 Claims**

1. A process for the preparation of vinylphosphonic dichloride through elimination of hydrogen chloride from 2-chloroethanephosphonic dichloride in the presence of triphenyl phosphine as catalyst, wherein the reaction is carried out under reduced pressure at a temperature of 130° to 166° C. and the vinylphosphonic dichloride produced is simultaneously removed by distillation.

4,761,252

PROCESS FOR THE PREPARATION OF VINYLPHOSPHONIC DICHLORIDE

Herbert Siegel; Erwin Weiss, both of Hofheim am Taunus, and Harald Berger, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

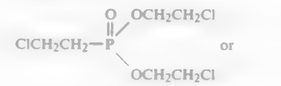
Filed Aug. 27, 1987, Ser. No. 90,229

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1986, 3629578

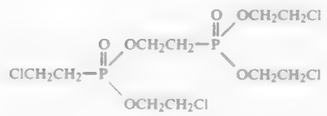
Int. Cl.⁴ C07F *9/42*

U.S. Cl. 260—543 P **7 Claims**

1. A process for the preparation of vinylphosphonic dichloride, wherein a 2-chloroethanephosphonate of the formula



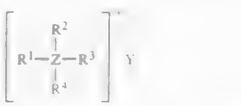
or



or a mixture of the two esters, is reacted with thionyl chloride at a temperature of 60° to 160° C. in the presence of a catalyst which contains at least one of the following substances:

(a) tertiary phosphines of the general formula R^1-P(R^2)-R^3 in which the radicals R^1, R^2 and R^3 may be identical or different and denote straight-chain or branched C_1–C_{10}-alkyl, which is unsubstituted or substituted by C_1–C_4-alkoxy, C_1–C_4-alkylthio or C_1–C_4-dialkylamino radicals, or denote phenyl, which is unsubstituted or substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy radicals,

(b) quaternary ammonium or phosphonium salts of the general formula



where Z=N or P, where Y^- is an anion of a strong acid and in which R^1, R^2 and R^3 have the meaning mentioned in the case of (a) and R^4 denotes straight-chain or branched C_1–C_{10}-alkyl, or benzyl which is substituted by halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy radicals,

(c) alkali metal or alkaline-earth metal halides, any thionyl chloride which may still be present is removed by distillation subsequent to this reaction, the mixture remaining is heated to 140° to 200° C., and the vinylphosphonic dichloride produced during this is removed by distillation.

4,761,253

METHOD AND APPARATUS FOR PRODUCING A RELIEF PATTERN WITH A MICROSCOPIC STRUCTURE, IN PARTICULAR HAVING AN OPTICAL DIFFRACTION EFFECT

Gregor Antes, Zürich, Switzerland, assignor to LGZ Landis & Gyr Zug Ag, Zug, Switzerland

Continuation of Ser. No. 750,550, Jul. 1, 1985, abandoned. This application Jan. 29, 1987, Ser. No. 14,096

Claims priority, application Switzerland, Jul. 6, 1984, 3277/84

Int. Cl.⁴ B29D *11/00, 59/02*

U.S. Cl. 264—1.3 **16 Claims**

8. A method of embossing a pattern, having a microscopic relief structure of the type which produces an optical diffraction effect, onto the surface of a substrate covered with a layer of radiant energy absorbing thermoplastic material comprising the steps of:

(a) placing a flexible embossing die, in the form of a foil, bearing a microscopic relief structure to be reproduced in the thermoplastic layer, in closely-spaced but not touching relationship with said layer of thermoplastic material;

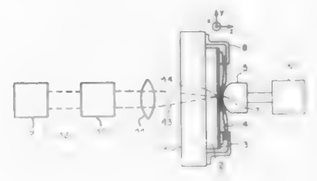
(b) applying pressure to said embossing die, whereby said flexible embossing die is brought into contact with said thermoplastic layer and an elastic deformation occurs;

(c) placing a radiant source of thermal energy so that said thermoplastic layer is between said flexible embossing die and said radiant source of thermal energy;

(d) focussing said thermal energy through said transparent pressure plate and substrate in a small region of said radiation absorbent thermoplastic layer which is in contact with said flexible embossing die, thereby causing said region of said thermoplastic layer to heat up, soften and to be plastically deformed;

(e) interrupting said thermal energy, whereby said small region of said thermoplastic layer is allowed to cool and harden, thereby fixing said microscopic relief structure in the form of an approximately circular surface region of said thermoplastic layer;

(f) removing pressure from said flexible embossing die, whereby contact with said small substantially circular region of said thermoplastic layer is ended; and



(g) repeating steps d and e as many times and in as many regions of said thermoplastic layer as is required to form the desired pattern.

16. An apparatus for embossing a pattern having microscopic relief structure of the type which produces an optical diffraction effect onto the surface of a substrate covered with radiant energy absorbing thermoplastic material, said apparatus comprising a flat, rigid optically transparent pressure plate capable of supporting said substrate with a radiant-energy absorbing thermoplastic layer, a flexible embossing die spaced apart from said pressure plate by said substrate and capable of being positioned on said thermoplastic layer of said substrate, a punch located on the other side of said flexible embossing die from said substrate being capable of pressing the flexible embossing die onto said thermoplastic layer so that only an elastic deformation on the surface of said thermoplastic layer occurs, a radiation energy beam source located on the other side of said pressure plate from said substrate, focussing means located between said radiation-energy beam source and said pressure plate capable of concentrating the energy of said beam source in a focal spot through the pressure plate on through said substrate in said thermoplastic layer and heating a small region of thermoplastic layer on said substrate so that said thermoplastic layer softens and yields to said embossing die under the pressure of said punch by a plastic deformation, whereby the embossing occurs only in the region of said focal spot, said flexible embossing die and said substrate with said thermoplastic layer capable of being displaced in a plane parallel to said thermoplastic layer relative to said focal spot and said punch.

4,761,254

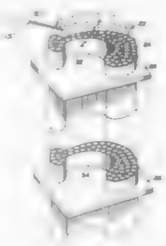
METHOD OF AND APPARATUS FOR FABRICATING A TOOL TO FORM AN ASYMMETRICAL CONSTANT CROSS SECTION BORE IN THE PROPELLANT IN A SOLID ROCKET MOTOR

Martin T. Olliff, Huntsville, Ala., assignor to Morton Thiokol, Inc., Chicago, Ill.

Filed Apr. 14, 1986, Ser. No. 851,186

Int. Cl.⁴ C06B *21/00*

U.S. Cl. 264—3.3 **9 Claims**



1. A method of fabricating a tool to form a bore of desired cross sectional form in the propellant of a rocket motor comprising the steps of:

(a) fitting a bag of flexible material inside a plurality of spaced templates each of which has a shaped opening corresponding to the cross sectional form desired for the bore with the length of the bag corresponding substantially to that of the bore and with said templates positioned such that the openings therein are in alignment,

(b) filling the bag as fitted inside the templates with a multiplicity of individual solid pieces each of which has a cross section substantially less than that of the bag,

(c) sealing the bag,

(d) exhausting air from the bag until the bag is tight on the multiplicity of pieces therein, and

(e) removing the templates from the bag whereby the resulting hard and rigid core may be used in the loading of a rocket motor, following which loading said bag may be cut open to allow said pieces to be extracted and said bag to be peeled out of the bore thereby to produce in the rocket motor propellant a bore of the desired cross sectional form.

4,761,255

PROCESS FOR THE CONTINUOUS PRODUCTION OF MICROCAPSULES

Manfred Dahm, Leverkusen; Gert Jabs, Odenthal; Bernd Kogin, Bergisch-Gladbach, and Hildegard Schnöring, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 371,595, Apr. 26, 1982, abandoned, which is a continuation of Ser. No. 128,929, Mar. 10, 1980, abandoned. This application Apr. 24, 1987, Ser. No. 42,223

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909906

Int. Cl.⁴ B01J *13/02*

U.S. Cl. 264—4.7 **4 Claims**

1. In a continuous process for the production of microcapsules having polymeric walls encapsulating a solid or liquid core material in which a polyisocyanate is dispersed with the material to be encapsulated and then reacted with a polyamine in an aqueous phase containing a dispersion aid,

the improvement which comprises forming a reaction mixture emulsion in a high turbulence mixing zone which has an average residence time in the mixing zone of less than 5 minutes while continuous recirculating the reaction mixture through the mixing zone from 0.3 to 10 times, and

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subsequently completing the reaction in the mixture by transferring the reaction mixture emulsion through a multiplestage cascade of a series of individual vessels with the



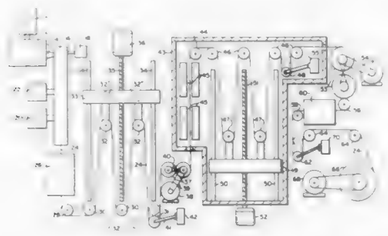
temperature in each individual vessel being kept constant and with the temperature progressively increasing from vessel to vessel.

4,761,256

METHOD FOR PRODUCING MICROCELLULAR FOAMED PLASTIC MATERIAL WITH SMOOTH INTEGRAL SKIN

Scott B. Hardenbrook, Kent; Louis P. Harasta, Jr., Rochester; Stephen T. Faulkenberry, Conesus, and Richard D. Bomba, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1987, Ser. No. 6,830
Int. Cl.[4] B29C *67/22*
U.S. Cl. 264—45.5 6 Claims



1. A method for continuously producing foamed plastic material with integral unmodified laminar skin, comprising the steps of:

(1) continuously providing to an environment at substantially atmospheric pressure an elongate element of gas-impregnated plastic material at below the atmospheric foaming temperature at which said material foams at such substantially atmospheric pressure.

(2) conveying said element along a degassing path at a predetermined speed to permit gas to partially diffuse out of said element and selectively establishing the length of said degassing path for controlling the degree to which gas diffuses out of said element along said path.

(3) heating said element beyond said degassing path, while at least some gas remains in core regions of said element, to a temperature above said atmospheric foaming temperature to initiate foaming thereof, and

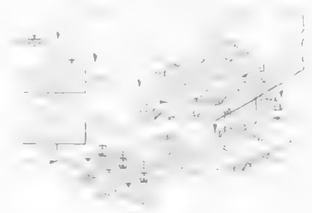
(4) cooling said heated element to below said atmospheric foaming temperature to terminate said foaming.

4,761,257

METHOD AND APPARATUS FOR FOAM MOLDING PACKAGING USING A STAGED VACUUM

Eric R. Bunn, Elmwood Park, N.J., assignor to Sealed Air Corporation, Stamford, Conn.

Filed Nov. 5, 1986, Ser. No. 927,732
Int. Cl.[4] B29C *67/22, 39/10*
U.S. Cl. 264—46.5 9 Claims



1. A method of molding foam cushioning using a plastic sheet as a release agent comprising the steps of

(a) providing a mold having a relatively complex mold image thereon corresponding to the shape and size of the article to be cushioned and with the image being divided into separate and distinct sections from the center of the image outwardly to the periphery thereof,

(b) placing a plastic sheet loosely over the mold in covering relation to the image thereon,

(c) drawing a vacuum on the surfaces of the separate and distinct sections of the mold image in a staged sequence to cause the plastic sheet to closely and smoothly conform to the surface of the mold image on the mold, and including drawing a vacuum first on the center section of the mold image and then on the remaining sections progressively outwardly to the outermost sections,

(d) dispensing foam precursors onto said plastic sheet covered mold and permitting the precursors to foam; and

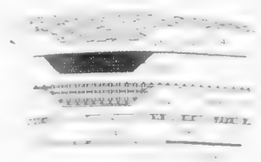
(e) removing said foam cushioning and adhered plastic sheet from the mold.

4,761,258

CONTROLLED FORMATION OF LIGHT AND HEAVY FLUFF ZONES

Kenneth M. Enloe, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 10, 1985, Ser. No. 807,380
Int. Cl.[4] D04H *1/04, 17/00*
U.S. Cl. 264—518 28 Claims



1. An apparatus for forming a fibrous web, comprising:

a. a foraminous web forming layer for receiving a deposit of fibers of web material thereon;

b. foraminous spacing means for supporting said web forming layer while allowing a substantially unrestricted gas flow from a region immediately adjacent to and downstream from said web forming layer; and

c. a gas flow regulating layer, which has a selected pattern of apertures therethrough and is fixedly positioned in adjacent facing relation with said foraminous spacing means,

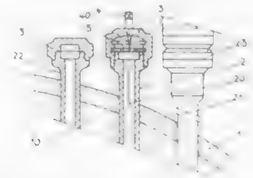
for providing a selected pattern of gas flow through said web forming layer, wherein said web forming layer, said foraminous spacing means and said gas flow regulating layer are constructed to form a replaceable, web forming assembly.

4,761,259

DEVICE FOR THE DETECTION OF A GASEOUS PHASE IN A NUCLEAR REACTOR

Jean Marini, Marly-Le-Roi, and Jean-Claude Weilbacher, Champagne-Sur-Oise, both of France, assignors to Framatome, Courbevoie, France

Filed Nov. 5, 1981, Ser. No. 318,546
Claims priority, application France, Nov. 20, 1980, 80 24684
Int. Cl.[4] G21C *17/00*
U.S. Cl. 376—245 7 Claims



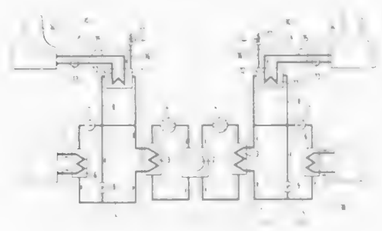
1. Device for detecting the formation of gaseous bubbles in the tank of a nuclear reactor by means of an ultrasonic emitter-receiver placed at the exterior of said tank, said tank being closed by a cover on which are fixed a plurality of vertical adapter tubes for the control rod actuating mechanisms of said reactor, adapter tubes not provided with mechanisms each being closed by a plug, said device comprising a plurality of ultrasonic emitter receivers fixed to the upper surface of said plugs of at least some of said adapter tubes so that each emitter-receiver directs an ultrasonic beam to the inside of said tank parallel to the axis of the corresponding tube, the latter being provided with at least one reflector placed inside the tube in the path of said ultrasonic beam.

4,761,260

NUCLEAR POWER PLANT WITH A HIGH TEMPERATURE REACTOR LOCATED IN A CYLINDRICAL PRESTRESSED CONCRETE PRESSURE VESSEL

Hermann Schmitt, Wiesweiler, and Josef Schoening, Hambruecken, both of Fed. Rep. of Germany, assignors to Hochtemperatur-Reaktorbau GmbH, Fed. Rep. of Germany

Filed Jun. 26, 1987, Ser. No. 66,464
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1986, 3621516
Int. Cl.[4] G21C *15/18*
U.S. Cl. 376—298 11 Claims



1. A nuclear power plant comprising:

a cylindrical prestressed concrete pressure vessel defining a cavity exhibiting a liner;

a high temperature reactor arranged out of center in said cavity;

a pile of spherical fuel elements arranged in a core of said reactor;

said reactor including a graphite reflector surrounding and defining said core, and means for inserting a plurality of absorber rods into a latteral portion of said reflector and into said core;

means for introducing fuel elements to said reactor located above said core and means for removing fuel element from said reactor located below said core;

at least two primary heat exchangers arranged in parallel, and adjacent to said reactor and elevated with respect to said core wherein each primary heat exchanger has sufficient capacity for full removal of operational and decay heat;

a blower associated with each primary heat exchanger arranged in a coolant flow path subsequent to said primary heat exchanger and configured for downward coolant flow through said pile;

an intermediate circulation loop connected to a secondary side of each primary heat exchanger, exhibiting a circulating pump and a intermediate heat exchanger;

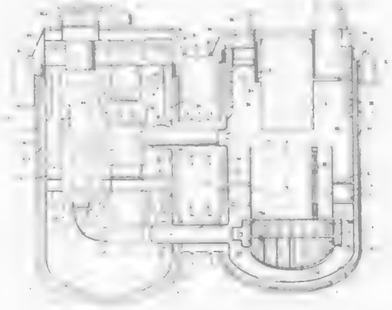
an auxiliary circulation loop connected to said intermediate circulation loop and exhibiting a recooling system and means for normal operation shutoff of said auxiliary circulating loop.

4,761,261

NUCLEAR REACTOR

George Garabedian, Boston, Mass., assignor to Stone & Webster Engineering Corp., Boston, Mass.

Filed Feb. 21, 1984, Ser. No. 582,096
Int. Cl.[4] G21C *15/00*
U.S. Cl. 376—404 15 Claims



1. A liquid reactor comprising:

(a) a reactor vessel having a core;

(b) one or more satellite tanks;

(c) pump means in said satellite tank;

(d) heat exchanger means in said satellite tank;

(e) an upper liquid metal conduit extending between said reactor vessel and said satellite tank;

(f) a lower liquid metal duct extending between said reactor vessel and satellite tanks said upper liquid metal conduit and said lower liquid metal duct being arranged to permit free circulation of liquid metal between said reactor vessel core and said satellite tank by convective flow of liquid metal;

(g) a separate sealed common containment vessel around the reactor vessel, conduits and satellite tanks;

(h) said satellite tank having space for a volume of liquid

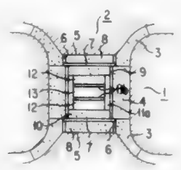
VOL 1093 ISS 1 AG 2 1988 UMI

metal that is sufficient to dampen temperature transients resulting from abnormal operating conditions.

4,761,262
SINTERING METHOD

Masaru Ogata, Hadano, and Shuichi Takeda, Oiso, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

PCT No. PCT/JP86/00069, § 371 Date Oct. 8, 1986, § 102(e) Date Oct. 8, 1986, PCT Pub. No. WO86/04890, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 14, 1986, Ser. No. 928,220
Claims priority, application Japan, Feb. 15, 1985, 60-026424
Int. Cl.⁴ B22F 1/00
U.S. Cl. 419—10 9 Claims

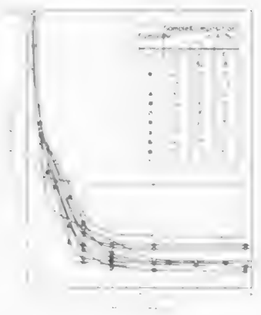


1. A method for sintering a metal powder, a ceramic powder, or a mixture of a metal powder with a ceramic powder by heating said powder as held under pressure with the heat of thermit reaction.

4,761,263
PROCESS FOR PRODUCING FORMED AMORPHOUS BODIES WITH IMPROVED, HOMOGENEOUS PROPERTIES

Constantin Politis, Karlsruhe, Fed. Rep. of Germany; William L. Johnson, Pasedena, Calif., and Wolfgang Pflumm, Mossingen, Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed May 22, 1986, Ser. No. 865,996
Claims priority, application Fed. Rep. of Germany, May 24, 1985, 3518706; European Pat. Off., Mar. 29, 1986, 86104368.5
Int. Cl.⁴ B22F 1/00
U.S. Cl. 419—33 14 Claims

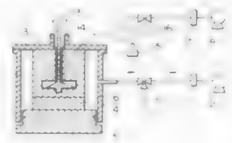


1. Process for producing formed bodies with improved homogeneous properties, high resistance to oxidation and corrosion, great hardness and firmness, good mechanical workability, and high resistance to abrasion, made out of an initial powder material which contains two elemental metals; or one or more alloys; or one or more elemental metals and one or more alloys; or a combination of one or more elemental metals and/or one or more alloys with one or more metalloids and/or one or more nonmetallic substances, except for formed bodies made of NiTi, of Nb_3Sn, of stoichiometric, binary intermetallic yttrium-cobalt compounds and gadolinium-cobalt compounds, and of $Ni_{60}Nb_{40}$, wherein the initial material, in metallic form or in the form of a hard material or a mixture thereof, is ground in a dry state to a fine pulverized powder in a high-energy ball mill, and in which the fine powder is subsequently shaped into a formed body, comprising: conducting the fine pulverization of the powder by grinding in a dry, purified protective gas until it loses practically all of its crystalline properties, as proven by X-ray diffractometry, while employing a temperature during the grinding which is below the temperature at which crystallization first occurs, and employing a temperature during the subsequent shaping into a formed body which is below the temperature at which crystallization first occurs.

4,761,264
METHOD FOR MOLDING POWDERS

Hiroaki Nishio, and Jun Harada, both of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 12, 1987, Ser. No. 61,896
Claims priority, application Japan, Jun. 17, 1986, 61-139158
Int. Cl.⁴ B22F 1/00
U.S. Cl. 419—68 21 Claims



1. A method of molding powders, comprising:
providing a ventilative mold support having an internal cavity of a predetermined inside shape substantially corresponding to a desired shape of a green compact to be produced;
introducing a thin-wall resilient mold into said cavity of said ventilative mold support, said thin-wall resilient mold having a shape similar to the inside shape of said cavity of said ventilative mold support;
reducing the pressure outside of said ventilative mold support to less than the atmospheric pressure (760 Torr), to pull said thin-wall resilient mold close to the inside wall of said cavity of said ventilative mold support which defines said inside shape;
supplying powder material into the interior of said thin-wall resilient mold;
exhausting air existing in voids which form in the powder material inside said thin-wall resilient mold;
then sealing said thin-wall resilient moid;
taking out said sealed thin-wall resilient mold filled with said powder material by taking apart said ventilative mold support; and
then applying a cold isostatic press treatment to said sealed thin-wall resilient mold, to form said powder material inside said thin-wall resilient mold into a green compact.

4,761,265
SPRING COPPER ALLOY FOR ELECTRIC AND ELECTRONIC PARTS

Naohiro Igata, 15-1, Nishiogi-Kita 1-Chome, Suginami-Ku, Tokyo, and Yoshio Nakasato, Tokyo, both of Japan, assignors to Nakasato Limited and Naohiro Igata, both of Tokyo, Japan

Filed Sep. 10, 1987, Ser. No. 96,801
Claims priority, application Japan, Jan. 8, 1986, 61-793
Int. Cl.⁴ C22C 9/02, 9/06
U.S. Cl. 420—472 2 Claims

2. A method for preparing a spring copper alloy for electric and electronic parts having a high modulus of elasticity, good electrical conductivity and good solderability, which comprises melting a mixture consisting essentially of between 1.5 and 3.0% by weight of nickel, between 1.0 and 2.0% by weight of tin, between 0.10 and 0.30% by weight of manganese, between 0.01 and 0.1% by weight of phorphorus and the remainder copper under an inert atmosphere in a high frequency induction furnace, casting the molten mixture into a mold to form a thin slab of alloy, annealing the slab at about 800° C., hot rolling the slab to reduce its thickness, cold rolling the slab to futher reduce its thickness, further annealing the slab at about 600° C., rolling the slab to further reduce its thickness, further annealing the slab at about 250° C., and air-cooling the annealed slab.

4,761,266
CONTROLLED ADDITION OF LITHIUM TO MOLTEN ALUMINUM

Richard S. Bruski, Martinez, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Jun. 22, 1987, Ser. No. 64,431
Int. Cl.⁴ C22C 1/00, 21/00
U.S. Cl. 420—528 10 Claims



1. A method for preparing an aluminum-lithium alloy at a preselected ratio of aluminum to lithium, comprising:
(a) feeding molten aluminum to a first vessel through an entry conduit containing a tapered portion and flow-restricting pin of variable position extending into said tapered portion, said first vessel containing an orifice of preselected diameter, at a feed rate sufficient to maintain a head of molten aluminum above said orifice:
(b) detecting the level of molten aluminum in said first vessel, generating a first signal representative of said level, and varying the position of said flow-restricting pin relative to said tapered portion of said entry conduit to maintain said head at a preselected value, whereby molten aluminum is discharged from said first vessel at an aluminum discharge rate corresponding to said preselected diameter and said preselected value of said head;
(c) detecting said aluminum discharge rate and generating a second signal representative thereof:
(d) lowering a cylindrical plunger into a body of molten lithium in a second vessel at a volumetric displacement rate to displace said molten lithium toward an overflow port in said second vessel, whereby lithium is discharged from said second vessel through said overflow port at a lithium discharge rate substantially equal to said volumetric displacement rate, said volumetric displacement rate being controlled by said second signal in accordance with said preselected ratio: and
(e) combining said aluminum discharged through said orifice with said lithium discharged through said overflow port to form a substantially uniform molten mixture at said preselected ratio, and solidifying said molten mixture.

4,761,267
ALUMINUM ALLOY FOR USE AS CORE OF CLAD MATERIAL

Shinji Takeno, Fukaya; Seishi Nakamoto, Oosato, and Kouhei Oono, Fukaya, all of Japan, assignors to Sky Aluminium Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1987, Ser. No. 10,501
Claims priority, application Japan, Mar. 31, 1986, 61-73621
Int. Cl.⁴ C22C 21/12
U.S. Cl. 420—529 8 Claims



1. An aluminum alloy-core material for brazing, having an improved secular corrosion resistance due to a sacrificial anode or a filler metal, when used in the manufacture of brazed assemblies, which consists of 0.5～1.0% of Cu, 0.6～1.0% of Mn, 0.10～0.30% of Ti, or less of Fe, less than 0.10% of Si, and balance of Al, which exhibits only a slight reduction in mechanical strength after brazing, and, in which any Fe-containing intermetallic compound of Al further contains Mn, thereby rendering said material resistant against pitting corrosion.

4,761,268
LIQUID HANDLING

Mario R. Andersen, Veradale; Thomas O. Tiffany, Spokane, both of Wash., and Mario J. Gangitano, Anaheim, Calif., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed Apr. 12, 1984, Ser. No. 599,509
Int. Cl.⁴ G01N 21/07, 35/06
U.S. Cl. 422—72 18 Claims



1. Apparatus for transferring precise quantities of liquids to analysis cuvettes comprising:
a cuvette loading station for receiving an analysis cuvette;
transfer structure having two liquid handling probes fixedly mounted thereon in fixed spaced apart relation permitting simultaneous insertion of said two probes into an analysis cuvette at said cuvette loading station;
first and second storage chamber structures, each said storage chamber structure being connected to a corresponding one of said probes; first and second liquid metering means, each said metering means being connected to a corresponding one of said first and second storage cham-

VOL 1093 ISS 1 AG 2 1988 UMI

ber structures and being constructed and arranged to control flow of liquid into and out of its respective storage chamber through its respective probe;

a sample transporting means including a sample container support mechanism, a portion of said sample transporting means forming a sample station, a plurality of sample containers on said sample container support mechanism, and sample container drive mechanism constructed and arranged for indexing said sample container support mechanism through said sample station to sequentially position successive sample containers carried by said sample container support mechanism at said sample station;

an auxiliary transporting means including an auxiliary container support mechanism, a portion of said auxiliary transporting means forming an auxiliary station, a plurality of auxiliary containers on said auxiliary container support mechanism, each said auxiliary container having a reagent storage compartment and a dry well that is open at its bottom, structure defining first and second spaced apart ports through which said two probes may be concurrently inserted, said first port providing communication with said reagent storage compartment and said second port providing communication with said dry well, and

an auxiliary container drive mechanism constructed and arranged to index said auxiliary container support mechanism to selectively position said auxiliary containers carried by said auxiliary container support mechanism at said auxiliary station,

wherein said cuvette loading station, said sample station and said auxiliary station are disposed on a straight line path and said transfer structure is constructed and arranged to move said two probes along said straight path with tips of said two probes defining a line parallel with said straight line path, and wherein said first port and said dry well of that one of said auxiliary containers which is positioned at said auxiliary station is disposed on said straight line path, the spacing of said sample and auxiliary stations corresponding to the fixed spacing of said two probes so that said two probes may be simultaneously inserted into those of said sample and auxiliary containers which are located at said sample and auxiliary stations, respectively;

a first drive mechanism constructed and arranged for moving said transfer structure along said straight line path between said cuvette loading, sample, and auxiliary stations;

a second drive mechanism operative at said loading, sample, and auxiliary stations for selectively inserting the tips of said two liquid handling probes into a cuvette in said cuvette loading station, that one of said auxiliary containers which is located in said auxiliary station, and concurrently into both one of said sample containers located at said sample station and one of said auxiliary containers located at said auxiliary station; and

control means for operating said first and second drive mechanisms and said liquid metering means to transfer liquid from sample and auxiliary containers at said sample and auxiliary stations to an analysis cuvette at said cuvette loading station.

4,761,269

APPARATUS FOR DEPOSITING MATERIAL ON A SUBSTRATE

Darrell R. Conger, Portland; John G. Posa, and Dennis K. Wickenden, both of Lake Oswego, all of Oreg., assignors to Crystal Specialties, Inc., Portland, Oreg.

Filed Jun. 12, 1986, Ser. No. 873,581

Int. Cl.[4] C30B *35/00;* **C23C** *16/54*

U.S. Cl. 422—245 **15 Claims**

1. An apparatus for depositing materials on a substrate, comprising:

a process chamber;

at least one gas source pair providing a compensating gas flow and a separate continuous reactant gas flow;

manifold means having a pair of inlets for receiving gas flows from the gas source pair and an outlet for directing the gas flows to the process chamber;

inlet valve means between each of the inlets and the outlet of the manifold means for switching the gas flow from each gas source in the pair into and out of the process chamber,



each valve means being located equidistantly from the outlet; and

means for simultaneously switching one of the compensating gas flow and continuous reactant gas flow into the process chamber as the other of the compensating gas flow and continuous reactant gas flow is switched out of the process chamber to maintain a constant flow through the manifold outlet into the process chamber.

4,761,270

METHOD OF REDUCING THE OXIDES OF NITROGEN IN FOSSIL FUELS COMBUSTION AND COMBUSTION EFFLUENTS USING HYDRAZINE AND/OR HYDRAZINE COMPOUNDS

Otto C. Turchan, 458 El Camino Dr., Beverly Hills, Calif. 90212

Filed Feb. 13, 1987, Ser. No. 14,821

Int. Cl.[4] C01B *21/00*

U.S. Cl. 423—235 **1 Claim**

1. A process for reduction of oxides of nitrogen formed in fossil fuels combustion reaction zone of a fossil fuels combustion apparatus or combustion device, the said oxides of nitrogen reduction process comprising: the step of interjecting an admixture of oxides of nitrogen reducing agents into said fossil fuels combustion reaction zone, said admixture of oxides of nitrogen reducing agents consisting essentially of methylhydrazine, dimethylhydrazine, and unsymmetrical dimethylhydrazine hydrazine compounds intermixed in combination with the combustion fuel and combustion air delivered into said fossil fuels combustion reaction zone said fossil fuels combustion reaction zone containing a mixture of combustion fuel, combustion air, products of combustion, including oxides of nitrogen formed in the fuel combustion reaction and said interjected admixture of oxides of nitrogen reducing agents, whereby said oxides of nitrogen contained in the combustion reaction zone mixture react in the combustion process with said interjected admixture of oxides of nitrogen reducing agents, converting said oxides of nitrogen in chemical reduction process with said interjected admixture of nitrogen oxides reducing agents, to harmless molecular N_2 and H_2O, which is discharged in the effluent of combustion products to the ambient atmosphere.

4,761,271

METHOD FOR TREATING DESTABILIZED, FIRE-INVOLVED ELEMENTAL PHOSPHORUS

Arthur D. F. Toy, Stamford, Conn., and Fred Jaffe, Ossining, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 24, 1987, Ser. No. 41,962

Int. Cl.[4] C01B *25/01, 25/02, 25/04*

U.S. Cl. 423—265 **2 Claims**

1. A method of storing destabilized elemental phosphorus, which had been previously fire involved, in the presence of a weakly aqueous solution of an alkali metal hypochlorite as a blanketing agent, said aqueous solution having a pH ranging from about 7.5 to about 10.

4,761,272

DENSIFIED CARBONACEOUS BODIES WITH IMPROVED SURFACE FINISHES

Edward E. Hucke, Ann Arbor, Mich., assignor to Union Oil Company, Los Angeles, Calif.

Division of Ser. No. 689,842, Jan. 9, 1985, Pat. No. 4,548,957, which is a continuation-in-part of Ser. No. 568,066, Jan. 4, 1984, Pat. No. 4,503,215, which is a division of Ser. No. 305,777, Sep. 25, 1981, Pat. No. 4,425,316. This application Jul. 29, 1985, Ser. No. 760,303

The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.

Int. Cl.[4] C01B *31/02*

U.S. Cl. 423—445 **14 Claims**

1. A method of producing a densified carbonaceous body with a superior surface finish, said method comprising the steps of: impregnating a permeable body composed essentially of a fine grained, isotropic graphite with a liquid impregnant containing furfural or furfural alcohol or a mixture thereof, an acid catalyst, and a pore-forming agent comprising a polyalkylene oxide adduct nonionic surfactant; heating the impregnated, permeable body to a temperature which is sufficiently high to polymerize the impregnant; and then heating said body to a temperature which is sufficiently high to pyrolyze the carbon in the polymerized impregnant.

4,761,273

COMPOSITION IN THE FORM OF AN AEROSOL FOAM, BASED ON A CATIONIC POLYMER AND AN ANIONIC POLYMER

Jean F. Grollier, Paris; Annie Madrange, Saint Germain en Laye, and Michele Chailley, Fontenay sous Bois, all of France, assignors to L'Oreal, Paris, France

Continuation of Ser. No. 614,400, May 29, 1984, abandoned, which is a continuation of Ser. No. 376,126, May 7, 1982, abandoned. This application Jul. 24, 1985, Ser. No. 758,409

Claims priority, application Luxembourg, May 8, 1981, 83349

Int. Cl.[4] A61K *7/06, 7/11, 9/12*

U.S. Cl. 424—47 **39 Claims**

1. A cosmetic foamable composition which is suitable for application to the hair and which forms an unstable foam on contact with the hair when expelled from an aerosol container by means of a propellant, said composition comprising a cationic polymer in an amount from about 0.01% to about 5% by weight of the composition, said cationic polymer containing one or more primary, secondary, tertiary or quaternary amine groups or a mixture thereof and having a molecular weight of 500 to 5,000,000; an anionic polymer in an amount from about 0.01% to 5% by weight of the composition, said anionic polymer containing a plurality of sulphonic, carboxylic or phosphoric acid groups and having a molecular weight of 500 to 5,000,000; and an aqueous solvent medium; at least one of said cationic and anionic polymers (i) when in solution in water produces, according to the Ross Miles test carried out at 20 degrees C., a foam height of more than 1 cm, and (ii) when in solution in water and after pressurization of the solution produces a foam having a density of less than 0.25 g/cm^3; said cationic and anionic polymers being polymers which together foam in an aqueous solvent medium in the absence of a surface active agent possessing foaming properties to produce a foam having a density of less than 0.25 g/cm^3 and disappearing in less than 1 minute after application to the hair and massaging; and said unstable foam produced by said composition having a density of less than 0.25 g/cm^3 and disappearing very rapidly after application to the hair and massaging.

4,761,274

MEDICAMENT ADSORBATES OF ANALGESICS WITH COMPLEX MAGNESIUM ALUMINUM SILICATE AND THEIR PREPARATION

John Denick, Jr., Newton; David Peters; Anil K. Talwar, both of Long Valley, and Wei C. Liao, Iselin, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 845,101, Mar. 27, 1986, Pat. No. 4,711,774. This application Oct. 16, 1987, Ser. No. 109,786

Int. Cl.[4] A61K *9/18, 9/20, 9/68, 33/12*

U.S. Cl. 424—48 **17 Claims**

1. A medicament adsorbate which comprises: a complex magnesium aluminum silicate having the following typical chemical analysis:

	Percent by Weight	Ratio to Aluminum Oxide
Silicon dioxide	56 to 59	14.0 to 29.5
Magnesium oxide	21 to 24	5.2 to 12.0
Aluminum oxide	2.0 to 4.0	1
Ferric oxide	0.4 to 0.6	
Calcium oxide	1.1 to 1.5	
Sodium oxide	2.5 to 3.5	
Potassium oxide	0.5 to 1.0	
Ignition Loss	5.5 to 12.6	

having sorbed therein a solution of medicament drug, wherein the medicament drug is an analgesic.

4,761,275

SUNSCREEN COMPOSITIONS

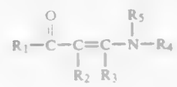
Charles E. Clum, Kingston; William V. Murray, Belle Mead, and Elvin R. Lukenbach, Somerset, all of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Division of Ser. No. 702,703, Feb. 19, 1985, Pat. No. 4,663,156, which is a continuation-in-part of Ser. No. 375,072, May 5, 1982, Pat. No. 4,514,383. This application Feb. 11, 1987, Ser. No. 13,752

Int. Cl.[4] A61K *7/027, 7/42, 9/12*

U.S. Cl. 424—59 **10 Claims**

1. A sunscreen composition comprising an extending medium and from about 1 to 20% by weight of the total composition of at least one vinylogous amide compound of the formula



wherein

R_1 is selected from alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, substituted aryl or alkaryl of from 1 to 18 carbon atoms;

R_2 and R_3 are the same or different and are selected from hydrogen, alkyl, alkenyl, cycloalkyl or cycloalkenyl of from 1 to 18 carbon atoms;

R_4 and R_5 are the same or different and are selected from hydrogen, alkyl, alkenyl, aryl and substituted aryl, alkaryl, cycloalkyl or cycloalkenyl of from 1 to 18 carbon atoms;

provided that at least one of R_4 or R_5 is interrupted or substituted by N;

VOL 1093 ISS 1 AG 2 1988 UMI

wherein N is selected from the group consisting of primary amines, secondary amines, tertiary amines, and quaternary ammonium salts;

and furthermore wherein R_2 together with R_1 and/or R_3 may form carbocyclic rings and R_4 together with R_5 may form heterocyclic rings.

4,761,276

SUNSCREEN COMPOSITIONS

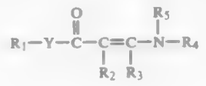
William V. Murray, Belle Mead; Charles E. Clum, Kingston, and Elvin R. Lukenbach, Somerset, all of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Division of Ser. No. 702,704, Feb. 19, 1985, Pat. No. 4,663,155, which is a division of Ser. No. 375,072, May 5, 1982, Pat. No. 4,514,383. This application Feb. 11, 1987, Ser. No. 13,751

Int. Cl.[4] A61K *7/027, 7/42, 9/12*

U.S. Cl. 424—59 6 Claims

1. A sunscreen composition comprising an extending medium and at least one vinylogous amide compound of the formula



wherein

R_1 is selected from alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, substituted aryl or alkaryl of from 1 to 18 carbon atoms;

R_2 and R_3 are the same or different and are selected from hydrogen, alkyl, alkenyl, cycloalkyl or cycloalkenyl of from 1 to 18 carbon atoms;

R_4 and R_5 are the same or different and are selected from hydrogen, alkyl, alkenyl, aryl and substituted aryl, alkaryl, cycloalkyl or cycloalkenyl of from 1 to 18 carbon atoms; and Y is N.

4,761,277

WATERBASE LIPLINER FORMULATION

Nancy E. Valdes, Ramsey; Gary Linstra, Jr., Point Pleasant, and Ann M. Krog, Red Bank, all of N.J., assignors to Charles of the Ritz Group Ltd., New York, N.Y.

Filed Dec. 29, 1986, Ser. No. 946,991

Int. Cl.[4] A61K *31/79, 7/025*

U.S. Cl. 424—64 16 Claims

1. A water resistant lipliner composition in the form of a flowable liquid dispersion or solution comprising one or more water-soluble organic pigments, water as a carrier therefor, and a water-soluble organic polymer film-forming agent which is a combination consisting essentially of polyvinyl pyrrolidone and polyvinyl alcohol, said composition having a viscosity of less than about 750 cps.

4,761,278

LADIES AFTERSHAVE PREPARATION AND METHOD FOR ITS MANUFACTURE

Jean Lewis, P.O. Box 34, Patagonia, Ariz. 85624; Michael De Chicio, P.O. Box 585, Sonoita, Ariz. 85637, and Deborah Marshall, 750-B Falcon St., Austin, Tex. 78719

Filed Mar. 13, 1987, Ser. No. 25,819

Int. Cl.[4] A61K *7/15, 31/14*

U.S. Cl. 424—73 2 Claims

1. An astringent, antiseptic, aloe containing ladies aftershave for application to tender areas such as legs and underarms, and the like, following the shaving of same, consisting essentially of:

aloe vera in an amount of about 4% by weight;

alcohol in an amount of about 55% by weight;

propylene glycol in an amount of about 10% by weight;

citric acid in an amount of less than 1% by weight;

sodium benzoate in an amount of about 0.1% by weight; and

water in an amount of about 30% by weight;

a fragrance in an amount of about 0.1% by weight.

4,761,279

SHAVING CREAM FORMULATIONS

Ezzat N. Khalil, River Forest, Ill.; Michael K. Edwards, and Howard K. Hobbs, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1987, Ser. No. 32,276

Int. Cl.[4] A61K *7/15*

U.S. Cl. 424—73 15 Claims

1. A shaving cream composition comprising

(a) about 0.2 to about 20 parts by weight of at least one salt of a fatty acid ester of lactylic acid,

(b) about 1.2 to about 56 parts by weight of at least one saturated monoglyceride of a straight chain fatty acid having from 8 to 22 carbon atoms and an iodine value of 0 to about 20,

(c) about 0.8 to about 48 parts by weight of at least one propylene glycol monoester of a saturated straight chain fatty acid having from 8 to 22 carbon atoms and an iodine value of 0 to about 20,

(d) about 1 to about 90 parts by weight of a polyhydroxylated humectant,

(e) an effective amount up to about 25 parts by weight of an unsaturated monoglyceride of at least one straight chain fatty acid having from 8 to 22 carbon atoms and an iodine value of about 30 to 110, and

(f) 0 to 95 parts by weight water.

4,761,280

ADDITIVES USEFUL AS CRYSTALLIZATION INHIBITORS AND ACTIVITY EXTENDERS FOR TRIMEDLURE, THE MEDITERRANEAN FRUIT FLY ATTRACTANT

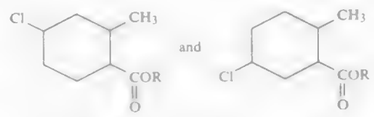
Terrence P. McGovern, Bowie; Barbara A. Leonhardt, Potomac, both of Md., and Roy T. Cunningham, Hilo, Hi., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 8, 1986, Ser. No. 904,533

Int. Cl.[4] A01N *25/00*

U.S. Cl. 424—84 17 Claims

1. In a method of attracting the mediterranean fruit fly which employs trimedlure as the attractant, wherein the improvement comprises employing the trimedlure with a crystallization inhibiting and attraction extending amount of a pure or substantially pure isomeric mixture of



wherein $-CH_3$ and $-COOR$ are in a trans-configuration and the C1 is in both an equatorial and axial conformation, and R is a C_4 to C_6 straight-or branched-chain alkyl or alkenyl group but not 1,1-dimethylethyl, a C_1 or C_2 straight-chain alkyl having a C_3 to C_5 alicyclic ring moiety, a C_1 or C_2 straight-chain alkyl having a C_3 to C_5 alicyclic ring moiety having a lower alkyl substituent, a C_3 to C_6 alicyclic ring, or a C_3 to C_6 alicyclic ring having a lower alkyl substituent.

4,761,281

VACCINE FROM DIROFILARIA EXTRACTS

George H. Scherr, Park Forest, Ill., assignor to ImmunoMed Corporation, Tampa, Fla.

Filed Apr. 22, 1986, Ser. No. 854,853

Int. Cl.[4] A61K *39/00, 39/002*

U.S. Cl. 424—88 24 Claims

1. A vaccine for protecting a mammal against infection by Dirofilaria which comprises an effective, non-toxic amount of water-soluble fraction of an extract of adult Dirofilaria organisms and of an acid-soluble fraction of an extract of adult Dirofilaria organisms.

4,761,282

INACTIVATED INFECTIOUS BRONCHITIS VACCINE FOR POULTRY

Peter Apostowell, Leersum, and Manfred M. Krasselt, De Bilt, both of Netherlands, assignors to Gist-Brocades N.V., Delft, Netherlands

Division of Ser. No. 621,078, Jun. 15, 1984, Pat. No. 4,645,665, and Ser. No. 409,996, Aug. 20, 1982, Pat. No. 4,481,188. This application Aug. 6, 1986, Ser. No. 893,936

Claims priority, application European Pat. Off., Aug. 28, 1981, 81-200960.3

Int. Cl.[4] A61K *39/215*

U.S. Cl. 424—89 3 Claims

1. An inactivated infectious bronchitis vaccine for poultry characterized in that the inactivated virus is derived from at least one virus strain selected from the group consisting of serotype of the virus strain identified by means of the internal notation Gelderland. 901 deposited at the Czechoslovak National Collection of Type Cultures of the Institute of Hygiene and Epidemiology in Prague under No. CNCTC AO 17/81 and deposited at the Collection Nationale de Cultures de Micro organismes d'Institute Pasteur, Paris, under No. I-168 and novel serotype of the virus strain, identified by means of the internal notation Brabant. 802, deposited at the Czechoslovak National Collection of Type Cultures of the Institute of Hygiene and Epidemiology in Prague under No. CNCTC. 18/82 and deposited at the Collection Nationale d'Institute Pasteur, Paris, under No. I-202.

4,761,283

IMMUNOGENIC CONJUGATES

Porter W. Anderson, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Continuation of Ser. No. 511,048, Jul. 5, 1983, Pat. No. 4,673,574, which is a continuation-in-part of Ser. No. 298,102, Aug. 31, 1981, abandoned. This application Mar. 28, 1986, Ser. No. 845,731

The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.

Int. Cl.[4] A61K *39/02, 39/09, 39/102;* C07K *15/04*

U.S. Cl. 424—92 34 Claims

1. An immunogenic conjugate, comprising: the reductive amination product of a capsular polymer fragment having a reducing end and derived from the capsular polymer of a bacterial pathogen selected from the group consisting of Haemophilus influenzae type b, *Escherichia coli, Neisseria meningitidis* and *Streptococcus pneumoniae,* and the diptheria toxin protein CRM_{197}.

32. A vaccine that elicits effective levels of anti-polyribosyl ribitol phosphate antibody formations in young warm-blooded mammals comprising an immunogenic amount of the conjugate of claim 1 and a pharmaceutically acceptable carrier.

4,761,284

ANTIDOTE INCLUDING ACTIVATED CARBON PARTICLES

Yasushi Nishimura, Tokyo, Japan, assignor to Kureha Kagaku Kogy Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 470,762, Feb. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 376,960, May 11, 1982, abandoned, and Ser. No. 274,736, Jun. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 52,141, Jun. 26, 1979, abandoned, said Ser. No. 376,960, is a continuation-in-part of Ser. No. 158,203, Jun. 10, 1980, abandoned, said Ser. No. 158,203, and Ser. No. 52,141, each is a continuation-in-part of Ser. No. 970,106, Dec. 18, 1978, abandoned. This application Jul. 29, 1985, Ser. No. 759,933

Claims priority, application Japan, Dec. 27, 1977, 52-156546; Jun. 26, 1979, 54-80537

Int. Cl.[4] A61K *33/44*

U.S. Cl. 424—125 11 Claims

1. A pharmaceutical composition in dosage unit form having antidotal activity adapted for oral administration to adsorb exogenous or endogenous toxins in the gastrointestinal tract of a patient without causing the patient to become constipated, comprising an antidotally effective amount of activated carbon particles and a pharmaceutical carrier, wherein at least 35% in number of said particles are microscopically spherical activated carbon particles which have smooth and convex curved surfaces without sharp edges, a diameter of 0.05 to 2.0 mm, a maximum diameter to minimum diameter ratio of 1.0 to 1.3, a pore cavity volume of not more than 0.05 cc/g determined in the pore radius range of 5000 to 75,000 Å, a pore capacity volume of 0.05 to 1.0 cc/g determined in the pore radius range of 100 to 75,000 Å and a specific surface area of 500 to 2000 m^2/g.

4,761,285

COMPOSITION FOR RELIEF AND TREATMENT OF HEMORRHOIDS

Anna Vasiliou, Larisa, Greece, and Athanasios Vasiliou, 450 East 800 S., Salt Lake City, Utah 84111, assignors to Athanasios Vasiliou, Salt Lake City, Utah

Filed Oct. 28, 1986, Ser. No. 923,877

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 20 Claims

1. A composition comprising the following components: Leptandra Culver's root, chick-peas and grape seeds.

4,761,286

INTESTINAL ABSORPTION INHIBITING AGENT

Yasutake Hiji, c/o Tottori University School of Medicine, 86, Nishi-machi, Yonago-shi, Tottori-ken, Japan

Continuation of Ser. No. 745,161, Jun. 17, 1985, abandoned. This application Jan. 27, 1987, Ser. No. 8,081

Claims priority, application Japan, Jun. 18, 1984, 59-124826

Int. Cl.[4] A61K *35/78*

U.S. Cl. 424—195.1 12 Claims

1. A composition to be ingested by an animal having an intestinal tract as a foodstuff, comprising:

(a) an aqueous extract of *Gymnema sylvestre,* and

(b) a food material which is absorbed in the form of glucose by an intestinal tract of an animal having an intestinal tract,

said extract being present in an amount equaling a weight ratio of from 0.02 to 0.3 to said glucose.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,287

DIABETES CONTROL BY SEROTONIN

Walter B. Geho, Wooster, Ohio, assignor to Technology Unlimited, Inc., Wooster, Ohio

Continuation-in-part of Ser. No. 606,714, May 3, 1984, Pat. No. 4,603,044. This application Apr. 9, 1986, Ser. No. 849,849

Int. Cl.[4] A61K *37/22, 9/42;* B01J *13/02*

U.S. Cl. 424—450 5 Claims



2. The method of treatment of hyperglycemia in a warm blooded animal suffering from excess blood glucose levels and the presence of functional insulin levels at the liver, said method comprising the step of administering to said animal a therapeutically effective dose of serotonin contained in a liposome having a target substituent selected from the class of those chemicals which are classed biologically as having a high affinity for the hepatocytes of the liver.

4,761,288

MULTIPHASE LIPOSOMAL DRUG DELIVERY SYSTEM

Michael Mezei, Nova Scotia, Canada, assignor to Mezei Associates Limited, Nova Scotia, Canada

Continuation-in-part of Ser. No. 653,997, Sep. 24, 1984, abandoned. This application Sep. 10, 1985, Ser. No. 774,266

Int. Cl.[4] A61K *9/66, 37/22;* B01J *13/02*

U.S. Cl. 424—450 13 Claims

1. A pharmaceutical composition comprising a mixture of:

(a) multilamellar lipid vesicles with a slightly water-soluble biologically active compound as both a saturated aqueous solution and in solid form captured therein;

(b) a saturated solution of the biologically active compound; and

(c) the biologically active compound in solid form

said multilamellar lipid vesicles and said biologically active compound in solid form being suspended in said saturated solution of the biologically active compound.

4,761,289

SUSTAINED RELEASE IMPLANT AND METHOD FOR PREPARING SAME

Mohamad D. Shalati, Richton Park, Ill., and Ravi Viswanathan, Miami, Fla., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Oct. 10, 1986, Ser. No. 917,771

Int. Cl.[4] A61K *9/00, 15/00, 21/00, 9/22*

U.S. Cl. 424—468 16 Claims

1. A method for preparing a pellet containing effective amount of a substantially water-insoluble polymer and a growth hormone, the method comprising:

(a) forming a mixture comprising a dispersion of a growth hormone in a solution of a non-aqueous solvent and a substantially water-insoluble polymer:

(b) removing the non-aqueous solvent from the mixture to substantially dry the mixture;

(c) comminuting the substantially dry mixture to form particles; and

(d) forming a plurality of the particles under pressure to produce a pellet.

11. A pellet produced according to the method of claim 1.

4,761,290

PROCESS FOR MAKING DOUGH PRODUCTS

Paul Meraj, Encino, and Teri Nagle, Alta Loma, both of Calif., assignors to General American Foods Manufacturing Corporation, Sylmar, Calif.

Filed Jan. 20, 1987, Ser. No. 4,987

Int. Cl.[4] A21D *10/00*

U.S. Cl. 426—90 9 Claims

1. A process for producing a dough product which is convertible upon finish cooking by baking or exposure to microwaves in the presence of a microwave susceptor into a cooked dough product having a light, flaky, crispy texture, which comprises the steps of:

providing a dough;

applying a layer of shortening flakes to at least one side of said dough;

coating a light batter to a thickness in the range of about 0.001 inch to 0.125 inch over said at least one side of said dough to which said shortening flakes have been applied;

heating the resulting batter-coated dough to a temperature in the range of about 400° F. to 850° F. for a period of time ranging from about 10 seconds to 5 minutes to first set said batter and then subsequently melt said shortening flakes, whereby air cells are formed in said batter and the surface of said dough; and

cooling the resulting dough product.

4,761,291

PINEAPPLE PROCESSING METHOD

John W. Neumann, Birmingham, and J. Scott Neumann, Southfield, both of Mich., assignors to Neumann Industries, Incorporated, Madison Heights, Mich.

Filed Apr. 27, 1987, Ser. No. 42,972

Int. Cl.[4] G01N *33/02;* A23L *1/212*

U.S. Cl. 426—231 17 Claims

1. Pineapple processing method comprising the steps of slicing a pineapple having a peripheral edible fruit and unedible shell and eyes, sensing each slice by a sensing device for its peripheral extremity of edible fruit, and differentially processing each individual slice by automatically controlled means responsive to said sensing step, to remove the shell and eyes and recover the fruit including any edible peripheral portion of each slice.

4,761,292

READY-TO-SPREAD CAKE FROSTING

Michael E. Augustine, and Donald W. Lillard, both of Decatur, Ill., assignors to Staley Continental, Inc., Rolling Meadows, Ill.

Filed Jul. 8, 1986, Ser. No. 883,209

Int. Cl.[4] A23G *3/00;* A23L *3/00*

U.S. Cl. 426—321 19 Claims

1. A storage-stable ready-to-spread cake frosting comprising:

(a) about 40 to 85 weight percent sugar, at least about 20 weight percent of which comprises fructose;

(b) about 1 to 12 weight percent of a granular starch having a cold-water-solubility of greater than 50 weight percent and a fat content of less than 0.25 weight percent;

(c) about 5 to 30 weight percent fat; and

(d) about 10 to 30 weight percent water.

4,761,293

METHOD OF AND APPARATUS FOR PRODUCING BAKED CONES OR CORNETS

Heinrich Herting, Herne, Fed. Rep. of Germany, assignor to Firma Karl Oexmann, Inh. Wolfgang Oexmann, Gelsenkirchen-Hessler, Fed. Rep. of Germany

Filed Jul. 7, 1986, Ser. No. 882,267

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1985, 3524116; Apr. 19, 1986, 3613292

Int. Cl.[4] A22C *17/10*

U.S. Cl. 426—383 12 Claims

1. A method of making wafer cones, consisting essentially of the steps of:

forming bakable wafer elements of a dough adapted to be baked;

baking said elements as flat leaves, the forming and baking of said leaves being effected while said leaves are displaced along a transport path leading to a device for automatically coiling said leaves into said cones;

allowing the baked elements to cool to rigid articles;

lifting the leaves by a plunger-like member from the respective baking forms and transferring the leaves to a conveyor forming part of said path said member forming a printing stamp;

contacting said stamp with an ink-carrying member for inking said stamp;

printing directly on said elements, in a hot state thereof resulting from baking, indicia of contrasting coloration to the material of said elements subsequent to the forming of said elements but prior to complete cooling of said baked elements to rigid articles, whereby said indicia are visible on said cones upon the introduction of a foodstuff into the cones, said printing being effected along said transport path while said leaves are displaced therealong and upstream of said device; and

coiling each of said flat leaves into the shape generally of a cone after the printing of said indicia thereon while said leaves are flat and prior to complete cooling of the flat leaves.

4,761,294

PROCESS FOR PREPARING PARFRIED AND FROZEN POTATO STRIPS

Michael L. Hamann, and Nicholas C. Guidinger, both of Caldwell, Id., assignors to J. R. Simplot Company, Boise, Id.

Continuation of Ser. No. 767,529, Aug. 20, 1985, abandoned, which is a continuation-in-part of Ser. No. 693,806, Jan. 23, 1985, abandoned. This application Apr. 25, 1986, Ser. No. 858,578

Int. Cl.[4] A23L *1/217*

U.S. Cl. 426—438 32 Claims

1. A process for preparing parfried and frozen potato strips for subsequent reconstitution for consumption by finish frying in hot oil in a reduced finish fry time period, said process comprising the steps of:

blanching the potato strips cut from raw potatoes to a generally translucent state;

drying the blanched strips to remove moisture from the strips and thereby reduce the weight thereof by about 20 percent to about 35 percent from the raw state;

parfrying the dried strips in hot oil at a temperature of about 300° F. to about 375° F. and for about 15 seconds to about 60 seconds;

freezing the parfried strips;

subjecting the parfried and frozen strips to an air impingement step including exposure to a flow of hot air at a temperature of about 300° F. to about 450° F. and a flow rate substantially greater than about 500 feet per minute for about 1 minute to about 9 minutes to texturize the outer skin surfaces of the strips and to remove moisture from the strips and thereby reduce the weight of the strips by about 5 percent to about 36 percent from the parfried and frozen state; and

refreezing the air impinged strips, said freezing, air impingement, and refreezing steps proceeding in sequence without further parfrying of the strips between said parfrying and refreezing steps.

4,761,295

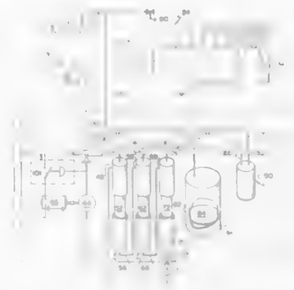
TECHNIQUE FOR USING REVERSE OSMOSIS UNIT

John P. Casey, Nueces County, Tex., assignor to Williams Wholesalers, Inc., Corpus Christi, Tex.

Filed May 27, 1986, Ser. No. 867,383

Int. Cl.[4] A21D *2/02;* A23L *2/00*

U.S. Cl. 426—549 9 Claims



9. A method of producing carbonated soft drinks comprising the steps of

conducting a reverse osmosis water treatment on inlet feed water to produce a dissolved solids rich concentrate and a dissolved solids poor permeate;

discarding the concentrate;

delivering the permeate to a carbonator and mixing carbon dioxide with the permeate therein;

delivering the carbonated permeate to a post-mix dispenser and mixing a quantity of the carbonated permeate with a quantity of soft drink syrup;

delivering the mixture of carbonated permeate and syrup from the post-mix dispenser; and

delivering a quantity of uncarbonated permeate into a bread dough and baking the bread dough.

4,761,296

CRACKERS HAVING STABILIZED SUNFLOWER SEEDS

Richard D. Fazzolare, Pearl River, N.Y., and Rudolf Windmuller, Wayne, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 611,877, May 18, 1984, Pat. No. 4,595,596. This application Jan. 2, 1986, Ser. No. 815,524

The portion of the term of this patent subsequent to Jun. 17, 2003, has been disclaimed.

Int. Cl.[4] A21D *10/00*

U.S. Cl. 426—549 21 Claims

1. A cracker comprising:

(a) flour, water, shortening, and a chemical leavening agent;

(b) a quantity of stabilized sunflower seeds having diameters of about 2 to 3 millimeters, said seeds being:

(i) impregnated with a high stability oil, said high stability oil includes a partially hydrogenated vegetable oil; and

(ii) incorporated into a dough to make baked crackers prior to said dough being machined and baked into said baked crackers, wherein said sunflower seed containing crackers are rancid free and shelf stable at room temperature for up to 6 months.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,297

METHOD OF MANUFACTURING DRIED RICE

Ko Sugisawa; Masaru Shibuki, both of Nara; Noriaki Yamaguchi, Jyoyo, and Maki Nakano, Takatsuki, all of Japan, assignors to House Food Industrial Company Limited, Higashiosaka, Japan

Filed Dec. 1, 1986, Ser. No. 936,153
Claims priority, application Japan, Dec. 6, 1985, 60-274786
Int. Cl.[4] A23L *1/00, 1/182*
U.S. Cl. 426—618 9 Claims

1. A method of manufacturing dried rice consisting essentially the steps of: adjusting the water content of polished rice so that it reaches at least 23 wt% after the rice has been washed with water; soaking the rice in a sugar solution consisting essentially of a sugar and water so as to allow the sugar to permeate the rice and to remove 6 to 38 wt% of the water contained in the rice; separating the sugar solution adhered to the rice; and drying the rice under conditions in which starch contained therein will not be pregelatinized.

4,761,298

METHOD OF PRECISELY ADJUSTING THE FREQUENCY OF A PIEZOELECTRIC RESONATOR

John R. Vig, Colts Neck, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 6, 1987, Ser. No. 46,347
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—10 11 Claims

1. Method of precisely adjusting the frequency of a UHF piezoelectric resonator, said method including the steps of:

(A) fabricating the resonator by means of art established techniques,

(B) adjusting the frequency of the resonator with an accuracy that is equivalent to about ±1 atomic layer of quartz,

(C) measring the frequency of the resonator at a known conditions of temperature, pressure and load capacitance,

(D) depositing a monomolecular layer of a thermally stable, low stress, uniform insulating polyimide film on the active area of the resonator and outgassing the film thoroughly,

(E) measuring the frequency of the resonator at the same conditions as in step (C),

(F) calculating the difference between the frequencies measured in steps (C) and (E) as the size of the step change in frequency for the particular resonator design and insulating film,

(G) deciding on the frequency adjustment tolerance desired and converting that frequency adjustment tolerance to an insulating film area tolerance, and

(H) removing the appropriate fraction of the insulating film area.

4,761,299

METHOD AND APPARATUS FOR ELECTROSTATIC SPRAY COATING

Patrick A. Hufstetler, Mt. Clemens, Mich., and James E. Hynds, 7147 Creeks Crossing, W. Bloomfield, Mich. 48033, assignors to James E. Hynds, West Bloomfield, Mich.

Filed Mar. 31, 1987, Ser. No. 33,028
Int. Cl.[4] B05D *1/04*
U.S. Cl. 427—27 21 Claims

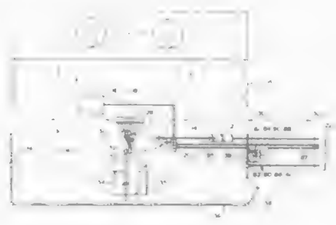
1. A method for electrostatically spray-coating an article in a coating zone with a liquid coating material, the method comprising the steps of:

supplying air to an atomizing device having a spray head;

supplying the liquid coating material to the atomizing device;

utilizing the air entering the atomizing device to atomize the liquid coating material with the air at the spray head, the air having a flow rate in excess of 5 CFM at the spray head and a delivery pressure of less than 15 psi over atmospheric pressure at the spray head; and

creating an electrical charge differential between the atomized liquid coating material and the article in the coating



zone for causing the atomized liquid coating material to be directed to the article.

4,761,300

METHOD OF VACUUM DEPOSTION OF PNICTIDE FILMS ON A SUBSTRATE USING A PNICTIDE BUBBLER AND A SPUTTERER

Rozalie Schachter, Flushing, and Marcello Viscogliosi, North Tarrytown, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 581,103, Feb. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 509,175, Jun. 29, 1983, Pat. No. 4,509,066. This application Feb. 24, 1986, Ser. No. 834,135
Int. Cl.[4] B05D *3/06;* C23C *16/00*
U.S. Cl. 427—38 18 Claims



1. The method of vacuum deposition of an elemental pnictide comprising the steps of:

passing a gas inert to elemental pnictide through a heated condensed phase elemental pnictide material to provide an elemental pnictide vapor,

generating a plasma in a vacuum chamber by electrically energizing inert gas therein,

passing said elemental pnictide vapor through said electrically generated inert gas plasma in said vacuum chamber, and

depositing elemental pnictide from said vapor on a stationary substrate in said vacuum chamber.

4,761,301

ELECTRICAL INSULATOR FOR A PLASMA ENHANCED CHEMICAL VAPOR PROCESSOR

Charles E. Ellenberger, Elko, Nev., and Hayden K. Piper, Hillsboro, Oreg., assignors to Pacific Western Systems, Inc., Mountain View, Calif.

Continuation of Ser. No. 542,764, Oct. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 311,758, Oct. 15, 1981, abandoned. This application Aug. 8, 1986, Ser. No. 894,726
Int. Cl.[4] C23C *16/50*
U.S. Cl. 427—39 3 Claims

1. In a method for plasma enhanced chemical vapor deposition of an electrically conductive material the steps of:

disposing first and second sets of interleaved electrodes in an evacuable envelope;

loading semiconductive wafers into the processing gaps defined between adjacent interleaved electrodes of said first and second sets with one major face of each wafer being disposed facing an adjacent electrode and the other major face of each wafer facing into the processing gap defined between adjacent ones of said first and second electrodes;

evacuating said envelope to subatmospheric pressure;

introducing a chemical vapor at subatmospheric preasure into said envelope;

electrically insulating said first and second sets of interleaved electrodes by means of an electrical insulator body for physically supporting said electrodes in electrically insulatively spaced relation one from the other;

providing a pair of first narrow annular axial recess portions in said insulator body with each of said first narrow annular axial recess portions being defined by a relatively narrow space between a pair of relatively broad mutually opposed radially spaced apart annular side wall portions of said insulator body, said annular broad side wall portions having axes of revolution extending generally axially of said insulator body and in a direction across said processing gap defined between adjacent interleaved electrodes, and each of said first narrow annular axial recess portions extending into said insulator body and toward the other from opposite ends of said insulator body;

providing a pair of second annular recesses between the ends of said insulator body and the adjacent electrodes and each of said second recesses extending radially outwardly of said body to the outer periphery thereof at opposite ends of said insulator body;

intersecting said second radial recesses with respective ones of said first narrow axial recesses, wherein said intersecting step results in the insulator body being provided with combination recesses of generally L-shaped cross-section including narrow annular axial reentrant recessed portions;

heating said electrodes, workpieces, and insulator body to a chemical vapor deposition temperature;

establishing an electrical plasma discharge at subatmospheric pressure in the processing gap between said interleaved first and second sets of electrodes to produce chemically active vapor products of said plasma discharge; and

chemically interacting said chemically active vapor products with said major faces of said wafers which face into the processing gap for depositing an electrically conductive material on said wafers while partially shielding said narrow annular axial reentrant recessed portions from said plasma discharge for substantially inhibiting deposition of the conductive material on the interior walls of said narrow annular axial reentrant recessed portions in said insulator body.

4,761,302

FLUORINATION OF AMORPHOUS THIN-FILM MATERIALS WITH XENON FLUORIDE

Raoul B. Weil, Haifa, Israel, assignor to The United States Department of Energy, Washington, D.C.

Filed May 1, 1987, Ser. No. 45,920
Int. Cl.[4] B05D *3/06;* C23C *16/00*
U.S. Cl. 427—39 18 Claims

13. A process for incorporating fluorine into amorphous thin-film material comprising depositing amorphous thin-film material onto a substrate, said amorphous material being selected from the group consisting of silicon, germanium, or mixtures thereof, and introducing XeF_2 during said thin-film deposition process to incorporate and intimately intermix fluorine into said thin-film material.

4,761,303

PROCESS FOR PREPARING MULTILAYER PRINTED CIRCUIT BOARDS

Stanley J. Ruszczyk, Naugatuck; Donald R. Ferrier, Thomaston; Gary B. Larson, Cheshire, all of Conn.; Daniel Gallegos, Anaheim, Calif., and Steven A. Castaldi, Waterbury, Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Filed Nov. 10, 1986, Ser. No. 929,640
Int. Cl.[4] B05D *5/12, 3/04;* H05K *1/00*
U.S. Cl. 427—96 28 Claims

1. In a process for fabricating a multilayer printed circuit board wherein a first layer is fabricated by:

providing a copper clad substrate with holes drilled therethrough, said holes being plated with copper;

forming a resist image of a circuit pattern on said copper coated substrate;

removing copper from the areas not covered by said resist;

removing said resist; and

applying a dielectric solder mask to selected portions of said circuit pattern;

the improvement which comprises fabricating at least the second layer of said multilayer printed circuit board by;

providing on said first layer an image of a second circuit pattern said image being formed using a suspension in a curable resinous material of particles of a non-conductive metal derivative capable of being chemically reduced to electrically conductive free metal;

at least partially curing said image;

subjecting said image to chemical reduction to convert at least a portion of said metal derivative in the surface of said image to free metal "such that the unreduced portion of said particles suspended in said resinous material serves as a dielectric layer";

electrolessly plating said image with copper; and

applying a dielectric mask to selected portions of said circuit pattern.

4,761,304

PROCESS FOR PRINTED CIRCUIT BOARD MANUFACTURE

William R. Brasch, Nesconset, N.Y., and Carlo Favini, Milan, Italy, assignors to LeaRonal, Inc., Freeport, N.Y.

Division of Ser. No. 574,086, Jan. 26, 1984. This application Feb. 24, 1987, Ser. No. 17,413
Int. Cl.[4] B05D *5/12*
U.S. Cl. 427—98 24 Claims

1. A method for selectively metallizing a hydrophilic plastic printed board having holes of the desired design exposing plastic areas therein by way of the hole walls which comprises imaging the board to form the desired circuit with a hydrophobic resist, treating the board with a reducing agent, treating the board with a hydrophilic aqueous ionic metal solution which is repelled by the hydrophobic resist and is attracted to the hydrophilic plastic, reduing the ionic metal contained in said solution on the plastic areas of the board to a valence state capable of selectively catalyzing such surfaces for electroless metal deposition, and electrolessly plating said board whereby the metal electrolessly plates on the catalyzed areas and not on the resist; wherein the selectivity of the catalyst is enhanced by treating the circuit boards with a charge extender to create a higher differential of charge between the resist image and non-imaged areas.

4,761,305

METHOD FOR FINISHING CLOTHES

Hiromichi Ochiai, No. 1-28-5, Kakinokizaka, Meguro-ku, Tokyo, Japan

Filed Sep. 8, 1987, Ser. No. 93,705
Claims priority, application Japan, Sep. 12, 1986, 61-215304
Int. Cl.[4] B05D *1/12*
U.S. Cl. 427—180 7 Claims

1. A method for finishing clothes that improves the wearing

VOL 1093 ISS 1 AG 2 1988 UMI

sensation and feeling of the clothes on the body comprising of the steps of:

arranging one or more articles of clothing to be finished by hanging them from a rod in a sealed chamber used for finishing after dry cleaning or washing the clothes;

then spraying fine particles of 10 to 60 microns in diameter of a hydrophilic finishing agent which is water soluble or dilutes with water by emulsifying, in a predetermined quantity adapted for the clothes to be finished, to moisten the entire front and back surfaces of the clothes to be finished by adhering the agent thereto; and

thereafter or simultaneously therewith steaming the clothes, then blowing with hot air to dry them.

4,761,306

METHOD OF MAKING A POSITIONED CHIP SURFACE COVERING

Lawrence Clark; Harold N. Graybeal, and Jack H. Witman, all of Lancaster, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Oct. 30, 1984, Ser. No. 666,295
Int. Cl.[4] B05D *5/00*
U.S. Cl. 427—197 **1 Claim**

1. A process for forming a decorative surface "comprising decorative particles"; comprising the steps of

selectively providing a first adhesive material on a support surface;

selecting a first set of environmental conditions such that said first material exhibits substantially non-adhesive properties;

selectively providing a second adhesive material on said support surface, said second material being applied on top of and/or adjacent to said first material, said second material exhibiting adhesive properties under said first conditions;

depositing a first decorative particulate chip material over the layered adhesive materials, at least a portion of said particulate material being adhered to said second material;

removing non-adhered particles from the surface of the layered composite;

selecting a second set of environmental conditions such that said first adhesive material exhibits adhesive properties;

depositing a second decorative particulate chip material different from the first over the surface of the layered composite, at least a portion of said second particulate material being adhered to said first adhesive material; and

removing non-adhered particles from the surface of the layered composite, whereby a product is produced comprising a pattern of adhered chips.

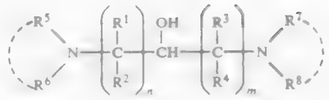
4,761,307

PROCESS FOR THE PRODUCTION OF OPTIONALLY FOAMED POLYURETHANES WHICH ARE COMBINED OR FABRICATED WITH ANOTHER MATERIAL

Peter Haas, Haan, Fed. Rep. of Germany; Hans-Albrecht Freitag, Pittsburgh, Pa., and Geza Avar, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Jan. 8, 1986, Ser. No. 817,222
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1985, 3502107
Int. Cl.[4] B05D *5/00, 3/02;* **B32B** *5/18*
U.S. Cl. 427—243 **6 Claims**

1. A process for the production of optionally foamed polyurethanes which are combined or fabricated with another material comprising reacting compounds with molecular weights from 400 to 10,000 containing at least 2 isocyanate reactive hydrogen atoms with polyisocyanates in the presence of catalysts containing tertiary amino groups and combining or fabricating the resulting polyurethane with another material, characterized in that the catalysts used are diffusion resistant amino-alkanols corresponding to the general formula



wherein

R^1, R^2, R^3 and R^4 may be identical or different and represent hydrogen or a C_1–C_6 alkyl group,

R^5, R^6, R^7 and R^8 may be identical or different and represent a C_1–C_6 alkyl group or together from a C_2–C_6 alkylene group which may contain hetero atoms such as O or NR ($R = C_1$–C_4 alkyl), and n and m may be identical or different and represent integers from 1 to 6.

4,761,308

PROCESS FOR THE PREPARATION OF REFLECTIVE PYROLYTIC GRAPHITE

Joseph J. Gebhardt; Robert F. Mulvey, both of Malvern, and John J. Yodsnukis, Philadelphia, all of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 22, 1987, Ser. No. 70,358
Int. Cl.[4] C23C *16/26*
U.S. Cl. 427—249 **11 Claims**

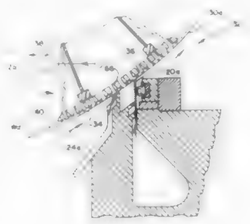
1. A process for preparing reflective graphite having improved reflectance which comprises the steps of (a) preparing pyrolytic graphite by depositing carbon by the chemical vapor deposition technique on a suitable support from a short chain hydrocarbon at a temperature of about 1850° C. to 2250° C. and a pressure of about 1 to 3 torr until the film is at least 1 mm thick and cooling, to room temperature, (b) positioning said support and pyrolytic graphite in a furnace, evacuating said furnace and slowly increasing the temperature of about 700°–1000° C. while maintaining a pressure of about 1 torr, (c) increasing the pressure in the furnace to 5 to 10 torr while increasing the temperature to about 2600° C. to 3300° C., (d) maintaining said temperature and pressure for about 10 minutes to 2 hours, and (e) cooling and recovering the reflective graphite product.

4,761,309

COATING APPARATUS AND METHOD

Lamar Embry, Columbus, Miss., assignor to Beloit Corporation, Beloit, Wis.

Filed Jan. 5, 1987, Ser. No. 603
Int. Cl.[4] B05C *5/02;* **B05D** *1/26*
U.S. Cl. 427—294 **11 Claims**



11. A method of applying a coating onto a surface of a moving web, said method comprising the steps of:

connecting a backing member to a source of partial vacuum such that the web is drawn toward a perforate surface defined by the backing member;

pressing the web towards the perforate surface by means of a short dwell coating blade disposed adjacent to the backing member; and

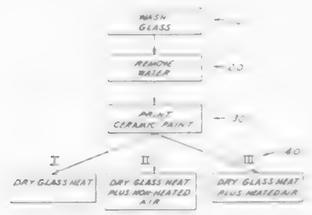
interposing a permeable belt between the perforate surface of the backing member and the web such that when the partial vacuum is applied through the perforate surface and the permeable belt, the web is drawn into close conformity with the belt for firstly inhibiting the buildup of deleterious material adjacent to the blade, and secondly for inhibiting the generation of an air pocket between the backing member and the web upstream relative to the blade, the permeable belt having a first layer which is disposed contiguous relative to the perforate surface and a second layer disposed contiguous relative to the first layer, the second layer being disposed contiguous relative to the web, the second layer having a finer mesh relative to the mesh of the first layer such that during coating of the web, the vacuum applied through the perforate surface is evenly distributed by means of the first layer and on the second layer inhibits marking of the contiguous surface of the web.

4,761,310

METHOD OF BONDING AN OIL-BASED CERAMIC PAINT TO A SURFACE OF A GLASS SHEET

Premakaran T. Boaz, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1986, Ser. No. 914,851
Int. Cl.[4] B05D *3/02*
U.S. Cl. 427—314 **4 Claims**



1. A method of bonding an oil-based ceramic paint to a surface of a glass sheet consisting essentially of the steps of:

washing the glass sheet with hot water to both clean and heat the glass sheet;

removing any excess water from the washed glass sheet;

applying an oil-based ceramic paint to a surface of the washed glass sheet; and

utilizing said heat placed in the glass sheet by said washing operation as a principal heat source the bonding of the ceramic paint to the surface of the glass sheet as the volatiles in the oil vehicle of the ceramic paint are evaporated.

4,761,311

PROCESS FOR GLOSSING A DEVELOPER SHEET AND AN APPARATUS USEFUL THEREIN

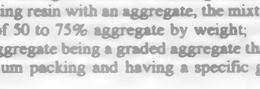
Benjamin C. Stone, Waynesville, and D. Scott Proehl, Miamisburg, both of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Feb. 19, 1987, Ser. No. 17,102
Int. Cl.[4] B05D *3/12*
U.S. Cl. 427—366 **9 Claims**

1. A process for glossing a developer sheet having a thermoplastic developer resin on the surface thereof, said thermoplastic developer resin being capable of forming a film which imparts gloss upon the application of heat, comprising the steps of:

heating an arched plate to a temperature sufficient to cause said thermoplastic developer resin to coalesce, said arched plate having a heat transfer limiting blanket thereon;

feeding said sheet between the convex side of said arched plate and a continuous belt held snugly against said convex side of said arched plate so that said surface of said



sheet with said thermoplastic developer resin is adjacent to said belt, said belt exerting minimal contact pressure on said sheet;

driving said belt so as to move said sheet over said arched plate; and

passing said sheet from between said plate and said belt.

4,761,312

WATERPROOF, UNEVENLY TEXTURED COATING FILM

Taro Koshi, and Hidetoshi Kondo, both of Chiba, Japan, assignors to Dow Corning Corporation, Midland, Mich.

Filed May 26, 1987, Ser. No. 54,452
Claims priority, application Japan, Jun. 5, 1986, 61-130950
Int. Cl.[4] B05D *1/36, 3/02*
U.S. Cl. 427—387 **8 Claims**

1. A method of forming a waterproof, unevenly textured coating film on the wall surfaces of structures, which method comprises,

(I) the formation of a cured film on the wall surface of a structure by application of an undercoating material consisting of a silicone-modified organic resin,

(II) the subsequent application on the undercoating material of (I), in an uneven texture, of an intermediate coating material consisting of short fiber-containing aqueous silicone emulsion which will form a rubbery elastomer by means of the removal of the water fraction, followed by curing, and

(III) the subsequent formation on the cured, intermediate coating material of a (II) a cured film by application of a top coating material consisting of a silicone-type resin.

4,761,313

COMPOSITION AND METHOD FOR THE PRODUCTION OF CHEMICAL RESISTANT NON-POROUS PLASTIC FLOORING

Eugene F. Jacobs, Tulsa, Okla., assignor to Concrete Protection Systems, Inc., Tulsa, Okla.

Filed Dec. 22, 1986, Ser. No. 944,847
Int. Cl.[4] B05D *1/36*
U.S. Cl. 427—407.1 **2 Claims**

1. A method of applying a filled thermosetting resin flooring material to an essentially horizontal substrate to produce a non-porous protective coating including the steps of:

(a) compounding a mixture consisting essentially of a thermosetting resin with an aggregate, the mixture using a low level of 50 to 75% aggregate by weight;

(b) the aggregate being a graded aggregate that will produce maximum packing and having a specific gravity of over 2.0;

(c) the thermosetting resin being selected from the group consisting of epoxy, polyester, vinyl ester, urethane and furan having a room temperature cure and a viscosity less than 1500 cps;

(d) spreading or troweling the mixture on the substrate producing a resin rich layer upon settling; and

(e) broadcasting onto the resin rich layer an aggregate having a specific gravity of over 2.0, thereby producing a finished flooring material containing 76 to 82% aggregate by weight.

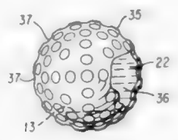
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,314

ARTICLES FOR COOLING BEVERAGES

Randall S. Marshall, 8149 East Branch Dr., Washington, D.C. 20012

Division of Ser. No. 563,598, Dec. 20, 1983, Pat. No. 4,554,189. This application Oct. 11, 1985, Ser. No. 786,427
Int. Cl.[4] A63H 3/00; F25D 3/08
U.S. Cl. 428—11 14 Claims



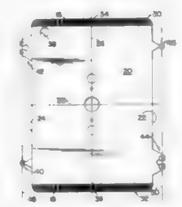
1. An article for cooling beverages retained in a glass, cup or the like having a predetermined height substantially less than that of the glass, cup or the like, the article comprising:
a container having a wall of plastic material completely enclosing a space and a height substantially less than that of the glass or cup;
a phase-change medium confined within the space by the wall, the phase-change medium changing phase from a solid state to a liquid state at approximately the point at which ice melts to water, and
weight means attached to the container to compensate for positive buoyancy thereof, whereby the container does not float at the top of the beverage being cooled thereby but sinks in the beverage.

4,761,315

BLANK FOR USE IN A LENS PATTERN GENERATOR

David J. Logan, Glastonbury; Kenneth O. Wood, Ellington, and William Hernandez, Madison, all of Conn., assignors to Gerber Scientific Products, Inc., Manchester, Conn.

Filed Aug. 14, 1986, Ser. No. 896,840
Int. Cl.[4] A61B 3/10; F16B 5/07
U.S. Cl. 428—33 28 Claims



1. A blank from which a lens pattern is cut, said blank comprising:
a relatively thin body having generally parallel top and bottom major faces of substantially rectangular shape, said body also having first and second side edges parallel to and opposite one another and first and second end edges parallel to and opposite one another and perpendicular to said side edges;
a series of drive elements located along each of said first and second side edges of said body and integral with one of said top and bottom major faces, so that said drive elements do not extend completely through said body between said top and bottom surfaces;
first hinge means located adjacent said first end edge, and
said second hinge means located adjacent said second end edge;
said first hinge means being arranged for cooperation with another said first hinge means of a first similar blank and said second hinge means being arranged for cooperation with another said second hinge means of a second similar blank whereby said blank and said first and second blanks are connected with said first hinge means of said blank connected to first hinge means of said first blank and said second hinge means of said blank connected to said second hinge means of said second blank so that like end edges are adjacent one another when said blank and said first and second blanks are connected.

15. A blank for use in a lens pattern generator and from which a lens pattern is cut wherein said generator includes drive means for moving the blank along a travel path and sensing means for sensing the blank as it moves along the travel path, said blank comprising:
a relatively thin body having generally parallel top and bottom major faces of substantially rectangular shape, said body also having first and second side edges parallel to and opposite one another and first and second end edges parallel to and opposite one another and perpendicular to said side edges;
a series of drive elements located along each of said first and second side edges of said body, said drive elements engaging with the drive means of the pattern generator for moving the blank in a direction parallel to its side edges.
first hinge means located adjacent said first end edge;
second hinge means located adjacent said second end edge, and
nasal locating means cooperating with the sensing means associated with the pattern generator for determining the orientation of a nasal side of said blank at a predetermined position along the travel path in the pattern generator.

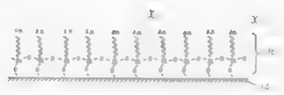
24. A chain of blanks for continuous feeding to a lens pattern generator of the general type including drive means for moving the blanks along a travel path to a work station and sensing means for sensing a blank in the chain of blanks and from which of each blanks a lens pattern is cut, said chain comprising:
a number of rectangularly shaped blanks, each of said blanks including:
(a) a relatively thin body having generally parallel top and bottom major faces, said body also having first and second side edges parallel and opposite one another and first and second end edges parallel and opposite one another and perpendicular to said side edges;
(b) a series of drive elements located along each of said first and second side edges of said body, said drive elements engaging with the drive means of the pattern generator for indexing and advancing said blanks in said chain along the travel path in the generator;
(c) nasal locating means cooperating with the sensing means associated with the pattern generator for determining the orientation of a nasal side of a blank in said chain at a predetermined position along the travel path;
(d) first hinge means located adjacent said first end edges;
(e) second hinge means located adjacent said second end edge;
said first hinge means located adjacent said first end edge of one blank being arranged for cooperation with said first hinge means located adjacent said first end edge of a similar advance blank located adjacent said first end edge to permit said blank and said similar advance blank to rotate relative to one another about an axis parallel to said first end edge, and said second hinge means located adjacent said second end edge of said one blank being arranged for cooperation with said second hinge means located adjacent said second end edge of a similar rear blank located adjacent said second end edge to permit said blank and said similar rear blank to rotate relative to one another about an axis parallel to said second end edge, and
said first hinge means being located adjacent said first end edge and said second hinge means being located adjacent said second end edge such that a first plane passing through said axis associated with said first hinge means and through said axis associated with said second hinge means is inclined with respect to said top and bottom faces and a second plane passing through said first hinge means axis is substantially coplanar with one of said top and bottom faces and a third plane passing through said second hinge means axis is substantially coplanar with the other of said top and bottom faces.

4,761,316

RECORDING MEDIUM AND METHOD OF PRODUCING THE SAME

Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 18, 1985, Ser. No. 799,451
Claims priority, application Japan, Nov. 19, 1984, 59-243677
Int. Cl.[4] G11B 5/72
U.S. Cl. 428—64 13 Claims



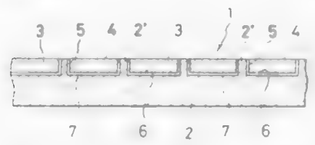
1. A recording medium comprising:
a base body;
at least one recording layer formed on said base body; and
at least one protection layer formed on said recording layer for protecting said recording layer, said protection layer being at least one monomolecular layer of polymerized silane surface active agent of the formula $CH_2=CH-(CH_2)_n-C\equiv C-C\equiv C-(CH_2)_m-SiCl_3$ (n and m are integers) chemically bonded to said recording layer.

4,761,317

ABRASION RESISTANT ADHEREND

Yoshihiro Ebata; Tohru Komiyama, both of Kawanishi; Ryoso Hayami, Takarazuka, and Masanori Koyama, Ikeda, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 12, 1987, Ser. No. 84,223
Claims priority, application Japan, Aug. 14, 1986, 61-125057[U]
Int. Cl.[4] B32B 3/16
U.S. Cl. 428—67 5 Claims



1. An adherend comprising a vulcanized rubber layer and ceramic pieces embedded in said rubber layer, wherein said ceramic pieces are exposed at least in part from said vulcanized rubber layer and have a penetrative sintering layer in the portion thereof in contact with said vulcanized rubber layer.

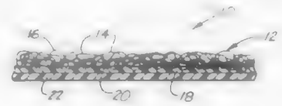
4,761,318

LOOP FASTENER PORTION WITH THERMOPLASTIC RESIN ATTACHING AND ANCHORING LAYER

Ronald L. Ott, Lake Elmo, and Susan K. Nestegard, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 723,458, Apr. 15, 1985, Pat. No. 4,609,581. This application Aug. 29, 1986, Ser. No. 902,227
Int. Cl.[4] B32B 3/06
U.S. Cl. 428—85 5 Claims

1. A structure comprising:
a substrate; and a loop portion for a hook and loop fastener said loop portion including:
a flexible sheet-like fibrous structure comprising a nonwoven layer having first and second major surfaces and a mutiplicity of loops along said first surface adapted to be releasably engaged by the hook portion of the fastener, said nonwoven layer alone having insufficient internal strength to adequately anchor the loops for use as the loop portion of a hook and loop fastener; and



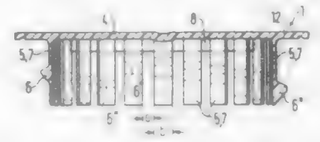
a layer of thermoplastic resin adhered to the second major surface of said fibrous structure, said thermoplastic resin bonding together said fibrous structure to add sufficient internal strength and integrity to the fastener portion and anchoring of said loops to afford use of said loop fastener portion as the loop portion of a hook and loop fastener, and adhering said loop fastener portion to said substrate.

4,761,319

CLOSURE COVER

Wilfried Krause, Grunstadt, and Ute Weinheimer, Ramsen, both of Fed. Rep. of Germany, assignors to TRW United-Carr GmbH, Fed. Rep. of Germany

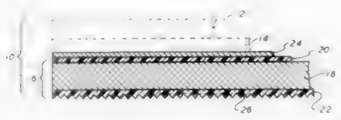
Filed Dec. 31, 1986, Ser. No. 948,238
Claims priority, application Fed. Rep. of Germany, Jan. 3, [illegible]
Int. Cl.[4] B32B 3/06
U.S. Cl. 428—99 9 Claims



1. In a closure cover member for closing an opening in a panel, such as a wall or floor panel of a motor vehicle, said member comprising a molded plastic cover plate with integrally formed holding elements extending from the cover plate for entering through the opening and engaging behind the peripheral edge of the opening, the improvement comprising:
a multiplicity of said holding elements in the form of elongated resilient arms of equal length extending perpendicular to the cover plate and located in closely spaced side-by-side aligned relationship continuously about said cover plate at a location generally corresponding to the peripheral edge of the opening to which said cover member is to be applied, each said holding element including a laterally extending integral jaw portion for engaging under the peripheral edge of the opening, the jaw portions of said holding elements being located at at least three different distances from the cover plate and at least a plurality of circumferentially spaced ones of said holding elements having jaw portions located at the same distance from the cover plate to provide a plurality of sets of said holding elements with each set including at least three separate arms having jaw portions adapted to engage at the same distance from the cover plate, the locations of said jaw portions describing a plurality of continuous curves of uniform slope extending over no more than about one-third of the periphery of the opening.

VOL
1093
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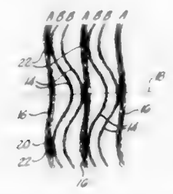
4,761,320
RELEASE MATERIAL
Joseph W. Coburn, Jr., 1650 Corporate Road West, Lakewood, N.J. 08701
Continuation of Ser. No. 808,460, Dec. 13, 1985, abandoned. This application Mar. 11, 1987, Ser. No. 24,411
Int. Cl.[4] B32B 3/30
U.S. Cl. 428—167 5 Claims



1. Improved release material for backing and releasing from a surface, comprising:
a paper substrate, a first layer of plastic film on one surface of the substrate, a second layer of plastic film on the other surface of the substrate, a release coating on the outer surface of the first layer of plastic film, and the outer surface of said second layer of plastic film being embossed to provide a plurality of outwardly extending members for engaging an adjacent surface, upon engagement with said adjacent surface, said plurality of outwardly extending members eliminating area contact between said second layer of plastic film and said adjacent surface.

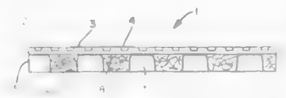
5. Improved release material for backing and releasing from a surface, comprising:
a paper substrate, a first layer of plastic film on one surface of the substrate, a second layer of plastic film on the other surface of the substrate, a release coating on the outer surface of the first layer of plastic film, and the outer surface of said second layer of plastic film provided with a plurality of outwardly extending spaced apart ridges of generally triangular cross-sectional shape with the sides thereof in cross-section narrowing outwardly to substantially a point, said points for engaging an adjacent surface, upon engagement with said adjacent surface, said plurality of points substantially eliminating area contact between said second layer of plastic film and said adjacent surface.

4,761,321
CORRUGATED WOVEN FABRIC
Clyde A. McCall, Walhalla, S.C.; Michael J. Campbell, Roswell, and William B. Dean, Cornelia, both of Ga., assignors to Chicopee, New Brunswick, N.J.
Continuation of Ser. No. 790,993, Oct. 24, 1985, abandoned, which is a continuation-in-part of Ser. No. 623,657, Jun. 22, 1984, abandoned. This application Apr. 1, 1987, Ser. No. 33,921
Int. Cl.[4] B32B 1/00
U.S. Cl. 428—176 16 Claims



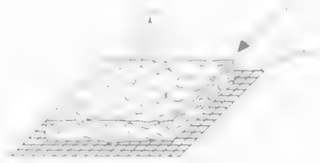
1. A high bulk, heat shrunk, corrugated fabric formed by heat treatment of a woven precursor fabric comprising low shrink fill yarns and alternating ultra low shrink and highly elastic high shrink texturized thermoplastic warp yarns, said corrugated fabric comprising substantially parallel corrugations extending along the fill direction, said corrugations formed by repeated sinuous twists of the ultra low shrink warp yarns.

4,761,322
LAMINATED FIBROUS WEB COMPRISING DIFFERENTIALLY BONDED LAYERS, AND METHOD AND APPARATUS FOR MAKING THE SAME
John M. Raley, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 7, 1985, Ser. No. 785,370
Int. Cl.[4] B32B 27/14
U.S. Cl. 428—198 22 Claims



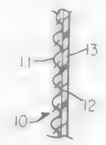
1. A laminated fibrous web, comprising:
a first fibrous layer, which has fibers thereof bonded to one another with a first, spaced-apart bonding pattern having a first bonding area, and which has a first density, as determined prior to said bonding thereof; and
a second fibrous layer, which is composed of fibers bonded to one another with a second, spaced-apart bonding pattern having a second bonding area which is less than said first pattern bonding area, said second fibrous layer having a second density, as determined prior to said bonding thereof, which is less than said first fibrous layer density;
wherein said second bonding pattern produces bonds between said first and second fibrous layers, and said first bonding pattern does not produce bonds between said first and second fibrous layers.

4,761,323
METHOD AND ARTICLE FOR THE PRODUCTION OF POROUS FIBER BATS
August Mühlratzer, Krailling; Siegfried Lassmann, Gröbenzell; Roland Bertinger, Munich; Herbert Gutwein, Pasenbach, and Renate Sanden, Hebertshausen, all of Fed. Rep. of Germany, assignors to Man Technologie GmbH, Munich, Fed. Rep. of Germany
Filed Oct. 10, 1986, Ser. No. 917,804
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1985, 3540133; Jul. 15, 1986, 3623786
Int. Cl.[4] B32B 27/14
U.S. Cl. 428—198 7 Claims



1. A method for the manufacture of a fiber bat in the form of a felt-like structure comprising the steps of placing fibers in an array constituting a bat and then so coating the fibers in the bat with a bonding material that the fibers are substantially exclusively joined with each other at crossovers thereof, the fibers in the bat being made of a material selected from the group consisting of Al_2O_3, mullite, SiO_2, B_2O_3, SiC and combinations thereof, said bonding material being selected from the group consisting of Al_2O_3, B_2O_3, SiC, ZrO_2, BN, TiO_2 and mullite.

4,761,324
ELASTIC, LAMINATED, WATER-PROOF, MOISTURE-PERMEABLE FABRIC
Leonard J. Rantenberg, West Creek Farms Rd., Sands Point, N.Y. 11050; Milton M. Gilbert, 19 Susan Ter., Waterford, Conn. 06385; James H. Wyner, 24 Holyoke St.-Apt. #2, and Daniel M. Wyner, 7 Holyoke St.-Apt. #5, both of Boston, Mass. 02138-4519
Filed Jun. 24, 1987, Ser. No. 68,907
Int. Cl.[4] B32B 3/26, 7/14
U.S. Cl. 428—198 12 Claims



1. A laminated elastic fabric comprising:
a layer of stretch material having substantial elastic qualities;
a polymer film layer having a thickness less than 1.0 mil, said film layer being breathable and water-resistant and having elastic qualities comparable to said stretch material; and
an adhesive bonding said film layer to said layer of stretch material, said adhesive being present in substantially discontinuous segments.

4,761,325
MULTILAYER CERAMIC CIRCUIT BOARD
Kazuaki Kurihara, Atsugi; Nobuo Kamehara, Isehara; Hiromitsu Yokoyama, Sagamihara; Hiromi Ogawa, Yokohama; Kishio Yokouchi, Zama; Yoshihiko Imanaka, Atsugi, and Koichi Niwa, Tama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 2, 1985, Ser. No. 762,310
Claims priority, application Japan, May 31, 1984, 59-109490
Int. Cl.[4] B32B 3/00
U.S. Cl. 428—209 20 Claims



1. A sinterable precursor material for a glass-ceramic insulating layer of a multilayer ceramic circuit board made up of copper conductors separated by glass-ceramic insulating layers, said material comprising a mixture of 10 percent to 75 percent by weight of α-alumina particles, 20 percent to 60 percent by weight of crystallizable or non-crystallizable glass which has a softening point in the range of approximately 750° C. to 900° C. and is sinterable at a temperature lower than the melting point of copper, and 5 percent to 70 percent by weight of quartz glass particles based on the total weight of the mixture.

4,761,326
FOAM COATED CSR/SURGICAL INSTRUMENT WRAP FABRIC
Charles G. Barnes, and A. Frank Baldwin, both of Greensboro, N.C., assignors to Precision Fabrics Group, Inc., Greensboro, N.C.
Filed Jun. 9, 1987, Ser. No. 59,949
Int. Cl.[4] B32B 27/04, 5/20, 5/32
U.S. Cl. 428—219 25 Claims



1. A sterilizable, water vapor permeable, bacterial barrier foam-coated medical fabric suitable for use as a medical instrument wrap composed of a nonwoven textile substrate having a continuous network of an open cell microporous, hydrophobic foam distributed among and covering substantially the entire top surface of the textile substrate and extending into the textile substrate, the network of interconnected cells forming a tortuous path from the face of the fabric to the back of the fabric and defining a bacterial barrier yet allowing steam and water vapor to pass into and out of the fabric, the fabric having a Frazier air permeability at 0.5" W.C. (INDA 70.1–70) in the range of about 50 to about 250 cfm and a bacterial filtration efficiency (mil. spec. 36954C) for a single ply of at least 60%.

11. The medical fabric of claim 1, in which the fabric contains from about 0.2 to about 0.75 ounces of foam solids per square yard of substrate and an overall basis weight (INDA 130.0–70) in the range of about 0.7 to about 3.0 ounces per square yard.

4,761,327
BIAXIALLY ORIENTED AROMATIC POLYESTER FILM
Hisashi Hamano, Sagamihara; Kinji Hasegawa, Yokohama; Yoshihiro Noumi, Sagamihara, and Hideo Katoh, Shiroyama, all of Japan, assignors to Teijin Limited, Osaka, Japan
Filed Jan. 14, 1987, Ser. No. 3,231
Claims priority, application Japan, Jan. 17, 1986, 61-6392; Jan. 20, 1986, 61-7873; Jan. 20, 1986, 61-205769
Int. Cl.[4] B32B 27/06; C08L 67/02
U.S. Cl. 428—220 17 Claims

1. A biaxially oriented film formed from an intimate mixture comprising
(I) an aromatic polyester, and
(II) 0.005 to 1.0% by weight, based on the aromatic polyester, of fine particles of a silicone resin having
(a) a structural unit in a three-dimensional polymer chain represented by the following formula (A)

$$R_xSiO_{2-x/2} \quad (A)$$

wherein R represents a hydrocarbon group having 1 to 7 carbon atoms, and x is a number of from 1 to 1.2,
(b) a volume shaped factor (f), represented by the following formula (B), of more than 0.4 but not exceeding $\pi/6$

$$f = V/D^3 \quad (B)$$

wherein V is the average volume (μm^3) of the particles and D is the average maximum particle diameter (μm) of the particle,
and
(c) an average particle diameter of 0.01 to 4 μm.

11. A magnetic recording medium comprising the biaxially

VOL 1093 ISS 1 AUG 2 1988 UMI

oriented film of claim 1 or 10 and a magnetic layer on one or both surfaces of the film.

17. The magnetic recording medium according to claim 11 wherein said biaxially oriented film has a thickness of from 1 to 5 microns.

4,761,328

PROCESS FOR PRODUCING A LOW DENSITY FOAMED POLYETHYLENE

Yong W. Shin, Sam Ho Apt. 203, Da-Dong, 725 Bang Bae Dong Gang Nam-Gu, Seoul, Rep. of Korea

Division of Ser. No. 744,747, Jun. 14, 1985. This application Oct. 8, 1987, Ser. No. 77,861

Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—220 5 Claims

1. A low density article possessing excellent buoyancy, thermal-resistance and water repellency comprising a flexible, expanded, closed-cell polyethylene sheet having a density ranging from about 0.0251 to 0.0285 g/cm^3, a buoyancy such that 300 g of the polyethylene keep more than about 130 kg of weight afloat, a water absorption of about 0.0041 g/cm^3 for a 1 mm thickness of the polyethylene and a thermal transmittance of about 6.70 w/m^{2}C. and a thermal transmission of about 52.5% for a 1 mm thickness of the polyethylene and a material covering for at least one side of the polyethylene sheet.

4,761,329

MACHINE FELT, AND A METHOD FOR MANUFACTURING SAME

Vera Hilker, and Helmut Hilker, both of Niederzier, Fed. Rep. of Germany, assignors to Thomas Josef Heimbach GmbH & Co., Düren, Fed. Rep. of Germany

Filed Sep. 23, 1987, Ser. No. 100,178

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1986, 3632386

Int. Cl.[4] D03D *13/00*

U.S. Cl. 428—222 18 Claims



1. A machine felt, in particular for papermaking machines, having the following features:

(a) the machine felt is provided with a support material extending over its entire length,

(b) the support material is in several plies over its entire extent,

(c) the individual plies consist of at least one belt of material, in particular a knit,

(d) the belt of material or at least one of the belts of material exceeds the length of the machine felt and overlaps itself while forming at least two complete plies,

(e) the plies of the support material are joined by at least one pinned fiber web, characterized by the following features:

(f) in order to form the plies (5,6) due to overlapping, the end segments (3,4) of the particular belt(s) of material (2) are folded back on the in-between, central segment (5) of these belt(s) of material (2) covering the entire machine felt (1),

(g) the, or at least one of the folding edges (9,10) on each tip side of the machine felt (1) can be joined together by coupling elements (11, 12).

4,761,330

OPTOMAGNETIC RECORDING MEDIUM

Tadao Tokushima, and Makato Shiraki, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Apr. 1, 1986, Ser. No. 846,713

Claims priority, application Japan, Apr. 3, 1985, 60-070724

Int. Cl.[4] G11B *7/24*

U.S. Cl. 428—312.8 14 Claims



1. An optomagnetic recording medium, comprising:

a base plate comprising aluminum;

an anode oxidized coat formed on said base plate, said coat having pores therein extending inwardly from an upper surface of said oxidized coat such that each said pore has an open end at said upper surface;

a first magnetic material packed in said pores of said anode oxidized coat; and

a thin film of a second magnetic material having a saturation magnetization effective to allow magnetic flux to penetrate from said first magnetic material to an upper surface of said second magnetic material, said second material covering said open end of said pores and being accessible by light emitted from a source above and spaced from said upper surface of said anode oxidized coat; said film having a thickness effective to prevent penetration of light into said oxidized coat, yet being sufficiently thin to permit anisotropy in the vertical direction and to prevent interference between magnetic fluxes from said magnetic material in adjacent pores.

4,761,331

MAGNETIC RECORDING MEDIUM HAVING A BACK COAT LAYER CONTAINING CARBON BLACK TREATED WITH FATTY ACIDS

Hiroshi Ogino; Yukio Matsumoto, both of Mito; Hiroshi Togashi, Yamagata, and Kumiko Ojima, Mito, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 28, 1986, Ser. No. 867,684

Claims priority, application Japan, May 30, 1985, 60-115396

Int. Cl.[4] G11B *5/72*

U.S. Cl. 428—323 2 Claims

1. In a magnetic recording medium which comprises a non-magnetic support, a magnetic recording layer formed on one side of the support, and a back coat layer formed on the other side of the support, said back coat layer being made of a composition comprising from 25 to 400 parts by weight of carbon black dispersed in 100 parts by weight of a resin binder, the improvement characterized in that said carbon black has a specific surface area not larger than 800 m^2/g as determined by the BET absorption method and an average size of from 0.01 to 0.05 micrometers, and said carbon black is treated, prior to dispersion in the resin binder, with a fatty acid of the formula, RCOOH, in which R represents a linear saturated or unsaturated hydrocarbon residue having from 13 to 17 carbon atoms, in such a way that said fatty acid is deposited on the carbon black in an amount of from 1 to 20 wt %.

4,761,332

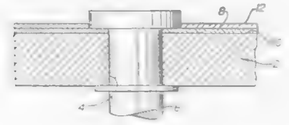
PLANARIZED CERAMIC SUBSTRATES

Kenneth L. Elias, Essex Junction; Stuart R. Martin, Bristol, and William J. Slattery, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 747,598, Jun. 24, 1985, Pat. No. 4,659,585. This application Feb. 24, 1987, Ser. No. 937,265

Int. Cl.[4] B32B *18/00, 9/00, 19/00*

U.S. Cl. 428—325 6 Claims



1. A ceramic substrate comprising:

a ceramic sheet containing oxide particles selected from the group consisting of aluminum oxide, beryllium oxide, magnesium oxide, zirconium oxide, cordierite, forsterite, mullite, and mixtures thereof; said oxide particles being bonded with a silicon bearing phase; and

an overlay of silicon nitride on said ceramic sheet preferentially deposited on said silicon bearing bonding phase.

4,761,333

STEERING WHEEL

Masahiro Takimoto; Satoshi Ohta, and Yoshio Yamazaki, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Aug. 4, 1987, Ser. No. 81,336

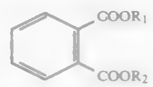
Claims priority, application Japan, Aug. 9, 1986, 61-187572

Int. Cl.[4] B62D *1/06;* B32B *27/00, 21/02*

U.S. Cl. 428—327 4 Claims



1. A steering wheel which comprises a core that is covered with a synthetic resin covering material which is overlaid with a coating film thereon, wherein said covering material is formed using an injection molding method by a resin composition that comprises 100 parts by weight of a polyvinyl chloride resin, 100 to 200 parts by weight of a phthalic acid ester based plasticizer represented by formula (I), and 10 to 40 parts by weight of an acrylonitrile-butadiene rubber·



(I)

wherein R_1 and R_2 are each an alkyl group, provided that when the total number of mols of R_1 and R_2 is 100 mol, a monomethyloctyl group is present in an amount of 10 to 60 mols, while a dimethylheptyl group is present in an amount of 30 to 70 mols.

3. The steering wheel as claimed in claim 1, wherein said coating film comprises a polyurethane based paint containing 2 to 10 wt % of nylon beads having an average particle size of 10 to 30 μm.

4,761,334

MAGNETIC RECORDING MEDIUM

Masayuki Sagoi, Kanagawa; Noritsugu Kawashima, Tokyo; Yoichiro Tanaka, and Kunio Sekine, both of Kanagawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 1, 1985, Ser. No. 750,271

Claims priority, application Japan, Sep. 21, 1984, 59-197917; Sep. 21, 1984, 59-197918; Sep. 21, 1984, 59-197919

Int. Cl.[4] G11B *5/64*

U.S. Cl. 428—332 22 Claims



1. A magnetic recording medium comprising:

a substrate;

at least one magnetic recording layer formed on a surface of the substrate, having an axis of easy magnetization in a direction essentially perpendicular to a surface of the layer thereof; and

a silicon nitrode film formed on the magnetic recording layer, the number of nitrogen atoms in the silicon nitride film being less than four thirds of the number of silicon atoms therein.

4,761,335

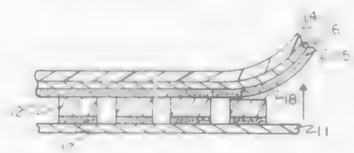
ALPHA-PARTICLE PROTECTION OF SEMICONDUCTOR DEVICES

Joseph A. Auricchio, and Paul D. Fisher, both of Anderson, S.C., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Mar. 7, 1985, Ser. No. 708,999

Int. Cl.[4] C09J *7/02;* H05K *1/00;* H01L *23/28*

U.S. Cl. 428—352 8 Claims



1. A transfer tape product to protect semiconductor devices from alpha-particles which comprises:

(a) a support film;

(b) a pressure sensitive adhesive layer on one side of the support film;

(c) at least one alpha-particle protector member formed of a plastic material capable of protecting a semiconductor device from alpha particles when adhesively bonded to it, said member being releasably bonded to the side of the pressure sensitive adhesive layer (b) opposite to that side of the adhesive (b) which is bonded to the support film (a) and said protector member being of a configuration capable of protecting the semiconductor device from the alpha-particles; and

(d) a layer of heat resistant adhesive bonded to the plastic material (c) on its side lying opposite to the side bonded to layer (b) to allow for bonding of the member (c) to the semiconductor device to be protected from the alpha-particles.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,336

POWDER COATABLE EPOXY COMPOSITION AND POST-TENSIONING CABLE COATED THEREWITH

Stephen C. Hart, Warsaw, Ind., assignor to Morton Thiokol, Inc., Chicago, Ill.

Division of Ser. No. 681,521, Dec. 14, 1984. This application Feb. 17, 1987, Ser. No. 15,241

The portion of the term of this patent subsequent to Feb. 4, 2003, has been disclaimed.

Int. Cl.[4] B32B *15/00*; D02G *3/00*

U.S. Cl. 428—379 2 Claims

1. A corrosion resistant metal cable comprising a metal cable coated with an essentially crack-free layer of a cured thermosetting powder coating which in its uncured state comprises about 80 to about 130 parts by weight of an epoxy resin or mixture of epoxy resins having an epoxide equivalent weight of at least about 2250, about 0.1 to about 3.0 parts by weight of a cure catalyst for the epoxy resin, about 0.5 to about 3.0 parts by weight of an acrylic resin and about 0.5 to about 10.0 parts by weight of a polyamide resin.

4,761,337

CATIONIC ELECTRODEPOSITABLE RESIN COMPOSITIONS CONTAINING POLYURETHANE RESIN DISPERSIONS

Matthew Gusgliardo, Bloomfield, N.J.; Tapan K. DebRoy, Novi, Mich., and John Packnat, New York, N.Y., assignors to BASF Corporation, Clifton, N.J.

Division of Ser. No. 912,753, Sep. 26, 1986, abandoned. This application Apr. 2, 1987, Ser. No. 34,140

Int. Cl.[4] B32B *27/00, 27/40*; C08L *63/02*

U.S. Cl. 428—425.8 2 Claims

1. A coated article formed by coating on an electrically conductive material coated with an electrodepositable cationic primer coating composition comprising an amine-epoxy resin adduct, a polyurethane dispersion of colloidally-sized particles in water, and a cross-linking agent, the coated article produced by initially connecting the article to a DC electric circuit to act as a cathode, immersing the article in a coating bath containing the acid salted resin composition and an anode, passing a sufficient amount of electrical power across the article for a sufficient amount of time to produce a film of the composition on the article, and then removing the article from the bath and curing the film, wherein the cured film thereby produced is durable smooth, flexible, impact-resistant and chip-resistant.

4,761,338

MAGNETIC RECORDING MEDIUM

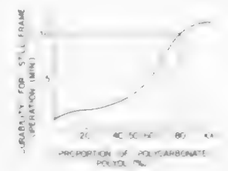
Masao Asano; Kazumasa Matsumoto, both of Tokyo; Toshio Tsuji, Hachioji, and Yoshitaka Yasufuku, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 815,878, Jan. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 626,635, Jul. 2, 1984, abandoned. This application Sep. 9, 1987, Ser. No. 96,305

Claims priority, application Japan, Jul. 2, 1983, 58-120[illegible]

Int. Cl.[4] G11B *5/702*

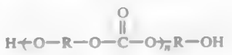
U.S. Cl. 428—425.9 13 Claims



a magnetic recording layer provided on said support, said magnetic recording layer containing

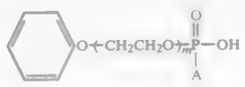
(i) magnetic particles;

(ii) a polycarbonate polyurethane resin having no ester bond and obtained by the reaction of a polycarbonatepolyol of the formula

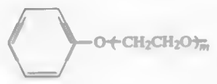


wherein R is selected from the group consisting of aliphatic hydrocarbons having 4 to 12 carbon atoms and aromatic hydrocarbons having 6 to 12 carbon atoms, and n is an integer of not greater than 50 with a polyisocyanate containing a plurality of isocyanate groups and, if necessary, a polyol; and

(iii) a dispersant represented by the formula:



wherein A is hydroxyl, —OM, or



wherein m is an integer from 1 to 30, and M is an alkali metal, or a salt of a copolymer containing a monomer unit having at least one anionic organic group, said salt of the copolymer being used for pretreatment of said magnetic particles, and

wherein said resin is present in an amount of 5 to 400 parts by weight per 100 parts by weight of said magnetic particles and said dispersant is present in an amount of 1 to 10 parts by weight per 100 parts by weight of said magnetic particles.

4,761,339

SINTERED CERAMIC ARTICLES AND METHOD FOR PRODUCTION THEREOF

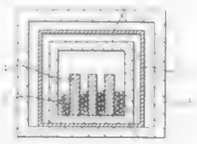
Michiyasu Komatsu, Yokohama, and Isao Ikeda, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 716,215, Mar. 26, 1985, abandoned. This application Jun. 26, 1986, Ser. No. 878,650

Claims priority, application Japan, Mar. 27, 1984, 59-58593

Int. Cl.[4] C04B *35/58*

U.S. Cl. 428—446 2 Claims



1. A sintered ceramic article having a smooth, thin reaction-formed surface layer preponderantly of silicon oxynitride (Si_2N_2O) formed on a surface of a sintered Si_3N_4 article having a density of 3.0 gr/cm^3 or more, said silicon oxynitride being a reaction product of SiO_2 and Si_3N_4 of said sintered article.

4,761,340

CERAMICS SLIDING MEMBER

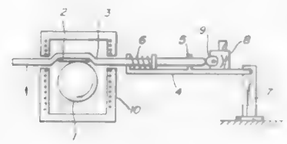
Isao Oda, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

Filed Jul. 8, 1986, Ser. No. 883,332

Claims priority, application Japan, Jul. 12, 1985, 60-152551

Int. Cl.[4] B32B *15/04*

U.S. Cl. 428—457 6 Claims



1. A ceramic sliding member comprising:

a first sliding plane formed by a silicon nitride ceramic member; and

a second sliding plane in contact with said first sliding plane, said second sliding plane being formed by a metallic member, said metallic member having depressions formed thereon, said second sliding plane being coated, at least in said depressions, with a composition of Cu and LiF.

4,761,341

TEMPORARILY BONDED CONSTRUCTIONS

Edward A. Rosiak, Lisle, and Frank A. Bozich, Clarendon Hills, both of Ill., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation of Ser. No. 743,334, Jun. 10, 1985, abandoned. This application Apr. 10, 1987, Ser. No. 37,105

Int. Cl.[4] C09J *7/02, 3/12*; B32B *27/06*

U.S. Cl. 428—512 11 Claims

1. A temporarily bonded construction comprising a plastic, paper, glass, ceramic or metal substrate attached to a paper base stock substrate utilizing a nonpressure sensitive hot melt adhesive, the adhesive consisting essentially of:

(a) 5–40% by weight of at least one A-B-A block copolymer wherein the A blocks are non-elastomeric polymer blocks which, as homopolymers have glass transition temperatures above 20° C.,and the elastomeric polymer blocks B are isoprene or butadiene which is partially or substantially hydrogenated.

(b) 95–60% by weight plasticizing oil, and

(c) 0.1 to 2% by weight of a stabilizer; wherein up to 45% by weight of the oil may be replaced by a tackifying resin provided the quantity of said resin is not sufficient to render the adhesive pressure sensitive.

4,761,342

FIBRE BOARD, A METHOD FOR MAKING IT, AND A BINDER COMPOSITION

Georg Björkaag, Åmål; Göran Embring, Väröbacka, and Karl-Gunnar Stahl, Karlstad, all of Sweden, assignors to Nova Scand Utveckling AB, Bromma, Sweden

PCT No. PCT/SE85/00116, § 371 Date Jan. 21, 1986, § 102(e) Date Jan. 21, 1986, PCT Pub. No. WO85/04130, PCT Pub. Date Sep. 26, 1985

PCT Filed Mar. 14, 1985, Ser. No. 804,645

Claims priority, application Sweden, Mar. 16, 1984, 8401467

Int. Cl.[4] B32B *21/04, 21/06*

U.S. Cl. 428—537.1 7 Claims

1. A fibre board having relatively high strength as well as high water and flame resistance, and comprising a lignin-containing fibre material and a binder; said fibre board being characterized in that the binder is derived from a binder composition consisting essentially of:

(a) 50–90 parts by weight of an alkali silicate solution;

(b) 0.5–10 parts by weight of a sulphur component selected from the group comprising: sulphur, inorganic sulphur compounds and mixtures thereof; and,



(c) 10–40 parts by weight of a metal component selected from the group comprising calcium compounds, magnesium compounds and mixtures thereof.

4,761,343

INJECTION MOLDING MANIFOLD SYSTEM HAVING BALANCED BRIDGING MANIFOLD

Jobst U. Gellert, 7A Prince Street, Georgetown, Ontario, Canada (L7G 4X5)

Continuation of Ser. No. 786,063, Oct. 10, 1985, abandoned. This application Apr. 21, 1987, Ser. No. 41,655

Claims priority, application Canada, Sep. 13, 1985, 490750

Int. Cl.[4] B29C *45/22*

U.S. Cl. 425—547 8 Claims



1. A heated balanced bridging manifold system for a multi-cavity injection molding system in which a hot runner passage conveys pressurized melt from a molding machine, through manifolds and to a plurality of gates in a cooled cavity plate, each of the gates leading to a cavity and being at an equal fluid flow distance from the molding machine, the manifold system comprising:

(a) spaced apart, separate support manifolds disposed substantially in a common plane, each support manifold having first and second support manifold opposed faces with at least one heater element embedded in at least one face and the portion of the hot runner passage which extends therethrough branches from a common support manifold inlet on the first face to a plurality of support manifold outlets on the second face and all bends in the said branches are smooth curves to streamline the flow of the presurized melt, the fluid flow distance from the common support manifold inlet to each support manifold outlet being the same, and the portion of the hot runner passage extending through each of the support manifolds has at

VOL 1093 ISS 1 AG 2 1988 UMI

least one junction whereat a pair of equal diameter downstream portions of the hot runner passage join an upstream portion of the hot runner passage, whereby an even number of support manifold outlets are provided and the pressure drop of the melt to each of the support manifold outlets on the second face is substantially equal; and

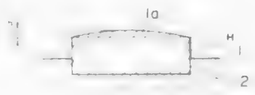
(b) a separate, single heated bridging manifold having first and second bridging manifold opposed faces with at least one heater element embedded in at least one face and the portion of the hot runner passage which extends therethrough branches from a bridging manifold common inlet on the first face to a plurality of bridging manifold outlets on the second face and all bends in the said branches are smooth curves to streamline the flow of the pressurized melt, the number of bridging manifold outlets on the second face corresponding to the number of support manifolds, and the fluid flow distance from the bridging manifold common inlet to each bridging manifold outlets being the same, said bridging manifold being releasably secured across the top of the support manifolds with the second face of the bridging manifold abutting the first faces of each of the support manifolds and the common support manifold inlet of each of the support manifolds is in alignment with one of the outlets of the bridging manifold, the portion of the hot runner passage extending through the bridging manifold having at least one junction whereat a pair of equal diameter downstream portions of the hot runner passage join an upstream portion of the hot runner passage, whereby an even number of bridging manifold outlets are provided and the pressure drop of the melt to each of the bridging manifold outlets on the second face is substantially equal, whereby pressurized melt received at the hot runner passage bridging manifold inlet on the first face of the bridging manifold is conveyed an equal distance through the hot runner passage to each of the hot runner support manifold outlets on the second face of each of the support manifolds.

4,761,344

VEHICLE COMPONENT PART

Yoshihiro Maki, Miura; Makoto Kano, Yokohama; Akira Fujiki, Yokosuka, and Ichiro Tanimoto, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 9, 1987, Ser. No. 36,485
Claims priority, application Japan, Apr. 14, 1986, 61-86252
Int. Cl.[4] B22F 3/00
U.S. Cl. 428—552 22 Claims



1. A component part of a vehicle, comprising a section having a surface slidingly contacting with an opposite member, said section being formed of a sintered alloy including a joining phase of martensite stainless steel, and a hard phase of at least one of boride and multiple boride of at least one, including iron (Fe), of elements capable of forming said at least one of boride and multiple boride, said hard phase being homogeneously dispersed in said joining phase, said sintered alloy containing boron ranging from 3.0 to 5.0% by weight and said hard phase ranging from 40 to 62% by weight, said sintered alloy having a maximum grain size of said at least one of boride and multiple boride ranging not larger than 50 μm, a Rockwell A-scale hardness number ranging not less than 80, and a deflective strength ranging not lower than 175 kgf/mm^2.

4,761,345

ALUMINUM NITRIDE SUBSTRATE

Hideki Sato; Nobuyuki Mizunoya, and Mitsuhiro Nagata, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 20, 1987, Ser. No. 16,906
Claims priority, application Japan, Feb. 20, 1986, 61-33829
Int. Cl.[4] B22F 7/02
U.S. Cl. 428—552 14 Claims

1. An aluminum nitride substrate comprising: a substrate composed of an aluminum nitride sintered product; an electroconductive metallized layer laminated on said substrate composed of titanium nitride and at least one member selected from the group consisting of molybdenum, tungsten, tantalum, scandium, yttrium, boron, aluminum, gallium, indium, thallium, titanium, zirconium, and hafnium, the rare earth elements, the actinide elements and compounds containing any of these elements; and an electroconductive protective layer laminated on said metallized layer.

4,761,346

EROSION-RESISTANT COATING SYSTEM

Subhash K. Naik, Milford, Conn., assignor to AVCO Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 672,912, Nov. 19, 1984, abandoned. This application May 20, 1986, Ser. No. 864,995
Int. Cl.[4] B32B 15/04
U.S. Cl. 428—627 44 Claims

25. A layered erosion-resistant coating to be applied to a metallic substrate without substantially any resulting loss in fatigue properties of the substrate which comprises a first ductile layer on the substrate comprising a metal selected from Group VI to Group VIII elements or the noble metal group of elements; a second layer on the first layer and comprising a substantially pure metal from Group III to Group VI elements; and a third hard erosion-resistant layer on the second layer comprising a material formed of a boride, carbide, nitride or oxide of a metal from Group III to Group VI elements, the first layer capable of retaining substrate integrity, not substantially diffusing into the substrate, and preventing diffusion of material from the third layer into the substrate.

4,761,347

PHOSPHOR AND RADIATION IMAGE STORAGE PANEL CONTAINING THE SAME

Takashi Nakamura, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Mar. 23, 1987, Ser. No. 29,382
Claims priority, application Japan, Jul. 9, 1984, 59-142010; Jul. 9, 1984, 59-142011
Int. Cl.[4] C09K 11/85
U.S. Cl. 428—691 12 Claims

1. A cerium activated rare earth complex halide phosphor having the formula (I):

$$LnX_3 \cdot aLn'X'_3 : xCe^{3+} \quad (I)$$

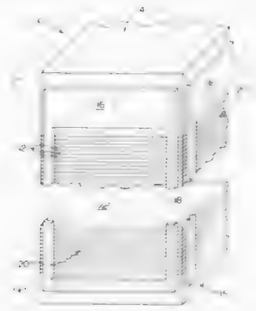
in which each of Ln and Ln′ is at least one rare earth element selected from the group consisting of Y, La, Gd and Lu; each of X and X′ is at least one halogen selected from the group consisting of F, Cl, Br and I, and $X \neq X'$; and a and x are numbers satisfying the conditions of $0.25 \leqq a \leqq 5.0$ and $0 < x \leqq 0.2$, respectively, wherein the phosphor exhibits a higher intensity of stimulated emission when excited by 632.8 mm radiation after exposure to X-rays at $80KV_p$ than said phosphor where a is less than 0.25 or greater than 5.0.

4,761,348

ELECTROLYTIC CELL STACK WITH MOLTEN ELECTROLYTE MIGRATION CONTROL

H. Russell Kunz, Vernon; Robin J. Guthrie, East Hartford, and Murray Katz, Newington, all of Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 17, 1987, Ser. No. 26,819
Int. Cl.[4] H01M 8/04, 8/24, 2/08
U.S. Cl. 429—35 11 Claims



1. In an electrolytic cell stack including a plurality of electrolytic cells with electrically conductive, electrolyte impermeable separator sheets between adjacent cells in said stack, the electrolytic cells including a porous anode member, a porous cathode member and a porous matrix for molten electrolyte disposed in the stack between major surfaces of the anode and cathode members, said stack having a negative end portion and a positive end portion at opposite ends thereof with the edge surfaces of the cells forming a first stack face for admitting a supply of oxidant gas and the edge surfaces forming a second stack face for admitting a supply of fuel gas, porous sealing means at the outer margins of the first stack face and at the outer margins of the second stack face for sealing to the supply of oxidant gas and to the supply of fuel gas, the improvement comprising:

a first porous reservoir layer in the negative end portion of said stack having an edge surface thereof exposed to the supply of oxidant gas at the first stack face and being in electrolyte communication with the sealing means for receiving and containing electrolyte migrating towards the negative end of said stack, said first porous layer being separated from all adjacent electrodes and matrices by an electrolyte impermeable, electrically conducted layer;

a second porous reservoir layer in the positive end portion of said stack having an edge surface exposed at the second stack face and being in electrolyte communication with the second sealing means for providing reserve electrolyte to fuel cells in the positive end portion of the stack, said second porous layer being separated from all adjacent electrodes and matrices by an electrolyte impermeable electrically conducted layer; and

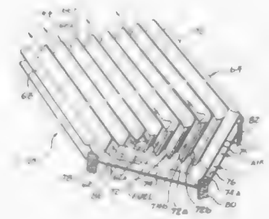
wherein said porous sealing means having a portion of increased cross-section and volume at the negative end portion of said stack and having a portion of its length of lesser volume and cross-section at the midportion of said stack for restricting molten electrolyte migration from the positive to the negative end portion of the stack.

4,761,349

SOLID OXIDE FUEL CELL WITH MONOLITHIC CORE

Charles C. McPheeters, Plainfield, and Franklin C. Mrazek, Hickory Hills, both of Ill., assignors to University of Chicago, Chicago, Ill.

Filed Mar. 19, 1987, Ser. No. 27,929
Int. Cl.[4] H01M 8/10, 2/14
U.S. Cl. 429—39 17 Claims



1. A solid oxide fuel cell for electrochemically reacting a flowing fuel gas with a flowing oxidant gas at an elevated temperature in producing a DC output voltage, said solid oxide fuel cell comprising:

a thin, generally planar, conductive sheet having a plurality of elongated corrugations along the length thereof and comprised of thin layers of anode and cathode materials and a thin layer of ion conducting electrolyte disposed therebetween, said corrugations forming first and second pluralities of spaced, parallel flow channels on respective first and second opposed surfaces of said conductive sheet, said conductive sheet further including fuel and oxidant gas inlet means at a first edge thereof, for respectively directing a fuel gas into said first flow channels and an oxidant gas into said second flow channels, and fuel and oxidant gas outlet means at a second, opposed edge of said conductive sheet for respectively directing unreacted fuel and oxidant gases out of said solid oxide fuel cell, wherein each of said elongated corrugations of said conductive sheet is comprised of a first intermediate corrugation section and second and third end corrugation sections each coupled to a respective end of said intermediate corrugation section and continuous and forming an angle therewith; and

first and second electron conducting interconnecting layers respectively disposed immediately above and below said conductive sheet and bonded to the corrugations thereof so as to confine the fuel gas and the oxidant gas within said first and second flow channels, respectively, and to direct unreacted fuel and oxidant gases flowing in said first and second flow channels out of said solid oxide fuel cell, wherein the DC output voltage is produced across said first and second interconnecting layers, wherein one of said interconnecting layers includes first and second pluralities of spaced, paralle ribs at respective ends thereof which are respectively aligned generally transverse to said second and third end corrugation sections and form therewith said fuel and oxidant gas inlet and outlet means including respective inlet and outlet channels each having a depth approximately one-half that of said first and second flow channels to permit said fuel and oxidant gas inlet channels and said fuel and oxidant gas outlet channels to be arranged in an overlapping manner.

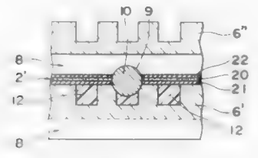
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,350

METHOD FOR PROCESSING DEFECTIVE FUEL CELLS IN FUEL CELL STACKS

Masahiro Ide, Hirakata; Nobuyoshi Nishizawa, Neyagawa; Nobuya Inoue, Habikino; Akio Inoue, Neyagawa, and Osamu Takehara, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Apr. 14, 1987, Ser. No. 38,118
Claims priority, application Japan, Apr. 18, 1986, 61-90561
Int. Cl.[4] H01M 6/50, 6/00
U.S. Cl. 429—49 5 Claims



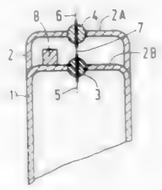
1. A method for processing defective fuel cells in fuel cell stacks of the kind comprising a number of fuel cells, bipolar plates each having process gas channels and being arranged between two neighboring fuel cells in the stack, and cooling plates arranged between every several fuel cells in the stack, the method comprising the steps of making plural holes in neighboring two bipolar plates adjacent to the defective cell, said holes extending between said bioplar plates further their both ends to their center area along the process gas channels of said bipolar plates, press-fitting corrosion-resisting conductive wire rods into said holes respectively to shortcircuit said neighboring two bipolar plates, and closing the process gas channels of said two bipolar plates with a heat-resisting sealing material at both ends of said process gas channels to stop the supply of the process gases to the defective fuel cell.

4,761,351

BATTERY COMPRISING ONE OR MORE ELECTROCHEMICAL CELLS HAVING A DOUBLE-WALLED CELL LID

Gijsbertus Voorn, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Mar. 17, 1987, Ser. No. 26,796
Claims priority, application Netherlands, Mar. 21, 1986, [illegible]
Int. Cl.[4] H01M 2/32
U.S. Cl. 429—50 13 Claims



1. A battery of one or more electrochemical cells comprising in a metal cell box having a cell lid with a leadthrough of an electrically insulating material and a leadthrough pin, which lid is hermetically sealed to said box, a negative electrode of an alkali metal, a positive electrode and an electrolyte which comprises a corrosive constituent, characterized in that the cell lid has a doublewalled construction in which a chamber is formed which is sealed from the ambient, both walls comprising a leadthrough of an electrically insulating material and a leadthrough pin.

4,761,352

ACCORDIAN FOLDED ELECTRODE ASSEMBLY

Vincent W. Bakos, and Thomas W. Martin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 17, 1985, Ser. No. 735,406
Int. Cl.[4] H01M 4/00, 2/16
U.S. Cl. 429—94 8 Claims



1. An electrochemical cell having an electrolyte and an electrode assembly comprising a lithium anode, a MnO_2 cathode and an insulating separator material between the anode and cathode, wherein

(a) the anode and the separator forms a three piece laminate comprising in the following order
  (i) a metal foil current collector support;
  (ii) a layer of lithium and
  (iii) a layer of an insulating separator material;
(b) the anode is about twice the length of the cathode;
(c) the anode is folded in half;
(d) the cathode, comprising a metal foil current collector coated on both sides with MnO_2, is sandwiched between the fold of the anode to form the electrode assembly; and
(e) the entire electrode assembly is laminated together in an accordian fold.

4,761,353

ELECTROCHEMICAL STORAGE CELL

Reinhard Knödler, Sandhausen; Werner Bansemir, Schriesheim; Stefan Meanicke, Leimen, and Günther Steinleitner, Schriesheim, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed May 1, 1987, Ser. No. 45,679
Claims priority, application Fed. Rep. of Germany, May 6, 1986, 3615238
Int. Cl.[4] H01M 10/39
U.S. Cl. 429—104 4 Claims



1. An electrochemical storage cell based on sodium and sulfur with an anode space and a cathode space, which are separated from one another by a solid electrolyte and are defined at least in some areas by a metal housing, comprising

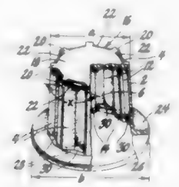
an electrode received in the cathode space and embodied as two half-shells surrounding the solid electrolyte and formed of compressed filamentary material or graphite or carbon saturated with sulfur, and an intermediate film having a thickness of substantially 50 μm applied to at least one of a surface of the solid electrolyte and surfaces of the half-shells facing the solid electrolyte, said intermediate film being formed of an anhydrous material selected from the group consisting of sodium hydroxide, molybdenum sulfide, titanium sulfide and graphite for promoting a sliding of the electrode along the surface of the solid electrolyte.

4,761,354

UNIVERSAL BATTERY POST CAP

David T. Poe, Yorktown, and Joseph T. Crouse, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 22, 1987, Ser. No. 64,534
Int. Cl.[4] H01M 2/32
U.S. Cl. 429—121 4 Claims



1. A universal, one-piece, nonconductive, protective cap adapted to engage either small or large diameter battery terminal posts, said cap comprising:

a substantially resilient, annular body comprising a corrugated wall defining a cavity for receiving a said post, said wall having a plurality of inwardly-projecting accordion pleats defining a plurality of valleys therebetween, said pleats each having a bendable ridge for engaging a said post and permitting radial expansion of said body when said cap is positioned about a said post;

tensioning means on one end of said body in part defining said cavity, said means including a hub and a plurality of substantially resilient connectors extending radially from said hub, said connectors each engaging a floor of one of said valleys and defining a plurality of first openings between said connectors at the ends of said pleats at said one end of said body; and

an integral, substantially resilient flange extending radially outwardly from the other end of said body, said flange having an inboard edge joined to said floors at the other end of said body so as to define a plurality of second openings at the other ends of said pleats;

said first and second openings serving to permit flexure of said pleats and expansion of said body to accommodate said small or large diameter posts.

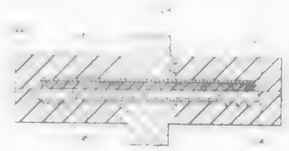
4,761,355

ELECTROCHEMICAL CELLS AND CATHODE MATERIALS

Paul M. Skarstad, Plymouth; Darrel F. Untereker, Cedar, and Donald R. Merritt, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 210,027, Nov. 24, 1980, abandoned. This application Nov. 16, 1981, Ser. No. 321,460
Int. Cl.[4] H01M 4/60
U.S. Cl. 429—213 16 Claims

1. An electrochemical cell comprising anode and cathode means in operative relationship, the cathode means comprising a cathode material comprised of, at least in part:



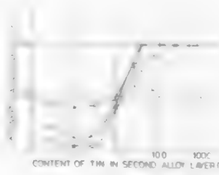
a halogen component selected from the group consisting of iodine, bromine, iodine bromide and mixtures thereof, and poly(ethylene oxide), at least in part.

4,761,356

GRID FOR LEAD STORAGE BATTERIES

Yoshihiro Kobayashi, Hiratsuka, and Tetsunari Kawase, Chigasaki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP85/00088, § 371 Date Oct. 27, 1986, § 102(e) Date Oct. 27, 1986, PCT Pub. No. WO86/05031, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 26, 1985, Ser. No. 932,506
Int. Cl.[4] H01M 4/73
U.S. Cl. 429—242 6 Claims



1. A grid for a lead storage battery which comprises a network unit formed from a lead alloy sheet of an integral combination of a first alloy layer of a lead-calcium alloy and a second alloy layer of a lead-tin alloy whose concentration of tin is higher than that in the first alloy layer, the first alloy layer and the second alloy layer being exposed at slits of the network unit.

4,761,357

ELECTROPHORETIC DEVELOPMENT OF ELECTROSTATIC CHARGE IMAGES

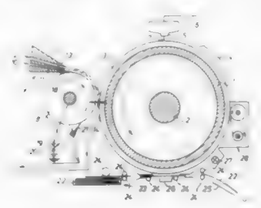
Serge M. Tavernier, Lint; Pierre R. De Roo, Schoten; Jozef L. Mampaey, Kontich, and Robert F. Janssens, Geel, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Mar. 25, 1987, Ser. No. 29,882
Claims priority, application European Pat. Off., Apr. 1, 1986, [illegible]
Int. Cl.[4] G03G 13/10
U.S. Cl. 430—32 20 Claims

1. In an electrophoretic process of developing an electrostatic charge pattern carried by a dielectric surface by progressively moving that surface through a development station and simultaneously progressively advancing a layer of liquid toner comprised of toner particles dispersed in a carrier liquid, through that station in proximity to said charge-carrying surface, and imposing an electric field bias to promote selective image-wise movement of toner particles through said liquid at said development station and deposition thereof on said charge-carrying surface in a pattern representing said electo-

VOL 1093 ISS 1 AG 2 1988 UMI

static charge pattern, the improvement wherein said layer of liquid toner contains toner particles in a concentration of from 2 to 25% by weight and including the step of applying a film of substantially toner-free non-polar liquid which is miscible with the carrier liquid of said liquid toner and which has a specific conductivity lower than 0.2 nS/m over the surface of said



liquid toner layer in such manner and at such a rate that each increment of such toner layer arrives at the development station, substantially free from turbulence and covered by an overlying film of said substantially toner-free liquid, the thickness of said overlying film being such that at the development station said film just makes contact with the charge-carrying surface.

4,761,358

ELECTROSTATOGRAPHIC ENCAPSULATED TONER

Noriyuki Hosoi, and Akira Hatakeyama, both of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 16, 1986, Ser. No. 886,550

Claims priority, application Japan, Jul. 16, 1985, 60-156526; Nov. 2, 1985, 60-246807; Mar. 28, 1986, 61-71873; Mar. 28, 1986, 61-71874

Int. Cl.⁴ G03G *9/08, 9/14*

U.S. Cl. 430—109 **13 Claims**

1. An electrostatographic encapsulated toner comprising a core material which comprises a colorant and a binder and a resin shell enclosing said core material in the form of a microcapsule, which is characterized in that

said binder is an oily binder comprising a solid polymer and an organic solvent capable of dissolving or swelling said polymer and having a boiling point of not lower than 150° C., said oily binder having a viscosity within the range of 1,000–100,000 cp at 25° C.;

said resin shell formed around the core material being selected from the group consisting of resin shells formed from interfacial polymerization, inner polymerization, and outer polymerization processes; and

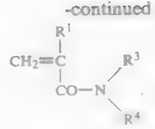
the surface of said resin shell is deposited with a polymer of at least one vinyl monomer which is selected from the group consisting of acrylonitrile, and

(I)

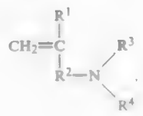


(II)

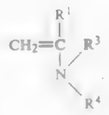
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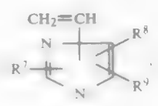
(III)



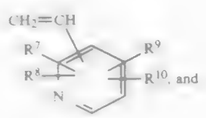
(IV)



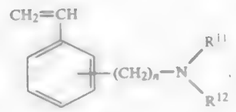
(V)



(VII)



(VIII)



(IX)

in which

R^1 is the hydrogen atom or an alkyl group having 1–4 carbon atoms;

R^2 is selected from the group consisting of an alkylene group having 1–8 carbon atoms, an alkylene oxyalkylene group having 1–8 carbon atoms, a phenylene group, a naphthylene group and a group having a combination of two or more of those groups;

R^3 and R^4 are the same as or different from each other, each of R^3 and R^4 is the hydrogen atom or a group selected from the group consisting of an alkyl group having 1–8 carbon atoms, a phenyl group, a naphthyl group and a phenylalkyl group having an alkyl group of 1–4 carbon atoms;

R^7, R^8, R^9 and R^{10} are the same as or different from each other and each is the hydrogen atom or an alkyl group having 1–10 carbon atoms; and

R^{11} and R^{12} are the same as or different from each other and each is the hydrogen atom or a group selected from the group consisting of an alkyl group having 1–10 carbon atoms, a phenyl group, a naphthyl group and a phenylalkyl group having 1–4 carbon atoms in the alkyl chain; and n is an integer of 1 to 4;

said vinyl monomer having been graft-polymerized on the surface of the shell.

4,761,359

ELECTROPHOTOGRAPHIC PROCESS USING PHOTOCONDUCTIVE CYLINDER OF SMALL DIAMETER

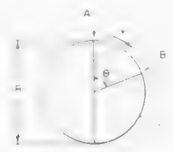
Kiyoshi Sakai, Chofu; Naoto Fujimura, Yokohama; Junichi Kishi, Tokyo, and Teigo Sakakibara, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1986, Ser. No. 912,124

Claims priority, application Japan, Sep. 30, 1985, 60-214698

Int. Cl.⁴ G03G *13/22*

U.S. Cl. 430—126 **9 Claims**



1. In an electrophotographic process employing the steps of charging, exposing, developing and transferring, which employs a cylindrical photosensitive member having an outer diameter (R) from about 25 to 40 millimeters and subject to formation of elevated residual potential thereon during repeated use, the improvement which comprises:

(a) adjusting the charging characteristic of the cylindrical photosensitive member so that upon charging said cylindrical photosensitive member to ±700 volts and exposing said cylindrical photosensitive member to a light intensity sufficient to provide a potential of ±200 volts after exposure for 50 msec, a potential of ±20 to ±150 volts after exposure for 150 msec is obtained; and

(b) selecting a value for angle θ (in radians) formed between an exposing and a developing position on said cylindrical photosensitive member with respect to the center thereof as the angle center, and a value for the circumferential speed (v) in mm/sec of said cylindrical photosensitive member to satisfy the equation:

$R\theta/V \geq 0.3$.

4,761,360

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND AND A SILVER DIAZOTATE

Kozo Sato, and Soichiro Yamamoto, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 24, 1987, Ser. No. 18,365

Claims priority, application Japan, Feb. 24, 1986, 61-38511

Int. Cl.⁴ G03C *1/72*

U.S. Cl. 430—138 **14 Claims**

1. In a light-sensitive material comprising a light-sensitive layer which contains silver halide, a reducing agent and an ethylenic unsaturated polymerizable compound provided on a support, the improvement wherein the light-sensitive layer further contains a silver diazotate having the following formula:

$$Ar—N=N—O—Ag(L)_n$$

in which Ar is an aryl group or a heterocyclic group, each of which may have one or more substituent groups; L is a ligand; and n is 0, 1 or 2.

4,761,361

METHOD FOR FORMING AN IMAGE EMPLOYING ACETYLENE SILVER COMPOUNDS

Hiroyuki Ozaki; Hiroyuki Hirai, and Ken Kawata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 11, 1986, Ser. No. 895,063

Claims priority, application Japan, Aug. 15, 1985, 60-179959

The portion of the term of this patent subsequent to Dec. 16, 2003, has been disclaimed.

Int. Cl.⁴ G03C *5/54*

U.S. Cl. 430—203 **25 Claims**

1. A method for forming an image comprising heating a light-sensitive material comprising a support having thereon at least a light-sensitive silver halide, a dye providing substance, a binder, and an acetylene silver compound, simultaneously with or after imagewise exposure thereof in the presence of water and at least one of a base and a base precursor, thereby transferring a diffusible dye thus formed or released to a dye fixing layer, wherein water is supplied to the dye-fixing layer, the light-sensitive material or both the dye-fixing layer and the light-sensitive material and then the dye-fixing material and the light-sensitive material are heated to heat develop the light-sensitive material and simultaneously transfer the diffusible dye thus formed or released to the dye-fixing layer.

4,761,362

PROCESSING A PHOTOGRAPHIC MATERIAL COMPRISING AN EMULSION LAYER PROVIDING A CONTRAST GRADATION AND ANOTHER LAYER PROVIDING A SOFT TONE GRADATION

Senzo Sasaoka; Shigesori Moriuchi; Kimitaka Kameoka; Kazunobu Katoh, and Yoshio Inagaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1986, Ser. No. 947,301

Claims priority, application Japan, Dec. 25, 1985, 60-295468; Jul. 8, 1986, 61-160306

Int. Cl.⁴ G03C *1/06*

U.S. Cl. 430—267 **11 Claims**

1. An image forming process which comprises

processing an image-wise exposed silver halide light-sensitive material having at least two silver halide emulsion layers on a support, one of said emulsion layers providing a contrasty gradation and the other of said emulsion layers providing a soft tone gradation, with a hydrazine contrast development system, a tetrazolium contrast development system or a lith development system, wherein the gamma (γ) value of the portion having a density (D) from 0.3 to 1.5 on the characteristic curve obtained is less than 10 and the gamma (γ) value of the portion having a density (D) from 1.5 to 3.0 is at least 10.

4,761,363

UV CURABLE COMPOSITIONS FOR MAKING IMPROVED SOLDER MASK COATINGS

Paul L. K. Hung, Edison, and Kenneth K. S. Tseng, Piscataway, both of N.J., assignors to M&T Chemicals Inc., Woodbridge, N.J.

Division of Ser. No. 747,090, Jun. 20, 1985. This application Apr. 18, 1986, Ser. No. 853,482

The portion of the term of this patent subsequent to Jan. 5, 2005, has been disclaimed.

Int. Cl.⁴ G03C *1/70*

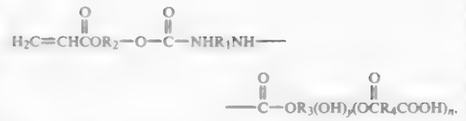
U.S. Cl. 430—284 **10 Claims**

1. A UV curable aqueous alkaline developable, urethane acrylate composition comprising:

(a) 40–70% by weight of a mixture of

(i) 20–99% by weight of a urethane acrylkate which has the following formula:

VOL 1093 ISS 1 AG 2 1988 UMI



where
R_1 is aliphatic or cycloaliphatic,
R_2 and R_3 are alkylene,
R_4 is aliphatic or cycloaliphatic, saturated or unsaturated, y is 0–4 and n is 1–5, provided that if y, is 0, then n is at least 2; and

(ii) 1–80% by weight of a urethane diacrylate obtained by reacting a urethane with 2 moles of a hydroxy alkyl acrylate;

(b) 20–50% by weight of a reactive monomer diluent, and

(c) 0.5–10% by weight of a photoinitiator.

4,761,364

SCREEN PRINTING STENCIL FOR MAKING ELASTOMER SEALING LAYERS ON FLAT GASKET PLATES AND METHOD FOR MAKING SAME

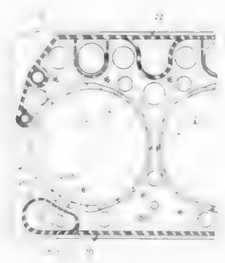
Karl Schmander, Hülben, Fed. Rep. of Germany, assignor to Elring Dichtungswerke GmbH, Fed. Rep. of Germany

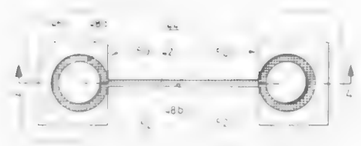
Filed Nov. 12, 1986, Ser. No. 929,744

Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616697

Int. Cl.⁴ G03F *7/12*

U.S. Cl. 430—308 **4 Claims**





1. Method of making a screen printing stencil comprising an upper or doctor blade side as well as a lower or printing side for producing a sealing layer configuration of elastomer material of varying thickness on a flat gasket plate, wherein a photoresist layer is applied to a first surface of a screen, dried and exposed through an exposure mask corresponding to the sealing layer configuration, whereupon at least one through opening for the elastomer material is produced by washing out the photoresist material, characterized in that for producing at least one first zone of the photoresist layer enclosing an opening area for producing a first sealing layer area of a greater height as well as at least one second zone of the photoresist layer enclosing an opening area for a second sealing layer area of lesser height, a first photoresist layer is produced over the entire first surface of the screen whereupon the first photoresist layer is dried, said first photoresist layer zone being then delimited all the way round by applying at least one demarcation member to the printing side of said first photoresist layer whereupon a second photoresist layer is applied to the printing side of the first photoresist layer in the first photoresist layer zone within the boundaries of the demarcation member, and that then the second photoresist layer is dried and said demarcation member is removed, whereupon said mask is applied to said two photoresist layers which are then jointly exposed through said mask, whereupon the through-opening is produced by washing out the photoresist material.

4,761,365

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS CONTAINING SPECIFIC MAGENTA DYES TO CONTROL PHOTOGRAPHIC SENSITIVITY

Mitsuga Tanaka, and Minoru Sakai, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

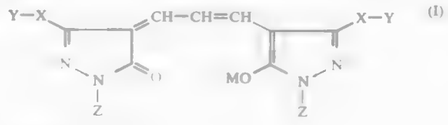
Filed Jun. 21, 1985, Ser. No. 747,491

Claims priority, application Japan, Jun. 22, 1984, 59-128834

Int. Cl.⁴ G03C *1/08, 7/26, 7/32*

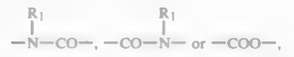
U.S. Cl. 430—555 **7 Claims**

1. A silver halide photographic light-sensitive material comprising a support base having coated thereon a photographic layer containing a magenta dye represented by formula (I):



(I)

wherein X represents



wherein R_1 represents a hydrogen atom or an alkyl group; Y and Z each represent a substituted or nonsubstituted alkyl group, a substituted or nonsubstituted aryl group, a substituted or nonsubstituted aralkyl group, wherein the substituent of the substituted alkyl group, aryl group or aralkyl group is not a sulfo group or a carboxyl group and the total of carbon atoms in Y and Z is 15 or more; and M represents a hydrogen atom or a cation, wherein the alkyl group represented by Y and Z has from 1 to 18 carbon atoms, and wherein said substituents are selected from the group consisting of a halogen atom, an alkyl group having 1 to 18 carbon atoms, an alkoxy group having 1 to 18 carbon atoms, an acylamino group, a carbamoyl group and an ester group.

4,761,366

MEDIUM, APPARATUS AND METHOD FOR CELL SEPARATION

Toru Nakajima; Masahiro Sato; Katsuhiko Nishimura, and Sumiaki Tsuru, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

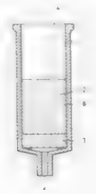
Filed Apr. 10, 1986, Ser. No. 850,186

Claims priority, application Japan, Apr. 11, 1985, 60-77222

Int. Cl.⁴ C12Q *1/24*

U.S. Cl. 435—2 **3 Claims**

1. A cell separating method which comprises bringing a cell suspension into contact with a cell separating medium formed of a packing of discrete sintered hydroxycalcium apatite bodies



having an average size of 50–2,000 μm to adsorb a cell population of interest on said cell separating medium.

4,761,367

VECTORS SUITABLE FOR DETECTION OF EUKARYOTIC DNA REGULATORY SEQUENCES

Marshall H. Edgell, Hillsborough; Steven K. Nordeen, Carrboro, and Clyde A. Hutchinson, III, Chapel Hill, all of N.C., assignors to The University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Nov. 7, 1984, Ser. No. 669,224

Int. Cl.⁴ C12Q *1/68*; C12N *15/00, 5/00*; C12P *21/00*

U.S. Cl. 435—6 **20 Claims**



1. A method for identifying eukaryotic regulatory sequences which comprises:

(a) inserting putative eukaryotic regulatory sequences into a vector which comprises:

(i) a first nucleotide sequence which provides for replication of the vector in a eukaryotic host and is the SV40 origin of replication;

(ii) a second nucleotide sequence which codes for a first product which controls replication at said first sequence, said second sequence lacks the native promoter and the expression of which is not under the control of said promoter and said first product is SV40 large T-antigen;

(iii) a cloning site on the 5'-side of said second sequence suitable for the insertion of a putative eukaryotic regulatory sequence; and

(iv) a third nucleotide sequence which codes for a second product which is different from said first product and is detectable in a positive assay, said positive assay detecting a product directly as a result of said product's presence and not indirectly as a result of a growth requirement or survivability, whereby the insertion of a eukaryotic regulatory sequence results in the amplification of the vector;

(b) transforming a first eukaroytic host with the vector of step (a);

(c) transforming a second eukaryotic host with said vector lacking the putative eukaryotic regulatory sequences; and

(d) measuring the amount of said second product produced in said first and second hosts and comparing the amounts of said second product produced, whereby an increase in the amount in said first host indicates that said sequence is a regulatory sequence.

6. A vector suitable for detecting eukaryotic regulatory sequences which comprises:

(a) a first nucleotide sequence which provides for replication of the vector in a eukaryotic host and is the SV40 origin of replication;

(b) a second nucleotide sequence which codes for a first product which controls replication at said first sequence, said second sequence lacks the native promoter and the expression of which is not under the control of said promoter and said first product is SV40 large T-antigen;

(c) a cloning site on the 5'-side of said second sequence suitable for the insertion of a putative eukaryotic regulatory sequence; and

(d) a third nucleotide sequence which codes for a second product which is different from said first product and is detectable in a positive assay, said positive assay detecting a product directly as a result of said product's presence and not indirectly as a result of a growth requirement or survivability, whereby the insertion of a eukaryotic regulatory sequence results in the amplification of the vector.

4,761,368

METHOD AND AGENTS FOR MEASURING PROTEIN AGING

Anthony Cerami, Flanders, N.J., assignor to The Rockefeller University, New York, N.Y.

Filed Jul. 15, 1986, Ser. No. 885,967

Int. Cl.⁴ G01N *53/00, 33/48*; C07K *15/00*

U.S. Cl. 435—7 **11 Claims**



1. A test kit for the detection of advanced glycosylation end products of polypeptides, comprising:

a. a predetermined amount of the labeled chromophore 2-(2-furoyl)-4(5)-(2-furanyl)-1H-imidazole or the binding partner specific thereto;

b. other reagents; and

c. directions for use of said kit.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,369

PROCESS FOR MEASURING CALCIUM LEVELS IN BIOLOGICAL FLUIDS

Gary D. Steinman, Flushing, N.Y., assignor to David Diagnostics, Inc., Astoria, N.Y.

Filed May 12, 1986, Ser. No. 862,479
Int. Cl.[4] C12Q *1/58*
U.S. Cl. 435—19 11 Claims

1. A process for measuring the calcium concentration of a biological fluid, comprising the steps of:

(a) supplying a particular amount of phosphatidylcholine (PC) and phospholipase A2 (PLA) in the presence of a buffer and a detergent in a reaction mixture for enzymatic Reaction I,

$$PC + H_2O \xrightarrow[Ca]{PLA} \text{fatty acid} + \text{lysolecithin}; \quad (I)$$

(b) measuring the rate of appearance of the products of Reaction I so that the reaction rate of PLA, being proportional to the concentration of calcium, is determined; and

(c) comparing the reaction rate of PLA in Reaction I against the reaction rate of the same in, at least, one standard of known calcium concentration, thereby determining the calcium concentration of said biological fluid.

4,761,370

METHOD FOR DETERMINING THE PRESENCE OF BACTERIA IN BODY FLUID SPECIMENS CONTAINING BACTERIAL INHIBITORS

Michael J. Caulfield, Shaker Hts., Ohio, assignor to Cleveland Clinic Foundation, Cleveland, Ohio

Filed Jun. 16, 1986, Ser. No. 874,638
Int. Cl.[4] C12Q *1/14, 1/02, 1/06*
U.S. Cl. 435—36 14 Claims

1. A method for determining the presence of bacteria in a body fluid specimen containing bacterial inhibitors, which method comprises:

a. providing a body fluid specimen containing bacterial inhibitors;

b. adding growth media for said bacteria to the body fluid specimen;

c. adding antibodies specific to the bacterial inhibitors to the body fluid specimen to neutralize the effectiveness of the bacterial inhibitors; and

d. incubating said reaction mixture and thereafter determining the presence of bacteria in the body fluid specimen.

4,761,371

INSULIN RECEPTOR

John R. Bell, San Francisco; Janakiraman Ramachandran, Palo Alto, and Axel Ullrich, San Francisco, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Feb. 12, 1985, Ser. No. 700,776
Int. Cl.[4] C12P *21/00, 19/34;* C12N *15/00;* C07H *15/12*
U.S. Cl. 435—68 13 Claims

1. Isolated DNA encoding an insulin receptor or a fragment thereof encoding a biologically active insulin receptor polypeptide.

4,761,372

MUTANT ENTEROTOXIN OF *E. COLI*

Werner K. Maas, Hastings-on-Hudson, N.Y., and Carlton L. Gyles, Guelph, Canada, assignors to New York University, New York, N.Y.

Continuation-in-part of Ser. No. 224,046, Jan. 12, 1981, abandoned. This application Dec. 19, 1984, Ser. No. 683,701
Int. Cl.[4] C12M *15/00;* C12P *19/32;* A61K *39/02;* A01N *63/00*
U.S. Cl. 435—172.1 24 Claims

1. A plasmid which comprises a gene coding for an immunologically active, conjugably transferable, non-toxin, heat-labile *Escherichia Coli* enterotoxin and a gene coding for a non-toxic, heat-stable *Escherichia Coli* enterotoxin.

4,761,373

HERBICIDE RESISTANCE IN PLANTS

Paul C. Anderson, Minneapolis, and Kenneth A. Hibberd, Falcon Heights, both of Minn., assignors to Molecular Genetics, Inc., Minnetonka, Minn.

Continuation-in-part of Ser. No. 586,802, Mar. 6, 1984, abandoned. This application Aug. 10, 1984, Ser. No. 639,321
Int. Cl.[4] C12N *15/00, 5/00;* A01H *1/24*
U.S. Cl. 435—172.3 33 Claims

1. A maize plant wherein the growth and development of said plant is resistant to inhibition by a 2-(2-imidazoline-2-yl)pyridine herbicide, or a derivative thereof at levels which normally inhibit the growth and development of said maize plant wherein said resistance is conferred by an altered acetohydroxyacid synthase resistant to inhibition by said herbicide at levels which normally inhibit the activity of an unaltered acetohydroxyacid synthase.

4,761,374

THERMALLY STABLE TRYPTOPHANASE, PROCESS FOR PRODUCING THE SAME, AND THERMALLY STABLE TRYPTOPHANASE-PRODUCING MICROORGANISM

Teruhiko Beppu, 5-2, Horisouchi 1-chome, Suganami-ku, Tokyo, and Seiban Suzuki, Tokyo, both of Japan, assignors to Teruhiko Beppu, Tokyo, Japan

Filed Jun. 6, 1986, Ser. No. 871,315
Claims priority, application Japan, Jun. 8, 1985, 60-124546
Int. Cl.[4] C12N *9/88, 1/20;* C12P *39/00;* C12R *1/07, 1/01*
U.S. Cl. 435—232 9 Claims

1. A thermally stable tryptophanase having

(1) an optimum temperature for activity at a pH of 8.0 of about 70° C., and

(2) such thermal stability that it retains at least about 80% residual activity when maintained at a temperature of 60° C. and a pH of 8.0 for 40 minutes.

4,761,375

HUMAN INTERLEUKIN-2 CDNA SEQUENCE

Steven C. Clark, Winchester, Mass., assignor to Genetics Institute, Inc., Cambridge, Mass.

Continuation of Ser. No. 608,228, May 8, 1984, abandoned. This application Apr. 7, 1986, Ser. No. 849,234
Int. Cl.[4] C12N *5/00, 15/00, 1/20, 1/00*
U.S. Cl. 435—240.2 5 Claims



1. A cDNA sequence coding for an IL-2 protein characterized by a serine at amino acid position 45, said DNA sequence comprising the sequence

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                                                    21
                                Ala  Pro  Thr  Ser  Ser  Ser  Thr  Lys  Lys
5'  GCA CCT ACT TCA AGT TCT ACA AAG AAA
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-continued

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                                                    30
Thr  Gln  Leu  Gln  Leu  Glu  His  Leu  Leu  Leu
ACA CAG CTA CAA CTG GAG CAT TTA CTT CTG

                                               40                   45
Asp  Leu  Gln  Met  Ile  Ser  Asn  Gly  Ile  Asn
GAT TTA CAG ATG ATT TCG AAT GGA ATT AAT

                                                    50
Asn  Tyr  Lys  Asn  Pro  Lys  Leu  Thr  Arg  Met
AAT TAC AAG AAT CCC AAA CTC ACC AGG ATG

                                                    60
Leu  Thr  Phe  Lys  Phe  Tyr  Met  Pro  Lys  Lys
CTC ACA TTT AAG TTT TAC ATG CCC AAG AAG

                                                    70
Ala  Thr  Glu  Leu  Lys  His  Leu  Gln  Cys  Leu
GCC ACA GAA CTG AAA CAT CTT CAG TGT CTA

                                                    80
Glu  Glu  Glu  Leu  Lys  Pro  Leu  Glu  Glu  Val
GAA GAA GAA CTC AAA CCT CTG GAG GAA GTG

                                                    90
Leu  Asn  Leu  Ala  Gln  Ser  Lys  Asn  Phe  His
CTA AAT TTA GCT CAA AGC AAA AAC TTT CAC

                                                   100
Leu  Arg  Pro  Arg  Asp  Leu  Ile  Ser  Asn  Ile
TTA AGA CCC AGG GAC TTA ATC AGC AAT ATC

                                                   110
Asn  Val  Ile  Val  Leu  Glu  Leu  Lys  Gly  Ser
AAC GTA ATA GTT CTG GAA CTA AAG GGA TCT

                                                   120
Glu  Thr  Thr  Phe  Met  Cys  Glu  Tyr  Ala  Asp
GAA ACA ACA TTC ATG TGT GAA TAT GCT GAT

                                                   130
Glu  Thr  Ala  Thr  Ile  Val  Glu  Phe  Leu  Asn
GAG ACA GCA ACC ATT GTA GAA TTT CTG AAC

                                                   140
Arg  Trp  Ile  Thr  Phe  Cys  Gln  Ser  Ile  Ile
AGA TGG ATT ACC TTT TGT CAA AGC ATC ATC

                                                   150
Ser  Thr  Leu  Thr
TCA ACA CTG ACT 3'
```

4,761,376

FACULTATIVELY ANAEROBIC MICROORGANISM FOR DEGRADING TOXIC WASTE MATERIALS

Charles F. Knips, South Bend, Ind., and Stanley A. Sojka, Buffalo, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Jul. 3, 1986, Ser. No. 881,770
Int. Cl.[4] C02F *3/34*
U.S. Cl. 435—262 10 Claims

1. A biologically pure culture of the facultatively anaerobic microorganism selected from the group consisting of *Klebsiella axytoca* strain SAL-18A and mutations thereof, said microorganism being further identified by accession number IVI-10113, said microorganism being capable of degrading haloaromatic compounds in a solid medium.

2. A process for the microbial degradation of toxic halogenated organic chemical waste into less toxic materials, which comprises applying the locus of said halogenated organic chemical waste a biologically pure culture of the microorganism selected from the group consisting of *Klebsiella oxytoca* strain SAL-18A and mutations thereof, said microorganism being further identified by accession number IVI-10113, and monitoring the removal of contaminants from the waste locus.

4,761,377

HUMAN-HUMAN HYBRID CELL LINES THAT PRODUCE ANTIBODIES AGAINST ANTIGENIC DETERMINANTS ON CANCER CELLS

Mark C. Glassy, and Charles Surh, both of San Diego, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 15, 1984, Ser. No. 661,110
Int. Cl.[4] C12N *5/00;* C07K *15/04;* A61K *39/395*
U.S. Cl. 435—240.27 4 Claims

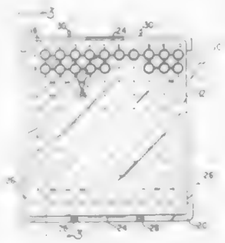
1. Human anticancer monoclonal antibodies synthesized by hybridoma cell lines produced by fusing human lymph node cells from a patient suffering from carcinoma of the vulva and a human cell line that is sensitive to growth in drug supplemented media, said anticancer monoclonal antibodies being selected from the group consisting of VLN3F10 with American Type Culture Collection No. HB 8632, VLN6H2 with American Type Culture Collection No. HB 8633, VLN5C7 with American Type Culture Collection No. HB 8634, and VLN1F9 with American Type Culture Collection No. HB 8635.

4,761,378

MICROBIOLOGICAL TESTING APPARATUS

James H. Godsey, Roseville, Calif., assignor to American Home Products Corp. (Del.), New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 472,416
Int. Cl.[4] C12M *1/20*
U.S. Cl. 435—293 12 Claims



1. In a biological test tray having a plurality of chambers for carrying out tests of microorganisms in the presence of a plurality of different reagents in which the reagents are inserted into the chambers in a solution and then lyophilized to dryness, the improvement comprising

A. a skirt around the periphery of the tray whereby a plurality of said trays may be stacked in a lyophilizer without closing said chambers and,

B. an orifice formed in at least two sides of said skirt whereby evacuation of sublimed moisture is enhanced.

4,761,379

BIOLOGICAL SPECIMEN COLLECTION DEVICE

Edward L. Williams, West Milford; Larry A. Franchore, Sparta, both of N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 9, 1984, Ser. No. 639,279
Int. Cl.[4] C12M *1/24*
U.S. Cl. 435—296 35 Claims

18. A biological specimen collection device comprising:

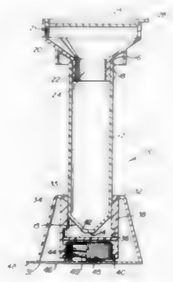
a specimen receptacle having a closed first end and an open second end;

removable conduit means for introducing a biological specimen into the receptacle connected to the second end of said receptacle;

base means for removably receiving the first end of the receptacle for supporting same in a substantially vertical position;

VOL 1093 ISS 1 AG 2 1988 UMI

cap means removably connected to said base means, said cap means adapted to provide a liquid seal between the cap means and the open second end of said receptacle; and



means associated with the base means for maintaining the cap means in a protective environment prior to use of the device and for permitting access to the cap means for capping the open end of the receptacle with its contents.

4,761,380

FERMENTATION CELL FOR CONTINUOUS OPERATION

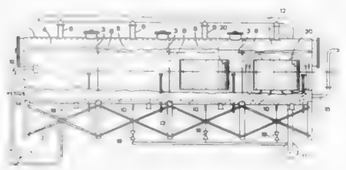
Pierre Desmous, Niveiles, and Philippe Mullier, Reves, both of Belgium, assignors to Abay S.A., Brussels, Belgium

Filed Aug. 5, 1986, Ser. No. 893,279

Claims priority, application European Pat. Off., Aug. 5, 1985, 85201267.3

Int. Cl.[4] C12M *1/04*

U.S. Cl. 435—313 12 Claims



1. Fermentation apparatus for subjecting a liquid to the action of microorganisms that form cell masses or are fixed on solid supports in said apparatus, wherein said liquid is circulated continuously from an inlet pipe towards an outlet pipe, comprising (1) a closed cell having an approximately horizontal primary axis, said cell being divided into a plurality of chambers by solid partitions positioned vertically at predetermined intervals in said cell, wherein at least some of said partitions are each provided at a predetermined height with an aperture allowing liquid to pass through the partition; and (2) evacuation means for evacuating gas of said chambers.

4,761,381

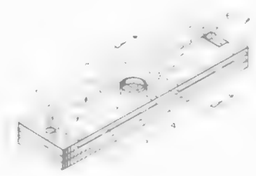
VOLUME METERING CAPILLARY GAP DEVICE FOR APPLYING A LIQUID SAMPLE ONTO A REACTIVE SURFACE

Joel M. Blatt, Granger; Robert Heiland, Goshen; James R. Morris, South Bend; Jerry Pugh, Elkhart, and Frank W. Wogoman, South Bend, all of Ind., assignors to Miles Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 777,273, Sep. 18, 1985, abandoned. This application Feb. 26, 1987, Ser. No. 20,185

Int. Cl.[4] G01N *21/78, 33/52*

U.S. Cl. 436—165 36 Claims



1. A flow metering capillary device for controlled fluid flow of test liquid comprising oppositely disposed top and bottom surface layers defining therebetween a capillary zone of intended liquid transport of a test liquid, said top and bottom surface layers being spaced apart at a distance no greater than which will maintain a capillary flow of said test liquid therebetween and wherein said capillary zone is divided into a sample test chamber containing interactive material capable of reaction with a component of said test liquid to provide a detectable response and an overflow chamber for excess test liquid,

an overflow proportioning channel located between said sample test chamber and said overflow chamber which functions to permit overflow of test liquid from the sample test chamber to the overflow chamber and as a capillary lock to break connection between test liquid in the sample chamber and test liquid in the overflow chamber and which prevents backflow of the test liquid from the overflow chamber to the sample chamber, and

means defining a sample application port for introduction of said test liquid into said capillary zone, said sample application port being in communication with said sample test chamber and contiguous to said overflow proportioning channel.

36. A method for introducing a liquid into a test device comprising the steps of supplying a liquid to an application port of said test device which directs the fluid to a capillary channel that further directs said liquid into a reaction chamber containing interactive material capable of reacting with a component of said liquid to provide a detectable response, directing remaining fluid in excess of the volume of said reaction chamber into a second capillary channel arranged to direct said remaining liquid into an overflow chamber that functions to prevent said liquid back-flow from said overflow chamber into said reaction chamber, said capillary channels being sized to maintain a capillary flow of said liquid and said sample application port being in communication with said sample chamber and contiguous to said second capillary channel.

4,761,382

IMMUNOLOGICAL PROCEDURE FOR DETECTING OR QUANTIFYING SUBSTANCES

James S. Woodhead, Gwent, and Ian Weeks, Cardiff, both of United Kingdom, assignors to The Welsh National School of Medicine, Cardiff, United Kingdom

Continuation of Ser. No. 529,751, Sep. 6, 1983, abandoned. This application Feb. 5, 1987, Ser. No. 13,215

Claims priority, application United Kingdom, Sep. 10, 1982, [illegible]

Int. Cl.[4] G01N *33/536, 33/542*

U.S. Cl. 436—536 1 Claim



1. In a method of quantifying a substance of biological interest by a homogeneous immunoassay, in which a first component of an immune reaction in the form of an antigen, hapten, or antibody, is linked with one or more components of a chemiluminescent reaction, and the corresponding component of the immune reaction is complexed therewith to cause entropic and/or enthalpic changes in a subsequent light emitting reaction characterized by the formation of an electronically excited state and the simultaneous decay of said electronically excited state according to the respective equations

$$A+B \rightarrow C$$

$$C \rightarrow D;$$

the improvement comprising measuring the rate of change of the intensity of light emission of the light emitting reaction from the said complexed labelled component, only during the period when the intensity of emission therefrom is rising, thereby to determine said rate of change only when said formation of an electronically excited state predominates over the decay thereof, reacting the uncomplexed labelled component with its corresponding component in the immune reaction, measuring the rate of change of the intensity of light emission of the light emitting reaction of the uncomplexed labelled component only during the period when the intensity of emission therefrom is rising, thereby to determine the latter said rate of change only when said formation of an electronically excited state predominates over the decay thereof, and mathematically processing and comparing the said measurements to quantify the substance of interest.

4,761,383

METHOD OF MANUFACTURING AVALANCHE PHOTO DIODE

Yuichi Matsushima, Tokorozawa; Kazuo Sakai, and Shigeyuki Akiba, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 774,301, Sep. 10, 1985, abandoned, which is a continuation of Ser. No. 421,801, Sep. 23, 1982, abandoned. This application Apr. 30, 1987, Ser. No. 47,606

Claims priority, application Japan, Sep. 28, 1981, 56-152048

Int. Cl.[4] H01L *31/18*

U.S. Cl. 437—3 3 Claims

1. A method for the manufacture of an avalanche photodiode, comprising the steps of: forming in sequence, on a semiconductor substrate of a first conductivity type, at least a first semiconductor layer of the first conductivity type and serving as a light absorbing layer, a second semiconductor layer of the first conductivity type having a larger forbidden band width and forming a hetero boundary with said first layer, and a dummy layer of the first conductivity type; forming, by diffusion, a ring-shaped region of the second conductivity type to extend through the dummy layer down to the second semiconductor layer, the ring-shaped region being used as a guard ring;



removing the dummy layer; forming, by diffusion, a light receiving region of the second conductivity type constituting a pn junction in the second semiconductor layer inside the ring-shaped region, making the distances from said hetero boundary between the first semiconductor layer and the second semiconductor layer to the diffusion front of the guard ring and to the pn junction serving as the light receiving region substantially equal to each other; and providing electrodes on the substrate and the guard ring.

4,761,384

FORMING RETROGRADE TWIN WELLS BY OUTDIFFUSION OF IMPURITY IONS IN EPITAXIAL LAYER FOLLOWED BY CMOS DEVICE PROCESSING

Franz Neppl, Munich; Erwin Jacobs, Vaterstetten; Josef Winnerl, Landshut, and Carlos-Alberto Mazure-Espejo, Kirchseeon, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,377

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1986, 3619506

Int. Cl.[4] H01L *21/265*

U.S. Cl. 437—029 16 Claims

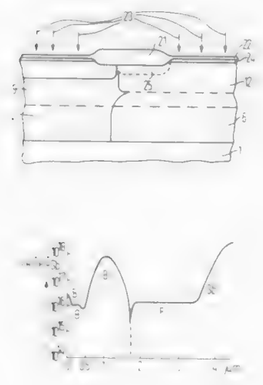
1. A method for the manufacture or complementary MOS field effect transistor circuits which comprises:

providing an n^+-doped or p^+-doped silicon substrate having a first n^--doped or p^--doped epitaxial layer, respectively, thereon,

implanting a comparatively high dosage of dopant into said first epitaxial layer to form highly doped buried layers,

VOL 1093 ISS 1 AG 2 1988 UMI

depositing a second epitaxial layer over said highly doped layer, and



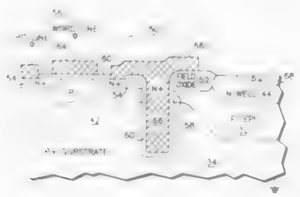
generating n-doped or p-doped wells by diffusion out from said highly doped epitaxial layer into said second epitaxial layer.

4,761,385

FORMING A TRENCH CAPACITOR

James R. Pfiester, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 10, 1987, Ser. No. 13,096
Int. Cl.[4] H01L *29/93*
U.S. Cl. 437—52 4 Claims



1. A process for forming a trench capacitor, comprising:

providing a doped semiconductor substrate, relatively heavily doped with an impurity of a first conductivity type;

providing a doped layer of semiconductor material on the semiconductor substrate, where the doped layer is relatively lightly doped with an impurity of the first conductivity type;

providing a localized outdiffusion region extending from the doped semiconductor substrate into the doped layer of semiconductor material, where the localized outdiffused region is relatively heavily doped with the same impurity of the doped semiconductor substrate and the source of the impurity is the doped semiconductor substrate;

providing a trench within the doped layer of semiconductor material extending into the localized outdiffusion region;

providing a thin layer of dielectric material on the trench; and

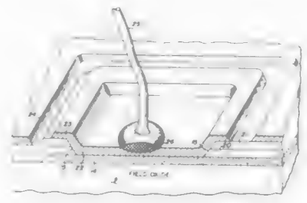
providing a region of conductive material on the layer of dielectric material in the trench.

4,761,386

METHOD OF FABRICATING CONDUCTIVE NON-METALLIC SELF-PASSIVATING NON-CORRODABLE IC BONDING PADS

Matthew S. Buynoski, Palo Alto, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 663,653, Oct. 22, 1984, Pat. No. 4,622,576.
This application Jul. 21, 1986, Ser. No. 888,553
Int. Cl.[4] H01L *21/66*
U.S. Cl. 437—203 6 Claims



1. In the process for fabricating the bonding pads in monolithic silicon integrated circuit devices located in a wafer wherein the metal bonding pads have been established and overcoated with a first insulating passivation layer that has openings located over the centers of the bonding pads, the steps comprising:

depositing a second passivation layer on said wafer, said second passivation layer being composed of a conductive material selected from the group consisting of doped polycrystalline silicon and metal silicide; and

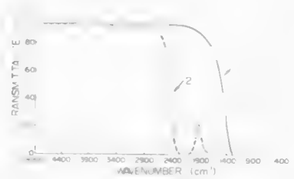
etching a moat in said second passivation layer around each bonding pad outside the confines of said opening in said first passivation layer.

4,761,387

FLUORIDE GLASS

Minoru Tokida, Akishima; Tetsuro Izumitani, Hino; Toshiharu Yamashita, Hachioji, and Kiyotaka Miura, Akishima, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Feb. 27, 1987, Ser. No. 19,618
Claims priority, application Japan, Feb. 28, 1986, 61-43065
Int. Cl.[4] C03C *3/32, 4/10, 13/04*
U.S. Cl. 501—40 4 Claims



1. A fluoride glass consisting essentially of AlF_3, ZrF_4 and/or HfF_4, and at least one compound selected from the group consisting of CaF_2, SrF_2 and BaF_2, the compositional ratios of said components in mol% being 20–45% of AlF_3, 0.5–25% of ZrF_4 and/or HfF_4, 0–42% of CaF_2, 0–25% of SrF_2 and 0–25% of BaF_2, the total content of CaF_2, SrF_2 and BaF_2 being 20–70%.

4,761,388

IN ORGANIC FIBERS CONTAINING FINE CRYSTALS OF ALN AND AL_2O_3 AND PROCESS FOR THEIR PRODUCTION

Yasuo Oguri; Mitsuru Awata, both of Tokyo, and Hozumi Endo, Fuzisawa, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Sep. 3, 1986, Ser. No. 903,142
Claims priority, application Japan, Sep. 3, 1985, 60-194190
Int. Cl.[4] C04B *35/58, 35/10*
U.S. Cl. 501—95 23 Claims



6. A process for producing inorganic fibers composed essentially of fine crystals of an aluminum compound and containing at least 10% by weight of aluminum nitride, said process comprising:

(a) spinning a viscous solution comprising an aluminum compound and an organic polymer compound to obtain precursor fibers in which the atomic ratio of organic carbon to aluminum is at least 0.5;

(b) heating said precursor fibers at a temperature of at least 1,000° C. in a non-oxidizing atmosphere comprising a gas selected from the group consisting of nitrogen and ammonia to convert at least part of said aluminum compound in said precursor fibers to aluminum nitride; and

(c) obtaining inorganic fibers composed essentially of fine crystals of an aluminum compound and containing at least 10% by weight of aluminum nitride, said fibers having a diameter of from 2 to 20 micrometers and a length to diameter ratio of at least 50 wherein said aluminum nitrate, aluminum acetate, and aluminum alkoxide, alumina, or an aluminum oxychloride.

4,761,389

PROCESS FOR PREPARING CERAMIC MATERIALS WITH REDUCED CARBON LEVELS

James A. Rabe, Midland, and Duane R. Bujalski, Monitor Township, Bay County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 1, 1985, Ser. No. 717,354
Int. Cl.[4] C04B *35/52, 35/58*
U.S. Cl. 501—95 29 Claims

1. A process for preparing a ceramic material with reduced carbon level comprising

(A) heating a silicon-containing preceramic polymer at a temperature of about 550°–800° C. in an ammonia-containing atmosphere for a time sufficient to reduce the carbon level of the silicon-containing preceramic polymer wherein said ammonia-containing atmosphere contains 0–99 volume percent inert atmosphere and 1–100 volume percent ammonia and then

(B) heating the material formed in step (A) to a temperature of 900–1500° C. in an inert atmosphere, vacuum, or in the presence of ammonia gas until a ceramic material with reduced carbon level is obtained.

4,761,390

OPTICALLY TRANSPARENT YTTRIUM OXIDE

Tom Hartnett, Nashua, N.H.; Michael Greenberg, Natick, and Richard L. Gentilman, Acton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 2, 1987, Ser. No. 10,247
Int. Cl.[4] C04B *35/50*
U.S. Cl. 501—152 25 Claims



1. A body comprising at least 99.9% yttrium oxide having a density of at least 99% of theoretically density, a sample of said body having an in-line transmission of at least 73%, over a wavelength range of 2–5 microns with said sample having a thickness of 0.375 inches.

4,761,391

DELAMINATED CLAYS AND THEIR USE IN HYDROCARBON CONVERSION PROCESSES

Mario L. Occelli, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 30, 1986, Ser. No. 880,313
Int. Cl.[4] B01J *21/16*
U.S. Cl. 502—63 34 Claims

1. A process for preapring a delaminated clay having an X-ray diffraction pattern which does not contain a first order reflection, which process comprises:

(a) reacting a natural or synthetic swelling clay with a reactant selected from the group consisting of colloidal silica particles, colloidal alumina particles, colloidal titania particles, colloidal chromia particles, colloidal tin oxide particles, colodial antimony oxide particles, cationic molybdenum clusters, cationic tungsten clusters, cationic nickel clusters, cationic cobalt clusters and mixtures thereof to form a flocculated reaction product, said swelling clay being comprised of particles at least about 20 percent of which have a length-to-width ratio greater than about 2.0 and a length-to-thickness ratio greater than about 5.0 and wherein said particles are comprised of platelets; and

(b) drying said floccculated reaction product in the presence of air to form said delaminated clay having an X-ray diffraction pattern which does not contain a first order reflection.

4,761,392

CATALYST SYSTEM FOR POLYMERIZATION OF OLEFINS

Akinobu Shiga, Koganei; Toshio Sasaki, and Junpei Kojima, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Division of Ser. No. 725,499, Apr. 22, 1985, Pat. No. 4,645,808.
This application Nov. 12, 1986, Ser. No. 929,511
Claims priority, application Japan, Apr. 26, 1984, 59-85597
The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.
Int. Cl.[4] C08F *4/64, 10/00*
U.S. Cl. 502—126 9 Claims

1. A catalyst system for polymerization of olefins which comprises:

(A) a hydrocarbyloxy group-containing solid catalyst com-

VOL 1093 ISS 1 AG 2 1988 UMI

ponent which is prepared by reducing a titanium compound represented by the general formula $Ti(OR^1)_nX_{4-n}$, wherein R^1 is a C_1–C_{20} hydrocarbon radical, X is halogen, and n is a number defined as $0<n\leqq4$, with an organoaluminum compound represented by the general formula $AlR^2_mY_{3-m}$, wherein R^1 is a C_1–C_{20} hydrocarbon radical, Y is halogen, and m is a number defined as $1\leqq m\leqq3$, subjecting the reduction product, which is a hydrocarbyloxy group-containing solid insoluble in hydrocarbon solvents and in which the hydrocarbyloxy group content is 0.3 to 2.5 moles per mole of titanium atoms, to a preliminary ethylene polymerization treatment, and treating the resultant solid in a state of slurry in a hydrocarbon solvent with an ether compound and titanium tetrachloride at a temperature of 30° to 100° C., and

(B) an organoaluminum compound.

4,761,393

METHOD FOR PLACING A CATALYTICALLY ACTIVE ALKALI METAL ON A CATALYST SUPPORT

Marc O. Baleiko, Naperville, and Edward F. Rader, Wheaton, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Jul. 27, 1987, Ser. No. 78,374

Int. Cl.⁴ B01J *31/04, 21/08, 23/04*

U.S. Cl. 502—170 8 Claims

1. A method for preparing an alkali metal ion-bearing particulate siliceous catalyst suitable for enhancing the vapor-phase condensation of a gaseous, saturated carboxylic acid with formaldehyde, which method comprises:

providing a bed containing a particulate siliceous catalyst support;

providing a gaseous carrier stream containing at least said saturated carboxylic acid;

introducing into said gaseous carrier stream a volatile alkali metal compound to produce a gaseous admixture containing said gaseous carboxylic acid and said volatile alkali metal compound; and

intimately contacting said admixture and said bed while maintaining the vapor-phase condensation reaction conditions in said bed for a time period sufficient to deposit at least some of the alkali metal present in said feed stream onto the thus contacted catalyst support.

4,761,394

ETHYLENE OXIDE CATALYST AND PROCESS FOR PREPARING THE CATALYST

Ann M. Lauritzen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 31, 1986, Ser. No. 926,026

Int. Cl.⁴ B01J *21/04, 23/04, 23/36, 23/50*

U.S. Cl. 502—348 122 Claims

1. An ethylene oxide catalyst for the vapor phase production of ethylene oxide from ethylene and oxygen comprising a catalytically effective amount of silver, a promoting amount of alkali metal and a promoting amount of rhenium supported on a suitable support having a surface area ranging from about 0.05 to about 10 m^2/g. reaction conditions with the same combination of silver and support and none or one of the promoters selected from rhenium and alkali metal.

4,761,395

PROCESS AND COMPOSITION FOR PURIFYING ARSINE, PHOSPHINE, AMMONIA, AND INERT GASES TO REMOVE LEWIS ACID AND OXIDANT IMPURITIES THEREFROM

Glenn M. Tom, New Milford, and Duncan W. Brown, Wilton, both of Conn., assignors to Advanced Technology Materials, Inc., New Milford, Conn.

Filed Mar. 24, 1987, Ser. No. 29,632

Int. Cl.⁴ B01J *20/04, 20/16, 20/22*

U.S. Cl. 502—401 19 Claims

1. A scavenger, having utility for purifying a gaseous mixture comprising (i) a primary component selected from one or more members of the group consisting of arsine, phosphine, ammonia, and inert gases, and (ii) impurities selected from one or more members of the group consisting of Lewis acids and oxidants, said scavenger comprising:

(a) a support having a surface area in the range of from about 50 to about 1000 square meters per gram of support; and

(b) associated with, but not covalently bonded to, said support, an anion which is reactive to effect the removal of said impurities from said gaseous mixture, said anion being selected from one or more members of the group consising of:

(1) carbanions whose corresponding protonated compounds have a pK_a value of from about 22 to about 36; and

(2) anions formed by reaction of said carbanions with the primary component of said mixture.

4,761,396

HEAT-SENSITIVE RECORDING MATERIAL

Nobuo Kanda, Hirakata; Kazuko Hirahara, Amagasaki, and Mitsuru Kondo, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1987, Ser. No. 11,101

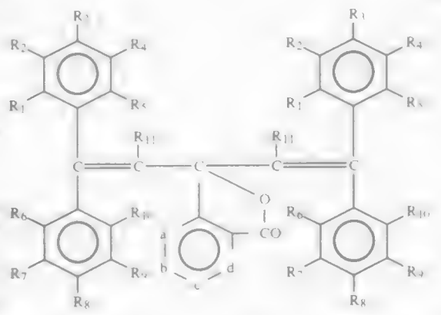
Claims priority, application Japan, Feb. 12, 1986, 61-28098; Jun. 24, 1986, 61-147775

Int. Cl.⁴ B41M *5/18*

U.S. Cl. 503—209 11 Claims

1. In a heat-sensitive recording material comprising a colorless or pale-colored basic dye and an electron accepting reactant material which is reactive with the basic dye to form a color when contacted therewith, and comprising at least one of phthalide derivatives represented by the formula [I] as the basic dye, the heat-sensitive recording material characterized in that at least one compound selected from the group consisting of a fluorene derivative of the formula [II] and a p-phenylenediamine derivative of the formula [III] is further contained in the recording material.

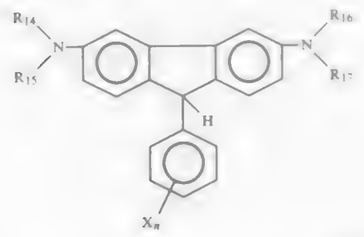
[I]



wherein R_1 to R_{10} are each hydrogen atom; halogen atom; nitro; substituted or unsubstituted, saturated or unsaturated alkyl; substituted or unsubstituted cycloalkyl; substituted or unsubstituted alkoxyl; substituted or unsubstituted acyloxy; substituted or unsubstituted aryl; substituted or unsubstituted aralkyl; substituted or unsubstituted phenoxy; substituted or unsubstituted thioalkoxyl; or $—N(R_{12})(R_{13})$, R_{12} and R_{13} being each hydrogen atom; substituted or unsubstituted, saturated or unsaturated alkyl; substituted or unsubstituted cycloalkyl; substituted or unsubstituted aryl; substituted or unsubstituted aralkyl; tetrahydrofurfuryl; or substituted or unsubstituted acyl, R_{12} and R_{13} may form a heteroring together therewith or with an adjacent benzene ring, R_{11} is hydrogen atom or lower alkyl, a, b, c and d represent carbon atoms and one or two of them may be nitrogen atom, the carbon atom may have a substituent selected from the group consisting of hydrogen

atom; halogen atom; alkyl; alkoxyl; substituted or unsubstituted amino; or nitro, a—b, b—c or c—d bond may form an another aromatic ring,

[II]



wherein R_{14}, R_{15}, R_{16} and R_{17} are each C_1~C_8 saturated alkyl; C_5~C_8 cycloalkyl; C_3~C_8 alkoxyalkyl; aryl unsubstituted or substituted with halogen atom, C_1~C_4 saturated alkyl or C_1~C_4 alkoxyl; or aralkyl unsubstituted or substituted with halogen atom, C_1~C_4 saturated alkyl or C_1~C_4 alkoxyl; R_{14} and R_{15}, or R_{16} and R_{17} may form a heteroring together therewith or with an adjacent benzene ring, X is hydrogen atom; halogen atom; C_1~C_4 saturated alkyl; C_1~C_4 alkoxyalkyl; or $—N(R_{18})(R_{19})$, R_{18} and R_{19} are each same as R_{14}, R_{15}, R_{16} or R_{17}, n is an integer of 1 to 4,

[III]



wherein R_{20} and R_{21} are each C_1~C_{10} saturated alkyl; C_3~C_9 unsaturated alkyl; C_5~C_8 cycloalkyl; 3-methacryloyloxy-2-hydroxypropyl; or aralkyl, aryl or arylsulfonyl unsubstituted or substituted with halogen atom, C_1~C_4 saturated alkyl or C_1~C_4 alkoxyl.

4,761,397

MICROCAPSULE SHEET FOR PRESSURE-SENSITIVE COPYING

Shunsaku Higashi; Shojiro Sano, and Keiso Saeki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 14, 1986, Ser. No. 839,389

Claims priority, application Japan, Mar. 15, 1985, 60-51648

Int. Cl.⁴ B41M *5/16*

U.S. Cl. 503—214 6 Claims

1. A microcapsule sheet for pressure-sensitive copying which comprises a base paper having thereon a layer comprising

(a) microcapsules containing color former and

(b) a styrene-butadiene series polymer latex having an oil swelling degree with respect to diisopropylnaphthalene of at least 68% as a binder on a base paper.

4,761,398

METHOD OF INDUCING BIRDS TO MOLT

Frank W. Edens, Raleigh, and James P. Thaxton, Apex, both of N.C., assignors to Embrex, Inc., Raleigh, N.C.

Filed Aug. 18, 1986, Ser. No. 897,749

Int. Cl.⁴ A61K *37/43; C07K 7/20*

U.S. Cl. 514—15 22 Claims

1. A method of inducing an egg laying hen to molt, comprising administering to said egg laying hen a Luteinizing Hormone Releasing Hormone (LHRH) receptor ligand in an amount and for a time effective to cause the hen to stop laying eggs and drop its feathers.

4,761,399

DIPEPTIDE COMPOUNDS HAVING PHARMACEUTICAL ACTIVITY AND COMPOSITIONS CONTAINING THEM

Alberto Pilotto; Mario Portelli, both of Vicenza; Angelo Carenzi, Busto Arsizio, and Davide Della Bella, Milan, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

PCT No. PCT/EP85/00543, § 371 Date Aug. 11, 1986, § 102(e) Date Aug. 11, 1986, PCT Pub. No. WO86/02353, PCT Pub. Date Apr. 24, 1986

PCT Filed Oct. 16, 1985, Ser. No. 874,179

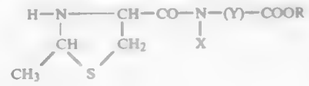
Claims priority, application Italy, Oct. 16, 1984, 23173 A/84

Int. Cl.⁴ C07D *277/06;* **A61K** *31/41*

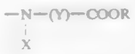
U.S. Cl. 514—19 8 Claims

1. A compound of formula

(I)



wherein the group



represents the residue of a natural amino acid selected from the group consisting of glycine, alanine, beta-alanine, phenylalanine, isoleucine, methionine, proline, aspartic acid and arginine; R represents a hydrogen atom or a C_1–C_4 alkyl; and their acid-addition salts with pharmaceutically acceptable organic or inorganic acids.

4,761,400

LAXATIVE COMPOSITION BASED ON LACTULOSE AND ITS PREPARATION PROCESS

Bernard J. M. Doat; Jean-Francois J. Letavernier, both of Angers; Gilbert G. Aubard, Palaiseau; Jean B. Llull, Morsang sur Orge; Alain P. Calvet, Versailles, and Jean-Louis Junien, Paris, all of France, assignors to Jouveinal S.A., Paris, France

Filed Jan. 6, 1986, Ser. No. 816,617

Claims priority, application France, Jan. 15, 1985, 85 00528

Int. Cl.⁴ A23L *1/236;* **A61K** *31/70*

U.S. Cl. 514—53 17 Claims

15. A lactulose-based laxative composition comprising (a) 35 to 45 weight percent lactulose, (b) 40 to 55 weight percent water, (c) a pectinocalcium system in an amount effective to impart to said composition a texture of jelly whereby said composition has a viscosity, measured on a Brookfield viscosimeter, at 20° C., between 15,000 and 30,000 centipoises, and a refractive index at 20° C. between 1.430 and 1.445 and (d) a pH-adjusting agent in an amount effective to impart to the composition a pH ranging from 3 to 4.

4,761,401

OLIGOSACCHARIDES

John R. Couchman, Birmingham, Ala., and Walter T. Gibson, Wellingborough, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jul. 29, 1986, Ser. No. 891,940

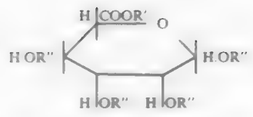
Claims priority, application United Kingdom, Aug. 1, 1985, 8519416

Int. Cl.⁴ C07H *1/00;* **A61K** *31/70, 31/72*

U.S. Cl. 514—53 36 Claims

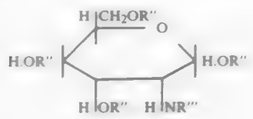
1. An esterified oligosaccharide including at least one esterified disaccharide unit consisting of a uronic acid residue having the structure:

VOL 1093 ISS 1 AG 2 1988 UMI



(2a)

and a hexosamine residue having the structure:



(2b)

where
R′ is C_3 to C_{10} alkyl or



R″ is —H, C_1 to C_4 alkyl, $—CO(CH_2)_mCH_3$, $—SO_3M$
R‴ is —H, $—CO(CH_2)_mCH_3$, or $—SO_3M$
M is —H, or a metallic or organic cation
n is 0 or an integer of from 1 to 7
m is 0 or the integer 1 or 2
the groups designated R″ being the same or different, one R″ group from each pyranose ring structure being linked by a glycosidic linkage having the configuration α-1,3; α-1,4; β-1,3; or β-1,4; and the —COOR′, $—CH_2OR''$ and —OR″ groups being of either configuration with respect to the pyranose rings;
provided that when the esterified oligosaccharide is an esterified disaccharide unit having the structure:



(3)

then R′ is C_5 to C_{10} alkyl or

4,761,402
METHODS AND COMPOSITIONS FOR PROPHYLACTIC AND THERAPEUTIC TREATMENT OF INFECTIONS

David L. Williams, River Ridge; I. William Browder, New Orleans, and Nicholas R. Diluzio, deceased, late of Gretna, all of La. (by Nicholas M. Diluzio, legal representative), assignors to Bioglucans, L.P., New Orleans, La.

Continuation-in-part of Ser. No. 767,388, Aug. 19, 1985. This application Feb. 10, 1987, Ser. No. 13,082
Int. Cl.[4] C08B 37/16, 37/00
U.S. Cl. 514—54 33 Claims

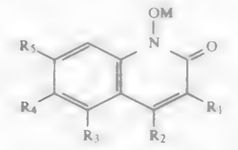
1. A method for treatment of an infection in animals or humans, comprising: administering to an animal or a human affected with said infection a therapeutically effective amount of a soluble glucan which comprises a phosphorylated poly-[beta-(1-3)glucopyranose] chain which is characterized by:
(a) the capability of dissolving in water or an aqueous solution;
(b) being non-toxic, non-immunogenic and substantially non-pyrogenic; and
(c) the capability of exerting a pronouced immunobiological response when administered in vivo to an animal or to a human.

4,761,403
LIPOXYGENASE INHIBITING COMPOUNDS

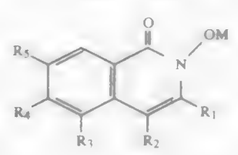
Bruce P. Gunn, Island Lake, and James B. Summers, Jr., Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 9, 1986, Ser. No. 849,924
Int. Cl.[4] A61K 31/695; C07F 7/10
U.S. Cl. 514—63 28 Claims

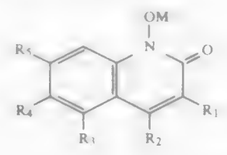
1. A method of inhibiting lipoxygenase activity in a human or lower animal in need of such treatment, comprising administering to the human or lower animal a therapeutically effective amount of a compound of the formula I or II



I



wherein
R_1 through R_5 are independently selected from hydrogen, C_1–C_{12} alkyl, C_1–C_{12} alkoxy, C_1–C_8 carboalkoxy, C_6 or C_{10} aryl, nitro, hydroxy, a halogen, or where R_1–R_2, R_3–R_4, or R_4–R_5 form an aromatic fused ring;
and where M is a pharmaceutically acceptable cation, tri-C_1–C_6 alkylsilyl or C_1–C_{12} alkyl or acyl.
2. A compound of the formula



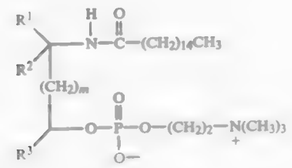
where R1 is selected from chloro, fluoro, iodo, C_6 or C_{10} aryl, selected from phenyl, 1-naphthyl and 2-naphthyl; C_1–C_8 carboalkoxyl, C_3–C_{12} alkoxy or C_5–C_{12} alkyl; and where R2–R5 independently are selected from hydrogen, C_1 to C_8 alkyl or C_1–C_8 alkoxy, aryl, selected from phenyl, 1-naphthyl and 2-naphthyl; halo, nitro, or C_1–C_8 carboalkoxy; or R1–R2, R3–R4 or R4–R5 independently form an aromatic fused ring, provided that R2–R5 are not all hydrogen when R1 is carboalkoxy and R3–R5 are not all hydrogen when R1–R2 is an aromatic fused ring; M is a pharmaceutically acceptable cation, C_1 to C_{12} alkyl or acyl, or trialkylsilyl wherein the alkyl groups have from 1 to 6 carbon atoms.

4,761,404
PHOSPHOLIPID ANALOGS USEFUL AS PAF SYNTHESIS INHIBITORS

Robert L. Bugianesi, Colonia; Mitree M. Poupipom, Branchburg, and Kathleen M. Rupprecht, Cranford, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 1, 1985, Ser. No. 750,435
Int. Cl.[4] A61K 31/685; C07F 9/10
U.S. Cl. 514—77 12 Claims

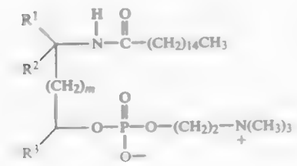
1. A method of treating disorders or diseases mediated by the PAF which comprises administering to a patient in need of such treatment of PAF biosynthesis inhibitory amount of a compound having the formula:



wherein:
m is 0, 1 or 2;
when m is 0, R^1, R^2 and R^3 are as tabulated below:

R^1	R^2	R^3
II	II	CH_2CH_3
CH_3	CH_3	H
CH_3	H	H
or CH_2CH_3	H	H

when m is 1 or 2, R^1, R^2 and R^3 independently are H or C_{1-6} alkyl.
5. A compound of formula:



wherein:
m is 0, 1 or 2;
when m is 0, R^1, R^2 and R^3 are as tabulated below:

R^1	R^2	R^3
II	H	CH_2CH_3
CH_3	CH_3	H
CH_3	II	II
or CH_2CH_3	II	II

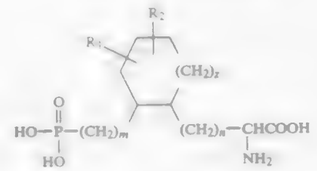
when m is 1 or 2, R^1, R^2 and R^3 independently are H or C_{1-6} alkyl.

4,761,405
ANTAGONISTS OF SPECIFIC EXCITATORY AMINO ACID NEUROTRANSMITTER RECEPTORS HAVING INCREASED POTENCY

Waclaw J. Rzeszotarski, Millersville, and Donald J. Kyle, Baltimore, both of Md., assignors to Nova Pharmaceutical Corporation, Baltimore, Md.

Filed Mar. 4, 1987, Ser. No. 21,703
Int. Cl.[4] C07F 9/38; A61K 31/13, 31/195, 31/045
U.S. Cl. 514—114 15 Claims

1. A potent selective excitatory amino acid neurotransmitter receptor antagonist having the general formula:



wherein R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, lower alkyl (C_1 to C_6), alkyl (C_7 to C_{12}), fatty acid chain (C_{13} to C_{24}), aryl, aralkyl, hydroxyl, the stereoisomers being in their resolved or racemic form; n and m=1, 2, or 3 and z=0, 1 or 2; the cycloalkyl ring being replaced with the cycloalkenyl ring; and the pharmaceutically acceptable salts thereof.

5. A pharmaceutical composition for relieving pain which comprises a pain relieving effective amount of one or more compounds of claim 1 with a pharmaceutically acceptable carrier and/or diluent.

6. A process of relieving pain in an animal in need thereof which comprises administering said compound of claim 1 or 5 parenterally, nasally, orally, rectally or a combination thereof to said animal in need thereof.

4,761,406
REGIMEN FOR TREATING OSTEOPOROSIS

Lawrence Flora, Fairfield, and Benjamin F. Floyd, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 6, 1985, Ser. No. 741,976
Int. Cl.[4] A61K 31/66, 31/675
U.S. Cl. 514—86 21 Claims

1. A method for treating osteoporosis, in humans or lower animals afflicted with or at risk to osteoporosis, comprising administering to said human or lower animal an effective amount of a bone resorption inhibiting polyphosphonate according to the following schedule:
(a) a period of from about 1 day to about 90 days during which said bone resorption inhibiting polyphosphonate is administered daily in a limited amount; followed by
(b) a rest period of from about 50 days to about 120 days; and
(c) repeating (a) and (b) two or more times where a net increase in bone mass said human or animal results.

4,761,407
SOLID GALENICAL FORM FOR ORAL ADMINISTRATION, AND THE PROCESS FOR ITS PREPARATION

Jean-Jacques Campan, Courbevoie, and Roberto Lombardi, Chatou, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Continuation of Ser. No. 436,683, Oct. 26, 1982, abandoned. This application Oct. 22, 1985, Ser. No. 789,365
Claims priority, application France, Oct. 26, 1981, 81 20048
Int. Cl.[4] A61K 31/57, 31/19, 9/22
U.S. Cl. 514—179 3 Claims

1. A solid pharmaceutical or veterinary composition for oral

VOL 1093 ISS 1 AUG 2 1988 UMI

administration, which comprises an active ingredient selected from the group consisting of ketoprofen, prednisone and prednisolone dissolved or dispersed in a pharmaceutically or veterinarily acceptable excipient mixture which liquefies at a temperature above ambient temperature, which excipient mixture is compatible with the active ingredient and is solid at ambient temperature, and which releases the active ingredient in water or after oral administration, when prepared by the process which comprises:

(a) dissolving or dispersing the active ingredient in a first lipophilic, hydrophilic or amphoteric excipient phase, the said first excipient phase being kept liquid at a temperature above ambient temperature, and

(b) mixing the liquid phase thus obtained with a second lipophilic, hydrophilic or amphoteric liquid excipient phase;

the first excipient phase and the second excipient phase each comprising an excipient or excipients selected from the group consisting of: as lipophilic excipients, cetyl alcohol, linoleic acid, isopropyl myristate, cineol, menthol, eucalyptol and camphor; as hydrophilic excipients, water, ethanol, propylene glycol, glycerol, gelatine, leucine and lysine: and, as amphoteric excipients, lecithin, glycerol monostearate and glycerophosphoric acid;

the second excipient phase being hydrophilic or amphoteric when the first excipient phase is lipophilic, the second excipient phase being lipophilic or amphoteric when the first excipient phase is hydrophilic, and the second excipient phase being lipophilic, hydrophilic or amphoteric, when the first excipient phase is amphoteric,

the solution obtained being liquid and homogeneous at a temperature above ambient temperature, and cooling to solidify the said solution to a homogeneous solid composition in unit dosage form.

4,761,408

CRYSTALLINE AMINOMETHYL COMPOUND

Peter Schneider, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 28, 1985, Ser. No. 792,076

Claims priority, application Switzerland, Nov. 2, 1984, 5266/84

Int. Cl.[4] C07D *499/00;* A61K *31/425*

U.S. Cl. 514—192 12 Claims

1. (5R,6S)-2-aminomethyl-6-[(1R)-1-hydroxyethyl]-2-penem-3-carboxylic acid in crystalline form.

4,761,409

CEPHEM DERIVATIVES

Hirotada Yamada, Nishinomiya, Japan; Naruhito Masai, Gainesville, Fla.; Shinji Ueda, Nishinomiya, Japan; Takao Okuda; Masuhiro Kato, both of Toyonaka, Japan; Masatomo Fukasawa, Nishinomiya, Japan, and Masataka Fukumura, Takarazuka, Japan, assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan

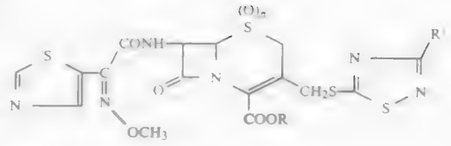
Filed Aug. 5, 1985, Ser. No. 762,560

Claims priority, application Japan, Aug. 16, 1984, 59-171098; Oct. 29, 1984, 59-227299

Int. Cl.[4] A61K *31/545;* C07D *501/36*

U.S. Cl. 514—206 23 Claims

1. The cephem compound represented by the formula



wherein R^1 represents hydrogen or methyl, n is 0 or 1 and R represents an alkanoyloxyalkyl, alkoxycarbonyloxyalkyl, or (5-alkyl-2-oxo-1,3-dioxolen-4-yl)-methyl group and salts thereof.

4,761,410

CEPHEM COMPOUNDS

Takao Takaya; Kazuo Sakane; Kenzi Miyai, all of Kawanishi, and Teruaki Matuo, Ibaraki, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

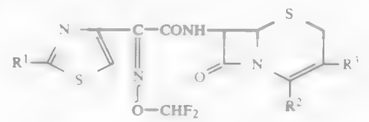
Filed Dec. 31, 1985, Ser. No. 815,015

Claims priority, application United Kingdom, Jan. 14, 1985, 8500807; Jun. 24, 1985, 8515910

Int. Cl.[4] C07D *501/38;* A61K *31/545*

U.S. Cl. 514—206 8 Claims

1. A compound of the formula:



wherein

R^1 is amino or a protected amino group,

R^2 is carboxy or a protected carboxy group and

R^3 is thiadiazolylthiomethyl or thiadiazolylthiomethyl substituted with lower alkyl,

and pharmaceutically acceptable salts thereof.

4,761,411

DIHYDRORENZOPYRROLOBENZODIAZEPINES USEFUL FOR TREATING PYSCHOSES

Edward J. Glamkowski, Warren, and Yulin Chiang, Morristown, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

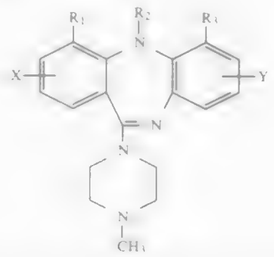
Filed May 18, 1983, Ser. No. 495,569

The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.

Int. Cl.[4] A61K *31/495;* C07D *403/04*

U.S. Cl. 514—219 7 Claims

1. A compound of the formula



where X and Y may be the same or different and each is hydrogen, halogen, CF_3, lower alkyl, lower alkoxy, lower alkylthio and lower alkylsulfonyl; R_1 is hydrogen, when R_2 is bonded to R_3 to form a $—CH_2—CH_2—$ group and R_3 is hydrogen, when R_1 is bonded to R_2 to form $—CH_2—CH_2—$ group; and the pharmaceutically acceptable acid addition salts thereof.

7. A method of treating psychoses which comprises administering to a mammal in need of psychoses treatment a psychoses-treating effective amount of a compound as defined in claim 1.

4,761,412

BENZOPYRROLOBENZODIAZEPINES AND QUINOBENZODIAZEPINES USEFUL FOR THE TREATMENT OF PSYCHOSES

Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 770,046, Aug. 28, 1985, Pat. No. 4,663,453, which is a continuation-in-part of Ser. No. 639,569, Aug. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 495,569, May 18, 1983. This application Nov. 12, 1986, Ser. No. 929,700

Int. Cl.[4] A61K *31/55, 31/535;* C07D *403/04, 401/04*

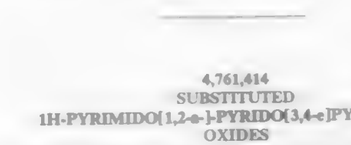
U.S. Cl. 514—219 51 Claims

1. A method of treating psychoses which comprises administering to a mammal in need of psychoses treatment a psychoses-treating effective amount of a compound of the formula

wherein X and Y may be the same or different and each is hydrogen, halogen, CF_3, lower alkyl, lower alkoxy, lower alkylthio or lower alkylsulfonyl, p and q are independently 1 or 2; R_1 is hydrogen when R_2 is bonded to R_3 to form a $—(CH_2)_m—CH_2—$ group or a $—CH=CH—$ group; R_3 is hydrogen when R_1 is bonded to R_2 to form a $—(CH_2)_m—CH_2—$ group or a $—CH=CH—$ group; m is 1 or 2; R_4 is NR_5R_6 wherein R_5 is hydrogen or lower alkyl and R_6 is hydrogen, lower alkyl or a group of the formula $(CH_2)_n NR_7R_8$ wherein R_7 and R_8 are lower alkyl, and n is 2 or 3,

wherein R_9 is lower alkyl,

wherein R_{10} is CH_2CH_2OH, lower alkyl, phenyl, phenyl substituted by halogen, CF_3, lower alkyl, lower alkoxy or lower alkylthio, benzyl, benzyl in which the phenyl group is substituted by halogen, CF_3, lower alkyl, lower alkoxy or lower alkylthio or CO_2R_{11} wherein R_{11} is lower alkyl; or a pharmaceutically acceptable acid salt thereof.



where

R_1 is H, 7-halogen, 7,8-dihydroxy, 7,8-methylenedioxy, 7,8-di-C_1–C_3 alkoxy or 7,8-dibenzyloxy;

R_2 is H, 1,3-dioxolanyl, phenyl or phenyl substituted by CF_3, C_1–C_6 alkyl or C_1–C_4 alkoxy;

R_3 is H, phenyl or phenyl substituted by CF_3, C_1–C_6 alkyl or C_1–C_4 alkoxy;

R_4 is H, benzyl, C_1–C_6 alkyl, C_3–C_6 alkenyl, $—(CH_2)_3OH$,

R_5 is C_1–C_3 alkyl; n is 2 or 3, and the oxalate and dioxalate salts thereof, provided that when R_1 is 7-halogen, R_4 is not hydrogen.

7. A method of inducing cytoprotection in mammals by increasing the natural integrity of the gastrointestinal mucosa which comprises administering to a mammal an effective amount of a compound of claim 1.

8. A method of inhibiting gastric secretion in mammals which comprises administering to a mammal an effective amount of a compound of claim 1.

4,761,414

SUBSTITUTED 1H-PYRIMIDO[1,2-a-]-PYRIDO[3,4-e]PYRAZINE 6 OXIDES

George J. Eliames; Roger M. Upton, both of High Wycomb; Albert A. Jaxa-Chamiec, Marlow, and Peter L. Myers, Aylesbury, all of United Kingdom, assignors to G. D. Searle & Co., Chicago, Ill.

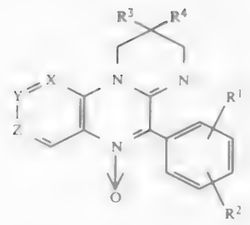
Filed Aug. 19, 1986, Ser. No. 897,908

Int. Cl.[4] C07D *471/14, 471/20, 239/70;* A61K *31/505*

U.S. Cl. 514—250 53 Claims

1. A compound of the formula

VOL 1093 ISS 1 AG 2 1988 UMI



wherein

R^1 and R^2 are independently selected from the class consisting of hydrogen, halo, C_1–C_6 alkyl, and C_1–C_6 alkoxy;

R^3 and R^4 are independently hydrogen or C_1–C_6 alkyl or R^3 and R^4 together may be a



group wherein n is an integer of from 0 to 4; and

X, Y and Z are independently —CH— or —N═ provided that one and only one of X, Y or Z must be —N═;

and pharmaceutically acceptable salts thereof.

52. A method for treating anaerobic infections in mammals comprising administering a therapeutically effective dose of at least one compound of claim 1 to a mammal in need of such treatment.

4,761,415

DOPAMINE-β-HYDROXYLASE INHIBITORS

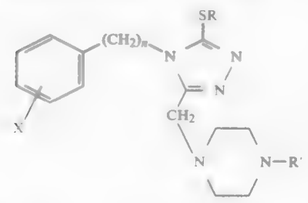
Joseph A. Finkelstein, Philadelphia, Pa.; Lawrence I. Kruse, Haddonfield, N.J., and Thomas B. Leonard, Haverford, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Aug. 28, 1986, Ser. No. 901,120

Int. Cl.⁴ A61K *31/495;* **C07D** *403/06, 295/10*

U.S. Cl. 514—252 **15 Claims**

1. A compound represented by the formula:



in which:

X is H, F, Cl, Br, I, C_{1-4} alkyl, CN, NO_2, SO_2NH_2, COOH, OH, CHO, C_{1-4} alkoxy, CH_2OH, CF_3, SO_2CH_3, SO_2CF_3, or $CO_2C_aH_{2a+1}$ wherein a is 1–5, or any accessible combination thereof of up to 4 substituents,

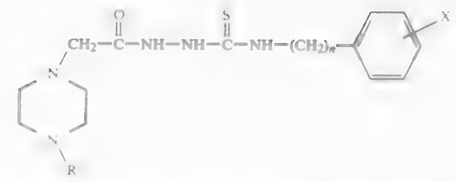
R and R′ independently are H or C_{1-4} alkyl, and

n is 0–5.

a pharmaceutically acceptable salt or hydrate thereof.

11. A method of inhibiting dopamine-β-hydroxylase activity in mammals that comprises administering internally to a subject in need of such inhibition an effective amount of a compound of claim 1.

15. A compound represented by the formula:



in which:

X is H, F, Cl, Br, C_{1-4} alkyl, CN, NO_2, SO_2NH_2, COOH, OH, CHO, C_{1-4} alkoxy, CH_2OH, CF_3, SO_2CH_3, SO_2CF_3, or $CO_2C_aH_{2a+1}$ wherein a is 1–5, or any accessible combination thereof of up to 4 substituents,

R′ is H or C_{1-4} alkyl, and

n is 0–5.

4,761,416

N-N-DISUBSTITUTED-ω-[2-AMINO-3-(CARBONYLMETHYL)-3, 4-DIHYDROQUINAZOLINYL]OXYALKYLAMIDES AND RELATED COMPOUNDS

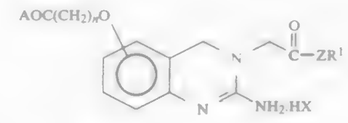
John H. Fried, Palo Alto, and Michael C. Venuti, San Francisco, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jul. 25, 1986, Ser. No. 889,641

Int. Cl.⁴ A61K *31/505;* **C07D** *239/84*

U.S. Cl. 514—260 **44 Claims**

1. A pharmaceutical composition comprising a pharmaceutically acceptable excipient and a compound of the formula



(I)

or an optical isomer thereof,

wherein

Z is O or NR^2;

n is an integer of 1 to 6;

R^1 and R^2 are independently hydrogen; alkyl of 1 to 12 carbon atoms; cycloalkyl of 3 to 12 carbon atoms; hydroxyalkyl of 1 to 6 carbon atoms; cycloalkyl lower alkyl of 4 to 12 carbon atoms wherein the cycloalkyl ring is optionally substituted with a lower alkyl, lower alkoxy, —OH, —$OCOR^3$, halo, —$N(R^3)_2$, —$NHCOR^3$, —COOH, or —$COOR^3$ group wherein R^3 is lower alkyl; and phenyl or phenyl lower alkyl wherein the phenyl ring is optionally substituted with one to five halo groups, one to three lower alkyl groups, or a single group selected from lower alkoxy, —$N(R^3)_2$, —$NHCOR^3$, —COOH, and —$COOR^3$ wherein R^3 is lower alkyl; or R^1 and R^2 are combined with the N to which they are attached to form a cyclic secondary amine radical selected from the group consisting of morpholinyl, piperidinyl, pyrrolidinyl and N-methyl piperazinyl;

HX is optionally present and when present represents the acid portion of a pharmaceutically acceptable acid addition salt;

A is NR^4R^5 wherein R^4 and R^5 are independently selected from the group consisting of: hydrogen; alkyl of 1 to 6 carbon atoms; hydroxyalkyl of 2 to 6 carbon atoms; cycloalkyl of 3 to 8 carbon atoms or cycloalkyl lower alkyl of 4 to 12 carbon atoms wherein the cycloalkyl ring is optionally substituted with a lower alkyl, lower alkoxy, —OH, —O-COR^3, halo, —$N(R^3)_2$, —$NHCOR^3$, —COOH, or —$COOR^3$ group wherein R^3 is lower alkyl; and phenyl or phenyl lower alkyl wherein phenyl is optionally substituted with a lower alkyl, halo or lower alkoxy group or an —$N(R^3)_2$, —$NHCOR^3$, —COOH, or —$COOR^3$ group wherein R^3 is lower alkyl; or wherein R^4 and R^5 are combined with the N to which they are attached to form a radical selected from the group consisting of: morpholinyl, piperidinyl, perhexylenyl, N-loweralkylpiperazinyl, pyrrolidinyl, tetrahydroquinolinyl, tetrahydroisoquinolinyl, (±)-decahydroquinolinyl, and indolinyl.

4,761,417

COMPOUNDS, COMPOSITIONS AND METHOD OF TREATMENTS FOR IMPROVING CIRCULATORY PERFORMANCE

Peter R. Maroko, 1765 Garwood Dr., Cherry Hill, N.J. 08003

Continuation of Ser. No. 378,122, May 14, 1982, abandoned. This application Oct. 18, 1985, Ser. No. 788,507

Int. Cl.⁴ A61K *31/44, 31/705*

U.S. Cl. 514—284 **18 Claims**

1. A therapeutic method for increasing contractility of the mammalian heart as shown by a positive inotropic effect which comprises administering to a mammal in need thereof in an amount effective to cause a positive inotropic effect, a composition which comprises a biologically acceptable carrier and a compound selected from the group consisting of berberrubine and the pharmaceutically acceptable salts thereof, causing a positive inotropic effect and discontinuing administration.

4,761,418

NOVEL COMPOUNDS

Roy A. Swaringen, Jr., Durham, N.C.; Hassan A. El-Sayad, Nasr City, Egypt; David A. Yeowell, Chapel Hill, N.C., and John J. Savarese, Boxford, Mass., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C. and General Hospital Corporation, Boston, Mass.

Filed Jul. 17, 1985, Ser. No. 756,025

Claims priority, application United Kingdom, Jul. 18, 1984, [illegible]

Int. Cl.⁴ A61K *31/47;* **C07C** *401/14*

U.S. Cl. 514—308 **15 Claims**

1. 2,2′[(E)-4-Octenedioylbis(oxytrimethylene)]bis[(trans)-1,2,3,4-tetrahydro-6,7-dimethoxy-2-methyl-1-(3,4,5-trimethoxybenzyl)isoquinolinium] cation in association with a pharmaceutically acceptable anion.

13. A method for producing muscle relaxation in a mammal which comprises parenterally administering to a mammal an effective muscle relaxant amount of the compound of claim 1, 3 or 5.

4,761,419

6-(((SUBSTITUTED)QUINOLINYL)ETHYL)-AND ETHENYL)TETRAHYDRO-4-HYDROXYPYRAN-2-ONE INHIBITORS OF CHOLESTEROL BIOSYNTHESIS

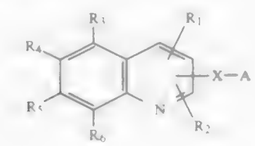
Joseph A. Picard; Bruce D. Roth, both of Ann Arbor, and Drago R. Sliskovic, Ypsilanti, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 7, 1987, Ser. No. 129,516

Int. Cl.⁴ A61K *31/34, 31/47;* **C07D** *217/12, 217/14*

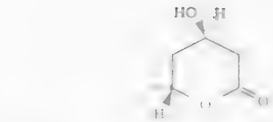
U.S. Cl. 514—311 **15 Claims**

1. A compound of structural Formula I



I

wherein A is



X is —CH2CH2— or —CH═CH—;

R_1 and R_2 are independently

hydrogen;

alkyl of from one to six carbons;

trifluoromethyl;

cyclopropyl;

cyclohexyl;

cyclohexylmethyl;

phenyl;

phenyl substituted with

fluorine,

chlorine,

bromine,

hydroxy,

trifluoromethyl,

alkyl of from one to four carbon atoms, or

alkoxy of from one to four carbon atoms;

phenylmethyl;

phenylmethyl substituted with

fluorine,

chlorine,

bromine,

hydroxy,

trifluoromethyl,

alkyl of from one to four carbon atoms, or

alkoxy of from one to four carbon atoms;

2-, 3-, or 4-pyridinyl; or

2-, 4-, or 5-pyrimidinyl;

R_3, R_4, R_5, R_6 are independently selected from

hydrogen;

alkyl of from one to six carbon atoms;

trifluoromethyl;

cyclopropyl;

fluorine;

chlorine;

bromine;

hydroxy;

alkoxy of from one to four carbon atoms;

cyano;

nitro;

amino;

acetylamino;

aminomethyl;

phenyl;

phenyl substituted with

fluorine,

chlorine,

bromine,

hydroxy,

trifluoromethyl,

alkyl of from one to four carbon atoms, or

alkoxy of from one to four carbon atoms;

phenylmethyl; or

phenylmethyl substituted with

fluorine,

chlorine,

bromine,

hydroxy,

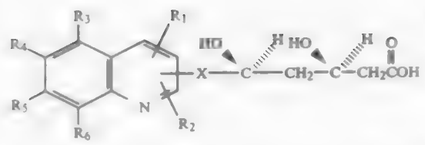
trifluoromethyl, or

alkyl of from one to four carbon atoms;

provided that when X is in the 2-position, RI is hydrogen and is attached in the 4-position;

or a corresponding 3,5-dihydroxyacid of Formula II

VOL 1093 ISS 1 AG 2 1988 UMI



II

wherein A, X, R_1, R_2, R_3, R_4, and R_5 are as defined above, or a pharmaceutically acceptable salt thereof.

15. A method of inhibiting cholesterol biosynthesis in a patient in need of said treatment comprising administering a cholesterol synthesis inhibiting amount of a compound as defined by claim 1 in combination with a pharmaceutically acceptable carrier.

4,761,420

ANTIHYPERTENSIVE DIHYDROPYRIDINE DERIVATIVES

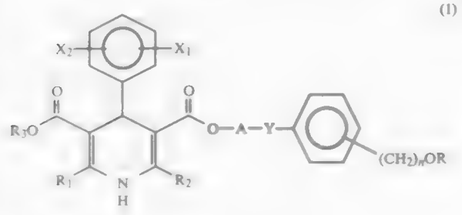
Gilles Genain, Issy-les-Moulineaux, France, assignor to Laboratoires Synter S.A., Puteaux Cedex, France

Filed Jun. 13, 1986, Ser. No. 874,264

Int. Cl.[4] A61K *31/455;* **C07D** *211/90, 405/12*

U.S. Cl. 514—336 **35 Claims**

1. A compound of formula I:



wherein

n is an integer from 1 to 4;

R_1 and R_2 are lower alkyl;

R_3 is a lower alkyl or alkoxyalkyl;

A is alkylene of two to eight carbon atoms;

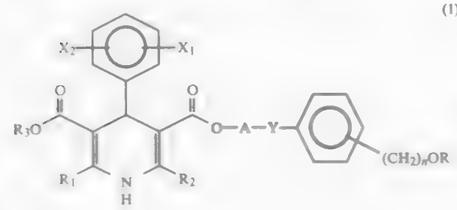
X_1 and X_2 are each independently $—NO_2$, —CF3, $CH_3O—$, —CN, —H, lower alkyl or halo;

Y is —O—, —S—, —S(O)—, or $—S(O)_2—$; and

R is H, lower alkyl, cycloalkyl, alkoxyalkyl, cycloalkyloxyalkyl, alkoxycycloalkyl, Ra C(O)—(where R_a is lower alkyl), or saturated or unsaturated 5- or 6-membered heterocyclyl optionally substituted with lower alkyl or alkoxy wherein the heteroatom is one oxygen atom.

32. A pharmaceutical composition for treating a cardiovascular disease treatable with a calcium-entry antagonist, comprising a pharmaceutically acceptable excipient and an effective amount of a compound of formula 1:

(1)



wherein

n is an integer from 1 to 4;

R_1 and R_2 are lower alkyl;

R_3 is lower alkyl or alkoxyalkyl;

A is alkylene of two to eight carbon atoms;

X_1 and X_2 are each independently $—NO_2$, —CF3, $CH_3O—$, —CN, —H, lower alkyl or halo;

Y is —O—, —S—, —S(O)—, or $—S(O)_2—$; and

R is H, lower alkyl, cycloalkyl, alkoxyalkyl, cycloalkyloxyalkyl, alkoxycycloalkyl, $R_aC(O)—$ (where R_1 is lower alkyl), or saturated or unsaturated 5- or 6-membered heterocyclyl optionally substituted with lower alkyl or alkoxy, wherein the heteroatom is one oxygen atom.

4,761,421

USE OF CERTAIN COMPOUNDS IN LIVESTOCK FOOD AS GROWTH PROMOTANTS FOR BETTER FEED UTILIZATION AND IMPROVED CARCASS COMPOSITION

Larry A. Muir, Flemington, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

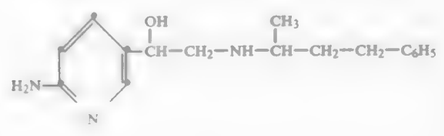
Continuation of Ser. No. 731,255, May 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 617,299, Jun. 4, 1984, abandoned. This application Sep. 18, 1986, Ser. No. 909,045

Int. Cl.[4] A61K *31/44*

U.S. Cl. 514—352 **2 Claims**

1. A method of improving the growth of livestock which comprises administering to such livestock a sufficient amount of a compound having the following structure:

(I)



4,761,422

(2-AMINO-4-ARYL-THIAZOLE-5-YL)ETHANOLS AND THEIR DERIVATIVES HAVING DIURETIC ACTIVITY AND METHODS FOR PREPARING THE SAME

Elso Manghisi, Moaza, and Aldo Salimbeni, Serto San Giovanni, both of Italy, assignors to Lasofarmaco Istituto Lasofarmaco d'Italia SpA, Milan, Italy

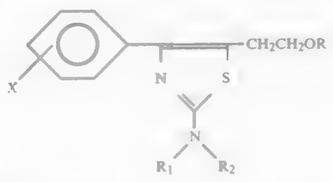
Filed Nov. 19, 1986, Ser. No. 932,929

Int. Cl.[4] C07D *277/40, 277/42;* **A61K** *31/425*

U.S. Cl. 514—370 **5 Claims**

1. Thiazole derivatives of the general formula I

(I)



wherein:

R is a hydrogen atom or an acyl radical of a carbamic or allophanic acid, R_1 is a hydrogen atom or a lower alkyl with 1 to 4 carbon atom, R_2 is a hydrogen atom, a lower alkyl with 1 to 4 carbon atoms or a phenyl group, X is a hydrogen atom or a halogen atom selected from fluorine, chlorine and bromine and the pharmaceutically acceptable salts thereof.

4,761,423

SEED DRESSING ADDITIVE

András Szegö ; József Sós; Ferenc Kovátz; István Petróczi; György Kis, all of Budapest; József Karsai, Battonya; Sándor Ásgyán, Budapest; István Rácz, Budapest, and Katalin Márnarosi, Budapest, all of Hungary, assignors to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

PCT No. PCT/HU84/00001, § 371 Date Oct. 24, 1985, § 102(e) Date Oct. 24, 1985, PCT Pub. No. WO85/02976, PCT Pub. Date Jul. 18, 1985

PCT Filed Jan. 6, 1984, Ser. No. 796,618

Int. Cl.[4] A01N *25/02*

U.S. Cl. 514—395 **8 Claims**

1. In a method of formulating a dressing which is applied to winter wheat, bean, pea or sorghum seed to protect the seed from insect or fungal damage, and wherein the seed dressing vehicle comprises:

(1) 30 to 45% by weight of an oil of vegetable, animal or mineral origin;

(2) 2 to 7% by weight of an emulsifier;

(3) 0 to 12% by weight of a dyestuff; and

(4) 33.5 to 50% by weight water, the improvement which comprises the step of:

dispersing a quantity of the seed dressing vehicle in an amount of water greater than the quantity of the seed dressing vehicle, and adding a fungicide or insecticide to form a seed dressing whose water content is substantially greater than the water content of the seed dressing vehicle.

4,761,424

ENOLAMIDES, PHARMACEUTICAL COMPOSITIONS AND METHODS FOR TREATING INFLAMMATION

Mary E. Carethers, Cincinnati, Ohio; Wlaczeslaw A. Cetenko; David T. Connor, both of Ann Arbor, Mich.; Elizabeth A. Johnson, Corte Madera, Calif.; John S. Kiely, Ann Arbor, Mich.; Charles F. Schwender, Califon, N.J.; Jagadish C. Sircar, Ann Arbor, Mich.; Roderick J. Sorenson, Ann Arbor, Mich.; Paul C. Unangst, Ann Arbor, Mich., and Robert F. Bruns, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

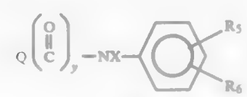
Filed Oct. 1, 1985, Ser. No. 782,623

Int. Cl.[4] C07D *333/64;* **A61K** *31/38*

U.S. Cl. 514—443 **20 Claims**

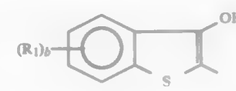
1. A compound having the formula (I)

I



and pharmaceutically acceptable salts thereof, wherein (I) y is one or two; (II) Q is a substituent (I_4)

I_4



wherein a is zero, one, or two; b is zero, one two, three, or four, X is independently hydrogen or lower alkyl; R_1 may be the same or different if b is two or more, selected from a group consisting of alkyl of from one to four carbons, inclusive; alkoxy of from one to four carbons, inclusive; carboalkoxy of from two to four carbons, inclusive; hydroxy, halogen, nitro, amino, mono- and di-alkylamino having each alkyl the same or different of from one to four carbons, inclusive; carbalkoxyamido of from one to four carbons, inclusive; alkylsulfonamido of from one to four carbons, inclusive; alkylsulfinyl of from one to four carbons, inclusive; alkylsulfonyl of from one to four carbons, inclusive; and —(CH=CH—CH=CH)— taken together with an adjacent ring carbon to form a benzo radical; R_5 is hydrogen; alkyl of from one to four carbons, inclusive; alkoxy of from one to four carbons, inclusive; carbalkoxy of from two to four carbons, inclusive; hydroxy; halogen; or —(CH=CH—CH=CH)— taken together with adjacent carbons to form a benzo radical; R_6 is alkyl of from six to twenty carbons, —CH=CH—R_4, $—(CH_2)_nCOOR_4$ or $—(CH_2)_n—R_4$ wherein n is zero to four, inclusive; and R_4 is phenyl optionally substituted at the two through six positions by carboalkoxy, having alkoxy of from one to four carbons, inclusive; alkoxy or thioalkoxy of from one to four carbons, inclusive; phenalkoxy of from one to four carbons, inclusive; amino, monoalkyl and dialkylamino having the alkyl of from one to four carbons, inclusive; alkanoylamino of from one to four carbons, inclusive; carboxyl; benzo; halogen; hydroxy; hydroxyalkyl of from one to four carbons, inclusive; alkanoyl of from one to four carbons, inclusive; nitro; alkanesulfonamido of from one to four carbons; or phenyl.

2. A pharmaceutical composition for treating inflammation which comprises an antiinflammatory effective amount of a compound as claimed in claim 1 together with a pharmaceutically acceptable carrier.

4,761,425

LEUKOTRIENE ANTAGONISTS

Yves Girard, Pierrepondu, and Joshua Rokach, Laval, both of Canada, assignors to Merck Frosst Canada, Inc., Kirkland, Canada

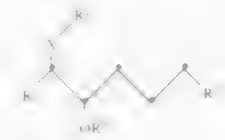
Continuation-in-part of Ser. No. 651,415, Dec. 27, 1983, abandoned. This application Dec. 24, 1984, Ser. No. 685,807

The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.

Int. Cl.[4] A61K *31/35;* **C07D** *311/24, 311/22*

U.S. Cl. 514—456 **8 Claims**

1. Compounds having the formula:

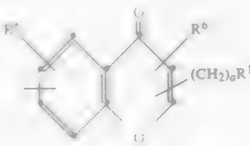


X is O, S, SO, SO_2;

R is selected from: —CH=CH—(C_1 to C_{14} alkyl), —(CH=CH)$_2$—(C_1 to C_{12} alkyl), —(CH=CH)$_3$—(C_1 to C_{10} alkyl), —(CH=CH)$_3$—(CH_2—CH=CH)$_2$—(C_1 to C_4 alkyl), —(CH=CH)$_4$—(C_1 to C_8 alkyl), —CH$_2$—(CH=CH)$_4$—(C_1 to C_7 alkyl), —(CH=CH-)$_3$—CH_2CH=CH—$(CH_2)_n$$CH_2$OH wherein n is 1 to 6, —(CH=CH)$_3$—CH_2CH=CH—$(CH_2)_n$COOR[11] wherein n is 1 to 6, —(CH=CH)$_3$—CH_2CH=CH—(C_1 to C_7 alkyl); —C≡C—(C_1 to C_{14} alkyl), —CH=CH—C≡C—(C_1 to C_{12} alkyl), —C≡C—(CH=CH)—(C_1 to C_{12} alkyl), —C≡C—(CH=CH)$_2$—(C_1 to C_{10} alkyl), and —C≡C—(CH=CH)$_2$—CH_2—CH=CH—(C_1 to C_7 alkyl);

R^1 is $COOR^{11}$;

R^2 is



R^3 is H, lower alkyl, $—(CH_2)_aCOOR^{11}$ or C_1 to C_5 acyl;

VOL 1093 ISS 1 A/G 2 1988 UMI

each R^5 is independently lower alkyl; CF_3; phenyl; or substituted phenyl, wherein the substituents are C_1 to C_3 alkyl, halogen, CN, CF_3, $COOR^8$ or C_1 to C_3 alkoxy;
R^6 is H, lower alkyl, OH, halogen, C_1 to C_3 perfluoroalkyl, CN, NO_2, C_1 to C_5 acyl, $COOR^8$, $SO_2N(R^8)_2$, $N(R^8)_2$, OR^5, SR^5, SOR^5, SO_2R^5, O-aryl, benzyl, benzyl substituted as defined for phenyl in R^5, or CH_2OH;
each R^8 is independently H or alkyl of 1 to 4 carbons which may be straight chain or branched;
R^{11} is H, lower alkyl, phenyl-lower alkyl, lower alkoxy-lower alkyl, lower acyloxy-lower alkyl;
n is 0 to 4;
and pharmaceutically acceptable salt or lactone forms thereof.

4,761,426

LYSOCELLIN-CONTAINING COMPOSITION AND PROCESS FOR PROMOTING GROWTH AND FEED EFFICIENCY OF FOOD PRODUCING ANIMALS

Jerome L. Martin; David R. Bright; Robert D. Williams, and Vernon V. Young, all of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Continuation of Ser. No. 291,134, Aug. 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 196,722, Oct. 8, 1980, abandoned. This application Aug. 24, 1984, Ser. No. 643,763
The portion of the term of this patent subsequent to Mar. 31, 2004, has been disclaimed.
Int. Cl.⁴ A61K *31/35*
U.S. Cl. 514—460 **15 Claims**

1. A process for promoting growth and enhancing feed efficiency of a food-producing mammal, which process comprises administering to a food-producing mammal in need of growth promotion and feed efficiency enhancement a growth-promoting and feed efficiency-enhancing amount of a lysocellin material selected from the group consisting of lysocellin, lysocellin free acid, and the physiologically acceptable salts thereof.

4,761,427

LIQUID ANTIMICROBIAL COMPOSITION

Jenne Segall, and Leonard M. Shorr, both of Haifa, Israel, assignors to Bromine Compounds Ltd., Beer-Sheva, Israel

Continuation-in-part of Ser. No. 650,551, Sep. 12, 1984, abandoned, which is a continuation of Ser. No. 442,189, Nov. 16, 1982, abandoned. This application Dec. 6, 1985, Ser. No. 805,792
Claims priority, application Israel, Feb. 28, 1982, 65126
Int. Cl.⁴ A01N *37/34*
U.S. Cl. 514—528 **10 Claims**

1. A stable antimicrobial liquid concentrate composition, consisting essentially of a solution of 1—30% by weight of dibromonitrilopropionamide (DBNPA) in propylene glycol, and a stabilizing amount of water, said stabilizing amount of water being 5—30% by weight.

4,761,428
Patent Not Issued For This Number

4,761,429

ENKEPHALINASE AND ENDORPHINASE INHIBITORS AS ANTI-CRAVING COMPOSITIONS

Kenneth Blum, 3707 Castle Crest, San Antonio, Tex. 78230; Arthur H. Briggs, 707 Serenade, San Antonio, Tex. 78216, and Jack E. Wallace, 9215 George Kyle, San Antonio, Tex. 78240

Filed Jul. 22, 1985, Ser. No. 757,733
Int. Cl.⁴ A61K *31/195*
U.S. Cl. 514—561 **8 Claims**

1. A method for reducing the craving of a human or animal for alcohol by administering to said subject, at least one substance which inhibits the destruction of neuropeptidyl opiates in an amount sufficient to reduce the craving for alcohol.

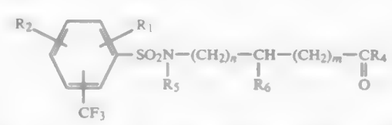
4,761,430

ARYLBENZENESULFONAMIDE CONTAINING PHARMACEUTICAL COMPOSITIONS

Patrick Choay, Paris; Pierre Roger, Montigny les Bretonneux, and Dominique Olliero, Montpellier, all of France, assignors to Dropic, Societe civile de gestion de droits de propriete industrielle, Paris, France

Division of Ser. No. 388,964, Jun. 16, 1982, Pat. No. 4,613,618. This application Sep. 23, 1986, Ser. No. 910,738
Claims priority, application France, Jun. 16, 1981, 81 11858; Jun. 16, 1981, 81 11859
Int. Cl.⁴ A61K *31/19, 31/215*
U.S. Cl. 514—562 **5 Claims**

1. An orally administrable pharmaceutical unit dose form selected from the group consisting of a tablet, a capsule, and a lozenge, comprising an effective blood lipid level lowering amount from 10 to 500 milligrams of a compound of the formula:



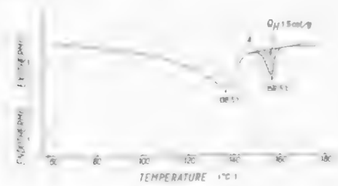
wherein R_1 and R_2 are each hydrogen, halogen, $—NO_2$, $—NH_2$, $—CF_3$, alkyl having from 1 to 6 carbon atoms or alkoxy having from 1 to 6 carbon atoms;
n+m+1 is from 3 to 11,
R_5 and R_6 are each hydrogen, alkyl having 1 to 6 carbon atoms or aralkyl having from 7 to 9 carbon atoms, and
R_4 is hydroxy or OR_7 in which R_7 is alkyl having from 1 to 6 carbon atoms;
or a pharmaceutically acceptable salt thereof and a sterile pharmaceutical carrier.

4,761,431

PRE-EXPANDED PARTICLES OF PROPYLENE RESIN

Kyoichi Nakamura, Ibaraki, Japan, assignor to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 53,662, May 26, 1987, Pat. No. 4,720,509. This application Oct. 20, 1987, Ser. No. 110,258
Claims priority, application Japan, May 27, 1986, 61-121486
Int. Cl.⁴ C08V *9/02*
U.S. Cl. 521—60 **1 Claim**



1. A pre-expanded particle of a propylene resin having two melting temperatures as determined by differential scanning calorimetry, the heat of fusion Q_H for the peak based on the higher melting temperature being 0.5 to 2.3 cal/g.

4,761,432

COATING OF FLAME RETARDANTS ONTO A SEED HEAD

Fred M. Sonnenberg, Merion, and Dennis M. Hajnik, West Chester, both of Pa., assignors to Arco Chemical Company, Newtown Square, Pa.

Filed Nov. 16, 1987, Ser. No. 121,253
Int. Cl.⁴ C08V *9/18, 9/22*
U.S. Cl. 521—60 **52 Claims**

1. The process for preparing a fire-retardant foam composition comprising:
(a) forming an aqueous suspension of initial vinyl aromatic polymer beads with the aid of a suitable suspending agent system;
(b) forming a monomer solution of vinyl aromatic monomer, free-radical producing catalysts, and flame retardant agent;
(c) forming an emulsion by adding a suitable emulsifier to the monomer solution;
(d) adding the emulsion to the suspension of beads at 25°–75° C.;
(e) immediately heating the suspension to about 80°–95° C., and maintaining said temperature for 0.10 to 6 hours to polymerize said monomers;
(f) heating said suspension to a temperature of from 100° to about 135° C. for sufficient time to substantially complete the polymerization of the vinyl aromatic monomer to form beads having the vinyl aromatic polymer and the flame retardant diffused throughout but distributed primarily at or near the surface of the bead;
(g) optionally cooling the suspension to about 125° C. or less;
(h) adding a non-ionic surfactant and 3–12% of a blowing agent;
(i) heating the whole at a temperature of between 80° and 135° C. to impregnate the beads with the blowing agent; and
(j) cooling the suspension to room temperature, acidifying the suspension, and separating the impregnated beads from the aqueous system.

4,761,433

USE OF ANTIMONY COMPOUNDS TO RETARD CATALYST DEACTIVATION IN FOAM-FORMING COMPOSITIONS CONTAINING AROMATIC POLYESTER POLYOLS

John R. Panchak, Wilmington, Del., and John M. Trowell, St. Simons Island, Ga., assignors to Hercules Incorporated, Wilmington, Del.

Filed Dec. 4, 1987, Ser. No. 128,853
Int. Cl.⁴ C08J *9/14*
U.S. Cl. 521—124 **8 Claims**

1. A composition for admixture with an isocyanate to form a rigid polyurethane foam, said composition comprising
(a) an aromatic polyester polyol,
(b) a surfactant,
(c) a tertiary amine catalyst,
(d) an organic blowing agent, and
(e) an organic antimony compound that is soluble in the polyol.

4,761,434

STABLE DISPERSIONS OF POLYUREAS AND/OR POLYHYDRAZODI-CARBONAMIDES IN RELATIVELY HIGH MOLECULAR WEIGHT, HYDROXYL GROUP-CONTAINING COMPOUNDS PROCESS FOR THE PRODUCTION THEREOF AND USE THEREOF FOR THE PRODUCTION OF POLYURETHANES

Manfred Dietrich, and Klaus König, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1985, Ser. No. 811,186
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1985, 3500337
Int. Cl.⁴ C08G *18/00, 18/14*
U.S. Cl. 521—164 **10 Claims**

1. A stable dispersion of a polyurea and/or a polyhydrazodicarbonamide having a solids content of from 5 to 40%, by weight, in a relatively high molecular weight, hydroxyl group-containing polyether, obtained by continuously reacting:
(a) an organic di- and/or polyisocyanate with
(b) an amine-functional material selected from the group consisting of (i) primary and/or secondary amino group-containing di- and/or polyamines, (ii) hydrazines, (iii) hydrazides and (iv) mixtures thereof in
(c) said polyether
at an equivalent ratio of components (a) to (b) of from 1.051:1 to 1.50:1 in a throughflow mixer in such a quantity that the average residence time of the reaction components in the mixer is less than 10 minutes and collecting the reaction product issuing from the throughflow mixer in a receiver.

4,761,435

POLYAMINE-POLYENE ULTRAVIOLET COATINGS

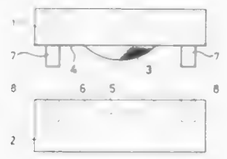
Edward J. Murphy, Mt. Prospect, and Ronald S. Conti, New Lennox, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Oct. 3, 1986, Ser. No. 914,989
Int. Cl.⁴ C08G *73/02*; C08F *265/06*
U.S. Cl. 522—46 **18 Claims**

1. An ultraviolet-curable ethylenically unsaturated liquid coating composition consisting essentially of:
(1)—polyethylenically unsaturated material in which the ethylenically unsaturated groups are polymerizable groups which are not (meth)acrylate groups;
(2)—a polyamine resin; and
(3)—an aryl ketone photosensitizer.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,436
CONTACT LENS COMPRISING TRIORGANOVINYLSILANE POLYMERS
Yoshiyuki Kohno, Yokohama; Kenichi Tomita, Tokyo; Minoru Takamizawa, Joetsu; Tetsuya Mayuzumi, Kawagoe; Shigehiro Nagura, and Akira Yamamoto, both of Joetsu, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan
Filed Oct. 21, 1986, Ser. No. 921,107
Claims priority, application Japan, Oct. 21, 1985, 60-235062; Dec. 23, 1985, 60-290154
Int. Cl.[4] C08F 289/00; G02C 7/04
U.S. Cl. 522—114 13 Claims



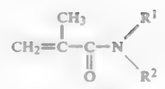
1. A contact lens comprising a lens substrate in the shape of a lens which comprises a triorganovinylsilane based polymer having a molecular weight of at least 100,000, said lens substrate having a hydrophilic polymeric chain grafted onto the surface thereof.

4,761,437
PROCESS FOR PREPARING FRAGRANCE CHIPS
Sharon K. Christie, 23 Narioma La., Northport, N.Y. 11768
Filed Jan. 9, 1987, Ser. No. 1,684
Int. Cl.[4] A61K 7/46; C11B 9/00
U.S. Cl. 523—102 3 Claims

1. A process for producing a fragrance material incorporating solid body comprising:
selecting a liquid fragrance material,
selecting a substantially dry solid phase ethylene vinyl acetate copolymer in particulate form,
combining said copolymer and no more than about 25 weight percent of said fragrance material and admixing the resulting mass at no more than about 100 degrees Fahrenheit until said resulting mass is substantially dry,
allowing the resulting admixture to stand at approximately room temperature for at least 12 hours to produce a seasoned admixture,
heating said seasoned admixture at a temperature not to exceed approximately 325 degrees Fahrenheit to produce a molten admixture,
forming the resultant molten admixture into a desired configuration and cooling said molten admixture while maintaining said configuration to produce said fragrance material incorporating solid body.

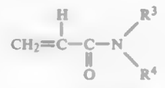
4,761,438
SOFT CONTACT LENS
Shigeo Komiya; Niro Tarumi, and Hideyuku Futamura, all of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan
Filed Nov. 7, 1986, Ser. No. 927,725
Claims priority, application Japan, Nov. 11, 1985, 60-250936
Int. Cl.[4] C08J 6/10
U.S. Cl. 523—106 6 Claims

1. A soft contact lens made of a copolymer comprised of at least one monomer represented by formula (1):



(1)

wherein R^1 and R^2 each represents hydrogen atom, methyl group, or ethyl group; said copolymer further comprising at least one monomer represented by formula (2):



(2)

wherein R^3 and R^4 each represents hydrogen atom, methyl group, or ethyl group;
said copolymer including,
a hydrophobic monomer, selected from the group consisting of phenyl acrylates, benzyl acrylates, phenyl methacrylates, benzyl methacrylates, cyclohexyl acrylates and cyclohexyl methacrylates, an unsaturated carboxylic acid having one ethylenically unsaturated bond, and a crosslinking agent.

4,761,439
ANTI-FOULING PAINT COMPOSITIONS
Jozef Braeken, Deuderleeuw; Jean-Paul Dekerk, Heverlee, both of Belgium; Hendrik van der Poel, Amstelveen, and Jozef Verborgt, ES Berkel-Rodenrijs, both of Netherlands, assignors to Labofina, S.A., Brussels, Belgium
Filed Oct. 7, 1986, Ser. No. 916,125
Claims priority, application Luxembourg, Oct. 9, 1985, 86111
Int. Cl.[4] C08L 31/02, 33/02; C08K 3/20
U.S. Cl. 523—122 21 Claims

1. A paint composition comprising a film-forming polymer, and at least one sparingly soluble metalliferous pigment, and wherein said polymer comprises (A) from 20 to 45 wt.% of monomer units of at least one triorganotin salt of an olefinically unsaturated carboxylic acid; (B) from 5 to 35 wt.% of at least one comonomer selected from the group consisting of VP (vinylpyrrolidone), VPi (vinylpiperidone) and VC (vinylcaprolactam), and wherein the total of A+B amounts to from about 40 to about 70 wt.% of the polymer; (C) up to 10 wt.% of an olefinically unsaturated comonomer selected from the group consisting of EA (ethyl acrylate), MA (methyl acrylate), PA (propyl acrylate), BA (butyl acrylate), HA (hexyl acrylate), EHA (2-ethylhexyl acrylate), AN (acrylonitrile), MAN (methacrylonitrile), acrylamides, vinyl pyridine, vinyl chloride, vinyl acetate, vinyl propionate, vinyl butyrate, methylvinylether, cyclohexene, vinylidene chloride, and mixtures and analogs thereof; and, (D) the balance of said polymer being monomer units selected from the group consisting of C_1–C_4 alkyl methacrylates, styrene, and mixtures thereof.

4,761,440
ARTICLES OF FILLED SYNTHETIC POLYMERIC MATERIALS AND GLASS BEAD FILLER THEREFOR
Pierre Laroche, Nalinnes, Belgium, assignor to Glaverbel, Brussels, Belgium
Continuation of Ser. No. 754,452, Jul. 11, 1985, abandoned. This application Apr. 20, 1987, Ser. No. 41,667
Claims priority, application United Kingdom, Jul. 12, 1984, 8417740
Int. Cl.[4] C08K 9/00, 9/06
U.S. Cl. 523—217 4 Claims

1. A polymeric article comprising a synthetic polymer matrix and a filler material, the synthetic polymer matrix being comprised of a synthetic polymer selected from the group consisting of polyamide, polystyrenes, epoxy resins, and polyester resins, and the filler material being comprised of glass beads bearing coatings of at least one coating agent which comprises a fluorocarbon compound, in a total coating amount not exceeding 1% by weight based on the weight of uncoated glass beads, which coatings limit adhesion between the glass beads and the synthetic polymer and confer an increased impact resistance on the article as compared with an article which includes uncoated glass beads as filler material but is otherwise identical.

4,761,441
ACID-CURABLE COMPOSITIONS COMPRISING MIXTURES OF FURAN AND EPOXY RESINS AND USE IN PREPARING FORMED, SHAPED, FILLED BODIES
Wayne D. Woodson, Danville, Ill., assignor to CL Industries, Inc., Georgetown, Ill.
Filed Jul. 1, 1985, Ser. No. 750,891
Int. Cl.[4] C08K 3/36; C08L 71/06, 63/00, 45/00
U.S. Cl. 523—439 23 Claims

1. An acid-curable resin composition comprising a furan resin, from about 5 to about 45 parts by weight, per 100 parts of the furan resin, of an acid-curable epoxy resin, and an organic sulfonic acid or salt catalyst effective to initiate polymerization of the composition.

6. An acid-curable resin composition comprising a mixture comprising
(A) a major amount of a solid particulate material, and
(B) a minor amount of a resin composition comprising a furan resin, from about 5 to about 45% by weight, based on the weight of the furan resin, of an acid-curable epoxy resin, and an organic sulfonic acid or salt catalyst effective to initiate polymerization.

9. The composition of claim 6 wherein the solid particulate material is sand.

4,761,442
RUST-INHIBITING PRIMER COMPOSITION
Louis Jenal, Widnau, Switzerland, assignor to SFS Stadler Heerbrugg AG, Heerbrugg, Switzerland
PCT No. PCT/CH84/00198, § 371 Date Aug. 18, 1986, § 102(e) Date Aug. 18, 1986
PCT Filed Dec. 18, 1984, Ser. No. 903,430
Int. Cl.[4] C08L 5/00
U.S. Cl. 524—56 14 Claims

1. A rust-inhibiting primer composition in the form of a highly stable emulsion comprising:
(a) solutions, dispersions and/or emulsions of film forming synthetic resins or binders,
(b) chelating agents,
(c) acid activators and others,
(d) 1–6 wt % based on the total weight, of silica powder,
(e) 0.05 to 1% based on the total weight, of an anionic heteropolysaccharide, and
(f) 4–10 wt % based on the total weight, of vegetable air-drying oils and/or phthalate resins modified by such oils and also air-drying,
the composition having a minimum water content with respect to storage stability and application charactersitics.

4,761,443
MULTIPLE RELEASE MOLD COATING FOR HIGH WATER, HIGH RESILIENCY POLYURETHANE FOAM
William J. Lopea, Midland, Mich., assignor to Dow Corning Corporaton, Midland, Mich.
Filed Jun. 4, 1987, Ser. No. 58,203
Int. Cl.[4] C08K 5/15
U.S. Cl. 524—110 7 Claims

1. A composition consisting essentially of:
(i) a hydroxyl endblocked polydimethylsiloxane having a molecular weight of about 20,000 to 500,000:
(ii) a hydroxyl endblocked polydimethylsiloxane having a molecular weight of about 1,000 to 5,000, the weight ratio of (i) to (ii) being about 3:1 to 19:1;
(iii) a siloxane crosslinker having, on average, at least three SiH groups per molecule and selected from siloxanes having the formulae

$$R_2R'SiO(Me_2SiO)_m(HMeSiO)_nSiR'R_2$$

or

$$R_2R'SiO(HMeSiO)_nSiR'R_2$$

wherein in each formula Me denotes the methyl radical, R is an alkyl group having 1 to 8 carbon atoms or the phenyl radical, R' is R or hydrogen, m is 1 to about 150 and n is 1 to about 50, said crosslinker being present in such proportion so as to provide an approximate stoichiometric equivalence of SiH functionality for reacting with the total of the hydroxyl functionality provided by components (i) and (ii):
(iv) sufficient condensation catalyst to promote reaction of (i) and (ii) with (iii): and
(v) an inert organic solvent, said mold release composition containing from about 5 to 95 weight percent of said solvent.

4,761,444
BLEND COMPOSITION OF SULFO EPDM'S HAVING IMPROVED TEAR PROPERTIES
Pawan K. Agarwal, Bridgewater; William M. Petrik, Flemington, and Richard T. Garner, Berkeley Heights, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Filed Jan. 9, 1986, Ser. No. 872,266
Int. Cl.[4] C08F 8/00; C08L 27/12; C08K 5/00, 5/01
U.S. Cl. 524—145 13 Claims

1. An elastomeric blend composition having improved tear properties and having a viscosity at 0.73 sec^{-1} and at 200° C of about 8×10^3 to about 8×10^6 poises, said composition formable into an elastomeric article, which comprises:
(a) a neutralized sulfonated EPDM terpolymer having a viscosity at 0.73 sec^{-1} and at 200° C. of about 5×10^4 poises to about 5×10^6 poises and about 10 to about 50 meq. sulfonate groups per 100 grams of said sulfonated EPDM terpolymer, said sulfonate groups being neutralized; and
(b) about 2 to about 60 parts by weight of a fluorohydrocarbon elastomer per 100 parts of such sulfonated EPDM terpolymer.

4,761,445
POLYAMIDE RESIN COMPOSITION
Kazumasa Chiba, Nagoya, Japan, assignor to Stamicarbon, B.V., Geleen, Netherlands
PCT No. PCT/NL85/00047, § 371 Date Jul. 15, 1986, § 102(e) Date Jul. 15, 1986, PCT Pub. No. WO86/03213, PCT Pub. Date Jun. 5, 1986
PCT Filed Nov. 20, 1985, Ser. No. 890,776
Claims priority, application Japan, Nov. 21, 1984, 59-244387
Int. Cl.[4] C08K 5/54; C08L 83/06
U.S. Cl. 524—262 8 Claims

1. A polyamide resin composition comprising 100 parts by weight of a polyamide having tetramethylene adipamide as a main component and 2 to 20 parts by weight of a silicon oil.

VOL 1093 ISS 1 AG 2 1988 UMI

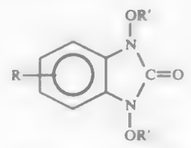
4,761,446

RUBBER COMPOSITIONS MODIFIED WITH BENZIMIDAZO-LINONES

Daniel F. Graves, Clinton, Ohio, and Hans-Wilhelm Engels, Kerpen, Fed. Rep. of Germany, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 13, 1987, Ser. No. 37,378
Int. Cl.[4] L08K 5/34
U.S. Cl. 524—93 20 Claims

1. A rubber composition comprising at least one rubber having an unsaturated carbon chain and a minor property-improving amount of at least one 1,3-dihydroxy-benzimidazolinone compound of the formula



(I)

wherein R is hydrogen, or a hydroxyl, lower hydrocarbyl, lower hydrocarbyloxy, lower hydrocarbylthio, lower hydrocarbyl nitrile, carboxyl, cyano, nitro, amino, amide or —C(O)—R‴ where R‴ is an aryl or a lower hydrocarbyl group; each R′ independently is H, lower alkyl, acyl, CONR″$_2$ or CONHR″ where R″ is alkyl or aryl.

4,761,447

HEAT-VULCANIZABLE MOLDABLE/EXTRUDABLE ORGANOPOLYSILOXANE COMPOSITIONS

Ming Shea, Lakewood, N.J., and Robert Lagarde, Feyzin, France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Feb. 27, 1987, Ser. No. 19,949
Claims priority, application France, Feb. 27, 1986, 86 02962
Int. Cl.[4] C08L 33/00
U.S. Cl. 524—251 9 Claims

1. A heat-vulcanizable organopolysiloxane composition of matter, comprising:

(A) 100 parts of a mixture of organopolysiloxane polymers containing:

(i) 70 to 98% by weight of a diorganopolysiloxane resin of the general formula

$$R_{3-a}(R'O)_aSiO)_nSi(OR')_aR3\text{-}a$$

in which the symbols R, which are identical or different, are C_1–C_8 hydrocarbon radicals, or substituted such hydrocarbon radicals bearing at least one halogen atom or cyano radicals; the symbol R′ is a hydrogen atom or a C_1–C_4 alkyl radical, the symbol a is zero or one, and the symbol n is a number whose value is sufficient to provide a viscosity of at least 1 million mPa.s at 25° C., with the proviso that at least 50% of the number of radicals R are methyl radicals and said resin also contains 0.005 to 0.5 mol % of the units comprising the resin composition, units of the formulae:

$$(CH_2{=}CH)(R)SiO$$

and

$$(CH_2{=}CH)R_{2-a}(R'O)_aSi_{0.5};$$

(ii) 2 to 30% by weight of at least one diorganopolysiloxane oil of the formula:

$$R_3SiO(R_2SiO)_kSiR_3$$

in which the symbols R, which are identical or different, are defined as in (i), and the symbol k is a number whose value is sufficient to provide a viscosity of 20,000 to 200,000 mPa.s at 25° C., with the proviso that at least 50% of the number of radicals R are methyl radicals and said oil also contains 0.05 to 3 mol % of the units comprising the oil units of the formulae:

$$(CH_2{=}CH)RSiO \text{ and } (CH_2{=}CH)R_2SiO_{0.5};$$

(B) 0.01 to 10 parts of at least one amine or ammonia having a pK_a higher than 7.5 in an aqueous solution at 25° C. and a boiling point lower than 270° C. at atmospheric pressure;

(C) 5 to 280 parts of an inorganic filler; and

(D) 0.1 to 7 parts of an organic peroxide.

4,761,448

STABILIZED CRYSTALLINE POLYMERS

Robert Q. Kluttz, Houston; Richard A. Kemp, Stafford, and Robert C. Ryan, Houston, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 29, 1987, Ser. No. 102,467
Int. Cl.[4] C08K 5/05
U.S. Cl. 524—381 25 Claims

1. A composition stabilized against the loss of apparent crystallinity during melt processing which comprises a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon and a stabilizing quantity of aluminum tri-alkoxide or aluminum-containing hydrolysis product thereof.

4,761,449

FLAME RETARDANT COMPOSITIONS

Robert G. Lutz, Santa Rosa, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 22, 1987, Ser. No. 111,466
Int. Cl.[4] C08G 3/26
U.S. Cl. 524—424 7 Claims

1. The flame retardant polymer composition comprising a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon and a flame retarding quantity of an alkaline earth metal carbonate.

4,761,450

COMPATIBLE POLYMER BLENDS USEFUL AS MELT ADHESIVES

Pallavoor R. Lakshmanan, Houston, and Paula J. Carrier, Seabrook, both of Tex., assignors to Baychem International, Inc., Houston, Tex.

Filed Dec. 11, 1987, Ser. No. 131,580
Int. Cl.[4] C08L 23/20, 23/06, 23/08
U.S. Cl. 524—488 30 Claims

1. A compatible polymer blend comprising a low density ethylene polymer, a copolymer of butene-1 and from about 1.5 to about 20 weight percent of an olefin selected from the group consisting of ethylene and propylene, a hydrocarbon tackifier and a low molecular weight polymer selected from the group consisting of a low molecular weight liquid polybutene, an amorphous polypropylene and mixtures thereof.

4,761,451

ACOUSTIC VIBRATION SHEET AND POLYPROPYLENE COMPOSITION FOR THE SAME

Tsutomu Moteki, Chibakes; Kunihiro Yamaguchi, and Hisao Iizuka, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 12, 1987, Ser. No. 13,882
Claims priority, application Japan, Mar. 5, 1986, 61-47930
Int. Cl.[4] C08K 3/04, 3/34; C08L 9/00, 53/02
U.S. Cl. 524—505 4 Claims

1. A polypropylene composition for acoustic vibration sheets consisting essentially of a blend of 100 parts by weight of a polypropylene having a crystallinity of 0.95 or more and a Q value of 15 or more and 1 to 15 parts by weight of a thermoplastic styrene block copolymer rubber.

4,761,452

OIL-RESISTANT RUBBER COMPOSITION

Kunio Itoh; Motoo Fukushima, both of Annaka, and Tsutomu Nakamura, Takasaki, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1986, Ser. No. 883,535
Claims priority, application Japan, Jul. 12, 1985, 60-153788
Int. Cl.[4] C08L 43/04
U.S. Cl. 524—521 8 Claims

1. A rubber composition which comprises:

(a) from 10 to 90 parts by weight of an acrylic copolymer comprising from about 90.00 to about 99.99% by weight of an acrylic monomer or monomers and from about 10.00 to about 0.01% by weight of a vinylsilyl-containing organosilicon compound having an aliphatically unsaturated group copolymerizable with the acrylic monomer and a vinylsilyl group represented by the general formula,

$$(CH^2{=}CH)^mR^nSi\text{—},$$

in which R is a monovalent atom or group selected from the class consisting of a hydrogen atom, monovalent hydrocarbon group and hydrolyzable groups, m is 1, 2, or 3 and n is zero, 1 or 2 with the proviso that m+n is 3;

(b) from 90–10 parts by weight of an EPM or EPDM rubber; and

(c) a reinforcing filler having a specific surface area of at least 50 m^2/g in an amount in the range from 10 to 200% by weight based on the total amount of the components (a) and (b).

4,761,453

POLYMER PROCESSING

Robert C. Allen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1987, Ser. No. 107,192
Int. Cl.[4] C08J 00/00
U.S. Cl. 524—612 5 Claims

1. A plasticized composition comprising a linear alternating polymer of carbon monoxide and at least one ethylenically unsaturated hydrocarbon, said polymer having been substantially saturated with water at the melting point of said composition.

4,761,454

METHOD FOR THE PREPARATION OF FINE SPHERICAL PARTICLES OF SILICONE ELASTOMER

Toshio Oba, Annaka; Takeshi Mihama, Tokyo, and Koji Futatsumori, Annaka, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1987, Ser. No. 44,236
Claims priority, application Japan, May 2, 1986, 61-102285
Int. Cl.[4] C08L 83/04
U.S. Cl. 524—862 5 Claims

1. A method for the preparation of fine spherical particles of a silicone elastomer which comprises spray-drying an aqueous emulsion containing a curable organopolysiloxane composition dispersed in an aqueous medium in the form of spherical particles having a diameter not exceeding 20 μm, wherein the organopolysiloxane composition comprises:

(a) an organopolysiloxane having, in a molecule, at least two vinyl groups bonded to the silicon atoms;

(b) an organohydrogenpolysiloxane having, in a molecule, at least two hydrogen atoms directly bonded to the silicon atoms; and

(c) a platinum compound in a catalytic amount.

4,761,455

POLY(VINYL CHLORIDE) COMPOSITIONS AND POLYMERIC BLENDING AGENTS USEFUL THEREFOR

Muyen M. Wu, Hudson, and George S. Li, Solon, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 12, 1987, Ser. No. 60,889
Int. Cl.[4] C08L 27/06, 51/04; C08F 279/02
U.S. Cl. 525—75 4 Claims

1. Normally solid polymers that are the result of addition copolymerization of the monomers acrylonitrile, methyl methacrylate, α-methylstyrene and/or styrene, and indene in the presence of a preformed unsaturated rubbery polymer, said polymers containing 10–200 parts by weight rubbery polymer, 10–40 parts by weight acrylonitrile, 5–50 parts by weight methyl methacrylate, 5–45 parts by weight of one or both of styrene and α-methylstyrene and 4–45 parts by weight indene in the polymer structure, per 100 parts by weight of the total parts of acrylonitrile, methyl methacrylate, styrene, α-methylstyrene and indene combined in said polymer structure.

4,761,456

PROCESS FOR METALLATING NONCONJUGATED DIENE-CONTAINING ETHYLENE POLYMERS AND GRAFT POLYMERS PREPARED THEREFROM

Gary K. Lund, Ogden, Utah, and Calvin P. Esneault, Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 745,763, Jun. 17, 1985, abandoned. This application Aug. 18, 1986, Ser. No. 899,183
Int. Cl.[4] C08F 8/42
U.S. Cl. 525—331.7 17 Claims

1. A process for metallating an ethylene interpolymer, said interpolymer having polymerized therein ethylene, a nonconjugated diene and at least one 1-olefin having three or more carbon atoms, the process comprising:

(a) providing an admixture of the ethylene interpolymer and a saturated nonpolar hydrocarbon solvent;

(b) forming an intermixture of the admixture and activating amounts of a tertiary diamine and a potassium alkoxide; and

(c) contacting the intermixture with an amount of at least one lithium alkyl compound under conditions sufficient to provide more than about twenty percent of the polymer molecules with at least one lithiated site,

the amounts of the tertiary amine, the potassium alkoxide and the lithium alkyl also being sufficient to provide a degree of metallation greater than the degree of metallation attained with (1) the potassium alkoxide and the lithium alkyl compound or (2) the tertiary amine and the lithium alkyl compound, or by adding the degrees of metallation attained with (1) and (2) said amounts also being sufficient to provide a ratio of potassium atoms to lithium atoms of from about 0.5 to about 4.0 and a ratio of tertiary amine to lithium atoms of from about 0.5 to about 1.0.

4,761,457

PROCESS FOR PRODUCING CROSS-LINKED RESINS

Kazuhiro Arita, Takatsuki, and Yasuo Sano, Minoo, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 874,894, Jun. 16, 1986, abandoned, which is a continuation of Ser. No. 679,008, Dec. 6, 1984, abandoned. This application Mar. 6, 1987, Ser. No. 20,209
Claims priority, application Japan, Dec. 26, 1983, 58-248642; Oct. 18, 1984, 58-219253
Int. Cl.[4] C08G 63/76
U.S. Cl. 525—439 1 Claim

1. A process for producing a cross-linked resin which comprises: reacting a bis(2-oxazoline) compound with a polyesterpolycarboxylic acid which has carboxylic acid ester linkages in the molecule, in an equivalent ratio of the bis(2-oxazoline) compound to the carboxyls of the polyesterpolycarboxylic

VOL 1093 ISS 1 AG 2 1988 UMI

acid of not less than 1 at an elevated temperature; said polyesterpolycarboxylic acid being at least one selected from the group consisting of:

a polyesterpolycarboxylic acid prepared by the reaction of a polycarbonatediol with an aliphatic dicarboxylic acid or its anhydride; and

wherein the reaction is carried out in the presence of an organic reactive compound as a further reactant which has at least one acidic active hydrogen in the molecule, in an equivalent ratio of the bis(2-oxazoline) compound to the total of the carboxyls of the polyesterpolycarboxylic acid and the active hydrogens of the organic reactive compound of not less than 1, the reactive compound being at least one selected from the group consisting of a dicarboxylic acid, a sulfonamide, an acid imide, an aromatic hydroxy-carboxylic acid and a bisphenol-sulfone compound, and said reactive compound is not said polyesterpolycarboxylic acid,

said reaction being carried out in the presence of a catalyst selected from the group consisting of a phosphorous acid ester, an organic phosphonous acid ester and an inorganic salt, and

said catalyst being used in an amount of 0.1–5 percent by weight based on the weight of a mixture of the bis(2-oxazoline) compound, polyesterpolycarboxylic acid and organic reactive compound.

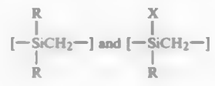
4,761,458

PRECERAMIC POLYCARBOSILANE DERIVATIVES

Gary T. Burns; Paul P. Lu, and Gregg A. Zank, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 17, 1987, Ser. No. 85,826
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—474 **37 Claims**

1. A halogenated polycarbosilane consisting essentially of



units where each R is independently an alkyl group containing 1 to 4 carbon atoms, where X is chlorine or bromine, and where X is present at about 0.1 to 80 weight percent.

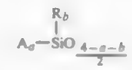
4,761,459

SURFACE MODIFIER

Masashi Matsuo; Nobuyuki Yamagishi, and Takashige Maekawa, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jun. 3, 1987, Ser. No. 57,039
Claims priority, application Japan, Jun. 3, 1986, 61-127272
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—479 **2 Claims**

1. A surface modifier comprising a block copolymer obtained by polymerizing a polyfluoroalkyl group-containing compound selected from the group consisting of acrylates and methacrylates having a polyfluoroalkyl group at its terminal in the presence of a chain transfer agent composed of a polysiloxane having a mercapto group at its terminal represented by the following formula:



(I)

wherein A is a monovalent organic group having a mercapto group at its terminal, $0<a<4$, R is a substituted or unsubstituted monovalent hydrocarbon group having not higher than 20 carbon atoms, $0 \leqq b<4$, and $0<a+b<4$, said block copolymer containing segments of said polysiloxane and segments of said compound, as essential components.

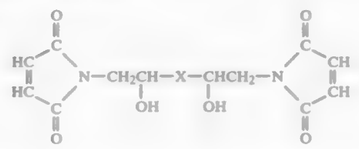
4,761,460

POLYMALEIMIDE COMPOUND AND COMPOSITION CONTAINING THE SAME

Masahiko Otsuka, Kurashiki, and Hidekazu Ishimura, Fujinomiya, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

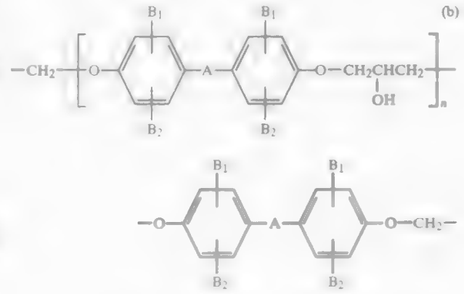
Filed Mar. 4, 1987, Ser. No. 21,886
Claims priority, application Japan, Mar. 5, 1986, 61-46432
Int. Cl.[4] C08G *59/14*
U.S. Cl. 525—504 **4 Claims**

1. A polymaleimide compound having a structure represented by the formula (a):

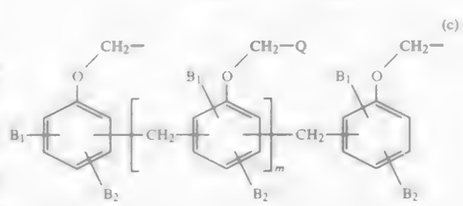


(a)

wherein X is selected from the group consisting of units represented by the formula (b) and units represented by the formula (c):

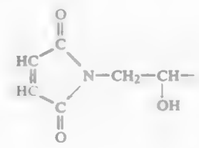


(b)



(c)

in which A is selected from the group consisting of $—CH_2—$, $—C(CH_3)_2—$ and $—SO_2—$; B_1 and B_2 are each independently selected from the group consisting of hydrogen atom, bromine atom and methyl group; Q is a group represented by the formula



n is an integer of from 0 to 2; and m is an integer of from 1 to 10.

4,761,461

PREPARATION OF HOMOPOLYMERS AND COPOLYMERS OF PROPYLENE BY MEANS OF A ZIEGLER-NATTA CATALYST SYSTEM

James F. R. Jaggard, Gruenstadt; Rainer A. Werner, Bad Durkheim, and Wolfgang Gruber, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 14, 1986, Ser. No. 930,529
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1985, 3540699
Int. Cl.[4] C08F *4/02, 10/06*
U.S. Cl. 526—125 **1 Claim**

1. A process for preparing homopolymers of propylene and copolymers of propylene with minor amounts of other C_2–C_6-alpha-monoolefins by polymerizing the monomer or monomers at 20°–160° C. and 1–100 bar by means of a Ziegler-Natta catalyst system comprising

(1) a titanium component which contains titanium, magnesium, chlorine and a benzenecarboxylic acid derivative,

(2) an aluminum component of the formula

$$X\ Al\ R_2^1$$

where
X is R^1 or chlorine and
R^1 is alkyl of not more than 8 carbon atoms,

(3) a silane component of the formula

$$R_n^2\ Si(OR^3)_{4-n}$$

where
R^2 is aryl or alkyl of not more than 16 carbon atoms,
R^3 is alkyl of not more than 15 carbon atoms and
n is 0, 1, 2, or 3, with the proviso that the atomic ratio of titanium in titanium component (1):aluminum in aluminum component (2) is from 1:10 to 1:500 and of aluminum in aluminum component (2):silicon in silane component (3) is from 1:0.01 to 1:0.5,

which comprises using a titanium component (1) obtained by first of all reacting

(1.1) in a first stage

(1.1.1) in a liquid alkane,

(1.1.2) a finely divided magnesium compound having a particle diameter within the range from 0.01 to 5 mm and the formula

$$MgX_2$$

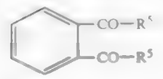
where X is halogen,

(1.1.3) an alcohol of the formula

$$R^4OH$$

where R^4 is $-C_2$-alkyl,

(1.1.4) a phthalic acid derivative of the formula



where R^5 is C_1–C_8-alkoxy and

(1.1.5) titanium tetrachloride with one another by

(1.1.A) first bringing together the magnesium compound and the alcohol with constant mixing at from −20° to +40° C. using per 100 mole parts of the hydrocarbon from 5 to 30 mole parts of magnesium compound and per 100 mole parts of magnesium compound from 200 to 350 mole parts, of the alcohol, the mixing being continued for from 0.2 to 12 hours and the temperature being maintained at from +50° to +130° C.,

(1.1.B) subsequently adding the titanium tetrachloride with constant mixing at from −20° to +40° C. using per 100 mole parts of alcohol from 50 to 500 mole parts of titanium tetrachloride, and with constant mixing maintaining the resulting mixture at 10°–150° C. for from 0.1 to 4 hours with the proviso that the phthalic acid derivative is added during process steps (1.1.A) and/or (1.1.B), in an amount, per 100 mole parts of magnesium compound, of from 10 to 25 mole parts, and isolating the resulting solid intermediate by separating off the remaining liquid phase, then

(1.2) in a second stage extracting the solid intermediate obtained from stage (1.1), which is A weight percent magnesium, at 100°-150° C., continuously, with titanium tetrachloride until the remaining solid substance has become richer in magnesium by a factor of from 1.1 to 2.4, i.e. comprises from 1.1×A to 2.4×A weight percent magnesium, and finally

(1.3) washing in a third stage the extractant-moist solid substance remaining in stage (1.2) with a liquid C_5–C_8-alkane 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10 times, using per 100 parts by weight of solid substance from 300 to 400 parts by volume of alkane per wash step, and in this way recovering with the solid substance produced in stage (1.3) said titanium component (1).

4,761,462

PACKAGING PROPYLENE COPOLYMER FILM

Shuji Kitamura, Nagaokakyo; Kiyohiko Nakae, Otsu; Tadatoshi Ogawa; Teruaki Yoshida, both of Takatsuki, and Hajime Sadatoshi, Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 30, 1985, Ser. No. 814,884
Claims priority, application Japan, Sep. 20, 1983, 58-174864; Mar. 20, 1985, 60-56209
The portion of the term of this patent subsequent to Jun. 2, 2004, has been disclaimed.
Int. Cl.[4] C08F *210/06, 210/08*
U.S. Cl. 526—159 **5 Claims**

1. A packaging transparent propylene copolymer film consisting of a copolymer of propylene and butene-1 or a copolymer of propylene, butene-1 and ethylene obtained by a polymerization method in which the solvent-soluble components are not substantially removed, using a catalyst system consisting of a solid compound containing at least titanium and a halogen, an organoaluminum compound and an electron-donating compound, said copolymer satisfying the following conditions:

(1) the content of butene-1 in said copolymer is 10–22 mole %,

(2) the content of ethylene in said copolymer is 3 mole % or less,

(3) the content of cold xylene-soluble portion in said copolymer is 15–50% by weight,

(4) the content of boiling n-heptane insoluble portion in said copolymer is 7% or more by weight,

(5) the ΔHaze of said copolymer is 4% or less, and

(6) the flexural modulus of said copolymer is 2,500–7,000 kg/cm^2,

said copolymer being stretched in at least one direction in a draw ratio of 1.2–5.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,463

THERMOPLASTIC RESIN COMPOSITION HAVING A MATTE APPEARANCE

Shigemi Matsumoto, Akashi, and Fumiya Nagoshi, Kobe, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1986, Ser. No. 843,358
Claims priority, application Japan, Mar. 25, 1985, 60-60432
Int. Cl.[4] C08L 37/00
U.S. Cl. 525—74 3 Claims

1. A thermoplastic resin composition having a matte appearance comprising: (A) 80–5 parts by weight of a graft copolymer obtained by grafting 40–95 parts by weight of diene rubber with 60–5 parts by weight of a vinyl component consisting of 0.1–40 weight % of a glycidyl ester of α- and β-unsaturated acid, 10–40 weight % of a vinyl cyanide compound, 60–90 weight % of an aromatic vinyl compound and 0–30 weight % of other copolymerizable vinyl compounds, and (B) 20–95 parts by weight of a copolymer obtained through reaction of 10–40 weight % of a vinyl cyanide compound, 60–90 weight % of at least one aromatic vinyl compound and 0–30 weight % of other copolymerizable vinyl compounds, the intrinsic viscosity of the resin composition in terms of its components which are soluble in methyl ethyl ketone being 0.25–1.5 (N,N'-dimethyl formamide solution, 30° C.).

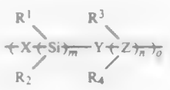
4,761,464

INTERRUPTED POLYSILANES USEFUL AS PHOTORESISTS

John M. Zeigler, 2208 Lester Dr, NE., Albuquerque, N. Mex. 87112

Filed Sep. 23, 1986, Ser. No. 910,672
Int. Cl.[4] C08G 77/22
U.S. Cl. 528—30 14 Claims

1. A polymer of the formula



wherein

X is SiR^5R^6, O, NR^5, SnR^5R^6, GeR^5R^6, S, PR^5, $P(=O)R^5$, AsR^5, Se or Te,

Y is independently a group defined for X,

Z is C, Si, Ge, Sn, P or P(=O),

R^{1-6} each independently is (a) H; (b) C_{6-10}-aryl; (c) C_{1-15}-alkyl; (d) C_{3-15}-cycloalkyl; (e) a heterocyclic group of 1–3 fused rings, each containing 4–7 ring atoms, 1–3 of which in each ring are O, N or S, the remainder being C-atoms; (f) one of (b)–(e) wherein a H-atom is replaced by C_{1-10}-alkyl, C_{6-10}-aryl, C_{3-15}-cycloalkyl, C_{1-10}-alkoxy, OH, SH, NH_2, $NH(C_{1-10}$-alkyl), $N(C_{1-10}$-alkyl) (C_{1-10}-alkyl), or C_{1-10}-(alkoxyalkyl); (g) $—SiR^7R^8R^9$; (h) $GeR^7R^8R^9$; or (i) $SnR^7R^8R^9$;

R^{7-9} each independently is (a) H; (b) C_{6-10}-aryl; (c) C_{1-15}-alkyl; (d) C_{3-15}-cycloalkyl; (e) a heterocyclic group of 1–3 fused rings, each containing 4–7 ring atoms, 1–3 of which in each ring are O, N or S, the remainder being C-atoms; or (f) one of (b)–(e) wherein H-atoms is replaced by C_{1-10}-alkyl, C_{6-10}-aryl, C_{3-15}-cycloalkyl, C_{1-10}-alkoxy, OH, SH, NH_2, $NH(C_{1-10}$-alkyl), $N(C_{1-10}$-alkyl) (C_{1-10}-alkyl), or C_{1-10}-(alkoxyalkyl);

m is 2 to about 10;

n is 0 to about 100, and

o is about 10 to about 100,

with the provisos that

(a) at least one of X, Y and Z represents a group wherein the atom in the main polymer chain is not Si,

(b) when n=0, then X and Y are not both O or N,

(c) when X and Y is GeR^5R^6 or Z is Ge, then at least one of X, Y or Z is a group wherein the atom in the main polymer chain is not Ge and is not Si,

(d) when one of R^{1-9} is alkyl-containing, then the total number of C-atoms in all alkyl groups on the atom in the main polymer chain to which it is bonded is not more than 25,

(e) when Z is P or P(=O), R^4 is not present,

(f) there are no O—N bonds in the polymer backbone and

(g) when the polymer backbone has only Si and O atoms, R^1 is isopropyl, C_{4-15}-alkyl, C_{6-10}-aryl or one of (d)–(i) defined above for R^1.

4,761,465

DIFUNCTIONAL ISOCYANATE-TERMINATED POLYOXYALKYLENE DIAMINE PREPOLYMERS AND POLYMER COATINGS APPLICATIONS

George P. Speranza, Austin; Jiang-Jen Lin, Round Rock, and Michael Cascarida, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

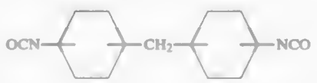
Filed Jul. 27, 1987, Ser. No. 78,314
Int. Cl.[4] C08G 18/80
U.S. Cl. 528—45 17 Claims

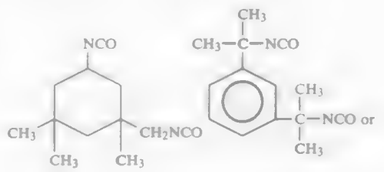
1. A polyoxyalkylene diamine and isocyanate reaction product containing an average of two terminal isocyanate groups and having an average molecular weight of about 600 to 10,000;

said isocyanate reaction product comprising a prepolymer having been prepared by reacting an excess of diisocyanate with an polyoxyalkylene diamine having a molecular weight of about 400 or less in the presence of a alcohol solvent;

the principal isocyanate prepolymer reaction product being a diisocyanate formed by coupling each isocyanate group of said diisocyanate through a urea-linkage with a terminal primary amine of said diamine;

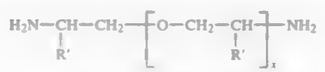
wherein said diisocyanate reactant has the formula from the group consisting of :



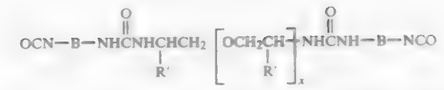




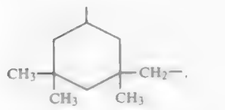
and said polyoxyalkylene diamine has the formula:

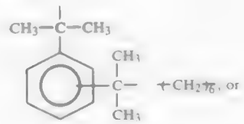


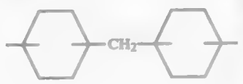
wherein R' independently represents hydrogen, methyl or ethyl and x is a number having an average value of about 1 to about 60, wherein said isocyanate prepolymer reaction product has the formula:



where R' is hydrogen or methyl and x is a number having an average value of about 1 to 60, B represents alkyl group from an isocyanate nucleus structure from the group consisting of:







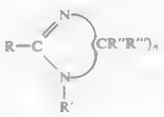
4,761,466

INIDAZOLINE THIOCYANATES AS CURE ACCELERATORS FOR AMINE CURING OF EPOXIDE RESINS

Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 12, 1987, Ser. No. 84,351
Int. Cl.[4] C08G 59/68
U.S. Cl. 528—90 14 Claims

1. An adhesive composition comprising a mixture of a polyepoxide, an amine curing agent and a thiocyanate salt of a compound having the formula



wherein R represents an alkyl group carbon atoms, an aryl group having from 6 to 20 carbon atoms or an alkaryl group having from 7 to 20 carbon atoms, R', R'' and R''' independently represent hydrogen, an alkyl group having from 1 to 10 carbon atoms or an alkyl ether group having from 1 to 10 carbon atoms and n represents 2 or 3.

4,761,467

PYRIDINE LIGANDS FOR PREPARATION OF ORGANIC CARBONATES

Ajit K. Bhattacharya, Hopewell Junction, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,809
Int. Cl.[4] C07C 68/00
U.S. Cl. 558—277 9 Claims

1. A method of preparing dimethyl carbonate which comprises

(a) reacting methanol with carbon monoxide and oxygen in the presence of a catalyst system containing

(i) as a catalyst, cupric methoxychloride [Cu(OMe)Cl], and

(ii) as a ligand of the catalyst, a pyrimidine compound; and

(b) recovering the dimethyl carbonate product.

4,761,468

PROCESS FOR PREPARING POLYARYLENE THIOETHER HAVING THIOL/THIOLATE END GROUP CONCENTRATION OF 10 MICRO MOLE/G OR LESS

Tsuneo Okamoto; Takao Iwasaki; Yo Iizaka, and Zenya Shiiki, all of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,346
Claims priority, application Japan, Feb. 14, 1986, 61-30457
Int. Cl.[4] C08G 75/14
U.S. Cl. 528—388 9 Claims

1. In a process for producing a polyarylene thioether by the dehalogenation/sulfidization reaction of an alkali metal sulfide with a dihaloaromatic compound in a polar organic solvent, the improvement which comprises continuing the reaction until the concentration of a thiolate group or a thiol group at the resulting polyarylene thioether terminal reaches 10 micro mole/g or less by adopting at least the following conditions:

(a) the dihaloaromatic compound is the major component of a haloaromatic compound and the ratio of an equivalent weight of total charge (B) of the haloaromatic compound to an equivalent weight of effective charge (A) of the alkali metal sulfide, (B)/(A), is in the range of 1.002 to 1.25, and

(b) at least the latter period of the reaction is conducted in an apparatus which has stirring power number of 1.2 or more at a Reynolds number of 5×10^4 or more under the stirring condition such that stirring power is 1.0 kw/m^3 or more.

4,761,469

ISOLATION, PURIFICATION AND SEQUENCE DETERMINATION OF CARDIONATRINS

Adolfo J. de Bold, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Continuation of Ser. No. 706,379, Feb. 27, 1985, abandoned, which is a continuation-in-part of Ser. No. 546,817, Oct. 31, 1983, Pat. No. 4,663,437, Ser. No. 473,442, Mar. 9, 1983, abandoned, and Ser. No. 351,036, Feb. 22, 1982, abandoned, said Ser. No. 546,817, is a continuation-in-part of Ser. No. 473,442, , which is a continuation-in-part of Ser. No. 351,036,. This application Feb. 13, 1987, Ser. No. 15,514
Int. Cl.[4] C07K 7/10
U.S. Cl. 530—324 2 Claims

1. A purified bioactive composition containing a peptide having a molecular weight of about 13,700 and an amino acid sequence comprising: Asn-Pro-Val-Tyr-Ser-Ala-Val-Ser-Asn-Thr-Asp-Leu-Met-Asp-Phe-Lys-Asn-Leu-Leu-Asp-His-Leu-Glu-Glu-Lys-Met-Pro-Val-Glu-Asp-Glu-Val-Met-Pro-Pro-Gln-Ala-Leu-Ser-Glu-Gln-Thr-Asp-Glu-Ala-Gly-Ala-Ala-Leu-Ser-Ser-Leu-Ser-Glu-Val-Pro-Pro-Trp-Thr-Gly-Glu-Val-A n-Pro-Ser-Gln-Arg-Asp-Gly-Gly-Ala-Leu-Gly-Arg-Gly-Pro-Trp-Asp-Pro-Ser-Asp-Arg-Ser-Ala-Leu-Leu-Lys-Ser-Lys-Leu-Arg-Ala-Leu-Leu-Ala-Gly-Pro-Arg-Ser-Leu-Arg-Arg-Ser-Ser-Cys-Phe-Gly-Gly-Arg-Ile-Asp-Arg-Ile-Gly-Ala-Gln-Ser-Gly-Leu-Gly-Cys-Asn-Ser-Phe-Arg- yr.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,470

IMMUNOGENIC SYNTHETIC PEPTIDE CAPABLE OF ELICITING HERPES SIMPLEX VIRUS NEUTRALIZING ANTIBODY

Emilio A. Emini, Paoli; Vivian M. Larson, Harleysville, both of Pa., and Joshua S. Boger, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 809,452, Dec. 16, 1985, abandoned. This application Apr. 10, 1987, Ser. No. 36,651

Int. Cl.[4] C07K *7/08*

U.S. Cl. 530—326 6 Claims

1. An immunogenic synthetic peptide having the sequence:

A-B-D-Gly-Asp-Pro-Lys-Pro-Lys-Lys-Asn-Lys-Lys-Pro-Lys-Asn-Pro-E-G-J-K,

wherein

A is amino, amino-p-benzoylbenzoyl, N-acetyl or carboxyl;
B is absent, Tyr or Lys;
D is absent or Nle;
E is absent, Thr, Cys or Nle;
G is absent or Pro;
J is absent or Pro;
K is amino or carboxyl,

or a pharmaceutically-acceptable salt thereof.

4,761,471

BONE MORPHOGENETIC PROTEIN COMPOSITION

Marshall R. Urist, Pacific Palisades, Calif., assignor to The Regents of the University of California, Berkley, Calif.

Division of Ser. No. 523,606, Aug. 16, 1983, Pat. No. 4,619,989, which is a continuation-in-part of Ser. No. 260,726, May 5, 1981, Pat. No. 4,455,256, which is a continuation of Ser. No. 174,906, Aug. 4, 1980, Pat. No. 4,294,753. This application Aug. 22, 1986, Ser. No. 899,020

Int. Cl.[4] C07G *7/00*; C07K *15/06*

U.S. Cl. 530—350 13 Claims

1. Substantially pure bone morphogenetic protein composition comprising BMP factor and at least one BMP associated protein selected from a group consisting of BMP associated proteins having molecular weights in the range of between about 14 dKa and about 34 kDa, said BMP factor being capable of inducing bone formation independent of the presence of said BMP associated proteins, and said BMP associated proteins being incapable of inducing bone formation independent of the presence of said BMP factor.

4,761,472

ISOLATION AND PURIFICATION OF HEMIN

Hans Schultze, Moorrege, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,819

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1986, 3608091

Int. Cl.[4] C07D *487/22*

U.S. Cl. 540—145 4 Claims

1. A process for the isolation and purification of hemin, where the hemin is allowed to crystallize out from a heated aqueous hydrogen chloride-containing solution or suspension at pH 0.5–2.5 in the presence of a cationic, nonionic or amphoteric surfactant which remains in solution at neutral pH, or a mixture thereof, as a crystallization catalyst.

4,761,473

NOVEL COMPOSITIONS PREPARED FROM ORGANIC AMINES AND NITROGEN-CONTAINING AROMATIC HETEROCYCLIC COMPOUNDS SUBSTITUTED WITH AT LEAST ONE GROUP SELECTED FROM CARBOXYLIC ACID, CARBOXYLIC ACID ESTER, CARBOXYLIC ACID ANHYDRIDE AND CARBOXYLIC ACID HALIDE

Duane S. Treybig, and Robert G. Martinez, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 15, 1985, Ser. No. 787,819

Int. Cl.[4] C07D *213/81, 215/48, 217/26, 401/12*

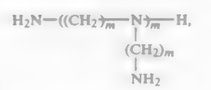
U.S. Cl. 544—224 3 Claims

1. A new composition of matter which comprises the reaction product of

(A) at least one aromatic heterocyclic material, except pyrazine, having one or more rings, at least one nitrogen atom and containing at least one group selected from
(1) carboxylic acid,
(2) carboxylic acid ester,
(3) acyclic carboxylic acid anhydride,
(4) carboxylic acid halide or
(5) combination thereof; with

(B) an organic amine represented by the formulas

$H_2N((CH_2)_mNH)_mCH_2)_mNH_2$,



wherein m has a value from 1 to about 10; and

(C) optionally reacted or neutralized with a mineral acid or an organic acid having from about 1 to about 36 carbon atoms; and

wherein components (A) and (B) are present in quantities which provide a ratio of



groups to $-NH_2$ and/or —NH— groups of from about 0.1:1 to about 1.2:1, and component (C) is present in a quantity which provides a ratio of mineral acid or carboxylic acid to reactive amine hydrogen of the product formed from the reaction of components (A) and (B) of from about zero:1 to about 2:1.

4,761,474

3-(1H-TETRAZOL-5-YL)THIENO[2,3-D]PYRIMIDIN-4(3H)-ONES

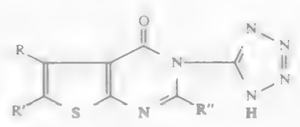
Norton P. Peet; Shyam Sunder, both of Indianapolis, Ind., and Anna P. Vinogradoff, Concord, Calif., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Feb. 25, 1986, Ser. No. 833,871

Int. Cl.[4] C07D *495/04*

U.S. Cl. 544—250 5 Claims

1. A compound of the formula



wherein R is hydrogen or lower alkyl having 1 to 4 carbon atoms; R′ is hydrogen, lower alkyl having 1 to 4 carbon atoms or phenyl; or R and R′ are combined as trimethylene or tetramethylene; and R″ is hydrogen, methyl or ethyl; and the pharmaceutically acceptable salts thereof.

4,761,475

2,4-DIAMINOPYRIMIDINES SUBSTITUTED WITH HETEROBICYCLOMETHYL RADICALS AT THE 5 POSITION USEFUL AS ANTIBACTERIALS

Susan M. Daluge, 297 Azalea Dr., Chapel Hill, N.C. 27514, and Paul M. Skoenzay, 1513 Cotherstone Dr., Durham, N.C. 27712

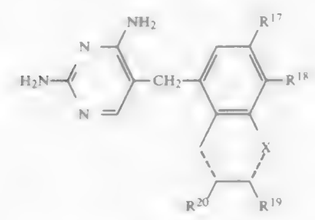
Division of Ser. No. 319,647, Nov. 9, 1981, abandoned. This application Mar. 12, 1986, Ser. No. 839,463

Claims priority, application United Kingdom, Nov. 11, 1980, 8036133

Int. Cl.[4] C07D *239/49*

U.S. Cl. 544—324 2 Claims

1. A compound of formula (VIII):



(VIII)

or a pharmaceutically acceptable salt thereof, wherein R^{17} and R^{18} together form a methylene-dioxy group or R^{17} is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{2-4} alkenyl, amino, trifluoromethyl, a group $—COR^{21}$ wherein R^{21} is C_{1-4} alkyl or C_{1-4} alkoxy, or a group $—OSO_2R^{22}$ wherein R^{22} is C_{1-4} alkyl; R^{18} is halogen, C_{1-4} alkyl, C_{2-4} alkenyl, hydroxy, amino, mono- or di-C_{1-4} alkyl substituted amino, mercapto-, C_{1-4} alkylthio, trifluoromethyl, a group $—COR^{21}$ or a group $—OSO_2R^{22}$ wherein R^{21} and R^{22} are as hereinbefore defined; R^{19} is hydrogen, =O, S, $(CH_3)_2$, halogen, C_{1-4} alkyl; R^{20} is hydrogen or methyl, X is oxygen or nitrogen and the dotted lines represent single or double bonds with the exception that when X is an oxygen atom the dotted line adjacent to it cannot represent a double bond.

4,761,476

COMPOUNDS FORMED BY THE REACTION OF PIPERAZINE, AND DERIVATIVES THEREOF, WITH GLYOXAL, AND DERIVATIVES THEREOF

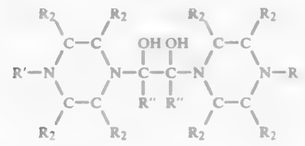
Duane S. Treybig, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 28, 1985, Ser. No. 749,697

Int. Cl.[4] C07D *295/08, 295/10*

U.S. Cl. 544—357 8 Claims

1. A composition of matter having the following chemical formula:



where

R and R′ are hydrogens; and
R″ is hydrogen or C_1 to C_4 alkyl.

4,761,477

13-PROPYLBERBERINE SALTS

Tetsuro Ikekawa, Chiba; Fumitake Shimada, Kasukabe; Jong-Chol Cyong, Akishima, and Kazuo Uebaba, Yokohama, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

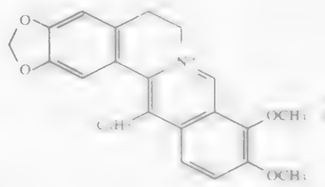
Filed Nov. 27, 1985, Ser. No. 802,447

Claims priority, application Japan, Nov. 29, 1984, 59-252425

Int. Cl.[4] C07D *455/03*; A61K *31/47*

U.S. Cl. 546—48 1 Claim

1. A 13-propylberberine salt represented by the following general formula (I):



(I)

wherein X^- means HSO_4 or H_2PO_4.

4,761,478

3-DEAZAGUANINE SULFONIC ACID SALTS

Ian C. Pattison, Ann Arbor, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 409,389, Aug. 19, 1982, abandoned. This application Jan. 21, 1986, Ser. No. 821,176

Int. Cl.[4] C07D *471/04*

U.S. Cl. 546—118 1 Claim

1. The compound having the name 6-amino-1,5-dihydro-4H-imidazo-[4,5-c]pyridin-4-one methanesulfonic acid salt, said compound having improved solubility in water.

4,761,479

CRYSTALLINE QUINAPRIL AND A PROCESS FOR PRODUCING THE SAME

Om P. Goel, and Uldis Krolls, both of Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 30, 1987, Ser. No. 32,209

Int. Cl.[4] C07D *217/16*

U.S. Cl. 546—147 8 Claims

1. Crystalline quinapril hydrochloride exhibiting essentially the following X-ray diffraction data:

Spacing 'd'	Relative Intensities
11.946	11
9.825	44
7.971	30
6.417	22
5.372	30
5.277	37
4.720	18
4.461	61
4.133	24
4.022	99
3.770	30
3.562	49
3.278	32
3.089	17
2.969	24
2.894	19
2.557	18
2.488	15

VOL 1093 ISS 1 AG 2 1988 UMI

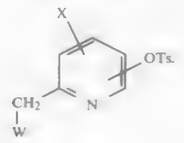
4,761,480

P-TOLUENE-SULFONYL-OXY SUBSTITUTED PYRIDINES

Carl Kaiser, Haddon Heights; Lawrence I. Kruse, Haddonfield, both of N.J., and Stephen T. Ross, Berwyn, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Division of Ser. No. 761,936, Aug. 2, 1985, Pat. No. 4,634,711.
This application Oct. 7, 1986, Ser. No. 916,132
Int. Cl.[4] C07D *213/65*
U.S. Cl. 546—294 5 Claims

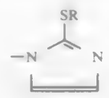
1. A compound having the formula:



in which:

X is hydrogen, halogen, halo C_{1-4} alkyl, or any accessible combination thereof of up to three substituents; and

W is acetoxy, propionyloxy, butyryloxy, or



wherein R is hydrogen or C_{1-4} alkyl.

4,761,481

SUBSTITUTED PYRIDINE DERIVATIVES

Ron L. Hale, Palo Alto, and Dennis W. Solas, San Francisco, both of Calif., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 18, 1985, Ser. No. 712,774
Int. Cl.[4] C07D *213/68, 213/65, 213/73, 213/55*
U.S. Cl. 546—296 24 Claims

1. A fluorescently detectable molecule characterized as comprising a substituted aryl-substituted 2,6-bis(N,N-di(carboxyalkyl)aminoalkyl)pyridine moiety wherein at least one of the substituents present on the acyl is an electron-releasing group and wherein at least one of the substituents present in the aryl as a substitute on the pyridine provides a binding group for attachment to other molecules.

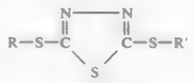
4,761,482

TERPENE DERIVATIVES OF 2,5-DIMERCAPTO-1,3,4-THIADIAZOLES AND LUBRICATING COMPOSITIONS CONTAINING SAME

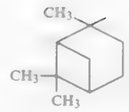
Thomas J. Karol, Norwalk, Conn., assignor to R. T. Vanderbilt Company, Inc., Norwalk, Conn.

Filed Apr. 23, 1987, Ser. No. 41,496
Int. Cl.[4] C07D *285/12*
U.S. Cl. 548—142 5 Claims

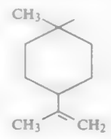
1. A compound having the structural formula



wherein R represents pinene residue having the structural formula



and limonene residue having the structural formula



and R′ represents alkyl, hydroxyalkyl, alkylthio, phenylalkyl and alkylated phenylalkyl groups wherein the alkyl group contains 1 to 50 carbon atoms.

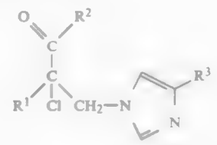
4,761,483

CHLORO-SUBSTITUTED KETONE IMIDAZOLE DERIVATIVES

Kevin R. Lawson, and Roger M. Upton, both of High Wycombe, United Kingdom, assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 26, 1985, Ser. No. 748,890
Int. Cl.[4] C07D *233/64*
U.S. Cl. 548—344 8 Claims

1. A compound of the formula:

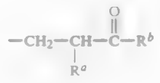


wherein

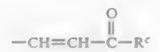
R^1 is C_1–C_4 alkyl, phenyl or C_1–C_4 alkylphenyl;

R^2 is C_1–C_7 alkyl, benzyl, pyridyl, phenyl, halophenyl or dihalophenyl; and

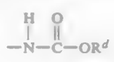
R^3 is hydrogen, a



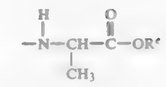
group or a



group wherein R^a is hydrogen, amino or a



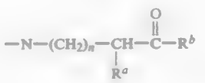
group wherein R^d is benzyl or C_1–C_4 alkyl; R^b is—OR^e or



group wherein R^c is hydrogen or



alkyl; and R^c is hydroxyl or a



group wherein n is an integer of from 1 to 6 and R^a and R^b are herein defined; or a pharmaceutically acceptable acid addition salt thereof.

4,761,484

2-PHENYL-4-ACYL-(3H)-PYRAZOL-3-ONES

Jean-Claude Gautier, Ablon sur Seine; Serge Lecolier, Janville sur Juine; Claude Soriaux, Meunecy, and Sammy Chivalier, Paris, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Division of Ser. No. 593,863, Mar. 27, 1984, Pat. No. 4,666,513.
This application Dec. 10, 1986, Ser. No. 940,064
Claims priority, application France, Apr. 19, 1983, 83 06393
Int. Cl.[4] C07D *231/20, 231/22, 231/26*
U.S. Cl. 548—364 1 Claim

1. A 2-phenyl-4-acyl-pyrazol-3-one which is:

(1) 1,6-di(2-phenyl-5-methyl-4-pyrazolyl-3-one)-hexan-1,6-dione;

(2) 2-phenyl-4-undecenoyl-5-methyl-(3H)-pyrazol-3-one;

(3) 2-phenyl-4-oleoyl-5-phenyl-(3H)-pyrazol-3-one; or

(4) 1,10-di(2-phenyl-5-phenyl-4-pyrazolyl-3-one)-decan-1,10-dione.

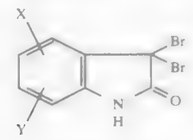
4,761,485

SYNTHETIC METHOD FOR INDOL-2(3H)-ONES

Anthony Marfat, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 11, 1987, Ser. No. 24,746
Int. Cl.[4] A61K *31/40*; C07D *209/34*
U.S. Cl. 548—486 2 Claims

1. A compound of the formula



wherein X and Y are each independently hydrogen, (C_1–C_3)alkyl, (C_1–C_3)alkoxy, fluoro, chloro or bromo; with the provisos that both X and Y are not hydrogen; when X or Y is 5-bromo, the other is not hydrogen, 6-bromo or 7-bromo; and when X or Y is 4-methoxy, the other is not 7-methoxy.

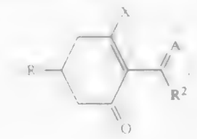
4,761,486

CYCLOHEXENONE DERIVATIVES, THE PREPARATION AND USE THEREOF AS HERBICIDES AND PLANT GROWTH REGULATORS

Bernd Zeeh, Limburgerhof; Dieter Jahn, Edingen-Neckarhausen; Michael Keil, Freinsheim; Dieter Kolassa, Ludwigshafen; Bruno Wuerzer, Otterstadt; Norbert Meyer, Ladenburg; Wilhelm Rademacher, and Johann Jung, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Patentabteilung, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 14, 1987, Ser. No. 3,148
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1986, 3601066
Int. Cl.[4] C07D *333/22, 337/00, 335/00*
U.S. Cl. 549—9 1 Claim

1. A cyclohexenone derivative of the formula



(I)

where

R^1 is a 5-, 6- or 7-membered heterocycle of 1, 2 or 3 sulfur hetero ring members, which may contain 1, 2 or 3 double bonds and up to 3 substituents selected from the group consisting of C_1–C_6-alkyl, C_2–C_6-alkenyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_4-dialkylamino and C_2–C_8-alkoxyalkyl, or is 2-ethylthiopropyl or C_1–C_6-alkoxycarbonyl,

R^2 is C_1–C_4-alkyl,

A is NOR^3, where R^3 is C_1–C_4-alkyl, C_3–C_4-alkenyl, C_3-alkynyl, C_4-alkynyl, C_2–C_4-haloalkyl, C_3–C_4-haloalkenyl or C_2–C_4-alkoxyalkyl, and

X is halogen, or C_1–C_4-alkylthio, phenylthio.

4,761,487

METHOD FOR IMPROVING VOLTAGE REGULATION OF BATTERIES, PARTICULARLY LI/FES_2 THERMAL BATTERIES

Ned A. Godshall, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 10, 1986, Ser. No. 872,718
Int. Cl.[4] H01M *6/36, 4/36*
U.S. Cl. 429—112 4 Claims



1. In a battery composition useful as the cathode of a Li/FeS_2 thermal battery, consisting essentially of substantially pure FeS_2, the improvement wherein sufficient lithium is added to said composition whereby the resultant composition falls into a three-phase thermodynamically invariant region of

VOL 1093 ISS 1 AG 2 1988 UMI

the Li/Fe/S phase diagram and has the formula Li_xFeS_2 with the proviso that $0.05 \leqq x \leqq 1.5$.

4,761,488

REACTION OF OLEFINS WITH MALEIC ANHYDRIDE

Herbert E. Fried, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 13, 1987, Ser. No. 120,257
Int. Cl.[4] C07D *307/60*
U.S. Cl. 549—255 3 Claims

1. In a process for the reaction of olefinically unsaturated hydrocarbons with maleic anhydride to form the corresponding alkenyl succinic anhydride in the presence of an additive which reduces the formation of black/solids and improves product color, the improvement which comprises utilizing aluminum acetylacetonate as additive.

4,761,489

SUBSTITUTED 5-FORMYL-1,3-DIOXEPANS

Walter Gramlich, Edingen-Neckarhausen; Hardo Siegel, Speyer, and Dieter Jahn, Edingen-Neckarhausen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Oct. 30, 1986, Ser. No. 924,762
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1985, 3539468
Int. Cl.[4] C07D *321/06*
U.S. Cl. 549—347 7 Claims

1. 2-isopropyl-5-formyl-1,3-dioxepan.

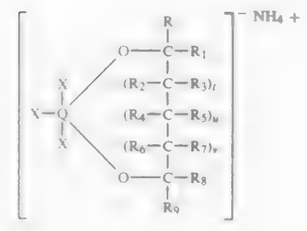
4,761,490

ORGANIC DERIVATIVES OF TELLURIUM AND SELENIUM AND THEIR USE TO STIMULATE CYTOKINE PRODUCTION

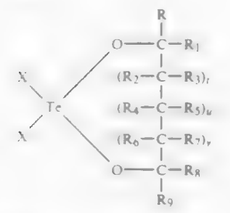
Michael Albeck, Ramat Gan, and Benjamin Sredni, Bnei Brak, both of Israel, assignors to Bar-Ilan University, Ramat Gan, Israel

Continuation-in-part of Ser. No. 712,549, Mar. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 599,511, Apr. 12, 1984, abandoned. This application Sep. 30, 1985, Ser. No. 782,129
Int. Cl.[4] C07D *321/02, 321/12, 319/04, 317/08*
U.S. Cl. 549—347 7 Claims

1. A compound of the general formula:



or



wherein Q is Te or Se; t is 1 or 0; u is 1 or 0; v is 1 or 0; R, R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are the same or different and are independently selected from the group consisting of hydrogen, hydroxyalkyl of 1 to 5 carbons, hydroxy, alkyl of from 1 to 5 carbon atoms, halogen, haloalkyl of 1 to 5 carbon atoms, carboxy, alkylcarbonylalkyl of 2 to 10 carbons, alkanoyloxy of 1 to 5 carbon atoms, carboxyalkyl of 1 to 5 carbon atoms, acyl, amido, cyano, amidoalkyl of 1 to 5 carbons, N-monoalkylamidoalkyl of 2 to 10 carbons, N,N-dialkylamidoalkyl of 4 to 10 carbons, cyanoalkyl of 1 to 5 carbons, alkoxy of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 10 carbon atoms and $—COR_{10}$ wherein R_{10} is alkyl of from 1 to 5 carbons; and x is halogen;

4,761,491

PREPARATION OF 2-SUBSTITUTED-1,3-DIOXACYCLOALKANES FROM DIOLS AND DIUNSATURATED ETHERS

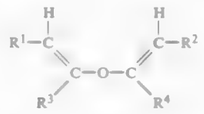
Robert H. Heistand, II, East Walpole, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 686,068, Dec. 24, 1984, abandoned. This application Oct. 20, 1986, Ser. No. 920,633
Int. Cl.[4] C07D *317/20, 317/48*
U.S. Cl. 549—435 17 Claims

14. A method of preparing a 2-substituted-1,3-dioxacycloalkane and a ketone by-product comprising reacting together:

(a) an organic compound having a plurality of hydroxyl moieties which are separated by two carbon atoms, the organic compound being sterically capable of forming a ring with a single additional carbon atom; and

(b) a diunsaturated ether of the formula



wherein each of R^1 and R^2 are independently a hydrogen atom or an inert organic moiety that will not hinder the reaction; and each of R^3 and R^4 are independently an inert organic moiety that will not hinder the reaction;

wherein said organic compound having a plurality of hydroxyl moieties and said diunsaturated ether are reacted under conditions sufficient to form said 2-substituted-1,3-dioxacycloalkane and said ketone.

4,761,492

PROCESS FOR RECOVERING TRIMETHOXYSILANE FROM A TRIMETHOXYSILANE AND METHANOL MIXTURE

Thomas E. Childress, Newport; George M. Omietanski, and Frank D. Mendicino, both of Marietta, all of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 28, 1987, Ser. No. 101,408
Int. Cl.[4] C07F *7/04*
U.S. Cl. 556—482 9 Claims

1. A process for recovering trimethoxysilane from a mixture of trimethoxysilane and methanol which mixture is capable of forming an azeotrope comprising.

(a) feeding a mixture of trimethoxysilane and methanol to a first distillation zone;

(b) adding sufficient solvent to the first distillation zone to increase the volatility of the methanol relative to the volatility of the trimethoxysilane-solvent mixture;

(c) increasing the temperature in the first distillation zone to distill the methanol from the solvent/trimethoxysilane mixture;

(d) removing the solvent/trimethoxysilane mixture to a second distillation zone; and

(e) increasing the temperature in the second distillation zone to distill the trimethoxysilane from the solvent.

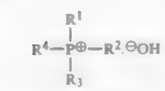
4,761,493

PREPARATION PROCESS OF QUATERNARY PHOSPHONIUM HYDROXIDE

Masayuki Umeno, Chigasaki, and Satoshi Takita, Atsugi, both of Japan, assignors to Hokko Chemical Industry Co., Ltd., Tokyo, Japan

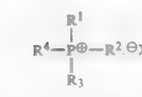
Filed Mar. 10, 1987, Ser. No. 24,074
Claims priority, application Japan, Mar. 12, 1986, 61-52593
Int. Cl.[4] C07F *9/02*
U.S. Cl. 568—11 9 Claims

1. A process for the preparation of a quaternary phosphonium hydroxide represented by the following general formula (II):



(II)

wherein R^1, R^2, R^3 and R^4 mean independently an alkyl group having 1–8 carbon atoms, a phenyl group or a benzyl group, which comprises dissolving a quaternary phosphonium halide represented by the following general formula (I):



(I)

wherein R^1, R^2, R^3 and R^4 has the same meaning as defined above and X denotes a chlorine, bromine or iodine atom, in a solvent selected from water, lower alcohols and aqueous lower alcohols, and then bringing the resultant solution into contact with a strongly basic anion exchange resin (OH-type).

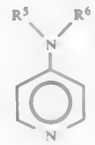
4,761,494

PREPARATION OF CYANOMETHYL ESTERS

Walter L. Petty, Watsonville, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 896,987, Aug. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 642,297, Aug. 20, 1984, abandoned. This application Nov. 23, 1987, Ser. No. 124,867
Int. Cl.[4] C07C *120/00, 121/66*
U.S. Cl. 558—398 4 Claims

1. A process for the preparation of the ester S-alpha-cyano-3-phenoxy-benzyl R,S(or S)-alpha-isopropyl-4-chlorophenylacetate or of a mixture enriched therein from reactants that contain a water impurity, the process consisting of treating racemic or S-alpha-isopropyl-4-chlorophenylacetic acid chloride with a molar excess of S-alpha-cyano-3-phenoxybenzyl alcohol or a racemic mixture enriched therein, in the presence of an inert solvent, a molar excess of a tertiary amine hydrogen halide acceptor and a catalytic amount of a 4-tertiary aminopyridine catalyst of the formula



wherein:

R^5 and R^6 are independently selected from C_1 to C_{24} alkyl, C_3 to C_{24} alkenyl and C_3 to C_{24} alkynyl groups, or phenylmethyl and phenylethyl groups in which the phenyl moiety can be further substituted by one to five C_1 to C_4 alkyl groups, or R^5 and R^6 can be taken together as a $—(CH_2.)_n—$ alkylene chain wherein each carbon individually can be substituted with one to two groups selected from C_1 to C_{12} alkyl, C_2 to C_{12} alkenyl and C_2 to C_{12} alkynyl, and n is an integer from 4 to 6,

the water impurity amounting to no more than about 0.2 moles per mole of carboxylic acid chloride starting material and the ester product containing less than about 3 weight percent of carboxylic acid anhydride caused by presence of the water impurity.

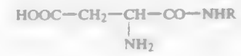
4,761,495

METHOD RELATING TO PREPARATION OF ASPARTYL PEPTIDES

Didier Wirth, Paris; Dominique Gibert, Villers-sous-St. Leu, and Annie Boutin, Villeneuve-La-Garenne, all of France, assignors to Isochem S.A., Geneviliers, France

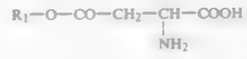
Filed Jan. 11, 1985, Ser. No. 690,682
Claims priority, application France, Jan. 19, 1984, 84 00794
Int. Cl.[4] C07C *101/02, 69/00, 101/24, 101/26*
U.S. Cl. 560—41 33 Claims

1. A method for preparing an α-aspartyl peptide having the general formula:

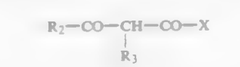


where —NHR represents an alanine, phenylalanine, or phenylalaninamide residue, the method comprising the steps of:

(a) reacting a β-monoester of aspartic acid having the general formula:



where R_1 denotes a linear or branched alkyl radical with 1 to 5 carbon atoms, a phenyl radical, a phenyl radical substituted by a methyl radical, a methoxy radical or a halogen atom, a benzyl radical, or a benzyl radical substituted by a methyl radical, a methoxy radical or a nitro group, with a β-dicarbonyl compound having the general formula:



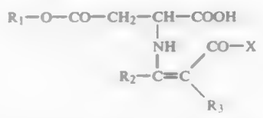
wherein:

(i) R_2 is a linear or branched alkyl radical with 1 to 5 carbon atoms, a phenyl radical, or a benzyl radical, a carbomethoxymethyl radical, or a carboethoxymethyl radical; R_3 is a hydrogen atom; and X is a linear or branched alkyl radical with 1 to 5 carbon atoms, a phenyl radical, or a benzyl radical, or an alkoxy radical having the formula $—OR_4$ where R_4 is a linear or branched alkyl radical with 1 to 5 carbon atoms, a phenyl radical, or a benzyl radical, or a radical having the formula $—NR_aR_b$ where R_a and R_b represent a hydrogen atom or a linear or brached alkyl radical with 1 to 5 carbon atoms, a phenyl radical, or a benzyl radical, or where R_a, R_b and N constitute a 5- or 6-member ring; or

(ii) R_2 and R_3 are bonded to one another and constitute a single alkyl chain portion of said β-dicarbonyl compound, said alkyl chain portion having the general formula $—(CH_2)_n—$ where n is 3 or 4; and X has the meaning ascribed in (i) above; or

VOL 1093 ISS 1 AG 2 1988 UMI

(iii) R_2 and X are bonded to one another and constitute a single three-carbon chain portion of said β-dicarbonyl compound, said chain portion being unsubstituted or substituted by one or two methyl groups; and R_3 is hydrogen; in the presence of a secondary or tertiary amine to obtain an aspartyl enamine having the general formula:



where R_1, R_2, R_3, and X have the meanings given in (i), (ii), and (iii) above; and

(b) reacting said aspartyl enamine with an amino acid or amino acid derivative selected from the group consisting of phenylalanine, alanine, phenylalaninamide, and salts or esters thereof to obtain an α-aspartyl peptide.

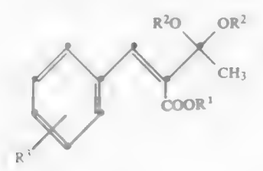
4,761,496

ALKYLENE AND DIAKYL KETALS AND ALKYL ALPHA-ENOL ETHERS OF ALPHA-ACETYL CINNAMIC ACIDS AND ESTERS THEREOF

Joseph R. Zoeller, and Charles E. Sumner, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1987, Ser. No. 107,742
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—60 21 Claims

1. An alkylene or dialkyl ketal of the formula



wherein

R^1 is C_1–C_{12})alkyl, (C_6–C_{20})aryl or (C_7–C_{20})alkylaryl or aralkyl;

R^2 is (C_1-C_{12})alkyl or the two R^2 taken together are (C_2-C_{12})alkylene; and

R^3 is halo, carboxy or (C_1–C_{12})alkyl, alkoxy, acyl, acyloxy, carbalkoxy or alkylthio.

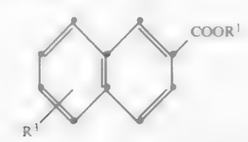
4,761,497

PROCESS FOR PREPARING 2-NAPHTHANOIC ACIDS AND ESTERS THEREOF

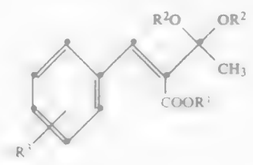
Joseph R. Zoeller, and Charles E. Sumner, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 13, 1987, Ser. No. 107,743
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—100 20 Claims

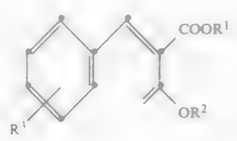
1. A process for preparing a 2-naphthanoic acid or ester thereof of the formula



wherein R^3 is H, halo or (C_1–C_{12}) alkoxy, acyloxy, carboxy, carbalkoxy, acyl, alkyl or thioalkyl, and R^1 is H, (C_1–C_{12})alkyl, (C_6–C_{20})aryl, (C_7–C_{21})alkaryl or araalkyl, said process comprising heating a compound selected from the group consisting of a ketal of the formula



wherein R^1 and R^3 are as described above, and each R^2 is (C_1–C_{12})alkyl or the two R^2 taken together are (C_2–C_{12})alkylene, and an alpha-enol ether of ester of the formula



wherein R^1 and R^3 are as defined above and R^2 is (C_1–C_{12})alkyl or (C_2–C_{12}) acyl at a temperature effective to cyclize the compound and obtain said 2-naphthanoic acid or ester thereof.

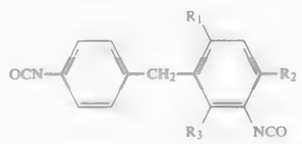
4,761,498

DIISOCYANATES AND DIISOCYANATE MIXTURES BASED ON DIPHENYLMETHANE, PROCESSES FOR THEIR PRODUCTION AND THEIR USE AS ISOCYANATE COMPONENT IN THE PRODUCTION OF POLYURETHANE PLASTICS BY THE ISOCYANATE POLYADDITION PROCESS

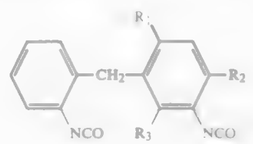
Hartmut Knöfel, Odenthal; Michael Brockelt, Bergisch-Gladbach, and Gerhard Wegener, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 360,856, Mar. 22, 1982, abandoned, which is a continuation of Ser. No. 182,569, Aug. 29, 1980, abandoned. This application Mar. 20, 1987, Ser. No. 28,265
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1979, 2935318
Int. Cl.[4] C07C *118/00*; C08G *18/00*
U.S. Cl. 560—359 6 Claims

1. Diisocyanates corresponding to the formula:



which may be present in admixture with 0 to 40% by weight, based on the total mixture, of diisocyanates corresponding to the formula:



and optionally with 0 to 30% by weight, based on the total mixture, of other diisocyanatodiphenylmethane isomers which may be substituted; wherein two of the radicals R_1, R_2 and R_3 represent hydrogen and one of the radicals R_1, R_2 and R_3 represents a methyl group.

4,761,499

CARBONYLATION OF VINYL DIHALIDES

Ronald A. Epstein, Yonkers, N.Y., assignor to Akzo America Inc., New York, N.Y.

Continuation-in-part of Ser. No. 945,257, Dec. 22, 1986, which is a continuation-in-part of Ser. No. 796,687, Nov. 12, 1985, Pat. No. 4,668,816. This application Jun. 2, 1987, Ser. No. 56,636
Int. Cl.[4] C07C *51/14, 102/00, 67/36*
U.S. Cl. 562—520 18 Claims

1. A process for carbonylating a vinyl dihalide to esters or amides comprising carbonylating, a vinyl dihalide in the presence of a solvent for the process, using carbon monoxide and amine, and a palladium catalyst.

4,761,500

SULFAMOYL-SUBSTITUTED PHENETHYLAMINE DERIVATIVES, THEIR PREPARATION, AND PHARMACEUTICAL COMPOSITIONS, CONTAINING THEM

Kunihiro Niigata, and Takashi Fujikura, both of Saitama, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 803,204, Nov. 27, 1985. This application Feb. 10, 1986, Ser. No. 828,052
Claims priority, application Japan, Feb. 8, 1980, 55-14382
Int. Cl.[4] C07C *143/80*
U.S. Cl. 564—86 2 Claims

1. A process of producing (R)(−)-5-[2-[[2-(o-ethoxyphenoxy)ethyl]amino-2-methylethyl]-2-methoxybenzenesulfonamide, which comprises reacting (R)(−)-5-[(2-amino-2-methyl)ethyl]-2-methoxybenzenesulfonamide with 2-(o-ethoxyphenoxy)ethyl bromide.

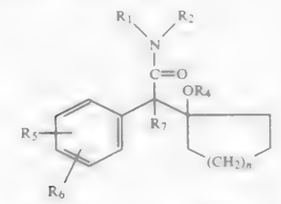
4,761,501

SUBSTITUTED PHENYLACETAMIDES

G. E. Morris Husbands, Berwyn; John P. Yardley, Guiph Mills, and Eric A. Muth, West Chester, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 545,701, Oct. 26, 1983, Pat. No. 4,535,186, which is a continuation-in-part of Ser. No. 486,594, Apr. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 449,032, Dec. 13, 1982, abandoned. This application May 22, 1985, Ser. No. 736,744
Int. Cl.[4] C07C *103/84, 103/82, 103/78*
U.S. Cl. 564—167 19 Claims

1. A compound of the formula:



in which the dotted line represents optional unsaturation,

R_1 is alkyl of 1 to 6 carbon atoms;

R_2 is alkyl of 1 to 6 carbon atoms;

R_4 is hydrogen or alkyl of 1 to 6 carbon atoms;

R_5 and R_6, one of which may be hydrogen, are independently, hydroxyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, aralkoxy of 7 to 9 carbon atoms, alkanoyloxy of 2 to 7 carbon atoms, alkylmercapto of 1 to 6 carbon atoms, N-protected amino, halo or trifluoromethyl;

R_7 is hydrogen or alkyl of 1 to 6 carbon atoms; and

n is one of the integers 0, 1, 2, 3 or 4.

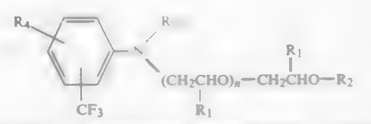
4,761,502

POLYALKYLENEOXYTRIFLUOROMETHYLANILINE COMPOUNDS

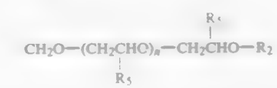
Edward W. Kluger, Pauline; Patrick D. Moore, Spartanburg, and Joe T. Barchette, Mayo, all of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 8, 1986, Ser. No. 904,459
Int. Cl.[4] C07C *87/28, 87/60*
U.S. Cl. 564—442 9 Claims

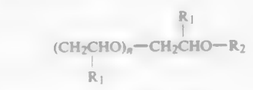
1. A compound of the formula:



wherein R_1 is independently selected from H, a lower alkyl group containing from 1 to about 10 carbon atoms, CH_2Cl, CH_2Br, CH_2OH, phenyl or



where R_5 is H or a lower alkyl group containing from 1 to about 9 carbon atoms; wherein R_2 is selected from H, a lower alkyl group containing from 1 to about 9 carbon atoms or, alkylaryl containing from about 7 to about 11 carbon atoms; R_3 is selected from a lower alkyl group containing from 1 to about 9 carbon atoms, or



wherein R_1 and R_3 are as given above; R_4 is H, CF_3, lower alkyl group containing from 1 to about 9 carbon atoms, Cl or Br and n is an integer from 1 to about 125.

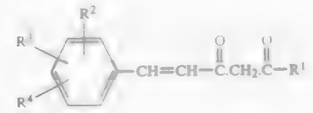
4,761,503

PHARMACEUTICAL COMPOSITIONS CONTAINING 5-PHENYL-1,3-DIOXOALKENYL COMPOUNDS

Richard A. Partis, Evanston, and Richard A. Mueller, Glencoe, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Division of Ser. No. 845,309, Mar. 28, 1986, Pat. No. 4,649,157. This application Nov. 7, 1986, Ser. No. 928,505
Int. Cl.[4] C07C *45/46*
U.S. Cl. 568—313 16 Claims

1. A process for preparing a 5-phenyl-1,3-dioxoalkenyl compound of the formula



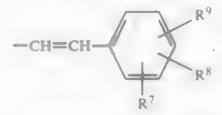
wherein R^1 is:

(a) hydrogen;

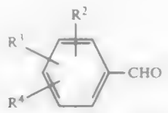
(b) C_1–C_{10} alkyl

VOL 1093 ISS 1 AUG 2 1988 UMI

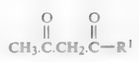
(c) C_1–C_6 alkoxy;
(d) NR^5R^6;
wherein R^5 and R^6, each being the same or different, are:
(i) hydrogen; or
(ii) C_1–C_{10} alkyl;
(e) phenyl or phenyl substituted with 1 to 3 substiuents selected from the group consisting of:
(i) C_1–C_{10} alkyl;
(ii) C_1–C_6 alkoxy;
(iii) nitro, with the proviso that only one such substituent may be nitro; or
(iv) halogen;
(f) phenoxy or phenoxy substituted with 1 to 3 substituents selected from the group consisting of:
(i) C_1–C_{10} alkyl;
(ii) C_1–C_6 alkoxy;
(iii) nitro, with the proviso that only one such substituent may be nitro; or
(iv) halogen;
(g)



wherein R^7, R^8, and R^9, each being the same or different, are:
(i) hydrogen;
(ii) C_1–C_{10} alkyl;
(iii) C_1–C_6 alkoxy;
(iv) benzyl;
(v) phenoxy or phenoxy substituted with 1 to 3 substituents selected from the group consisting of:
(A) C_1–C_{10} alkyl;
(B) C_1–C_6 alkoxy; or
(C) halogen;
(vi) nitro, with the proviso that only one of R^7, R^8, and R^9 may be nitro;
(vii) halogen;
(viii) hydroxyl; or
(ix) R^7 and R^8 together are —CH=CH—CH=CH—;
wherein R^2, R^3, and R^4, each being the same or different, are:
(a) hydrogen;
(b) C_1–C_{10} alkyl;
(c) C_1–C_6 alkoxy;
(d) benzyl;
(e) phenoxy or phenoxy substituted with 1 to 3 substituents selected from the group consisting of:
(i) C_1–C_{10} alkyl;
(ii) C_1–C_6 alkoxy; or
(iii) halogen;
(f) nitro, with the proviso that only one of R^2, R^3, and R^4 may be nitro;
(g) halogen;
(h) hydroxyl; or
(i) R^2 and R^3 together are —CH=CH—CH=CH—;
comprising contacting in an organic solvent at a temperature between −60° C. and 75° C.
(a) an optionally substituted benzaldehyde of the formula



wherein R^2, R^3, R^4 are above defined;
(b) an acetoacetate ester, acetoacetamide, or 2,4-alkanedione of the formula



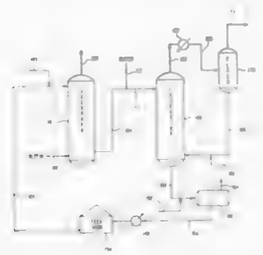
wherein R^1 is:
(a) hydrogen;
(b) C_1–C_{10} alkyl;
(c) C_1–C_6 alkoxy;
(d) NR^5R^6;
wherein R^5 and R^6, each being the same or different, are:
(i) hydrogen; or
(ii) C_1–C_{10} alkyl;
(e) phenyl or phenyl substituted with 1 to 3 substituents selected from the group consisting of:
(i) C_1–C_{10} alkyl;
(i) C_1–C_6 alkoxy;
(iii) nitro, with the proviso that only one such substituent may be nitro; or
(iv) halogen;
(f) phenoxy or phenoxy substituted with 1 to 3 substituents selected from the group consisting of:
(i) C_1–C_{10} alkyl;
(ii) C_1–C_6 alkoxy;
(iii) nitro, with the provisio that only one such substituent may be nitro; or
(iv) halogen;
(c) a transition metal Lewis acid; and
(d) a tertiary amine or a hindered secondary amine.

4,761,504
INTEGRATED PROCESS FOR HIGH OCTANE ALKYLATION AND ETHERIFICATION
Peter R. Pujado, Palatine, Ill., assignor to UOP Inc., Des Plaines, Ill.
Filed Dec. 29, 1986, Ser. No. 947,009
Int. Cl.[4] C07C *2/62, 41/06*
U.S. Cl. 568—697 8 Claims

1. In a process for the production of an ether and a C_8 hydrocarbon wherein a first feed stream comprising an alcohol and a second feed stream comprising isobutylene, isobutane and normal butenes is contacted with an etherification catalyst in an etherification zone and a resultant etherification zone effluent comprising isobutane, normal butenes and a tertiary ether is produced and passed into a fractionation column, a bottoms stream comprising the ether is removed from the column, a net overhead stream comprising isobutane and normal butenes is recovered from the column, and the net overhead stream is passed into a mineral acid catalyzed alkylation zone wherein isobutane and normal butenes are reacted to produce a C_8 alkylate product hydrocarbon; the improvement which comprises the net overhead stream has an ether concentration above at least 0.3 mole percent.

4,761,505
PROCESS FOR RECOVERY OF ALCOHOLS FROM SULFURIC ACID STREAMS
William D. Diana, Belle Mead, and Chuen Y. Yeh, Edison, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.
Continuation of Ser. No. 776,387, Sep. 16, 1985, abandoned. This application Jul. 21, 1986, Ser. No. 888,581
Int. Cl.[4] C07C *29/86, 31/12*
U.S. Cl. 568—918 17 Claims

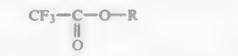
1. An improved process for recovering aliphatic monoalcohols having from 3 to 8 carbon atoms per molecule from acid/alcohol feedstreams comprising 40 to 80% acid strength strong acid solutions containing said alcohols which comprises (a) contacting said acid/alcohol feedstream in an extraction zone with an effective amount of an extraction solvent selected from the group consisting of alicyclic and acyclic alkyl carboxylic acids having from 6 to 20 carbons per molecule and mixtures thereof, for a time and under conditions sufficient to selectively extract said alcohol from said acid/alcohol feedstream and to form a first liquid phase comprising an alcohol-enriched carboxylic acid extract, and a second liquid phase comprising an aqueous strong acid raffinate depleted in alcohol, and containing minor amounts of said carboxylic acid extraction solvent (b) recovering said alcohol-enriched carboxylic acid extract, and (c) contacting said second liquid phase in



a contacting zone with an organic extractive agent for a time and under conditions sufficient to separate at least a majority of said carboxylic acid extraction solvent from said second liquid phase and to form a third liquid phase comprising said separated carboxylic acid extraction solvent and said organic extractive agent and a fourth liquid phase comprising an aqueous strong acid solution depleted in alcohol and also depleted in said carboxylic acid extraction solvent.

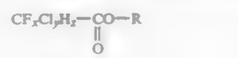
4,761,506
PROCESS FOR THE PREPARATION OF PERFLUOROALKANOLS
Georges Cordier, Francheville, and Jean-Serge Ferlut, Lyons, both of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France
Continuation of Ser. No. 780,376, Sep. 25, 1985, abandoned. This application Mar. 24, 1987, Ser. No. 30,265
Claims priority, application France, Sep. 28, 1984, 84 145917
Int. Cl.[4] C07C *31/38*
U.S. Cl. 568—842 22 Claims

1. A process for the preparation of trifluoroethanol which comprises bringing an ester of a trifluorinated acid of the formula (I):



(I)

in which R is selected from alkyl, alkylphenyl, cycloalkyl, phenyl, halogenoalkyl, halogenoalkylphenyl, halogenocycloalkyl and halogenophenyl groups, alone or mixed with an ester of a non-perfluorinated acid of the formula (II):



(II)

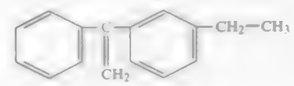
in which
x is an integer between 0 and 2,
y is an integer between 0 and 3,
z is an integer between 0 and 3,
the sum of x+y+z is equal to 3, and
R has the same meaning as in formula (I), into contact, in the liquid phase, with hydrogen at a total pressure of between about 1 and 300 bars in the presence of a catalyst consisting of a metal deposited on an inert carrier, said metal being present in an amount less than 20% by weight based on the weight of said carrier, wherein said metal is in the metallic form, the form of a metal oxide, the form of a metal chromite, or is a mixture thereof, and wherein said metal is selected from the group consisting of platinum, rhodium and ruthenium, and wherein said ester of formula (II), when present, is completely converted to hydrofluoric acid, hydrochloric acid and non-toxic organic compounds,
with the proviso that said contact is conducted in the absence of water, except that when an ester of formula (II) is present and an inorganic base is added to be present during said contact step, said inorganic base is dissolved in an amount of water such that the molar ratio of water to ester is less than about 0.1.

4,761,507
ISOMERIZATION OF LINALYL HALIDES WITH QUATERNARY SALTS
Peter W. D. Mitchell, Freehold, N.J.; Lois T. McElligott, Abington, Pa., and David E. Sasser, Jacksonville, Fla., assignors to Union Camp Corporation, Wayne, N.J.
Continuation-in-part of Ser. No. 515,564, Jul. 20, 1983, abandoned. This application Jan. 28, 1985, Ser. No. 750,691
Int. Cl.[4] C07C *21/19*
U.S. Cl. 570—236 8 Claims

1. A method for isomerizing linalyl halide to neryl and geranyl halides comprising isomerizing the linalyl halide in the presence of a catalytic proportion of a copper-containing catalyst, and further comprising carrying out the isomerization at a temperature below 25° C. in the presence of a catalytic proportion of an anyhydrous hydrogen halide and an organic quaternary ammonium or phosphonium salt which has a carbon atom content of at least twenty.

4,761,508
1,1-(3-ETHYLPHENYL)PHENYLETHYLENE AND METHOD FOR PREPARING IT
Isoo Shimizu; Yasuo Matsumura, both of Yokohama; Shigenobu Kawakami, Ichikawa, and Atsushi Sato, Tokyo, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Tokyo, Japan
Filed Jul. 22, 1986, Ser. No. 888,012
Claims priority, application Japan, Jul. 24, 1985, 60-163712
Int. Cl.[4] C07C *15/12*
U.S. Cl. 585—25 1 Claim

1. 1,1-(3-ethylphenyl)phenylethylene represented by the formula (I);



(I)

4,761,509
HIGH SELECTIVITY PROCESS FOR DEHYDROGENATION OF PARAFFINIC HYDROCARBONS
Bipin V. Vora, Darien, and Daniel L. Ellig, Des Plaines, both of Ill., assignors to UOP Inc., Des Plaines, Ill.
Filed Feb. 24, 1987, Ser. No. 17,964
Int. Cl.[4] C07C *5/00*
U.S. Cl. 585—254 12 Claims

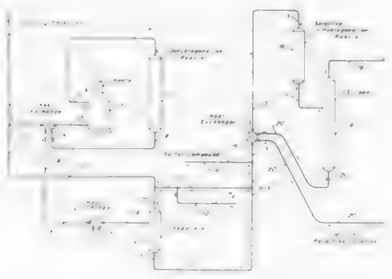
1. A process for the dehydrogenation of C_4-plus paraffinic hydrocarbons to monoolefinic hydrocarbons with a minimum presence of diolefinic hydrocarbons which process comprises the steps of:
(a) passing said C_4-plus paraffinic hydrocarbons and hydrogen as a feed stream through a dehydrogenation reaction zone maintained at dehydrogenation conditions to produce a vapor phase dehydrogenation reaction zone effluent stream comprising:(i) hydrogen, (ii) by-product light hydrocarbons having lower carbon number molecules than said paraffinic hydrocarbons, (iii) undehydrogenated C_4-plus paraffinic hydrocarbons, (iv) C_4-plus monoole-

VOL 1093 ISS 1 AG 2 1988 UMI

finic hydrocarbons, and (v) C_4-plus diolefinic hydrocarbons;

(b) cooling said dehydrogenation reaction zone effluent stream to partially condense said dehydrogenation reaction zone effluent stream to form a vapor-liquid phase stream;

(c) separating said cooled vapor-liquid phase dehydrogenation reaction zone effluent stream in a vapor-liquid separation zone maintained at vapor-liquid separation conditions into a separation zone overhead vapor stream comprising hydrogen and a separation zone bottoms liquid stream comprising: (i) dissolved hydrogen, (ii) by-product light hydrocarbons having lower carbon number molecules than said paraffinic hydrocarbons, (iii) C_4-plus paraffinic hydrocarbons, (iv) C_4-plus monoolefinic hydrocarbons, and (v) C_4-plus diolefinic hydrocarbons; the improvement which comprises passing said separation zone bottoms liquid stream, a controlled amount of a hydrogen feed stream and a sulfur compound feed stream in an amount from about 0.5 to about 20 weight ppm based on said



separation zones bottoms liquid stream to a selective hydrogenation reaction zone located downstream of said vapor-liquid separation zone and upstream of a stripping zone as hereinafter defined in step (d), said selective hydrogenation reaction zone containing a selective hydrogenation catalyst and maintained at selective diolefin hydrogenation conversion conditions, said amount of hydrogen and sulfur compound selected to be effective to selectively convert said diolefinic hydrocarbons to monoolefinic hydrocarbons and to product a hydrogenation reaction zone effluent stream substantially free of C_4-plus diolefinic hydrocarbons; and

(d) stripping said hydrogenation reaction zone effluent stream in a stripping zone maintained at stripping conditions effective to result in the production of a stripping zone overhead stream containing substantially all hydrogen, sulfur compounds and light hydrocarbons present in said hydrogenation zone effluent and a stripping zone bottoms stream substantially free of diolefins and containing C_4-plus monoolefinic hydrocarbons as the product stream of said process.

4,761,510

SELECTIVE PREPARATION OF TRANS-PERHYDROACENAPHTHENE

Yoshihiro Narusе, and Toshihide Suzuki, both of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed May 4, 1987, Ser. No. 45,580

Claims priority, application Japan, May 12, 1986, 61-107970

Int. Cl.⁴ C07C *5/03*

U.S. Cl. 585—268 **5 Claims**

1. A process for selectively preparing trans-perhydroacenaphthene by hydrogenating acenaphthene, comprising hydrogenating acenaphthene at a temperature of 200° to 300° C. in the presence of a catalyst comprising nickel carried on kieselguhr, for a time sufficient to produce a product having a substantial majority of trans isomers of perhydroacenaphthene.

4,761,511

CRYSTALLINE GALLOALUMINOSILICATES, STEAM-MODIFIED CRYSTALLINE GALLOALUMINOSILICATES, THEIR PREPARATION AND THEIR USE AS CATALYSTS AND CATALYST SUPPORTS

Michael T. Barlow, Byfleet, United Kingdom, assignor to BP Chemicals Limited, United Kingdom

Continuation of Ser. No. 908,952, Sep. 17, 1986, abandoned, which is a continuation of Ser. No. 757,184, Jul. 19, 1985, abandoned, which is a division of Ser. No. 593,613, Mar. 26, 1984, abandoned. This application May 19, 1987, Ser. No. 53,522

Claims priority, application United Kingdom, Mar. 29, 1983, 8308684

Int. Cl.⁴ C07C *2/00*

U.S. Cl. 585—415 **11 Claims**

1. A process for the production of aromatic hydrocarbons which process comprises contacting in the vapour phase a C_2 to C_{12} hydrocarbon feedstock at elevated temperature with the steam-modified crystalline galloaluminosilicate in the hydrogen-form or ammonium-form, said crystalline galloaluminosilicate having an X-ray diffraction pattern substantially the same as that of an MFI-zeolite and a composition in terms of mole ratios of oxides as follows:

$$0.9+0.2M_{2/n}O.Al_2O_3.a\ Ga_2O_3.b\ SiO_2.zH_2O$$

wherein M is a cation, n is the valence of the cation, a has a value between 0.0001 and 2, b has a value of at least 12 and z has a value of from 0 to 40.

4,761,512

CATALYST FOR THE PRODUCTION OF AROMATIC HYDROCARBONS AND PROCESS FOR THE PRODUCTION OF AROMATIC HYDROCARBONS USING SAID CATALYST

Hisashi Katsuno, Sodegaura; Takashi Murakawa, Ichihara, and Toshikazu Yoneda, Sodegaura, all of Japan, assignors to Research Association for Utilization of Light Oil, Tokyo, Japan

Division of Ser. No. 856,756, Apr. 28, 1986, Pat. No. 4,681,865. This application Mar. 31, 1987, Ser. No. 33,077

Int. Cl.⁴ C07C *2/52*

U.S. Cl. 585—417 **16 Claims**

1. A process for producing aromatic hydrocarbons which comprises contacting at least one type of hydrocarbon selected from paraffin, olefin, acetylene, cyclic paraffin and cyclic olefin-based hydrocarbons with a catatlyst comprising zeolite L treated with a halogen-containing compound and platinum, said catalyst having been formed by treating zeolite L with said halogen-containing compound to form a halogen-treated zeolite L and then depositing platinum thereon.

4,761,513

TEMPERATURE CONTROL FOR AROMATIC ALKYLATION PROCESS

Paul C. Steacy, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 1, 1987, Ser. No. 68,520

Int. Cl.⁴ C07C *2/68*

U.S. Cl. 585—467 **13 Claims**

1. In a process for alkylating aromatic hydrocarbons by contacting an aliphatic alkylating agent and an aromatic hydrocarbon in a series of exothermic reaction zones where said aromatic hydrocarbon passes serially through said reaction zones, a separate stream of said alkylating agent enters the inlet of each reaction zone, the aromatic hydrocarbon, and alkylation agent contact an alkylation catalyst at alkylation conditions in each reaction zone, an alkylation product passes serially from the first reaction zone in said series to the last reaction zone and an alkylate product is recovered from the last reaction zone in said series, the improvement wherein: at least one of said separate streams of alkylating agent that enters the inlet of each reaction zone is a quench stream comprising vapor phase alkylation agent and liquid phase alkylation agent, and the relative proportion of liquid and vapor phase alkylating agent in said quench stream is controlled to provide a predetermined degree of quenching for the reaction zones located downstream of the inlet where said quench stream enters the process.

4,761,514

TOLUENE DISPROPORTIONATION PROCESS

Kevin P. Meaard, Big Spring, Tex., assignor to Cosden Technology, Inc., Dallas, Tex.

Filed May 18, 1987, Ser. No. 51,493

The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.

Int. Cl.⁴ C07C *3/62*

U.S. Cl. 585—475 **10 Claims**

1. In a process for the disproportionation of a toluene and ethylbenzene containing feedstock to produce a disproportionation product containing benzene, xylene and ethylated aromatics, the steps comprising:

(a) supplying said feedstock in which ethylbenzene is present in a concentration of at least 5 wt. % to a reaction zone into contact with a mordenite catalyst within said reaction zone having a silica/alumina mole ratio of at least 30;

(b) co-feeding hydrogen to said reaction zone to provide a hydrogen environment therein;

(c) operating said reaction zone under temperature and pressure conditions to effect the disproportionation of toluene and ethylbenzene to benzene, xylene, ethylbenzene and ethyltoluene; and

(d) withdrawing said disproportionation product from said reaction zone.

4,761,515

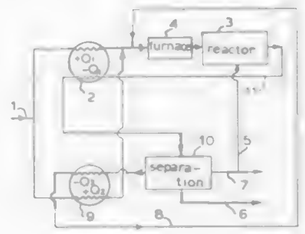
LIQUIFIED NATURAL GAS CONVERSION PROCESS

Oliver M. Goodwin, San Rafael, Calif., assignor to S-Cal Research, San Rafael, Calif.

Continuation-in-part of Ser. No. 688,058, Dec. 31, 1984, Pat. No. 4,705,908. This application Dec. 12, 1985, Ser. No. 807,976

Int. Cl.⁴ C07C *2/00*

U.S. Cl. 585—500 **17 Claims**



1. A process for the conversion of the paraffinic hydrocarbon components of Liquified Natural Gas (LNG), of carbon number 1 or 2, into an aromatics-rich liquid mixture of hydrocarbons having a number of carbon atoms greater than 3, and into a hydrogen-rich gaseous by-product, said process comprising the following steps;

(a) revaporization into a gaseous phase of LNG in heat exchangers receiving the hot gaseous effluents from a short residence time catalytic reactor wherein the catalyst consists essentially of actinide and lanthanide elements in combustion with gallium and zirconium,

(b) pre-heating of said gaseous phase stream, and of the recycled gas stream in a furnace,

(c) reaction between an ionized hydrogen plasma and the mixture of the preheated gas stream of LNG and the recycled gas stream, in the presence of a catalyst in a short residence time reactor,

(d) separation of the solid particles of said catalyst from the stream of gaseous products of said reactor,

(e) removal of hydrogen and light hydrocarbons products of carbon number less than 3 from said gaseous product stream in a separation unit utilizing as cooling fluids low temperature streams derived from LNG,

(f) recycllling said recycled gas stream of light hydrocarbons to said furnace and reactor, and

(g) regeneration of said catalyst by combustion of the coke deposited on said catalyst, with an oxidizing stream.

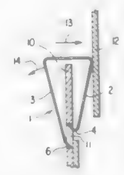
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4,761,516

ELECTROMAGNETIC INTERFERENCE SHIELDING DEVICE

Gunther Reichert, deceased, late of Schwieberdingen, Fed. Rep. of Germany (by Sylvia Reichert, Legal Representative), assignor to Alcatel N.V., Amsterdam, Netherlands

PCT No. PCT/EP85/00378, § 371 Date Mar. 12, 1986, § 102(e) Date Mar. 12, 1986, PCT Pub. No. WO86/01069, PCT Pub. Date Feb. 13, 1986
PCT Filed Jul. 27, 1985, Ser. No. 853,806
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1984, 3427706
Int. Cl.[4] H05K 9/00
U.S. Cl. 174—35 GC 19 Claims



1. An electromagnetically shielded housing for electronic equipment, comprising:

first and second housing members with a gap between them, the first housing member having an edge and having an opening adjacent the edge; and

a contact spring element to close the gap between the first and second housing members, the contact spring element having a profile with three legs disposed in a generally triangular configuration that is open at one point, the generally triangular configuration almost corresponding to the configuration of an isosceles triangle, two of the legs being adjacent the open point and being slipped over the edge of the first housing member, one of the legs being applied to the second housing member,

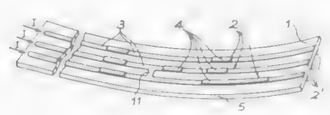
wherein one of the legs adjacent the open point has a free end that is bent toward the interior of the triangle to form a narrow lip having, the lip having an inwardly angled-off flap, and wherein the other of the legs adjacent the open point has a free end with an inwardly angled-off flap, the flaps engaging the opening.

4,761,517

ELECTRICAL CONNECTIONS WITH CONTROLLED THERMAL AND ELECTRICAL RESISTANCES

Claude Massit, Grenoble, and Gérard Nicolas, Voreppe, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 1, 1987, Ser. No. 44,784
Claims priority, application France, May 5, 1986, 86 06478
Int. Cl.[4] H01B 7/08
U.S. Cl. 174—36 10 Claims



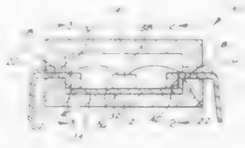
1. An electrical connecting cable formed from a flat insulating support, on at least one face of which is installed at least one connecting line wherein said at least one connecting line is constituted by two superimposed layers, the first of them, which extends over the entire length of said at least one line, being made from a material having a low thermal conductivity, while still permitting the passage of electricity and the second layer is made of segments spaced at intervals and made from a material which is both a good electrical and thermal conductor.

4,761,518

CERAMIC-GLASS-METAL PACKAGING FOR ELECTRONIC COMPONENTS INCORPORATING UNIQUE LEADFRAME DESIGNS

Sheldon H. Butt, Godfrey, Ill., and William F. Cass, Ladue, Mo., assignors to Olin Corporation, New Haven, Conn.

Filed Jan. 20, 1987, Ser. No. 4,469
Int. Cl.[4] H01L 23/08
U.S. Cl. 174—52 FP 27 Claims



1. A semiconductor casing, comprising:

a base component formed of a ceramic-glass-metal composite material;

a lid component formed of a ceramic-glass-metal composite material;

said composite having a structure comprising substantially a matrix of glass with ceramic particles and metallic particles dispersed therein;

a metallic leadframe embedded into said base component, said leadframe having at least one hole therethrough with said composite material therein whereby the bonded area of said leadframe is increased and said leadframe is interlocked in said composite material of said base member; and

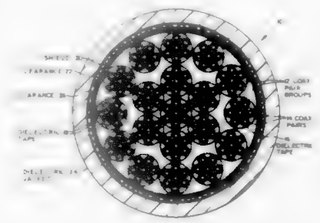
a sealing glass bonding said base component to said lid component.

4,761,519

HIGHLY FLEXIBLE, SHIELDED, MULTI-CONDUCTOR ELECTRICAL CABLE

Ronald A. Olson, Portland, and Arthur G. Back, Sherwood, both of Oreg., assignors to Precision Interconnect Corporation, Portland, Oreg.

Filed Jan. 29, 1987, Ser. No. 8,331
Int. Cl.[4] H01B 7/18, 7/04
U.S. Cl. 174—107 6 Claims



1. A highly flexible, shielded, elongate electrical cable comprising:

(a) flexible conductor means for conducting electrical current;

(b) flexible shield means for conducting electrical current, said shield means comprising braided strands of wire

VOL 1093 ISS 1 AG 2 1988 UMI

encircling said conductor means and electrically insulated therefrom;

(c) flexible material immediately underlying said shield means;

(d) said braided strands of wire loosely encircling said material immediately underlying said shield means and applying substantially no force in a transversely inward direction against said material immediately underlying said shield means.

4. A method of making a highly flexible, shielded electrical cable comprising:

(a) providing an elongate, flexible, electrical conductor assembly having an outer surface of flexible dielectric material; and

(b) braiding a flexible shield of electrically conductive wire around said conductor assembly so that said wire applies substantially no force in a transversely inward direction against the material immediately underlying said shield.

4,761,520

SPIRAL WRAPPED INSULATED MAGNET WIRE

Ivan W. Wade, Jr., Fort Wayne, Ind., and John D. Hessler, Payne, Ohio, assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 17, 1987, Ser. No. 63,202

Int. Cl.[4] H01B *7/02, 13/08;* **H05K** *13/00*

U.S. Cl. 174—121 R 3 Claims



1. An electrically insulated magnet wire comprising a multilayered polyester insulation tape spirally wrapped and bonded to a layer of glass fibers wound on but unbonded to a metallic conductor, the resulting insulated magnet wire having high physical and electrical insulation properties, increased flexibility, and ease of strippability.

2. A method of making an electrically insulated magnet wire comprising:

circumferentially winding a layer of electrical grade glass fiber on top of a metallic conductor, each individual winding abutting the previous individual winding, wrapping in spiral abutting or overlap fashion on top of the glass fiber layer at least one layer of a multilayered polyester insulation tape, said multilayered polyester insulation tape comprising an amorphous layer and a crystalline layer bonded thereto, the multilayered polyester insulation tape being spirally wrapped on the glass fiber layer such that the amorphous layer contacts the glass fiber, subjecting the thus wrapped metallic conductor to sufficient heat to fuse the polyester tape to the glass fiber layer, resulting in a tape having high physical and electrical insulating properties, increased flexibility, and ease of stripability.

3. A method of connecting an insulated electrical conductor between a source of electrical energy and an electrical component or between electrical components comprising stripping insulation from the ends of an insulated electrical conductor and connecting the ends of the conductor between a source of electrical energy and an electrical component or between electrical components by mechanical or solder means, wherein the improvement comprises utilizing as the insulated electrical conductor a multilayered polyester insulation tape spirally wrapped on a layer of glass fibers wound on but not bonded to an electrical conductor.

4,761,521

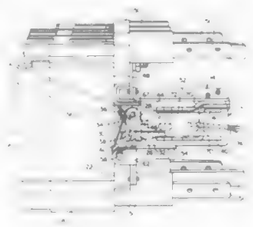
DRAWOUT AND INTERLOCK ASSEMBLY FOR MOLDED CASE CIRCUIT BREAKERS

Henry R. Beck, Thetford Center, Vt.; James E. Ferree, Lawrenceville, Ga., and Alan J. Ludwig, deceased, late of Trafford, Pa. (by Donna L. Ludwig, administratrix), assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 13, 1987, Ser. No. 72,942

Int. Cl.[4] H01H *9/20*

U.S. Cl. 200—50 AA 10 Claims



1. A drawout and interlock assembly for manually racking a low-voltage circuit breaker into connected and disconnected-test positions relative to the panelboard of a distribution switchboard apparatus having control circuit means and power plug-in components with a plurality of protruding primary conductors, said circuit breaker having a trip mechanism and an insulating housing with primary electrical connectors engageable by said protruding primary conductors and a depressible interlock button that are disposed on the back of the circuit breaker housing, said interlock button being coupled to the trip mechanism of the circuit breaker in a manner such that the circuit breaker is tripped when the interlock button is released and protrudes beyond the back of the circuit breaker housing, said drawout and interlock assembly comprising:

(a) a first subassembly that is secured to the power plug-in components of the panelboard and comprises a laterally-extending receptor structure having a rotatable operating handle, a drive mechanism rotatable by and with the operating handle, and a first secondary connector component that is mounted at a prededetermined fixed location within the receptor structure and is connectable with the control circuit means of the panelboard;

(b) a second subassembly that is secured to the back of the circuit breaker housing and comprises a laterally-extending coupler structure that is disposed in slidable telescoped relationship which said receptor structure and includes a second secondary connector component that connectable with electrical control means within the circuit breaker;

(c) said coupler structure being mechanically linked to said drive mechanism in a manner such that rotation of the operating handle and drive mechanism causes the coupler structure and the attached circuit breaker to be driven as a unit toward and away from said receptor structure and power plug-in components and thereby move the circuit breaker into said connected and disconnected-test positions relative to the panelboard and power plug-in components; and

(d) means for automatically controlling the position of the interlock button and operational status of the circuit breaker in response to the rotation of the operating handle and drive mechanism comprising an interlock lever that is pivotally mounted on said coupler structure and is disposed to engage the interlock button, and means for automatically actuating said interlock lever in response to the rotation of the operating handle and drive mechanism;

said first and second secondary connector components being constructed and disposed to mate and electrically connect with one another when the coupler structure and circuit breaker are first moved as a unit by the operating handle and drive mechanism into connected position with the panelboard and power plug-in components and remain connected when the coupler structure and circuit breaker are thereafter moved to said disconnected-test position by the operating handle and drive mechanism.

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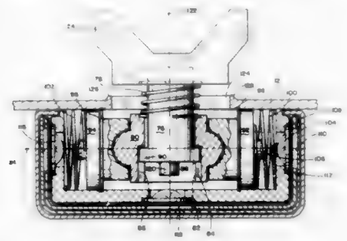
FINGER OPERATED SWITCHING APPARATUS

Donald E. Allen, 1012 W. Eakridge Ave., Stillwater, Okla. 74075

Filed Oct. 6, 1986, Ser. No. 915,513

Int. Cl.[4] H01H *25/04, 13/70;* **B41J** *5/08*

U.S. Cl. 200—5 R 11 Claims



1. Finger operated switching apparatus comprising a key and switch combination including:

a switch including:

first contacts actuated by force applied to said switch along a substantially horizontal axis in one direction,

first contact engagement means, disposed to reciprocatingly move along said horizontal axis, for engaging said first contacts so that said first contacts electrically connect,

second contacts actuated by force applied to said switch along said horizontal axis in a direction substantially opposite to said one direction,

second contact engagement means, disposed to reciprocatingly move along said horizontal axis, for engaging said second contacts so that said second contacts electrically connect,

third contacts actuated by downward force applied to said switching mechanism along an axis substantially normal to said horizontal axis,

third contact engagement means, disposed to reciprocatingly move along said axis substantially normal to said horizontal axis, for engaging said third contacts so that said third contacts electrically connect, and

means for coupling said third contact engagement means with said first and second contact engagement means so that reciprocating movement of said third engagement means along said axis substantially normal to said horizontal axis is not communicated to said first and second contact engagement means but so that movement of said third engagement means along said horizontal axis is communicated to at least one of said first and second engagement means; and

a key mounted on said third contact engagement means and being constructed to accommodate a finger for applying such forces to said switch, said key including:

a first inclined surface for receiving a force applied to said first inclined surface as a result of finger contraction so that said key and said third contact engagement means are pulled in said one direction, thereby moving said first contact engagement means into engagement with said first contacts,

a second inclined surface for receiving a force applied to said second inclined surface as a result of finger extension so that said key and said third contact engagement means are pushed in said one direction substantially opposite to said one direction, thereby moving said second contact engagement means into engagement with said second contacts, and

a horizontal surface extending between said first and second inclined surfaces for receiving a force applied to said horizontal surface as a result of finger depression so that said key and said third contact engagement means are depressed towards said third contacts, thereby moving said third contact engagement means into engagement with said third contacts.

4,761,523

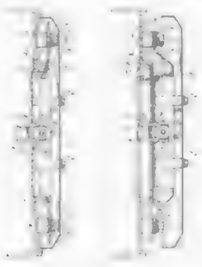
GAS SWITCH WITH PRESSURE RECEASE COVER

Kunio Mitsukuchi; Hiromitsu Ito; Isamu Eguchi; Bunji Hirasato, and Takashi Furuhata, all of Inuyama, Japan, assignors to Takamatsu Electric Works, Ltd., Inuyama, Japan

Division of Ser. No. 838,229, Mar. 10, 1986. This application Jun. 18, 1987, Ser. No. 64,043

Int. Cl.[4] H01H *33/54*

U.S. Cl. 200—148 B 4 Claims



1. A gas switch comprising:

(a) a body casing having an arc-extinguishing gas such as the SF6 gas and the like confined therein;

(b) a stationary electrode and a movable electrode adapted to be moved toward and apart from said stationary electrode in said body casing;

(c) a side wall forming part of said body casing and having a pressure release hole for releasing an abnormal gas pressure in said body casing;

(d) a pressure release cover covering said pressure release hole for warping out of engagement with the same when in the pressure releasing operation to release said abnormal gas to the outside of said body casing; and

(e) a protecting member for protecting the outer side face of said pressure release cover.

4,761,524

SWITCH OPERATING MECHANISM

Victor Golowash, Birmingham, Ala., assignor to Electrical Equipment, Inc., Birmingham, Ala.

Filed May 26, 1987, Ser. No. 54,228

Int. Cl.[4] H01H *21/42*

U.S. Cl. 200—153 SC 20 Claims

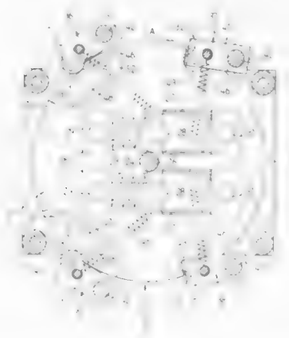
1. An operating apparatus for use with a multi-position switch comprising:

(a) a planar member mounted on a first shaft for rotation about an axis therethrough;)

(b) a disc-like member connected to said multi-position switch and mounted parallel to said planar member for rotation on a second shaft extending along said axis;

VOL 1093 ISS 1 AG 2 1988 UMI

(c) means for arresting rotational motion of said disc-like member at a preselected arc of rotation;
(d) means carried by said planar member for disengaging said arresting means responsive to a pre-determined rota-



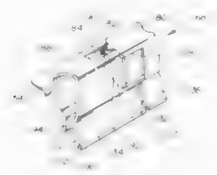
tion of said planar member relative to said disc-like member; and
(e) biasing means for elastically connecting said planar member and said disc-like member.

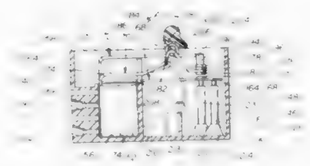
4,761,525

ELECTRICAL SWITCH APPARATUS HAVING A WIRE ENGAGING ELECTRICAL CONDUCTING MEMBER

Phillip W. Stumpff, Madill, and Richard D. Taylor, Kingston, both of Okla., assignors to Philrich Innovators Research Manufacturing and Development, Inc., Madill, Okla.

Filed Dec. 8, 1986, Ser. No. 939,189
Int. Cl.[4] H01H *1/58*
U.S. Cl. 200—284 **44 Claims**





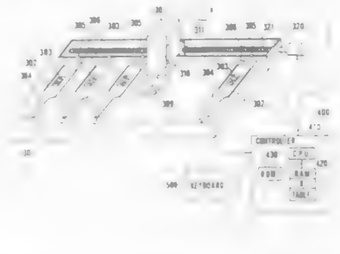
1. An electrical switch apparatus comprising:
an insulating housing defining a switch handle opening therein;
an electrical contact member disposed in said housing and comprising:
wire receiving means for receiving an electrical wire and comprising:
an elongated web portion having a plurality of aligned wire receiving web openings disposed therethrough; and
first and second elongated leg portions extending from said web portion, at least one of said leg portions being spot transversely to a length thereof between adjacent ones of said web openings, so that said leg portions can engagingly receive different sizes of wire therebetween in adjacent web openings; and
a cantilevered strip extending from said wire receiving means; and
a switch handle disposed in said housing and movable between a first and a second position, said switch handle having strip engaging means thereon for engaging said cantilevered strip at least when in one of said first and second positions.

4,761,526

APPARATUS FOR READING DISPLAYED VALUE OF ELECTRONIC CLINICAL THERMOMETER

Yutaka Muramoto, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1987, Ser. No. 46,292
Claims priority, application Japan, May 12, 1986, 61-106763; May 12, 1986, 61-106764
Int. Cl.[4] B65D *85/38*
U.S. Cl. 206—306 **13 Claims**



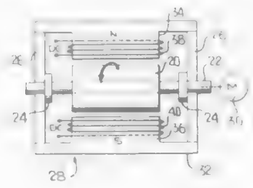
1. An apparatus for reading temperature values displayed by a plurality of electronic clinical thermometers, comprising:
reading means for reading temperature values displayed by a plurality of electronic clinical thermometers;
retaining means for retaining a plurality of electronic clinical thermometers in such a manner that temperature display sections of the electronic clinical thermometers are positioned facing in the direction of the reading means; and
moving means for moving said retaining means and reading means relative to each other so that said reading means reads the temperature values displayed by the plurality of electronic clinical thermometers.

4,761,527

MAGNETIC FLUX INDUCTION HEATING

Glenn R. Mohr, P.O. Box 52, Linthicum, Md. 21090

Filed Oct. 4, 1985, Ser. No. 784,499
Int. Cl.[4] H05B *5/08*
U.S. Cl. 219—10.41 **26 Claims**



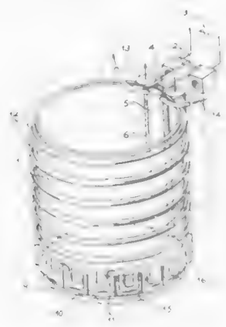
1. A method of magnetic flux induction heating an armature formed of strip shapes or the like, said method comprising the steps of forming a direct current generator including a direct current generator field and the armature, with the armature being a dead short and all electrical energy induced into the armature is directly converted into heat and effecting a pulsed induction of electrical energy into the armature at a frequency wherein there is a controlled depth of penetration of the armature by the induced electrical energy well beyond the surface of the armature wherein heat absorbed by the armature is primarily retained within the armature.

4,761,528

HIGH FREQUENCY INDUCTION MELTING FURNACE

Bruno Caillaut, Seyssins; René Perrier de la Bathie, d'Albigny, and Jacques Terrier, Sassenage, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 26, 1987, Ser. No. 53,805
Claims priority, application France, Jun. 3, 1986, 86 07970
Int. Cl.[4] H05B *6/24*
U.S. Cl. 219—10.491 **11 Claims**



1. A melting furnace for melting refractory materials into a molten state by induction from a high frequency alternating current source, said furnace comprising:
a material holding crucible which includes a bottom wall and a substantially longitudinally extending, electrically conducting cylindrical side wall having a single cylindrical turn, said side wall turn having end portions spaced apart from each other to define a slot therebetween which extends generally longitudinally of said cylindrical side wall;
means connecting an alternating current source between said side wall turn end portions so that said cylindrical side wall turn constitutes both said crucible and an inductor;
at least one elongated member made from an electrically conducting material mounted in said slot in spaced relation from each of said side wall end portions and electrically insulated from said cylindrical wall, and
means for cooling said elongated member.

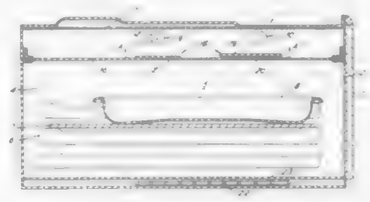
4,761,529

GRILLING OR BROWNING APPARATUS SUITABLE FOR USE IN A MICROWAVE OR CONVECTION OVEN

Michael N. Tsisios, Famagusta, Cyprus, assignor to Thorn EMI Patents Limited, Hayes, England

Filed Jun. 19, 1987, Ser. No. 63,948
Claims priority, application United Kingdom, Jun. 21, 1986, 8615401
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 B **10 Claims**

1. An apparatus for grilling or browning food, the apparatus comprising a compartment having a region in which food to be grilled or browned can be placed; at least one infra-red emissive lamp having a longitudinal axis and being positioned to heat said region and screening means located between said lamp and said region and being effective to provide a substantially uniform distribution of heat in said region, wherein the screening means comprises a first sheet of a metallic mesh material arranged lengthwise with respect to the lamp and a second sheet of a metallic mesh material adjacent to said first



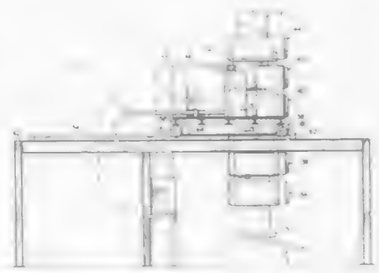
sheet of a metallic mesh material, the second sheet being shorter than, and arranged centrally with respect to the ends of, said first sheet, the screening means being located in sufficiently close proximity to said at least one lamp as to absorb radiation produced by the lamp and re-radiate said radiation at a wavelength which is greater than that produced by the lamp and is more conducive to browning or grilling food.

4,761,530

ELECTRIC INDUCTION HEAT TREATING FURNACE

Ronald W. Scherer, LaPorte, Ind., and Nicholas V. Ross, Youngstown, Ohio, assignors to National Steel Corporation and Ajax Magnethermic Corporation, both of, Del.

Continuation-in-part of Ser. No. 33,755, Apr. 3, 1987, abandoned. This application Sep. 23, 1987, Ser. No. 100,246
Int. Cl.[4] H05B *6/10*
U.S. Cl. 219—10.71 **14 Claims**



1. In an electric induction furnace for use in a continuous galvanneal operation wherein a zinc coating applied to the surface of a running length of steel is converted to a zinc iron alloy coating by passing the running length of zinc coated steel along a generally straight path through the furnace and heating the coated strip during movement through the furnace to alloy the zinc coating with iron from the steel strip, said furnace having at least one induction coil including electric conductor means defining a closed loop having an opening through which the running length of coated steel passes in movement through the furnace, and power means supplying electric current to the conductor means for inductively heating the coated strip passing through the closed loop, the improvement comprising,
a frame supporting said at least one induction coil,
carriage means supporting said frame and said coil for movement between a first position wherein the opening in said

VOL 1093 ISS 1 AG 2 1988 UMI

coil extends around said generally straight path and a second position wherein the coil is spaced from said generally straight path,

connector means defining a part of said conductor means,

support means mounting said connector means for movement between a closed position forming a part of said loop and an open position forming an opening in the said loop, said

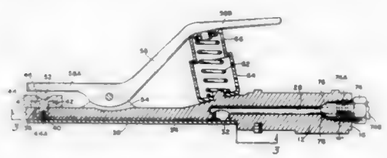
power means operatively associated with said support means for moving said connector means between said open and said closed positions whereby said closed loop may be opened to permit said furnace to be moved between said first and said second positions while said running length of zinc coated steel extends along said straight path.

4,761,531

TORCH WITH IMPROVED AIR FLOW

Paul B. Moss, 202 S. Lansing, Tulsa, Okla. 74120

Continuation of Ser. No. 866,404, Oct. 14, 1986, abandoned.
This application Oct. 26, 1987, Ser. No. 115,594
Int. Cl.[4] B23K *9/28*
U.S. Cl. 219—70 **2 Claims**



1. A holder for an arc forming electrode having means to direct the flow of air in the direction towards the arc formed by the electrode, comprising:

an elongated metallic body having a forward and a rearward end and an upper and a lower surface and an air passageway in said body formed in part of a central passageway extending from said rearward end and terminating at a point intermediate said forward and rearward ends and the air passageway formed in part by an elongated groove formed in said body lower surface, said groove extending from adjacent said body forward end and terminating at a point intermediate said forward and rearward ends, said central passageway and said groove communicating with each other at said point intermediate said body forward and rearward ends;

a cylindrical nozzle head rotatably affixed at said body forward end, the nozzle head having an upper surface having a notch formed therein to receive an electrode, the nozzle head having an internal passageway therein and a cylindrical external sidewall having an air jet opening communicating with said air passageway and oriented to eject air in alignment with said notch, said body having means for attachment of an air hose to said body, said passageway communicating said hose with said nozzle head passageway;

an elongated tong member pivotally affixed at a point intermediate its end to said body upper surface, the tong member having a forward portion extending over and adjacent said nozzle head and a rearward, handle forming portion, extending over and in the plane of said body adjacent the rearward end thereof;

a spring resiliently biasing said tong forward portion towards said nozzle head, an electrode being releasably receivable between said tong forward end and said nozzle head; and

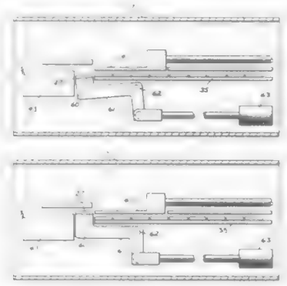
an elongated, generally flat removable cover secured to said body lower surface covering said groove, and in part defining said body air passageway, and at least one secondary passageway in said body adjacent the forward end thereof communicating said groove with said nozzle head passageway.

4,761,532

RESISTANCE WELDING APPARATUS

Oscar L. Bock, Sun City, Ariz., assignor to Bock Corporation, Madison, Wis.

Filed Sep. 30, 1987, Ser. No. 103,525
Int. Cl.[4] B23K *11/00, 11/32*
U.S. Cl. 219—79 **6 Claims**



1. A resistance welding apparatus for welding metal pieces to the inside surface of a metal tube, comprising:

(a) means for holding the tube in which the metal pieces are to be welded;

(b) an elongated electrically conductive electrode arm cantilever mounted at one end, and having a free end that is inserted into the tube in which the pieces are to be welded, and including a track for supporting a row of the pieces to be welded and having an outer end near the free end of the electrode arm;

(c) means for feeding a plurality of the metal pieces to be welded in single file along the track of the electrode arm toward the free end;

(d) means, having a top surface that receives the metal pieces at a first level position as the metal pieces are pushed off of the end of the track by the means for feeding, for controllably displacing the metal pieces to a second level position;

(e) an end support mounted to and electrically connected to the free end of the electrode arm for receiving and holding metal pieces to be welded in proper position for welding to the inside of the tube;

(f) means for pushing a metal piece to be welded off of the top surface of the means for controllably displacing when the top surface is at the second level position onto the end support; and

(g) a drive cylinder mounted to the electrode arm and having a plunger, the drive cylinder being mounted to the electrode arm in position to have the plunger press against the inside surface of the tube to drive the electrode arm such that metal pieces to be welded held by the end support are driven into firm contact with the inside of the tube.

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SPOT WELDING DEVICE

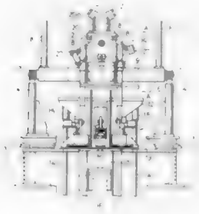
Kazuo Naruse, Okazaki; Mikio Kitano, and Hideaki Tobita, both of Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Feb. 3, 1987, Ser. No. 10,556
Claims priority, application Japan, Feb. 3, 1986, 61-21533
Int. Cl.[4] B23K *11/10*
U.S. Cl. 219—86.7 **3 Claims**

1. A welding device for spot welding a car body mounted on a pallet having a longitudinal aperture therein, the welding device comprising:

a polyhedron shaped rotational member having a plurality of electrodes disposed on different surfaces thereof;

a support member for supporting said rotational member in vertical alignment with a longitudinal opening in a pallet;



means for rotating said rotational member to selectively position one of the surfaces of said rotational member; and

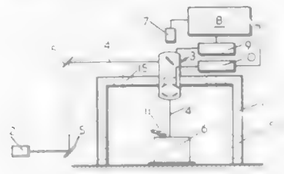
means, including said support member, for vertically moving said rotational member through the longitudinal opening of said pallet to position the electrodes of said selected surface of said rotational member in a predetermined welding position.

4,761,534

LASER APPARATUS

Thomas L. Foulkes, Leyland, Great Britain, assignor to N.I.S. Limited, Chorley, United Kingdom

PCT No. PCT/GB86/00097, § 371 Date Oct. 23, 1986, § 102(e) Date Oct. 23, 1986, PCT Pub. No. WO86/04847, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 24, 1986, Ser. No. 924,999
Claims priority, application United Kingdom, Feb. 23, 1985, 8504732; United Kingdom, Mar. 1, 1985, 8505296
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.8 **8 Claims**



1. Laser apparatus for performing operations on a workpiece comprising:

a laser source,

computing means,

surface imaging apparatus remote from the workpiece for forming a representation of a surface of the workpiece, said imaging apparatus being associated with said computing means whereby said representation may be stored in said computing means,

focusing means remote from the workpiece for focusing the laser beam from said source onto the workpiece,

translation means operable under the control of the computing means for translating the beam in a line relatively across the surface of the workpiece in accordance with a selected input to the computing means and,

focus control means under the control of said computer means for adjusting the focus of the laser beam in accordance with the three dimensional characteristics stored in the computer of the surface along the line along which the beam translates relative to the workpiece for maintaining the focus of the laser beam at the predetermined position relative to said surface.

4,761,535

LASER WIRE STRIPPER

William E. Lawson, Somerset, Wis., assignor to Laser Machining, Inc., Somerset, Wis.

Filed Oct. 13, 1987, Ser. No. 108,541
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.68 **17 Claims**



1. A wire insulation cutter comprising:

energy source means;

directing means for directing energy from the energy source means to a focus at a first point;

reflecting means receiving the energy after passing the first point and reflecting the energy to a focus at a second point; and

motive means for moving an insulated wire in a path which passes the first point and the second point in sequence, the energy focused at the first point cutting the insulation on one side of the wire and the energy focused at the second point cutting the insulation on the side opposite the one side of the wire.

4,761,536

METHOD AND APPARATUS FOR REDUCING MAGNETIC FIELD STRENGTHS IN WELDING ZONES

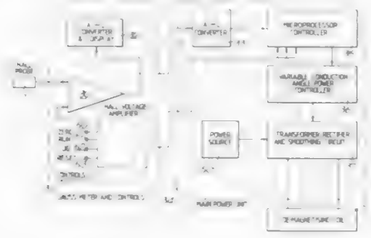
Philip J. Blakeley, 25 The Woodlands, Linton, Cambridge, England (CB1 6UG)

Filed Mar. 9, 1987, Ser. No. 23,191
Claims priority, application United Kingdom, Jun. 23, 1986, 8615112
Int. Cl.[4] B23K *9/08*
U.S. Cl. 219—123 **14 Claims**

1. Apparatus for reducing the strength of magnetic fields in the vicinity of a weld zone in a workpiece to be welded, the apparatus comprising sensing means for sensing the strength of a resultant magnetic field in said weld zone vicinity, and magnetic field generating means responsive to said sensing means

VOL 1093 ISS 1 AG 2 1988 UMI

for generating a counterbalancing magnetic field in said weld zone vicinity between pole pieces defined by the workpiece



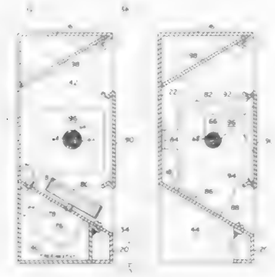
whereby said resultant magnetic field in said vicinity of the weld zone is reduced.

4,761,537

ELECTRIC BASEBOARD HEATER HAVING A REDUCED PROFILE CABINET

Edwin T. Hayes, Gray, Tenn., assignor to Tennessee Plastics, Inc., Johnson City, Tenn.

Filed Dec. 8, 1986, Ser. No. 938,877
Int. Cl.[4] H05B *1/02*; F24H *9/08, 3/04*
U.S. Cl. 219—366 12 Claims



1. A cabinet for a reduced profile perimeter base board electrical heater comprising an elongated sheet metal shell having interconnected sections comprising a top, upper floor, front, back, and lower floor, the planes of said front and back being substantially parallel, said upper floor slanting downwardly from said back to said front, a removable end cap on each end of said shell, each of said end caps having a base, the planes of said end cap bases and of said lower floor being substantially contiguous, the plane of said lower floor in geometric association with the plane of said upper floor, with the plane of said front, and with the plane of said back defining an electrical raceway, wherein said back terminates at its junction with said upper floor, and wherein said lower floor extends inwardly from said front only a minor portion of the width of said shell, the termination of said back and the minor extension of said lower floor providing easy access to said raceway, removable cover means positioned in said raceway and comprising a back, floor and end means enclosing at least a portion of said raceway, wherein the back and floor of said cover means lie substantially in the respective planes of the back and lower floor of said shell, and said top, front, back and upper floor of said shell defining a heater element cavity overlying said raceway.

4,761,538

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE OF A RADIANTLY HEATED OBJECT

Takatoshi Chiba, Muko, and Hideyuki Teraoka, Kyoto, both of Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Nov. 18, 1986, Ser. No. 932,223
Claims priority, application Japan, Nov. 21, 1985, 60-259907; Dec. 11, 1985, 60-276986; Jan. 8, 1986, 61-002549
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 19 Claims



1. A temperature control method for controlling the supply of electric power from an electric power supply means to radiant heater means, to heat an object by radiant heat generated from said radiant heater means, thereby to control the instantaneous temperature θ of said object to follow a prescribed instantaneous target temperature level T_o over time t, said temperature control method comprising the steps of:

obtaining a relationship between electric power P supplied to said radiant heater means and an instantaneous temperature θ of said object, on the basis of Stefan-Boltzmann's law with respect to temperature and radiant energy, according to $U=\sigma\theta^4$, wherein U is the radiant energy per unit area of a black body, θ is the absolute temperature of said black body and σ is a constant, and approximating θ by T_o;

generating a temperature control signal reponsive to said prescribed target temperature level;

converting said temperature control signal into a power control signal for controlling said electric power supplied to said radiant heater means, using a conversion rule determined in accordance with said relationship; and

supplying said electric power from said power supply means to said radiant heater means on the basis of said power supply signal, thereby to controllably heat said object by said radiant energy from said radiant heater means.

4,761,539

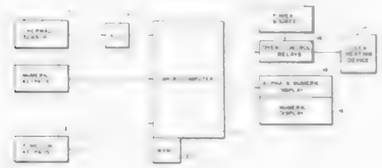
OVEN CALIBRATION SYSTEM HAVING VARIABLE STORED CALIBRATION VALUE

Silas E. Carmean, Mansfield, Ohio, assignor to The Tappan Company, Ohio

Filed Apr. 13, 1987, Ser. No. 37,585
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—497 17 Claims

1. In a control system comprising condition responsive means, control terminals, and control means coupled to said condition responsive means and control terminals and responsive to said sensing means for controlling the application of control signals to said terminals, the control means including means storing a first value corresponding to a given condition to which said sensing means is to be subjected; the improvement wherein said storing means comprising a non-volatile memory storing a digital number corresponding to said first value, and said control means further comprises a programmable non-volatile memory having stored therein a digital calibration value, means for varying said digital calibration value,

means for converting the output of said condition responsive means to digital form, means for comparing the output of said converting means with a digital value representing a function



of said digital number and said calibration value, and means for applying said control signals to said terminals only when the condition responsive means senses a value that differs from said function in a given sense.

4,761,540

ELECTRICALLY OPERATED APPLIANCE CONTROLS AND METHODS OF MAKING THE SAME

Gram J. McGeorge , Spring Lake, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 912,968, Sep. 29, 1986, Pat. No. 4,695,711, which is a division of Ser. No. 685,775, Dec. 24, 1984, Pat. No. 4,636,621. This application Jul. 21, 1987, Ser. No. 76,045
Int. Cl.[4] H05B *1/02*
U.S. Cl. 219—506 9 Claims



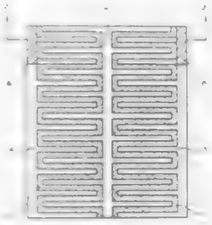
1. In a method of making an electrically operated appliance control comprising the steps of forming an electrically operated device for providing two different functions of said device, forming an electrically operated visual display unit, forming a manually operated selector means, electrically interconnecting said selector means to said device and said unit for selecting a desired function of said device and for setting said device to provide that selected function in a desired set manner thereof as being indicated on said display unit by such operation of said selector means, and forming said selector means to have a manually operated start actuator which when actuated will cause said device to begin to produce the selected function thereof and in that selected set manner thereof, the improvement comprising the steps of forming said selector means to comprise a single manually operated movable selector member which when moved in one direction a certain amount from an off position thereof to a first position thereof selects one of said functions and then sets said device to provide that selected function in a desired manner as being indicated on said display unit as said selector member is being further moved in said one direction and which when moved in the other direction a certain amount from said off position thereof to a second position thereof selects the other of said functions and then sets said device to provide that selected function in a desired manner as being indicated on said display unit as said selector member is being further moved in said other direction from said second position thereof, and causing said one function of said device to be a time-of-day function and said other function of said device to be a run down interval timer function.

4,761,541

DEVICES COMPRISING CONDUCTIVE POLYMER COMPOSITIONS

Neville S. Batliwalla, Foster City; Michael C. Jones, Fremont; Ravinder K. Oswal, Union City; Jeff Shafe, Redwood City, and Bernadette A. Trammell, Menlo Park, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 820,276, Jan. 17, 1986, abandoned, Continuation-in-part of Ser. No. 780,524, Sep. 26, 1985, abandoned, Ser. No. 735,409, May 17, 1985, abandoned, Ser. No. 735,408, May 17, 1985, abandoned, Ser. No. 650,919, Sep. 14, 1984, abandoned, and Ser. No. 650,918, Sep. 14, 1984, abandoned, said Ser. No. 780,524, is a continuation of Ser. No. 573,099, Jan. 23, 1984, abandoned, said Ser. No. 735,408, and a continuation-in-part of Ser. No. 663,014, and a continuation-in-part of Ser. No. 650,920. This application May 19, 1987, Ser. No. 51,438
Int. Cl.[4] H05B *3/02, 3/36*
U.S. Cl. 219—528 26 Claims



1. An electrical device which comprises

(1) a resistive element composed of a first material which has a resistivity at 23° C. of 1 to 500,000 ohm.cm;

(2) a contact layer which is directly bonded to a surface of the resistive element, and is composed of a second conductive material having a resistivity at 23° C. which is less than the resistivity at 23° C. of the first material; and

(3) a further member which is composed of a third conductive material having a resistivity at 23° C. which is less than the resistivity at 23° C. of the second material, said further member being in direct physical contact with the contact layer and being maintained in such contact substantially only by means of pressure over a connection area which is at least 0.5 square inch in area or which has at least one dimension greater than 1 inch,

the components of the device being positioned such that the device can be connected to a source of electrical power so that an electrical path exists from the further member to the resistive element, through the contact layer.

4,761,542

AUTOMATIC MONEY RECEIVING AND PAYING METHOD AND APPARATUS

Yuji Kubo, Nakajomachi; Eiichi Ise, Niigatashi, and Seietu Takahashi, Nakajomachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 25, 1985, Ser. No. 758,785
Claims priority, application Japan, Jul. 27, 1984, 59-155208
Int. Cl.[4] G06F *15/30*
U.S. Cl. 235—379 17 Claims

1. An automatic money receiving and paying apparatus, comprising:

detecting means for receiving from a transmitter holdable by a customer, a signal containing characteristic information

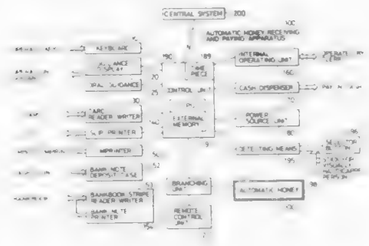
VOL 1093 ISS 1 AG 2 1988 UMI

about the customer, including information indicating a native language of a customer and whether the customer is a visually-handicapped person;

an information reading unit for receiving by reading characteristic information from a recording medium, including information indicating a native language of a customer and whether the customer is a visually-handicapped person;

a memory unit for storing a plurality of pieces of guidance information including oral guidance information in a plurality of native languages for visually-handicapped customers and visible guidance information for visually-non-handicapped customers;

a display unit including a visible guidance display and an oral guidance display, adapted to receive and display said guidance information, and to switch from the visible guidance display to the oral guidance display upon reception of oral guidance information; and



a control unit adapted to select corresponding guidance information from said memory unit on the basis of said characteristic information including said information indicating a native language and whether a customer is a visually-handicapped customer received by one of said detector means and said information reading unit and to output said corresponding guidance information to said display unit when one of said detector means and said information reading unit receives the characteristic information about a visually-handicapped customer from said recording medium, said control unit being adapted to read the oral guidance information in the native language indicated by said characteristic information from said memory unit and supply the same to said guidance display unit when said characteristic information indicates that a customer is visually handicapped.

4,761,543

HOLOGRAPHIC SECURITY DEVICES AND SYSTEMS

Kenneth J. Hayden, 14 Valley Road, Plympton, Plymouth, Devon, United Kingdom

PCT No. PCT GB86/00109, § 371 Date Oct. 30, 1986, § 102(e) Date Oct. 30, 1986, PCT Pub. No. WO86/05300, PCT Pub. Date Sept. 12, 1986

PCT filed Oct. 30, 1986, Ser. No. 925,088

Claims priority, application United Kingdom, Mar. 1, 1985, 8505361; Jan. 3, 1986, 8600081

Int. Cl.[4] G06K *7/10*

U.S. Cl. 235—457 33 Claims

1. An identifiable security device comprising a carrier supporting holographically-applied identifying information, characterised in that the said information is provided in a single piece of thick holographic film and includes at least one discrete reflective region surrounded by film of different reflectivity, the reflective region being adapted to be read directionally and optically without a focusing system according to at



least one optical parameter comprising intensity, wave length and polarisation of light reflected from the reflective region.

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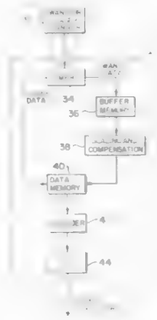
MEANS AND METHOD OF SCALING TIME INTERVAL MEASUREMENTS FROM AN OPTICAL BAR CODE SCANNER TO IMPROVE DECODER EFFICIENCY

McKee D. Poland, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 15, 1985, Ser. No. 798,765

Int. Cl.[4] G06K *7/10*

U.S. Cl. 235—462 9 Claims



1. A decoder for translating the signals from a bar code scanner into character data, capable of processing the output signals from both wand and laser bar code scanners from scans of various bar code symbology tags without using separate decoding hardware, comprising:

timer means for measuring the pulse width time intervals between the state changes of the signals from the wand and laser bar code scanners and producing a time interval data signal;

filter means comprising an adaptive digital filter connected to the timer means for transforming the time interval data from a wand scanner into time interval data having the characteristics of time interval data from a laser scanner, to produce transformed wand time interval data that preserves the relative proportions of time interval values of bars and spaces of the bar code; and

decoder means for receiving the laser time interval data from the timer means and for receiving the transformed wand time interval data from the filter means, for translating the time interval data into character data, said decoder capable of translating only time interval data having the characteristics of data from a laser scanner.

4,761,545

TAILORED EXCITATION FOR TRAPPED ION MASS SPECTROMETRY

Alan G. Marshall; Tom L. Ricca, both of Columbus, Ohio, and Tao-Chin L. Wang, Rockville, Md., assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed May 23, 1986, Ser. No. 866,882

Int. Cl.[4] B01D *59/44*

U.S. Cl. 250—291 42 Claims

MICROFICHE APPENDIX INCLUDED

(1 Microfiche, 16 Pages)



1. Ion mass spectrometry apparatus comprising:

(a) an ion cell including a plurality of electrode plates;

(b) means for detecting motion of ions in the cell and providing a signal indicative thereof;

(c) excitation means connected to the ion cell for producing an electric field in the cell which has a time domain waveform which is a selectively weighted and shifted inverse Fourier transform of components at discrete frequencies of a selected frequency domain excitation spectrum wherein the phases of the discrete frequency components are varied by the excitation means as a non-constant function of the frequencies of the components such that the frequency components are not all in phase at any point in time.

4,761,546

OPTICAL DISPLACEMENT MEASURING SYSTEM WITH NONLINEARITY CORRECTION

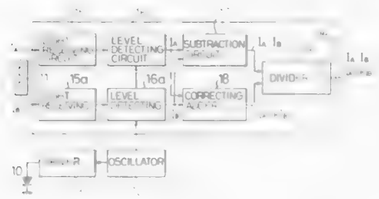
Motoo Ikari, Kyoto; Yuji Takada, Neyagawa; Shiataro Yamamoto, Nabari; Katsuhiro Teramae, Osaka, and Makio Asai, Tatsuno, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Nov. 12, 1986, Ser. No. 929,417

Claims priority, application Japan, Nov. 25, 1985, 60-264275

Int. Cl.[4] G01J *1/20;* G01C *3/00*

U.S. Cl. 250—201 11 Claims



1. An optical displacement measuring system utilizing a triangulation, comprising:

means for projecting a light beam with a first optical axis onto an object whose displacement is to be measured,

a light-reception optical means for passing therethrough as condensed light reflected by said object, on a second optical axis intersecting at an angle said first optical axis for said triangulation,

a light receiving means disposed on said second optical axis for generating a pair of positional output signals having mutually opposite values and responsive to the position of a condensed light spot received from said light-reception optical means with respect to the center of said light receiving means;

an operational means for performing addition and subtraction of said pair of positional output signals from said light receiving means and for obtaining a ratio between the added and subtracted positional output signals to generate a displaced distance signal, and

correction means for correcting said pair of positional output signals with a mathematical correction for correcting nonlinearity of said measured displaced distance signal with respect to said displaced distance.

4,761,547

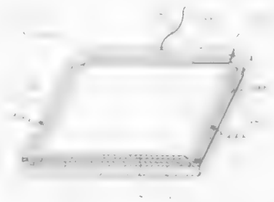
SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE FOR LIGHT INCIDENT POSITION DETECTION

Shigenori Torihata, Isehara; Kazuto Togino, Tokyo; Akira Okamoto, Hiratsuka; Haruo Hashimoto, Kamakura; Yukitaka Takitani, Isehara; Hisaakira Imaizumi, Hiratsuka, and Hiroshi Miyata, Kanagawa, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 18, 1985, Ser. No. 712,997

Int. Cl.[4] H01J *40/14*

U.S. Cl. 250—211 J 10 Claims



1. A semiconductor photoelectric conversion device device for light incident position detection comprising:

a PIN amorphous semiconductor layer structure comprising a P type amorphous semiconductor layer, an I type amorphous semiconductor layer and an N type amorphous semiconductor layer;

first and second resistance layers provided on opposing surfaces of said structure;

a pair of first collector electrodes provided on said first resistance layer, said first collector electrodes opposing to each other in a first direction; and

a pair of second collector electrodes provided on said second resistance layer, said second collector electrodes opposing each other in a second direction perpendicular to said first direction,

wherein at least one of said first and second resistance layers at which light incidents is made to be light permeable.

4,761,548

OPTICALLY TRIGGERED HIGH VOLTAGE SWITCH WITH CESIUM VAPOR

Virgil R. Laul, Dana Point, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Dec. 18, 1986, Ser. No. 943,975

Int. Cl.[4] H01J *40/14;* H05B *37/02*

U.S. Cl. 250—211 R 12 Claims

1. A high voltage arc discharge type switch for closing two parts of a high voltage circuit and capable of being optically triggered, comprising:

VOL 1093 ISS 1 AUG 2 1988 UMI

an insulating body having a hollow interior, at least a portion of the body being optically transmissive to a cesium ionizing light frequency;

a first and a second electrode attached to the insulating body and electrically communicating with the interior of the body, the insulating body and electrodes forming a gas tight container;

said electrode further being connected to each said circuit part respectively;



a predetermined quantity of vaporizable cesium disposed within the insulating body hollow interior;

flash lamp means for directing cesium vapor ionizing light through said interior,

a predetermined quantity of buffer gas disposed within the insulating body hollow interior, wherein a resistance between the first and second electrodes is reduced when a cesium ionizing light is directed through the optically transmissive portion of the insulating body into the hollow interior, triggering the high voltage switch.

4,761,549

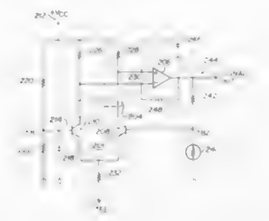
A LINEAR PHOTO-RESPONSIVE CIRCUIT

Loyal D. Mealer, III, San Jose, and Richard F. Lacey, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 21, 1986, Ser. No. 934,287

Int. Cl.[4] H01J *40/14*

U.S. Cl. 250—214 A **5 Claims**



1. A linear photo-responsive circuit comprising:

a passive, linear, photo-responsive element having a feedback terminal, said photo-responsive element being biased such that it has a conductance or resistance which is substantially linearly responsive to incident radiation within a particular intensity range;

a first differential amplifier having two input ports and two output ports, where a first of said input ports is coupled to said feedback terminal of said photo-responsive element to develop an amplified feedback signal at a first output port, and a second of said input ports is coupled to a constant voltage source to produce a differential voltage at a second output port; and

a second differential amplifier having two input ports and an output port, where a first input port of said second differential amplifier is coupled to said first output port of said first differential amplifier, a second input of said second differential amplifier is coupled to said second output port of said first differential amplifier, and a signal output port of said second differential amplifier is coupled to said feedback terminal of said photo-responsive element such that said signal output is a substantially linear function of said incident radiation due to its feedback to said photo-responsive element.

4,761,550

SCANNING SYSTEM FOR OPTICAL COORDINATE INPUT DEVICE WITH SCAN INTERRUPT CONTROL

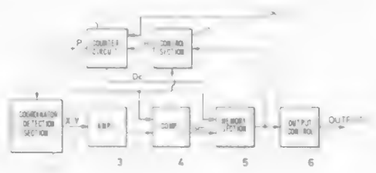
Kazuo Hasegawa, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Nov. 10, 1986, Ser. No. 929,336

Claims priority, application Japan, Nov. 9, 1985, 60-251178

Int. Cl.[4] G06F *3/033*

U.S. Cl. 250—221 **3 Claims**



1. A scanning system for an optical coordinate input device of the type having two mutually perpendicular coordinate detection sets forming a detection matrix, each set having a row of light emitting elements facing opposite a row of light receiving elements for detecting a coordinate input by blockage of a light beam between a light emitting element and a corresponding light receiving element, said scanning system comprising:

scanning means for scanning in sequence the opposed rows of light emitting and receiving elements of the coordinate detection sets by causing each light emitting element to emit a light beam and detecting whether or not the light beam is received by the corresponding light receiving element;

output means connected to said scanning means for sensing when a light beam between a light emitting element and the corresponding light receiving element is blocked, indicating detection of a coordinate input, and for outputting a coordinate data output based thereon; and

control means connected to said scanning means and said output means for interrupting the scanning of said coordinate detection sets for a predetermined interruption period following detection of a coordinate input and output of the coordinate data output by said output means.

4,761,551

OPTICAL TRANSDUCER WITH MOVABLE FILTER

Roger A. Edwards, and Peter T. Gardiner, both of Cheltenham, England, assignors to Smiths Industries Public Limited Company, London, England

Filed Nov. 24, 1986, Ser. No. 933,949

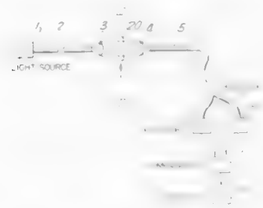
Claims priority, application United Kingdom, Dec. 18, 1985, [illegible]

Int. Cl.[4] G02B *5/14*

U.S. Cl. 250—227 **9 Claims**

1. Optical transducer apparatus comprising: a single optical radiation source means, said source means being adapted to emit radiation along a path within a first band of wavelengths; filter means having a transmission characteristic at any point on said filter means that is substantially the same as the transmission characteristic at other points on the filter means, the transmission characteristic at any said point varying substantially within said first band of wavelenghts; means for effecting

displacement of the said filter means relative to said path of radiation from said source means; detector means located in said path to receive only radiation from said source means, the radiation being received by said detector means both directly from said source means and via the filter means in amounts that both vary according to the position of said filter means, said detector means being arranged to provide outputs in respect of



the quantity of radiation at two different wavelengths spaced from one another within said first band; and means for comparing the outputs of the detector means at said two different wavelengths so as thereby to determine the position of the filter means, said source means being operative to emit a substantially constant radiation level and spectral content regardless of changes in the level of radiation received by said detector means.

4,761,552

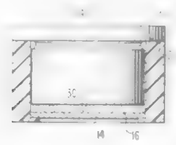
STANDARD FOR NEAR-INFRARED REFLECTANCE MEASUREMENT AND METHOD OF MAKING THE SAME

Robert D. Rosenthal, Gaithersburg, Md., assignor to Trebor Industries, Inc., Gaithersburg, Md.

Filed Sep. 16, 1986, Ser. No. 907,890

Int. Cl.[4] G01N *21/01*

U.S. Cl. 250—252.1 **2 Claims**



1. In combination with an analyzer for quantitative measurements for at least one constituent of interest in a sample by optical measurements, a calibration standard comprising, a calibration standared holder having a cup-shaped cavity closed at one end by an IR-quartz window, a pressed PTFE layer of a predetermined density and thickness in the cavity pressed onto and adjacent the IR-quartz window and having an upper surface substantially parallel to the surface against the IR-quartz window, and a sealing member in the cavity premanently sealing the pressed PTFE layer, the member being of a material which does not affect the optical characteristics of the standard.

4,761,553

GASEOUS LEAK DETECTOR

Frank E. Juravic, Jr., Aurora, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 6, 1983, Ser. No. 539,369

Int. Cl.[4] H01J *49/30*

U.S. Cl. 250—298 **8 Claims**



1. A mass-spectrometer type of leak detector for detecting gaseous atoms of a predetermined mass comprising:

a rigid housing;

an ion-detecting target means having an active detecting area;

ionization means for ionizing said atoms to produce ions;

accelerating means for accelerating said ions in a first direction;

path defining means comprising a series of spaced apart baffles fixed to said housing and disposed along said path to define the boundary of said path, and to deflect ions which cross said boundary of said path;

deflecting means comprising a magnet with generally opposed spaced apart pole pieces for generating a magnetic field having a first portion with generally parallel lines of force between the pole pieces and a fringe area portion with generally non-parallel lines of force outside the pole pieces; and

means for positioning said deflecting means with respect to said rigid housing, accelerating means and ion-detection target means such that a magnetic field generated by such deflection means orthogonally intersects the ion path for deflecting said ions away from said first direction so as to form a concave path of ions extending from said accelerating means through said baffles and to said active collecting area of said ion-detecting target means with substantially the entire concave ion path being in said magnetic field and with a major portion of said concave ion path being in the first portion of said magnetic field and the remaining portion of said concave ion path and said active collecting area of said ion-detecting target means being in said fringe area portion of said magnetic field.

4,761,554

RADIATION IMAGE READ-OUT APPARATUS

Ryoichi Yoshimura, and Shumpeita Torii, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 3, 1987, Ser. No. 10,530

Claims priority, application Japan, Feb. 3, 1986, 61-21728; Feb. 10, 1986, 61-27352

Int. Cl.[4] G01T *1/105*

U.S. Cl. 250—327.2 **20 Claims**

1. A radiation image read-out apparatus for taking a stimulable phosphor sheet out of a detachable cassette housing, said stimulable phosphor sheet carrying a radiation image thereon, reading out said radiation image from said stimulable phosphor sheet, erasing radiation energy remaining on said stimulable phosphor sheet after said radiation image is read-out therefrom, and then conveying said stimulable phosphsor sheet into as detachable cassette, comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

(i) a read-out section for reading out a radiation image stored on a stimulable phospshor sheet,
(ii) an erasing section for erasing radiation energy remaining on said stimulable phosphor sheet after image read-out from said stimulable phosphor sheet is finished,
(iii) a cassette holding section for releasably holding a plurality of cassettes capable of housing said stimulable phosphor sheet therein, and



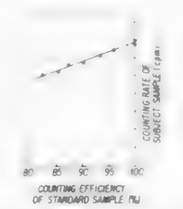
(iv) a sheet conveyance means for taking said stimulable phosphor sheeet out of an arbitrary one of said plurality of the cassettes, conveying said stimulable phosphor sheet to said read-out section and said erasing section, and then conveying said stimulable phosphor sheet into an arbitrary one of said plurality of the cassettes.

4,761,555

AUTOMATIC EFFICIENCY TRACING METHOD AND ITS APPARATUS

Hiroaki Ishikawa, Tokyo, Japan, assignor to Ishikawa Industry Co., Ltd., Japan

PCT No. PCT/JP84/00213, § 371 Date Oct. 18, 1985, § 102(e) Date Oct. 18, 1985, PCT Pub. No. WO85/03779, PCT Pub. Date Aug. 29, 1985
PCT Filed Apr. 24, 1984, Ser. No. 801,158
Claims priority, application Japan, Feb. 20, 1984, 59-28678
Int. Cl.[4] G01T *1/204*
U.S. Cl. 250—328 **10 Claims**



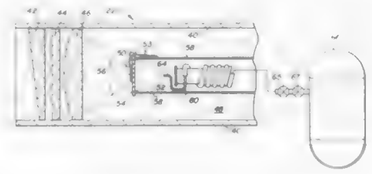
1. A method of determining radioactivity in an efficiency tracing method of liquid scintillation measurement, which comprises:
obtaining a data group including the counting efficiencies of a standard sample and the counted values of a subject sample under a predetermined measurement condition;
determining a regression equation representing the relation between the counting efficiencies and the counted values based on the obtained data group; and
determining the radioactivity of the subject sample from a given value of the counting efficiency of the standard sample by using the determined regression equation.

4,761,556

ON BOARD RECEIVER

Fynlon G. Simpson, Grand Prairie; Robert L. Fisher, Arlington, and James Kissell, Watauga, all of Tex., assignors to LTV Aerospace & Defense Company, Dallas, Tex.

Continuation of Ser. No. 825,121. This application Dec. 2, 1987, Ser. No. 127,547
Int. Cl.[4] F25B *19/00;* **H01L** *25/04*
U.S. Cl. 250—352 **14 Claims**



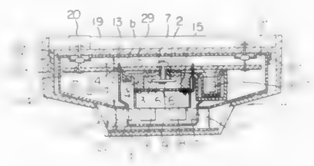
1. A receiver for detecting a communications signal during a fixed reception time period comprising:
means for detecting the presence of the communications signal and for generating a detector signal;
signal processing means for receiving said detector signal and for providing an indication of reception of the communication signal;
a cold well tube;
a source of cooling fluid;
a fixed orifice cooling gas tube disposed within said cold well tube and connected to said source of cooling fluid;
said detecting means being connected to said cold well tube; and
valve means connected between said source of cooling fluid and said cooling gas tube for providing cooling fluid under pressure to said cold well tube and said detecting means for a fixed time period which is less than the fixed reception time period.

4,761,557

IONIZATION-TYPE SMOKE DETECTOR

Toru Sasaki, and Yoshinori Igarashi, both of Tokyo, Japan, assignors to Kohmi Bosai Kogyo Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1986, Ser. No. 897,617
Claims priority, application Japan, Aug. 24, 1985, 60-129057[U]; Sep. 28, 1985, 60-147332[U]; Sep. 30, 1985, 60-148145[U]
Int. Cl.[4] H01J *47/00;* **G01N** *27/64*
U.S. Cl. 250—381 **4 Claims**



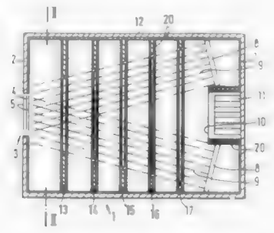
4. An ionization type smoke detector comprising a detector case having smoke inlet openings and a detector baseboard cover, a printed circuit board secured in vertically spaced relation to said detector baseboard, ionization electrode means including a radioactive source secured to said printed circuit board, a shield plate secured to said baseboard between said baseboard and said printed circuit board, and a shield case secured to said shield plate and substantially surrounding said printed circuit board and electrode means to prevent scattering of the same upon fusion of said detector case and detector baseboard.

4,761,558

APPARATUS FOR VIEWING A FOIL IRRADIATED IN THE COURSE OF NEUTRON RADIOGRAPHY

Wolfgang Schulz, Wunstorf, Fed. Rep. of Germany, assignor to Brown Boveri Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Sep. 26, 1986, Ser. No. 912,929
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1985, 3534759
Int. Cl.[4] G01T *3/00, 5/02*
U.S. Cl. 250—485.1 **5 Claims**



1. Apparatus for viewing a foil irradiated in the course of neutron radiography, the foil having nuclear tracks being visible after etching under the action of light, comprising a completely enclosed housing having a first surface with means defining an opening therein for receiving an etched foil, a second surface opposite said opening, a black coating disposed on said second surface, and at least one light source disposed in said housing between the black coated second surface and said opening for transmitting light rays striking the foil in said opening at an angle deviating from the normal.

4,761,559

ION BEAM IMPLANTATION DISPLAY METHOD AND APPARATUS

Douglas D. Myron, Austin, Tex., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sep. 24, 1986, Ser. No. 911,240
Int. Cl.[4] H01J *37/30*
U.S. Cl. 250—492.21 **10 Claims**



1. A method of controlling an ion beam for ion implantation of a workpiece comprising the steps of:
directing an ion beam through sets of scanning electrodes, a first set of electrodes to deflect the ion beam in a first direction and a second set of electrodes to deflect the beam in a second direction orthogonal to the first direction;
simultaneously energizing each set of scanning electrodes with first and second deflecting voltages to cause the ion beam to sweep over the workpiece;
coordinating the frequency and amplitude of said deflecting voltages to cause said beam to scan across all regions of said workpiece;
generating a signal related to the ion beam current striking said workpiece;
triggering a sweep of an imaging ray across a screen by coordinating the sweep with one of said first and second deflecting voltages and depicting said beam current on said screen as said ray sweeps across the screen to create a single beam characterizing image on the screen; and
adjusting the trajectory of the ion beam to cause said beam characterizing image to conform to a desired shape.

4,761,560

MEASUREMENT OF PROXIMITY EFFECTS IN ELECTRON BEAM LITHOGRAPHY

William B. Glendinning, Red Bank, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 25, 1984, Ser. No. 573,547
Int. Cl.[4] H01J *3/26*
U.S. Cl. 250—492.2 **7 Claims**

1. A method of measuring submicron proximity effects caused by electron beam scattering in electron beam lithography, comprising the steps of lithographing with an electron beam on a wafer or mask under test a test pattern comprising a pair of straight lines, with said lines crossing at an angle of less than one degree, and further lithographing a measuring scale on said wafer or mask parallel to one of said lines and having its origin lined up with the intersection of said lines, or with the intersection of the centerlines of said lines, and then opitically measuring the distance from said intersection to the closest unexposed portion of said wafer or mask which lies between the two lines.

4,761,561

LASER BEAM SCANNING PATTERN GENERATION SYSTEM WITH POSITIONAL AND DIMENSIONAL ERROR CORRECTION

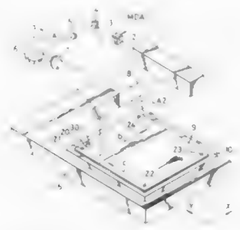
Yoshihisa Fujiwara, Nagareyama; Akikazu Tanimoto, Yokohama; Hisakazu Kato, Tokyo; Manabu Hosoya; Shinji Miura, both of Yokohama; Fuyuhiko Inoue, Sagamihara, and Yuichi Aoki, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 21, 1986, Ser. No. 933,185
Claims priority, application Japan, Nov. 27, 1985, 60-266574; Dec. 13, 1985, 60-280477
Int. Cl.[4] G01N *21/86*
U.S. Cl. 250—548 **17 Claims**

1. A pattern generation system comprising:
means for holding a workpiece on a flat surface, the workpiece having a plurality of openings extending through the workpiece in a direction perpendicular to the flat surface;
means for scanning the workpiece with an energy beam modulated on the basis of design data and for generating a pattern on the workpiece;

VOL 1093 ISS 1 AG 2 1988 UMI

detecting means having a plurality of photosensors respectively opposite said plurality of openings and means for radiating the light beam through said openings corresponding to said photosensors, said plurality of photosensors being adapted to generate detection outputs representing relative positions between said photosensors and said openings corresponding thereto within the flat surface;



means for determining two-dimensional positional errors of the workpiece on the flat surface with respect to said holding means, on the basis of the detection outputs from said plurality of photosensors; and

means for correcting the two-dimensional positional errors in response to operation of said determining means.

4,761,562

PHOTOELECTRIC CONTROL SYSTEM FOR MOVING STORAGE UNITS

Bjarne Christensen, Kirke Såby, and Niels Larsen, Valby, both of Denmark, assignors to Nord-Plan Stalreoler A/A, Vipperod, Denmark

Filed Oct. 31, 1986, Ser. No. 926,015
Claims priority, application Denmark, Nov. 7, 1985, 5141/85
Int. Cl.[4] G01N *21/86*; G01V *9/04*
U.S. Cl. 250—561 6 Claims



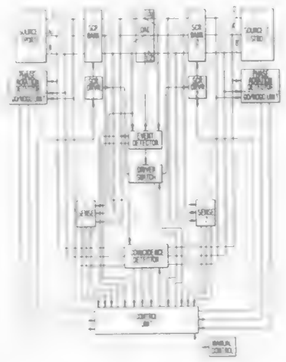
1. A storage system comprising a row of double-sided storage units displaceable in two opposing directions in the longitudinal direction of the row in such a manner that a passage appears between opposing sides of two neighboring storage units, each storage unit comprising driving means moving the storage unit in one or the opposite direction, said system further comprising a plurality of manually operated switch means connected to the driving means of at least one storage unit so as to control the movement thereof in a preselected manner, at least one light operated coupler on each side of each storage unit including at least one light activated sensor coupler on one storage unit activatable by a light operated coupler of an abutting neighboring storage unit and means associated with each storage unit connecting the light activated sensor coupler thereof to the driving means thereof so as to control the movement thereof when the storage unit is spaced a predetermined distance from a neighboring storage unit.

4,761,563

ASYNCHRONOUS MULTIPHASE SWITCHING GEAR

John M. Ross, Annandale, and George K. Woodworth, Manassas, both of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 27, 1987, Ser. No. 113,926
Int. Cl.[4] H02J *3/00*
U.S. Cl. 307—87 3 Claims



1. An asynchronous multiphase switching circuit for transferring the connection of a three phase load from a first three phase power source to a second, independent three phase power source so as to minimize power outage to the load, comprising:

a first SCR bank switchably connecting said load to said first power source and a second SCR bank for switchably connecting said load to said second power source;

a waveform coincidence detector circuit having inputs connected to said second power source and a load master waveform input connected to one terminal of said load, for continuously monitoring the phase relationship between and said one terminal of said load;

a control unit having an input connected to an output from said waveform coincidence detector, and an output connected to said first SCR bank and said second SCR bank, for determining the sequence for connecting the three phases from said second power source to said load through said second SCR bank when said first power source stops supplying power to said load, by determining which phase on said second power source most closely matches the phase of said load master waveform at said one terminal of said load;

whereby the disruption in three phase power being supplied to said load is minimized.

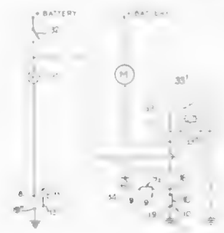
4,761,564

ELECTRICAL CONTACTOR

Jacques Nollez, Paris, and Pierre Preassco, La Courneuve, both of France, assignors to Bendix France, Drancy, France

Filed Jun. 16, 1987, Ser. No. 62,753
Claims priority, application France, Jun. 18, 1986, 86 08811; Dec. 10, 1986, 86 17276
Int. Cl.[4] H01H *35/24*
U.S. Cl. 307—118 12 Claims

1. An electrical contactor of the type including a control member which moves in translation in order to pass through at least first, second and third positions each corresponding to a change of state of at least first, second, third and fourth pairs of electrical contacts which can be open or closed, first and second bars which carry first and second, and third and fourth electrical contacts respectively forming part of the first and second, and third and fourth pairs of contacts, the control member working in conjunction with the bars in order to make each of the bars turn about an axis of rotation perpendicular to an axis of translation of the control member in such a way that at each end of a rotational travel, each bar changes the state of one of the pairs of electrical contacts associated with the bar, characterized in that the control member (5) includes a monoblock part interposed between the first and second bars which are spring loaded toward each other and toward the monoblock part which includes at least two



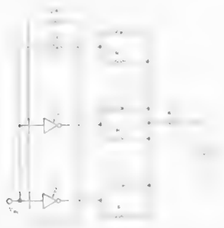
protruding bearing surfaces (5', 5'''; 5'') each placed facing one of the bars and laterally spaced from a fixed contact of an associated pair of contacts to make the associated bar swing through a rotational travel about an axis passing through said fixed contact so as to change the state of another pair of contacts controlled by said associated bar, the control member being movable between the first and second bars in order to sequentially move the bars so as to effect the changes of state of the four pairs of contacts, at ends of the rotational travels of the bars, when the control member moves from one end to the other end of the member's translational travel.

4,761,565

CCD CLOCK DRIVER CIRCUIT

Ram Kannegundla, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 29, 1987, Ser. No. 67,749
Int. Cl.[4] H03K *17/12*
U.S. Cl. 307—243 4 Claims



1. A clock drive circuit for a CCD capacitive load which in response to an input clock signal provides driving current into such load, comprising:

(a) a plurality of driver circuits connected in parallel, each having an input and output and two switching transistors connected in series which alternately change state in response to the level of said clock signal;

(b) a resistor and a diode connected in parallel between the series connection of the two switching transistors and the output of the driver circuit; and

(c) the input of each driver circuit being commonly connected to receive said input clock signal, and the output of each driver circuit being commonly connected to provide charging current to said capacitive load.

4,761,566

INPUT CIRCUIT FOR CONVERTING CONTACT SIGNAL INTO A VOLTAGE SIGNAL

Michiya Inoue, Hino, and Junichi Satoh, Hachioji, both of Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP86/00210, § 371 Date Dec. 16, 1986, § 102(e) Date Dec. 16, 1986, PCT Pub. No. WO86/06566, PCT Pub. Date Nov. 6, 1986
PCT Filed Apr. 25, 1986, Ser. No. 12,670
Claims priority, application Japan, Apr. 26, 1985, 60-090587; Apr. 30, 1985, 60-092759
Int. Cl.[4] H03K *19/21, 19/092, 5/00*
U.S. Cl. 307—262 2 Claims



1. An interface circuit including a resistor connected at one end to a power source or ground, a switching means connected between the other end of the resistor and ground or the power source, depending on whether the resistor is connected at one end to the power source or ground, and first voltage detecting means for detecting a voltage level at a connection point between the switching means and the resistor and outputting a logic output signal corresponding to the voltage level at the connection point, said interface circuit comprising:

second voltage level detecting means for detecting a voltage level at the connection point between the resistor and the power source or ground and outputting an output logic signal indicating whether the power source or ground is connected to the connection point; and

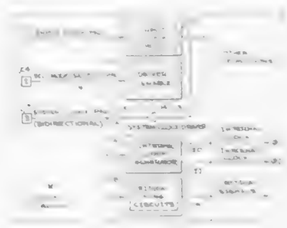
means for detecting noncoincidence between the output signal of said second voltage level detecting means and the output signal of the first voltage level detecting means and generating a voltage signal output, accordingly.

4,761,567

CLOCK SCHEME FOR VLSI SYSTEMS

Donald M. Walters, Jr., and Gigy Baror, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 20, 1987, Ser. No. 52,623
Int. Cl.[4] H03K *3/66, 5/15*
U.S. Cl. 307—269 12 Claims



1. An integrated circuit comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

an input pad connected to receive a first external clock signal;

input clock generator means responsive to said first clock signal for generating an internal system clock signal;

means for selectively enabling or disabling of said input clock generator means;

input/output pad connected to receive said internal system clock signal and to provide said internal system clock signal to other integrated circuits;

internal clock generator means being responsive to said internal system clock signal for generating a first internal phase clock signal and a second internal phase clock signal which is complementary to the first internal phase clock signal when said input clock generator means is enabled;

said input/output pad being further connected to receive a second external system clock signal when said input clock generator means is disabled; and

said internal clock generator means being responsive to said second external system clock signal for generating said first and second internal phase clock signals when said input clock generator means is disabled.

4,761,568

LOAD-ADAPTED CLOCK GENERATOR IN CMOS CIRCUITS

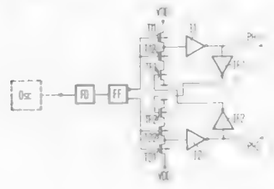
Sabine Stronski, Goldach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 31, 1987, Ser. No. 91,545

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1986, 3629690

Int. Cl.[4] H03K *5/13, 5/00, 3/01, 3/284*

U.S. Cl. 307—269 **12 Claims**



1. Clock generator for CMOS circuits for producing two non-overlapping internal clocks or timing cycles at two clock outputs, the clock generator having a frequency divider energized by an oscillator and having an output side, and a bistable multivibrator connected to the output side of the frequency divider and having complementary outputs, comprising an equal number of inverter-driver stages connected to each of the complementary outputs and being controllable thereby, said driver stages being dimensioned asymmetrically.

4,761,569

DUAL TRIGGER HALL EFFECT I.C. SWITCH

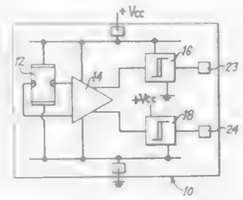
Jacob K. Higgs, Salisbury, N.H., assignor to Sprague Electric Company, North Adams, Mass.

Filed Feb. 24, 1987, Ser. No. 17,955

Int. Cl.[4] H03K *17/90, 3/29*

U.S. Cl. 307—309 **2 Claims**

1. An integrated-circuit comprising a Hall element and two Schmitt trigger circuit means connected to the output of said Hall element, the operate and release points of said two Schmitt trigger circuit means respectively, being at magnetic fields of opposite polarities, so that the output signals of said



two Schmitt trigger circuits are mutually complementary but have non-simultaneous changes from one state to the other.

4,761,570

PROGRAMMABLE LOGIC DEVICE WITH PROGRAMMABLE SIGNAL INHIBITION AND INVERSION MEANS

David G. Williams, Portland, Me., assignor to Harris Corporation, Melbourne, Fla.

Filed Feb. 12, 1987, Ser. No. 13,851

Int. Cl.[4] H03K *19/177*

U.S. Cl. 307—465 **19 Claims**



1. A programmable logic circuit comprising:

a first programmable means for selectively controlling the inhibition and inversion of logic signals applied to various input circuits,

logic circuit means coupled to said first programmable means for receiving said controlled signals from said first programmable means, wherein said logic circuit means provides an output signal having a preset relationship with respect to said controlled signals received from said first programmable means, and

a second programmable means for receiving said output signal of said logic circuit for selectively inverting said output signal of said logic circuit means.

4,761,571

MEMORY CIRCUIT ENCHANCEMENT TO STABLIZE THE SIGNAL LINES WITH ADDITIONAL CAPACITANCE

Keith W. Golke, Minneapolis, and Robert L. Rabe, Maple Grove, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

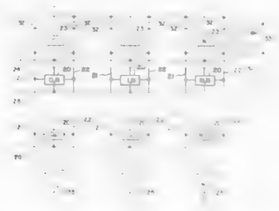
Filed Dec. 19, 1985, Ser. No. 811,145

Int. Cl.[4] G11C *11/24, 11/40;* **G06F** *1/00;* **H03K** *19/003*

U.S. Cl. 307—468 **23 Claims**

1. An improvement for monolithic integrated circuits having a voltage level state switching circuit arrangement therein subject to an electrical charge generating disturbances where such voltage level states represent logic signals or data signals, said arrangement comprising at least in part a plurality of signal line pairs including first and second signal line pairs with each member line of said signal line pairs being capable of conducting electrical signals and with each of said first and

second signal line pairs having at least one circuit portion electrically connected between its said member lines, including a first pair first circuit portion electrically connected between first signal line pair member lines and a second pair first circuit portion electrically connected between said second signal line pair member lines, such that either of said first and second circuit portions, upon receiving an access signal, can cause a selected one of said member lines connected thereto as aforesaid to be in a selected voltage level state and can cause said other member line connected thereto to be in a different voltage level state, said improvement in combination with the foregoing comprising:



a stabilizing capacitance electrically connected through a plurality of unidirectional current conducting means individually to member lines of said plurality of signal line pairs, including being electrically connected through a first unidirectional current conducting means to one of said member lines of said first signal pair and through a second unidirectional current conducting means to that remaining said member line of said first signal line pair, and again through a third unidirectional current conducting means to one of said member lines of said second signal line pair and through a fourth unidirectional current conducting means to that remaining said member line of said second signal line pair.

4,761,572

SEMICONDUCTOR LARGE SCALE INTEGRATED CIRCUIT WITH NOISE CUT CIRCUIT

Tetsu Tanizawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 13, 1987, Ser. No. 25,709

Claims priority, application Japan, Mar. 15, 1986, 61-56074

Int. Cl.[4] H03K *5/00;* **H03B** *1/04*

U.S. Cl. 307—546 **6 Claims**



1. A semiconductor large scale integrated circuit including a pluraltiy of input terminals, sequential circuits and output buffer circuits connected to said sequential circuits, and further comprising a noise circuit comprising;

a sense amplifier connected to an input terminal of said output buffer circuit for detecting a change of signal level at said input terminal and for generating an edge detection signal in response thereto;

a pulse generator connected to said sense amplifier for outputting a trigger pulse signal having a predetermined pulse width in response to said edge detection signal from said sense amplifier; and

at least one tri-state circuit connected between at least one of said input terminals and at least one of said sequential circuits, and having a control terminal for receiving said trigger pulse signal, for obtaining a high impedance state at an output line of said tri-state circuit during a predetermined period in response to said trigger signal input from said pulse generator.

4,761,573

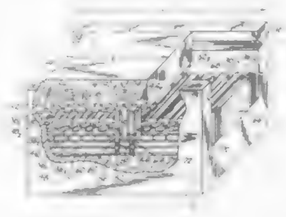
LINEAR MOTOR

Anwar Chitayat, Duck Island, P.O. Box 107, Northport, N.Y. 11768

Division of Ser. No. 650,435, is a division of Ser. No. 383,351, Jun. 1, 1982, Pat. No. 4,560,911. This application Aug. 25, 1986, Ser. No. 900,144

Int. Cl.[4] H02K *41/00*

U.S. Cl. 310—12 **6 Claims**



1. A linear motor comprising:

a U-shaped frame;

an armature in said U-shaped frame;

at least one arm of said U-shaped frame extending beyond a surface of said armature;

said armature including a toothed assembly having a plurality of coils of wire wound thereon;

an integrated magnet and brush assembly;

said integrated magnet and brush assembly including a holder having a plurality of permanent magnets affixed to a surface thereof;

said integrated magnet and brush assembly further including means, in an operational condition, for permitting support thereof and for motion thereof along an axis parallel to axes of said U-shaped frame and said armature;

said means for permitting support being effective, in said operational condition, for disposing said plurality of magnets spaced from said toothed assembly by a gap;

a power pickup rail and slip-ring assembly within said U-shaped frame;

a plurality of brushes on, and movable in concert with, said integrated magnet and brush assembly; and

means for urging said plurality of brushes into operational contact with conductive areas on said power pickup rail ano slip-ring assembly.

VOL 1093 ISS 1 AUG 2 1988 UMI

4,761,574

LINEAR PULSE MOTOR

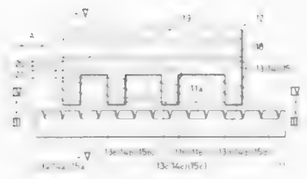
Hiroshi Nakagawa, Mie, Japan, assignor to Shinko Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 803,492, Dec. 2, 1985. This application Oct. 2, 1987, Ser. No. 105,447

Claims priority, application Japan, May 18, 1983, 58-87937; May 18, 1984, 58-165589

Int. Cl.[4] H02K *41/00*

U.S. Cl. 310—12 8 Claims



1. A linear pulse motor comprising:

(A) a linearly extending stationary body defining a moving direction along the length thereof;

(B) a movable body supported in closely spaced relationship relative to said stationary body such that an air gap is created between the stationary body and the movable body and said movable body is able to move along said stationary body in the moving direction; said movable body having a first center line disposed perpendicular to the moving direction and a second center line disposed parallel to the moving direction and having a plurality of iron cores provided with coil means, said iron cores extending along the movable body parallel to said moving direction and having a plurality of magnetic poles, said plurality of magnetic poles consisting of a first set of magnetic poles and a second set of magnetic poles wherein said first set of magnetic poles and said second set of magnetic poles are arranged on opposite sides of said first center line; said stationary body having magnetic circuit forming means for forming magnetic circuits with said iron cores across said air gap, said plurality of magnetic poles extending towards said magnetic circuit forming means; and

(C) permanent magnet means magnetized in the direction perpendicular to said stationary body and arranged on said iron cores such that magnetic fluxes therefrom interact with magnetic fluxes generated by energization of said coil means, wherein said coil means is so arranged and energized that magnetic forces are generated at the same time between one or more of said first set of magnetic poles and said magnetic circuit forming means of the stationary body and between one or more of said second set of magnetic poles and said magnetic circuit forming means of the stationary body, said one or more of said first set of magnetic poles being substantially at the same distance from said first center line as said one or more of said second set of magnetic poles, and said magnetic forces at both sides of said first center line being substantially equal to one another, whereby said movable body can be prevented from vibrating in the moving direction.

4,761,575

SERVO-VALVE AND A CONTROL MOTOR THEREFOR

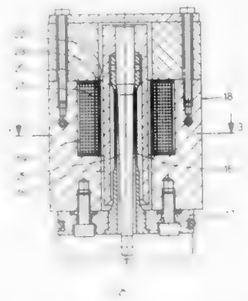
Herbert Reder, Lohr-Rodenbach, and Hans-Georg Schubert, Partenstein, both of Fed. Rep. of Germany, assignors to Mannesmann Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Sep. 22, 1986, Ser. No. 909,886

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1985, 3533817

Int. Cl.[4] H02K *33/16*

U.S. Cl. 310—36 11 Claims



1. An electric control motor for a servo valve, said motor comprising:

a housing,

an armature movably mounted in said housing to actuate an output member (26),

permanent magnet means located in said housing adjacent to said armature,

control coil means (19) located in said housing adjacent to said armature and adapted to be energized by a control signal,

dampening means in the form of at least one dampening coil (22), the two ends of said at least one dampening coil (22) being connected with each other, said dampening means providing a dampening effect depending on the frequency such that the movement of the free end of the output member (26) does not exceed a predetermined maximum displacement, said one dampening coil (22) being inductively coupled to said control coil means (19).

4,761,576

MOTOR DRIVEN AIR MOVING APPARATUS FOR HIGH SPEED, CONSTANT DUTY OPERATION

Jack W. Savage, Centerville, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 797,218, Nov. 12, 1985, abandoned. This application Dec. 19, 1986, Ser. No. 943,342

Int. Cl.[4] H02K *5/24*

U.S. Cl. 310—51 2 Claims



1. In DC permanent magnet motor driven air moving apparatus, the motor having a stator and rotor, one of the stator and rotor having a core with an even number of identically sized, evenly spaced skewed teeth separated by winding containing

slots and the other of the stator and rotor comprising an even number of identically sized, permanent magnet poles, one of the rotor and stator having a skew at an angle from the axial, the maximum achievable skew being less than one tooth pitch due to short axial core width, which tends to produce a magnetically induced pulsating angular velocity of rotor with audible noise, the improvement comprising:

a skewed groove along the midline of each of the teeth of the core which is parallel to and shallower than the tooth separating slots and contains no winding, the skewed groove being effective to divide the tooth magnetically in half, circumferentially, and thus decrease the effective tooth pitch, whereby, simultaneously, the magnetically induced pulsating angular velocity of the rotor and resultant audible noise are reduced and efficiency of the motor and air moving apparatus combination at high speeds in constant duty operation is increased.

4,761,577

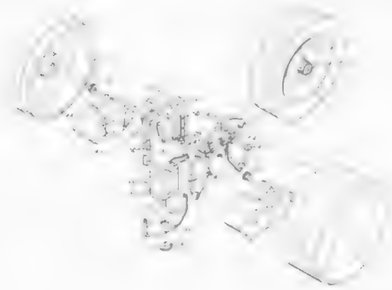
WHEEL-MOUNTED ELECTRICAL POWER GENERATOR

Stephen E. Thomas, 38840 Godfrey Pl., Fremont, Calif. 94536, and Mark S. Thomas, 1235 Wildwood Ave., Apt. 400, Sunnyvale, Calif. 94089

Filed Jul. 2, 1987, Ser. No. 69,321

Int. Cl.[4] H02K *7/02, 23/66*

U.S. Cl. 310—67 A 28 Claims



1. An electrical power generator assembly for mounting on a wheel comprising,

(a) a housing means for attachment to a side of a wheel having an axis of rotation, the housing having a periphery defining a circumferential path and a pivot axis aligned with said axis of rotation,

(b) yoke means pivotally mounted about said pivot axis in the housing with pendulum-like behavior in a vertical plane, said yoke means having a plurality of arms supporting a miniature electrical generator having a rotor and a stator, the stator supported in fixed relation to the yoke means and the rotor being rotatably supported within the stator and having an axial rotor shaft projecting from the stator, said yoke means and said generator having a center of gravity distal to the pivot of said yoke means in pendulum relation relative to land,

(c) a rotary member mounted at a radially outward end of the rotor shaft in a manner communicating with the circumferential path thereby allowing turning of the rotor in the generator upon rotation of the yoke means, in said vertical plane, the rotor and stator having an electrical output line, and

(d) a circuit board receiving as an input said electrical power output line and having an electrical utilization circuit in electrical communication with said output line.

4,761,578

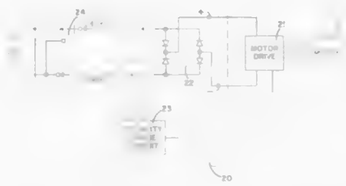
METHOD AND MEANS FOR OPERATING BRUSHLESS DC MOTOR WITH REVERSIBLE DC POWER

Robert S. Landin, Northfield, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Feb. 27, 1987, Ser. No. 19,818

Int. Cl.[4] H02P *7/10;* H02K *11/00*

U.S. Cl. 310—68 B 4 Claims



1. A circuit for providing direction information and power to a brushless D.C. motor drive, the circuit receiving as inputs positive/negative or negative/positive D.C. power, the polarity of the input D.C. power indicating commanded direction of rotation of the motor, comprising:

(a) means for receiving the positive/negative or negative/-positive input D.C. power and providing only positive/-negative D.C. power to the motor drive regardless of the polarity of the D.C. power received; and

(b) means for determining the polarity of the input D.C. power and providing to the motor drive a logic signal indicating the commanded direction of rotation of the motor.

4,761,579

ELECTROMAGNETIC LEVITATION DEVICE

Jean Delassus, Montmorency, France, assignor to Alsthom, Paris Cedex, France

Filed May 13, 1987, Ser. No. 49,174

Claims priority, application France, May 14, 1986, 86 06933

Int. Cl.[4] F16C *39/06*

U.S. Cl. 310—90.5 6 Claims



1. In an electromagnetic levitation device for supporting an electrically conductive part without physical contact, said device comprising:

a source of an alternating excitation electric current,

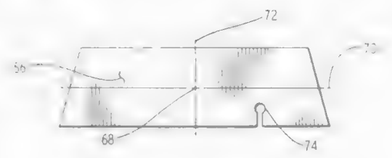
and at least one elongate excitation electric conductor fed from said source and forming current loops and respective magnetic poles each of which alternates with said excitation electric current, said current loops defining a levitation area and forming a two-dimensional alternated network of said magnetic poles,

the improvement wherein said at least one excitation conductor extends, in said levitation area in zigzag form, defining a succession of sawtooth paths which succeed one another in a first direction and each of which has a centerline running along a second direction, each of said conductor sawtooth paths forming on both sides thereof an alternate succession of conductor section peaks and of

VOL 1093 ISS 1 AG 2 1988 UMI

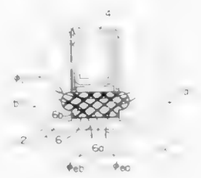
valleys each between two peaks, any two consecutive ones of said sawtooth paths having mutually facing peaks and valleys, without said two consecutive paths crossing each other, such that any pair of two of said mutually facing peaks form a proximity zone between said two paths, and means for feeding said two consecutive conductor sawtooth paths from said source in two opposite current directions, respectively, whereby said current loops are formed by respective pairs of two said mutually facing valleys between two said proximity zones.

4,761,580
MAGNETIC TOP WEDGE
Bruce Hein, Muskego, Wis., and Charles Shuffleberger, Goodland, Ind., assignors to MagneTek, Inc., Los Angeles, Calif.
Filed Jun. 17, 1987, Ser. No. 63,264
Int. Cl.[4] H02K *3/48*
U.S. Cl. 310—214 11 Claims



1. An improvement for dynamo electric machinery of the type having a core structure including slots with walls and slot wedges of the type having a stack of laminations of ferromagnetic material, the improvement comprising an insulating layer of material interposed between opposing sides of said lamination stack and adjacent slot walls such that said laminations are arranged to form an extension of the magnetic path across the slot opening and the insulating layer is arranged to form a magnetic gap of predetermined length in the magnetic path across the slot opening, said wedge laminations further comprising a keyhole shaped notch having an enlarged portion centered at a point on the lamination other than the center of gravity of the lamination cross-section.

4,761,581
MAGNETIC WEDGE
Masatoshi Watanabe; Miyoshi Takahashi; Masaki Sato, all of Hitachi; Motoya Ito, Katsuta, and Keiji Arai, Kitaibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 5, 1987, Ser. No. 46,196
Claims priority, application Japan, May 9, 1986, 61-104624
Int. Cl.[4] H02K *3/48*
U.S. Cl. 310—214 5 Claims



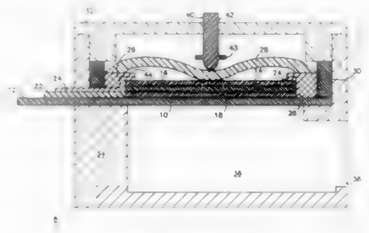
1. A magnetic wedge for use in an electromagnetic device, said wedge having a longitudinal dimension which extends along an opening portion of a core slot for receiving a winding and a thickness dimension in a plane perpendicular to said longitudinal dimension and in the direction of the depth of the core slot, said wedge comprising:

a group of strips of magnetic material embedded in a molded body of a plastics material in a non-contacting arrangement;

said strips having longitudinal axes that are oriented to be in planes perpendicular to the longitudinal dimension of the wedge and in directions that correspond to a predetermined angle of inclination with respect to the thickness dimension of the wedge; and

the inclination angle of the magnetic strips being alternately different in adjacent planes along the longitudinal axis of said wedge.

4,761,582
DUAL MODE TRANSDUCER
John M. McKee, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 19, 1987, Ser. No. 27,984
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—322 23 Claims



1. A dual mode transducer comprising:

an actuating means;

a resilient member responsive to said actuating means;

a piezoelectric element responsive to mechanical deformation for generating a first electric signal, wherein said resilient member being interposed between said actuating means and said piezoelectric element and being forced by said actuating means for a normal undeflected position to a deflected position, deforms said piezoelectric element to generate said first electrical signal; and further wherein

the piezoelectric element being responsive to a second electrical signal for generating mechanical vibrational energy; and

a housing supporting said piezoelectric element, said housing having a resonant cavity and a port for radiating acoustical energy wherein said mechanical vibrational energy is converted to acoustical energy by said resonant cavity and said port.

4,761,583
GLOW DISCHARGE STARTER CONTAINING RADIOACTIVE ALLOY
Michael R. Kling, Williamsport, Pa., assignor to GTE Products Corporation, Danvers, Mass.
Filed Jul. 30, 1986, Ser. No. 890,685
The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.
Int. Cl.[4] H01J *65/08*; H01H *61/00*
U.S. Cl. 313—54 21 Claims

1. A glow discharge starter comprising: an hermetically sealed envelope of vitreous material having a seal located at one end thereof and containing an ionizable medium; a pair of electrical conductors extending through said seal and terminating in a spaced relationship to form a pair of electrodes within said envelope, at least one of said electrodes having a bimetallic element secured thereto, said bimetallic element being deformable by heat into engagement with the other of said electrodes;

and a coating comprising lanthanum, nickel and at least one radioactive dopant disposed on a surface within said envelope,



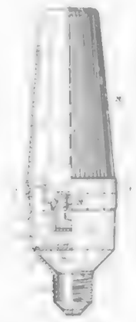
said coating being sufficient to reduce the dark effect by improving the dark starting of said glow discharge starter.

4,761,584
STRONG PERMANENT MAGNET-ASSISTED ELECTROMAGNETIC UNDULATOR
Klaus Halbach, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Jan. 30, 1987, Ser. No. 8,689
Int. Cl.[4] H01J *25/00*
U.S. Cl. 315—4 6 Claims



1. In an undulator wherein a plurality of electromagnet poles are located along opposite sides of a particle beam axis normal to the beam axis with alternate north and south poles on each side of the beam to cause the beam to wiggle or undulate as it travels generally along said beam axis, the improvement which comprises reducing the saturation of said electromagnet poles by the use of permanent magnets spaced in between adjacent electromagnetic poles on each side of said axis of said particle beam in an orientation wherein the north and south poles of said permanent magnets are parallel to the particle beam axis and normal to the magnetic axes of said electromagnetic poles to reduce the saturation of said electromagnets to thereby permit the increasing of the field strength of the electromagnets beyond normal saturation levels.

4,761,585
FITTING FOR COMPACT ELECTRIC DISCHARGE LAMPS
Sven N. J. Linnman, Åkersberga, and Ake Björkman, Karlskrona, both of Sweden, assignors to Lumalampan AB, Karlskrona, Sweden
Filed Oct. 10, 1986, Ser. No. 917,794
Claims priority, application Sweden, Nov. 5, 1985, 8505213
Int. Cl.[4] H05B *41/29*
U.S. Cl. 315—309 13 Claims



1. A fitting for compact electric-discharge lamps, comprising an electric series-impedance device for the normal function of the lamp, wherein the fitting is constructed for lamps of difference powers and incorporates control means effective to maintain the glow current of the different lamps to which it may be fitted at substantially one and the same level, wherein said control means include a temperature-responsive resistor; and resistor is placed in good thermal contact with one component whose temperature is dependent on the glow current, wherein a transistor is included in the series-impedance device, and said resistor is placed in good thermal contact with the transistor.

4,761,586
LINEARITY CORRECTION FOR MULTIPLE FREQUENCY VIDEO APPARATUS
James H. Wharton, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.
Filed Dec. 23, 1986, Ser. No. 945,724
Int. Cl.[4] H01J *29/70, 29/76*
U.S. Cl. 315—408 6 Claims



1. In a video apparatus having a cathode ray tube producing an electron beam, a deflection circuit adapted for operating at a plurality of line rate frequencies comprising:

VOL 1093 ISS 1 AG 2 1988 UMI

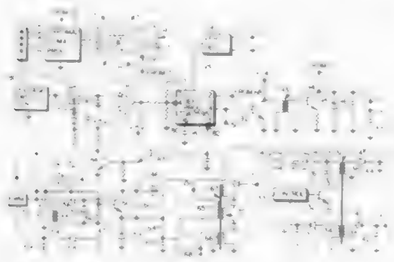
means for receiving a signal indicative of a line rate frequency;
means responsive to said line rate frequency indicative signal for producing deflection current for deflecting said electron beam; and
means, coupled to said deflection current producing means for modifying said deflection current to correct distortion in the deflection of said electron beam, comprising:
a first capacitor;
a transformer having a first winding coupled to said first capacitor and having a second winding magnetically coupled to said first winding;
a second capacitor; and
means responsive to said line rate frequency indicative signal for coupling said second capacitor to said second winding for combining said first and second capacitors.

4,761,587

MULTIPLE FREQUENCY HORIZONTAL OSCILLATOR FOR VIDEO APPARATUS

James H. Wharton, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Dec. 17, 1986, Ser. No. 942,894
Int. Cl.[4] H01J 29/70; H03L 7/00
U.S. Cl. 315—408 7 Claims



1. In a video apparatus, a deflection circuit capable of operating at a frequency determined by an incoming video information rate signal, said frequency being between first and second frequencies, said deflection circuit comprising:
oscillator means for producing an output signal having a frequency determined in response to an input signal level;
first means for periodically varying said input signal level to said oscillator for causing said oscillator to periodically vary the frequency of said output signal between first and second frequencies, said second frequency being significantly greater than said first frequency;
second means responsive to said oscillator output signal and to said incoming video information rate signal for producing an output signal when said frequency of said video information rate signal equals said frequency of said oscillator output signal during said periodic varying of said oscillator output signal frequency;
third means responsive to said output signal of said second means for maintaining said oscillator output signal frequency at said frequency of said incoming video information rate signal.

4,761,588

DUAL-DRIVE SYSTEM FOR MICRO-MANIPULATION OF DIRECT-DRIVE ROBOTIC SYSTEMS

Kamal Youcef-Toumi, and Paul I. H. Ro, both of Cambridge, Mass., assignors to MIT, Cambridge, Mass.

Filed Dec. 5, 1986, Ser. No. 938,533
Int. Cl.[4] H02P 7/68
U.S. Cl. 318—46 19 Claims



1. Apparatus for direct-drive micro-manipulation of a robotic system having a link, comprising:
a primary DC electric motor having a primary rotor,
means for directly coupling said primary rotor to the link,
a secondary DC electric motor having a secondary rotor,
means for coupling said secondary rotor to said primary rotor,
means for driving said primary DC electrical motor in a first direction, and
means for selectively modulating said secondary DC electric motor to apply a bias force to said primary DC electric motor.

10. A method for precisely manipulating a robotic system having a link, a primary DC electric motor having a primary rotor, and a secondary DC electric motor having a secondary rotor, comprising:
coupling said primary rotor directly to the link,
coupling said secondary rotor to said primary rotor,
driving said primary motor in a first rotational direction, and
modulating said secondary motor to selectively apply a bias torque to said primary motor.

4,761,589

MINE HOIST CONTROL METHOD AND APPARATUS

Lindo Hauptfleisch, and Klaus Katzy, both of Johannesburg, South Africa, assignors to Crucible Societe Anonyme, Luxembourg

Filed Nov. 4, 1986, Ser. No. 926,731
Claims priority, application South Africa, Nov. 5, 1985, [illegible]
Int. Cl.[4] H02P 5/46, 1/54
U.S. Cl. 318—51 4 Claims

1. A method of controlling a set of first and second direct current motors driving separate shafts in a hoisting application, comprising the steps of:
delaying activation of the first motor, which is about to raise a load, and activating the second motor, which is about to lower a load;
delaying activation of the first motor until a steady lowering speed of the second motor is reached;
activating the first motor approximately at the time of reaching of the steady lowering speed by the second motor;
accelerating the first motor until a steady raising speed is reached, with the steady lowering speed of the second motor being less than the steady raising speed of the first motor; and
decelerating both motors until the raising and lowering are completed.

4. Apparatus for controlling a set of first and second direct current motors driving separate shafts in a hoisting application, comprising first and second direct current motors driving separate shafts, control means for delaying activation of the first motor about to raise a load, for activating the second motor about to lower a load to accelerate it until a desired lowering speed is reached, and further for activating the first motor after reaching the desired lowering speed of the second



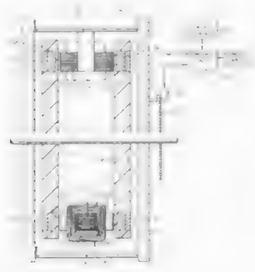
motor, for accelerating the first motor until a desired raising speed is reached, with the lowering speed of the second motor being less than the raising speed of the first motor, and for decelerating both motors until raising and lowering are completed.

4,761,590

ELECTRIC MOTOR

John Kaszman, Willowdale, Canada, assignor to Polestar Magnetronics Inc., Willowdale, Canada

Filed Jul. 20, 1987, Ser. No. 77,412
Int. Cl.[4] H02P 8/02; H02K 29/00
U.S. Cl. 318—254 8 Claims



1. An electric motor comprising two coaxial rotor discs, spaced apart on a rotational axis of the motor and each exhibiting an annular array of alternating north and south magnetically polarized pole pieces, at a predetermined annular pitch with the like polarized pole pieces in each rotor angularly aligned; a stator coaxial with and between said rotors, said stator exhibiting two angularly aligned axially spaced annular arrays of pole pieces at a predetermined pitch equal to the pitch of the rotor pole pieces, arranged so that the annular arrays of pole pieces of the rotor discs can be aligned in close juxtaposition with the pole pieces of the annular arrays of the stator, the stator comprising core members defining said pole pieces such that angularly adjacent pairs of pole pieces in said pole piece arrays of the stator are joined by said core members in an annularly arranged series of H configurations with cross bars of the H configurations extending peripherally of the stator and stems of the H configurations extending parallel to the axis of the motor; electrically energizable windings on said cross bars of the H configurations such that energization of said windings polarizes pairs of pole pieces on stems at opposite ends of the cross bars of said H configurations, with the pole pieces on any one stem having like polarization and the pole pieces on neighbouring stems having opposite polarization; electrical energy storage means external of said windings; and control means, connected between said windings, said electrical energy storage means and connections to a direct current power supply, to control the direction and duration of energization of the windings with reference to the relative angular position of the rotor and stator pole pieces such as to control angular movement of the rotor.

4,761,591

RPM REGULATION OF AN ELECTROMOTOR

Jürgen Hartwig, Karlsruhe-Durlach, Fed. Rep. of Germany, assignor to Pfaff Haushaltmaschinen GmbH, Fed. Rep. of Germany

Filed Mar. 18, 1987, Ser. No. 27,492
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1986, 3609566
Int. Cl.[4] H02P 5/00
U.S. Cl. 318—345 D 17 Claims



1. A device for regulating the RPM of a motor having an RPM generator for generating pulses with rotation of the motor, intervals of the pulses being a measure of the RPM of the motor, the device comprising a first oscillator for generating clock signals, a first counter for receiving the clock signals, the first counter having a switching input for switching the first counter on and off and for counting the number of clock signals between successive pulses of the RPM generator, a register for accepting the count from the first counter, control value means connectable to the register for receiving the count of the first counter, and for generating a control value for correcting the RPM of the motor, and a starting circuit connected in series to the motor and connected to the control value means for applying the control value to the motor, the control value to the motor, the control means comprising a RC-network including a manually adjustable control resistor and a capacitor, a second counter for determining the starting resistance of the adjustable control resistor, a second oscillator for generating pulsating signals, to the capacitor for short-circuiting the capacitor when the switch is activated, a contact mechanism for receiving the oscillator-driven pulsating signals, the contact mechanism is connected to the switch for activating the switch, and a circuit element connected to the switching input of the second counter for switching on the second counter, the contact mechanism being connected to the switching input of the second counter for delaying the switching on of the second counter.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,592

ELECTRIC MOTOR WITH OVERLOAD PROTECTION CIRCUIT

Bjarne Diasing, Hammel, and Niels D. Jensen, Bjerringbro, both of Denmark, assignors to Grundfos International A/S, Bjerringbro, Denmark

Filed Mar. 12, 1987, Ser. No. 24,570
Claims priority, application Denmark, Mar. 14, 1986, 1203/86
Int. Cl.[4] F04B *49/00*
U.S. Cl. 318—471 12 Claims



1. An electric motor comprising a motor overload protection circuit and a main relay for controlling a multipolar switch in the voltage supply conductors of the motor, said main relay breaking the connection with the voltage supply conductors when the protection circuit is activated, and further comprising an auxiliary relay for controlling an auxiliary motor when the protection circuit is activated, said main relay and said auxiliary relay being mounted in a terminal box for the electric motor and said auxiliary relay being connected in parallel with the main relay.

4,761,593

DEVICE FOR CONTROLLING MOTOR DRIVEN ANTENNAS FOR VEHICLES

Kazuhiko Nakase, Tokyo, Japan, assignor to Harada Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1987, Ser. No. 32,784
Claims priority, application Japan, Apr. 22, 1986, 61-93001
Int. Cl.[4] H02P *3/08*
U.S. Cl. 318—473 3 Claims



1. A control device for a motor driven antenna for vehicles comprising:

an electric current detecting means for detecting current in a motor which extends and retracts said antenna, said electric current detecting means comprising positive characteristic thermistors which are connected in series to said motor; and

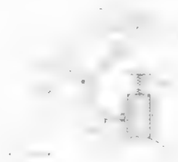
an electric current breaking means responsive to said positive characteristic thermistors for breaking said current in said motor when the current increases over a predetermined level.

4,761,594

DEVICE FOR DETECTING THE CONDITION OF CARBON BRUSHES

Anton Rodi, Leimen; Berthod Grützmacher, Dossenheim, and Michael Krüger, Edingen-Neckarhausen, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 17, 1986, Ser. No. 840,377
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1985, 3509299
Int. Cl.[4] H01R *39/58*
U.S. Cl. 318—490 6 Claims



1. Device for detecting a condition of a carbon brush in a drive unit comprising a signalling device constructed as a lightguide optical system and disposed in vicinity of a carbon brush yet out of contact with the carbon brush and having means for monitoring wear of the carbon brush, said wear-monitoring means including a first lightguide for transmitting light to the carbon brush, and a second lightguide for transmitting light reflected form the carbon brush when the carbon brush has reached a predetermined residual length, the carbon brush being received in a brush holder and having a surface facing towards said signalling device, and said brush holder having an inner surface, at least one of said surfaces being at least partly capable of reflecting, to said second light guide so as to be optically visible at said second lightguide, the light which is transmitted to said one surface through said first lightguide.

5. Device for detecting a condition of a carbon brush in a drive unit comprising a signalling device constructed as a lightguide optical system and disposed in vicinity of a carbon brush yet out of contact with the carbon brush and having means for monitoring wear of the carbon brush, and means connected to said monitoring means for triggering a warning signal when the carbon brush has reached a predetermined residual length, said signalling device including an electrically generated light source, the drive unit comprising a motor having an internal voltage source connectible to said light source for supplying generating voltage thereto, the carbon brush being received in a brush holder having a lateral wall formed with an opening wherein one end of said lightguide optical system is disposed opposite the carbon brush, and said internal voltage source of said motor comprising a field winding internal to said motor, said lightguide optical system including a first lightguide connected to said light source supplied by voltage via said field winding, and a second lightguide constructed as a reflex light probe extending to the surface of a housing of said motor.

4,761,595

MOTION CONTROL SYSTEM HAVING ADAPTIVE FEEDFORWARD PATH TRACKING

Robert M. Goor, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 1, 1987, Ser. No. 45,129
Int. Cl.[4] G05B *19/10*
U.S. Cl. 318—568 2 Claims

1. In a motion control system including a DC servomotor adapted to adjust the position of an output member in relation to a control voltage applied thereto, path generation means for defining third order trajectory position, velocity and accelera-

tion parameters y, y', and y'' for steering the servo output member from its current position to a target position, and path tracking means for supplying a control voltage to the servomotor for causing the output member to track the trajectory, the improvement wherein:

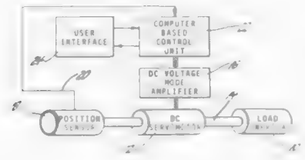
the path tracking means includes:

feedback means for computing the tracking error e according to the deviation of the output member from the trajectory position parameter y, and for generating a feedback term in relation thereto;

feedforward means for generating a feedforward term to be combined with the feedback term to form the servomotor control voltage, the feedforward term being determined substantially in accordance with the expression:

$$v_1 y' + v_2 y'' + v_3 y''' + v_f$$

where the coefficients v_1, v_2, v_3 and v_f relate to characteristic



operating parameters of said motion control system, whereby the dynamics of said trajectory are immediately reflected in the servomotor control voltage; and

adaptive means for adjusting the value of the feedforward coefficients v_1, v_2, v_3 and v_f substantially according to the expression:

$$v_1 = v_1 + k_1 * e * y'$$

$$v_2 = v_2 + k_2 * e * y'$$

$$v_3 = v_3 + k_3 * e * y'''$$

$$v_f = v_f + k_f * e$$

where k_1, k_2, k_3 and k_f are constants, thereby to adaptively tune the feedforward coefficients v_1, v_2, v_3 and v_f for a specific motion control system, and to compensate for variations in the characteristic operating parameters thereof, allowing the trajectory to be tracked with minimum tracking error.

4,761,596

METHOD OF DETECTING AND CONTROLLING WORK START POINT OF ROBOT

Satoru Nio, and Hitoshi Wakisako, both of Kitakyushu, Japan, assignors to Yasakawa Electric Mfg. Co., Ltd., Kitakyushu, Japan

Filed May 30, 1986, Ser. No. 868,738
Claims priority, application Japan, Jun. 1, 1985, 60-117711
Int. Cl.[4] G05B *19/10*
U.S. Cl. 318—568 7 Claims

1. A method of detecting a work start point in a robot of the teaching playback control type having an interpolating function in which a work tool is attached to an edge of an arm and a visual sensor is provided for the wrist portion of said arm and a contact sensor is provided for generating a contact signal when an edge of said work tool comes into contact with an object to be worked is further provided, whereby a plurality of drive shafts constituting the robot are controlled in response to position correcting signals from said visual sensor, thereby adjusting a position of said work tool, said method comprising the steps of:

(1) using said visual sensor to image-recognize a work line of said work object and said work tool;

(2) generating said position correcting signal, in a first correcting direction, for reducing a first distance between said work line and said edge of said work tool on the basis of said image recognized by said visual sensor;

(3) moving said edge of said work tool along said first correcting direction in response to said position correcting signal until said work line and said edge of said work tool substantially coincide on said recognized image; and



(4) moving said edge of said work tool along an axial direction of said work tool until said contact sensor generates a contact signal and, at the same time, correcting a position of said edge of said work tool along said first correcting direction until said work line and said edge of said work tool on said image substantially coincide.

4,761,597

METHOD AND SYSTEM FOR CONTROLLING SYNCHRONOUS DRIVE SYSTEMS

Yoshinari Sasaki, Numazu, and Yasuo Ozaki, Shizuoka, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 5,376, Jan. 12, 1987, abandoned. This application Sep. 21, 1987, Ser. No. 99,117
Claims priority, application Japan, Feb. 14, 1984, 59-25566; Feb. 14, 1984, 59-25567
Int. Cl.[4] G05B *11/32*
U.S. Cl. 318—625 4 Claims



1. A system for controlling a synchronous drive system of the type comprising a first servosystem and a second servosystem wherein it is necessary to cause outputs of said first and second servosystems to coincide with each other, wherein there are provided means for supplying a target value of a servosystem to said first and second servosystems respectively, a compensation system inputted with a difference between the outputs of said first and second servosystems, and means for inputting the sum of said target value and the output of said compensation system to said second servosystem, said compensation system being constituted by a proportionality element and a differentiating element.

4,761,598

TORQUE-ANGLE STABILIZED SERVO MOTOR DRIVE

Rodger T. Lovrenich, 209 Whispering Sands, Santa Teresa, N. Mex. 88008

Filed Jun. 15, 1987, Ser. No. 61,556
Int. Cl.[4] G05B *19/40*
U.S. Cl. 318—685 4 Claims

1. A torque-angle stabilized servo drive comprising:

an electric motor having a stator with a plurality of pole

VOL 1093 ISS 1 AG 2 1988 UMI

pairs and electrical windings for producing a rotatable magnetic field, and a rotor coupled to a motor output shaft,

a power source including a constant current source and drive means responsive to control signals for selectively applying current from said constant current source to said windings to control angular position of said rotatable magnetic field,

position encoder means coupled to said motor output shaft for providing a pulsed signal indicative of increments of rotor and shaft rotation, the number of pulses in said



increment-indicative pulsed signal per revolution of said rotor and shaft being greater than, and an integral multiple of, the number of said pole pairs,

means coupled to said encoder means and responsive to said pulsed signal to produce signals which indicate angular position of said rotor and shaft,

means for comparing said control signals to said signals which indicate angular position of said rotor and shaft to obtain a difference signal indicative of torque angle between said rotor and said field, and

means responsive to said difference signal for providing said control signals to said power source.

4,761,599

MOTOR CONTROLLER

Isamu Yasunobu; Kenichi Ohara, both of Hirakata; Nobuho Shibata, Katano, and Shigeo Neki, Asahi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

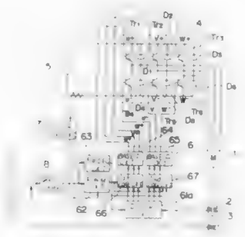
PCT No. PCT/JP86/00353, § 371 Date Mar. 16, 1987, § 102(e) Date Apr. 24, 1987, PCT Pub. No. WO87/00705, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 11, 1986, Ser. No. 34,425

Claims priority, application Japan, Jul. 16, 1985, 60-156457

Int. Cl.[4] H02P *3/20*

U.S. Cl. 318—723 **4 Claims**



1. A motor controller for a synchronous motor equipped with a rotor position sensor which comprises: a power inverter circuit including a plurality of switching elements for switching power supply to drive windings of said synchronous motor and diodes connected in parallel to said switching elements, a DC power source for supplying power to said power inverter circuit, a speed adjusting instruction circuit for outputting speed adjusting instruction for said synchronous motor, a PWM circuit for outputting pulse width-modulated signals according to said speed adjusting instruction, a forward-/reverse decision circuit for outputting a reverse rotation instruction signal if the speed adjusting instruction is of a speed reduction signal above a predetermined level and for outputting a forward rotation instruction signal if said speed adjusting instruction is of signals other than said speed reduction signal, a distributing circuit for outputting switching signals for determining switching state of said power inverter circuit according to the signal of said rotor position sensor and forward/reverse rotation instruction, a first logic circuit which receives said pulse width-modulated signal and said switching signal as inputs, while outputting the drive signal for the switching elements connected to the minus (or plus) side of said DC power source, and a second logic circuit which receives said pulse width-modulated signal, said switching signal and said forward/reverse rotation instruction as inputs, while outputting the drive signal of said switching elements connected to the plus (or minus) side of said DC power source, said first logic circuit outputting the drive signal for conducting said switching elements only when said pulse width-modulated signal and said switching signal are both of ON signals, said second logic circuit outputting the drive signal to said switching elements only when said pulse width-modulated signal and said switching signal are both of ON signals or when said switching signal is of ON signal, with said forward/reverse rotation instruction being of a forward rotation signal.

4,761,600

DYNAMIC BRAKE CONTROL

John D. D'Atre, and William P. Glewont, both of Earlysville, Va., assignors to General Electric Company, Charlottesville, Va.

Filed Mar. 6, 1987, Ser. No. 22,936

Int. Cl.[4] H02P *3/18*

U.S. Cl. 318—759 **5 Claims**



1. A dynamic brake control system for an alternating current (AC) motor said system being supplied by AC power having a predetermined AC frequently, the motor being electrically connected to a variable voltage, variable frequency inverter for controlling the speed thereof, the inverter receiving direct current (DC) power via a DC link from an AC to DC converter of the type having a plurality of controllable switching devices, the switching devices being energized at a base execution rate which is synchronized to the AC frequency, the direction of current through the inverter being reversible in order to dissipate regenerated electric power by dynamic braking, said dynamic brake control system comprising:

(a) resistive means switchably connected across the input terminals of the inverter for providing an effective dynamic braking resistance in order to dissipate regenerated current;

(b) means for determining at the base execution rate a value of the effective dynamic braking resistance necessary to sustain a constant relation between voltage at the inverter input terminals and motor frequency during dynamic braking; and

(c) control means for switchably connecting said resistive means to and disconnecting said resistive means from the inverter input terminals so that the effective dynamic braking resistance is adjustable at the base execution rate to values necessary to sustain a constant relation between voltage at the inverter input terminals and motor frequency during dynamic braking, said control means providing a plurality of binary time signals for establishing portions of the base execution period during which said resistive means is connected across the input terminals of the inverter.

4,761,601

MOTOR STARTING CIRCUIT

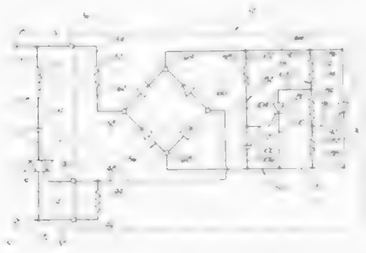
Andrew Zaderej, 4016 N. Home St., Mishawaka, Ind. 46544

Continuation-in-part of Ser. No. 354,539, Mar. 4, 1982, Pat. No. 4,468,604, which is a continuation-in-part of Ser. No. 179,678, Aug. 20, 1980, abandoned. This application Aug. 15, 1984, Ser. No. 640,866

The portion of the term of this patent subsequent to Aug. 28, 2001, has been disclaimed.

Int. Cl.[4] H02P *1/42*

U.S. Cl. 318—786 **3 Claims**



1. A motor starting circuit for momentarily energizing the starting winding circuit of a single-phase, alternating current motor, comprising:

a triac connected, via the main terminals thereof, in series with said starting winding circuit; and

a switching circuit having first and second input terminals and a gate terminal, wherein the switching circuit is connected, via the input terminals thereof, in parallel with the serially connected triac and starting winding circuit, the second input terminal of the switching circuit being connected to a main terminal of the triac with the opposite main terminal thereof connected to the starting winding circuit, wherein the gate terminal of the switching circuit is connected to the gate of the triac, and wherein the switching circuit comprises:

a biasing resistor connected between the gate terminal and the second input terminal of the switching circuit, and

timing means connected between the first input terminal of the switching circuit and the gate terminal thereof for establishing a relatively low effective resistance between the first input terminal and the triac gate for a preselected time period following connection of the motor to an electrical source and thereafter establishing a relatively high effective resistance between the first input terminal and the triac gate, said timing means including:

a full-wave rectifier bridge having the input terminals thereof connected between the first input terminal of the switching circuit and the gate terminal of the switching circuit;

a load resistor having one end thereof connected to one output terminal of the rectifier bridge;

a SCR connected between the load resistor and the other output terminal of the rectifier bridge so as to substantially provide a short circuit between the load resistor and said other output terminal of the rectifier bridge at such time that the SCR is gated into a conducting state;

a SCR gating branch comprising:

a first gating branch resistor connected between the cathode and gate of said SCR;

a zener diode having its anode connected to the junction of the first gating branch resistor and the gate of said SCR; and

a second gating branch resistor connected between the cathode of said zener diode and the end of the load resistor connected to the rectifier bridge, wherein the second gating branch resistor has a resistance which is large in relation to the resistance of the load resistor;

a timing branch, comprising:

a timing resistor having one end thereof connected to the end of the load resistor connected to the rectifier bridge; and

a timing capacitor connected between the other end of the timing resistor and the cathode of said SCR for charging through the timing resistor; and

turn-off means connected between the junction of the timing resistor and timing capacitor, the junction of said zener diode and second gating branch resistor, and the junction of the first gating branch resistor and the SCR cathode, for substantially providing a short circuit across the first gating branch resistor and said zener diode in response to charging of the timing capacitor to a preselected level,

said turn-off means including a switch having an anode and cathode responsive to a turn-off voltage applied between its anode and cathode, said switch having the cathode thereof connected to the junction of the SCR cathode and the first gating branch resistor, said switch having the anode thereof connected to the cathodes of a pair of diodes, the anode of one of said pair of diodes connected to the junction of said zener diode and second gating branch resistor, the other of said pair diodes having its anode connected to the junction of the timing resistor and timing capacitor.

4,761,602

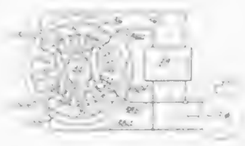
COMPOUND SHORT-CIRCUIT INDUCTION MACHINE AND METHOD OF ITS CONTROL

Gregory Lefkovich, 2218 Ardemore Dr., Fullerton, Calif. 92633

Continuation-in-part of Ser. No. 693,615, Jan. 22, 1985, abandoned. This application Jul. 10, 1986, Ser. No. 884,045

Int. Cl.[4] H02P *5/40*

U.S. Cl. 318—816 **43 Claims**



1. In an alternating current asynchronous induction machine, the combination comprising:

housing means:

stator means within said housing means and having at least two phase sets of independently fed stator winding means, with each phase set including at least one phase coil;

armature means mounted within said housing means for movement relative to said stator means with an air gap between the periphery of said armature means and the adjacent part of said stator means;

armature winding means on said armature means including at least one short-circuited loop member including open

VOL 1093 ISS 1 AUG 2 1988 UMI

loop portions arranged in generally spatially aligned relation with said at least one coil of both of said sets; and

means for applying alternating current power to said phase sets including

(a) means for applying alternating current power to said at least one phase coil of one of said phase sets, and

(b) means for controlling the application of alternating current power to the other said at least one phase coil for enabling control of at least one of

(i) the current therein relative to the other said at least one phase coil and

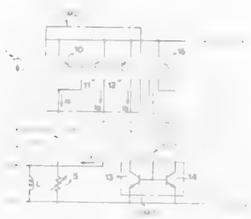
(ii) the phase shift of the current therein relative to the other said at least one phase coil for controlling the operating parameters of said machine.

4,761,603

HIGH FREQUENCY OSCILLATION PROXIMITY SWITCH

Hisatoshi Nodera, Kusatsu, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 27, 1986, Ser. No. 833,253
Claims priority, application Japan, Feb. 28, 1985, 60-39784
The portion of the term of this patent subsequent to Sep. 23, 2003, has been disclaimed.
Int. Cl.[4] G05F *3/16*
U.S. Cl. 323—315 8 Claims



1. A high speed proximity switch of high frequency oscillation type, comprising:

oscillation means for generating an oscillation output which is reduced with the approach of an object to be detected by the proximity switch;

feedback means associated with the oscillation means for feeding back a part of an oscillation current within the oscillation means;

comparator means for comparing the oscillation output with a predetermined level to generate an output signal when the oscillation output is below the predetermined level; and

a switching means for receiving the output signal and for triggering the feedback means, and wherein

the feedback means rapidly responds to the switching means adapted to increase feedback current directly within the oscillation means.

4,761,604

IDENTIFICATION OF CARRIER FREQUENCY FOR PULSED SIGNALS

Morris Engelson, Portland; Clifford D. Morgan, Newberg, and Ivan E. Waltz, Hillsboro, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

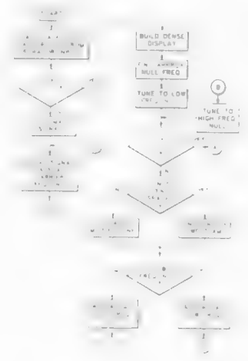
Filed Apr. 27, 1987, Ser. No. 43,123
Int. Cl.[4] G01R *23/02*
U.S. Cl. 324—78 R 3 Claims

1. A method of determining the carrier frequency of a pulsed signal based upon nominal parameters comprising the steps of:

calculating a duty factor based upon the nominal parameters;

identifying from a plurality of spectral lines shown on a frequency domain display the spectral line having a maximum peak value as the carrier frequency if the duty factor is greater than a first predetermined value;

determining, when the duty factor is less than the first predetermined value, a null point on each side of a main lobe shown on the frequency domain display, the null points being symmetrical with respect to the main lobe;



calculating a carrier frequency from the null points; and

identifying from a plurality of spectral lines a spectral line within a window about the calculated carrier frequency having a maximum peak value as the carrier frequency.

4,761,605

INPUT SWITCHING IN ELECTRONIC WATTHOUR METER

Thomas A. Jochum, Durham, N.C., assignor to General Electric Company, Somersworth, N.H.

Filed Dec. 22, 1986, Ser. No. 944,313
Int. Cl.[4] G01R *21/06, 19/18*
U.S. Cl. 324—142 6 Claims



1. A current sensor comprising:

a current transformer;

said current transformer including a primary winding, a secondary winding and a feedback winding;

means for magnetically coupling together said primary winding, said secondary winding and said feedback winding;

feedback generating means responsive to an AC signal in said secondary winding for producing a feedback signal for application to said feedback winding, said feedback signal having an amplitude and a phase effective for maintaining a flux in said means for magnetically coupling near zero; and

an operational amplifier in said feedback generating means;

a first switch assembly;

said first switch assembly including a first pair of switches effective when closed to connect first and second ends of said secondary winding to first and second inputs, respectively, of said operational amplifier;

said first switch assembly including a second pair of switches effective when closed to connect said first and second ends of said secondary winding to said second and first inputs, respectively, of said operational amplifier;

a second switch assembly;

said second switch assembly including a third pair of switches effective when closed to connect an output of said operational amplifier to a third end of said feedback winding and to connect a fourth end of said feedback winding to a subsequent circuit;

said second switch assembly including a fourth pair of switches effective when closed to connect said output of said operational amplifier to said fourth end of said feedback winding and to connect said third end of said feedback winding to said subsequent circuit;

first means for repetitively alternately closing said first and third pairs of switches while opening said second and fourth pair of switches;

second means for repetitively alternately opening said first and third pairs of switches while closing said second and fourth pairs of switches; and

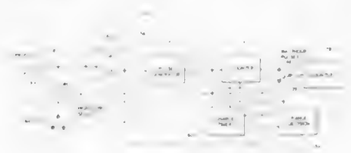
said first and second means operating their respective switches synchronously with respect to each other, whereby an AC signal relative to a DC offset voltage is coupled to said operational amplifier through said means for magnetically coupling.

4,761,606

AUTO-RANGING IN ELECTRIC WATTHOUR METER

Warren R. Germer, Dover, N.H., and Maurice J. Ouellette, North Berwick, Me., assignors to General Electric Company, Somersworth, N.H.

Filed Dec. 22, 1986, Ser. No. 944,029
Int. Cl.[4] G01R *21/133, 15/08*
U.S. Cl. 324—142 7 Claims



1. A circuit for an electronic watthour meter, comprising:

first means for producing a first signal in a first proportion to a power consumed by a load;

second means for producing a second signal in a second proportion to said power consumed by said load;

said second proportion having a predetermined ratio to said first proportion;

range decision means for selecting said first signal when said power is less than a predetermined threshold and for selecting said second signal when said power is greater than said predetermined threshold;

means for integrating a predetermined quantity of the selected one of said first and second signals and for producing a pulse in response thereto;

means for reducing a significance of said pulse by said predetermined ratio during selection of said first signal, whereby an output pulse is generated having a constant significance; and

means for changing an amount of power consumption required to produce a first output pulse following a transition from said first signal to said second signal dependent upon a content of said means for integrating at the time of said transition.

4,761,607

APPARATUS AND METHOD FOR INSPECTING SEMICONDUCTOR DEVICES

Tsuyoshi Shiragasawa, Neyagawa; Masahide Segano, Hirakata, and Masaharu Noyori, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 876,202, Jun. 19, 1986, abandoned. This application Sep. 8, 1987, Ser. No. 97,358
Claims priority, application Japan, Jun. 27, 1985, 60-140801
Int. Cl.[4] G01R *31/28*
U.S. Cl. 324—158 R 7 Claims



1. A semiconductor device inspecting apparatus comprising:

a signal input means for supplying test pattern to a semiconductor device to be inspected;

a first comparing means for comparing an output signal delivered from said semiconductor device with a prestored expected value which is dependent upon the application of this test pattern;

a non-contact probing means for probing, without making contact, an electrical state inside said semiconductor device;

a position adjusting means for adjusting the relative configuration of said semiconductor device and said non-contact probing means;

a second comparing means for comparing probing data from said non-contact probing means with said expected value; and

a determining means for determining which node is probed using the comparison result of said first or second comparison means and circuit connection information of said semiconductor device and test pattern data and logic simulation data according to said test pattern data.

4,761,608

IN USE POSITION MEASURING DEVICE CALIBRATION

Philip C. Franklin, Netherton, and Alan P. Ogburn, Cirencester, both of England, assignors to Holset Engineering Company Limited, Turnbridge, England

Filed Aug. 26, 1986, Ser. No. 900,572
Claims priority, application United Kingdom, Aug. 23, 1985, [illegible]
Int. Cl.[4] G01R *35/00;* F02M *65/00;* G01L *27/00;* G01B *7/14*
U.S. Cl. 324—202 10 Claims

1. A method of calibrating a measuring device which measures the position of a movable member actuatable in response to a control signal, the member having a first limiting position, comprising the steps of

monitoring a signal reflecting a condition of when the member reaches the first limiting position,

monitoring the time during which the signal reflecting the first limiting position condition continues,

comparing the monitored time with a first predetermined time, and, if the first limiting position condition continues for at least as long as the first predetermined time, maintaining said control signal at a level which insures the

VOL 1093 ISS 1 AG 2 1988 UMI

member is at said first limiting position and, subsequently taking a measurement of the signal reflecting the actual



position of the movable member in such limiting position condition, and

using this measurement to calibrate the device.

4,761,609

TACHOMETER SIGNAL CONDITIONER

Richard A. Dorman, Troy, and Donald E. Welch, Latham, both of N.Y., assignors to Mechanical Technology Incorporated, Latham, N.Y.

Filed Aug. 20, 1987, Ser. No. 87,402
Int. Cl.[4] G01R 7/14
U.S. Cl. 324—208 5 Claims



1. A tachometer signal conditioner circuit for producing a phase reference signal from a machine shaft rotation comprising:

means for detecting the positive and negative peaks of a tachometer output signal during each cycle of said: tachometer; and

differential amplitude means connected to one or more outputs of said means for detecting and functioning to compare a signal proportional to said positive and negative peaks with stored proportional peak values from said tachometer's previous cycle, and to produce an output if the difference between said peak values and said stored proportional peak values exceeds a preset level.

4,761,610

APPARATUS FOR DETERMINING THE POSITION OF SURFACE DEFECTS OF A TEST OBJECTS WITH RESPECT TO AN EDGE THEREOF

Lennart Svegander, and Bengt Törnblom, both of Västerås, Sweden, assignors to Asea AB & Tornbloms Kvalitetskontrollar, Västerås, Sweden

Filed Oct. 8, 1986, Ser. No. 917,067
Claims priority, application Sweden, Oct. 18, 1985, 8504912
Int. Cl.[4] G01N 27/82; G01R 33/02
U.S. Cl. 324—227 9 Claims



1. Apparatus for examining the surface of an electrically conductive test piece for determining the location of surface defects, comprising:

at least one sensor including at least one proximity sensor, said one sensor operating with eddy current induction for producing signals in response to the detection of surface defects;

a holder supporting and moving said at least one sensor in a scanning movement from side to side over said surface;

means for receiving and processing said signals;

means for determining the position of said at least one sensor in space;

means responsive to said at least one proximity sensor for determining the position of at least one edge of the test piece at the point where said at least one sensor travels over said edge for each scan in a first direction over said surface; and

calculating means responsive to said means for receiving and processing and said means for determining for calculating at least one of the position and orientation of a surface defect relative to the latest determined position of said at least one edge.

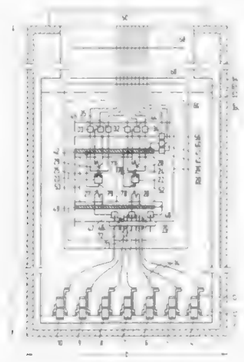
4,761,611

APPARATUS FOR MEASURING WEAK MAGNETIC FIELDS HAVING A DC-SQUID ARRAY AND GRADIOMETER ARRAY

Eckhardt Hoenig, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 22, 1986, Ser. No. 854,773
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1985, 3515237
Int. Cl.[4] G01R 33/035
U.S. Cl. 324—248 8 Claims

1. Apparatus for measuring weak magnetic fields, comprising at least one DC-SQUID array means, said DC-SQUID array means comprising of a plurality of DC-SQUIDs, each of said DC-SQUIDs comprising Josephson junction means and coupling coil means, the apparatus further comprising gradiometer array means having a plurality of gradiometer coil means, each of said gradiometer coil means being coupled to a respective DC-SQUID, a modulation coil means being associated with a respective DC-SQUID, said Josephson junction means, coupling coil means and modulation coil means comprising a module and being deposited as a planar thin-film structure on a common substrate, each module having terminal



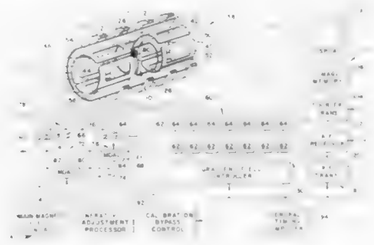
means and magnetic decoupling means comprising a superconducting shielding ring surrounding the module and the apparatus further comprising metallic coupling means for electrically coupling together at least one part of the terminal means of the module to selected other parts of the terminal means of the same or others of said modules by means of ground plane means.

4,761,612

PROGRAMMABLE EDDY CURRENT CORRECTION

G. Neil Holland, Chagrin Falls, and John R. Stauber, Fairview Park, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 758,761, Jul. 25, 1985, Pat. No. 4,703,275. This application Apr. 3, 1987, Ser. No. 33,532
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—307 19 Claims



1. A magnetic resonance apparatus comprising:

a main magnetic field means for generating a substantially uniform main magnetic field through an examination region;

a gradient energization profile generating means for generating gradient energization profiles each indicative of a preselected gradient field profile;

a gradient coil means for receiving the gradient energization profiles and generating a corresponding gradient magnetic field profile therewith, the generated gradient magnetic field profile causing eddy currents, which eddy currents generate opposing gradient magnetic field components that distort the generated gradient magnetic field profile, whereby the generated magnetic field profile differs from the preselected gradient field profile;

a gradient profile calibration means operatively connected between the gradient profile generating means and the gradient coil means for altering the energization profile such that the generated gradient magnetic field profile more closely matches the preselected gradient field profile, the gradient profile calibration means includes a calibration adjusting means for adjusting the calibration means alteration of the energization profile, whereby the calibration means is selectively adjustable;

a magnetic field monitoring means disposed in the examination region for measuring the generated magnetic field gradient profiles;

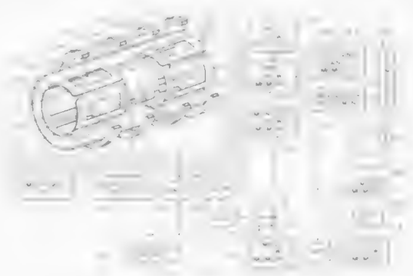
a computer means operatively connected with the magnetic field monitoring means and with the calibration means adjusting for comparing the preselected gradient profile with the measured gradient magnetic field profile and adjusting the adjusting means to optimize conformity between the preselected gradient profile and the measured gradient magnetic field profile, whereby the gradient field profile calibration means is automatically calibrated.

4,761,613

MONITORED ECHO GATING FOR THE REDUCTION OF MOTION ARTIFACTS

Richard S. Hinks, Miami, Fla., assignor to Picker International, Inc., Highland Hts., Ohio

Filed Aug. 12, 1987, Ser. No. 84,683
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—309 21 Claims



1. A method of magnetic resonance imaging comprising:

deriving a reference view having a first preselected phase encoding;

initiating a plurality of magnetic resonance excitation and data collection pulse sequences, at least some of the pulse sequences including:

phase encoding magnetic resonance with the preselected reference phase encoding and collecting a monitor view with the reference phase encoding, and,

phase encoding the magnetic resonance with one of a plurality of image phase encodings and collecting an image view;

comparing each monitor view with the reference view to assess validity of the corresponding image view.

VOL 1093 ISS 1 AUG 2 1988 UMI

4,761,614

DEVICE AND METHOD FOR AUTOMATIC SHIMMING OF NMR INSTRUMENT

Manfred G. Prammer, Philadelphia, and John C. Haselgrove, Swarthmore, both of Pa., assignors to Phospho-Energetics, Inc., Philadelphia, Pa.

Filed Apr. 27, 1987, Ser. No. 42,882
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—320 34 Claims



1. A method for compensating inhomogeneities in the main magnet field of a nuclear magnetic resonance (NMR) instrument having a set of shimming coils, comprising

determining a plurality of fields maps of a first object with said NMR instrument, a first of said field maps being taken with the shim currents of said set of shim coils being held at a first set of respective values, and each other one of said fields maps being determined with at least one respective one of said shim currents having a different value than the respective value of said first set,

determining from said field maps information on the amount of change in the field in said first object caused by each said difference in each respective shim current, and obtaining a field map of a further object with said NMR instrument with said shim currents at a further set of respective values, and

calculating using a Chebychev criterion, from said information and said field map of said further object, a final set of values for said shim currents for compensating inhomogeneities in said main magnet field for investigating said further object with the NMR instrument, wherein said calculating of said final set of values for the shim currents employs a Chebychev norm for minimizing said inhomogeneities over a region of interest in said magnetic field.

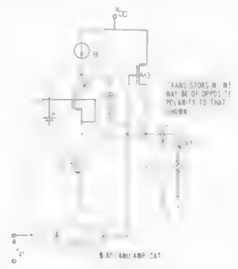
4,761,615

VOLTAGE REPEATER CIRCUIT WITH LOW HARMONIC DISTORTION FOR LOADS WITH A RESISTIVE COMPONENT

Franco Maloberti, D'Isola, and Guido Torelli, Alessio, both of Italy, assignors to SGS Microelettronica SPA, Milan, Italy

Filed Jul. 6, 1987, Ser. No. 70,825
Claims priority, application Italy, Jul. 3, 1986, 21018 A/86
Int. Cl.[4] H03F 3/16
U.S. Cl. 330—277 12 Claims

1. A voltage repeater circuit with low harmonic distortion for loads with a resistive component, having at least one input terminal for connection to a voltage generator and at least one output terminal for connection to a load, comprising: first and second MOSFET transistors having a first type of conductivity, and a third MOSFET transistor having a second type of conductivity opposite to said first type of conductivity, a gate electrode of said first transistor forming the input terminal of the repeater circuit; a source electrode of said first transistor and drain electrodes of said second and third transistors being connected together in a first circuit node which forms the output terminal of the repeater circuit; a drain electrode of said first transistor being connected to a first terminal of a voltage supply by means of a constant current generator and being further coupled to a gate electrode of said second transistor by a first constant voltage generator; a source electrode of said second transistor being connected to a second terminal of said voltage supply; a source electrode of said third transistor being connected to said first terminal of said voltage supply, the



input terminal of the voltage repeater circuit being further coupled to a gate electrode of said third transistor by a circuit means for biasing and amplification with signal inversion.

4,761,616

VOLTAGE CONTROLLED OSCILLATOR

Darrell L. Ash, Sachse, Tex., assignor to R. F. Monolithics, Inc., Dallas, Tex.

Filed Sep. 4, 1987, Ser. No. 93,315
Int. Cl.[4] H03B 5/00, 5/24
U.S. Cl. 331—107 A 22 Claims



1. A voltage controlled oscillator circuit comprising:

a. a phase shifting element having a signal input terminal and a signal output terminal and having a predetermined signal phase shift between said input and said output terminals,

b. a signal feedback network having an output signal terminal and having an input terminal coupled to said output terminal of said phase shifting element to form said oscillator circuit, and

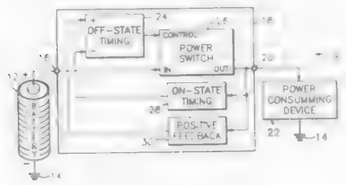
c. adjustable voltage control means coupled between said output terminal of said feedback network and said input terminal of said phase shifting element and between said output terminal of said feedback network and said output terminal of said phase shifting element for varying the phase shift of said signal at said output terminal of said phase shifting element over a predetermined frequency range to cause said circuit to oscillate at any predetermined frequency within said predetermined frequency range.

4,761,617

LOW POWER ASTABLE MULTIVIBRATOR

Peter H. Sorrells, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1987, Ser. No. 65,741
Int. Cl.[4] H03K 3/281
U.S. Cl. 331—111 12 Claims



1. An astable multivibrator comprising:

means, having first and second inputs and an output, for establishing a duration of a multivibrator off state;

means, having an input coupled to the output of said establishing means and having an output coupled to the first input of said establishing means, for controlling a duration of a multivibrator on state;

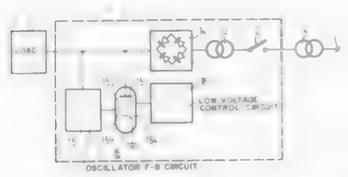
means, having an input coupled to the output of said establishing means and having an output coupled to the second input of said establishing means, for providing positive feedback to said establishing means during the multivibrator on state.

4,761,618

HIGH-FREQUENCY HEATING GENERATOR COMPRISING A MULTIPLE-GRID ELECTRON TUBE

Christian S. A. E. Patron, and Aart P. Huben, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1987, Ser. No. 18,679
Claims priority, application Netherlands, Mar. 17, 1986, [illegible]
Int. Cl.[4] H03B 5/10; H05B 6/02
U.S. Cl. 331—167 10 Claims



1. A high-frequency heating generator comprising, an oscillator circuit including an electron-tube having a first grid connected to a positive feedback circuit of the oscillator circuit, means connecting an anode of the electron tube to a d.c. power source, characterized in that the electron tube has a second grid, a low-voltage control circuit having an output terminal connected to one of said first and second grids so as to control the generator output power.

4,761,619

HIGH-FREQUENCY GENERATOR WITH IMPROVED CATHODE CURRENT REGULATED HIGH-FREQUENCY OSCILLATOR

Christian S. A. E. Patron, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 25, 1987, Ser. No. 18,678
Claims priority, application Netherlands, Mar. 17, 1986, [illegible]
Int. Cl.[4] H03B 5/10; H05B 6/02
U.S. Cl. 331—167 7 Claims



1. A high-frequency heating generator comprising an electron tube oscillator including an electron tube having a cathode circuit comprising at least one control element connected in series with the electron tube, said control element being operative to adjust output power of the electron tube oscillator up to a maximum power level and for dissipating a part of the power at power levels below said maximum power level, and an impedance circuit connected in parallel with the control element for dissipating part of the power to be dissipated in the cathode circuit when the control element is adjusted to produce a power level less than the maximum power level.

4,761,620

OPTICAL READING OF QUANTUM WELL DEVICE

Israel Bar-Joseph, Highlands, Tao-Yuan Chang, Lincroft, Daniel S. Chemla, Rumson, and David A. B. Miller, Fair Haven, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 3, 1986, Ser. No. 937,387
Int. Cl.[4] H01L 33/02; G02B 5/14; G02F 1/015
U.S. Cl. 332—7.51 8 Claims



1. Optical apparatus for detecting a change in an electrical signal comprising a modulation-doped semiconductor structure having a region that includes at least one quantum well layer having charge carriers, a doped semiconductor layer in substantially close proximity to said at least one quantum well layer for providing said charge carriers, means responsive to the change in said electrical signal for changing the number of charge carriers in a region of said at least one quantum well layer, a source of light having a predetermined wavelength, said source being oriented such that the light passes through the region of said at least one quantum well layer, and means

VOL 1093 ISS 1 AG 2 1988 UMI

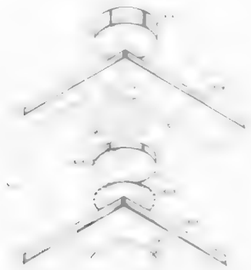
for detecting changes in the light that emerges after passing through said region of said at least one quantum well layer.

4,761,621

CIRCULATOR/ISOLATOR RESONATOR

Robert C. Kane, Woodstock, and Carl Kotecki, Palatine, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1986, Ser. No. 880,220
Int. Cl.[4] H01P *1/387*
U.S. Cl. 333—1.1 5 Claims



1. A resonator for a microstrip non-reciprocal radio frequency device comprising:

a planar electrical conductor having three port leads and a substantially circular resonant member comprising a discontinuous outer ring and a centered inner triangle, said ring coupled to said port leads at predetermined angular intervals along the outer circumference of said ring and coupled to a respective vertex of said triangle at each said predetermined angular interval along the inner circumference of said ring, said discontinuous ring having interruptions at substantially the bisection of said angular interval between each said port lead and said triangle having non-conducting slots extending toward the center on each radius common with said bisection; and

at least one transversely magnetized ferrite element disposed substantially opposite said circular resonant member and including said discontinuous outer ring and inner triangle within an area bounded by the periphery of said ferrite element whereby said ferrite element is electromagnetically coupled to at least all of said discontinuous outer ring and inner triangle.

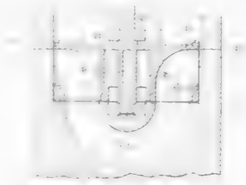
4,761,622

WAVEGUIDE SWITCHING APPARATUS

David J. Cracknell, Writtle, and Raymond P. Smith, Billericay, both of United Kingdom, assignors to The General Electric Company, p.l.c., London, United Kingdom

Filed Oct. 30, 1986, Ser. No. 924,659
Claims priority, application United Kingdom, Oct. 31, 1985, 8526909
Int. Cl.[4] H01P *1/10*
U.S. Cl. 333—106 38 Claims

1. Waveguide switching apparatus comprising first and second members arranged to undergo relative rotation, there being first and second channels in the second member having respective ports at a boundary between the first and second members, the arrangement and construction of the two members being such that, when in a particular position relative to one another, they define a passage between the ports which connects the channels and which is located wholly within the first and second members, part of the passage being located in



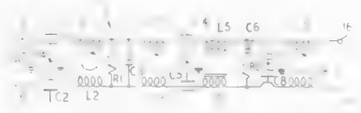
the first member and part of the passage being located in the second member.

4,761,623

BROADBAND RFI POWER LINE FILTER

Lon M. Schneider, Arlington Heights, Ill., assignor to Corcom Inc., Libertyville, Ill.

Filed Dec. 4, 1986, Ser. No. 938,020
Int. Cl.[4] H03H *7/09, 7/06*
U.S. Cl. 333—167 4 Claims



1. A very broad band radio frequency interference filter for the range of 10 kilohertz to 1000 megahertz comprising, a pair of input lines, first and second capacitors, respectively, connected to said pair of input lines and connected together with their common lead grounded, first and second inductors wound on a first toroid core and having first ends respectively, connected to said first and second capacitors, a third capacitor and a first resistor connected in parallel and the combination connected from the second end said first inductor to the second end of said second inductor, third and fourth inductors wound on a second toroid core and having first ends respectively, connected to second ends of said first and second inductors, fourth and fifth capacitors, respectively connected together with their common terminal grounded and connected, respectively, to second ends of said third and fourth inductors, fifth and sixth inductors wound on a third toroid core and having first ends, respectively, connected to said fourth and fifth capacitors, a sixth capacitor, a second resistor connected in series with said sixth capacitor and the combination connected from the second end said fifth inductor to the second end of said sixth inductor, seventh and eighth capacitors connected together with their common lead grounded and connected, respectively, to the second ends of said fifth and sixth inductors, a pair of output terminals, and seventh and eighth inductors wound on a fourth toroid core and having first ends respectively connected to second ends of fifth and sixth inductors and the second ends of said seventh and eighth inductors, respectively, connected to said pair of output terminals.

4,761,624

MICROWAVE BAND-PASS FILTER

Sadao Igarashi, and Moriaki Ueno, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

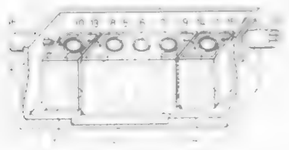
Filed Mar. 20, 1987, Ser. No. 28,608
Claims priority, application Japan, Aug. 8, 1986, 61-186631
Int. Cl.[4] H01P *1/205, 1/202*
U.S. Cl. 333—206 3 Claims

1. A microwave band pass filter for obtaining a sharp skirting characteristic on a low frequency side of a passing band, such as obtained in a coaxial type band pass filter (BPF), as well as on a high frequency side of the passing band, such as obtained in a combline type BPF, comprising in series at least the following:

a first dielectric block having a resonator providing a coaxial type BPF having a characteristic of lower cutoff frequencies which is formed by a hole lined with an inner conductor and a pair of leading and trailing electrodes on a face of said block in one direction spaced on each side of an end of said hole;

a second dielectric block having a plurality of resonators providing a combline type BPF having a characteristic of higher cutoff frequencies which is formed by respective holes spaced apart in parallel and in series, each lined with an inner conductor, and a pair of leading and trailing electrodes on a face of said block in the one direction spaced on each side of the series of holes; and

a third dielectric block having a resonator providing a coaxial type BPF having a characteristic of lower cutoff frequencies which is formed by a hole lined with an inner



conductor and a pair of leading and trailing electrodes on one face of said block in the one direction spaced on each side of an end of said hole,

wherein the lower cutoff frequencies for said coaxial type BPF are included in a passing band for the combline type BPF, and the higher cutoff frequency for the combline type BPF are included in a pass band for the coaxial type BPF, and

wherein the trailing electrode of said first block is connected to the leading electrode of said second block, and the trailing electrode of said second block is connected to the leading electrode of said third block, whereby the low frequency side skirting characteristic of a coaxial type BPF is obtained by the resonators of said first and third blocks being connected through said second block in series through equivalent capacitances formed by the connection of the leading and trailing electrodes, and the high frequency side skirting characteristic of a combline type BPF is obtained by the resonators of said second block connected in series through equivalent coaxial lines formed by their parallel arrangement in said second block.

4,761,625

TUNABLE WAVEGUIDE BANDPASS FILTER

Arvind K. Sharma, Mercer County, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 20, 1986, Ser. No. 876,487
Int. Cl.[4] H01P *1/207, 1/208, 1/16, 7/00*
U.S. Cl. 333—209 20 Claims

1. A bandpass filter, comprising:

first and second elongated mutually parallel conductive broad walls equidistant from and parallel to an axis and spaced apart by a pair of elongated mutually parallel conductive narrow walls to define a hollow rectangular waveguide centered on said axis and having a predetermined length;

an elongated first dielectric plate including mutually parallel first and second broad sides, said plate being oriented with said first and second broad sides parallel with said conductive narrow walls and substantially centered therebetween;

a conductive sheet defining first, second, third and fourth sheet edges, said conductive sheet being bonded to one of said first and second broad sides of said first dielectric plate, said conductive sheet being shorter in the direction of said axis than said predetermined length, said first and second edges of said conductive sheet being in conductive communication with said first and second broad walls, respectively, said conductive sheet defining at least one aperture symmetrically oriented relative to a plane of symmetry equidistant from said first and second broad



sides and which passes through said axis, whereby a bandpass filter characteristic is established within a range of frequencies;

a substantially flat second dielectric plate located within said rectangular waveguide, and oriented parallel with said first dielectric plate and located between one of said first and second broad sides and the adjacent one of said conductive narrow walls near said at least one aperture for affecting said range of frequencies; and

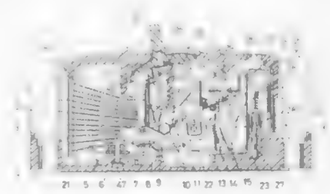
mechanical adjustment means connected to at least one of said broad walls and said narrow walls and to said second dielectric plate for selectively moving said second dielectric plate towards or away from said first dielectric plate.

4,761,626

CIRCUIT BREAKER

Wataru Teraoka, Niigata, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 23, 1985, Ser. No. 812,899
Claims priority, application Japan, Dec. 26, 1984, 59-272959
Int. Cl.[4] H01H *75/00, 77/00, 83/00*
U.S. Cl. 335—16 24 Claims



1. A circuit breaker, comprising:

a J-shaped fixed contactor in circuit;

a moving contactor in circuit

a connection terminal electrically connected to one of said contactors;

a fixed core in circuit;

a switching mechanism for switching said moving contactor into and out of engagement with said fixed contactor;

a heater disposed electrically in circuit in series between said one contactor and said terminal in such a manner as to extend along said fixed core;

a moving core rotatably supported relative to said fixed core to move toward said fixed core upon current overload to actuate said switching mechanism;

VOL 1093 ISS 1 AG 2 1988 UMI

an insulating member disposed in such a manner as to extend on the outer side of said fixed contactor facing said moving contactor;

a demagnetizer member disposed in such a manner as to extend along an inner side of the J-shape of the said fixed contactor; and

means interconnecting said insulating member and said demagnetizing member in such a manner as to clamp said fixed contactor between them.

4,761,627

ELECTROMAGNETIC RELAY INCLUDING A ROTATABLE ARMATURE MOUNT

Richard E. Bell, Princeton, Ind., assignor to Potter and Brumfield Inc., Princeton, Ind.

Filed Sep. 17, 1987, Ser. No. 97,995
Int. Cl.[4] H01H *67/02*
U.S. Cl. 335—128 10 Claims

1. An electromagnetic relay comprising:

(a) an electromagnetic coil having an axis and a core coextensive with said axis;

(b) an angled yoke having a first yoke leg perpendicular to said axis and adapted to receive said core and a second yoke leg parallel to the axis, said second leg having a free end serving as a fulcrum;

(c) a plurality of contact elements comprising at least one stationary contact element and at least one moveable contact element secured in a base body, said yoke including said coil mounted on said base body;

(d) a generally L-shaped armature pivotally mounted on said fulcrum and having a first leg forming a working air gap with said core and a second leg extending generally parallel to said axis, the first leg of the armature being actuated by said armature responsive to the electromagnetic coil by moving to reduce the working air gap when the coil is energized;

(e) a pusher member for transferring movement of the armature to the at least one moveable contact, the pusher member having a longitudinal axis and having a first end portion engaged with said second armature leg and a second end portion engaged with said at least one moveable contact element, said first end of the pusher member including an elongated section extending between two retaining means displaced laterally and extending circumferentially from said elongated section, for defining its length; and

(f) said second armature leg having a bifurcated end adapted to slide over and embrace said elongated section of the pusher member between said two retaining means, the bifurcated end of the armature having an opening and a socket, the opening adapted to freely slide around one dimension of the elongated section while the socket is longitudinally restricted between said two retaining means and the other dimension of the elongated section being larger than the one dimension.

4,761,628

ELECTROMAGNETIC INDUCTION APPARATUS WITH TAP WINDING CONDUCTORS

Hideji Nishi, and Katsumi Kondo, both of Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Dec. 17, 1987, Ser. No. 133,927
Claims priority, application Japan, Dec. 24, 1986, 61-306486
Int. Cl.[4] H01F *27/28, 15/10*
U.S. Cl. 336—180 2 Claims



1. An electromagnetic induction apparatus comprising:

an even number of flat coils each having a main winding conductor and tap winding conductors which are the same in number as taps and which are wound in parallel along at least a portion of said main winding conductor to form, together with said main winding conductor, a flat coil, said flat coils being wound substantially coaxially;

means for connecting said main winding conductors together by connecting the inner end of said main winding conductor of each odd-numbered one of said even number of flat coils to the inner end of said main winding conductor of the adjacent even-numbered flat coil, and connecting the outer end of said main winding conductor of said even-numbered flat coil to the outer end of said main winding conductor of the succeeding odd-numbered flat coil;

means for connecting said tap winding conductors together by connecting the inner end of each of said tap winding conductors of each odd-numbered one of said even number of flat coils to the inner end of the corresponding tap winding conductor of the adjacent even-numbered flat coil, and connecting the outer end of each of said tap winding conductors of said even-numbered flat coil to the outer end of the corresponding tap winding conductor of the succeeding even-numbered flat coil; and

upright lead portions formed on each of the outer ends of both the main winding conductors and the tap winding conductors of flat coils which are located at opposite ends of said even number of flat coils.

4,761,629

INJECTION MOLDABLE CORE INSULATION TUBES

Richard W. Martin; Herbert J. Macemon, and William R. Fortenberry, all of Versailles, Ky., assignors to Kuhlman Corporation, Troy, Mich.

Filed Sep. 18, 1986, Ser. No. 908,837
Int. Cl.[4] H01F *27/30*
U.S. Cl. 336—208 14 Claims

1. An insulation tube for use with a toroidal transformer comprising:

first and second identical U-channel halves defining a common axis, each half made of a plastic electrical insulation material, having an arcuate bottom with first and second edges and having inner and outer walls extending from the first and second edges of the bottom, the inner and outer walls having respective inner and outer edges;

the first and second U-channel halves being secured to one another along the inner and outer edges; and

the U-channel halves each having first and second electrical
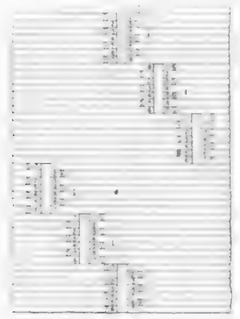


lead slots formed at the first and second ends for receipt of electrical transformer leads, the first and second lead slots being axially oriented and positioned so that electrical leads positioned therein are axially spaced apart and are directed generally normal to and away from the first and second ends and towards respective second and first ends of an opposed insulation tube with opposed transformer leads being axially offset from one another.

4,761,630

BUTT-LAP-STEP CORE JOINT

Frank H. Grimes, and Eugenius Hammack, both of Athens, Ga., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 9, 1987, Ser. No. 107,225
Int. Cl.[4] H01F *27/26*
U.S. Cl. 336—213 19 Claims



1. An improved transformer core having a butt-lap-step transformer core joint, said transformer core comprising:

a plurality of laminations cut from a continuous spiral of material, said plurality of laminations divided into a plurality of groups of laminations;

laminations within each group being cut to form a butt joint with other laminations of said group;

each group of laminations being offset laterally from its adjacent group of laminations for form a lap joint with said adjacent group, the end lamination of each group being of a different length than the majority of laminations within said group and forming the end lamination of the next adjacent group,

a preselected number of said groups of laminations comprising a set of groups wherein the lamination interconnecting two sets of groups is of a substantially different length than the balance of the laminations within said groups and define a step.

4,761,631

MAIN BATTERY DISCONNECTION ALARM AND HEADLIGHT WARNING CIRCUIT

Shih-Ming Hwang, No. 11, Alley 12, Lane 7, Ching-Tyan St., Taipei, Taiwan

Filed May 14, 1987, Ser. No. 49,821
Int. Cl.[4] B60Q *1/00*
U.S. Cl. 340—52 D 3 Claims



1. A main battery disconnection alarm and headlight warning circuit comprising:

a. a charging circuit composed of D1 and R2 to maintain the backup battery in a full-charge state;

b. a main battery disconnection alarm circuit composed of R1, R4, R5, C1, IC1, R6, D3, R7, C2, and IC2 so that when the main battery is disconnected or damaged, IC2 gives an output "1" which, after oscillation in an oscillator composed of IC5, IC4, C6, C7, R18, and R20, turns on Q1 to drive RY1 to trigger a siren;

c. a headlight warning circuit composed of R9, R10, R11, C4, IC3, IC5, C7, IC4, R12, R13, R14, R15, C5, IC6, R16, C6, D6, R17, IC7, D7, IC8, D8, R18, R19, C6, and R20 to give a warning if the headlights continue to be on for a preset time after turning off the vehicle's ignition switch;

d. a warning circuit composed of Q1, RY1, and D5 to turn on and turn off a siren in such a manner that when the main battery is disconnected or when the headlights are not turned off within a preset time after turning off of the ignition switch, an audible warning signal is given; and characterized by the distinction between the main battery disconnection warning and the headlight warning signal in such a manner that the main battery disconnection signal is a series of short, relatively quiet intermittent tones, and the headlight warning signal is a series of longer, relatively loud intermittent tones;

characterized by the distinction between the main battery disconnection warning and the headlight warning signal in such a manner that the main battery disconnection signal is a series of longer, relatively loud intermittent tones, and the headlight warning signal is a series of short, relatively quiet intermittent tones.

4,761,632

TRI-STATE DIRECTIONAL SIGNAL SYSTEM

Paul C. Ambrusko, 3609 Silver Park Dr. #20, Suitland, Md. 20746

Filed Jan. 22, 1987, Ser. No. 64,470
Int. Cl.[4] B60Q *1/46*
U.S. Cl. 340—81 R 4 Claims

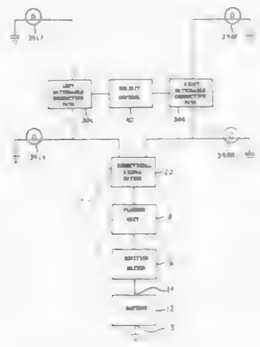
1. A vehicle directional signal switching circuit with conductive means to selectively interrupt normal flashing of the front directional signal while allowing the corresponding rear directional signal to flash, comprised of:

VOL 1093 ISS 1 AUG 2 1988 UMI

a battery with the negative terminal connected to a common ground and the positive terminal connected to an ignition switch;

a left and right set of rear and front directional signal lamps, with each said signal lamp having a base terminal connected to said common ground;

a directional signal switch and a flasher unit serially con-



nected to said ignition switch, with conductive means to selectively provide a flashing current source to said directional signal lamps;

a switchable conductive path interconnected between said flashing current source and said front directional signal lamp;

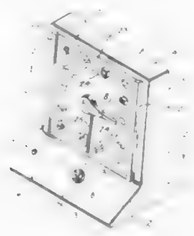
an inhibit control with selective means to activate and deactivate said switchable conductive path.

4,761,633

COMMUNICATION AID

Ruth B. Leff, and Aaron N. Leff, both of 6589 N. Crestwood Dr., Milwaukee, Wis. 53209

Filed Nov. 26, 1986, Ser. No. 935,048
Int. Cl.[4] G09B *21/00*
U.S. Cl. 340—286 R 7 Claims



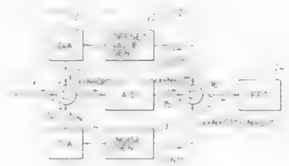
1. A communication aid for a patient, comprising a housing having a surface, a rotatable pointer mounted on a shaft, guide means on said surface, and a panel mounted on said guide means and bearing a plurality of symbols, said panel having a slot to receive said shaft, said pointer being rotatable to bring the pointer into registry with one of said symbols.

4,761,634

AD CONVERTING DEVICE

Takahiro Yamaguchi; Norio Arakawa; Takayuki Ohgami, and Hiromi Kosawa, all of Gyoda, Japan, assignors to Advantest Corporation, Tokyo, Japan

Filed Dec. 10, 1986, Ser. No. 940,058
Claims priority, application Japan, Dec. 13, 1985, 60-280652
Int. Cl.[4] H03M *1/06*
U.S. Cl. 340—347 AD 17 Claims



1. An AD converting device comprising:

random noise generating means for generating an analog random noise of a relatively small amplitude;

offset generating means for generating an analog offset voltage whose level varies relatively largely;

analog adding means for adding together the analog random noise, the analog offset voltage, and an analog signal to be converted to digital form; and

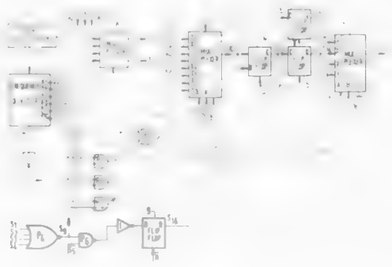
an AD converter for converting the added output of the analog adding means into a digital signal, wherein the level variation of the analog offset voltage is greater than a quantization step size of the AD converter and sufficiently slower than a sampling rate of the AD converter.

4,761,635

METHOD OF CODING DIGITAL INFORMATION ORGANIZED IN FRAMES USING A CMI CODE, A DEVICE FOR IMPLEMENTING THIS METHOD AND APPLICATION TO SERVITUDE INFORMATION FOR A HIGH CAPACITY DIGITAL NETWORK

Jean-Pierre Arnaune, Dravell; Nazario Dominguez, Paris, and Jean Walraet, Lannion, all of France, assignors to S.A.T. (Societe Anonyme de Telecommunications), Paris, France

Filed Nov. 19, 1986, Ser. No. 932,371
Claims priority, application France, Nov. 19, 1985, 85 17037
Int. Cl.[4] H03M *5/14*
U.S. Cl. 340—347 DD 9 Claims



3. A method of coding digital servitude information such as supervision, signalling, order channels, alarms, or remote monitoring of a high capacity digital network in the CMI code, said coding of said digital servitude information comprising the steps of:

multiplexing said digital servitude information;

organizing said multiplexed digital information in frames, each said frame having inserted therein a frame locking word comprising a binary "1" positioned at the end of said frame whereby the CMI code as a result of said insertion of said locking word is violated;

inserting a binary filling element into said frame immediately before said frame locking word so that statistics of said CMI code are maintained;

said method further comprising the steps of coding said locking word alternately as "11" and "00" from one frame to the next;

coding said binary filling element as binary "0" when the number of binary "1"s in said frame is odd before the insertion of said frame locking word; and

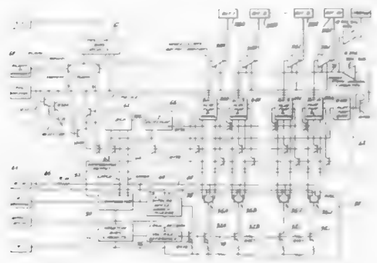
coding said binary filling element as binary "1" when the number of binary "1"s in said frame is even before the insertion of said frame locking word.

4,761,636

A-TO-D CONVERTER OF THE SUCCESSIVE-APPROXIMATION TYPE

Adrian P. Brokaw, Burlington, and Modesto A. Maidique, Lexington, both of Mass., assignors to Analog Devices, Incorporated, Norwood, Mass.

Division of Ser. No. 780,916, Sep. 27, 1985, Pat. No. 4,707,682, which is a division of Ser. No. 361,740, Mar. 25, 1982, Pat. No. 4,556,870, which is a division of Ser. No. 931,960, Aug. 8, 1978, Pat. No. 4,400,689, which is a continuation-in-part of Ser. No. 785,322, Apr. 7, 1977, abandoned. This application Sep. 22, 1987, Ser. No. 99,743
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] H03M *1/38*
U.S. Cl. 340—347 AD 2 Claims



1. An analog-to-digital converter comprising substrate means forming a single monolithic integrated-circuit chip including:

a plurality of transistor current sources formed in said substrate means and individually controllable to produce respective binarily-weighted currents for summation into a composite signal;

first transistor means formed in said substrate means including circuit means defining successive-approximation control means capable of carrying out a successive-approximation algorithm;

transistor switch means on said substrate means responsive to said successive-approximation control means and serving to control said current sources to carry out said algorithm for developing a digital output corresponding to an unknown analog signal;

second transistor means arranged as a comparator to compare an unknown analog input signal with a signal corresponding to said composite signal;

means connecting the output of said comparator to said first transistor means to provide the results of such comparison to the successive-approximation control means so that the control means may carry out said algorithm;

voltage supply means comprising a sub-surfacebreakdown Zener diode serving to develop a reference voltage; and

circuit means responsive to said reference voltage and controlling said composite signal to provide a comparison standard for said comparator, so that the converter is capable of providing an absolute analog-to-digital conversion.

4,761,637

TOUCH INPUT DEVICE

Paul B. Lucas, Urbana, and James E. Garrett, Champaign, both of Ill., assignors to Carroll Touch Inc., Round Rock, Tex.

Continuation of Ser. No. 621,575, Jun. 18, 1984, abandoned. This application Nov. 5, 1986, Ser. No. 928,652
Int. Cl.[4] G08C *9/00, 21/00*
U.S. Cl. 340—365 P 15 Claims



1. A touch input device interactive with a host computer to convey data indicative of the interference of a passive stylus within the field of the touch input device to the host computer, the touch input device comprising:

a plurality of optical emitters, electrically interconnected in a first matrix, the optical emitters being linearly disposed, each optical emitter having emitter first and second terminals, each optical emitter being individually independently addressable in the matrix through the first and second terminals;

a like plurality of optical detectors, electrically interconnected in a second matrix, the optical detectors also being linearly disposed, each optical detector having detector first and second terminals, each optical detector being individually independently addressable in the second matrix through the detector first and second terminals, corresponding emitters and detectors being oppositely disposed, each emitter emitting a light beam incident on a corresponding detector;

a plurality of separate driver means, each driver means connected to emitter first terminals of a plurality of emitters, and first decoder means having a plurality of decoder lines, each first decoder line electrically interconnected to an emitter second terminal of a plurality of emitters, each emitter being electrically interconnected to a unique combination of driver means and first decoder lines to form the first matrix, the driver means and first decoder means comprising means for sequentially activating individual emitters within the first matrix;

second decoder means, each second decoder means having a plurality of lines, each second decoder line being connected to detector first terminals of the plurality of detectors, and a plurality of I/O signal lines, each I/O signal line being connected to detector second terminals of the plurality of detectors, each detector being connected to a unique combination of second decoder means and I/O signal lines to form the second matrix, the second decoder means and the I/O signal lines comprising means for

VOL 1093 ISS 1 AUG 2 1988 UMI

sequentially activating the output of individual detectors within the second matrix; and

microcomputer means including a plurality of I/O ports electrically connected to the driver means, the first and second decoder means and the I/O signal lines, the microcomputer means comprising means for sequentially activating corresponding emitters and detectors at the same time and means for processing signals received from the detectors prior to transmission to the host computer.

4,761,638

MEANS AND METHOD FOR DETECTING PRESENCE OF ELECTRICALLY CONDUCTIVE FLUID

Miguel A. Lozano, Jr., 1614 NW. 99th Ct., Des Moines, Iowa 50322

Filed Sep. 15, 1986, Ser. No. 907,063
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—620 8 Claims



1. Means for detecting the presence of electrically conducting fluid comprising:

a gating means for conducting electrical current through an electrical path upon the introduction of a sufficient triggering voltage;

a signaling means connected to the gating means and actuated upon conduction of current through the gating means;

a probe means for placement in a desired location and for detection of fluid having first, second, and third conducting means, the first and second conducting means comprising exposed electrical conductors spaced apart but adjacently positioned, the second and third conducting means comprising exposed electrical conductors which are electrically connected;

probe extension cable means having first, second, and third electrical conducting wires each connected at one end to the first, second, and third conducting means, respectively;

a voltage dividing means comprising first and second resistive means, each having first and second electrical connection ends;

the other end of the first wire being conductingly connected to one side of an electrical power source and the first end of the first resistive means, the other end of the second wire being conductingly connected to the second end of first resistive means, the third wire being conductingly connected to the first end of the second resistive element, and the second end of the second resistive element being conductingly connected to the other side of the electrical power source;

an electrical conducting wire connected between the second end of the first resistive means and the gating means for supplying the triggering voltage to the gating means; and

so that in the absence of sufficient electrical conducting fluid between the first and second conducting means, current flows through the first resistive means, the second and third conducting wires, and the second resistive means, causing insufficient triggering voltage to be supplied to the gating means to allow conduction of current through the electrical path to actuate the signal means;

and so that any damage to the second or third conducting wires to render them non-conducting would remove the resistance of the second resistive means and cause sufficient current and triggering voltage to activate the signal means;

and so that when sufficient electrical conducting fluid shorts out the first and second conducting means, the resistance of the second resistive means is bypassed and sufficient triggering voltage is supplied to the gating means to allow the conduction of electrical current through the electrical path to actuate the signal means.

4,761,639

LIGHTWEIGHT, COMPACT DETECTOR OF SUDDEN CHANGES IN CONCENTRATION OF A GAS

Stephen C. Pyke, Willowick; Donald L. Boos, Garfield Heights, and Michael T. McMahon, Sebring, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 811,548, Dec. 20, 1985, abandoned. This application Oct. 8, 1986, Ser. No. 916,668
Int. Cl.[4] G08B *17/10*
U.S. Cl. 340—634 16 Claims



1. Apparatus for signalling a sudden increase in the concentration of a selected gas comprising:

sensor means for producing a change in an electrical sensing signal in response to the detection of a change in the concentration of a selected gas;

first and second amplifying means of unequal overall gain, each amplifying means receiving said sensing signal and having substantially different time constants, for generating first and second output signals, respectively, in response to said sensing signal;

means for comparing the magnitude of said first output signal to the magnitude of said second output signal and for generating an alarm signal when the relative magnitudes of said first and second output signals are inverted;

means receiving said alarm signal for producing a warning in response to the generation of an alarm signal.

4,761,640

POSITIONING CURSORS AT SPECIFIC POINTS ON A WAVEFORM DISPLAY

Keith R. Slavin, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

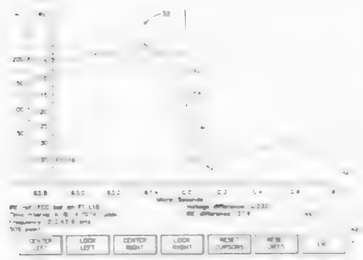
Filed Mar. 24, 1987, Ser. No. 30,770
Int. Cl.[4] G01R *13/30*; G09G *3/02*
U.S. Cl. 340—709 1 Claim

1. A method for positioning a vertical cursor at a specific point of a waveform on a display comprising the steps of:

positioning the vertical cursor relative to the waveform at an extreme amplitude point of a transition in the waveform to store a first value representing such extreme amplitude point;

positioning the vertical cursor relative to the waveform at an opposite extreme amplitude point of the transition in the waveform to store a second value representing such opposite extreme amplitude point;

computing and displaying for each position of the vertical cursor with respect to the waveform between the extreme amplitude points a third value as a percentage of the difference between the first and second values; and



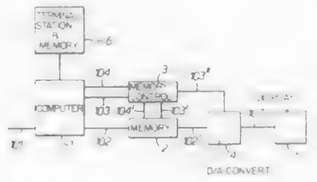
positioning the vertical cursor relative to the waveform at a point on the waveform where the percentage is a desired value for the specific point.

4,761,641

INFORMATION DISPLAY SYSTEM

Craig A. Schreiber, Best, Netherlands, assignor to Videom Rentservice B.V., Bodegraven, Netherlands

Filed Jan. 21, 1983, Ser. No. 459,975
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—717 25 Claims



1. An information display system characterized in that it comprises a computer device having at least one input member for receiving video information and a processor member connected with said input member for processing or controlling digital video information contained in or obtained from the video information received from the input member or digital video information generated by the computer device itself in order to produce display data, control signals and address signals; a communication channel having a data bus, a control bus and an address bus connected to the processor member of the computer device for the transmission of the display data, the control signals and the address signals, respectively; at least two memory means connected to the data bus for storing the display data received from the data bus; at least two memory control means connected to the control bus and the address bus for controlling the storage of display data in and for reading the stored display data from the memory means in response to control signal from the control bus; a digital/analog converting device connected to the memory means for producing analog display signals while the memory control means is reading the stored display data; and at least one display panel consisting of a plurality of discrete electronic display units arranged side by side in a manner such that respective display surfaces together constitute the display surface of the display panel, the electronic display units are each coupled to the digital/analog converting device for being scanned in synchronism and for receiving individual display signals; said processor member comprising first means for processing video information and second means for generating address signals so that the at least two memory means are selectively connectable to a different one of the individual electronic display units whereby an image may be displayed on each display unit which is distinct in form from the images displayed by the other display units and comprising a recognizable portion of a composite picture and whereby the synchronous scanning of said display units is capable of providing a composite image which is the combination of the distinct individual images of said discrete display units.

4,761,642

SYSTEM FOR PROVIDING DATA COMMUNICATION BETWEEN A COMPUTER TERMINAL AND A PLURALITY OF CONCURRENT PROCESSES RUNNING ON A MULTIPLE PROCESS COMPUTER

Gregory G. Hunzinger, West Linn, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 4, 1985, Ser. No. 784,413
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—721 1 Claim



1. In a computer system having a memory and having processing means for concurrently executing multiple processes, including first processes, each of which first processes receives input data produced by a computer terminal of said computer system and produces output data for controlling display on a screen of said computer terminal, a method for permitting concurrent data communication between a plurality of said first processes and a single computer terminal, the method comprising the steps of:

initiating and concurrently executing for each of said first processes a corresponding virtual terminal process each virtual terminal process receiving input data from the single computer terminal and forwarding said input data to the corresponding first process, receiving output data produced by the corresponding first process, and maintaining a separate display list in said memory, said display list comprising data defining a display in accordance with said output data produced by the corresponding first process;

initiating and executing a screen process for maintaining a subrectangle list in said memory, said subrectangle list comprising a set of instructions defining positions and sizes of display windows to be displayed on a screen of said single computer terminal, each window corresponding with a separate display list; and

initiating and executing a display list process for periodically transmitting display data to said single computer terminal for causing said single computer terminal to concurrently display said display windows on said screen at positions and of sizes defined by said subrectangle list, each window including a display in accordance with the display defined by the corresponding subrectangle list.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,643

IMAGE DATA STORING SYSTEM

Fukumi Fujiwara, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 499,662, May 31, 1983, abandoned. This application Mar. 11, 1986, Ser. No. 838,448
Claims priority, application Japan, May 31, 1982, 57-91406; Jan. 14, 1983, 58-3416; Jan. 14, 1983, 58-3418
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—723 8 Claims



1. An image data storage system for storing image data representing an image, said system comprising:

a map memory having a two-dimensional format and being divided into a plurality of (p×q) of memory regions corresponding to (p×q) image units which may or may not contain image information, said image units being obtained by two-dimensionally dividing an image, each of said image units consisting of a matrix of M×N bits, wherein p is the number of image units in the horizontal scanning direction; q, the number of image units in the vertical scanning direction; M, the number of bits in one image unit in the horizontal scanning direction; and N, the number of bits in one image unit in the vertical scanning direction, and

a data memory for storing image data representing said image units, each said memory region in said map memory storing a pointer which indicates an address of said data memory at which said image data are stored when image information exists in said one image unit, said map memory storing a predetermined number when no image information exists in said one image unit, wherein said data memory is not accessed for a particular map memory location when said location contains said predetermined number.

4,761,644

DATA TRANSMISSION SYSTEM

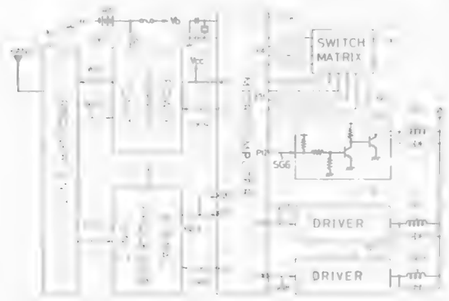
Taneichi Kawai, Anjyo, and Yuichi Murakami, Tokyo, both of Japan, assignors to Aisin Seiki Kabushikikaisha, Aichi, Japan

Filed Jun. 3, 1986, Ser. No. 870,193
Claims priority, application Japan, Jun. 3, 1985, 60-120148; Jun. 3, 1985, 60-120149
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—825.31 2 Claims

1. A data transmission system comprising

a data transmitter unit including at least one switch means, wave generating means, and first electronic control means responsive to an operation of the switch means to control carrier output means to provide a carrier output from a wave generating means and to control modulation means to initiate a modulation of the carrier with a modulation signal including information which depends upon the operation of the switch means at least a given time interval after the beginning of the carrier output;

and a data receiver under including switching control means for controlling a given electrical instrument, wave receiving means including demodulation means for receiving a wave generated by the wave generating means and delivering a given electrical information signal in response thereto, second electronic control means for decoding information contained in the electrical information signal which is demodulated by the demodulation means and for controlling the switching control means accordingly, wave reception decision means for monitoring the electrical information signal which is output from the wave receiving means and for determining the presence or absence of a wave from said wave generating means being received to deliver a corresponding electrical control



signal, power supply means for supplying power to said wave receiving means and said second electric control means and power switching responsive to the electrical control signal which is ouput from the wave reception decision means to switch at least the power which is supplied to the second electronic control means, wherein the second electronic control means is effective to apply an A.C. signal to the power switching means to achieve a self-holding action for a power supply whenever the power supply is turned on and to interrupt the power supply to the second electronic control means itself by interrupting the application of the A.C. signal after a given time interval thereafter.

4,761,645

KEYLESS ENTRY SYSTEM FOR AUTOMOTIVE DEVICES INCLUDING STEERING LOCK DEVICE WITH COMPACT, PORTABLE WIRELESS CODE TRANSMITTER

Haruo Mochida, Kanagawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 27, 1985, Ser. No. 706,281
Claims priority, application Japan, Mar. 1, 1984, 59-39461
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—825.31 9 Claims

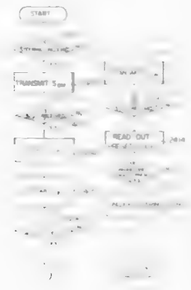
1. A keyless entry system for an automotive vehicle for selectively operating various vehicle devices including a door lock mechanism and a steering lock mechanism, comprising:

a portable wireless transmitter adapted to transmit a unique code indicative signal encoded to carry a first preset unique code stored in said transmitter

actuators, each associated with corresponding vehicle devices for operating the latter to a desired state, said actuators including a steering lock actuator associated with said steering lock mechanism for operating the latter between a locking state and an unlocking state;

manual switches, manually operable for activating said keyless entry system and for signalling said keyless entry system to operate a corresponding one of said vehicle device; and

a controller mounted on the vehicle and responsive to manual operation of at least one of said manual switches to transmit a demand signal for triggering said transmitter, and receiving said unique code indicative signal transmitted from said transmitter, said controller comparing the received unique code with a second preset code, and producing a control signal to be fed to one of said actuators corresponding to said at least one of said manual



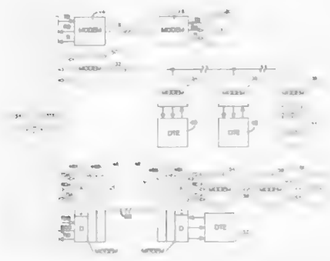
switches operated only when the received unique code matches said second preset code, for operating one of said vehicle devices corresponding to said at least one of said manual switches, said controller being detective of said transmitter moving out of a given transmission range from said vehicle to transmit said control signal to said steering lock actuator for performing a steering locking operation.

4,761,646

METHOD AND SYSTEM FOR ADDRESSING AND CONTROLLING A NETWORK OF MODEMS

Michel Choquet, Vence, France; James B. Staton, III, Heidelberg, Fed. Rep. of Germany, and Kenneth R. Swartz, Apex, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1986, Ser. No. 864,998
Int. Cl.[4] H04Q *9/00*; H04J *3/00*
U.S. Cl. 340—825.520 6 Claims



1. A method of controlling a network of modems comprising link level cascaded pairs of primary and secondary modems, each pair being connected by a communication link level in a cascaded link communication system, said system comprising, a data terminal equipment (DTE), a first modem in communication with the data terminal equipment, and a second modem attached to the first modem through a given link level of a cascaded transmission medium, comprising steps of:

transmitting a digital command message from the DTE to the first modem over the same path through which data is transmitted, said command message including a first digital identification means, a digital addressing means comprising a first segment containing the modem pair communication link level designation on which the desired modem resides and a second segment containing a constant for all primary modems or a second constant for all secondary modems or the address of the attached DTE for any secondary modem having an attached DTE, and a command means;

monitoring said path at said first modem to detect said first identification means;

monitoring said addressing means when said first identification means is detected; and

storing said command message when said addressing means is detected to contain the address of said first modem; and

decoding and acting on the command in said command means in said command message at said first modem.

4,761,647

EPROM CONTROLLED TRI-PORT TRANSCEIVER

Kirby S. Hallenbeck, Shingle Springs, and Lawrence S. Palley, Orangevale, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Apr. 6, 1987, Ser. No. 34,846
Int. Cl.[4] H04Q *11/04*; H04J *3/04*
U.S. Cl. 340—825.220 22 Claims



4,761,648

REMOTE SENSING SYSTEMS

Lyndon Ellis, Didcot, England, assignor to Racal Security Limited, Newbridge, Scotland

Filed Dec. 2, 1983, Ser. No. 557,478
Claims priority, application United Kingdom, Dec. 2, 1982, [illegible]
Int. Cl.[4] G08C *19/24*
U.S. Cl. 340—825.64 8 Claims

1. An information transmission system, comprising

a master station,

a plurality of remote sensors each for transmitting informa-

1. An erasable programmable logic device (EPLD) for receiving, switching and transmitting data among a plurality of channels, comprising:

a programmable logic array (PLA) including a memory and a macro-architecture circuit for providing control signals;

a transceiver circuit coupled to said PLA for receiving said control signals and also coupled to said plurality of channels, said transceiver circuit comprising for each channel:

(a) a latch to receive and store an input to said channel;

(b) a first multiplexer coupled to receive latched outputs from said latches of other said channels, such that one of said other latched outputs is selected;

(c) a driver coupled to receive said selected output from said first multiplexer and coupled to transmit said selected output onto said channel;

wherein for each said channel, its input is latched and coupled to various said first multiplexers of other said channels for switching its input onto other said channels;

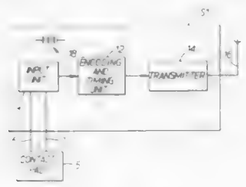
whereby data on each of said channels is switched for transmission onto other said channels.

VOL 1093 ISS 1 AG 2 1988 UMI

tion signals to the master station by radio when it detects a local change in conditions,

each signal being transmitted in a message in which it is associated with an access code identifying the signal as being intended for that particular master station, each sensor transmitting each signal a plurality of times in succession in the message,

the master station comprising recognition means operative to recognize signals only when the format of each received message agrees with a predetermined format, each received signal is received in association with the said access code, and at least a predetermined plurality of identical signals are received within a predetermined time,



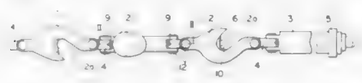
each sensor in a group which comprises at least some predetermined and physically adjacent ones of the sensors including means responsive to the identity of the particular sensor for controlling the length of the gaps between the successive signals in each message which it transmits so as to render that length dependent on the identity of the sensor and different from the corresponding length applicable to the or each other of the sensors in the said group whereby to prevent the signals produced by any one of the sensors in the said group in response to occurrence of a local change in conditions from masking or corrupting the signals produced by any other one of the sensors in the said group in response to occurrence of the same local change in conditions.

4,761,649

CABLE DETECTOR

Akira Matsuzaki, Tokyo, and Shigeki Taniguchi, Chiba, both of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed May 14, 1987, Ser. No. 49,367
Claims priority, application Japan, May 16, 1986, 61-110474
Int. Cl.[4] H04B *13/02*
U.S. Cl. 340—850 5 Claims



1. A cable detector for detecting a cable under water comprising a contact pressure sensing member, a switch member activated by output of said contact pressure sensing member, a plurality of hook members connected in series and a plurality of connectors each connecting adjacent two hook members by pin joints, each of said hook members having a slidable slide hook within an open entrance therein for receiving the cable, each of said connectors being provided with a through hole and further provided with a tapered opening at both ends thereof, and a wire rope connecting adjacent two slide hooks passing through said holes, and said wire rope being further connected to said contact pressure sensing member.

4,761,650

SYSTEM FOR MEASURING HEIGHT DISTRIBUTIONS OF ATMOSPHERIC TEMPERATURE, WIND DIRECTION AND WIND SPEED

Yoshihisa Masuda, Musashino; Hisao Inuki, Higashi-Murayama, and Kozo Takahashi, Higashi-Kurume, all of Japan, assignors to Communications Research Laboratory, Ministry of Posts and Telecommunications, Tokyo, Japan

Filed Dec. 5, 1986, Ser. No. 938,470
Claims priority, application Japan, Dec. 6, 1985, 60-273499
Int. Cl.[4] G01S *13/95*
U.S. Cl. 342—26 3 Claims



1. A system for measuring height distribution of the atmospheric temperature, wind direction and wind speed comprising:

radio generating means for generating and receiving directional radio waves;

an on-ground sound measurement unit for measuring the on-ground sound speed;

a sound wave generating means for generating a sound wave;

calculating means coupled to said radio means and said on-ground sound measurement unit, and said sound wave generating means for:

calculating the Doppler frequencies of received scattered radio waves from said radio means;

inferring a radio wave reflection zone formed by sound waves from the determined height distributions of the wind direction and wind speed and a presumed height distribution of the atmospheric temperature;

calculating and setting an azimuth angle and elevation angle of said radio means such that the radio wave produced are directed to a measurement zone falling within said inferred reflection zone;

controlling said radio means so as to generate a radio wave pulse;

calculating the speed of sound within the measurement zone based on the measurement from said on-ground sound measurement unit, the determined height distribution of the wind direction, wind speed and the presumed height distributions of the atmospheric temperatures;

calculating sound wave frequencies such that the ratio of the wavelength of radio waves to the wavelength of the sound waves in the measurement zone is 2:1;

transmitting through said sound wave generating means sound waves having the calculated frequencies successively into the atmosphere;

storing in memory the elevation angle and the Doppler frequency of the radio wave returned from the radio signal sent by the radio generating means in a memory, when a radio wave is reflected by a sound wavefront;

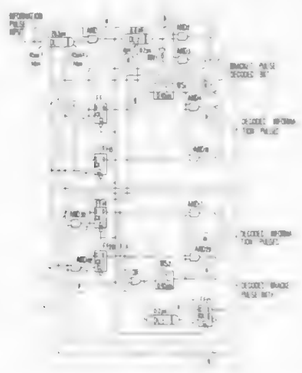
calculating from said stored information the high atmospheric temperature.

4,761,651

PULSE DISCRIMINATING SYSTEM FOR REPLY SIGNALS IN A TRANSPONDER

Masaharu Matsunaga, Kanagawa, Japan, assignor to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

PCT No. PCT/JP86/00068, § 371 Date Oct. 15, 1986, § 102(e) Date Oct. 15, 1986, PCT Pub. No. WO86/05051, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 14, 1986, Ser. No. 928,221
Claims priority, application Japan, Feb. 15, 1985, 60-28876
Int. Cl.[4] G02S *13/74*
U.S. Cl. 342—40 3 Claims



1. A pulse discriminating system for discriminating reply signals from transponders wherein there are a plurality of overlapping incoming pulse signals, and wherein each of said plurality of pulse signals are composed of a reference pulse and a number of information pulses n, n being a positive integer, having a prescribed time relationship with respect to said reference pulse as in reply signals from transponders, said system comprising: a means for time discriminating only information pulses belonging to a first of said plurality of incoming pulse signals by a gate circuit means which allows signals to pass only for a prescribed period of time in accordance with the reference pulse of said first incoming pulse signal; at least one means for discriminating only information pulses belonging to another of said plurality of incoming pulse signals which is slightly delayed from said first or following incoming pulse signals by another gate circuit means which allows signals to pass only for a prescribed period of time in accordance with said delayed information pulses, wherein said prescribed period of time for opening each of said another respective gate circuit means is set in relation to a maximum allowable jitter time of each of said information pulses.

4,761,652

ARRANGEMENT FOR MEASURING THE DISTANCE SEPARATING THE ARRANGEMENT FROM A MOVING BODY

Claude Pirolli, Rueil Malmaison, and Jean-Pierre Fouilloy, Velizy, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1986, Ser. No. 924,546
Claims priority, application France, Oct. 29, 1985, 85 16042
Int. Cl.[4] G01S *13/08, 13/86*
U.S. Cl. 342—53 5 Claims

1. An arrangement for measuring the distance to a moving object when said object enters a measuring field, said arrangement comprising:

a. transmitting means for transmitting a wave into the measuring field;

b. receiving means for receiving a doppler-shifted reflection of the wave from the moving object and for producing a beat signal having a frequency representative of at the doppler frequency;

c. delimiting means including (1) an optical arrangement for sequentially receiving thermal radiation along first and second separated paths having respective central axes defining in the measuring field first and second datum lines and (2) first and second thermal detectors disposed in the optical arrangement for detecting thermal radiation received along respective ones of said axes;



d. timing circuitry electrically connected to the thermal detectors for producing first and second signals indicating when the moving object crosses the respective axes; and

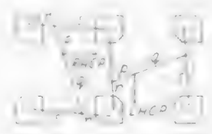
e. processing means electrically connected to the receiving means and to the timing circuitry for determining said distance from the doppler frequency and the timing of the first and second signals.

4,761,653

MICROSTRIP ANTENNA

Roger P. Owens, Wedmore, and James Tomlinson, Wells, both of England, assignors to Thorn Emi Electronics Limited, Hayes, England

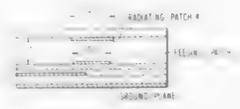
Filed Apr. 2, 1987, Ser. No. 33,212
Claims priority, application United Kingdom, Apr. 2, 1986, [illegible]
Int. Cl.[4] H01Q *1/38*
U.S. Cl. 343—700 MS 4 Claims



1. A microstrip antenna comprising: a plurality of microstrip antenna radiation elements arranged in a lattice formation; first means to feed signals to or from a first sub-array of elements of the lattice formation, the first feed means being connected to elements of the first sub-array to effect circular polarisation in one sense; second means to feed signals to or from a second sub-array of elements of the lattice formation, the second feed means being connected to elements of the second assembly to effect circular polarisation in the other sense; elements of the lattice formation being common to both the first sub-array and the second sub-array; first feed points for the common elements in relation to circular polarisation in said one sense; and second feed points for the common elements in relation to circular polarisation in said other sense; each common element having associated therewith a first feed point and a second feed point.

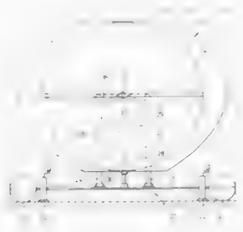
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,654
ELECTROMAGNETICALLY COUPLED MICROSTRIP ANTENNAS HAVING FEEDING PATCHES CAPACITIVELY COUPLED TO FEEDLINES
Amir I. Zaghloul, Bethesda, Md., assignor to Communications Satellite Corporation, Washington, D.C.
Filed Jun. 25, 1985, Ser. No. 748,637
Int. Cl.[4] H01Q *0/0*
U.S. Cl. 343—700 MS 23 Claims



1. A method of fabricating microstrip antennas. comprising:
providing a feed network board having a plurality of feedlines which are wider at one end than at the other, for impedance matching with other microstrip antenna elements;
providing a feeding patch board having a plurality of feeding patches which are impedance matched with the wider end of said feedlines;
providing a radiating patch board having a plurality of radiating patches which are impedance matched with said feeding patches and said feedlines;
coupling in a contactless manner said feed network board to said feeding patch board wherein each of said feeding patches is coupled to at least a corresponding one of said feedlines; and
coupling said feeding patch board in a contactless manner to said radiating patch board.

4,761,655
TRANSPORTABLE ANTENNA FOR AN EARTH STATION
Miles E. Butcher, Woodbridge, England, assignor to British Telecommunications plc, London, England
Filed Nov. 29, 1985, Ser. No. 802,965
Claims priority, application United Kingdom, Nov. 30, 1984, [illegible]
Int. Cl.[4] H01Q *3/08, 15/16*
U.S. Cl. 343—713 6 Claims



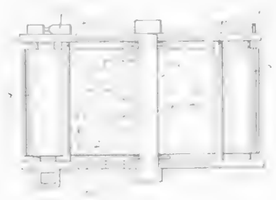
1. A transportable antenna suitable for satellite communication comprising a non-circular reflector formed of three components wherein:
one of the components is a center component including a circular dish having an axis of revolution and having the shape of a parabolic surface of revolution, and
the other two components are side components being located adjacent with the dish and diametrically opposite one another, each of said side components having as peripheral portion which is in contact with the center component along half of the periphery of the center component, said side components being shaped to extend the parabolic surface of revolution of the dish, thereby defining a reflector whose outer boundary is not circular and whose side components are not hingedly connected to said center component.

4,761,656
PASSIVE MARKER DEVICE
Armond D. Cosman, and Larry R. Cox, both of Austin, Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed May 23, 1986, Ser. No. 866,798
Int. Cl.[4] H01Q *1/40*
U.S. Cl. 343—719 4 Claims



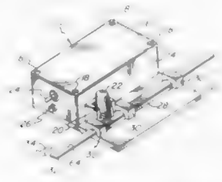
1. A passive marker device including:
a housing including a base member having a central portion and an upstanding rim; and a cover member extending between and bonded to said upstanding rim and said central portion, said base member having an opening in said central portion about which said cover member is bonded and said cover member having an opening aligned with said opening in said central portion; and
a tuned circuit positioned within said housing between said central portion and said rim.

4,761,657
METHOD FOR FEEDING A DRAWING MEDIUM SUCH AS PAPER IN A DRAWING PLOTTER
Bernardo Alcantara Perez, C/Rioja nr. 13-4-B, Madrid (28042); Rodrigo Becerra Carrasco, C/Urbanizacion nr. 109 Villas F-17 Pozuelo Estacion, Madrid (28023), and Pedro Panizo Robles, nr. 22 Pozuelo de Alarcon, Madrid (28023), all of Spain
Filed Jul. 24, 1987, Ser. No. 77,584
Claims priority, application Spain, Jul. 24, 1986, 8600543
Int. Cl.[4] G01D *15/24*
U.S. Cl. 346—1.1 6 Claims



1. A method for feeding a continuous sheet-like work piece in a flat table drawing plotter, said flat table drawing plotter having a drawing table, work piece supply means located at a first end of said drawing table, work piece collection means located at a second opposite end of said drawing table, feed means for feeding said work piece in a feed direction from said first end to said second end of said drawing table, and drawing means located above said drawing table, said method comprising:
positioning said work piece on said drawing table;
drawing an image on said work piece, said image having a first end adjacent said first end of said drawing table;
placing a trace on said work piece at said first end of said image;
advancing said work piece in said feed direction;
optically detecting said trace when said work piece has advanced a preselected distance in said feed direction;
stopping the advance of said work piece responsive to the optical detection of said trace;
optically detecting said trace after the advance of said work piece has stopped, thereby locating said first end of said image;
and recommencing drawing said image responsive to said optically detected location of said first end of said image.

4,761,658
METHOD AND APPARATUS FOR MEASURING EXPERIMENTAL QUANTITIES USING AN INK JET IMPACTLESS TIMING DEVICE
Nicholas J. Georgis, 215 Fox Run, Huntington, Conn. 06484
Filed Jan. 28, 1987, Ser. No. 7,959
Int. Cl.[4] G01D *15/16;* G09B *23/08*
U.S. Cl. 346—1.1 16 Claims



1. Method for measuring experimental quantities while performing a physics experiment such as measuring acceleration due to gravity, linear acceleration, changes in momentum acceleration down an inclined plane, period of a pendulum and motion of a spring comprising the steps of:
(A) providing an impactless timing device, with an ink jet head operationally connected to timing circuit means, producing an ink dot stream in which the ink dots are produced at a constant, uniform, precisely timed frequency;
(B) providing elongated indicia receiving means in the path of said ink dot stream; and
(C) producing a desired relative movement between said impactless timing device and said elongated indicia receiving means, the desired relative movement being directly related into the experimental quantity being measured, thereby creating, when said impactless timing device is producing said ink dot stream, an ink dot pattern, which represents an experimental quantity, on said elongated indicia receiving means with the distance between the ink dots in the ink dot pattern on said elongated indicia receiving means being directly related to the experimental quantity being measured.

4,761,659
TEMPERATURE AND AGING COMPENSATED DRIVE CIRCUIT IN A SEMICONDUCTOR LASER BEAM PRINTER
Kiyoshi Negishi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 26, 1986, Ser. No. 878,914
Claims priority, application Japan, Jul. 2, 1985, 60-101563[U]
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 8 Claims

1. In a laser beam printer for producing a copy of image data on a recording medium by scanning said medium with a laser beam modulated according to said image data, a semiconductor laser drive circuit comprising:
a semiconductor laser for outputting a laser beam;
a reference signal generating circuit having a temperature compensating element for compensating the temperature characteristic of said drive circuit including said semiconductor laser, said reference signal generating circuit outputting a reference signal which is corrected by said temperature compensating element;
a light receiving element for receiving a part of said laser beam outputted by said semiconductor laser and outputting a light reception signal according to the result of the light reception;
a sample and hold circuit for sampling said light reception signal outputted by said light receiving element for one of



repeated scanning operations of said printer and holding said light reception signal thus sampled for said one scanning operation;
a differential amplifier circuit for applying a drive current to said semiconductor laser according to the difference between said light reception signal held by said sample and hold circuit and said reference signal outputted by said reference signal generating circuit; and
a switching element connected in series with a signal line extending from an output of said differential amplifier circuit to an input of said semiconductor laser, said switching element being turned on and off by a modulation signal formed according to said image data, to intermittently permit the application of said drive current to said semiconductor laser.

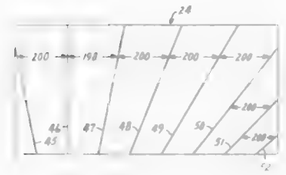
4,761,660
LASER SCANNING APPARATUS USING A FAN STYLE GRATING PLATE
Charles C. Lee, Little Canada, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 15, 1986, Ser. No. 941,777
Int. Cl.[4] H04N *7/18*
U.S. Cl. 346—108 5 Claims

2. A laser scanner apparatus including:
a grating plate having a line grating, the line grating including a set of a plurality of lines defined relative to a reference line wherein said plurality of lines intersect with the reference line at equally spaced points along such reference line, all that is of said plurality of lines, if extended, intersecting at a single point and a line orthogonal to said reference line and spaced at a distance from said set that is

VOL 1093 ISS 1 AG 2 1988 UMI

greater than the distance between two adjacent lines of said set measured along said reference line;
a laser for providing a reference laser beam; and





means for directing said reference laser beam to said lens grating for movement along a line parallel to said reference line.

4,761,661

EMERGENCY RESETTING CIRCUIT FOR A SEMICONDUCTOR LASER OF A LASER BEAM PRINTER

Kiyoshi Negishi, Saitama, Japan, assignor to Asahi Kogaku Kogyo Kabushiki, Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed Jan. 5, 1987, Ser. No. 467
Claims priority, application Japan, Jan. 13, 1986, 61-3890[U]
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 **16 Claims**



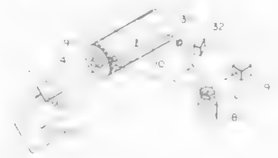
1. An emergency reset circuit adapted for use with a laser beam printer which includes a modulatable laser, a laser driver circuit, and a control system, said reset circuit comprising means for interrupting the light output of said modulatable laser, said laser beam printer comprising means for producing a hard copy of image information by copy-processing a photosensitive surface scanned by the laser when said laser is supplied with a preset driving current and produces light at a preset level, said laser being operated by said control system, said control system comprising means for producing a preselected driver voltage that is applied to said laser driver circuit that supplies driving current to said laser, said laser driver circuit being responsive to said preselected driver voltage so as to comprise means for producing said preset driving current, whereby said laser emits light at said preset level, said emergency reset circuit comprising a latch circuit comprising means for zeroing the driver voltage produced by said control system in response to receipt of an emergency reset signal produced by means for detecting a malfunction in the operation of said laser beam printer when a malfunction occurs, and an offset circuit comprising means for applying a preselected offset voltage to said laser driver circuit when said driver voltage is zeroed, said offset voltage having a value sufficient to cause the driving current produced by said laser driver circuit to be at a level that is below the threshold level at which said laser emits light.

4,761,662

IMAGE FORMING APPARATUS COMPRISING AN IMAGE BEARING MEMBER DRIVEN AT A PREDETERMINED CONSTANT SPEED

Toshio Yoshimoto, Tokyo; Kiyoshi Kanaiwa, Kawasaki; Kenjiro Hori, Yokohama; Yukihide Ushio; Hiroshi Hashimoto, both of Tokyo, and Kaoru Seto, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 15, 1986, Ser. No. 896,638
Claims priority, application Japan, Aug. 20, 1985, 60-182650
Int. Cl.[4] G01D *9/42*
U.S. Cl. 346—108 **27 Claims**



1. An image forming apparatus, comprising:
an image bearing member movable along an endless path;
image forming means for forming an image on said image bearing member;
driving means for moving said image bearing member along the endless path;
mark means formed on said image bearing member;
detecting means for detecting a speed of movement of said image bearing member by movement of said mark means; and
control means, responsive to said detecting means, for controlling said driving means to provide a predetermined constant speed of the movement of said image bearing member.

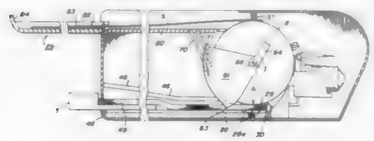
4,761,663

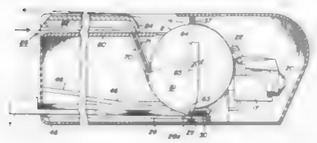
COMPACT PRINTER HAVING CONVERTIBLE DISCHARGE HOPPER

Michael J. Platt, Enon, and Michael A. Walters, Kettering, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,410
Int. Cl.[4] G01D *15/24;* **B41J** *13/10, 29/02*
U.S. Cl. 346—134 **9 Claims**

1. In a compact printer having a housing, a cut-sheet supply station located in the lower rear of said housing and a transport platen for feeding successive sheets from the supply station, along a print path extending through a print zone and out a print path egress located at an upper region of said printer, a guide and hopper construction comprising:
(a) a printer sub-wall having a first end located proximate said print path egress and extending with a non-positive slope to the rear of said housing to form a portion of a cut-sheet hopper; and
(b) lid means, forming, in a closed position, an exterior housing portion overlying said sub-wall and mounted to pivot about an axis proximate the rear of said housing to an open





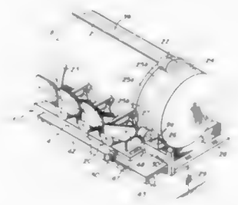
position wherein said lid interior forms a rearward extension of said sub-wall hopper portion.

4,761,664

PRINT MEDIA HANDLING SYSTEM FOR COMPACT PRINTER WITH TRAVERSING, MULTIPLE PRINT HEAD CARRIAGE

Michael J. Platt, Enon, and Mark E. Brown, Kettering, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,424
Int. Cl.[4] G01D *15/24*
U.S. Cl. 346—134 **8 Claims**



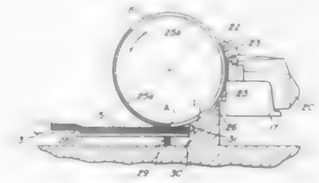
2. In printer apparatus of the kind having a housing, a print zone, print means for traversing said print zone and printing across sectors of print media that are successively advanced into and out of said print zone, a construction for handling discrete sheets of print media comprising:
(a) a cylindrical transport platen which is rotatable within said housing so that portions of its periphery move successively through a sheet ingress zone, said print zone and a sheet egress zone;
(b) drive means for rotating said platen;
(c) a sheet supply station formed within said housing, and including means for supporting a stack of such sheets with a face portion of the stack top opposing said transport platen at a location upstream of said ingress zone;
(d) frictional feed means located around portions of said platen and constructed to feed the top sheets of a supported stack sequentially toward said print zone;
(e) upstream roller means, located proximate said sheet ingress zone at a position upstream of the path of traverse of said printing means, for biasing a sheet moving therepast into drive transmission relation with said platen means;
(f) downstream guide means, located proximate said sheet egress zone at a position downstream of the path of traverse of said printing means, for biasing a sheet moving therepast toward said platen means; and
(g) intermediate guide means, movable with said print means, for guiding a print sheet from said upstream roller means to said downstream guide means.

4,761,665

HIGH SPEED PRINT/CARTRIDGE PRINTER/FEEDER

Michael J. Platt, Enon, and Kevin L. Houser, Kettering, both of Ohio, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,302
Int. Cl.[4] G01D *15/16, 15/28*
U.S. Cl. 346—140 R **5 Claims**



1. In an ink jet printing apparatus adapted for use with a plurality of insertable print/cartridges and having platen means for transporting successive line portions of a print medium through a linear print zone, a system for cooperative high speed printing with a plurality of such print/cartridges comprising:
(a) a carriage including a plurality of nest means for supporting, positioning and electrically coupling respective print-/cartridges in said printer, said nests being spaced along the transverse dimension of said linear print zone in a manner dividing it into a plurality of discrete traverse subportions of equal length;
(b) traversing means for reciprocating said carriage in forward and return directions parallel to said linear print zone, the movement of said traversing means being approximately equal to the length of said print zone divided by the number of said nest means of said carriage; and
(c) means forming a sheet supply station,
said platen means being constructed to feed successive sheets from said supply station into a print path leading to said print zone, and
said carriage means including means for guiding fed sheets along said print path.

4,761,666

CAMERA CAPABLE OF FLASH PHOTOGRAPHY

Tetsuro Goto, Funabashi, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jul. 15, 1987, Ser. No. 73,471
Claims priority, application Japan, Jul. 20, 1986, 61-110864
Int. Cl.[4] G03B *15/05*
U.S. Cl. 354—133 **10 Claims**



1. A camera in which exposure of a film is accomplished by movement of the forward shutter curtain of a focal plane

VOL 1093 ISS 1 AG 2 1988 UMI

shutter and movement of the rearward shutter curtain of the focal plane shutter, including:

magnet means for restraining the rearward shutter curtain of said focal plane shutter by a magnetic force;

power supply means for supplying power to said magnet means, said magnet means being adapted to produce a magnetic force in response to the supply of power by said power supply means;

control means for controlling the period of power supply of said power supply means, said magnet means being adapted to release the restraint of said rearward shutter curtain in respone to the termination of said power supply;

a detecting circuit electrically connected to said power supply means for electrically detecting the termination of the power supply by said power supply means and outputting a detection signal;

another detecting circuit responsive to the movement of the forward shutter curtain of said focal plane shutter to output another detection signal;

flash emitting means for emitting flash toward an object to be photographed;

a starting circuit; and

selecting means for selecting one of said detection signals and inputting the selected signal to said starting circuit, said starting circuit being responsive to the signal selected by said selecting means to start the flash emission of said flash emitting means.

4,761,667

IMAGE FORMING APPARATUS

Kiyoshi Miyai; Shuhei Uotani, both of Himeji; Toyohiko Tsunemine, and Yujiro Kohmoto, both of Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Continuation of Ser. No. 750,879, Jul. 1, 1985, abandoned. This application Nov. 19, 1986, Ser. No. 933,312

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R 13 Claims



1. An image forming apparatus including a latent image holder which forms on the surface thereof latent images, develops said latent images by toner, and transfers said toner images to a recording paper; and a cleaning means for removing the residual toner from said latent image holder; said latent image holder and cleaning means being coupled integrally with a chassis mounted detachably on a body, wherein the improvement comprises:

said latent image holder and said cleaning means being detachably coupled with each other;

said chassis including first and second auxiliary chassis on which said latent image holder and cleaning means are mounted, respectively, said first and second auxiliary chassis being coupled detachably and integrally with each other; and

said second auxiliary chassis being provided with peel-off means for peeling off from said latent image holder said recording paper attached thereto.

9. An image forming apparatus which develops with toner latent images formed on the surface of a latent image holder, said toner images being transferred onto a recording paper, wherein the improvement comprises said latent image holder being mounted on a chassis detachably mounted on a body, said chassis being provided with peel-off means for peeling off from said latent image holder said recording paper attached thereto, and a pair of rollers positioned with respect to said peel-off means for receiving said recording paper therefrom, for passing said recording paper away from said latent image holder, said peel-off means being wholly located between said latent image holder and the one of said pair of rollers closest to said latent image holder.

4,761,668

HIGHLIGHT COLOR PRINTER

Delmer G. Parker, Rochester, and Howard M. Stark, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 29, 1986, Ser. No. 913,181

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—3 DD 14 Claims



1. Method of removing one of a plurality of dry toners from a developer housing used to render visible latent images contained on a charge retentive surface, said method including the steps of:

moving said charge retentive surface with latent electrostatic images thereon past a plurality of developer housings; and

placing electrostatic charges on non-image areas of said charge retentive surface and electrically biasing one of said developer housings to create an electrostatic field between said developer housing and said charge retentive surface for causing said one of said plurality of dry toners to be attracted to said charge retentive surface in said non-image areas while causing repulsion of another of said plurality of dry toners from said detoning member.

4,761,669

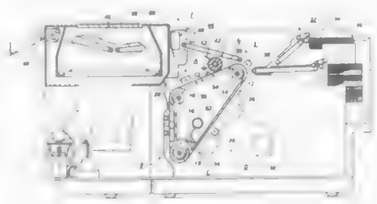
HIGHLIGHT COLOR PRINTING

Michael J. Langdon, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 21, 1987, Ser. No. 52,650

Int. Cl.[4] G03G *15/01*

U.S. Cl. 355—4 17 Claims



1. An electrophotographic printing machine in which indicia are printed on a sheet in at least two different colors, including:

a photoconductive member;

means for recording a first electrostatic latent image on said photoconductive member;

first means for developing the first electrostatic latent image with a liquid developer material of a first color to form a first color liquid image on said photoconductive member;

means for substantially neutralizing the first electrostatic latent image recorded on said photoconductive member after said first developing means develops the first electrostatic latent image;

means for projecting ions in an image wise pattern onto said photoconductive member to record a second electrostatic latent image thereon;

means for developing the second electrostatic latent image with a liquid developer material of a second color to form a second color liquid image on said photoconductive member with the second color liquid image being a different color than the first color liquid image; and

means for transferring substantially simultaneously the first color liquid image and the second color liquid image from said photoconductive member to the sheet to print indicia in two colors thereon.

4,761,671

ELECTROPHOTOGRAPHIC SUBPROCESS FOR APPARATUS USING DISCHARGED AREA TONING

Michael D. Sadowski, Hilton; Philip Alesio, and Catherine D. Newell, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 2, 1987, Ser. No. 9,853

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—3 R 2 Claims



4,761,670

COLOR IMAGE REPRODUCTION DEVICE

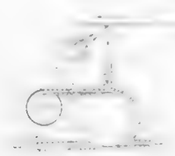
Hironori Tanaka; Matahira Kotani, and Masafumi Matsumoto, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Aug. 21, 1987, Ser. No. 88,081

Claims priority, application Japan, Sep. 5, 1986, 61-210362

Int. Cl.[4] G03G *15/01*

U.S. Cl. 355—4 9 Claims



1. A color image reproduction device comprising

an exposure means for exposing a colored document sequentially with red, green and blue beams of light,

a photosensitive film having an ink layer containing ink particles of a plurality of color types, each of said color types reacting with incident light thereon according to the color or wavelength characteristic of said incident light to form colored image on said film,

imaging means for receiving light reflected from said document and forming an image thereof on said photosensitive film,

transferring-fixing means for transferring image data formed on said film onto a recording sheet and fixing said transferred image data on said recording sheet, and

separating means for separating said recording sheet and said photosensitive film after said image data are transferred onto and fixed on said recording sheet.

4,761,672

RAMPED DEVELOPER BIASES

Delmer G. Parker; Jerome E. May, both of Rochester, and William M. Allen, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1987, Ser. No. 78,750

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—14 D 24 Claims

1. In an electrophotographic process for use in an apparatus which, in normal operation, includes the steps of:

placing an electrostatic charge of a first polarity on a photoconductive member;

imagewise exposing the member to create a charge pattern including at least partially discharged image portions;

contacting said pattern with a mixture of toner and carrier said toner being charged to the first polarity and said carrier to an opposite polarity in the presence of an electric field which tends to encourage toning of the discharged image portions to form a toner pattern;

transferring the toner pattern to a receiving member;

cleaning the photoconductive member of residual toner remaining after the transferring step, and reusing the photoconductive member;

the improvement comprising, after a period of such normal use of the apparatus and prior to a period of nonuse, moving the photoconductive member past a discharging station to place the member in a discharged condition, while subjecting the photoconductive member to what would normally be the toning step in the presence of an electric field that tends to inhibit toning of the discharged portions without encouraging deposition of carrier thereon.

4,761,672

RAMPED DEVELOPER BIASES

Delmer G. Parker; Jerome E. May, both of Rochester, and William M. Allen, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 28, 1987, Ser. No. 78,750

Int. Cl.[4] G03G *15/08*

U.S. Cl. 355—14 D 24 Claims

1. A method for producing plural-color images, said method including the steps of:

moving a charge retentive member through a plurality of processing stations;

uniformly charging a charge retentive member;

actuating a light source capable of uniformly discharging said charge retentive member and selectively discharging

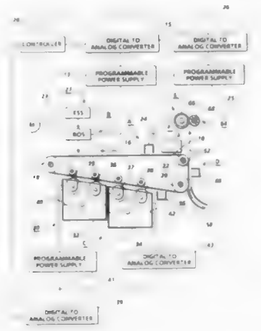
VOL 1093 ISS 1 AG 2 1988 UMI

said charge retentive member in accordance with information to be produced;

using said light source, uniformly discharging said charge retentive member to a first predetermined voltage level;

decreasing the intensity of said light source thereby allowing the charge level on said charge retentive member to increase above said predetermined level;

applying electrical biases to at least two developer housings



in such a manner that predetermined voltage differences are maintained between developer rolls in said housings and said charge retentive member until a second predetermined voltage level, substantially greater than said first predetermined voltage level, on said charge retentive member has been reached, and

forming latent images on said charge retentive member with said light source which are developed when they are contacted by the developer in said housings.

4,761,673

IMAGE FORMING APPARATUS WITH IMAGE FORMING AREA SELECTION

Junji Watanabe, Yokohama, and Hideshi Oushiden, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 795,436, Nov. 6, 1985, Pat. No. 4,655,580. This application Sep. 18, 1986, Ser. No. 908,657

Claims priority, application Japan, Nov. 6, 1984, 59-233557; Nov. 19, 1984, 59-244115; Mar. 26, 1985, 60-61478

Int. Cl.[4] G03G *15/04*

U.S. Cl. 355—14 R 8 Claims

1. An image forming apparatus for copying a selected portion of an original image, comprising:

an original table for supporting an original to be copied;

indication means, movable in a two-dimensional plane located along the original supported on said original table, for indicating said selected portion of the image to be copied;

image specifying means for moving said indication means in said two-dimensional plane to specify said selected portion of the image; and

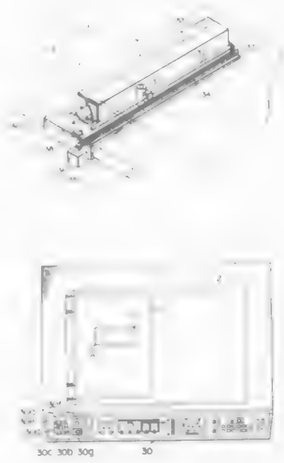


image forming means for forming said selected portion of the image which has been specified by said image specifying means.

4,761,674

FULL WASTE TONER CONTAINER DETECTOR

Mitsuru Ogura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1986, Ser. No. 945,520

Claims priority, application Japan, Dec. 27, 1986, 60-297307

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—15 6 Claims



1. A waste toner container for storing waste toner particles, inclusive of a system for detecting a full waste toner condition, comprising:

a waste toner container for collecting waste toner particles from a photoreceptor, said container having a recess formed in a corner of an upper surface thereof; and

a flexible film member fixed in the bottom of said recess which projects into said container when said container is in an unfilled condition of said waste toner particles and is forced outwardly from said container due to pressure of said waste toner when said container is full of said waste toner particles, said member having a reflection plate mounted on an external surface of said flexible member.

4,761,675

NEGATIVE CARRIER ASSEMBLY FOR USE WITH A PHOTOGRAPHIC PRINTER

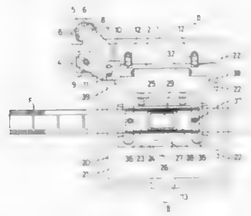
Takashi Sawasaki, Arida, Japan, assignor to Noritsu Keakyu Center Co., Ltd., Wakayama, Japan

Filed Aug. 31, 1987, Ser. No. 90,991

Claims priority, application Japan, Sep. 1, 1986, 61-134582

Int. Cl.[4] G03B *27/62, 27/64*

U.S. Cl. 355—76 1 Claim



1. A negative carrier assembly for use with a photographic printer, comprising: a negative mask base formed with a recess; a negative carrier unit having a mask support plate detachably received in said recess and formed with a recess for receiving a mask; a holder arm pivotally mounted near said recess in said negative mask base; means for driving said holder arm; a holder mounted on said holder arm at the free end thereof and formed with a groove; a negative mask detachably mounted in said recess in said mask support plate and formed with a film guide groove; a negative presser arm having its rear portion pivotally supported on said mask support plate; a negative presser frame mounted on said negative presser arm at its front portion so as to be received in said film guide groove formed in said negative mask; said negative presser arm being formed with a pair of projections at its rear portion so as to be loosely engaged in said groove formed in said holder.

4,761,676

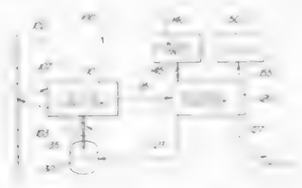
FAULT DETECTION AND RESET IN SURFACE REFLECTANCE METER

Gregory R. Wiles, Royal Oak, and Robert J. Matzoll, Jr., Rochester Hills, both of Mich., assignors to ATI Systems Inc., Madison Heights, Mich.

Filed Aug. 22, 1986, Ser. No. 899,467

Int. Cl.[4] G01N *21/55, 21/01;* G04G *11/00;* G04F *13/00*

U.S. Cl. 356—445 10 Claims



5. A surface reflectance meter comprising:

a light source;

a first optical system for focusing said light source onto a surface to be tested;

a light chopper means including at least one light chopper blade, said at least one light chopper blade periodically interposed and withdrawn from between said light source and the surface to be tested thereby causing a shadow of the edge of the blade to appear at the surface to be tested;

a light detector means for detecting light intensity;

a second optical system for directing light reflected from the surface to be tested to said light detector means, said second optical system including a narrow slot disposed between the surface to be tested and said light detector means, said narrow slot oriented in parallel with the shadow of the edge of the blade;

a flux rate detecting means connected to said light detector means for detecting the length of time required for the light intensity detected by said light detecting means to change from a first predetermined intensity level to a second predetermined intensity level higher than said first predetermined intensity level as the shadow of the edge of the blade is withdrawn from said narrow slot; and

a fault detection means connected to said flux rate detecting means for detecting and indicating a fault when said light intensity detected by said light detecting means fails to reach said second predetermined intensity level in a predetermined period of time.

4,761,677

SEMICONDUCTOR DEVICE HAVING NEW CONDUCTIVE INTERCONNECTION STRUCTURE AND METHOD FOR MANUFACTURING THE SAME

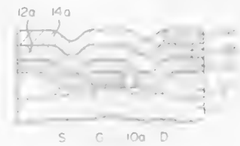
Nobuo Sasaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 827,179, Feb. 6, 1986, abandoned, which is a continuation of Ser. No. 738,498, May 28, 1985, abandoned, which is a continuation of Ser. No. 418,010, Sep. 14, 1982, abandoned. This application Jan. 22, 1987, Ser. No. 8,139

Claims priority, application Japan, Sep. 18, 1981, 56-148092; Sep. 18, 1981, 56-148094

Int. Cl.[4] H01L *29/28*

U.S. Cl. 357—8 3 Claims



1. A semiconductor device comprising:

a substrate;

wiring layers formed on said substrate;

a conductive region formed in said substrate;

a first polyacetylene layer formed on said conductive region, said first polyacetylene layer exhibiting insulating properties and having a first doped region, said first doped region being conductive and being electrically connected to said conductive region; and

a second polyacetylene layer formed directly on said first polyacetylene layer and including a second doped region electrically connected to said conductive region below said first polyacetylene layer through said first doped region.

4,761,678

INTEGRATED CIRCUIT SEMICONDUCTOR DEVICE

Hideto Goto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1987, Ser. No. 19,281

Claims priority, application Japan, Feb. 26, 1986, 61-41065

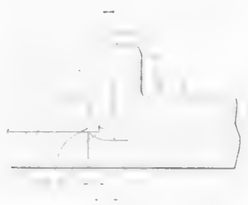
Int. Cl.[4] H01L *29/78, 27/02, 29/34*

U.S. Cl. 357—23.6 5 Claims

1. An integrated circuit semiconductor device comprising a

VOL 1093 ISS 1 AG 2 1988 UMI

first insulating layer selectively formed on a semiconductor substrate, and having an upper surface, a bottom and a side edge, said first insulating layer including a silicon nitride film, a second insulating layer selectively formed on said semiconductor substrate, abutted against said side edge of said first insulating layer to form a boundary therebetween and against a part of said bottom of said first insulating layer, said second insulating layer having an upper surface including a peripheral part extending from said boundary, a first electrode selectively



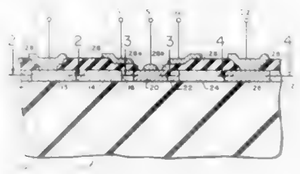
formed on said upper surface of said first insulating layer except a peripheral section of said upper surface of said first insulating layer extending from said boundary, a third insulating layer covering said first electrode and contacted to said peripheral section of said upper surface of said first insulating layer, an upper end of said boundary and said peripheral part of said upper surface of said second insulating layer, continuously, and a second electrode formed on said upper surface of said second insulating layer and covering a part of said third insulating layer.

4,761,679

COMPLEMENTARY SILICON-ON-INSULATOR LATERAL INSULATED GATE RECTIFIERS

Edward H. Stupp, Spring Valley, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 945,417, Dec. 22, 1986, abandoned. This application Oct. 23, 1987, Ser. No. 115,583
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.1 3 Claims



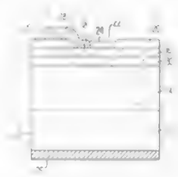
1. A complementary Silicon-On-Insulator (SOI) Lateral Insulated Gate Rectifier (LIGR), which comprises:
- a substantially insulating substrate having a major surface;
- a monocrystalline silicon layer on said major surface, said layer comprising a plurality of adjacent, coplanar, doped layer portions;
- a first layer portion, having regions of both a first and a second, opposite conductivity type and forming a first drain region of said complementary LIGR;
- a second layer portion of said first conductivity type in contact with said first layer portion and comprising a first drift region of said complementary LIGR;
- a third layer portion of said second conductivity type in contact with said second layer portion and comprising a first channel region of said complementary LIGR;
- a fourth layer portion, having regions of both said first and second conductivity types, in contact with said third layer portion and forming a common source region of said complementary LIGR;
- a fifth layer portion of said first conductivity type in contact with said fourth layer portion and comprising a second channel region of said complementary LIGR;
- a sixth layer portion of said second conductivity type in contact with said fifth layer portion and comprising a second drift region of said complementary LIGR;
- a seventh layer portion, having regions of both said first and second conductivity types, in contact with said sixth layer portion and forming a second drain region of said complementary LIGR;
- an insulating layer over portions of said monocrystalline silicon layer and covering at least said third and fifth layer portions;
- first and second gate electrodes on said insulating layer and over said third and fifth layer portions, respectively;
- a source electrode connected to said fourth layer portion; and
- first and second drain electrodes connected to said first and seventh layer portions, respectively.

4,761,680

PHOTODETECTOR

Paul A. Longeway, East Windsor Township, Mercer County, and Ramon U. Martinelli, Hightstown, both of N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1986, Ser. No. 912,633
Int. Cl.[4] H01L *27/14, 31/00*
U.S. Cl. 357—30 12 Claims



1. A photodetector comprising:
- a light absorptive layer;
- a wide bandgap layer;
- an intermediate bandgap layer of a first conductivity type interposed between and lattice matched to said light absorptive layer and said wide bandgap layer, said intermediate bandgap layer having a bandgap intermediate to said wide bandgap and said light absorptive layer;
- a zone of a second conductivity type extending throuth said wide bandgap layer into said intermediate bandgap layer and forming a p-n junction in said intermediate bandgap layer;
- a means for electrically contacting said light absorptive layer and a means for electrically contacting said wide bandgap layer.

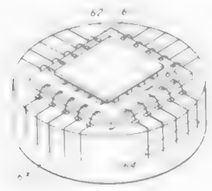
4,761,681

METHOD FOR FABRICATING A SEMICONDUCTOR CONTACT AND INTERCONNECT STRUCTURE USING ORIENTATION DEPENDENT ETCHING AND THERMOMIGRATION

Lee R. Reid, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 8, 1982, Ser. No. 415,783
Int. Cl.[4] H01L *23/48, 25/06, 25/08*
U.S. Cl. 357—68 4 Claims

1. A semiconductor device comprising:
- a substrate of semiconductor material having first and second major surfaces;
- at least one mesa of semiconductor material integral with the semiconductor material of said substrate and extending outwardly of said first major surface of said substrate to define a substantially level elevated surface spaced outwardly with respect to said first major surface of said substrate;
- an electrically conductive material forming an electrically conductive path through said substrate and extending to said first and second major surfaces and through said at least one mesa to said level elevated surface thereof so as to define a continuous electrical conductor;
- a first electrically conductive layer disposed on said level elevated surface of said mesa and electrically interconnected to said electrical conductor defined by said electrically conductive path through said substrate;
- a second electrically conductive layer disposed on said second major surface of said substrate electrically interconnected to said electrical conductor as defined by said electrically conductive path through said substrate; and
- first and second electrical circuit means respectively disposed on said first and second major surfaces of said substrate and electrically connected to said first and second electrically conductive layers respectively so as to be electrically interconnected with each other via said electrical conductor as defined by said electrically conductive path through said substrate.



4,761,682

OPTICAL LOW-PASS FILTER INCLUDING THREE CRYSTAL PLATES FOR A SOLID-STATE COLOR TV CAMERA

Takashi Asaida, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 27, 1986, Ser. No. 867,224
Claims priority, application Japan, May 27, 1985, 60-113464; May 27, 1985, 60-113465
Int. Cl.[4] H04N *9/097, 9/04;* G02B *27/28*
U.S. Cl. 358—50 2 Claims



1. An optical low-pass filter for a solid-state color camera, said camera comprising a plurality of solid-state image sensing devices having a predetermined horizontal scanning direction, said solid-state image sensing devices each comprising sensing elements disposed at predetermined repetitive intervals and generating one of a plurality of primary color signals, said filter serving to diffuse an incident light ray to thereby provide a low-pass transmission characteristic for the incident ray, said filter providing the diffused incident ray to said plurality of solid state-image sensing devices, said optical low-pass filter comprising:
- (a) a first crystal plate for separating the incident ray into an ordinary ray and an extraordinary ray in a direction of +45° with respect to the horizontal scanning direction of the solid-state image sensing devices,
- (b) a second crystal plate for separating said incident ray into an ordinary ray and an extraordinary ray in a direction coinciding with said horizontal scanning direction, and
- (c) a third crystal plate for separating said incident ray into an ordinary ray and an extraordinary ray in a direction of −45° with respect to said horizontal scanning direction, said second crystal plate being located between said first and third crystal plates, the three plates being secured together, whereby the optical low-pass filter diffuses the incident ray into a plurality of rays.

4,761,683

CHARGE TRANSFER IN MULTIPLE SENSOR ROW ARRAYS

Ronald G. Matteson, Walworth, and Jagdish C. Tandon, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1986, Ser. No. 943,337
Int. Cl.[4] H04N *9/07, 1/028*
U.S. Cl. 358—75 20 Claims



1. In a scanner system for detecting images on a preselected surface and generating an electronic representation thereof, said scanner system including an image detecting stage comprising:
- at least first, second and third parallel rows of sensors for generating charges representative of light of preselected wavelengths detected by said sensors;
- said sensors in any selected row being comprised of substantially similar construction suitable for detection of a preselected wavelength;
- said sensors in at least said second and third rows of a sensor type which facilitates transfer of charges into and out of said sensor;
- said sensor rows provided with transfer paths interconnecting each sensor in said first and second sensor rows in charge passing relationship with sensors in a successive row, and each said sensors in said third row to a storage means whereby charges generated at said sensors in said first row are transferred to said storage means through corresponding sensors in said second and third rows, charges generated at said sensors in said second row are transferred to said storage means through corresponding sensors in said third row and charges generated at said sensors in said third row are transferred into said storage means prior to transmission of all of said charges as output information.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,684

TELEPHONE ACCESS DISPLAY SYSTEM

Morris Clark, Miami Springs, Fla.; Kenneth Lawson, Salt Lake City, and James Izatt, West Jordan, both of Utah, assignors to Video Jukebox Network, Miami, Fla.

Filed Nov. 14, 1986, Ser. No. 930,207
Int. Cl.[4] H04N 7/10; H04H 9/00; H04M 11/00
U.S. Cl. 358—86 20 Claims



1. Apparatus for the remote viewing of selected video program material at subscriber remote receiving locations, comprising:

(a) television broadcasting means at a central location for providing a television signal for transmission to said remote locations over a single common channel;

(b) means at said central location for providing video program signals to said television broadcasting means;

(c) at least one selectable source of video program materials;

(d) selection means for generating a selection signal for enabling each subscriber remote receiving location to select video program material to be broadcast over the single common channel with such selection being made through a telephone system keypad; and

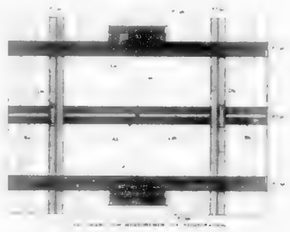
(e) programmed data processor means coupled to said at least one selectable source of video program materials and said means for providing video program signals to said television broadcasting means, said programmed data processor being responsive to the telephonically transmitted selection signal from a remote location selecting desired video program material for transmission by said televison broadcasting means over the single common channel for viewing by all of said subscriber remote receiving locations on the single common channel, said programmed data processor providing control signals to said at least one selectable source of video program materials in accordance with the desired video program material selected by a subscriber remote receiving location such that selected video program material is coupled by said means for providing video program signals to said television broadcasting means for transmission over the single common channel to all of the said subscriber remote receiving locations viewing the single common channel irrespective of whether the subscribers at such locations have selected any video program material so that a viewer at a remote receiving location may tune a television receiver at that location to the single common channel in order to sequentially view all of the selected video program materials transmitted by said television broadcasting means over the single common channel, said programmed digital processor means further providing information identifying said video program materials on said single common channel in addition to said video program material.

4,761,685

APPARATUS AND METHOD FOR SOLID-STATE IMAGE SENSOR ELEMENT REGISTRATION ADJUSTMENT

Takashi Asaida, and Kenichi Athara, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP86/00302, § 371 Date Feb. 17, 1987, § 102(e) Date Feb. 17, 1987, PCT Pub. No. WO86/07660, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 17, 1986, Ser. No. 32,518
Claims priority, application Japan, Jun. 17, 1985, 61-131388
Int. Cl.[4] H04N 17/00
U.S. Cl. 358—139 9 Claims



1. An apparatus for solid-state image sensor element registration adjustment, characterized in that:

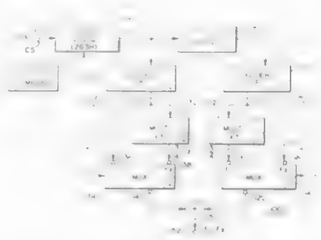
a test chart having a shade recurrence pattern having a recurrence pitch in a predetermined relation to the picture element pitch of solid-state image sensor elements of a solid state image sensor in either the horizontal or the vertical direction is imaged with the solid-state image sensor elements, of the image sensor output signals obtained from said solid-state image sensor elements the beat component based on the difference between said picture element pitch and the shade recurrence pitch is detected, and the positional deviation of said solid-state image sensor elements in said shade recurrence pattern direction is measured to adjust the positional deviation.

4,761,686

TV RECEIVER HAVING FREEZE FIELD DISPLAY

Donald H. Willis, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Nov. 6, 1986, Ser. No. 928,948
Int. Cl.[4] H04N 5/14
U.S. Cl. 358—160 9 Claims



1. Apparatus for processing an incoming television signal to develop first and second interlaced field signals representing a freeze-field display, comprising:

an input port for applying said incoming television signal;

a field store memory, coupled to said input port for storing signals representing one field interval of said incoming television signal and for providing said stored signals at an output port;

signal generating means, coupled to the output port of said field store memory and including delay means, for providing a first generated signal which is displaced in time by substantially one horizontal line period with respect to the signals provided by said field store memory and for providing a second generated signal having substantially no displacement in time with respect to the signals provided by said field store memory;

output means, coupled to said signal generating means for producing a first output signal representing a combination of said first and second generated signals in a ratio of three to one, respectively, and producing a second output signal representing a combination of said first and second generated signals in a ratio of one to three, respectively; and

control means coupled to said field store memory and to said output means for selectively inhibiting said field store memory from storing said signals representing said incoming television signal, thereby conditioning said field store memory to repeatedly provide said stored signals, and for selectively conditioning said output means to alternately provide said first and second output signals as said first and second interlaced field signals, respectively, during respective alternate field periods.

4,761,687

AUTOMATIC GAIN CONTROL DELAY CIRCUIT FOR A VIDEO SIGNAL PROCESSOR

Mark F. Rumreich, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed May 6, 1987, Ser. No. 46,355
Int. Cl.[4] H04N 5/52
U.S. Cl. 358—174 5 Claims



1. In a system for processing a video signal, automatic gain control (AGC) apparatus comprising:

a variable gain ratio frequency (RF) amplifier having a gain control input and an RF signal input;

a source of signal representative of the magnitude of a video signal to be processed by said system;

threshold control means responsive to said representative signal for selectively providing a gain control signal to said gain control input of said amplifier for controlling the signal gain of said amplifier when the magnitude of said representative signal exceeds a given threshold conduction value of said control means; and

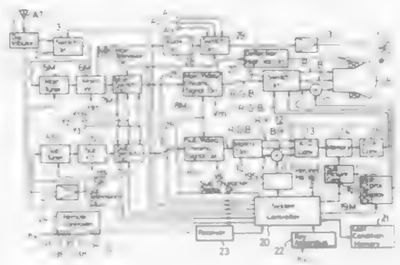
means coupled to said threshold control means for preventing said control means from responding to said representative signal beyond a predetermined magnitude of said representative signal, to prevent said threshold control means from developing a false output gain control signal.

4,761,688

TELEVISION RECEIVER

Kunio Hakamada, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 15, 1987, Ser. No. 97,099
Claims priority, application Japan, Sep. 20, 1986, 61-223437
Int. Cl.[4] H04N 5/272
U.S. Cl. 358—183 6 Claims



1. A television receiver comprising:

(a) a video picture display device having a picture screen which is divisible into a main picture screen for displaying a picture represented by a first video signal and one or more sub-picture screens inset into the main picture screen for displaying a compressed picture represented by a second video signal;

(b) a main picture circuit for selecting the first video signal from a plurality of video signals supplied by external sources and supplying the selected first video signal as the main picture screen video signal;

(c) a sub-picture circuit for selecting the second video signal from a plurality of video signals supplied by external sources and supplying the selected second video signal as a sub-picture video signal for one or more of said sub-picture screens;

(d) a composing circuit for composing the first and second video signals into a composite signal which is supplied to the picture display device;

(e) a first adder for adding a first picture discrimination character signal to said first video signal, whereby a first picture discrimination character is displayed as part of the picture on the main picture screen;

(f) a second adder for adding a second picture discrimination character signal to said second video signal, whereby a second picture discrimination character is displayed as part of the picture on the sub-picture screen; and

(g) size control means for controlling the size of said second picture discrimination character as it is displayed on said sub-picture screen.

4,761,689

APPARATUS FOR DRIVING A SOLID STATE IMAGE PICKUP DEVICE

Norihiko Takatsu, Tokyo, and Keita Kimura, Kawaguchi, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Nov. 5, 1986, Ser. No. 927,156
Claims priority, application Japan, Nov. 11, 1985, 60-252460
Int. Cl.[4] H04N 3/14
U.S. Cl. 358—213.22 6 Claims

1. An apparatus for making a video signal, including:

(a) solid state image pickup means having a plurality of first charge accumulation type photoelectric converting elements corresponding to the odd fields of the video signal, a plurality of second charge accumulation type photoelectric converting elements corresponding to the even fields of the video signal, vertical transfer means, horizontal

VOL 1093 ISS 1 AG 2 1988 UMI

transfer means, first terminal means and second terminal means, said solid state image pickup means being responsive to the inputting of a pulse to said first terminal means to transfer charges accumulated by said plurality of first photoelectric converting elements to said vertical transfer means, said solid state image pickup means being responsive to the inputting of a pulse to said second terminal means to transfer charges accumulated by said plurality of second photoelectric converting elements to said vertical transfer means;

(b) output means for putting out a vertical blanking signal indicative of the vertical blanking period of the video signal, a first transfer pulse and a second transfer pulse, said output means putting out said first and second transfer pulses during said vertical blanking period so that said second transfer pulse is put out after the lapse of a predetermined period of time subsequent to the outputting of said first transfer pulse;



(c) input means for alternately inputting said first and second transfer pulses to said first and second terminal means during each vertical blanking period; and

(d) generator means for putting out a plurality of first driving pulses and a plurality of second driving pulses to said vertical transfer means, the period of said first driving pulse being shorter than the period of said second driving pulse, said generator means generating said plurality of first driving pulses within said predetermined period of time and generating said plurality of second driving pulses without said predetermined period of time, said vertical transfer means being responsive to said plurality of first driving pulses and said plurality of second driving pulses to transfer charges to said horizontal transfer means, and wherein said generator means puts out a plurality of horizontal driving pulses for driving said horizontal transfer means and has means for frequency-dividing said plurality of horizontal driving pulses.

4,761,690

VIDEO TAPE RECORDER WITH PARTICULAR FORMAT CHROMINANCE AND LUMINANCE INFORMATION

Kazuhiro Yamanishi, Higashiosaka; Masaaki Kobayashi, Kawanishi; Akihiro Takeuchi, Ikoma; Atsuo Ochi, Kadoma, and Yoshitomi Nagaoka, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 2, 1986, Ser. No. 902,957

Claims priority, application Japan, Sep. 5, 1985, 60-196296; Oct. 18, 1985, 60-233635

Int. Cl.[4] H04N *9/79, 9/84*

U.S. Cl. 358—310 9 Claims

1. A video tape recorder for recording on a magnetic tape a video signal composed of a first signal having luminance signal information and a second signal having chrominance signal information, which comprises:

means for exchanging said first signal and said second signal every predetermined period L to obtain two combined signals each composed of said first signal and said second signal which occur alternately at intervals of L;

means having two pairs of rotary magnetic heads for recording said two combined signals on a magnetic tape so as to form signal tracks with no spaces between each adjacent two of said signal tracks, two heads of each of said pairs being disposed to be apart by a predetermined distance S in a rotating direction of said heads; and

means for moving said magnetic tape so that a signal track of one field is shifted from a signal track of next field by a predetermined distance α,

wherein said period L, said distance S and said distance α are selected as follows:

$L=kH$;



$S=(2n-1)L$; and

$\alpha=(i/2)L$,

where H denotes a horizontal scanning period and each of k, n and i denotes an arbitrary integer, whereby said first signal and said second signal recorded on each signal track are respectively adjacent to said first signal and said second signal recorded on each adjacent signal track which is adjacent to said each signal track.

4,761,691

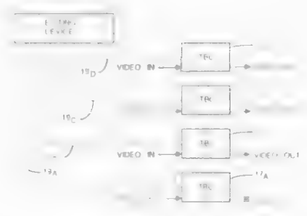
METHOD FOR CONTROLLING VIDEO SIGNAL TIME-BASE CORRECTORS

John C. Stearns, San Jose, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 9, 1987, Ser. No. 1,716

Int. Cl.[4] H04N *9/89, 5/95*

U.S. Cl. 358—311 26 Claims



1. A method for controlling a time-base corrector with a videotape editing device comprising the steps of:

storing schedules of instructions in a videotape editing device;

communicating selected ones of said scheduled instructions to a time-base corrector from the videotape editing device; and

operating the time-base corrector to adjust the levels of video signals information processed by the time-base corrector according to said communicated instructions.

4,761,692

METHOD AND APPARATUS FOR DATA RECORDING DISC PLAYBACK

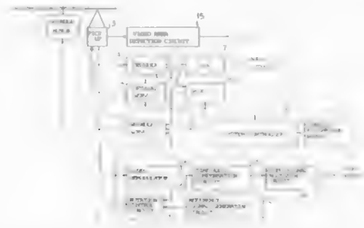
Masayuki Yoshida; Izumi Ueda; Hidehiro Ishii; Takahumi Shiba, and Fumihiro Nakajima, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Apr. 14, 1987, Ser. No. 38,358

Claims priority, application Japan, Apr. 15, 1986, 61-86711; Apr. 15, 1986, 61-86712; Apr. 15, 1986, 61-86713; Apr. 15, 1986, 61-86714; Apr. 15, 1986, 61-86715; Apr. 15, 1986, 61-86716; Apr. 15, 1986, 61-86719; Apr. 15, 1986, 61-86722

Int. Cl.[4] H04N *5/76*

U.S. Cl. 358—335 14 Claims



1. A data reading apparatus capable of reading a data recording disc with predetermined data which has been subjected to digital modulation processing recorded in a first area of said disc and a video signal which has been subjected to frequency modulation processing recorded with a predetermined digital signal superimposed thereon in a second area of said disc disposed peripherally outward from said first area, the apparatus comprising:

a pickup for directing a light beam onto a recording surface of said data recording disc for detecting recorded data of said disc by means of light reflected from said recording surface;

focus servo means for controlling a position of a focal point of said light beam, to form a data detection point of said pickup on said recording surface;

tracking servo means for controlling the position of said data detection point along a radial direction of said disc;

carriage servo means for controlling a relative position of a carriage which supports said pickup, along a radial direction of said disc;

spindle servo means for controlling a relative velocity of displacement of said data detection point with respect to said disc and;

means for detecting when said data detection point has reached positions adjacent to respective boundaries of said first and second areas, and for producing a corresponding detection signal;

wherein the improvement comprises:

means for executing changeover of the gain of a servo amplifier of at least one of said tracking servo means, said carriage servo means, and said spindle servo means, in accordance with indications of said first area and said second area respectively by said detection signal.

4,761,693

MAGNETIC RECORDING AND REPRODUCING DEVICE

Hidejiro Higashi; Hiroshi Sato; Kaoru Yamamoto, and Jun Kanda, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 19, 1987, Ser. No. 16,619

Claims priority, application Japan, Feb. 19, 1986, 61-34160; Feb. 19, 1986, 61-34161; Feb. 19, 1986, 61-34162

Int. Cl.[4] G11B *27/02, 15/14*

U.S. Cl. 360—13 6 Claims



1. A magnetic recording and reproducing method for a device in which digital signals are recorded on a plurality of recording tracks obtained by dividing each of a plurality of sloped tracks on a tape and reproduced therefrom by rotary heads, comprising the steps of:

rotating a rotary drum supporting a plurality N of reproducing rotary heads and a plurality N of recording rotary heads corresponding to said reproducing rotary heads;

running a recording tape over said rotating rotary drum, whereby said rotary heads trace a plurality of sloped tracks on said tape;

arranging each of said reproducing rotary heads on said rotary drum to precede a corresponding recording rotary head by at least three fields in passing over a given area of said running tape, a field being a time of rotation of said rotary drum by $360°/N$;

selecting a desired one of a plurality of recording tracks forming one of said sloped tracks;

reproducing a first digital signal recorded in said selected recording tracks with one of said reproducing rotary heads;

expanding in time and converting said reproduced digital signal to a first analog signal;

outputting said first analog signal;

inputting in synchronization with said outputing step a second analog signal;

converting said second analog signal to a second digital signal and compressing said second digital signal in time; and

recording with one of said recording rotary heads corresponding to said one reproducing rotary head said compressed second digital signal on a recording track including said selected recording track in synchronization with recording at least a part of said first digital signal.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,694

APPARATUS FOR RECORDING/REPRODUCING A COMPOSITE VIDEO SIGNAL WITH A ROTARY RECORDING MEDIUM AND CIRCUIT ARRANGEMENT THEREFOR

Katsuyuki Shudo; Hisao Kinjo; Keigo Okano, and Yoshiaki Hanashiro, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 28, 1985, Ser. No. 706,794
Claims priority, application Japan, Mar. 1, 1984, 59-39468
Int. Cl.[4] H04N *5/78, 9/491*
U.S. Cl. 360—37.1 13 Claims



10. Apparatus for recording a composite video signal arranged to perform horizontal scanning and vertical scanning in accordance with an interlaced scanning standard, said apparatus recording said composite video signal on a rotary recording medium having at least one track, comprising:

(a) means for producing a recording signal having a signal form suitable for recording on the basis of a modified composite video signal arranged such that either an odd field signal or an even field signal of a composite video signal to be recorded is delayed by ½ of a horizontal synchronous period relative to the composite video signal of the other field;

(b) means responsive to said composite video signal for producing a field distinguishing signal by detecting whether a field is an odd or an even field; and

(c) means for recording said recording signal produced on the basis of said modified composite video signal and said field distinguishing signal to be located at a given time position with respect to a predetermined vertical sync signal of each frame in said recording signal onto a rotary recording medium which is rotated at a rotating period equal to the period of vertical scanning of the composite video signal, so that horizontal sync signals are recorded to be aligned on said rotary recording medium in a direction of the width of said track and vertical sync signals are also recorded thereon to be aligned substantially in the width direction of said track.

4,761,695

METHOD AND ARRANGEMENT FOR RECORDING DATA ON A MAGNETIC RECORDING MEDIUM

Herman Lia, Li, Norway, assignor to Tandberg Data A/S, Oslo, Norway

Filed Sep. 18, 1986, Ser. No. 908,633
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1985, 3533447
Int. Cl.[4] G11B *5/09*
U.S. Cl. 360—46 11 Claims

1. A method for recording data on a magnetic recording medium, comprising the steps of:

employing a write amplifier and providing data signals thereto, the write amplifier emitting write signals to a magnetic head;

allocating the write signals to the data signals and causing changes of magnetization on a recording medium at those locations which are allocated to edges of the data signals; and

varying a respective amplitude of respective write signals dependent on respective spacings of the edges of the data signals in such fashion that, given a relatively small spacing of the edges, the respective amplitude of the respective write signal is greater than when a relatively large spacing of the edges of the data signals is present.

4,761,696

HELICAL SCAN TYPE APPARATUS WITH READILY ALIGNED SCANNING UNIT

Johannes C. A. Muller, and Cornelis M. Beijersbergen Van Henegouwen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1986, Ser. No. 880,856
Claims priority, application Netherlands, Feb. 21, 1986, 8600438; Mar. 28, 1986, 8600814
Int. Cl.[4] G11B *5/08, 21/04*
U.S. Cl. 360—84 8 Claims



1. A magnetic-tape apparatus comprising a frame, a scanning unit mounted on the frame, and means for transporting a length of magnetic tape past said scanning unit for scanning of the length of tape by the unit,

said scanning unit comprising a rotatable head support mounted for rotation about an axis, and at least one magnetic head mounted on said support and having a free end; guide means comprising an upper drum and a lower drum, disposed in a fixed position on said frame, said head support being mounted between said drums for rotation; positioning elements for positioning the upper drum and lower drum in alignment relative to one another; and fixing means for interconnecting the upper drum and the lower drum,

said drums having outer circumferential surfaces which together form a curved guide surface having a circularly cylindrical shape about a cylinder axis which is at least

substantially coaxial with the axis of rotation of said head support, disposed near the circular path of said at least one head, said curved guide surface extending over a first angularly extending part of said outer circumferential surfaces, and said tape being guided over said guide surface,

characterized in that said upper drum and lower drum have respective facing axial end walls, each end wall having a sector in which a wall portion is formed, each wall portion carrying three positioning elements only, said positioning elements of each respective drum defining vertices of a triangle; said axially facing wall portions adjoin a second part of said outer circumferential surfaces diametrically opposite said first part, and extend radially beyond a circular path described by the free end of said at least one magnetic head, said sectors in which said wall portions are formed, and said positioning elements, are disposed radially beyond said circular path; and the positioning elements of one wall portion and those of the other wall portion cooperate pairwise with one another to establish together a statically defined alignment between the upper drum and the lower drum, and

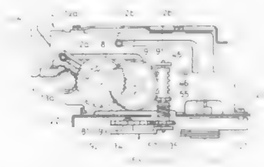
said fixing means comprises an element pressing against at least one of said drums at a location within said triangle, for biasing said positioning elements pairwise against one another.

4,761,697

CASSETTE LOADING MECHANISM OF MAGNETIC RECORDING AND REPRODUCING APPARATUS

Yasuhiro Hashiguchi, Katsuta; Noboru Katono, Mito, and Yoshihiro Shibata, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 917,975
Claims priority, application Japan, Oct. 11, 1985, 60-226399
Int. Cl.[4] G11B *15/66, 15/18*
U.S. Cl. 360—96.5 3 Claims



1. A cassette loading mechanism for a magnetic recording and reproducing apparatus comprising:

a cassette holder for storing a tape cassette, said holder being equipped with support portions on both sides thereof;

a bracket for storing said cassette holder, said bracket being equipped with guide holes in both sides thereof for guiding said cassette holder from a first position to a second position and with bearing portions on one side thereof, said support portions of said cassette holder being inserted in and supported by said guide holes of said bracket, respectively;

cassette holder moving means for moving said cassette holder from said first position to said second position, said moving means including first gear means having at least one gear disposed near said bearing portions of said bracket, and a driving member moved upon receiving the rotating force of said at least one gear of said first gear means and driving one of said support portions of said cassetteholder so as to move said support portions of said cassette holder along said guide holes of said bracket;

a driving force source;

second gear means including at least one gear rotated upon receiving the driving force from said driving force source;

a base provided separately from said bracket, said base being equipped with at least one shaft for supporting said at least one gear of said second gear means and said base further provided with a fitting position reference hole for determining a relative position of said first gear means to said second gear means; and

rotation transmission means for transmitting the rotating force of said at least one gear of said second gear means to said at least one gear of said first gear means, said rotation transmission means including a shaft which is supported by said bearing portions of said bracket and one end of which is inserted through said reference hole of said base, a first rotation transmission element fitted to said shaft and meshing with said at least one gear of said second gear means, and a second rotation transmission element fitted to said shaft and meshing with said at least one gear of said first gear means,

wherein said at least one gear of said first gear means is coupled to at least one gear of said second gear means through said second and first rotation transmission elements by inserting said one end of said shaft supported by said bearing portions of said bracket through said reference hole of said base.

4,761,698

DISK CASSETTE LOADING/UNLOADING MECHANISM WITH FLEXIBLE SHUTTER OPENING DEVICE

James D. Harsey, Rochester; Clark E. Harris, Fairport, and Thomas D. Jensen, Hilmrod, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1986, Ser. No. 925,435
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—97 12 Claims



1. A disk cassette loading/unloading mechanism for use in a disk cassette recorder or the like having a disk drive mechanism, wherein the disk cassette includes a record disk within the cassette, a leading end portion of the cassette having front and rear edges, an aperture in the cassette extnding to the front edge for insertion therethrough of magnetic heads, and a shutter blade in the cassette associated with the aperture and movable between an aperture-open position and an aperture-closed position, comprising:

a support plate;

a disk cassette holder mounted on the support plate for movement toward and away from said support plate between a loading/unloading position in which a cassette is inserted into the holder and moved along a path to a loaded position or unloaded from the holder from the loaded position, and a recording position in which the disk in the cassette can be drivingly engaged by the disk drive mechanism; and

abutment means wherein a first part of the abutment means is mounted on the support plate, and a second part of the abutment means includes an abutment member and extends partly in the path of the cassette, the leading end portion of the cassette adapted upon insertion of the cassette into the holder to its loaded position to engage and cam the second part of the abutment means toward the support plate causing the abutment member to engage and move the shutter blade in the cassette to its aperture-open position.

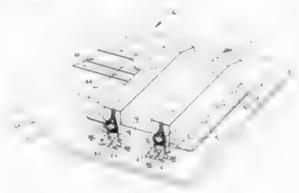
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,699

SLIDER-SUSPENSION ASSEMBLY AND METHOD FOR ATTACHING A SLIDER TO A SUSPENSION IN A DATA RECORDING DISK FILE

Norman G. Ainslie, San Jose; Dwight W. Brede, Los Altos Hills; A. David Erpelding, and Surya Pattanaik, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1986, Ser. No. 923,932
Int. Cl.[4] G11B *5/60*
U.S. Cl. 360—103 10 Claims



1. A slider-suspension assembly for a data recording disk file comprising:
- a slider having an air bearing surface, a back side opposite the air bearing surface and a trailing edge oriented generally perpendicular to the back side and air bearing surface;
- a plurality of solder contact pads formed on the back side of the slider;
- a transducer formed as a thin film on the trailing edge of the slider and having electrical leads formed on the trailing edge and terminating approximately at the corner defined by the back side and trailing edge;
- a suspension formed as a laminated structure comprising a nonconductive base layer, a patterned conductive layer formed on the base layer and having a portion providing electrical connection to ground, and an insulating layer formed over the patterned conductive layer and having openings therein exposing solder-wettable regions on the conductive layer, at least some of said regions on the conductive layer being oriented in registration with corresponding solder contact pads on the back side of the slider;
- a plurality of reflowed solder balls, each solder ball mechanically connecting a solder contact pad on the slider with a respective solder-wettable region on the conductive layer and maintaining the back side of the slider spaced from and out of contact with the insulating layer, at least one of the solder balls electrically connecting a solder contact pad on the slider with said conductive layer portion providing electrical connection to ground; and
- a plurality of generally right-angled reflowed solder joints, each joint spanning the space between the slider back side and the insulating cover layer and connecting a transducer lead termination to an associated solder-wettable region not in registration with a solder contact pad.

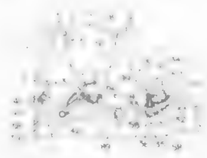
4,761,700

VIDEO CLEANING DEVICE

Joseph F. Fritsch, Dublin, Ireland, assignor to Roxanne Y. Fritsch, Dublin, Ireland, a part interest

Filed Jul. 22, 1986, Ser. No. 887,854
Claims priority, application Ireland, Jul. 26, 1985, 1877/85
Int. Cl.[4] G11B *5/41*
U.S. Cl. 360—128 16 Claims

1. A cleaning device for cleaning the operating components of a playing and/or recording video unit, where the video unit comprises a receiving area for receiving a video tape cassette, and a recording head mounted in a rotating drum in the cassette receiving area for recording onto or playing from the tape, guide means to engage the tape of the tape cassette for moving the tape outwardly of the cassette to the drum, and a capstan and pinch roller assembly in the receiving area to engage the tape as it passes onto or from a spool of the cassette, the cleaning device comprising
- a pair of spools rotatable in the base member, and in use, operably engagable with spindles of the video unit,
- a cleaning tape wound on the spools, and
- a bearing member mounted on the base member which, in



use, is spaced apart from the drum and intermediate the guide means on each side of the drum, so that, in use, the cleaning tape on passing over one guide means passes over a first arcuate portion of the drum, and then passes over the bearing member, before passing over a second arcuate portion of the drum on the opposite side of the drum to the first arcuate portion.

4,761,701

BIASING MEMBER FOR BIASING A TAPE IN A MAGNETIC TAPE CASSETTE

Kengo Oishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 17, 1987, Ser. No. 74,816
Claims priority, application Japan, Jul. 17, 1986, 61-108694[U]
Int. Cl.[4] G11B *23/04*
U.S. Cl. 360—130.33 5 Claims



1. A biasing member for biasing a tape in a cassette, comprising a pad and a plate spring, said plate spring comprising:
- a central portion to which said pad is fixed;
- tapering portions extending from opposite sides of said central portions and tapering toward their respective ends; and
- fixing pawls formed at angles at said respective end;
- wherein at least each of said tapering portions had formed therein a plurality of apertures having a maximum inside distance less than a width of each of said fixing pawls.

4,761,702

CMOS LATCH-UP RECOVERY CIRCUIT

Jim Pinard, Stittsville, Canada, assignor to Mitel Corporation, Kanata, Canada

Filed Nov. 20, 1986, Ser. No. 932,405
Claims priority, application Canada, Apr. 22, 1986, 507268
Int. Cl.[4] H02H *7/10*
U.S. Cl. 361—18 5 Claims

1. In a switching regulator including an input circuit for receiving an input signal, means for pulse width modulating said input signal thereby generating a modulated input signal, means for coupling said modulated input signal to an output circuit, thereby forming an output signal having a D.C. voltage

level proportional to the duty cycle of said modulated input signal, means for monitoring said output signal and generating an error signal for application to a D.C. feedback circuit in response thereto, and means for receiving said error signal from said feedback circuit and varying the duty cycle of said modulated input signal in proportion to variations in the D.C. level of said error signal; an overcurrent shut down and recovery circuit, comprised of:
- (a) means for detecting the average D.C. level of said modulated input signal and generating an average D.C. input signal in response thereto,
- (b) means for comparing said average D.C. input signal with



a predetermined threshold signal and connecting said feedback circuit to ground potential in the event said average D.C. input signal is greater than said threshold signal,

whereby the duty cycle of said modulated input signal is reduced to zero thereby reducing the D.C. voltage level of said output signal to zero volts, and
- (c) time delay means for removing said feedback circuit from ground potential after a predetermined delay time, thereby reapplying said error signal to said means for varying the duty cycle of said modulated input signal, and restoring the D.C. voltage level of said output signal to a normal level.

4,761,703

ROTOR FAULT DETECTOR FOR INDUCTION MOTORS

Gerald B. Kliman; Rudolph A. A. Koegl, both of Schenectady; Max W. Schulz, Jr., Scotia, and Stephen E. Grabkowski, Schenectady, all of N.Y., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Aug. 31, 1987, Ser. No. 91,594
Int. Cl.[4] H02H *7/08*
U.S. Cl. 361—23 22 Claims

1. A method of detecting rotor faults in an induction motor, the motor including a rotor with a multiplicity of rotor bars, and a stator which draws current from a power supply, the method comprising the steps of:
- generator a flux signal corresponding to the magnetic flux at a predefined flux detection point external to the motor;
- generating a current signal proportional to the current drawn by said motor;
- storing a time series of flux samples and a time series of current samples, representing the values of said flux and current signals over a period of time;
- transforming said stored flux samples into a set of flux spectra and said stored current samples into a set of current spectra;
- determining the line frequency of said power supply by finding the maximum of the current spectra;
- determining the slip frequency of said motor by finding the maximum of the flux spectra in a predefined spectral range;
- comparing the amplitude of said current spectra at a set of rotor fault harmonic frequencies with specified fault threshold criteria, each said rotor fault harmonic frequency being a predefined function of said line frequency and said slip frequency; and



denoting the presence of a rotor fault if the amplitude of a predefined set of said current spectra exceed the corresponding fault threshold criteria.

4,761,704

SOLID-STATE TRIP DEVICE WITH TEST CIRCUIT FOR AN ELECTRICAL CIRCUIT BREAKER

Didier Fraisse, St. Martin D'Heres; Pascal Dudon, Biviers, and Paul Tripodi, St. Martin D'Heres, all of France, assignors to Merlin Gerin, France

Filed Dec. 23, 1986, Ser. No. 945,540
Claims priority, application France, Jan. 10, 1986, 86 00415; Jan. 10, 1986, 86 00416
Int. Cl.[4] H02H *3/08*
U.S. Cl. 361—50 10 Claims



1. A solid-state trip device for a multipole electrical circuit breaker having a separable contact system controlled by an operating mechanism, said solid-state trip device comprising:
- a measuring device including a current sensor per pole for detecting intensity of current flowing in each active conductor of an alternating current system, and a plurality of current rectifying means, having respective AC inputs connected to respective current sensors, said plurality of current rectifying means having respective DC outputs which are commonly connected to provide a first rectified control signal, proportional to a maximum intensity of currents flowing in said alternating current system;
- a first electronic processing circuit for processing said first control signal, comprising at least one delayed or instanta-

VOL 1093 ISS 1 AG 2 1988 UMI

neous trip circuit capable of generating with or without a time delay a tripping order for a solid-state switching device when said first control signal exceeds a predetermined threshold;

a trip coil electromagnet controlled by said switching device for activating said operating mechanism after the tripping order has been generated, to open the separable contact system;

a test circuit having first and second test terminals which are connectable to a fault simulator designed to apply an artificial fault current to monitor operation of the solid-state trip device, when the circuit breaker is either connected with or disconnected from the active conductors of the alternating current system; and

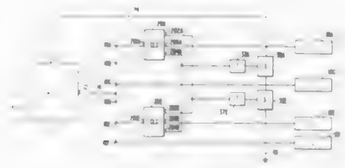
an internal connection circuit for connecting the first and second test terminals of the test circuit with an AC input of a rectifier cell having current rectifying means, said rectifier cell having a DC output connected to said DC outputs of said plurality of current rectifying means connected to said current sensors.

4,761,705

FAULT TOLERANT/FAILSAFE CURRENT UNIT

Reeves, Larry D., Palo Alto, and Jay A. Zwagerman, Saratoga, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Apr. 16, 1987, Ser. No. 39,562
Int. Cl.[4] H02H *3/08*
U.S. Cl. 361—93 3 Claims



1. In a system including a power supply having an output port coupled to a preselected number of output terminals, with each output terminal providing power to an associated load circuit, the power supply for supplying a fixed voltage to each load circuit, the power supply also including a ground terminal and a power enable port for receiving an enable signal and turning off the power supply when the enable signal is active, a fault tolerant/failsafe current limit system for preventing an overcurrent condition in a load circuit coupled to a selected output terminal comprising:

a first monitor circuit, external to the power supply and coupling a first output terminal to a first load circuit and supplying current thereto, for generating a first output signal in a first state if an overcurrent condition is detected and in a second state if no overcurrent condition is detected; and

a second monitor circuit, external to the power supply and coupling a second output terminal to a second load circuit and supplying current thereto, for generating a first output signal in a first state if an overcurrent condition is detected; and in a second state if no overcurrent condition is detected;

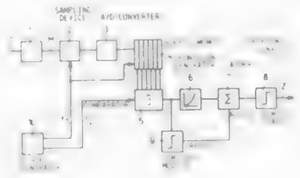
means, adapted to receive both monitor output signals, for shutting off the power supply to prevent an overcurrent condition unless both monitor circuit output signals are in the second state.

4,761,706

METHOD FOR GENERATING A TRIPPING SIGNAL AS A FUNCTION OF THE MAGNITUDE AND THE DURATION OF AN OVERCURRENT

Helmut Förnsel, and Hans-Eberhard Simmel, both of Karlsruhe, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jun. 13, 1986, Ser. No. 874,084
Int. Cl.[4] H02H *3/00*
U.S. Cl. 361—94 3 Claims



1. A method for generating a tripping signal for a circuit interrupter as a function of the magnitude and duration of an overcurrent of an alternating current waveform, comprising the steps of:

sampling a rectified measurement variable derived from the overcurrent and converting the sampled measurement values into corresponding digital values,

weighting the digital values according to a predetermined function, summing the digital values and generating the tripping signal if the sum value is above a predetermined reference value, and

cancelling the summation before the tripping signal is generated if the overcurrent falls below a predetermined threshold for a period of time, and further comprising the steps of:

storing the digital values of the respective last time interval corresponding to at least one half period of the overcurrent before said step of weighting, and

comparing all then stored digital values with each other,

said step of weighting comprising weighting the largest stored digital value determined in each comparison and summing said largest stored digital values as said sum value, and

said step of cancelling comprising cancelling the summation if the largest digital value is below the predetermined threshold.

4,761,707

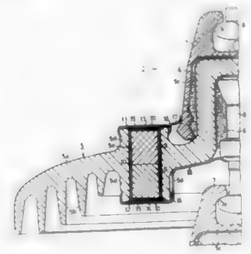
LIGHTNING-CONDUCTING INSULATORS

Keiji Wakamatsu, Chofu; Tetsuya Nakayama, Niwa, and Jun Atsumi, Nagoya, all of Japan, assignors to The Tokyo Electric Co., Inc. and NGK Insulators, Ltd., both of, Japan

Filed Jul. 10, 1987, Ser. No. 71,810
Claims priority, application Japan, Mar. 6, 1987, 62-52641
Int. Cl.[4] H02H *9/04*
U.S. Cl. 361—127 7 Claims

1. A lightning-conducting insulator comprising an insulator body which comprises a shed portion, a plurality of annular rib portions provided inside the shed portion, and a cup-like cylindrical head portion at a central upper portion of the shed portion, a metal cap put and fixed onto the head portion, and a metal pin inserted and fixed inside the head portion, wherein a cylindrical fitting section with a through hole is provided in said shed portion, a current-limiting element having a non-linear voltage-current characteristic is inserted into the through

hole, the cylindrical fitting section is sealed with a glass- and ceramics-bonding conductive metal solder such that upper and



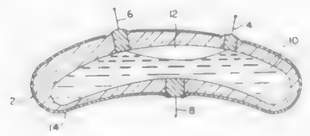
lower end faces of the current-limiting element and end faces of the cylindrical fitting section may be continuously sealed.

4,761,708

ELECTROLYTIC SWITCH HAVING ELECTROSTATIC SHIELD

William H. Fickes, Union, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 10, 1987, Ser. No. 83,487
Int. Cl.[4] H01G *00/00*
U.S. Cl. 361—212 13 Claims



10. An electrolytic switch, comprising:

a dielectric chamber;

a plurality of electrodes disposed around the chamber;

the chamber being partially filled with an electrolyte so that a bubble is formed within the chamber for engagement with the electrodes commensurate with the orientation of the switch, whereby the electrodes are at different potentials, with one of the electrodes being at a potential most near ground potential;

the electrolyte and the chamber interior being at ground potential, and electrostatic charges accumulating on the exterior of the chamber which interact with the electrolyte to affect the performance characteristics of the switch; and

a conductive shield disposed on the exterior of the chamber and connected to the one electrode, with said shield being thereby effective as a ground plane for bleeding off the accumulated electrostatic charges.

4,761,709

CONTACT BRUSH CHARGING

Joan R. Ewing, Fairport, and Joseph A. Swift, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 665,822, Oct. 29, 1984, abandoned.
This application Nov. 10, 1986, Ser. No. 928,600
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.[4] G03G *15/02*
U.S. Cl. 361—225 20 Claims

1. A contact brush charging device for charging an insulating layer comprising a plurality of resiliently flexible thin partially carbonized polyacrylonitrile fibers arranged in a brush like configuration, said fibers being supported by a support means so that the distal ends of the fibers may contact the insulating layer and having an electrical resistivity of from about 10^2 ohms-cm to about 10^6 ohms-cm and being substantially resistivity stable to changes in relative humidity and temperature.

4,761,710

POLYIMIDE CAPACITIVE HUMIDITY SENSING ELEMENT

Stephen G. L. Chen, Taiwan Hsien, Taiwan, assignor to Industrial Technology Research Institute, Hsin-Chu, Taiwan

Filed Jan. 23, 1987, Ser. No. 65,830
Int. Cl.[4] H01G *7/00*; G01N *27/12*
U.S. Cl. 361—286 11 Claims



1. A capacitive humidity sensing element comprising:

a corrosion resistant metal substrate;

a humidity sensitive polyimide film coated on the corrosion resistant metal substrate; and

a moisture permeable thin gold electrode on top of the humidity sensitive polyimide film, the humidity sensitive polyimide film being produced by reacting:

a dianhydride selected from the group consisting of pyromellitic dianhydride and 3,3'-4,4'-benzophenon tetracarboxylic acid dianhydride, with

a diamine selected from the group consisting of p-phenylene diamine, m-phenylene diamine, 4,4'-diamino-diphenyl methane, 4,4'-diamino-diphenyl ether, 3,4'-diamino-diphenyl ether and 4,4'-diamino-diphenyl sulfide.

4,761,711

BARRIER LAYER CERAMIC DIELECTRIC CAPACTTOR CONTAINING BARIUM PLUMBATE

Basavaraj V. Hiremath, Lawrenceville, N.J.; Robert E. Newnham, State College, Pa.; Leslie E. Cross, State College, Pa., and James V. Biggers, State College, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 5, 1987, Ser. No. 58,316
Int. Cl.[4] H01G *4/12, 7/00, 1/00*; C04B *35/46*
U.S. Cl. 361—321 15 Claims

1. A barrier layer ceramic capacitor, comprising:

a ceramic wafer having first and second major surfaces, said wafer having a grain structure;

a first conducting layer bonded to said first major surface;

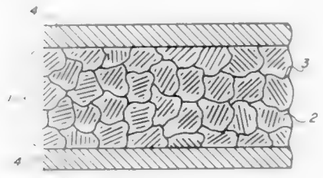
a second conducting layer bonded to said second major surface;

a glass compound diffused into the grain structure of said

VOL 1093 ISS 1 AG 2 1988 UMI

ceramic wafer to force a boundary layer insulator in boundary areas of said grain structure; and

wherein said ceramic wafer comprises a solid solution of modified barium plumbate having the formula:



$Ba(Bi_xPb_{1-x})O_3$ $0 \leqq x \leqq 25$ mole %.

4,761,712

MOUNTING STRUCTURE FOR ELECTRONIC PARTS

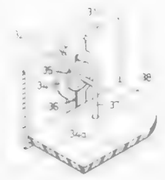
Katsuo Ito; Takami Yamamoto, and Kazunori Kinoshita, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Nov. 26, 1986, Ser. No. 935,308

Claims priority, application Japan, Nov. 28, 1985, 60-183746[U]; Nov. 28, 1985, 60-183747[U]

Int. Cl.[4] H02B *1/04*

U.S. Cl. 361—429 3 Claims



1. A mounting structure for fixedly securing electronic parts comprising

a frame having a mounting bore for receiving an electronic part therein;

a tongue integrally attached at one end thereof to said frame, and having a free end thereof substantially parallel to and adjacent said frame;

a retaining bore in said tongue, the diameter of said retaining bore being smaller than the diameter of said mounting bore of said frame, said retaining and mounting bores being substantially aligned for receiving an electronic part therein;

a cutout in said free end of said tongue, said cutout extending from said retaining bore to the outermost portion of said free end of said tongue, said cutout providing elastic expansion of said free end of said tongue for fixedly securing an electronic part receivable in said retaining and mounting bores.

4,761,713

GLYCOL BASED MID-VOLT CAPACITOR

Jesse S. Shaffer, Veldhoven, Netherlands, assignor to North American Philips Corp., New York, N.Y.

Filed Nov. 6, 1987, Ser. No. 118,483

Int. Cl.[4] H01G *9/02*

U.S. Cl. 361—433 6 Claims

1. An electrolytic capacitor comprising an anode provided with a dielectric oxide layer, a cathode and an electrolyte, said electrolyte consisting essentially of a solution in ethylene glycol of the ammonium salts of sebaccic, azelaic and benzoic acids and a minor amount of water.

4,761,714

ANODE AND CAPACITOR AND METHOD THEREFOR

Jean Levasseur, Chambray Les Tours, and Didier Gouvernelle, Semblancay, both of France, assignors to Sprague Electric Company, North Adams, Mass.

Filed Jun. 5, 1987, Ser. No. 58,473

Claims priority, application France, Aug. 5, 1986, 86 11316

Int. Cl.[4] H01G *9/05;* H01L *23/28*

U.S. Cl. 361—433 10 Claims



1. An anode for a capacitor comprising a porous body (7,21) connected to an elongated element (3,20) characterized in that said elongated element is a strip presenting an incurvated zone (6, 6') in the form of a rolled-over eyelet-like piece anchored in said body.

4,761,715

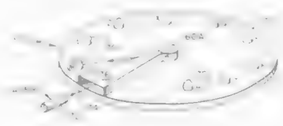
LASER POINTER

Bradford L. Brooks, Hopkington, N.H., assignor to Beede Electrical Instrument Co., Inc., Penacook, N.H.

Filed Mar. 25, 1987, Ser. No. 30,178

Int. Cl.[4] G01D *11/28*

U.S. Cl. 362—23 14 Claims



1. A meter comprising:

a dial having a plurality of designator means which are placed at predetermined locations per meter values and which reflect light;

a collimated light source;

a meter movement

proximate said dial and controllingly rotating light deflector means according to input signals;

media means for conducting light from said light source to said deflector means which in turn will direct collimated light at said designator means thereby indicating the value according to the input signal; and

wherein said deflector means is characterized by the absence of any pointing structure.

4,761,716

LIGHTING SYSTEM FOR BUILDING

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 463,089, Feb. 2, 1983, abandoned. This application Apr. 10, 1987, Ser. No. 37,083

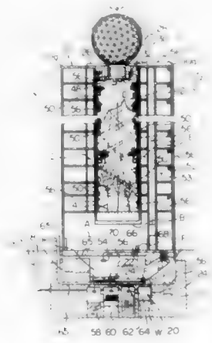
Claims priority, application Japan, Feb. 9, 1982, 57-19397

Int. Cl.[4] G02B *17/00*

U.S. Cl. 362—32 6 Claims

1. In an arrangement, the combination of a building having a substantially annular cross-section except for the first floor

thereof, said building above the first floor having an inner wall means defining an outer boundary of a cylindrical open courtyard space, said building having artificial ground means disposed over said first floor and disposed within said courtyard space to define the bottom of said courtyard space, frame support means disposed on said building to directly overlie said courtyard space, sunlight collector means mounted on said frame support means in a position directly overlying said courtyard space, light conductor means for conducting the sunlight collecting means, a plurality of light radiator means receiving the conducted sunlight from said light conducting means and radiating the sunlight outwardly from the light radiator means, said sunlight collector means having a base, a first plurality of said light radiator means mounted on said base of said sunlight collector means and disposed in a position



directly overlying said courtyard space such that said first light radiator means radiate light downwardly into the courtyard space to said underlying artificial ground means, whereby said first plurality of light radiator means light up the courtyard space and provide light for the artificial ground means, a second plurality of light radiator means disposed on said inner wall means for directing light across the courtyard space to illuminate said inner wall means, a basement on which said building is disposed, growth means in said basement providing for growth of a form of life, a third plurality of said light radiator means disposed in said basement to provide light to said growth means, whereby said courtyard space, said inner wall means of said courtyard space, and said growth means in said basement are lighted by the sunlight collected by said sunlight collector means.

4,761,717

HEADLAMP PIVOT ASSEMBLY

David R. McMahan; Harry S. Murphy, and William E. Nagengast, Jr., all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 20, 1987, Ser. No. 39,945

Int. Cl.[4] B60Q *1/04*

U.S. Cl. 362—66 7 Claims

1. A support shoe for a vehicle headlamp assembly having a lamp body received within a support frame for pivotal adjustable movement about a horizontal axis and a vertical axis, said support frame having a lower wall formed with at least one slot located therein, said support shoe including a metal stud the shank of which has its upper end formed so as to permit fastening of said support shoe to said lamp body, an enlarged head formed at the lower end of said shank, a grommet supported by said head, a resilient member molded around the stud between the threaded portion of said shank and said grommet, and an annular groove formed in said resilient member for allowing



said support shoe to be slidably and sealingly received by said slot in said support frame.

4,761,718

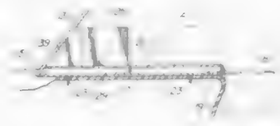
SIGNAL LIGHT FOR AUTOMOTIVE VEHICLE

Billie W. Allen, 296 La Plata NW., Albuquerque, N. Mex. 87107

Filed Dec. 31, 1987, Ser. No. 140,057

Int. Cl.[4] B60Q *1/00*

U.S. Cl. 362—80 3 Claims



1. For use in a vehicle having a windshield and a dash member extending generally horizontally back from the windshield to a terminal rear portion: a signal light attachment structure comprising a fore-and-aft track having means for affixation to the top of the dash to extend from the windshield to the rear portion of the dash, a signal lamp housing disposed above the track and having a front signalling face facing the back side of the windshield, and a track follower means secured to the housing and received by the track for fore-and-aft sliding of the housing between a front position adjacent to the windshield and a rear position adjacent to the rear portion of the dash.

4,761,719

DENTAL LIGHTING DEVICE

Kosaku Yamada, Ikoma, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Feb. 18, 1987, Ser. No. 15,971

Claims priority, application Japan, Feb. 19, 1986, 61-23676; Jan. 13, 1987, 62-7115

Int. Cl.[4] F21V *33/00*

U.S. Cl. 362—135 8 Claims



1. A dental lighting device including a lighting device com-

VOL 1093 ISS 1 AG 2 1988 UMI

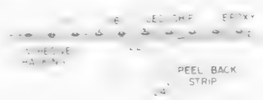
ponent composed of a lighting section having a light source and reflection plate, and a lighting support section which adjustably supports said lighting section, wherein the light from said light source is cast into the mouth of a patient via said reflection plate, said lighting device being characterized in that said device comprises a mirror member in combination with said lighting device component to allow the patient to look at the inside of his mouth so that said mirror member can have a mirror use posture where the surface of said mirror member is almost perpendicular to the light beam from said reflection plate at least when said mirror member is used, the mirror member is positioned in front of said lighting section having said reflection plate and a great part of said mirror member is positioned at the upper-half section of said reflection plate when said mirror member is in said mirror use posture.

4,761,720

ILLUMINATED TAPE

Joseph E. Solow, Plainview, N.Y., assignor to Wolo Manufacturing Corporation, Deer Park, N.Y.

Filed May 14, 1987, Ser. No. 50,283
Int. Cl.[4] F21S *1/14;* F21V *21/08*
U.S. Cl. 362—252 8 Claims



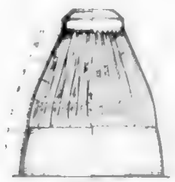
1. A weatherproof, illuminated tape comprising:
a pair of longitudinally extending thin wires, said wires being laterally spaced apart;
a plurality of LED elements positioned between the wires and spaced longitudinally therealong;
a plurality of thin electrical connectors electrically connecting the LED elements across the wires; wherein the wires, LED elements, and connectors lie essentially in a plane; and
an elongated, flat, thin tape element having a thickness slightly greater than said LED elements, wherein said tape element is composed of at least partially translucent plastic, and is formed by disposing said plastic, in liquid form, around said wires, LED elements, and connectors so as to completely embed the same.

4,761,721

REFLECTOR FOR AN OBLONG LIGHT SOURCE

Achim Willing, Schleaslitz-Burgellern, Fed. Rep. of Germany, assignor to Raak Licht B.V., Aalsmeer, Netherlands

Filed May 22, 1987, Ser. No. 53,345
Claims priority, application Netherlands, May 26, 1986, 8601338
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—348 18 Claims



1. A reflector for an oblong light source, comprising:
a conical reflector part, the conical part having an inside;
a curved reflector part, the curved part being connected with the conical part, the curved part having an inside, the curved part being curved around a central axis of the reflector; and,
first longitudinal grooves, the first longitudinal grooves being formed on the inside of the curved part, the first grooves having a groove bottom extending longitudinally from a starting point to a finishing point;
second longitudinal grooves, the second longitudinal grooves being formed on the inside of the conical part; and,
a reflection face, the reflection face being provided in at least one of said first grooves in the curved part, the reflection face being formed parallel to a line passing through the starting point and the finishing point of the first groove, the reflection face being oriented to face towards the central axis of the reflector.

4,761,722

SWITCHING REGULATOR WITH RAPID TRANSIENT RESPONSE

Duard L. Pruitt, Cinnaminson, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 9, 1987, Ser. No. 36,535
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—17 10 Claims



1. A switching regulator, comprising:
inductance means;
controllable first switch means serially coupled with said inductance means for forming a series combination of two elements, said series combination of two elements being adapted to be coupled to a source of direct voltage for, when said first switch means is in a conductive condition, causing an increasing ramp current through said inductance means as energy is stored in the magnetic fields associated therewith, and for, when said first switch means is in a nonconductive condition, causing decreasing ramp current in said inductance means;
first control means coupled to said first switch means to said inductance means for sensing said increasing and decreasing ramp currents and for recurrently operating said first switch means between said conductive and said nonconductive conditions for maintaining said ramp currents substantially constant, thereby forming a controlled direct current;
coupling and integrating means coupled to said inductance means and adapted to be coupled to utilization means for receiving at least a portion of said controlled direct current and for producting a direct load voltage in response to the average value thereof for utilization by said utilization means, said coupling and integrating means further including transformer means including primary and secondary windings inverter means coupled to said inductance means and to said transformer means for receiving at least said portion of said controlled direct current and for applying said controlled direct current so received to said primary winding, and for periodically reversing the direction of flow of said controlled direct current so received through said primary winding, for genertaing an alternating current in said secondary winding, and rectifying and filtering

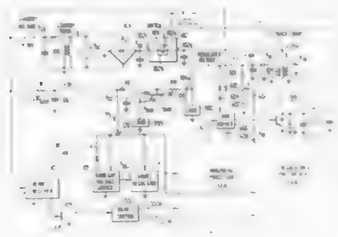
means coupled to said secondary winding for rectifying and integrating said alternating current for producing said direct load voltage;
controllable second switch means coupled to said inductance means for selectively short-circuiting said inductance means for causing said controlled direct current to bypass said coupling and integrating means and to circulate instead through said inductance means; and
second control means coupled to said second switch means and said coupling and integrating means for sensing said direct load voltage and for recurrently controlling the operating conditions of said second switch means for maintaining said average value of said direct load voltage substantially constant.

4,761,723

POWER SUPPLY REGULATOR FOR TELEVISION

Jeffery B. Leadaro, Noblesville, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Feb. 27, 1987, Ser. No. 19,855
Int. Cl.[4] H02M *3/335;* H01J *29/70;* H04N *3/18*
U.S. Cl. 363—21 20 Claims



1. A television apparatus power supply, comprising:
a source of an input supply voltage;
a source of an on/off control signal that selectively contains power-on and power-off control information that is indicative when an operation of said power supply in a normal operation power-up mode is required and when in a standby mode is required, respectively;
means responsive to said on/off control signal and coupled to said input supply voltage for generating therefrom a first supply voltage during a normal operation power-up mode of said power supply;
means coupled to said input supply voltage for generating therefrom a second supply voltage that is coupled to a first terminal of a first load circuit to develop thereat a first terminal supply voltage during said standby mode;
switching means coupled between said first supply voltage and said first terminal for coupling during said power-up mode said first supply voltage to said first terminal to develop during said power-up mode said first terminal supply voltage at said first terminal; and
a voltage regulator coupled to said first terminal for regulating said first terminal supply voltage such that said regulated first terminal supply voltage is coupled through said switching means during said power-up mode to a second terminal of said switching means to regulate thereat a third supply voltage that during said standby mode is isolated by said switching means from said first terminal.

4,761,724

TRANSFORMER COUPLING FOR TRANSMITTING DIRECT CURRENT THROUGH A BARRIER

Ralph L. Brown; Richard P. Guilford, and John H. Stichman, all of Albuquerque, N. Mex., assignors to The United States as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 29, 1987, Ser. No. 67,026
Int. Cl.[4] H02M *3/335;* H01F *21/06*
U.S. Cl. 363—21 6 Claims



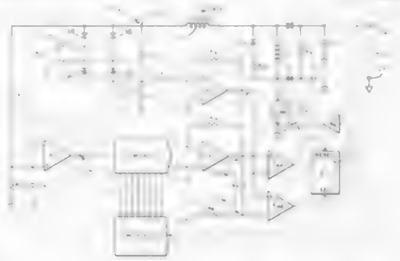
1. A system for transmitting direct current across a mechanical and electrical barrier from an energy source on a first side of the barrier to a load on a second side of the barrier, said system comprising:
transformer means comprising a primary core disposed on the first side of the barrier, a secondary core disposed in alignment with the primary core on the second side of the barrier, a primary winding on the primary core for applying oscillating current thereto, and a secondary winding on the secondary core for applying transmitted energy to the load; means for converting direct current from the direct current energy source into oscillating current for application to the primary winding;
means for converting alternating current from the secondary winding to direct current;
optical link means for optically coupling the oscillating circuit to the secondary winding for regulating voltage on the secondary winding; and
mechanical magnetic coupling means selectively movable between a first position and a second position, energy being transmitted from the primary core to the secondary core only when the magnetic coupling means is in the first position.

4,761,725

DIGITALLY CONTROLLED A.C. TO D.C. POWER CONDITIONER

Christopher P. Henze, Eagan, Minn., assignor to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 891,911, Aug. 1, 1986. This application Oct. 13, 1987, Ser. No. 107,239
Int. Cl.[4] H02M *1/14*
U.S. Cl. 363—46 22 Claims



1. In a power conditioner for providing a D.C. output voltage from a rectified A.C. input voltage source which com-

VOL 1093 ISS 1 AG 2 1988 UMI

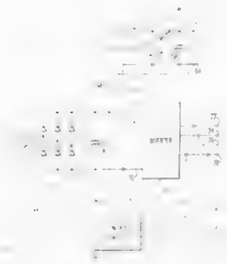
prises switching means and an inductor, through which inductor current comprising ripple current flows, and which is coupled between said input voltage source and said switching means, the improvement comprising means for supplying a reference voltage, current control means comprising said switching means for varying the magnitude of the peak-to-peak value of said ripple current and the instantaneous average value of said inductor current in proportion to the instantaneous magnitude of said rectified A.C. input voltage, comparison means for comparing said output voltage and said reference voltage, and for supplying an analog error signal representative of the difference of said output voltage and said reference voltage, and analog-to-digital converter means coupled to said comparison means for receiving said analog error signal, and for providing a digital error signal to said switching means for altering the switching frequency of said switching means as a function of said digital error signal.

4,761,726

VARIABLE SPEED CONSTANT FREQUENCY POWER SYSTEM WITH BOOST CONVERTER AUXILIARY OUTPUT

Stuart C. Brown, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1987, Ser. No. 111,961
Int. Cl.[4] H02H *7/00*
U.S. Cl. 363—51 **7 Claims**



1. An electric power system, comprising:
an electrical generator for producing a DC voltage on a pair of DC link conductors;
an inverter for converting said DC voltage to a constant frequency AC output voltage on an AC output bus;
a voltage boost circuit connected between said DC link conductors and an auxiliary supply bus; and
a control circuit for regulating said DC voltage by controlling the output of said generator in response to said AC output voltage, and for regulating an output voltage of said boost circuit on said auxiliary supply bus, when said AC output bus is subjected to a fault.

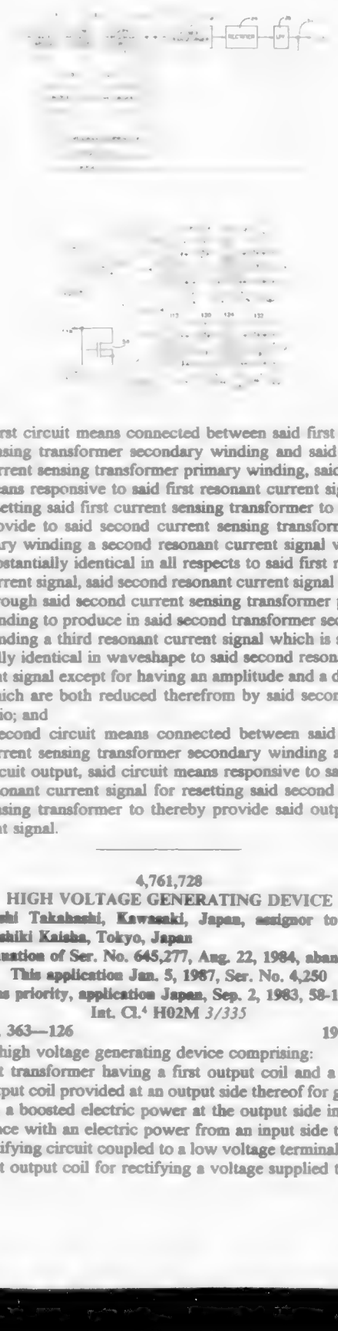
4,761,727

CURRENT SENSING CIRCUIT FOR USE WITH DECOUPLED HALF BRIDGE CONVERTER

Neil Kammiller, Lakewood, Ohio, assignor to Reliance Comm/-Tec Corporation, Chicago, Ill.

Division of Ser. No. 37,984, Apr. 14, 1987, abandoned. This application Jan. 6, 1988, Ser. No. 140,874
Int. Cl.[4] H02M *7/5387*
U.S. Cl. 363—98 **14 Claims**

1. In a series resonant power supply of the type which includes a series resonant circuit which generates a resonant current signal, each half cycle of which goes to zero, said signal having a certain waveshape and amplitude and d-c level, a circuit for providing at its output a current signal which is substantially identical in all respects to said resonant current signal except for being reduced in amplitude and d-c level therefrom by a predetermined amount, said circuit comprising:
(a) a first current sensing transformer having a first turns ratio, primary and secondary windings, said resonant current signal flowing through said primary winding to produce in said secondary winding a first resonant current signal which is substantially identical in waveshape to said resonant current signal except for having an amplitude and d-c level which are both reduced therefrom by said turns ratio;
(b) a second current sensing transformer having a second turns ratio and primary and secondary windings;



(c) first circuit means connected between said first current sensing transformer secondary winding and said second current sensing transformer primary winding, said circuit means responsive to said first resonant current signal for resetting said first current sensing transformer to thereby provide to said second current sensing transformer primary winding a second resonant current signal which is substantially identical in all respects to said first resonant current signal, said second resonant current signal flowing through said second current sensing transformer primary winding to produce in said second transformer secondary winding a third resonant current signal which is substantially identical in waveshape to said second resonant current signal except for having an amplitude and a d-c level which are both reduced therefrom by said second turns ratio; and
(d) second circuit means connected between said second current sensing transformer secondary winding and said circuit output, said circuit means responsive to said third resonant current signal for resetting said second current sensing transformer to thereby provide said output current signal.

4,761,728

HIGH VOLTAGE GENERATING DEVICE

Kazuyoshi Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 645,277, Aug. 22, 1984, abandoned. This application Jan. 5, 1987, Ser. No. 4,250
Claims priority, application Japan, Sep. 2, 1983, 58-160547
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—126 **19 Claims**

1. A high voltage generating device comprising:
a first transformer having a first output coil and a second output coil provided at an output side thereof for generating a boosted electric power at the output side in accordance with an electric power from an input side thereof;
a rectifying circuit coupled to a low voltage terminal of said first output coil for rectifying a voltage supplied thereto;

a housing unit for housing both the first transformer and the rectifying circuit;
a second transformer, an output coil of which is connected to the rectifying circuit, disposed outside the housing unit for supplying an AC voltage to the rectifying circuit via the output coil thereof such that the sum of the output



electric power from the first transformer and the rectified voltage rectified by the rectifying circuit can be obtained at the first output coil of the first transformer, and
control means for controlling electric power supplied to an input coil of the second transformer in response to the output of the first output coil of the first transformer.

4,761,729

DEVICE FOR EXCHANGING DATA BETWEEN A COMPUTER AND A PERIPHERAL UNIT HAVING A MEMORY FORMED BY SHIFT REGISTERS

Alain Brion, 15, rue Kermen, F 92140 Clamart, France

Filed Jan. 21, 1986, Ser. No. 820,989
Claims priority, application France, Jan. 24, 1985, 85 00970
Int. Cl.[4] G06F *13/14*
U.S. Cl. 364—200 **10 Claims**



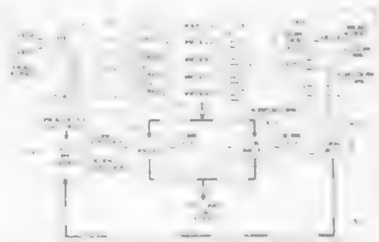
1. A device for exchanging data between a computer and a peripheral unit, the data supplied by the computer being words of N binary characters (bits) and the data received by the peripheral unit being words of P bits, N and P being integers, wherein said device comprises at least one memory formed by P shift registers of N bits, an address decoding circuit connected to the shift registers and the computer for addressing the registers during exchanges of data, a control unit connected to control inputs of the shifts in the registers and to a control output of the decoding circuit to receive from the decoding circuit a signal controlling the shifts in the registers, the shift registers each having N parallel inputs connected to the computer to receive P words of N bits, each register having a series output, the P series outputs of the P registers being connected to inputs of the peripheral unit via a transfer means to transfer thereto the P words of N bits contained in the shift registers, said shift registers also each comprising a series input, the P series inputs of the registers being connected to outputs of the peripheral unit via a bus transfer means to receive N words of P bits, the registers also each having P parallel outputs connected to inputs of the computer to transfer thereto the P words of N bits contained in the shift registers, the bus transfer means connected to the P series inputs and to the peripheral unit permitting an exchange of data between the peripheral unit and the computer.

4,761,730

COMPUTER MEMORY APPARATUS

Alvan W. Ng, Lowell, and Edwin P. Fisher, N. Abington, both of Mass., assignors to Honeywell Bull Inc., Waltham, Mass.

Filed Jul. 2, 1985, Ser. No. 751,179
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **21 Claims**



1. A memory subsystem for use in a system in which said subsystem couples to a single word bus for receiving memory requests and for transferring information words to said bus during bus cycles of operation, said memory requests including a multibit address different ones of said requests being coded to specify a predetermined type of memory read operation requiring a transfer of a plurality of words over successive bus cycles of operation, said memory subsystem comprising:
an addressable single word wide memory array including a plurality of word blocks of dynamic random access memory chips mounted on a single circuit board;
decode means coupled to said plurality of blocks of chips and to said bus to receive a number of least significant bits of each said address, said decode means being operative to generate a plurality of select signals, said select signals preselecting a corresponding plurality of word blocks in response to said number of least significant bits;
selection means coupled to said plurality of blocks of chips and to receive at least one of said number of least significant address bits;
a plurality of registers coupled in common to said single word wide memory array; and,
timing means for generating a sequence of timing signals for each predetermined read type of read operation, said timing means being coupled to said memory array, to said selection means and to said plurality of registers, said sequence of timing signals including a first timing signal having a duration for defining a first interval and a plurality of sequential timing signals which occur during said first interval, said blocks of chips preselected by said select signals being enabled by said first timing signal for access during said first interval, said plurality of sequential timing signals being applied selectively by said selection means to different groups of blocks of chips as specified by said one least significant bit for enabling the read out of a plurality of words in succession during said first interval only from said blocks of said array preselected by said select signals and said plurality of registers being conditioned by said plurality of sequential signals to store said plurality of words in a predetermined sequence.

4,761,731

LOOK-AHEAD INSTRUCTION FETCH CONTROL FOR A CACHE MEMORY

David M. Webb, Blaine, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Aug. 14, 1985, Ser. No. 765,427
Int. Cl.[4] G06F *9/38/9/00*
U.S. Cl. 364—200 **4 Claims**

1. In a stored program digital computer including an ad-

VOL 1093 ISS 1 AG 2 1988 UMI

dressable central memory receiving address signals and for storing individually addressable instruction words, each address signal encoding a central memory address and an instruction word buffer address, said central memory responsive to a request signal placing the central memory address and the instruction word buffer address encoded in the current address signal in an address queue and supplying for each central memory address in the address queue a central memory signal encoding the instruction word stored in that central memory address and the associated instruction word buffer address; an instruction word buffer receiving the central memory signal and storing each instruction word encoded therein at the address specified by the associated instruction word buffer address encoded therein, said instruction word buffer further supplying responsive to an instruction word buffer address signal an instruction word signal encoding individual ones of instruction words stored in the instruction word buffer; an instruction processor issuing instruction word buffer address signals to the instruction word buffer and receiving instruction word signals from the instruction word buffer responsive to the instruction word buffer address signals, and responsive to instruction words encoded in the instruction word signals issuing a plurality of processor signals each specifying a central memory address; and buffer address assignment means receiving each such processor signal and responsive to each such processor signal selecting an instruction word buffer address to be associated with the specified central memory address, and supplying to the central memory an address signal encoding the central memory address and the instruction word buffer



address associated with it, an improved address requesting mechanism including

(a) an addressable write valid memory comprising a plurality of storage locations, each storing a write status indicator, each said storage location having an address associated with an instruction word buffer address and each write status indicator having first and second values, said write valid memory receiving the request signals and the address signals supplied to the central memory and responsive to the request signal, setting to its second value the write status indicator in the storage location whose address is associated with the instruction word buffer address encoded in the address signal, and further, the write valid memory responsive to the address signal supplying a status signal encoding the value of the write status indicator in the storage location whose address is associated with that of the instruction word buffer address encoded therein; and

(b) gate means receiving a busy signal and the status signal from the write valid memory for, responsive to concurrent first values of the busy and status signals issuing a request signal to the central memory;

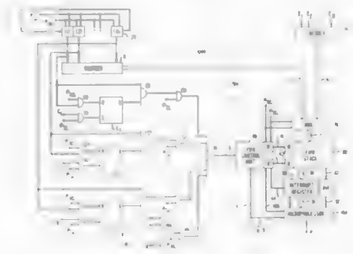
and wherein the central memory further comprises queue monitoring means for issuing a busy signal having a second value responsive to the presence of at least a predetermined number of central memory addresses in the queue and a first value otherwise, whereby addresses in the central memory instruction address queue are prevented from appearing therein more than once at any time.

4,761,732

INTERRUPT CONTROLLER ARRANGEMENT FOR MUTUALLY EXCLUSIVE INTERRUPT SIGNALS IN DATA PROCESSING SYSTEMS

Ismail I. Elhanlati, Holmdel, N.J.; David T. Meinik, Rehovot, Israel, and Robert P. Wiederhold, Millburn, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 29, 1985, Ser. No. 802,988
Int. Cl.[4] G60F *9/46*
U.S. Cl. 364—200 7 Claims



1. In a data processing system, an interrupt controller arrangement comprising:

(a) first and second encoding means respectively for generating first and second sets of encoded words corresponding to individual interrupt signals contained in first and second sets of interrupt signals, respectively, the first set of interrupt signals consisting of interrupt signals no two of which can occur simultaneously, and the second set containing at least two interrupt signals that can occur simultaneously;

(b) a memory stack; and

(c) multiplexing means for receiving the encoded first and second interrupt words from the first and second encoding means and for delivering to the memory stack during each time interval, of a prescribed sequence of time intervals, one of the encoded first words or one of the encoded second words depending upon the time interval.

2. The system of claim 1, further comprising write logic means for enabling the memory stack to be written with whichever word is being delivered to the stack by the multiplexing means during each such time interval if the corresponding interrupt signal has occurred within a prescribed amount of time prior to the time interval, including a separate latching means for recording the occurrences of each interrupt signal of the second set.

4,761,733

DIRECT-EXECUTION MICROPROGRAMMABLE MICROPROCESSOR SYSTEM

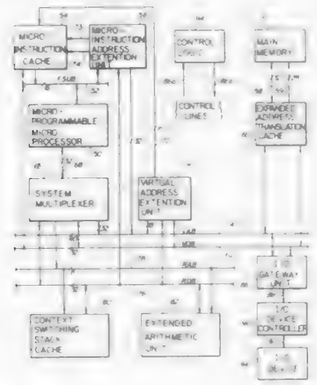
Andrew J. McCrocklin; Nicholas E. Anschansley, both of San Diego; Patricia Shanahan, Escondido; James J. Whelan, San Diego; Jeffrey P. Anderson; James E. Kocol, both of Escondido, and Gary L. Riddle, Poway, all of Calif., assignors to Celerity Computing, San Diego, Calif.

Filed Mar. 11, 1985, Ser. No. 710,615
Int. Cl.[4] G06F *9/22*
U.S. Cl. 364—200 20 Claims

1. A direct-execution microprogrammable microprocessor system, comprising,

microprogrammable microprocessor means for executing microinstructions,

microinstruction address extension unit means connected to said microprogrammable microprocessor means for extending microinstruction address space of said microprogrammable microprocessor means, and



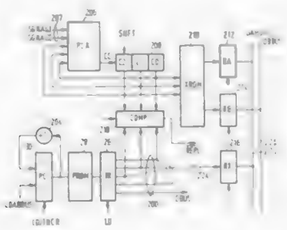
main memory means connected to said microinstruction address extension unit means for storing data and said microinstructions.

4,761,734

DATA-PROCESSING APPARATUS PROVIDED WITH A FINITE-STATE MACHINE TO PERFORM A PROGRAM JUMP

Jozef L. van Meerbergen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 1, 1986, Ser. No. 914,049
Claims priority, application Netherlands, Oct. 18, 1985, [illegible]
Int. Cl.[4] G06F *09/30*
U.S. Cl. 364—200 6 Claims



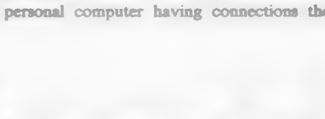
1. A data-processing apparatus comprising a processor, a read-write memory, an interface element for connection to the "outside world" and a data bus to connect said components to each other, and also comprising a program counter, a program memory addressed by the program counter, an instruction register connected to a data output of said program memory, and a control bus connected to said instruction register to apply control signals to said processor, said read-write memory and said interface element; said program counter being provided with means to perform, in a first alternative, an incrementation operation by means of an incrementation element (204), or, in a second alternative, a loading operation, and having for that purpose a data input connected to said control bus in order to receive a jump address for the execution of a first program jump, said first or second alternatives being selected by a control signal from said instruction register; said instruction register further providing signals for the execution of a second program jump via a feedback finite-state machine (206, 208), said finite-state machine comprising a first decoding circuit (206) connected to an output register (208); in which outputs from said output register are fed back to the first decoding circuit, and in which said first decoding circuit is fed a sign-signal output (207) from said processor, said output register (208) having a multibit-wide information output whose content bits are formed in at least two successive machine cycles, wherein said multibit-wide information output is connected to a comparator (218) to supply a condition code to said comparator, which comparator is also supplied by outputs from said instruction register in order, upon detection of a first equality condition (unequal) between said supplied items of information, to validate a current instruction or, upon detection of a second equality condition (equal) between said supplied items of information, to invalidate, in a third alternative, said current instruction, so that said current instruction operates like a dummy instruction (NOP) and a subsequent instruction is then activated.

4,761,735

DATA TRANSFER CIRCUIT BETWEEN A PROCESSOR AND A PERIPHERAL

Michael E. Amy, Winter Springs, Fla., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1986, Ser. No. 943,463
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—200 11 Claims



1. A data transfer circuit for transferring data between a processor and a peripheral wherein said processor has a data and control bus for transmitting data and command signals, said data transfer circuit comprising:

random access memory (RAM) means having a plurality of addressable storage locations for storing data and address input means for inputting the address of said storage locations when reading data to or writing data from said RAM means;

first input/output means for connection to said data and control bus and being connected to said RAM means for transmitting data therebetween;

second input/output means for connection to the peripheral and being connected to said RAM means for transmitting data therebetween;

addressable means in said first input/output means addressable by data bits received from the data and control bus which, when addressed, connects said RAM means to said first input/output means;

address counter means connected between said first input-/output means and said address input means of said RAM means for supplying addresses thereto, said address counter means including reset means for resetting said address supplied therefrom to a set value when said addressable means is addressed; and

incrementing means connected between said first input/output means and said address counter means for sequentially incrementing the address of said address counter means responsive to each read or write command signal received by said first input/output means from the data and control bus.

4,761,736

MEMORY MANAGEMENT UNIT FOR ADDRESSING AN EXPANDED MEMORY IN GROUPS OF NON-CONTIGUOUS BLOCKS

David W. Di Orio, West Chester, Pa., assignor to Commodore Business Machines, Inc., West Chester, Pa.

Filed Jan. 2, 1986, Ser. No. 815,695
Int. Cl.[4] G06F *12/06*
U.S. Cl. 364—200 12 Claims

1. A personal computer having connections thereto for

VOL 1093 ISS 1 AG 2 1988 UMI

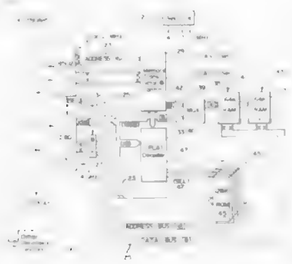
connecting to an operator keyboard, a display device and other peripheral devices including a floppy disk, having a memory management structure for addressing all of expanded amounts of memory in real time by a single microprocessor whose capability is for addressing less than all of said memory, said computer comprising:

an 8-bit microprocessor having internal controls for accessing, real time, only 64K of electronic memory, said microprocessor having address bus and data bus connections;

an address bus connected to said microprocessor address bus connection;

a data bus connected to said microprocessor data bus connection;

at least two 64K RAMs connected to said data bus each said 64K RAM having its memory space addressed in blocks of memory of less than the total 64K;



a memory translator and control circuit connected on its input to said address bus and to said data bus having an output and providing on its output an exclusive control signal to enable only one of said 64K RAMs at a time to be read, said translator and control circuit providing a translated address signal on its output; and

a multiplexer connected to said translator and control circuit output for receiving said translated address signal and connected to said address bus, the output of said multiplexer being connected to each of said 64K RAMs to address simultaneously each of said 64K RAMs;

wherein said 64K of electronics memory appears to said microprocesaor as 64K of RAM comprised of combinations of blocks from both said at least two 64K RAMs.

4,761,737

METHOD TO AUTOMATICALLY INCREASE THE SEGMENT SIZE OF UNIX FILES IN A PAGE SEGMENTED VIRTUAL MEMORY DATA PROCESSING SYSTEM

Keith E. Duvall, Georgetown; Anthony D. Hooten, Round Rock, both of Tex.; John C. O'Quin, III, Chappaqua, N.Y., and Todd A. Smith, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 16, 1986, Ser. No. 819,456

Int. Cl.⁴ G06F *12/08*

U.S. Cl. 364—300 11 Claims

1. In a page segmented virtual memory data processing system comprising,

(A) a main memory,

(B) a secondary storage device having a plurality of locations each of which stores a block of data comprising at least one virtual page, each of said locations having a different block address,

(C) a UNIX type operating system (UOS),

(D) an application program for processing UNIX files, each said file being stored on said device at identified block addresses,

(E) a memory manager for managing:

(1) the allocation of virtual address space in said system, and

(2) the transfer of information between said secondary storage device and said main memory, said memory manager including,

(3) an external page table (XPT) including a plurality of XPT entries for correlating each said block address to at least one virtual page address, each said entry including a status field for indicating to said system the status of the corresponding virtual system, and

(F) means for selectively mapping said files to designated segments of the virtual address space of said virtual memory,

a method to automatically manage the size of each said designated segment through allocation of increments of XPT entries in accordance with the addresses in the instructions of said application program that are executed during said processing of a UNIX file, said method comprising the combination of the following sequential steps,

(1) establishing for said system with said operating system, an allocatable increment of sequential virtual addresses comprising a fixed plurality of XPT entries, each said increment having a virtual address that defines the Upper Boundary of said increment,

(2) allocating, with said operating system, a number of said increments to provide at least one XPT entry for each block on said device that contains information associated with said file being processed resulting in the current size of said segment being defined by said Upper Boundary of said last allocated segment,



(3) establishing in each said XPT entry a status field for indicating to said system one of a plurality of processing states of the virtual page corresponding to said entry,

(4) mapping said file to correlate the address of said each block to the virtual page address corresponding to the associated said one XPT entry, including the steps of;

(a) setting the status field of each said associated XPT entry to a first value, and

(b) setting the status fields of said XPT entries between the virtual address representing the End of File (EOF) and the virtual address representing the end of the current segment, to a second value to indicate allocated, unmapped XPT entries,

(5) interrupting the current instruction being executed in said application program when said current instruction involves a virtual address contained on an unmapped virtual page to indicate to said system that one of a plurality of predetermined protection exceptions has occurred,

(6) automatically allocating with said operating system sufficient said increments when a first of said predetermined exceptions has been indicated, to accommodate said virtual address involved with said current instruction,

(7) automatically mapping with said operating system at least one newly allocated disk block to one of said unmapped XPT entries when a second one of said predetermined exceptions has been indicated, and

(I) reissuing said current instruction that was interrupted.

4,761,738

COMPUTER TOMOGRAPHY APPARATUS INCLUDING A COMBINED RECURSIVE AND CONVOLUTION FILTER

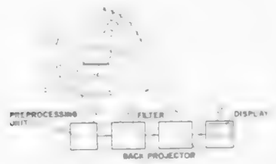
Steven Lobregt; Johannes C. A. Op de Beek, and Roelof Werkman, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 11, 1986, Ser. No. 884,453

Claims priority, application Netherlands, Apr. 21, 1986, 8601004

Int. Cl.⁴ G06F *15/62*

U.S. Cl. 364—414 10 Claims



1. In computer tomography apparatus for determining a radiation attenuation distribution in a body which includes a radiation source, radiation source displacement means for irradiating a region of the body from a plurality of source positions, detection means for detecting attenuated radiation which has passed through the body in order to form groups of measurement data, filter means for determining groups of back-projection data from the groups of measurement data, back projection means which determine the attenuation distribution from the groups of back-projection data, and storage means for storing the attenuation distribution the improvement wherein the filter means comprise a combination of convolution means, and a recursive filter and a first adder which is connected to sum outputs from the convolution means and the recursive filter and has an output connected to the back-projection means.

4,761,739

DENSITY CORRECTING METHOD AND APPARATUS FOR ENERGY SUBSTRACTION IMAGE

Kazuo Shimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 12, 1986, Ser. No. 838,862

Claims priority, application Japan, Mar. 13, 1985, 60-49668

Int. Cl.⁴ H05B *33/12*; **G06F** *15/68*

U.S. Cl. 364—414 4 Claims



1. A method of obtaining a radiation image including the steps of: exposing two sets of stimulable phosphor sheets respectively to high energy radiation and low energy radiation passing through the same object to store radiation images of said object stored in said stimulable phosphor sheets, at least a part of the image information of said object being different between said radiation images, scanning the respective stimulable phosphor sheets with stimulating rays to sequentially release the radiation energy stored in said stimulable phosphor sheets in the form of light emission, photoelectrically detecting and converting the respective amounts of emitted light into a digital high energy image signal SH and a digital low energy image signal SL, and carrying out subtraction processing of said digital image signals between corresponding picture elements of said radiation images by subtracting said low energy image signal SL weighted by a first value b from said high energy image signal SH weighted by a second value a to obtain a preliminary difference signal and adding a bias component for adjusting density of said preliminary difference signal to obtain a final difference signal for obtaining an image of a specific structure of said object, said bias component being a third value c, said final difference signal being expressed by

$$Ssub = a \cdot SH - b \cdot SL + c.$$

and further including the step of adjusting said value c to a value calculated by

$$c = m \cdot Smax + n \cdot Smin - a(m \cdot SHmax + n \cdot SHmin) + b(m \cdot SLmax + n \cdot SLmin)$$

where Smax and Smin respectively denote the maximum density signal and the minimum density signal representing the maximum density and the minimum density desired in the subtraction image formed by said difference signal Ssub, SHmax and SHmin respectively denote the maximum value and the minimum value of said high energy image signal SH, SLmax and SLmin respectively denote the maximum value and the minimum value of said low energy image signal SL, and m and n respectively denote a constant which may be 0, and the step of reproducing said radiation image from said final difference signal Ssub.

4,761,740

COMBINED COLOR FLOW MAP AND MONOCHROME IMAGE

David Lipschutz, Lexington, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 7, 1986, Ser. No. 837,456

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 364—415 1 Claim



1. Ultrasonic apparatus for forming an image in which body tissue is displayed in monochrome and the velocity of blood flow is displayed in color, said apparatus comprising

means for providing a first signal that varies in amplitude with the amplitude of reflections of acoustic pulses tansmitted into the body of a patient by tissue and blood in the body,

means for deriving a second signal from reflections of acous-

VOL 1093 ISS 1 AG 2 1988 UMI

tic pulses transmitted into the body of a patient that can be used to provide a third signal indicative of the velocity of blood and tissue therein,

means for deriving said third signal from said second signal, a monitor,

means for causing said monitor to produce monochrome light in response to said first signal when said second signal is less than a given minimum amplitude or when said second signal is greater than said given minimum amplitude and a weighted value of said first signal is greater than a weighted value of said third signal, and

means for causing said monitor to produce colored light related to the value of said third signal when the amplitude of said second signal exceeds said given minimum value and a weighted value of said third signal is greater than a weighted value of said first signal.

4,761,741

ANTI-LOCK BRAKE CONTROL SYSTEM

Paul D. Agarwal, Troy, and Alexander Kade, Grosse Pointe Woods, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 7, 1986, Ser. No. 882,788
Int. Cl.[4] B60T *8/60*
U.S. Cl. 364—426 6 Claims



6. A wheel lock control system for limiting the brake pressure P_b applied to the brakes of a vehicle wheel having a tendency to lock up as the slip between the wheel and a road surface increases beyond a critical slip value, the system comprising:

means for estimating the tire torque T_t tending to accelerate the wheel during the application of brake pressure in accord with the expression

$$T_t = I_w\omega + P_bK_b$$

where ω is the wheel angular acceleration, I_w is the wheel moment of inertia and K_b is a constant;

means for identifying a maximum value T_{tm} of the value of the estimated tire torque T_t following each application of brake pressure and the brake pressure value P_{bm} corresponding in time thereto;

means for indication an incipient wheel lockup condition when the estimated tire torque T_t decreases from the identified maximum tire torque value T_{tm} by an amount equal to T_{tm}/K_{DEL} as the wheel slip increases from the critical slip value where K_{DEL} is a constant; and

means for reapplying the brake pressure following a detected incipient wheel lockup condition with substantially the identified value of brake pressure P_{bm}.

4,761,742

GUIDING SPOT DISPLAY APPARATUS

Kazunori Hasabusa, Kasugai; Nobutoshi Yamagishi, Obu, and Kenzo Ito, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Apr. 25, 1986, Ser. No. 856,157
Claims priority, application Japan, Apr. 26, 1985, 60-91486
Int. Cl.[4] G06F *15/20*; G09B *29/10*
U.S. Cl. 364—443 5 Claims



1. An apparatus for displaying a plurality of guiding spots on a road map, comprising:

display means for displaying a map of a predetermined area;

storage means for storing first guiding spot data corresponding to a first guiding classification, each of said first guiding spot data being assigned a priority, and for storing second guiding spot data corresponding to a second guiding classification, each of said second guiding spot data being assigned a priority;

classification selecting means for selecting one of said first guiding classification and said second guiding classification;

designating means for entering a designation related to the number of guiding spots to be displayed; and

display control means for reading guiding spot data from said storage means corresponding to the guiding classification selected by said classification selecting means and for displaying said guiding spots in accordance with said guiding spot data on said map displayed by said display means, a number of guiding spots displayed corresponding to said designation by said designating means, said guiding spots being displayed in order of priority such that a higher priority guiding spot is displayed before a lower priority guiding spot.

4,761,743

DYNAMIC SYSTEM ANALYSIS IN A VIBRATING BEAM ACCELEROMETER

Ernest C. Wittke, West Caldwell, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Dec. 2, 1985, Ser. No. 803,155
Int. Cl.[4] G01P *9/04*
U.S. Cl. 364—484 26 Claims



1. Apparatus for analyzing a pair of frequencies which are related to natural frequency as a function of a force applied to a system, said system including means producing a first frequency (f_1) and a second frequency (f_2) comprising:

means for sensing said first frequency (f_1) and said second frequency (f_2);

means for squaring said first and second frequencies to produce f_1^2 and f_2^2 respectively;

means for computing the difference between said squared frequencies ($f_1^2-f_2^2$) to approximate

$$\int_{t1}^{t2} (\Sigma f \cdot \Delta f)dt$$

to obtain a measure of the force applied to the system, including means for scaling and biasing ($f_1^2-f_2^2$) in accordance with the relationship of $[(f_1^2-f_2^2)/B]+[(-A/B)]$, where A is said bias, and B is said scale factor;

said means producing said first and said second frequencies comprising:

a first mass and a second mass, respectively;

means for vibrating said masses at said first and said second frequencies; and

means for orienting said masses such that moving said means for producing said frequencies will cause an increase in one said frequency and a decrease in said other said frequency.

4,761,744

METHOD AND DEVICE FOR DETERMINING HEATS OF COMBUSTION OF GASEOUS HYDROCARBONS

Jag J. Singh, Yorktown; Danny R. Sprinkle, Newport News, and Richard L. Puster, Hampton, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1986, Ser. No. 933,962
Int. Cl.[4] G06F *15/46*; G01N *25/22*
U.S. Cl. 364—500 2 Claims

1. A method of determining the heat of combustion of a hydrocarbon test gas comprising:

providing a flow of carrier stream air containing oxygen;

sensing the amount of oxygen in said flow of carrier stream air;

introducing three individual volumetric flow rates of carrier stream air, oxygen, and hydrocarbon test gas into a burner to produce combustion products containing oxygen;

sensing the amount of oxygen in said combustion products;

adjusting said flow of oxygen until the amount of oxygen in said combustion products is equal to the previously sensed amount of oxygen in the carrier stream air; and

calculating the heat of combustion of said hydrocarbon test gas from the following equation:

$$\Delta H^\circ = A_0 + A_1(m/n) + A_2(m/n)^2 + A_3(m/n)^3 + A_4(m/n)^4$$

where,

ΔH° is the heat of combustion of said hydrocarbon test gas,

m is the volumetric flow rate of said individual flow of oxygen which equalizes the amount of oxygen in said combustion products with the previously sensed amount of oxygen in the carrier stream air,

n is the volumetric flow rate said individual flow of hydrocarbon test gas which is introduced into the burner, and

A_0, A_1, A_2, A_3 and A_4 are constants determined by using a least squares fit to a fourth power equation expressing ΔH° as a function of m/n.

4,761,745

OFF-LINE PROGRAMMING FOR A ROBOT WITH DIVISION OF THE WORK SEQUENCE INTO PLURAL JOBS

Norio Kodaira, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 7, 1986, Ser. No. 928,080
Claims priority, application Japan, Nov. 7, 1985, 60-247919
Int. Cl.[4] G05B *13/00*
U.S. Cl. 364—513 10 Claims

1. A method of off-line programming a robot, said robot having a first three dimensional geometry that may serve as a first coordinate system, for preparing a work program that said robot is made to execute without being required to move while working on a workpiece, said workpiece having a second three dimensional geometry that may serve as a reference for a second coordinate system, comprising the steps of:

preparing a work program based on the first and second three-dimensional geometries of said robot and said workpiece, respectively;

converting work point positions of said robot, specified in accordance with said second coordinate system that has said workpiece stated in the work program as a reference unit, into work point positions that are specified in accordance with said first coordinate system that has said robot as a reference unit;

dividing the work point positions stated in the work program that have been specified in terms of said first coordinate system as a function of the work to be performed by the robot in order to provide a plurality of jobs;

teaching said robot at least two work points per job;

determining an error vector for said at least two work points per job, based upon a comparison of said work points as specified in terms of said first coordinate system and in terms of comparable points on the actual workpiece;

apportioning an error vector to each said work point that has been specified in terms of said first coordinate system in proportion to all the work point positions within the job; and

adding said apportioned error vector to each said work point to thereby correct a local error depending on the work position and posture of said robot.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,746

DYNAMIC RECONSTRUCTION METHOD FOR DISCRIMINATION NETWORK

Shunichi Tano, Machida; Motohisa Funabashi, Sagamihara; Shoichi Masui, Kawasaki, and Seiji Sakagnchi, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1986, Ser. No. 897,841
Claims priority, application Japan, Sep. 6, 1985, 60-195845
Int. Cl.[4] G06F *15/46, 15/18*
U.S. Cl. 364—513 3 Claims



1. A method for dynamically reconstructing a network in a system in which a determination of whether or not a composite condition for an object data including a data name and at least a pair of an attribute name and an attribute value is satisfied based on network nodes representing clauses of the composite condition, said network nodes being sequentially processed beginning with a node corresponding to the highest position in the network, comprising the steps of:

collecting node processing information when said composite condition is determined to be satisfied; and

dynamically reconstructing the network basded on the collected node processing information.

4,761,747

SWITCHING NETWORK FOR MONITORING STATIONS

Michael J. Gauder, Englewood, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 24, 1986, Ser. No. 877,926
Int. Cl.[4] G06K *15/00;* **H01H** *67/00*
U.S. Cl. 364—514 4 Claims



1. A switching system having a network for a monitoring station comprising N monitor units, each unit having an individual input channel for an analog signal to be monitored, and the station having M instrumentation units for additional monitoring of the analog signals, M and N being integers greater than one;

wherein said network comprises (M×N) relays, M of which are individual to each of said monitor units, each relay having a winding and two sets of normally open contacts, one set being signal contacts and the other set being feedback contacts, the M relays for each monitor unit having one side of the signal contacts connected together to the input channel for that unit, and the other side connected individually to M output channels, each output channel being coupled to an individual one of the instrumentation units, whereby the network is essentially M independent N-to-1 analog multiplexers designed to function as a single system;

wherein each of the monitor units has M manual switches for output channel selection, each of the switches being individually associated with one of the relays, and having an associated light-emitting is in an operated state;

electronic control means comprising common circuits and other circuits;

wherein the common circuits comprise a microprocessor, a source of clock signals coupled to an input of the microprocessor, an address bus coupled to outputs of the microprocessor, a data bus coupled to input/outputs of the microprocessor, a set of control leads coupled to outputs of the microprocessor, a reset lead coupled to an output of the microprocessor, address decode means with inputs coupled to the address bus and the set of control leads, a set of enable leads coupled from outputs of the address decode means, program memory means having inputs coupled to the address bus and one of the enable leads and outputs coupled to the data bus, temporary memory means having inputs coupled to the address bus and one of the enable leads and input/outputs coupled to the data bus;

wherein said other circuits comprise, individual to each of said manual switches, a switch buffer device, a feedback buffer device, and a flip flop, with the switch buffer device having a signal input coupled to the associated manual switch, an enable input coupled to one of the enable leads, and an output coupled to one lead of the data bus, with the feedback buffer device having a signal input coupled to the feedback contacts of the associated relay, an enable input coupled to one of the enable leads, and an output coupled to said one lead of the data bus, and with the flip flop having a data input coupled to said one lead of the data bus, a clock input coupled to one of enable leads, a reset input coupled to the reset lead, and an output coupled to the winding of the associated relay;

a program stored in the program memory having an overall routine comprising initialize means followed by general switch routine means for each of the M channels in sequence and back to the first channel in a loop which continues as long as the system is on and operation is normal;

in which the initialize means includes commands to cause the microprocessor to supply a signal via the reset lead to reset all of the flip flops;

in which the general switch routine means for each channel comprises commands for supplying signals via the address bus and the set of control leads to the address decode means to cause signals from the address decode means via the enable leads to select the switch buffer devices for that channel, to thereby read switch inputs onto the data bus, and to analyze the inputs to determine if any of the manual switches for that channel are operated; a decision command responsive to no manual switch being operated to branch and proceed to the general switch routine for the next channel, or responsive to at least one switch input indicating an operated manual switch to select one, to clear previous output for that channel with a command to reset any previously operated relay, to store the new output and cause signals to be supplied to operate the relay corresponding to the selected switch, followed by commands to read the status of the feedback contact for that relay, and in response to a signal indicating operation of the relay to restore the common circuits to a normal condition, and to proceed to the general switch routine for the next channel;

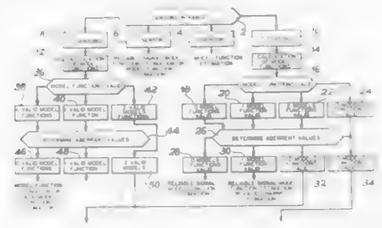
wherein the general switch routine means for each channel includes commands responsive to more than one request to make a decision, so that if one of the selected input lines is the same as the currently activated input, no action takes place, but if the selected input lines are different than what is currently activated, a precedence operation determines which is selected.

4,761,748

METHOD FOR VALIDATING THE VALUE OF A PARAMETER

Guy Le Rat, Torcy, and Jean-Marc Lagache, Paris, both of France, assignors to Framatome & Cie, Courbevoie, France

Filed Sep. 13, 1985, Ser. No. 775,567
Claims priority, application France, Sep. 13, 1984, 84 14065
Int. Cl.[4] G06F *11/14, 15/36*
U.S. Cl. 364—551 11 Claims



1. A signal validation method for generating a reliable signal from a plurality of redundant received signals, comprising the following steps:

simultaneously measuring samples of each of said received signals;

memorizing the values of the last N samples (N≧2) of each received signal;

determining a plurality of model functions corresponding to the N memorized samples for each of said received signals, said model functions being defined as a plurality of parameters representing an approximate function for said N memorized samples;

calculating a dispersion coefficient representing the difference between each sample of the N memorized samples and a sample, determined by the model functions;

validating said model functions by comparing said dispersion coefficient with a predetermined dispersion threshold, said model function being valid if said dispersion coefficient is smaller than said predetermined dispersion threshold; and

generating said reliable signal by determining a value for a sample of said reliable signal as a function of at least some of said valid model functions.

4,761,749

VEHICLE WHEEL ALIGNMENT APPARATUS AND METHOD

Raymond Titsworth, Conway; J. Tom Lipe, Little Rock; James L. Dale; Hanford D. Monroe, both of Conway, and Jerry M. Hill, North Little Rock, all of Ark., assignors to FMC Corporation, Chicago, Ill.

Division of Ser. No. 648,422, Sep. 7, 1984. This application Jan. 21, 1987, Ser. No. 6,031
Int. Cl.[4] G01B *7/315, 11/275*
U.S. Cl. 364—559 26 Claims

1. In a vehicle wheel alignment system, comprising

at least two alignment heads mountable on the vehicle wheels to be aligned,

alignment measurement instruments in at least one alignment head providing alignment data,

cordless alignment data transmission means mounted in the



at least one alignment head in communication with said alignment measuring instruments,

display means,

cordless alignment data reception means in cordless communication with said transmission means and coupled to said display means, whereby alignment data provided by the alignment measuring instruments is shown at said display means.

4,761,750

ELECTRONIC CALCULATOR WITH A PROGRAM CALCULATION FUNCTION

Hiroyuki Yoshino, and Morito Tamiya, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1985, Ser. No. 719,368
Claims priority, application Japan, Apr. 12, 1984, 59-73581
Int. Cl.[4] G06F *15/02*
U.S. Cl. 364—709 4 Claims



1. An electronic calculator with a program calculation function, comprising:

key input means including numerical keys for inputting numerical data, function keys, variable keys corresponding to a plurality of variables and arranged to designate selected ones of said variables, and an interval key for indicating a group of variables defined between two designated variables;

program memory means for storing program data which contains designated variables among said plurality of variables;

variable memory means for storing numerical data, said variable memory means including a plurality of memory areas arranged in a predetermined incremental order, each of said memory area corresponding to a different one of said plurality of variables, and said memory areas are arranged to be addressable by address data which defines an associated variable;

first memory means for storing address data corresponding to a first designated variable selected by operation of a first variable key;

second memory means for storing address data corresponding to a second designated variable selected by a second variable key operated consecutively after operation of said first variable key and said interval key in the stated order;

VOL 1093 ISS 1 AG 2 1988 UMI

comparing means for comparing the address data stored in said first memory means with the address stored in said second memory means, and for generating a comparing signal corresponding to a comparison result;

updating means for receiving the comparing signal and for incrementing the address data stored in said first memory means until the incremented address data in said first memory means at least coincides with the address data in the second memory means; and

control means for controlling said variable memory means to store a predetermined numerical data input by said numerical keys at corresponding memory area addressed by original address data corresponding to said first designated variable, and by the incremented addreses data as stored in said first memory means by operation of said updating means;

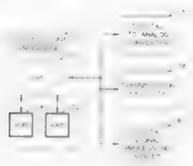
wherein the predetermined numerical data is stored in those memory areas of said variable memory means associated with the group of consecutive variables indicated by operation of said interval key.

4,761,751

METHOD AND APPARATUS FOR GENERATING DIGITAL SIGNALS REPRESENTING PERIODIC SAMPLES OF A SINE WAVE

Ronald J. Canniff, Naperville, Ill., assignor to American Telephone and Telegraph Company AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1986, Ser. No. 891,228
Int. Cl.[4] G06F *15/31*
U.S. Cl. 364—721 34 Claims



1. A method of generating electrical digital signals representing periodic sample values for a sine wave, the period of sample generation being T seconds, the frequency of said sine wave being F, T being less than 1/2F, wherein $\omega=2\pi FT$, comprising the steps of:

(a) generating electrical signals representing the value of d,$d=2\cos\omega$;

(b) generating electrical signals representing an initial value e of the value of said sine wave for time t=T and an initial value f of the value of the sine wave for time t=0;

(c) generating a next value E of said sine wave by calculating $E=de-f$;

(d) replacing f by e and e by E;

(e) transmitting an electrical signal representing the value E to a user of said signal;

(f) repeating steps (c), (d), and (e) every T seconds for the duration of the time of generation of said digital sine wave;

(g) calculating a normalizing factor N based on the values of d, e, and f;

(h) multiplying e and f by said normalizing factor; and

(j) repeating steps (g) and (h) every U seconds for the duration of the time of generation of said digital sine wave, where $U \geqq T$.

4,761,752

FRACTIONAL STEP CORRELATOR

Casper W. Barnes, Newport Beach, Calif., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 21, 1986, Ser. No. 854,260
Int. Cl.[4] G06F *15/336*
U.S. Cl. 364—728 7 Claims

1. A fractional step correlator circuit for determining the cross-correlation of a first input signal and a second input signal, said input signals each being represented as a series of discrete digital samples having a sample period π, comprising:

a plurality of fractional step delay (FSD) digital interpolation filter means, each of said filter means functioning to interpolate the value of a filter input signal at a different predetermined time between discrete signal sample times, and



a plurality of discrete time correlator circuits connected in cascade with said interpolation filters.

4,761,753

VECTOR PROCESSING APPARATUS

Hiroyuki Izumisawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1984, Ser. No. 654,889
Claims priority, application Japan, Sep. 28, 1983, 58-179621
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—736 7 Claims



1. A vector operation processing apparatus comprising:

a plurality of vector registers for individually holding ordered data elements;

a pipelined vector operation unit for processing said ordered data elements successively transmitted from a first pair of said vector registers which are designated by a vector instruction to produce intermediate operands;

an input selection circuit for writing said intermediate operands into a second pair of said vector registers which are designated by said vector instruction; and

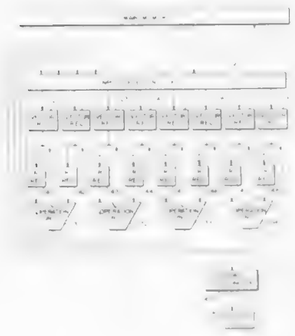
a write control means which is responsive to a vector instruction which specifies an inner product operation for causing said writing operation to be performed alternately between said first and second pairs of vector registers.

4,761,754

VECTOR PROCESSOR WHEREIN OUTPUTS OF VECTOR REGISTERS ARE FIXEDLY COUPLED TO INPUTS OF VECTOR CALCULATORS

Seiichiro Kinoshita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 7, 1984, Ser. No. 648,259
Claims priority, application Japan, Sep. 9, 1983, 58-165956
Int. Cl.[4] G06F *7/00, 9/00*
U.S. Cl. 364—736 5 Claims



1. A vector processing device in combination with a main memory for storing vectors as stored vectors, said vector processing device comprising:

a plurality of vector registers each for holding a vector,

a plurality of vector operation means for carrying out a vector operation based on operand vectors to produce a result vector,

input selecting means for selecting one of said vector registers as a destination register and for selecting one of said stored vectors or said result vector as a load vector to load said destination register with said load vector wherein said selected stored vector or said selected result vector is loaded into said selected vector register,

output selecting means for selecting one of the vectors held in said vector registers as a store vector for storage in said main memory,

means for fixedly coupling said vector registers to inputs of said plurality of vector operation means so that one of said vector operation means is coupled to receive outputs only from a first plurality of said vector registers and a second one of said vector operation means is coupled to receive outputs only from a second plurality of said vector registers which is different from said first plurality of vector registers wherein said operand vectors specify at least an operation code and the destination register without specifying source registers for said plurality of vector operation means, and

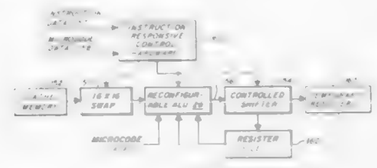
wherein said vector processing device further comprises selecting means for selecting one of said vector registers as a source register, a plurality of vector memories, memory selecting means for selecting one of said vector memories as a selected memory, and vector moving means for moving the vector held in said source register to said selected memory for storage therein as a retained vector.

4,761,755

DATA PROCESSING SYSTEM AND METHOD HAVING AN IMPROVED ARITHMETIC UNIT

Joseph L. Ardini, Jr., Needham; Robert F. Beckwith; Chi-Ping Chen, both of Framingham, and Paul K. Rodman, Ashland, all of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Jul. 11, 1984, Ser. No. 629,640
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—749 9 Claims



1. In a data processing system having

a central processing unit having an arithmetic unit for processing data in response to programmed machine instructions, and

a control store for storing microcode program instructions and responsive to a said machine instruction for implementing said machine instruction, the improvement comprising

a reconfigurable primary arithmetic logic unit, including a plurality of individually controlled secondary arithmetic logic units connected in a parallel arrangement for handling input groups of data,

a data string manipulation circuitry for aligning data strings for processing by the primary arithmetic logic unit, and

circuitry responsive to a microcode independent machine state for generating separate secondary arithmetic logic unit control signals for separately internally reconfiguring each said secondary arithmetic logic unit and for controlling said data string manipulation circuitry.

4,761,756

SIGNED MULTIPLIER WITH THREE PORT ADDER AND AUTOMATIC ADJUSTMENT FOR SIGNED OPERANDS

Hsiao-Peng S. Lee, Sunnyvale; John C. Oneto, Campbell, and Stephen J. Rawlinson, Sunnyvale, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 526,106, Aug. 24, 1983, abandoned.
This application Jul. 11, 1986, Ser. No. 883,468
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—757 3 Claims



1. An apparatus for multiplying a first operand having a sign

VOL 1093 ISS 1 A G 2 1988 UMI

by a second operand having a sign in 2's complement form to provide a final product, comprising:

a first register for storing the first operand;

means, coupled to the first register, for generating a complement of the first operand;

a second register for storing the second operand;

means, coupled to the second register, for generating a complement of the second operand;

means, coupled to the first register and the second register to receive the first operand and an increment of the second operand, for multiplying the first operand by the increment of the second operand to generate a partial sum output and a partial carry output;

third register means, coupled to the means for multiplying, for storing the partial sum output and the partial carry output;

a result register;

three port adder means, having a first port, a second port and a third port, for adding data received at the first, second and third ports to generate a resulting sum and supplying the resulting sum to the result register,

the first port, second port and third port connected to receive in any given machine cycle up to three of the following data, the partial sum output from the third register, the partial carry output of the third register, the first operand, the complement of the first operand, the second operand, the complement of the second operand, the contents of the result register or zero;

control means, coupled to the means for multiplying and the three port adder means, for controlling the means for multiplying and the three port adder means to successively generate partial sum and carry outputs and to add the partial sum and carry outputs to the contents of the result register to generate a partial product until a final partial product is generated; and

adjustment means, responsive to the sign of the first operand and of the second operand for generating an adjustment, the adjustment being determined by a first condition in which the first operand is negative and the second operand is positive, a second condition in which the first operand is positive and the second operand is negative, and a third condition in which both the first and second operands are negative, including

means, responsive to the first condition, for controlling the adder means to add the complement of the second operand to contents of high order bits of a final partial product in the result register,

means, responsive to the second condition, for controlling the adder means to add the complement of the first operand to the contents of the result register before generation of a partial product, and

means, responsive to the third condition, for controlling the adder means to add a multiple of the complement of the first operand to the contents of the result register before generation of a partial product and to add a multiple of the complement of the second operand to high order bits of the final partial product in the result register.

4,761,757

CARRY-SAVE-ADDER THREE BINARY DIVIDING APPARATUS

Tatsuya Sakai, and Sakou Ishikawa, both of Hadano, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 14, 1986, Ser. No. 818,687

Claims priority, application Japan, Jan. 18, 1985, 60-5669

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—761 5 Claims

1. A dividing apparatus comprising:

a first carry-save adder for carrying out divisor addition and divisor subtraction to generate a first half-sum and a first half-carry;

a second carry-save adder for receiving the first half-sum and the first half-carry and carrying out one of divisor addition and divisor subtraction to generate a second half-sum or a second half-carry;

a half carry-save adder for receiving the first half-sum and the first half-carry and carrying out another operation to that of said second carry-save adder to generate a third half-carry;

an inverter for receiving the second half-sum and inverting the second half-sum to generate a third half-sum;

a plurality of carry look-ahead circuits each connected to said first and second carry-save adders and said half carry-save adder for receiving a pair of the first, second or third half-sum and a half-carry to generate a carry when the received half-sum and half-carry are full-added;



a quotient determining circuit for determining first and second quotient bits, including means for determining the first quotient bits based on the first half-carry and a carry from the carry look-ahead circuit connected to said first carry-save adder, and means for determining the second quotient bits based on the second and third half-carries and carries from said plurality of carry look-ahead circuits; and

a selection circuit for selecting one of pairs of the second and third half-carries and a half-sum based on the first and second quotients and selecting the divisor or inversion thereof to supply the selected divisor or inversion thereof to said first carry-save adder.

4,761,758

DIGITAL SIGNAL PROCESSOR WITH DIVIDE FUNCTION

Andrew G. Deczky, and Stephen G. Rayment, both of Nepean, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 2, 1986, Ser. No. 902,988

Int. Cl.⁴ G06F *7/52*

U.S. Cl. 364—761 1 Claim

1. A digital signal processor for dividing a digital dividend signal by a digital divisor signal to obtain a digital quotient signal and a digital remainder signal, the processor comprising:

an arithmetic logic unit (alu) having selectively concatenated independently controllable most (MSB) and least (LSB) significant bit sections having first and second inputs, and first and second outputs;

an accumulator (acc) having most (msb) and least (lsb) significant bit sections with respective inputs connected to the first and second outputs of the arithmetic logic unit;

a shift register (sr) having an additional signal input, and having an output connected to the second input to the arithmetic logic unit, means for connecting respective inputs of the shift register to first and second outputs of the accumulator; and

a control means:

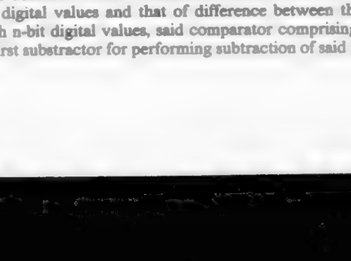
(a) for loading the dividend signal into the least significant bit section of the accumulator,

(b) for testing whether the current value of the digital signal in the arithmetic logic unit from the most significant bit section of the accumulator is negative,

(c) for shifting the concatenated signal from the accumulator in the shift register to double the value thereof,

(d) in response to a negative msb signal in the accumulator, for adding in the most significant bit section of the arithmetic logic unit, the value of the divisor signal to the current value of the signal from the most significant bit section of the shift register and storing the resultant signal in the most significant bit section of the accumulator,

(e) in response to a negative msb signal in the accumulator, for incrementing in the least significant bit section of the arithmetic logic unit, the value of the signal from the least significant bit section of the shift register by one, and storing the resultant signal in the least significant bit section of the accumulator



(f) in response to a non-negative msb signal in the accumulator, for subtracting in the most significant bit section of the arithmetic logic unit the value of the divisor signal from the current value of the signal at the output of the most significant bit section of the shift register and storing the resultant signal in the most significant bit section of the accumulator;

(g) in response to an N cycle counter, for repeating functions (b) to (f) N times, where N equals the number of bits of the dividend signal; then for

(h) repeating function (b),

(j) in response to a negative msb signal in the accumulator, for repeating functions (d) (c) and (e) to derive the digital remainder signal from the most significant bit section and the inverted digital quotient signal from the least significant bit section of the accumulator; and

(k) in response to a non-negative msb signal in the accumulator, for deriving the digital remainder signal from the most significant bit section of the accumulator, and for repeating function (c) to derive the inverted digital quotient signal from the least significant bit section of the accumulator.

4,761,759

ABSOLUTE VALUE COMPARATOR FOR DIFFERENCES

Shinichi Nakagawa, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1986, Ser. No. 840,998

Claims priority, application Japan, Mar. 20, 1985, 60-56410

Int. Cl.⁴ G06F *15/66, 7/50*

U.S. Cl. 364—769 7 Claims

1. An absolute value comparator for performing comparison of the absolute value of difference between first and second n-bit digital values and that of difference between third and fourth n-bit digital values, said comparator comprising:

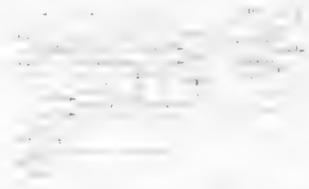
a first substractor for performing subtraction of said first and second digital values thereby to supply the result of subtraction and a first sign indicating signal indicating the sign of the result of subtraction;

a second subtractor for performing subtraction of said third and fourth digital values to supply the result of subtraction and a second sign indicating signal indicating the sign of the result of subtraction;

controller means for receiving said first sign indicating signal from said first subtractor and said second sign indicating signal from said second subtractor to decide the coincidence or incoincidence of the signs indicated by the same thereby to output sign identifying signals, said sign identifying signals indicating the result of decision;

said absolute value comparator further comprising:

operating means for performing, in response to said sign



identifying signals, operation on either subtraction of said result of subtraction in said first subtractor and said result of subtraction in said second subtractor or addition of said result of subtraction in said first subtractor and said result of subtraction in said second subtractor to output a third sign indicating signal indicating the sign of the result of operation on either the subtraction or addition;

controller means for receiving said second sign indicating signal from said second subtractor to detect the sign indicated by said second sign indicating signal thereby to output a fourth sign indicating signal; and

selecting means for receiving said third sign indicating signal from said operating means to selectively pass either said third sign indicating signal or an inverted signal of said third sign indicating signal in response to said fourth sign indicating signal from said sign detecting means.

4,761,760

DIGITAL ADDER-SUBTRACTER WITH TENTATIVE RESULT CORRECTION CIRCUIT

Nukiyama Tomoji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 19, 1985, Ser. No. 767,013

Claims priority, application Japan, Aug. 17, 1984, 59-171074

Int. Cl.⁴ G06F *7/50*

U.S. Cl. 364—788 5 Claims



1. A digital arithmetic unit for first and second binary numbers including a least significant adder and a plurality of adders arranged in cascade, each of said first and second binary numbers being subdivided into a plurality of segments, and

(a) said least significant adder comprising:

(1) carry lookahead means operative to produce a first carry signal representative of an actual carry based on

VOL 1093 ISS 1 AG 2 1988 UMI

one of the segments of said first binary number, a corresponding segment of said second binary number, and a dummy carry signal of value 0;

(2) adding means operative to add the segment of said first binary number to the corresponding segment of said second binary number for generation of a first partial sum of the segments, said adding means further being operative to add a suspense carry of value 1 to the first partial sum for generation of a first temporary result; and

(3) final result determination means operative to generate a first final result by subtracting a value 1 from said first temporary result

(b) each of said adders comprising:

(1) carry lookahead means operative to produce a second carry signal representative of an actual carry based on another segment of said first binary number, a corresponding segment of said second binary number and said carry signal fed from said least significant adder or said adder located at a lower position thereof,

(2) adding means operative to add said another segment of said first binary number to the corresponding segment of said second binary number for generation of a second partial sum of the segments, said adding means further being operative to add a suspense carry of value 1 to the second partial sum for generation of a second temporary result, and

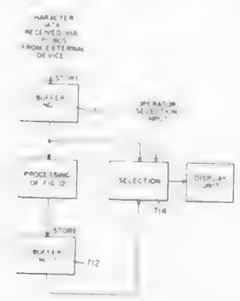
(3) final result determination means operative to generate a second final result by substracting a value 0 from said second temporary result in the presence of said carry signal and by subtracting a value 1 from said second temporary result in the absence of said carry signal.

4,761,761

MULTITYPE CHARACTERS PROCESSING METHOD AND TERMINAL DEVICE WITH MULTIPLE DISPLAY BUFFERS

Hiroshi Sekiguchi, Nakano, Japan, assignor to Kanars Data Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 657,772, Oct. 4, 1984, Pat. No. 4,727,511. This application Dec. 17, 1985, Ser. No. 809,744
Claims priority, application Japan, Oct. 4, 1983, 58-185514
Int. Cl.[4] G06F *3/153*
U.S. Cl. 364—900 10 Claims



1. A processing terminal device for receiving character data and processing said character data to obtain processed character data, said device comprising:

input means for receiving said character data;

first display buffer means for storing said character data received by said input means;

processing means connected to said first display buffer means for processing said received character data to provide processed character data;

second display buffer means for storing said processed character data provided by said processing means;

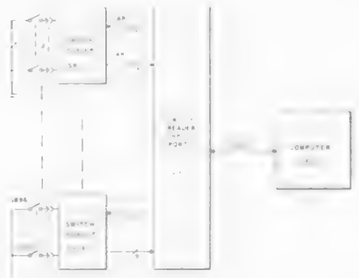
selector means operable by the operator for selecting between said first display buffer means and said second received buffer means and display means connected to said selector means for displaying the received character data stored in said first display buffer means or the processed character data stored in said second display buffer means as selected by said selector means.

4,761,762

INTERRUPT CONTROL SWITCH INTERFACE SYSTEM

Buddy L. Holmes, Ocean Springs, Miss., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 10, 1986, Ser. No. 849,991
Int. Cl.[4] G06F *3/00*
U.S. Cl. 364—900 5 Claims



1. Apparatus for reading the status of a plurality of switch contacts, which comprises an input port module and at least one switch reader module, the input port module having a plurality of ports and coupling to a processor via a bus, the switch reader module being coupled between a maximum of N of said switch contacts and one pot of the input port module;

wherein said switch reader module comprises a multiplex unit, a latch, an N-bit shift register, a comparator, a clock, and an address counter; with the coupling between said switch reader module and said one port including M address data leads, one switch data lead, a strobe lead, a clock lead, and a ready lead, 2^M being equal to N;

wherein said multiplex unit comprises multiplex means having N inputs coupled to said N switch contacts, address inputs from said address counter, and a multiplex output, for supplying a multiplex output signal to the multiplex output representing the state of one of the switch contacts as determined by signals at the address inputs;

wherein said clock comprises clock counting means having a clock input and four outputs designated phase one, phase two, phase three and phase four, for placing an active signal on one of the four outputs counting from one to four and then back to one, with the count advancing in response to each pulse at the clock input; the clock input being coupled via said clock lead from said port, and via the input port module and said bus, to receive clock signals from said processor; a scan count flip flop having an input on a scan-inhibit lead from the comparator, an input coupled to said ready lead, and an output to a clock scan gate, the clock scan gate being part of said coupling between said clock lead and the clock input of the clock counting means, the scan count flip flop having a first state and a second state which respectively enable and disable the clock scan gate;

wherein said address counter comprises a binary counter having a clock input from said phase one output of the clock, for counting pulses at its clock input from zero to N, and M output leads coupled to said address-data leads, the M output leads being also coupled to multiplex address means which supplies the address to the address inputs of the multiplex means in the form required;

said latch having an input from said multiplex output, a switch-data output coupled to said switch-data lead, and a clock input from the phase two lead for loading data from the multiplex means at phase two of the clock;

said N-bit shift register having a serial input from said switch-data output, a serial output to a previous-state lead, and a clock input from the phase-four output for shifting data from the serial input at phase four of the clock;

said comparator having comparison inputs from said switch-data output and the previous-state lead, a strobe output coupled to said strobe lead, an output to said scan-inhibit lead, and a clock input from the phase three lead, the comparator having means responsive to a pulse at its clock input and the comparison inputs being different to generate a pulse supplied to the strobe lead and also to the scan-inhibit lead, with the pulse on the scan-inhibit lead setting the scan count flip flop to said second state to stop the clock;

wherein the input port module include interrupt means which is actuated in response to a pulse on the strobe lead of any of its pots set that port to an interrupt condition and to supply an interrupt signal via said bus to the processor, and to select one of the ports having the interrupt condition, means to receive data from said address data leads and the switch data lead of the port selected and to transmit the data via the bus to the processor, and means responsive to a subsequent ready signal condition from the processor via the bus for supplying a pulse on the ready lead of the selected port;

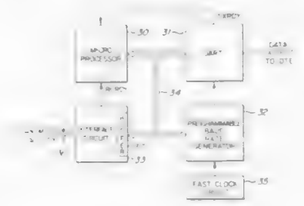
the scan count flip flop of the switch reader module being set to its first state in response to the pulse on the ready lead so that the clock scan gate is enabled to cause the clock to resume operation and the switch reader module continues scanning the swtich contacts from the next address.

4,761,763

RATE ADAPTATION CIRCUIT AND METHOD FOR ASYNCHRONOUS DATA ON DIGITAL NETWORKS

Gregory F. Hicks, Nepean, Canada, assignor to Northern Telecom Limited, Quebec, Canada

Filed Sep. 24, 1985, Ser. No. 780,367
Claims priority, application Canada, Jun. 28, 1985, 485968
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—900 13 Claims



1. In a digital system for transmitting synchronous digital data information, a data unit for interfacing a digital transmission facility to data terminal equipment, the data unit comprising: an interface circuit for receiving consecutive bytes of data from the digital transmission facility, a universal asynchronous receive transmit circuit (UART) having its output terminal connected to data terminal equipment, a dynamically adjustable baud rate generator for driving the UART, a microprocessor, and a bus interconnecting the microprocessor, the interface circuit, the UART, and the generator, the microprocessor being programmed for controlling the transfer of data received from the transmission facility to the output terminal of the UART and being responsive to the condition that the rate of the data being received from the transmission facility is greater than the nominal frequency of said baud rate generator for increasing the frequency thereof by an amount not exceeding a frequency corresponding to slightly less than one-half the duration of a stop bit at said nominal frequency.

4,761,764

PROGRAMMABLE READ ONLY MEMORY OPERABLE WITH REDUCED PROGRAMMING POWER CONSUMPTION

Takeshi Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 18, 1988, Ser. No. 853,509
Claims priority, application Japan, Apr. 18, 1985, 60-82756
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—181 7 Claims



6. A semiconductor memory comprising a plurality of word lines, a plurality of digit lines, a plurality of N-channel type memory transistors, each of said memory transistors having a floating gate, a control gate connected to one of said word lines and a source-drain current path connected between one of said digit lines and a reference potential point, a circuit node, a plurality of gate transistors, each of said gate transistors being connected between said circuit node and an associated one of said digit lines, a first decoder energizing one of said word lines in response to a first set of address signals, a second decoder turning ON one of said gate transistors in response to a second set of address signals, a first terminal supplied with a programming voltage in a programming operation, a second terminal supplied with an intermediate voltage between said programming voltage and a reference potential at said reference potential point, a switching transistor of a P-channel type having a source-drain current path connected between said first terminal and said circuit node, a third terminal receiving a programming control signal, means for producing a writing signal in response to said programming control signal, said writing signal taking either one of a first level substantially equal to said reference potential and a second level substantially equal to said programming voltage, a level conversion circuit converting said first and second levels of said writing signal into third and fourth levels, said third level being substantially equal to said intermediate voltage and said fourth level being substantially equal to said programming voltage, and means for applying the output of said level conversion circuit to a gate of said switching transistor.

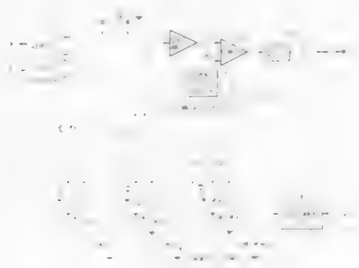
VOL 1093 ISS 1 AG 2 1988 UMI

4,761,765

SEMICONDUCTOR MEMORY DEVICE HAVING IMPROVED DATA OUTPUT CIRCUIT

Kiyokazu Hashimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 14, 1985, Ser. No. 690,904
Claims priority, application Japan, Jan. 13, 1984, 59-4315
Int. Cl.[4] G11C *11/40*
U.S. Cl. 365—185 1 Claim



1. A semiconductor memory comprising a plurality of memory transistors, each having a control gate, a floating gate and a source-drain current path; first and second power supply terminals; a circuit node; means responsive to a set of address signals for selecting one of said memory transistors to connect the source-drain current path of the selected memory transistor between said circuit node and said first power supply terminal, said selected memory transistor producing a current in response to data "1" stored therein and no current in response to data "0" stored therein; a sense amplifier including a first inverting amplifier having an input terminal connected to said circuit node and an output terminal, a first transistor of a depletion type having a source-drain current path connected between the input and output terminals of said first inverting amplifier and a gate connected to one of its source and drain, said first transistor representing a first feedback resistor having a first resistance value, a second transistor of an enhancement type having a source-drain current path connected between said second power supply terminal and the input terminal of said first inverting amplifier, a third transistor of said enhancement type having a gate connected to the output terminal of said first inverting amplifier and a source-drain current path connected between said second power supply terminal and a gate of said second transistor, the output terminal of said first inverting amplifier taking a first potential when the selected memory cell stores data "1" and a second potential when the selected memory cell stores data "0"; a reference voltage generator including a second inverting amplifier having input and output terminals, a single dummy memory transistor having a floating gate, a control gate connected to said second power supply terminal and a source-drain current path connected between said first power supply terminal and the input terminal of said second inverting amplifier, said dummy memory transistor having the same structure as the memory transistor and producing a current that is substantially equal to the current produced by the selected memory transistor, a fourth transistor of said depletion type having a source-drain current path connected between the input and output terminals of said second inverting amplifier and a gate connected to one of its source and drain, said fifth transistor representing a second feedback resistor having a second resistance value that is smaller than said first resistance value, a fifth transistor of said enhancement type having a gate connected to the output terminal of said second inverting amplifier and a source-drain current path connected between said second power supply terminal and the input terminal of said second inverting amplifier, the output terminal of said second inverting amplifier taking a reference potential that is an intermediate level between said first and second potentials; and a comparator having input terminals connected respectively to the output terminals of said first and second inverting amplifier and comparing the potential at the output terminal of said first inverting amplifier with said reference potential to produce an output data signal representative of the data stored in the selected memory cell; wherein the output terminal of said first inverting amplifier is clamped to a first level larger than a potential of the input terminal thereof by threshold voltages of said second and third transistors when said second and third transistors are turned ON and the output terminal of said second inverting amplifier is clamped to a second level larger than a potential of the input terminal thereof by a threshold voltage of said fifth transistor when said fifth transistor is turned ON, said first level being smaller than said second level.

4,761,766

READ-WRITE CONTROL FOR ECL MEMORY

Claude Barre, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 12, 1986, Ser. No. 906,211
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1985, 3533453
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—190 2 Claims



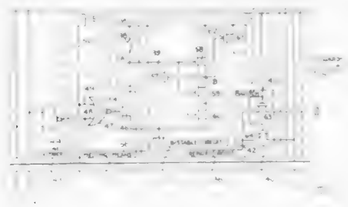
1. In a write-read control for an ECL memory having a plurality of storage cells arranged in rows and columns, said storage cells in a given column being connected in common to a pair of bit lines, said bit lines serving as data inputs and data outputs for said cell, a pair of write-read transistors having their collectors and emitters connected in series with said bit lines, said write-read control comprising; means for supplying output control signals to the bases of said two write-read transistors in response to first and second control input signals (W and R) for causing said output control signals to assume an upper value H, a lower value L, or an intermediate value M, in accordance with said two write-read control signals, said output control signals assuming opposite H and L values when said two control input signals (W and R) are high and low respectively, said output control signals both assuming an intermediate value M when said write-read control signals (W and R) are low and high respectively, and said output control signals both assuming a high value when said write-read signals (W and R) are both low, and means for changing the level of the write-read control signal R from high to low prior to the change of the level of the write-read control signal W from low to high, during a transition from a read access to a write access, whereby said output control signals are both high immediately prior to each write access.

4,761,767

HIGH RELIABILITY INTEGRATED CIRCUIT MEMORY

Richard Ferrant, Aix en Provence, France, assignor to Eurotechnique, Rousset, France

Filed Jan. 13, 1986, Ser. No. 818,030
Claims priority, application France, Jan. 15, 1985, 85 00526
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—200 5 Claims



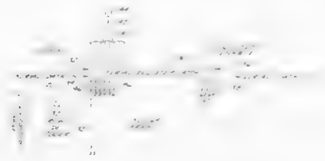
1. An integrated circuit memory, comprising:
memory cells divided into lines and columns in a matrix, the cells of the same cell line being connected to the same connections called bit lines, said bit lines being each, on the one hand, biased by a power supply circuit and, on the other, each in series with a respective bit line selection circuit,
repair circuits comprising means for disabling the selection circuit and thus placing bit lines of cell lines out of action and means for enabling circuits for selecting bit lines of additional cell lines which replace the cell lines placed out of action, and means for interrupting the power supply to the cell lines placed out of action wherein said power supply circuits each comprise a transistor connected to a supply terminal of a corresponding bit line of the memory, to a power supply terminal, and, by its control electrode, to said interrupting means.

4,761,768

PROGRAMMABLE LOGIC DEVICE

John E. Turner, and David L. Rutledge, both of Beaverton, Oreg., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Filed Mar. 4, 1985, Ser. No. 707,662
Int. Cl.[4] H03K *19/177*; G06F *11/26*
U.S. Cl. 365—201 25 Claims



1. In an integrated programmable logic device comprising a plurality of input lines, a plurality of product terms, a matrix of programmable cells each selectively coupling respective ones of said input lines to respective ones of said product terms, and output logic circuits coupling said product terms to device terminals, the improvement wherein:
said programmable cells each comprise an electrically erasable and reprogrammable floating gate transistor having a source and a drain and employing Fowler-Nordheim tunneling to achieve charge transfer between the floating gate and the transistor drain so that the transistor may be operated in either the enhancement mode or the depletion mode, whereby the transistor is either conductive or non-conductive when an interrogation signal is applied to the gate of the floating gate transistor, and a cell select transistor connected in series relation with said floating gate transistor and whose state is controlled by a respective input line signal;
said device further comprises means for programming the floating gate transistors comprising said cells to either the enhancement mode or the depletion mode, said programming means adapted to program in parallel the cells coupled to a selected input line whose cell select transistors have been gated to the conductive state; and
cell verification means for reading in parallel the programmed states of the respective cells coupled to a selected input line and providing a data sequence representative of respective programmed states at a device output port.

4,761,769

MOS READ-ONLY MEMORY DEVICE

Kaoru Saito, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1986, Ser. No. 890,482
Claims priority, application Japan, Aug. 2, 1985, 60-170868
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—230 6 Claims



1. An MOS read-only memory device comprising
(a) a memory cell matrix including a plurality of word lines, a plurality of bit lines and a plurality of MOS transistors, said word lines and said bit lines being in a matrix form, said MOS transistors being selectively connected between said word lines and bit lines;
(b) an address decoder connected to said memory cell matrix for selecting one of said word lines in response to address signals;
(c) a clock signal generating circuit for supplying a pair of positive and negative clock signals ϕ and $\bar{\phi}$ to first and second signal lines by detecting a level change of any one of said address signals, said clock signals ϕ and $\bar{\phi}$ having a prescribed pulse width; and
(d) a plurality of charging control circuits each connected to said first and second signal lines for providing a charging current to one of said bit lines, each of said charging control circuits including a load MOS transistor having a gate electrode, a first electrode connected to a first power source and a second electrode connected to one of said bit lines; an MOS switching transistor having a gate electrode connected to said first signal line, a first electrode connected to a second power source and a second electrode connected to said gate electrode of said load MOS transistor; and a tri-state circuit having an input connected to said one of said bit lines and an output connected to said gate electrode of said load MOS transistor, a first control input connected to said first signal line, and a second control input connected to said second signal line, whereby when said pair of clock signals ϕ and $\bar{\phi}$ are

VOL 1093 ISS 1 AG 2 1988 UMI

supplied to said tri-state circuit so as to make its output a high impedance, said load MOS transistor charges said one of said bit lines during a prescribed period.

4,761,770

ULTRASONIC BINAURAL SENSORY AID FOR A BLIND PERSON

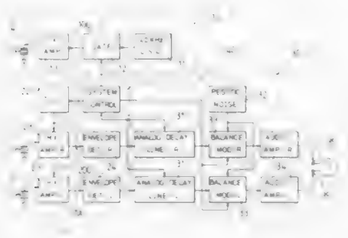
Wonky Kim, 263 Chagchun-dong, Suhdaemoon-ku, and Taeyoung Choi, 17-6 Shinchun-dong, Kangdong-ku, both of Seoul, Rep. of Korea

Filed Sep. 2, 1987, Ser. No. 92,370

Claims priority, application Rep. of Korea, Sep. 15, 1986, 86-7700

Int. Cl.[4] G01S 9/68

U.S. Cl. 367—116 10 Claims



1. A method of detecting the position of objects in an ultrasonic binaural sensory aid, comprising:

radiating ultrasonic signals over an area comprising a field of view;

receiving signals reflected from objects within said field of view;

amplifying the received signals;

detecting the envelope of the amplified signals;

stretching the time axis of the detected envelopes; and modulating the stretched detected envelopes with pseudo noise to generate audio signals representative of said detected objects.

4,761,771

ELECTRONIC TIMEKEEPING APPARATUS WITH TEMPERATURE COMPENSATION AND METHOD FOR COMPENSATING SAME

Tatsuo Moriya; Hitomi Aizawa; Kuniharu Natori; Kazumi Kamoi, and Hiroshi Yabe, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 763,118, Aug. 7, 1985, abandoned. This application May 4, 1987, Ser. No. 46,063

Claims priority, application Japan, Aug. 9, 1984, 59-167048; Aug. 13, 1984, 59-168992

Int. Cl.[4] G04B 17/12

U.S. Cl. 368—202 68 Claims

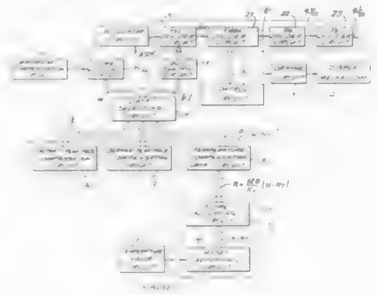
1. An electronic timekeeping apparatus, comprising:

a temperature value generating means for generating a temperature value;

a temperature value converting means which provides a slope corrected output in accordance with a frequency versus temperature characteristic of said apparatus in response to said temperature value;

an offset adjusting means which operates on said temperature value so that said slope corrected output is referenced with respect to a predetermined temperature, at least one of said slope adjusting means and said offset adjusting means comprising a PROM;

a pace compensation data means for producing pace compensation data corresponding to said slope corrected output, said pace compensation data means including a Mask ROM in which the pace compensating data is stored; and



a pace compensating means for compensating the pace of said apparatus in accordance with said pace compensation data.

4,761,772

OPTICAL DISK RECORDING AND REPRODUCING APPARATUS RELIABLY PROVIDING ACCESS TO DESIRED TRACKS

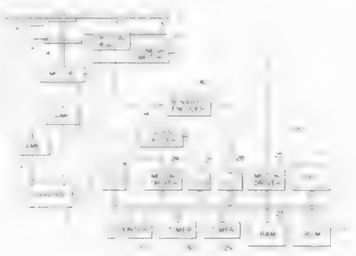
Hiroyasu Murakami, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1984, Ser. No. 666,610

Claims priority, application Japan, Oct. 31, 1983, 58-203830

Int. Cl.[4] G11B 21/08, 7/013

U.S. Cl. 369—32 6 Claims



1. An optical disk recording and reproducing apparatus comprising:

an optical disk memory having a non-recording area, an user accessible area and user inaccessible area provided between said non-recording area and said user accessible area, said user inaccessible area and an user accessible area each having a plurality of blocks, and a block head data representative of a block position on said disk being recorded in each of said blocks, said user inaccessible area having only block head data recorded in individual blocks, and no block head data being recorded in said non-recording area;

optical head means for effecting recording and reading operations with respect to said user accessible area of said optical disk memory;

head driver means for driving said optical head means; and

data processing means for supplying an energization signal corresponding to the data to be recorded to said optical head means when said optical head means is located at said user accessible area, and for receiving a reproduction signal from said optical head means when said optical head means is located at said user accessible area or said user inaccessible area, said data processing means being program controlled by a control program to supply drive data to said head driver means for allowing the optical head means to perform a controlled access only onto a desired block in said accessible area and for repositioning said optical head means to said accessible area after receiving said reproduction signal from said optical head means being inadvertently located at said user inaccessible area.

4,761,773

TRACKING CONTROL APPARATUS

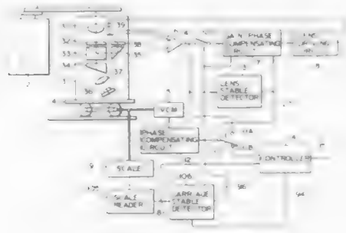
Hiroo Okada, Ina; Yoshiaki Ikeda, and Makie Morota, both of Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 18, 1986, Ser. No. 840,928

Claims priority, application Japan, Mar. 23, 1985, 60-59151

Int. Cl.[4] G11B 7/00, 21/10

U.S. Cl. 369—44 3 Claims



1. A tracking control apparatus for tracking a desired track with a laser beam emitted from a laser device through an objective lens and for generating a tracking error signal representing a difference between a portion tracked by the laser beam and the desired track, said tracking control apparatus comprising:

lens tracking means coupled to an objective lens for tracking a desired track with a laser beam and including means for moving the objective lens in accordance with a tracking error signal, said tracking error signal having a plurality of frequency components;

carriage tracking means coupled to a laser device for tracking the desired track with the laser beam and including means for moving the laser device in accordance with the tracking error signal;

tracking control means coupled to said lens tracking means and to said carriage tracking means for operating only said lens tracking means during a first time period and for operating both said lens tracking means and said carriage tracking means during a second time period after said first time period; and

gain compensating means, coupled to said lens tracking means, and including amplifying means for amplifying only predetermined frequency components of said tracking error signal supplied to said lens tracking means only during said first time period, said amplified frequency components being lower than a resonance frequency of said lens tracking means, said gain compensating means thereby increasing a gain of said lens tracking means for said amplified frequency components lower than said resonance frequency of said lens tracking means only during said first time period.

4,761,774

OPTICAL DISC DRIVE APPARATUS

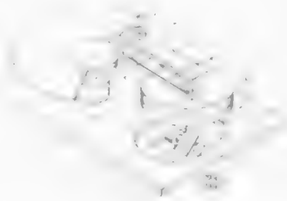
Hiromichi Ishibashi, Toyonaka; Shinichi Tanaka, Kyoto; Ryosuke Shimizu, Yawata; Makoto Kuwamoto, Katano, and Hajime Yamamoto, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 23, 1986, Ser. No. 866,584

Claims priority, application Japan, May 30, 1985, 60-116906; Feb. 17, 1986, 61-32327

Int. Cl.[4] G11B 7/095

U.S. Cl. 369—44 19 Claims



1. An optical disc drive apparatus comprising:

an optical system having a light emitting means for emitting light;

an objective lens for focusing the light emitted from said optical system to form a light spot on a surface of an optical disc on which information is recorded in information tracks;

a rotatable means having a rotational axis along which the light emitted from said optical system passes and having said objective lens mounted thereon for causing said objective lens to move arcuately in a direction crossing the information tracks of said optical disc to allow the light spot to coarsely track the information tracks;

a light guide means mounted on said rotatable means for guiding the light passed along the rotational axis of said rotatable means to said objective lens; and

an optical path deflecting means for receiving the light emitted directly from said optical system and passing the light along the rotational axis of said rotatable means and being movable for deflecting the light, said optical path deflecting means being mechanically isolated from said rotatable means and the movement being such as to allow the light spot to finely track the information tracks.

4,761,775

OPTICAL DISC USING TRACKING AND CLOCKING PREPITS AND ADDRESS PREPITS BETWEEN ADJACENT ONES OF THE TRACKING AND CLOCKING PREPITS, AND AN OPTICAL APPARATUS USING SUCH A DISC

Hiroyasu Murakami, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 722,761, Apr. 15, 1985, abandoned, which is a continuation of Ser. No. 388,173, Jun. 14, 1982, abandoned. This application Jan. 23, 1987, Ser. No. 8,118

Claims priority, application Japan, Jun. 18, 1981, 56-94427

Int. Cl.[4] G11B 7/00

U.S. Cl. 369—46 8 Claims

8. A disc for receiving optically recorded information thereon and playing back information therefrom, comprising:

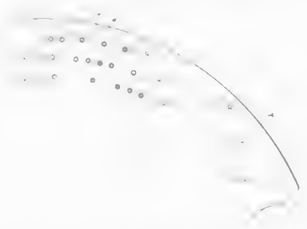
a disc member having a surface and no pregroove;

a plurality of first prepits helically preformed on said surface at a predetermined pitch by which, at least in a data recording mode, tracking and clock generation can be performed;

a plurality of groups of consecutively arranged second prepits formed between first adjacent ones of said first prepits

VOL 1093 ISS 1 AG 2 1988 UMI

and constituting a header including address data used for designating a position for recording data, said surface being pre-formed with said first and second prepits; and a plurality of data recording areas, adapted for receiving



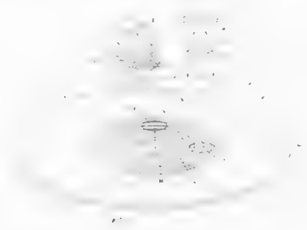
data pits to be recorded therein, each said data recording area located between second adjacent ones of said first prepits arranged after said header, said second adjacent ones of said prepits being ones between which said groups are not formed.

4,761,776

DEVICE FOR DETERMINING A CENTRING ERROR OF AN OPTICAL DISC RELATIVE TO THE AXIS OF ROTATION OF A TURNTABLE SUPPORTING THE DISC

Willem G. Opheij, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1986, Ser. No. 833,922
Claims priority, application Netherlands, Dec. 11, 1985, 8503411
Int. Cl.[4] G11B 7/26
U.S. Cl. 369—54 15 Claims



1. A device for determining the centering error of an information structure on an optical record carrier relative to the axis of rotation of a turntable supporting the record carrier, which information structure comprises a plurality of generally concentric, circular tracks, said device comprising at least one radiation source for projecting radiation onto the information structure and a radiation-sensitive detection system for converting radiation coming from the record carrier into an electrical signal which is indicative of the centering error, characterized in that the radiation source produces a radiation beam whose cross-section at the location of the information structure and transverse to the local track direction is between at least a few times and several thousands of times the period of the tracks and in that the radiation-sensitive detection system comprises at least two detectors arranged in the path of a first-order diffraction beam which is formed as a result of the radiation beam being diffracted transversely of the local track direction by the information structure, and means for producing, from output signals of said at least two detectors, said electrical signal indicative of the centering error.

4,761,777

OPTICAL MULTIPLEX SYSTEMS

Roger A. Edwards, and Peter T. Gardiner, both of Cheltenham, England, assignors to Smiths Industries Public Limited Company, London, England

Filed Nov. 24, 1986, Ser. No. 933,948
Claims priority, application United Kingdom, Dec. 18, 1985, 85 31150
Int. Cl.[4] H04B 9/00
U.S. Cl. 370—3 8 Claims



1. An optical multiplex system comprising: a fiber-optic cable; a source of optical radiation, said source supplying radiation within a broad band of wavelengths to one end of said cable; a plurality of transducer devices arranged in series one after the other along said cable, each of said transducer devices having a respective filter that is movable relative to a path of radiation through said cable, each filter absorbing radiation in a respective narrow band of wavelength that differs from one another within said broad band, and each filter transmitting radiation passed through said filter to other transducer devices in the series in accordance with the position of said filter relative to said path of radiation; and optical radiation receiver means mounted to receive radiation emitted from the other end of said cable after passing through all said transducer devices, said receiver means responding to radiation within each of the said narrow bands of wavelength and producing respective outputs in accordance therewith.

4,761,778

CODER-PACKETIZER FOR RANDOM ACCESSING IN DIGITAL COMMUNICATION WITH MULTIPLE ACCESSING

Joseph Y. N. Hui, Plainfield, N.J., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 11, 1985, Ser. No. 722,275
Int. Cl.[4] H04L 5/22; H04Q 11/04; H04J 3/00
U.S. Cl. 370—46 8 Claims



1. In a common channel of communication, apparatus for transmitting serially related bit streams of information from

multiple geographically distributed sources over said common channel of communications, comprising:

(a) an encoder for at least one such source for redundantly encoding the bits in a bit stream originating from said one such source into a serially related encoded bit stream;

(b) interleaving means for interleaving the bits into a plurality of different packets of bits;

(c) storage means for storing said packets;

(d) transmitter means for transmitting said packets in bursts at random intervals over said common channel; the number of such packets being sufficiently large so that consecutive bits in a packet are not serially related.

4,761,779

SUBSCRIBER'S LINE SWITCHING CONTROL SYSTEM

Takashi Nara; Hiroaki Takeichi; Yoshio Morita, all of Yokohama; Takashi Hatano, Machida, and Yutaka Kawato, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 20, 1986, Ser. No. 932,621
Claims priority, application Japan, Nov. 28, 1985, 60-266072
Int. Cl.[4] H04J 3/12
U.S. Cl. 370—58 5 Claims



1. A subscriber's line switching control system responsive to control information from a signal control device, comprising:

a network of a digital switching system, operatively connected to the signal control device, accommodating, via a subscriber's line interfacer, at least one of a digital subscriber's line and an analog subscriber's line;

a packet handler connected directly to said network and via said network to the signal control device; and

a processor, operatively connected to said network and the signal control device, for controlling said network according to the control information from the signal control device to compile call control information into a packet form in said subscriber's line interfacer, the call control information being transferred in said packet form via said network to said signal control device, and digital data from the digital subscriber's line being transferred via said network to said packet handler.

4,761,780

ENHANCED EFFICIENCY BATCHER-BANYAN PACKET SWITCH

Bryan L. Bingham, Parsippany; Chester M. Day, Jr., Randolph, and Lanny S. Smoot, Morris Township, Morris County, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Dec. 22, 1986, Ser. No. 945,079
Int. Cl.[4] H04J 3/00
U.S. Cl. 370—60 9 Claims

1. A packet switch comprising

a plurality of input ports interconnected in a ring-like configuration,

a plurality of output ports, and

a self-routing switch network for routing packets present at said input ports to particular output ports depending on addresses contained in said packets,

said ring-like configuration of input ports being adapted to circulate a plurality of bits including one bit corresponding to each of said output ports, each of said input ports being adapted to read said bits to determine if a particular output port is available for a packet and to write said bits to reserve a particular output port for a packet.

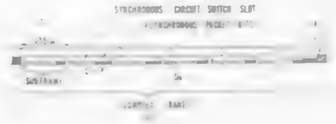


4,761,781

ADAPTATIVE PACKET/CIRCUIT SWITCHED TRANSPORTATION METHOD AND SYSTEM

Jean Calvignac, LeGaude, and Pierre Secondo, Saint Jeannet, both of France, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 4, 1986, Ser. No. 893,075
Claims priority, application European Pat. Off., Aug. 13, 1985, 85430027.4
Int. Cl.[4] H04J 3/26
U.S. Cl. 370—94 6 Claims



1. A method for configuring a succession of complex bit frames for exchanging synchronous circuit switched bits such as digitized voice signals which have been sampled at a frequency fs and coded with m bits per sample and asynchronous packet switched bits, between nodes interconnected by transmission links working at a plurality of bit rates V said method comprising the steps of:

generating in sequence a plurality of complex frames each containing an integer number of bits Nc or Nc+1 each of which complex frame includes n subframes where n is an integer number equal to or greater than one, each of said complex frames being provided with a flag field f, the period of each said complex frame is made to equal a value n.T+e where T is equal to the reciprocal of the sampling frequency fs used for providing the circuit switched bits, e is less than the link bit period, Nc is the integer part of V.n.T and selected to be as close as possible to an integer number Na which is the number of bits in the time period T on the link having the maximum bit rate Vmax and n is the integer part of Na/Nts where Nts is the integer part of V.T;

calculate the remaining bits R in each complex frame where R=n[V.T−Nts], compare the calculated value of R to f if R is greater than f used the computed value of Nts in subsequent steps, if not decrement Nts by one and recalcu-

VOL 1093 ISS 1 AG 2 1988 UMI

late R until R is greater than f and use the decremented value of Nts in subsequent steps;

allocate an integer number of the Nts bits in each said subframe to an integer number of circuit switched bit slots and the remaining bits to asynchronous packet switched bits; and

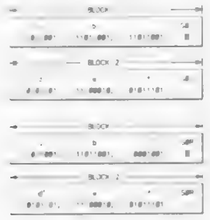
partition the R remaining bits between the flag field f and residual bits r where r=R−f, said r residual bits being used for asynchronous packet switched bits, whereby the complex frames may be retrieved and distributed at the receiving end of the transmission link by detecting the flag f and counting the bits in the complex frame.

4,761,782

ERROR CORRECTION OF DIGITAL IMAGE DATA BY MEANS OF IMAGE REDUNDANCY

Shaw-Yueh Lin, Encinitas, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 9, 1987, Ser. No. 23,327
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—30 20 Claims



18. Method of encoding redundant digital data, said method comprising the steps of:

(a) grouping said data into at least one block,

(b) identifying specific bit patterns in said redundant data in said block,

(c) defining a relation between said specific bit patterns and at least one check bit, and

(d) assigning said check bit to said block in accordance with said relation whereby said check bit identifies the occurrence of said specific bit patterns in said data in said block.

4,761,783

APPARATUS AND METHOD FOR REPORTING OCCURRENCES OF ERRORS IN SIGNALS STORED IN A DATA PROCESSOR

Harold F. Christensen, 38455 Berkeley Commons, Fremont, Calif. 94536, and Joseph A. Petolino, Jr., 3730 Redwood Cir., Palo Alto, Calif. 94306

Filed Oct. 17, 1986, Ser. No. 920,522
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—38 11 Claims

1. An apparatus for reporting errors in data stored in a memory apparatus of a data processor, comprising:

first means for storing multiple digital first signals;

second means for storing the multiple digital first signals and adapted for storing at least one digital second signal;

third means for transmitting the multiple digital first signals substantially from the first means to said second means;

fourth means, for testing, in the course of the transmitting of the first signals by said third means, for an occurrence of one or more errors in the multiple first signals and for providing at least one digital second signal in response to a detecting of an occurence;

fifth means for transmitting the multiple first signals substantially from said second means to said first means;

sixth means for testing, in the course of the transmitting of the multiple first signals by said fifth means, for an occurrence in said second means of one or more errors in a first set of signals including the multiple first signals, and the at least one second signal; and

seventh means for correcting single bit errors detected by the sixth means in the first set of signals.



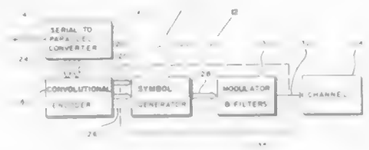
eight means for providing at least one third signal in response to the at least one digital second signal in the course of the transmitting of the multiple digital first signals by said fifth means.

4,761,784

MODEM AND METHOD USING MULTIDIMENSIONAL CODED MODULATION

Rangarajan Srinivasagopalan, Coral Springs; James D. Pruett, Fort Lauderdale; Vedavalli G. Krishnan, Miami Lakes, and Luis V. Farias, Sunrise, all of Fla., assignors to Racal Data Communications Inc., Sunrise, Fla.

Filed Jan. 15, 1987, Ser. No. 4,389
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—43 53 Claims



1. In a modulation-demodulation system for transmitting a plurality of information bits over a band limited channel, said system including a transmitter having convolutional encoder means, said convolutional encoder means each group interval providing one of a plurality of members of a coset, said coset being one of a plurality of cosets with each of said cosets being associated with a unique permissible transition of said convolutional encoder means from a given present state to one of a plurality of next states, each said group interval having a plurality of bauds, each of said members having a plurality of components with each of said components being associated with a unique one of said bauds, said system further including a receiver having branch cost calculator means for selecting one of said members from each of said cosets for said group interval based upon said selected member having associated therewith a minimum member cost relative to a plurality of member costs of the other said members of said coset, each of said member costs being a sum of a plurality of component costs for said components of one of said members, the improvement comprising:

said convolutional encoder means being designed to provide at least one group of at least two of said members of one of said cosets with each of said members of said group having a non-common portion and a common portion, each of said non-common portions including at least one non-common component which is different between said at least two members and each of said common portions including at least one common component which is the same between said at least two members;

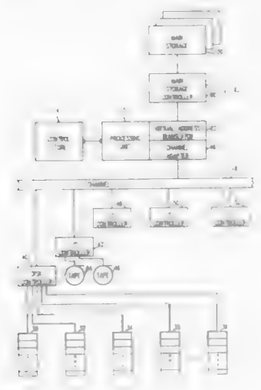
said branch cost calculator means having comparing means for comparing at least two non-common portion costs associated with said non-common portions and for selecting a surviving one of said non-common portions with a minimum one of said non-common portion costs, whereby said selection of said surviving non-common portion based upon said minimum non-common portion cost determines which of said at least two members has said minimum member cost.

4,761,785

PARITY SPREADING TO ENHANCE STORAGE ACCESS

Brian E. Clark, Rochester, Minn.; Francis D. Lawlor, Sangerties; Werner E. Schmidt-Stumpf, Patterson, both of N.Y.; Terrence J. Stewart, Rochester, and George D. Timms, Jr., Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 12, 1986, Ser. No. 873,249
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—51 22 Claims



1. A data protection mechanism for a computer system having multiple independently accessible storage devices which store blocks of data, the data protection mechanism comprising:

generator means for generating parity blocks as a function of sets of data blocks, said data blocks in a set corresponding to one parity block being stored on different storage devices;

storage management means for managing the storage of data blocks and parity blocks onto the storage devices; and

spreading means coupled to the storage management means for identifying a storage device to the storage management means on which each parity block is to be stored such that no one storage device contains the parity blocks for all of the groups of data blocks.

4,761,786

MINIATURIZED Q-SWITCHED DIODE PUMPED SOLID STATE LASER

Thomas M. Baer, Mountain View, Calif., assignor to Spectra-Physics, Inc., San Jose, Calif.

Filed Dec. 23, 1986, Ser. No. 945,609
Int. Cl.[4] H01S *3/11, 3/117, 3/092*
U.S. Cl. 372—10 20 Claims



1. A compact Q-switched solid state laser for producing short high peak power pulses, comprising:

a miniaturized solid state laser rod;

cavity forming means for defining a compact resonant cavity which contains the laser rod, said cavity forming means including output coupling means for extracting laser pulses from the cavity;

laser diode pumping means positioned to longitudinally end pump the laser rod and to match the pumping volume to the mode volume in the laser rod;

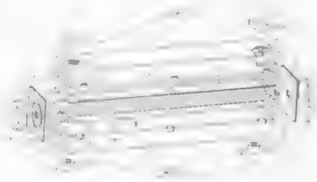
a miniaturized Q-switch mounted in the resonant cavity in a position to introduce a loss in the cavity so the rod can be pumped to store energy without lasing, and to remove the loss so that lasing in the cavity occurs with stored energy being dumped into a short high peak power pulse.

4,761,787

TRANSVERSELY EXCITED WAVEGUIDE LASER

Hinrich Heynisch, Grafelfing; Klemens Hubner, Ottobrunn; Hans Krüger, Munich, and Hubert Weber, Augsburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 134,094
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1986, 3643133
Int. Cl.[4] H01S *3/04*
U.S. Cl. 372—34 14 Claims



1. A transversely excited waveguide laser, comprising:

a rod of vacuum-suitable high-temperature insulating material,

said rod having at least one discharge profile portion containing at least one discharge channel formed by a groove in said at least one discharge profile portion, said at least one discharge profile portion having solder surfaces at two opposite sides of said at least one discharge channel;

VOL 1093 ISS 1 AG 2 1988 UMI

said rod having two cooling profile parts having approximately the same coefficient of temperature expansion as said at least one discharge profile portion, each of said cooling profile parts containing a cooling channel arranged symmetrically to said at least one discharge channel, one of said cooling profile parts soldered to each of said solder surfaces of said at least one discharge profile portion along their entire longitudinal extent, said cooling channels having generated surfaces facing toward said discharge channel, said generated surfaces being broader than a perpendicular projection of a closest limiting surface of said discharge channel on said generated surface of said cooling channel facing toward said discharge channel, and

a soldered-on end plate at each end face of said rod terminating said cooling channels.

4,761,788

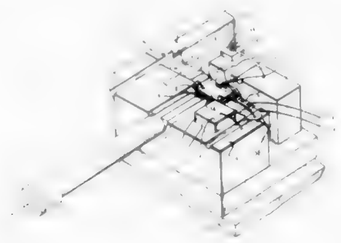
STRIPLINE MOUNT FOR SEMICONDUCTOR LASERS

Norman R. Dietrich, Allentown; Walter R. Holbrook, Reading; Anderson F. Johnson, Jr., Sinking Spring, all of Pa., and Alfred Zacharias, Plainfield, N.J., assignors to American Telephone and Telegraph Company, Murray Hill; AT&T Bell Laboratories, Berkeley Heights, both of, N.J. and AT&T Technologies, N.Y.

Filed Oct. 28, 1985, Ser. No. 792,055

Int. Cl.[4] H01S *3/096*

U.S. Cl. 372—36 22 Claims



16. An arrangement for coupling a semiconductor optical device to a signal source, said arrangement comprising

a stripline transmission path having a predetermined characteristic impedance Z_o; and

resistance means connected in series with said stripline transmission path, chosen to provide impedance matching between said stripline transmission path and an associated semiconductor optical device.

4,761,789

COOLING METHOD FOR A SLAB-GEOMETRY SOLID STATE LASER MEDIUM AND A LASER DEVICE WHICH EMPLOYS THAT COOLING METHOD

Kenneth A. Fukae, Irvine, Calif., assignor to Amada Engineering & Service Co., Inc., La Mirada, Calif.

Filed Jul. 31, 1986, Ser. No. 891,320

Int. Cl.[4] H01S *3/04*

U.S. Cl. 372—34 2 Claims

1. A laser device comprising:

a support frame;

a slab-geometry solid state crystal laser medium having parallel top and bottom surfaces supported by the support frame, and front and rear surfaces;

a pumping means for pumping the slab-geometry solid state crystal laser medium at least through one of said top and bottom surfaces;

means for cooling said laser medium through said top and bottom surfaces, wherein said cooling means includes:

a first and second cooling glass cover supporting said top and bottom surfaces, respectively, of the laser medium and containing said front and rear surfaces therebetween; and

a coolant fluid in contact with said cooling glass covers and flowing along the glass covers for carrying away heat from the glass covers;



the improvement wherein: said first and second glasscovers are in contact with said top and bottom surfaces, respectively, of the crystal laser medium so as to attach the laser medium to the laser device without mechanical deformation of said glass covers and to prevent a nonuniformity of temperature on said front and rear surfaces of the laser medium.

4,761,790

OPTICAL SEMICONDUCTOR DEVICE

Toshiro Hayakawa, Nara; Takahiro Suyama; Kohsei Takahashi, both of Tenri, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1985, Ser. No. 803,692

Claims priority, application Japan, Dec. 7, 1984, 59-259571

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—45 1 Claim



1. An optical semiconductor device comprising a GaAs substrate, a lamination of molecular layer units including an optically active MQW layer formed between two cladding layers on said GaAs substrate, a GaAs cap layer formed on said lamination, and contacts formed on said substrate and said cap layer, said molecular layer units being composed of binary compound semiconductors of InP, GaP and AlP, wherein the ratio of the number of the InP molecular layers to the total number of the GaP molecular layers and the AlP molecular layers in each of said molecular layer units constituting said active MQW layer is in the range of 1:1 to 12:13, and each InP layer in said molecular layer units is composed of a continuous lamination of 20 or less molecular layers.

4,761,791

MONOMODE DIODE LASER

Bernhard Stegmüller, Augsburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

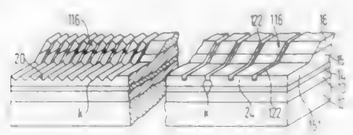
Filed Oct. 7, 1985, Ser. No. 785,228

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1984, 3437209

Int. Cl.[4] H01S *3/19*

U.S. Cl. 372—46 15 Claims

1. A laser diode having a double heterostructure on a substrate body and a strip-shaped ridge over a laser active zone including lateral regions extending adjacent thereto and forming a strip-shaped wave guide, first and second electrodes through which current is supplied to the laser diode, an improved discontinuity structure provided for the laser active zone of the laser diode for single mode stabilization, the improvement comprising:



at least one discontinuity structure formed on at least a portion of a surface of said lateral regions of said double heterostructure, said at least one discontinuity structure being formed only on a surface of said lateral regions; and said heterostructure of said ridge and said lateral regions being formed in a single step.

4,761,792

LASER APPARATUS

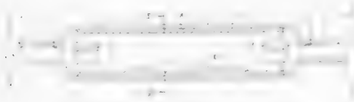
Arthur Maitland, Fife, Scotland, assignor to English Electric Valve Company, Chelmsford, England

Filed Aug. 21, 1986, Ser. No. 898,555

Claims priority, application United Kingdom, Aug. 22, 1985, 8521067

Int. Cl.[4] H01S *3/03*

U.S. Cl. 372—56 9 Claims



1. A laser apparatus comprising:

a discharge vessel having an inner surface and first and second spaced-apart ends, said discharge vessel being made of a thermally insulating material susceptible to being damaged by a metal vapor laser active medium;

first and second electrodes located within said discharge vessel at said first and second ends;

means adjacent the ends of said discharge vessel for forming with said discharge vessel a resonant cavity;

material contained within said discharge vessel, said material acting as a metal vapor laser active medium during operation of said laser apparatus; and

a protective metal layer interposed between the inner surface of said discharge vessel and said material thereby isolating the inner surface of said discharge vessel from said material and protecting said surface from damage.

4,761,793

PLASMA FIRED FEED NOZZLE

Shyam V. Digne, North Huntingdon, and Charles B. Wolf, Irwin, both of Pa., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed May 8, 1987, Ser. No. 47,811

Int. Cl.[4] H05H *1/26*

U.S. Cl. 373—24 15 Claims

1. A plasma feed nozzle for a furnace, said plasma feed nozzle comprising:

a plasma torch for producing a superheated gas at a temperature in the range of 10,000° F. (5538° C.);

a conduit for shroud gas;

a tubular mixing chamber in fluid communication with said superheated gas and said conduit for shroud gas and having one end thereof open to said furnace;

said tubular mixing chamber being lined with a refractory material and being generally encircled by a cooling fluid jacket;

means for introducing said shroud gas from said conduit into said mixing chamber disposed to cooperate with said plasma torch and said mixing chamber so that the superheated gas enters the mixing chamber along its central axis and the shroud gas enters the mixing chamber radially



outward from the superheated gas and in such a manner whereby the temperature profile of said gases flowing through said mixing chamber is substantially hotter in the central portion of said mixing chamber than adjacent said refractory lining; and

a particulate material feed nozzle so disposed in fluid communication with said mixing chamber that the particulate material is introduced into the central portion of the mixing chamber to mix with the hottest superheated gases in the central portion of the mixing chamber prior to entering the furnace.

4,761,794

THYRATRON HAVING THERMIONIC CATHODE MATERIAL BETWEEN ANODE AND CONTROL GRID

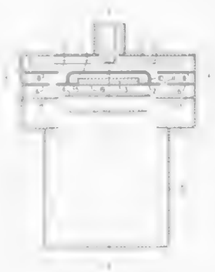
Hugh Menown, Writtle, England, and Arthur Maitland, Fife, Scotland, assignors to English Electric Valve Company Limited, Chelmsford, England

Filed Dec. 18, 1985, Ser. No. 810,301

Claims priority, application United Kingdom, Dec. 22, 1984, 8432614

Int. Cl.[4] H01J *17/06, 17/54*

U.S. Cl. 313—595 9 Claims



1. A thyratron including: an anode, a control grid, a thermionic cathode material, and a screen grid arranged to hold the cathode material between the anode and the control grid, arranged such that during operation a main discharge current occurs between the material and the anode.

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,795

RECEIVER FOR BANDSPREAD SIGNALS

Wolfgang Beier, Weil der Stadt, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 758,191, Jul. 23, 1985, Pat. No. 4,672,629, and a continuation-in-part of Ser. No. 929,935, Nov. 12, 1986, Pat. No. 4,719,469. This application Jan. 20, 1987, Ser. No. 4,467

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1986, 3601576

Int. Cl.[4] H04K *1/102*

U.S. Cl. 375—1 13 Claims



1. A receiver for modulated bandspread carrier signals comprising, in combination:

an antenna for intercepting a plurality of modulated carrier signals bandspread at a first clock rate;

a radio frequency section in communication with said antenna for selecting a received signal from said plurality of signals;

an intermediate frequency section in communication with said radio frequency section for converting said received signal to an intermediate frequency signal;

digitizing means connected to said intermediate frequency section for digitizing said intermediate frequency signal, for digitizing means includes means for linearly dividing the amplitude range of said intermediate frequency signal into a number of subranges and for assigning consecutive digital numbers to said subranges;

first multiplication means connected to said digitizing means for demodulating said digitized signal with a pseudorandom code stored in a first memory of said receiver;

register means for adding successive products provided by said first multiplication means;

means for operating on the output of said register means to provide in-phase (I) and quadrature (Q) signals, including

second multiplication means adapted to multiply said sum stored in said register by a first signal from a first clock pulse generator,

first summing means for summing the output of said second multiplication means, the output of said first summing means having the form:

$$I = -Z(O) + 2Z(pi) - Z(2pi),$$

third multiplication means adapted to multiply said sum stored in said register by a second signal from said first clock pulse generator, said first signal being offset from said second signal from said first clock pulse generator by a predetermined phase shift of pi/2, and

second summing means for summing the output of said third multiplication means, the output of said second summing means having the form:

$$2 = -Z(O) + 2Z(pi/2) - 2Z(3pi/2) + Z(2pi);$$

and

control means for utilizing said I and Q signals to control the timing of the multiplication of said digitized signal with the pseudo-random code stored in said first memory.

4,761,796

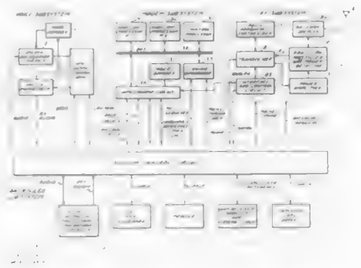
HIGH FREQUENCY SPREAD SPECTRUM COMMUNICATION SYSTEM TERMINAL

James Dunn, San Diego, Calif.; Charles Sanford, Iselin, and Joseph Kadin, Florham Park, both of N.J., assignors to ITT Defense Communications, Nutley, N.J.

Filed Jan. 24, 1985, Ser. No. 694,549

Int. Cl.[4] H04L *27/30*

U.S. Cl. 375—1 8 Claims



1. A spread spectrum communication system terminal comprising:

a first subsystem including

first means to encode locally generated digital data with an error correcting code,

second means coupled to said first means for spectrum spreading of said encoded locally generated digital data in at least one mode of operation of said communication system terminal,

third means to receive remotely generated error correcting code encoded digital data spectrum spread in said one mode of operation, and

fourth means coupled to said third means to recover said remotely generated digital data;

said encoded locally generated digital data and said encoded remotely generated digital data being processed in blocks of data bits, a second subsystem including

fifth means frequency hopping said encoded locally generated digital data prior to transmission to a remote location, and

sixth means frequency dehopping said encoded remotely generated digital data received from said remote location; and

a third subsystem including

seventh means coupled to said second means and said fifth means to provide a predetermined signal for spectrum spreading of said encoded locally generated digital data in said one mode of operation and to couple said encoded locally generated digital data to said fifth means, and

eighth means coupled to said third means, said fifth means said sixth means to provide a reference frequency for said frequency hopping and said frequency dehopping and to couple said frequency dehopped encoded remotely generated digital data from said sixth means to said third means,

said first means and second means including

a first processor coupled to said seventh means,

a first decision feedback equalizer/canceller coupled to said first processor, and

a second processor coupled to said first processor and said first decision feedback equalizer/canceller to provide said encoded locally generated digital data, said third means and said four means including

a third processor and said second processor coupled to said eighth means,

said first decision feedback equalizer/canceller coupled to said second processor,

a second decision feedback equalizer/canceller coupled to said third processor, and

said first processor coupled to said first and second decision feedback equalizer/canceller to recover said encoded remotely generated digital data,

said first, second and third processors operating according to predetermined data rate algorithms when said locally generated and remotely generated data rates are from 1200–4800 bits per second and spectrum spreading is not provided in the mode of operation of said communication system,

said first, second and third processors operating according to algorithms providing operation against jamming signals when said locally generated and said remotely generated data rates are below 1200 bits per second and spectrum spreading is provided in this mode of operation of said communication system.

4,761,797

FLEXIBLE REGENERATOR

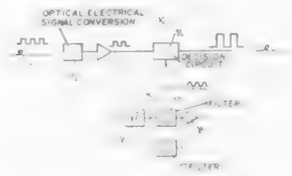
Lawrence Bickers, Ipswich, England, assignor to British Telecommunications, plc, London, England

Filed Nov. 25, 1985, Ser. No. 802,181

Claims priority, application United Kingdom, Nov. 27, 1984, 8429921

Int. Cl.[4] H04B *3/06;* H04L *25/66*

U.S. Cl. 375—4 8 Claims



3. A digital signal regenerator adapted to regenerate digital signals at a plurality of substantially distinct bit rates, said regenerator comprising:

regeneration means operable at any of said bit rates to produce a regenerated digital signal from an input digital signal; and

timing recovery means operable at said bit rates for controlling the regeneration means, said timing recovery means comprising:

means coupled to receive the input digital signal and responsive to the input digital signal bit rate for generating a timing signal corresponding to the bit rate of the input digital signal;

filter means for filtering the timing signal, said filter means being adapted to pass a timing signal corresponding to each one of said plurality of bit rates; and

means for applying the filtered timing signal to the regeneration means, thereby to time the regenerated digital signal in correspondence with the bit rate of the input digital signal, wherein the filter means comprises at least one multiple passband filter adapted to pass timing signals corresponding to more than one of said bit rates.

4,761,798

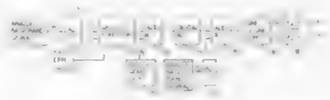
BASEBAND PHASE MODULATOR APPARATUS EMPLOYING DIGITAL TECHNIQUES

Stanley R. Griswold, Jr., and Bryan G. Mussatti, both of Fort Wayne, Ind., assignors to ITT Aerospace Optical, Fort Wayne, Ind.

Filed Apr. 2, 1987, Ser. No. 33,144

Int. Cl.[4] H04L *27/04*

U.S. Cl. 375—59 24 Claims



1. A Zero IF modulator apparatus for modulating RF carrier signals with baseband signals and operative to perform phase or frequency modulation, comprising:

first and second analog-to-digital converters each having a separate input adapted to receive an analog baseband signal and each having a separate output for providing a digital signal indicative of the analog baseband signal applied to said input,

a weighting function generator means having an input coupled to the output of said first analog-to-digital converter and operative to provide at an output said digital signal at the output of said first analog-to-digital converter as multiplied by a given weighting function,

a digital sine/cosine amplitude converter means having an input and operative to provide at a first output a first digital quadrature baseband signal and to provide at a second output a second digital quadrature baseband signal,

adding means having one input coupled to the output of said weighting function generator means and another input coupled to the output of said second analog-to-digital converter with the output of said adding means coupled to the input of said sine/cosine amplitude converter means wherein said sine/cosine converter can receive a digital baseband signal from either said first or second converters,

a first digital-to-analog converter coupled to said first output of said sine/cosine converter means to provide at an output a first analog quadrature signal,

a second digital-to-analog converter coupled to said second output of said sine/cosine converter means to provide at an output a second analog quadrature signal, and

modulation translation means including a carrier oscillator operating at a given frequency, said modulation translation means responsive to said first and second analog quadrature signals for translating said signals to a given carrier frequency.

4,761,799

TIME-LOCKING METHOD FOR STATIONS WHICH FORM PART OF A LOCAL STAR NETWORK, AND LOCAL STAR NETWORK FOR PERFORMING THE TIME-LOCKING METHOD

Jean-Pierre Arragon, Rolsay, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 490,286, May 2, 1983, abandoned. This application Apr. 3, 1987, Ser. No. 35,196

Claims priority, application France, Apr. 30, 1982, 8207537

Int. Cl.[4] H04L *7/00*

U.S. Cl. 375—107 1 Claim

1. In a local communication network which has a star structure and which comprises a plurality of stations, each station having a clock and being connected to a central node which comprises a coupler, the exchange of messages between said stations of said network being organized at the level of said

VOL 1093 ISS 1 AUG 2 1988 UMI

coupler in successive frames of time division time slots, each station being allocated to at least one time slot in each frame; a time-locking method for enabling each station to transmit its message in its allocated time slot, such method comprising:

an initialization phase in which an arbitrary one of said stations serves as a master station which transmits a synchronizing signal for phase locking said clocks of all of said stations;

a measuring phase in which each station individually determines its own forward and return propagation time for a message from said station to said coupler and back from said coupler to said station, such measuring phase comprising, for each individual station, the steps of:

(a) transmission of a word by such station to said coupler and simultaneously starting a time counter;

(b) reception and retransmission of such word by said coupler back to such station;

(c) reception of said retransmitted word by such station and simultaneously stopping said time counter; and



(d) storing in such station the measured forward and return word propagation time as indicated by said time counter; and

a time-locking phase which comprises:

(e) transmission by said arbitrary one station of a synchronization word to said coupler;

(f) reception and retransmission of said synchronization word by said coupler to each of said stations;

(g) reception of said retransmitted synchronization word by each of said stations; and

(h) transmission by each station of its message after a time delay following the synchronization word received thereby which is advanced in accordance with the measured forward and return word propagation time between said station and said coupler, whereby the message transmitted by each station is inserted in the time slot allocated to such station.

4,761,800

METHOD AND APPARATUS FOR DETECTING A RATE OF DATA TRANSMISSION

Gregory Lese, Howell; John D. Price, Colts Neck; Ralph E. Richardson, Tinton Falls, all of N.J.; Cu T. Than, and Mark D. Vancura, both of Whitehall, Pa., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories and AT&T Information Systems, Inc., both of Murray Hill, N.J.

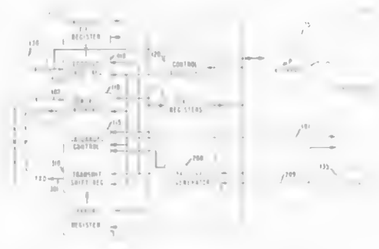
Filed Mar. 2, 1987, Ser. No. 20,483
Int. Cl.[4] H04L *25/40*
U.S. Cl. 375—117 12 Claims

1. An asynchronous interface for coupling data between a data module and a serial asynchronous peripheral, the asynchronous interface being configurable in response to control signals from the data module and comprising:

control means responsive to the control signals from the data module;

means for receiving a serial asynchronous data stream from the serial asynchronous peripheral, the receiving means including counting means operating in a first configuration for providing a clock source for sampling and determining the one or zero state of each bit in the data being received by the asynchronous interface;

means for determining a rate of data reception of the serial asynchronous data stream being transmitted by the serial asynchronous peripheral to the asynchronous interface, the determining means including the counting means reconfigured by the control means and operating in a



second configuration for measuring the duration of the period of the start bit in a first received character, the counting means incrementing up to and providing a count reflective of the period of the start bit; and

rate conversion means responsive to both the control means and the counting means for realigning the data stream receiving means for receiving data at a rate reflective of the period of the start bit.

4,761,801

LOOK AHEAD TERMINAL COUNTER

George D. Underwood, Inglewood, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 18, 1986, Ser. No. 875,894
Int. Cl.[4] H03K *21/40*; G06F *11/00*
U.S. Cl. 377—33 8 Claims



1. A look ahead terminal counter (56) comprising:

a plurality of counter registers (51, 53, 55, 57), each of said counter registers having an enable input port, an output port and a clock input port;

counter enabling circuitry (59) interconnected between the input and output ports of said plurality of counter registers and cooperating with said plurality of counter registers for sequencing the operation of said plurality of counter registers at a predetermined counter cycle rate determined by a clock signal at said clock input ports of said plurality of counter registers;

terminal count output enabling circuitry (61) connected to said input ports of said plurality of counter registers, said terminal count output enabling circuitry generating an enable signal when signals at said input ports of said plurality of counter registers are at predetermined states determined by said counter enabling circuitry cooperating with said plurality of counter registers; and
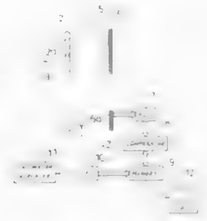
an output register (63), said output register having an enable input port connected to said terminal count output enabling circuitry (61) and a clock input port, said output register (63) generating an output signal in response to the receipt of said enable signal from said terminal count output enabling circuitry and a clock signal present at said clock input port.

4,761,802

HIGH-CONTRAST X-RAY IMAGE DETECTING APPARATUS

Motosada Kiri, Kyoto, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Oct. 8, 1986, Ser. No. 916,617
Int. Cl.[4] G01N *23/00*; H05G *1/64*
U.S. Cl. 378—99 5 Claims



1. An X-ray image detecting apparatus comprising:

an X-ray source;

a collimator plate placed between said X-ray source and an object whose X-ray image is to be detected, said collimator plate being provided with two-dimensionally arrayed X-ray collimating through holes to make a plurality of thin X-ray beams from widely diversing X-rays from said X-ray source;

an X-ray image receiving means for converting an X-ray image projected thereon to an electric image signal, said X-ray image receiving means being devised so as to detect said X-ray image with the same divided into pixels so that said electric image signal may be outputted in the form of pixel signals from said X-ray image receiving means;

a collimator plate displacing means for moving said collimator plate two-dimensionally in parallel to said X-ray image receiving means so that the same may be scanned by said thin X-ray beams made by said X-ray collimating through holes provided in said collimator plate;

a memory means having addresses corresponding to said pixels for storing said electric image signal in the form of the pixel signals; and

a signal comparator means for comparing, with regard to each of said addresses of said memory, a previously sampled and stored value of a pixel signal with a succeedingly sampled value of the pixel signal and replacing the contents of each address with a succeedingly sampled pixel signal if the latter value is larger than the former one, such that each of the addresses in said memory may finally store the maximum value of a corresponding pixel signal which varies showing a peak in the process of the scanning of a corresponding X-ray beam made by said collimator plate.

4,761,803

X-RAY DIAGNOSTICS INSTALLATION

Sylvester Oppelt, Bamberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 21, 1987, Ser. No. 52,271
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1986, 3618869
Int. Cl.[4] H05G *1/64*
U.S. Cl. 378—99 3 Claims



1. An x-ray diagnostics installation comprising:

two x-ray sources respectively generating an x-ray beam in different planes, said x-ray sources being disposed such that said x-ray beams intersect in an examination subject;

a first image converter means for generating an image signal from one of said x-ray beams of at least a portion of said examination subject;

an image computer connected to said first image converter which calculates the projection of the x-ray beam incident on said first image converter in the plane of the other x-ray beam;

a second image converter for generating an image signal corresponding to at least a portion of said examination subject;

an addition stage having inputs connected to said image computer and said second image converter which adds the signals at said inputs; and

means connected to the output of said addition stage for displaying a visual image of said portion of said examination subject.

4,761,804

HIGH DC VOLTAGE GENERATOR INCLUDING TRANSITION CHARACTERISTICS CORRECTING MEANS

Mitsuru Yahata, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 24, 1987, Ser. No. 66,020
Claims priority, application Japan, Jun. 25, 1986, 61-147149
Int. Cl.[4] H05G *1/32*, *1/34*
U.S. Cl. 378—109 7 Claims

1. A high DC voltage generating apparatus for an X-ray tube comprising:

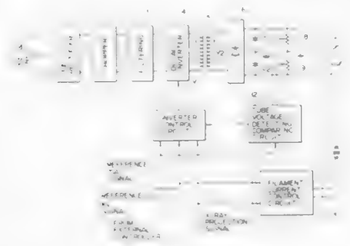
low voltage rectifier means for rectifying a low AC (alternating current) input voltage to produce a low DC (direct current) voltage;

DC-to-DC converting means for converting said low DC voltage into a high DC voltage; and,

control means for shortening a rising time period of said high DC voltage to be applied to said X-ray tube in response to

VOL 1093 ISS 1 AG 2 1988 UMI

an X-ray projection control signal, said rising time period being defined by a time period measured from a turn-on



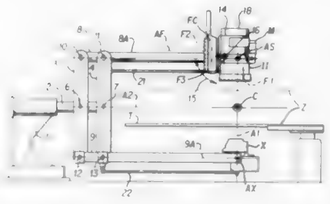
voltage of said X-ray tube to a predetermined anode voltage thereof.

4,761,805

X-RAY RECEPTOR INTERCHANGE MECHANISM

John P. Sebring, Townsend, Mass., assignor to John K. Grady, Littleton, Mass.

Filed Nov. 14, 1986, Ser. No. 931,397
Int. Cl.[4] G03B *42/04, 42/16*
U.S. Cl. 378—181 15 Claims



1. X-ray apparatus for medical examination of a patient comprising:

a frame extending to portions at opposite ends of a radiation axis through a patient zone;

an x-ray source on one frame portion;

and an assembly on the opposite frame portion including first and second x-ray receptors with image faces responsive to x-rays, the receptors having a locus of their combined center of gravity counterbalancing the center of gravity of the x-ray source;

characterized in that the frame includes means mounting the respective receptors for rotational movement about an interchange pivot and sliding movement of their respective image faces interchangeably to and from a position at the same plane on the radiation axis so as to prevent movement of the radial extremity of either receptor into the patient zone, and

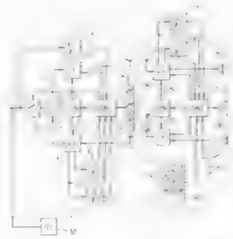
a linkage between the receptors controlling their sliding movement so as to locate their combined center of gravity at the counterbalancing locus in either interchange position of the receptors.

4,761,806

METHOD AND CIRCUIT FOR SETTING DIALING DATA IN A WIRELESS TELEPHONE

Akio Toki, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 21, 1987, Ser. No. 75,891
Claims priority, application Japan, Mar. 23, 1987, 62-65558
Int. Cl.[4] H04Q *7/04*
U.S. Cl. 379—61 17 Claims



1. An apparatus provided in a radio telephone apparatus for storing telephone number information to be used for a reduced dialing operation, said radio telephone apparatus having a base unit coupled to a wired telephone line and a radio telephone set and said radio telephone set being connected to said base unit through a radio channel, said apparatus comprising:

dial means for generating a dial signal in response to a dialing operation;

registration means for generating a control signal representing a storage request for telephone number information;

means for disconnecting said wired telephone line from said base unit electrically to break a speech path, in response to the control signal;

memory means provided in said base unit for storing the dial signal from said dial means as telephone number information in response to the control signal; and

notification means connected to said wired telephone line for detecting an incoming telephone call from said wired telephone line and generating a ringing signal for notifying the user if an incoming telephone call is detected while said telephone number information is being stored.

4,761,807

ELECTRONIC AUDIO COMMUNICATIONS SYSTEM WITH VOICE AUTHENTICATION FEATURES

Gordon H. Matthews, Plano; Thomas B. Tansil, and Michael L. Fannin, both of Dallas, all of Tex., assignors to VMX, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 428,161, Sep. 29, 1982, Pat. No. 4,580,012, which is a continuation-in-part of Ser. No. 97,240, Nov. 26, 1979, Pat. No. 4,371,752. This application Feb. 12, 1985, Ser. No. 700,946
Int. Cl.[4] H04M *3/38, 3/50*
U.S. Cl. 379—89 9 Claims

7. An electronic communications message system for storing and forwarding audio messages from a user's telephone facility, comprising:

electronic digital signal processing means for controlling the operation of the message system;

digital memory means controlled by said electronic digital signal processing means for storing digital representations of the audio messages;

means for enabling an originator to access the message system through signals transmitted from a telephone station;

means for storing in said memory means digital representations of an audio message from the telephone station of the originator;

means for storing selected recipient telephone station addresses for digital representations of audio messages stored in said memory means;

means for accessing said stored digital representations associated with particular telephone station addresses;

means for reproducing audio messages from the stored digital representations;

transmitting means for sequentially transmitting the reproduced audio messages from said means for reproducing to said selected recipient telephone stations; and

mean for controlling unauthorized user access to the message system which includes:

user storage means for storing in said memory means a digital representation of

characteristic features of the voice of each authorized user;

means for reproducing an accessed audio message to the telephone station of each user who attempts to access the message system, said accessed message instructing that a password be spoken;

comparing means for comparing the characteristic features of the speaking voice of the user attempting access to the message system with the stored characteristic features;

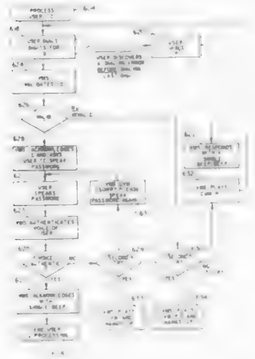
4,761,808

TIME CODE TELEPHONE SECURITY ACCESS SYSTEM

Sheldon Howard, 2510 S. Mountain Brook Dr., Hacienda Heights, Calif. 91745

Filed Mar. 18, 1987, Ser. No. 27,336
Int. Cl.[4] H04M *11/00*
U.S. Cl. 329—95 18 Claims





1. A security access control system for controlling access of users to an information processing system, said security access control system comprising:

a plurality of remote terminals each comprising a signal generating means for generating a coded identification signal and a transmitting means for transmitting said coded identification signal;

a base terminal comprising a receiving means for receiving said coded identification signals, a signal processing means for decoding and determining the validity of each of said coded identification signal, and an access control means for controlling access to said information processing system;

each of said coded identification signals generated by said signal generating means of said remote terminal comprising a sequence of a predetermined number of alphanumeric digits, a first group of said alphanumeric digits comprising a time code and a second group of said alphanumeric digits comprising an address code;

said time code changing periodically in a predetermined manner;

said address code remaining essentially constant over time;

each of said signal generating means comprising a first time code memory means containing a first predetermined sequence of time codes, and a first clock means for selecting a first time code from said first sequence of time codes contained in said first time code memory means;

said signal processing means of said base terminal comprising a second time code memory means containing a second predetermined sequence of time codes and a second clock means; and

said signal processing means further comprising first comparator means for comparing said time code component of said incoming identification signal with a second time code selected according to the time indicated by said second clock means from said second time code memory means;

whereby said base terminal denies access to said information processing system if said time code component of said incoming identification signal and said second time code are not identical.

means for denying the attempting user access to the message system unless the output of said comparing means indicates a match between the spoken and the stored characteristic features within a preselected deviation;

means for reproducing an audio message to the telephone station of a newly authorized message recipient instructing the recipient to speak a selected password into the telephone a predetermined number of times;

means for producing an audio signal each time the selected password is spoken;

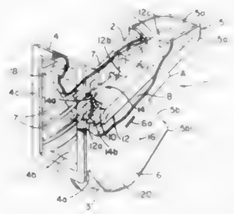
means responsive to the audio signal produced each time the selected password is spoken for analyzing each audio signal and producing for each audio signal a template in digital format which is representative of distinctive features of the analyzed audio signal;

means for storing the digital format template for each audio signal in association with the identification code assigned to the newly authorized message recipient; and

means for generating and storing with each template a set of signal values indicative of the variations in the templates produced each time the selected password is spoken from the previous time it was spoken.

VOL 1093 ISS 1 AUG 2 1988 UMI

4,761,809
COIN RETURN CHUTE FOR TELEPHONE PAY STATION
Rudolph P. Brancati, Richmond Hill, N.Y., assignor to Nynex Corporation, New York, N.Y.
Filed Jul. 27, 1987, Ser. No. 78,218
Int. Cl.[4] H04M *17/00*
U.S. Cl. 379—150 23 Claims



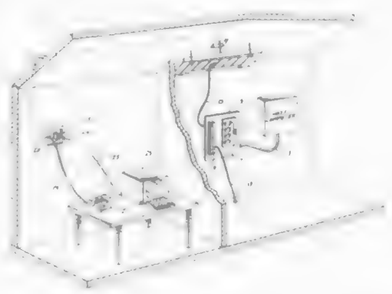
1. A coin return chute for use with a telephone pay station comprising:
a hollow body having front and back walls, top and bottom walls, a wall intermediate the top and bottom walls, and first and second side walls meeting said front, back, top, bottom and intermediate walls, the top wall having an opening towards the rear for receiving coins to be returned to a caller, the front wall having an opening sized to allow entry of the finger of a caller for retrieving from the chute the coins being returned, the intermediate wall extending from a point below the rear of the top wall angularly downwardly toward the front wall to a point short of the front wall, thereby defining with said top wall and said side walls a throat of said chute, the rear wall having a first wall portion extending between the ends of the top and intermediate wall and a second wall portion extending between the intermediate wall and the rear end of the bottom wall, the bottom wall extending downwardly from the front wall and then rearwardly upwardly to the second portion of the rear wall to thereby define a trough of said chute extending below and forward of said throat portion; whereby coins to be returned to a caller are deliverd to said said throat via said opening in said top wall and slide down said intermediate wall of said throat and are caused to fall to said trough at said bottom wall to be retrieved by a caller by inserting his finger into said trough via the opening in said front wall;
a front cover pivotally mounted relative to said opening of said front wall for normally closing said opening and for permitting access to said trough through pivoting of said door inwardly into said trough;
and means for inhibiting the stuffing of material into said throat while allowing passage of coins from said throat to said trough.

4,761,810
PROGRAMMABLE SELECTIVE RINGING CIRCUIT AND METHOD FOR PARTY TELEPHONE LINE
Steven B. Perry, Highlands, N.J., assignor to Keptel, Inc., Tinton Falls, N.J.
Filed Oct. 21, 1986, Ser. No. 921,599
Int. Cl.[4] H04M *13/00*
U.S. Cl. 379—181 23 Claims

1. Apparatus for decoding ringing signals on a party telephone line coupled to the telephone line and a telephone instrument comprising:
first means coupled to the telephone line for selectively associating the telephone instrument connected thereto with one of a plurality of different coded ringing signals and for supplying said one ringing signal to the telephone instrument via a ringing signal path provided in the decoding apparatus thereby to activate a ringer of the telephone instrument; said first means comprising means for decoding said plurality of ringing signals according to the polarity of a d.c. voltage level present across the telephone line upon which the ringing signals are superimposed and according to a grounded state of one of the two conductors of the telephone line;
second means coupled to said telephone line and connected to the telephone instrument via a voice signal path provided in the decoding apparatus for preventing said ringing signal present on the telephone line from activating the ringer of said telephone instrument via said voice signal path, said second means comprising rectifier means for converting a ringing signal to a direct current signal to which a ringer of the telephone instrument is not responsive; and
third means coupled to said second means for limiting a change in voltage level at an output of said second means between said d.c. level on said telephone line and a rectified level of the ringing signal voltage.



4,761,811
DATA AND VOICE TRANSMISSION USING COMPOSITE CABLES AND PUNCH-DOWN BLOCKS
Maurice F. Zetena, Jr., P.O Box 59, Bridgewater, Conn. 06752
Filed Dec. 22, 1986, Ser. No. 944,827
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—397 16 Claims



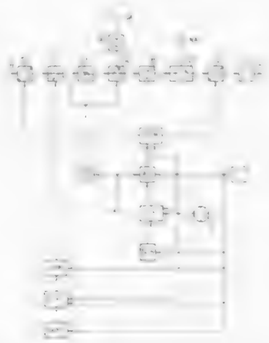
1. A data transmission system for use in local area network interconnection of computer terminals with a host computer, said system being capable of carrying data bits at high frequencies and being capable of having its interconnection pattern readily changed, said system including
a plurality of composite cables for transmission of said data bits, one said composite cable for each said computer terminal in said network, each of said cables including at least two sets of twisted pair data wires and an associated drain wire, each of said sets of data wires being within a separate shielding sleeve,
a distribution wiring board for interconnecting said cables, said wiring board including a punch down block, said punch down block having multiple sets of aligned punch-down connectors, and means associated with said distribution wiring board for establishing a common ground path, said wires in said composite cables being connected to said punch-down block, and means for interconnecting said punch down block to said host computer,
whereby high frequency data may be transmitted in a local area network and said computer terminals may be interconnected with said wiring board without the use of coaxial cables.

4,761,812
CONSTANT POWER TELEPHONE LINE CIRCUIT
David L. Hollis, Morrisville, and John L. Reynolds, III, Raleigh, both of N.C., assignors to U.S. Holding Company, Inc., New York, N.Y.
Filed Dec. 10, 1985, Ser. No. 807,085
Int. Cl.[4] H04M *19/00*
U.S. Cl. 379—413 3 Claims



3. A telephone line circuit for providing an isolated power feed to a two wire telephone subscriber line having a dc voltage source coupled thereto, comprising:
flyback switching power converter means including a switching transistor circuit, a transformer having a core and a primary winding with said primary winding being connected to said switching transistor circuit, and means for discharging energy stored in said core of said transformer to provide a constant power output;
means for applying a potential to said primary winding through said switching transistor circuit;
comparator means having first and second inputs and an output, said output being connected to said switching transistor circuit to control the conduction thereof;
means for applying a switching level to one of said first and second inputs of said comparator means;
means for supplying controlled repetitive constant frequency driving pulses to another of said first and second inputs of said comparator means, said driving pulses having a pulsewidth inversely proportional to potential applied to said primary winding through said switching transistor circuit to store a constant energy level in said core of said transformer; and
means including a power FET for coupling said constant power output of said flyback switching power converter means to said telephone subscriber line during intervals when said switching transistor circuit is not applying current to said primary winding.

4,761,813
MILITARY RADAR OR RADIO COMMUNICATION SYSTEM
Josef Gammel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 952,247, Aug. 21, 1978, abandoned.
This application Jan. 20, 1982, Ser. No. 345,335
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1977, 2737576
Int. Cl.[4] H04K *1/02*
U.S. Cl. 380—6 6 Claims



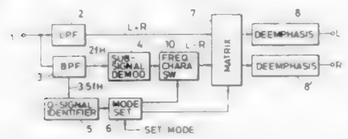
1. A military communication system operable over a frequency band which has a plurality of frequency ranges, comprising:
a mobile transceiver including an information transmitter, an information antenna, and an information receiver;
means for controlling information transmission by said information transmitter in accordance with a frequency hopping principle in separate changing ranges of the frequency band;
an interference antenna;
an interference transmitter; and
control means for activating said interference transmitter and electrically connecting said interference transmitter to said interference antenna during intervals between useful signal transmission and in frequency ranges which are currently not being used by said mobile transceiver for communication; and
means for establishing the frequency ranges including frequency selection means capable of decoupling the frequencies at the information transmitter, the information receiver and the interference transmitter.

4,761,814
VARIABLE BANDWIDTH MULTIVOICE DEMODULATING CIRCUIT
Yoshiro Segal, and Hiroyuki Kimura, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jan. 20, 1986, Ser. No. 876,601
Claims priority, application Japan, Jan. 20, 1985, 60-92160[U]
Int. Cl.[4] H04H *5/00*
U.S. Cl. 381—13 8 Claims

1. A multivoice demodulator circuit, said circuit comprising:
means for setting a reception mode based on a mode identified by a multivoice mode signal superimposed on a received signal;
means for extracting first and second audio signals from said received signal and for separating said first signal from said second signal; and

VOL 1093 ISS 1 AG 2 1988 UMI

audio frequency characteristic switching means for shifting only audio frequency characteristics of said second extracted signal in response to whether said set reception mode is a multi mode or stereo mode.



4,761,815

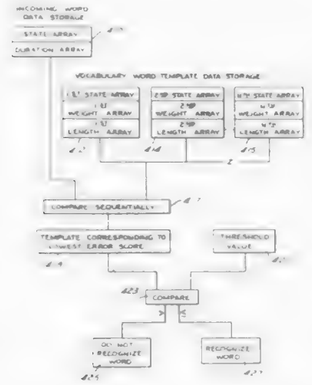
SPEECH RECOGNITION SYSTEM BASED ON WORD STATE DURATION AND/OR WEIGHT

Myron H. Hitchcock, Englewood, Colo., assignor to Figgie International, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 259,695, May 1, 1981, Pat. No. 4,388,495. This application Mar. 16, 1983, Ser. No. 475,888

Int. Cl.⁴ G10L *5/00*

U.S. Cl. 381—43 33 Claims



1. Speech recognition apparatus comprising:

means for converting audio speech into electroninc signals;

means for diverting the incoming speech up along a time line into an array of sequential word states based on the content of the speech, each word state having a time period;

means for classifying each word state as one of a plurality of classifications based on the content of the speech during the corresponding time period;

means for determining the duration of the time period corresponding to each word state within the array of incoming word states and for using the determined durations to provide an array of durational values corresponding to the word states of the incoming word state array;

means for providing a plurality of stored templates representing the vocabulary of the speech recognition apparatus; each template being comprised of two arrays; the first array being a sequence of stored word states each state being classified as one of said plurality of classifications; the second array being a sequence of values indicating the duration of a corresponding stored word state;

first comparing means for comparing the classifications of incoming word states with said first array of each of said templates to locate matching states;

second comparing means for comparing the duration of each incoming word state with the duration of the corresponding stored word state only where the classifications of the word states match; and

means responsive to both of said comparing means for determining which of said templates is the closest match to said array of incoming word states and said array of durational values.

4,761,816

DIGITAL LEVEL DETECTING CIRCUIT

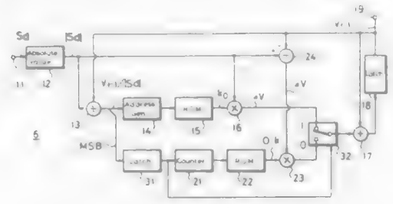
Hideki Fukasawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1986, Ser. No. 940,943

Claims priority, application Japan, Dec. 17, 1985, 60-283263; Dec. 23, 1985, 60-289865

Int. Cl.⁴ H03G *7/00*

U.S. Cl. 381—106 8 Claims



1. A digital level detecting circuit for controlling the amplitude of digital audio signals, comprising: means for generating an attack response of output control signals based on positive going waveforms of an incoming signal and based on attack response coefficients stored in a memory, wherein the attack response coefficients stored in said memory have a relatively low value during the beginning of the attack response, and wherein said attack response generating means includes an address generator which generates address data to be supplied to said memory based on ratios of the incoming signal and the output control signals.

4,761,817

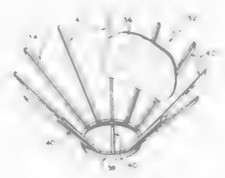
DIAPHRAGM STRUCTURE FOR A TRANSDUCER

Cary L. Christie, Canoga, Calif., assignor to Harman International Industries, Incorporated, Northridge, Calif.

Filed Jan. 27, 1986, Ser. No. 823,068

Int. Cl.⁴ H04R *9/00, 7/02, 7/24*

U.S. Cl. 381—194 11 Claims



1. A diaphragm for an acoustical transducer comprising a support and a separate cover for the support, the support constructed from a rigid material, the support including a central region and rib means attached to, and projecting away from, the central region, the rib means being oriented with respect to each other by their attachment to the central region, the orientations of the rib means with respect to each other being maintained by the central region of the support, the cover comprising a light weight, relatively less rigid, and pliable sheet, and means for mounting the cover on the support to form the diaphragm.

4,761,818

IMAGE PROCESSING APPARATUS

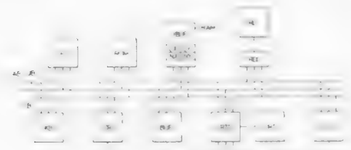
Yuichi Bannai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,833, Apr. 4, 1984, abandoned. This application Mar. 23, 1987, Ser. No. 30,293

Claims priority, application Japan, Apr. 8, 1983, 58-60951; Apr. 8, 1983, 58-60953; Jun. 20, 1983, 58-109426; Jun. 20, 1983, 58-109427

Int. Cl.⁴ G06K *9/00;* **G09G** *1/00*

U.S. Cl. 382—41 12 Claims



1. An information processing apparatus comprising:

first memory means for storing characters;

second memoroy means for storing an image;

calculating means for calculating an area of the image stored in said second memory means and corresponding to the area required by a number of characters each having an area of a character stored in said first memory means;

allotting means for allotting the image stored in said second memory means to a character area corresponding to the number of characters calculated by said calculating means; and

output means for outputting the image allotted to the character area by said allotting means.

4,761,819

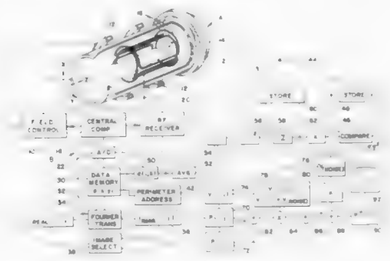
ADAPTIVE NOISE REDUCTION FILTER FOR RECONSTRUCTED IMAGES

Kenneth S. Denison, Shaker Hts., and William Sattin, Cleveland Hts., both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Filed Feb. 27, 1987, Ser. No. 19,567

Int. Cl.⁴ G06K *9/40*

U.S. Cl. 382—54 21 Claims



1. A method of medical diagnostic imaging comprising:

collecting medical diagnostic data;

determining noise statistics of the collected diagnostic data;

converting the collected diagnostic data into an electronic image representation which includes an array of pixel values;

for each pixel value determining (i) a variance between the pixel value and neighboring pixel values and (ii) an average of the neighboring pixel values;

providing an improved electronic image representation by replacing each pixel value of the array by a weighted combination of the replaced pixel value and the average of pixel values neighboring the replaced pixel value, the weighting being in accordance with the determined noise statistics and the variance between the replaced pixel value and its neighboring pixel values.

4,761,820

ELASTIC SPACER FOR BALL BEARINGS

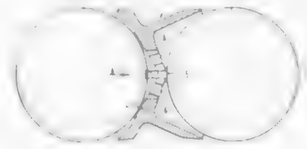
Hubertus Frank, Hochstadt, and Andreas Nagengast, Eggolsheim, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Sep. 10, 1987, Ser. No. 95,395

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1986, 3635725

Int. Cl.⁴ F16C *33/374*

U.S. Cl. 384—520 1 Claim



1. An elastic spacer to be inserted between adjacent balls of a ball bearing and having recesses on the faces of the spacer turned toward the balls into which the balls partially engage, characterized in that the spacer (1) has an outer contour (3) that can be inscribed in a cylinder and the length (L) of the spacer corresponds to at least one half the diameter of the ball and the spacer has in its bore a conical partition (4) with a cone tip (5) which, at least in the central region of the spacer contiguous to the cone tip (5), is subdivided into elastically resilient tongues (7) by slots (6) extending approximately radially, one ball (2) making approximately punctiform contact in the center and the adjacent ball (2) abutting on the partition (4) in a contact circle.

4,761,821

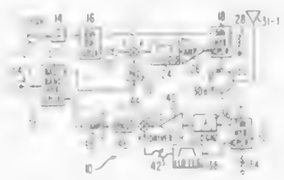
RADIO FREQUENCY SIGNAL TRANSMISSION SYSTEM WITH CARRIER FREQUENCIES AT OPPOSITE EDGES OF THE CHANNEL

Daniel D. Mawhinney, Livingston, and Robert E. Askew, Belle Mead, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 15, 1986, Ser. No. 885,783

Int. Cl.⁴ H04B *1/50*

U.S. Cl. 455—73 7 Claims

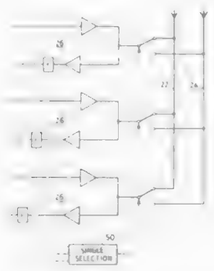


1. A pair of radio frequency transmitter/receivers, each comprising in combination:

VOL 1093 ISS 1 AG 2 1988 UMI

a local oscillator producing a signal at a given frequency, the frequencies differing from one another;
means for modulating the local oscillator frequency with an information content signal to produce a modulation signal including the local oscillator froquency and only one sideband corresponding to the information signal, the sideband of the lower of of said local oscillator frequencies being an upper sideband, the sideband of the higher of said local oscillator frequencies being a lower sideband; and
means for combining the local oscillator signal and modulated signal and for simultaneously transmitting the resulting combined signal:
means receptive of the transmitted combined signal for splitting the signal into two signals;
means responsive to one of said two signals for recovering a signal having the value of the given frequency of the local oscillator of the other of the pair;
means responsive to the other of the two signals for producing a signal corresponding to the modulated sideband produced by the other of the pair; and
means for subtractively mixing the two reconstructed signals to produce said information content signal.

4,761,822
BURST-MODE TWO-WAY RADIO COMMUNICATIONS SYSTEM
Graham L. Maile, Chesterton, England, assignor to Libera Developments Ltd., London, England
Filed Aug. 18, 1986, Ser. No. 897,711
Claims priority, application United Kingdom, Aug. 23, 1985, [redacted]
Int. Cl.[4] H04B 1/74
U.S. Cl. 455—82 9 Claims



1. A burst-mode two-way radio communications system comprising a plurality of transceivers and a base station, a common antenna arrangement shared by said transceivers, said antenna arrangement having a plurality of antenna branches being separated by a spacing, and at least one portable transceiver, wherein antenna branch selected is made by an operative base station transceiver having regard to the strength of the signal received from a portable transceiver with which communication is established, said system also comprising at least one switch at which antenna branch selection is effected, a switch controller for controlling operation of said at least one switch, and circuit means connecting said switch controller to all the base station transceivers to enable said controller to receive from any one of said transceivers a signal which instructs antenna branch selection.

4,761,823
COMMUNICATIONS ADAPTOR BRACKET
Duane T. Fler, Owatonna, Minn., assignor to E. F. Johnson Company, Waseca, Minn.
Filed Sep. 5, 1986, Ser. No. 904,558
Int. Cl.[4] H04B 1/38
U.S. Cl. 455—89 13 Claims

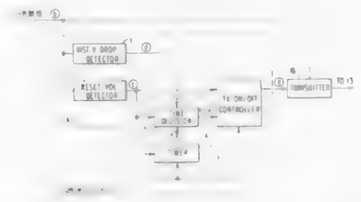


12. Apparatus for housing a portable radio transceiver to be adapted for configuration in electronic communication with a main console of a fixed or mobile communication system through a communications adaptor bracket having a track means and extenrally accessible contact elements in accordance with the present invention, wherein said portable transceiver includes electronic and acoustical components, and selection means for controlling said components, comprising:
a generally rectangular housing having a side wall and an end wall;
track riding means on said side wall compatible with said track means of said bracket; and
a plurality of externally accessible contacts on said end wall for connecting various functional signals, such as audio, logic, power, charging, and RF, with said main console,
whereby when said track riding means is mated with said track means of said bracket, said externally accessible contact elements of said bracket are operably engaged with said externally accessible contacts of said portable transceiver connecting said various functional signals with said main console, while not interfering with the operation said portable transceiver as a handheld device or with the operation of said selection means of said portable transceiver.

4,761,824
BATTERY-POWERED MOBILE COMMUNICATIONS APPARATUS HAVING TRANSMITTER RESET FUNCTION
Akio Saito, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 22, 1986, Ser. No. 866,019
Claims priority, application Japan, May 23, 1985, 60-110732
Int. Cl.[4] H01Q 11/12; H04B 11/04
U.S. Cl. 455—127 13 Claims

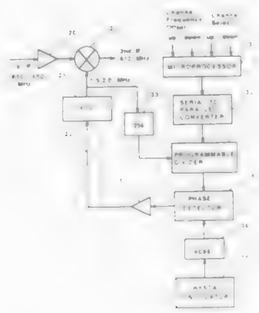
1. A mobile communications apparatus comprising:
a load circuit to which a DC voltage is supplied from a DC power source;
first detector means for generating a reset signal for turning off said load circuit when said DC voltage falls below a predetermined level and a reset release signal for turning on said load circuit when said DC voltage returns to or above said predetermined level;

second detector means for detecting whether or not a change in said DC voltage is an instantaneous drop;
actuating means for providing an actuation signal in order to place said load means in an actuated state;
timer means connected to detect said actuation signal and said reset signal for measuring the lapse of time from the actuation of said load circuit until the generation of said reset signal; and



means responsive to the outputs of said first and second detector means and said timer means and to said actuation signal for comparing, when said second detector means has determined said change to be an instantaneous drop, the measured lapse of time with a predetermined length of time, and for terminating the actuated state of said load circuit if the measured time is shorter than said predetermined time.

4,761,825
TVRO EARTH STATION RECEIVER FOR REDUCING INTERFERENCE AND IMPROVING PICTURE QUALITY
John Y. Ma, Milpitas, Calif., assignor to Capetronic (BSR) Ltd., Kowloon, Hong Kong
Filed Oct. 30, 1985, Ser. No. 792,784
Int. Cl.[4] H04B 1/26
U.S. Cl. 455—183 13 Claims



1. A method of reducing terrestrial interference in a TVRO earth station receiver for receiving signals broadcast over a plurality of channels and centered within a range of frequencies having a nominal center frequency, said receiver comprising
a superheterodyne circuit including a voltage-controlled oscillator (VCO), means for supplying a controlling input voltage to said VCO, and a mixer for combining incoming 1-st IF signals with the output of said VCO to reduce the frequency of the 1st IF signals to a 2nd IF range having a predetermined nominal center frequency,
means for generating a "channel select" command signal,
means for automatically setting the controlling input voltage at predetermined levels, in response to said "channel select" command signal, so that the VCO produces an output frequency which centers the 1st IF signal corresponding to received signals for a selected channel on the nominal 2nd IF center frequency, and
a passband filter for filtering the 2nd IF signals and having a pass band centered on the nominal 2nd IF center frequency,
said method comprising
offsetting said controlling input voltage from the predetermined level for a selected channel to offset the actual 2nd IF center frequency relative to the center of the pass band of said filter, in a direction that removes at least a portion of terrestrial interference from said pass band.

4,761,826
SIGNAL SEPARATING DEVICE
Jerzy J. Kropielnicki, Knutsford, England; James D. Last, and Brian Easter, both of Gwynedd, United Kingdom, assignors to BSH Electronics, Ltd., Manchester, England
Filed Mar. 28, 1986, Ser. No. 845,464
Claims priority, application United Kingdom, Mar. 30, 1985, [redacted]
Int. Cl.[4] H01Q 1/02, 1/32
U.S. Cl. 455—277 8 Claims



1. A signal separating device for separating radio signals from the heating element antenna means of an electrically heated window of a motor vehicle comprising:
common (unbalanced) configuration signal separation circuit means connected between said heating element antenna means and one of at least two radio signal connections of the aerial inputs of a vehicle radio receiver;
isolating circuitry connected with the connection of said common (unbalanced) configuration signal separation circuit means to the said heating element antenna and with the other of said at least two radio signal connections of the aerial inputs of a vehicle radio receiver;
balanced configuration signal separation circuit means coupled with the said common (unbalanced) configuration and with said one of at least two radio signal connections;
signal selection circuit means selectively connecting the outputs of said common (unbalanced) and balanced configurations to the said one of at least two radio signal connections of the aerial inputs of a vehicle radio receiver in dependence on monitored characteristics of the radio signals produced at said outputs and received by said vehicle radio receiver;
wherein said signal separating device includes said circuit means to establish with said heating element antenna different respective aerial arrangements responsive to radio signals in different configurations, and whereby diversity reception is provided to effectively compensate for fading without using separate antenna structures.

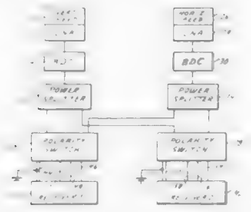
VOL 1093 ISS 1 AUG 2 1988 UMI

4,761,827

POLARITY SWITCH FOR SATELLITE TELEVISION RECEIVER

Edwin T. Horton, Ballwin, Mo., and William G. Heimbuch, San Antonio, Tex., assignors to Satellite Technology Services, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 650,897, Sep. 17, 1984, abandoned. This application Jan. 28, 1985, Ser. No. 695,458
Int. Cl.[4] H04B *1/16*; H04N *5/44*
U.S. Cl. 455—277 21 Claims



1. In a television system for receiving and processing a plurality of television signals, said system including an antenna means for receiving said television signals, said antenna means having a plurality of outputs, each of said outputs being associated with one of said television signals, and a receiver means for processing one of said television signals, said receiver means having means to generate a coded signal indicative of one of said antenna means outputs and TV signal for processing by the receiver means, the improvement comprising a switching means for connection between the antenna means and the receiver means, said switching means having means to decode the receiver means signal and produce an output corresponding to the selected one of said antenna outputs and TV signal, and means to connect one of said television signals to the receiver means for processing in response to the decoded receiver means signal.

4,761,828

RADIO RECEIVER

Heinz Rinderle, Heilbronn, Fed. Rep. of Germany, assignor to Telefunken electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Dec. 9, 1985, Ser. No. 807,342
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447282
Int. Cl.[4] H04B *1/10*
U.S. Cl. 455—296 25 Claims



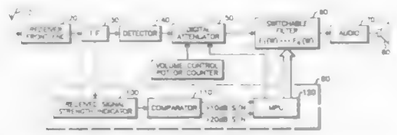
1. A radio receiver comprising:
an input stage for receiving a radio signal composed of a desired signal in a first selected frequency range and an undesired disturbance signal;
a mixer connected to said input stage for converting the received radio signal into a lower frequency signal in a second selected frequency range lower than the first selected range;
signal distortion means connected in said receiver for imparting to the disturbance signal a distortion which temporarily changes in degree;
a recognition circuit connected to monitor the distorted disturbance signal, based on the change in the received signal due to the change in degree of distortion, for producing a recognition signal if the received signal contains a disturbance signal lying in the first selected frequency range; and
signal modifying means connected to said recognition circuit and responsive to the recognition signal for initiating suppression or reduction of a disturbance signal lying in the first selected frequency range.

4,761,829

ADAPTIVE SIGNAL STRENGTH AND/OR AMBIENT NOISE DRIVEN AUDIO SHAPING SYSTEM

Charles N. Lynk, Jr., Bedford, Tex., and Gerald P. Labedz, Chicago, Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Nov. 27, 1985, Ser. No. 802,641
Int. Cl.[4] H03J *15/00*, *1/16*
U.S. Cl. 455—307 20 Claims



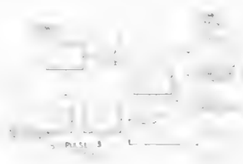
1. An adaptive audio filter arrangement for a radio receiver having RF, IF, detector, and audio sections comprising:
means, interposed between the detector and the audio sections, for providing a plurality of filter responses dependent upon a control signal applied thereto, including at least switchable filter means; and
control signal generating means, coupled to said means for providing a plurality of filter responses and the IF section, for providing at least one of a plurality of available control signals which are related to the signal to noise ratio of the receiver for effecting one of the plurality of frequency responses thereof.

4,761,830

COMMUNICATION DEVICE

Sachihiro Izumi, Kakuda, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Mar. 2, 1987, Ser. No. 20,435
Claims priority, application Japan, Jul. 23, 1986, 61-173481
Int. Cl.[4] H04B *1/16*
U.S. Cl. 455—343 1 Claim



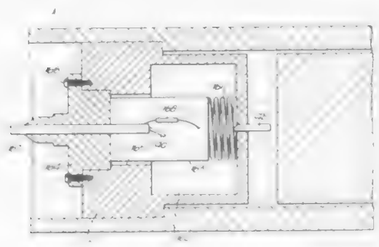
1. A communication device operated between a transmitter of a data signal and a receiver connectable to a power source, comprising:
the transmitter transmitting a data signal consisting of a leader pulse which is continuous for a predetermined time period t1 followed by a series of data pulses provided within a predetermined duration;
the receiver having receiving means for receiving the data signal from the transmitter, an intermittent pulse generator for generating a series of timed pulses spaced apart by a time period t2 and having a duty cycle of t3, an AND circuit having the data signal from the receiving means applied to one terminal and the timed pulses from the intermittent pulse generator applied to its other terminal and outputting a high level pulse when a timed pulse coincides with a leader pulse of the data signal, a trigger circuit for outputting an output pulse which is continuous for a time period t4 in response to receiving the high level pulse from the AND circuit, an OR circuit having the output pulse from said trigger circuit applied to one terminal and the timed pulses from the intermittent pulse generator applied to its other terminal and outputting a high level output when either of said timed pulses or said continuous output pulse is present, a power source circuit responsive to the high level output from said OR circuit for connecting power from the power source to said receiving means, and a data processing circuit for processing the data pulses of the data signal when said receiving means is connected by said power source circuit to an operating voltage of the power source when the continuous output pulse of time period t4 is provided by said trigger circuit,
wherein $t2 < \frac{1}{4} \times t1$, $t3 < 1/10\ t2$, t4 is long enough to receive all data pulses after detection of the leader pulse t1, whereby when no data signal is transmitted, the power source is connected to the receiver less than 1/10 the time over the timed pulses, and since t2 is shorter than $\frac{1}{4}$ the time period of the leader pulse, two or more timed pulses are generated during a leader pulse to ensure that the leader pulse will be reliably detected.

4,761,831

OPTICAL REPEATERS

Arthur A. Davis, Harrold Wood, and Robert W. Eady, London, both of England, assignors to Standard Telephones and Cables Public Limited Company, London, England

Division of Ser. No. 690,535, Jan. 11, 1955, Pat. No. 4,662,002. This application Oct. 17, 1986, Ser. No. 919,964
Claims priority, application United Kingdom, Jan. 19, 1984, 8401433
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—601 3 Claims



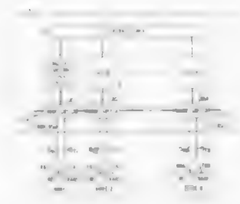
1. An optical repeater for a submerged optical transmission system comprising:
a tubular pressure resistant housing;
a pressure resistant bulkhead at each end secured to the housing;
each bulkhead having a respective cable sealed in a pressure resistant cable gland secured in the bulkhead; and
a chassis located inside the housing;
there being optical feed means connected between the chassis and the cable in one of the bulkheads;
a resilient helically-coiled self-supporting member having a longitudinal axis and being longitudinally expansible and contractible along said axis by a substantial amount such that a bulkhead can be withdrawn from one end while the optical feed integrity is maintained at the other end, said member defining an open channel which extends along the member and which locates and holds said optical feed

4,761,832

FIBER OPTIC SWITCHING NETWORK

Raja R. Gade, Bloomingdale, N.J., and Frank H. Levinson, Redwood City, Calif., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 28, 1985, Ser. No. 750,568
Int. Cl.[4] H04B *9/00*
U.S. Cl. 455—612 11 Claims



1. An optical network, said network comprising a plurality of node switches coupled to a first waveguide at a plurality of bypass portions of said first waveguide, each of said node switches including a second and a third waveguide and transducer means operative to controllably coupled said second and third waveguides to said first waveguide at an associated bypass portion therealong, said network also including control means responsive to input signals for applying command signals to said transducer means in a manner to selectively couple the associated second and third waveguides to said first waveguide along the associated bypass portion thereof, wherein each said transducer means is connected to said control means, wherein said waveguides comprise optical fibers, wherein said network includes a pair of receiving and transmitting nodes adapted for receiving from and transmitting information into said second and third optical fibers, respectively, of an associated one of said node switches, each said node switch being constructed to connect the associated pair of receiving and transmitting nodes to said first fiber through said associated ones of said second and third fibers, respectively, when said associated ones of said second and third fibers are coupled to the associated bypass portion of said first fiber, wherein said control means includes a control logic circuit arrangement for each said node switch, each said control logic circuit arrangement applying said command signals to the associated node switch in response to said input signals, and wherein said control means further includes central timing means for selectively supplying control signals to said control logic circuit arrange-

4,761,833

OPTICAL FIBRE NETWORK

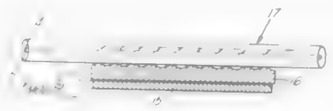
Richard E. Epworth, Bishop's Stortford, Great Britain, assignor to STC PLC, London, England

Filed Oct. 14, 1986, Ser. No. 917,852
Claims priority, application United Kingdom, Nov. 1, 1985, 8526941
Int. Cl.[4] H04B *9/00*; H01J *5/16*; G02B *6/34*
U.S. Cl. 455—612 8 Claims

1. An optical fiber network comprising a length of single mode optical fiber having a core and cladding thereon, means for transmitting continuous wave optical power through the fiber from one or both of its ends, and non-intrusive node means associated with the fiber, the node means including

VOL
1093
ISS
1
AG
2
1988
UMI

transducer means, for introducing information into the fiber by modulating the optical power being transmitted therethrough, and the node means including tapping means for extracting information from the fiber, wherein the transducer means and the tapping means involve periodic gratings and are such as to provide wavelength dependent resonant mode coupling between the guided mode in the core and a mode or modes in the cladding of the optical fiber whereby the modulation and tapping at the node means is wavelength selective, information



being introduced into and extracted from the optical fiber at the node means by said mode coupling.

DESIGN PATENTS

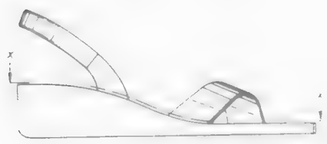
GRANTED AUG. 2, 1988

ERRATA

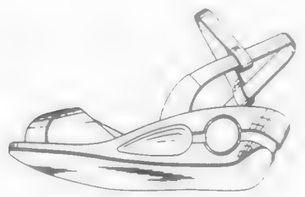
For CLASS	See PATENT NO.
D07-105	 297,008

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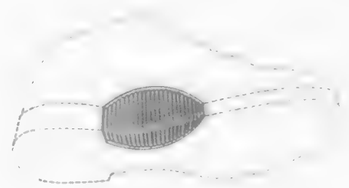
296,950
SANDAL
David Brickwood, London, Great Britain, assignor to Scholl, Inc., Memphis, Tenn.
Filed Aug. 3, 1985, Ser. No. 762,983
Claims priority, application United Kingdom, Feb. 8, 1985, 1024963
Term of patent 14 years
U.S. Cl. D2—291



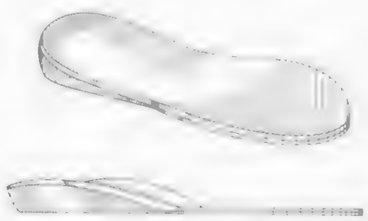
296,951
SANDAL
David Brickwood, London, United Kingdom, assignor to Scholl, Inc., Memphis, Tenn.
Filed Aug. 6, 1985, Ser. No. 763,102
Claims priority, application United Kingdom, Feb. 8, 1985, [illegible]
Term of patent 14 years
U.S. Cl. D2—291



296,952
SHOE ARCH
Paul D. Brown, Hingham, and Juan A. Diaz, Weymouth, both of Mass., assignors to Reebok International Ltd., Canton, Mass.
Filed Feb. 6, 1987, Ser. No. 11,673
Term of patent 14 years
U.S. Cl. D2—314



296,953
INNERSOLE WITH SHOCK-ABSORBING INSERTS
Richard B. Fox, Mashpee, Mass., assignor to Atlantic Thermoplastics Co., Inc., Blackstone, Mass.
Filed Oct. 9, 1985, Ser. No. 785,732
Term of patent 14 years
U.S. Cl. D2—318

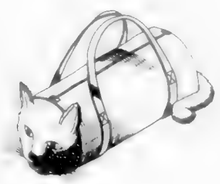


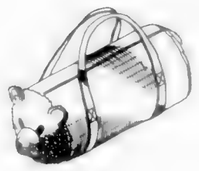
[illegible]
SHOE SOLE
James K. Tong, Beaverton, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Oct. 2, 1987, Ser. No. 104,037
Term of patent 14 years
U.S. Cl. D2—320



VOL 1093 ISS 1 AG 2 1988 UMI

296,955
ATHLETIC BAG OR SIMILAR ARTICLE
Kathy A. Janney, and Stephen P. Janney, both of R.R. #2 Box 212A, Gaston, Ind. 47342
Filed Jan. 9, 1984, Ser. No. 569,402
Term of patent 14 years
U.S. Cl. D3—45





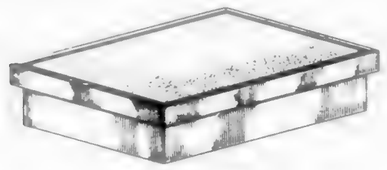
296,956
GARMENT BAG
Marvin Cooper, New Rochelle, N.Y., assignor to Dynamic Classics, Ltd., New York, N.Y.
Filed Jun. 12, 1985, Ser. No. 743,946
Term of patent 14 years
U.S. Cl. D3—71







296,957
ZIG-ZAG PHOTOGRAPH HOLDER
Melvin L. Gordon, Newton; Steven J. Gordon, Boston, and Barry D. Gordon, Sudbury, all of Mass., assignors to Melannco International Ltd., Chelsea, Mass.
Filed Sep. 6, 1985, Ser. No. 773,175
Term of patent 14 years
U.S. Cl. D6—301



296,958
HANGER
Michel Dallaire, 2151 A, rue de la Montagne, Montreal, Quebec, Canada H3G 1Z8, and Gérard Cormier, 1043 Maguire, Sillery, Quebec, Canada G1T 1Y6
Filed Sep. 2, 1986, Ser. No. 903,072
Claims priority, application Canada, Jun. 13, 1986, 13-06-86-8
Term of patent 14 years
U.S. Cl. D6—317



296,960
CHAIR
Derek H. Fenske, Thornhill, Canada, assignor to Adamson Industrial Design Inc., Toronto, Canada
Filed Jun. 6, 1986, Ser. No. 871,591
Term of patent 14 years
U.S. Cl. D6—366



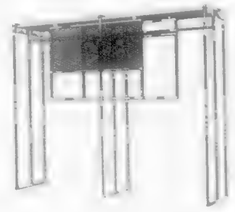
296,961
BENCH OR SIMILAR ARTICLE
Ian F. Norton, Toronto, Canada, assignor to Union Carbide Canada Limited, Toronto, Canada
Filed May 8, 1986, Ser. No. 862,393
Claims priority, application Canada, Mar. 14, 1986, 14-03-86-4
Term of patent 14 years
U.S. Cl. D6—370



296,959
CHAIR
Svein A. Gusrud, Oslo, Norway, assignor to Hag A/S, Norway
Filed Jul. 15, 1985, Ser. No. 755,077
Claims priority, application Norway, Mar. 4, 1985, 66.058
The portion of the term of this patent subsequent to Apr. 12, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—330



296,962
RUG SAMPLE DISPLAY STAND WITH SLIDING PANELS
Ernest G. Ovitz, III, Galva, Ill., assignor to John H. Best & Sons, Inc., Galva, Ill.
Filed Jan. 16, 1986, Ser. No. 819,382
Term of patent 14 years
U.S. Cl. D6—409

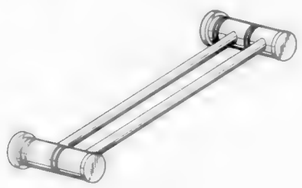


VOL 1093 ISS 1 AG 2 1988 UMI

296,963
MANDREL FOR A TOILET PAPER ROLL HOLDER
Ernest Smallwood, 230 S. Dade, Ferguson, Mo. 63135
Filed Mar. 11, 1985, Ser. No. 710,381
Term of patent 14 years
U.S. Cl. D6—523



296,964
TOWEL RACK
Franz W. Jans, Offenbach am Main, Fed. Rep. of Germany, assignor to Jado Bathroom and Hardware Manufacturing Corp., Camarillo, Calif.
Filed Feb. 24, 1986, Ser. No. 834,857
Term of patent 14 years
U.S. Cl. D6—548



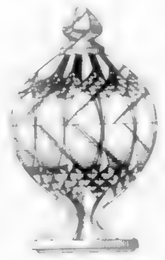
296,965
CASSETTE TAPE DISPLAY CASE
Tsan T. Yeh, No. 356, Min Hu Rd., Hsin Chu City, Taiwan
Filed Sep. 24, 1985, Ser. No. 779,423
Term of patent 14 years
U.S. Cl. D6—573



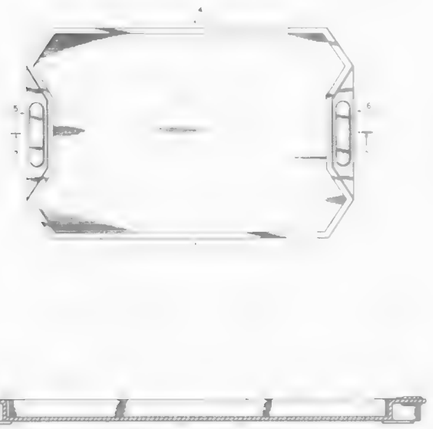
296,966
ENTREE PLATE WITH SAUCE BOAT
Charles E. Finsilver, Hartdale; Sylvia Schur, New Rochelle; Mary W. Yuan, N. Tarrytown, and Terry L. Taylor, Pound Ridge, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Sep. 20, 1985, Ser. No. 778,050
Term of patent 14 years
U.S. Cl. D7—3



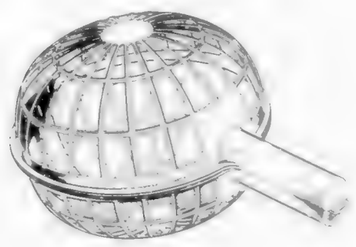
296,967
COVERED CANDY DISH
Jean-Jacques Durand, LaBute 62510, Arques, France
Filed Jan. 8, 1986, Ser. No. 817,244
Term of patent 14 years
U.S. Cl. D7—17



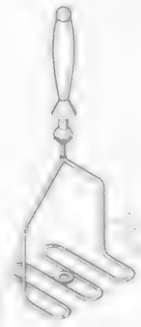
296,968
TRAY
Ambrogio Pozzi, Gallarate, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Sep. 19, 1985, Ser. No. 777,711
Claims priority, application Italy, Mar. 21, 1985, 21186/85[U]
Term of patent 14 years
U.S. Cl. D7—21



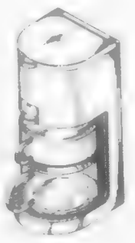
296,969
STRAINER
Arthur R. Carlson, Rowville, Australia, assignor to The Decor Corporation Proprietary Limited, Scoresby, Australia
Filed Oct. 15, 1985, Ser. No. 787,742
Term of patent 14 years
U.S. Cl. D7—47



296,970
POTATO MASHER
Cheryl L. Bruckner, 3708-A Summerall Ter., Fort McClellan, Ala. 36205
Filed Dec. 27, 1985, Ser. No. 814,034
Term of patent 14 years
U.S. Cl. D7—101

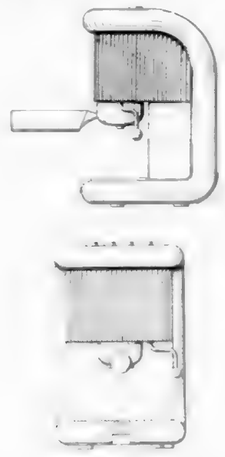


296,971
[illegible]
Franz A. Stützer, Offenbach, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Jun. 6, 1985, Ser. No. 741,981
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1984, 5 MR 10 579
Term of patent 14 years
U.S. Cl. D7—309

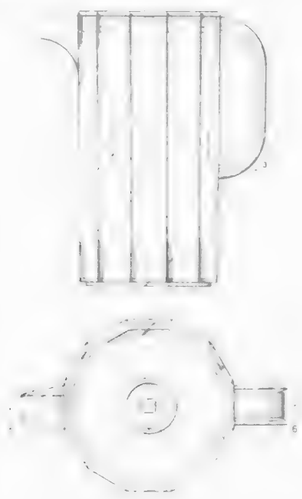


VOL 1093 ISS 1 AG 2 1988 UMI

296,972
ESPRESSO COFFEE MACHINE
Peppino Roccio, Milan, Italy, assignor to Nuova Faema S.p.A., Milan, Italy
Filed Dec. 4, 1985, Ser. No. 804,704
Claims priority, application Italy, Jun. 4, 1985, 22076/85[U]
Term of patent 14 years
U.S. Cl. D7—309



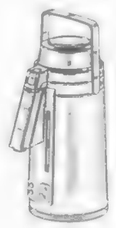
296,973
CARAFE
Ambrogio Pozzi, Gallarate, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Sep. 19, 1985, Ser. No. 777,606
Claims priority, application Italy, Mar. 22, 1985, 21186/85[U]
Term of patent 14 years
U.S. Cl. D7—317



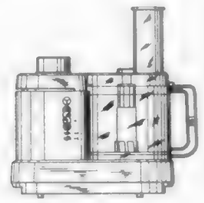
296,974
VACUUM JUG
Johannes H. Weernink, Rijssenseweg 8, Ambt-Delden, Netherlands
Filed Dec. 23, 1985, Ser. No. 812,346
Claims priority, application Netherlands, Jul. 1, 1985, 6016800
Term of patent 14 years
U.S. Cl. D7—317



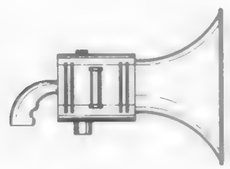
296,975
ELECTRICALLY HEATED VACUUM BOTTLE
Takehisa Nakagawa; Mitsutaka Huke, and Chikako Hatta, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Jul. 18, 1985, Ser. No. 756,959
Term of patent 14 years
U.S. Cl. D7—320



296,976
FOOD PROCESSOR
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany
Filed Jul. 29, 1985, Ser. No. 760,285
The portion of the term of this patent subsequent to Jan. 26, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—384



296,977
HEAT SOURCE USED IN CALIBRATING A HEAT SENSOR
Kevin B. Christie, 64 Christian St., White River Junction, Vt. 05001
Filed Nov. 14, 1985, Ser. No. 804,978
Term of patent 14 years
U.S. Cl. D8—29.1



296,978
COMBINATION BOTTLE AND CAN OPENER AND SCRAPER
James C. Smith, 336 Harder Rd., Hayward, Calif. 94544
Filed Nov. 18, 1985, Ser. No. 805,362
Term of patent 14 years
U.S. Cl. D8—34



296,979
ELECTRICAL CAN OPENER WITH AUTOMATIC STOP
John S. Yuen, Kwun Tong, Hong Kong, assignor to John Manufacturing Limited, Kowloon, Hong Kong
Filed Dec. 20, 1985, Ser. No. 811,745
Claims priority, application United Kingdom, Jun. 26, 1985, 1027 520
Term of patent 14 years
U.S. Cl. D8—36



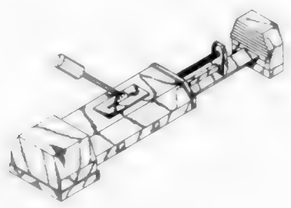


VOL 1093 ISS 1 AG 2 1988 UMI

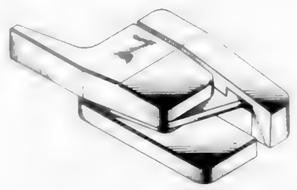
296,980
TIP FOR A SAW BLADE
Peter C. Chaconas, Glyndon, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Feb. 28, 1985, Ser. No. 706,524
Term of patent 14 years
U.S. Cl. D8—70



296,981
PORTABLE HYDRAULIC VISE
Ceffus Clark, Jr., 4088 Archer Dr., Memphis, Tenn. 38109
Filed Sep. 26, 1984, Ser. No. 654,854
Term of patent 14 years
U.S. Cl. D8—74



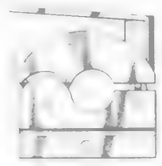
296,982
WINDOW SASH FASTENER
Paul S. White, Barnsley, and Arthur N. Searl, Parbold, both of United Kingdom, assignors to GKN Crompton Limited, Lancashire, England
Filed Feb. 27, 1986, Ser. No. 836,597
Claims priority, application United Kingdom, Sep. 3, 1985, 1029998
Term of patent 14 years
U.S. Cl. D8—337



296,983
CLIP
Bengt A. Westerlund, Hestra, Sweden, assignor to Isaberg AB, Hestra, Sweden
Filed Nov. 8, 1985, Ser. No. 803,946
Claims priority, application Sweden, Jan. 20, 1985, 85-1586
Term of patent 14 years
U.S. Cl. D8—396



296,984
CLAMP
James S. Mashburn, and Jerry P. Mashburn, both of 1201 E. Hill St., Long Beach, Calif. 90806
Filed Dec. 16, 1985, Ser. No. 809,143
Term of patent 14 years
U.S. Cl. D8—396





296,985
COSMETIC CONTAINER
Michio Iwaki, Tokyo, Japan, assignor to Shiseido Company Ltd., Tokyo, Japan
Filed Jul. 26, 1985, Ser. No. 759,175
Term of patent 14 years
U.S. Cl. D9—337



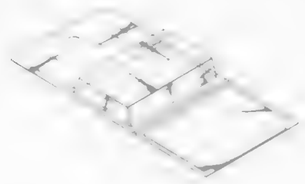
296,986
COMBINED CONTAINER AND LID
Adrian P. Rayner, Iver, England, assignor to Metal Box P.L.C., Reading, England
Filed Aug. 12, 1985, Ser. No. 764,736
Claims priority, application United Kingdom, Feb. 12, 1985, 1024978
Term of patent 14 years
U.S. Cl. D9—399



296,987
FUEL CONTAINER
George W. MacFarlane, 504 Richmond, Orlando, Fla. 32806
Continuation-in-part of Ser. No. 243,759, Mar. 16, 1981, abandoned. This application Sep. 10, 1985, Ser. No. 774,465
Term of patent 14 years
U.S. Cl. D9—374

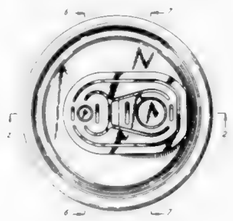


296,988
SMALL ARTICLE PACKAGING CASE OR THE LIKE
Tsutomu Yamada, Osaka, Japan, assignor to Wago Industry Company, Osaka, Japan
Filed Sep. 16, 1985, Ser. No. 776,527
Term of patent 14 years
U.S. Cl. D9—415

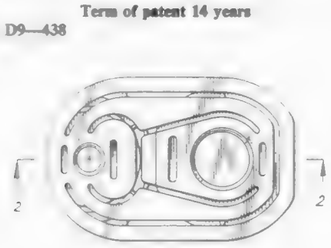


VOL 1093 ISS 1 AG # 2 1988 UMI

296,989
COMBINED CAN END AND PULL TAB CLOSURE
Andrzej J. J. Juty, Harrow, England, assignor to Metal Box p.l.c., Reading, England
Filed Sep. 13, 1985, Ser. No. 776,137
Claims priority, application United Kingdom, Mar. 15, 1985, 1025581
Term of patent 14 years
U.S. Cl. D9—438



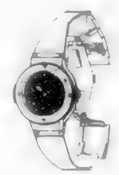
296,990
PULL TAB CLOSURE FOR A CAN
Andrzej J. J. Juty, Harrow, England, assignor to Metal Box p.l.c., Reading, England
Filed Sep. 13, 1985, Ser. No. 776,136
Claims priority, application United Kingdom, Mar. 15, 1985, 1025582
Term of patent 14 years
U.S. Cl. D9—438



296,991
WRIST WATCH CASE
Daniel Lauper, Givisiez, Switzerland, assignor to Interdica S.A., Switzerland
Filed Dec. 9, 1985, Ser. No. 806,682
Claims priority, application Switzerland, Jun. 10, 1985, 114,669
Term of patent 14 years
U.S. Cl. D10—30



296,992
WRIST WATCH
Carlo Crocco, Lugano, Switzerland, assignor to Montres MIDI SA,Genève, Switzerland
Filed Dec. 2, 1985, Ser. No. 803,569
Claims priority, application Hagne, Jun. 12, 1985, DN/005 390
Term of patent 14 years
U.S. Cl. D10—32



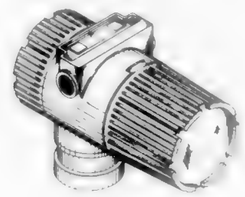
296,993
WATCH WITH SLIDING DOOR
Thomas C. Givings, 2705 13 St., NE., Apt. #50, Washington, D.C. 20018, assignor to Thomas Carlton Givings, Washington, D.C.
Filed Dec. 6, 1985, Ser. No. 805,698
Term of patent 14 years
U.S. Cl. D10—32



296,994
WRIST WATCH
Daniel Lauper, Givisiez, Switzerland, assignor to Interdica S.A., Switzerland
Filed Dec. 9, 1985, Ser. No. 806,690
Claims priority, application Switzerland, Jun. 10, 1985, 114,669
Term of patent 14 years
U.S. Cl. D10—39



296,995
PRESSURE TRANSMITTER HOUSING
David W. Lee, Farmington, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.
Filed Sep. 27, 1985, Ser. No. 781,359
Term of patent 14 years
U.S. Cl. D10—46



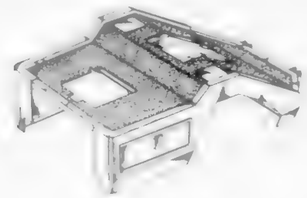
296,996
MILITARY MAP SYMBOLS TEMPLATE
Michael H. Deering, 114 London La., Jacksonville, N.C. 28540
Filed May 30, 1985, Ser. No. 739,094
Term of patent 14 years
U.S. Cl. D10—62



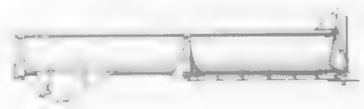
296,997
COMBINED JEWELRY CHAIN AND LENGTH ADJUSTER OR SIMILAR ARTICLE
Charles Dobson, P.O. Box 539, Hesperia, Calif. 92345
Filed Oct. 26, 1984, Ser. No. 665,146
Term of patent 14 years
U.S. Cl. D11—1



296,998
WRECKER BODY
Ted D. Thomison, Dyersburg, Tenn., and Michael E. Michell, Menomonee Falls, Wis., assignors to Holmes International Inc., Chattanooga, Tenn.
Filed Jun. 13, 1985, Ser. No. 744,551
Term of patent 14 years
U.S. Cl. D12—14

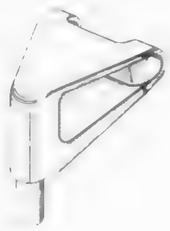


296,999
SEMI-END DUMP TRAILER BODY
William J. Morse, 8224 Banana St., Fontana, Calif. 92335
Filed Feb. 18, 1986, Ser. No. 833,776
Term of patent 14 years
U.S. Cl. D12—15

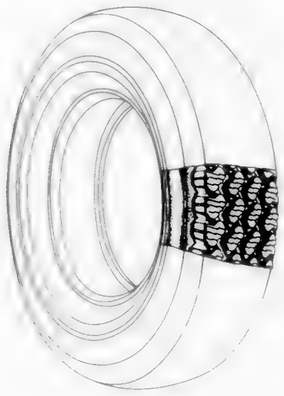


VOL 1093 ISS 1 AUG 2 1988 UMI

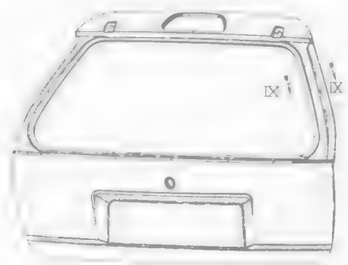
297,000
STEM FOR BICYCLE HANDLEBARS
Lucio Borromeo, Turin, Italy, assignor to 3 T S.p.A., Turin, Italy
Filed Jan. 23, 1986, Ser. No. 824,385
Claims priority, application Italy, Sep. 26, 1985, 53856/85[U]
Term of patent 14 years
U.S. Cl. D12—118



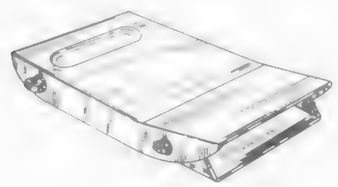
297,001
TIRE
Ronald L. Messer, Simpsonville, S.C., assignor to Michelin Recherche et Technique S.A., Basel, Switzerland
Division of Ser. No. 755,110, Jul. 15, 1985, Pat. No. Des. 293,902, which is a continuation-in-part of Ser. No. 673,878, Nov. 21, 1984, abandoned, which is a continuation-in-part of Ser. No. 534,191, Sep. 21, 1983, abandoned. This application Jul. 15, 1987, Ser. No. 73,629
Term of patent 14 years
U.S. Cl. D12—147



297,002
AUTOMOBILE LIFT GATE
Ramon L. Everts, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jun. 25, 1985, Ser. No. 748,653
Term of patent 14 years
U.S. Cl. D12—196



297,003
FOLDED WHEEL BLOCK
David M. Haskamp, Minneapolis, and Merrel M. De Raad, Burnsville, both of Minn., assignors to Bridge Wheel Co., Inc., Minneapolis, Minn.
Filed Oct. 28, 1985, Ser. No. 791,991
The portion of the term of this patent subsequent to Oct. 22, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D12—217



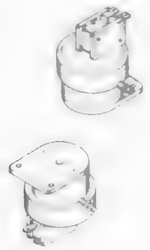
297,004
FLOAT
Ove Henriksen, Eggesbönes, Norway, assignor to Baro Mek. Verksted A/S, Eggesbönes, Norway
Filed Jan. 8, 1986, Ser. No. 817,256
Claims priority, application Norway, Jul. 8, 1985, 66.450
Term of patent 14 years
U.S. Cl. D12—316



297,005
HELICOPTER
Andrew C. Whyte, Norwalk, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Mar. 13, 1986, Ser. No. 844,730
Term of patent 14 years
U.S. Cl. D12—327



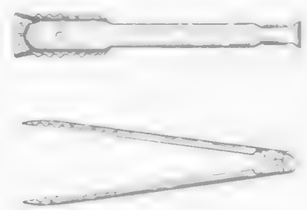
297,006
PRESSURE RESPONSIVE SWITCH
Raymond J. H. Walters, East Victoria Park, Australia, assignor to Values Pty. Ltd., East Victoria Park, Australia
Filed Apr. 18, 1985, Ser. No. 724,613
Claims priority, application Australia, Oct. 25, 1984, 9349/84
Term of patent 14 years
U.S. Cl. D13—32



297,007
HOUSING FOR ELECTRONIC APPARATUS
Floyd J. Pushelberg, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Sep. 15, 1986, Ser. No. 907,716
Term of patent 14 years
U.S. Cl. D14—52



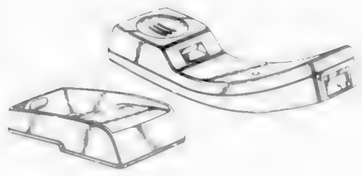
297,008
TONGS
Hugh M. Sofy, 201 Warrington Rd., Bloomfield Hills, Mich. 48013
Filed Jan. 6, 1986, Ser. No. 816,234
Term of patent 14 years
U.S. Cl. D7—105



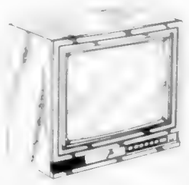
VOL 1093 ISS 1 AG 2 1988 UMI

297,009
MOBILE TELEPHONE SET
Douglas H. Grambush, Irvine, and Lloyd R. Walker, Newport Beach, both of Calif., assignors to Fujitsu Limited, Kawasaki, Japan
Filed Mar. 27, 1987, Ser. No. 30,601
Term of patent 14 years
U.S. Cl. D14—64





297,010
TELEVISION RECEIVER
Akemi Takahashi, Kokubunji; Hiroyuki Kogane, Tokyo; Takao Aoki, Hachioji; Toru Kiyota, Tachikawa, and Ryuichiro Tanaka, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jun. 17, 1985, Ser. No. 745,233
Claims priority, application Japan, Mar. 8, 1985, 60-8914
Term of patent 14 years
U.S. Cl. D14—80

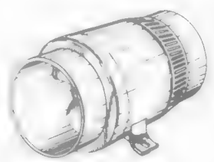


297,011
PLUG-MOUNTED BACKGROUND NOISE AMPLIFIER
William D. Quigley, 132 Oakridge Ave., Nutley, N.J. 07110, and Philip H. Nelson, 42 Harmony Rd., Spring Valley, N.Y. 10977
Filed Apr. 25, 1985, Ser. No. 727,349
Term of patent 14 years
U.S. Cl. D14—96

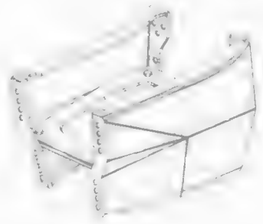




297,012
BILGE EXHAUST BLOWER FOR BOATS
Stanley T. Greseen, Chicago, Ill., assignor to Attwood Corporation, Lowell, Mich.
Filed Nov. 4, 1985, Ser. No. 794,387
Term of patent 14 years
U.S. Cl. D15—4



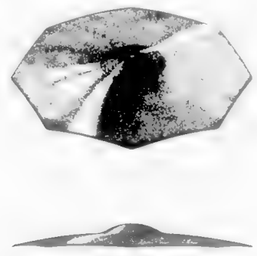
297,013
OUTBOARD MOTOR MOUNTING BRACKET
Michael J. McGuire, P.O. Box 1250, Milan, Ohio 44846
Filed Nov. 5, 1985, Ser. No. 795,242
Term of patent 14 years
U.S. Cl. D15—4



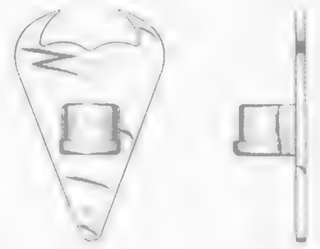
297,014
MULTIPURPOSE TYMPANI
Roland Lawes, Navy Steel Band South, 1415 S. Lawn St., New Orleans, La. 70014
Filed May 30, 1986, Ser. No. 875,361
Term of patent 14 years
U.S. Cl. D17—22



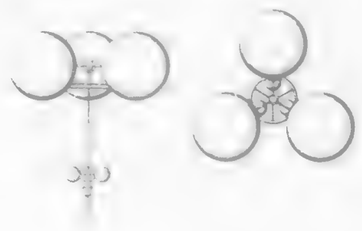
297,015
CYMBAL
James V. Hargrove, Meductic, Canada, assignor to Sabian Ltd., Meductic, Canada
Filed May 12, 1986, Ser. No. 862,533
Term of patent 14 years
U.S. Cl. D17—22



297,016
DRUM SIDE PLATE
Martin Cohen, Hilladale, N.J., assignor to Latin Percussion, Inc., Garfield, N.J.
Filed Apr. 21, 1986, Ser. No. 856,119
Term of patent 14 years
U.S. Cl. D17—22

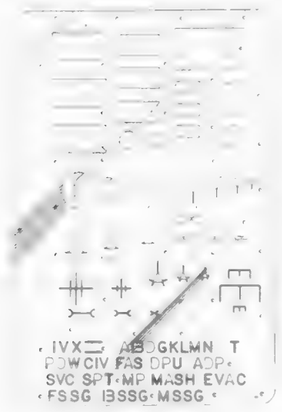


297,017
PENDANT GENERATOR FOR DENDRIFORM GRAPHIC PATTERNS
Morel D. Guyot, Jr., 3585 Beverly Glen, Sherman Oaks, Calif. 91423
Filed Sep. 6, 1985, Ser. No. 773,029
Term of patent 14 years
U.S. Cl. D18—22



VOL 1093 ISS 1 AUG 2 1988 UMI

297,018
LOGISTICS SYMBOLS TEMPLATE
Michael H. Deering, 114 London La., Jacksonville, N.C. 28540
Filed May 30, 1985, Ser. No. 739,093
Term of patent 14 years
U.S. Cl. D19—37



297,019
GENERAL MAP SYMBOLS TEMPLATE
Michael H. Deering, 114 London La., Jacksonville, N.C. 28540
Filed May 30, 1985, Ser. No. 739,114
Term of patent 14 years
U.S. Cl. D19—37



297,020
BALL POINT PEN
Claude Grossiord, Annecy, France, assignor to S. T. Dupont, Paris, France
Filed Sep. 17, 1985, Ser. No. 777,048
Claims priority, application France, Mar. 19, 1985, 85 1255
Term of patent 14 years
U.S. Cl. D19—51



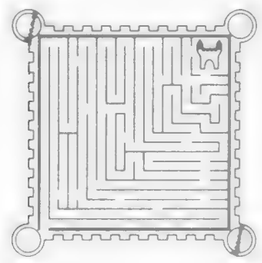
297,021
FOUNTAIN PEN
Claude Grossiord, Annecy, France, assignor to S. T. Dupont, Paris, France
Filed Sep. 17, 1985, Ser. No. 776,928
Claims priority, application France, Mar. 19, 1985, 85 1255
Term of patent 14 years
U.S. Cl. D19—51



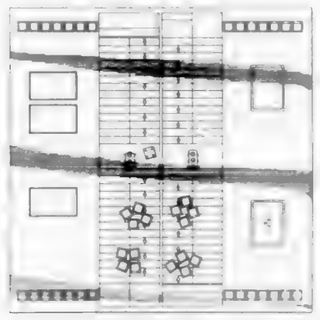
297,022
BALL POINT PEN
Claude Grossiord, Annecy, France, assignor to S. T. Dupont, Paris, France
Filed Sep. 17, 1985, Ser. No. 776,927
Claims priority, application France, Mar. 19, 1985, 85 1255
Term of patent 14 years
U.S. Cl. D19—51



297,023
MAZED CASTLE GAME BOARD
Donald J. Black, P. O. Box 1258, Cottonwood, Ariz. 86326
Filed Sep. 20, 1985, Ser. No. 778,428
Term of patent 14 years
U.S. Cl. D21—16



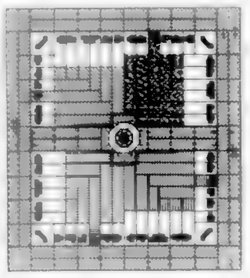
297,024
GAME BOARD
Gary M. McCormack, 43 Lakeshore Dr. S., Westford, Mass. 01886
Filed Oct. 22, 1985, Ser. No. 790,149
Term of patent 14 years
U.S. Cl. D21—25



297,025
GAME BOARD
Bruce R. Weber, 875 Benedetti Dr. Apt. 204, Naperville, Ill. 60540, and Mary M. Weber, 200 N. Owen St., Mt. Prospect, Ill. 60056
Filed Nov. 25, 1985, Ser. No. 806,351
Term of patent 14 years
U.S. Cl. D21—31

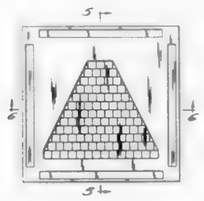


297,026
BOARD FOR A GAME
Peter O. Plummer, Chequers Lane, Walton-on-the-Hill, Tadworth, Surrey, England
Filed Nov. 26, 1985, Ser. No. 806,970
Claims priority, application United Kingdom, May 30, 1985, 1077072
Term of patent 14 years
U.S. Cl. D21—31



VOL 1093 ISS 1 AG 2 1988 UMI

297,027
GAME BOARD
Joe W. Hamamoto, 25437 Edgemont Dr., San Bernardino, Calif. 92401
Filed Aug. 29, 1985, Ser. No. 770,610
Term of patent 14 years
U.S. Cl. D21—34



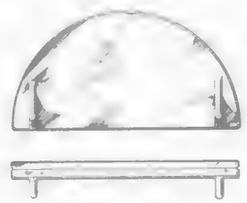
297,028
FLIGHT SIMULATOR CONTROL
Kevin W. McCann, Stevensville, Mont., assignor to Parkland Corporation, Stevensville, Mont.
Filed Nov. 12, 1985, Ser. No. 804,751
Term of patent 14 years
U.S. Cl. D21—48



297,029
GAME DART
Lane S. McCutcheon, Davis Lake, Mo., assignor to Midwest Sport Distributors, Inc., Fayette, Mo.
Filed Mar. 4, 1985, Ser. No. 708,015
Term of patent 14 years
U.S. Cl. D21—49



297,030
PLAYING CARD HOLDER
Richard F. Sweet, 1454 Briarglen Ave., Westlake Village, Calif. 91361
Filed Dec. 2, 1985, Ser. No. 803,842
Term of patent 14 years
U.S. Cl. D21—54



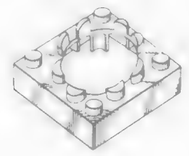
297,031
TOY VEHICLE
Jesse E. Bohannan, Gail Rte., Box 102, Big Spring, Tex. 79720
Filed Jul. 10, 1986, Ser. No. 884,262
Term of patent 14 years
U.S. Cl. D21—81



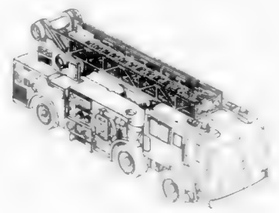
297,032
TOY PUZZLE
Wilson Leung, Kowloon, Hong Kong, assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.
Filed Aug. 18, 1986, Ser. No. 897,477
Term of patent 14 years
U.S. Cl. D21—107



297,033
TOY CONSTRUCTION PIECE
Masaharu Yamada, No. 36-2, Heiwadai 2-chome, Nerima-ku, Tokyo, Japan
Filed Mar. 20, 1986, Ser. No. 845,370
Term of patent 14 years
U.S. Cl. D21—108

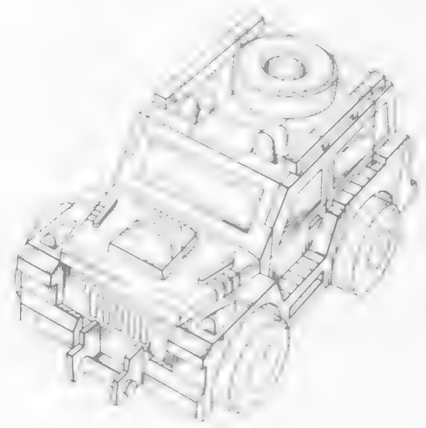


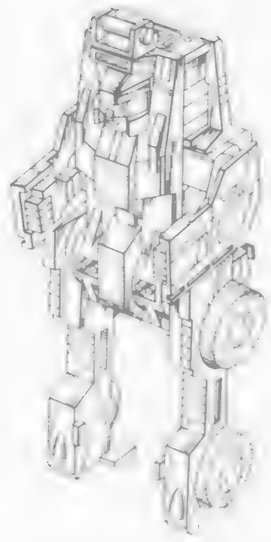
297,034
RECONFIGURABLE TOY LADDER TRUCK
Kaoru Matsumoto, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Dec. 9, 1985, Ser. No. 804,785
Claims priority, application Japan, Oct. 24, 1985, 60-44745
Term of patent 14 years
U.S. Cl. D21—133





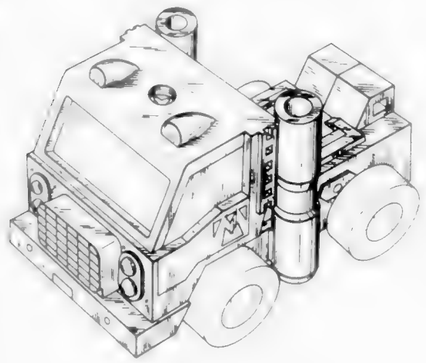
297,035
RECONFIGURABLE TOY VEHICLE
Hideaki Yoke, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1986, Ser. No. 817,829
Claims priority, application Japan, Oct. 4, 1985, 60-41659
Term of patent 14 years
U.S. Cl. D21—134

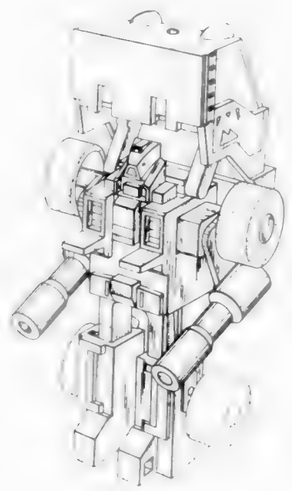




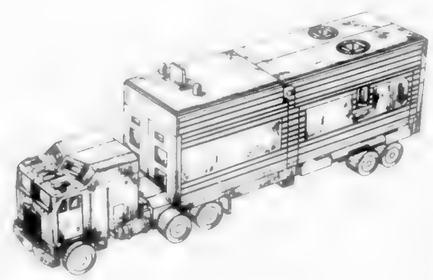
VOL
1093
ISS
1
AG
2
1988
UMI

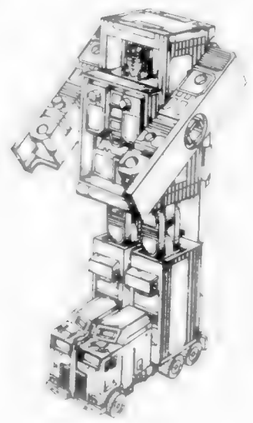
297,036
RECONFIGURABLE TOY TRACTOR
Hideaki Yoke, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Jan. 10, 1986, Ser. No. 817,827
Claims priority, application Japan, Oct. 4, 1985, 60-41662
Term of patent 14 years
U.S. Cl. D21—134



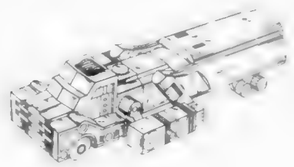


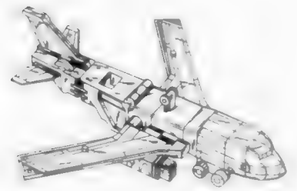
297,037
RECONFIGURABLE TOY VEHICLE
Kaoru Matsumoto, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Nov. 12, 1985, Ser. No. 804,799
Claims priority, application Japan, Jul. 31, 1985, 60-32691
Term of patent 14 years
U.S. Cl. D21—140

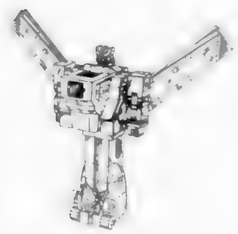




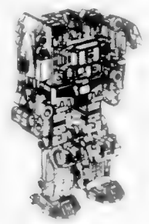
297,038
RECONFIGURABLE TOY VEHICLE TANKER
Kouzin Ohno, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Feb. 24, 1986, Ser. No. 835,316
Claims priority, application Japan, Dec. 24, 1985, 60-53624
Term of patent 14 years
U.S. Cl. D21—140







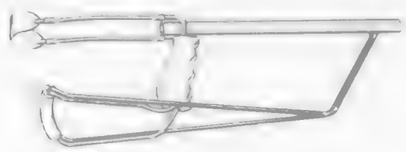
297,039
ROBOTIC-HUMANOID TOY ASSEMBLY
Kaoru Matsumoto, Tokyo, Japan, assignor to Takara Co., Ltd., Tokyo, Japan
Filed Nov. 12, 1985, Ser. No. 804,755
Claims priority, application Japan, Aug. 1, 1985, 60-32908
Term of patent 14 years
U.S. Cl. D21—166



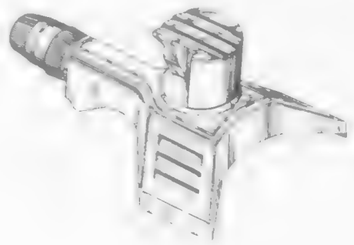
297,040
GOLF PUTTER
Esmond S. Shong, 2nd Floor, 837 Burdett Ave., Victoria, British Columbia, Canada (V8W 1B3)
Filed Oct. 10, 1985, Ser. No. 786,068
Claims priority, application Canada, Apr. 26, 1985, 26-04-85-5
Term of patent 14 years
U.S. Cl. D21—217



297,041
SLINGSHOT
Frank Bongiorni, Box 190-A Rte. 50, R.D. #2, Avella, Pa. 15312
Filed Mar. 27, 1986, Ser. No. 847,012
Term of patent 14 years
U.S. Cl. D22—106

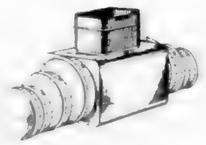


297,042
LAWN SPRINKLER
Bryn Evans, Buckinghamshire, England, assignor to Hozelock-ASL Limited, Aylsbury, England
Filed Aug. 15, 1985, Ser. No. 766,094
Claims priority, application United Kingdom, Feb. 15, 1985, 1029861
Term of patent 14 years
U.S. Cl. D23—214



VOL
1093
ISS
1
AG
2
1988
UMI

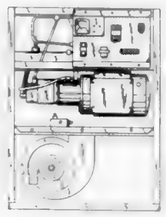
297,043
INTAKE REDUCING TEE
Donald W. Vander Wilt, 1009 W. 4th St., Pella, Iowa 50219
Filed Dec. 18, 1985, Ser. No. 810,211
Term of patent 14 years
U.S. Cl. D23—263



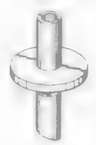
297,044
HEAT EXCHANGER HOUSING
Dirk Van Ee, Humboldt, Canada, assignor to Del-Air Systems Ltd., Humboldt, Canada
Filed Dec. 19, 1985, Ser. No. 810,677
Term of patent 14 years
U.S. Cl. D23—328



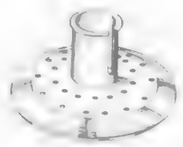
297,045
FRICTION FURNACE
Louis D. Powell, 6383 Holcomb, Des Moines, Iowa 50322
Filed Sep. 16, 1985, Ser. No. 776,608
Term of patent 14 years
U.S. Cl. D23—329



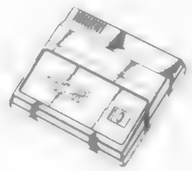
297,046
INFUSION CANNULA FOR OPHTHALMIC SURGERY
Bernard J. Dignam, late of 250 Bay View Ave., Belvedere, Calif. 94920, by Bonnie M. Dignam, executrix
Filed Feb. 24, 1986, Ser. No. 836,613
Term of patent 14 years
U.S. Cl. D24—8



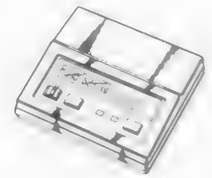
297,047
SENSOR SUPPORT PLATE FOR USE WITH AN EXTERNAL MEDICAL MONITOR DEVICE
Edward H. Hon; Edward D. Hon, both of 11 Bradbury Hills Rd., Bradbury, Calif. 91010, and Robert W. Hon, 483 Panchita Way, Los Altos, Calif. 94022
Filed Dec. 1, 1986, Ser. No. 936,334
Term of patent 14 years
U.S. Cl. D24—17



297,048
HAEMADYNAMOMETER
Koichi Tsukada, Shibukawa, Japan, assignor to Nihon Seimitsu Sokki Co., Ltd., Gunma, Japan
Filed Oct. 18, 1985, Ser. No. 789,225
Term of patent 14 years
U.S. Cl. D24—21



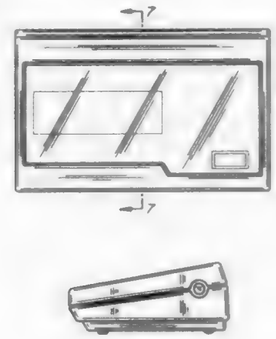
297,049
HAEMADYNAMOMETER
Takeshi Hagiwara, Shibukawa, Japan, assignor to Nihon Seimitsu Sokki Co., Ltd., Gunma, Japan
Filed Oct. 18, 1985, Ser. No. 789,227
Term of patent 14 years
U.S. Cl. D24—21



297,050
HAEMADYNAMOMETER
Norio Moro, Shibukawa, Japan, assignor to Nihon Seimitsu Sokki Co., Ltd., Gunma, Japan
Filed Oct. 21, 1985, Ser. No. 789,538
Term of patent 14 years
U.S. Cl. D24—21



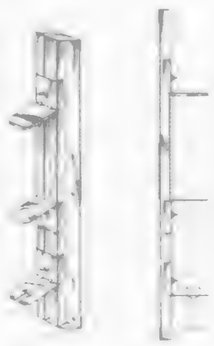
297,051
ELECTRONIC SPHYGMOMANOMETER
Masaki Kawamura, Osaka, Japan, assignor to Sharp Corporation, Osaka, Japan
Filed Sep. 11, 1985, Ser. No. 774,754
Claims priority, application Japan, Mar. 14, 1985, 60-10410
Term of patent 14 years
U.S. Cl. D24—21



297,052
SKIN MICROPUNCTURE IMPLEMENT
Michel Galy, Saint Loup, France, assignor to Institut Merieux, Lyons, France
Continuation of Ser. No. 470,395, Feb. 28, 1983, abandoned.
This application Mar. 17, 1987, Ser. No. 28,019
Claims priority, application France, Aug. 26, 1982, 82 2926
Term of patent 14 years
U.S. Cl. D24—24



297,053
HOLDER FOR BOTTLE AND SYRINGE
Mark A. Jansen, R.F.D. 3, Newton, Kans. 67114
Filed Dec. 23, 1985, Ser. No. 812,770
Term of patent 14 years
U.S. Cl. D24—29



VOL 1093 ISS 1 AG 2 1988 UMI

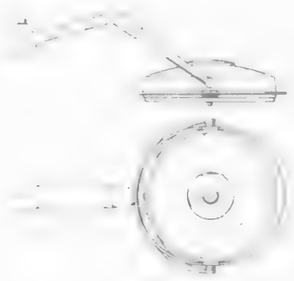
297,054
PIPETTE TIP
Fred G. Williams, San Anselmo, Calif., assignor to Cetus Corporation, Emeryville, Calif.
Filed Apr. 16, 1986, Ser. No. 852,910
Term of patent 14 years
U.S. Cl. D24—55



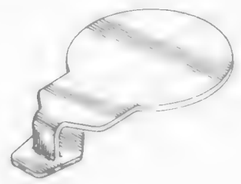
297,055
PIVOTABLE MOBILE HOME VEHICLE STAIR RAIL
Glen McElvania, R.R., Alden, Iowa 50006
Filed Nov. 12, 1985, Ser. No. 805,052
Term of patent 14 years
U.S. Cl. D25—38



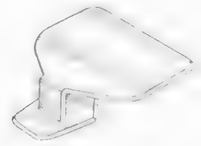
297,056
SURGICAL LIGHT
Joseph T. Sestak, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.
Filed Oct. 2, 1985, Ser. No. 783,308
Term of patent 14 years
U.S. Cl. D26—65



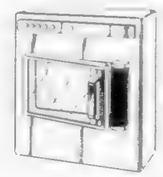
297,057
EAR TAG
Michael S. Gardner, Auckland, New Zealand, assignor to Tagland (NZ) Limited, Auckland, New Zealand
Filed Feb. 19, 1986, Ser. No. 834,062
Claims priority, application New Zealand, Jan. 15, 1986, [illegible]
The portion of the term of this patent subsequent to Jul. 26, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—155



297,058
EAR TAG
Michael S. Gardner, Auckland, New Zealand, assignor to Tagland (NZ) Limited, Auckland, New Zealand
Filed Feb. 19, 1986, Ser. No. 834,435
Claims priority, application New Zealand, Jan. 15, 1986, [illegible]
The portion of the term of this patent subsequent to Jul. 26, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—155



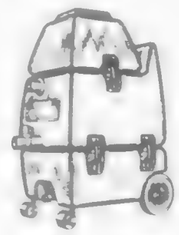
297,059
CLOTHES DRIER
Jun Matsumoto, Tokyo, and Mikio Kamegi, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 30, 1985, Ser. No. 781,682
Claims priority, application Japan, Apr. 1, 1985, 60-12807
Term of patent 14 years
U.S. Cl. D32—8



297,060
VACUUM CLEANING MACHINE
Willie D. Kent, Clovis, Calif., assignor to Rug Doctor, Inc., Fresno, Calif.
Filed Jul. 17, 1985, Ser. No. 756,069
Term of patent 14 years
U.S. Cl. D32—21



297,061
VACUUM CLEANING MACHINE
Willie D. Kent, Clovis, Calif., assignor to Rug Doctor, Inc., Fresno, Calif.
Filed Jul. 17, 1985, Ser. No. 755,923
Term of patent 14 years
U.S. Cl. D32—21



297,062
SCRAPER FOR CLEANING BOILERS AND FURNACES
Richard Miller, 65 Washington Pl., Thorawood, N.Y. 10594
Filed Nov. 12, 1986, Ser. No. 929,652
Term of patent 14 years
U.S. Cl. D32—49

297,063
FLORAL DISPLAY STAND
Duane N. Baldwin, 3515 SW. 104th St., Seattle, Wash. 98146
Filed Mar. 13, 1986, Ser. No. 844,285
Term of patent 14 years
U.S. Cl. D34—18





VOL 1093 ISS 1 AG 2 1988 UMI

297,064
PORTABLE LOADING RAMP
Charles W. Ball, and Jean Curtis-Ball, both of Dermott, Ark., assignors to Metko, Inc., New Holstein, Wis.
Filed Jan. 8, 1985, Ser. No. 689,767
Term of patent 14 years
U.S. Cl. D34—32



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Volvo: *See—*
Fager, Gunnar, 4,760,997, Cl. 269-71.000.
Abay S.A.: *See—*
Desmons, Pierre; and Mullier, Philippe, 4,761,380, Cl. 435-313.000
Abbott Laboratories: *See—*
Gunn, Bruce P.; and Summers, James B., Jr., 4,761,403, Cl. 514-63.000.
Abbruzzi, Joseph A.; Dougherty, John D.; and Marballi, Vikram M., to Timken Company, The. Vehicle wheel mounting assembly. 4,761,018, Cl. 280-674.000.
Abdulally, Igbal F., to Foster Wheeler Corporation. Fluidized bed flyash reinjection system. 4,761,131, Cl. 431-7.000.
Abe, Masahiro: *See—*
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000.
Ace Medical Company: *See—*
Kyle, Richard F., 4,760,844, Cl. 128-92.0YQ.
Adler, Hans, to H. Adler Associates, Inc. Combination stop and pressure reducing valve and stop cock version. 4,760,866, Cl. 137-614.170.
Advanced Micro Devices, Inc.: *See—*
Walters, Donald M., Jr.; and Baror, Gigy, 4,761,567, Cl. 307-269.000.
Advanced Technology Materials, Inc.: *See—*
Tom, Glenn M.; and Brown, Duncan W., 4,761,395, Cl 502-401.000
Advantest Corporation: *See—*
Yamaguchi, Takahiro; Arakawa, Norio; Ohgami, Takayuki; and Kosawa, Hiromi, 4,761,634, Cl. 340-347.0AD.
AE PLC: *See—*
Felici, Alberto; and Rhodes, Michael L. P., 4,760,771, Cl. 92-159.000.
AEC-Able Engineering Company, Inc.: *See—*
Benton, Max D.; and Everman, Michael R., 4,761,084, Cl. 384-619.000
Agarwal, Paul D.; and Kade, Alexander, to General Motors Corporation. Anti-lock brake control system. 4,761,741, Cl. 364-426.000.
Agarwal, Pawan K.; Petrik, William M.; and Garner, Richard T., to Exxon Research and Engineering Company. Blend composition of sulfo EPDM's having improved tear properties. 4,761,444, Cl. 524-145.000.
Agency of Industrial Science & Technology: *See—*
Ebata, Yoshihiro; Komiyama, Tohru; Hayami, Ryozo; and Koyama, Masanori, 4,761,317, Cl. 428-67.000.
AGFA-Gevaert N.V.: *See—*
Boets, Marc J.; and Heylen, Raymond A., 4,760,915, Cl. 206-303.000
Tavernier, Serge M.; De Roo, Pierre R.; Mampaey, Jozef L.; and Janssens, Robert F., 4,761,357, Cl. 430-32.000.
Agudio S.p.A.: *See—*
Blengini, Sergio, 4,760,798, Cl. 104-209.000.
Aihara, Kenichi: *See—*
Asaida, Takashi; and Aihara, Kenichi, 4,761,685, Cl. 358-139.000.
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Air Products and Chemicals, Inc.: *See—*
Nicholas, David M.; Roden, Thomas M.; and Gottier, Gerry N., 4,761,167, Cl. 62-17.000.
Pez, Guido P.; Carlin, Richard T.; Lacıak, Daniel V.; and Sorensen, James C., 4,761,164, Cl. 55-16.000.
Airfoil Textron Inc.: *See—*
Hinman, Edmund R., 4,761,214, Cl. 204-224.00M.
Aisin Seiki Kabushiki Kaisha: *See—*
Nagashima, Takashi; and Miura, Eiji, 4,761,041, Cl. 303-9.620.
Takahashi, Shigeo, 4,760,867, Cl. 137-637.000.
Aisin Seiki Kabushikikaisha: *See—*
Kawai, Taneichi; and Murakami, Yuichi, 4,761,644, Cl. 340-825.310.
Aizawa, Hitomi: *See—*
Moriya, Tatsuo; Aizawa, Hitomi; Natori, Kuniharu; Kamoi, Kazumi; and Yabe, Hiroshi, 4,761,771, Cl. 368-202.000
Ajax Magnethermic Corporation: *See—*
Scherer, Ronald W.; and Ross, Nicholas V., 4,761,530, Cl. 219-10.710.
Akama, Toyohiko; Iino, Masashi; and Igarashi, Osamu, to Nikko Kogyo Kabushiki Kaisha. Frame structure for housing panel plates. 4,761,044, Cl. 312-110.000
Akazawa, Michitada: *See—*
Kondo, Shiro; Akazawa, Michitada; and Ito, Akinori, 4,760,877, Cl 165-24.000
Akiba, Shigeyuki: *See—*
Matsushima, Yuichi; Sakai, Kazuo; and Akiba, Shigeyuki, 4,761,383, Cl. 437-3.000
Akzo America Inc.: *See—*
Epstein, Ronald A., 4,761,499, Cl. 562-520.000
Albach, Eberhard R., to Libbey-Owens-Ford Co. Apparatus for coating glass. 4,761,171, Cl. 65-146.000.
Albeck, Michael; and Sredni, Benjamin, to Bar-Ilan University. Organic derivatives of tellurium and selenium and their use to stimulate cytokine production. 4,761,490, Cl. 549-347.000.
Alcan International Limited: *See—*
Paquin, Ronald J., 4,760,947, Cl. 226-190.000
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Panizo Robles, Pedro. Method for feeding a drawing medium such as paper in a drawing plotter. 4,761,657, Cl. 346-1.100.
Alcatel Cit: *See—*
Crespo Ruiz, Francois; and Pelet, Andre , 4,761,051, Cl. 350-96.200.
Alcatel N.V.: *See—*
Reichert, Gunther, deceased, 4,761,516, Cl. 174-35.0GC.
Alesio, Philip: *See—*
Sadowski, Michael D.; Alesio, Philip; and Newell, Catherine D., 4,761,671, Cl. 355-3.00R
Alexander, Steven R.; and Myers, W. Michael, to Baxter Travenol Laboratories, Inc. Peritoneal dialysis solution containing carbohydrate polymers. 4,761,237, Cl. 210-647.000.
Alfred Teves GmbH: *See—*
Seibert, Wolfram; Ocvirk, Norbert; and Weise, Lutz, 4,761,042, Cl. 303-92.000
Wupper, Hans; and Buschaman, Gunther, 4,761,043, Cl. 303-100.000
Allen, Billie W. Signal light for automotive vehicle. 4,761,718, Cl. 362-80.000
Allen, Donald E. Finger operated switching apparatus. 4,761,522, Cl. 200-5.00R
Allen, Norman. Explosive small arms projectile. 4,760,794, Cl. 102-473.000.
Allen, Robert C., to Shell Oil Company. Polymer processing. 4,761,453, Cl. 524-612.000
Allen, William M., Jr.: *See—*
Parker, Delmer G.; May, Jerome E.; and Allen, William M., Jr., 4,761,672, Cl. 355-14.00D
Alliance Automation Systems, Inc.: *See—*
Brown, Robert N.; and Farquhar, James J., 4,761,106, Cl. 414-125.000
Allied Corporation: *See—*
Brooks, Mark A.; and Fallis, Robert E., 4,760,818, Cl. 123-298.000
Allied-Signal Inc.: *See—*
Ficken, William H., 4,761,708, Cl. 361-212.000
Alps Electric Co., Ltd.: *See—*
Hasegawa, Kazuo, 4,761,550, Cl. 250-221.000.
Hori, Fumihisa, 4,760,785, Cl. 101-93.280.
Hori, Fumihisa, 4,760,787, Cl. 101-205.000
Igarashi, Sadao; and Ueno, Moriaki, 4,761,624, Cl. 333-206.000.
Izumi, Sachihiro, 4,761,830, Cl. 455-343.000
Kondo, Shiro; Akazawa, Michitada; and Ito, Akinori, 4,760,877, Cl. 165-24.000.
Alsthom: *See—*
Delassus, Jean, 4,761,579, Cl. 310-90.500
Alt, Gerhard H., to Monsanto Company. Herbicidal 2-haloacetanilides. 4,761,176, Cl. 71-118.000
Altdorf, Joachim, to Kloeckner-Humboldt-Deutz AG. Adjustment mechanism for changing discharge initiation and timing of an internal combustion engine. 4,760,831, Cl. 123-501.000.
Aluminum Company of America: *See—*
Huet, Roger; and Perrier, Philippe, 4,760,611, Cl. 2-2.500
Stewart, Donald L., Jr.; and VanLinden, Jan H. L., 4,761,207, Cl. 204-67.000
AM International, Inc.: *See—*
Witczak, Stanley, 4,760,789, Cl. 101-348.000.
Amada Engineering & Service Co., Inc.: *See—*
Fukae, Kenneth A., 4,761,789, Cl. 372-34.000
Amagaya, Hidefumi, to Plus Corporation. Device for combining pair of stationery components. 4,761,094, Cl. 403-341.000
AMAX Inc.: *See—*
Chou, Eddie C.; Beckstead, Leo W.; and Tinnin, Luther R., 4,761,177, Cl. 75-0.5AA.
Ambac Industries, Incorporated: *See—*
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000.
Ambrusko, Paul C. Tri-state directional signal system. 4,761,632, Cl. 340-81.00R.

VOL 1093 ISS 1 AG 2 1988 UMI

Amdahl Corporation: *See*—
Lee, Hsiao-Peng S.; Oneto, John C.; and Rawlinson, Stephen J., 4,761,756, Cl. 364-757.000
Amendola, Frank. Fishing lure lighted. 4,760,664, Cl. 43-17.500.
American Home Products Corporation: *See*—
Husbands, G. E.; Yardley, John P.; and Muth, Eric A., 4,761,501, Cl. 564-167.000
American Home Products Corp. (Del.): *See*—
Godsey, James H., 4,761,378, Cl. 435-293.000.
American Sterilizer Company: *See*—
Fisher, Kenneth J.; Schuldt, Eric J.; and Fendya, Thomas J., 4,761,000, Cl. 269-323.000.
American Telephone and Telegraph Company: *See*—
Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, 4,761,788, Cl. 372-36.000
American Telephone and Telegraph Company, AT&T Bell Laboratories: *See*—
Blyler, Lee L., Jr.; Hart, Arthur C., Jr.; and Progelhof, Richard C., 4,761,168, Cl. 65-3.100.
Canniff, Ronald J., 4,761,751, Cl. 364-721.000
Cogelia, Nicholas J.; Johnson, Brian D.; Reed, William C.; and Wilson, Carla G., 4,761,053, Cl. 350-96.230.
Eldumati, Ismail I.; Melnik, David T.; and Wiederhold, Robert P., 4,761,732, Cl. 364-200.000.
Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., 4,761,800, Cl. 375-117.000
Miller, David A. B., 4,761,620, Cl. 332-7.510.
Ammann, Hansrudolf; Egger, Hans J.; and Streuli, Adrian, to BBC Brown, Boveri & Company, Limited. Supercharged marine diesel engine. 4,760,702, Cl. 60-605.200.
Amoco Corporation: *See*—
Baleiko, Marc O.; and Rader, Edward F., 4,761,393, Cl. 502-170.000
AMP Incorporated: *See*—
Gade, Raja R.; and Levinson, Frank H., 4,761,832, Cl. 455-612.000.
Goto, Kazuhiro; and Mair, Ross L., 4,761,145, Cl. 439-469.000.
Hawk, Gary W.; and Marzili, Joseph C., 4,761,141, Cl. 439-153.000.
Hunt, Alexander, III; and Myer, John M., 4,761,144, Cl. 439-545.000
Ampex Corporation: *See*—
Stearns, John C., 4,761,691, Cl. 358-311.000.
Amy, Michael E., to NCR Corporation. Data transfer circuit between a processor and a peripheral. 4,761,735, Cl. 364-200.000.
Anadrill, Inc.: *See*—
Sheppard, Michael C.; and Wick, Christian, 4,760,735, Cl 73-151.000
Analog Devices, Incorporated: *See*—
Brokaw, Adrian P.; and Maidique, Modesto A., 4,761,636, Cl. 340-347.0AD
Andersen, Marlo R.; Tiffany, Thomas O.; and Gangitano, Mario J., to Fisher Scientific Company. Liquid handling. 4,761,268, Cl. 422-72.000
Anderson, C. William: *See*—
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; Zenner, Bruce D.; and Anderson, C. William, 4,761,209, Cl 204-129.000
Anderson, Jeffrey P.: *See*—
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000
Anderson, Paul C.; and Hibberd, Kenneth A., to Molecular Genetics, Inc. Herbicide resistance in plants. 4,761,373, Cl. 435-172.300.
Anderson, Porter W., to University of Rochester, The. Immunogenic conjugates. 4,761,283, Cl. 424-92.000.
Andrew Tool Company: *See*—
Dulebohn, David H., 4,761,028, Cl. 294-99.200.
Anelva Corporation: *See*—
Sasaki, Naoto; and Sato, Fumihiko, 4,761,219, Cl. 204-298.000.
Aneshansley, Nicholas E.: *See*—
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000
Angst, Tim V.; and Troupes, Demetrios, to International Business Machines Corporation. Printer with enhanced bidirectional logic seeking for increased through-put. 4,761,085, Cl. 400-323.000.
Angyan, Sandor: *See*—
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000
Anno, Nobuo: *See*—
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000.
Antes, Gregor, to LGZ Landis & Gyr Zug Ag. Method and apparatus for producing a relief pattern with a microscopic structure, in particular having an optical diffraction effect. 4,761,253, Cl. 264-1.300.
Anthony's Manufacturing Co., Inc.: *See*—
Stromquist, Michael E., 4,760,621, Cl. 16-85.000.
Aoki, Tadashi; Ashikaga, Tadatoshi; Kuno, Hiroshi; Isobe, Masakazu; and Ohhira, Hideaki, to Kabushiki Kaisha Saginomiya Seisakusho. Five-way valve having simultaneous defrosting and heating functions. 4,760,709, Cl. 62-324.600.
Aoki, Takashi: *See*—
Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, 4,760,761, Cl. 74-867.000
Aoki, Yuichi: *See*—
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000
AP Industries, Inc.: *See*—
Harwood, Jon W.; Emrick, James W.; Rosa, Bruno A.; and Kratzer, Bruce G., 4,760,894, Cl. 181-282.000
Apontoweil, Peter; and Krasselt, Manfred M., to Gist-Brocades N.V. Inactivated infectious bronchitis vaccine for poultry. 4,761,282, Cl. 424-89.000
Aquanautics Corporation: *See*—
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; Zenner, Bruce D.; and Anderson, C. William, 4,761,209, Cl. 204-129.000
Aquino, Agostino: *See*—
Simelunas, William J.; and Aquino, Agostino, 4,760,778, Cl. 99-450.100
Arai, Keiji: *See*—
Watanabe, Masatoshi; Takahashi, Miyoshi; Sato, Masaki; Ito, Motoya; and Arai, Keiji, 4,761,581, Cl. 310-214.000
Arakawa, Norio: *See*—
Yamaguchi, Takahiro; Arakawa, Norio; Ohgami, Takayuki; and Kosawa, Hiromi, 4,761,634, Cl. 340-347.0AD.
Araki, Junichi: *See*—
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000.
Arco Chemical Company: *See*—
Sonnenberg, Fred M.; and Hajnik, Dennis M., 4,761,432, Cl 521-60.000
Ardini, Joseph L., Jr.; Beckwith, Robert F.; Chen, Chi-Ping; and Rodman, Paul K., to Prime Computer, Inc. Data processing system and method having an improved arithmetic unit. 4,761,755, Cl. 364-749.000.
Arima, Kouichiro: *See*—
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000.
Arita, Kazuhiro; and Sano, Yasuo, to Takeda Chemical Industries, Ltd. Process for producing cross-linked resins. 4,761,457, Cl. 525-439.000.
Armstrong World Industries, Inc.: *See*—
Clark, Lawrence; Graybeal, Harold N.; and Witman, Jack H., 4,761,306, Cl. 427-197.000.
Arnaune, Jean-Pierre; Dominguez, Nazario; and Walraet, Jean, to S.A.T. (Societe Anonyme de Telecommunications). Method of coding digital information organized in frames using a CMI code, a device for implementing this method and application to servitude information for a high capacity digital network. 4,761,635, Cl. 340-347.0DD
Arragon, Jean-Pierre, to U.S. Philips Corporation. Time-locking method for stations which form part of a local star network, and local star network for performing the time-locking method. 4,761,799, Cl. 375-107.000
Arsenault, Roger: *See*—
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., 4,761,048, Cl. 350-96.110
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, to Sulzer Morat GmbH. Method and circular knitting machine for producing knit goods with combed-in fibers. 4,760,716, Cl. 66-9.00B
Asahi Glass Company Ltd.: *See*—
Matsuo, Masashi; Yamagishi, Nobuyuki; and Maekawa, Takashige, 4,761,459, Cl. 525-479.000
Nishiyama, Hisashi; Miyasaka, Seiichi; Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Yoshihara, Akihiko, 4,761,061, Cl. 350-357.000
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Otsuka, Masahiko; and Ishimura, Hidekazu, 4,761,460, Cl. 525-504.000
Asahi Kogaku Kogyo Kabushiki: *See*—
Negishi, Kiyoshi, 4,761,661, Cl. 346-108.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Nakajima, Toru; Sato, Masahiro; Nishimura, Katsuhiko; and Tsuru, Sumiaki, 4,761,366, Cl. 435-2.000.
Negishi, Kiyoshi, 4,761,659, Cl. 346-108.000.
Asai, Makio: *See*—
Ikari, Motoo; Takada, Yuji; Yamamoto, Shintaro; Teramae, Katsuhiro; and Asai, Makio, 4,761,546, Cl. 250-201.000.
Asai, Masaki, to Meitoh Denki Kohji Kabushiki Kaisha. Tensing rope. 4,760,991, Cl. 254-134.30R
Asaida, Takashi, to Sony Corporation. Optical low-pass filter including three crystal plates for a solid-state color TV camera. 4,761,682, Cl. 358-50.000.
Asaida, Takashi; and Aihara, Kenichi, to Sony Corporation. Apparatus and method for solid-state image sensor element registration adjustment. 4,761,685, Cl. 358-139.000
Asano, Masao; Matsumoto, Kazumasa; Tsuji, Toshio; and Yasufuku, Yoshitaka, to Konishiroku Photo Industry Co., Ltd. Magnetic recording medium. 4,761,338, Cl. 428-425.900.
Asea AB & Tornbloms Kvalitetskontrollar: *See*—
Svegander, Lennart; and Tornblom, Bengt, 4,761,610, Cl. 324-227.000
Asea Stal Aktiebolag: *See*—
Jonsson, Arne, 4,760,817, Cl. 122-510.000
Ash, Darrell L., to R. F. Monolithics, Inc. Voltage controlled oscillator. 4,761,616, Cl. 331-107.00A.

Ashikaga, Tadatoshi: *See*—
Aoki, Tadashi; Ashikaga, Tadatoshi; Kuno, Hiroshi; Isobe, Masakazu; and Ohhira, Hideaki, 4,760,709, Cl. 62-324.600
Ashikawa, Tomoharu: *See*—
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M.
Ashland Oil, Inc.: *See*—
Goel, Anil B., 4,761,466, Cl. 528-90.000.
Askeland, Ronald A.; Kappele, William D.; Pawlowski, Norman E.; and Stoffel, John L., to Hewlett-Packard Company. Dyes containing tetramethylammonium cation for ink-jet printing inks. 4,761,180, Cl. 106-22.000.
Askew, Robert E.: *See*—
Mawhinney, Daniel D.; and Askew, Robert E., 4,761,821, Cl. 455-73.000.
Aste, Robert; and Bloch, Peter, to Swisscab E.A. Schoen S.A. Device for changing color during the extrusion of a sheath around a conductor. 4,761,129, Cl. 425-133.100.
AT&T Bell Laboratories: *See*—
Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, 4,761,788, Cl. 372-36.000.
AT&T Information Systems, Inc.: *See*—
Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., 4,761,800, Cl. 375-117.000.
AT&T Technologies: *See*—
Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, 4,761,788, Cl. 372-36.000.
AT&T Technologies, Inc.: *See*—
Cogelia, Nicholas J.; Johnson, Brian D.; Reed, William C.; and Wilson, Carla G., 4,761,053, Cl. 350-96.230.
ATI Systems Inc.: *See*—
Wiles, Gregory R.; and Matzoll, Robert J., Jr., 4,761,676, Cl. 356-445.000.
Atlantic Richfield Company: *See*—
Dunn, Michael D., 4,760,883, Cl. 166-297.000.
Atlas Copco Aktiebolag: *See*—
Hansson, Gunnar C., 4,761,151, Cl. 464-25.000
Atsumi, Jun: *See*—
Wakamatsu, Keiji; Nakayama, Tetsuya; and Atsumi, Jun, 4,761,707, Cl. 361-127.000.
Aubard, Gilbert G.: *See*—
Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, 4,761,400, Cl. 514-53.000.
Aubex Corporation: *See*—
Kurihara, Norigi; and Sakuda, Ryutaro, 4,761,089, Cl. 401-198.000
Augat Inc.: *See*—
Geib, James F., 4,761,140, Cl. 439-71.000.
Augustine, Michael E.; and Lillard, Donald W., to Staley Continental, Inc. Ready-to-spread cake frosting. 4,761,292, Cl. 426-321.000.
Aupor, Hans; and Muller, Wilhelm, to Motoren-Werke Mannheim AG vorm. Benz Abt. stat. Motorenbau. Intake spiral device and/or turbulence device for combustion engines. 4,760,821, Cl. 123-308.000.
Aurichio, Joseph A.; and Fisher, Paul D., to National Starch and Chemical Corporation. Alpha-particle protection of semiconductor devices. 4,761,335, Cl. 428-352.000.
Austin, Arnold S., to Quabaug Corporation. Composite outsole. 4,760,652, Cl. 36-30.00R.
Automotion Incorporated: *See*—
Houghton, Harry E., 4,760,908, Cl. 198-365.000.
Avar, Geza: *See*—
Haas, Peter; Freitag, Hans-Albrecht; and Avar, Geza, 4,761,307, Cl. 427-243.000.
AVCO Corporation: *See*—
Naik, Subhash K., 4,761,346, Cl. 428-627.000
Avny, Eli, to Sundstrand Corporation. Variable lead differential travel limiting mechanism. 4,760,907, Cl. 192-141.000.
Awata, Mitsuru: *See*—
Oguri, Yasuo; Awata, Mitsuru; and Endo, Hozumi, 4,761,388, Cl. 501-95.000.
Bachner, Jerry G.; Bachner, Larry G.; and Hose, John, to Nimco Corporation. Apparatus for forming a denesting lip on paperboard containers. 4,761,156, Cl. 493-133.000.
Bachner, Larry G.: *See*—
Bachner, Jerry G.; Bachner, Larry G.; and Hose, John, 4,761,156, Cl. 493-133.000.
Bacigalupe, Carlos; and Dobie, Michael J., to Stewart Systems, Inc Conveyor system for use in a continuous proofing and baking apparatus. 4,760,911, Cl. 198-474.100.
Baer, Thomas M., to Spectra-Physics, Inc. Miniaturized Q-switched diode pumped solid state laser. 4,761,786, Cl. 372-10.000.
Bag Butler, Inc.: *See*—
Cooke, Ronald C., 4,760,982, Cl. 248-99.000
Baggio, Giorgio, to Nordica SpA. Device for closing the quarters of ski boots. 4,760,653, Cl. 36-117.000.
Bagnall-Wild, Ralph H.; Evans, Clinton E.; and Smith, Gordon R., to Barr & Stroud Limited. Fire control systems. 4,760,770, Cl. 89-41.190.
Baker & Finnemore Limited: *See*—
Chambers, John T., 4,760,678, Cl. 52-562.000.
Bakos, Vincent W.; and Martin, Thomas W., to Eastman Kodak Company. Accordian folded electrode assembly. 4,761,352, Cl. 429-94.000
Baldwin, A. Frank: *See*—
Barnes, Charles G.; and Baldwin, A. Frank, 4,761,326, Cl 428-219.000.
Baleiko, Marc O.; and Rader, Edward F., to Amoco Corporation. Method for placing a catalytically active alkali metal on a catalyst support. 4,761,393, Cl. 502-170.000.
Ball Corporation: *See*—
Halasz, Andrew, 4,760,725, Cl. 72-84.000.
Ball, Graham J.; Hart, William B.; and Hurst, Michael H., to Jencons (Scientific) Limited. Liquid dosing device with digital display. 4,760,939, Cl. 222-23.000
BallistiVet, Inc.: *See*—
Chevalier, Martin A., 4,760,834, Cl. 124-51.00R
Bannai, Yuichi, to Canon Kabushiki Kaisha. Image processing apparatus. 4,761,818, Cl. 382-41.000.
Bansemir, Werner: *See*—
Knodler, Reinhard; Bansemir, Werner; Mennicke, Stefan; and Steinleitner, Gunther, 4,761,353, Cl. 429-104.000
Bar-Ilan University: *See*—
Albeck, Michael; and Sredni, Benjamin, 4,761,490, Cl. 549-347.000
Barbier, Jose E.: *See*—
Silvestrini, Jesus A.; Barbier, Jose E.; and Morsucci, Juan C., 4,760,780, Cl. 99-584.000.
Barland, Michel. Articulated head for an industrial robot and a robot equipped with a head of this type. 4,761,114, Cl. 414-735.000.
Barlow, Michael T., to BP Chemicals Limited. Crystalline galloaluminosilicates, steam-modified crystalline galloaluminosilicates, their preparation and their use as catalysts and catalyst supports. 4,761,511, Cl. 585-415.000.
Barnes, Casper W., to North American Philips Corporation. Fractional step correlator. 4,761,752, Cl. 364-728.000
Barnes, Charles G.; and Baldwin, A. Frank, to Precision Fabrics Group, Inc. Foam coated CSR/surgical instrument wrap fabric. 4,761,326, Cl. 428-219.000.
Baron, William S. Apparatus and method for determining corneal and scleral topography. 4,761,071, Cl. 351-212.000.
Baror, Gigy: *See*—
Walters, Donald M., Jr.; and Baror, Gigy, 4,761,567, Cl. 307-269.000.
Barr, Stephen W.: *See*—
Bredeweg, Robert A.; Larson, Jeffrey R.; and Barr, Stephen W., 4,760,732, Cl. 73-23.100
Barr & Stroud Limited: *See*—
Bagnall-Wild, Ralph H.; Evans, Clinton E.; and Smith, Gordon R., 4,760,770, Cl. 89-41.190
Barre, Claude, to Siemens Aktiengesellschaft. Read-write control for ECL memory. 4,761,766, Cl. 365-190.000.
Barrett, Haentjens & Co.: *See*—
Werner, Roy H., 4,761,077, Cl. 366-165.000.
Barrois, Claus D.; and Dieterich, Philipp A., to Koenig & Bauer Aktiengesellschaft. Printed sheet removal assembly. 4,761,003, Cl. 271-280.000
Bartlechner, Johann, to Hans Bartlechner Betonwerke. Paving stone. 4,761,095, Cl. 404-41.000.
Bartolini, Carlo M.; Naso, Vincenzo; and Suraci, Ferdinando, to Comitato Nazionale per la Ricerca e per lo Sviluppo del' Energia Nuclere e Delle Energie Alternative. Stirling engine. 4,760,698. Cl. 60-526.000
BASF Aktiengesellschaft: *See*—
Gramltch, Walter; Siegel, Hardo; and Jahn, Dieter, 4,761,489, Cl 549-347.000
Jaggard, James F. R.; Werner, Rainer A.; and Gruber, Wolfgang, 4,761,461, Cl. 526-125.000.
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,761,175, Cl. 71-100.000.
Schultze, Hans, 4,761,472, Cl. 540-145.000
Trendl, Franz, 4,760,617, Cl. 8-151.200.
BASF Aktiengesellschaft, Patentabteilung: *See*—
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000.
BASF Corporation: *See*—
Guagliardo, Matthew; DebRoy, Tapan K.; and Pucknat, John, 4,761,337, Cl. 428-425.800.
Bass, Morton E.; and Herting, James G., to Rack Mate, Inc. Platform for bicycle rack. 4,760,943, Cl. 224-39.000
Bassa, Altan, to Du Pont de Nemours, E. I., and Company. Device for turning a moving web. 4,760,946, Cl. 226-97.000.
Batliwalla, Neville S.; Jones, Michael C.; Oswal, Ravinder K.; Shafe, Jeff; and Trammell, Bernadette A., to Raychem Corporation. Devices comprising conductive polymer compositions. 4,761,541, Cl. 219-528.000
Battista, Righele G.; and Giuseppe, Scorzato. Rotary pump with an improved air extraction system for sacking ground meat. 4,761,121, Cl. 418-15.000
Baxter Travenol Laboratories, Inc.: *See*—
Alexander, Steven R.; and Myers, W. Michael, 4,761,237. Cl. 210-647.000
Christine, William C.; Schmidt, Josef; Lyons, Steffen; Green, Brian; and Herschman, George J., 4,761,197, Cl. 156-290.000.
Hale, Ron L.; and Solas, Dennis W., 4,761,481, Cl. 546-296.000
Baychem International, Inc.: *See*—
Lakshmanan, Pallavoor R.; and Carrier, Paula J., 4,761,450, Cl 524-488.000

VOL 1093 ISS 1 AG 2 1988 UMI

Bayer Aktuengesellschaft: *See*—
Dahm, Manfred; Jabs, Gert; Koglin, Bernd; and Schnoring, Hildegard, 4,761,255, Cl. 264-4.700.
Dietrich, Manfred; and Konig, Klaus, 4,761,434, Cl. 521-164.000.
Haas, Peter; Freitag, Hans-Albrecht; and Avar, Geza, 4,761,307, Cl. 427-243.000.
Knofel, Hartmut; Brockelt, Michael; and Wegener, Gerhard, 4,761,498, Cl. 560-359.000.
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.
Paulini, Dieter; Wagner, Wolfram; Schmitz-Bastian, Peter; and Bruck, Robert, 4,760,629, Cl. 28-256.000.

Bayerwitz, Marvin H.: *See*—
Griffing, Neal R.; Bayerwitz, Marvin H.; and Stelts, Philip D., 4,761,178, Cl. 75-51.200

BBC Brown, Boveri & Company, Limited: *See*—
Ammann, Hansrudolf; Egger, Hans J.; and Streuli, Adrian, 4,760,702, Cl. 60-605.200.

Beauchamp, Robert W.; and Ebersole, Anthony W., to Hewlett-Packard Company. Belt tensioner. 4,761,154, Cl. 474-101.000.

Beaven, Herbert R., Jr.: *See*—
Stewart, James P.; and Beaven, Herbert R., Jr., 4,760,985, Cl. 248-176.000.

Becerra Carrasco, Rodrigo: *See*—
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Panizo Robles, Pedro, 4,761,657, Cl. 346-1.100.

Beck, Henry R.; Ferree, James E.; and Ludwig, Alan J., deceased (by Lugwig, Donna L., administratrix), to Westinghouse Electric Corp. Drawout and interlock assembly for molded case circuit breakers. 4,761,521, Cl. 200-50.0AA.

Becker, Klaus: *See*—
Ehrler, Guenter; Hagen, Heinz; and Becker, Klaus, 4,761,210, Cl. 204-129.650.

Becker, Rainer: *See*—
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,761,175, Cl. 71-100.000.

Beckstead, Leo W.: *See*—
Chou, Eddie C.; Beckstead, Leo W.; and Tinnin, Luther R., 4,761,177, Cl. 75-0.5AA.

Beckwith, Robert F.: *See*—
Ardini, Joseph L., Jr.; Beckwith, Robert F.; Chen, Chi-Ping; and Rodman, Paul K., 4,761,755, Cl. 364-749.000.

Becton, Dickinson and Company: *See*—
Williams, Edward L., 4,761,379, Cl. 435-296.000

Beede Electrical Instrument Co., Inc.: *See*—
Brooks, Bradford L., 4,761,715, Cl. 362-23.000.

Behr-Industrieanlagen GmbH & Co.: *See*—
Schneider, Rolf, 4,760,965, Cl. 239-701.000.

Beidler, Donald. Mobil barbeque cart. 4,760,776, Cl. 99-421.00H.

Beier, Wolfgang, to Standard Elektrik Lorenz AG. Receiver for band-spread signals. 4,761,795, Cl. 375-1.000.

Beijersbergen Van Henegouwen, Cornelis M.: *See*—
Muller, Johannes C. A.; and Beijersbergen Van Henegouwen, Cornelis M., 4,761,696, Cl. 360-84.000.

Beisler GmbH: *See*—
Hulsmann, Norbert, 4,760,808, Cl. 112-68.000.

Beitzinger, Kurt, to Schubert & Salzer Maschinenfabrik. Open-end spinning machine with plural spinning stations and thread joining process therefor. 4,760,688, Cl. 57-92.000.

Bell Communications Research, Inc.: *See*—
Bingham, Bryan L.; Day, Chester M., Jr.; and Smoot, Lanny S., 4,761,780, Cl. 370-60.000.

Bell, John R.; Ramachandran, Janakiraman; and Ullrich, Axel, to Genentech, Inc. Insulin receptor. 4,761,371, Cl. 435-68.000.

Bell, Richard E., to Potter and Brumfield Inc. Electromagnetic relay including a rotatable armature mount. 4,761,627, Cl. 335-128.000

Bellanger, Regis, to Massey-Ferguson Services N.V. Clutch engagement control system. 4,760,902, Cl. 192-0.033.

Beloit Corporation: *See*—
Embry, Lamar, 4,761,309, Cl. 427-294.000.

Bemis Company, Inc.: *See*—
Wolske, Eugene H., 4,761,079, Cl. 383-62.000.

Bendickson, Orrin C. Mulcher-chopper. 4,760,967, Cl. 241-101.700.

Bendix France: *See*—
Michoux, Eric; and Denree, Michel, 4,760,897, Cl. 188-79.510.
Nollez, Jacques; and Pressaco, Pierre, 4,761,564, Cl. 307-118.000.

Benning, James M. Racing-type horseshoe. 4,760,885, Cl. 168-11.000

Benton, Max D.; and Everman, Michael R., to AEC-Able Engineering Company, Inc. Bearing system with redundant race. 4,761,084, Cl 384-619.000.

Beppu, Teruhiko; and Suzuki, Seibun, to Beppu, Teruhiko. Thermally stable tryptophanase, process for producing the same, and thermally stable tryptophanase-producing microorganism. 4,761,374, Cl. 435-232.000.

Beret, Samil; Yu, S. Gary; and Hsieh, C. Richard, to Chevron Research Company. Hydroprocessing catalyst fines as a first-stage catalyst in a two-stage, close-coupled thermal catalytic hydroconversion process. 4,761,220, Cl. 208-59.000.

Berger, Harald: *See*—
Siegel, Herbert; Weiss, Erwin; and Berger, Harald, 4,761,251, Cl. 260-543.00P.
Siegel, Herbert; Weiss, Erwin; and Berger, Harald, 4,761,252, Cl. 260-543.00P

Bergwerksverband GmbH: *See*—
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.

Bernard, Brian C.: *See*—
Heiskell, Ronald E.; and Bernard, Brian C., 4,760,904, Cl. 192-56.00R

Bertinger, Roland: *See*—
Muhlratzer, August; Lassmann, Siegfried; Bertinger, Roland; Gutwein, Herbert; and Sanden, Renate, 4,761,323, Cl. 428-198.000.

Bethlehem Steel Corporation: *See*—
Griffing, Neal R.; Bayerwitz, Marvin H.; and Stelts, Philip D., 4,761,178, Cl. 75-51.200

Bhattacharya, Ajit K., to Texaco Inc. Pyridine ligands for preparation of organic carbonates. 4,761,467, Cl. 558-277.000.

Bianchi, Francois; Deley, Serge; and Fourrey, Francois, to Cycles Peugeot. Slide structure for a motor vehicle seat structure. 4,760,988, Cl. 248-430.000

Bickers, Lawrence, to British Telecommunications, plc. Flexible regenerator. 4,761,797, Cl. 375-4.000

Bigbee, Marvin L.; Ridgely, Marvis L.; and Snyder, Michael D., to Deere & Company. Conservation opener. 4,760,806, Cl. 111-87.000.

Biggers, James V.: *See*—
Hiremath, Basavaraj V.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,761,711, Cl. 361-321.000

Billner, Werner, to Schubert & Salzer. Process and device for open-end friction spinning. 4,760,693, Cl. 57-401.000.

Bingham, Bryan L.; Day, Chester M., Jr.; and Smoot, Lanny S., to Bell Communications Research, Inc. Enhanced efficiency Batcher-Banyan packet switch. 4,761,780, Cl. 370-60.000.

Binzen, Willard, to Dravo Corporation. Integrated dust containment system for rotary crusher/breakers and the like. 4,760,968, Cl. 241-101.200

Bioglucans, L.P.: *See*—
Williams, David L.; Browder, I. William; and Diluzio, Nicholas R., deceased, 4,761,402, Cl. 514-54.000

Birkett, John N., to Reed Packaging Limited. Printing presses. 4,760,790, Cl. 101-470.000

Bjorhaag, Georg; Embring, Goran; and Stahl, Karl-Gunnar, to Nova Scand Utveckling AB. Fibre board, a method for making it, and a binder composition. 4,761,342, Cl. 428-537.100.

Bjorkman, Ake: *See*—
Linnman, Sven N. J.; and Bjorkman, Ake, 4,761,585, Cl. 315-309.000

Blake, William L. Geared ratio coupling. 4,760,759, Cl. 74-804.000.

Blakeley, Philip J. Method and apparatus for reducing magnetic field strengths in welding zones. 4,761,536, Cl. 219-123.000.

Blatt, Joel M.; Heiland, Robert; Morris, James R.; Pugh, Jerry; and Wogoman, Frank W., to Miles Inc. Volume metering capillary gap device for applying a liquid sample onto a reactive surface. 4,761,381, Cl. 436-165.000

Blengini, Sergio, to Agudio S.p.A. Device for the automatic connection of a vehicle to the cable or to each of the two cables of a continuously moving cableway. 4,760,798, Cl. 104-209.000.

Bloch, Peter: *See*—
Aste, Robert; and Bloch, Peter, 4,761,129, Cl. 425-133.100.

Blum, Kenneth; Briggs, Arthur H.; and Wallace, Jack E. Enkephalinase and endorphinase inhibitors as anti-craving compositions. 4,761,429, Cl. 514-561.000

Blyler, Lee L., Jr.; Hart, Arthur C., Jr.; and Progelhof, Richard C., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Optical fiber manufacturing technique. 4,761,168, Cl. 65-3.100.

Board of Governors of Ryerson Polytechnical Institute, The: *See*—
Dowton, Gordon H., 4,761,013, Cl. 280-87.02R.

Boaz, Premakaran T., to Ford Motor Company. Method of bonding an oil-based ceramic paint to a surface of a glass sheet. 4,761,310, Cl. 427-314.000

Bobak, Tadeusz, to Incorema. Hygienic toilet seat assembly. 4,760,613, Cl. 4-247.000

Bock Corporation: *See*—
Bock, Oscar L., 4,761,532, Cl. 219-79.000.

Bock, Immo E., to Johannesburg Construction Corp. Limited. Electrical sequential firing system. 4,760,791, Cl. 102-200.000.

Bock, Oscar L., to Bock Corporation. Resistance welding apparatus. 4,761,532, Cl. 219-79.000

Boets, Marc J.; and Heylen, Raymond A., to AGFA-Gevaert N.V. Light-tight film reel package. 4,760,915, Cl. 206-303.000.

Bogatzki, Hans-Ulrich, to Elpatronic AG. Method and apparatus for the stress testing of glass containers arranged hanging. 4,760,731, Cl. 73-12.000

Boger, Joshua S.: *See*—
Emini, Emilio A.; Larson, Vivian M.; and Boger, Joshua S., 4,761,470, Cl. 530-326.000.

Bomba, Richard D.: *See*—
Hardenbrook, Scott B.; Harasta, Louis P., Jr.; Faulkenberry, Stephen T.; and Bomba, Richard D., 4,761,256, Cl. 264-45.500.

Bonaventura, Celia: *See*—
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; Zenner, Bruce D.; and Anderson, C. William, 4,761,209, Cl. 204-129.000.

Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; Zenner, Bruce D.; and Anderson, C. William, to Aquanautics Corporation. System for the extraction and utilization of oxygen from fluids. 4,761,209, Cl. 204-129.000

Boos, Donald L.: *See*—
Pyke, Stephen C.; Boos, Donald L.; and McMahon, Michael T., 4,761,639, Cl. 340-634.000.

Bordui, Peter F.; and Loiacono, Gabriel M., to U.S. Philips Corporation. Process for crystal growth of $KTiOPO_4$ from solution. 4,761,202, Cl. 156-621.000.

Boschian, Louis. Device for reducing vibrations of a tennis racquet. 4,761,007, Cl. 273-73.00D.

Botnick, Irlin H. Faucet manifold. 4,760,861, Cl. 137-315.000.

Boussac Saint Freres B.S.F.: *See*—
De Jonckheere, Raphael; and Rousseau, Jean L., 4,760,764, Cl. 83-23.000.

Boutilier, Roland A., to Tradex Limited. Vehicle lifting and towing apparatus. 4,761,110, Cl. 414-563.000.

Boutin, Annie: *See*—
Wirth, Didier; Gibert, Dominique; and Boutin, Annie, 4,761,495, Cl. 560-41.000.

Bowman, Timothy S.; and Domigan, Charles N., to Butler Manufacturing Company. Power compartment and method of fabricating 4,760,675, Cl. 52-221.000

Boykin, Kanda. Convertible windbreak. 4,761,030, Cl. 296-1.00S.

Boys, Donald R., to Varian Associates, Inc. Sputter coating source having plural target rings. 4,761,218, Cl. 204-298.000.

Bozich, Frank A.: *See*—
Rosiak, Edward A.; and Bozich, Frank A., 4,761,341, Cl. 428-512.000.

BP Chemicals Limited: *See*—
Barlow, Michael T., 4,761,511, Cl. 585-415.000.

Braddy, Bruce T.; and Eldrid, Sacheveral Q., to General Electric Company. Turbine blade with tip vent. 4,761,116, Cl. 416-92.000.

Bracken, Jozef; Dekerk, Jean-Paul; van der Poel, Hendrik; and Verborgt, Jozef, to Labofina, S.A. Anti-fouling paint compositions. 4,761,439, Cl. 523-122.000.

Brancati, Rudolph P., to Nynex Corporation. Coin return chute for telephone pay station. 4,761,809, Cl. 379-150.000.

Brand, Scott R.; and Duffy, Dennis M. Apparatus for and method of constructing an improved foundation structure. 4,760,674, Cl. 52-169.500.

Brandt, Inc.: *See*—
Reed, John M.; Sherman, William, III; and Loftus, Peter J., 4,761,002, Cl. 271-111.000.

Brasch, William R.; and Favini, Carlo, to LeaRonal, Inc. Process for printed circuit board manufacture. 4,761,304, Cl. 427-98.000.

Brede, Dwight W.: *See*—
Ainslie, Norman G.; Brede, Dwight W.; Erpelding, A. David; and Pattanaik, Surya, 4,761,699, Cl. 360-103.000.

Bredeweg, Robert A.; Larson, Jeffrey R.; and Barr, Stephen W., to Dow Chemical Company, The. Flow programmer for gas chromatography. 4,760,732, Cl. 73-23.100.

Brendel, Bernhard, to Eduard Kusters Maschinenfabrik GmbH & Co. KG. Roll. 4,760,631, Cl. 29-116.100.

Breslin, Michael K. Apparatus for controlling the removal of liquid hydrocarbons from groundwater. 4,761,225, Cl. 210-104.000.

Brewster Plastics, Inc.: *See*—
Wallace, Robert P.; Nugent, William P.; and Newton, Kenneth C., 4,760,940, Cl. 222-129.100.

Briggs, Arthur H.: *See*—
Blum, Kenneth; Briggs, Arthur H.; and Wallace, Jack E., 4,761,429, Cl. 514-561.000.

Bright, David R.: *See*—
Martin, Jerome L.; Bright, David R.; Williams, Robert D.; and Young, Vernon V., 4,761,426, Cl. 514-460.000.

Bright, Donald G., to Porex Technologies Corp. of Georgia. Macroporous substrate containing microporous matrix. 4,761,232, Cl. 210-500 360.

Brion, Alain. Device for exchanging data between a computer and a peripheral unit having a memory formed by shift registers. 4,761,729, Cl. 364-200.000.

British Nuclear Fuels Plc: *See*—
O'Brien, Michael J.; and Rigg, Robert B., 4,761,127, Cl. 425-110.000.

British Telecommunications, plc: *See*—
Bickers, Lawrence, 4,761,797, Cl. 375-4.000.
Butcher, Miles E., 4,761,655, Cl. 343-713.000.

Brockelt, Michael: *See*—
Knofel, Hartmut; Brockelt, Michael; and Wegener, Gerhard, 4,761,498, Cl. 560-359.000

Broer, Peter C. Pressure vacuum valve, more particularly to the storage tanks for volatile liquids. 4,760,863, Cl. 137-493.800.

Brokaw, Adrian P.; and Maidique, Modesto A., to Analog Devices, Incorporated. A-to-D converter of the successive-approximation type. 4,761,636, Cl. 340-347.0AD.

Bromine Compounds Ltd.: *See*—
Segall, Jeane; and Shorr, Leonard M., 4,761,427, Cl. 514-528.000.

Brooks, Bradford L., to Beede Electrical Instrument Co., Inc. Laser pointer. 4,761,715, Cl. 362-23.000.

Brooks, Mark A.; and Fallis, Robert E., to Allied Corporation. Vapor phase injector. 4,760,818, Cl. 123-298.000.

Brotz, Gregory R. Board game. 4,761,010, Cl. 273-275.000.

Browder, I. William: *See*—
Williams, David L.; Browder, I. William; and Diluzio, Nicholas R., deceased, 4,761,402, Cl. 514-54.000.

Brown, Andrew M. Automobile lifting and towing equipment. 4,761,111, Cl. 414-563.000.

Brown, Boveri & Cie AG: *See*—
Knodler, Reinhard; Bansemir, Werner; Mennicke, Stefan; and Steinleitner, Gunther, 4,761,353, Cl. 429-104.000

Brown Boveri Reaktor GmbH: *See*—
Schulz, Wolfgang, 4,761,558, Cl. 250-485.100.

Brown, Duncan W.: *See*—
Tom, Glenn M.; and Brown, Duncan W., 4,761,395, Cl 502-401.000

Brown, Gregory C., to Rosemount Inc. Modular pressure instrument 4,760,859, Cl. 137-84.000

Brown, Hugh L.; and Stepaniewski, Richard J. Method for overcoming optical deficiencies of shooters. 4,761,196, Cl. 156-247.000

Brown, Mark E.: *See*—
Platt, Michael J.; and Brown, Mark E., 4,761,664, Cl. 346-134.000

Brown, Ralph L.; Guilford, Richard P.; and Stichman, John H., to United States of America, Energy. Transformer coupling for transmitting direct current through a barrier. 4,761,724, Cl. 363-21.000.

Brown, Robert N.; and Farquhar, James J., to Alliance Automation Systems, Inc. Part feeder. 4,761,106, Cl. 414-125.000.

Brown, Robert S.; and Dunlap, Roger, to United Technologies Corporation. Acoustic oscillatory pressure control for ramjet. 4,760,695, Cl 60-204.000.

Brown, Stuart C., to Westinghouse Electric Corp. Variable speed constant frequency power system with boost converter auxiliary output. 4,761,726, Cl. 363-51.000.

Brown & Williamson Tobacco Corporation: *See*—
Jewell, John N.; and Korte, Kevin R., 4,760,854, Cl. 131-291.000

Bruck, Robert: *See*—
Paulini, Dieter; Wagner, Wolfram; Schmitz-Bastian, Peter; and Bruck, Robert, 4,760,629, Cl. 28-256.000.

Brunninger, Manfred: *See*—
Theurer, Josef; and Brunninger, Manfred, 4,760,796, Cl. 104-7.300

Bruns, Robert F.: *See*—
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.

Brunswick Corporation: *See*—
Hlava, Lorens G., 4,760,973, Cl. 242-84.20A
Swisher, Steven L., 4,760,974, Cl. 242-84.20A.

Bruski, Richard S., to Kaiser Aluminum & Chemical Corporation Controlled addition of lithium to molten aluminum. 4,761,266, Cl 420-528.000.

BSH Electronics, Ltd.: *See*—
Kropielnicki, Jerzy J.; Last, James D.; and Easter, Brian, 4,761,826, Cl. 455-277.000.

Bubendorff, Richard. Rolling shutter for roof window. 4,760,873, Cl. 160-32.000

Buck, Arthur G.: *See*—
Olson, Ronald A.; and Buck, Arthur G., 4,761,519, Cl. 174-107.000

Buckeye Cellulose Corporation, The: *See*—
Vinson, Kenneth D., 4,761,203, Cl. 162-9.000.

Buekers, Valere; and Franckx, Joris, to N. V. Raychem S.A. Optical fibre splice case. 4,761,052, Cl. 350-96.200.

Bugianesi, Robert L.; Poupipom, Mitree M.; and Rupprecht, Kathleen M., to Merck & Co., Inc. Phospholipid analogs useful as PAF synthesis inhibitors. 4,761,404, Cl. 514-77.000.

Bujalski, Duane R.: *See*—
Rabe, James A.; and Bujalski, Duane R., 4,761,389, Cl. 501-95.000

Bulbring, Jurgen, to Deutsche Babcock Werke Aktiengesellschaft Pressurized fluidized-bed combustion burner. 4,761,133, Cl 431-170.000.

Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., to Ambac Industries, Incorporated. Method and apparatus for controlling fuel injection timing in a compression ignition engine. 4,760,830, Cl. 123-501.000.

Bunn, Eric R., to Sealed Air Corporation. Method and apparatus for foam molding packaging using a staged vacuum. 4,761,257, Cl 264-46.500

Burandt, Wesley A., to Sundstrand Corporation. Actuator system for jet nozzle flap. 4,760,964, Cl. 239-265.190.

Burchette, Joe T.: *See*—
Kluger, Edward W.; Moore, Patrick D.; and Burchette, Joe T., 4,761,502, Cl. 564-442.000.

Burchette, Robert L., Jr. Transfer tail receiving structure for a yarn carrier. 4,760,976, Cl. 242-118.110.

Burns, Gary T.; Lu, Paul P.; and Zank, Gregg A., to Dow Corning Corporation. Preceramic polycarbosilane derivatives. 4,761,458, Cl 525-474.000.

Burns, William K.; Frigo, Nicholas J.; and Moeller, Robert P., to United States of America, Navy. Optical waveguide device for frequency shifting and mode conversion. 4,761,049, Cl. 350-96.140

Burroughs Wellcome Co.: *See*—
Swaringen, Roy A., Jr.; El-Sayad, Hassan A.; Yeowell, David A.; and Savarese, John J., 4,761,418, Cl. 514-308.000

Buschaman, Gunther: *See*—
Wupper, Hans; and Buschaman, Gunther, 4,761,043, Cl 303-100.000.

Bustos, Rafael T., to Leggett & Platt, Incorporated. Corrugated sheet plastic beverage display case. 4,760,928, Cl. 211-59.400.

Butcher, Miles E., to British Telecommunications plc. Transportable antenna for an earth station. 4,761,655, Cl. 343-713.000

Butler Manufacturing Company: *See*—
Bowman, Timothy S.; and Domigan, Charles N., 4,760,675, Cl. 52-221.000

VOL 1093 ISS 1 AG 2 1988 UMI

Butt, Sheldon H.; and Cann, William F., to Olin Corporation. Ceramic-glass-metal packaging for electronic components incorporating unique leadframe designs. 4,761,518, Cl. 174-52.0FP.
Buynoski, Matthew S., to National Semiconductor Corporation. Method of fabricating conductive non-metallic self-passivating non-corrodable IC bonding pads. 4,761,386, Cl. 437-203.000.
Byron, Kevin C., to STC PLC. Optical switching device including polarization preserving coupler utilizing Kerr effect and method of using same. 4,761,050, Cl. 350-96.150.
Caillaut, Bruno; Perrier de la Bathie, Rene ; and Terrier, Jacques, to Commissariat a l'Energie Atomique. High frequency induction melting furnace. 4,761,528, Cl. 219-10.491.
Calvet, Alain P.: *See—*
Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, 4,761,400, Cl. 514-53.000.
Calvignac, Jean; and Secondo, Pierre, to International Business Machines Corp. Adaptative packet/circuit switched transportation method and system. 4,761,781, Cl. 370-94.000.
Camco, Incorporated: *See—*
Pringle, Ronald E., 4,760,879, Cl. 166-117.500.
Cameron Iron Works, Inc.: *See—*
Troxell, John N., Jr., 4,761,023, Cl. 285-18.000.
Campan, Jean-Jacques; and Lombardi, Roberto, to Rhone-Poulenc Sante. Solid galenical form for oral administration, and the process for its preparation. 4,761,407, Cl. 514-179.000.
Campbell, Ernest L. Outdoor cooking table. 4,760,801, Cl. 108-119.000.
Campbell, Michael J.: *See—*
McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., 4,761,321, Cl. 428-176.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See —*
Dumas, Ghislain M.; Lavertu, Roger; and Drolet, Jean-Francois, 4,760,792, Cl. 102-204.000.
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., 4,761,048, Cl. 350-96.110.
Cann, William F.: *See—*
Butt, Sheldon H.; and Cann, William F., 4,761,518, Cl. 174-52.0FP.
Canniff, Ronald J., to American Telephone and Telegraph Company AT&T Bell Laboratories. Method and apparatus for generating digital signals representing periodic samples of a sine wave. 4,761,751, Cl. 364-721.000
Canon Kabushiki Kaisha: *See—*
Bannai, Yuichi, 4,761,818, Cl. 382-41.000.
Hayakawa, Kimiaki; Sayama, Hideaki; Kitahara, Makoto; and Honjo, Takeshi, 4,761,001, Cl. 271-3.100
Okubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; Hatanaka, Katsunori; and Nakagiri, Takashi, 4,761,058, Cl. 350-331.00T
Sakai, Kiyoshi; Fujimura, Naoto; Kishi, Junichi; and Sakakibara, Teigo, 4,761,359, Cl. 430-126.000.
Sato, Yasue, 4,761,199, Cl. 156-345.000.
Takahashi, Kazuyoshi, 4,761,728, Cl. 363-126.000.
Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, 4,761,662, Cl 346-108.000.
Capetronic (BSR) Ltd.: *See—*
Ma, John Y., 4,761,825, Cl. 455-183.000.
Carenzi, Angelo: *See—*
Pilotto, Alberto; Portelli, Mario; Carenzi, Angelo; and Della Bella, Davide, 4,761,399, Cl. 514-19.000.
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., to Warner-Lambert Company. Enolamides, pharmaceutical compositions and methods for treating inflammation. 4,761,424, Cl. 514-443.000.
Carl Freudenberg, Firma: *See—*
Eckel, Hans G.; and Schweikert, Willi, 4,761,020, Cl. 280-714.000
Carlin, Richard T.: *See—*
Pez, Guido P.; Carlin, Richard T.; Laciak, Daniel V.; and Sorensen, James C., 4,761,164, Cl. 55-16.000.
Carmean, Silas E., to Tappan Company, The. Oven calibration system having variable stored calibration value. 4,761,539, Cl. 219-497.000.
Carr, Larrey, to Carr, Larrey; and Meyers, Fredrick R. Apparatus for towing a vehicle. 4,761,015, Cl. 280-402.000
Carrier Corporation: *See—*
Dennis, Richard D.; and Manning, John D., 4,760,707, Cl. 62-197.000
Carrier, Paula J.: *See—*
Lakshmanan, Pallavoor R.; and Carrier, Paula J., 4,761,450, Cl. 524-488.000
Carroll Touch Inc.: *See—*
Lucas, Paul B.; and Garrett, James E., 4,761,637, Cl. 340-365.00P
Carter, Cecil O.; and Coombs, Daniel M., to Phillips Petroleum Company. Method for separating normally liquid organic compounds 4,761,222, Cl. 208-322.000.
Carter, William J. Stereoscopic optical system. 4,761,066, Cl. 350-510.000
Carver, George C.: *See—*
St. Angelo, Stephen, Jr.; Carver, George C.; Patterson, David W.; and Fremont, Owen K., 4,760,636, Cl. 29-701.000
Casey, John P., to Williams Wholesalers, Inc. Technique for using reverse osmosis unit. 4,761,295, Cl. 426-549.000.
Cash Engineering Research Pty. Ltd.: *See—*
Kitchener, Anthony J.; and Cromm, Gerd, 4,761,166, Cl. 55-385.00R
Casio Computer Co., Ltd.: *See—*
Yoshino, Hiroyuki; and Tamiya, Morito, 4,761,750, Cl. 364-709.000.
Castaldi, Steven A.: *See—*
Ruszczyk, Stanley J.; Ferrier, Donald R.; Larson, Gary B.; Gallegos, Daniel; and Castaldi, Steven A., 4,761,303, Cl. 427-96.000
Caulfield, Michael J., to Cleveland Clinic Foundation. Method for determining the presence of bacteria in body fluid specimens containing bacterial inhibitors. 4,761,370, Cl. 435-36.000.
Cawlfield, David W., to Olin Corporation. Multilayer electrode. 4,761,216, Cl. 204-284.000.
CBM Display Group Limited: *See—*
Fox, Clifford R., 4,760,930, Cl. 211-153.000.
Celerity Computing: *See—*
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000.
Ceodeux S.A.: *See—*
Kerger, Leon; Kremer, Paul; and Schmitz, Jean-Claude, 4,760,990, Cl. 251-335.200.
Cerami, Anthony, to Rockefeller University, The. Method and agents for measuring protein aging. 4,761,368, Cl. 435-7.000.
Cetenko, Wiaczeslaw A.: *See—*
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.
Chailley, Michele: *See—*
Grollier, Jean F.; Madrange, Annie; and Chailley, Michele, 4,761,273, Cl. 424-47.000.
Chak, Maryan. Device for silverizing water. 4,761,215, Cl. 204-269.000.
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., to Monsanto Company. Partially oriented nylon yarn and process. 4,760,691, Cl. 57-243.000.
Chambers, John T., to Baker & Finnemore Limited. Anchoring device. 4,760,678, Cl. 52-562.000.
Champenois S.A.: *See—*
Groud, Laurent, 4,761,016, Cl. 280-467.000.
Chan, M. Kenneth: *See—*
Whitescarver, Olin D.; Kwan, Jonathan T.; Chan, M. Kenneth; and Hoyer, Daniel P., 4,761,182, Cl. 106-98.000.
Chang, Jun H.; and Lyga, John W., to FMC Corporation. Triazolin-5-one herbicides. 4,761,174, Cl. 71-92.000
Chapin, Stephen R., Jr. Apparatus for cleaning the interior of a mouse. 4,760,618, Cl. 15-104.930.
Charles of the Ritz Group Ltd.: *See—*
Valdes, Nancy E.; Linstra, Gary, Jr.; and Krog, Ann M., 4,761,277, Cl. 424-64.000.
Chen, Chi-Ping: *See—*
Ardini, Joseph L., Jr.; Beckwith, Robert F.; Chen, Chi-Ping; and Rodman, Paul K., 4,761,755, Cl. 364-749.000.
Chen, Stephen G. L., to Industrial Technology Research Institute. Polyimide capacitive humidity sensing element. 4,761,710, Cl. 361-286.000
Chevalier, Martin A., to BallistiVet, Inc. Clip with rib stop mechanism for supplying projectiles to gun. 4,760,834, Cl. 124-51.00R.
Chevron Research Company: *See—*
Beret, Samil; Yu, S. Gary; and Hsieh, C. Richard, 4,761,220, Cl. 208-59.000
Chiang, Yulin: *See—*
Glamkowski, Edward J.; and Chiang, Yulin, 4,761,411, Cl. 514-219.000
Glamkowski, Edward J.; and Chiang, Yulin, 4,761,412, Cl. 514-219.000.
Chiba, Kazumasa, to Stamicarbon, B.V. Polyamide resin composition. 4,761,445, Cl. 524-262.000.
Chiba, Takatoshi; and Teraoka, Hideyuki, to Dainippon Screen Mfg Co., Ltd. Method and apparatus for controlling the temperature of a radiantly heated object. 4,761,538, Cl. 219-497.000.
Chicago Lock Company: *See—*
Steinbach, Robert, 4,760,721, Cl. 70-208.000
Chicopee: *See—*
McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., 4,761,321, Cl. 428-176.000.
Childress, Thomas E.; Omietanski, George M.; and Mendicino, Frank D., to Union Carbide Corporation. Process for recovering trimethoxysilane from a trimethoxysilane and methanol mixture. 4,761,492, Cl. 556-482.000.
Chilvers, Edward W., Jr.: *See—*
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,760,691, Cl. 57-243.000
Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000.
Chisso Corporation: *See—*
Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, 4,761,246, Cl. 252-299.680.
Moteki, Tsutomu; Yamaguchi, Kunihiro; and Iizuka, Hisao, 4,761,451, Cl. 524-505.000.
Chitayat, Anwar. Linear motor. 4,761,573, Cl. 310-12.000.
Chivalier, Sammy: *See—*
Gautier, Jean-Claude; Lecolier, Serge; Soriaux, Claude; and Chivalier, Sammy, 4,761,484, Cl. 548-364.000.
Choay, Patrick; Roger, Pierre; and Olliero, Dominique, to Dropic, Societe civile de gestion de droits de propriete industrielle. Arylbenzenesulfonamide containing pharmaceutical compositions. 4,761,430, Cl. 514-562.000

Choi, Taeyoung: *See—*
Kim, Wonky; and Choi, Taeyoung, 4,761,770, Cl. 367-116.000
Choquet, Michel; Staton, James B., III; and Swartz, Kenneth R., to International Business Machines Corporation. Method and system for addressing and controlling a network of modems. 4,761,646, Cl 340-825.520
Chornet, Esteban; Koeberle, Paulo G.; and Overend, Ralph, to Universite de Sherbrooke. Rapid starch depolymerization via spray reactors. 4,761,185, Cl. 127-38.000.
Chou, Eddie C.; Beckstead, Leo W.; and Tinnin, Luther R., to AMAX Inc. Production of cobalt and nickel powder. 4,761,177, Cl. 75-0.5AA.
Christ, Gene L.: *See—*
Long, Stephen L.; and Christ, Gene L., 4,760,881, Cl. 166-165.000
Christensen, Bjarne; and Larsen, Niels, to Nord-Plan Stalreoler A/A. Photoelectric control system for moving storage units. 4,761,562, Cl. 250-561.000
Christensen, Harold F.; and Petolino, Joseph A., Jr. Apparatus and method for reporting occurrences of errors in signals stored in a data processor. 4,761,783, Cl. 371-38.000.
Christie, Cary L., to Harman International Industries, Incorporated. Diaphragm structure for a transducer. 4,761,817, Cl. 381-194.000.
Christie, Sharon K. Process for preparing fragrance chips. 4,761,437, Cl. 523-102.000
Christine, William C.; Schmidt, Josef; Lyons, Steffen; Green, Brian; and Herschman, George J., to Baxter Travenol Laboratories, Inc. Apparatus for sealing a web of film. 4,761,197, Cl. 156-290.000.
Christner, Susan A.; and Janda, Elaine R. Fuel tank tube vapor/fuel seal. 4,760,933, Cl. 220-86.00R.
Chrysler Motors Corporation: *See—*
Dubensky, Robert G., 4,761,019, Cl. 280-674.000.
Ciba-Geigy Corporation: *See—*
Schneider, Peter, 4,761,408, Cl. 514-192.000.
Citius Buerotechnik GmbH: *See—*
Zubek, Dieter, 4,761,088, Cl. 401-122.000
CKD Kabushiki kaisha: *See—*
Mutou, Yoshiichi; and Uematsu, Eiji, 4,760,862, Cl. 137-315.000
CL Industries, Inc.: *See—*
Woodson, Wayne D., 4,761,441, Cl. 523-439.000.
Clark, Brian E.; Lawlor, Francis D.; Schmidt-Stumpf, Werner E.; Stewart, Terrence J.; and Timms, George D., Jr., to International Business Machines Corporation. Parity spreading to enhance storage access. 4,761,785, Cl. 371-51.000.
Clark, Lawrence; Graybeal, Harold N.; and Witman, Jack H., to Armstrong World Industries, Inc. Method of making a positioned chip surface covering. 4,761,306, Cl. 427-197.000.
Clark, Morris; Lawson, Kenneth; and Izatt, James, to Video Jukebox Network. Telephone access display system. 4,761,684, Cl. 358-86.000.
Clark, Steven C., to Genetics Institute, Inc. Human interleukin-2 cDNA sequence. 4,761,375, Cl. 435-240.200.
Clarke, William J., to Geochemical Corporation; and Clarke, William J Grouting composition comprising slag. 4,761,183, Cl. 106-117.000.
Claux, Philippe. Support system for a steerable vehicle wheel which may also be a driving wheel, and its application, in particular, to an amphibious vehicle. 4,761,017, Cl. 280-660.000.
Cleveland Clinic Foundation: *See—*
Caulfield, Michael J., 4,761,370, Cl. 435-36.000
Clifford, Steven F.; and Farmer, David M., to United States of America, Commerce. Acoustic scintillation liquid flow measurement. 4,760,743, Cl. 73-861.060.
Clift, V. Stanley, to Kerr-McGee Chemical Corporation. Process for preparing particulate detergent products. 4,761,248, Cl. 252-527.000.
Clorox Company, The: *See—*
Heiskell, Ronald E.; and Bernard, Brian C., 4,760,904, Cl. 192-56.00R
Clum, Charles E.; Murray, William V.; and Lukenbach, Elvin R., to Johnson & Johnson Baby Products Company. Sunscreen compositions. 4,761,275, Cl. 424-59.000
Clum, Charles E.: *See—*
Murray, William V.; Clum, Charles E.; and Lukenbach, Elvin R., 4,761,276, Cl. 424-59.000.
Coburn, Joseph W., Jr. Release material. 4,761,320, Cl. 428-167.000.
Cogelia, Nicholas J.; Johnson, Brian D.; Reed, William C.; and Wilson, Carla G., to American Telephone and Telegraph Company, AT&T Bell Laboratories; and AT&T Technologies, Inc. Communications transmission media. 4,761,053, Cl. 350-96.230.
Coleman Company, Inc., The: *See—*
Hughes, Thomas E., 4,760,944, Cl. 224-205.000.
Colgate-Palmolive Company: *See—*
Rothanavibhata, Adam A.; and Payne, Richard K., 4,761,240, Cl. 252-8.700
Combustion Tec, Inc.: *See—*
Khinkis, Mark J., 4,761,132, Cl. 431-10.000
Comitato Nazionale per la Ricerca e per lo Sviluppo del' Energia Nuclere e Delle Energie Alternative: *See—*
Bartolini, Carlo M.; Naso, Vincenzo; and Suraci, Ferdinando, 4,760,698, Cl. 60-526.000.
Commissariat a l'Energie Atomique: *See—*
Caillaut, Bruno; Perrier de la Bathie, Rene ; and Terrier, Jacques, 4,761,528, Cl. 219-10.491.
Massit, Claude; and Nicolas, Gerard, 4,761,517, Cl. 174-36.000
Commodore Business Machines, Inc.: *See—*
Di Orio, David W., 4,761,736, Cl. 364-200.000
Communications Research Laboratory, Ministry of Posts and Telecommunications: *See—*
Masuda, Yoshihisa; Inuki, Hisao; and Takahashi, Kozo, 4,761,650, Cl. 342-26.000
Communications Satellite Corporation: *See—*
Zaghloul, Amir I., 4,761,654, Cl. 343-700.0MS
Compagnie Generale des Etablissements Michelin: *See—*
Madrona, Gilbert, 4,760,860, Cl. 137-223.000
Concrete Protection Systems, Inc.: *See—*
Jacobs, Eugene F., 4,761,313, Cl. 427-407.100
Conger, Darrell R.; Posa, John G.; and Wickenden, Dennis K., to Crystal Specialties, Inc. Apparatus for depositing material on a substrate. 4,761,269, Cl. 422-245.000
Connor, David T.: *See—*
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000
Conrad, Hans-Jurgen; Kurz, Hanns; Martini, Helmut; and Neumann, Gerhard, to Robert Bosch GmbH. Thermal deburring system 4,760,630, Cl. 29-33.00A
Conti, Ronald S.: *See—*
Murphy, Edward J.; and Conti, Ronald S., 4,761,435, Cl 522-46.000
Control Data Corporation: *See—*
Webb, David M., 4,761,731, Cl. 364-200.000
Cooke, Ronald C., to Bag Butler, Inc. Apparatus for holding a bag open. 4,760,982, Cl. 248-99.000
Coombs, Daniel M.: *See—*
Carter, Cecil O.; and Coombs, Daniel M., 4,761,222, Cl. 208-322.000
Cooper Industries, Inc.: *See—*
Sappington, Gayle L., 4,761,148, Cl. 439-621.000
Corcom Inc.: *See—*
Schneider, Lon M., 4,761,623, Cl. 333-167.000
Cordier, Georges; and Ferlut, Jean-Serge, to Rhone-Poulenc Specialites Chimiques. Process for the preparation of perfluoroalkanols. 4,761,506, Cl. 568-842.000
Cornely, Wolfgang: *See—*
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stem, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000
Corning Glass Works: *See—*
Darcangelo, Charles M.; Hujar, Robert M.; Schmitt, Paul S.; and Shafer, Harold G., Jr., 4,760,672, Cl. 51-284.00R
Cosden Technology, Inc.: *See—*
Menard, Kevin P., 4,761,514, Cl. 585-475.000.
Cosman, Armond D.; and Cox, Larry R., to Minnesota Mining and Manufacturing Company. Passive marker device. 4,761,656, Cl. 343-719.000
Couchman, John R.; and Gibson, Walter T., to Lever Brothers Company. Oligosaccharides. 4,761,401, Cl. 514-53.000
Cox & Company, Inc.: *See—*
Schuyler, Martin; and Cox, John L., II, 4,760,978, Cl. 244-134.00D
Cox, John L., II: *See—*
Schuyler, Martin; and Cox, John L., II, 4,760,978, Cl. 244-134.00D
Cox, Larry R.: *See—*
Cosman, Armond D.; and Cox, Larry R., 4,761,656, Cl 343-719.000
Cracknell, David J.; and Smith, Raymond P., to General Electric Company, p.l.c., The. Waveguide switching apparatus. 4,761,622, Cl 333-106.000
Crane & Co.: *See—*
Crane, Timothy T., 4,761,205, Cl. 162-103.000
Crane, Timothy T., to Crane & Co. Security paper for currency and banknotes. 4,761,205, Cl. 162-103.000
Creps, John L., to Henry Filters, Inc. Continuously operable power actuated vacuum filter. 4,761,226, Cl. 210-106.000
Crespo Ruiz, Francois; and Pelet, Andre , to Alcatel Cit. Longitudinal sealing device for an optical cable core. 4,761,051, Cl. 350-96.200.
Cromm, Gerd: *See—*
Kitchener, Anthony J.; and Cromm, Gerd, 4,761,166, Cl. 55-385.00R
Crosby, Denis G., to Princeton Packaging, Inc. Bags. 4,760,684, Cl. 53-459.000
Cross, Leslie E.: *See—*
Hiremath, Basavaraj V.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,761,711, Cl. 361-321.000
Crouse, Joseph T.: *See—*
Poe, David T.; and Crouse, Joseph T., 4,761,354, Cl. 429-121.000
Crown Forest Industries Limited: *See—*
Hirschberger, Baldur; and Mack, Michael, 4,760,683, Cl 53-170.000
Crucible Societe Anonyme: *See—*
Hauptfleisch, Lindo; and Katzy, Klaus, 4,761,589, Cl. 318-51.000
Crystal Specialties, Inc.: *See—*
Conger, Darrell R.; Posa, John G.; and Wickenden, Dennis K., 4,761,269, Cl. 422-245.000
Cunningham, Roy T.: *See—*
McGovern, Terrence P.; Leonhardt, Barbara A.; and Cunningham Roy T., 4,761,280, Cl. 424-84.000
Cuomo, Edward: *See—*
Zak, Gregory M.; and Cuomo, Edward, 4,761,057, Cl. 350-273.000
Cuscurida, Michael: *See—*
Speranza, George P.; Lin, Jiang-Jen; and Cuscurida, Michael, 4,761,465, Cl. 528-45.000

VOL 1093 ISS 1 AG 2 1988 UMI

Cycles Peugeot: *See—*
Bianchi, Francois; Deley, Serge; and Fourrey, Francois, 4,760,988, Cl. 248-430.000.

Cyong, Jong-Chol: *See—*
Ikekawa, Tetsuro; Shimada, Fumitake; Cyong, Jong-Chol; and Uebaba, Kazuo, 4,761,477, Cl. 546-48.000.

Dacey, Ernest A., Jr., to Utica Enterprises, Inc. Method for body panel attachment. 4,760,633, Cl. 29-432.100.

Dahm, Manfred; Jabs, Gert; Koglin, Bernd; and Schnoring, Hildegard, to Bayer Aktiengesellschaft. Process for the continuous production of microcapsules. 4,761,255, Cl. 264-4.700.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Chiba, Takatoshi; and Teraoka, Hideyuki, 4,761,538, Cl. 219-497.000

Dale, James L.: *See—*
Titsworth, Raymond; Lipe, J. Tom; Dale, James L.; Monroe, Hanford D.; and Hill, Jerry M., 4,761,749, Cl. 364-559.000.

Daluge, Susan M.; and Skonezny, Paul M. 2,4-diaminopyrimidines substituted with heterobicyclomethyl radicals at the 5 position useful as antibacterials. 4,761,475, Cl. 544-324.000.

Dam, Poul S.: *See—*
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,760,699, Cl. 60-531.000.

Dames, Peter K. Device to transport suitcases. 4,761,012, Cl 280-38.000

Dana Corporation: *See—*
Flotow, Richard A.; and Dickson, Thomas G., 4,760,906, Cl. 192-70.250.

Danfoss A/S: *See—*
Hansen, Allan H., 4,760,954, Cl. 236-42.000
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,760,699, Cl. 60-531.000.
Simonsen, Jens K.; and Voss, Frands W., 4,760,744, Cl. 73-861.380.

Darcangelo, Charles M.; Hujar, Robert M.; Schmitt, Paul S.; and Shafer, Harold G., Jr., to Corning Glass Works. Simultaneously grinding and polishing preforms for optical lenses. 4,760,672, Cl. 51-284.00R

D'Atre, John D.; and Giewont, William P., to General Electric Company. Dynamic brake control. 4,761,600, Cl. 318-759.000.

David, Constant V. External combustion rotary engine. 4,760,701, Cl. 60-595.000

David Diagnostics, Inc.: *See—*
Steinman, Gary D., 4,761,369, Cl. 435-19.000

Davidson & Company Ltd.: *See—*
Gibson, Stanley; and Tindall, Colin, 4,760,875, Cl. 165-4.000

Davies, Anthony S.: *See—*
Heggie, William S.; and Davies, Anthony S., 4,760,697, Cl. 60-408.000.

Davis, Arthur A.; and Eady, Robert W., to Standard Telephones and Cables Public Limited Company. Optical repeaters. 4,761,831, Cl. 455-601.000

Davis, Lawrence P., to Honeywell Inc. Damper and isolator. 4,760,996, Cl. 267-122.000

Davis, Richard E., to S.M.S. Industries, Inc. Pole mounted pruning tool with adjustable length operating lever. 4,760,645, Cl. 30-249.000

Day, Chester M., Jr.: *See—*
Bingham, Bryan L.; Day, Chester M., Jr.; and Smoot, Lanny S., 4,761,780, Cl. 370-60.000.

DCA Food Industries, Inc.: *See—*
Fowler, Roscoe T.; Hochhauser, Arthur; Kaufman, Harold B., Jr.; McCarthy, John P.; and Stockler, Jerry, 4,761,128, Cl 425-126.200

Dean, Thomas R., to Du Pont de Nemours, E. I., and Company. Herbicidal heterocyclic sulfonamides. 4,761,173, Cl. 71-92.000

Dean, William B.: *See—*
McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., 4,761,321, Cl. 428-176.000.

de Bold, Adolfo J., to Queen's University at Kingston. Isolation, purification and sequence determination of cardionatrins. 4,761,469, Cl. 530-324.000

DebRoy, Tapan K.: *See—*
Guagliardo, Matthew; DebRoy, Tapan K.; and Pucknat, John, 4,761,337, Cl. 428-425.800.

De Chicio, Michael: *See—*
Lewis, Jean; De Chicio, Michael; and Marshall, Deborah, 4,761,278, Cl. 424-73.000

Dechirot, Jean-Pierre, to Societe Vynex SA. Linear display cabinet. 4,760,927, Cl. 211-54.100.

Deczky, Andrew G.; and Rayment, Stephen G., to Northern Telecom Limited. Digital signal processor with divide function. 4,761,758, Cl. 364-761.000

Deere & Company: *See—*
Bigbee, Marvin L.; Ridgely, Marvis L.; and Snyder, Michael D., 4,760,806, Cl. 111-87.000

De Jonckheere, Raphael; and Rousseau, Jean L., to Boussac Saint Freres B.S.F. Process for the continuous manufacture hour glass-shaped pads. 4,760,764, Cl. 83-23.000

Dekerk, Jean-Paul: *See—*
Bracken, Jozef; Dekerk, Jean-Paul; van der Poel, Hendrik; and Verborgt, Jozef, 4,761,439, Cl. 523-122.000

Delassus, Jean, to Alsthom. Electromagnetic levitation device 4,761,579, Cl. 310-90.500

Deley, Serge: *See—*
Bianchi, Francois; Deley, Serge; and Fourrey, Francois, 4,760,988, Cl. 248-430.000

Della Bella, Davide: *See—*
Pilotto, Alberto; Portelli, Mario; Carenzi, Angelo; and Della Bella, Davide, 4,761,399, Cl. 514-19.000.

del Valle, Jaime. Traveling concrete casting mold. 4,761,126, Cl. 425-62.000

Denick, John, Jr.; Peters, David; Talwar, Anil K.; and Liao, Wei C., to Warner-Lambert Company. Medicament adsorbates of analgesics with complex magnesium aluminum silicate and their preparation. 4,761,274, Cl. 424-48.000.

Denison, Kenneth S.; and Sattin, William, to Picker International, Inc. Adaptive noise reduction filter for reconstructed images. 4,761,819, Cl. 382-54.000.

Dennies, Daniel P.: *See—*
Paton, Neil E.; Dennies, Daniel P.; Lumsden, Jesse B.; and Ng, Lillian W., 4,761,187, Cl. 148-3.000.

Dennis, Richard D.; and Manning, John D., to Carrier Corporation. Thermo-charger for multiplex air conditioning system. 4,760,707, Cl. 62-197.000

Denree, Michel: *See—*
Michoux, Eric; and Denree, Michel, 4,760,897, Cl. 188-79.510.

De Roo, Pierre R.: *See—*
Tavernier, Serge M.; De Roo, Pierre R.; Mampaey, Jozef L.; and Janssens, Robert F., 4,761,357, Cl. 430-32.000.

Desmons, Pierre; and Mullier, Philippe, to Abay S.A. Fermentation cell for continuous operation. 4,761,380, Cl. 435-313.000.

DeSoto, Inc.: *See—*
Murphy, Edward J.; and Conti, Ronald S., 4,761,435, Cl. 522-46.000

Deton Engineering (Proprietary) Limited: *See—*
Du Preez, Hercules P., 4,760,993, Cl. 254-411.000

Deutsche Babcock Werke Aktiengesellschaft: *See—*
Bulbring, Jurgen, 4,761,133, Cl. 431-170.000.

DeVilbiss Company, The: *See—*
Wheeler, Roger D., 4,760,962, Cl. 239-289.000

Diana, William D.; and Yeh, Chuen Y., to Exxon Research & Engineering Co. Process for recovery of alcohols from sulfuric acid streams. 4,761,505, Cl. 568-918.000.

Dickey, Leland C. Coordinated sorptive strand contactor. 4,761,236, Cl. 210-635.000

Dickson, Thomas G.: *See—*
Flotow, Richard A.; and Dickson, Thomas G., 4,760,906, Cl. 192-70.250.

DiDomenico, Robert A.: *See—*
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000

Diesel Kiki Co., Ltd.: *See—*
Nomura, Hiroshi; Saito, Susumu; and Echizen, Susumu, 4,761,119, Cl. 417-269.000

Dieterich, Philipp A.: *See—*
Barrois, Claus D.; and Dieterich, Philipp A., 4,761,003, Cl. 271-280.000

Dietrich, Manfred; and Konig, Klaus, to Bayer Aktiengesellschaft. Stable dispersions of polyureas and/or polyhydrazodi-carbonamides in relatively high molecular weight, hydroxyl group-containing compounds process for the production thereof and use thereof for the production of polyurethanes. 4,761,434, Cl. 521-164.000.

Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, to American Telephone and Telegraph Company; AT&T Bell Laboratories; and AT&T Technologies. Stripline mount for semiconductor lasers. 4,761,788, Cl. 372-36.000

Diffracto Ltd.: *See—*
Pryor, Timothy R., 4,761,072, Cl. 356-1.000.

Digne, Shyam V.; and Wolf, Charles B., to Electric Power Research Institute. Plasma fired feed nozzle. 4,761,793, Cl. 373-24.000.

DiLorenzo, Antonio. Hairdressing cap. 4,760,855, Cl. 132-9.000

Diluzio, Nicholas M., legal representative: *See—*
Williams, David L.; Browder, I. William; and Diluzio, Nicholas R., deceased, 4,761,402, Cl. 514-54.000

Diluzio, Nicholas R., deceased: *See—*
Williams, David L.; Browder, I. William; and Diluzio, Nicholas R., deceased, 4,761,402, Cl. 514-54.000

Di Modica, Vicenzo R. Modular mirror on clay support. 4,761,067, Cl. 350-641.000

Di Orio, David W., to Commodore Business Machines, Inc. Memory management unit for addressing an expanded memory in groups of non-contiguous blocks. 4,761,736, Cl. 364-200.000.

Dissing, Bjarne; and Jensen, Niels D., to Grundfos International A/S. Electric motor with overload protection circuit. 4,761,592, Cl. 318-471.000

Doak, Sid W.; and Suiter, Shawn P. Marking device. 4,760,648, Cl 33-668.000

Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, to Jouvenal S.A. Laxative composition based on lactulose and its preparation process. 4,761,400, Cl. 514-53.000

Dobie, Michael J.: *See—*
Bacigalupe, Carlos; and Dobie, Michael J., 4,760,911, Cl 198-474.100

Dr Wolman GmbH: *See—*
Goettsche, Reimer; and Marx, Hans-Norbert, 4,761,179, Cl. 106-18.320

Dolbear, Geoffrey E.: *See—*
Ratcliffe, Charles T.; and Dolbear, Geoffrey E., 4,761,162, Cl. 44-626.000

Domigan, Charles N.: *See—*
Bowman, Timothy S.; and Domigan, Charles N., 4,760,675, Cl. 52-221.000

Dominguez, Nazario: *See—*
Arnaune, Jean-Pierre; Dominguez, Nazario; and Walraet, Jean, 4,761,635, Cl. 340-347.0DD.

Dorman, Richard A.; and Welch, Donald E., to Mechanical Technology Incorporated. Tachometer signal conditioner. 4,761,609, Cl. 324-208.000.

Dorsett, Terry E.; and Rininger, David P. Electroplate to moving metal. 4,761,217, Cl. 204-290.00R.

Doty, Gerald A., to Gateway Industries, Inc. Seat belt retractor. 4,760,975, Cl. 242-107.40A.

Dougherty, John D.: *See—*
Abbruzzi, Joseph A.; Dougherty, John D.; and Marballi, Vikram M., 4,761,018, Cl. 280-674.000.

Dow Chemical Company, The: *See—*
Bredeweg, Robert A.; Larson, Jeffrey R.; and Barr, Stephen W., 4,760,732, Cl. 73-23.100.
Heistand, Robert H., II, 4,761,491, Cl. 549-435.000.
Klimpel, Richard R.; and Hansen, Robert D., 4,761,223, Cl 209-166.000
Lund, Gary K.; and Esneault, Calvin P., 4,761,456, Cl. 525-331.700.
Treybig, Duane S.; and Martinez, Robert G., 4,761,473, Cl. 544-224.000.
Treybig, Duane S., 4,761,476, Cl. 544-357.000.

Dow Corning Corporation: *See—*
Burns, Gary T.; Lu, Paul P.; and Zank, Gregg A., 4,761,458, Cl 525-474.000.
Koshi, Taro; and Kondo, Hidetoshi, 4,761,312, Cl. 427-387.000.
Rabe, James A.; and Bujalski, Duane R., 4,761,389, Cl. 501-95.000.

Dow Corning Corporaton: *See—*
Lopes, William J., 4,761,443, Cl. 524-110.000.

Dowton, Gordon H., to Board of Governors of Ryerson Polytechnical Institute, The. User propelled vehicle. 4,761,013, Cl. 280-87.02R.

Drabert Sohne GmbH & Co.: *See—*
Lanuzzi, Max; and Dubach, Fredi, 4,761,033, Cl. 297-316.000

Dravo Corporation: *See—*
Binzen, Willard, 4,760,968, Cl. 241-101.200.

Drolet, Jean-Francois: *See—*
Dumas, Ghislain M.; Lavertu, Roger; and Drolet, Jean-Francois, 4,760,792, Cl. 102-204.000.

Dropic, Societe civile de gestion de droits de propriete industrielle: *See—*
Choay, Patrick; Roger, Pierre; and Olliero, Dominique, 4,761,430, Cl. 514-562.000

Dubach, Fredi: *See—*
Lanuzzi, Max; and Dubach, Fredi, 4,761,033, Cl. 297-316.000

Dubensky, Robert G., to Chrysler Motors Corporation. Steering knuckle assembly. 4,761,019, Cl. 280-674.000.

Dudley, Edmond R.: *See—*
Dudley, Peter B.; and Dudley, Edmond R., 4,760,909, Cl. 198-369.000

Dudley, Peter B.; and Dudley, Edmond R. Suction diverter. 4,760,909, Cl. 198-369.000

Dudman, Roy L. High bending strength ratio drill string components. 4,760,889, Cl. 175-320.000

Dudon, Pascal: *See—*
Fraisse, Didier; Dudon, Pascal; and Tripodi, Paul, 4,761,704, Cl 361-50.000

Dufau, Oscar R., to Fluidmaster, Inc. Air regulated cleaner discharge device for toilets and the like. 4,760,612, Cl. 4-225.000

Duffy, Dennis M.: *See—*
Brand, Scott R.; and Duffy, Dennis M., 4,760,674, Cl. 52-169.500

Duffy, James J., to Ford Motor Company. Variable assist power steering system using electronic pressure control. 4,760,892, Cl. 180-142.000.

Dulebohn, David H., to Andrew Tool Company. Single-piece tweezers. 4,761,028, Cl. 294-99.200

Dumas, Ghislain M.; Lavertu, Roger; and Drolet, Jean-Francois, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Pyrotechnic delay for high g's application. 4,760,792, Cl. 102-204.000.

Dunlap, Roger: *See—*
Brown, Robert S.; and Dunlap, Roger, 4,760,695, Cl. 60-204.000.

Dunn, James; Sanford, Charles; and Kadin, Joseph, to ITT Defense Communications. High frequency spread spectrum communication system terminal. 4,761,796, Cl. 375-1.000.

Dunn, Michael D., to Atlantic Richfield Company. Wellbore perforating. 4,760,883, Cl. 166-297.000.

Du Pont de Nemours, E. I., and Company: *See—*
Bassa, Altan, 4,760,946, Cl. 226-97.000.
Dean, Thomas R., 4,761,173, Cl. 71-92.000.
Herring, Edward I., III, 4,760,793, Cl. 102-460.000.
Petty, Walter L., 4,761,494, Cl. 558-398.000.

Du Preez, Hercules P., to Deton Engineering (Proprietary) Limited Snatch block. 4,760,993, Cl. 254-411.000

Durbin, John A.: *See—*
Loce, Robert P.; Durbin, John A.; and Lama, William L., 4,761,062, Cl. 350-413.000.

Duvall, Keith E.; Hooten, Anthony D.; O'Quin, John C., III; and Smith, Todd A., to International Business Machines Corporation Method to automatically increase the segment size of unix files in a page segmented virtual memory data processing system. 4,761,737, Cl. 364-300.000

Dyer, Gerald P.; Gorneault, Gerald J.; Stearns, Charles F.; and Perkinson, Robert H., to United Technologies Corporation. Hybrid fuel metering system. 4,760,662, Cl. 60-39.281

E. F. Johnson Company: *See—*
Fier, Duane T., 4,761,823, Cl. 455-89.000

Eady, Robert W.: *See—*
Davis, Arthur A.; and Eady, Robert W., 4,761,831, Cl. 455-601.000

East, Gary P.: *See—*
Schulte, Rudolf R.; East, Gary P.; and Heindl, Alfons, 4,761,158, Cl. 604-9.000

East, Vernoy A. Placer mining apparatus with puddling nozzle 4,760,656, Cl. 37-57.000

Easter, Brian: *See—*
Kropielnicki, Jerzy J.; Last, James D.; and Easter, Brian, 4,761,826, Cl. 455-277.000

Eastman Kodak Company: *See—*
Bakos, Vincent W.; and Martin, Thomas W., 4,761,352, Cl 429-94.000
Hardenbrook, Scott B.; Harasta, Louis P., Jr.; Faulkenberry, Stephen T.; and Bomba, Richard D., 4,761,256, Cl. 264-45.500
Harney, James D.; Harris, Clark E.; and Jensen, Thomas D., 4,761,698, Cl. 360-97.000
Kannegundla, Ram, 4,761,565, Cl. 307-243.000
Khalil, Ezzat N.; Edwards, Michael K.; and Hobbs, Howard K 4,761,279, Cl. 424-73.000
Lin, Shaw-Yueh, 4,761,782, Cl. 371-30.000
Piatt, Michael J.; and Walters, Michael A., 4,761,663, Cl 346-134.000
Piatt, Michael J.; and Brown, Mark E., 4,761,664, Cl. 346-134.000
Piatt, Michael J.; and Houser, Kevin L., 4,761,665, Cl. 346-140.00R
Sadowski, Michael D.; Alesio, Philip; and Newell, Catherine D., 4,761,671, Cl. 355-3.00R
Zoeller, Joseph R.; and Sumner, Charles E., Jr., 4,761,496, Cl 560-60.000
Zoeller, Joseph R.; and Sumner, Charles E., Jr., 4,761,497, Cl 560-100.000

Eaton Corporation: *See—*
Myron, Douglas D., 4,761,559, Cl. 250-492.210.

Eaton Leonard Technologies, Inc.: *See—*
Traub, Zeno P., 4,760,726, Cl. 72-149.000

Ebata, Yoshihiro; Komiyama, Tohru; Hayami, Ryozo; and Koyama, Masanori, to Agency of Industrial Science & Technology. Abrasion resistant adherend. 4,761,317, Cl. 428-67.000.

Ebersole, Anthony W.: *See—*
Beauchamp, Robert W.; and Ebersole, Anthony W., 4,761,154, Cl. 474-101.000

Echizen, Susumu: *See—*
Nomura, Hiroshi; Saito, Susumu; and Echizen, Susumu, 4,761,119, Cl. 417-269.000

Eckel, Hans G.; and Schweikert, Willi, to Carl Freudenberg, Firma. Air suspension system. 4,761,020, Cl. 280-714.000

Eckstein, Gunter K.; and Schleyer, Kurt, to Shell Oil Company. Process and apparatus for the preparation of synthesis gas. 4,760,667, Cl 48-69.000.

Edens, Frank W.; and Thaxton, James P., to Embrex, Inc. Method of inducing birds to molt. 4,761,398, Cl. 514-15.000.

Edgell, Marshall H.; Nordeen, Steven K.; and Hutchinson, Clyde A., III, to University of North Carolina at Chapel Hill, The. Vectors suitable for detection of eukaryotic DNA regulatory sequences 4,761,367, Cl. 435-6.000.

Eduard Kusters Maschinenfabrik GmbH & Co. KG: *See—*
Brendel, Bernhard, 4,760,631, Cl. 29-116.100

Edwards, Michael K.: *See—*
Khalil, Ezzat N.; Edwards, Michael K.; and Hobbs, Howard K., 4,761,279, Cl. 424-73.000

Edwards, Roger A.; and Gardiner, Peter T., to Smiths Industries Public Limited Company. Optical transducer with movable filter. 4,761,551, Cl. 250-227.000.

Edwards, Roger A.; and Gardiner, Peter T., to Smiths Industries Public Limited Company. Optical multiplex systems. 4,761,777, Cl 370-3.000

Egbers, Gerhard: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B

Egger, Hans J.: *See—*
Ammann, Hansrudolf; Egger, Hans J.; and Streuli, Adrian, 4,760,702, Cl. 60-605.200.

Eguchi, Isamu: *See—*
Mitsukuchi, Kunio; Ito, Hiromitsu; Eguchi, Isamu; Hirasato, Bunji; and Furuhata, Takashi, 4,761,523, Cl. 200-148.00B

Ehrler, Guenter; Hagen, Heinz; and Becker, Klaus, to Siemens Aktiengesellschaft. Method for generating structures in micro-mechanics. 4,761,210, Cl. 204-129.650

Eldrid, Sacheveral Q.: *See—*
Braddy, Bruce T.; and Eldrid, Sacheveral Q., 4,761,116, Cl 416-92.000

Eldumiati, Ismail I.; Melnik, David T.; and Wiederhold, Robert P., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Interrupt controller arrangement for mutually exclusive interrupt signals in data processing systems. 4,761,732, Cl. 364-200.000

Electric Power Research Institute: *See—*
Digne, Shyam V.; and Wolf, Charles B., 4,761,793, Cl. 373-24.000

Electric Power Research Institute, Inc.: *See—*
Kliman, Gerald B.; Koegl, Rudolph A. A.; Schulz, Max W., Jr.; and Grabkowski, Stephen E., 4,761,703, Cl. 361-23.000

VOL 1093 ISS 1 AG 2 1988 UMI

Electrical Equipment, Inc.: *See—*
Golowash, Victor, 4,761,524, Cl. 200-153.0SC
Elias, Kenneth L.; Martin, Stuart R.; and Slattery, William J., to International Business Machines Corporation. Planarized ceramic substrates. 4,761,332, Cl. 428-325.000
Elias, Thomas C., to Sonoco Products Company. Composite container with high barrier liner layer and method of forming the same. 4,760,949, Cl. 229-4.500
Ellames, George J.; Upton, Roger M.; Jaxa-Chamiec, Albert A.; and Myers, Peter L., to G. D. Searle & Co. Substituted 1H-pyrimido[1,2-a-]-pyrido[3,4-e]pyrazine 6 oxides. 4,761,414, Cl. 514-250.000.
Ellenberger, Charles E.; and Piper, Hayden K., to Pacific Western Systems, Inc. Electrical insulator for a plasma enhanced chemical vapor processor. 4,761,301, Cl. 427-39.000.
Ellig, Daniel L.: *See—*
Vora, Bipin V.; and Ellig, Daniel L., 4,761,509, Cl. 585-254.000.
Elliott, Lynn T.; and Hune, Ronald G. Valve operator. 4,760,989, Cl. 251-129.030.
Ellis, Lyndon, to Racal Security Limited. Remote sensing systems. 4,761,648, Cl. 340-825.640.
Elpatronic AG: *See—*
Bogatzki, Hans-Ulrich, 4,760,731, Cl. 73-12.000.
Elring Dichtungswerke GmbH: *See—*
Schmauder, Karl, 4,761,364, Cl. 430-308.000
El-Sayad, Hassan A.: *See—*
Swaringen, Roy A., Jr.; El-Sayad, Hassan A.; Yeowell, David A.; and Savarese, John J., 4,761,418, Cl. 514-308.000.
Embrex, Inc.: *See—*
Edens, Frank W.; and Thaxton, James P., 4,761,398, Cl. 514-15.000
Embring, Goran: *See—*
Bjorhaag, Georg; Embring, Goran; and Stahl, Karl-Gunnar, 4,761,342, Cl. 428-537.100.
Embry, Lamar, to Beloit Corporation. Coating apparatus and method. 4,761,309, Cl. 427-294.000
Emig, Hans; Lindstaedt, Bernd; Strein, Gunter; Uhrig, Helmut; and Volk, Willi, to Rowenta-Werke GmbH. Steam-iron drip-feed valve. 4,760,658, Cl. 38-77.700.
Emilson, Frederick H.: *See—*
Sowards, Brian D.; and Emilson, Frederick H., 4,761,123, Cl. 418-89.000
Emini, Emilio A.; Larson, Vivian M.; and Boger, Joshua S., to Merck & Co., Inc. Immunogenic synthetic peptide capable of eliciting herpes simplex virus neutralizing antibody. 4,761,470, Cl. 530-326.000.
Emrick, James W.: *See—*
Harwood, Jon W.; Emrick, James W.; Rosa, Bruno A.; and Kratzer, Bruce G., 4,760,894, Cl. 181-282.000.
Endo, Hozumi: *See—*
Oguri, Yasuo; Awata, Mitsuru; and Endo, Hozumi, 4,761,388, Cl. 501-95.000
Engels, Hans-Wilhelm: *See—*
Graves, Daniel F.; and Engels, Hans-Wilhelm, 4,761,446, Cl. 524-93.000.
Engelson, Morris; Morgan, Clifford D.; and Waltz, Ivan E., to Tektronix, Inc. Identification of carrier frequency for pulsed signals. 4,761,604, Cl. 324-78.00R.
English Electric Valve Company: *See—*
Maitland, Arthur, 4,761,792, Cl. 372-56.000
English Electric Valve Company Limited: *See—*
Menown, Hugh; and Maitland, Arthur, 4,761,794, Cl. 313-595.000.
Enigma N.V.: *See—*
Markessini, Efthalia V., 4,761,184, Cl. 106-203.000.
Enloe, Kenneth M., to Kimberly-Clark Corporation. Controlled formation of light and heavy fluff zones. 4,761,258, Cl. 264-518.000.
Epstein, Ronald A., to Akzo America Inc. Carbonylation of vinyl dihalides. 4,761,499, Cl. 562-520.000
Epworth, Richard E., to STC PLC. Optical fibre network. 4,761,833, Cl. 455-612.000.
Erhardt & Leimer GmbH: *See—*
Lonner, Wolfgang; and Mair, Franz, 4,760,626, Cl. 26-75.000.
Erhardt+Leimer GmbH: *See—*
Zerle, Ludwig, 4,760,945, Cl. 226-18.000
Erpelding, A. David: *See—*
Ainslie, Norman G.; Brede, Dwight W.; Erpelding, A. David; and Pattanaik, Surya, 4,761,699, Cl. 360-103.000
Esneault, Calvin P.: *See—*
Lund, Gary K.; and Esneault, Calvin P., 4,761,456, Cl. 525-331.700.
ETA SA Fabriques d'Ebauches: *See—*
Mock, Elmar; and Hotz, Jean-Marie, 4,760,714, Cl. 63-3.000.
Eurotechnique: *See—*
Ferrant, Richard, 4,761,767, Cl. 365-200.000
Evans, Charles D.; Tirums, Andrew T.; Larkin, Eric W.; and Melzer, James E., to Kaiser Aerospace and Electronics Corporation. Compact helmet mounted display. 4,761,056, Cl. 350-174.000
Evans, Clinton E.: *See—*
Bagnall-Wild, Ralph H.; Evans, Clinton E.; and Smith, Gordon R., 4,760,770, Cl. 89-41.190
Evans, Daniel S.; and Hall, Lawrence P. Non-key locking cable lock for marine vessel. 4,760,719, Cl. 70-18.000
Everman, Michael R.: *See—*
Benton, Max D.; and Everman, Michael R., 4,761,084, Cl. 384-619.000
Evezich, Paul D. Squeezable device for ejecting retained materials. 4,760,937, Cl. 222-95.000
Ewbank, Mark D.: *See—*
Yeh, Pochi A.; Ewbank, Mark D.; and Khoshnevisan, Mohsen, 4,761,059, Cl. 350-354.000
Ewen, Alexander T. E., to Glynwed Tubes & Fitting Limited. Clamp assembly. 4,761,024, Cl. 285-93.000.
Ewing, Joan R.; and Swift, Joseph A., to Xerox Corporation. Contact brush charging. 4,761,709, Cl. 361-225.000.
Extrufix Inc.: *See—*
McNerney, Francis B., 4,760,983, Cl. 248-100.000
Exxon Production Research Company: *See—*
Novak, Lucille H., 4,760,882, Cl. 166-295.000
Turner, J. Ward, 4,761,097, Cl. 405-204.000
Exxon Research and Engineering Company: *See—*
Agarwal, Pawan K.; Petrik, William M.; and Garner, Richard T., 4,761,444, Cl. 524-145.000.
Diana, William D.; and Yeh, Chuen Y., 4,761,505, Cl. 568-918.000.
Fackler, Dale J., to Petro Sales Corporation. Liquid sampling and measuring device. 4,760,747, Cl. 73-864.650.
Fager, Gunnar, to AB Volvo. Fixing device for heavy components, especially engines. 4,760,997, Cl. 269-71.000.
Fallis, Robert E.: *See—*
Brooks, Mark A.; and Fallis, Robert E., 4,760,818, Cl. 123-298.000.
Famoso Equipment Company: *See—*
Welsh, Richard S., 4,760,777, Cl. 99-450.200.
Fann, Yaw-Shin; and Wu, Rong-Faa, to Tong Lung Metal Industry Co. Ltd. Cylinder lock. 4,760,722, Cl. 70-358.000
Fannin, Michael L.: *See—*
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,761,807, Cl. 379-89.000
Fanuc Ltd: *See—*
Inoue, Michiya; and Satoh, Junichi, 4,761,566, Cl. 307-262.000
Farias, Luis V.: *See—*
Srinivasagopalan, Rangarajan; Pruett, James D.; Krishnan, Vedavalli G.; and Farias, Luis V., 4,761,784, Cl. 371-43.000
Farmer, David M.: *See—*
Clifford, Steven F.; and Farmer, David M., 4,760,743, Cl. 73-861.060
Faro Medical Technologies Inc.: *See—*
Fraser, Gregory A.; and Raab, Simon, 4,760,851, Cl. 128-774.000.
Farquhar, James J.: *See—*
Brown, Robert N.; and Farquhar, James J., 4,761,106, Cl. 414-125.000
Farris, Richard J.; and Lyon, Richard E. Deformation calorimeter. 4,761,078, Cl. 374-31.000.
Fast, Jacob. Label holder for use with wire rod-type structures. 4,760,660, Cl. 40-308.000
Faulkenberry, Stephen T.: *See—*
Hardenbrook, Scott B.; Harasta, Louis P., Jr.; Faulkenberry, Stephen T.; and Bomba, Richard D., 4,761,256, Cl. 264-45.500.
Favini, Carlo: *See—*
Brasch, William R.; and Favini, Carlo, 4,761,304, Cl. 427-98.000
Fazzolare, Richard D.; and Windmuller, Rudolf, to Nabisco Brands, Inc. Crackers having stabilized sunflower seeds. 4,761,296, Cl. 426-549.000
Fedorchak, James J. Spacer for garment hanger or the like. 4,760,929, Cl. 211-123.000
Fel-Pro Incorporated: *See—*
Kruse, Gregory M.; and Patton, Harold P., 4,760,746, Cl. 73-862.230.
Felici, Alberto; and Rhodes, Michael L. P., to AE PLC. Pistons with oil retaining cavities. 4,760,771, Cl. 92-159.000.
Fendya, Thomas J.: *See—*
Fisher, Kenneth J.; Schuldt, Eric J.; and Fendya, Thomas J., 4,761,000, Cl. 269-323.000.
Ferguson, Charles L. Device for a welding torch. 4,760,994, Cl. 266-48.000
Ferlut, Jean-Serge: *See—*
Cordier, Georges; and Ferlut, Jean-Serge, 4,761,506, Cl. 568-842.000
Ferrant, Richard, to Eurotechnique. High reliability integrated circuit memory. 4,761,767, Cl. 365-200.000.
Ferree, James E.: *See—*
Beck, Henry R.; Ferree, James E.; and Ludwig, Alan J., deceased, 4,761,521, Cl. 200-50.0AA
Ferrier, Donald R.: *See—*
Ruszczyk, Stanley J.; Ferrier, Donald R.; Larson, Gary B.; Gallegos, Daniel; and Castaldi, Steven A., 4,761,303, Cl. 427-96.000.
Fiberplastics, Inc.: *See—*
Netsch, Robert R., 4,760,934, Cl. 220-269.000
Fibropolimeri S.R.L.: *See—*
Ponzielli, Giuseppe, 4,760,717, Cl. 68-181.00R.
Fichtel & Sachs AG: *See—*
Gob, Werner, 4,760,905, Cl. 192-58.00B
Ficken, William H., to Allied-Signal Inc. Electrolytic switch having electrostatic shield. 4,761,708, Cl. 361-212.000
Fier, Duane T., to E. F. Johnson Company. Communications adaptor bracket. 4,761,823, Cl. 455-89.000
Figgie International, Inc.: *See—*
Hitchcock, Myron H., 4,761,815, Cl. 381-43.000
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., to SmithKline Beckman Corporation. Dopamine-β-hydroxylase inhibitors. 4,761,415, Cl. 514-252.000
Finnegan, Robert D.; and Klimek, Joseph P., to United States of America, Army. Method of comminuting rare earth magnet alloys into fine particles. 4,760,966, Cl. 241-1.000
Firestone Tire & Rubber Company, The: *See—*
Graves, Daniel F.; and Engels, Hans-Wilhelm, 4,761,446, Cl. 524-93.000

Fischer, Artur; and Kramer, Wolfgang. Connector for fractured bones. 4,760,843, Cl. 128-92.0YF.
Fish, Ivan. Closer/holder with access slit. 4,760,624, Cl. 24-30.50S
Fisher, Edwin P.: *See—*
Ng, Alvan W.; and Fisher, Edwin P., 4,761,730, Cl. 364-200.000.
Fisher, Kenneth J.; Schuldt, Eric J.; and Fendya, Thomas J., to American Sterilizer Company. Surgical table having horizontally displaceable tabletop. 4,761,000, Cl. 269-323.000.
Fisher, Paul D.: *See—*
Aurichio, Joseph A.; and Fisher, Paul D., 4,761,335, Cl. 428-352.000
Fisher, Robert L.: *See—*
Simpson, Fynlon G.; Fisher, Robert L.; and Kissell, James, 4,761,556, Cl. 250-352.000.
Fisher Scientific Company: *See—*
Andersen, Marlo R.; Tiffany, Thomas O.; and Gangitano, Mario J., 4,761,268, Cl. 422-72.000
Flora, Lawrence; and Floyd, Benjamin F., to Procter & Gamble Company, The. Regimen for treating osteoporosis. 4,761,406, Cl. 514-86.000.
Flotow, Richard A.; and Dickson, Thomas G., to Dana Corporation. Internal assisted clutch. 4,760,906, Cl. 192-70.250.
Floyd, Benjamin F.: *See—*
Flora, Lawrence; and Floyd, Benjamin F., 4,761,406, Cl. 514-86.000.
Fluidmaster, Inc.: *See—*
Dufau, Oscar R., 4,760,612, Cl. 4-225.000.
FMC Corporation: *See—*
Chang, Jun H.; and Lyga, John W., 4,761,174, Cl. 71-92.000.
Titsworth, Raymond; Lipe, J. Tom; Dale, James L.; Monroe, Hanford D.; and Hill, Jerry M., 4,761,749, Cl. 364-559.000.
Vijay, Tumkur R., 4,760,871, Cl. 157-1.280.
Ford Motor Company: *See—*
Boaz, Premakaran T., 4,761,310, Cl. 427-314.000.
Duffy, James J., 4,760,892, Cl. 180-142.000.
Svab, Eugen, 4,760,757, Cl. 74-689.000.
Forest Engineering Research Institute of Canada: *See—*
Meligren, Per-Gustaf, 4,761,109, Cl. 414-555.000.
Fornsel, Helmut; and Simmel, Hans-Eberhard, to Siemens Aktiengesellschaft. Method for generating a tripping signal as a function of the magnitude and the duration of an overcurrent. 4,761,706, Cl. 361-94.000
Forrest, Norman. Method for producing large reinforced seamless casings and the product obtained therefrom. 4,761,206, Cl. 204-9.000.
Fortenberry, William R.: *See—*
Martin, Richard W.; Macemon, Herbert J.; and Fortenberry, William R., 4,761,629, Cl. 336-208.000.
Foster, Bryan D., to Norton Company. Silicon carbide diffusion furnace components with an impervious coating thereon. 4,761,134, Cl. 432-253.000.
Foster Wheeler Corporation: *See—*
Abdulally, Igbal F., 4,761,131, Cl. 431-7.000.
Fouilloy, Jean-Pierre: *See—*
Pirolli, Claude; and Fouilloy, Jean-Pierre, 4,761,652, Cl. 342-53.000
Foulkes, Thomas L., to N.I.S. Limited. Laser apparatus. 4,761,534, Cl. 219-121.800
Fournier, George R., Jr.; Kung, Andrew H.; and McAninch, Jack W., to University of California, The Regents of the. Endoscopic laser instrument. 4,760,840, Cl. 128-303.100.
Fourrey, Francois: *See—*
Bianchi, Francois; Deley, Serge; and Fourrey, Francois, 4,760,988, Cl. 248-430.000
Fowler, Michael J.: *See—*
Owens, Rick L.; and Fowler, Michael J., 4,761,143, Cl. 439-372.000
Fowler, Roscoe T.; Hochhauser, Arthur; Kaufman, Harold B., Jr.; McCarthy, John P.; and Stockler, Jerry, to DCA Food Industries, Inc. Apparatus for reforming a frozen confection slug on a stick. 4,761,128, Cl. 425-126.200.
Fox, Clifford R., to CBM Display Group Limited. Shelving component. 4,760,930, Cl. 211-153.000.
Fraisse, Didier; Dudon, Pascal; and Tripodi, Paul, to Merlin Gerin. Solid-state trip device with test circuit for an electrical circuit breaker. 4,761,704, Cl. 361-50.000.
Framatome: *See—*
Marini, Jean; and Weilbacher, Jean-Claude, 4,761,259, Cl. 376-245.000
Framatome & Cie: *See—*
Le Rat, Guy; and Lagache, Jean-Marc, 4,761,748, Cl. 364-551.000.
Franckx, Joris: *See—*
Buekers, Valere; and Franckx, Joris, 4,761,052, Cl. 350-96.200
Frank, Hubertus; and Nagengast, Andreas, to INA Walzlager Schaeffler KG. Elastic spacer for ball bearings. 4,761,820, Cl. 384-520.000
Frank, Thomas P.; and Thompson, Jeffrey L., to Medex, Inc. Calibration system for blood pressure transducer. 4,760,730, Cl. 73-4.00R.
Frankel, Milton B.; and Witucki, Edward F., to Rockwell International Corporation. Process for preparing 1,5-diazido-3-nitrazapentane 4,761,250, Cl. 260-349.000
Franklin, Philip C.; and Ogburn, Alan P., to Holset Engineering Company Limited. In use position measuring device calibration. 4,761,608, Cl. 324-202.000
Frantti, Edsel W., to Westinghouse Electric Corp. Apparatus for transferring components to and from containers. 4,761,107, Cl 414-146.000
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef; and Brunninger, Manfred, 4,760,796, Cl. 104-7.300
Fraser, Gregory A.; and Raab, Simon, to Faro Medical Technologies Inc. 3-dimensional digitizer for skeletal analysis. 4,760,851, Cl 128-774.000
Freitag, Hans-Albrecht: *See—*
Haas, Peter; Freitag, Hans-Albrecht; and Avar, Geza, 4,761,307, Cl. 427-243.000
Freminet, Dany. Apparatus for the automatic feeding of silk screen printing machines with run-out platen. 4,760,786, Cl. 101-126.000
Fremont, Owen K.: *See—*
St. Angelo, Stephen, Jr.; Carver, George C.; Patterson, David W.; and Fremont, Owen K., 4,760,636, Cl. 29-701.000
French, Barry J.; and Fung, Clifford D., to French, Barry J. Sports scoring device including a flexible prezoelectric layer resilient layer. 4,761,005, Cl. 273-1.0GC.
Freund Medical Products, Inc.: *See—*
Mers Kelly, William C.; and Freund, Robert F., 4,760,846, Cl 128-327.000
Freund, Robert F.: *See—*
Mers Kelly, William C.; and Freund, Robert F., 4,760,846, Cl 128-327.000
Fried, Herbert E., to Shell Oil Company. Reaction of olefins with maleic anhydride. 4,761,488, Cl. 549-255.000
Fried, John H.; and Venuti, Michael C., to Syntex (U.S.A.) Inc. N-N-disubstituted-ω-[2-amino-3-(carbonylmethyl)-3, 4-dihydroquinazoliny1]oxyalkylamides and related compounds. 4,761,416, Cl. 514-260.000
Friedmann, Oswald, to Luk Lamellen und Kupplungsbau GmbH. Apparatus for transmitting torque between flywheels in the power train between the engine and the transmission of a motor vehicle 4,760,754, Cl. 74-574.000
Frigo, Nicholas J.: *See—*
Burns, William K.; Frigo, Nicholas J.; and Moeller, Robert P., 4,761,049, Cl. 350-96.140
Fritsch, Joseph F., to Fritsch, Roxanne Y., a part interest. Video cleaning device. 4,761,700, Cl. 360-128.000.
Fritsch, Roxanne Y.: *See—*
Fritsch, Joseph F., 4,761,700, Cl. 360-128.000
Fuchs, Dieter: *See—*
Stehle, Wolfgang; and Fuchs, Dieter, 4,760,925, Cl. 209-616.000
Fues, Johann F.: *See—*
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fues, Johann F., 4,761,249, Cl 252-528.000
Fuji Jukogyo Kabushiki Kaisha. *See—*
Miyawaki, Motohisa, 4,760,760, Cl. 74-866.000
Morimoto, Yoshihiko, 4,761,153, Cl. 474-28.000
Fuji Photo Film Co., Ltd.: *See—*
Higashi, Shunsaku; Sano, Shojiro; and Saeki, Keiso, 4,761,397, Cl. 503-214.000
Hosoi, Noriyuki; and Hatakeyama, Akira, 4,761,358, Cl. 430-109.000
Kakuishi, Yutaka; Masuyama, Kenichi; Fujiyama, Masaaki; and Okutu, Toshimitu, 4,761,243, Cl. 252-62.540
Nakamura, Takashi, 4,761,347, Cl. 428-691.000
Oshi, Kengo, 4,761,701, Cl. 360-130.330.
Ozaki, Hiroyuki; Hirai, Hiroyuki; and Kawata, Ken, 4,761,361, Cl. 430-203.000
Sasaoka, Senzo; Moriuchi, Shigenori; Kameoka, Kimitaka; Katoh, Kazunobu; and Inagaki, Yoshio, 4,761,362, Cl. 430-267.000
Sato, Kozo; and Yamamoto, Soichiro, 4,761,360, Cl. 430-138.000
Shimura, Kazuo, 4,761,739, Cl. 364-414.000
Suzuki, Yoshiaki, 4,761,181, Cl. 106-22.000
Tanaka, Mitsugu; and Sakai, Minoru, 4,761,365, Cl. 430-555.000
Yoshimura, Ryoichi; and Torii, Shumpeita, 4,761,554, Cl. 250-327.200
Fuji Robin Kabushiki Kaisha: *See—*
Kobashi, Teruhisa; Kobashi, Ichiro; and Iwai, Masanori, 4,760,804, Cl. 111-7.000
Fuji Seiki Machine Works, Ltd.: *See—*
Tsuchiya, Tomio, 4,760,673, Cl. 51-418.000
Fuji Xerox Co., Ltd.: *See—*
Fujiwara, Fukumi, 4,761,643, Cl. 340-723.000
Fuji, Kenji: *See—*
Saga, Toshihiko; Inao, Akitaka; and Fuji, Kenji, 4,761,192, Cl. 148-152.000
Fujiki, Akira: *See—*
Maki, Yoshihiro; Kano, Makoto; Fujiki, Akira; and Tanimoto, Ichiro, 4,761,344, Cl. 428-552.000
Fujikura, Takashi: *See—*
Niigata, Kunihiro; and Fujikura, Takashi, 4,761,500, Cl. 564-86.000
Fujimura, Naoto: *See—*
Sakai, Kiyoshi; Fujimura, Naoto; Kishi, Junichi; and Sakakibara, Teigo, 4,761,359, Cl. 430-126.000
Fujisawa Pharmaceutical Co., Ltd.: *See—*
Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi, and Matuo, Teruaki, 4,761,410, Cl. 514-206.000
Fujita, Nagahisa; Okuno, Itaru; and Kaneko, Tadashi, to Mazda Motor Corporation. Engine throttle valve control device. 4,760,826, Cl 123-399.000
Fujitsu Limited: *See—*
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu, Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000
Nara, Takashi; Takeichi, Hiroaki; Morita, Yoshio, Hatano, Takashi, and Kawato, Yutaka, 4,761,779, Cl. 370-58.000
Sasaki, Nobuo, 4,761,677, Cl. 357-8.000

VOL 1093 ISS 1 AG 2 1988 UMI

Tanizawa, Tetsu, 4,761,572, Cl. 307-546.000.
Fujiwara, Fukumi, to Fuji Xerox Co., Ltd. Image data storing system. 4,761,643, Cl. 340-723.000.
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, to Nippon Kogaku K.K. Laser beam scanning pattern generation system with positional and dimensional error correction. 4,761,561, Cl. 250-548.000.
Fujiyama, Masaaki: *See—*
Kakuishi, Yutaka; Masuyama, Kenichi; Fujiyama, Masaaki; and Okutu, Toshimitu, 4,761,243, Cl. 252-62.540.
Fukae, Kenneth A., to Amada Engineering & Service Co., Inc. Cooling method for a slab-geometry solid state laser medium and a laser device which employs that cooling method. 4,761,789, Cl. 372-34.000.
Fukasawa, Hideki, to Sony Corporation. Digital level detecting circuit. 4,761,816, Cl. 381-106.000.
Fukasawa, Masatomo: *See—*
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000.
Fukuda, Hiroyuki, to Olympus Optical Co., Ltd. Endoscope apparatus and air-/liquid-supply device therefor. 4,760,838, Cl. 128-4.000.
Fukuda, Masatami: *See—*
Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, 4,760,686, Cl. 56-15.800.
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, to Nippon Kokan Kabushiki Kaisha. Continuously treating line for steel bands having a heating furnace by directly flaming. 4,760,995, Cl. 266-103.000.
Fukui, Koichiro; Furukawa, Yuichi; and Noguchi, Kazunari, to Showa Aluminum Corporation. Process for producing heat pipe. 4,760,878, Cl. 165-104.270.
Fukuma, Yasufumi, to Tokyo Kogaku Kikai Kabushiki Kaisha. Eye refractometer. 4,761,070, Cl. 351-205.000.
Fukumura, Masataka: *See—*
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000.
Fukunaka, Shiro: *See—*
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000.
Fukushima, Motoo: *See—*
Itoh, Kunio; Fukushima, Motoo; and Nakamura, Tsutomu, 4,761,452, Cl. 524-521.000.
Fuller Company: *See—*
Jocsak, Richard W., 4,760,856, Cl. 134-56.00R.
Funabashi, Motohisa: *See—*
Tano, Shunichi; Funabashi, Motohisa; Masui, Shoichi; and Sakaguchi, Seiji, 4,761,746, Cl. 364-513.000.
Funato, Hiroyoshi, to Ricoh Company, Ltd. Laser beam recording method. 4,761,046, Cl. 350-3.710.
Fung, Clifford D.: *See—*
French, Barry J.; and Fung, Clifford D., 4,761,005, Cl. 273-1.0GC.
Furniss, Josephine. Lift for use with patients. 4,760,615, Cl. 5-63.000.
Furuhata, Takashi: *See—*
Mitsukuchi, Kunio; Ito, Hiromitsu; Eguchi, Isamu; Hirasato, Bunji; and Furuhata, Takashi, 4,761,523, Cl. 200-148.00B.
Furukawa, Yuichi: *See—*
Fukui, Koichiro; Furukawa, Yuichi; and Noguchi, Kazunari, 4,760,878, Cl. 165-104.270.
Futamura, Hideyuku: *See—*
Komiya, Shigeo; Tarumi, Niro; and Futamura, Hideyuku, 4,761,438, Cl. 523-106.000.
Futatsumori, Koji: *See—*
Oba, Toshio; Mihama, Takeshi; and Futatsumori, Koji, 4,761,454, Cl. 524-862.000.
G. D. Searle & Co.: *See—*
Ellames, George J.; Upton, Roger M.; Jaxa-Chamiec, Albert A.; and Myers, Peter L., 4,761,414, Cl. 514-250.000.
Lawson, Kevin R.; and Upton, Roger M., 4,761,483, Cl. 548-344.000.
Partis, Richard A.; and Mueller, Richard A., 4,761,503, Cl. 568-313.000.
G.D. Societa per Azioni: *See—*
Gamberini, Antonio, 4,760,853, Cl. 131-283.000.
Gabelli, Antonio, to SKF Industrial Trading and Development Company, B.V. Roller bearing. 4,761,082, Cl. 384-133.000.
Gach, Peter P., to Sunbeam Plastics Corporation. Safety container neck insert. 4,760,931, Cl. 215-235.000.
Gade, Raja R.; and Levinson, Frank H., to AMP Incorporated. Fiber optic switching network. 4,761,832, Cl. 455-612.000.
Gallegos, Daniel: *See—*
Ruszczyk, Stanley J.; Ferrier, Donald R.; Larson, Gary B.; Gallegos, Daniel; and Castaldi, Steven A., 4,761,303, Cl. 427-96.000.
Gamberini, Antonio, to G.D. Societa per Azioni. Device for feeding cigarettes to the wrapping line of a packaging machine. 4,760,853, Cl. 131-283.000.
Gammel, Josef, to Siemens Aktiengesellschaft. Military radar or radio communication system. 4,761,813, Cl. 380-6.000.
Gandolfo, Rino, to Minnesota Mining and Manufacturing Company. Apparatus for loading and unloading x-ray film cassettes. 4,760,641, Cl. 29-806.000.
Gangitano, Mario J.: *See—*
Andersen, Marlo R.; Tiffany, Thomas O.; and Gangitano, Mario J., 4,761,268, Cl. 422-72.000.
Ganton, Keith A.: *See—*
Stegelmeier, Ulrich H. E.; and Ganton, Keith A., 4,760,903, Cl. 192-26.000.
Ganzmann, Herbert; and Pastari, Gunther, to Ing. Alfred Schmidt GmbH. Snow sweeping method and apparatus. 4,760,657, Cl. 37-232.000.
Garabedian, George, to Stone & Webster Engineering Corp. Nuclear reactor. 4,761,261, Cl. 376-404.000.
Gardiner, Peter T.: *See—*
Edwards, Roger A.; and Gardiner, Peter T., 4,761,551, Cl. 250-227.000.
Edwards, Roger A.; and Gardiner, Peter T., 4,761,777, Cl. 370-3.000.
Gardner, Robert B., to National Rivet & Manufacturing, Company. Blind fastener settable by spring pin. 4,761,105, Cl. 411-57.000.
Garner, Richard T.: *See—*
Agarwal, Pawan K.; Petrik, William M.; and Garner, Richard T., 4,761,444, Cl. 524-145.000.
Garrett, James E.: *See—*
Lucas, Paul B.; and Garrett, James E., 4,761,637, Cl. 340-365.00P.
Garshelis, Ivan J., to Mag Dev Inc. Magnetoelastic torque transducer. 4,760,745, Cl. 73-862.360.
Gateway Industries, Inc.: *See—*
Doty, Gerald A., 4,760,975, Cl. 242-107.40A.
Gauder, Michael J., to United States of America, Air Force. Switching network for monitoring stations. 4,761,747, Cl. 364-514.000.
Gaul, David J., to Owens-Corning Fiberglas Corporation. Corrosion resistant cobalt-base alloy containing hafnium and a high proportion of chromium and method of making fibers. 4,761,169, Cl. 65-8.000.
Gauthier, Richard, to I.G.G. Electronics Canada Inc. Multipin connector with filtering. 4,761,147, Cl. 439-607.000.
Gautier, Jean-Claude; Lecolier, Serge; Soriaux, Claude; and Chlvalier, Sammy, to Societe Nationale des Poudres et Explosifs. 2-phenyl-4-acyl-(3H)-pyrazol-3-ones. 4,761,484, Cl. 548-364.000.
Gebhardt, Joseph J.; Mulvey, Robert F.; and Yodsnukis, John J., to General Electric Company. Process for the preparation of reflective pyrolytic graphite. 4,761,308, Cl. 427-249.000.
Geho, Walter B., to Technology Unlimited, Inc. Diabetes control by serotonin. 4,761,287, Cl. 424-450.000.
Gehrig, Heinz, to Hoesch Maschinenfabrik Deutschland AG. Device for picking up flexible and/or porous and/or sticky flat articles or shapes. 4,761,027, Cl. 294-61.000.
Geib, James F., to Augat Inc. Minimum insertion force self-cleaning anti-overstress PLCC receiving socket. 4,761,140, Cl. 439-71.000.
Gelardi, Anthony; Lowry, Alan; and Lovecky, Craig, to Shape Inc. Theft-resistant retail container. 4,760,914, Cl. 206-1.500.
Gellert, Jobst U. Injection molding manifold system having balanced bridging manifold. 4,761,343, Cl. 425-547.000.
Genain, Gilles, to Laboratoires Syntex S.A. Antihypertensive dihydropyridine derivatives. 4,761,420, Cl. 514-336.000.
Genentech, Inc.: *See—*
Bell, John R.; Ramachandran, Janakiraman; and Ullrich, Axel, 4,761,371, Cl. 435-68.000.
General American Foods Manufacturing Corporation: *See—*
Meraj, Paul; and Nagle, Teri, 4,761,290, Cl. 426-90.000.
General Electric Company: *See—*
Braddy, Bruce T.; and Eldrid, Sacheveral Q., 4,761,116, Cl. 416-92.000.
D'Atre, John D.; and Giewont, William P., 4,761,600, Cl. 318-759.000.
Gebhardt, Joseph J.; Mulvey, Robert F.; and Yodsnukis, John J., 4,761,308, Cl. 427-249.000.
Germer, Warren R.; and Ouellette, Maurice J., 4,761,606, Cl. 324-142.000.
Jochum, Thomas A., 4,761,605, Cl. 324-142.000.
Longeway, Paul A.; and Martinelli, Ramon U., 4,761,680, Cl. 357-30.000.
Zak, Gregory M.; and Cuomo, Edward, 4,761,057, Cl. 350-273.000.
General Electric Company, p.l.c., The: *See—*
Cracknell, David J.; and Smith, Raymond P., 4,761,622, Cl. 333-106.000.
Peterson, Ian R.; and Girling, Ian R., 4,761,211, Cl. 204-130.000.
General Foods Corporation: *See—*
Schara, Robert E.; and Katcher, Jay H., 4,761,186, Cl. 127-71.000.
General Hospital Corporation: *See—*
Swaringen, Roy A., Jr.; El-Sayad, Hassan A.; Yeowell, David A.; and Savarese, John J., 4,761,418, Cl. 514-308.000.
General Motors Corporation: *See—*
Agarwal, Paul D.; and Kade, Alexander, 4,761,741, Cl. 364-426.000.
Goor, Robert M., 4,761,595, Cl. 318-568.000.
McMahan, David R.; Murphy, Harry S.; and Nagengast, William E., Jr., 4,761,717, Cl. 362-66.000.
Poe, David T.; and Crouse, Joseph T., 4,761,354, Cl. 429-121.000.
St. Angelo, Stephen, Jr.; Carver, George C.; Patterson, David W.; and Fremont, Owen K., 4,760,636, Cl. 29-701.000.
Savage, Jack W., 4,761,576, Cl. 310-51.000.
Genetics Institute, Inc.: *See—*
Clark, Steven C., 4,761,375, Cl. 435-240.200.
Genicom Corporation: *See—*
Ward, David O.; and Zajac, Theodore S., Jr., 4,761,087, Cl. 400-621.000.

Gentilman, Richard L.: *See—*
Hartnett, Tom; Greenberg, Michael; and Gentilman, Richard L., 4,761,390, Cl. 501-152.000.
Geochemical Corporation: *See—*
Clarke, William J., 4,761,183, Cl. 106-117.000.
George, Flint R.: *See—*
Haugen, David M.; George, Flint R.; and George, Kevin R., 4,760,884, Cl. 166-377.000.
George, Kevin R.: *See—*
Haugen, David M.; George, Flint R.; and George, Kevin R., 4,760,884, Cl. 166-377.000.
Georgis, Nicholas J. Method and apparatus for measuring experimental quantities using an ink jet impactless timing device. 4,761,658, Cl. 346-1.100.
Gerber Garment Technology, Inc.: *See—*
Vaida, Robert M., 4,760,912, Cl. 198-678.000.
Gerber Scientific Products, Inc.: *See—*
Logan, David J.; Wood, Kenneth O.; and Hernandez, William, 4,761,315, Cl. 428-33.000.
Gerdes, Knud: *See—*
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.
Gerhard Collardin GmbH: *See—*
Mady, Raschad; Ries, Christian; and Morlock, Roland, 4,761,189, Cl. 148-6.160.
Germer, Warren R.; and Ouellette, Maurice J., to General Electric Company. Auto-ranging in electric watthour meter. 4,761,606, Cl. 324-142.000.
Gibert, Dominique: *See—*
Wirth, Didier; Gibert, Dominique; and Boutin, Annie, 4,761,495, Cl. 560-41.000.
Giberti, Giuseppe: *See—*
Maccaferri, Galeazzo; and Giberti, Giuseppe, 4,760,669, Cl. 51-117.000.
Gibree, Paul. Golf putting game device. 4,761,009, Cl. 273-177.00R.
Gibson, Stanley; and Tindall, Colin, to Davidson & Company Ltd. Controlling seal system in rotary regenerative air preheaters. 4,760,875, Cl. 165-4.000.
Gibson, Walter T.: *See—*
Couchman, John R.; and Gibson, Walter T., 4,761,401, Cl. 514-53.000.
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fues, Johann F., to Henkel Kommanditgesellschaft auf Aktien. Soil-collecting cleaning enhancers in aqueous surfactant laundering and cleaning solutions. 4,761,249, Cl. 252-528.000.
Giesen, Brigitte: *See—*
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fues, Johann F., 4,761,249, Cl. 252-528.000.
Giewont, William P.: *See—*
D'Atre, John D.; and Giewont, William P., 4,761,600, Cl. 318-759.000.
Gilbert, Milton M.: *See—*
Rautenberg, Leonard J.; Gilbert, Milton M.; Wyner, James H.; and Wyner, Daniel M., 4,761,324, Cl. 428-198.000.
Gillis, David P. Linear measuring apparatus. 4,760,647, Cl. 33-141.00E.
Gillon, Willard A., Jr., to Rockwell International Corporation. Bi-level thruster. 4,760,694, Cl. 60-200.100.
Girard, Yves; and Rokach, Joshua, to Merck Frosst Canada, Inc. Leukotriene antagonists. 4,761,425, Cl. 514-456.000.
Girling, Ian R.: *See—*
Peterson, Ian R.; and Girling, Ian R., 4,761,211, Cl. 204-130.000.
Gist-Brocades N.V.: *See—*
Apontoweil, Peter; and Krasselt, Manfred M., 4,761,282, Cl. 424-89.000.
Giuseppe, Scorzato: *See—*
Battista, Righele G.; and Giuseppe, Scorzato, 4,761,121, Cl. 418-15.000.
Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals Inc. Dihydrobenzo[c]pyrrolobenzodiazepines useful for treating pyschoses. 4,761,411, Cl. 514-219.000.
Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals Inc. Benzopyrrolobenzodiazepines and quinobenzodiazepines useful for the treatment of psychoses. 4,761,412, Cl. 514-219.000.
Glas-Craft, Inc.: *See—*
Mansfield, Gregory A., 4,760,956, Cl. 239-8.000.
Glassy, Mark C.; and Surh, Charles, to University of California, The Regents of the. Human-human hybrid cell lines that produce antibodies against antigenic determinants on cancer cells. 4,761,377, Cl. 435-240.270.
Glaverbel: *See—*
Laroche, Pierre, 4,761,440, Cl. 523-217.000.
Glendinning, William B., to United States of America, Army. Measurement of proximity effects in electron beam lithography. 4,761,560, Cl. 250-492.200.
Glenn, William H.: *See—*
Meltz, Gerald; Glenn, William H.; and Snitzer, Elias, 4,761,073, Cl. 356-32.000.
Glynwed Tubes & Fitting Limited: *See—*
Ewen, Alexander T. E., 4,761,024, Cl. 285-93.000.
Gob, Werner, to Fichtel & Sachs AG. Fluid friction clutch. 4,760,905, Cl. 192-58.00B.
Godsey, James H., to American Home Products Corp. (Del.). Microbiological testing apparatus. 4,761,378, Cl. 435-293.000.
Godshall, Ned A., to United States of America, Energy. Method for improving voltage regulation of batteries, particularly Li/FeS_2 thermal batteries. 4,761,487, Cl. 429-112.000.
Goel, Anil B., to Ashland Oil, Inc. Imidazoline thiocyanates as cure accelerators for amine curing of epoxide resins. 4,761,466, Cl. 528-90.000.
Goel, Om P.; and Krolls, Uldis, to Warner-Lambert Company. Crystalline quinapril and a process for producing the same. 4,761,479, Cl. 546-147.000.
Goettsche, Reimer; and Marx, Hans-Norbert, to Dr. Welman GmbH. Wood preservatives. 4,761,179, Cl. 106-18.320.
Goh, Djing-San, to Koh-I-Noor Rapidograph, Inc. Tubular writing pen tip with adjustment means. 4,761,090, Cl. 401-259.000.
Golke, Keith W.; and Rabe, Robert L., to Honeywell Inc. Memory circuit enchancement to stablize the signal lines with additional capacitance. 4,761,571, Cl. 307-468.000.
Golowash, Victor, to Electrical Equipment, Inc. Switch operating mechanism. 4,761,524, Cl. 200-153.0SC.
Gondouin, Oliver M., to S-Cal Research. Liquified natural gas conversion process. 4,761,515, Cl. 585-500.000.
Goodyear Tire & Rubber Company, The: *See—*
Hart, James M., 4,761,195, Cl. 156-116.000.
Goor, Robert M., to General Motors Corporation. Motion control system having adaptive feedforward path tracking. 4,761,595, Cl. 318-568.000.
Gorneault, Gerald J.: *See—*
Dyer, Gerald P.; Gorneault, Gerald J.; Stearns, Charles F.; and Perkinson, Robert H., 4,760,662, Cl. 60-39.281.
Gorney, Moshe, to Naan Mechanical Works. Drive arm deflector for a rotary impact sprinkler. 4,760,959, Cl. 239-233.000.
Goto, Hideto, to NEC Corporation. Integrated circuit semiconductor device. 4,761,678, Cl. 357-23.600.
Goto, Kazuhiro; and Mair, Ross L., to AMP Incorporated. Housing for electrical connectors. 4,761,145, Cl. 439-469.000.
Goto, Mieko, to Minamifuji Sangyo Kabushiki Kaisha. System of prefabricated components for constructing modular houses. 4,760,676, Cl. 52-236.100.
Goto, Tetsuro, to Nippon Kogaku K. K. Camera capable of flash photography. 4,761,666, Cl. 354-133.000.
Gottier, Gerry N.: *See—*
Nicholas, David M., Roden, Thomas M.; and Gottier, Gerry N., 4,761,167, Cl. 62-17.000.
Gouvernelle, Didier: *See—*
Levasseur, Jean; and Gouvernelle, Didier, 4,761,714, Cl. 361-433.000.
Grabkowski, Stephen E.: *See—*
Kliman, Gerald B.; Koegl, Rudolph A. A.; Schulz, Max W., Jr.; and Grabkowski, Stephen E., 4,761,703, Cl. 361-23.000.
Grady, John K.: *See—*
Sebring, John P., 4,761,805, Cl. 378-181.000.
Gram, Helen F.; Muller, Martin E.; Pendergrass, Ann M.; and Rink, Phillip A., to Los Alamos Technical Associates, Inc. Electrolytic method and cell for sterilizing water. 4,761,208, Cl. 204-95.000.
Gramlich, Walter; Siegel, Hardo; and Jahn, Dieter, to BASF Aktiengesellschaft. Substituted 5-formyl-1,3-dioxepans. 4,761,489, Cl. 549-347.000.
Grant, Lawrence P.: *See—*
Rei, Nuno M.; and Grant, Lawrence P., 4,761,247, Cl. 252-364.000.
Graves, Daniel F.; and Engels, Hans-Wilhelm, to Firestone Tire & Rubber Company, The. Rubber compositions modified with benzimidazo-linones. 4,761,446, Cl. 524-93.000.
Graybeal, Harold N.: *See—*
Clark, Lawrence; Graybeal, Harold N.; and Witman, Jack H., 4,761,306, Cl. 427-197.000.
Green, Brian: *See—*
Christine, William C.; Schmidt, Josef; Lyons, Steffen; Green, Brian, and Herschman, George J., 4,761,197, Cl. 156-290.000.
Greenberg, Ilan, to Plastro Gvat and Agroteam Consultants Ltd. Water sprinkler. 4,760,958, Cl. 239-222.210.
Greenberg, Michael: *See—*
Hartnett, Tom; Greenberg, Michael; and Gentilman, Richard L., 4,761,390, Cl. 501-152.000.
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Integrated optics spectrum analyzer. 4,761,048, Cl. 350-96.110.
Gren, Urban: *See—*
Theliander, Hans; and Gren, Urban, 4,760,650, Cl. 34-35.000.
Greulich, Bodo: *See—*
van den Beld, Paul Christiaan H.; Kettenring, Gerhard; Greulich, Bodo; and Schmitz, Gunther, 4,760,935, Cl. 220-307.000.
Griffing, Neal R.; Bayerwitz, Marvin H.; and Stelts, Philip D., to Bethlehem Steel Corporation. Process for heating molten steel contained in a ladle. 4,761,178, Cl. 75-51.200.
Grigsby, James D.: *See—*
Kaufmann, Frank H.; Kramer, Charles F.; Grigsby, James D.; and Root, Stephen J., 4,760,628, Cl. 28-201.000.
Grille, Juan. Padlock protector. 4,760,720, Cl. 70-54.000.
Grimes, Frank H.; and Hammack, Eugenius, to Westinghouse Electric Corp. Butt-lap-step core joint. 4,761,630, Cl. 336-213.000.
Grimm, Helmut: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus, Seidel, Adolf; Haseher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B.
Grip-Rite, Inc.: *See—*
Harrison, Craig M., 4,760,986, Cl. 248-225.310.

VOL 1093 ISS 1 AG 2 1988 UMI

Griswold, Stanley R., Jr.; and Mussatti, Bryan G., to ITT Aerospace Optical. Baseband phase modulator apparatus employing digital techniques. 4,761,798, Cl. 375-59.000.

Groh, Carole L.: *See—*
Madhavan, Narayanan; Groh, Carole L.; and Probst, Robert L., 4,761,136, Cl. 433-214.000.

Groleau, Rodney J. Mold pressure sensor body. 4,760,749, Cl. 73-866.500.

Grollier, Jean F.; Madrange, Annie; and Chailley, Michele, to L'Oreal Composition in the form of an aerosol foam, based on a cationic polymer and an anionic polymer. 4,761,273, Cl. 424-47.000.

Groud, Laurent, to Champenois S.A. Automatic vehicle with forwardly mounted tool assembly and steering system for guiding the tool assembly. 4,761,016, Cl. 280-467.000.

Gruber, Wolfgang: *See—*
Jaggard, James F. R.; Werner, Rainer A.; and Gruber, Wolfgang, 4,761,461, Cl. 526-125.000.

Grundfos International A/S: *See—*
Dissing, Bjarne; and Jensen, Niels D., 4,761,592, Cl. 318-471.000.

Grutzmacher, Berthod: *See—*
Rodi, Anton; Grutzmacher, Berthod; and Kruger, Michael, 4,761,594, Cl. 318-490.000.

GSI Engineering, Inc.: *See—*
Jackson, Keith L.; Polley, Richard B.; and Schmitt, Dallas L., 4,760,799, Cl. 105-182.100.

GTE Products Corporation: *See—*
Kling, Michael R., 4,761,583, Cl. 313-54.000.
Kopatz, Nelson E.; and Stermer, Philip E., 4,760,711, Cl. 62-373.000.

Guagliardo, Matthew; DebRoy, Tapan K.; and Pucknat, John, to BASF Corporation. Cationic electrodepositable resin compositions containing polyurethane resin dispersions. 4,761,337, Cl. 428-425.800.

Guidinger, Nicholas C.: *See—*
Hamann, Michael L.; and Guidinger, Nicholas C., 4,761,294, Cl. 426-438.000.

Guilford, Richard P.: *See—*
Brown, Ralph L.; Guilford, Richard P.; and Stichman, John H., 4,761,724, Cl. 363-21.000.

Gunji, Tsunefusa: *See—*
Yoshikoshi, Takashi; Marumori, Katsuhira; and Gunji, Tsunefusa, 4,760,661, Cl. 40-356.000.

Gunn, Bruce P.; and Summers, James B., Jr., to Abbott Laboratories. Lipoxygenase inhibiting compounds. 4,761,403, Cl. 514-63.000.

Guthrie, Robin J.: *See—*
Kunz, H. Russell; Guthrie, Robin J.; and Katz, Murray, 4,761,348, Cl. 429-35.000.

Gutwein, Herbert: *See—*
Muhlratzer, August; Lassmann, Siegfried; Bertinger, Roland; Gutwein, Herbert; and Sanden, Renate, 4,761,323, Cl. 428-198.000.

Gyles, Carlton L.: *See—*
Maas, Werner K.; and Gyles, Carlton L., 4,761,372, Cl. 435-172.100.

H. Adler Associates, Inc.: *See—*
Adler, Hans, 4,760,866, Cl. 137-614.170.

Haas, Peter; Freitag, Hans-Albrecht; and Avar, Geza, to Bayer Aktiengesellschaft. Process for the production of optionally foamed polyurethanes which are combined or fabricated with another material 4,761,307, Cl. 427-243.000.

Hackmack, Alfred. Surface working accessory. 4,761,038, Cl. 299-10.000.

Haentjens, Kathleen S., to Hazleton Stainless Casting Company. Waste collection device for garbage grinder. 4,761,235, Cl. 210-532.100.

Hafez, Medi M.: *See—*
Thompson, John A.; and Hafez, Medi M., 4,761,229, Cl. 210-321.820.

Hagen, Heinz: *See—*
Ehrler, Guenter; Hagen, Heinz; and Becker, Klaus, 4,761,210, Cl. 204-129.650.

Hajnik, Dennis M.: *See—*
Sonnenberg, Fred M.; and Hajnik, Dennis M., 4,761,432, Cl. 521-60.000.

Hakamada, Kunio, to Sony Corporation. Television receiver. 4,761,688, Cl. 358-183.000.

Halasz, Andrew, to Ball Corporation. Spin flow forming. 4,760,725, Cl. 72-84.000.

Halbach, Klaus, to United States of America, Energy. Strong permanent magnet-assisted electromagnetic undulator. 4,761,584, Cl. 315-4.000.

Hale, Ron L.; and Solas, Dennis W., to Baxter Travenol Laboratories, Inc. Substituted pyridine derivatives. 4,761,481, Cl. 546-296.000.

Hale, Seymour B., Jr. Security pet door. 4,760,872, Cl. 160-90.000.

Halker, Helmut: *See—*
Halker, Vera; and Halker, Helmut, 4,761,329, Cl. 428-222.000.

Halker, Vera; and Halker, Helmut, to Thomas Josef Heimbach GmbH & Co. Machine felt, and a method for manufacturing same. 4,761,329, Cl. 428-222.000.

Hall, Lawrence P.: *See—*
Evans, Daniel S.; and Hall, Lawrence P., 4,760,719, Cl. 70-18.000.

Hallenbeck, Kirby S.; and Palley, Lawrence S., to Intel Corporation. Eprom controlled tri-port transceiver. 4,761,647, Cl. 340-825.220.

Halliburton Company: *See—*
Haugen, David M.; George, Flint R.; and George, Kevin R., 4,760,884, Cl. 166-377.000.

Hamada, Chiaki: *See—*
Ohashi, Kaoru; Hamada, Chiaki; Kawakami, Hiroshi; Hirano, Yutaka; and Murakami, Zensaku, 4,761,022, Cl. 280-772.000.

Hamann, Michael L.; and Guidinger, Nicholas C., to J. R. Simplot Company. Process for preparing parfried and frozen potato strips. 4,761,294, Cl. 426-438.000.

Hamano, Hisashi; Hasegawa, Kinji; Noumi, Yoshihiro; and Katoh, Hideo, to Teijin Limited. Biaxially oriented aromatic polyester film. 4,761,327, Cl. 428-220.000.

Hambro Machinery Limited: *See—*
Morris, Christopher P., 4,760,779, Cl. 99-475.000.

Hammack, Eugenius: *See—*
Grimes, Frank H.; and Hammack, Eugenius, 4,761,630, Cl. 336-213.000.

Hammon, Wolfgang; Theisen, Wolfgang; and Wegner, Klaus, to Nukem GmbH. Device for mounting of remote control apparatuses. 4,761,112, Cl. 414-591.000.

Han, Joonho. Watering device for plants. 4,760,666, Cl. 47-79.000.

Hanabusa, Kazunori; Yamagishi, Nobutoshi; and Ito, Kenzo, to Nippondenso Co., Ltd. Guiding spot display apparatus. 4,761,742, Cl. 364-443.000.

Hanashiro, Yoshiaki: *See—*
Shudo, Katsuyuki; Kinjo, Hisao; Okano, Keigo; and Hanashiro, Yoshiaki, 4,761,694, Cl. 360-37.100.

Hans Bartlechner Betonwerke: *See—*
Bartlechner, Johann, 4,761,095, Cl. 404-41.000.

Hans Heynau GmbH: *See—*
Vetter, Ulrich; and Neumeier, Jurgen, 4,760,753, Cl. 74-479.000.

Hansen, Allan H., to Danfoss A/S. Auxiliary equipment for the thermostatic valve of a radiator. 4,760,954, Cl. 236-42.000.

Hansen, Robert D.: *See—*
Klimpel, Richard R.; and Hansen, Robert D., 4,761,223, Cl. 209-166.000.

Hanson, Charles B.: *See—*
Smith, Wayne G.; Martinez, David V.; Mozingo, Robert E.; and Hanson, Charles B., 4,761,113, Cl. 414-732.000.

Hanson, Palmer. Reversible knick knack shelf. 4,760,800, Cl. 108-111.000.

Hansson, Gunnar C., to Atlas Copco Aktiebolag. Hydraulic torque impulse generator. 4,761,151, Cl. 464-25.000.

Harada, Jun: *See—*
Nishio, Hiroaki; and Harada, Jun, 4,761,264, Cl. 419-68.000.

Harada Kogyo Kabushiki Kaisha: *See—*
Nakase, Kazuhiko, 4,761,593, Cl. 318-473.000.

Haraguchi, Hiroshi: *See—*
Shimada, Shiro; Haraguchi, Hiroshi; and Iwata, Toshiharu, 4,760,828, Cl. 123-425.000.

Harasta, Louis P., Jr.: *See—*
Hardenbrook, Scott B.; Harasta, Louis P., Jr.; Faulkenberry, Stephen T.; and Bomba, Richard D., 4,761,256, Cl. 264-45.500.

Hardenbrook, Scott B.; Harasta, Louis P., Jr.; Faulkenberry, Stephen T.; and Bomba, Richard D., to Eastman Kodak Company. Method for producing microcellular foamed plastic material with smooth integral skin. 4,761,256, Cl. 264-45.500.

Hargabus, Patrick A. Infinity mirror display. 4,761,004, Cl. 272-13.000.

Harman International Industries, Incorporated: *See—*
Christie, Cary L., 4,761,817, Cl. 381-194.000.

Harney, James D.; Harris, Clark E.; and Jensen, Thomas D., to Eastman Kodak Company. Disk cassette loading/unloading mechanism with flexible shutter opening device. 4,761,698, Cl. 360-97.000.

Harris, Clark E.: *See—*
Harney, James D.; Harris, Clark E.; and Jensen, Thomas D., 4,761,698, Cl. 360-97.000.

Harris Corporation: *See—*
Williams, David G., 4,761,570, Cl. 307-465.000.

Harrison, C. L. Scott. Drainage pipe stoppage displacer. 4,760,614, Cl. 4-255.000.

Harrison, Craig M., to Grip-Rite, Inc. Mount for pickup trucks. 4,760,986, Cl. 248-225.310.

Harrison Handling, Inc.: *See—*
Tschantz, William H., 4,760,913, Cl. 198-819.000.

Harrison, Walter L., to K B & H, Inc. Back-splash molding. 4,760,681, Cl. 52-716.000.

Hart, Arthur C., Jr.: *See—*
Blyler, Lee L., Jr.; Hart, Arthur C., Jr.; and Progelhof, Richard C., 4,761,168, Cl. 65-3.100.

Hart, James M., to Goodyear Tire & Rubber Company, The. Tire building machine server. 4,761,195, Cl. 156-116.000.

Hart, Stephen C., to Morton Thiokol, Inc. Powder coatable epoxy composition and post-tensioning cable coated therewith. 4,761,336, Cl. 428-379.000.

Hart, William B.: *See—*
Ball, Graham J.; Hart, William B.; and Hurst, Michael H., 4,760,939, Cl. 222-23.000.

Hartman Rack Products, Inc.: *See—*
Mulford, Frederick A., 4,761,081, Cl. 384-20.000.

Hartnett, Tom; Greenberg, Michael; and Gentilman, Richard L., to Raytheon Company. Optically transparent yttrium oxide. 4,761,390, Cl. 501-152.000.

Hartwig, Jurgen, to Pfaff Haushaltmaschinen GmbH. RPM regulation of an electromotor. 4,761,591, Cl. 318-345.00D.

Harwood, Jon W.; Emrick, James W.; Rosa, Bruno A.; and Kratzer, Bruce G., to AP Industries, Inc. Exhaust muffler with angularly aligned inlets and outlets. 4,760,894, Cl. 181-282.000.

Hascher, Helmut: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B.

Hasegawa, Kazuo, to Alps Electric Co., Ltd. Scanning system for optical coordinate input device with scan interrupt control. 4,761,550, Cl. 250-221.000.

Hasegawa, Kinji: *See—*
Hamano, Hisashi; Hasegawa, Kinji; Noumi, Yoshihiro; and Katoh, Hideo, 4,761,327, Cl. 428-220.000.

Hasegawa, Shinichi: *See—*
Yoshioka, Takayuki; and Hasegawa, Shinichi, 4,761,063, Cl. 350-432.000.

Haselgrove, John C.: *See—*
Prammer, Manfred G.; and Haselgrove, John C., 4,761,614, Cl. 324-320.000.

Hashiguchi, Yasuhiro; Katono, Noboru; and Shibata, Yoshihiro, to Hitachi, Ltd. Cassette loading mechanism of magnetic recording and reproducing apparatus. 4,761,697, Cl. 360-96.500.

Hashimoto, Haruo: *See—*
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J.

Hashimoto, Hiroshi: *See—*
Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, 4,761,662, Cl. 346-108.000.

Hashimoto, Kiyokazu, to NEC Corporation. Semiconductor memory device having improved data output circuit. 4,761,765, Cl. 365-185.000.

Hashimoto, Masahide, to Mitsubishi Denki Kabushiki Kaisha. Freezing apparatus. 4,760,712, Cl. 62-381.000.

Hasson, Harrith M. Rotational surgical instrument. 4,760,848, Cl. 128-340.000.

Hatakeyama, Akira: *See—*
Hosoi, Noriyuki; and Hatakeyama, Akira, 4,761,358, Cl. 430-109.000.

Hatakeyama, Shiro: *See—*
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.

Hatakeyama, Yasunori: *See—*
Otoshima, Hiroo; and Hatakeyama, Yasunori, 4,760,969, Cl. 242-18.00R.

Hatanaka, Katsunori: *See—*
Okubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; Hatanaka, Katsunori; and Nakagiri, Takashi, 4,761,058, Cl. 350-331.00T.

Hatano, Takashi: *See—*
Nara, Takashi; Takeichi, Hiroaki; Morita, Yoshio; Hatano, Takashi; and Kawato, Yutaka, 4,761,779, Cl. 370-58.000.

Hatje, Gunter H., to Helmut K. Pinsch GmbH & Co. Retroreflector for the reflection of electromagnetic rays. 4,761,055, Cl. 350-103.000.

Hatton, Gregory J., to Texaco Inc. Multi-phase petroleum stream monitoring system and method. 4,760,742, Cl. 73-861.040.

Haugen, David M.; George, Flint R.; and George, Kevin R., to Halliburton Company. Air chamber actuated dual tubing release assembly. 4,760,884, Cl. 166-377.000.

Hauptfleisch, Lindo; and Katzy, Klaus, to Crucible Societe Anonyme. Mine hoist control method and apparatus. 4,761,589, Cl. 318-51.000.

Hawk, Gary W.; and Marzili, Joseph C., to AMP Incorporated. Locking latching shroud. 4,761,141, Cl. 439-153.000.

Hayakawa, Kimiaki; Sayama, Hideaki; Kitahara, Makoto; and Honjo, Takeshi, to Canon Kabushiki Kaisha. Automatic document feeder. 4,761,001, Cl. 271-3.100.

Hayakawa, Toshiro; Suyama, Takahiro; Takahashi, Kohsei; and Yamamoto, Saburo, to Sharp Kabushiki Kaisha. Optical semiconductor device. 4,761,790, Cl. 372-45.000.

Hayami, Ryozo: *See—*
Ebata, Yoshihiro; Komiyama, Tohru; Hayami, Ryozo; and Koyama, Masanori, 4,761,317, Cl. 428-67.000.

Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Braking device for vehicle 4,760,899, Cl. 188-181.00A.

Hayden, Kenneth J. Holographic security devices and systems. 4,761,543, Cl. 235-457.000.

Hayes, Edwin T., to Tennessee Plastics, Inc. Electric baseboard heater having a reduced profile cabinet. 4,761,537, Cl. 219-366.000.

Hazleton Stainless Casting Company: *See—*
Haentjens, Kathleen S., 4,761,235, Cl. 210-532.100.

Heggie, William S.; and Davies, Anthony S., to National Research Council of Canada. Mechanical power regeneration system 4,760,697, Cl. 60-408.000.

Heidelberger Druckmaschinen AG: *See—*
Rodi, Anton; Grutzmacher, Berthod; and Kruger, Michael, 4,761,594, Cl. 318-490.000.

Heiland, Robert: *See—*
Blatt, Joel M.; Heiland, Robert; Morris, James R.; Pugh, Jerry; and Wogoman, Frank W., 4,761,381, Cl. 436-165.000.

Heimbuch, William G.: *See—*
Horton, Edwin T.; and Heimbuch, William G., 4,761,827, Cl. 455-277.000.

Hein, Bruce; and Shufflebarger, Charles, to MagneTek, Inc. Magnetic top wedge. 4,761,580, Cl. 310-214.000.

Heindl, Alfons: *See—*
Schulte, Rudolf R.; East, Gary P.; and Heindl, Alfons, 4,761,158, Cl. 604-9.000.

Heiskell, Ronald E.; and Bernard, Brian C., to Clorox Company, The One-way torque limiter. 4,760,904, Cl. 192-56.00R.

Heistand, Robert H., II, to Dow Chemical Company, The. Preparation of 2-substituted-1,3-dioxacycloalkanes from diols and diunsaturated ethers. 4,761,491, Cl. 549-435.000.

Helmut K. Pinsch GmbH & Co.: *See—*
Hatje, Gunter H., 4,761,055, Cl. 350-103.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fuea, Johann F., 4,761,249, Cl. 252-528.000.

Hennessey, James R. Quick disconnect assembly for microphone. 4,760,984, Cl. 248-121.000.

Henry Filters, Inc.: *See—*
Creps, John L., 4,761,226, Cl. 210-106.000.

Henze, Christopher P., to Unisys Corporation. Digitally controlled A.C. to D.C. power conditioner. 4,761,725, Cl. 363-46.000.

Hercules Incorporated: *See—*
Panchak, John R.; and Trowell, John M., 4,761,433, Cl. 521-124.000.

Hernandez, William: *See—*
Logan, David J.; Wood, Kenneth O.; and Hernandez, William, 4,761,315, Cl. 428-33.000.

Herring, Edward I., III, to Du Pont de Nemours, E. I., and Company. Multi-range shot shell. 4,760,793, Cl. 102-460.000.

Herschman, George J.: *See—*
Christine, William C.; Schmidt, Josef; Lyons, Steffen; Green, Brian; and Herschman, George J., 4,761,197, Cl. 156-290.000.

Herting, Heinrich, to Karl Oexmann, Inh. Wolfgang Oexmann, Firma. Method of and apparatus for producing baked cones or cornets 4,761,293, Cl. 426-383.000.

Herting, James G.: *See—*
Bass, Morton E.; and Herting, James G., 4,760,943, Cl. 224-39.000.

Hessler, John D.: *See—*
Wade, Ivan W., Jr.; and Hessler, John D., 4,761,520, Cl. 174-121.00R.

Hewlett-Packard Company: *See—*
Askeland, Ronald A.; Kappele, William D.; Pawlowski, Norman E.; and Stoffel, John L., 4,761,180, Cl. 106-22.000.
Beauchamp, Robert W.; and Ebersole, Anthony W., 4,761,154, Cl. 474-101.000.
Lipschutz, David, 4,761,740, Cl. 364-415.000.
Mealer, Loyal D., III; and Lacey, Richard F., 4,761,549, Cl. 250-214.00A.
Poland, McKee D., 4,761,544, Cl. 235-462.000.
Wield, Paul J.; and Torgerson, Curt N., 4,760,752, Cl. 74-434.000.

Heylen, Raymond A.: *See—*
Boets, Marc J.; and Heylen, Raymond A., 4,760,915, Cl. 206-303.000.

Heynisch, Hinrich; Hubner, Klemens; Kruger, Hans; and Weber, Hubert, to Siemens Aktiengesellschaft. Transversely excited waveguide laser. 4,761,787, Cl. 372-34.000.

HGM Medical Laser Systems, Inc.: *See—*
Kovalcheck, Steven W., 4,760,845, Cl. 128-303.100.

Hiatt, Sidney A.; and Zapletal, Henry, to Leggett & Platt, Incorporated. Bedding foundation having sinuous wire springs. 4,760,616, Cl. 5-246.000.

Hibberd, Kenneth A.: *See—*
Anderson, Paul C.; and Hibberd, Kenneth A., 4,761,373, Cl. 435-172.300.

Hibi, Yasuo: *See—*
Suzuki, Masanori; Hibi, Yasuo; Tanaka, Kazuaki; and Yamaguchi, Yoshimitsu, 4,760,910, Cl. 198-412.000.

Hicks, Gregory F., to Northern Telecom Limited. Rate adaptation circuit and method for asynchronous data on digital networks. 4,761,763, Cl. 364-900.000.

Higashi, Hidejiro; Sato, Hiroshi; Yamamoto, Kaoru; and Kanda, Jun, to Pioneer Electronic Corporation. Magnetic recording and reproducing device. 4,761,693, Cl. 360-13.000.

Higashi, Shunsaku; Sano, Shojiro; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Microcapsule sheet for pressure-sensitive copying. 4,761,397, Cl. 503-214.000.

Higgs, Jacob K., to Sprague Electric Company. Dual trigger Hall effect I.C. switch. 4,761,569, Cl. 307-309.000.

Hiji, Yasutake. Intestinal absorption inhibiting agent. 4,761,286, Cl. 424-195.100.

Hilaris, John A., to Hydro-Ergon Corporation. Cutting head for removing material with a high velocity jet of working liquid. 4,761,039, Cl. 299-39.000.

Hill, Jerry M.: *See—*
Titsworth, Raymond; Lipe, J. Tom; Dale, James L.; Monroe, Hanford D.; and Hill, Jerry M., 4,761,749, Cl. 364-559.000.

Hillestad, Tollief O. Portable tube milling tool. 4,761,104, Cl. 409-175.000.

Himeshima, Yoshio: *See—*
Uemura, Tadahiro; Himeshima, Yoshio; and Kurihara, Masaru, 4,761,234, Cl. 210-500.380.

Hinks, Richard S., to Picker International, Inc. Monitored echo gating for the reduction of motion artifacts. 4,761,613, Cl. 324-309.000.

Hinman, Edmund R., to Airfoil Textron Inc. ECM machine with mechanisms for venting and clamping a workpart shroud. 4,761,214, Cl. 204-224.00M.

Hirahara, Kazuko: *See—*
Kanda, Nobuo; Hirahara, Kazuko; and Kondo, Mitsuru, 4,761,396, Cl. 503-209.000.

Hirai, Hiroyuki: *See—*
Ozaki, Hiroyuki, Hirai, Hiroyuki; and Kawata, Ken, 4,761,361, Cl. 430-203.000.

VOL 1093 ISS 1 AG 2 1988 UMI

Hirano, Yutaka: *See—*
Ohashi, Kaoru; Hamada, Chiaki; Kawakami, Hiroshi; Hirano, Yutaka; and Murakami, Zensaku, 4,761,022, Cl. 280-772.000

Hirasato, Bunji: *See—*
Mitsukuchi, Kunio; Ito, Hiromitsu; Eguchi, Isamu; Hirasato, Bunji; and Furuhata, Takashi, 4,761,523, Cl. 200-148.00B.

Hiremath, Basavaraj V.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., to United States of America, Navy. Barrier layer ceramic dielectric capacitor containing barium plumbate. 4,761,711, Cl. 361-321.000.

Hirschberger, Baldur; and Mack, Michael, to Crown Forest Industries Limited. Bag inserter. 4,760,683, Cl. 53-170.000.

Hitachi, Ltd.: *See—*
Hashiguchi, Yasuhiro; Katono, Noboru; and Shibata, Yoshihiro, 4,761,697, Cl. 360-96.500.
Horiguchi, Hiyosei; and Tezuka, Akira, 4,760,772, Cl. 98-2.010.
Kubo, Yuji; Ise, Eiichi; and Takahashi, Seietu, 4,761,542, Cl. 235-379.000.
Matsushita, Hajime; Yabe, Ryohei; Kurimura, Masaaki; and Yokobayashi, Toshiaki, 4,761,075, Cl. 356-39.000.
Nikaido, Hideyuki; Naoi, Takayuki; Komori, Atsushi; and Nihei, Mitsuo, 4,760,728, Cl. 72-407.000.
Sakai, Tatsuya; and Ishikawa, Sakou, 4,761,757, Cl. 364-761.000.
Tano, Shunichi; Funabashi, Motohisa; Masui, Shoichi; and Sakaguchi, Seiji, 4,761,746, Cl. 364-513.000.
Teraoka, Wataru, 4,761,626, Cl. 335-16.000.
Watanabe, Masatoshi; Takahashi, Miyoshi; Sato, Masaki; Ito, Motoya; and Arai, Keiji, 4,761,581, Cl. 310-214.000.

Hitachi Maxell, Ltd.: *See—*
Sasaki, Shigeo; and Yamamoto, Osamu, 4,760,972, Cl. 242-68.500

Hitchcock, Myron H., to Figgie International, Inc. Speech recognition system based on word state duration and/or weight. 4,761,815, Cl. 381-43.000.

Hitt, Dale. Clamping device. 4,760,998, Cl. 269-138.000.

Hlava, Lorens G., to Brunswick Corporation. Cam in thumbstop for spin cast reels. 4,760,973, Cl. 242-84.20A.

Hobbs, Howard K.: *See—*
Khalil, Ezzat N.; Edwards, Michael K.; and Hobbs, Howard K., 4,761,279, Cl. 424-73.000.

Hochhauser, Arthur: *See—*
Fowler, Roscoe T.; Hochhauser, Arthur; Kaufman, Harold B., Jr.; McCarthy, John P.; and Stockler, Jerry, 4,761,128, Cl. 425-126.200

Hochtemperatur-Reaktorbau GmbH: *See—*
Schmitt, Hermann; and Schoening, Josef, 4,761,260, Cl 376-298.000

Hodges, Bonnie E. Heating boot hanger assembly. 4,760,981, Cl. 248-57.000

Hodgetts, Graham L., to Rolflor Industries, Inc. Internally mounted drive mechanism for a belt-winding drum. 4,760,971, Cl. 242-67.10R.

Hoechst Aktiengesellschaft: *See—*
Siegel, Herbert; Weiss, Erwin; and Berger, Harald, 4,761,251, Cl. 260-543.00P
Siegel, Herbert; Weiss, Erwin; and Berger, Harald, 4,761,252, Cl 260-543.00P

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Glamkowski, Edward J.; and Chiang, Yulin, 4,761,411, Cl. 514-219.000.
Glamkowski, Edward J.; and Chiang, Yulin, 4,761,412, Cl. 514-219.000.

Hoeffkes, Horst: *See—*
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fues, Johann F., 4,761,249, Cl. 252-528.000.

Hoenig, Eckhardt, to Siemens Aktiengesellschaft. Apparatus for measuring weak magnetic fields having a DC-SQUID array and gradiometer array. 4,761,611, Cl. 324-248.000.

Hoesch Maschinenfabrik Deutschland AG: *See—*
Gehrig, Heinz, 4,761,027, Cl. 294-61.000.

Hokko Chemical Industry Co., Ltd.: *See—*
Umeno, Masayuki; and Takita, Satoshi, 4,761,493, Cl. 568-11.000.

Holbrook, Walter R.: *See—*
Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, 4,761,788, Cl. 372-36.000.

Holland, G. Neil; and Stauber, John R., to Picker International, Inc. Programmable eddy current correction. 4,761,612, Cl. 324-307.000.

Holler, H. Stanford. Method and apparatus for lower back manipulation. 4,760,841, Cl. 128-52.000.

Hollis, David L.; and Reynolds, John L., III, to U.S. Holding Company, Inc. Constant power telephone line circuit. 4,761,812, Cl. 379-413.000.

Holmes, Buddy L., to United States of America, Air Force. Interrupt control switch interface system. 4,761,762, Cl. 364-900.000.

Holmes, Kenneth E. Therapeutic traction device. 4,760,842, Cl. 128-75.000

Holset Engineering Company Limited: *See—*
Franklin, Philip C.; and Ogburn, Alan P., 4,761,608, Cl. 324-202.000.

Honda Giken Kogyo K.K.: *See—*
Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, 4,760,761, Cl. 74-867.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, 4,760,899, Cl. 188-181.00A.
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000

Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,760,822, Cl. 123-325.000.
Saga, Toshihiko; Inao, Akitaka; and Fujii, Kenji, 4,761,192, Cl. 148-152.000.
Sakurai, Hidetoshi, 4,760,824, Cl. 123-339.000
Tanaka, Akira, 4,760,733, Cl. 73-35.000.
Yasuoka, Akimasa; Kiuchi, Takeo; and Iwata, Takahiro, 4,760,823, Cl. 123-339.000.

Honeywell Bull Inc.: *See—*
Ng, Alvan W.; and Fisher, Edwin P., 4,761,730, Cl. 364-200.000

Honeywell Inc.: *See—*
Davis, Lawrence P., 4,760,996, Cl. 267-122.000.
Golke, Keith W.; and Rabe, Robert L., 4,761,571, Cl. 307-468.000.

Hong Kong Yung Hong Trading Co., Ltd.: *See—*
Lautenberger, Carl; and Samo, Harvey W., 4,761,150, Cl. 446-345.000.

Honjo, Takeshi: *See—*
Hayakawa, Kimiaki; Sayama, Hideaki; Kitahara, Makoto; and Honjo, Takeshi, 4,761,001, Cl. 271-3.100.

Hooten, Anthony D.: *See—*
Duvall, Keith E.; Hooten, Anthony D.; O'Quin, John C., III; and Smith, Todd A., 4,761,737, Cl. 364-300.000

Hopfensperger, Reinhold, to Standard Elektrik Lorenz AG. Axial-flow fan. 4,761,115, Cl. 415-119.000.

Hopper, Randy W. FRP (fiber reinforced plastic) transom reinforcement. 4,760,811, Cl. 114-65.00R.

Hori, Fumihisa, to Alps Electric Co., Ltd. Printer with rotating hammers. 4,760,785, Cl. 101-93.280.

Hori, Fumihisa, to Alps Electric Co., Ltd. Multicolor inking mechanism for a printer. 4,760,787, Cl. 101-205.000.

Hori, Kenjiro: *See—*
Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, 4,761,662, Cl. 346-108.000

Horiguchi, Hiyosei; and Tezuka, Akira, to Hitachi, Ltd. Vehicle air-conditioning control apparatus. 4,760,772, Cl. 98-2.010.

Horton, Edwin T.; and Heimbuch, William G., to Satellite Technology Services, Inc. Polarity switch for satellite television receiver. 4,761,827, Cl. 455-277.000

Hose, John: *See—*
Bachner, Jerry G.; Bachner, Larry G.; and Hose, John, 4,761,156, Cl. 493-133.000.

Hoskins, Robert W., to McCormick & Company, Inc. Method and apparatus for handling shaped food product. 4,760,775, Cl. 99-353.000

Hosoi, Noriyuki; and Hatakeyama, Akira, to Fuji Photo Film Co., Ltd. Electrostatographic encapsulated toner. 4,761,358, Cl. 430-109.000.

Hosoya, Manabu: *See—*
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000

Hosten, Daniel, to Siemens Aktiengesellschaft. Treatment facility particularly for printed circuit boards to be treated while in a horizontal plane. 4,761,213, Cl. 204-198.000.

Hotz, Jean-Marie: *See—*
Mock, Elmar; and Hotz, Jean-Marie, 4,760,714, Cl. 63-3.000.

Houghton, Harry E., to Automotion Incorporated. Sorter conveyor. 4,760,908, Cl. 198-365.000

House Food Industrial Company Limited: *See—*
Sugisawa, Ko; Shibuki, Masaru; Yamaguchi, Noriaki; and Nakano, Maki, 4,761,297, Cl. 426-618.000

Houser, Kevin L.: *See—*
Piatt, Michael J.; and Houser, Kevin L., 4,761,665, Cl. 346-140.00R

Howard, Sheldon. Time code telephone security access system. 4,761,808, Cl. 329-95.000.

Hoya Corporation: *See—*
Komiya, Shigeo; Tarumi, Niro; and Futamura, Hideyuku, 4,761,438, Cl. 523-106.000
Tokida, Minoru; Izumitani, Tetsuro; Yamashita, Toshiharu; and Miura, Kiyotaka, 4,761,387, Cl. 501-40.000.

Hoyer, Daniel P.: *See—*
Whitescarver, Olin D.; Kwan, Jonathan T.; Chan, M. Kenneth; and Hoyer, Daniel P., 4,761,182, Cl. 106-98.000.

Hsia, Victor K.: *See—*
Preston, Corlis E.; and Hsia, Victor K., 4,760,649, Cl. 33-333.000.

Hsieh, C. Richard: *See—*
Beret, Samil; Yu, S. Gary; and Hsieh, C. Richard, 4,761,220, Cl. 208-59.000

Huang, Kung-Hsiung. Propulsion of scooters. 4,761,014, Cl. 280-258.000.

Huben, Aart P.: *See—*
Patron, Christian S. A. E.; and Huben, Aart P., 4,761,618, Cl. 331-167.000

Hubner, Klemens: *See—*
Heynisch, Hinrich; Hubner, Klemens; Kruger, Hans; and Weber, Hubert, 4,761,787, Cl. 372-34.000

Hucke, Edward E., to Union Oil Company. Densified carbonaceous bodies with improved surface finishes. 4,761,272, Cl. 423-445.000.

Huet, Roger; and Perrier, Philippe, to Aluminum Company of America. Armor elements and method. 4,760,611, Cl. 2-2.500.

Hufstetler, Patrick A.; and Hynds, James E., to Hynds, James E. Method and apparatus for electrostatic spray coating. 4,761,299, Cl. 427-27.000

Huggins, Peter D., to Iten Industries. Holders for bingo supplies. 4,761,008, Cl. 273-148.00R.

Hughes Aircraft Company: *See—*
Underwood, George D., 4,761,801, Cl. 377-33.000.

Hughes, Robin W.: *See—*
Koopmans, Robert; and Hughes, Robin W., 4,760,741, Cl 73-784.000

Hughes, Thomas E., to Coleman Company, Inc., The. Sling assembly for bows, rifles, and the like. 4,760,944, Cl. 224-205.000.

Hui, Joseph Y. N., to Massachusetts Institute of Technology. Coder-packetizer for random accessing in digital communication with multiple accessing. 4,761,778, Cl. 370-46.000.

Hujar, Robert M.: *See—*
Darcangelo, Charles M.; Hujar, Robert M.; Schmitt, Paul S.; and Shafer, Harold G., Jr., 4,760,672, Cl. 51-284.00R

Hulsmann, Norbert, to Beisler GmbH. Device and method for forming a piped opening in a garment. 4,760,808, Cl. 112-68.000.

Hune, Ronald G.: *See—*
Elliott, Lynn T.; and Hune, Ronald G., 4,760,989, Cl. 251-129.030

Hung, Paul L. K.; and Tseng, Kenneth K. S., to M&T Chemicals Inc UV curable compositions for making improved solder mask coatings. 4,761,363, Cl. 430-284.000.

Hunt, Alexander, III; and Myer, John M., to AMP Incorporated. Mounting means for rack and panel connector. 4,761,144, Cl. 439-545.000

Huntzinger, Gregory G., to Tektronix, Inc. System for providing data communication between a computer terminal and a plurality of concurrent processes running on a multiple process computer 4,761,642, Cl. 340-721.000.

Hurst, Michael H.: *See—*
Ball, Graham J.; Hart, William B.; and Hurst, Michael H., 4,760,939, Cl. 222-23.000.

Husbands, G. E.; Yardley, John P.; and Muth, Eric A., to American Home Products Corporation. Substituted phenylacetamides. 4,761,501, Cl. 564-167.000.

Husson, Frank D., Jr.; and Walter, Kathleen E., to Quantum Materials Inc. Silver-glass paste with poly-modal flake size distribution and quick dry vehicle. 4,761,224, Cl. 106-1.140.

Hutchinson, Clyde A., III: *See—*
Edgell, Marshall H.; Nordeen, Steven K.; and Hutchinson, Clyde A., III, 4,761,367, Cl. 435-6.000

Huynh, Tan D., to Veglia. On board indicator for motor vehicles. 4,760,736, Cl. 73-430.000

Hwang, Shih-Ming. Main battery disconnection alarm and headlight warning circuit. 4,761,631, Cl. 340-52.00D.

Hydro-Ergon Corporation: *See—*
Hilaris, John A., 4,761,039, Cl. 299-39.000

Hynds, James E.: *See—*
Hufstetler, Patrick A.; and Hynds, James E., 4,761,299, Cl 427-27.000

Hynninen, Pertti K., to Kamyr AB. Method of treatment of the circulation water of a paper mill. 4,761,238, Cl. 210-725.000

I.G.G. Electronics Canada Inc.: *See—*
Gauthier, Richard, 4,761,147, Cl. 439-607.000.

Ichihara, Eiichi: *See—*
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000.

Ichihashi, Mitsuyoshi: *See—*
Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, 4,761,246, Cl. 252-299.680

Ichino, Kouji, to Kaijo Kenki Co., Ltd. Ultrasonic transmit-receive probe. 4,760,739, Cl. 73-661.000

Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; Inoue, Akio; and Takehara, Osamu, to Sanyo Electric Co., Ltd. Method for processing defective fuel cells in fuel cell stacks. 4,761,350, Cl. 429-49.000

Igarashi, Osamu: *See—*
Akama, Toyohiko; Iino, Masashi; and Igarashi, Osamu, 4,761,044, Cl. 312-110.000

Igarashi, Sadao; and Ueno, Moriaki, to Alps Electric Co., Ltd. Microwave band-pass filter. 4,761,624, Cl. 333-206.000

Igarashi, Yoshinori: *See—*
Sasaki, Toru; and Igarashi, Yoshinori, 4,761,557, Cl. 250-381.000

Igata, Naohiro; and Nakasato, Yoshio, to Nakasato Limited; and Igata, Naohiro. Spring copper alloy for electric and electronic parts. 4,761,265, Cl. 420-472.000.

Ignaz Vogel GmbH Co., KG: *See—*
Vogel, Ignaz, 4,761,036, Cl. 297-452.000

Iino, Masashi: *See—*
Akama, Toyohiko; Iino, Masashi; and Igarashi, Osamu, 4,761,044, Cl. 312-110.000

Iizuka, Hisao: *See—*
Moteki, Tsutomu; Yamaguchi, Kunihiro; and Iizuka, Hisao, 4,761,451, Cl. 524-505.000

Iizuka, Yo: *See—*
Okamoto, Tsuneo; Iwasaki, Takao; Iizuka, Yo; and Shiiki, Zenya, 4,761,468, Cl. 528-388.000.

Ikari, Motoo; Takada, Yuji; Yamamoto, Shintaro; Teramae, Katsuhiro; and Asai, Makio, to Matsushita Electric Works, Ltd. Optical displacement measuring system with nonlinearity correction. 4,761,546, Cl. 250-201.000

Ikeda, Isao: *See—*
Komatsu, Michiyasu; and Ikeda, Isao, 4,761,339, Cl. 428-446.000

Ikeda, Yoshiaki: *See—*
Okada, Hiroo; Ikeda, Yoshiaki; and Morota, Makie, 4,761,773, Cl 369-44.000

Ikekawa, Tetsuro; Shimada, Fumitake; Cyong, Jong-Chol; and Uebaba, Kazuo, to SS Pharmaceutical Co., Ltd. 13-propylberberine salts 4,761,477, Cl. 546-48.000

Imaizumi, Hisaakira: *See—*
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J

Imanaka, Yoshihiko: *See—*
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000

Imdec S.R.L.: *See—*
Silvestrini, Jesus A.; Barbier, Jose E.; and Morsucci, Juan C., 4,760,780, Cl. 99-584.000

ImmunoMed Corporation: *See—*
Scherr, George H., 4,761,281, Cl. 424-88.000

INA Walzlager Schaeffler KG: *See—*
Frank, Hubertus; and Nagengast, Andreas, 4,761,820, Cl 384-520.000

Inaba, Tsutomu: *See—*
Matsugi, Tetsuzo; Inaba, Tsutomu; and Kobayashi, Norihide, 4,761,122, Cl. 418-55.000

Inagaki, Mitsuo; Iwanami, Shigeki; Sasaya, Hideaki; and Nakano, Hiromichi, to Nippon Soken, Inc. Twin-shaft multi-lobed type hydraulic device. 4,761,125, Cl. 418-201.000

Inagaki, Yoshio: *See—*
Sasaoka, Senzo; Moriuchi, Shigenori; Kameoka, Kimitaka; Katoh, Kazunobu; and Inagaki, Yoshio, 4,761,362, Cl. 430-267.000

Inamed Development Company: *See—*
Petit, Michael G., 4,760,837, Cl. 128-1.00R

Inao, Akitaka: *See—*
Saga, Toshihiko; Inao, Akitaka; and Fujii, Kenji, 4,761,192, Cl 148-152.000

Inco Alloys International, Inc.: *See—*
Smith, Gaylord D., 4,761,190, Cl. 148-11.50R

Incorema: *See—*
Bobak, Tadeusz, 4,760,613, Cl. 4-247.000

Industrial Technology Research Institute: *See—*
Chen, Stephen G. L., 4,761,710, Cl. 361-286.000

Inertia Dynamics, Inc.: *See—*
Nyquist, Stephen, 4,760,898, Cl. 188-161.000

Ing. Alfred Schmidt GmbH: *See—*
Ganzmann, Herbert; and Pastari, Gunther, 4,760,657, Cl. 37-232.000

Ingersoll-Rand Company: *See—*
Sowards, Brian D.; and Emilson, Frederick H., 4,761,123, Cl. 418-89.000

Inoue, Akio: *See—*
Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; Inoue, Akio; and Takehara, Osamu, 4,761,350, Cl 429-49.000

Inoue, Fuyuhiko: *See—*
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000

Inoue, Hiromichi: *See—*
Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, 4,761,246, Cl. 252-299.680.

Inoue, Michiya; and Satoh, Junichi, to Fanuc Ltd. Input circuit for converting contact signal into a voltage signal. 4,761,566, Cl 307-262.000

Inoue, Nobuya: *See—*
Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; Inoue, Akio; and Takehara, Osamu, 4,761,350, Cl. 429-49.000

Intel Corporation: *See—*
Hallenbeck, Kirby S.; and Palley, Lawrence S., 4,761,647, Cl 340-825.220

Inter Innovation AB: *See—*
Lundblad, Leif; Persson, Olof L.; Swegen, Hans B. A.; and Zettergren, Hans, 4,760,923, Cl. 209-534.000

International Business Machines Corporation: *See—*
Ainslie, Norman G.; Brede, Dwight W.; Erpelding, A. David; and Pattanaik, Surya, 4,761,699, Cl. 360-103.000
Angst, Tim V.; and Troupes, Demetrios, 4,761,085, Cl. 400-323.000
Calvignac, Jean; and Secondo, Pierre, 4,761,781, Cl. 370-94.000
Choquet, Michel; Staton, James B., III; and Swartz, Kenneth R., 4,761,646, Cl. 340-825.520.
Clark, Brian E.; Lawlor, Francis D.; Schmidt-Stumpf, Werner E.; Stewart, Terrence J.; and Timms, George D., Jr., 4,761,785, Cl 371-51.000
Duvall, Keith E.; Hooten, Anthony D.; O'Quin, John C., III; and Smith, Todd A., 4,761,737, Cl. 364-300.000
Elias, Kenneth L.; Martin, Stuart R.; and Slattery, William J., 4,761,332, Cl. 428-325.000
Ross, John M.; and Woodworth, George K., 4,761,563, Cl 307-87.000

International Minerals & Chemical Corp.: *See—*
Martin, Jerome L.; Bright, David R.; Williams, Robert D.; and Young, Vernon V., 4,761,426, Cl. 514-460.000
Shalati, Mohamad D.; and Viswanathan, Ravi, 4,761,289, Cl 424-468.000

International Paper Company: *See—*
Wachter, Richard G.; and Schillaci, Rosario J., 4,760,952, Cl 229-127.000

International Paper Company Incorporated: *See—*
Northgrave, Randall B., 4,760,922, Cl. 206-600.000

VOL 1093 ISS 1 AG 2 1988 UMI

Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, to Chisso Corporation. Optically active azoxy compound and liquid crystal composition. 4,761,246, Cl. 252-299.680.

Inuki, Hisao: *See*—
Masuda, Yoshihisa; Inuki, Hisao; and Takahashi, Kozo, 4,761,650, Cl. 342-26.000.

Ise, Eiichi: *See*—
Kubo, Yuji; Ise, Eiichi; and Takahashi, Seietu, 4,761,542, Cl. 235-379.000.

Isella, Thomas: *See*—
Sigl, Alfred; and Isella, Thomas, 4,760,893, Cl. 180-197.000.

Ishibashi, Hiromichi; Tanaka, Shinichi; Shimizu, Ryosuke; Kuwamoto, Makoto; and Yamamoto, Hajime, to Matsushita Electric Industrial Co., Ltd. Optical disc drive apparatus. 4,761,774, Cl. 369-44.000.

Ishii, Hidehiro: *See*—
Yoshida, Masayuki; Ueda, Izumi; Ishii, Hidehiro; Shiba, Takahumi; and Nakajima, Fumihiro, 4,761,692, Cl. 358-335.000.

Ishikawa, Hiroaki, to Ishikawa Industry Co., Ltd. Automatic efficiency tracing method and its apparatus. 4,761,555, Cl. 250-328.000.

Ishikawa Industry Co., Ltd.: *See*—
Ishikawa, Hiroaki, 4,761,555, Cl. 250-328.000.

Ishikawa, Sakou: *See*—
Sakai, Tatsuya; and Ishikawa, Sakou, 4,761,757, Cl. 364-761.000.

Ishimori, Akira; Yamamoto, Takashi; and Kinoshita, Tsuyoshi, to Mitsubishi Denki Kabushiki Kaisha. Infrared fiber cable. 4,761,054, Cl. 350-96.260.

Ishimura, Hidekazu: *See*—
Otsuka, Masahiko; and Ishimura, Hidekazu, 4,761,460, Cl. 525-504.000.

Isobe, Masakazu: *See*—
Aoki, Tadashi; Ashikaga, Tadatoshi; Kuno, Hiroshi; Isobe, Masakazu; and Ohhira, Hideaki, 4,760,709, Cl. 62-324.600.

Isochem S.A.: *See*—
Wirth, Didier; Gibert, Dominique; and Boutin, Annie, 4,761,495, Cl. 560-41.000.

Iten Industries: *See*—
Huggins, Peter D., 4,761,008, Cl. 273-148.00R.

Ito, Akinori: *See*—
Kondo, Shiro; Akazawa, Michutada; and Ito, Akinori, 4,760,877, Cl. 165-24.000.

Ito, Hiromitsu: *See*—
Mitsukuchi, Kunio; Ito, Hiromitsu; Eguchi, Isamu; Hirasato, Bunji; and Furuhata, Takashi, 4,761,523, Cl. 200-148.00B.

Ito, Katsuo; Yamamoto, Takami; and Kinoshita, Kazunori, to Murata Manufacturing Co., Ltd. Mounting structure for electronic parts. 4,761,712, Cl. 361-429.000.

Ito, Kenzo: *See*—
Hanabusa, Kazunori; Yamagishi, Nobutoshi; and Ito, Kenzo, 4,761,742, Cl. 364-443.000.

Ito, Motoya: *See*—
Watanabe, Masatoshi; Takahashi, Miyoshi; Sato, Masaki; Ito, Motoya; and Arai, Keiji, 4,761,581, Cl. 310-214.000.

Itoh, Kunio; Fukushima, Motoo; and Nakamura, Tsutomu, to Shin-Etsu Chemical Co., Ltd. Oil-resistant rubber composition. 4,761,452, Cl 524-521.000.

ITT Aerospace Optical: *See*—
Griswold, Stanley R., Jr.; and Mussatti, Bryan G., 4,761,798, Cl. 375-59.000.

ITT Defense Communications: *See*—
Dunn, James; Sanford, Charles; and Kadin, Joseph, 4,761,796, Cl 375-1.000.

Iuni, Peter. Light bulb organizer and storage device. 4,760,926, Cl 211-13.000.

Iwai, Itsuo: *See*—
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000.

Iwai, Masanori: *See*—
Kobashi, Teruhisa; Kobashi, Ichiro; and Iwai, Masanori, 4,760,804, Cl. 111-7.000.

Iwanami, Shigeki: *See*—
Inagaki, Mitsuo; Iwanami, Shigeki; Sasaya, Hideaki; and Nakano, Hiromichi, 4,761,125, Cl. 418-201.000.

Iwasaki, Takao: *See*—
Okamoto, Tsuneo; Iwasaki, Takao; Iizuka, Yo; and Shiiki, Zenya, 4,761,468, Cl. 528-388.000.

Iwata, Takahiro: *See*—
Yasuoka, Akimasa; Kiuchi, Takeo; and Iwata, Takahiro, 4,760,823, Cl. 123-339.000.

Iwata, Toshiharu: *See*—
Shimada, Shiro; Haraguchi, Hiroshi; and Iwata, Toshiharu, 4,760,828, Cl. 123-425.000.

Izatt, James: *See*—
Clark, Morris; Lawson, Kenneth; and Izatt, James, 4,761,684, Cl. 358-86.000.

Izumi, Sachihiro, to Alps Electric Co., Ltd. Communication device. 4,761,830, Cl. 455-343.000.

Izumisawa, Hiroyuki, to NEC Corporation. Vector processing apparatus. 4,761,753, Cl. 364-736.000.

Izumitani, Tetsuro: *See*—
Tokida, Minoru; Izumitani, Tetsuro; Yamashita, Toshiharu; and Miura, Kiyotaka, 4,761,387, Cl. 501-40.000.

J. I. Case Company: *See*—
Smith, Wayne G.; Martinez, David V.; Mozingo, Robert E.; and Hanson, Charles B., 4,761,113, Cl. 414-732.000.
Wagenbach, Gerald L., Jr., 4,761,152, Cl. 464-176.000.

J. R. Simplot Company: *See*—
Hamann, Michael L.; and Guidinger, Nicholas C., 4,761,294, Cl. 426-438.000.

Jabs, Gert: *See*—
Dahm, Manfred; Jabs, Gert; Koglin, Bernd; and Schnoring, Hildegard, 4,761,255, Cl. 264-4.700.

Jackson, Keith L.; Polley, Richard B.; and Schmitt, Dallas L., to GSI Engineering, Inc. Lightweight railway vehicle truck. 4,760,799, Cl. 105-182.100.

Jacobs, Erwin: *See*—
Neppl, Franz; Jacobs, Erwin; Winnerl, Josef; and Mazure-Espejo, Carlos-Alberto, 4,761,384, Cl. 437-029.000.

Jacobs, Eugene F., to Concrete Protection Systems, Inc. Composition and method for the production of chemical resistant non-porous plastic flooring. 4,761,313, Cl. 427-407.100.

Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., to Danfoss A/S. Thermostatic servo-motor, particularly for valves. 4,760,699, Cl. 60-531.000.

Jaffe, Fred: *See*—
Toy, Arthur D. F.; and Jaffe, Fred, 4,761,271, Cl. 423-265.000.

Jaggard, James F. R.; Werner, Rainer A.; and Gruber, Wolfgang, to BASF Aktiengesellschaft. Preparation of homopolymers and copolymers of propylene by means of a Ziegler-Natta catalyst system. 4,761,461, Cl. 526-125.000.

Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, to BASF Aktiengesellschaft. Herbicidal cyclohexanol derivatives, compositions, and method of use therefor. 4,761,172, Cl. 71-88.000.

Jahn, Dieter: *See*—
Gramltch, Walter; Siegel, Hardo; and Jahn, Dieter, 4,761,489, Cl. 549-347.000.
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000.

Janda, Elaine R.: *See*—
Christner, Susan A.; and Janda, Elaine R., 4,760,933, Cl. 220-86.00R.

Janssens, Robert F.: *See*—
Tavernier, Serge M.; De Roo, Pierre R.; Mampaey, Jozef L.; and Janssens, Robert F., 4,761,357, Cl. 430-32.000.

Jansson, Kjell-Ove L.; Liljeblad, Lars E.; and Liljekvist, Bernt S., to Santrade Limited. Drill element for percussion drilling. 4,760,887, Cl. 173-132.000.

Japan Steel Works, Ltd., The: *See*—
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M.

Japanese National Railways: *See*—
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M.

Jasper, Louis J., Jr., to United States of America, Army. High-power, rapid fire railgun. 4,760,769, Cl. 89-8.000.

Jaxa-Chamiec, Albert A.: *See*—
Ellames, George J.; Upton, Roger M.; Jaxa-Chamiec, Albert A.; and Myers, Peter L., 4,761,414, Cl. 514-250.000.

Jenal, Louis, to SFS Stadler Heerbrugg AG. Rust-inhibiting primer composition. 4,761,442, Cl. 524-56.000.

Jencons (Scientific) Limited: *See*—
Ball, Graham J.; Hart, William B.; and Hurst, Michael H., 4,760,939, Cl. 222-23.000.

Jenkinson, Charles B., Jr., to Milliken Research Corporation. Loom reed. 4,760,869, Cl. 139-188.00R.

Jensen, Niels D.: *See*—
Dissing, Bjarne; and Jensen, Niels D., 4,761,592, Cl. 318-471.000.

Jensen, Thomas D.: *See*—
Harney, James D.; Harris, Clark E.; and Jensen, Thomas D., 4,761,698, Cl. 360-97.000.

Jewell, John N.; and Korte, Kevin R., to Brown & Williamson Tobacco Corporation. Tobacco expansion process. 4,760,854, Cl. 131-291.000.

Jochum, Thomas A., to General Electric Company. Input switching in electronic watthour meter. 4,761,605, Cl. 324-142.000.

Jocsak, Richard W., to Fuller Company. Method and apparatus for conditioning fly ash. 4,760,856, Cl. 134-56.00R.

Johannesburg Construction Corp. Limited: *See*—
Bock, Immo E., 4,760,791, Cl. 102-200.000.

Johnson, Anderson F., Jr.: *See*—
Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, 4,761,788, Cl. 372-36.000.

Johnson, Brian D.: *See*—
Cogelia, Nicholas J.; Johnson, Brian D.; Reed, William C.; and Wilson, Carla G., 4,761,053, Cl. 350-96.230.

Johnson, Elizabeth A.: *See*—
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.

Johnson & Johnson Baby Products Company: *See*—
Clum, Charles E.; Murray, William V.; and Lukenbach, Elvin R., 4,761,275, Cl. 424-59.000.
Murray, William V.; Clum, Charles E.; and Lukenbach, Elvin R., 4,761,276, Cl. 424-59.000.

Johnson, W. Gordon. Wheel cover mounting system for dual wheels. 4,761,040, Cl. 301-37.00S

Johnson, William L.: *See*—
Politis, Constantin; Johnson, William L.; and Pflumm, Wolfgang, 4,761,263, Cl. 419-33.000.

Jones, Michael C.: *See*—
Batliwalla, Neville S.; Jones, Michael C.; Oswal, Ravinder K.; Shafe, Jeff; and Trammell, Bernadette A., 4,761,541, Cl. 219-528.000.

Jonsson, Arne, to Asea Stal Aktiebolag. Fluidized bed combustion chamber in a power plant. 4,760,817, Cl. 122-510.000.

Jouveinal S.A.: *See*—
Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, 4,761,400, Cl. 514-53.000.

Juma, Mahmud A. M. Hole saw. 4,760,643, Cl. 30-166.00A.

Jung, Johann: *See*—
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000.

Junien, Jean-Louis: *See*—
Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, 4,761,400, Cl. 514-53.000.

Juravic, Frank E., Jr., to United States of America, Energy. Gaseous leak detector. 4,761,553, Cl. 250-298.000.

K B & H, Inc.: *See*—
Harrison, Walter L., 4,760,681, Cl. 52-716.000.

kabelmetal electro Gesellschaft mit beschrankter Haftung: *See*—
Ziemek, Gerhard; Schatz, Friedrich; and Werwitzke, Lothar, 4,760,692, Cl. 57-314.000.

Kabushiki Kaisha Aiaishi: *See*—
Muramatsu, Yasuyuki; and Nakamichi, Shoji, 4,760,718, Cl. 70-18.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Katamine, Akihiko, 4,760,738, Cl. 73-644.000.
Moriyama, Hidemi, 4,760,781, Cl. 100-53.000.
Ogata, Masaru; and Takeda, Shuichi, 4,761,262, Cl. 419-10.000.
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J.

Kabushiki Kaisha Morita Seisakusho: *See*—
Yamada, Kosaku, 4,761,719, Cl. 362-135.000.

Kabushiki Kaisha Murakoshi Seiko: *See*—
Toyama, Hiroaki, 4,760,623, Cl. 16-238.000.

Kabushiki Kaisha Saginomiya Seisakusho: *See*—
Aoki, Tadashi; Ashikaga, Tadatoshi; Kuno, Hiroshi; Isobe, Masakazu; and Ohhira, Hideaki, 4,760,709, Cl. 62-324.600.

Kabushiki Kaisha Toshiba: *See*—
Komatsu, Michiyasu; and Ikeda, Isao, 4,761,339, Cl. 428-446.000.
Murakami, Hiroyasu, 4,761,772, Cl. 369-32.000.
Sagoi, Masayuki; Kawashima, Noritsugu; Tanaka, Yoichiro; and Sekine, Kunio, 4,761,334, Cl. 428-332.000.
Sato, Hideki; Mizunoya, Nobuyuki; and Nagata, Mitsuhiro, 4,761,345, Cl. 428-552.000.
Toki, Akio, 4,761,806, Cl. 379-61.000.
Watanabe, Junji; and Oushiden, Hideshi, 4,761,673, Cl. 355-14.00R.
Yahata, Mitsuru, 4,761,804, Cl. 378-109.000.
Yamaguchi, Toru, 4,760,896, Cl. 187-124.000.

Kabushikigaisha Tokyo Kikai Seisakusho: *See*—
Shiba, Noriyuki; and Kawata, Tomoshi, 4,760,857, Cl. 134-144.000.

Kadar, Sandor. Boot lifter for elderly and handicapped. 4,760,942, Cl. 223-114.000.

Kade, Alexander: *See*—
Agarwal, Paul D.; and Kade, Alexander, 4,761,741, Cl. 364-426.000.

Kadin, Joseph: *See*—
Dunn, James; Sanford, Charles; and Kadin, Joseph, 4,761,796, Cl. 375-1.000.

Kagawa, Masahiro: *See*—
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.

Kaijo Kenki Co., Ltd.: *See*—
Ichino, Kouji, 4,760,739, Cl. 73-661.000.

Kaiser Aerospace and Electronics Corporation: *See*—
Evans, Charles D.; Tirums, Andrew T.; Larkin, Eric W.; and Melzer, James E., 4,761,056, Cl. 350-174.000.

Kaiser Aluminum & Chemical Corporation: *See*—
Bruski, Richard S., 4,761,266, Cl. 420-528.000.

Kaiser, Carl; Kruse, Lawrence I.; and Ross, Stephen T., to SmithKline Beckman Corporation. P-toluene-sulfonyl-oxy substituted pyridines 4,761,480, Cl. 546-294.000.

Kakuishi, Yutaka; Masuyama, Kenichi; Fujiyama, Masaaki; and Okutu, Toshimitu, to Fuji Photo Film Co., Ltd. Process for the preparation of magnetic paint. 4,761,243, Cl. 252-62.540.

Kamehara, Nobuo: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000.

Kameoka, Kimitaka: *See*—
Sasaoka, Senzo; Moriuchi, Shigenori; Kameoka, Kimitaka; Katoh, Kazunobu; and Inagaki, Yoshio, 4,761,362, Cl. 430-267.000.

Kamimori, Tadatoshi: *See*—
Nishiyama, Hisashi; Miyasaka, Seiichi; Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Yoshihara, Akihiko, 4,761,061, Cl 350-357.000.

Kaminski, Elton G., to Stolle Corporation, The. Dual ram press. 4,760,729, Cl. 72-456.000.

Kammiller, Neil, to Reliance Comm/Tec Corporation. Current sensing circuit for use with decoupled half bridge converter. 4,761,727, Cl 363-98.000.

Kamoi, Kazumi: *See*—
Moriya, Tatsuo; Aizawa, Hitomi; Natori, Kuniharu; Kamoi, Kazumi; and Yabe, Hiroshi, 4,761,771, Cl. 368-202.000.

Kamyr AB: *See*—
Hynninen, Pertti K., 4,761,238, Cl. 210-725.000.

Kanaiwa, Kiyoshi: *See*—
Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, 4,761,662, Cl 346-108.000.

Kanari, Shohei: *See*—
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.

Kanars Data Corporation: *See*—
Sekiguchi, Hiroshi, 4,761,761, Cl. 364-900.000.

Kanda, Jun: *See*—
Higashi, Hidejiro; Sato, Hiroshi; Yamamoto, Kaoru; and Kanda, Jun, 4,761,693, Cl. 360-13.000.

Kanda, Nobuo; Hirahara, Kazuko; and Kondo, Mitsuru, to Kanzaki Paper Manufacturing Co., Ltd. Heat-sensitive recording material 4,761,396, Cl. 503-209.000.

Kane, Robert C.; and Kotecki, Carl, to Motorola, Inc. Circulator/isolator resonator. 4,761,621, Cl. 333-1.100.

Kane, Robert F.: *See*—
Keller, George O.; Portugal, Joseph J.; and Kane, Robert F., 4,761,191, Cl. 148-12.00R.

Kanebo Limited: *See*—
Tomita, Yoji; and Mitsuhashi, Kenichi, 4,761,231, Cl. 210-497.100.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Matsumoto, Shigemi; and Nagoshi, Fumiya, 4,761,463, Cl 525-74.000.
Nakamura, Kyoichi, 4,761,431, Cl. 521-60.000.

Kaneko, Fumihiko; and Moriyasu, Katsuyuki, to Murata Manufacturing Co., Ltd. Wound unit of an electronic components series. 4,760,916, Cl. 206-329.000.

Kaneko, Tadashi: *See*—
Fujita, Nagahisa; Okuno, Itaru; and Kaneko, Tadashi, 4,760,826, Cl 123-399.000.

Kaneto, Shuji: *See*—
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000.

Kannegundla, Ram, to Eastman Kodak Company. CCD clock driver circuit. 4,761,565, Cl. 307-243.000.

Kanno, Yoshiaki; Nakamoto, Katsuya; and Sumitani, Jiro, to Mitsubishi Denki Kabushiki Kaisha. Fuel control apparatus for a fuel injection system of an internal combustion engine. 4,760,829, Cl. 123-488.000.

Kano, Hajime: *See*—
Kohsaka, Yasuo; Nitda, Tohru; Sato, Hisao; and Kano, Hajime, 4,761,074, Cl. 356-37.000.

Kano, Makoto: *See*—
Maki, Yoshihiro; Kano, Makoto; Fujiki, Akira; and Tanimoto, Ichiro, 4,761,344, Cl. 428-552.000.

Kansai Paint Company, Limited: *See*—
Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, 4,761,212, Cl. 204-181.100.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Kanda, Nobuo; Hirahara, Kazuko; and Kondo, Mitsuru, 4,761,396, Cl. 503-209.000.

Kappele, William D.: *See*—
Askeland, Ronald A.; Kappele, William D.; Pawlowski, Norman E.; and Stoffel, John L., 4,761,180, Cl. 106-22.000.

Kapps, Manfred: *See*—
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.

Karanewsky, Donald S.: *See*—
Wachter, Michael P.; and Karanewsky, Donald S., 4,761,413, Cl 514-229.800.

Karashima, Masashi. Refrigerated showcase. 4,760,708, Cl. 62-256.000.

Karl Oexmann, Inh. Wolfgang Oexmann, Firma. *See*—
Herting, Heinrich, 4,761,293, Cl. 426-383.000.

Karol, Thomas J., to R. T. Vanderbilt Company, Inc. Terpene derivatives of 2,5-dimercapto-1,3,4-thiadiazoles and lubricating compositions containing same. 4,761,482, Cl. 548-142.000.

Karsai, Jozsef: *See*—
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000.

Kasamatsu, Taisuke, to Victor Company of Japan, Ltd. Rotary driving mechanism. 4,760,751, Cl. 74-354.000.

Kaszman, John, to Polestar Magnetronics Inc. Electric motor 4,761,590, Cl. 318-254.000.

Katamine, Akihiko, to Kabushiki Kaisha Komatsu Seisakusho. Contact medium for use in probe of ultrasonic flaw detector. 4,760,738, Cl 73-644.000.

Katayanagi, Shinichi; and Mori, Taro, to Suga Test Instruments Co., Ltd. Optical deterioration-accelerating weather and optical resistance testing apparatus. 4,760,748, Cl. 73-865.600.

VOL
1093
ISS
1
AG
2
1988
UMI

Katcher, Jay H.: *See—*
Schara, Robert E.; and Katcher, Jay H., 4,761,186, Cl. 127-71.000.
Kato, Hisakazu: *See—*
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000.
Kato, Masuhiro: *See—*
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000.
Katoh, Hideo: *See—*
Hamano, Hisashi; Hasegawa, Kinji; Noumi, Yoshihiro; and Katoh, Hideo, 4,761,327, Cl. 428-220.000.
Katoh, Kazunobu: *See—*
Sasaoka, Senzo; Moriuchi, Shigenori; Kameoka, Kimitaka; Katoh, Kazunobu; and Inagaki, Yoshio, 4,761,362, Cl. 430-267.000.
Katono, Noboru: *See—*
Hashiguchi, Yasuhiro; Katono, Noboru; and Shibata, Yoshihiro, 4,761,697, Cl. 360-96.500.
Katsuno, Hisashi; Murakawa, Takashi; and Yoneda, Toshikazu, to Research Association for Utilization of Light Oil. Catalyst for the production of aromatic hydrocarbons and process for the production of aromatic hydrocarbons using said catalyst. 4,761,512, Cl. 585-417.000.
Katz, Murray: *See—*
Kunz, H. Russell; Guthrie, Robin J.; and Katz, Murray, 4,761,348, Cl. 429-35.000.
Katzy, Klaus: *See—*
Hauptfleisch, Lindo; and Katzy, Klaus, 4,761,589, Cl. 318-51.000.
Kaufman, Harold B., Jr.: *See—*
Fowler, Roscoe T.; Hochhauser, Arthur; Kaufman, Harold B., Jr.; McCarthy, John P.; and Stockler, Jerry, 4,761,128, Cl. 425-126.200.
Kaufmann, Frank H.; Kramer, Charles F.; Grigsby, James D.; and Root, Stephen J., to Steel Heddle Manufacturing Corp. Drawing-in of heddles remote from a loom harness frame. 4,760,628, Cl 28-201.000
Kawaguchi, Takeshi: *See—*
Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, 4,760,899, Cl. 188-181.00A.
Kawai, Taneichi; and Murakami, Yuichi, to Aisin Seiki Kabushikikaisha. Data transmission system. 4,761,644, Cl. 340-825.310.
Kawakami, Hiroshi: *See—*
Ohashi, Kaoru; Hamada, Chiaki; Kawakami, Hiroshi; Hirano, Yutaka; and Murakami, Zensaku, 4,761,022, Cl. 280-772.000.
Kawakami, Shigenobu: *See—*
Shimizu, Isoo; Matsumura, Yasuo; Kawakami, Shigenobu; and Sato, Atsushi, 4,761,508, Cl. 585-25.000.
Kawasaki Steel Corporation: *See—*
Naruse, Yoshihiro; and Suzuki, Toshihide, 4,761,510, Cl. 585-268.000.
Nikaido, Hideyuki; Naoi, Takayuki; Komori, Atsushi; and Nihei, Mitsuo, 4,760,728, Cl. 72-407.000.
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.
Kawase, Tetsunari: *See—*
Kobayashi, Yoshihiro; and Kawase, Tetsunari, 4,761,356, Cl. 429-242.000.
Kawashima, Noritsugu: *See—*
Sagoi, Masayuki; Kawashima, Noritsugu; Tanaka, Yoichiro; and Sekine, Kunio, 4,761,334, Cl. 428-332.000.
Kawata, Ken: *See—*
Ozaki, Hiroyuki; Hirai, Hiroyuki; and Kawata, Ken, 4,761,361, Cl. 430-203.000.
Kawata, Tomoshi: *See—*
Shiba, Noriyuki; and Kawata, Tomoshi, 4,760,857, Cl. 134-144.000.
Kawato, Yutaka: *See—*
Nara, Takashi; Takeichi, Hiroaki; Morita, Yoshio; Hatano, Takashi; and Kawato, Yutaka, 4,761,779, Cl. 370-58.000.
Keil, Michael: *See—*
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000.
Keller Engineering Co. Inc: *See—*
Keller, Paul, 4,760,807, Cl. 111-92.000.
Keller, George O.; Portugal, Joseph J.; and Kane, Robert F., to TRW Inc. Method of forming closely sized openings. 4,761,191, Cl. 148-12.00R.
Keller, Paul, to Keller Engineering Co. Inc. Hand pressure operated seed planter. 4,760,807, Cl. 111-92.000.
Kemp, Richard A.: *See—*
Kluttz, Robert Q.; Kemp, Richard A.; and Ryan, Robert C., 4,761,448, Cl. 524-381.000.
Kennecott Corporation: *See—*
Nunlist, Erwin J., 4,761,025, Cl. 285-114.000.
Keptel, Inc.: *See—*
Perry, Steven B., 4,761,810, Cl. 379-181.000.
Kerger, Leon; Kremer, Paul; and Schmitz, Jean-Claude, to Ceodeux S.A. Diaphragm valve. 4,760,990, Cl. 251-335.200.
Kernforschungszentrum Karlsruhe GmbH: *See—*
Politis, Constantin; Johnson, William L.; and Pflumm, Wolfgang, 4,761,263, Cl. 419-33.000.
Kerr Manufacturing Company: *See—*
Madhavan, Narayanan; Groh, Carole L.; and Probst, Robert L., 4,761,136, Cl. 433-214.000.
Kerr-McGee Chemical Corporation: *See—*
Clift, V. Stanley, 4,761,248, Cl. 252-527.000.
Kerrey, John S.; and Smith, John H., to Westinghouse Electric Corp. Reduced stress fuel assembly fabrication apparatus and method. 4,760,637, Cl. 29-723.000.
Ketraro, Reuven: *See—*
Linder, Charles; Perry, Mordechay; and Ketraro, Reuven, 4,761,233, Cl. 210-500.370.
Kettenring, Gerhard: *See—*
van den Beld, Paul Christiaan H.; Kettenring, Gerhard; Greulich, Bodo; and Schmitz, Gunther, 4,760,935, Cl. 220-307.000.
Khalil, Ezzat N.; Edwards, Michael K.; and Hobbs, Howard K., to Eastman Kodak Company. Shaving cream formulations. 4,761,279, Cl. 424-73.000.
Khinkis, Mark J., to Combustion Tec, Inc. Oxygen enriched combustion. 4,761,132, Cl. 431-10.000.
Khoshnevisan, Mohsen: *See—*
Yeh, Pochi A.; Ewbank, Mark D.; and Khoshnevisan, Mohsen, 4,761,059, Cl. 350-354.000.
Kida, Hideo: *See—*
Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, 4,760,686, Cl. 56-15.800.
Kiely, John S.: *See—*
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.
Kim, Wonky; and Choi, Taeyoung. Ultrasonic binaural sensory aid for a blind person. 4,761,770, Cl. 367-116.000.
Kimberley, John A.: *See—*
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000.
Kimberly-Clark Corporation: *See—*
Enloe, Kenneth M., 4,761,258, Cl. 264-518.000.
Raley, John M., 4,761,322, Cl. 428-198.000.
Kimura, Hiroyuki: *See—*
Sugai, Yoshiro; and Kimura, Hiroyuki, 4,761,814, Cl. 381-13.000.
Kimura, Keita: *See—*
Takatsu, Norihiko; and Kimura, Keita, 4,761,689, Cl. 358-213.220.
Kimura, Shigeki: *See—*
Kobori, Takeshi; and Kimura, Shigeki, 4,761,241, Cl. 252-32.500.
King Jim Co., Ltd.: *See—*
Ominato, Kiyoshi; and Mizutani, Satoshi, 4,761,091, Cl. 402-76.000.
King, John R., to S & K Enterprises Inc. Tubular rack beam and method of making same. 4,760,682, Cl. 52-731.000.
Kinjo, Hisao: *See—*
Shudo, Katsuyuki; Kinjo, Hisao; Okano, Keigo; and Hanashiro, Yoshiaki, 4,761,694, Cl. 360-37.100.
Kinoshita, Kazunori: *See—*
Ito, Katsuo; Yamamoto, Takami; and Kinoshita, Kazunori, 4,761,712, Cl. 361-429.000.
Kinoshita, Seiichiro, to NEC Corporation. Vector processor wherein outputs of vector registers are fixedly coupled to inputs of vector calculators. 4,761,754, Cl. 364-736.000.
Kinoshita, Tsuyoshi: *See—*
Ishimori, Akira; Yamamoto, Takashi; and Kinoshita, Tsuyoshi, 4,761,054, Cl. 350-96.260.
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, to Honda Giken Kogyo Kabushiki Kaisha; and Tanaka Machine Industries Co., Ltd. Tensioner for wrapping connector transmission device for internal combustion engine. 4,761,155, Cl. 474-110.000.
Kiri, Motosada, to Shimadzu Corporation. High-contrast X-ray image detecting apparatus. 4,761,802, Cl. 378-99.000.
Kis, Gyorgy: *See—*
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000.
Kishi, Junichi: *See—*
Sakai, Kiyoshi; Fujimura, Naoto; Kishi, Junichi; and Sakakibara, Teigo, 4,761,359, Cl. 430-126.000.
Kissell, James: *See—*
Simpson, Fynlon G.; Fisher, Robert L.; and Kissell, James, 4,761,556, Cl. 250-352.000
Kitahara, Makoto: *See—*
Hayakawa, Kimiaki; Sayama, Hideaki; Kitahara, Makoto; and Honjo, Takeshi, 4,761,001, Cl. 271-3.100.
Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Yoshida, Teruaki; and Sadatoshi, Hajime, to Sumitomo Chemical Company, Limited. Packaging propylene copolymer film. 4,761,462, Cl. 526-159.000.
Kitano, Mikio: *See—*
Naruse, Kazuo; Kitano, Mikio; and Tobita, Hideaki, 4,761,533, Cl. 219-86.700
Kitchener, Anthony J.; and Cromm, Gerd, to Cash Engineering Research Pty. Ltd. Compressor system. 4,761,166, Cl. 55-385.00R.
Kiuchi, Takeo: *See—*
Yasuoka, Akimasa; Kiuchi, Takeo; and Iwata, Takahiro, 4,760,823, Cl. 123-339.000

Kliman, Gerald B.; Koegl, Rudolph A. A.; Schulz, Max W., Jr.; and Grabkowski, Stephen E., to Electric Power Research Institute, Inc. Rotor fault detector for induction motors. 4,761,703, Cl. 361-23.000.
Klimek, Joseph P.: *See—*
Finnegan, Robert D.; and Klimek, Joseph P., 4,760,966, Cl. 241-1.000.
Klimpel, Richard R.; and Hansen, Robert D., to Dow Chemical Company, The. Frothers demonstrating enhanced recovery of fine particles of coal in froth flotation. 4,761,223, Cl. 209-166.000.
Kling, Michael R., to GTE Products Corporation. Glow discharge starter containing radioactive alloy. 4,761,583, Cl. 313-54.000.
Kloeckner-Humboldt-Deutz AG: *See—*
Altdorf, Joachim, 4,760,831, Cl. 123-501.000.
Kluger, Edward W.; Moore, Patrick D.; and Burchette, Joe T., to Milliken Research Corporation. Polyalkyleneoxytrifluoromethylaniline compounds. 4,761,502, Cl. 564-442.000.
Kluttz, Robert Q.; Kemp, Richard A.; and Ryan, Robert C., to Shell Oil Company. Stabilized crystalline polymers. 4,761,448, Cl. 524-381.000.
Knodler, Reinhard; Bansemir, Werner; Mennicke, Stefan; and Steinleitner, Gunther, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,761,353, Cl. 429-104.000.
Knofel, Hartmut; Brockelt, Michael; and Wegener, Gerhard, to Bayer Aktiengesellschaft. Diisocyanates and diisocyanate mixtures based on diphenylmethane, processes for their production and their use as isocyanate component in the production of polyurethane plastics by the isocyanate polyaddition process. 4,761,498, Cl. 560-359.000.
Knox, Lewis. Method of chemical deodorization of articles and solutions used in medical and biological procedures. 4,761,159, Cl. 604-49.000
Kobashi, Ichiro: *See—*
Kobashi, Teruhisa; Kobashi, Ichiro; and Iwai, Masanori, 4,760,804, Cl. 111-7.000.
Kobashi Kogyo Co., Ltd.: *See—*
Kobashi, Teruhisa; Kobashi, Ichiro; and Iwai, Masanori, 4,760,804, Cl. 111-7.000.
Kobashi, Teruhisa; Kobashi, Ichiro; and Iwai, Masanori, to Kobashi Kogyo Co., Ltd.; and Fuji Robin Kabushiki Kaisha. Air injection cultivator. 4,760,804, Cl. 111-7.000.
Kobayashi, Masaaki: *See—*
Yamanishi, Kazuhiro; Kobayashi, Masaaki; Takeuchi, Akihiro; Ochi, Atsuo; and Nagaoka, Yoshitomi, 4,761,690, Cl. 358-310.000.
Kobayashi, Noboru, to Yamaha Hatsudoki Kabushiki Kaisha. Hull for small watercraft. 4,760,810, Cl. 114-56.000.
Kobayashi, Noboru, to Yamaha Hatsudoki Kabushiki Kaisha. Component layout for small watercraft. 4,760,814, Cl. 114-270.000.
Kobayashi, Norihide: *See—*
Matsugi, Tetsuzo; Inaba, Tsutomu; and Kobayashi, Norihide, 4,761,122, Cl. 418-55.000.
Kobayashi, Teruo: *See—*
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.
Kobayashi, Yoshihiro; and Kawase, Tetsunari, to Matsushita Electric Industrial Co., Ltd. Grid for lead storage batteries. 4,761,356, Cl. 429-242.000.
Kobayashi, Yoshihito: *See—*
Sato, Hiroshi; and Kobayashi, Yoshihito, 4,760,924, Cl. 209-573.000.
Kobori, Takeshi; and Kimura, Shigeki, to Nihon Kousakuyu Co., Ltd. Oily lubricant for cold plastic processing of metallic material. 4,761,241, Cl. 252-32.500.
Kocol, James E.: *See—*
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000.
Kodaira, Norio, to Mitsubishi Denki Kabushiki Kaisha. Off-line programming for a robot with division of the work sequence into plural jobs. 4,761,745, Cl. 364-513.000.
Kodaka, Mikio: *See—*
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.
Koeberle, Paulo G.: *See—*
Chornet, Esteban; Koeberle, Paulo G.; and Overend, Ralph, 4,761,185, Cl. 127-38.000.
Koegl, Rudolph A. A.: *See—*
Kliman, Gerald B.; Koegl, Rudolph A. A.; Schulz, Max W., Jr.; and Grabkowski, Stephen E., 4,761,703, Cl. 361-23.000.
Koenig & Bauer Aktiengesellschaft: *See—*
Barrois, Claus D.; and Dieterich, Philipp A., 4,761,003, Cl. 271-280.000.
Koglin, Bernd: *See—*
Dahm, Manfred; Jabs, Gert; Koglin, Bernd; and Schnoring, Hildegard, 4,761,255, Cl. 264-4.700.
Koh-I-Noor Rapidograph, Inc.: *See—*
Goh, Djing-San, 4,761,090, Cl. 401-259.000.
Kohl, Arthur L.; and Stewart, Albert E., to Rockwell International Corporation. Chemical recovery process using break up steam control to prevent smelt explosions. 4,761,204, Cl. 162-30.100.
Kohmi Bosai Kogyo Co., Ltd.: *See—*
Sasaki, Toru; and Igarashi, Yoshinori, 4,761,557, Cl. 250-381.000.
Kohmoto, Yujiro: *See—*
Miyai, Kiyoshi; Uotani, Shuhei; Tsunemine, Toyohiko; and Kohmoto, Yujiro, 4,761,667, Cl. 355-3.00R.
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru; Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, to Shin-Etsu Chemical Co., Ltd. Contact lens comprising triorganovinylsilane polymers. 4,761,436, Cl. 522-114.000
Kohsaka, Yasuo; Nitda, Tohru; Sato, Hisao; and Kano, Hajime, to Nihon Kagaku Kogyo Co., Ltd.; and Nomura Micro Science Co., Ltd. Method for measuring impurity concentrations in a liquid and an apparatus therefor. 4,761,074, Cl. 356-37.000.
Kojima, Jr ·pei: *See—*
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,761,392, Cl. 502-126.000
Kokusai Denshin Denwa Co., Ltd.: *See—*
Matsuzaki, Akira; and Taniguchi, Shigeki, 4,761,649, Cl. 340-850.000
Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Matsushima, Yuichi; Sakai, Kazuo; and Akiba, Shigeyuki, 4,761,383, Cl. 437-3.000.
Kolassa, Dieter: *See—*
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000
Kolb, Wolfgang: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B
Komatsu, Michiyasu; and Ikeda, Isao, to Kabushiki Kaisha Toshiba. Sintered ceramic articles and method for production thereof 4,761,339, Cl. 428-446.000.
Komiya, Shigeo; Tarumi, Niro; and Futamura, Hideyuku, to Hoya Corporation. Soft contact lens. 4,761,438, Cl. 523-106.000
Komiyama, Tohru: *See—*
Ebata, Yoshihuro; Komiyama, Tohru; Hayami, Ryozo; and Koyama, Masanori, 4,761,317, Cl. 428-67.000
Komori, Atsushi: *See—*
Nikaido, Hideyuki; Naoi, Takayuki; Komori, Atsushi; and Nihei, Mitsuo, 4,760,728, Cl. 72-407.000
Kondo, Hidetoshi: *See—*
Koshi, Taro; and Kondo, Hidetoshi, 4,761,312, Cl. 427-387.000
Kondo, Katsumi: *See—*
Nishi, Hideji; and Kondo, Katsumi, 4,761,628, Cl. 336-180.000
Kondo, Mitsuru: *See—*
Kanda, Nobuo; Hirahara, Kazuko; and Kondo, Mitsuru, 4,761,396, Cl. 503-209.000
Kondo, Shiro; Akazawa, Michitada; and Ito, Akinori, to Alps Electric Co., Ltd. Air conditioner with motor controlled door. 4,760,877, Cl. 165-24.000
Kondoh, Shiroh, to Ricoh Company, Ltd. Vibration absorption apparatus for reciprocating object. 4,760,750, Cl. 74-89.200.
Konig, Klaus: *See—*
Dietrich, Manfred; and Konig, Klaus, 4,761,434, Cl. 521-164.000.
Konishiroku Photo Industry Co., Ltd.: *See—*
Asano, Masao; Matsumoto, Kazumasa; Tsuji, Toshio; and Yasufuku, Yoshitaka, 4,761,338, Cl. 428-425.900
Koopmans, Robert; and Hughes, Robin W. Borehole dilatometer with intensifier. 4,760,741, Cl. 73-784.000.
Kopatz, Nelson E.; and Stermer, Philip E., to GTE Products Corporation. Multilayer cooling disc for use in high temperature processing. 4,760,711, Cl. 62-373.000.
Korte, Kevin R.: *See—*
Jewell, John N.; and Korte, Kevin R., 4,760,854, Cl. 131-291.000
Kosawa, Hiromi: *See—*
Yamaguchi, Takahiro; Arakawa, Norio; Ohgami, Takayuki; and Kosawa, Hiromi, 4,761,634, Cl. 340-347.0AD
Koshi, Taro; and Kondo, Hidetoshi, to Dow Corning Corporation. Waterproof, unevenly textured coating film. 4,761,312, Cl. 427-387.000.
Kotani, Matahira: *See—*
Tanaka, Hirotomi; Kotani, Matahira; and Matsumoto, Masafumi, 4,761,670, Cl. 355-4.000.
Kotecki, Carl: *See—*
Kane, Robert C.; and Kotecki, Carl, 4,761,621, Cl. 333-1.100
Kovalcheck, Steven W., to HGM Medical Laser Systems, Inc. Laser angioplasty probe. 4,760,845, Cl. 128-303.100.
Kovats, Ferenc: *See—*
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000.
Koyama, Masanori: *See—*
Ebata, Yoshihiro; Komiyama, Tohru; Hayami, Ryozo; and Koyama, Masanori, 4,761,317, Cl. 428-67.000.
Kramer, Charles F.: *See—*
Kaufmann, Frank H.; Kramer, Charles F.; Grigsby, James D.; and Root, Stephen J., 4,760,628, Cl. 28-201.000.
Kramer, Wolfgang: *See—*
Fischer, Artur; and Kramer, Wolfgang, 4,760,843, Cl. 128-92.0YF.
Krasselt, Manfred M.: *See—*
Apontoweil, Peter; and Krasselt, Manfred M., 4,761,282, Cl. 424-89.000
Kratzer, Bruce G.: *See—*
Harwood, Jon W.; Emrick, James W.; Rosa, Bruno A.; and Kratzer, Bruce G., 4,760,894, Cl. 181-282.000
Kraus, Willibald; and Weinheimer, Ute, to TRW United-Carr GmbH Closure cover. 4,761,319, Cl. 428-99.000
Kremer, Paul: *See—*
Kerger, Leon; Kremer, Paul; and Schmitz, Jean-Claude, 4,760,990, Cl. 251-335.200

VOL 1093 ISS 1 AG 2 1988 UMI

Kress Corporation: *See—*
Kress, Edward S.; Thomas, Dennis R.; and LaBerdia, William L., 4,761,108, Cl. 414-460.000

Kress, Edward S.; Thomas, Dennis R.; and LaBerdia, William L., to Kress Corporation. Low profile slab carrier. 4,761,108, Cl 414-460.000

Kridl, Thomas A.: *See—*
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., 4,761,193, Cl. 156-85.000
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., 4,761,194, Cl. 156-86.000

Krishnan, Vedavalli G.: *See—*
Srinivasagopalan, Rangarajan; Pruett, James D.; Krishnan, Vedavalli G.; and Farias, Luis V., 4,761,784, Cl. 371-43.000.

Krog, Ann M.: *See—*
Valdes, Nancy E.; Linstra, Gary, Jr.; and Krog, Ann M., 4,761,277, Cl. 424-64.000

Krolls, Uldis: *See—*
Goel, Om P.; and Krolls, Uldis, 4,761,479, Cl. 546-147.000.

Kropf, Laurent, to Medinvent S.A. Planar blank and a coil spring manufactured therefrom. 4,760,849, Cl. 128-341.000

Kropielnicki, Jerzy J.; Last, James D.; and Easter, Brian, to BSH Electronics, Ltd. Signal separating device. 4,761,826, Cl. 455-277.000

Krstovic, Dragisa. Micro-adjustable boring head. 4,761,103, Cl 408-181.000

Kruger, Hans: *See—*
Heynisch, Hinrich; Hubner, Klemens; Kruger, Hans; and Weber, Hubert, 4,761,787, Cl. 372-34.000.

Kruger, Michael: *See—*
Rodi, Anton; Grutzmacher, Berthod; and Kruger, Michael, 4,761,594, Cl. 318-490.000

Kruse, Gregory M.; and Patton, Harold P., to Fel-Pro Incorporated Torque to yield indicator and method. 4,760,746, Cl. 73-862.230.

Kruse, Lawrence I.: *See—*
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., 4,761,415, Cl. 514-252.000
Kaiser, Carl; Kruse, Lawrence I.; and Ross, Stephen T., 4,761,480, Cl. 546-294.000

Kubo, Yuji; Ise, Eiichi; and Takahashi, Seietu, to Hitachi, Ltd. Automatic money receiving and paying method and apparatus. 4,761,542, Cl. 235-379.000

Kubota, Ltd.: *See—*
Murayama, Yoshinobu, 4,760,758, Cl. 74-764.000.
Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, 4,760,686, Cl 56-15.800

Kuhlman Corporation: *See—*
Martin, Richard W.; Macemon, Herbert J.; and Fortenberry, William R., 4,761,629, Cl. 336-208.000

Kulikov, Viktor V.: *See—*
Rudnev, Ivan E.; and Kulikov, Viktor V., 4,760,762, Cl. 76-107.00R

Kulpa, Charles F.; and Sojka, Stanley A., to Occidental Chemical Corporation. Facultatively anaerobic microorganism for degrading toxic waste materials. 4,761,376, Cl. 435-262.000

Kume, Masafumi: *See—*
Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, 4,761,212, Cl. 204-181.100

Kunde, Klaus: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B

Kung, Andrew H.: *See—*
Fournier, George R., Jr.; Kung, Andrew H.; and McAninch, Jack W., 4,760,840, Cl. 128-303.100.

Kuno, Hiroshi: *See—*
Aoki, Tadashi; Ashikaga, Tadatoshi; Kuno, Hiroshi; Isobe, Masakazu; and Ohhira, Hideaki, 4,760,709, Cl. 62-324.600.

Kunz, H. Russell; Guthrie, Robin J.; and Katz, Murray, to United States of America, Energy. Electrolytic cell stack with molten electrolyte migration control. 4,761,348, Cl. 429-35.000.

Kupperman, David S., to United States of America, Energy. Procedure for flaw detection in cast stainless steel. 4,760,737, Cl. 73-622.000

Kureha Kagaku Kogy Kabushiki Kaisha: *See—*
Nishimura, Yasushi, 4,761,284, Cl. 424-125.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Okamoto, Tsuneo; Iwasaki, Takao; Iizuka, Yo; and Shiiki, Zenya, 4,761,468, Cl. 528-388.000.

Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, to Fujitsu Limited. Multilayer ceramic circuit board. 4,761,325, Cl 428-209.000

Kurihara, Masaru: *See—*
Uemura, Tadahiro; Himeshima, Yoshio; and Kurihara, Masaru, 4,761,234, Cl. 210-500.380

Kurihara, Norigi; and Sakuda, Ryutaro, to Aubex Corporation. Synthetic resin pen nib. 4,761,089, Cl. 401-198.000.

Kurimura, Masaaki: *See—*
Matsushita, Hajime; Yabe, Ryohei; Kurimura, Masaaki; and Yokobayashi, Toshiaki, 4,761,075, Cl. 356-39.000.

Kurz, Hanns: *See—*
Conrad, Hans-Jurgen; Kurz, Hanns; Martini, Helmut; and Neumann, Gerhard, 4,760,630, Cl. 29-33.00A.

Kuwamoto, Makoto: *See—*
Ishibashi, Hiromichi; Tanaka, Shinichi; Shimizu, Ryosuke; Kuwamoto, Makoto; and Yamamoto, Hajime, 4,761,774, Cl. 369-44.000

Kwak, Kyu H. Device for razor and toothbrush containing shaving cream dispensers therein. 4,760,642, Cl. 30-123.000.

Kwan, Jonathan T.: *See—*
Whitescarver, Olin D.; Kwan, Jonathan T.; Chan, M. Kenneth; and Hoyer, Daniel P., 4,761,182, Cl. 106-98.000.

Kyle, Donald J.: *See—*
Rzeszotarski, Waclaw J.; and Kyle, Donald J., 4,761,405, Cl. 514-114.000.

Kyle, Richard F., to Ace Medical Company. Cannulated screw dye injector. 4,760,844, Cl. 128-92.0YQ.

Kyowa Chemical Industry Co., Ltd.: *See—*
Miyata, Shigeo, 4,761,188, Cl. 148-6.200.

La Telemecanique Electrique: *See—*
Maillard, Jacques, 4,761,100, Cl. 408-1.00R.

Labedz, Gerald P.: *See—*
Lynk, Charles N., Jr.; and Labedz, Gerald P., 4,761,829, Cl. 455-307.000

LaBerdia, William L.: *See—*
Kress, Edward S.; Thomas, Dennis R.; and LaBerdia, William L., 4,761,108, Cl. 414-460.000

Labotina, S.A.: *See—*
Braeken, Jozef; Dekerk, Jean-Paul; van der Poel, Hendrik; and Verborgt, Jozef, 4,761,439, Cl. 523-122.000.
Rossi, Carmela A.; and Nelis, Philippe, 4,761,221, Cl. 208-262.000.

Laboratoires Syntex S.A.: *See—*
Genain, Gilles, 4,761,420, Cl. 514-336.000.

Lacey, Richard F.: *See—*
Mealer, Loyal D., III; and Lacey, Richard F., 4,761,549, Cl. 250-214.00A.

Laciak, Daniel V.: *See—*
Pez, Guido P.; Carlin, Richard T.; Laciak, Daniel V.; and Sorensen, James C., 4,761,164, Cl. 55-16.000

Lagache, Jean-Marc: *See—*
Le Rat, Guy; and Lagache, Jean-Marc, 4,761,748, Cl. 364-551.000.

Lagarde, Robert: *See—*
Shen, Ming; and Lagarde, Robert, 4,761,447, Cl. 524-251.000.

Lagsdin, Andry. Stabilizer pad for earthmoving apparatus. 4,761,021, Cl. 280-764.100

Lakshmanan, Pallavoor R.; and Carrier, Paula J., to Baychem International, Inc. Compatible polymer blends useful as melt adhesives. 4,761,450, Cl. 524-488.000.

Lama, William L.: *See—*
Loce, Robert P.; Durbin, John A.; and Lama, William L., 4,761,062, Cl. 350-413.000.

Lamore, Patrick H. Feather brush and method for the fabrication thereof. 4,760,620, Cl. 15-181.000.

Lan, Yung-Huei. Cup-holder stabilizer. 4,760,987, Cl. 248-346.100.

Lang, Bruno; and Schaffner, Paul, to Viscosuisse SA. Process for the production of a weft fiber of polyester-poy. 4,760,690, Cl. 57-243.000.

Langdon, Michael J., to Xerox Corporation. Highlight color printing. 4,761,669, Cl. 355-4.000

Lanuzzi, Max; and Dubach, Fredi, to Drabert Sohne GmbH & Co. Chair. 4,761,033, Cl. 297-316.000

Larkin, Eric W.: *See—*
Evans, Charles D.; Tirums, Andrew T.; Larkin, Eric W.; and Melzer, James E., 4,761,056, Cl. 350-174.000.

Laroche, Pierre, to Glaverbel. Articles of filled synthetic polymeric materials and glass bead filler therefor. 4,761,440, Cl. 523-217.000.

Larsen, Niels: *See—*
Christensen, Bjarne; and Larsen, Niels, 4,761,562, Cl. 250-561.000.

Larson, Gary B.: *See—*
Ruszczyk, Stanley J.; Ferrier, Donald R.; Larson, Gary B.; Gallegos, Daniel; and Castaldi, Steven A., 4,761,303, Cl. 427-96.000.

Larson, Jeffrey R.: *See—*
Bredeweg, Robert A.; Larson, Jeffrey R.; and Barr, Stephen W., 4,760,732, Cl. 73-23.100.

Larson, Vivian M.: *See—*
Emini, Emilio A.; Larson, Vivian M.; and Boger, Joshua S., 4,761,470, Cl. 530-326.000

Larsson, Ove: *See—*
Larsson, Ralf; and Larsson, Ove, 4,760,970, Cl. 242-55.540

Larsson, Ralf; and Larsson, Ove. Feeding out device for a material web withdrawable from a roll. 4,760,970, Cl. 242-55.540.

Laser Machining, Inc.: *See—*
Lawson, William E., 4,761,535, Cl. 219-121.680.

Lassmann, Siegfried: *See—*
Muhlratzer, August; Lassmann, Siegfried; Bertinger, Roland; Gutwein, Herbert; and Sanden, Renate, 4,761,323, Cl. 428-198.000.

Last, James D.: *See—*
Kropielnicki, Jerzy J.; Last, James D.; and Easter, Brian, 4,761,826, Cl. 455-277.000

Lattice Semiconductor Corporation: *See—*
Turner, John E.; and Rutledge, David L., 4,761,768, Cl. 365-201.000

Laubach, Donald R. Elk calling device. 4,761,149, Cl. 446-208.000.

Laul, Virgil R., to Northrop Corporation. Optically triggered high voltage switch with cesium vapor. 4,761,548, Cl. 250-211.00R.

Lauritzen, Ann M., to Shell Oil Company. Ethylene oxide catalyst and process for preparing the catalyst. 4,761,394, Cl. 502-348.000.

Lautenberger, Carl; and Samo, Harvey W., to Hong Kong Yung Hong Trading Co., Ltd. Moving eye for dolls. 4,761,150, Cl. 446-345.000

Lavertu, Roger: *See—*
Dumas, Ghislain M.; Lavertu, Roger; and Drolet, Jean-Francois, 4,760,792, Cl. 102-204.000.

Lawlor, Francis D.: *See—*
Clark, Brian E.; Lawlor, Francis D.; Schmidt-Stumpf, Werner E.; Stewart, Terrence J.; and Timms, George D., Jr., 4,761,785, Cl. 371-51.000.

Lawrence, William G. Insulator-jack for replacing insulator disks. 4,760,640, Cl. 29-760.000.

Lawson, Kenneth: *See—*
Clark, Morris; Lawson, Kenneth; and Izatt, James, 4,761,684, Cl. 358-86.000.

Lawson, Kevin R.; and Upton, Roger M., to G. D. Searle & Co. Chloro-substituted ketone imidazole derivatives. 4,761,483, Cl. 548-344.000.

Lawson, William E., to Laser Machining, Inc. Laser wire stripper 4,761,535, Cl. 219-121.680.

LeaRonal, Inc.: *See—*
Brasch, William R.; and Favini, Carlo, 4,761,304, Cl. 427-98.000

Leclerc, Henry R., to Societe Nationale d'Etude et de Construction de Moteurs D'Aviation "S. N. E. C. M. A.". Devices forming parts of regulatory systems for providing an output in the form of rectilinear motion with an input of both rotary and rectilinear motion. 4,760,864, Cl. 137-552.000.

Lecolier, Serge: *See—*
Gautier, Jean-Claude; Lecolier, Serge; Soriaux, Claude; and Chlvalier, Sammy, 4,761,484, Cl. 548-364.000.

Ledbetter, Ferman. Aircraft landing game. 4,761,006, Cl. 273-1.0GC.

Lee, Ah Soon. Inspection device with adjustable viewing screen 4,761,065, Cl. 350-576.000.

Lee, Charles C., to Minnesota Mining and Manufacturing Company. Laser scanning apparatus using a fan style grating plate. 4,761,660, Cl. 346-108.000

Lee, Hsiao-Peng S.; Oneto, John C.; and Rawlinson, Stephen J., to Amdahl Corporation. Signed multiplier with three port adder and automatic adjustment for signed operands. 4,761,756, Cl. 364-757.000

Leff, Aaron N.: *See—*
Leff, Ruth B.; and Leff, Aaron N., 4,761,633, Cl. 340-286.00R.

Leff, Ruth B.; and Leff, Aaron N. Communication aid. 4,761,633, Cl. 340-286.00R.

Leggett & Platt, Incorporated: *See—*
Bustos, Rafael T., 4,760,928, Cl. 211-59.400.
Hiatt, Sidney A.; and Zapletal, Henry, 4,760,616, Cl. 5-246.000.

Leibovich, Gregory. Compound short-circuit induction machine and method of its control. 4,761,602, Cl. 318-816.000.

Leitner, S.p.A.: *See—*
Pabst, Otto, 4,760,756, Cl. 74-665.00L.

Lekholm, Anders, to Siemens Aktiengesellschaft. Heart pacemaker electrode having two portions of different conductive properties for stimulating and sensing. 4,760,852, Cl. 128-785.000.

Lendaro, Jeffery B., to RCA Licensing Corporation. Power supply regulator for television. 4,761,723, Cl. 363-21.000.

Leonard, Thomas B.: *See—*
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., 4,761,415, Cl. 514-252.000

Leong, Po S., to Walter Fleisher Company. Table and stool assembly. 4,760,802, Cl. 108-157.000.

Leonhardt, Barbara A.: *See—*
McGovern, Terrence P.; Leonhardt, Barbara A.; and Cunningham, Roy T., 4,761,280, Cl. 424-84.000.

Le Rat, Guy; and Lagache, Jean-Marc, to Framatome & Cie. Method for validating the value of a parameter. 4,761,748, Cl. 364-551.000

Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., to American Telephone and Telegraph Company, AT&T Bell Laboratories; and AT&T Information Systems, Inc. Method and apparatus for detecting a rate of data transmission. 4,761,800, Cl. 375-117.000.

Letavernier, Jean-Francois J.: *See—*
Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, 4,761,400, Cl. 514-53.000

Levasseur, Jean; and Gouvernelle, Didier, to Sprague Electric Company. Anode and capacitor and method therefor. 4,761,714, Cl. 361-433.000.

Levavi, Shmuel. Hydraulic braking system particularly useful in human powered vehicles. 4,760,901, Cl. 188-291.000.

Lever Brothers Company: *See—*
Couchman, John R.; and Gibson, Walter T., 4,761,401, Cl. 514-53.000.

Levick, Lois B. Pita bread sandwich holder. 4,760,950, Cl. 229-103.000

Levinson, Frank H.: *See—*
Gade, Raja R.; and Levinson, Frank H., 4,761,832, Cl. 455-612.000

Lewis, Jean; De Chicio, Michael; and Marshall, Deborah. Ladies aftershave preparation and method for its manufacture. 4,761,278, Cl. 424-73.000.

LGZ Landis & Gyr Zug Ag: *See—*
Antes, Gregor, 4,761,253, Cl. 264-1.300.

Li, George S.: *See—*
Wu, Muyen M.; and Li, George S., 4,761,455, Cl. 525-75.000.

Lia, Herman, to Tandberg Data A/S. Method and arrangement for recording data on a magnetic recording medium. 4,761,695, Cl. 360-46.000.

Liao, Wei C.: *See—*
Denick, John, Jr.; Peters, David; Talwar, Anil K.; and Liao, Wei C., 4,761,274, Cl. 424-48.000

Libbey-Owens-Ford Co.: *See—*
Albach, Eberhard R., 4,761,171, Cl. 65-146.000

Libera Developments Ltd.: *See—*
Maile, Graham L., 4,761,822, Cl. 455-82.000

Licari, Vito. Stackable storage receptacle and modular storage system made therefrom. 4,760,921, Cl. 206-504.000

Lichfield, Steve: *See—*
Sample, Clark M., 4,760,880, Cl. 166-118.000

Ligon, Lang S.: *See—*
Wright, Joe, Jr.; and Ligon, Lang S., 4,760,977, Cl. 242-130.000

Liljeblad, Lars E.: *See—*
Jansson, Kjell-Ove L.; Liljeblad, Lars E.; and Liljekvist, Bernt S 4,760,887, Cl. 173-132.000

Liljekvist, Bernt S.: *See—*
Jansson, Kjell-Ove L.; Liljeblad, Lars E.; and Liljekvist, Bernt S 4,760,887, Cl. 173-132.000

Lillard, Donald W.: *See—*
Augustine, Michael E.; and Lillard, Donald W., 4,761,292, Cl 426-321.000

Limbach, Robert C. Apparatus for locating an orthotic in a ski boot shell. 4,760,654, Cl. 36-117.000

Lin, Jiang-Jen: *See—*
Speranza, George P.; Lin, Jiang-Jen; and Cuscurida, Michael, 4,761,465, Cl. 528-45.000

Lin, Shaw-Yueh, to Eastman Kodak Company. Error correction of digital image data by means of image redundancy. 4,761,782, Cl. 371-30.000

Lin, Sheng-Chi, to Tsann Kuen Enterprise Co., Ltd. Espresso and drip coffee maker. 4,760,774, Cl. 99-299.000

Lin, Sheng S. Universal footing with jetting system. 4,761,096, Cl. 405-195.000

Linder, Charles; Perry, Mordechay; and Ketraro, Reuven, to Membrane Products Kiryat Weizmann Ltd. Novel membranes and process for making them. 4,761,233, Cl. 210-500.370

Lindstaedt, Bernd: *See—*
Emig, Hans; Lindstaedt, Bernd; Strein, Gunter; Uhrig, Helmut; and Volk, Willi, 4,760,658, Cl. 38-77.700

Linnman, Sven N. J.; and Bjorkman, Ake, to Lumalampan AB. Fitting for compact electric discharge lamps. 4,761,585, Cl. 315-309.000

Linstra, Gary, Jr.: *See—*
Valdes, Nancy E.; Linstra, Gary, Jr.; and Krog, Ann M., 4,761,277, Cl. 424-64.000

Lipe, J. Tom: *See—*
Titsworth, Raymond; Lipe, J. Tom; Dale, James L.; Monroe, Hanford D.; and Hill, Jerry M., 4,761,749, Cl. 364-559.000

Lipschutz, David, to Hewlett-Packard Company. Combined color flow map and monochrome image. 4,761,740, Cl. 364-415.000.

Lipsker, Itshaq. Drilling means serving as ground anchor and method 4,761,098, Cl. 405-262.000

Llull, Jean B.: *See—*
Doat, Bernard J. M.; Letavernier, Jean-Francois J.; Aubard, Gilbert G.; Llull, Jean B.; Calvet, Alain P.; and Junien, Jean-Louis, 4,761,400, Cl. 514-53.000

Lobregt, Steven; Op de Beek, Johannes C. A.; and Werkman, Roelof, to U.S. Philips Corporation. Computer tomography apparatus including a combined recursive and convolution filter. 4,761,738, Cl. 364-414.000

Loce, Robert P.; Durbin, John A.; and Lama, William L., to Xerox Corporation. Gradient index lens array with improved image quality due to stray light reduction. 4,761,062, Cl. 350-413.000.

Lockheed Corporation: *See—*
Peppel, George W.; and Sullivan, Paul E., 4,760,992, Cl 254-277.000

Lockheed Missiles & Space Company, Inc.: *See—*
Mercado, Romeo I.; and Robb, Paul N., 4,761,064, Cl. 350-482.000
Stewart, James P.; and Beaven, Herbert R., Jr., 4,760,985, Cl 248-176.000

Loftus, Peter J.: *See—*
Reed, John M.; Sherman, William, III; and Loftus, Peter J., 4,761,002, Cl. 271-111.000

Logan, David J.; Wood, Kenneth O.; and Hernandez, William, to Gerber Scientific Products, Inc. Blank for use in a lens pattern generator. 4,761,315, Cl. 428-33.000

Loiacono, Gabriel M.: *See—*
Bordui, Peter F.; and Loiacono, Gabriel M., 4,761,202, Cl 156-621.000

Lombardi, Roberto: *See—*
Campan, Jean-Jacques; and Lombardi, Roberto, 4,761,407, Cl. 514-179.000

Long, Stephen L.; and Christ, Gene L., to Texaco Inc. Downhole steam sampler. 4,760,881, Cl. 166-165.000

Longeway, Paul A.; and Martinelli, Ramon U., to General Electric Company. Photodetector. 4,761,680, Cl. 357-30.000

Lonner, Wolfgang; and Mair, Franz, to Erhardt & Leimer GmbH Guiding and spreading device. 4,760,626, Cl. 26-75.000

Lopes, William J., to Dow Corning Corporaton. Multiple release mold coating for high water, high-resiliency polyurethane foam. 4,761,443, Cl. 524-110.000

L'Oreal: *See—*
Grollier, Jean F.; Madrange, Annie; and Chailley, Michele, 4,761,273, Cl. 424-47.000

Los Alamos Technical Associates, Inc.: *See—*
Gram, Helen F.; Muller, Martin E.; Pendergrass, Ann M., and Rink, Phillip A., 4,761,208, Cl. 204-95.000

VOL 1093 ISS 1 AG 2 1988 UMI

Louvatiere, Jimmy: *See*—
Salmon, Pierre; Pradinas, Claude; and Louvatiere, Jimmy, 4,760,941, Cl. 222-153.000.

Lovecky, Craig: *See*—
Gelardi, Anthony; Lowry, Alan; and Lovecky, Craig, 4,760,914, Cl. 206-1.500

Lovrenich, Rodger T. Torque-angle stabilized servo motor drive. 4,761,598, Cl. 318-685.000.

Lowry, Alan: *See*—
Gelardi, Anthony; Lowry, Alan; and Lovecky, Craig, 4,760,914, Cl. 206-1.500

Loxley, Russell A.: *See*—
Rooks, John V.; and Loxley, Russell A., 4,760,696, Cl. 60-39.281.

Lozano, Miguel A., Jr. Means and method for detecting presence of electrically conductive fluid. 4,761,638, Cl. 340-620.000.

LTV Aerospace & Defense Company: *See*—
Simpson, Fynlon G.; Fisher, Robert L.; and Kissell, James, 4,761,556, Cl. 250-352.000.

Lu, Paul P.: *See*—
Burns, Gary T.; Lu, Paul P.; and Zank, Gregg A., 4,761,458, Cl. 525-474.000.

Lucas Industries Public Limited Company: *See*—
Pickering, John F.; Schluter, Peter; and Wagner, Bernd, 4,760,700, Cl. 60-585.000.

Lucas, Paul B.; and Garrett, James E., to Carroll Touch Inc. Touch input device. 4,761,637, Cl. 340-365.00P.

Ludwig, Alan J., deceased: *See*—
Beck, Henry R.; Ferree, James E.; and Ludwig, Alan J., deceased, 4,761,521, Cl. 200-50.0AA.

Lugwig, Donna L., administratrix: *See*—
Beck, Henry R.; Ferree, James E.; and Ludwig, Alan J., deceased, 4,761,521, Cl. 200-50.0AA.

Luk Lamellen und Kupplungsbau GmbH: *See*—
Friedmann, Owald, 4,760,754, Cl. 74-574.000.

Lukenbach, Elvin R.: *See*—
Clum, Charles E.; Murray, William V.; and Lukenbach, Elvin R., 4,761,275, Cl. 424-59.000
Murray, William V.; Clum, Charles E.; and Lukenbach, Elvin R., 4,761,276, Cl. 424-59.000

Lumalampan AB: *See*—
Linnman, Sven N. J.; and Bjorkman, Ake, 4,761,585, Cl. 315-309.000.

Lumsden, Jesse B.: *See*—
Paton, Neil E.; Dennies, Daniel P.; Lumsden, Jesse B.; and Ng, Lillian W., 4,761,187, Cl. 148-3.000.

Lund, Gary K.; and Esneault, Calvin P., to Dow Chemical Company, The. Process for metallating nonconjugated diene-containing ethylene polymers and graft polymers prepared therefrom. 4,761,456, Cl. 525-331.700

Lundblad, Leif; Persson, Olof L.; Swegen, Hans B. A.; and Zettergren, Hans, to Inter Innovation AB. Arrangement for feeding valuable documents to a storage space. 4,760,923, Cl. 209-534.000.

Lundin, Lars, to Oy Lars Lundin Patent Ab. Cleaning-device combination for cleaning oil-contaminated shore water and shore area. 4,760,619, Cl. 15-142.000.

Lundin, Robert S., to Superior Electric Company, The. Method and means for operating brushless DC motor with reversible DC power 4,761,578, Cl. 310-68.00B.

Lusofarmaco Istituto Lusofarmaco d'Italia SpA: *See*—
Manghisi, Elso; and Salimbeni, Aldo, 4,761,422, Cl. 514-370.000.

Lutz, Robert G., to Shell Oil Company. Flame retardant compositions. 4,761,449, Cl. 524-424.000.

Lyga, John W.: *See*—
Chang, Jun H.; and Lyga, John W., 4,761,174, Cl. 71-92.000.

Lynk, Charles N., Jr.; and Labedz, Gerald P., to Motorola Inc. Adaptive signal strength and/or ambient noise driven audio shaping system. 4,761,829, Cl. 455-307.000.

Lyon, Richard E.: *See*—
Farris, Richard J.; and Lyon, Richard E., 4,761,078, Cl. 374-31.000.

Lyons, Steffen: *See*—
Christine, William C.; Schmidt, Josef; Lyons, Steffen; Green, Brian; and Herschman, George J., 4,761,197, Cl. 156-290.000.

M&T Chemicals Inc.: *See*—
Hung, Paul L. K.; and Tseng, Kenneth K. S., 4,761,363, Cl 430-284.000.

Ma, John Y., to Capetronic (BSR) Ltd. TVRO earth station receiver for reducing interference and improving picture quality. 4,761,825, Cl. 455-183.000.

Maas, Werner K.; and Gyles, Carlton L., to New York University. Mutant enterotoxin of *E. coli*. 4,761,372, Cl. 435-172.100.

Maccaferri, Galeazzo; and Giberti, Giuseppe. Machine for grinding the brake discs of motor-vehicles. 4,760,669, Cl. 51-117.000.

MacDermid, Incorporated: *See*—
Ruszczyk, Stanley J.; Ferrier, Donald R.; Larson, Gary B.; Gallegos, Daniel; and Castaldi, Steven A., 4,761,303, Cl. 427-96.000.

Macemon, Herbert J.: *See*—
Martin, Richard W.; Macemon, Herbert J.; and Fortenberry, William R., 4,761,629, Cl. 336-208.000

MacGregor, Francis W., to Quad Research Inc. Disposable spray hood. 4,760,951, Cl. 229-125.000.

Mack, Michael: *See*—
Hirschberger, Baldur; and Mack, Michael, 4,760,683, Cl. 53-170.000.

MacKay, Joseph H., Jr. Disposable depressed center grinding wheel having an integral mounting hub. 4,760,670, Cl. 51-168.000.

Madhavan, Narayanan; Groh, Carole L.; and Probst, Robert L., to Kerr Manufacturing Company. Visible light cured impression material. 4,761,136, Cl. 433-214.000.

Madrange, Annie: *See*—
Grollier, Jean F.; Madrange, Annie; and Chailley, Michele, 4,761,273, Cl. 424-47.000.

Madrona, Gilbert, to Compagnie Generale des Etablissements Michelin. Valve for tubeless tire. 4,760,860, Cl. 137-223.000.

Mady, Raschad; Ries, Christian; and Morlock, Roland, to Gerhard Collardin GmbH. Process and aqueous compositions for treating metal surfaces. 4,761,189, Cl. 148-6.160.

Maekawa, Takashige: *See*—
Matsuo, Masashi; Yamagishi, Nobuyuki; and Maekawa, Takashige, 4,761,459, Cl. 525-479.000.

Mag Dev Inc.: *See*—
Garshelis, Ivan J., 4,760,745, Cl. 73-862.360.

MagneTek, Inc.: *See*—
Hein, Bruce; and Shufflebarger, Charles, 4,761,580, Cl. 310-214.000.

Mahlab, David: *See*—
Yogev, Amnon; and Mahlab, David, 4,760,705, Cl. 60-651.000.

Maidique, Modesto A.: *See*—
Brokaw, Adrian P.; and Maidique, Modesto A., 4,761,636, Cl. 340-347.0AD.

Maidl, Bernhard: *See*—
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000

Maile, Graham L., to Libera Developments Ltd. Burst-mode two-way radio communications system. 4,761,822, Cl. 455-82.000.

Maillard, Jacques, to La Telemecanique Electrique. Method of tapping on a press, and apparatus for implementing the method. 4,761,100, Cl. 408-1.00R

Mainland Windsurfing Hawaii, Inc.: *See*—
Stanley, Larry; and Tidswell, Frank, 4,760,812, Cl. 114-108.000.

Mair, Franz: *See*—
Lonner, Wolfgang; and Mair, Franz, 4,760,626, Cl. 26-75.000.

Mair, Ross L. *See*—
Goto, Kazuhiro; and Mair, Ross L., 4,761,145, Cl. 439-469.000.

Maitland, Arthur, to English Electric Valve Company. Laser apparatus. 4,761,792, Cl. 372-56.000.

Maitland, Arthur: *See*—
Menown, Hugh; and Maitland, Arthur, 4,761,794, Cl. 313-595.000.

Maki, Yoshihiro; Kano, Makoto; Fujiki, Akira; and Tanimoto, Ichiro, to Nissan Motor Co., Ltd. Vehicle component part. 4,761,344, Cl. 428-552.000.

Maloberti, Franco; and Torelli, Guido, to SGS Microelettronica SPA. Voltage repeater circuit with low harmonic distortion for loads with a resistive component. 4,761,615, Cl. 330-277.000.

Mampaey, Jozef L.: *See*—
Tavernier, Serge M.; De Roo, Pierre R.; Mampaey, Jozef L.; and Janssens, Robert F., 4,761,357, Cl. 430-32.000.

Man Technologie GmbH: *See*—
Muhlratzer, August; Lassmann, Siegfried; Bertinger, Roland; Gutwein, Herbert; and Sanden, Renate, 4,761,323, Cl. 428-198.000.

Manghisi, Elso; and Salimbeni, Aldo, to Lusofarmaco Istituto Lusofarmaco d'Italia SpA. (2-amino-4-aryl-thiazole-5-yl)ethanols and their derivatives having diuretic activity and methods for preparing the same. 4,761,422, Cl. 514-370.000.

Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, to Bayer Aktiengesellschaft; and Bergwerksverband GmbH. Process for strengthening and sealing geological formations. 4,761,099, Cl. 405-264.000.

Mannesmann Rexroth GmbH: *See*—
Reder, Herbert; and Schubert, Hans-Georg, 4,761,575, Cl. 310-36.000

Manning, John D.: *See*—
Dennis, Richard D.; and Manning, John D., 4,760,707, Cl. 62-197.000.

Mansfield, Gregory A., to Glas-Craft, Inc. Internal mix plural component system. 4,760,956, Cl. 239-8.000

Mansfield, Robert J., to Polaroid Corporation. Method for employing plasma in dehydration and consolidation of preforms. 4,761,170, Cl. 65-18.200.

Marballi, Vikram M.: *See*—
Abbruzzi, Joseph A.; Dougherty, John D.; and Marballi, Vikram M., 4,761,018, Cl. 280-674.000.

Marfat, Anthony, to Pfizer Inc. Synthetic method for indol-2(3H)-ones. 4,761,485, Cl. 548-486.000.

Marini, Jean; and Weilbacher, Jean-Claude, to Framatome. Device for the detection of a gaseous phase in a nuclear reactor. 4,761,259, Cl. 376-245.000.

Markessini, Efthalia V., to Enigma N.V. Formaldehyde binder. 4,761,184, Cl. 106-203.000.

Marmarosi, Katalin: *See*—
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000

Maroko, Peter R. Compounds, compositions and method of treatments for improving circulatory performance. 4,761,417, Cl. 514-284.000.

Marozzi, Alfred A.; and Sapinski, Thomas A., to Marozzi, Alfred A. Reciprocating print head marking apparatus. 4,760,788, Cl. 101-333.000

Marshall, Alan G.; Ricca, Tom L.; and Wang, Tao-Chin L., to Ohio State University Research Foundation, The. Tailored excitation for trapped ion mass spectrometry. 4,761,545, Cl. 250-291.000.

Marshall, Deborah: *See*—
Lewis, Jean; De Chicio, Michael; and Marshall, Deborah, 4,761,278, Cl. 424-73.000

Marshall, Randall S. Articles for cooling beverages. 4,761,314, Cl. 428-11.000

Martin, Jerome L.; Bright, David R.; Williams, Robert D.; and Young, Vernon V., to International Minerals & Chemical Corp. Lysocellin-containing composition and process for promoting growth and feed efficiency of food producing animals. 4,761,426, Cl. 514-460.000

Martin, Richard W.; Macemon, Herbert J.; and Fortenberry, William R., to Kuhlman Corporation. Injection moldable core insulation tubes. 4,761,629, Cl. 336-208.000

Martin, Stuart R.: *See*—
Elias, Kenneth L.; Martin, Stuart R.; and Slattery, William J., 4,761,332, Cl. 428-325.000.

Martin, Thomas W.: *See*—
Bakos, Vincent W.; and Martin, Thomas W., 4,761,352, Cl. 429-94.000.

Martinelli, Ramon U.: *See*—
Longeway, Paul A.; and Martinelli, Ramon U., 4,761,680, Cl. 357-30.000.

Martinez, David V.: *See*—
Smith, Wayne G.; Martinez, David V.; Mozingo, Robert E.; and Hanson, Charles B., 4,761,113, Cl. 414-732.000.

Martinez, Robert G.: *See*—
Treybig, Duane S.; and Martinez, Robert G., 4,761,473, Cl. 544-224.000.

Martini, Helmut: *See*—
Conrad, Hans-Jurgen; Kurz, Hanns; Martini, Helmut; and Neumann, Gerhard, 4,760,630, Cl. 29-33.00A.

Marumori, Katsuhira: *See*—
Yoshikoshi, Takashi; Marumori, Katsuhira; and Gunji, Tsunefusa, 4,760,661, Cl. 40-356.000

Marx, Hans-Norbert: *See*—
Goettsche, Reimer; and Marx, Hans-Norbert, 4,761,179, Cl 106-18.320

Marzili, Joseph C.: *See*—
Hawk, Gary W.; and Marzili, Joseph C., 4,761,141, Cl. 439-153.000.

Masai, Naruhito: *See*—
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000

Maschinenfabrik Bezner GmbH & Co. KG: *See*—
Stehle, Wolfgang; and Fuchs, Dieter, 4,760,925, Cl. 209-616.000

Mashiach, Gideon. Drawing board type amusement device. 4,761,139, Cl. 434-410.000.

Massachusetts Institute of Technology: *See*—
Hui, Joseph Y. N., 4,761,778, Cl. 370-46.000.

Massey-Ferguson Services N.V.: *See*—
Bellanger, Regis, 4,760,902, Cl. 192-0.033.

Massit, Claude; and Nicolas, Gerard, to Commissariat a l'Energie Atomique. Electrical connections with controlled thermal and electrical resistances. 4,761,517, Cl. 174-36.000.

Masubuchi, Yoichi: *See*—
Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, 4,761,212, Cl. 204-181.100

Masuda, Yoshihisa; Inuki, Hisao; and Takahashi, Kozo, to Communications Research Laboratory, Ministry of Posts and Telecommunications. System for measuring height distributions of atmospheric temperature, wind direction and wind speed. 4,761,650, Cl. 342-26.000

Masui, Shoichi: *See*—
Tano, Shunichi; Funabashi, Motohisa; Masui, Shoichi; and Sakaguchi, Seiji, 4,761,746, Cl. 364-513.000.

Masuyama, Kenichi: *See*—
Kakuishi, Yutaka; Masuyama, Kenichi; Fujiyama, Masaaki; and Okutu, Toshimitu, 4,761,243, Cl. 252-62.540.

Matsugi, Tetsuzo; Inaba, Tsutomu; and Kobayashi, Norihide, to Mitsubishi Denki Kabushiki Kaisha. Scroll-type fluid transferring machine with slanted thrust bearing. 4,761,122, Cl. 418-55.000

Matsumoto, Kazumasa: *See*—
Asano, Masao; Matsumoto, Kazumasa; Tsuji, Toshio; and Yasufuku, Yoshitaka, 4,761,338, Cl. 428-425.900.

Matsumoto, Masafumi: *See*—
Tanaka, Hironori; Kotani, Matahira; and Matsumoto, Masafumi, 4,761,670, Cl. 355-4.000.

Matsumoto, Shigemi; and Nagoshi, Fumiya, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin composition having a matte appearance. 4,761,463, Cl. 525-74.000.

Matsumoto, Yukio: *See*—
Ogino, Hiroshi; Matsumoto, Yukio; Togashi, Hiroshi; and Ojima, Kumiko, 4,761,331, Cl. 428-323.000.

Matsumura, Yasuo: *See*—
Shimizu, Isoo; Matsumura, Yasuo; Kawakami, Shigenobu; and Sato, Atsushi, 4,761,508, Cl. 585-25.000

Matsunaga, Masaharu, to Toyo Communication Equipment Co., Ltd. Pulse discriminating system for reply signals in a transponder. 4,761,651, Cl. 342-40.000

Matsuo, Masashi; Yamagishi, Nobuyuki; and Maekawa, Takashige, to Asahi Glass Company Ltd. Surface modifier. 4,761,459, Cl 525-479.000

Matsushima, Yuichi; Sakai, Kazuo; and Akiba, Shigeyuki, to Kokusai Denshin Denwa Kabushiki Kaisha. Method of manufacturing avalanche photo diode. 4,761,383, Cl. 437-3.000

Matsushita Electric Industrial Co., Ltd.: *See*—
Ishibashi, Hiromichi; Tanaka, Shinichi; Shimizu, Ryosuke, Kuwamoto, Makoto; and Yamamoto, Hajime, 4,761,774, Cl 369-44.000
Kobayashi, Yoshihiro; and Kawase, Tetsunari, 4,761,356, Cl 429-242.000
Negishi, Kiyoshi, 4,761,661, Cl. 346-108.000
Ogawa, Kazufumi, 4,761,316, Cl. 428-64.000
Shiragasawa, Tsuyoshi; Sugano, Masahide; and Noyori, Masaharu, 4,761,607, Cl. 324-158.00R
Yamanishi, Kazuhiro; Kobayashi, Masaaki; Takeuchi, Akihiro; Ochi, Atsuo; and Nagaoka, Yoshitomi, 4,761,690, Cl 358-310.000
Yasunobu, Isamu; Ohara, Kenichi; Shibata, Nobuho; and Neki Shigeo, 4,761,599, Cl. 318-723.000.

Matsushita Electric Works, Ltd.: *See*—
Ikari, Motoo; Takada, Yuji; Yamamoto, Shintaro; Teramae, Katsuhiro; and Asai, Makio, 4,761,546, Cl. 250-201.000

Matsushita, Hajime; Yabe, Ryohei; Kurimura, Masaaki; and Yokobayashi, Toshiaki, to Hitachi, Ltd. Cellular analysis system. 4,761,075, Cl. 356-39.000

Matsuzaki, Akira; and Taniguchi, Shigeki, to Kokusai Denshin Denwa Co., Ltd. Cable detector. 4,761,649, Cl. 340-850.000

Matteson, Ronald G.; and Tandon, Jagdish C., to Xerox Corporation Charge transfer in multiple sensor row arrays. 4,761,683, Cl 358-75.000

Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., to VMX, Inc. Electronic audio communications system with voice authentication features. 4,761,807, Cl. 379-89.000

Matuo, Teruaki: *See*—
Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi; and Matuo, Teruaki, 4,761,410, Cl. 514-206.000

Matzoll, Robert J., Jr.: *See*—
Wiles, Gregory R.; and Matzoll, Robert J., Jr., 4,761,676, Cl 356-445.000

Mauch, Walter. Insole. 4,760,655, Cl. 36-44.000

Mawhinney, Daniel D.; and Askew, Robert E., to RCA Corporation Radio frequency signal transmission system with carrier frequencies at opposite edges of the channel. 4,761,821, Cl. 455-73.000

Maxwell, Bryce. Apparatus for measuring the rheological properties of materials. 4,760,734, Cl. 73-60.000

May, Jerome E.: *See*—
Parker, Delmer G.; May, Jerome E.; and Allen, William M., Jr., 4,761,672, Cl. 355-14.00D

Mayer, James R.; and Sparkman, Robert T., Jr. Well pumping unit and control system. 4,761,120, Cl. 417-403.000

Mayuzumi, Tetsuya: *See*—
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru, Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, 4,761,436, Cl. 522-114.000

Mazda Motor Corporation: *See*—
Fujita, Nagahisa; Okuno, Itaru; and Kaneko, Tadashi, 4,760,826, Cl. 123-399.000

Mazure-Espejo, Carlos-Alberto: *See*—
Neppl, Franz; Jacobs, Erwin; Winnerl, Josef; and Mazure-Espejo, Carlos-Alberto, 4,761,384, Cl. 437-029.000

McAninch, Jack W.: *See*—
Fournier, George R., Jr.; Kung, Andrew H.; and McAninch, Jack W., 4,760,840, Cl. 128-303.100

McCall, Clyde A.; Campbell, Michael J.; and Dean, William B., to Chicopee. Corrugated woven fabric. 4,761,321, Cl. 428-176.000

McCarthy, John P.: *See*—
Fowler, Roscoe T.; Hochhauser, Arthur; Kaufman, Harold B., Jr.; McCarthy, John P.; and Stockler, Jerry, 4,761,128, Cl 425-126.200

McCormick & Company, Inc.: *See*—
Hoskins, Robert W., 4,760,775, Cl. 99-353.000

McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., to Celerity Computing. Direct-execution microprogrammable microprocessor system. 4,761,733, Cl. 364-200.000

McElligott, Lois T.: *See*—
Mitchell, Peter W. D.; McElligott, Lois T.; and Sasser, David E 4,761,507, Cl. 570-236.000

McGeorge, Gram J., to Robertshaw Controls Company. Electrically operated appliance controls and methods of making the same 4,761,540, Cl. 219-506.000

McGovern, Terrence P.; Leonhardt, Barbara A.; and Cunningham, Roy T., to United States of America, Agriculture. Additives useful as crystallization inhibitors and activity extenders for trimedlure, the mediterranean fruit fly attractant. 4,761,280, Cl. 424-84.000.

McHugh, Thomas M.: *See*—
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000

McInerney Incorporated: *See*—
Van Landingham, Thomas A., 4,760,727, Cl. 72-149.000

McKay, Michael L.: *See*—
Smith, Darren A.; McKay, Michael L.; and Sayer, Christopher N F., 4,760,832, Cl. 123-525.000

McKee, John M., to Motorola, Inc. Dual mode transducer. 4,761,582, Cl. 310-322.000

McMahan, David R.; Murphy, Harry S.; and Nagengast, William E., Jr., to General Motors Corporation. Headlamp pivot assembly 4,761,717, Cl. 362-66.000

VOL 1093 ISS 1 AG 2 1988 UMI

McMahon, Michael T.: *See*—
Pyke, Stephen C.; Boos, Donald L.; and McMahon, Michael T., 4,761,639, Cl. 340-634.000.
McNerney, Francis B., to Extrufix Inc. Support structure for different types of bags. 4,760,983, Cl. 248-100.000.
McPheeters, Charles C.; and Mrazek, Franklin C., to University of Chicago. Solid oxide fuel cell with monolithic core. 4,761,349, Cl. 429-39.000
McVay, Donald R.: *See*—
Trocciola, John C.; and McVay, Donald R., 4,760,713, Cl 62-434.000.
Mead Corporation, The: *See*—
Stone, Benjamin C.; and Proehl, D. Scott, 4,761,311, Cl. 427-366.000.
Mealer, Loyal D., III; and Lacey, Richard F., to Hewlett-Packard Company. A linear photo-responsive circuit. 4,761,549, Cl. 250-214.00A.
Mechanical Technology Incorporated: *See*—
Dorman, Richard A.; and Welch, Donald E., 4,761,609, Cl 324-208.000.
Medeot, Renzo. Water jet demolition apparatus and method. 4,761,037, Cl. 299-1.000
Medex, Inc.: *See*—
Frank, Thomas P.; and Thompson, Jeffrey L., 4,760,730, Cl. 73-4.00R
Medinvent S.A.: *See*—
Kropf, Laurent, 4,760,849, Cl. 128-341.000.
Medtronic, Inc.: *See*—
Skarstad, Paul M.; Untereker, Darrel F.; and Merritt, Donald R., 4,761,355, Cl. 429-213.000.
Meffert, Alfred: *See*—
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fues, Johann F., 4,761,249, Cl. 252-528.000
Mehesch, Hans: *See*—
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.
Meisterling, Jesse R., to Raymond Engineering Inc. Vacuum coupled transducer. 4,760,740, Cl. 73-761.000
Meitoh Denki Kohji Kabushiki Kaisha: *See*—
Asai, Masaki, 4,760,991, Cl. 254-134.30R.
Melchi, Floyd D.: *See*—
Rowe, John C.; and Melchi, Floyd D., 4,761,031, Cl. 296-182.000
Mellgren, Per-Gustaf, to Forest Engineering Research Institute of Canada. Forwarder. 4,761,109, Cl. 414-555.000.
Melnik, David T.: *See*—
Eldumiati, Ismail I.; Melnik, David T.; and Wiederhold, Robert P., 4,761,732, Cl. 364-200.000.
Meltz, Gerald; Glenn, William H.; and Snitzer, Elias, to United Technologies Corporation. Distributed, spatially resolving optical fiber strain gauge. 4,761,073, Cl. 356-32.000.
Melzer, James E.: *See*—
Evans, Charles D.; Tirums, Andrew T.; Larkin, Eric W.; and Melzer, James E., 4,761,056, Cl. 350-174.000.
Membrane Products Kiryat Weizmann Ltd.: *See*—
Linder, Charles; Perry, Mordechay; and Ketraro, Reuven, 4,761,233, Cl. 210-500.370.
Menard, Kevin P., to Cosden Technology, Inc. Toluene disproportionation process. 4,761,514, Cl. 585-475.000.
Mendicino, Frank D.: *See*—
Childress, Thomas E.; Omietanski, George M.; and Mendicino, Frank D., 4,761,492, Cl. 556-482.000.
Mennicke, Stefan: *See*—
Knodler, Reinhard; Bansemir, Werner; Mennicke, Stefan; and Steinleitner, Gunther, 4,761,353, Cl. 429-104.000.
Menown, Hugh; and Maitland, Arthur, to English Electric Valve Company Limited. Thyratron having thermionic cathode material between anode and control grid. 4,761,794, Cl. 313-595.000
Meraj, Paul; and Nagle, Teri, to General American Foods Manufacturing Corporation. Process for making dough products. 4,761,290, Cl. 426-90.000
Mercado, Romeo I.; and Robb, Paul N., to Lockheed Missiles & Space Company, Inc. Color-corrected lens systems. 4,761,064, Cl 350-482.000
Merck & Co., Inc.: *See*—
Bugianesi, Robert L.; Ponpipom, Mitree M.; and Rupprecht, Kathleen M., 4,761,404, Cl. 514-77.000
Emini, Emilio A.; Larson, Vivian M.; and Boger, Joshua S., 4,761,470, Cl. 530-326.000.
Muir, Larry A., 4,761,421, Cl. 514-352.000.
Merck Frosst Canada, Inc.: *See*—
Girard, Yves; and Rokach, Joshua, 4,761,425, Cl. 514-456.000.
Merlin Gerin: *See*—
Fraisse, Didier; Dudon, Pascal; and Tripodi, Paul, 4,761,704, Cl. 361-50.000
Merrell Dow Pharmaceuticals Inc.: *See*—
Peet, Norton P.; Sunder, Shyam; and Vinogradoff, Anna P., 4,761,474, Cl. 544-250.000
Merritt, Donald R.: *See*—
Skarstad, Paul M.; Untereker, Darrel F.; and Merritt, Donald R., 4,761,355, Cl. 429-213.000.
Mers Kelly, William C.; and Freund, Robert F., to Freund Medical Products, Inc. Radial artery clamp. 4,760,846, Cl. 128-327.000.
Messere, Ida. Method for making quick ageing abrasive slurries for the construction of grinding wheels, and the abrasive slurries made thereby. 4,761,163, Cl. 51-293.000.
Metalworks, Inc.: *See*—
Paine, George W., 4,761,045, Cl. 312-219.000.
Meyer, Frank: *See*—
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.
Meyer, Norbert: *See*—
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000
Meyers, Fredrick R.: *See*—
Carr, Larrey, 4,761,015, Cl. 280-402.000.
Mezei Associates Limited: *See*—
Mezei, Michael, 4,761,288, Cl. 424-450.000.
Mezei, Michael, to Mezei Associates Limited. Multiphase liposomal drug delivery system. 4,761,288, Cl. 424-450.000.
Michoux, Eric; and Denree, Michel, to Bendix France. Spring for assembling a drum brake. 4,760,897, Cl. 188-79.510.
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method for controlling the air/fuel ratio of an internal combustion engine with a fuel cut operation. 4,760,822, Cl. 123-325.000.
Mihama, Takeshi: *See*—
Oba, Toshio; Mihama, Takeshi; and Futatsumori, Koji, 4,761,454, Cl. 524-862.000.
Mihara, Takeshi, to UBE Industries, Ltd. Method and apparatus for forming disk wheel like formed parts. 4,760,874, Cl. 164-457.000.
Miles Inc.: *See*—
Blatt, Joel M.; Heiland, Robert; Morris, James R.; Pugh, Jerry; and Wogoman, Frank W., 4,761,381, Cl. 436-165.000.
Mileti, Robert J. Connector and brace connection system for a kite. 4,760,979, Cl. 244-153.00R.
Miller, David A. B., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Optical reading of quantum well device. 4,761,620, Cl. 332-7.510.
Miller, Michael A., to 20th Century Machine. Method of forming a helical ball screw member. 4,760,635, Cl. 29-558.000.
Milliken Research Corporation: *See*—
Jenkinson, Charles B., Jr., 4,760,869, Cl. 139-188.00R.
Kluger, Edward W.; Moore, Patrick D.; and Burchette, Joe T., 4,761,502, Cl. 564-442.000.
Millipore Corporation: *See*—
Pacheco, John F.; and Rising, Donald B., 4,761,230, Cl 210-321.840.
Minami, Shunji; Nakao, Yasuo; and Nomura, Kazuhiko, to Yamaha Hatsudoki Kabushiki Kaisha. Induction system for internal combustion engines. 4,760,703, Cl. 60-605.100.
Minamifuji Sangyo Kabushiki Kaisha: *See*—
Goto, Mieko, 4,760,676, Cl. 52-236.100.
Minnesota Mining and Manufacturing Company: *See*—
Cosman, Armond D.; and Cox, Larry R., 4,761,656, Cl. 343-719.000
Gandolfo, Rino, 4,760,641, Cl. 29-806.000.
Lee, Charles C., 4,761,660, Cl. 346-108.000.
Ott, Ronald L.; and Nestegard, Susan K., 4,761,318, Cl. 428-85.000.
Pereyra, Rodger J., 4,760,919, Cl. 206-484.200.
Minogue, Patrick M., to Westinghouse Electric Corp. Remote inspection device transport system. 4,760,876, Cl. 165-11.200.
MIT.: *See*—
Youcef-Toumi, Kamal; and Ro, Paul I. H., 4,761,588, Cl. 318-46.000.
Mitchell, Peter W. D.; McElligott, Lois T.; and Sasser, David E., to Union Camp Corporation. Isomerization of linalyl halides with quaternary salts. 4,761,507, Cl. 570-236.000.
Mitel Corporation: *See*—
Pinard, Jim, 4,761,702, Cl. 361-18.000.
Mitsubishi Chemical Industries Limited: *See*—
Oguri, Yasuo; Awata, Mitsuru; and Endo, Hozumi, 4,761,388, Cl. 501-95.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Hashimoto, Masahide, 4,760,712, Cl. 62-381.000.
Ishimori, Akira; Yamamoto, Takashi; and Kinoshita, Tsuyoshi, 4,761,054, Cl. 350-96.260.
Kanno, Yoshiaki; Nakamoto, Katsuya; and Sumitani, Jiro, 4,760,829, Cl. 123-488.000.
Kodaira, Norio, 4,761,745, Cl. 364-513.000.
Matsugi, Tetsuzo; Inaba, Tsutomu; and Kobayashi, Norihide, 4,761,122, Cl. 418-55.000.
Nakagawa, Shinichi, 4,761,759, Cl. 364-769.000.
Nakagawa, Yoshiaki, 4,760,723, Cl. 72-8.000.
Nishi, Hideji; and Kondo, Katsumi, 4,761,628, Cl. 336-180.000.
Mitsuhashi, Kenichi: *See*—
Tomita, Yoji; and Mitsuhashi, Kenichi, 4,761,231, Cl. 210-497.100.
Mitsukuchi, Kunio; Ito, Hiromitsu; Eguchi, Isamu; Hirasato, Bunji; and Furuhata, Takashi, to Takamatsu Electric Works, Ltd. Gas switch with pressure recease cover. 4,761,523, Cl. 200-148.00B.
Miura, Eiji: *See*—
Nagashima, Takashi; and Miura, Eiji, 4,761,041, Cl. 303-9.620.

Miura, Kiyotaka: *See*—
Tokida, Minoru; Izumitani, Tetsuro; Yamashita, Toshiharu; and Miura, Kiyotaka, 4,761,387, Cl. 501-40.000.
Miura, Shinji: *See*—
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000.
Miyai, Kenzi: *See*—
Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi; and Matuo, Teruaki, 4,761,410, Cl. 514-206.000
Miyai, Kiyoshi; Uotani, Shuhei; Tsunemine, Toyohiko; and Kohmoto, Yujiro, to Sanyo Electric Co., Ltd. Image forming apparatus. 4,761,667, Cl. 355-3.00R.
Miyasaka, Seiichi: *See*—
Nishiyama, Hisashi; Miyasaka, Seiichi; Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Yoshihara, Akihiko, 4,761,061, Cl 350-357.000.
Miyata, Hiroshi: *See*—
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J.
Miyata, Shigeo, to Kyowa Chemical Industry Co., Ltd. Filiform corrosion-resistant primer coating composition and method for preventing filiform corrosion. 4,761,188, Cl. 148-6.200.
Miyawaki, Motohisa, to Fuji Jukogyo Kabushiki Kaisha. Control system for a continuously variable transmission. 4,760,760, Cl. 74-866.000.
Miyazawa, Kazutoshi: *See*—
Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, 4,761,246, Cl. 252-299.680.
Mizuhashi, Mamoru: *See*—
Nishiyama, Hisashi; Miyasaka, Seiichi; Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Yoshihara, Akihiko, 4,761,061, Cl 350-357.000.
Mizunoya, Nobuyuki: *See*—
Sato, Hideki; Mizunoya, Nobuyuki; and Nagata, Mitsuhiro, 4,761,345, Cl. 428-552.000.
Mizutani, Satoshi: *See*—
Ominato, Kiyoshi; and Mizutani, Satoshi, 4,761,091, Cl. 402-76.000
Mochida, Haruo, to Nissan Motor Company, Limited. Keyless entry system for automotive devices including steering lock device with compact, portable wireless code transmitter. 4,761,645, Cl 340-825.310.
Mock, Elmar; and Hotz, Jean-Marie, to ETA SA Fabriques d'Ebauches. Artefact band with bonded clasp. 4,760,714, Cl. 63-3.000
Moeller, Robert P.: *See*—
Burns, William K.; Frigo, Nicholas J.; and Moeller, Robert P., 4,761,049, Cl. 350-96.140.
Mohr, Glenn R. Magnetic flux induction heatng. 4,761,527, Cl. 219-10.410.
Molback, Jens J.: *See*—
Jacobsen, Finn; Molback, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,760,699, Cl. 60-531.000
Molecular Genetics, Inc.: *See*—
Anderson, Paul C.; and Hibberd, Kenneth A., 4,761,373, Cl. 435-172.300.
Molin, Marek: *See*—
Schreiber, Hans; and Molin, Marek, 4,760,827, Cl. 123-414.000.
Monroe, Hanford D.: *See*—
Titsworth, Raymond; Lipe, J. Tom; Dale, James L.; Monroe, Hanford D.; and Hill, Jerry M., 4,761,749, Cl. 364-559.000
Monsanto Company: *See*—
Alt, Gerhard H., 4,761,176, Cl. 71-118.000.
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,760,691, Cl. 57-243.000.
Montieth, Royel F.: *See*—
Trick, O. Lee; and Montieth, Royel F., 4,760,763, Cl. 81-3.090.
Moore, Patrick D.: *See*—
Kluger, Edward W.; Moore, Patrick D.; and Burchette, Joe T., 4,761,502, Cl. 564-442.000
Moran, John C.: *See*—
Weisenbarger, Gale M.; and Moran, John C., 4,761,228, Cl. 210-222.000.
Morgan, Clifford D.: *See*—
Engelson, Morris; Morgan, Clifford D.; and Waltz, Ivan E., 4,761,604, Cl. 324-78.00R.
Mori, Kei. Light rays radiation cloth for medical treatment. 4,761,047, Cl. 350-96.100.
Mori, Kei. Lighting system for building. 4,761,716, Cl. 362-32.000.
Mori, Taro: *See*—
Katayanagi, Shinichi; and Mori, Taro, 4,760,748, Cl. 73-865.600.
Morimoto, Yoshihiko, to Fuji Jukogyo Kabushiki Kaisha. Transmission ratio control system for a continuously variable transmission 4,761,153, Cl. 474-28.000.
Morita, Tatsuo, to Nissan Motor Company, Limited. System for controlling an engine and method therefor. 4,760,825, Cl. 123-340.000
Morita, Yoshio: *See*—
Nara, Takashi; Takeichi, Hiroaki; Morita, Yoshio; Hatano, Takashi; and Kawato, Yutaka, 4,761,779, Cl. 370-58.000.
Moriuchi, Shigenori: *See*—
Sasaoka, Senzo; Moriuchi, Shigenori; Kameoka, Kimitaka; Katoh, Kazunobu; and Inagaki, Yoshio, 4,761,362, Cl. 430-267.000
Moriya, Tatsuo; Aizawa, Hitomi; Natori, Kuniharu; Kamoi, Kazumi; and Yabe, Hiroshi, to Seiko Epson Corporation. Electronic timekeeping apparatus with temperature compensation and method for compensating same. 4,761,771, Cl. 368-202.000.
Moriyama, Hidemi, to Kabushiki Kaisha Komatsu Seisakusho. Overload protecting apparatus for a press. 4,760,781, Cl. 100-53.000.
Moriyasu, Katsuyuki: *See*—
Kaneko, Fumihiko; and Moriyasu, Katsuyuki, 4,760,916, Cl. 206-329.000
Morlock, Roland: *See*—
Mady, Raschad; Ries, Christian; and Morlock, Roland, 4,761,189, Cl. 148-6.160
Morota, Makie: *See*—
Okada, Hiroo; Ikeda, Yoshiaki; and Morota, Makie, 4,761,773, Cl. 369-44.000
Morris, Christopher P., to Hambro Machinery Limited. Distribution means. 4,760,779, Cl. 99-475.000
Morris, James R.: *See*—
Blatt, Joel M.; Heiland, Robert; Morris, James R.; Pugh, Jerry; and Wogoman, Frank W., 4,761,381, Cl. 436-165.000
Morsucci, Juan C.: *See*—
Silvestrini, Jesus A.; Barbier, Jose E.; and Morsucci, Juan C., 4,760,780, Cl. 99-584.000
Morton Thiokol, Inc.: *See*—
Hart, Stephen C., 4,761,336, Cl. 428-379.000
Olliff, Martin T., 4,761,254, Cl. 264-3.300
Rei, Nuno M.; and Grant, Lawrence P., 4,761,247, Cl. 252-364.000
Moss, Michael D. Wheel motor cover. 4,760,891, Cl. 180-65.500
Moss, Paul B. Torch with improved air flow. 4,761,531, Cl. 219-70.000
Moteki, Tsutomu; Yamaguchi, Kunihiro; and Iizuka, Hisao, to Chisso Corporation. Acoustic vibration sheet and polypropylene composition for the same. 4,761,451, Cl. 524-505.000
Motoren-Werke Mannheim AG vorm. Benz Abt. stat. Motorenbau.: *See*—
Aupor, Hans; and Muller, Wilhelm, 4,760,821, Cl. 123-308.000.
Motorola, Inc.: *See*—
Kane, Robert C.; and Kotecki, Carl, 4,761,621, Cl. 333-1.100
Lynk, Charles N., Jr.; and Labedz, Gerald P., 4,761,829, Cl 455-307.000
McKee, John M., 4,761,582, Cl. 310-322.000
Pfiester, James R., 4,761,385, Cl. 437-52.000
Sorrells, Peter H., 4,761,617, Cl. 331-111.000
Mozingo, Robert E.: *See*—
Smith, Wayne G.; Martinez, David V.; Mozingo, Robert E.; and Hanson, Charles B., 4,761,113, Cl. 414-732.000
Mrazek, Franklin C.: *See*—
McPheeters, Charles C.; and Mrazek, Franklin C., 4,761,349, Cl 429-39.000
MTD Products Inc.: *See*—
Siegrist, Rudolf, 4,760,687, Cl. 56-15.800.
Mueller, Richard A.: *See*—
Partis, Richard A.; and Mueller, Richard A., 4,761,503, Cl 568-313.000
Mueller, Rolf J., to Textube Corporation. Ventable container 4,760,936, Cl. 220-366.000
Muhlratzer, August; Lassmann, Siegfried; Bertinger, Roland; Gutwein, Herbert; and Sanden, Renate, to Man Technologie GmbH. Method and article for the production of porous fiber bats. 4,761,323, Cl. 428-198.000.
Muir, Larry A., to Merck & Co., Inc. Use of certain compounds in livestock food as growth promotants for better feed utilization and improved carcass composition. 4,761,421, Cl. 514-352.000.
Mulford, Frederick A., to Hartman Rack Products, Inc. Glide system for mini-load warehouse rack. 4,761,081, Cl. 384-20.000
Muller, Johannes C. A.; and Beijersbergen Van Henegouwen, Cornelis M., to U.S. Philips Corporation. Helical scan type apparatus with readily aligned scanning unit. 4,761,696, Cl. 360-84.000
Muller, Martin E.: *See*—
Gram, Helen F.; Muller, Martin E.; Pendergrass, Ann M.; and Rink, Phillip A., 4,761,208, Cl. 204-95.000
Muller, Wilhelm: *See*—
Aupor, Hans; and Muller, Wilhelm, 4,760,821, Cl. 123-308.000
Mullier, Philippe: *See*—
Desmons, Pierre; and Mullier, Philippe, 4,761,380, Cl. 435-313.000
Mulvey, Robert F.: *See*—
Gebhardt, Joseph J.; Mulvey, Robert F.; and Yodsnukis, John J., 4,761,308, Cl. 427-249.000
Murakami, Hiroyasu, to Kabushiki Kaisha Toshiba. Optical disk recording and reproducing apparatus reliably providing access to desired tracks. 4,761,772, Cl. 369-32.000
Murakami, Hiroyasu, to Tokyo Shibaura Denki Kabushiki Kaisha Optical disc using tracking and clocking prepits and address prepits between adjacent ones of the tracking and clocking prepits, and an optical apparatus using such a disc. 4,761,775, Cl. 369-46.000
Murakami, Yuichi: *See*—
Kawai, Taneichi; and Murakami, Yuichi, 4,761,644, Cl 340-825.310
Murakami, Zensaku: *See*—
Ohashi, Kaoru; Hamada, Chiaki; Kawakami, Hiroshi; Hirano, Yutaka; and Murakami, Zensaku, 4,761,022, Cl. 280-772.000
Murakawa, Takashi: *See*—
Katsuno, Hisashi; Murakawa, Takashi; and Yoneda, Toshikazu, 4,761,512, Cl. 585-417.000
Muramatsu, Yasuyuki; and Nakamichi, Shoji, to Kabushiki Kaisha Aiaishi. Wheel lock for vehicles. 4,760,718, Cl. 70-18.000
Muramoto, Yutaka, to Terumo Kabushiki Kaisha. Apparatus for reading displayed value of electronic clinical thermometer. 4,761,526, Cl 206-306.000

VOL 1093 ISS 1 AG 2 1988 UMI

Murasaki, Ryuichi, to Yoshida Kogyo K. K. Method for producing hooks on book-and-loop fasteners. 4,760,625, Cl. 26-9.000.

Murata Kikai Kabushiki Kaisha: *See*—
Otoshima, Hiroo; and Hatakeyama, Yasunori, 4,760,969, Cl. 242-18.00R.

Murata Manufacturing Co., Ltd.: *See*—
Ito, Katsuo; Yamamoto, Takami; and Kinoshita, Kazunori, 4,761,712, Cl. 361-429.000.
Kaneko, Fumihiko; and Moriyasu, Katsuyuki, 4,760,916, Cl. 206-329.000.

Murayama, Yoshinobu, to Kubota, Ltd. Transmission system for vehicle having planetary gear type forward and backward drive switching apparatus. 4,760,758, Cl. 74-764.000.

Murphy, Edward J.; and Conti, Ronald S., to DeSoto, Inc. Polyamine-polyene ultraviolet coatings. 4,761,435, Cl. 522-46.000.

Murphy, Harry S.: *See*—
McMahan, David R.; Murphy, Harry S.; and Nagengast, William E., Jr., 4,761,717, Cl. 362-66.000.

Murray, William V.; Clum, Charles E.; and Lukenbach, Elvin R., to Johnson & Johnson Baby Products Company. Sunscreen compositions. 4,761,276, Cl. 424-59.000.

Murray, William V.: *See*—
Clum, Charles E.; Murray, William V.; and Lukenbach, Elvin R., 4,761,275, Cl. 424-59.000.

Mussatti, Bryan G.: *See*—
Griswold, Stanley R., Jr.; and Mussatti, Bryan G., 4,761,798, Cl. 375-59.000.

Muth, Eric A.: *See*—
Husbands, G. E.; Yardley, John P.; and Muth, Eric A., 4,761,501, Cl. 564-167.000.

Mutou, Yoshiichi; and Uematsu, Eiji, to CKD Kabushiki kaisha. Air pressure regulator. 4,760,862, Cl. 137-315.000.

Myer, John M.: *See*—
Hunt, Alexander, III; and Myer, John M., 4,761,144, Cl. 439-545.000.

Myers, Peter L.: *See*—
Ellames, George J.; Upton, Roger M.; Jaxa-Chamiec, Albert A.; and Myers, Peter L., 4,761,414, Cl. 514-250.000.

Myers, Robert E. Fiberglass grating formed of interlocked pultruded fiberglass grating bars. 4,760,680, Cl. 52-669.000.

Myers, W. Michael: *See*—
Alexander, Steven R.; and Myers, W. Michael, 4,761,237, Cl. 210-647.000.

Myron, Douglas D., to Eaton Corporation. Ion beam implantation display method and apparatus. 4,761,559, Cl. 250-492.210.

N.I.S. Limited: *See*—
Foulkes, Thomas L., 4,761,534, Cl. 219-121.800.

N. V. Raychem S.A.: *See*—
Buekers, Valere; and Franckx, Joris, 4,761,052, Cl. 350-96.200.

Naan Mechanical Works: *See*—
Gorney, Moshe, 4,760,959, Cl. 239-233.000.

Nabisco Brands, Inc.: *See*—
Fazzolare, Richard D.; and Windmuller, Rudolf, 4,761,296, Cl. 426-549.000.
Simelunas, William J.; and Aquino, Agostino, 4,760,778, Cl. 99-450.100.

Nagai, Masashi, to Snair Company, The. Modular sprayhead assembly 4,760,961, Cl. 239-267.000.

Nagaoka, Haruo: *See*—
Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, 4,761,212, Cl. 204-181.100.

Nagaoka, Yoshitomi: *See*—
Yamanishi, Kazuhiro; Kobayashi, Masaaki; Takeuchi, Akihiro; Ochi, Atsuo; and Nagaoka, Yoshitomi, 4,761,690, Cl. 358-310.000.

Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Mesh pattern eraser for endoscope. 4,760,839, Cl. 128-6.000.

Nagashima, Takashi; and Miura, Eiji, to Aisin Seiki Kabushiki Kaisha. Fluid pressure control valve for vehicle braking system. 4,761,041, Cl. 303-9.620.

Nagata, Mitsuhiro: *See*—
Sato, Hideki; Mizunoya, Nobuyuki; and Nagata, Mitsuhiro, 4,761,345, Cl. 428-552.000.

Nagengast, Andreas: *See*—
Frank, Hubertus; and Nagengast, Andreas, 4,761,820, Cl. 384-520.000.

Nagengast, William E., Jr.: *See*—
McMahan, David R.; Murphy, Harry S.; and Nagengast, William E., Jr., 4,761,717, Cl. 362-66.000.

Nagle, Teri: *See*—
Meraj, Paul; and Nagle, Teri, 4,761,290, Cl. 426-90.000.

Nagoshi, Fumiya: *See*—
Matsumoto, Shigemi; and Nagoshi, Fumiya, 4,761,463, Cl. 525-74.000.

Nagura, Shigehiro: *See*—
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru; Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, 4,761,436, Cl. 522-114.000.

Naik, Subhash K., to AVCO Corporation. Erosion-resistant coating system. 4,761,346, Cl. 428-627.000.

Naitoh, Masataka: *See*—
Suzuki, Kazunori; and Naitoh, Masataka, 4,761,242, Cl. 252-62.900.

Nakae, Kiyohiko: *See*—
Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Yoshida, Teruaki; and Sadatoshi, Hajime, 4,761,462, Cl. 526-159.000.

Nakagawa, Hiroshi, to Shinko Electric Co., Ltd. Linear pulse motor. 4,761,574, Cl. 310-12.000.

Nakagawa, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Absolute value comparator for differences. 4,761,759, Cl. 364-769.000.

Nakagawa, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Elongation control system. 4,760,723, Cl. 72-8.000.

Nakagiri, Takashi: *See*—
Okubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; Hatanaka, Katsunori; and Nakagiri, Takashi, 4,761,058, Cl. 350-331.00T.

Nakajima, Fumihiro: *See*—
Yoshida, Masayuki; Ueda, Izumi; Ishii, Hidehiro; Shiba, Takahumi; and Nakajima, Fumihiro, 4,761,692, Cl. 358-335.000

Nakajima, Toru; Sato, Masahiro; Nishimura, Katsuhiko; and Tsuru, Sumiaki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Medium, apparatus and method for cell separation. 4,761,366, Cl. 435-2.000.

Nakajima, Toyohei: *See*—
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,760,822, Cl. 123-325.000.

Nakamichi, Shoji: *See*—
Muramatsu, Yasuyuki; and Nakamichi, Shoji, 4,760,718, Cl. 70-18.000.

Nakamoto, Katsuya: *See*—
Kanno, Yoshiaki; Nakamoto, Katsuya; and Sumitani, Jiro, 4,760,829, Cl. 123-488.000.

Nakamoto, Seishi: *See*—
Takeno, Shinji; Nakamoto, Seishi; and Oono, Kouhei, 4,761,267, Cl. 420-529.000.

Nakamura, Kyoichi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pre-expanded particles of propylene resin. 4,761,431, Cl. 521-60.000.

Nakamura, Takashi, to Fuji Photo Film Co., Ltd. Phosphor and radiation image storage panel containing the same. 4,761,347, Cl. 428-691.000.

Nakamura, Tsutomu: *See*—
Itoh, Kunio; Fukushima, Motoo; and Nakamura, Tsutomu, 4,761,452, Cl. 524-521.000

Nakanihon Juki Co., Ltd.: *See*—
Nakatani, Toshio; and Ohshima, Atsumi, 4,760,809, Cl. 112-121.150.

Nakano, Hiromichi: *See*—
Inagaki, Mitsuo; Iwanami, Shigeki; Sasaya, Hideaki; and Nakano, Hiromichi, 4,761,125, Cl. 418-201.000.

Nakano, Maki: *See*—
Sugisawa, Ko; Shibuki, Masaru; Yamaguchi, Noriaki; and Nakano, Maki, 4,761,297, Cl. 426-618.000.

Nakao, Yasuo: *See*—
Minami, Shunji; Nakao, Yasuo; and Nomura, Kazuhiko, 4,760,703, Cl. 60-605.100.

Nakasato Limited: *See*—
Igata, Naohiro; and Nakasato, Yoshio, 4,761,265, Cl. 420-472.000.

Nakasato, Yoshio: *See*—
Igata, Naohiro; and Nakasato, Yoshio, 4,761,265, Cl. 420-472.000.

Nakase, Kazuhiko, to Harada Kogyo Kabushiki Kaisha. Device for controlling motor driven antennas for vehicles. 4,761,593, Cl. 318-473.000.

Nakatani, Eisaku: *See*—
Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, 4,761,212, Cl. 204-181.100.

Nakatani, Koma. Lock for telescoping tubular leg. 4,761,092, Cl. 403-104.000.

Nakatani, Toshio; and Ohshima, Atsumi, to Nakanihon Juki Co., Ltd. Apparatus for feeding fabric to sewing machine. 4,760,809, Cl. 112-121.150.

Nakayama, Michio: *See*—
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000.

Nakayama, Tetsuya: *See*—
Wakamatsu, Keiji; Nakayama, Tetsuya; and Atsumi, Jun, 4,761,707, Cl. 361-127.000.

Naoi, Takayuki: *See*—
Nikaido, Hideyuki; Naoi, Takayuki; Komori, Atsushi; and Nihei, Mitsuo, 4,760,728, Cl. 72-407.000.

Nara, Takashi; Takeichi, Hiroaki; Morita, Yoshio; Hatano, Takashi; and Kawato, Yutaka, to Fujitsu Limited. Subscriber's line switching control system. 4,761,779, Cl. 370-58.000.

Naruse, Kazuo; Kitano, Mikio; and Tobita, Hideaki, to Toyota Jidosha Kabushiki Kaisha. Spot welding device. 4,761,533, Cl. 219-86.700

Naruse, Yoshihiro; and Suzuki, Toshihide, to Kawasaki Steel Corporation. Selective preparation of trans-perhydroscenaphthene. 4,761,510, Cl. 585-268.000

Naso, Vincenzo: *See*—
Bartolini, Carlo M.; Naso, Vincenzo; and Suraci, Ferdinando, 4,760,698, Cl. 60-526.000.

Nasser, Gamal E. Method and system for current generation. 4,760,706, Cl. 60-675.000.

Nassof, Martin, to Simplex Ceiling Corp. Suspended ceiling having a concealed suspension grid and lay-in metal panels supported thereon. 4,760,677, Cl. 52-484.000.

National Research Council of Canada: *See*—
Heggie, William S.; and Davies, Anthony S., 4,760,697, Cl. 60-408.000.

National Rivet & Manufacturing, Company: *See*—
Gardner, Robert B., 4,761,105, Cl. 411-57.000.

National Semiconductor Corporation: *See*—
Buynoski, Matthew S., 4,761,386, Cl. 437-203.000.

National Starch and Chemical Corporation: *See*—
Aurichio, Joseph A.; and Fisher, Paul D., 4,761,335, Cl. 428-352.000
Rosiak, Edward A.; and Bozich, Frank A., 4,761,341, Cl. 428-512.000
Salerno, Catherine E., 4,761,198, Cl. 156-334.000

National Steel Corporation: *See*—
Scherer, Ronald W.; and Ross, Nicholas V., 4,761,530, Cl. 219-10.710.

Natori, Kuniharu: *See*—
Moriya, Tatsuo; Aizawa, Hitomi; Natori, Kuniharu; Kamoi, Kazumi; and Yabe, Hiroshi, 4,761,771, Cl. 368-202.000

NCR Corporation: *See*—
Amy, Michael E., 4,761,735, Cl. 364-200.000
Stegelmeier, Ulrich H. E.; and Ganton, Keith A., 4,760,903, Cl. 192-26.000.

NEC Corporation: *See*—
Goto, Hideto, 4,761,678, Cl. 357-23.600.
Hashimoto, Kiyokazu, 4,761,765, Cl. 365-185.000.
Izumisawa, Hiroyuki, 4,761,753, Cl. 364-736.000
Kinoshita, Seiichiro, 4,761,754, Cl. 364-736.000
Saito, Akio, 4,761,824, Cl. 455-127.000.
Sawano, Tsuyotake, 4,761,060, Cl. 350-354.000
Tomoji, Nukiyama, 4,761,760, Cl. 364-788.000.
Watabe, Noboru, 4,760,659, Cl. 40-124.100.
Watanabe, Takeshi, 4,761,764, Cl. 365-181.000.

Negishi, Kiyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Temperature and aging compensated drive circuit in a semiconductor laser beam printer. 4,761,659, Cl. 346-108.000.

Negishi, Kiyoshi, to Asahi Kogaku Kogyo Kabushiki; and Matsushita Electric Industrial Co., Ltd. Emergency resetting circuit for a semiconductor laser of a laser beam printer. 4,761,661, Cl. 346-108.000.

Neki, Shigeo: *See*—
Yasunobu, Isamu; Ohara, Kenichi; Shibata, Nobuho; and Neki, Shigeo, 4,761,599, Cl. 318-723.000

Nelis, Philippe: *See*—
Rossi, Carmela A.; and Nelis, Philippe, 4,761,221, Cl. 208-262.000.

Nemco, Incorporated: *See*—
Short, R. Stanford, 4,760,766, Cl. 83-356.300

Neppl, Franz; Jacobs, Erwin; Winnerl, Josef; and Mazure-Espejo, Carlos-Alberto, to Siemens Aktiengesellschaft. Forming retrograde twin wells by outdiffusion of impurity ions in epitaxial layer followed by CMOS device processing. 4,761,384, Cl. 437-029.000

Nestegard, Susan K.: *See*—
Ott, Ronald L.; and Nestegard, Susan K., 4,761,318, Cl. 428-85.000.

Netsch, Robert R., to Fiberplastics, Inc. Lift tab lid with accordian hinge. 4,760,934, Cl. 220-269.000

Neumann, Gerhard: *See*—
Conrad, Hans-Jurgen; Kurz, Hanns; Martini, Helmut; and Neumann, Gerhard, 4,760,630, Cl. 29-33.00A.

Neumann Industries, Incorporated: *See*—
Neumann, John W.; and Neumann, J. Scott, 4,761,291, Cl 426-231.000

Neumann, J. Scott: *See*—
Neumann, John W.; and Neumann, J. Scott, 4,761,291, Cl. 426-231.000

Neumann, John W.; and Neumann, J. Scott, to Neumann Industries, Incorporated. Pineapple processing method. 4,761,291, Cl 426-231.000

Neumeier, Jurgen: *See*—
Vetter, Ulrich; and Neumeier, Jurgen, 4,760,753, Cl. 74-479.000.

New York University: *See*—
Maas, Werner K.; and Gyles, Carlton L., 4,761,372, Cl 435-172.100

Newell, Catherine D.: *See*—
Sadowski, Michael D.; Alesio, Philip; and Newell, Catherine D., 4,761,671, Cl. 355-3.00R

Newnham, Robert E.: *See*—
Hiremath, Basavaraj V.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,761,711, Cl. 361-321.000.

Newton, Kenneth C.: *See*—
Wallace, Robert P.; Nugent, William P.; and Newton, Kenneth C., 4,760,940, Cl. 222-129.100.

Ng, Alvan W.; and Fisher, Edwin P., to Honeywell Bull Inc. Computer memory apparatus. 4,761,730, Cl. 364-200.000.

Ng, Lillian W.: *See*—
Paton, Neil E.; Dennies, Daniel P.; Lumsden, Jesse B.; and Ng, Lillian W., 4,761,187, Cl. 148-3.000

NGK Insulators, Ltd.: *See*—
Oda, Isao; and Tsuno, Nobuo, 4,761,117, Cl. 416-241.00R.
Oda, Isao, 4,761,340, Cl. 428-457.000
Torita, Katsutoshi; and Yamamoto, Kojuro, 4,760,783, Cl. 100-137.000
Wakamatsu, Keiji; Nakayama, Tetsuya; and Atsumi, Jun, 4,761,707, Cl. 361-127.000

Nicholas, David M.; Roden, Thomas M.; and Gottier, Gerry N., to Air Products and Chemicals, Inc. Hydrocarbon recovery from fuel gas. 4,761,167, Cl. 62-17.000

Nichols, Steven C., Jr. Self contained apparatus to guide a roll of roofing material, to heat the departing roofing material, and to accurately and sealably lay the heated roofing material on a roof surface 4,761,201, Cl. 156-497.000.

Nicolas, Gerard: *See*—
Massit, Claude; and Nicolas, Gerard, 4,761,517, Cl. 174-36.000

Niesyn, Joseph Z. Planet model with solar display. 4,761,138, Cl. 434-143.000

Nihei, Mitsuo: *See*—
Nikaido, Hideyuki; Naoi, Takayuki; Komori, Atsushi; and Nihei, Mitsuo, 4,760,728, Cl. 72-407.000

Nihon Kagaku Kogyo Co., Ltd.: *See*—
Kohsaka, Yasuo; Niida, Tohru; Sato, Hisao; and Kano, Hajime, 4,761,074, Cl. 356-37.000

Nihon Kousakuyu Co., Ltd.: *See*—
Kobori, Takeshi; and Kimura, Shigeki, 4,761,241, Cl 252-32.500

Niida, Tohru: *See*—
Kohsaka, Yasuo; Niida, Tohru; Sato, Hisao; and Kano, Hajime, 4,761,074, Cl. 356-37.000

Nigata, Kunihiro; and Fujikura, Takashi, to Yamanouchi Pharmaceutical Co., Ltd. Sulfamoyl-substituted phenethylamine derivatives, their preparation, and pharmaceutical compositions, containing them 4,761,500, Cl. 564-86.000

Nikaido, Hideyuki; Naoi, Takayuki; Komori, Atsushi; and Nihei, Mitsuo, to Kawasaki Steel Corporation; and Hitachi, Ltd. Method for reducing widths of hot slabs. 4,760,728, Cl. 72-407.000

Nikko Kogyo Kabushiki Kaisha: *See*—
Akama, Toyohiko; Iino, Masashi; and Igarashi, Osamu, 4,761,044, Cl. 312-110.000

Nils Olsson Hydraulmontage AB: *See*—
Warmling, Bo, 4,760,813, Cl. 114-121.000

Nimco Corporation: *See*—
Bachner, Jerry G.; Bachner, Larry G.; and Hose, John, 4,761,156, Cl. 493-133.000

Nio, Satoru; and Wakisako, Hitoshi, to Yaskawa Electric Mfg Co., Ltd Method of detecting and controlling work start point of robot 4,761,596, Cl. 318-568.000

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Tokushima, Tadao; and Shiraki, Makato, 4,761,330, Cl 428-312.800
Yamamoto, Jun, 4,760,768, Cl 84-236.000

Nippon Kogaku K. K.: *See*—
Goto, Tetsuro, 4,761,666, Cl. 354-133.000
Takatsu, Norihiko; and Kimura, Keita, 4,761,689, Cl. 358-213.220

Nippon Kogaku K.K.: *See*—
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000

Nippon Kokan Kabushiki Kaisha: *See*—
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000
Nishio, Hiroaki; and Harada, Jun, 4,761,264, Cl. 419-68.000

Nippon Petrochemicals Co., Ltd.: *See*—
Shimizu, Isoo; Matsumura, Yasuo; Kawakami, Shigenobu; and Sato, Atsushi, 4,761,508, Cl. 585-25.000

Nippon Soken, Inc.: *See*—
Inagaki, Mitsuo; Iwanami, Shigeki; Sasaya, Hideaki; and Nakano, Hiromichi, 4,761,125, Cl. 418-201.000

Nippondenso Co., Ltd.: *See*—
Hanabusa, Kazunori; Yamagishi, Nobutoshi; and Ito, Kenzo, 4,761,742, Cl. 364-443.000
Shimada, Shiro; Haraguchi, Hiroshi; and Iwata, Toshiharu, 4,760,828, Cl. 123-425.000
Suzuki, Kazunori; and Naitoh, Masataka, 4,761,242, Cl. 252-62.900
Suzuki, Masanori; Hibi, Yasuo; Tanaka, Kazuaki; and Yamaguchi, Yoshimitsu, 4,760,910, Cl. 198-412.000

NIRO Atomizer B.V.: *See*—
Rockx, Ludwig G., 4,760,815, Cl. 118-326.000

Nishi, Hideji; and Kondo, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic induction apparatus with tap winding conductors. 4,761,628, Cl. 336-180.000

Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, to Honda Giken Kogyo K.K. Control system for a direct-coupling mechanism in hydraulic power transmission means of a transmission for automotive vehicles. 4,760,761, Cl. 74-867.000

Nishimoto, Yoshitaka; and Tamaki, Kanji, to Ryowa Reiki Seisakusho, Ltd. Movable stacker for a food loaf slicing machine. 4,760,765, Cl. 83-92.000

Nishimura, Katsuhiko: *See*—
Nakajima, Toru; Sato, Masahiro; Nishimura, Katsuhiko; and Tsuru, Sumiaki, 4,761,366, Cl. 435-2.000

Nishimura, Yasushi, to Kureha Kagaku Kogy Kabushiki Kaisha. Antidote including activated carbon particles. 4,761,284, Cl. 424-125.000

Nishio, Hiroaki; and Harada, Jun, to Nippon Kokan Kabushiki Kaisha Method for molding powders. 4,761,264, Cl. 419-68.000

Nishiyama, Hisashi; Miyasaka, Seiichi; Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Yoshihara, Akihiko, to Asahi Glass Company Ltd. Method for fabrication of electrochromic device and the same fabricated by the method. 4,761,061, Cl. 350-357.000

Nishizawa, Nobuyoshi: *See*—
Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; Inoue, Akio; and Takehara, Osamu, 4,761,350, Cl. 429-49.000

Nissan Motor Co., Ltd.: *See*—
Maki, Yoshihiro; Kano, Makoto; Fujiki, Akira; and Tanimoto, Ichiro, 4,761,344, Cl. 428-552.000
Mochida, Haruo, 4,761,645, Cl. 340-825.310
Morita, Tatsuo, 4,760,825, Cl. 123-340.000

Niwa, Koichi: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu, Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000

Nodera, Hisatoshi, to Omron Tateisi Electronics Co. High frequency oscillation proximity switch. 4,761,603, Cl. 323-315.000

VOL 1093 ISS 1 AG 2 1988 UMI

Noguchi, Kazunari: *See*—
Fukui, Koichiro; Furukawa, Yuichi; and Noguchi, Kazunari, 4,760,878, Cl. 165-104.270.
Nollez, Jacques; and Pressaco, Pierre, to Bendix France. Electrical contactor. 4,761,564, Cl. 307-118.000.
Nomura, Hiroshi; Saito, Susumu; and Echizen, Susumu, to Diesel Kiki Co., Ltd. Compressor having pulsating reducing mechanism. 4,761,119, Cl. 417-269.000.
Nomura, Kazuhiko: *See*—
Minami, Shunji; Nakao, Yasuo; and Nomura, Kazuhiko, 4,760,703, Cl. 60-605.100.
Nomura Micro Science Co., Ltd.: *See*—
Kohsaka, Yasuo; Niida, Tohru; Sato, Hisao; and Kano, Hajime, 4,761,074, Cl. 356-37.000.
Nord-Plan Stalreoler A/A: *See*—
Christensen, Bjarne; and Larsen, Niels, 4,761,562, Cl. 250-561.000.
Nordeen, Steven K.: *See*—
Edgell, Marshall H.; Nordeen, Steven K.; and Hutchinson, Clyde A., III, 4,761,367, Cl. 435-6.000.
Nordica SpA: *See*—
Baggio, Giorgio, 4,760,653, Cl. 36-117.000.
Noritsu Kenkyu Center Co., Ltd.: *See*—
Sawasaki, Takashi, 4,761,675, Cl. 355-76.000.
North American Philips Corporation: *See*—
Barnes, Casper W., 4,761,752, Cl. 364-728.000.
Shaffer, Jesse S., 4,761,713, Cl. 361-433.000.
Stupp, Edward H., 4,761,679, Cl. 357-23.100.
Northern Telecom Limited: *See*—
Deczky, Andrew G.; and Rayment, Stephen G., 4,761,758, Cl. 364-761.000.
Hicks, Gregory F., 4,761,763, Cl. 364-900.000.
Northgrave, Randall B., to International Paper Company Incorporated. Combination pallet and collapsible container mounted thereon. 4,760,922, Cl. 206-600.000.
Northrop Corporation: *See*—
Laul, Virgil R., 4,761,548, Cl. 250-211.00R.
Norton Company: *See*—
Foster, Bryan D., 4,761,134, Cl. 432-253.000.
Noumi, Yoshihiro: *See*—
Hamano, Hisashi; Hasegawa, Kinji; Noumi, Yoshihiro; and Katoh, Hideo, 4,761,327, Cl. 428-220.000.
Nova Pharmaceutical Corporation: *See*—
Rzeszotarski, Waclaw J.; and Kyle, Donald J., 4,761,405, Cl. 514-114.000.
Nova Scand Utveckling AB: *See*—
Bjorhaag, Georg; Embring, Goran; and Stahl, Karl-Gunnar, 4,761,342, Cl. 428-537.100.
Novak, Lucille H., to Exxon Production Research Company. Method for primary cementing a well with a drilling mud which may be converted to cement using chemical initiators with or without additional irradiation. 4,760,882, Cl. 166-295.000.
Noyori, Masaharu: *See*—
Shiragasawa, Tsuyoshi; Sugano, Masahide; and Noyori, Masaharu, 4,761,607, Cl. 324-158.00R.
Nugent, William P.: *See*—
Wallace, Robert P.; Nugent, William P.; and Newton, Kenneth C., 4,760,940, Cl. 222-129.100.
Nukem GmbH: *See*—
Hammon, Wolfgang; Theisen, Wolfgang; and Wegner, Klaus, 4,761,112, Cl. 414-591.000.
Nunlist, Erwin J., to Kennecott Corporation. Method and apparatus for distributing the load between sections of a vertical column. 4,761,025, Cl. 285-114.000.
Nunning, Walter J.: *See*—
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,760,691, Cl. 57-243.000.
Nynex Corporation: *See*—
Brancati, Rudolph P., 4,761,809, Cl. 379-150.000.
Nyquist, Stephen, to Inertia Dynamics, Inc. Armature assembly. 4,760,898, Cl. 188-161.000.
O. F. Ahlmark & Co. EFTR. AB: *See*—
Warmling, Bo, 4,760,813, Cl. 114-121.000.
O & S Manufacturing Company: *See*—
Smith, Joseph E.; and Trudeau, William H., 4,761,083, Cl. 384-208.000.
Oba, Toshio; Mihama, Takeshi; and Futatsumori, Koji, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of fine spherical particles of silicone elastomer. 4,761,454, Cl. 524-862.000.
O'Brien, Michael J.; and Rigg, Robert B., to British Nuclear Fuels Plc. Apparatus for waste encapsulation. 4,761,127, Cl. 425-110.000.
Occelli, Mario L., to Union Oil Company of California. Delaminated clays and their use in hydrocarbon conversion processes. 4,761,391, Cl. 502-63.000.
Occidental Chemical Corporation: *See*—
Kulpa, Charles F.; and Sojka, Stanley A., 4,761,376, Cl. 435-262.000.
Ochi, Atsuo: *See*—
Yamanishi, Kazuhiro; Kobayashi, Masaaki; Takeuchi, Akihiro; Ochi, Atsuo; and Nagaoka, Yoshitomi, 4,761,690, Cl 358-310.000.
Ochiai, Hiromichi. Method for finishing clothes. 4,761,305, Cl. 427-180.000.
Ocvirk, Norbert: *See*—
Seibert, Wolfram; Ocvirk, Norbert; and Weise, Lutz, 4,761,042, Cl 303-92.000
Oda, Isao; and Tsuno, Nobuo, to NGK Insulators, Ltd. Turbine rotor and a method of producing the same. 4,761,117, Cl. 416-241.00R.
Oda, Isao, to NGK Insulators, Ltd. Ceramics sliding member. 4,761,340, Cl. 428-457.000.
Ogata, Masaru; and Takeda, Shuichi, to Kabushiki Kaisha Komatsu Seisakusho. Sintering method. 4,761,262, Cl. 419-10.000.
Ogawa, Hiromi: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000.
Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Recording medium and method of producing the same. 4,761,316, Cl. 428-64.000.
Ogawa, Tadatoshi: *See*—
Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Yoshida, Teruaki; and Sadatoshi, Hajime, 4,761,462, Cl. 526-159.000.
Ogburn, Alan P.: *See*—
Franklin, Philip C.; and Ogburn, Alan P., 4,761,608, Cl. 324-202.000.
Ogino, Hiroshi; Matsumoto, Yukio; Togashi, Hiroshi; and Ojima, Kumiko, to Victor Company of Japan, Ltd. Magnetic recording medium having a back coat layer containing carbon black treated with fatty acids. 4,761,331, Cl. 428-323.000.
Ogura, Mitsuru, to Sharp Kabushiki Kaisha. Full waste toner container detector. 4,761,674, Cl. 355-15.000.
Oguri, Yasuo; Awata, Mitsuru; and Endo, Hozumi, to Mitsubishi Chemical Industries Limited. In organic fibers containing fine crystals of AlN and Al_2O_3 and process for their production. 4,761,388, Cl. 501-95.000.
Ohara, Kenichi: *See*—
Yasunobu, Isamu; Ohara, Kenichi; Shibata, Nobuho; and Neki, Shigeo, 4,761,599, Cl. 318-723.000.
Ohashi, Kaoru; Hamada, Chiaki; Kawakami, Hiroshi; Hirano, Yutaka; and Murakami, Zensaku, to Toyota Jidosha Kabushiki Kaisha. Suspension controller for improved turning. 4,761,022, Cl. 280-772.000.
Ohgami, Takayuki: *See*—
Yamaguchi, Takahiro; Arakawa, Norio; Ohgami, Takayuki; and Kosawa, Hiromi, 4,761,634, Cl. 340-347.0AD.
Ohhira, Hideaki: *See*—
Aoki, Tadashi; Ashikaga, Tadatoshi; Kuno, Hiroshi; Isobe, Masakazu; and Ohhira, Hideaki, 4,760,709, Cl. 62-324.600.
Ohio State University Research Foundation, The: *See*—
Marshall, Alan G.; Ricca, Tom L.; and Wang, Tao-Chin L., 4,761,545, Cl. 250-291.000.
Ohshima, Atsumi: *See*—
Nakatani, Toshio; and Ohshima, Atsumi, 4,760,809, Cl. 112-121.150.
Ohta, Satoshi: *See*—
Takimoto, Masahiro; Ohta, Satoshi; and Yamazaki, Yoshio, 4,761,333, Cl. 428-327.000.
Oishi, Kengo, to Fuji Photo Film Co., Ltd. Biasing member for biasing a tape in a magnetic tape cassette. 4,761,701, Cl. 360-130.330.
Ojima, Kumiko: *See*—
Ogino, Hiroshi; Matsumoto, Yukio; Togashi, Hiroshi; and Ojima, Kumiko, 4,761,331, Cl. 428-323.000.
Okada, Hiroo; Ikeda, Yoshiaki; and Morota, Makie, to Olympus Optical Co., Ltd. Tracking control apparatus. 4,761,773, Cl. 369-44.000.
Okada, Yasushi: *See*—
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,760,822, Cl. 123-325.000.
Okamoto, Akira: *See*—
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J.
Okamoto, Tsuneo; Iwasaki, Takao; Iizuka, Yo; and Shiiki, Zenya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for preparing polyarylene thioether having thiol/thiolate end group concentration of 10 micro mole/g or less. 4,761,468, Cl. 528-388.000.
Okano, Keigo: *See*—
Shudo, Katsuyuki; Kinjo, Hisao; Okano, Keigo; and Hanashiro, Yoshiaki, 4,761,694, Cl. 360-37.100.
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, to Kawasaki Steel Corporation. Method of and apparatus for controlling operation of a cross helical rolling mill. 4,760,724, Cl. 72-19.000.
Oki Electric Industry Co., Ltd.: *See*—
Saito, Kaoru, 4,761,769, Cl. 365-230.000.
Okubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; Hatanaka, Katsunori; and Nakagiri, Takashi, to Canon Kabushiki Kaisha. Biasing liquid crystal displays having capacitors and transistors. 4,761,058, Cl. 350-331.00T.
Okuda, Takao: *See*—
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000.
Okuno, Itaru: *See*—
Fujita, Nagahisa; Okuno, Itaru; and Kaneko, Tadashi, 4,760,826, Cl. 123-399.000
Okutu, Toshimitu: *See*—
Kakuishi, Yutaka; Masuyama, Kenichi; Fujiyama, Masaaki; and Okutu, Toshimitu, 4,761,243, Cl. 252-62.540.
Olin Corporation: *See*—
Butt, Sheldon H.; and Cann, William F., 4,761,518, Cl. 174-52.0FP.
Cawlfield, David W., 4,761,216, Cl. 204-284.000.
Scardera, Michael; and Roche, Thomas S., 4,761,244, Cl. 252-79.300.

Scardera, Michael; and Roche, Thomas S., 4,761,245, Cl. 252-793.000.
Olliero, Dominique: *See*—
Choay, Patrick; Roger, Pierre; and Olliero, Dominique, 4,761,430, Cl. 514-562.000.
Olliff, Martin T., to Morton Thiokol, Inc. Method of and apparatus for fabricating a tool to form an asymmetrical constant cross section bore in the propellant in a solid rocket motor. 4,761,254, Cl. 264-3.300.
Olson, Ronald A.; and Buck, Arthur G., to Precision Interconnect Corporation. Highly flexible, shielded, multi-conductor electrical cable. 4,761,519, Cl. 174-107.000.
Olvera, Raul A. Improvements in spinning ring assembly for textile twisting apparatus. 4,760,689, Cl. 57-124.000
Olympus Optical Co., Ltd.: *See*—
Fukuda, Hiroyuki, 4,760,838, Cl. 128-4.000.
Nagasaki, Tatsuo, 4,760,839, Cl. 128-6.000.
Okada, Hiroo; Ikeda, Yoshiaki; and Morota, Makie, 4,761,773, Cl. 369-44.000.
Omietanski, George M.: *See*—
Childress, Thomas E.; Omietanski, George M.; and Mendicino, Frank D., 4,761,492, Cl. 556-482.000.
Ominato, Kiyoshi; and Mizutani, Satoshi, to King Jim Co., Ltd. Binding device. 4,761,091, Cl. 402-76.000.
Omron Tateisi Electronics Co.: *See*—
Nodera, Hisatoshi, 4,761,603, Cl. 323-315.000.
Oneto, John C.: *See*—
Lee, Hsiao-Peng S.; Oneto, John C.; and Rawlinson, Stephen J., 4,761,756, Cl. 364-757.000.
Onward Multi-Corp., Inc.: *See*—
Witzel, Terrence R., 4,760,836, Cl. 126-42.000.
Oono, Kouhei: *See*—
Takeno, Shinji; Nakamoto, Seishi; and Oono, Kouhei, 4,761,267, Cl. 420-529.000.
Oono, Nobuyuki: *See*—
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,760,822, Cl. 123-325.000.
Op de Beek, Johannes C. A.: *See*—
Lobregt, Steven; Op de Beek, Johannes C. A.; and Werkman, Roelof, 4,761,738, Cl. 364-414.000.
Opheij, Willem G., to U.S. Philips Corporation. Device for determining a centring error of an optical disc relative to the axis of rotation of a turntable supporting the disc. 4,761,776, Cl. 369-54.000.
Oppelt, Sylvester, to Siemens Aktiengesellschaft. X-ray diagnostics installation. 4,761,803, Cl. 378-99.000.
Oppermann, Stefan: *See*—
Ott, Gernot; Oppermann, Stefan; Riedl, Gottfried; and Sticht, Walter, 4,760,638, Cl. 29-732.000.
O'Quin, John C., III: *See*—
Duvall, Keith E.; Hooten, Anthony D.; O'Quin, John C., III; and Smith, Todd A., 4,761,737, Cl. 364-300.000.
Orbital Engine Company Proprietary Limited: *See*—
Smith, Darren A.; McKay, Michael L.; and Sayer, Christopher N. F., 4,760,832, Cl. 123-525.000.
Ormat Turbines Ltd.: *See*—
Yogev, Amnon; and Mahlab, David, 4,760,705, Cl. 60-651.000.
Ortho Pharmaceutical Corporation: *See*—
Wachter, Michael P.; and Karanewsky, Donald S., 4,761,413, Cl. 514-229.800.
Osada, Yoshiyuki: *See*—
Okubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; Hatanaka, Katsunori; and Nakagiri, Takashi, 4,761,058, Cl. 350-331.00T.
Oswal, Ravinder K.: *See*—
Batliwalla, Neville S.; Jones, Michael C.; Oswal, Ravinder K.; Shafe, Jeff; and Trammell, Bernadette A., 4,761,541, Cl. 219-528.000
Otoshima, Hiroo; and Hatakeyama, Yasunori, to Murata Kikai Kabushiki Kaisha. Package yarn processing device. 4,760,969, Cl. 242-18.00R.
Otsuka, Masahiko; and Ishimura, Hidekazu, to Asahi Kasei Kogyo Kabushiki Kaisha. Polymaleimide compound and composition containing the same. 4,761,460, Cl. 525-504.000.
Ott, Gernot; Oppermann, Stefan; Riedl, Gottfried; and Sticht, Walter, to STIWA-Fertigungstechnik Sticht Gesellshaft m.b.H. Apparatus for preparing stacks of armature disks. 4,760,638, Cl. 29-732.000.
Ott, Ronald L.; and Nestegard, Susan K., to Minnesota Mining and Manufacturing Company. Loop fastener portion with thermoplastic resin attaching and anchoring layer. 4,761,318, Cl. 428-85.000.
Ouellette, Maurice J.: *See*—
Germer, Warren R.; and Ouellette, Maurice J., 4,761,606, Cl 324-142.000
Oushiden, Hideshi: *See*—
Watanabe, Junji; and Oushiden, Hideshi, 4,761,673, Cl. 355-14.00R.
Outboard Marine Corporation: *See*—
Smith, LaVerne D., 4,760,685, Cl. 56-11.300
Overend, Ralph: *See*—
Chornet, Esteban; Koeberle, Paulo G.; and Overend, Ralph, 4,761,185, Cl. 127-38.000.
Owens-Corning Fiberglas Corporation: *See*—
Gaul, David J., 4,761,169, Cl. 65-8.000.
Owens-Illinois Plastic Products Inc.: *See*—
Szeremeta, Walter, 4,761,200, Cl. 156-448.000
Owens-Illinois Television Products Inc.: *See*—
Ward, William R., 4,760,671, Cl. 51-215.0AR.
Owens, Rick L.; and Fowler, Michael J. Electrode clip. 4,761,143, Cl. 439-372.000
Owens, Roger P.; and Tomlinson, James, to Thorn Emi Electronics Limited. Microstrip antenna. 4,761,653, Cl. 343-700.0MS.
Oy Lars Lundin Patent Ab: *See*—
Lundin, Lars, 4,760,619, Cl. 15-142.000.
Ozaki, Hiroyuki; Hirai, Hiroyuki; and Kawata, Ken, to Fuji Photo Film Co., Ltd. Method for forming an image employing acetylene silver compounds. 4,761,361, Cl. 430-203.000.
Ozaki, Yasuo: *See*—
Sasaki, Yoshinari; and Ozaki, Yasuo, 4,761,597, Cl. 318-625.000
Pabst, Otto, to Leitner, S.p.A. Combined engagement-disengagement device for two speed reduction gears with coaxial shafts. 4,760,756, Cl. 74-665.00L.
Pacheco, John F.; and Rising, Donald B., to Millipore Corporation Small volume tangential flow filtration apparatus. 4,761,230, Cl 210-321.840
Pacific Western Systems, Inc.: *See*—
Ellenberger, Charles E.; and Piper, Hayden K., 4,761,301, Cl 427-39.000
Paine, George W., to Metalworks, Inc. Drawer and cabinet assembly. 4,761,045, Cl. 312-219.000
Palley, Lawrence S.: *See*—
Hallenbeck, Kirby S.; and Palley, Lawrence S., 4,761,647, Cl 340-825.220.
Panchak, John R.; and Trowell, John M., to Hercules Incorporated Use of antimony compounds to retard catalyst deactivation in foam-forming compositions containing aromatic polyester polyols 4,761,433, Cl. 521-124.000
Panizo Robles, Pedro: *See*—
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Panizo Robles, Pedro, 4,761,657, Cl. 346-1.100.
Paquin, Ronald J., to Alcan International Limited. Slitter strand separating roll. 4,760,947, Cl. 226-190.000
Parent, Christopher A.: *See*—
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000.
Parker, Delmer G.; and Stark, Howard M., to Xerox Corporation Highlight color printer. 4,761,668, Cl. 355-3.0DD.
Parker, Delmer G.; May, Jerome E.; and Allen, William M., Jr., to Xerox Corporation. Ramped developer biases. 4,761,672, Cl. 355-14.00D.
Partis, Richard A.; and Mueller, Richard A., to G. D. Searle & Co Pharmaceutical compositions containing 5-phenyl-1,3-dioxoalkenyl compounds. 4,761,503, Cl. 568-313.000
Pastari, Gunther: *See*—
Ganzmann, Herbert; and Pastari, Gunther, 4,760,657, Cl. 37-232.000
Paton, Neil E.; Dennies, Daniel P.; Lumsden, Jesse B.; and Ng, Lillian W., to Rockwell International Corporation. Method of improving stress corrosion resistance of alloys. 4,761,187, Cl. 148-3.000.
Patron, Christian S. A. E.; and Huben, Aart P., to U.S. Philips Corporation. High-frequency heating generator comprising a multiple-grid electron tube. 4,761,618, Cl. 331-167.000
Patron, Christian S. A. E., to U.S. Philips Corporation. High-frequency generator with improved cathode current regulated high-frequency oscillator. 4,761,619, Cl. 331-167.000.
Pattanaik, Surya: *See*—
Ainslie, Norman G.; Brede, Dwight W.; Erpelding, A. David; and Pattanaik, Surya, 4,761,699, Cl. 360-103.000.
Patterson, David W.: *See*—
St. Angelo, Stephen, Jr.; Carver, George C.; Patterson, David W.; and Fremont, Owen K., 4,760,636, Cl. 29-701.000.
Pattison, Ian C., to Warner-Lambert Company. 3-deazaguanine sulfonic acid salts. 4,761,478, Cl. 546-118.000.
Patton, Harold P.: *See*—
Kruse, Gregory M.; and Patton, Harold P., 4,760,746, Cl 73-862.230.
Patton, Wesley H.: *See*—
Stubbs, John L.; Patton, Wesley H.; and Thompson, Jeffrey L., 4,760,797, Cl. 104-12.000.
Paulini, Dieter; Wagner, Wolfram; Schmitz-Bastian, Peter; and Bruck, Robert, to Bayer Aktiengesellschaft. Process for the treatment of a filament cable. 4,760,629, Cl. 28-256.000.
Paulson, John G.: *See*—
Paulson, Kerry K.; Paulson, John G.; and Paulson, John K., deceased, 4,760,835, Cl. 124-78.000
Paulson, John K., deceased: *See*—
Paulson, Kerry K.; Paulson, John G.; and Paulson, John K., deceased, 4,760,835, Cl. 124-78.000.
Paulson, Kerry K.; Paulson, John G.; and Paulson, John K., deceased (by Paulson, Kerry K., John G. Paulson, executors). Ball throwing device. 4,760,835, Cl. 124-78.000
Paulson, Kerry K., John G. Paulson, executors: *See*—
Paulson, Kerry K.; Paulson, John G.; and Paulson, John K., deceased, 4,760,835, Cl. 124-78.000
Pawlowski, Norman E.: *See*—
Askeland, Ronald A.; Kappele, William D.; Pawlowski, Norman E.; and Stoffel, John L., 4,761,180, Cl. 106-22.000
Payne, Richard K.: *See*—
Rothanavibhata, Adam A.; and Payne, Richard K., 4,761,240, Cl 252-8.700
Peck, David E., to Rockwell International Corporation. Drive axle housing blank. 4,760,755, Cl. 74-606.00R.
Peet, Norton P.; Sunder, Shyam; and Vinogradoff, Anna P., to Merrell Dow Pharmaceuticals Inc. 3-(1H-tetrazol-5-yl)thieno[2,3-d]pyrimidin-4(3H)-ones. 4,761,474, Cl. 544-250.000

VOL 1093 ISS 1 AG 2 1988 UMI

Pelet, Andre : *See—*
Crespo Ruiz, Francois; and Pelet, Andre , 4,761,051, Cl. 350-96.200
Pendergrass, Ann M.: *See—*
Gram, Helen F.; Muller, Martin E.; Pendergrass, Ann M.; and Rink, Phillip A., 4,761,208, Cl. 204-95.000.
Pennwalt Corporation: *See—*
Shapiro, Leonard, 4,761,157, Cl. 494-35.000.
Peppel, George W.; and Sullivan, Paul E., to Lockheed Corporation. Rope tension damper. 4,760,992, Cl. 254-277.000.
Pereyra, Rodger J., to Minnesota Mining and Manufacturing Company. Tamper-indicating package. 4,760,919, Cl. 206-484.200.
Perkinson, Robert H.: *See—*
Dyer, Gerald P.; Gorneault, Gerald J.; Stearns, Charles F.; and Perkinson, Robert H., 4,760,662, Cl. 60-39.281.
Perrier de la Bathie, Rene : *See—*
Caillaut, Bruno; Perrier de la Bathie, Rene ; and Terrier, Jacques, 4,761,528, Cl. 219-10.491.
Perrier, Philippe: *See—*
Huet, Roger; and Perrier, Philippe, 4,760,611, Cl. 2-2.500.
Perry, Mordechay: *See—*
Linder, Charles; Perry, Mordechay; and Ketraro, Reuven, 4,761,233, Cl. 210-500.370.
Perry, Steven B., to Keptel, Inc. Programmable selective ringing circuit and method for party telephone line. 4,761,810, Cl. 379-181.000.
Persson, Olof L.: *See—*
Lundblad, Leif; Persson, Olof L.; Swegen, Hans B. A.; and Zettergren, Hans, 4,760,923, Cl. 209-534.000.
Peterpaul, Joseph, to Thomas & Betts Corporation. Support device for wire marker sleeves. 4,761,086, Cl. 400-531.000.
Peters, David: *See—*
Denick, John, Jr.; Peters, David; Talwar, Anil K.; and Liao, Wei C., 4,761,274, Cl. 424-48.000.
Peters, Donald L., to Phillips Petroleum Company. Apparatus for blow molding. 4,761,130, Cl. 425-532.000.
Peterson, Ian R.; and Girling, Ian R., to General Electric Company, p.l.c., The. Method of improving the electrical characteristics of a thin film. 4,761,211, Cl. 204-130.000.
Petit, Michael G., to Inamed Development Company. Apparatus for verifying the position of needle tip within the injection reservoir of an implantable medical device. 4,760,837, Cl. 128-1.00R.
Petolino, Joseph A., Jr.: *See—*
Christensen, Harold F.; and Petolino, Joseph A., Jr., 4,761,783, Cl. 371-38.000.
Petrik, William M.: *See—*
Agarwal, Pawan K.; Petrik, William M.; and Garner, Richard T., 4,761,444, Cl. 524-145.000.
Petro Sales Corporation: *See—*
Fackler, Dale J., 4,760,747, Cl. 73-864.650
Petroczi, Istvan: *See—*
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000.
Petrofsky, Jerrold S.: *See—*
Phillips, Chandler A.; and Petrofsky, Jerrold S., 4,760,850, Cl 128-432.00W
Petty, Walter L., to Du Pont de Nemours, E. I., and Company. Preparation of cyanomethyl esters. 4,761,494, Cl. 558-398.000.
Pez, Guido P.; Carlin, Richard T.; Laciak, Daniel V.; and Sorensen, James C., to Air Products and Chemicals, Inc. Method for gas separation. 4,761,164, Cl. 55-16.000.
Pezzulli, Michael F. Ventilator closure. 4,760,773, Cl. 98-42.160.
Pfaff Haushaltmaschinen GmbH: *See—*
Hartwig, Jurgen, 4,761,591, Cl. 318-345.00D.
Pfalzgraf, Emile. Drilling head with jointly or individually radially adjustable tools. 4,761,102, Cl. 408-157.000
Pfiester, James R., to Motorola, Inc. Forming a trench capacitor. 4,761,385, Cl. 437-52.000.
Pfizer Inc.: *See—*
Marfat, Anthony, 4,761,485, Cl. 548-486.000.
Pflumm, Wolfgang: *See—*
Politis, Constantin; Johnson, William L.; and Pflumm, Wolfgang, 4,761,263, Cl. 419-33.000
Phillips, Chandler A.; and Petrofsky, Jerrold S., to Wright State University. Method for balancing assistance. 4,760,850, Cl. 128-432.00W
Phillips Petroleum Company: *See—*
Carter, Cecil O.; and Coombs, Daniel M., 4,761,222, Cl. 208-322.000.
Peters, Donald L., 4,761,130, Cl. 425-532.000
Philrich Innovators Research Manufacturing and Development, Inc.: *See—*
Stumpff, Phillip W.; and Taylor, Richard D., 4,761,525, Cl. 200-284.000
Phospho-Energetics, Inc.: *See—*
Prammer, Manfred G.; and Haselgrove, John C., 4,761,614, Cl. 324-320.000.
Piatt, Michael J.; and Walters, Michael A., to Eastman Kodak Company. Compact printer having convertible discharge hopper 4,761,663, Cl. 346-134.000.
Piatt, Michael J.; and Brown, Mark E., to Eastman Kodak Company. Print media handling system for compact printer with traversing, multiple print head carriage. 4,761,664, Cl. 346-134.000.
Piatt, Michael J.; and Houser, Kevin L., to Eastman Kodak Company. High speed print/cartridge printer/feeder. 4,761,665, Cl. 346-140.00R
Picard, Joseph A.; Roth, Bruce D.; and Sliskovic, Drago R., to Warner-Lambert Company. 6-(((substituted)quinolinyl)ethyl)-and ethenyl)-tetrahydro-4-hydroxypyran-2-one inhibitors of cholesterol biosynthesis. 4,761,419, Cl. 514-311.000.
Picker International, Inc.: *See—*
Denison, Kenneth S.; and Sattin, William, 4,761,819, Cl. 382-54.000.
Hinks, Richard S., 4,761,613, Cl. 324-309.000.
Holland, G. Neil; and Stauber, John R., 4,761,612, Cl. 324-307.000.
Pickering, John F.; Schluter, Peter; and Wagner, Bernd, to Lucas Industries Public Limited Company. Master cylinder for vehicle braking systems. 4,760,700, Cl. 60-585.000.
Pilotto, Alberto; Portelli, Mario; Carenzi, Angelo; and Della Bella, Davide, to Zambon S.p.A. Dipeptide compounds having pharmaceutical activity and compositions containing them. 4,761,399, Cl. 514-19.000.
Pinard, Jim, to Mitel Corporation. CMOS latch-up recovery circuit. 4,761,702, Cl. 361-18.000.
Pioneer Electronic Corporation: *See—*
Higashi, Hidejiro; Sato, Hiroshi; Yamamoto, Kaoru; and Kanda, Jun, 4,761,693, Cl. 360-13.000
Sugai, Yoshiro; and Kimura, Hiroyuki, 4,761,814, Cl. 381-13.000.
Yoshida, Masayuki; Ueda, Izumi; Ishii, Hidehiro; Shiba, Takahumi; and Nakajima, Fumihiro, 4,761,692, Cl. 358-335.000.
Yoshioka, Takayuki; and Hasegawa, Shinichi, 4,761,063, Cl. 350-432.000
Piper, Hayden K.: *See—*
Ellenberger, Charles E.; and Piper, Hayden K., 4,761,301, Cl. 427-39.000
Pirolli, Claude; and Fouilloy, Jean-Pierre, to U.S. Philips Corporation. Arrangement for measuring the distance separating the arrangement from a moving body. 4,761,652, Cl. 342-53.000.
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., to Raychem Limited. Recoverable article for encapsulation. 4,761,193, Cl. 156-85.000.
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., to Raychem Limited. Method of environmental sealing. 4,761,194, Cl. 156-86.000.
Plastro Gvat and Agroteam Consultants Ltd.: *See—*
Greenberg, Ilan, 4,760,958, Cl. 239-222.210.
Plus Corporation: *See—*
Amagaya, Hidefumi, 4,761,094, Cl. 403-341.000.
Poe, David T.; and Crouse, Joseph T., to General Motors Corporation. Universal battery post cap. 4,761,354, Cl. 429-121.000.
Poland, McKee D., to Hewlett-Packard Company. Means and method of scaling time interval measurements from an optical bar code scanner to improve decoder efficiency. 4,761,544, Cl. 235-462.000
Polaroid Corporation: *See—*
Mansfield, Robert J., 4,761,170, Cl. 65-18.200.
Polestar Magnetronics Inc.: *See—*
Kaszman, John, 4,761,590, Cl. 318-254.000.
Politis, Constantin; Johnson, William L.; and Pflumm, Wolfgang, to Kernforschungszentrum Karlsruhe GmbH. Process for producing formed amorphous bodies with improved, homogeneous properties. 4,761,263, Cl. 419-33.000.
Polley, Richard B.: *See—*
Jackson, Keith L.; Polley, Richard B.; and Schmitt, Dallas L., 4,760,799, Cl. 105-182.100.
Pon-Tzu, Chi. Air-ventilating shoe pad having shoe-lift effect. 4,760,651, Cl. 36-3.00B.
Ponpipom, Mitree M.: *See—*
Bugianesi, Robert L.; Ponpipom, Mitree M.; and Rupprecht, Kathleen M., 4,761,404, Cl. 514-77.000.
Ponzielli, Giuseppe, to Fibropolimeri S.R.L. Washing machine for washing off or separating plastic film from paper or cellulose fibers or other pollutants and method relating thereto. 4,760,717, Cl. 68-181.00R.
Porex Technologies Corp. of Georgia: *See—*
Bright, Donald G., 4,761,232, Cl. 210-500.360.
Portelli, Mario: *See—*
Pilotto, Alberto; Portelli, Mario; Carenzi, Angelo; and Della Bella, Davide, 4,761,399, Cl. 514-19.000.
Portugal, Joseph J.: *See—*
Keller, George O.; Portugal, Joseph J.; and Kane, Robert F., 4,761,191, Cl. 148-12.00R.
Posa, John G.: *See—*
Conger, Darrell R.; Posa, John G.; and Wickenden, Dennis K., 4,761,269, Cl. 422-245.000.
Potschke, Denes. Process for improving the dyeing of cellulosic materials with reactive or substantive dyes utilizing milk protein as a leveling agent. 4,761,161, Cl. 8-543.000.
Potter and Brumfield Inc.: *See—*
Bell, Richard E., 4,761,627, Cl. 335-128.000.
Pradinas, Claude: *See—*
Salmon, Pierre; Pradinas, Claude; and Louvatiere, Jimmy, 4,760,941, Cl. 222-153.000.
Prammer, Manfred G.; and Haselgrove, John C., to Phospho-Energetics, Inc. Device and method for automatic shimming of NMR instrument. 4,761,614, Cl. 324-320.000.
Precision Fabrics Group, Inc.: *See—*
Barnes, Charles G.; and Baldwin, A. Frank, 4,761,326, Cl 428-219.000
Precision Interconnect Corporation: *See—*
Olson, Ronald A.; and Buck, Arthur G., 4,761,519, Cl. 174-107.000.
Pressaco, Pierre: *See—*
Nollez, Jacques; and Pressaco, Pierre, 4,761,564, Cl. 307-118.000.
Preston, Corlis E.; and Hsia, Victor K. Travel trailer level indicator 4,760,649, Cl. 33-333.000

Price, John D.: *See—*
Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., 4,761,800, Cl. 375-117.000.
Prime Computer, Inc.: *See—*
Ardini, Joseph L., Jr.; Beckwith, Robert F.; Chen, Chi-Ping; and Rodman, Paul K., 4,761,755, Cl. 364-749.000.
Princeton Packaging, Inc.: *See—*
Crosby, Denis G., 4,760,684, Cl. 53-459.000
Pringle, Ronald E., to Camco, Incorporated. Choke and kill control system. 4,760,879, Cl. 166-117.500.
Probst, Robert L.: *See—*
Madhavan, Narayanan; Groh, Carole L.; and Probst, Robert L., 4,761,136, Cl. 433-214.000
Procter & Gamble Company, The: *See—*
Flora, Lawrence; and Floyd, Benjamin F., 4,761,406, Cl. 514-86.000.
Proehl, D. Scott: *See—*
Stone, Benjamin C.; and Proehl, D. Scott, 4,761,311, Cl. 427-366.000
Progelhof, Richard C.: *See—*
Blyler, Lee L., Jr.; Hart, Arthur C., Jr.; and Progelhof, Richard C., 4,761,168, Cl. 65-3.100.
Pruett, James D.: *See—*
Srinivasagopalan, Rangarajan; Pruett, James D.; Krishnan, Vedavalli G.; and Farias, Luis V., 4,761,784, Cl. 371-43.000.
Pruitt, Duard L., to RCA Corporation. Switching regulator with rapid transient response. 4,761,722, Cl. 363-17.000.
Pryor, Timothy R., to Diffracto Ltd. Electro-optical sensors for manual control. 4,761,072, Cl. 356-1.000.
Pucknat, John: *See—*
Guagliardo, Matthew; DebRoy, Tapan K.; and Pucknat, John, 4,761,337, Cl. 428-425.800.
Pudenz-Schulte Medical Research Corp.: *See—*
Schulte, Rudolf R.; East, Gary P.; and Heindl, Alfons, 4,761,158, Cl. 604-9.000.
Pugh, Jerry: *See—*
Blatt, Joel M.; Heiland, Robert; Morris, James R.; Pugh, Jerry; and Wogoman, Frank W., 4,761,381, Cl. 436-165.000.
Pujado, Peter R., to UOP Inc. Integrated process for high octane alkylation and etherification. 4,761,504, Cl. 568-697.000
Puster, Richard L.: *See—*
Singh, Jag J.; Sprinkle, Danny R.; and Puster, Richard L., 4,761,744, Cl. 364-500.000
Pyke, Stephen C.; Boos, Donald L.; and McMahon, Michael T., to Standard Oil Company, The. Lightweight, compact detector of sudden changes in concentration of a gas. 4,761,639, Cl. 340-634.000
Quabaug Corporation: *See—*
Austin, Arnold S., 4,760,652, Cl. 36-30.00R.
Quad Research Inc.: *See—*
MacGregor, Francis W., 4,760,951, Cl. 229-125.000.
Quantum Materials Inc.: *See—*
Husson, Frank D., Jr.; and Walter, Kathleen E., 4,761,224, Cl 106-1.140
Queen's University at Kingston: *See—*
de Bold, Adolfo J., 4,761,469, Cl. 530-324.000
R. F. Monolithics, Inc.: *See—*
Ash, Darrell L., 4,761,616, Cl. 331-107.00A.
R. T. Vanderbilt Company, Inc.: *See—*
Karol, Thomas J., 4,761,482, Cl. 548-142.000
Raab, Simon: *See—*
Fraser, Gregory A.; and Raab, Simon, 4,760,851, Cl. 128-774.000.
Raak Licht B.V.: *See—*
Willing, Achim, 4,761,721, Cl. 362-348.000.
Rabe, James A.; and Bujalski, Duane R., to Dow Corning Corporation. Process for preparing ceramic materials with reduced carbon levels. 4,761,389, Cl. 501-95.000.
Rabe, Robert L.: *See—*
Golke, Keith W.; and Rabe, Robert L., 4,761,571, Cl. 307-468.000.
Racal Data Communications Inc.: *See—*
Srinivasagopalan, Rangarajan; Pruett, James D.; Krishnan, Vedavalli G.; and Farias, Luis V., 4,761,784, Cl. 371-43.000
Racal Security Limited: *See—*
Ellis, Lyndon, 4,761,648, Cl. 340-825.640.
Rack Mate, Inc.: *See—*
Bass, Morton E.; and Herting, James G., 4,760,943, Cl. 224-39.000
Racz, Istvan: *See—*
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000
Rademacher, Wilhelm: *See—*
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000.
Rader, Edward F.: *See—*
Baleiko, Marc O.; and Rader, Edward F., 4,761,393, Cl 502-170.000
Raley, John M., to Kimberly-Clark Corporation. Laminated fibrous web comprising differentially bonded layers, and method and apparatus for making the same. 4,761,322, Cl. 428-198.000.
Ramachandran, Janakiraman: *See—*
Bell, John R.; Ramachandran, Janakiraman; and Ullrich, Axel, 4,761,371, Cl. 435-68.000
Ramos, Philip M., Jr. Resilient wrist bracelet. 4,760,715, Cl. 63-5.200
Rapp, Eugen. Method and apparatus for joining plates by stamping pressing and swaging dies. 4,760,632, Cl. 29-432.100.
Rapp, Eugen. Method of connecting thin plates. 4,760,634, Cl. 29-509.000
Ratcliffe, Charles T.; and Dolbear, Geoffrey E., to Union Oil Company of California. Upgrading and storage of solid carbonaceous fuel 4,761,162, Cl. 44-626.000
Rautenberg, Leonard J.; Gilbert, Milton M.; Wyner, James H.; and Wyner, Daniel M. Elastic, laminated, water-proof, moisture-permeable fabric. 4,761,324, Cl. 428-198.000
Rawlinson, Stephen J.: *See—*
Lee, Hsiao-Peng S.; Oneto, John C.; and Rawlinson, Stephen J., 4,761,756, Cl. 364-757.000
Raychem Corporation: *See—*
Batliwalla, Neville S.; Jones, Michael C.; Oswal, Ravinder K.; Shafe, Jeff; and Trammell, Bernadette A., 4,761,541, Cl 219-528.000
Raychem Limited: *See—*
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., 4,761,193, Cl. 156-85.000
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., 4,761,194, Cl. 156-86.000
Rayment, Stephen G.: *See—*
Deczky, Andrew G.; and Rayment, Stephen G., 4,761,758, Cl. 364-761.000
Raymond Engineering Inc.: *See—*
Meisterling, Jesse R., 4,760,740, Cl. 73-761.000
Raytheon Company: *See—*
Hartnett, Tom; Greenberg, Michael; and Gentilman, Richard L., 4,761,390, Cl. 501-152.000
RCA Corporation: *See—*
Mawhinney, Daniel D.; and Askew, Robert E., 4,761,821, Cl 455-73.000
Pruitt, Duard L., 4,761,722, Cl. 363-17.000
Sharma, Arvind K., 4,761,625, Cl. 333-209.000
Spiecker, Ray G., 4,760,948, Cl. 228-180.200
RCA Licensing Corporation: *See—*
Lendaro, Jeffery B., 4,761,723, Cl. 363-21.000
Rumreich, Mark F., 4,761,687, Cl. 358-174.000
Wharton, James H., 4,761,586, Cl. 315-408.000
Wharton, James H., 4,761,587, Cl. 315-408.000
Willis, Donald H., 4,761,686, Cl. 358-160.000
Reder, Herbert; and Schubert, Hans-Georg, to Mannesmann Rexroth GmbH. Servo-valve and a control motor therefor. 4,761,575, Cl 310-36.000
Reed, John M.; Sherman, William, III; and Loftus, Peter J., to Brandt Inc. Document handling and counting apparatus. 4,761,002, Cl 271-111.000
Reed Packaging Limited: *See—*
Birkett, John N., 4,760,790, Cl. 101-470.000
Reed, William C.: *See—*
Cogelia, Nicholas J.; Johnson, Brian D.; Reed, William C.; and Wilson, Carla G., 4,761,053, Cl. 350-96.230.
Reeves, Larry D.; and Zwagerman, Jay A., to Tandem Computers Incorporated. Fault tolerant/failsafe current unit. 4,761,705, Cl 361-93.000
Rei, Nuno M.; and Grant, Lawrence P., to Morton Thiokol, Inc. Phenol-stabilized microbiocidal compositions. 4,761,247, Cl. 252-364.000
Reichert, Gunther, deceased (by Reichert, Sylvia, Legal Representative), to Alcatel N.V. Electromagnetic interference shielding device 4,761,516, Cl. 174-35.0GC
Reichert, Sylvia, Legal Representative: *See—*
Reichert, Gunther, deceased, 4,761,516, Cl. 174-35.0GC
Reid, Lee R., to Texas Instruments Incorporated. Method for fabricating a semiconductor contact and interconnect structure using orientation dependent etching and thermomigration. 4,761,681, Cl 357-68.000
Reliance Comm/Tec Corporation: *See—*
Kammiller, Neil, 4,761,727, Cl. 363-98.000
Research Association for Utilization of Light Oil: *See—*
Katsuno, Hisashi; Murakawa, Takashi; and Yoneda, Toshikazu 4,761,512, Cl. 585-417.000
Reynolds, John L., III: *See—*
Hollis, David L.; and Reynolds, John L., III, 4,761,812, Cl 379-413.000
Rhodes, Andrew. Kitty litter. 4,760,816, Cl. 119-1.000
Rhodes, Gilbert A., Jr., to United States of America, Army Segmented, collapsible, rigid liquid storage tank. 4,760,932, Cl. 220-5.00A
Rhodes, Michael L. P.: *See—*
Felici, Alberto; and Rhodes, Michael L. P., 4,760,771, Cl 92-159.000
Rhone-Poulenc Chimie: *See—*
Shen, Ming; and Lagarde, Robert, 4,761,447, Cl. 524-251.000
Rhone-Poulenc Sante: *See—*
Campan, Jean-Jacques; and Lombardi, Roberto, 4,761,407, Cl. 514-179.000
Rhone-Poulenc Specialites Chimiques: *See—*
Cordier, Georges; and Ferlut, Jean-Serge, 4,761,506, Cl. 568-842.000
Ricca, Tom L.: *See—*
Marshall, Alan G.; Ricca, Tom L.; and Wang, Tao-Chin L 4,761,545, Cl. 250-291.000
Richardson, Ralph E.: *See—*
Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., 4,761,800, Cl. 375-117.000

VOL 1093 ISS 1 AG 2 1988 UMI

Richarz, Winfried: *See—*
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.

Richter, Martin, to Siemens Aktiengesellschaft. Apparatus for equipping circuit boards. 4,760,639, Cl. 29-566.300.

Ricoh Company, Ltd.: *See—*
Funato, Hiroyoshi, 4,761,046, Cl. 350-3.710.
Kondoh, Shiroh, 4,760,750, Cl. 74-89.200.

Riddle, Gary L.: *See—*
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000.

Ridgely, Marvis L.: *See—*
Bigbee, Marvin L.; Ridgely, Marvis L.; and Snyder, Michael D., 4,760,806, Cl. 111-87.000.

Riedl, Gottfried: *See—*
Ott, Gernot; Oppermann, Stefan; Riedl, Gottfried; and Sticht, Walter, 4,760,638, Cl. 29-732.000.

Ries, Christian: *See—*
Mady, Raschad; Ries, Christian; and Morlock, Roland, 4,761,189, Cl. 148-6.160.

Rigg, Robert B.: *See—*
O'Brien, Michael J.; and Rigg, Robert B., 4,761,127, Cl. 425-110.000.

Rilett, John W. Container valve. 4,760,865, Cl. 137-588.000.

Rinderle, Heinz, to Telefunken electronic GmbH. Radio receiver. 4,761,828, Cl. 455-296.000.

Rininger, David P.: *See—*
Dorsett, Terry E.; and Rininger, David P., 4,761,217, Cl. 204-290.00R.

Rink, Phillip A.: *See—*
Gram, Helen F.; Muller, Martin E.; Pendergrass, Ann M.; and Rink, Phillip A., 4,761,208, Cl. 204-95.000.

Rising, Donald B.: *See—*
Pacheco, John F.; and Rising, Donald B., 4,761,230, Cl. 210-321.840.

Ristic, Velimir M.: *See—*
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., 4,761,048, Cl. 350-96.110.

Ro, Paul I. H.: *See—*
Youcef-Toumi, Kamal; and Ro, Paul I. H., 4,761,588, Cl. 318-46.000.

Robb, Paul N.: *See—*
Mercado, Romeo I.; and Robb, Paul N., 4,761,064, Cl. 350-482.000.

Robert Bosch GmbH: *See—*
Conrad, Hans-Jurgen; Kurz, Hanns; Martini, Helmut; and Neumann, Gerhard, 4,760,630, Cl. 29-33.00A.
Sigl, Alfred; and Isella, Thomas, 4,760,893, Cl. 180-197.000.

Robertshaw Controls Company: *See—*
McGeorge, Gram J., 4,761,540, Cl. 219-506.000.

Roche, Thomas S.: *See—*
Scardera, Michael; and Roche, Thomas S., 4,761,244, Cl. 252-79.300.
Scardera, Michael; and Roche, Thomas S., 4,761,245, Cl. 252-793.000.

Rockefeller University, The: *See—*
Cerami, Anthony, 4,761,368, Cl. 435-7.000.

Rockwell International Corporation: *See—*
Frankel, Milton B.; and Witucki, Edward F., 4,761,250, Cl. 260-349.000.
Gillon, Willard A., Jr., 4,760,694, Cl. 60-200.100.
Kohl, Arthur L.; and Stewart, Albert E., 4,761,204, Cl. 162-30.100.
Paton, Neil E.; Dennies, Daniel P.; Lumsden, Jesse B.; and Ng, Lillian W., 4,761,187, Cl. 148-3.000.
Peck, David E., 4,760,755, Cl. 74-606.00R.
Yeh, Pochi A.; Ewbank, Mark D.; and Khoshnevisan, Mohsen, 4,761,059, Cl. 350-354.000.

Rockx, Ludwig G., to NIRO Atomizer B.V. Apparatus for displacing air through a cabinet for spraying paint. 4,760,815, Cl. 118-326.000.

Roden, Thomas M.: *See—*
Nicholas, David M.; Roden, Thomas M.; and Gottier, Gerry N., 4,761,167, Cl. 62-17.000.

Rodi, Anton; Grutzmacher, Berthod; and Kruger, Michael, to Heidelberger Druckmaschinen AG. Device for detecting the condition of carbon brushes. 4,761,594, Cl. 318-490.000.

Rodman, Paul K.: *See—*
Ardini, Joseph L., Jr.; Beckwith, Robert F.; Chen, Chi-Ping; and Rodman, Paul K., 4,761,755, Cl. 364-749.000.

Roger, Pierre: *See—*
Choay, Patrick; Roger, Pierre; and Olliero, Dominique, 4,761,430, Cl. 514-562.000.

Rohrman, Henry, to Schlegel Corporation. Compound winding apparatus and counterbalance systems. 4,760,622, Cl. 16-196.000.

Rokach, Joshua: *See—*
Girard, Yves; and Rokach, Joshua, 4,761,425, Cl. 514-456.000.

Roland Corporation: *See—*
Tsurubuchi, Tooru, 4,760,767, Cl. 84-1.160.

Rolflor Industries, Inc.: *See—*
Hodgetts, Graham L., 4,760,971, Cl. 242-67.10R.

Rolls-Royce plc: *See—*
Rooks, John V.; and Loxley, Russell A., 4,760,696, Cl. 60-39.281.

Rooks, John V.; and Loxley, Russell A., to Rolls-Royce plc. Fuel system for gas turbine engines. 4,760,696, Cl. 60-39.281.

Root, Stephen J.: *See—*
Kaufmann, Frank H.; Kramer, Charles F.; Grigsby, James D.; and Root, Stephen J., 4,760,628, Cl. 28-201.000.

Rosa, Bruno A.: *See—*
Harwood, Jon W.; Emrick, James W.; Rosa, Bruno A.; and Kratzer, Bruce G., 4,760,894, Cl. 181-282.000.

Rosemount Inc.: *See—*
Brown, Gregory C., 4,760,859, Cl. 137-84.000.

Rosenberg, Peretz. Flow regulator and water sprinkler including same. 4,760,957, Cl. 239-222.170.

Rosenthal, Robert D., to Trebor Industries, Inc. Standard for near-infrared reflectance measurement and method of making the same. 4,761,552, Cl. 250-252.100.

Rosiak, Edward A.; and Bozich, Frank A., to National Starch and Chemical Corporation. Temporarily bonded constructions. 4,761,341, Cl. 428-512.000.

Ross, John M.; and Woodworth, George K., to International Business Machines Corporation. Asynchronous multiphase switching gear. 4,761,563, Cl. 307-87.000.

Ross, Nicholas V.: *See—*
Scherer, Ronald W.; and Ross, Nicholas V., 4,761,530, Cl. 219-10.710.

Ross, Stephen T.: *See—*
Kaiser, Carl; Kruse, Lawrence I.; and Ross, Stephen T., 4,761,480, Cl. 546-294.000.

Rossi, Carmela A.; and Nelis, Philippe, to Labofina, S.A. Process for the decomposition of halogenated organic compounds. 4,761,221, Cl. 208-262.000.

Roth, Bruce D.: *See—*
Picard, Joseph A.; Roth, Bruce D.; and Sliskovic, Drago R., 4,761,419, Cl. 514-311.000.

Rothanavibhata, Adam A.; and Payne, Richard K., to Colgate-Palmolive Company. Controlling viscosity of fabric softening heavy duty liquid detergent composition containing bentonite. 4,761,240, Cl. 252-8.700.

Rousseau, Jean L.: *See—*
De Jonckheere, Raphael; and Rousseau, Jean L., 4,760,764, Cl. 83-23.000.

Rowe, John C.; and Melchi, Floyd D., to Truck Trailer Design, Inc. Flatbed semi-trailer vehicle. 4,761,031, Cl. 296-182.000.

Rowenta-Werke GmbH: *See—*
Emig, Hans; Lindstaedt, Bernd; Strein, Gunter; Uhrig, Helmut; and Volk, Willi, 4,760,658, Cl. 38-77.700.

Royal Ordnance plc: *See—*
Young, Frederick M., 4,760,795, Cl. 102-473.000.

Rudnev, Ivan E.; and Kulikov, Viktor V., to Volzhskoe Obiedinenie Po Proizvodstvu Legkovykh Avtomobilei. Method of making die set line. 4,760,762, Cl. 76-107.00R.

Rumreich, Mark F., to RCA Licensing Corporation. Automatic gain control delay circuit for a video signal processor. 4,761,687, Cl. 358-174.000.

Rupprecht, Kathleen M.: *See—*
Bugianesi, Robert L.; Ponpipom, Mitree M.; and Rupprecht, Kathleen M., 4,761,404, Cl. 514-77.000.

Ruszczyk, Stanley J.; Ferrier, Donald R.; Larson, Gary B.; Gallegos, Daniel; and Castaldi, Steven A., to MacDermid, Incorporated. Process for preparing multilayer printed circuit boards. 4,761,303, Cl. 427-96.000.

Rutledge, David L.: *See—*
Turner, John E.; and Rutledge, David L., 4,761,768, Cl. 365-201.000.

Ryan, Robert C.: *See—*
Kluttz, Robert Q.; Kemp, Richard A.; and Ryan, Robert C., 4,761,448, Cl. 524-381.000.

Ryowa Reiki Seisakusho, Ltd.: *See—*
Nishimoto, Yoshitaka; and Tamaki, Kanji, 4,760,765, Cl. 83-92.000.

Rzeszotarski, Waclaw J.; and Kyle, Donald J., to Nova Pharmaceutical Corporation. Antagonists of specific excitatory amino acid neurotransmitter receptors having increased potency. 4,761,405, Cl. 514-114.000.

S.A.T. (Societe Anonyme de Telecommunications): *See—*
Arnaune, Jean-Pierre; Dominguez, Nazario; and Walraet, Jean, 4,761,635, Cl. 340-347.0DD.

S-Cal Research: *See—*
Gondouin, Oliver M., 4,761,515, Cl. 585-500.000.

S & K Enterprises Inc.: *See—*
King, John R., 4,760,682, Cl. 52-731.000.

S.M.S. Industries, Inc.: *See—*
Davis, Richard E., 4,760,645, Cl. 30-249.000.

Sadatoshi, Hajime: *See—*
Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Yoshida, Teruaki; and Sadatoshi, Hajime, 4,761,462, Cl. 526-159.000.

Sadowski, Michael D.; Alesio, Philip; and Newell, Catherine D., to Eastman Kodak Company. Electrophotographic subprocess for apparatus using discharged area toning. 4,761,671, Cl. 355-3.00R.

Saeki, Keiso: *See—*
Higashi, Shunsaku; Sano, Shojiro; and Saeki, Keiso, 4,761,397, Cl. 503-214.000.

Saga, Toshihiko; Inao, Akitaka; and Fujii, Kenji, to Honda Giken Kogyo Kabushiki Kaisha. Method of and apparatus for remelting and hardening a shaft. 4,761,192, Cl. 148-152.000.

Sagoi, Masayuki; Kawashima, Noritsugu; Tanaka, Yoichiro; and Sekine, Kunio, to Kabushiki Kaisha Toshiba. Magnetic recording medium. 4,761,334, Cl. 428-332.000.

St. Angelo, Stephen, Jr.; Carver, George C.; Patterson, David W.; and Fremont, Owen K., to General Motors Corporation. Apparatus of a

robot for installing weather stripping in a door or like opening. 4,760,636, Cl. 29-701.000.

Saito, Akio, to NEC Corporation. Battery-powered mobile communications apparatus having transmitter reset function. 4,761,824, Cl. 455-127.000.

Saito, Kaoru, to Oki Electric Industry Co., Ltd. MOS read-only memory device. 4,761,769, Cl. 365-230.000.

Saito, Makoto, to Tone Boring Company Limited. Drill bit for core boring. 4,760,888, Cl. 175-259.000.

Saito, Shinichi: *See—*
Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, 4,761,246, Cl. 252-299.680.

Saito, Susumu: *See—*
Nomura, Hiroshi; Saito, Susumu; and Echizen, Susumu, 4,761,119, Cl. 417-269.000.

Saito, Tetsuo, to Tachikawa Spring Co., Ltd. Head rest unit. 4,761,034, Cl. 297-408.000.

Sakaguchi, Seiji: *See—*
Tano, Shunichi; Funabashi, Motohisa; Masui, Shoichi; and Sakaguchi, Seiji, 4,761,746, Cl. 364-513.000.

Sakai, Kazuo: *See—*
Matsushima, Yuichi; Sakai, Kazuo; and Akiba, Shigeyuki, 4,761,383, Cl. 437-3.000.

Sakai, Kiyoshi; Fujimura, Naoto; Kishi, Junichi; and Sakakibara, Teigo, to Canon Kabushiki Kaisha. Electrophotographic process using photoconductive cylinder of small diameter. 4,761,359, Cl. 430-126.000.

Sakai, Minoru: *See—*
Tanaka, Mitsugu; and Sakai, Minoru, 4,761,365, Cl. 430-555.000.

Sakai, Tatsuya; and Ishikawa, Sakou, to Hitachi, Ltd. Carry-save-adder three binary dividing apparatus. 4,761,757, Cl. 364-761.000.

Sakakibara, Teigo: *See—*
Sakai, Kiyoshi; Fujimura, Naoto; Kishi, Junichi; and Sakakibara, Teigo, 4,761,359, Cl. 430-126.000.

Sakane, Kazuo: *See—*
Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi; and Matuo, Teruaki, 4,761,410, Cl. 514-206.000.

Sakatsuji, Takao: *See—*
Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, 4,760,686, Cl. 56-15.800.

Sakuda, Ryutaro: *See—*
Kurihara, Norigi; and Sakuda, Ryutaro, 4,761,089, Cl. 401-198.000.

Sakurai, Hidetoshi, to Honda Giken Kogyo Kabushiki Kaisha. Auxiliary air volume control device for internal-combustion engine 4,760,824, Cl. 123-339.000.

Sakurai, Yoshimi: *See—*
Nishikawa, Masao; Sakurai, Yoshimi; and Aoki, Takashi, 4,760,761, Cl. 74-867.000.

Salerno, Catherine E., to National Starch and Chemical Corporation. Use of a thermoplastic elastic adhesive for elastic banding. 4,761,198, Cl. 156-334.000.

Salimbeni, Aldo: *See—*
Manghisi, Elso; and Salimbeni, Aldo, 4,761,422, Cl. 514-370.000.

Salmon, Pierre; Pradinas, Claude; and Louvatiere, Jimmy, to Societe Nouvelle de Bouchons Plastiques. Combination container and closure assembly. 4,760,941, Cl. 222-153.000.

Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, to Kubota Ltd. Attachment device for front-mountable working implement. 4,760,686, Cl. 56-15.800.

Samo, Harvey W.: *See—*
Lautenberger, Carl; and Samo, Harvey W., 4,761,150, Cl. 446-345.000.

Sample, Clark M., to Lichfield, Steve. Combination anchor. 4,760,880, Cl. 166-118.000.

Sanchez, David L.: *See—*
Sanchez, Florence J.; and Sanchez, David L., 4,761,032, Cl. 297-229.000.

Sanchez, Florence J.; and Sanchez, David L. Infant seat cover. 4,761,032, Cl. 297-229.000.

Sanden, Renate: *See—*
Muhlratzer, August; Lassmann, Siegfried; Bertinger, Roland; Gutwein, Herbert; and Sanden, Renate, 4,761,323, Cl. 428-198.000.

Sanford, Charles: *See—*
Dunn, James; Sanford, Charles; and Kadin, Joseph, 4,761,796, Cl. 375-1.000.

Sano, Shojiro: *See—*
Higashi, Shunsaku; Sano, Shojiro; and Saeki, Keiso, 4,761,397, Cl. 503-214.000.

Sano, Yasuo: *See—*
Arita, Kazuhiro; and Sano, Yasuo, 4,761,457, Cl. 525-439.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Torigai, Katsumi, 4,760,704, Cl. 60-612.000.

Santrade Limited: *See—*
Jansson, Kjell-Ove L.; Liljeblad, Lars E.; and Liljekvist, Bernt S., 4,760,887, Cl. 173-132.000.

Sanyo Electric Co., Ltd.: *See—*
Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; Inoue, Akio; and Takehara, Osamu, 4,761,350, Cl. 429-49.000.
Miyai, Kiyoshi; Uotani, Shuhei; Tsunemine, Toyohiko; and Kohmoto, Yujiro, 4,761,667, Cl. 355-3.00R.

Sapinski, Thomas A.: *See—*
Marozzi, Alfred A.; and Sapinski, Thomas A., 4,760,788, Cl. 101-333.000.

Sappington, Gayle L., to Cooper Industries, Inc. Fuse block with rejection feature. 4,761,148, Cl. 439-621.000.

Sasaki, Naoto; and Sato, Fumihiko, to Anelva Corporation. Magnetron sputtering etching apparatus. 4,761,219, Cl. 204-298.000.

Sasaki, Nobuo, to Fujitsu Limited. Semiconductor device having new conductive interconnection structure and method for manufacturing the same. 4,761,677, Cl. 357-8.000.

Sasaki, Shigeo; and Yamamoto, Osamu, to Hitachi Maxell, Ltd. Recording tape cartridge and hub for use therein and method of making the hub. 4,760,972, Cl. 242-68.500.

Sasaki, Toru; and Igarashi, Yoshinori, to Kohmi Bosai Kogyo Co., Ltd. Ionization-type smoke detector. 4,761,557, Cl. 250-381.000.

Sasaki, Toshio: *See—*
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,761,392, Cl. 502-126.000.

Sasaki, Yoshinari; and Ozaki, Yasuo, to Toshiba Kikai Kabushiki Kaisha. Method and system for controlling synchronous drive systems 4,761,597, Cl. 318-625.000.

Sasaoka, Senzo; Moriuchi, Shigenori; Kameoka, Kimitaka; Katoh, Kazunobu; and Inagaki, Yoshio, to Fuji Photo Film Co., Ltd. Processing a photographic material comprising an emulsion layer providing a contrast gradation and another layer providing a soft tone gradation. 4,761,362, Cl. 430-267.000.

Sasaya, Hideaki: *See—*
Inagaki, Mitsuo; Iwanami, Shigeki; Sasaya, Hideaki; and Nakano, Hiromichi, 4,761,125, Cl. 418-201.000.

Sasser, David E.: *See—*
Mitchell, Peter W. D.; McElligott, Lois T.; and Sasser, David E., 4,761,507, Cl. 570-236.000.

Sassier, Pierre, to Thomson-CSF. Fast discharge fire extinguisher and a method of fabricating same. 4,760,886, Cl. 169-28.000.

Satellite Technology Services, Inc.: *See—*
Horton, Edwin T.; and Heimbuch, William G., 4,761,827, Cl. 455-277.000.

Sato, Atsushi: *See—*
Shimizu, Isoo; Matsumura, Yasuo; Kawakami, Shigenobu; and Sato, Atsushi, 4,761,508, Cl. 585-25.000.

Sato, Fumihiko: *See—*
Sasaki, Naoto; and Sato, Fumihiko, 4,761,219, Cl. 204-298.000.

Sato, Hideki; Mizunoya, Nobuyuki; and Nagata, Mitsuhiro, to Kabushiki Kaisha Toshiba. Aluminum nitride substrate. 4,761,345, Cl. 428-552.000.

Sato, Hiroshi; and Kobayashi, Yoshihito, to Takeda Riken Co., Ltd. IC test equipment having input magazine replenisher. 4,760,924, Cl. 209-573.000.

Sato, Hiroshi: *See—*
Higashi, Hidejiro; Sato, Hiroshi; Yamamoto, Kaoru; and Kanda, Jun, 4,761,693, Cl. 360-13.000.

Sato, Hisao: *See—*
Kohsaka, Yasuo; Niida, Tohru; Sato, Hisao; and Kano, Hajime, 4,761,074, Cl. 356-37.000.

Sato, Kozo; and Yamamoto, Soichiro, to Fuji Photo Film Co., Ltd. Light-sensitive material containing silver halide, reducing agent, polymerizable compound and a silver diazotate. 4,761,360, Cl. 430-138.000.

Sato, Masahiro: *See—*
Nakajima, Toru; Sato, Masahiro; Nishimura, Katsuhiko; and Tsuru, Sumiaki, 4,761,366, Cl. 435-2.000.

Sato, Masaki: *See—*
Watanabe, Masatoshi; Takahashi, Miyoshi; Sato, Masaki; Ito, Motoya; and Arai, Keiji, 4,761,581, Cl. 310-214.000.

Sato, Michio: *See—*
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000.

Sato, Yasue, to Canon Kabushiki Kaisha. Shutter device for ion beam etching apparatus and such etching apparatus using same. 4,761,199, Cl. 156-345.000.

Satoh, Junichi: *See—*
Inoue, Michiya; and Satoh, Junichi, 4,761,566, Cl. 307-262.000.

Sattin, William: *See—*
Denison, Kenneth S.; and Sattin, William, 4,761,819, Cl. 382-54.000.

Savage, Jack W., to General Motors Corporation. Motor driven air moving apparatus for high speed, constant duty operation. 4,761,576, Cl. 310-51.000.

Savarese, John J.: *See—*
Swaringen, Roy A., Jr.; El-Sayad, Hassan A.; Yeowell, David A.; and Savarese, John J., 4,761,418, Cl. 514-308.000.

Sawada, Kingo: *See—*
Okazaki, Shuji; Kodaka, Mikio; Kagawa, Masahiro; Hatakeyama, Shiro; Kobayashi, Teruo; Sawada, Kingo; and Kanari, Shohei, 4,760,724, Cl. 72-19.000.

Sawano, Tsuyotake, to NEC Corporation. Optical delay type flipflop and shift register using it. 4,761,060, Cl. 350-354.000.

Sawasaki, Takashi, to Noritsu Kenkyu Center Co., Ltd. Negative carrier assembly for use with a photographic printer. 4,761,675, Cl. 355-76.000.

Saxman, William C., to Tamrock Inc. Cutter assembly for rotary boring of earth. 4,760,890, Cl. 175-363.000.

Saxon, Edward G. High confidence tube plug. 4,760,868, Cl. 138-89.000.

Sayama, Hideaki: *See—*
Hayakawa, Kimiaki; Sayama, Hideaki; Kitahara, Makoto; and Honjo, Takeshi, 4,761,001, Cl. 271-3.100.

Sayer, Christopher N. F.: *See—*
Smith, Darren A.; McKay, Michael L.; and Sayer, Christopher N. F., 4,760,832, Cl. 123-525.000.

VOL 1093 ISS 1 AG 2 1988 UMI

Scardera, Michael; and Roche, Thomas S., to Olin Corporation. Etching solutions containing ammonium fluoride and an alkyl polyaccharide surfactant. 4,761,244, Cl. 252-79.300.

Scardera, Michael; and Roche, Thomas S., to Olin Corporation. Etching solutions containing ammonium fluoride and an alkylphenol polyglycidol ether surfactant. 4,761,245, Cl. 252-793.000.

Schaberle, Erwin: *See*—
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B.

Schachter, Rozalie; and Viscogliosi, Marcello, to Stauffer Chemical Company. Method of vacuum depostion of pnictide films on a substrate using a pnictide bubbler and a sputterer. 4,761,300, Cl. 427-38.000.

Schaffner, Paul: *See*—
Lang, Bruno; and Schaffner, Paul, 4,760,690, Cl. 57-243.000

Schara, Robert E.; and Katcher, Jay H., to General Foods Corporation. Method of purifying starches and products produced therefrom. 4,761,186, Cl. 127-71.000.

Schatz, Friedrich: *See*—
Ziemek, Gerhard; Schatz, Friedrich; and Werwitzke, Lothar, 4,760,692, Cl. 57-314.000.

Schele, Enrique. Apparatus for an oscillating pinch roll assembly utilized in the extrusion of blown films. 4,760,627, Cl. 26-87.000.

Scherer, Ronald W.; and Ross, Nicholas V., to National Steel Corporation; and Ajax Magnethermic Corporation. Electric induction heat treating furnace. 4,761,530, Cl. 219-10.710.

Scherr, George H., to ImmunoMed Corporation. Vaccine from Dirofilaria extracts. 4,761,281, Cl. 424-88.000.

Schillaci, Rosario J.: *See*—
Wachter, Richard G.; and Schillaci, Rosario J., 4,760,952, Cl. 229-127.000.

Schirmer, Henry G., to W. R. Grace & Co., Cryovac Div. Multilayer gusseted bag with reverse fin seals. 4,761,080, Cl. 383-120.000.

Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, to BASF Aktiengesellschaft. M-anilido-urethanes and herbicides containing these compounds. 4,761,175, Cl. 71-100.000.

Schirmer, Ulrich: *See*—
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.

Schlaefli, Alfred. Surface grinding machine and method. 4,760,668, Cl. 51-5.00D.

Schlegel Corporation: *See*—
Rohrman, Henry, 4,760,622, Cl. 16-196.000.

Schleyer, Kurt: *See*—
Eckstein, Gunter K.; and Schleyer, Kurt, 4,760,667, Cl. 48-69.000

Schluter, Peter: *See*—
Pickering, John F.; Schluter, Peter; and Wagner, Bernd, 4,760,700, Cl. 60-585.000.

Schmauder, Karl, to Elring Dichtungswerke GmbH. Screen printing stencil for making elastomer sealing layers on flat gasket plates and method for making same. 4,761,364, Cl. 430-308.000.

Schmidt, Josef: *See*—
Christine, William C.; Schmidt, Josef; Lyons, Steffen; Green, Brian; and Herschman, George J., 4,761,197, Cl. 156-290.000.

Schmidt-Stumpf, Werner E.: *See*—
Clark, Brian E.; Lawlor, Francis D.; Schmidt-Stumpf, Werner E.; Stewart, Terrence J.; and Timms, George D., Jr., 4,761,785, Cl. 371-51.000.

Schmitt, Dallas L.: *See*—
Jackson, Keith L.; Polley, Richard B.; and Schmitt, Dallas L., 4,760,799, Cl. 105-182.100.

Schmitt, Hermann; and Schoening, Josef, to Hochtemperatur-Reaktorbau GmbH. Nuclear power plant with a high temperature reactor located in a cylindrical prestressed concrete pressure vessel. 4,761,260, Cl. 376-298.000.

Schmitt, Paul S.: *See*—
Darcangelo, Charles M.; Hujar, Robert M.; Schmitt, Paul S.; and Shafer, Harold G., Jr., 4,760,672, Cl. 51-284.00R.

Schmitz-Bastian, Peter: *See*—
Paulini, Dieter; Wagner, Wolfram; Schmitz-Bastian, Peter; and Bruck, Robert, 4,760,629, Cl. 28-256.000.

Schmitz, Gunther: *See*—
van den Beld, Paul Christiaan H.; Kettenring, Gerhard; Greulich, Bodo; and Schmitz, Gunther, 4,760,935, Cl. 220-307.000.

Schmitz, Jean-Claude: *See*—
Kerger, Leon; Kremer, Paul; and Schmitz, Jean-Claude, 4,760,990, Cl. 251-335.200.

Schneider, Lon M., to Corcom Inc. Broadband RFI power line filter. 4,761,623, Cl. 333-167.000.

Schneider, Peter, to Ciba-Geigy Corporation. Crystalline aminomethyl compound. 4,761,408, Cl. 514-192.000.

Schneider, Rolf, to Behr-Industrieanlagen GmbH & Co. Atomizer for electrostatically coating objects. 4,760,965, Cl. 239-701.000.

Schnoring, Hildegard: *See*—
Dahm, Manfred; Jabs, Gert; Koglin, Bernd; and Schnoring, Hildegard, 4,761,255, Cl. 264-4.700.

Schoening, Josef: *See*—
Schmitt, Hermann; and Schoening, Josef, 4,761,260, Cl. 376-298.000.

Schreiber, Craig A., to Vidcom Rentservice B.V. Information display system. 4,761,641, Cl. 340-717.000.

Schreiber, Hans; and Molin, Marek, to Siemens Aktiengesellschaft. Apparatus and method for the identification of angular pulses. 4,760,827, Cl. 123-414.000.

Schubert, Hans-Georg: *See*—
Reder, Herbert; and Schubert, Hans-Georg, 4,761,575, Cl. 310-36.000.

Schubert & Salzer: *See*—
Billner, Werner, 4,760,693, Cl. 57-401.000.

Schubert & Salzer Maschinenfabrik: *See*—
Beitzinger, Kurt, 4,760,688, Cl. 57-92.000.

Schuldt, Eric J.: *See*—
Fisher, Kenneth J.; Schuldt, Eric J.; and Fendya, Thomas J., 4,761,000, Cl. 269-323.000.

Schulte, Rudolf R.; East, Gary P.; and Heindl, Alfons, to Pudenz-Schulte Medical Research Corp. Subcutaneous infusion reservoir and pump system. 4,761,158, Cl. 604-9.000.

Schultze, Hans, to BASF Aktiengesellschaft. Isolation and purification of hemin. 4,761,472, Cl. 540-145.000.

Schulz, Johann G. Process for generating energy in a furnace or combustion engine. 4,760,803, Cl. 110-341.000.

Schulz, Max W., Jr.: *See*—
Kliman, Gerald B.; Koegl, Rudolph A. A.; Schulz, Max W., Jr.; and Grabkowski, Stephen E., 4,761,703, Cl. 361-23.000.

Schulz, Wolfgang, to Brown Boveri Reaktor GmbH. Apparatus for viewing a foil irradiated in the course of neutron radiography. 4,761,558, Cl. 250-485.100.

Schuyler, Martin; and Cox, John L., II, to Cox & Company, Inc. Ice-free screen for protecting engines from damage caused by foreign bodies in the intake airstream. 4,760,978, Cl. 244-134.00D.

Schweikert, Willi: *See*—
Eckel, Hans G.; and Schweikert, Willi, 4,761,020, Cl. 280-714.000.

Schwender, Charles F.: *See*—
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.

Scott, Philip R.: *See*—
Ward, Eric J.; Scott, Philip R.; and Thayer, Edward B., 4,760,960, Cl. 239-265.250.

Sealed Air Corporation: *See*—
Bunn, Eric R., 4,761,257, Cl. 264-46.500.

Sebring, John P., to Grady, John K. X-ray receptor interchange mechanism. 4,761,805, Cl. 378-181.000.

Secondo, Pierre: *See*—
Calvignac, Jean; and Secondo, Pierre, 4,761,781, Cl. 370-94.000.

Segall, Jeane; and Shorr, Leonard M., to Bromine Compounds Ltd. Liquid antimicrobial composition. 4,761,427, Cl. 514-528.000.

Seibert, Wolfram; Ocvirk, Norbert; and Weise, Lutz, to Alfred Teves GmbH. Anti-lock hydraulic brake system. 4,761,042, Cl. 303-92.000.

Seidel, Adolf: *See*—
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B.

Seiko Epson Corporation: *See*—
Moriya, Tatsuo; Aizawa, Hitomi; Natori, Kuniharu; Kamoi, Kazumi; and Yabe, Hiroshi, 4,761,771, Cl. 368-202.000.

Sekiguchi, Hiroshi, to Kanars Data Corporation. Multitype characters processing method and terminal device with multiple display buffers. 4,761,761, Cl. 364-900.000.

Sekine, Kunio: *See*—
Sagoi, Masayuki; Kawashima, Noritsugu; Tanaka, Yoichiro; and Sekine, Kunio, 4,761,334, Cl. 428-332.000.

Sereboff, Joel L. Water cushion stress-reducing assemblies for chairs and other seating devices. 4,761,011, Cl. 297-230.000.

Seto, Kaoru: *See*—
Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, 4,761,662, Cl. 346-108.000

Seymour, Paul F. Unifastener a pipe fitting having a blind fastener. 4,761,093, Cl. 403-190.000.

SFS Stadler Heerbrugg AG: *See*—
Jenal, Louis, 4,761,442, Cl. 524-56.000.

SGS Microelettronica SPA: *See*—
Maloberti, Franco; and Torelli, Guido, 4,761,615, Cl. 330-277.000.

Shafe, Jeff: *See*—
Batliwalla, Neville S.; Jones, Michael C.; Oswal, Ravinder K.; Shafe, Jeff; and Trammell, Bernadette A., 4,761,541, Cl. 219-528.000.

Shafer, Harold G., Jr.: *See*—
Darcangelo, Charles M.; Hujar, Robert M.; Schmitt, Paul S.; and Shafer, Harold G., Jr., 4,760,672, Cl. 51-284.00R.

Shaffer, Jesse S., to North American Philips Corp. Glycol based mid-volt capacitor. 4,761,713, Cl. 361-433.000.

Shalati, Mohamad D.; and Viswanathan, Ravi, to International Minerals & Chemical Corp. Sustained release implant and method for preparing same. 4,761,289, Cl. 424-468.000.

Shanahan, Patricia: *See*—
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000.

Shape Inc.: *See*—
Gelardi, Anthony; Lowry, Alan; and Lovecky, Craig, 4,760,914, Cl. 206-1.500.

Shapiro, Leonard, to Pennwalt Corporation. Centrifuge apparatus. 4,761,157, Cl. 494-35.000.

Sharma, Arvind K., to RCA Corporation. Tunable waveguide bandpass filter. 4,761,625, Cl. 333-209.000.

Sharp Kabushiki Kaisha: *See*—
Hayakawa, Toshiro; Suyama, Takahiro; Takahashi, Kohsei; and Yamamoto, Saburo, 4,761,790, Cl. 372-45.000
Ogura, Mitsuru, 4,761,674, Cl. 355-15.000
Tanaka, Hironori; Kotani, Matahira; and Matsumoto, Masafumi, 4,761,670, Cl. 355-4.000
Washizuka, Isamu; and Tanimoto, Akira, 4,760,918, Cl. 206-328.000

Sharpe, William. Method and apparatus for patching an opening within a screen. 4,760,980, Cl. 245-2.000.

Shell Oil Company: *See*—
Allen, Robert C., 4,761,453, Cl. 524-612.000
Eckstein, Gunter K.; and Schleyer, Kurt, 4,760,667, Cl. 48-69.000.
Fried, Herbert E., 4,761,488, Cl. 549-255.000.
Kluttz, Robert Q.; Kemp, Richard A.; and Ryan, Robert C., 4,761,448, Cl. 524-381.000.
Lauritzen, Ann M., 4,761,394, Cl. 502-348.000.
Lutz, Robert G., 4,761,449, Cl. 524-424.000

Shen, Ming; and Lagarde, Robert, to Rhone-Poulenc Chimie. Heat-vulcanizable moldable/extrudable organopolysiloxane compositions. 4,761,447, Cl. 524-251.000

Sheppard, Michael C.; and Wick, Christian, to Anadrill, Inc. Method and apparatus for investigating drag and torque loss in the drilling process. 4,760,735, Cl. 73-151.000.

Sherman, William, III: *See*—
Reed, John M.; Sherman, William, III; and Loftus, Peter J., 4,761,002, Cl. 271-111.000

Shiba, Noriyuki; and Kawata, Tomoshi, to Kabushikigaisha Tokyo Kikai Seisakusho. Washing device for a roller part in a machine unit and the like. 4,760,857, Cl. 134-144.000

Shiba, Takahumi: *See*—
Yoshida, Masayuki; Ueda, Izumi; Ishii, Hidehiro; Shiba, Takahumi, and Nakajima, Fumihiro, 4,761,692, Cl. 358-335.000

Shibata, Nobuho: *See*—
Yasunobu, Isamu; Ohara, Kenichi; Shibata, Nobuho; and Neki, Shigeo, 4,761,599, Cl. 318-723.000.

Shibata, Yoshihiro: *See*—
Hashiguchi, Yasuhiro; Katono, Noboru; and Shibata, Yoshihiro, 4,761,697, Cl. 360-96.500.

Shibuki, Masaru: *See*—
Sugisawa, Ko; Shibuki, Masaru; Yamaguchi, Noriaki; and Nakano, Maki, 4,761,297, Cl. 426-618.000

Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, to Sumitomo Chemical Company, Limited. Catalyst system for polymerization of olefins. 4,761,392, Cl. 502-126.000.

Shiiki, Zenya: *See*—
Okamoto, Tsuneo; Iwasaki, Takao; Iizuka, Yo; and Shiiki, Zenya, 4,761,468, Cl. 528-388.000.

Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, to Japan Steel Works, Ltd., The; and Japanese National Railways. Friction brakes. 4,760,900, Cl. 188-251.00M.

Shimada, Fumitake: *See*—
Ikekawa, Tetsuro; Shimada, Fumitake; Cyong, Jong-Chol; and Uebaba, Kazuo, 4,761,477, Cl. 546-48.000

Shimada, Shiro; Haraguchi, Hiroshi; and Iwata, Toshiharu, to Nippondenso Co., Ltd. Ignition timing controller for multi-cylinder engine 4,760,828, Cl. 123-425.000

Shimadzu Corporation: *See*—
Kiri, Motosada, 4,761,802, Cl. 378-99.000

Shimamura, Teruo: *See*—
Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, 4,760,686, Cl. 56-15.800

Shimizu, Isoo; Matsumura, Yasuo; Kawakami, Shigenobu; and Sato, Atsushi, to Nippon Petrochemicals Co., Ltd. 1,1-(3-ethylphenyl)-phenylethylene and method for preparing it. 4,761,508, Cl. 585-25.000.

Shimizu, Ryosuke: *See*—
Ishibashi, Hiromichi; Tanaka, Shinichi; Shimizu, Ryosuke; Kuwamoto, Makoto; and Yamamoto, Hajime, 4,761,774, Cl. 369-44.000

Shimura, Kazuo, to Fuji Photo Film Co., Ltd. Density correcting method and apparatus for energy substraction image. 4,761,739, Cl. 364-414.000

Shin-Etsu Chemical Co., Ltd.: *See*—
Itoh, Kunio; Fukushima, Motoo; and Nakamura, Tsutomu, 4,761,452, Cl. 524-521.000
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru; Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, 4,761,436, Cl. 522-114.000
Oba, Toshio; Mihama, Takeshi; and Futatsumori, Koji, 4,761,454, Cl. 524-862.000

Shin, Yong W. Process for producing a low density foamed polyethylene. 4,761,328, Cl. 428-220.000

Shinko Electric Co., Ltd.: *See*—
Nakagawa, Hiroshi, 4,761,574, Cl. 310-12.000.

Shiragasawa, Tsuyoshi; Sugano, Masahide; and Noyori, Masaharu, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for inspecting semiconductor devices. 4,761,607, Cl. 324-158.00R

Shiraki, Makato: *See*—
Tokushima, Tadao; and Shiraki, Makato, 4,761,330, Cl. 428-312.800

Shorr, Leonard M.: *See*—
Segall, Jeane; and Shorr, Leonard M., 4,761,427, Cl. 514-528.000

Short, R. Stanford, to Nemco, Incorporated. Manual produce cutter 4,760,766, Cl. 83-356.300

Showa Aluminum Corporation: *See*—
Fukui, Koichiro; Furukawa, Yuichi; and Noguchi, Kazunari, 4,760,878, Cl. 165-104.270.

Shudo, Katsuyuki; Kinjo, Hisao; Okano, Keigo; and Hanashiro, Yoshiaki, to Victor Company of Japan, Ltd. Apparatus for recording-/reproducing a composite video signal with a rotary recording medium and circuit arrangement therefor. 4,761,694, Cl. 360-37.100

Shufflebarger, Charles: *See*—
Hein, Bruce; and Shufflebarger, Charles, 4,761,580, Cl. 310-214.000

Siegel, Hardo: *See*—
Gramlich, Walter; Siegel, Hardo; and Jahn, Dieter, 4,761,489, Cl 549-347.000

Siegel, Herbert; Weiss, Erwin; and Berger, Harald, to Hoechst Aktiengesellschaft. Process for the preparation of vinylphosphonic dichloride. 4,761,251, Cl. 260-543.00P

Siegel, Herbert; Weiss, Erwin; and Berger, Harald, to Hoechst Aktiengesellschaft. Process for the preparation of vinylphosphonic dichloride. 4,761,252, Cl. 260-543.00P

Siegler, Frederick. Tree pruner and hedge trimmer. 4,760,646, Cl. 30-382.000

Siegrist, Rudolf, to MTD Products Inc. Mower deck height and clutch control. 4,760,687, Cl. 56-15.800.

Siemens Aktiengesellschaft: *See*—
Barre, Claude, 4,761,766, Cl. 365-190.000
Ehrler, Guenter; Hagen, Heinz; and Becker, Klaus, 4,761,210, Cl. 204-129.650
Fornsel, Helmut; and Simmel, Hans-Eberhard, 4,761,706, Cl. 361-94.000
Gammel, Josef, 4,761,813, Cl. 380-6.000
Heynisch, Hinrich; Hubner, Klemens; Kruger, Hans; and Weber Hubert, 4,761,787, Cl. 372-34.000
Hoenig, Eckhardt, 4,761,611, Cl. 324-248.000
Hosten, Daniel, 4,761,213, Cl. 204-198.000
Lekholm, Anders, 4,760,852, Cl. 128-785.000
Neppl, Franz; Jacobs, Erwin; Winnerl, Josef; and Mazure-Espejo, Carlos-Alberto, 4,761,384, Cl. 437-029.000
Oppelt, Sylvester, 4,761,803, Cl. 378-99.000
Richter, Martin, 4,760,639, Cl. 29-566.300
Schreiber, Hans; and Molin, Marek, 4,760,827, Cl. 123-414.000
Stegmuller, Bernhard, 4,761,791, Cl. 372-46.000
Stronski, Sabine, 4,761,568, Cl. 307-269.000

Sigl, Alfred; and Isella, Thomas, to Robert Bosch GmbH. Method of controlling slipping or spinning of a vehicle wheel. 4,760,893, Cl. 180-197.000

Silvestrini, Jesus A.; Barbier, Jose E.; and Morsucci, Juan C., to Imdec S.R.L. Apparatus for loosening the skin of moisture bearing fruit. 4,760,780, Cl. 99-584.000

Simelunas, William J.; and Aquino, Agostino, to Nabisco Brands, Inc Peanut applicator and process of making a confectionery product 4,760,778, Cl. 99-450.100

Simmel, Hans-Eberhard: *See*—
Fornsel, Helmut; and Simmel, Hans-Eberhard, 4,761,706, Cl 361-94.000

Simonsen, Jens K.; and Voss, Frands W., to Danfoss A/S. Mass flow meter based on the coriolis principle. 4,760,744, Cl. 73-861.380

Simplex Ceiling Corp.: *See*—
Nassof, Martin, 4,760,677, Cl. 52-484.000

Simpson, Fynlon G.; Fisher, Robert L.; and Kissell, James, to LTV Aerospace & Defense Company. On board receiver. 4,761,556, Cl 250-352.000

Singer Company, The: *See*—
Wittke, Ernest C., 4,761,743, Cl. 364-484.000.

Singh, Jag J.; Sprinkle, Danny R.; and Puster, Richard L., to United States of America, National Aeronautics and Space Administration Method and device for determining heats of combustion of gaseous hydrocarbons. 4,761,744, Cl. 364-500.000

Sircar, Jagadish C.: *See*—
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000

Sjolin, Ulf: *See*—
Timuska, Karlis; and Sjolin, Ulf, 4,761,124, Cl. 418-153.000.

Skarstad, Paul M.; Untereker, Darrel F.; and Merritt, Donald R., to Medtronic, Inc. Electrochemical cells and cathode materials 4,761,355, Cl. 429-213.000

SKF Industrial Trading and Development Company, B.V.: *See*—
Gabelli, Antonio, 4,761,082, Cl. 384-133.000

Skonezny, Paul M.: *See*—
Daluge, Susan M.; and Skonezny, Paul M., 4,761,475, Cl. 544-324.000

Sky Aluminium Co., Ltd.: *See*—
Takeno, Shinji; Nakamoto, Seishi; and Oono, Kouhei, 4,761,267, Cl. 420-529.000

Slattery, William J.: *See*—
Elias, Kenneth L.; Martin, Stuart R.; and Slattery, William J., 4,761,332, Cl. 428-325.000

Slavin, Keith R., to Tektronix, Inc. Positioning cursors at specific points on a waveform display. 4,761,640, Cl. 340-709.000

Sliskovic, Drago R.: *See*—
Picard, Joseph A.; Roth, Bruce D.; and Sliskovic, Drago R., 4,761,419, Cl. 514-311.000

VOL 1093 ISS 1 AG 2 1988 UMI

Smith, Darren A.; McKay, Michael L.; and Sayer, Christopher N. F., to Orbital Engine Company Proprietary Limited. Metering of fuel to an engine. 4,760,832, Cl. 123-525.000.
Smith, Gaylord D., to Inco Alloys International, Inc. Method of manufacture of a heat resistant alloy useful in heat recuperator applications and product. 4,761,190, Cl. 148-11.50R.
Smith, Gordon R.: *See*—
Bagnall-Wild, Ralph H.; Evans, Clinton E.; and Smith, Gordon R., 4,760,770, Cl. 89-41.190.
Smith, John H.: *See*—
Kerrey, John S.; and Smith, John H., 4,760,637, Cl. 29-723.000.
Smith, Joseph E.; and Trudeau, William H., to O & S Manufacturing Company. Compound bearing. 4,761,083, Cl. 384-208.000.
Smith, LaVerne D., to Outboard Marine Corporation. Lawn mower with combined engine brake and ignition control. 4,760,685, Cl. 56-11.300.
Smith, Raymond P.: *See*—
Cracknell, David J.; and Smith, Raymond P., 4,761,622, Cl. 333-106.000.
Smith, Todd A.: *See*—
Duvall, Keith E.; Hooten, Anthony D.; O'Quin, John C., III; and Smith, Todd A., 4,761,737, Cl. 364-300.000.
Smith, Wayne G.; Martinez, David V.; Mozingo, Robert E.; and Hanson, Charles B., to J. I. Case Company. Quick coupler assembly. 4,761,113, Cl. 414-732.000.
Smith, Wayne H. Applicator apparatus and method. 4,760,805, Cl. 111-7.200.
SmithKline Beckman Corporation: *See*—
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., 4,761,415, Cl. 514-252.000.
Kaiser, Carl; Kruse, Lawrence I.; and Ross, Stephen T., 4,761,480, Cl. 546-294.000.
Smiths Industries Public Limited Company: *See*—
Edwards, Roger A.; and Gardiner, Peter T., 4,761,551, Cl. 250-227.000.
Edwards, Roger A.; and Gardiner, Peter T., 4,761,777, Cl. 370-3.000.
Smoot, Lanny S.: *See*—
Bingham, Bryan L.; Day, Chester M., Jr.; and Smoot, Lanny S., 4,761,780, Cl. 370-60.000.
Snair Company, The: *See*—
Nagai, Masashi, 4,760,961, Cl. 239-267.000.
Snitzer, Elias: *See*—
Meltz, Gerald; Glenn, William H.; and Snitzer, Elias, 4,761,073, Cl. 356-32.000.
Snyder, Michael D.: *See*—
Bigbee, Marvin L.; Ridgely, Marvis L.; and Snyder, Michael D., 4,760,806, Cl. 111-87.000.
Societe des Etablissements Rene Trubert: *See*—
Trubert, Denis, 4,760,953, Cl. 236-122.000.
Societe Nationale des Poudres et Explosifs: *See*—
Gautier, Jean-Claude; Lecolier, Serge; Soriaux, Claude; and Chlvalier, Sammy, 4,761,484, Cl. 548-364.000.
Societe Nationale d'Etude et de Construction de Moteurs D'Aviation "S. N. E. C. M. A.": *See*—
Leclerc, Henry R., 4,760,864, Cl. 137-552.000.
Societe Nouvelle de Bouchons Plastiques: *See*—
Salmon, Pierre; Pradinas, Claude; and Louvatiere, Jimmy, 4,760,941, Cl. 222-153.000.
Societe Vynex SA: *See*—
Dechirot, Jean-Pierre, 4,760,927, Cl. 211-54.100.
Sohoel, Eivind O., to SPM Instrument Inc. Coaxial cable connector assembly and method for making. 4,761,146, Cl. 439-584.000.
Sojka, Stanley A.: *See*—
Kulpa, Charles F.; and Sojka, Stanley A., 4,761,376, Cl. 435-262.000.
Sola International Holdings Limited: *See*—
Truong, Van-Tan; and Watkins, Rodney D., 4,761,069, Cl. 351-160.00H.
Solas, Dennis W.: *See*—
Hale, Ron L.; and Solas, Dennis W., 4,761,481, Cl. 546-296.000.
Solow, Joseph E., to Wolo Manufacturing Corporation. Illuminated tape. 4,761,720, Cl. 362-252.000.
Sonnenberg, Fred M.; and Hajnik, Dennis M., to Arco Chemical Company. Coating of flame retardants onto a seed bead. 4,761,432, Cl. 521-60.000.
Sonoco Products Company: *See*—
Elias, Thomas C., 4,760,949, Cl. 229-4.500.
Sony Corporation: *See*—
Asaida, Takashi, 4,761,682, Cl. 358-50.000.
Asaida, Takashi; and Aihara, Kenichi, 4,761,685, Cl. 358-139.000.
Fukasawa, Hideki, 4,761,816, Cl. 381-106.000.
Hakamada, Kunio, 4,761,688, Cl. 358-183.000.
Sorensen, James C.: *See*—
Pez, Guido P.; Carlin, Richard T.; Laciak, Daniel V.; and Sorensen, James C., 4,761,164, Cl. 55-16.000.
Sorenson, Roderick J.: *See*—
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.
Soriaux, Claude: *See*—
Gautier, Jean-Claude; Lecolier, Serge; Soriaux, Claude; and Chlvalier, Sammy, 4,761,484, Cl. 548-364.000.
Sorrells, Peter H., to Motorola, Inc. Low power astable multivibrator. 4,761,617, Cl. 331-111.000.
Sos, Jozsef: *See*—
Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, 4,761,423, Cl. 514-395.000.
Southern, John H.: *See*—
Chamberlin, John M.; Chilvers, Edward W., Jr.; Nunning, Walter J.; and Southern, John H., 4,760,691, Cl. 57-243.000.
Southern Railway Company: *See*—
Stubbs, John L.; Patton, Wesley H.; and Thompson, Jeffrey L., 4,760,797, Cl. 104-12.000.
Sowards, Brian D.; and Emilson, Frederick H., to Ingersoll-Rand Company. Lubrication arrangement, in an air compresaor. 4,761,123, Cl. 418-89.000.
Sparkman, Robert T., Jr.: *See*—
Mayer, James R.; and Sparkman, Robert T., Jr., 4,761,120, Cl. 417-403.000.
Speck, Dwight L. Automatic dado and scoring machine. 4,760,870, Cl. 144-3.00R.
Spectra-Physics, Inc.: *See*—
Baer, Thomas M., 4,761,786, Cl. 372-10.000.
Speranza, George P.; Lin, Jiang-Jen; and Cuscurida, Michael, to Texaco Inc. Difunctional isocyanate-terminated polyoxyalkylene diamine prepolymers and polymer coatings applications. 4,761,465, Cl. 528-45.000.
Spiecker, Ray G., to RCA Corporation. Leadless chip carrier assembly and method. 4,760,948, Cl. 228-180.200.
SPM Instrument Inc.: *See*—
Sohoel, Eivind O., 4,761,146, Cl. 439-584.000.
Sprague Electric Company: *See*—
Higgs, Jacob K., 4,761,569, Cl. 307-309.000.
Levasseur, Jean; and Gouvernelle, Didier, 4,761,714, Cl. 361-433.000.
Sprinkle, Danny R.: *See*—
Singh, Jag J.; Sprinkle, Danny R.; and Puster, Richard L., 4,761,744, Cl. 364-500.000.
Squire, Molly A. Dental amalgam press. 4,760,782, Cl. 100-116.000.
Sredni, Benjamin: *See*—
Albeck, Michael; and Sredni, Benjamin, 4,761,490, Cl. 549-347.000.
Srinivasagopalan, Rangarajan; Pruett, James D.; Krishnan, Vedavalli G.; and Farias, Luis V., to Racal Data Communications Inc. Modem and method using multidimensional coded modulation. 4,761,784, Cl. 371-43.000.
SS Pharmaceutical Co., Ltd.: *See*—
Ikekawa, Tetsuro; Shimada, Fumitake; Cyong, Jong-Chol; and Uebaba, Kazuo, 4,761,477, Cl. 546-48.000.
Stahl, Karl-Gunnar: *See*—
Bjorhaag, Georg; Embring, Goran; and Stahl, Karl-Gunnar, 4,761,342, Cl. 428-537.100.
Staley Continental, Inc.: *See*—
Augustine, Michael E.; and Lillard, Donald W., 4,761,292, Cl. 426-321.000.
Stamicarbon, B.V.: *See*—
Chiba, Kazumasa, 4,761,445, Cl. 524-262.000.
Standard Elektrik Lorenz AG: *See*—
Beier, Wolfgang, 4,761,795, Cl. 375-1.000.
Hopfensperger, Reinhold, 4,761,115, Cl. 415-119.000.
Standard Oil Company, The: *See*—
Pyke, Stephen C.; Boos, Donald L.; and McMahon, Michael T., 4,761,639, Cl. 340-634.000.
Wu, Muyen M.; and Li, George S., 4,761,455, Cl. 525-75.000.
Standard Telephones and Cables Public Limited Company: *See*—
Davis, Arthur A.; and Eady, Robert W., 4,761,831, Cl. 455-601.000.
Stanley, Larry; and Tidswell, Frank, to Mainland Windsurfing Hawaii, Inc. Miniature pulley block assembly. 4,760,812, Cl. 114-108.000.
Stant Inc.: *See*—
Szlaga, Emil, 4,760,858, Cl. 137-43.000.
Star, John. Eyeglass frame holder. 4,761,068, Cl. 351-156.000.
Stark, Howard M.: *See*—
Parker, Delmer G.; and Stark, Howard M., 4,761,668, Cl. 355-3.0DD.
Staton, James B., III: *See*—
Choquet, Michel; Staton, James B., III; and Swartz, Kenneth R., 4,761,646, Cl. 340-825.520.
Stauber, John R.: *See*—
Holland, G. Neil; and Stauber, John R., 4,761,612, Cl. 324-307.000.
Stauffer Chemical Company: *See*—
Schachter, Rozalie; and Viscogliosi, Marcello, 4,761,300, Cl. 427-38.000.
Toy, Arthur D. F.; and Jaffe, Fred, 4,761,271, Cl. 423-265.000.
STC PLC: *See*—
Byron, Kevin C., 4,761,050, Cl. 350-96.150.
Epworth, Richard E., 4,761,833, Cl. 455-612.000
Steacy, Paul C., to UOP Inc. Temperature control for aromatic alkylation process. 4,761,513, Cl. 585-467.000.
Stearns, Charles F.: *See*—
Dyer, Gerald P.; Gorneault, Gerald J.; Stearns, Charles F.; and Perkinson, Robert H., 4,760,662, Cl. 60-39.281.
Stearns, John C., to Ampex Corporation. Method for controlling video signal time-base correctors. 4,761,691, Cl. 358-311.000.
Steel Heddle Manufacturing Corp.: *See*—
Kaufmann, Frank H.; Kramer, Charles F.; Grigsby, James D.; and Root, Stephen J., 4,760,628, Cl. 28-201.000.
Stegelmeier, Ulrich H. E.; and Ganton, Keith A., to NCR Corporation. Method and apparatus for extending the life of a wrap spring clutch. 4,760,903, Cl. 192-26.000.

Stegmuller, Bernhard, to Siemens Aktiengesellschaft. Monomode diode laser. 4,761,791, Cl. 372-46.000.
Stehle, Wolfgang; and Fuchs, Dieter, to Maschinenfabrik Bezner GmbH & Co. KG. Refuse sorting apparatus. 4,760,925, Cl. 209-616.000.
Stein, Dietrich: *See*—
Mann, Max; Kapps, Manfred; Meyer, Frank; Mehesch, Hans; Cornely, Wolfgang; Maidl, Bernhard; Stein, Dietrich; and Gerdes, Knud, 4,761,099, Cl. 405-264.000.
Steinbach, Robert, to Chicago Lock Company. Handle flange assembly. 4,760,721, Cl. 70-208.000
Steinkohl, Hannelore. Band carrier for orthodontic bands. 4,761,135, Cl. 433-49.000.
Steinleitner, Gunther: *See*—
Knodler, Reinhard; Bansemir, Werner; Mennicke, Stefan; and Steinleitner, Gunther, 4,761,353, Cl. 429-104.000.
Steinman, Gary D., to David Diagnostics, Inc. Process for measuring calcium levels in biological fluids. 4,761,369, Cl. 435-19.000.
Stelts, Philip D.: *See*—
Griffing, Neal R.; Bayerwitz, Marvin H.; and Stelts, Philip D., 4,761,178, Cl. 75-51.200.
Stepniewski, Richard J.: *See*—
Brown, Hugh L.; and Stepniewski, Richard J., 4,761,196, Cl. 156-247.000.
Stermer, Philip E.: *See*—
Kopatz, Nelson E.; and Stermer, Philip E., 4,760,711, Cl. 62-373.000.
Stewart, Albert E.: *See*—
Kohl, Arthur L.; and Stewart, Albert E., 4,761,204, Cl. 162-30.100.
Stewart, Donald L., Jr.; and VanLinden, Jan H. L., to Aluminum Company of America. Continuous salt-based melting process. 4,761,207, Cl. 204-67.000
Stewart, James P.; and Beaven, Herbert R., Jr., to Lockheed Missiles & Space Company, Inc. Strut dispenser for erecting truss structures in extraterrestrial space. 4,760,985, Cl. 248-176.000.
Stewart Systems, Inc.: *See*—
Bacigalupe, Carlos; and Dobie, Michael J., 4,760,911, Cl. 198-474.100.
Stewart, Terrence J.: *See*—
Clark, Brian E.; Lawlor, Francis D.; Schmidt-Stumpf, Werner E.; Stewart, Terrence J.; and Timms, George D., Jr., 4,761,785, Cl. 371-51.000.
Steyr-Daimler-Puch AG: *See*—
Zedrosser, Ulrich, 4,760,663, Cl. 42-15.000.
Stichman, John H.: *See*—
Brown, Ralph L.; Guilford, Richard P.; and Stichman, John H., 4,761,724, Cl. 363-21.000.
Sticht, Walter: *See*—
Ott, Gernot; Oppermann, Stefan; Riedl, Gottfried; and Sticht, Walter, 4,760,638, Cl. 29-732.000.
STIWA-Fertigungstechnik Sticht Gesellshaft m.b.H.: *See*—
Ott, Gernot; Oppermann, Stefan; Riedl, Gottfried; and Sticht, Walter, 4,760,638, Cl. 29-732.000.
Stocker, Jorg; and Whysall, Michael, to Union Carbide Corporation. Pressure swing adsorption control method and apparatus. 4,761,165, Cl. 55-21.000.
Stockler, Jerry: *See*—
Fowler, Roscoe T.; Hochhauser, Arthur; Kaufman, Harold B., Jr.; McCarthy, John P.; and Stockler, Jerry, 4,761,128, Cl. 425-126.200
Stoffel, John L.: *See*—
Askeland, Ronald A.; Kappele, William D.; Pawlowski, Norman E.; and Stoffel, John L., 4,761,180, Cl. 106-22.000
Stolle Corporation, The: *See*—
Kaminski, Elton G., 4,760,729, Cl. 72-456.000
Stone, Benjamin C.; and Proehl, D. Scott, to Mead Corporation, The. Process for glossing a developer sheet and an apparatus useful therein. 4,761,311, Cl. 427-366.000.
Stone & Webster Engineering Corp.: *See*—
Garabedian, George, 4,761,261, Cl. 376-404.000.
Strein, Gunter: *See*—
Emig, Hans; Lindstaedt, Bernd; Strein, Gunter; Uhrig, Helmut; and Volk, Willi, 4,760,658, Cl. 38-77.700.
Streuli, Adrian: *See*—
Ammann, Hansrudolf; Egger, Hans J.; and Streuli, Adrian, 4,760,702, Cl. 60-605.200.
Stromquist, Michael E., to Anthony's Manufacturing Co., Inc. Combination doorstop, holdopen and shock absorber. 4,760,621, Cl. 16-85.000
Stronski, Sabine, to Siemens Aktiengesellschaft. Load-adapted clock generator in CMOS circuits. 4,761,568, Cl. 307-269.000.
Stubbs, John L.; Patton, Wesley H.; and Thompson, Jeffrey L., to Southern Railway Company. Method and apparatus for automated tie detection and tamping. 4,760,797, Cl. 104-12.000.
Stueber, George P. Fishhook shields. 4,760,665, Cl. 43-36.000.
Stumpff, Phillip W.; and Taylor, Richard D., to Philrich Innovators Research Manufacturing and Development, Inc. Electrical switch apparatus having a wire engaging electrical conducting member. 4,761,525, Cl. 200-284.000.
Stupp, Edward H., to North American Philips Corporation. Complementary silicon-on-insulator lateral insulated gate rectifiers. 4,761,679, Cl. 357-23.100.
Suga Test Instruments Co., Ltd.: *See*—
Katayanagi, Shinichi; and Mori, Taro, 4,760,748, Cl. 73-865.600
Sugai, Yoshiro; and Kimura, Hiroyuki, to Pioneer Electronic Corporation. Variable bandwidth multivoice demodulating circuit. 4,761,814, Cl. 381-13.000
Sugano, Masahide: *See*—
Shiragasawa, Tsuyoshi, Sugano, Masahide; and Noyori, Masaharu, 4,761,607, Cl. 324-158.00R
Sugata, Masao: *See*—
Okubo, Yukitoshi; Osada, Yoshiyuki; Sugata, Masao; Hatanaka, Katsunori; and Nakagiri, Takashi, 4,761,058, Cl. 350-331.00T
Sugisawa, Ko; Shibuki, Masaru; Yamaguchi, Noriaki; and Nakano, Maki, to House Food Industrial Company Limited. Method of manufacturing dried rice. 4,761,297, Cl. 426-618.000
Suiter, Shawn P.: *See*—
Doak, Sid W.; and Suiter, Shawn P., 4,760,648, Cl. 33-668.000
Sullivan, Paul E.: *See*—
Peppel, George W.; and Sullivan, Paul E., 4,760,992, Cl 254-277.000
Sulzer Morat GmbH: *See*—
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B
Sumitani, Jiro: *See*—
Kanno, Yoshiaki; Nakamoto, Katsuya; and Sumitani, Jiro, 4,760,829, Cl. 123-488.000.
Sumitomo Chemical Company, Limited: *See*—
Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Yoshida, Teruaki; and Sadatoshi, Hajime, 4,761,462, Cl. 526-159.000.
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,761,392, Cl. 502-126.000
Sumitomo Pharmaceuticals Company, Limited: *See*—
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000
Summers, James B., Jr.: *See*—
Gunn, Bruce P.; and Summers, James B., Jr., 4,761,403, Cl. 514-63.000
Sumner, Charles E., Jr.: *See*—
Zoeller, Joseph R.; and Sumner, Charles E., Jr., 4,761,496, Cl 560-60.000.
Zoeller, Joseph R.; and Sumner, Charles E., Jr., 4,761,497, Cl. 560-100.000
Sunbeam Plastics Corporation: *See*—
Gach, Peter P., 4,760,931, Cl. 215-235.000
Sunder, Shyam: *See*—
Peet, Norton P.; Sunder, Shyam; and Vinogradoff, Anna P., 4,761,474, Cl. 544-250.000
Sundstrand Corporation: *See*—
Avny, Eli, 4,760,907, Cl. 192-141.000
Burandt, Wesley A., 4,760,964, Cl. 239-265.190
Superior Electric Company, The: *See*—
Lundin, Robert S., 4,761,578, Cl. 310-68.00B
Suraci, Ferdinando: *See*—
Bartolini, Carlo M.; Naso, Vincenzo; and Suraci, Ferdinando, 4,760,698, Cl. 60-526.000
Surh, Charles: *See*—
Glassy, Mark C.; and Surh, Charles, 4,761,377, Cl. 435-240.270
Suyama, Takahiro: *See*—
Hayakawa, Toshiro; Suyama, Takahiro; Takahashi, Kohsei; and Yamamoto, Saburo, 4,761,790, Cl. 372-45.000
Suzuki, Kazunori; and Naitoh, Masataka, to Nippondenso Co., Ltd Piezoelectric ceramic composition. 4,761,242, Cl. 252-62.900
Suzuki, Masanori; Hibi, Yasuo; Tanaka, Kazuaki; and Yamaguchi, Yoshimitsu, to Nippondenso Co., Ltd. Aligning and feeding apparatus for elongated pieces. 4,760,910, Cl. 198-412.000.
Suzuki, Seibun: *See*—
Beppu, Teruhiko; and Suzuki, Seibun, 4,761,374, Cl. 435-232.000
Suzuki, Toshihide: *See*—
Naruse, Yoshihiro; and Suzuki, Toshihide, 4,761,510, Cl. 585-268.000
Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Method for stabilizing organic base substances to light. 4,761,181, Cl. 106-22.000
Svab, Eugen, to Ford Motor Company. Continuously variable belt driven transmission for motor vehicles with a compact planetary gearing and clutch and brake assembly. 4,760,757, Cl. 74-689.000.
Svegander, Lennart; and Tornblom, Bengt, to Asea AB & Tornbloms Kvalitetskontrollar. Apparatus for determining the position of surface defects of a test objects with respect to an edge thereof. 4,761,610, Cl. 324-227.000
Svenska Rotor Maskiner Aktiebolag: *See*—
Timuska, Karlis; and Sjolin, Ulf, 4,761,124, Cl. 418-153.000
Swaringen, Roy A., Jr.; El-Sayad, Hassan A.; Yeowell, David A.; and Savarese, John J., to Burroughs Wellcome Co.; and General Hospital Corporation. Novel compounds. 4,761,418, Cl. 514-308.000
Swartz, Kenneth R.: *See*—
Choquet, Michel; Staton, James B., III; and Swartz, Kenneth R., 4,761,646, Cl. 340-825.520
Sweeney, Robert M.: *See*—
Taylor, John W.; and Sweeney, Robert M., 4,761,137, Cl 434-99.000
Swegen, Hans B. A.: *See*—
Lundblad, Leif; Persson, Olof L.; Swegen, Hans B. A.; and Zettergren, Hans, 4,760,923, Cl. 209-534.000
Swift, Joseph A.: *See*—
Ewing, Joan R.; and Swift, Joseph A., 4,761,709, Cl. 361-225.000
Swisher, Steven L., to Brunswick Corporation. Fishing reel with flipping control. 4,760,974, Cl. 242-84.20A.

VOL 1093 ISS 1 AG 2 1988 UMI

Swisscab E.A. Schoen S.A.: *See—*
Aste, Robert; and Bloch, Peter, 4,761,129, Cl. 425-133.100.

Syldatk, Andreas: *See—*
Giede, Karl; Giesen, Brigitte; Hoeffkes, Horst; Meffert, Alfred; Syldatk, Andreas; and Fues, Johann F., 4,761,249, Cl. 252-528.000

Syntex (U.S.A.) Inc.: *See—*
Fried, John H.; and Venuti, Michael C., 4,761,416, Cl. 514-260.000.

Szego , Andras; Sos, Jozsef; Kovats, Ferenc; Petroczi, Istvan; Kis, Gyorgy; Karsai, Jozsef; Angyan, Sandor; Racz, Istvan; and Marmarosi, Katalin, to Chinoin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Seed dressing additive. 4,761,423, Cl. 514-395.000.

Szeremeta, Walter, to Owens-Illinois Plastic Products Inc. Apparatus for applying a flexible plastic label to a round container. 4,761,200, Cl. 156-448.000

Szlaga, Emil, to Stant Inc. Fuel vapor control valve. 4,760,858, Cl. 137-43.000.

Tachikawa Spring Co., Ltd.: *See—*
Saito, Tetsuo, 4,761,034, Cl. 297-408.000.
Urai, Muneharu, 4,761,035, Cl. 297-452.000.

Takada, Yuji: *See—*
Ikari, Motoo; Takada, Yuji; Yamamoto, Shintaro; Teramae, Katsuhiro; and Asai, Makio, 4,761,546, Cl. 250-201.000.

Takagi, Akishito, to Takagi Sangyo Yugen Kaisha. Ice making machine. 4,760,710, Cl. 62-354.000.

Takagi Sangyo Yugen Kaisha: *See—*
Takagi, Akishito, 4,760,710, Cl. 62-354.000.

Takahashi, Kazuyoshi, to Canon Kabushiki Kaisha. High voltage generating device. 4,761,728, Cl. 363-126.000.

Takahashi, Kohsei: *See—*
Hayakawa, Toshiro; Suyama, Takahiro; Takahashi, Kohsei; and Yamamoto, Saburo, 4,761,790, Cl. 372-45.000.

Takahashi, Kozo: *See—*
Masuda, Yoshihisa; Inuki, Hisao; and Takahashi, Kozo, 4,761,650, Cl. 342-26.000.

Takahashi, Miyoshi: *See—*
Watanabe, Masatoshi; Takahashi, Miyoshi; Sato, Masaki; Ito, Motoya; and Arai, Keiji, 4,761,581, Cl. 310-214.000.

Takahashi, Seietu: *See—*
Kubo, Yuji; Ise, Eiichi; and Takahashi, Seietu, 4,761,542, Cl. 235-379.000

Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Pressure modulator valve device. 4,760,867, Cl 137-637.000

Takamatsu Electric Works, Ltd.: *See—*
Mitsukuchi, Kunio; Ito, Hiromitsu; Eguchi, Isamu; Hirasato, Bunji; and Furuhata, Takashi, 4,761,523, Cl. 200-148.00B.

Takamizawa, Minoru: *See—*
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru; Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, 4,761,436, Cl. 522-114.000.

Takasawa, Katuro: *See—*
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M.

Takatsu, Norihiko; and Kimura, Keita, to Nippon Kogaku K. K. Apparatus for driving a solid state image pickup device. 4,761,689, Cl 358-213.220.

Takaya, Takao; Sakane, Kazuo; Miyai, Kenzi; and Matuo, Teruaki, to Fujisawa Pharmaceutical Co., Ltd. Cephem Compounds. 4,761,410, Cl. 514-206.000

Takeda Chemical Industries, Ltd.: *See—*
Arita, Kazuhiro; and Sano, Yasuo, 4,761,457, Cl. 525-439.000.

Takeda Riken Co., Ltd.: *See—*
Sato, Hiroshi; and Kobayashi, Yoshihito, 4,760,924, Cl. 209-573.000

Takeda, Shuichi: *See—*
Ogata, Masaru; and Takeda, Shuichi, 4,761,262, Cl. 419-10.000

Takehara, Osamu: *See—*
Ide, Masahiro; Nishizawa, Nobuyoshi; Inoue, Nobuya; Inoue, Akio; and Takehara, Osamu, 4,761,350, Cl. 429-49.000.

Takeichi, Hiroaki: *See—*
Nara, Takashi; Takeichi, Hiroaki; Morita, Yoshio; Hatano, Takashi; and Kawato, Yutaka, 4,761,779, Cl. 370-58.000.

Takenaka, Yasuo: *See—*
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M

Takeno, Shinji; Nakamoto, Seishi; and Oono, Kouhei, to Sky Aluminium Co., Ltd. Aluminum alloy for use as core of clad material 4,761,267, Cl. 420-529.000

Takeuchi, Akihiro: *See—*
Yamanishi, Kazuhiro; Kobayashi, Masaaki; Takeuchi, Akihiro; Ochi, Atsuo; and Nagaoka, Yoshitomi, 4,761,690, Cl. 358-310.000

Takimoto, Masahiro; Ohta, Satoshi; and Yamazaki, Yoshio, to Toyoda Gosei Co., Ltd. Steering wheel. 4,761,333, Cl. 428-327.000.

Takita, Satoshi: *See—*
Umeno, Masayuki; and Takita, Satoshi, 4,761,493, Cl. 568-11.000

Takitani, Yukitaka: *See—*
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J.

Talwar, Anil K.: *See—*
Denick, John, Jr.; Peters, David; Talwar, Anil K.; and Liao, Wei C., 4,761,274, Cl. 424-48.000.

Tamaki, Kanji: *See—*
Nishimoto, Yoshitaka; and Tamaki, Kanji, 4,760,765, Cl. 83-92.000.

Tamiya, Morito: *See—*
Yoshino, Hiroyuki; and Tamiya, Morito, 4,761,750, Cl. 364-709.000.

Tamrock Inc.: *See—*
Saxman, William C., 4,760,890, Cl. 175-363.000.

Tanaka, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Method of detecting cylinder pressure in internal combustion engine. 4,760,733, Cl. 73-35.000

Tanaka, Hironori; Kotani, Matahira; and Matsumoto, Masafumi, to Sharp Kabushiki Kaisha. Color image reproduction device. 4,761,670, Cl. 355-4.000.

Tanaka, Kazuaki: *See—*
Suzuki, Masanori; Hibi, Yasuo; Tanaka, Kazuaki; and Yamaguchi, Yoshimitsu, 4,760,910, Cl. 198-412.000.

Tanaka Machine Industries Co., Ltd.: *See—*
Kinoshita, Yusuke; Araki, Junichi; Iwai, Itsuo; Ichihara, Eiichi; Sato, Michio; and Anno, Nobuo, 4,761,155, Cl. 474-110.000.

Tanaka, Mitsugu; and Sakai, Minoru, to Fuji Photo Film Co., Ltd. Photographic light-sensitive materials containing specific magenta dyes to control photographic sensitivity. 4,761,365, Cl. 430-555.000.

Tanaka, Shinichi: *See—*
Ishibashi, Hiromichi; Tanaka, Shinichi; Shimizu, Ryosuke; Kuwamoto, Makoto; and Yamamoto, Hajime, 4,761,774, Cl. 369-44.000.

Tanaka, Yoichiro: *See—*
Sagoi, Masayuki; Kawashima, Noritsugu; Tanaka, Yoichiro; and Sekine, Kunio, 4,761,334, Cl. 428-332.000.

Tandberg Data A/S: *See—*
Lia, Herman, 4,761,695, Cl. 360-46.000.

Tandem Computers Incorporated: *See—*
Reeves, Larry D.; and Zwagerman, Jay A., 4,761,705, Cl. 361-93.000.

Tandon, Jagdish C.: *See—*
Matteson, Ronald G.; and Tandon, Jagdish C., 4,761,683, Cl. 358-75.000.

Taniguchi, Shigeki: *See—*
Matsuzaki, Akira; and Taniguchi, Shigeki, 4,761,649, Cl. 340-850.000

Tanimoto, Akikazu: *See—*
Fujiwara, Yoshihisa; Tanimoto, Akikazu; Kato, Hisakazu; Hosoya, Manabu; Miura, Shinji; Inoue, Fuyuhiko; and Aoki, Yuichi, 4,761,561, Cl. 250-548.000

Tanimoto, Akira: *See—*
Washizuka, Isamu; and Tanimoto, Akira, 4,760,918, Cl. 206-328.000

Tanimoto, Ichiro: *See—*
Maki, Yoshihiro; Kano, Makoto; Fujiki, Akira; and Tanimoto, Ichiro, 4,761,344, Cl. 428-552.000.

Tanizawa, Tetsu, to Fujitsu Limited. Semiconductor large scale integrated circuit with noise cut circuit. 4,761,572, Cl. 307-546.000.

Tano, Shunichi; Funabashi, Motohisa; Masui, Shoichi; and Sakaguchi, Seiji, to Hitachi, Ltd. Dynamic reconstruction method for discrimination network. 4,761,746, Cl. 364-513.000.

Tansil, Thomas B.: *See—*
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,761,807, Cl. 379-89.000

Tappan Company, The: *See—*
Carmean, Silas E., 4,761,539, Cl. 219-497.000.

Tarumi, Niro: *See—*
Komiya, Shigeo; Tarumi, Niro; and Futamura, Hideyuku, 4,761,438, Cl. 523-106.000.

Tatyrek, Alfred F. Engine crankcase vacuum check valve system for internal combustion engines. 4,760,833, Cl. 123-574.000.

Tavernier, Serge M.; De Roo, Pierre R.; Mampaey, Jozef L.; and Janssens, Robert F., to AGFA-Gevaert N.V. Electrophoretic development of electrostatic charge images. 4,761,357, Cl. 430-32.000.

Taylor, John W.; and Sweeney, Robert M. Color coordination cone. 4,761,137, Cl. 434-99.000.

Taylor, Richard D.: *See—*
Stumpff, Phillip W.; and Taylor, Richard D., 4,761,525, Cl. 200-284.000

Technology Unlimited, Inc.: *See—*
Geho, Walter B., 4,761,287, Cl. 424-450.000.

Teijin Limited: *See—*
Hamano, Hisashi; Hasegawa, Kinji; Noumi, Yoshihiro; and Katoh, Hideo, 4,761,327, Cl. 428-220.000.

Tektronix, Inc.: *See—*
Engelson, Morris; Morgan, Clifford D.; and Waltz, Ivan E., 4,761,604, Cl. 324-78.00R
Huntzinger, Gregory G., 4,761,642, Cl. 340-721.000.
Slavin, Keith R., 4,761,640, Cl. 340-709.000.

Telefunken electronic GmbH: *See—*
Rinderle, Heinz, 4,761,828, Cl. 455-296.000.

Tennessee Plastics, Inc.: *See—*
Hayes, Edwin T., 4,761,537, Cl. 219-366.000

Tennessee Valley Authority: *See—*
Whiteside, Richard W., 4,760,784, Cl. 100-220.000

Teramae, Katsuhiro: *See—*
Ikari, Motoo; Takada, Yuji; Yamamoto, Shintaro; Teramae, Katsuhiro; and Asai, Makio, 4,761,546, Cl. 250-201.000.

Teraoka, Hideyuki: *See—*
Chiba, Takatoshi; and Teraoka, Hideyuki, 4,761,538, Cl. 219-497.000

Teraoka, Wataru, to Hitachi, Ltd. Circuit breaker. 4,761,626, Cl. 335-16.000

Terashima, Kanetsugu: *See—*
Inukai, Takashi; Saito, Shinichi; Inoue, Hiromichi; Miyazawa, Kazutoshi; Terashima, Kanetsugu; and Ichihashi, Mitsuyoshi, 4,761,246, Cl. 252-299.680.

Terrier, Jacques: *See—*
Caillaut, Bruno; Perrier de la Bathie, Rene ; and Terrier, Jacques, 4,761,528, Cl. 219-10.491.

Terumo Kabushiki Kaisha: *See—*
Muramoto, Yutaka, 4,761,526, Cl. 206-306.000

Texaco Inc.: *See—*
Bhattacharya, Ajit K., 4,761,467, Cl. 558-277.000
Hatton, Gregory J., 4,760,742, Cl. 73-861.040.
Long, Stephen L.; and Christ, Gene L., 4,760,881, Cl. 166-165.000.
Speranza, George P.; Lin, Jiang-Jen; and Cuscurida, Michael, 4,761,465, Cl. 528-45.000

Texas Instruments Incorporated: *See—*
Reid, Lee R., 4,761,681, Cl. 357-68.000

Textube Corporation: *See—*
Mueller, Rolf J., 4,760,936, Cl. 220-366.000

Tezuka, Akira: *See—*
Horiguchi, Hiyosei; and Tezuka, Akira, 4,760,772, Cl. 98-2.010.

Than, Cu T.: *See—*
Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., 4,761,800, Cl. 375-117.000.

Thaxton, James P.: *See—*
Edens, Frank W.; and Thaxton, James P., 4,761,398, Cl. 514-15.000

Thayer, Edward B.: *See—*
Ward, Eric J.; Scott, Philip R.; and Thayer, Edward B., 4,760,960, Cl. 239-265.250

Theisen, Wolfgang: *See—*
Hammon, Wolfgang; Theisen, Wolfgang; and Wegner, Klaus, 4,761,112, Cl. 414-591.000.

Theliander, Hans; and Gren, Urban. Method of drying particulate material. 4,760,650, Cl. 34-35.000.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Ballast cleaning machine with compacting device. 4,760,796, Cl. 104-7.300

Thomas & Betts Corporation: *See—*
Peterpaul, Joseph, 4,761,086, Cl. 400-531.000

Thomas, Dennis R.: *See—*
Kress, Edward S.; Thomas, Dennis R.; and LaBerdia, William L., 4,761,108, Cl. 414-460.000

Thomas Josef Heimbach GmbH & Co.: *See—*
Halker, Vera; and Halker, Helmut, 4,761,329, Cl. 428-222.000.

Thomas, Mark S.: *See—*
Thomas, Stephen E.; and Thomas, Mark S., 4,761,577, Cl. 310-67.00A.

Thomas, Stephen E.; and Thomas, Mark S. Wheel-mounted electrical power generator. 4,761,577, Cl. 310-67.00A.

Thompson, Jeffrey L.: *See—*
Frank, Thomas P.; and Thompson, Jeffrey L., 4,760,730, Cl. 73-4.00R.
Stubbs, John L.; Patton, Wesley H.; and Thompson, Jeffrey L., 4,760,797, Cl. 104-12.000

Thompson, John A.; and Hafez, Medi M. Multi-leaf membrane module. 4,761,229, Cl. 210-321.820.

Thompson, Peter B. Roofing panel and method. 4,760,679, Cl. 52-573.000

Thomsen, Victoria. Earring purse. 4,760,920, Cl. 206-495.000.

Thomson-CSF: *See—*
Sassier, Pierre, 4,760,886, Cl. 169-28.000

Thorn Emi Electronics Limited: *See—*
Owens, Roger P.; and Tomlinson, James, 4,761,653, Cl. 343-700.0MS.

Thorn EMI Patents Limited: *See—*
Tsiosios, Michael N., 4,761,529, Cl. 219-10.55B.

Tidswell, Frank: *See—*
Stanley, Larry; and Tidswell, Frank, 4,760,812, Cl. 114-108.000

Tiffany, Thomas O.: *See—*
Andersen, Marlo R.; Tiffany, Thomas O.; and Gangitano, Mario J., 4,761,268, Cl. 422-72.000.

Timken Company, The: *See—*
Abbruzzi, Joseph A.; Dougherty, John D.; and Marballi, Vikram M., 4,761,018, Cl. 280-674.000.

Timms, George D., Jr.: *See—*
Clark, Brian E.; Lawlor, Francis D.; Schmidt-Stumpf, Werner E.; Stewart, Terrence J.; and Timms, George D., Jr., 4,761,785, Cl. 371-51.000

Timuska, Karlis; and Sjolin, Ulf, to Svenska Rotor Maskiner Aktiebolag. Screw-type rotary machine having at least one rotor made of a plastics material. 4,761,124, Cl. 418-153.000

Tindall, Colin: *See—*
Gibson, Stanley; and Tindall, Colin, 4,760,875, Cl. 165-4.000

Tinnin, Luther R.: *See—*
Chou, Eddie C.; Beckstead, Leo W.; and Tinnin, Luther R., 4,761,177, Cl. 75-0.5AA

Tirums, Andrew T.: *See—*
Evans, Charles D.; Tirums, Andrew T.; Larkin, Eric W.; and Melzer, James E., 4,761,056, Cl. 350-174.000

Titsworth, Raymond; Lipe, J. Tom; Dale, James L.; Monroe, Hanford D.; and Hill, Jerry M., to FMC Corporation. Vehicle wheel alignment apparatus and method. 4,761,749, Cl. 364-559.000

Tobita, Hideaki: *See—*
Naruse, Kazuo; Kitano, Mikio; and Tobita, Hideaki, 4,761,533, Cl. 219-86.700

Togashi, Hiroshi. *See—*
Ogino, Hiroshi; Matsumoto, Yukio; Togashi, Hiroshi; and Ojima, Kumiko, 4,761,331, Cl. 428-323.000

Togino, Kazuto: *See—*
Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, 4,761,547, Cl. 250-211.00J

Togoshi, Yoshikazu: *See—*
Samejima, Kazuo; Shimamura, Teruo; Sakatsuji, Takao; Togoshi, Yoshikazu; Fukuda, Masatami; and Kida, Hideo, 4,760,686, Cl 56-15.800

Toh Electronics Co., Ltd.: *See—*
Yoshikoshi, Takashi; Marumori, Katsuhira; and Gunji, Tsunefusa, 4,760,661, Cl. 40-356.000

Toki, Akio, to Kabushiki Kaisha Toshiba. Method and circuit for setting dialing data in a wireless telephone. 4,761,806, Cl. 379-61.000

Tokida, Minoru; Izumitani, Tetsuro; Yamashita, Toshiharu; and Miura, Kiyotaka, to Hoya Corporation. Fluoride glass. 4,761,387, Cl. 501-40.000

Tokushima, Tadao; and Shiraki, Makato, to Nippon Gakki Seizo Kabushiki Kaisha. Optomagnetic recording medium. 4,761,330, Cl 428-312.800

Tokyo Electric Co., Inc., The: *See—*
Wakamatsu, Keiji; Nakayama, Tetsuya; and Atsumi, Jun, 4,761,707, Cl. 361-127.000

Tokyo Kogaku Kikai Kabushiki Kaisha: *See—*
Fukuma, Yasufumi, 4,761,070, Cl. 351-205.000

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Murakami, Hiroyasu, 4,761,775, Cl. 369-46.000

Tom, Glenn M.; and Brown, Duncan W., to Advanced Technology Materials, Inc. Process and composition for purifying arsine, phosphine, ammonia, and inert gases to remove Lewis acid and oxidant impurities therefrom. 4,761,395, Cl. 502-401.000

Tominaga, Akira: *See—*
Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, 4,761,212, Cl. 204-181.100

Tomita, Kenichi: *See—*
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru; Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, 4,761,436, Cl. 522-114.000

Tomita, Yoji; and Mitsuhashi, Kenichi, to Kanebo Limited. Tubular fluid filter. 4,761,231, Cl. 210-497.100.

Tomizuka, Shunichi: *See—*
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M

Tomlinson, James: *See—*
Owens, Roger P.; and Tomlinson, James, 4,761,653, Cl. 343-700.0MS

Tomoji, Nukiyama, to NEC Corporation. Digital adder-subtracter with tentative result correction circuit. 4,761,760, Cl. 364-788.000

Tone Boring Company Limited: *See—*
Saito, Makoto, 4,760,888, Cl. 175-259.000

Tong Lung Metal Industry Co. Ltd.: *See—*
Fann, Yaw-Shin; and Wu, Rong-Fan, 4,760,722, Cl. 70-358.000

Toray Industries, Inc.: *See—*
Uemura, Tadahiro; Himeshima, Yoshio; and Kurihara, Masaru, 4,761,234, Cl. 210-500.380

Torelli, Guido: *See—*
Maloberti, Franco; and Torelli, Guido, 4,761,615, Cl. 330-277.000

Torgerson, Curt N.: *See—*
Wield, Paul J.; and Torgerson, Curt N., 4,760,752, Cl. 74-434.000

Torigai, Katsumi, to Sanshin Kogyo Kabushiki Kaisha. Multi-cylinder engine with turbo-charger. 4,760,704, Cl. 60-612.000

Torihata, Shigenori; Togino, Kazuto; Okamoto, Akira; Hashimoto, Haruo; Takitani, Yukitaka; Imaizumi, Hisaakira; and Miyata, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Semiconductor photoelectric conversion device for light incident position detection. 4,761,547, Cl. 250-211.00J

Torii, Shumpeita: *See—*
Yoshimura, Ryoichi; and Torii, Shumpeita, 4,761,554, Cl 250-327.200

Torita, Katsutoshi; and Yamamoto, Kojuro, to NGK Insulators, Ltd Compression apparatus having a main compression device and a tapered precompression device. 4,760,783, Cl. 100-137.000

Tornblom, Bengt: *See—*
Svegander, Lennart; and Tornblom, Bengt, 4,761,610, Cl. 324-227.000

Toshiba Kikai Kabushiki Kaisha *See—*
Sasaki, Yoshinari; and Ozaki, Yasuo, 4,761,597, Cl. 318-625.000

Toy, Arthur D. F.; and Jaffe, Fred, to Stauffer Chemical Company Method for treating destabilized, fire-involved elemental phosphorus 4,761,271, Cl. 423-265.000

Toyama, Hiroaki, to Kabushiki Kaisha Murakoshi Seiko. Hinge 4,760,623, Cl. 16-238.000

Toyo Communication Equipment Co., Ltd.: *See—*
Matsunaga, Masaharu, 4,761,651, Cl. 342-40.000

Toyoda Gosei Co., Ltd.: *See—*
Takimoto, Masahiro; Ohta, Satoshi; and Yamazaki, Yoshio, 4,761,333, Cl. 428-327.000

Toyota Jidosha Kabushiki Kaisha: *See—*
Naruse, Kazuo; Kitano, Mikio; and Tobita, Hideaki, 4,761,533, Cl 219-86.700
Ohashi, Kaoru; Hamada, Chiaki; Kawakami, Hiroshi; Hirano, Yutaka; and Murakami, Zensaku, 4,761,022, Cl. 280-772.000

VOL 1093 ISS 1 AG 2 1988 UMI

Takahashi, Shigeo, 4,760,867, Cl. 137-637.000.

Tozzi, Luigi. Plasma jet ignition apparatus. 4,760,820, Cl. 123-143.00B.

Tradex Limited: *See—*
Boutilier, Roland A., 4,761,110, Cl. 414-563.000

Trammell, Bernadette A.: *See—*
Batliwalla, Neville S.; Jones, Michael C.; Oswal, Ravinder K.; Shafe, Jeff; and Trammell, Bernadette A., 4,761,541, Cl. 219-528.000.

Traub, Zeno P., to Eaton Leonard Technologies, Inc. Bend arm apparatus for tube bending machine with cammed clamp die arrangement 4,760,726, Cl. 72-149.000.

Trebor Industries, Inc.: *See—*
Rosenthal, Robert D., 4,761,552, Cl. 250-252.100.

Trendl, Franz, to BASF Aktiengesellschaft. Level dyeing of a filament bundle with a dye solution. 4,760,617, Cl. 8-151.200.

Treybig, Duane S.; and Martinez, Robert G., to Dow Chemical Company, The. Novel compositions prepared from organic amines and nitrogen-containing aromatic heterocyclic compounds substituted with at least one group selected from carboxylic acid, carboxylic acid ester, carboxylic acid anhydride and carboxylic acid halide 4,761,473, Cl. 544-224.000.

Treybig, Duane S., to Dow Chemical Company, The. Compounds formed by the reaction of piperazine, and derivatives thereof, with glyoxal, and derivatives thereof. 4,761,476, Cl. 544-357.000.

Trick, O. Lee; and Montieth, Royel F. Self-gripping cap remover for child resistant medication containers. 4,760,763, Cl. 81-3.090.

Triplett, James T.: *See—*
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., 4,761,193, Cl. 156-85.000.
Pithouse, Kenneth B.; Kridl, Thomas A.; and Triplett, James T., 4,761,194, Cl. 156-86.000.

Tripodi, Paul: *See—*
Fraisse, Didier; Dudon, Pascal; and Tripodi, Paul, 4,761,704, Cl. 361-50.000

Trocciola, John C.; and McVay, Donald R., to United Technologies Corporation. Multiple heat sink cooling system for a burst power fuel cell. 4,760,713, Cl. 62-434.000

Troupes, Demetrios: *See—*
Angst, Tim V.; and Troupes, Demetrios, 4,761,085, Cl. 400-323.000.

Trowell, John M.: *See—*
Panchak, John R.; and Trowell, John M., 4,761,433, Cl. 521-124.000

Troxell, John N., Jr., to Cameron Iron Works, Inc. Telescoping joint 4,761,023, Cl. 285-18.000.

Trubert, Denis, to Societe des Etablissements Rene Trubert. Thermostatic mixer devices in particular for distributing water. 4,760,953, Cl. 236-122.000

Truck Trailer Design, Inc.: *See—*
Rowe, John C.; and Melchi, Floyd D., 4,761,031, Cl. 296-182.000.

Trudeau, William H.: *See—*
Smith, Joseph E.; and Trudeau, William H., 4,761,083, Cl. 384-208.000

Truong, Van-Tan; and Watkins, Rodney D., to Sola International Holdings Limited. Contact lens and method of molding. 4,761,069, Cl. 351-160.00H

TRW Inc.: *See—*
Keller, George O.; Portugal, Joseph J.; and Kane, Robert F., 4,761,191, Cl. 148-12.00R.

TRW United-Carr GmbH: *See—*
Kraus, Willibald; and Weinheimer, Ute, 4,761,319, Cl. 428-99.000.

Tsann Kuen Enterprise Co., Ltd.: *See—*
Lin, Sheng-Chi, 4,760,774, Cl. 99-299.000.

Tschantz, William H., to Harrison Handling, Inc. Hinged belt support and enclosure system. 4,760,913, Cl. 198-819.000.

Tseng, Kenneth K. S.: *See—*
Hung, Paul L. K.; and Tseng, Kenneth K. S., 4,761,363, Cl. 430-284.000

Tsisios, Michael N., to Thorn EMI Patents Limited. Grilling or browning apparatus suitable for use in a microwave or convection oven. 4,761,529, Cl. 219-10.55B

Tsuchida, Tetsuo: *See—*
Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, 4,760,899, Cl. 188-181.00A.

Tsuchiya, Tomio, to Fuji Seiki Machine Works, Ltd. Lead frame finishing apparatus. 4,760,673, Cl. 51-418.000.

Tsuji, Toshio: *See—*
Asano, Masao; Matsumoto, Kazumasa; Tsuji, Toshio; and Yasufuku, Yoshitaka, 4,761,338, Cl. 428-425.900.

Tsujimura, Taro: *See—*
Shima, Takashi; Takasawa, Katuro; Ashikawa, Tomoharu; Tsujimura, Taro; Takenaka, Yasuo; and Tomizuka, Shunichi, 4,760,900, Cl. 188-251.00M.

Tsunemine, Toyohiko: *See—*
Miyai, Kiyoshi; Uotani, Shuhei; Tsunemine, Toyohiko; and Kohmoto, Yujiro, 4,761,667, Cl. 355-3.00R.

Tsuno, Nobuo: *See—*
Oda, Isao; and Tsuno, Nobuo, 4,761,117, Cl. 416-241.00R.

Tsuru, Sumiaki: *See—*
Nakajima, Toru; Sato, Masahiro; Nishimura, Katsuhiko; and Tsuru, Sumiaki, 4,761,366, Cl. 435-2.000.

Tsurubuchi, Tooru, to Roland Corporation. Apparatus for detecting string stop position. 4,760,767, Cl. 84-1.160.

Turchan, Otto C. Method of reducing the oxides of nitrogen in fossil fuels combustion and combustion effluents using hydrazine and/or hydrazine compounds. 4,761,270, Cl. 423-235.000.

Turner, J. Ward, to Exxon Production Research Company. System for mating an integrated deck with an offshore substructure. 4,761,097, Cl. 405-204.000.

Turner, James H. Control system for heating and cooling apparatus of building. 4,760,955, Cl. 236-68.00C.

Turner, John E.; and Rutledge, David L., to Lattice Semiconductor Corporation. Programmable logic device. 4,761,768, Cl. 365-201.000.

UBE Industries, Ltd.: *See—*
Mihara, Takeshi, 4,760,874, Cl. 164-457.000.

Uebaba, Kazuo: *See—*
Ikekawa, Tetsuro; Shimada, Fumitake; Cyong, Jong-Chol; and Uebaba, Kazuo, 4,761,477, Cl. 546-48.000.

Ueda, Izumi: *See—*
Yoshida, Masayuki; Ueda, Izumi; Ishii, Hidehiro; Shiba, Takahumi; and Nakajima, Fumihiro, 4,761,692, Cl. 358-335.000.

Ueda, Shinji: *See—*
Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, 4,761,409, Cl. 514-206.000.

Uematsu, Eiji: *See—*
Mutou, Yoshiichi; and Uematsu, Eiji, 4,760,862, Cl. 137-315.000.

Uemura, Tadahiro; Himeshima, Yoshio; and Kurihara, Masaru, to Toray Industries, Inc. Interfacially synthesized reverse osmosis membrane. 4,761,234, Cl. 210-500.380.

Ueno, Moriaki: *See—*
Igarashi, Sadao; and Ueno, Moriaki, 4,761,624, Cl. 333-206.000.

Uhrig, Helmut: *See—*
Emig, Hans; Lindstaedt, Bernd; Strein, Gunter; Uhrig, Helmut; and Volk, Willi, 4,760,658, Cl. 38-77.700.

Ullrich, Axel: *See—*
Bell, John R.; Ramachandran, Janakiraman; and Ullrich, Axel, 4,761,371, Cl. 435-68.000.

Umeno, Masayuki; and Takita, Satoshi, to Hokko Chemical Industry Co., Ltd. Preparation process of quaternary phosphonium hydroxide. 4,761,493, Cl. 568-11.000.

Unangst, Paul C.: *See—*
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000.

Underwood, George D., to Hughes Aircraft Company. Look ahead terminal counter. 4,761,801, Cl. 377-33.000

Union Camp Corporation: *See—*
Mitchell, Peter W. D.; McElligott, Lois T.; and Sasser, David E., 4,761,507, Cl. 570-236.000.

Union Carbide Corporation: *See—*
Childress, Thomas E.; Omietanski, George M.; and Mendicino, Frank D., 4,761,492, Cl. 556-482.000.
Stocker, Jorg; and Whysall, Michael, 4,761,165, Cl. 55-21.000.

Union Oil Company: *See—*
Hucke, Edward E., 4,761,272, Cl. 423-445.000.

Union Oil Company of California: *See—*
Occelli, Mario L., 4,761,391, Cl. 502-63.000.
Ratcliffe, Charles T.; and Dolbear, Geoffrey E., 4,761,162, Cl. 44-626.000
Whitescarver, Olin D.; Kwan, Jonathan T.; Chan, M. Kenneth; and Hoyer, Daniel P., 4,761,182, Cl. 106-98.000.

Unisys Corporation: *See—*
Henze, Christopher P., 4,761,725, Cl. 363-46.000.

U.S. Holding Company, Inc.: *See—*
Hollis, David L.; and Reynolds, John L., III, 4,761,812, Cl. 379-413.000

United States of America
Agriculture: *See—*
McGovern, Terrence P.; Leonhardt, Barbara A.; and Cunningham, Roy T., 4,761,280, Cl. 424-84.000.
Air Force: *See—*
Gauder, Michael J., 4,761,747, Cl. 364-514.000.
Holmes, Buddy L., 4,761,762, Cl. 364-900.000.
Army: *See—*
Finnegan, Robert D.; and Klimek, Joseph P., 4,760,966, Cl. 241-1.000
Glendinning, William B., 4,761,560, Cl. 250-492.200.
Jasper, Louis J., Jr., 4,760,769, Cl. 89-8.000.
Rhodes, Gilbert A., Jr., 4,760,932, Cl. 220-5.00A.
Vig, John R., 4,761,298, Cl. 427-10.000.
Commerce: *See—*
Clifford, Steven F.; and Farmer, David M., 4,760,743, Cl. 73-861.060.
Energy: *See—*
Brown, Ralph L.; Guilford, Richard P.; and Stichman, John H., 4,761,724, Cl. 363-21.000.
Godshall, Ned A., 4,761,487, Cl. 429-112.000
Halbach, Klaus, 4,761,584, Cl. 315-4.000.
Juravic, Frank E., Jr., 4,761,553, Cl. 250-298.000.
Kunz, H. Russell; Guthrie, Robin J.; and Katz, Murray, 4,761,348, Cl. 429-35.000.
Kupperman, David S., 4,760,737, Cl. 73-622.000.
Weil, Raoul B., 4,761,302, Cl. 427-39.000.
National Aeronautics and Space Administration: *See—*
Singh, Jag J.; Sprinkle, Danny R.; and Puster, Richard L., 4,761,744, Cl. 364-500.000.
Navy: *See—*
Burns, William K.; Frigo, Nicholas J.; and Moeller, Robert P., 4,761,049, Cl. 350-96.140.

Hiremath, Basavaraj V.; Newnham, Robert E.; Cross, Leslie E.; and Biggers, James V., 4,761,711, Cl. 361-321.000

U.S. Philips Corporation: *See—*
Arragon, Jean-Pierre, 4,761,799, Cl. 375-107.000.
Bordui, Peter F.; and Loiacono, Gabriel M., 4,761,202, Cl 156-621.000.
Lobregt, Steven; Op de Beek, Johannes C. A.; and Werkman, Roelof, 4,761,738, Cl. 364-414.000.
Muller, Johannes C. A.; and Beijersbergen Van Henegouwen, Cornelis M., 4,761,696, Cl. 360-84.000
Opheij, Willem G., 4,761,776, Cl. 369-54.000.
Patron, Christian S. A. E.; and Huben, Aart P., 4,761,618, Cl. 331-167.000
Patron, Christian S. A. E., 4,761,619, Cl. 331-167.000.
Pirolli, Claude; and Fouilloy, Jean-Pierre, 4,761,652, Cl. 342-53.000.
van Meerbergen, Jozef L., 4,761,734, Cl. 364-200.000.
Voorn, Gijsbertus, 4,761,351, Cl. 429-50.000

United Technologies Corporation: *See—*
Brown, Robert S.; and Dunlap, Roger, 4,760,695, Cl. 60-204.000.
Dyer, Gerald P.; Gorneault, Gerald J.; Stearns, Charles F.; and Perkinson, Robert H., 4,760,662, Cl. 60-39.281.
Meltz, Gerald; Glenn, William H.; and Snitzer, Elias, 4,761,073, Cl. 356-32.000.
Trocciola, John C.; and McVay, Donald R., 4,760,713, Cl. 62-434.000.
Wade, Ivan W., Jr.; and Hessler, John D., 4,761,520, Cl. 174-121.00R.
Ward, Eric J.; Scott, Philip R.; and Thayer, Edward B., 4,760,960, Cl. 239-265.250

Universite de Sherbrooke: *See—*
Chornet, Esteban; Koeberle, Paulo G.; and Overend, Ralph, 4,761,185, Cl. 127-38.000.

University of California, The Regents of the: *See—*
Fournier, George R., Jr.; Kung, Andrew H.; and McAninch, Jack W., 4,760,840, Cl. 128-303.100.
Glassy, Mark C.; and Surh, Charles, 4,761,377, Cl. 435-240.270.
Urist, Marshall R., 4,761,471, Cl. 530-350.000

University of Chicago: *See—*
McPheeters, Charles C.; and Mrazek, Franklin C., 4,761,349, Cl. 429-39.000.

University of North Carolina at Chapel Hill, The: *See—*
Edgell, Marshall H.; Nordeen, Steven K.; and Hutchinson, Clyde A., III, 4,761,367, Cl. 435-6.000.

University of Rochester, The: *See—*
Anderson, Porter W., 4,761,283, Cl. 424-92.000.

Untereker, Darrel F.: *See—*
Skarstad, Paul M.; Untereker, Darrel F.; and Merritt, Donald R., 4,761,355, Cl. 429-213.000.

UOP Inc.: *See—*
Pujado, Peter R., 4,761,504, Cl. 568-697.000.
Steacy, Paul C., 4,761,513, Cl. 585-467.000.
Vora, Bipin V.; and Ellig, Daniel L., 4,761,509, Cl. 585-254.000.

Uotani, Shuhei: *See—*
Miyai, Kiyoshi; Uotani, Shuhei; Tsunemine, Toyohiko; and Kohmoto, Yujiro, 4,761,667, Cl. 355-3.00R.

Upton, Roger M.: *See—*
Ellames, George J.; Upton, Roger M.; Jaxa-Chamiec, Albert A.; and Myers, Peter L., 4,761,414, Cl. 514-250.000.
Lawson, Kevin R.; and Upton, Roger M., 4,761,483, Cl. 548-344.000.

Urai, Muneharu, to Tachikawa Spring Co., Ltd. Seat cushion assembly. 4,761,035, Cl. 297-452.000.

Urist, Marshall R., to University of California, The Regents of the. Bone morphogenetic protein composition. 4,761,471, Cl. 530-350.000.

Ushio, Yukihide: *See—*
Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, 4,761,662, Cl 346-108.000.

Utica Enterprises, Inc.: *See—*
Dacey, Ernest A., Jr., 4,760,633, Cl. 29-432.100.

Vaida, Robert M., to Gerber Garment Technology, Inc. Conveyor hanger with circular wedge gripper. 4,760,912, Cl. 198-678.000.

Vaillancourt, Vincent. Depth measuring device. 4,760,847, Cl. 128-329.00R

Valdes, Nancy E.; Linstra, Gary, Jr.; and Krog, Ann M., to Charles of the Ritz Group Ltd. Waterbase lipliner formulation. 4,761,277, Cl. 424-64.000.

Vancura, Mark D.: *See—*
Lese, Gregory; Price, John D.; Richardson, Ralph E.; Than, Cu T.; and Vancura, Mark D., 4,761,800, Cl. 375-117.000.

van den Beld, Paul Christiaan H.; Kettenring, Gerhard; Greulich, Bodo; and Schmitz, Gunther. Plastic closure plug. 4,760,935, Cl. 220-307.000.

van der Poel, Hendrik: *See—*
Bracken, Jozef; Dekerk, Jean-Paul; van der Poel, Hendrik; and Verborgt, Jozef, 4,761,439, Cl. 523-122.000.

Van Landingham, Thomas A., to McInerney Incorporated. Electric bend head for bending tubes. 4,760,727, Cl. 72-149.000.

VanLinden, Jan H. L.: *See—*
Stewart, Donald L., Jr.; and VanLinden, Jan H. L., 4,761,207, Cl. 204-67.000.

van Meerbergen, Jozef L., to U.S. Philips Corporation. Data-processing apparatus provided with a finite-state machine to perform a program jump. 4,761,734, Cl. 364-200.000.

Van Ryzin, Joseph C.: *See—*
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; Zenner, Bruce D.; and Anderson, C. William, 4,761,209, Cl. 204-129.000

Varian Associates, Inc.: *See—*
Boys, Donald R., 4,761,218, Cl. 204-298.000

Vasiliou, Anna; and Vasiliou, Athanasios, to Vasiliou, Athanasios. Composition for relief and treatment of hemorrhoids. 4,761,285, Cl. 424-195.100

Vasiliou, Athanasios: *See—*
Vasiliou, Anna; and Vasiliou, Athanasios, 4,761,285, Cl. 424-195.100

Veglia: *See—*
Huynh, Tan D., 4,760,736, Cl. 73-430.000.

Venuti, Michael C.: *See—*
Fried, John H.; and Venuti, Michael C., 4,761,416, Cl. 514-260.000

Verborgt, Jozef: *See—*
Braeken, Jozef; Dekerk, Jean-Paul; van der Poel, Hendrik, and Verborgt, Jozef, 4,761,439, Cl. 523-122.000

Vermillion, Richard E. Human milk retrieval system. 4,761,160, Cl 604-76.000

Vetter, Ulrich; and Neumeier, Jurgen, to Hans Heynau GmbH. Swivel head for industrial robots. 4,760,753, Cl. 74-479.000

Victor Company of Japan, Ltd.: *See—*
Kasamatsu, Taisuke, 4,760,751, Cl. 74-354.000
Ogino, Hiroshi; Matsumoto, Yukio; Togashi, Hiroshi; and Ojima, Kumiko, 4,761,331, Cl. 428-323.000
Shudo, Katsuyuki; Kinjo, Hisao; Okano, Keigo; and Hanashiro, Yoshiaki, 4,761,694, Cl. 360-37.100.

Vidcom Rentservice B.V.: *See—*
Schreiber, Craig A., 4,761,641, Cl. 340-717.000.

Video Jukebox Network: *See—*
Clark, Morris; Lawson, Kenneth; and Izatt, James, 4,761,684, Cl. 358-86.000

Vig, John R., to United States of America, Army. Method of precisely adjusting the frequency of a piezoelectric resonator. 4,761,298, Cl 427-10.000

Vijay, Tumkur R., to FMC Corporation. Lower bead breaker removal and adjustment apparatus. 4,760,871, Cl. 157-1.280.

Vinogradoff, Anna P.: *See—*
Peet, Norton P.; Sunder, Shyam; and Vinogradoff, Anna P., 4,761,474, Cl. 544-250.000.

Vinson, Kenneth D., to Buckeye Cellulose Corporation, The. Process for making expanded fiber. 4,761,203, Cl. 162-9.000.

Viscogliosi, Marcello: *See—*
Schachter, Rozalie; and Viscogliosi, Marcello, 4,761,300, Cl. 427-38.000

Viscosuisse SA: *See—*
Lang, Bruno; and Schaffner, Paul, 4,760,690, Cl. 57-243.000.

Viswanathan, Ravi: *See—*
Shalati, Mohamad D.; and Viswanathan, Ravi, 4,761,289, Cl. 424-468.000

Vitek, Joseph J., to Westinghouse Electric Corp. Integrated circuit carrier. 4,760,917, Cl. 206-331.000

VMX, Inc.: *See—*
Matthews, Gordon H.; Tansil, Thomas B.; and Fannin, Michael L., 4,761,807, Cl. 379-89.000.

Vogel, Ignaz, to Ignaz Vogel GmbH Co., KG. Passenger seat support structure. 4,761,036, Cl. 297-452.000

Volk, Willi: *See—*
Emig, Hans; Lindstaedt, Bernd; Strein, Gunter; Uhrig, Helmut; and Volk, Willi, 4,760,658, Cl. 38-77.700.

Volzhskoe Obiedinenie Po Proizvodstvu Legkovykh Avtomobilei: *See—*
Rudnev, Ivan E.; and Kulikov, Viktor V., 4,760,762, Cl. 76-107.00R.

Voorn, Gijsbertus, to U.S. Philips Corp. Battery comprising one or more electrochemical cells having a double-walled cell lid. 4,761,351, Cl. 429-50.000

Vora, Bipin V.; and Ellig, Daniel L., to UOP Inc. High selectivity process for dehydrogenation of paraffinic hydrocarbons. 4,761,509, Cl. 585-254.000

Vorum, Peter C. Short pipe manifold for four-stroke engines. 4,760,819, Cl. 123-52.0MB

Voss, Frands W.: *See—*
Simonsen, Jens K.; and Voss, Frands W., 4,760,744, Cl. 73-861.380

Voss, James R.: *See—*
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000.

W. R. Grace & Co., Cryovac Div.: *See—*
Schirmer, Henry G., 4,761,080, Cl. 383-120.000

Wachsmuth, Peter: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,760,716, Cl. 66-9.00B

Wachter, Michael P.; and Karanewsky, Donald S., to Ortho Pharmaceutical Corporation. 1,5-epoxy-2,3,4,5-tetrahydro-1H-3-benzazepins and use in treatment of ulcers. 4,761,413, Cl. 514-229.800

Wachter, Richard G.; and Schillaci, Rosario J., to International Paper Company. Bulk box and slip sheet construction. 4,760,952, Cl 229-127.000

Wade, Ivan W., Jr.; and Hessler, John D., to United Technologies Corporation. Spiral wrapped insulated magnet wire. 4,761,520, Cl. 174-121.00R

VOL 1093 ISS 1 AG 2 1988 UMI

Wagenbach, Gerald L., Jr., to J. I. Case Company. Foldable power take-off shaft shield. 4,761,152, Cl. 464-176.000

Wagner, Bernd: *See—*
Pickering, John F.; Schluter, Peter; and Wagner, Bernd, 4,760,700, Cl. 60-585.000

Wagner, Wolfram: *See—*
Paulini, Dieter; Wagner, Wolfram; Schmitz-Bastian, Peter; and Bruck, Robert, 4,760,629, Cl. 28-256.000

Wakamatsu, Keiji; Nakayama, Tetsuya; and Atsumi, Jun, to Tokyo Electric Co., Inc., The; and NGK Insulators, Ltd. Lightning-conducting insulators. 4,761,707, Cl. 361-127.000.

Wakisako, Hitoshi: *See—*
Nio, Satoru; and Wakisako, Hitoshi, 4,761,596, Cl. 318-568.000

Waldrum, John E. Ground spray applicator. 4,760,963, Cl. 239-245.000

Wallace, Jack E.: *See—*
Blum, Kenneth; Briggs, Arthur H.; and Wallace, Jack E., 4,761,429, Cl. 514-561.000

Wallace, Robert P.; Nugent, William P.; and Newton, Kenneth C., to Brewster Plastics, Inc. Carbonated beverage dispenser having low turbulence valve. 4,760,940, Cl. 222-129.100

Walraet, Jean: *See—*
Arnaune, Jean-Pierre; Dominguez, Nazario; and Walraet, Jean, 4,761,635, Cl. 340-347.0DD

Walter Fleisher Company: *See—*
Leong, Po S., 4,760,802, Cl. 108-157.000.

Walter, Kathleen E.: *See—*
Husson, Frank D., Jr.; and Walter, Kathleen E., 4,761,224, Cl 106-1.140

Walters, Donald M., Jr.; and Baror, Gigy, to Advanced Micro Devices, Inc. Clock scheme for VLSI systems. 4,761,567, Cl. 307-269.000

Walters, Michael A.: *See—*
Patt, Michael J.; and Walters, Michael A., 4,761,663, Cl 346-134.000

Waltz, Ivan E.: *See—*
Engelson, Morris; Morgan, Clifford D.; and Waltz, Ivan E., 4,761,604, Cl. 324-78.00R

Wang, Tao-Chin L.: *See—*
Marshall, Alan G.; Ricca, Tom L.; and Wang, Tao-Chin L., 4,761,545, Cl. 250-291.000

Ward, David O.; and Zajac, Theodore S., Jr., to Genicom Corporation. Printer with automatic printed paper advancement to tear-off position and subsequent retraction to new first print line. 4,761,087, Cl. 400-621.000

Ward, Eric J.; Scott, Philip R.; and Thayer, Edward B., to United Technologies Corporation. Linkage for area controlled, thrust vectoring vane cascade. 4,760,960, Cl. 239-265.250.

Ward, William R., to Owens-Illinois Television Products Inc. Method of and apparatus for automatically grinding cathode ray tube faceplates. 4,760,671, Cl. 51-215.0AR.

Wardell, Harry H. Waste water clarification. 4,761,239, Cl. 210-727.000

Warden, Douglas R.: *See—*
Warden, Roland R.; and Warden, Douglas R., 4,761,026, Cl 294-19.200

Warden, Roland R.; and Warden, Douglas R. Ball retriever. 4,761,026, Cl. 294-19.200

Warmling, Bo, to O. F. Ahlmark & Co. EFTR. AB; and Nils Olsson Hydraulmontage AB. Device for eliminating disturbing heeling of ships at loading and unloading. 4,760,813, Cl. 114-121.000

Warner-Lambert Company: *See—*
Carethers, Mary E.; Cetenko, Wiaczeslaw A.; Connor, David T.; Johnson, Elizabeth A.; Kiely, John S.; Schwender, Charles F.; Sircar, Jagadish C.; Sorenson, Roderick J.; Unangst, Paul C.; and Bruns, Robert F., 4,761,424, Cl. 514-443.000
Denick, John, Jr.; Peters, David; Talwar, Anil K.; and Liao, Wei C., 4,761,274, Cl. 424-48.000
Goel, Om P.; and Krolls, Uldis, 4,761,479, Cl. 546-147.000
Pattison, Ian C., 4,761,478, Cl. 546-118.000
Picard, Joseph A.; Roth, Bruce D.; and Sliskovic, Drago R., 4,761,419, Cl. 514-311.000.

Washizuka, Isamu; and Tanimoto, Akira, to Sharp Kabushiki Kaisha. Pocketbook type electronic apparatus. 4,760,918, Cl. 206-328.000

Watabe, Noboru, to NEC Corporation. Display plate for a printed circuit board. 4,760,659, Cl. 40-124.100.

Watanabe, Junji; and Oushiden, Hideshi, to Kabushiki Kaisha Toshiba Image forming apparatus with image forming area selection. 4,761,673, Cl. 355-14.00R

Watanabe, Masatoshi; Takahashi, Miyoshi; Sato, Masaki; Ito, Motoya; and Arai, Keiji, to Hitachi, Ltd. Magnetic wedge. 4,761,581, Cl. 310-214.000

Watanabe, Tadashi; Masubuchi, Yoichi; Tominaga, Akira; Nagaoka, Haruo; Nakatani, Eisaku; and Kume, Masafumi, to Kansai Paint Company, Limited. Multiple coating method. 4,761,212, Cl. 204-181.100

Watanabe, Takeshi, to NEC Corporation. Programmable read only memory operable with reduced programming power consumption. 4,761,764, Cl. 365-181.000

Watkins, Rodney D.: *See—*
Truong, Van-Tan; and Watkins, Rodney D., 4,761,069, Cl. 351-160.00H

Webb, David M., to Control Data Corporation. Look-ahead instruction fetch control for a cache memory. 4,761,731, Cl. 364-200.000.

Weber, Hubert: *See—*
Heynisch, Hinrich; Hubner, Klemens; Kruger, Hans; and Weber, Hubert, 4,761,787, Cl. 372-34.000

Weeks, Ian: *See—*
Woodhead, James S.; and Weeks, Ian, 4,761,382, Cl. 436-536.000

Wegener, Gerhard: *See—*
Knofel, Hartmut; Brockelt, Michael; and Wegener, Gerhard, 4,761,498, Cl. 560-359.000

Wegner, Klaus: *See—*
Hammon, Wolfgang; Theisen, Wolfgang; and Wegner, Klaus, 4,761,112, Cl. 414-591.000.

Weil, Raoul B., to United States of America, Energy. Fluorination of amorphous thin-film materials with xenon fluoride. 4,761,302, Cl. 427-39.000

Weilbacher, Jean-Claude: *See—*
Marini, Jean; and Weilbacher, Jean-Claude, 4,761,259, Cl. 376-245.000

Weinheimer, Ute: *See—*
Kraus, Willibald; and Weinheimer, Ute, 4,761,319, Cl. 428-99.000

Weise, Lutz: *See—*
Seibert, Wolfram; Ocvirk, Norbert; and Weise, Lutz, 4,761,042, Cl. 303-92.000

Weisenbarger, Gale M.; and Moran, John C. Magnetic fluid conditioner. 4,761,228, Cl. 210-222.000

Weiss, Erwin: *See—*
Siegel, Herbert; Weiss, Erwin; and Berger, Harald, 4,761,251, Cl. 260-543.00P
Siegel, Herbert; Weiss, Erwin; and Berger, Harald, 4,761,252, Cl. 260-543.00P.

Welch, Donald E.: *See—*
Dorman, Richard A.; and Welch, Donald E., 4,761,609, Cl. 324-208.000

Welsh National School of Medicine, The: *See—*
Woodhead, James S.; and Weeks, Ian, 4,761,382, Cl. 436-536.000

Welsh, Richard S., to Famoso Equipment Company. Tortilla stacker. 4,760,777, Cl. 99-450.200.

Wenger, Harry. Dispenser box and snap open/snap shut closure therefor. 4,760,938, Cl. 222-498.000

Werkman, Roelof: *See—*
Lobregt, Steven; Op de Beek, Johannes C. A.; and Werkman, Roelof, 4,761,738, Cl. 364-414.000.

Werner, Rainer A.: *See—*
Jaggard, James F. R.; Werner, Rainer A.; and Gruber, Wolfgang, 4,761,461, Cl. 526-125.000

Werner, Roy H., to Barrett, Haentjens & Co. Mixing apparatus. 4,761,077, Cl. 366-165.000

Werwitzke, Lothar: *See—*
Ziemek, Gerhard; Schatz, Friedrich; and Werwitzke, Lothar, 4,760,692, Cl. 57-314.000.

Westinghouse Brake and Signal Company Limited: *See—*
Wickham, David J., 4,760,895, Cl. 185-40.00R.

Westinghouse Electric Corp.: *See—*
Beck, Henry R.; Ferree, James E.; and Ludwig, Alan J., deceased, 4,761,521, Cl. 200-50.0AA
Brown, Stuart C., 4,761,726, Cl. 363-51.000
Frantti, Edsel W., 4,761,107, Cl. 414-146.000
Grimes, Frank H.; and Hammack, Eugenius, 4,761,630, Cl. 336-213.000
Kerrey, John S.; and Smith, John H., 4,760,637, Cl. 29-723.000.
Minogue, Patrick M., 4,760,876, Cl. 165-11.200.
Vitek, Joseph I., 4,760,917, Cl. 206-331.000.

Wharton, James H., to RCA Licensing Corporation. Linearity correction for multiple frequency video apparatus. 4,761,586, Cl. 315-408.000

Wharton, James H., to RCA Licensing Corporation. Multiple frequency horizontal oscillator for video apparatus. 4,761,587, Cl. 315-408.000

Wheeler, Roger D., to DeVilbiss Company, The. Spray gun paint cup and lid assembly. 4,760,962, Cl. 239-289.000.

Whelan, James J.: *See—*
McCrocklin, Andrew J.; Aneshansley, Nicholas E.; Shanahan, Patricia; Whelan, James J.; Anderson, Jeffrey P.; Kocol, James E.; and Riddle, Gary L., 4,761,733, Cl. 364-200.000.

Whitescarver, Olin D.; Kwan, Jonathan T.; Chan, M. Kenneth; and Hoyer, Daniel P., to Union Oil Co. of California. Process for using sludge from geothermal brine to make concrete and concrete composition. 4,761,182, Cl. 106-98.000.

Whiteside, Richard W., to Tennessee Valley Authority. Compacting plate locking device used for packaging expansible material. 4,760,784, Cl. 100-220.000

Whysall, Michael: *See—*
Stocker, Jorg; and Whysall, Michael, 4,761,165, Cl. 55-21.000

Wick, Christian: *See—*
Sheppard, Michael C.; and Wick, Christian, 4,760,735, Cl. 73-151.000

Wickenden, Dennis K.: *See—*
Conger, Darrell R.; Posa, John G.; and Wickenden, Dennis K., 4,761,269, Cl. 422-245.000.

Wickham, David J., to Westinghouse Brake and Signal Company Limited. Electric actuators. 4,760,895, Cl. 185-40.00R.

Wiederhold, Robert P.: *See—*
Eldumati, Ismail I.; Melnik, David T.; and Wiederhold, Robert P., 4,761,732, Cl. 364-200.000.

Wiegand, Walter J.: *See—*
Bullis, Robert H.; DiDomenico, Robert A.; Kimberley, John A.; McHugh, Thomas M.; Parent, Christopher A.; Voss, James R.; and Wiegand, Walter J., 4,760,830, Cl. 123-501.000.

Wield, Paul J.; and Torgerson, Curt N., to Hewlett-Packard Company. Plastic deformation relief. 4,760,752, Cl. 74-434.000.

Wiles, Gregory R.; and Matzoll, Robert J., Jr., to ATI Systems Inc. Fault detection and reset in surface reflectance meter. 4,761,676, Cl. 356-445.000.

Williams, David G., to Harris Corporation. Programmable logic device with programmable signal inhibition and inversion means. 4,761,570, Cl. 307-465.000.

Williams, David L.; Browder, I. William; and Diluzio, Nicholas R., deceased (by Diluzio, Nicholas M., legal representative), to Bioglucans, L.P. Methods and compositions for prophylactic and therapeutic treatment of infections. 4,761,402, Cl. 514-54.000.

Williams, Edward L., to Becton, Dickinson and Company. Biological specimen collection device. 4,761,379, Cl. 435-296.000.

Williams, Robert D.: *See—*
Martin, Jerome L.; Bright, David R.; Williams, Robert D.; and Young, Vernon V., 4,761,426, Cl. 514-460.000.

Williams Wholesalers, Inc.: *See—*
Casey, John P., 4,761,295, Cl. 426-549.000.

Willing, Achim, to Raak Licht B.V. Reflector for an oblong light source. 4,761,721, Cl. 362-348.000.

Willinger, Allan H.; and Woltmann, Klaus, to Willinger Bros. Self priming aquarium filter. 4,761,227, Cl. 210-169.000.

Willinger Bros.: *See—*
Willinger, Allan H.; and Woltmann, Klaus, 4,761,227, Cl. 210-169.000.

Willis, Donald H., to RCA Licensing Corporation. TV receiver having freeze field display. 4,761,686, Cl. 358-160.000.

Wilson, Carla G.: *See—*
Cogelia, Nicholas J.; Johnson, Brian D.; Reed, William C.; and Wilson, Carla G., 4,761,053, Cl. 350-96.230.

Windmuller, Rudolf: *See—*
Fazzolare, Richard D.; and Windmuller, Rudolf, 4,761,296, Cl. 426-549.000.

Winnerl, Josef: *See—*
Neppl, Franz; Jacobs, Erwin; Winnerl, Josef; and Mazure-Espejo, Carlos-Alberto, 4,761,384, Cl. 437-029.000.

Wirth, Didier; Gibert, Dominique; and Boutin, Annie, to Isochem S.A. Method relating to preparation of aspartyl peptides. 4,761,495, Cl. 560-41.000.

Witcombe, John D. Mixer. 4,761,076, Cl. 366-46.000.

Witczak, Stanley, to AM International, Inc. Adjustable roller system for printing or duplicating machines. 4,760,789, Cl. 101-348.000.

Witman, Jack H.: *See—*
Clark, Lawrence; Graybeal, Harold N.; and Witman, Jack H., 4,761,306, Cl. 427-197.000.

Wittke, Ernest C., to Singer Company, The. Dynamic system analysis in a vibrating beam accelerometer. 4,761,743, Cl. 364-484.000.

Witucki, Edward F.: *See—*
Frankel, Milton B.; and Witucki, Edward F., 4,761,250, Cl 260-349.000.

Witzel, Terrence R., to Onward Multi-Corp., Inc. Spark ignition safety system for a gas barbeque. 4,760,836, Cl. 126-42.000.

Wogoman, Edsel W.: *See—*
Blatt, Joel M.; Heiland, Robert; Morris, James R.; Pugh, Jerry; and Wogoman, Frank W., 4,761,381, Cl. 436-165.000.

Wolf, Charles B.: *See—*
Digne, Shyam V.; and Wolf, Charles B., 4,761,793, Cl. 373-24.000.

Wolo Manufacturing Corporation: *See—*
Solow, Joseph E., 4,761,720, Cl. 362-252.000.

Wolske, Eugene H., to Bemis Company, Inc. Reclosable bag. 4,761,079, Cl. 383-62.000.

Woltmann, Klaus: *See—*
Willinger, Allan H.; and Woltmann, Klaus, 4,761,227, Cl. 210-169.000

Wood, Kenneth O.: *See—*
Logan, David J.; Wood, Kenneth O.; and Hernandez, William, 4,761,315, Cl. 428-33.000.

Woodcock, Edward J. Ski boot carrier. 4,761,029, Cl. 294-148.000.

Woodhead, James S.; and Weeks, Ian, to Welsh National School of Medicine, The. Immunological procedure for detecting or quantifying substances. 4,761,382, Cl. 436-536.000.

Woodson, Wayne D., to CL Industries, Inc. Acid-curable compositions comprising mixtures of furan and epoxy resins and use in preparing formed, shaped, filled bodies. 4,761,441, Cl. 523-439.000.

Woodworth, George K.: *See—*
Ross, John M.; and Woodworth, George K., 4,761,563, Cl 307-87.000.

Wright, Joe, Jr.; and Ligon, Lang S. Yarn package holder. 4,760,977, Cl. 242-130.000

Wright State University: *See—*
Phillips, Chandler A.; and Petrofsky, Jerrold S., 4,760,850, Cl. 128-432.00W

Wu, Bing T.; and Wu, Mei-Ling. Umbrella cap hat. 4,760,610, Cl 2-209.100.

Wu, Mei-Ling: *See—*
Wu, Bing T.; and Wu, Mei-Ling, 4,760,610, Cl. 2-209.100.

Wu, Muyen M.; and Li, George S., to Standard Oil Company, The. Poly(vinyl chloride) compositions and polymeric blending agents useful therefor. 4,761,455, Cl. 525-75.000.

Wu, Rong-Faa: *See—*
Fann, Yaw-Shin; and Wu, Rong-Faa, 4,760,722, Cl. 70-358.000.

Wuerzer, Bruno: *See—*
Jahn, Dieter; Becker, Rainer; Keil, Michael; Schirmer, Ulrich; Richarz, Winfried; Wuerzer, Bruno; and Meyer, Norbert, 4,761,172, Cl. 71-88.000.
Schirmer, Ulrich; Becker, Rainer; and Wuerzer, Bruno, 4,761,175, Cl. 71-100.000.
Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, 4,761,486, Cl. 549-9.000.

Wupper, Hans; and Buschaman, Gunther, to Alfred Teves GmbH. Method and circuit configuration for the control of wheel slip in vehicles with all-wheel drive. 4,761,043, Cl. 303-100.000

Wyner, Daniel M.: *See—*
Rautenberg, Leonard J.; Gilbert, Milton M.; Wyner, James H.; and Wyner, Daniel M., 4,761,324, Cl. 428-198.000.

Wyner, James H.: *See—*
Rautenberg, Leonard J.; Gilbert, Milton M.; Wyner, James H.; and Wyner, Daniel M., 4,761,324, Cl. 428-198.000.

Xerox Corporation: *See—*
Ewing, Joan R.; and Swift, Joseph A., 4,761,709, Cl. 361-225.000
Langdon, Michael J., 4,761,669, Cl. 355-4.000.
Loce, Robert P.; Durbin, John A.; and Lama, William L., 4,761,062, Cl. 350-413.000
Matteson, Ronald G.; and Tandon, Jagdish C., 4,761,683, Cl 358-75.000
Parker, Delmer G.; and Stark, Howard M., 4,761,668, Cl. 355-3.0DD.
Parker, Delmer G.; May, Jerome E.; and Allen, William M., Jr., 4,761,672, Cl. 355-14.00D

Yabe, Hiroshi: *See—*
Moriya, Tatsuo; Aizawa, Hitomi; Natori, Kuniharu; Kamoi, Kazumi; and Yabe, Hiroshi, 4,761,771, Cl. 368-202.000.

Yabe, Ryohei: *See—*
Matsushita, Hajime; Yabe, Ryohei; Kurimura, Masaaki; and Yokobayashi, Toshiaki, 4,761,075, Cl. 356-39.000.

Yahata, Mitsuru, to Kabushiki Kaisha Toshiba. High DC voltage generator including transition characteristics correcting means. 4,761,804, Cl. 378-109.000

Yamada, Hirotada; Masai, Naruhito; Ueda, Shinji; Okuda, Takao; Kato, Masuhiro; Fukasawa, Masatomo; and Fukumura, Masataka, to Sumitomo Pharmaceuticals Company, Limited. Cephem derivatives. 4,761,409, Cl. 514-206.000

Yamada, Kosaku, to Kabushiki Kaisha Morita Seisakusho. Dental lighting device. 4,761,719, Cl. 362-135.000.

Yamagishi, Nobutoshi: *See—*
Hanabusa, Kazunori; Yamagishi, Nobutoshi; and Ito, Kenzo, 4,761,742, Cl. 364-443.000

Yamagishi, Nobuyuki: *See—*
Matsuo, Masashi; Yamagishi, Nobuyuki; and Maekawa, Takashige, 4,761,459, Cl. 525-479.000

Yamaguchi, Kunihiro: *See—*
Moteki, Tsutomu; Yamaguchi, Kunihiro; and Iizuka, Hisao, 4,761,451, Cl. 524-505.000

Yamaguchi, Noriaki: *See—*
Sugisawa, Ko; Shibuki, Masaru; Yamaguchi, Noriaki; and Nakano, Maki, 4,761,297, Cl. 426-618.000.

Yamaguchi, Takahiro; Arakawa, Norio; Ohgami, Takayuki; and Kosawa, Hiromi, to Advantest Corporation. AD converting device. 4,761,634, Cl. 340-347.0AD.

Yamaguchi, Toru, to Kabushiki Kaisha Toshiba. Apparatus for performing group control on elevators. 4,760,896, Cl. 187-124.000.

Yamaguchi, Yoshimitsu: *See—*
Suzuki, Masanori; Hibi, Yasuo; Tanaka, Kazuaki; and Yamaguchi, Yoshimitsu, 4,760,910, Cl. 198-412.000

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kobayashi, Noboru, 4,760,810, Cl. 114-56.000
Kobayashi, Noboru, 4,760,814, Cl. 114-270.000
Minami, Shunji; Nakao, Yasuo; and Nomura, Kazuhiko, 4,760,703, Cl. 60-605.100

Yamamoto, Akira: *See—*
Kohno, Yoshiyuki; Tomita, Kenichi; Takamizawa, Minoru; Mayuzumi, Tetsuya; Nagura, Shigehiro; and Yamamoto, Akira, 4,761,436, Cl. 522-114.000.

Yamamoto, Hajime: *See—*
Ishibashi, Hiromichi; Tanaka, Shinichi; Shimizu, Ryosuke; Kuwamoto, Makoto; and Yamamoto, Hajime, 4,761,774, Cl. 369-44.000

Yamamoto, Jun, to Nippon Gakki Seizo Kabushiki Kaisha. Mechanism for suppressing bound of swingable elements on a key musical instrument. 4,760,768, Cl. 84-236.000.

Yamamoto, Kaoru: *See—*
Higashi, Hidejiro; Sato, Hiroshi; Yamamoto, Kaoru; and Kanda, Jun, 4,761,693, Cl. 360-13.000

Yamamoto, Kojuro: *See—*
Torita, Katsutoshi; and Yamamoto, Kojuro, 4,760,783, Cl 100-137.000

Yamamoto, Osamu: *See—*
Sasaki, Shigeo; and Yamamoto, Osamu, 4,760,972, Cl. 242-68.500

Yamamoto, Saburo: *See—*
Hayakawa, Toshiro; Suyama, Takahiro; Takahashi, Kohsei; and Yamamoto, Saburo, 4,761,790, Cl. 372-45.000

Yamamoto, Shintaro: *See—*
Ikari, Motoo; Takada, Yuji; Yamamoto, Shintaro; Teramae, Katsuhiro; and Asai, Makio, 4,761,546, Cl. 250-201.000

Yamamoto, Soichiro: *See—*
Sato, Kozo; and Yamamoto, Soichiro, 4,761,360, Cl. 430-138.000

Yamamoto, Takami: *See—*
Ito, Katsuo; Yamamoto, Takami; and Kinoshita, Kazunori, 4,761,712, Cl. 361-429.000

Yamamoto, Takashi: *See—*
Ishimori, Akira; Yamamoto, Takashi; and Kinoshita, Tsuyoshi, 4,761,054, Cl. 350-96.260

VOL 1093 ISS 1 AG 2 1988 UMI

Yamanishi, Kazuhiro; Kobayashi, Masaaki; Takeuchi, Akihiro; Ochi, Atsuo; and Nagaoka, Yoshitomi, to Matsushita Electric Industrial Co., Ltd. Video tape recorder with particular format chrominance and luminance information. 4,761,690, Cl. 358-310.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Niigata, Kunihiro; and Fujikura, Takashi, 4,761,500, Cl. 564-86.000.

Yamashita, Toshiharu: *See*—
Tokida, Minoru; Izumitani, Tetsuro; Yamashita, Toshiharu; and Miura, Kiyotaka, 4,761,387, Cl. 501-40.000.

Yamazaki, Masayuki: *See*—
Fukuda, Shuzo; Abe, Masahiro; Fukunaka, Shiro; Nakayama, Michio; Kaneto, Shuji; Yamazaki, Masayuki; and Arima, Kouichiro, 4,760,995, Cl. 266-103.000.

Yamazaki, Yoshio: *See*—
Takimoto, Masahiro; Ohta, Satoshi; and Yamazaki, Yoshio, 4,761,333, Cl. 428-327.000.

Yang, Tai-Her. Clamping device. 4,760,999, Cl. 269-241.000.

Yardley, John P.: *See*—
Husbands, G. E.; Yardley, John P.; and Muth, Eric A., 4,761,501, Cl. 564-167.000.

Yaskawa Electric Mfg. Co., Ltd.: *See*—
Nio, Satoru; and Wakisako, Hitoshi, 4,761,596, Cl. 318-568.000.

Yasufuku, Yoshitaka: *See*—
Asano, Masao; Matsumoto, Kazumasa; Tsuji, Toshio; and Yasufuku, Yoshitaka, 4,761,338, Cl. 428-425.900.

Yasunobu, Isamu; Ohara, Kenichi; Shibata, Nobuho; and Neki, Shigeo, to Matsushita Electric Industrial Co., Ltd. Motor controller. 4,761,599, Cl. 318-723.000.

Yasuoka, Akimasa; Kiuchi, Takeo; and Iwata, Takahiro, to Honda Giken Kogyo Kabushiki Kaisha. Method for control of idle rotations of internal combustion engine. 4,760,823, Cl. 123-339.000.

Yeh, Chuen Y.: *See*—
Duna, William D.; and Yeh, Chuen Y., 4,761,505, Cl. 568-918.000.

Yeh, Pochi A.; Ewbank, Mark D.; and Khoshnevisan, Mohsen, to Rockwell International Corporation. External beam combining of multiple lasers. 4,761,059, Cl. 350-354.000.

Yeowell, David A.: *See*—
Swaringen, Roy A., Jr.; El-Sayad, Hassan A.; Yeowell, David A.; and Savarese, John J., 4,761,418, Cl. 514-308.000.

Yirmiyahu, Benyamin; and Yirmiyahu, Mordechai. Hydraulic cutter. 4,760,644, Cl. 30-180.000.

Yirmiyahu, Mordechai: *See*—
Yirmiyahu, Benyamin; and Yirmiyahu, Mordechai, 4,760,644, Cl. 30-180.000.

Yodsnukis, John J.: *See*—
Gebhardt, Joseph J.; Mulvey, Robert F.; and Yodsnukis, John J., 4,761,308, Cl. 427-249.000

Yogev, Amnon; and Mahlab, David, to Ormat Turbines Ltd. Rankine cycle power plant with improved organic working fluid. 4,760,705, Cl. 60-651.000

Yokobayashi, Toshiaki: *See*—
Matsushita, Hajime; Yabe, Ryohei; Kurimura, Masaaki; and Yokobayashi, Toshiaki, 4,761,075, Cl. 356-39.000

Yokouchi, Kishio: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000

Yokoyama, Hiromitsu: *See*—
Kurihara, Kazuaki; Kamehara, Nobuo; Yokoyama, Hiromitsu; Ogawa, Hiromi; Yokouchi, Kishio; Imanaka, Yoshihiko; and Niwa, Koichi, 4,761,325, Cl. 428-209.000.

Yoneda, Toshikazu: *See*—
Katsuno, Hisashi; Murakawa, Takashi; and Yoneda, Toshikazu, 4,761,512, Cl. 585-417.000

Yoshida Kogyo K. K.: *See*—
Murasaki, Ryuichi, 4,760,625, Cl. 26-9.000.

Yoshida, Masayuki; Ueda, Izumi; Ishii, Hidehiro; Shiba, Takahumi; and Nakajima, Fumihiro, to Pioneer Electronic Corporation. Method and apparatus for data recording disc playback. 4,761,692, Cl. 358-335.000

Yoshida, Teruaki: *See*—
Kitamura, Shuji; Nakae, Kiyohiko; Ogawa, Tadatoshi; Yoshida, Teruaki; and Sadatoshi, Hajime, 4,761,462, Cl. 526-159.000.

Yoshihara, Akihiko: *See*—
Nishiyama, Hisashi; Miyasaka, Seiichi; Kamimori, Tadatoshi; Mizuhashi, Mamoru; and Yoshihara, Akihiko, 4,761,061, Cl 350-357.000

Yoshikoshi, Takashi; Marumori, Katsuhira; and Gunji, Tsunefusa, to Toh Electronics Co., Ltd. Copy stand. 4,760,661, Cl. 40-356.000

Yoshimoto, Toshio; Kanaiwa, Kiyoshi; Hori, Kenjiro; Ushio, Yukihide; Hashimoto, Hiroshi; and Seto, Kaoru, to Canon Kabushiki Kaisha. Image forming apparatus comprising an image bearing member driven at a predetermined constant speed. 4,761,662, Cl. 346-108.000

Yoshimura, Ryoichi; and Torii, Shumpeita, to Fuji Photo Film Co., Ltd. Radiation image read-out apparatus. 4,761,554, Cl. 250-327.200.

Yoshino, Hiroyuki; and Tamiya, Morito, to Casio Computer Co., Ltd. Electronic calculator with a program calculation function. 4,761,750, Cl. 364-709.000

Yoshioka, Takayuki; and Hasegawa, Shinichi, to Pioneer Electronic Corporation. Projection lens system. 4,761,063, Cl. 350-432.000.

Youcef-Toumi, Kamal; and Ro, Paul I. H., to MIT. Dual-drive system for micro-manipulation of direct-drive robotic systems. 4,761,588, Cl. 318-46.000

Young, Frederick M., to Royal Ordnance plc. Explosive projectiles. 4,760,795, Cl. 102-473.000.

Young, Vernon V.: *See*—
Martin, Jerome L.; Bright, David R.; Williams, Robert D.; and Young, Vernon V., 4,761,426, Cl. 514-460.000

Yu, S. Gary: *See*—
Beret, Samil; Yu, S. Gary; and Hsieh, C. Richard, 4,761,220, Cl. 208-59.000.

Zacharias, Alfred: *See*—
Dietrich, Norman R.; Holbrook, Walter R.; Johnson, Anderson F., Jr.; and Zacharias, Alfred, 4,761,788, Cl. 372-36.000.

Zaderej, Andrew. Motor starting circuit. 4,761,601, Cl. 318-786.000.

Zaghloul, Amir I., to Communications Satellite Corporation. Electromagnetically coupled microstrip antennas having feeding patches capacitively coupled to feedlines. 4,761,654, Cl. 343-700.0MS.

Zajac, Theodore S., Jr.: *See*—
Ward, David O.; and Zajac, Theodore S., Jr., 4,761,087, Cl. 400-621.000

Zak, Gregory M.; and Cuomo, Edward, to General Electric Company. Aperture member for photo plotting apparatus. 4,761,057, Cl. 350-273.000.

Zambon S.p.A.: *See*—
Pilotto, Alberto; Portelli, Mario; Carenzi, Angelo; and Della Bella, Davide, 4,761,399, Cl. 514-19.000.

Zanarini, Franco. Positive displacement hydraulic-drive reciprocating compressor. 4,761,118, Cl. 417-254.000.

Zangenberg, Jan: *See*—
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,760,699, Cl. 60-531.000.

Zank, Gregg A.: *See*—
Burns, Gary T.; Lu, Paul P.; and Zank, Gregg A., 4,761,458, Cl. 525-474.000

Zapletal, Henry: *See*—
Hiatt, Sidney A.; and Zapletal, Henry, 4,760,616, Cl. 5-246.000.

Zedrosser, Ulrich, to Steyr-Daimler-Puch AG. Firearm. 4,760,663, Cl. 42-15.000.

Zeeh, Bernd; Jahn, Dieter; Keil, Michael; Kolassa, Dieter; Wuerzer, Bruno; Meyer, Norbert; Rademacher, Wilhelm; and Jung, Johann, to BASF Aktiengesellschaft, Patentabteilung. Cyclohexenone derivatives, the preparation and use thereof as herbicides and plant growth regulators. 4,761,486, Cl. 549-9.000.

Zeigler, John M. Interrupted polysilanes useful as photoresists. 4,761,464, Cl. 528-30.000

Zenner, Bruce D.: *See*—
Bonaventura, Joseph; Bonaventura, Celia; Van Ryzin, Joseph C.; Zenner, Bruce D.; and Anderson, C. William, 4,761,209, Cl. 204-129.000

Zerle, Ludwig, to Erhardt+Leimer GmbH. Web-position controller. 4,760,945, Cl. 226-18.000.

Zetena, Maurice F., Jr. Data and voice transmission using composite cables and punch-down blocks. 4,761,811, Cl. 379-397.000.

Zettergren, Hans: *See*—
Lundblad, Leif; Persson, Olof L.; Swegen, Hans B. A.; and Zettergren, Hans, 4,760,923, Cl. 209-534.000.

Zettl, Otto. Arrangement for wireless signal transmission from a rotating body to a stationary receiving station. 4,761,101, Cl. 408-6.000.

Ziemek, Gerhard; Schatz, Friedrich; and Werwitzke, Lothar, to kabelmetal electro Gesellschaft mit beschrankter Haftung. Device for the stranding, or stranding-on, of stranding elements. 4,760,692, Cl. 57-314.000.

Zoeller, Joseph R.; and Sumner, Charles E., Jr., to Eastman Kodak Company. Alkylene and diakyl ketals and alkyl alpha-enol ethers of alpha-acetyl cinnamic acids and esters thereof. 4,761,496, Cl. 560-60.000

Zoeller, Joseph R.; and Sumner, Charles E., Jr., to Eastman Kodak Company. Process for preparing 2-naphthanoic acids and esters thereof. 4,761,497, Cl. 560-100.000

Zubek, Dieter, to Citius Buerotechnik GmbH. Closure for a bottle for correcting fluid. 4,761,088, Cl. 401-122.000.

Zwagerman, Jay A.: *See*—
Reeves, Larry D.; and Zwagerman, Jay A., 4,761,705, Cl. 361-93.000

20th Century Machine: *See*—
Miller, Michael A., 4,760,635, Cl. 29-558.000

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Hospital Supply Corporation: *See*—
Cartmell, James V., Re. 32,724, Cl. 128-640.000.

Campbell, Michael: *See*—
Howard, Paulette A.; Campbell, Michael; and Zollinger, David T., Re. 32,725, Cl. 426-656.000.

Cartmell, James V., to American Hospital Supply Corporation. Reusable medical electrode having disposable electrolyte carrier. Re. 32,724, Cl. 128-640.000.

Central Soya Company, Inc.: *See*—
Howard, Paulette A.; Campbell, Michael; and Zollinger, David T., Re. 32,725, Cl. 426-656.000.

Combustion Research Corp.: *See*—
Johnson, Arthur C. W., Re. 32,722, Cl. 55-387.000

Howard, Paulette A.; Campbell, Michael; and Zollinger, David T., to Central Soya Company, Inc. Water-soluble vegetable protein aggregates. Re. 32,725, Cl. 426-656.000.

Johnson, Arthur C. W., to Combustion Research Corp. Ventilation system with thermal energy recovery. Re. 32,722, Cl. 55-387.000.

Neundorfer, Inc.: *See*—
Neundorfer, Mark H., Re. 32,723, Cl. 122-379.000.

Neundorfer, Mark H., to Neundorfer, Inc. Apparatus for deslagging steam generator tubes. Re. 32,723, Cl. 122-379.000.

Zollinger, David T.: *See*—
Howard, Paulette A.; Campbell, Michael; and Zollinger, David T., Re. 32,725, Cl. 426-656.000

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Jerabek, Richard J., to Moore Business Forms, Inc. Carbonless system including solvent-only microcapsules. B1 4,636,818, 8-2-88, Cl. 503-213.000.

Moore Business Forms, Inc.: *See*—
Jerabek, Richard J., B1 4,636,818, Cl. 503-213.000

LIST OF DESIGN PATENTEES

Adamson Industrial Design Inc.: *See*—
Fenske, Derek H., 296,960, Cl. D6-366.000.

American Sterilizer Company: *See*—
Sestak, Joseph T., 297,056, Cl. D26-65.000.

Aoki, Takao: *See*—
Takahashi, Akemi; Kogane, Hiroyuki; Aoki, Takao; Kiyota, Toru; and Tanaka, Ryuichiro, 297,010, Cl. D14-80.000

Atlantic Thermoplastics Co., Inc.: *See*—
Fox, Richard B., 296,953, Cl. D2-318.000

Attwood Corporation: *See*—
Gresens, Stanley T., 297,012, Cl. D15-4.000

AVIA Group International, Inc.: *See*—
Tong, James K., 296,954, Cl. D2-320.000.

Baldwin, Duane N. Floral display stand. 297,063, 8-2-88, Cl. D34-18.000.

Ball, Charles W.; and Curtis-Ball, Jean, to Metko, Inc. Portable loading ramp. 297,064, 8-2-88, Cl. D34-32.000.

Baro Mek. Verksted A/S: *See*—
Henriksen, Ove, 297,004, Cl. D12-316.000.

Black & Decker Inc.: *See*—
Chaconas, Peter C., 296,980, Cl. D8-70.000.

Black, Donald J. Mazed castle game board. 297,023, 8-2-88, Cl. D21-16.000.

Bohannan, Jesse E. Toy vehicle. 297,031, 8-2-88, Cl. D21-81.000.

Bongiorni, Frank. Slingshot. 297,041, 8-2-88, Cl. D22-106.000.

Borromeo, Lucio, to 3 T S.p.A. Stem for bicycle handlebars. 297,000, 8-2-88, Cl. D12-118.000.

Brickwood, David, to Scholl, Inc. Sandal. 296,950, 8-2-88, Cl. D2-291.000.

Brickwood, David, to Scholl, Inc. Sandal. 296,951, 8-2-88, Cl. D2-291.000.

Bridge Wheel Co., Inc.: *See*—
Haskamp, David M.; and De Raad, Merrel M., 297,003, Cl. D12-217.000.

Brown, Paul D.; and Diaz, Juan A., to Reebok International Ltd. Shoe arch. 296,952, 8-2-88, Cl. D2-314.000.

Bruckner, Cheryl L. Potato masher. 296,970, 8-2-88, Cl. D7-101.000

Carlson, Arthur R., to Decor Corporation Proprietary Limited, The. Strainer. 296,969, 8-2-88, Cl. D7-47.000

Cetus Corporation: *See*—
Williams, Fred G., 297,054, Cl. D24-55.000

Chaconas, Peter C., to Black & Decker Inc. Tip for a saw blade. 296,980, 8-2-88, Cl. D8-70.000.

Christie, Kevin B. Heat source used in calibrating a heat sensor. 296,977, 8-2-88, Cl. D8-29.100

Clark, Ceffus, Jr. Portable hydraulic vise. 296,981, 8-2-88, Cl. D8-74.000

Cohen, Martin, to Latin Percussion, Inc. Drum side plate. 297,016, 8-2-88, Cl. D17-22.000

Cooper, Marvin, to Dynamic Classics, Ltd. Garment bag. 296,956, 8-2-88, Cl. D3-71.000

Cormier, Gerard: *See*—
Dallaire, Michel; and Cormier, Gerard, 296,958, Cl. D6-317.000

Crocco, Carlo, to Montres MDM SA,Geneve. Wrist watch. 296,992, 8-2-88, Cl. D10-32.000

Curtis-Ball, Jean: *See*—
Ball, Charles W.; and Curtis-Ball, Jean, 297,064, Cl. D34-32.000

Dallaire, Michel; and Cormier, Gerard. Hanger. 296,958, 8-2-88, Cl. D6-317.000

Decor Corporation Proprietary Limited, The: *See*—
Carlson, Arthur R., 296,969, Cl. D7-47.000

Deering, Michael H. Military map symbols template. 296,996, 8-2-88, Cl. D10-62.000

Deering, Michael H. Logistics symbols template. 297,018, 8-2-88, Cl. D19-37.000

Deering, Michael H. General map symbols template. 297,019, 8-2-88, Cl. D19-37.000

Del-Air Systems Ltd.: *See*—
Van Ee, Dirk, 297,044, Cl. D23-328.000

De Raad, Merrel M.: *See*—
Haskamp, David M.; and De Raad, Merrel M., 297,003, Cl. D12-217.000

Diaz, Juan A.: *See*—
Brown, Paul D.; and Diaz, Juan A., 296,952, Cl. D2-314.000

Dignam, Bernard J.; and Dignam, Bonnie M. Infusion cannula for ophthalmic surgery. 297,046, 8-2-88, Cl. D24-8.000.

VOL 1093 ISS 1 AG 2 1988 UMI

Dignam, Bonnie M.: *See—*
Dignam, Bernard J.; and Dignam, Bonnie M., 297,046, Cl. D24-8.000.
Dobson, Charles. Combined jewelry chain and length adjuster or similar article. 296,997, 8-2-88, Cl. D11-1.000.
Durand, Jean-Jacques. Covered candy dish. 296,967, 8-2-88, Cl. D7-17.000.
Dynamic Classics, Ltd.: *See—*
Cooper, Marvin, 296,956, Cl. D3-71.000.
Evans, Bryn, to Hozelock-ASL Limited. Lawn sprinkler. 297,042, 8-2-88, Cl. D23-214.000.
Everts, Ramon L., to Ford Motor Company. Automobile lift gate. 297,002, 8-2-88, Cl. D12-196.000.
Fenske, Derek H., to Adamson Industrial Design Inc. Chair. 296,960, 8-2-88, Cl. D6-366.000.
Finsilver, Charles E.; Schur, Sylvia; Yuan, Mary W.; and Taylor, Terry L., to General Foods Corporation. Entree plate with sauce boat 296,966, 8-2-88, Cl. D7-3.000.
Ford Motor Company: *See—*
Everts, Ramon L., 297,002, Cl. D12-196.000
Fox, Richard B., to Atlantic Thermoplastics Co., Inc. Innersole with shock-absorbing inserts. 296,953, 8-2-88, Cl. D2-318.000.
Fratelli Guzzini S.p.A.: *See—*
Pozzi, Ambrogio, 296,968, Cl. D7-21.000.
Pozzi, Ambrogio, 296,973, Cl. D7-317.000.
Fujitsu Limited: *See—*
Grambush, Douglas H.; and Walker, Lloyd R., 297,009, Cl. D14-64.000
Galy, Michel, to Institut Merieux. Skin micropuncture implement. 297,052, 8-2-88, Cl. D24-24.000.
Gardner, Michael S., to Tagland (NZ) Limited. Ear tag. 297,057, 8-2-88, Cl. D30-155.000
Gardner, Michael S., to Tagland (NZ) Limited. Ear tag. 297,058, 8-2-88, Cl. D30-155.000
General Foods Corporation: *See—*
Finsilver, Charles E.; Schur, Sylvia; Yuan, Mary W.; and Taylor, Terry L., 296,966, Cl. D7-3.000.
Givings, Thomas C., to Givings, Thomas Carlton. Watch with sliding door. 296,993, 8-2-88, Cl. D10-32.000
Givings, Thomas Carlton: *See—*
Givings, Thomas C., 296,993, Cl. D10-32.000
GKN Crompton Limited: *See—*
White, Paul S.; and Searl, Arthur N., 296,982, Cl. D8-337.000.
Gordon, Barry D.: *See—*
Gordon, Melvin L.; Gordon, Steven J.; and Gordon, Barry D., 296,957, Cl. D6-301.000
Gordon, Melvin L.; Gordon, Steven J.; and Gordon, Barry D., to Melannco International Ltd. Zig-zag photograph holder. 296,957, 8-2-88, Cl. D6-301.000
Gordon, Steven J.: *See—*
Gordon, Melvin L.; Gordon, Steven J.; and Gordon, Barry D., 296,957, Cl. D6-301.000.
Grambush, Douglas H.; and Walker, Lloyd R., to Fujitsu Limited Mobile telephone set. 297,009, 8-2-88, Cl. D14-64.000
Gresens, Stanley T., to Attwood Corporation. Bilge exhaust blower for boats. 297,012, 8-2-88, Cl. D15-4.000.
Grossiord, Claude, to S. T. Dupont. Ball point pen. 297,020, 8-2-88, Cl. D19-51.000
Grossiord, Claude, to S. T. Dupont. Fountain pen. 297,021, 8-2-88, Cl. D19-51.000.
Grossiord, Claude, to S. T. Dupont. Ball point pen. 297,022, 8-2-88, Cl. D19-51.000
Gusrud, Svein A., to Hag A/S. Chair. 296,959, 8-2-88, Cl. D6-330.000.
Guyot, Morel D., Jr. Pendant generator for dendriform graphic patterns. 297,017, 8-2-88, Cl. D18-22.000.
Hag A/S: *See—*
Gusrud, Svein A., 296,959, Cl. D6-330.000.
Hagiwara, Takeshi, to Nihon Seimitsu Sokki Co., Ltd. Haemadynamometer. 297,049, 8-2-88, Cl. D24-21.000
Hamamoto, Joe W. Game board. 297,027, 8-2-88, Cl. D21-34.000.
Hargrove, James V., to Sabian Ltd. Cymbal. 297,015, 8-2-88, Cl. D17-22.000
Haskamp, David M.; and De Raad, Merrel M., to Bridge Wheel Co., Inc. Folded wheel block. 297,003, 8-2-88, Cl. D12-217.000
Hatta, Chikako: *See—*
Nakagawa, Takehisa; Huke, Mitsutaka; and Hatta, Chikako, 296,975, Cl. D7-320.000.
Henriksen, Ove, to Baro Mek. Verksted A/S. Float. 297,004, 8-2-88, Cl. D12-316.000
Hitachi, Ltd.: *See—*
Takahashi, Akemi; Kogane, Hiroyuki; Aoki, Takao; Kiyota, Toru; and Tanaka, Ryuichiro, 297,010, Cl. D14-80.000.
Holmes International Inc.: *See—*
Thomison, Ted D.; and Micheli, Michael E., 296,998, Cl. D12-14.000
Hon, Edward D.: *See—*
Hon, Edward H.; Hon, Edward D.; and Hon, Robert W., 297,047, Cl. D24-17.000
Hon, Edward H.; Hon, Edward D.; and Hon, Robert W. Sensor support plate for use with an external medical monitor device. 297,047, 8-2-88, Cl. D24-17.000.
Hon, Robert W.: *See—*
Hon, Edward H.; Hon, Edward D.; and Hon, Robert W., 297,047, Cl. D24-17.000
Hozelock-ASL Limited: *See—*
Evans, Bryn, 297,042, Cl. D23-214.000
Huke, Mitsutaka: *See—*
Nakagawa, Takehisa; Huke, Mitsutaka; and Hatta, Chikako, 296,975, Cl. D7-320.000.
Institut Merieux: *See—*
Galy, Michel, 297,052, Cl. D24-24.000.
Interdica S.A.: *See—*
Lauper, Daniel, 296,991, Cl. D10-30.000.
Lauper, Daniel, 296,994, Cl. D10-39.000.
Isaberg AB: *See—*
Westerlund, Bengt A., 296,983, Cl. D8-396.000
Iwaki, Michio, to Shiseido Company Ltd. Cosmetic container. 296,985, 8-2-88, Cl. D9-337.000.
Jans, Franz W., 296,964, Cl. D6-548.000
Jans, Franz W., to Jado Bathroom and Hardware Manufacturing Corp.: *See—*
Jans, Franz W., 296,964, Cl. D6-548.000
Janney, Kathy A.; and Janney, Stephen P. Athletic bag or similar article. 296,955, 8-2-88, Cl. D3-45.000.
Janney, Stephen P.: *See—*
Janney, Kathy A.; and Janney, Stephen P., 296,955, Cl. D3-45.000.
Jans, Franz W., to Jado Bathroom and Hardware Manufacturing Corp. Towel rack. 296,964, 8-2-88, Cl. D6-548.000
Janzen, Mark A. Holder for bottle and syringe. 297,053, 8-2-88, Cl. D24-29.000
John H. Best & Sons, Inc.: *See—*
Ovitz, Ernest G., III, 296,962, Cl. D6-409.000.
John Manufacturing Limited: *See—*
Yuen, John S., 296,979, Cl. D8-36.000.
Juty, Andrzej J. J., to Metal Box p.l.c. Combined can end and pull tab closure. 296,989, 8-2-88, Cl. D9-438.000.
Juty, Andrzej J. J., to Metal Box p.l.c. Pull tab closure for a can. 296,990, 8-2-88, Cl. D9-438.000.
Kabushiki Kaisha Toshiba: *See—*
Matsumoto, Jun; and Kamegi, Mikio, 297,059, Cl. D32-8.000.
Kamegi, Mikio: *See—*
Matsumoto, Jun; and Kamegi, Mikio, 297,059, Cl. D32-8.000
Kawamura, Masaki, to Sharp Corporation. Electronic sphygmomanometer. 297,051, 8-2-88, Cl. D24-21.000.
Kent, Willie D., to Rug Doctor, Inc. Vacuum cleaning machine. 297,060, 8-2-88, Cl. D32-21.000.
Kent, Willie D., to Rug Doctor, Inc. Vacuum cleaning machine. 297,061, 8-2-88, Cl. D32-21.000
Kiyota, Toru: *See—*
Takahashi, Akemi; Kogane, Hiroyuki; Aoki, Takao; Kiyota, Toru; and Tanaka, Ryuichiro, 297,010, Cl. D14-80.000.
Kogane, Hiroyuki: *See—*
Takahashi, Akemi; Kogane, Hiroyuki; Aoki, Takao; Kiyota, Toru; and Tanaka, Ryuichiro, 297,010, Cl. D14-80.000.
Latin Percussion, Inc.: *See—*
Cohen, Martin, 297,016, Cl. D17-22.000.
Lauper, Daniel, to Interdica S.A. Wrist watch case. 296,991, 8-2-88, Cl. D10-30.000
Lauper, Daniel, to Interdica S.A. Wrist watch. 296,994, 8-2-88, Cl. D10-39.000
Lawes, Roland. Multipurpose tympani. 297,014, 8-2-88, Cl. D17-22.000.
Lee, David W., to Rosemount Inc. Pressure transmitter housing. 296,995, 8-2-88, Cl. D10-46.000.
Leung, Wilson, to Spalding & Evenflo Companies, Inc. Toy puzzle. 297,032, 8-2-88, Cl. D21-107.000.
Maass, Rudolf, to Robert Krups Stiftung & Co. KG. Food processor. 296,976, 8-2-88, Cl. D7-384.000.
MacFarlane, George W. Fuel container. 296,986, 8-2-88, Cl. D9-374.000
Mashburn, James S.; and Mashburn, Jerry P. Clamp. 296,984, 8-2-88, Cl. D8-396.000
Mashburn, Jerry P.: *See—*
Mashburn, James S.; and Mashburn, Jerry P., 296,984, Cl. D8-396.000
Matsumoto, Jun; and Kamegi, Mikio, to Kabushiki Kaisha Toshiba. Clothes drier. 297,059, 8-2-88, Cl. D32-8.000.
Matsumoto, Kaoru, to Takara Co., Ltd. Reconfigurable toy ladder truck. 297,034, 8-2-88, Cl. D21-133.000.
Matsumoto, Kaoru, to Takara Co., Ltd. Reconfigurable toy vehicle. 297,037, 8-2-88, Cl. D21-140.000
Matsumoto, Kaoru, to Takara Co., Ltd. Robotic-humanoid toy assembly. 297,039, 8-2-88, Cl. D21-166.000.
McCann, Kevin W., to Parkland Corporation. Flight simulator control. 297,028, 8-2-88, Cl. D21-48.000.
McCormack, Gary M. Game board. 297,024, 8-2-88, Cl. D21-25.000.
McCutcheon, Lane S., to Midwest Sport Distributors, Inc. Game dart. 297,029, 8-2-88, Cl. D21-49.000.
McElvania, Glen. Pivotable mobile home vehicle stair rail. 297,055, 8-2-88, Cl. D25-38.000.
McGuire, Michael J. Outboard motor mounting bracket. 297,013, 8-2-88, Cl. D15-4.000.
Melannco International Ltd.: *See—*
Gordon, Melvin L.; Gordon, Steven J.; and Gordon, Barry D., 296,957, Cl. D6-301.000
Messer, Ronald L., to Michelin Recherche et Technique S.A. Tire 297,001, 8-2-88, Cl. D12-147.000
Metal Box p.l.c.: *See—*
Juty, Andrzej J. J., 296,989, Cl. D9-438.000.
Juty, Andrzej J. J., 296,990, Cl. D9-438.000
Rayner, Adrien P., 296,987, Cl. D9-399.000.
Metko, Inc.: *See—*
Ball, Charles W.; and Curtis-Ball, Jean, 297,064, Cl. D34-32.000.

Micheli, Michael E.: *See—*
Thomison, Ted D.; and Micheli, Michael E., 296,998, Cl. D12-14.000
Michelin Recherche et Technique S.A.: *See—*
Messer, Ronald L., 297,001, Cl. D12-147.000.
Midwest Sport Distributors, Inc.: *See—*
McCutcheon, Lane S., 297,029, Cl. D21-49.000
Miller, Richard. Scraper for cleaning boilers and furnaces. 297,062, 8-2-88, Cl. D32-49.000.
Montres MDM SA,Geneve: *See—*
Crocco, Carlo, 296,992, Cl. D10-32.000.
Moro, Norio, to Nihon Seimitsu Sokki Co., Ltd. Haemadynamometer. 297,050, 8-2-88, Cl. D24-21.000.
Morse, William J. Semi-end dump trailer body. 296,999, 8-2-88, Cl. D12-15.000.
Nakagawa, Takehisa; Huke, Mitsutaka; and Hatta, Chikako, to Sharp Corporation. Electrically heated vacuum bottle. 296,975, 8-2-88, Cl. D7-320.000.
Nelson, Philip H.: *See—*
Quigley, William D.; and Nelson, Philip H., 297,011, Cl. D14-96.000.
Nihon Seimitsu Sokki Co., Ltd.: *See—*
Hagiwara, Takeshi, 297,049, Cl. D24-21.000.
Moro, Norio, 297,050, Cl. D24-21.000.
Tsukada, Koichi, 297,048, Cl. D24-21.000.
Northern Telecom Limited: *See—*
Pushelberg, Floyd J., 297,007, Cl. D14-52.000.
Norton, Ian F., to Union Carbide Canada Limited. Bench or similar article. 296,961, 8-2-88, Cl. D6-370.000.
Nuova Faema S.p.A.: *See—*
Roccio, Peppino, 296,972, Cl. D7-309.000.
Ohno, Kouzin, to Takara Co., Ltd. Reconfigurable toy vehicle tanker. 297,038, 8-2-88, Cl. D21-140.000.
Ovitz, Ernest G., III, to John H. Best & Sons, Inc. Rug sample display stand with sliding panels. 296,962, 8-2-88, Cl. D6-409.000.
Parkland Corporation: *See—*
McCann, Kevin W., 297,028, Cl. D21-48.000.
Plummer, Peter O. Board for a game. 297,026, 8-2-88, Cl. D21-31.000.
Powell, Louis D. Friction furnace. 297,045, 8-2-88, Cl. D23-329.000
Pozzi, Ambrogio, to Fratelli Guzzini S.p.A. Tray. 296,968, 8-2-88, Cl. D7-21.000.
Pozzi, Ambrogio, to Fratelli Guzzini S.p.A. Carafe. 296,973, 8-2-88, Cl. D7-317.000.
Pushelberg, Floyd J., to Northern Telecom Limited. Housing for electronic apparatus. 297,007, 8-2-88, Cl. D14-52.000.
Quigley, William D.; and Nelson, Philip H. Plug-mounted background noise amplifier. 297,011, 8-2-88, Cl. D14-96.000.
Rayner, Adrien P., to Metal Box P.L.C. Combined container and lid 296,987, 8-2-88, Cl. D9-399.000.
Reebok International Ltd.: *See—*
Brown, Paul D.; and Diaz, Juan A., 296,952, Cl. D2-314.000.
Robert Krups Stiftung & Co. KG.: *See—*
Maass, Rudolf, 296,976, Cl. D7-384.000.
Roccio, Peppino, to Nuova Faema S.p.A. Espresso coffee machine. 296,972, 8-2-88, Cl. D7-309.000.
Rosemount Inc.: *See—*
Lee, David W., 296,995, Cl. D10-46.000.
Rowenta-Werke GmbH: *See—*
Stutzer, Franz A., 296,971, Cl. D7-309.000.
Rug Doctor, Inc.: *See—*
Kent, Willie D., 297,060, Cl. D32-21.000.
Kent, Willie D., 297,061, Cl. D32-21.000.
S. T. Dupont: *See—*
Grossiord, Claude, 297,020, Cl. D19-51.000.
Grossiord, Claude, 297,021, Cl. D19-51.000.
Grossiord, Claude, 297,022, Cl. D19-51.000.
Sabian Ltd.: *See—*
Hargrove, James V., 297,015, Cl. D17-22.000.
Scholl, Inc.: *See—*
Brickwood, David, 296,950, Cl. D2-291.000.
Brickwood, David, 296,951, Cl. D2-291.000.
Schur, Sylvia: *See—*
Finsilver, Charles E.; Schur, Sylvia; Yuan, Mary W.; and Taylor, Terry L., 296,966, Cl. D7-3.000.
Searl, Arthur N.: *See—*
White, Paul S.; and Searl, Arthur N., 296,982, Cl. D8-337.000
Sestak, Joseph T., to American Sterilizer Company. Surgical light 297,056, 8-2-88, Cl. D26-65.000.
Sharp Corporation: *See—*
Kawamura, Masaki, 297,051, Cl. D24-21.000.
Nakagawa, Takehisa; Huke, Mitsutaka; and Hatta, Chikako, 296,975, Cl. D7-320.000
Shiseido Company Ltd.: *See—*
Iwaki, Michio, 296,985, Cl. D9-337.000
Shong, Esmond S. Golf putter. 297,040, 8-2-88, Cl. D21-217.000
Smallwood, Ernest. Mandrel for a toilet paper roll holder. 296,963, 8-2-88, Cl. D6-523.000.
Smith, James C. Combination bottle and can opener and scraper 296,978, 8-2-88, Cl. D8-34.000.
Sofy, Hugh M. Tongs. 297,008, 8-2-88, Cl. D7-105.000
Spalding & Evenflo Companies, Inc.: *See—*
Leung, Wilson, 297,032, Cl. D21-107.000
Stutzer, Franz A., to Rowenta-Werke GmbH. Beverage maker. 296,971, 8-2-88, Cl. D7-309.000.
Sweet, Richard F. Playing card holder. 297,030, 8-2-88, Cl. D21-54.000
Tagland (NZ) Limited: *See—*
Gardner, Michael S., 297,057, Cl. D30-155.000
Gardner, Michael S., 297,058, Cl. D30-155.000.
Takahashi, Akemi; Kogane, Hiroyuki; Aoki, Takao; Kiyota, Toru; and Tanaka, Ryuichiro, to Hitachi, Ltd. Television receiver. 297,010, 8-2-88, Cl. D14-80.000.
Takara Co., Ltd.: *See—*
Matsumoto, Kaoru, 297,034, Cl. D21-133.000
Matsumoto, Kaoru, 297,037, Cl. D21-140.000.
Matsumoto, Kaoru, 297,039, Cl. D21-166.000
Ohno, Kouzin, 297,038, Cl. D21-140.000.
Yoke, Hideaki, 297,035, Cl. D21-134.000.
Yoke, Hideaki, 297,036, Cl. D21-134.000.
Tanaka, Ryuichiro: *See—*
Takahashi, Akemi; Kogane, Hiroyuki; Aoki, Takao; Kiyota, Toru; and Tanaka, Ryuichiro, 297,010, Cl. D14-80.000.
Taylor, Terry L.: *See—*
Finsilver, Charles E.; Schur, Sylvia; Yuan, Mary W.; and Taylor, Terry L., 296,966, Cl. D7-3.000
Thomison, Ted D.; and Micheli, Michael E., to Holmes International Inc. Wrecker body. 296,998, 8-2-88, Cl. D12-14.000
3 T S.p.A.: *See—*
Borromeo, Lucio, 297,000, Cl. D12-118.000.
Tong, James K., to AVIA Group International, Inc. Shoe sole. 296,954, 8-2-88, Cl. D2-320.000
Tsukada, Koichi, to Nihon Seimitsu Sokki Co., Ltd. Haemadynamometer. 297,048, 8-2-88, Cl. D24-21.000.
Union Carbide Canada Limited: *See—*
Norton, Ian F., 296,961, Cl. D6-370.000.
United Technologies Corporation: *See—*
Whyte, Andrew C., 297,005, Cl. D12-327.000.
Values Pty. Ltd.: *See—*
Walters, Raymond J. H., 297,006, Cl. D13-32.000.
Vander Wilt, Donald W. Intake reducing tee. 297,043, 8-2-88, Cl. D23-263.000
Van Ee, Dirk, to Del-Air Systems Ltd. Heat exchanger housing 297,044, 8-2-88, Cl. D23-328.000.
Wago Industry Company: *See—*
Yamada, Tsutomu, 296,988, Cl. D9-415.000.
Walker, Lloyd R.: *See—*
Grambush, Douglas H.; and Walker, Lloyd R., 297,009, Cl. D14-64.000
Walters, Raymond J. H., to Values Pty. Ltd. Pressure responsive switch. 297,006, 8-2-88, Cl. D13-32.000.
Weber, Bruce R.; and Weber, Mary M. Game board. 297,025, 8-2-88, Cl. D21-31.000
Weber, Mary M.: *See—*
Weber, Bruce R.; and Weber, Mary M., 297,025, Cl. D21-31.000.
Weernink, Johannes H. Vacuum jug. 296,974, 8-2-88, Cl. D7-317.000.
Westerlund, Bengt A., to Isaberg AB. Clip. 296,983, 8-2-88, Cl. D8-396.000.
White, Paul S.; and Searl, Arthur N., to GKN Crompton Limited Window sash fastener. 296,982, 8-2-88, Cl. D8-337.000.
Whyte, Andrew C., to United Technologies Corporation. Helicopter 297,005, 8-2-88, Cl. D12-327.000
Williams, Fred G., to Cetus Corporation. Pipette tip. 297,054, 8-2-88, Cl. D24-55.000
Yamada, Masaharu. Toy construction piece. 297,033, 8-2-88, Cl. D21-108.000
Yamada, Tsutomu, to Wago Industry Company. Small article packaging case or the like. 296,988, 8-2-88, Cl. D9-415.000.
Yeh, Tsun T. Cassette tape display case. 296,965, 8-2-88, Cl. D6-573.000
Yoke, Hideaki, to Takara Co., Ltd. Reconfigurable toy vehicle. 297,035, 8-2-88, Cl. D21-134.000.
Yoke, Hideaki, to Takara Co., Ltd. Reconfigurable toy tractor. 297,036, 8-2-88, Cl. D21-134.000.
Yuan, Mary W.: *See—*
Finsilver, Charles E.; Schur, Sylvia; Yuan, Mary W.; and Taylor, Terry L., 296,966, Cl. D7-3.000
Yuen, John S., to John Manufacturing Limited. Electrical can opener with automatic stop. 296,979, 8-2-88, Cl. D8-36.000.

VOL 1093 ISS 1 AG 2 1988 UMI

LIST OF PLANT PATENTEES

De Ruiter's Nieuwe Rozen B.V.: *See*—
De Ruiter, Gijsbert, 6,236, Cl. 10.000.
De Ruiter, Gijsbert, 6,237, Cl. 10.000.
De Ruiter, Gijsbert, to De Ruiter's Nieuwe Rozen B.V. Miniature rose plant named 'Ruiseto'. 6,236, 8-2-88, Cl. 10.000.
De Ruiter, Gijsbert, to De Ruiter's Nieuwe Rozen B.V. Miniature rose plant named 'Ruififty'. 6,237, 8-2-88, Cl. 10.000.
Fides, Handelskwekerij: *See*—
Van der Knaap, Jacques C. M., 6,238, Cl. 74.000.
Van der Knaap, Jacques C. M., 6,239, Cl. 74.000.
Van der Knaap, Jacques C. M., 6,240, Cl. 74.000.
Van der Knaap, Jacques C. M., 6,241, Cl. 76.000.
Van der Knaap, Jacques C. M., 6,242, Cl. 76.000.
Van der Knaap, Jacques C. M., to Fides, Handelskwekerij. Chrysanthemum plant named Penny Lane. 6,238, 8-2-88, Cl. 74.000.
Van der Knaap, Jacques C. M., to Fides, Handelskwekerij. Chrysanthemum plant named Sunny Cassa. 6,239, 8-2-88, Cl. 74.000.
Van der Knaap, Jacques C. M., to Fides, Handelskwekerij. Chrysanthemum plant named Daymark. 6,240, 8-2-88, Cl. 74.000.
Van der Knaap, Jacques C. M., to Fides, Handelskwekerij. Chrysanthemum plant named Bijoux. 6,241, 8-2-88, Cl. 76.000.
Van der Knaap, Jacques C. M., to Fides, Handelskwekerij. Chrysanthemum plant named Lilac Bijoux. 6,242, 8-2-88, Cl. 76.000.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 2ND DAY OF AUGUST, 1988

A. E. Staley Manufacturing, division of Staley Continental, Inc.: *See*—
Portnoy, Norman A.; and Orthoefer, Frank T., H507, Cl 526-200.000
Asada, Masashiro; and Takase, Junji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Resinous composition and process for producing shaped articles using same. H506, 8-2-88, Cl. 524-128.000.
Borgini, Fred; and Noto, Richard, to United States of America, Army. Automated universal array. H512, 8-2-88, Cl. 357-42.000.
Burnside, Walter D.; Rudduck, Roger C.; and Yu, Jiunn S., to United States of America, Energy. Compact range for variable-zone measurements. H514, 8-2-88, Cl. 342-360.000.
Chao, Hung-Ya. Preparation of adhesives. H509, 8-2-88, Cl. 526-264.000.
Clinch, Marvin R., to United States of America, Air Force. Automatic authentication for voice transmissions. H510, 8-2-88, Cl. 340-825.340.
Dunne, Timothy; and Gentry, James F., to United States of America, Air Force. ECM preprocessor or tracker using multi-processor modules. H513, 8-2-88, Cl. 364-516.000.
E. I. Du Pont de Nemours: *See*—
Levitt, George; and Pater, Richard V., H504, Cl. 549-64.000.
Fairchild, Ralph G.: *See*—
Slatkin, Daniel N.; Micca, Peggy L.; and Fairchild, Ralph G., H505, Cl. 424-1.100.
Gentry, James F.: *See*—
Dunne, Timothy; and Gentry, James F., H513, Cl. 364-516.000
Holt, Harold H., to United States of America, Army. Polarized target detector. H515, 8-2-88, Cl. 358-108.000.
Hung, James C.: *See*—
Mabee, Crawford D., III, deceased; White, Harold V.; Ruffin, Paul B.; and Hung, James C., H502, Cl. 242-18.00R.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Asada, Masashiro; and Takase, Junji, H506, Cl. 524-128.000
Keller, David J., to United States of America, Navy. Wave surface characterization. H503, 8-2-88, Cl. 356-152.000.
Levitt, George; and Pater, Richard V., to E. I. Du Pont de Nemours. Process for the preparation of alkyl 3-chlorosulfonylthiophene-2-carboxylate. H504, 8-2-88, Cl. 549-64.000.
Mabee, Crawford D., III, deceased (by Mabee, Marilyn N., executrix); White, Harold V.; Ruffin, Paul B.; and Hung, James C., to United States of America, Army. High speed precision optical fiber winding system. H502, 8-2-88, Cl. 242-18.00R.
Mabee, Marilyn N., executrix: *See*—
Mabee, Crawford D., III, deceased; White, Harold V.; Ruffin, Paul B.; and Hung, James C., H502, Cl. 242-18.00R.
Madden, William M.: *See*—
Stogner, Claude R.; and Madden, William M., H500, Cl. 239-265.250.
Mark, James W., to United States of America, Energy. Hybrid-drive implosion system for ICF targets. H508, 8-2-88, Cl. 376-103.000
Micca, Peggy L.: *See*—
Slatkin, Daniel N.; Micca, Peggy L.; and Fairchild, Ralph G., H505, Cl. 424-1.100.
Noto, Richard: *See*—
Borgini, Fred; and Noto, Richard, H512, Cl. 357-42.000
Orthoefer, Frank T.: *See*—
Portnoy, Norman A.; and Orthoefer, Frank T., H507, Cl. 526-200.000
Pater, Richard V.: *See*—
Levitt, George; and Pater, Richard V., H504, Cl. 549-64.000
Portnoy, Norman A.; and Orthoefer, Frank T., to A. E. Staley Manufacturing, division of Staley Continental, Inc. Derivatized starch products as protective colloids in emulsion polymerization processes. H507, 8-2-88, Cl. 526-200.000.
Rubin, Donald V.; and Walker, Billy J., to United States of America, Army. Apparatus for acoustical quieting of a cavity. H501, 8-2-88, Cl. 244-1.00R.
Rudduck, Roger C.: *See*—
Burnside, Walter D.; Rudduck, Roger C.; and Yu, Jiunn S., H514, Cl. 342-360.000
Ruffin, Paul B.: *See*—
Mabee, Crawford D., III, deceased; White, Harold V.; Ruffin, Paul B.; and Hung, James C., H502, Cl. 242-18.00R.
Slatkin, Daniel N.; Micca, Peggy L.; and Fairchild, Ralph G., to United States of America, Energy. Boron uptake in tumors, cerebrum and blood from [10B]NA4B24H22S2. H505, 8-2-88, Cl. 424-1.100.
Stello, Samuel L., to United States of America, Navy. Data collection system. H511, 8-2-88, Cl. 364-200.000.
Stogner, Claude R.; and Madden, William M., to United States of America, Air Force. Exhaust nozzle flap assembly. H500, 8-2-88, Cl. 239-265.250.
Takase, Junji: *See*—
Asada, Masashiro; and Takase, Junji, H506, Cl. 524-128.000
United States of America
Air Force: *See*—
Clinch, Marvin R., H510, Cl. 340-825.340.
Dunne, Timothy; and Gentry, James F., H513, Cl. 364-516.000
Stogner, Claude R.; and Madden, William M., H500, Cl. 239-265.250.
Army: *See*—
Borgini, Fred; and Noto, Richard, H512, Cl. 357-42.000.
Holt, Harold H., H515, Cl. 358-108.000
Mabee, Crawford D., III, deceased; White, Harold V.; Ruffin, Paul B.; and Hung, James C., H502, Cl. 242-18.00R.
Rubin, Donald V.; and Walker, Billy J., H501, Cl. 244-1.00R.
Energy: *See*—
Burnside, Walter D.; Rudduck, Roger C.; and Yu, Jiunn S., H514, Cl. 342-360.000.
Mark, James W., H508, Cl. 376-103.000
Slatkin, Daniel N.; Micca, Peggy L.; and Fairchild, Ralph G., H505, Cl. 424-1.100.
Navy: *See*—
Keller, David J., H503, Cl. 356-152.000
Stello, Samuel L., H511, Cl. 364-200.000
Walker, Billy J.: *See*—
Rubin, Donald V.; and Walker, Billy J., H501, Cl. 244-1.00R
White, Harold V.: *See*—
Mabee, Crawford D., III, deceased; White, Harold V.; Ruffin, Paul B.; and Hung, James C., H502, Cl. 242-18.00R.
Yu, Jiunn S.: *See*—
Burnside, Walter D.; Rudduck, Roger C.; and Yu, Jiunn S., H514, Cl. 342-360.000

CLASSIFICATION OF PATENTS

ISSUED AUGUST 2, 1988

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2.5 4,760,611
209.1 4,760,610

CLASS 4
225 4,760,612
247 4,760,613
255 4,760,614

CLASS 5
63 4,760,615
246 4,760,616

CLASS 8
151.2 4,760,617
543 4,761,161

CLASS 15
104.93 4,760,618
142 4,760,619
181 4,760,620

CLASS 16
85 4,760,621
196 4,760,622
238 4,760,623

CLASS 24
30.5 S 4,760,624

CLASS 26
9 4,760,625
75 4,760,626
87 4,760,627

CLASS 28
201 4,760,628
256 4,760,629

CLASS 29
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732 4,760,638
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806 4,760,641

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180 4,760,644
249 4,760,645
382 4,760,646

CLASS 33
141 E 4,760,647
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668 4,760,648

CLASS 34
35 4,760,650

CLASS 36
3 B 4,760,651
30 R 4,760,652
44 4,760,655
117 4,760,653
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CLASS 37
57 4,760,656
232 4,760,657

CLASS 38
77.7 4,760,658

CLASS 40
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308 4,760,660
356 4,760,661

CLASS 42
15 4,760,663

CLASS 43
17.5 4,760,664
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CLASS 44
626 4,761,162

CLASS 47
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CLASS 48
69 4,760,667

CLASS 51
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168 4,760,670
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284 R 4,760,672
293 4,761,163
418 4,760,673

CLASS 52
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669 4,760,680
716 4,760,681
731 4,760,682

CLASS 53
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21 4,761,165
385 R 4,761,166
387 Re.32,722

CLASS 56
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CLASS 57
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124 4,760,689
243 4,760,690
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401 4,760,693

CLASS 60
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204 4,760,695
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17 4,761,167
197 4,760,707
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324.6 4,760,709
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373 4,760,711
381 4,760,712
434 4,760,713

CLASS 63
3 4,760,714
5.2 4,760,715

CLASS 65
3.1 4,761,168
8 4,761,169
18.2 4,761,170
146 4,761,171

CLASS 66
9 B 4,760,716

CLASS 68
181 R 4,760,717

CLASS 70
18 4,760,718
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54 4,760,720
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358 4,760,722

CLASS 71
88 4,761,172
92 4,761,173
4,761,174
100 4,761,175
118 4,761,176

CLASS 72
8 4,760,723
19 4,760,724
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149 4,760,726
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407 4,760,728
456 4,760,729

CLASS 73
4 R 4,760,730
12 4,760,731
23.1 4,760,732
35 4,760,733
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430 4,760,736
622 4,760,737
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861.06 4,760,743
861.38 4,760,744
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865.6 4,760,748
866.5 4,760,749

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89.2 4,760,750
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479 4,760,753
574 4,760,754
606 R 4,760,755
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866 4,760,760
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CLASS 75
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51.2 4,761,178

CLASS 76
107 R 4,760,762

CLASS 81
3.09 4,760,763

CLASS 83
23 4,760,764
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356.3 4,760,766

CLASS 84
1.16 4,760,767
236 4,760,768

CLASS 89
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41.19 4,760,770

CLASS 92
159 4,760,771

CLASS 98
2.01 4,760,772
42.16 4,760,773

CLASS 99
299 4,760,774
353 4,760,775
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450.2 4,760,777
475 4,760,779
584 4,760,780

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116 4,760,782
137 4,760,783
220 4,760,784

CLASS 101
93.28 4,760,785
126 4,760,786
205 4,760,787
333 4,760,788
348 4,760,789
470 4,760,790

CLASS 102
200 4,760,791
204 4,760,792
460 4,760,793
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CLASS 104
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12 4,760,797
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182.1 4,760,799

CLASS 106
1.14 4,761,224
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117 4,761,183
203 4,761,184

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CLASS 110
341 4,760,803

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87 4,760,806
92 4,760,807

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65 R 4,760,811
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270 4,760,814

CLASS 118
326 4,760,815

CLASS 119
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CLASS 122
379 Re 32,723
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574 4,760,833

CLASS 124
51 R 4,760,834
78 4,760,835

CLASS 126
42 4,760,836

CLASS 127
38 4,761,185
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CLASS 128
1 R 4,760,837
4 4,760,838
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52 4,760,841
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92 YQ 4,760,844
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329 R 4,760,847
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CLASS 134
56 R 4,760,856
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CLASS 137
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614.17 4,760,866
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CLASS 138
89 4,760,868

CLASS 139
188 R 4,760,869

CLASS 144
3 R 4,760,870

CLASS 148
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6.2 4,761,188
11.5 R 4,761,190
12 R 4,761,191
152 4,761,192

CLASS 156
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86 4,761,194
113 4,761,195
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334 4,761,198
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497 4,761,201
621 4,761,202

CLASS 157
1.28 4,760,871

CLASS 160
32 4,760,873
90 4,760,872

CLASS 162
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103 4,761,205

CLASS 164
457 4,760,874

CLASS 165
4 4,760,875
11.2 4,760,876
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295 4,760,882
297 4,760,883
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CLASS 168
11 4,760,885

CLASS 169
28 4,760,886

CLASS 173
132 4,760,887

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35 GC 4,761,516
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52 FP 4,761,518
107 4,761,519
121 R 4,761,520

CLASS 175
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320 4,760,889
363 4,760,890

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65.5 4,760,891
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197 4,760,893

CLASS 181
282 4,760,894

CLASS 185
40 R 4,760,895

CLASS 187
124 4,760,896

CLASS 188
79.51 4,760,897
161 4,760,898
181 A 4,760,899
251 M 4,760,900
291 4,760,901

CLASS 192
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26 4,760,903
56 R 4,760,904
58 B 4,760,905
70.25 4,760,906
141 4,760,907

CLASS 198
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369 4,760,909
412 4,760,910
474.1 4,760,911
678 4,760,912
819 4,760,913

CLASS 200
5 R 4,761,522
50 AA 4,761,521
148 B 4,761,523
153 SC 4,761,524
284 4,761,525

CLASS 204
9 4,761,206
67 4,761,207
95 4,761,208
129 4,761,209
129.65 4,761,210
130 4,761,211
181.1 4,761,212
198 4,761,213
224 M 4,761,214
269 4,761,215
284 4,761,216

VOL 1093 ISS 1 AG 2 1988 UMI

290 R 4,761,217
298 4,761,218
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CLASS 206

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331 4,760,917
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495 4,760,920
504 4,760,921
600 4,760,922

CLASS 208

59 4,761,220
262 4,761,221
322 4,761,222

CLASS 209

166 4,761,223
534 4,760,923
573 4,760,924
616 4,760,925

CLASS 210

104 4,761,225
106 4,761,226
169 4,761,227
222 4,761,228
321 82 4,761,229
321 84 4,761,230
497.1 4,761,231
500 36 4,761,232
500 37 4,761,233
500 38 4,761,234
532.1 4,761,235
635 4,761,236
647 4,761,237
725 4,761,238
727 4,761,239

CLASS 211

13 4,760,926
54.1 4,760,927
59 4 4,760,928
123 4,760,929
153 4,760,930

CLASS 215

235 4,760,931

CLASS 219

10 41 4,761,527
10 491 4,761,528
10 55 B 4,761,529
10 71 4,761,530
70 4,761,531
79 4,761,532
86 7 4,761,533
121 68 4,761,535
121.8 4,761,534
123 4,761,536
366 4,761,537
497 4,761,538
4,761,539
506 4,761,540
528 4,761,541

CLASS 220

5 A 4,760,932
86 R 4,760,933
269 4,760,934
307 4,760,935
366 4,760,936

CLASS 222

23 4,760,939
95 4,760,937
129 1 4,760,940
153 4,760,941
498 4,760,938

CLASS 223

114 4,760,942

CLASS 224

39 4,760,943
205 4,760,944

CLASS 226

18 4,760,945
97 4,760,946
190 4,760,947

CLASS 228

180 2 4,760,948

CLASS 229

4 5 4,760,949
103 4,760,950
125 4,760,951
127 4,760,952

CLASS 235

379 4,761,542
457 4,761,543
462 4,761,544

CLASS 236

42 4,760,954
68 C 4,760,955
122 4,760,953

CLASS 239

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222.17 4,760,957
222.21 4,760,958
233 4,760,959
245 4,760,963
265.19 4,760,964
265.25 4,760,960
267 4,760,961
289 4,760,962
701 4,760,965

CLASS 241

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101.7 4,760,967

CLASS 242

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67 1 R 4,760,971
68.5 4,760,972
84.2 A 4,760,973
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107.4 A 4,760,975
118.11 4,760,976
130 4,760,977

CLASS 244

134 D 4,760,978
153 R 4,760,979

CLASS 245

2 4,760,980

CLASS 248

57 4,760,981
99 4,760,982
100 4,760,983
121 4,760,984
176 4,760,985
225.31 4,760,986
346.1 4,760,987
430 4,760,988

CLASS 250

201 4,761,546
211 J 4,761,547
211 R 4,761,548
214 A 4,761,549
221 4,761,550
227 4,761,551
252.1 4,761,552
291 4,761,545
298 4,761,553
327.2 4,761,554
328 4,761,555
352 4,761,556
381 4,761,557
485.1 4,761,558
492.2 4,761,560
492 21 4,761,559
548 4,761,561
561 4,761,562

CLASS 251

129 03 4,760,989
335.2 4,760,990

CLASS 252

8.7 4,761,240
32.5 4,761,241
62 54 4,761,243
62 9 4,761,242
79 3 4,761,244
299 68 4,761,246
364 4,761,247
527 4,761,248
528 4,761,249
793 4,761,245

CLASS 254

134 3 R 4,760,991
277 4,760,992
411 4,760,993

CLASS 260

349 4,761,250
543 P 4,761,251
4,761,252

CLASS 264

1.3 4,761,253
3.3 4,761,254
4.7 4,761,255
45.5 4,761,256
46 5 4,761,257
518 4,761,258

CLASS 266

48 4,760,994
103 4,760,995

CLASS 267

122 4,760,996

CLASS 269

71 4,760,997
138 4,760,998
241 4,760,999
323 4,761,000

CLASS 271

3.1 4,761,001
111 4,761,002
280 4,761,003

CLASS 272

13 4,761,004

CLASS 273

1 GC 4,761,005
4,761,006
73 D 4,761,007
148 R 4,761,008
177 R 4,761,009
275 4,761,010

CLASS 280

38 4,761,012
87.02 R 4,761,013
258 4,761,014
402 4,761,015
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660 4,761,017
674 4,761,018
4,761,019
714 4,761,020
764.1 4,761,021
772 4,761,022

CLASS 285

18 4,761,023
93 4,761,024
114 4,761,025

CLASS 294

19.2 4,761,026
61 4,761,027
99.2 4,761,028
148 4,761,029

CLASS 296

1 S 4,761,030
182 4,761,031

CLASS 297

229 4,761,032
230 4,761,011
316 4,761,033
408 4,761,034
452 4,761,035
4,761,036

CLASS 299

1 4,761,037
10 4,761,038
39 4,761,039

CLASS 301

37 S 4,761,040

CLASS 303

9 62 4,761,041
92 4,761,042
100 4,761,043

CLASS 307

87 4,761,563
118 4,761,564
243 4,761,565
262 4,761,566
269 4,761,567
4,761,568
309 4,761,569
465 4,761,570
468 4,761,571
546 4,761,572

CLASS 310

12 4,761,573
4,761,574
36 4,761,575
51 4,761,576
67 A 4,761,577
68 B 4,761,578
90.5 4,761,579
214 4,761,580
4,761,581
322 4,761,582

CLASS 312

110 4,761,044
219 4,761,045

CLASS 313

54 4,761,583
595 4,761,794

CLASS 315

4 4,761,584
309 4,761,585
408 4,761,586
4,761,587

CLASS 318

46 4,761,588
51 4,761,589
254 4,761,590
345 D 4,761,591
471 4,761,592
473 4,761,593
490 4,761,594
568 4,761,595
4,761,596
625 4,761,597
685 4,761,598
723 4,761,599
759 4,761,600
786 4,761,601
816 4,761,602

CLASS 323

315 4,761,603

CLASS 324

78 R 4,761,604
142 4,761,605
4,761,606
158 R 4,761,607
202 4,761,608
208 4,761,609
227 4,761,610
248 4,761,611
307 4,761,612
309 4,761,613
320 4,761,614

CLASS 329

95 4,761,808

CLASS 330

277 4,761,615

CLASS 331

107 A 4,761,616
111 4,761,617
167 4,761,618
4,761,619

CLASS 332

7 51 4,761,620

CLASS 333

1.1 4,761,621
106 4,761,622
167 4,761,623
206 4,761,624
209 4,761,625

CLASS 335

16 4,761,626
128 4,761,627

CLASS 336

180 4,761,628
208 4,761,629
213 4,761,630

CLASS 340

52 D 4,761,631
81 R 4,761,632
286 R 4,761,633
347 AD 4,761,634
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347 DD 4,761,635
365 P 4,761,637
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709 4,761,640
717 4,761 641
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723 4,761,643
825 220 4,761,647
825 31 4,761,644
4,761,645
825 520 4,761,646
825.64 4,761,648
850 4,761,649

CLASS 342

26 4,761,650
40 4,761,651
53 4,761,652

CLASS 343

700 MS 4,761,653
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713 4,761,655
719 4,761,656

CLASS 346

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4,761,658
108 4,761,659
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134 4,761,663
4,761,664
140 R 4,761,665

CLASS 350

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482 4,761,064
510 4,761,066
576 4,761,065
641 4,761,067

CLASS 351

156 4,761,068
160 H 4,761,069
205 4,761,070
212 4,761,071

CLASS 354

133 4,761,666

CLASS 355

3 DD 4,761,668
3 R 4,761,667
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4 4,761,669
4,761,670
14 D 4,761,672
14 R 4,761,673
15 4,761,674
76 4,761,675

CLASS 356

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37 4,761,074
39 4,761,075
445 4,761,676

CLASS 357

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CLASS 358

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174 4,761,687
183 4,761,688
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310 4,761,690
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CLASS 360

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130.33 4,761,701

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225 4,761,709
286 4,761,710
321 4,761,711
429 4,761,712
433 4,761,713
4,761,714

CLASS 362

23 4,761,715
32 4,761,716
66 4,761,717
80 4,761,718
135 4,761,719
252 4,761,720
348 4,761,721

CLASS 363

17 4,761,722
21 4,761,723
4,761,724
46 4,761,725
51 4,761,726
98 4,761,727
126 4,761,728

CLASS 364

200 4,761,729
4,761,730
4,761,731
4,761,732
4,761,733
4,761,734
4,761,735
4,761,736
300 4,761,737
414 4,761,738
4,761,739
415 4,761,740
426 4,761,741
443 4,761,742
484 4,761,743
500 4,761,744
513 4,761,745
514 4,761,746
551 4,761,747
559 4,761,748
709 4,761,749
721 4,761,750
728 4,761,751
736 4,761,752
4,761,753
749 4,761,754
757 4,761,755
761 4,761,756
4,761,757
769 4,761,758
788 4,761,759
900 4,761,760
4,761,761
4,761,762
4,761,763

CLASS 365

181 4,761,764
185 4,761,765
190 4,761,766
200 4,761,767
201 4,761,768
230 4,761,769

CLASS 366

46 4,761,076
165 4,761,077

CLASS 367

116 4,761,770

CLASS 368

202 4,761,771

CLASS 369

32 4,761,772
44 4,761,773
4,761,774
46 4,761,775
54 4,761,776

CLASS 370

3 4,761,777
46 4,761,778
58 4,761,779
60 4,761,780
94 4,761,781

CLASS 371

30 4,761,782
38 4,761,783
43 4,761,784
51 4,761,785

CLASS 372

10 4,761,786
14 4,761,787
4,761,789
36 4,761,788
45 4,761,790
46 4,761,791
56 4,761,792

CLASS 373

24 4,761,793

CLASS 374

31 4,761,078

CLASS 375

4,761,795
4,761,796
4 4,761,797
59 4,761,798
107 4,761,799
117 4,761,800

CLASS 376

146 4,761,107
460 4,761,108
245 4,761,259 555 4,761,109
298 4,761,260 563 4,761,110
404 4,761,261 4,761,111
591 4,761,112
CLASS 377 732 4,761,113
33 4,761,801 735 4,761,114

CLASS 378

CLASS 415

99 4,761,802 119 4,761,115
4,761,803
CLASS 416
109 4,761,804
181 4,761,805 92 4,761,116
241 R 4,761,117

CLASS 379

CLASS 417

61 4,761,806
89 4,761,807 254 4,761,118
150 4,761,809 269 4,761,119
181 4,761,810 403 4,761,120
397 4,761,811
413 4,761,812 **CLASS 418**

CLASS 380

15 4,761,121
55 4,761,122
6 4,761,813 89 4,761,123
153 4,761,124
CLASS 381 201 4,761,125
13 4,761,814
43 4,761,815 **CLASS 419**
106 4,761,816 10 4,761,262
194 4,761,817 33 4,761,263
68 4,761,264

CLASS 382

CLASS 420

41 4,761,818
54 4,761,819 472 4,761,265
528 4,761,266
CLASS 383 529 4,761,267
62 4,761,079
120 4,761,080 **CLASS 422**

CLASS 384

72 4,761,268
245 4,761,269
20 4,761,081
133 4,761,082 **CLASS 423**
208 4,761,083 235 4,761,270
520 4,761,820 265 4,761,271
619 4,761,084 445 4,761,272

CLASS 400

CLASS 424

322 4,761,085 47 4,761,273
531 4,761,086 48 4,761,274
621 4,761,087 59 4,761,275
4,761,276
CLASS 401 64 4,761,277
122 4,761,088 73 4,761,278
198 4,761,089 4,761,279
259 4,761,090 84 4,761,280
88 4,761,281
CLASS 402 89 4,761,282
76 4,761,091 92 4,761,283
94 4,761,284
CLASS 403 125 4,761,285
104 4,761,092 195 1 4,761,286
190 4,761,093 450 4,761,287
341 4,761,094 4,761,288
468 4,761,289

CLASS 404

CLASS 425

41 4,761,095 62 4,761,126

CLASS 405

110 4,761,127
195 4,761,096 126 2 4,761,128
204 4,761,097 133.1 4,761,129
262 4,761,098 532 4,761,130
264 4,761,099 547 4,761,343

CLASS 408

CLASS 426

1 R 4,761,100 90 4,761,290
6 4,761,101 231 4,761,291
157 4,761,102 321 4,761,292
181 4,761,103 383 4,761,293
438 4,761,294
CLASS 409 549 4,761,295
175 4,761,104 4,761,296
618 4,761,297
CLASS 411 656 Re.32,725
57 4,761,105
CLASS 427

CLASS 414 49 4,761,135
125 4,761,106 10 4,761,298 214 4,761,136

CLASS 434

27 4,761,299
38 4,761,300
99 4,761,137
39 4,761,301 143 4,761,138
4,761,302 410 4,761,139
96 4,761,303
98 4,761,304
180 4,761,305
197 4,761,306
243 4,761,307
249 4,761,308
294 4,761,309
314 4,761,310
366 4,761,311
387 4,761,312
407 1 4,761,313

CLASS 428

11 4,761,314
33 4,761,315
64 4,761,316
67 4,761,317
85 4,761,318
99 4,761,319
167 4,761,320
176 4,761,321
198 4,761,322
4,761,323
4,761,324
209 4,761,325
219 4,761,326
220 4,761,327
4,761,328
222 4,761,329
312 8 4,761,330
323 4,761,331
325 4,761,332
327 4,761,333
332 4,761,334
352 4,761,335
379 4,761,336
425 8 4,761,337
425 9 4,761,338
446 4,761,339
457 4,761,340
512 4,761,341
537.1 4,761,342
552 4,761,344
4,761,345
627 4,761,346
691 4,761,347

CLASS 429

35 4,761,348
39 4,761,349
49 4,761,350
50 4,761,351
94 4,761,352
104 4,761,353
112 4,761,487
121 4,761,354
213 4,761,355
242 4,761,356

CLASS 430

32 4,761,357
109 4,761,358
126 4,761,359
138 4,761,360
203 4,761,361
267 4,761,362
284 4,761,363
308 4,761,364
555 4,761,365

CLASS 431

7 4,761,131
10 4,761,132
170 4,761,133

CLASS 432

253 4,761,134

CLASS 433

49 4,761,135
214 4,761,136

CLASS 434

99 4,761,137
143 4,761,138
410 4,761,139

CLASS 435

2 4,761,366
6 4,761,367
7 4,761,368
19 4,761,369
36 4,761,370
68 4,761,371
172.1 4,761,372
172.3 4,761,373
232 4,761,374
240.2 4,761,375
240.27 4,761,377
262 4,761,376
293 4,761,378
296 4,761,379
313 4,761,380

CLASS 436

165 4,761,381
536 4,761,382

CLASS 437

3 4,761,383
52 4,761,385
029 4,761,384
203 4,761,386

CLASS 439

71 4,761,140
153 4,761,141
372 4,761,143
469 4,761,145
545 4,761,144
584 4,761,146
607 4,761,147
621 4,761,148

CLASS 446

208 4,761,149
345 4,761,150

CLASS 455

73 4,761,821
82 4,761,822
89 4,761,823
127 4,761,824
183 4,761,825
277 4,761,826
4,761,827
296 4,761,828
307 4,761,829
343 4,761,830
601 4,761,831
612 4,761,832
4,761,833

CLASS 464

25 4,761,151
176 4,761,152

CLASS 474

28 4,761,153
101 4,761,154
110 4,761,155

CLASS 493

133 4,761,156

CLASS 494

35 4,761,157

CLASS 501

40 4,761,387
95 4,761,388
4,761,389
152 4,761,390

CLASS 502

63 4,761,391
126 4,761,392
170 4,761,393
348 4,761,394
401 4,761,395

CLASS 503

209 4,761,396
213 B1 4,636,818
214 4,761,397

CLASS 514

15 4,761,398
19 4,761,399
53 4,761,400
4,761,401
54 4,761,402
63 4,761,403
77 4,761,404
86 4,761,406
114 4,761,405
179 4,761,407
192 4,761,408
206 4,761,409
4,761,410
219 4,761,411
4,761,412
229 8 4,761,413
250 4,761,414
252 4,761,415
260 4,761,416
284 4,761,417
308 4,761,418
311 4,761,419
336 4,761,420
352 4,761,421
370 4,761,422
395 4,761,423
443 4,761,424
456 4,761,425
460 4,761,426
528 4,761,427
561 4,761,429
562 4,761,430

CLASS 521

60 4,761,431
4,761,432
124 4,761,433
164 4,761,434

CLASS 522

46 4,761,435
114 4,761,436

CLASS 523

102 4,761,437
106 4,761,438
122 4,761,439
217 4,761,440
439 4,761,441

CLASS 524

56 4,761,442
93 4,761,446
110 4,761,443
145 4,761,444
251 4,761,447
262 4,761,445
381 4,761,448
424 4,761,449
496 4,761,450
505 4,761,451
521 4,761,452
612 4,761,453
862 4,761,454

CLASS 525

74 4,761,463
75 4,761,455
331 7 4,761,456
439 4,761,457
474 4,761,458
479 4,761,459
504 4,761,460

CLASS 526

125 4,761,461
159 4,761,462

CLASS 528

30 4,761,464
45 4,761,465
90 4,761,466
388 4,761,468

CLASS 530

324 4,761,469
326 4,761,470
350 4,761,471

CLASS 540

145 4,761,472

CLASS 544

224 4,761,473
250 4,761,474
324 4,761,475
357 4,761,476

CLASS 546

48 4,761,477
118 4,761,478
147 4,761,479
294 4,761,480
296 4,761,481

CLASS 548

142 4,761,482
344 4,761,483
364 4,761,484
486 4,761,485

CLASS 549

9 4,761,486
255 4,761,488
347 4,761,489
4,761,490
435 4,761,491

CLASS 556

482 4,761,492

CLASS 558

277 4,761,467
398 4,761,494

CLASS 560

41 4,761,495
69 4,761,496
100 4,761,497
359 4,761,498

CLASS 562

520 4,761,499

CLASS 564

86 4,761,500
167 4,761,501
442 4,761,502

CLASS 568

11 4,761,493
313 4,761,503
697 4,761,504
842 4,761,506
918 4,761,505

CLASS 570

236 4,761,507

CLASS 585

25 4,761,508
254 4,761,509
268 4,761,510
415 4,761,511
417 4,761,512
467 4,761,513
475 4,761,514
500 4,761,515

CLASS 604

9 4,761,158
49 4,761,159
76 4,761,160

VOL 1093 ISS 1 AG 2 1988 UMI

CLASSIFICATION OF DESIGNS

D2—	291	296,950		101	296,970		415	296,988	D14—	52	297,007		34	297,027	D24—	5	297,046
		296,951		105	297,008		438	296,989		64	297,009		48	297,028		17	297,047
	314	296,952		309	296,971			296,990		80	297,010		49	297,029		21	297,048
	318	296,953			296,972	D10—	30	296,991		96	297,011		54	297,030			297,049
	320	296,954		317	296,973		32	296,992	D15—	4	297,012		81	297,031			297,050
D3—	45	296,955			296,974			296,993			297,013		107	297,032			297,051
	71	296,956		320	296,975		39	296,994	D17—	22	297,014		108	297,033		24	297,052
D6—	301	296,957		384	296,976		46	296,995			297,015		133	297,034		29	297,053
	317	296,958	D8—	29.1	296,977		62	296,996			297,016		134	297,035		55	297,054
	330	296,959		34	296,978	D11—	1	296,997	D18—		297,017			297,036	D25—	38	297,055
	366	296,960		36	296,979	D12—	14	296,998	D19—	37	297,018		140	297,037	D26—	65	297,056
	370	296,961		70	296,980		15	296,999			297,019			297,038	D30—	155	297,057
	409	296,962		74	296,981		118	297,000		51	297,020		166	297,039			297,058
	523	296,963		337	296,982		147	297,001			297,021		217	297,040	D32—	8	297,059
	548	296,964		396	296,983		196	297,002			297,022	D22—	106	297,041		21	297,060
	573	296,965			296,984		217	297,003	D21—	16	297,023	D23—	214	297,042			297,061
D7—	3	296,966					316	297,004		25	297,024		263	297,043		49	297,062
	17	296,967	D9—	337	296,985		327	297,005		31	297,025		328	297,044	D34—	18	297,063
	21	296,968		374	296,986	D13—	32	297,006			297,026		329	297,045		32	297,064
	47	296,969		399	296,987												

CLASSIFICATION OF PLANTS

P—	10	6,236															
		6,237		74	6,238			6,239			6,240		76	6,241			6,242

STATUTORY INVENTION REGISTRATIONS

239—	265	25	H500	340—	825.34	H510	357—	42	H512		516	H513	524	128	H506		264	H509
242—	18	R	H502	342—	360	H514	358—	108	H515	376—	103	H508						
244—	1	R	H501	356—	152	H503	364—	200	H511	424—	1.1	H505	526—	200	H507	549—	64	H504

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	4,760,784		4,761,084		4,761,801		4,761,613		4,760,858		4,760,950
	4,761,254		4,761,096		4,761,808		4,761,684		4,760,906		4,761,009
	4,761,401		4,761,106		4,761,817		4,761,735		4,760,931		4,761,021
	4,761,524		4,761,138		4,761,825		4,761,784		4,760,956		4,761,078
04	4,760,656		4,761,154	08 :	4,760,743	13 :	4,760,928		4,760,975		4,761,116
	4,760,674		4,761,158		4,760,937		4,760,986		4,761,031		4,761,134
	4,760,872		4,761,160		4,761,111		4,761,053		4,761,040		4,761,137
	4,760,891		4,761,162		4,761,120		4,761,232		4,761,336		4,761,170
	4,760,996		4,761,180		4,761,177		4,761,630		4,761,354		4,761,205
	4,761,278		4,761,182		4,761,815	15 :	4,760,812		4,761,376		4,761,230
	4,761,532		4,761,187	09 :	4,760,647	16 :	4,760,747		4,761,381		4,761,247
	4,761,617		4,761,202		4,760,662		4,761,294		4,761,426		4,761,261
05	4,760,793		4,761,204		4,760,684	17 :	Re.32,725		4,761,474		4,761,375
	4,760,811		4,761,218		4,760,713		4,760,664		4,761,520		4,761,491
	4,760,871		4,761,220		4,760,740		4,760,685		4,761,530		4,761,588
	4,761,749		4,761,224		4,760,830		4,760,721		4,761,586		4,761,636
06	4,760,610		4,761,225		4,760,898		4,760,725		4,761,587		4,761,730
	4,760,612		4,761,248		4,760,912		4,760,737		4,761,601		4,761,740
	4,760,613		4,761,250		4,760,942		4,760,746		4,761,627		4,761,755
	4,760,615		4,761,266		4,760,951		4,760,789		4,761,686		4,761,805
	4,760,621		4,761,270		4,760,979		4,760,848		4,761,687	26 :	Re.32,722
	4,760,645		4,761,290		4,760,984		4,760,907		4,761,717		4,760,620
	4,760,646		4,761,371		4,761,073		4,760,908		4,761,723		4,760,633
	4,760,649		4,761,377		4,761,146		4,760,920		4,761,798		4,760,635
	4,760,654		4,761,378		4,761,214		4,760,952	19 :	4,760,806		4,760,636
	4,760,670		4,761,379		4,761,244		4,760,964		4,761,113		4,760,682
	4,760,694		4,761,386		4,761,245		4,761,039		4,761,638		4,760,727
	4,760,695		4,761,391		4,761,271		4,761,108	20 :	4,760,805		4,760,732
	4,760,701		4,761,416		4,761,303		4,761,132		4,760,926		4,760,749
	4,760,715		4,761,449		4,761,315		4,761,152		4,761,026		4,760,755
	4,760,726		4,761,471		4,761,346		4,761,156	21 :	4,760,854		4,760,818
	4,760,752		4,761,481		4,761,348		4,761,159		4,760,994		4,760,892
	4,760,782		4,761,494		4,761,395		4,761,279		4,761,629		4,760,933
	4,760,802		4,761,515		4,761,482		4,761,281	22 :	4,761,402		4,760,981
	4,760,837		4,761,541		4,761,485		4,761,289	23 :	4,760,914		4,760,998
	4,760,840		4,761,544		4,761,578		4,761,292		4,761,570		4,761,018
	4,760,842		4,761,548		4,761,658		4,761,341	24 :	4,760,618		4,761,019
	4,760,845		4,761,549		4,761,811		4,761,349		4,760,642		4,761,045
	4,760,880		4,761,577	10 :	4,760,614		4,761,393		4,760,666		4,761,083
	4,760,904		4,761,584		4,761,173		4,761,403		4,760,775		4,761,136
	4,760,909		4,761,602		4,761,433		4,761,435		4,760,917		4,761,223
	4,760,934		4,761,647	11 :	4,761,314		4,761,441		4,760,932		4,761,272
	4,760,943		4,761,691	12 :	4,760,660		4,761,503		4,761,011		4,761,291
	4,760,955		4,761,699		4,760,691		4,761,504		4,761,280		4,761,299
	4,760,985		4,761,705		4,760,720		4,761,509		4,761,405		4,761,310
	4,761,015		4,761,733		4,760,759		4,761,513		4,761,527		4,761,389
	4,761,030		4,761,752		4,760,960		4,761,518		4,761,552		4,761,419
	4,761,032		4,761,756		4,761,004		4,761,553		4,761,632		4,761,443
	4,761,056		4,761,782		4,761,093		4,761,621		4,761,654		4,761,458
	4,761,059		4,761,783		4,761,104		4,761,623	25 :	4,760,652		4,761,478
	4,761,064		4,761,786		4,761,206		4,761,637		4,760,745		4,761,479
	4,761,066		4,761,789		4,761,239		4,761,751		4,760,855		4,761,540
	4,761,071		4,761,796		4,761,582	18 :	4,760,820		4,760,948		4,761,595

VOL 1093 ISS 1 AG 2 1988 UMI

4,761,676 4,761,227 4,761,081 4,760,913 4,760,841 4,760,879
4,761,741 4,761,240 4,761,128 4,760,961 4,760,856 4,760,881
27 : 4,760,665 4,761,257 4,761,215 4,760,962 4,760,868 4,760,882
4,760,807 4,761,274 4,761,256 4,761,005 4,760,876 4,760,883
4,760,844 4,761,275 4,761,283 4,761,008 4,760,885 4,760,884
4,760,859 4,761,276 4,761,296 4,761,103 4,760,963 4,760,889
4,760,919 4,761,277 4,761,300 4,761,169 4,760,968 4,760,890
4,760,967 4,761,298 4,761,304 4,761,171 4,760,971 4,760,911
4,761,028 4,761,320 4,761,324 4,761,195 4,761,000 4,760,982
4,761,079 4,761,337 4,761,352 4,761,200 4,761,077 4,760,989
4,761,143 4,761,363 4,761,369 4,761,217 4,761,105 4,760,992
4,761,318 4,761,368 4,761,372 4,761,226 4,761,107 4,761,023
4,761,355 4,761,404 4,761,437 4,761,228 4,761,141 4,761,097
4,761,373 4,761,411 4,761,467 4,761,287 4,761,144 4,761,191
4,761,571 4,761,412 4,761,499 4,761,311 4,761,157 4,761,295
4,761,660 4,761,413 4,761,565 4,761,370 4,761,164 4,761,385
4,761,725 4,761,417 4,761,573 4,761,406 4,761,167 4,761,394
4,761,731 4,761,421 4,761,609 4,761,424 4,761,178 4,761,429
4,761,785 4,761,444 4,761,668 4,761,446 4,761,197 4,761,448
4,761,823 4,761,447 4,761,669 4,761,455 4,761,207 4,761,450
28 4,761,309 4,761,480 4,761,671 4,761,466 4,761,235 4,761,453
4,761,762 4,761,505 4,761,672 4,761,492 4,761,236 4,761,465
29 : 4,760,616 4,761,507 4,761,679 4,761,539 4,761,306 4,761,473
4,760,799 4,761,560 4,761,683 4,761,545 4,761,308 4,761,476
4,760,949 4,761,620 4,761,698 4,761,576 4,761,415 4,761,488
4,761,006 4,761,625 4,761,703 4,761,612 4,761,432 4,761,514
4,761,148 4,761,680 4,761,709 4,761,639 4,761,470 4,761,556
4,761,176 4,761,708 4,761,720 4,761,663 4,761,501 4,761,559
4,761,827 4,761,711 4,761,809 4,761,664 4,761,583 4,761,567
30 : 4,761,149 4,761,722 4,636,818 4,761,665 4,761,614 4,761,616
31 4,760,648 4,761,732 37 : 4,760,797 4,761,726 4,761,736 4,761,656
32 : 4,760,777 4,761,743 4,760,801 4,761,727 4,761,788 4,761,681
4,761,901 4,761,778 4,760,980 4,761,747 4,761,793 4,761,737
33 : 4,761,390 4,761,780 4,761,085 4,761,819 43 : 4,761,126 4,761,807
4,761,569 4,761,800 4,761,123 40 : 4,760,973 44 : 4,761,029 4,761,829
4,761,806 4,761,810 4,761,209 4,760,974 4,761,140 49 : 4,761,456
4,761,715 4,761,821 4,761,326 4,761,130 45 : 4,760,628 50 : 4,761,332
34 : 4,760,677 4,761,832 4,761,367 4,761,222 4,760,637 4,761,521
4,760,734 4,761,624 4,761,398 4,761,313 4,760,869 51 : 4,761,049
4,760,769 35 : 4,760,208 4,761,418 4,761,522 4,760,936 4,761,087
4,760,778 4,761,464 4,761,475 4,761,525 4,760,976 4,761,563
4,760,788 4,761,487 4,761,605 4,761,531 4,760,977 4,761,600
4,760,833 4,761,598 4,761,812 41 : 4,760,719 4,761,080 4,761,744
4,760,847 4,761,718 39 : Re.32,724 4,760,835 4,761,321 53 : 4,760,800
4,760,921 4,761,724 4,760,671 4,761,237 4,761,335 4,761,201
4,760,938 36 : 4,760,672 4,760,681 4,761,269 4,761,502 4,761,268
4,760,966 4,760,707 4,760,687 4,761,519 47 : 4,761,203 54 : 4,760,675
4,761,002 4,760,816 4,760,729 4,761,604 4,761,216 4,761,190
4,761,057 4,760,866 4,760,730 4,761,640 4,761,496 55 : 4,760,834
4,761,086 4,760,929 4,760,766 4,761,642 4,761,497 4,761,010
4,761,131 4,760,940 4,760,819 4,761,768 4,761,537 4,761,196
4,761,150 4,760,944 4,760,846 42 : 4,760,622 48 : Re.32,723 4,761,258
4,761,168 4,760,978 4,760,850 4,760,640 4,760,680 4,761,322
4,761,174 4,761,025 4,760,861 4,760,711 4,760,742 4,761,535
4,761,183 4,761,062 4,760,870 4,760,776 4,760,763 4,761,580
4,761,186 4,761,068 4,760,894 4,760,803 4,760,773 4,761,633
4,761,198

DESIGN PATENTS

01 : 296,970 297,030 297,012 296,953 34 297,011 41 296,954
04 : 297,023 297,046 297,025 296,957 297,016 42 : 297,041
05 : 297,064 297,047 18 296,955 297,024 36 296,956 297,056
06 296,978 297,054 19 297,043 26 297,002 296,966 45 297,001
296,984 297,060 297,045 297,008 297,062 47 296,981
296,997 297,061 297,055 27 296,995 37 : 296,996 296,998
296,999 09 297,005 20 : 297,053 297,003 297,018 48 : 297,031
297,009 11 296,993 22 : 297,014 29 296,963 297,019 50 297,077
297,017 12 296,986 24 296,980 297,029 39 297,013 53 : 297,063
297,027 17 : 296,962 25 : 296,952 30 297,028

STATUTORY INVENTION REGISTRATIONS

H501 06 H503 12 H500 34 H512 H509 39 H514
H502 H508 17 H507 36 H505 H510 51 H511
H515 10 H504 24 H513

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AG
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ISS
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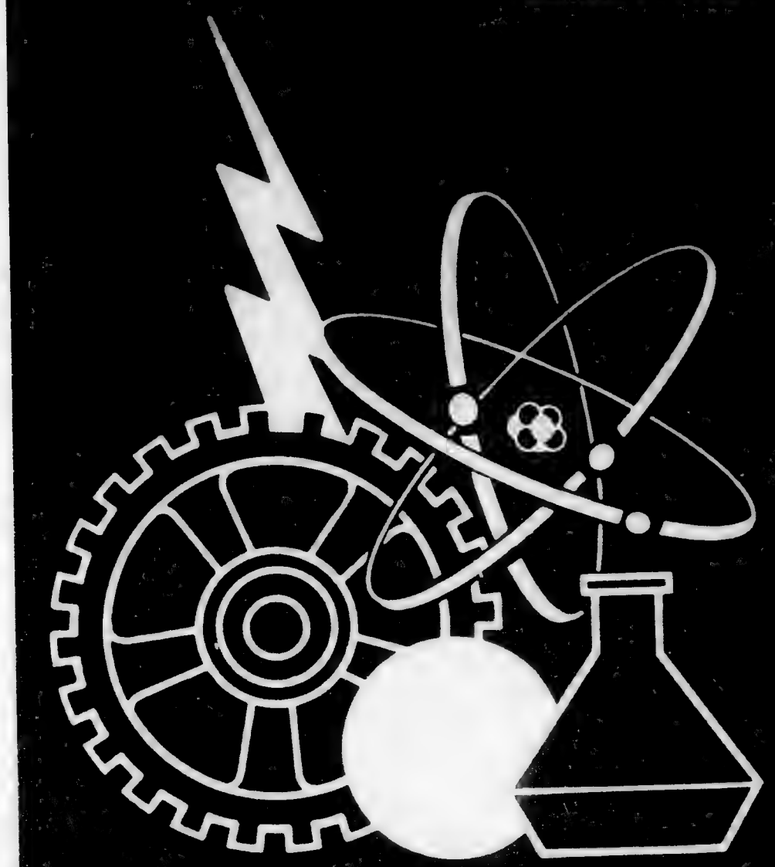
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PATENTS

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VOL
1093

ISS
2

AG
9

1988

UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 9, 1988 Volume 1093 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1093 OG 12
Notice of Maintenance Fees Payable	1093 OG 12
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1093 OG 13
Reissue Applications Filed	1093 OG 15
Erratum	1093 OG 15
Requests for Reexaminations Filed	1093 OG 15
Patents Available for License or Sale	1093 OG 15
Registration to Practice	1093 OG 16
Request for Identifiable Records	1093 OG 16
Patent Certificates of Correction	1093 OG 18
Disclaimers	1093 OG 18
Dedications	1093 OG 18
Disclaimer and Dedications	1093 OG 18
Special Boxes for Mail	1093 OG 19
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1093 OG 20
Condition of Patent Applications	1093 OG 21
Reexaminations	441
Reissue Patents Granted (32,726)	443
Plant Patents Granted (6,243)	445
Patents Granted	
General and Mechanical (4,761,834)	447
Chemical (4,762,522)	689
Electrical (4,762,965)	815
Design Patents Granted (297,065)	959
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patentees	PI 62
Classification of	
Patents (Including Reissues and Reexaminations)	PI 67
Designs and Plant Applications	PI 70
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 71
Designs and Plant Applications	PI 72
Change of Address Form and Subscription Order Form	Back Page

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VOL 1093 ISS 2 AUG 9 1988 UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Mar. 15, 1988, and was announced in the *Official Gazette* at 1087 O.G. 24 on Feb. 16, 1988.

Domestic PCT Fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1300.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(1) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Mar. 21, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on Aug. 6, 1985, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,532,653 through 4,534,064
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 22, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,449,252	06/394,276	5/22/84
4,449,253	06/302,871	5/22/84
4,449,258	06/314,836	5/22/84
4,449,262	06/299,881	5/22/84
4,449,265	06/471,048	5/22/84
4,449,271	06/432,344	5/22/84
4,449,285	06/397,342	5/22/84
4,449,286	06/315,641	5/22/84
4,449,295	06/393,106	5/22/84
4,449,299	06/306,365	5/22/84
4,449,300	06/323,138	5/22/84
4,449,314	06/415,665	5/22/84
4,449,315	06/410,934	5/22/84
4,449,322	06/382,631	5/22/84
4,449,324	06/412,606	5/22/84
4,449,325	06/393,624	5/22/84
4,449,333	06/389,761	5/22/84
4,449,335	06/384,745	5/22/84
4,449,339	06/308,619	5/22/84
4,449,343	06/374,341	5/22/84
4,449,353	06/405,913	5/22/84
4,449,361	06/354,627	5/22/84
4,449,363	06/272,103	5/22/84
4,449,364	06/342,142	5/22/84
4,449,366	06/268,235	5/22/84
4,449,367	06/398,272	5/22/84
4,449,369	06/252,292	5/22/84
4,449,372	06/341,881	5/22/84
4,449,378	06/341,135	5/22/84
4,449,381	06/349,625	5/22/84
4,449,382	06/349,626	5/22/84
4,449,384	06/405,029	5/22/84
4,449,387	06/330,807	5/22/84
4,449,423	06/396,550	5/22/84
4,449,425	06/345,114	5/22/84
4,449,429	06/394,654	5/22/84
4,449,431	06/343,312	5/22/84
4,449,433	06/351,459	5/22/84
4,449,444	06/282,757	5/22/84
4,449,450	06/402,677	5/22/84
4,449,452	06/496,860	5/22/84
4,449,455	06/374,712	5/22/84
4,449,458	06/360,273	5/22/84
4,449,460	06/358,811	5/22/84
4,449,463	06/348,460	5/22/84
4,449,467	06/392,680	5/22/84
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4,449,481	06/411,026	5/22/84
4,449,485	06/400,121	5/22/84
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4,449,497	06/401,232	5/22/84
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4,449,578	06/273,087	5/22/84
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4,449,595	06/378,786	5/22/84

VOL 1093 ISS 2 AG 9 1988 UMI

Patent Number	Serial Number	Issue Date
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4,449,614	06/326,117	5/22/84
4,449,624	06/321,543	5/22/84
4,449,626	06/305,097	5/22/84
4,449,632	06/449,846	5/22/84
4,449,638	06/507,120	5/22/84
4,449,641	06/385,119	5/22/84
4,449,652	06/455,749	5/22/84
4,449,653	06/329,628	5/22/84
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4,449,655	06/308,145	5/22/84
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4,449,663	06/533,757	5/22/84
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4,449,697	06/359,711	5/22/84
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4,449,896	06/302,158	5/22/84
4,449,897	06/304,828	5/22/84
4,449,899	06/373,077	5/22/84
4,449,915	06/349,731	5/22/84
4,449,920	06/393,797	5/22/84
4,449,926	06/323,804	5/22/84
4,449,931	06/356,828	5/22/84
4,449,932	06/389,408	5/22/84
4,449,938	06/350,404	5/22/84
4,449,939	06/502,404	5/22/84
4,449,941	06/462,421	5/22/84
4,449,954	06/275,601	5/22/84
4,449,955	06/290,442	5/22/84
4,449,963	06/367,902	5/22/84
4,449,966	06/399,166	5/22/84
4,449,968	06/350,597	5/22/84
4,449,970	06/299,199	5/22/84
4,449,972	06/406,512	5/22/84
4,449,981	06/272,144	5/22/84
4,449,990	06/416,578	5/22/84
4,450,009	06/490,088	5/22/84
4,450,013	06/387,196	5/22/84
4,450,015	06/406,444	5/22/84
4,450,034	06/387,100	5/22/84
4,450,056	06/479,588	5/22/84
4,450,076	06/409,881	5/22/84
4,450,080	06/425,323	5/22/84
4,450,082	06/383,693	5/22/84
4,450,086	06/283,714	5/22/84
4,450,088	06/496,009	5/22/84
4,450,091	06/480,756	5/22/84
4,450,108	06/217,528	5/22/84
4,450,116	06/398,097	5/22/84
4,450,131	06/322,838	5/22/84
4,450,134	06/291,466	5/22/84
4,450,139	06/374,517	5/22/84
4,450,144	06/400,539	5/22/84
4,450,148	06/428,539	5/22/84
4,450,155	06/423,054	5/22/84
4,450,161	06/382,027	5/22/84
4,450,168	06/513,750	5/22/84
4,450,170	06/277,034	5/22/84
4,450,172	06/356,712	5/22/84
4,450,193	06/510,971	5/22/84
4,450,202	06/394,205	5/22/84
4,450,214	06/388,478	5/22/84
4,450,225	06/499,421	5/22/84
4,450,234	06/347,724	5/22/84
4,450,245	06/361,880	5/22/84
4,450,248	06/293,048	5/22/84
4,450,254	06/392,392	5/22/84
4,450,262	06/407,270	5/22/84
4,450,269	06/217,644	5/22/84
4,450,276	06/386,134	5/22/84
4,450,295	06/332,117	5/22/84
4,450,308	06/325,809	5/22/84
4,450,325	06/480,777	5/22/84
4,450,326	06/312,690	5/22/84
4,450,330	06/410,064	5/22/84
4,450,332	06/411,435	5/22/84
4,450,347	06/395,018	5/22/84
4,450,353	06/299,910	5/22/84
4,450,361	06/411,947	5/22/84
4,450,354	06/361,176	5/22/84
4,450,369	06/261,358	5/22/84
4,450,382	06/390,426	5/22/84
4,450,394	06/355,101	5/22/84
4,450,400	06/327,318	5/22/84
4,450,424	06/376,525	5/22/84
4,450,434	06/265,886	5/22/84
4,450,435	06/325,789	5/22/84
4,450,478	06/300,587	5/22/84
4,450,481	06/296,171	5/22/84
4,450,482	06/349,373	5/22/84
4,450,494	06/304,612	5/22/84
4,450,500	06/498,244	5/22/84
4,450,503	06/425,483	5/22/84
4,450,508	06/477,180	5/22/84
4,450,509	06/408,885	5/22/84
4,450,517	06/225,690	5/22/84
4,450,518	06/274,039	5/22/84
4,450,536	06/346,207	5/22/84
4,450,548	06/426,008	5/22/84
4,450,549	06/293,798	5/22/84
4,450,550	06/307,023	5/22/84
4,450,580	06/357,307	5/22/84
4,450,587	06/325,313	5/22/84

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,460,256, Re. S.N. 204,011, Filed June 8, 1988, Cl. 354/173.11, FILM FEEDING SYSTEM OF A CAMERA, Kunihido Araki, et al., Owner of Record: *Ricoh Co., Ltd., Tokyo, Japan,* Attorney or Agent: Gregory J. Maier, Ex. Gp.: 211

4,580,535, Re. S.N. 178,903, Filed Apr. 7, 1988, Cl. 123/339, ENGINE IDLING SPEED CONTROLLING SYSTEM, Yoshiaki Danno, et al., Owner of Record: *Mitsubishi Jidasha Koggo Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Robert E. Burnes, Ex. Gp.: 342

4,594,736, Re. S.N. 208,362, Filed June 17, 1988, Cl. 2/163, CURVED CLUTE-CUT GLOVE CONSTRUCTION, John R. Connelly, Owner of Record: *Wells Lamont Corp., Chicago, Ill.,* Attorney or Agent: Granger Cook, Jr., Ex. Gp.: 247

4,595,424, Re. S.N. 209,113, Filed June 20, 1988, Cl. 148/6.15R, METHOD OF FORMING PHOSPHATE COATING ON ZINC, Kenneth J. Hacias, Owner of Record: *Parker Chemical Co., Madison Heights, Mich.,* Attorney or Agent: Wayne C. Jaeschke, Ex. Gp.: 111

4,595,895, Re. S.N. 207,133, Filed June 14, 1988, Cl. 335/26, CIRCUIT BREAKER, Hiroshi Fujii, et al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Allan M. Lowe, Ex. Gp.: 216

4,600,761, Re. S.N. 206,024, Filed June 13, 1988, Cl. 526/270, ACRYLIC EMULSION COPOLYMERS FOR THICKENING AQUEOUS SYSTEMS AND COPOLYMERIZABLE SURFACTANT MONOMER FOR USE THEREIN, Charles G. Ruffner, et al., Owner of Record: *Alco Chemical Corp., Chattanooga, Tenn.,* Attorney or Agent: Mary E. Bak, Ex. Gp.: 155

4,608,208, Re. S.N. 203,689, Filed May 20, 1988, Cl. 261/39.1, CONTROL VALVE DEVICE, Kenji Yogo, et al., Owner of Record: *Aisin Seiki Kabushiki Kaisha, Aichi-Pref., Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 135

4,618,143, Re. S.N. 185,819, Filed Apr. 25, 1988, Cl. 272/123, WEIGHT LIFTING BAR, Brian Twardosz, Owner of Record: *Inventor,* Attorney or Agent: Kevin W. Guynn, Ex. Gp.: 332

4,637,971, Re. S.N. 204,096, Filed June 8, 1988, Cl. 430/5G, PHOTORECEPTOR HAVING POLYCARBONATE LAYERS AND PROCESS FOR THE PREPARATION THEREOF, Yoshiaki Takei, et al., Owner of Record: *Konishiroku Photo Industry Co. Ltd.,* Attorney or Agent: Bierman and Muserlian, Ex. Gp.: 156

4,649,183, Re. S.N. 202,070, Filed June 3, 1988, Cl. 526/240, CALCIUM TOLERANT N-SUBSTITUTED ACRYLAMIDES AS THICKNERS FOR AQUEOUS SYSTEM, Charles L. McCormick, Owner of Record: *University of Southern Mississippi,* Attorney or Agent: J. Edward Hess, Ex. Gp.: 155

4,654,765, Re. S.N. 202,698, Filed June 3, 1988, Cl. 362/238, LOW VOLTAGE LIGHTING SYSTEM REPLACEABLE BULB ASSEMBLY, Jerry H. Laidman, Owner of Record: *Inventor,* Attorney or Agent: Stephen L. King, Ex. Gp.: 346

4,660,829, Re. S.N. 187,511, Filed Apr. 28, 1988, Cl 273/29A, BODY JOINT POSITION MONITORING SYSTEM, Paul J. Whiteneir, Owner of Record: *Inventor,* Attorney or Agent: Gilbert L. Wells, Ex. Gp.: 334

4,711,165, Re. S.N. 202,211, Filed June 3, 1988, Cl. 99/353, LASAGNA PRODUCT, Leno Codino, Owner of Record: *Inventor,* Attorney or Agent: Albert L. Schmeiser, Ex. Gp.: 242

4,749,097, Re. S.N. 207,291, Filed June 15, 1988, Cl. 220/4B, TWO SECTION BAKERY CONTAINER, Morris Rosman, Owner of Record: *Inventor,* Attorney or Agent: Dillis V. Allen, Ex. Gp.: 241

Erratum

In the Reissue Applications Filed published at 1089 OG 5 (Apr. 3, 1988), the serial number for patent number 4,628,159 should be 137,886.

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a))

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,634,938, Reexam. No. 90/001,540, Requested: June 22, 1988, Cl. 433/29, DENTAL HANDPIECE, Seymour M. Hutchinson, Owner of Record: *Kinetic Instruments Inc., Bethel, Conn.,* Attorney or Agent: Unknown, Ex. Gp.: 330, Requester: Midwest Dental Products Corp., Des Plaines, Ill.

4,235,553, Reexam. No. 90/001,542, Requested: June 28, 1988, Cl. 366/208, MATERIAL MIXER, John C. Gall, Owner of Record: *Sears Roebuck & Co., Chicago, Ill.,* Attorney or Agent: Unknown, Ex. Gp.: 240, Requester: Highland Laboratories Inc., Ashland, Mass.

4,656,957, Reexam. No. 90/001,541, Requested: June 24, 1988, Cl. 111/7, LIQUID FERTILIZER APPLICATOR, Gerald E. Williamson, et al., Owner of Record: *Yetter Manufacturing Co., Colchester, Ill.,* Attorney or Agent: Dennis McWilliams,, Ex. Gp.: 330, Requester: AG Systems Inc., Hutchinson, Minn.

Patents Available for License or Sale

4,457,723. COLOR CHANGEABLE FABRIC, *Clarence R. Tate.* Contact: John F. Witherspoon, Suite 1200, 1627 I St., NW., Washington, D.C. 20006.

4,528,237. COLOR CHANGEABLE FABRIC CONTAINING MICROMAGNETS ADHERED TO A SUBSTRATE, *Clarence R. Tate.* Contact: John F. Witherspoon, Suite 1200, 1627 I St., NW., Washington, D.C. 20006.

4,576,178. AUDIO SIGNAL GENERATOR, *David Johnson.* Contact: Wyatt, Gerber, Shoup & Badie, One Rockefeller Pl., New York, N.Y. 10020

4,659,619. COLOR CHANGEBLE FABRIC, *Clarence R. Tate.* Contact: John F. Witherspoon, Suite 1200, 1627 I St., NW., Washington, D.C. 20006.

4,693,271. HORIZONTALLY MOUNTED SUBMERSIBLE PUMP ASSEMBLY, *Benjamin F. Hargrove.* Rt. 9, Box 192-B, West Monroe, La. 71291

4,745,766. DEHUMIDIFIER CONTROL SYSTEM, *Chester A. Bahr.* Kohler Co., MS 072, Kohler, Wis. 53044.

4,752,498. METHOD AND APPARATUS FOR PRODUCTION OF THREE-DIMENSIONAL OBJECTS BY PHOGOSOLIDIFICATION, *Efrem V.*

VOL
1093
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Fudim. 4815 N. Marlborough Dr., Milwaukee, Wis. 53217.

4,747,177. CHIMNEY SWEEP, *Lowell Drechsel*, Rt. 1, Box 131, Erhard, Minn. 56534.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. These persons have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished the Director, Office of Enrollment and Discipline on or before Dept. 9, 1988:

Atkinson, William M., 7807 Byrds Nest Pass, Annandale, Va. 22003
Brookes, Ann E., 602 Valley View Ave., SW., Leesburg, Va. 22075
Cox, Ronald B., 6370 Silver Ridge Cir., Alexandria, Va. 22310
Duggan, Donovan F., 12921 Walnut View Ct., Germantown, Md. 20874
Handren, Frederick R., 2301 Jeff. Davis Hwy., #1110, Arlington, Va. 22202
Johnson, Warren R., 6982 Old Brentford Rd., Alexandria, Va. 22310
Lane, Hadd S., 4925 River Rd., Bethesda, Md. 20816
Leppink, James A., 9619 Jomar Dr., Fairfax, Va. 22032
Martineau, Francois, 275, Rue Viviane, Mt. Royal, Quebec, Canada H3P 1P1
Mason, Robert M., 1943 Greenview, Northbrook, Ill. 60062
McNeil, William H., 5004 Norbeck Rd., Rockville, Md. 20853
Miller, Roger M., 145A Avenue D, Gunter AFS, Ala. 36115
Mullins, J. G., 19017 Sedley Terr., Gaithersburg, Md. 20879
Obee, Jane E., 2000 S. Eads St., #317, Arlington, Va. 22202
Olds, Judith L., 933 E. Second St., Royal Oak, Mich. 48067
Olds, Theodore W. III, 933 E. Second St., Royal Oak, Mich. 48067
Ozaki, George T., 4905 Bangor Dr., Kensington, Md. 20895
Punter, William H., 2400 Virginia Ave., NW., #1117, Washington, D.C. 20037
Scott, Patricia M., 238C Presidential Dr., Greenville, Del. 19807
Thronson, Mark J., 2524B N. Fairfax Dr., Arlington, Va. 22201
Tinney, Francis J., 1372 Green Rd., Ann Arbor, Mich. 48105

CAMERON WEIFFENBACH,
July 14, 1988 *Director, Office of Enrollment and Discipline.*

Department of Commerce
Patent and Trademark Office
37 CFR §1.15
[Docket No. 80515-8115]

Requests for Identifiable Records

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking
Summary: This notice of proposed rulemaking sets forth changes that the Patent and Trademark Office (PTO) is proposing to the rules governing requests for records not disclosed to the public as part of the regular informational activity of the PTO. The present rule sets out PTO Freedom of Information Act (FOIA) procedures. The proposed rule updates these procedures and specifies that FOIA requests will be processed in accordance with Department of Commerce regulations contained in Part 4 of 15 CFR (Public Information).
Dates: Comments must be submitted on or before Sept. 20, 1988. No hearing will be held.
Address: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231 marked to the attention of Albin F. Drost.
For Further Information Contact: Albin F. Drost by telephone at [703] 557-4035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: As presently written, 37 CFR 1.15 describes procedures for obtaining documents under the Freedom of Information Act (FOIA) that have been superseded. The purpose of this rule change is to bring the PTO FOIA procedures into conformity with the Department of Commerce FOIA rules. The proposed rule directly advises requesters that the PTO will follow the Department of Commerce rules for disclosure of information under FOIA.
Other Considerations The proposed rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

The proposed rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96-354), Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. §3501 et seq.

The General Counsel of the Department of Commerce has certified to the Small Business Administration that the proposed rule change will not have a significant adverse economic impact on a substantial number of small entities [Regulatory Flexibility Act, Pub. L. 96-354] because no increase in fees or paperwork should result from this rule change.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect to the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The PTO has also determined that this notice has no federalism implications affecting the relationship between the national government and the states as outlined in Executive Order 12612.

The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. §3501 et seq., since no record keeping or reporting requirements within the coverage of the Act are placed upon the public.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Records.

For the reasons set out in the preamble and under the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. §6, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below:

Part 1 — RULES OF PRACTICE IN PATENT CASES

1. The authority citation for 37 CFR Part 1 would continue to read as follows:

Authority: 35 U.S.C. §6 unless otherwise noted.

2. Section 1.15 is proposed to be revised as follows:

§1.15 Requests for identifiable records.

(a) Requests for records, not disclosed to the public as part of the regular informational activity of the Patent and Trademark Office and which are not otherwise dealt with in the rules in this part, shall be made in writing, with the envelope and the letter clearly marked "Freedom of Information Request." Each such request, so marked, should be submitted by mail addressed to the "Patent and Trademark Office, Freedom of Information Request Control Desk, Box 8, Washington, D.C. 20231," or hand delivered to the Office of the Solicitor, Patent and Trademark Office, Arlington, Va. The request will be processed in accordance with the procedures set forth in Part 4 of Title 15, Code of Federal Regulations.

(b) Any person whose request for records has been initially denied in whole or in part, or has not been timely determined, may submit a written appeal as provided in §4.8 of Title 15, Code of Federal Regulations.

(c) Procedures applicable in the event of service of process or in connection with testimony of employees on official matters and production of Official documents of the Patent and Trademark Office in civil legal proceedings not involving the United States shall be those established in Parts 15 and 15a of Title 15, Code of Federal Regulations.

DONALD J. QUIGG,
May 24, 1988 *Assistant Secretary and Commissioner of Patents and Trademarks.*

VOL
1093
ISS
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1988
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PATENT NOTICES

Certificates of Correction for the Week of Aug. 9, 1988

B1 3,951,033	4,700,314	4,717,274	4,727,792
Re. 32,581	4,700,498	4,717,275	4,728,453
4,375,723	4,700,516	4,717,330	4,728,646
4,501,173	4,700,770	4,717,386	4,729,035
4,513,177	4,701,722	4,717,559	4,729,101
4,538,988	4,701,889	4,717,708	4,729,501
4,549,073	4,702,591	4,718,153	4,729,570
4,563,467	4,702,934	4,718,537	4,729,683
4,564,860	4,703,985	4,719,318	4,729,886
4,581,448	4,704,031	4,719,327	4,729,889
4,591,559	4,704,150	4,719,847	4,729,914
4,593,766	4,704,720	4,720,145	4,729,934
4,595,482	4,704,848	4,720,507	4,729,990
4,599,392	4,705,732	4,720,648	4,730,108
4,600,294	4,705,733	4,721,271	4,730,710
4,604,528	4,705,760	4,721,365	4,730,838
4,615,362	4,705,875	4,721,483	4,730,983
4,623,639	4,706,222	4,721,631	4,731,025
4,631,746	4,706,230	4,721,785	4,731,433
4,652,404	4,706,911	4,722,219	4,731,443
4,657,654	4,707,342	4,722,332	4,731,473
4,658,198	4,707,752	4,722,776	4,731,971
4,661,764	4,707,838	4,723,136	4,732,146
4,664,405	4,708,075	4,723,513	4,732,293
4,665,959	4,708,466	4,723,563	4,732,298
4,668,814	4,708,703	4,723,881	4,732,610
4,668,897	4,709,461	4,724,075	4,732,842
4,674,171	4,710,614	4,724,719	4,733,236
4,674,587	4,710,952	4,724,740	4,734,049
4,675,261	4,711,032	4,724,905	4,734,159
4,675,385	4,711,562	4,724,917	4,734,589
4,675,550	4,712,432	4,725,198	4,734,631
4,679,514	4,712,521	4,725,534	4,734,643
4,680,219	4,713,302	4,725,561	4,734,876
4,688,030	4,713,329	4,725,859	4,734,940
4,688,073	4,713,440	4,725,878	4,736,009
4,691,144	4,713,571	4,725,936	4,736,361
4,691,846	4,713,759	4,726,305	4,736,433
4,692,465	4,713,968	4,726,369	4,736,553
4,696,372	4,714,068	4,726,539	4,736,615
4,696,898	4,714,226	4,726,952	4,736,912
4,697,240	4,714,227	4,727,437	4,737,273
4,698,228	4,715,819	4,727,459	
4,700,119	4,716,454	4,727,736	

Disclaimers

3,777,099.—*Melvin L. Levinson*, Avenel, N.J. METHODS OF HEATING AN ARTICLE IN A MICROWAVE OVEN. Patent dated Dec. 4, 1973. Disclaimer filed June 9, 1988, by the *inventor.*

Hereby enters this disclaimer to claims 9 and 10 of said patent.

3,985,991.—*Melvin L. Levinson*, Avenel, N.J. METHODS OF MICROWAVE HEATING IN METAL CONTAINERS. Patent dated Oct. 12, 1976. Disclaimer filed June 9, 1988, by the *inventor.*

Hereby enters this disclaimer to claims 10 and 11 of said patent.

4,744,044.—*Howard H. Stover*, Pasadena; *Kenneth E. Alexander*, Villa Park, both of Calif.; and *Fred P. Alexander*, Stateline, Nev. HAND-HELD CALCULATOR FOR DIMENSIONAL CALCULATIONS. Patent dated May 10, 1988. Disclaimer filed June 2, 1988, by the assignee, *Electronic Teacher's Aids, Inc.*

The term of this patent subsequent to May 10, 1988, has been disclaimed.

Dedications

4,114,117.—*Michael A. Ford*, Buckinghamshire, England. TUNABLE ELECTRICAL FILTER NETWORK. Patent dated Sept. 12, 1978. Dedication filed May 26, 1988, by the assignee, *Perkin-Elmer Ltd.*

Hereby dedicates to the Public the remaining term of said patent.

4,430,228.—*Laurene O. Paterson*, Adrian, Mich. PROCESS FOR REMOVING DISSOLVED IRON FROM WATER. Patent dated Feb. 7, 1984. Dedication filed May 2, 1988, by the *inventor.*

Hereby dedicates to the Public the entire term of said patent.

4,451,361.—*Laurene O. Paterson*, Adrian, Mich. APPARATUS FOR REMOVING DISSOLVED IRON FROM WATER. Patent dated May 29, 1984. Dedication filed May 2, 1988, by the *inventor.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimer and Dedications

Des. 289,529.—*Samuel D. Cappotto*, Syracuse; and *Anthony Bartolone*, Lansing, both of N.Y. RIBBON CASSETTE. Patent dated Apr. 28, 1987. Disclaimer and Dedication filed June 7, 1988, by the assignee, *Smith Corona Corp.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

4,521,286.—*Christopher M. Horwitz*, Summer Hill, Australia. HOLLOW CATHODE SPUTTER ETCHER. Patent dated June 4. 1985. Disclaimer and Dedication filed June 8, 1988, by the assignee, *Unisearch Ltd.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

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Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement.
Box 7	Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8	All papers for the Office of the Solicitor except communications relating to pending litigation.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of patent and trademark applications.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box FWC	Requests for File Wrapper Continuation Applications. (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	Issue Fee Transmittals (PTOL Form 85) and associated fees and corrected drawings.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non Fee Amendment	Non-fee amendments to patent applications.
Box OED	Mail for the Office of Enrollment and Discipline.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain data received and/or serial number for patent applications prior to the Office's standard notification (return post card or the official "Filing Receipt", "Notice to File Missing Parts," or " Notice of Incomplete Information Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

VOL
1093
ISS
2
AG
9
1988
UMI

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	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
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	Cleveland Public Library	(216) 623-2870
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Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin -Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 18, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	12-9-86
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	10-24-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-8-86
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-14-85
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-6-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	1-12-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	10-3-86
DESIGN, GROUP 290—K. L. CAGE, Director	6-26-85
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-13-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	10-04-85
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	4-9-86
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	2-20-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	7-1-87

Expiration of patents: The patents within the range of numbers indicated below expire during June 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,581,312 to 3,590,387, inclusive

Plant Patents ..... None

VOL 1093 ISS 2 AG 9 1988 UMI

REEXAMINATIONS

AUGUST 9, 1988

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,425,426 (907th)

RADIOGRAPHIC ELEMENTS EXHIBITING REDUCED CROSSOVER

Thomas I. Abbott, Rochester, and Cynthia G. Jones, Bergen, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Reexamination Request No. 90/001,255, Jun. 8, 1987.

Reexamination Certificate for Patent No. 4,425,426, issued Jan. 10, 1984, Ser. No. 431,910, Sep. 30, 1982.

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—502

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–15 is confirmed.

1. In a radiographic element comprised of first and second imaging means,

at least said first imaging means including a silver halide emulsion comprised of a dispersing medium and radiation-sensitive silver halide grains, and

a support interposed between said imaging means capable of transmitting radiation to which said second imaging means is responsive

the improvement comprising said first imaging means containing

tabular silver halide grains having a thickness of less than 0.2 micron and an average aspect ratio of from 5:1 to 8:1 accounting for at least 50 percent of the total projected area of said silver halide grains present in said silver halide emulsion and

spectral sensitizing dye adsorbed to the surface of said tabular silver halide grains in an amount sufficient to substantially optimally sensitize said tabular grains.

B1 4,569,444 (908th)

EGG PROCESSING SYSTEM

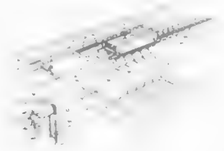
John C. McEvoy, Canton; George N. Bliss, Franklin, and Leslie P. Thomas, Canton, all of Mich., assignors to Diamond Automations, Inc., Framington, Mich.

Reexamination Request No. 90/001,213, Apr. 8, 1987.

Reexamination Certificate for Patent No. 4,569,444, issued Feb. 11, 1986, Ser. No. 394,162, Jul. 1, 1982.

Int. Cl.[4] A01K *43/08;* **B65G** *47/46*

U.S. Cl. 209—510



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 9, 10, 14, 23–25** and **29** are determined to be patentable as amended.

Claims **2–8, 11–13, 15–22, 26–28** and **30**, dependent on an amended claim, are determined to be patentable.

New claims **31–56** are added and determined to be patentable.

1. An apparatus for transferring eggs continuously conveyed by a first conveyor means to a receiving station of an egg grading apparatus at which the eggs are packaged according to their physical characteristics, comprising:

means, disposed adjacent to said first conveyor means at said receiving station, for releasing eggs having the same physical characteristics from said first conveyor means in a predetermined sequence at said receiving station, said releasing means being movable with respect to said receiving station, and

means [,] *operatively communicative with drive means for said first conveyor means and responsive to said drive means and* coupled to said releasing means, for varying the position of said releasing means with respect to said receiving station according to the speed of said first conveyor means, *said means for varying being responsive to variations in the speed of said first conveyor means thereby to adjust the position of said releasing means to compensate for said variations in the speed of said first conveyor means.*

B1 4,684,404 (909th)

DISSOLUTION OF NOBLE METALS

Guy I. Z. Kalocsai, Armidale, Australia, assignor to Kaljas Pty. Limited, North Sydney, Australia

Reexamination Request No. 90/001,385, Dec. 1, 1987.

Reexamination Certificate for Patent No. 4,684,404, issued Aug. 4, 1987, Ser. No. 784,463, Oct. 4, 1985.

Continuation of Ser. No. 628,371, Jul. 6, 1984, abandoned.

Claims priority, application Australia, Jul. 8, 1983, PG0202

Int. Cl.[4] C01G *7/00;* **C22B** *11/04*

U.S. Cl. 75—118 R

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1** and **4** is confirmed.

Claims **2, 3** and **5** are determined to be patentable as amended.

Claims **6–19**, dependent on an amended claim, are determined to be patentable

New claims **20–22** are added and determined to be patentable.

2. A process of dissolving metallic gold or removing metallic gold from a gold-containing material comprising the steps of:

VOL 1093 ISS 2 AUG 9 1988 UMI

(a) contacting metallic gold or a gold-containing material with an aqueous bromine-based composition comprising:
at least one source of cations, which source is able to highly dissociate in the solution, said source being a strong base or producing in solution at least one cation selected from the group consisting of sodium, potassium, ammonium, ferric and lithium ions;
a bromine containing substance selected from the group consisting of bromine *gas, bromine liquid and bromine water, said substance being capable of liberating an effective amount of bromine* in a concentration of not more than 5 wt %; and
sufficient acid or base such that the pH of the composition in contact with said gold is in the range of 5.6 to 8.5,
to dissolve the gold in the aqueous composition; and
(b) recovering the dissolved gold from the aqueous composition.

REISSUES

AUGUST 9, 1988

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,726
ENVELOPE GENERATOR

Teruo Hiyoshi; Akira Nakada; Shigeru Yamada; Eiichiro Aoki, all of Hamamatsu, and Eiichi Yamaga, Tokyo, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Original No. 4,185,532, dated Jun. 29, 1980, Ser. No. 837,599, Sep. 28, 1977. Application for reissue May 30, 1980, Ser. No. 154,993
Claims priority, application Japan, Sep. 29, 1976, 51-116776
Int. Cl.[4] G10H *1/02*
U.S. Cl. 84—1.26 **19 Claims**



15. An envelope generator used in an electronic musical instrument for generating in real time an envelope waveshape signal which is used to impart a characteristic varying with time to a musical tone produced by said instrument, the value of said envelope waveshape signal that is being generated at each present time being designated the current value, comprising:
first register means for storing the current value of said envelope waveshape signal,
arithmetic means, receiving waveshape variation data, for arithmetically combining the waveshape variation data with at least a part of said stored envelope waveshape signal, the resultant new current value envelope waveshape signal being stored in said register means in place of the value previously stored therein, upon each such combining operation of said arithmetic means,
control means for producing the variation data and for programmatically altering the arithmetic operations of said arithmetic means each in accordance with different parts of a selected waveshape, said different parts including attack, decay and release, and
feedback means for feeding back at least a part of the stored current value envelope waveshape signal from said register means to said control means so that said alteration of arithmetic operations and said production of said variation data by the control means are controlled both in response to said fed back part and with respect to the different attack, decay and release parts of such selected waveshape, the envelope waveshape signal thereby being altered programmatically to obtain a preselected time variation thereof corresponding to said selected envelope waveshape said register means thereby storing said envelope waveshape signal during attack, decay and release parts of said envelope, the stored current value thereof being changeable by cooperation of said control means and said feedback means during all of said parts of said selected waveshape.

19. An envelope waveshape generator comprising:
a source of clock pulses occurring at a certain frequency,
a digital counter connected to be stepped upon occurrence of said clock pulses,
feedback computation means, cooperating with said counter, for modifying the effective rate at which the contents of said counter is stepped in response to the accrued contents of said counter reaching certain values so as to achieve a certain relationship of accrued count as a function of time,
a memory storing at least part of a musical tone waveshape, and means for accessing said memory repetitively with access data that varies progressively according to the frequency of a selected tone,
envelope imparting means for imparting to the tone waveshape accessed from said memory an envelope having an amplitude equivalent in value to said accrued count as a function of time, said envelope having attack, decay and release portions, and
clock pulse frequency selection means for selectively controlling the frequency of said clock pulses during different portions of said imparted envelope.

Re. 32,727
ROTARY OFFSET SHEET PRINTING MACHINE FOR PRIME AND VERSO PRINTING

Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Original No. 4,356,766, dated Nov. 2, 1982, Ser. No. 308,364, Oct. 5, 1981. Application for reissue Apr. 3, 1987, Ser. No. 35,654
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1980, 3040389
Int. Cl.[4] B41F *13/24*
U.S. Cl. 101—232 **3 Claims**



1. Rotary offset sheet printing machine for prime and verso printing having
an impression cylinder (2);
three paired rubber cylinder-plate cylinder combinations (3, 4; 5, 6; 7, 8), each including a first, second and third rubber cylinder (3, 5, 7) *and a first, second and third printing plate cylinder (4,6,8), a first prime printing being applied to the sheets by the first rubber cylinder-plate cylinder combination (3,4) while the sheets are transported between the first rubber cylinder (3) and the impression cylinder (2)*;
and a transport chain system including gripper means (13) and a chain (10) to transport sheets [between the first rubber cylinder (3) and] *from* the impression cylinder (2) [for first prime printing] and [past] *partly around* the second rubber cylinder (5) for second prime printing, and further past the third rubber [printing] *cylinder* (7) for verso printing,
wherein, [in accordance with the invention,]
the transport chain [10] (*10*) is carried about the second rubber cylinder (5) and receives sheets from the impression cylinder (2) and leads said sheets over part of the circumference of the second rubber cylinder (5) to thereby have the second prime printing applied, and further lead the sheets [against] *between* the third rubber cylinder (7) [between] *and* the second rubber cylinder

VOL 1093 ISS 2 AG 9 1988 UMI

(5) to have the verso printing applied, the second rubber cylinder (5) forming the counter cylinder for the third rubber cylinder (7).

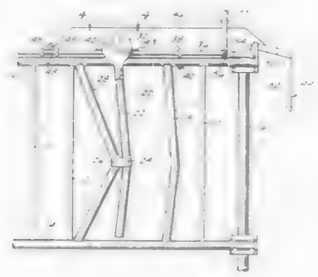
Re. 32,728
CATTLE STANCHION APPARATUS

Teo Albers, Sr., 18007 Arline Ave., Artesia, Calif. 90701

Original No. 4,495,897, dated Jan. 29, 1985, Ser. No. 516,384, Jul. 22, 1983. Continuation-in-part of Ser. No. 431,264, Sep. 30, 1982, Pat. No. 4,476,815. Application for reissue Jan. 27, 1987, Ser. No. 7,454

Int. Cl.[4] A01K *1/06*

U.S. Cl. 119—148 **21 Claims**



17. In cattle stanchion apparatus including fixed and release stanchions laterally spaced apart to define a head opening for an animal; fixed structure including mounting means mounting said release stanchion for pivotal movement from an open position in which the upper part of said head opening is enlarged to enable an animal to place its head through said opening, to a closed position in which said upper part of said head opening is narrowed to hold the animal's head in said opening, and beyond said closed position to a downed cattle release position in which said upper part of said opening is further narrowed and wherein the lower part of said opening is enlarged to enable a downed animal to withdraw its head; and a generally horizontally extending positioner pivotable about a longitudinal axis between a first position and a second position; the improvement comprising:

coupler means carried by said positioner;

latch means carried by the upper extremity of said release stanchion and having a latch portion movable along said positioner in one direction to enable movement of said release stanchion from said open position to said closed position, said latch portion being movable along said positioner in the opposite direction for engagement with said coupler means in said first position of said positioner to stop movement of said release stanchion from said closed position to said open position; and

downed cattle latch and coupler means operative to engage said release stanchion in said closed position to prevent movement of said release stanchion to said downed cattle release position, said latch and coupler means being manually actuable to enable movement of said release stanchion to said downed cattle release position.

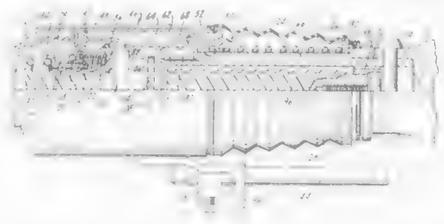
Re. 32,729
COMPRESSION TYPE RAILROAD BRAKE SLACK ADJUSTER

Eugene W. Schmitt, Lockport, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Original No. 4,593,797, dated Jun. 10, 1986, Ser. No. 631,454, Jul. 16, 1984. Application for reissue Feb. 12, 1987, Ser. No. 31,950

Int. Cl.[4] F16D *65/66, 65/38*

U.S. Cl. 188—196 D **9 Claims**



8. A compression-type slack adjuster for use in brake rigging arranged such that during application of the brakes the slack adjuster is in compression, comprising:

a clutch housing assembly having first and second opposed clutch surfaces formed therein and adapted at one end to be attached to a portion of a brake force transmitting means, the other end being open;

an adjusting screw assembly having a threaded end fitting telescopically in the open end of the clutch housing, the other end of the screw assembly being adapted to be attached to another portion of the brake force transmitting means;

a clutch disc rotatably mounted on the adjusting screw threads and disposed between the first and second clutch surfaces;

a trigger element adjacent a portion of the clutch housing;

main spring means engaging the adjusting screw assembly and the clutch housing assembly and urging said assemblies in opposite directions;

a trigger spring bearing against the clutch housing assembly and the trigger element and urging the trigger element and clutch housing assembly in opposite directions;

a plurality of clutch pins slidably mounted in the clutch housing assembly and engageable between the trigger element and clutch disc so as to transmit the trigger spring force to the clutch disc;

a brake application force applied to said clutch housing assembly by said brake force transmitting means moving said clutch housing assembly, trigger element and adjusting screw assembly in a brake application force transmitting direction, means for limiting movement of said trigger element, with subsequent brake application force movement compressing said trigger spring and removing the trigger spring force from the clutch pins; and

a lock-up spring disposed between the clutch housing assembly and clutch disc to apply a force to the clutch disc opposite that applied by the trigger spring.

PLANT PATENTS

GRANTED AUGUST 9, 1988

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing

6,243
MINIATURE ROSE PLANT NAMED 'RUIMARSO'

Gijsbert De Ruiter, Hazerswoude, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Jul. 21, 1986, Ser. No. 887,706

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—9 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized by its dwarf, compact, free blooming growth habit, producing blooms of delicate pink color of about 4.5 centimeters in diameter, the blooms having petals of heavy substance and the plant being suitable for use as a pot plant.

6,244
MINIATURE ROSE PLANT NAMED 'RUIFORTO'

Gijsbert de Ruiter, Hazerswoude, Netherlands, assignor to De Ruiter's Nieuwe Rozen B.V., Hazerswoude, Netherlands

Filed Jul. 22, 1986, Ser. No. 888,152

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein shown and described, characterized by the dwarf, compact, free blooming growth habit, producing brilliant coral-red blooms, approximately 38 millimeters in diameter, with petals of heavy substance; the plant being suitable as a pot plant as well as a garden decoration.

6,245
REIMER CULTIVAR PEAR TREE

Frank Reimer, deceased, late of Inglewood, Calif. (by Matthew G. McCoy, administrator), assignor to The State of Oregon-/Oregon State University, Corvallis, Oreg.

Filed Apr. 25, 1986, Ser. No. 856,153

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree substantially as described and illustrated, obtained as a seedling from a seed parent Max Red Bartlett (U.S. Plant Pat. No. 741) and a pollen parent Comice, characterized by its ability to produce a heavy crop of large, attractive, red-skinned fruit of excellent dessert quality which have long storage life.

6,246
PHILODENDRON PLANT

Howard N. Miller, Gainesville, Fla., assignor to Cora McColley, Orlando, Fla.

Filed Jun. 16, 1986, Ser. No. 874,860

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Philodendron plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of compact rosette form with thick narrowly ovate to elliptic leaves, which are dark, brick-red color as new leaves becoming dark-reddish-green at maturity, petioles of black-red, short thickened prominently winged form, presenting over all a very compact, bushy, spreading plant of a height substantially less than its spread.

VOL
1093

ISS
2

AG
9

1988

UMI

PATENTS

GRANTED AUG. 9, 1988

ERRATA

For CLASS	See PATENT NO.
401-206	4,762,433
156-611	4,762,576
428-040	4,762,680
522-099	4,762,887
428-122	4,762,904
357-074	4,763,188
318-254	4,763,247

VOL
1093
ISS
2
AG
9
1988
UMI

PATENTS

GRANTED AUGUST 9, 1988

GENERAL AND MECHANICAL

4,761,834

SYSTEM FOR FACILITATING PROTECTION OF AN ATHLETE'S HIP AND PELVIC AREA

Joseph J. Kolb, 4 Gilbert Ave., Smithtown, N.Y. 11787

Continuation-in-part of Ser. No. 664,242, Oct. 24, 1984, abandoned. This application Jul. 11, 1986, Ser. No. 884,381

Int. Cl.[4] **A41D** *13/00*

U.S. Cl. 2—2 **22 Claims**



1. A hip pad assembly for use in protecting the hip an pelvic area of an athlete, comprising: A pair of thin, lightweight resilient protective pad assemblies and a configuration facilitating positioning over the hip and iliac crest area of the pelvis of the user, the pad assemblies being separate and adapted to be simultaneously positioned on the hips on both sides of the user respectively, each pad assembly being substantially T-shaped in configuration and including a horizontally extending iliac pad in a substantially vertically extending trochanter pad depending intermediate the ends of the iliac pad, an elongated, thin lightweight belt having an elastic portion and Velcro type fastener means having mating fastener elements at the free ends of the belt to form attachment means for coupling the belt and pad assembly in a manner that facilitates relative sliding movement therebetween, the Velcro fastener means being dimensioned to permit attachment between the mating fastener elements thereof over a range of points thereby making the assembly adjustable to fit a variety of different size athletes and to be quickly and efficiently put on or removed by the athlete before, during and subsequent to the athletic event, the elasticity of the belt and the capability of the pad assemblies to move relative to the attached belt and each other facilitating comfortable use by the athlete while accommodating a variety of different athletic movements, attachment means including each pad having a series of receiver elements affixed thereto through which the belt extends and the belt being sufficiently smaller in cross section than the receiver elements so as to permit relative or sliding movement therebetween, and the iliac pad having as predetermined configuration and size to be positioned to cover and protect the iliac crest of the pelvis while the trochanter pad is positioned to cover and protect the head of the femur.

4,761,835

INFORMATION INDICATING GLOVE

Si-Fong Chen, Room A, 10F, No. 344, Min Sheng E. Road, Taipei, Taiwan

Filed Jun. 9, 1987, Ser. No. 59,947

Int. Cl.[4] **A41D** *19/00*

U.S. Cl. 2—160 **2 Claims**

1. An information-indicating glove comprising:

a glove portion;

an information indication portion including:

an observation cover, one edge thereof being attached to said glove portion,

a transparent plate disposed inside said observation cover,

at least one information indication means,

an information indicator support disposed inside said transparent plate and provided with at least one aperture retaining said information indication means,

a securement flap with one edge thereof attached to said glove portion, said securement flap being secured to said observation cover, and

a tightening ring secured to an edge of said observation cover remote from said glove portion; and



a tightening strip set on said glove portion opposite to said information indication portion, said tightening strip being provided with Velcro fasteners on inner surfaces of an upper portion and a lower portion thereof.

4,761,836

WASHING DEVICE FOR PARTS OF HUMAN BODY

Osamu Tsutsui, Kitakyushu; Hirohiko Yasuda, Yamaguchi; Hidehiko Kuwahara, Kitakyushu; Hirofumi Takeuchi, Kitakyushu; Keiji Hayashi, Kitakyushu; Mitsuhiro Higuchi, Kitakyushu, and Akio Fujii, Kitakyushu, all of Japan, assignors to Toto Ltd., Kitakyushu, Japan

Filed Dec. 30, 1986, Ser. No. 947,930

Claims priority, application Japan, Jul. 10, 1986, 61-106583[U]

Int. Cl.[4] **A47K** *3/20*

U.S. Cl. 4—420.2 **6 Claims**



1. In a washing device for parts of the human body in a toilet chamber or bathroom, wherein said device comprises a cold water supply passage having an upstream end connected to an outlet opening of a cold water supply source, a heated water supply passage having an upstream end connected to an outlet opening of a heated water supply soure, a hot and cold water mixing valve having an inlet opening thereof connected to a downstream end of said heated water supply passage and a downstream end of said heated water supply, and a mixed water ejecting nozzle having an inlet opening communicating with an outlet opening of said hot and cold water mixing valve

VOL 1093 ISS 2 AG 9 1988 UMI

by way of a mixed water supply passage; the improvement wherein

said heated water supply source comprises a boiler, and said boiler and cold water supply source are both installed outside of said toilet chamber or bathroom, and further comprising

a controller,

a heated water drainage solenoid valve,

a heated water temperature sensor on said heated water supply passage, said sensor comprising means for transmitting to said controller, said controller comprising means responsive to the detection of a temperature below a predetermined temperature for controlling said heated water drainage solenoid valve to drain heated water in said heated water supply passage so as to supply said heated water of a predetermined temperature to said hot and cold water mixing valve,

a power operated motor for said mixing valve,

a mixed water temperature sensor in said hot and cold water mixing valve for detecting the temperature of mixed water in said hot and cold water mixing valve and for sending a signal to said controller when the temperature detected thereby is below a predetermined temperature, said controller being responsive to said last mentioned signal for controlling said power operated motor to change the mixing ratio of said heated water and cold water from said cold water supply passage, and

a solenoid valve controlled by said controller and mounted on said mixed water supply passage.

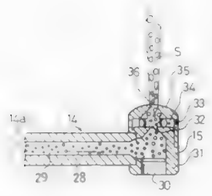
4,761,837

WASHING DEVICE FOR PARTS OF BODY

Hisanobu Takeda, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 24, 1986, Ser. No. 911,287
Claims priority, application Japan, Sep. 24, 1985, 60-210523
Int. Cl.[4] A47K *3/22;* **A61H** *35/00*
U.S. Cl. 4—443 **4 Claims**





1. A washing device for parts of a body for use in combination with a toilet comprising:

water source means;

water heating means for heating water supplied from said water source means;

pump means having a suction side connected to said water heating means for sucking up the water heated by said water heating means and supplying the water under pressure;

said pump means having an air intake port provided in said suction side for introducing air into the water to form an air-water foam;

said air intake port of said pump means is connected to an air control valve having means for regulating the amount of air introduced into said pump means; and

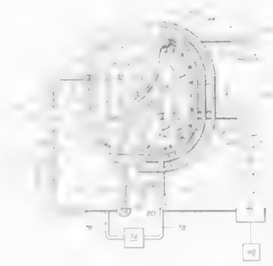
nozzle means connected to said pump means for ejecting the pressurized air-water foam toward parts of a body as a controlled jet.

4,761,838

CONTRAST-HEALING WATER SPA SYSTEM

John W. Hargrove, Houston, Tex., assignor to Nancy A. Brown, Houston, Tex.

Filed May 4, 1987, Ser. No. 46,834
Int. Cl.[4] A61H *33/02*
U.S. Cl. 4—542 **19 Claims**



1. A contrast-healing water spa system comprising

a monolithically formed double-chambered tub having substantially equal volumes, said chambers separated by an integrally formed insulated structural wall,

an independent hot water circulating means for withdrawing water from one of said tub chambers at a first predetermined flow rate and heating the water to a preselected temperature before returning the water to said one tub chamber through a plurality of injection ports for agitating the hot water in said one tub chamber,

an independent cold water circulating means for withdrawing water from the other of said tub chambers at a second predetermined flow rate and chilling the water to a preselected temperature before returning the water to said other tub chamber and deflecting the inlet stream of water for maintaining the cool water in a calm surface condition in said other tub chamber,

disinfecting means cooperating with said hot and cold water circulating means for injecting a

disinfectant into said hot and cold water circulating means after the water has been heated and chilled for disinfecting said heated and chilled water prior to return to said respective tub chambers, and

cross-feed means cooperating with said hot and cold water circulating means downstream of said disinfecting means for permitting cross-feed of heated water at a low preselected flow rate from said hot water circulating means into said cold water circulating means for heating the chilled water prior to return to the other tub chamber for maintaining the water temperature within the other tub chamber at a preselected temperature.

4,761,839

SINK SPRAY AND AUXILIARY ATTACHMENT DEVICE

Richard M. Ganaway, 1845 S. Highland, Bldg. 11, Apt. 3, Clearwater, Fla. 33516

Filed Nov. 17, 1986, Ser. No. 931,091
Int. Cl.[4] E03C *1/02*
U.S. Cl. 4—654 **7 Claims**



1. A combination sink spray device and auxiliary attachment device comprising:

(a) a sink spray housing having an upstream stem and downstream stem integrally connected to a valve housing containing internally a valve for controlling the flow of water through the housing;

(b) an annular opening at an entrance to an interior channel of the upstream stem for receiving water in the upstream stem and an annular opening at an exit from an interior channel of the downstream stem for discharging water from the downstream stem;

(c) a slot on an exterior surface of the valve housing and the downstream stem inserted into an interior cylindrical channel of the auxiliary attachment device, the interior cylindrical channel having an interior wall;

(d) a locking tab integral with the interior wall in the auxiliary attachment device and projecting from the wall towards a center of the channel;

(e) the locking tab capable of being inserted into an entrance groove leading to the slot of the valve housing to seat the auxiliary attachment device; and

(f) the locking tab capable of moving from a first engaging position to a second engaging position in the slot to open the valve within the sink spray housing.

4,761,840

PORTABLE TOILET CABANA

George W. Harding, Clearwater, Fla., assignor to Poly-John Enterprises Corp., Whiting, Ind.

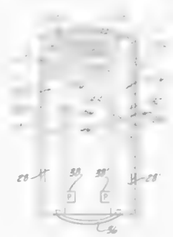
Continuation of Ser. No. 810,665, Dec. 19, 1985, abandoned.
This application Oct. 20, 1987, Ser. No. 110,591
Int. Cl.[4] A47K *4/00*
U.S. Cl. 4—664 **3 Claims**

1. An improved portable toilet cabana for use in remote location, said cabana including an enclosure having four walls a top and bottom and a door in one of said four walls for entry into said enclosure and a self-contained water supply mounted within said enclosure; said improved toilet cabana comprising:

two separate reservoirs for containing said self-contained water supply said separate reservoirs supplying both hot and cold running water as needed, each of said reservoirs being an integral unit with one reservoir adapted to provide hot water and the other reservoir adapted to provide cold water;

each of said integral reservoirs being sectioned into an upper and a lower watertight compartment; said lower compartment having a larger capacity than said upper compartment for storing a supply of water therein to be supplied to said upper compartment when the level of said upper compartment is below a predetermined level, said compartments being in fluid communication with one another such that water may be delivered from said lower compartment to said upper compartment when the water level of said upper compartment reaches said predetermined level;

a valve protruding from said upper compartment for selectively releasing water from said upper compartment for use; said valve being positioned between said upper and



lower compartments at the bottom of said upper compartment;

a water inlet extending through one of said walls of said cabana and interconnected to said lower compartment of one of said reservoirs;

interconnecting means for interconnecting said reservoirs so that water delivered to said lower compartment of one of said reservoirs is communicated between said reservoirs to fill both of said lower compartments of said reservoirs;

bi-directional heat transfer means operatively connected to each of said upper sections to maintain said water in said upper sections at said predetermined temperatures with the water in one of the upper sections being heated and the water in the other of the upper sections being cooled; and
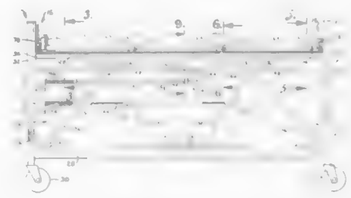
solar power means for providing power to said bi-directional heat transfer means.

4,761,841

HOSPITAL GURNEY HAVING A PATIENT TRANSFER DEVICE

Ralph E. Larsen, Box 35, Osceola, Mo. 64776

Filed May 11, 1987, Ser. No. 48,568
Int. Cl.[4] A61G *7/08*
U.S. Cl. 5—81 R **8 Claims**



1. A gurney for transporting a hospital patient resting thereon and for safely and conveniently transferring the pa-

VOL 1093 ISS 2 AG 9 1988 UMI

tient between said gurney and a hospital bed, examination table, or the like said gurney comprising:

a rollable support frame including means for rolling supportive engagement with a floor surface;

a patient conveyor including a support structure and conveyor material presenting a patient-support surface shiftably coupled with said structure for lateral shifting movement relative thereto;

means shiftably coupling said conveyor with said frame for lateral, outward shifting of said conveyor relative to said frame, said conveyor presenting an outwardly extended portion when shifted laterally outwardly from said frame; and

conveyor support means for supporting said extended portion when said conveyor shifted laterally outwardly from said frame, said conveyor support means including:

a conveyor support plate, and

means shiftably coupling said plate with said frame below said conveyor for lateral, outward shifting of said plate relative to said frame, said plate presenting an outwardly extended section when shifted laterally outwardly relative to said frame, said outwardly extended conveyor portion including means for rolling supportive engagement with said plate section when said conveyor and said plate are extended laterally outwardly from said frame.

4,761,842

INVALID HANDLING DEVICE

Rudolf Weiner, Danzinger Strasse 62, 6360 Friedberg, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 5,771

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1986, 3602105; Jun. 2, 1986, 3618526

Int. Cl.[4] A61G *7/10*

U.S. Cl. 5—81 B **10 Claims**



1. An invalid handling device with a vertical standard and a slide which is movable along the standard and connectable with a holding device to carry an invalid, said device comprising a lifting device inside the standard to move the slide, the slide being guided outside the standard (1); and a suspending cable running from the slide upwards to a return point and from there down to a fixed point and wherein the return point is movable relative to the standard by means of the lifting device.

4,761,843

HEMORRHOID SEAT CUSHION

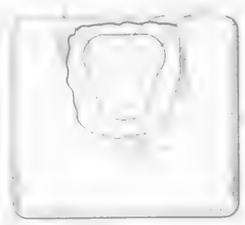
Eric C. Jay, Boulder, Colo., assignor to Jay Medical, Ltd., Boulder, Colo.

Continuation-in-part of Ser. No. 736,291, May 20, 1985, Pat. No. 4,660,238. This application Apr. 24, 1987, Ser. No. 42,172

The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.

Int. Cl.[4] A61F *5/34;* **A47C** *27/08;* **A61G** *7/04*

U.S. Cl. 5—431 **8 Claims**



1. A portable hemorrhoid supporting cushion assembly comprising a supporting surface, said cushion assembly adapted to be removably positioned on a generally horizontal surface that is adapted to support a seated person, said cushion assembly further comprising a pad comprising:

an envelope comprising an upper, generally smooth, generally continous and generally planar layer and a lower layer, said upper layer comprising a flexible material, said envelope being partially filled with a flowable non-gaseous fluid;

said envelope being positioned on said supporting surface, said supporting surface adapted to support a seated person and to support said pad;

said envelope being no greater in width than 7 inches, said envelope adapted to be positioned under said seated person with portions of said envelope extending at least partially beneath the ischia of said seated person, but not substantially beyond said ischia, whereby the weight of said seated person in combination with said supporting surface, causes fluid within said envelope to move inwardly toward the central longitudinal axis of said envelope and upwardly, thus providing uniform upward hemorrhoid supporting pressure greaer than 40 millimeters of mercury to the anal area of said person.

4,761,844

COMBINED HOLE MAKING AND THREADING TOOL

Manuel C. Turchan, 12825 Ford Rd., Dearborn, Mich. 48126

Continuation-in-part of Ser. No. 840,443, Mar. 17, 1986, Pat. No. 4,651,374. This application Jan. 27, 1987, Ser. No. 7,344

The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.

Int. Cl.[4] B23G *5/20*

U.S. Cl. 10—140 **7 Claims**

1. For use in a machine tool which is adapted to simultaneously rotate a cutting tool about its axis, move the cutting tool axially, and move the axis in an orbital path whereby a point on the axis of the cutting tool may be moved to define a rectilinear path or a helical path, a tool comprising:

a body having a shank at one end, a hole making means at the other end and a thread making means intermediate said ends,

and at least one chip removal passage extending from said hole making means through said thread making means,

said thread making means having a maximum diameter which is no greater than the maximum diameter of said hole making means whereby said thread making means



can enter the hole made by the hole making means without interference.

4,761,845

BONDING PRESS FOR SHOES

Herbert Funck, Am Wasserbogen 43, D-8032 Gräfelfing-Lochham, Fed. Rep. of Germany

Filed Jan. 8, 1987, Ser. No. 1,395

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1986, 3600844

Int. Cl.[4] A43D *25/06*

U.S. Cl. 12—33 **22 Claims**



1. A bonding press for cementing shoe soles to lasted uppers, said bonding press comprising:

a frame;

a supporting table mounted to said frame;

a shoe support formed with a central opening adapted to receive a lasted upper within a predetermined size range, said shoe support selectively residing on said supporting table;

last support means on said frame adjustably supporting the lasted upper in said central opening;

press hood means comprising a relatively rigid concave shell member and a pliable membrane enclosing the open side of said shell member thereby forming an interior cavity, said press hood means being pivotably mounted to said frame;

control circuit means having actuators for moving, releasing and selectively filling and venting said press hood means with compressed air, said control circuit means comprising a switching valve adapted to be automatically actuated upon insertion of the lasted upper in said central opening in said shoe support, said control circuit means being operatively coupled to the movable components of said bonding press; and

a programmable control unit connected to said control circuit means so as to control operation of said movable components and said actuators;

said last support means being horizontally and vertically movable with respect to said shoe support by position adjusting actuating means controlled by said programmable control unit.

4,761,846

MODULAR BRIDGE WITH TORSION PIPE EXPANSION LOOPS

Bobby E. Cox, Kenner, and Jay S. Smith, Metairie, both of La., assignors to Shell Offshore Inc., Houston, Tex.

Filed Jun. 30, 1987, Ser. No. 68,299

Int. Cl.[4] E01D *9/02*

U.S. Cl. 14—3 **26 Claims**



1. A bridge for connecting adjacent first and second facilities which are subjected to relative motion due to wave action on at least one of the facilities, said bridge comprising:

(A) an elongated, substantially rigid frame connecting said first and second facilities;

(B) means for dynamically decoupling the substantially rigid frame effective to limit the translation of force between the adjacent facilities through the substantially rigid frame; and

(C) a plurality of helical pipelines having torsion expansion loops connected between the adjacent first and second facilities, said helical pipelines being supported by the substantially rigid frame.

4,761,847

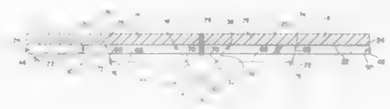
FOLDING RAMP

Carl P. Savage, 407 McGill St.; John E. Knight, Rte. 2, Box 164,, both of Martin, Tenn. 38237; J. W. Graves, Box 266, Springfield, Tenn. 37172, and Harold Tate, Rte. 1, Cottontown, Tenn. 37048

Filed Jun. 26, 1987, Ser. No. 66,519

Int. Cl.[4] E01D *1/00*

U.S. Cl. 14—69.5 **13 Claims**



1. A portable folding ramp, comprising:

a plurality of panels, each said panel having a top and bottom surface and lateral and longitudinal sidewalls;

longitudinal and lateral hinge means for foldably connecting adjoining panels along adjacent respective longitudinal and lateral sidewalls, said panels being foldable about said longitudinal and lateral hinge means into a first state wherein said top surfaces of said panels are substantially parallel with respect to one another, and being unfoldable about said longitudinal and lateral hinge means into a second state co-planar with respect to one another;

VOL 1093 ISS 2 AG 9 1988 UMI

at least one support bracket including first and second rigid members each having a proximate and a distal end, said proximate ends each pivotably connected on opposite sides of said lateral hinge means to said bottom surface of respective panels, said first and second rigid members being further pivotably connected to one another at said distal ends across and spaced from said lateral hinge means such that said members are foldable onto one another with said ramp in said first state, said first and second members each having an aperture at a predetermined distance from said pivotable, spaced connection;

at least one flexible support cable inserted through said apertures in said first and second members of said support bracket and means for attaching said cable at opposite ends of adjoining panels across said lateral hinge means, said cable urging said spaced, pivotable connection of said first and second rigid members in a first direction with said panels in said second state to support a load on said top surfaces of said panels.

4,761,848

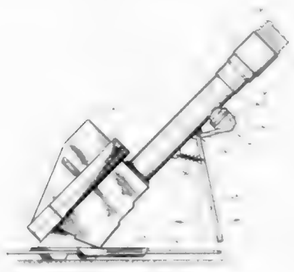
SUCTION-OPERATED AUTOMATIC SWIMMING POOL CLEANER

Helmut J. Hofmann, 1800 S.W. 7th Ave., Pompano Beach, Fla. 33060

Continuation of Ser. No. 915,058, Oct. 3, 1986. This application Jul. 17, 1987, Ser. No. 74,574

Int. Cl.[4] E04H *3/20*

U.S. Cl. 15—1.7 6 Claims



1. A swimming pool cleaner operable from a suction source through a connecting flexible hose, comprising:

a head having a water flow path therethrough to an outlet connectable with a flexible hose, to permit suction to be applied producing a suction adherence of the head to a submerged pool surface;

an automatic valve within the head with means to create a motive force on the head during operation, so that the pool cleaner is moved across the submerged pool surface;

a valve in the outlet upstream of the automatic valve actuated in response to contact of the pool cleaner with an obstruction to movement, which obstruction is external to the water flow path through the head, for diverting applied suction from the head so that the suction adherence of the head with the submerged surface is reduced and to permit reorientation of the cleaner head.

4,761,849

WASHCLOTH

Norma L. Taylor, 3171 Celt Cove, Memphis, Tenn. 38118

Filed Oct. 15, 1985, Ser. No. 787,497

Int. Cl.[4] A61H *7/00*

U.S. Cl. 15—222 2 Claims

1. A washcloth for use by a person to wash said person's face and back, said washcloth comprising, in combination:

(a) a rectangular panel having a first end and a second end; said panel having a length of at least approximately twice the width thereof;

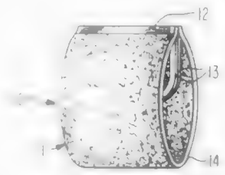
(b) a first handle attached to said first end of said panel;

(c) a second handle attached to said second end of said panel;

(d) a first fastening means attached to said panel at said first end of said panel; and

(e) a second fastening means attached to said panel at said second end of said panel;

said panel being movable between an unfolded position wherein said first handle can be grasped in one hand of



said person and said second handle can be grasped in the other hand of said person to wash said person's back, and a folded position with said first and second ends of said panel positioned adjacent one another to form an approximately square shape for use to wash said person's face; said first and second fastening means coacting with one another to fasten said first and second ends of said panel to one another when said panel is in said folded position;

said panel being constructed of a single thickness of terrycloth, said first and second handles being constructed of a triple thickness of terrycloth.

4,761,850

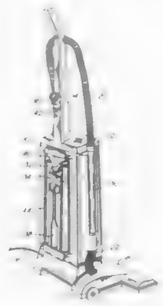
VACUUM CLEANER HAVING AN INTEGRAL TOOL HOLDER

Robert Romeo, Maplewood, N.J., and Robert A. Chieda, Westport, Conn., assignors to The Regina Co., Inc., Rahway, N.J.

Filed Nov. 16, 1987, Ser. No. 121,498

Int. Cl.[4] A47L *9/00*

U.S. Cl. 15—323 6 Claims



1. In a vacuum cleaner having a housing, a tool holder for a plurality of vacuum cleaner tools, including wands and a nozzle, said holder comprising a flexible wall of said housing having recesses defining lands and depressions between said lands, said depressions defining compartments for releasably retaining said tools, one of said compartments having a first wall extending therein from one of said lands, said one compartment also having a second wall opposite to said first wall and having an edge, a member attached to said housing and disposed along said edge in overlapping relationship with said edge to define a lip over which said nozzle can snap into retained position between said first and second walls.

4,761,851

ARTICLE WITH A HANDLE BEING RETAINED BY A CUP SHAPED RETAINING ELEMENT

John A. Day, Shatterford, and Roger M. Messenger, Abberley, both of United Kingdom, assignors to Healey Mouldings Limited, West Midlands, United Kingdom

Filed Nov. 19, 1986, Ser. No. 932,272

Claims priority, application United Kingdom, Nov. 26, 1985, 8529115

Int. Cl.[4] A47J *45/06*

U.S. Cl. 16—110 A 3 Claims



1. An article comprising a body and a handle, an elongate member projecting outwardly from the body, to which member the handle is attached, the handle having an internal recess, a generally cup-shaped retaining element received in the recess, the retaining element having a base and four side walls extending from the base the side walls being separated from one another by slits, means securing the retaining element against withdrawal from the recess, the retaining element having at least two inwardly extending teeth which engage the elongate member, at least some of the teeth of the retaining element engaging the elongate member at positions spaced longitudinally along the member, the elongate member having ribs which engage the inside of the recess as said member is received in the recess and extend through the slits of the cup-shaped retaining element.

4,761,852

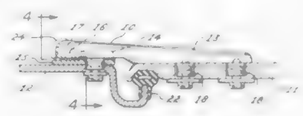
HINGE FOR VEHICLE PANEL DOOR

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Continuation-in-part of Ser. No. 796,800, Nov. 12, 1985, abandoned. This application Sep. 19, 1986, Ser. No. 909,240

Int. Cl.[4] E05D *7/04, 11/02, 5/12*

U.S. Cl. 16—237 11 Claims



1. A hinge for a vehicle panel door to be pivotally mounted with respect to a vehicle body opening, comprising in combination,

(a) an elongated door leaf having at one end an integrally formed hinge pin, said door leaf having fastener receiving means on its underside, said fastener receiving means being adapted to receive fasteners tightened from the rear side of the panel door and

(b) a body leaf having a generally flat mounting portion and a semi-circular knuckle portion, the mounting portion having fastener receiving means for attaching the body leaf to the panel body, and

(c) said semi-circular knuckle portion extending over and interconnecting with said integrally formed hinge pin and facing the vehicle body, whereby the hinge pin is inaccessible from the exterior of the hinge and thereby securing said door leaf for relative rotation about said body leaf the space between said semi-circular knuckle portion and said panel body being sized to prevent removal of the door leaf from the body leaf during rotation of the door leaf, said body leaf being rotatable about the hinge pin between a closed position wherein the body leaf mounting portion underlies and extends generally parallel to the elongated door leaf and an opened position wherein the body leaf mounting portion extends at an angle to the elongated door leaf.

4,761,853

SELF-CLOSING HINGE STRUCTURE

George H. Hoffman, St. Louis, Mo., assignor to Allied Plastics Enterprises, Inc., St. Louis, Mo.

Filed Apr. 15, 1987, Ser. No. 38,518

Int. Cl.[4] E05F *1/12*

U.S. Cl. 16—302 8 Claims



1. In a hinge structure comprising two intermeshed geared hinge members and a connector member maintaining said geared hinge members in mesh, each geared hinge member comprising a gear segment having an outwardly extending flange portion, each gear segment having radially inward of its teeth a recess, said connector member having spaced pintles each of which fits into one of said recesses, and at least one of said flange portions and an adjacent portion of said connector member having cooperating surfaces which define therebetween a space the volume of which increases when said cooperating surfaces separate and the volume of which decreases when said cooperating surfaces close toward each other, a deposit of resilient rubber-like material trapped in said space which deposit is compressed when the volume of said space is decreased and thereby creates a force tending to restore the volume of said space and thereby separate said surfaces, said restoring force producing a separation of said cooperating surface upon removal of the force of compression on said deposit.

4,761,854

SUSPENSION DEVICE FOR STRINGS OF SAUSAGE LINKS

Karl Schnell, Winterbach, and Miroslav Domlatil, Schorndorf, both of Fed. Rep. of Germany, assignors to Karl Schnell Maschinenfabrik, Winterbach, Fed. Rep. of Germany

Filed Oct. 9, 1986, Ser. No. 917,182

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 3536460

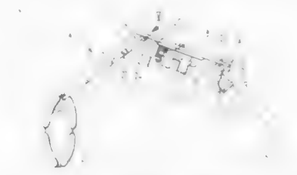
Int. Cl.[4] A22C *15/00*

U.S. Cl. 17—1 R 15 Claims

1. Suspension device (5) for sausage link strings (6) with a revolving endless chain-like or band-like conveyor member, having a longitudinal direction and hooks (7) each having a long leg with a first end mounted on said endless conveyor member and a second end extending outwardly from said endless conveyor member, said long leg having a longitudinal

VOL 1093 ISS 2 AG 9 1988 UMI

axis and being rotatable around the longitudinal axis, and a short leg extending transversely of said long leg at the second end thereof and forming a hook end (16) characterized in that the hooks are arranged to be pivotable approximately transversely to the conveyor member longitudinal direction, and control devices (18, 19, 20, 21, 23) are provided for pivoting and rotating the hook ends of the hooks (7) into a receiving and a delivering position.



4,761,855

DEVICE AND METHOD FOR FILLETING FISH

Arthur A. Peters, Roseville, Mich., assignor to KAP, Inc., Warren, Mich.

Continuation-in-part of Ser. No. 839,092, Mar. 13, 1986, abandoned. This application Mar. 3, 1987, Ser. No. 21,304
Int. Cl.[4] A22C *23/16*
U.S. Cl. 17—46 10 Claims



1. A device for filleting fish comprising:
a unitary base having opposed ends;
a pair of opposed and parallel rigid legs attached to the opposed ends of the base and projecting perpendicularly therefrom, said legs and said base together forming a rigid frame, and
a cutting blade adjustably mounted on projecting ends of the legs, the blade having a rearwardly disposed cutting edge thereon, said cutting blade having a length and a curvature which may be adjusted to conform to different sizes and thicknesses of fish.

4,761,856

APPARATUS FOR PROCESSING FISH

Richard C. Ewing, Assonet, Mass., assignor to Baader North America Corporation, New Bedford, Mass.

Filed Oct. 20, 1986, Ser. No. 920,364
Int. Cl.[4] A22C *25/14*
U.S. Cl. 17—58 5 Claims

1. Apparatus for removing a dorsal fin from a fish comprising:
a conveyor;
a generally V-shaped support for a back of said fish;
a longitudinal slot in said V-shaped support effective for permitting said dorsal fin to protrude at least partly therethrough;
a pressure roller generally aligned with said longitudinal slot;
means for urging said pressure roller into contact with an interior of said fish whereby said dorsal fin is urged through said longitudinal slot;
a rotating cutting knife at a side of said V-shaped support remote from said fish;
means for urging said rotating cutting knife into a cutting position in synchronism with said dorsal fin arriving in a predetermined location with respect to a cutting edge of said knife; and
said means for urging further including means for removing said cutting edge from said cutting position a predetermined time after said dorsal fin has travelled therepast.



4,761,857

METHOD AND APPARATUS FOR MAKING LONG-TAILED NEPS

Ian D. McFarlane, Christchurch; Melvin Jones, Canterbury; Mark Watson, Christchurch; Richard J. Walls, Christchurch; Leslie T. Clare, Christchurch, and Edward C. Radford, Christchurch, all of New Zealand, assignors to Wool Research Organisation of New Zealand Inc., Canterbury, New Zealand

Filed Dec. 10, 1986, Ser. No. 940,244
Claims priority, application New Zealand, Dec. 13, 1985, 214555; Aug. 5, 1986, 217094
Int. Cl.[4] D01C *15/40*
U.S. Cl. 19—98 15 Claims



1. In an apparatus for manufacturing long-tailed neps useful as a fill or effect material, said apparatus including
a housing which defines a treatment chamber therein and provides an inlet opening and an outlet opening,
a drum which is rotatably positioned in said treatment chamber, said drum including outwardly-extending teeth,
cooperating teeth located in said treatment chamber and extending toward and cooperable with the outwardly-extendir.g teeth of said drum such that they will cause fibrous material carried on the outwardly-extending teeth of said drum to become entangled,
a fan doffer roller rotatably positioned in said chamber between said drum and said outlet opening so as to remove entangled fibrous material from the outwardly-extending teeth of said drum and sling it towards said outlet opening, and
a feed means for supplying fibrous material to said treatment chamber via said inlet opening of said housing,
the improvement wherein said apparatus includes a door which is movable to cover or uncover said outlet opening, said door being moved to cover said outlet opening when said drum and said fan doffer roller are rotating and fibrous material in said treatment chamber is being entangled therein such that said fibrous material will remain in said treatment chamber sufficiently long to be converted into said long-tailed neps.

4,761,858

PROCEDURE AND APPARATUS FOR CONTROLLING THE SURFACE MASS DISTRIBUTION OF PAPER WEB

Ari Maijala, Tampere, Finland, assignor to Yhtyneet Paperitehtaat Oy Jylhavaara, Valkeakoski, Finland

Filed Jul. 16, 1986, Ser. No. 886,267
Claims priority, application Finland, Aug. 8, 1985, 853042
Int. Cl.[4] B29C *13/00;* D21H *5/26*
U.S. Cl. 19—296 17 Claims



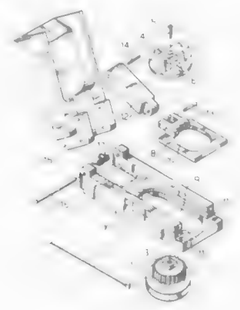
1. Apparatus for controlling the surface mass distribution of a paper web formed on a top surface of a wire of a dry paper machine, said apparatus comprising
a suction box under said wire;
a rotatable drum former above said wire, said drum former having supply means including at least one passage for flowing fiber thereto, said drum former also having exit holes through which said supplied fiber may be drawn onto said top surface of said wire;
blowing means, distinct from said supply means, above said drum former for blowing air through said drum former and onto said top surface of said wire in a direction essentially perpendicular to said top surface of said wire; and
a first set of ribs above said drum former for directing air from said blowing means to said drum former, said ribs being arranged along a first plane essentially parallel to said top surface of said wire and substantially over the width of said wire, said ribs of said first set of ribs extending longitudinally with respect to said wire, the spacing between said ribs of said first set of ribs being adjustable within said first plane.

4,761,859

SKI BOOT ADJUSTMENT DEVICE

Giovanni B. Calabrigo, Treviso, Italy, assignor to Icaro Olivieri & C. S.p.A., Treviso, Italy

Filed Dec. 24, 1986, Ser. No. 945,972
Int. Cl.[4] A43B *5/04*
U.S. Cl. 24—68 SK 3 Claims



1. A securement and adjustment device for ski boots comprising
a base member adapted to be secured to a ski boot and having an elongated slot therein,
a pulley adapted to have at least one ski boot tightening cable connected thereto mounted in said slot for rotation and for movement lengthwise of the slot,
a sawtooth wheel fixed coaxially with said pulley on one side thereof and extending above said slot,
manually operable means secured to said wheel for rotating said wheel and pulley to adjust the tension of said cable,
a slide member slidably mounted on said base member for movement lengthwise of said slot, said slide member having an elongated aperture in which said sawtooth wheel is received and having teeth adjacent one end of said aperture adapted to be moved into and out of engagement with said wheel upon movement of said slide member relative to said wheel,
a cover lever pivoted at one end thereof to one end of said base member for pivotal movement into a closed position overlying said base member and an open position,
an operating lever pivotably mounted at one end thereof to an intermediate portion of said cover lever and at the other end thereof to said slide member, whereby upon pivotal movement of said cover lever into the closed position, the slide member will move said pulley to one end of said slot with the teeth on said slide member engaging the teeth on said wheel to tighten the boot about the foot of the wearer and to prevent rotation of said pulley and upon movement of said cover lever into the open position, said teeth on said slide member will be moved out of engagement with said sawtooth wheel to permit rotation of said pulley for adjustment of the cable.

4,761,860

TWO PART GROMMET WITH INTERENGAGING PROJECTIONS

Mark Krauss, Providence, R.I., assignor to American Cord & Webbing Co., Inc., New York, N.Y.

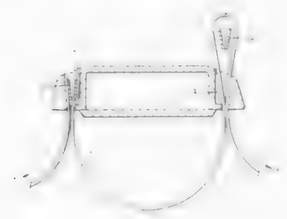
Filed Mar. 27, 1987, Ser. No. 30,628
Int. Cl.[4] A43C *5/00;* F16B *21/00*
U.S. Cl. 24—142 14 Claims



1. A grommet comprising a first and second half, each half comprising a tubular body composed of a resinous material with the body of the first half being disposed over and about the body of the second half, the tubular body of the first half having an inner surface comprising a smooth portion which is substantially flat and a portion having inwardly directed projection means and the tubular body of the second half having an outward surface having a smooth portion which is substantially flat and a portion having outwardly directed projection means for engaging the projection means of the first half, wherein the smooth portions of the first and second halves contact each other providing lateral and rotational support for the coupling of the halves and wherein each half further comprises a gripping means for contacting material into which the grommet is fastened.

VOL 1093 ISS 2 AG 9 1988 UMI

4,761,861
FASTENING MEANS FOR BELTS
Eliezer Peles, Kibbutz Afiki, D.N. Jordan Valley, Israel
Filed Feb. 24, 1987, Ser. No. 17,707
Int. Cl.[4] A44B *11/10*
U.S. Cl. 24—196 2 Claims



1. Means for fastening a belt to secure the belt against movement relative to an article which the belt is intended to hold, said means for fastening comprising:

a housing with two throughgoing slots into which loop forming portions of a strip of material are insertable with said loop portions of said material being capable of extending outwardly from said slots; and,

two substantially hollow V-shaped wedge members with a pair of spaced resilient outwardly flared arms, said arms being formed by said V-shape and extending in said outwardly extending looped portions, each of said wedge members being adaptable to be pulled into one of each of said slots, one opening thereof being narrower than the opposite one thereof constituting a step so that said wedge members are forcibly pulled into each of said slots.

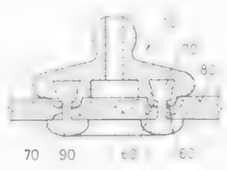
4,761,862
CLIP USED FOR BUSINESS
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Industrial Company, Taito, Japan
Filed Mar. 18, 1987, Ser. No. 27,303
Claims priority, application Japan, Mar. 19, 1986, 61-39040[U]
Int. Cl.[4] B24F *1/02*
U.S. Cl. 24—67.9 5 Claims



1. In a clip used for business composed of a main body of a clip formed by bending a plated spring material so as to turn into substantially an equilateral triangle in section and a pair of operational levers made of metallic wire capable of raising and falling free disposed at both sides of opening ends of said main body, the clip used for business comprising:

a flat finger patch provided with a fitting groove formed at a peripheral edge thereof, the height of one groove edge of said patch being lower than that of the other groove edge, each holding portion of said operational levers and when said pair of operational levers being raised simultaneously, said lower groove edge being arranged to be an inner side of said patch in fitting the same into said holding portion.

4,761,863
STRUCTURE OF SNAP
Kouki Sugihara, Tokyo, Japan, assignor to Scovill Japan Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 17, 1987, Ser. No. 15,045
Claims priority, application Japan, Mar. 4, 1986, 61-30109[U]
Int. Cl.[4] A44B *1/18*
U.S. Cl. 24—692 9 Claims



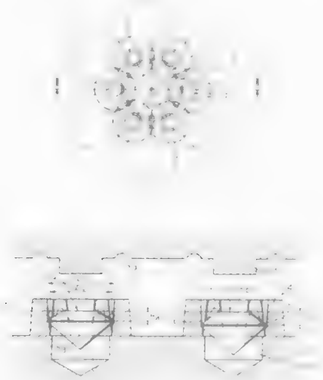
1. A plastic stud of a snap comprising a stud body with a flange having an annular groove formed at the bottom, the groove being convergent outwardly to provide a reverse taper, and open at the bottom of the flange so as to receive a plurality of clinchable prongs of a backing member for attachment to an article of clothing or the like, the backing member being made of plastic, and the prongs being adapted to be plastically deformed within the annular groove by a clinching force exerted at the time of joining the backing member to the stud.

4,761,864
PARALLEL THREAD SUPPLY SYSTEM
Johann Berger, Alfdorf, and Josef Berger, Schwäbisch Gmund-Grossdeinbach, both of Fed. Rep. of Germany, assignors to Elastic-Berger OHG, Alfdorf, Fed. Rep. of Germany
Continuation of Ser. No. 242,526, Mar. 11, 1981, abandoned. This application Dec. 15, 1983, Ser. No. 562,032
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009610
Int. Cl.[4] D02G *1/00*; D04B *19/00*
U.S. Cl. 28—218 4 Claims



1. A system for supplying at least one work position of at least one machine for producing a two-dimensional fabric with warp threads comprising means for holding a predetermined supply of a textile material comprised of said warp threads and loosely woven withdrawable weft loops, said withdrawable weft loops being held in place by having a portion of the end forming said weft loops being formed into stitches extending in a row along one side of the textile material, means for removing said textile material from said supply means and for separately removing said withdrawable weft loops so that only parallel warp threads remain, and means for feeding the parallel warp yarns in that condition directly to said at least one work position, said feeding means including control means adjacent the position where weft loops are withdrawn for controlling the feed rate of the textile material at that position.

4,761,865
PROCESS FOR THE MECHANIZED PRODUCTION OF JEWELRY COMPRISING A PLURALITY OF SMALL CONTIGUOUS STONES SET IN A METAL SUPPORT
Emile G. Magnien, and Alain M. Plantureux, both of Montpellier, France, assignors to Diamants Applications, Montrellier, France
Filed Jan. 14, 1987, Ser. No. 3,190
Claims priority, application France, Jan. 17, 1986, 86 00735
Int. Cl.[4] B23P *5/00*
U.S. Cl. 29—10 5 Claims



1. A process for the mechanized production of jewelry comprising a plurality of small contiguous stones of similar size grading but different height, which stones are set in a metal support, process of the type consisting in machining in said support, contiguous and equidistant bores each one of which comprises a deformable seating on which rests a stone, and setting claws situated on the periphery of each housing and common to several stones, wherein said process further comprises:

machining on the periphery of each bore a plurality of truncated studs situated at the apices of a polygon surrounding said bore, the walls of which studs converge towards the external face of the support, using a conical tool to remove rings of metal which intersect one another;

placing in each bore one of said stones which rests on the side faces of said studs;

placing a push member over the upper faces of the highest stones, parallel to the external face of said support, and applying pressure thereon, thus pressing down the stones which push back the metal of said studs until said push member comes in contact with the upper faces of all the stones which are then all in the same plane or on the same surface parallel to the external face of said support; and

finally setting in the stones by causing the deformation of the studs with a setting tool to form setting claws.

4,761,866
METHOD OF WORKING IN SITU THE END OF A HEAT EXCHANGER TUBE
Mark A. Murphy, South Bend, Ind., assignor to Sundstrand Corporation, Rockford, Ill.
Filed Nov. 25, 1986, Ser. No. 934,213
Int. Cl.[4] B21D *53/02*
U.S. Cl. 29—157.3 C 10 Claims

1. A method of working in situ the end of at least one hollow heat exchanger tube positioned within a heat exchanger core, said tube having a bore and central axis, said method comprising the steps of:

(a) positioning said hollow tube through an opening in a plate forming a part of said core with a free end of said tube extending beyond said plate;

(b) expanding said tube by forcing an expansion rod having an enlarged head through said tube to radially expand said tube into frictional abutment with said plate opening;

(c) axially moving a working tool positioned about said rod toward the free end of said tube;



(d) centering said working tool relative to said tube axis by means of an axial tool extension cooperating with said tube bore as positioned by said plate opening in step (b) upon axial movement of said tool, said tool extending beyond the axial position of said plate opening prior to engagement of said working tool with the free end of said tube, and;

(e) working the free end of said tube with said tool centered relative to said tube axis.

4,761,867
METHOD FOR PRODUCING RING GEARS FOR HEAVY-DUTY DRIVE AXLES
George W. Vollmer, Glasgow, Ky., and Alvin M. Sabroff, Mentor, Ohio, assignors to Eaton Corporation, Cleveland, Ohio
Filed Feb. 12, 1987, Ser. No. 14,429
Int. Cl.[4] B23P *15/14*
U.S. Cl. 29—159.2 11 Claims



1. A method for producing ring gears for heavy-duty drive axle ring gear/pinion gear gear-sets, said method comprising the steps of:

providing a near net ring gear forging, the tooth flank and tooth root surfaces of said near net ring gear forging having sufficient excess material for subsequent removal by grinding;

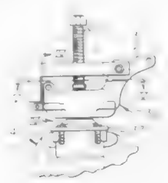
then finish machining said ring gear near net forging surfaces other than the gear teeth root and flank surfaces;

then subjecting said machined workpiece to a carburizing heat treatment;

then grinding said gear teeth root and flank surfaces to the final finish profiles thereof.

VOL 1093 ISS 2 AG 9 1988 UMI

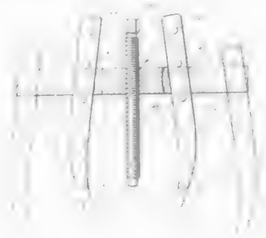
4,761,868
TOOL FOR BEARING REMOVAL
Larry S. Allison, 2353 Oak St., Muskegon, Mich. 49442
Filed Jun. 10, 1987, Ser. No. 60,231
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—256 3 Claims



1. A tool for reconditioning bearing supported shaft assemblies for automobile drive trains, said assemblies having a drive shaft and support bearings press fitted together and the resulting combination press fitted into one end of a shaft opening in housing, said drive shaft being co-axially telescopically press fitted into said bearing, said drive shaft and said bearing being capable of axial movement out of said housing through one end of the shaft opening, said tool having a rigid bar, said bar having a threaded opening intermediate its ends and anchor means at each end of said bar for anchoring it to said housing and supporting said bar in spaced relationship to the face thereof opposite from said one end of said shaft opening with said threaded opening centered over said shaft opening; said anchor means including a leg depending from one end of said bar and a pin projecting from said leg parallel to said bar and adjacent the end of said leg spaced from said bar, said housing having a pin receiving opening in one side thereof for anchoring said one end of said bar to the housing; said housing having an arm integral therewith and extending outwardly therefrom, the end of said bar remote from said leg being detachably secured to said arm; a threaded drive rod mounted in said threaded opening, a cap and means at one end of said drive rod mounting said cap thereto for limited angular adjustment with respect to the axis of said drive rod; a first removable drive block adapted to seat against the face of said cap, said drive block being shaped and of a size to seat against the end face only of the inner one of said drive shaft and bearing whereby upon pressure being applied by said drive rod to the inner one only of said shaft and bearing will be axially displaced with respect to each other and from said housing; a second drive block, said second drive block being of a size and shape to seat against only the end face of the outer one of said drive shaft and bearing after the inner one thereof has been removed whereby application of pressure by said rod to the remaining one of said drive shaft and bearing will cause said tool to lift said housing axially off the shaft when the shaft is supported against axial movement relative to the housing.

4,761,869
BAR-TYPE PULLER
Gerald E. Barry, and James L. Sandberg, both of Owatonna, Minn., assignors to Owatonna Tool Company, Owatonna, Minn.
Filed Jun. 22, 1987, Ser. No. 64,681
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—261 4 Claims

1. A bar-type puller having a cross block with a central section and a pair of end sections, a forcing screw extending perpendicular to said central section and threadably adjustable therein and having a length to extend outwardly from opposite faces of the central section and having one end engageable with a structure, said end sections each being defined by a pair of spaced-apart arms defining an elongate space therebetween with the centerline of the elongate spaces passing through the axis of the forcing screw, a pair of elongate pulling jaws positioned one in each of said elongate spaces to extend therefrom in spaced generally parallel relation to the forcing screw for engagement with a component to be separated from said structure, and a pair of pins spaced apart along the length of and fixed to each pulling jaw with the pins of a pair extending outwardly from opposite faces of a pulling jaw a distance sufficient to span said arms, each of said pulling jaws having a hook offset inwardly from a line passing through the centers of said pair of pins whereby a pull on the hook causes a tilt of the jaw, said spacing between pairs of pins being only slightly



greater than the height of said arms to provide limited clearance between a pair of pins and said arms to enable easy assembly of a pulling jaw with the cross block and radial adjustment of the pulling jaw lengthwise of the cross block, said limited clearance being taken up by a slight tilt of a pulling jaw resulting from a pull on the pulling jaws as the forcing screw is forced against said structure to bindingly engage one pin from each pair with the top of said arms and one pin from each pair with the bottom of said arms to lock the pulling jaw in position.

4,761,870
METHOD FOR MAKING A CAMSHAFT
Shigeru Urano, Saitama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan
Division of Ser. No. 942,036, Dec. 15, 1986, Pat. No. 4,708,029, which is a continuation of Ser. No. 773,189, Sep. 6, 1985, abandoned. This application Aug. 6, 1987, Ser. No. 82,208
Claims priority, application Japan, Sep. 11, 1984, 59-188925
Int. Cl.[4] B23P *17/00*
U.S. Cl. 29—421.1 2 Claims



1. A method for forming a cam shaft for use in an internal combustion engine, comprising the steps of:
arranging a plurality of cam lobes each having an opening therethrough, the opening of each said lobe being aligned generally with the axis of rotation of the cam lobe, the axes of rotation of said arranged lobes being aligned with each other;
inserting one of a plurality of tubular collars to fit within said openings in said lobes;
spacing the ends of said collars apart from each other to form at least one circumferential gap;
inserting a central tubular member within said spaced collars; and
expanding said central tubular member within said circumferential gap to form a bearing journal for said cam shaft.

4,761,871
METHOD OF JOINING TWO THERMOPLASTIC ARTICLES
James E. O'Connor, and William B. Beaulieu, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Nov. 21, 1986, Ser. No. 933,762
Int. Cl.[4] B32B *7/08*
U.S. Cl. 29—432.1 26 Claims



1. A method of joining thermoplastic articles, said method comprising the steps of:
(a) placing a first thermoplastic article against a second thermoplastic article thereby defining an interface between said first thermoplastic article and said second thermoplastic article;
(b) heating adjacent portions of said first thermoplastic article and said second thermoplastic article bordering the interface such that said portions are softened;
(c) positioning a portion of a fastener having a first end and a second end in the heated portions of said first thermoplastic article and said second thermoplastic article, said fastener extending across the interface, said heated portions softening an outer surface of said fastener; and
(d) cooling the heated portions of said first thermoplastic article and said second thermoplastic article to secure said fastener to said first thermoplastic article and said second thermoplastic article.

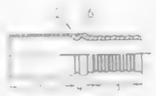
4,761,872
METHOD OF MAKING A PILLOW
E. Jane Buettner, and Donald D. Buettner, both of 2619 Willow, Woodbury County, Sioux City, Iowa 51106
Division of Ser. No. 819,993, Jan. 15, 1986, abandoned, which is a continuation of Ser. No. 718,816, Apr. 1, 1985, abandoned, which is a continuation of Ser. No. 421,682, Sep. 22, 1982, abandoned. This application Jan. 20, 1987, Ser. No. 4,881
Int. Cl.[4] B23P *11/02*
U.S. Cl. 29—451 6 Claims

1. A method of making a pillow comprising the steps of:
placing filler material comprised of a rectangular piece of batting comprised of polyester fiber which is spirally wound into a somewhat cylindrical shape into a plastic bag having a closed bottom;
snugly fitting a short portion of one end of a tubular casing which has a diameter slightly less than that of the cylindrical shape of the spirally wound filler material over the smaller end of a tapered tube, said smaller end having a diameter approximately equal to that of the casing;
stuffing the bag and filler through the larger end of the tapered tube, bag bottom first, until the filler is positioned within the casing;



removing the bag from the casing through the other end thereof; and
removing the casing from the tapered tube, whereby the filling will be pre-compressed within the casing.

4,761,873
METHOD OF MANUFACTURING A HOSE STEM FOR HYDRAULICALLY LOADED FRICTION FITTINGS OR THREADED FITTINGS
Hans J. Wetzel, Baden-Baden, and Bernd Matuszczak, Sasbach, both of Fed. Rep. of Germany, assignors to Aeroquip GmbH, Baden-Baden, Fed. Rep. of Germany
PCT No. PCT/EP86/00277, § 371 Date Dec. 17, 1986, § 102(e) Date Dec. 17, 1986, PCT Pub. No. WO86/06813, PCT Pub. Date Nov. 20, 1986
PCT Filed May 10, 1986, Ser. No. 2,700
Claims priority, application Fed. Rep. of Germany, May 11, 1985, 3517163
Int. Cl.[4] B21D *39/00*
U.S. Cl. 29—517 15 Claims



1. Method of manufacturing a hose stem for hydraulically loaded friction fittings or threaded fittings with a stem end that a hose can fit over, a securing component that accepts a connection, and a joining pipe, comprising the steps: shaping an end surface of the stem to position the hose securely and forming a groove in said securing component for securing the connection; cold forming togehter said stem end, securing component, and joining pipe out of a single one-piece continuous length of pipe; and shaping said end of the hose stem out of the length of pipe by decreasing the pipe diameter; and shaping said groove in said securing component by reducing the diameter of said continuous length of pipe; said shaping and cold forming comprising applying radial forces to the exterior of said length of pipe, said shaping and cold forming producing walls of varying thickness in said length of pipe.

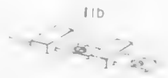
VOL 1093 ISS 2 AG 9 1988 UMI

4,761,874
METHOD OF MAKING MAGNETIC RECORDING MEDIUM
Masaaki Utsui, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 1, 1987, Ser. No. 32,695
Claims priority, application Japan, Apr. 1, 1986, 61-75076
Int. Cl.[4] B21D *28/26*
U.S. Cl. 29—527.2 4 Claims



1. A method of making a magnetic recording medium, which comprises a first step of polishing a surface of a strip-like magnetic recording medium in continuous strip form composed of a substrate and a magnetic layer formed on a surface of said substrate by coating a magnetic material onto said surface of said substrate and drying said coated magnetic material, a second step of carrying out inspection of the polished surface of said magnetic recording medium for defects, and a third step of punching out said magnetic recording medium, and a third step of punching out said magnetic recording medium, on which the inspection for defects is finished, into a predetermined shape, wherein said first step, said second step and said third step are carried out in order on the continuous strip, moved sequentially through polishing, inspection and punching stations.

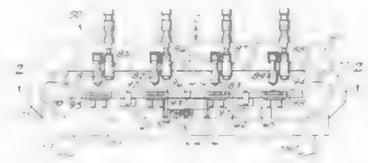
4,761,875
METHOD OF MANUFACTURING PAD FOR MAGNETIC RECORDING TAPE CASSETTE
Kengo Oishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 17, 1987, Ser. No. 39,270
Claims priority, application Japan, Apr. 17, 1986, 61-88769
Int. Cl.[4] B21D *28/06*
U.S. Cl. 29—527.4 5 Claims



1. A method of manufacturing a pad which is for pressing a magnetic recording tape of a magnetic recording tape cassette against a magnetic head and comprises a pad body fixedly mounted on a strip-like resilient member provided with a mounting means for mounting the pad on the casing of the magnetic recording tape cassette, the method comprising steps of feeding a metal strip to a plastic injection mold, molding a plurality of pad bodies on the metal strip by injection molding of synthetic resin, cutting the metal strip at the middle points between the pad bodies, and forming mounting means on each pad body-metal strip assembly thus obtained.

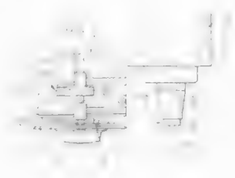
4,761,876
HIGH SPEED PRECISION DRILLING SYSTEM
Wojciech B. Kosmowski, San Juan Capistrano, Calif., assignor to Dynamotion Corporation, Santa Ana, Calif.
Filed Apr. 18, 1986, Ser. No. 853,662
Int. Cl.[4] B23Q *3/157*; B23B *31/14, 39/24, 47/06*
U.S. Cl. 29—568 58 Claims

1. A high-speed precision drilling system for positioning a workpiece along at least one axis in relation to a drilling spindle, comprising:
a first beam member having a planar first surface region;
a work table having a planar second surface region juxtaposed with said first beam member such that said surface regions are adjacent one another, said table arranged to carry said workpiece for operations thereon by the drilling spindle;
means for providing a distributed air bearing between said planar surface regions providing distributed separation forces to separate said surface regions and to support the work table over a substantial portion of the area carrying the workpiece;



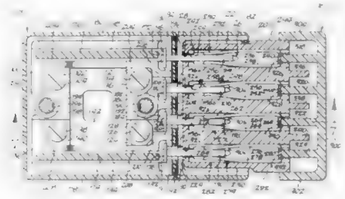
at least one drilling spindle supported on a support structure separated from said work table for carrying a drilling tool, said drilling spindle comprising means for feeding said drilling tool into and out of a workpiece secured to said table while the drilling tool is rotated at high speed;
translating means for translating said table along a first axis in relation to said guide beam; and
preloading means for exerting preloading forces distributed between said planar surface regions and opposing the separating forces provided by said air bearing means, tending to draw said surface regions of said table and beam members together without overcoming the separation forces applied by the air bearing, thereby damping vibrations in the work table caused by said translation or operation of said drilling machine.

4,761,877
TOOL CHANGER FOR MACHINE TOOL
Peter Rupp, Düsseldorf, Fed. Rep. of Germany, assignor to Gebruder Honsberg GmbH, Reimscheid, Fed. Rep. of Germany
Filed Sep. 3, 1987, Ser. No. 92,441
Int. Cl.[4] B23Q *3/157*
U.S. Cl. 29—568 9 Claims



1. Tool changer for a machine tool having a tool holding fixture, comprising:
at least one rotatable holder having a plurality of gripper hands for engaging a tool,
a first moving means for moving the holder between a return position and an aligning position in which one of the gripper hands is located ahead of the tool holding fixture,
a second moving means for moving the holder in parallel to the axis of the tool holding fixture,
a block for carrying the holder,
a wrench supported by the block, the wrench being drivable rotatingly and projecting towards the tool holding fixture,
a locking screw provided at the tool holding fixture, the locking screw and wrench being disposed so that movement of the holder to the aligning position brings the locking screw and the wrench into abutment,
coupling means associated with the wrench for turning the locking screw (35),
driving means for moving the holder relative to the block and in parallel to the axis of the tool holding fixture while the wrench remains in engagement with the locking screw.

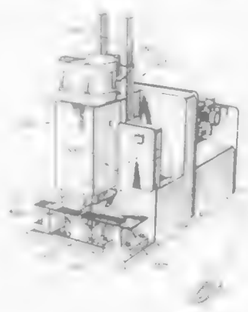
4,761,878
METHOD OF MAKING ONE PART OF A TWO PART ELECTRICAL CONNECTOR
John H. Buscher, East Amherst, and Michael E. Hoffman, Lockport, both of N.Y., assignors to Eastman Machine Company, Buffalo, N.Y.
Division of Ser. No. 430,757, Sep. 30, 1982, Pat. No. 4,609,244.
This application Aug. 20, 1986, Ser. No. 898,106
Int. Cl.[4] H01B *19/00*
U.S. Cl. 29—631 4 Claims



1. A method of making one part of a two part electrical connector wherein the one part includes a plurality of slots for receiving corresponding pins of the other part, said method comprising:
(a) forming a hollow body for said one part having an end face and to include a single slot in said end face having a fixed orientation independent of the selected voltage and phase magnitude for the particular connector being made; and
(b) subsequently and separately forming a plurality of additional slots in said end face spaced from said single slot, said additional slots being of a predetermined selected number and orientation unique to the particular voltage and phase magnitude selected for the particular connector being made.

4,761,879
CONNECTOR INSTALLATION STATION FOR COMPACT SEMI-AUTOMATIC CABLE ASSEMBLY SYSTEM
James D. Anderson, Norwalk, Conn., assignor to Burndy Corporation, Norwalk, Conn.
Division of Ser. No. 702,992, Feb. 19, 1985, Pat. No. 4,594,776.
This application Feb. 26, 1986, Ser. No. 834,095
Int. Cl.[4] H01R *43/00*
U.S. Cl. 29—749 4 Claims

2. Apparatus for installing connectors, each having a body portion and a cover portion, onto flat cables having multiple electrical conductors separated by, and encased in, electrically insulating material, said apparatus comprising:
(a) a frame;
(b) an installation station on said frame having press means for coupling connectors to cables supported at said installation station, said press means including a ram and a ram shoe coupled therewith, said ram shoe being formed with a retention cavity, said ram shoe also having a pusher and spring means operatively associated with said retention cavity for removably receiving a connector portion within said retention cavity, said installation station also having platen means for supporting a cable in a generally horizontal plane, said platen means including two platens laterally offset from each other with a space therebetween to allow the passage of a connector portion therepast;



(c) magazines on said frame adapted to support a plurality of body portions and cover portions respectively; and
(d) a transport station to sequentially move portions of connectors from said magazines to said installation station.

4,761,880
METHOD OF OBTAINING SURFACE MOUNT COMPONENT PLANARITY
John J. Stankus, Austin, and Boyd M. Fry, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 8, 1986, Ser. No. 938,950
Int. Cl.[4] H05K *3/34*
U.S. Cl. 29—840 6 Claims



1. A method of insuring lead planarity in leaded surface mountable components comprising sequentially:
applying by pressure forming a web of electrically conductive material to the leads prior to their separation from a matrix of lead material;
shaping leads into a predetermined configuration; and
removing the excess lead material matrix.

4,761,881
SINGLE STEP SOLDER PROCESS
Muhammad-Yusuf J. Bora, Austin, and Karl G. Hoebener, Georgetown, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 15, 1986, Ser. No. 907,266
Int. Cl.[4] H05K *3/34*
U.S. Cl. 29—840 2 Claims

1. An improved method of surface mountable components to both sides and leaded components to one side of a printed circuit board having first and second sides comprising the sequential steps of:
screening solder paste on lands for surface mount components located on the first side of the board;

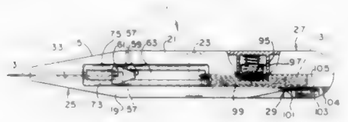
VOL 1093 ISS 2 AUG 9 1988 UMI

depositing adhesive on surface mount components receiving sites located on the first side of the board;
placing the surface mount components on the first side of the board;
curing the deposited adhesive;
inverting the board;



screening solder paste on surface mount component lands and into the through hole locations on the second side of the board;
placing components on the second side of the board;
drying the screened solder paste;
reflowing the solder; and
cleaning the board.

4,761,882
UTILITY KNIFE
Sidney Silverstein, Flushing, N.Y., assignor to Hunt X-Acto, Inc., Philadelphia, Pa.
Filed Feb. 18, 1986, Ser. No. 830,326
Int. Cl.[4] B26B *1/08*
U.S. Cl. 30—162 3 Claims



1. A retractable utility knife comprising
a handle having a front portion and a rear portion,
a blade carrier slideably mounted in a passageway in the front portion of the handle for positioning a blade in retracted-protected, exposed-cutting, or advanced attachment-detachment positions,
actuating means extending from the blade carrier for moving the blade carrier back and forth in the passageway, and
rib means positioned in the handle on each side of the passageway to define the passageway and hold the blade and carrier in position to prevent lateral movement,
said carrier having top, bottom and rear mounting flanges, and a forward mounting lance adapted to register with a central cutaway portion on the blade for holding the blade in position against longitudinal movement on the carrier,
said passageway extending to the front portion of the handle a sufficient distance to position the forward mounting lance outside the handle to free the blade for detachment from the mounting means by grasping the front portion of the blade and lifting it off the carriage,
further including storage means in the rear portion of the handle for storing replacement blades,
the storage means including
a blade magazine in the rear portion of the handle having a top wall with a finger opening smaller than a blade,
a spring-biased pusher means mounted in the blade magazine to push the replacement blades toward the top wall so that the top blade is flush against the top wall,
a transverse slot extending downwardly from the top wall for sliding a replacement blade into or out of the magazine, and
guard means positioned in the rearward path of the top blade in the magazine for preventing accidental removal of the top blade from the magazine.

4,761,883
CUTTING TOOL WITH DRAWING CUT
Wolfgang Mertens, Solingen, Fed. Rep. of Germany, assignor to Dovo Stahlwaren Bracht GmbH & Co KG, Solingen, Fed. Rep. of Germany
Filed May 15, 1987, Ser. No. 51,045
Claims priority, application Fed. Rep. of Germany, Jan. 15, 1987, 3701049
Int. Cl.[4] B26B *13/00*
U.S. Cl. 30—239 6 Claims



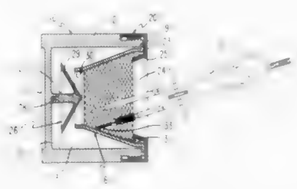
1. A cutting tool with drawing cut, comprising:
a lower shear blade defining a longitudinal axis and including a straight groove extending at an angle to said longitudinal axis;
an upper shear blade provided with a straight oblong hole; and
connecting means engaging said oblong hole for pivotally joining said upper shear blade with said lower shear blade,
said upper shear blade accommodating an insert which includes said oblong hole and said insert is provided with a pin projecting into said groove of said lower shear blade for allowing a displacement of said upper shear blade relative to said lower shear blade,
said insert being an injection molded part of wear-resisting, self lubricating plastic material flush mounted in said upper shear blade so as to provide bearing surfaces for said connecting means and said groove.

4,761,884
DEVICE FOR TRIMMING TO A NET SHAPE THE EDGE OF A METAL SKIN
Peter D. Nguyen, San Diego, and Robert R. Ferenc, La Jolla, both of Calif., assignors to General Dynamics Corporation/-Convair Division, San Diego, Calif.
Filed Oct. 20, 1986, Ser. No. 921,026
Int. Cl.[4] B23B *19/14;* B23D *47/02, 51/02;* B27B *9/04*
U.S. Cl. 30—373 10 Claims



1. A device for trimming an end of a first metal skin to a shape that is complementary to an end of a second metal skin, comprising:
a base plate provided with a slot and adapted to be suitably positioned on the upper surface of a first metal skin;
a power driven metal saw means rotatably secured to and biased away from the base plate; said power driven saw means having a rotatable annular saw blade and adapted to rotatably extend said rotatable driven annular saw blade through said slot in the base plate against said bias;
a lower flexible plate secured to the bottom of the base plate at an open end opposing the slot in the base plate at an angle, the lower plate being provided with a slot complementary in size to the slot in the base plate and arranged so that the rotatable saw blade may also extend through the lower plate; and
guide means secured to the lower plate adjacent to the slot and arranged to contact the end of the second skin whereby the driven annular saw blade may be rotatably extended downwardly through the slots in the base and lower plate into cutting contact with the first skin and cut the first skin to a shape that is complementary to the end of the second skin as the guide means is maintained in contact with the end of the second skin,
whereby the flexibility of said lower plate allows said lower plate to yield sufficiently to permit the base plate to be brought into sliding engagement with the first skin.

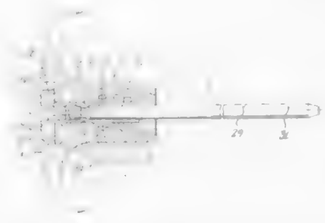
4,761,885
SHARPENER FOR COMPASS LEADS AND PENCIL LEADS
Colin W. McMillan, 173 St. Lawrence Crescent, Saskatoon, Saskatchewan, Canada S7K 3X7
Filed May 1, 1987, Ser. No. 44,667
Int. Cl.[4] B43L *23/00*
U.S. Cl. 30—451 21 Claims



1. A device for sharpening compass leads and the like comprising in combination an open topped container, an open based sharpening cup mounted in said container means to detachably mount said cup in said container and a cup retaining ring detachably engaged with the upper end of said container, means cooperating between the upper edge of said cup and the inner edge of said retainer ring to trap lead residue therein when sharpening a compass lead or the like, when said container is in the tilted operating position and means to direct said residue into the base of the container when the container is in the upright storage position.

4,761,886
DIPSTICK FOR MEASURING OIL OR FLUID LEVELS
David J. Wilson, Deeping St. James, and David Elmore, Bourne, both of United Kingdom, assignors to Perkins Engines Group Limited, London, United Kingdom
Filed Mar. 31, 1987, Ser. No. 32,794
Claims priority, application United Kingdom, Apr. 1, 1986, 8607980
Int. Cl.[4] G01F *23/04*
U.S. Cl. 33—126.7 R 8 Claims

1. A dipstick comprising a blade having a handle connected to one end of the blade by means of an intermediate resilient tubular collar, and a cap that engages a recess in the handle and cooperates with the collar; said one end of the blade and said collar being provided with formations that cooperate as a snap-fit when said one end of the blade is inserted into the collar thereby to retain the two axially together; said handle having a central aperture to receive the collar as a close fit and said handle and said collar being provided with second formations that cooperate as a snap-fit when said collar is inserted into the central aperture in the handle thereby to retain the two axially together, said first formations then being constrained radially within said aperture so as to lock the blade therein; and said cap engaging an adjacent end of the collar axially to constrain said second formations radially thereby to lock the collar to the handle.



4,761,887
TEMPERATURE INSENSITIVE GAUGE
Bernard J. Brown, Ann Arbor, and Kerry L. Ritter, Britton, both of Mich., assignors to Control Gaging, Inc., Ann Arbor, Mich.
Filed Aug. 29, 1986, Ser. No. 902,232
Int. Cl.[4] G01B *7/12*
U.S. Cl. 33—148 H 11 Claims



1. A temperature insensitive gauge comprising:
a frame;
first and second caliper assemblies movably mounted on said frame for engaging a work piece;
means coupled to said caliper assemblies for measuring the relative movement between said caliper assemblies to provide measurement information on the size of said work piece;
temperature compensating means for reducing the effects on measurement of thermally induced dimensional changes in the gauge, said temperature compensating means including;
insert means secured to said caliper assemblies;
gauge finger means secured to said insert means, said gauge finger means and said insert means oriented such that thermal expansion of said gauge finger means is offset by thermal expansion of said insert means thereby reducing the effects on measurement of thermally induced dimensional changes in the gauge.

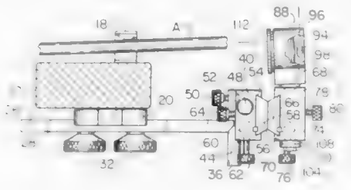
VOL 1093 ISS 2 AG 9 1988 UMI

4,761,888

ARCHERY BOWSIGHT MOUNT AND METHOD OF ADJUSTMENT

Donald S. Kudlacek, 3412 Oak St., Longview, Wash. 98632

Filed Apr. 13, 1987, Ser. No. 37,659
Int. Cl.[4] F41G *1/46*
U.S. Cl. 33—265 6 Claims



1. An archery bowsight comprising:
(a) a bowsight support arranged to be mounted on the handle of a bow,
(b) a sight member mounting a bubble level, and
(c) mounting means mounting the sight member on the support for adjustment of the axis of the bubble level to horizontal and also perpendicular to the longitudinal axis of an arrow supported on the arrow rest of the bow, the mounting means including
(1) ball and socket means interconnecting the support and sight member for moving the bubble level pivotally for adjusting the axis thereof to horizontal and also perpendicular to the longitudinal axis of an arrow supported on the arrow rest of the bow,
(2) an elevation carriage member, the ball and socket means interconnecting the elevation carriage member and sight member,
(3) an elongated elevation carriage guide member having an elongated rack thereon, a rotary gear on the elevation carriage member engaging the rack for moving the carriage member along the guide member, and
(4) lock means on the carriage member releasably engaging the guide member for securing the carriage member in adjusted position on the guide member, the lock member comprising an elongated threaded lock screw mounted on the carriage member for movement toward and away from the guide member, a friction pad member interposed between the lock screw and the guide member, and resilient means interposed between the pad member and the carriage member for urging the carriage member toward the guide member.

4,761,889

METHOD FOR THE DETECTION AND CORRECTION OF MAGNETIC INTERFERENCE IN THE SURVEYING OF BOREHOLES

Martin E. Cobern, Cheshire; Frederick A. Stone, Durham, and Edmund M. Hamlin, East Hampton, all of Conn., assignors to Teleco Oilfield Services Inc., Meriden, Conn.

Continuation of Ser. No. 608,365, May 9, 1984, abandoned. This application Sep. 10, 1986, Ser. No. 905,979
Int. Cl.[4] E21B *47/022*
U.S. Cl. 33—302 18 Claims

1. The method of determining a correction to be made to an azimuth measurement of an instrument in a borehole to compensate for magnetic interference, including the steps of:
determining the measured azimuth angle of the instrument;
determining the measured inclination angle of the instrument;
determining the measured dip angle;
ascertaining the true dip angle at the location of the borehole; and
calculating the error in azimuth measured caused by magnetic interference from the difference between said measured dip angle and said true dip angle and a factor determined from said measured azimuth angle, said measured inclination angle and said true dip angle.

4,761,890

ADJUSTABLE CARPENTERS MEASURING TOOL

Michael F. Morrell, Canyon Country, Calif., assignor to Dan Claffey, Canyon Country, Calif., a part interest

Filed Jul. 7, 1987, Ser. No. 70,956
Int. Cl.[4] B43L *7/06*
U.S. Cl. 33—473 26 Claims



1. An adjustable measuring tool for use in carpentry, comprising:
a clevis-like handle having a closed end and a pair of parallel bracket members which extend away from the closed end to an open end;
a slide rule fastened to the handle between the bracket members and adjacent the open end, the slide rule being fastened to the handle in a manner permitting pivotal movement of the slide rule and some linear movement of the slide rule along its longitudinal axis with respect to the handle;
a pitch slide positioned between the parallel bracket members and capable of sliding movement between the slide rule and the closed end of the handle;
means for adjusting the position of the pitch slide in relation to the slide rule; and
level means attached to the handle;
wherein at least one of the bracket members of the handle has an inward channel extending between the closed end and the slide rule, and wherein the pitch slide includes a tongue which engages the inward channel and is capable of moving between the closed end of the handle and the slide rule between the bracket members along a track defined by the channel, wherein the engagement of the tongue within the channel holds the pitch slide between the bracket members.

4,761,891

METHOD AND APPARTUS FOR MACHINING A SCREW THREAD WITH LITTLE DISPERSION

Nobuyuki Sugimura, 308, Mabase, Shimizu-shi, Shizuoka-ken, Japan

Continuation of Ser. No. 758,134, Jul. 23, 1985, abandoned. This application Nov. 10, 1987, Ser. No. 120,736
Claims priority, application Japan, Jul. 26, 1984, 59-113787[U]
Int. Cl.[4] B43L *7/06*
U.S. Cl. 33—503 10 Claims



1. For an NC-lathe for machining a thread groove in a screw, a method of determining the effective radius of the machined thread groove comprising the steps of:
providing a set of coordinates wherein an X-coordinate direction extends along an axis parallel the longitudinal axis of said screw and a y-coordinate direction extends along an axis perpendicular to said x-coordinate direction;
providing a thread touch sensor;
providing means for indexing the thread touch sensor to a plurality of positions;
indexing said thread touch sensor into contact with an arbitrary point on said screw;
determining the coordinate values (Xa, Ya) of said arbitrary point;
indexing said thread touch sensor ½ pitch length in the X-coordinate direction away from said arbitrary point, while indexing said thread touch sensor in the Y-coordinate direction away from said screw to insure said screw does not interfere with said indexing of the thread touch sensor in the X-coordinate direction;
indexing said thread touch sensor in the Y-coordinate direction towards the screw until the thread touch sensor contacts the screw thread at an intermemiate point (Xi, Yi);
determining the coordinate values of the intermediate point (Xi, Yi);
determining which of the arbitrary point or the intermediate point is a start point, said start point being whichever of the arbitrary point or the intermediate point has a smaller Y-coordinate value indicating which of said points is located in the thread groove;
indexing said thread touch sensor to said start point;
incrementally indexing said thread touch sensor in the positive and negative X-coordinate direction from said start point and subsequently moving said thread touch sensor into contact with said screw following each of said incremental indexes, determining which of said alternate incremental points has the smaller Y-coordinate value and moving the thread touch sensor to the incremental point having the smaller Y-coordinate value, and repeating the step until the opposite points yield the same Y-coordinate value, thus indicating the thread touch sensor is centered in the thread groove, said point being a center point; and
determining the Y-coordinate value of the center point, said Y-coordinate value representing the radius of the screw thread.

4,761,892

APPARATUS FOR MEASURING THE LENGTH OF ELECTRODES IN AN ELECTRIC FURNACE

Martti J. Jankkila, Tornio, Finland, assignor to Outokumpu Oy, Helsinki, Finland

Filed Nov. 26, 1986, Ser. No. 935,185
Claims priority, application Finland, Nov. 28, 1985, 854724
Int. Cl.[4] G01B *7/28*
U.S. Cl. 33—556 8 Claims



1. Apparatus for determining the position of the free end of an electrode in an electric furnace, comprising:
a support frame,
a feed mechanism connected to the support frame and comprising an elongate guide bar, a first holding member which is mounted to the guide bar so as to remain stationary with respect thereto, a second holding member, and drive means for moving the second holding member longitudinally of the guide bar, each of the holding members being operable selectively to grip or release a measuring rod, whereby a measuring rod fitted to the holding members can be advanced longitudinally of the guide bar by operating the drive means and the holding members, and
a power member effective between the support frame and the feed mechanism for adjusting the orientation of the feed mechanism relative to the support frame.

4,761,893

SLUDGE TREATMENT PROCESS

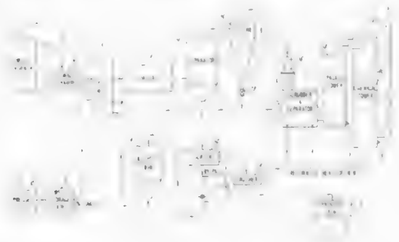
John D. Glorioso, 2437 West Moore Haven Dr., Clearwater, Fla. 33575

Filed Oct. 29, 1986, Ser. No. 924,630
Int. Cl.[4] F26B *3/24*
U.S. Cl. 34—11 14 Claims

1. A process for drying mechanically dewatered sewage sludge to produce pellets of a predetermined small and uniform size comprising the steps of:
mixing said sludge with recycled, previously dried sludge particles and pellets;
drying said mixture in a thermal drier to form pellets and particles thereof;
conveying the dried pellets and particles and drier off gas to a low velocity gas/solids separator and separating and collecting the pellets and a substantial portion of the particles;
clarifying the collected pellets and particles, and separating and collecting the pellets of a predetermined size, the undersize pellets and particles, and the oversize pellets;

VOL 1093 ISS 2 AG 9 1988 UMI

mechanically crushing the oversize pellets and collecting the crushed pellets and undersize pellets and particles; and



recycling the collected undersize pellets and particles and crushed pellets by mixing said recycled materials with said incoming sludge to the drier.

4,761,894

DRYING FURNACE FOR USE IN COATING DRYING

Shuji Hamasaki; Michio Taniguchi, both of Toyota; Masanori Yokoi, Aichi; Shunichi Akiyama, and Yasuo Tokushima, both of Toyota, all of Japan, assignors to Trinity Industrial Corporation, Tokyo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 29, 1986, Ser. No. 947,250
Claims priority, application Japan, Dec. 27, 1985, 60-293220
Int. Cl.[4] F26B *23/10*
U.S. Cl. 34—39 6 Claims



1. A drying furnace for drying a coating on an article while the article is being moved therethrough,

said furnace comprising:

left and right sidewall and ceiling means defining a tunnel-like furnace main body of U-shaped plan figure having two laterally-opposite legs, and including, in series, an inlet zone including an inlet to said furnace main body, an effective drying zone, and an exit zone including an exit from said furnace main body, said inlet zone and said exit zone being disposed laterally adjacent one another; said sidewall and ceiling means enclosing a path for movement of an article having a coating to be dried, so that said article may be successively moved into said furnace main body through said inlet of said inlet zone, along said inlet zone, along said effective drying zone, along said exit zone and out of said furnace main body through said exit;

said furnace main body being provided internally thereof on said ceiling-means in said inlet zone and said exit zone with a respective resin deposition prevention duct through which hot gas may be circulated for maintaining a high temperature in said inlet zone despite proximity of said inlet and for maintaining a high temperature in said exit zone despite proximity of said exit;

said furnace main body being provided internally thereof on said sidewall means in said effective drying zone with coating-drying hot gas recirculating duct means for radiating heat to said article as said article is being moved along said path in said effective drying zone;

burner means including blower means associated therewith, said blower means having a pressure side and a suction side;

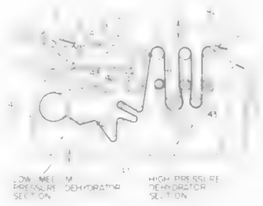
supply duct means communicating said burner means with said resin deposition prevention ducts and with said hot gas recirculating duct means, so that gas may be heated by said furnace, blown through said hot gas recirculating duct means and said resin deposition prevention ducts and at least partially recycled to said burner means for reheating.

4,761,895

METHOD AND APPARATUS FOR DEHYDRATING SLUDGE

Kiyoshi Uyama, Kawasaki; Yoshio Kanno, Yokohama; Kiyoteru Segawa, Yokohama, and Yasuhiko Kihara, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 26, 1984, Ser. No. 674,570
Claims priority, application Japan, Dec. 1, 1983, 58-225425; Oct. 11, 1984, 59-213091
Int. Cl.[4] F26B *17/04*
U.S. Cl. 34—69 13 Claims



1. An apparatus for dehydrating a wet sludge, comprising,

a preliminary dehydrator means provided with a filter fabric for performing a preliminary dehydration of the wet sludge by gravitational filtration to obtain a preliminarily dehydrated sludge, wherein said preliminary dehydrator comprises a plurality of bag-like filter fabrics attached to a pair of endless chains, the chains being respectively looped around two pairs of sprockets;

a pelletizer means for pelletizing the preliminarily dehydrated sludge after the preliminary dehydration and without using a dehydration assistant, said pelletizer means being provided with a pair of rollers which have meshing portions on the circumferential surfaces thereof and which rotate in mesh with each other, the sludge being applied to meshing portions of said rollers to be pelletized; and

a compression dehydrator means for performing a compression dehydration of the pellets with an endless filter fabric.

4,761,896

APPARATUS FOR PROCESSING DRY-CLEANED CLOTHES

Yukio Miyata, No. 738-4, Kodera, Mihara-cho, Minami-Kawachi-gun, Osaka, Japan

Filed Aug. 6, 1987, Ser. No. 82,574
Claims priority, application Japan, Jan. 16, 1987, 62-8544
Int. Cl.[4] F26B *9/06*
U.S. Cl. 34—77 2 Claims

1. In an apparatus for dry cleaning clothes comprising

a chamber comprising an upper portion, a lower portion and means for hanging clothes to be cleaned;

air circulation path connecting said upper portion and said lower portion;

means for causing air current to circulate through said air circulation path and inside said chamber from said upper portion to said lower portion;

means for supplying solvent to said chamber for cleaning said clothes;

means for heating air current passing through said air circulation path, said heating means being located at at least one of said upper portion and said lower portion;

means disposed near said chamber for supplying steam into said chamber; and

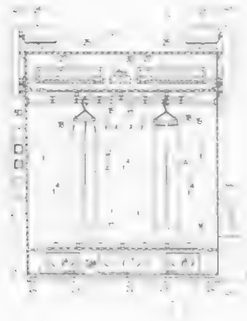
means for feeding fresh air into said air circulation path; the improvement comprising

air return path for connecting said lower portion to said upper portion;

first gate means for selectively connecting said lower portion to said air return path;

second gate means for selectively connecting said upper portion to said air return path;

fan means for causing air current containing evaporated solvent to flow from inside of said chamber through said air return path when said first gate means connects said lower portion to said air return path;



a pair of water cooled radiators for condensing solvent evaporated in said air current, each said radiator having a front end and a rear end, said front ends of both radiators being connected to respective entry paths, said entry paths being commonly connected through an opening path to said fan means, with a deflector means located substantially midway between said front ends of said radiators in said entry paths to enable splitting of air flow having evaporated solvent therein from said opening path into said front ends of said radiators;

solvent collecting means;

a pair of convection generating chambers each connected to respective rear ends of said radiators, each said convection generating chamber having an air passage area at the connection with said rear end of said radiator which is wider than an air passage area at the front end of said radiator, said convection generating chambers further comprising a bottom portion connected to said solvent collecting means; and

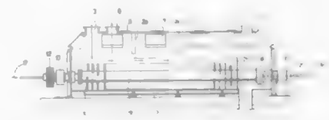
a pair of exit paths connected to respective convection generating chambers and commonly connected to said second gate means.

4,761,897

SCREW CONVEYOR TYPE DRYING APPARATUS

Mitsuo Tazaki, Takarazuka, and Kenji Ohata, Wakayama, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Continuation of Ser. No. 905,785, Sep. 9, 1986, abandoned. This application Dec. 7, 1987, Ser. No. 131,247
Claims priority, application Japan, Jan. 25, 1986, 61-14426
Int. Cl.[4] F26B *17/20*
U.S. Cl. 34—180 14 Claims



1. A conveyor type drying apparatus, comprising a casing having a material charging inlet port and a material discharging outlet port which are spaced from each other by a first predetermined distance in a normal direction of conveyance from said inlet port to said outlet port, a plurality of hollow drive shafts rotatably mounted in said casing, said hollow drive shafts having longitudinal axes extending in said normal direction of conveyance, drive means operatively connected to said hollow drive shafts for driving said plurality of hollow drive shafts so that neighboring drive shafts are rotated in mutually opposite directions, a plurality of feed vanes of hollow construction spaced at a second predetermined distance from each other along said hollow drive shafts, each of said hollow feed vanes having a foot connected to its hollow drive shaft, said plurality of hollow feed vanes including a first group of hollow feed vanes connected along a first imaginary helix having a first pitch positioned on the outer peripheral surface of each of said drive shafts, said plurality of hollow feed vanes including a second group of hollow feed vanes having their feet connected to at least one hollow drive shaft along a second imaginary helix having a second pitch, each of said hollow feed vanes of said first and second groups of feed vanes having a peripheral edge longer than its foot so that each feed vane spreads in a fan type manner radially outwardly, means for feeding heating fluid into the hollow portions of the feed vanes through said hollow drive shafts, said second pitch of said second imaginary helix being wound in a direction opposite to said first pitch of said first imaginary helix, so that said second group of feed vanes move a material to be dried in a direction opposite to said normal direction of conveyance, as the respective drive shaft is rotated, for prolonging the residence time of material in said casing.

4,761,898

FOOTWEAR FASTENER AND SKI BOOT EQUIPPED THEREWITH

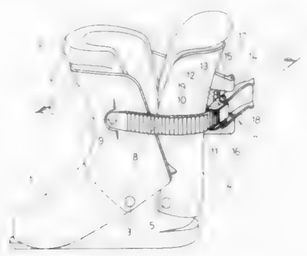
Guy Courvoisier, Celigny; Simon Arieh, Geneva, both of Switzerland, and Herbert Marxer, Schaan, Liechtenstein, assignors to Lange International S.A., Fribourg, Switzerland

Filed Mar. 9, 1987, Ser. No. 23,214
Claims priority, application Switzerland, Apr. 18, 1986, 1578/86; Aug. 22, 1986, 3397/86
Int. Cl.[4] A43C *11/00*; A43B *5/04*
U.S. Cl. 36—50 5 Claims

1. Fastener for closing two portions of a footwear, which comprises a toothed strap having ratchet teeth and adapted to be attached to one portion of the footwear, a stirrup provided with a pawl and adapted to be attached to the other portion of the footwear and in which said toothed strap can slide, said toothed strap being held by said pawl against movement in one direction but allowed to move in the opposite direction, and a

VOL 1093 ISS 2 AG 9 1988 UMI

tension lever, wherein said stirrup is kept continuously in contact with said toothed strap, said tension lever being ful-

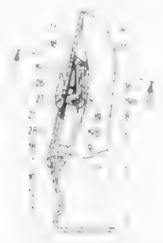


crumed on said stirrup and providing a permanent coupling between said stirrup and the other portion of the footwear.

4,761,899
SKI BOOT

Herbert Marxer, Schaan, Liechtenstein, assignor to Lange International S.A., Fribourg, Switzerland

Filed Apr. 30, 1987, Ser. No. 44,348
Claims priority, application Switzerland, Jun. 6, 1986, 2305/86
Int. Cl.[4] A43B 5/04
U.S. Cl. 36—121 5 Claims

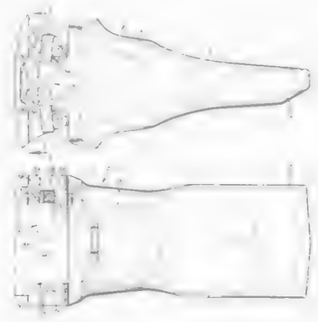


1. Ski boot made of at least semi-rigid material and consisting of a bottom part (**1**) comprising the sole and surrounding the foot and the heel and of an upper (**4**) hinged with the bottom part and comprising a connecting mechanism (**6**) comprising essentially two links (**7, 8**) hinged with each other and with the upper and the bottom part of the boot, respectively, the mechanism (**6**) being arranged in such a way that it is able to assume a first position where the upper is locked relative to the bottom part and a second position where the upper is free to pivot on the bottom part, one of the links being provided with manual operating means, wherein the other link has an aperture (**19**) inside which the pin (**9**) hingeably connecting the links together is engaged, this aperture or groove having a longitudinal part (**19***a*) and a transverse part (**19***b* at the opposite end of the pin (**11**) where it is hinged with the boot, the connecting mechanism comprising in addition an elastic means (**26**) acting transversely on the link hinged with the upper and tending to keep the pin (**9**) hingeably connecting the links together inside the bottom of the transverse part (**19***b*) of the aperture or groove, the said manual operating means (**27**) being arranged in such a way as to move the links angularly relative to each other so as to disengage the hinging pin (**9**) from the transverse part of the said aperture or groove, in such a way that this pin is able to slide inside the longitudinal part of the aperture.

4,761,900
EXCAVATING TOOTH ASSEMBLY

Robert K. Emrich, Portland, Oreg., assignor to ESCO Corporation, Portland, Oreg.

Filed Dec. 4, 1986, Ser. No. 937,982
Int. Cl.[4] E02F 9/28
U.S. Cl. 37—142 R 12 Claims



1. An excavating tooth comprising an adapter and a point, said adapter having means at the rear end for connection to a bucket or the like, a nose at the forward end for coupling to said point and ear means on one side of said nose, said point having an earth engaging edge at one end constituting the tooth forward end and a socket at the rear end for coupling to said adapter nose by movement along the tooth longitudinal axis and tongue means extending rearwardly from said socket for cooperative action with said adapter ear means, and lock means externally of said nose and on one side thereof releasably connecting said point and adapter, said lock means consisting essentially of a generally elongated pin member disposed generally transversely of said axis and having generally arcuate forward and rear surfaces for wedging engagement with said ear and tongue means, said pin member being equipped with a recess in confronting relation to said adapter, said adapter having a bore transverse to said longitudinal axis said one side rearward of said ear means and aligned with said pin member recess and a plug member in said bore resiliently engaging said pin member recess.

4,761,901
SAFETY GUARD FOR A POWER TOOL DISCHARGE CHUTE

Henry Szafarz, 294 Mystic St., Arlington, Mass. 02174

Filed Oct. 22, 1986, Ser. No. 922,056
Int. Cl.[4] E01H 5/09
U.S. Cl. 37—262 23 Claims

1. A safety guard device for a power tool discharge chute, comprising:
shaft means attached to the chute and extending across the opening of the chute;
a plurality of elongate spaced apart blade elements mounted to said shaft means for pivoting within said chute; and
resilient means for biasing said blade elements into a closed condition within the chute to prevent operator access through the opening of the chute and permitting said

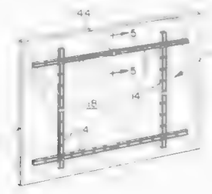


blades to pivot into an open condition so that bulky material may be discharged through the chute.

4,761,902
UNIVERSAL PICTURE SUPPORT ASSEMBLY AND METHOD

Marc A. Lansky, and Philip M. Clemens, both of Fort Wayne, Ind., assignors to John F. Hoffman and Albert L. Jeffers, both of Fort Wayne, Ind., a part interest to each

Filed Jan. 20, 1987, Ser. No. 4,665
Int. Cl.[4] A47G 1/06
U.S. Cl. 40—155 33 Claims



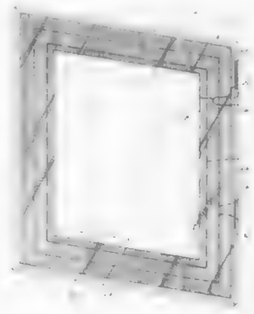
1. A universal picture support assembly, comprising:
a plurality of relatively rigid elongate grid members;
first means defined at a first plurality of spaced locations along each of said grid members for facilitating the breaking off of an end portion thereof to provide said grid member matched in length to a dimension of a picture to be mounted by said assembly;
second means defined at a second plurality of spaced locations along each of said grid members for facilitating interfitting of said grid members together in a gridwork pattern; and
attaching means on one of a pair of opposite sides of said grid members for securing to the back of the picture said grid members when interfitted in said gridwork pattern.

4,761,903
WATERPROOF DISPLAY FRAME

Robert L. Cantrell, 114 Chapel Hill Dr., Fairfield, Ohio 45014

Filed Dec. 5, 1986, Ser. No. 938,584
Int. Cl.[4] A47C 1/06; G09F 1/10
U.S. Cl. 40—159 3 Claims

1. A method of displaying a picture in a waterproof frame comprising the steps of:
applying an opaque border to the rear face of a light-transmissive rigid plate having front and rear faces, peripheral edges and a center, said opaque border applied around the perimeter of said rear face, said border spaced from said peripheral edges of said rear face and spaced from the center of said plate whereby a light-transmissive area is defined by said opaque border and a light-transmissive area is provided around the peripheral edges,
positioning a picture having marginal edges to be displayed behind the centered light-transmissive area defined by said opaque border on said rear face, the marginal edges of said picture overlying said opaque border,

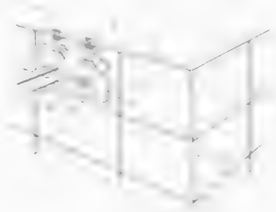


securing said picture to the rear face of said rigid plate by means of a water-impermeable plastic sheet, said sheet having two faces and peripheral edges, an adhesive coating being applied around at least the peripheral edges of said sheet, and said adhesive coated peripheral edges being adhesively secured to said opaque border.

4,761,904
LABEL HOLDER

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317, and Michael M. Smith, Ft. Lauderdale, Fla., assignors to Jacob Fast, Plantation, Fla.

Filed Sep. 5, 1985, Ser. No. 772,670
Int. Cl.[4] G09F 3/00
U.S. Cl. 40—308 5 Claims



1. In combination with a wire rod forming a part of a product basket, shelf, and the like, a label holder suspended from the rod, the label holder comprising a card of sheet material and at least one elongate tab extending from an upper margin of the card, the tab being looped around the rod and secured to the car by attachment means on the end of the tab, the tab further being stabilized against swaying by contact adhesive on an inner surface thereof adhering the tab to the rod and the tab being slit longitudinally to improve conforming adhesion thereof around the rod.

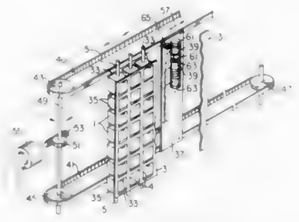
VOL 1093 ISS 2 AG 9 1988 UMI

4,761,905

SCANNED ELECTROMECHANICAL DISPLAY

Fred M. Black, 109 Kemp Rd. East, Greensboro, N.C. 27410

Filed Sep. 30, 1986, Ser. No. 913,536
Int. Cl.[4] G09F *3/04*
U.S. Cl. 40—447 15 Claims



1. A selectively controllable electro-mechanical display apparatus including a matrix of rows and columns of a plurality of individual rotatable multifaced display elements, respectively, each individual display element including trigger arms on immediately adjacent or opposite faces, a carriage, means for controllably moving said carriage back and forth between the extremes of said matrix of display elements proximate the non-display side of said matrix, triggering means mounted on said carriage for selectively engaging preselected ones of the trigger arms of each one of said display elements, as said carriage moves back and forth, to cause rotation of the preselected ones of said display elements, to position desired faces of said elements on the display side of said matrix of elements for displaying a desired pattern, wherein the improvement comprises:

each display element identically having at least two adjacent faces 90° to one another, each face being unique at least relative to its adjacent face, a single trigger arm mounted on and protruding from an opposite edge of each of said two adjacent faces, and protruding away from the axis of rotation of said display element, the opposite edges being perpendicular to the axis of rotation of said display element, whereby when said carriage is moved across said matrix of elements in one direction, selected ones of said elements are rotated 90° via said triggering means engaging the trigger arms thereof, to display different faces thereof, and when said carriage is moved oppositely to said one direction back across said matrix of elements, second selected ones of said elements are rotated 90° in opposite rotation to the first selected ones of said elements, via said triggering means engaging the trigger arms thereof, for displaying different faces of the former, the set-up of a desired pattern of unique faces of said elements on the display side of said matrix of display elements from one pattern to another, requiring from one to three passes of said carriage, depending upon the uniqueness of the faces relative to one another of each display element.

4,761,906

FIREARM SAFETY DEVICE

Michael G. Guevara, 16575 #A San Ramon, Morgan Hill, Calif. 95037

Continuation-in-part of Ser. No. 753,637, Jul. 10, 1985, abandoned. This application Feb. 20, 1987, Ser. No. 5,480
Int. Cl.[4] F41C *17/08*
U.S. Cl. 42—70.11 3 Claims

1. A firearm safety device usable on a firearm having an externally exposable space between a cartridge firing chamber and associated firing pin, including a revolvable cylinder with a plurality of cartridge chambers each of which chambers is movable between a loading position in which both ends of the chamber are exposed and a firing position in which the chamber is disposed adjacent the firing pin in which position it functions as the firing chamber, said device comprising:

plate means disposable in the space between the firing pin and cylinder for mechanically isolating the firing pin from the firing chamber;

a pair of bar members sized to be received in cartridge chambers, attached at mutually spaced locations to said plate means, and extending from a common side of said plate means;

means for adjusting the distance on said plate means between said bar members to permit positioning of said bar members in differently spaced cartridge chambers; and

means for releasably locking one of said bar members to a cylinder with said bar members disposed in respective ones of such cartridge chambers.

4,761,907

DEVICE FOR THE TRANSFORMATION OF A WEAPON INTENDED TO SHOOT BULLETS INTO A LASER SHOT TRAINING WEAPON

Carlo De Bernardini, 8, rue des Maraichers, 1205 Geneve, Switzerland

Filed Sep. 8, 1986, Ser. No. 904,498
Claims priority, application Switzerland, Sep. 13, 1985, 03983/85
Int. Cl.[4] F41G *3/26*
U.S. Cl. 42—106 4 Claims



1. Device for the transformation of a bullet shooting weapon into a laser training weapon, characterized by the fact that it comprises a housing for a shock detector controlling the release of a laser beam as well as a part carried by said housing and limiting the stroke of a percussion system of a said weapon to a value such that the impact of such a percussion system on said device will be sufficient to release such a laser beam through the intermediary of such a detector but will be insufficient to cause vibrations of the weapon leading to oscillations of such laser beam, the housing being parallelepipedic and having dimensions such that it is adapted to be wedged into a fire groove of a breech of a rifle to reduce the stroke of a percussion member of said rifle during the release of the shot.

4,761,908

PORTABLE HUNTING BLIND

Alphis H. Hayes, 4600 Old Troup Rd., Tyler, Tex. 75707

Filed Aug. 13, 1987, Ser. No. 84,914
Int. Cl.[4] A01M *31/02*
U.S. Cl. 43—1 12 Claims



1. A portable hunting blind, which comprises:

a first hoop;

a second hoop;

a plurality of collapsible stays connected between said first and second hoops at substantially equally spaced apart locations about the circumferences of said hoops, each of said collapsible stays being movable between a substantially rigid extended position in which said first and second hoops are spaced apart from each other and a collapsed position in which said hoops are closely adjacent each other;

a third hoop;

and a plurality of collapsible stays connected between said third hoop and said second hoop at substantially equally spaced apart locations about the circumference of said hoops, wherein said stays connecting said first and second hoops are circumferentially displaced from said stays connecting said second and third hoops.

4,761,909

ICE HOLE FISHING PLUG

Gregory A. Christian, 8125 Vincent Ave. S., Minneapolis, Minn. 55431; Patrick L. Gray, 8940 - 16th Cir., Bloomington, Minn. 55420, and Brian S. Gray, 2140 Carnelian La., Eagan, Minn. 55122

Continuation-in-part of Ser. No. 916,889, Oct. 8, 1986, abandoned. This application Jun. 8, 1987, Ser. No. 59,640
Int. Cl.[4] A01K *00/00*
U.S. Cl. 43—4 8 Claims



1. An icehole plug, comprising, in combination: a hollow, longitudinally elongated member comprised of material exhibiting resiliency characteristics permitting the walls of said member to expand when unrestrained, said member further having an upper portion comprised of material exhibiting a lesser degree of resiliency than the material of the bottom portion and including means for receiving and discharging fluid under pressure to and from the interior thereof and adapted to be disposed in a hole to be plugged so that the top and bottom portions remain unrestrained when fluid under pressure is admitted to the interior thereof whereby the ends of said member will expand over the ends of a hole.

4,761,910

ARTIFICIAL BAIT DEVICE

Masaki Ninomiya, Chiba, Japan, assignor to Tackle House Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1987, Ser. No. 78,865
Claims priority, application Japan, Jul. 28, 1986, 61-115523[U]
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.31 1 Claim



1. An artificial bait device comprising:

a main body;

a steel ball received within said main body and longitudinally movable therein; and

a magnet attached to said main body for attracting and releasably holding said steel ball.

4,761,911

SELF-ACTUATING ANIMAL SNARE

Richard E. Butera, 2935 Lynn Dr., Willoughby Hills, Ohio

Filed Aug. 3, 1987, Ser. No. 80,788
Int. Cl.[4] A01M *23/34*
U.S. Cl. 43—87 18 Claims



1. A snare for trapping animals comprising a flexible cable having opposed anchor and loop ends, said loop end operatively connected to an intermediate portion of said cable to form a constrictable loop for ensnaring an animal, said loop having a relatively large area setting position and a relatively smaller area closed position, actuating means for urging said loop toward said closed position and catch means for releasably restraining said loop in said setting position, and said actuating means comprising a length of cable proximate said loop end having a permanent set approximately in the shape of said closed position.

4,761,912

SNAIL TRAP

Robert L. Dyer, 6915 Camino De Gravia, San Diego, Calif. 92111, and Lonnie C. Pogue, 821 Pismo Ct., San Diego, Calif. 92109

Filed May 11, 1987, Ser. No. 48,213
Int. Cl.[4] A01M *1/10*
U.S. Cl. 43—121 17 Claims

1. A trap for snails, slugs and the like, comprising:

a base having a central upwardly extending support defining an upwardly opening bait receptacle, an annular upwardly projecting wall surrounding the central support, a generally horizontal planar bottom member extending between and connecting a lower portion of the central support and a lower portion of the annular wall, and a ring-shaped

VOL 1093 ISS 2 AG 9 1988 UMI

flange connected to the lower portion of the annular wall and extending radially outwardly therefrom; and

a top cover having a generally horizontal planar disk element, an annular lip extending downwardly from the periphery of the disk element, and a plurality of reinforcing ribs extending diametrically across the underside of the disk element, the ribs including downwardly extending legs, the top cover being configured and dimensioned so that it can fit on top of the base and engage the central support and annular wall thereof, with the annular lip positioned radially outward from the annular wall and the



legs engaging the ring-shaped flange, and the annular wall positioned below the disk element to provide an annular gap therebetween of sufficient size so that snails, slugs or the like can crawl over the annular wall, through the gap and into a concealed poison chamber defined by the bottom member, the central support, the annular wall and the disk element, and with the bait receptacle communicating with the chamber through a space between an upper end of the central support and the disk element so that the odor of a quantity of bait deposited therein can permeate the chamber.

4,761,913

GREENHOUSE SCREEN

Göran Henningsson, Kinna, and Olof Hellgren, Lund, both of Sweden, assignors to Ludvig Svensson International BV, Hellevoetsluis, Netherlands

Continuation-in-part of Ser. No. 863,375, filed as PCT SE85/00301, Aug. 5, 1985, published as WO86/01072, Feb. 27, 1986

Claims priority, application Sweden, Aug. 6, 1984, 8403986

Int. Cl.[4] A01G *9/22*

U.S. Cl. 47—17 5 Claims



1. Greenhouse screen, for use as a filter for short-day treatment of plants and made of a film, textile, non-woven material or a combination thereof with high light resistance and good weathering characteristics wherein: said greenhouse screen at least partly consists of a material which in one or more layers has high absorption of light in a significant part of the wavelength interval 575–800 nm, and with a substantially total absorption in the interval 600–750 nm, and which has a high transmittance of light in the wavelength interval 400–575 nm.

4,761,914

SYSTEM OF CONSTRUCTION OF TERRACED STRUCTURES FOR CROPS

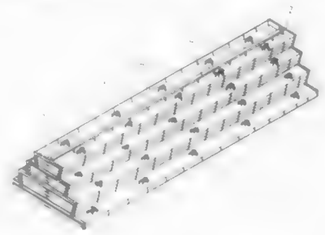
Manuel T. Martinez, Sancho el Fuerte, 21-8° Navarra, Pamplona, Spain

Filed Mar. 30, 1987, Ser. No. 32,019

Claims priority, application Spain, Apr. 1, 1986, 553.591

Int. Cl.[4] A01G *9/02*

U.S. Cl. 47—83 6 Claims



1. System of construction of terraced structures for crops, comprising two rigid and equal one-piece frames that will determine the shape of the general cultivating structure and tiered on both sides with upward convergence, and in which each said tier has its tread or upright member inclined outward; both said frames being joined by an upper stringer that determines the length of the general structure and at least two strap cables existing on each said tread, each said strap cable forming a link embracing the entire perimeter of the terraced structure and incorporating means of stress, in order to keep the link under tension, and side walls being constituted by a plurality of side retaining plates, having as many side retaining plates as there are tiers, said side retaining plates are provided with a means of hooking on the upper strap cable and are abutted and supported laterally against said cables around said tier and in alignment with the tread; and when the structure is very long, there will be braced posts to support said upper stringer at intermediate points and flats that are crossed by said strap cables and keep the separation between said cables stable.

4,761,915

DOOR FOR AN AUTOMOTIVE VEHICLE

Helmut März, Lenting, Fed. Rep. of Germany, assignor to Audi AG, Ingolstadt, Fed. Rep. of Germany

Filed Apr. 24, 1987, Ser. No. 41,928

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1986, 3613978

Int. Cl.[4] B60J *5/04*

U.S. Cl. 49—374 16 Claims



1. A door for use in a vehicle, comprising:

a panel member;

a frame member positioned in spaced-apart superposed relationship to said panel member to provide a chamber for receiving a window pane mounted for movement into and out of said chamber substantially along a first axis;

component support means positioned in said chamber;

guide means for providing guidance to said window pane during said movement;

means for connecting said component support means to one of said frame member and said guide means for pivotable movement relative to the other of said frame member and said guide means about a second axis intersecting said first axis;

means for pivoting said component support means about said second axis into a predetermined position relative to said one of said frame member and said guide means; and

means for maintaining said predetermined position between said component support means and said one of said frame member and said guide means.

4,761,916

MOLDED URETHANE WINDOW GASKET ASSEMBLY WITH HINGE MEMBER AND APPARATUS AND METHOD FOR MAKING SAME

John L. Sanok, Grosse Ile, Mich., and David G. Adams, Toledo, Ohio, assignors to Sheller Globe Corporation, Toledo, Ohio

Continuation of Ser. No. 560,603, Dec. 12, 1983, abandoned, which is a continuation-in-part of Ser. No. 505,196, Jun. 17, 1983, Pat. No. 4,648,832. This application Jan. 15, 1987, Ser. No. 5,334

Int. Cl.[4] E05D *15/00*

U.S. Cl. 49—381 11 Claims



1. In a window assembly having at least one substantially transparent window panel and a window gasket assembly for sealing between said transparent window panel and a window opening in a vehicle body panel or the like, the improvement wherein said gasket assembly includes a fixed gasket member adapted to be bonded and secured directly to a peripheral area of said body panel surrounding said window opening with an adhesive material without the use of a mechanical fastener device, a movable gasket member secured to at least a portion of the peripheral edge area of said window panel, said fixed and movable gasket members being interconnected by a flexible hinge web extending therebetween, said window panel and said movable gasket member being hingedly and pivotally movable relative to said fixed gasket member and said body panel, said fixed and movable gasket members and said hinge web being integrally molded in a one-piece structure, said movable gasket member being integrally molded onto at least said portion of said peripheral edge area of the window panel and bonded thereto, and said one-piece structure being reaction injection molded from a multi-constituent urethane material.

4,761,917

DEFLATABLE WEATHERSTRIPS

Allen F. Knecht, Centerville; John F. Eilerman; Stanley E. Smith, both of Dayton, and Jack E. Smith, Huber Heights, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 3, 1987, Ser. No. 10,368

Int. Cl.[4] E06B *7/16*

U.S. Cl. 49—477 1 Claim

1. An apparatus for sealing between a hinged vehicle closure and body, such as between a door and door frame forming an opening of an automobile, comprising:

a deflatable sealing member for resilient interference engagement between said closure and said body; said sealing member including a non-deflatable bumper portion defining a limited resilient surface for contacting a portion of said body to both absorb shock during closing and positively maintain a predetermined space between the closure and the remainder of the sealing member when deflated for the passage of air and prevention of compression shock;

vacuum source means connected to said deflatable sealing member;

control means for connecting said vacuum source means to said deflatable sealing member at least during the closing of said closure, and for venting to ambient pressure after closing; said sealing member having sufficient resiliency to



provide a firm seal by interference engagement upon inflation by ambient pressure;

whereby deflation of said sealing member to a reduced cross section during closing of said closure allows passage of air from inside the vehicle past said sealing member by the positive influence of said bumper portion to substantially reduce closing effort and eliminate compression shock, and after closing inflation of said sealing member by ambient pressure releases said sealing member for firm sealing engagement with increased resilient interference between said closure and said body.

4,761,918

WORK RECIPROCATED SURFACE GRINDING APPARATUS

Hisashi Hirota, Ichikawa, Japan, assignor to Nippon Thompson Co., Ltd., Japan

Filed Aug. 4, 1986, Ser. No. 893,066

Claims priority, application Japan, Aug. 3, 1985, 60-170581

Int. Cl.[4] B24B *7/17*

U.S. Cl. 51—114 7 Claims



1. A grinding apparatus for forming at least one straight groove on a surface of a work, comprising:

carrying means for carrying at least one work to be processed, said carrying means being provided to be movable along a predetermined path in a reciprocating manner between a first end position and a second end position, said carrying means including a pair of spaced mounting sections, each mounting section including means for mounting thereon a work to be processed, and arranged in a line in a direction of movement of said carrying means;

VOL 1093 ISS 2 AG 9 1988 UMI

first grinding means located along said predetermined path between said first and second position, said first grinding means being for finish grinding and movable between a retracted position where not engageable with said work which moves along said predetermined path as carried on said carrying means and an advanced position where engageable with said work which moves along said predetermined path as carried on said carrying means;

a pair of second and third grinding means wherein said second grinding means is located along said predetermined path between said first end position and said first grinding means, and said third grinding means is located along said predetermined path between said second end position and said first grinding means, said pair of second and third grinding means being for rough grinding and each movable between a retracted position where not engageable with said work which moves along said predetermined path as carried on said carrying means and an advanced position where engageable with said work which moves along said predetermined path as carried on said carrying means; and

whereby said work is first processed by either one of said second or third grinding means and then by said first grinding means as said work moves along said predetermined path as carried on said carrying means in a reciprocating manner, thereby forming a groove on a surface of said work and wherein said first, second and third grinding means are spaced apart from one another such that, when one of said pair of mounting sections is located between said first grinding means and one of said second and third grinding means, the other of said pair of mounting sections is located between the other of said second and third grinding means and a corresponding one of said first and second end positions.

4,761,919

MULTIPLE SKYLIGHT GUTTERING SYSTEM

William F. O'Keeffe, and Sonny Q. Garcia, both of San Francisco, Calif., assignors to O'Keeffe's, Inc., San Francisco, Calif.

Filed Apr. 30, 1987, Ser. No. 44,156
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—14 8 Claims



1. A guttering system for draining fluid comprising:

a plurality of first channels having a first cross-section;

a plurality of second channels having a second cross-section, the second channels being deeper than the first channels;

each of said second channels being provided with a plurality of first apertures substantially in the shape of the first cross-section;

first means for securing the first channels in the first apertures of the second channels;

first means for providing a seal between the first channels and the second channels with the first channels provided in the first apertures of the second channels;

a peripheral sill provided with a plurality of second apertures substantially in the shape of the first cross-section and a plurality of third apertures substantially in the shape of the second cross-section;

second means for securing the first channels in the second apertures and the second channels in the third apertures;

second means for providing a seal between the first channel and the peripheral sill with the first channels provided in the second apertures and for providing a seal between the second channels and the peripheral sill with the second channels provided in the third apertures;

wherein the first means for providing a seal includes first gaskets substantially conforming to the first cross-section;

wherein the second means for providing a seal includes second gaskets substantially conforming to the first cross-section and third gaskets substantially conforming to the second cross-section;

wherein said first gaskets in cross-section includes first and second appendages which fit about and form a pocket for receiving an edge of said first apertures of said second channels for forming a seal between the first gaskets and the first apertures, and a first surface for receiving said first channels against said first surfaces for forming a seal between the first surfaces and the first channels;

wherein said second gaskets in cross-section includes third and fourth appendages which fit about and form a pocket for receiving an edge of said second apertures of said peripheral sill for forming a seal between the second gaskets and the second apertures, and a second surface for receiving said first channels against said second surfaces for forming a seal between the second surfaces and the first channels; and

wherein said third gaskets in cross-section includes fifth and sixth appendages which fit about and form a pocket for receiving an edge of said third apertures of said peripheral sill for forming a seal between the third gaskets and the third apertures, and a third surface for receiving said second channels against said third surfaces for forming a seal between the third surfaces and the second channels.

4,761,920

LOFT HATCH FRAMES

Clifford B. Coulson, Leicestershire, United Kingdom, assignor to Profilex Limited, Leicestershire, United Kingdom

Filed Jan. 7, 1987, Ser. No. 1,239
Claims priority, application United Kingdom, Jan. 24, 1986, 8601740
Int. Cl.[4] E06B *1/56*
U.S. Cl. 52—19 12 Claims



1. A ceiling loft hatch assembly comprising:

A ceiling structure including ceiling support members clad on their underside with cladding means;

means defining an access opening through said ceiling structure, including a rectangular arrangement of four purlins coplanar with the ceiling structure, inwardly facing vertical edge faces of the four purlins cooperating with one another to define the access opening;

four extruded mouldings each comprising an elongate face plate having a planar upper surface and a generally central longitudinal web upstanding therefrom;

means securing the web of each moulding to a respective one of the purlin inwardly facing vertical edges with one half of each elongate face plate underlying the ceiling cladding means around the access opening and with the respective said upper surfaces thereof in engagement with the confronting surface of said ceiling cladding means such that the other half of each elongate face plate projects into the access opening with said upper surface thereof in the plane of said confronting surface to provide a support surface for supporting a loft closure panel with the lower surface thereof coplanar with said confronting surface;

four corner plates each having formed therein a pair of mutually perpendicular upwardly open channel recesses each of which receives an end portion of one of the said extruded mouldings to overlie and mask the adjacent ends of said extruded mouldings; and

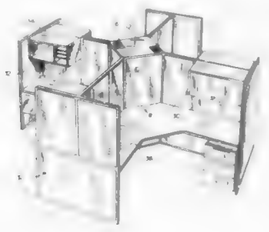
a loft closure panel removably filling the access opening by resting on said support surface formed by said other halves of the respective elongate face plates.

4,761,921

SOUND-MASKING SYSTEM FOR CORE MODULES USED IN AN OFFICE

Philip H. Nelson, 42 Harmony Rd., Spring Valley, N.Y. 10977

Filed Jan. 16, 1987, Ser. No. 4,126
Int. Cl.[4] E04B *1/82*
U.S. Cl. 52—33 10 Claims



1. An acoustic sound-masking system carried in a core module assembly, said sound- masking conditioning the human ear of those within an area to reject unwanted sound and providing conversational privacy and individual work-areas for workers in an open-plan office space, this and each core module assembly movable to a desired location within the open-plan office space and on the open floor, this sound-masking system including:

(a) a core module assembly having at least three sidepanel portions and a flat top portion, each side-panel portion substantially alike in height, and with said panels secured to provide an assembly which is an enclosure movable, without disassembly, on said floor;

(b) the flat top panel configured to provide a closure of and for the top portion of the enclosure,and means for securing this top panel to each side of the side panel portions;

(c) at least one through aperature formed in said top panel, said at least one through aperature having a selected and determined configuration;

(d) a loudspeaker mounted in each of said through aperture with said loudspeaker adapted to produce a sound-masking or random-noise sound at a low level and direct said sound-masking noise upwardly and outwardly, each loudspeaker mounted so as to not protrude obtrusively and excessively above the top surface of the top panel;

(e) at least one divider for each side panel and having at a first end operatively attached to said enclosure at the intersection of said side panels, and

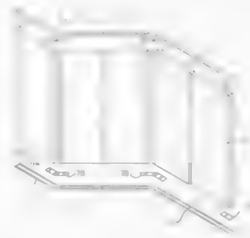
(f) a plurality of desks or individual work-areas arrayed between two of said at least one divider and adjacent the side panel,with a divider between each pair of desks or individual work-areas, and with a desk or work-area adjacent each side extent of a divider, said work-area adapted to be within that area proximate to a divider, the sound-masking noise level great enough to insure speech privacy for the occupant of said work, these work areas and said loudspeaker, producing said random-sound noise, providing sound-masking for this localized area.

4,761,922

PARTITION WALL CONSTRUCTION

Brian E. Black, 24 Palatine Terrace, Christchurch, New Zealand

Filed Dec. 16, 1986, Ser. No. 942,129
Claims priority, application New Zealand, Dec. 16, 1985, 214578
Int. Cl.[4] E04B *1/346*
U.S. Cl. 52—71 66 Claims



1. A partition wall construction, said wall having at least one external surface and including: a first series of channel member sections connected together with connecting plates to form a horizontal lower channel member; a second series of channel member sections connected together with connecting plates to form a horizontal upper channel member; a series of vertical spaced wall posts each having an upper and a lower end, the upper end of each wall post being engaged with the upper channel member and the lower end of each wall post being engaged with the lower channel member; and one or more panels each having two horizontal and two vertical edges, the horizontal edges of each said panel being received within the upper and lower channel members, said panels being arranged so that at least one surface of each said wall post forms part of the external surface of the partition wall; said connecting plates being capable of interconnection over a range of angles such that any panel may be positioned relative to any adjacent panel over said range of angles, said range of angles lying between about 30 degrees and 330 degrees.

4,761,923

LANDSCAPE EDGING

Donald J. Reum, and Mark T. Reum, both of Albany, Minn., assignors to Avon Plastics, Inc., Albany, Minn.

Filed Aug. 7, 1986, Ser. No. 894,353
Int. Cl.[4] E02D *27/00*
U.S. Cl. 52—102 36 Claims

1. Landscape edging, comprising:

a body member of predetermined length, height and thickness and defining first and second opposed faces;

a top rail member extending longitudinally along the top of the body member;

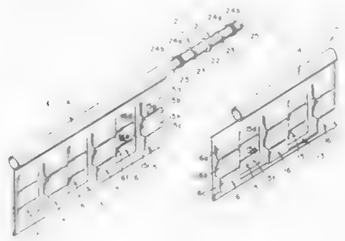
a plurality of first nesting regions formed in the body and disposed in longitudinally spaced relation, each of said first nesting regions comprising at least one projecting surface projecting from the first face of said body and at least one cavity extending into the second face of said body;

a plurality of second nesting regions formed in the body and disposed in longitudinally spaced alternating relation with the plurality of first nesting regions, each of said second nesting regions comprising at least one projection surface

VOL 1093 ISS 2 AG 9 1988 UMI

projecting from the second face of said body and at least one cavity extending into the first face of said body;

the projecting surface of the first nesting regions and the



cavities of the second nesting regions being structurally complementary to permit two lengths of the landscape edging to be joined in longitudinal overlapping, nesting relation.

4,761,924

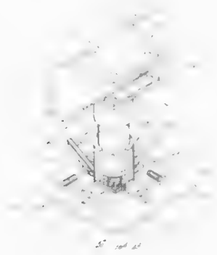
SUPPORT MEMBER FOR A BUILDING STRUCTURE SUPPORT SYSTEM

Harold L. Gustafson, BattleGround, Wash., assignor to Russell Lorenz & Wilma Lorenz, BattleGround, Wash.

Filed Apr. 17, 1987, Ser. No. 40,548

Int. Cl.[4] E04C *3/10*

U.S. Cl. 52—126.6 11 Claims



1. A support member adapted for use in a support system for a building structure having a foundation formed of a plurality of spaced, parallel support beams wherein said support member is adapted to be positioned under one of a said beam, said support member comprising

a planar base having a preselected cross-sectional area;

a bottom member operatively coupled to said planar base and having a vertically extending portion formed of a selected internal geometrical dimension and which defines a hollowed-out thrust bearing member receiving cavity, said bottom member including at least one pair of aligned base tabs positioned adjacent the planar base and one on each side of the vertically extending portion positioned adjacent the planar base;

a raised locking boss attached to said planar base and being positioned adjacent said vertically extending portion within the hollowed-out thrust bearing member receiving cavity;

a support member including a planar support plate having a geometrical dimension and shape to pass through the vertically extending portion of said bottom member and into mating position with that portion of the planar base enclosed by said hollowed out thrust bearing member member receiving cavity wherein the raised locking boss coacts with said planar support plate to lock the same in position and to prohibit rotation thereof about an axis passing perpendicular to the plane of said planar support plate, said support member including a vertically extending support shaft of a selected length and predetermined external dimension and shape, said vertically extending support shaft being affixed to said planar support plate and including first coacting means located around the periphery thereof;

a thrust bearing member having a selected axial length and means defining an outer lip at one end thereof having a selected external geometrical dimension with an inner collar extending therefrom having a selected external dimension which is less than said selected external dimension, said thrust bearing member including interior wall means for defining an opening which extends axially therethrough and means for forming an interior wall having a second coacting means located thereon which is capable of coacting with said first coacting means in response to a rotational force applied around the longitudinal axis thereof to produce relative movement therebetween, said opening in said thrust bearing member having a cross-sectional diameter and shape which is adapted to receive and pass vertically extending support shaft;

an elongated sleeve member having an elongated central opening extending therethrough forming rims at each end thereof with the internal dimensions thereof being substantially equal to the selected external dimensions of the collar of said thrust bearing member to enable the collar to be inserted into said elongated sleeve until the rim of the sleeve is contiguous to the outer edge of said collar, said elongated sleeve member having an external geometrical dimension thereof which is of a shape and dimension to permit said one end of the elongated sleeve member having said thrust bearing member affixed thereto to be inserted into and transported within the hollowed-out thrust bearing member receiving cavity in said bottom member until said opening in said thrust bearing member is brought into contact with said vertically extending support shaft such that said first coacting means and said second coacting means coact with each other and are responsive to a rotational force applied therebetween to vary the distance between the planar support plate, locked in position by said locking boss to prevent rotation thereof, and said thrust bearing;

a top member having a top stabilizing plate and an extended lower portion formed of an internal geometrical dimension and shape to receive and slide over the other end of said elongated sleeve member permitting the other end thereof to slide within said extended lower portion of said top member into engagement with said top stabilizing plate, said top member including gripping means adapted to be fixedly attached to said stabilizing plate and to one of said beams, said top stabilizing plate plate having at least one pair of aligned top tabs positioned one on each side of the lower extended portion of the top member and positioned in spaced parallel alignment with said at least one pair of base tabs;

at least two strut stabilizing rods each having one end extending from a selected one of the bottom tabs; and

means for fixedly connecting said one end of each of said strut stabilizing rods to a selected one of the bottom tabs.

4,761,925

ANTI-SEISMIC RUBBER BEARING

Yoshikide Fukahori, Hachioji; Wataru Seki, Kodaira; Toshikazu Yoshizawa, Hachioji; Shigenobu Suzuki, Kodaira; Takeshi Suga, Kawasaki; Mitsuaki Maeda, Hoya, and Akihiko Ogino, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 27,283

Claims priority, application Japan, Mar. 31, 1986, 61-74040; Apr. 10, 1986, 61-82852

Int. Cl.[4] E02D *27/34*

U.S. Cl. 52—167 12 Claims



1. An anti-seismic rubber bearing adapted to be fixed to a building and foundation, comprising:

two flanges,

a laminate structure securely connected between the flanges, said laminate structure including a plurality of rigid plates with stiff properties, each rigid plate having a rounded edge around an outer periphery thereof, and a plurality of flexible plates with viscoelastic properties, said rigid plates and flexible plates being laminated alternately so that upper most and lower most plates are flexible plates and fixedly bonded together, upper and lower peripheries of the laminate structure having curved corners smoothly extending from the outer periphery to the flanges so that local strain, when occurred around the flanges, is evenly distributed throughout the structure, and

a rubber compound covering the laminate structure.

4,761,926

TILE MOUNTING SYSTEM

Philip L. Rea, "Melleray", 7A, Hillcrest Road, Ealing, London W5 2JL, and Stanley R. Bagshaw, 19 Georgewood Road, Hemel, Hempstead, Hertfordshire HP3 8AL, both of England

Filed Jun. 12, 1986, Ser. No. 873,346

Claims priority, application United Kingdom, Jun. 21, 1985, 8515769

Int. Cl.[4] E04F *13/08*

U.S. Cl. 52—387 12 Claims



1. A tiling system which comprises the provision of a matrix defining a substantially planar apertured portion for adhesive attachment to a surface that is to be tiled and whose apertures constitute substantially all of the area of the matrix, the apertured portion being provided with a pattern of projections whose size and positions are such that in use, tiles can fit between the projections and seat on the apertured portion and be adhesively secured to said surface by way of the apertured portion and the apertures therein whilst being spaced apart from one another by said projections to facilitate uniform grouting between the tiles, the projections having an axial length and height less than the width, length and height of any tile that may be adhered to the surface, and

wherein the pattern of projections is detachably secured to said apertured portion.

4,761,927

PANELIZED ENCLOSURE SYSTEM WITH REVERSE CAMBER SEAL

William F. O'Keeffe, and Sonny Q. Garcia, both of San Francisco, Calif., assignors to O'Keeffe's, Inc., San Francisco, Calif.

Filed Apr. 30, 1987, Ser. No. 44,288

Int. Cl.[4] E04B *1/62*

U.S. Cl. 52—403 5 Claims



1. A panelized enclosure system including:

a plurality of panel structures each having a panel and a rafter means for supporting each panel;

interconnection means for flexibly interconnecting said panel structures to form the enclosure system;

sealing means for sealing said panel structures together to form an enclosure system;

each rafter means including a rafter with an exterior side, an interior side and a peripheral side joining the exterior and interior sides, and positioned by the interconnecting means adjacent the peripheral side of an adjacent rafter; and

wherein said sealing means includes:

(a) a finger gasket means extending from at least one of two adjacent rafters toward the other adjacent rafter; and

wherein said finger gasket means includes:

(a) a first finger gasket extending from a first rafter toward an adjacent second rafter;

(b) said first finger gasket secured to said first rafter about where the peripheral and interior sides of said first rafter meet;

(c) a second finger gasket extending from said second rafter toward said first rafter;

(d) said second finger gasket secured to said second rafter about where the peripheral and interior sides of said second rafter meet, said second finger gasket overlapping said first finger gasket.

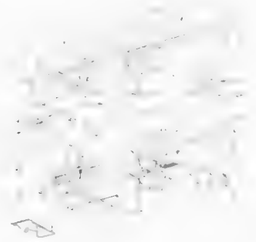
VOL 1093 ISS 2 AG 9 1988 UMI

4,761,928

INSULATING BATTS SAG PREVENTING WALL FRAME STUD

Carold Pichette, 163 de l'Eglise Street, Château Richer, Canada G0A 1N0

Filed Jul. 6, 1987, Ser. No. 69,975
Int. Cl.[4] E04B *1/62, 2/14*
U.S. Cl. 52—404 11 Claims



1. A structural, sheet metal elongated member adapted to be used as a component of a wall frame defining a cavity for receiving glass-fibre insulating batts of the type having easily-separable layers, said member of U-shape cross-section defining a web and two legs interconnecting said web and of a width at least one-quarter that of said web, said member used as an upright stud, said stud having longitudinally-spaced struck-out portions made in said web, each defining an elongated prong having a free tip and free longitudinal edges and an inner end integrally-connected to said web at a bending line, said prong bendable between an inoperative position co-planar with said web and an operative position generally normal to said web to engage and retain a batt , said bending line being oblique to the longitudinal axis of said member and said prong, when in operative position, being transversely, downwardly inclined towards one of said legs, and at least one of its longitudinal edges being inclined relative to the plane of said web.

4,761,929

COLLAPSIBLE/EXPANDABLE STRUCTURAL FRAMEWORKS

Theodore R. Zeigler, 3333 McKinley St., Washington, D.C. 20015

Continuation-in-part of Ser. No. 458,364, Jan. 17, 1983, Pat. No. 4,473,986. This application Oct. 2, 1984, Ser. No. 656,937
Int. Cl.[4] E04H *12/14*
U.S. Cl. 52—646 30 Claims



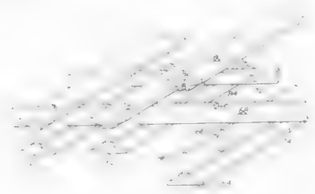
10. A collapsible/expandable structural framework comprising a plurality of struts and a plurality of hub means pivotally connected to the ends of said struts, the hub means constituting the sole means pivotally joining the struts so that the framework is movable between a generally parallel and bunched collapsed condition and an expanded condition in which the struts define an open space frame encompassing a volume filled with adjacent and contiguous generally polyhedral bodies each having struts lying along its edges and hub means at its corners so that adjacent bodies share common struts and hub means.

4,761,930

GRATING SYSTEM

Joseph E. Tepera, McKinney, Tex., assignor to Fibergrate Corporation, Dallas, Tex.

Filed Dec. 14, 1981, Ser. No. 330,700
Int. Cl.[4] E04C *2/42*
U.S. Cl. 52—669 4 Claims



1. A load bearing grate structure comprising: longitudinal span bars having top and bottom surfaces and having lateral locating slots spaced therealong, said lateral locating slots having a generally U-shaped configuration;

transverse tie bars having top and bottom surfaces, said top surfaces having axial locking slots spaced therealong and said bottom surfaces being arcuate for mating with said lateral locating slots of said longitudinal span bars;

longitudinal interlock members having top and bottom surfaces, said top surfaces being flat for receiving the load and said bottom surfaces including a channel; and

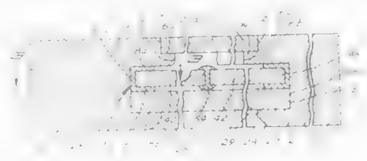
said channel being defined by sidewalls and being disposed for receiving said top surfaces of said longitudinal span bars between said channel side walls along length thereof and for engaging said axial locking slots of said transverse tie bars on the outside of said sidewalls to form a unitary load bearing structure.

4,761,931

STAINED GLASS TABLE FRAME

Thomas R. Schrunk, 2025 19th Ave. N.E., Minneapolis, Minn. 55413

Filed Jan. 2, 1987, Ser. No. 84
Int. Cl.[4] E04C *2/24*
U.S. Cl. 52—788 11 Claims



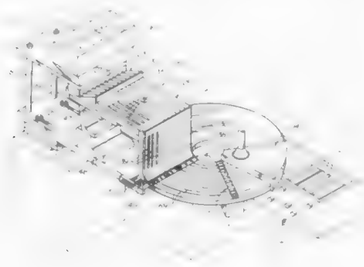
1. For mounting a top protective glass pane and at least one of a decorative glass unit and a glass pane vertically below and spaced from the protective glass, comprising a table frame having a central opening which has a central vertical axis and a top horizontal surface, the central opening at least in part being defined by a horizontal, inner peripheral rib, an inner peripheral lip, and a vertical peripheral first edge vertically between the rib and lip, the inner peripheral lip being at a substantial lower elevation than the top surface and being adapted for supporting a top protective glass pane and the horizontal, inner peripheral lip being at a substantial distance below the rib and adapted for supporting at least one of a decorative glass unit and a glass pane in vertical spaced relationship to a protective glass pane supported on the rib, the minimum peripheral dimension of the rib being substantially less than the minimum peripheral dimension of the lip, and the rib, lip and peripheral vertical frame edge at least in part defining a peripheral groove that forms a part of the central opening, and has a maximum peripheral dimension that is substantially greater than the minimum peripheral dimension of the lip.

4,761,932

CAPSULE SEALING MACHINE

Larry L. Harvey, Lebanon, and Ralph A. Volpe, Landisville, both of Pa., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 13, 1987, Ser. No. 14,840
Int. Cl.[4] B65B *51/02, 51/20*
U.S. Cl. 53—329 15 Claims



1. In a capsule sealing machine having a supply source for capsules to be sealed, a horizontally disposed rotating capsule transport plate or sealing table with a plurality of elongate, spaced apart capsule-receiving pockets in a stop surface thereof for receiving and supporting capsules therein, said pockets being oriented with their respective longitudinal axes parallel to the plane of the table whereby the capsules are supported on their side, capsule feed and guide means for guiding and conveying capsules from the source to the table, and means associated with the table for sealing capsules carried in the pockets, the improvement comprising:

said capsule feed and guide means having means for guiding and conveying capsules from the source to the table and depositing the capsules on their side into the pockets in the table, said guide means comprising a first substantially horizontally disposed plate means having a plurality of elongate, parallel guide slots in the upper surface thereof and having an inlet end and an outlet end; and

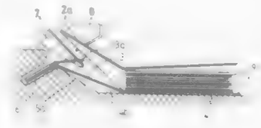
a second plate means having a plurality of elongate, parallel guide slots therein and having an inlet end and an outlet end, said inlet end being positioned to receive capsules from the outlet end of the first plate means, and the outlet end of the second plate means being disposed adjacent said table and being configured and arranged to deposit said capsules on their side in said pockets.

4,761,933

ARRANGEMENT FOR CLOSING A RECEPTACLE FOR PHOTOGRAPHS AND NEGATIVES

Reinhard Nicko; Friedrich Meschenmoser, both of Munich; Karl-Heinz Sager, Ottobrunn, and Rainer Türcke, Taufkirchen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 18, 1986, Ser. No. 888,141
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1985, 3527550
Int. Cl.[4] B65B *7/02, 7/18*
U.S. Cl. 53—374 17 Claims



1. An arrangement for manipulating a receptacle for developed film and/or photographs, the receptacle including a pair of panels defining at least one pocket having an openable and closable side, and one of the panels having a flap extending beyond the openable and closable side, the other of the panels terminating at, and including a first tab adjacent to, the openable and closable side, and the flap being provided with a second tab which normally overlaps the first tab, the first tab having a first position in which the openable and closable side is open for insertion of developed film and/or photographs in, and removal of developed film and/or photographs from, the pocket, and the first tab having a second position in which the openable and closable side is closed, at least part of the second tab being disposed between the first tab and the one panel in the first position, and at least part of the first tab being disposed between the second tab and the one panel in the second position, said arrangement including a unit for closing the openable and closable side subsequent to insertion of developed film and/or photographs in the pocket, and said unit comprising first means defining a slot designed to receive the flap and guide the same for movement in a predetermined direction, said first means further defining a surface designed to support the pocket as the flap is conveyed along said slot, and said slot and said surface defining an angle of at least 30°; and second means for displacing the second tab so as to permit movement of the first tab by the second tab, said second means being arranged to displace the second tab in such a manner that the second tab and said surface define an increasing angle as the flap is conveyed along said slot.

4,761,934

PARALLEL BELTED CLAMP

William G. Lancaster, Louisville, Ky., assignor to Lantech, Louisville, Ky.

Filed Feb. 27, 1987, Ser. No. 19,613
Int. Cl.[4] B65B *13/04*
U.S. Cl. 53—399 50 Claims

32. A method for clamping a web and wrapping a load with a web comprising:

positioning a load in a position to be wrapped;

rotating the load relative to a web dispenser to wrap the web on the load;

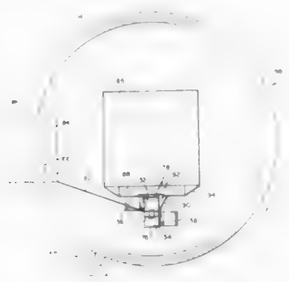
extending a first longitudinally extending clamp element along its longitudinal direction into the wrapping path of the web;

passing the web over the first clamp element and contacting the web with a contact portion of the first clamp element; and

extending a second longitudinally extending clamp element along its longitudinal direction in a direction parallel to the first clamp element and contacting the web with a

VOL 1093 ISS 2 AG 9 1988 UMI

contact portion of the second clamp element while moving the contact portion of the second clamp element in the longitudinal direction relative to a remaining portion of the second clamp element but maintaining the contact portion of the second clamp element fixed relative to



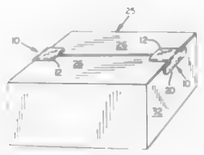
contact portion of the first clamp element to clamp the web between the contact portions of the first and second clamp elements as the remaining portion of the second clamp element is longitudinally extended in a direction parallel to the longitudinal direction of the first clamp element.

4,761,935

DEVICE FOR RETAINING CARTON FLAPS IN CLOSED OR OPEN POSITION

Feather W. King, 165 Reiten Dr., Ashland, Oreg. 97520, and Siegfried G. V. Leibthal, 1013 Holly St., Alameda, Calif. 94501

Filed Jun. 1, 1987, Ser. No. 55,916
Int. Cl.[4] B65B *61/00*
U.S. Cl. 53—416 11 Claims



1. A method for holding a flap of a carton in a fully opened and folded back position, comprising,

providing a clip-like holding device comprising two generally parallel and generally planar flanges connected at one end, with biasing means for urging the flanges toward convergence, and with the flap holding device so configured as to be capable of receiving a double thickness of carton material between the two flanges when the flanges are spread apart,

manually spreading the two flanges apart against the force of the biasing means, sufficiently to engage the flap holding device as a clip over a double thickness of the carton material,

slipping the device down over a fold at the juncture of a flap and a side wall of the carton, so that one flange is engaged against the outside of the flap and the other flange is engaged against the inside surface of the carton wall, and

repeating the same procedure with another flap holding device, for each flap of the carton which is desired to be held in the open position,

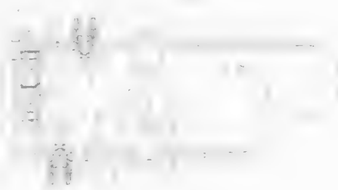
and further including removing the flap holding devices and closing the flaps of the carton when desired, and temporarily holding the carton in the closed configuration by engaging two of the flap holding devices over the ends of the major flaps of the carton, the major flaps being on the exterior, by spreading the flanges of each flap holding device apart and sliding the device inwardly from the end of the carton, straddling the two major flaps such that the major flaps are engaged by one flange at their top side and by the other flange at their bottom side.

4,761,936

SYSTEM FOR AUTOMATICALLY HANDLING ROLLER BOTTLES FOR CELL CULTIVATION

Akira Suzuki, and Hideki Matsukura, both of Tokyo, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 21, 1987, Ser. No. 99,341
Claims priority, application Japan, Sep. 24, 1986, 61-146054[U]
Int. Cl.[4] B65B *31/02*
U.S. Cl. 53—510 7 Claims



1. A system for automatically handling roller bottles for cell cultivation comprising:

a starting station for supplying roller bottles to be processed in an upright state;

a terminal station for collecting processed roller bottles;

an aseptic chamber disposed between said starting station and said terminal station;

a conveyor means operatively connected to said starting and terminal stations so as to extend throughout an interior of said aseptic chamber;

a decapper located along said conveyor means to open a cap of the roller bottle;

a first means located along said conveyor means for sucking and filling liquid from and into the roller bottle;

a rolling mechanism located along said conveyor means for rolling the roller bottle in a horizontally reclined state;

a second means located along said conveyor means for sucking and filling liquid from and into the roller bottle; and

a capper located along said conveyor means for closing the cap of the roller bottle;

said decapper, said first liquid sucking and filling means, said rolling mechanism, said second liquid sucking and filling means, and said capper being all located in said aseptic chamber along said conveyor means in this order in a roller bottle conveying direction.

4,761,937

ADJUSTABLE FORMING UNIT FOR PACKAGING MACHINES FOR WRAPPERS OF THE FLOW-PACK TYPE AND THE LIKE

Renzo Francioni, Novara, Italy, assignor to Cavanna S.p.A., Via Matteotti, Italy

Filed Oct. 9, 1987, Ser. No. 107,300
Claims priority, application Italy, Apr. 28, 1987, 67359 A/87
Int. Cl.[4] B65B *9/20, 9/22*
U.S. Cl. 53—550 11 Claims



1. A sheet-forming unit for packaging machines for tubular wrappers, including a supply source of a continuous flat sheet with two longitudinal edges and a substantially flat plate for closure of the sheet, to which the sheet is supplied in a general direction of advance, the closure plate having two sides which converge away from the supply source, wherein

(a) upper and lower forming means are associated with each of the two converging sides of the plate, the upper forming means associated with the two converging sides being aligned with each other transverse the general direction of advance so as to be able to define in the sheet a central portion intended to form the top of the wrapper and two side flaps situated between the central portion and respective longitudinal edges of the sheet, the lower forming means associated with the two converging sides being aligned transverse the general direction of advance and arranged along the two converging sides so as to guide the side flaps of the sheet in an overturning movement towards the closure plate to bring the two longitudinal edges together beneath the plate, the upper and lower forming means associated with each of the two converging sides being aligned with each other in a direction forming a fixed angle relative to the general plane of the closure plate and being arranged in a fixed relative position transverse the general direction of advance, and

(b) a support structure is provided for the upper and lower forming means associated with each of the two converging sides adapted to effect:

displacement of the lower forming means along the respective converging side of the closure plate, whilst maintaining their fixed position transverse the general direction of advance relative to the upper forming means, and

displacement of the upper forming means relative to the lower forming means, whilst maintaining said direction of alignment which forms a fixed angle relative to the general plane of the closure plate.

4,761,938

STIRRUP EXTENSION

Ray T. Townsend, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa

Filed Apr. 27, 1987, Ser. No. 42,662
Int. Cl.[4] B68C *3/00*
U.S. Cl. 54—47 16 Claims

1. A stirrup step extension, comprising,

an elongated rigid frame means having upper and lower ends,

connecting means on the upper end of said frame means adapted to releasably connect said frame means to a conventional stirrup means,

step means on the lower end of said frame means,



arm means having upper and lower ends and being connected by its lower end to the upper end of said frame means,

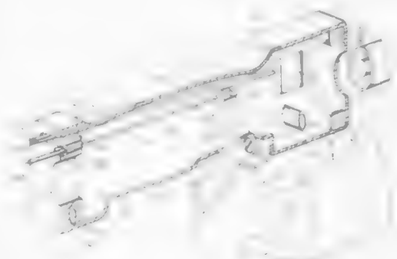
and latch means on the upper end of said arm means and being adapted to releasably engage a vertical stirrup strap supporting said conventional stirrup means.

4,761,939

BRUSHCUTTER

Gerhard Zerrer, Korb, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Aug. 12, 1987, Ser. No. 84,212
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 8623173[U]
Int. Cl.[4] A01D *38/46*
U.S. Cl. 56—12.7 11 Claims



1. A brushcutter comprising:

a supporting tube defining a longitudinal axis and having a first end and a second end;

a motor mounted to said supporting tube at said first end thereof;

a cutterhead mounted to said supporting tube at said second end thereof, said cutter head including cutting tool means;

a drive shaft mounted in said supporting tube for connecting said motor to said cutting tool means for driving the latter;

a handle mounted on said supporting tube for manipulating the brushcutter during the operation thereof, said handle

VOL 1093 ISS 2 AG 9 1988 UMI

including a tubular-shaped handle portion surrounding said supporting tube;

said tubular-shaped handle portion including a first clamshell and a second clamshell conjointly defining a partition plane lying in the direction of said axis; and,

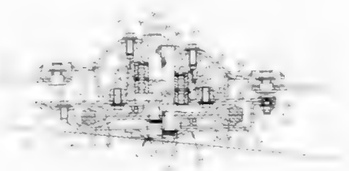
a plurality of control components mounted on said handle portion for controlling the operation of the brushcutter, said control components being mounted exclusively in said first clamshell.

4,761,940

ROTARY MOWER

Michel Wolff, Hochfelden, France, assignor to Kuhn, S. A., Cedex, France

Filed Sep. 19, 1985, Ser. No. 777,582
Claims priority, application France, Sep. 19, 1984, 84 14487
Int. Cl.[4] A01D *35/26*
U.S. Cl. 56—13.6 22 Claims



1. A rotary mower comprising:

(a) a housing;

(b) first cutting elements extending above said housing, each of said first cutting elements being connected to a corresponding one of upwardly directed shafts, which are guided in rotation in a corresponding bearing housing extending to an upper part of said housing, said first cutting elements being provided with cutting tools rotating in a first plane of rotation;

(c) second cutting elements extending above said housing, each of said second cutting elements being connected to a corresponding one of upwardly directed shafts which are guided in rotation in a corresponding bearing housing extending to said upper part of said housing, said second cutting elements being provided with cutting tools rotating in a second plane of rotation different from said first plane of rotation;

(d) said first and said second cutting elements extending above said housing in such a manner that first and second cutting elements are situated alternately along said housing; and

(e) drive means for driving said cutting elements in rotation, said drive means being supported by said housing and comprising a plurality of wheels which are able to be desynchronized, each of said wheels can be fastened to the corresponding one of said upwardly directed shafts in two different positions, a first position adapted for said first cutting elements and a second position adapted for said second cutting elements, whereby in said first position said wheels are farther away from the associated cutting element than in said second position.

4,761,941

COTTON PICKER LOWER PICKER DRUM CLEANER

Leo Blackwood, and Donna L. J. Blackwood, both of 6880 S. James Rd., Tranquillity, Calif. 93668

Filed Jun. 25, 1987, Ser. No. 66,334
Int. Cl.[4] A01D *46/16, 46/08*
U.S. Cl. 56—36 7 Claims



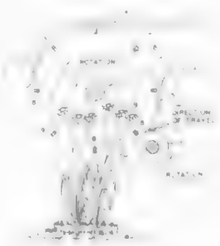
1. In combination with a cotton picker of the type including a frame relative to which a picker drum is journalled for rotation about an upstanding axis and wherein said drum includes a lower base plate spaced above a horizontal portion of said frame and a plurality of peripherally spaced, upstanding picker bars having lower ends pivotally supported from peripherally spaced portions of said base plate, a cleaner accessory, said cleaner accessory including a horizontal plate mounting portion disposed over and anchored relative to a selected peripheral portion of said base plate and a depending tang portion supported from said plate mounting portion and extending downwardly therefrom outward of said peripheral portion and to a level spaced slightly below said base plate and above said frame horizontal portion.

4,761,942

FLOWER HARVESTERS

Geoffrey A. Williames, Warragul, Australia, assignor to Williames Hi-Tech International Pty. Ltd., Warragul, Australia

Filed Dec. 9, 1986, Ser. No. 939,570
Claims priority, application Australia, Dec. 11, 1985, PH03832; Sep. 16, 1986, PH08033
Int. Cl.[4] A01D *45/00*
U.S. Cl. 56—130 8 Claims



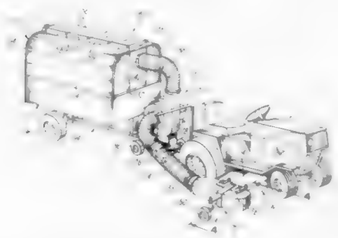
1. A mobile harvesting machine movable forwardly along a path through a field of growing flowers each of which has a flower head supported above ground level by a rooted stem, said machine comprising duct means terminating at its forward end in a shroud having upper and lower wall edges spaced from one another and forming an opening; picking rotor means having axially extending, radially projecting circumferentially spaced flutes; means mounting said rotor means in said opening for rotation about a substantially horizontal axis at such level and in such direction as to enable moving flutes below said axis to engage the stems of flowers in said path at a zone between their heads and ground level and sweep their heads rearwardly of the direction of movement of said machine into said shroud, said flutes being of such radial length as to provide between said flutes and the lower wall of said shroud a clearance less than the thickness of a flower head; drum means at said edge of the lower wall of said shroud for engaging the stems of rearwardly swept heads at a level between such heads and ground level; and means for rotating said drum means in a direction to impose tension on the stems of rearwardly swept heads between such heads and said drum means and relieve tension in the stems of such rearwardly swept heads between their roots and said drum means.

4,761,943

MOBILE VACUUM SYSTEM FOR USE WITH A RIDING TRACTOR MOWER

Richard W. Parker; James P. Beery; Donald L. Boblitt, and Robert L. Starr, all of Springfield, Ohio, assignors to Parker Sweeper Company, Springfield, Ohio

Filed Feb. 6, 1985, Ser. No. 698,700
Int. Cl.[4] A01D *34/12*
U.S. Cl. 56—202 25 Claims



1. A mobile vacuum system adapted for use with a rotary mower mounted on a riding tractor and wherein the mower includes a deck having a discharge portion defining an outlet for discharging cut grass, leaves and other debris, said system comprising an engine drive vacuum-blower unit having an inlet and an outlet, a boot of molded plastics material and having a generally vertical first wall portion defining an inlet and a second wall portion defining an outlet, a flexible hose connecting said outlet of said boot to said inlet of said vacuum-blower unit, connecting means mounted on said deck and positioning and first wall portion in horizontally spaced relation to said discharge portion of said deck with said inlet of said boot opposing said outlet of said deck, said connecting means including a pivot connection providing for pivoting said boot on a generally horizontal axis relative to said deck, a caster wheel carried by said boot and adapted to engage the ground for positioning said boot relative to the ground, and said first wall portion defining said inlet of said boot cooperating with said discharge portion of said deck to define a substantial air suction gap between said discharge portion of said deck and said first wall portion to provide for a substantial flow of air into said boot around said discharge portion of said deck to assure a continuous flow of debris from said mower to said vacuum-blower unit.

4,761,944

BUSH TRIMMING CATCHER

Ronald G. Glisan, 435 Pinehill Dr., Dixon, Ill. 61021

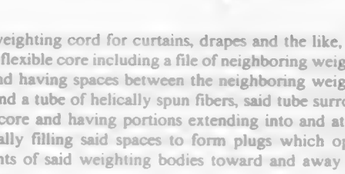
Filed Jun. 10, 1987, Ser. No. 60,170
Int. Cl.[4] A01D *46/24, 46/26*
U.S. Cl. 56—329 1 Claim

1. A new and improved bush trimming catcher comprising:

trimming catching and collection means formed from a flexible material foldable in an accordian-like arrangement without any rigid skeleton support framework within said collection means, and said collection means including a continuous uninterrupted floor including an inner and outer wall to define a trough therebetween, and

shape support means for holding said flexible material in a bush trimming catching and collecting shape; said shape support means comprise L-shaped support rods and

position support means for supporting said catcher proximate said bush wherein each of said L-shaped support rods includes first and second substantially parallel aligned arms interconnected by a cross-extending arm substantially orthogonally directed therebetween wherein said position support means includes at least one separable ground engaging rod with said ground engaging rod including a hook on one end thereof for engaging said flexible material, wherein said hook engages a grommet formed in said flexible material.



4,761,945

WEIGHTING CORD FOR CURTAINS, DRAPES AND THE LIKE

Claus M. Bünger, Wuppertal, Fed. Rep. of Germany, assignor to August Bünger Bob-Textilwerk KG. GmbH & Co., Wuppertal, Fed. Rep. of Germany

PCT No. PCT/EP85/00514, § 371 Date Jun. 6, 1986, § 102(e) Date Jun. 2, 1986, PCT Pub. No. WO86/01987, PCT Pub. Date Apr. 10, 1986
PCT Filed Oct. 3, 1985, Ser. No. 874,162
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1984, 3436801
Int. Cl.[4] A47H *23/01;* D02G *3/44*
U.S. Cl. 57—224 8 Claims



1. A weighting cord for curtains, drapes and the like, comprising a flexible core including a file of neighboring weighting bodies and having spaces between the neighboring weighting bodies; and a tube of helically spun fibers, said tube surrounding said core and having portions extending into and at least substantially filling said spaces to form plugs which oppose movements of said weighting bodies toward and away from each other.

VOL 1093 ISS 2 AUG 9 1988 UMI

4,761,946

ARRANGEMENT FOR THE PRESTRENGTHENING OF THREAD COMPONENTS TO BE TWISTED TOGETHER

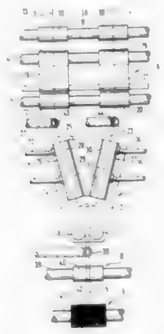
Fritz Stahlecker, Josef—Neidhart Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Filed Feb. 12, 1987, Ser. No. 13,789

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1986, 3606932

Int. Cl.[4] D01H *5/28;* **D02G** *3/26*

U.S. Cl. 57—328 **23 Claims**



1. Apparatus for the prestrengthening of at least two thread components that are to be subsequently twisted together, comprising:

drawing means for drawing said at least two thread components and transporting said at least two thread components in a respective transport direction, said at least two thread components being spaced a first predetermined distance from one another as they exit from said drawing means,

at least two false-twist means disposed downstream of said drawing means in the transport direction of the thread components for applying a false-twist, said at least two false-twist means being arranged in a sloped position with respect to the transport direction of the drawing means such that said at least two thread components are guided to converge toward one another in transport direction of said thread components through said at least two false-twist means and such that the distance between each of said at least two thread components decreases in the transport direction of said thread components through said at least two false-twist means,

withdrawing means for withdrawing the at least two prestrengthened thread components separate and untwisted, and

thread orientation means for guiding the at least two thread components through said arrangement, said thread orientation means including first thread component deflecting means disposed between said drawing means and said at least two false twist means and second thread component deflecting means disposed between said at least two false-twist means and said withdrawing means for deflecting said at least two thread components toward one another and for providing for the withdrawal of said at least two thread components adjacent one another, whereby said first deflecting means engage the at least two thread components at a location of optimum strength and reduce the deflection at said second deflecting means.

17. Process for the prestrengthening of at least two thread components that are to be subsequently twisted together, comprising:

drawing said at least two thread components through drawing means, said at least two thread components being spaced a first predetermined distance from one another as they exit said drawing means,

transporting said at least two thread components in a respective transport direction through and from said drawing means,

false-twisting said at least two thread components in at least two false-twist means disposed downstream of the drawing means in the transport direction of the thread components, said at least two false-twist means being arranged in a sloped position with respect to the transport direction of the drawing means such that said at least two thread components are guided to converge toward one another and such that the distance between each of said at least two thread components decreases in the transport direction of said thread components through said at least two false-twist means,

withdrawing the at least two predetermined thread components separate from one another and untwisted, and

guiding the at least two thread components through thread orientation means, said thread orientation means including first thread component deflecting means disposed between said drawing means and said at least two false twist means and second thread component deflecting means disposed between said at least two false-twist means and said withdrawing means for deflecting said at least two thread components toward one another and for providing for the withdrawal of said at least two thread components adjacent one another, whereby said first deflecting means engage the at least two thread components at a location of optimum strength and reduce the deflection at said second deflection means.

4,761,947

GAS TURBINE PROPULSION UNIT WITH DEVICES FOR BRANCHING OFF COMPRESSOR AIR FOR COOLING OF HOT PARTS

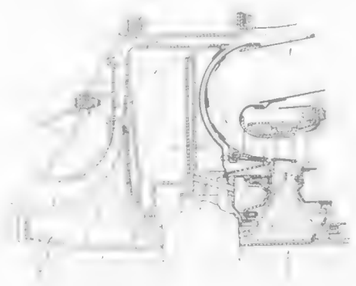
Dietmar Hennecke, Rossdorf; Klaus Pfaff, and Dietrich Grigo, both of Munich, all of Fed. Rep. of Germany, assignors to MTU Motoren- Und Turbinen- Union München GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 18, 1986, Ser. No. 853,658

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1985, 3514352

Int. Cl.[4] F02C *7/12*

U.S. Cl. 60—39.75 **17 Claims**



1. A gas turbine propulsion unit, comprising: compressor means; combustion chamber means; turbine means; and heat exchange path means for branching off compressor air for cooling hot parts of the turbine means; said heat exchange path means being in heat exchange relationship with heated structural parts of the propulsion unit, which parts substantially retain their heat content even upon an initiation of increase in loading on the propulsion unit, to maintain substantially constant the temperature of the branched off cooling compressor air upon changes in loading of the propulsion unit to avoid sudden changes in the temperature of the cooling air fed to the hot parts of the turbine and wherein said heat exchange path leads from an outlet area of said compressor in heat exchange relationship along a backside of the compressor, through a hollow blade of a compressor diffusor to an area adjacent a frontside of the compressor and from there to the turbine means.

4,761,948

WIDE RANGE GASEOUS FUEL COMBUSTION SYSTEM FOR GAS TURBINE ENGINES

Virendra M. Sood, Olivenhain, and Leslie J. Faulder, San Diego, both of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Apr. 9, 1987, Ser. No. 37,296

Int. Cl.[4] F02C *3/22, 9/26*

U.S. Cl. 60—39.281 **12 Claims**



1. A system for burning gaseous fuels having a range of calorific values in a combustion chamber of a gas turbine engine comprising:

at least one fuel injector located in said combustion chamber and having a first fuel supply passage and a second fuel supply passage opening into the combustion chamber;

a first throttle valve connected to the first fuel supply passage;

a second throttle valve connected to the second fuel supply passage;

a chamber connected to the first and second throttle valves;

a first control valve connected to the chamber and being connectable to a source of high calorific value gaseous fuel;

a second control valve connected to the chamber and being connectable to a source of low calorific value gaseous fuel; and

means for selectively controlling the first and second throttle valves and the first and second control valves in response to a preestablished engine parameter so that one of the high calorific value fuel, the low calorific value fuel and a mixture of the high and low calorific value fuels is selectively burned by the gas turbine engine.

4,761,949

THRUST REVERSER POSITION INDICATOR SHAFT BEARING ASSEMBLY

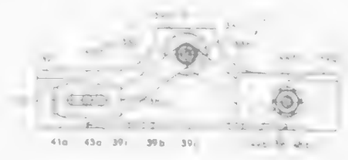
Guy E. O. Leclercq, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA), Paris, France

Filed Oct. 5, 1987, Ser. No. 104,218

Claims priority, application France, Oct. 8, 1986, 86 13991

Int. Cl.[4] F02K *3/04*

U.S. Cl. 60—226.2 **13 Claims**



1. A bearing assembly for supporting an end of a shaft of a position sensor system for a thrust reverser of a secondary duct of a turbofan jet engine wherein the thrust reverser has a stationary portion and a movable portion, the bearing assembly comprising:

(a) a bushing adapted to engage and support an end of the shaft;

(b) a pair of support arms, each support arm having first and second ends;

(c) first connecting means pivotally connecting the bushing to the first ends of both support arms such that the arms may undergo pivotal motion about an axis extending generally parallel to a longitudinal axis of the shaft;

(d) bracket means fixedly attached to the stationary portion of the thrust reverser; and,

(e) second connecting means connecting each second end of the support arms to the bracket means such that each second end may undergo movement with respect to the bracket means in a place extending generally perpendicular to the longitudinal axis of the shaft.

4,761,950

DOUBLE AIR-FUEL RATIO SENSOR SYSTEM CARRYING OUT LEARNING CONTROL OPERATION

Toshinari Nagai, Susono; Takatoshi Masui; Yasushi Satou, both of Mishima, and Toshiyasu Katsuno, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 4, 1986, Ser. No. 903,977

Claims priority, application Japan, Sep. 10, 1985, 60-198587

Int. Cl.[4] F02D *41/14*

U.S. Cl. 60—274 **28 Claims**

1. A method for controlling an air-fuel ratio in an internal combustion engine having a catalyst converter for removing pollutants in the exhaust gas thereof, and first upstream-side and second downstream-side air-fuel ratio sensors disposed upstream and downstream, respectively, of said catalyst converter, for detecting a concentration of a specific component in the exhaust gas, comprising the steps of:

calculating a first air-fuel ratio correction amount in accordance with the output of said upstream-side air-fuel ratio sensor;

determining whether said engine is in an air-fuel ratio feedback control state or in an open control state for said downstrema-side air-fuel ratio sensor;

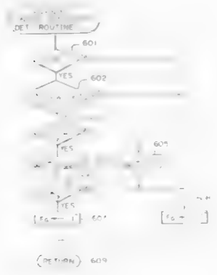
calculating a second air-fuel ratio correction amount in accordance with the output of said downstream-side air-fuel ratio sensor when said engine is in said air-fuel ratio feedback control state;

determining whether or not said engine is in a learning control state;

calculating a center value of said second air-fuel ratio cor-

VOL 1093 ISS 2 AG 9 1988 UMI

rection amount when said engine is in said learning control state;
storing said center value of said second air-fuel ratio correction amount;
setting said stored center value of said second air-fuel ratio correction amount in said second air-fuel ratio correction amount when said engine is transferred from said open control state to said air-fuel ratio feedback control state;
adjusting an actual air-fuel ratio in accordance with said first and second air-fuel ratio correction amounts;
wherein said learning control state determining step comprises the steps of:



determining whether or not said engine is in an air-fuel ratio feedback control state by both of said first and second air-fuel ratio sensors;
determining whether or not a coolant temperature of said engine is within a predetermined range;
determining whether or not a duration, during which a change of an engine load parameter is smaller than a predetermined value, exceeds a predetermined duration; and
setting said learning control state only when all of the above-mentioned determinations are affirmative.

4,761,951

PARTICULATE EXTRACTION ARRANGEMENT FOR AUTOMOTIVE TURBOCHARGER OR THE LIKE

Noboru Ishida; Norio Kato, and Mitsuyoshi Kawamura, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

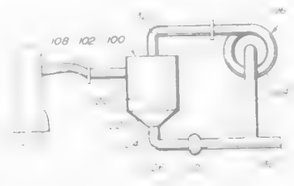
Filed Sep. 16, 1987, Ser. No. 97,142

Claims priority, application Japan, Sep. 17, 1986, 61-141336[U]

Int. Cl.[4] F02B *37/00;* **F01N** *3/02*

U.S. Cl. 60—280 **5 Claims**

1. In an engine system
an exhaust manifold;
a turbocharger having a scroll into which exhaust gas from said engine is introduced;
a valve for selectively by-passing exhaust gases from said manifold around said scroll into an exhaust conduit; and
a particulate separation device operatively interposed between said exhaust manifold, said scroll and said valve, said separation device comprising;
a chamber;
a first port which establishes fluid communication between said chamber and said manifold;



a second port, said second port establishing fluid communication between said chamber and said scroll; and
a third port, said third port establishing fluid communication between said chamber and said exhaust conduit via said valve;
said chamber including means for inducing particulate matter which is carried thereinto from said manifold through said first port to separate from the exhaust gases and gravitate toward said third port and for inducing particulate matter free exhaust gases to pass through said second port.

4,761,952

HYDRAULIC COUPLING

Heinz Höller, Crailsheim, Fed. Rep. of Germany, assignor to Voith Turbo GmbH & Co. KG, Crailsheim, Fed. Rep. of Germany

Filed Jun. 17, 1986, Ser. No. 875,269

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1985, 3522174

Int. Cl.[4] F16D *33/00*

U.S. Cl. 60—330 **11 Claims**



1. A hydraulic coupling of the type having a constant volume of operating fluid comprising: a bladed primary wheel and a bladed secondary wheel having an operating space therebetween and coupling axis means about which said bladed primary and secondary wheels can rotate independently from each other; a shell rotating common with said bladed primary wheel and enveloping the exterior of the secondary bladed wheel; and means defining a first delay chamber and a second delay chamber, both rotating with said blade primary wheel and having means for communicating with the operating space; wherein at least a substantial part of the second delay chamber is located at a greater distance from the coupling axis than the radial outer limitation of the operating space.

4,761,953

HYDRAULIC ELEVATOR MECHANISM

Alan H. Rosman, Woodland Hills, Calif., assignor to Dynamic Hydraulic Systems, Inc., Canoga Park, Calif.

Continuation-in-part of Ser. No. 601,481, Apr. 18, 1984, Pat. No. 4,715,180, and a continuation-in-part of Ser. No. 570,590, Jan. 13, 1984, abandoned. This application Dec. 24, 1986, Ser. No. 945,970

Int. Cl.[4] F16D *31/02*

U.S. Cl. 60—414 **14 Claims**



1. In a hydraulically operated lift system wherein a pressurized hydraulic accumulator is continuously connected to a single-acting hydrualic lift actuator and wherein a rotary liquid-displacement device is interposed between the accummulator and the actuator, said rotary-displacement device having two flow-connection ports and an interposed rotor with externally accessible shaft connection to the rotor, the improvement in which said rotary liquid-displacement device is the first of two rotary liquid-displacement devices and has a greater flow-rate capacity than the second of said devices, a first pilot-operated check valve interposed between said accumulator and said devices, a second pilot-operated check valve interposed between said actuator and said devices, said check valves being operative in closed condition to check flow from said accumulator and to check flow from said actuator, fluid-pressure operated means responsive to liquid displacement by said rotary devices and connected to both of the respective pilots of said check valves, whereby regardless of the net direction of liquid displacement by said devices, both pilot-operated check valves will be opened by pilot action and will remain open, and fluid pressure will be applied to both of the respective pilots of said pilot-operated check valves, during all lift and descent operations of said system; distributor-valve means having first and second ports respectively connected to the accumulator and to the actuator, said valve means having third and fourth ports respectively connected to the flow-connection ports of the second of said devices; said distributor-valve means having a first positional state in which one flow is between the first and third ports while another flow is between the second and fourth ports, said distributor valve having a second positional state in which one flow is between the first and fourth ports while another flow is between the second and third ports; and a prime mover drive connection to both of said devices; whereby for one of said positional states, flow between said accumulator and said actuator represents substantially the sum of the capacities of said devices and for the other of said positional states, flow between said accumulator and said actuator represents substantially the difference between the capacities of said devices.

4,761,954

FORK-LIFT SYSTEM

Alan H. Rosman, Woodland Hills, Calif., assignor to Dynamic Hydraulic Systems, Inc., Canoga Park, Calif.

Filed Mar. 16, 1987, Ser. No. 26,181

Int. Cl.[4] F16D *31/02*

U.S. Cl. 60—414 **7 Claims**



1. In a fork-lift vehicle, wherein a battery-operated electric motor is relied upon for selective up/down positioning drive of a fork-lift slide having a predetermined span of operational displacement along upstanding guides, the improvement in which a single-acting hydraulic-hoist actuator is connected for direct up/down positioning of the slide and in which said actuator and a hydraulic accumulator and a power integrator are interconnected as a fluid-conserving hydraulic system, said power integrator being a liquid-displacement device and having first and second ports respectively connected to said actuator and to said accumulator, a volume of hydraulic fluid self-contained within the included volume of said actuator and integrator and accumulator to the extent at least sufficient to enable operation of said actuator for more than said span, said accumulator having a volume substantially in excess of said hydraulic-fluid volume and said actuator being under gas pressure at a level at least more than sufficient to balance a load in excess of a deadweight-load condition on said actuator; a first pilot-operated check valve in the port connection to said actuator and a second pilot-operated check valve in the port connection to said accumulator, each of said check valves being oriented to check flow in the direction toward said integrator, and said integrator further including rotatable means having a torsionally responsive relation to port-to-port flow through the integrator and said rotatable means having a shaft connection to said electric motor; and control means including a motor-driven connection and fluid-pressure operated means responsive to liquid displacement by said rotary device and connected to both of the respective pilots of said check valves, whereby regardless of the direction of liquid displacement by said device, both pilot-operated check valves will be opened by pilot action and will remain open, and fluid pressure will be applied to both of the respective pilots of said pilotoperated check valves, during all up or down operations of said fork-lift slide.

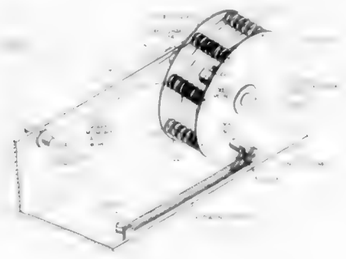
VOL 1093 ISS 2 AG 9 1988 UMI

4,761,955

ROTARY ACTUATOR UTILIZING A SHAPE MEMORY ALLOY

Joseph T. Bloch, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Jul. 16, 1987, Ser. No. 74,049
Int. Cl.[4] F03G 7/06
U.S. Cl. 60—528 20 Claims



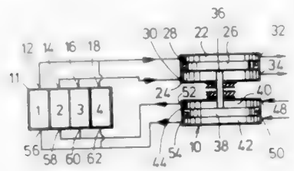
1. An apparatus comprising:
(a) rotary accumulator means for accumulating a length of a shape memory alloy wire;
(b) said shape memory alloy wire attached at one end to a point fixed with respect to said rotary accumulator means and attached at a second end to said rotary accumulator means;
(c) biasing means for biasing said rotary accumulator means to a first position; and
(d) means for heating said shape memory alloy wire to cause said shape memory alloy wire to contract, thereby rotating said rotary accumulator means from said first position to a second position.

4,761,956

POSITIVE DISPLACEMENT SUPERCHARGER USING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

Oskar Schatz, Tellhohe 14, D-8031 Stockdorf, Fed. Rep. of Germany

Continuation of Ser. No. 609,917, May 14, 1984, abandoned. This application Jul. 28, 1986, Ser. No. 892,871
Claims priority, application Fed. Rep. of Germany, May 18, 1983, 3318136
Int. Cl.[4] F02B 37/00
U.S. Cl. 60—605.1 4 Claims



1. An exhaust gas supercharger for an internal combustion engine having a plurality of cylinders which produce exhaust gas pulses comprising;
a first housing defining a chamber,
a first partition movable in said first housing defining first and second exhaust chambers each having exhaust gas inlets and outlets,
a first exhaust duct for transmitting exhaust gases from a first set of cylinders from said engine to said first exhaust chamber through said exhaust gas inlet such that said exhaust gases drive said partition in one direction in said first housing,
a second exhaust duct for transmitting exhaust gases from a second set of cylinders from said engine to said second exhaust chamber through said exhaust gas inlet such that said exhaust gases drive said partition in an opposite direction from said first partition movement in said first housing,
a second housing defining a chamber,
a second partition in said second chamber defining first and second supercharging air chambers each having air inlets and outlets, wherein said first and second partitions have differing cross sectional areas to optimize performance of said supercharger,
a first air duct for transmitting air from said first supercharging air chamber through said air outlet to a first set of said cylinders,
a second air duct for transmitting air from said second supercharging air chamber through said air outlet to said second set of cylinders, and
a guide rod connected to said first and second partitions causing said partitions to move simultaneously whereby exhaust gases produced by one set of cylinders act on said first partition which urges said second partition to force air into the other set of cylinders, and whereby exhaust gases produced by said other set of cylinders act on said first partition which urges said second partition to force air into said first set of cylinders; and
biasing means associated with said guide rod for moving said partitions to a middle position in said housings between exhausts pulses of said first and second set of cylinders.

4,761,957

INDIRECTLY HEATED GAS TURBINE ENGINE

John D. Eberhardt; Peter L. Hovde; John M. Koerber; Robert J. Neary, and Robert V. Peltier, all of San Diego, Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Continuation of Ser. No. 471,126, Mar. 1, 1983, abandoned. This application Oct. 22, 1985, Ser. No. 790,105
Int. Cl.[4] F02C 1/04
U.S. Cl. 60—650 2 Claims



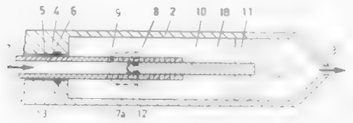
1. A indirectly fired gas turbine engine system comprising: a compressor; an external heat source; a heat exchanger through which air discharged from said compressor can be circulated in heat exchange relationship with gases from said external heat source to heat said air; a turbine through which heated air can be expanded to drive the turbine; a first mixing chamber to which heated air can be circulated from said heat exchanger and from which air can be circulated to said turbine; means including a bypass duct for diverting a modulated proportion of the air discharged from said compressor from the upstream side of said heat exchanger to said mixing chamber for admixture with the air circulated thereto from said heat exchanger to thereby control the temperature of the air circulated to said turbine from said mixing chamber; a compressor discharge duct providing fluid communication between said compressor and said heat exchanger, said compressor duct also communicating with said bypass duct; and means for maintaining a constant or scheduled pressure drop between said compressor and said turbine to provide accurate turbine inlet temperature control and to permit substantial and rapid drops in said turbine inlet temperature, said last-mentioned means comprising a modulating, pressure drop control valve in said compressor duct on the downstream side of said bypass duct and between said compressor duct and said heat exchanger.

4,761,958

FUEL LANCE FOR THE COMBUSTION CHAMBER OF A GAS TURBINE

Jaan Hellat, Baden-Rütihof, Switzerland, assignor to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Continuation of Ser. No. 596,607, Apr. 4, 1984, abandoned. This application Nov. 25, 1985, Ser. No. 802,604
Claims priority, application Switzerland, Apr. 13, 1983, 1988/83
Int. Cl.[4] F02C 1/00
U.S. Cl. 60—737 4 Claims



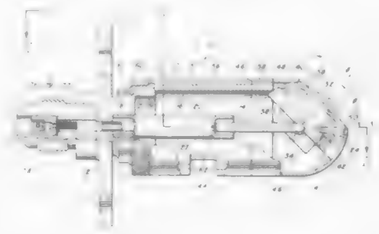
1. A fuel lance for supplying gaseous fuel to a combustion chamber of a gas turbine without interference from a natural vibration of said combustion chamber, said fuel lance comprising:
a lance pipe having an interior chamber with a nozzle outlet adjacent one end of said chamber;
a plunger in said interior chamber, means supporting said plunger at a fixed location spaced from said nozzle outlet;
a tubular throttle body, means mounting said throttle body in said lance pipe for axial movement relative to said pipe, said body extending into said interior chamber, a source of gaseous fuel and means for conducting gaseous fuel from said source to the interior of said throttle body, said plunger being received in said tubular body and said throttle body having a plurality of fuel openings spaced longitudinally along said body in said chamber through which gaseous fuel passes from the interior of said throttle body into said chamber, said plunger including means for progressively closing off predetermined members of said plurality of fuel openings according to the relative longitudinal position of said throttle body relative to said plunger, the longitudinal position of said throttle body regulating the quantity of fuel passing into said combustion chamber while limiting the position of any fuel opening relative to said nozzle outlet to a predetermined distance that is less than the wavelength of the natural vibration of the combustion chamber system.

4,761,959

ADJUSTABLE NON-PILOTED AIR BLAST FUEL NOZZLE

Russell P. Romey, and Lonny R. Greer, both of Jacksonville, Fla., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 2, 1987, Ser. No. 20,304
Int. Cl.[4] F02C 1/00; B05B 15/08
U.S. Cl. 60—740 16 Claims



1. An apparatus for atomizing fuel in air and for injecting said fuel and air into an air stream at a first angle ϕ with respect to a first longitudinal axis which is adjustable over a predetermined angular range comprising:
a support flange for mechanically supporting a fuel supply tube and a first sheath,
a nozzle tip body spaced a predetermined distance from said support flange and having an air inlet and a fuel inlet and an outlet for expelling atomized fuel outward from and along a second longitudinal axis of said nozzle tip body,
said fuel inlet concentric with a pivot axis of said nozzle tip body, said nozzle tip body pivot axis positioned transverse to said first and second longitudinal axes,
said fuel supply tube having a first end adjustably connected to said fuel inlet of said nozzle tip body to supply fuel thereto and to support and hold said nozzle tip body with its second longitudinal axis at said angle within said predetermined angular range by positioning said nozzle tip body around said pivot axis,
said first longitudinal axis passing through said support flange and through said nozzle tip body,
an internal air cap having an outer surface with portions thereof conforming to the surface of revolution, said outer surface surrounding said nozzle tip body and attached thereto to direct air through said nozzle tip body via said air inlet,
said first sheath having a cylindrical shape concentric with said first longitudinal axis, having a slot opening for admitting air inside said sheath, said sheath extending a predetermined distance from said support flange,
an external air cap having an inside surface with portions thereof conforming to the surface of revolution and having a first opening for mating with an opening at the end of said sheath and a second opening to permit said nozzle tip body to expel atomized fuel at positions within said predetermined angular range about said pivot axis.

4,761,960

CRYOGENIC REFRIGERATION SYSTEM HAVING AN INVOLUTE LAMINATED STATOR FOR ITS LINEAR DRIVE MOTOR

Graham J. Higham, Ashland, Mass.; Howard D. Saively, Schenectady, N.Y.; Harry G. Nicoll, Norwell, and Gerald R. Pruitt, Mendon, both of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 14, 1986, Ser. No. 885,218
Int. Cl.[4] F25B 9/00
U.S. Cl. 62—6 23 Claims

1. A cryogenic refrigerator comprising gaseous working fluid which is alternatively compressed and expanded to cool a

VOL 1093 ISS 2 AG 9 1988 UMI

portion of the working fluid to cryogenic temperatures and a linear oscillating drive motor for driving a piston element in the refrigerator which acts on the working fluid in a thermody-



namic refrigeration cycle, the linear oscillating drive motor comprising a coil positioned within a laminated flux path, the flux path being formed of involute laminations split about the coil, said split cutting across the flux path.

4,761,961

PROCEDURE FOR REMOVAL OF LOW-BOILING REFRIGERANTS FROM REFRIGERATIVE AND AIR-CONDITIONING UNITS

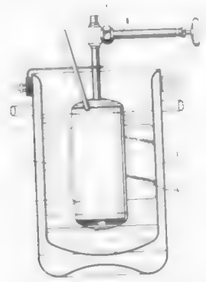
Bodo Marx, Willich, Fed. Rep. of Germany, assignor to Messer, Griesheim GmbH, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,505

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1986, 3622423

Int. Cl.[4] F17C *7/02*

U.S. Cl. 62—55 8 Claims



1. In a procedure for removal of low-boiling refrigerants from refrigerative and air-conditioning units by decantation into collecting vessels, the improvement being in that the collecting vessel undergoes cooling throughout the entire process of removal of the refrigerant by heat exchange with a cryogenic coolant to a temperature below the boiling temperature and within the ambient pressure conditions of the refrigerant.

4,761,962

PROCESS AND APPARATUS FOR FREEZING LIQUID OR SEMILIQUID FOODS IN THE FORM OF ESSENTIALLY UNIFORM PELLETS

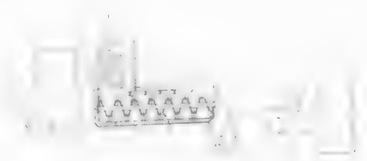
Alvar Andersson, Viken, Sweden, assignor to Frigoscandia Contracting AB, Helsingborg, Sweden

Filed Jun. 16, 1987, Ser. No. 62,751

Claims priority, application Sweden, Jun. 16, 1986, 8602669

Int. Cl.[4] F25D *13/06*

U.S. Cl. 62—63 10 Claims



1. A process for freezing liquid or semiliquid food products in the form of essentially uniform pellets, comprising the steps of introducing the nonfrozen food product into a container; agitating the food product within the container while spraying a liquid cooling gas over the food product; removing the partially frozen food product from the container before it is completely frozen and after it has become formable; forming the removed food product into essentially uniform pellets; and completely freezing said pellets outside the container.

4,761,963

METHOD OF EXCHANGING THE DISPLACEMENT ELEMENT OF A REFRIGERATOR AND REFRIGERATOR FOR IMPLEMENTING THE METHOD

Gerhard Kiese, Cologne, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,110

Claims priority, application European Pat. Off., Jul. 29, 1986, 86110463.6

Int. Cl.[4] F25B *45/00*

U.S. Cl. 62—77 3 Claims



1. A method of exchanging a displacement element in a working area in a divided housing of a refrigerator, the housing having parts which are separable so as to provide access to the displacement element therein, the method comprising the steps of.

a. opening the housing by separating the parts of the housing, so as to access the displacement element therein;

b. following said step of opening, exchanging the displacement element therein for another displacement element;

c. closing the housing; and

d. during said steps of opening, exchanging and closing, maintaining a stream of protective gas which shields the working area from undesired gases.

4,761,964

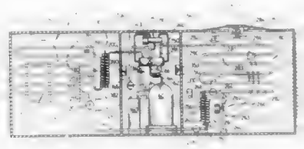
APPARATUS FOR ENHANCING THE PERFORMANCE OF A HEAT PUMP AND THE LIKE

Jerry J. Pacheco, 24659 Brook Dr., Madera, Calif. 93638

Continuation-in-part of Ser. No. 921,612, Oct. 22, 1986, abandoned. This application Dec. 28, 1987, Ser. No. 138,715

Int. Cl.[4] F25B *13/00*

U.S. Cl. 62—160 16 Claims



1. An apparatus for enhancing the performance of a heat pump that utilizes a refrigerant, the apparatus comprising

first and second auxiliary coils of predetermined dimension operatively interconnected in fluid flow relation with the heat pump to receive and transmit the refrigerant;

radiant heating means disposed in heat transferring relation to the first and second auxiliary coils for imparting heat energy to the refrigerant therein;

temperature sensor means operatively interconnected with the heat pump for sensing the temperature of the refrigerant and the ambient air temperature;

air flow inducing means disposed in heat removing relation to the second auxiliary coil for dissipating the heat energy from the refrigerant contained therein; and

selectively adjustable control means for selectively actuating the radiant heating means of the first and second auxiliary coils, and the air flow reducing means for selected periods of time at a predetermined high and low ambient air temperature, and predetermined refrigerant temperatures to achieve increased heat pump efficiency.

4,761,965

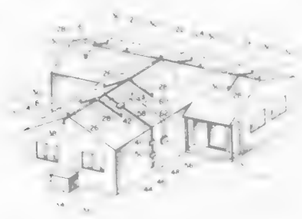
EVAPORATIVE ROOF COOLING SYSTEM

Stephen G. Viner, 1066 S. Ogden Dr., Los Angeles, Calif. 90019

Filed Jun. 24, 1987, Ser. No. 65,850

Int. Cl.[4] F28D *3/00*

U.S. Cl. 62—171 4 Claims



1. An evaporative roof cooling system for placement upon a roof surface exposed to relatively high levels of solar radiation causing high under roof temperatures and comprising:

(a) a plurality of water distribution mist/spray nozzles positioned on said roof surface for supplying substantially uniform mist/sprays of water thereto to lay down a substantially uniform thin film of water on said roof surface;

(b) conduit means on said one said roof surface for supplying said nozzles with water;

(c) solenoid-controlled valve means in water flow communication with said conduit means to supply controlled quantities of water to said nozzles through said conduit means over periods during which the temperature of said roof surface is measured to be within a predetermined temperature range;

(d) temperature measurement means comprised of a thermistor encapsulated in an epoxy block in direct contact with said roof surface for monitoring and measuring the actual temperature of said surface substantially by thermal conductivity and developing an electrical resistance value in direct relationship with the temperature of said surface, said temperature measurement means having a solar radiation reflective cover protecting said means from direct solar radiation heating thereof and being affixed to said roof surface by a like epoxy adhesive; and

(e) cooling system control means in electric comunication with the temperature measurement means for comparing the electric resistance value developed by said temperature measurement means and a range of current values related to said predetermined temperature range, said control means including pulse action timer means in electric communication with the solenoid-controlled valve means for initiating the cyclic pulse opening and closing of said valve when the electric resistance value developed by said temperature measurement means reaches or exceeds the high point of said predetermined temperature range and for terminating the cyclic pulse opening and closing of said valve when the electric resistance value developed by said temperature measurement means reaches the low point of said predetermined temperature range whereby the cyclically pulsed mist/sprays of water discharged from said nozzles evaporatively cool the roof surface between the high point and the low point of said temperature range and whereby puddling of water on said roof surface is substantially avoided and evaporative efficiency is increased.

4,761,966

DEHUMIDIFICATION AND COOLING SYSTEM

Walter Stark, 38 Upland Dr., East Northport, N.Y. 11731

Continuation-in-part of Ser. No. 662,590, Oct. 19, 1984, abandoned. This application Jun. 16, 1986, Ser. No. 874,544

Int. Cl.[4] F25B *49/00*

U.S. Cl. 62—176.6 6 Claims



1. A dehumidification system for high humidity air from an indoor swimming pool, comprising:

air inlet means,

air-to-air heat exchange means for precooling said air,

first conducting means for directing the precooled air to a dehumidification and cooling coil,

second conducting means for directing dehumidified and

VOL 1093 ISS 2 AUG 9 1988 UMI

cooled air from said coil to said heat exchange means for reheating said air,

exit means,

circulating means for returning said dehumidified and reheated air to said pool,

wherein third conducting means connects said inlet means and said dehumidification and cooling coil for bypassing said air-to-air heat exchange means,

means for regulating the flow of air in said system from said inlet means directly to said third conducting means and to the dehumidification and cooling coil when the air temperature of the pool air reaches a predetermined temperature level,

means for controlling the flow of a cooling medium to said dehumidification and cooling coil when the humidity of the pool air reaches a predetermined level,

means for detecting the temperature of the pool air and determining when it reaches said predetermined temperature level, and

means for detecting the humidity and determining when it reaches said predetermined humidity level.

4,761,967

CAR AIR CONDITIONER WITH HEAT STORAGE TANK FOR COOLING ENERGY

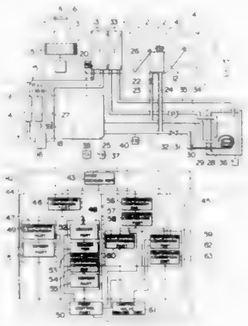
Seiji Sumikawa; Yoichiro Furuya, and Shinji Satoh, all of Saitama, Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1985, Ser. No. 786,894

Claims priority, application Japan, Oct. 11, 1984, 59-213022; Oct. 11, 1984, 59-213023

Int. Cl.[4] F24D *11/00*; B60H *3/00*; B61D *27/00*

U.S. Cl. 62—201 8 Claims



1. An apparatus for controlling the temperature in the interior of a vehicle, comprising an air duct communicating at one end with the interior of the vehicle for supplying air thereto; cooling means for cooling air flowing through said air duct, said cooling means including a cooler disposed in said air duct; a heat exchanger disposed in said air duct adjacent said cooler; a tank having therein a fluid capable of storing thermal energy; first means for selectively transferring thermal energy between said heat exchanger and said tank, said first means including second means for transferring cooling energy from said heat exchanger to said tank when the fluid temperature in said tank is greater than the air temperature in said air duct near said colder and the temperature of the interior of the vehicle is less than a first predetermined value, and third means for transferring cooling energy from said tank to said heat exchanger when the fluid temperature in said tank is less than the air temperature in said air duct near said cooler and the speed of an engine of the vehicle is less than a predetermined speed; and a housing provided in said air duct and having in an interior thereof a partition wall which divides the interior of said housing into separate first and second portions which respectively serve as said cooler and said heat exchanger, wherein said partition wall is capable of conducting thermal energy and thermal energy passes between said cooler and said heat exchanger through said wall.

4,761,968

HIGH EFFICIENCY AIR DRYING SYSTEM

Sanjiv K. Basseen, Anderson County, and Richard A. Harlan, Morgan County, both of Tenn., assignors to Pioneer Air Systems, Inc., Wartburg, Tenn.

Filed Oct. 13, 1987, Ser. No. 108,105

Int. Cl.[4] F25D *23/00*

U.S. Cl. 62—271 20 Claims



1. An improved drying system for removing moisture from air and like gases used in pneumatic systems to produce a product gas having a dew point of −40 to about −100 degrees Fehrenheit, which comprises:

a heat exchange means having an inlet for receiving inlet gas from said pneumatic systems, and an outlet, for cooling said inlet gas to produce an outlet gas having a dew point of about 35 to 40 degrees F., said heat exchange means having a refrigerant flowing therein;

a refrigerant system connected to said heat exchange means for supplying said refrigerant to said heat exchanger means, said refrigerant system having at least a compressor;

a moisture separator means connected to said outlet of said heat exchanger means for removing condensed moisture contained in said cooled outlet gas;

a moisture sorption means having at least one bed of moisture removal material, said sorption means having an inlet connected to said separator to receive gas having said condensed moisture removed, and an outlet for the removal of dried gas; and

a purge system for selectively removing moisture from said bed of moisture removal material, said purge system including a withdrawl line to obtain a purge gas from said outlet of said moisture sorption means, a heat exchanger in said withdrawl line proximate said compressor said refrigerant system to heat said purge gas, and a means of selectively applying said purge gas from said heat exchanger to said bed for said selected removal of moisture from said bed

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4,761,969

REFRIGERATION SYSTEM

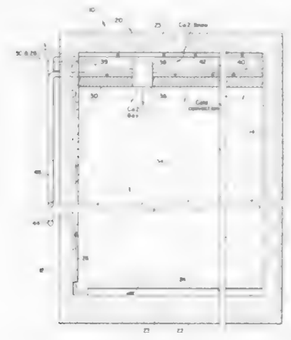
James S. Moe, 376 Boisfort, Curtis, Wash. 98558

Filed Feb. 9, 1987, Ser. No. 12,163

Int. Cl.[4] F25D *3/12*

U.S. Cl. 62—388 5 Claims

1. Refrigeration apparatus using cryogenic refrigerant materials for storing perishable products for predetermined periods of time, comprising: an insulated container including means for dividing said container into an upper insulated compartment and a lower insulated compartment, said dividing means having apertures extending therethrough, an expandable bladder disposed atop said dividing means, said bladder being expandable from a collapsed state, and conduit means communicating with said upper compartment and connectable to a source of cryogenic liquid, said conduit means including first manifold means for forming cryogenic snow from the cryogenic liquid and introducing the formed cryogenic snow into said upper compartment, and second manifold means for forming cryogenic snow from the cryogenic liquid and introducing the formed cryogenic snow into said expandable bladder, said conduit means including means for selectively coupling the cryogenic liquid source to one of said first or second manifold means, whereby the refrigeration apparatus may be operated in



a first mode in which the cryogenic liquid source is coupled to said first manifold means and cryogenic snow is introduced into the upper compartment so that cryogenic vapors formed upon sublimation of the cryogenic snow flow through the apertures in the dividing means and into contact with perishable products stored in the lower compartment, or a second mode in which the cryogenic liquid source is coupled with the second manifold means and cryogenic snow is introduced into the expandable bladder so that perishable products stored in the lower compartment may be chilled without being subjected to any cryogenic vapors formed upon sublimation of the cryogenic snow.

4,761,970

IMMISCIBLE PROPELLANT AND REFRIGERANT PAIRS FOR EJECTOR-TYPE REFRIGERATION SYSTEMS

Calvin D. MacCracken, Englewood, N.J., assignor to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Jun. 11, 1987, Ser. No. 60,650

Int. Cl.[4] F25B *1/06*

U.S. Cl. 62—500 6 Claims



1. In an ejector-type vapor compression refrigeration system wherein a propellant fluid is directed in its own loop from a pump to a boiler and a refrigerant fluid is directed in its own loop from an expansion device to an evaporator and the two fluids are then joined in a common loop at an ejector followed by a condenser and then a separator from which they are redirected to their own loops, the improvement which comprises

(a) the propellant fluid being immiscible with the refrigerant fluid and consisting of at least one perfluorocarbon containing at least five carbon atoms and at least ten fluorine atoms and having a pour point below about 50 degrees F.;

(b) the refrigerant fluid having a molecular weight less than about 80 and a heat of vaporization greater than about 150 Btu's per pound.

4,761,971

JEWELRY COATING

Marilyn H. Freier, 889 Greenway Ave., North, St. Paul, Minn. 55119

Filed Nov. 21, 1986, Ser. No. 933,744

Int. Cl.[4] A44C *7/00*, *27/00*

U.S. Cl. 63—12 18 Claims



1. A device adapted to be carried by a person adjacent his or her skin comprising: a body that can irritate a person's skin, holding means secured to the body for holding the body adjacent the skin of a person, and coating means attached to said body and holding means to shield the skin from the body and holding means, said coating means comprising a mixture of trichlorethane, toluene, and 2-methoxyethanol forming a coating material that is a non-irritant to a person's skin.

4,761,972

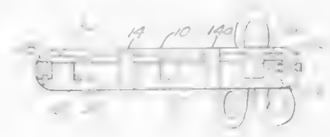
JEWELRY ORNAMENT

Thomas L. Falcone, 15 Wolfe St., Providence, R.I. 02909

Filed May 28, 1987, Ser. No. 55,175

Int. Cl.[4] A44C *15/00*

U.S. Cl. 63—20 1 Claim

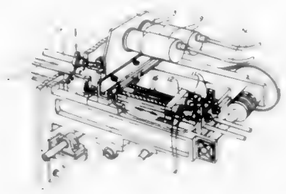


1. A jewelry article or the like for the attachment of ornaments comprising a bar that defines two opposite faces and has a plurality of square apertures therethrough, each aperture having a raised portion adjacent thereto, said bar having a pin stem mounted on one face, an elongated continuous spring wire fastened on said one face, and held in each raised portion to restrict deflection thereof, said wire extending across each aperture adjacent one edge thereof, ornaments having a square

VOL 1093 ISS 2 AG 9 1988 UMI

protruberance extending normal to the ornament, each protruberance having a neck located thereon a distance remote from the ornament substantially equal to the thickness of the bar, said spring wire engaging the neck portion to hold the ornament.

4,761,973
WARP KNITTING/CROCHET WARP KNITTING MACHINE
Richard Gangi, 270 Johnson Ave., River Edge, N.J. 07661
Filed May 8, 1987, Ser. No. 47,272
Int. Cl.[4] D04B *23/00*
U.S. Cl. 66—204 14 Claims



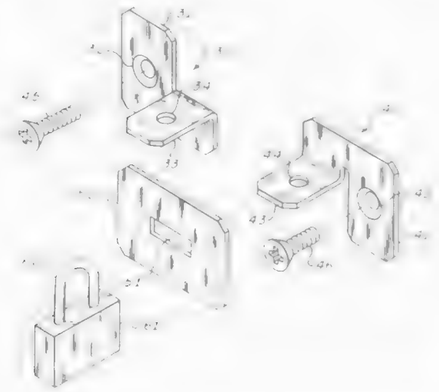
1. A fully synchronized individual direct drive apparatus which accomplishes an entirely controlled reciprocal movement cycle for each individual associated pattern bar of a Warp Knitting Machine in accordance with and in conformity with the movement requirements needed for the generation of any specifically desired cloth pattern, said pattern being developed by means of an individual direct drive which couples each controllable mechanical power source to its individually controlled associated pattern bar, said fully synchronized individual direct drive apparatus moving its individual associated pattern bar in controlled scynchronization with all other moving members of said Warp Knitting Machine, including other individually controlled associated pattern bars, said fully synchronized individual direct drive apparatus for each individually controlled associated pattern bar comprising: a control means comprising a computer which is programmed to prescribe the movements of each individually controlled associated pattern bar, said prescribed movements being accomplished by controlling the rotation of the controllable mechanical power source, where the clockwise and counter-clockwise rotation of the controllable mechanical power source is converted into the reciprocating movements of each said individually controlled associated pattern bar and where the coupling means is accomplished by means of a ball screw and ball nut, said ball screw being mounted on the individually controlled associated pattern bar which is threadably connected to a threaded shaft rotated by the controllable mechanical power source, and where the controlled reciprocal movement cycle as aforesaid is made in controlled synchronization with all other moving members of said warp knitting machine, said synchronization being accomplished through sensors which locate the position of each moving member aforesaid relative to each other by means of said computer whereby the computer is able to effect said synchronization; a controllable mechanical power source; and a direct coupling means by which said power source is directly and fully coupled to its individually controlled associated pattern bar during a full reciprocal cycle.

4,761,974
COMBINATION LOCK FOR LUGGAGE CASES
Shih M. Lii, Taipei, Taiwan, assignor to Echolag Co., Ltd., Taipei, Taiwan
Filed Dec. 10, 1987, Ser. No. 131,038
Int. Cl.[4] E05B *65/48*
U.S. Cl. 70—4 2 Claims



1. A combination lock for luggage case or the like, comprising:
a staple unit attached to one portion of a luggage case such as case lid; and
a hasp unit attached to the other portion of a luggage case such as case body, comprising a base plate, a locking unit pivotally connected to said base plate and a hasp pivotally connected to said locking unit; the locking unit further comprising a body, a combination lock and a securing mechanism; the base plate being provided with an arch;
the body of said locking unit having a plurality of slots formed side by side to allow the dial wheels of said combination lock to fit in; said combination lock of locking unit further comprising a dial assembly, a latching piece and a casing, said dial assembly utilizing a plurality of dial wheels, each dial wheel being mounted on a sleeve rotatably mounted on a shaft supported inside said casing, each sleeve having a flange at one end consisting of a round arch portion and a flat portion; said latching piece being provided with a plurality of slots corresponding to said dial wheels, two lugs pivotally supported on said casing as a pivot axis of said latching piece and a latch end formed on the front thereof, round arch portion of flange of sleeve being rotatably in contact with said latching piece and pressing said latching piece downwards when dial wheels are in lock combination, flat portion of flange of sleeve being rotatably in contact with said latching piece to allow said latch piece to move upwards when dial wheels are in open combination; said securing mechanism comprising a knob being slidably fitted in said body, a leaf spring being capable of resiliently and selectively holding said knob in place when said knob is slided to and fro, and a sliding piece adapted to be slidably disposed between said latching piece and the bottom of said casing, said sliding piece comprising an arm adapted to be connected with said knob, a hook adapted to engage with or disengage from said arch of base plate to have said locking unit secured to or released from said base plate when said knob is moved to "secure" or "release", and a hole adapted to correspond to and in alignment with said latch end of said latching piece to allow latch end to fit in when sliding piece is moved to "secure" by pushing knob.

4,761,975
MODULE SECURITY LOCKING DEVICE
Thomas A. Kachnowski, Flemington; Frederick E. Bratro, Manville; Ehanan Kaplan, East Brunswick, and George A. Sudol, Kenvil, all of N.J., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Jun. 5, 1987, Ser. No. 58,717
Int. Cl.[4] F16B *41/00*
U.S. Cl. 70—232 2 Claims



1. Apparatus for locking a first assembly to a second assembly adjacent thereto, each said assembly hvaing a threaded screw hole therein proximate an edge thereof, said edge of said first assembly being adjacent said edge of said assembly, said locking being effected by a padlock having a shackle, said apparatus comprising
a first member having a first plate with a first screw clearance hole therethrough and a first tab secured and orthogonal to said first plate, said first tab having a first hole therethrough adapted to receive said shackle,
a second member having a second plate with a second screw clearance hole therethrough and a second tab secured and orthogonal to said second plate, said second tab having a second hole therethrough adapted to receive said shackle, and
a further plate, separate from said padlock having a slot therein,
said first plate being secured, in use, to said first assembly by a screw passing through said first screw clearance hole and secured in said threaded screw hole of said first assembly,
said second plate being secured, in use, to said second assembly by a screw passing through said second screw clearance hole and secured in said threaded screw hole of said second assembly,
said first and second tabs being superposed, in use, so that said first and second holes are aligned with respect to each other,
said slot being of such length and width to permit said superposed tabs to pass therethrough,
said further plate, in use, being positioned on said superposed tabs and being of such length and width to cover said first and second screw clearance holes,
said further plate being secured, in use, from removal by said shackle inserted through said first and second holes,
said tabs, said slot and said further plate being dimensioned so that when said further plate is secured said tabs by said shackle, no motion of said further plate can occur that will permit access to either said first or said second screw clearance hole.

4,761,976
LOCK CYLINDER WITH INTEGRATED ELECTROMAGNETIC LOCKING MECHANISM
Arno Kleinhany, Hinwil, Switzerland, assignor to Bauer Kaba AG, Wetzikon, Switzerland
Filed Nov. 28, 1983, Ser. No. 555,332
Claims priority, application Switzerland, Nov. 26, 1982, 6903/82
Int. Cl.[4] E05B *47/00*
U.S. Cl. 70—277 19 Claims



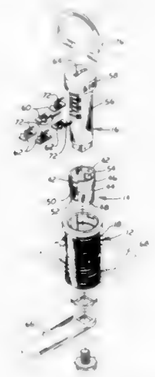
1. A lock cylinder with mechanical and electromagentic locking mechanisms, comprising:
a lock cylinder stator having mechanical locking means and a stator groove;
a bolt movably mounted in said stator groove between first and second positions, said bolt including an armature movable in a translatory manner and a retaining part arranged at one end of said armature for movement relative to said armature;
electrical control means, operably coupled to said bolt, for controlling movement thereof;
a lock cylinder rotor rotatably coupled to said stator and engaged by said mechanical locking means; and
retaining means, coupled to said rotor, for releasably engaging said bolt to permit and prevent relative movement between said stator and said rotor depending on the position of said bolt, said retaining means including a retaining ring fixed to said rotor for simultaneous rotation therewith, said retaining ring having a sliding groove receiving said retaining part.

4,761,977
DUAL FUNCTION LOCK/LATCH DEVICE
Robert G. Weatherby, Long Boat Key, Fla., assignor to Sarasota Quality Products, Inc., Sarasota, Fla.
Filed Jan. 19, 1988, Ser. No. 145,135
Int. Cl.[4] E05B *29/02*
U.S. Cl. 70—493 16 Claims

1. A dual function lock/latch device selectively operable in a latch configuration or lock configuration comprising an outer housing having a bore formed therethrough including a lock spline with side walls and sleeve actuator spline with side walls formed about the inner periphery thereof, an inner member having a keyway and cam lock/latch member formed on the outer and inner end portions thereof rotatable between a lock/latch position and an unlock/unlatch position disposed within the bore with at least one sleeve actuator tumbler and at least one lock tumbler disposed longitudinally along the periphery thereof movable from an extended and retracted position by a key inserted into said keyway, and an intermediate sleeve including a sleeve actuator slot and a lock slot formed therethrough disposed between said inner member and outer housing such that when in said lock configuration and lock-/latch position said lock tumbler extends through said lock slot into said lock spline to lock said inner member relative thereto to lock said dual function lock/latch device in said lock/latch position, that when in said lock configuration the insertion of said key into said keyway retracts said lock tumbler to permit rotation of said inner member from said lock/latch position to the unlock/unlatch position and that when in said latch config-

VOL 1093 ISS 2 AG 9 1988 UMI

uration said sleeve actuator tumbler extends through said sleeve actuator slot to permit rotation of the inner member and



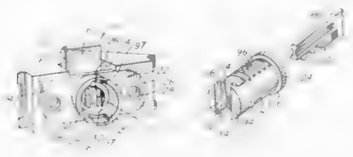
intermediate sleeve between said lock/latch position and unlock/unlatch position.

4,761,978

LOCK WITH KEY OPERATED REMOVABLE PLUG

Gregg W. Walla, Lake Bluff, Ill., assignor to Timberline Supply Ltd., Lake Bluff, Ill.

Continuation-in-part of Ser. No. 765,843, Aug. 15, 1985. This application Jul. 25, 1986, Ser. No. 874,419
Int. Cl.[4] E05B *29/00*
U.S. Cl. 70—367 8 Claims



1. In a lock having a lock cylinder provided with an internal cavity, a key operated lock plug having a keyway, said lock plug being removably mounted in said lock cylinder cavity to be rotatable about a first axis relative to the lock cylinder with a key inserted in said keyway and locked against rotation in said cavity in the absence of a key in the keyway, and a coupling rotatably mounted in said lock cylinder for rotation about said first axis and having associated therewith a lock member that is movable upon rotation of the coupling in a limited range between a locked state and an open state with the coupling in locked and unlocked positions respectively, the improvement comprising:

means provided on the plug for cooperation with the coupling selectively to prevent withdrawal of the plug from the cavity with the plug inserted fully into the cavity and the plug and coupling being disposed in a first relative rotational position, and to allow withdrawal of the plug from the cavity with the plug inserted fully into the cavity and the plug and coupling in a second relative rotational position,

said coupling having spaced edges defining an opening extending axially with respect to the lock cylinder;

a first key having a length preselected so that when said first key is in a fully inserted position in the keyway a portion of the first key extends into said coupling opening so that rotation of the first key brings said key portion into contact with one of said spaced edges to effect rotation of the coupling;

a second key having a length such that when the second key is fully inserted in the keyway it does not extend into the opening,

whereby with said second key relative rotation between the plug and coupling can be effected between the first and second relative rotational positions; and

means for preventing rotation of the coupling in either direction relative to the plug with the coupling in the locked position,

whereby the lock member cannot be moved from its locked state to its open state without insertion of a key in the keyway.

4,761,979

ROLLER BENDING APPARATUS EQUIPPED WITH A CURVATURE MEASURING UNIT

Kenji Kawaguchi, Osaka, and Akio Yoshida, Amagasaki, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 738,750, May 29, 1985, abandoned. This application Dec. 15, 1986, Ser. No. 942,061
Claims priority, application Japan, May 30, 1984, 59-108664; Sep. 29, 1984, 59-205037; Feb. 18, 1985, 60-29796; Feb. 18, 1985, 60-29797
Int. Cl.[4] B21D *5/14*
U.S. Cl. 72—9 1 Claim



1. A roller bending apparatus comprising:

a top roller;

two or more bottom rollers disposed below said top roller, said top roller located horizontally in a space between two of the bottom rollers, for supporting a workpiece;

means for moving said top roller vertically over the length of a stroke;

a drive motor connected to said bottom rollers so as to rotate said bottom rollers forward or backward;

means for measuring a radius of curvature of the workpiece and for producing a corresponding output signal, said measuring means including a frame movable toward and away from the workpiece along a straight line perpendicular to a tangent of said workpiece, a probe holder on said frame, two coplanar stationary probes secured to opposite ends of said probe holder, displacing means including a movable probe for producing said output signal upon linear displacement of said movable probe when said stationary probes are in contact with said workpiece, said displacing means being secured to said probe holder between said stationary probes in the same plane as said stationary probes, and power means for moving said frame and probe holder toward and away from said workpiece such that said probes are movable into contact with said workpiece and are separable from said workpiece;

said power means including a drive cylinder for generating a force responsive to an electrical input signal, a ram connected to said cylinder and movable responsive to said force, a guide plate rigidly mounted on said frame and

having a journal bearing formed in the center thereof, a rod slidable through and supported by said journal bearing and including a limit rigidly secured to an outer end for preventing said rod from passing through said guide plate and a compression spring concentrically disposed around another outer end to cause said frame to move along an axial direction when said ram is moved outwardly by said force, and a limit switch rigidly secured in the vicinity of said guide plate on said frame and electrically connected to said drive cylinder to stop said drive cylinder from generating said force when contacted by said rod;

control means including calculating means and connected to receive the output signal of said curvature measuring means and operable under program control for determining an elastoplastic bending moment to be applied to said workpiece, said calculating means including means for determining the radius of curvature of said workpiece based on said output signal, means for calculating a first radius of curvature for a first neutral surface of the workpiece during bending of the workpiece which will result in a desired second radius of curvature for a second neutral surface corresponding to the desired radius of curvature of the workpiece after release and springback of the workpiece, and means for calculating the vertical stroke length said top roller must be moved to achieve said first radius of curvature during bending, said control means further including means for controlling said moving means to move said top roller in accordance with said stroke length, and means for controlling said drive motor for said bottom rollers to roll said workpiece through said rollers and stop said workpiece in said rollers, and to repeat the rolling if the difference between the determined radius of curvature and the desired radius of curvature is greater than a certain value, and for ending rolling if the difference is less than a certain value.

4,761,980

METHOD OF FEEDING MATERIAL TO HOT FORGING MACHINE

Yoshio Kawashima; Shunji Ogata; Masaaki Yokoyama; Masato Tomiku, all of Kitakyushu; Tsuneo Yamada, Takarazuka; Tsutomu Kuno, Kitakyushu; Hisao Murakami, Yukuhashi; Hiroyuki Morimoto, Kitakyushu; Toyoshige Myojo, Higashimurayama; Kozo Watanabe, Sakado, and Toshihiro Tanaka, Niihama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Sumitomo Heavy Industries, Ltd., Tokyo, both of, Japan

Filed Feb. 28, 1986, Ser. No. 835,027
Claims priority, application Japan, Mar. 1, 1985, 60-38903; Oct. 23, 1985, 60-237854; Oct. 23, 1985, 60-237855; Oct. 23, 1985, 60-163439[U]; Oct. 31, 1985, 60-242859
Int. Cl.[4] B21J *7/46, 1/06*
U.S. Cl. 72—24 2 Claims



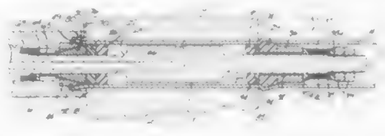
1. A method of forging including driving pinch rollers by driving for uncoiling a coiled material, straightening the uncoiled material, and intermittently feeding the straightened material through a heating device and subsequently through feed rollers until the forward end of the material is brought in engagement with a stopper, heating the material while it passes through said heating device, cutting the material by a cutting device and then feeding the cut material into a hot forging machine wherein said feeding of said material to said hot forging machine comprises: preparing said driving device by driving said pinch rollers mechanically independently from said hot forging machine; picking up the timing of forging conducted by said hot forging machine as an electric signal; and controlling said driving device in accordance with said electric signal; said driving device driving said pinch rollers at a speed corresponding both to the operation speed of said hot forging machine and the length in which said material is to be cut; said driving device being controlled in such a manner that said pinch rollers are driven backwardly relative to a forward direction of said material during cutting of said material by said cutting device and during the period from the completion of the cutting till the completion of retraction of a movable blade of said cutting device, so as to move the subsequent material backwardly by an amount equal to the amount of thermal expansion caused by the heating by said heating device, thereby maintaining the leading end surface of said subsequent material at a constant position from the moment of commencement of said cutting till the moment of completion of retraction of said movable blade.

4,761,981

SWAGING APPARATUS FOR FLARING AND ANCHORING TUBES

John W. Kelly, Burbank, Calif., assignor to Haskel, Inc., Burbank, Calif.

Filed Mar. 23, 1987, Ser. No. 29,320
Int. Cl.[4] B21D *22/00*
U.S. Cl. 72—58 24 Claims



1. An apparatus for expanding and anchoring a tube within a surrounding structure by radially expanding said tube and flaring an end of said tube projecting from said surrounding structure comprising:

an elongated support for insertion in said tube;

positioning means for axially positioning said support with respect to said surrounding structure;

first and second sealing rings encircling said support for engaging the inside surface of said tube and thus defining a hydraulic pressure zone extending axially through a portion of said tube, whereby hydraulic pressure applied within said pressure zone causes radial expansion of said tube; and

flaring means for flaring said end of said tube comprising a cylinder formed by a plurality of arcuate segments having cam surfaces thereon, and a cam member disposed between said cylinder and said second sealing ring, whereby hydraulic pressure within said zone causes said cylinder to expand radially in response to axial movement of said cam member, thereby flaring said tube end.

4,761,982

METHOD AND APPARATUS FOR FORMING A HEAT EXCHANGER TURBULATOR AND TUBE

George K. Snyder, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

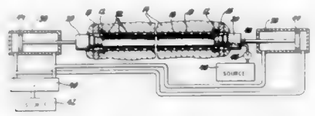
Filed Oct. 1, 1986, Ser. No. 913,973
Int. Cl.[4] B21D *39/20*
U.S. Cl. 72—58 4 Claims

1. A method of forming an integral inner tube and turbulator for a concentric tube heat exchanger from a stock length of tube comprising the steps of simultaneously forming a sealing and outer tube attaching section in both ends of the tube while also sealing the ends thereby, applying hydraulic pressure to the interior of the tube to hydraform outwardly projecting turbulation bumps in the tube at places located about and along

VOL 1093 ISS 2 AG 9 1988 UMI

the length thereof, and increasing the section forming force with increasing hydraforming pressure so that the hydraforming force opposes the section forming forces and only their net force acts on said sections to maintain said sealing during said hydraforming to prevent coining and thereby weakening of said sections.

3. Apparatus for forming an integral tube and turbulator for a heat exchanger from a stock piece of tube comprising a cylindrical hydraforming die having bulge forming holes therein, a punch die fixed to each end of the hydraforming die, said dies adapted to receive the stock piece, a punch for cooperating with each punch die to form a sealing and tube attaching section in each end of the stock piece and also sealingly



close same, control means for controlling the force of said punches so that the punch force is sufficient to form said bell-shaped sections and thereafter may be increased, a source of hydraulic fluid at a regulatable pressure, means for communicating said hydraulic fluid with the interior of the stock piece while sealed by said punches at said sections such that the hydraulic fluid fills said interior and then increases in pressure to form outwardly projecting bumps in the stock piece, and said control means also providing for increasing the force of said punches with increasing hydraulic pressure in the stock piece to maintain said sealing and also so that the increasing hydraulic force opposes the increasing punch forces such that only their net force acts on said sections to prevent coining and thereby weakening thereof by said punches.

4,761,983

METHOD AND APPARATUS FOR WINDING MATERIAL ON A DRUM

Vladimir B. Ginzburg, Pittsburgh; Richard C. DeChellis, McMurray, and Robert H. Ellis, Oakmont, all of Pa., assignors to International Rolling Mill Consultants, Inc. and United Engineering, Inc., both of Pittsburgh, Pa.

Filed Aug. 7, 1987, Ser. No. 82,489

Int. Cl.[4] B21C *47/06*

U.S. Cl. 72—148 19 Claims



1. In a hot reversing mill for reducing a workpiece and having a rotatable coiler drum on a side thereof for coiling and uncoiling said material traveling along a passline defined by a series of table rolls, said coiler drum located above said passline and having a material receiving slot positionable in a predetermined angular position relative to the rotation of said drum for receiving the leading end of said material, said drum rotated in a desired direction for a winding operation, such as an overwinding or an underwinding of said material thereon, and comprising:

an apparatus in cooperation with said coiler drum comprising:

a shaft assembly located along said passline,

a first and a second pivotal arm means mounted on said shaft assembly,

means for pivoting said first and second pivotal arm means including means for positioning said first and second pivotal arm means close to said coiler drum above said passline for said winding operation of said material onto said drum, and

means mounted on said each first and second pivotal arm means for engaging said material to initially bend said material and subsequently wrapping said material onto said coiler drum for said overwinding or underwinding operation of said material,

said means for engaging said material comprising first roller assembly means on said first pivotal arm means located upstream of and near said slot when in said predetermined angular position for said underwinding operation and second roller assembly means on said second pivotal arm means located on a side of and close to said slot opposite to that which said first roller assembly means is located downstream of said slot when in said predetermined angular position for said underwinding operation,

said means for pivoting said first and second pivotal arm means further includes means for independently and selectively positioning said first roller assembly means away from said coiler drum for supporting and guiding said material onto said coiler drum when in a different said predetermined angular position for said overwinding operation.

4,761,984

APPARATUS FOR SUPPORTING A VEHICLE FOR STRAIGHTENING AND ALIGNMENT

Frank Fuscaldo, Jr., 1635 Otlahurst Dr., Fairmont, W. Va. 26554

Filed Sep. 26, 1986, Ser. No. 912,059

Int. Cl.[4] B21D *1/12*

U.S. Cl. 72—305 17 Claims



1. In an apparatus for supporting a vehicle structure for repair and finishing purposes, a pair of crossbars beneath a vehicle body in horizontal spaced parallel relationship transverse to the longitudingal axis of the vehicle body, each crossbar having two ends and a length greather than the width of the vehicle body, a pair of clamping means on each said crossbar for clamping said crossbars to pinch welds on the uderside of the vehicle body, a bench frame having a length substantially equal to that of the vehicle body and a width less than the length of the crossbars detachably attached to the undersides of said crossbars, a plurality of vertical towers each fixedly attached to an extremity of a said end of said crossbars and extending both above and below the respective crossbar, said towers each extending below said crossbar a sufficient distance to support the vehicle body upon a supporting surface such that the wheels of the vehicle are clear of the supporting surface.

4,761,985

APPARATUS FOR FLANGING SHEET METAL BLANKS

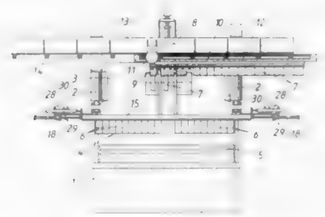
Johann Klingesberger, Lohnsburg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Aug. 14, 1987, Ser. No. 85,534

Claims priority, application Austria, Aug. 14, 1986, 2192/86

Int. Cl.[4] B21D *5/04*

U.S. Cl. 72—316 6 Claims



1. In apparatus for flanging sheet metal blanks comprising

a backing structure adapted to support a sheet metal blank as it is flanged and

a holding-down mechanism for holding down said sheet metal blank on said backing structure and for defining on said blank a bend line, which mechanism comprises

a holding-down shoe comprising a plurality of segments arranged in a straight row,

a holding-down ram, which is operable to force down said shoe so that said segments engage said blank on said backing structure and define on said blank a bend line which is parallel to said row, and

track means rigid with said ram and extending parallel to said row, wherein

said segments comprise mid-segment means and two sets of displaceable segments disposed on opposite sides of said mid-segment means and displaceably guided by said track means along the latter,

said mechanism comprises two adjusting rods, each of which is operable to move at least one of said displaceable segments of one of said sets along said track means,

the improvement comprising a plurality of couplings, each of which is on said displaceable segment and is operable to couple one of said displaceable segments alternately to one of said adjusting rods and to said ram.

4,761,986

ARRANGEMENT FOR TRANSPORTING WORKPIECES IN MULTI-STAGE DEFORMATION PRESSES

Hermann Maunz, Goeppingen-Holzheim; Oskar Rahn, Goeppingen-Faurndau, and Wilfried Voss, Eislingen, all of Fed. Rep. of Germany, assignors to L. Schuler GmbH, Goeppingen, Fed. Rep. of Germany

Filed May 8, 1987, Ser. No. 47,145

Claims priority, application Fed. Rep. of Germany, May 10, 1986, 3615812

Int. Cl.[4] B21J *13/08*

U.S. Cl. 72—405 12 Claims



12. An arrangement for transporting workpieces in a multi-stage deformation press, comprising gripping tong means for seizing the workpieces and transferring the same into the deformation stages, the gripping tong means including a base body means operable to be displaced by way of a coupling rod in the direction of a deflection movement, the base body means carrying a pivot support means, the gripping tong means incluuding gripping arms pivotally supported in pivot joints on said pivot support means, the areas of the gripping arms remote from the workpiece being pivotally connected by a coupling member to the base body means, roller means on the gripping arms within the area of the pivotal connection thereof, said roller means ride along curved regions of a cama means, a spring means between the base body means and the pivot support means, and a first curved region of the cam means being constructed in the shape of a circular arc whose radial center point is the pivot joints as a result of which said pivot support means will stop its deflection movement before said base body means stops its deflection movement and while said gripping arms pivot.

4,761,987

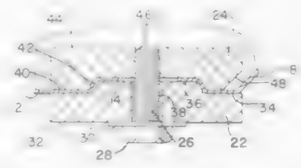
DOOR LOCK OPENING RESTORING TOOL AND METHOD FOR USING THE SAME

Richard J. Gamauf, 7260 W. 112th St., Worth, Ill. 60482

Filed Mar. 16, 1987, Ser. No. 26,015

Int. Cl.[4] B21D *1//12*

U.S. Cl. 72—414 16 Claims



1. A tool useful for restoring a damaged door lock opening associated with a transportation vehicle which comprises:

first die means having a hole located therethrough, a front face, and a rear face including an outwardly extending projection such that said rear face extends beyond said projection;

second die means having a hole located therethrough, a front face having an inwardly extending indent sized to be capable of receiving at least a portion of said projection, and a rear face, provided that at least one of said holes is threaded and said front face of said second die means extends beyond said indent and is at least partially angularly truncated toward said rear face of said second die means to avoid interference with other components of said door of said transportation vehicle; and

bolt means adapted and sized to be capable of passing into at least a portion of both of said holes simultaneously, said bolt means including threads which are engageable with the threads in said hole or holes as said bolt means passes into said holes.

4,761,988

PRESS APPARATUS FOR SMALL PRECISION PART

Heizaburou Kato, Shizuoka, Japan, assignor to Sankyo Manufacturing Company, Ltd., Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 7,236

Claims priority, application Japan, Jan. 28, 1986, 61-16335

Int. Cl.[4] B21J *9/18*

U.S. Cl. 72—452 1 Claim

1. A press apparatus comprising:

a base and a crown mounted on the top of said base, said base having a bed mounted therein and a bolster plate secured to the top of said bed;

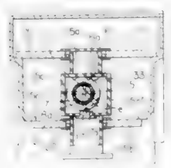
VOL 1093 ISS 2 AUG 9 1988 UMI

a crank shaft mounted in said crown and having at least one crank portion;

first, second and third followers fitted on said crank portion to be rotatable about the axis of said crank portion which is eccentric with the rotational axis of said crank shaft; said first, second and third roller followers being disposed parallel with respect to each other in the direction of the axis of said crank portion, said first and second roller followers being disposed in positions corresponding to left and right ends of the crank portion and said third roller follower corresponding to an intermediate section of said crank portion and disposed between said first and second roller followers;

a slide post including a slide at its lower end disposed in said crown to be slidable in the vertical direction towards said bolster plate;

upper and lower roller pads disposed in said slide post, each roller pad having a pressure-contact surface, the pressure-





contact surface of said upper roller pad being in pressing contact with said first and second roller followers and the pressure-contact surface of said lower roller pad being in pressing contact with said third roller follower;

wherein, when said crank shaft is driven and rotated, the vertical movement of said slide post and said slide towards said bolster plate is generated by the eccentric rotary motion of said first, second and third roller followers the radius of which is defined by the distance between the rotational axis of said crank shaft and the axis of said crank portion; and wherein said upper roller pad has in its lower surface said pressure-contact surface and a recessed surface adjacent to said pressure-contact surface, said recessed surface acting as a pressure-release surface for releasing the pressure-contact state between said upper roller pad and said first and second roller followers at least at a moment during the upward movement of said slide post.

4,761,989

METHOD OF CALIBRATING A TORQUE TESTING DEVICE AND A MAGNETIC CALIBRATION DEVICE THEREFOR

Thomas M. McDevitt, 4009 Beechway Blvd., Toledo, Ohio 43614

Filed Jan. 20, 1987, Ser. No. 4,887
Int. Cl.[4] G01L *25/00*; H02K *49/10*
U.S. Cl. 73—1 C 13 Claims



12. A method of calibrating a torque testing device having a set of jaws, said method comprising the steps of:

providing a calibrating device for applying a predetermined amount of torque, said calibrating device comprising, in combination; a first member having an inside surface; a second member having an outside surface, at least a portion of said outside surface of second member being positioned to be surrounded by at least a portion of said inside surface of said first member; bearing means positioned between said at least a portion of said outside surface of said second member and said at least a portion of said inside surface of said first member, whereby said first member and said second member can be rotated relative to one another; first annular permanent magnetic means carried by said at least a portion of said first member; and second annular permanent magnetic means carried by said at least a portion of said second member, at least a portion of said first annular permanent magnetic means surrounding at least a portion of said second annular permanent magnetic means, said at least a portion of said second annular permanent magnetic means being spaced apart from said at least a portion of said first annular permanent magnetic means whereby said first annular permanent magnetic means and said second annular permanent magnetic means cooperate to impose a magnetic drag of a reproducible magnitude that resists the rotation of said second member and said first member with respect to one another;

securely engaging one of said first member and said second member of said calibrating device in said jaws of said torque testing device; and

applying sufficient torque to the other of said first member and said second member of said calibrating device to overcome said magnetic drag that resists the rotation of said second member and said first member with respect to one another.

4,761,990

METHOD AND APPARATUS FOR MEASUREMENT OF ATTRITION RATE OF PARTICULATE MATERIAL

Lloyd A. Baillie, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

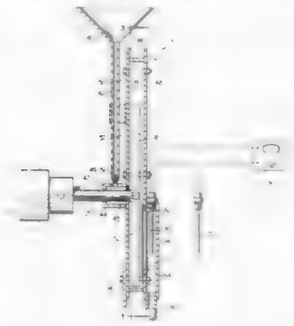
Filed Jan. 27, 1987, Ser. No. 7,318
Int. Cl.[4] G01N *3/56*
U.S. Cl. 73—7 15 Claims

10. A method for determing the rate of attrition of a quantity of particulate material subject to impact forces during use comprising the steps of:

providing means for imparting impact forces to a predetermined quantity of said particulate material, said means including a chamber for receiving said quantity of particu-

late material and means in said chamber for imparting said impact forces to said quantity of particulate material;

operating said means for imparting impact forces to said quantity of particulate material while substantially continuously and permanently withdrawing fines generated by impacting said particulate material from said chamber;



adding a quantity of makeup particulate material to said chamber;

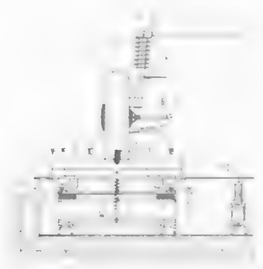
repeating the steps of withdrawing fines and adding makeup material so as to determine the attrition rate of the type of particulate material being measured.

4,761,991

METHOD AND APPARATUS FOR CHECKING THE CHASSIS OF A MOTOR VEHICLE

Josef Femböck, Neuötting, Fed. Rep. of Germany, assignor to Richard Langlechner GmbH, Unterneukirchen, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 943,754
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3545087
Int. Cl.[4] G01M *17/04*
U.S. Cl. 73—11 11 Claims



1. A method of checking the state of the chassis of a motor vehicle wherein the motor vehicle is brought onto a position holding means spaced above a support and then the position holding means is removed so that the motor vehicle falls with its front or rear axle in free fall onto the support, characterised in that

1. the distance between the position holding means and the support, which corresponds to the height of fall of the motor vehicle, is selected so that it corresponds substantially to the residual spring deflection (distance between wheel axle and buffer stop) predetermined by the design of the motor vehicle but does not exceed this,

2. the position holding means is removed at least as quickly as the wheel or wheels to be tested of the motor vehicle would fall under the action of the force of gravity and the simultaneous action of the relaxing spring present between wheel and body, ignoring the oppositely directed action of the shock absorber and of the frictional forces (for example in the axle joint bearing and in the springs), and

3. the variation in time of the wheel pressure acting on the support is measured.

4,761,992

KNOCK DETECTION CIRCUIT WITH GATED AUTOMATIC GAIN CONTROL

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jun. 9, 1987, Ser. No. 59,792
Int. Cl.[4] G01L *23/22*
U.S. Cl. 73—35 16 Claims



1. A knock detection circuit for an internal combustion engine, comprising:

transducer means sensing audio signals indicative of engine combustion and occurring within a combustion chamber of the engine and converting said audio signals into a transducer output voltage including a portion representing background noise and a portion representing detonation;

means for adjusting the amplitude of said transducer output voltage;

means sampling said portion of said transducer output voltage representing background noise and controlling said adjusting means to decrease the amplitude of said transducer output voltage for increased sensed background noise and to increase the amplitude of said transducer output voltage for decreased sensed background noise;

detonation threshold means responsive to a predetermined increase in the amplitude of said portion of said transducer output voltage representing detonation above the amplitude of said portion of said transducer output voltage representing background noise, and outputting a knock-detected signal;

combination fail-safe and idle override means comprising means responsive to loss of said transducer output voltage to provide said knock-detected signal in a fail-safe mode, and responsive to engine speed below a given engine idle speed and preventing said fail-safe mode even if a low amplitude transducer output voltage, corresponding to

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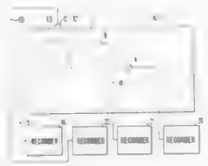
low amplitude audio signals at idle, appears to be a loss of said transducer output voltage.

4,761,993

METHOD FOR MONITORING THE OPERATION OF AN INTERNAL COMBUSTION ENGINE

Wojciech Klepacki, Courbevoie La Defense, France, assignor to Societe D'Etudes De Machines Thermiques, Saint Denis, France

Filed Mar. 25, 1987, Ser. No. 30,016
Claims priority, application France, Mar. 28, 1986, 8604517; May 14, 1986, 8606934
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—115 10 Claims



1. A method for monitoring the operation of an internal combustion engine while it is in service, (involving) the method comprising the following steps:

recording the change of pressure occurring in at least one combustion chamber of one or more same-type sample or "control" engines for various values of the operating parameters, said parameters being temporarily modified as required to bring about a plurality of stabilized load conditions ranging from 0 to 100% and to cause vibrations of the amplitude of the pressure swings about the mean value of the pressure ranging from the minimum value of the amplitudes to a maximum value equal to ten times the minimum value, the recording being made over a range of frequencies from 0 to 30,000 Hz and covering one or more successive or nonsuccessive engine cycles;

simultaneously recording at various points of the components surrounding the combustion chamber or chambers of the control engine or engines the amplitude and the frequency of the vibrations generated by overall operation in a frequency range of 0 to 30,000 Hz;

computing the ratio of the spectral power of the pressure signal to the spectral power of each of the signals supplied from each of the measuring points, or the ratio of any values representative of said powers;

determining for which measuring point this ratio differs least from a constant irrespective of load level, said measuring point being assumed to deliver a representative signal;

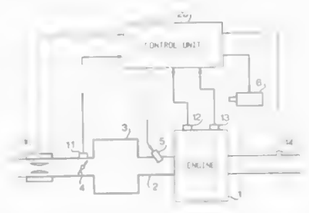
installing on the service engine a vibration measuring device at the location deduced from the previous steps involving the control engines and using the spectral power level of the signal emitted at various periods during normal-duty operation of the engine, or a value representative of this power, to determine the behavior of the components surrounding the combustion chamber and/or the severity of the stresses to which they are subjected and to take suitable remedial action.

4,761,994

SYSTEM FOR MEASURING QUANTITY OF INTAKE AIR IN AN ENGINE

Yoshiyuki Sogawa, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1987, Ser. No. 46,023
Claims priority, application Japan, May 6, 1986, 61-104413; May 6, 1986, 61-104414
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—118.2 1 Claim



1. A system for measuring quantity of intake air in an engine for a motor vehicle having an intake passage, a throttle valve provided in the intake passage, the intake passage including a first intake passage upstream of the throttle valve, and a second intake passage between the throttle valve and cylinders of the engine, comprising:

an airflow meter provided in the first intake passage for measuring a first quantity of intake air passing in the first intake passage;

first detector means for detecting opening degree of the throttle valve and for producing an opening degree signal;

second detector means for detecting an engine speed and for producing an engine speed signal;

first means responsive to the opening degree signal and to the engine speed signal for producing a pressure signal representative of pressure in the second intake passage, wherein the first means calculates the pressure based on pressure in the first intake passage, resistance at the throttle valve and resistance in the engine;

second means responsive to the pressure signal for calculating a second quantity of intake entered into the second intake passage without entering into the cylinders; and

third means for producing a signal representing quantity of intake air actually entered into the cylinders in accordance with the difference between the first quantity and the second quantity.

4,761,995

DIRECT-HEATED FLOW MEASURING APPARATUS HAVING IMPROVED SENSITIVITY AND RESPONSE SPEED

Minoru Ohta, Okazaki; Kazuhiko Miura, Nukata; Michitoshi Onoda, Toyohashi, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 5, 1987, Ser. No. 46,938
Claims priority, application Japan, May 9, 1986, 61-107233
Int. Cl.[4] G01M *15/00*
U.S. Cl. 73—118.2 20 Claims

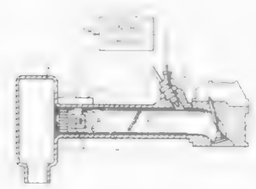
1. A direct-heated flow measuring apparatus for measuring a flow rate of a fluid stream within a passage comprising:

a thin-plate sensing element disposed in parallel with said fluid stream within said passage and having a sensing portion for generating heat and detecting the temperature thereof;

a supporting member for supporting said sensing element in said passage at at least one end of said sensing element; and

electric power control means, connected to said sensing portion of said sensing element, for controlling the heat generated therefrom,

said sensing portion being positioned on a downstream side of a connection portion between said sensing element and said supporting member with respect to said fluid stream within said passage, and said sensing element is approxi-



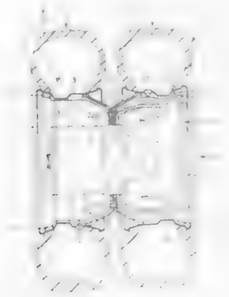
mately L-shaped having a first portion fixed to said supporting member and a second portion positioned on a downstream side with respect to said fluid stream, said portion being formed on said second portion.

4,761,996

DEVICE FOR TRANSMITTING MEASURING SIGNALS, FOR EXAMPLE, FOR THE TIRE PRESSURE, TO TWIN WHEELS OF MOTOR VEHICLES

Hans-Dieter Schmid; Günther Alberter, both of Nuremberg, and Gerhard Hettich, Rosstal, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE86/00374, § 371 Date Aug. 25, 1987, § 102(e) Date Aug. 25, 1987, PCT Pub. No. WO87/03254, PCT Pub. Date Jun. 4, 1987
PCT Filed Sep. 18, 1986, Ser. No. 90,245
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1985, 3541529
Int. Cl.[4] B60C *23/02*
U.S. Cl. 73—146.5 6 Claims



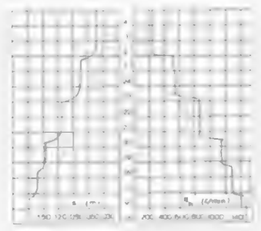
1. Device for the transmission of measuring signals of tire pressures in twin wheels of motor vehicles, which twin wheels are each formed of two individual wheels having rim pot bases adjoined one another, the device comprising at least two sensors (**13, 14**) each provided on an outer rim of each individual wheel of a twin wheel; at least two signal transmitters (**17, 18** and **19, 20**) arranged on each individual wheel (**2, 3**) in a region of an outer rim edge (**15, 16**) thereof; coupling devices each provided on a rim of each individual wheel and connecting said signal transmitters to said sensors in such a way that a first signal transmitter (**17**) of a first wheel (**2**) of the twin wheel is electrically connected with a sensor (**13**) of the first wheel (**2**) and with a signal transmitter (**20**) of a second wheel (**3**), and a signal transmitter (**18**) of the first wheel (**2**) is electrically connected with a sensor (**14**) of the second wheel (**3**); and a stationary signal receiver (**21**) positioned in the region of the outer rim edge (**15** or **16**) of one of individual wheels (**2**) at a distance from it.

4,761,997

GROUND WATER WELL DIMENSIONING PROCEDURE

Veli E. Reijonen, and Risto Reijonen, both of Helsinki, Finland, assignors to Veli Reijonen Oy, Helsinki, Finland

Filed Nov. 19, 1985, Ser. No. 799,746
Claims priority, application Finland, Nov. 20, 1984, 844558
Int. Cl.[4] E21B *49/00*
U.S. Cl. 73—155 9 Claims



1. A method for pre-determining the dimensions of a ground water production well comprising the steps of sinking an observation tube having a strainer in the ground, carrying out a series of pumping runs in said tube, said pumping being carried out stepwise and having flows with different velocities induced in the soil, measuring the flow quantity and hydrostatic height in the tube caused in each of the pumping runs, and extrapolating from said measurement, the yield of an ultimate production well to be built at the place of the observation tube.

4,761,998

TESTING DEVICE FOR ORDNANCE

Hillebrand J. Greven, LH Delft, Netherlands, assignor to RMO-Wrkspoor Srvices BV, Netherlands

Filed Jul. 17, 1985, Ser. No. 755,732
Claims priority, application Netherlands, Jul. 20, 1984, 8402313
Int. Cl.[4] G01L *5/14*
U.S. Cl. 73—167 27 Claims



24. Apparatus for testing a brake and return mechanism of an ordnance piece, which comprises the combination of:

mass means for imparting a kinetic energy impulse to the ordnance piece which approximates the time history of forces which would be imposed thereon during actual firing of the piece;

thrust means for imparting predetermined kinetic energy to said mass means;

means for guiding said mass means along a path aligned with a bore of and to impact the ordnance piece and transfer the predetermined kinetic energy of the mass means to the ordnance piece;

means for recording the force/time diagram of the predetermined kinetic energy imparted by the mass means to the ordnance piece; and means for recording a velocity-trajec-

VOL 1093 ISS 2 AUG 9 1988 UMI

tory curve of said brake and return mechanism, whereby said curve may be compared to a predetermined band of curves defining permissible limits.

4,761,999

SET PRESSURE VERIFICATION DEVICE AND METHOD

Leonard J. Thompson, Wrentham, Mass., assignor to Crosby Valve & Gage Company, Wrentham, Mass.

Filed Feb. 27, 1987, Ser. No. 20,104
Int. Cl.[4] G01M *19/00*
U.S. Cl. 73—168 7 Claims



7. A method for calculating the set pressure of a valve coupled to a port in a pressure line, said valve being of the type which includes a valve stem, a closure element connected to said valve stem and movable between a first limit position sealing said port and a second limit position opening said port, and spring loaded means for biasing said closure element towards said first limit position, said method comprises the steps of;

providing a set pressure verification device which includes:

a position transducer for generating a position signal representative of the position of said closure element between said first and second limit positions:

an assembly including: an annular piston adapted to fit about said valve stem; a base member plate adapted to be removably connected to said valve; an annular piston seal provided on said base member plate and adapted to engage and form a generally airtight seal with the lower portion of said piston; a top guide plate having an upper surface and a bottom surface adapted to be mounted to said base member plate; and upper mount having a bottom surface attached to the upper surface of top guide plate, wherein said base member plate, said top guide plate and said upper mount define a chamber, and wherein said annular piston is located within said chamber and movable between said base member plate and said top guide plate; and a single annular expandable elastomeric diaphragm connected to said annular piston and said top guide plate and which, upon the introduction of increased air pressure into said chamber, is adapted to apply a force ramp to said closure element in the direction opposite to the bias provided by said spring loaded means, whereby said assembly is adapted to be removably mounted on said valve; and

a force transducer for generating a force signal representative of the forces applied to said closure element by said expandable elastomeric diaphragm;

attaching said set pressure verification device to said valve;

introducing air from an external source into said chamber to thereby apply said force ramp to said closure element in the direction opposite to the bias; and

monitoring with external controller means the position signals and the force signals so as to calculate the set pressure of said valve.

4,762,000

FLUID LEVEL INDICATING APPARATUS

Charles R. Bond, Jr., 2241 Boston, SE., Grand Rapids, Mich. 49506

Filed Oct. 6, 1986, Ser. No. 915,766
Int. Cl.[4] G01F *23/00*
U.S. Cl. 73—290 R 12 Claims



1. In an indicating apparatus for giving indication of the level of fluid contained in a reservoir, the indicating apparatus comprising:

a support means having a portion spaced from said reservoir and connected thereto;

an indicator means mounted to said support means portion spaced from said reservoir;

said indicator means including indicia thereon corresponding to a range of fluid levels to be indicated;

a registering means mounted on said support means portion and positioned for registry with said indicia on said indictor means;

said indicator means being movably mounted on said support means with respect to said registering means to permit registry of said registering means with said indicia in a range of relative positions corresponding to said range of fluid levels to be indicated;

an actuating means gripable by a user and releasably mounted to said indicator means through a releasable retention means to draw said indicator means from an initial position thereof through a range of available motion and to release said movable indicator means when said indicator means encounters a predetermined resistance to further motion;

a chamber element having a portion in which there is defined a variable volume chamber that is adapted to be maintained at least partially submerged in the fluid contained within said reservoir;

a piston means movably disposed within said chamber for decreasing the volume of said chamber by a movement thereof from an initial position corresponding to said initial position of said indicator means; link means connecting said piston means and said indicator means;

said chamber element including at least one inlet port communicating between said chamber and said reservoir when said piston means is in said initial position;

said inlet port being submerged in the reservoir fluid to permit reservoir fluid to flow into said chamber when said chamber is submerged in the reservoir fluid sufficiently for fluid level indication;

said chamber element including at least one vent port located to vent gas first, and fluid subsequently, from said chamber during piston movement to decrease the volume of said chamber;

said vent port being of a geometry to restrict fluid flow therethrough to generate at least said predetermined resistance when all air has been expelled from said cylinder through said vent port such that said releasable retention means is effective to retain said movable indicator means during movement of said actuating means only until concomitant movement of said piston means within said chamber encounters the fluid flow resistance imparted by the restriction of fluid flow through said vent port; and

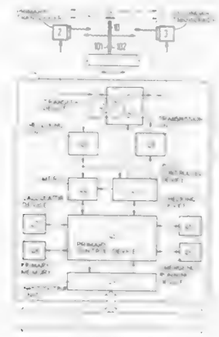
holding means cooperable with said indicator means to hold said indicator means at a relative position at which said actuating means is released from said indicator means in response to said piston means encountering said fluid flow resistance.

4,762,001

ARRANGEMENT FOR IDENTIFYING THE POSITION OF A MOVABLE BODY WITH ULTRASOUND

Gero Wuttke, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 26, 1987, Ser. No. 66,521
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1986, 3622368
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—597 7 Claims



1. An arrangement for identifying the position of a movable body with ultrasonic energy, comprising:

a primary transducer operable as a transmitter and as a receiver for ultrasonic pulses;

a reflector attached to the movable body and including a reflecting front side and a reflecting rear side which reflects an ultrasonic pulse transmitted from the primary transducer from said front side back in the direction of said primary transducer;

measuring apparatus connected to said primary transducer and operable to identify a principal transit time per ultrasonic pulse required by the ultrasonic pulse along a principal distance between said primary transducer and said reflector and from said reflector back to said primary transducer and which identifies a positional value therefrom representing the position of said reflector relative to a reference position having a reference distance from said primary transducer;

a secondary transducer connected to said measuring apparatus and operable as a transmitter and a receiver of ultrasonic pulses which propagate along a subsidiary distance from said secondary transducer to said rear side of said reflector and back with a subsidiary transit time;

said reflector being arranged between said primary transducer and said secondary transducer;

said primary and said secondary transducers being spaced apart a predetermined distance which is equal to the sum of said principal distance and said subsidiary distance and which remains constant between said primary transducer and said secondary transducer; and

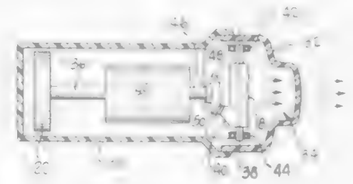
said measuring apparatus including means for identifying said subsidiary transit time and calculating said positional value from said subsidiary transit time, said principal transit time, said predetermined distance and said reference position.

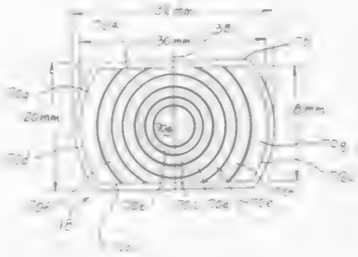
4,762,002

PROBE ARRAY FOR ULTRASONIC IMAGING

Darwin P. Adams, Guilford, Conn., assignor to Picker International, Inc., Cleveland, Ohio

Filed Nov. 26, 1986, Ser. No. 935,582
Int. Cl.[4] G01N *29/04*
U.S. Cl. 73—625 13 Claims





5. An ultrasonic probe assembly comprising:

(a) a generally tubular housing having an ultrasonic window;

(b) an ultrasonic transducer disposed within said tubular housing facing the ultrasonic window, said transducer comprising a number of piezo-electric transducer segments oriented to direct energy away from an ultrasound emitting transducer face through a fluid acoustic coupling to the window, said segments arranged concentrically about a center point, said segments including a disk-like center section, an inner grouping of annular segments surrounding said disk-like center section, and an outer grouping of truncated annular segments; said center section, annular segments, and truncated annular segments in combination forming an elongated transducer;

(c) drive means mounted within said housing coupled to said ultrasonic transducer for effecting rocking motion of said transducer about a pivot axis, said pivot axis located ahead of or substantially coincident with the ultrasound emitting transducer face;

(d) power means coupled to the drive means for energizing said drive means; and

(e) means for coupling said transducer segments to external circuitry for sending and receiving diagnostic signals.

4,762,003

MATERIAL TEST MACHINE FOR TENSION-COMPRESSION TESTS AT HIGH TEMPERATURE

Olisse C. Cioletti, Pittsburgh, Pa., assignor to The United States Department of Energy, Washington, D.C.

Filed May 1, 1987, Ser. No. 44,619
Int. Cl.[4] G01N *3/10*
U.S. Cl. 73—825 10 Claims

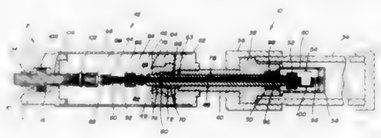
1. Apparatus for testing the properties of a material specimen, comprising in combination:

VOL 1093 ISS 2 AG 9 1988 UMI

a test chamber including means for mounting a test specimen therein;

actuator means coupled to said specimen located in said test chamber through a load column, said load column being further comprised of a pull rod and force transducer means serially coupled between said actuator means and said test specimen, and

a force balance chamber through which said pull rod passes, located externally of said test chamber and including means responsive to the pressure inside of said test chamber and acting on said pull rod to counteract the pressure



or force inside of said test chamber tending to eject said pull rod therefrom, wherein said test chamber comprises an autoclave, wherein said force balance chamber includes a piston chamber, a piston member within said piston chamber, and means for coupling the pressure inside of said autoclave to one side of said piston member, wherein said piston member comprises a portion of said pull rod, and wherein said means for coupling pressure comprises a longitudinal bore in said pull rod and at least one through-hole in said pull rod from said bore to said piston chamber.

4,762,004

GAS FLOWMETER AND SOAP BUBBLE GENERATOR

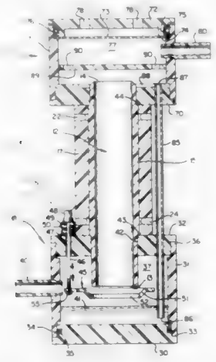
Hill S. Lalin, Wayne; William T. Fleming, Jr., Glen Gardner, and Jorge E. Bermudez, Haledon, all of N.J., assignors to Gilian Instrument Corp., Wayne, N.J.

Continuation-in-part of Ser. No. 837,847, Mar. 10, 1986, Pat. No. 4,691,577. This application Sep. 25, 1986, Ser. No. 911,369

The portion of the term of this patent subsequent to Sep. 8, 2004, has been disclaimed.

Int. Cl.[4] G01F *1/708*

U.S. Cl. 73—861.05 20 Claims



1. A gas flowmeter and soap bubble generator comprising: a first closed chamber housing a soap solution; gas inlet means extending into said first chamber at a flow rate to be measured using the flowmeter; a second closed chamber spaced from the first chamber; a flowtube extending from the first chamber to the second chamber and having a hollow body through which said gas passes with a bottom open end spaced from the soap solution in said first chamber; gas exit means extending into said second chamber for discharging the gas introduced into said first chamber; bubble generating means for generating a soap bubble from said soap solution and means for measuring the time displacement of said soap bubble through the flowtube between two predetermined points, wherein said bubble generating means comprises a hoop surrounding said flowtube at the bottom open end thereof and having an annular body with a central opening larger than the diameter of the flowtube and means for controllably depressing said hoop into said soap solution to pick up a soap bubble and for raising said hoop to said flowtube to transfer said soap bubble to the bottom open end of said flow tube.

4,762,005

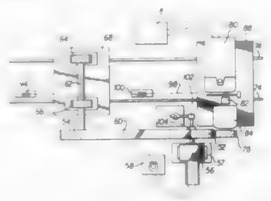
ABRASIVE GRINDING BELT TEST MACHINE

Kurt M. Marshek, 9701 Courtleigh Cir., Austin, Tex., and Hyunsoo Kim, Kangdong-Ku, Shinchon-don 7 Jangmi Apt. 19-505, Seoul, Rep. of Korea

Filed Aug. 31, 1987, Ser. No. 91,529

Int. Cl.[4] G01L *5/16*

U.S. Cl. 73—862.04 16 Claims



1. An apparatus for measuring the normal and tangential belt forces between a belt and a driving pulley (contact wheel) as well as the workpiece grinding friction force between a workpiece and the belt, with respect to pulley angular position, for abrasive belt grinding, the apparatus comprising:

an instrumented driving pulley (contact wheel) in which normal and tangential force transducers are assembled;

a first motor which rotates the said driving pulley;

a belt means connecting the driving pulley to a driven pulley whereby said belt means contacts the workpiece;

a second motor which rotates said workpiece and is mounted on first sliding means;

a first loading means connected to said first sliding means for applying a workpiece grinding normal force;

a second sliding means on which the driven pulley is mounted for driving pulley (contact wheel) belt grinding;

a second loading means connected to said second sliding means for applying the belt initial tension.

4,762,006

FORCE-DETECTING APPARATUS

Kazuo Asakawa; Nobuhiko Onda, both of Kawasaki; Tadashi Akita, Oyama, and Toru Kamada, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 24, 1985, Ser. No. 779,640

Claims priority, application Japan, Sep. 29, 1984, 59-205721; Mar. 20, 1985, 60-057414; Jun. 7, 1985, 60-122738; Jun. 7, 1985, 60-122739

Int. Cl.[4] G01L *5/16, 1/22*

U.S. Cl. 73—862.04 12 Claims



1. A force-detecting apparatus, comprising:

a cruciform comprising first and second elastic members defining orthogonal lines of the cruciform, the orthogonal lines crossing at and defining the center point of the cruciform; each said elastic member comprising at least two parallel plate springs respectively, each parallel plate spring having parallel main surfaces, and the plate springs having opposite ends and defining a center point therebetween coinciding with the center point of the cruciform and an axis extending through the cruciform center point and lying in a plane parallel to the main surfaces of the plate springs, and each said elastic member being deformable in response to a force applied thereto in a direction perpendicular to the main surfaces of the plate springs and a torque applied thereto about the axis;

a frame member associated with each said elastic member, the opposite ends of said plate springs of each said elastic member being secured to the associated frame member; and

for each said elastic member:

first displacement-detecting means for detecting deformation of the elastic member, affixed at predetermined positions on the respective main surfaces of different ones of said parallel plate springs thereof oppositely disposed relative to said center point, and said predetermined positions being symmetric with respect to said center point, and

second displacement-detecting means for detecting deformation of the elastic member, affixed at predetermined positions on a common said main surface of one of said parallel plate springs thereof, and said predetermined positions being symmetric with respect to said central axis.

4,762,007

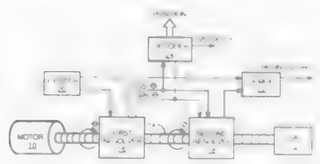
TORQUE MEASURING APPARATUS

Michael L. Gasperi, Caledonia, and Glen Ray, Big Bend, both of Wis., assignors to Allen-Brady Company, Inc., Milwaukee, Wis.

Filed Feb. 18, 1987, Ser. No. 16,084

Int. Cl.[4] G01L *3/10*

U.S. Cl. 73—862.34 10 Claims



1. An apparatus for measuring torque of an elastic member comprising:

a first resolver having a primary winding, two secondary windings, and a rotor coupled to the elastic member at a first position;

means for applying an excitation signal to the primary winding of the first resolver;

A second resolver having a rotor coupled to said elastic member at a second position, a primary winding, and two secondary windings each of which is connected to one of the secondary windings of said first means connected to the primary winding of the second resolver for determining the amplitude of the signal produced at that winding.

4,762,008

TORQUE DETECTING APPARATUS

Tadahiko Kobayashi; Masashi Sakashi, and Koichiro Inomata, all of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 30, 1987, Ser. No. 31,279

Claims priority, application Japan, May 13, 1986, 61-109087; Oct. 30, 1986, 61-259090

Int. Cl.[4] G01L *3/10*

U.S. Cl. 73—862.36 15 Claims



1. A torque detecting apparatus comprising:

at least one pair of thin magnetic metal strips fixed on a torque transmitting shaft subjected to torque detection, and having magnetic anisotropy in a predetermined direction; and

at least one pair of detecting cores paired with said at least one pair of thin magnetic metal strips, fixed in contact with said thin magnetic metal strips, each of the cores of said at least one pair of detecting cores having a detecting coil wound therearound.

4,762,009

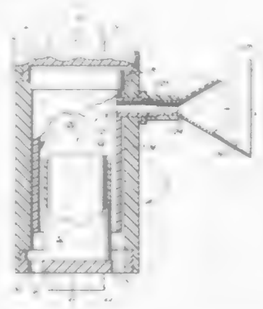
IN-SITU INTEGRATED SUSPENDED SEDIMENT STREAM SAMPLER

Ronald J. Scrudto, Oswego, N.Y., assignor to Research Foundation of State University of New York, Albany, N.Y.

Filed Mar. 4, 1987, Ser. No. 21,797

Int. Cl.[4] G01N *1/20, 1/18*

U.S. Cl. 73—863.52 20 Claims



1. An in-situ integrated suspended sediment stream sampler, comprising:

upstream facing capture means for capturing flowing water containing suspended sediment;

container means defining a hollow sedimentation chamber for receiving the captured sediment-containing water and slowing the flow therethrough so as to induce settling of the sediment within said chamber, said container means including a housing having side walls, a water impermeable top member, and a base member which is at least partially water permeable to allow water to escape through said base member; and

VOL 1093 ISS 2 AG 9 1988 UMI

open top receptacle means located within said chamber for receiving and collecting settled sediment.

4,762,010

APPARATUS AND METHOD FOR ADSORPTION AND DESORPTION STUDIES, PARTICULARLY FOR CHARACTERIZATION OF CATALYSTS

William S. Borghard, Yardley, Pa., and Hans J. Schoennagel, Pennington, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 2, 1987, Ser. No. 33,150
Int. Cl.[4] G01N *15/08*
U.S. Cl. 73—865.5 37 Claims



11. Method for measuring the amount of gas adsorbed by a sample, comprising the steps of:

disposing said sample in a first sample chamber of known volume;

measuring the pressure of gas within said first chamber;

measuring the pressure of gas within a second chamber of known volume;

creating a flow path between said first sample chamber and said second chamber through a flow restrictor having an orifice therein sized such that the rate of gas flow therethrough is less than the equilibrium rate of adsorption/-desorption of gas with respect to said sample;

monitoring the changes in gas pressure in said chambers as gas flows through said flow path from said second chamber into said sample chamber and is adsorbed by said sample; and

determining the amount of gas adsorbed by said sample as a function of the changes in pressure in said first and second chambers.

4,762,011

ELECTRONIC GAGE

Paravila O. Jacob, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 16, 1987, Ser. No. 38,941
Int. Cl.[4] G01L *5/00*; G01B *21/20, 7/28, 7/00*
U.S. Cl. 73—865.8 3 Claims

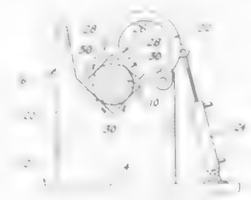
3. An electronic gage for testing the conformation of articles of manufacture to a standard comprising;

a fixture for holding each test article, V blocks on the fixture for cradling the article,

pressure plates on the V blocks for contacting the article at test points on the article,

actuator operated clamp means for pressing the article into snug contact with the pressure plates, and

force sensors sandwiched between the V blocks and the pressure plates for emitting signals in a preset range of values when an article clamped in the fixture conforms to



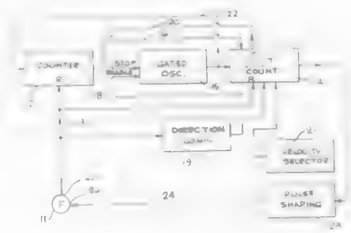
the standard and for emitting signals outside of the range when the article is out of conformance.

4,762,012

UNIVERSAL UPSTREAM-DOWNSTREAM FLOWMETER TESTER

Alvin E. Brown, Santa Cruz, Calif., assignor to Manning Technologies, Inc., Santa Cruz, Calif.

Filed Jan. 29, 1987, Ser. No. 8,613
Int. Cl.[4] G01F *25/00*
U.S. Cl. 73—866.4 6 Claims



1. A circuit simulating the electrical signal response of a flowing fluid whose velocity is to be measured by an upstream-downstream flowmeter with fixed transducers comprising,

input means for acquiring electrical transmit signals from a flowmeter of the type having upstream and downstream transducers which convert electrical transmit signals to acoustic signals,

a gated first oscillator connected to receive and be gated by the electrical transmit signal and having first counter means connected to said oscillator for receiving the gated oscillator output signal and dividing down said signal to the extent said divided signal electrically simulates in time a signal having almost the mean transit time of an acoustic pulse between upstream and downstream transducers in said flowmeter,

pulse means for incrementing the almost mean transit time signal by preselected amounts of time representing upstream and downstream pulses with respect to an exact mean transit time signal simulating, in time, signals received at said upstream and downstream transducers due to flow in a hypothetical pipe carrying a known fluid whose velocity is to be measured,

a second oscillator connected for triggering by said upstream and downstream pulse simulation signals and having second counter means connected to said oscillator for receiving the oscillator output signal and producing in response thereto mimicking output signals shaped to simulate upstream and downstream received signals at respective upstream and downstream acoustic transducers, and

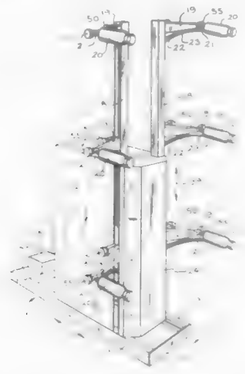
injector means for directing said mimicking output signals to said upstream and downstream transducers.

4,762,013

RECIPROCATING DEVICE FOR SPRAY COATING

Dirk A. Peter, Toledo, and Timothy H. Drury, Howell, both of Mich., assignors to The DeVilbiss Company, Toledo, Ohio

Filed Aug. 6, 1986, Ser. No. 893,673
Int. Cl.[4] B05B *3/18, 13/04, 15/08*
U.S. Cl. 74—104 24 Claims



1. A device for reciprocating an apparatus along a linear path comprising:

guide means defining as linear path along which an apparatus is to be reciprocated;

support means for retaining an apparatus, said support means being slidably mounted on said guide means for movement along the linear path;

reversible motor means having a rotatable output shaft;

transmission means coupled to said motor output shaft to reciprocate said support means along said guide means, said transmission means including means for converting rotational movement of said output shaft in one direction to linear movement of said support means in a first linear direction and for converting rotational movement of said output shaft in an opposite direction to linear movement of said support means in a second linear direction opposite said first linear direction; and

control means coupled to said motor means for driving said output shaft through a predetermined arc of 180° or less and for altnerately reversing the direction of rotation of said output shaft to cause said support means and the apparatus to alternately travel a predetermined distance in said first and second linear directions along the linear path.

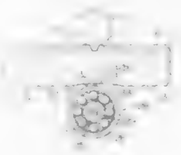
4,762,014

RACK-PINION MECHANISM IN STEERING DEVICE

Osamu Sano, Kashihara, Japan, assignor to Koyo Jidoki Kabushiki Kaisha, Nara, Japan

Filed Apr. 29, 1985, Ser. No. 728,317
Claims priority, application Japan, May 1, 1984, 59-63025[U]
Int. Cl.[4] B62D *3/12*
U.S. Cl. 74—422 12 Claims

1. A rack and pinion mechanism comprising: a housing, a pinion rotatably mounted in said housing, a rack constituted by a rack bar arranged to be linearly movable through said housing and a plurality of rack teeth arranged axially on said rack bar and engaged with said pinion so that rotation of said pinion effects linear movement of said rack bar, a yoke member for elastically pressingly supporting said rack bar at a surface thereof opposite to said rack teeth, a rotary supporting member rotatably arranged at a bottom center of a surface of said yoke member which supports said rack bar, and engaging/disengaging means arranged on said rack bar and comprising an axially middle part and an axially adjacent part extending axially from the axially middle part, the axially middle part being axially movable to contact with the yoke member but not to contact with the rotary supporting member when the amount of the



linear movement of the rack bar is below a certain value, and the axially adjacent part being axially movable to contact with the rotary supporting member when the amount of the linear movement of the rack bar is above the certain value, whereby said axially middle part does not make contact with said rotary supporting member during engagement of said pinion with said rack teeth of said axially middle part.

4,762,015

TILTABLE VEHICLE STEERING COLUMN ASSEMBLY

Kazuo Katayama, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 28, 1986, Ser. No. 923,861
Claims priority, application Japan, Oct. 31, 1985, 60-244833; Oct. 31, 1985, 60-244834; Oct. 31, 1985, 60-244836
Int. Cl.[4] B62D *1/18*
U.S. Cl. 74—473 SW 12 Claims



1. A tiltable vehicle steering column assembly including steering shaft means comprising an upper shaft portion and a lower shaft portion which are connected together by first universal joint means, an upper steering column housing said upper shaft portion, a lower steering column housing said lower shaft portion, said upper and lower steering columns being connected together for vertical tilting movements with respect to each other about a transverse axis passing through said first universal joint means, automatic transmission shifting shift rod means having an upper rod portion and a lower rod portion which are connected together by second universal joint means, said upper rod portion being connected with said upper shaft portion so that the upper rod portion is tiltably moved about said second universal joint means in response to a tiltable movement of the upper shaft portion, said upper rod portion of the transmission shift rod means being located at a transversely side portion of the upper shaft portion of the steering shaft means and extending substantially parallelly with said upper shaft portion, said second universal joint means

VOL 1093 ISS 2 AG 9 1988 UMI

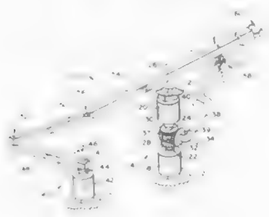
being located on said transverse axis at a transversely side portion of and at the same heightwise position with respect to the first universal joint means.

4,762,016

ROBOTIC MANIPULATOR HAVING THREE DEGREES OF FREEDOM

Robert Stoughton, and Theodore Kokkinis, both of Goleta, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 27, 1987, Ser. No. 31,504
Int. Cl.[4] B25J *18/00*; G05G *11/00*
U.S. Cl. 74—479 12 Claims



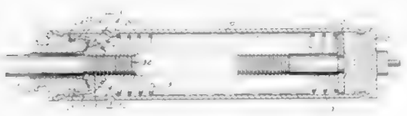
1. A robotic manipulator comprising:
a frame;
a first input link;
a first actuator assembly coupled at a first joint to one end of said first input link for manipulating said first link with two degrees of freedom;
a second input link;
a second actuator assembly coupled at a second joint to one end of said second link for manipulating said second link with one degree of freedom;
means for mounting said first and second actuator assemblies on said frame;
a first output link coupled at a third joint adjacent one of its ends to the other end of said first input link;
a second output link coupled at a fourth joint at one of its ends to the other end of said second input link and coupled at a fifth joint at its other end to the other end of the first output link;
where the mounting of said actuator assemblies on said frame, and said first through fifth joints allow manipulation of said one end of said first output
link by said first and second actuator assemblies with three degrees of freedom.

4,762,017

SELF-ADJUSTING CABLE CONTROL DEVICE

Miroslav Jaksic, Ann Arbor, Mich., assignor to Acco Babcock Inc., Fairfield, Conn.

Continuation of Ser. No. 917,914, Oct. 10, 1986, abandoned.
This application Dec. 9, 1987, Ser. No. 131,274
Int. Cl.[4] F16C *1/10*; F16D *11/00, 13/60, 65/38*
U.S. Cl. 74—501 R 9 Claims



1. A self-adjusting automatically compensating cable control device in a control device system comprising
a termination member adapted to be connected at one end of a control cable and having longitudinally spaced serrations on the exterior thereof,
a connecting member adapted to be attached to an actuation member,
a plurality of collet members having a body portion and a hinge arm, said body portion having longitudinally spaced serrations thereon normally engaging the serrations on said termination member,
spring means interposed between said termination member and said connecting member for moving the termination member longitudinally relative to the connecting member in a first longitudinal direction when the collet members are disengaged from the termination member,
said hinge arm of each said collet member extending generally longitudinally from the body of the collet member in a second longitudinal direction opposite to said first longitudinal direction in which the termination member is moved by said spring means,
each said hinge arm having a free end,
means for hinging said hinge arms of said collet member to said connecting member at the free ends of said hinge arms of said collet members such that the body portions of said collet members are able to move radially inwardly and outwardly generally perpendicular to move the serrations thereon toward and away from said serrations on said termination member,
said connecting member having a fixed internal conical surface at one end of said connecting member,
said collet members having external conical surfaces intermediate the free ends and the serrations thereon,
said conical surfaces normally engaging said conical surface on the connecting member, and when the force on the termination member is reduced below a predetermined level, the spring means acting on the termination member causes body portions of said collet members to swing about the connecting member to move the body portions of said collect members radially outwardly about the ends of the hinge arms to disengage the serrations on the collet members from the serrations on the termination member and the spring means acting on said termination member moves the termination member relative to said connecting member until the force on the termination member reaches the predetermined value whereupon the collet members re-engage the serrations on the termination member.

9. A self-adjusting automatically compensating cable control device in a control cable system comprising
a termination member adapted to be connected at one end of a control cable and having longitudinally spaced serrations on the exterior thereof,
a connecting member adapted to be attached to an actuation member,
a plurality of collet members having a body portion and a hinge arm, said body portion having longitudinally spaced serrations thereon normally engaging the serrations on said termination member,
spring means interposed between said termination member and said connecting member for moving the termination member longitudinally relative to the connecting member in a first longitudinal direction when the collet members are disengaged from the termination member,
said hinge arm of each said collet member extending generally longitudinally from the body of the collet member in a second longitudinal direction opposite to said first longitudinal direction in which the termination member is moved by said spring means,
each said hinge arm having a free end,
means for hinging said hinge arms of said collet members to said connecting member at the free ends of said hinge arms of said collet members such that the body portions of said collet members are able to move radially inwardly and outwardly generally perpendicular to move the serrations thereon toward and away from said serrations on said termination member,

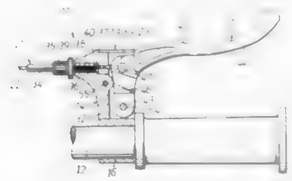
said connecting member having a conical surface,
said collet members having conical surfaces normally engaging said conical surface on the connecting member, and when the force on the termination member is reduced below a predetermined level, the spring means acting on the termination member causes body portions of said collet members to swing about the connecting member to move the body portions of said collet members radially outwardly about the ends of the hinge arms to disengage the serrations on the collet members from the serrations on the termination member and the spring means acting on said termination member moves the termination member relative to said connecting member until the force on the termination member reaches the predetermined value whereupon the collet members re-engage the serrations on the termination member,
each said hinge arm extending generally longitudinally outwardly, said connecting member having an axially inwardly extending portion, said portion having an annular groove therein, each said arm having a tab at the free end thereof extending into said groove,
said connecting member comprising a tubular housing having end members fixed to said tubular housing, one of said end members having an inwardly axially extending portion spaced from said tubular housing, said hinge arms of said collet members extending into the space between the tubular housing and the axially extending portion surrounding the collet members.

4,762,018

BRAKE LEVER DEVICE

Toshinobu Yoshigai, 8-21, Nakakosaka 5-chome, Higashi-Osaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 592,582, Mar. 23, 1984, abandoned.
This application Sep. 4, 1986, Ser. No. 903,686
Claims priority, application Japan, Apr. 25, 1983, 58-62736[U]; May 19, 1983, 58-76554[U]
Int. Cl.[4] G05G *1/04*
U.S. Cl. 74—523 4 Claims



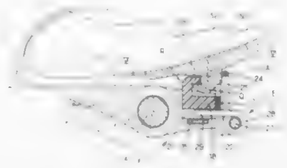
1. A brake lever device including:
a housing main body having a handle portion to be fixed to a handle and fastening flanges projecting outwardly from opposed edges of the holding portion defining a cut groove and also having a fitting groove portion;
a support member having an outer wire holding mount; and
a brake lever;
wherein the brake lever is inserted into the fitting groove portion at one side and pivoted on the housing main body and the support member is inserted into the fitting groove portion at the other side and an inner wire is inserted through said support member and an end of the inner wire is fitted on a corner portion of the brake lever wherein said corner portion is provided with a connecting hole and separate, support plate is attached to the brake lever and is provided with another hole adjacent said connecting hole, whereinto a fixing member provided at the end of the inner wire is fitted, thereby the inner wire is connected with the brake lever;
wherein the housing main body is one-piece formed with the handle holding portion, the fastening flanges and the fitting groove portion by cutting a light alloy frame into short dimension pieces, each piece having said handle holding portion, said fastening flanges and said fitting groove provided at one side thereof; and
wherein a fitting portion is formed at one side of the support member and is removably fitted in the fitting groove portion of the housing main body, and a mount for an outer wire holder is formed at an other side of the support member, the fitting portion having an insertion hole in communication with insertion holes formed in the fitting groove portion and the fitting portion is fitted in the fitting groove portion, the support member being fixed to the housing main body by a lock pin inserted through the insertion hole.

4,762,019

DEVICE FOR FIXING A SHOE ON A PEDAL, A SHOE AND A PEDAL THUS FITTED OUT

Jean J. Beyl, 10, Boulevard Victor Hugo, 58000 Nevers, France

Continuation of Ser. No. 735,210, May 17, 1985, abandoned.
This application May 5, 1987, Ser. No. 48,533
Claims priority, application France, May 18, 1984, 84 07786; Dec. 14, 1984, 84 19173
Int. Cl.[4] G05G *1/14*
U.S. Cl. 74—594.6 16 Claims



1. Device for fixing a shoe on a pedal of a pedal-powered machine such as a bicycle, comprising in combination:
(a) a sole plate to be fixed to the sole of a cyclist's shoe and having forwardly and rearwardly facing transverse bearing surfaces at the front and rear of the plate comprising frontal forward stop means and a rearward surface;
(b) restraining means mounted on the pedal and comprising on one hand frontal stop means adapted to be associated with those of the sole plate for restraining the sole plate in the forward direction, and, on the other hand, a transversely extending hook section on the pedal combined with a lip provided on said sole plate for restraining said plate in the upward direction, said frontal forward stop means of said sole plate being engageable against the frontal stop means of the pedal when the shoe is attached to said pedal;
(c) holding means movably mounted on the pedal;
(d) resilient biasing means capable of urging said holding means against the back of said rearward surface of the sole plate for opposing rearward displacement of the said sole plate when the rearward force on the shoe remains below a predetermined threshold value and for allowing said displacement when said threshold is at least attained;
said frontal forward stop means and said rearward surface of the sole plate extending transversely under the sole of the shoe when said sole plate is fixed to the shoe sole, behind the portion of the sole having the greatest width, and said frontal stop means and said hook section of the pedal associated with said frontal stop means of the sole plate extending transversely over the major part of the width of the pedal and being fixed on the pedal behind the geometric axis of rotation of the pedal, said pedal including a portion which extends in front of said frontal stop means of said pedal, on which said portion the shoe is supportable substantially thereabove.

VOL 1093 ISS 2 AUG 9 1988 UMI

4,762,020

LINK-TYPE APRON ARRANGEMENT

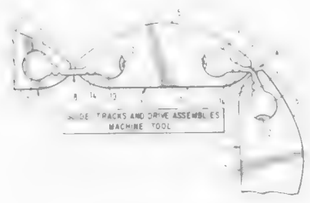
Peter Schmidberger, Münchner Str. 104, D-8043 Unterföhring, and Herbert Kowal, Lohhof, both of Fed. Rep. of Germany, assignors to Peter Schmidberger, Fed. Rep. of Germany

Continuation of Ser. No. 256,276, Apr. 23, 1981, abandoned. This application Jul. 7, 1987, Ser. No. 71,541

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020621

Int. Cl.[4] F16P *1/00*; G05G *25/00*; E06B *3/12*

U.S. Cl. 74—612 10 Claims



1. Link-type apron apparatus for protecting guide tracks, drive assemblies and the like, comprising,

(1) a plurality of extruded light weight metal bar members having tapered slots in two opposing ends thereof and parallel to the longitudinal axis thereof, each said tapered slots being defined by a pair of mutually facing wall surfaces and tapering toward said two opposing ends,

(2) a plurality of connecting bendable plastic elements, each said plastic members having a pair of end portions with tapering sides, said tapering sides entirely engaging said pair of mutually facing wall surfaces along the length thereof in said bar members forming said tapered slots and a central bendable section between said pair of end portions, said tapering sides being complementary to said taper in said slots and being tapered toward the center of said central bendable section, and said bars having ends which are so shaped, and spaced apart by said connecting elements, such that each bar can pivot relative to an adjacent bar through at least 90 degrees in one direction with the connecting element being subjected to a substantially pure bending loading without the adjacent bar members striking each other and said adjacent bar members have a limited pivotal movement in an oppsite direction to said one direction.

9. In combination wtih a machine tool having guide tracks and drive assemblies and locations which are liable to cause accidents, a link-type apron arrangement for protecting said guide tracks, drive assemblies, locations which are liable to cause accidents, or the like, comprising a plurality of individual rigid light metal bar members aligned side-by-side and a plurality of positively connected bendable connecting elements interconnecting said rigid bar members such that said bar members can be pivoted relative to one another, the improvement comprising, said bendable connecting elements being plastic and having end portions, means adjacent said end portions of said bendable connecting elements positively connecting said end portions to two adjacent bar members, said end portions being at least partly in the form of tapering web portions in said bendable elements, and at least partially tapering slots in opposing ends of said bar members, the taper in said slots being in the direction of the ends of said bar members and complementary to the taper in said tapering web portions so as to lock and fix said bars to said bendable connecting elements and the surfaces forming said slots entirely engaging the surfaces of said tapering web portions, respectively, and a central bendable section being formed between said two tapering web portions of said elements, each said tapering web portion tapering in the direction of said central bendable section.

4,762,021

TRANSFER CASE FOR FOUR-WHEEL-DRIVE VEHICLES

Masao Terasoka, Tochigi, Japan, assignor to Tochigifujisangyo Kabushikigaisha, Tochigi, Japan

Continuation of Ser. No. 651,112, Sep. 17, 1984, abandoned. This application Oct. 17, 1986, Ser. No. 921,797

Claims priority, application Japan, Sep. 27, 1983, 58-176887; Oct. 20, 1983, 58-161367

Int. Cl.[4] F16H *37/06*

U.S. Cl. 74—665 GA 4 Claims



1. A transfer mechanism for distributing driving torque from an input shaft to the front wheel and rear wheel propeller shafts of a four-wheel-drive vehicle, said mechanism comprising:

first means for establishing a drive connection between said input shaft and one of said propeller shafts, said first means including torque detector means for detecting the level of torque being transmitted by said input shaft to the said one propeller shaft;

second means for establishing a drive connection between the said one propeller shaft and the other of said propeller shafts, said second means including a clutch having frictionally engageable elements arranged to develop a coupling force between said propeller shafts, said elements being mutually adjustable in response to the torque level being detected by said torque detecting means to thereby vary said coupling force, said elements being mutually rotatable at lower detected torque levels to thereby accommodate differential rotation between said propeller shafts, said input shaft and said one propeller shaft being arranged on the same axis and said other propeller shaft being offset on a parallel axis.

4,762,022

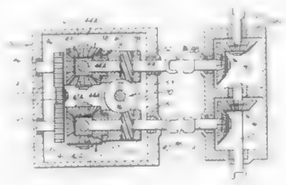
TORQUE RETAINING AND PROPORTIONING DIFFERENTIAL DRIVE ASSEMBLY

Edward W. Johnshoy, R.R. 1, Box 258A, Mentor, Minn. 56736

Continuation-in-part of Ser. No. 881,827, Jul. 3, 1986. This application Apr. 17, 1987, Ser. No. 40,541

Int. Cl.[4] F16H *1/44, 37/06*

U.S. Cl. 74—711 19 Claims



1. A torque proportioning differential drive housed in a gear case and having a common power input the differential drive comprising a pair of substantially identical gear sets, each of said gear sets being driven from said common power input and each gear set having a separate output drive shaft that is loaded

under differing loads from time to time resulting from a need for differential speed from the output shaft of the other gear set, each gear set comprising first differentiating gear means including a drive gear connected to receive power from the input, second gear means coupled to the drive gear and coupled to rotate with the respective output shaft, and a rotatable control member controlling rotation of the second gear means, the rotation of which control member controls the ratio of speeds of the associated output shaft relative to the drive gear;

means for controlling rotation of both of said control members of the pair of gear sets comprising a pair of worms, one coupled to each of said control members, and a worm gear common to and engaged by both of said worms whereby each of the worms will rotate only when the other worm rotates in an opposite direction; and

said output shafts of the respective gear sets being parallel with each other and extending outwardly of said case, said worms and worm gear cooperating to permit rotation of the respective control members as a function of the load carried by the ouptut shafts, respectively when there is a necessity for differential rotational speeds of the output shafts.

4,762,023

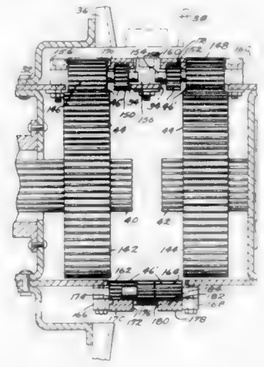
VEHICLE DIFFERENTIAL WHICH DISTRIBUTES TORQUE BETWEEN VEHICLE WHEELS IN ACCORDANCE WITH OPERATING DEMANDS

Jessie T. Ivy, 686 W. Shore Dr., Anacortes, Wash. 98221

Division of Ser. No. 680,651, Dec. 11, 1984, Pat. No. 4,718,304. This application Jul. 15, 1987, Ser. No. 73,687

Int. Cl.[4] F16H *1/42*

U.S. Cl. 74—714 7 Claims



1. A differential for a vehicle, said differential comprising:

a differential case defining a plurality of openings therein;

a ring gear attached to said case;

a driving pinion gear in meshing relation with said ring gear;

left and right axle means disposed in end-to-end relationship to each other and at least partially positioned within said case for connecting with two wheels of the vehicle;

axle driving means within said case and in operative relationship with said left and right axle means for selectively rotating said axle means, said axle driving means including left and right driving gears connected, respectively, to said left and right axle means;

gear assembly means mounted on the exterior of said case, projecting into the interior of said case through predetermined ones of said openings, and in meshing relation with said axle driving means for controlling movement of said axle driving means; and

a substantially oil-tight housing enclosing the previously recited elements;

said gear assembly means including:

left and right large power gears mounted on the exterior of said case, projecting into the interior of said case through predetermined ones of said openings and in meshing relation with said left and right driving gears, respectively;

left and right small power gears spaced predetermined distances from said left and right large power gears respectively;

a left power gear shaft rigidly connecting together said left large and said left small power gears and rotatably mounted on the exterior of said case;

a right power gear shaft rigidly connecting together said right large and said right small power gears and rotatably mounted on the exterior of said case;

left and right supporting gears rotatably mounted on the exterior of said case and in meshing relation with each other;

a left ring control gear having a scalloped side surface and having an inner circumferential periphery surface formed of gear teeth, said ring control gear supported in meshing relationship with said left small power gear and with said left supporting gear;

a right ring control gear having a scalloped side surface and having an inner circumferential periphery surface formed of gear teeth, said right ring control gear supported in meshing relationship with said right small power gear and with said right supporting gear and said scalloped side surfaces of said ring control gears located in opposing relationship with each other; and

means mounted on the exterior of said case in operative relationship with said left and right ring control gears for selectively interacting with said left and right ring control gears for controlling their speed of rotation and the speed of rotation of said left and right driving gears.

4,762,024

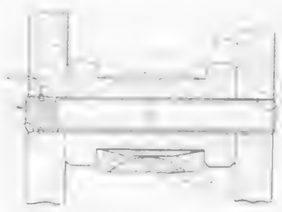
SHAFT RETAINING MEANS FOR A DIFFERENTIAL GEAR ASSEMBLY

John T. Graft, Ft. Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Continuation of Ser. No. 760,593, Jul. 30, 1985, abandoned. This application Jul. 23, 1987, Ser. No. 77,061

Int. Cl.[4] F16H *1/38, 1/42*

U.S. Cl. 74—715 3 Claims



1. A differential gear assembly comprising:

a rotatable case having an outer surface and a generally hollow interior, at least one pair of walls being defined by said case which are spaced apart from one another across said interior;

an aperture formed through each of said spaced apart walls, said apertures defining an axis therethrough;

a flat portion formed in said outer surface of said case, one of said apertures extending through said wall to said flat surface, said flat surface being oriented perpendicularly relative to said axis defined by said apertures;

a shaft disposed within said case and extending between said apertures, said shaft being rotatable relative to said case; and

means for selectively preventing axial movement of said

VOL 1093 ISS 2 AG 9 1988 UMI

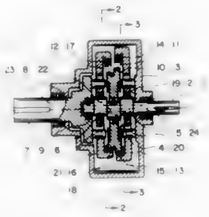
shaft relative to said case including a first annular groove formed in the interior of said one aperture, a second annular groove formed in the exterior of said shaft, and a retaining ring adapted to be disposed in said first and second grooves in interfering relationship between said shaft and said case so as to prevent axial movement of said shaft relative to said case when a desired axial alignment is attained.

4,762,025

ALL ORBITING GEAR PLANETARY DRIVE

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005

Continuation-in-part of Ser. No. 891,124, Jul. 31, 1986, and a continuation-in-part of Ser. No. 5,111, Jan. 20, 1987, and a continuation-in-part of Ser. No. 12,679, Feb. 9, 1987. This application Mar. 23, 1987, Ser. No. 29,521
Int. Cl.[4] F16H *1/28*
U.S. Cl. 74—804 13 Claims



1. An apparatus for transmitting rotating motions from a power input member to a power output member comprising in combination:

(a) a frame;

(b) a power output member of generally axisymmetric construction rotatably secured to the frame;

(c) a power input shaft disposed in line with the power output member and rotatably secured to the frame, said shaft including a first eccentric section, a second eccentric section and a third eccentric section, wherein said second and third eccentric sections are disposed in generally diametrically opposite relationship to said first eccentric section;

(d) a first rotary member rotatably mounted on said first eccentric section of said shaft, said first rotary member including a first set of meshing means of a first pitch diameter coaxially disposed about the central axis of said first eccentric section and a second set of meshing means of a second pitch diameter coaxially disposed about the central axis of said first eccentric section;

(e) a second rotary member rotatably mounted on said second eccentric section of said shaft,said second rotary member including a third set of meshing means coaxially disposed about the central axis of said second eccentric section; wherein said first set of meshing means engages said third set of meshing means over an arc portion thereof;

(f) a third rotary member rotatably mounted on said third eccentric section of said shaft, said third rotary member including a fourth set of meshing means coaxially disposed about the central axis of said third eccentric section; wherein said second set of meshing means engages said fourth set of meshing means over an arc portion thereof;

(g) a first coupling nonrotatably coupling said third rotary member to the power output member in a radially shiftable relationship therebetween; and

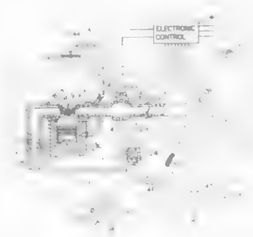
(h) a second coupling nonrotatably coupling said second rotary member to the frame in a radially shiftable relationship therebetween.

4,762,026

SPEED CHANGE CONTROL METHOD AND DEVICE OF AUTOMATIC TRANSMISSION FOR VEHICLE

Yukio Kinugasa, Susono, and Takehisa Yaegashi, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 753,552, Jul. 10, 1985, abandoned, which is a continuation of Ser. No. 338,051, Jan. 8, 1982, Pat. No. 4,572,029. This application Dec. 2, 1986, Ser. No. 937,456
Claims priority, application Japan, Aug. 26, 1981, 56-132639
Int. Cl.[4] B60K *41/10*
U.S. Cl. 74—866 6 Claims



1. A speed change method of an automatic transmission for a vehicle, the method comprising the following steps:

defining shift points in relation to vehicle speed and independently of engine temperature;

carrying out a speed change on the basis of said shift points;

inhibiting the transmission from being in a higher speed condition under all vehicle operating conditions when engine temperature is lower than a predetermined temperature and vehicle speed is lower than a predetermined speed; and

allowing the transmission to be in a higher speed condition when engine temperature is lower than said predetermined temperature and vehicle speed is higher than said predetermined speed, or when engine temperature is higher than said predetermined temperature.

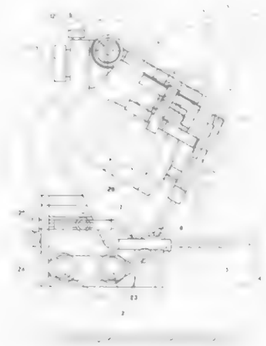
4,762,027

ROTATING GRINDING WHEEL DEVICE FOR SHARPENING CHAIN SAWS

Floriano Fagiolini, Cannobio, and Gianfranco Storti, Omegna, both of Italy, assignors to Fercad S.P.A., Vincenza, Italy

PCT No. PCT/IT85/00049, § 371 Date Oct. 8, 1986, § 102(e) Date Oct. 8, 1986, PCT Pub. No. WO86/03702, PCT Pub. Date Jul. 3, 1986
PCT Filed Dec. 4, 1985, Ser. No. 899,217
Claims priority, application Italy, Dec. 19, 1984, 85670 A/84
Int. Cl.[4] B23D *63/16*
U.S. Cl. 76—25 A 3 Claims

1. An apparatus for sharpening the teeth of a chain (4) in a portable saw having a chain with teeth for cutting tree trunks and the like, the chain sliding on a guiding blade (3), which comprises a base (24), a column (8) supported thereon, a movable arm (11) supported by said column, a complex of a grinding wheel (6) and electric motor (26) supported on said movable arm and being mounted on a graduated circular sector (19), said graduated circular sector being provided with locking means (15), said circulate sector (19) being connected to a support plate (17) movable on pin (18), said grinding wheel and said electric motor being carried by said support plate (17), said support plate (17) being angularly movable, and the apparatus comprises bracket means (20) for limiting said angular motion of said support plate, and resilient means for urging said support plate to an inoperative position whereby the teeth of the chain may be slid on said blade so that they may be sharpened according to alternately opposite angles without dismounting said guiding blade therefrom.

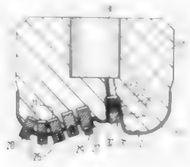


4,762,028

ROTARY DRILL BITS

Michael C. Regan, Robinswood, United Kingdom, assignor to NL Petroleum Products Limited, Gloucestershire, England

Filed May 5, 1987, Ser. No. 46,904
Claims priority, application United Kingdom, May 10, 1986, 8611445
Int. Cl.[4] B21K *5/02*
U.S. Cl. 76—108 A 13 Claims



1. A method of manufacturing a rotary drill bit of the kind comprising a bit body having a shank for connection to a drill string, a bit face on the bit body, a plurality of cutting structures mounted in sockets in the bit body and projecting from the bit face, and a number of nozzles also mounted in sockets in the bit body and communicating with a passage for supplying drilling fluid to the face of the bit, the method including the steps of forming at least part of the bit body from steel, forming said sockets in the bit body part, plugging each socket with a former which projects partly beyond the bit face, applying to the bit face a coating of a fusible hardfacing material, heating the coated bit body part so as to fuse said hardfacing material, cooling the bit body part to solidify the fused hardfacing material, and removing said formers from the sockets, each said former being formed of material having a higher coefficient of thermal expansion than the steel of the bit body part, and being so dimensioned in relation to the socket into which it is to be inserted that it can be readily inserted into said socket at ambient temperature but expands relatively to the socket at the fusing temperature so as tightly to engage the interior surface of the socket.

4,762,029

BOTTLE CLOSURE OPENER

Joseph Chen, Quezon, Philippines, assignor to Isabelita Hilario Chen, Quezon, Philippines

Filed Mar. 16, 1987, Ser. No. 26,155
Claims priority, application Philippines, Apr. 30, 1986, 33719
Int. Cl.[4] B67B *7/18*
U.S. Cl. 81—3.2 4 Claims



1. A bottle closure opener for use in screwtype bottle caps comprising:

(a) a housing with an open front consisting of a substantially square base, a rear wall, opposed side walls and a top wall;

(b) a bottle body cramping unit mounted on a vertically movable bottle platform, said cramping unit consisting of a pair of opposed identical cramp members pivotally mounted at the lateral mid-section of said platform, said cramp members each consisting of an upwardly extending stem having an inwardly bent rounded lower end extending downwardly of said platform, and at its upper end, a pair of diverging downwardly inclined vise jaws defining a V-shape formation, and means for actuating said cramp members mounted underneath said platform whereby said actuating means tends to move said vise jaws towards or away from each other;

(c) a drive mechanism consisting of a vertical driven shaft journalled on said base and top wall, said shaft provided with a large gear at its lower end and a small gear at its upper end, said large gear having an integrated lower clutch member provided with a clutch lining and adapted to be in mesh with the drive gear of a reversible motor; a helically threaded shaft telescopically received on said driven shaft and adapted to be drivingly connected to said means for actuating said cramp members, said shaft having an unthreaded lower portion with a keyway disposed vertically thereon;

(d) a spring biased upper clutch member telescopically received on said unthreaded portion of said threaded shaft and vertically aligned with said lower clutch member, said upper clutch member having a key adapted to be vertically slidable in said keyway;

(e) a bottle cap gripping unit comprising a gear train mounted on said top wall, said gear train being drivingly connected to said driven shaft and provided with bladed grip fingers positioned in coaxial alignment with the center between said cramp members; and

(f) a clutch actuator pivotally supported on said housing and disposed on top of said upper clutch member, and a pair of clutch switch levers, each adapted to rotate said actuator to press downwardly said clutch member to frictionally engage said lower clutch member and simultaneously switch on said motor.

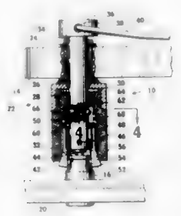
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,030

FASTENER COLLAR REMOVAL TOOL

Peter D. Nguyen, San Diego, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Oct. 21, 1987, Ser. No. 111,009
Int. Cl.[4] B25B *21/00*
U.S. Cl. 81—55 7 Claims



1. A fastener collar removal tool which comprises

a central cylindrical pin having a head at a first end lockable against rotation and a keyed second end;

a mandrel assembly surrounding said pin for rotation relative thereto;

a collet positioned between said pin and mandrel adapted to be selectively rotated relative to either said pin or said mandrel;

a plurality of gripping fingers on a first end of said collet extending along said pin second end;

the second end of said collet having threads adapted to thread into corresponding threads in said mandrel;

releasable latch means resiliently biased between said pin and collet adapted to initially latch said collet to said pin and release said collet in response to differential rotational forces;

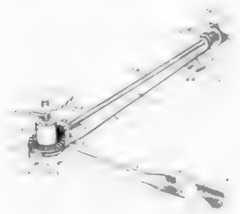
whereby rotation of said mandrel relative to said pin in a selected direction will initially cause said collet to remain stationary and cause said mandrel to thread into said collet moving said mandrel toward said pin second end until said gripping fingers become frictionally engaged between said mandrel and a collar positioned within the fingers whereby said mandrel imposes a rotational force to overcome said latch means and cause said latch means release, thereby allowing said mandrel and collet to rotate together, rotating collar in an unthreading direction.

4,762,031

RATCHET WRENCHES

Ross Bradley, R.R. #1, Box 260, New Buffalo, Mich. 49117

Filed Sep. 5, 1986, Ser. No. 904,559
Int. Cl.[4] B25B *23/00, 17/00*
U.S. Cl. 81—57.22 10 Claims



1. A device for retrofitting onto a ratchet wrench of the type that has a platform with projecting drive stud therefrom for receiving sockets of a normal diameter and an elongated handle with a handle-operable loose nut turning ratchet device, comprising:

an elongated base having a drive end and a handle end,

a flat gear member mounted on said base for rotation thereon at said drive end and having a central opening sized and shaped to conform and to fit about the drive stud and lie above the platform, said flat gear member having a flat thin portion about said opening, such that a socket of normal diameter can be secured to the drive stud above that portion of the gear, so as to sandwich the portion between the socket and the platform, said flat gear member extending beyond the normal diameter of the socket and including a set of gear teeth surrounding said portion outside of the normal diameter, and

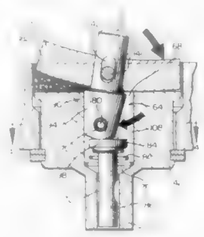
a movable drive shaft mounted along said base from the handle end toward said flat gear member and said drive shaft having driven gear means adapted to be manually-actuated from the handle end, to selectively engage and disengage the gear teeth of said flat gear member and to revolve said flat gear member so as to rotate the drive stud of a socket wrench to which said flat gear member may be affixed.

4,762,032

SOCKET RELEASE ASSEMBLY FOR RATCHET DRIVE

Kirk K. Chow, 5902 Bent Trail, Dallas, Tex. 75234

Filed Feb. 24, 1987, Ser. No. 17,710
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—63 14 Claims



1. A ratchet wrench including a tool head having a handle-mounted driving ring carrying internal circumferentially-disposed ratchet teeth,

a cylindrical core sleeved within and rotatable in said driving ring,

tang means carried by said core at an axial end thereof for attachment of a tool element thereto,

detent means carried by said tang means and being selectively shiftable between modes including a tool element locking mode and a tool element releasing mode, means for shifting said detent means between said modes,

a pivotally-supported, double-ended, ratchet-toothed pawl secured in said core and operating mechanically to intercouple said core with said driving ring through interengagement of complementary respective ratchet teeth of said driving ring and said core-carried pawl and imparting, selectively, bi-directional rotation to said core through application of annular rotational forces to said driving ring,

digital-pressure-responsive pawl-actuator means for selectively shifting said pawl to either of two limiting positions for controlling the direction of driving rotation of said core during operational use of said wrench,

said pawl-actuator means comprising lever means extending outwardly from a face of said tool head and including shaft means projecting generally axially into said core for effecting displacement of said pawl between two limiting positions correlated with clockwise and counterclockwise driving rotation of said core,

means coupling said shaft means and said pawl for translating axial forces applied to said lever means into pawl-pivoting radial forces applied to said pawl, for enabling one using the same hand in which the wrench is held conveniently to reverse the driving direction of the wrench by applying digital pressure to said shaft means of said pawl-actuator means,

said means for shifting said detent means comprising a detent locking and release pin extending axially into said tang means for controlling radial positioning of said detent means within said tang means,

said pin being formed with a camming wall extending along a side of said pin for engaging said detent means,

spring means bearing upon and biasing said pin axially upwardly within said tang means to present said camming wall of said pin to abut said detent means to urge said detent means radially outwardly of said tang means for bearing against and for locking in place a tool element carried by said tang means, said pin being formed with a recess opening laterally thereof for receiving said detent means therein upon displacing said pin axially downwardly within said tang means against opposing biasing forces of said spring means to being said recess opposite said detent means,

said shaft means having a lower end thereof abutting an upper end of said pin for transmitting to said pin displacement forces applied digitally to said shaft means,

said shaft means having an exposed head portion projecting upwardly of said core of said wrench for facilitating application of digital pressure thereto for displacing said pin axially to bring said recess into lateral registry with said detent means and to allow said detent means to retract into said recess in said pin, thereby to permit release of a tool element carried on said tang means, and

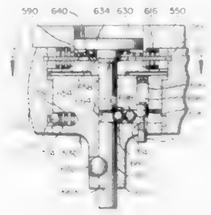
said shaft means being formed with a transversely-extending slot for accommodating a pivot rod extending through said shaft means and supporting said pawl-actuator means.

4,762,033

RATCHET WRENCH WITH MANUAL DISASSEMBLY CAPABILITY

Kirk K. Chow, Dallas, Tex., assignor to National Hand Tool Corporation, Dallas, Tex.

Filed Feb. 24, 1987, Ser. No. 17,731
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—63.2 41 Claims



1. In a ratchet wrench having a tool head including a drive ring, a core rotatably journaled in said drive ring, selectively positionable pawl means for coupling said drive ring to said core to establish reversible driving modes for said wrench, a tool-element-engaging shank extending downwardly from said core, said drive ring and said core being formed with opposed and intercommunicating annular grooves defining a channel bridging and bounded by said ring and said core, and retainer means for detachably securing said core in said drive ring, said retainer means including interlock means for interlocking said drive ring and said core, said interlock means including band means received within said channel for mechanically intercoupling said ring and said core to prevent relative axial displacement therebetween and inadvertent removal of said core from said drive ring,

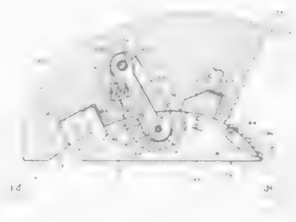
the improvement comprising control means bearing on said band means retained in said channel and manually operable for selectively permitting said band means to assume, selectively, a first position in which said band means invades a single one only of opposed said annular grooves in said ring and said core, thereby to effect mechanical decoupling between said ring and said core and to permit ready axial displacement of said core with respect to said drive ring and to allow physical withdrawal of said core from said drive ring, and a second position in which said band means bridges said channel and projects into to invade each of opposed said annular grooves for establishing a mechanical interlock between and for mechanically interconnecting said drive ring and said core to prevent relative axial displacement therebetween.

4,762,034

CONSTRICTOR LOCK WRENCH SYSTEM

Howard R. Foreman, Rte. 1, Box 184, Miami, Okla. 74354

Filed Feb. 5, 1987, Ser. No. 11,264
Int. Cl.[4] B25B *13/28*
U.S. Cl. 81—111 10 Claims



10. An improved wrench having:

a handle;

a first jaw fixed to said handle and having a face having an arcuate contour surface on an edge;

a second jaw suppoted from said handle and spaced from said first jaw;

a swinging jaw having a convex surface contacting said arcuate contour surface and also having a second edge which is planar;

supporting means supporting said swinging jaw from said first jaw such that said swinging jaw contacts said arcuate contour surface of said first jaw;

a mouth defined between said first jaw and said second jaw and having an entry away from said handle; and

biasing means to bias said support means in a direction away from the entry of the mouth of the wremch to force the swinging jaw along the arcuate face of the top jaw away from the entry of the mouth of the wrench toward said handle.

4,762,035

DEPTH ADJUSTING DEVICE FOR SCREWDRIVERS

Fusao Fushiya, and Tetsuhisa Kaneko, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan

Filed Sep. 3, 1987, Ser. No. 92,547
Claims priority, application Japan, Sep. 16, 1986, 61-142062[U]
Int. Cl.[4] B25B *23/00*
U.S. Cl. 81—429 6 Claims

1. In a screwdriver having a suitable housing, a depth adjust-

VOL 1093 ISS 2 AG 9 1988 UMI

ing device adapted to control within predetermined desired limits the depth to which a fastener may be driven into a work, comprising:

a diametrically contractible locking ring retentively engaging the forward end of said housing:

an adjusting sleeve received within and carried by said locking ring;



means for axially moving said adjusting sleeve with respect to said locking ring; and

means on said locking ring for diametrically contracting the locking ring and releasably locking the axial movement of said adjusting sleeve with respect to said locking ring.

4,762,036

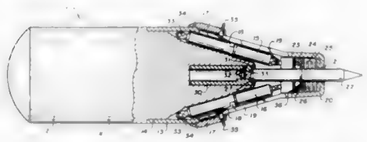
SCREW DRIVER

Anton Orlitzky, 5291 - 6th Avenue, Delta, British Columbia, Canada V4M 1L6, and Albert Koehler, 2773 Pilot Drive, Coquitlam, British Columbia, Canada V3C 3T6

Filed Nov. 25, 1986, Ser. No. 934,595

Int. Cl.[4] B25F *1/00*

U.S. Cl. 81—437 3 Claims



1. A single action multi-bit screw driver, comprising:

a main body forming a handle with a cylindrical shaped outer end and a tapered inner end for receiving a cone shaped bit retaining head having a plurality of bit storage locations radially positioned around said head;

a bit for each storage location, each having a useable tip at one end, a locking head at the opposite end provided with a ball socket arrangement, a stop ring between said locking head and said useable tip and means to prevent rotation of said bit when received in a locking receptacle disposed centrally in said tapered inner end of said handle adapted to receive said locking head of a selected bit, the useable tip of said bit extending through a tubular projection of said cone-shaped bit retaining head having a spring loaded wedge shaped thrust washer disposed therein for retaining said bit in said locking receptacle when said stop ring of said bit rests against said thrust ring;

actuating means on said retaining head comprising a lever connected to said bit by a leaf spring joining said lever and said bit near said locking head of said bit, said lever and said leaf spring being adapted for movement along channel means in said bit retaining head for sliding said bit from said storage locations to a resting position where said useable tip extends out of said bit retaining head;

aligning means on said actuating means adapted to align said locking head of said bit with said locking receptacle to thereby allow said head to be retained therein.

4,762,037

FACE AND INTERNAL TURNING HEAD

Kurt Stoffel, Horgen, Switzerland, assignor to K. R. Pfiffner Engineering, Langnau am Albis, Switzerland

Filed Sep. 9, 1986, Ser. No. 905,720

Claims priority, application Switzerland, Sep. 10, 1985, 3901/85

Int. Cl.[4] B23B *3/26*

U.S. Cl. 82—2 E 5 Claims

1. A face and internal turning head comprising:

cylindrical drive means including a fixing pin adapted to be mounted on the front face of work spindle of a cutting machine;

a casing surrounding the drive means;

a rotary motor disposed in the casing and surrounding the drive means in annular manner, the motor having a rotor;

a tool slide mounted on the front of the driving means outside of the casing and radially displaceable with respect to the driving means;

a planetary transmission disposed in the casing and surrounding the drive means, the transmission being axially displaced from the motor, the transmission including first and second series-connected identical planetary gears and a sun wheel common to both gears, the first gear having a web coupled to the drive means and having a hollow wheel which is connected to and is rotated by the rotor, the second gear having a web mounted in rotary manner on the drive means and arranged on the side of the tool slide, the second gear web having a bearing sleeve, the sun wheel being guided in a rotary manner by the bearing sleeve, the second gear web being constructed as a disk cam having a frontal guidance groove in the form of an archimedeon spiral or a spiral with a random pitch ratio.

4,762,038

PIPE MACHINING APPARATUS

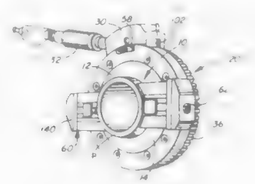
Peter K. Olson, Buffalo Grove, Ill., assignor to The E. H. Wachs Company, Wheeling, Ill.

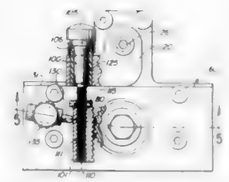
Filed Oct. 14, 1986, Ser. No. 918,293

Int. Cl.[4] B23B *3/22*

U.S. Cl. 82—4 C 6 Claims

1. A pipe machining apparatus comprising, a tool carrier, a frame attachable to a pipe for rotatably mounting the tool carrier, means for rotating the tool carrier circumferentially about the pipe, a tool head mounted on the tool carrier and having a tool slide for movement radially of the pipe, a movable feed plunger on said tool head, a tool advance cam on the frame and in the path of said feed plunger, means for converting motion of the feed plunger to movement of the tool slide including a rotatable member operatively connected to said tool slide, a pivotally-mounted rack, a pinion and a one-way clutch operatively connected to said rotatable member, said rack being connected to said feed plunger, and yieldable means for holding the rack in engagement with the pinion and permitting reverse rotation of the pinion relative to the rack by forced pivotal movement of the rack away from the pinion.





4,762,039

METHOD OF AND APPARATUS FOR SEVERING PROFILED STRIPS OF METALLIC MATERIAL

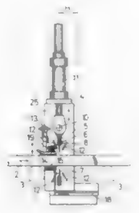
Karl Rimmele, Schmerikon, Switzerland, assignor to Mecapec S.A, Schmerikon/SG, Switzerland

Filed Sep. 10, 1986, Ser. No. 905,800

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1985, 3534127

Int. Cl.[4] B23D *25/04*

U.S. Cl. 83—37 16 Claims



1. A method of severing a strand of heated metallic stock, particularly a profiled steel stock, which advances along a predetermined path, with a severing unit consisting of first and second knives which are disposed at opposite sides of the path, comprising the steps of advancing the knives with the strand; moving one of the knives transversely of the path and into the material of the moving strand so that the one knife penetrates into and partially severs the strand in a predetermined plane; and moving the other knife in said plane into the strand so that the other knife penetrates into and at least substantially completes the severing of the strand in said plane.

4,762,040

BLADE SHARPENING AND GUIDE MECHANISM

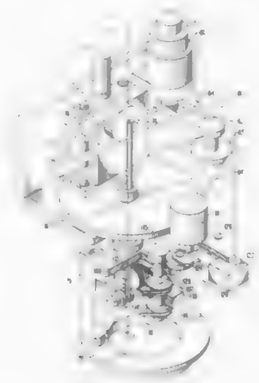
Bernardo Alcantara Perez; Rodrigo Becerra Carrasco, and Mario Andrada Galan, all of Madrid, Spain, assignors to Investronica, S.A., Madrid, Spain

Filed Apr. 14, 1987, Ser. No. 38,360

Claims priority, application Spain, Apr. 16, 1986, 554,047

Int. Cl.[4] B26D *7/12*

U.S. Cl. 83—56 20 Claims



16. A method of sharpening a cutting blade of a numerically controlled cutting apparatus comprising:

raising said cutting blade such that a bottom end thereof is spaced above a cutting surface;

rotating said cutting blade about an axis perpendicular to said cutting surface from a first angular position at which cutting is performed, to a second angular position at which sharpening is performed, said first angular position being variable with respect to said axis and said second angular position being fixed with respect to said axis;

sharpening said cutting blade by actuating grinding means to first sharpen one side of said cutting blade for a predetermined period of time and then to sharpen the other side of said cutting blade for another predetermined period of time; and

rotating said cutting blade from said second angular position to said first angular position; and

lowering said blade to begin a cutting operation.

4,762,041

DISPENSING MECHANISM FOR SEPARATING COUPONS FROM A CONNECTED RIBBON OF COUPONS

Harold D. Kuykendall, Peoria, Ill., assignor to General Methods Corporation, Peoria, Ill.

Filed Feb. 24, 1987, Ser. No. 17,529

Int. Cl.[4] B26D *5/20*

U.S. Cl. 83—278 7 Claims

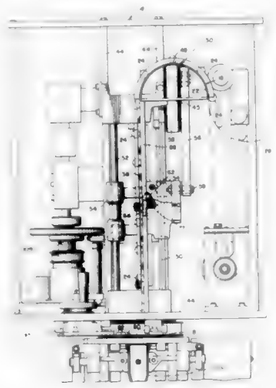
1. An improved mechanism for feeding a strip of material and for cutting discrete lengths from said strip, said strip of the type having a front side and a back side said front side including a three dimensional object thereon and projecting therefrom said mechanism comprising, in combination:

a frame;

a strip pathway assembly supported on the frame, said pathway assembly including an arcuate run and a connected, generally straight line discharge run for continuously supporting a strip with the back side facing inward toward the center of the radius of curvature of the arcuate run, said strip having a plurality of precut tabs therethrough

VOL 1093 ISS 2 AG 9 1988 UMI

with the free end of each tab extending in the direction of strip travel in the runs, the three dimensional object projecting radially outward from the front side and movable with the strip along the pathway;
a feed finger supported on the frame, said feed finger positioned to project from the back side of the strip through an opening defined by said precut tab in the strip, said finger extending from the back side of the strip through the straight line run and against a tab and to thereby engage the strip for transport of the strip in response to movement of the feed finger in the direction of the free end of the tab;
a slide support on the frame positioned on the back side of the strip for mounting the feed finger;
means for driving the slide support reciprocally in the direction of the straight line run;
said feed finger including a plow which is sized to fit through the opening defined by the tab, said feed finger pivotally mounted on the slide support for pivoting about



a pivot axis toward the back side of the strip and through the opening and away from the strip out of engagement with the opening; and
means for pivoting the feed finger toward the back side of the strip into the opening as the slide support moves in the direction of strip travel and away from the back side of the strip out of the opening as the slide support moves in the opposite direction,
said means for pivoting comprising
(i) a lever arm extending from the feed finger; and
(ii) a cam rod extending in the direction of slide support movement, said cam rod continuously engaging the lever arm of the feed finger, said cam rod rotatable about an axis parallel to the direction of slide support movement to thereby engage and pivot the feed finger lever arm to enable control of pivoting movement of the feed finger through a range of reciprocal movement of the slide support.

4,762,042
REFILLABLE DISPENSER FOR ROLLS OF PAPER OR FOIL
Ulrich Denter, Hambach; Dieter Himmighofen, Roth, and Rolf G. Schülein, Singhofen, all of Fed. Rep. of Germany, assignors to Leifheit AG, Nassau, Fed. Rep. of Germany
Filed Oct. 30, 1987, Ser. No. 116,007
Claims priority, application European Pat. Off., Oct. 31, 1986, 86115138.9
Int. Cl.[4] B65D *85/671*
U.S. Cl. 83—374 7 Claims

1. Refillable dispenser for rolls of web material (6, 17) having:
a housing (1) receiving at least one roll;
a cover (2) supported by the housing (1);
a cutter (3) tranversely slidable along the cover (2), and a cutting support surface (11) formed on the housing (1);
wherein, in accordance with the invention;
said housing includes a back wall (8) and a baseplate (9) projecting therefrom;



said cutting support surface (11) is formed as an extension of said baseplate (9); and
said cutting support surface extends through an opening (12) formed in said cover (2) and, together with said cover, defines a dispensing slit (14) for said web material.

4,762,043
LONG WEARING PUNCH
Sonny Sneed, Akron, Ohio, assignor to Jacob L. Reich, Akron, Ohio
Filed Mar. 23, 1987, Ser. No. 28,783
Int. Cl.[4] B26F *1/14*
U.S. Cl. 83—688 3 Claims



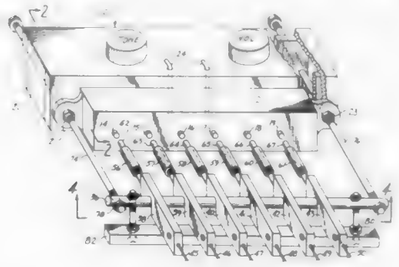
1. A tool for use with a punching press for punching holes in workpieces,
comprising:
(a) an elongate body having first and second ends;
(b) said first end having means for releasable engagement by the punching press and said second end having a working surface to engage the workpiece to be punched;
(c) said working surface comprising at least first and second punching edges
(1) formed on said second end of said body; and
(2) disposed in axially spaced relationship thereon; and
(d) said first punching edge being formed on the leading end of said second end of said body and said second punching edge having a diameter less than the diameter of said first punching edge; said first punching edge engaging the workpiece in advance of engagement therwith by said second punching edge.

4,762,044
SAW CHAIN TOOTH
Gerald C. Kolve, 5833 SW. Lane Ct., Portland, Oreg. 97221
Continuation-in-part of Ser. No. 634,964, Jul. 26, 1984, which is a continuation-in-part of Ser. No. 599,769, Apr. 13, 1984, which is a continuation-in-part of Ser. No. 503,334, Jun. 10, 1983. This application Mar. 17, 1987, Ser. No. 26,657
The portion of the term of this patent subsequent to Mar. 18, 2003, has been disclaimed.
Int. Cl.[4] B27B *33/14*
U.S. Cl. 83—832 9 Claims



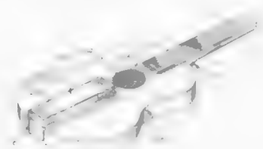
1. A saw chain side cutter tooth comprising:
a link having:
a body defining a plane for the tooth and two half- spaces separated by the plane;
a trailing cutter element extending laterally outwardly from the body ending in a cutter tip, the cutter element curling out of the plane into one-half space, the tip extending upwardly substantially vertically and substantially parallel to the plane of the body and the tip sloping back inwardly toward the plane of the body at an angle of 0° to 50°.

4,762,045
ANTI "CLICK" ELECTRONIC PICKUP DEVICE FOR STRINGED INSTRUMENTS
Julius H. Cunningham, 813 Trouville Ave., Grover City, Calif. 93433
Filed Mar. 17, 1987, Ser. No. 26,782
Int. Cl.[4] G10H *3/00*
U.S. Cl. 84—1.16 1 Claim



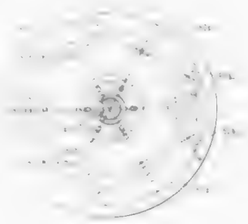
1. In a stringed musical instrument having at least one string, each string having two ends, a device for aiding in the electronic reproduction of vibrations from the at least one string comprising:
a pivot;
a means for securely attaching the pivot to the musical instrument;
at least one rockshaft, each rockshaft in pivoting relationship to the pivot, each rockshaft having a first and second end, the first end being attached to one of the at least one string so that vibrations of the at least one string cause the second end to vibrate;
the pivot and the at least one rockshaft anchoring one end of at least one string; and,
a means for translating the vibrations of the second end of each rockshaft into electrical vibrations.

4,762,046
SOUND REVERBERATOR DEVICE FOR DETACHABLE CONNECTION TO THE STRINGS OF A STRING MUSICAL INSTRUMENT
Roberto Aspri; Claude Mauffette, and Michel Dallaire, all of Montreal, Canada, assignors to Les Entreprises Roberto Aspri Ltee, Quebec, Canada
Filed Jun. 16, 1987, Ser. No. 62,836
Int. Cl.[4] G10D *3/02*
U.S. Cl. 84—294 25 Claims



1. A sound reverberator device for detachable connection to the strings of a string musical instrument having strings tensioned over a bridge piece connected to a top wall of the sound box of said instrument, said reverberator comprising one or more metal springs secured at a rear to a spring support, a metallic attachment member secured to a free end of said spring, said attachment member has string engaging means for engaging said strings of said musical instrument, said attachment member further having a bridge abutment portion for contact with said bridge piece, and means to tension said spring with said attachment member connected to said strings whereby vibrations imparted to said strings will be transmitted to said bridge piece and said associated spring; said spring being vibrated by said associated string transmits its vibrations to said sound box through said bridge piece whereby to modify the tonality of the sound generated by said sound box as a result of setting the strings in vibration.

4,762,047
MORTAR
Inigo Arana Ibarra, Vizcaya, Spain, assignor to Esperanza y Cia, Spain
Division of Ser. No. 849,817, Apr. 9, 1986. This application Dec. 24, 1986, Ser. No. 945,809
Claims priority, application Spain, Mar. 17, 1986, 292.983; Mar. 17, 1986, 292.986
Int. Cl.[4] F41F *1/06*
U.S. Cl. 89—1.35 7 Claims



6. An improved base plate for a mortar comprising:

VOL 1093 ISS 2 AG 9 1988 UMI

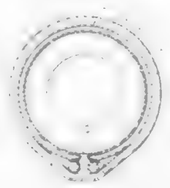
(a) a platform having an upper and a lower face and a center;
(b) locking means for locking a ball of a mortar barrel, said locking means mounted on said upper face of said platform;
(c) an even number of radial ridged members attached to said lower face of said platform at equal angles and extending radially from said center of said platform; and
(d) every other one of said radial ridged members being forked beyond the mi-point of said radial ridged members into two branched members, each of said two branched members being parallel to an adjacent non-forked radial ridged member.

4,762,048

APPARATUS FOR UNIFORMING HEAT OF GUN BARREL

Izumi Higashi; Akio Adachi; Takayoshi Tajima, and Norimichi Hiroshige, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Oct. 10, 1986, Ser. No. 917,546
Claims priority, application Japan, Oct. 11, 1985, 60-226312
Int. Cl.[4] F41F *17/14*
U.S. Cl. 89—14.1 **5 Claims**



1. An apparatus for the uniform heating of a gun barrel having an outside peripheral surface, comprising:
first and second spaced arcuate members having aligned edges, said members being disposed substantially parallel to each other to form, respectively, inner and outer arcuate walls for substantially encircling the gun barrel, said first and second members each having opposing parallel edges extending longitudinaly along the gun barrel with the first member being in intimate contact with the outside peripheral surface of the gun barrel, said arcuate members being sealed at the edges thereof forming a chamber therebetween;
a liquid substantially filling the chamber;
a wick disposed in the chamber for providing capillary circulation for the liquid;
a heat insulating cover in intimate contact with the entire second arcuate member, the heat insulating cover substantially encircling the gun barrel;
said liquid uniformly dissipating heat generated from the interior of the gun barrel and the interior of the heat insulating cover; and
said heat insulating cover being operative to shade the second arcuate member from solar radiation.

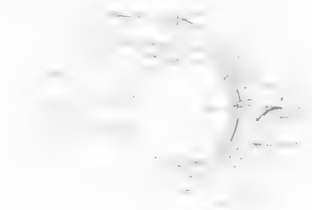
4,762,049

FEED SYSTEM FOR LINKED AMMUNITION

Rodney V. Hughes, Stafford, England, assignor to Lucas Industries plc, Birmingham, England

Filed Dec. 2, 1986, Ser. No. 937,110
Claims priority, application United Kingdom, Dec. 31, 1985, 8531957
Int. Cl.[4] F41D *10/40*
U.S. Cl. 89—33.14 **4 Claims**

1. A feed system for supplying a belt of linked cartridges to a traversable gun, comprising a fixed substantially horizontal and substantially planar element with respect to which said gun is traversable and elevatable, means for guiding said belt onto said element so that said element can support said cartridges with the axes thereof substantially perpendicular to the plane of said element, and means for guiding said belt away



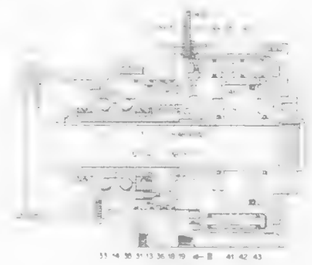
from said element towards the breech of said gun, a flexible chute for guiding said belt between said means for guiding onto and away from said element, the area of said element being sufficiently large as to support loops formed in said flexible chute over the expected range of traverse of said gun.

4,762,050

ROTARY HYDRAULIC ACTUATOR

Eric Marchand, Porrentruy, Switzerland, assignor to ACED S.A., Switzerland

Filed Oct. 22, 1986, Ser. No. 921,446
Claims priority, application Switzerland, Oct. 23, 1985, 4556/85
Int. Cl.[4] F15B *31/12*
U.S. Cl. 91—1 **11 Claims**



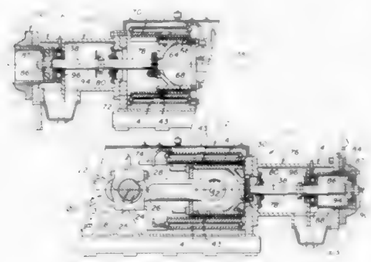
1. A rotary hydraulic actuator for controlling the gripping or loosening of a collet or a mandrel of a machine tool, comprising:
a piston which is integral with a pull rod;
a control cylinder which is integral with a spindle body;
a hydraulic control circuit comprising a stationary part supported by fixed elements and a rotating part supported by the spindle body, the rotating part of the control circuit comprises means for retaining control fluid and means for maintaining said control fluid under pressure, and transmission means are disposed between individual parts of said hydraulic control circuit in order to connect them temporarily to each other during a control operation;
wherein said means for maintaining fluid under pressure comprises a series of parallel casings acting as accumulators, pistons sliding in said casings, a series of springs acting in parallel with said casings and interposed between said casings and a connecting ring loaded by the springs and by the pistons, such that, when the control cylinder is put under pressure, the fluid pressure acts on the auxiliary pistons and moves the connecting ring in such a manner as to stress said springs, thereby preventing the pressure from dropping in the control cylinder and in the casings even in the event of oil leakage.

4,762,051

SINGLE ACTING PUMP WITH DOUBLE ACTING DRIVE

Dragan Besic, West Caldwell, and Wilbur C. Smith, N. Caldwell, both of N.J., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 17, 1986, Ser. No. 886,460
Int. Cl.[4] F04B *39/02, 23/06;* **F16C** *23/02*
U.S. Cl. 92—165 R **3 Claims**



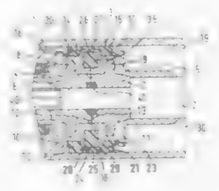
1. A pump assembly comprising:
a frame;
a crankshaft mounted for rotation in said frame about a drive axis;
a connecting rod mounted on the crankshaft;
a first crosshead pivotally mounted on the connecting rod, the frame having first crosshead guides for confining motion of the first crosshead along a first pumping direction as the crankshaft rotates about the drive axis;
a second crosshead, the frame having second crosshead guides for confining motion of the second crosshead along the first pumping direction on the opposite side of the drive axis from the first crosshead;
transfer structure connecting the first and second crossheads for joint motion along the first pumping direction;
a first single acting pump, the first pump having a cylinder with its center axis aligned with the first pumping direction and a piston reciprocating within the cylinder, the piston and cylinder defining a pumping chamber, the piston connected to the first crosshead, movement of the first crosshead along the first pumping direction and away from the drive axis moving the piston within the cylinder to decrease the volume of the pumping chamber forming the working stroke of the first pump to pump slurry.
a second single acting pump, the second pump having a cylinder with its center axis aligned with the first pumping direction and a piston reciprocating within the cylinder, the piston and cylinder defining a pumping chamber, the piston connected to the second crosshead, movement of the second crosshead along the first pumping direction away from the drive axis moving the piston within the cylinder to decrease the volume of the pumping chamber forming the working stroke of the second pump to pump slurry; and
the working strcke of each of the pumps occurring in opposite directions of movement along the first pumping axis to provide a relatiely constant load on the crankshaft, connecting rod, crossheads and transfer structure, the pumping forces acting on the second crosshead to operate the second single acting pump being transferred from the first crosshead through the transfer structure, wherein said first and second crosshead guides include a pair of cradles having a wear surface thereon for engaging and guiding the crossheads and means for securing the cradles to the frame initially permitting limited movement of each of the cradles relative to the frame in a plane parallel the first pumping direction so that reciprocation of a crosshead along the first pumping direction by rotating the crankshaft aligns the cradles with the crossheads and subsequently rigidly securing the cradles to the frame in alignment with the crossheads.

4,762,052

PISTON

Kurt Stoll, Lenzhalde 72, and Gerhard Hihn, Schurwaldstr. 7, both of D-7300 Esslingen, Fed. Rep. of Germany

Filed Mar. 10, 1986, Ser. No. 838,106
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1985, 3508686
Int. Cl.[4] F16J *1/00;* **B29C** *13/00*
U.S. Cl. 92—172 **13 Claims**



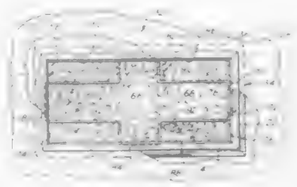
1. A multi part piston comprising a piston rod, two piston halves mounted on said piston rod so as to be symmetrical about a plane between them which is radial with respect to said rod, each such piston half comprising a metallic inner member with radial anchoring projection, a molded resin casing on the inner member, and a piston seal on said molded casing in a circumferential groove in an outer surface of said casing, wherein each piston seal comprises an outer sealing lip on the side of the piston half remote from the respective other piston half, said outer sealing lip being positioned to run on the bore a cylinder, and an inner retainer lip located on the outer side of the respective piston half, whereas on the side opposite to the sealing lip such piston seal has a guide lip extending in a direction opposite to that of the sealing lip, said guide lip forming the said bore-engaging surface with the guide lip of the other piston half.

4,762,053

REPLACEMENT FILTERED SOFFIT VENTILATOR

Clarke K. Wolfert, Peoria, Ill., assignor to Air Vent Inc., Peoria, Ill.

Filed Jun. 2, 1987, Ser. No. 56,768
Int. Cl.[4] F24F *13/18*
U.S. Cl. 98—37 **6 Claims**



3. In a filtered soffit ventilator provided with a bracket lining an opening in said soffit, and a frame designed to be secured within said bracket and having an interior face forming an inwardly projecting peripheral lip, upper and lower edges and first and second side edges, a compressible filter media retain-

VOL 1093 ISS 2 AUG 9 1988 UMI

ing loop designed to retain a filter media within said frame, comprising:

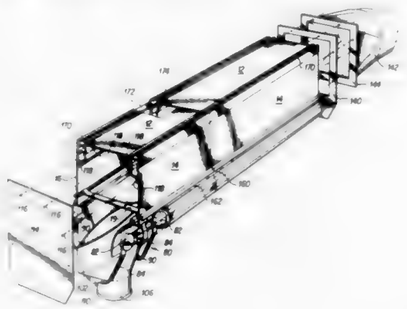
a single strand of flexibly rigid material, said strand being formed into substantially rectangular shape with upper and lower edges and first and second side edges corresponding with said edges of said frame, said upper and lower edges including an extended central portion engaging said upper and lower edges of said frame located between two relatively recessed portions which form gripping means for compressing said loop for insertion beneath said peripheral lip, said first and second side edges of said loop engaging said corresponding side edges of said frame so that said loop retains said filter media therein on all sides thereof.

4,762,054

EXHAUST EXTRACTION RAIL ASSEMBLY

Phillip L. Melville, Alexandria, Va., and Rene M. Wallyn, Nogent-sur-France, France, assignors to Sacatec, Inc., Vienna, Va.

Filed Jul. 7, 1987, Ser. No. 70,723
Int. Cl.[4] B08B *15/00*
U.S. Cl. 98—115.4 12 Claims



1. In an exhaust discharge system for one or more exhaust producing sources, said system including a flexible conduit adapted to be connected to each exhaust producing source, said conduits being fluidably connected to an exhaust extraction rail assembly which in turn feeds exhaust to a blower which discharges the exhaust to the atmosphere or other appropriate exhaust receiving means, said exhaust extraction rail assembly comprising:

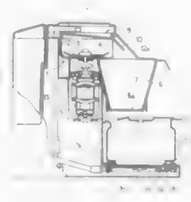
1. an extraction rail, said rail having a top rail member with parallel longitudinal side edges and a side rail member connected to and extending downwardly from each side edge, each side rail member having an upper longitudinal edge and a bottom longitudinal edge,
2. interengaging connecting means on both side edges of the top rail member and the upper longitudinal edge of each side rail member for connecting the top rail member with its respective side rail member,
3. resilient sealing means closing off the opening formed between the bottom side edges of the two side rail members, said sealing means being longitudinally and centrally divided with respect to the side rail members,
4. the bottom longitudinal edge portion of each side rail member having three integral and independently functioning components;
   (a) a longitudinal channel extending along the bottom longitudinal edge portion of each side rail member, said channel having an outwardly directed opening,
   (b) wheel track means extending downwardly from the bottom longitudinal edge portion of each side rail member and generally coextensive therewith,
   (c) flange means extending inwardly from the bottom longitudinal edge portion of each side rail member for supporting the sealing means,
5. an exhaust spout sealingly positioned in the longitudinal division in the sealing means,
6. carriage means connected to and supporting the exhaust spout in the sealing means for longitudinal movement with respect to said sealing means, said carriage means having wheels riding in the wheel track means extending downwardly from the bottom longitudinal edge portion of each side rail member,
7. assembly bar means slidably carried in the longitudinal channel extending along the bottom longitudinal edge portion of each side rail member to retain the side rail members adjacent thereto in assembled position, and means associated with each assembly bar for retaining same in locked position.

4,762,055

COFFEE MAKERS

Nobuo Shimomura, Nagoya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 11, 1987, Ser. No. 131,436
Claims priority, application Japan, Feb. 23, 1987, 62-039835
Int. Cl.[4] A47J *31/42, 31/52*
U.S. Cl. 99—285 2 Claims



1. A coffee maker comprising:
(a) a water reservoir;
(b) a drip case for containing coffee powder;
(c) hot water feeding means having two ends, said hot water feeding means being supplied with water through one of the ends thereof from said water reservoir, said hot water feeding means feeding hot water from the other end thereof to an area communicating to the interior of said drip case;
(d) heating means for applying heat to said hot water feeding means to heat the water therein, thereby causing the hot water to flow through said hot water feeding means to the end thereof communicating to the interior of said drip case, by the force of boiling pressure;
(e) transferred heat detecting means for detecting an amount of heat transferred from said heating means to said hot water feeding means; and
(f) operational means for comparing an amount of heat detected by said transferred heat detecting means with a predetermined value, thereby producing an alarm signal when the amount of heat detected by said transferred heat detecting means takes a value smaller than the predetermined value.

4,762,056

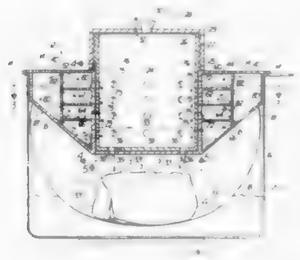
COMBINED PACKAGE AND COOKING CONTAINER

Janos Virag, P.O. Box 6568, Nassau, The Bahamas

Filed Oct. 7, 1986, Ser. No. 916,322
Int. Cl.[4] B65B *25/22*
U.S. Cl. 99—345 14 Claims

1. A container assembly of the type primarily designed for the containment of a food product and additives therefor during both storage and cooking of the food product, said assembly comprising:

(a) a base comprising means defining a substantially hollow interior portion and including a closure secured to said base in covering relation to at least a portion of said hollow interior,
(b) a pouch secured to said base in depending, substantially enclosing relation to an underportion thereof,
(c) said pouch structured to contain a food product and disposed in fluid receiving relation to at least a part of said hollow interior portion of said base,
(d) compartment means for containing food additives mounted on said base and structured to selectively communicate with said hollow interior portion,
(e) said compartment means further disposed for fluid communication with fluid within said pouch and disposed substantially between said pouch and said hollow interior portion,
(f) a first path of fluid flow formed in said base and disposed to provide liquid flow from said hollow interior portion into said pouch,
(g) a second path of fluid flow formed on said base and disposed to provide fluid flow from said pouch into said compartment means and a third path of fluid flow formed on said base adjacent said compartment means and disposed and structured to provide fluid flow from said compartment means into said hollow interior portion,
(i) whereby a cooking liquid placed in said hollow interior portion recirculates throughout said pouch and said base and feeds additives from said compartment means to said pouch.



4,762,057

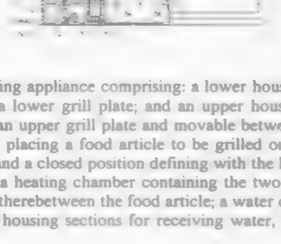
AUTOMATIC BREAD PRODUCING MACHINE

Hiromi Hirota; Hirofumi Nakakura, both of Toyonaka; Haruo Ishikawa; Hajime Oyabu, both of Kawanishi; Akihisa Nakano, Toyonaka, and Toshiichiro Tanaka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 9, 1986, Ser. No. 917,368
Claims priority, application Japan, Oct. 11, 1985, 60-227131; Oct. 11, 1985, 60-227132; Nov. 8, 1985, 60-251262; Dec. 17, 1985, 60-283429
Int. Cl.[4] A21D *8/00;* **A47J** *27/00*
U.S. Cl. 99—348 15 Claims

1. An automatic bread producing machine for producing bread from raw bread material, said machine comprising:

a casing;
a baking chamber defined within said casing, a heater for heating the baking chamber to bake the raw bread material, and a cover for covering the baking chamber;
a bread baking mold detachably securable to the casing within the baking chamber for receiving the raw bread material, the bread baking mold having a rotatable kneading blade disposed therein for kneading the raw bread material received in said mold;
a motor operatively connected to said kneading blade for driving said kneading blade to knead the raw bread material;
a temperature detecting means within said baking chamber for detecting the temperature of the raw bread material received in said bread baking mold; and
a control apparatus operatively connected to said heater, said motor and said temperature detecting means for controlling the temperature in the baking chamber and the time during which a series of bread baking processes



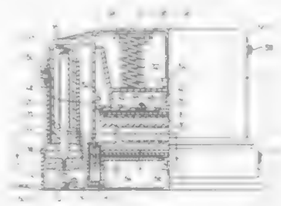
including the kneading of the raw bread material by the kneading blade driven by the motor, fermenting, gas breathing and the baking of the raw bread material by the heater are performed,
said control apparatus comprising means for establishing at least two different modes of said series of processes, and means for selecting one of said modes in response to one or two temperatures of the bread raw material detected by said temperatures detecting means,
each of said temperatures detected, respectively, at one of the start of the kneading of the raw bread material, at a time during the kneading of the raw bread material, and at the completion of the kneading of the raw bread material.

4,762,058

GRILLING APPLIANCE

Ruben Masel, 16 Hatzabar Street, Kiron, Israel, and George Valdshtein, Holon, Israel, assignors to Ruben Masel, Kiron, Israel

Filed Apr. 30, 1987, Ser. No. 44,792
Claims priority, application Israel, May 1, 1986, 78657
Int. Cl.[4] A47J *37/06*
U.S. Cl. 99—425 10 Claims



1. A grilling appliance comprising: a lower housing section containing a lower grill plate; and an upper housing section containing an upper grill plate and movable between an open position for placing a food article to be grilled on the lower grill plate, and a closed position defining with the lower housing section a heating chamber containing the two grill plates for grilling therebetween the food article; a water container in one of said housing sections for receiving water, and sealing

VOL 1093 ISS 2 AG 9 1988 UMI

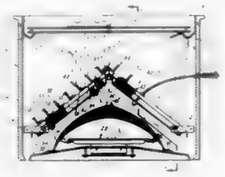
means for enclosing the water container within the heating chamber whereby the water can saturate the heating chamber with water vapor during the grilling of the food article.

4,762,059

COOKING GRILL WITH GREASE COLLECTOR

Jack S. McLane, Sr., 3101 Bachman Rd., Gaston, S.C. 29053

Filed Feb. 5, 1987, Ser. No. 11,283
Int. Cl.[4] A47J 37/07
U.S. Cl. 99—445 10 Claims



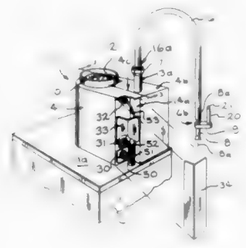
1. A cooking apparatus for cooking meats and other foods comprising a housing defining an upper opening with means for supporting a food support grill in an approximately horizontal attitude at said upper opening, a source of heat positioned in said housing beneath said upper opening, a grease collector positioned between said heat source and said food support grill, said grease collector comprising a plurality of rectilinear, grease collection bars supported in closely spaced relationship with respect to each other to define heat passages therebetween, each of said grease collection bars having a first leg and a second leg, with the bars each arranged with one of their ends lower than the other, and with the first legs of the bars arranged in a common inclined plane and with the second leg of each bar extending over the heat passage formed between the next adjacent bar, whereby the bars generally prevent grease drippings from falling through the heat passages and permit heat to pass upwardly through the heat passages.

4,762,060

APPARATUS FOR CONTROLLED HEATING AND DISPENSING OF A MIXED LIQUID AND SOLID MATERIAL

Arthur W. Santa Cruz, 430 Charles St., East Lansing, Mich. 48823

Filed Aug. 14, 1987, Ser. No. 85,626
Int. Cl.[4] B05C 5/04
U.S. Cl. 99—483 24 Claims



1. An apparatus for heating and dispensing a food paste or other liquid and solid material including a pump means with an inlet and an outlet and driven by a motor means mounted on a support means the improvement which comprises:

(a) reservoir means for the material mounted on the support means having an opening for filling the reservoir means above a tapered portion leading to an outlet from the reservoir means connected to the inlet of the pump means;

(b) vertically oriented pipe means connected to the outlet of the pump means and mounted adjacent to the reservoir means;

(c) water jacket means mounted on the support means around the reservoir means and the pipe means and having an inlet and an outlet for the water, wherein the outlet is at an upper portion of the reservoir means and is open during operation of the apparatus;

(d) electrically controlled valve means in fluid connection with the inlet of the jacket means and adapted to be connected to a source of supply of water;

(e) flexible hose means connected to the pipe means and leading to a nozzle means for dispensing the material;

(f) first electrically controlled switch means mounted adjacent the nozzle means which activates the motor means and thereby the pump means to dispense the material from the nozzle means;

(g) electrically controlled heater means mounted inside the jacket means for heating water inside the jacket means and thus the material in the reservoir means and in the pipe means;

(h) thermostat means for controlling the temperature of the heater means and thus the temperature of the water by electrically connecting and disconnecting the heater means;

(i) electrically controlled moisture sensing means mounted inside the jacket means to sense when the jacket means is filled with water at a predetermined level above the heater means; and

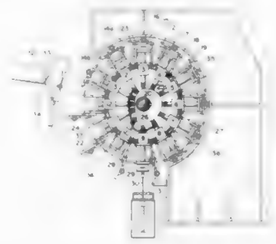
(j) second electrically controlled switch means in an electrical circuit with the valve means electrically responsive to the moisture sensing means for opening the valve means to fill the jacket means with water to the predetermined level and then switching to close the valve means and allow the heater means to heat the water so long as the water is at the predetermined level and when the water drops below the predetermined level switching to fill the jacket means by opening the valve means and to disconnect the heater means.

4,762,061

METHOD OF PRODUCING COMPRESSED ROLL OF PAPER

Kouzou Watanabe, 18-25, Fukumitsu Minami-machi, Gifu-shi, Gifu-ken, and Yasuhiko Saito, 13-17, Hiromi-Higashihoncho, Fuji-shi, Shizuoka-ken, both of Japan

Continuation of Ser. No. 716,848, Mar. 28, 1985, abandoned. This application Feb. 11, 1987, Ser. No. 13,168
Claims priority, application Japan, Mar. 30, 1984, 59-62293; Dec. 6, 1984, 59-258308
Int. Cl.[4] B30B 13/00
U.S. Cl. 100—35 1 Claim



1. A method of producing a compressed roll of roll paper with preserved crepe deformed into a flat shape comprising the steps of:

applying a compressing pressure to a cylindrical roll of roll paper with crepe having an axis and a diametrical thickness, the compressing pressure being in one direction to deform said roll into a flat shape having a second thickness in said direction; and

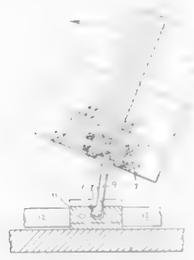
continuing application of said compressing pressure to said flat shape until said second thickness is reduced to between one-half and one-fifth of said diametrical distance of said cylindrical roll of roll paper before compression, while simultaneously restricting expansion of said roll in a direction lateral to said one direction of compressing pressure to at least partially preserve the crepe, said directions being substantially perpendicular to said axis of said roll.

4,762,062

MECHANICAL PRESS

Manfred Wanzke, Am Sportfeld 3, D-8751 Niedernberg, Fed. Rep. of Germany

Continuation of Ser. No. 765,668, Aug. 14, 1985. This application Mar. 17, 1987, Ser. No. 24,856
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1984, 3430514
Int. Cl.[4] B30B 1/10
U.S. Cl. 100—280 20 Claims



1. A mechanical press, comprising:

a drive;

a yoke;

a shaft coupled to said drive, said shaft being supported in said yoke at an end of said shaft which is opposite to said drive;

a plurality of bearings;

a journal being supported in a front end of said shaft via said plurality of bearings, said journal having a first rotation axis which is parallel to a second rotation axis of said shaft, but is offset in relation thereto;

a slide which is guidable and movable relative to a press table; and,

a connecting rod, having a lower connecting rod end and an upper connecting rod end, said upper connecting rod end being connected to said journal and said lower connecting rod end being rotatably connected to said slide, wherein said upper connecting rod end and said lower connecting rod end are capable of being rotated about at least two intersecting axes which are essentially perpendicular to said shaft in a plane so that forces exerted upon said shaft and said plurality of bearings during operation of said mechanical press are in a substantially axisl direction to said shaft rather than primarily in a radial direction to said shaft.

4,762,063

BAR CODE PRINTING METHOD

Paul H. Yeagle, 214 Verdan Dr., York, Pa. 17403

Filed Jan. 23, 1987, Ser. No. 6,179
Int. Cl.[4] B41J 1/34
U.S. Cl. 101—93.01 4 Claims



1. A bar code printing method for generating an extended height bar code image target pattern on a bar code printed item by employing a computer driven pulsing hammer raise-engraved fixed font printer of that type wherein the long axis direction of a font of an array of bar code characters are disposed by engraving the same upon a drum of said printer in an orientation parallel to the lateral edge direction of the printer having a pitch advance of 0.125-inch for a print stock material, in combination with an extended height bar code character font wherein the long axis dimension of an array of said extended height bar code character font is 0.150-inch thereby being of a uniformly slightly greater elevation than that of said pitch advance of said print stock material so as to in turn thereby respectively enable a computer controlled pitch advance successively repetitive overlap differential of 0.025-inch therebetween in bar code font character printout from row-to-row, said method comprising the steps of first effecting an initial computer controlled line printing upon said print stock material of each of an extended height bar code font character component comprising a 0.150-inch print output image elevation segment imprint of a bar code image target pattern, thereafter effecting a computer controlled print stock material pitch advance of 0.125-inch and a sequentially progressive repetitive aligned and abutted extended height bar code character font 0.025-inch overlap printing of each of said extended height bar code font character component elements to thereby comprise an add-on print output image elevation segment to said bar code image target pattern, and continuing a sequentially successive computer controlled print stock material 0.125-inch pitch advance and sequentially progressive repetitive aligned and abutted series of computer controlled differential 0.025-inch overlap printing cycles to that number of such cycles the computer controlled pitch advance total of which cumulatively equals the desired extended height dimension of said extended height bar code image target pattern to be generated without a shortened pitch advance or any reverse movement of the print stock material.

4,762,064

ARRANGEMENT FOR ATTACHING INTAGLIO PRINTING PLATES TO A CYLINDER

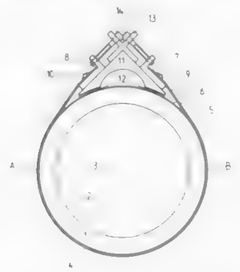
John Moore, La Conversion, Switzerland, assignor to De La Rue Giori S.A., Lausanne, Switzerland

Division of Ser. No. 870,441, Jun. 4, 1986, Pat. No. 4,680,067. This application Feb. 26, 1987, Ser. No. 19,472
Claims priority, application Switzerland, Jul. 26, 1985, 3258/85
Int. Cl.[4] B41F 27/12
U.S. Cl. 101—150 1 Claim

1. Arrangement for attaching printing plates to a plate cylinder of a web fed intaglio printing machine, said plate cylinder comprising a cylindrical barrel of ductile material, having a

VOL 1093 ISS 2 AG 9 1988 UMI

slightly tapered surface corresponding to the taper of the inner wall of the cylinder to be mounted on said shaft, means for heating the cylindrical barrel, a traction device, a metal ribbon of a width at least equal to that of an intaglio plate and a length greater than the half-circumference of the plate cylinder, the two ends of said ribbon extending parallel to the cylinder axis and being provided with means for coupling the ribbon to said traction device, permitting the exertion of traction forces tangential to the peripheral surface of the cylinder and perpendicular to the cylinder axis wherein the traction device comprises a pressure member adapted to bear against the cylinder surface with a cylindrical concave wall and having a length at least equal to the length of said cylinder, said cylinder concave wall being lined with a soft material to prevent the surface of the plate cylinder from being damaged, said pressure member comprising on its portion opposite said cylindrical concave wall means permitting on the one hand the coupling of the two edges of said ribbon and on the other hand of exerting said traction forces.

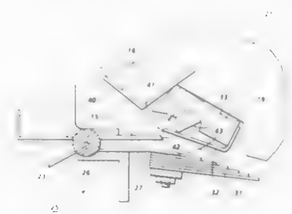


4,762,065

SHEET INFEED MECHANISM FOR A PRINTING MACHINE

Gerhard W. Nothmann, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 8, 1987, Ser. No. 93,831
Int. Cl.[4] B41F *21/04*
U.S. Cl. 101—409 8 Claims



1. An Infeed mechanism for advancing and guiding the leading edge of a sheet into a sheet constraining means comprising an upper anvil and a lower gripper finger movable between an open and a closed position, said sheet constraining means providing a space between said anvil and said finger in said gripper finger open position for receiving said leading edge, and forming a clamp on said sheet between said anvil and said finger in said closed position, said mechanism comprising:

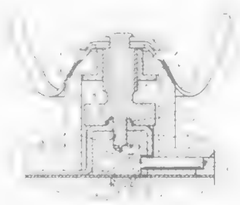
a chute comprising an upper surface and a lower surface for guiding said sheet toward said space, and a plurality of flexible strips of graduated width attached to and extending from the lower surface, the narrower of said strips being located above the wider strips, said strips constituting extensions of said lower surface, said chute further comprising means for positioning said chute in a first position wherein said gripper finger in said open position sequentially contacts and displaces said strips in cantilever fashion during movement of said constraining means to form a continuity between said lower surface and said finger.

4,762,066

FUZE FOR A PARACHUTE-STABILIZED OR BAND-STABILIZED SMALL BOMB WHICH ROTATES DURING FLIGHT

Werner Rudenauer, Roth; Fritz Muller, Nuremberg; Dieter Kufner, Eckental-Eckenhaid, and Joachim Furtmayr, Erlangen, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Jul. 7, 1987, Ser. No. 70,367
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1986, 3624713
Int. Cl.[4] F42B *13/50;* F42C *15/04, 15/22*
U.S. Cl. 102—226 6 Claims



1. In a fuze for a small bomb which rotates during flight and which is parachute-stabilized or band-stabilized; a transversely displaceable slider; a detonator in said slider; a detonator pin engageable into a bore for blocking said slider in a secured position, said detonator pin being turnable out of said bore through a screw threaded connection in a housing responsive to the rotation of the parachute or band; and a destructor pin inserted in said slider under the resilient biasing of a spring for the triggering of said detonator, said destructor pin being blocked in a secured position by said detonator pin; the improvement comprising a pyrotechnic charge in said slider constituting a timing element, said pyrotechnic charge being arranged intermediate said destructor pin and the output end of said detonator, said destructor pin being movable in a coaxial bore relative to said pyrotechnic charge along the direction of movement of said slider; a securing slider supported in said housing laterally engaging said slider for securing said slider, said securing slider being displaceable in response to centrifugal force, and said detonator pin in the secured position concurrently contacting the leading end surface of the destructor pin.

4,762,067

DOWNHOLE PERFORATING METHOD AND APPARATUS USING SECONDARY EXPLOSIVE DETONATORS

James M. Barker, Katy; Larry L. Grigar, East Bernard; Dennis E. Schramek, Houston; Starlin M. Reid, Katy, and Cyril R. Sumner, Houston, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 13, 1987, Ser. No. 120,275
Int. Cl.[4] F42B *1/02*
U.S. Cl. 102—313 23 Claims

1. A detonator for use in a well borehole for detonating explosives, comprising:

(a) conductive metal foil sized and shaped to conduct current therethrough wherein said foil, on current flow in excess of a specified level forms a detonating shock wave;

(b) secondary explosive charge means;

(c) housing means supporting said foil to form a shock wave from said foil toward said charge means to impinge thereon for detonation of said charge means; and



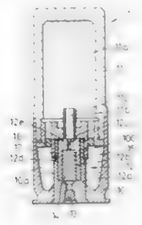
(d) a detonating cord fixedly supported by said housing means and in sufficient proximity to said charge means to serially detonate said detonating cord from said charge means.

4,762,068

CARTRIDGE-TYPE AMMUNITION

Willi Lübbers, Trittau, Fed. Rep. of Germany, assignor to Nico-Pyrotechnik Hanns-Jürgen Diederichs GmbH & Co KG, Trittau, Fed. Rep. of Germany

PCT No. PCT/EP86/00097, § 371 Date Nov. 5, 1986, § 102(e) Date Nov. 5, 1986, PCT Pub. No. WO86/05265, PCT Pub. Date Sep. 12, 1986
PCT Filed Feb. 25, 1986, Ser. No. 948,359
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507643
Int. Cl.[4] F42B *5/02*
U.S. Cl. 102—439 13 Claims



1. Cartridged ammunition for a grenade pistol, comprising:

a casing having an opening and a base;

a projectile disposed in the opening of the casing, the projectile including a payload, a base having a sleeve member with an internal thread, a transfer charge, and means for supporting the transfer charge adjacent the base of the projectile so that the transfer charge is disposed between the sleeve member and the payload and communicates with the payload;

primer and propelling charges; and

cup means disposed at the base of the casing for accommodating the primer and propelling charges, the cup means including

an outer sleeve having a first end and having a second end which is oriented toward the base of the casing, the outer sleeve additionally having an external thread adjacent the first end thereof and having an annular break location between the external thread and the second end, the external thread being screw-connected to the internal thread of the sleeve member, and

an inner sleeve which is concentric with the outer sleeve, the inner sleeve being disposed in the outer sleeve so as to be telescopically slidable with respect thereto, the inner sleeve being generally cup-shaped and having an end which is oriented toward the transfer charge, the end of the inner sleeve having a firing channel.

9. Cartridged ammunition for a grenade pistol, comprising:

a casing having an opening and a base;

a projectile disposed in the opening of the casing, the projectile including a payload, a base portion having a threaded region, a transfer charge, and means for supporting the transfer charge adjacent the base of the projectile and adjacent the payload, with the transfer charge communicating with the payload;

primer and propelling charges; and

cup meas disposed at the base of the casing for accommodating the primer and propelling charges, the cup means including

a cylindrical sleeve having a first end and having a second end which is mounted at the base of the casing, the cylindrical sleeve additionally having a threaded region adjacent the first end and having an annular break location between the second end and the threaded region, the threaded region of the cylindrical sleeve being screwed to the threaded region of the base portion of the projectile, and

another cylindrical sleeve located in the cylindrical sleeve, the another cylindrical sleeve having an end which is directed toward the transfer charge, the cylindrical sleeve and another cylindrical sleeve being telescopically slidable with respect to each other.

4,762,069

RAIL WITH SUSPENSION AND CONDUCTOR HOLDING CLAWS

Johannes G. Spoeler, Borken, and Manfred Grapentin, Herdecke, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Nov. 10, 1986, Ser. No. 929,011
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1985, 3539751
Int. Cl.[4] E01B *25/24*
U.S. Cl. 104—107 14 Claims



1. A carrier rail of I-beam configuration having a web and two cross bars wherein the web has claws for connection to rail suspending structure and conductor holders, comprising:

first claws for conductive holders on one side of the web;

second claws with overhung flange portions on an opposite

VOL 1093 ISS 2 AG 9 1988 UMI

side of the web and forming a channel, for receiving heads of connecting screws of the rail suspending structure;
said second claws further having surface portions facing each of said cross bars and being configured as inclined wedging surfaces;
and an auxiliary carrier being provided with a contour matching portion gripping around and covering said second claws and said wedging surfaces and engaging said crossbars.

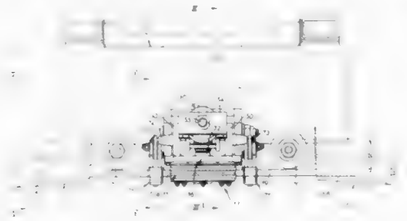
11. A carrier rail of I-beam configuration having a web and two cross bars wherein the web has claws for connection to rail suspending structure and conductor holders, comprising:
a plurality of first claws on one side of the web; conductive holders inserted in said first claws;
second claws larger than the first claws, and having overhung flange portions, and being disposed on an opposite side of the web, for forming a channel;
support surfaces on the web, alongside the second claws, outside of said channel; and
suspension means, including means inserted in said channel as well as means bearing against said support surfaces.

4,762,070

TRANSPORT INSTALLATION COMPRISING A GUIDE TRACK AND CIRCULATING CABLE DRIVEN CARS

Jean Huon de Kermadec, Le Chesnay, and Guy M. C. M. Thomas, Bagneres de Bigorre, both of France, assignors to SOULE, Bagneres De Bigorre, France

Filed Dec. 12, 1986, Ser. No. 941,142
Claims priority, application France, Dec. 18, 1985, 85 18789
Int. Cl.[4] B61B *12/12*
U.S. Cl. 104—173.1 14 Claims



1. Transport installation comprising at least one car, a circulating cable disposed near said car, gripping means on said at least one car adapted to grip said cable and lateral retaining members fixed to said at least one car and adapted to accommodate said cable at least when it is gripped by said gripping means, there being at least two lateral retaining members disposed on respective sides of said gripping means, wherein each lateral retaining member comprises two substantially vertical flanges extending lengthwise of said cable and having bottom longitudinal edges defining an opening into which said cable may be inserted and adapted to hold said cable between them at least substantially in a vertical plane.

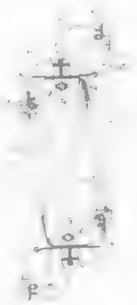
4,762,071

HOOD DEVICE FOR COUPLING CARS

Yoshio Ohta, Tokyo, and Koji Tabata, Nagoya, both of Japan, assignors to Narita Seisakusho Mfg., Ltd., Nagoya and Japan National Railways, Tokyo, both of, Japan

Filed Nov. 25, 1986, Ser. No. 934,904
Claims priority, application Japan, Nov. 26, 1985, 60-265611
Int. Cl.[4] B61D *17/22*
U.S. Cl. 105—8.1 4 Claims

1. In a hood device for coupling cars, comprising a pair of hoods provided between a pair of car bodies to be coupled together, each of said hoods having a first end secured to an adjacent car body, and a second end including an intermediate frame for coupling said second ends of said hoods, an apparatus comprising:
a plate member having front and rear end edges coupled to said intermediate frame and provided in at least one of a ceiling and a bottom portion of said hood device, and



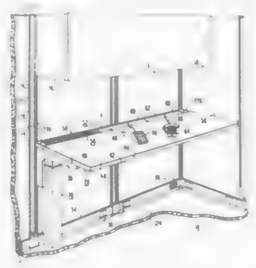
regulating means for preventing the rotation of said plate member with respect to said pair of car bodies by engaging said plate member when said pair of car bodies are displaced relative to each other in the lateral direction thereof by more than a predetermined amount, said regulating means being provided on said pair of car bodies.

4,762,072

DESK AND SPACE DIVIDING WALL PANEL ASSEMBLY

Bruce K. Boundy, Holland Township, Ottawa County, and Gerald N. Vander Till, Jenison, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1986, Ser. No. 916,424
Int. Cl.[4] A47B *35/00*
U.S. Cl. 108—50 21 Claims



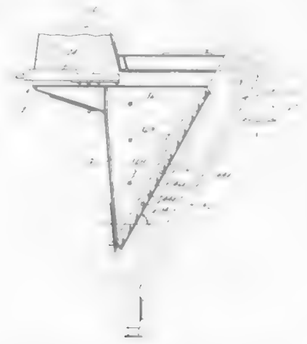
1. A desk and space dividing panel assembly, comprising:
a space dividing panel having a base,
an electrical raceway at the base of said panel which includes electrical wiring,
a desk having a predetermined width dimension,
said desk being supported at least in part by said space dividing panel,
said desk having upper and lower major opposed surfaces, with the upper surface being a work surface, said upper and lower surfaces being bounded by front and back edges and first and second lateral edges,
an elongated trough supported by said desk,
said trough having first and second ends and a longitudinal axis which extends between said ends,
said trough having a substantially U-shaped cross sectional configuration, including a bight portion and first and second spaced upstanding leg portions having upper edges which define first and second lateral edges, respectively, disposed substantially in the plane of the work surface,
a terminal block in said trough,
electrical upfeed means which extends between said electrical raceway and said trough,
said electrical upfeed means including electrical wiring which interconnects the electrical wiring in said raceway with said terminal block,
said electrical upfeed means including an elongated housing having upper and lower ends and a longitudinal axis which extends between said ends,
said housing surrounding the wiring which interconnects the wiring in the raceway with the terminal block,
said housing having upper and lower telescopically engaged sections respectively fixed to the trough and space dividing panel with a locking arrangement which is actuated simultaneously with adjustment of the housing length to the dimension between the raceway and the trough,
and cover means on said trough which forms an extension of said work surface,
said cover means defining an opening to said trough for accommodating an electrical wire between said terminal block and an electrical device on said work surface.

4,762,073

METERING FEEDER

Thomas A. Glaier, Ypsilanti; Neil H. Johnson; Harold L. Knox, both of Grosse Ile; David C. Reschly, Monroe, all of Mich., and Kim E. Spurlock, Toledo, Ohio, assignors to Detroit Stoker Company, Monroe, Mich.

Division of Ser. No. 859,411, May 5, 1986, Pat. No. 4,718,360, which is a division of Ser. No. 747,372, Jun. 20, 1985, Pat. No. 4,616,573, which is a continuation of Ser. No. 558,376, Dec. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 490,657, May 2, 1983, abandoned. This application Jun. 3, 1987, Ser. No. 57,622
Int. Cl.[4] F23K *3/00*
U.S. Cl. 110—101 CD 4 Claims



1. An apparatus for delivering solid fuel for combustion comprising:
hopper means for containing a quantity of solid fuel;
means for introducing fuel into said hopper at a variable rate including a first rate and a second rate slower than said first rate;
conveyer means at least partially disposed within said hopper for removing fuel from said hopper;
fuel sensing means for determining the presence of a first predetermined quantity of fuel in said hopper and for determining the presence of a second predetermined quantity of fuel in said hopper, said second predetermined quantity being greater than said first predetermined quantity;
control means responsive to said fuel sensing means for controlling said means for introducing fuel into said hopper;
said control means selecting said first rate when said fuel in said hopper is below said first predetermined quantity;
said control means selecting said second rate when said fuel in said hopper is above said first predetermined quantity and below said second predetermined quantity; and
said control means causing the interruption of introducing fuel into said hopper when said fuel in said hopper is above said second predetermined quantity.

4,762,074

PROCESS FOR THE INCINERATION OF COMBUSTIBLE MATERIALS

Leif E. Sörensen, Frederiksberg, Denmark, assignor to The Alpha Foundation, Vaduz, Liechtenstein

Filed Jun. 26, 1986, Ser. No. 878,744
Claims priority, application Luxembourg, Jun. 28, 1985, 85980
Int. Cl.[4] F23J *11/00*
U.S. Cl. 110—346 19 Claims

1. A process for incinerating solid waste combustible materials containing precursors of poisonous dioxines and furans, in which said combustible materials are completely combusted by means of air to which an amount of oxygen has been added so as to obtain air containing an excess of oxygen of about 30 to 35% by weight with respect to its normal oxygen content (23.19%), said amount of oxygen being sufficient for obtaining combustion gases at a temperature of at least 1200° C., and said excess of oxygen being such that the hot combustion gases contain enough oxygen for destroying the poisonous dioxines and furans, whereby the noxious nitrogenous gases are cut down and the poisonous dioxines and furans are destroyed.

4,762,075

SEED/FERTILIZER MINIMUM TILLAGE PLANTER

James W. Halford, Box 417, Indian Head, Saskatchewan, Canada S0G 2K0

Continuation of Ser. No. 745,952, Jun. 18, 1985, abandoned. This application May 14, 1987, Ser. No. 49,571
Claims priority, application United Kingdom, Jun. 19, 1984, 8415662
Int. Cl.[4] A01C *5/08*
U.S. Cl. 111—73 10 Claims



1. Apparatus for planting two different materials in the ground comprising:
a frame including hitch means to connect said frame to a prime mover for transport across the ground;

VOL 1093 ISS 2 AG 9 1988 UMI

first material delivery means comprising means for forming a furrow in the ground consisting solely of knife means, means mounting the knife means on the frame with said knife mounted to cut a furrow in the ground as the frame is moved forwardly over the ground, a first tube means, means for supplying a first material to the first tube means, and means mounting the first tube means on the knife means at a position immediately rearwardly thereof for depositing said first material into the furrow;

second material delivery means comprising soil engaging and opening means consisting solely of a second tube means formed by a single tube said single tube having an open mouth at the lower end, said lower end defining ground engaging means, means for supplying a second material to the second tube means, and means mounting the second tube means rearwardly of and separately from the knife means;

said second tube mounting means comprising a member positioned above the furrow from which the second tube extends downwardly into the furrow to engage soil therein;

said second tube mounting means mounting said second tube means spaced from the first tube means to leave a free space behind said first tube means and in front of said second tube means within which soil falls into the furrow as the first and second tube means are moved along the furrow behind the knife;

and a packer wheel assembly comprising a packer wheel and means mounting the packer wheel rearwardly of the second tube means for following in the furrow behind the second tube means;

said mounting means for said packer wheel and said mounting means for said second tube means comprising a single mounting member, means pivotally connecting said single mounting member rearwardly of said knife means, the second tube means being rigidly supported by said single mounting member between said knife means and the packer wheel and means for applying a bias to said single mounting member tending to hold said second tube means and said packer in contact with the ground;

said packer wheel and said knife means having cooperating respective widths, the packer wheel at its periphery being wider than the knife means and narrower than a widest part of the furrow formed by the knife to cause the packer wheel to run in the furrow at a position below ground level so as to act to positionally retain said second tube means in the furrow.

4,762,076

RULER DEVICE FOR SETTING EMBROIDERING FABRIC

Kiyoshi Wakaizumi, Tokyo, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Nov. 16, 1987, Ser. No. 121,349

Claims priority, application Japan, Nov. 14, 1986, 61-173965[U]

Int. Cl.⁴ D05C *9/04*

U.S. Cl. 112—103 **4 Claims**

1. An embroidering fabric setting ruler device for a sewing machine provided with a stitch forming instrument in association with a vertically reciprocating needle and an instrument moving in coordinate directions in synchronism with the needle, the device comprising an embroidering outer frame attachable to said moving instrument and having an inner side; an embroidering inner frame having an outer side corresponding to the inner side of the outer frame and including a positioning portion to be placed on said outer frame, said fabric being held between the embroidering outer frame and the embroidering inner frame; and a fabric setting ruler having positioning means placed on the embroidering inner frame for attaching to said embroidering inner frame, and gauge means formed in correspondence to coordinate directions of said moving instrument, said ruler including a transparent bottom which in assembly comes into contact with the fabric held between the embroidering outer frame and the embroidering inner frame, said gauge means being positioned on said transparent bottom,



whereby the fabric being held can be easily set in coordinate directions in accordance with said gauge means.

4,762,077

ARRANGEMENT OF A CLOTH FEEDER IN A SEWING MACHINE

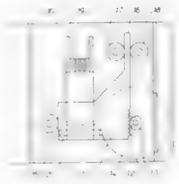
Kenneth O. E. Skogward, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Sweden

Filed Mar. 5, 1987, Ser. No. 22,131

Claims priority, application Sweden, Mar. 11, 1986, 8601129

Int. Cl.⁴ D05B *27/02*

U.S. Cl. 112—323 **7 Claims**



1. In a cloth feeding apparatus for a sewing machine comprising a reciprocating guide, a vertically movable feeder on said guide, and means for driving said guide, the improvement wherein said guide and feeder comprise substantially planar elements, and wherein said driving means comprises a motor having a shaft, and a pinion mounted to be driven by said shaft, said pinion being mounted to directly drive said guide and also to support said guide.

4,762,078

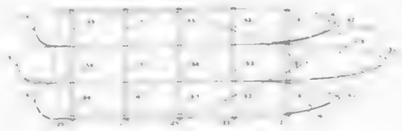
INFLATABLE AQUATIC VESSELS

John M. Palmer, Jr., P.O. Box 2171, Lutz, Fla. 33549

Continuation-in-part of Ser. No. 738,212, May 8, 1985, abandoned. This application May 15, 1986, Ser. No. 863,610

Int. Cl.⁴ B63B *7/08*

U.S. Cl. 114—39.1 **10 Claims**



1. An aquatic vessel having a plurality of hull members,

each such hull member comprising an inflatable envelope,

each such envelope having a plurality of open-ended sleeve members transecting it,

each such sleeve member being sealed at its ends to the walls of the envelope and thereby sealing off the envelope from the exterior,

a plurality of tie members, and

rigid framework adapted to receive and attach to the tie members,

assembled according to the method comprising the steps of

inserting the tie members through such framework and through such sleeve members,

each of such tie members transecting sleeve members in a plurality of such envelopes, and

attaching such framework to such tie members between adjacent hull members.

4,762,079

TRIM TAB ACTUATOR FOR MARINE PROPULSION DEVICE

Toshio Takeuchi, and Shinya Atsumi, both of Hamamatsu, Japan, assignors to Shanin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Apr. 1, 1987, Ser. No. 33,403

Claims priority, application Japan, Apr. 1, 1986, 61-72590

Int. Cl.⁴ B63H *25/00*

U.S. Cl. 114—152 **15 Claims**



1. In a marine outboard drive comprising propulsion means, said propulsion means being effective to generate a force tending to cause an associated watercraft to deviate from a preset course, and trim tab means journaled upon said outboard drive and pivotal to positions for generating a hydrodynamic force upon movement of the watercraft for resisting course deviations caused by the force generated by said propulsion means, the improvement comprising means for measuring a watercraft running condition tending to effect said course deviations, memory means for storing information as to the desired positions of said trim tab means for the measured watercraft running condition, and means for steering said trim tab means in the desired position for the measured running condition

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4,762,080

CONSUMABLE REPLACEABLE BOW GUARD

Bruce E. Pearson, P.O. Box 1445, Prescott, Ariz. 86302

Filed Apr. 30, 1987, Ser. No. 44,949

Int. Cl.⁴ B63B *59/02*

U.S. Cl. 114—219 **3 Claims**

1. A universal type, marinhibiting, removable ablative bow guard system for protecting different boat bow structures having different sizes which reside within a defined range of sizes and for altering the hydrodynamic flow of water over said boat bow structures, said bow structurs each having a pair of outer walls at an acute angle with respect to one another and terminating in generally V-shaped relationship at a fixed leading edge having an arcuate convex longitudinal lower portion with a defined, fixed curvature, said lower portion contacting, moving over and being abraded by the ground when said boat is moved onto a beach, said bow guard system including

(a) an elongate V-shaped deformable consumable ablative bow guard strip having a pair of elongate panel shaped arm members terminating at an edge, said arm members being shaped and dimensioned and deformable toward and away from one another, said bow guard being deformable along its longitudinal length to alter the longitudinal curvature of said bow guard, said bow guard, by virtue of deformation of said arm members and said bow guard along its longitudinal length, being shaped and dimensioned to conform to and cover, without actually



extending from said leading edge over said walls, the fixed leading edge of any boat bow lower portion characterized by said defined range of sizes; and,

(b) a layer of non-water soluble adhesive removably securing said bow guard arm members to said lower portion of said fixed leading edge to alter hydrodynamic flow of water over said lower portion, portions of said bow guard being torn away when said boat bow is moved onto a beach to minimize frictional forces between the beach and bow guard.

4,762,081

PLATFORM BRACKET

Stuart J. Porter, 2181 Mill Rd., Novato, Calif. 94947

Continuation-in-part of Ser. No. 924,804, Oct. 30, 1986. This application Mar. 5, 1987, Ser. No. 21,990

Int. Cl.⁴ B63B *17/00*

U.S. Cl. 114—364 **4 Claims**



1. A platform bracket for supporting a swim board from a boat transom comprising:

a transom plate member for attachment to a transom;

a receiver member having a longitudinal axis, and connected to said transom plate member so that said receiver member's axis is generally parallel to said transom plate member;

a support plate member for attachment to a swim board;

a post member having a longitudinal axis, said post member connected to said support plate member so that said post member's axis is generally perpendicular to said support plate member, wherein said post member is insertable within said receiver member so that said support plate member is supported in a generally horizontal orientation; and

a locking mechanism to secure said post member within said receiver member.

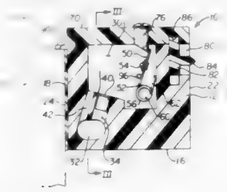
VOL 1093 ISS 2 AUG 9 1988 UMI

4,762,082

ALARM DEVICE

Edward E. Suchevits, 114 Mayflower Dr., Uniontown, Pa. 15401

Continuation-in-part of Ser. No. 8,583, Jan. 29, 1987, abandoned. This application Dec. 7, 1987, Ser. No. 129,668
Int. Cl.[4] G08B *13/08*
U.S. Cl. 116—87 10 Claims



1. An alarm device, comprising:
a generally boxed-shaped housing having an opened first end section and an opposite closed second end section, and having a first side section shaped to engage a generally first planar surface and an opposed second side section;
said housing defining a first chamber therein open at one end thereof and in communication with said first end section of said housing, and closed at its other end;
said housing defining a second chamber located in said second end section thereof and having at least one of its ends open;
said housing having at least one passageway communicating between said first chamber and said second chamber;
said housing defining at least one open channel communicating between said first and second chambers;
detonatable gas generator means received in said passageway;
firing mechanism means supported by said housing within said first chamber for impressing a detonating force on said gas generator means; and
closure means slideably supported by said housing arranged to engage a generally second planar surface coplanar with said first planar surface and adjacent said first side section of said housing for closing said one end of said first chamber and for holding said firing mechanism means against striking said gas generator means and for releasing said firing mechanism means when said closure means is moved a predetermined distance from said first planar surface.

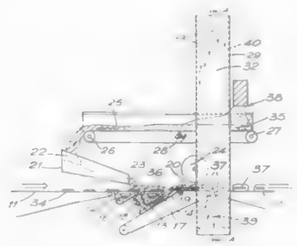
4,762,083

COATING OF FOODSTUFFS

Lars G. A. Wadell, Aastorp, Sweden, assignor to Nestec S.A., Vevey, Switzerland

Filed Dec. 3, 1986, Ser. No. 937,236
Claims priority, application European Pat. Off., Jan. 23, 1986, [redacted]100864.7
Int. Cl.[4] B05C *19/00*
U.S. Cl. 118—16 11 Claims

1. An apparatus for coating a foodstuff with particulate material comprising:
a drum capable of rotating about a substantially horizontal longitudinal axis;
a first horizontal conveyor adapted to travel through the drum;
a second horizontal conveyor below the first conveyor, adapted to travel in a direction opposite the first conveyor, the second conveyor comprising at least first, second and third successive endless belts each having a horizontal upper run and a gap between each successive pair of belts, the second belt having an inclined portion extending to a position below the first belt, the gap between the second and third belts being situated within the drum;
means for feeding particulate material onto the first conveyor; and
means for feeding a foodstuff onto the first belt;
such that in operation, particulate material is fed from the first conveyor onto the foodstuff on the first belt for coating the foodstuff on an upper side, the coated foodstuff is transported to the second belt with excess particulate material falling off the first belt onto the inclined portion of the second belt and is



conveyed to the horizontal upper run of the second belt to form a layer on which the coated foodstuff lies after being transported from the first belt to the horizontal upper run of the second belt for coating the foodstuff on a bottom side, the coated foodstuff is fed to the third belt with further particulate material falling through the gap between the second and third belts onto an inside wall of the drum which rotates for conveying the further material to a position above the first conveyor upon which the further material falls by gravity, and the first conveyor transports the further material back to the second conveyor.

4,762,084

FISH BREEDING NET

Steen Stissing, Stouby, Denmark, assignor to Stissing Havbrugsartikler APS, Denmark

PCT No. PCT/DK86/00072, § 371 Date Feb. 17, 1987, § 102(e) Date Feb. 17, 1987, PCT Pub. No. WO86/07524, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 20, 1986, Ser. No. 30,828
Claims priority, application Denmark, Jun. 21, 1985, 2817/85
Int. Cl.[4] A01K *61/00*
U.S. Cl. 119—3 5 Claims



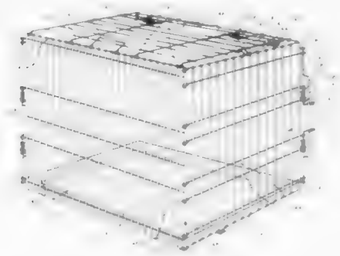
1. A fish breeding net for fish farms comprising:
a net formed with side surfaces which when the net is deployed slope downwardly to an open origin,
a net well having an opening at its upper end which is attached to and projects below the open origin of the deployed net surface into which infirm fish enter through the net well opening and accumulate,
a reinforced edge ring surrounding the net well opening, and
means connected to said net well edge ring for pulling said net well up to the water surface while leaving active areas of the net below the water surface.

4,762,085

COLLAPSIBLE WIRE CAGE

Vladimir J. Ondrasik, 11215 S. Wilmington, Los Angeles, Calif. 90059

Filed Nov. 24, 1986, Ser. No. 934,465
Int. Cl.[4] A01K *31/00*
U.S. Cl. 119—17 12 Claims



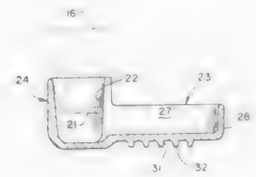
1. A collapsible wire cage comprising:
two pairs of opposed walls defining an open-ended enclosure, each wall of one pair being collapsible and being pivotally connected at its opposite side edges to adjacent side edges of the other pair of walls;
a pair of end walls for closing the opposite ends of the enclosure, one of the end walls being pivoted at one edge to one of the walls of said other pair and the other end wall being pivoted at the opposite edge to the other wall of said other pair, each end wall having releasable fastener means for releasably securing it to the wall of said other pair opposite the wall to which the end wall is secured;
the collapsible walls each comprising at least two panel sections and pivot means for pivotally connecting said panel sections about a pivot axis extending between said opposite ends of said enclosure, said pivot means comprising means for allowing pivotal movement of said sections between an open position in which they are substantially flat and co-planar and a collapsed position in which they are folded inwardly relative to said enclosure into a face to face engagement to one another to allow said other pair of walls to be moved towards one another to collapse said cage; and
each of said collapsible walls further including releaseable securing means for releaseably securing the respective collapsible wall in said open position.

4,762,086

WATER FOUNT FOR ANIMAL CAGES

Frank W. Atchley, 461 Walnut St., Napa, Calif. 94559

Filed Mar. 31, 1986, Ser. No. 847,588
Int. Cl.[4] A01K *7/00*
U.S. Cl. 119—18 4 Claims



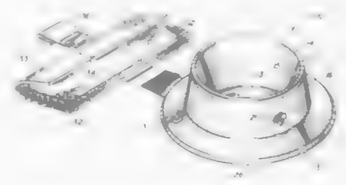
1. A fount assembly for delivering water or other flowable substance to an animal cage having a wall with an opening therethrough, including; a fount member having a trough portion disposed to extend through said wall opening;
said fount member including means for engaging reservoir bottles having a wide range of heights, diameters, and mouth sizes and configurations, said means for engaging including a bottle engaging portion having an upwardly opening passage disposed exteriorly of the cage wall and adapted to receive the mouth of an inverted bottle, said passage having a progressively diminishing diameter in the downward direction to accommodate and frictionally retain bottle mouths of various diameters, said trough portion communicating with said upwardly opening passage;
said means for engaging further including more than two teeth extending downwardly from said trough portion and disposed to engage a lower edge of the opening in the cage wall, said teeth spaced longitudinally along said trough portion at successively greater distances from said bottle engaging portion to permit insertion of said trough portion into the cage wall opening to a selective extent to accommodate bottles of various diameters supported in said bottle engaging portion exteriorly of the cage wall; and
a length of flexible resilient material adapted to extend around a portion of the bottle above said fount member and having opposite ends adopted to be attached to the exterior of the cage wall at opposite sides of the bottle to retain the upper portion of the inverted bottle to the cage wall.

4,762,087

PET FEEDING UTENSIL

Daniel C. Heinecke, 180 E. Vista Del Cerro, Tempe, Ariz. 85281

Filed Nov. 17, 1986, Ser. No. 931,088
Int. Cl.[4] A01K *5/01*
U.S. Cl. 119—61 8 Claims



1. A pet feeding utensil comprising a dish-shaped receptacle, said receptacle being constructed of pliable sheet material and having one layer forming a bottom wall thereof and inner and outer layers forming the side wall of the receptacle, said inner and outer layers being joined at their uppermost edges and diverging from each other toward their lower edges which are joined to said bottom wall layer to define a containment area therebetween, having a decreasing volume from said uppermost edges toward said bottom wall, said inner and outer layers in combination with said bottom wall to provide a space therebetween which is generally triangular in cross-section, and means in one of said layers for admitting air under pressure to said space to cause the side wall of the receptacle to become erect and for expelling air from said space to permit the side wall to be collapsed, and said side wall remains erect as the contents of the utensil are consumed.

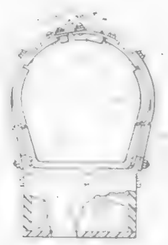
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,088

RELEASE MECHANISM FOR ANIMAL TELEMETRY AND DATA ACQUISITION DEVICES

Richard C. Chapman, and Michael E. Hamerly, both of Brooklyn Park, Minn., assignors to CompuCap, Inc., Brooklyn Park, Minn.

Continuation-in-part of Ser. No. 897,129, Aug. 15, 1986, abandoned. This application Aug. 3, 1987, Ser. No. 80,771
Int. Cl.[4] A01K *1/06*
U.S. Cl. 119—106 11 Claims



1. For use in combination with an animal supported retrievable telemetry package held on the animal with strap segments and having means for initiating various actions, the improvement comprising:

an actuable separation device for holding the strap segments together and for separating in response to the action initiating means to permit the strap segments to also separate comprising first and second members; a first member being attachable to a first strap segment, and a second member being attached to a second strap segment;

each of the members having complementary interfitting lugs that overlap each other, each of the overlapping lugs having a bore aligning with a bore in another interfitting lug;

a pin mounted in one of the bores and extending into the bore of an adjacent interfitting lug, the pin being movable in the other bore a sufficient distance to move to a position completely out of the one bore, thereby removing any connection between the two lugs; and

a pyrotechnic device capable of generating a propelling gas positioned in the one bore on an end of the pin opposite from the other bore, the pyrotechnic device including means for detonating the pyrotechnic device with a remote signal, so that upon actuation the pin will be propelled to move the sufficient distance.

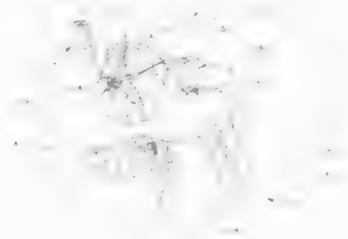
4,762,089

HORSE-GROOMING TETHER DEVICE AND IMPROVED HORSE GROOMING STALL

Robert A. McNulty, Carthage, N.C., assignor to Adrian De Pasquale, Pinehurst, N.C., a part interest

Filed Dec. 9, 1985, Ser. No. 806,665
Int. Cl.[4] A01K *1/06*
U.S. Cl. 119—109 6 Claims

1. An improved horse grooming stall comprising a pair of laterally spaced upstanding side walls and a pair of tether means respectively mounted on said side walls in facing relation to one another, each said tether means comprising spool means having a length of a retaining strap retractably wound thereon for winding and unwinding of said strap and latch means at the free end of said strap for latching engagement to a halter on a horse, said pair of tether means being adapted for selective unwinding of their said straps and engagement of their said latch means respectively to opposite sides of a halter on a horse positioned between said side walls, each said spool means including means for selectively locking releasably said spool in selected unwound positions with a desired length of said strap extended outwardly from said spool to resist unintended rewinding of said strap in each said unwound position in response to movements of the horse while permitting further



unwinding of said strap to safely accommodate a limited range of movement of the horse for retaining the horse essentially stationary for grooming without risk of injury to the horse.

4,762,090

MEANS AND METHOD FOR CONTROLLING LOAD TURNDOWN IN A FLUIDIZED BED COMBUSTER

Robert C. Brown, and William H. Buttermore, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jul. 15, 1986, Ser. No. 907,110
Int. Cl.[4] B09B *3/00*
U.S. Cl. 122—4 D 11 Claims



1. A method of controlling the rate of heat-transfer or load turndown between a fluidized bed combustor and a load comprising a chamber having a fluid and utilizing the heat transferred from the fluidized bed combustor comprising the steps of:

combusting fuel in a fluidized combustion bed;

interposing between the load and the fluidized combustion bed a separately fluidized heat transfer bed that is free of combustion; and

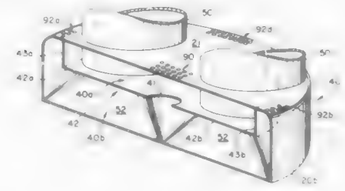
adjusting the fluidization of the heat transfer bed to control the rate of heat transfer or load turndown between the fluidized bed combustor and the load.

4,762,091

SLUDGE TRAP WITH INTERNAL BAFFLES FOR USE IN NUCLEAR STEAM GENERATOR

Allen C. Smith, Jr., Bethel Park, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 677,767, Dec. 3, 1984, Pat. No. 4,649,868. This application May 12, 1986, Ser. No. 862,331
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.[4] F22B *37/54*
U.S. Cl. 122—32 5 Claims



1. A sludge trap for a vertically oriented steam generator having a flow path therein through which a secondary liquid supplied to the generator flows, for heating and conversion to a vapor which is discharged from the generator, and including means for separating liquid entrained in the vapor prior to discharge of the vapor and means for collecting the separated liquid, and for mixing the separated liquid with other secondary liquid in the generator for recirculation thereof through the flow path, said sludge trap receiving a portion of said collected, separated liquid prior to mixing thereof with other secondary liquid for recirculation, and comprising:

a generally cylindrical sidewall having upper and lower ends; and

upper and lower enclosures integrally joined to the respective upper and lower ends of said cylindrical sidewall, said upper enclosure including a centrally disposed inlet port for receiving therethrough said portion of said collected and separated liquid, and plural output ports disposed adjacent the periphery thereof through which the received liquid exits from said sludge trap; and

baffle means disposed generally horizontally within said sludge trap intermediate said upper and lower enclosures thereof, for defining plural laminar flow path chambers within said sludge trap communicating between said inlet and outlet ports, each said chamber defining a reduced vertical settling distance for particulate matter entrained in said received secondary liquid and a diverging cross-sectional flow path area in proceeding toward said outlet ports, said baffle means distributing secondary liquid received through said inlet port proportionately into said plural laminar flow path chambers.

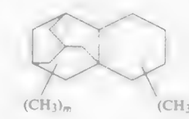
4,762,092

HIGH-DENSITY LIQUID FUEL

Hitoshi Yuasa; Mitsuo Matsuno, and Tetsuo Satoh, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Japan

Filed Feb. 24, 1987, Ser. No. 17,736
Claims priority, application Japan, Feb. 24, 1986, 61-38506
Int. Cl.[4] F02B *75/12*; C10L *1/16*
U.S. Cl. 123—1 A 6 Claims

1. A method of operating an engine by combusting a fuel oil therein, said fuel oil comprising a hydrocarbon, the improvement which comprises employing a fuel oil containing a tetracyclo (7. 3. 1. $0^{2,7}$. $1^{7,11}$) tetradecane derivative represented by the general formula:



(I)

wherein each of m and n is 0, 1 or 2, and the sum of m and n is 2 or less.

4,762,093

COMPACT CATALYTIC DISSOCIATOR SYSTEM FOR COLD STARTING METHANOL-FUELED CARS

Robert W. McCabe, Lathrup Village; David F. McCready, Clinton Township, Macomb County; Philip V. Mohan, Birmingham, and Robert A. Potter, Warren, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1987, Ser. No. 37,011
Int. Cl.[4] F02B *43/08*
U.S. Cl. 123—3 3 Claims



1. A method for starting a spark-ignited methanol-fueled engine at low ambient temperatures comprising

forming atomized droplets of methanol and introducing them into a stream of ambient air to form an air-methanol mixture,

passing the stream into contact with a catalyst that promotes both the oxidation and dissociation of methanol, the proportion of methanol to air initially being adjusted to promote oxidation to heat the catalyst to a temperature promoting dissociation and the proportion then being increased to provide methanol for dissociation productive of hydrogen and carbon monoxide, and

introducing said hydrogen and carbon monoxide into the engine as a fuel for engine start-up.

4,762,094

VALVE GEAR FOR FOUR-CYCLE ENGINE

Tetsuzo Fujikawa, Kobe; Makizo Hirata; Shinichi Tamba, both of Kakogawa, and Yoshiro Yamane, Akashi, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 6, 1987, Ser. No. 82,286
Claims priority, application Japan, Aug. 8, 1986, 61-187092
Int. Cl.[4] F01L *1/04*
U.S. Cl. 123—90.6 2 Claims

1. A valve gear for a four-cycle engine comprising:

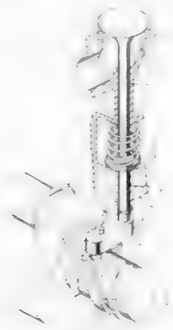
a groove having such a shape folding around a crank shaft with an intersection as to return back to a starting point in two turns,

a cam formed on top faces of both banks of the aforesaid groove,

a tappet arm projecting sideways from a tappet and elastically engaged with said cam, and

VOL 1093 ISS 2 AG 9 1988 UMI

a slider supported by said tappet arm and slidably fitted into the aforesaid groove, and



said tappet arm guided by the aforesaid slider to be given a lift by said cam provided on the outer circumference of the crank shaft.

4,762,095

DEVICE FOR ACTUATING A FUEL-EXCHANGE POPPET VALVE OF A RECIPROCATING INTERNAL-COMBUSTION ENGINE

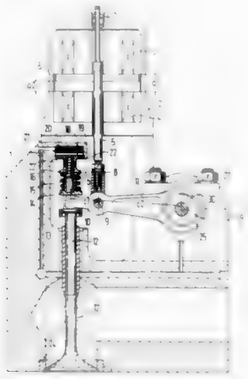
Hans Mezger, Freiberg; Reinhard Könneker, Mönsheim, and Hans-Joachim Esch, Heimsheim, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 18, 1987, Ser. No. 50,391

Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616540

Int. Cl.[4] F01L *9/04*

U.S. Cl. 123—90.11 18 Claims



18. A device for actuating a fuel-exchange poppet valve of a reciprocating combustion engine, comprising:

a pivotable valve control lever having a first movable portion engageable with a poppet valve shaft of a poppet valve to move the poppet valve between open and closed positions in response to pivotal movement of the valve control lever about its bearing center;

movable armature means connected to a second portion of the valve control lever;

electromagnetic means for selectively moving the armature means to thereby forcibly pivotably move the valve control lever between respective open and closed positions of the poppet valve; and

torsion bar spring means connected to the valve control lever for resiliently resisting movement of the valve control lever toward the respective open and closed positions of the poppet valve;

wherein the first movable portion of the valve control lever is at a free end of the valve control lever, wherein the armature means is pivotally connected to the second position of the valve control lever by means of an armature pivotal connection disposed between the free end and a bearing center pivotal connection of the valve control lever at its opposite end, and wherein the torsion bar spring means has one portion fixed to the pivotal bearing center of the valve control lever and another portion fixed to a fixed vehicle engine part;

wherein the closing movement of the poppet valve is dampened by a hydraulic damping device; and

wherein the damping device includes a damping sleeve that is fastened at an end face on the poppet valve shaft, an oil-filled damping cylinder equipped with damping disks, an oil inlet bore, and throttling gaps.

4,762,096

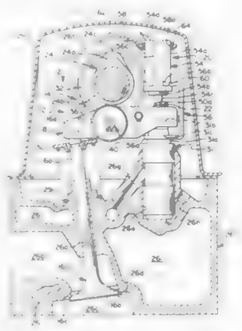
ENGINE VALVE CONTROL MECHANISM

Lawrence J. Kamm, San Diego, Calif.; Lawrence L. Meyer, Northville, and Erlen B. Walton, Farmington Hills, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 16, 1987, Ser. No. 97,235

Int. Cl.[4] F01L *1/34*

U.S. Cl. 123—90.16 19 Claims



1. A rocker arm including a rigid link (34) adapted to be pivotally supported at one end (34*a*) and to operate a device (16) at the other end (34*b*) in response to rotation of a cam lobe (24*c*) projecting radially outward of a base circle surface (24*b*) of a camshaft (24) effecting pivotal movement of the link (34) by engaging a cam follower (38) operative to transmit displacement of the cam lobe (24*c*) to the link (34), the cam follower (38) being mounted (40) on the link between the ends (34*a*, 34*b*) and being selectively movable relative to the link between a first position wherein the cam lobe displacement is transmitted to the link and a second position wherein the cam lobe displacement is not transmitted to the link, the improvement comprising:

roller follower means (36) mounted on the link (34) at a position axially adjacent the cam follower (38) relative to the axis of the camshaft, said roller follower having an outer cylindrical surface adapted to engage the base circle surface (24*b*) of the camshaft (24) and to maintain a clearance between the cam follower (38) and the base circle surface (24*b*).

4,762,097

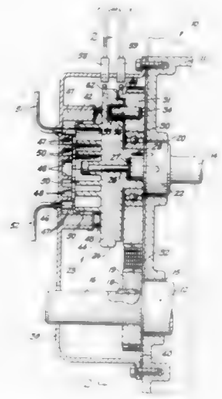
ENGINE WITH HYDRAULICALLY VARIABLE CAM TIMING

Steven F. Baker, Bellevue, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 29, 1986, Ser. No. 946,992

Int. Cl.[4] F01L *1/34*

U.S. Cl. 123—90.31 4 Claims



1. Cam timing control means in combination with an internal combustion engine having a housing supporting a rotatable output member, a cam, and drive means between the output member and the cam to drive the cam at a rotational speed related to that of the output member, said cam timing control means comprising

a drive member and a driven member forming a part of the drive means, said drive member being positively connected with the output member for direct rotation therewith and said driven member being positively connected with the cam for direct rotation therewith,

resileintly yieldable means drivably connecting the drive and driven members and resiliently yieldable in response to variable drive resisting torque applied to the driven member to allow proportional retarding of the phase relation of the cam with respect to the output member, and

fluid coupling means operatively connected between the driven member and the housing and controllable to apply a variable fluid drag on the driven member to create variable amounts of drive resisting torque for the control of cam timing.

4,762,098

LUBRICATING DEVICE FOR OVERHEAD VALVE ENGINE

Shinichi Tamba, Kakogawa; Hitoshi Yamamoto, Kako, and Akihito Shimizu, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Jul. 29, 1987, Ser. No. 79,028

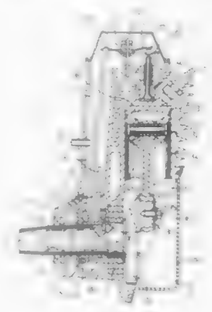
Claims priority, application Japan, Aug. 8, 1986, 61-187091

Int. Cl.[4] F01M *1/06*

U.S. Cl. 123—90.33 4 Claims

1. A lubricating device for an overhead valve engine having a rocker arm chamber provided with a valve gear, a crank chamber provided with a valve driving gear, and valve drive push rods disposed between the valve gear and the valve driving gear, comprising:

paths respectively communicating said crank chamber to said rocker arm chamber, said rocker arm chamber to said push rod chamber, and the bottom of said push rod chamber to said crank chamber through a bearing portion on a power takeoff side.



4,762,099

VALVE ACTUATING DEVICE OF FOUR-CYCLE INTERNAL COMBUSTION ENGINE

Noriaki Fujii; Takeshi Iwata; Toshihiro Oikawa, and Naoki Takahara, all of Wako, Japan, assignors to Honda Giken Koygo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,497

Claims priority, application Japan, Jul. 8, 1986, 61-160358; Jul. 9, 1986, 61-162862

Int. Cl.[4] F01L *1/18*

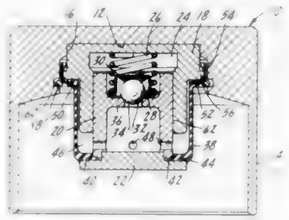
U.S. Cl. 123—90.44 14 Claims



1. A valve actuating device of a four-cycle internal combustion engine, comprising a valve actuating cam shaft having a valve actuating cam thereon and a rocker arm, wherein a cam holder block for carrying said cam shaft is fixed to a body of the engine and an adjusting bolt is held on the cam holder block in a manner that said bolt is adjustable relative to its position to the cam holder block, said adjusting bolt being integrally formed at one end thereof with a pivot portion, said rocker arm being rockably carried on said pivot portion and being operatively connected with said valve actuating cam on the valve actuating cam shaft, said rocker arm having a free end which is in direct operative connection with an opening and closing valve.

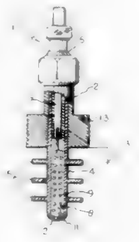
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,100
INVERTED BUCKET TAPPET WITH IMPROVED SEAL AND VALVE STEM PAD
Steven J. Kowal, Prospect Heights, Ill., assignor to Stanadyne, Inc., Windsor, Conn.
Filed Nov. 10, 1986, Ser. No. 928,556
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.58 6 Claims



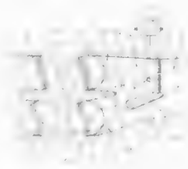
1. A self-contained lash adjuster including a generally cylindrical cup-shaped follower having an end face, a lash adjuster cartridge assembly within said follower,
said cartridge assembly including a body positioned against said follower end face and a reciprocally movable plunger within said body, a high pressure chamber between said plunger and body, a plunger passage opening into said high pressure chamber, a check valve controlling fluid flow through said plunger passage,
said plunger having an open end spaced from said high pressure chamber, a valve stem pad closing said plunger open end,
and an annular expandable seal member extending about said cartridge assembly and attached at one end to said body and at the other end to said plunger and extending in part and compressed between said plunger and valve stem pad, said seal member defining a reservoir exteriorly of said cartridge assembly, said plunger having openings therein in communication with said reservoir.

4,762,101
GLOW PLUG
John Manolis, P.O. Box 380, New York, N.Y. 10028
Filed Dec. 4, 1987, Ser. No. 128,906
Int. Cl.[4] F02P *19/02*
U.S. Cl. 123—145 A 5 Claims



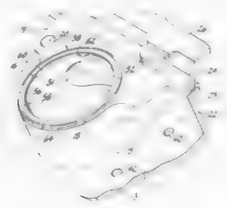
1. A super heating type glow plug comprising:
(i) a base portion having a fixing portion formed on an outer wall thereof and a terminal insulatedly provided therein and connected to an electrical source;
(ii) a plurality of heating means fins outwardly extending projections radially mounted on the outer wall of the base portion of the super heating glow plug;
(iii) a heater means integrally connected to the said base portion, having heating surface and heating fins formed on a wall surface thereof and composed of a catalyst a transition metal, and
(iv) a heating means comprising a resistive exothermic element connected to the terminal of said base portion, the resistive exothermic element being provided adjacent to the heating surface within the heating means, whereby fuel may be heated, ignited and burned as a whole by said heading fins.

4,762,102
INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE
Mutsumi Kanda, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan
Filed Sep. 30, 1987, Ser. No. 102,678
Claims priority, application Japan, Nov. 4, 1986, 61-168163[U]
Int. Cl.[4] F02B *31/00*; F02F *1/42*
U.S. Cl. 123—188 M 8 Claims



1. An intake device of an internal combustion engine having at least one cylinder equipped with a first intake valve and a second intake valve, which are arranged adjacent to each other, said intake device comprising:
an intake passage which is common to said first intake valve and said second intake valve;
a dividing wall extending in said intake passage from a position between said first intake valve and said second intake valve towards a point upstream of said intake passage and dividing said intake passage into a first straight passage and a second straight passage, said dividing wall having an upstream end which is furthest from both said first intake valve and said second intake valve;
a separating wall projecting downward from an upper wall of said intake passage and having a bottom wall which is spaced from a bottom wall of said intake passage, said separating wall extending in said intake passage from a position upstream of said upstream end of said dividing wall towards a point upstream of said intake passage along an axis of said first straight passage;
valve means arranged between said separating wall and a side wall of said intake passage, which is located on said second straight passage side, and
actuating means actuating said valve means in response to a load of the engine to open said valve means when the load of the engine is higher than a predetermined load and close said valve means when the load of the engine is lower than said predetermined load.

4,762,103
ENGINE WITH SEALING HEAD SEAT RING
Julius F. Koch, Jr., Elmhurst, Ill., assignor to General Motors Corporation, Detroit, Mich.
Continuation of Ser. No. 899,988, Aug. 25, 1986, abandoned.
This application Nov. 13, 1987, Ser. No. 122,549
Int. Cl.[4] F01M *1/00*
U.S. Cl. 123—193 CH 10 Claims



1. In combination in a diesel engine,
a crankcase having a cylinder bank disposed at a substantial angle from vertical and supporting at least one cylinder head retainer with an annular upper surface sloping upwardly toward an edge at one side of the cylinder bank, a longitudinal wall extending inwardly and upwardly from adjacent said one side of the upper surface, and an exhaust passage opening into the head retainer on said one side, below said edge of the annular upper surface and the longitudinal wall,
a cylinder head received in said retainer and including an exhaust outlet opening aligned within the head retainer with the crankcase exhaust passage and a radially extending flange having an annular lower surface above and in closely opposed relation to the retainer annular upper surface,
oil lubricated mechanism disposed above the cylinder head and said longitudinal wall of the crankcase, and
an annular metallic seat ring having annular lower and upper faces between and engaging the upper surface of the head retainer and the lower surface of the head flange to limit the wear thereof and seal the gap between them, wherein the improvement comprises
a resilient seal portion on the seat ring outer periphery and including upper and lower annular beads respectively engaging in assembly the lower surface of the cylinder head flange and the upper surface of the head retainer to maintain a seal against the entry of lubricating oil into the interior of the head retainer and the exhaust passage even though adjacent metallic portions of the seat ring become worn in service.

4,762,104
TJ-JET CHAMBER OF GASOLINE ENGINE
Liu Yonjun; Shang Xiujing; Liu Yinlong; Wan Shixiong, and Liu Jieping, all of Tianjin, China, assignors to Tianjin University, Tianjin, China
Filed Oct. 23, 1985, Ser. No. 790,441
Int. Cl.[4] F02B *19/18*
U.S. Cl. 123—293 3 Claims

1. A cylinder head assembly for an internal combustion engine having at least one piston mounted for reciprocation within a cylinder space defined in an engine block, the cylinder space having a clearance space, comprising:
a cylinder head having a planar lower surface which is adapted to be mounted to an engine block, and having an internal combustion chamber defined therein which opens out directly into the clearance space, the shape of said chamber being substantially cylindrical, with a slight inward taper toward a lower end thereof, said chamber accounting for at least 85% of the total combined volume of the chamber and cylinder space, and further defining an axially extending jet hole bore which extends from said clearance space to said combustion chamber, an upper end of said bore being opposite an exhaust valve and a lower end being remote from an axially extending spark plug bore defined in said cylinder head that extends from the combustion chamber to an outer surface of the cylinder head;
intake valve means mounted in said cylinder head;
exhaust valve means mounted in said cylinder head parallel to said intake valve means for exhausting hot gases from the combustion chamber after combustion; and



a spark plug mounted in said spark plug bore;
whereby a flame ignited by said spark plug in the combustion chamber is bifurcated into separate paths of travel to the clearance space; a first path thrugh where the combustion chamber opens out in the clearance space and a second path through the jet hole, whereby the separate flame fronts may violently collide in the clearance space, thereby providing more complete combustion and higher engine efficiency.

4,762,105
CONTROL SYSTEM FOR AN EXTRINSIC-IGNITION INTERNAL COMBUSTION ENGINE RESPONSIVE TO AN ENGINE LOAD SIGNAL PROVIDED TO DUAL CONTROL UNITS
Hans-Ernst Beyer, Oberriexingen; Jörg Bonitz, Mühlacker; Robert Entenmann, Benningen; Siegmar Förster, Schwieberdingen; Rochus Knäb, Korwestheim; Walter Künzel, Ludwigsburg; Wolfgang Kugler, Vaihingen/Enz; Alfred Mahlberg, Freiberg; Bernhard Miller; Matthias Philipp, both of Stuttgart; Siegfried Rohde, Schwieberdingen; Stefan Unland, Ludwigsburg; Walter Viess, Schwieberdingen; Herbert Winter, Stuttgart, and Jürgen Zimmermann, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 10, 1986, Ser. No. 850,149
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1985, 3513086
Int. Cl.[4] F02P *5/15*
U.S. Cl. 123—417 77 Claims



1. Multipurpose control system for an internal combustion

VOL 1093 ISS 2 AG 9 1988 UMI

engine including a first control unit for a control funtion other than ignition timing and a second control unit for extrinsic ignition timing control, both said first and second control units requiring an input signal representative of engine load and an input signal representative of engine rotary speed, among signals representative of respective aspects of engine operation that may be utilized in a said control unit, said first control unit requiring said signal representive of engine load to be provided to said first control unit in the form of a measure of air quantity sucked into conbustion chambers of said engine, said control system comprising, in addition to said first and second control units:

means (**29**, **15***b*) responsive to said second control unit (**18**) for producing timed ignition in said engine (**10**) under timing control by said first control unit;

means (**18***a*) responsive to said first control unit (**17**) for controlling a variable engine-operation parameter of said engine (**10**) other than ignition timing, under control of said second control unit;

means (**12**) for measuring air quantity sucked into combustion chambers of said engine for providing an engine load output signal (**2**) to at least said first control unit (**17**);

means in said second control unit for modifying said output signal of said air quantity measuring means, said second control unit comprising a microcomputer (**45–53**) having a central processing unit (**50**) and permanent (**51**) and temporary ([S]52) data storage means and also including said signal modifying means in the form of program controlled computation capability utilizing stored program and data for modification of said output signal of said air quantity measuring means, said output of said air quantity measuring means being connected to an input of said second control unit for modification thereof by said modifying means before use in further processing by said second control unit for ignition timing control.

4,762,106

ARRANGEMENT FOR THE GENERATION OF A TRIGGER PULSE FOR THE IGNITION OF FUEL IN AN INTERNAL COMBUSTION ENGINE

Reinhold Blauhut, Werdohl, Fed. Rep. of Germany, assignor to Atlas Fahrzeugtechnik GmbH, Werdohl, Fed. Rep. of Germany

Filed Jun. 21, 1985, Ser. No. 747,263
Claims priority, application Austria, Jul. 2, 1984, 2131/84
Int. Cl.[4] F02P *5/15*
U.S. Cl. 123—425 3 Claims



1. An arrangement for controlling the time at which an ignition signal is applied to a sparkplug in an internal combustion engine based on a peak value of an ionic current in at least one combustion chamber for a reciprocable piston, comprising:

(a) a tooth pulse sensor responsive to the teeth of a starter gear rim operatively coupled to the engine crankshaft for generating tooth pulses proportional to the angular displacement of the crankshaft;

(b) a reference pulse sensor responsive to a reference marking on said starter gear rim for generating one reference pulse per crankshaft revolution at a predetermined position out of line with the top dead center position of the piston;

(c) a counter having a reset input, a counting input and an inhibit input, said reset input being connected to said reference pulse sensor, said counting input being connected to said tooth pulse sensor, and said inhibiting input being connected to a peak value circuit means;

(d) peak value circuit means for determining the peak value of the ionic current in a combustion chamber which corresponds to peak combustion chamber pressure by evaluating the current flowing through the ignition sparkplug and generating an inhibiting signal to said inhibiting input when said peak value of said ionic current is reached, including the ignition sparkplug and means for supplying a positive measuring voltage to the sparkplug;

(e) a comparator circuit for comparing the count of the counter with a desired value supplied to the comparator circuit and providing a correction signal which indicates when the peak value of the ionic current is occurring with respect to a desired time; and

(f) a trigger circuit responsive to said correction signal for supplying a trigger signal so that said ignition signal is supplied to said sparkplug.

4,762,107

ELECTRONIC CONTROL DEVICE FOR OPERATING PARAMETERS

Günter Schöneck; Gerhard Stumpp, both of Stuttgart, and Wolf Wessel, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 295,047, Aug. 21, 1981, abandoned.
This application Dec. 2, 1983, Ser. No. 557,392
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032381
Int. Cl.[4] F02M *25/06;* F02D *35/00*
U.S. Cl. 123—478 17 Claims



1. An electronic control device for exhaust gas recirculation rate in an internal combustion engine having self ignition and having an injection nozzle and needle therein, comprising

electronic measuring means for producing a signal indicating the position of said needle in said injection nozzle,

electronic means for producing an actual injection duration signal dependent on said signal produced by said measuring means, and

electronic means for producing control variable signals dependent upon said actual injection duration signal for controlling said exhaust gas recirculation rate.

4,762,108

NON-LINEAR POSITION TRANSDUCER FOR DETECTING THE POSITION OF A VALVE CONTROLLING THE RATE OF FLOW OF AIR INDUCTED TO THE CYLINDERS OF A HEAT ENGINE

Roberto de Concini, Zola Predosa, Italy, assignor to Weber S.r.l., Turin, Italy

Filed Mar. 20, 1987, Ser. No. 28,315
Claims priority, application Italy, Mar. 21, 1986, 67226 A/86
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—488 7 Claims



1. A non-linear position transducer (**1**) for detecting the position of a valve (**7**) for controlling the rate of flow of air inducted to the cylinders of a heat engine (**9**), comprising first means (**5**) for detecting the position (α) of the said valve (**7**) and second means (**3,4**) coupled to the said first means (**5**) and operable to provide an electric output signal (V_2) in non-linear relation to the position (α) of the said valve (**7**), characterised by the fact that the said first and second means (**3,4,5**) comprise an electrical sensing circuit, said sensing circuit further comprising

a first and second resistor connected in parallel with each other and forming a first resistor pair, a first end of said resistor pair being connected to a voltage level,

a third and fourth resistor connected in parallel with each other and forming a second resistor pair, a first end of said second resistor pair being connected to a second voltage level different from said first voltage level,

the other ends of said resistor pairs being electrically connected together, said electrical output signal being present at said other ends of said resistor pairs,

wherein said second means comprises means for varying the resistive values of the first and third resistors inversely with respect to each other as a function of the valve position and

wherein said sensing circuit is constructed wholly from passive components.

4,762,109

DEVICE FOR AND METHOD OF AFFECTING CONTROL OF OPERATIONAL MAGNITUDES OF INTERNAL COMBUSTION ENGINES HAVING EXHAUST GAS CIRCULATION

Edmund Jeenicke, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE85/00316, § 371 Date Nov. 21, 1986, § 102(e) Date Nov. 21, 1986, PCT Pub. No. WO86/04645, PCT Pub. Date Aug. 14, 1986
PCT Filed Sep. 11, 1985, Ser. No. 930,406
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1985, 3503798
Int. Cl.[4] F02M *25/06*
U.S. Cl. 123—571 18 Claims

1. Method for influencing operational magnitudes of internal combustion engines inclusive of the rotary speed (n) and the intake pipe pressure used for determining the amount of fuel to be allocated to the engine and wherein a return of exhaust gases into an intake conduit of the internal combustion engine is provided, comprising the steps of measuring two values of the intake pipe pressure during successively switched on and switched off exhaust gas return and using the two pressure values to determine the actual value of the returned amount of exhaust gas or the amount of fuel to be allocated for the internal combustion engine.

4,762,110

IGNITION CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINE

Toshio Iwata, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 946,215
Claims priority, application Japan, Jan. 21, 1986, 61-12329; Jan. 22, 1986, 61-13080; Jan. 30, 1986, 61-20624
Int. Cl.[4] F02P *1/00*
U.S. Cl. 123—609 8 Claims



1. An ignition control device for an internal combustion engine, comprising:

(a) first means (1, 2) for producing a signal synchronized with an ignition timing interval of the engine;

VOL 1093 ISS 2 AG 9 1988 UMI

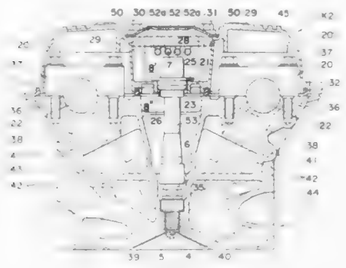
(b) second means (3, 4) responsive to said synchronized signal produced by said first means for producing a signal indicative of said ignition timing interval and a signal indicative of a time point at which an interval between successive ignition periods is divided into two sections with a predetermined ratio;
(c) third means (9) responsive to said ignition timing interval signal and said time point signal from said second means for producing a first signal within a period from a beginning of said ignition timing interval to said time point, and a second signal within a period from said time point to a beginning of a subsequent ignition timing interval;
(d) fourth means responsive to either of said first or second signals from said third means for establishing a start time of current supply to an ignition coil means, in dependence upon the establishment of a preceding current supply start time, to provide a current supply signal for said ignition coil means; and
(e) switching means responsive to said current supply signal from said fourth means for on-off controlling a current to said ignition coil means.

4,762,111

HEAD COVER ARRANGEMENT FOR DOUBLE OVERHEAD CAM TYPE ENGINE

Hiroyuki Hanafusa, Hiroshima; Fusatoshi Tanaka, Higashihiroshima; Hideo Nakayama, and Shuichi Nakatani, both of Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 24, 1986, Ser. No. 888,955
Claims priority, application Japan, Jul. 25, 1985, 60-114927[U]
Int. Cl.⁴ F02B *77/00*
U.S. Cl. 123—647 **15 Claims**



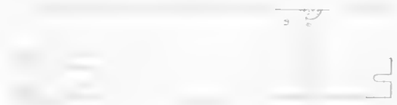
1. In a head cover arrangement for a double overhead cam type engine, including a head cover for covering two cam shafts provided, in parallel to each other, on a cylinder head such that a plurality of spark plugs are provided in a hollow defined, between said cam shafts, by an outer peripheral face of said head cover and an outer peripheral face of said cylinder head, the improvement comprising:
a boundary member for bounding the hollow so as to form a chamber for accommodating therein said spark plugs and a plurality of high-tension cords connected to said spark plugs, respectively; and a partition wall for dividing the chamber into an upper chamber and a lower chamber;
said boundary member including an upper member and a side member;
said upper member being mounted on said head cover and extending in an axial direction of said cam shafts so as to constitute a top wall of the chamber;
said side member being provided at one end of said upper member in the axial direction of said cam shafts so as to constitute a side wall of the chamber and being formed, at its edge portion abutting on said upper member, with a plurality of recesses for securing therein said high-tension cords, respectively such that said high-tension cords are drawn out of the chamber through the recesses, respectively, said partition wall being formed, at its positions aligned with said spark plugs provided in the hollow, with a plurality of bosses, said bosses each having a through-hole for passing each of said high-tension cords therethrough, said high-tension cords each having a sealing portion fitted into the through-hole such that the through-hole is sealed by said sealing portion.

4,762,112

METHOD FOR STRINGING A BOW LIMB

Richard Johnston, Tucson, Ariz., assignor to Precision Shooting Equipment Company, Tucson, Ariz.

Division of Ser. No. 742,421, Jun. 7, 1985, Pat. No. 4,660,537.
This application Jan. 27, 1987, Ser. No. 6,755
Int. Cl.⁴ F41B *5/00*
U.S. Cl. 124—86 **2 Claims**



1. A method of stringing a compound archery bow and wheel comprising,
providing a bow limb with a butt slot and an axle assembly mount having a pair of spaced fork members,
providing an axle receiving recess at lateral portions of the fork members,
assembling an axle assembly with a pair of cover plates which are removably secured to the axle,
positioning a wheel on the axle with at least one cover plate removed,
positioning the butt slot of the limb in a butt slot receiving area on an archery bow limb support,
stringing the wheel mounted on the axle assembly,
resecuring the axle cover plate and mounting the axle assembly on the axle assembly mount by engaging the cover plate to the fork member ends,
and stringing the bow normally,
whereby the tension force in the bow string by bending the limbs reinforcingly and self-energizingly secures both the limb to the butt slot receiving area and the wheel to the axle and axle mounting assembly.

4,762,113

SELF-HEATING CONTAINER

Masafumi Hamasaki, Tokorozawa, Japan, assignor to Chori Company, Ltd., Osaka; Fukubi Kagaku Kogyo Kabushiki Kaishi, Fukui and Hama Corporation Co., Ltd., Saitama, all of, Japan

Filed Jul. 28, 1987, Ser. No. 78,754
Claims priority, application Japan, Aug. 4, 1986, 61-118819[U]; Aug. 4, 1986, 61-118820[U]; Sep. 19, 1986, 61-142709[U]; Oct. 6, 1986, 61-152443[U]; Dec. 22, 1986, 61-303917; Jan. 29, 1987, 62-10680[U]
Int. Cl.⁴ F24J *1/00*
U.S. Cl. 126—263 **18 Claims**

1. A self-heating container comprising:
a body having an upper open end;
a cover for closing said body;
an inner container disposed in said body for containing foodstuff;
an elongated primary water bag filled with water and disposed between the bottom of said body and said inner container, said primary water bag having sealed ends held between the upper end of said body and said cover, and said primary water bag capable of being opened and removed from said body to thereby discharge the water into said body; and
an envelope disposed between said bottom of said body and said inner container and having permeability to water on at least the side facing said primary water bag, said envelope enclosing an exothermic reaction agent for generating heat by hydration and a secondary water bag filled with water, said secondary water bag being rupturable by the heat, whereby hydration caused by water discharged from said primary water bag generates heat to rupture said secondary water bag and continue the hydration.

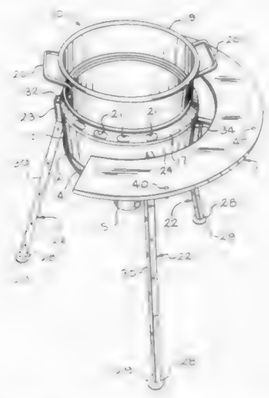


4,762,114

PORTABLE COOKING APPARATUS WITH A REMOVABLE WORK TABLE

William J. Blankemeyer, 813 E. 5th St., Ottawa, Ohio 45875

Filed Sep. 24, 1987, Ser. No. 100,417
Int. Cl.⁴ F24C *1/16*
U.S. Cl. 126—373 **3 Claims**



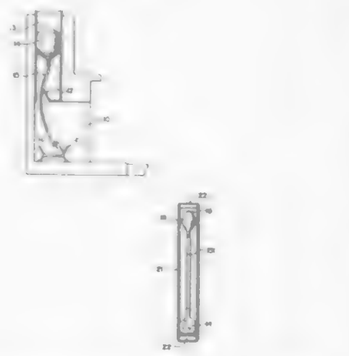
1. Portable cooking apparatus comprising a housing having an exterior surface, means on said housing for supporting a cooking vessel, means in said housing for heating a supported cooking vessel, at least three spaced tubular housing brackets attached to said exterior surface, said housing brackets each having a generally vertically directed opening extending therethrough with each bracket opening having open upper and lower ends, at least three tubular legs each having an open upper end and a lower end, said upper ends having a shape for telescoping into said lower housing bracket ends whereby said legs are removably attached to said housing, a work table, and means for removably attaching said work table to at least two of said housing brackets, said work table attaching means including at least two support brackets attached to said table, said support brackets each including an end which telescopes through a different upper housing bracket end and into an open upper end of a tubular leg within such housing bracket, whereby the supported portion of both the leg and the support bracket are coaxially located within the housing bracket.

4,762,115

DRAFT PLUGGING DEVICE FOR A CHIMNEY FLUE

Peter Penner, 19 Thornbury Crescent, Winnipeg Manitoba, Canada R2G 3B2

Filed Aug. 3, 1987, Ser. No. 81,092
Int. Cl.⁴ F23J *13/08*
U.S. Cl. 126—319 **4 Claims**



1. A device for plugging a chimney flue of a fireplace to prevent air movement through the flue when the flue is not in use, the device comprising straight elongate, semi-rigid hollow wand, an inflatable body mounted on one end of the wand so as to be inflatable by air supplied through the hollow wand from a collapsed condition to an expanded condition in which it can engage an inner periphery of the flue, a valve member provided on an opposed end of the wand and arranged such that inflation air can be supplied through the valve member from an inflation device and such that the valve member can be closed to prevent escape of inflation air from said wand, the wand being formed from a material having properties such that said one end an inflatable body can be supported and manoeuvered by manual movement of said opposed end and such that it can flex sufficiently to pass from the fireplace into the flue, and being formed from bright coloured material so as to be readily visually apparent at said opposed end when observed by a user from a position outside of said fireplace, said inflatable body being collapsible to a condition in which it is not self-supporting and is not substantially larger than the transverse dimension of the wand, and an elongate container having a length and transverse dimension sufficient to receive the hollow wand, inflatable body and valve member such that the device can stored when removed from the flue in a soiled condition.

4,762,116

SOLAR WATER HEATERS ESPECIALLY INTENDED FOR USE WITH SWIMMING POOLS

Colin C. Vincent, Alinjarra, Australia, assignor to S. W. Hart & Co. Pty. Ltd., Welshpool, Australia

Filed Aug. 26, 1985, Ser. No. 769,637
Int. Cl.⁴ F24J *2/24, 2/36*
U.S. Cl. 126—448 **7 Claims**

1. A solar water heater especially intended for use with swimming pools, said solar water heater comprising an inlet header, an outlet header, a strip of flexible material having first end and a second end, a plurality of tubes formed in the strip and extending from the first end to the second end of the strip, wherein each end of the strip is connected to a manifold com-

VOL 1093 ISS 2 AG 9 1988 UMI

prising a first side provided with a respective spigot for each tube in the strip, and a second side provided with an aperture means with less apertures than the number of said spigots, each manifold comprising a base and an upstanding wall extending around the base to form a recess, the spigots being mounted in the recess, the spigots being formed into a unitary spigot assembly and a single locking collar comprising an outer peripheral wall arranged to fit snugly in the recess and the outer peripheral wall having an inner face formed with recesses and



shaped to conform with the outer shape of the spigot assembly and in which each spigot has a circumferential projection and the inner face of the locking collar has shoulder means arranged to engage with the projections on the spigots, such that, in use, the tubes at each end of the strip are connected to the spigots of one of the manifolds, each locking collar is located in the recess of one of the manifolds and the aperture means is connected to a header whereby fluid communication is established between the headers and the strip.

4,762,117

METHOD OF SURGICAL INTERVENTION FOR REMOVAL OF FLUORESCABLE GLASS FRAGMENTS

Joseph H. Burckhalter, 203 Commodore Club, 995 N. A1A Hwy., Indialantic, Fla. 32903

Continuation-in-part of Ser. No. 699,244, Feb. 5, 1985, abandoned. This application Mar. 4, 1987, Ser. No. 21,461

Int. Cl.⁴ A61B *1/05*

U.S. Cl. 128—1 R **4 Claims**

1. For surgical intervention, a method of visualizing and removing fragments of glass at a trauma site resulting from fracture of a glass object that is fluorescable under ultraviolet light, the fragments typically being of various sizes and shapes including surface fragments comprising (1) large fragments that are conspicuous both in a lightfield and a darkfield, and (2) small fragments that are conspicuous in a darkfield and inconspicuous in a lightfield, and sub-surface fragments comprising (3) large and/or small implanted fragments that are inconspicuous in a lightfield, the method comprising:

exposing the trauma site to darkfield ultraviolet light of intensity such that said conspicuous surface fragments are caused to fluoresce and their presence and location to be thus visualized and confirmed whereby the visualization is likewise sufficient after removal of said surface fragments in a first phase to advantageously reveal the presence and location of said sub-surface implanted fragments in a further phase,

viewing the darkfield for the presence and location of fluorescent sites, and

surgically removing the sites from the darkfield in said first phase and said further phase thereby reducing the major bulk of the glass particle burden from the trauma site.

4,762,118

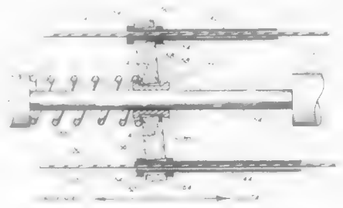
SELF-ADJUSTING STEERING MECHANISM FOR BORESCOPE, ENDOSCOPE, OR GUIDE TUBE

Raymond A. Lia, Auburn, and Allan I. Krauter, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jul. 28, 1987, Ser. No. 78,711

Int. Cl.⁴ A61B *1/00*

U.S. Cl. 128—4 **10 Claims**



1. In a steerable endoscope, borescope, or guide tube having a cable-bendable articulation section disposed proximally of its distal tip and including at least one pair of steering cables and bending means responsive to differential movement of the cables to bend the articulation section, a flexible insertion tube section proximally of the articulation section through which said steering cables pass, and a control section proximally of said insertion tube section and which includes means for imparting a differential motion to said steering cables to bend said articulation section, with said steering cables having respective cable sheaths extending thereover from said control section to said articulation section to carry opposing forces to any forces applied to said steering cables;

the improvement wherein said control section includes a self-adjusting articulation mechanism comprising a frame fixedly mounted in said control section and including axially oriented track means; slider means which is axially slidable on said track means, including means extending radially outward from said track means for engaging the proximal ends of said cable sheaths; and engaging means on said slider means for engaging said track means when the forces on said steering cables are unequal to lock the slider means against proximal sliding motion on said frame, but permitting said proximal sliding motion when there are similar tension forces on both said steering cables.

4,762,119

SELF-ADJUSTING STEERING MECHANISM FOR BORESCOPE OR ENDOSCOPE

Jimmie B. Allred, III, Skaneateles, and Allan I. Krauter, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jul. 28, 1987, Ser. No. 78,712

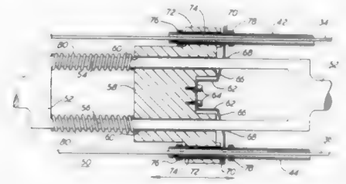
Int. Cl.⁴ A61B *1/00*

U.S. Cl. 128—4 **15 Claims**

1. In a steerable endoscope or borescope of the type having a viewing head, a cable-bendable steering section disposed proximally of the viewing head and including at least one pair of steering cables and bending means responsive to differential movement of the cables to bend the steering section, an insertion tube section proximally of the steering section through which said steering cables pass, and a control section proximally of said insertion tube section and which includes means for imparting a differential motion to said steering cables to bend said steering section, with said steering cables having respective cable sheaths extending thereover from said control section to said steering section to carry opposing forces to any forces applied to said steering cables;

the improvement wherein said control section includes a

self-adjusting steering mechanism comprising a frame fixedly mounted in said control section and including axially oriented track means; slider means which enjoys axial sliding movement on said track means; first and second arms extending radially outward from said slider means and including means for engaging the proximal



ends of said cable sheaths; and engaging means on said slider means for engaging said frame when the force in one said steering cable is zero to lock the slider means against proximal sliding motion on said frame, but permitting said proximal sliding motion when tension forces in both said steering cables exist.

4,762,120

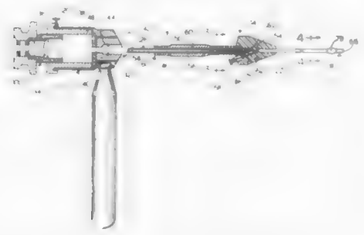
ENDOSCOPIC DEVICE HAVING HANDLE ASSEMBLY AND CATHETER ASSEMBLY

Hany M. G. Hussein, Costa Mesa, Calif., assignor to Laserscope, Inc., Santa Ana, Calif.

Continuation of Ser. No. 756,977, filed as PCT US84/01808 on Nov. 8, 1984, published as WO85/02101 on May 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 549,780, Nov. 8, 1983, abandoned. This application Jan. 8, 1987, Ser. No. 59,199

Int. Cl.⁴ A61B *1/06*

U.S. Cl. 128—6 **2 Claims**



1. An endoscopic viewing device comprising:

(a) a handle assembly including an eyepiece, the handle assembly also defining a socket;

(b) a flexible cannula having a proximal end and a distal end and defining a passageway and channel between the ends;

(c) a plug mounted on the cannula proximal end and having a port in fluid communication with the channel;

(d) a sleeve having a proximal end and a distal end and defining a bore between the ends, the sleeve being mounted on the plug with the bore in communication with the cannula passageway;

(e) a flexible coherent fiberoptic viewing bundle received in the passageway and bore;

(f) a flexible light transmitting fiber slidably received in the channel through the port;

(g) locking means carried by the plug for fixing a portion of the light transmitting fiber with respect to the plug; and

(h) retaining means for rotatably and releasably mounting the sleeve proximal end in the socket with the viewing bundle operably associated with the eyepiece.

4,762,121

MASSAGING SLEEVE FOR BODY LIMBS

Izhar Shlenfeld, Afek, Israel, assignor to Mego Afek, Industrial Measuring Instruments, Afek, Israel

Filed Jul. 29, 1982, Ser. No. 402,900

Claims priority, application Israel, Aug. 14, 1981, 63574

Int. Cl.⁴ A61H *9/00*

U.S. Cl. 128—64 **8 Claims**



1. A massaging sleeve formed with a plurality of cells extending along the length of the sleeve which cells are inflatable and deflatable to apply a squeezing pressure to a body limb when enclosed by the sleeve; said sleeve comprising an outer flexible covering adapted to be laid relatively flat and rolled into the shape of a sleeve to enclose the limb, and including:

a first panel of flexible sheet material forming one face of the covering,

a second panel of flexible sheet material forming the opposite face of the covering,

a plurality of divider panels of flexible sheet material secured to said first and second panels along lines extending transversely thereof and dividing the space therebetween into a plurality of individual compartments each extending substantially the complete width of said first and second panels,

said first and second panels being secured together along all their edges except for one longitudinal edge such that one end of each of said compartments is open,

said first panel being formed with a plurality of openings therethrough, one for each of said compartments;

said sleeve further comprising a plurality of inflatable bags each individually receivable in and removable from one of said compartments through the open end thereof, and being of a length extending substantially the complete width of said outer flexible covering; each of said bags including a port connector extending through the opening of its respective compartment for inflating and deflating the bag.

4,762,122

DEVICE AND METHOD FOR PELVIC OSTEOTOMY FIXATION

Barclay Slocum, 241 Spy Glass Dr., Eugene, Oreg. 97401

Filed Feb. 6, 1987, Ser. No. 11,681

Int. Cl.⁴ A61F *5/04*

U.S. Cl. 128—92 YP **17 Claims**

1. In the field of pelvic osteotomy apparatus used to orient two cut and separated ilial sections, a fixation bracket comprising

VOL 1093 ISS 2 AG 9 1988 UMI

means defining a pair of generally planar fixation plate expanses, and



generally planar web means joining said expanses whereby the same occupy planes intersecting along a line that is generally normal to the plane of said web means.

4,762,123

HEEL PADDING

Richard G. Dedo, 175 Denise Dr., Hillsborough, Calif. 94010

Division of Ser. No. 876,780, Jun. 20, 1986. This application Aug. 6, 1987, Ser. No. 82,810
Int. Cl.[4] A61F *5/30*
U.S. Cl. 128—153 7 Claims



1. A method of forming a cast on the lower extremity of a patient, comprising the steps of:
placing a stockinette material over the distal portion of the leg and the foot;
placing a pad behind and below the lateral malleolus;
placing a pad behind and below the medial malleolus;
placing a pad over the heel;
wrapping the foot and distal leg with sheet wadding over the pads; and
forming a cast over the wrapped sheet wadding.

4,762,124

LIQUID DISPENSING POUCH

Martha E. Kerch, Sparta, and Louis S. Hoffman, Morristown, both of N.J., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 28, 1986, Ser. No. 924,098
Int. Cl.[4] A61L *15/00*
U.S. Cl. 128—156 9 Claims



1. A flexible liquid-dispensing pouch consisting essentially of the following coterminous layers joined peripherally:
(1) an absorbent layer impregnated with the liquid which is to be dispensed, said layer having an upper surface and a lower surface with the upper surface consisting essentially of a centrally disposed flat portion circumscribed by a continuous sidewall and including a circumjacent attenuated border which extends laterally from the base of said sidewall to the peripheral edge;
(2) an impermeable support layer bonded to the lower surface of the absorbent layer;
(3) a membrane layer disposed on the upper surface of the absorbent layer and extending laterally to form a marginal border which is sealingly joined to the attenuated border of the absorbent layer; and
(4) an impermeable cover layer removably secured to the marginal border of the membrane layer for dispensing purposes.

4,762,125

BALLOON-TIPPED SUCTION CATHETER

Basil C. Leiman; Bruce D. Butler, and Jeffrey Katz, all of Houston, Tex., assignors to The University of Texas System, Houston, Tex.

Continuation-in-part of Ser. No. 837,493, Mar. 7, 1986, abandoned. This application Apr. 27, 1987, Ser. No. 43,611
Int. Cl.[4] A61M *16/00*
U.S. Cl. 128—207.15 5 Claims



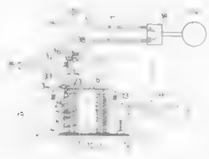
1. A catheter assembly for removing secretions from within an endotracheal or tracheostomy tube by extirpation or suction, comprising:
(a) an endotracheal or tracheostomy tube with a distal end and a proximal end and sized to be inserted into a human, the distal end of said tube being configured to provide access to mucous in the throat or lungs and extending outside the mouth of the patient to said proximal end adapted to receive a catheter, the interior surface of said tube being adapted to slidably receive an elastomeric balloon;
(b) a catheter adapted at its distal end to be inserted into the proximal end of said endotracheal or tracheostomy tube to a position within said tube, the proximal end of said catheter extending outside the proximal end of said tube;
(c) an inflatable balloon mounted on and around the catheter at or near the catheter's distal end, said balloon capable of being inflated to the wall of the tube to form a slidable seal with the tube wall;
(d) at least one aperture in the wall of the catheter proximate the proximal end of the balloon, capable of providing fluid communication between the interior of the catheter and the interior of said tube;
(e) a cannula extending along the catheter connected at its distal end to the balloon and connectable at its proximal end to a pressure source suitable for inflating the balloon; and
(f) a control port in the wall of the catheter near its proximal end for controlling transmission of suction forces to the distal end of said catheter.

4,762,126

SHOCK WAVE GENERATING APPARATUS

Shuzo Kimura, Ichikawa, Japan, assignor to Yachiyoda Sangyo Co., Ltd., Tokyo and Yachiyoda Kogyo Co., Ltd., Chiba, both of, Japan

Filed Oct. 14, 1986, Ser. No. 918,336
Claims priority, application Japan, Oct. 17, 1985, 60-157788
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—328 32 Claims



1. A shock wave generating apparatus comprising a main body portion having an internal shock wave generating chamber with a predetermined shake and at least one focal point; and a casing adapted to retain a plurality of explosive carrying members, each of said explosive carrying members adapted to be charged at a first end with a microexplosive, said first ends of said explosive carrying members thereby comprising means for receiving said microexplosives, said apparatus further comprising means adapted for pushing individual explosive carrying members from said casing into said chamber, means for driving said means for pushing until said first end of each said explosive carrying member reaches a predetermined position within said shock wave generating chamber, said predetermined position being substantially located at one of said focal points said apparatus further comprising means adapted for moving successive individual explosive carrying members over an upper end of a bore in said body portion, wherein said pushing means is adapted to push said explosive carrying members into said shock wave generating chamber, said moving means including means adapted for conveying each of said explosive carrying members to a position aligned with said bore when said pushing means is in an inoperative position, each of said explosive carrying members and said means for pushing including electrically conductive members wherein said electrically conductive members on said means for pushing are adapted to be connected to said electrically conductive members on said explosive carrying members, wherein when said electrically conductive members contact each other, each said microexplosive will be electrically detonatable after said contact is established.

4,762,127

APPARATUS AND METHOD FOR ENLARGING THE ENDS OF A VESSEL PRIOR TO ANASTOMOSIS

Krishna Narayanan, and Marc D. Liang, both of Pittsburgh, Pa., assignors to The Montefiore Hospital Association of Western Pennsylvania, Pittsburgh, Pa.

Filed Apr. 15, 1987, Ser. No. 38,652
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 R 5 Claims



1. In the method for anastomosing a blood vessel end comprising expanding the end of a blood vessel having an inner wall and an outer wall to facilitate anastomosis of the said end with another blood vessel, the improvement comprising:
inserting into the open end of said vessel the closed end of a closed, resilient, expansible tubular member; introducing fluid into the said tubular member to cause controlled radial outward expansion against the said inner wall of said vessel; maintaining said tubular member in an expanded conditions for a sufficient period of time to establish a temporary expansion of the said end of said vessel; thereafter withdrawing the said tubular member from the enlarged end of said vessel and thereafter anastomosing the enlarged end of said vessel to another blood vessel.

4,762,128

METHOD AND APPARATUS FOR TREATING HYPERTROPHY OF THE PROSTATE GLAND

Robert F. Rosenbluth, Laguna Niguel, Calif., assignor to Advanced Surgical Intervention, Inc., San Clemente, Calif.

Filed Dec. 9, 1986, Ser. No. 939,754
Int. Cl.[4] A61M *25/00, 29/02*
U.S. Cl. 128—343 28 Claims



1. A method for treating hypertrophy of the prostate gland, comprising the steps of:
positioning a dilation means having an expandable tubular stent associated therewith within the prostatic urethra; said dilation means comprising a catheter having a circumferential recess thereon in which an expandable balloon is mounted, wherein said stent is positioned over said balloon in said recess, and wherein said positioning step includes protecting the urethral lining from damage by minimizing sliding contact with said stent by maintaining said stent in said recess during said positioning;
dilating the expandable tubular stent with said dilation means to deform said stent, to expand the prostatic urethra, and to maintain such expansion against radial inward forces generated by said prostate;
restoring said dilation means to its substantially unexpanded state; and
removing said dilation means and leaving the dilated tubular stent within the urethra.

4,762,129

DILATATION CATHETER

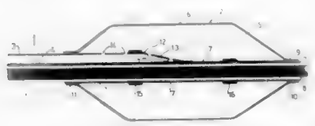
Tassilo Bonzel, Neumattenstrasse 27, D-7800 Freiburg, Fed. Rep. of Germany

PCT No. PCT/DE85/00479, § 371 Date Jul. 14, 1986, § 102(e) Date Jul. 14, 1986, PCT Pub. No. WO86/03129, PCT Pub. Date Jun. 5, 1986
PCT Filed Nov. 15, 1985, Ser. No. 893,558
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1984, 3442736
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 7 Claims

1. A dilatation catheter comprising an expandable balloon having distal and proximal ends, a first, relatively long, elongated hollow tube having distal and proximal ends and opening adjacent its distal end into the interior of the expandable balloon, the first tube being sealingly connected to the proximal

VOL 1093 ISS 2 AG 9 1988 UMI

end of the balloon, and a second, relatively short, elongated hollow tube integral with said first tube, having distal and proximal ends and a lumen extending between said ends of uniform cross section along its length and free of obstructions adapted to receive a guide wire in a sliding fit, the second tube traversing the interior of the expandable balloon from the distal end to the proximal end of the balloon and being sealingly connected to the distal end of the balloon, and the second



tube terminating at its proximal end substantially distally of the proximal end of the first tube in an aperture open to the exterior of the catheter,

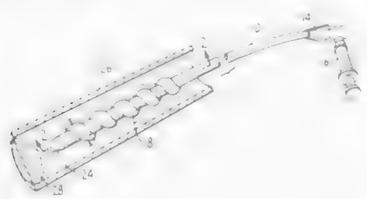
said first tube having sufficient stiffness that the second tube and expandable balloon can readily be advanced or withdrawn together in use along the guide wire by exerting a pushing or pulling force upon the first tube, in combination with an elongated guide wire.

4,762,130

CATHETER WITH CORKSCREW-LIKE BALLOON

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304; Thomas B. Kinney, San Diego, and James C. Finn, III, Menlo Park, both of Calif., assignors to Thomas J. Fogarty, Palo Alto, Calif.

Filed Jan. 15, 1987, Ser. No. 3,589
Int. Cl.[4] A61M *25/00*
U.S. Cl. 128—348.1 **12 Claims**



1. An intravascular catheter comprising: an elongate flexible tube having a through lumen; an inflatable and deflatable helical balloon attached to and carried by said tube adjacent the distal end of said tube, said balloon comprising a plurality of spaced apart helical turns disposed about said tube, at least one end of said balloon extending transversely around said tube and into attached relation to said balloon to thereby form a closed annular sealing loop which is responsive to blood pressure or blood flow within a blood vessel to move said catheter along said vessel; and a port formed in said tube providing communication between said lumen and said balloon.

4,762,131

DRILLER PROVIDING LIGHT AND SOUND STIMULI FOR STIMULATING THE VISUOSENSORY AND AUDIOSENSORY NERVES, FOR USE IN THE REHABILITATION OF POSTAPOPLECTIC PARALYTIC PATIENTS

Shigeru Okuda, 22-13, Senju-Akebonocho, Adachi-ku, Tokyo, Japan

Filed Apr. 8, 1986, Ser. No. 849,407
Claims priority, application Japan, Sep. 2, 1985, 60-133159[U]
Int. Cl.[4] F21V *33/00;* **A61N** *00/00*
U.S. Cl. 128—396 **4 Claims**



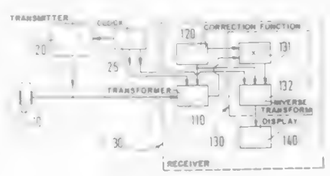
1. A driller device for providing light and sound stimuli for stimulating the visuosensory and audiosensory nerves of a postapoplectic paralytic patient, comprising two light emitters each capable of emitting light of 400 to 2,000 lm for stimulating the visuosensory nerves, said light emitters each being installed at an end of each of a pair of flexible arms each secured at a stem thereof to a control section body, said light emitters being connected to a power source through a controller provided in the control section body, the controller having intermittently on-off operated switch means, and electronic buzzers capable of producing an acoustical output of 50 to 90 phons for stimulating the audiosensory nerves, said electronic buzzers being installed in ear pads of a headphone connected to said control section body, said electronic buzzers being connected to said power source through said controller.

4,762,132

DEVICE FOR SCANNING OBJECTS BY MEANS OF ULTRASOUND ECHOGRAPHY

Jean-Marie Nicolas, and Jean-Luc Bernatets, both of Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1986, Ser. No. 851,837
Claims priority, application France, Apr. 19, 1985, 85 05952
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—660 **7 Claims**



1. In a device for scanning objects by means of ultrasound echography, which device includes at least one ultrasound transducer which is connected to transmitter means for the repeated transmission of ultrasound waves to an object to be examined, and to receiver means for receiving an echographic signal which represents echoes which are reflected to the transducer from the object, the improvement wherein the receiver means include:

(A) transformation means (**110**) which calculate the Mellin transform of the echographic signal;

(B) correction means (**120**) which calculate a correction function using an inverse value of the Mellin transform of an attenuation function which is associated with an attenuation value corresponding to at least one region of the object; and

(C) a processing means comprising a series connection of:

(1) first multiplier means (**131**) for multiplying the output signals of the transformation means and the first arithmetic means; and

(2) inverse transformation means (**132**) which calculate the inverse Mellin transform of the output of the first multiplier means; and

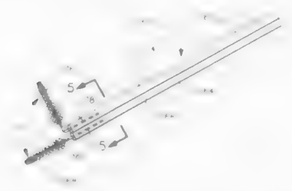
(D) display means (**140**) for processing the output signal of the inverse transformation means to display images of a region scanned and/or data which is representative of the region scanned.

4,762,133

CERVICAL CYTOLOGY DEVICE

Irman D. Bayne, Littleton, and Edwin L. Adair, Denver, both of Colo., assignors to Medical Dynamics, Inc., Englewood, Colo.

Filed Jun. 12, 1987, Ser. No. 60,917
Continuation-in-part of Ser. No. 28,458, Mar. 20, 1987, Pat. No. 4,754,764. This application Jun. 12, 1987, Ser. No. 60,917
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—756 **10 Claims**



1. A cervical cytology device for simultaneously collecting cytology cell samples from the endocervix and exocervix, said device comprising:

handle means for manipulating and rotating said device, said handle means including a pair of parallel rods having surfaces positioned in contiguous relationship, each rod having a distal end and a proximal end;

fracturable means joining said rods so that they can be separated after use;

a distal cell collecting surface sized and configured to scrape cytology cell samples from the endocervix, said distal surface being attached to and extending axially from said distal end of one of said rods; and

an intermediate cell collecting surface sized and configured to scrape cytology cell samples from said exocervix, said intermediate surface being attached to said distal end of said other rod so that said intermediate cell collecting surface extends at an angle from said other rod, said distal cell collecting surface and said intermediate cell collecting surface cooperating, respectfully, to simultaneously scrape cytology cell samples from the endocervix and exocervix, respectfully, when said handle means is rotated and said distal and intermediate cell collecting surfaces are in contact, respectfully, with the endocervix and exocervix.

4,762,134

VERTEBRAE DIAGNOSTIC AND TREATMENT APPARATUS

Jeffery Gala, 3000 N. Ocean Dr., Suite 28G, Singer Island, Fla. 33404-3249

Filed Aug. 1, 1986, Ser. No. 891,561
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—781 **6 Claims**

1. A diagnostic and treatment apparatus for use on the vertebrae of a patient having a plurality of interconnected joints comprising:

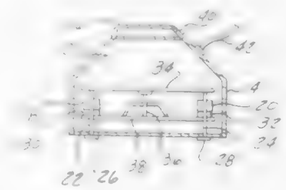
means for engaging the vertebrae of a patient including;

a housing;

a plurality of pads spacedly, extensibly and retractably mounted in the housing; and

drive means connected to said pads for individually extending and retracting each of the plurality of the pads into and out of engagement with the vertebrae of a patient;

means connected between said drive means and said pads for sensing the resistance of said vertebrae by measuring a force applied by the pads to the vertebrae of the patient; and



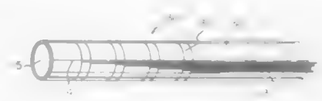
a control means connected to said housing, responsive to the sensing means, for controlling the operation of the drive means to measure an initial force that is applied to the vertebrae and for controlling the drive means to apply an amount of force to the vertebrae that is dependent upon the resistance of the vertebrae as measured by said sensing means.

4,762,135

COCHLEA IMPLANT

P. D. van der Puije, Lot 13, Concession 2, Rideau Township, Ontario K0A 2T0, and Carlos R. Pon, 1535 Alta Vista Drive, Apt. 504, Ottawa, Ontario, K1G 3N9, both of Canada

Filed Nov. 15, 1985, Ser. No. 798,337
Claims priority, application Canada, Aug. 30, 1985, 489804
Int. Cl.[4] A61N *1/05*
U.S. Cl. 128—784 **14 Claims**



1. A small diameter, rolled-up, electrode array for implantation in the cochlea, comprising:

a flexible, biological-inert, planar support member rolled-up to a generally cylindrical shape, and having a proximal end and a distal end;

a plurality of electrodes located at predetermined, spaced distances along a portion of the length of said rolled-up, cylindrically-shaped support member, each of said electrodes comprising an open-ended ring almost encircling said support member, and a conducting feedline monolithically associated with each electrode, lying on the outer curved surface of said rolled-up support member, and extending from each associated electrode to said distal end;

said planar support member being of sufficient flexibility to be rolled-up into a cylindrical shape to facilitate insertion of said electrode array into the cochlea while minimizing trauma during the insertion period.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,136

LOW POLARIZATION PACING ELECTRODES FOR CAPTURE VERIFICATION

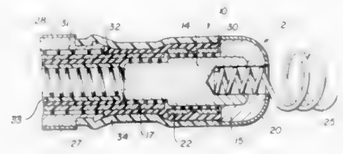
Ross G. Baker, Jr., Houston, Tex., assignor to Intermedics, Inc., Angleton, Tex.

Filed Feb. 19, 1987, Ser. No. 16,379

The portion of the term of this patent subsequent to Jul. 14, 2004, has been disclaimed.

Int. Cl.[4] A61N *1/05*

U.S. Cl. 128—786 10 Claims



1. A lead assembly for use in sensing capture of the heart in conjunction with pacing of the heart, comprising

an electrode having a coating of iridium oxide on a surface thereof adapted to be in electrically coupled relationship with the heart when said lead assembly is implanted in a patient, to provide low polarization whereby the electrode is capable of sensing the evoked potential indicative of capture immediately after the heart is paced, and

electrical conductor means connected to said electrode for electrically coupling said electrode to detecting circuitry of a cardiac pacemaker.

4,762,137

HEAT TRANSFER SYSTEM FOR TOBACCO CURING

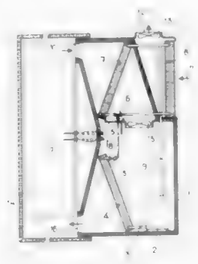
Manuel V. Rodriguez, Virgen de la Cerca 23, Santiago de Compostela; Ramon M. Barrio, Priegue-Nigran, and Juan P. Dobarro, La Coruna, all of Spain

Filed Oct. 18, 1985, Ser. No. 788,774

Claims priority, application Spain, Dec. 20, 1984, 538860

Int. Cl.[4] B01F *3/02;* G05D *21/00;* A24B *3/12*

U.S. Cl. 131—299 11 Claims



2. A closed heat transfer system for curing tobacco, said system being comprised of:

a compressor for compressing a refrigerating gas;

a condenser generally connected to said compressor for receiving and condensing said gas into a liquid;

an internal battery having a first end and a second end, said first end being generally connected to said condenser, said second end being generally connected to said compressor, said internal evaporator receiving said liquid from said condenser and enabling said liquid to return to its gaseous state as it passes through said internal evaporator and out of said second end to said compressor;

air circulating means situated between said internal evaporator and said condenser; and

a casing having a first chamber, said first chamber generally enclosing said compressor, said condenser, said internal evaporator, and said air circulating means such that said air circulating means continuously cycles air in said casing by pulling the air through said internal evaporator which causes said air to cool and be dehumidified, then impelling the air through said condenser to be heated and further dehumidified, said air then returning to said internal evaporator to begin the cycle again.

4,762,138

DEVICE FOR MONITORING THE END DROPOUT OF CIGARETTES

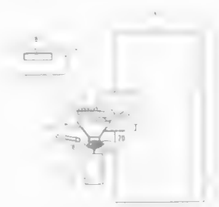
Kühne Manfred, Furtwangen; Theodor Gast, Berlin; Karl-Ulrich Kramm, Rheinstetten, and Karl Nolte, Berlin, all of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Dec. 12, 1986, Ser. No. 941,113

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544152

Int. Cl.[4] A24C *5/00, 5/60*

U.S. Cl. 131—280 7 Claims



1. A device for monitoring the average end dropout of cigarettes in combination with a cigarette manufacturing apparatus, said device comprising

(a) a means for rolling a defined number of cigarettes along a support, and

(b) a means for detecting the total mass of the tobacco particles dropping out of the cigarettes during a predetermined period of time in the rolling movement, wherein

(c) in the path of the cigarette manufacturing apparatus beneath a conveying path along which the finished cigarettes during their transaxial conveying movement rotate about their longitudinal axis a mass transducer for the dropping tobacco particles is disposed, and

(d) an evaluating means determines the average end dropout from the amount of tobacco particles determined by the mass transducer on the one hand and the number of cigarettes which have passed through the conveying path on the other.

4,762,139

PORTABLE SAILBOARD FRAME

Daniel Timmes, and Christopher G. Thornton, both of 535 Seabright La., Solana Beach, Calif. 92075

Filed Dec. 9, 1985, Ser. No. 806,410

The portion of the term of this patent subsequent to Mar. 8, 2005, has been disclaimed.

Int. Cl.[4] B08B *3/02*

U.S. Cl. 134—199 2 Claims

1. A portable frame for washing, rinsing, drying, storing and repairing sailboards, surfboards and similar structures comprising:

a self-standing rack constructed from a plurality of sections comprising at least two pairs of substantially parallel vertical tubular sections;

means in the lower part of said rack for supporting at least one sailboard;

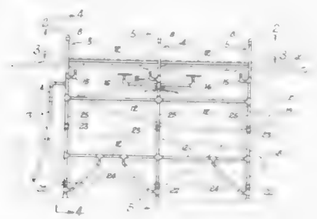
means fixed on said rack for spraying fluid from various directions toward said sailboard, including a plurality of jets mounted on said tubular sections;

means for moving fluid through some of said sections to said spraying means which includes a hose adapter inlet mounted on one of said sections and a plurality of tubular couplings joining said sections together;

at least one spraying branch extending horizontally within said rack, substantially parallel to said side members and disposed in a lower position thereto;

fluid-ducting means for supporting said branch and delivering fluid thereto;

a plurality of jets mounted on said branch;



each of said vertical tubular sections including:

at least two vertical members;

a first horizontal cross member spanning the upper ends of the vertical member;

a second horizontal cross member substantially parallel to said first horizontal cross member and disposed in a lower position thereto;

a third horizontal cross member substantially parallel to said first and second horizontal cross members and disposed in an overlying relation to said first cross member; and

at least two pairs of horizontal side members spanning said vertical sections and holding them in substantially parallel positions to each other.

4,762,140

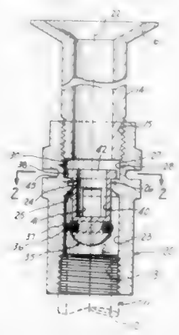
SNAP-OFF PLUG VALVE

Edward A. Davis, 1238 Green La., La Canada-Flintridge, Calif. 91011

Filed May 28, 1987, Ser. No. 56,132

Int. Cl.[4] F16K *17/40*

U.S. Cl. 137—71 5 Claims



1. A snap-off plug valve having a body with an axial flow passage, a peripheral wall therethrough, an inlet port and an outlet port to said passage, a peripheral valve seat in said passage projecting radially into said passage with an upsteam face and an internal diameter smaller than the diameter of the wall upstream from said valve seat, a relief in said wall downstream from said valve seat, with a diameter larger than the internal diameter of said valve seat, limit means overhanging said relief spaced downstream from said valve seat, a poppet passing through and slidably fitted in said valve seat, a head on said poppet loosely fitted in said relief and having radial dimensions such as to abut said limit means when brought against it, a peripheral valve seal carried by said poppet at the upstream side of said valve seat, a by-pass passage through said poppet from a point downstream from said valve seal to the downstream end of said poppet, and a fracture groove formed in said body located axially between said valve seat and said limit means which establishes an annular region of least structural resistance to distortive forces, whereby water flowing through said flow passage only, causes said head to abut said limit means and the valve seal will be held away from the valve seat and water can flow through said by-pass passage, and whereby when the body is fractured at said fracture groove, the poppet can be moved by fluid pressure to press the valve seal against the valve seat and close the valve.

4,762,141

FLUID FLOW REGULATOR

John J. Karpis, The Toledo Apt. #4, Long Beach, Calif. 90803

Division of Ser. No. 425,772, Sep. 28, 1982, Pat. No. 4,545,401. This application Sep. 5, 1985, Ser. No. 772,812

Int. Cl.[4] F16K *31/363*

U.S. Cl. 137—312 1 Claim



1. A fluid flow regulator, comprising:

a housing within which a fluid flow passageway is defined through which a fluid flow to be controlled moves, a servo valve passage connected to and intersecting the fluid flow passageway, a throttling port defined at the intersection of the fluid flow passageway and the servo valve passage, a leakage passageway, and a further passageway;

servo valve means mounted within the servo valve passage, said servo valve means including:

an axially spaced pair of actuators defining with said servo valve passage a pressure chamber at each end of the actuators subjected to a reference pressure and a pressure chamber between the actuators, each actuator comprising at least two axially spaced pistons between which at least one pressure chamber is defined; and

biasing means situated within a pressure chamber at one end of the actuators for exerting a biasing force against the actuators, wherein:

(i) said actuators each including at least a pair of spaced apart surfaces exposed, respectively, to an end pressure chamber and the pressure chamber between the actuators, the spaced apart surfaces of one actuator defining a greater pressure area than the spaced apart surfaces of the other actuator;

(ii) said further passageway connecting the pressure chamber between the actuators and the fluid flow passageway upstream of the servo valve passageway;

(iii) said actuators are joined together to move as a unit in

VOL 1093 ISS 2 AG 9 1988 UMI

said servo valve passage in response to the resultant force generated by the pressure chambers and said biasing means;

(iv) said leakage passageway connecting the pressure chambers between the spaced pistons and the fluid flow passageway downstream of the throttling port to thereby intercept leakage from the pressure chamber between the actuators and from the throttling port; and

(v) one of said actuators is situated to directly control, in response to said resultant force, the throttling port.

4,762,142

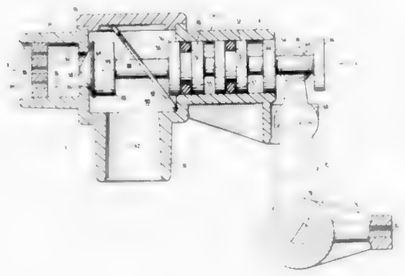
METERED FLOAT CONTROLLED VALVE

Joseph Tams, 23016 Jacobson Rd., Brooksville, Fla. 33512

Filed Dec. 10, 1987, Ser. No. 131,491

Int. Cl.[4] F16K *43/00, 31/26, 33/00*

U.S. Cl. 437—315 **4 Claims**



1. A metered float controlled valve comprising a valve body having means defining a valve chamber, a first cylindrical projection defining an inlet chamber having a first passage in communication with said valve chamber, a second cylindrical projection disposed at right angles to said first cylindrical projection defining an outlet chamber having a second passage in communication with said valve chamber, a third cylindrical projection disposed in alignment with said first cylindrical projection and having a cylindrical passage in communication with said valve chamber, a substantially cylindrical plunger slidably mounted in said cylindrical passage and having a valve member secured to one end thereof with the opposite end thereof extending outwardly of said cylindrical passage for engagement with operating means and a diverter plate disposed in said valve chamber at an angle to the axes of said first and second cylindrical projections and provided with a central aperture for the passage of said plunger therein for easy insertion and removal of said plunger and valve member without removing said diverter plate whereby said diverter plate will deflect fluid entering said valve chamber from said inlet chamber toward said outlet chamber and away from said third cylindrical projection to prevent undue pressure thereto.

4,762,143

FAUCET MANIFOLD

Irlin H. Botnick, 3155 Kersdale, Pepper Pike, Ohio 44124

Continuation-in-part of Ser. No. 735,664, May 20, 1985, Pat. No. 4,671,316. This application Jun. 3, 1987, Ser. No. 57,118

Int. Cl.[4] E03C *1/04*

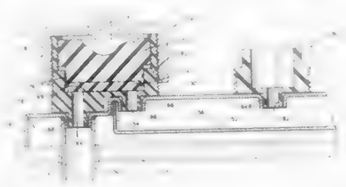
U.S. Cl. 137—315 **16 Claims**

6. A faucet manifold adapted to be mounted on a countertop over an opening through which access can be had to a water-conveying conduit, the manifold comprising:

a cover, the cover including a plate and a skirt extending downwardly from the periphery of the plate, the plate adapted to overlie the opening and the skirt adapted to engage the countertop, the plate being spaced from the surface of the countertop so as to define a chamber;

first, second, and third openings in the plate, the openings being spaced from each other, the first opening adapted to be connected to the water-conveying conduit, the second opening adapted to be selectively in fluid communication with the first opening, and the third opening adapted to be connected to an outlet;

a channel member, the channel member being of a size and shape to underlie the second and third openings; and



a fluidtight seal between the cover and the channel member such that fluid flow between the second and third openings is possible; and

a valve member connected to the plate, the valve member selectively controlling the flow of water from the first opening to the second opening.

4,762,144

VALVE COVER APPARATUS

John Ford, Hanley, England, assignor to Ford-Manwaring Limited, England

PCT No. PCT/GB86/00379, § 371 Date Feb. 27, 1987, § 102(e) Date Feb. 27, 1987, PCT Pub. No. WO87/00255, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 27, 1986, Ser. No. 26,545

Claims priority, application United Kingdom, Jun. 29, 1985, 8516505; Apr. 10, 1986, 8608721

Int. Cl.[4] F16K *27/08*

U.S. Cl. 137—382.5 **9 Claims**



1. Apparatus for covering valves, wherein the apparatus comprises means for releasably locating on a valve stem, the locating means comprising a first part, and a second part movably located on the first part, whereby, with the apparatus located on the valve stem, the apparatus is movable from a non-operative condition, when the second part is in a first position relative to the first part, and the first and second parts are movable relative to the valve stem, to enable free movement of the apparatus in either direction of rotation relative to the valve stem, in one direction of movement to an operative condition wherein engagement with the valve stem can operate the valve, movement of the apparatus from the non-operative condition in an opposed direction of movement causing the second part to move to a second position relative to the first part, the second part clamping against the valve stem to prevent unauthorised removal of the apparatus from the valve, means being provided to deter unauthorised access to the locating means.

4,762,145

UNDERWATER PRESSURE RELIEF VALVE

Fabio Stradella, Genoa, Italy, assignor to G.S.D. Sports Equipment S.R.L., Italy

Filed May 13, 1987, Ser. No. 49,813

Int. Cl.[4] F16K *17/06*

U.S. Cl. 137—599.2 **4 Claims**



1. A pressure relief valve for underwater inflated articles, comprising:

(A) a base member including a hollow cylindrical portion extending longitudinally along an axis and being in communication with an underwater inflated article having an internal pressure to be relieved, and an annular flange extending in a radially outward direction;

(B) a body member mounted for turning movement on the flange and having a central axially-extending guide passage;

(C) a locking ring mounted for turning movement on the flange between a locked position in which the body member is clamped to the base member, and an unlocked position in which the body member is free to turn about the axis;

(D) a manually-operated pressure relief assembly, including

(i) a pushbutton extending axially outwardly at least in part of the body member in an unactuated position, and being manually displaceable axially along the guide passage to an actuated position,

(ii) an axially-extending stem movable with the pushbutton,

(iii) a sealing disc mounted on the stem for joint movement therewith,

(iv) a support washer having a central hole through which the stem passes with clearance, and

(v) an elongated first coil spring centered on the axis and having one end bearing against the pushbutton, and an opposite end bearing against the support washer, said first spring being tensioned to constantly urge the support washer and the pushbutton in opposite axial directions;

(E) a valve support member having a central portion sealingly engaging the support washer, an outer annular rim extending in a radially outward direction, an outer valve surface facing toward the pushbutton, and an inner valve surface facing away from the pushbutton;

(F) a first flexible diaphragm mounted between the support washer and the valve support member and sealingly engaging the outer valve surface in the unactuated position of the pushbutton;

(G) a second flexible diaphragm mounted between the sealing disc and the valve support member and sealingly engaging the inner valve surface in the unactuated position of the pushbutton; and

(H) an automatically-operated pressure relief assembly independently operative of the manually-operated assembly, including

(i) an adjustable cylindrical sleeve mounted on the body member for turning movement about the axis when the body member is turned, said sleeve having a radially-extending shoulder, and

(ii) an elongated second coil spring centered on the axis and having one end bearing against the shoulder, and an opposite end bearing against the outer annular rim of the valve support member for urging the second flexible diaphragm mounted on the valve support member into sealing engagement with the annular flange of the base member with an adjustable biasing force which is dependent on the angular extent through which the sleeve has been turned by the body member.

4,762,146

FLOW CONTROL VALVE

Michael E. Ewbank, and Steven A. Heitz, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Sep. 22, 1986, Ser. No. 886,873

Int. Cl.[4] F16K *47/14*

U.S. Cl. 137—625.3 **14 Claims**



1. A valve for controlling fluid flow in a manner reducing noise, comprising:

a hollow valve housing having a fluid inlet and a fluid outlet;

a cylindrical valve chamber within said hollow valve housing in direct fluid communication with said fluid inlet, said valve chamber having a plurality of longitudinally spaced openings, said fluid inlet communicating with said fluid outlet through one or more of said longitudinally spaced openings;

a piston disposed in said cylindrical valve chamber for reciprocating longitudinal movement therewithin and including means for imparting said reciprocating longitudinal movement to said piston, said piston being adapted to vary the number of said longitudinally spaced openings in communication with said fluid inlet in response to reciprocating longitudinal movement thereof;

separate means associated with each of said longitudinally spaced openings for reducing fluid pressure in an incremental manner, said separate incremental pressure reduction means each being disposed between the corresponding one of said longitudinally spaced openings and said hollow valve housing;

means for further reducing fluid pressure associated with all of said separate incremental pressure reduction means, said further pressure reduction means being adapted for acoustically damping noise upstream of said fluid outlet, said further pressure reduction means being disposed between said separate incremental pressure reduction means and said hollow valve housing; and

means for mounting said valve chamber, separate incremental pressure reduction means, and further pressure reduction means in acoustically isolated relation to said hollow valve housing, said valve chamber, separate incremental pressure reduction means, and further pressure reduction means comprising an integral insert within said hollow

VOL 1093 ISS 2 AG 9 1988 UMI

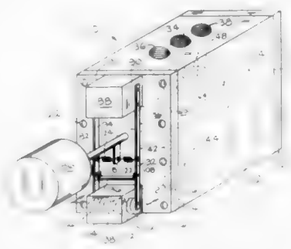
valve housing, said acoustically isolated mounting means including a pair of vibration isolating seals disposed between said integral insert and said hollow valve housing to maintain said integral insert and said hollow valve housing in physically spaced and acoustically isolated relation.

4,762,147

SERVO VALVE WITH TORQUE FEEDBACK

Harry M. Sloate, 7 Milldam Rd., Acton, Mass. 01720

Continuation-in-part of Ser. No. 831,976, Feb. 20, 1986, Pat. No. 4,674,537. This application Jun. 22, 1987, Ser. No. 65,411
Int. Cl.[4] F15B *13/043*
U.S. Cl. 137—625.64 21 Claims



1. A servo valve comprising, in combination,
a housing defining a bore and a plurality of ports axially spaced along and communicating with said bore,
a valve spool slidably disposed within said bore, said valve spool having a plurality of alternating lands and reduced diameter regions, a piston defining a first chamber and a second chamber, an axial bore, a first radial passageway communicating between one of said reduced diameter regions and said axial bore and a second radial passageway communicating between another of said reduced diameter regions and said axial bore,
a control rod disposed within said axial bore, said control rod defining an axial passageway and including a radially extending torque arm,
a pair of cantilever spring arms,
means for coupling each of said cantilever spring arms to said torque arm, and
means for translating said cantilever spring arms,
whereby rotation of said control rod in one direction places said first radial passageway in communication with said second chamber and rotation of said control rod in the opposite direction places said second radial passageway in communication with said second chamber.

4,762,148

APPARATUS AND METHOD FOR THE GENERATION AND UTILIZATION OF A SPIRAL GAS STREAM IN A PIPELINE

Tomohiro Marui, Tokyo; Masaaki Takarada, Chiba; Yoshiaki Shimura, Yokohama; Minoru Mita, Chiba, and Kiyoshi Horii, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation and Kiyoshi Horii, both of, Japan

Continuation of Ser. No. 646,216, Aug. 31, 1984, abandoned. This application May 1, 1987, Ser. No. 45,187
Claims priority, application Japan, Sep. 3, 1983, 58-161214; Sep. 8, 1983, 58-164191; Sep. 8, 1983, 58-164192; Oct. 28, 1983, 58-200731; Jan. 5, 1984, 59-34; Jan. 5, 1984, 59-35; Mar. 21, 1984, 59-52240; Apr. 23, 1984, 59-80251; May 14, 1984, 59-94505
Int. Cl.[4] F15C *1/16*; F16L *55/10*; B56G *53/42*; B02C *12/00*
U.S. Cl. 137—808 2 Claims

1. An apparatus for the generation of a spiral gas stream in a pipeline consisting essentially of:
a funnelform reducer adapted for connecting to a pipeline pipe;
a cylinder having a first end and a second end, said first end connected to said funnelform reducer, said cylinder having an inner diameter larger than the diameter of said pipeline pipe;
a bottom plate attached to said second end of said cylinder; and



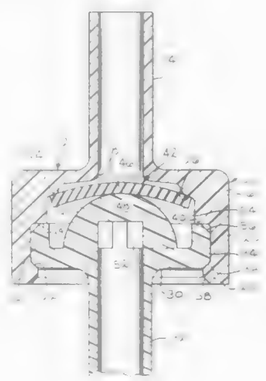
at least one gas inlet pipe adapted for admitting a feed gas into said cylinder, located to the side of said cylinder, at an inclination angle of more than one degree to said bottom plate, at a distance from said bottom end so as to direct the center of the gas flow of said feed gas into said cylinder intersecting the longitudinal axis of said cylinder and inclined toward said bottom plate to the extent that the feed gas flow does not directly hit said bottom plate.

4,762,149

DOUBLE SEAL PRESS ASSEMBLED CHECK VALVE

Joseph Pickl, Jr., 860 Colliston, Ann Arbor, Mich. 48105

Continuation of Ser. No. 927,650, Nov. 5, 1986, abandoned. This application Nov. 25, 1987, Ser. No. 129,343
Int. Cl.[4] F16K *15/14*
U.S. Cl. 137—843 6 Claims



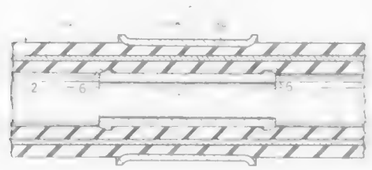
1. A check valve for use in a fluid control system comprising:
a valve body member having an inlet tube portion adapted for connection to a conduit of said system and a larger chamber forming portion at one end of and communicating with said tube portion, said chamber forming portion having an inlet from said inlet tube portion, said chamber forming portion terminating in a generally tubular section having axially spaced sealing surfaces extending around the entire periphery of said valve body,
a cap member having an outlet tube portion adapted for connection to a conduit of the fluid control system and a larger chamber forming portion at one end of said tube portion, said chamber forming portion terminating in a generally tubular section communicating with said outlet tube portion and having axially spaced sealing surfaces extending around the entire periphery of said valve body,
said members having said tubular sections relatively telescoped one within the other to positions in which said sealing surfaces are sealingly engaged to thereby form an enclosed valve chamber communicating with said inlet and outlet tube portions,
means forming an annular valve seat in said chamber on said valve body member at a position encircling said inlet and said inlet tube portions,
a resilient disk in said chamber of a size to seat on said valve seat so as to seal off said chamber from said inlet tube, and
projection means on said cap member extending into said chamber and engaged with a center portion of said disk urging said disk into a position seated on said valve seat, said projection means being in a clearance relation with said disk radially outwardly of said central portion thereof to enable an annular outer edge portion of said disk radially outwardly of said central portion to move off said seat and allow passage of fluid from said inlet tube portion into said chamber, one of said tubular sections being positioned radially outwardly of the other of said tubular sections and said radially outer tubular section terminating in a radially inwardly extending lip defining one of said sealing surfaces and extending around the entire periphery of said outer tubular section and wherein said sealing surfaces of said radially outer tubular section define the axial ends of an annular cavity and the axial ends of said radially inner tubular section defining said sealing surfaces and wherein when said radially outer tubular section is snapped over said radially inner section said sealing surfaces of said radially outer tubular section exerts an axial compressive loading on said radially inner section whereby said sealing surfaces are in sealing engagement.

4,762,150

HOSE HAVING ORIFICE

Yuji Kokuryu, Aichi, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Continuation of Ser. No. 817,531, Jan. 9, 1986, abandoned. This application Feb. 17, 1987, Ser. No. 15,510
Claims priority, application Japan, Jan. 31, 1985, 60-18415
Int. Cl.[4] F16L *55/02, 55/04*
U.S. Cl. 138—44 6 Claims



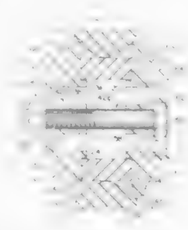
1. A system comprising:
a hose of flexible material having a substantially continuous section of uniform cross section;
an orifice forming substantially rigid nipple disposed in the interior of said continuous section of said hose and having a passage therethrough of smaller cross-sectional area than the interior of said hose section for absorbing fluid pulsations in said hose and preventing generation of noise, said nipple having at least one pair of generally-alike, longitudinally-spaced protrusions on the outer surface and at both ends of said nipple, said nipple being of generally uniform thickness in radial section between said protrusions and said protrusions being engaged with the inner surface of said hose section to prevent said nipple form moving longitudinally within said hose; and
a metal sleeve exteriorly snugly surrounding said hose about said nipple, said sleeve having a caulked portion shorter than the distance between said protrusions for fixing said nipple against longitudinal movement within said hose.

4,762,151

BLANK PLUG ASSEMBLY

Frank R. Kinnan, Camas Valley, Oreg., assignor to L & F Company, Camas Valley, Oreg.

Filed Jul. 7, 1986, Ser. No. 882,685
Int. Cl.[4] F16L *55/12*
U.S. Cl. 138—89 6 Claims



1. A plug assembly for sealing a conduit comprising:
an annular, elastomeric, deformable sealing member having an annular outer surface adapted to be brought into sealing engagement at two axially-spaced, annular regions of contact with the inside surface of a conduit and annular inner surface, said inner surface including opposed surface portions that slope toward each other progressing radially inwardly of the member;
a pair of substantially parallel, opposed disks, each having an annular boundary edge and positioned with the boundary edge of one disk underneath one of said surface portions and thus overlayed by the sealing member adjacent one axial extremity of the member and with the boundary edge of the other disk underneath the other of said surface portions and thus overlayed by the sealing member adjacent the other axial extremity of the member, wherein each of said disks has an inner side and a rounded rim joining the boundary edge of the disk and its inner side, and the rim of a disk engages a sloping surface portion of the sealing member, and each sloping surface portion where engaged by a disk rim in cross section has a convex curvature;
an annular elastomeric centering insert disposed concentrically with and detached from said sealing member and contacting the inner surface of said sealing member, and wherein each of said inner sides includes a centered annular ridge snugly fitted within said centering insert; and
means for drawing said disks toward each other with radial expanding of said sealing member in regions where the member overlies said disk.

4,762,152

ASSEMBLY OF A CLOSING BAFFLE INSIDE A TUBULAR MEMBER

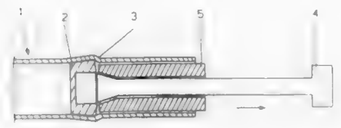
Edvin L. Clausen, Tonder, Denmark, assignor to Norsk Hydro A.S., Oslo, Norway

Continuation of Ser. No. 776,026, Sep. 13, 1985, abandoned. This application Nov. 19, 1986, Ser. No. 934,835
Int. Cl.[4] F16L *55/12*
U.S. Cl. 138—89 4 Claims

1. A motor vehicle heat exchanger manifold assembly comprising:
a tubular member defined by a wall having inner and outer surfaces, an internal passage defined by said inner surface, and an open end, whereby a heat exchange fluid medium is adapted to be directed in said internal passage in a direction toward said open end;

VOL 1093 ISS 2 AG 9 1988 UMI

an integral one-piece baffle positioned within said internal passage at a selected position spaced from said open end, said baffle having an outer cross-sectional shape complementary to the internal cross-sectional shape of said tubular member, said baffle including a bottom forming a closed first end closing said internal passage of said tubular member and a hollow flange integral with said bottom and extending axially therefrom toward said open end of said tubular member, said flange forming a wall of said baffle, and said hollow flange having a vacant and unoccupied interior; and



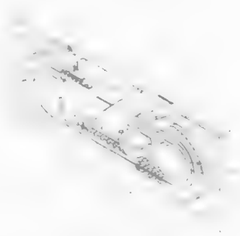
said baffle wall being mechanically expanded outwardly to result in permanent plastic outward deformation of said wall of said tubular member and thereby to form therein a circumferential indentation, said inner and outer surfaces of said wall of said tubular member being outwardly deformed permanently at said indentation, said expanded baffle wall being firmly and permanently engaged in said indentation and thereby forming a leak-proof closure to block the medium from said open end of said tubular member.

4,762,153

WEAVING LOOM WITH MAGNETIC SHUTTLE

Wu-Chen Chuang, No. 6, Lane 70, Ting-Mei I St.; Chi-Shuang Huang, No. 23, Lane 235, Kai-San Rd., both of Tainan, and Vincent Chuang, No. 30, Lane 100, Kuang-Hua I Rd., Kaohsiung, all of Taiwan

Filed Jan. 15, 1987, Ser. No. 3,557
Int. Cl.[4] D03D *49/26*
U.S. Cl. 139—134 4 Claims



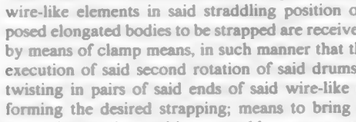
1. A weaving loop comprising:
(a) means for supplying warps in a letoff motion;
(b) means for forming a shed between said warps;
(c) a race rail in the form on an endless loop with an elongated opening in the portion which transverses the shed; said endless loop of the race rail comprises parallel horizontal portions and two curved portions, each curved portion interconnecting adjacent ends of the horizontal portions,
(d) a magnetic shuttle movable along said race rail for guiding wefts into the shed;
(e) magnetic drive means comprising a belt extending along the race rail and electrically operated to circulate around the race rail, and a first series of magnets fixed on said belt for attracting and driving the magnetic shuttle to fly along the race rail;
(f) a reed assembly comprising a series of aligned reed dents, each reed dent having a horizontal portion so aligned to form a horizontal surface which takes the place of said rail race for guiding said shuttle in passing the shed; and
(g) means connected to said reed assembly for reciprocating it; whereby said shuttle is moved at a constant speed in a smooth manner due to said endless race rail.

4,762,154

AUTOMATIC APPARATUS FOR STRAPPING ELONGATED SUPERPOSED BODIES

Guido Cianciullo, 27/B Viale degli Eucalipti, I-84100 Salerno SA, Italy

PCT No. PCT/IT86/00043, § 371 Date Feb. 17, 1987, § 102(e) Date Feb. 17, 1987, PCT Pub. No. WO86/07618, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 16, 1986, Ser. No. 29,204
Claims priority, application Italy, Jun. 17, 1985, 48229 A/85
Int. Cl.[4] B21F *9/02*
U.S. Cl. 140—119 17 Claims



1. An automatic apparatus for the strapping of elongated superposed bodies, comprising: at least one container wherein several, relatively rigid and previously proportioned and shaped strapping wire-like elements are placed side by side; pushing means in said at least one container, capable of bringing each of said wire-like elements in succession at respective entrainment means, capable of carrying in a guided way, at each stroke, two of said wire-like elements in a straddling position on the upper of said superposed elongated bodies, each along opposite sides of the lower one; two drums associated to first and second means which impart to each of them respectively a first rotation from a disengaged position to an operating position and a second rotation around their axis when they are in said operating position, each of said drums being provided with two housings in which, following the execution of said first rotation, the respective ends of said two wire-like elements in said straddling position on said superposed elongated bodies to be strapped are received and locked, by means of clamp means, in such manner that the subsequent execution of said second rotation of said drums provides the twisting in pairs of said ends of said wire-like elements performing the desired strapping; means to bring back to their respective starting positions movable components consisting of said pushing means, said entrainment means, said drums and said clamp means.

4,762,155

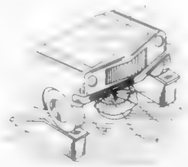
METHOD AND KIT FOR REMOVING AND DISPOSING OF OIL FROM A VEHICLE

David E. Gruber, Libson, Ohio, assignor to Ganeaux Industries, Inc., Salem, Ohio

Filed Oct. 16, 1987, Ser. No. 109,191
Int. Cl.[4] B67C *9/00*
U.S. Cl. 141—10 5 Claims

1. A method of removing and disposing of oil from the crankcase of a vehicle engine by using a flexible bag containing a predetermined amount of granular clay and a support pan, said method including the steps of:

(a) placing the bag containing the granular clay in the support pan;
(b) turning a top portion of the flexible bag which defines an open end of the bag, down over a top edge of the support pan to expose the granular clay;
(c) placing said pan, bag, and granular clay beneath an oil drain of a vehicle crankcase;



(d) removing a drain plug from the crankcase and allowing oil within the crankcase to drain from the crankcase and into the granular clay and be absorbed thereby; and
(e) removing the bag containing the granular clay and absorbed oil from the pan and placing it in a refuse container for subsequent transportation to a disposal site.

4,762,156

FUEL FILL VAPOR RECOVERY SYSTEM WITH VAPOR RECIRCULATION

Gregory E. Rich, Richmond, Mich., assignor to General Motors Corporaton, Detroit, Mich.

Filed Jul. 16, 1987, Ser. No. 74,099
Int. Cl.[4] B01D *53/04;* B67D *5/04*
U.S. Cl. 141—46 2 Claims



1. In a vehicle having a fuel tank that is filled through a filler neck that is open to the atmosphere when a fuel nozzle is inserted therein so that atmospheric air tends to be drawn into said filler neck by the rapid flow of fuel from said nozzle into said filler neck, a vapor recovery system for reducing the volume of air-fuel vapors produced in and displaced from said tank during fuel fill, and for storing said vapors, comprising,
a vapor storage canister,
a tank venting line running from the interior of said fuel tank to said canister which is open during fuel fill so that vapors displaced from said tank during fuel fill may pass to said canister to be stored,
a shield portion in said filler neck sized so as to receive said fuel nozzle therethrough with a clearance sufficiently small to substantially block the entry of atmospheric air into said filler neck, and thereby create a negative pressure within said filler neck beneath said shield portion during fuel fill the strength of which is proportional to the rate of the fuel flow,
a vapor recirculation line branching from said tank venting line and opening into said filler neck beneath said shield portion, and
a regulating valve in said recirculation line that is normally closed, but which is opened by said filler neck negative pressure, so that a portion of the vapors displaced from said fuel tank during fuel fill will be recirculated from said tank interior, through said tank venting line, recirculation line and regulation valve to said filler neck and back to said tank interior as said fuel flows, said regulating valve further opening by a variable amount that increases as said filler neck negative pressure becomes more negative, whereby the portion of said fuel fill vapors so recirculated will be sufficiently small for low rates of fuel flow to prevent said filler neck negative pressure from exceeding atmospheric pressure allowing said recirculated vapors to escape past said shield portion to atmosphere, while the portion of said fuel vapors recirculated at higher rates of fuel flow and consequently greater negative pressures will be sufficiently great to substantially prevent atmospheric air from being drawn into said filler neck, thereby reducing the amount of atmospheric air entrained in said fuel and reducing the amount of air-fuel vapors produced in the tank interior during fuel fill.

4,762,157

METHOD AND MACHINE FOR RESAWING AND WORKING BOARDS OF OPTIONAL WIDTH INTO LATHS

Bengt Andersson, Halmstad, Sweden, assignor to Waco Jonsereds AB, Halmstad, Sweden

Filed Jun. 15, 1987, Ser. No. 61,802
Claims priority, application Sweden, Jun. 18, 1986, 8602713
Int. Cl.[4] B27L *7/00*
U.S. Cl. 144—369 4 Claims



1. A machine for resawing boards of optional width into laths, comprising a frame having a feed table and a guide edge extending along one long side of said feed table, at least one feed mechanism adapted to feed the boards along the feed table with one flat side facing the table, as well as planing and sawing means, wherein said sawing means comprise a number of saw blades adapted to the maximum board width and coaxially mounted on a drive shaft at spaced apart intervals corresponding to the desired lath width and being mounted transversely of the feed table adjacent the board infeed end; splitting knives rigidly mounted in the board feed direction directly after the sawing means and defining between themselves compartments each adapted to accommodate a lath; pressure means provided above each compartment to apply to said laths a predetermined force directed against the feed table; and first and second planing means adapted to plane first the lower side and then the upper side of the laths.

4. A method of resawing and working boards of optional width into laths comprising the steps of:
(a) feeding an unplaned board into a resawing and planing machine with one flat side of the board facing a feed table of the machine;
(b) sawing the board into a plurality of laths of predetermined width;
(c) introducing each lath into a compartment defined by rigidly clamped splitting knives for absorbing lateral forces and extending forwardly in the feed direction at

VOL 1093 ISS 2 AG 9 1988 UMI

least into a position for working the flat side of the board facing the feed table;

(d) subjecting each lath in its compartment to a pressure directed against the feed table for first planing the side of the lath facing the feed table and thereafter planing the side of the lath facing away from the feed table; and

(f) discharging the laths from the machine.

4,762,158

REDUCED ROLLING RESISTANCE PNEUMATIC RADIAL TIRE

Shinichi Furuya; Kuninobu Kadota, both of Tokyo; Minoru Togashi, Adachi, and Kenshiro Kato, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 11, 1986, Ser. No. 838,750

Claims priority, application Japan, Mar. 15, 1985, 60-51618; Jul. 24, 1985, 60-161757; Feb. 12, 1986, 61-28344

Int. Cl.[4] B60C *3/00, 9/02, 15/06*

U.S. Cl. 152—454 13 Claims



1. A heavy duty pneumatic radial tire comprising; a carcass consisting of at least one layer of inextensible cords substantially radially arranged, a breaker consisting of at least two layers of metal cords to form a main reinforcement with said carcass, and bead portions including stiffeners, said carcass having a ratio of radii R/R′ within a range of 0.65–0.85 and f within a range of 3–8 mm when said tire mounted on a a normal rim is filled with a normal inner pressure, R′ is a radius of a standard circle passing through points B, E, C, wherein point B is an intersection of the carcass and a line extending in parallel with a rotating axis of the tire and passing through a point spaced from a rim diameter line l by a distance h that is 15% of radial height SH of the tire, point C is an intersection of the carcass and a line extending through the point B and perpendicular to said rotating axis of the tire, and point E is an intersection of a line extending through a middle point D of a line segment BC and in parallel with said rotating axis and a line extending through a carcass maximum width point F and perpendicular to the rotating axis, R is a radius of profile curvature of a shoulder passing through said point C, and f is the maximum distance between an arc of said standard circle and the remaining carcass line smoothly extending from said profile curvature of said shoulder to said point B having a single carcass curvature reverse position and wherein when said tire mounted on the normal rim is filled with the normal inner pressure, each sidewall of the tire has a radial profile over a radially inner zone of the sidewall of 20–45% of the radial height SH such that a curvature $1/\rho$ of a surface of the sidewall at a location 32.5% of the radial height corresponding to a center of the profile is less than 6×10^{-3} mm^{-1}, said curvature being a mean value of curvature obtained by differentiating a cubic curve indicating the profile, and when the tire mounted on the rim is filled with the inner pressure from 5% of a nominal pressure to the normal inner pressure, a bulged deformation in the zone radially inward of the carcass maximum width position being much greater than that in the zone radially outward of the carcass maximum width position which is substantially unnoticeable.

4,762,159

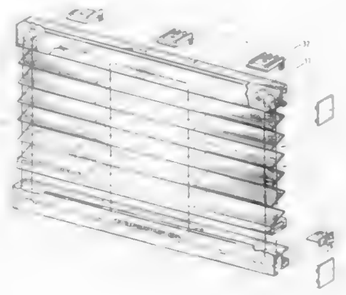
SHADE SYSTEM

Alan A. Ford, Sturgis, Mich., assignor to Cooper Industries, Houston, Tex.

Filed Sep. 18, 1986, Ser. No. 908,860

Int. Cl.[4] E06B *9/262*

U.S. Cl. 160—84.1 11 Claims



1. A shade system for a window comprising:

a fixed first rail;

a fixed second rail;

a movable middle rail, said movable middle rail being positionable with respect to said fixed first rail and said fixed second rail;

a shade fabric affixed to said fixed first rail and said movable middle rail;

a cord constructed and arranged to move substantially around the perimeter of the shade system by passing over a plurality of pulleys;

a spring tensioner within said middle rail, said spring tensioner having a first portion attached to said middle rail and a second portion releasably connected to said cord;

a rotatable drive member constructed and arranged to move said cord around said pulleys;

whereby rotation of said rotatable drive member causes said cord to move substantially around the perimeter of said shade system over said pulleys which in turn causes said movable middle rail to be positioned with respect to said fixed first rail and said fixed second rail.

4,762,160

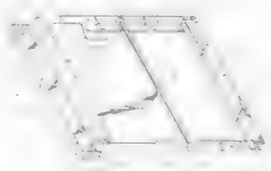
SKYLIGHT SHADE ASSEMBLY

Stephen K. Bechtold, 306 Ocean Ave., Northport, N.Y. 11768, and Alec W. Bechtold, 54 N. Bayles Ave., Port Washington, N.Y. 11050

Filed Aug. 22, 1986, Ser. No. 899,015

Int. Cl.[4] A47H *1/00*

U.S. Cl. 160—98 12 Claims



1. A shade assembly for a skylight mounted in an opening in a structure forming a visual passageway and which includes a supporting base mounted in the opening in the structure and having a dome assembly positioned on the supporting base to overlie the opening, said skylight shade assembly comprising:

a support bracket adapted to be affixed to said supporting base, the support bracket including a portion thereof extending partially into the visual passageway of the skylight;

a shade support having a shade rolled thereabout, said shade having a fixed end and a free end;

an elongated end bar having opposite axial ends, the end bar being secured to the shade at the free end thereof;

means on said bracket and said shade support to permit rotatable mounting of said shade support on said bracket so that said shade support can rotate to permit the rolling and unrolling of said shade with respect to said bracket, the shade support being mounted on the support bracket and disposed over the portion thereof which extends into the visual passageway so that the shade support and shade rolled thereon are not viewable form below the shade assembly;

a pair of pull cords, each of the pull cords being secured to an axial end of the shade end bar, the pull cords being adapted to be grasped and pulled to actuate rolling and unrolling of said shade; and

guide means adapted to be mounted on said supporting base of said skylight for guiding the shade during rolling and unrolling movement thereof, said guide means including:

(a) a pair of parallel, spaced apart side moldings, each side molding being adapted to be mounted on the supporting base, and including a portion thereof extending partially into the visual passageway of the skylight, the axial ends of the end bar being slidably supported by said molding portions, and the pair of pull cords joined to the axial ends of the end bar being disposed over portions thereof above said side molding portions and parallel thereto so as not to be viewable from below the shade assembly;

(b) an end molding, the end molding being adapted to be mounted on the supporting base at a position opposite to the support bracket, the side moldings being interposed between the support bracket and the end molding and defining therewith a frame, the end molding including a portion thereof extending partially into the visual passageway of the skylight, the pair of pull cords being disposed over portions thereof above said end molding portions and extending parallel thereto so as not to be viewable form below the shade assembly;

(c) a first pair of pulleys, each pulley of the first pair being mounted on the end molding over said end molding portion so as not to be viewable from below the shade assembly, the axis of each pulley of the first pair being disposed perpendicularly to the plane in which the shade resides, the pull cords engaging each pulley of the first pair and being partially wrapped thereabout; and

(d) a second pair of pulleys, each pulley of the second pair being mounted on the end molding over said end molding portion so as not to be viewable from below the shade assembly, the axis of each pulley of the second pair being disposed perpendicularly to the axis of the pulleys of the first pair, the second pair of pulleys being disposed on the end molding between the pulleys of the first pair, the pulll cords engaging each pulley of the second pair and being partially wrapped thereabout, the end molding having an opening formed therethrough, the pull cords being received by the end molding opening and extending downwardly therefrom for grasping to effect movement of the shade.

4,762,161

LOCKING DEVICE FOR USE WITH A BLIND ASSEMBLY

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Upper Saddle River, N.J.

Continuation of Ser. No. 733,553, May 13, 1985, abandoned. This application Jan. 20, 1987, Ser. No. 4,928

Int. Cl.[4] E06B *9/324*

U.S. Cl. 160—178.2 4 Claims



1. A blind assembly including a locking device, said blind assembly mounted in a wall opening and comprises a fixed end rail, a movable end rail, a blind extending between the end rails, and means for moving said movable end rail relative to said fixed end rail to move said blind towards open and closed positions; said locking device including a base portion adapted to be connected to a side member of said wall opening, a resilient finger portion connected at one end to said base portion and adapted at its opposite free end to engage with a part of said movable end rail when in a locking position and to be moved out of engagement with said part when moved to an unlocked position, the free end of said resilient finger portion includes a beveled surface ending in a locking shoulder adapted to engage a projection on an end of said movable end rail when said movable end rail is in a blind closed position whereby when said movable end rail is moved towards a blind closed position, said projection will slide along said surface to move said finger portion towards an unlocked position until said projection moves beyond the end of said surface at which point the finger portion will snap to a locked position with the locking shoulder engaging a side of said projection thereby preventing movement of said movable end rail to a blind open position, said means for moving said movable end rail including an operating cable for moving said movable end rail and a cap member adapted to connect said base portion to a side member and wherein said cap member includes operating cable turning means by which said operating cable is guided through substantially 180°.

4,762,162

SHADE BRACKETS AND ASSEMBLY

Frank S. Chochrek, 95 Eastern Ave., Woburn, Mass. 01801

Continuation of Ser. No. 699,631, Feb. 8, 1985, abandoned. This application Dec. 31, 1986, Ser. No. 948,324

Int. Cl.[4] A47H *1/13*

U.S. Cl. 160—323.1 3 Claims

1. A shade saver assembly comprising:

a replacement window unit of the type forming a complete unit fitting a window opening, including a frame with opposite vertical sidewalls and opposite trim pieces each lining one of the opposite vertical walls;

a roll-up window shade having a gudgeon at one end and a spring wind-up spear at the other end;

a pair of shade brackets, each having an elongated, relatively narrow body of thin sheet metal with a first straight portion about three quarters of its length forming a base, and

VOL 1093 ISS 2 AG 9 1988 UMI

having a plurality of sharp pointed prongs extending outwardly at right angles therefrom toward the said walls and piercing into one of said opposite vertical walls, each said elongated body being bent inwardly at right angles toward the other body for a distance of about one-quarter inch and each said elongated body then being bent again at right angles into parallelism with and in, extension of said base to form a cantilevered shade support with a curved terminal edge;



an elongated strip along an upper edge of the base of each said bracket is cut away so that the prongs along the remaining upper edge are unlikely to split the top edge of the inner vertical walls of said frame;

one said cantilevered support having an open slot on the outside edge of the terminal end and the other said support having a hole at the terminal end for said gudgeon;

each said bracket fitting under one of said trim pieces at right angles thereto and so that only the shade support portions thereof are visible.

4,762,163

DIE CASTING ARRANGEMENT

Fumitaka Takehisa, Anjo; Mitsuyoshi Yokoi, Takahama, and Fumio Kondoh, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 29, 1986, Ser. No. 947,207
Claims priority, application Japan, Dec. 27, 1985, 60-298396
Int. Cl.[4] B22D *17/10*; B22C *3/00*
U.S. Cl. 164—72 12 Claims



1. A die-casting method using a stationary mold, a movable mold contactable with said stationary mold to define therewith a mold cavity, an injection sleeve opening at one end to said mold cavity for introducing molten metal into said mold cavity, and an ejector pin for ejecting the molten metal in solidified form from said mold cavity, said method comprising the steps of:

spraying a lubricant over a high-temperature portion of a sprue interconnecting said mold cavity and said injection sleeve thereby carbonizing a part of said lubricant;

forming said mold cavity by bringing said movable mold into contact with said stationary mold;

supplying the molten metal to said injection sleeve;

injecting, using an injection plunger, the molten metal from said injection sleeve into said mold cavity so that said molten metal conveys said lubricant toward said mold cavity;

solidifying the molten metal in said mold cavity to form a solidified article;

parting said movable mold from said stationary mold; and

ejecting the solidifed article from said mold cavity, the above-mentioned steps being carried out in the sequence written

wherein at least a part of said lubricant is mixed into said molten metal during said injecting operation and the lubricant mixed into said molten metal has already been carbonized during said spraying operation.

4,762,164

MOLD FRICTION MONITORING FOR BREAKOUT PROTECTION

John W. Grove, Cranberry Township, Vanago County, Pa., assignor to USX Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1987, Ser. No. 87,490
Int. Cl.[4] B22D *11/16*
U.S. Cl. 164—150 16 Claims



1. A continuous caster mold assembly comprising:

a continuous caster mold, having a mold cavity open at top and bottom ends thereof,

a frame for support of said mold, said mold and frame being oscillatable in unison in a direction of casting, and

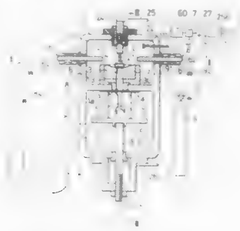
a plurality of vertical force indicating means for indicating the vertical forces exerted by the mold on said frame during the oscillation thereof, including at least first and second vertical force indicating means mounted on a first of two adjoining downwardly and upwardly facing surfaces of opposed walls of the mold and the frame for bearing the load therebetween, each of said first and second vertical force indicating means including a set of at least two load cells spaced in a horizontal direction, said load cells each having an elongated member associated therewith adapted for variable deflection in a vertical direction, and means mounted on a second of said two facing surfaces for guiding slidable movement of said opposed walls with respect to the frame in said horizontal direction during oscillation of said mold, said means for guiding slidable movement including track means and a horizontal guide member mounted on the variably deflectable member of the load cells in each set so as to cause vertical deflection of said variably deflectable members, said guide member being slidably movable in the track means in said horizontal direction, said track means being adapted to permit relative tilting of the mold and said frame due to imbalance in oscillation of the mold during casting, said guide member serving to reduce the effect of lateral forces due to such imbalance and more accurately transmit vertical forces to the load cells in each set thereof.

4,762,165

ARC MELTING AND CASTING METHOD AND APPARATUS THEREOF

Sekiya Ogino, Kyoto; Shigehiko Inoue, Osaka; Touru Tomai, Kyoto, and Masami Tamura, Osaka, all of Japan, assignors to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Dec. 18, 1986, Ser. No. 944,335
Claims priority, application Japan, Dec. 23, 1985, 60-289726
Int. Cl.[4] B22D *13/06, 18/00, 18/06, 27/02*
U.S. Cl. 164—457 6 Claims



1. An arc melting and casting method in which a metal material in a crucible in an airtight chamber is melted by an arc column generated from an arc generation electrode disposed in said airtight chamber and the molten metal of said metal material is poured into a casting mold disposed to receive said molten metal from said crucible, wherein said airtight chamber is divided into a melting chamber and a casting chamber, and the pressure in said melting chamber is set higher than that in said casting chamber so that said metal material melted in said melting chamber is forcibly poured into said casting mold in said casting chamber using the pressure difference, said method being characterized in that said method comprises melting said metal material by moving the magnetic flux of electromagnets substantially perpendicular to said arc column to apply Lorentz force from outside said airtight chamber to said arc column and said metal material so that said arc column can move over said metal surface, determining a direction of movement and speed of said arc column by detecting an arc voltage of said arc column, performing feed back control by comparing the detected arc voltage with a preset arc voltage so that optimum control is performed, and pouring said molten metal into said casting mold, and controlling an excitation current of said electromagnets depending on said detected arc voltage so that said metal material is slightly floated from said crucible by said Lorentz force when said material is melted.

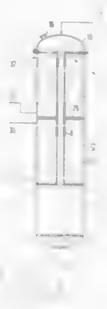
3. An arc melting and casting apparatus comprising an airtight chamber, an arc generation electrode electrically insulated and installed in said airtight chamber, a crucible having the same electric potential as that of said airtight chamber, a metal material facing said arc generation electrode and disposed in said crucible, a casting mold disposed to receive molten metal from said crucible, electromagnets disposed outside said airtight chamber and virtually perpendicular to the axis of said arc generation electrode, an excitation power supply which supplies changing excitation current to the excitation coils of said electromagnets, and a control circuit which detects the arc voltage of said arc generation electrode and properly controls said excitation current, and wherein said airtight chamber is divided into said melting chamber which includes at least said arc generation electrode and said crucible and said casting chamber which includes at least said casting mold, exhaust ports connected to a vacuum or exhaust means are disposed in said melting chamber and said casting member respectively, and an inlet port connected to an inert gas supply means is disposed in said melting chamber, whereby the magnetic flux of said electromagnets is moved by said changing excitation current to apply Lorentz force to the arc column generated from said arc generation electrode and said metal material so that said arc column is moved over the surface of said metal material to uniformly melt said metal material, and said arc voltage and said excitation current are controlled so that said metal material can be slightly floated from said crucible by said Lorentz force.

4,762,166

METHOD FOR THE HEATING OF A FLUID AND APPARATUS FOR CARRYING OUT THE METHOD

Ulrich Dümmler, Marxzell, Fed. Rep. of Germany, assignor to GEA Wiegand GmbH, Fed. Rep. of Germany

Filed Apr. 3, 1986, Ser. No. 847,500
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1985, 3512451
Int. Cl.[4] F23D *15/00*
U.S. Cl. 165—1 8 Claims



1. A process for heating a liquid in an apparatus having at least one vertically arranged tube having an internal space and an inner surface on which said liquid flows downwardly in the form of a trickling film, said tube extending through at least two heating zones defined in said apparatus, each said heating zone having a predetermined temperature with the respective temperatures of said heating zones increasing in a downward direction, said process comprising the step of:

maintaining the internal space of said tube at a gas pressure higher than the vapour pressure of said liquid in said trickling film.

4,762,167

WATER MANAGEMENT SYSTEM

Thomas R. Dobson, Shillington, Pa., assignor to Tricorn, Inc., Shillington, Pa.

Filed Nov. 20, 1986, Ser. No. 932,604
Int. Cl.[4] F28F *7/00*; G01F *15/04*; G01D *13/02*
U.S. Cl. 165—11.1 5 Claims



1. A water management system for circulating water heat exchange devices comprising:

an aqueous based heat exchange liquid in which an effective

VOL 1093 ISS 2 AG 9 1988 UMI

level of dissolved corrosion inhibitors and fluorescent dye is established,

conduit means through which the heat exchange liquid circulates between a source of heat and a cooling device

a concentrate containing a fixed ratio of the corrosion inhibitors to the fluorescent dye which concentrate is packaged in defined unit quantities, and

a comparator by which a visual colorimetric indication of the amount of the inhibitors and dyes in the system can be obtained and which comparator is calibrated to indicate the number of unit quantities that need be added, if any, to reestablish the effective level.

4,762,168

CONDENSER HAVING APPARATUS FOR MONITORING CONDITIONS OF INNER SURFACE OF CONDENSER TUBES

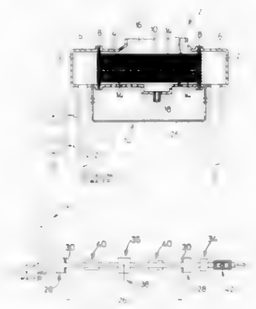
Atsushi Kawabe, Sakai; Katsumi Yasui, Nishinomiya; Masaki Yamamoto, Akashi; Koji Nagata, Nisshin; Tetsuro Atsumi, Nagoya, and Mamoru Nishikawa, Mie, all of Japan, assignors to Sumitomo Light Metal Industries, Ltd., Tokyo and The Kansai Electric Power Company, Incorporated, Osaka, both of, Japan

Filed Nov. 24, 1986, Ser. No. 933,927

Claims priority, application Japan, Nov. 28, 1985, 60-267700

Int. Cl.[4] G01N *17/00;* F28G *1/12, 9/00*

U.S. Cl. 165—11.1 5 Claims



1. A condenser including a body which accommodates a plurality of condenser tubes made of a copper alloy, through which a coolant is caused to flow, the condenser further including a ferrous-ion injecting device for injecting ferrous ions into the coolant before it passes through the condenser tubes in order to form a protective film on an inner surface of each of the condenser tubes, and a first sponge-ball supply device for introducing sponge balls into the condenser tubes for cleaning the inner surfaces of the condenser tubes, comprising:

a by-pass line disposed so as to extend outside said body, in parallel connection with said plurality of condenser tubes in said body, said by-pass line having a monitor tube made of substantially the same material as said condenser tubes and having substantially the same size as said condenser tubes, so that coolant, ferrous ions and sponge balls are caused to flow through said monitor tube under substantially the same operating conditions as in said condenser tubes, said by-pass line having a pair of by-pass water chambers disposed at opposite ends of said monitor tube;

polarization-resistance measuring means disposed in an intermediate portion of said monitor tube, for measuring a polarization resistance of said monitor tube; and

fouling measuring means disposed in said intermediate portion of said monitor tube, for measuring a condition of fouling of the inner surface of said monitor tube, said fouling measuring means consisting of a pair of fouling measuring devices one of which is disposed between said polarization-resistance measuring means and one of said by-pass water chambers, and the other of which is disposed between said polarization-resistance measuring means and the other by-pass water chamber;

said body having a vapor chamber through which said plurality of condenser tubes extend, and first and second water chambers disposed on opposite sides of said water chamber such that said condenser tubes communicate with said water chambers, and such that said coolant flows into said condenser tubes through said first water chamber, said by-pass line being connected at opposite ends thereof with said pair of water chambers;

whereby said ferrous-ion injecting device and said first sponge-ball supply device for said condenser tubes in said body of the condenser may be adjusted in response to the polarization resistance measured by said polarization-resistance measuring means and the condition of fouling measured by said fouling measuring means.

4,762,169

HEATING AND/OR AIR-CONDITIONING SYSTEM FOR THE INTERIOR OF MOTOR VEHICLES

Jürgen Andersen, and Lothar Busch, both of Gilching, Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP85/00361, § 371 Date Apr. 8, 1986, § 102(e) Date Apr. 8, 1986, PCT Pub. No. WO86/00855, PCT Pub. Date Feb. 13, 1986

PCT Filed Jul. 20, 1985, Ser. No. 846,455

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1984, 3427292

Int. Cl.[4] F25B *29/00;* B60H *3/00;* B61D *27/00*

U.S. Cl. 165—25 5 Claims



1. A heating/air-conditioning system for the interior of motor vehicles comprising:

operation selection means for selecting defrosting, heating or cooling modes of operation;

a first and second temperature-selection means manually operated separately for both the driver and passenger halves of the interior of the automatic temperature control of the heating and cooling air flowing into the respective half of the interior;

a plurality of adjustable air-admission control element means for controlling the admission of air flow for the foot space, for defrosting and for ventilating;

first air-admission selection means for selecting program or fixed modes of air-admission exclusively (a) for said foot space and ventilating air-admission control element means on the driver's half of the interior and (b) for said defrosting air-admission control element means on both halves of the interior;

second air-admission selection means for selecting program or fixed modes of air-admission exclusively for said foot space and ventilating air-admission control element means on the passenger's half of the interior; and

control means for individually adjusting the position of said plurality of air-admission control element means in response to said operation selection means, respective first and second temperature-selection means and respective first and second air-admission selection means.

4,762,170

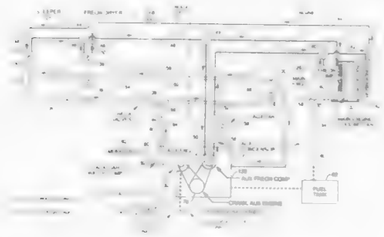
AUXILIARY POWER SYSTEM FOR TRUCKS AND OTHER HEAVY DUTY VEHICLES

Parmjit S. Nijjar, Newark, and Joseph J. Neff, Fremont, both of Calif., assignors to Paccar Inc., Newark, Calif.

Filed Nov. 16, 1987, Ser. No. 122,247

Int. Cl.[4] F02N *17/06;* B60H *1/22, 1/03*

U.S. Cl. 165—43 4 Claims



1. In a truck or other heavy duty vehicle having a cab, a battery, a main engine having an engine block and a water jacket, a radiator and coolant lines coupling the water jacket of the main engine to the radiator, at least one heating unit and additional coolant lines including an additional outlet coolant line for delivering coolant fluid from the water jacket of the main engine to the heating unit and an additional inlet coolant line for returning coolant fluid from the heating unit to the water jacket of the main engine; an auxiliary power system comprising:

a secondary engine smaller than and independent of said main engine, said secondary engine having a water jacket with an inlet for coolant fluid and a auxiliary water pump for pumping coolant fluid out of said water jacket of said secondary engine; and

auxiliary coolant lines including an auxiliary coolant outlet line for routing coolant pumped by said auxiliary water pump into said water jacket of the main engine, and an auxiliary coolant inlet line for routing coolant fluid from the water jacket of the main engine into said water jacket of said secondary engine; said auxiliary coolant outlet line being coupled to the additional coolant inlet line, for returning coolant fluid from the heating unit to the water jacket of the main engine, with one way check valves in said auxiliary coolant outlet line and in the additional coolant inlet line to prevent back flow of coolant fluid into the heating unit and into said secondary engine's water jacket.

whereby the waste heat generated by said secondary engine can be used to heat the main engine and the heating unit.

4,762,171

PLATE TYPE EVAPORATOR

Bengt Hallstrom, Lund; Olle Olsson, Astorp; Ulf Bolmstedt, Staffanstorp, and Bjorn-Olow Johansson, Lomma, all of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Continuation-in-part of Ser. No. 328,662, Dec. 8, 1981, abandoned. This application Dec. 10, 1981, Ser. No. 329,573

Claims priority, application Sweden, Dec. 8, 1980, 80085954

Int. Cl.[4] F28F *13/08, 3/08;* **B01D** *1/22*

U.S. Cl. 165—147 3 Claims

1. A plate evaporator of the rising and/or falling film type comprising a series of heat exchange plates disposed substantially vertically in spaced face-to-face relationship to define evaporation passages through which a medium to be evaporated is adapted to pass in a flow direction, said plates also defining heating medium passages alternating with said evaporation passages, each plate having a part operable to conduct heat from a heating medium passage to an adjacent evaporation passage, each evaporation passage having an inlet end portion and an output end portion, the two plates of each pair of adjacent plates defining an evaporation passage having respective heat exchange surfaces which diverge from each other in said flow direction, thereby providing the evaporation passage with a cross-sectional area which increases in said direction, the width of each of said heat exchange surfaces decreasing from a relatively large width at said inlet end portion to a relatively small width at said outlet end portion of the evaporation passage, to provide the evaporation passage with a perimeter at a given cross-section through the evaporation passage which decreases from its inlet to its outlet end portion.



4,762,172

HEAT EXCHANGE DEVICE OF THE PERFORATED PLATE EXCHANGER TYPE WITH IMPROVED SEALING

Alain Grehier, Paris, and Alexandre Rojey, Garches, both of France, assignors to Institute Francais du Petrole, Rueil-Malmaison, France

Filed Jun. 23, 1986, Ser. No. 877,038

Claims priority, application France, Jun. 25, 1985, 85 09771

Int. Cl.[4] F28D *7/02*

U.S. Cl. 165—165 10 Claims



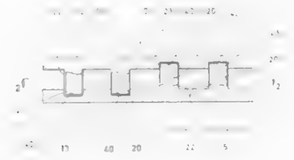
1. A heat exchange device including an exchange zone formed of a stack of perforated plates with perforations disposed so that, in the stack of said plates, superimposition and alignment of the perforations creates flow spaces for at least two fluids, in which, between consecutive plates of said stack seals are inserted to compensate for flatness defects in said plates; the seals being disposed so that aligned perforations of the plates through which one of said fluids flows, is separated from aligned perforations through which another fluid flows, wherein the cohesion of said stack is maintained by a clamping pressure of about 2 to 50 bars exerted by a plurality of tie-rods passing through some of the aligned perforations of said stack, oriented perpendicular to the planes of the plates and distributed over the whole volume thereof; the seals being formed of expanded graphite manufactured under conditions such that the expanded graphite has a bulk density of about 200 to 500 $kg.m^{-3}$.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,173
HIGH EFFECTIVENESS CONTOUR MATCHING CONTACT HEAT EXCHANGER

Robert L. Blakely, Madison, Ala.; George J. Roebelen, Jr., Suffield, and Arthur K. Davenport, E. Hartland, both of Conn., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 19, 1986, Ser. No. 943,346
Int. Cl.[4] F28F *3/14*
U.S. Cl. 165—170 10 Claims



1. A high effectiveness contour matching contact heat exchanger having substantial manufacturing and physical distortion tolerance, comprising:

(a) opposing shell members,

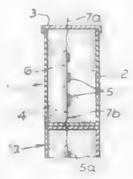
(b) a plurality of heat transfer pins extending between said shell members, each said pin having a base and an outer end opposite said base, and each of said pins being attached at its respective base to a predetermined one of said shell members, and

(c) means forming a close fitting receptacle for receiving the portion of each said pin at said outer end thereof in the opposing said shell member and closely contacting the sides of each said pin thereat while providing for relative movement between each said pin and its corresponding receptacle, for efficiently transfering heat between said pins and said shell members notwithstanding variations in the inter-shell spacing as much as substantially the depth of said receptacles.

4,762,174
HEAT SINK

Raymonde G. C. Artus, The Cedars, 95 Crescent Road, Reading, Berkshire, England

Filed Apr. 11, 1986, Ser. No. 850,773
Claims priority, application United Kingdom, Apr. 12, 1985, 8509619
Int. Cl.[4] F28F *7/00*
U.S. Cl. 165—185 7 Claims

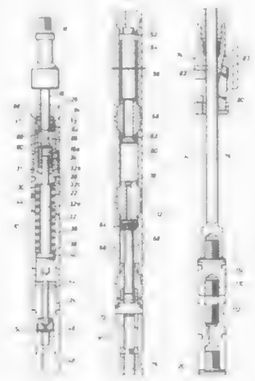


1. A heat sink comprising a sealed cell packed with a stiff paste consisting essentially of a mixture of electrically non-conductive particles of at least one microcrystalline material selected from the group consisting of diamond, cubic boron nitride, sapphire and silicon carbide and an electrically non-conductive filler material which fills the voids between the particles of the microcrystalline material, the particles being of a concentration to produce in the heat sink a thermal conductivity that is non-linear with temperature and which has a positive coefficient such that the thermal conductivity increases with increasing temperature, and wherein the mean particle to particle distance is about 0.1μ or less.

4,762,175
APPARATUS FOR CONNECTING JARS TO A DOWNHOLE TOOL

James M. Perricone, Spring, Tex., assignor to Petro-Tech Tools Incorporated, Houston, Tex.

Filed May 6, 1987, Ser. No. 46,313
Int. Cl.[4] E21B *31/107*
U.S. Cl. 166—63 14 Claims



1. Apparatus for connecting the firing head of a downhole tool to a set of jars to allow the jars to jar up and jar down comprising a firing head housing, a hammer located in the housing, resilient means urging the hammer toward a firing pin, a mandrel extending into the housing having one end adapted for connecting to a jar and the other end connected to the hammer by a shear pin, said mandrel having spaced oppositely facing shoulders, lock segment means spaced around the mandrel, means limiting the movement of the lock segment means along the axis of the housing, and means urging the lock segment means toward the mandrel to move the lock segment means into position to engage the oppositely facing shoulders to limit axial movement of the mandrel relative to the housing in either direction when the pin is sheared and the hammer released to strike the firing pin.

4,762,176
AIR-WATER SEPARATOR

Orand C. Miller, P.O. Box 711, Garden City, Kans. 67846

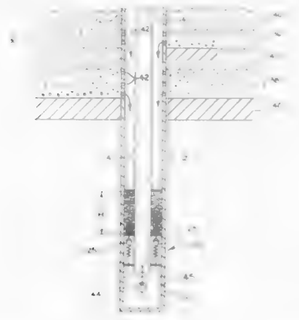
Filed Mar. 23, 1987, Ser. No. 29,208
Int. Cl.[4] E21B *43/38*
U.S. Cl. 166—105.5 6 Claims

1. A water well separator assembly for separating air from an air entrained flowable liquid in a well casing which assembly is adapted to be associated with a submersible pump with a pump inlet downstream of the separator for pumping the liquid through a discharge pipe concentrically positioned inside the casing, the assembly comprising:

a collar member means attachable to and surrounding the discharge pipe to prevent fluid flow in the casing;

a plurality of spring-biased check valve means positioned in the collar each means including a poppet member and spring, the poppet members are normally spring-biased closed but open and allow gravity flow through the collar member to the pump inlet when a certain predetermined head pressure is created on the upstream side of the separator;

the separator assembly being positioned just upstream of the pump inlet whereby the liquid passing through the assembly has stood in a static column sufficiently long for the entrained air to separate before entering the pump inlet.



4,762,177
SLIP GRIPPING MECHANISM WITH FLOATING CONE SEGMENTS

Sidney K. Smith, Jr., Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jul. 24, 1987, Ser. No. 77,559
The portion of the term of this patent subsequent to Mar. 22, 2005, has been disclaimed.
Int. Cl.[4] E21B *23/00, 43/10*
U.S. Cl. 166—216 10 Claims



1. A slip gripping mechanism for supporting a cylindrical conduit within the interior bore of a circumscribing conduit in a well bore, the cylindrical conduit being made up of a plurality of joints of pipe, at least one of the joints having a cylindrical external diameter which defines a length between a threaded connecting end at one extent and an opposite threaded connecting end at another extent, the slip gripping mechanism comprising:

a cone retaining body having an internal bore, the bore being sized to slidingly receive the cylindrical external diameter of one of the joints of the cylindrical conduit which is to be supported from the circumscribing conduit whereby the cone retaining body is received directly on the cylindrical external diameter of the cylindrical conduit between the threaded connecting ends thereof;

a plurality of individual cone segments, each cone segment having side edges and an engagement end, the engagement end being adapted to be engaged by the cone retaining body for supporting each of the cone segments in spaced circumferential locations on the cylindrical conduit, the side edges of adjacent cone segments defining a plurality of circumferentially spaced, longitudinally disposed slots;

a plurality of circumferentially spaced, vertically shiftable slips carried on the cylindrical conduit in the longitudinally disposed slots, each slip having side edges which engage mating profiles formed in the longitudinally disposed slots whereby the slots form guideways for the slips for shifting the slips upwardly and outwardly between a set position engaging the circumscribing conduit and an unset position; and

setting means for effecting opposite relative motion between the cone segments and the slips.

4,762,178
OIL RECOVERY WITH WATER CONTAINING CARBONATE SALT AND CO_2

Andrew H. Falls, Sugarland, and Myron I. Kuhlman, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 928,123, Nov. 7, 1986, abandoned. This application Sep. 24, 1987, Ser. No. 99,649
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—268 17 Claims



1. In a process in which a mixture of an aqueous liquid and CO_2 is injected into a subterranean reservoir, an improvement for reducing the adverse effects of the resultant carbonic acid, comprising:

dissolving in the aqueous liquid with which the CO_2 is mixed, an amount of monovalent cationic salt of carbonic acid sufficient for providing a pH of at least about 4 but is less than enough to cause precipitation of carbonate salts at the pressure and temperature of the reservoir; and

injecting the preformed mixture into the reservoir.

12. A process for preparing a brine solution in which divalent cations are present, that solution being effective for increasing the pH of said brine solution under reservoir conditions in a CO_2 flooding operation comprising:

maintaining a blanket of CO_2 on the brine solution; and

dissolving in the brine solution an amount of monovalent cationic carbonic acid salt which is sufficient to increase the brine solution pH under reservoir conditions and effective to reduce adverse mineral transformations within the reservoir.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,179

PRESSURE ASSIST DETONATING BAR AND METHOD FOR A TUBING CONVEYED PERFORATOR

David S. Wesson, Katy; Robert R. Luke, Houston; Flint R. George, Katy; David M. Haugen, Houston, and Kevin R. George, Columbus, all of Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Aug. 4, 1986, Ser. No. 892,814
Int. Cl.[4] E21B *43/116*
U.S. Cl. 166—297 23 Claims



1. An apparatus for detonating an explosive contained on an object located in a subterrean well, comprising:

igniting means for igniting the explosive contained on said object located in said subterrean well;

initiating means, connected with said igniting means, for initiating the operation of said igniting means in response to a fluid pressure in said subterrean well, said initiating means including a slidable firing member;

inner housing means for carrying said igniting means and said initiating means, said inner housing including an air chamber through which said firing member moves in said inner housing;

outer housing means for carrying said inner housing means;

retainer means extending between said inner housing and said outer housing for frangibily releasably retaining, with a retaining force, said inner housing means stationary relative to said outer housing means until an impact force, generated by the engagement of said inner housing means with the object in the said well, exceeds said retaining force whereupon said outer housing means and said inner housing means move relative to each other to thereby allow said inner housing means to move within said outer housing means from a first position to a second position therein; and

holding means extending between said inner housing and said firing member for releasably holding, with a holding force said firing member stationary relative to said inner housing means until a fluid pressure, communicated through said outer housing means to said holding means, exerts a force exceeding the holding force whereby after said impact force has released said retainer means from retaining said inner housing stationary relative to said outer housing thereby allowing said inner housing to move from a first position to a second position in said outer housing, when said fluid pressure exerting a force exceeds the holding force of said holding means, said firing member moves through said air chamber in said inner housing thereby causing said igniting means to cause, in turn detonation of said explosive.

20. A method of actuating a perforator, which is conveyed into a well bore on a tubing string, using a weighted mass including a first member, a second member connected to the first member by at least one first frangible member, an explosive charge disposed in the second member, and a firing piston with firing pin held in the second member by a releasable means member, said method comprising the steps of:

(a) striking the weighted mass on the perforator with a force sufficient to break the at least one first frangible member;

(b) moving the first member relative to the second member so that the releasable means is released from holding the firing piston relative to the second member; and

(c) moving the firing piston and firing pin against the explosive charge in response to the fluid under pressure in the well bore.

4,762,180

MODULAR NEAR-SURFACE COMPLETION SYSTEM

Pieter G. Wybro, Richmond, and Colin P. Leach, Houston, both of Tex., assignors to Conoco Inc., Ponca City, Okla.

Filed Feb. 5, 1987, Ser. No. 12,094
Int. Cl.[4] E21B *7/132, 43/017*
U.S. Cl. 166—350 15 Claims



1. A modular near-surface completion system for a plurality of subsea wells in deep water, wherein each of said plurality of subsea wells has been drilled and cased from a mudline and completed with a lower tubing hanger below the mudline, said near-surface completion comprising:

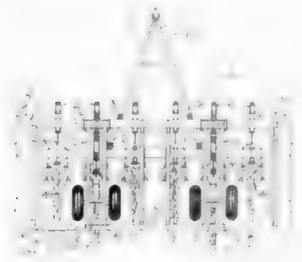
a first plurality of production risers, one said production riser extending from each of said plurality of subsea wells to a quiescent zone beneath the surface of the sea; a plurality of riser buoys positioned in said quiescent zone out of a subsurface sea region affected by the action of wind and waves, one each of said plurality of riser buoys being attached to one of said first plurality of production risers, each of said buoys having positive buoyance in an amount exceeding the weight of respective elements it supports; a plurality of well completion trees with a single well completion tree mounted atop each of said riser buoys; means for connecting each of said plurality of well completion trees to an above-surface production facility; means interconnecting at least one of said riser buoys directly to one or more additional adjacent riser buoys of said plurality of riser buoys to increase stability of said near-surface completion system by substantially fixedly interconnecting said adjacent riser buoys, said interconnecting means including a plurality of attachment points capable of accomodating variations in vertical positioning of said adjacent buoys.

4,762,181

MINIMUM TILLAGE IMPLEMENT

Randal A. Cox, Van Wert, Iowa, assignor to Cox, Inc., Van Meter, Iowa

Filed Feb. 3, 1987, Ser. No. 10,383
Int. Cl.[4] A01B *13/08, 49/06, 49/02*
U.S. Cl. 172—196 20 Claims



1. A minimum tillage implement comprising,

a rectangular closed frame including front and rear tool bars and an intermediate tool bar adjacent said front tool bar and remote to said rear tool bar,

a coulter connected to said front tool bar and a subsoil shank connected to said intermediate tool bar,

a disk hiller positioned behind said subsoil shank and connected to said intermediate tool bar, and

a depth gauge and support wheel assembly including a pair of spaced apart frame members extending between and connected to said front and rear tool bars, a pivot arm pivotally connected at one end between said pair of frame members at said front tool bar, and said arm including a ground wheel at the other end opposite said pivot end, a hydraulic power cylinder connected between the front end of said assembly and said pivot arm to raise and lower said implement.

4,762,182

AUXILIARY MOUNTING DEVICE FOR CULTIVATING IMPLEMENTS

Harold J. Reimann, 537 S. Segoe Rd., Madison, Wis. 53711

Continuation of Ser. No. 513,239, Jul. 13, 1983, Pat. No. 4,650,006. This application Dec. 12, 1986, Ser. No. 941,145
Int. Cl.[4] A01B *15/14, 49/02*
U.S. Cl. 172—327 2 Claims

1. An auxiliary mounting device for use with a tractor having a one-point hitch and power take-off comprising:

(a) a body having a forward end and a rearward end;

(b) a primary tool mount on which a primary tool may be mounted fixed to the body;

(c) a secondary, three point mount located at the rearward end of the body on which a secondary tool may be mounted by three point hitch attachment;

(d) retractable wheel means for raising and lowering the body for transportation and to engage the primary tool with the ground;

(e) a pedestal extending upward from the body;

(f) a variable length shaft connecting the pedestal to the highest attachment point of the three point hitch so that the secondary tool may be raised or lowered relative to the body by changing the length of the shaft;

(g) a power shaft extending centrally through the body and attachable to the power take-off on the tractor to provide power to the secondary tool;

(h) a hitch attachment device to connect to the one-point hitch on the tractor;



(i) a pair of tongue members connecting the hitch attachment device to opposite sides of the front end of the body;

(j) a pair of braces extending from the tongue members upward over the power shaft and joined together at their top; and

(k) a second variable length shaft connecting the pedestal to the joinder of the two braces, the length of the variable length shaft adjustable to draw the front end of the body downward or upward to force the primary tool into or out of the ground, the braces bridging over the power shaft so as not to interfere with it.

4,762,183

FARMING IMPLEMENT WITH ADJUSTABLE EARTHWORKING TOOL FRAMER

Francois P. Bourgault, and Joseph L. Bourgault, both of St. Brieux, Canada, assignors to F. P. Bourgault Industries Cultivator Division Ltd., St. Brieux, Canada

Continuation-in-part of Ser. No. 765,946, Aug. 15, 1985, Pat. No. 4,655,296. This application Oct. 9, 1986, Ser. No. 917,110
Claims priority, application Canada, Feb. 15, 1985, 474934
The portion of the term of this patent subsequent to Apr. 7, 2004, has been disclaimed.
Int. Cl.[4] A01B *63/22*
U.S. Cl. 172—400 5 Claims



1. A farming implement including a frame section carrying a plurality of earth working tools and provided with ground wheel means secured to the frame section for allowing movement of same in a predetermined direction; front and rear bearing means fixedly secured to the frame section at the front and rear portions thereof, respectively; towing bar means secured to said frame section at a front end thereof for free pivotal movement about a generally horizontal, transverse axis, said ground wheel means being comprised of a plurality of ground wheel subassemblies, each of said ground wheel subassemblies comprising, when viewed from one side of the implement;

(a) front wheel means at the front end of the frame section,

VOL 1093 ISS 2 AG 9 1988 UMI

said front wheel means being connected with a free end of a longitudinal front suspension arm at a first pivot point, the other end of the front suspension arm being pivotally connected with the front bearing means at a second pivot point corresponding with a transverse generally horizontal axis of the front bearing means;

(b) front bracket means fixedly secured at one end with said front suspension arm, the other end of said front bracket means including a first transmitting joint;

(c) a connecting rod extending between the front and rear portions of the frame section, the front end of said connecting rod being pivotally connected with said first transmitting joint of said front bracket means, said first transmitting joint defining a third pivot point in a plane containing the axis of said connecting rod and spaced from a reference plane containing the horizontal axis of the front bearing means;

(d) rear wheel means connected with a longitudinal rear suspension swing arm at a fourth pivot point near a free end of the swing arm, the other end of said swing arm being pivotally connected with the rear bearing means at a fifth pivot point corresponding with a generally horizontal transverse axis of the rear bearing means;

(e) rear bracket means fixedly secured at one end with said swing arm, the other end of said rear bracket means including a second transmitting joint pivotally connected with the rear end of said connecting rod, said second transmitting joint defining a sixth pivot point spaced from said reference plane;

(f) drive means operatively associated with each of said subassemblies to selectively pivot said arms about said transverse axes of the front and rear bearing means to selectively raise and lower the frame, said connecting rod transmitting the swing pivotal movement of one of said arms to the other via said transmitting joints;

(g) the pivot points being so arranged that the raising of the front suspension arm results in the raising of the rear suspension swing arm and vice-versa;

(h) said first, second and third pivot points defining, when viewing the implement from said one side, a first triangle ABC;

(i) said fourth, fifth and sixth pivot points defining, when the implement is viewed from said one side, a second triangle A'B'C';

(j) one of said first and second triangles being one of a right and obtuse angled triangle, the other being one of an acute and obtuse angled triangle, the geometry of said first and second triangles being developed by dividing a reference triangle AA'C by a median from the point C, into two triangles of which one is identical with said first triangle ABC and the other is similar to said second triangle A'B'C';

(k) the second and third pivot points and said fifth and sixth pivot points each defining a line which is disposed at no more than about 30° to a reference line through one of the respective two pivot points and perpendicular to a line defined by the third and sixth pivot points when the implement is viewed from said one side, at any position between a fully raised and fully lowered state of the frame.

4,762,184

DIGGING POINT ASSEMBLY

Allan J. Yeomans, 30 Elizabeth St., Forbes, New South Wales, 2871, Australia

Filed Sep. 5, 1986, Ser. No. 904,187

Claims priority, application Australia, Dec. 19, 1985, 51485/85

Int. Cl.[4] A01B *15/06, 23/02, 39/22*

U.S. Cl. 172—704 9 Claims

1. In a digging point assembly of the type comprising a holder adapted to be fixed to a tyne of an earth working implement and a digging point tip member, the improvement comprising an elongate blade member adapted to be connected between said holder and said tip member, said blade member having a female front end and a male rear end defined with respect to the operative direction of motion, said front and rear ends being of mating configuration whereby said blade mem-



ber can receive at the front end thereof another such blade member to function as the tip member for said digging point assembly.

4,762,185

OFF-SHORE DRILLING

Brian K. Simpson, Congresbury, Great Britain, assignor to DRG (UK) Limited, Bristol, England

Filed Jan. 2, 1987, Ser. No. 561

Claims priority, application United Kingdom, Jan. 3, 1986, [illegible]

Int. Cl.[4] E21B *19/20*

U.S. Cl. 175—5 14 Claims



1. Apparatus for handling elongate drill string elements that are to be assembled together on a drilling axis for use in a well-forming operation, the apparatus comprising:

lifting means for transferring said elements to a position on the drilling axis for said assembly,

at least one storage space laterally offset from the drilling axis,

a magazine in said storage space for holding the elements with their axes substantially vertical,

mounting means for said magazine defining a rotary axis substantially parallel to the drill string elements therein,

lifting means for raising an element from said storage space,

means for moving said lifting means transversely to the drilling axis to transfer the element from said storage space to the drilling axis,

guide means engagable with the raised element,

means for moving the guide means on a parallel path to and in step with the lifting means for restraining the raised element so as to prevent or limit swinging of the element on said lifting means while it is being moved to the drilling axis, and

drive means for displacing the magazine about said rotary axis to bring successive elements to a zone of action of the guide means when they are to be withdrawn from the storage space.

4,762,186

MEDIUM CURVATURE DIRECTIONAL DRILLING METHOD

James A. Dech, Plano; David D. Hearn, Richardson, Frank J. Schuh, Plano, and John H. Striegler, Richardson all of Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 5, 1986, Ser. No. 927,780

Int. Cl.[4] E21B *7/08*

U.S. Cl. 175—61 5 Claims



1. A method for drilling a deviated wellbore characterized by a generally vertical wellbore portion contiguous with a curved wellbore portion having a radius of curvature of about 200 feet to 400 feet and a further wellbore portion extending to the bottom of the wellbore and through a formation region of interest configured in such a way that the wellbore is drilled into the formation region of interest from the kick-off point of the deviated portion of the wellbore,said method comprising the steps of:

forming said vertical wellbore portion;

providing a drillstem including a first drillstem portion for drilling said curved wellbore portion and for extension within said curved wellbore portion comprising elongated elastically bendable sections of drillpipe each comprising a generally tubular member having joint forming portions at opposite ends thereof for connecting said sections of drillpipe end to end, and a plurality of spaced apart sleeves of a diameter greater than said tubular member and adapted for engagement with the wall of said curved wellbore portion for reducing the rotational drag on said first drillstem portion during the rotation thereof and for distributing the bending stresses on said first drillstem portion in said curved wellbore portion;

providing drilling tool means at a distal end of said first drillstem portion for drilling said curved wellbore portion;

providing a second drillstem portion remaining in said vertical wellbore portion characterized by end to end connected drillstem sections which are heavier per unit length than said sections of drillpipe extending through said curved wellbore portion so as to place sufficient weight on said sections of drillpipe extending through said curved wellbore portion to urge said first drillstem portion into engagement with the radially outermost portion of said wellbore through said curved wellbore portion during the formation thereof; and

forming said curved wellbore portion and said further wellbore portion with said sections of drillpipe making up said drillstem in said curved wellbore portion and said further wellbore portion, respectively, while urging said first drillstem portion into engagement of at least some of said sleeves with said radially outermost portion of said curved wellbore portion.

4,762,187

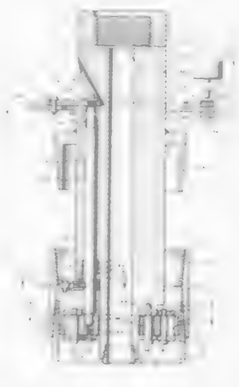
INTERNAL WRENCH FOR A TOP HEAD DRIVE ASSEMBLY

Keith M. Haney, Wichita Falls, Tex., assignor to W-N Apache Corporation, Wichita Falls, Tex.

Filed Jul. 29, 1987, Ser. No. 79,024

Int. Cl.[4] E21B *19/16*

U.S. Cl. 175—171 31 Claims



1. An apparatus for applying a torque to a tubular in an earth drilling machine of the type having a top head drive assembly, wherein the tubular defines an upper threaded end, said apparatus comprising:

a body having an upper portion and a lower portion, said body defining a passageway which extends between the upper and lower portions;

means for supporting the upper portion of the body under the top head drive assembly;

a plug mounted to an intermediate portion of the body, said plug defining a set of threads configured to threadedly engage the upper threaded end of the tubular to create a fluid tight seal with the tubular;

means for releasably engaging the lower portion of the body with an interior surface of the tubular positioned below the threaded end, said engaging means movable between a disengaged position in which the body is free to rotate independently of the tubular, and at least one engaged position, in which the body and the tubular are mechanically engaged with one another to rotate together; and

means for moving the engaging means away from the at least one engaged position to free the body for rotation with respect to the tubular to engage the plug threads with the upper threaded end of the tubular to seal off the tubular.

13. In combination with an earth drilling machine of the type comprising: a mast, a top head drive assembly mounted for movement along the mast, a quill included in the top head drive assembly, and means included in the top head drive assembly for rotating the quill; an apparatus for applying torque to a casing, said apparatus comprising:

a body having an upper end and a lower end;

means for mounting the upper end of the body to the quill for rotation with the quill;

at least one jaw;

means for mounting the jaw to the lower end of the body for

VOL 1093 ISS 2 AG 9 1988 UMI

movement between at least one extended position, in which the jaw engages an interior surface of the casing to rotate the casing with the body, and a retracted position, in which the jaw is out of engagement with the interior surface;

means for selectively moving the jaws between the extended and retracted positions, said moving means comprising:

a drag ring disposed around an intermediate portion of the body;

a friction brake mounted to the top head drive assembly to engage the drag ring; and

means for coupling the drag ring to the jaws such that relative movement between the drag ring and the body in a first direction moves the jaws to a first one of the at least one extended positions and relative movement between the drag ring and the body in a second direction moves the jaws away from the first one of the extended positions.

4,762,188

DRILL BIT

Roger Massé , 131 Roussin St., Thetford Mines, Quebec, Canada G6G 1N6

Filed Feb. 9, 1987, Ser. No. 12,683

Int. Cl.[4] E21B *10/10, 10/16, 10/36*

U.S. Cl. 175—361 11 Claims



1. A drill bit for use with a reciprocating device, comprising:

(a) a mounting post having an upper end and a lower end, said post having its upper end designed for attachment to the reciprocating device so as to be reciprocated by said reciprocating device in the direction of its longitudinal axis;

(b) a U-shaped member having two arms and a base attached to the lower end of the mounting post;

(c) a single corrugated frusto conical roller for striking a surface to be drilled, said roller being mounted between the arms of the U-shaped member on an axle so that said roller is rotatable about is geometrical axis, the axis of said post as extended intersecting the central portion of said roller, the corrugations being alternating peaks and furrows, each peak being tipped with a hard material and defining a circle, the circles being concentric about the roller's geometrical axis and having diameters which decrease from one end of the roller to its other end; said axle being oriented so that aligned points on the peaks of the roller at the drilling end of the drill bit define an imaginary line substantially perpendicular to the direction of reciprocation of the mounting post.

4,762,189

SEAL AND SEAL SHIELD ASSEMBLY FOR ROTARY DRILL BITS

David M. Tatum, 9251 Burdine, No. 386, Houston, Tex. 77096

Filed May 28, 1987, Ser. No. 55,126

Int. Cl.[4] E21B *10/22*

U.S. Cl. 175—371 33 Claims

1. A seal and seal shield assembly for a rotary drill bit of the type comprising

a main bit body having at least one leg extending downwardly therefrom

said leg having a generally cylindrical journal extending radially inward therefrom comprising a first bearing member of the bit,

said journal having end bearing surface on the surface of said leg at the juncture of the journal therewith,

a hollow roller cutter with an open end rotatably mounted on each journal, having a bore forming a bearing surface cooperable with said journal, and having a counterbore at the open end thereof defining an annular seal cavity in cooperation with the peripheral surface of said journal and said journal end bearing surface with a peripheral opening therefrom,

said annular seal cavity having a fixed end wall comprising said journal end bearing surface, a journal end wall on said roller cutter spaced from said journal end bearing surface and movable relative thereto, a fixed side wall comprising the peripheral surface of said journal, and a side wall on



said roller cutter spaced from said journal peripheral surface and movable relative thereto, and

means for introducing lubricant into the space between said hollow cutter and said journal,

said seal and seal shield assembly comprising

a first flat annular disc of a soft malleable, corrosion-resistant metal, extrudable under conditions of temperature and pressure normally encountered during use, with lubricating properties, positioned in said annular bearing cavity and engageable in bearing relation with said journal end bearing surface,

a second flat annular disc of a strong, rigid material positioned in said annular seal cavity in supporting relation to said first disc, and

spring means in said annular seal cavity biasing said second disc to urge said first disc against said journal end bearing surface so that said first disc maintains bearing contact therewith and extrudes through said seal cavity peripheral opening under load.

4,762,190

WEIGHING APPARATUS INCLUDING WIND SHIELDING MEANS

Erwin Meixner, Volketswil, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Sep. 8, 1987, Ser. No. 93,555

Claims priority, application Switzerland, Dec. 15, 1986, 4984/86

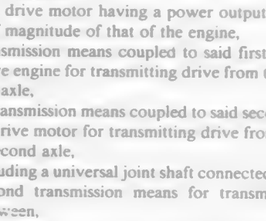
Int. Cl.[4] G01G *23/18*

U.S. Cl. 177—181 9 Claims

1. Protective wind shield means for an electronic weighing apparatus (1) including a housing (3) and a load-receiving member (9) movable relative to the housing, comprising:

(a) a plurality of concentrically-arranged symmetrical generally semispherical transparent shield sections (25,23) having different diameters of generation (D1, D2), respectively; and

(b) means connecting said sections with the housing to define a protective chamber above the load receiving member, at least one of said sections being connected for movement between open and closed positions relative to the



other section, thereby to permit loading and unloading of the load-receiving member.

4,762,191

ARTICULATED VEHICLE SELECTIVELY DRIVEN AT TWO AXLES FROM TWO POWER SOURCES

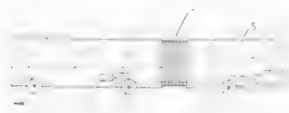
Faust Hagin, and Hans J. Drewitz, both of Munich, Fed. Rep. of Germany, assignors to MAN Nutzfahrzeuge GmbH, Fed. Rep. of Germany

Filed Jun. 4, 1986, Ser. No. 870,715

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1985, 3522062

Int. Cl.[4] B60L *7/00;* B60K *25/00*

U.S. Cl. 180—14.2 10 Claims



1. A hybrid vehicle comprising:

first and second axles each with wheels thereon,

an IC drive engine,

an electric drive motor having a power output of the same order of magnitude of that of the engine,

a first transmission means coupled to said first axle and to said drive engine for transmitting drive from the engine to the first axle,

a second transmission means coupled to said second axle and to said drive motor for transmitting drive from the motor to the second axle,

means including a universal joint shaft connected to said first and second transmission means for transmitting drive therebetween,

a first differential connecting said universal joint shaft with one of said transmission means,

said first and second transmission means including respective clutches for selectively connecting and disconnecting said drive engine and said drive motor to and from said first and second transmission means respectively, and respective clutch means for selectively connecting and disconnecting said universal joint shaft in driving relation to and from said first and second axles such that either the drive engine or the drive motor alone can selectively drive both of said axles concurrently

4,762,192

BEAM HAULER FOR TRUCKS

Carroll B. Maxwell, P.O. Box 17184, Orlando, Fla. 32860

Filed Dec. 31, 1986, Ser. No. 948,088

Int. Cl.[4] B62D *59/04*

U.S. Cl. 180—14.2 11 Claims



1. A trailer assembly for supporting the weight of a load and for transporting the load over a highway, said trailer assembly being releasably coupled to a prime mover having load bearing wheels, said trailer assembly comprising:

a fore-trailer for supporting a first end of the load, said fore-trailer comprising at least a first wheel assembly, said fore-trailer being supported by at least the load bearing wheels of the prime mover and said first wheel assembly;

an aft-trailer for supporting a second end of the load, said aft-trailer comprising at least a second wheel assembly;

dolly means for steering said aft-trailer, said dolly means comprising at least a third wheel assembly and a fourth wheel assembly said dolly means being supported by at least said third and fourth wheel assemblies and said aft-trailer being supported by at least said second wheel assembly and said dolly means, said dolly means further comprising drive means for providing rear drive propulsion of said steering dolly independent of the prime mover

longitudinal adjustment means located on said for-trailer, said aft-trailer and said doly means for variably distributing the weight of the load upon the load bearing wheels of the prime mover and said wheel assemblies.

4,762,193

MOTORIZED GOLF TROLLEY

Sidney S. Levine, Congleton, England, assignor to Dorothy Margaret Levine, United Kingdom

Filed Jan. 16, 1987, Ser. No. 5,577

Claims priority, application United Kingdom, Jan. 18, 1986, 8601196

Int. Cl.[4] G62B *1/02*

U.S. Cl. 180—65.1 9 Claims

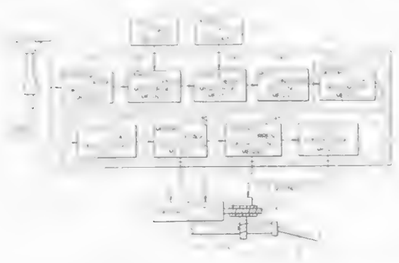
1. Apparatus for carrying a golf bag, the apparatus comprising a ground engageable wheel arrangement, means for driving the ground engageable wheel arrangement, and frame means comprising a first single elongate tubular member co-axially surrounding a drive axle for the wheel arrangement along at least more than one half of the length of the drive axle, a second single tubular member connected at one end to the first single tubular member intermediate the ends thereof and removably mounting a handle structure on the other end, and a third single tubular member connected at one end to the first single tubular member intermediate the ends thereof and removably mounting a bag support structure on the other end.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,194
MOTOR-DRIVEN POWER STEERING SYSTEM FOR A VEHICLE

Mitsuharu Morishita, and Shinichi Kohge, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Mar. 19, 1987, Ser. No. 27,725
Claims priority, application Japan, Mar. 26, 1986, 61-71746; Mar. 26, 1986, 61-71747
Int. Cl.[4] B62D *5/04*; B60G *17/08*
U.S. Cl. 180—79.1 30 Claims



1. A motor-driven power steering system for a vehicle having a steering wheel operatively connected to steer steerable road wheels in response to force exerted thereon by an operator, said motor-driven power steering system comprising:

a torque sensor connected to detect operator-induced steering torque resulting from the steering force exerted on said steering wheel by the operator and having means to generate an output signal representative thereof;

a vehicle-speed sensor connected to detect vehicle speed and having means to generate an output signal representative thereof;

a road-condition judging means for comparing variables representing roughness of road surfaces on which the vehicle travels with predetermined reference values and for generating an output signal representing whether road roughness is normal or exceeds a bad road condition represented by the reference values;

a motor operatively connected with said steerable road wheels and adapted to be energized by a battery to transmit a force to said steerable road wheels for power-assisting the steering motion caused by the operator through said steering wheel;

an electric clutch means interposed between said motor and said steerable road wheels for selectively establishing and interrupting the transmission of the power-assisting force from said motor to said steerable road wheels; and

a control unit connected to receive output signals from said torque sensor, said vehicle-speed sensor, and said road-condition judging means and having means for controlling the operations of said motor and said electric clutch means in accordance with the output signals to change the force transmitted from the motor to the steerable road wheels and controlling steering feel felt by the operator in the steering wheel.

4,762,195
HYDRAULIC STEERING SYSTEM

James R. McBurnett, Corinth, Miss., assignor to Dana Corporation, Toledo, Ohio

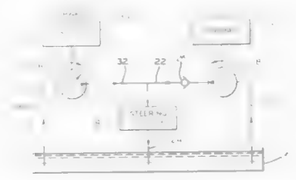
Filed Sep. 2, 1987, Ser. No. 92,766
Int. Cl.[4] B62D *5/06*
U.S. Cl. 180—133 17 Claims

1. An hydraulic steering system for a ground-contacting vehicle having an engine to propel the vehicle, said vehicle being capable of moving in a forward motion direction and in a reverse motion direction, said hydraulic steering system comprising:

steering means;

a primary hydraulic system for supplying hydraulic fluid to said steering means, said primary hydraulic system being powered by said engine of said vehicle;

a secondary hydraulic system for supplying hydraulic fluid to said steering means, said secondary hydraulic system



being powered by motion of said vehicle and comprising reversible, variable displacement pumping means; and

means responsive to the direction of motion of said vehicle for reversing the operation of said reversible, variable displacement pumping means upon the reversing of the direction of motion of said vehicle.

4,762,196
VEHICLE SLIP CONTROL APPARATUS

Yasuhiro Harada; Kazutoshi Nobumoto; Eizi Nishimura; Toru Onaka; Mitsuru Nagaoka, and Toshihiro Matsuoka, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 17, 1987, Ser. No. 74,783
Claims priority, application Japan, Jul. 24, 1986, 61-172698; Jul. 24, 1986, 61-172703
Int. Cl.[4] B60K *31/00*
U.S. Cl. 180—197 20 Claims



1. In a vehicle slip control apparatus capable of preventing the driving wheel from being slipped or spinned excessively on a road surface by controlling a torque transmitted to the driving wheel, the slip control apparatus comprising:

output torque adjusting means for adjusting the output torque of a power source functioning as a source of the output of the torque;

braking force adjusting means for adjusting a braking force of the brake for a driving wheel;

slip detecting means for detecting slippage of the driving wheel on a road surface; and

slip controlling means for carrying out the slip control by controlling said output torque adjusting means and said braking force adjusting means in response to an output from said slip detecting means, thereby reducing the output torque of said power source without using a braking force of the driving wheel when the degree of slippage of the driving wheel is small, and thereby providing the driving wheel with the braking force, in addition to the reduction in the output torque of the power source, when the degree of slippage of the driving wheel is large.

4,762,197
MOTORCYCLE

Toshiyuki Yamada, Saitama; Makoto Kitagawa, Tokyo, and Toshio Kurihara, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 7, 1986, Ser. No. 916,163
Claims priority, application Japan, Oct. 8, 1985, 60-222825; Oct. 11, 1985, 60-224968
Int. Cl.[4] B62D *61/02*
U.S. Cl. 180—219 6 Claims



1. In a motorcycle having a frame extending longitudinally between a front wheel and a rear wheel, an engine carried by said frame intermediate said front wheel and said rear wheel, a fuel tank above said engine and a seat disposed rearwardly of said fuel tank, the improvement comprising:

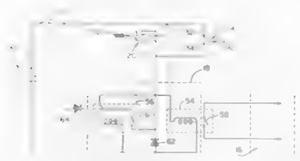
laterally spaced luggage containers attached to said frame on opposite sides of said rear wheel; and

a side cover extending forwardly from each of said luggage containers, each said side cover having a forward end engaging said fuel tank and a rear end engaging said luggage container.

4,762,198
VEHICLE ANTI-THEFT SYSTEM

Louis M. Vagnone, 2492 Wantagh Ave., Wantagh, N.Y. 11793, and Richard Raheb, 1900 Horatio Ave., Merrick, N.Y. 11566

Filed Dec. 8, 1986, Ser. No. 939,409
Int. Cl.[4] B60R *25/04*
U.S. Cl. 180—287 3 Claims



1. In a vehicle anti-theft ignition controlling system of the type disabling the ignition of said vehicle in accordance with the condition of an on-off switch of said circuit, the improvement in said circuit comprising the use as said on-off switch of a cooperating pair of electrical contacts consisting of a first stationary contact and a second movable contact normally in a spaced clearance position therefrom so as to correspondingly provide said switch with a normally open condition, a switch mounting member in the form of a hollow tube bounding a cylindrical operative compartment oriented lengthwise thereof having a first opening at a distal end of said compartment and a second opening at an opposite proximal end thereof, said pair of contacts being mounted in said distal end first opening of said compartment and said hollow tube being attached with said proximal end second opening to a dashboard of said vehicle, so as to position said pair of contacts in a rearwardly spaced relation behind said dashboard, said dashboard having an opening in communication with said compartment proximal end second opening, and a probe sized to project into said compartment and electrically close said contacts, whereby the presence of said on-off switch is undetectable except for said dashboard opening.

4,762,199
AERIAL LIFT INCLUDING FIBER OPTICS BOOM CONTROL

William K. Holmes, Delafield, Wis., assignor to Hi-Ranger, Inc., Waukesha, Wis.

Continuation-in-part of Ser. No. 744,969, Jun. 1, 1985, abandoned. This application Nov. 26, 1986, Ser. No. 935,526
Int. Cl.[4] B66F *11/04*
U.S. Cl. 182—2 30 Claims



1. An aerial lift comprising a frame, a support structure supported by the frame for pivotal movement about a vertical axis,

an elongated boom having opposite ends,

means for pivotally joining one of the opposite ends of the elongated boom to the support structure,

a platform for use in supporting a workman supported by the other of the opposite ends of the elongated boom,

a hydraulic fluid motor for causing selective pivotal movement of the support structure around said vertical axis,

a hydrualic cylinder connected to the support structure and to the elongated boom for causing selective pivotal movement of the elongated boom with respect to the support structure, and

means for controlling operation of the hydraulic fluid motor and the hydraulic cylinder, said means for controlling operation including valve means supported by said frame, a manually operable control means supported by the platform and adapted to be manipulated by the operator to provide for controlled movement of the platform, the manually operable control means including a control handle supported for controlled movement, means for converting movement of the control handle to an optic signal, and an optic fiber means for operably connecting the manually operable control means to the valve means, the optic fiber means including an optic fiber supported to extend along the length of the elongated boom, the optic fiber having opposite ends, one of the opposite ends of the optic fiber receiving an optic signal from the means for converting movement of the control handle to an optic

VOL 1093 ISS 2 AG 9 1988 UMI

signal, and the other of the ends of the optic fiber including a longitudinal axis colinear with said vertical axis, and swivel means for supporting the end of said optic fiber such that its longitudinal axis is colinear with said vertical axis and such that said other end of said optic fiber is supported for rotation about its longitudinal axis with said support strucutre and means for receiving an optic signal from said other end of said optic fiber and for converting said optic signal to an electrical signal for controlling said valve means, said means for receiving an optic signal from said other end of said optic fiber being supported by the frame below the point of pivotal movement of the support structure about the vertical axis.

4,762,200

TREE LADDER

Dale D. Andrews, 510 Clark St., Big Rapids, Mich. 49307, and Durwood T. Andrews, 8245 Elder Rd., Stanwood, Mich. 49346

Filed Nov. 24, 1987, Ser. No. 124,872
Int. Cl.[4] E06C *7/48*
U.S. Cl. 182—151 10 Claims



1. In a pole-type ladder of knockdown construction comprising upper and lower, central, longitudinally-extending sections connectable together in substantially end-to-end relationship, a plurality of steps rigidly secured to and extending substantially transversely from opposite sides of said upper and lower sections, a connecting means for releasably connecting said upper and lower sections in substantially end-to-end relationship and a mounting means on said upper section and for mounting said ladder to a lateral support, wherein the improvement in said mounting means comprises:

a hook means rigidly secured to or formed integral with said upper section, adapted to engage said lateral support, and defining an opening adapted to receive said lateral support when said hook means is engaged with said lateral support; and

a gusset means for centering said lateral support with respect to said opening to limit movement of said ladder with respect to said lateral support, when said hook means is engaged with said lateral support, and for rigidifying said hook means to resist torsional forces exerted on said hook means when said hook means is engaged with said lateral support and downward and lateral forces are exerted on said steps.

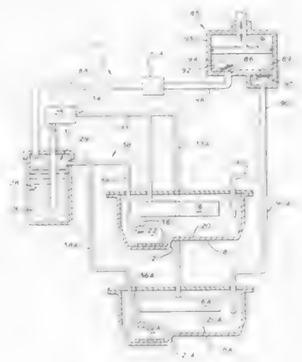
4,762,201

DRY SUMP SCAVENGING SYSTEM WITH INDEPENDENT HEAD SOURCE

Marvin J. Malik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1987, Ser. No. 37,700
Int. Cl.[4] F01M *9/10, 11/04*
U.S. Cl. 184—6.13 1 Claim

1. A scavenging system for hydraulic recirculating installations comprising: at least one sump having a first air chamber which collects circulating hydraulic fluid and which is to be maintained essentially dry; at least one pickup head assembly disposed within said sump; a reservoir for storing hydraulic fluid and being of sufficient size to maintain a second air chamber above the fluid in said reservoir; a pump for delivering the hydraulic fluid, which collects in said sump, from said reservoir; conduit means; said conduit means communicating between said pickup head assembly and the first air chamber located within said reservoir; a float valve mounted within



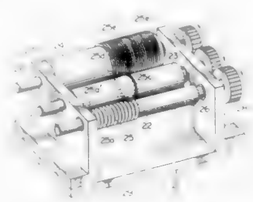
each said pickup head assembly, said float valve opening and closing communication between said sump and said conduit means in response to the level of the hydraulic fluid within said sump; and, means to effect a reduction of the pressure within said first air chamber relative to ambient air pressure and an increase in the pressure within said second air chamber relative to ambient air pressure whereby to lift the fluid within said sump through said conduit means and into said reservoir when said float valve opens communication between said sump and said conduit means.

4,762,202

ELASTIC ENERGY STORING DEVICE

Masahiro Ogawa, Toyoake, and Akio Fukui, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jul. 13, 1987, Ser. No. 72,736
Claims priority, application Japan, Jul. 18, 1986, 61-168033; Sep. 19, 1986, 61-142712[U]; Oct. 1, 1986, 61-149488[U]; Dec. 12, 1986, 61-190504[U]; Dec. 12, 1986, 61-190505[U]; Dec. 15, 1986, 61-191700[U]; Jan. 30, 1987, 62-18461
Int. Cl.[4] F03G *1/00*
U.S. Cl. 185—39 22 Claims



1 An energy storing device comprising:

a first drum, a second drum and at least one intermediate drum disposed between said first drum and said second drum, axes of said drums being parallel to each other, and said drums being rotatable around the respective axes;

an elastic cord having a first end portion fixed to and wound onto said first drum, a second end portion fixed to and wound onto said second drum, and an intermediate portion wound at least partly around said intermediate drum; and

means for connecting said first drum, said second drum, and said at least one intermediate drum so that upon rotation of the drums, the peripheral displacement of said second drum is greater than the peripheral displacement of said intermediate drum and the peripheral displacement of said intermediate drum is greater than the peripheral displacement of said first drum.

4,762,203

LIFT TRUCK LOWERING SYSTEM

Kenneth E. Ryan, Oxford, N.Y., assignor to The Raymond Corporation, Greene, N.Y.

Filed Jun. 25, 1987, Ser. No. 66,307
Int. Cl.[4] B66B *9/20*
U.S. Cl. 187—9 E 7 Claims



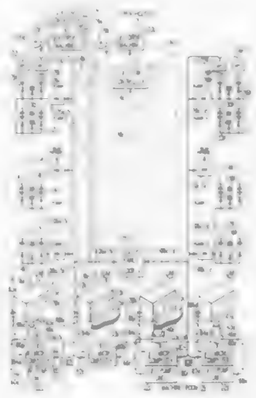
1. In a lift truck having a base frame, a traction motor system for propelling said truck, a fixed mast section, a first telescopic mast section guided for vertical movement by said fixed mast section, a second telescopic mast section guided for vertical movement by said first telescopic mast section, a load carriage guided for vertical movement by said second telescopic mast section, first cylinder-ram means for raising and lowering said first telescopic mast section relative to said base frame and said fixed mast section, first chain means and first sheave means inter-connecting said first and second telescopic mast sections to provide vertical movement of said second telescopic section relative to said first telescopic section at twice the rate of vertical movement of said first telescopic section relative to said base frame, second cylinder-ram means carried on said second telescopic section, second sheave means connected to be raised and lowered by said second cylinder-ram means, second chain means connected between said load carriage and said second telescopic section and over said second sheave means to provide vertical movement of said load carriage relative to said second telescopic section at twice the rate of extension and retraction of said second cylinder-ram means, said first and second cylinder-ram means being hydraulically interconnected by hose means extending between said second cylinder and said base frame and having substantially the same effective cross-section area, a hydraulic lowering system including an adjustable lowering control valve and a low pressure relief valve connected to bleed fluid from said cylinders when the pressure in said cylinders exceeds a predetermined value, the improvement which comprises chain slack detector means for detecting a reduction in tension below a predetermined amount in said first chain means, as when the load carriage is supported by an external structure during lowering; and means responsive to said slack detector means for disabling at least one of said systems.

4,762,204

ELEVATOR SYSTEM MASTER CAR SWITCHING

Jeffrey W. Blain, Scenic Lakes Township, Sussex County, and Jean Chen, Parsippany, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1987, Ser. No. 109,638
Int. Cl.[4] B66B *1/18*
U.S. Cl. 187—101 17 Claims



1. A method of controlling a plurality of elevator cars for providing continuous elevator service to each floor of a building, with each car having its car call signals communicating on a local area network from an electronic circuit loaded with each car through a separate traveling cable to a remote controller,

each remote controller including a microprocessor based comupter circuit individual to each car and with each remote controller also communicating corridor signal information on a local area network through a riser cable terminating in a set of floor control circuits distributed proximate to each floor,

each said controller with microprocessor based computer circuit being inherently capable of implementing a floor control strategy to assign the better car or both cars into operation, based on relative car travel positions and timing, to respond to the hall calls registered at the floors along said cable riser,

each said remote controller, concurrently with its response in the strategy for hall calls, controlling the car response individual to its registered car calls for service to the floors, and

each said remote controller repeatedly checking its operational capability and communication signal integrity so as to be available to assume implementing the floor control strategy should there be a failure of the current remote controller priority of operation.

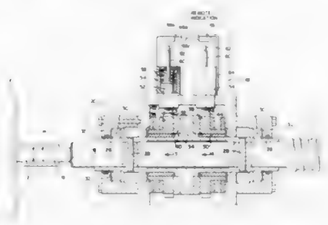
VOL
1093
ISS
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AG
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1988
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4,762,205

FLIGHT CONTROL SURFACE ACTUATOR FOR AIRCRAFT INCLUDING REMOTE BRAKING FAILURE DETECTION

Michael J. Ortman, Maplewood, N.J., assignor to Simmonds Precision, Tarrytown, N.Y.

Filed May 20, 1987, Ser. No. 51,594
Int. Cl.[4] F16D *55/02, 63/00;* G01M *13/02;* B64C *5/00*
U.S. Cl. 188—71.2 11 Claims



1. An actuator system for controlling the position of a flight control surface on an aircraft, comprising

a prime mover means for rotating an actuator shaft in opposite angular directions for positioning said flight control surface,

a braking device rotatable about said actuator shaft and having a braking surface means thereon,

a load bearing means fixed to said shaft and rotatable therewith,

said braking surface means of said braking device always being contiguous with said load bearing means,

a pawl means for releaseably engaging said braking device to thereby allow said braking device to rotate with said shaft in one of said angular directions and to be fixed with respect to said shaft in the other of said angular directions, whereby said load bearing means is constantly braked by said braking device regardless of the angular direction said shaft is being rotated, and

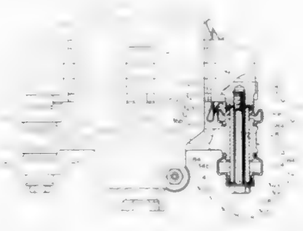
a fault detection device for said braking device disposed in proximity thereto and having an electrical circuit means for providing a remote indication of the continuous operation of said braking device.

4,762,206

DISC BRAKE

Satoshi Arimitsu, Yokosuka, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Nov. 13, 1986, Ser. No. 930,738
Claims priority, application Japan, Nov. 15, 1985, 60-175839[U]; Nov. 19, 1985, 60-178863[U]
Int. Cl.[4] F16D *65/14, 55/00*
U.S. Cl. 188—73.45 7 Claims



1. A disc brake for a vehicle having wheels and a body comprising:

(a) a disc rotatable with the wheels;

(b) a mounting bracket adapted to be mounted on the body of the vehicle;

(c) a pair of friction pads disposed on opposite sides of said disc and mounted on said mounting bracket so as to move toward each other;

(d) a caliper mounted on said mounting bracket for moving in an axial direction of said disc;

(e) means for moving said caliper relative to said mounting bracket so as to press said pair of friction pads against the opposite sides of said disc;

(f) guide means for guiding the movement of said caliper relative to said mounting bracket, said guide means comprising a tubular sleeve slidably extending through a guide hole formed through said caliper in the axial direciton of said disc, said guide means comprising a bolt received in and extending through said tubular sleeve and threaded into a threaded hole formed in a mounting surface of said mounting bracket, said bolt having a head, said sleeve being disposed between said bolt head and said mounting surface;

(g) a pair of first and second retainer rings mounted on said bolt, said first retainer ring being clamped between said bolt head and one end of said sleeve, said second retainer ring being clamped between said mounting surface and the other end of said sleeve; and

(h) a pair of first and second tubular elastic boots respectively surrounding and covering the opposite end portions of said sleeve extending outwardly from said guide hole, thereby forming a pair of annular chambers each formed between the outer periphery of said sleeve and a respective one of said boots, one end of said first boot being secured to said first retainer ring while the other end is secured to said caliper at a portion thereof to which one end of said guide hole opens, one end of said second boot being secured to said second retainer ring while the other end is secured to said caliper at a portion thereof to which the other end of said guide hole opens, and said one ends of said first and second boots which are respectively secured to said caliper being elastically held in contact with said bolt head and said mounting surface in which each of said first and second retainer rings has a disc portion held against a respective one of the opposite ends of said sleeve, and a boot-mounting portion disposed around said sleeve, and a tubular connective portion disposed around said sleeve and interconnecting said disc portion and said boot-mounting portion, and said bolt extending through said disc portion and in which each of said boots has and end with grooves in which one of said boot-mounting portions of one of said first and second retainer rings is inserted.

4,762,207

AUTOMATIC ADJUSTMENT ARRANGEMENT FOR DISK BRAKES

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Horst-Manfred Ernst, Eltingshausen; Robert Stolz, and Günter Neder, both of Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Jul. 7, 1987, Ser. No. 70,366
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1986, 3623790
Int. Cl.[4] F16D *65/38, 55/02*
U.S. Cl. 188—196 D 6 Claims

1. In an automatic adjustment arrangement for disk brakes, comprising:

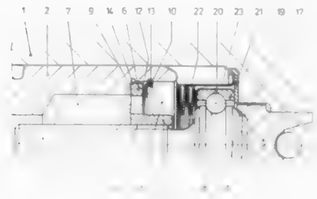
(a) a housing having first and second bores in communication, said first and second bores being substantially coaxial;

(b) a brake piston axially slidably arranged in said first bore of said housing and having a substantially cylindrical sliding surface;

(c) a manually actuated hand brake piston axially slidably arranged in said second bore of said housing and having a substantially cylindrical sliding surface;

(d) first and second adjustment elements connected to each other by a self-locking-free thread to form an extendable adjustment member arranged between said brake piston and said hand brake piston; and

(e) a rolling bearing axially urged toward a radial surface of said housing by a first spring means;



wherein said first adjustment element has a first conical surface and said hand brake piston has a second conical surface, said first and second conical surfaces forming a frictional coupling for mechanically actuating said first adjustment element, and said second adjustment element is coupled to said brake piston, and wherein said first adjustment element is rotatably mounted in said rolling bearing, said rolling bearing being slightly radially displaceable,

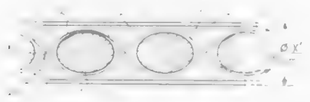
the improvement wherein said second adjustment element is axially form-locked and radially displaceable with respect to said brake piston.

4,762,208

VIBRATION DAMPER FOR A TOWED BODY

René Reynier, Cagnes sur Mere; Jean G. Malcor, Biot; Gilles Moresco, Le Cannet Rocheville, and Francois Ramoger, Cannes, all of France, assignors to Thomson-CSF, Paris, France

Filed Jun. 25, 1986, Ser. No. 878,267
Claims priority, application France, Jun. 28, 1985, 8509892
Int. Cl.[4] F16F *15/02*
U.S. Cl. 188—288 2 Claims



1. A vibration damper for a towed body comprising:

traction means for transmitting a tractive force in a generally longitudinal direction of said vibration damper, said traction means comprising at least one traction element having first end on which a tractive force is exerted in said longitudinal direction and a second end for connection to a towed body; and

a plurality of substantially adjacent and similarly-shaped pieces of energy-absorbing material, at least one of said pieces of energy-absorbing material being made of a loss material,

said traction means comprising a sleeve of a woven textile material woven into a plurality of adjacent cavities, said cavities respectively containing said pieces of energy-absorbing material, the weave of said sleeve surrounding individual ones of said pieces and crossing itself between adjacent pieces, said crossing forming adjacent ones of said cavities,

said traction means comprising means responsive to vibrations in said tractive force for deforming said at least one piece of loss material.

4,762,209

DRUM BRAKE ASSEMBLY AND SHOE HOLD-DOWN AND RETRACTION SPRING THEREFOR

Douglas M. Copp, West Milton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 29, 1987, Ser. No. 56,041
Int. Cl.[4] F16D *51/26*
U.S. Cl. 188—328 1 Claim



1. A drum brake assembly comprising:

a backing plate having mounted thereon a wheel cylinder and an anchor circumferentially opposite said wheel cylinder, a pair of brake shoe assemblies having a first set of adjacent ends engaging said anchor and a second set of adjacent ends engaging said wheel cylinder for actuation, each of said brake shoe assemblies including a shoe web having a slot formed therein and located nearer said wheel cylinder than said anchor, and a single generally U-shaped spring combining the functions of shoe hold-down and shoe retracting springs and shoe guide means, said anchor having a tab-like portion extending toward said wheel cylinder in spaced relation to said backing plate;

said single spring having a center loop section and first and second spring arms extending from said center loop section, said center loop section having loop arms connecting with said first and second spring arms in bent relation and extending toward said backing plate and a loop back section connecting said loop arms, said loop back section being positioned between said anchor tab-like portion and said backing plate with said anchor tab-like portion being engaged by said loop back section and providing spring reaction to spring force exerted thereon in the direction away from said backing plate for shoe hold-down, said loop arms being in spring force engaging relation with said anchor on the side thereof opposite said backing plate with the spring force exerted on said anchor by said loop arms being in the direction toward said backing plate, said spring arms extending in bent relation from said loop arms in generally arcuate opposed directions and having hooked ends received in said shoe web slots in spring loaded relation, said spring arms also having double bend offsets intermediate said loop arms and said hooked ends, at least portions of said spring arms from said double bend offsets to said hooked ends being in spring-engaging relation with said shoe webs and exerting shoe hold-down forces on said shoe webs from first points thereon located nearer said wheel cylinder than said anchor to second points thereon located nearer said anchor than said wheel cylinder, said second points being adjacent to said shoe ends engaging said anchor, said spring arms providing shoe web guides keeping said shoe webs in guided relation to said anchor, said spring being spring loaded so as to continually urge said brake shoe assemblies toward the

VOL 1093 ISS 2 AG 9 1988 UMI

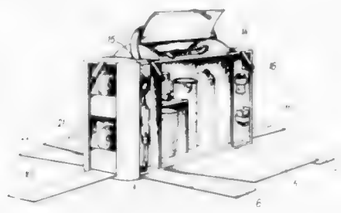
retracted position and also in resilient hold-down position against said backing plate.

4,762,210

SMALL CASE EQUIPPED WITH ACCESSORIES FOR PROFESSIONAL TASTERS OF ALCOHOLIC DRINKS

Maria Boitani, Via Bissolati, No. 54, 00187 Rome, Italy

Filed Apr. 21, 1987, Ser. No. 41,737
Claims priority, application Italy, Oct. 31, 1986, 36222/86[U]
Int. Cl.[4] A45C *3/00*
U.S. Cl. 190—111 4 Claims



1. A small rigid case having a generally rectangular para.telepiped shape, said case comprising:

a first central partition for defining a front central compartment and two lateral partitions for defining respective first lateral compartments each of which is separated from and disposed adjacent a respective side of said front central compartment;

a second central partition for defining a rear central compartment disposed back-to-back with respect to said front central compartment, and two lateral partitions for defining respective second lateral compartments each of which is separated from and disposed adjacent a respective side of said rear central compartment; and

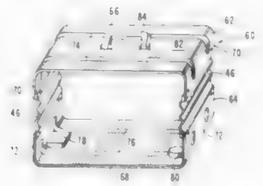
two additional lateral partitions for defining two additional lateral compartments each of which extends between and is separated from a respective one of said first lateral compartments and a respective one of said second lateral compartments, said respective ones of said first and said second lateral compartments being disposed adjacent the same respective said side of the front central compartment and the rear central compartment, respectively.

4,762,211

SOFT SIDED LUGGAGE FRAME

Ronald L. Krenzel, Boulder, Colo., assignor to Delsey Luggage Company, Jessup, Md.

Filed Mar. 6, 1987, Ser. No. 22,651
Int. Cl.[4] A45C *3/00, 13/04*
U.S. Cl. 190—122 6 Claims



1. A frame for soft-sided luggage comprising:

top and bottom plastic frame elements, each said frame element having substantially identical length and having a generally U-shaped longitudinal cross section including a base and spaced parallel legs, said frame elements being disposed in opposed relationship; and

a resilient wall element joining each pair of opposed legs of said frame elements to define a generally rectangular hollow peripheral shell, said wall elements having a width generally equal to the width of said frame elements and being corrugated in a direction perpendicular to said width of said wall elements.

4,762,212

LOCK ACTUATOR ASSEMBLY AND CARD READER

Aaron M. Fish, Cote St. Luc; Leon Mayzels, Montreal; Alexander Branover, Cote St. Luc; Masoud Miresmaili, LaSalle, and Jean-Paul Dausseing, Chomedey Laval, all of Canada, assignors to Ilco Unican Inc., Montreal, Canada

Filed Sep. 24, 1985, Ser. No. 779,455
Int. Cl.[4] F16D *11/04;* E05B *47/06*
U.S. Cl. 192—24 5 Claims



1. An actuator assembly mechanism co.nprising:

a clutch mechanism having an input disc and an output disc;

means for rotating said input disc;

means for actuating for changing the state of said assembly from a rest condition, when said means for actuating is unactuated, to an actuated condition, when said means for actuating is actuated;

means for preventing rotation of said output disc with said input disc when said assembly is in a rest condition, and for permitting a rotation transmitting connection between said input disc and said output disc when said assembly is in an actuated condition;

means for automatically returning said assembly from said actuated condition to said rest condition: (1) if said first input disc is rotated within a given time delay, upon said rotation; or, (2) if said first disc is not rotated within said given time delay, upon the expiration of said time delay;

whereby said second output disc can be rotated only once within said time delay, and whereby said second disc is not rotatable if said first disc is not rotated within said time delay;

said means for preventing rotation of said output disc with said input disc comprising:

an opening in said output disc;

solenoid means having a shaft member, said solenoid means being positioned relative to said output disc such that said shaft member is adapted to extend into said opening in said output disc;

whereby to fix said output disc in position to thereby prevent rotation of said output disc with said input disc;

said shaft member extending into said opening in said output disc when said solenoid is in its unactuated condition;

and further including means for actuating said solenoid whereby to remove said shaft member from said opening in said output disc whereby to permit a rotation transmitting connection between said output disc and said input disc;

said means for rotating said input disc comprising a hub means rotatable with said input disc;

said hub means mounting a handle rotatable with said hub; and

means for sensing movement of said handle;

and further including a card reader arrangement for reading codes on an encoded card, and for sensing when a card is inserted in said card reader arrangement;

wherein said means for actuating comprises said card reader arrangement, said means for sensing when a card is inserted in said card reader arrangement, and said means for sensing movement of said handle;

whereby, when said card reader arrangement reads a valid code on said encoded card, and when said handle movement is sensed, said solenoid is actuated.

4,762,213

DRIVING SYSTEM FOR A FOUR-WHEEL DRIVE VEHICLE

Kenichi Watanabe, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jan. 29, 1987, Ser. No. 8,002
Claims priority, application Japan, Jan. 30, 1986, 61-18580
Int. Cl.[4] F16D *25/063, 43/25, 43/28*
U.S. Cl. 192—82 T 9 Claims



1. A driving torque transmitting system including torque transmitting means disposed in a torque transmitting path from a power plant to a vehicle wheel, said torque transmitting means having friction members which are adapted to be brought into engagement with each other under a biasing force which determines a torque transmitting capacity of the torque transmitting means, the torque transmitting means having a first heat generating range wherein the heat generation in the torque transmitting means is within an allowable limit for continuous operation and a second heat generating range wherein the heat generation is higher than that of the first heat generating range but within a second allowable limit which is allowable for a predetermined time, control means responsive to heat generation conditions in the torque transmitting means for adjusting the biasing force in accordance with predetermined control characteristics so that a slip rate between the friction members is changed in accordance with the control characteristics when heat generation in the torque transmitting meansis in said first heat generating range, for adjusting the biasing force so that the slip rate of the torque transmitting means becomes substantially zero when heat generation within the torque transmitting means is out of the first heat generating range but within the second heat generating range within said predetermined time, and for adjusting the biasing force to a value wherein torque transmission through the torque transmitting means becomes substantially zero when heat generation within the torque transmitting means has been in the second heat generating range beyond said predetermined time or is beyond the first and second heat generating ranges.

4,762,214

CLUTCH PLATE AND METHOD OF MAKING SAME

Bernard M. Hadaway, Highett, Australia, assignor to Repco Limited, Australia

Continuation of Ser. No. 788,564, Oct. 17, 1985. This application Aug. 3, 1987, Ser. No. 81,635
Claims priority, application Australia, Oct. 26, 1984, PG7853
Int. Cl.[4] F16D *13/68*
U.S. Cl. 192—107 C 15 Claims



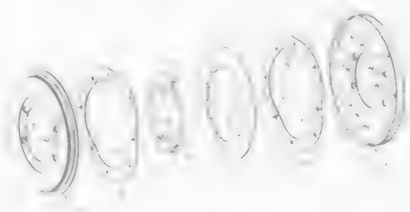
1. A friction component including, a facing of friction material, at least one metal section of plate-like form secured to said facing so as to be held against movement relative thereto, said metal section being embedded within a rear surface of said friction facing so as to be exposed at that rear surface and so that the periphery of the metal section is completely surrounded by said friction facing, and at least one hollow fastener formed integral with said metal section and projecting therefrom outwardly away from said rear surface, said fastener providing means whereby said friction component can be attached to a clutch plate cushioning spring.

4,762,215

BRAKE TORQUE LIMITING COUPLING

Richard A. Flotow, Ft. Wayne, and William H. Sink, Auburn, both of Ind., assignors to Dana Corporation, Toledo, Ohio

Filed Nov. 6, 1981, Ser. No. 318,729
Int. Cl.[4] F16D *11/00, 13/60*
U.S. Cl. 192—107 C 16 Claims



1. In a torque limiting friction device said friction device comprising a brake assembly for driving engagement with a shaft, and said friction device further comprising a cover assembly having an outer surface engagable with a non-rotatable surface, means for mounting said cover assembly for relative rotation on said brake assembly and a torque limiting mechanism which drivingly connects said brake assembly and said cover assembly up to a predetermined torque applied between said brake assembly and said cover assembly, an improvement wherein said torque limiting mechanism comprises a resilient friction member positively engaged with said cover assembly and frictionally engaged with said brake assembly wherein said predetermined torque is established substantially solely by friction between said resilient friction member and said brake assembly.

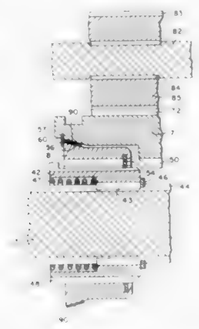
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,216

VEHICLE COMPONENT HAVING IMPROVED FRICTION MATERIAL

Selami Y. Pusatcioglu, Milwaukee, Wis., and Thomas A. Genise, Dearborn Heights, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 3, 1987, Ser. No. 57,072
Int. Cl.[4] F16D *69/02, 23/06*
U.S. Cl. 192—107 M 8 Claims



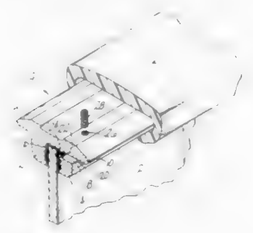
1. A component for a vehicle part, said component having an improved friction material disposed thereupon operative to enhance frictional engagement therewith, said friction material comprising a composite of from about 25% to about 75% by weight of a flurocarbon polymer and from about 75% to about 25% by weight ceramic fibers dispersed substantially uniformly therein, and said improvement characterized by said material having improved frictional engagement characteristics imparted thereto by reason of said polymer having controlled increased crystallinity arising from said material having been cooled at a rate of less than about 20° C. per minute after having been sintered at a temperature within a predetermined sintering temperature range for said polymer for a predetermined period of time.

4,762,217

ESCALATOR HANDRAIL GUIDE

Robert J. Steacy, Collinsville, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Dec. 7, 1987, Ser. No. 129,635
Int. Cl.[4] B66B *23/24*
U.S. Cl. 198—337 4 Claims



1. A handrail guide for controlling movement of a sliding handrail in a people conveying assembly, said guide comprising:

(a) an axially elongated solid metal body having a generally T-shaped cross-sectional configuration;

(b) first and second oppositely extending transverse arms forward on said body, said arms forming a part of the guide over which the handrail slides;

(c) first and second legs on said body extending generally perpendicularly from proximal portions of said arms, said legs being spaced apart to form sides of a groove in said body adapted to receive a top edge portion of a balustrade part of the conveying assembly;

(d) a transversed slot formed in said body, said slot undercutting a portion of one of said legs immediately adjacent to a corresponding one of said arms, said slot having a closed end proximal said groove to define a pivot portion of said body about which relative movement of said legs can occur;

(e) means forming a plurality of threaded openings extending through said corresponding one of said arms at locations spaced axially along said body, said openings each having its central axis substantially perpendicular with a bearing surface formed on said one of said legs by said slot; and

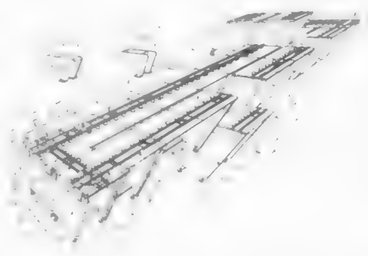
(f) means for threading into said threaded openings for tightening therein against said bearing surface to cause relative movement of said legs toward each other whereby the guide can be clamped to the balustrade part of the conveying assembly.

4,762,218

PRODUCTION PLANT WITH SEVERAL SINGLE STATIONS

Walter Sticht, Karl-Heinrich-Waggerl-Strasse 8, A-4800 Attnang-Puchheim, Austria

Continuation of Ser. No. 912,170, Sep. 26, 1986, abandoned, which is a continuation of Ser. No. 695,840, Jan. 28, 1985, abandoned. This application Nov. 5, 1987, Ser. No. 119,244
Claims priority, application Austria, Feb. 6, 1984, 365/84
Int. Cl.[4] B65G *21/20*
U.S. Cl. 198—345 10 Claims



1. A modular production plant for assembling workpieces comprised of several parts on respective workpiece carriers, which comprises a plurality of successively arranged operating stations including conveying modules for the workpiece carriers, deflector modules for the workpiece carriers and manual working modules for the workpiece carriers, said modules comprising

(a) a machine table module comprising a table plate module having four edges extending perpendicularly to each other, the machine table module for the deflector module comprising a square table module having a diagonal and the machine table module for the conveying module comprising a rectangular table plate module having two edges extending along a length thereof and two edges extending along a width thereof, the length of the rectangular table plate module being the same as that of the edges of the square table plate module and the width being a little smaller than the length,

(1) all the rectangular table modules being alike and interchangeable, and all the square table plate modules being alike and interchangeable,

(b) a guiding track device module on each one of said rectangular table plate modules and two guiding track device modules and a turntable module on each one of said square table plate modules, each guiding track device module and turntable module having a straight continuous track for guiding the workpiece carriers in a conveying direction,

(1) the guiding tracks having central longitudinal axes spaced at a greater distance from one of the table plate module edges than from a table plate module edge opposite the one edge, and the greater distance being more than half the width of the rectangular table plate module, the smaller width of the rectangular table plate module being of such dimension that contiguous ones of the continuous guiding tracks on a rectangular table plate module and on a square table plate module are in alignment,

(2) the two guiding tracks of the guiding track device modules on the square table plate modules intersecting at an imaginary point of intersection on said diagonal,

(3) a pivot shaft mounting the turntable module for rotation about the imaginary point of intersection for respective alignment of the guiding track of the turntable module with a selected one of the two guiding tracks of the guiding track device modules on the square table plate module, and

(4) all the guiding track device modules on the square table plate modules being alike and interchangeable, and all the guiding track device modules on the rectangular table plate modules being alike and interchangeable,

(c) a feed device module on the table plate modules for conveying the workpiece carriers,

(1) all the feed device modules being alike and interchangeable, and

(2) the table plate modules having means for receiving the guiding track device and feed device modules,

(d) a positioning device module for positioning and stopping the workpiece carriers in selected positions,

(1) all the positioning device modules being alike and interchangeable, and

(2) the table plate moeule of the conveying and manual working modules each comprising means for receiving the positioning device modules, and

the modular production plant further comprising

(e) like coupling means for replaceably attaching the guiding track, feed and positioning device modules to the receiving means of the table plate modules, and

(f) like coupling means for replaceably attaching the machine table modules of the conveying, deflector and manual working modules to each other.

4,762,219

BOX CONVEYING AND INDEXING SYSTEM

Richard D. Walters, Strathmore; Jon De Young, Fresno County; Clarence M. Rasmussen, and Louie S. Almares, both of Tulare County, all of Calif., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 21, 1985, Ser. No. 768,074
Int. Cl.[4] B65G *43/08, 47/46*
U.S. Cl. 198—358 10 Claims

1. A box conveying and indexing system for feeding boxes to a plurality of box packing stations upon request therefrom to maintain a given accumulation of boxes thereat, said system comprising

moving conveyor belt means for conveying boxes in said system,

a box accumulation buffer station formed on said moving conveyor belt means immediately upstream each of said packing stations,

restraining means for temporarily maintaining each of said accumulation buffer stations in place on said moving conveyor belt means,

detecting means associated with each of said packing stations for indicating when accumulation of boxes thereat falls below a given number, said detecting means inputting a signal to microprocessor means for generating an appropriate output signal,

indexing means responsive to said detecting means and output signal for pushing a most downstream box from a donor buffer station in closest upstream proximity to said packing station where accumulation of boxes fell below said given number,



means for causing at least one lesser downstream box of said donor buffer station to move downstream to replace said most downstream box, and boxes in each buffer station upstream said donor buffer station to move sequentially downstream to satisfy accumulation requirements of each of said upstream accumulation buffer stations, and

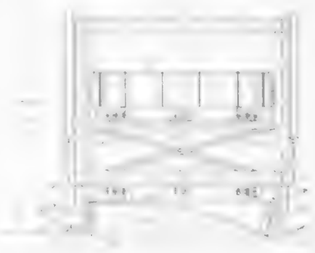
means for supplying boxes to said system from a main box holding station.

4,762,220

SIDE SCRAPER FOR A HEAP OF LOOSE MATERIAL

Hubert Lütke, Beckum, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Jan. 5, 1987, Ser. No. 384
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1986, 3602360
Int. Cl.[4] B65G *65/06*
U.S. Cl. 198—519 7 Claims



1. A side scraper for use with an elongate heap of loose material having an inclined upper surface sloping upwardly of said heap from its foot to its top, said side scraper comprising a scraper arm mounted to extend upwardly from adjacent the foot of said heap towards its top and being movable in at least one direction longitudinally of said heap; conveyor means carried by said arm and including scraper means having an edge at such level with respect to said surface of said material as to penetrate the surface of said material; and support means carried by said arm on that side of said arm which faces in said direction, said support means having a lower surface at a level above that of said edge for engagement with said surface of

VOL 1093 ISS 2 AG 9 1988 UMI

said material to limit the extent of penetration of said scraper means into said material.

4,762,221

TUBULAR BELT CONVEYOR

Kunio Hashimoto, and Haruo Okazaki, both of Kitakyushu, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 5, 1987, Ser. No. 104,286
Claims priority, application Japan, Oct. 8, 1986, 61-237996
Int. Cl.[4] B65G *15/08*
U.S. Cl. 198—819 5 Claims



1. A tubular belt conveyor which comprises:

an endless belt which is rolled up into a tubular shape to run as a forward path for conveying powdered or granular material wrapped therein;

a driving roller provided at the terminating end of the forward path for driving the belt so that the belt which is flattened may be wound around the driving roller and may be rolled up again to run as a return path;

a follower roller provided at the terminating end of the return path so that the belt may circulate between said two rollers; and

a plurality of support frames comprising two chambers through which the forward and return paths pass respectively, each chamber having a plurality of support rollers for supporting the tubular belt; the improvement comprising that

the first and return paths are on the same substantially vertical plane the vicinity of the driving and follower rollers and are in the same substantially horizontal plane therebetween.

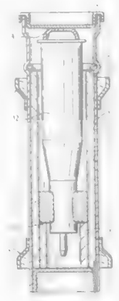
4,762,222

CONTAINER CONSTRUCTION PARTICULARLY FOR AMMUNITION

Roland Martin, Würnberg, Fed. Rep. of Germany, assignor to DVG Deutsche Verpackungsmittel GmbH, Fed. Rep. of Germany

Filed Sep. 23, 1986, Ser. No. 911,066
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1985, 3538027
Int. Cl.[4] F42B *37/00*
U.S. Cl. 206—3 8 Claims

1. A container for a part such as a round of ammunition, comprising an outer cylindrical jacket having a closed bottom and an open top with an interior wall, an inner lining positioned on the interior of said inner wall and having an end face at one end spaced from the top and defining a stop, said jacket having an interior wall with a concave encircling bead defined into said interior wall at a spaced location from the top, and an elastic safety ring in said bead which projects inwardly beyond the interior wall and forms a counter stop face disposed oppo-



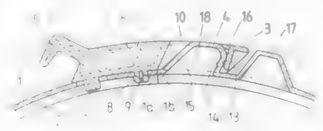
site to said lining stop and holding said lining in a fixed axial position in said jacket.

4,762,223

TYING AND STORAGE RING FOR A REEL OF RECORDING TAPE

Patrick P. P. Posso, Lausanne, Switzerland, assignor to Gefitiech S.A., Lausanne, Switzerland

Filed Jul. 8, 1987, Ser. No. 70,905
Claims priority, application Switzerland, Sep. 9, 1986, 3614/86
Int. Cl.[4] B65D *85/67*
U.S. Cl. 206—53 3 Claims



1. A tying and storage ring for a reel of recording tape, said reel comprising a hub and a pair of circular parallel webs, said ring comprising a strip of extensible flexible material (1) equipped, on a face thereof with two pairs of parallel longitudinal ribs (2), each rib positioned so as to engage one side of the webs of the reel, and said ring comprising a suspension hook (5) and with closing and tensioning means comprising a buckle (3) integral with one of the ends of the strip, and with a boss (4) which is integral with the other end of the strip and positioned such that the said buckle catches it when under tension, wherein the said buckle (3) is made in one piece with the suspension hook (5), wherein said buckle is fastened rigidly to the strip (1), wherein said buckle has an orifice (10) surrounding the boss (4) on which said buckle is caught, and wherein said buckle's side has gripping means (11, 12).

4,762,224

MIXING CONTAINER WITH SEGREGATED INGREDIENT COMPARTMENTS

John E. Hall, 9900 Camino Royal, Merriam, Kans. 66203

Filed Dec. 21, 1987, Ser. No. 135,325
Int. Cl.[4] B65D *81/32*
U.S. Cl. 206—221 7 Claims

1. A container for segregating two or more ingredients which when intermixed form a finished product, but which should not be intermixed until just prior to actual usage of the finished product, said container comprising:

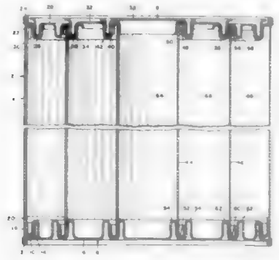
a. a hollow container body having a top and a bottom,

b. a bottom wall sealing the bottom of said body,

c. a composite lid assembly closing the top of said body and comprising a central lid and at least one annular lid surrounding said central lid,

d. means providing sealing engagement between said central lid and the inner edge of the innermost of said annular lids, between the outer edge of said innermost annular lid and the inner edge of the next outer annular lid, and the outer edge of the outermost annular lid and the top edge of said body, said sealing connections being manually engageable and disengageable,

e. one or more tubular partition walls disposed within said body and extending between said bottom wall and said composite lid assembly, and being of successively smaller



diameters than said body to divide said body into compartments for containing said ingredients,

f. means providing manually engageable and disengageable sealing engagement between the top of each of said tubular partition walls and one of the said annular lids, but not with said central lid, and

g. means providing manually engageable and disengageable sealing engagement between the bottom of each of said tubular partition walls and said bottom wall, said sealing engagements between each of said partition walls and said annular lids and said bottom wall being engageable and disengageable by force applied thereto in a direction parallel to the axes of said tubular partition walls.

4,762,225

COMPACT DISC GUARD AND CARRYING SYSTEM

Walter R. Henkel, 711 John St., Secaucus, N.J. 07094

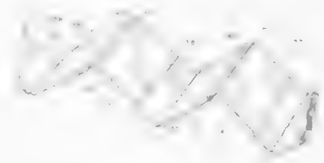
Filed Aug. 28, 1986, Ser. No. 901,599
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—311 24 Claims

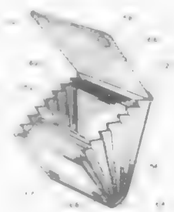
13. A portable guard and carrying system useful with compact discs, comprising:

(a) an accordion-like integral series of V-shaped storage means, said storage means comprising a foldable integral sleeve having a longitudinal axis, said sleeve comprising means for trapping air therein within a planar volume, thereby stiffening and flattening the skin of said sleeve when said sleeve is subjected to uniform surface pressures; and

(b) a plurality of linear folds defining a plurality of surfaces capable of holding of compact discs,

whereby a folding along said folds will cause said plurality of surfaces to fold upon each other and will cause said planar volume of trapped air to define a plurality of planar air cush-





ions that will act to protect said discs from said external pressures and impacts.

4,762,226

SHIPPING CONTAINER FOR MAJOR APPLIANCES

John R. Gatton, Bellville, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Oct. 12, 1983, Ser. No. 541,018
Int. Cl.[4] B65D *15/00*
U.S. Cl. 206—320 6 Claims



1. A shipping container for a household appliance comprising a tube member folded from a sheet of corrugated fiberboard to form four vertically extending sidewall panels, and a top cap of corrugated fiberboard extending horizontally over the upper end of said tube member, said top cap having a folded flap portion along three sidewall panels extending downwardly in surface-abutting contact with the outer surface of the adjacent sidewall panel and adhesively secured thereto, said top cap on said fourth side having an integral triple folded flap, the outer panel of said flap being secured in abutting relationship to the adjacent sidewall panel of said tube with the flap fold adjacent the top edge of the panel, the intermediate flap folds extending downward and defining a lifting flange, and adhesive tape material at each side of said flange extending over the outer surface of said lifting flange horizontally to and over the adjacent top cap flap to hold said lifting flange adjacent said outer flap panel, said tape material at its lower edge

VOL 1093 ISS 2 AG 9 1988 UMI

also being in adhesive engagement with the adjacent tube panel below said top cap flap portion.

4,762,227

RESILIENT HOUSING FOR REMOTE CONTROLLERS

Robert C. Patterson, 6736 Mantova, Long Beach, Calif. 90815

Filed Nov. 19, 1987, Ser. No. 122,386
Int. Cl.[4] B65D *85/38*
U.S. Cl. 206—328 3 Claims



1. A resilient protective enclosure for receiving remote signaling articles, comprising:

a substantially rectangular resilient pad including a base layer adhesively secured to a segmented receiving layer defined by a plurality of adjacent segments releasably adhered to said base layer whereby a combination of one or more of said segments may be removed from said base layer to receive said article between the remaining ones thereof; and

a transparent cover conformed for adhesive attachment to said pad and including an exterior ply adhesively secured to a portioned interior ply defined by a plurality of portions releasably adhered to said exterior ply, whereby the removal of selected ones of said portions will present the adhesive therebetween against the remaining ones of said segments.

4,762,228

VIDEO TAPE REEL BOX WITH SELF OPENING TOP

Joseph W. McConnell, III, Federal Way; Richard D. Wilburn, Jr., Mercer Island; Allan R. Northrup, Bellevue, and Lloyd D. Neal, Woodinville, all of Wash., assignors to Amaray International Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 828,805, Feb. 10, 1986. This application Feb. 10, 1987, Ser. No. 13,005
Int. Cl.[4] B65D *85/672*
U.S. Cl. 206—387 9 Claims



1. A molded storage box for reel stored media articles, such as a video tape reel, having a central aperture, comprising:

(a) a molded base having a bottom, a plurality of interconnected, peripheral walls extending upward from the bottom with at least one wall shorter than the others, the short poeripheral wall having external projections defining two ramp receptacles, the bottom and walls defining an enclosed reel receptacle having an open top;

(b) a top for closing the reel receptacle pivotally connected to the base and having a top wall having a first downwardly depending peripheral flange for closely overlapping the short peripheral wall on the outside thereof, the first flange having an outwardly depending lip with transverse ramp projections to automatically engage the ramp receptacles on the base when the lid is closed, and a plurality of downwardly depending peripheral flanges interconnected with each other and the first downwardlhy depending flange for closely meeting with corresponding peripheral walls of the base to form a lid with enclosed sides mateable with the base to form a fully enclosed box with dust barriers;

(c) a molded latch pivotally connected to the external projections on the base, the latch being moveable between an open and a closed position including means for engaging the molded latch with the top to secure the top in a closed position; and

(d) means, molded inside the box, for engaging the central aperture in the article to prevent movement of the article.

4,762,229

METHOD AND APPARATUS FOR ORIENTING OR LABELING A BEVERAGE DISPENSING CONTAINER RESPONSIVE TO TACTILE STIMULI

Monica Wickre, 1419 S. Third St., Aberdeen, S. Dak. 57401

Filed Jul. 2, 1987, Ser. No. 69,108
Int. Cl.[4] B65D *73/00*
U.S. Cl. 206—459 23 Claims



1. In a beverage dispensing container of the type having a generally cylindrical body with a pair of opposing sides, said body defining a receptacle region for containing a liquid beverage and said top defining a pouring aperture from which a person may drink said beverage when said person grips said beverage dispensing container in a hand, said hand having a plurality of fingers and an opposable thumb, said pouring aperture being located generally adjacent to one of said sides of said cylindrical body, the improvement comprising:

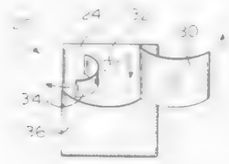
a tactile stimulus producing member disposed on the body of the beverage dispensing container, said tactile stimulus producing member being positioned such that said tactile stimulus producing member is contacted by the thumb of the person when the person grips the beverage dispensing container with the fingers of the hand contacting a first of the sides of the body and the thumb of the hand contacting a second of the sides of the body, said tactile stimulus producing member being predeterminately positioned and oriented in fixed relation to the second side of the body to which the pouring aperture is generally adjacent, whereby the person gripping the beverage dispensing container may selectively reorient the beverage dispensing container within the hand responsive to sensing the tactile stimulus producing member.

4,762,230

TEAR ORIENTED PACKAGE

Carlo P. Croce, Leonia, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Oct. 8, 1986, Ser. No. 916,687
Int. Cl.[4] B65D *65/26*
U.S. Cl. 206—469 18 Claims



1. A tear oriented package comprising; a first wall member and a second wall member, said first and second wall members sealed together about their peripheral edges when aligned with one another so as to form a sealed chamber therebetween for holding preselected items therein, said first wall member comprising a foamed polypropylene material having a tear orientation to facilitate the tearing of said first wall member into a first portion and a second portion to open the package in one predetermined direction and divide said chamber into a first pocket and a second pocket; and

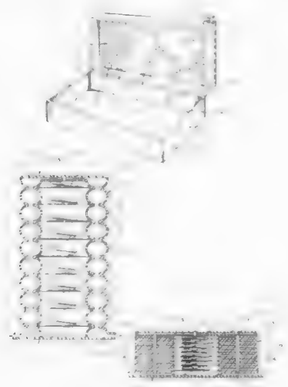
an adhesive material located on said second wallmemeber under said first portion exposable on removal of said first portion from said second wall member to allow engagement of said adhesive material with an adjacent surface of said second portion for closing said package.

4,762,231

PNEUMATIC DEVICE FOR HOLDING ARTICLES IN CONTAINERS

Donald L. Kiselewski, 4705 Holly Dr., Palm Beach Gardens, Fla. 33410

Filed Aug. 10, 1987, Ser. No. 83,452
Int. Cl.[4] B65D *81/08*
U.S. Cl. 206—522 34 Claims



1. A pneumatic device for holding an article in position in a container, comprising:

an inflatable-deflatable mat adapted to be positioned in contact with a surface in said container, said mat having an air passageway therethrough and being disposed so as to generally conform to said surface in said container;

a plurality of expandable-contractable air chambers disposed about said mat, each of each air chambers being continuously in communication with said mat, said air chambers, being inflatable and deflatable with said mat; and

a pressure applying surface associated with said air chambers directly opposite said mat, said pressure applying surface being adapted to hold said article in position upon inflation of said mat and said air chambers, said pressure applying surface being disposed adjacent said mat when said air chambers are deflated;

said air chambers expanding upon inflation to cause said pressure applying surface to engage said article in said container, said air chambers cooperating with said pressure applying surface to provide a substantially uniform pressure for holding said article in position.

4,762,232

FROZEN CONFECTION CONTAINER AND METHOD

Anthony J. Sedutto, Staten Island, and Stephen L. Capece, Beechhurst, both of N.Y., assignors to The Pillsbury Co., Minneapolis, Minn.

Filed Oct. 21, 1986, Ser. No. 921,724
Int. Cl.[4] B65D *6/02*
U.S. Cl. 206—525 5 Claims



1. A two-member container for a layered frozen confection product, said container comprising:

a bottom member having a circumferential top portion,

a domed cover member having a dome portion and a peripheral portion around the outer circumferential edge of the dome portion,

said peripheral portion having a diameter and being shaped to receive the top portion of the bottom member thereon and said circumferential top portion of the bottom member constitutes a bead and the peripheral portion of the domed cover member constitutes a peripheral flange having a bead receiving groove formed therein with a diameter to receive and interfit with the bead of the bottom member,

a plurality of radially extending ribs formed in the top of the domed cover member and extend radially outwardly from a center portion of said cover member with the outside surfaces of said ribs defining a top planar support for supporting a second container thereon and said ribs define radially extending marking indicia on the inside of the domed cover member and form divider indicia in a soft confection product confined within the domed cover.

4,762,233

CONTRACTING CONTAINER

Jack L. Sears, c/o George Spector, 233 Broadway RM 3815, and George Spector, 233 Broadway RM 3815, both of New York, N.Y. 10007

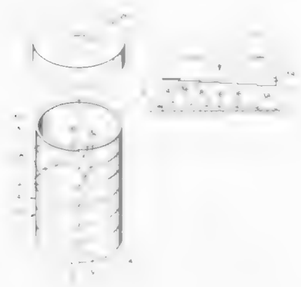
Filed May 26, 1987, Ser. No. 54,220
Int. Cl.[4] B65D *3/26*
U.S. Cl. 206—627 1 Claim

1. A collapsible container which comprises:

(a) a side wall forming an open end cylindrical portion, said side wall having a plurality of spaced apart score lines along surface thereof forming a plurality of container sections which are generally parallel to each other and to

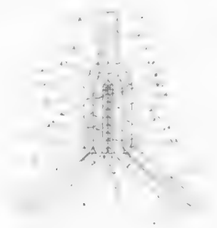
VOL 1093 ISS 2 AG 9 1988 UMI

an edge defining an open end of said cylindrical portion, said side wall including an outermost pair of overlapping end portions having outer ends;
(b) a bottom for said cylindrical portion;
(c) a removeable cover which is adapted to be positioned in closing relation to the open end of said cylindrical portion;
(d) means for sealing said overlapping end portions together at a position adjacent said outer ends of said outermost pair of said end portions; and



(e) a plurality of tab portions formed on the outer end of the outermost one of said pair of end portions so that a person may grasp each said successive uppermost tab portion between the fingers and peel away each said successive uppermost container section away from rest of said cylindrical portion along said respective score line, wherein said side wall comprises a plurality of downwardly descending steps thereon so as to form said plurality of score lines with tapered edges in said side wall and downwardly descending thickness in said container sections.

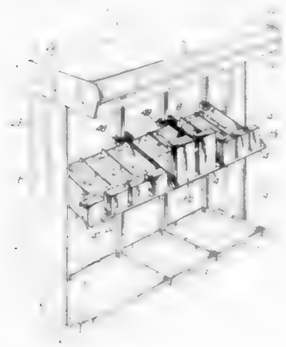
4,762,234
GABLE-TOP CONTAINER
Gregory R. Wyberg, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 10, 1987, Ser. No. 36,908
Int. Cl.[4] B65D 5/74
U.S. Cl. 206—631.3 23 Claims



1. A sheet material blank for constructing a sealed gable-top container having inner and outer surfaces responsive to a container sealing process, said blank comprising:
(a) four body panels including front and back panels and first and second side panels;
(b) bottom closure panel means for closing a bottom of said container;
(c) first and second oppositely disposed roof panels connected to upper edges of said first and second side panels, respectively;
(d) first and second opposed substantially triangular end panels connected to upper edges of said front and back body panels, respectively;
(e) first and second foldback panels, said first foldback panel connected to said first roof panel and to one lateral edge of said first triangular end panel, and said second foldback panel connected to said second roof panel and to the other lateral edge of said first triangular end panel;
(f) third and fourth foldback panels, said third foldback panel connected to said first roof panel and to one lateral edge of said second triangular end panel, and said fourth foldback panel connected to the other lateral edge of said second triangular end panel and adapted to be connected to said second roof panel;
(g) first and second gable rib panels connected to upper edges of said first and second foldback panels, respectively, to extend upwardly therefrom, having upper edges and lateral edges, and connected to each other at a common line;
(h) third and fourth gable rib panels connected to upper edges of said third and fourth foldback panels, respetively, and to each other;
(i) first and second roof rib panels connected to upper edges of said first and second roof panels, respectively, each said roof rib panel connected at one side thereof to one of said first and second gable rib panels;
(j) first and second upper rib panels connected to upper edges of said first and second roof rib panels, respectively;
(k) first roof wing panel comprising a triangular portion of said first roof panel adjoining said first foldback panel and said first roof rib panel and connected thereto;
(l) second roof wing panel comprising a traiangular portion of said second roof panel adjoining said second foldback panel and said second roof rib panel and connected thereto; and
(m) at least one stiffening fillet overlying a poriton of, and bonded to the outer surface of at least one of said first and second gable rib panels, for stiffening said at least one of said first and second gable rib panels to transfer applied opening forces along said at least one said panel to open said container, said fillet comprising (x) a strip of material resistant to the container sealing process and having a modulus of electicity of at least 0.1×10^6 psi, and (xx) a layer of adhesive attached to one side of said strip and to said outer surface of said at least one said gable rib panel for bonding said strip thereto.

4,762,235
INTEGRATED MODULAR STORE FIXTURE SYSTEM AND A TRAY AND HEADER THEREFOR
Fred Howard, New York, and Sydney Edson, East Meadow, both of N.Y., assignors to Sara Lee Corporation, Winston-Salem, N.C.
Filed Jul. 9, 1986, Ser. No. 883,586
Int. Cl.[4] A47F 5/00
U.S. Cl. 211—59.3 24 Claims

1. An integrated modular store fixture system comprising:
a plurality of C-shaped rigid frame members each having an upper and a lower horizontal arm and a vertical spine connecting the two arms and disposed at a rear portion of the system;
a plurality of rigid spacer elements positioned adjacent each end of each of said upper and lower horizontal arms and connecting the frame members together in a spaced apart parallel relationship;
trays for holding merchandise to be displayed;



means for releasably mounting the trays between successive spines; and
side panels connected to said frame members.

4,762,236
ADJUSTABLE TRAY DISPENSING APPARATUS
William C. Jackle, III, Scottdale, Ariz.; Richard A. Sherwood, Dallas, Tex.; Frederick M. Avery, and James V. Seifert, both of Phoenix, Ariz., assignors to The Niven Marketing Group, Des Plaines, Ill.
Continuation-in-part of Ser. No. 920,042, Oct. 16, 1986, Pat. No. 4,730,741. This application Jun. 29, 1987, Ser. No. 68,153
Int. Cl.[4] A47F 7/00
U.S. Cl. 211—59.3 25 Claims



1. A product dispensing apparatus comprising a tray system including a front wall, a rear wall and interconnecting side walls at opposite ends of said front and rear walls; support means including a cross-bar extending between said side walls and having support plates at opposite ends thereof in juxaposed relation to said side walls with rail means between said side walls and said support plates for guiding said tray system between a rear product dispensing position wherein said support plates and said side walls are substantially coextensive and a product restocking position where said tray system is located forward of said support means, said tray system including a plurality of partitions extending between said front and rear walls and releasably retained thereon to define a plurality of transversely-spaced trays, guide means extending between said front and rear walls in each of said trays, pusher means slideably supported on said guide means, and biasing means between said cross-bar and each of said pusher means for maintaining engagement with a rear-most product in a tray to move all products in a tray toward said front wall when the tray system is in a product dispensing position and accommodating movement of said pusher means toward said rear wall when said tray system is moved to said product dispensing position so that new products can be introduced behind existing products in a tray.

4,762,237
STORAGE SYSTEM
Brian L. Newton, Woonsocket, R.I., assignor to Dart Industries Inc., Deerfield, Ill.
Filed Apr. 1, 1986, Ser. No. 846,684
Int. Cl.[4] A47F 5/08
U.S. Cl. 211—115 24 Claims



1. In a storage system for engagement with and suspension from an overhead structure, a mounting bracket and a tray assembly supportable in depending relation by and from said bracket; said mounting bracket comprising a horizontal base having opposed side edges, a pair of oppositely directed mounting arms, one arm on each of said side edges, each arm terminating in spaced relation above said base in a laterally directed mounting flange, a pair of laterally inwardly directed support shoulders rigid with said base and in underlying relation thereto, said support shoulders defining a slot therebetween paralleling the side edges of said base; said tray assembly comprising a vertically elongate handle having an upper end and a lower end, a goods-receiving platform mounted on the lower end of said handle, the upper end of said handle including an enlarged head thereon of a greater transverse dimension than the width of the slot defined between the support shoulders of said mounting bracket, said handle, immediately below said head, being receivable within said slot for supporting engagement of said head on said support shoulders.

4,762,238
AUXILIARY HANGER ROD SUPPORT
Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.
Filed Mar. 3, 1986, Ser. No. 835,196
Int. Cl.[4] B01D 25/12
U.S. Cl. 211—123 9 Claims



1. Means for simultaneously providing support for garment hangers of conventional construction and providing for discouraging the unauthorized removal of specially designed open hook supported garment hangers from their location of use, said means comprising: a garment hanger support rod of conventional diameter and an auxiliary support rod of a substantially small diameter than that of said conventional garment hanger support rod; a pair of brackets one mounted to said auxiliary support rod at each of its ends, each of said brackets having means for engaging the garment hanger support rod of conventional diameter to suspend the auxiliary support rod beneath the conventional support rod in closely

VOL 1093 ISS 2 AG 9 1988 UMI

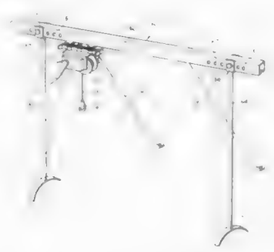
spaced vertical relationship thereto; said bracket initially being of an inverted generally U-shape with a pair of depending legs forming an upwardly extending aperture therebetween defining a first cavity for receiving said conventional garment hanger support rod adjacent the top of the bracket, said aperture also defining a second concave cavity in each leg adjacent the open end thereof, said second aperture being of a size when said legs are brought together to snugly receive said auxiliary rod therein; latch means for holding said legs together with said rods in their respective cavities; said auxiliary rod and said brackets having interengaging means for holding the auxiliary rod against both axial and rotational movement with respect to said brackets; said interengaging means being a key integral with said bracket and projecting into said second aperture and a key receiving opening in one side of said auxiliary rod; said key being narrower than said bracket and recessed from both ends of said second aperture and said key receiving opening being only wide enough to receive said key whereby said keys are concealed within said bracket when it is closed around said auxiliary rod; a garment hanger having a support hook, said hook having a rod receiving opening of a size no larger than that necessary to receive the auxiliary rod therein.

4,762,239

APPARATUS INCLUDING A PORTABLE HOIST AND GRAPPLES FOR USE IN REPAIRING WATER MAIN METERS

Edward E. Wissman, Millersville, and Vincent Tenaglia, Hyattsville, both of Md., assignors to Washington Suburran Sanitary Commission, Hyattsville, Md.

Filed Sep. 28, 1987, Ser. No. 101,606
Int. Cl.[4] B66C *23/18*
U.S. Cl. 212—179 8 Claims



1. Apparatus for use in repairing valves in water main meters wherein the water main meters include a valve chamber with a cover, a pivoted weight and a valve clapper; the apparatus comprising:
- a portable hoist for use in repairing water main meters, the hoist including:
- a beam for extending horizontally across the water main meter;
- first and second struts each strut having an upper and lower end, the upper end of each strut having means for detachably connecting the strut to the beam the lower end of each strut having an arcuate base with a surface conforming to the shape of the water main meter;
- a pair of obliquely extending lateral struts, wherein each lateral strut has a first and a second end, the first end being secured to the beam and the second end to a lateral portion of the meter;
- a trolley supported by the beam for horizontal movement thereon from a first position to a second position;
- a winch mounted on the trolley, the winch having a winding drum and a cable with coupling means at the free end of the cable;
- a plurality of grapples selectively attachable to the coupling means or the cable, the grapples including:
- first grappling means securable to the coupling means for lifting the cover from the valve chamber;
- second grappling means securable to the coupling means for lifting the pivoted weight from the valve chamber; and
- third grappling means securable to the coupling means for lifting the valve from the meter.

4,762,240

ARTICULATING CRANE

George J. Thompson, Ocean Springs, Miss., assignor to Paceco, Inc., Gulfport, Miss.

Filed Jan. 20, 1987, Ser. No. 5,203
Int. Cl.[4] B66C *23/42*
U.S. Cl. 212—187 4 Claims



1. A crane comprising
- a supporting structure,
- an inboard boom section having the inboard end thereof pivotally secured to said supporting structure by a first hinge means having a horizontal axis of rotation disposed perpendicular to the longitudinal axis of said boom,
- an outboard boom section having a second hinge means with an axis of rotation parallel to the first hinge means pivotally securing said outboard boom section to said inboard boom section, both of said booms being capable of pivoting upward to raised stowed positions, said outboard boom section having its center of gravity located outboard of its hinge connection to said inboard boom section when said outboard boom section is raised to an upward projecting position limit or stowed position and when said inboard boom section is disposed in its lowered outward projecting horizontal operating position,
- means for rotating said outboard boom section about its hinge connection to said inboard boom section to said upward projecting stowed position, and
- means for rotating said inboard boom section about its inboard end, when said outboard boom section is disposed in its said upward projecting stowed position, to a raised position limit or stowed position approaching the vertical with the center of gravity of said combination of said booms being located outboard of the pivot connection of said inboard boom section with said supporting structure,
- said means for rotating said boom sections also being formed for lowering said inboard and outboard boom sections with said outboard boom section disposed in its stowed position until said inboard boom section has been lowered to its horizontal operating position and then lowering said outboard boom section until it is in a horizontal operating position, and
- said means for rotating said inboard and outboard boom sections to the upward projecting stowed position and lowering said boom sections sequentially including a wire rope and sheave mechanism having sheaves disposed proximate the outboard ends of each of said boom sections and a continuous wire rope loop reeved through both of said sheaves at the outboard ends of said boom sections and driven by a winch which picks up the outboard end of said outboard boom section first by shortening of said rope and raises it to its raised position during rotation of said booms before further shortening of said rope by said winch raises the outboard end of said inboard boom section, and lengthening of said rope lowers the combination of booms with the outboard boom section stowed in its raised position until the inboard boom section has been rotated down to its horizontal operating position before said outboard boom section is rotated down to its horizontal operating position.

4,762,241

CONTAINER WITH SUPPLEMENTAL OPENING FOR EXTRACTING CONTENTS

Richard R. Lang, 6343 Milton St., Philadelphia, Pa. 19138

Filed Feb. 5, 1987, Ser. No. 11,007
Int. Cl.[4] B65D *39/00*
U.S. Cl. 215—250 10 Claims



1. An improved container of the type having a vessel defined by a bottom with an outer surface contoured to support the container when placed on a flat surface, side walls substantially perpendicular to the outer surface of the bottom, and a top, a primary opening being disposed in the top and dimensioned such that the contents of the container can be poured by tilting the container whereupon the contents flow out normally through the top, the improvement comprising:
- the bottom being a solid wall having a flat inner surface inclined relative to the flat surface against which the bottom is placed; and,
- at least one of the bottom and a side wall of the container having a supplemental opening with removable closure in the form of a hole in said one of the bottom and the side wall and a removable plug therein, the supplemental opening being disposed at an edge of the flat inner surface and at a lowermost point in the container, at a junction between the bottom and the side wall whereby the contents can alternatively be removed through the supplemental opening.

4,762,242

RETRACTABLE COVER FOR AN OPENING HAVING LIMITED STACKING SPACE

Jesse W. Harris, 3006 Mayfair, San Antonio, Tex. 78217, and James K. Kuhns, 3106 Colony Dr., San Antonio, Tex. 78230

Filed Oct. 16, 1987, Ser. No. 109,496
Int. Cl.[4] B65D *43/20*
U.S. Cl. 220—18 12 Claims

10. A retractable safety cover for an oil change pit comprising:
- a plurality of stacked panels;
- a crossmember mounted to the edge of each of said panels and having a wheel mounted to each and thereof;
- a track mounted to the wall of an oil change pit on which the wheels of said panels rest;
- a clasper mounted on the edge of each of said panels for slidably engaging the panel stacked therebelow and for engaging said crossmember to retain said panels in engagement with each other when said panels are extended from a first position in which said panels are stacked



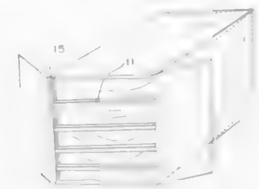
directly on top of each other to a second position in which said panels are stacked on top of each other in staircase fashion.

4,762,243

DRY CONTAINER CAPABLE OF ACCOMMODATING BULK CARGO

Nobuyuki Unrinin, Miki, Japan, assignor to Kawasaki Kisen Kaisha, Ltd., Hyogo, Japan

Filed Aug. 25, 1987, Ser. No. 89,313
Claims priority, application Japan, Sep. 19, 1986, 61-142605[U]
Int. Cl.[4] F26B *25/12*
U.S. Cl. 220—22 9 Claims



1. A dry container capable of accommodating bulk cargo, which consists of hexahedral vessel having its door opening onto at least one side shell face thereof, comprising
- a pair of longitudinal corner-post-grooves facing each other disposed near the door opening,
- a set of reinforcement rigid members, whose each end is inserted into each corresponding groove, arranged with distance to each other and each bridging between a pair of front corner posts, and
- a flexible inner-container-bag arranged inside the space defined by the plane including the set of reinforcement rigid members disposed in the dry container and by other five shell faces than the face nearest the rigid members so as to fit the bag sheet onto these container shell faces and the rigid members.

4,762,244

RADIATOR OVERFLOW CONTAINER

David B. Ziegler, Eden Prairie, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

Filed Sep. 23, 1987, Ser. No. 100,380
Int. Cl.[4] B65D *51//16*
U.S. Cl. 220—203 4 Claims

1. A radiator overflow container, comprising:
- a plastic container having a metallic orifice,
- said plastic container having wall portions which define an enclosure for a liquid which may have above-ambient and

VOL 1093 ISS 2 AG 9 1988 UMI

above-atmospheric operating temperatures and pressures, respectively,

said metallic orifice having a substantially cylindrical configuration, including first and second axial ends, an opening which extends between the first and second ends, and inner and outer surfaces,

said first end of the metallic orifice being embedded in a wall portion of said plastic container via a plastic-to-metal interface sufficient to mechanically hold the metallic orifice in the assembled position at the operating temperatures and pressures of the associated liquid, but which may



not be liquid tight, and wherein the plastic of said wall portion extends into the opening of said metallic orifice to define a plastic annular sealing surface adjacednt to the inner surface of said metallic orifice,

and a cap releasably engageable with said metallic orifice,

said cap including a depending portion which extends into the opening of said metallic orifice and contacts said annular sealing surface when the cap is engaged with said metallic orifice, to seal the tank with a cap-to-container seal which places the plastic-to-metal interface outside the portion of the container which may operate above atmospheric pressure.

4,762,245

EASY-OPEN CAN LID

Hiroshi Matsubayashi, Kamakura; Naoto Watanabe; Seishichi Kobayashi, both of Yokohama; Toshio Sue, and Kazuo Taira, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Continuation of Ser. No. 769,718, Aug. 27, 1985, abandoned.
This application Mar. 18, 1987, Ser. No. 28,014
Claims priority, application Japan, Aug. 28, 1984, 59-177548; May 22, 1985, 60-108379
Int. Cl.[4] F23Q 7/22
U.S. Cl. 220—269 13 Claims



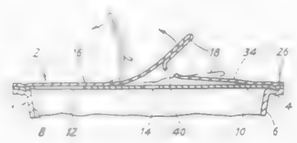
1. An easy-open can lid having on the periphery thereof a sealing compound-coated portion to be seamed with a flange of a can body and an easy-open mechanism on the inner side, said can lid comprising a rigid lid member comprising a chromated surface treased steel plate coated with an epoxy type primer, a score line formed on the lid member to define a portion to be opened which is cut to the middle of the steel plate in the thickness direction, and an opening tab secured to the outer surface of the lid member at said portion to be opened through a bonding fulcrum formed of a thermoplastic adhesive consisting of amide recurring units and/or ester recurring units, said opening tab being located so that the push-tearing top end of the opening tab is positioned substantially on the score line, wherein the chromated surface treated steel plate has a thickness of 0.10–0.40 mm, a strength of 35–60 kg/mm^2, a carbon content of lower than 0.03% and an elongation of 1 to 20%, and the ratio of the residual thickness on the score line to the thickness of the chromated surface treated steel plate in the portion to be initially opened is in the range of from 0.1 to 0.4.

4,762,246

CONTAINERS

Robert J. Ashley, Faringdon; John D. Miller, Didcot, and Maurice F. Ring, Wantage, all of United Kingdom, assignors to Metal Box Public Limited Company, Berkshire, England

Division of Ser. No. 908,708, filed as PCT GB85/00569 on Dec. 11, 1985, published as WO86/03474 on Jun. 19, 1986, Pat. No. 4,723,391.
This application Aug. 20, 1987, Ser. No. 87,676
Claims priority, application United Kingdom, Dec. 13, 1984, 8431447
Int. Cl.[4] B65D 17/34
U.S. Cl. 220—270 10 Claims



1. A container for foodstuffs and beverages, comprisng a vessel having a mouth surrounded by a rim presenting an upper surface of plastics material, and a lid, comprising a diaphragm secured by an endless weld to said upper surface and covering the mouth, the diaphragm having a perforation consisting of at least one through hole, and a peel strip sealingly but peelably secured over the perforation, the peel strip having a pull tab, formed by a portion of the peel strip folded back on itself and situated outside the perforation, the peel strip having a transverse cut across part of its width at the junction of the pull tab with the remainder of the peel strip on the side of the pull tab remote from the perforation.

4,762,247

ORIFICE RING FOR A FILLING CAP

Angelika B. Temmesfeld, Raubling, Fed. Rep. of Germany, assignor to Temtec Fahrzeugtechnik Entwicklungsgesellschaft mbH, Raubling, Fed. Rep. of Germany

Filed Jan. 20, 1987, Ser. No. 4,885
Claims priority, application Fed. Rep. of Germany, Jan. 30, 1986, 3602844
Int. Cl.[4] B65D 5/16
U.S. Cl. 220—303 11 Claims



1. Orifice ring for fixing to a self-sealing fuel tank cap, characterized in that it has a guide tube part connected to the fuel tank cap, whilst leaving an annular-like air gap, the side of tube

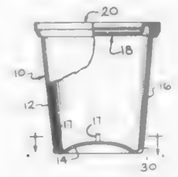
part remote from fuel tank cap passing into an inverted over marginal region.

4,762,248

TAMPER RESISTANT WIDE MOUTH PACKAGE

Albert R. Uhlig, Toledo, Ohio, assignor to Plastic Technologies, Toledo, Ohio

Filed May 11, 1987, Ser. No. 48,905
Int. Cl.[4] B65D 39/00
U.S. Cl. 220—307 29 Claims



1. A tamper resistant package comprising:

a container having a closed end, at least one side wall, and an open end defined by the side wall, the side walls including radially extending sealing surfaces and an inwardly facing annular sealing surface; and,

a closure of plastic material such that the closure flexes in thin cross section, the closure having a depending annular skirt adapted to securely fit within the open end of the container, the depending annular skirt having radially extending sealing surfaces for engaging the radially extending sealing surfaces of the container and for placing the container and closure under tension to secure the closure on the container, the depending annular skirt terminating in an outwardly facing peripheral annular sealing surface adapted to engage said inwardly facing annular sealing surface; the closure snapping into the open end of the container and being sealed under tension such that an attempt to disengage the closure from the container causes visual damage to either the closure or the container which can be seen by observing the package from the top.

4,762,249

THERMOPLASTIC CONTAINER END FOR INERTIAL SPINWELDING OF THERMOPLASTIC CONTAINER ENDS

Vincent Fortuna, Huntington Beach, Calif., and Donald MacLaughlin, Midland, Mich., assignors to Packaging Resources Incorporated, New Vienna, Ohio

Continuation-in-part of Ser. No. 234,344, Feb. 13, 1981, abandoned. This application Aug. 5, 1982, Ser. No. 405,642
Int. Cl.[4] B65D 41/00, 13/00; B65B 7/00
U.S. Cl. 220—359 19 Claims



1. A container end, adapted to receive a container sidewall and to be spinweld bonded thereto, comprising;

a first portion for receiving a container sidewall, said first portion comprising a first annular groove formed by first and second upstanding wall members;

a second portion, connected to an end of said second wall member at a position remote from said first wall member and having means for transferring to a direction normal to a spinwelded bond, any shear forces which arise due to axial forces on said container end which tend to shear said spinweld bond, said second portion comprising an additional wall portion connected to and extending from said second wall member and forming therewith a second annular groove of generally opposite orientation from said first annular groove, wherein said shear force transferring means comprise a plurality of circumferentially spaced radial ribs, extending in said second annular groove between said second upstanding wall portion and said additional wall portion, said plurality of ribs being operable to transfer forces acting on said container end from shearing said spinwelded bond and being further operable to provide a rotary drive engagement for said container end.

4,762,250

VENDING MACHINE

Bo S. Friberg, Stensta-Skepptuna, S-195 00 Mästa, Sweden

Filed Nov. 12, 1985, Ser. No. 796,765
Claims priority, application Sweden, Nov. 19, 1984, 8405804
Int. Cl.[4] B65D 83/00
U.S. Cl. 221—123 2 Claims



1. A vending machine for combined dispensing of variable sized articles which are restricted in shape and size only by the narrowest passage within the machine, and for heating and dispensing of ready-prepared food portions, including (a) a cabinet; (b) a storage-closet arranged in the cabinet comprising a back wall, a front and an outlet opening and equipped with a number of shelves for storage of the articles; (c) means within the storage-closet for transportation of a selected article from its position within the storage-closet into a microwave oven including a removable lid situated within the space of the cabinet outside the storage-closet; and (d) means for operating the microwave oven and for transferring the articles from the oven and farther to a delivery compartment, characterized by the combination of features comprising:

(i) said shelves (5,6,7) extending from the back wall of the storage-closet towards the front, terminating with their front edges at a distance therefrom to form a lift shaft;

(ii) said means for transportation of an article into the microwave oven positioned within said storage-closet and comprising:

(a) a carriage which is vertically adjustable and laterally displaceable along the front edges of the shelves;

(b) means on the carriage for receiving the article delivered from the shelves and transferring the article to an outlet opening at the bottom of the storage-closet; and

(c) means for moving the article received at the outlet opening into the microwave oven;

and wherein said means for receiving the article delivered from the shelves comprises at least one chute which is pivotally journalled on the carriage at right angles to the front edges of the shelves, said chute being provided on its free end with a

VOL 1093 ISS 2 AG 9 1988 UMI

stop member and is supported in an inclination which ensures that the article will slip down the chute by its own weight at rest against the stop member, and a dog plate being arranged on a level with the chutes in a horizontal position and carriage in a lowest position for transferring the article through an outlet opening into a bottom of the microwave oven.

4,762,251

RATIO MEASURING CUP

Martin J. Berger, Dobbs Ferry, N.Y., assignor to Pepsico Inc., Purchase, N.Y.

Filed Jun. 27, 1986, Ser. No. 881,447

Int. Cl.[4] **B67D** *5/22, 5/06, 5/56;* **G09F** *9/00*

U.S. Cl. 222—49 **4 Claims**



1. A cup for determining whether a dispenser is dispensing an acceptable ratio of water to syrup, comprising first and second adjacent, substantially non-opaque chambers, the first chamber being for receiving water dispensed from a nozzle, and the second chamber being for receiving syrup dispensed by the nozzle, with the cross sectional areas of the water and syrup chambers being substantially in the ratio of a predetermined water to syrup ratio in the dispensed product, and a slider element vertically slideable along the height one of said two chambers and having a first horizontal calibration mark thereon to be aligned with one liquid level height, and said slider element also having a second horizontal calibration mark thereon displaced vertically from said first horizontal calibration mark, with the distance between said first and second calibration marks defining a vertically disposed tolerance range, which when the second level height falls within said tolerance range indicates an acceptable ratio of water to syrup.

4,762,252

ADAPTATION TO MAJOR OR SPORADIC DISTURBANCE ERROR IN WEIGH FEEDING APPARATUS

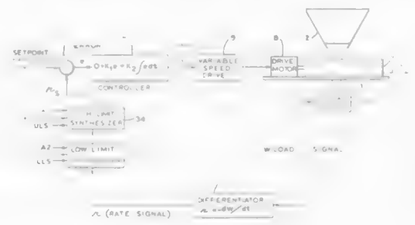
Frank S. Hyer, Duxbury, and Paul M. Kintner, Pembroke, both of Mass., assignors to Hyer Industries, Inc., Pembroke, Mass.

Filed May 8, 1987, Ser. No. 47,260

Int. Cl.[4] **G01G** *13/285*

U.S. Cl. 222—56 **17 Claims**

1. In a weigh-feeding system comprising controllable means for feeding material to a delivery point, means for weighing said material in advance of said delivery point, means for sensing the rate of change of said weight, means for establishing a desired rate of change of weight corresponding to a desired material delivery rate, means for making a comparison between said sensed rate and said desired rate and means for normally controlling said feeding means in response to said comparison in order to produce a controlled feed of material at said desired material delivery rate, the improvement which comprises means for substituting for said sensed rate a pre-established synthetic rate differing from said desired rate by a predetermined amount whenever said sensed rate reaches or exceeds a limit value deviating from said desired rate in an



increasing or decreasing sense, and controlling said feeding means in response to a comparison between said desired rate and said synthetic rate.

4,762,253

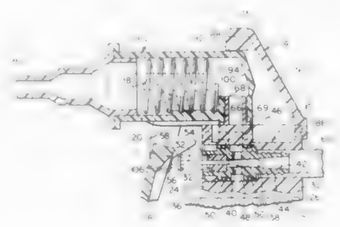
FOAM DISPENSING GUN

Steven H. Palmert, Brookfield, Wis., assignor to RHH Enterprises, Inc., Cudahy, Wis.

Continuation-in-part of Ser. No. 015,479, Feb. 17, 1987, abandoned. This application Aug. 5, 1987, Ser. No. 81,774

Int. Cl.[4] **F23D** *11/46;* **B05B** *7/02*

U.S. Cl. 222—145 **15 Claims**



1. In a foam dispensing gun having a pair of supply conduits adapted to be connected to separate pressurized fluid components to be mixed and dispensed from the gun, a gun body having a pair of fluid passageways adapted to be connected to the respective supply conduits, valve means for controlling the flow of fluid components through said passageways, a replaceable mixing and dispensing nozzle adapted to be mounted on said body, means for removably retaining said nozzle on said body, and trigger means for operating said valve means, the improvement comprising:

a cylindrical nipple projecting from said body to provide body discharge porting for both said fluid components;

means including a cylindrical sleeve provided on and extending within said nozzle for defining a single inlet port in said nozzle, said sleeve being adapted to telescope over said nipple to provide releasable coupling passageway between said discharge porting and said inlet port; and

sealing means operable between said sleeve and said nipple for making said coupling passageway fluid tight.

4,762,254

PRESSURE CONTAINER FOR AEROSOL

Tomio Nitta, Yokohama, Japan, assignor to Tokai Corporation, Kanagawa, Japan

Filed Oct. 27, 1986, Ser. No. 924,245

Claims priority, application Japan, Nov. 8, 1985, 60-170889[U]

Int. Cl.[4] **B65D** *83/14*

U.S. Cl. 222—402.24 **3 Claims**



1. A pressure container for aerosol comprising:

a synthetic resin container body open at only one end thereof, a hollow synthetic resin plug fitted internally of said one open end of said container body and sealed by means of ultrasonic welding to form a unitary structure with said container body, said hollow synthetic resin plug defining a valve chamber having an inlet in communication with the interior of said container body at one end thereof and a uniform largest diameter upper most portion having a threaded inner surface, a downwardly tapered portion extending downwardly from said uppermost portion, a uniform intermediate diameter intermediate portion extending downwardly from said tapered portion and a smallest diameter lowermost portion extending downwardly from said intermediate portion, a spring loaded spouting tube received in said valve chamber with a portion thereof protruding above said container body and plug for vertical slidable movement, a valve port in a side wall of said spouting tube and a communication groove in communication with said valve port in the side wall of said spouting tube, an annular threaded guide in threaded engagement with said threaded inner surface of said valve chamber, an annular shoulder formed on the inner surface of said valve chamber, said annular shoulder being spaced from said threaded inner surface and defining the upper edge of a downwardly tapered internal surface of said downwardly tapered portion of said hollow plug and an annular deformable gasket interposed between said annular shoulder and said guide for normally closing said valve port whereby when said spouting tube is depressed down against said spring force, said annular deformable gasket is deformed to uncover said valve port and allow aerosol flow from said inlet to said spouting tube with said downwardly tapered internal surface providing an inclined annular surface limiting downward movement of said gasket.

4,762,255

BICYCLE EQUIPMENT CARRIER APPARATUS

John J. Dunn, 4 Bancroft St., Wilmington, Mass. 01887

Filed Dec. 5, 1986, Ser. No. 938,255

Int. Cl.[4] **B62J** *9/00*

U.S. Cl. 224—32 R **17 Claims**

1. An equipment carrier apparatus attachable to the frame of a bicycle, comprising:

a plate portion having a forward end, a rearward end, and a bottom;

at least one elongate receptacle disposed proximate one of said ends and having an entrance for accommodating items therein;

web means having a bottom, forward, and rearward edges attached at said bottom edge to the bottom of said plate



portion, and attached at each of said forward and rearward edges to one of said at least one elongate receptacle and said plate portion; and

said web means, said plate portion and said receptacle defining among them a container for holding items therein.

4,762,256

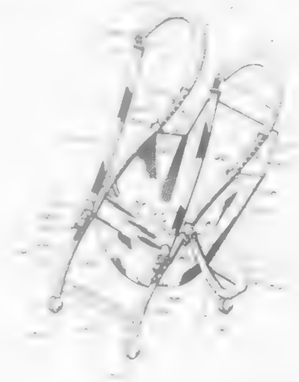
CONVERTIBLE STROLLER-BACKPACK BABY CARRIER

Len Whitaker, 1806 Wright St., Pomona, Calif. 91766

Filed Nov. 19, 1986, Ser. No. 932,746

Int. Cl.[4] **A61G** *1/00*

U.S. Cl. 224—161 **15 Claims**



1. A device convertible to form a baby stroller or baby backpack comprising:

a rigid frame structure formed by two elongated, substantially parallel and spaced apart struts which are joined together by at least a first transverse cross member;

seat means secured to said frame for receiving and supporting a small child;

at least two handles, each of which is extensibly coupled to one of said struts to allow said handle to be protracted out from and retracted to said strut, with a portion of each of said handles being arcuately shaped for positioning on an individual user's shoulders;

means for retaining said frame strut and said extensibly

VOL 1093 ISS 2 AG 9 1988 UMI

coupled handle at a desired position with respect to each other;

at least a first frame leg pivotally supported by said frame struts for movement from a substantially collapsed position on said frame to at least a first extended position away from said frame, wherein said leg and said frame define in combination a base upon which said device is supported; and

wheel means secured to said frame and said frame leg for allowing said device to be wheeled about thereon.

4,762,257

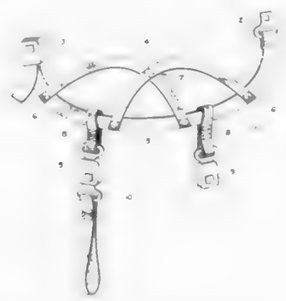
HOSE HANDLER

Robert L. Spillers; Alonzo Martinez, both of Freeport; Vergel G. Perry, and Lonnie L. Smith, Both of Lake Jackson, all of Tex., assignors to Larvco, Inc., Lake Jackson, Tex.

Continuation of Ser. No. 737,685, May 28, 1985. This application Nov. 5, 1986, Ser. No. 926,883

Int. Cl.[4] A45F *3/04*

U.S. Cl. 224—216 15 Claims



1. A fire fighter's harness comprising:

a chest belt fitted with means for releasably fastening the belt at the front of the wearer;

a lanyard;

a pair of should straps attached to said belt at front and rear attachment points; and

tongue and latch means for releasably attaching said lanyard to said belt, said tongue and latch means being attached to said belt, being laterally slidable under the arm of the wearer behind a said front attachment point and a said rear attachment point of said straps and adapted to cooperate with said belt and shoulder straps to distribute between said front and rear attachment points a load supported by said lanyard, said tongue and latch means being readily releasable under tension said tongue and latch means including a push button actuator and being readily releasable when under tension to detach said lanyard from said belt by mere pressure on said actuator.

4,762,258

UNIVERSAL SUPPORT DEVICE FOR A VEHICLE

I. Leon Murphy, P.O. Box 215, Daleville, Ind. 47334

Continuation of Ser. No. 658,038, Oct. 5, 1984, abandoned. This application Jan. 9, 1987, Ser. No. 4,812

Int. Cl.[4] B60R *7/00*

U.S. Cl. 224—273 3 Claims

1. A support device for supporting small articles in a vehicle or the like, said device comprising:

first and second generally planar members, said first member adapted to be secured to a surface and said second member adapted to support an article, said first and second planar members each having a lateral side;

hinge means for adjustably interconnecting said first and second planar members whereby said planar members may be oriented at an angle relative to each other, said hinge means including a first plurality of apertured knuckles secured to the lateral side of said first planar member, a second plurality of apertured knuckles secured to the lateral side of said second planar member, said first and second plurality of knuckles being equal in number, said first and second plurality of knuckles being arranged



alternatingly serially to form an elongated hinge and thereby provide smooth contacting surfaces therebetween, a hinge pin disposed through said knuckle apertures, whereby each said knuckle encloses said hinge pin, and means for compressing said knuckles into tight engagement whereby said first and second planar members may be held in any desired relative angular relationship.

4,762,259

ROLLED SHEET MATERIAL DISPENSING DEVICE

Edward Koss, 107 S. Mary Ave., No. 85, Sunnyvale, Calif. 94086

Filed Oct. 29, 1986, Ser. No. 924,418

Int. Cl.[4] A47K *10/36*; B26D *1/03*; B65D *85/672*

U.S. Cl. 225—37 12 Claims



1. A rolled sheet material dispensing device, comprising:

(a) a main body portion including a generally rectangular member having a front edge, a rear edge and left and right end edges and adapted to be detachably secured to a mounting structure;

(b) a pair of support plates pivotally mounted on the main body portion adjacent opposite ends thereof and extending substantially parallel to said main body portion when in collapsed position and substantially perpendicular thereto when in extended position;

(c) a plurality of support bosses on each of said support plates, corresponding ones of said bosses on opposed support plates constituting a pair adapted to engage and rotatably support a roll of rolled sheet material; and

(d) at least two cutter bars supported on said main body portion and bridging the space between said support plates in cooperative association with selected pairs of said support bosses, whereby strip sheet material rotatably mounted on said bosses may be drawn over and against said cutter bars to effect severing of a length thereof from said roll of said material.

4,762,260

SURGICAL MICROSTAPLER

William D. Richards, Medway; Ernesto E. Blanco, Belmont; Richard A. Clark, Holliston, and John C. Meade, Walpole, all of Mass., assignors to Ophthalmic Ventures Limited Partnership, Norwood, Mass.

Filed Sep. 11, 1986, Ser. No. 906,151

Int. Cl.[4] A61B *17/00*

U.S. Cl. 227—19 34 Claims



1. A surgical stapling system for driving a staple into human or animal tissue, said system comprising:

(a) a stapling mechanism, and

(b) a staple carrier strip, said staple carrier strip comprising a frame and a plurality of staples attached to said frame, each of said staples having a body section and a pair of legs extending from opposite sides of said body section, said body section being attached to said frame by at least one tab leading said body section and at least one tab trailing said body section, said legs extending perpendicular to the plane of said frame so that said legs protrude above said frame, said two legs having ends that are adapted to pierce said tissue;

said stapling mechanism comprising:

a wall having a stape ejection slot;

means for advancing said staple carrier strip along said wall so as to position the leading staple in alignment with said staple ejection slot;

first means for engaging the two legs of said leading staple and driving the two legs thereof downwardly through said ejection slot into tissue engaged by said first wall; and

second means for severing said leading staple from said staple carrier strip and driving it through said ejection slot.

20. A multi-staple staple carrier strip formed from a sheet of a selected metal, said staple carrier strip comprising:

a pair of side frame members and a plurality of cross-frame members extending between and attached to said side frame members;

a plurality of staples each disposed between said side frame members and a pair of said cross-frame members; and

a plurality of tabs extending between and attached to said staples and said cross-frame members, whereby said staples are mounted in a fixed spatial relationship to said cross-frame members.

4,762,261

RIVETING ROBOT

Rudolf Hawly, Mertingen, and Günter Schmid, Augsburg, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

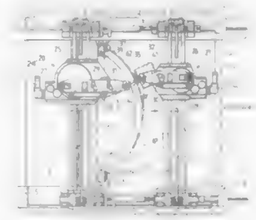
Filed Oct. 6, 1986, Ser. No. 915,636

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1985, 3535761

Int. Cl.[4] B21J *15/14*

U.S. Cl. 227—66 16 Claims

1. A robot for riveting work pieces, especially large surface work pieces, such as an aircraft wing component or aircraft fuselage component, comprising machine frame means (1) defining a rectangular, three-dimensional coordinate system, said coordinate system having an x-axis, a y-axis, and a z-axis, said machine frame means comprising a base (2) extending perpendicularly to said y-axis, said machine frame means comprising upright frame members (4) secured to said machine base and extending in parallel to said y-axis, said machine frame further comprising horizontally extending upper and lower frame members (3, 6, 7; 5, 8) interconnecting said upright frame members, said robot further comprising work piece positioning means (39) for supporting a work piece (40) so that the largest work piece surface dimension extends approximately an an x-y-plane, guide means (37, 38) mounted in said machine frame means for guiding said work piece positioning means (39) for moving in a direction of said x-axis, first and second riveting tool positioning means (10, 11) extending in a direction of said y-axis, first drive means (18, 18') connected to said first and second riveting tool positioning means (10, 11) for displacing said first and second riveting tool positioning means, said work piece positioning means (39) being located between said first and said second riveting tool positioning means (10,



11), first and second riveting tool means (20, 21) supported respectively by said first and second riveting tool positioning means (10, 11), second drive means (22, 22') connected for displacing said first and second riveting tool means (20, 21) in a direction parallel to said y-axis along said first and second riveting tool positioning means (10, 11), said first and second riveting tool means cooperating with each other for performing a riveting operation, and computer means including a monitor connected for controlling said first and second drive means (18, 18', 22, 22'), and said first and second riveting tool means (20, 21) for moving said first and second riveting tool means (20, 21) to any riveting point of the work piece (40) for performing a riveting operation.

4,762,262

SIDE-FED STAPLER

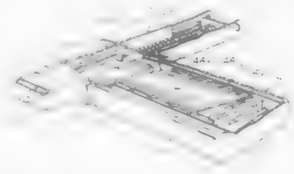
Young Tsung Ming, 5F 1, No. 10-15, 54 Alley, Fu-Hsing Rd., Lu-Chou, Taipei, Taiwan

Filed May 5, 1986, Ser. No. 860,002

The portion of the term of this patent subsequent to Dec. 9, 2004, has been disclaimed.

Int. Cl.[4] B25C *5/16*

U.S. Cl. 227—120 2 Claims



1. A side-fed stapler comprising:

a press handle having a driver formed on its outer end;

a loading arm filled with a staple stick pivotedly mounted under said arm; a base, having an anvil, pivotedly formed under said arm; and a magazine consecutively prefilled with several staple sticks inserted on a side portion of said loading arm, whereby upon the pressing of said handle,

VOL 1093 ISS 2 AG 9 1988 UMI

said driver will punch a staple in front of said loading arm to staple a stack of papers as padded by said anvil of said base;

the improvement which comprises:

said loading arm including a rectangular tray having a longitudinal slot formed on its rear side wall, a side window defined by a coupling receptacle disposing around said window, and an U-shaped pusher having a handle lug protruding rearwards reciprocatively moving within said longitudinal slot and having a second longitudinal slot formed on a front side of said pusher, said U-shaped pusher resiliently biased by a spring inserted in said tray to operatively push a staple stick outwardly for stapling operation; and said magazine including a rectangular case consecutively prefilled with several staple sticks as resiliently biased by a leaf spring formed in the case, said case having an opening end engaged with said side window and inserted into said coupling receptacle of said side window of said loading arm, and having an angled spring plate fixed on a side wall of said case near its opening end normally transversely biasing a staple stick against an opposite side wall, said angled spring plate having an angled portion and a striker end portion adapted to be pulled by an edge of said second longitudinal slot of said pusher, whereby upon the retraction of said pusher, said striker end portion will be retracted to straighten said angled spring plate to allow a standby staple stick being filled into said tray as retained by said leaf spring.

4,762,263

SMALL-SIZED GAS PRESSURE WELDING MACHINE FOR RAILS WITH TWO SEPARATE MECHANISMS FOR PUNCHING-SHEARING EXCESS METAL

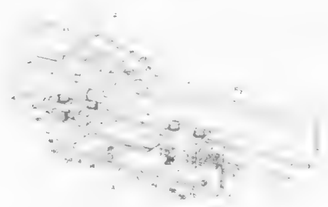
Hirotsugu Oishibashi; Muneyuki Ohara; Kenzo Hagiwara, all of Tokyo; Hisashi Yoshida, Saitama; Kunio Kitagawa, Saitama, and Kimio Shimizu, Saitama, all of Japan, assignors to Hakusan Seisakusho Co., Ltd. and Railway Technical Research Institute, both of Tokyo, Japan

Filed Oct. 19, 1987, Ser. No. 109,620

Claims priority, application Japan, Oct. 17, 1986, 61-246883

Int. Cl.[4] B23K *20/00, 20/26*

U.S. Cl. 228—5.1 1 Claim



1. A small-sized gas pressure welding machine for rails with two separate mechanisms for punching-shearing excess metal, which comprises:

a pressure application unit including a positioning bed disposed along the rail feet of rails to be welded together, a movable pressure application clamp mechanism provided at one end of said positioning bed and a stationary pressure application clamp mechanism provided at the other end of said positioning bed,

said movable clamp mechanism being for clamping the rail foot of one of the rails and providing an abutting pressure,

said stationary clamp mechanism being for clamping the rail foot of the other rail and receiving the abutting pressure,

an excess metal punching unit mounted on the other end of said positioning bed to be fitted on the other rail from the railhead thereof and capable of being mechanically and detachably coupled to said pressure application unit,

said excess metal punching unit being provided with an upper excess metal punching mechanism for punching excess metal off the railheads, rail webs and rail foot upper surfaces of abutted end portions of the rails in one direction,

said movable pressure application clamp mechanism being provided with a lower excess metal punching mechanism for punching excess metal off the rail foot lower surfaces of the rails in the other direction.

4,762,264

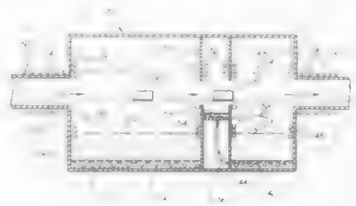
VAPOR PHASE SOLDERING SYSTEM

Douglas J. Peck, North Andover, Mass., assignor to Dynapert-HTC Corporation, Farmington, Conn.

Filed Sep. 10, 1987, Ser. No. 95,485

Int. Cl.[4] B23K *3/04*

U.S. Cl. 228—37 2 Claims



1. A vapor phase soldering system comprising

a processing vessel,

means for conveying work product which is to be soldered through said vessel,

said vessel including first and second processing chambers arranged in side by side relation along the work product path,

a first electronic liquid contained in said first chamber,

means for defining a zone of saturated vapor of said first electronic liquid in said first chamber to surround the work product,

the temperature of the first electronic liquid saturated vapor being selected to be lower than the liquidus temperature of eutectic and similar solder so that the work product to be soldered will be preheated, but not reflowed,

a second electronic liquid contained in said second chamber,

means for defining a zone of saturated vapor of said electronic liquid in said second chamber to surround the work product,

the temperature of the second electronic liquid saturated vapor being selected to be higher than the liquidus temperature of eutectic solder so that preheated work product can be soldered.

4,762,265

PLUG FOR KINETIC BONDING PROCEDURE

Richard H. Baird; Theodore J. Blechar; Leo V. B. Giladett, all of Santa Cruz; Reginald M. Horner, Watsonville; Gerald G. Prouty, Santa Cruz, and David L. Rinde, Boulder Creek, all of Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 332,924, Dec. 21, 1981, Pat. No. 4,527,623.

This application Dec. 8, 1983, Ser. No. 559,410

Int. Cl.[4] B23K *37/00;* B23P *15/26*

U.S. Cl. 228—50 2 Claims

1. A plug for insertion into a metal tube bonded to a cylindrical bore in a metal tubesheet having a plurality of other substantially identically dimensioned bores with a substantially uniform spacing between adjacent bores, said plug comprising:

(a) a resilient member of generally cylindrical configuration and having a distal end face said resilient member having an axial bore therethrough;

(b) a supporting structure comprising a rigid base plate and an elongate member, said elongate member extending generally perpendicularly from said base plate through said axial bore in said resilient member, a proximal end of said elongate member being secured to said base plate so that relative motion of said elongate member with respect to said base plate is substantailly precluded, a distal end of said elongate member being screw-threaded;

(c) a rigid top plate of a regular polygonal configuration positioned adjacent said distal end face, diametrically opposite edge portions of said rigid top plate in every direction being space from each other by at least 1.2 times the diameter of said distal end face; and



(d) a nut threadably securable to said screw-threaded distal end of said elongate member of said supporting structure so that, when said plug is inserted into said tube, torquing of said nut causes said polygonal top plate to move longitudinally with respect to said elongate member of said supporting structure without undergoing any significant rotation with respect to said base plate of said supporting structure, said resilient member thereby being compressed between said polygonal top plate and said base plate so as to expand laterally against said tube, said compressed resilient member thereby bracing said tube aginst movement in reaction to a bonding charge detonation in an adjacent bore in the tubesheet while said polygonal top plate protects said circumjacent portion of the front face of the tubesheet from effects of said bonding charge detonation.

4,762,266

METHOD FOR PERFORMING REMOTELY-MANIPULATED WORK ON A CONDUIT OF A NUCLEAR FACILITY

Günter Schröder, Minden-Dützen, and Rudolf Eichhorn, Minden, both of Fed. Rep. of Germany, assignors to Deutsche Gesellschaft für Wiederaufarbeitung von Kernbrennstoffen mbH, Hanover, Fed. Rep. of Germany

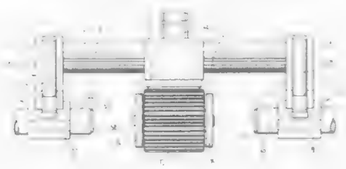
Division of Ser. No. 717,460, Mar. 29, 1985, Pat. No. 4,674,926.

This application Mar. 20, 1987, Ser. No. 28,498

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412363

Int. Cl.[4] B23K *31/02;* B23P *6/00*

U.S. Cl. 228—103 5 Claims



1. A method for maintaining the pipe conduits of a radioactively charged cell of a reprocessing facility for irradiated nuclear fuel wherein a portion of a conduit can develop a leak or become otherwise defective, the method comprising the steps of:

cutting the defective portion from the conduit thereby forming two mutually adjacent cut conduit end faces corresponding to respective conduit end portions;

tightly clamping said end portions to align the same with respect to each other;

moving a machining unit to the end face of one of the conduit end portions and machine planing said one end face;

selecting the planed end face as a first reference point for measuring the length of the clear dimension between said conduit end portions;

displacing the machining unit to the end face of the other one of said conduit end portions and machine planing said end face of said other conduit end portion;

selecting the planed end face of said other conduit end portion as the end reference point for measuring said clear dimension;

measuring the displacement of the machining unit from said first reference point to said end reference point;

determining the length of said clear dimension and therefore of a replacement conduit segment with the aid of the measured value of said displacement;

preparing said replacement conduit segment having said length;

remotely manipulating said conduit segment into the gap between said conduit end portions; and,

welding said conduit segment to said conduit end portions.

4,762,267

WIRE BONDING METHOD

Yasuhiko Shimizu, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1987, Ser. No. 101,424

Claims priority, application Japan, Sep. 29, 1986, 61-230844

Int. Cl.[4] B23K *31/02*

U.S. Cl. 228—179 8 Claims

1. A wire bonding method, using a wire bonder, for wire bonding between bonding pads formed on an elongated semiconductor chip and electrodes connected to outer leads with said semiconductor chip being chucked by a chuck table, said method comprising in sequence:

a first step of chucking said semiconductor chip by said chuck table and carrying out bonding between a first set of bonding pads and electrodes within a bonding region of said wire bonder;

a second step of releasing the chucking by said chuck table and conveying said semiconductor chip by a predetermined pitch;

a third step of turning said chuck table so that it becomes in alignment with said semiconductor chip having been conveyed by said predetermined pitch; and

a fourth step of chucking said semiconductor chip by said chuck table and carrying out wire bonding between a second set of bonding pads of said semiconductor chip and electrodes which have reached said bonding region of said wire bonder.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,268

FABRICATION METHOD FOR LONG-LENGTH OR LARGE-SIZED DENSE FILAMENTARY MONOTAPES

Gordon S. Doble, Shaker Hts., Ohio, assignor to Airfoil Textron Inc., Lima, Ohio

Filed May 2, 1986, Ser. No. 858,623
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—186 19 Claims



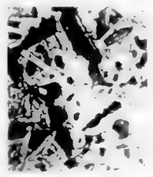
1. A method of forming a densified filamentary reinforced monotape including the steps of:
(a) providing a collimated filament preform;
(b) forming an assembly by positioning said preform between layers of matrix material;
(c) forming a length of said assembly between tool means including forming said length of said assembly into a first predetermined arcuate configuration while sealing opposite edges of said matrix material along said length to encapsulate the collimated filament preform between said layers of said matrix material;
(d) consolidating said formed length of said assembly to form a length of densified filamentary reinforced monotape.

4,762,269

METHOD OF JOINING MOLDED SILICON CARBIDE PARTS

Ernö Gyarmati, and Aristides Naoumidis, both of Jülich, Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich GmbH, Julich, Fed. Rep. of Germany

Filed May 23, 1986, Ser. No. 866,597
Claims priority, application Fed. Rep. of Germany, May 24, 1985, 3518710; Apr. 14, 1986, 3612458
Int. Cl.[4] B23K *35/368*
U.S. Cl. 228—194 21 Claims



1. Process of joining together molded silicon carbide bodies at fitting polished surfaces with an additive bond-promoting material in the joint and with pressing and heating to high temprature, said process comprising the steps of:
polishing surfaces to be joined on a plurality of silicon carbide bodies each of said bodies being made of silicon carbide sintered into a firm body, whether sintered without pressure or with hot-pressing;
applying a layer, not more than 1 μm thick and covering at least one said polished surfaces of each intended joint entirely with at least a monatomic layer composed of atoms of at least one element capable of combining chemically with at least one constituent element of silicon carbide and selected from the group consisting of Ag, Al, Au, Co, Cr, Cu Fe, Mg, Mn, Mo, Nb, Ni, Pd, Pt, Ta, Ti, V, W and Zr;
fitting together said polished surfaces of respective bodies parts, at least one of which has said applied layer, for each joint and then pressing said surfaces of each joint together, in the absence of any other binder or bond-promoting material in the joint, with a pressure in the range from 1 to 100 MPa while heating said parts at a temperature in the range from 800° to 2200° C. in a non-oxidizing atmosphere which is at a pressure in the range from 10^{-1} to 10^{5} Pa, whereby said bodies parts are joined and a joint seam is formed in which no metal exists as a layer extending along and between the joined surfaces that were pressed together, and
cooling said joined bodies parts.

4,762,270

SNAP OPEN TOTE CONTAINER ASSEMBLY

Mark S. Stoll, Deephaven; Glenn H. Brodin, and LeRoy Miller, both of Minneapolis, all of Minn., assignors to Liberty Diversified Industries, New Hope, Minn.

Filed Apr. 24, 1987, Ser. No. 41,927
Int. Cl.[4] B65D *5/32*
U.S. Cl. 229—23 A 15 Claims



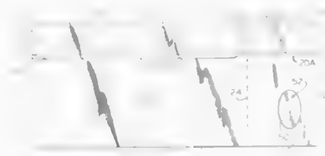
1. A tote container assembly defining an open top receptacle region for receiving an article, said tote container assembly comprising:
a first support panel, said first support panel having a first base panel with two opposing side edges and two opposing end edges, and a pair of side wall panels, said side wall panels extending from said opposing side edges of said first base panel and hingedly connected thereto along scored side fold lines, said wall panels each being foldable across said scored side fold lines to an upright position generally perpendicular to said first base panel, said first base panel further having an inner planar surface and an outer planar surface opposing said inner surface;
a second support panel, said second support panel having a second base panel with two opposing side edges and two opposing end edges, and a pair of end wall panels, said end wall panels extending from said opposing end edges of said second base panel and hingedly connected thereto along scored end fold lines, said end wall lines to an upright position generally perpendicular to panels each being foldable across said scored end fold said second base panel, said second base panel having an intermediate scored fold line extending between said side edges thereof substantially perpendicular to said scored fold lines along which said end wall panels are connected thereto, said second base panel being foldable across said intermediate scored fold line, said second base panel further having an inner planar surface and an outer planar surface opposing said inner surface; and
securing means mountable on said first support panel and said second support panel for securing said side wall panels and said end wall panels in said upright position, and for further connecting said first support panel to said second support panel such that said outer planar surface of said second base panel may be placed in parallel abutting contact with said inner planar surface of said first base panel to define the open top receptacle region when said side wall panels and said end wall panels are folded to said upright position, whereby the article may be removably received within said receptacle.

4,762,271

COMPARTMENTED AND SEPARABLE MAILING ENVELOPE

Alexander Lewyt, 660 Madison Ave., New York, N.Y. 10021

Filed Oct. 11, 1983, Ser. No. 540,354
Int. Cl.[4] B65D *27/08*
U.S. Cl. 229—72 15 Claims



1. A mailing envelope system, which comprises;
(a) a first envelope, which comprises:
1. a sheet having a first inner and a second outer planar surface defined by a top edge, a bottom edge and lateral first and second side edges joining the top and bottom edges, said sheet being folded along a line parallel to the bottom edge and joining the lateral side edges together, said fold placing the top edge adjacent to the bottom edge and the portion of the lateral edges proximal to the top edge, adjacent to the portion distal to the top edge; sealing means inwardly along the first edge, sealing the first edge above the fold to the first edge below the fold;
2. a first flap integral with said sheet and extending outwardly from the top edge, adapted by size and configuration to fold over the bottom edge and seal therewith;
3. sealing means on the flap for sealing the top edge to the bottom edge; and
4. means for closing the second side edge extending from the top edge to the fold with the second side edge extending from the fold to the bottom edge;
(b) a second envelope which comprises;
1. a second sheet having a first and a second planar surface each of which is bounded and defined by a top edge, a bottom edge and lateral first and second side edges joining the top and bottom edges, said sheet being folded along a line parallel to the top and bottom edges and joining the lateral side edges at a point between top and bottom edges, said folded second sheet placing the top edge thereof adjacent to the bottom edge thereof and the portion of the lateral edges proximal to the top edge thereof, adjacent to the portion distal to the top edge thereof; an aperture in the second sheet between the bottom edge thereof and the line parallel to top and bottom edges thereof;
2. a flap, integral with said second sheet and extending outwardly form the top edge of the second sheet, adapted by size and configuration to fold inwardly and seal with the bottom edge of the second sheet;
3. means on the flap of the second sheet, for sealing said flap to the bottom edge of the second sheet when said second sheet is folded; and
4. means sealing the lateral side edges of the second sheet, above the line of the second sheet to the lateral side edges of the second sheet below the line of the second sheet;
(c) said first and second sheets being integrally joined to each other along a perforated, frangible tear line between the first edge of the first sheet and one of the lateral side edges of the second sheet; said second envelope being removable from attachment with the first envelope.

4,762,272

BOX FORMED FROM TWO TRAY-TYPE CONTAINERS

Lenny Herrin, c/o Regent Box Co., 15th & Huntingdon Sts., Philadelphia, Pa. 19132

Filed Aug. 29, 1986, Ser. No. 902,288
Int. Cl.[4] B65D *5/66*
U.S. Cl. 229—125.08 10 Claims



1. A box formed from two tray-type containers, the box comprising:
a first tray-type container formed from a single sheet of polymeric plastic material including a parallelogram shaped base panel having a predetermined length and width, front and back panels of substantially the same height as the front and back panels and a length generally corresponding to the length of the base panel, the front and back panels on opposd sides of the base panel and folded to extend generaly perpendicularly to the base panel, a pair of side panels of substantially the same height as the front and back panels and of a length generally corresponding to the width of the base panel, the side panels on opposed sides of the base panel, tab members extending between and joining together said side panels and said front and back panels to form said tray-type container, and a connection panel extending outwardly from an unattached edge of the back panel;
a second tray-type container sized to fit within the first tray-type container and formed from a sheet of polymeric plastic material including a parallelogram-shaped base panel having a predetermined length and width, front and back panels of a length generally corresponding to the length of the base panel, the front and back panels on opposed sides of the base panel and folded to extend

VOL 1093 ISS 2 AG 9 1988 UMI

generally perpendicular to the base panel, a pair of side panels of a length generally corresponding to the width of the base panel, the side panels on opposed sides of the base panel and folded generally perpendicular to the base panel, tab members extending between and joining together said side panels and said front and back panels to form said tray-type container, the connection panel being folded along a fold line toward and attached to the base panel of the second tray-type container proximate an edge formed between the base panel and the back panel, the connection panel including spaced perforations along the fold line; and

means for attaching the connection panel of the first tray-type container to the base panel of the second tray-type container, said connection panel forming a hinge to interconnect the first and second tray-type containers, the spaced perforations cooperating with the spaces between the perforations to give the hinge a memory whereby the box may be opened by pivoting one of the tray-type containers with respect to the other of the tray-type containers about the hinge, the hinge memory operating to permit the first container to remain in a desired open position with respect to the second container.

4,762,273

ELECTRONIC FAUCET WITH SPOUT POSITION SENSING MEANS

Stephen O. Gregory, 2508 Arapahoe St., Denver, Colo. 80205; Michael W. West, Denver, Colo.; James L. Wolf, Lakewood, Colo., and Daniel V. Sallis, Littleton, Colo., assignors to Stephen O. Gregory, Denver, Colo.

Continuation-in-part of Ser. No. 837,409, Mar. 7, 1986, Pat. No. 4,735,357. This application May 4, 1987, Ser. No. 46,064

Int. Cl.[4] E03C *1/05*

U.S. Cl. 236—93 R 26 Claims



1. A water faucet having a spout swivelably connected to a body for controlling a water supply of hot and cold water comprising in combination:

detection means for sensing the presence of an object near an outlet of said spout;

a water flow control valve operative on said detection means for opening and closing a water flow passageway in fluid communication with said water supply; and

spout position sensing means for enabling or disabling said detection means in an automatic mode when said spout is in any one of a plurality of predetermined angular positions, said spout position sensing means for determining the augular position of said spout, said faucet operating in an automatic mode operative on said detection means when said detection means is enabled and in a manual mode, operative on an on/off input signal, when said detection means is disabled.

4,762,274

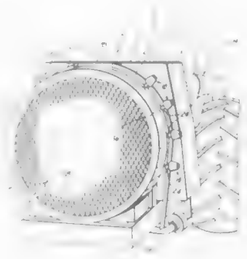
INDUCTOR NOZZLE ASSEMBLY FOR CROP SPRAYERS

Gary E. Burls, Amherst, and William F. Parmentar, Vermilion, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Continuation of Ser. No. 797,698, Nov. 13, 1985, abandoned. This application Dec. 18, 1986, Ser. No. 945,195

Int. Cl.[4] B05B *5/02*

U.S. Cl. 239—3 6 Claims



1. An inductor nozzle assembly for use in an air blast sprayer to deposit chemicals onto object crops such as trees in an orchard, grapevines and row crops on both sides of a row, the air blast sprayer including an air blast fan operable to produce a high velocity air stream and delivery lines carrying the chemicals disposed on opposite sides of the air blast fan, said inductor nozzle assembly comprising:

a spray nozzle adapted to mount to the delivery lines for receiving chemicals therefrom, said spray nozzle having a discharge orifice operable to discharge the chemicals in an atomized particle stream;

a housing having a substantially conical-shaped wall defining an exterior about which air from said air blast fan can flow and a hollow interior formed with a cross section tapering radially inwardly from an entrance opening to a reduced diameter discharge opening, said spray nozzle being disposed within said hollow interior and oriented so that said discharge orifice ejects said atomized particle stream into said discharge opening;

an inductor ring mounted to said wall of said housing at said discharge opening, said inductor ring applying an induced electrical charge to said particle stream ejected into said discharge opening; and

said spray nozzle and said housing being positioned along the delivery line of the air blast sprayer with respect to the air blast fan so that the high velocity air stream from the air blast fan forms an exterior stream of air which flows about said exterior of said housing and an interior flow of air which enters said housing through said entrance opening and moves toward said reduced diameter discharge opening, the interior air stream being accelerated within the tapered hollow interior of said housing from said entrance opening to said reduced diameter disharge opening to form a barrier of air between said inductor ring and said atomized particle stream; said interior and exterior air streams together propelling the charged particles stream toward object crops.

4,762,275

DIFFUSER FOR VOLATILE LIQUID FLUIDS

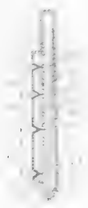
Wendel Herbert, and Wendel Serge, both of Sarreguemines, France, assignors to Societe International de Fabrication et de Diffusion de Produits Parfumes-I.P.P., Sarreguemines, France

Filed Jul. 28, 1986, Ser. No. 889,630

Claims priority, application France, Aug. 9, 1985, 85 12311; Oct. 25, 1985, 85 16013

Int. Cl.[4] A61L *9/04*

U.S. Cl. 239—6 21 Claims



21. A diffuser for volatile liquids comprising:

(a) an absorbent carrier for accepting and diffusing a volatile liquid;

(b) a perforable container for storing a volatile liquid, said perforable container comprising a first end and a second end;

(c) piercing means, situated on the interior of said perforable container, for piercing said perforable container to establish direct communication for discharge of volatile liquid from said perforable container to said absorbent carrier, said piercing means comprising a plurality of piercing means spaced at increasing intervals from one of said ends to the other.

4,762,276

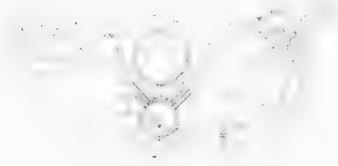
FLUID EVAPORATION DEVICE FOR MUD PITS

H. Clyde Foust, 2728 Valentine Ct., New Orleans, La. 70114

Continuation-in-part of Ser. No. 813,608, Dec. 26, 1985, abandoned, which is a continuation-in-part of Ser. No. 656,244, Oct. 1, 1984, abandoned, which is a continuation-in-part of Ser. No. 355,895, Mar. 8, 1982, abandoned. This application May 5, 1987, Ser. No. 46,169

Int. Cl.[4] B05B *17/04*

U.S. Cl. 239—8 9 Claims



1. A device for evaporating liquid from a liquid-solid suspension in a drilling mud pit having a bottom, earthen sides and an open top comprising:

(a) at least one sealed float chamber;

(b) an elongated hollow cylindrical-shaped collector tank of substantially uniform diameter having two end walls and a side wall to equalize water pressure and settle particulate matter, said tank attached to and supported by said float chamber and having a plurality of outlets distributed along said side wall of said tank;

(c) a riser pipe connected at one end to each of said outlets and extending both outwardly and upwardly from said collector tank and having the other end of said riser pipe extending above said liquid-solid suspension in said drilling mud pit;

(d) a spray nozzle attached to said other end of each said riser pipe, said spray nozzle having a hollow core tip and a chamber with a tangentially aligned inlet passage that produces a shallow conical spray when the pressurized suspension is ejected therefrom;

(e) a separate pump having an inlet and an outlet located adjacent said mud pit;

(f) inlet conduit means extending from said mud pit to said pump inlet; and

(g) outlet conduit means extending from said pump outlet to said collector tank;

said device being further characterized by having said outlets and said riser pipes with attached spray nozzles arranged in pairs, said pairs being positioned so that one of said spray nozzles is located directly above the other of said spray nozzles.

4,762,277

APPARATUS FOR ACCELERATING SLUGS OF LIQUID

Larry L. Pater, Zelienople, and Aubrey C. Briggs, Roselyn Farms, both of Pa., assignors to Briggs Technology Inc., Pittsburgh, Pa.

Continuation of Ser. No. 821,806, Jan. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 447,000, Dec. 6, 1982, Pat. No. 4,573,637. This application Dec. 3, 1987, Ser. No. 129,915

Int. Cl.[4] B05B *1/08*

U.S. Cl. 239—99 24 Claims



1. Apparatus for accelerating a slug of liquid comprising:

a housing forming a substantially rigid closed chamber suitable for storing pressurized liquid at pressures greater than about 5,000 psi;

means for introducing liquid into the closed chamber under pressure to compress liquid in the chamber and thereby store energy primarily by liquid compression and mass in the closed chamber;

a nozzle connected to the housing and having a passage therethrough with an inlet which communicates with the closed chamber formed by the housing and an exit;

VOL 1093 ISS 2 AG 9 1988 UMI

valve means for selectively sealing the nozzle passage relative to the closed chamber and operative at liquid pressures greater than about 5,000 psi from a closed to an open to a closed position to release a slug of liquid driven from the closed chamber into the nozzle passage by the energy stored in the compressed liquid, the rate of opening of said valve means being sufficiently rapid that the valve means is substantially fully opened in less time than is required for the leading edge of the liquid slug to reach the nozzle exit; and

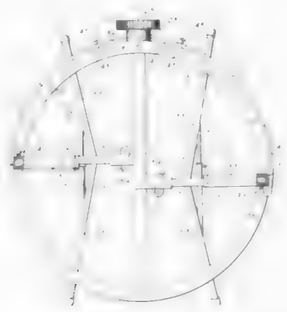
means for breaking a vacuum in the nozzle passage after each slug is released.

4,762,278

COMBINATION LAWN MOWER WASHER AND SHARPENER

Conrad C. Taylor, 223-Sand Rd., Columbus, Miss. 39702

Filed Nov. 4, 1987, Ser. No. 116,493
Int. Cl.[4] B05B *15/08*
U.S. Cl. 239—281 8 Claims



1. A combination lawn mower washer and sharpener, comprising:

(a) a frame including a plurality of legs;

(b) a water supply coupling attached to said frame and including a single inlet and a plurality of outlets;

(c) a first one of said outlets supplying first nozzle means for spraying an undercarriage of a lawn mower;

(d) a grinding stone rotatably mounted on said frame and having means for rotating said grinding stone attached to said frame and said grinding stone;

(e) said frame including means for attaching said frame to the undercarriage of said lawn mower with said grinding stone being aligned with a blade of said lawn mower;

(f) whereby said grinding stone may be rotated by said means for rotating while said first nozzle means sprays water on the undercarriage of said lawn mower to remove debris therefrom.

4,762,279

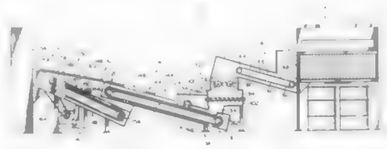
Patent Not Issued For This Number

4,762,280

SORTING METHOD FOR RADIOACTIVE WASTE

Anthony J. Prisco, Beverly, and Alfred N. Johnson, Voorhees, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 648,833, Sep. 10, 1984, Pat. No. 4,679,138.
This application Sep. 8, 1986, Ser. No. 905,000
Int. Cl.[4] B02C *23/14*
U.S. Cl. 241—3 5 Claims



1. A method for detecting radioactive components in dry active waste, comprising the steps of:

providing a substantially airtight housing,

withdrawing air from said housing,

putting dry active waste in said housing,

reducing the waste to pieces of substantially uniform size,

providing a first conveyor in said housing, said first conveyor having a receiving portion and a discharge portion,

discharging said pieces of reduced waste onto said first conveyor,

flattening said pieces of reduced waste,

detecting radiation emanating from said pieces of reduced waste from a position closely overlying said first conveyor, after said pieces are flattened,

removing from said first conveyor said pieces of reduced waste from which radioactive radiation above a determined level is detected,

providing a second conveyor in said housing, said second conveyor having a receiving portion and a discharge portion,

disposing said second conveyor so that its receiving portion is below and spaced from the discharge portion of said first conveyor,

discharging said pieces of reduced waste from the discharge portion of said first conveyor so that they fall onto the receiving portion of said second conveyor; the space between said last named discharge portion and said last named receiving portion being sufficiently great so that said pieces of reduced waste are substantially overturned and dispersed as they fall to said last named receiving portion,

flattening the dispersed and overturned pieces of waste,

detecting radiation emanating from said pieces of dispersed and reduced waste from a position closely overlying said second conveyor, after said pieces are flattened,

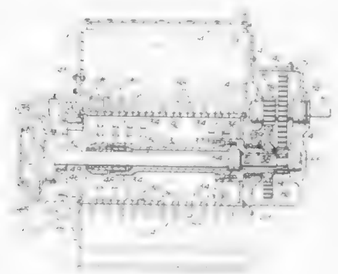
and removing from said second conveyor pieces of waste from which radioactive radiation above a predetermined level is detected.

4,762,281

DRIVE ARRANGEMENTS FOR COMMINUTOR-PUMP ASSEMBLY

H. Alfred Eberhardt, Paoli, Pa., assignor to Hale Fire Pump Company, Conshohocken, Pa.

Filed Apr. 19, 1983, Ser. No. 486,528
The portion of the term of this patent subsequent to Jan. 19, 2005, has been disclaimed.
Int. Cl.[4] B02C *23/36*
U.S. Cl. 241—46.06 13 Claims



1. A comminutor-pump assembly comprising:

a housing defining a comminution chamber and having an inlet for a solids containing liquid,

a comminutor drum including a hollow cylinder having a cylindrical wall defining exterior and interior surfaces,

an interior chamber enclosed by said interior surface of said cylindrical wall,

means mounting said cylinder to extend within said comminution chamber and for rotation about its longitudinal axis,

a drive shaft for causing rotation of said cylinder,

one end of said cylinder being open,

means closing the end of said cylinder opposite said one end,

a plurality of cutting teeth on the exterior surface of said cylindrical wall,

blade means extending within said comminution chamber on the exterior of said cylinder for cooperating with said cutting teeth so as to comminute solids within said chamber,

a plurality of openings in said cylindrical wall of said cylinder through which comminuted solids of a predetermined size may pass into said interior chamber of said cylinder,

a pump mounted on said housing and having a drive shaft,

said pump having a suction through which liquid is drawn into the pump,

means connecting the suction of said pump in flow communication with said interior chamber of said cylinder, and

drive means for causing rotation of said pump and rotation of said cylinder to cause said solids and the liquid to be drawn into the comminution chamber through said inlet, the comminution of the solids by said teeth, and the passage of comminuted solids through said openings into said interior chamber of said cylinder from which they flow to the suction of the pump and are discharged therefrom,

said drive means having an input drive shaft,

first drive transmitting means connected between said input drive shaft and said cylinder drive shaft for causing rotation of the cylinder at a relatively low speed, and

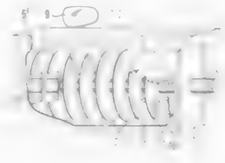
second drive transmitting means connected between said input drive shaft and said pump drive shaft for causing rotation thereof at a relatively high speed.

4,762,282

DEVICE FOR COMMINUTING SMALL ICE BODIES

Theo Wessa, Siedlung 19, 6751 Mackenbach/Pfalz, Fed. Rep. of Germany

Filed Apr. 10, 1987, Ser. No. 36,921
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1986, 3612626
Int. Cl.[4] B02C *13/06, 13/26*
U.S. Cl. 241—190 9 Claims



1. A device for comminuting small ice bodies of a predetermined size, comprising a housing having four walls and being open at the top and the bottom, a rotatable shaft horizontally mounted extending between two opposite of the four side walls, a plurality of metal disks forming beater knives fixedly connected on the shaft so as to rotate therewith, a plurality of stationary counterknives attached to the housing and extending between the disks, the spacing between the disks and the beater knives corresponding to the desired degree of comminution of the ice bodies, wherein groups of adjacent disks define segment-like recesses such that chambers for receiving an ice body each are formed by the recesses, wherein the size of each chamber corresponds to the size of an ice body.

4,762,283

MACHINE AND METHOD FOR FORMING WINDINGS ON ELECTRIC MOTOR STATORS

Luciani Sabatino, Florence, Italy, assignor to Axis S.p.A., Florence, Italy

Continuation of Ser. No. 785,918, Oct. 10, 1985, abandoned.
This application Aug. 18, 1987, Ser. No. 88,020
Claims priority, application Italy, Jul. 9, 1985, 21485 A/85
Int. Cl.[4] H02K *15/085*
U.S. Cl. 242—1.1 R 10 Claims



1. A method for forming windings on electric motor stators comprising positioning a stator, traversing the inside of the stator in one direction with a needle having two pivotable arms with an orthogonal point on the end of each arm in a closed position and between which wire runs to create the winding on the stator, opening the arms and separating the points once the

VOL 1093 ISS 2 AG 9 1988 UMI

points have moved beyond one end of the stator by rotating the needle arms about a common axis to bring the wire into contact with the stator, closing the arms and points by rotation of said arms about a common axis, traversing the interior of the stator in the opposite direction with the needle arms and points in a closed position, opening the arms and separating the points once the points have moved beyond the other end of the stator by rotating the needle arms about the common axis to bring the wire into contact with the stator, closing the arms and points by rotation of said arms about a common axis and repeating the cycle until the stator is completely wound.

4,762,284

ENCLOSURES FOR HIGH-SPEED WINDERS

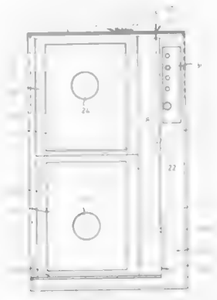
Adolf Flüeli; Kurt Schefer, and Heinz Oswald, all of Winterthur, Switzerland, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

Filed Jun. 27, 1986, Ser. No. 879,292

Claims priority, application United Kingdom, Jul. 5, 1985, 8517173

Int. Cl.⁴ B65H *67/044*

U.S. Cl. 242—18 A **28 Claims**



1. A machine for winding thread having an operating region in which thread packages are formed and retained to await doffing thereof and having at least one predetermined doffing position in the operating region, comprising:

headstock means;

at least two chucks;

means for cantilever mounting of said at least two chucks in the headstock means and so as to extend forwardly therefrom into the operating region;

each of said at least two chucks defining a respective longitudinal chuck axis;

said at least two chucks each being rotatable about said respective longitudinal chuck axis for winding thread into thread packages thereon;

a thread traverse mechanism extending forwardly of said headstock means into the operating region for selectively winding a thread onto each of said at least two chucks into a respective thread package during a winding operation at a predetermined winding position of the operating region;

means mounting each of said at least two chucks to be selectively movable between the predetermined winding position in the operating region and the at least one predetermined doffing position;

means for selectively bringing each of said at least two chucks into said predetermined winding position of the operating region for coaction with the thread traverse mechanism to wind a thread package thereon and for bringing each of said at least two chucks into the region of the at least one predetermined doffing position for doffing a wound thread package from the related chuck;

an enclosure for the operating region;

said enclosure being provided with an access opening to the at least one predetermined doffing position;

said enclosure being provided with an inlet permitting infeed of at least one thread to the predetermined winding position;

at least one access door arranged in said enclosure; and

means for accomplishing movement of said at least one access door relative to said enclosure for exposing said access opening to the at least one predetermined doffing position while said enclosure hinders access to said thread traverse mechanism, a thread package forming upon one of the chucks located in the predetermined winding position and the thread extending between the inlet and the thread package forming upon one of the chucks located in the predetermined winding position.

4,762,285

BOBBIN WINDER FOR A SPINNING WHEEL

Mark Allred, Box 24, Afton, Wyo. 83110

Filed Apr. 27, 1987, Ser. No. 42,843

Int. Cl.⁴ B65H *54/00, 54/56*

U.S. Cl. 242—47 **2 Claims**



1. A winding apparatus comprising, a frame, a drive wheel with a crank arm rotatably supported by said frame, a treadle pivotally attached to said frame and coupled to said crank arm of said drive wheel, a pair of spaced uprights mounted on said frame and each with first and second bearing elements respectively mounted thereon, a shaft with a reduced end bearing portion which cooperates with said first bearing element in one of said pair of spaced uprights, a pulley with a collar positioned on said shaft with its bearing portion extending into said second bearing element in a second one of said pair of uprights, means for locking said pulley and collar to said shaft at a position which prevents the shaft from shifting position relative to said pair of uprights and said shaft having an extended tapered portion which extends beyond said second upright, a drive belt mounted on said pulley and said drive wheel so that said shaft is rotated when said drive wheel is rotated by said treadle; and a bobbin spool with an opening mounted on said extended tapered portion of said shaft and said extended portion is tapered so as to receive spools having openings of different sizes.

4,762,286

SPOOL REWINDER

John Q. Crow, 1609 W. 8th St., Texarkana, Tex. 75501

Continuation of Ser. No. 901,379, Aug. 23, 1986, abandoned. This application Oct. 5, 1987, Ser. No. 105,506

Int. Cl.⁴ B65H *54/00, 75/00*

U.S. Cl. 242—47 **17 Claims**

1. A spool rewinder comprising

(a) a frame having at least two opposed arms;

(b) a first arm having a bore therein;

(c) a rotatable shaft extending through said bore toward an opposed second arm, said shaft having a crank on the end distal to the second arm;

(d) a spool gripping means on the end of the shaft proximal to the second arm, and

(e) a biasing means for forcing said gripping means toward the second arm, whereby a spool held by said gripping



means is biased against the second arm which is comprised of a stationary baffle.

4,762,287

DEVICE FOR LAYING SPINNING CABLES INTO CONTAINERS

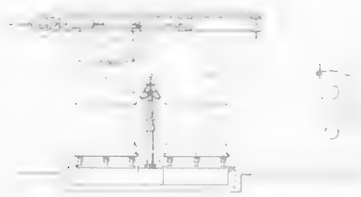
Werner Krüger-Hoiss, Neumünster; Hans-Joachim Heidel, and Heinrich Troué, both of Nortorf, all of Fed. Rep. of Germany, assignors to Neumünstersche Maschinen-Und Apparatebau GmbH, Neumünster, Fed. Rep. of Germany

Filed Feb. 17, 1987, Ser. No. 15,275

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609198

Int. Cl.⁴ B65H *75/32*

U.S. Cl. 242—48 **5 Claims**



1. A device for laying spinning cables, particularly synthetic fibrous cables into containers, comprising at least two container-position means for each container; means for an automatic container exchange; a roof-shaped supporting organ for supporting a cable being laid into the container said supporting organ including two oblique supporting plates and bridging an intermediate space between two of the container-position means; a cable separating organ and means for moving the cable-separating organ to a position above said supporting organ; clamping means for rigidly holding a cable on said supporting organ; and means for moving said supporting plates relative to each other between an inoperative position, in which said supporting plates tightly abut against each other along a ridge edge of said supporting organ, and an operative position in which said supporting plates are separated from each other so as to form therebetween at said edge a slit so that said cable-separating organ which has been moved to the position above said supporting organ is inserted into said slit to severe the cable held by said supporting plates only when said supporting plates are in said operative position, said clamping means being connected to said supporting plates.

4,762,288

HOLDER FOR ROLLED PRODUCTS AND THE LIKE

Robert E. Eckels, 49 S. Lookout Mountain Rd., Golden, Colo.

Filed Mar. 19, 1987, Ser. No. 28,120

Int. Cl.⁴ B65H *19/00*

U.S. Cl. 242—55.2 **14 Claims**



1. An improved holder for dispensing products which are wound on a hollow center support tube, said products being dispensed by being unwound from the roll formed on said tube, the holder comprising:

(a) a U-shaped bracket having an elongated base member and a top and bottom outwardly extending support members mounted on one side of said base member, said base member being adapted to be mounted in a generally vertical position on an upright support surface;

(b) a support shaft means attached to the upper surface of said bottom support member, said support shaft having at least an upper portion having a diameter which is less than the inside diameter of said hollow tube, said support shaft means further having a tapered conical outer configuration, the upper portion of said support shaft means being a first tapered section and the lower portion of the shaft means having a second tapered section, the angle between the bottom support member and the second tapered section being less than the angle of the first tapered section, the major diameter of the second tapered conical section being larger than the inside diameter of said tube whereby the tube will be supported on the outer surface of the support shaft means at a point above the major diameter whereby friction will be applied to the edges of the hollow tube to control the dispensing of the product and prevent excess product from being dispensed; and

(c) a retainer shaft means attached to the undersurface of the top support member, said retainer and support shafts being axially aligned.

4,762,289

CONTINUOUS SUPPLY OF ELONGATE MATERIAL

Alan T. Nuttall, Stubbins, United Kingdom, assignor to Harland Machine Systems Limited, Salford, Manchester, England

Filed Feb. 20, 1987, Ser. No. 16,760

Claims priority, application United Kingdom, Feb. 28, 1986, 8504996; Dec. 3, 1986, 8628948

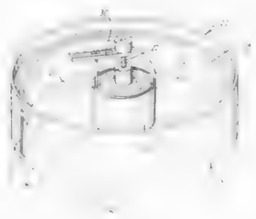
Int. Cl.⁴ B65H *19/14, 19/24*

U.S. Cl. 242—58.1 **19 Claims**

1. A method of continuously supplying elongate material comprising providing on central mandrel a supply of said material from a first reel thereof having predetermined initial inner and outer diameters, rotating an inner disc to subsequently feed said material into an expanded reel formed on a rotatable outer disc concentric and coplanar with said inner disc, said expanded reel having an inner diameter greater than said predetermined initial outer diameter, providing a second reel of said material having a leading end and having said predetermined initial inner and outer diameters, locating said second reel on said central mandrel within said expanded reel when said first reel has expired and said expanded reel has a trailing end, and joining said trailing end of said expanded reel to said leading end of said second reel.

VOL 1093 ISS 2 AG 9 1988 UMI

9. Apparatus for continuously supplying elondate material comprising drive means operable to locate and drive in rotation a first reel of said material having predetermined initial inner and outer diameters, a stationary collecting surface disposed concentrically with said drive means against which an expanded reel of larger internal diameter than said predetermined outer diameter may be formed of material withdrawn from said first reel, and withdrawing means operable to withdraw said material from said expanded reel, wherein said drive means comprises a central mandrel adapted to receive a first reel thereon, and inner and outer concentric and coplanar discs.



4,762,290

FISHLINE HOLDER FOR A FISHING REEL

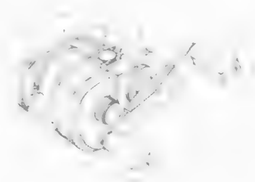
Masaharu Emura, and Takehiro Kobayashi, both of Hiroshima, Japan, assignors to Ryobi, Ltd., Hiroshima, Japan

Filed Jul. 17, 1987, Ser. No. 74,709

Claims priority, application Japan, Jul. 18, 1986, 61-110766[U]

Int. Cl.[4] A01K *89/00*

U.S. Cl. 242—84.1 K 5 Claims



1. A fishline holder for a fishing reel comprising:

a body including a support portion, said support portion having a through hole with a first diameter portion and a second enlarged diameter portion to form a first recess of predetermined depth having a first shoulder at the juncture of said first and second diameter portion and a second shoulder surrounding the second enlarged diameter portion, said support portion having a top provided with a plurality of positioning recesses;

a fishline holding member having a head portion and a stem portion slidably positioned in said through hole, said head portion being demensioned for restricting movement of the holding member in a first axial direction at times when said head portion is at rest in a first position in engagement with the support portion surrounding the through hole, said stem portion having a circumferentially extending groove of predetermined width substantially equal to the predetermined depth of the first recess, said groove being axially spaced from the head portion to substantially coincide with said first recess, said head portion having a bottom provided with a plurality of positioning projections adapted to engage and disengage said positioning recesses to restrict the rotation of said holding member;

spring means diposed in said groove and physically engaging said second shoulder for urging the holding member in said first axial direction to maintain said head in said first position, said spring means being configured to deflect and thereby engage said first shoulder at times when said member is pulled in a second axial direction opposite the first for limiting the movement of the holding member.

4,762,291

SELF-LOADING REEL TRAILER

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Jun. 11, 1987, Ser. No. 60,533

Int. Cl.[4] B65H *19/20*

U.S. Cl. 242—86.5 R 7 Claims



1. A self-contained, self-loading reel trailer apparatus for manipulating a reel having circular ends and a central drum having a bore therethrough able to have cable wound thereon, or the like and having a reel bar through said bore, said apparatus comprising:

a transporting means having a cradle for receiving said circular ends to support said reel during transportation to resist forward, rearward and downward movement of said reel;

a loading means for loading said reel into said cradle comprising:

a reel loading ramp leading from the ground to the cradle;

a set of hydraulically activated maneuvering arms to propel said reel along said reel loading ramp until said reel settles in said cradle;

a set of support arms, each having a first end pivotally mounted to said apparatus, and each having recess means at a second end for engaging said reel bar; and

an advancing means for advancing said reel bar to engage the recess means ends of the support arms and for pivoting said support arms so that said reel lifts from said cradle to a payout position where said reel may rotate about said reel bar to aid in winding or unwinding said cable from said reel.

4,762,292

VACUUM COLUMN WEB LOOP POSITION SENSING SYSTEM

Alexander M. D'Anci, 13 Payne St., Springvale, Me. 04083

Filed Jan. 30, 1987, Ser. No. 9,147

Int. Cl.[4] G11B *15/06;* G01N *21/86*

U.S. Cl. 242—184 15 Claims



1. An apparatus for sensing tape loop length of tape in a tape storage column having sides, one of the sides being formed from a transparent plate, said apparatus comprising:

a retroreflective surface on one of the sides of the tape storage column abutting the transparent plate;

light emitting means, positioned outside the tape storage column adjacent to the transparent plate, for directing light towards said retroreflective surface, the tape obstructing the light emitted from said light emitting means to the extent that the tape extends into the tape storage column;

a plurality of light receiving means, disposed along an array outside the tape storage column and adjacent to the transparent plate, for receiving a quantity of light emitted from said light emitting means and reflected by said retroreflective surface; and

detection means for detecting the quantity of light received by said light from said light emitting means by said light receiving means and indicating the tape loop length in dependence upon the quantity of light detected.

4,762,293

ROCKET PROJECTILES

John F. Waddington, Tonbridge, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kindgom of Great Britain and Northern Ireland, United Kingdom

Filed Dec. 12, 1968, Ser. No. 785,046

Claims priority, application United Kingdom, Dec. 13, 1967, 56728/67

Int. Cl.[4] F42B *15/033*

U.S. Cl. 244—3.22 11 Claims



1. A control system for a guided missile comprising means for rotating the missile about its axis; a discharge nozzle so directed that the thrust therefrom has a lateral component relative to the missile; a reaction motor associated with the said nozzle and having means for actuating the said motor, in response to a suitable signal, to produce a thrust from the nozzle appropriately times in relation to the roll position of the missile and appropriate duration for correcting the missile trajectory; said reaction motor comprising a combustion chamber; a discharge nozzle associated with said combustion chamber; a relief valve through which said combustion chamber has access to said discharge nozzle; a compressible fuel tank; means for pressurizing the fuel tank; an injection system by way of which said fuel tank communicates with said combustion chamber and incorporating an injection nozzle; a differential piston pump, incorporating a piston having larger area and smaller area sides and actuable by pressure of gases from said combustion chamber, for feeding fuel to the injection nozzle; a command operable valve for controlling the differential piston pump; and means for initially heating and pressurizing said combustion chamber.

4,762,294

ELEVATOR CONTROL SYSTEM ESPECIALLY FOR AN AIRCRAFT

Udo Carl, Bremen, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Bremen, Fed. Rep. of Germany

Filed Sep. 9, 1987, Ser. No. 94,824

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3631090; Nov. 13, 1986, 3638821

Int. Cl.[4] B64C *13/42*

U.S. Cl. 244—75 R 14 Claims



1. An elevator control system especially for an aircraft, comprising right and left elevator assemblies, electrically controlled primary drive means (6, 7) for driving each of said elevator assemblies under normal operating conditions, computer means for controlling said electrically controlled primary drive means (6, 7), mechanically controlled auxiliary drive means (8) for driving each of said elevator assemblies under emergency operating conditions, mechanical control means (12) arranged for actuation by a pilot, mechanical linkage means (27) operatively connected to said mechanical control means and to said auxiliary drive means (8) for enabling a pilot to mechanically control operation of said auxiliary drive means (8), automatically operating logic switch-off means (32) connected to said computer means for normally keeping said auxiliary drive means (8) in an inactive bypass state when said electrically controlled primary drive means are properly operating and for activating said auxiliary drive means in response to a failure of said electrically controlled drive means of both elevator assemblies or in response to a failure of an electrical power supply, switch means (14) including a testing switch (4) operatively arranged for control by a pilot for manually switching off said electrically controlled drive means while substantially simultaneously activating said auxiliary drive means (8), said mechanical linkage means comprising mechanical signal distributing means and cable means connecting said mechanical control means (12) to said mechanical signal distributing means for simultaneously distributing pilot initiated mechanical control signals to a left branch and to a right branch of said mechanical linkage means, said mechanical linkage means further comprising spring means arranged in each of said left and right branches, and coupling and synchronizing units (15) connected to said left and right branches through said spring means for transmitting said pilot initiated control signals to said auxiliary drive means (8), electric drive means (13) arranged for normally transmitting a deflection of said elevator assemblies to said mechanical control means when said elevator assemblies are driven by said electrically controlled primary drive means, and ram air turbine means for producing hydraulic pressure for said auxiliary drive means (8) when all engines fail.

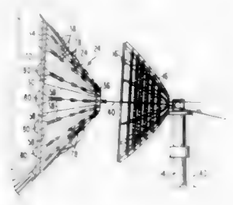
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,295

AEROSTAT STRUCTURE WITH CONICAL NOSE

Terrell H. Yon, Jr., Cocoa Beach, Fla., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 25, 1986, Ser. No. 934,909
Int. Cl.[4] B64F 1/14
U.S. Cl. 244—115 18 Claims



1. A aerostat structure comprising:

an inflatable hull including a forward substantially conical soft nose section defining a cone axis, a central body section and a rearward tail section, all of said sections being inflatable as an integral unit;

said nose section comprising an inflatable envelope which tapers to its cone apex at a given angle to said cone axis

a mooring nose cap having a conical recess dimensioned to closely receive therein and abut said nose section at said cone apex, said cap including an upstanding mooring probe; and

cap securing means including a plurality of ropes for securing the cap to said hull at a region spaced from the nose apex, said ropes lying in a conical envelope closely spaced from and juxtaposed with said nose section conical envelope wherein the envelopes define similar cones, said mooring probe terminating at its extended end substantially within the conical volume defined by the envelope of said ropes, said given angle having a value sufficiently great such that a force on said probe normal to said axis is counteracted with a sufficient reaction force created by the hull internal pressure to preclude significant bending of said nose section relative to said body section in a direction normal to said axis, said given angle having a value sufficiently small to preclude significant inward collapsing of the nose section in response to an axially directed force on said probe in a direction along said axis.

4,762,296

MOUNTING DEVICE FOR SUPPORTING TUBING OF DIFFERENT DIAMETERS

Willibald Kraus, Grunstadt, Fed. Rep. of Germany, and Jean-Luc R. G. Klein, Obermodern, France, assignors to TRW United-Carr GmbH, Alsenborn, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 54,374
Claims priority, application Fed. Rep. of Germany, May 28, 1986, 3617911
Int. Cl.[4] F16L 3/12
U.S. Cl. 248—74.2 9 Claims

1. A mounting device for supporting and holding tube-like members of different diameters and comprising:

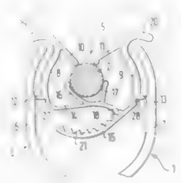
a generally U-shaped support section having a pair of upwardly extending legs terminating in spaced free ends which define a slide-in zone;

a pair of dish-like elements mounted generally in said slide-in zone in spaced opposed relationship, each said dish-like element being connected by hinge means to a separate one of said legs for independent pivoting movement relative to each other and said legs,

a separate, resilient arm carried from the lower portion of each dish-like element and each respective arm having a free end extending in a direction generally toward the opposite dish-like element, the respective arms being located in vertically spaced and overlapping relationship to each other to thereby provide an upper arm and a lower arm;

a pair of upwardly extending resilient fingers carried on the upper arm;

the free end of the upper arm having a contact edge adapted



to engage and impinge on the upper surface of the lower arm when a tube-like member is supported on said upper arm; and,

the upper surface of the lower arm including a series of recesses for receiving said contact edge and maintaining said dish-like elements in selected positions of relative adjustment.

4,762,297

METHOD AND APPARATUS FOR TEMPORARILY STORING HOUSEHOLD WASTE

Dale Milligan, 25900 Camino Juarez, Sun City, Calif. 92381

Filed Jun. 25, 1987, Ser. No. 66,304
Int. Cl.[4] B65B 67/04
U.S. Cl. 248—99 4 Claims



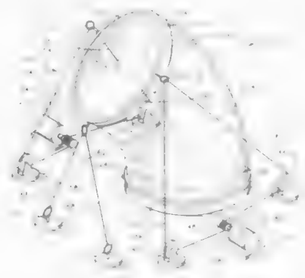
1. Apparatus for supporting a plastic merchandise carrying bag from the rim of a waste container comprising a pair of hangers each formed of a single length of stiff wire and wherein the ends of each of said wires are bent to form a pair of hooks disposed parallel to each other and in spaced separation from each other to serve as hook means adapted to fit over the upper rim of a waste container, and each of said hangers has a pair of upright standards connected to said hook means and formed by bends in said wires proximate to said hooks thereof and in mutually coplanar relationship with said hooks thereof, and a central portion of each of said wires extends horizontally between said standards to serve as a rigid stretching means arranged to hold said upright standards in each hanger apart a predetermined distance suitable to receive and stretch a handgrip loop of a plastic merchandising bag between said standards.

4,762,298

SUPPORT AND MANEUVERING DEVICE

Richard L. Wood, Arvada, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 23, 1987, Ser. No. 28,934
Int. Cl.[4] F16M 11/12
U.S. Cl. 248—179 19 Claims



1. A support and maneuvering device securable to a ground surface and adapted for mounting a mechanism to receive solar energy from the sun, said device comprising:

a. flexible, inflatable enclosure having a fixed end and a movable end, the movable end of the enclosure being collapsible toward the fixed end to a contracted position when said enclosure is in a noninflated condition, and said movable end being movable away from said fixed end to an extended position when said enclosure is in an inflated condition;

b. means for mounting said solar energy receiving mechanism to said movable end;

c. means for inflating said enclosure to any selected position between said contracted position and a fully extended position;

d. at least three position controlling means disposed about said movable end to adjust said movable end in conjunction with said inflation means by predetermined amounts to control the angle and attitude at which said solar energy receiving mechanism is oriented relative to the position of the sun and said ground surface, said position controlling means limiting a selected number of degrees of freedom of said movable end to transmit a steering motion to said movable end to continuously control the angular position thereof; and

e. at least two of said position controlling means comprising adjustable, position controlling means, each one of said adjustable position controlling means being connected to different corresponding portions of said movable end to move said different corresponding portions of said movable end said predetermined amounts and bending said enclosure to control the angle at which said movable end is oriented relative to the sun to continuously optimize the desired angle and attitude of said solar energy receiving mechanism relative to the sun.

4,762,299

PEG BOARD HOOKING SUPPORT ROD

André Langelier, 5690 Robert Boulevard, Saint-Léonard, Canada H1P 1M4

Filed Jun. 2, 1987, Ser. No. 56,699
Int. Cl.[4] A47F 5/00
U.S. Cl. 248—220.4 12 Claims

1. A display hanger for a pegboard having a front and a rear face and provided with rows of bores, said hanger comprising a hook member and a mounting bracket for releasably connecting the hook member to the pegboard; said mounting bracket defining a main body provided at its top end with a pair of transverse anchoring fingers, said fingers being of arcuate-shape and adapted to engage a pair of horizontally-aligned pegboard bores and to rest against the pegboard rear face with the main body thereof flatly abutting against the pegboard front face; said hook member including: an elongated support rod member, having a horizontal top leg and a downturned leg projecting from the inner end portion of the top leg thereof, and a connector plate, having a horizontal top leg projecting from and anchored to the top face of said support rod member inner end portion and a downturned leg; further including a sleeve member mounted to the upper portion of said mounting bracket main body; said sleeve member defining a channel, said



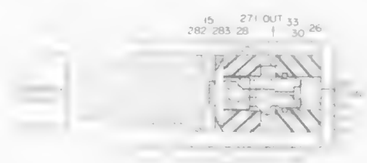
channel releasably frictionally engageable by said connector plate downturned leg; wherein upon hanging on said support rod member horizontal top leg a number of relatively heavy articles to be displayed, said hook member is prevented from downwardly collapsing under the load by the combined action of said rigid connector plate, the horizontal top leg of which is under tension by the weight of said hung articles, and of the resistance to flexion of said support rod member downturned leg which rests against said sleeve member; and wherein the support rod member is easily removable from said mounting bracket without having to remove said hung articles and with minimal vertical clearance.

4,762,300

CONTROL VALVE FOR CONTROLLING FLUID PASSAGE

Mitsuo Inagaki; Hideaki Sasaya, both of Okazaki; Kenji Takeda, Aichi; Yoshiyuki Hattori, Toyoake; Yuzo Imoto, Kariya, and Toshihiro Takei, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Sokeu, Inc., Nishio, both of, Japan

Filed Feb. 18, 1986, Ser. No. 830,132
Claims priority, application Japan, Feb. 19, 1985, 60-31708; Mar. 30, 1985, 60-66850
Int. Cl.[4] F16K 31/02
U.S. Cl. 251—129.06 11 Claims



1. A control valve for controlling a fluid passage, comprising:

a case defining a first cylinder;

a piston mechanism disposed in said first cylinder so as to be movable in the axial direction of said first cylinder;

VOL 1093 ISS 2 AG 9 1988 UMI

a first fluid pressure chamber defined in said first cylinder by said piston mechanism and being filled with fluid;

a piezoelectric element group inoluding a plurality of laminar piezoelectric elements stacked in layers, said element group being disposed in said first cylinder and adapted to be extended and contracted when voltage is applied to said piezoelectric elements, whereby said piston mechanism is moved to vary the capacity of said first fluid pressure chamber;

said case also defining a second cylinder communicating with said first fluid pressure chamber, said second cylinder having a cross-sectional area smaller than that of said first cylinder;

a second fluid pressure chamber defined in said case, to which fluid is supplied and which is continuous with said first fluid pressure chamber via said second cylinder;

valve member means disposed in said second cylinder for being driven by the fluid pressure in said first fluid pressure chamber, said valve member means having opposite end faces on which the fluid pressures in said first and second fluid pressure chambers respectively act, the end face area of said valve member means exposed to the fluid pressure in said first fluid pressure chamber being equal to the end face area of said valve member means exposed to the fluid pressure in said second fluid pressure chamber, said valve member means further having valve means formed in a central portion thereof for opening and closing said fluid passage; and

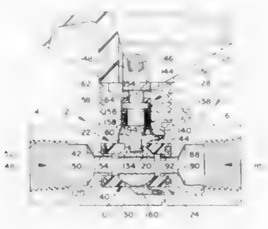
an auxiliary fluid passage at least partially defined by said valve member means for connecting said first fluid pressure chamber to said second fluid pressure chamber.

4,762,301

COMPACT MULTI-SERVICE BALL VALVE

Richard F. Wozniak, Euclid; Robert C. Stewart, Bedford Heights., and Peter C. Williams, Clevelands Heights, all of Ohio, assignors to Whitey Co., Highland Heights, Ohio

Filed Feb. 6, 1987, Ser. No. 11,753
Int. Cl.[4] F16K 5/06
U.S. Cl. 251—171 8 Claims



1. A ball valve comprising:

a first unitary body member having first and second axially disposed ends with a cylindrical valve chamber extending inwardly from the first end thereof and terminating in a transversely extending end face, a first flow pasage extending into said first body member from said second end and opening into said valve chamber axially of said end face, a first sleeve member formed about said first flow passage and extending axially into said valve chamber and defining an axially extending recess, a cylindrical stem receiving chamber extending radially outwardly from said valve chamber and opening to the exterior of said first body member through an inwardly facing shoulder;

a secondary unitary body member releasably connected to the first end of said first body member to close the first end of said valve chamber and define a second flow passage opening into said valve chamber in axial alignment with said first flow passage, inner and outer radially spaced sleeves formed integrally with said second body member and extending into said valve chamber circumferentially about said second flow passage and defining an axial recess opening into said valve chamber, said inner sleeve being aligned with said first sleeve member formed about said first flow passage on said first body member, said outer sleeve forming a continuation of said valve chamber and having an inner diameter substantially corresponding to the diameter of said valve chamber;

a valve ball mounted in said valve chamber in axial alignment with said first and second flow passages;

seat rings positioned about said first and inner sleeve members and biased into engagement with said valve ball by O-rings carried in said recesses;

an operating stem for rotating said ball, said operating stem positioned axially of said stem receiving chamber and having an outer end portion extending past said inwardly facing shoulder, and a flange extending outwardly of said stem at a location axially inwardly of said inwardly facing shoulder with a resilient bearing ring located between said flange and said shoulder;

a stem shoulder carried on said stem axially inwardly of said flange; and

stem seal means located between said flange and said stem shoulder.

4,762,302

VALVE SLEEVE AND METHOD OF MANUFACTURING SAME

Masaaki Bandou, Sakado; Masso Sugita, Higashimatsuyama, and Takachi Marumo, Maebashi, all of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo and Gunma Seikou Co., Ltd., Gunma, both of, Japan

Division of Ser. No. 870,200, Jun. 2, 1986, Pat. No. 4,706,487.
This application Jul. 28, 1987, Ser. No. 78,682
Claims priority, application Japan, Jun. 3, 1985, 60-119975
Int. Cl.[4] F16K 1/32
U.S. Cl. 251—360 4 Claims



1. In an elongate valve sleeve having a central opening therein with a plurality of blind axial grooves formed in an inner surface of said central opening which transform to no depth at their lengthwise ends; the improvement comprising wherein each of said axial grooves has a bottom surface which comprises a pair of surfaces which are equally but oppositely inclined from said lengthwise ends to a longitudinal center thereof, said groove having the greatest depth at said longitudinal center.

4,762,303

LUMBER TURNING TOOL

Philip G. Thomas, 1257 Siskiyo Blvd., Ashland, Oreg. 97520

Filed Jan. 12, 1987, Ser. No. 2,748
Int. Cl.[4] B25C 11/00
U.S. Cl. 254—25 5 Claims

1. In a lever type tool, the combination comprising:

(a) an elongated handle, and

(b) a one-piece integral generally C-shaped head having two opposed and spaced apart claws projecting in generally the same direction at opposite sides of a space to closely receive a portion of a rectangular cross section of a lumber member,

(c) one of the claws at one side of said space being substantially shorter in length than the other of the claws at the opposite side of said space,

(d) said integral head including a transverse section interconnecting the claws, said claws having inner surfaces defining faces that are parallel throughout their lengths at opposite sides of said space, said space having an innermost side, said transverse section having a transverse face at said innermost side of said space, said transverse face always extending in a plane that is normal to planes defined by said parallel faces,



(e) each of said claws being bifurcated to define tines,

(f) said one bifurcated claw defining a recess, intersecting said face of the one claw,

(g) said claws also having outer surfaces, and wherein said inner and outer surfaces of each claw taper toward a tip,

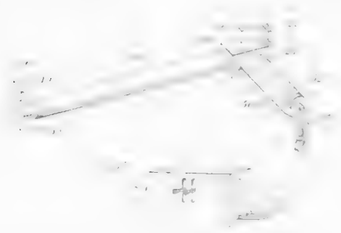
(h) said tips being at distances d_1 and d_2 from said transverse face, d_1 being approximately 2.5 d_2.

4,762,304

FLUID-OPERATED DOOR OPENER

Anthony Hill, Cradley Heath, England, assignor to Stafford Hill Arms Company Limited, Cradley Heath, England

Filed Apr. 21, 1987, Ser. No. 40,829
Claims priority, application United Kingdom, Apr. 26, 1986, 8610257
Int. Cl.[4] B66F 3/24
U.S. Cl. 254—93 R 1 Claim



1. A door opener comprising

a rectangular block having six faces of which four faces are interrupted by a plane which is parallel to and located between the two remaining faces;

first and second hydraulic actuators adapted to produce linear motion and each including a piston housed in a cylinder and a piston rod connected to the piston and extending through one end of the cylinder to provide a free end;

two jamb-engaging elements;

one of said jamb-engaging elements being connected to the free end of the piston rod of said first hydraulic actuator;

the cylinder of said first hydraulic actuator extending outwardly from a first face of said four faces of the block;

the other of said jamb-engaging elements being mounted on a second face which is opposite to said first face of the block;

the cylinder of the second hydraulic actuator extending outwardly from a third face which is adjacent to said first face and to said second face of the block;

a door-engaging member;

the piston rod of said second hydraulic actuator extending through said block towards and through the fourth of said four faces of said block;

said door-engaging member being connected to said free end of the piston rod of said second hydraulic actuator; and

means operable to supply a liquid under pressure to each of the hydraulic actuators in turn;

whereby operation of the first hydraulic actuator causes the jamb-engaging elements to engage the door jambs and, subsequently, operation of the second hydraulic actuator causes the closed/locked door to be pushed out of the doorway.

4,762,305

RAMMING MIX FOR FORMING A MULLITE-CORUNDUM LINING WITHIN A FOUNDRY FURNACE

Hal H. Rice, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 881,596, Jul. 3, 1986, abandoned. This application Jul. 2, 1987, Ser. No. 70,146
Int. Cl.[4] C21C 5/44
U.S. Cl. 266—281 2 Claims

1. In a method for forming a refractory lining within a foundry furnace for defining a compartment for containing an iron melt, said method comprising positioning an expandable iron metal liner within said furance to define the compartment, packing a dry, refractory, particulate ramming mix into a space about the metal liner, and filling the compartment with an iron melt, whereupon the melt dissolves the iron liner and heats the refractory ramming mix to sinter the mix to form the refractory lining, the improvement wherein

the ramming mix comprises a mixture composed predominantly of raw kyanite particles and alumina particles, said kyanite particles being present in an amount between about 35 and 60 weight percent of the ramming mix and dissociating during sintering to form mullite and silica, said alumina particles being present in an amount sufficient to react during sintering with free silica to form additional mullite, said ramming mix being formulated to develop a dilametric expansion at sintering temperature under 38 kPa load of at least five percent, whereupon constraint of said ramming mix by said liner during sintering produces compressive forces that strengthen the product lining, said sintered lining being substantially formed of mullite and corundum phases and resistant to attack by silica-base slag.

4,762,306

HYDRAULIC MOUNTING SYSTEM FOR A POWER UNIT

Kenichi Watanabe, and Haruyuki Taniguchi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Dec. 13, 1985, Ser. No. 808,812
Claims priority, application Japan, Dec. 19, 1984, 59-268841; Dec. 19, 1984, 59-268842; Dec. 19, 1984, 59-268853
Int. Cl.[4] B60G 13/08
U.S. Cl. 267—195 22 Claims

1. A mounting system for a power unit having an output shaft, the mounting means comprising mounting units located at the opposite sides of the output shaft for supporting the power unit on a base, each of said mounting units including resilient means between said power unit and said base to provide a resilient support for the power unit and hydraulic chamber means containing hydraulic fluid provided adjacent to the

VOL 1093 ISS 2 AUG 9 1988 UMI

resilient means to apply a hydraulic pressure to the resilient means, the hydraulic chamber means in said mounting units being connected together by conduit means, said conduit means having flow control means acting responsive to the



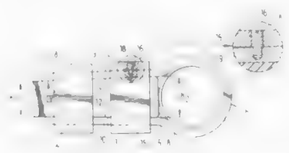
operation of the power unit so that the hydraulic fluid flow in said conduit means is more restricted under an operating condition wherein a rolling frequency of the power unit is high than under an operating condition wherein the rolling frequency is low.

4,762,307

LEAF SPRING OF PLASTIC MATERIAL AND METHOD FOR ITS MANUFACTURE

Herbert Woltron, Modling, Austria, assignor to Isopert Verbundbauteile G.m.b.H., Austria

PCT No. PCT/AT85/00042, § 371 Date Jun. 23, 1986, § 102(e) Date Jun. 23, 1986, PCT Pub. No. WO86/02601, PCT Pub. Date May 9, 1986
PCT Filed Oct. 23, 1985, Ser. No. 885,569
Claims priority, application Austria, Oct. 25, 1984, 3418/84
Int. Cl.[4] F16F *1/18, 1/26, 1/36*
U.S. Cl. 267—47 14 Claims



1. Leaf spring having a body of plastic material, joined at least at one end to a spring eye body having mounting zones, wherein said spring body is provided with at least one spring end zone with a wedge-like thickening, which increases in thickness towards the spring end (5'), wherein said mounting zones of the spring eye body (6,19,26), appropriately of laminar design, adjoin the top and bottom sides (2,3) of said end zone (1) of the spring eye body, and wherein at least one clamping sleeve is provided that is slipped over the spring body's end zone (1) and over the mounting zone adjoining it, which clamping sleeve wedges these mounting zones onto the spring body's end zone (1).

13. Method for the manufacture of a leaf spring of plastic material, which is connected to a spring eye body (6, 19, 26) at least at one end, wherein a leaf spring body is manufactured of fiber-reinforced plastic material, which at least at one spring end exhibits an end zone (1) with essentially plane parallel top and bottom sides (2, 3), wherein to these top and bottom sides (2, 3) or at least to one of them, a coating of plastic material is applied, which is composed of a plastic mass of duromer plastic containing reinforcing fibers and the thickness of which increases towards the spring end, and wherein subsequently the spring eye body (6, 19, 26), which has mounting zones of appropriately laminar design, is placed on the spring body's end zone (1) provided with these coatings of plastic material, so that the mounting zones adjoin these coatings, and wherein at least one clamping sleeve is slipped over the spring body's end zone (1) and over the mounting zones adjoining it, and thereby wedging the latter onto the spring body's end zone (1), whereupon the plastic material coatings are cured

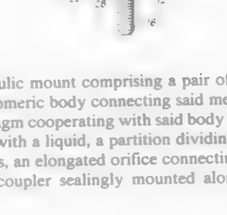
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4,762,308

DAMPING VALVE FOR AIR SPRING SUSPENSION SYSTEMS

Wayne H. Geno, Cicero, Ind., assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 30, 1987, Ser. No. 31,642
Int. Cl.[4] F16F *9/04, 9/43, 5/00;* F16K *15/14*
U.S. Cl. 267—64.27 14 Claims



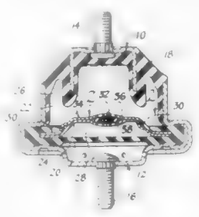
1. An improved air spring of the type having first and second end members mounted in a spaced relationship and movable towards and away from each other, and a flexible sleeve connected to said end members and forming a fluid pressure chamber therebetween, wherein said improvement includes valve means for controlling the flow of a fluid into and out of the fluid pressure chamber upon movement of the end members towards and away from each other to provide damping, said valve means including a fixed predetermined sized orifice opening and a flexible diaphragm formed with at least one slot forming at least two flaps movable into and out of said orifice opening to vary the effective size of said opening for allowing greater fluid flow in one direction than in the other.

4,762,309

HYDRAULIC MOUNT HAVING A FLEXIBLE DECOUPLER WITH AN ORIFICE THERETHROUGH

Bruce E. Hutchins, Milford, Mich., assignor to Saturn Corporation, Troy, Mich.

Filed Sep. 14, 1987, Ser. No. 96,638
Int. Cl.[4] F16M *5/00;* B60G *15/04;* F16K *21/04;* B62D *21/00*
U.S. Cl. 267—140.1 3 Claims



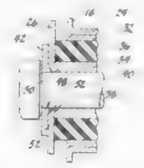
1. A hydraulic mount comprising a pair of mounting members, an elastomeric body connecting said members, an elastomeric diaphragm cooperating with said body to define a closed cavity filled with a liquid, a partition dividing said cavity into two chambers, an elongated orifice connecting said chambers, a flexible decoupler sealingly mounted along the periphery thereof in an opening through said partition, said decoupler having an opening therethrough for connecting said chambers, a pair of valves on said partition sandwiching said decoupler and alternately contacted thereby to cover said decoupler opening on alternating deflection of said decoupler above a predetermined relative displacement of said mounting members, and at least one groove in both sides of said decoupler intersecting with said decoupler opening for providing limited communication between said chambers through said decoupler opening when same is otherwise alternately closed by said valves.

4,762,310

PIVOT BUSHING ASSEMBLY APPLICATION

Casimir Krajewski, Rochester Hills; Randolph I. Melville, Fenton, and William W. Porter, Plymouth, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1987, Ser. No. 90,845
Int. Cl.[4] F16F *1/38, 7/00;* B60G *13/00, 15/02*
U.S. Cl. 267—141.2 2 Claims



1. In a pivot bushing installation for automotive suspension apparatus and the like, including support means defining a spaced pair of walls of a material deformable under predetermined stress, the walls being apertured on a common axis for reception of a fastener bolt,

the combination comprising, an elastomeric pivot bushing assembly received between said walls and including an inner metallic sleeve having its longitudinal bore aligned on said axis and its end surfaces adapted each for engagement with a respective said wall,

centrally apertured upsetting washer means of a material relatively substantially less deformable under said stress than said wall material and including protuberance means adjacent the central aperture juxtaposed at the exterior of the respective one of said walls to an end surface of said sleeve,

and threaded bolt and nut fastener means in the aligned apertures and bore of said walls, said sleeve and said washer means whereby under thread tightening of the fastener means said washer means is operable to deform the portion of said one wall intervening said protuberance means and said end surfaces of said sleeve to enhance frictional engagement of said sleeve between said walls.

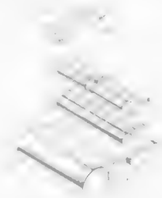
4,762,311

ADJUSTING ROLLER ARRANGEMENT PARTICULARLY FOR ROTARY FOLDERS

Klaus Hertrich, Göhrenz, German Democratic Rep., assignor to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Jul. 27, 1987, Ser. No. 78,514
Claims priority, application German Democratic Rep., Jul. 25, 1986, 2928585
Int. Cl.[4] B41L *43/04*
U.S. Cl. 270—41 4 Claims

1. An adjusting roller arrangement, particularly for a rotation folding apparatus wherein one or a plurality of elongated successively running webs are fed over a funnel-shaped folder, the arrangement comprising at least one pair of adjusting rollers (3,4) mirror-inverted relative to each other and positioned between said funnel-shaped folder and a feeding roller pair (5) of a cylinder folding mechanism (6), each roller including an axle on which said roller is rotatable, a sleeve (18, 18') at each end thereof, and an adjusting device (21, 29; 24, 30; 27,28, 22,23) for horizontally, vertically and axially adjusting said roller, said roller being supported over said sleeves in said



adjusting device, each roller including an external roller body (15, 15') divided into at least two portions, a non-rotating internal tube also divided into two portions, said external tube being supported and horizontally adjusted at outer ends thereof over said internal tube (13, 13') relative to said axle.

4,762,312

SORTER WITH A FUNCTION OF BINDING COPY SHEETS

Yoshiaki Ushirogata, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 14, 1987, Ser. No. 38,031
Claims priority, application Japan, Apr. 15, 1986, 61-86706; Jun. 23, 1986, 61-94542[U]
Int. Cl.[4] B42B *1/02*
U.S. Cl. 270—53 5 Claims



1. A sorter having a function of binding copy sheets, comprising:

a plurality of bins each for stacking copy sheets therein;

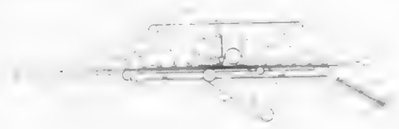
a stapler for driving a staple into a predetermined portion of a stack of copy sheets in any of said bins;

bin moving means for moving said bin loaded with a stack of copy sheets toward said stapler so that said predetermined portion of said stack is brought to a predetermined stapling position; and

drive transmitting means for moving the stapler and said bin moving means in an interlocked motion to, respectively, a position corresponding to a selected one of the bins and a drive position for driving said selected bin toward said stapler.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,313
PRODUCTION OF PAPER WITH DECORATIVE, NON-RECTILINEAR EDGES
Ingvar Nilsson, Akarp, Sweden, assignor to Svecia Antiqua SA, Fribourg, Switzerland
Division of Ser. No. 821,956, Jan. 24, 1986, Pat. No. 4,669,644.
This application Feb. 26, 1987, Ser. No. 21,650
Claims priority, application United Kingdom, Jan. 24, 1985, 8501756
Int. Cl.[4] B65H *29/00*
U.S. Cl. 271—187 4 Claims



1. A conveyor apparatus comprising:
a first conveyor means for conveying sheets in a first direction;
a second conveyor means for conveying sheets in a second direction, substantially perpendicular to first direction; and
means for receiving sheets conveyed by said first conveying means and for supplying said sheets conveyed by said first conveying means to said second conveying means, said means for receiving and supplying including:
a star wheel having an axially elongated hub, having a plurality of arms extending radially from said hub and spaced circumferentially about said hub, said star wheel being mounted at a longitudinal end of said first conveyor means, a longitudinal axis of said hub being disposed substantially transverse to said first direction so as to receive sheets from said first conveying means between circumferentially successive arms of said star wheel, said star wheel further being disposed at a first longitudinal end of said second conveying means such that said longitudinal axis of said hub is substantially parallel to said second direction;
means for rotating said star wheel about said longitudinal axis of said hub; and
reciprocal means for displacing sheets from said star wheel onto said second conveying means in a direction substantially parallel to said longitudinal axis of said hub.

4,762,314
ENVELOPE FEEDER
Hiroshi Harada, 2-4-44, Kamiashiarai, Shizuoka-shi, Shizuoka-ken 420, Japan
Filed Jun. 17, 1987, Ser. No. 63,127
Int. Cl.[4] B65H *5/12*
U.S. Cl. 271—267 1 Claim



1. An envelope feeder comprising a basic body which is suspended from a support shaft provided above a transfer conveyor for said envelope feeder, said support shaft extending along said transfer conveyor, a pair of first rollers fixed rotatably to both sides of a substantially central portion of said basic body and having eccentric rotary members at the side portions thereof, a feed member having a front and rear portion and engaged with the basic body so that said feed member can be reciprocatingly moved, said feed member having claws at free ends of a bifurcated portion thereof, and said feed member being engaged at the rear portion thereof with said eccentric rotary members, and a roller support member having at free ends of a bifurcated portion thereof a pair of second rollers disposed in parallel with said claws, fixed pivotably at a substantially central portion thereof to said basic body, and said roller support member being urged to constantly bias said second rollers toward a surface of said transfer conveyor by a spring provided at the rear end portion of said roller support member.

4,762,315
CHILD RESTRAINT DEVICE
Judith M. Witter, 15632 Yukon Ave., Lawndale, Calif. 90260
Filed May 22, 1986, Ser. No. 865,766
Int. Cl.[4] A63G *31/00*; A61F *5/37*
U.S. Cl. 272—1 R 7 Claims



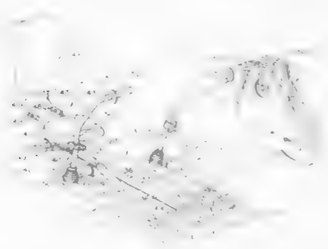
1. A child restraint device which can be buried in the sand to a predetermined level, comprising a flexible sack of a size adapted to accommodate the legs and lower torso of a child and having a mouth with an elastic band extending thereabout and having first fastening means thereat, a laterally expansive, apron defining a central opening and a periphery remote therefrom and having second fastening means at said central opening releaseably interengageable with said first fastening means, and a stiff rim at the outer perimeter of said apron for maintaining said apron in an expanded condition with said periphery held away from said central opening, said annular apron and said rim being radially split, and said rim being equipped with releasable latching means where it is split so that said central opening is adjustable.

4,762,316
WAVE SURFING SIMULATION APPARATUS
Dennis Merino, El Dorado Hills, Calif., assignor to Trade Source International, El Dorado Hills, Calif.
Filed Jan. 22, 1987, Ser. No. 5,943
Int. Cl.[4] A63G *21/00*
U.S. Cl. 272—56.5 R 13 Claims



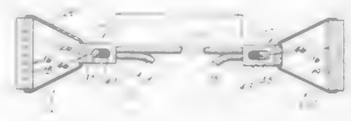
1. Wave surfing simulation apparatus comprising:
a flat planar elongated flexible slide having an upper planar surface and a lower planar surface with an elongated water chamber extending along at least one side thereof, a water inlet in fluid communication with one end of said water chamber, said water chamber having a plurality of water jets at spaced locations along the upper surface thereof adapted to spray water across substantially the entire upper surface of said slide when said inlet is coupled to a source of water;
a plurality of air chambers in the form of elongated inflatable tubes substantially oval in cross-section associated with the lower planar surface of said slide extending transverse to the longitudinal axis thereof providing an undulating surface to the upper planar surface of said slide, the oval shape of said tubes providing a smooth transitional surface from the upper planar surface of said slide over said undulating surface; and
a simulated inflated belly board having a substantially flat bottom adapted to glide over the upper planar surface of said slide thereby providing a buoyant chamber of said belly board gliding over the buoyant chambers of said air chambers.

4,762,317
STATIONARY EXERCISE DEVICE
David K. Camfield; Daniel F. Brashear, both of Olney, and Marion N. Craig, Calhoun, all of Ill., assignors to Roadmaster Corporation, Olney, Ill.
Filed May 4, 1987, Ser. No. 45,535
Int. Cl.[4] A63B *21/00, 69/06*
U.S. Cl. 272—73 2 Claims



1. In a stationary exercise device having an elongated base frame and a seat supported by said base frame adjacent one end thereof, the improvement comprising a non-circular, substantially vertical post mounted on and projecting above said frame adjacent the other end of said frame, exercise cycle means including means for selectively mounting said exercise cycle means on said post, said exercise cycle means comprising pedal means positioned to be reached by the feet of a human operator sitting on said seat, said pedal means including cranks, a crank shaft, a bearing housing surrounding said crank shaft, and a drive sprocket carried by said crank shaft on one side of said housing, flywheel means connected to be driven by said drive sprocket, and a frame including an open-bottomed hollow stanchion of a cross-sectional configuration complementary to the external configuraton of said post and of a size to fit closely but slidably over said post, said stanchion having a cradle part at its upper end to which said bearing housing is secured and a fly wheel fork made up of two, substantially mirror image arms, each with a weld section welded to said stanchion a free slotted end adjustably receiving a shaft of said fly wheel means, housing mounting bracket means secured to said stanchion, and a housing mounted on said bracket means, said stanchion supporting the entire exercise cycle means, whereby the entire exercise cycle means, including said flywheel, is mountable and demountable as a unit from the said post.

4,762,318
EXERCISER
Bradford E. Phillips, and Roy J. Bertacchi, both of Cincinnati, Ohio, assignors to 'totes', incorporated, Loveland, Ohio
Filed Mar. 10, 1987, Ser. No. 24,309
Int. Cl.[4] D63B *21/02*; F16G *11/00*
U.S. Cl. 272—137 8 Claims



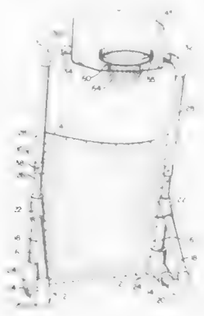
1. An exerciser comprising
a stretchable tension member, the length of said stretchable tension member being variable as desired in order to vary the force resistance of said exerciser,
a length adjustor mechanism to which said flexible tension member is connected at one end, said length adjustor mechanism including
a housing having a cavity therein, said cavity being open through an access port to atmosphere,
a pin slideable along an axis between a release position and a lock position within said cavity, a loop of said stretchable tension member being received in said cavity around said pin through said access port, the length of one end of said stretchable tension member being adjustable at said release position by pulling said flexible tension member around said pin and the length of that one end of said stretchable tension member being fixed at said lock position,
a roller rotatably carried on said pin, said roller being in direct contact with said stretchable tension member during use, said roller being moved between said release and lock positions simultaneous with movement of said pin between said release and lock positions, said roller rotating on said pin as said flexible tension member is pulled around same to reduce the frictional resistance of pulling said flexible tension member that would otherwise be present without said roller, and
a handle connected to said length adjustor mechanism by which said stretchable tension member can be stretched as desired by a user.

4,762,319
CONVERTIBLE SPORTS STAND CONSTRUCTION
Jerrold J. Krumbolz, 200 Burnet Ave., Maplewood, N.J. 07040
Filed Jul. 1, 1987, Ser. No. 68,964
Int. Cl.[4] A63B *63/08*
U.S. Cl. 273—1.5 R 12 Claims

9. A multi-purpose sports apparatus comprising a frame having spaced-apart support members adapted to rest upon a supporting surface, a U-shaped upper portion, vertically adjustable tubular means between said supporting members and said upper portion for adjusting the height of said upper portion- to correct spelling and provide a proper function for the "means" expression, net means extending between the support members, a backboard carried by said u-shaped upper portion, a basketball goal hoop carried by said backboard, said backboard being supported between said support members above

VOL 1093 ISS 2 AG 9 1988 UMI

said net, and said backboard being adjustably rotatable horizontally between a vertical position and a horizontal position,



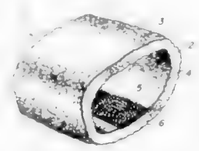
whereby said basketball goal hoop can be positioned to extend horizontally or vertically.

4,762,320

SKIN STIMULATOR AND METHOD FOR SPORTS TRAINING

Erling A. Larsen, P.O. Box 13302, Tucson, Ariz. 85732

Continuation of Ser. No. 701,865, Feb. 14, 1985, Pat. No. 4,657,251. This application Apr. 13, 1987, Ser. No. 37,321
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 C 4 Claims



1. A sport training device comprising:
(a) a wristband of elastic material which stretches and is maintained in tension when the wristband is in place around the wrist of a person;
(b) skin stimulating means disposed on a portion of the inner surface of the wristband for poking the adjacent skin of the person and producing a stimulation that focuses the person's attention to the location of the stimulation, the tightness of the elastic material pressing the skin-stimulating means against the person's skin with sufficient force to produce the stimulation, the skin-stimulating means including a strip of hook or pile material sewn to the inner surface of the wristband.

4,762,321

FOLDAWAY TABLE TENNIS SUPPORT STRUCTURE

Yong-Hong Chang, No. 53-5, Fu Hsing Village, Chi An Hsiang, Hwa Lien Hsien, Taiwan

Filed May 26, 1987, Ser. No. 53,618
Claims priority, application Japan, Nov. 25, 1986, 61-181022[U]
Int. Cl.[4] A63B *39/00*
U.S. Cl. 273—30 1 Claim

1. A foldaway table tennis support structure comprising:
(a) four brackets (7) which are fixed to the lower surface of a substantially horizontal table top (1) comprised of two leaves; two of said brackets (7) attached to each of said leaves, said brackets facing each other;
(b) two braces (5); each of said braces extending between and engaging two of said brackets (7) and being stabilized thereby;
(c) four extension bars (6); said extension bars each having one of its ends pivotally attached to one end of said brace (5) and having a leg frame (8) pivotally attached to its other end;
(d) said leg frame (8) comprising a long hollow leg (84), a swivel support (16) and a stabilizing bar (81) extending between said hollow leg and said swivel support for lateral support of said table top;



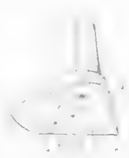
(e) each leg frame having a pair of wedges (10) which are fixed to the lower surface of each leaf of said table top (1); each of said wedges (10) having a hole therethrough;
(f) each of said leg frames having a swivel bar (11); said swivel bar (11) being pivotally retained in said holes of said wedges (10); said swivel support (16) being pivotally attached to one of said swivel bars (11); and
(g) each said hollow leg (84) having a leg (9) telescopically received therein; said legs (9) being slidable with said hollow legs (84) for adjusting the height of said table and a roller (13) on the lower end thereof, adjustment means on the lower end of each hollow leg for engaging and adjustably fixing said leg (9) relative to said hollow leg (84).

4,762,322

GOLF CLUB

Robert P. Molitor, Niles, Mich.; Bernard McDermott, Akron, Ohio; Dominick J. Swistro, Holyoke, and Steven J. Mahaffey, Hampden, both of Mass., assignors to Spalding & Evenflo Companies, Inc., Chicopee, Mass.

Filed Aug. 5, 1985, Ser. No. 762,573
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—77 A 4 Claims



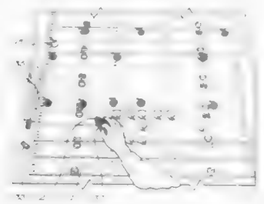
1. A golf club comprising a head and a shaft, said head being shaped to define a ball striking face, a crown and a sole,
said sole being disposed on the bottom of said head, the width of the sole, measured at the widest portion of the sole, being at least 1.25 inches, said sole width being defined as the distance between the front edge of the sole and the rear edge of the sole wherein the front edge of the sole is defined by the intersection of the sole curve of the club and the lower edge of the striking face, and the rear edge of the sole is defined by the intersection of the sole curve and the back curve of the club,
said club head having a center of gravity located substantially at the midpoint of the horizontal dimension of the ball striking face of the club, at least 0.5 inch behind a centerline of the shaft extending through the club head, and not more than 0.7 inch above the sole.

4,762,323

GAME APPARATUS AND METHOD

Dennis Blagg, 2620 Willing Ave., Fort Worth, Tex. 76110

Filed Nov. 21, 1986, Ser. No. 934,915
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—126 R 8 Claims



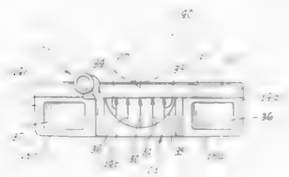
2. A game apparatus, comprising:
a flat playing board, representing a playing field;
a player disk, representing a player;
a ball disk, representing a ball;
the player disk being sufficiently thin and flat to enable the ball disk, when properly propelled, to slide on top of the player disk, with the lower side of the ball disk being in contact with the upper side of the player disk;
wherein one of the sides of the player disk and the ball disk has beveled edges, to facilitate the ball disk sliding over the player disk when the ball disk is propelled across the playing board; and
wherein the lower side of the ball disk has a smoother texture than the upper side of the player disk, so that the ball disk will slide smoothly across the playing board, and stop on the player disk if propelled at the proper speed.

4,762,324

GOLD CLUB

Donald A. Anderson, 19281 Tobago La., Huntington Beach, Calif. 92646

Filed Jan. 27, 1987, Ser. No. 7,097
Int. Cl.[4] A63B *53/04*
U.S. Cl. 273—164 11 Claims



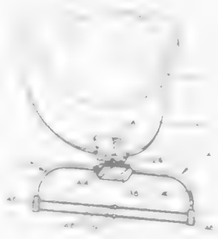
1. In a golf putter having a head defining a ball striking front face, a bottom surface, a top surface, a rear surface, a heel and a toe, the improvement comprising:
(a) the top surface having first, second and third regions respectively near the toe, mid-extent of the head and heel,
(b) each of the first and third regions having a recess sunk downwardly therein,
(c) and metallic weights received downwardly in said recesses, each recess intersecting the corresponding region top surface so that the outlines of said recesses and weights, which are substantially rectangular, in horizontal cross section, are visible from above said top surface, the recesses having bottom walls everywhere spaced above the bottom surface of the head,
(d) the head defining a ledge proximate said second region, the ledge having a top surface extending generally at the levels of the lowermost portions of said weights, and including a main marker on the ledge directed toward and the front face of the head, said marker being located at the mid-point between said recesses,
(e) and the head defining a forward upright wall that extends between and forwardly of said first and third regions and above their levels, the putter having a hosel integral with said wall at a location above the top levels of said first and third regions.

4,762,325

TRAINING DEVICE FOR GOLFERS

Ray A. McCleery, 9753 Greenwood Rd., Grass Lake, Mich. 49241

Filed Mar. 25, 1987, Ser. No. 29,979
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 B 6 Claims



1. A golf aid for encouraging immobility of the head and proper alignment of the head, ball and swing comprising, in combination, a frame, mounting means connected to the frame for mounting the frame upon the head within the wearer's line of sight when addressing a golf ball, and a pair of spaced parallel, linear, elongated reference elements mounted on said frame each having ends and mounted to said frame at said ends to provide an unobstructed central region whereby an addressed golf may be observed between said reference elements and the relationship to the wearer's head and the desired direction of ball movement determined, and at least one visible reference mark defined on said central region of at least one of said reference elements, said one reference mark appearing to the frame wearer as two reference marks when addressing a golf ball.

4,762,326

GOLF BALL

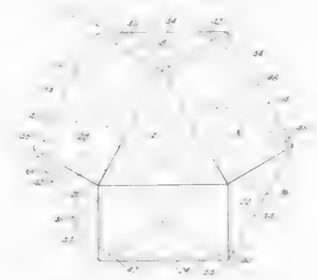
William Gobush, No. Dartmouth, Mass., assignor to Acushnet Company, New Bedford, Mass.

Filed Jun. 4, 1987, Ser. No. 58,031
Int. Cl.[4] A63B *37/14*
U.S. Cl. 273—232 15 Claims

8. A golf ball having a spherical surface with a plurality of dimples thereon and seven great circular paths which do not intersect any dimples, the circular paths being arranged on the spherical surface by inscribing a cuboctahedron in the spherical surface and bisecting each square face of said cuboctahedron twice to form four isosceles triangles, said seven great

VOL 1093 ISS 2 AG 9 1988 UMI

circular paths corresponding to the bisecting lines of said square faces, which define three great circular paths, the remaining four great circular paths corresponding to the edges of the cuboctahedron.

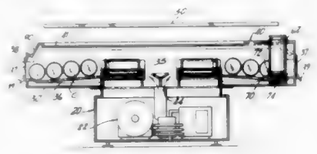


4,762,327

GAME TABLE

Sergio Gomez, 9710 SW. 103 Ave., Miami, Fla. 33176

Filed Mar. 2, 1987, Ser. No. 20,898
Int. Cl.[4] A63F *9/00*; F25D *23/12*
U.S. Cl. 273—309 5 Claims



1. A table for playing games and storing beverage containers and foodstuffs, comprising:

A. a base member;

B. refrigerating means housed within said base member;

C. a thermically sealed compartment connected to said refrigerating means and including at least one gate and said compartment includes at least one inclined plane for each of said gates so that said beverage containers with cylindrical shape may be cooperatively placed on said inclined plane and urged by gravity towards said gate, and further including cover means for said gates; and

D. a top member mounted over said compartment wherein said top member includes at least one aperture that connects with said compartment and said compartment including a spring loaded platform located directly below said aperture and so arranged and constructed that said aperture is of sufficiently large dimensions to allow said containers through to rest on said platform and said platform is pushed down proportionately to the weight of the liquid in said container.

4,762,328

ARROWHEAD WITH REFILLABLE CARTRIDGES FOR HIGH IMPACT ARROWS

James A. Beyl, 633 E. Lamme, Bozeman, Mont. 59715

Filed Mar. 5, 1986, Ser. No. 836,546
Int. Cl.[4] F41B *5/02*
U.S. Cl. 273—420 1 Claim

1. An arrowhead for big and small game hunting comprising;

(1) a blunt base element having means for attaching the base element to an arrow shaft, and a surface opposite from said means for attaching for mounting a casing,

(2) an elongate hollow casing, comprising a tube of flexible material having a base at one end for mounting on said surface and a plurality of slits in the tube extending rearwardly from the front edge thereof towards the base defining a plurality of splines therebetween,

(3) means for removably securing said casing to said base,

(4) a tip comprising a rear portion for fitting in the forward end of said casing, an intermediate portion of larger transverse cross-sectional size than said rear portion of said tip



and larger than the interior transverse cross-sectional size of said tube, and a game impacting forward portion, and

(5) a retainer band surrounding the forward end of said tube for holding said splines against said tip rear portion for retaining the tip on the tube,

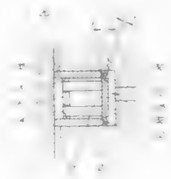
whereby upon impact with game said tip slides rearwardly into said tube casing said intermediate portion thereof to spread said splines outwardly increasing the area of tissue displacement and trauma effect in the game.

4,762,329

SPACER EXPANDER FOR PISTON RINGS

Takeo Kooroki, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Jul. 7, 1987, Ser. No. 70,700
Claims priority, application Japan, Jul. 15, 1986, 61-164688
Int. Cl.[4] F16J *9/06*
U.S. Cl. 277—139 7 Claims



1. A spacer expander assembly adapted for engagement with at least one side rail disposed in the oil ring of an internal combustion engine which comprises

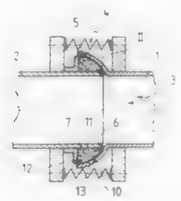
a split annular shaped spring body and a plurality of lugs extending axially from said spring body for bearing engagement with the inner radial face of said side rail, each lug having a base portion connected to said body which is thinner in thickness in the cross-sectional radial direction, at least at said base portion where it connects to said body.

4,762,330

SEALING RING

Klaus Löhne; Klaus-Peter Majewski, both of Burscheid; Franz-Josef Giesen, Odenthal, and Rüdiger Voigt, Burscheid, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Apr. 10, 1986, Ser. No. 850,031
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1985, 3512751
Int. Cl.[4] F16J *15/12*
U.S. Cl. 277—230 4 Claims



1. A sealing ring comprising a ring material formed of a compressed mixture of a high-temperature resistant metal fiber and a low-friction material; said sealing ring having a surface adapted to be pressed against and displaced by sliding relative to a counter-face; said surface being free from said low-friction material and being roughened.

2. A sealing ring as defined in claim 1, further comprising a coating of hexagonal boron nitride carried on said roughened surface, said coating being chemically distinct from said low-friction material.

4,762,331

COMBINATION AUTOMOBILE SEAT AND STROLLER

J. Camille Tucker, and Klaus D. Weiswurm, both of San Antonio, Tex., assignors to Gee-I-Go, Inc., San Antonio, Tex.

Filed Oct. 31, 1986, Ser. No. 925,302
Int. Cl.[4] B62B *7/12*
U.S. Cl. 280—30 3 Claims



1. A combination car seat and stroller apparatus for infants and small children comprising:

a frame having an upright back portion connected to a horizontally disposed, generally rectangularly shaped base portion adapted to rest on a vehicle seat;

a seat adapted for holding infants and small children secured to said frame;

a set of retractable rear wheel and fairing assemblies;

means for attaching said set of retractable rear wheel and fairing assemblies to the rear portion of said frame base portion and for retracting said assemblies from a first lower position in which the wheels of said assemblies are in position for use as a stroller to a second position in which the wheels of said assemblies are raised to a stored position adjacent the sides of said seat in position for use as a car seat wherein said retracting means comprises

L-shaped wheel mounting tabs secured at one end thereof to the fairing of each of said wheel and fairing assemblies and having a slot in the other end thereof,

a set of pivot pins fixedly mounted on the sides of said frame base portion for engaging the slot in said wheel mounting tabs whereby said wheel and fairing assemblies may be pivoted rearwardly and upwardly and then forwardly in an arc from said lower position toward said seat and then rearwardly to said second stored position, said pins engaging the forward margins of the slots when said rear retractable wheel and fairing assemblies are in said first lower position and said pins engaging the rearward margins of the slots when said rear retractable wheel and fairing assemblies are in second stored position, and

means for interconnecting said wheel mounting tabs whereby said wheel mounting tabs on both sides of said frame base portion are moved together;

means for securing said rear retractable wheel and fairing assemblies in said first lower position;

a set of retractable front wheel and fairing assemblies;

means for attaching said set of retractable front wheel and fairing assemblies to the front portion of said frame base portion and for retracting said assemblies from a first lower position in which the wheels of said assemblies are in position for use as a stroller to a second position in which the wheels of said assemblies are raised to a stored position adjacent the sides of the seat in a position for use as a car seat wherein said retracting means comprises

front wheel mounting members pivotally attached to each of said wheel and fairing assemblies and pivotally mounted to the front of said frame base portion whereby said wheel and fairing assemblies may be pivoted from said first position to said second stored position; and

means for locking said set of wheel and fairing assemblies in said first and second positions.

4,762,332

WHEEL CHAIR

Mara T. Seol, Rochester, N.Y., assignor to Byung D. Yim, Rochester, N.Y.

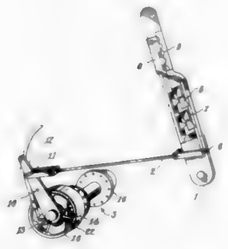
Filed Jun. 17, 1986, Ser. No. 875,135
Int. Cl.[4] B62M *1/04, 1/14*
U.S. Cl. 280—242 WC 12 Claims

1. A wheel chair equipped with a propulsion and speed change mechanism comprising a propulsion and speed change lever **1** having an elongated hole **7**, a plurality of movable stops **5** selectively spaced from each other along said hole **7**, a frame **18** with an axle **13** having a main wheel with a main wheel shaft **25**, a hub **24** on said shaft **25**, such shaft and hub being rotably mounted on said axle, a cylindrical fly-wheel **23** installed on the hub **24** of the wheel shaft **25** of the main wheel, a cam clutch **21**, roller bearings **16**, plate springs **22**, said cam clutch having a plurality of indentations with said roller bearings and plate springs located in said indentations, a forward and backward regulating device **15**, said cam clutch with said roller bearing plate, springs, forward and backward regulating device assembled therein being disposed inside said fly-wheel **23**, a first union gear **20** at the center of said cam clutch, a second union gear **19** disposed within and engaged with said second union gear **19** a propulsion and speed change bar **12** having said second union gear **19** mounted on the axis of rotation thereof so that said cam clutch **21** and said propulsion and speed change bar **12** move together as one body, said cam clutch **21** and the

VOL 1093 ISS 2 AG 9 1988 UMI

bar 12 being installed with a bearing 17 for rotation on the frame axle 13, a connecting rod having one end thereof connected to one of a plurality of holes 10 on said propulsion and speed change bar 12 with a fixing pin 11, said bar having an-





other end connected to a pin 6 movable in said hole 7 of the propulsion and speed change lever 1, and a forward and backward selector 4 connected to said forward and backward regulating device 15 with a wire.

4,762,333

REPOSITIONABLE HAND TRUCK

Carl N. Mortenson, Midland, Mich., assignor to Magline, Inc., Pinconning, Mich.

Filed Jan. 5, 1987, Ser. No. 364
Int. Cl.[4] B62B *1/12*
U.S. Cl. 280—43.1 12 Claims

1. In a two-wheeled hand truck structure incorporating an elongate upright frame adapted in use to assume a vertically inclined position and mounting a load-supporting forwardly projecting nose at its lower end, a pair of spaced apart wheel support brackets connected to the lower end of said frame above said nose and projecting rearwardly thereof, an axle connecting said brackets, and a pair of wheels, each rotatably mounted on an end of the axle, there being graspable means provided on the frame at its upper end, the improvement wherein:

a. pivot means pivotally connects said brackets to the frame for movement from a first load-supporting position in which the wheels are adjacent the lower end of the frame for supporting loads with a relatively lower center of gravity, to a second load-supporting position in which the wheels and axle are moved materially rearward for supporting loads with a relatively higher center of gravity; and

b. yieldable pressure exerting means connects between said brackets and frame at a spaced vertical distance from the connection of said brackets to said frame, and at a spaced distance rearward of said pivot means when the brackets are in said first position to provide a predetermined, over-



comeable, locking resistance exerted through a first moment arm lying on one side of said pivot means to pivoting movement of said brackets in a direction to swing said brackets to said second position, said yieldable pressure exerting means providing a predetermined overcomeable locking resistance when said brackets are in said second load supporting position, exerted through a second moment arm lying on the opposite side of said pivot means to pivoting movement of said brackets in a direction to swing said brackets and wheels forwardly.

4,762,334

FIFTH WHEEL BRACKET MOUNTING ASSEMBLY

Russell G. Altherr, Munster, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Nov. 3, 1987, Ser. No. 116,166
Int. Cl.[4] B62D *53/08*
U.S. Cl. 280—433 10 Claims



1. A fifth wheel bracket mounting arrangement for a tractor frame having a pair of transversely spaced and longitudinally extending channel members including inboard facing upper horizontal flanges extending from a vertical web, said bracket mounting arrangement comprising:

an angle member fixed to the outboard face of each of said vertical webs of said channel members;

a bracket mounting plate mounted on a horizontal leg of said angle and overlying said upper horizontal flange;

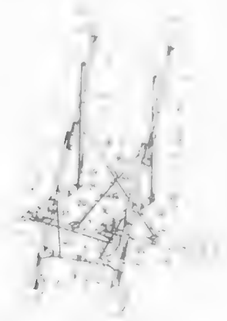
said mounting plate being fastened to said horizontal leg of said angle and clampingly secured along the free edge of said underlying upper horizontal flange of said channel members.

4,762,335

BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Aprica Kassai Kabushikikaisha, Osaka, Japan

Filed Mar. 27, 1987, Ser. No. 31,983
Claims priority, application Japan, Mar. 28, 1986, 61-72099; Jun. 24, 1986, 61-149051; Jul. 7, 1986, 61-159960
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—649 11 Claims



1. A baby carriage comprising a pair of front legs having front wheels on the lower portions thereof, a pair of rear legs having rear wheels on the lower portions thereof and turnably connected to said front legs by first pins at the intersections therebetween, a pair of seat support rods turnably connected at their front portions to the upper portions of said rear legs, a pair of push rods turnably connected at their lower portions to the upper portions of said front legs by second pins at the intersections therebetween, a pair of seat suspending rods turnably connected at their lower portions thereof to the rear portions of said seat support rods by third pins, said seat suspending rods being connected near their upper ends to the respective push rod by fourth pins, widthwise connecting means for interconnecting right and left sides of the baby carriage formed by said front legs, said rear legs, said seat support rods, said seat suspending rods and by said push rods, locking means arranged for fixing said baby carriage in an open state, said front legs, said rear legs, said seat support rods, said seat suspending rods, said push rods, and said widthwise connecting means having such lengths and positions that folding the baby carriage moves said rear wheels toward said front wheels and so that in the folded state, said rear wheels and said front wheels are positioned on substantially the same level, whereby the baby carriage can stand by itself, and wherein said front legs have front leg sleeves slidable thereon, said seat support rods having seat sleeves slidable thereon, and further pins journalling said front leg sleeves and said seat sleeves to each other at their intersections.

4,762,336

STRUCTURE FOR SUPPORTING LOWER SUSPENSION ARM ON VEHICLE CHASSIS

Hisashi Ogawa, Okazaki, and Kazuhiko Yamashita, Toyota, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 27, 1987, Ser. No. 54,788
Claims priority, application Japan, Jun. 6, 1986, 61-131535
Int. Cl.[4] B60G *3/00*
U.S. Cl. 280—673 13 Claims



1. A structure for supporting a lower suspension arm having a swinging axis of a vehicle suspension of a type employing a bracket which swingably connects said lower suspension arm to the chassis of the vehicle, comprising:

a main part of said bracket connected at a first connecting portion to said chassis and swingably supporting one end of said lower suspension arm;

an extension of said bracket extending from said main part in the longitudinal direction of said chassis, said extension being connected to said chassis at a second connecting portion which is vertically spaced from said connecting portion of said main part and on an opposite side of said swinging axis to said connecting portion of said main part, and

said first and second connecting portions being disposed with a difference in level therebetween, and said swinging axis being positioned between said first and second connecting portions.

4,762,337

SUSPENSION ASSEMBLY WITH STUB BOLSTER HANGER ASSEMBLY

John E. Raidel, Rte. 1, Box 400-M, Springfield, Mo. 65804

Filed Feb. 19, 1987, Ser. No. 16,542
Int. Cl.[4] B60G *11/26*
U.S. Cl. 280—688 8 Claims



1. A suspension assembly for a vehicle having an axle and a chassis including a side rail at a side of the vehicle and a like side rail at the opposite side of the vehicle, and having at least one vehicle component occupying a large area extending below the chassis and between the side rails, comprising a torque beam and axle seat assembly, means for connecting the torque beam and axle seat assembly to the axle, spring means connected between the chassis and the torque beam and axle seat assembly, a sleeve on the torque beam and axle seat assembly for mounting on a bushing, a hanger and stub bolster assembly including a verticle skirt, means for connecting the

VOL 1093 ISS 2 AG 9 1988 UMI

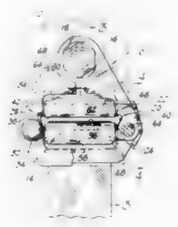
verticle skirt to the side rail with a lower portion of the skirt positioned below the side rail, a stub bolster beam connected on a transverse axis to the lower portion of the skirt at an elevation that affords minimum ground clearance of the suspension system and consequently locates the upper portion of the stub bolster beam higher than the lower portion of said at least one vehicle component, the stub bolster beam having an outboard section extending transversely outboard from the skirt and having an inboard end that terminates the stub bolster outboard of said at least one vehicle component, reinforcing means connected between the skirt and the stub bolster beam for increasing the ability of the hanger and stub bolster assembly to support loads applied to the stub bolster beam, said reinforcing means including a cross channel extending transversely between the stub bolster and a like stub bolster beam on the opposite side of the vehicle and having a cross section of less height than that of the stub bolster and having a length that locates opposite end portions of the cross channel member adjacent transverse areas of the stub bolster beams, means for connecting the end portions of the cross channel member to said transverse areas of the stub bolster beams whereby the stub bolster beams are reinforced against forces and moments applied by the torque beam and axle seat assembly, the uppermost extension of the cross channel member being located below and clearing said at least one vehicle component, the height of the cross channel member positioning its lower side above said minimum ground clearance, and a bushing assembly supported on a transverse axis by the outboard section of the stub bolster beam, the bushing assembly including an annular elastomeric bushing member, and the sleeve on the torque beam and axle seat assembly being mounted on the elastomeric bushing member thereby providing the outer bushing housing for the bushing assembly connecting the torque beam and axle seat assembly to the hanger and stub bolster assembly.

4,762,338

BELT CLAMPING GUIDE LOOP

Richard A. Hayden, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1987, Ser. No. 105,669
Int. Cl.[4] A62B *35/02;* B60R *21/10*
U.S. Cl. 280—801 5 Claims



1. A restraint belt guide loop assembly adapted to be mounted on the pillar of a vehicle body and slidably receive the belt from a retractor and deflect the belt diagonally across the occupant shoulder comprising:

a frame mounted on the pillar;

first and second belt clamping shoes movably mounted on the frame, the lower shoe underlying the belt so that downward acting tension on the belt urges the lower shoe downwardly, and the upper shoe overlying the belt;

means acting between the upper shoe and the lower shoe and forcing the upper shoe downwardly toward the lower shoe at a rate of downward movement greater than the downward movement of the lower shoe in response to the belt tension so that the belt becomes clamped between the shoes and against sliding movement through the frame.

4,762,339

SEAT FOR SKIER

Nicholas G. M. Hoek, Oude Kerkweg 10, 1251 NZ Laren, Netherlands

Filed Oct. 15, 1986, Ser. No. 918,901
Claims priority, application Netherlands, Dec. 10, 1985, 8503396
Int. Cl.[4] A63C *11/00*
U.S. Cl. 280—812 5 Claims



1. A ski seat structure comprising:

(A) two mutually parallel skis, having points on the leading ends, corresponding and straight trailing ends and sliding surfaces between respective ends, the respective sliding surfaces facing upwardly and the straight ends engaging the ground in spaced apart relation;

(B) two ski poles each having an upper handle end and having apertures passing therethrough and a lower end, the upper ends of the poles being adjacent each other, the lower ends engaging the ground in diverging spaced apart relation to each other and to the straight trailing ends of the skis;

(C) a seat bottom of flexible material, said seat bottom forming upper and lower edges which define transverse enclosures, said upper edge being bifurcated to form a longitudinal recess;

(D) upper and lower seat carrying bars, the said upper bar defining oblong openings adjacent ends thereof, the upper bar being guided into the apertures in the upper handle end of the respective ski poles, near the center of said upper bar whereby to secure the upper end handles of the poles adjacent each other, said upper bar being slideably enveloped in part by the transverse enclosure of the seat, and extending outwardly thereof, said lower bar likewise being slideably enveloped in part by the seat, free ends thereof resting loosely upon the sliding surfaces of the skis; the points of the leading ends of the skis being inserted within the respective oblong openings of the upper bar.

4,762,340

TIMING DEVICE FOR SKIERS

Oswald G. Addison, Jr., 6809 Nashville Rd., Lanham, Md. 20706

Filed Oct. 24, 1986, Ser. No. 923,139
Int. Cl.[4] A63C *11/22*
U.S. Cl. 280—816 4 Claims

1. In combination with the grip of a ski pole having a bore therethrough a first portion of which receives a top of a ski pole and a second portion of which extends above the top of the ski pole when the ski pole is inserted into the first portion; a timing device within the second portion, the improvement comprising:

an opening through the top of the grip and communicating with the second portion of the bore;

a push button slidably received in the opening and having a face exposed at the top of the grip;

a stem attached to the push button and projecting down into the second portion of the grip;

a pin-in-slot connection coupling the stem to the wall of the second portion of the bore so as to allow the push button limited movement in the first and second axial directions;

a fixed surface in the second portion of the bore;

spring means disposed between the fixed surface and the push button for urging the push button in the first axial direction;

a timer in the grip, the timer having a face with timing indicia exposed for viewing external to the grip;

acctivating means linking the stem to the timing means for operating the timing means upon pushing the push button in the second direction against the bias of the spring means;





sealing means between the push button and the inner wall of the bore for minimizing entry of moisture into the bore which moisture might interfere with operation of the push button or timer should the moisture accumulate within the bore; and

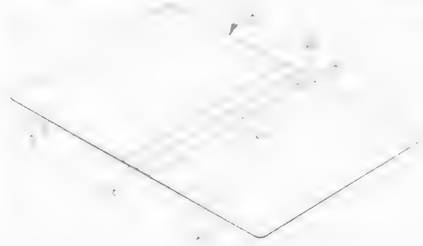
weep hole means extending through the grip from the second portion thereof to a point open to the atmosphere to allow moisture which may have entered the second portion of the bore to escape.

4,762,341

BOOKLET COVER

George R. Rabuse, Sunfish Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 4, 1985, Ser. No. 719,698
Int. Cl.[4] B42D *1/10, 3/00*
U.S. Cl. 281—29 15 Claims



1. A cover adapted for covering and supporting paper sheets of known length and width bound together along shingled edges of the sheets by a length of the commercially available pressure sensitive adhesive coated "Scotch" brand binding tape No. C-7888, which binding tape has a portion extending beyond the edges of the bound sheets adapted to be adhered to the cover to form a booklet or brochure. said cover comprising

a sheet of paper cover stock of a predetermined size for covering the bound sheets when folded generally centrally of said sheet along a fold line, and

a continuous protective coating on said sheet along and adjacent both sides of said fold line for protecting said paper cover stock, said coating affording sufficient adhesion of the pressure-sensitive adhesive on said binding tape to said protective coating to hold sheets bound by said binding tape to said cover and affording release of said binding tape therefrom under peeling forces without deleterious effect to said coating, the paper cover stock or to the binding tape, which adhesion requires a removal peel force of between 200 and 700 grams per 1.27 cm of said binding tape width under standard peel adhesion test ASTM D 3330-81 for pressure sensitive adhesive tape.

4,762,342

MANIFOLD FORM ASSEMBLY

Gary J. Thompson, 2610 Brookdale, Green Bay, Wis. 54303

Continuation-in-part of Ser. No. 921,964, Oct. 22, 1986, Pat. No. 4,715,620. This application Nov. 17, 1987, Ser. No. 121,522
Int. Cl.[4] B41L *1/20, 1/16;* B41M *5/10*
U.S. Cl. 282—9 R 14 Claims



1. An integral manifold form assembly for providing a completed two-sided original document and a completed copy of the original document, comprising:

an original front page disposed on one side of a first sheet, said original front page having at least one image-receiving area disposed thereon;

an original back page disposed on the other side of said first sheet, said original back page having at least one image-receiving area disposed thereon;

pressure sensitive image-transferring means integral with the form assembly for transferring pressure-created images formed on said original front page image-receiving area and on said original back page image-receiving area;

a duplicate of said original front page integral with the form assembly, said duplicate front page having at least one image-receiving area disposed thereon corresponding substantially to said original front page image-receiving area;

a duplicate of said original back page integral with the form assembly, said duplicate back having at least one image-receiving area disposed thereon corresponding substantially to said original back page image-receiving area; and

binder means for connecting said first sheet, said duplicate front page, said duplicate back page, and said image-transferring means into an integral form assembly, said assembly being adapted to accommodate movement of said first sheet between a first position in which said original front page is exposed and a second position in which said original back page is exposed, so that pressure-created images formed on said original front page image-receiving area are transferred to said duplicate front page image-receiving area by said image-transferring means when said first sheet is in said first position, and pressure-created images formed on said original back page image-receiving area are transferred to said duplicate back page image-receiving area by said image-transferring means when said first sheet is in said second position, for providing a completed original front page and a completed original back page on said first sheet, and for providing a copy of said original front page on said duplicate front page and a copy of said originai back page on said duplicate back page.

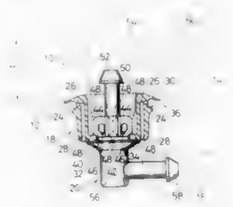
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,343

TUBE CONNECTOR

Toshio Hirokata, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Sep. 11, 1987, Ser. No. 96,046
Claims priority, application Japan, Sep. 29, 1986, 61-149162[U]
Int. Cl.[4] F16L 5/00
U.S. Cl. 285—158 1 Claim



1. A tube connector comprising a cylindrical socket for mounting in a hole in a plate or the like, said socket having external means for keying said socket in said hole in a predetermined position, said socket further having resilient retainer means for snapping through said hole to retain said socket in said plate or the like, said socket further having adjacent an upper edge thereof a resilient circumferential flange of frusto-conical configuration for resiliently bearing against a face of said plate or the like opposite said retainer means, and said socket further having a hollow core with a transverse lower wall, said well having a regular polygonal aperture with a predetermined number of sides therethrough, and a connector interfitting with said socket and including a lower cylindrical portion, an upper cylindrical portion upsatnding from said lower cylindrical portion, a lateral tubular portion extending from said lower cylindrical portion, said upper and lower cylindrical portions and said lateral tubular portion having a continuous bore therethrough, a lateral resilient flange of frusto-conical configuration resiliently engageable with said wall of said socket from an underside thereof, a polygonal portion complementary to said polygonal aperture and of said predetermined number of sides disposed adjacent said lateral resilient flange, and a plurality of vertical resilient walls above said polygonal portion and extending radially from said upper cylindrical portion, said walls being of said predetermined number and equally arcuately spaced so that said walls are respectively spaced midway between apices of said polygonal portion, said connector being axially insertable into said socket through said socket wall with said walls directed toward the apices of said aperture in said socket wall, and thereafter turnable to dispose said polygonal portion complementarily in said polygonal aperture with said walls disposed against an upper surface of said socket wall.

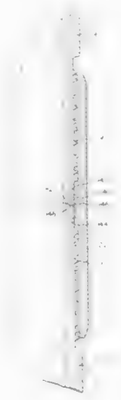
4,762,344

WELL CASING CONNECTION

Lee E. Perkins, 159 St. George Rd., Schriever, La. 70295, and James J. Petrella, Houma, La., assignors to Lee E. Perkins, Schriever, La.

Continuation of Ser. No. 696,425, Jan. 30, 1985, abandoned. This application Feb. 6, 1987, Ser. No. 15,499
Int. Cl.[4] F16L 55/00
U.S. Cl. 285—175 5 Claims

1. A threaded connection for oil and gas well pipe sections, said connection comprising: a first pipe section having an external thread formed thereon and having an end terminating in a first sealing surface, said thread having a first pitch; a second pipe section having an external thread formed thereon and having an end terminating in a second sealing surface for cooperative engagement with said first sealing surface and adapted for sealing engagement therewith, said second pipe section external thread having a second pitch different from the first pitch, said threads on each of said first and second pipe sections being of the same hand when said pipe ends are opposite each other; an internally threaded tubular connector adapted to engage with the respective threaded ends of said pipe sections, said connector having first threads adjacent one end thereof engagable with and having the same pitch as the threads on said first pipe section and having second threads adjacent the other end thereof engageable with and having the same pitch as the threads on said second pipe section, each of



said first and second threads of said connector having the same; and said first and second pipe sections being threadedly engaged with the corresponding threads of said connector so that final tightening of the section can be accomplished by rotating the connector relative to the pipe sections and without relative rotation between the pipe sections, to draw the pipe ends together axially, without relative sliding between the respective sealing surfaces until the sealing surfaces are engaged under compressive stress, the pitch of said first thread being at least three times the pitch of said second thread.

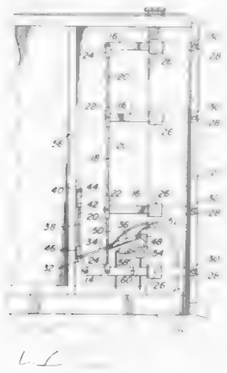
4,762,345

AIR OPERATED POSITIVE LOCK FOR REFUSE TRAILER AND THE LIKE

Eugene F. Stluka, Haverford, and William J. Huber, Audubon, both of Pa., assignors to Florig Equipment Company, Inc., Conshohocken, Pa.

Filed Mar. 31, 1987, Ser. No. 32,869
Int. Cl.[4] E05C 19/12
U.S. Cl. 292—26 22 Claims

1. Apparatus for locking a trailer door, comprising:
(a) a trailer;
(b) a door rotatably connected to said trailer;
(c) means for locking/unlocking said door in a closed position, said means including:
(i) a fluid actuated cylinder having a free end and a fixed end, said fixed end being rotatably connected to said trailer;
(ii) a control member rotatably connected to said trailer, said control member having a first position for locking said door in its closed position, and a second position for unlocking said door from its closed position;
(iii) a control link having a first end rotatably connected to said control member, and a second end rotatably connected to said fluid actuated cylinder free end, said link having its second end beyond top dead center when said control number is in its first position;
(iv) an adjustable link, having a fixed end rotatably connected to said trailer, and a free end rotatably connected to both said fluid actuated cylinder free end and said second end of said control link; and



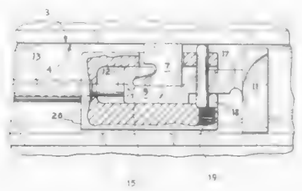
(d) a control mechanism for selectively moving said control member between its first and second positions.

4,762,346

PERIPHERALLY ARRAYED CLOSURE FASTENER SYSTEM

William J. King, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Comapny, Wilmington, Del.

Filed Jul. 20, 1987, Ser. No. 75,777
Int. Cl.[4] E05C 9/24
U.S. Cl. 292—38 10 Claims



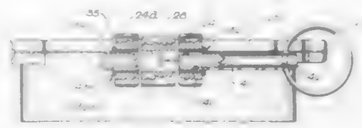
1. A peripheral locking mechanism in combination with a frame enclosing an aperture and a closure for the aperture which, in the closed configuration, provide mating surfaces on the frame and closure, the locking mechanism comprising at least two latches mounted on either the frame or the closure, hooks on the opposite mating surface positioned to engage the latches, at least one polymeric member extending between two of the latches around a portion of the perimeter of the aperture including at least one corner thereof and mounted in a track on one of the mating surfaces, means for moving each polymeric member in its track, each polymeric member being connected to two latches in a manner such that the movement of one latch transmits force through the polymeric member to cause movement of the second latch to engage the corresponding hooks.

4,762,347

SECURITY DOOR AND LOCK ASSEMBLY

Allen D. Siblik, Lindenhurst, Ill., and James C. Babusek, Twin Lakes, Wis., assignors to Hallen Products, Ltd., Gurnee, Ill.

Filed Jul. 29, 1987, Ser. No. 78,964
Int. Cl.[4] E05C 1/04
U.S. Cl. 292—147 11 Claims



1. A system for securing a pivotally moveable closure member to a stationary frame member, comprising: a pair of laterally spaced female projections on one of the members, at least one male projection on the other member aligned to interfit with said female projections; all said projections being formed with transverse through openings and being arranged to lie adjacent one another so that said openings are coaxially aligned when said closure member is is closed position over said frame member; a non-rotatable, elongated bolt slidably attached to one of said female projections for movement coaxially through said aligned openings, manually engageable means at one end of said bolt for manually actuating the same, and detent means adjacent the other end of said bolt and operable to independently engage each of said spaced female projections for removeably retaining said bolt in corresponding first and second positions.

4,762,348

ELECTRIC DOOR LOCK SYSTEM

Masaharu Matsumoto, Yokohama, Japan, assignor to Obi Seisakusho Co., Ltd., Yokohama, Japan

Filed Oct. 29, 1986, Ser. No. 924,415
Claims priority, application Japan, Oct. 30, 1985, 60-241339
Int. Cl.[4] E05C 13/10
U.S. Cl. 292—201 15 Claims



1. An electric door lock system comprising:
a door lock device including a latch plate movable between a half-latched position, a full-latched position, and an open position and engageable with a striker and a pawl plate engageable with said latch plate to lock the same;
an output member means which is movable in first and second directions;
an actuator means having a first actuation means and a second actuation means for moving the output member means in said first and second directions, selectively;
a door locking mechanism means which moves said latch plate from said half-latched position to said full-latched position when said output member is moved in said first direction;
a lock releasing mechanism means which cancels the locked engagement of said pawl plate with said latch plate when

VOL 1093 ISS 2 AG 9 1988 UMI

said output member means is moved in said second direction;

a lock releasing switch means which actuates the lock releasing mechanism means and operates when opening of the door is required;

a locking and unlocking switch means which actuates the door locking mechanism means and operates when locking and unlocking of the door are required;

a half-latched condition sensor means which senses the reaching of said latch plate to said half-latched position from said open position; and

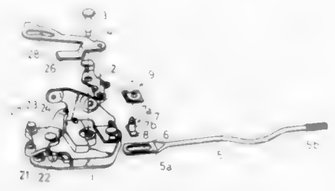
a control means for controlling the operation of said door lock system and includes a locked and unlocked condition memory means which memorizes either the locked condition of the door or the unlocked condition of the same, a control selection means which makes said lock releasing switch means operative when said memory means memorizes said unlocked condition of the door and makes said lock releasing switch means inoperative when said memory means memorizes said locked condition of the door, the first actuation means which moves said output member means in said second direction when said control selection means makes said lock releasing switch means operative and the lock releasing switch means is manipulated, and the second actuation means which moves said output member means in said first direction when the half-latched condition sensor senses reaching of the door to the half-latched position.

4,762,349

LATCH FOR AN AUTOMOBILE DOOR

Ichio Ikeda, Aichi, Japan, assignor to Kabushikikaisha Anseikogyo, Aichi, Japan

Filed Apr. 17, 1987, Ser. No. 39,248
Claims priority, application Japan, Sep. 19, 1986, 61-221467
Int. Cl.[4] E05C 3/26
U.S. Cl. 292—216 4 Claims



1. A latch for an automobile door including:

(a) a latch body including a latching member, a ratchet for holding said latching member, and an opening lever for releasing the hold of said latching member by said ratchet, said latching member, ratchet and opening lever mounted relative to a base frame;

(b) an opening rod having one end connected with said opening lever and another end connected with a door handle of said automobile; and

(c) a connection means for connecting said opening lever to said one end of said opening rod comprising:

a pin, said pin including a shaft portion, a root portion at one end of said shaft portion and a slip-out prevention member at the other end of said shaft portion, said shaft portion being connected, at the root portion thereof, to said opening lever;

an elongate rest mounted rotatably on said shaft portion between said opening lever and said slip-out prevention member;

a push plate mounted for movement in the axial direction of said shaft portion between said opening lever and said elongate rest and biased towards said elongate rest;

an elongate hole formed in said one end of said opening rod for insertion of said shaft portion, the longitudinal and transverse dimensions of said elongate hole being larger than the longitudinal and transverse dimensions of said elongate rest, respectively, and the transverse dimension of said elongate hole being smaller than the longitudinal dimension of said elongate rest; and

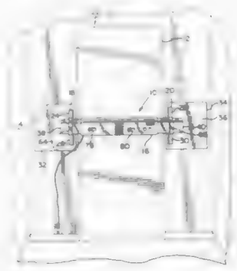
an extension protruding from said push plate beyond the periphery of said elongate rest in the direction perpendicular to the axis of said shaft portion and preventing said push plate from passing through said elongate hole in said opening rod when said elongate rest is inserted in said elongate hole.

4,762,350

CROSS BAR LOCKING DEVICE

Otto Hurtado, 2139 N. Milwaukee Ave., Chicago, Ill. 60647

Filed Oct. 13, 1987, Ser. No. 107,106
Int. Cl.[4] E05C 17/54
U.S. Cl. 292—259 R 20 Claims



1. A modular electric door lock for securing a door having a left side and right opposite side, said door lock comprising:

a tubular housing member;

means for selectively affixing said tubular housing member to said door;

a pair of bracket members affixed to door support means proximate said opposite sides of said door and aligned with said tubular housing member;

a pair of oppositely disposed slide members contained within said housing member and including means for telescopic extension of said slide members from said housing into said brackets, and means for retraction of said slide members from said brackets back into said housing member;

said means for telescopic extension and retraction compromising electric motor means contained within said tubular housing and engaged with said slide members for selectively extending said slide members from said tubular housing into telescopic engagement with said bracket members and for retracting said slide members back into said housing member, as desired;

means for supplying an electrical motor means for selectively actuating said electric motor means; and

switching means connected to said electric motor means for selectively actuating said electric motor means.

4,762,351

SECURITY DEVICE FOR DOORS

Edward W. Bowman, 1891 Irvine Blvd., Tustin, Calif. 92680

Filed Jun. 7, 1985, Ser. No. 742,289
Int. Cl.[4] E05C 17/32
U.S. Cl. 292—263 11 Claims

1. A security device for limiting the size of a passageway between an edge of a door and a door frame in which said door is mounted, comprising:

a first base member having a slot, said slot having an open end and a closed end;

means for mounting said first base member on one of said door and said door frame;

a second base member;

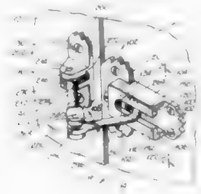
means for mounting said second member on the other of said door and said door frame in close proximity to said first base member when said door is closed to obstruct said passageway;

a first connecting member having a first end and a second end;

first pivot means for pivotably mounting said first end of said first connecting member to said second base member, said first pivot means having a first pivot axis so that said first connecting member pivots about said first pivot axis;

a second connecting member having a first end and a free second end;

second pivot means for pivotably mounting said first end of said second connecting member to said second end of said first connecting member, said second pivot means having



a second pivot axis parallel to said first pivot axis so that said second connecting member pivots about said second pivot axis, said free second end of said second connecting member removably engageable with said slot in said first base member, said first and second connecting members interconnecting said first and second base members when said free second end is engaged in said slot to thereby limit the distance that said edge of said door can be moved away from said door frame; and

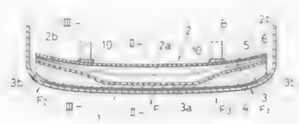
a first biasing member mounted at said first pivot axis, having a first end engaging said second base member and a second end engaging said first connecting member, said first biasing member providing tension between said second base member and said first connecting member to cause said first connecting member to pivot about said first pivot axis to a position away from said edge of said door so that said free second end of said second connecting member does not extend into said passageway.

4,762,352

SYNTHETIC RESIN BUMPER ASSEMBLY

Koji Enomoto, Utsunomiya, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 25, 1986, Ser. No. 934,891
Claims priority, application Japan, Nov. 29, 1985, 60-267291
Int. Cl.[4] B60R 19/02
U.S. Cl. 293—120 3 Claims



1. A bumper for a motorcar comprising:

a backup beam formed of a hollow beam member and having a depth, a length, a front surface, a back surface, portions on said back surface for mounting to left and right stays of the motor car, a middle portion extending between the mounting portions, terminal ends, and end portions extending between said middle portion and said terminal ends,

a shock absorbing member made of a foamed synthetic resin attached to said front surface of said backup beam and having a depth, and

a facing member made of synthetic resin having a channel-shaped cross-section and covering front, upper, and lower surfaces of said shock absorbing member and said backup beam;

said backup beam being made of a composite fiber-reinforced synthetic resin material;

said depth of said backup beam being comparatively large at said middle portion and comparatively small at said end portions;

said depth of said shock absorbing member being in inverse relation to said depth of said backup beam such that a combined depth of said shock absorbing member and said backup beam may be nearly constant along the entire length thereof.

4,762,353

FLEXIBLE CARRIER FOR SEMICONDUCTOR WAFER CASSETTES

James S. Molinaro, Whitehall, Pa., assignor to Dexon, Inc., Minneapolis, Minn.

Filed Mar. 9, 1987, Ser. No. 23,194
Int. Cl.[4] B65D 71/00
U.S. Cl. 294—1.1 8 Claims



1. Apparatus for transporting semiconductor material cassettes during processing, comprising:

(a) a tray having two wafer cassette stations thereon, said cassette station comprising:

a cassette supporting surface;

a first pair of substantially parallel cassette guides on said supporting surface; and,

a second pair of substantially parallel cassette guides on said supporting surface located between and substantially at right angles to said first pair to form a generally rectangular boundary, said stations are approximately equal in size;

b. a handle neck extending upwardly from the same side of the tray as the cassette guides and between said stations, and located in a plane that intersects and is perpendicular to said tray;

c. a handle crosspiece connected to the handle neck and having a bearing surface oriented substantially parallel to the plane of said parallel wafer cassette guides and said tray and,

d. picker means for engaging the handle neck and handle crosspiece, said picker means having a pair of substantially parallel fingers separated by a distance slightly larger than the width of said neck and said fingers having in them substantially parallel transverse grooves slightly wider than the width of said handle crosspiece; and, at least one

VOL 1093 ISS 2 AG 9 1988 UMI

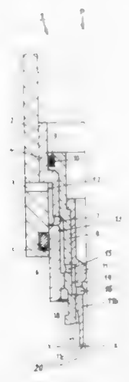
fillet located between the handle neck and handle crosspiece, whereby when the fingers of the picker means straddle the handle neck and approach the handle crosspiece for engaging and lifting the apparatus, the fillet guides the picker means and the handle neck and handle crosspiece into the desired engagement relationship with each other.

4,762,354

DEVICE FOR PICKING AND TRANSPORTING COMPONENTS

Martin Gfeller, Schaiunen, and Rudolf Wanner, Rüttenen, both of Switzerland, assignors to Zevatech AG, Bellach, Switzerland

Filed Nov. 12, 1986, Ser. No. 929,993
Claims priority, application Switzerland, Nov. 12, 1985, 4831/85
Int. Cl.[4] B25J *15/06*; B65G *47/91*
U.S. Cl. 294—2 14 Claims



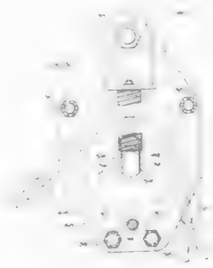
1. A device for picking and transporting components, said device comprising:
an elongate hollow casing movable toward and away from a component and having a vacuum inlet for connection to a vacuum source;
first and second concentric telescopic gripping elements located in said casing and movable relative to each other, each of said first and second gripping elements having an end surface facing the component and a suction opening formed in said end surface, said casing having a first position in which the end surface of the first gripping element having a suction opening formed therein is located farther away from the component than the end surface of the second gripping element having a suction opening formed therein, and a second position in which the end surfaces comprising a suction opening of the first and second gripping elements are located in a common plane;
conduit means for communicating said suction openings with said vacuum inlet; and
means for blocking communication between said vacuum inlet and the suction opening of the first gripping element in the first position of said casing;
said conduit means comprising first and second axial passages formed in said first and second gripping elements, respectively, for communicating the respective suction openings of said first and second gripping elements with said vacuum inlet, and said blocking means comprising first control edges formed on said first and second gripping elements for blocking communication between said first axial passages and the suction opening of the first gripping element in said first position of said casing.

4,762,355

SELF EQUALIZING LIFTING DEVICE

John P. C. Hogg, 2 Ghyll Beck Drive, Rawdon Leeds LS19 6RB, England

Continuation-in-part of Ser. No. 858,918, May 2, 1986, abandoned. This application Jan. 6, 1987, Ser. No. 758
Claims priority, application United Kingdom, Jun. 26, 1985, 8516149
Int. Cl.[4] B65H *57/14*; B66C *1/14*
U.S. Cl. 294—82.12 11 Claims



1. In a lifting device for lifting a load and comprising:
(a) a support block comprising a pair of spaced side plates having a top end and a bottom end;
(b) slots in said side plates and extending in a direction from top to bottom of said side plates;
(c) a guide wheel assembly comprising a spindle and a guide wheel body;
(d) ends on said spindle, said spindle ends received in said slots;
(e) sprocket teeth on said guide wheel body;
(f) a locking pin extending between said plates and located at the bottom ends of the side plates;
(g) spring means connected between the ends of the spindle and the side plates urging the wheel assembly towards the top ends of said side plates;
(h) suspension means at the top ends of the side plates by which the device may be suspended by a crane hook;
(i) a length of flexible suspension member passing over the wheel body and of which the ends are attached to a load when in use, the tension in the load-producing a tension in the suspension member urging the wheel assembly towards the bottom ends of the side plates against the spring means, in which position the pin engages between the said teeth preventing rotation of the guide wheel body relative to the side plates,
the improvement residing in that said slots and spindle are so arranged when the load supported by the device is greater than the spring force of the spring means the spindle rests on the bottom of the slots so that the plates take the load, the pin between the teeth taking no direct loading but serving only as a means resisting the turning of the guide wheel body.

4,762,356

ENDER AND CHOKER HOOK FOR LOGGING RIGGING

David J. Robins, E. 10420 Mission Ave., Spokane, Wash. 99206

Filed Dec. 4, 1986, Ser. No. 938,712
Int. Cl.[4] B66C *1/14*
U.S. Cl. 294—82.14 4 Claims

1. A choker hook for logging rigging to releasably fasten a ferruled end of a choker cable on a hauling cable comprising, in combination:
a cable eye structure peripherally defining an eye to slidably fit about a hauling cable;
a peripherally defined cylindrical body, having an upper part and a lower part, defining a medial chamber, carrying the cable eye structure in its upper part, and having a bottom disk in its lower part, said cylindrical body defining an entry orifice communicating with the medial chamber defined by said body, a first slot portion angling downwardly and radially approximately 90 degrees, and a downwardly extending second slot portion communicating with a third horizontal slot defined more than half way through the bottom disk, said first, second and third aforesaid slots having width sufficient to allow slidable motion of a hauling cable therein but insufficient to allow passage of an enlarged end of a hauling cable therethrough; and
ferrule stop means carried in the upper part of the medial body chamber by the lower portion of the cable eye structure, said ferrule stop means extending downwardly at an angle away from the entry orifice and being positioned at a spaced distance from the entry orifice, slightly greater than the length of the ferrule on a choker cable to be fastened by the choker hook, to require a choker cable having a ferruled end to be placed in the choker hook with its ferruled end extending inwardly and downwardly through the entry orifice and to the ferrule stop means and then being moved through approximately a 180 degree angle and along the second angled slot to the third slot defined in the bottom disk, with the ferruled end resting on the upper surface of the bottom disk and with the associated cable depending therefrom and through the third slot, all to aid in preventing accidental dislodgement of the choker cable from the choker hook.

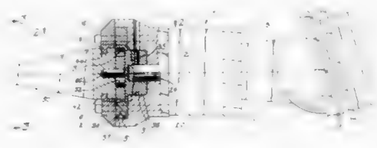


4,762,357

LINEAR ACTION GRIPPER FOR A ROBOT

Samuel Bergamo, Metamora, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 12, 1987, Ser. No. 84,183
Int. Cl.[4] B25J *15/08*
U.S. Cl. 294—119.1 1 Claim



1. A linear action gripper for a robot or the like, said gripper in combination comprising:
a frame, said frame having a top portion for coaxial connection with said robot or the like, and said frame having a first small diameter indention and a second larger diameter indention and said frame having a threaded fastener connected lower portion, said lower portion forming a linear track with tongues;
a selectively activated power rotary actuator connected with said frame and rotatable along a first axis;
a circular plate perpendicularly connected with said actuator having a small diameter portion mounted within said first frame indention and a second larger diameter mounted within said second larger indention, said circular plate being rotatable in said first axis, said circular plate having two common diameter constant radius semicircular slots, said slots ending on a common diameter of said plate and wherein the distance between the inner most intersections of said semicircular slots with said common diameter is equal to the radius of said slots; and
two sliders mounted to said lower portion, said sliders having grooves mated with and captured by said tongues for linear movement perpendicular with said first axis, said sliders being geometrically spaced with respect to said actuator for gripping and centering an object along said first axis, each said slider having a pin cammingly engaged with one of said semicircular slots of said plate whereby said sliders are movable in opposite directions in response to rotation of said plate when said actuator is activated and each of said sliders is cammingly locked in position when said actuator is not activated.

4,762,358

AUTOMOTIVE SUN SCREEN

John M. Levosky, El Paso; Jack A. Dowdy, Canutillo, and Carlos Herrera, El Paso, all of Tex., assignors to J. Viola, Jr., El Paso, Tex.

Continuation of Ser. No. 806,047, Dec. 6, 1985, abandoned. This application Apr. 8, 1987, Ser. No. 36,194
Int. Cl.[4] B60J *3/02*
U.S. Cl. 296—97 G 18 Claims



1. A lightweight sun screen to cover a window in a vehicle comprising:
an elongated frame;
a screen secured to said frame and selectively movable from an extended position wherein said screen covers the window and a retracted position wherein said screen is retracted from the window;
a roller pivotally mounted to said frame;
said screen connected to said roller;
biasing means mounted with said roller to selectively retain said screen in said retracted position, rolled up on said roller; and
means for mounting said frame further comprising:
a substantially planar mounting surface on said frame;
at least one mounting member adapted to be mounted adjacent to the window of a vehicle;
pivot means with said mounting member and mounting surface for allowing each said mounting member to pivot about an axis in a plane substantially perpendicular to the longitudinal axis of said frame;
said pivot means further comprises:
a first bracket secured to said mounting surface having at least one bore thereon;
a second bracket, secured to said mounting member, having at least one bore thereon;
fastening means for securing said bores on said first and second brackets in alignment with each other for allowing said second bracket to pivot with respect to said first bracket;
said mounting means allowing each said mounting member to be aligned to windows of different curvatures, where-

VOL 1093 ISS 2 AG 9 1988 UMI

upon the sun screen can be secured interchangeably to screen a substantially flat window and a curved window in a number of different vehicles.

4,762,359

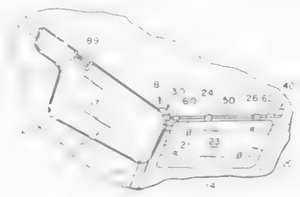
VISOR SYSTEM

Edward T. Boerema, Zeeland; Michael J. Suman, and Dennis J. Fleming, both of Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Continuation of Ser. No. 667,765, Nov. 2, 1984, Pat. No. 4,690,450. This application Mar. 5, 1987, Ser. No. 21,978

Int. Cl.[4] B62J *3/02*

U.S. Cl. 296—97 K **9 Claims**



1. A visor system for selectively providing simultaneous sun blocking protection for the windshield and a side window of a vehicle, in which an angled pillar extends between the windshield and the side window comprising:

a pair of brackets adapted to be mounted in spaced relationship above a vehicle window;

a first visor pivotally coupled to one of said brackets for independent movement of said visor in a generally horizontal direction to selectively and independently provide sun blocking for either a side window or the windshield;

a second visor having a horizontal length substantially less than that of said first visor, said second visor having a first edge which is proximate the pillar between the vehicle windshield and side window when mounted to the vehicle; and

means for mounting said second visor for sliding movement between said brackets, said mounting means and said second visor coupled to be movable together about an axis parallel to the longitudinal axis of said second visor such that when said second visor is moved between a raised, stored position adjacent the vehicle roof and a lowered use position adjacent the vehicle windshield said mounting means rotates with said second visor; and wherein said brackets and said mounting means permit said first visor to be moved from a raised, stored position to a lowered use position and subsequently moved to a side window use position with said second visor remaining in a stored position against the vehicle headliner to provide said independent movement of said first visor.

4,762,360

DEMOUNTABLE PICK-UP TRUCK TONNEAU COVER

Roy L. Huber, 11609 Lehigh Court, Plymouth, Mich. 48170

Filed Oct. 21, 1986, Ser. No. 921,618

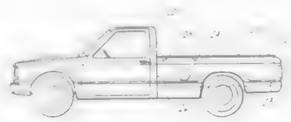
Int. Cl.[4] B60P *7/02*

U.S. Cl. 296—100 **22 Claims**

1. In a pick-up truck having a chassis-mounted cargo box comprising a generally horizontal floor and a generally vertical wall structure cooperating with said floor to form a cargo space which is bounded on the bottom by said floor and laterally by said vertical wall structure, but which is open at the top, said vertical wall structure including a gate which is movable from a position laterally bounding the cargo space to a position which does not laterally bound the cargo space, and a tonneau cover cooperating with the open top of the cargo box to enclose the cargo space at the top, the improvement which comprises:

said cover comprising a relatively rigid, but relatively lightweight, panel, which, when disposed in cooperative relationship with the open top of the cargo box to enclose the cargo space, is generally horizontally disposed, said panel comprised of a relatively rigid plastic cellular core, a thin upper outer skin bonded to the upper and outer surfaces of the cellular core and a thin lower wall joined to the cellular core;

means for releasably securing said panel to said vertical wall structure comprising at least one releasable latch disposed at a selected location for performing a releasable latch



function between the panel and said vertical wall structure, means for operating said releasable latch from latching to non-latching condition, said means for releasing said latch being substantially within the interior of the lightweight panel, including at least one operator means which is remote from said releasable latch and which, when the panel is disposed on the box in covering relation to the cargo space and the gate is in laterally bounding relation to said cargo space, is inaccessible for operation;

and means for releasably locking said gate in laterally bounding relation to said cargo space by means of a key-operated mechanism which is accessible for operation exterior of the cargo space.

4,762,361

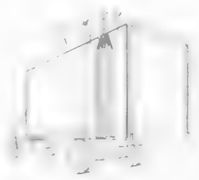
FOLDING DEVICE FOR HEAVY CURTAINS

Terry Horton, Whittier, and Emilio Zavalza, Walnut, both of Calif., assignors to Utility Trailer Mfg. Co., City of Industry, Calif.

Filed Jun. 19, 1987, Ser. No. 64,102

Int. Cl.[4] B60J *5/06*

U.S. Cl. 296—181 **2 Claims**



1. A curtain sided vehicle having at least one open side to provide access to the cargo area of said vehicle, the open side being closed by two slideable doors and a foldable curtain, said foldable curtain is attached to and extends between the slideable doors, the foldable curtain is comprised of a plurality of horizontally spaced pole pockets defining a plurality of panels, located in said pole pockets are poles extending vertically from the bottom of said foldable curtain to the top of said foldable curtain, said poles being securely fastened to said foldable curtain, at least two of said panels comprising the area between pole pockets the improvement comprising:

a hinge pocket, said hinge pocket having a right pocket and a left pocket, each said right and left pocket overlapping onto a pole pocket and extending horizontally to the horizontal center portion of said panel,

vertical rod pocket means extending vertically from the lower portion of said panel to the upper portion of said panel and located in substantially the horizontal center of said panel and adapted to accept a vertical rod,

biased hinge means adapted to be inserted into said hinge pockets and to be connected to said vertical rod at the center portion of said biased hinge means, said biased hinge means being adapted to urge the center portion of said panel and said vertical rod away from the cargo area of said curtain sided vehicle.

4,762,362

FOLDING PIECE OF FURNITURE

Oswald Brunn, Bunzlauer Platz 1, 8000 Munich 50, Fed. Rep. of Germany D-8000

Filed Aug. 7, 1987, Ser. No. 83,608

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1986, 3634986

Int. Cl.[4] A47C *4/00*

U.S. Cl. 297—26 **10 Claims**



1. A folding piece of furniture such as a stool comprising:

a seat portion;

a first leg pair and a second leg pair, each pair disposed laterally on opposing sides of said seat portion;

a first plate including a first guiding groove and a first bearing pin, said first bearing pin rotatably connecting said first plate to a chosen leg of said first leg pair;

a second plate including a second guiding groove and a second bearing pin, said second bearing pin rotatably connecting said second plate to a chosen leg of said second leg pair;

each said first and second guiding grooves being shaped to define a substantially straight groove region substantially parallel to said seat portion, an arcuate groove region merging with one end of said straight region and adjoining a bearing pin, and a plurality of detent grooves at various heights above said straight region merging with a second end of said straight region;

a guiding pin, attached to each leg not rotatably connected to a plate, adapted to engage a guiding groove in a plate;

whereby when folded, each guiding pin engages an arcuate section of a guiding groove enabling a substantially parallel displacement of each leg pair, and when unfolded for seating each guiding pin engages a chosen detent groove allowing the seat portion to be variably inclined.

4,762,363

EXERCISE CHAIR

Victor R. Hart, 156 Camden High St., London NW1 One, England

PCT No. PCT/GB86/00267, § 371 Date Jan. 9, 1987, § 102(e) Date Jan. 9, 1987, PCT Pub. No. WO86/06598, PCT Pub. Date Nov. 20, 1986

PCT Filed May 14, 1986, Ser. No. 5,440

Claims priority, application United Kingdom, May 14, 1985, 8512211; Nov. 11, 1985, 8527761

Int. Cl.[4] A47C *13/00*

U.S. Cl. 297—113 **3 Claims**



1. An apparatus arranged to rest on a substantially level and horizontal support surface and convertible between a chair configuration and an exercise machine configuration, the apparatus comprising a front frame member of generally L-shaped cross-section having a vertical portion and a horizontal portion substantially perpendicular thereto, a substantially straight rear frame member, said rear frame member being pivotally connected to the end of said horizontal portion remote from said vertical portion, a pull-resistant means and a detachable seat member, wherein, in the chair configuration, said horizontal portion is arranged to engage the horizontal support surface and to constitute the support means for the chair thereon, said rear frame member is pivoted to a first position substantially perpendicular to said horizontal portion and constituting the back of the chair, and said seat member extends parallel to said horizontal portion and is detachably connected to and extends between the upper end of said vertical portion of said front frame member and a point on said rear frame member, and wherein, in the exercise machine configuration, said rear frame member is pivoted relative to said front frame member to a second position constituting an extension of said horizontal portion of said front frame member and said seat member is movably mounted thereon, and one end of said pull-resistant means is attached to one of said frame members, the other end of said pull-resistant means being provided with handle means.

4,762,364

CHILD RESTRAINT DEVICE

Quentin Young, San Antonio, Tex., assignor to Rock-A-Bye Restraint Company, Inc., San Antonio, Tex.

Filed Aug. 4, 1987, Ser. No. 82,195

Int. Cl.[4] A47D *1/10*

U.S. Cl. 297—250 **13 Claims**

1. A child restraint car seat comprising:

a base;

a pivot, swivel mounted on said base;

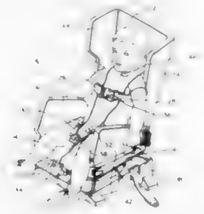
a seat;

a plurality of pin assemblies attached to said pivot;

a plurality of latch means attached to said seat and respec-

VOL 1093 ISS 2 AG 9 1988 UMI

tively engageable with said pin assemblies for removably holding said seat on said pivot;
a back, reclinably attached to said seat;



means for fixing said back relative to said seat; and
means for fixing said pivot relative to said base.

4,762,365
CHAIR HAVING A BASE CONFIGURATION ENABLING SELECTIVE ENABLING STATIC OR MOBIL USE
Karl Grossfield, London, England, assignor to Hartana Developments Limited, London, England
Filed Mar. 12, 1987, Ser. No. 25,080
Claims priority, application United Kingdom, Mar. 12, 1986, 8606177
Int. Cl.[4] A47C *15/00*
U.S. Cl. 297—325 7 Claims



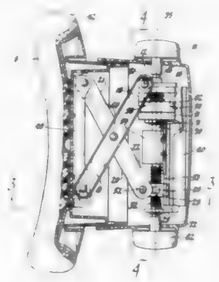
1. A chair comprising:
a seat;
a backrest structure upstanding from said seat;
a leg structure depending from said seat;
two like pairs of front and rear friction-producing ground-engagement formations respectively mounted on each side of the chair below said leg structure; and
two like pairs of front and rear ground-engaging roller elements mounted on each side of the chair on a portion of said leg structure disposed rearwardly of said formations, said elements being individually mounted such that when said formations are disposed on the ground, the lowermost portion of each said front element is located closely behind a respective one of said rear formations and just above the ground, and the lowermost portion of each said rear element is located further behind a respective one of said rear formations than each said front element and disposed above the ground a distance greater than said front elements,
whereby the chair has two alternative stable dispositions when occupied, one said disposition being static with said formations disposed on the ground with the overall centre of gravity of the occupied chair being disposed vertically above the space bounded by said formations, the other of said dispositions being mobile with said elements disposed on the ground with the overall centre of gravity disposed vertically above the space bounded by said elements, said dispositions being selectable by tilting the occupied chair through a small angle about the rear formations and the front elements, respectively.

4,762,366
SELF-LOCKING REVOLUTE JOINT, ADJUSTABLE STEP BY STEP TO AN ANGLE BY MEANS OF PUMPING MOVEMENTS OF AN ACTIVATION LEVER
Heinz Bauer; Burckhard Becker; Ernst-Reiner Frohnhaus; Alfred Gedig, all of Solingen; Josef Klink, Nagold, and Antonin Koucky, Sindelfingen, all of Fed. Rep. of Germany, assignors to C. Rob. Hammerstein GmbH and Daimler-Benz AG, both of, Fed. Rep. of Germany
Filed May 14, 1987, Ser. No. 50,288
Claims priority, application Fed. Rep. of Germany, May 14, 1986, 3616164
Int. Cl.[4] B60N *1/02*
U.S. Cl. 297—367 8 Claims



1. A self-locking revolute joint, adjustable step by step to an angle by means of pumping movements of an activation lever, particularly for adjustment of seat height or backrest inclination of vehicle seats, comprising:
a mount, in which a bearing shaft is arranged,
a locking means with rotational connection with that arm of the joint which is to be adjusted, having notches distributed at equal angular intervals, and capable of rotating around the axis of the bearing shaft, and
a locking element which is held, movable, on the mount so that it can move in bearings, having a locking tooth cofunctioning with the notches, elastically prestressed in the engagement direction of the locking tooth in the direction of one of the notches and having a total of two control profiles, cofunctioning with carriers which are adjustable by means of an activation lever and each one having a release profile and an unblocking indentation, the distance between these being adjusted to the angular intervals of the notches,
whereby a return spring means activates a lever and prestresses the latter into a central position, said activation lever having a rigid connection with an activation plate and preferably also with a bearing shaft, that a release segment is linked to the activation plate around a linkage axle so that it can be freely turned, having two carriers which can be turned into the notches, and which is prestressed into a neutral position by means of a return spring in which position both carriers are released from the engagement with notches and these carriers are arranged so that after the turning away from the neutral position, one carrier engages in one notch, while the other carrier rests on the adjacent release profile of the locking element and unblocks it.

4,762,367
VEHICLE HEADREST
Gary G. Denton, Wickford, England, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 27, 1987, Ser. No. 6,791
Claims priority, application United Kingdom, Sep. 4, 1986, [illegible]
Int. Cl.[4] A47C *7/36*
U.S. Cl. 297—409 10 Claims



1. A vehicle seat headrest, said headrest in combination comprising:
a frame to attach said headrest to said seat;
a cushion support;
a first link pivotally connected to said cushion support and said frame along the opposite ends of said first link;
a second link pivotally connected with said cushion support along a first end;
a shaft rotatively mounted to said frame said shaft having a threaded portion threadably engaged and pivotally connected with an end of said second link opposite said first end of said second link whereby rotation of said shaft causes said end of said second link threadably engaged with said shaft to translate linearly with respect to said end of said first link pivotally connected to said frame and rotation of said shaft causes said cushion support to be translated in a plane fixed with respect of said frame; and
means for adjusting the angular orientation of said first and second links and said cushion support with respect to said frame along a fixed pivotal axis, said adjusting means including a first clutch plate through which said shaft extends angularly fixed with respect to said frame and a second clutch plate through which said shaft extends angularly fixed with respect to said first and second links and said cushion support for rotational movement therewith, and a spring for biasing said first and second clutch plates together for engagement whereby the angular orientation of said cushion support can be set.

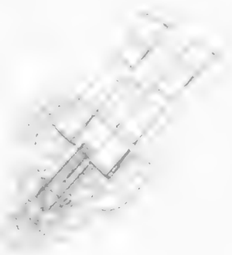
4,762,368
LAWN FURNITURE AND METHOD OF MAKING SAME
Larry A. Schwartz, Scarsdale, N.Y., and Bertram Lesser, Hackensack, N.J., assignors to Omni Products International, Inc., Fairfield, N.J.
Continuation of Ser. No. 695,263, Jan. 28, 1985, Pat. No. 4,674,799. This application Mar. 17, 1987, Ser. No. 26,859
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[4] A47C *5/00*
U.S. Cl. 297—445 11 Claims

1. A light-weight chair or chaise lounge having improved strength comprising:
first and second hollow rigid outer members each having at least two longitudinally-extending members formed therein, said at least two longitudinally-extending members dividing the hollow interior of said first and second hollow rigid outer members into at least three longitudinally-extending chambers at least partial enclosed from each other by said at least two longitudinally-extending members;
a longitudinally-extending metal member located within at least one of said longitudinally-extending chambers of each of said first and second hollow rigid outer members to provide strength thereto, said metal member restrained by at least one of said at least two longitudinally-extending members and by portions of said first and second hollow rigid outer members into which said metal member is



inserted by substantially filling said chamber in order to maintain the lateral and transverse position of said metal member within said chamber, said first and second hollow rigid outer members in cooperation with their respective said metal member forming load bearing members configured into at least a weight bearing portion of said chair or chaise lounge, said metal member having a shape corresponding to the shape of the hollow rigid outer member into which it is inserted; and
seat means for forming a body supporting portion of said chair, said seat means carried by and attached between said first and second hollow rigid outer members.

4,762,369
HARNESS WITH STRAP LENGTH ADJUSTMENT DEVICE
Frederick C. Nicod, Cumbria, England, assignor to ASE (UK) Limited, Cumbria, England
Filed Feb. 5, 1987, Ser. No. 13,216
Claims priority, application United Kingdom, Feb. 5, 1986, 8602874; Mar. 25, 1986, 8607346
Int. Cl.[4] A47D *15/00*; B60R *21/00*
U.S. Cl. 297—484 18 Claims



1. A safety harness comprising shoulder straps, a lower securement means, and a connector device establishing con-

VOL 1093 ISS 2 AG 9 1988 UMI

nection between said shoulder straps and said lower securement means, said connector device comprising:

a frame,

means securing ends of said shoulder straps to said frame,

apertures adjacent said securing means for said shoulder straps to extend therethrough outwardly of said connector device,

bar means extending transversely of said shoulder straps,

guide slots in said frame guiding said bar means for movement towards and away from said securing means and said apertures, and

holding means holding said bar means at a selected position along said guide slots, said holding means comprising a manually operable detent means pivotably mounted on said frame, a detent member carried by said bar means, detent formations on said detent member, and a spring releasably biassing said manually operable detent means into engagement with one of said formations, said shoulder straps extending frame said securing means to said apertures around said bar means, whereby the selected position of said bar means determines the length of said shoulder straps retained within said connector device.

4,762,370

TIPPING DEVICE TO CONTROL THE TIPPING OF A BODY MOUNTED ON A VEHICLE

Antoine Corompt; Jean Lablanche, and Fernand Michalon, all of Saint Etienne, France, assignors to Bennes Marrel, France

Filed Jul. 31, 1986, Ser. No. 893,020

Claims priority, application France, Jul. 31, 1985, 85 12056

Int. Cl.⁴ B60P *1/20*

U.S. Cl. 298—19 R **19 Claims**



1. A tipping device mounted to a chassis of a vehicle, comprising:

a tipping tray;

thrustor means having a first and second end, said thrustor means being connected pivotally at said first end to one of said tipping tray and said chassis;

means for actuating said thrustor means located adjacent said chassis of said vehicle;

a first bracket attached to the other of said tipping tray and said chassis;

a first push rod having a first, a second and a third apex, said second end of said thrustor means being pivotally connected to said first apex of said first push rod;

said first bracket being pivotally connected to said second apex of said first push rod; and

a roller rotatably attached to said third apex of said first push rod for applying thrust from said first push rod contactingly upon said one of said tipping tray and said chassis when said thrustor means is actuated;

whereby when said tipping tray is lifted by said tipping device to a position where said roller disengages contact with said one of said tipping tray and said chassis, said first and second apices of said first push rod are aligned with said first end of said thrustor means.

4,762,371

ROAD PLANNING EQUIPMENT

William G. Lupton, North Yorkshire, England, assignor to Econ Group Limited, North Yorkshire, England

Filed Oct. 15, 1984, Ser. No. 660,886

Claims priority, application United Kingdom, Oct. 14, 1983, 27573

Int. Cl.⁴ E01C *23/08*

U.S. Cl. 299—39 **22 Claims**



1. A roadway cutting device that is supported on a wheeled roadway vehicle or which is adapted to be mounted on a wheeled roadway vehicle, said roadway cutting device comprising in combination:

(a) an elongated beam that is adapted to extend in cantilever fashion outwardly from the supporting wheels of said roadway vehicle so as to define an inner end close to the roadway vehicle and an outer end that is spaced outwardly and away from the supporting wheels of the roadway vehicle;

(b) a frame connected to the inner end of said beam, said frame being adapted to be connected to a portion of said roadway vehicle;

(c) jackable legs means on said frame which are adjustable in length, the leg means having ground engaging feet and being of variable length;

(d) a cutter unit mounted on said elongated beam so that it is able to move back and forth along said beam;

(e) means to move said cutter unit over at least a portion of the length of said elongated beam;

(f) a cutter head associated with said cutting unit which is adapted to contact a roadway surface;

(g) a support leg at the outer end of the beam for supporting the outer end of the beam so that by supporting the inner and outer ends of the beam on the leg means at the inner end of the beam and the support leg at the outer end of the beam the cutter head can be made to cut the road along a line parallel to the beam regardless of the profile of the road surface under the beam.

4,762,372

CUTTER-BIT ASSEMBLIES

Christoph Rassmann, Lünen; Oswald Breuer, Dortmund, and Bernd Steinkuhl, Lünen, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenbutte Westfalia GmbH, Lunen, Fed. Rep. of Germany

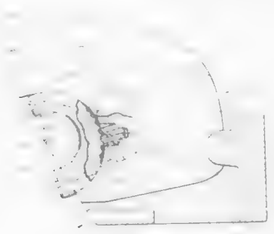
Filed Mar. 11, 1987, Ser. No. 24,620

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1986, 3608786

Int. Cl.⁴ E21B *10/00*

U.S. Cl. 299—91 **8 Claims**

1. In a cutter-bit assembly comprising a holder defining an open pocket, a cutter-bit having a shank detachably mounted in the pocket, complementary curved surfaces on the shank and the holder which provide an arcuate tapered gap between the shank and an inner face of the pocket, bearing means between the shank and the holder opposite the gap and a tapered wedge component fitted in the gap; the improvement comprising there being contact directly between the exterior of the



wedge component and at least one of the complementary curved surfaces over end zones separated by a clearance between the exterior of the wedge component and said at least one curved surface.

4,762,373

PROCESS FOR ROUNDING THE BRISTLE TIPS OF TOOTHBRUSHES AND TOOTHBRUSHES PREPARED BY THIS PROCESS

Walter Amos, Wiesbaden, and Horst Klein, Kelkheim-Fischbach, both of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Filed Sep. 5, 1986, Ser. No. 903,762

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1985, 3533533

Int. Cl.⁴ A46D *1/04*

U.S. Cl. 300—21 **5 Claims**



1. A method of rounding bristle tips of a toothbrush by laser radiation which comprises subjecting said bristle tips of said toothbrush to said laser radiation in an electrostatic field.

4,762,374

WHEEL COVER ASSEMBLY

Trevor J. Brown, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 16, 1987, Ser. No. 26,043

Int. Cl.⁴ B60B *7/00*

U.S. Cl. 301—37 P **9 Claims**

1. A wheel cover assembly for mounting to an axially extending radially facing flange of a vehicle wheel, comprising in combination,

a wheel cover having an axially inwardly extending cover retention flange provided with an opening therethrough,

a wire ring located radially inwardly of the cover retention flange and including an axially inwardly extending retention loop cantilevered from the wire ring and radially rotatable relative thereto,

the loop including a pair of axially inwardly extending legs having their axially inner ends joined by a radially outwardly extending bridge leg, the bridge leg including a wheel engaging portion and a cover flange engaging portion,

the wheel engaging portion of the bridge leg of the loop extending radially outwardly through the cover flange

opening and being engageable with the flange of the wheel to mount the wire ring to the wheel,

the cover flange engaging portion of the bridge leg of the loop engaging the radially inner side of the cover flange to hold the cover flange against the wheel flange and mount the cover to the wheel independently of any engagement of the wire ring with the cover.

4,762,375

ANTI-SKID CONTROL SYSTEM FOR MOTOR VEHICLES

Takao Maki, Kitakatsushika; Isao Yamaki, Iwatsuki; Hideo Akima, Yokohama, and Akira Hoashi, Munakata, all of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Fujitsu Limited, Kanagawa, both of, Japan

Filed Dec. 29, 1986, Ser. No. 947,045

Claims priority, application Japan, Dec. 27, 1985, 60-29299

Int. Cl.⁴ B60T *8/82, 8/60, 8/68*

U.S. Cl. 303—96 **4 Claims**

1. In an anti-skid control system for a motor vehicle, wherein when a wheel speed to be controlled and being decreased through buildup of brake pressure becomes equal to a reference wheel speed which is set up on the basis of the wheel speed in such a manner that said reference wheel speed follows said wheel speed with a predetermined relationship thereto, the equality of said wheel speed to said reference wheel speed being a fulfillment of a brake pressure reduction starting condition, and thus reduction of the brake pressure is started so that there is a change in said wheel speed from decrease to increase; and on the basis of a detection of a low peak of said wheel speed where there is a change in said wheel speed from decrease to increase, the reduction of the brake pressure is stopped so that the brake pressure is held; said anti-skid control system comprising:

means for detecting the highest one of the wheel speeds of the motor vehicle;

means for generating a signal representative of said highest wheel speed;

means for limiting a rate of decrease and increase of said

VOL 1093 ISS 2 AG 9 1988 UMI

highest wheel speed signal with respect to time to be in a predetermined range;

means for setting up a computed vehicle speed on the basis of said highest wheel speed signal by having the rate of decrease and increase thereof with respect to time limited by said limiting means;

means for comparing said computed vehicle speed with the wheel speed to be controlled; and

means adapted, when the wheel speed to be controlled is equal to or higher than said computed vehicle speed, for preventing reduction of the brake pressure from being started irrespective of whether the brake pressure reduction starting condition is fulfilled.

4,762,376

ANTI-SKID CONTROL SYSTEM FOR MOTOR VEHICLES OF THE TYPE SWITCHABLE BETWEEN TWO-WHEEL DRIVE (2WD) AND FOUR-WHEEL DRIVE (4WD)

Yuji Matsubara, Kazo, Japan, assignor to Akebono Brake Industry Co., Ltd., Japan

Filed Mar. 31, 1987, Ser. No. 32,341
Claims priority, application Japan, Apr. 10, 1986, 61-81167
Int. Cl.[4] B60T *8/42, 8/58;* B60K *17/354, 17/356*
U.S. Cl. 303—115 3 Claims



1. An anti-skid control apparatus for motor vehicles having a drive system which is switchable between a two-wheel drive and a four-wheel drive, comprising:

a first modulator for regulating a front lefthand wheel brake pressure;

a second modulator for regulating a front righthand wheel brake pressure;

a third modulator for regulating a rear lefthand wheel brake pressure;

a fourth modulator for regulating a rear righthand wheel brake pressure;

a plurality of speed sensors each adapted for detecting respective wheel speeds;

logic circuit means for providing brake pressure control signals, on the basis of output signals derived from said plurality of speed sensors, to said first to fourth modulators; and

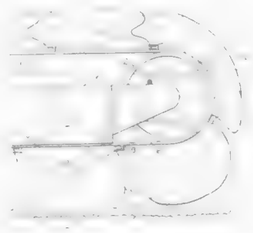
change-over switch means provided in a circuit connecting said plurality of speed sensors to said logic circuit means, said change-over switch means being adapted so that under a two-wheel drive condition, said first and second modulators are operated independently and said third and fourth modulators are operated in synchronism with each other while under a four-wheel drive condition, said first and fourth modulators are operated in synchronism with each other and said second and third modulators are operated in synchronism with each other.

4,762,377

MATTRESS CONSTRUCTION FOR PNEUMATIC MATTRESS TRACK SYSTEM

Fredrik K. Burmeister, Lansatorpet 3, SF-02630 Esbo, Finland

PCT No. PCT/FI86/00032, § 371 Date Dec. 4, 1986, § 102(e) Date Dec. 4, 1986, PCT Pub. No. WO86/06038, PCT Pub. Date Oct. 23, 1986
PCT Filed Mar. 27, 1986, Ser. No. 945,098
Claims priority, application Finland, Apr. 18, 1985, 851552
Int. Cl.[4] B62D *55/247*
U.S. Cl. 305—34 2 Claims



1. A pneumatic mattress track system used as a construction element of a vehicle comprising

a frame, at least two rollers rotatably positioned at opposite ends of said frame,

a plurality of discrete bags attached to a base,

said bags and said base defining in combination an endless hollow mattress running around said two rollers,

an air cushion space defined between the frame and the base, a pressurized fluid is fed into said air cushion space in such a way that a part of the mattress running under the frame is automatically filled with the pressurized fluid through a plurality of inlet orifices,

each said discrete bag comprising a supporting part attached to the base and engaging part for engagement with the ground, at least two flexible supports crossing the entire interior of said each inflated bag in opposite to each other diagonal directions, one end of each said support is fixedly attached to the bag at an area of junction between the base and the supporting part, a second end of each said support fixedly attached to an area of the engaging part diagonally opposed to said area of junction when the bag is inflated, said supports interconnecting the diagonally opposed parts of each said bag enhancing ability of the bags and the mattress to withstand shear forces resulted during operation of the mattress track system.

4,762,378

DISPLAY APPARATUS

Haruhiko Kagami, Ooizumi, Japan, assignor to Sanyo Electric Co., Ltd., Japan

Filed Mar. 13, 1987, Ser. No. 25,325
Claims priority, application Japan, Mar. 17, 1986, 61-58556; Nov. 20, 1986, 61-178534[U]; Nov. 20, 1986, 61-178535[U]
Int. Cl.[4] G09D *2/06*
U.S. Cl. 312—7.2 17 Claims

1. A display apparatus, comprising

a front unit for mounting a display device, a back unit for supporting said front unit, a base for supporting of said back unit,

a first plate chassis mounted to a support shaft, said support shaft having an axis crossing a screen of the display device, a second plate chassis having a bearing hole for supporting of said support shaft, one said chassis fixed to a back face of said front unit and the other said chassis fixed to a front face of the back unit,

a first annular spacer engages and encircles said support shaft and positioned between said first and second plate chassis, a second annular spacer engages and encircles said support shaft and positioned in such a manner that said second plate chassis is interposed between said first and second spacers, said support shaft inserted into said bearing hole,



a fixture plate is fixedly attached to said support shaft in such a manner that said first, second annular spaces and said second chassis positioned therebetween are kept together, whereby said display device is rotatable within said support shaft.

4,762,379

BLOW MOLDED PANELS AND A MOLD AND METHOD OF MAKING THEM

John W. Beam, Princeton, and Richard M. Latino, Holden, both of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed May 16, 1986, Ser. No. 864,030
Int. Cl.[4] A47B *88/00*
U.S. Cl. 312—320 12 Claims



1. A panel for doors and drawer fronts for storage cabinets comprising:

a single piece of hollow, blow molded plastic having a front wall and a rear wall spaced from the front wall, the walls being joined by integral sides, an integral top and an integral bottom thereby enclosing at least one hollow interior portion by the single piece of plastic,

a recessed handle in the front wall having a substantially keystone cross section formed by a first elongated wall extending from the front wall to the rear wall,

the recessed handle having ends terminating in the front wall at locations spaced from the sides and intersecting the front wall by diagonal walls diverging away from each other from the rear wall to the front wall and joined to the first and second elongated walls,

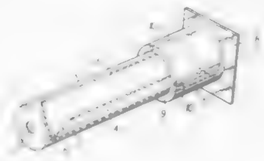
and a second elongated wall spaced from the first elongated wall and extending from the front wall to the rear wall, the first and second walls diverging away from each other in the direction from the front to the rear wall thereby forming the recessed handle.

4,762,380

INTERACTIVE KALEIDOSCOPE

Patrick MacCarthy, 5263 Arbutus St., Arvada, Colo. 80002

Filed Jun. 17, 1986, Ser. No. 875,448
Int. Cl.[4] G02B *23/00*
U.S. Cl. 350—4.1 15 Claims



1. A kaleidoscope comprising:

(a) a tube having a longitudinal axis surrounding at least two mirrors touching at a common edge;

(b) an eye-piece at the proximal end of said tube;

(c) a cap rotatably connected to the distal end of said tube for rotation about the longitudinal axis of said tube;

(d) a translucent screen attached to the distal end of said cap, said screen being translatable in a plane orthogonal to the longitudinal axis of said tube; and

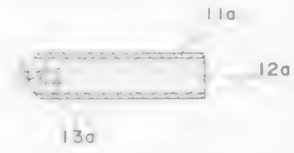
(e) means for creating designs on said translucent screen.

4,762,381

OPTICAL ELEMENT INTEGRATED OPTICAL WAVEGUIDE AND PRODUCTION OF THE SAME

Takafumi Uemiya; Yutaka Shibata; Akira Nishimura; Shinichiro Niwa, and Yoshitaka Oeawa, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 3, 1986, Ser. No. 926,176
Claims priority, application Japan, Jan. 29, 1986, 61-19129
Int. Cl.[4] G02B *6/12*
U.S. Cl. 350—96.11 18 Claims



1. An optical element integrated optical waveguide comprising

(1) a polymeric supporting member a length of which lies in a light transmission direction and which has at least one bore along its entire length,

(2) at least one optical waveguide part consisting of organic siloxane polymer filling at least one bore, and

(3) at least one optical element embedded in the optical waveguide part.

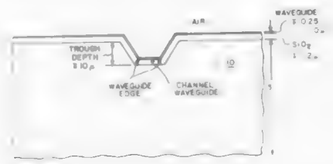
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,382

OPTICAL INTERCONNECT CIRCUIT FOR GAAS OPTOELECTRONICS AND SI VLSI/VHSIC

Anis Husain, Roseville, and Charles T. Sullivan, Burnsville, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 29, 1987, Ser. No. 66,930
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.12 23 Claims



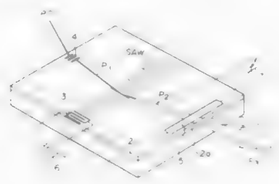
1. An optical waveguide interconnect circuit comprising:
an anisotropically-etched flat-bottom channel in a planar surface of a monocrystalline silicon substrate;
a uniform thin-film dielectric layer over said planar surface and channel surface; and,
a uniform thin-film waveguiding layer over said dielectric layer whereby said waveguiding layer on said flat-bottom operates as a waveguide.

4,762,383

TWO DIMENSIONAL LIGHT BEAM DEFLECTORS UTILIZING THERMOOPTICAL EFFECT AND METHOD OF USING SAME

Tsukasa Yamashita, Nara; Masaharu Matano, Kyoto; Kazuhiko Mori, Osaka, and Nobuhisa Inoue, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 445,757, Dec. 1, 1982, abandoned. This application Jan. 15, 1986, Ser. No. 818,915
Claims priority, application Japan, Dec. 4, 1981, 56-195458; Jan. 20, 1982, 57-7311; Jan. 20, 1982, 57-7312; Jan. 21, 1982, 57-8031; Jan. 29, 1982, 57-12678; Feb. 10, 1982, 57-19958
Int. Cl.[4] G02B *6/10;* G02F *1/03*
U.S. Cl. 350—96.13 20 Claims



1. A two dimensional light beam deflector responsive to first and second electrical signals, comprising:
a thin film substrate forming an optical waveguide which conducts a light beam in parallel to a surface of the substrate;
means for propagating an incident light beam across said substrate;
first means on said substrate, connected to receive said first electrical signal, for deflecting the propagating light beam in a first selected direction parallel to a plane of said thin film optical waveguide, said first means selecting said first direction in response to said first signal; and
second means formed in combination on the same thin film optical waveguide, connected to receive said second electrical signal, for deflecting the light beam, once deflected by said first means, in a second selected direction perpendicular to the plane of said thin film optical waveguide and perpendicular to said first direction, said second means selecting said second direction in response to said second signal and comprising a heating means.

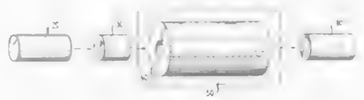
18. A method of deflecting a light beam comprising the steps of:
(1) propagating an incident light beam along a first path through a planar optical waveguide formed on a substrate, said first path parallel to a surface of said substrate;
(2) applying a first electrical signal to a first light deflecting means disposed on said substrate;
(3) deflecting said propagating beam in a first direction parallel to said surface, and by a first angle, in response to said first signal, so that said propagating beam follows a second path within said planar optical waveguide;
(4) applying a second electrical signal to a second light deflecting means disposed on said substrate; and
(5) deflecting said beam travelling along said second path in response to said second signal in a second direction perpendicular to said surface to a third path having at least one direction component not within the plane of said waveguide said deflecting occurring by applying heat to said substrate.

4,762,384

OPTICAL SYSTEMS WITH ANTIRECIPROCAL POLARIZATION ROTATORS

John Hegarty, Plainfield, and Raymond Wolfe, New Providence, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 728,669, Apr. 29, 1985, Pat. No. 4,671,621. This application Aug. 30, 1985, Ser. No. 771,016
Int. Cl.[4] G02B *6/10, 27/00*
U.S. Cl. 350—96.12 14 Claims



1. An optical system, comprising:
a source of electromagnetic radiation;
a component of said system, capable of optical communication with said source, serving to transmit or reflect at least a portion of the electromagnetic radiation emitted by said source; and
a device which includes a substantially antireciprocal polarization rotator, said device being capable of optical communication with said source and said component, wherein said device exhibits a refractive index profile which includes a first local waveguiding maximum positioned within said rotator, and said device further includes means for reducing the electromagnetic energy of at least a portion of the electromagnetic radiation which traverses said device but is not guided by said rotator during the operation of said system.

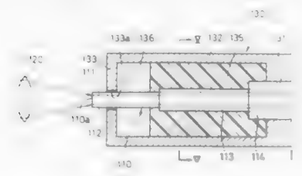
4,762,385

LASER BEAM ADMITTING DEVICE

Jiro Fuse, Kasukabe, Japan, assignor to Kabushiki Kaisha Machida Seisakusho, Tokyo, Japan

Filed Aug. 11, 1986, Ser. No. 895,168
Claims priority, application Japan, Sep. 2, 1985, 60-133158[U]
Int. Cl.[4] G02B *6/32*
U.S. Cl. 350—96.18 18 Claims

1. A laser beam admitting device comprising:
optical fiber means having a core and a clad layer surrounding said core;
a condensing optical system through which a laser beam is admitted into a beam admitting end of said optical fiber means; and
a support structure for supporting said optical fiber means at a supporting location remote from said beam admitting end thereof, said support structure having a tubular portion formed so as to extend from said supporting location toward said beam admitting end of said optical fiber means, said tubular portion having its inner diameter



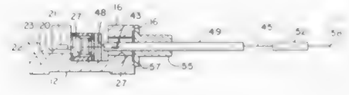
greater than an outer diameter of said clad layer of said optical fiber means, said support structure including a beam leakage material disposed between said tubular portion and said clad layer of said optical fiber means to permit the laser beam admitted into said clad layer to leak through said beam leakage material to cause the leaking laser beam to impinge against an inner peripheral surface of said tubular portion, which has an area greater than that of an outer peripheral surface of said optical fiber means.

4,762,386

OPTICAL FIBER ASSEMBLY INCLUDING MEANS UTILIZING A COLUMN LOAD TO COMPENSATE FOR THERMAL EFFECTS

Eugene I. Gordon, Convent Station, N.J.; Robert J. Nielsen, Upper Black Eddy, Pa., and John W. Stafford, Summit, N.J., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 2, 1986, Ser. No. 902,374
Int. Cl.[4] G02B *6/36;* H01S *3/00*
U.S. Cl. 350—96.20 10 Claims



1. An optical fiber assembly comprising,
a length of optical fiber having an optical face,
a first tube joined to the fiber at a first attachment point, and
a second tube joined to the fiber at a second attachment point, said second tube being axially spaced apart from said first tube, said second tube applying a column load on the fiber and causing the fiber to bend in a smoothly curved configuration substantially, said second tube being movable relative to said first tube.

4,762,387

ARRAY CONNECTOR FOR OPTICAL FIBERS

Robert L. Batdorf, Reading; Edmond J. Murphy, Bethlehem, both of Pa.; Tommy L. Poteat, Bridgewater, and Jay R. Simpson, Fanwood, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 21, 1986, Ser. No. 832,166
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.2 24 Claims

19. A polarization maintaining optical fiber connector capable of joining at least one polarization maintaining optical fiber to either an optical fiber or an optical waveguide, said at least one polarization maintaining fiber having a cross-section including at least one elongated sidewall, said polarization maintaining optical fiber connector comprising
a substrate including at least one groove formed in a top surface, said at least one groove comprising a relatively flat bottom surface capable of accommodating the elongated sidewall of said at least one polarization maintaining optical fiber; and



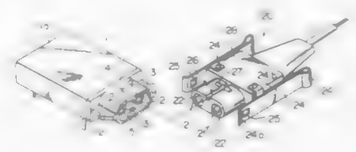
a coverplate disposed over and in contct with the top surface of said substrate, said coverplate including a plurality of grooves equal to the number of grooves formed in the substrate for completely interlocking said coverplate with said substrate.

4,762,388

OPTICAL CONNECTOR RECEPTACLE AND PLUG

Toshiyasu Tanaka, and Sadakazu Ariga, both of Yokohama, Japan, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 15, 1985, Ser. No. 712,404
Claims priority, application Japan, Mar. 19, 1984, 59-39197[U]; Mar. 19, 1984, 59-39198[U]; Mar. 19, 1984, 59-39199[U]; Oct. 22, 1984, 59-220490; Nov. 24, 1984, 59-246987
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 12 Claims



1. An optical connector receptacle adapted to receive and connect in tight fit with at least one optical connector plug which has a protective guide member surrounding at least one ferrule containing an optical fiber, the outer surface of each said ferrule being separated by a defined space from an inner surface of the guide member surrounding said ferrule, said receptacle comprising:
a housing having at least one space open to the receiving end of said receptacle, said one space having a profile conforming to the profile of the outer surface of the protective guide member of said plug,
at least two separate supporting members disposed linearly adjacent one another within said one space of the housing, each said supporting member surrounding and defining at least one passage extending from said receiving end of the receptacle to the opposite end, the outer surface of each said supporting member being separated from an inner surface of the housing by the remainder of said one space, each said supporting member having a cross-sectional

VOL 1093 ISS 2 AG 9 1988 UMI

shape conforming to the defined space between said ferrule and the guide member of the plug, and

a pair of apertures formed in said housing on opposite sides of said one space, each aperture being open to the receiving end of the receptacle and adapted to receive one of a corresponding pair of spring latching arms extending along opposite sides of the protective guide member of said plug, each said aperture having therein means for releasably latching with each arm of the plug,

whereby when said plug is inserted into the receptacle, the ferrule will be received within the passage defined by said supporting member while said supporting member is received within the defined space between the ferrule and the guide member, and the guide member is received within the remainder of said one space of the housing, all respective mating surfaces between the receptacle and plug contributing to said tight fit, said plug being further retained within the receptacle by the arms releasably latched within said pair of apertures of said receptacle.

4,762,389

OPTICAL FIBER CONNECTOR

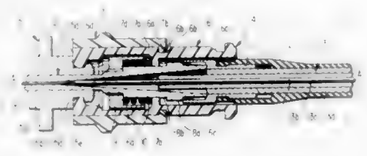
Shigeru Kaikara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 26, 1985, Ser. No. 716,064

Claims priority, application Japan, Mar. 30, 1984, 59-62427; Mar. 30, 1984, 59-63956

Int. Cl.[4] G02B 6/38

U.S. Cl. 350—96.21 7 Claims



1. An optical fiber connector comprising:

an optical fiber plug, said plug including:

a ferrule for fixing an optical fiber on a center axis thereof said ferrule having a terminal tip;

a spring member positioned coaxially with said ferrule and along an outer periphery of the ferrule;

a slipout-preventing member fixed to the ferrule for preventing said spring member from slipping out;

a first housing for accommodating the ferrule, the spring member and the slipout-preventing member, said first housing being provided with a pair of parallel extensions, each extending toward said terminal tip of the ferrule along an opposite side periphery of the ferrule, and a pawl protruding from a tip of each of said extensions toward the center axis of the ferrule; and

a second housing for accommodating said first housing and slidable a predetermined amount in a direction parallel to the center axis of the ferrule in contact with an outer periphery of said first housing, said second housing being so configured that said pair of parallel extensions snugly fit into said second housing and are prevented from expanding from each other at a position where said second housing is moved forward along said pair of parallel extensions;

an adapter for receiving said optical fiber plug, said adapter including:

a block provided with a cylindrical bore for receiving the ferrule, said block having a pair of parallel outer side surfaces which are disposed symmetrically about a center axis of said bore, and a recess provided in a part of each of said side surfaces;

the plug and the adapter being connected by mating the recesses of said block of the adapter with the respective pawls of the first housing while inserting the tip of the ferrule into the cylindrical bore of the adapter and, then, sliding the second housing to said position.

4,762,390

CONNECTOR ELEMENT FOR A PLURALITY OF LIGHT WAVEGUIDES IN A ROW

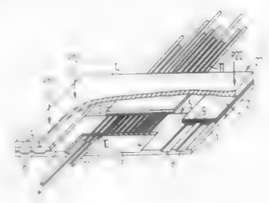
Lothar Finzel, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 4, 1987, Ser. No. 21,829

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1986, 3608053

Int. Cl.[4] G02B 6/38

U.S. Cl. 350—96.21 10 Claims



1. In a connector device for a plurality of light waveguides, said device including two carrier members having parallel extending centering grooves for receiving light waveguides and an end surface for abutting a corresponding end surface of a carrier member with the waveguides in an abutting relationship, each of said carrier members having a guiding groove and a bridging guide element having a ridge received in said guiding groove, means for holding the carrier members and the bridging guide elements in an assembled relationship with the abutting surfaces in engagement and the guide elements holding the waveguides in alignment, the improvement comprising a common base plate and the two bridging guide elements and means for securing the two bridging guide elements to the common base plate, said means for securing only securing the elements in selected sub-areas and being an adhesive which remains elastic to allow yielding after securing.

4,762,391

GRAPHIC INPUT DEVICE AND METHOD INCLUDING A FIBER OPTIC BUNDLE WITH ELECTRONIC MEANS FOR IMPROVING IMAGES

George Margolin, Newport Beach, Calif., assignor to Photon Devices, Ltd., Newport Beach, Calif.

Continuation-in-part of Ser. No. 581,085, Feb. 17, 1986, Pat. No. 4,674,834. This application Aug. 8, 1986, Ser. No. 894,792

Int. Cl.[4] G02B 6/06; H01J 5/16; G09G 1/02

U.S. Cl. 350—96.25 17 Claims



1. A combination of elements for controllably activating a unique subset of sensors in a sensor array during a scan period when an object is illuminated, said combination comprising a sensor array and a coherent fiber optic bundle adapted to direct light representative of said object onto said array, said combination including permanent memory means for storing the addresses of said unique subset of sensors determined during an initialization procedure, and means for interrogating said unique subset of sensors of said array in a manner to provide the correspondence between each fiber and at least one associated sensor each time a scan period occurs.

11. A method for determining the relationship between the fibers of a fiber optic bundle having an input and an output face and the sensors of a sensor array onto which the bundle is operative to direct an array of pixels, said method comprising the steps of positioning said bundle such that the pixels exiting said output face of said bundle impinge upon the surface of said array, moving a beam of radiation of relatively small diameter incrementally along a path in said input face which intersects said fibers in an ordered sequence, each of said fibers having a relatively large diameter, interrogating said array in a manner to determine which sensors of said array are illuminated each time said beam is moved along said path, and storing the addresses of the sensors illuminated each time a maximum in the number of illuminated sensors in one area of said array occurs.

4,762,392

PLASTIC OPTICAL FIBERS

Takashi Yamamoto, Saeki; Ryuji Murata, Ohtake; Yasuteru Tahara, Ohtake; Hiromu Terada, Ohtake, and Kenichi Sakunaga, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

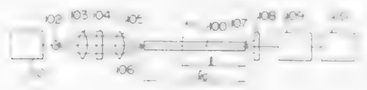
PCT No. PCT/JP85/00294, § 371 Date Jan. 28, 1986, § 102(e) Date Jan. 28, 1986, PCT Pub. No. WO85/05699, PCT Pub. Date Dec. 19, 1985

PCT Filed May 29, 1985, Ser. No. 830,584

Claims priority, application Japan, May 30, 1984, 59-108599; Jul. 11, 1984, 59-142121

Int. Cl.[4] G02B 6/10; C08F 120/18; B05D 5/06; B32B 27/00

U.S. Cl. 350—96.30 33 Claims



1. A plastic optical fiber comprising a core layer, a cladding layer, and a protective layer as basic constitutional units, characterized in that the protective layer has a heat distortion temperature [HDT] of at least 120° C., a thickness of at least 10 μm, and a cross-sectional area of at least 0.07 times the sum of the cross-sectional areas of the core and cladding layers.

4,762,393

REAR PROJECTION SCREEN AND REAR PROJECTION SYSTEM PROVIDED WITH SUCH A SCREEN

Gerrit B. Gerritsen; Leendert Vriens, and Johannes C. van de Ven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 9, 1987, Ser. No. 36,419

Claims priority, application Netherlands, Jan. 21, 1987, 8700135

Int. Cl.[4] G03B 21/60

U.S. Cl. 350—128 13 Claims

1. A rear projection screen having a front and a rear side for displaying on the front side of the screen an image supplied by at least one primary image source placed on the rear side of the screen, said screen comprising a light-transparent plate having on its front side a multiple of parallel-arranged first light-spreading elements extending in a first direction across the plate for spreading light in a first plane perpendicular to the first direction, said elements having steep edges for obtaining total internal reflection and a tip having a portion for transmission and refraction, characterized in that the rear side of the plate has parallel-arranged second light-spreading elements extending in a second direction substantially perpendicular to the first direction for spreading light in a second plane perpendicular to the second direction.



4,762,394

REAL TIME OPTICAL COMPUTING AND IMAGE PROCESSING USING SELF-PUMPED CONJUGATE MIRROR

Sze-Keung Kwong, Pasadena; George A. Rakuljic, Santa Monica; Victor Leyva, Alhambra, and Amnon Yariv, San Marino, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jun. 16, 1986, Ser. No. 874,565

Int. Cl.[4] G02B 5/23, 1/01, 27/14, 5/30

U.S. Cl. 350—171 7 Claims



1. A method for real-time optical image processing using a phase conjugate mirror comprising the steps of generating a beam of coherent light, splitting said beam into two beams of substantially equal magnitude by subjecting said beam to reflection of approximately half of the beam with a coefficient of reflection R and transmitting the remaining part of said beam with a coefficient of transmission T, directing both split beams to said phase conjugate mirror to reflect each split beam back on itself without phase shift, placing an image transparency in the path of at least one split beam, combining said split beams interferometrically upon subjecting one split beam with a coefficient of transmission t and the other split beam with a coefficient of reflection r in the reverse beam splitting order, thereby introducing a phase shift of 180° between the complex image fields of said split beams, whereby upon recombining the beams form an image that is the difference between the image fields of said split beams recombined, and detecting the intensity of said split beams combined interferometrically.

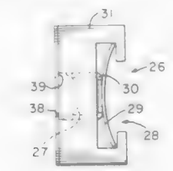
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,395

LENS ASSEMBLY FOR OPTICAL COUPLING WITH A SEMICONDUCTOR LASER

Eugene I. Gordon, Convent Station, N.J.; Robert J. Nielsen, Upper Black Eddy, Pa., and John W. Stafford, Summit, N.J., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 902,999, Sep. 2, 1986, abandoned. This application Jan. 29, 1988, Ser. No. 150,481
Int. Cl.[4] G02B 7/02
U.S. Cl. 350—252 11 Claims





1. A lens assembly comprising, a holder having a first wall, an opening through the first wall, an optical lens at the opening and facing an optical axis, a pedestal engaged against the lens, an opitcal diaphragm having a diaphragm opening aligned with the optical axis and trailing edges of the diaphragm engaged against a second wall of the holder, the pedestal engaging and positioning the diaphragm spaced from the lens,

said lens assembly further comprising a plate secured to the first wall, said plate having an aperture aligned with the opening, the aperture being of less diameter than the diameter of the opening to define a lip.

4,762,396

MASKING METHOD

Jean M. Dumant, 8 Rue de la Torsade Crolles, Brignoux 38190, and Bruno Latombe, 6 Rue Desnos, Saint Martin D'Heres 38400, both of France

Filed Nov. 20, 1986, Ser. No. 932,599
Claims priority, application France, Nov. 21, 1985, 85 17487
Int. Cl.[4] G02B 5/00
U.S. Cl. 350—320 2 Claims



1. A masking method for controlling limits of irradiated regions of a photoresist material layer, said layer being formed on a substrate, wherein the image of a mask is formed on said layer by means of an optical system having a predetermined reduction factor, said masking method comprising the steps of:

selecting a mask having a desired pattern of dark and transparent areas;

adding to the transparent areas of the mask, at a distance (b) from the borders of said dark and transparent areas, narrow dark stripes having a width (a);

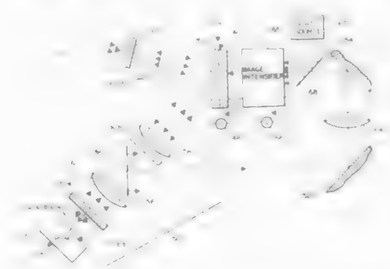
said width (a) and said distance (b) being such that the product of their values by the reduction factor of the optical system is lower than a resolution limit thereof.

4,762,397

OPTICAL PHASE CONJUGATOR WITH SPATIALLY RESOLVABLE THRESHOLDING UTILIZING LIQUID CRYSTAL LIGHT VALVE

David M. Pepper, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 19, 1987, Ser. No. 64,975
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—331 R 18 Claims



1. An apparatus for optical phase conjugation with individual thresholding of spatially resolvable components of an input beam, comprising:

spatial intensity light modulation means disposed in a first optical path of said input beam, for selecting spatially resolvable components of said input beam that have amplitudes greater than a predetermined threshold value and directing said selected components along a second optical path, and

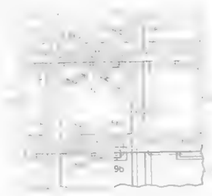
phase conjugation reflection means disposed in said second optical path, for retroreflecting the complex conjugate of said selected spatially resolvable components back along said second and first optical paths, maintaining the same relative phase relationships of the complex beam components to each other before and after reflection.

4,762,398

PIXEL TRANSISTOR FREE OF PARASITIC CAPACITANCE FLUCTUATIONS FROM MISALIGNMENT

Masaru Yasui, Yao, and Taisuke Miyaza, Hikone, both of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Jan. 20, 1987, Ser. No. 4,405
Int. Cl.[4] G02F 1/133; H10L 29/78
U.S. Cl. 350—334 8 Claims



1. A pixel driving composite transistor for driving one of a plurality of display electrodes comprising:

a source electrode having an even number of source electrode portions connected to a source bus;

an even number of drain electrode portions respectively disposed adjacent the source electrode portions and connected to the same display electrode, half said number of drain electrode portions being opposite in their direction of arrangement relative to the source electrode portions from the other half of said number of drain electrode portions;

a semiconductor layer for each pair of drain and source electrodes provided in common to all the source and drain electrode portions of the some such said pair thereof;

a gate insulating film formed on the semiconductor layer; and

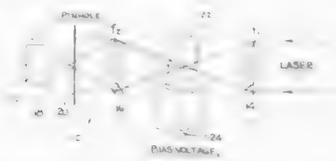
a gate electrode formed on the gate insulating film in common to all the source and drain electrode portions such that one of the side edges of said gate electrode overlaps said half number of at least either said source or drain electrode portions and the other side edge of said gate electrode overlaps the other half number of at least either said source or drain electrode portions.

4,762,399

VOLTAGE-BIASED LIQUID CRYSTAL OPTICAL POWER LIMITER

Shin-Tson Wu, Northridge, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 21, 1986, Ser. No. 820,847
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—347 V 6 Claims



4. An optical power limiter for limiting the amount of light impinging on a detector cell disposed along an optical path comprising:

a first lens positioned in the optical path:

a second lens positioned in the optical path following said first lens, said first and second lenses arranged for focusing light to a point along the optical path adjacent to the detector cell;

a plate having an aperture therein along said optical path at the focal point of said first and second lenses;

a liquid crystal positioned in the optical path between said first and second lenses and wherein said liquid crystal is selected to provide defocusing of the first and second lenses for light above a preselected intensity such that a substantial portion of the light no longer passes through the aperture; and

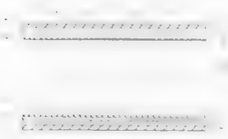
means for applying a bias voltage across the liquid crystal to enhance recovery of the liquid crystal.

4,762,400

FERROELECTRIC LIQUID CRYSTAL ELECTRO-OPTICAL DEVICE HAVING HALF-SELECT VOLTAGE TO MAXIMIZE CONTRAST

Sadashi Shimoda; Takamasa Harada; Masaaki Taguchi, and Kokichi Ito, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Tokyo, Japan

Filed May 27, 1987, Ser. No. 54,739
Claims priority, application Japan, May 27, 1986, 61-121861
Int. Cl.[4] G02F 1/13
U.S. Cl. 350—350 S 12 Claims



1. A ferroelectric liquid crystal electro-optical device driven in time-sharing comprising; a ferroelectric liquid crystal layer having bi-stable alignment characteristics, means for converting the bi-stable aligment state to optical ON state or optical OFF state, a matrix electrode and means for driving the liquid crystal layer by applying voltages to the liquid crystal layer through the matrix electrode, a voltage sufficient to change a stable alignment state of the ferro-electric liquid crystal molecular being applied to a selected pixel, a voltage insufficient to change a stable alignment state being applied to a non-selected pixel, an AC voltage for holding a stable alignment state being applied to a half-selected pixel, a bias value, which is the ratio of the amplitude of said voltage applied to the selected pixel to the amplitude of said AC voltage applied to the half-selected pixel, being set near the maximum value of B satisfying the following formula

$$B/(B-2) \geq Vsat/Vth.$$

wherein Vsat is the minimum value of voltage which enables to change a stable alignment state to the other state and Vth is the maximum value of voltage which enables to hold said stable alignment state.

4,762,401

ELECTROCHROMATIC SYSTEM WITH THIRD ELECTRODE

Friedrich Bancke, Mainz; Klaus Mücke, Bad Kreuznach, and Bernd Metz, Mainz, all of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed May 2, 1986, Ser. No. 858,959
Claims priority, application Fed. Rep. of Germany, May 4, 1985, 3516021
Int. Cl.[4] G02F 1/01
U.S. Cl. 350—357 6 Claims



1. An electrochromatic transparent layer system hermetically sealed against an exchange of matter with the environment, comprising at least one electrochromatic layer, at least a front and a rear electrode separated by an hydrogen ion conductive layer, and at least one hydrogen ion supplying layer which simultaneously is a hydrogen ion storing layer, characterized by the fact that, seen in the direction of light incidence through the layer system, there is (a) an additional hydrogen ion-conducting layer behind the rear electrode and (b) an additional electrode behind the additional hydrogen-ion conducting layer which is capable of oxidizing diffused hydrogen gas into hydrogen ions.

4,762,402

SYSTEM MAKING IT POSSIBLE TO OBTAIN A SELECTIVE REACTION IN PHOTOCHEMICAL PROCESSES ON THE BASIS OF LASER BEAMS INCORPORATING MEANS FOR DISTRIBUTING SAID BEAMS

Maurice Michon, Draveil, and Paul Rigny, Sceaux, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Apr. 20, 1987, Ser. No. 40,086
Int. Cl.[4] G21K 5/00
U.S. Cl. 350—370 7 Claims

1. A system making it possible to obtain a selective reaction in photochemical processes on the basis of laser beams comprising:

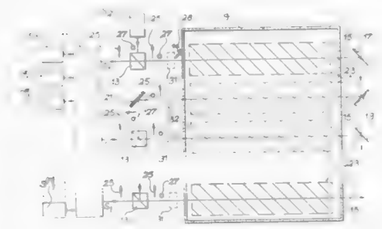
in a sealed enclosure, the substance whereof a species is to be extracted, said substance being in the form of a vapour flow,

laser sources emitting towards said enclosure a beam S_1

VOL 1093 ISS 2 AG 9 1988 UMI

permitting a selective excitation of the species to be extracted and a beam S_2 permitting a transformation of said excited species, wherein it comprises means for distributing the beams having:

means for superimposing the beams $S'_1, S''_1, \ldots S_1^{(n)}$ with n being an integer at least equal to 1, and for constituting several beams S_1 introduced at several points through the vapour to be treated,



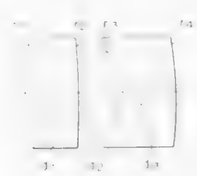
means for introducing into the enclosure the resultant beams S_1 and also beam S_2 so as to make them colinear, whilst distinguishing them by one of their characteristics, said introduction means being periodically distributed on parallel arms defining the propagation directions of said beams in the enclosure.

4,762,403

IMAGING OPTICAL SYSTEM HAVING A DISTRIBUTED INDEX LENS

Jun Hattori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1985, Ser. No. 720,082
Claims priority, application Japan, Apr. 13, 1984, 59-75389; Apr. 16, 1984, 59-76821; Apr. 18, 1984, 59-78084; Jun. 19, 1984, 59-12575
Int. Cl.[4] G02B 9/04, 3/00
U.S. Cl. 350—413 42 Claims



1. An imaging lens system formed by two lenses whose refractive index continuously varies in conformity with the distance from the optic axis, comprising:

a first lens disposed on the object side, said first lens having a refractive index distribution in which the refractive index thereof increase away from the optic axis, the shape of said first lens being a shape in which the thickness thereof is greatest on the optic axis and decreases away from the optic axis; and

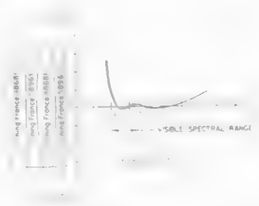
a second lens disposed on the image side, said second lens having a refractive index distribution in which the refractive index thereof decreases away from the optic axis, the shape of said second lens being a shape in which the thickness thereof is smallest on the optic axis and increases away from the optic axis.

4,762,404

COLOR-CORRECTED LENS SYSTEMS

Romeo I. Mercado, San Jose, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 419,705, Sep. 20, 1982. This application Dec. 22, 1986, Ser. No. 944,792
Int. Cl.[4] G02B 3/00
U.S. Cl. 350—483 43 Claims



1. An optical system rotationally symmetric about an axis, said system comprising a lens quadruplet having a common focal length on said axis for four optical wavelengths, said lens quadruplet comprising a first lens element made of an optical material having a refractive index of approximately 1.49 and an Abbe number of approximately 81.40 at a base wavelength of 0.546 micrometers, a second lens element made of an optical material having a refractive index of approximately 1.59 and an Abbe number of approximately 60.94 at said base wavelength, a third lens element and a fourth lens element, one of said third and fourth lens elements being made of the same optical material as said first lens element, and another one of said third and fourth lens elements being made of the same optical material as said second lens element.

4,762,405

INVERTED-DESIGN MICROSCOPE

Yasuo Inoue, and Itaru Endo, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 717,091, Mar. 27, 1985, abandoned. This application Apr. 27, 1987, Ser. No. 42,519
Claims priority, application Japan, Mar. 29, 1984, 59-061769
Int. Cl.[4] G02B 21/32, 21/14
U.S. Cl. 350—507 4 Claims



1. An inverted-design microscope comprising:

a stage on which an object to be observed can be placed;

an objective provided movable along the optical axis below said stage to enable an observer to observe said object placed on said stage from the lower side;

a condenser lens unit for an illuminating system arranged to face said objective across said stage interposed between them;

a glass stylus having a tip part and extending along the optical axis of said objective, said glass stylus being positioned above said object between said object and said condenser lens unit for an illuminating system to move along the optical axis to enable said tip part to prick said object vertically thereto, said glass stylus being held to face said objective by an arm means attached to an objective holding means provided as a revolver on which said objective is mounted;

a first driving means for vertically moving said objective holding means on which said objective is mounted, to focus and prick said object; and

a second driving means for vertically moving said tip part to a position slightly above the focus position of said objective.

4,762,406

MODULAR EYEGLASSES

Walter Steiner, Säntisstrasse 52, Brütten 8311, Switzerland

Filed Dec. 17, 1985, Ser. No. 809,896
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447369
Int. Cl.[4] E02C 5/12, 5/04
U.S. Cl. 351—154 4 Claims



1. Eyeglasses including:

a pair of lenses;

a nosepiece selected from a plurality of nosepieces;

a holding element having a continuous groove for removably and slidingly receiving said nosepiece and said pair of lenses, each lens of said pair of lenses being located on a respective opposite side of said nosepiece;

said nosepiece and said lenses being slidably movable along said continuous groove in said holding element to positions to accommodate the eye spacing of an eyeglasses wearer, said nosepiece and said lenses having surfaces engaging the surfaces defining said continuous groove to hold said nosepiece and said lenses in said positions; and

said eyeglasses further including a pair of earpieces for supporting said eyeglasses on the ears of the eyeglasses wearer.

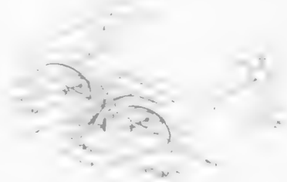
4,762,407

PROCESS FOR PREPARATION OF SPECTACLES

Wilhelm Anger, Via Brattas 4, CH-7500 St. Moritz, Switzerland, and Eric Steinhauer, La Canada, Calif., assignors to Wilhelm Anger, St. Moritz, Switzerland

Filed Nov. 29, 1984, Ser. No. 676,475
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1984, 3436133
Int. Cl.[4] A61B 3/10
U.S. Cl. 351—204 31 Claims

1. Process for the construction of spectacles from two lenses and a frame which comprises a bridge including at least one pad having a reposing surface, two flanges and two temples, said process comprising the steps of: establishing a spatial coordinate system; using an optical means which observes the wearer's face from the front to determine the coordinates in said system of the centers of the wearer's eyes as reference points; specifying an initial target position in said coordinate system which said lenses are intended to occupy relative to the face of the wearer; using said optical means to determine the coordinates in said system of at least one point on the surface of the wearer's nose; subsequently determining a final target position which said lenses are intended to occupy in said spatial coordinate system and relative to sid reference points and said point on thwearer's nose; correcting, if necessary, the dioptric effects of the lenses to be in accord with the final target position; using said optical means to determine, relative to said final target position, the coordinates of a point on said reposing



surface intended for contact with the wearer's nose; and joining the spectacle lenses, said bridge and the remaining components of the frame in such a manner that the lenses occupy said final target position when the point on said reposing surface of said pad contacts the wearer's nose.

4,762,408

PROGRESSIVE MULTIFOCAL LENS AND SPECTACLES USING SAME

Toshihide Shinohara, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jun. 30, 1986, Ser. No. 880,515
Claims priority, application Japan, Jul. 9, 1985, 60-150512
Int. Cl.[4] G02C 7/06
U.S. Cl. 351—169 13 Claims



1. A progressive multifocal ophthalmic lens comprising first and second refractive surfaces, said first refractive surface having a central basic curve defined thereon which extends essentially vertically therealong and divides said first refractive surface into a left portion and a right portion, and including a far vision viewing zone in an upper portion for viewing mainly distant objects, a near vision viewing zone in a lower portion for viewing mainly nearby objects, and an intermediate vision viewing zone for viewing mainly intermediate objects between said far and near vision viewing zones, said far vision viewing zone and said near vision viewing zone each having an optical center and a clear vision viewing zone, a predetermined additional power being added between the optical center of the far vision viewing zone and the optical center of the near vision viewing zone along said central basic curve, the gradient G of the focal power variation between said optical center of the far vision viewing zone and said optical center of the near vision viewing zone satisfying the condition:

$$G \leq ADD/20 \text{ (diopter/mm)},$$

wherein ADD is said additional power in units of diopter,

the far vision viewing zone in the portion above said optical center of said far vision viewing zone having said clear vision viewing zone including said central basic curve and defined by the condition:

VOL 1093 ISS 2 AG 9 1988 UMI

$(n-1)\times|C1-C2|\leqq 0.5\ (m^{-1})$,

where n is the refractive index of the lens material, and C1 and C2 are the principal curvatures at each point on the refractive surface of the lens, and wherein m^{-1}=1/meter,

the maximum width W (mm) of the said clear vision viewing zone in said far vision viewing zone satisfying the condition:

$5\leqq W\leqq 30$ (mm).

4,762,409

LIGHT BULB UNIT FOR A SLIT LAMP

Mark K. Swannie, 1185 Stanton Ct., Colorado Springs, Colo. 80907

Filed Apr. 7, 1986, Ser. No. 849,117
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—214 23 Claims



1. A light bulb unit primarily intended for use in a slit lamp for examining eyes, said unit including:

a substantially circular, disc-shaped base member extending about a central axis substantially in a plane,

first and second support members, each of said support members being elongated and having first and second end portions spaced from each other, and means for mounting said first and second support members to said base member with the second end portions of each respective support member spaced from said base member,

an encapsulated light bulb, said light bulb having a filament, first and second electrode members attached to said filament, and bulb means for encapsulating said filament and a first portion of each of said first and second electrode members, each of said electrode members having a second portion extending outwardly of said bulb means,

means for mounting the second portion of said first electrode member to the second portion of said first support member and means for mounting the second portion of said second electrode member to the second portion of said second support member whereby said encapsulated light bulb is supported on said base member with the filament thereof at a predetermined distance from the base member, and,

a light reflector having a convex side and means for mounting said light reflector between said filament and said base member with said convex side thereof facing said filament wherein light emanating from said filament toward said base member is substantially reflected away from said base member.

4,762,410

OPHTHALMIC INSTRUMENT

Kyoji Sekiguchi, Tokyo; Isao Matsumura, Yokosuka, and Haruhisa Madate, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 596,412, Apr. 3, 1984. This application Jan. 12, 1987, Ser. No. 4,822
Claims priority, application Japan, Apr. 7, 1983, 58-61415; Apr. 7, 1983, 58-61416; Apr. 7, 1983, 58-61417
Int. Cl.[4] A61B *13/14*
U.S. Cl. 351—206 8 Claims



1. An opthalmic instrument having:

illuminating means for illuminating an eye being examined with a variable quantity of illumination light;

imaging means for imaging a predetermined portion of the eye being examined at a predetermined image plane position along an optical axis;

first light receiving means for detecting the quantity of illuminating light directed to the eye being examined, second light receiving means for detecting the quantity of light reflected from a portion of the eye being examined during blinking of the eye, and operation means for comparing said quantity of reflected light detected by said second light receiving means with said quantity of illuminating light detected by said first light receiving means; wherein

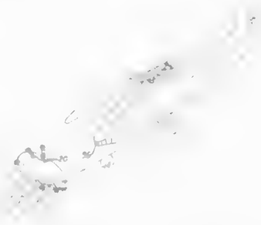
the second light receiving means is disposed on a first side of the optical axis and an upper eyelid of the eye being examined is the light reflecting portion and is located on a second side of the optical axis, opposite to the first side.

4,762,411

BORESIGHT ALIGNMENT VERIFICATION DEVICE

Stephen K. Pitalo, Huntsville; Donnie T. Walden, Cullman, and Henry P. Lay, Huntsville, all of Ala., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 712,103, Mar. 15, 1985. This application Sep. 10, 1987, Ser. No. 97,331
Int. Cl.[4] G01B *11/26*
U.S. Cl. 356—152 7 Claims



2. A boresight alignment device for optically determining

alignment of a vehicle-mounted weapons system having a reflective reference fixture defining the boresight thereof to a vehicle boresight based on a reflective reference fixture mounted on said vehicle or to a vehicle-mounted sighting system, said device comprising:

a portable housing for independent disposition in spaced relation to said vehicle;

means in said housing for generating a collimated light ray;

periscope means for providing two-way reflective optical communication of collimated light rays, one end of said periscope means being rotatably attached to said housing in optical communication with said generating means, and the other end of said periscope means being radially and annularly moveable relative to said housing and movable relative to said vehicle for selective optical alignment with one of said sighting system and said reference fixture;

means in said reference fixture for retroreflecting part of said light ray and for reflecting part of said light ray at a predetermined angle of said retroreflected light ray;

means for adjusting the path of the light ray from said generating means to a path representative of the boresight of said vehicle or of said sighting system; and

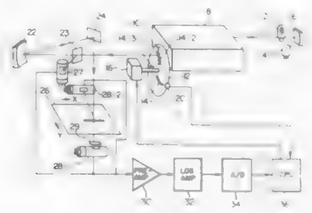
sensor means disposed in said housing for receiving and recording the light rays reflected through said periscope means from said reference fixture, said reflected light rays generating on said sensor means two points representative of the boresight error between said weapons system and one of said vehicle boresight and said sighting system.

4,762,412

OPTICAL SCANNING DEVICE

Kunihiko Ohkubo, and Shunichiro Sasaki, both of Kyoto, Japan, assignors to Shimadzu Corporation, Kyoto, Japan

Filed Dec. 24, 1985, Ser. No. 813,140
Claims priority, application Japan, Dec. 26, 1984, 59-275164; Dec. 27, 1984, 59-277562; Dec. 29, 1984, 59-275871
Int. Cl.[4] G01J *3/42*
U.S. Cl. 356—319 9 Claims



1. A chromatoscanner for scanning a specimen surface comprising:

a spectroscope having an elongated outlet slit for producing a light beam in the elongate shape of said outlet slit;

a rotatable disk having a slit therethrough beginning a selected distance from the center of said disk and extending to a point adjacent the periphery of the disk, said disk being mounted between said elongated outlet slit and the specimen and disposed to intersect said elongated beam of light, said slit being configured to pass a different portion of said elongated beam to scan the specimen upon rotation of said disk to rotate said slit through said elongated beam of light;

means for rotating said disk, the position of said portion of said elongated beam passing through said slit changing relative to the center of said disk, upon angular rotation of said disk, to perform an individual scan of said specimen along a discrete scan path each time said slit rotates past said elongated outlet slit;

means for generating absorbancy data for each of said individual scans of the specimen by measuring the degree of transmission of said light beam through the specimen along each of said discrete scan paths;

position detecting means for producing position data corresponding to the position of each of said discrete scan paths by measuring the angle of rotation of said disk by said rotating means;

memory means for storing said absorbancy data and said position data corresponding to each of said discrete scan paths;

data reading control means for selecting a part of each individual scan path for which absorbancy data is read; and

data reading means for reading said selected absorbancy data from said memory means in accordance with said position data stored in said memory means.

4,762,413

METHOD AND APPARATUS FOR MEASURING IMMUNOLOGICAL REACTION WITH THE AID OF FLUCTUATION IN INTENSITY OF SCATTERED LIGHT

Akihiro Nambe, Tokyo; Fumio Uchino, Hachioji; Hitoshi Tateoka, Hachioji; Masahiro Ohno, Hachioji; Outaro Ando, Hino; Kouichi Karaki, Fuchu, and Tatsuo Nagasaki, Musashino, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1985, Ser. No. 769,965
Claims priority, application Japan, Sep. 7, 1984, 59-186282; Sep. 7, 1984, 59-186283; Sep. 7, 1984, 59-186284; Sep. 7, 1984, 59-186285; Sep. 7, 1984, 59-186286; Sep. 8, 1984, 59-186253; Sep. 8, 1984, 59-187254; Sep. 8, 1984, 59-187255; Sep. 8, 1984, 59-187256
Int. Cl.[4] G01N *21/51, 33/557, 35/02*
U.S. Cl. 356—339 25 Claims



1. A method of measuring immunological reaction comprising the steps of:

projecting radiation to a reaction liquid containing at least antigen and antibody;

detecting radiation scattered by particulate substances in the reaction liquid;

deriving a plurality of power spectrum densities of fluctuation in intensity of said scattered radiation;

deriving a mean power spectrum density in accordance with said plurality of power spectrum densities; and

measuring antigen-antibody reaction on the basis of said mean power spectrum density.

4,762,414

STATIC INTERFEROMETRIC ELLIPSOMETER

Giorgio Grego, Venaria, Italy, assignor to Cselt-Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Apr. 10, 1986, Ser. No. 850,493
Claims priority, application Italy, Apr. 23, 1985, 67378 A/85
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—349 3 Claims

1. An interferometric ellipsometer for measuring optical properties of a sample, comprising:

a light source generating a beam of two monochromatic light radiations with slightly different frequencies;

polarizing means in the path of said beam for linearly polar-

VOL 1093 ISS 2 AG 9 1988 UMI

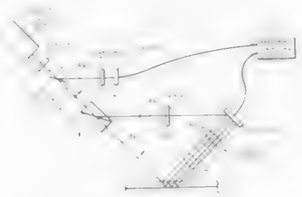
izing the two monochromatic light radiations thereof in two perpendicular planes;

a beam splitter in the path of the beam generated by said light source for subdividing said beam into a first fractional beam and a second fractional beam each composed of said two monochromatic light radiations with slightly different frequencies and for directing said fractional beams along separate paths;

a first photodetector in the path of said first fractional beam receiving said first fractional beam without passage through and reflection by said sample for generating a first beat from said two monochromatic light radiations;

separating means in the path of said second fractional beam for separating the second fractional beam into two light beams of different polarization planes and transmitting the two light beams of different polarization planes respectively along first and second noncoincident paths;

a second photodetector disposed along said first path and



receiving the light beam of one of said polarization planes transmitted therealong without passing through said sample;

means for positioning said sample in said second path, for collecting radiation reflected from said sample into a reflected beam having a component polarized in the same plane as said light beam transmitted along said first path, and directing said reflected beam onto said second photodetector to generate a second beat frequency between said two monochromatic light radiations with slightly different frequencies whereby said second beat has an amplitude proportional to the magnitude of said component and a phase relative to the first beat depending upon the phase shift between said component of said reflected beam and said light beam transmitted along said first path; and

measuring and computing means electrically connected to said first and second detectors for calculating values of said optical properties from said amplitude and the phase of said second beat relative to said first beat.

4,762,415

MULTIPLE AXIS RING LASER GYROSCOPES

John A. Geen, and David J. Guppy, both of Bracknell, England, assignors to British Aerospace Plc, London, England

Continuation of Ser. No. 626,245, Jun. 29, 1984, abandoned. This application Apr. 25, 1986, Ser. No. 858,896

Claims priority, application United Kingdom, Jun. 29, 1983, 8317599

Int. Cl.[4] G01C *19/64*

U.S. Cl. 356—350 11 Claims

1. A multiple axis ring laser gyroscope comprising:

at least one mirror shared by beams of a plurality of cavities;

a laser medium shared by the plurality of cavities which therefore have the same natural frequency; and

offsetting means arranged so that the mean frequency of the beam in each one of the plurality of cavities is offset from the mean frequency of the beams in at least one other of the plurality of cavities and for reducing the cross-coupling effect between the beams of any two of the plurality of cavities;

said offset frequency amount being sufficient to avoid the cross-coupling effect between the beams of any two of the plurality of cavities in order to avoid rate locking, but the



offset frequency amount being small relative to the mode spacing in each one of the plurality of cavities.

4,762,416

MONOMODE OPTICAL FIBER RECIPROCAL RING INTERFEROMETER DEVICE

Hervé Lefevre, Paris, and Alain Esard, Montrouge, both of France, assignors to Thomson-CSF, Paris, France

Filed Nov. 5, 1986, Ser. No. 927,061

Claims priority, application France, Nov. 8, 1985, 85 16600

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—350 7 Claims



1. A ring interferometer device including a monomode optical fiber forming said ring, means for emitting coherent light energy at a given wave length, means for separating and mixing the radiation so as to direct the coherent light energy emitted, simultaneously and in equal parts, to both ends of the monomode optical fiber and for recombining the radiation emerging from both ends of the monomode optical fiber and a monomode optical fiber segment having a core and a sheath, which monomode optical fiber segment forms a mode filter disposed between the separation and mixing means and the light energy emission means, wherein said monomode fiber segment is provided with shutters generating directional losses creating a beam escaping from said optical fiber in a given mean propagation direction and an opto-electronic member is provided for detecting said beam.

4,762,417

FRINGE SCANNING POINT DIFFRACTION INTERFEROMETER BY POLARIZATION

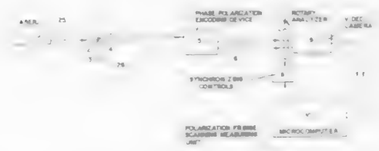
Shudong Wu; Xiangzhen Chen, and Xiou Tao, all of Shanghai, China, assignors to Shanghai Institute of Optics and Fine Mechanics, Academia Sinica, Shanghai, China

Filed Jun. 26, 1986, Ser. No. 879,000

Claims priority, application China, Aug. 6, 1985, 85106007

Int. Cl.[4] G01B *9/02*

U.S. Cl. 356—351 10 Claims



1. A polarization fringe scanning digital interferometer for testing optical quality of optical components, comprising:

A. laser means for producing a beam of light adapted to be passed to an optical component under test;

B. device means adapted to receive said beam of light from said optical component under test for performing a phase polarization encoding on the wavefront of said beam of light as it passes through said device means;

C. analyzer means capable of being rotated for transmitting said phase polarization encoded wavefront;

D. camera means receiving said encoded wavefront transmitted by said analyzer means for producing video signals representing said encoded wavefront;

E. computer means for processing said video signals from said camera means and producing control signals relating to a desired rotation of said analyzer means; and

F. synchronizing means for rotating said analyzer means in response to said control signals to achieve synchronous polarization fringe scanning and synchronous measurement.

4,762,418

ANGLE-OF-OPTICAL-ROTATION VARIATION MEASURING APPARATUS

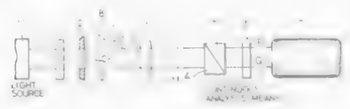
Toshiaki Ito; Mitsuo Hiramatsu, and Isuke Hirano, all of Shizuoka, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Jul. 6, 1987, Ser. No. 70,253

Claims priority, application Japan, Jul. 8, 1986, 61-160477

Int. Cl.[4] G01N *21/21*

U.S. Cl. 356—364 6 Claims



1. An angle-of-optical rotation variation measuring apparatus comprising:

an exciting pulse generating source for producing and providing an exciting pulse to a specimen;

a light source for providing a monochromatic linearly polarized light beam with said specimen;

continuous analysis means for optically rotating said light beam passed through said specimen at successively different angles in the direction of a reference line predetermined to said apparatus and transmitting as an output light beam a part of said light beam which is optically rotated at a predetermined angle; and

a streak tube for receiving said output light beam from said analysis means in a direction perpendicular to a time axis of said streak tube.

4,762,419

METHOD OF DETERMINING SURFACE RELIEF WITHOUT MAKING CONTACT THEREWITH

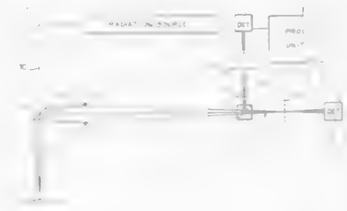
Jean-Marie Caussignac, Le Perreux Sur Marne, and Gérard Morel, Courbevoie, both of France, assignors to Laboratoire Central Des Ponts Et Chaussees, Paris, France

Filed Jan. 28, 1987, Ser. No. 7,751

Claims priority, application France, Jan. 29, 1986, 86 01263

Int. Cl.[4] G01B *11/30*

U.S. Cl. 356—371 10 Claims



1. A method of determining the measuring relief on the surface of an object or a structure without making direct contact with said surface, wherein:

the surface under investigation is illuminated by a beam of electromagnetic waves;

an objective lens is used to focus the beam as backscattered from said surface;

the beam coming from said objective lens is split into a measurement beam and a reference beam, said measurement beam being subjected to the action of a diaphragm and having a total energy of value Wf after being subjected to the action of said diaphragm, and the reference beam possessing a total energy of value Wo and not being subjected to the action of a diaphragm;

the incident beam and the objective lens are displaced relative to the surface under investigation parallel thereto and at a constant average distance therefrom;

the energies of the measurement beam and the reference beam are continuously measured during said displacement, and for each measurement point the ratio of their respective values Wf/Wo is determined, with the variation in said ratio during said displacement being representative of the relief in the surface under investigation;

the incident beam used to illuminate the surface is narrow, concentrated, and of known circularly symmetrical energy distribution, and said diaphragm being circularly symmetrical.

4,762,420

PHOTOMETRIC READING DEVICE FOR SEROLOGICAL ANALYSIS

Alan R. Bowley, Inverness, Scotland, assignor to Fisons plc, Ipswich, England

Filed Mar. 25, 1987, Ser. No. 30,176

Claims priority, application United Kingdom, Apr. 1, 1986, 86/07975

Int. Cl.[4] G01N *21/59*

U.S. Cl. 356—436 10 Claims

1. A photometric reading device comprising

a plurality of reading elements; and

means of bringing about continuous motion relative to said

VOL 1093 ISS 2 AUG 9 1988 UMI

reading elements of first and second rows of samples arranged transverse to the direction of relative motion,



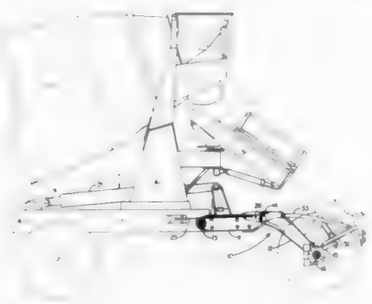
said reading elements being arranged to come into registration during said relative motion sequentially with the samples in the first row of samples and thereafter with the samples in the second row of samples.

4,762,421

TAG AXLE ASSEMBLY FOR WORK VEHICLES

Ronald E. Christenson, Mantorville, and Garwin B. McNeilus, Dodge Center, both of Minn., assignors to McNeilus Truck and Manufacturing, Inc., Dodge Center, Minn.

Filed Jul. 6, 1987, Ser. No. 70,331
Int. Cl.[4] B28C 5/18; B60S 9/00
U.S. Cl. 366—54 11 Claims



1. In combination with a ready-mix concrete truck of the type having (1) a longitudinal extending frame including first and second spaced apart side members supported on a plurality of transversely extending axles, said axles each having one or more wheels affixed to the opposite ends thereof, and (2) a drum for carrying a cement mixture supported above the frame at least in part by a rear support member, an auxiliary wheel assembly for said truck comprised of:

(a) first and second primary torque arm means, each being pivotally attached at one end thereof to said first and second side members of said frame proximate the rear end of said frame members;

(b) first and second secondary torque arm means, each pivotally attached at one end thereof to the opposite end of said first and second primary torque arm means;

(c) first and second stub axle means extending perpendicularly outward from said first and second secondary torque arm means respectively;

(d) further wheel means journaled for rotation on said first and second stub axle means;

(e) a transversely extending spacer member having first and second ends connected to said first and second secondary torque arm means respectively;

(f) a linear actuator means operatively coupled to said first and second primary arm means and to said frame for moving said further wheel means between a ground engaging disposition rearward of the ends of said first and second side members of said frame and an elevated disposition wherein said wheel means straddle the rear portion of said first and second side members of said spacer and said support member is located above the lowermost portion of said frame;

(g) a guide member pivotally attached at one end to said first side members of the frame and pivotally attached at the other end to at least one of said secondary torque arm means near said pivotal connection between said primary arm means to which it is joined for guiding movement of said primary and secondary arm means during movement of said further wheel means between said ground engaging disposition and said elevated disposition; and

(h) means associated with said pivotal attachment between said primary and secondary torque arms for engaging said rear support member supporting said drum for further guiding movement of said further wheel means between said ground engaging disposition and said elevated disposition.

4,762,422

DEVICE FOR AUTOMATICALLY CONTROLLING THE DENSITY AND VISCOSITY OF THE ABRASIVE MIXTURE AND THE QUANTITY OF METALLIC MIDDLINGS USED IN THE SAWING OF GRANITE OR HARD STONE

Luca Toncelli, via Giovanni XXIII, 2, Bassano del Grappa (Vicenza), Italy

Filed Mar. 11, 1987, Ser. No. 24,610
Claims priority, application Italy, Mar. 14, 1986, 85525 A/86
Int. Cl.[4] B01F 15/04
U.S. Cl. 366—141 1 Claim



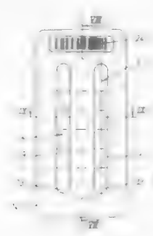
1. In the operation of sawing granite or hard stones wherein an abrasive mixture containing a determined amount of metallic middlings and of a determined density and viscosity is used to saw the granite or hard stones, wherein the abrasive mixture is introduced through a delivery conduit (2) to the sawing machine along the path of said delivery conduit and wherein a sample of said abrasive mixture is removed at time intervals and is introduced in a hopper and after each determination the residue is removed and recycled to said conduit, a device for automatically carrying out the operations of controlling the density and viscosity of the abrasive mixture and determining the quantity of said metallic middlings for use in said operation of sawing granite or hard stones, which device is inserted along the path of said conduit (2), said device comprising a dosing hopper (1), a first valve (3) along the path of said conduit for controlling the flow of a sample of the abrasive mixture to said dosing hopper (1) up to a leveling indicator (7) within said hopper, means (9) for introducing water into said dosing hopper and diluting the sample of said abrasive mixture and subsequently washing said hopper, said hopper having a second valve (4) connected to a discharge tube (5), said leveling indicator determining the maximum amount of the sample of the abrasive mixture to be introduced into said hopper, whereby the flow of said mixture after said leveling indicator is reached is interrupted, a stirrer (6) actuated by an electric motor (8) within said dosing hopper, said stirrer (6) rotating with a constant number of turns, said electric motor being subjected to a variation of the absorption of the variable current as a function of the density of the sample of said abrasive mixture, means for determining the absorption of the current required by the electric motor, means (11) for weighing the mixture of said sample after the sample has been diluted, said mixture containing said metallic middlings, means for discharging the residue from said hopper and recycling said residue to said conduit (2), whereby it is possible to determine the density and viscosity of said sample, and determine the quantity of metallic middlings contained in the sample of the mixture and to re-establish the optimum value of the metallic middlings in the mixture for use in the operation of sawing.

4,762,423

EVAPORATION CALORIMETER

Walter Basta, Zanaschkagasse 12/29/3, A-1120 Vienna, Austria

PCT No. PCT/AT86/00024, § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05879, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 27, 1986, Ser. No. 946,573
Claims priority, application Austria, Mar. 27, 1985, 911/85; Aug. 28, 1985, 2521/85
Int. Cl.[4] G01K 17/02
U.S. Cl. 374—31 16 Claims



1. A liquid-evaporation calorimeter for determining the heat delivered from a surface, comprising:

a housing composed of a thermally insulating material and mounted on said surface;

a measuring bulb in said housing containing a liquid evaporatable by heat delivered from said surface and provided with a vent to release vapors of said liquid, whereby a level of said liquid in said measuring bulb drops upon heating of said measuring bulb and evaporation of said liquid in said measuring bulb;

a comparison bulb in said housing thermally isolated from said surface and containing said liquid, said comparison bulb being provided with a vent to release vapors of said liquid, whereby a level of said liquid in said comparison bulb drops upon evaporation of said liquid in said comparison bulb;

heat-conductive means in said housing forming a thermal bridge in direct contact with said measuring bulb, spaced from said comparison bulb and in heat-conducting relation with said surface for conducting heat from said surface to said measuring bulb; and

a transparent plate on said housing covering at least portions of said bulbs and through which said levels are visible, said transparent plate defining in said housing with said bulbs an air gap separating said plate from said bulbs, whereby a difference in said levels represents heat delivered by said surface.

4,762,424

LOW TEMPERATURE DILATOMETER

Thomas A. Baricevac, Bayside, and Karl-Heinz Raffalski, Wheatley Heights, both of N.Y., assignors to Theta Industries, Inc., Port Washington, N.Y.

Division of Ser. No. 736,813, May 22, 1985, Pat. No. 4,636,090.
This application Jan. 2, 1987, Ser. No. 96
Int. Cl.[4] G01N 25/16, 3/08; G01K 1/14
U.S. Cl. 374—56 2 Claims



1. Low temperature dilatometer comprising a combination cryostat/furnace, a specimen tube having an open end that is insertable into said cryostat/furnace, a specimen holder within said specimen tube and a dilation sensor coupled to a ceramic pushrod that is adapted to engage a specimen within said specimen tube,

said cryostat/furnace being an elongated block of metal that has been drilled longitudinally to form a tubular specimen chamber for receiving said specimen within said specimen tube, at least one tubular heating chamber containing an electric resistance heating element and at least one tubular cooling chamber within which a compressed refrigerant is expanded and

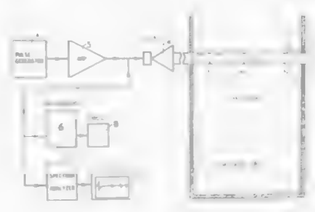
said specimen holder comprising a ceramic post that is adapted to engage a hole through a first end of said specimen and a ceramic hook that is adapted to engage a hole through a second end of said specimen and is coupled to said pushrod, said post being retained at its ends in notches on said open end of said specimen tube and said pushrod being adapted to apply a tensive force to said specimen.

4,762,425

SYSTEM FOR TEMPERATURE PROFILE MEASUREMENT IN LARGE FURNANCES AND KILNS AND METHOD THEREFOR

Parthasarathy Shakkottai, 2622 Gardi St., Duarte, Calif. 91010, and Shakkottai P. Venkateshan, No. 34, III Main Rd., Gandhi Nagar, Adyar, Madras 60020, India

Filed Oct. 15, 1987, Ser. No. 108,813
Int. Cl.[4] G01K 11/22
U.S. Cl. 374—117 11 Claims



1. A system and method for deriving data indicative of temperature variations in hot fluids in large chambers, kilns, process vessels and the like comprising a long, resistant, heat

VOL 1093 ISS 2 AG 9 1988 UMI

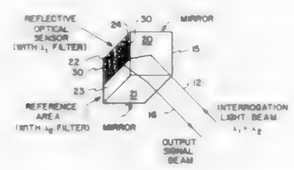
conducting sensor tube containing a chosen gas which serves to transfer the temperature profile in the hot fluid just outside said tube to said gas inside said sensor tube; said tube containing a chosen number of stubs or other reflecting means inside said sensor tube which serve to partially reflect sound pulses that are used to probe said temperature profile that has been transferred into said sensor tube; a transmitting and receiving means for generating and detecting said sound pulses and their multiple reflections which propagate inside said sensor tube; a means for measuring the time intervals between said various pulses in the train of said multiple reflections from said reflecting means inside said sensor tube; and output means for calculating, tabulating, and displaying said temperature profile and generating useful control signals to utilize said calculated temperature profile in said combustion chamber, kiln, or process vessel.

4,762,426

REMOTE PASSIVE TEMPERATURE SENSOR

Norman A. Foss, North Oaks, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 19, 1986, Ser. No. 943,418
Int. Cl.⁴ G01J *5/08;* **G01W** *1/00;* **G02B** *5/124, 26/08*
U.S. Cl. 374—130 **12 Claims**



2. A non-electrical, optically read condition sensor apparatus for determining the condition at a remote location, the apparatus comprising in combination:

a local ground instrument comprising;

means for generating an interrogation beam of radiant energy having a component λ_1 and a component λ_2;

means directing said interrogation beam to a remotely located corner-cube sensor; and,

return radiation sensing means for sensing the intensity of returned λ_1 and λ_2 components;

a passive, unpowered, remotely located corner cube sensor means comprising;

a reflective corner cube having three adjoining faces at right angles to each other;

a reference area on one of said corner cube faces;

λ_2 filter means associated with said reference area of said corner cube for returning said λ_2 component to said local ground instrument without modification;

a condition sensing area on said one of said reflective corner cube faces; λ_1 filter means associated with said condition sensing area, said sensing area including condition responsive bi-level film cantilever member means forming a part of said one of said reflective corner cube faces, said bi-level film consisting of two different materials which have different expansion coefficients whereupon as said condition changes, the bi-level film cantilever member means bends to a degree dependent on said condition, and thus deflects more or less of the λ_1 return radiation.

4,762,427

SENSOR FOR MEASUREMENT BY ELECTRICAL HEATING

Tomoshige Hori, Kitamoto, and Kensuke Itoh, Kodaira, both of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

Continuation of Ser. No. 830,944, Feb. 19, 1986, abandoned. This application Jul. 9, 1987, Ser. No. 71,565
Claims priority, application Japan, Sep. 6, 1985, 197230
Int. Cl.⁴ G01K *1/08, 1/14*
U.S. Cl. 374—141 **5 Claims**



1. A sensing and measuring device for measurement of temperature in a liquid or semi-solid food material by electrical heating comprising:

a sensor comprising

a stainless steel rod;

a first thermally contractible electrially insulating member covering said stainless steel rod;

a thin platinum wire wound about said first electrically insulating member;

a second thermally contractible electrically insulating member covering said thin platinum wire, said second electrically insulating member being heat-proof and resistant to strong alkali and strong acid;

means connected to said thin platinum wire for passing a constant DC current through said thin platinum wire, whereby heat is generated in said thin platinum wire such that said wire and said metallic core are heated to a temperature higher than the temperature of said food material; and

measurement means connected to said thin platinum wire for measuring the voltage in said platinum wire while the said constant DC current is flowing threrethrough, so that the temperature of said food material can be determined from the voltage in said thin platinum wire, which voltage is proportioned to the temperature of said food material.

4,762,428

TEMPERATURE SENSOR FOR A DRYER ACCESSORY ON A WEIGHING DEVICE

Robert Villiger, Embrach, Switzerland, assignor to Mettler Instrumente AG, Greifensee, Switzerland

Filed Apr. 30, 1986, Ser. No. 857,364
Claims priority, application Switzerland, May 10, 1985, 1991/85
Int. Cl.⁴ G01K *1/14*
U.S. Cl. 374—149 **2 Claims**

1. A dryer comprising in combination:

a precision weighing device having a weighing pan adapted to support items to be weighed;

a plurality of infrared heating elements disposed above said weighing pan; and

at least one temperature sensor for measuring the temperature above the items to be weighed, each said temperature

sensor including a temperature sensing element mounted within a thermally conductive support member disposed below said heating elements, said temperature sensing element being resiliently urged by a resiliently deformable member firmly against a portion of said support member for thermal contact therewith, each said support member having a downwardly directed opening therein adjacent said temperature sensing element, whereby said support



member shields said temperature sensing element from direct exposure to radiation from said heating elements;

each said support member being disposed such that said opening therein is directed towards said weighing pan, whereby the temperature sensed by said temperature sensor is a mean value of the radiated heat from said heating elements absorbed by said support member and the convection heat absorbed from the space above the items to be weighed.

4,762,429

ELECTRONIC CLINICAL THERMOMETER WITH A BATTERY LIFE WARNING DISPLAY

Toyoharu Fujikawa, Kawagoe, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 9, 1987, Ser. No. 36,713
Claims priority, application Japan, Apr. 22, 1986, 61-093102
Int. Cl.⁴ G08B *21/00;* **G06F** *3/14*
U.S. Cl. 374—163 **3 Claims**



1. An electronic clinical thermometer comprising:

a temperature oscillating circuit having a temperature sensor for detecting a body temperature;

a body temperature measuring circuit for making data on the body temperature in response to an output signal of the oscillating circuit;

a battery voltage detecting circuit for detection a voltage drop of a battery;

a digital display device having:

a plurality of seven segment digital patterns for displaying the body temperature in response to a signal of the body temperature measuring circuit;

a first additional pattern formed between middle segments of two adjacent digital patterns; and

a second additional pattern formed between upper segments of the two adjacent digital patterns of said plurality of seven segment digital patterns; and

an additional pattern decoder for driving the first and second additional patterns and being controlled by an output signal of the battery voltage detecting circuit so as to selectively display one of the body temperature and a battery condition;

said middle segments, upper segments and outside segments of the two adjacent digital patterns of said plurality of seven segment digital patterns and said first and second additional patterns being capable of constituting a battery life warning mark having the shape of a battery;

whereby only the battery life warning mark is display on the digital display device when the voltage drop of the battery is detected by the battery voltage detecting circuit.

4,762,430

RIBBED DRAW TAPE FOR THERMOPLASTIC BAG

Edward M. Bullard, East Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 9, 1987, Ser. No. 71,296
Int. Cl.⁴ B65D *33/28*
U.S. Cl. 383—75 **14 Claims**



1. A thermoplastic draw tape bag for carrying trash and the like having a non-roping thermoplastic draw tape comprising:

two thermoplastic panels forming an open top, closed bottom bag, said panels being joined along the sides of said bag;

a hem on said panels being folded over adjacent said top, the bottom of said hem being secured to the adjacent panel;

a thermoplastic draw tape in said hem secured at said sides to said panels, said draw tape having a plurality of integral thermoplastic ribs extending across the width of the tape and spaced along the length of the tape, each rib having a thickness greater than the thickness of said tape whereby roping of said draw tape is reduced when said draw tape is gripped to lift a loaded bag.

4,762,431

MODIFIED THERMAL PRINTING USING A HEATED ROLLER AND WITH LIFT-OFF CORRECTION

Clifford M. Denny; Hugh T. Findlay, both of Lexington; Stephen A. Popyach, Harrodsburg, and Deh C. Tao, Lexington, all of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 28, 1986, Ser. No. 856,528
Int. Cl.⁴ B41D *3/20*
U.S. Cl. 400—120 **1 Claim**



1. A thermal printer having a lift-off correction capability by applying heat at temperatures less than printing temperatures, a printhead for printing from a thermal transfer ribbon, a platen having a cylindrical surface to support paper being printed upon on said cylindrical surface, a ribbon feed system for directing said ribbon away from said printhead after printing, a carrier on which said printhead is mounted to traverse said

VOL 1093 ISS 2 AG 9 1988 UMI

platen for printing on said paper, and a heated roller having a concave outer surface which conforms to said cylindrical surface of said platen mounted on said carrier in a fixed, spaced position past the location of printing by said printhead a distance to leave at least the last two to three typical words printed by said printhead visually unobstructed, said roller pressing directly against printing transferred by said printhead from said ribbon, said roller operating at a temperature above ambient, below said printing temperatures, and below a temperature which impairs said lift-off correction capability.

4,762,432

METHOD OF THERMAL PRINTING

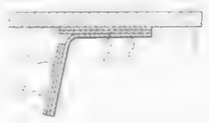
Seiji Ueyama, Hirakata; Hideo Taniguchi, and Hiromi Ogata, both of Kyoto, all of Japan, assignors to General Company Limited, Osaka and Rohm Company Limited, Kyoto, both of, Japan

Continuation of Ser. No. 759,856, Jul. 29, 1985, abandoned. This application Jun. 9, 1987, Ser. No. 60,016

Claims priority, application Japan, Mar. 15, 1985, 60-53068

Int. Cl.[4] B41J *31/00;* **B41M** *5/26*

U.S. Cl. 400—241.1 3 Claims



1. A method of thermal printing comprising:

placing an ink transferring medium between an ink receiving medium and a thermal printing head, said thermal printing head having a heating element,

contacting the heating element against the ink transferring medium to effect printing on the ink receiving medium, and

rapidly separating the ink transferring medium from the ink receiving medium immediately after printing, wherein

the ink transferring medium includes an ink layer which becomes cohesive when heated, said ink layer comprising:

ethylene-vinyl acetate (90:10) copolymer	about 70 parts by weight
carnauba wax	about 10 parts by weight
carbon black	about 20 parts by weight.

4,762,433

FLUID APPLICATOR FOR SHOES AND THE LIKE

Larry W. Bergeson, Racine, Wis.; Vincent J. Lasorso, Jr., Columbus, Ind.; Russell H. Petersen, Sturtevant, and Ronald G. Ruffalo, Racine, both of Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Jul. 2, 1987, Ser. No. 68,856

Int. Cl.[4] A47L *23/05, 13/16*

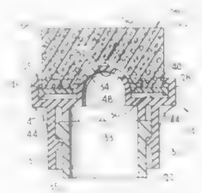
U.S. Cl. 401—206 18 Claims

1. A fluid applicator comprising:

a cap having a sidewall defining a cavity, the cap further having a resiliently-deformable domed surface surrounded by the sidewall, a portion of the domed surface extending outwardly from the cap cavity, the domed surface defining at least two spaced-apart apertures; and

an insert removably disposable into the cap cavity and engageable with the cap sidewall, the insert comprising a fluid-distributing substance;

at least one of the two spaced-apart apertures providing the domed surface with a valve means (1) which opens in response to deformation of the domed surface to allow fluid to flow by gravity through the one aperture when a portion of the domed surface in the vicinity of such aperture is subjected to a predetermined dome-deforming force and such aperture is disposed generally downwardly and (2) which closes automatically in a substantially fluid-tight manner upon removal of the predetermined force from the domed surface, the domed surface being so contoured as to enable fluid to flow by gravity generally away from each of the apertures when the domed surface is disposed generally upwardly;



at least a portion of the insert being movable relative to the domed surface for removably applying the predetermined force to the domed surface, for opening and closing the valve means.

4,762,434

RIBBON FEED DEVICE

Horofumi Hirano, Arakawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 731,396, May 7, 1985, abandoned. This application Mar. 30, 1987, Ser. No. 32,999

Claims priority, application Japan, May 10, 1984, 59-91874

Int. Cl.[4] B41J *33/22, 33/36*

U.S. Cl. 400—236.2 4 Claims



1. A ribbon feed device for a recording apparatus comprising:

drive means for rotating about a first shaft in clockwise and counter-clockwise directions in connection with a reciprocating motion of a carriage of said recording apparatus, said drive means including a drive gear rotatably supported by said first shaft and having teeth disposed around an outer periphery thereof;

ribbon feed means for feeding an ink ribbon rotating about a second shaft positioned parallel to said first shaft, said ribbon feed means including a gear having first and second concentric circular toothed surfaces having different pitch circle diameters, said first toothed surface being externally geared and said second toothed surface being internally geared, a space between said first and second shafts being smaller than a sum of radii of said drive gear and said ribbon feed means so that a face portion of said ribbon feed means overlaps with a face portion of said drive gear; and

a planetary gear positioned between said first toothed surface and said second toothed surface of said ribbon feed means and automatically rotating about said first shaft in a direction of said drive means for transferring rotating power directly from said drive means to said ribbon feed means by meshing with said ribbon feed gear means at said first toothed surface during the rotation of said drive means in said clockwise direction, and meshing with said ribbon feed means at said second toothed surface opposing said first toothed surface when the rotation of said drive means is in said counter-clockwise direction, so as to cause said ribbon feed means to always rotate in the same direction irrespective of the rotational direction of said drive means.

4,762,435

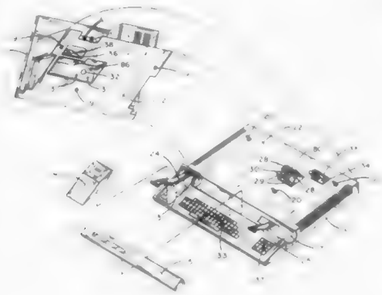
LETTERING APPARATUS HAVING A PRINTER-KEYBOARD INTERFACE

Michael M. Richardson, Scottsdale; Joseph M. Sega, Phoenix, both of Ariz., and Ronald F. Tuckner, White Bear Lake, Minn., assignors to Kroy Inc., Scottsdale, Ariz.

Continuation of Ser. No. 667,908, Nov. 2, 1984, abandoned. This application Jul. 11, 1986, Ser. No. 884,424

Int. Cl.[4] B41J *19/32*

U.S. Cl. 400—304 14 Claims



1. A lettering apparatus comprising:

a data input housing having a character font motor and a data input means embodied therein and a top interface and support surface, said character font motor including a shaft portion extending outwardly from said font motor and above said top interface and support surface;

a printer having a rotatable character font, a bottom interface and support surface for interfacing engagement with said top interface and support surface of said data input housing and means for connecting said printer to an electrical outlet, said printer being free of any character font motor, said printer further being manually operable independently and said character font being manually rotatable of said data input means and without electrical connection with said data input means; and

quick interface means facilitating quick and selective interfacing between said printer and said data input means and housing to automate said printer, said interface means including:

electrical interface means for providing said data input means with a power source and for providing control interface between said data input means and said printer, said electrical interface means having a first electrical interface element connected with said bottom interface and support surface of said printer and a second electrical interface element connected with said top interface and support surface of said data input housing, one of said first and second electrical interface elements including a protruding electrical alignment member, and the other including an electrical alignment cavity for engagement by said protruding electrical alignment member, one of said protruding electrical alignment member or electrical alignment cavity being tapered and one of said first or second electrical interface members and its included protruding electrical alignment member or electrical alignment cavity being adapted for limited movement in a plane substantially perpendicular to said protruding electrical alignment member for the purpose of accommodating limited misalignment between said data input housing and said printer; and

font motor interface means for operatively connecting the character font motor of said data input housing with the rotatable character font of said printer, said font motor interface means having a first font motor interface element connected with said bottom interface and support surface of said printer and a second font motor interface element connected with said top interface and support surface of said data input housing, one of said first and second font motor interface elements including a protruding font motor alignment member extending generally parallel to said protruding electrical alignment member and the other including a font motor alignment cavity for engagement by said font motor alignment member, one of said protruding font motor alignment member or font motor alignment cavity being tapered and one of said first or second font motor interface members and its included protruding font motor alignment member or font motor alignment cavity being adapted for limited movement in a plane substantially perpendicular to said protruding font motor alignment member for the purpose of accommodating limited misalignment between said data input housing and said printer, whereby said first and second electrical interface elements and said first and second font motor interface elements are respectively engaged by placing said bottom interface and support surface of said printer into aligned engagement with said top interface and support surface of said data input means.

4,762,436

BIO-MECHANICAL NEURO-SENSORY KEYBOARD STRUCTURE AND OPERATING METHODS

Barbara D. Herzog, and Stuart Herzog, both of 1433 E. Broadway, Tucson, Ariz. 85719

Continuation-in-part of Ser. No. 681,895, Dec. 14, 1984, abandoned. This application Jul. 16, 1986, Ser. No. 886,635

Int. Cl.[4] B41J *5/12*

U.S. Cl. 400—491.3 17 Claims



1. In a keyboard for computers, including terminals and input devices, word processing equipment, typewriters, and similar equipment, and simulators of such equipment, an improvement comprising:

a core structure comprising a plurality of keys, each of said keys having a fingerstrike surface which is the surface of the key that is touched or tapped by a fingertip to operate the key;

said plurality of keys having a left hand plurality of keys operable by touch with the fingertips of the index, middle, ring and little fingers of the left hand, and a right hand plurality of keys operable by touch with the fingertips of the index, middle, ring and little fingers of the right hand;

said left hand plurality of keys having a left hand positioning key being a key operated by the left middle finger, and said right hand plurality of keys having a right hand positioning key being a key operated by the right middle finger;

said core structure having means for positioning and maintaining the position of the fingertip of each middle finger

VOL 1093 ISS 2 AG 9 1988 UMI

on its hand positioning key by touch, and thereby positioning and maintaining the positions of the hands on said core structure by touch;

said means comprising:

at least three spaced apart three dimensional shapes on or near the perimeter of the fingerstrike surface on each of said left and right hand positioning keys;

the keys in said core structure other than said left and right hand positioning keys and other than additional hand positioning keys being free of said spaced apart three dimensional shapes;

said plurality of spaced apart three dimensional shapes on each of said left and right hand positioning keys being raised above the fingerstrike surface of each of said hand positioning keys;

the topmost parts of adjacent raised spaced apart three dimensional shapes being of sufficient height above each fingerstrike surface and there being sufficient space between the topmost parts of adjacent three dimensional shapes to enable neuro-sensory two-point discrimination and stereognosis by the fingertip of each middle finger;

the number and locations of said three dimensional shapes on the fingerstrike surface of each hand positioning key providing omni-directional positional and directional orientation of the position of the middle fingertip in relation to its hand positioning key and the direction to move the hand to position said middle fingertip on its hand positioning key;

whereby the fingertip of each middle finger is positioned on its hand positioning key by touch, and whereby the hands maintain accurate position for operating the core structure by touch with the fingers of both hands.

4,762,437

FASTENER

Seiji Mitomi, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Mar. 10, 1987, Ser. No. 24,263
Claims priority, application Japan, Mar. 31, 1986, 61-48243
Int. Cl.[4] F16B *19/00*
U.S. Cl. 403—406.1 1 Claim



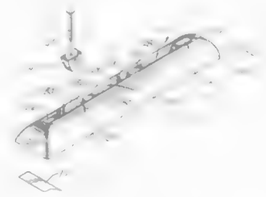
1. The combination comprising a one-piece resilient plastic fastener and a first work piece and a second work piece having respective first and second apertures therethrough, said apertures being aligned and said fastener extending through both of said apertures and detachably retaining said work pieces in close confronting assembled relation, said first aperture being substantially circular and said second aperture being substantially circular with a radial extension therefrom, said fastener including a base member and a main body having a main axis and extending axially from said base member and through said apertures, said base member having means thereon for rotating said fastener about said main body axis, said main body having a first resiliently displaceable engaging member projecting laterally from said main body and spaced a first predetermined distance axially along said main body from said base member and non-releasably snapped through said first aperture and axially engaging said first work piece to retain said fastener in assembled relation with said first work piece, and a second laterally displaceable engaging member spaced circumferentially from said first engaging member and spaced axially from said base member a second predetermined distance greater than said first predetermined distance and axially engaged said second work piece to hold said second work piece in assembled relation with said first work piece, rotation of said fastener aligning said second engaging member with the radial extension of said second aperture to permit said second work piece to be separated from said fastener and said first work piece, said fastener remaining in assembled relation with said first work piece for subsequent reuse.

4,762,438

LIGHTWEIGHT PARKING CURB

Kenneth M. Dewing, Porterville, Calif., assignor to Dewtek Corporation, Santa Fe Springs, Calif.

Filed Jun. 19, 1986, Ser. No. 876,085
Int. Cl.[4] E01F *13/00*
U.S. Cl. 404—6 12 Claims



6. A light weight parking curb comprising:

a hollow, plastic body having a base, top and longitudinally extending upwardly and inwardly projecting sides adapted to restrain movement of a vehicle tire, the body having a plurality of chambers extending from the top to the base, said chambers forming openings which converge in the direction of the base and communicating with recesses extending upwardly from the base; and

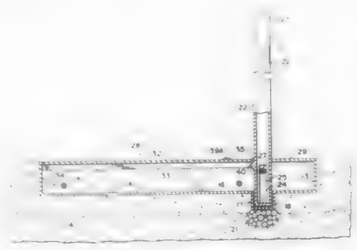
means cooperating with said chambers for fixing the body to a parking surface.

4,762,439

SECURITY BARRIER DEVICE

Martin P. Carlyle, 48, Reservoir Road, Erdington, Birmingham, England

Filed May 7, 1987, Ser. No. 46,744
Int. Cl.[4] E01F *13/00*
U.S. Cl. 404—6 6 Claims



1. A security barrier device comprising an elongate container having a pair of sides, a pair of ends interconnecting the sides and an open top, a single post member having a length and width less than that of the container such that in a first position thereof it can lie in the container along the length of the container, mounting means connected to the post adjacent one end thereof and to the container adjacent to a respective

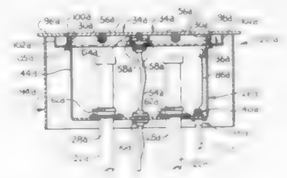
end thereof coupling said post to said container for pivotal movement of the post relative to the container from the first position to a second position in which the post extends from th container in a direction substantially at right angles thereto, said mounting means being arranged to allow limited sliding movement of said post in said second position thereof in a direction longitudinal of the post, latching means fixed on said container arranged such that said sliding movement of said post causes said post to engage said latching means in a latched condition of the post to hold said post to prevent said pivotal movement, cover means for said container mounted on said container for movement relative thereto from a closed position in which the cover means covers said container and said post in said first position of the post and in which said cover means covers said container and provides an opening through which said post projects in said second position of said post, to an open position in which said cover means allows said pivotal movement of said post, and locking means for locking said cover means in said closed position, said post including a lug defining an abutment surface extending outwardly from one side thereof and arranged at a position along the length of the post such that, with the post in said latched condition in engagement with said latch means and said cover means in said closed position thereof, said cover means engages said abutment surface to hold said post against said sliding movement of said post out of said latched condition whereby to lock said post in said second position thereof.

4,762,440

SPILL CONTAINMENT DEVICE

Toby Argandona, 21221 Running Branch Rd., Diamond Bar, Calif. 91765

Filed Jun. 16, 1986, Ser. No. 874,858
Int. Cl.[4] B65B *1/04*
U.S. Cl. 405—52 7 Claims



1. A spill containment device for a fill tube of a liquid storage tank comprising:

a spill container having a bottom opening for removably receiving the tank fill tube, a top access opening bounded circumferentially by wall means having an upper edge surrounding said top access opening through which top opening the fill tube is accessible for filling the tank through the fill tube, and an upwardly opening water drain channel surrounding said access opening outwardly of said wall means and separated from said access opening by said wall means,

means for sealing said container to the fill tube, whereby the containment device is adapted to contain any liquid spill during filling of the tank through its fill tube,

a removable cover closing said access opening, said cover having a top wall seating on said upper edge of said wall means and a depending circumferential flange about said top wall projecting downwardly into said channel, and drain means opening to said channel below the level of said upper wall edge for draining water from said channel to the exterior of said container, said channel draining means comprising a drain conduit extending downwardly from said channel through the bottom of said spill container.

4,762,441

SEALING PROFILE

Siegfried Glang, Hamburg, Fed. Rep. of Germany, assignor to Phoenix Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Oct. 8, 1986, Ser. No. 916,503
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1985, 3540494
Int. Cl.[4] E21D *11/38*
U.S. Cl. 405—152 7 Claims



1. A sealing profile formed of rubber or rubber-like material for sealing tunnel segments assembled to form a tubular tunnel, the segments each having a recess extending peripherally therearound, said sealing profile having a substantially cross-sectional shape in the form of two isosoles trapezoids joined along a common long base leg and defining a base side with two outwardly inclined first lateral sides and a back side parallel to the base side with two inwardly inclined second lateral sides, said base side including three longitudinally extending parallel fluted grooves, a first row of three longitudinally extending parallel ducts disposed proximate said back side and a second row of four longitudinally extending parallel ducts disposed parallel to said first row of ducts between said first row of ducts and said fluted grooves, the ducts in said first row each being in alignment with a respective fluted groove, and the ducts in said second row being laterally offset therefrom and the ducts in said first and second rows being of equal diameter and having substantially equal spacing between the ducts in each row and the ducts from row to row.

4,762,442

SUPPORT DEVICE FOR AN OFF-SHORE OIL DRILLING JACK-UP PLATFORM LEG AND PLATFORM INCLUDING SAID DEVICE

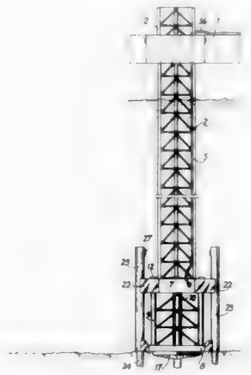
Pierre-Armand Thomas, Puteaux; Jean C. Naudin, Paris Cedex, and Michel Ningler, Courbevoie, all of France, assignors to Technip Geoproduction, Paris, France

Filed Dec. 18, 1986, Ser. No. 943,066
Claims priority, application France, Dec. 19, 1985, 85 18884
Int. Cl.[4] E02B *17/08*
U.S. Cl. 405—196 33 Claims

1. A support device for one of the several independent legs of an off-shore oil jack-up platform having a hull movably mounted on the legs, each of which is adapted to bear against the seabed when the platform is in a working position, said device comprising an individual, independent heightener adapted to be interposed between a respective leg of the platform and the sea bed so as to increase the depth of installation

VOL 1093 ISS 2 AG 9 1988 UMI

of the platform and improve the stability thereof, said heightener being provided with detachable, adjustable and lockable means for rigidly fixing the heightener to the lower end of the respective leg.



4,762,443

METHOD OF RENDERING SOILS IMPERVIOUS

Daniel Gouvenot, Clichy, France, assignor to Soletanche, Nanterre, France

Filed Jul. 30, 1986, Ser. No. 891,776

Claims priority, application France, Aug. 1, 1985, 85 11773

Int. Cl.⁴ E02D *3/12*

U.S. Cl. 405—263 4 Claims

1. Method of rendering a soil or a material like a mortar, a binder, or a concrete impervious by injecting it with a silica solution, characterized in that a finely ground powdered compound containing calcium with a solubility in water of between approximately 0.01 g/l and approximately 2 g/l is mixed into the silica solution, which has a ratio of SiO_2 to Na_2O of between 1 and 1.3, before injection.

4,762,444

SCREW TAP WITH LUBRICATION AND EXTRACTION BORES

Carl M. Mesa, 58357 C.R. 111, Elkhart, Ind. 46517

Filed Mar. 16, 1987, Ser. No. 25,941

Int. Cl.⁴ B23B *51/06;* **B23G** *5/06*

U.S. Cl. 408—59 10 Claims



1. A tap for forming internal threads on the inner wall of a bore, said tap including a longitudinally extending shank portion and an external threaded portion, said threaded portion being interrupted by at least one but less than six longitudinally extending flutes, said threaded portion terminating in a distal end, and a longitudinal cavity in the tap, said longitudinal cavity having an hexagonal cross-section and constituting means for rotating said tap by a mating tool having an hexagonal cross-section.

4,762,445

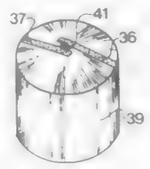
COMPOSITE SINTERED TWIST DRILL

John A. Bunting, Provo, and Kenneth H. Hanks, Orem, both of Utah, assignors to Precorp, Inc., Niles, Ill.

Filed Jun. 3, 1985, Ser. No. 740,260

Int. Cl.⁴ B23B *51/02*

U.S. Cl. 408—144 7 Claims



1. A helically fluted twist drill apparatus in which a drill shaft is operably and restrainably integrated to a drill blank of a first material, into which drill blank one or more regions of a second, highly abrasive particulate material are rigidly located and affixed through sintering, to in turn create a web, point and one or more flutes having cutting edges of said sintered abrasive particulate material within said first material, upon helical fluting thereof, as well as upon grinding and finishing of same, said twist drill apparatus comprising;

a drill blank of said first material having a cylindrically shaped region with a top and bottom side,

said drill blank including a generally conically shaped point region of said first material with said point at said top side of said cylindrically shaped region;

a first vein of sintered abrasive particulate, in the shape of a substantially narrow radially offset rectangular polyhedron, extending from the top of said conically shaped point region into said cylindrically shaped region of said drill bank, from the circumferential edge of said drill blank inwardly to and past the axial center point of said drill blank;

a second vein of sintered abrasive particulate, in the shape of a substantially narrow radially offset rectangular polyhedron, extending from the top of said conically shaped point region into said cylindrically shaped region of said drill blank, from the circumferential edge of said drill blank inwardly to and past the axial center point of said drill blank so as to overlap, proximate to said axial center point, a portion of said first vein;

said first and second veins respectively meeting said circumferential edge of said drill blank at positions substantially 180° disposed from one another,

the respective longitudinal mid axes of said first and second veins, at the surface of said point region, being positioned substantially parallel to one another as well as positioned on upper and lower oppositely positioned sides of the diameter of said drill blank passing therebetween,

each said first and second veins connected by a region of sintered abrasive particulate over at least a portion of said web at the axial center point of said generally conically shaped point region; and

said region of sintered abrasive particulate over at least a portion of said web, at the axial center point of said generally conically shaped point region, extending from the top of the upper one of said first and second veins to the bottom of the lower one of said first and second veins, with said region of said sintered abrasive particulate at the axial center point of said point region being radially wider

in configuration than the radial width of either of said first and second veins.

4,762,446

CUTTER OF TIP DRESSER FOR WELDING APPARATUS

Toshihiro Nishiwaki, Kawasaki, Japan, assignor to Obara Corporation, Tokyo, Japan

Filed Jul. 11, 1986, Ser. No. 884,586

Claims priority, application Japan, Jan. 24, 1986, 61-007773[U]

Int. Cl.⁴ B23B *51/00*

U.S. Cl. 408—203.5 4 Claims



1. A cutter of a tip dresser for a welding apparatus, comprising:

a plurality of at least three blade members arranged so as to project generally radially outwardly from a central longitudinal axis of the cutter, said blade members being substantially uniformly angularly spaced around the axis and cooperating to define a dish-shaped recess on one end of the cutter for receiving a tip therein;

one said blade member having a radially inner flat portion which projects inwardly substantially to said central axis, said radially inner flat portion being joined to a radially outer portion which extends axially outwardly as it projects radially outwardly, said one blade member having a cutting edge formed thereon which extends from said radially outward portion along said flat portion substantially to said central axis, said cutting edge defining the profile of said tip-receiving recess; and

the remaining blade members of said plurality having cutting edges thereon which terminate radially outwardly a substantial distance from said central axis, each of said remaining blade members having a radially outer portion corresponding substantially to the radially outer portion of said one blade member, said remaining blade members being free of radially inner flat portions so as to not interfere with the cutting function performed by the cutting edge which extends along the radially inner flat portion of said one blade member.

4,762,447

DUAL-PLANE HIGH-SPEED COLLET

William F. Marantette, Torrance, Calif., assignor to Optima Industries, Inc., Torrance, Calif.

Filed Sep. 23, 1986, Ser. No. 910,540

Int. Cl.⁴ B23B *31/04;* **B23C** *5/26*

U.S. Cl. 409—131 28 Claims

1. A collet comprising

a radially-compressible member having an opening adapted to receive the shank of a rotatable tool,

said radially-compressible member having a first tapered exterior surface, and a second tapered exterior surface spaced from said first tapered exterior surface,

a first means having a tapered surface engaging said first tapered exterior surface,

a second means having a tapered surface engaging said second tapered exterior surface,

the angles of the tapers of all of said tapered surfaces in interengagement being matching and that of self-holding tapers,

said radially-compressible member being movable relative to said second means, said first means being movable relative to said radially-compressible member and said second means,

means for applying a first force in one direction on said first means such as to cause said first means to move relative to said second means and said radially-compressible member in one direction so as to cause said tapered surface of said first means to react against said first tapered exterior surface and compress said radially-compressible member around the shank of such a tool so as to grip said shank at a first location, and to cause said tapered surface of said first means and said first tapered exterior surface to frictionally lock together, and thereafter to cause said first means to move said radially-compressible member relative to said second means in one direction so as to cause said tapered surface of said second means to react against said second tapered exterior surface and compress said radially-compressible member around the shank of such a tool so as to grip said shank at a second location, and to cause said tapered surface of said second means and said second tapered exterior surface to frictionally lock together,

means for thereafter releasing said first force to allow said tapered surfaces to remain so locked and said radially-compressible member to grip said shank at two locations, whereby such a tool can be operated without an external



force on said radially-compressible member, means for applying a second force in the opposite direction to cause relative movement of said radially-compressible member and said first means in the opposite direction and to cause relative movement of said second means and said radially-compressible member in the opposite direction, thereby to unlock said tapered surfaces and release said shank, and

means for thereafter releasing said second force to allow said tapered surfaces to remain unlocked.

26. The method of gripping and operating a tool comprising the steps of

providing a radially-compressible member having a cylindrical opening adapted to receive the shank of a tool, a first exterior surface tapering in one direction and a second exterior surface tapering in the opposite direction,

providing a rotatable shaft having an opening therein receiving said radially-compressible member, with said opening being provided with a tapered surface engaging and at the same angle as said first exterior surface so as to provide a first pair of matching tapers,

providing a second member having an opening therein having a tapered surface having the same angle of taper as that of said second exterior surface,

positioning said second exterior surface within said opening

VOL 1093 ISS 2 AG 9 1988 UMI

in said second member adjacent said tapered surface thereof so as to provide a second pair of matching tapers, the angles of the tapered surfaces of said first and second pairs of matching tapers being such that said tapers are self-holding,

positioning the shank of a tool within said cylindrical opening,

then applying a force to said second member so as to move said second member axially in one direction relative to said radially-compressible member for causing said tapered surface of said second member to react against said second exterior surface so as to compress said radially-compressible member adjacent thereto for gripping said shank at one location, and thereafter causing said second member to move said radially-compressible member axially in one direction relative to said shaft so that said first exterior surface reacts against said tapered surface of said shaft and said radially-compressible member is compressed adjacent thereto for gripping said shank at a second location,

and then removing said force from said second member so that said first and second pairs of matching tapers remain frictionally locked together without the application of an exterior force and said shank continues to be gripped in said two locations,

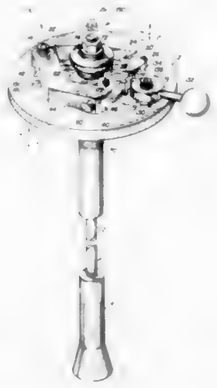
and then rotating said shaft and with it said shank for causing operation of said tool.

4,762,448

THREADING APPARATUS FOR MILLING MACHINES

Harold L. Christy, 44 Sleepy Hollow Dr., Prescott, Ariz. 85301

Filed Jan. 12, 1987, Ser. No. 2,648
Int. Cl.[4] B23G *3/00*
U.S. Cl. 409—233 **16 Claims**



1. Threading apparatus for single point threading by vertical milling machines having a head and a rotatable drawbar extending through the head, comprising, in combination:

a base plate securable to the head;

first arm means pivotally secured to the base plate;

second arm means pivotally secured to the base plate;

lead screw means securable to the drawbar and rotatable therewith and having threads corresponding to the desired threads to be cut;

threaded nut means secured to the first and second arm means and pivotal therewith to engage the threads of the lead screw means to cause the lead screw means and the drawbar to move vertically in accordance with the pitch of the threads on the lead screw means and the threaded nut means as the drawbar rotates, and to disengage the lead screw means to cause the drawbar to cease vertical movement; and

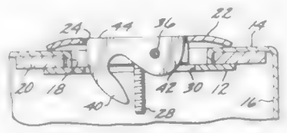
means for pivoting the first and second arm means to engage and to disengage the threaded nut means and the lead screw means.

4,762,449

TIE DOWN FITTING

Frank H. St. Pierre, 27732 W. Moonridge La., Castaic, Calif. 91310, and Jack D. Jensen, P.O. Box 7895, Newport Beach, Calif. 92658

Filed Jul. 13, 1987, Ser. No. 73,005
Int. Cl.[4] B60P *7/06*; F16B *21/00, 45/02*
U.S. Cl. 410—107 **6 Claims**



1. A tie down fitting for mounting to a vehicle cargo bed side wall having a horizontal section provided with a stake hole, the fitting comprising;

a clamping plate having a central slot and threaded openings on opposite sides of the slot, and dimensioned for passage through the stake hole for engagement with the underside of the side wall section;

a cover plate for engagement with the upper side of the section in covering relation to the stake hole, and including a central slot and openings on opposite sides of the slot for alignment with the central slot and threaded openings of the clamping plate, respectively;

anchor means aligned with the central slots of the clamping and cover plates and carried by the cover plate for pivotal movement between a recessed position in which the anchor means is flush with the upper side of the cover plate, and a projected position wherein a portion of the hook means is located above the upper side of the cover plate for engagement by a cargo securing line or the like; and

fastener means carried within the cover plate openings and threadably engaging the threaded openings in the clamping plate for preassembly into a single unit for insertion of the clamping plate through the stake hole, and for positioning the unit for orienting the clamping plate across the stake hole whereby the cover and clamping plates may be tightly urged against the section upper side and underside, respectively, as the fastener means are actuated.

4,762,450

DAMAGE RESISTANT PLASTIC EXPANSION NUT AND SCREW THEREFOR

Richard J. Schwind, Akron, Ohio; Joseph Bart, St. Charles, and Burnell Wollar, Barrington, both of Ill., assignors to Phillips Plastics Corp., Phillips, Wis.

Filed Feb. 3, 1986, Ser. No. 825,651
Int. Cl.[4] F16B *13/04, 37/16*
U.S. Cl. 411—34 **8 Claims**

1. A plastic one-piece hollow expansion nut insertable into a panel hole for receiving a screw, said screw having a threaded shank with a screw thread thereon which has upper and lower surfaces and a screw head, said nut comprising:

a nut shank having a resilient expandable portion therealong; and outwardly extending panel-engaging flange means near one end of said nut shank;

said nut shank being engageable at one end by said screw head and having a screw-receiving bore of predetermined diameter extending axially therethrough, said bore including a first bore portion extending through said expandable portion of said nut shank for receiving said threaded screw shank therein in non-thread engaging relationship, and said bore further including a second bore portion near the other end of said nut shank and defined by bore wall portions which are spaced apart from each other less than said predetermined diameter, said wall portions having axially spaced apart screw thread receiving slots therein for receiving said threaded screw shank in threaded relationship, each slot having an upper edge and a lower edge engageable with a thread surface of said screw thread, and rotation inhibiting means comprising first means on said screw and second means on said nut for engaging said first



means on said screw to inhibit further screw rotation when said screw shank is at a predetermined axial position in said second bore portion and said expandable portion of said nut shank has fully expanded to thereby prevent overtorquing of said screw and damage to said nut, said second means comprising screw-support means on said nut engageable with said first means on said screw and movable thereby in response to predetermined force applied thereto to a displaced position to enable further rotational and axial advancement of said screw shank;

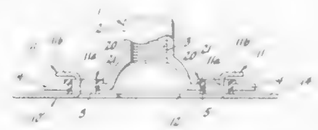
and said rotation inhibiting means further comprising lock means on said nut engageable with said screw to prevent screw rotation when said screw-support means is in said displaced position.

4,762,451

CAGED NUT WITH ISOLATORS

James F. Collins, Farmington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 29, 1986, Ser. No. 947,196
Int. Cl.[4] F16B *43/00*
U.S. Cl. 411—177 **1 Claim**



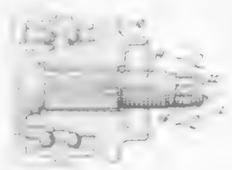
1. In a caged nut assembly of the type including an anchor nut having a tubular nut body portion with internal threads therein and having radial outward extending integral lugs with each such lug having an aperture therethrough and an apertured cage means for the anchor nut with the apertured cage means having upstanding and return bent legs which extend through the apertures to loosely retain the anchor nut in unit assembly with the apertured cage means, the improvement wherein an isolator of an electrical insulating material and having an annular enlarged flange and a hollow shank depending therefrom and of a configuration corresponding to the apertures in said lugs has said hollow shank thereof secured by a press fit in each of said apertures in said lugs with said flange between said return bent legs and said nut lugs so as to extend outward from said lugs whereby said anchor nut can be supported out of electrical contact with said apertured cage means so that during painting of said apertured cage means by an electro-deposition process, paint will not adhere to said internal threads of said anchor nut and to prevent bonding of said anchor nut to said apertured cage means by paint, the axial extent of said hollow shank being greater than the thickness of said nut lugs, such that after the painting process, as when said caged nut is secured as by a bolt to a second workpiece, said isolators can be axially moved with respect to said nut lugs whereby said anchor nut can then abut against said apertured cage means.

4,762,452

ATTACHMENT NUT WITH ANTI-BACK UP MEANS

William C. Vogel, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1987, Ser. No. 92,763
Int. Cl.[4] F16B *34/284*
U.S. Cl. 411—194 **3 Claims**



1. A means for preventing a conventionally threaded nut from loosening from a tightened position on a threaded portion of a shaft, comprising in combination,

a series of axially extending, circumferentially spaced splines formed on said shaft adjacent to said shaft threaded portion, and,

a retainer attached non-turnably to said nut and having a generally cylindrical sleeve sized so as to fit over the splined portion of said shaft, said sleeve further including a series of circumferentially spaced resilient fingers thereon extending radially inwardly therefrom sufficiently far to be able to fit between said splines, said fingers further being oriented so as to be freely flexible over said splines only when said retainer is turned in the direction of nut tightening and being one less in number than said splines,

whereby, as said nut is threaded to its tightened position, said resilient retainer fingers can flex freely over said splines until said nut stops at its tightened position, whereupon said mismatch between the number of fingers and splines assures that one finger will be located substantially between an adjacent pair of splines so that said nut and retainer will not be able to turn significantly in the loosening direction before being blocked.

4,762,453

HELICAL COIL FASTENER

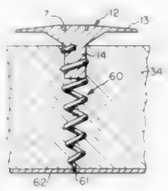
Charles J. DeCaro, Charlotte, N.C., assignor to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 823,724, Jan. 29, 1986, abandoned. This application Oct. 10, 1986, Ser. No. 917,652
Int. Cl.[4] F16B *35/00*; E04B *5/00*
U.S. Cl. 411—383 **19 Claims**

1. A fastener for attaching insulation to a roof deck, said fastener comprising a retaining member having a top portion with an upper surface and a lower surface, an elongated hub integral with said top portion and extending downwardly from the lower surface of said top portion, said hub having a helical groove formed therein extending throughout a substantial portion of its length, the upper end of said helical groove

VOL 1093 ISS 2 AG 9 1988 UMI

having means to create a tensile load on said hub by a helical coil having at least the uppermost loop located in said helical groove on said hub, a helical coil having a plurality of loops, at least the uppermost loop of said helical coil located in said helical groove formed in said hub, the end portion of at least the uppermost loops of said helical coil contacting said means to create a tensile load on said hub to firmly mount said helical coil on said hub and the lower loops of said helical coil extending downwardly below the end of said hub, the lower end of the lowermost loop of said helical coil being formed with a point lying on the center line of said helical coil, said lower end being substantially parallel to the center line of said helical coil and self-tapping threads are formed along said lower end, whereby said helical coil is adapted to be screwed through insulation into a roof deck to hold insulation onto the roof deck and said self-tapping threads are adapted to penetrate the roof deck to attach said fastener to said roof deck.

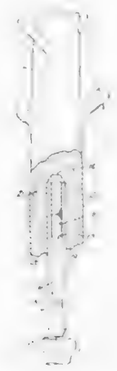


4,762,454

PERMANENT SPIKE MEMBER FOR WOODEN OBJECTS

Billy R. Davis, 1486 Francis Ave., Upland, Calif. 91786

Filed Nov. 28, 1984, Ser. No. 675,954
Int. Cl.[4] F16B *15/00*
U.S. Cl. 411—446 **10 Claims**



1. A support spike securely held by and extending from a wooden object, said spike being oriented about parallel to the grain in said wooden object and said spike comprising:

a unitary elongated shaft having a driving end said driving end and a portion of the shaft extending outwardly from said wooden object, said shaft having a generally constant cross sectional shape along its length and having a maximum outside dimension of between three sixteenths and one-half inch as measured in a direction perpendicular to its longitudinal axis;

a cylindrical, longitudinal opening formed in said elongated shaft, said opening containing only the wood passing therein as the spike was passed into the wooden object and said opening being axially oriented and extending from said point along said shaft a distance of at least one half inch, said opening having an inside diameter between one-fourth and three fourths of its maximum outside dimension and said opening terminating within said elongated shaft and said shaft being free from any longitudinal slits between the opening and the exterior of said shaft; and

said spike being positioned in said wooden object a distance greater than the length of said longitudinal opening whereby the wood forced within said opening is compressed.

4,762,455

REMOTE MANIPULATOR

Joel B. Coughlan, Knox County; Howard W. Harvey, Roane County; R. Glen Upton, Anderson County, and John R. White, Roane County, all of Tenn., assignors to Remote Technology Corporation, Oak Ridge, Tenn.

Filed Jun. 1, 1987, Ser. No. 56,423
Int. Cl.[4] B25J *3/00;* **G21C** *19/00*
U.S. Cl. 414—4 **18 Claims**



15. An all electric remote manipulator system characterized by being remotely maintainable and repairable, comprising:

a master unit operable by a user, said master unit being provided with

a. a frame;

b. a pair of articulated master arms for positioning one at each side of said user, each of said articulated master arms having a hand unit, a forearm unit, a wrist joining said hand unit to said forearm unit, an upper arm unit attached to said forearm unit with an elbow unit, and a shoulder unit connecting said upper arm unit to said frame, whereby said user grasping said hand units of said master arms can impart rotary and angular motions to selected portions of said articulated master arms in relation to movement of said user, each of said wrist, elbow and shoulder joint units being provided with potentiometer means for generating electrical signals proportional to positions of said joint units;

a slave unit operable by signals derived from said master unit, said slave unit being provided with

a. a torso element having at least rotary positional adjustment about a vertical axis;

b. a pair of pan/tilt units releasably attached to said torso, said pan/tilt units each carrying a video camera, said pan/tilt units provided with drive means for effecting aim of said camera and with means to produce signals as to directions of said aim;

c. a pair of identical and interchangeable articulated slave arms each releasably attached to opposite sides of said torso, each of said articulated slave arms having a shoulder joint portion adapted for rotation about a horizontal axis, an upper arm portion having a first end releasably and rotatably attached to said shoulder joint portion and adapted for rotation about its own axis, a forearm portion releasably and pivotally attached at a first end to a further end of said upper arm with an elbow joint portion, said forearm portion adapted for rotation about its own axis, a hand portion, including at least a pair of fingers adapted for movement toward and away from each other, said hand being releasably and pivotally attached by a wrist joint portion at a further end of said forearm portion and adapted for full rotation about its own axis, said elbow joint portion and said wrist joint encased in a flexible boot, said articulated slave arms each provided with electrically operated reversable motor and gear train drive assemblies for carrying out pivotal and rotary motions of portions thereof at said joints portions, each of said drive assemblies being provided with potentiometer means for producing electrical signals corresponding to operation of said drive assemblies; and

d. electrical connecting means associated with junctions of said slave arms with said torso, said electrical connecting means each having a first pair of half connectors attached to said torso and a second pair of complimentary half connectors attached to said slave arm whereby attachment of each said slave arms to said torso interconnects said first halves with said second halves, and separation of said slave arms from said torso separates said connector means; and

a control circuit electrically connected with said master unit and said slave unit, said control circuit adapted to receive said position signals from said master unit and drive assembly movement signals from said slave unit and selectively generate movement initiating signals to said drive assemblies when selected differences exist between said position signals and said drive assembly movement signals to null said differences, said control circuit further providing signals for moving said pan/tilt unit to effect said aim of said camera mounted thereto.

4,762,456

ACCOMMODATIONS TO EXCHANGE CONTAINERS BETWEEN VESSELS

Arthur J. Nelson, P.O. Box 3007, Daly City, Calif. 94015-0007

Filed Jun. 11, 1986, Ser. No. 873,213
Int. Cl.[4] B66C *23/52*
U.S. Cl. 414—138 **1 Claim**



1. In a combination having a commonly known double cantilevered, through-leg, floating gantry crane comprising, a hull and deck contained tower means, disposing a bridge elevationally above said deck for a trolley with hoist means towed between bridge ends to exchange containers as an arrangement of three floating vessels, unencumbered by tidal change, with said crane having a second outer bridge portion extending above a fixed positioned second floating vessel located alongside the crane for a second moored engagement, and having a first outer bridge portion above a moveable first floating vessel along the other of the two sided crane for a first moored engagement;

for a development embodying an offshore terminal in a sheltered cove for disposition of said three floating vessels in contention with control of four motion directional differences among said vessels involving said moored engagement, the improvement comprising:

(a) a first and second distantly spaced apart primary floating stations, stayed to rise and fall with the tide, establishing limited connection of a motor powered wire towing system for said floating crane disposed along a straight course to selected positions with the second vessel in motion control with said second moored engagement;

(b) a first and second distantly spaced apart secondary floating stations, stayed to rise and fall with the tide, establishing limited connection of a motor powered wire towing system for said first floating vessel disposed along a straight course to selected positions with the crane, including an integrating means of the first vessel with its wire system suiting the repeating trade-off of first vessels effecting a first moored engagement;

(c) dual spaced apart 'A' frames mounted atop the bridge portion contained between said towers, having a simple connecting truss spanning between apices of said 'A' frames, providing for the upper connection of a guy system extending for connection to bridge ends;

(d) a dual wire system established in tensioned arrangement between said primary floating stations, interacting said wires with sheaves having mounting means to the bottom of said crane hull, with wires being passive during said straight course unimpeded travel and containing said wires with sheaves to oppose impediments to travelling of said crane as a crane antiskew means furthering the first and second moored engagement;

(e) a second antilist rope system having a motor drive mechanism atop said second outer bridge portion for a rope arrangement with sheave means for tension engagement to the first floating vessel, and a first antilist rope system having a motor drive mechanism atop said first outer bridge portion for a rope arrangement with sheave means for tension engagement to said second floating vessels, said rope systems accommodating disposition of the trolley over said outboard bridge portions and variation in draft of vessels with container exchanges;

(f) a stabilizing means including a second lever having a fulcrum automatically contained to constant clearance above tidal water level, depending on the second lever longer arm connection to a second float providing buoyant reaction to the tension in a pendant connecting said second lever shorter arm to said second outer bridge portion, and a first lever having fulcrum automatically contained to constant clearance above tidal water level, depending on the first lever longer arm connection with a first float providing buoyant reaction to the tension in a pendant connecting said first lever shorter arm to said first outer bridge portion, said floats stabilizing the idle crane in heavy weather; and,

(g) a composite equalizer arrangement modulating elastic stretch differences in a four wire hoisting system bearing a container non-distributedly loaded.

4,762,457

STORAGE AND RAPID RETRIEVAL SYSTEM

Alexander Stefan, 216 E. Arby Ave., Las Vegas, Nev. 89119

Continuation-in-part of Ser. No. 701,376, Feb. 14, 1985, abandoned. This application Jun. 15, 1987, Ser. No. 62,375
Int. Cl.[4] B65G *1/08*
U.S. Cl. 414—276 **8 Claims**

1. Storage and retrieval apparatus comprising:

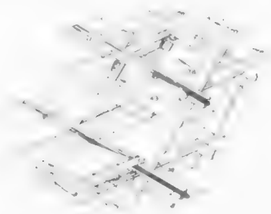
a. a plurality of box-like storage bins, each having internal storage space for articles and having support means extending outwardly from its lower rear side portions and its upper front side portions respectively;

b. a pair of longitudinally extending, spaced apart storage racks, each rack having a plurality of identical storage compartments arranged in longitudinally extending rows and in vertically extending tiers, each compartment having an outer opening and an inner opening and adapted to receive at least one of said bins therein;

VOL 1093 ISS 2 AUG 9 1988 UMI

c. a plurality of inclined rails mounted at the inner side of said pair of racks, and extending downwardly and forwardly from the top region of the racks to the lower region of the racks, said inclined rails being arranged in horizontally spaced rail pairs that are adapted to slidingly support one of said bins;

d. a plurality of take-off rails including first take-off rails each of which first take-off rails curves forwardly from the region of the lower end of each of said inclined rails and turns towards a substantially horizontal lower end, said first take-off rails arranged in horizontally spaced pairs which are adapted to slidingly engage the lower rear support means of one of said bins that has moved down said inclined rails, and including second take-off rails that curve toward substantially horizontal lower ends, and



mounted in horizontally spaced pairs and adapted to slidingly engage the upper front support means of one of said bins that has moved down said inclined rails;

e. conveyor means, including a pair of longitudinally extending, forwardly moving, spaced apart belts that lie just below the lower ends of said first and second take-off rails, and adapted to supportingly engage said rear and front support means of one of said bins;

f. a plurality of rail loading means for moving one of said bins from a rack storage compartment, placing said bin in alignment for sliding engagement with an adjoining one of said inclined rail pairs, and releasing said bin; and

g. control means in electrical communication with said plurality of rail loading means for remotely operating any one of said rail loading means as required.

4,762,458

BOTTOM DISCHARGE HOPPER

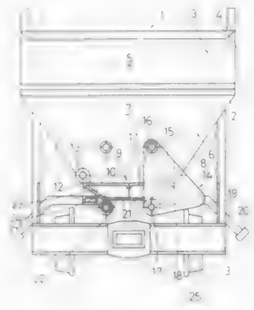
Deon A. van der Merwe, and Brian A. Steinhobel, both of 9 Rose Rd., Upper Houghton, Johannesburg, Transvaal Province, South Africa 2196

Filed Mar. 20, 1987, Ser. No. 28,444

Int. Cl.[4] B61D *7/30*

U.S. Cl. 414—378 8 Claims

1. A hopper comprises a load carrying body having an elongated bottom discharge aperture and mounted on a suitable wheeled chassis, the aperture being closable by at least one hinged door biased, by its own weight to an open position; and control means for the door including a runner track on the door transverse to its hinge axis, a runner to engage the runner track and movable between postions corresponding to open and closed positions of the door, the runner being mounted on a pivotally mounted biasing member which is biased under its own weight to a position in which the runner corresponds to the closed position of the door and to a position directly below the pivot point of the biasing member, the force of the door and any load thereon acting substantially downwardly on the runner; and means for moving the biasing member to a position



in which the runner is moved to a position corresponding with the open position of the door.

4,762,459

INDUSTRIAL ROBOT

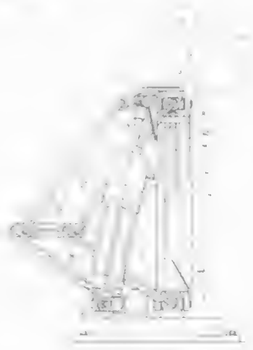
Hirobumi Morita, Shiki, and Yoshiro Fukui, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1986, Ser. No. 836,373

Claims priority, application Japan, Mar. 6, 1985, 60-42852; Mar. 7, 1985, 60-43603; Dec. 23, 1986, 60-287940; Dec. 23, 1986, 60-287941

Int. Cl.[4] B25J *17/02*

U.S. Cl. 414—680 4 Claims



1. An industrial robot comprising a machine base; a first universal joint mounted on said base; an expandable and contractable robot arm provided vertically on said machine base through said first universal joint, X and Y axes being defined as horizontal axes passing through the center of rotation of the first universal joint and crossing at right angles one to another and a Z axis being defined as a longitudinal axis of the arm passing through the center of rotation of the first universal joint; a pair of driving sources for causing the arm to incline in the X axis direction along on a X-Z plane defined by the X and Z axes and in the Y axis direction along on a Y-Z plane defined by the Y and Z axes provided on the machine base and connected to said arm so that the arm may be moved to incline in any desired direction by the cooperation of the two driving sources; a tool attaching plate attached to an upper end of the arm through a second universal joint having its center of rotation positioned on the Z axis; a floating plate intermediate said tool attaching plate and said machine base, at least three links each having third universal joints on upper and lower ends thereof and respectively attached to said floating plate and said machine base so the floating plate will remain parallel to the base when moved in any desired direction, at least three additional links each having fourth universal joints on upper and lower ends thereof and respectively attached to said tool attaching plate and said floating plate so the tool attaching plate will remain parallel to said floating plate when moved in any desired direction whereby said tool attaching plate will remain parallel to said machine base in all positions of movement of said upper end of said robot arm.

4,762,460

POSITIONING DEVICE

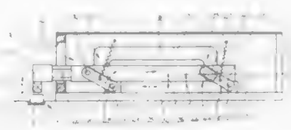
Kurt Stoll, Lenzhalde 72, 7300 Esslingen, Fed. Rep. of Germany

Filed Jun. 29, 1987, Ser. No. 68,912

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622473

Int. Cl.[4] B65G *25/00*

U.S. Cl. 414—750 7 Claims



1. A positioning device adapted to move an object along a feed path made up of a number of path sections contained in a single feed plane comprising: a support part and a piston and cylinder actuator arranged thereon, said piston and cylinder actuator having a cylinder and a piston rod extending therefrom, an object holder arranged on the piston rod of said piston and cylinder actuator, a cam with a positive follower means connecting it with said object holder for steering same along said path with a change in the direction of its motion between said path sections, and mounting means carrying said piston and cylinder actuator in such a way that it is able to perform a movement made up of two components of which a first component is parallel to a longitudinal axis of the piston and cylinder actuator and a second component is at a right angle thereto, said two components being in a plane which is plane-parallel to said plane containing the path sections with provision for converting a thrust on said cylinder in the first direction into said second motion component, wherein there are two link arms and two pivot mounts on which one end of each link arm is respectively pivoted for swinging motion about first and second pivot axes, said pivot mounts being spaced apart in the direction of the cylinder axis, respective opposite ends of said link arms being pivoted to said cylinder for swinging motion about third and fourth pivot axes, said first, second, third and fourth pivot axes being parallel to each other and generally normal to the plane containing the cam.

4,762,461

LEAKLESS PUMP

Ryusuke Ushikoshi, Handa, Japan, assignor to NGK Insulators Ltd., Aichi, Japan

Filed Dec. 12, 1986, Ser. No. 941,105

Claims priority, application Japan, Dec. 20, 1985, 60-195291; Aug. 4, 1986, 61-182892

Int. Cl.[4] F04D *29/00*

U.S. Cl. 415—14 11 Claims

1. A leakless pump for pumping a liquid including a rotor having an impeller thereon and rotatably journaled by bearings, and a casing surrounding said rotor and said impeller, said pump comprising a bypath for flowing part of the liquid from a high pressure portion in the proximity of an outer circumference of said impeller to a low pressure portion on a side of an inlet of the pump, at least one pressure detecting aperture formed in said casing and having an inner end communicating with the fluid flow in said bypath for monitoring the flow and measuring a change in pressure in said bypath due to wear of



at least one of said bearings, and pressure detecting means provided at an outer end of said pressure detecting aperture and in fluid comunication therewith for continuously detecting the pressure change in said bypath.

4,762,462

HOUSING FOR AN AXIAL COMPRESSOR

Alain M. J. Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA), Paris, France

Filed Nov. 24, 1987, Ser. No. 124,599

Claims priority, application France, Nov. 26, 1986, 86 16448

Int. Cl.[4] F01D *25/08*

U.S. Cl. 415—177 6 Claims



1. A housing for an axial compressor having a rotor assembly rotatable about a longitudinal axis of the compressor with at least one row of rotor blades extending radially outwardly therefrom, the housing comprising:

(a) an inner wall disposed circumferentially around the rotor assembly and having i) a radially inner surface defining, with the rotor assembly, a gas passage therebetween; and ii) a radially outer surface defining a plurality of generally circumferentially extending corrugations, the corrugations defining alternating troughs and peaks in a longitudinal direction;

(b) an outer wall disposed circumferentially around the inner wall so as to define a generally annular space therebetween;

(c) a plurality of stator vanes attached to the inner surface of the inner wall, each stator vane having a leading edge and a trailing edge, each stator vane being located such that the leading and trailing edges are longitudinally aligned with a peak of the circumferentially extending corrugations; and,

(d) a plurality of flexible rods extending through the annular

VOL 1093 ISS 2 AG 9 1988 UMI

space having a first end attached to a peak of the inner wall and a second end attached to the outer wall, each first end being aligned with either a leading edge or a trailing edge of a stator vane.

4,762,463

FAN HAVING SPEED INDICATOR

Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan

Filed Apr. 7, 1987, Ser. No. 35,387
Int. Cl.[4] F04B *21/00*
U.S. Cl. 416—61 19 Claims



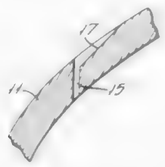
1. In a ceiling fan having a plurality of blades, speed-selecting switch means, a rotor and at least one stator winding, said speed-selecting switch means being operatively arranged to apply respectively different magnitudes of voltage across the at least one stator winding for each respective speed, an improvement comprising at least one lamp fixedly and conductively connected in parallel to at least a portion of said at least one stator winding, whereby the intensity of light from the at least one lamp is indicative of the selected speed as set by the speed-selecting switch means.

4,762,464

AIRFOIL WITH DIFFUSED COOLING HOLES AND METHOD AND APPARATUS FOR MAKING THE SAME

Richard J. Vertz, Congers, and Reza K. Mosavi, Monsey, both of N.Y., assignors to Chromalloy Gas Turbine Corporation, Orangeburg, N.Y.

Filed Nov. 13, 1986, Ser. No. 929,780
Int. Cl.[4] F01D *5/18*
U.S. Cl. 416—97 R 4 Claims



1. A body shell for a gas-turbine airfoil and having one or more cooling holes between an inner surface and an outer surface, each of said one or more holes having a laser-drilled inner bore portion and an EDM-machined outer diffuser portion, whereby the inner bore portion has a surface roughness which substantially exceeds the surface roughness of the outer diffuser portion.

4,762,465

WATER PUMP IMPELLER

K. Gerd Friedrichs, Leverkusen, Fed. Rep. of Germany, assignor to Klifa-Fahrzeugteile GmbH + Co., Mannheim, Fed. Rep. of Germany

PCT No. PCT/DE86/00271, § 371 Date Feb. 17, 1987, § 102(e) Date Feb. 17, 1987, PCT Pub. No. WO87/00249, PCT Pub. Date Jan. 15, 1987
PCT Filed Jun. 27, 1986, Ser. No. 33,087
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1985, 3523419
Int. Cl.[4] F04D *7/02*
U.S. Cl. 416—185 3 Claims



1. Water pump impeller for use in a cooling water pump for an internal combustion engine comprising

a metal boss with a radially inner surface for mounting on a shaft and a radially outer surface,

an annular reinforcing sleeve fitting tightly around said radially outer surface of the metal boss,

a metal reinforcing disk coaxially and integrally shaped on and extending from one end face of said boss,

plastic encasing said boss, said reinforcing sleeve and said disk,

impeller blades composed of plastic projecting from the plastic encasing said boss, said reinforcing sleeve and said disk in an outer circumferential region of the water pump impeller, said plastic extending longitudinally over and beyond said one end face of said boss, said reinforcing disk extending radially to the vicinity of said impeller blades and defining in the vicinity of said impeller blades an annular disk part, said disk between said boss and said annular disk part having a revolution paraboloid-like reinforcing region lying at an acute angle to said boss with the concave side of the paraboloid-like reinforcing region adjacent said one end face of said boss

said impeller blades being placed on the concave side of said reinforcing disk and said plastic projecting over and beyond said one end face of the boss and terminating at a given radial spacing from the radially inner surface of the boss to avoid contact with the shaft on which the metal boss is mounted.

4,762,466

CARRIER RING FOR A PROPELLER BLADE SYSTEM

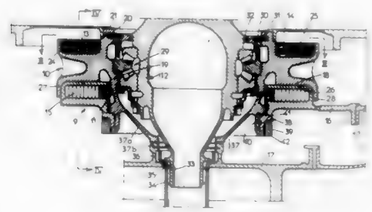
Jean G. Bouiller, Brunoy; Jean-Michel Payen, Le Mee Sur Seine, and Jean Pierre Ruis, Le Chatelet en Brie, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA), Paris, France

Filed Oct. 21, 1987, Ser. No. 111,028
Claims priority, application France, Oct. 22, 1986, 86 14631
Int. Cl.[4] B64C *27/46*
U.S. Cl. 416—205 21 Claims

1. A carrier ring for a large, rotatable propeller blade system driven by a gas turbine having a longitudinal axis comprising:

(a) an annular ring member formed of composite material disposed about the longitudinal axis of the gas turbine, the annular ring member defining a plurality of blade openings having substantially radially oriented central axes;

(b) a metallic blade mounting insert member mounted in each of the blade openings, each blade mounting insert defining at least one groove extending in a generally circumferential direction; and



(c) a fastening belt formed of fiberous material extending generally circumferentially around the annular ring member in the at least one groove of each of the blade mounting members so as to retain each of the blade mounting members attached to the annular ring member.

4,762,467

METHOD FOR CONTROLLING THE PRESSURE RATIO OF A JET PUMP

Hans Ackermann; Ralf Koecher, both of Duesseldorf; Udo Steinberner, Hilden, and Otto Michel, Langenfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,630
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545612
Int. Cl.[4] F04F *5/52*
U.S. Cl. 417—54 8 Claims



1. A method for controlling the pressure ratio of a jet pump to regulate a predetermined operating vacuum, said pressure ratio being defined as for a predetermined suction pressure and a predetermined volume of delivery fluid, the necessary volume of motive fluid is dependent on a function of the motive fluid pressure and the pressure at the exit of said jet pump, wherein a desired value for said pressure ratio is determined from the continuously measured value of the operating vacuum determined from the suction pressure in a vacuum container by a computer-aided iterative stepwise changing of an existing value of said pressure ratio, said iterative stepwise changing of an existing value of said pressure ratio being effected by use of an algorithm wherein the desired value is obtained by indefinitely repeating the algorithm using a corresponding computer, adapting the rate of change of the desired value for said pressure ratio to the magnitude and rate of change of the desired value/actual value deviation of the operating vacuum within preselectable limits, said algorithm having difference processing branches for different ranges of said desired value/actual value deviation of said operating vacuum and its rate of change, and observing a waiting time corresponding to the dead time of the system after each stepwise change of the desired value for said pressure ratio.

4,762,468

SHOE-AND-SOCKET JOINT IN A SWASH PLATE TYPE COMPRESSOR

Hayato Ikeda; Satoshi Kitahama, and Hiroshi Onomura, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Aug. 18, 1987, Ser. No. 86,925
Claims priority, application Japan, Aug. 25, 1986, 61-129061[U]
Int. Cl.[4] F04B *1/16*; F01B *3/00*
U.S. Cl. 417—269 6 Claims



1. A swash plate type compressor comprising:

a cylinder block having a center axis, means for defining a central bore extending along said center axis and including an outwardly bulged portion from said central bore at an intermediate position thereof to define a swash plate chamber, and means for defining a plurality of cylinder bores axially extending in said cylinder block around said central bore, said swash plate chamber laterally opening into said cylinder bores;

a front end plate and a rear end plate mounted at either end of said cylinder block for closing said cylinder bores;

a drive shaft rotatably inserted in said center bore;

a swash plate fixedly secured on said drive shaft and inserted in said swash plate chamber, said swash plate having a pair of opposite flat surfaces inclined relative to said center axis;

a plurality of pistons slidably inserted in said cylinder bores, respectively, to provide compression chambers on either side of each of said pistons, each of said pistons having an axis parallel to said center axis and means for defining a swash plate engaging groove at an intermediate position thereof to allow passage of said swash plate therethrough to cause said piston to move reciprocally upon rotation of said swash plate, said swash plate engaging groove having a pair of opposite surfaces generally perpendicular to said center axis of said cylinder block;

a shoe arranged between each of said opposite flat surfaces of said swash plate and each of said opposite surfaces of said swash plate engaging groove, said shoe having a round end and an opposite end adapted to slidably engage with said flat surface of said swash plate;

means for defining a concave round socket in each of said opposite surfaces of said swash plate engaging groove at a position offset from said axis of said piston to receive said round end of said shoe; and

said concave round socket comprising a semi-spherical concave surface and said round end of said shoe comprising a semi-spherical convex surface conforming to said socket, and said semi-spherical concave surface of said concave round socket has a center of curvature which is at a position on a circle having a center on said center axis and a

VOL 1093 ISS 2 AG 9 1988 UMI

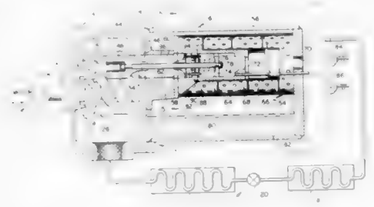
radius and circumferentially offset from said axis of said piston.

4,762,469

ROTOR ANTI-REVERSE ROTATION ARRANGEMENT IN A SCREW COMPRESSOR

James C. Tischer, La Crescent, Minn., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 3, 1986, Ser. No. 835,575
Int. Cl.[4] F04B *49/00*; F01C *1/16*
U.S. Cl. 417—279 14 Claims



1. Apparatus for preventing the reverse rotation of screw rotors in a screw compressor upon compressor shutdown comprising:

a body located downstream of the discharge port of said compressor and moveable with respect to said discharge port between a first position in which the flow of compressed gas from said discharge port is unimpeded while said compressor is in operation and a second position in which the backflow of gas through said discharge port from downstream of said compressor is prevented, said body having a contoured surface; and

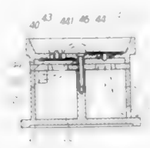
means for mounting said body for movement between said first and said second positions, said body being mounted on said mounting means so that said contoured surface faces into the flow of gas discharged from said compressor, said contoured surface diverting the discharge gas which impacts it.

4,762,470

STRUCTURE OF AIR PUMP FOR FISH BOWL

Chiao-Ming Wang, No. 27, Jingmei Road, Taipin Hsiang, Taichung Hsien, Taiwan

Filed Sep. 23, 1987, Ser. No. 100,326
Int. Cl.[4] F04B *45/04, 39/00*
U.S. Cl. 417—312 1 Claim



1. An improved air pump for a fish bowl comprising:

(a) a pump stock including an intake chamber, a discharge chamber, an air circulating chamber, a stop rod disposed between the intake and discharge chambers adjacent the external periphery of the pump stock, and a threaded hole formed at the center of the pump stock for receiving a screw;

(b) the intake chamber being provided with an intake port at a lower side wall thereof, and the discharge chamber being separated from the intake chamber and provided with a side opening at an upper side wall for communicating with the air circulating chamber;

(c) the air circulating chamber including a discharge port at a side wall opposite to the intake chamber for connection to a discharge pipe disposed outside the pump stock and a plurality of radially projecting and alternating partitions for defining a circuitous air flow path from the air circulating chamber to the discharge port;

(d) a soft rubber plate provided with a central opening, an inlet port, an outlet port and a stop hole positioned in alignment with, respectively, the threaded hole, the intake chamber, the discharge chamber and the stop rod when the rubber plate is disposed on top of the pump stock;

(e) an air circulating plate provided with a central opening, a first air circulating port, a second air circulating port, and a recess stop hole positioned in alignment with, respectively, the central opening, the inlet port, the outlet port and the stop hole of the rubber plate when the air circulating plate is disposed on top of the rubber plate;

(f) the first and second air circulating ports being each provided with a central engaging hole for receiving a diaphragm valve, the diaphragm valve of the first air circulating port being disposed on the top side thereof and the diaphragm valve of the second air circulating port being disposed on the underside thereof; and

(g) each diaphragm being formed of soft rubber material and provided with a projecting rod at its center, the projecting rod being of larger diameter than its corresponding engaging hole and including a ball formed at its end, the ball having a larger diameter than the diameter of the projecting rod and being of sufficient size for extrusion through the engaging hole when the diaphragm is disposed at its corresponding air circulating port.

4,762,471

ROTARY COMPRESSOR FOR REFRIGERANT

Hajime Asanuma, Fuji, and Masatsugu Tokairin, Shizuoka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 4, 1985, Ser. No. 794,540
Claims priority, application Japan, Nov. 6, 1984, 59-168216[U]
Int. Cl.[4] F04B *39/02*
U.S. Cl. 417—372 9 Claims



1. A rotary compressor for a refrigerant comprising:

(a) a sealed case;

(b) an oil reservoir disposed in the lower part of the said sealed case;

(c) an electric motor disposed in the upper part of said sealed case, said electric motor comprising a stator having an annular end coil at the upper part of said electric motor, a rotor rotatably supported within said stator, and a vertical rotor shaft fixed to said rotor;

(d) a compressing device disposed in the lower part of said sealed case, said compressing device being driven by said rotor shaft to compress said refrigerant, said compressed refrigerant being sent upward, together with particles of lubricating oil, through passages in said rotor to a space thereabove;

(e) refrigerant and lubricating oil flow reversal means for separating said lubricating oil from said refrigerant, said separating means disposed coaxially above and fixed relative to the upper end of said rotor, and positively directing said compressed refrigerant toward and through said end coil with a downward component of direction, whereby said particles of lubricating oil are substantially separated from said refrigerant, and wherein said separating means is an approximately umbrella shaped member having a downwardly-directed and circumferentially continuous peripheral rim; and

(f) a delivery pipe disposed in the upper part of said sealed case, which provides an exit for said substantially lubricating oil particle free compressed refrigerant.

4,762,472

AIR PUMP ASSEMBLIES

Peter J. King, P.O. Box 79, Tewantin, Australia QLD 4565

Continuation of Ser. No. 855,585, Apr. 25, 1986, abandoned. This application Nov. 30, 1987, Ser. No. 127,619
Claims priority, application Australia, May 2, 1985, PH0396
Int. Cl.[4] F04B *17/00*
U.S. Cl. 417—366 12 Claims



1. In an air pump assembly of the type having an electric bypass type air pump mounted within a casing for supplying air to an air delivery line, said electric bypass type air pump having a centrifugal pump provided with a pump outlet and a pump inlet and an integral electric driving motor having separate cooling air inlet and outlet apertures remote from said centrifugal pump through which cooling air is forced, the improvement consisting of:

(a) said casing comprising a fixed mounting wall on which said air pump is mounted and a removable cover which connects to said mounting wall and encloses said air pump;

(b) said casing being provided with air intake means adjacent the cooling air inlet aperture for said motor and through which air may pass to said air inlet aperture and to said pump inlet;

(c) there being provided a pumped air chamber assembly extending about said pump outlet having a supply outlet externally of said casing for connection to said air delivery line, and

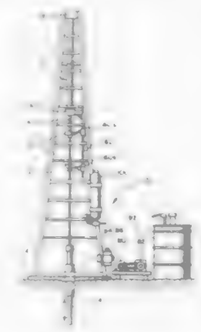
(d) there being provided a motor exhaust chamber fitted to said motor to receive exhausted motor cooling air and having a discharge outlet externally of said casing and spaced from said air intake means, whereby exhausted motor cooling air is discharged directly to the exterior of said casing.

4,762,473

PUMPING UNIT DRIVE SYSTEM

James B. Tieben, Rte. 1, W. McArtor Rd., Dodge City, Kans. 67801

Continuation of Ser. No. 826,196, Feb. 5, 1986, abandoned. This application Dec. 18, 1987, Ser. No. 134,547
Int. Cl.[4] F15B *9/02*
U.S. Cl. 417—399 33 Claims



1. In combination with a pumping unit of the type comprising pump means for pumping fluid from beneath ground level to a recovery level, said pump means comprising a pumping member which oscillates during operation of the pump means, the improvement comprising:

a hydraulic cylinder;

a pump rod extending into the cylinder and adapted to support and oscillate with the pumping member, said pump rod comprising at least a first, downwardly directed piston face, and a second, upwardly directed piston face;

first means for directing pressurized hydraulic fluid from a sealed pressure vessel against the first piston face during oscillation of the pump rod to bias the pump rod upwardly to compensate for a portion of a load associated with the pumping number, said sealed pressure vessel containing both pressurized hydraulic fluid and a charge of a pressurizing gas;

a hydraulic pump;

second means for periodically directing pressurized hydraulic fluid supplied by the hydraulic pump against the second piston face to periodically force the pump rod downwardly in order to oscillate the pumping member and thereby drive the pumping means

third means for introducing pressurized hydraulic fluid supplied by the hydraulic pump into the sealed pressure vessel to adjust the quantity of pressurized hydraulic fluid in the sealed pressure vessel; and

means for isolating the sealed pressure vessel from the hydraulic pump during operation of the second means.

4,762,474

PUMP HAVING RECIPROCATING PIPE AND SLIDABLY SUPPORTED HOLLOW BODY

William J. Dartnall, 15 Alness Street, Applecross, Western Australia, Australia

PCT No. PCT/AU85/00127, § 371 Date Feb. 11, 1986, § 102(e) Date Feb. 11, 1986, PCT Pub. No. WO86/00116, PCT Pub. Date Jan. 3, 1986
PCT Filed Jun. 11, 1985, Ser. No. 835,111
Claims priority, application Australia, Jun. 12, 1984, PG5469; Jan. 22, 1985, PG8986
Int. Cl.[4] F04B *19/02, 7/04, 21/04*
U.S. Cl. 417—469 13 Claims

1. A pump of the type adapted to be lowered into a body of fluid for pumping fluid therefrom comprising a pipe having an

VOL 1093 ISS 2 AG 9 1988 UMI

open lower end and an upper discharge end for discharging pumped fluid from a point above the body of fluid, said pipe being reciprocal through a normal pumping stroke, first check valve means for permitting flow into said pipe through said open lower end, a hollow body slidably supported upon the lower end of said pipe and defining a cavity into which said open lower pipe end extends, seal means interposed between an upper end of said hollow body and said pipe for sealing the upper end of said cavity, said hollow body having not portion that is engaged by said pipe upon normal pumping reciprocating of said pipe so that said hollow body is not physically reciprocated by contact with said pipe upon normal pumping reciprocation of said pipe, an opening formed at the lower end of said hollow body, and a second check valve for controlling the flow through said hollow body opening for permitting flow into said hollow body cavity and for precluding flow out



of said opening, said second check valve comprising a first element fixed relative to said hollow body and a cooperating second element adapted to be fixed relative to the body of fluid, and said pipe being reciprocated between a raised position and a lowered position during the normal pumping reciprocation thereof, the reciprocation of said pipe into said raised position effecting a pressure difference upon said hollow body by the fluid in the fluid body for moving the first element of said second check valve away from the second element of said second check valve for permitting flow of fluid into said hollow body cavity solely due to fluid pressure variations, movement of said pipe in a downward direction being effective to permit said hollow body to move for bringing said first element into sealing engagement with second element for pressurizing the fluid in said hollow body cavity for driving said fluid upwardly through said first check valve into said pipe and be discharged through said upper discharge end.

4,762,475

THRUST PISTON PUMP FOR THE DISCHARGE OF MEDIA

Karl-Heinz Fuchs, Radolfzell, Fed. Rep. of Germany, assignor to Ing. Erich Pfeiffer GmbH & Co., KG, Fed. Rep. of Germany

Filed Apr. 10, 1986, Ser. No. 850,500

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1985, 3514719

Int. Cl.[4] F04B *21/04;* F01B *31/00*

U.S. Cl. 417—550 20 Claims

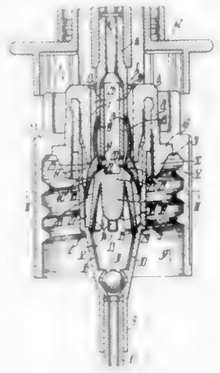
1. A manually operated thrust piston pump for delivering media, said piston pump comprising:

a piston unit (3) having a pump piston (17) located substantially along a pump axis (4);

a cylinder (5) for displaceably receiving said piston unit (3);

at least one return spring (33) formed by a bending spring (33), said return spring (33) counteracting displacement of said piston unit (3) in said piston pump;

a pump chamber (32) defined by said pump piston (17) and said cylinder (5); and,



wherein the bending spring (33) is formed by a single component common with the piston unit (3), is located in the pump chamber (32) and moves commonly with said piston unit (3).

4,762,476

OIL WELL PUMP

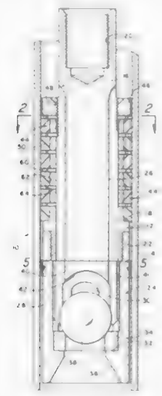
Richard L. Turner, Rte. 2, Box 138, Broken Arrow, Okla. 74012

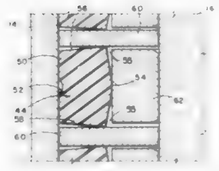
Continuation of Ser. No. 796,229, Nov. 8, 1985, abandoned. This application May 4, 1987, Ser. No. 46,137

Int. Cl.[4] F04B *21/04*

U.S. Cl. 417—544 7 Claims

1. In a subsurface well pump for disposition within a working barrel of a well bore and arranged for reciprocal movement therebetween for elevating well fluid from a subsurface well fluid reservoir to the surface of the ground for recovery of the fluid, the improvement comprising sealing means provided on the pump for engagement with the inner periphery of the working barrel for precluding leakage of fluid between the working barrel and the ouer periphery of the pump, the sealing means comprising rigid, substantially cylindrical, inner ring means and yieldable annular body means disposed around and covering the entire outer periphery of the inner ring means and adapted to extend, during use, axially into sealing engagement beyond the dimensions of said inner ring means and said yieldable annular body means having an annular groove provided around the outer periphery thereof for receiving a portion of the well fluid therein to assure an efficient lubrication between the outer periphery of the body means and the inner periphery of the working barrel during a pumping operation and said yieldable annular body means having a fluid channel provided around the inner periphery thereof for receiving fluid pressure





of the well fluid therein to assure radial expansion and sealing engagement to the inner periphery of the working barrel.

4,762,477

SCROLL COMPRESSOR WITH CONTROL OF LUBRICANT FLOW

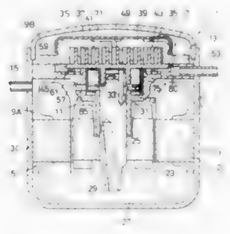
Makoto Hayano; Shigemi Nagatomo, both of Tokyo; Hirotsugu Sakata, Kanagawa, and Mitsuo Hatori, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 30, 1986, Ser. No. 913,349

Claims priority, application Japan, Sep. 30, 1985, 60-214954

Int. Cl.[4] F04C *18/04, 29/02*

U.S. Cl. 418—1 21 Claims



1. A method of limiting the flow of lubricating oil in a process for operating a scroll compressor comprising a sealed vessel having a low-pressure gas suction section and a high-pressure gas ejection section; a frame which is fixed to the inside of the sealed vessel; a stationary scroll member fixed to the frame and having a stationary scroll wrap; an orbital scroll member placed between the stationary scroll member and the frame and slidably supported on a first side thereof on said frame through a slidably engaging portion and having an orbital scroll wrap on the other side;

a lubricating oil well in a lower part of said vessel which contains lubricating oil; a rotating shaft having one end connected to the orbital scroll member so as to rotate the orbital scroll member and the other end immersed in the lubricating oil well; and a lubricating oil suction hole which passes through the rotating shaft, said method comprising the steps of forcibly supplying lubricating oil sucked up through the lubricating oil suction hole through a separate oil supply channel to the low-pressure gas suction section by the high pressure which is produced by the compression action between the orbital and stationary scroll members, and at the same time controlling the flow of the lubricating oil through said channel to the low-pressure gas suction section by metering the oil flow by at least one metering member located between said frame and the first side of said orbital scroll member.

4,762,478

SCROLL COMPRESSOR WITH BALANCER MOUNTED IN SINGLE FRAME

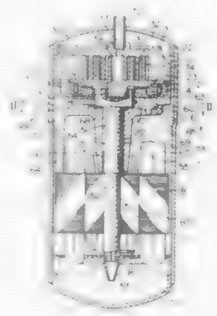
Kazuo Sakurai, Ihara, and Takahiro Tamura, Shimizu, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 19, 1987, Ser. No. 63,923

Claims priority, application Japan, Jan. 23, 1986, 61-144873

Int. Cl.[4] F04C *18/04, 29/00*

U.S. Cl. 418—55 3 Claims



1. In a scroll compressor including:

a scroll compressor portion including an orbiting scroll and a fixed scroll each having a base plate on which a spiral-shaped wrap is vertically formed, said orbiting scroll and said fixed scroll being combined such that said respective wraps are engaged with each other, in which orbiting motion is imparted to said orbiting scroll to cause an airtight space formed by said base plates and wraps of said respective scrolls to move toward the center of said orbiting motion to progressively reduce the volume of said airtight space thereby performing compression;

a drive shaft for connecting said scroll compressor portion and a motor; and

a frame including bearings for rotatably supporting said drive shaft, said frame being disposed between said scroll compressor portion and said motor for providing fixed connection therebetween, said frame being accommodated in a casing of said scroll compressor;

the improvement comprising:

said frame constituted by a single frame on which a first main bearing portion and a second bearing portion may be formed in coaxial relationship, said single frame shaped so as to have a chamber defined therein;

VOL 1093 ISS 2 AG 9 1988 UMI

a balancer mounted on said drive shaft which is rotatably supported by said first and second shaft bearing portions and between said first and second shaft bearing portions such that said balancer rotates within said chamber; and

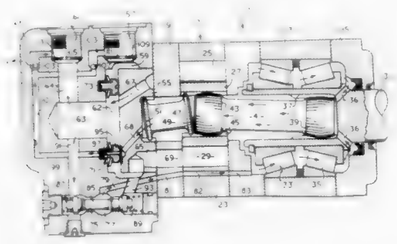
an opening formed in the periphery of said frame and communicating with said space-like chamber, said balancer being freely inserted and extracted through said opening.

4,762,479

MOTOR LUBRICATION WITH NO EXTERNAL CASE DRAIN

Sohan L. Uppal, Hopkins, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 17, 1987, Ser. No. 15,263
Int. Cl.[4] F01C *1/10, 21/04;* F03C *2/08*
U.S. Cl. 418—61.3 7 Claims



1. A rotary fluid pressure device of the type including housing means defining a fluid inlet port and a fluid outlet port; fluid energy-translating displacement means associated with said housing means and including at least one member having rotational movement relative to said housing means to define expanding and contracting fluid volume chambers during said rotational movement; valve means cooperating with said housing means to define a main fluid flow path providing fluid communication between said fluid inlet port and said expanding fluid volume chambers and between said contracting fluid volume chambers and said fluid outlet port; output shaft means supported for rotation relative to said housing means; means for transmitting torque from said one member of said displacement means having rotational movement to said output shaft means; and means defining a lubrication flow path including said torque-transmitting means, characterized by:

(a) said housing means defining outlet flow passage means communicating from said valve means to said fluid outlet port and comprising a portion of said main fluid flow path;

(b) fluid flow restriction means disposed in one of said outlet flow passage means and said fluid outlet port, said fluid flow restriction means being operable to provide a substantial fluid pressure differential thereacross;

(c) means operable to communicate a flow of lubrication fluid from said outlet flow passage means to said lubrication fluid path; and

(d) means defining lubrication drain passage means providing fluid communication between said lubrication flow path and one of said outlet flow passage means and said fluid outlet port, downstream of said fluid flow restriction means.

4,762,480

ROTARY PUMP

Otmar Winkler, Schweinfurt; Heinz Peter, and Egon Pfaller, both of Dittelbrunn, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 775,421, Sep. 12, 1985, abandoned. This application Mar. 6, 1987, Ser. No. 22,988
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1984, 3434501
Int. Cl.[4] F04C *18/344*
U.S. Cl. 418—266 6 Claims



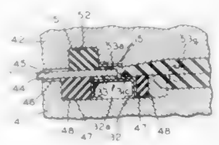
1. A rotary pump comprising a housing having a bore and a bore axis, a first adjacent lateral side wall having at least one inlet slit and a second adjacent lateral side wall having at least one outlet slit of at least equal size to said inlet slit for flow of medium axially therethrough, said slits in said lateral side walls defining the path of flow for said medium from said inlet axially directly into said bore and then from said bore axially directly to said outlet slit, a rotor mounted in the bore for rotation about an axis generally parallel to and eccentric to the bore axis, a plurality of vanes pivotally mounted on the periphery of the rotor having free ends in sliding sealing contact with said bore, each vane having lateral surfaces facing the rotor and an outer edge facing the bore, said outer edge on rotation of the rotor passing over an inner boundary edge of the inlet and outlet slits facing the bore of the housing, said inlet slit and outlet, curing along an arc around the rotational axis of rotor and extending in such a way that the trailing end of the inlet slit and the leading end of the inlet slit are disposed adjacent a central plane passing through the axis of the bore of the housing and the rotational axis of the rotor, the inlet slit being disposed at a greater distance from the rotational axis of the rotor than the outlet slit and the length of the outlet slit being greater than that of the inlet slit.

4,762,481

MOLD STRUCTURE FOR PRODUCING A WINDOW ASSEMBLY

William R. Weaver, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Division of Ser. No. 794,019, Nov. 1, 1985, Pat. No. 4,662,113. This application Dec. 4, 1986, Ser. No. 937,703
Int. Cl.[4] B29C *45/14, 45/26*
U.S. Cl. 425—116 3 Claims



1. A mold structure for producing a window assembly in-

cluding a transparent sheet having a bracket secured thereto by a first gasket member adhered to the bracket and a first peripheral portion of the sheet and having a second gasket member adhered to a second peripheral portion of the sheet, said mold structure comprising;

at least two cooperating mold sections having facing surfaces defining bracket and sheet receiving chambers;

at least one of the facing surfaces of said mold sections defining a first mold cavity adjoining said chambers for forming a first gasket and a second mold cavity spaced from said first cavity along an edge of the sheet and adjoining the sheet receiving chamber for forming a second gasket spaced from said first gasket, said first and second gaskets being formed about the edge of the sheet;

spaced seal means for holding the bracket spaced from an edge of said sheet; and

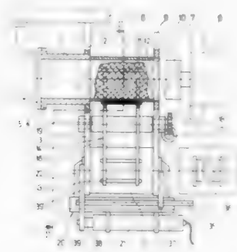
inlet means for introducing a flowable gasket forming material into the first and second gasket forming cavities when said mold sections are in contacting relationship.

4,762,482

FEED DEVICE FOR INJECTION MOLDING MACHINES

Ernst Sauerbruch, Gewerbestrasse 31, D-7702 Gottmadingen, Fed. Rep. of Germany

Filed Oct. 5, 1987, Ser. No. 104,400
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1986, 3633835
Int. Cl.[4] B29C *45/18*
U.S. Cl. 425—185 17 Claims



1. In a feed device for injection molding machines, in which the feed device includes a hollow cylinder whereby plastic material to be processed is contained in said hollow cylinder, said feed device further including a feed cylinder having a longitudinal axis and an axially displaceable feed ram coaxial therewith, means on the machine for transferring said hollow cylinder into a coaxial discharge position between said feed cylinder and said feed ram such that said hollow cylinder defines an extension of said feed cylinder, said feed ram being displaceable through said positioned hollow cylinder to empty the plastic material from said hollow cylinder into said feed cylinder.

4,762,483

APPARATUS FOR PACKAGING AND DISPENSING ICE CREAM AND THE LIKE

John M. Zevlakis, 21-09 19th St., Long Island, N.Y. 11105

Filed Jun. 8, 1987, Ser. No. 59,329
Int. Cl.[4] B29C *69/00, 11/12;* A23G *9/28*
U.S. Cl. 425—140 8 Claims

1. An apparatus for dispensing a coiled tubular encased frozen food product comprising, in combination:

(a) guide means for receiving the leading end of the coiled casing;

(b) slitting means associated with said guide means for slitting said casing lengthwise along a pair of diametrically opposite lines of cut while being drawn through said guide means;

(c) driven take-up roller means formed for receiving leading ends of the slit casing after passing said slitting means and taking up the slit casing as a means for advancing the trailing said casing;

(d) electrically controlled measuring means operative to measure off a predetermined length of the leading end of said encased frozen food product and to thereafter stop said roller means;



(e) powered cutting means operative to sever said predetermined length of frozen food product;

(f) means for transferring said severed length to a food container; and

(g) a refrigerated housing enclosing said coiled tubular encased product, said guide means, said slitting means, roller means, measuring means, cutting means and transferring means.

4,762,484

APPARATUS FOR THE CONTINUOUS, DRY, NON-PRESSURIZED REGENERATION OF SALVAGED RUBBER

Stefan Ficker, Munich, Fed. Rep. of Germany, assignor to Ingenieurburo S. Ficker, Munich, Fed. Rep. of Germany

Division of Ser. No. 709,038, Mar. 7, 1985, Pat. No. 4,665,101. This application Jan. 16, 1987, Ser. No. 4,101
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1984, 3408493
Int. Cl.[4] B29C *35/12;* H05B *6/64*
U.S. Cl. 425—174.8 R 11 Claims



1. An apparatus for the continuous dry, nonpressurized reclaiming of a material selected from the group which consists of salvaged rubber, plastics and mixtures thereof, said apparatus comprising:

a vertical microwave heating channel formed at opposite ends with means for preventing escape of microwaves from said channel and, intermediate said means, a brush-discharge electrode for generating microwaves in said channel to heat said material as it transverses said channel;

means forming an inlet at an upper end of said channel for feeding said material in comminuted form to said channel;

a curved guide element connected to a lower end of said channel for transferring the microwave-heated comminuted material from said channel to a charging trough with minimal relative change in positions of particles of said material; and

a hollow-flight screw heat exchanger positioned to receive the microwave-heated comminuted material from said

VOL 1093 ISS 2 AG 9 1988 UMI

trough and comprising a casing and a fluid-heated hollow-flight screw rotatable in said casing to heat said material to a reclaiming temperature.

4,762,485

CASTING FRAME STRUCTURE OF CENTRIFUGAL CASTING MACHINE

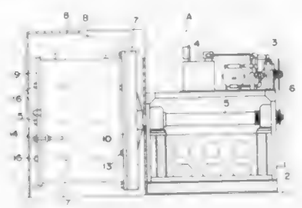
Ichiro Kanzaki, 14-12 Shimoitohzu 4-chome, Kokurakita-ku, Kitakyushu-shi, Japan, assignor to Ichiro Kanzaki, Kitakyushu and Mitsuharu Ogura, Takamatsu, both of, Japan

Filed Dec. 17, 1986, Ser. No. 943,119

Claims priority, application Japan, Dec. 18, 1985, 60-286596; Mar. 24, 1986, 61-066862; Aug. 19, 1986, 61-195038

Int. Cl.[4] B29C *41/04*

U.S. Cl. 425—434 9 Claims



1. In a casting frame structure of a centrifugal casting machine which comprises a hollow rotary drum in which a concrete-slurry charging space is formed, a rear-end plate replaceably attached to the rear end of said rotary drum, a front-end plate replaceably attached to the front end of said rotary drum and having a feeder opening through which a concrete slurry is supplied into said concrete-slurry charging space of said rotary drum, a plurality of casting space defining members mounted on the inner surface of said rotary drum defining a plurality of concrete-slurry casting spaces therebetween, each of which is open to said concrete-slurry charging space, the improvement wherein at least some of casting space defining members are movable in a direction to enlarge said concrete-slurry casting space defined thereby, and a plurality of casting space defining member positioning-and fixing members are disposed between said front end of said rotary drum and said front end plate as well as between said rear end of said rotary drum and said rear end plate.

4,762,486

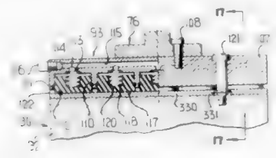
BLOW MOLDING MACHINE

Robert F. Windstrup, Oak Park; Steven A. Bodnar, Harwood Heights, and B. Pershing Larsen, Chicago, all of Ill., assignors to The Continental Group, Inc., Norwalk, Conn.

Division of Ser. No. 103,690, Dec. 14, 1979, Pat. No. 4,650,412. This application Mar. 13, 1987, Ser. No. 25,752

Int. Cl.[4] B29C *49/56*

U.S. Cl. 425—541 3 Claims



1. In a blow molding machine having mold halves carried by mold opening and closing means, cushion pad means for assuring tight and complete closing of mold halves under a predetermined loading after an initial closing of the mold halves, said cushion pad means being an air cushion pad, and actuating means for actuating said air cushion pad including an air entry means and an air outlet, said air cushion pad means including a pad member having a mold half opposing surface, a plurality of cylinders formed in said pad member and opening through said mold half opposing surface, and a piston in each cylinder and projectable from said mold half opposing surface for directly engaging an associated mold half, spring elements associated with said pistons for providing an initial loading of pistons, and a retainer plate selectively securable to said pad member for retaining said pistons in said cylinders against the urging of said spring elements.

4,762,487

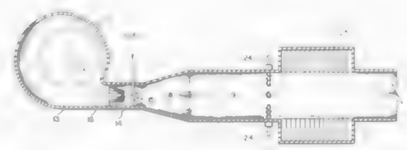
DIODE SUPPLIED PULSED COMBUSTOR

Oswald L. Zappa, Stoneham, Mass., assignor to Gas Research Institute, Chicago, Ill.

Filed Aug. 13, 1987, Ser. No. 84,817

Int. Cl.[4] F23C *11/04*

U.S. Cl. 431—1 11 Claims



1. An acoustically nonresonant pulse combustor comprising:

(a) aerodynamic vortex diode means having an air inlet port and an air outlet port, said diode means providing a low pressure drop for air flow from said inlet port to said outlet port and a substantially higher pressure drop for air flow from said outlet port to said inlet port, said inlet and outlet ports each having a cross section to provide a ratio of resistance to air backflow of about fifty to one hundred;

(b) means for providing a source of air at a pressure greater than atmospheric pressure;

(c) means for coupling said diode means to said source of pressurized air;

(d) a combustion chamber having an inlet end and an exhaust end, the said inlet end having a cross section larger than that of said diode means outlet port;

(e) duct means including diffuser means connecting said diode means outlet port and said combustion chamber inlet end;

(f) fuel injection means for sequentially injecting fuel into said duct means;

(g) ignition means for sequentially igniting fuel-air mixtures in said combustion chamber with peak pressures of at least about thirty pounds per square inch; and

(h) muffler means coupled to said combustion chamber exhaust end for receiving and exhausting gas from said combustion chamber and damping acoustic waves eminating therefrom, said muffler means nonresonantly exhausting said exhaust gas.

4,762,488

PORTABLE GAS-FIRED FORCED-DRAFT HEATER

Thaddeus A. Schilling, 549 Shoshone St., Lander, Wyo. 82520

Continuation-in-part of Ser. No. 735,993, May 20, 1985, Pat. No. 4,640,680. This application Feb. 2, 1987, Ser. No. 10,009

Int. Cl.[4] F23D *14/46*

U.S. Cl. 431—350 7 Claims

1. Combustion apparatus for burning a gaseous fuel-air mixture and adapted for use within a surrounding high velocity air stream, the apparatus comprising:

(a) a fuel and air mixing nozzle assembly for mixing fuel supplied to the assembly with air, for creating an essentially entirely gaseous mixture of fuel and air, and for discharging that mixture along a discharge axis of the assembly to a combustion zone downstream of the nozzle assembly and surrounded by the air stream, the assembly being adapted for connection to a source of fuel for supply of fuel from the source under pressure to the assembly, the assembly having a discharge end on said axis through which the mixture is discharged to the combustion zone, and

(b) spaced upstream and downstream combustion zone shroud means for creating in the combustion zone, during the existence of said air stream therepast, a region of relatively nonturbulent gas having a pressure higher than



the pressure in said air stream and in which combustion of the fuel air mixture can occur, the shroud means being disposed along said axis respectively (1) upstream of and adjacent the nozzle assembly discharge end and (2) substantially at a downstream end of the combustion zone and including plate means disposed substantially normal to the axis upstream and downstream of the discharge end of the nozzle assembly,

(c) the apparatus being characterized by the absence, between the upstream and downstream shroud means, of physical structure between the high velocity air stream and the combustion zone and the region of relatively nonturbulent gas therein.

adjust the amount of air that may flow through said perforations, and means for adjusting the air supplied to each of said





boxes, thereby enabling an optimum flow of cooling air through said perforations to be achieved.

4,762,489

COOLING APPARATUS

Heinz-Herbert Schmits, Rheda-Wiedenbruck, and Hermann Niemerg, Ennigerloh, both of Fed. Rep. of Germany, assignors to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed Apr. 10, 1987, Ser. No. 37,206

Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616630

Int. Cl.[4] F27D *15/02*

U.S. Cl. 432—77 14 Claims

1. In cooling apparatus for granular material precipitated from a kiln having a material discharge end, said apparatus including a cooling grate having an inlet end, and material transfer means bridging the discharge end of said kiln and the inlet end of said grate for transferring material along a path from said kiln to said cooling grate, said material transfer means being inclined downwardly towards said grate and having at least two rows of air boxes below and extending across said path, each of said air boxes being connected to at least one cooling air blower, the improvement wherein each of said rows of air boxes has an aerating base comprising overlying sheets, each of said sheets containing multiple perforations, means for moving the sheets of each of said boxes relative to one another between positions in which the respective perforations are in and out of registration with one another thereby to

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4,762,490

TOOTH SETTING AID ARRANGEMENT FOR POSITIONALLY CORRECTLY SETTING ARTIFICIAL TEETH IN A COMPLETE LOWER DENTURE

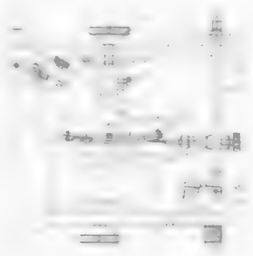
Horst Ludwigs, Lenbachstrasse 33, D-4800 Bielefeld 1, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 944,670

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1986, 8617182[U]

Int. Cl.[4] A61C *11/00*

U.S. Cl. 433—56 29 Claims



1. A tooth setting aid arrangement for use in a positionally correct setting of artificial teeth in a complete lower denture on a lower jaw model in accordance with a Pound's line, comprising

a holder which is positionally fixable with respect to the lower jaw model and is arched along an imaginary skull-

VOL 1093 ISS 2 AG 9 1988 UMI

cap-shaped surface with a sagittal and transversal compensation curve;

two insert members which are pivotable and shiftable on said holder within the imaginary skullcap surface as well as arrestable in selected positions thereof relative to the holder for adjustment to the Pound's line,

wherein said holder is constituted by an elongated bridge member including two plate-shaped bridge elements which are juxtaposed with one another, connected to each other, and spaced from one another to jointly bound an insertion slot for said insert members,

wherein each of said insert members has at least one insert arm; and wherein said holder further includes a plate-shaped distancing member interposed between said bridge elements at a central longitudinal region of the latter for forming said insertion slot between said bridge elements, and having a height corresponding to the thickness of said insert arm for alternate insertion of only one of said insert members at a time.

4,762,491

DENTAL MEASURING INSTRUMENT

Wayne A. Bolton, 5302 Scenic Dr., Yakima, Wash. 98908

Filed May 14, 1987, Ser. No. 50,903
Int. Cl.[4] A61C *19/04*
U.S. Cl. 433—72 12 Claims



1. A dental measuring instrument used by dentists and orthodontists to determine the labial inclination of maxillary and mandibular incisor teeth, and the measurements obtained are incorporated into the Bolton tooth size labial inclination analysis, comprises:

(a) an elongated base, which is "T" shaped, whereby a cross portion of the "T" base is insertable in a patient's mouth to be held in contact with the patient's teeth, and the stem portion of the "T" base has a positioning projection to be contacted by the patient's incisor tooth, thereby limiting any farther insertion of the "T" shaped base into the patient's mouth;

(b) a dial indicator mounted on the elongated base to determine a linear dimension, which is made in a plane parallel to the plane established by the elongated base, and this dial indicator has a rotating pointing hand and dial face indicia;

(c) a dial indicator adjustment screw of the dial indicator is turned to move an indicator arm;

(d) an indicator arm of dial indicator, when moved by the dial adjustment screw, protrudes to contact the mesio-distal center of the incisor crown of a patient's incisor tooth; and the linear dimension is converted by the dial indicator, whereby a rotating pointing hand simultaneously moves over dial face indicia of the dial indicator to reach an angle of inclination of the patient's incisor tooth.

4,762,492

ARTIFICIAL TOOTH ROOT MEMBER AND METHOD OF IMPLANTING SAME

Noriyuki Nagai, Okayama, Japan, assignor to Yamaura Seisakusho Ltd., Tokyo, Japan, a part interest

Filed Jun. 1, 1987, Ser. No. 56,240
Claims priority, application Japan, Jul. 18, 1986, 61-170689
Int. Cl.[4] A61C *8/00*
U.S. Cl. 433—174 15 Claims



1. An artificial tooth root member comprising a blade-shaped piece implantable in a jawbone and having a first threaded hole open at sides, a screw element threadedly engageable with the first threaded hole and serving for the purpose of forming a second threaded hole in the jawbone, and a pin neck portion substitutable for the screw element and formed at the base end part thereof with a threaded portion engageable with the first and second threaded holes.

4,762,493

SCENTED TEACHING AID, PARTICULARLY CRAYONS

Raymond G. Anderson, 206 N. Sharmin St., Ankeny, Iowa 50021

Filed Aug. 16, 1984, Ser. No. 641,261
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—84 7 Claims



1. A scented colored crayon for use as a teaching aid to assist in teaching identification of color to scent, and scent to color, comprising:

a crayon having from about 0.05% by weight to about 8% by weight of an artificial scent impregnated therein;

said crayon being of a color logically related to the impregnated scent.

4,762,494

PSYCHOTHERAPY DEVICE

Ruth E. Woods, 2041 N.W. 12th Rd., Gainesville, Fla. 32605

Filed Mar. 18, 1987, Ser. No. 27,356
Int. Cl.[4] G09B *19/00, 23/30;* A63H *3/16*
U.S. Cl. 434—236 15 Claims

1. A psychotherapy device comprising:

a body member;

a pair of legs connected to said body member;

a pair of arms connected to said body member;

a head connected to said body member;

said head, body member, arms and legs being in the general configuration of a human figure;

said head having a face and said face having a permanent representation of a pair of eyes, and a nose permanently affixed thereto;

means connected to said face adjacent to and generally below each of said permanent eyes for releasably receiving indicia of tears;

tear indicia operably connectable to and releasable from said means for receiving indicia of tears;

means connected to said face adjacent to and generally below said permanent nose for releasably receiving indicia of a mouth; and

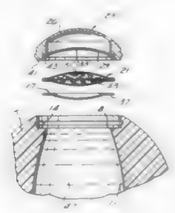
mouth indicia operably connectable to and releasable from said means for receiving indicia of a mouth, wherein during psychoplay therapy of a child patient, the patient may be invited, with the permanently affixed eyes and nose as a neutral point of reference, to apply or remove and conform the mouth of the psychotherapy device to the face to reflect a current or past mental state of the patient.

4,762,495

OPHTALMOLOGIC LENS PHANTOM SYSTEM

William F. Maloney, 2020 Ocean Front Ave., Del Mar, Calif. 92014, and Deborah K. Hall, 520 I via de la Valle, Solano Beach, Calif. 92075

Filed Feb. 13, 1987, Ser. No. 14,433
Int. Cl.[4] G09B *23/28*
U.S. Cl. 434—271 15 Claims



1. A simulated ocular system comprising:

an outer orb having an aperture formed in the outer surface of said orb and a chamber located within said orb, said aperture and said chamber in communication with one another;

a posterior membrane attached to said chamber and forming a fluid-tight seal between a portion of the chamber and said aperture;

a corneal cap attached to said orb adjacent said aperture and in a manner substantially sealing same; and

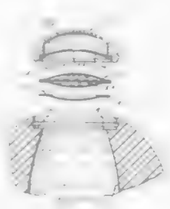
a cataractous lens phantom releasably attached to said orb within the chamber, and located between said posterior membrane and said corneal cap.

4,762,496

OPHTHALMOLOGIC LENS PHANTOM SYSTEM

William F. Maloney, 2020 Ocean Front Ave., Del Mar, Calif. 92014; Deborah K. Hall, 520 I Via de la Valle, Solano Beach, Calif. 92075; Dean B. Parkinson, Redwood City; Orton D. Bergren, Menlo Park, and Allen L. Dodge, Newark, all of Calif., assignors to William F. Maloney and Deborah K. Hall, both of Del Mar, Calif.

Filed Feb. 13, 1987, Ser. No. 14,434
Int. Cl.[4] G09B *23/28*
U.S. Cl. 434—271 17 Claims



1. A simulated ocular system comprising:

an outer orb having an aperture formed in the outer surface of said orb and a chamber located within said orb, said aperture and said chamber in communication with one another;

a posterior membrane attached to said chamber and forming a fluid-tight seal between a portion of the chamber and said aperture;

a corneal cap attached to said orb adjacent said aperture and in a manner substantially sealing same; and

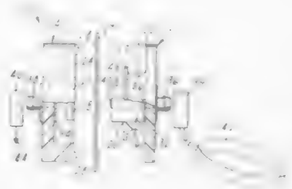
a cataractous lens phantom releasably attached to said orb within the chamber, and located between said posterior membrane and said corneal cap, the lens phantom comprising a permanent hydrogel material incorporating a water-soluble polymer encapsulated within a transparent film, with the permanent hydrogel material comprising a cross-linked gelatin, the water-soluble polymer comprising sodium alginate, and said transparent film selected from the group consisting of vinyl and vinylidene chloride copolymer.

4,762,497

ELECTRICAL CONNECTOR FOR ELECTRICALLY CONNECTING THROUGH A FABRIC

Richard W. Burvee, Austin, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 23, 1987, Ser. No. 29,340
Int. Cl.[4] H01R *3/00*
U.S. Cl. 439—37 32 Claims



1. An electrical connector useful for electrically connecting through a fabric comprising:

a first part and a second part adapted to be interconnected to entrap said fabic from both sides;

said first part and said second part when interconnected forming a reservoir therebetween;

VOL 1093 ISS 2 AUG 9 1988 UMI

a first electrode coupled to said first part electrically communicating with the interior of said reservoir,

a second electrode coupled to said second part electrically communicating with the interior of said reservoir;

first interconnection means coupled to said first part for connecting said first electrode exterior of said reservoir on one side of said fabric; and

second interconnection means coupled to said second part for connecting said second electrode exterior of said reservoir on the other side of said fabric;

whereby said first part and second part may be interconnected from opposite sides of said fabric and said reservoir may be filled with an electrically conductive gel capable of penetrating said fabric and thus an electrical connection be established through said fabric.

4,762,498

PIN-SHAPED CONTACT ELEMENT TO BE CONNECTED IN CONDUCTOR PLATE BORES

Dietmar Harting, Espelkamp; Hans Nagel, Porta Westfalica, and Wolfgang Brauer, Spenge, all of Fed. Rep. of Germany, assignors to Harting Elektronik GmbH, Espelkamp, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 474,846

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1982, 3210348

Int. Cl.[4] H01R *9/09*; H05K *1/04*

U.S. Cl. 439—82 7 Claims



1. A pin-shaped contact element for separable engagement in a metallized bore of a conductor plate comprising an insertable fastening contact element having two parallel sidepieces, a resilient connecting bridge connected to said sidepieces, each of said two sidepieces having two rounded ends spaced from each other by an intermediate portion, at least portions of each of said rounded ends contacting the bore walls at four spaced locations when the insertable fastening contact element is inserted in said bore without damaging said conductor plate, the connection between said two sidepieces and said bridge being rounded, said connecting bridge having a thickness which is about one-third the thickness of said sidepieces, said connecting bridge being connected to said intermediate portions of said sidepieces to thereby provide substantially even contact pressure at said four spaced locations where said portions of said rounded ends contact said bore walls, said connecting bridge having an undulating configuration providing for elasticity of the connecting bridge, whereby the insertable fastening contact element is elastically deformable when inserted into a bore which is smaller than the contact element and substantially returns to its original undeformed configuration when removed from said bore.

4,762,499

SURFACE MOUNT CONNECTOR AND MATING CONNECTOR THEREFOR

Henry G. Johnson, Jr., 5 Abbey Rd., East Hampton, Conn. 06416

Filed Apr. 3, 1987, Ser. No. 33,785

Int. Cl.[4] H01R *11/03*

U.S. Cl. 439—66 17 Claims

1. A connector mountable on the surface of a printed circuit board (PCB), said connector comprising a unitary body of rigid electrically insulating material having a bottom surface, a main top surface facing away from said bottom surface, additional surfaces interconnecting said bottom and main top surfaces and each other, and an electrical lead localized on the exterior of said body and having a bottom end portion on said bottom surface, a top end portion on said main top surface and additional portions on said additional surfaces and providing



circuit continuity on the exterior of said body between said end portions, said bottom end portion being affixable to a pad on the surface of the PCB.

4,762,500

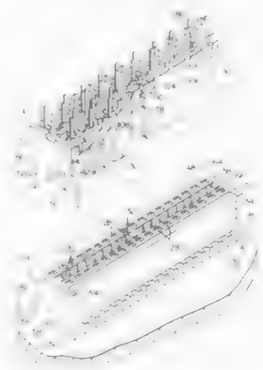
IMPEDANCE MATCHED ELECTRICAL CONNECTOR

Frank P. Dola, Hudson, and Steven Feldman, Seminole, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 4, 1986, Ser. No. 937,797

Int. Cl.[4] H01R *9/09*

U.S. Cl. 439—79 16 Claims



5. An electrical connector assembly comprising mating male and female connectors for use in establishing interconnections to a printed circuit board, each connector comprising:

a housing of insulative material having a plurality of passages therein arranged in a first plane;

a plurality of electrical terminals, each terminal mounted in a respective passage whereby each terminal is located within the first plane, each terminal having a tail extending therefrom and constituting means for interconnection to a circuit of the printed circuit board;

a planar, elongate, electrically conductive ground bus mounted within a bus passage and located within a second plane effectively parallel with the first plane, the bus being attached to the housing effectively parallel with the terminals with insulative material between the bus and the terminals, the bus also being attachable to the printed circuit board for constituting a reference plane for the microstrip configured transmission of electric signals by the terminals; and

bus solder tail means within the second plane formed as extensions of the bus and extending across the width of the bus constituting both the means for mounting the bus to the printed circuit board as well as the means for securing the housing to the printed circuit board, the connector assembly being characterized by a male bus in one connector and a mating female bus in the other connector, the male and female busses each being provided with a plurality of solder tails extending across the width of each bus.

4,762,501

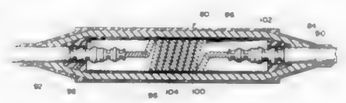
EXTENDED CONTACT

Alan D. Borgstrom, Hackettstown, and Larry N. Siebens, Whippany, both of N.J., assignors to Amerace Corporation, Hackettstown, N.J.

Filed Sep. 8, 1986, Ser. No. 904,913

Int. Cl.[4] H01R *13/648*

U.S. Cl. 439—131 28 Claims



1. A device for interconnecting two components of a high voltage system comprising: a housing constructed of an insulating material and having a passage therethrough from a first end of said housing to a second end; at least one extendable conductor means capable of being extended out of said housing through said passage at one of said first and second ends and thereafter capable of being returned to a position in said housing through said passage, said extendable conductor means being reconfigured to return same into said passage of said housing; first coupling means coupled to one end of said one extendable conductor means for coupling said extendable conductor means to a first component of a high voltage system; said first component being at least partially drawn into said passage of said housing as said extendable conductor means is returned and configured in said passage of said housing; conductor means positioned in said passage of said housing having a first end and a second end, said first end of said conductor means being coupled to said other end of said one extendable conductor means, and a further conductor means coupled to said second end of said conductor means to engage a second component of a high voltage system adjacent the passage at the second one of said first and second ends of said housing.

4,762,502

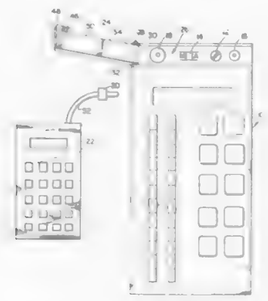
METHOD FOR CONCEALMENT AND ACCESS TO CONTROL PANEL FUNCTIONS

George R. Hall, II, Wickliffe, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 21, 1986, Ser. No. 921,552

Int. Cl.[4] H01R *13/44*

U.S. Cl. 439—144 4 Claims



1. Apparatus for concealing and permitting access to a portion of a control panel module comprising a cover member pivotally attached to the control panel module and having a first position wherein said cover member encloses a portion of the control panel module and a second position wherein said cover member permits access to the portion of the control panel module, said cover member the control panel module, said cover member having a top surface for supporting a member which is interconnected to the control panel module and means for preventing the interconnected member from becoming disengaged from said supporting means.

4,762,503

MOUNTING FOR AN ELECTRICAL LIGHT BULB WITH A BAYONET LAMP BASE

Franz-Josef Böhle, Salzkotten; Hans-Peter Brockmeyer, Lippstadt; Theodor Brügger, Lippstadt, and Klaus Panzer, Lippstadt, all of Fed. Rep. of Germany, assignors to Hella KG Hueck Co., Lippstadt, Fed. Rep. of Germany

Filed Sep. 2, 1986, Ser. No. 903,033

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1985, 3531166

Int. Cl.[4] H01R *13/625*

U.S. Cl. 439—336 20 Claims



1. A mounting for an electric light bulb which a bayonet lamp base formed of a sheet metal plate comprising

an opening in the sheet metal plate providing a passage for the base of a light bulb;

two guide flap pieces where a first one of the guide flap pieces is cut from an area of the sheet metal disposed outside of the opening in the sheet metal plate for the passage of the light bulb and a second one of the guide flap pieces is cut from an area of the sheet mtal disposed outside of the opening in the sheet metal plate for the passage of the light bulb on the opposite side of the opening from the first one of the guide flap pieces, where a first region of each flap piece adjoining a region of the opening is bent in a direction parallel to a direction of insertion of a light bulb in said opening about a first bending line running in parallel to the plane of the opening and where a second region of each flap piece adjoining the first region of the flap piece is bent about a second bending line perpendicular to the plane of the opening in a direction toward a first cylinder defined by a perpendicular projection of said opening about an axis running about perpendicular to a plane of the opening and where a third region of the first flap piece adjoining the second region is formed as part of a second cylinder concentric to the cylinder defined by a perpendicular projection of said opening such that the axis of the cylinders is parallel to the axis running perpendicular to the opening and where each third region includes a receiver opening for a socket pin radially projecting out of the light bulb base.

4,762,504

CONNECTOR COUPLING LOCK

Leonard H. Michaels, Warrenville, and Robert A. Miller, Woodridge, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Division of Ser. No. 830,796, Feb. 19, 1986, Pat. No. 4,707,047. This application Aug. 11, 1987, Ser. No. 84,645

Int. Cl.[4] H01R *13/627*

U.S. Cl. 439—345 4 Claims

1. An environmentally sealed connector assembly including

VOL 1093 ISS 2 AG 9 1988 UMI

interfitting manually telescoping separable plug and receptacle connectors,

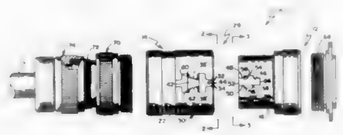
the plug connector having an outer rigid shell, a first dielectric support member mounted within the shell, and at least one electrical terminal mounted in the first support member,

the receptacle connector having an outer rigid shell dimensioned to telescopically receive said plug shell, a second dielectric support member mounted within the receptacle shell, and at least one electrical terminal mounted in the second support member adapted to mate with the plug terminal, and

a coupling lock including first and second interengaging portions associated with said plug and receptacle connectors, respectively, for selective locking and unlocking thereof during connector mating and unmating,

the improvement in said coupling lock, comprising:

a manually compressible resilient split ring captively mounted on the outside of said receptacle shell, having



first and second spaced-apart opposed ends resiliently moveable toward and away from each other as said ring is compressed and released, further having at each free end, inwardly extending tabs with camming surfaces;

a tab-receiving channel formed in said plug shell and extending in the direction of plug insertion, said channel having opposed edges for engaging said camming surfaces, a first entrance portion, a second portion of reduced width for drawing said tabs together during plug insertion so as to compress said ring with a stored bias force, an adjacent enlarged third portion allowing expansion of said tabs under said bias force, and shoulder means forming said third portion for engaging said tabs to prevent withdrawal thereof from said channel;

whereby said plug and receptacle connectors are locked together upon telescopic mating, and are unlocked for unmating upon manual compression of said ring sufficient bring said tabs out of engagement with said shoulder means.

4,762,505

POSITIVE RETENTION CONNECTOR LATCH

John C. Asick, Harrisburg; John M. Landis, Camp Hill, and Stephen M. Yingst, Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 16, 1987, Ser. No. 39,557
Int. Cl.[4] H01R *13/631*
U.S. Cl. 439—347 3 Claims

1. A connector system, comprising:

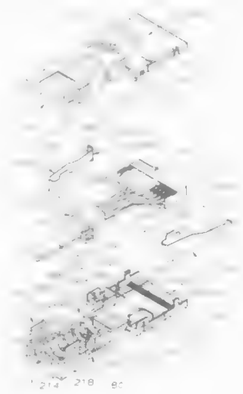
a header assembly having a mounting face and an insulative housing defining a cavity, said cavity having a channel for receiving latching means therein, said channel having a detente therein;

a plurality of pin contacts having a first end extending from the mounting face and a second end extending into the cavity;

a receptacle assembly having an insulative housing having an aperture therein and a mating face;

a plurality of terminals mounted in said receptacle assembly, said terminals having a mating portion directed toward the mating face for mating with said pin contacts, and a terminating portion directed away from the mating face for terminating conductors of a cable; and

latching means for securing the header assembly to the receptacle assembly upon mating, said latching means mounted on the receptacle assembly and having a leg member extending axially along the receptacle assembly, a



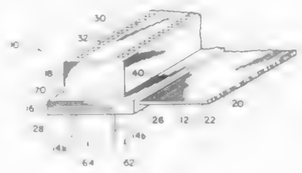
catch member extending normally to the leg member and through the aperture to operate in the channel, said catch member being received in said detente to secure said header and receptacle assemblies together.

4,762,506

DUAL DIRECTION INSULATION DISPLACEMENT CONNECTION CABLE TERMINATION ASSEMBLY

John M. Thompson, Leroy, and Tim K. Hoyt, Mentor, both of Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 31, 1986, Ser. No. 948,239
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—418 18 Claims



1. A cable termination assembly for in line emulation function comprising a multiconductor electrical cable, plural pairs of electrical IDC contacts positioned with respect to such cable to face in opposite directions on opposite sides of the cable, each of the contacts of respective pairs thereof effecting IDC connection with a respective cable conductor, and strain relief means for holding together the cable and the contacts for use such that electrical connection is provided among each pair of contacts and a respective conductor of the cable.

4,762,507

ELECTRICAL CONTACT RETENTION SYSTEM, AND TOOL FOR REMOVAL AND METHOD THEREFOR

William J. Rudy, Jr., Annville; Howard R. Shaffer, Millersburg, and Daniel E. Stahl, Dauphin, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 24, 1987, Ser. No. 42,205
Int. Cl.[4] H01R *13/40*
U.S. Cl. 439—595 7 Claims





1. A retention system for retaining a contact terminal in a passageway of a housing of an electrical connector, comprising:

housing means of resilient dielectric material including a transverse base portion proximate a rearward face and at least a pair of parallel walls extending forwardly therefrom towards a forward face, said housing means including at least one passageway extending therethrough from said rearward face to said forward face between facing inside surfaces of said pair of walls, said walls extending laterally from both sides of said at least one passageway continuously in a first direction transverse to said passageway, said housing means including relief channels along outside surfaces of said walls at least adjacent said passageway whereby portions of said walls proximate said forward face are adapted to be locally deflected laterally outwardly from said passageway in a transverse direction orthogonal to said first direction, said passageway including a forward end defined by opposed sections of said walls, upper portions of said sections including an opposing pair of inwardly extending stop projections comprised of forwardly facing stop surfaces and gradually tapered rearwardly facing surfaces; and

at least one contact terminal associated with said at least one passageway and having a forward contact section adapted to be insertable into and through said passageway from said rearward housing face to said forward housing face, and further having a body section and a rearward contact section, said body section including stop means for stopping forward terminal movement upon full insertion into said passageway by engaging surface means of said housing means, and said body section forwardly of said stop means including a pair of opposed notches associated with said housing stop projections and having rearwardly facing stop surfaces, and being located and adapted to receive said stop projections thereinto upon full insertion of said terminal into said housing passageway, and said body section forwardly of said notches further including opposed gradually tapered forwardly facing transition surfaces adapted to engage said gradually tapered rearwardly facing surfaces of said housing stop projections and urge said upper portions of said wall sections at said stop projections laterally outwardly during insertion of said terminal into said housing passageway to permit said terminal to be fully inserted thereinto and said notches to be moved axially forwardly to a position adjacent said stop projections and receive said stop projections thereinto when said deflected wall section upper portions resile, stopping axially rearward movement of said terminal, whereby said terminal is retained in said housing means.

4,762,508

MODULAR ELECTRICAL CONNECTOR SYSTEM

John N. Tengler, Chardon, and James C. Pilny, Painesville, both of Ohio, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

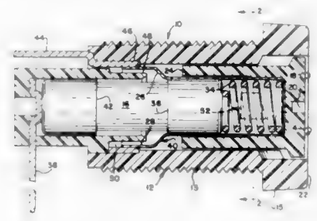
Division of Ser. No. 628,155, Jul. 5, 1984, Pat. No. 4,586,769, which is a division of Ser. No. 335,656, Dec. 30, 1981, Pat. No. 4,484,792. This application Mar. 28, 1986, Ser. No. 845,615
The portion of the term of this patent subsequent to Nov. 27, 2001, has been disclaimed.
Int. Cl.[4] H01R *13/502*
U.S. Cl. 439—607 12 Claims



1. A connector system comprising plural terminator means for terminating respective insulated conductors, each said terminator means including contact means for electrically connecting the respective conductor with another device; at least one pair of connector blocks, the connector blocks of said one pair including plural cell means for receiving and holding respective said terminator means with said contacts thereof aligned for connection with contacts of such another device; frame means for holding said one pair of connector blocks securely therewithin, said frame means having a dovetail slot, said connector blocks of said one pair having respective portions of a dovetail prism-shape member, and said portions of said dovetail prism-shape member cooperating with each other and with said slot to connect said connector blocks of said one pair together in said frame means.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,509
SHOCK-SAFE FUSEHOLDER ASSEMBLY
Rudolf K. Schaefer, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.
Filed Nov. 12, 1986, Ser. No. 926,611
Int. Cl.[4] H01R *13/68*
U.S. Cl. 439—621 23 Claims





16. In combination, a fuseholder body and a fuse-retaining knob, said fuseholder body being insulating material and having a fuse-receiving passageway extending inwardly from an outer face thereof for receiving a cartridge-type electrical fuse, said body having first and second terminal means for providing external electrical connection to the inner and outer contacts respectively of an inserted fuse, said fuse-retaining knob adapted to carry said fuse and having at least one radially extending locking projection configured for axial insertion into said passageway with said knob, one of said body and said knob including resilient biasing means for exerting an ejecting force on said knob through a fuse so inserted, said passageway having a knob locking projection-receiving portion with an entry section having entry section walls for initially guiding said knob locking projection and a terminal section for retainingly accepting said knob locking projection, said terminal section of said knob locking receiving portion of said passageway having a longitudinally axially inwardly facing wall forming a locking shoulder, so that when said knob is inserted into said passageway and said knob is turned in a locking direction, said knob locking projection will confront said locking shoulder and be urged by said biasing means against said locking shoulder to retain said body against said ejecting force, the improvement comprising:

said locking shoulder being configured with a camming surface disposed to be in a confronting relationship with said knob locking projection when said knob is in said locking position so as to prevent ejection of said knob by said biasing means, said camming surface being configured to rotatingly urge said knob in said locking direction by the ejecting force of said biasing means pressing said knob locking projection against said camming surface, the initially confronting portions of said camming surfaces of said locking shoulder and said knob locking projection beng configured so that when insertion pressure on said knob is released when said knob locking projection begins to partially overlap said locking shoulder camming surface, said camming surface under the force of said biasing means will rotate the knob in said locking direction to lock said knob in place, and upon release of said knob before said partial overlapping takes place, said biasing means will press said knob into a position where it projects beyond said fuseholder body.

4,762,510
SHOCKPROOF FUSEHOLDER
Rudolf K. Schaefer, Des Plaines, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.
Continuation-in-part of Ser. No. 926,611, Nov. 12, 1986. This application Apr. 6, 1987, Ser. No. 32,713
Int. Cl.[4] H01R *13/213, 13/68*
U.S. Cl. 439—621 13 Claims



1. In a fuseholder socket assembly including a socket body made of insulating material and having a fuse-receiving passageway extending axially inwardly from an outer face thereof for receiving a cartridge-type electrical fuse, said socket body including an innermost terminal in said passageway to be engaged by the innermost terminal of the cartridge fuse supported by and inwardly axially projecting from a knob which in its final position can lie recessed within the socket body, and a stationary side terminal in said passageway positioned to make electrical contact with at least a first axially extending knob contact finger which is disposed to be electrically connected in said knob to the outermost terminal on said cartridge fuse, and resilient biasing means for exerting an outwardly axially directed ejecting force on said knob as a result of a fuse inserted in said knob which strains the biasing means, the improvement wherein:

said side terminal has at least a first stationary helical camming surface portion disposed to be contacted by the inner end of a knob contact finger upon insertion of said knob, said first helical portion adapted to initially guide said knob for movement in both axial and circumferential directions toward a locking position where said contact finger can interlock with said side terminal with not more than substantially one-half turn of the knob, and an axially inwardly facing abutment shoulder for each knob contact finger and against which the associated contact finger is urged by said biasing means when knob is turned in said circumferential direction into a final locking position, said first helical portion of said side terminal being disposed to be traversed by said first contact finger when the knob is rotated from its locking position so as to eject said knob from said passageway even when a fuse is removed from the body and the biasing mean is unable to eject the knob.

4,762,511
TOY CRASH VEHICLE WITH SKEWABLE FRONT WHEELS
Shao-Wei Lee, and Kwong-Wai Chow, both of Kowloon, Hong Kong, assignors to Buddy L Corporation, New York, N.Y.
Filed Apr. 27, 1987, Ser. No. 42,968
Int. Cl.[4] A63H *17/02, 17/267, 17/273*
U.S. Cl. 446—6 7 Claims



1. A four-wheeled toy vehicle adapted upon frontal impact with an obstruction to simulate a crash and its effects, said vehicle comprising:

A. a chassis on which are supported the front and rear wheels of the vehicle, each front wheel being mounted on a short axle supported on a bearing pivotally mounted on the chassis to swing in a horizontal plane to permit the bearing of one front wheel to be colinear with the bearing of the other front wheel or to permit these bearings to lie along lines defining an angle in said plane, whereby the front wheels can be made to assume either a parallel state or a state in which the front wheels are skewed relative to each other;

B. a slide shiftable on the chassis from a forward position to a retracted position, the front end of the slide being attached to a bumper which impinges on said obstruction in the event of frontal impact, said slide being maintained in said forward position by a releasable detent, said slide being urged toward the retracted position by a spring; and

C. means operatively coupling the pivoted front wheel axle bearings to said slide whereby said front wheels assume their parallel state at the forward position of the slide and are caused to assume said skewed state upon a frontal impact resulting in a shock that releases said detent to cause said slide to shift to its retracted position.

4,762,512
COIN COLLECTOR
Stevan M. Divnick, Spring Valley, Ohio, assignor to Divnick International, Inc., Spring Valley, Ohio
Filed Mar. 23, 1987, Ser. No. 28,999
Int. Cl.[4] A63H *33/00*
U.S. Cl. 446—8 5 Claims

1. A device for collecting and/or playing with small disc-like objects such as coins, comprising

a base including a hollow pedestal having a generally flat bottom and a circular upper end concentric with and of substantially lesser cross-sectional area than said bottom,

an open top main body having a vertically extending circular upper rim portion and circular surface portion extending from said rim portion downward and inward to a lower aperture concentric with said rim and merging with said upper end of said pedestal whereby said main body is supported on said pedestal along a common vertical centerline,

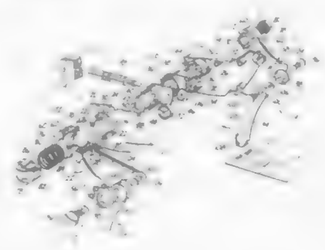
said main body having a shape in cross-section which is a curve of increasing slope from top to bottom,

said rim portion having a diameter no greater than approximately twice the width of said bottom of said pedestal,

whereby the device can be grasped near the juncture of said main body and said upper end of said pedestal to maneuver the same and cause disc-like objects to travel around the inside of said rim or to roll through a spiral path of decreasing radius into the lower aperture of said body and thence to drop into said base.



4,762,513
RECONFIGURABLE WALKING TOY WITH GEAR MECHANISM
Terence A. Choy, Redondo Beach; Harold A. Hartleben, Boyle Heights, both of Calif., and Jaime Serna, Barcelona, Spain, assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jul. 3, 1986, Ser. No. 881,890
Int. Cl.[4] A63H *7/00*
U.S. Cl. 446—359 5 Claims



1. A walking toy comprising:

a hollow body having two apertures passing therethrough and a plurality of elongated and shorter slots therein;

two upper leg members, each of said upper leg members having at least one tab attached thereto and one end thereof rotatably engaging one of said apertures in said hollow body, each of said tabs capable of selectively and releasably engaging one of said elongated slots and one of said shorter slots;

two lower leg members, each of said lower leg members having one end thereof rotatably engaging the other end of one of said upper leg members forming a pair of one upper leg member and one lower leg member.

two foot members, each of said foot members being rotatably engaged to the other end of one of said two lower leg members, said foot members capable of supporting said walking toy on a surface; and

gear means rotatably mounted inside said hollow body for simultaneously moving said pairs of upper and lower leg members in opposite directions in order to simulate a walking action when said walking toy is supported by said foot members on said surface, said upper leg members capable of being pulled outward from said hollow body

VOL 1093 ISS 2 AG 9 1988 UMI

and of being rotated so that said tabs may selectively engage said elongated slots in order to support said walking toy on said foot members and said shorter slots to dispose said pairs of upper and lower members in a substantially horizontal position.

4,762,514

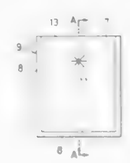
METHOD OF MAKING BEVERAGE PACKAGING BAG

Tokio Yoshida, deceased, late of Kanagawa, Japan (by Makiko Yoshida, administrator), assignor to Fujimori Kogyo Co., Ltd., Japan

Continuation of Ser. No. 794,143, Nov. 1, 1985, abandoned, which is a continuation-in-part of Ser. No. 625,300, Jun. 27, 1984, abandoned. This application Aug. 12, 1987, Ser. No. 85,261

Int. Cl.[4] B31B *1/14*

U.S. Cl. 493—227 **9 Claims**





1. A method of making a beverage packaging bag comprising at least one laminar thermo-adhesive panel having an inner layer, wherein at least a portion thereof is made of aluminum, and an outer layer, appropriate portions of said laminar panel being bonded and sealed by heating, wherein said outer layer of said laminar thermo-adhesive panel is provided with a plurality of cuts in a predetermined pattern and to a predetermined depth and width, said method, comprising the steps of:

(a) forming said cuts by providing a laser emitting a beam;

(b) directing said beam toward said bag;

(c) interposing a mask having said predetermined pattern therein in said beam;

(d) focusing said beam onto said outer layer;

(e) regulating said mask such that said beam penetrates said outer layer only to said predetermined width; and thereafter

(f) regulating said laser such that said beam penetrates said laminar panel completely through said outer layer and up to said aluminum portion of said inner layer.

4,762,515

MEDICAMENT IMPLANT APPLICATOR

C. Louis Grimm, Shawnee, Kans., assignor to Ivy Laboratories, Inc., Overland Park, Kans.

Filed Jan. 6, 1987, Ser. No. 754

Int. Cl.[4] A61M *31/00*

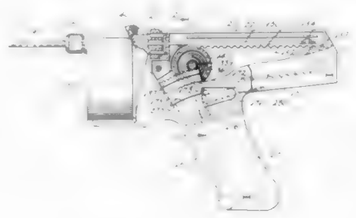
U.S. Cl. 604—61 **6 Claims**

1. In a pistol-like medicament implanter comprising:

(a) a hollow needle and a plunger means in axial alignment, said plunger means being movable into said hollow needle;

(b) storage means for at least one medicament implant dosage unit interposed between said needle and said plunger means, such dosage unit being disposed in a passthrough chamber indexed in line with said needle and said plunger means whereby said plunger means may travel through the indexed dosage unit chamber to expel the medicament therefrom; and

(c) a trigger means operatively connected to said plunger means so that when said trigger means is pulled, said plunger means advances through said chamber into the bore of said needle expelling thereby the implant dosage unit therefrom, and thereafter retracts when said trigger means is released;



the improvement which comprises a spring forming part of the operative connection between said trigger means and said plunger means, said spring being disposed to transmit the trigger pull movement to said plunger means so as to advance same, the bias of said spring being set so that when resistance to advance of said plunger means exceeds the spring bias any pulling movement on said trigger means results in spring take-up and lost motion by said trigger means, whereby a subsequent reduction in resistance to advance of said plunger means generates a spring impelled advance of said plunger means with consequent spring relaxation and there through recovery of the motion lost by said trigger means, the spring force thereby serving to generate the implant expelling movement by said plunger means.

4,762,516

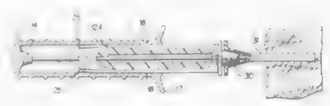
ASSEMBLY OF NEEDLE CATHETER PROTECTOR

Ronald B. Luther, Newport Beach, and Pradip V. Choksi, Northridge, both of Calif., assignors to Luther Medical Products, Inc., Santa Ana, Calif.

Filed Mar. 5, 1987, Ser. No. 22,132

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—164 **5 Claims**



1. An assembly of a needle and protector therefor, comprising:

a. an elongate housing providing sidewalls, and detent means defined thereon, the housing providing a rearwardly closed end and an open end;

b. a needle mounted inside the housing and attached at one end to the closed end of the housing, and projecting through the open end of the housing;

c. a needle guard slidably mounted within the housing, the needle guard having a pull tab at its forward end, and outwardly biased ears in contact with the sidewalls of the housing, the needle guard providing at its forward end a hub support defining a bore therein;

d. a luer-type locking hub and catheter mounted on the hub support, the needle being aligned within the hub support, hub and catheter, and projecting through the catheter to expose a tip thereof;

e. whereby, i. following insertion of the needle and catheter into a patient, the housing and attached needle are adapted to be retracted from the patient and the needle is adapted to be retracted into the needle guard thereby enabling the walls of the housing to slide relative the biased ears of the needle guard, the ears outwardly project into the detent means of the housing and permanently lock therewith, the needle guard being sized to completely enclose the needle upon locking with the housing;

ii. the hub and catheter remain with the patient; and

iii. the housing and enclosed needle are separated from the hub, catheter and patient.

4,762,517

SUBCUTANEOUSLY-IMPLANTED DRUG DELIVERY SYSTEM FOR INTRAVENOUS INJECTIONS, AND THE LIKE

Jeffrey A. McIntyre, and Timothy P. Cadieux, both of Chicago, Ill., assignors to Healthcare Technologies, Inc., Skokie, Ill., by said Timothy P. Cadieux

Filed Sep. 18, 1986, Ser. No. 909,002

Int. Cl.[4] A61M *5/00*

U.S. Cl. 604—175 **17 Claims**



1. A subcutaneously implanted infusion device, comprising:

a main housing of substantially hollow interior having a first end with an enlarged opening and a second end with a relatively smaller opening for mounting parts therein;

a septum for mounting in said main housing adjacent said second open end of said main housing;

a pressure-insert element for mounting in said main housing having a first substantially open end and a second closed end, the opening of said first end extending axially into the interior of said pressure-insert member to define an interior reservoir chamber, said first open end of said pressure-insert element abutting against the lower face of said septum for holding said septum in said main housing in a compressive state, said main housing having an inner annular groove formed along an inner circumferential surface thereof directly adjacent said enlarged opening of said first end of said main housing;

a retaining clip for mounting in said annular groove formed in said main housing for holding said pressure-insert element therein for compressing said septum;

said pressure-insert element comprising a through-opening along a circumferential portion thereof;

a catheter having a first end and a second end, said catheter having a portion adjacent said second end extending through said through-opening of said pressure-insert element;

means for fixedly connecting said second end of said catheter to said pressure-insert element, said second end of said catheter cooperating with said reservoir chamber of said pressure-insert element to thereby allow for communication between said catheter and said septum; and

means for allowing fastening of said main housing by implantation within a subcutaneous opening in a human body, said means comprising an enlarged skirt portion, and a reduced-diameter hollow portion receiving therein at least a portion of said main housing, said enlarged opening of said main housing being positioned in said hollow portion of said means for allowing fastening.

4,762,518

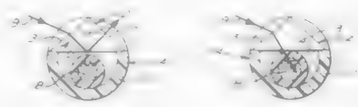
BLOCKAGE HAZARD ALARM IN AN INTRAVENOUS SYSTEM

Stephen J. Kreinick, San Diego, Calif., assignor to Pancretec, Inc., San Diego, Calif.

Filed Aug. 1, 1986, Ser. No. 892,318

Int. Cl.[4] A61M *5/005;* **G01N** *15/06*

U.S. Cl. 604—245 **1 Claim**



1. A medical infusion blockage alarm system comprising an external flexible conduit tubing,

a rigid tubing,

a central channel,

connecting means,

and internal expansive plastic tubing with an index of refraction close to that of water,

an optical prism of a high index of refraction,

a light source,

a light detector,

alarm means said external flexible conduit being connected to said rigid tubing forming interiorly and concentrically said central channel and in said central channel, a length of said internal expansive plastic tubing containing a flowing liquid and attached by said connecting means to the interior of said rigid tubing and said expansive plastic tubing having an outside diameter which is less than the inside diameter of said rigid tubing so that an air space exists between the exterior of said expansive plastic tubing when it is not in an expanded state, said rigid tubing having a cavity created in its wall to hold said optical prism, said optical prism having two equilateral planes and one hypotenuse plane,

where said hypotenuse plane is adjacent but not in contact with said internal expansive plastic tubing through which said liquid flows in said central channel and

said light source interfacing one of said equilateral planes and said light detector interfacing with other said equilateral plane with said alarm means connected to said light detector and said light source so that light rays emitted from said source enters said first equilateral plane, illuminates said hypotenuse plane and is reflected from said hypotenuse plane to penetrate other said equilateral plane to illuminate said light detector, but if said internal expansive plastic tubing is diametrically enlarged because of some excessive internal pressure of said liquid in said central channel, a wall of said internal expansive plastic tubing contacts said hypotenuse plane causing the light of said source to refract out of said illuminated hypotenuse plane, interrupting the illumination of said light detector thereby terminating a signal to cause said alarm means to sound.

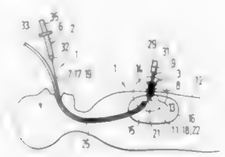
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,519

APPARATUS FOR PLACING A FEEDING TUBE IN THE STOMACH OF THE HUMAN OR ANIMAL BODY

Eckart Frimberger, Munich, Fed. Rep. of Germany, assignor to Erintrud Frimberger, Kempten, Fed. Rep. of Germany

Filed Aug. 18, 1987, Ser. No. 86,562
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1986, 3628006
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—280 19 Claims



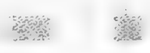
1. Apparatus for placing a feeding tube in the stomach of the human or animal body, comprising: a hollow needle, surrounded by a sleeve, for providing an opening in the abdominal wall and the stomach wall and for bringing the sleeve into the opening; the tube, which has a first draw member at its one end; and a thread-like second draw member, which may be introduced through the sleeve, for drawing the tube from the cavity of the stomach into the opening, the second draw member having an expandable loop at its inner end and the first draw member having a coupling element which may pass through the loop and be held fast by contraction of the loop.

4,762,520

ABSORBENT ARTICLE

Leif Wallström, Mölnlycke, Sweden, assignor to Molnlycke AB, Gothenburg, Sweden

PCT No. PCT/SE86/00278, § 371 Date Jan. 16, 1987, § 102(e) Date Jan. 16, 1987, PCT Pub. No. WO86/07242, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 10, 1986, Ser. No. 13,987
Claims priority, application Sweden, Jun. 11, 1985, 8502889
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—366 4 Claims



1. An absorbent article such as a sanitary napkin or a diaper, comprising an absorption body (9) accommodated in a casing (11), characterized by the casing being composed of a carded fiber fabric made in one piece and containing at least 5% of melt fibers, preferably of polypropylene, and by being subdivided into parallel streaks (1, 3, 4, 5, 6) having different melt-bonded patterns, resulting in streaks of varying structures adapted to their individual positioning in relation to the absorption body (9), the casing (11) sealing around the absorption body (9) with at least two layers (6, 2) on the side of the absorption body facing the user, the outermost layer (2) having a substantially tighter bonding pattern than the inner, loosely bonded and voluminous inner layer(s) (FIG. 3).

4,762,521

ABSORBENT GARMENT WITH QUILTED AND CONFORMABLE ABSORBENT PAD

Thomas H. Roessler, Menasha; Dan D. Endres, Appleton; Kenneth M. Enloe, Neenah; Andrew E. Huntoon, Appleton, and Mary E. Lippert, Hortonville, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 11, 1986, Ser. No. 851,027
Int. Cl.[4] A61F *13/16*
U.S. Cl. 604—38 SA 20 Claims



1. An absorbent garment, comprising:

a backsheet having waistband portions at each longitudinal end thereof, an intermediate portion interconnecting said waistband portions, and marginal portions along each lateral side edge thereof;

a liquid permeable liner sheet which is located in facing relation with said backsheet;

an absorbent body which is located between said backsheet and liner sheet, and which delimits waistband sections at least longitudinal end thereof, delimits an intermediate section interconnecting said waistband sections and delimits a marginal contour at each lateral side edge thereof, wherein each marginal side contour is interrupted by at least one collapsible notch section formed thereinto;

fastening means for securing said garment on a wearer; and

elastic members located adjacent to each of the notched side edges of said absorbent body extending generally along a longitudinal direction of the garment; wherein

said elastic members are configured and arranged to form elasticized gathers at side margins of a garment intermediate section, and said marginal notch sections of said absorbent body are constructed to flex and close when said elastic members form a seal around the legs of the wearer.

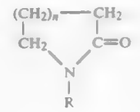
4,762,522

AGENT FOR TREATMENT OF HIDES AND PELTS

Marilyn J. Mase, Belleville, N.J., assignor to GAF Corporation, Wayne, N.J.

Filed Mar. 2, 1987, Ser. No. 20,626
Int. Cl.[4] C14C *3/00, 5/00, 9/00*
U.S. Cl. 8—94.19 R 27 Claims

1. A leather processing composition containing an effective leather penetrating amount of an N-heterocyclic amide having the formula



wherein n has a value of 1 to 3 and R is an aliphatic hydrocarbon radical of from 6 to 18 carbon atoms.

4,762,523

PERMANENTLY NON-DUSTING PIGMENT AND DYE PREPARATIONS, METHOD FOR PRODUCING THEM, AND MEASURING DEVICE THEREFORE

Manfred Gawol, Clausthal-Zellerfeld, and Gerhard Adrian, Goslar, both of Fed. Rep. of Germany, assignors to Dr. Hans Heubach Gmbh & Co. KG, Langelsheim, Fed. Rep. of Germany

PCT No. PCT/EP84/00380, § 371 Date Aug. 1, 1985, § 102(e) Date Aug. 1, 1985, PCT Pub. No. WO85/02407, PCT Pub. Date Jun. 6, 1985
PCT Filed Nov. 30, 1984, Ser. No. 763,437
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1983, 3343743; Dec. 2, 1983, 3343742; Dec. 8, 1983, 3344464; Dec. 8, 1983, 3344463
Int. Cl.[4] C09B *67/42;* C09C *3/08;* C09K *3/22*
U.S. Cl. 8—524 8 Claims

1. Permanently non-dusting pigment preparations produced by a process comprising the steps of:

thoroughly mixing a long-chain polyester surfactant produced by condensation of at least one saturated or unsaturated aliphatic ω-hydroxycarboxylic acid with at least 4 carbons between the hydroxy group and the carboxy group and a total of at least 9 carbon atoms including the carboxy group or by condensing said at least one hydroxycarboxylic acid with a carboxylic acid lacking hydroxy substitution, in an amount of from 0.5 to 10%, with a moist press cake of said pigment;

drying said surfactant-containing mixture;

adding an essentially non-volatile liquid selected from the group consisting of mineral oil and molten wax to said dried mixture, in an amount of 2–25%, based on said dried mixture;

applying intensive shear stress to said liquid-containing mixture until said pigment is wetted by said liquid, thereby obtaining a flowable, non-dusting granulate.

4,762,524

COMPOSITION COMPRISING THE ADDITION PRODUCT OF A VINYL-SULFONE DYE AND A SECONDARY AMINE AND PROCESS FOR DYEING A POLYAMIDE THEREWITH

Thomas V. Chambers, Rock Hill, S.C.; Manfred Deicke, Charlotte, N.C., and Suzanne C. Fleming, Warwick, R.I., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 5, 1987, Ser. No. 11,171
Int. Cl.[4] C09B *62/04, 62/20, 67/00*
U.S. Cl. 8—549 29 Claims

1. A dyestuff composition comprising the addition product of a fiber reactive, water-soluble dye of the formula:

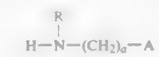


wherein D represents a dye chromphore selected from the anthraquinone, dioxazine, formazon, phthalocyanine, monoazo and disazo series and their metal copper, chromium, cobalt or iron complexes;

wherein Z represents the group —CH=CH_2 or CH_2—CH_2—Y; wherein Y is a substituent, capable of being split off by an alkaline reagent, selected from hydroxy, chloro, bromo, thiosulfato, sulfato, acyloxy, dimethylamino and diethylamino;

wherein n is an integer equal to 1 or 2;

with a secondary amine selected from an N-alkyl-amino-alkylsulfonic acid, an N-alkyl-amino-alkyl-carboxylic acid, the water-soluble salts thereof and mixtures of said acid and salts; and said secondary amine having the formula:



wherein A represents a sulfonic acid or carboxylic acid moiety or a water-soluble salt thereof, R represents a lower alkyl group of 1 to 4 carbons and "a" represents an integer from 1 to 25 ;

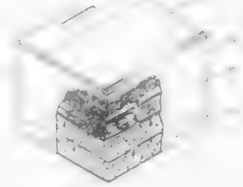
said composition containing about 0.5 to 1.0 mole of said secondary amine per mole of said dye present in said composition.

4,762,525

PREPACKAGED FIREBOX APPARATUS FOR OUTDOOR COOKING OR THE LIKE

William P. Wood, 2301 S. Placita Pitiquito, Tucson, Ariz. 85713

Filed Jun. 15, 1987, Ser. No. 62,142
Int. Cl.[4] C10L *11/00*
U.S. Cl. 44—534 6 Claims



1. An improved, inexpensive and prepackaged firewood firebox designed for sale at retail stores for use by novice and other consumers in outdoor cooking on consumer supplied backyard grills or for use as a quick campsite campfire starter firebox or as a prepackaged firewood firebox for fireplaces or the like, comprising:

(a) a lightweight, manageably sized, portable, semi-fire retardant, water repellant and fire consumable merchandising container,

said merchandising container being shaped in the form of a rectangular box having a top which may be opened and closed, four side walls and a bottom defining a base for said container,

said merchandising container is constructed from cardboard, wood fiber material,

said top of said merchandising container is provided with hand holds for ease of carrying,

said side walls of said merchandising container are provided with a plurality of pre-scored air inlet window located near said bottom of said container to help create an airflow within said container, said pre-scored air inlet windows further being provided with a hinge point to allow

VOL 1093 ISS 2 AG 9 1988 UMI

adjustment of inward and outward movement of said pre-scored air inlet windows to control said created airflow and a convenient place to insert a flame,

said side walls of said merchandising container are constructed to have corrugated ribs run horizontally with said bottom to thus impede airflow upwardly in said side walls of said container so as to retard the fire consumption of said container; and

(b) a plurality of layered combustibles prepackaged within said merchandising container, said plurality of layered combustibles within said container defining an arrangement such that the lowest kindling point layer members are located at said bottom of said container, the highest kindling point layer members are located nearest said top of said container and intermediate kindling point layer members are located therebetween said lowest kindling point layer members and said highest kindling point layer members, said arrangement producing opposing vertical forces on said top and bottom of said merchandising container when said top is closed, said highest kindling point layer members being arranged in alternating longitudinal and latitudinal direction to produce a tieing effect on said prepackaged layered combustibles within said merchandising container, said lowest kindling point layer members are aspen fibers, said intermediate kindling point layer members are excelsior and assorted sizes of wood chips, and said highest kindling point layer members are hardwood logs.

4,762,526

PROCESS FOR DEASHING COAL

Taiichi Funaji, Tsurugashima; Haruo Iso, Ibaraki; Jisaku Tanimichi, Yokohama; Kenichi Nagata, Yachiyo; Toshiaki Murata, and Hideto Mitsui, both of Tokyo, all of Japan, assignors to The Tokyo Electric Power Co., Inc.; Mitsui Engineering & Shipbuilding Co., Ltd. and Mitsui & Co., Ltd., all of Tokyo, Japan

Continuation-in-part of Ser. No. 786,976, Oct. 15, 1985, abandoned. This application Aug. 26, 1986, Ser. No. 900,574
Claims priority, application Japan, Oct. 26, 1984, 59-223868
Int. Cl.[4] C10L *5/16, 9/10*
U.S. Cl. 44—627 9 Claims

1. A process for deashing coal, comprising the following steps:

(a) crushing coal to form crushed coal having a particle size distribution of 0.05 to 15 mm and an average particle size of 0.5 to 2 mm,

(b) producing an aqueous slurry comprising said crushed coal, 1 to 4 wt.% of a binder based on said crushed coal, and water,

(c) feeding the resulting aqueous slurry of the crushed coal to a horizontal cylindrical agglomerator provided with disk impellers in a multistage manner and effecting collision and agglomeration among said crushed coal particles by the rotation of said impellers rotating at a peripheral speed within the range of 10–15 μm/sec, and effecting tumbling and agglomeration of the agglomerate to produce an aqueous slurry of spherical or spheroidal hard agglomerated coal having a particle size in the range of 500 to 5000 μm,

(d) separating said aqueous slurry of the agglomerated coal by treating it with a solid-liquid separator into first agglomerated coal containing adhering water of 5% or less on the separating medium and an aqueous slurry of second agglomerated coal and of ash which have passed through the separation medium, and

(e) adding a frother or a frother-based flotation reagent to said aqueous slurry of the second agglomerated coal and the ash and recovering said second agglomerated coal by flotation.

3. A process for deashing coal according to claim 1, wherein a surfactant is added to the aqueous slurry of the agglomerated coal.

4,762,527

SLURRY FUEL COMPRISED OF A HEAT TREATED, PARTIALLY DEWATERED SLUDGE WITH A PARTICULATE SOLID FUEL AND ITS METHOD OF MANUFACTURE

David G. Beshore, St. Petersburg, and Vincent M. Giampa, Apollo Beach, both of Fla., assignors to Electric Fuels Corporation, St. Petersburg, Fla.

Filed Dec. 16, 1986, Ser. No. 942,412
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 20 Claims



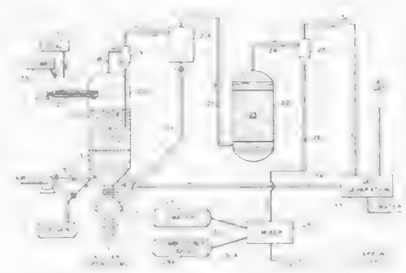
1. In a pumpable fuel composition comprising from about 45 to 75 percent by weight of a particulate solid fuel and from about 25 to 55 percent by weight of sewage sludge, the improvement wherein said sewage sludge comprises from about 90 to 98 percent by weight of water and which sewage sludge has been subjected to heat treatment for a period of time ranging from about 5 to 120 minutes at a temperature in the range of from about 150° to 500° F. while being maintained at a first pressure within the range of from 5 to 700 psig sufficient to maintain the water content of the heat treated sewage sludge in the range of from about 90 to 98 percent by weight, said first pressure at which said sewage sludge is maintained being reduced to a second pressure without permitting significant cooling of the heat treated sewage sludge, said pressure differential between said first and second pressures being in the range of from 5 to 20 psi and said heat treated sewage sludge being maintained at a temperature during said pressure reduction sufficient to lower the viscosity exhibited by said heat treated sewage sludge at ambient conditions in comparison to that exhibited by the sewage sludge prior to said heat treatment.

4,762,528

FLUID FUEL FROM COAL AND METHOD OF MAKING SAME

Eric H. Reichl, P.O. Box 472, Princeton, N.J. 08542

Filed Sep. 5, 1986, Ser. No. 903,602
Int. Cl.[4] C10L *1/32*
U.S. Cl. 44—51 5 Claims



1. A method for generating from coal a liquid fuel in the form of a combustible liquid carbon slurry comprising:

a. reacting substantially the entire said coal with oxygen and carbon dioxide in a gas generation chamber to produce products consisting essentially of ash and carbon monoxide entrained in a gas stream with reacted gases and other gases;

b. passing said gas stream into a reaction chamber containing catalyst for the reverse Boudouard reaction to convert the carbon monoxide into carbon dioxide and free carbon and recovering the free carbon from the reaction chamber;

c. separating the gases in said reaction chamber into carbon dioxide and residue gases; and

d. returning at least a portion of the carbon dioxide rich gas stream to the said gas generation chamber for reaction with coal;

e. recovering the said residue gas stream.

4,762,529

NOVEL FUEL FOR USE IN ENERGY GENERATING PROCESSES

Johann G. Schulz, 201 Conover Rd., Pittsburgh, Pa. 15208

Continuation-in-part of Ser. No. 790,530, Oct. 23, 1985, Pat. No. 4,668,243. This application Jan. 16, 1987, Ser. No. 4,036
The portion of the term of this patent subsequent to May 26, 2004, has been disclaimed.
Int. Cl.[4] C10L *1/00;* F23B *7/00*
U.S. Cl. 44—53 47 Claims

1. A novel fuel composition containing (1) the alcohol-soluble product obtained as a result of the mild reaction of a lignin-containing material with nitric acid, and (2) a component selected from the group consisting of water, methanol, ethanol, mixtures thereof, mixtures of lower alcohols, and a hydrocarbon fuel.

4,762,530

INTERNAL AIR SHUTTER FOR GAS BURNER

Walter Koziol, Antioch, Ill., assignor to Modern Home Products Corp., Antioch, Ill.

Division of Ser. No. 823,314, Jan. 28, 1986, Pat. No. 4,686,957, which is a continuation-in-part of Ser. No. 666,334, Oct. 30, 1984, abandoned. This application May 1, 1987, Ser. No. 44,693
Int. Cl.[4] F23D *14/62*
U.S. Cl. 48—180.1 10 Claims



1. A venturi tube assembly with an internal air regulator and attachment means for a gas barbecue grill comprising:

a first tubular member having an opening at one end for connection to a burner element and an opposing open end;

a lateral opening in said first tubular member positioned adjacent said opposing open end;

a second tubular member for telescoping inside said first tubular member, said second tubular member having openings at opposing ends and a lateral opening, one of said ends telescoping inside said opposing open end of said first tubular member and a second end opposite said one end for connection to a gas nozzle member;

an internal air regulator rotatably positioned inside said second tubular member adjacent said lateral opening therein;

said first and second tubular members being telescopically movable to a position so that said lateral openings in first and said second tubular members are at least partial aligned; and

attachment means operatively positioned in said second end of the second tubular member to maintain direct contact between a gas nozzle member and said second tubular member.

4,762,531

METHOD FOR REGULATING THE PRESSURE OF A GAS PRODUCED IN A REACTOR

Reinhard Kischel, Unterneukirchen; Josef Salzinger, Tüssling, and Richard Schöttner, Garching, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Feb. 12, 1987, Ser. No. 13,612
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1986, 3605172
Int. Cl.[4] F17D *1/04*
U.S. Cl. 48—191 9 Claims



1. A method for regulating pressure of a gas produced in a reactor and continuously withdrawn from the reactor by means of a gas compressor in a gas withdrawal path to a substantially constant pressure value in the reactor, comprising: controlling the gas withdrawal rate through the gas withdrawal path, in dependence upon the pressure of the gas in the reactor using, a first setting member in a first gas return conduit leading from the outlet to the inlet of the gas compressor; and controlling the gas return rate in a second gas return conduit, in dependence upon the pressure of the gas in the reactor using, a second setting member in the second gas return conduit leading from the outlet of the gas compressor to the reactor or upstream of the gas compressor into a heat exchanger and/or dust filter and/or gas washer lying in the gas withdrawal path between the reactor and the gas compressor, said second setting member reacting with less inertia on pressure changes of the gas in the reactor than said first setting member.

4,762,532

PARTIAL OXIDATION PROCESS USING A NOZZLE FOR ACHIEVING CONSTANT MIXING ENERGY

Charles W. Lipp, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

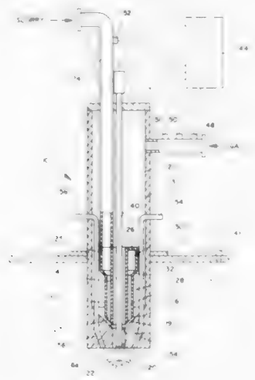
Division of Ser. No. 839,252, Mar. 13, 1986, Pat. No. 4,705,535. This application Jul. 10, 1987, Ser. No. 72,200
Int. Cl.[4] C10J *3/46*
U.S. Cl. 48—197 R 2 Claims

1. In a process for the manufacture of a gas comprising H_2 and CO by the partial oxidation of a carbonaceous slurry in a vessel which provides a reaction zone normally maintained at a pressure in the range of from about 15 to about 3500 psig (1 kg/cm^2 gauge to about 246 kg/cm^2 gauge) and at a temperature of from about 1700° F. (927° C.) to about 3500° F. (1927° C.), the improvement which comprises:

VOL 1093 ISS 2 AG 9 1988 UMI

(a) introducing, as reactants, a carbonaceous slurry and an oxygen containing gas to said reaction zone, said carbonaceous slurry being atomized and substantially uniformly dispersed within said oxygen-containing gas, said atomization being effected by a two-fluid nozzle to which said reactants are fed, said two-fluid nozzle being adjustable to deliver during process operation, a substantially constant mixing energy;

(b) monitoring and measuring the pressure in said reaction zone and the pressure of said oxygen-containing gas prior to its being fed to said two-fluid nozzle;



(c) monitoring and measuring the mass of said oxygen-containing gas and the mass of said carbonaceous slurry fed to said two-fluid nozzle;

(d) determining the mixing energy using the values obtained as a result of the monitoring and measuring in (b) and (c);

(e) comparing the determined mixing energy in (e) with a pre-selected mixing energy and adjusting said two-fluid nozzle to substantially deliver said pre-selected mixing energy; and

(f) reacting, by partial oxidation, the atomized and dispersed reactants within said reaction zone to produce said gas comprising H_2 and CO.

4,762,533

FLAT TYPE RESINOID GRINDING WHEEL

Kunimasa Oide, Kawanishi, Japan, assignor to Daichiku Co., Ltd., Hyogo, Japan

Continuation of Ser. No. 794,596, Nov. 4, 1985, abandoned, which is a continuation of Ser. No. 330,818, Dec. 15, 1981, abandoned. This application Nov. 18, 1986, Ser. No. 933,341
Claims priority, application Japan, Jul. 27, 1981, 56-114967
Int. Cl.[4] B24D 3/04
U.S. Cl. 51—298 2 Claims

1. A resinoid grinding wheel having a porosity in the range of 3 to 6% consisting essentially of a mixture of abrasive grains, phenol resin and calcite particles which are not of a powered form, said calcite particles being substantially equal to or larger than said abrasive grains and having a hardness value of 2 to 6 on Mohs Hardness Scale which is less than said abrasive grains, said calcite particles further consisting of 10 to 60% by weight of the total weight of the abrasive grains and the calcite particles, said mixture being pressure molded and fired.

4,762,534

METHOD OF PRODUCING MAGNETIC DISK

Yasushi Ito, Minami-ashigara; Masaaki Imamura, Odawara; Yoshiki Kato, Tokyo, and Jun Fumioka, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 26, 1986, Ser. No. 935,336
Claims priority, application Japan, Nov. 27, 1985, 60-266926
Int. Cl.[4] B24D 3/00
U.S. Cl. 51—293 17 Claims



1. A method comprising the steps of:

preparing a lapping tape having an abrasive particle layer provided with abrasive particle clustes and chip pockets having an area of 15–30% of entire surface of said layer formed between adjacent two clusters, (each of said clusters having abrasive particles of Al_2O_3 or SiC and abrasive particles of diamond, and binder resin said abrasive particle layer comprising 40 to 89% by weight Al_2O_3 or SiC abrasive particles, and 1 to 10% by weight diamond abrasive particles, and

lapping the surface of said magnetic disk medium by using the thus prepared lapping tape.

4,762,535

AMMONIA SEPARATION USING SEMIPERMEABLE MEMBRANES

Guido P. Pez, Allentown, and Daniel V. Laciak, Fogelsville, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 2, 1987, Ser. No. 57,403
Int. Cl.[4] B01D 53/22
U.S. Cl. 55—16 15 Claims

1. A process for separating ammonia from a mixture of gases containing ammonia and at least one other component, the process comprising: contacting said ammonia-containing mixture with a membrane containing a salt having the structural formula:

$$NR_4^+X^-$$

wherein each R is independently H or a straight chain or branched alkyl group and X^- is an organic or inorganic anion, such that said membrane selectively permeates ammonia from the ammonia-containing mixture.

4,762,536

ADSORBER FOR CLEANING GASES

Werner Purtschert, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

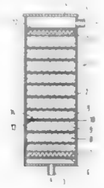
Continuation of Ser. No. 763,928, Aug. 8, 1985, abandoned. This application Oct. 14, 1986, Ser. No. 918,781
Claims priority, application Switzerland, Aug. 13, 1984, 3877/84
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—66 1 Claim

1. A method of cleaning a helium gas containing a synthetic oil aerosol in a concentration of 0.12 ppm, said method comprising the steps of

passing a flow of the gas sequentially through a packing having a plurality of adsorbent layers and a plurality of fiber layers disposed in alternating and contiguous relation;

collecting oil aerosols from the gas within each fiber layer;

retaining the collected oil aerosols near a contact surface between a respective fiber layer and a contiguous adsorbent layer;



adsorbing the oil aerosols from each fiber layer into a contiguous adsorbent layer under capillary action; and

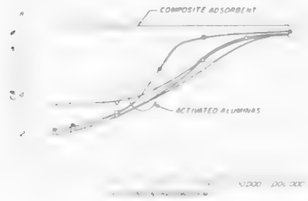
exhausting the gas from the packing with a concentration of the oil aerosol of 0.0011 ppm.

4,762,537

ADSORBENT FOR HCL COMPRISING ALUMINA AND ACID-TREATED Y ZEOLITE

Hubert L. Fleming, Mars; Kenneth P. Goodboy, Wexford, and Emmanuel K. Saforo, Zelienople, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 795,907, Nov. 7, 1985. This application Jun. 2, 1987, Ser. No. 56,714
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—71 20 Claims



1. A method for removing HCl from a gas containing less than about 100 ppm HCl, comprising removing said HCl by contacting said gas with a solid composite adsorbent having surface area greater than about 200 m^2/g and comprising about 50–95 wt % alumina and about 5–50 wt % Y zeolite, said adsorbent being produced by treating Y zeolite particles with an aqueous acid solution to reduce their sodium silicate content, admixing the acid-treated Y zeolite particles with alumina particles, agglomerating the Y zeolite and alumina particles into a composite agglomerate, aging said agglomerate in the presence of water and activating the composite agglomerate at an elevated temperature.

3. A composite adsorbent useful for adsorbing gaseous HCl, said adsorbent having surface area greater than about 200 m^2/g and comprising

(a) about 50–95 wt % alumina, and

(b) about 5–50 wt % Y zeolite wherein the molar ratio of SiO_2 to Al_2O_3 is about 4.5–6.0,

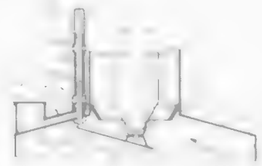
said adsorbent being produced by admixing particles of alumina with particles of Y zeolite treated with an acid solution so that their sodium silicate content is sufficiently low that a 20 wt % aqueous slurry has a pH of less than about 10.42, agglomerating the alumina and Y zeolite particles into a composite agglomerate, aging said agglomerate in the presence of water and activating said agglomerate at an elevated temperature.

4,762,538

SPRAY ABSORBER AND METHOD OF OPERATING

Wilhelm Michler, Frankfurt; Hans W. Both, Schwalbach, and Rolf Keppler, Frankfurt, all of Fed. Rep. of Germany, assignors to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 6, 1987, Ser. No. 82,756
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1986, 3626919
Int. Cl.[4] B01D 47/16
U.S. Cl. 55—84 9 Claims



1. A spray absorber for treating a gas stream with a suspension of an absorbent in a liquid, comprising:

a cylindrical housing having an upright axis, a top extending transversely to said axis and closing said housing at an upper part thereof, and means forming a dust-collecting bin at a bottom of said housing;

means forming a tubular gas inlet port opening downwardly into said housing at said top along said axis for introducing said gas stream axially downwardly into said housing;

a rotary sprayer centrally disposed in said housing adjacent said top and having a downwardly open shaft for discharging a rotating spray of said suspension of said adsorbent in said liquid into said housing;

gas-guiding means in said housing concentric to said sprayer for directing said gas flow through a gas flow space in said housing below said shaft and inducing intimate contact between said gas stream and said suspension whereby a pulverulent solid collects in said bin;

means forming a tubular gas outlet port communicating with said housing above pulverulent solids collecting in said bin for discharging gas treated with said suspension;

a cover constructed and arranged to fit over said shaft from below to close said shaft and permit removal and replacement of said sprayer therethrough; and

actuating means operatively connected to said cover for raising said cover into closing engagement with said shaft and lowering said cover to unblock said shaft and for swinging said cover laterally out of alignment with said shaft.

4,762,539

UNIVERSAL/SCRUBBER/PRECIPITATOR FOR SCRUBBING SMOKE

Rudolph Muto, 24 William St., Andover, Mass. 01810

Filed Oct. 30, 1986, Ser. No. 924,918
Int. Cl.[4] B01D 47/00
U.S. Cl. 55—232 14 Claims

1. A scrubber for scrubbing smoke or the like, comprising:

an inlet for the smoke and an outlet for the smoke;

a housing having a top, a bottom and sides;

a liquid bath for a liquid in the housing;

a main chamber in the housing;

a roll mounted in the main chamber for rotation in one direction about the horizontal axis having perforations for the passage of the smoke and being only partially immersed in the liquid, the roll having axial ends sealed to the housing sides against smoke leakage;

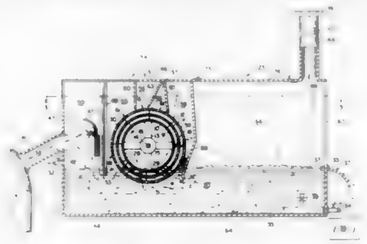
a rotary drive for the roll;

baffle means to seal the roll against smoke flow at the top of the housing including a baffle extending from the top to the roll and from side to side in smoke sealing relation and

VOL 1093 ISS 2 AG 9 1988 UMI

other baffles extending from the top into the surface of the bath and from side to side in smoke sealing relation, the housing with the roll thereby forming a plurality of deceleration chambers;

cups carried by the roll having concavities facing upward as they leave the bath and downward as they enter the bath in the direction of rotation, to pick up liquid and spill the liquid over the roll as it rotates, the cups extending the full axial length of the roll to prevent passage of smoke from the said chambers except through the roll perforations;



a first of said deceleration chambers serving as an inlet chamber for conducting the gas from the gas inlet into and through the surface of the bath;

the last of said deceleration chambers serving as an outlet chamber and conducting the gas into and through the surface of the bath to the gas outlet;

means to propel the smoke from the gas inlet to the inlet deceleration chamber through the exterior of the roll perforations to the interior of the roll and thence out again through the perforations in the exterior of the roll to the outlet deceleration chamber and to the gas outlet;

whereby the smoke is washed in its passage at least twice through the bath and through the wetted perforations.

4,762,540

NOISE SUPPRESSION AND PARTICLE SEPARATION APPARATUS FOR HIGH PRESSURE GASEOUS FLUID FLOWS

David M. Ruiz, Indio, and Alvin S. Timmons, Santa Rosa, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 27, 1987, Ser. No. 90,235
Int. Cl.[4] B01D *50/00*
U.S. Cl. 55—276 40 Claims

1. A noise suppression apparatus for quieting a flow of high pressure, high velocity, gaseous fluid, the apparatus comprising:

(a) a fluid conduit having an inlet end for receiving a flow of high pressure, gaseous fluid and an outlet end for discharging said fluid flow;

(b) an inner expansion chamber disposed around the outlet end of the fluid conduit for receiving therefrom said flow of gaseous fluid and for enabling the received flow to expand to a first, substantially reduced pressure, said inner expansion chamber having a side wall with at least one fluid discharge aperture therethrough;

(c) flow diffusing means for receiving the flow of fluid from said at least one discharge aperture and for diffusing said received flow;

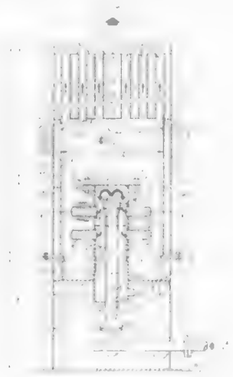
(d) an outer expansion chamber disposed around the inner expansion chamber and the flow diffusing means for receiving from the diffusing means the diffused flow of gaseous fluid and for enabling the received flow to expand to a second, substantially reduced pressure, said outer expansion chamber having a comparatively large gaseous fluid discharge opening therein; and

(e) means disposed in the outer expansion chamber for suppressing the noise caused by the flow of gaseous fluid entering and flowing through the apparatus.

21. A noise suppression and particle separation apparatus for venting a flow of high pressure, high velocity, particle-laden, gaseous fluid from a geothermal steam wellhead into the atmosphere, the apparatus comprising:

(a) a fluid conduit having an inlet end for receiving a flow of high pressure, particle-laden, gaseous fluid from a geothermal steam wellhead and having a fluid discharge opening with a diameter, D_1;

(b) a cylindrical, inner expansion chamber axially disposed around a discharge end region of the fluid conduit for receiving from the discharge opening the flow of gaseous fluid, said inner expansion chamber having a diameter, D_2, which is substantially greater than said discharge opening diameter, D_1, to thereby permit the fluid to expand to a first, substantially reduced pressure, said inner expansion



chamber having a side wall with a plurality of fluid flow discharge apertures therethrough;

(c) a like plurality of flow diffusing elements, each of said elements being connected to the inner expansion chamber to receive and diffuse the fluid flow from a corresponding chamber discharge aperture and to project outwardly from said inner expansion chamber;

(d) a cylindrical outer expansion chamber axially disposed around the inner expansion chamber and the flow diffusing elements for receiving from the elements the diffused flow of gaseous fluid, said outer expansion chamber having a diameter, D_3, which is substantially greater than the inner chamber diameter, D_2, to thereby permit the fluid to expand to a second, substantially reduced pressure, said outer expansion chamber having an open upper end through which the flow of gaseous fluid is discharged from the apparatus; and

(e) means disposed in the outer expansion chamber for suppressing noise therein caused by said flow of gaseous fluid into and through the apparatus.

4,762,541

Patent Not Issued For This Number

4,762,542

PROCESS FOR THE RECOVERY OF ARGON

Vladimir Mishkovsky, Plainfield; Wei S. Hwang, Wayne, and David J. Kamrath, Asbury, all of N.J., assignors to The BOC Group, Inc., Montvale, N.J.

Filed Mar. 20, 1987, Ser. No. 28,413
Int. Cl.[4] F25S *3/02*
U.S. Cl. 62—28 12 Claims

1. A process for producing substantially pure argon from a

hydrogen recovery unit tail gas stream comprising argon, nitrogen, methane and residual amounts of hydrogen comprising:

a. introducing the tail gas stream into a first fractionation zone under conditions to separate a liquid stream comprising argon and methane and a gaseous stream comprising nitrogen and hydrogen;

b. introducing the liquid stream into a second fractionation zone under conditions to separate argon as a gaseous product stream and methane as a liquid stream;

c. partially condensing the gaseous stream formed in step (a) and introducing it into a first separation zone to form a gaseous stream containing substantially all of the hydrogen and a liquid stream containing nitrogen and dissolved hydrogen;



d. combining the liquid methane stream formed in step (b) with the gaseous hydrogen stream formed in step (c), and passing the combined stream through a heat exchanger to recover its cold potential;

e. expanding the liquid stream formed in step (c) and introducing it into a second separation zone to form a gaseous stream containing hydrogen and a liquid product nitrogen stream;

f. passing a portion of the liquid product nitrogen stream to a heat pump cycle to provide referigeration requirements for said first and second fractionation zones; and

g. introducing a nitrogen stream withdrawn from said heat pump cycle into said first and second fractionation zones to provide the reboiling requirements therefor.

4,762,543

CARBON DIOXIDE RECOVERY

Leroy A. Pantermuehl, Katy, and Thomas E. Kriss, Houston, both of Tex., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 19, 1987, Ser. No. 27,761
Int. Cl.[4] F25J *3/02*
U.S. Cl. 62—28 2 Claims



1. A gas processing method for separating and recovering carbon dioxide from a pressurized gaseous feed stream comprising methane and/or nitrogen and at least about 85 mol percent carbon dioxide, said method comprising:

(a) cooling said feed stream to a temperature effective to cause at least a portion of the carbon dioxide in said feed stream to condense to a liquid;

(b) introducing the cooled, pressurized feed stream from step (a) into a separator vessel wherein said stream is separated into a first liquid bottom fraction (consisting essentially of carbon dioxide) and a first vapor fraction (comprising methane and/or nitrogen and carbon dioxide);

(c) recovering said first liquid bottom fraction;

(d) taking said first vapor fraction as a first overhead gas stream from said separator vessel and conveying said first overhead gas stream to a stripper tower and introducing said overhead gas stream into the bottom portion of said stripper tower;

(e) passing said first overhead gas stream upwardly through said stripper tower under conditions effective to separate said stream into a second liquid bottom fraction (consisting essentially of carbon dioxide) and a second vapor fraction (comprising methane and/or nitrogen and carbon dioxide);

(f) recovering said second liquid fraction;

(g) taking said second vapor fraction as a second overhead gas stream from said stripper tower;

(h) cooling said second vapor fraction to a temperature effective to cause at least a portion of the carbon dioxide in said second vapor fraction to condense to a liquid; and

(i) introducing the cooled second vapor fraction from (h) into a reflux accumulator vessel wherein said cooled vapor fraction is separated into (a) a third liquid bottom fraction (consisting essentially of carbon dioxide) which is recovered and reintroduced into the top portion of said stripper tower; and (b) a third vapor fraction (comprising methane and/or nitrogen and carbon dioxide) which is discharged or recovered.

4,762,544

AUTOMATED CONTROL OF GLASS CONTAINER MANUFACTURE

Richard G. Davey, Toledo, Ohio, assignor to Owens-Illinois Glass Container Inc., Toledo, Ohio

Filed Jan. 2, 1987, Ser. No. 257
Int. Cl.[4] B07C *5/34*
U.S. Cl. 65—29 8 Claims



1. A method of operating a glass production system which includes a glass forming machine having a multiplicity of operating mechanisms for converting a gob of molten glass into a hollow glass container, a glass forehearth/feeder for feeding glass gobs at controlled temperature and volume to said forming machine, electronic control means for individually and selectively controlling parameters of operation of said

VOL 1093 ISS 2 AG 9 1988 UMI

multiplicity of machine mechanism and said forehearth, a lehr for annealing glass containers formed by said forming machine, and glassware inspection means for inspecting containers formed by said machine, said method comprising the steps of:

(a) inspecting containers produced by said machine after annealing in said lehr for a plurality of faults at said inspection means,

(b) producing fault signals at said inspection means indicative of differing types of faults detected at said inspection means,

(c) coordinating said fault signals with associated operating parameters of said machine and said forehearth in accordance with predetermined analysis algorithms prestored in said electronic control means,

(d) selectively automatically adjusting said operating parameters at said glass forming machine and said forehearth in accordance with said predetermined algorithms to correct said detected faults, and

(e) following a delay sufficient to permit containers formed at said machine as a function of parameters adjusted in said step (d) to travel through said lehr, repeating said steps (a)–(d) such that said operating parameters are selectively iteratively adjusted in said step

(d) in a manner and sequence predetermined by said algorithms to correct faults detected in said step (a).

5. A glass production system which includes a glass forming machine having a multiplicity of operating mechanisms for converting a gob of molten glass into a hollow glass container, a glass forehearth for feeding glass gobs at controlled temperature and volume to said forming machine, electronic control means for individually and selectively controlling parameters of operation of said multiplicity of machine mechanisms and said forehearth, glassware inspection means for inspecting containers formed by said machine for a plurality of faults and producing fault signals indicative of differing types of faults detected at said inspection means, a lehr for annealing glass containers formed by said forming machine, and conveyor means for feeding containers formed by said machine through said lehr to said inspection means,

said electronic control means including means for coordinating said fault signals with associated operating parameters of said machine and said forehearth in accordance with predetermined analysis algorithms prestored in said electronic control means, means for selectively automatically adjusting said operating parameters at said glass forming machine and said forehearth in an iterative manner and sequence in accordance with said predetermined algorithms to correct said detected faults, and means responsive to said inspection following a delay sufficient to permit containers formed at said machine as a function of said adjusted parameters to travel on said conveyor means through said lehr to control said adjusting means.

4,762,545

SOIL AMENDMENT MATERIAL AND PROCESS FOR PREPARATION THEREOF

Nabil N. Youssef, 2168 N. 1450 East, North Logan, Utah 84321, and Gene W. Miller, 935 S. 400 East, Providence, Utah 84321

Filed Dec. 1, 1986, Ser. No. 936,519
Int. Cl.[4] C05G *3/04*
U.S. Cl. 71—27 1 Claim

1. A method of preparing a nutritive soil amendment material containing a plurality of plant nutrition containing salts, comprising the steps:

providing a quantity of water insoluble hydrophilic polymer in granular form, said polymer being non-toxic to plants to be grown and capable of cross linking in the presence of water to become essentially insoluble and capable of undergoing repeated reversible hydration and dehydration cycles;

preparing a quantity of water solution containing a combination including solution compatible salts of said plurality of salts, said solution being of a concentration of each included salt sufficiently dilute that said polymer is capable of said cross linking in its presence to become essentially insoluble and to maintain its capability to undergo repeated reversible hydration and dehydration;

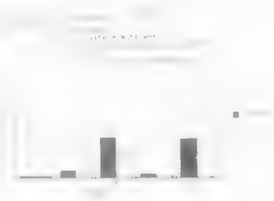
soaking said quantity of polymer in a quantity of said solution, so that said polymer swells to incorporate at least a portion of said solution within its molecular structure;

decanting any remaining unbound solution from the swollen polymer;

heating said polymer to expel the absorbed water therefrom;

repeating the soaking, decanting and drying steps, until the concentration of the salts in the polymer reaches a desired level;

preparing an additional quantity of water solution containing any of the remaining salts which are solution compatible, said additional solution being of a concentration of each included salt sufficiently dilute that said polymer is



capable of said cross linking in its presence to become essentially insoluble and to maintain its capability to undergo repeated reversible hydration and dehydration;

soaking said quantity of polymer in a quantity of said additional solution, so that said polymer swells to incorporate at least a portion of said solution within its molecular structure;

decanting any remaining unbound solution from the swollen polymer;

heating said polymer to expel the absorbed water therefrom;

repeating the soaking, decanting and drying steps, until the concentration of the additional salts in the polymer reaches a desired level; and

repeating the additional solution preparation, soaking, decanting and drying steps as necessary to incorporate all remaining salts of said plurality thereof into the polymer at the desired level of concentration of each.

4,762,546

PRODUCTION OF HIGH-GRADE NITROGEN-SULFUR SUSPENSION FERTILIZERS

Jeffrey L. Boles, Tuscumbia, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Filed Apr. 13, 1987, Ser. No. 37,492
Int. Cl.[4] C05C *9/00, 3/00*
U.S. Cl. 71—30 11 Claims

5. A batch-type process for producing suspensions containing a single solid phase at temperatures ranging from about 40° F. up to and including the boiling temperature of said suspensions, said solid phase consisting of ammonium sulfate and wherein said process comprises the following steps:

(a) introducing into mixer means predetermined quantities of a nitrogen source selected from the group consisting of solid urea, solid ammonium nitrate, an aqueous solution of urea, an aqueous solution of ammonium nitrate, and mixtures thereof together with any necessary water of formulation;

(b) providing in said mixer means constant agitation and introducing thereinto a predetermined amount of gelling agent, said predetermined amount of said gelling agent ranging from about 0.5 percent to about 3.5 percent by

weight based on the weight of later mentioned final product suspension;

(c) providing in said mixer means constant agitation and introducing thereinto a predetermined amount of ammonium sulfate solids and subjecting the resulting mixture



therein to substantial agitation for a predetermined period of time; and

(d) withdrawing from said mixer means, as the resulting final product, a X-0-0 -Y type, nitrogen-sulfur suspension fertilizer.

4,762,547

ENHANCEMENT OF BIOCIDE

Tetsuji Iwasaki, Wakayama, and Yuichi Hioki, Wakayama, both of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jan. 3, 1986, Ser. No. 815,837
Claims priority, application Japan, Jan. 18, 1985, 60-7147
Int. Cl.[4] A01N *57/00, 63/00;* A61K *37/54*
U.S. Cl. 71—65 10 Claims

1. In a method for controlling a plant, plant pest or an insect by the application of a biocide to the plant, or insect, the improvement comprising: decomposing the the outer waxy layer of the plant or insect by applying an esterase to said plant, or insect in advance of or together with the application of the biocide.

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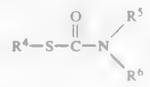
HERBICIDE COMPOSITIONS OF EXTENDED SOIL LIFE

Reed A. Gray, Saratoga, and Ferenc M. Pallos, Walnut Creek, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Filed Aug. 12, 1985, Ser. No. 764,290
Int. Cl.[4] A01N *25/22, 37/00*
U.S. Cl. 71—100 3 Claims

1. An herbicidal composition consisting essentially of

(1) an herbicidally effective amount of a thiolcarbamate having the formula

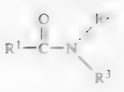


wherein

R^4 is C_1–C_6 alkyl;

R^5 and R^6 are C_1–C^6 alkyl

(2) an extending amount of a compound having the formula



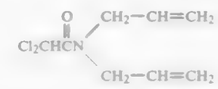
wherein

R^1 is C_1–C_6 mono-, di-, tri- or polyhaloalkyl,

R^2 is mono- or di-haloallyl; and

R^3 is allyl, mono- or di-haloallyl, and

(3) a non-phytotoxic antidotally effective amount of a compound having the formula



(a)

4,762,549

DELIVERY OF PLANT GROWTH REGULATORS

Vithal J. Rajadhyaksha, Mission Viejo, Calif., assignor to Nelson Research & Development Co., Irvine, Calif.

Continuation-in-part of Ser. No. 429,931, Sep. 30, 1982, abandoned, which is a continuation-in-part of Ser. No. 310,948, Oct. 13, 1981, Pat. No. 4,525,199, which is a continuation-in-part of Ser. No. 725,490, Oct. 28, 1976, abandoned, which is a continuation-in-part of Ser. No. 588,247, Jun. 19, 1975, Pat. No. 3,989,816. This application Apr. 11, 1983, Ser. No. 484,027
Int. Cl.[4] A01N *43/46*
U.S. Cl. 71—88 4 Claims

1. A method for delivering plant growth regulators to plants, comprising:

contacting a plant with a composition comprising, as a first ingredient, a plant growth regulator; and

enhancing the penetration of the plant growth regulator into the plant by including in the composition, as a separate, second ingredient, from 0.01% to 99.9% of the compound 1-n-dodecylazacycloheptan-2-one.

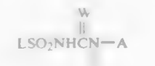
4,762,550

HERBICIDAL PYRAZOLESULFONAMIDES

Stephen L. Hartzell, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 760,713, Aug. 1, 1985, Pat. No. 4,705,558, which is a continuation-in-part of Ser. No. 662,789, Oct. 19, 1984, abandoned, which is a continuation-in-part of Ser. No. 651,082, Sep. 17, 1984, abandoned. This application Aug. 13, 1987, Ser. No. 85,026
Int. Cl.[4] C07D *401/14;* A01N *43/40, 43/56*
U.S. Cl. 71—94 21 Claims

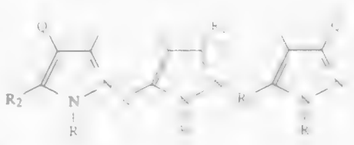
1. A compound of the formula:



I

wherein

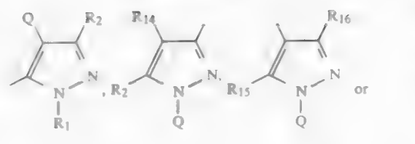
L is



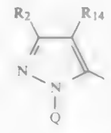
L-1 L-2 L-3

VOL 1093 ISS 2 AG 9 1988 UMI

-continued



L-4 L-5 L-6



L-7

Q is selected from a saturated 5- or 6-membered ring containing one S or O heteroatom, and an unsaturated 5- or 6-membered ring containing 1–3 heteroatoms selected from one S, and one O, 1–3N and combinations thereof and Q may optionally be substituted by one or more groups selected from C_1–C_4 alkyl, C_1–C_4 haloalkyl, mercapto, benzylthio, halogen, C_1–C_4 alkoxy, C_1–C_6 alkylthio, C_3–C_4 alkenyl, C_3–C_4 alkenylthio, C_3–C_4 alkynylthio, C_3–C_4 haloalkenylthio, C_3–C_4 alkenyloxy, C_1–C_2 haloalkoxy, C_1–C_2 haloalkylthio, C_2–C_4 cyanoalkylthio, C_3–C_6 alkoxycarbonylalkylthio, C_2–C_5 alkoxyalkylthio or C_3–C_5 acetylalkylthio:

W is O;

R is H or CH_3;

R_1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl or phenyl optionally substituted by Cl, NO_2, CH_3 or OCH_3;

R_2 is H, Cl or CH_3;

R_{14} is H, C_1–C_4 alkyl, F, Cl, Br, NO_2, C_1–C_3 haloalkylthio, C_3–C_4 alkenyl, C_3–C_4 alkynyl,

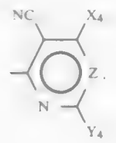
CO_2R_{17}, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl or $SO_2NR^IR^{II}$;

R_{15} and R_{16} are independently H, C_1–C_4 alkyl, C_2–C_4 alkoxyalkyl, C_1–C_3 haloalkylthio, C_1–C_3 haloalkoxy, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfonyl, F, Cl, Br, CO_2R_{17} or $SO_2NR^IR^{II}$;

R^I and R^{II} are independently C_1–C_3 alkyl;

R_{17} is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, $CH_2C{\equiv}CH$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

A is



A-7

Z is CH;

X_4 is CH_3, OCH_3, OC_2H_5, CH_2OCH_3 or Cl; and

Y_4 is CH_3, OCH_3 or OC_2H_5;

and their agriculturally suitable salts; provided that when L is L-5, L-6 or L-7, then Q must be bonded to the pyrazole ring nitrogen through a carbon atom.

15. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected an effective amount of a compound of claim 1.

4,762,551

CERTAIN 3-(SUBSTITUTED THIO)-2-BENZOYL-CYCLOHEX-2-ENONES

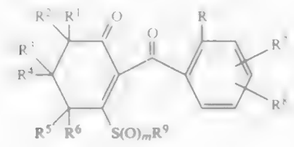
Christopher G. Knudsen, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jun. 9, 1986, Ser. No. 872,078

Int. Cl.[4] A01N *41/10*; C07C *147/14*

U.S. Cl. 71—103 **20 Claims**

1. A compound of the formula



wherein

R is halogen, C_1–C_2 alkyl, C_1–C_2 alkoxy, nitro; cyano; C_1–C_2 haloalkyl, or R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl;

R^1 is hydrogen or C_1–C_4 alkyl;

R^2 is hydrogen or C_1–C_4 alkyl; or

R^1 and R^2 together are alkylene having 2 to 5 carbon atoms;

R^3 is hydrogen or C_1–C_4 alkyl;

R^4 is hydrogen or C_1–C_4 alkyl; or

R^3 and R^4 together can be oxo;

R^5 is hydrogen or C_1–C_4 alkyl;

R^6 is hydrogen or C_1–C_4 alkyl; or

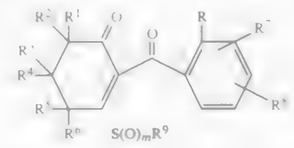
R^5 and R^6 together are alkylene having 2 to 5 carbon atoms;

R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined; or (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined;

m is the integer 0, 1 or 2; and

R^9 is C_1–C_4 alkyl; phenyl; dichlorophenyl; methylphenyl; methoxyphenyl; cyano; or —$(CH_2)_xC(O)O$—$(C_1$–C_4 alkyl) wherein X is the integer 1, 2, or 3.

11. An herbicidal composition comprising an herbicidally effective amount of a 3-substituted thio-2-benzoyl-cyclohex-2-enone compound of the formula



wherein

R is halogen, C_1–C_2 alkyl, C_1–C_2 alkoxy, nitro; cyano; C_1–C_2 haloalkyl, or R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl;

R^1 is hydrogen or C_1–C_4 alkyl;

R^2 is hydrogen or C_1–C_4 alkyl; or

R^1 and R^2 together are alkylene having 2 to 5 carbon atoms;

R^3 is hydrogen or C_1–C_4 alkyl;

R^4 is hydrogen or C_1–C_4 alkyl; or

R^3 and R^4 together can be oxo;

R^5 is hydrogen or C_1–C_4 alkyl;

R^6 is hydrogen or C_1–C_4 alkyl; or

R^5 and R^6 together are alkylene having 2 to 5 carbon atoms;

R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6)

cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; (12) $SO_2NR^cR^d$ wherein R^c and R^d are as defined; or (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined;

m is the integer 0, 1 or 2; and

R^9 is C_1–C_4 alkyl; phenyl; dichlorophenyl; methylphenyl; methoxyphenyl; cyano; or —$(CH_2)xC(O)O$—$(C_1$–C_4 alkyl) wherein X is the integer 1, 2, or 3 and an inert carrier therefor.

4,762,552

IMPROVED PROCESS FOR BENEFICATING IRON-CONTAINING TITANIFEROUS ORES

Roger A. Baldwin, Oklahoma City; William C. Laughlin, Edmond; Keshav P. Patel, Oklahoma City, and Patricia J. Shreve, Edmond, all of Okla., assignors to Kerr-McGee Chemical Corporation, Oklahoma City, Okla.

Filed Jun. 15, 1987, Ser. No. 61,958

Int. Cl.[4] C22B *1/06*

U.S. Cl. 75—1 T **7 Claims**

1. In a process for beneficiating an iron-containing titaniferous ore wherein the titaniferous ore is subjected to reduction in the presence of at least one reducing agent at a temperature of from about 600° C. to about 1100° C. and wherein the reduced ore is subjected to leaching with a hydrochloric acid solution at a temperature of from about 120° C. to about 150° C., the improvement which comprises:

forming a mixture of the titaniferous ore and a sulfuric acid solution said acid solution having a sulfuric acid concentration of from about 50 to about 98 weight percent based upon the total weight of the solution;

adding the reducing agent to the mixture; and

subjecting the mixture, containing the reducing agent to reduction.

4,762,553

METHOD FOR MAKING RAPIDLY SOLIDIFIED POWDER

Steven J. Savage, Farsta, Sweden, and Daniel Eylon, Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 24, 1987, Ser. No. 42,074

Int. Cl.[4] B22F *9/08*

U.S. Cl. 75—0.5 C **21 Claims**



1. A method for producing powder of metal or alloy material comprising the steps of:

(a) providing a source of molten said material;

(b) electromagnetically levitating said molten said material, on a levitating coil having an outlet, and forming a molten stream of said material directed from said outlet of said levitating coil;

(c) electromagnetically confining said molten stream to preselected stream diameter;

(d) disintegrating the confined said moltens stream into droplets of molten said material; and

(e) cooling said droplets to form said powder.

4,762,554

PROCESS TO ELIMINATE HAZARDOUS COMPONENTS FROM THE ELECTRIC ARC FURNACE FLUE DUST AND RECOVERING OF METALS

Arturo Lazcano-Navarro, Saltillo, Coahuila, Mexico

Filed Nov. 10, 1986, Ser. No. 928,925

Int. Cl.[4] C21B *3/04*

U.S. Cl. 75—10.14 **12 Claims**



1. A method to recover metals from flue dust generated in an electric arc furnace, said method comprising: charging pelletized or powder flue dust into an electric induction furnace between induction susceptors; sealing of the furnace top to prevent entry of air; injecting natural gas through the bottom of the electric induction furnace as a solitary reducing agent; heating the charge by electromagnetic induction of the susceptors to provide reduction energy; recovering of heavy metals as a zinclead-cadmium alloy in a condenser at the top of the furnace; burning and scrubbing exiting gases in the condenser; and melting the remaining iron to produce steel and slag.

4,762,555

PROCESS FOR THE PRODUCTION OF NODULAR CAST IRON

Ivo Henych, Stetten, and Karl Gut, Beaken, both of Switzerland, assignors to Georg Fischer Aktiengesellschaft, Schaffhause, Switzerland

Filed Dec. 22, 1986, Ser. No. 944,766

Claims priority, application Switzerland, Dec. 23, 1985, [illegible]

Int. Cl.[4] C21C *7/00*

U.S. Cl. 75—48 **8 Claims**

1. A process for the after-treatment of desulfurized cast iron intended for the production of nodular cast iron, comprising

treating molten cast iron with metallic magnesium to produce a desulfurized, Mg-alloyed iron melt having magnesium sulfide and magnesium oxide inclusions therein, and thereafter

treating the desulfurized, Mg-alloyed iron melt with a neutral gas to remove said magnesium sulfide and magnesium oxide inclusions.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,556

SELECTIVE EXTRACTION OF GOLD

Jonathan H. Hodgkin, Burwood, and Robert Eibl, Little River, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed Jul. 23, 1981, Ser. No. 285,926

Claims priority, application Australia, Aug. 7, 1980, PE 4953/80

Int. Cl.[4] C22B *11/04*

U.S. Cl. 75—118 R 15 Claims

1. A method for the extraction of gold from an aqueous solution containing gold and at least one other metal, characterised in that it comprises contacting the gold-containing solution with a resin which is a diallylamine homopolymer or copolymer to adsorb gold on the resin without significant adsorption of other metals.

4,762,557

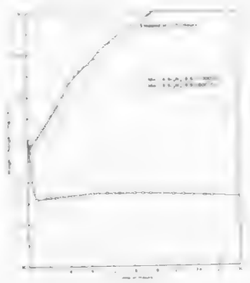
REFRACTORY METAL ALLOYS HAVING INHERENT HIGH TEMPERATURE OXIDATION PROTECTION

Vaidyanathan Nagarajan, and Ian G. Wright, both of Columbus, Ohio, assignors to Battelle Memorial Institute, Columbus, Ohio

Continuation-in-part of Ser. No. 845,279, Mar. 28, 1986, abandoned. This application Oct. 1, 1987, Ser. No. 103,977

Int. Cl.[4] C22C *29/14*

U.S. Cl. 75—244 2 Claims



1. A high temperature, oxidation resistant composition comprising:

a. a refractory metal selected from the group consisting of molybdenum, tungsten, niobium and tantalum; and

b. second and third phase additives selected from the group consisting of:

(1) Si_3N_4 (1–15%) and Si (1–6%), when the metal selected in (a) is molybdenum or tungsten;

(2) Cr_2N (14–22%) and Cr (1–8%), when the metal selected in (a) is molybdenum or tungsten, provided that the combined chromium content from the Cr_2N and the free elemental chromium is at least 20%; and

(3) TiN (1–18%), and a mixture of Al (1–9%) and Ti (1–9%), when the metal selected in (a) is molybdenum, tungsten, niobium, or tantalum, provided that the total content of elemental aluminum plus elemental titanium cannot exceed 10% as the third phase;

wherein the selected metals are present in the composition in elemental form and less than 5% is a dispersion of $MoSi_2$.

4,762,558

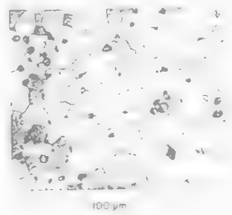
PRODUCTION OF REACTIVE SINTERED NICKEL ALUMINIDE MATERIAL

Randall M. German, Latham; Animesh Bose, Troy, both of N.Y., and David Sims, Bonners Ferry, Id., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed May 15, 1987, Ser. No. 50,914

Int. Cl.[4] B22F *3/00*

U.S. Cl. 75—246 50 Claims



1. Reactive sintering process for producing a shaped body of the nickel aluminide compound Ni_3Al, which comprises sintering a compacted shaped mass containing an intimate mixture of elemental nickel powder and elemental aluminum powder in a stoichiometric atomic ratio generally corresponding to the compound Ni_3Al, by heating the mass in a substantially dry inert atmosphere to an elevated sintering temperature sufficiently to initiate an exothermic reaction, and at a heating rate sufficiently for consequent progressive generation of a transient liquid below the melting point of the aluminum powder and at the corresponding eutectic temperature, and upon initiation of the exothermic reaction continuing the sintering for a total sintering time of at least about 2 seconds and sufficiently to form a densified shaped body containing the nickel aluminide compound Ni_3Al having a porosity of at most about 8%.

4,762,559

HIGH DENSITY TUNGSTEN-NICKEL-IRON-COBALT ALLOYS HAVING IMPROVED HARDNESS AND METHOD FOR MAKING SAME

Thomas W. Pearice, Mt. Juliet, and James Bost, Murfreesboro, both of Tenn., assignors to Teledyne Industries, Incorporated, Los Angeles, Calif.

Filed Jul. 30, 1987, Ser. No. 79,428

Int. Cl.[4] C22C *27/04*

U.S. Cl. 75—248 29 Claims

1. The process of making high density alloy containing about 85 to 98 weight percent tungsten and the balance of the alloy being essentially a binder of nickel, iron and cobalt, and wherein said cobalt is present in an amount within the range of about 5 to 47.5 weight percent of said binder, comprising

blending powders of said tungsten, nickel, iron and cobalt into a homogenous composition,

compacting said homogenous composition into a shaped article,

heating said shaped article to a temperature and for a time sufficient to sinter said article,

subjecting said sintered article to a temperature sufficient to enable the intermetallic phase formed at the matrix to tungsten interface to diffuse into the gamma austenitic phase whereby the alpha tungsten/gamma austenite boundaries are essentially free of such intermetallic phase,

quenching said article, and

swaging the article to a reduction in area of about 5 to 40 percent,

said article having improved mechanical properties, including improved tensile strength and hardness while maintaining suitable ductility for subsequent working thereof.

4,762,560

COPPER COLLOID AND METHOD OF ACTIVATING INSULATING SURFACES FOR SUBSEQUENT ELECTROPLATING

William R. Brasch, Neconset, N.Y., assignor to LeaRonal, Inc., Freeport, N.Y.

Continuation-in-part of Ser. No. 931,906, Nov. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 423,749, Sep. 27, 1982, abandoned. This application Dec. 10, 1987, Ser. No. 132,660

Int. Cl.[4] C22C *9/00*

U.S. Cl. 106—1.11 16 Claims

1. The method of preparing a copper colloid for activation of a non-conducting substrate which comprises adding a minor amount of an ionizable palladium compound to the copper colloid and reducing the palladium compound therein to form metallic palladium particles in an amount at least about 8 ppm to maintain the copper colloidal particles as the primary activating agent but less than about 80 ppm.

4,762,561

VOLUME-STABLE HARDENED HYDRAULIC CEMENT

Edward P. Holub, Bethel, and Richard J. Grabowski, Milford, both of Conn., assignors to Construction Products Research, Inc., Fairfield, Conn.

Continuation-in-part of Ser. No. 843,967, Mar. 25, 1986, abandoned. This application Mar. 24, 1987, Ser. No. 29,553

Int. Cl.[4] C04B *7/02*

U.S. Cl. 106—89 21 Claims

1. A volume stable, cementitious composition comprising:

from about 0.1 to about 80 parts by weight of a Portland cement which is manufactured from raw materials containing low levels of iron compounds so as to have less than about 2% by weight of iron oxide in the Portland cement;

from about 0.1 to about 40 parts by weight of a calcium or aluminate sulfate compound; and

from about 2 to about 90 parts by weight of an aluminous cement.

4,762,562

METHOD OF PREPARING AND MOLDING MORTAR OR LIKE

Toshiro Suzuki, Chiyozaki-jutaku 1-305, Chiyozaki-cho 2-71, Naka-ku, Yokohama-shi Kanagawa, Japan 231

Continuation of Ser. No. 852,941, filed as PCT JP85/00423 on Jul. 26, 1985, published as WO86/00884 on Feb. 13, 1986, abandoned.

This application Nov. 9, 1987, Ser. No. 120,753

Claims priority, application Japan, Jul. 31, 1984, 59-160677; Jul. 3, 1985, 60-146273

Int. Cl.[4] C04B *14/02*

U.S. Cl. 106—97 10 Claims

1. A method of preparing mortar including cement and aggregate using ice pieces to improve the mixing of the mortar and to provide water for hydration of cement comprising the steps of mixing cement, aggregate and ice pieces with gradual melting of the ice pieces to provide a greater degree of fluidity of mortar prior to hardening than is obtained by substitution of liquid water for said ice pieces in the same water-cement ratio and to uniformly disperse said cement, aggregate and ice pieces



prior to substantial melting of the ice pieces, melting substantially completely all remaining ice pieces prior to placement of the mortar, and causing hydration of the cement and water resulting from the melting of said ice pieces.

4,762,563

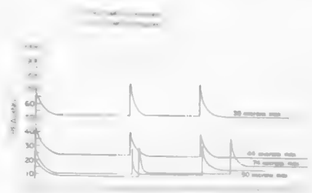
THIXOTROPIC CEMENT BASE PAINT COMPOSITION AND METHOD

Laurence Colin, Box 301, Cross River, N.Y. 10518

Continuation of Ser. No. 783,869, Oct. 3, 1985, abandoned. This application Dec. 29, 1986, Ser. No. 948,470

Int. Cl.[4] C04B *7/02*

U.S. Cl. 106—97 21 Claims



1. A composition for forming a cement base paint having thixotropic flow properties when mixed with water comprising an hydraulic cement in combination with presized particles of inorganic filler with the filler particles having a maximum particle size of about 50 microns and having a minimum relationship by weight to the cement of $P/2 \leqq F$; where P represents the cement and F represents the filler particles wherein said hydraulic cement and said presized filler particles are capable of causing thixotropy in the composition when combined in the aforementioned relationship in a mixture with water without the addition of any other ingredient or additive.

4,762,564

REINFORCED CELLULOSE AMINOMETHANATE

Douglas J. Bridgeford, Champaign, Ill., assignor to Teepak, Inc., Oak Brook, Ill.

Filed Mar. 13, 1987, Ser. No. 25,317

Int. Cl.[4] C08L *1/00*

U.S. Cl. 106—204 11 Claims

1. A reinforced article comprising cellulose aminomethanate containing a reinforcing fiber, wherein 0.5 to 30 numerical percent of the cellulose hydroxy groups have been substituted with aminomethanate groups.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,565

OPEN-GRADED ASPHALT

Peter E. Graf, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 31, 1986, Ser. No. 925,334
Int. Cl.[4] C08L 95/00
U.S. Cl. 106—281 R 19 Claims

1. A paving composition comprising about 80 to 97% by weight of an open-graded aggregate and about 3 to 20% asphalt, said composition being formed by successively mixing two asphalt-containing emulsions A and B with said aggregate wherein:

emulsion A comprises about 40 to 75% by weight of a soft asphalt having a viscosity in the range of 50 to 1000 centistokes at 210° F. and 0.25 to 5% by weight of an emulsifier, and water as a continuous phase of said emulsion A to make up 100% by weight; and

emulsion B comprises about 40 to 75% by weight of a hard asphalt having a penetration of 5 to 25 dmm at 77° F. and 0.25 to 5% by weight of an emulsifier, and water as a continuous phase of said emulsion B to make up 100% by weight, and wherein said emulsifier in emulsion A and emulsion B is a cationic or anionic emulsifier.

18. A process for producing an open-graded paving composition comprising successively mixing two asphalt-containing emulsions A and B with open-graded aggregate wherein:

emulsion A comprises about 40 to 75% by weight of a soft asphalt having a viscosity in the range of 50 to 1000 centistokes at 210° F. and 0.25 to 5% by weight of an emulsifier, and water as a continuous phase of said emulsion A to make up 100% by weight; and

emulsion B comprises about 40 to 75% by weight of a hard asphalt having a penetration of 5 to 25 dm at 77° F. and 0.25 to 5% by weight of an emulsifier, and water as a continous phase of said emulsion B to make up 100% by weight, and wherein said emulsifier in emulsion A and emulsion B is a cationic or anionic emulsifier.

4,762,566

HIGH COKING VALUE PITCH BINDERS

Ronald A. Greinke, Medina, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

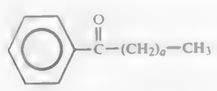
Filed Dec. 5, 1985, Ser. No. 804,894
Int. Cl.[4] C09D 3/00
U.S. Cl. 106—284 19 Claims

1. A binder chemically stable and non-reactive at mixing and processing temperatures less than about 170° C. which comprises a mixture of 80–95% by weight of pitch and 5–20% by weight of an aldol condensation product of:

(A) a compound selected from the group consisting of C_3 to C_{13} aliphatic linear, branched and cycloaliphatic ketones having one carbonyl group and diones having at least one active hydrogen on each carbon atom adjacent to a



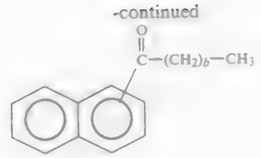
group, and aromatic ketones of the formula:



(I)

and

-continued



(II)

wherein a and b are integers having a value of 0 to 6, and the C_1 to C_4 alkyl substituted derivatives thereof; and

(B) at least one compound selected from the group consisting of C_5 to C_{11} aldehydes, said aldehydes having an aromatic ring containing 4 to 6 carbon atoms and 0 to 1 oxygen atoms;

wherein the condensation product is further characterized as having a Heat Of Reaction Value of less than about 155 cal/g.

4,762,567

WASHCOAT FOR A CATALYST SUPPORT

William B. Retallick, West Chester, Pa., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 30, 1987, Ser. No. 31,275
Int. Cl.[4] C09K 3/00
U.S. Cl. 106—287.17 10 Claims

1. A washcoat for a catalyst support, comprising a suspension of alumina, a major portion of which has been calcined at a higher temperature, and a minor portion of which has been calcined at a lower temperature, the washcoat also including a catalyst metal, the catalyst metal being selected from the platinum group.

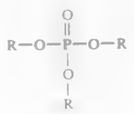
4,762,568

PIGMENT COMPOSITION

Michiei Nakamura, Soka; Hitoshi Takeuchi, Showa; Tetsujiro Takahashi, Koshigaya; Yoshitake Kori, Ageo; Minoru Takizawa, Koshigaya; Takamitsu Shinoda, Kashiwa, and Shojiro Horiguchi, Omiya, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1987, Ser. No. 84,197
Claims priority, application Japan, Aug. 20, 1986, 61-192919
Int. Cl.[4] C09C 3/00
U.S. Cl. 106—403 3 Claims

1. A pigment composition containing a pigment and a dispersant, characterized in that said dispersant is a wax paste or liquid phosphoric ester compound represented by the following general formula:



wherein at least one of the three Rs is a residuum of a polyester chain containing as principal bonds thereof ester bonds of a polycarboxylic acid and a polyalcohol.

4,762,569

EASILY DISPERSIBLE PIGMENT COMPOSITION AND DISPERSING METHOD

Toshiyuki Miki, and Mitsumasa Takeya, both of Himeji, Japan, assignors to Sanyo Color Works, Ltd., Himeji, Japan

Filed Aug. 7, 1987, Ser. No. 83,694
Int. Cl.[4] C04B 14/00
U.S. Cl. 106—476 8 Claims

1. An easily dispersible pigment composition for a non-aqueous vehicle, comprising 100 wt. parts of organic pigment and 0.5–15 wt. parts of tetracarboxylic acid diimide compound having the general formula [I]



[I]

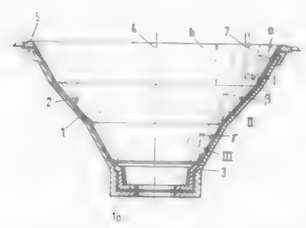
wherein Q is a naphthalene radical or perylene radical which is bonded to the 4 carbonyl radicals at peri-positions and R^1 and R^2 are each the same or different and are a hydrogen atom or an alkyl radical having 1–2 carbon atoms, and n is 2 or 3.

4,762,570

CONTINUOUSLY OPERABLE SUGAR CENTRIFUGE

Helmut Schaper, Braunschweig, Fed. Rep. of Germany, assignor to Braunschweigische Maschinenbauanstalt AG, Braunschweig, Fed. Rep. of Germany

Filed Aug. 14, 1987, Ser. No. 85,857
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628588
Int. Cl.[4] C13F 1/06
U.S. Cl. 127—19 5 Claims



1. In a continuously operable sugar centrifuge having a central rotational axis, the improvement comprising frustum shaped screen drum means for centrifuging massecuite, said screen drum means having three interconnected sections including a first upper section forming a sugar discharge rim at its upper wide diameter end, a second mid-section, and a third lower section, said screen drum means further including bottom means operatively connected to said third lower section at its lower small diameter end for feeding said massecuite onto said screen drum means, said first upper drum section having a first angle (α) of inclination relative to said central rotational axis such that, during the rotation of said screen drum means a substantially crystallized massecuite layer remains stationary on said first upper drum section when the supply of said massecuite to said bottom means is stopped and when simultaneously the supply of wash-water is maintained, said second drum mid-section having a second angle (β) of inclination relative to said central rotational axis, said second angle (α) being larger than said first angle (α) by about 3° to about 7°, said third lower drum section having a third angle (γ) of inclination relative to said central axis, said third angle (γ) corresponding approximately to said first angle (α), whereby a uniform distribution of the substantially crystallized massecuite being centrifuged on an inner drum surface is obtained with a layer thickness tapering toward said discharge rim.

4,762,571

EXPENDABLE IMMERSION DEVICE FOR COMBINING AN EXPENDABLE IMMERSION SENSOR AND MOLTEN METAL SAMPLER

Edwin E. Kaufman, Ambler; William E. Shuttleworth, Ellwood, and John R. Wiese, Pittsburgh, all of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 14, 1986, Ser. No. 839,852
Int. Cl.[4] H01L 35/02
U.S. Cl. 136—234 4 Claims



1. An expendable device for holding an insertable immersion sensor and an insertable immersion sampler to a lance having a manipulator section carrying electrical leads which must be connected to said sensor when said sensor and sampler are immersed into a bath of molten metal, comprising:

an immersion sensor for measuring a characteristic of said bath;

an end filling immersion sampler for gathering a sample of the molten metal of said bath while said device is immersed therein;

a first expendable heat insulating protective sleeve adapted to fit over said manipulator section for

protecting said manipulator during immersion,

providing a passage for gases from the interior of said first sleeve to a region above the bath, and

holding at one end thereof said insertable immersion sensor so that said sensor seals the interior of said sleeve from said molten metal and maintains electrical contact between said sensor and said connecting leads;

a second expendable heat insulating protective sleeve adapted to hold said insertable sampler in one end thereof and having its other end plugged;

means for attaching said second sleeve in a side by side relationship to said first sleeve; and

venting means providing a connecting passage between the interiors of said first and second sleeves so that air from said sampler is vented from said second sleeve for passage through said first sleeve to a region above said bath as said molten metal enters the sampler.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,572

PROCESS FOR PHOSPHATING ELECTROLYTICALLY ZINC-COATED METALS

Raschad Mady, Pulheim; Caecilie Daniel, Monheim; Detlev Bohnhorst, Cologne; Karl-Heinz Gottwald, Erftstadt, and Roland Morlock, Bergheim, all of Fed. Rep. of Germany, assignors to Gerhard Collardin GmbH, Cologne, Fed. Rep. of Germany

Filed Oct. 20, 1986, Ser. No. 921,665
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1985, 3537108
Int. Cl.[4] C23C *22/13, 22/18*
U.S. Cl. 148—6.15 Z 29 Claims

1. A method for phosphate coating an electrolytically zinc or zinc-alloy coated metal surface to a weight per unit area of less than 2 g/m^2, comprising exposing said surface to an acid phosphating solution for a time minimally long enough to produce an effective phosphate coating to maximally slightly more than 5 seconds, at a temperature above ambient atmosphere, said phosphating solution comprising essentially of:
(A) zinc cations (Zn^{2+}) present in about 0.1–0.8 g/l,
(B) manganese cations (Mn^{2+}) present in about 0.5–2.0 g/l,
(C) phosphate anions ($H_2PO_4^-$),
(D) nitrate anions (NO_3^-) present in a weight ratio $(Zn^{2+}+Mn^{2+}):NO_3^-$ of about 1:0.5–1.5, and
(E) cobalt cations (Co^{2+}) optionally present in a weight ratio $Co^{2+}:(Zn^{2+}+Mn^{2+})$ of about 1:100–150;
wherein said phosphating solution has a free acid content of about 4–8 points and a total acid:free acid ratio of about 2.5–5.0.

4,762,573

FLUXING AGENT AND SOLDERING PROCESS

Arne Biverstedt, Tullinge, Sweden, assignor to Ytkemiska Institutet, Stockholm, Sweden

PCT No. PCT/SE85/00291, § 371 Date Mar. 18, 1986, § 102(e) Date Mar. 18, 1986, PCT Pub. No. WO86/00844, PCT Pub. Date Feb. 13, 1986
PCT Filed Jul. 22, 1985, Ser. No. 853,812
Claims priority, application Sweden, Jul. 20, 1984, 8403815-7
Int. Cl.[4] B23K *35/34*
U.S. Cl. 148—23 16 Claims

1. A fluxing agent for soldering consisting of a solution, comprising:
from 1 to 15 percent by weight of a non-ionic substance selected from the group consisting of non-ionic surface active agents and substances with capacity to form liquid crystals in a film of the fluxing agent and mixtures thereof;
from 1 to 50 percent by weight of water; and
at least 20% by weight of a volatile organic solvent, and minor quantities of soldering activators which are capable of reacting with impurities on metal surfaces subjected to soldering;
the weight ratio of said non-ionic substance to water being from 1:8 to 5:1, and said non-ionic substance being soluble in the mixture of water and volatile organic solvent.

4,762,574

RARE EARTH-IRON-BORON PREMANENT MAGNETS

Mohammad H. Ghandehari, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jun. 14, 1985, Ser. No. 745,293
Int. Cl.[4] H01F *1/02*
U.S. Cl. 148—103 33 Claims

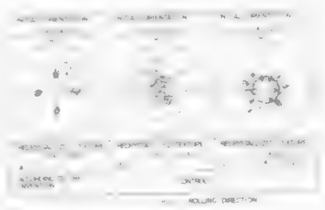
1. A method for producing rare earth-iron-boron permanent magnets containing added rare earth oxide, comprising the steps of:
(a) mixing a particulate alloy containing at least one rare earth metal, iron, and boron with at least one particulate rare earth oxide;
(b) aligning magnetic domains of the mixture in a magnetic field;
(c) compacting the aligned mixture to form a shape; and
(d) sintering the compacted shape.

4,762,575

PROCESS FOR PRODUCING ELECTRICAL STEEL SHEET

Akira Sakakura, Chiba; Kazuo Hoshino, Yamaguchi; Yoshihiro Uematsu, Yamaguchi; Takashi Igawa, Yamaguchi, and Hiroshi Fujimoto, Yamaguchi, all of Japan, assignors to Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1986, Ser. No. 874,088
Claims priority, application Japan, Jun. 26, 1985, 60-138039
Int. Cl.[4] H01F *1/04*
U.S. Cl. 148—111 7 Claims



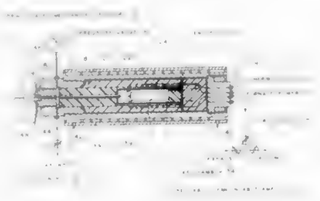
1. A process for the production of an electrical steel sheet having a ferritic single phase of the (100) [001] oriented cube texture of iron or iron alloy, comprising the steps of:
cold rolling a sheet consisting essentially of a single crystal of iron or iron alloy, in which said single crystal is oriented so that the pole of the {114} plane may form an angle of not greater than 15° with the normal direction of plane of the sheet, and the <401> direction may form an angle of not greater than 15° with the longitudinal direction of the sheet, along the longitudinal direction of the sheet at a rolling reduction of at least 40%, and
annealing the rolled sheet to form a primary recrystallization texture of fine grains of an average grain size of not larger than 5 mm under conditions preventing the occurrence of secondary recrystallization.

4,762,576

CLOSE SPACE EPITAXY PROCESS

Herbert L. Wilson, and William A. Guiterrez, both of Woodbridge, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,475
Int. Cl.[4] H01L *21/203*
U.S. Cl. 156—611 10 Claims



1. A method of epitaxial growth in an externally controllable pressure and gaseous environment under super imposed pressure, said method comprised of the steps of:
selecting a suitable heating pressurizing furnace having required temperature and pressure capability with air tight sealable means and gas mixture flow pressure controllable means therethrough;

providing a reusable demountable, non-fused seal type ampule having a formfitted removable end plug and vent means between the interior which defines a semi-confinement space when said end plug is inserted in said ampule and the exterior;
loading growth source materials and a substrate inside said ampule in close-spaced proximity to each other and inserting said end plug to provide said semi-confinement space;
placing the loaded ampule in a heatable pressurizable innerchamber of said furnace;
sealing and purging said innerchamber with alternating vaccum pressurization and pressure release cycles of high purity, high pressure inert and reducing gases to cleanse the insides of said innerchamber and said ampule through said vent means;
epitaxially growing said growth source materials on said substrate under continuing high pressure flowing conditions of the inert and reducing gases within said furnace innerchamber and said semi-confinement space of said ampule by close-spaced vapor phase epitaxial growth within said semi-confinement space wherein said growth source materials are heated under pressurization of said inert and reducing gases, and deposition of said growth source materials on said substrate is caused by elevating the temperature of said furnace innerchamber in which pressurization of said inert and reducing gases purifies and restricts the vapor growth cloud by high density collision of said inert and reducing gases with the vaporized growth source materials and confines growth source material flow primarily to the close-spaced area between said growth source materials and said substrate within said semi-confinement space in said ampule; and
cooling said furnace innerchamber down to ambient temperature while relieving the pressure of the circulating inert and reducing gases to one atmosphere and removing said ampule and the substrate and the remaining growth source materials therein wherein said ampule may be reused through repeated epitaxial growth steps.

4,762,577

9 CHROMIUM- 1 MOLYBDENUM STEEL ALLOY HAVING SUPERIOR HIGH TEMPERATURE PROPERTIES AND WELDABILITY, A METHOD FOR PREPARING SAME AND ARTICLES FABRICATED THEREFROM

Robert E. Clark, Orlando, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1987, Ser. No. 8,971
Int. Cl.[4] C22C *38/22*
U.S. Cl. 148—325 2 Claims



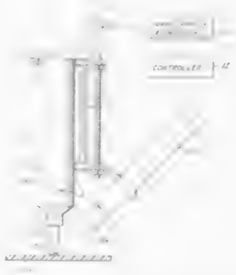
1. A high-pressure steam turbine rotor fabricated by welding at least two forging sections together, said sections being formed of a 9Cr-1Mo, mod. alloy having a chemical constituency as set forth in ASTM specification A-182, F-91 and a room temperature yield strength in the range of from about 85 to about 100 ksi as a result of having been tempered at a temperature in the range of from about 1275° F. to about 1300° F. for a period of time sufficient to produce such yield strength.

4,762,578

NON-CONTACT SENSING AND CONTROLLING OF SPACING BETWEEN A DEPOSITING TIP AND EACH SELECTED DEPOSITING LOCATION ON A SUBSTRATE

John I. Burgin, Jr., Binghamton; Michael J. Kane, Castle Creek, and Michael M. Levie, Binghamton, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 28, 1987, Ser. No. 43,623
Int. Cl.[4] G01B *15/00*
U.S. Cl. 156—64 29 Claims



1. In a method of spacing a tool tip a preferred distance from a surface without touching said tip to said surface, the improvement comprising the steps of:
advancing said tip toward said surface;
detecting, electrically separate from said surface and during said advancing, a reference spacing between said tip and a location on said surface in line with an axis of said advancing; and
halting advancing of said tip at a specified distance past said reference spacing, with said tip spaced said preferred distance from said surface location.

4,762,579

PROCESS FOR PRODUCING EASILY OPENABLE CLOSURE

Takashi Shimizu, Yokohama; Hiroshi Matsubayashi, Kamakura; Michio Watanabe, Yokohama; Kazumi Hirota, Tokyo; Naoto Watanabe, and Kikuo Matsuoka, both of Yokohama, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,001
Claims priority, application Japan, Dec. 3, 1985, 60-270657; Dec. 27, 1985, 60-293272; Jun. 12, 1986, 61-135001; Jun. 12, 1986, 61-135002
Int. Cl.[4] B32B *31/12*
U.S. Cl. 156—69 30 Claims

9. A method of producing an easily openable closure, said method comprising:
a step of producing at least one closure body by subjecting a sheet material to drawing, panel formation, bead formation and score formation for defining a portion to be opened while moving the sheet material intermittently, at least one of the panel formation and bead formation for forming a non-circular working, and the drawing and the at least one of the panel formation and the bead formation being performed simultaneously to form a shell,
a step of producing at least one tab,
a step of bringing a respective said tab produced and a respective said closure body produced together in a manner in which each said at least one closure body is matched with a respective said tab,
a step of placing said each closure body in such a position that a bonding surface of the closure body is disposed opposite to a bonding surface of said respective tab; and

VOL
1093
ISS
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1988
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a step of bonding the bonding surface of said respective tab to the bonding surface of the closure body by an adhesive



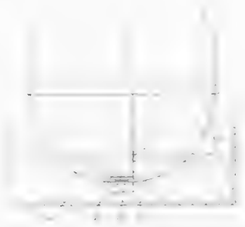
while moving the closure body and said respective tab continuously.

4,762,580

OPTICAL FIBRE SPLICE REINSTATEMENT SHEATHING

Alexander J. Robertson, Great Dunmow, Great Britain, assignor to STC PLC, London, England

Filed Dec. 15, 1986, Ser. No. 941,711
Claims priority, application United Kingdom, Jan. 31, 1986, 8602404
Int. Cl.[4] B65H *69/02;* B29D *11/00*
U.S. Cl. 156—83 7 Claims



1. A method of joining the ends of two plastics sheathed optical fibres each of which consists of an optical fibre encased in a plastics sheath, which method includes the steps of

stripping a length of the plastics sheath from the end of each plastics sheathed fibre to expose a length of bare fibre protruding from an end face of the plastics sheath,

of forming a butt join between the ends of the two protruding lengths of bare fibre,

of advancing said end face of the plastics sheath of each of the two fibres towards each other along their respective lengths of bare fibre so that said end faces are brought close enough to define a gap whose size is such that, if a quantity of liquid is applied to that gap, capillary action will cause the liquid to adopt a peripheral size and shape conforming to that of the plastics of the fibre,

of applying a quantity of liquid uncured resin to the gap sufficient to fill the gap, and

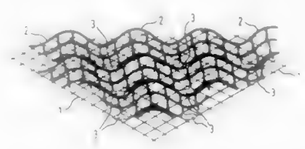
of curing the applied liquid uncured resin to form a length of reinstatement plastics sheathing bridging the gap between the ends faces and conforming in peripheral size and shape to that of the plastics sheath of the fibre.

4,762,581

METHOD OF MAKING HIGH-PROFILE STRUCTURES

Norman J. Stancliffe, Darwen; Frank B. Mercer, and Cyril Kennerley, both of Blackburn, all of United Kingdom, assignors to Netlon Limited, Mill Hill, England

Filed Mar. 31, 1986, Ser. No. 845,966
Claims priority, application United Kingdom, Apr. 2, 1985, [illegible]
Int. Cl.[4] B32B *31/26*
U.S. Cl. 156—84 23 Claims



1. A method of making a high-profile structure comprising:

providing a first, substantially planar, biaxially heat-shrinkable, plastics material layer, said first layer being of mesh structure defining generally square or rectangular meshes;

providing a second, substantially planar, plastics material layer, said second layer being of mesh structure;

fixing said first and second layers together at discrete zones which lie on intersections of a notional, generally square grid defining axes generally at right angles to each other, the sides of the meshes defined by said first layer being substantially parallel to diagonals of said grid, each said zone being spaced from adjacent said zones along each said axis of said grid, thereby forming a relatively dense, composite structure; and

heating said relatively dense, composite structure to cause said first layer to shrink biaxially with respect to said second layer and cause said second layer to assume a fairly regular cuspated configuration.

4,762,582

CONTINUOUS PROCESS FOR THE MANUFACTURE OF DISPOSABLE DIAPERS

Raphael de Jonckheere, Bondue, France, assignor to Boussac Saint Freres B.S.F., Lille, France

Continuation of Ser. No. 592,484, Mar. 23, 1984, abandoned.
This application Dec. 18, 1985, Ser. No. 810,828
Claims priority, application France, Mar. 25, 1983, 83 04988
Int. Cl.[4] A41B *13/02;* A61F *13/16*
U.S. Cl. 156—164 10 Claims

1. A method for continuous manufacturing of disposable diapers comprising an outer impervious envelope having a longitudinal axis, front and back transverse margins, and a central crotch zone, an absorbent pad having the same longitudinal axis and secured inside said envelope, and elastic means disposed on both sides of said longitudinal axis, each comprising a plurality of individual elastic strands adhesively secured to said envelope, comprising the steps of:

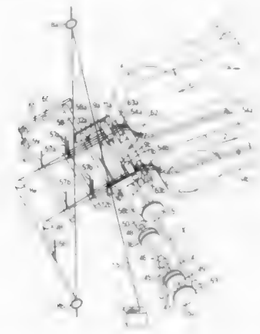
(a) passing a continuous strip of impervious envelope material along a significant portion of the peripheral smooth surface of a rotary drum rotating about a fixed axis, said strip being free, during passage around said drum, of contact by pressure rolls and grips facing said drum, said surface being maintained at an adhesive setting temperature,

(b) continuously feeding two arrays, each of a plurality of individual elastic strands,

(c) periodically varying the feeding speed of said elastic strands from a first speed substantially equal to the speed of said continuous strip on said rotary drum to a second speed less than the speed of said continuous strip on said rotary drum,

(d) passing said elastic strands into grooves open at their upper ends only filled with high temperature hotmelt adhesive material,

(e) applying each said array of elastic strands as it comes from its groove with its hot adhesive material, without precooling, directly to the surface of said continuous strip, the two arrays being applied on opposite sides of said longitudinal axis while said strip is contacting said rotary



drum and free from pressure rolls and grips, whereby immediate setting of the hotmelt adhesive carried by each strand is obtained at the drum, due to the drum's surface being at an adhesive setting temperature, and the strands are adhesively secured along their entire length to said continuous strip with some portions being elastically stretched and some portions substantially unstretched, and

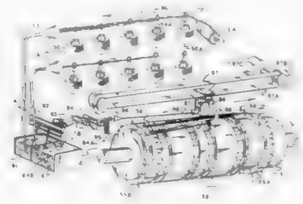
(f) applying and securing absorbent pads onto said continuous strip and severing transversely said strip and said elastic strands, whereby said elastically stretched portions of the elastic strands contract to gather the strip material to which it is secured in the crotch zone.

4,762,583

METHOD FOR MAKING COMPOSITE TWINE STRUCTURES

Charles E. Kaempen, 3202 Larkstone Dr., Orange, Calif. 92669

Division of Ser. No. 716,565, Mar. 27, 1985, Pat. No. 4,680,923.
This application Apr. 1, 1987, Ser. No. 33,492
Int. Cl.[4] B65H *81/00*
U.S. Cl. 156—173 15 Claims



1. A method for making a composite structure having a longitudinal axis comprising the steps of

twisting strands containing continuous filament reinforcements together to form a first ply twine so that each of said filament strands extends in the direction of said axis to exhibit a center-pull helical frequency and configuration defined by a multiple of revolutions of said strands with each of said strands having helixes that are spaced relative to the helixes of the other strands in the direction of said axis,

impregnating said first ply twine with a hardenable adhesive means,

securing a first end of said first ply twine to a first extremity of a forming surface,

disposing a first twine length of said first ply twine to extend in the direction of said longitudinal axis,

suspending said first twine length across at least one flange forming cavity of said forming surface,

securing a first loop end of said first ply twine to a second extremity of said forming surface,

disposing a second twine length of said first ply twine adjacent to said first twine length,

securing a second loop end of said first ply twine to said first extremity,

repeating the steps of disposing said first ply twine as a sequence of said adjacent twine lengths formed from the adjacent placement of a multiple of said longitudinal looped twines having said loop ends secured to opposite said extremities of said forming surface,

securing a second end of said first ply twine to the first extremity of said forming surface,

twisting strands containing continuous filament reinforcements together to form a second ply twine of dry strands,

impregnating said second ply twine with a hardenable adhesive means,

applying said second ply twine transversely across said multiple first ply twine to impose a substantially uniform load thereon and provide a first ply hinge line edge,

deflecting said first ply twine into said flange forming cavity by said second ply twine,

moving said loop ends of said first ply twine secured to said second extremity of said forming surface toward said flange forming cavity, and

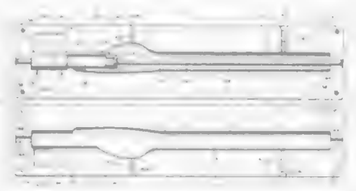
placing said second ply twine upon said first ply twine to tension and straighten said first ply twine.

4,762,584

METHOD OF MOLDING A ONE PIECE INTEGRAL FISHING ROD HANDLE

James E. Andreasen, Magnolia Springs; Casey J. Childre, and David B. Peed, both of Foley, all of Ala., assignors to Lew Childre & Sons, Inc., Foley, Ala.

Filed Jan. 27, 1986, Ser. No. 822,752
Int. Cl.[4] B29C *45/14;* B29D *22/00;* A01K *87/06*
U.S. Cl. 156—245 58 Claims



1. A method of making a one-piece integral fishng rod handle adapted to receive a fishing rod blank therein, the handle having a body portion and a reel seat portion including fishing reel securement means thereon comprising the steps of:

inserting a preformed rod handle reel seat member having a threaded front portion, a reel seat portion and means for mounting the support feet of a fishing reel thereon in a mold cavity which corresponds to the general configuration of a fishing rod handle;

inserting a cylindrical member through said mold cavity, said

VOL 1093 ISS 2 AG 9 1988 UMI

cylindrical member being adapted to receive said reel seat member thereon;

inserting an alignment sheath in said mold cavity, said alignment sheath being adapted to receive said reel seat member and said cylindrical member therethrough, said sheath including means for engaging said reel seat member and means for registering said sheath within said mold cavity whereby said alignment sheath fits substantially over all of the threads of said reel seat member threaded front portion to protect the threads from being fouled with a molding resin;

introducing a modable plastic resin into said mold cavity;

curing said resin; and

removing said molded handle from said mold and said alignment sheath from said molded handle.

4,762,585

PROCESS FOR LINING THE INNER SURFACES OF PIPES OR PIPE SECTIONS

Wolfgang Schneider, Kaiseraugst, and Kurt Amsler, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 667,508, Nov. 1, 1984,. This application Jun. 30, 1986, Ser. No. 881,512

Claims priority, application Switzerland, Nov. 9, 1983, 6036/83; Feb. 27, 1984, 931/84

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—294 **15 Claims**

1. A process for lining the inner surfaces of pipes or pipe sections using the Insituform method by pressing a tubular flexible laminate made up of an essentially liquid-impermeable membrane and a fibrous layer which has been impregnated with a binder which is not yet fully cured with the face with the binder against the inner surface of the pipe by means of liquid pressure in such a way that the laminate takes on the shape of the inner surface of the pipe and the binder becomes fully cured in this state, forming a firmly adhering internal lining, which comprises using a laminate whose fibrous layer has been impregnated with a binder which contains

(a) as sole curing agent a liquid to highly viscous salt of one or more (poly)amines having at least one tertiary nitrogen atom and one or more aromatic polyols or one or more aliphatically substituted phenols, the aliphatic radical having at least 9 carbon atoms, said amine being a heterocyclic tertiary amine selected from the group consisting of the pyrazoles, imidazoles, N-substituted pyrroles where the N-substituent is C_1–C_4-alkyl, phenyl or benzyl, pyridines, pyrazines, indoles, piperidines and piperazines, said amines being unsubstituted or substituted by halogen, alkyl, phenyl or benzyl, and

(b) a liquid epoxy resin or a liquid mixture of epoxy resins, wherein the curing agent component (a) is used in such an amount that there is 0.02 to 0.30 nitrogen equivalent per epoxy equivalent of component (b).

4,762,586

COMBINATION TAPE APPLICATOR AND TAPE DISPENSER

Robert C. Wilkie, 513 N. Electric, Apt. C, Alhambra, Calif. 91801

Filed Jul. 16, 1987, Ser. No. 74,077

Int. Cl.[4] B26F *3/02;* **B32B** *35/00*

U.S. Cl. 156—527 **36 Claims**

1. A dispenser for a roll of pressure sensitive adhesive tape comprising:

a housing having a tape dispensing port adjacent one end wall thereof;

tape carrier means for a roll of tape reciprocally supported within said housing for movement between extended and retracted positions and normally biased to said extended position adjacent said port;

said carrier means having a tape catcher crosswise of and cooperating with said housing in forming a part of said tape dispensing port, said catcher having a surface facing the adhesive side of the leading end of a roll of pressure sensitive tape adapted to be rotatably mounted on said carrier means and said catcher being operable to hold said tape captive rearwardly of the leading end thereof between tape dispensing cycles;

a tape cutter extending crosswise of said dispensing port with the cutting edge thereof facing toward the uncoated side of said tape; and



cutter guard means normally positioned closely adjacent said tape cutter and positioned to prevent said tape from contacting said cutter means so long as said carrier is in an extended position and movable to permit said tape to be severed by said tape cutter when said carrier is in the retracted position thereof.

4,762,587

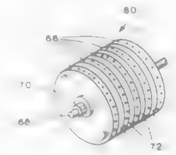
UNIVERSAL TAX STAMPING ASSEMBLY

Philip A. Deal, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 760,900, Jul. 31, 1985, abandoned. This application Sep. 22, 1987, Ser. No. 99,634

Int. Cl.[4] B44C *1/16;* **B44B** *5/00;* **B65C** *9/00*

U.S. Cl. 156—542 **7 Claims**



1. A tax stamping assembly for use in applying tax stamp decals to packs of cigarettes contained in cartons, said tax stamp applying assembly comprising in combination:

(a) a rotatable carton conveying drum having a plurality of carton receiving pockets spaced evenly about its periphery;

(b) means for sizing said carton receiving pockets in accordance with the overall dimensions of the cartons being conveyed by said drum;

(c) at least a first tax stamp applying station positioned adjacent the periphery of said rotatable carton conveying drum intermediate a carton insertion means and a carton ejector means, said station adapted to simultaneously apply a stamp to each of a plurality of cigarette packs in each of said cartons by the application of heat to a plurality of decal-carrying ribbons;

(d) at least one tax stamp ribbon roll assembly that includes a shaft for removably accepting and rotatably supporting a plurality of decal-carrying ribbons and spacer means for maintaining said plurality of decal-carrying ribbons in a predetermined spaced relationship as they are moved to said tax stamp applying station; and

(e) means associated with said tax stamp applying station for simultaneously moving each of said decal-carrying ribbons to said tax stamp applying station and into position adjacent the periphery of said rotatable carton conveying drum.

4,762,588

METHOD OF MANUFACTURING CALCIUM CARBONATE SINGLE CRYSTAL

Shinichi Hirano, 123 Meidai Yadacho Syukusya, 66 Yada-cho 2-chome, Higashi-ku, Aichi; Ryo Toyokuni, and Hiroshi Kuroda, both of Tokyo, all of Japan, assignors to Seiko Instruments & Electronics Ltd. and Shinichi Hirano, both of Tokyo, Japan

Filed Oct. 29, 1986, Ser. No. 924,402

Claims priority, application Japan, Nov. 12, 1985, 60-253124

Int. Cl.[4] C30B *7/10*

U.S. Cl. 156—623 R **28 Claims**



1. A method of manufacturing calcium carbonate single crystal wherein the calcium carbonate single crystal is grown by hydrothermal synthesis which applies heat and pressure to a starting material composed of calcium carbonate crystal within a nitrate aqueous solution at a temperature and pressure effective to grow the calcium carbonate single crystal.

4,762,589

METHOD OF MAKING A TUBULAR RUBBER PRODUCT HAVING A POLYAMIDE OR POLYESTER RESIN LAYER

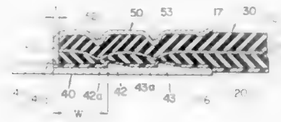
Setsuo Akiyama, Higashimurayama; Yukio Fukuura, Kawagoe; Masato Yoshikawa, Tokyo; Takeyuki Matsuda, Yokohama; Hisanobu Monobe, Yokohama; Shigeki Ohkubo, Yokosuka, and Shiro Yoshida, Yokohama, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 669,845, Nov. 9, 1984, Pat. No. 4,657,285. This application Oct. 16, 1986, Ser. No. 919,493

Claims priority, application Japan, Nov. 22, 1983, 58-220095

Int. Cl.[4] C09J *5/02*

U.S. Cl. 156—307.3 **13 Claims**



1. A process for producing a tubular rubber product, in which a polyamide resin and/or polyester resin layer is formed to an inner circumferential surface, outer circumferential surface or an intermediate layer of the main body of the tubular rubber product, which comprises:

(a) laminating a polyamide resin film or a polyester resin film having a softening point in a vulcanization temperature region of a subsequently applied rubber to an adhesive rubber comprising a resorcine, a formaldehyde-forming substance and a vinylpyridine-butadienestyrene copolymer rubber;

(b) laminating said laminated film from step (a) to the surface of the main body of a non-vulcanized tubular rubber product so that the adhesive rubber faces the surface of the main body; and

(c) vulcanizing the non-vulcanized tubular rubber product to bond said film to the main body of said tubular product through said adhesive rubber, thereby forming a layer of said resin film on the tubular rubber product main body.

4,762,590

CAUSTICIZING PROCESS

Holger Engdahl, Savonlinna, Finland, assignor to Enso-Gutzeit Oy, Helsinki, Finland

Filed Jun. 3, 1986, Ser. No. 870,244

Int. Cl.[4] D21C *11/12*

U.S. Cl. 162—30.11 **7 Claims**



1. A causticizing process for the production of white liquor and lime sludge from soda liquor and unslaked lime, comprising the steps of slaking a quantity of unslaked lime with the use of a slaking medium containing strong white liquor, and combining the mixture of the slaking medium and slaked lime obtained by the slaking step with an amount of soda liquor, so that a causticizing reaction is caused between the soda liquor and the slaked lime yielding white liquor and lime sludge.

4,762,591

APPARATUS FOR REACTING LIGNOCELLULOSIC MATERIAL WITH A GAS PHASE COMPRISING A NITROGEN OXIDE AND OXYGEN UNDER CONTROLLED GAS PRESSURE

Hans O. Samuelson, Gothenburg, Sweden, assignor to Mo och Domsjo Aktiebolag, Oraskoldsvik, Sweden

Continuation of Ser. No. 719,173, Apr. 3, 1985, abandoned, which is a continuation of Ser. No. 572,282, Jan. 20, 1984, abandoned. This application Mar. 5, 1987, Ser. No. 21,954

Claims priority, application Sweden, Mar. 9, 1984, 8300388

The portion of the term of this patent subsequent to Sep. 27, 2000, has been disclaimed.

Int. Cl.[4] D21C *1/08, 7/00*

U.S. Cl. 162—237 **9 Claims**

1. Apparatus for reacting lignocellulosic material with a gas phase comprising a nitrogen oxide and oxygen under controlled gas pressure in the presence of water, as a pretreatment before an alkaline delignification, the oxygen suppressing rapid initial reactions between nitrogen oxide and lignin leading to demethylation of the lignin, and indirectly leading to decreases in the regeneration of consumed nitrogen oxide by secondary reactions between modified lignin, nitric acid and oxygen gas

VOL 1093 ISS 2 AG 9 1988 UMI

resulting in the formation of an active form of nitrogen oxide; while promoting reactions between nitrogen oxide and water forming nitric acid; reoxidation of reduced nitrogen oxide; and the secondary oxidation with oxygen of modified lignin and nitrogen oxide, comprising, in combination, in continuous flow sequence;

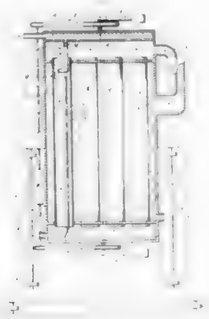
(1) a supply of water-containing lignocellulosic material, a supply of nitrogen oxide, and a supply of oxygen containing gas;
(2) a first reaction chamber receiving a continuous flow of water-containing lignocellulosic material, and nitrogen oxide from the supply of water-containing lignocellulosic material and the supply of nitrogen oxide;
(3) a first inlet for introducing lignocellulosic material into the first reaction chamber;
(4) a second inlet with control means for introducing nitrogen oxide into the first reaction chamber;
(5) a first outlet for withdrawing a continuous flow of lignocellulosic material after reaction with nitrogen oxide from the first reaction chamber;
(6) gas locks retaining gas pressure in the first reaction chamber at each of the first inlet and first outlet;
(7) a second reaction chamber in connection with the first reaction chamber via the gas lock at the outlet thereof and receiving a continuous flow of lignocellulosic material from the first reaction chamber after reaction with nitrogen oxide;
(8) a third inlet with control means for introducing oxygen from the supply of oxygen containing gas into the second reaction chamber;
(9) a second outlet for withdrawing a continuous flow of lignocellulosic material after reaction with oxygen from the second reaction chamber; and
(10) a gas lock retaining gas pressure in the second reaction chamber at the second outlet; the second reaction chamber having a volume that is at least 2.5 times the volume that is at least 2.5 times the volume of the first reaction chamber.

4,762,592

ORBITAL DRIVE EVAPORATOR

Yao T. Li, Huckleberry Hill, Lincoln, Mass. 01773

Continuation-in-part of Ser. No. 598,473, Apr. 9, 1984, which is a continuation-in-part of Ser. No. 367,251, Apr. 7, 1982, Pat. No. 4,441,963, which is a continuation of Ser. No. 201,380, Oct. 27, 1980, abandoned, which is a continuation-in-part of Ser. No. 961,452, Nov. 16, 1978, Pat. No. 4,230,529. This application Oct. 20, 1986, Ser. No. 921,142
Int. Cl.[4] B01D *3/02, 1/22, 1/28*
U.S. Cl. 202—172 14 Claims



1. In an evaporator having a container, a feed liquid inlet to the container, an outlet for condensate from the container, at least one vertically oriented heat transfer tube mounted within the container so that the feed liquid can evaporate at the interior surface of said heat transfer tube to form a vapor stream by taking heat from the vapor stream condensing at its exterior surface to form the condensate the improvement comprising an orbital drive and suspension system comprising

A. a base,
B. at least one orbiting counterweight,
C. means coupled to said container for mounting said counterweight to rotate about a first vertical axis generally parallel to said heat transfer tube,
D. means to rotate said counterweight and said counterweight mounting means,
E. means for directing the feed liquid from said inlet to the interior of said heat transfer tube, and

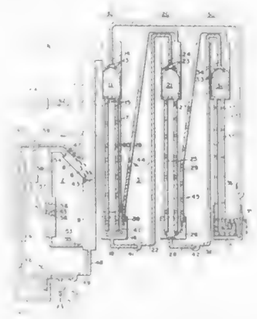
means mounted on said base for supporting said container to revolve in response to the rotation of said counterweight as an orbiting two-body system about a common second vertical orbiting axis for said container and said counterweight, said supporting means with said container mounted thereon having a low lateral stiffness in a plane orthogonal to said first and second vertical axes, and having high torsional rigidity, said container supporting means providing a dynamic balance for said evaporator during said rotation and said revolving.

4,762,593

DISTILLING APPARATUS

Philip G. Youngner, 919 - 18th St. S.E., St. Cloud, Minn. 56301

Continuation of Ser. No. 874,089, Jun. 13, 1986, abandoned.
This application Jun. 17, 1987, Ser. No. 63,307
Int. Cl.[4] B01D *3/10*
U.S. Cl. 202—186 9 Claims



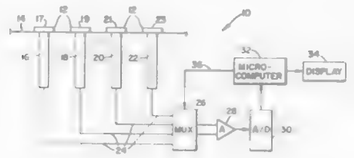
1. A vacuum distilling apparatus comprising in combination:
(a) evaporation apparatus including a boiling chamber, means for supplying raw liquid to said boiling chamber at a predetermined level, and connecting conduit means for directing vapors from said boiling chamber to a primary stage of a condensation apparatus;
(b) said primary condensation stage including a closed primary condensation chamber above said predetermined level and connected to, and being in fliud communication with, said connecting conduit means to receive, cool and condense said vapors therefrom, a primary collection chamber below said primary condensation chamber, at least one primary bubble tube connected to the lower portion of said primary condensation chamber and extending downward into said primary collection chamber, for carrying gas bubbles and distillate downward from said primary condensation chamber to said primary collection chamber, primary distillate conduit means extending from the bottom of said primary collection chamber to a final distributor in a final condensation chamber of a final condensation stage, said primary distillate conduit means including a primary pump for delivering essentially gas-free distillate from said primary collection chamber to said final condensation chamber, and a primary gas carrier tube connecting the upper portion of said primary collection chamber, at a level above the lower ends of said at least one primary bubble tube, to said final condensation chamber;
(c) a final condensation stage including said final condensation chamber having said final distributor therein, for receiving said distillate from said final distributor and gases from said primary gas carrier tube, at least one final bubble tube connected to the lower portion of said final condensation chamber and extending downward into a final distillate downward from said final condensation chamber to said final distillate container wherein a liquid level is maintained; and
(d) a valved recycle conduit extending from the lower portion of said final distillate container to a primary distributor within said primary condensation chamber for supplying cooled distillate to said primary stage for condensing said vapors from said boiling chamber.

4,762,594

APPARATUS AND METHODS FOR SENSING FLUID COMPONENTS

Vinodhini Gunasingam, Bethesda, Md., assignor to MedTest Systems, Inc., Bethesda, Md.

Filed Jan. 29, 1987, Ser. No. 8,554
Int. Cl.[4] G01N *27/26*
U.S. Cl. 204—1 T 13 Claims



1. A method for calibration measurement of chemicals in a solution employing only N+1 sensors when N is equal to the number, including one, of chemicals to be sensed, at least a first chemical species to be sensed in a solution having at least two chemicals and employing at least a first ion specific sensor and a second ion specific sensor where the first sensor is a combination electrode sensitive only to the first and a second dissimilar chemical species and the second sensor is sensitive only to the second species, the method comprising the steps of:
(a) contacting the sensors with a solution containing at least the first and second dissimilar chemical species,
(b) obtaining a first signal determined by the differences of the electrical charges developed by the two sensors when contacted by the solution
(c) conveying the first signal to a signal processor,
(d) contacting the sensors with at least a second solution containing known quantities of the first and second species and obtaining at least a second signal corresponding to the difference between the charges developed in response to the second solution by the first and second sensors,
(e) conveying at least the second signal to a signal processor,
(f) establishing algebraic constants from at least the second signal,
(g) inputing the constants into a calculating device for determining the concentration of the first dissimilar chemical species.

4,762,595

ELECTROFORMING ELEMENTS

Dennis S. Postupack, Natrona Heights, and Jean P. Pressau, Evans City, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 605,505, Apr. 30, 1984, abandoned.
This application Sep. 18, 1987, Ser. No. 99,692
Int. Cl.[4] C25D *1/08*
U.S. Cl. 204—11 7 Claims

1. A method for producing an electroforming mandrel comprising the steps of:
a. providing a glass substrate which transmits actinic radiation with a masking pattern in the form of a stain pattern within the glass which masks the transmission of actinic radiation to form a photomask;
b. depositing on a surface of a second substrate a continuous conductive film;
c. depositing on the conductive film a continuous layer of a photoresist;
d. exposing said photoresist to actinic radiation through said photomask; and
e. developing said photoresist to selectively remove a portion thereof in order to uncover a pattern of the underlying conductive film which corresponds with the pattern of the photomask to produce an electroforming mandrel whereupon metal is deposited on the uncovered pattern of the conductive film.

4,762,596

PROCESS FOR REMOVAL OF HYDROGEN HALIDES OR HALOGENS FROM INCINERATOR GAS

Haan S. Huang, Darien, and Norman F. Sather, Naperville, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 21, 1987, Ser. No. 87,835
Int. Cl.[4] C25B *1/00*
U.S. Cl. 204—60 7 Claims

1. A process for reducing the level of one or more halogens and/or halogen acids in a combustion gas containing an organic pollutant, comprising the steps of:
providing the combustion gas,
providing an electrochemical cell having a negative electrode, an electrolyte, a positive electrode, and means for applying a voltage across the electrodes, and
electrochemically reducing the amount of halogen and/or halogen acids in the combustion gas at a temperature above about 700° C. by contacting the combustion gas with the negative electrode to form a halide ion for transfer through the electrolyte to the positive electrode.

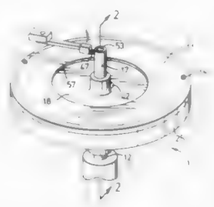
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,597

ELECTROCHEMICAL OXIDATION OF AN ORE TO RELEASE METAL VALUES OF INTEREST

David M. Scott, #316-980 Wordsley Street, Victoria, B.C., Canada V9A 6Y4

Filed Aug. 5, 1987, Ser. No. 81,691
Int. Cl.[4] C25C *1/00*
U.S. Cl. 204—105 R 12 Claims



1. A process for oxidizing a sulfidic ore to recover metal values of interest, comprising:

applying a pulp of crushed ore and aqueous chloride containing electrolyte to an active surface of the anode of a centrifugal electrolytic reactor, the reactor having a central rotor cathode, the circumference of which is enclosed by an anode housing defining the active anode surface spaced about the circumference of the rotor;

spinning the reactor in the presence of sufficient chloride containing electrolyte to establish an electric circuit between the cathode and the anode, and so that a centrifugal fluid pressure of from about 10 psi to about 100 psi is obtained at the active anode surface; and

providing a current density at the active anode surface of from about 0.1 amp/sq.inch to about 1.0 amp/sq.inch so that chlorine is generated at the anode and the crushed ore particles at the active anode surface are oxidized to release metal values of interest.

4,762,598

ELECTROLYTIC METAL RECOVERY

Peter R. Drew, 7 Peter Place, Melton, Australia (3337)

PCT No. PCT/AU86/00138, § 371 Date Jan. 12, 1987, § 102(e) Date Jan. 12, 1987, PCT Pub. No. WO86/06761, PCT Pub. Date Nov. 20, 1986
PCT Filed May 15, 1986, Ser. No. 12,001
Claims priority, application Australia, May 15, 1985, PH0573
Int. Cl.[4] C25C *1/20*
U.S. Cl. 204—109 8 Claims



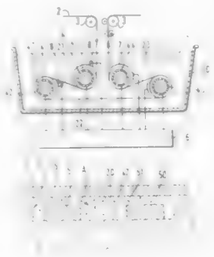
1. A method of electrolytically recovering silver from a solution which contains silver and from which, at lower silver concentrations and above a critical electrical potential, silver sulphide precipitates and/or hydrogen sulphide gas is generated, comprising applying a direct electrical current derived from an AC power source across a pair of electrodes in the solution and thereby through the solution to cause silver to be deposited at that electrode which is the cathode, wherein the ripple of the applied direct current is controlled so that, for any concentration of silver in the solution, the instantaneous magnitude of the electrical potential across the electrodes is sufficient to sustain deposit of silver on the cathode while the peak values of said electric potential are below the critical potential at and above which silver sulphide is precipitated from the solution and/or hydrogen sulphide gas is generated from the solution.

4,762,599

PROCESS AND PLANT FOR AN ELECTROLYTIC TREATMENT OF A METAL STRIP

Pierre-Marie Damiron, Neuilly; Jean-Luc Le Goupil, Paris, and Pascal Ménage, Rueil Malmaison, all of France, assignors to Clecim, Courbevoie Cedex, France

Filed Dec. 31, 1986, Ser. No. 948,196
Claims priority, application European Pat. Off., Oct. 20, 1986, 86402354.4
Int. Cl.[4] C25F *1/04*
U.S. Cl. 204—144.5 19 Claims



10. Process for electrolytic treatment of a metal strip by passing within a bath of electrolytic liquid along a direction of travel defined by a plurality of rolls each rotating around an axis perpendicular to the direction of travel, at least two of said rolls being entirely submerged within the bath of electrolytic liquid and each constituting an electrode-roll comprising on its periphery a cylindrical conductive wall partially covered by an insulating coating consisting of a series of uniformly spaced bearing rings of uniform height centered in planes perpendicular to the axis of the rolls and which are separated by recesses providing annular treatment spaces, the bottom of which consist of said conductive wall, said electrode-rolls being connected to an electric supply circuit so that, at each roll, the strip and the conductive wall of the roll are at different potential,

said treatment being produced in separate parallel bands by causing each face of the strip to be treated to pass over at least two submerged electrode-rolls the bearing rings of which are offset axially from one electrode-roll to the other so that, in the direction of travel of the strip, the lengthwise bands treated between the bearing rings of one roll correspond to the bearing regions on the rings of the succeeding roll and vice versa, at least some of the gas produced by electrolysis on the strip being mixed with the electrolytic liquid travelling in the treatment spaces between the rings.

4,762,600

PARTIALLY REDUCED FERRIC OXIDE CATALYST FOR THE MAKING OF AMMONIA VIA THE PHOTASSISTED REDUCTION OF MOLECULAR NITROGEN

Mahmoud M. Khader, Albany, Calif., and Norman N. Lichtin, Newton, Mass., assignors to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 891,038, Jul. 31, 1986, Pat. No. 4,703,030. This application Jul. 17, 1987, Ser. No. 74,833
Int. Cl.[4] B01J *19/12*
U.S. Cl. 204—157.46 8 Claims

1. A method for making ammonia via the reduction of molecular nitrogen comprising the steps of:

combining molecular nitrogen and water with a catalyst active over an extended time period for photoassisted catalytic reaction as a reaction mixture, said extended activity catalyst comprising iron oxide which has been exposed to a flowing mixture of molecular hydrogen and water vapor at a temperature ranging from about 350°–600° C. and which was then heated in an oxygen containing environment at a temperature ranging from about 350°–600° C. to yield a partially reduced iron oxide catalyst containing not more than 5 atom percent of Fe(II); and

adding photoenergy to said reaction mixture.

4,762,601

COPPER BATH FOR ELECTROLESS PLATING HAVING EXCESS COUNTER-CATION AND PROCESS USING SAME

Gerald Krulik, Laguna Hills; Stephen C. Davis, Long Beach, and John B. Davison, Mission Viejo, all of Calif., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Nov. 10, 1986, Ser. No. 929,242
Int. Cl.[4] B01D *13/02*; C23C *18/16*
U.S. Cl. 204—182.4 6 Claims

1. A process for electroless plating of copper onto catalyst-treated surfaces with a plating bath and continuously regenerating said plating bath, the process comprising

providing a plating chamber wherein metallic copper is electrolessly deposited from a plating bath onto catalyst-treated surfaces,

providing an electrodialysis cell comprising a cathode compartment having a cathode, a center compartment having no electrode, and an anode compartment having an anode, said cathode compartment being separated from said center compartment by an anion permselective membrane and said center compartment being separated from said anode compartment by an anion permselective membrane, said cathode compartment containing a basic aqueous solution, said center compartment containing partially spent plating bath, and said anode compartment containing an electrolyte,

providing means for recirculating plating bath from said plating chamber to said center compartment of said electrodialysis cell and back to said plating chamber,

maintaining within said plating chamber an aqueous plating bath comprising cupric ion at a concentration of between about 0.01 and about 0.1 molar, a chelating ligand for cupric ion at a concentration of between about 1.5 and about 3 molar equivalents of said cupric ion concentration, formaldehyde at a concentration of between about 0.05 and about 0.75 molar, an hydroxyl ion concentration sufficient to provide a pH of between about 11.0 and about 13, non-copper cation in sufficient concentration to serve as a counter-cation for said hydroxyl ion concentration plus an excess of non-copper cation of between about 0.2 and about 2 normal above that required to counter said hydroxyl ion concentration, and non-hydroxyl anions at concentrations sufficient to charge-balance said bath, said non-hydroxyl anions being of such type and concentration as to be consistent with efficient copper plating on catalyst-treated surfaces,

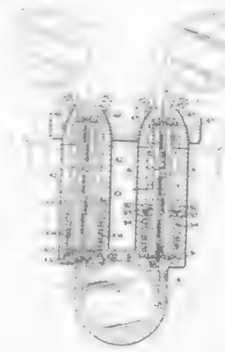
recirculating plating bath between said plating chamber and said center compartment of said electrodialysis cell, and establishing a current between said cathode and said anode so to regenerate plating bath in said center compartment, replenishing said bath with hydroxyl ions and removing non-hydroxyl anions from said bath.

4,762,602

METHOD AND APPARATUS FOR PROCESSING METAL STRIP IN VERTICAL ELECTROPLATING CELLS

Werner Bechem, Hilchenbach; Johann J. May, Iserlohn; Hubertus Peters, Dortmund; Roland Schnettler, Schwerter Strasse; Werner Solbach, Wallmeeroth, and Dietrich Wolfhard, Dortmund, all of Fed. Rep. of Germany, assignors to Hoesch Stahl Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 842,534, Mar. 21, 1986, abandoned. This application Dec. 23, 1986, Ser. No. 945,780
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1985, 3510592
Int. Cl.[4] C25D *17/00*
U.S. Cl. 204—206 6 Claims



1. A vertical electroplating cell with soluble anodes for depositing metal on metal strips in which the strip to be processed descends from an upper conductor roll to a lower deflecting immersion roll and from there is guided upwardly to a further upper conductor roll, and wherein the descending and ascending strip portions to be processed are each located in a canal between vertically arranged rows of soluble anodes and are encountered by an electrolyte flow of high velocity which moves in the direction opposite to the direction of strip movement, characterized in that inside of the electroplating cell housing there are means for producing four separate circulating flows of electrolyte such that in each of the canals (6, 8) receiving the strip portions (11, 12) the electrolyte flow is directed oppositely to the direction of movement of the strip, and which flows in the outer four flow canals between the rear sides of the anodes (5, 7) and the housing walls (41, 42) is driven by one row of jet pumps and redelivered to the canals between the strip and the anodes.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,603

PROCESS FOR FORMING ELECTRODES

Louis G. Morin, Tarrytown, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 604,397, Apr. 26, 1984, Pat. No. 4,680,100, which is a continuation of Ser. No. 507,604, Jun. 24, 1983, abandoned. This application May 13, 1987, Ser. No. 50,066

Int. Cl.[4] C25B *9/00*; C25C *7/00*; C25D *17/10*; H02G *15/02*

U.S. Cl. 204—279 10 Claims



1. In a process for making a fiber containing electrode, comprising:

providing a continuous length of a plurality of semi-metallic core fibers;

plating at least an end of each of the core fibers with a substantially uniform, firmly adherent coating of metal,

positioning an electrical connector for contact with the metal coated ends of said core fibers, and

joining the metal coated ends and the electrical connector by an electrically conductive metal which extends between said metal coated fiber ends to form an integral fiber/-metal matrix which provides an efficient electrical connection.

4,762,604

OXYGEN CONCENTRATION SENSING APPARATUS

Masahiko Asakura; Noritaka Kushida; Takanori Shiina, and Shin'ichi Kubota, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1987, Ser. No. 28,113

Claims priority, application Japan, Mar. 19, 1986, 61-63204

Int. Cl.[4] G01N *27/58*

U.S. Cl. 204—406 2 Claims



1. An oxygen concentration sensing apparatus comprising:

an oxygen sensor sensitive to oxygen in a gas under measurement and operative to produce an output signal having a magnitude proportional to the concentration of oxygen in the gas under measurement when contacted by a stream of the gas and having,

a sensor cell element made of a first active plate of an oxygen ion conductive solid electrolyte and a first pair of electrodes sandwiching said first active plate, and

an oxygen pump element made of a second active plate of an oxygen ion conductive solid electrolyte and a second pair of electrodes sandwiching said second active plate,

said first and second active plates confronting a restricted region into which said gas under measurement is introduced;

current supply means for supplying a pump current across said second pair of electrodes of said oxygen pump element;

limit voltage setting means for setting a limit voltage in response to a monitored voltage across said second pair of electrodes of said oxygen pump element; said monitored voltage indicating an internal resistance of said oxygen pump element, said limit voltage setting means reducing said limit voltage when said monitored voltage is higher than a predetermined reference voltage to prevent blackening at low temperature levels and

limit means for reducing the pump current supplied across said second pair of electrodes of said oxygen pump element when a voltage generated across said first pair of electrodes of said sensor cell element exceeds said limit voltage set by said limit voltage setting means.

4,762,605

OXYGEN SENSOR

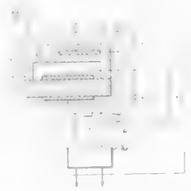
Takeo Tanaka; Keisuke Sugimoto; Yuji Sugiyama; Hideo Shiraishi; Teizo Takahama, and Masahiko Masuda, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jan. 30, 1987, Ser. No. 8,655

Claims priority, application Japan, Feb. 1, 1986, 61-13495[U]; Feb. 1, 1986, 61-13496[U]; Mar. 5, 1986, 61-47512; Jun. 3, 1986, 61-128747; Jun. 13, 1986, 61-89387[U]; Jul. 24, 1986, 61-174088

Int. Cl.[4] G01N *27/58*

U.S. Cl. 204—406 14 Claims



1. A limited current type oxygen sensor comprising:

an oxygen-ion conducting solid electrolyte element, said element having a top surface and a bottom surface;

a first electrode on said bottom surface;

a second electrode on said top surface;

means for covering said second electrode, said covering means including at least one diffusion orifice permitting ambient gas to diffuse therethrough toward said second electrode;

means for alternately applying a first voltage to one of said electrodes and for measuring a level of a first current flowing through said element between said first electrode and said second electrode responsive to the application of said first voltage and a second voltage different from said first voltage to said one electrode and for measuring a level of a second current flowing through said element between said first electrode and said second electrode responsive to the application of said second voltage, said first voltage having a level less than the theoretical water decomposition voltage such that said first current corresponds to the decomposition of oxygen on said surface of said second electrode and said second voltage having a level greater than the theoretical water decomposition voltage such that said second current corresponds to the decomposition of oxygen and water vapor on said surface of said second electrode; and

operational circuit means receiving said first current and said second current and for determining therefrom the dry-gas-based and humid-gas-based oxygen content of said ambient gas.

4,762,606

MINI CHIP CARRIER SLOTTED ARRAY

Randolph E. Root, Westminster, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 722,644, Apr. 12, 1985. This application Feb. 18, 1987, Ser. No. 16,445

Int. Cl.[4] B65D *73/02*

U.S. Cl. 206—328 9 Claims



1. A chip carrier array comprising:

a planar ceramic substrate; and

a plurality of individual chip carriers formed in said substrate and having outer edges defined by elongated slots which extend from a plurality of severable support bridges located along the sides of each of said chip carriers which maintain the individual chip carriers within the array, each of said plurality of chip carriers including corners which are defined by said elongated slots, each of said chip carriers comprising metallized edge interconnects.

4,762,607

HYDROCONVERSION PROCESS WITH COMBINED TEMPERATURE AND FEED STAGING

Clyde L. Aldridge; William E. Lewis; Roby Bearden, Jr., and Francis X. Mayer, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 857,358, Apr. 30, 1986. This application Apr. 13, 1987, Ser. No. 37,511

Int. Cl.[4] C10G *65/10*

U.S. Cl. 208—59 12 Claims

1. In a slurry hydroconversion process, for converting a heavy hydrocarbonaceous oil to lower boiling products, which process takes place in at least two zones, said process comprising the steps of:

(a) adding a catalyst or a catalyst precursor to a chargestock comprising a first portion of fresh heavy hydrocarbonaceous oil to form a mixture, which hydrocarbonaceous oil contains materials boiling above about 1050° F.;

(b) reacting the resulting mixture with a hydrogen-containing gas in a first hydroconversion zone at first hydroconversion conditions comprising a temperature range from about 780° F. to about 900° F., and a hydrogen partial pressure from about 50 to about 5,000 psig, to produce a first hydroconverted oil which has a lower boiling range than the hydrocarbonaceous chargestock;

(c) introducing at least a portion of the effluent of said first hydroconversion zone, including at least a portion of said first hydroconverted oil into a second hydroconversion zone at second hydroconversion conditions comprising the range of conditions of said first hydroconversion zone but with the proviso that the temperature of the second hydroconversion zone be at least about 10° F. higher than said first hydroconversion zone, to react with a hydrogen-containing gas and produce a second hydroconverted oil which has a boiling range lower than said first hydroconverted oil, the improvement which comprises:

(d) introducing a second portion of said fresh heavy hydrocarbonaceous oil to said second hydroconversion zone.

4,762,608

UPGRADING OF PYROLYSIS TAR

Rostislav Didchenko, Middleburg Heights, and Eric M. Dickinson, Bay Village, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 20, 1984, Ser. No. 684,140

The portion of the term of this patent subsequent to Apr. 26, 2005, has been disclaimed.

Int. Cl.[4] C10G *45/00*

U.S. Cl. 208—89 15 Claims

1. A method for upgrading a pyrolysis tar used to form coke which comprises hydrotreating a pyrolysis tar feed in the presence of a catalyst having a hydrogenation component and an acidic component provided by crystalline alumino-silicate, noncrystalline alumino-silicate, acidic alumina, sulfated zirconia, steam activated alumina, or steam activated alumino-silicate, wherein the catalyst has at least about 65 micromoles of acid sites per gram of the catalyst, wherein the acid sites per gram are measured by the ammonia adsorption/TGA method at about 400° C. after calcination of the catalyst to 500° C.; and producing hydrogen while hydrotreating the pyrolysis tar feed.

4,762,609

EXTRACTION OF OIL FROM STABLE OIL-WATER EMULSIONS

Stephen C. Paspek, North Royalton, and Christopher P. Eppig, Cleveland Hts., both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jul. 9, 1987, Ser. No. 71,433

Int. Cl.[4] C10G *33/00*

U.S. Cl. 208—187 17 Claims



1. A process of extracting oil from oil-water emulsions containing suspended solid particulates comprising the steps of:

(A) introducing said emulsion into a vessel,

(B) pressurizing the vessel by adding a volatile hydrocarbon whereby said volatile hydrocarbon in the vessel is in the liquefied state and forms a two-phase system with said emulsion,

(C) maintaining said pressure for a period of time sufficient to effect the displacement of at least some of the oil in the emulsion phase with said volatile hydrocarbon, the displaced oil being dissolved in the volatile hydrocarbon phase,

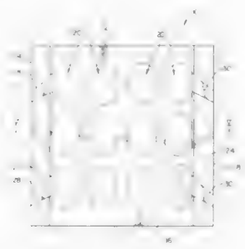
(D) withdrawing at least a portion of said oil-containing volatile hydrocarbon phase while maintaining the pressure on the two-phase system,

(E) reducing the pressure on the two-phase system whereby volatile hydrocarbon dissolved in the emulsion is vaporized, and the emulsion separates into a water phase and an oil phase, and

(F) recovering the oil phase from the water phase.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,610
SCREENING ARRANGEMENT
Manfred F. A. Freissle, Johannesburg, South Africa, assignor to Screenex Wire Weaving Manufacturers (Proprietary) Limited, Alberton, South Africa
Filed Sep. 30, 1986, Ser. No. 914,679
Claims priority, application South Africa, Oct. 21, 1985, 85/8082
Int. Cl.[4] B07B 1/46
U.S. Cl. 209—397 1 Claim



1. A screening panel molded of a suitable synthetic plastics material and having screening apertures and which is adapted to be secured to a support frame in a side-by-side abutting relationship with similar panels, in which the panel has a periphery which includes at least two sides which are substantially parallel to each other, and ridges of an angular cross-sectional configuration on the substantially parallel sides projecting above the screening surface of the panel so that the ridges are spaced from each other along the two substantially parallel sides along the periphery of the panel, and which panel includes grooves in the ridges leading directly into screening apertures in the panel, the grooves being positioned at an angle to the longitudinal axis of the panel so that when liquid flowing across the panel and across the ridges strikes against the sides of the grooves, the liquid is deflected directly into the screening apertures, and wherein the ridges on the panel are so arranged that, when two such panels are fitted on a support frame in a side-by-side abutting relationship, the ridges on adjacent panels abut each other to thereby form a larger ridge of double the cross-sectional configuration than that of a single ridge.

4,762,611
WATER QUALITY INDICATION SYSTEM
Richard A. Schipper, Leucadia, Calif., assignor to Myron L Company, Inc., Carlsbad, Calif.
Filed Sep. 16, 1987, Ser. No. 97,050
Int. Cl.[4] B01D 35/14
U.S. Cl. 210—85 12 Claims

1. A water conductivity sensor and indicating system comprising in combination:
a water faucet having a base;
indicating means carried by said base and responsive to electrical signals for indicating whether the conductivity of water being delivered to said faucet is less than a preselected water conductivity;
sensing means responsive to the electrical conductance of water for generating electrical signals indicative of water conductivity; and
power consumption limiting means for limiting power consumption by said display means comprising at least one of



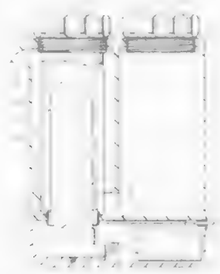
a liquid crystal display incorporated in said indicating means and a water flow responsive switch.

4,762,612
ANAEROBIC FLUIDIZED BED APPARATUS
Motoyuki Yoda, Sagamihara; Mikio Kitagawa, Ayase, and Miwako Watanabe, Yamato, all of Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan
Filed Mar. 19, 1987, Ser. No. 27,773
Claims priority, application Japan, Mar. 31, 1986, 61-74043
Int. Cl.[4] C02F 3/28
U.S. Cl. 210—150 8 Claims



1. An anaerobic fluidized bed apparatus comprising:
a fluidized bed type reaction tank having raw wastewater introduction means provided at a lower portion of said tank, treated water removing means and produced gas exhaust means provided at an upper portion of said reaction tank;
a bed in said reaction tank, said bed comprising granular carriers not larger than 300 μm in diameter and not smaller than 1.1 in specific gravity;
means for recycling a part of treated water from the upper portion of said reaction tank to the lower portion of said reaction tank; and
said bed being established such that a ratio h/H of an initial bed height h to an effective height H of said reaction tank is within a range of from 0.05 to 0.3.

4,762,613
WATER PURIFIERS
Malcolm R. Snowball, St. Leonards-on-Sea, Great Britain, assignor to William Still & Sons Limited, East Sussex, Great Britain
Continuation of Ser. No. 857,646, Apr. 29, 1986, abandoned.
This application Oct. 1, 1987, Ser. No. 104,515
Claims priority, application United Kingdom, May 24, 1985, 8513173
Int. Cl.[4] C02F 1/32
U.S. Cl. 210—192 4 Claims



1. A portable ultra-violet ray water sterilizer comprising
a container having first and second chambers with a water passage therebetween only adjacent the bottom internal surfaces of said chambers, said container being sized so that it is manually portable,
a water outlet adjacent the top of said first chamber, and a water inlet for said second chamber, wherein said water outlet is a pouring spout and
a germicidal ultra-violet ray lamp fixed in said first chamber, said lamp extending up from the bottom internal surface of said first chamber, said first chamber and said lamp being sized to provide a relatively close fit therebetween so that all water is sterilized at it flows through said first chamber between said passage and whereby tipping said container causes substantially all of said water in said second chamber to flow through said first chamber between said lamp and the surface of said first chamber, sterilizing said water as it flows through said first chamber and out said container.

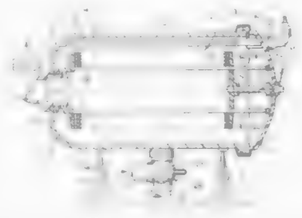
4,762,614
APPARATUS FOR REMOVAL OF SURFACE FILMS FROM NON-ABSORBENT ARTICLES
Francis J. Figiel, Boonton, and Harry F. Osterman, Westfield, both of N.J., assignors to Allied-Signal Inc., Morristownship, N.J.
Division of Ser. No. 589,865, Mar. 19, 1984, Pat. No. 4,636,320, which is a continuation-in-part of Ser. No. 395,210, Jul. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 220,206, Dec. 24, 1980, abandoned. This application Oct. 1, 1986, Ser. No. 894,527
Int. Cl.[4] B01D 12/00, 17/028
U.S. Cl. 210—195.1 5 Claims

1. Apparatus for separating a less dense liquid from a relatively more dense liquid comprising:
(a) walls and a bottom defining a tank for holding a liquid mixture of less dense liquid and relatively more dense liquid,
(b) walls defining an overflow channel positioned to receive said liquid mixture by overflow from said tank,
(c) walls and a bottom defining a separator chamber for receiving liquid from said overflow channel for allowing said mixture of less dense liquid and relatively more dense liquid to separate into a lower dense liquid phase and an upper less dense liquid phase respectively, which chamber contains an exit means in the upper portion thereof where said less dense liquid collects for continuously removing from the apparatus the upper phase of less dense liquid from said chamber,
(d) an opening means in said overflow channel defining an exit channel for liquid from said overflow channel to said separator chamber which exit channel enters said separator chamber at an intermediate height below the exit means for the upper phase of less dense liquid in said separator chamber, and



(e) an opening means in the lower portion of said separator chamber where relatively more dense liquid collects defining an underflow channel for continuously transferring the lower phase of relatively more dense liquid to walls and a bottom defining a holding chamber, which underflow channel is located below the exit channel for liquid from the overflow channel and which underflow channel has a cross-sectional area greater than the cross-sectional area of said exit channel to prevent pressure build-up.

4,762,615
SEMI-AUTOMATIC FLUID FILTER
Mordeki Drori, 89 Zahal Street, Kiron, Israel
Filed Jul. 9, 1987, Ser. No. 71,328
Claims priority, application Israel, Aug. 15, 1986, 79723
Int. Cl.[4] B01D 29/02
U.S. Cl. 210—333.01 20 Claims



1. A fluid filtering device, comprising: a housing having a fluid inlet and a fluid outlet for the fluid to be filtered, and a flushing outlet for the dirt separated from the fluid; a supporting core extending longitudinally within said housing; a plurality of annular filter discs supported as a stack on said supporting core; a pressure plate supported at one end of said stack, and movable in one longitudinal direction to tighten the stack by pressing the discs together, or in the opposite direction to loosen the stack; and a cleaning nozzle supported within the housing for movement along the length of the stack and having its axis oriented to apply a flushing fluid eccentrically to the discs, when the stack is loosened, to rotate the disc on the supporting core and thereby to flush the dirt particles therefrom through the flushing outlet.

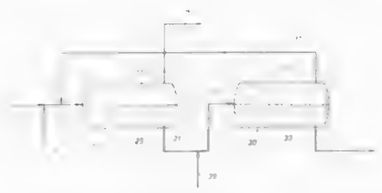
VOL 1093 ISS 2 AUG 9 1988 UMI

4,762,616

ISOPROPYL ALCOHOL PURIFICATION PROCESS

David B. Litzen, Houston, and Stephen R. Bolger, La Porte, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 19, 1986, Ser. No. 943,356
Int. Cl.[4] B01D *11/04*
U.S. Cl. 210—634 9 Claims



1. A process for the purification of a crude isopropyl alcohol product of propylene hydration, containing isopropyl alcohol, diisopropyl ether, and water, which comprises steps for:

(a) mixing the crude isopropyl alcohol product with the recycle stream from subsequent process step (f) and with added water in the amount required to provide a mixture containing between about 73 and 83% w water,

(b) in a first phase separation step, phase separating the mixture from step (a) into a first upper (nonpolar) phase rich in diisopropyl ether and a first lower (polar) phase rich in isopropyl alcohol and water,

(c) withdrawing the first upper phase from the process,

(d) admixing the first lower phase with added diisopropyl ether to obtain a mixture containing between about 10 and 21% w isopropyl alcohol, between about 1 and 4% w diisopropyl ether, and between about 77 and 87% w water, relative to the total weight of the resulting mixture,

(e) in a second phase separation step, phase separating the mixture from step (d) into a second upper (nonpolar) phase rich in diisopropyl ether and a second lower (polar) phase rich in isopropyl alcohol and water,

(f) recycling the second upper phase for use in dilution of the crude isopropyl and alcohol product in step (a), and

(g) recovering the second lower phase as a purified isopropyl alcohol product.

4,762,617

SIZE-EXCLUSION CHROMATOGRAPHY SYSTEM FOR MACROMOLECULAR INTERACTION ANALYSIS

Fred J. Stevens, Downers Grove, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 15, 1987, Ser. No. 3,667
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—635 16 Claims

13. A method for measuring the interaction between first and second macromolecular solutes in forming a complex, said method comprising:

depositing the first and second solutes in a chromatographic column at a first location therein;

measuring the concentrations of unreacted portions of the first and second solutes as well as the concentration of a complex formed by the first and second solutes at a second location in said chromatographic column;

taking the difference between the concentration of the complex and the sum of the concentrations of the first and second solutes in generating an experimental delta function;

generating a plurality of simulated delta functions corresponding to a range of association coefficients representing a range of degrees of interaction between the first and second solutes under various conditions;

comparing the experimental delta function with the plurality of simulated delta functions; and



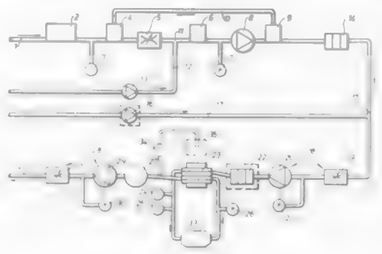
correlating the measured concentrations of the first and second solutes with said range of association coefficients in providing a quantitative measure of the interaction between the first and second solutes.

4,762,618

APPARATUS AND METHOD FOR CONTROLLING FLUID FLOW IN DIALYSIS AND THE LIKE

Bengt-Ake G. Gummesson, Bara; Preben A. Petersen, Bjarred, and Jan P. Sternby, Lund, all of Sweden, assignors to Gambro AB, Sweden

Filed May 29, 1986, Ser. No. 868,803
Claims priority, application Sweden, Jun. 4, 1985, 85.02757
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—637 28 Claims



1. Apparatus for controlling the flow of a fluid past one side of a membrane in a dialyzer comprising means for providing very rapid control independent of transmembrane pressure (TMP), including, fluid conduit means for conducting said flow of said fluid towards and away from said dialyzer, first constant flow means for producing a first constant flow in said fluid conduit means upstream of said dialyzer, and second constant flow means for producing a second constant flow in said fluid conduit means downstream of said dialyzer, said first constant flow means comprising first constriction means for creating a pressure drop in the flow of said fluid in said fluid conduit means from a first predetermined substantially constant pressure to a second lower pressure, pump means downstream of said first constriction means for pumping said fluid through said fluid conduit means, and pressure measuring means for measuring said second lower pressure, said second constant flow means comprising second constriction means for creating a pressure drop in the flow of said fluid in said fluid

conduit means from a third pressure to a fourth predetermined substantially constant lower pressure, pump means upstream of said second constriction means for pumping said fluid through said fluid conduit means, and pressure measuring means for measuring said third pressure whereby said first and second constant flow means can be controlled thereby, based upon said measured second pressure and said measured third pressure, respectively.

13. A method for controlling the flow of a fluid past one side of a membrane in a dialzyer comprising providing very rapid control, independent of transmembrane pressure (TMP), by, flowing said fluid through an upstream fluid flow portion to said dialyzer and from said dialyzer through a downstream fluid flow portion, producing a first constant flow in said upstream fluid flow portion, producing a second constant flow in said downstream portion, creating a pressure drop at a first predetermined location in said upstream fluid flow portion from a first predetermined substantially constant pressure to a second lower pressure, pumping said upstream fluid flow portion from a position downstream of said first predetermined location, measuring said second lower pressure, creating a pressure drop at a second predetermined location in said downstream fluid flow portion from a third pressure in a fourth predetermined substantially constant lower pressure, pumping said downstream fluid flow portion from a position upstream of said second predetermined location, measuring said third pressure, and controlling the flow of said fluid in said upstream and downstream fluid flow portions, based upon said measured second pressure and said measured third pressure, respectively.

4,762,619

METHOD OF FORMING DYNAMIC MEMBRANE ON STAINLESS STEEL SUPPORT

Joseph L. Gaddis, and Craig A. Brandon, both of Clemson, S.C., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 755,960, Jul. 17, 1985, abandoned, which is a continuation of Ser. No. 119,334, Feb. 7, 1980, abandoned. This application Aug. 19, 1986, Ser. No. 898,449
Int. Cl.[4] B01D *13/04*
U.S. Cl. 210—639 9 Claims

1. A method of preparing a hyperfiltration member including the steps of:

forming a porous stainless steel substrate from powdered stainless steel using suitable particle size, compression and sintering conditions to yield a porous stainless steel substrate having a nominal porosity of from about 2% to about 30% and an absolute particle retention pore rating of from about 0.2 micron to about 20 microns in diameter;

flowing through and about and in contact with the porous substrate, an effective amount of an aqueous nitrate solution comprising zirconium nitrate, and also a material selected from the group consisting of soluble sodium nitrate and soluble potassium nitrate to form a solute rejecting membrane of zirconium oxide on said stainless steel substrate;

continuing the flow of the aqueous nitrate solution through and about the porous substrate at a flow rate and pressure and for period of time effective to form the zirconium oxide membrane on the porous substrate;

adding to the aqueous nitrate solution nitric acid sufficient to lower the pH to between 1.5 to about 2.5;

adding to the aqueous nitrate solution polyacrylic acid in the amount of from about 20 to about 100 parts per million;

slowly adding to the aqueous nitrate solution sodium hydroxide until the aqueous nitrate solution is neutral to form a zirconium oxide-polyacrylic acid membrane on said substrate;

performing all steps in the absence of chlorine or chlorine compounds.

9. A method of filtering an aqueous solution by forming a membrane on a substrate, comprising the steps of:

circulating an aqueous nitrate solution at a pH of about 4 past and through a porous stainless steel tube prepared from sintered, powdered stainless steel, the aqueous nitrate solution containing approximately 0.025 molar sodium nitrate and further containing about 0.04 grams per liter of zirconium nitrate, at a flow rate and pressure and for a period of time effective to form a solute rejecting membrane of zirconium oxide on the stainless steel tube,

adding nitric acid sufficient to lower the pH of the aqueous nitrate solution to about 2;

adding approximately 50 parts per million of polyacrylic acid to the aqueous nitrate solution;

slowly adding sodium hydroxide to the aqueous nitrate solution to bring the pH to neutral to form a zirconium oxide-polyacrylic acid membrane on the stainless steel tube;

performing all steps in the absence of chlorine; and

filtering the aqueous nitrate solution by flowing it through the stainless steel tube at a throughflow velocity in the range of about 3 to about 5×10^{-5} m/sec.

4,762,620

METHOD AND APPARATUS FOR MEASURING THE QUANTITY OF PLASMA WATER REMOVED DURING HEMODIALYSIS

Claudio Sama, Brescello, Italy, assignor to Inphardial S.p.A., Italy

PCT No. PCT/EP86/00286, § 371 Date Dec. 9, 1986, § 102(e) Date Dec. 9, 1986, PCT Pub. No. WO86/06637, PCT Pub. Date Nov. 20, 1986
PCT Filed May 6, 1986, Ser. No. 17,252
Claims priority, application Italy, May 10, 1985, 20648 A/85
Int. Cl.[4] B01D *13/00, 13/01*
U.S. Cl. 210—646 9 Claims



7. A method for measuring a quantity of plasma water removed from a patient's blood during a dialysis sitting, the dialysis sitting including passing the blood through a dialysis chamber along a semipermeable membrane with a dialysis liquid disposed on an opposite side of the semipermeable membrane from the blood and controlling pressures of the blood and the dialysis liquid, respectively, filtrate being thereby passed from the blood into the dialysis liquid and being carried away, the method comprising the steps of:

connecting a filtering chamber in parallel with the dialysis chamber, the filtering chamber also having a semipermeable membrane along one side of which the blood is passed,

collecting in a graduated container filtrate passing through the semipermeable membrane of the filtering chamber, a quantity of said filtrate as collected indicating a quantity of filtrate passed in the dialysis chamber from the blood to the dialysis liquid; and,

operating the filtering chamber and the dialysis chamber at equal pressures by connecting both said chambers to a common blood supply and pressurizing the graduated container at a pressure equal to that of the dialysis liquid.

VOL
1093
ISS
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1988
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4,762,621

ITACONATE ESTER COPOLYMERS AS SCALE INHIBITORS

Masler, III: William F., Hinckley, and Zahid Amjad, Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 13, 1986, Ser. No. 929,973
Int. Cl.[4] C02F 5/10
U.S. Cl. 210—701 18 Claims



1. A method for inhibiting precipitation of scale, including calcium phosphate, in an aqueous medium comprising the step of adding to the aqueous medium at least an effective amount of a copolymer of 50 to 95 weight parts of acrylic acid or methacrylic acid and salts thereof and 50 to 5 weight parts of at least one dialkyl ester of itaconic acid containing 1 to 4 carbon atoms in each of the two alkyl groups, based on the total weight of 100 weight parts of said acid and said ester, wherein said copolymer is water-soluble, crosslinked random copolymer having weight average molecular weight of about 1,000 to 50,000.

4,762,622

APPARATUS AND PROCESS FOR SEPARATING SOLID PARTICLES FROM A LIQUID SUSPENSION AND/OR FOR THE PURIFICATION OR LEACHING OF SOLID PARTICLES

Henricus A. C. Thijssen, Son, Netherlands, assignor to Grasso's Koninklijke Machinefabrieken N.V., s-Hertogenbosch, Netherlands

Division of Ser. No. 829,163, Feb. 14, 1986, Pat. No. 4,705,624. This application Aug. 10, 1987, Ser. No. 83,284
Claims priority, application European Pat. Off., Feb. 15, 1985, 85200193.2
Int. Cl.[4] E01D 29/04, 35/00
U.S. Cl. 210—737 2 Claims

1. A process comprising separating solid particles from a liquid suspension and/or purification or leaching of solid particles in a column based on the pulsating movement of a compacted bed in this column to which a liquid suspension, under withdrawal of liquid phase, by supplying pulsewise at one end of the column and disintegrating the washed compacted bed removing the product of this disintegration at the opposite end of the column, moving the washfront in the compacted bed between two outermost limits in the compacted bed, supplying the energy for the compacting and filtering of the suspension, the transport of the compacted bed to the scraper and the washing by the feeding pump 13, while operating the wash column at pressures P_2 and P_3 determined by permeability and length of the compacted bed, the feed rate of the suspension, the fraction of suspended solids in the feed, the wall friction and the pressure of the scraper against the bed.

4,762,623

LANDFILL COMPOSITION AND METHOD OF PRODUCING THE SAME

Mitchell A. Kapland, Annapolis, Md., assignor to Trident Engineering Associates, Inc., Annapolis, Md.

Filed Nov. 14, 1986, Ser. No. 930,572
Int. Cl.[4] C02F 11/14
U.S. Cl. 210—751 14 Claims

1. A process for converting industrial waste product into a landfill composition containing essentially no free liquid as determined by the paint filter test protocol wherein a 100 ml sample of said composition containing said industrial waste product, placed in a 400 micron conical paint filter for five minutes, passes no water through said filter, said process comprising adding to said industrial waste product in an amount ranging from about 5 to 80 weight percent based on the total solids content in said industrial waste product of finely ground granulated blast furnace slag comprising 30–40 percent SiO_2, 40–45 percent CaO, 10–20 percent Al_2O_3, 3–10 percent MgO, 1–3 percent S, 0.3–3 percent MnO, 0.3 percent Fe_2O_3 and a trace of phosphorous, said finely ground granulated blast furnace slag having a Blaine particle size of about 1,800–6,000 sq.cm./g and permitting said landfill composition to develop after a period of time ranging from about 4 to 90 days a load supportive property ranging from about 0.5 to about 4.5 tons/ft^2 and a water permeability of about 1×10^{-6} cm^2/ sec or less.

9. A landfill composition containing essentially no free liquid as determined by the paint filter test protocol wherein a 100 ml sample of said composition containing an industrial waste product, placed in a 400 micron conical paint filter for five minutes, passes no water through said filter, said composition comprising a mixture of an industrial waste product and from 5 to 80 weight percent based on the total solids content thereof of finely ground granulated blast furnace slag comprising 30–40 percent SiO_2, 40–45 percent CaO, 10–20 percent Al_2O_3, 3–10 percent MgO, 1–3 percent S, 0.3–3 percent MnO, 0.3 percent Fe_2O_3 and a trace of phosphorous, said finely ground granulated blast furnace slag having a Blaine particle size of about 1,800–6,000 sq.cm./g and said landfill composition having a load supportive property ranging from about 0.5 to about 4.5 tons/ft^2 and a water permeability of about 1×10^{-6} cm^2/sec or less.

4,762,624

APPARATUS AND METHOD FOR FILTRATION AND CONCENTRATION OF SUSPENSION

Aisaburo Yagishita, 5-2, Shinpocho 4 chome, Chikusa-ku, Nagoya-shi, Aichi 464, Japan

Filed Jan. 29, 1987, Ser. No. 11,435
Int. Cl.[4] B01D 37/02
U.S. Cl. 210—778 3 Claims

1. A method of filtering/concentrating a raw liquid having a solids concentration of up to over 35% comprising the steps of enabling crossflow filtration of said raw liquid by

adding grains in a raw liquid containing therein suspended matter, suspended particles or the like;

supplying under pressure said grain-added raw liquid along a tubular filtering member on a first radial side thereof, said grains having a diameter less than one third said tubular member in case where said grains have a specific gravity larger than said raw liquid, said grains having a diameter ranging from one tenth to nine tenths the tubular filtering member in case where said grains have a specific gravity smaller than said raw liquid;

guiding said grain-added raw liquid spirally along the tubular filtering member on said first radial side; and

collecting at least one of a concentrated liquid on the first radial side and a filtrate on a second radial side of tubular filtering member.

4,762,625

VISCOSIFIERS FOR BRINES UTILIZING HYDROPHILIC POLYMER-MINERAL OIL SYSTEMS

Ahmad Dadgar, Lafayette, Ind., assignor to Great Lakes Chemical Corp., West Lafayette, Ind.

Filed Sep. 29, 1986, Ser. No. 913,415
Int. Cl.[4] C09K 7/02; E21B 43/00
U.S. Cl. 252—8.551 8 Claims

1. A viscosifying composition for aqueous alkali and alkaline earth metal and zinc halide brines used in the drilling and completion of oil and gas wells comprising:

about 20 to 35 percent of a viscosity inducing hydrophilic polymer selected from the group consisting of hydroxyethyl cellulose and carboxymethyl cellulose;

about 30 to 55 percent mineral oil;

about 3 to 6 percent of at least one oil soluble nonionic surfactant;

about 10 to 40 percent of at least one liquid polar solvent in which the hydrophilic polymer is soluble, said solvent being emulsified in said mineral oil; and

about 5 to 15 percent of a long chain aliphatic alcohol diluting agent, all by weight of the composition.

4,762,626

HYDROXYETHYLACRYLATE/ACRYLATE COPOLYMERS AS ZINC SULFIDE SCALE INHIBITORS

Daniel Emmons, Rosenberg, and Gary R. Chesnut, Houston, both of Tex., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Apr. 3, 1987, Ser. No. 34,307
Int. Cl.[4] E21B 37/00
U.S. Cl. 252—8.552 3 Claims

1. A method for inhibiting zinc sulfide scale in oil well operations, comprising introducing hydroxyethylacrylate/acrylate copolymer to oil flush water, said copolymer having a weight average molecular weight within the range of from 1,000 to 20,000.

4,762,627

CORROSION INHIBITORS

Robert G. Martinez; Duane S. Treybig, both of Lake Jackson, and Terry W. Glass, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

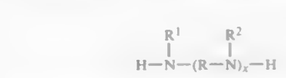
Continuation-in-part of Ser. No. 691,329, Jan. 14, 1985, abandoned. This application Mar. 24, 1987, Ser. No. 30,657
Int. Cl.[4] C23F 11/14
U.S. Cl. 252—8.555 35 Claims

1. A process for reducing or preventing the corrosion of ferrous alloys in contact with corrosive liquids or gases which process comprises contacting the surface of said ferrous metal alloy with a corrosive inhibiting amount of a corrosion inhibitor composition comprising the reaction product of

(I) the product resulting from reacting at a temperature of from about 0° C. to about 150° C.

(A) at least one aliphatic α,β-monoethylenically unsaturated aldehyde having from about 3 to about 6 carbon atoms; and

(B) at least one organic polyamine represented by the formula



wherein R is a divalent saturated C_2 to C_4 aliphatic hydrocarbon group; each R^1 and R^2 is independently hydrogen or a saturated alkyl amino or alkyloxy group containing from 2 to about 4 carbon atoms or when taken together, R^1 and R^2 form a bridging alkylene radical containing from 2 to about 4 carbon atoms such that R, R^1 and R^2 and two nitrogen atoms form a heterocyclic ring containing 4 carbon atoms; x has a value from 1 to about 8; and components (A) and (B) are employed in a mole ratio of (A) to (B) of from about 1:1 to abaout 1:6, and wherein

said reaction product of components (A) and (B) is thermally treated at a temperature of at least about 180° C. for a time sufficient to render the resultant thermally treated product with a stability temperature at least 25° C. above the stability temperature of the untreated product; and

(II) (A) at least one saturated or unsaturated, cyclic or acyclic aliphatic mono- or polycarboxylic acid having from about 2 to about 54 carbon atoms; or

(B) at least one saturated or unsaturated, cyclic or acyclic aliphatic mono- or polyalkyl halide having from about 2 to about 50 carbon atoms; or

(C) a combination of (II-A) and (II-B);

wherein components (I) and (II) are employed in quantities which provide from about 0.4 to about 1 equivalent of carboxyl or halide groups from component (II) for each theoretically active amino hydrogen atom contained in component (I).

4,762,628

NITROGEN-CONTAINING ADDITIVES FOR NON-AQUEOUS FUNCTIONAL FLUIDS

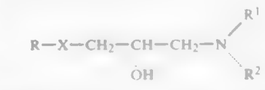
Emyr Phillips, Sale; Robert M. O'Neil, Boothstown, both of England, and Hermann O. Wirth, Bensheim, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 12, 1986, Ser. No. 838,986
Claims priority, application United Kingdom, Mar. 12, 1985, 8[illegible]
Int. Cl.[4] C10M 133/04
U.S. Cl. 252—51.5 R 10 Claims

1. A composition, having corrosion inhibiting properties, which comprises

(a) a non-aqueous functional liquid, and

(b) an effective corrosion-inhibiting amount of at least one compound of formula I



(I)

wherein X is —COO—, R^1 is unsubstituted C_1–C_4-alkyl or C_2–C_5-alkyl substituted by one to three hydroxyl groups, R^2 is hydrogen, unsubstituted C_1–C_4-alkyl or C_2–C_5-alkyl substituted by one to three hydroxyl groups, with the proviso that at least one of the residues R^1 or R^2 is hydroxy-substituted, and R is branched C_4–C_{20}-alkyl, C_2–C_{18}-alkenyl, C_2–C_3-alkynyl or C_5–C_{12}-cycloalkyl.

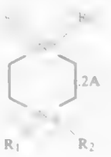
4,762,629

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR

Fumihiko Shinozaki, and Yutaka Yokoyama, both of Ome, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 26,748
Claims priority, application Japan, Mar. 20, 1986, 61-62793
Int. Cl.[4] H01G 9/00
U.S. Cl. 252—62.2 3 Claims

1. An electrolyte for an electrolytic capacitor comprising an aprotic solvent and a fluorocomplex acid salt of piperazine or piperazine derivative of general formula,



in which R_1 and R_2 are hydrogen atoms, alkyl group having 1 to 8 carbon atoms, R_1 and R_2 integrally form integrally a bridged alkylene group and A is a fluorocomplex acid.

VOL 1093 ISS 2 AG 9 1988 UMI

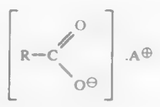
4,762,630

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR

Fumihiko Shinozaki; Tatsunori Tsuji, and Yutaka Yokoyama, all of Ome, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Mar. 24, 1987, Ser. No. 29,638
Claims priority, application Japan, Mar. 28, 1986, 61-70307
Int. Cl.[4] H01G 9/00
U.S. Cl. 252—622 4 Claims

1. An electrolyte for an electrolytic capacitor comprising an aprotic solvent and an alkyl ammonium salt of an aliphatic saturated monocarboxylic acid of general formula,



in which R is hydrogen atom or straight or branched chain alkyl group having 1 to 6 carbon atoms and A is alkyl ammonium comprising 1 to 4 alkyl groups having 1 to 6 carbon atoms.

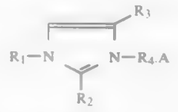
4,762,631

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR

Fumihiko Shinozaki, and Yutaka Yokoyama, both of Ome, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 26,746
Claims priority, application Japan, Mar. 20, 1986, 61-62792
Int. Cl.[4] H01G 9/00
U.S. Cl. 252—62.2 3 Claims

1. An electrolyte for an electrolytic capacitor comprising an aprotic solvent and a fluorocomplex acid salt of imidazole or imidazole derivative of general formula,



in which R_1 is hydrogen atom or 2-cyanoethyl group, R_2 is hydrogen atom, alkyl group having 1 to 8 carbon atoms, phenyl group or benzyl group, R_3 and R_4 are hydrogen atoms or alkyl groups having 1 to 8 carbon atoms and A is a fluorocomplex acid.

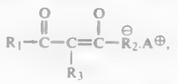
4,762,632

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR

Fumihiko Shinozaki; Tatsunori Tsuji, and Yutaka Yokoyama, all of Ome, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 26,747
Claims priority, application Japan, Mar. 19, 1986, 61-61835
Int. Cl.[4] H01G 9/00
U.S. Cl. 252—62.2 4 Claims

1. An electrolyte for an electrolytic capacitor comprising an aprotic solvent and an alkyl ammonium salt of an enol-form of 1,3-diketone compound of general formula,



in which R_1 and R_2 are alkyl group having 1 to 6 carbon atoms or aryl group, R_3 is hydrogen atom, alkyl group having 1 to 6 carbon atoms or aryl group and A is alkyl ammonium comprising 1 to 4 alkyl groups having 1 to 6 carbon atoms.

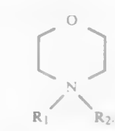
4,762,633

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR

Fumihiko Shinozaki, and Yutaka Yokoyama, both of Ome, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 26,749
Claims priority, application Japan, Mar. 20, 1986, 61-62794
Int. Cl.[4] H01G 9/00
U.S. Cl. 252—62.2 3 Claims

1. An electrolyte for an electrolytic capacitor comprising an aprotic solvent and a fluorocomplex acid salt of morpholine or morpholine derivative of general formula,



in which R_1 and R_2 are independently hydrogen atom, alkyl group having 1 to 8 carbon atoms and A is a fluorocomplex acid.

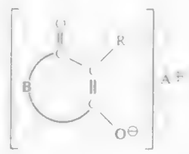
4,762,634

ELECTROLYTE FOR ELECTROLYTIC CAPACITOR

Fumihiko Shinozaki; Tatsunori Tsuji, and Yutaka Yokoyama, all of Ome, Japan, assignors to Nippon-Chemi Con Corporation, Tokyo, Japan

Filed Mar. 23, 1987, Ser. No. 29,332
Claims priority, application Japan, Mar. 24, 1986, 61-65331
Int. Cl.[4] H01G 9/00
U.S. Cl. 252—62.2 4 Claims

1. An electrolyte for an electrolytic capacitor comprising an aprotic solvent and an alkyl quarternary ammonium salt of an enol-form of 1,3-cyclodiketone compound of general formula,



in which R is alkyl group having 1 to 6 carbon atoms, B is alkylene group having 2 to 5 carbon atoms and two hydrogen atoms of any one methylene of B may be substituted with one or two alkyl groups having 1 to 6 carbon atoms and A is alkyl ammonium comprising 1 to 4 alkyl groups having 1 to 6 carbon atoms.

4,762,635

HIGH TRACTION SYNTHETIC HYDROCARBON FLUIDS

Thomas R. Forbus, Newtown, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 24, 1986, Ser. No. 888,915
Int. Cl.[4] C10M 101/02
U.S. Cl. 252—73 10 Claims

1. A method of making highly branched synthetic dhyrocarbon traction drive fluid having a high traction coefficient and excellent elastohydrodynamic lubricating characteristics comprising anionically oligomerizing dienes or polydienes in the presence of substanially 1:1 molar amounts of an organo-alkali

metal compound or mixture thereof and a complexing reagent at autogenous pressure and temperatures ranging from 10 to about 120° C., and thereafter non-destructively hydrogenating the resultant oligomers, the oligomerized dienes or polydienes having at least 50–85% 3,4-enchainment.

4,762,636

PROCESS FOR THE PREPARATION OF GRANULES CONTAINING AN ACTIVE SUBSTANCE AND TO THE USE THEREOF AS SPECKLES FOR TREATING SUBSTRATES

Paolo Balliello, Rheinfelden, Fed. Rep. of Germany; Beat Bruttel, Böckten, and Hanspeter Will, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 20, 1987, Ser. No. 17,381
Claims priority, application Switzerland, Feb. 28, 1986, 810/86
Int. Cl.[4] C11D 1/22, 3/395, 17/02, 17/06
U.S. Cl. 252—95 20 Claims

1. A process for preparing wettable granules that float on and dissolve in water, said granules containing at least one active substance, which process comprises:

(1) spray drying an aqueous solution that contains: (a) at least one active substance selected from the following bleaching agents, dyes, fluorescent brightening agents and finely particulate pigments; (b) at least one carrier selected from the group consisting of condensates of naphthalenesulfonic acids with formaldehyde or cresols, alkylsulfonic acids, alkylanilisulfonic acids and anilsulfonic acids; and (c) at least one foaming agent; and

(2) subsequently granulating the product of step (1) by spraying it with an aqueous solution that contains: (a) at least one of the active substances of step (1), and (b) at least one carrier material of step (1);

the amounts of all ingredients being chosen to provide an effective amount of the active substance for subsequent use of the granules and of the carrier and foaming agent to provide floatability and solubility of the granules in water.

4,762,637

ENCAPSULATED BLEACH PARTICLES FOR MACHINE DISHWASHING COMPOSITIONS

Michael Aronson, West Nyack, N.Y , Michele R. Lock, Bethlehem, Pa., and Edward Santos, Guttenberg, N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 14, 1986, Ser. No. 931,361
Int. Cl.[4] C11D 7/18, 7/38, 7/56
U.S. Cl. 252—99 2 Claims

1. An automatic dishwasher powder detergent comprising:

(i) from 0.5 to 15% by weight of bleach particles comprising:

(a) from 50 to 99.5% by weight of said particles of a core consisting essentially of an oxidizing material having at least one reactive chlorine or bromine in its molecular structure; and

(b) from 0.5 to 20% by weight of said particles of a polycarboxylate coating selected from homo- and co-polymers of carboxylic acids, carboxylic anhydrides, alkyl partial esters thereof and their salt derivatives, said coating being free of soap and fatty acids, said polycarboxylate coating being water-insoluble at or below pH 7 but soluble in aqueous alkaline media at pH 10 or higher;

(ii) from 5 to 70% of a detergency builder; and

(iii) from 1 to 20% of a silicate salt.

4,762,638

ALKALINE CLEANER FOR ALUMINUM

David Y. Dollman, Doylestown, and Stanley L. Blaszczyk, Lansdale, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation of Ser. No. 853,481, Apr. 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 733,546, May 13, 1985, abandoned. This application Jul. 13, 1987, Ser. No. 73,295
Int. Cl.[4] C11D 7/06
U.S. Cl. 252—135 20 Claims

1. In an aqueous alkaline cleaning composition bath for removing and dissolving aluminum fines and lubricating oils from formed aluminum surfaces, said bath having a water base, a pH of at least 11, and ingredients consisting essentially of:

(a) an alkali metal salt of ethylenediaminetetraacetic acid, an alkali metal salt of nitrilotriacetic acid, or their mixture, present in the bath in about 0.1 to about 8.0 g/l;

(b) at least one surfactant, present in the bath in about 0.1 to about 10 g/l; and

(c) at least one alkali metal hydroxide present in the bath in an amount sufficient to adjust the pH to at least 11; the improvement consisting of

(d) at least one inorganic alkali metal phosphate, present in the bath in about 0.1 to 20 g/l.

4,762,639

METHOD OF MAKING TERBIUM ACTIVATED YTTRIUM ALUMINATE PHOSPHOR

Anthony F. Kasenga, Towanda, and Jeffrey N. Dann, Sayre, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 23, 1987, Ser. No. 76,978
Int. Cl.[4] C09K 11/80
U.S. Cl. 252—301.4 R 1 Claim

1. The method of making $Y_3Al_5O_{12}$:Tb phosphor, said method comprising:

(a) forming a uniform mixture of source materials for $Y_3Al_5O_{12}$:Tb phosphor and barium fluoride with said barium fluoride being present in said mixture at a level of from about 0.254 to about 0.761 weight percent; and

(b) firing said mixture at an elevated temperature to react said source materials to form $Y_3Al_5O_{12}$:Tb phosphor having an improved brightness of at least about 7.5% over the phosphor prepared as above absent said barium fluoride, with the 50% size of said phosphor prepared as above with BaF_2 as measured by Coulter Counter technique being from about 5 to about 7 micrometers in diameter and with from about 1% to about 6% of the phosphor having a size of greater than about 20 micrometers in diameter.

4,762,640

FOAM CONTROL PROCESS FOR HIGHLY ACIDIC AQUEOUS SYSTEMS

Harry M. Schiefer, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 11, 1986, Ser. No. 940,686
Int. Cl.[4] B01D 19/04
U.S. Cl. 252—321 8 Claims

1. In a process of controlling foam in an acidic aqueous foaming system which includes the addition of a foam control agent to said system, the improvement comprising using as the foam control agent a composition consisting essentially of:

(A) from 40 to 70 parts by weight of a dimethylpolysiloxane gum having a viscosity greater than about 150,000 Poise at 25° C.;

(B) from 10 to 20 parts by weight of a non-ionic surfactant having an HLB number greater than about 10;

(C) from 5 to 10 parts by weight of a siloxane copolymer dispersing agent selected from the group consisting of

1. copolymers consisting essentially of SiO_2 units, $(CH_3)_3SiO_{\frac{1}{2}}$ units and $D(CH_3)_2SiO_{\frac{1}{2}}$ units in which D is

VOL 1093 ISS 2 AUG 9 1988 UMI

a polyoxyethylene polymer having a molecular weight of at least 500, or a polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 wherein the polyoxypropylene portion constitutes up to 50 mole percent of the copolymer, said D being attached to the silicon atom via a silicon-carbon bond, and the ratio of the SiO_2 units to the total $(CH_3)_3SiO_{\frac{1}{2}}$ and $D(CH_3)_2SiO_{\frac{1}{2}}$ units is in the range of 1:0.4 to 1:1.2,

2. copolymers which are reaction products derived from heating a mixture of a siloxane resin copolymer consisting essentially of SiO_2 units and $(CH_3)_3SiO_{\frac{1}{2}}$ units in which the ratio of SiO_2 units to $(CH_3)_3SiO_{\frac{1}{2}}$ units is in the range of 1:0.4 to 1:1.2, and a hydroxylated polyoxyethylene polymer having a molecular weight of at least 500, or a hydroxylated polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 wherein the polyoxypropylene portion constitutes up to 50 mole percent of the copolymer;

3. polydimethylsiloxane-organic copolymer in which the polydimethylsiloxane portion has a molecular weight of at least 1400 and the organic portion consists essentially of a polyoxyethylene polymer having a molecular weight of at least 500, or a polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 wherein said polyoxypropylene portion constitutes up to 50 mole percent of the organic portion of the copolymer, said organic portion being attached to silicon atoms via silicon-carbon bonds, and

4. polydimethylsiloxane-organic copolymers which are the reaction products produced by heating a mixture of a polydimethylsiloxane containing silicon bonded hydrogen atoms having a molecular weight of at least 1400 and a hydroxylated polyoxyethylene having a molecular weight of at least 500, or a hydroxylated polyoxyethylene-polyoxypropylene copolymer having a molecular weight of at least 500 wherein said polyoxypropylene constitutes up to 50 mole percent of the organic portion of the copolymer; and

(D) from 0 to 45 parts by weight water, said foaming system having a pH of less than 4.

4,762,641

VERMICULITE MOULDING COMPOSITIONS AND ARTICLES MADE THEREFROM

Sven T. Denton, Stockport, and Alan Atkinson, Rochdale, both of England, assignors to T & N Materials Research Limited, Manchester, England

Filed Jun. 1, 1987, Ser. No. 55,889

Claims priority, application United Kingdom, Jul. 2, 1986, 8616184

Int. Cl.[4] C04B *20/06*

U.S. Cl. 252—378 R **6 Claims**

1. A moulding composition consisting essentially of particles of gas-exfoliated vermiculite and, as binder, very fine particles, having a diameter below 50 μm, of vermiculite from which the interstitial magnesium ions have been at least partially removed and which has been swollen in water.

4,762,642

PROCESS FOR MANUFACTURING TRANSLUCENT ANTIBACTERIAL SOAP

David P. Joshi, Plainfield, N.J., and Peter A. Divone, Woodhaven, N.Y., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 822,980, Jan. 27, 1986, abandoned, which is a continuation of Ser. No. 670,689, Nov. 13, 1984, which is a continuation of Ser. No. 414,445, Sep. 2, 1982, Pat. No. 4,490,280. This application Jun. 8, 1987, Ser. No. 59,658

Int. Cl.[4] C11D *9/48, 13/08, 9/50, 13/14*

U.S. Cl. 252—368 **16 Claims**

1. A process for manufacturing a translucent antibacterial soap which comprises dissolving 2,4,4'-trichloro-2'-hydroxydiphenyl ether (THDE) in a mixture which includes soap of higher fatty acids and other components of a translucent soap, and converting said mixture to translucent soap cakes.

4,762,643

BINDERS AND FIBERS COMBINED WITH FLOCCED MINERAL MATERIALS AND WATER-RESISTANT ARTICLES MADE THEREFROM

Walter J. Bohrn, Lancaster; Richard A. Brubaker, Willow Street; Sheily N. Garman, Lancaster; Lewis K. Hosfeld, Mountville; Thomas M. Tymon, and Kenneth K. Ko, both of Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Continuation-in-part of Ser. No. 829,017, Feb. 13, 1986, Pat. No. 4,707,298, which is a continuation-in-part of Ser. No. 662,057, Oct. 18, 1984, abandoned. This application Jun. 5, 1987, Ser. No. [illegible],800)

The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.

Int. Cl.[4] C04B *20/02, 20/06*

U.S. Cl. 252—378 R **23 Claims**

1. A flocced mineral material which comprises (1) a binder and (2) a swelled layer silicate gel that has an average charge per structural unit that ranges from about −0.5 to about −1, said silicate containing at least some interstitial cations that have the formula $[R^1C(R^2)R^3]+$ wherein R^1, R^2, and R^3 are independently selected from NH_2 and CH_3; provided, however, that at least two or more of R^1, R^2, and R^3 are NH_2 but further providing that one or more of the hydrogen atoms of R^1, R^2, and R^3 may instead be a substitutent selected from: a C_1 to C_5 alkyl, a C_2 to C_5 alkenyl and a C_2 to C_5 alkynyl wherein these substituents may be linked to form one or more rings which may be saturated, unsaturated or aromatic; and further, provided that the silicate is a water swelling body of (a) vermiculite, (b) mica, or (c) a mixture of vermiculite and mica.

4,762,644

ELECTROCONDUCTIVE POLYMER SOLUTION AND MANUFACTURE OF ELECTROCONDUCTIVE ARTICLE THEREFROM

Yukio Kobayashi, Sagamihara, and Masataka Takeuchi, Kawasaki, both of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP86/00120, § 371 Date Nov. 10, 1986, § 102(e) Date Nov. 10, 1986, PCT Pub. No. WO86/05194, PCT Pub. Date Sep. 12, 1986

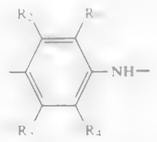
PCT Filed Mar. 7, 1986, Ser. No. 935,675

Claims priority, application Japan, Mar. 8, 1985, 60-44728; Mar. 8, 1985, 60-44729

Int. Cl.[4] H01B *1/00, 1/06*

U.S. Cl. 252—500 **22 Claims**

1. An electroconductive polymer solution comprising a polymer comprising at least 50 mole% of recurring units represented by the following general formula (I):



(I)

wherein R_1 through R_4, which may be the same or different, represent a hydrogen atom or an alkyl or alkoxy group having 1 to 5 carbon atoms, with the proviso that at least two of R_1 through R_4 are an alkyl or alkoxy group having 1 to 5 carbon atoms, a dopant and an organic solvent.

4,762,645

DETERGENT PLUS SOFTENER WITH AMIDE INGREDIENT

James R. Tucker, and Daniel F. Nesbitt, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 16, 1987, Ser. No. 121,315

Int. Cl.[4] C11D *3/30*

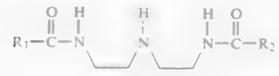
U.S. Cl. 252—544 **13 Claims**

1. A granular detergent or detergent additive composition comprising, by weight:

(a) from about 0% to about 95% of a surfactant selected from the group consisting of anionic surfactants, cationic surfactants, nonionic surfactants, zwitterionic surfactants, amphoteric surfactants, and mixtures thereof; and

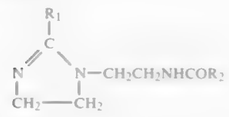
(b) from about 1% to about 95% of a fabric care agent consisting of particles comprising, by weight:

(i) from about 25% to 100% of a compound of the formula



wherein R_1 and R_2 can independently be C_{12} to C_{20} hydrocarbyl groups; and

(ii) from 0% to about 25% of imidazoline compound of the formula



wherein R_1 and R_2 can independently be C_{12} to C_{20} hydrocarbyl groups; and the weight ratio of (i) to (ii) is at least about 3:1; and said particles having an average diameter of from about 20 to about 200 microns.

4,762,646

METHOD OF TREATING RADIOACTIVE LIQUIDS

Charles Fougeron, Versailles; Jean J. Fidon, and Herve Janiaut, both of Paris, all of France, assignors to Somafer S.A., Fameck, France

Filed Oct. 3, 1986, Ser. No. 914,987

Claims priority, application France, Oct. 4, 1985, 85 15150

Int. Cl.[4] G21F *9/16*

U.S. Cl. 252—628 **13 Claims**



1. A method of treating low level radioactive waste liquid to form encapsulated solid for burial, the method comprising the steps of

(i) adding caustic solution to the waste liquid to give the liquid a substantially neutral pH value in the range between about 6 and about 8, and agitating and cooling the liquid during the addition,

(ii) subjecting the so neutralized liquid to atomization to provide particles of solid radioactive material and water vapor,

(iii) separating the particles from the water vapor, and

(iv) encapsulating the particles in a matrix.

4,762,647

ION EXCHANGE RESIN VOLUME REDUCTION

Eugene E. Smeltzer, Salem Township, Westmoreland County; Michael C. Skriba, Plum Boro, both of Pa., and Keith K. McDaniel, Ellicott City, Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 744,089, Jun. 12, 1985, abandoned. This application Sep. 10, 1986, Ser. No. 905,895

Int. Cl.[4] G21F *9/08, 9/14*

U.S. Cl. 252—632 **16 Claims**

1. A method for reducing the volume of radioactive material comprising between about 30 w% to about 60 w% spent ion exchange resin and between about 40 w% to about 70 w% of a filter aid, said filter aid reactive therewith at an elevated temperature said method comprising:

dewatering the spent ion exchange resin,

heating the dewatered resin to the elevated temperature, and

compressing the dewatered resin heated to the elevated temperature with a force of at least about 2000 psi for a period of time sufficient to cause the resin to sinter and become rewet stable.

4,762,648

MONOFUNCTIONAL AND BISFUNCTIONAL ANTHRAQUINONE-(OXY-2,3-OXIDOPROPANES), PROCESSES FOR THEIR PREPARATION, AND THEIR USE AS DRUGS

Ulrich Stache, Hofheim am Taunus; Hans P. Kraemer, and Hans-Harald Sedlacek, both of Marburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Marburg, Fed. Rep. of Germany

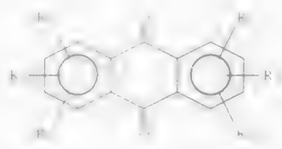
Filed Aug. 29, 1984, Ser. No. 645,266

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1983, 3331296

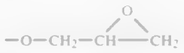
Int. Cl.[4] C07C *50/34;* **C07D** *303/12*

U.S. Cl. 260—383 **6 Claims**

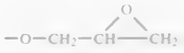
1. A compound of the formula I



where R_1 and R_1' are identical or different and are hydrogen, hydroxyl or the radical



R_2 and R_2' are identical or different and are hydrogen or one or more hydroxyl, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkanoyloxy, aryloxy, Ar—C_1–C_4-alkoxy, nitro groups or halogen atoms, and R_3 and R_3' are different and are hydrogen or the radical



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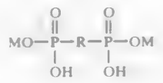
4,762,649

POLYMERIC ALKYLENE DIPHOSPHONATE ANHYDRIDES, THEIR PRODUCTION AND USE

James P. Coleman, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 766,724, Aug. 19, 1985, Pat. No. 4,663,432.
This application Feb. 2, 1987, Ser. No. 9,435
Int. Cl.[4] C07F *9/30*
U.S. Cl. 260—545 P 6 Claims

1. A method for preparing a polymeric phosphonate comprising heating from about 200° C. to about 400° C., under an inert atmosphere, a reaction mixture comprising a salt of a diphosphonic acid of the formula:



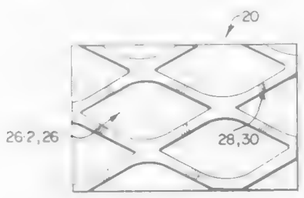
where M is an alkali metal and where R is an unsubstituted alkylene group having 2 to 6 carbon atoms.

4,762,650

PACKING ELEMENTS FOR EVAPORATIVE COOLERS AND A METHOD OF SUPPORTING PACKING ELEMENTS IN COOLING TOWERS

Peter B. Bosman, Sandton, South Africa, assignor to WLPU Holdings Proprietary Limited, Transvaal, South Africa

Filed Feb. 24, 1987, Ser. No. 18,339
Claims priority, application South Africa, Feb. 25, 1986, 86/1411
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—100 7 Claims



1. A packing element for a splash pack for an evaporative cooler, which element comprises a sheet of expanded metal which is corrosion resistant and which has a flat splash surface and apertures with width and length dimensions of from approximately 10 mm and 30 mm respectively to approximately 60 mm and 120 mm respectively.

4,762,651

VAPOR/LIQUID CONTACT DEVICE

Byron M. Parker, and Trent J. Parker, both of Salt Lake City, Utah, assignors to Uni-frac, Inc., Salt Lake City, Utah

Filed May 26, 1987, Ser. No. 54,181
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—114.1 2 Claims

1. In a transversely round distillation column having a cylindrical wall, a vapor/liquid contact tray having a base transverse with respect to and fitted against said column at the interior thereof, said tray having opposite ends respectively provided with inlet and outlet weirs, said base being provided with a series of parallel, transverse, mutually spaced baffles arranged parallel to said inlet and outlet weirs, said base being provided with perforate areas proximate the downstream sides of said baffles, said baffles including opposite upstanding sides contiguous with said column wall and having upstanding respective inner edges which are vertically co-planar, residing in side opposite parallel planes, whereby to provide parallel



straight-sided flow of fluid from said inlet end to said outlet end.

4,762,652

PROCESS AND APPARATUS FOR PRODUCING CARBON FIBER MAT

Tamotsu Miyamori; Iwao Kameyama, and Takeo Abe, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Japan

Filed Jun. 18, 1986, Ser. No. 875,704
Claims priority, application Japan, Jun. 28, 1985, 60-142055
Int. Cl.[4] D01F *9/14*
U.S. Cl. 264—6 17 Claims



1. A process for producing a carbon fiber mat, comprising the successive steps of:
(a) melt-spinning a fiber-forming pitch using a centrifugal spinning machine of the type having a horizontal axis of rotation,
(b) stretching the thus melt-spun pitch fibers,
(c) cutting the thus stretched fibers using at least one cutter installed on a stretching plate of said centrifugal spinning machine,
(d) piling the thus cut fibers on a belt of a horizontal belt conveyer positioned below said spinning machine,
(e) simultaneously (i) traversing said belt in a direction parallel to said axis of rotation and (ii) moving said belt in a direction orthogonal to said axis of rotation, thereby forming a pitch fiber mat upon said belt, and then
(f) subjecting the thus piled pitch fiber mat to infusibilization in an air atmosphere containing NO_2 and calcination in an inert atmosphere to obtain said carbon fiber mat.

12. An apparatus for continuously producing a carbon fiber mat, comprising:
(i) a centrifugal spinning machine rotatable about an axis and having a stretching plate and at least one cutter for cutting said pitch fibers on the stretching plate thereof, said spinning machine being positioned such that said rotational axis thereof is horizontal; and
(ii) a horizontally disposed belt conveyer having a belt for collecting said cut fibers and to thereby form a mat thereof, said belt conveyer including means for simultaneously (a) causing said belt to traverse in a direction parallel to said rotational axis of said centrifugal spinning machine and (b) moving said belt in a direction orthogonal to said first-mentioned direction,
(iii) an infusibilizing furnace;
(iv) first transfer conveyer means for transferring said pitch fiber mat from said belt conveyer to said infusibilizing furnace,
(v) a vertical-type calcining furnace, and
(vi) second transfer conveyer means for transferring said infusibilized mat from said infusibilizing furnace to said calcining furnace.

4,762,653

PROCESS FOR PREPARING ESPECIALLY METALLIC AND SEMI-METALLIC BANDS OF SMALL THICKNESS

Claude Senillou, Voreppe; Rémy de Framond, Grenoble; Marcel Garnier, Uriage; Ali R. Yavari, Grenoble, and Jean-Charles Joud, Meylan, all of France, assignors to Union Siderurgique du nord et de l'Est de la France (USINOR), Puteaux, France

Continuation of Ser. No. 692,185, Jan. 17, 1985, abandoned. This application Oct. 30, 1986, Ser. No. 925,470
Claims priority, application France, Jan. 18, 1984, 84 00747
Int. Cl.[4] B29D *7/01;* B22D *11/06*
U.S. Cl. 264—22 10 Claims



1. In a process for preparing a band from an electrically conductive molten material, comprising making the molten material flow from a container through a nozzle, to form a strip of substantially rectangular cross-section which is subjected before solidification of the strip to a stabilizing effect induced by an alternating magnetic field produced by means of an electromagnetic device having core means; the improvement comprising producing said stabilizing effect by the action, on at least one face of the strip of an incident magnetic field which originates from a first pole of said electromagnetic device and having a first polarity and which extends along a direction that is initially perpendicular and then parallel to the adjacent surface of the strip towards a second pole of said electromagnetic device, said second pole having a polarity opposed to said first polarity and then extends perpendicular again to the strip and then through the core means to said first pole to form a looped path

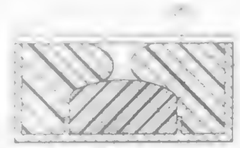
4,762,654

METHOD FOR MAKING FOAMED ARTICLES HAVING A LAMINATED STRUCTURE

Nobuhisa Fuchigami; Takeo Yoshida, and Hiroya Fukuda, all of Yokohama, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 5, 1986, Ser. No. 927,113
Claims priority, application Japan, Nov. 5, 1985, 60-247350
Int. Cl.[4] B29C *67/22, 39/18, 39/20*
U.S. Cl. 264—45.1 16 Claims

1. A method for making a cushion for automotive seats having a laminated structure of polyurethane foams which comprises: providing a mold having a cavity therein and a rib vertically mounted from a bottom of the cavity and having a predetermined height to establish at least two blocks on the bottom; and pouring foamable liquid compositions for making polyurethane foams into the respective blocks in amounts which permit one of the foamable liquid compositions to cover



the entire surface of the other foamable liquid composition upon foaming whereby the resulting foam has a laminated structure of polyurethane foams whose boundary between the respective polyurethane foam layers is smooth and agreeable to the touch.

4,762,655

METHOD OF SINTERING TRANSLUCENT ALUMINA

William H. Rhodes, Lexington; George C. Wei, Weston, both of Mass., and George A. Fryburg, Newmarket, N.H., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 27, 1985, Ser. No. 802,414
Int. Cl.[4] C04B *35/10*
U.S. Cl. 264—65 7 Claims

1. A process for producing a translucent polycrystalline alumina body comprising:
sintering a prefired, shaped compacted green body at a maximum sintering temperature in an atmosphere containing nitrogen and an amount of hydrogen greater than or equal to about 2.5 volume percent and less than or equal to 35 volume percent for a period of time sufficient to produce a translucent polycrystalline body, said green body comprising alumina doped with one or more sintering aids.

4,762,656

METHOD FOR HOT PRESSING BERYLLIUM OXIDE ARTICLES

Ambrose H. Ballard; Thomas G. Godfrey, Jr., both of Oak Ridge, and Erb H. Mowery, Clinton, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 10, 1986, Ser. No. 917,460
Int. Cl.[4] C04B *35/08*
U.S. Cl. 264—82 4 Claims



1. A method for preparing an article of beryllium oxide by hot pressing comprising the steps of forming a homogeneous mixture of about 98.5 to 99.5 weight percent of beryllium oxide particulates and sufficient lithium hydroxide in an aqueous solution to provide about 0.25 to 1.5 weight percent equivalent

VOL 1093 ISS 2 AG 9 1988 UMI

of lithium oxide, contacting the mixture with carbon dioxide for a sufficient duration to convert in situ essentially all the lithium hydroxide to lithium carbonate, and thereafter hot pressing the mixture into an article of desired configuration of near theoretical density, said hot pressing step being characterized by the lithium carbonate being uniformly dispersed throughout the mixture and affixed to the beryllium oxide particulates and converting to lithium oxide during the hot pressing step to provide essentially uniform sintering of the beryllium oxide particulates for providing the article with essentially uniform density.

4,762,657

FORMATION OF POROUS MEMBRANES BY MECHANICAL DEFORMATION

Charles E. Rogers, Chagrin Falls, and Zhong-He Shen, Cleveland, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 12, 1985, Ser. No. 808,148
Int. Cl.[4] B28B *11/00;* **B29C** *67/20, 71/00*
U.S. Cl. 264—83 **42 Claims**

1. A method for preparing polymer film membranes comprising:
(a) forming a glassy or semi-crystalline polymer non-porous film membrane having a high surface-to-volume ratio from a homopolymer, copolymer, block copolymer or a poly-blend material; then
(b) sandwiching the film membrane between yieldable surfaces; and then
(c) deforming the polymer film membrane by rolling or pressing the sandwiched film to form a poroous film membrane having a high concentration of porous regions per area of matrix;
whereby fluid flow rate being substantially increased compared to nonporous film membranes.

4,762,658

METHOD OF TABLETING OF DE-OILED PHOSPHATIDES (LECITHIN)

Diane Rothfuss, Fort Wayne, and Roger A. Lantz, Auburn, both of Ind., assignors to Central Soya Company, Inc., Fort Wayne, Ind.

Filed Oct. 8, 1986, Ser. No. 916,895
Int. Cl.[4] B29C *67/00;* **A23J** *7/00*
U.S. Cl. 264—122 **5 Claims**

1. A method of tableting granular lecithin comprising dry mixing de-oiled phosphatides and an excipient where said phosphatides are present in an amount of at least about 80%, said phosphataides having a moisture content less than about 1.0% an aerated density in the range of above about 0.38 gm/c.c., a compressibility of less than about 15% , and thereafter compressibly forming tablets of the mixture.

4,762,659

COIL ARRANGEMENT FOR NUCLEAR FUSION APPARATUS

Kazuo Kuno, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 23, 1986, Ser. No. 866,401
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—142 **6 Claims**

1. In a nuclear fusion apparatus containing a plasma, a coil arrangement comprising:
a return conductor for a coil feeder line, said return conductor being divided into two lines, one of which is situated more closely to the plasma and provided along a portion thereof with a resistance-inductance adjustor whereby the magnetic fields generated by the current flowing through



the two return lines are opposite in direction to each other so as to cancel out the error magnetic field.

4,762,660

COIL ARRANGEMENT FOR NUCLEAR FUSION APPARATUS

Kazuo Kuno, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 29, 1986, Ser. No. 868,043
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—142 **3 Claims**



1. In a nuclear fusion apparatus, a coil arrangement comprising a coil including a portion having a transition between turns, a return conductor radially penetrating through the transition portion of the coil, and feed conductor means symmetrically arranged with regard to the axis of the return conductor.

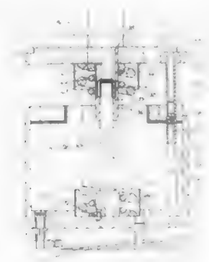
4,762,661

UPPER END PIECE FOR NUCLEAR FUEL ASSEMBLIES

Joseph Leclercq, Saint Didier au Mont d'Or, and Jean N. Canat, Lyon, both of France, assignors to FRAGEMA, Courbevoie, France

Filed Apr. 9, 1985, Ser. No. 721,350
Claims priority, application France, Apr. 10, 1984, 84 05652
Int. Cl.[4] G21C *7/02, 7/20, 3/32*
U.S. Cl. 376—209 **8 Claims**

7. In a spectral shift pressurized water nuclear reactor having a core consisting of upstanding fuel assemblies, an upper core plate above said core, first clusters of neutron absorbing control rods vertically movable into and out of some at least of said fuel assemblies, second clusters of rods vertically movable into and out of some at least of said fuel assemblies for modifying the moderation rate by forcing out water contained in said fuel assemblies when inserted in said fuel assemblies, a nuclear fuel assembly comprising:
an upper end piece comprising a structural element,
a lower end piece, and
a plurality of guide tubes including first guide tubes arranged for receiving one of said first clusters and second guide tubes arranged to receive one of said second clusters, said guides tubes mechanically connecting said structural element and lower end piece,
wherein said upper end piece further comprises:
a support member vertically movable with respect to said structural element, arranged for abutting connection with said first cluster upon fall of said first cluster,
an abutting element arranged for abutting connection with said second cluster upon fall of said second cluster,



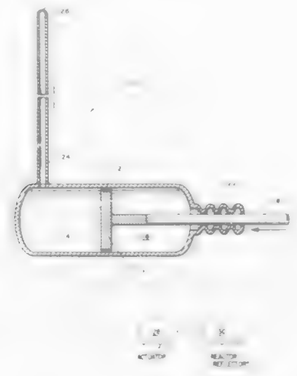
means for slidably guiding said support member and said abutting element parallel to the axis of the guide tubes, and
first and second resilient means contained within said upper end and in abutting connection with said structural element, said first resilient means being located between said structural element and said support member and exerting on said support member an upwardly directed force biasing said support member into abutment with said upper core plate while said second resilient means are located between said structural element and said abutting element.

4,762,662

THERMALLY ACTIVATED TRIGGER DEVICE

Richard B. Harty, Canoga Park, and Timothy L. Camaret, Acton, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 31, 1985, Ser. No. 793,501
Int. Cl.[4] G21C *7/28*
U.S. Cl. 376—220 **4 Claims**



1. In a nuclear space reactor, a thermally activated trigger device for rendering said reactor subcritical upon reentry to the earth's atmosphere, said device comprising:
a closed vessel,
a piston slideably mounted in said vessel to divide it into first and second compartments,
an inert gas contained within each of said compartments at substantially the same pressure,
a connecting rod operatively connected to said piston and to actuator means, said actuator means providing for moving means for rendering said reactor subcritical upon movement of said connecting rod;
a bellows having opposite ends, one of said ends being affixed to and in sealing engagement with said connecting rod and the other of said ends being affixed to and in sealing engagement with said vessel for permitting linear movement of said connecting rod and preventing any escape of said inert gas from said closed vessel; and
a plurality of normally closed pipes communicating with one of said compartments for venting the inert gas therefrom when any of said pipes is open, said pipes being located at different parts of the nuclear space reactor so that the closed ends thereof are exposed to the atmosphere upon reentry of the reactor to the atmosphere, said pipes being designed to open at a selected temperature resulting from said reentry so that said gas leaves the communicating compartment via an open pipe to cause a difference in pressure between said compartments sufficient for the higher pressure in the other compartment to move said piston and thereby activate said actuator means.

4,762,663

SELF-TESTING MONITORING CIRCUIT

Henry F. Cook, Penn Hills Twp., Allegheny County; James F. Sutherland, and Ronald J. Weisner, both of Plum Boro, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 8, 1986, Ser. No. 849,246
Int. Cl.[4] G21C *7/36;* **G01R** *31/00;* **G08B** *19/00*
U.S. Cl. 376—259 **13 Claims**



8. A nuclear reactor comprising:
(a) a control system for controlling operation of said nuclear reactor;
(b) a monitoring system responsive to said control system for monitoring operation of said control system;
(c) a switch connected in said control system, said switch having a first pair of contacts and a second pair of contacts, with one of the pairs being open and other being closed unless the switch is malfunctioning;
(d) first testing means, connected in said monitoring system and further connected across said first pair and responsive to a first enable signal and a first select signal, for outputting in the absence of said first enable signal a first output signal having first value if said first pair is open and a second value if said first pair is closed, and for outputting in the presence of said first enable signal a first output signal having in accordance with said first select signal one of said first value and said second value regardless of whether said first pair is open or closed;
(e) second testing means, connected in said monitoring system and further connected across said second pair and responsive to a second enable signal and a second select signal, for outputting in the absence of said second enable signal a second output signal having said first value if said second pair is open and said second value if said second

VOL 1093 ISS 2 AG 9 1988 UMI

pair is closed, and for outputting in the presence of said second enable signal a second output signal having one of said first value and said second value in accordance with said second select signal regardless of whether said second pair is open or closed; and

(f) logic means, responsive to said first and second testing means, for producing an error signal if said first and second output signals have equal values.

4,762,664

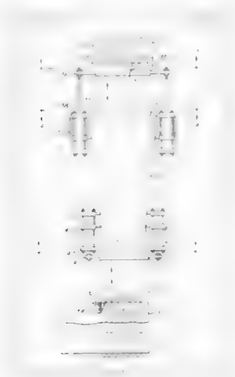
METHOD AND APPARATUS FOR COMPACTING SPENT NUCLEAR REACTOR FUEL RODS

William J. Wachter, Wexford, Pa., assignor to U.S. Tool & Die, Inc., Allison Park, Pa.

Division of Ser. No. 814,481, Dec. 30, 1986, Pat. No. 4,714,583, and a continuation-in-part of Ser. No. 291,230, Aug. 10, 1981. This application Dec. 12, 1986, Ser. No. 941,155

Int. Cl.[4] G21C *19/00*

U.S. Cl. 376—261 25 Claims



1. A method of compacting spent fuel rods from a fuel rod assembly comprising the steps of:

exposing end portions of an array of fuel rods in said fuel rod assembly,

passing a gripper to a fuel rod gripping position,

causing said gripper to simultaneously grip the array of spent fuel rods,

moving said gripper and array of fuel rods gripped thereby in an axial direction of the fuel rods relative to the fuel assembly to displace the fuel rods from the fuel rod assembly to a fuel rod release position, and

reciprocating said gripper between said fuel rod gripping position wherein the fuel rods are again gripped and said fuel rod release position wherein the fuel rods are released to withdraw the fuel rods from said fuel rod assembly in said one axial direction and advance the fuel rods along the respective passages in a fuel rod directing chamber to thereby consolidate the fuel rods into a compacted configuration of a cross-sectional area smaller than the cross-sectional area occupied by the fuel rods within the fuel rod assembly.

4,762,665

STACK FORMING APPARATUS

Alan J. Billington, and Thomas G. Rice, both of Preston, England, assignors to British Nuclear Fuels plc, Warrington, England

Filed Oct. 2, 1986, Ser. No. 914,628

Claims priority, application United Kingdom, Nov. 18, 1985, 8528347

Int. Cl.[4] G21C *21/00;* B65B *5/10*

U.S. Cl. 376—261 17 Claims



1. A method of stacking bodies in end-to-end relation to form a stack of predetermined length, said method including the steps of mechanically segregating said bodies according to length into a plurality of groups, initially drawing on said groups to build-up the stack part-way towards its overall length, measuring the length of the partly-formed stack and, depending on the extent (if any) to which the measured length deviates from a predetermined value, compensating for any such deviation by automatically selecting between said groups and mechanically routing bodies from the selected groups to the partly-formed stack in continuing to build up the stack.

4,762,666

AUTOMATICALLY CLOSING SWING GATE CLOSURE ASSEMBLY

Shih-Chih Chang; William J. Schuck, both of Richland, and Richard F. Gilmore, Kennewick, all of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 28, 1986, Ser. No. 868,223

Int. Cl.[4] G21C *19/19*

U.S. Cl. 376—264 13 Claims



1. A nuclear reactor tip off assembly, comprising:

(a) a nozzle;

(b) a closure assembly body connected to said nozzle and having an inlet adjacent said nozzle, an outlet adapted to receive a nozzle cap, and a through bore connecting said inlet and outlet, said inlet, outlet and through bore being dimensioned to permit passage of a fuel charge driven by fluid pressure in said nozzle from said nozzle through said inlet, through bore, and outlet;

(c) a swing gate in said body and moveable between a first position in which said swing gate does not seal said through bore and a second position in which said swing gate seals said through bore, said swing gate being moved to said first position by said fuel charge during said passage; and

(d) means in said body and in fluid communication with said inlet for hydraulically moving said swing gate to said second position in the absence of said fuel charge regardless of the presence of said fluid pressure in said closure assembly.

4,762,667

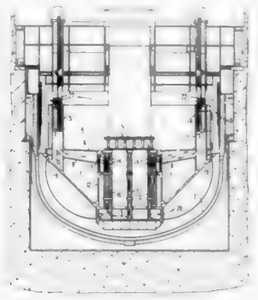
PASSIVE REACTOR AUXILIARY COOLING SYSTEM

John E. Sharbaugh, Bullskin, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 20, 1982, Ser. No. 451,530

Int. Cl.[4] G21C *15/18*

U.S. Cl. 376—298 2 Claims



1. A liquid-metal fast-breeder nuclear reactor which includes a direct reactor core auxiliary cooling system, said reactor comprising:

a reactor core disposed within a cylindrical vertically disposed core barrel, a hot-liquid-metal plenum disposed generally above said core barrel, a cylindrical liquid-metal shield forming the lateral peripheral boundary for said hot-liquid-metal plenum, a plenum divider plate extending laterally from the upper exterior portion of said core barrel to said liquid-metal shield and forming the bottom boundary for said hot-liquid-metal plenum, a baffle member affixed to the exterior of said core barrel and laterally extending therefrom to said liquid-metal shield, a radial-flow plenum formed by said plenum divider plate and said baffle member, and a cooled-liquid-metal plenum positioned beneath and about said core barrel and opening into the bottom of said core barrel;

said reactor core comprising a centrally disposed fuel-assembly region comprising individual fuel assemblies and a surrounding radial-shield-assembly region comprising individual shield assemblies which have apertures provided in the upper lateral walls thereof to permit the flow of liquid metal therethrough, and the upper portion of said core barrel having lateral apertures provided therethrough to permit the flow of liquid metal between said core barrel and said radial-flow plenum;

vertically oriented heat exchanger members disposed within said hot-liquid-metal plenum and opening into said radial-flow plenum to permit liquid metal flow therebetween, apertures provided in an upper portion of said heat-exchanger members to permit liquid metal flow between said heat-exchanger members and said hot-liquid-metal plenum, a vertically oriented cylindrical flow baffle spaced inwardly from said liquid-metal shield to form therebetween a vertical-flow plenum, and said vertical-flow plenum having apertures opening into said radial-flow plenum to permit liquid metal flow therebetween;

during normal reactor operation, a substantial pressure drop exists between said cooled-liquid-metal plenum and said hot-liquid-metal plenum to cause liquid metal to flow upwardly through said fuel assemblies to be heated thereby, liquid metal also flows upwardly through said radial-shield assemblies and into said radial-flow plenum and then upwardly through said vertical-flow plenum and then into said hot-liquid-metal plenum; and

during reactor scram conditions, liquid metal flows from said hot-liquid-metal plenum into said heat-exchange members and downwardly therethrough to be cooled and then to flow into said radial-flow plenum, thereafter the cooled liquid metal flows into said radial-shield assemblies and downwardly therethrough and into said cooled-liquid-metal plenum and then upwardly through said fuel assemblies to remove heat therefrom.

4,762,668

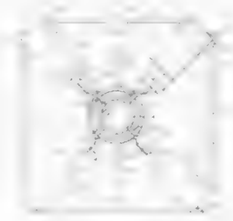
VENTURI FLOW NOZZLE ULTRASONIC CLEANING DEVICE

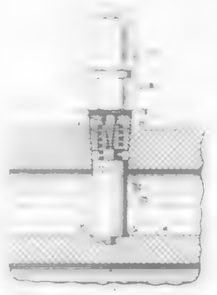
Robert A. Loose, Murrysville Boro, and William R. Rice, Monroeville Boro, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 855,265, Apr. 24, 1986, abandoned. This application Oct. 9, 1987, Ser. No. 106,962

Int. Cl.[4] G21C *19/32;* B08B *3/12*

U.S. Cl. 376—310 32 Claims





1. An ultrasonic cleaning device for a venturi flow nozzle mounted in a pipe in a fluid system comprising:

a transducer positioned adjacent and abutting said nozzle in said pipe for producing and transmitting sound waves to said nozzle; and

a mounting and sealing assembly mounted in an opening in said pipe for maintaining said transducer in position adjacent said nozzle and for sealing said opening.

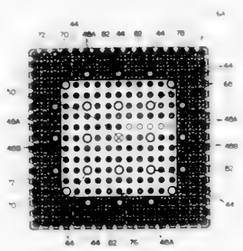
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,669

NUCLEAR REACTOR CORE CONTAINING FUEL ASSEMBLIES POSITIONED ADJACENT CORE BAFFLE STRUCTURE HAVING ANNULAR ANTI-VIBRATION GRIDS

Pratap K. Doshi, Murrysville Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 13, 1987, Ser. No. 50,833
Int. Cl.[4] G21C 3/34
U.S. Cl. 376—442 16 Claims



16. In a nuclear reactor, the combination comprising:

(a) a reactor core composed of a plurality of fuel assemblies disposed in side-by-side spaced relationships, an outer group of said fuel assemblies defining the periphery of said core and an inner group of said fuel assemblies positioned inwardly of and encompassed by said outer group thereof;

(b) each of said fuel assemblies having a plurality of elongated guide thimbles, a multiplicity of elongated fuel rods, a plurality of support grids axially spaced along and supported by said guide thimbles, each of said support grids defining a multiplicity of cells at least equal in number to said multiplicity of fuel rods for receiving respective ones of said fuel rods therethrough and supporting said fuel rods in a side-by-side array with respect to one another and to said guide thimbles;

(c) a baffle structure extending about said reactor core adjacent said fuel assemblies in said outer group thereof, said baffle structure having components being subject to unpredictable loosening with respect to one another so as to permit jetting of a coolant fluid from the exterior to the interior of said baffle structure and impingement upon fuel rods in said fuel assemblies of said outer group thereof so as to cause vibration of said fuel rods; and

(d) a plurality of annular anti-vibration grids axially spaced along, and connected to at least some of, said guide thimbles of said fuel assemblies in said outer group thereof between at least some of said support grids of said fuel assemblies in said outer group thereof, said annular grids being separate from and unconnected to said support grids, each of said annular grids defining a plurality of cells being less in number than said multiplicity of fuel rods of each of said fuel assemblies in said outer group thereof but at least equal in number to the plurality of said fuel rods positioned about the periphery of said each fuel assembly in said outer group thereof for receiving respective ones of said fuel rods therethrough and engaging said fuel rods so as to dampen vibration thereof due to impingement by coolant fluid jetting from said baffle structure;

(e) each of said annular grids being composed of a plurality of interleaved members arranged in an egg-crate configuration to define said plurality of cells and a central void region of a size to receive therethrough the rest of said fuel rods in said multiplicity thereof, each of said annular grids including

(i) a plurality of protrusions formed on said members and projecting into each of said cells in said plurality thereof through a sufficient distance to contact opposing sides of said fuel rod received through said each cell, and

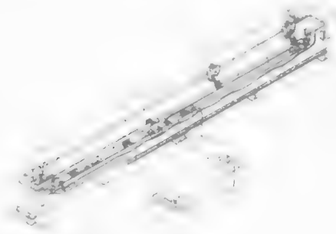
(ii) a number of sleeves adapted to receive a like number of said guide thimbles therethrough, said number of said guide thimbles being less than said plurality thereof, said sleeves being attached to said guide thimbles and unconnected with, and shorter in length than the distance between, the ones of said support grids disposed adjacent to said each annular grid.

4,762,670

CLEANING APPARATUS FOR ATOMIC REACTOR CONTROL ROD DRIVING MEANS (CRD)

Tomiharu Yoshida, Katsuta; Tatsuyuki Omote, Hitachi; Yoshimi Ishii, Kitaibaraki, and Kiyoshi Izumi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 5, 1985, Ser. No. 741,523
Claims priority, application Japan, Jun. 7, 1984, 59-116849
Int. Cl.[4] G21C 19/32
U.S. Cl. 376—313 4 Claims



1. A cleaning apparatus for an atomic reactor control rod driving means (CRD) which has been radioactively contaminated comprising a water tub having two ends for washing a CRD, rails laid within said water tub, a truck for loading said CRD installed on said rails, a CRD clamp unit mounted on said truck having means for rotating said CRD in the circumferential direction as well as for clamping said CRD, a CRD disassembling and assembling grapple unit installed within said water tub to clamp said CRD and move the same sideways, an outer-surface washing nozzle for washing on outer tube surface and strainer of said CRD, a lance installed within said water tub being insertable into the tubes of said CRD and being equipped with a nozzle assembly to spray the washing water onto the inner surface of said tubes, a filter washing nozzle unit installed within said water tub to spray the washing water onto a cylindrical filter of said CRD, a washing water recirculating pipe connected to said two ends of said water tub for recirculating the washing water back into said water tub, and a filter unit provided on a portion of the recirculating pipe to filter the washing water, said filter unit including shielding means for confining the radioactive contamination from the CRD entrained in the washing water therein so as to prevent radioactive exposure to the surrounding environment wherein said water tub is an elongated tub having a bottom member, oppposing said walls and opposing end walls, said filter washing nozzle unit being mounted adjacent only one side wall of said water tub and being pivotable about an axis extending in the elongated direction of said water tub, said filter washing nozzle unit including a cap member for substantially enclosing said cylindrical filter of said CRD and having disposed at the interior thereof a washing water ejecting nozzle and

wherein said cap member is a substantially unitary member arranged for pivoting movement from a position adjacent said one side wall to a substantially central position of said water tub and for enclosing said filter therein at the central position, said filter washing nozzle unit being disposed adjacent one end wall of said water tub.

4,762,671

INJECTION DEVICE

Masahiro Kobayashi, Ebina, and Masaru Takahashi, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 14, 1987, Ser. No. 3,224
Claims priority, application Japan, Jan. 14, 1986, 61-5575; Jul. 18, 1986, 61-169240
Int. Cl.[4] G21C 19/28
U.S. Cl. 376—316 17 Claims



1. In a nuclear reactor pressure vessel having a cylindrical side wall with an interior surface, at least one nozzle penetrating said side wall, piping penetrating said side wall at said nozzle, said nozzle and said piping forming an annular gap at said interior surface of said side wall, and means for decontaminating said reactor pressure vessel at said annular gap, said means for decontaminating comprising:

a casing;

means for suspending said casing in the reactor pressure vessel from a position above the reactor pressure vessel, whereby said casing can be positioned adjacent to the gap;

at least one injection nozzle arranged at a positive dip angle in said casing

means for supplying high-pressure liquid to said at least one injection nozzle;

means mounted on said casing for detecting that said at least one injection nozzle is positioned such that high-pressure liquid therefrom may be injected into the gap; and

means for selectively fixing said casing to the reactor pressure vessel when said detecting means detects that said at least one injection nozzle is positioned such that high-pressure liquid therefrom may be injected into the gap.

4,762,672

FAST BREEDER REACTOR

Kunitoshi Kurihara, Katsuta; Katsuyuki Kawashima; Ryoji Masumi, both of Hitachi, and Kazuo Azekura, Toukai, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 15, 1985, Ser. No. 787,390
Claims priority, application Japan, Oct. 12, 1984, 60-212532
Int. Cl.[4] G21C 7/10
U.S. Cl. 376—333 4 Claims

1. A fast breeder reactor comprising: a core having a core region encompassed by a blanket region; at least one hollow guide tube disposed inside said core and permitting the passage of a coolant therethrough; control rod means including a hollow cover member and a hollow elongated sleeve connected in series with said cover member at a lower part thereof, said control rod means adapted to be inserted into said guide tube for vertical movement therein; control rod driving means for vertically moving said control rod means via said cover member; said control rod means including a plurality of absorber rods each encased in said cover member, a neutron absorber encased in each of said absorber rods, said hollow sleeve filled with a gas and hermetically sealed with respect to said coolant, the interior of said hollow elongated sleeve having a vertical length of 10% to 100% of the vertical length of said core



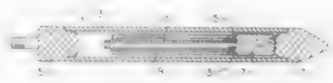
region and having a total volume greater than the total volume of neutron absorber encased in said plurality of absorber rods, the interior of said hollow elongated sleeve being void of coolant and solid material, said hollow elongated sleeve enabling an increase of core resistivity of said fast breeder reactor when positioned within said core region.

4,762,673

BURNABLE POISON ROD FOR USE IN A NUCLEAR REACTOR

Gary E. Paul, Monroeville; Ronald H. Carr, Swissvale, and Lee W. Stern, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 594,156, Mar. 28, 1984, Pat. No. 4,696,793.
This application Jan. 16, 1987, Ser. No. 4,016
Int. Cl.[4] G21C 7/04
U.S. Cl. 376—333 11 Claims



1. A nonfuel burnable poison rod for use in a nuclear reactor, said nonfuel burnable poison rod comprising:

(a) a tubular metallic cladding having upper and lower closure means, said lower closure means sealing the lower portion of said tubular cladding;

(b a neutron absorber in the form of an outer tube positioned concentrically within said tubular metallic cladding;

(c) a neutron moderating spacing means for positioning said outer neutron absorber tube in spaced relation to said lower closure means, said neutron moderating spacing means being in the form of a solid cylindrical mass of a neutron moderating material; and

(d) support means in the form of an inner metallic tube concentrically disposed within said outer neutron absorber tube and resting on said solid cylindrical mass of neutron moderating material.

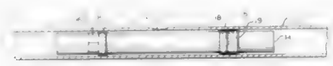
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,674

BRAZING SLEEVE HAVING CERAMIC FLUX BAND AND METHOD FOR APPLYING SAME

Wenche W. Cheng, Monroeville; Donald R. Stoner, Murrysville, and Harold T. Keller, deceased, late of Pittsburgh, all of Pa. by Patricia A. Keller, Administratrix, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 686,941, Dec. 27, 1984, Pat. No. 4,624,866.
This application Nov. 12, 1985, Ser. No. 797,348
Int. Cl.[4] G21C *15/00*
U.S. Cl. 376—405 36 Claims



26. a nuclear reactor system, comprising:
a pressure vessel;
a plurality of heat exchange tubes housed in said pressure vessel, each said heat exchange tube being of metal and having at least one open end and an elongated, generally straight axial portion extending from each such open end and having a sidewall defining a generally cylindrical interior of a given diameter; and
a sleeve construction of connected, first and second sealed joints for spanning and bypassing a defect in the sidewall of a given said heat exchange tube located at a position in the straight axial portion of said tube displaced form a given, open end thereof;
a brazing sleeve of generally cylindrical configuration having first and second ends and a first annular recess in the outer cylindrical surface thereof adjacent said first end, said sleeve having an outer diameter approximating, but smaller than, the interior diameter of said metal tube throughout at least a substantial portion of its length including said first end thereof,
a first braze preform initially received in said first annular recess of said brazing sleeve,
a first ceramic flux band initially formed on a first circumferential surface portion of said sleeve contiguous to said first annular recess and disposed interiorly thereof, said first ceramic flux band being formed by adhering a powder flux material on the circumferential surface portion and heating same sufficiently to melt the powder flux material to form an adherent, hard ceramic flux band,
said brazing sleeve being positioned within said metal tube, by insertion through said open end thereof, to span said defect between said first ceramic flux band and said second end of said sleeve, said first circumferential surface portion of said sleeve being positioned beyond said defect, relative to said open end of said metal tube,
at least said first end of said brazing sleeve being interiorly expanded and then heated to melt said first brazed preform and said first ceramic flux band and form a first sealed joint between said first circumferential portion of said sleeve and said tube, and
said second end of said brazing sleeve including means forming a second sealed joint between said sleeve and said tube.

4,762,675

PROCESS FOR COATING THE INTERNAL SURFACE OF ZIRCONIUM TUBES WITH NEUTRON ABSORBERS

Alexander L. Feild, Jr., Mt. Lebanon Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 742,153, Jun. 6, 1985, Pat. No. 4,695,476.
This application May 15, 1987, Ser. No. 50,177
Int. Cl.[4] G21C *3/06*
U.S. Cl. 376—414 5 Claims

1. A nuclear fuel rod cladding comprising a metallic tubular member selected from zirconium and a zirconium alloy having a neutron absorber on the internal surface of said tubular member, said neutron absorber consisting of a boron coating di-



rectly deposited on said internal surface by the decomposition of a volatilized boron compound in the presence of said internal surface heated to an elevated temperature of 200°–450° C.

4,762,676

TOP NOZZLE ADAPTER PLATE WITH FUEL ROD CAPTURE GRID HAVING PRESSURE DROP ADJUSTING MEANS

Robert K. Gjertsen, Monroeville Boro; John F. Wilson, Murrysville, both of Pa., and William E. Kirby, Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 5, 1985, Ser. No. 752,272
Int. Cl.[4] G21C *3/32*
U.S. Cl. 376—443 18 Claims



1. A top nozzle adapter plate for use in a fuel assembly of a nuclear reactor, said fuel assembly having a plurality of elongated structural members and a multiplicity of fuel rods disposed in a predetermined array, said fuel rods being supported in a manner which permits the possibility of upward movement thereof from said fuel assembly when acted upon by hydraulic forces occurring in upward coolant flow through said fuel assembly in said reactor, said adapter plate comprising:
(a) an upper structural component capable of rigid connection to said elongated structural members; and
(b) a lower functional component connected to said upper structural component and including a grid composed of a plurality of spaced and interleaved straps which extend in vertical planes generally parallel to the direction of coolant flow through the grid and cross one another to form intersections aligned with individual fuel rods in said array thereof, said strap intersections being capable of restraining movement of fuel rods upward from said fuel assembly while defining open channels through said grid which are capable of allowing passage of coolant flow therethrough, said lower component also including adjustable coolant flow directing means being operable to establish a predetermined desired pressure drop across said top nozzle of said fuel assembly.

4,762,677

METHOD OF PREPARING A BULK AMORPHOUS METAL ARTICLE

Benjamin P. Dolgin, Glenview, Ill., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 3, 1987, Ser. No. 116,599
Int. Cl.[4] B22F *3/24*
U.S. Cl. 419—11 11 Claims

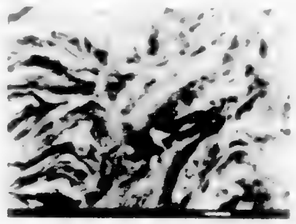
1. A method for producing a bulk amorphous metal alloy article comprising:
(a) mechanically alloying an amorphous matrix material, said material containing at least one metal, and at least one crystalline element which is a fast diffuser in the amorphous matrix material to give a powder mixture which is at least 50% but less than 100% amorphous; and
(b) forming the powder mixture into a bulk amorphous metal alloy article, having a density of at least 80% of its theoretical density, at a pressure greater than 5,000 atmospheres and a temperature from about 25° C. to below the glass transition temperature of the powder mixture, and recovering the bulk amorphous metal alloy article.

4,762,678

METHOD OF PREPARING A BULK AMORPHOUS METAL ARTICLE

Benjamin P. Dolgin, Glenview, Ill., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Nov. 3, 1987, Ser. No. 116,604
Int. Cl.[4] B22F *3/24*
U.S. Cl. 419—28 10 Claims



1. A method for producing a bulk amorphous metal alloy article comprising:
(a) mechanically alloying at least one crystalline matrix metal and at least one crystalline element which is a fast diffuser in the matrix metal into a powder mixture consisting of particles having a modulated structure, whereby the powder mixture is at least 50% but less than 100% amorphous; and
(b) forming the powder mixture into a bulk amorphous metal alloy article, having a density of at least 80% of its theoretical density, at a pressure above about 5,000 atmospheres and at a temperature from abot 25° C. to below the glass transition temperature of the powder mixture, and recovering the bulk amorphous metal alloy article.

4,762,679

BILLET CONDITIONING TECHNIQUE FOR MANUFACTURING POWDER METALLURGY PREFORMS

Harold L. Gegel, Kettering, Ohio; Yellapregada V. R. K. Prasad, Bangalore, India; Sokka M. Doraivelu, Dublin, Ohio; Raghavan Srinivasan, Fairborn, Ohio; J. S. Gunasekera, Athens, Ohio; Douglas R. Barker, Centerville, Ohio; James T. Morgan, Jr., Huber Heights, Ohio; James C. Malas, Dayton, Ohio; Kristine A. Lark, Enon, Ohio, and Lawrence E. Matson, Xenia, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 6, 1987, Ser. No. 70,276
The portion of the term of this patent subsequent to Oct. 21, 2003, has been disclaimed.
Int. Cl.[4] B22F *3/24*
U.S. Cl. 419—28 36 Claims



1. A process for manufacturing a preform of a material comprising the steps of:
(a) heating a preselected quantity of a powder of the material at a first preselected temperature under vacuum to degas said powder;
(b) compacting said powder at a second preselected temperature and at preselected pressure to provide a compact of said powder;
(c) generating flow stress data as a function of strain rate and temperature on samples of said material at preselected strain within preselected ranges of temperature and strain rate;
(d) determining from said data the power dissipation efficiency as a function of temperature and strain rate for said material within said ranges of temperature and strain rate;
(e) selecting from said data values of strain rate and corresponding extrusion temperature at which dynamic recrystallization is the dominant metallurgical mechanism characterizing said material; and
(f) extruding said compact at said extrusion temperature and at an extrusion rate corresponding to said selected strain rate to a preselected size for said preform.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,680

SILICONE RELEASE LAYERS, LAMINATES AND METHODS

John R. Pennace, Paxton, and Sharon A. Quinn, Hudson, both of Mass., assignors to Flexcon Co., Inc., Spencer, Mass.

Continuation of Ser. No. 596,767, Apr. 4, 1984, Pat. No. 4,614,677, and a continuation-in-part of Ser. No. 405,637, Aug. 5, 1982, abandoned, which is a continuation of Ser. No. 296,703, Aug. 27, 1981, and a continuation of Ser. No. 296,701, Aug. 27, 1981, which is a continuation of Ser. No. 99,265, Feb. 20, 1980, abandoned, and a continuation of Ser. No. 58,983, Jul. 10, 1979, abandoned, and a continuation of Ser. No. 969,254, Dec. 13, 1978, abandoned, and a continuation of Ser. No. 759,154, Dec. 13, 1977, abandoned, which is a continuation-in-part of Ser. No. 558,324, Mar. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 538,588, Jan. 16, 1975, abandoned. This application Sep. 19, 1986, Ser. No. 909,401

Int. Cl.[4] A61F *13/02*

U.S. Cl. 428—40 18 Claims



1. An article comprising a backing, and a releasable organopolysiloxane on said backing, said organopolysiloxane having a viscosity before curing below 1000 centipoises at 25° C.

4,762,681

CARBURIZATION RESISTANT ALLOY

Curtis S. Tassen, and Gaylord D. Smith, both of Huntington, W. Va., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Nov. 24, 1986, Ser. No. 934,261

Int. Cl.[4] C22C *19/05*

U.S. Cl. 420—443 13 Claims

1. A carburization-resistant alloy useful in carburizing atmospheres having a Po_2 of about 1.0E-2 to 1.0E-30 consisting essentially of in weight percent about 50 to about 55% nickel, about 16 to about 22% chromium, about 3 to about 4.5% aluminum, up to about 5% cobalt, up to about 5% molybdenum, up to about 2% tungsten, about 0.03 to about 0.3% carbon, up to about 0.2% rare earth element, balance essentially iron.

4,762,682

NICKEL-BASE SUPER ALLOY

Dwaine L. Klarstrom, Kokomo, Ind., assignor to Haynes International, Inc., Kokomo, Ind.

Filed Aug. 21, 1986, Ser. No. 898,568

Int. Cl.[4] C22C *19/05, 30/00*

U.S. Cl. 420—454 1 Claim

1. A nickel-base superalloy consisting essentially of, in weight percent, 20 to 24% chromium, 10 to 20% tungsten, 1.0 to 3.5% molybdenum, 0.1 to 1% manganese, 0.2 to 0.75% silicon, about 10% to 20% cobalt and the balance nickel plus normal impurities and having an N_v value of no more than about 2.5.

4,762,683

ANALYSIS DEVICE

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 16, 1986, Ser. No. 908,046

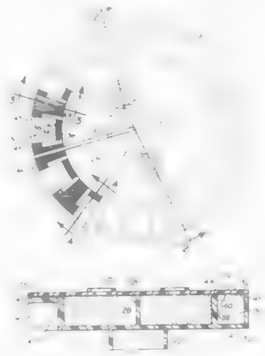
Int. Cl.[4] G01N *11/02, 33/49, 33/493*

U.S. Cl. 422—72 5 Claims

1. In a centrifugal device for analyzing a liquid sample, the device comprising a rotor having an axis of rotation, a central receptacle and a plurality of cells circumferentially spaced about the periphery of the central receptacle each of the cells defining interiors and in fluid communication with the central receptacle, said receptacle and said cells being defined by top and bottom plastic disks secured to each other with fluid communication provided by film capillaries formed between adjacent surfaces of the disks, the improvement wherein the film capillaries comprise:

a plurality of hydrophilic film capillaries positioned in an annulus about the periphery of the central receptacle and extending radially between each of two circumferentially-spaced cells,

a first plurality of hydrophobic film capillaries positioned in the annulus about the periphery of the central receptacle



and extending circumferentially between each of said hydrophilic film capillaries and one of said circumferentially-spaced cells,

a second plurality of hydrophobic film capillaries positioned in the annulus about the periphery of the central receptacle and extending radially between the central receptacle and each of the circumferentially spaced cells, such that the interior of each of the circumferentially-spaced cells is in fluid communication with one of said hydrophilic film capillaries through one of said first plurality of hydrophobic film capillaries.

4,762,684

APPARATUS FOR DECOMPOSING SODIUM ALUMINATE LIQUORS WITHOUT AGITATION TO PRODUCE ALUMINA

Eric Chantriaux; Henri Grobelny, both of Provence, and Yves Perret, Gardanne, all of France, assignors to Aluminium Pechiney, Paris, France

Division of Ser. No. 831,269, Feb. 20, 1986, Pat. No. 4,666,687.

This application Jan. 13, 1987, Ser. No. 3,046

Claims priority, application France, Mar. 20, 1985, 85 04598

Int. Cl.[4] B01F *13/02*

U.S. Cl. 422—106 7 Claims

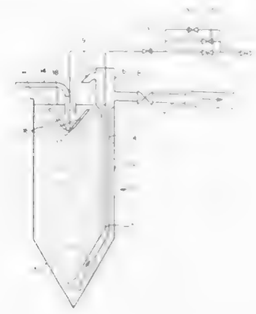
1. Apparatus for decomposing a sodium aluminate liquor supersaturated with alumina obtained from alkaline action on bauxite by the Bayer process, decomposition being initated by introduction of alumina trihydrate seed to the liquor, to trigger the decomposition by forming a suspension, without agitation, said apparatus comprising:

a cylindrical-conical reactor for containing the liquor to be decomposed, said reactor being cylindrical in an upper portion and conical in a lower portion, with the lower portion terminating in a tip defined at a lowermost portion of the reactor;

means for feeding the alumina trihydrate seed to the liquor at the upper portion of said reactor;

a tube having an upper end adjacent the upper portion of said reactor and a lower end adjacent the tip, wherein the lower end of said tube opens into the reactor at the lowermost portion of the reactor and the upper end of the tube is closed to the reactor;

means for injecting pressurized air in said tube in the vicinity of the lower end of said tube;



means connected to said tube proximate the upper end of said tube for removing suspension in the tube from said reactor without being returned to the reactor, said removing means including means for deaerating the suspension removed from the reactor.

4,762,685

APPARATUS TO RECOVER TRITIUM FROM TRITIATED MOLECULES

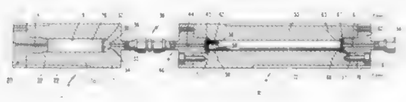
William A. Swansiger, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 661,852, Oct. 17, 1984, Pat. No. 4,657,747.

This application Oct. 15, 1986, Ser. No. 919,167

Int. Cl.[4] G21F *9/06*; B01D *59/28*; C01B *3/10*

U.S. Cl. 422—159 14 Claims



1. Apparatus for recovering tritium from tritiated water and tritiated species such as methane and ammonia and the like, comprising:

(a) reactor means having a reactor chamber charged with a mixture of uranium and a first inert substance, said mixture for decomposing an injected steam mixture to recover tritium therefrom via an exothermic reaction of said uranium with the steam, said reaction inducing temperatures in the reaction chamber in excess of the melting of uranium, said reactor means including an outer vessel having wall means establishing said reaction chamber with in the vessel, said wall means being formed of material that prevents a reaction between the outer vessel with uranium, said inert substance being a refractory material and said outer vessel being of sufficient thickness to conduct heat at heat transfer rates sufficient to prevent the wall means and vessel from attaining center line temperatures prevailing in the reaction chamber;

(b) preheating means connected to said reactor means for receiving a supply of tritiated water for preheating said tritiated water to temperatures of about 600° C.; and

(c) receiving means connected to said reaction chamber for receiving tritium from said reaction chamber.

4,762,686

FLUE GAS SCRUBBER SYSTEM

John M. Lehto, Cokato, Minn., assignor to Northern States Power Company, Minneapolis, Minn.

Filed Jun. 9, 1986, Ser. No. 872,118

Int. Cl.[4] B01D *47/02, 50/00, 53/34*

U.S. Cl. 422—168 8 Claims



1. A scrubber module for simultaneous removal of fly ash and sulfur dioxide from flue gas, comprising:

a tank having upper and lower ends, the lower end of said tank being capable of being filled with aqueous absorbent;

means defining a flue gas inlet in the upper end of said tank;

means defining a flue gas outlet in the upper end of said tank in spaced relationship with the flue gas inlet therein;

partition means for dividing the upper end of said tank into two subchambers in respective fluid communication with the flue gas inlet and the flue gas outlet;

said partition means including a plurality of horizontal fingers each bounded in part by interconnected spaced-apart side walls with end walls connected between adjacent fingers in order to define a zig-zag lower edge submerged in said aqueous absorbent, one side of said partition means opening onto the subchamber communicating with the flue gas inlet for directing the flue gas through the aqueous absorbent, and the other side of said partition means opening into the subchamber communicating with the flue gas outlet; and

means extending into said tank beneath said partition means for introducing an oxygen containing gas into said aqueous absorbent.

4,762,687

MEANS FOR FORMING A MELT OF A SEMICONDUCTOR MATERIAL IN ORDER TO MAKE A CRYSTALLINE ELEMENT GROW THEREIN

Christian Bélouet, Sceaux, and Michel Mautref, Ozoir la Ferriere, both of France, assignors to Societe Nationale Elf Aquitaine, Courbevoie and Compagnie General d'Electricite, Paris, both of, France

Filed Dec. 23, 1986, Ser. No. 945,710

Claims priority, application France, Dec. 23, 1985, 85 19041

Int. Cl.[4] C30B *21/06, 35/00*

U.S. Cl. 422—253 3 Claims

1. In an apparatus for forming a melt of a semiconductor material in order to make a crystalline element grow therein, comprising:

a crucible,

feed means for conveying semiconductor material into the crucible,

means for heating the crucible,

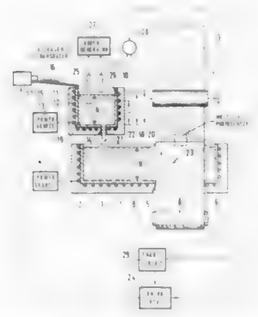
and means for bringing about the growth of the crystalline element in the melt, the improvement wherein said feed means for conveying semiconductor material into the crucible comprises:

VOL 1093 ISS 2 AG 9 1988 UMI

a vessel having an opening in the bottom thereof, said vessel being disposed above the crucible such that said opening is vertically aligned with the inside of the crucible,

means for the controlled supplying of said vessel with granules of the said semiconductor material,

means for heating said vessel to bring about fusion of the granules to form a melt of semiconductor material therein, the size of the cross-section of the opening in the bottom of the vessel being selected so that said semiconductor



material melt remains inside the vessel as long as the level of said melt does not reach a first, high value and that the melt flows freely out through the opening in the bottom of the vessel into the crucible to form said crucible melt as soon as the level of melt reaches said first value, and that the outflow of melt continues as long as the level of the melt inside the supply vessel remains higher than a second value, less than said first value, and control means responsive to the level in said crucible for controlling said granule supply means of said vessel.

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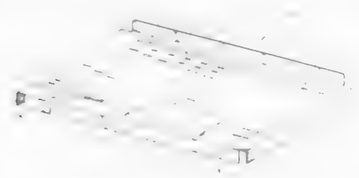
AUTOCLAVE TRAY FOR SURGICAL APPARATUS

Bernie B. Berry, Jr., 5315 E. Pleasant Run Pkwy., S. Dr., Indianapolis, Ind. 46219

Continuation of Ser. No. 921,888, Oct. 26, 1988, abandoned, which is a continuation of Ser. No. 819,205, Jan. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 579,022, Feb. 10, 1984, abandoned. This application May 13, 1987, Ser. No. 49,027

Int. Cl.[4] A61L *2/00, 31/00;* B65D *81/18*

U.S. Cl. 422—310 19 Claims



1. An autoclave tray for sterilization of surgical components and equipment, comprising:

(a) a plurality of slotted, flexible, synthetic holders;

(b) said holders each including a base portion, a body portion, and a connecting portion;

(c) said connecting portion having a width narrower than said base portion and said body portion;

(d) said body portion including means for receiving and retaining a surgical component;

(e) a tray including a plurality of oblong slots spaced from an outer periphery of said tray each of said holders having its connecting portion positioned within one of said oblong slots thereby connecting said holders to said tray;

(f) said oblong slots including first and second portions;

(g) said first portion including an elongated channel having a width;

(h) said second portion including an enlarged portion having a width greater than the width of said channel;

(i) said connecting portion of said holders having a width substantially equal to the width of said channel;

(j) said enlarged portion having a width greater than said base portion of said holders for permitting said base portion to pass therethrough for readily connecting and disconnecting said holders from said tray; and

(k) said body portion including a lower portion having a width greater than said channel.

8. An apparatus for retaining instruments, comprising:

(a) a plurality of slotted, flexible, synthetic holders;

(b) said holders each including a base portion, a body portion, and a connecting portion;

(c) said connecting portion having a width narrower than said base portion and said body portion;

(d) said body portion including means for receiving and retaining an instrument;

(e) a tray including a plurality of oblong slots spaced from an outer periphery of said tray each of said holders having its connecting portion positioned within one of said oblong slots thereby connecting said holders to said tray;

(f) said oblong slots including first and second portions;

(g) said first portion including an elongated channel having a width;

(h) said second portion including an enlarged portion having a width greater than the width of said channel;

(i) said connecting portion of said holders having a width substantially equal to the width of said channel;

(j) said enlarged portion having a width greater than said base portion of said holders for permitting said base portion to pass therethrough for readily connecting and disconnecting said holders from said tray; and

(k) said body portion including a lower portion having a width greater than said channel.

4,762,689

COMBINATION OF RETAINING MODULE AND CATALYST PLATES

Alfred Frey, Wattenheim; Daniel Grimm, Schlangenbad-Bärstadt, and Hartmut Kainer, Wiesbaden, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 12, 1986, Ser. No. 930,315

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1985, 3539887

Int. Cl.[4] A47G *29/00;* B65D *85/42, 85/48*

U.S. Cl. 422—310 18 Claims

2. A retaining module containing and in combination with catalyst plates, said retaining module receiving and detachably retaining a plurality of substantially planar catalyst plates, said plates having a given thickness, said retaining module with catalyst plates comprising:

four receiving members receiving and holding said catalyst plates in an array;

a pair of side walls which are secured to opposing ends of each of said receiving members;

said receiving members comprising:

a first and upper pair comprising a first set of said receiving members, said first pair of upper receiving members having substantially parallel slots spaced apart and each sized to admit, in sliding engagement, said catalyst plates, and to maintain them spaced apart from one another;

a second and lower pair of said receiving members having a second set of substantially parallel slots sized to admit, in sliding engagement, said plates while maintaining said plates spaced apart;

said lower pair providing along their lower end, a flange which comprises an arresting base for lower portions of said catalyst plates, said slots having a slot width substantially similar to said thickness of said catalyst plates;

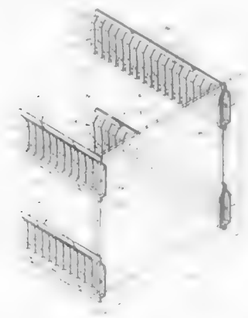
a first of said upper receiving members being aligned substantially directly above a first of said lower receiving members;

a second of said upper receiving members being aligned substantially directly above a second of said lower receiving members;

said parallel slots of said first and second of said upper receiving members being disposed in relation to said slots of said first and second of said lower receiving members for receiving in each aligned slot one of said plates;

means for retaining said plates in said slots and for substantially preventing sidewise movement of said plates;

means for retaining said receiving members disposedly aligned to one another;



said four receiving members and said side walls forming a frame of said module;

said module having a top and bottom and two sides between said side walls;

said module, with the catalyst plates disposed therein, being substantially open, between said four receiving members, at its top and bottom ends and on both of the sides between said side walls;

said catalyst plates forming substantially unobstructed spaces thereinbetween;

said spaces being elongated;

said catalyst plates defining said spaces as planar spaces between said catalyst plates; and

said planar spaces being disposed to permit a substantially unobstructed flow of gases in said planar spaces at least between said top and bottom and between the sides of the module along said planar spaces.

4,762,690

PROCESS FOR THE SEPARATION OF CATIONS FROM AQUEOUS SOLUTIONS

Herbert Brunner, Grunaustrasse 15, D-6450 Hanau 9; Reinhard Ballhorn, Darmstadterstrasse 72, D-6053 Obertshausen 2, and Roland Schwab, Talblick 6, D-8502 Weiherhof, Fed. Rep. of Germany

Filed Dec. 2, 1986, Ser. No. 937,164

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1985, 3542640

Int. Cl.[4] A62D *3/00;* G21F *9/12*

U.S. Cl. 423—3 14 Claims

1. A process for separating a cation selected from the group consisting of alkaline earth metals, lanthanides, actinides, ferrous metals, titanium, zirconium, hafnium, chromium, molybdenum, tungsten, vanadium, niobium tantalum, aluminum and lead from an aqueous solution comprising employing Crandallite of the general formula $MeAl_3(PO_4)_2(OH)_5.H_2O$ where Me is an alkaline earth metal, at a pH above 6 and a temperature above 40° C.

4,762,691

METHOD AND A DEVICE FOR EXTRACTING METAL IONS

Akira Miyazaki, Matsudo; Kenji Bansho, Ibaraki; Akira Kimura, Kashiwa, and Hiroaki Tao, Ibaraki, all of Japan, assignors to Director General of Agency of Industrial Science and Technology, Japan

Filed Mar. 11, 1987, Ser. No. 24,715

Claims priority, application Japan, Mar. 17, 1986, 61-58959

Int. Cl.[4] B01D *11/04*

U.S. Cl. 423—24 3 Claims

1. A method for extracting metal ions contained in an aqueous solution with an extractant including an organic solvent and capable of extracting the metal ions to form an upper organic phase containing the extracted metal ions and a lower aqueous phase containing the aqueous solution from which the metal ions have been extracted, said method comprising:

providing a vessel, said vessel including a lower portion and an upper portion; said upper portion having an inside diameter smaller than that of said lower portion and a liquid withdrawal port defining a predetermined level in said upper portion;

supplying first volume of the aqueous solution to said vessel;

supplying a second volume of the extractant to said vessel, the volume of organic solvent in said second volume being less than the volume of said upper portion above said predetermined level and the total of said first and second volumes being smaller than the volume of said lower portion;

stirring said aqueous solution and said extractant contained in said vessel to effect the extraction of the metal ions, so that an upper organic phase containing the extracted metal ions is formed above a lower aqueous phase containing the aqueous solution from which the metal ions have been extracted;

feeding a fluid immiscible with said organic phase to said vessel in an amount so that the interface between said organic and aqueous phases is raised to a level which is adjacent said liquid withdrawal port, to enable withdrawal of said organic phase through said liquid withdrawal port; and

withdrawing said organic phase through said liquid withdrawal port.

4,762,692

PROCESS FOR THE PRECIPITATION AND SEPARATION OF CADMIUM SULPHIDE FROM THE RAFFINATES DERIVED FROM PHOSPHORIC ACID PURIFICATION

Klaus Beltz, Budenheim; Klaus Frankenfeld, Hünfelden; Peter Ruschke, Budenheim, and Gerhard Eich, Ingelheim, all of Fed. Rep. of Germany, assignors to Chemische Fabrik Budenheim Rudolf A. Oetker, Budenheim, Fed. Rep. of Germany

Filed Feb. 12, 1987, Ser. No. 13,885

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622597

Int. Cl.[4] C01B *25/234, 25/46;* C01G *11/02*

U.S. Cl. 423—321 R 13 Claims

1. A process for the precipitation and separation of cadmium sulphide from a raffinate derived from purification of phosphoric acid, comprising the steps of:

treating an aqueous cadmium containing raffinate phase with a H_2S containing solvent phase under agitation conditions sufficient to produce a cadmium sulphide precipitate in the solvent phase; separating the raffinate phase from the cadmium sulphide containing solvent phase; and separating the precipitated cadmium sulphide from the solvent phase, wherein said H_2S containing solvent phase is miscible to partly miscible with water and phosphoric acid but

VOL 1093 ISS 2 AUG 9 1988 UMI

substantially immiscible with the raffinate phase, and comprises an organic compound having up to 6 carbon atoms and at least one oxygen atom.

4,762,693

PROCESS FOR WORKING UP HEAVY METAL-CONTAINING RESIDUES ORIGINALLY FROM THE DECONTAMINATION OF CRUDE PHOSPHORIC ACID

Günther Schimmel; Reinhard Gradl, both of Erftstadt, and Friedrich Kolkmann, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Hurth Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 873,427, Jun. 12, 1986, abandoned. This application Apr. 16, 1987, Ser. No. 39,792

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1985, 3522822

Int. Cl.[4] C01B *25/46*

U.S. Cl. 423—321 S 3 Claims

1. A process of working up a heavy metal-containing residue obtained on subjecting crude phosphoric acid to extractive decontamination in an extractive decontamination stage using a dialkyldithiophosphoric acid ester in combination with an adsorbent, the residue consisting substantially of the adsorbent and the said ester containing heavy metal values extracted from the phosphoric acid which process comprises recovering the said heavy metals by treating the residue with an oxidant until the said ester is destroyed, with the resultant formation of an aqueous suspension of the adsorbent in a salt solution also formed thereby, separating the adsorbent from the salt solution thus obtained, discarding or recycling the separated adsorbent into the extractive decontamination stage, removing the salts from the solution by evaporating the solution or neutralizing the salt solution and separating therefrom heavy metal oxides or hydroxides being formed.

4,762,694

MOLTEN SALT EXTRACTION PROCESS FOR THE RECOVERY OF VALUED TRANSITION METALS FROM LAND-BASED AND DEEP-SEA MINERALS

Victor A. Maroni, Naperville, Ill., and Samuel von Winbush, Huntington, N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 44,618, May 1, 1987, abandoned. This application Aug. 21, 1987, Ser. No. 88,525

Int. Cl.[4] C01G *45/00*

U.S. Cl. 423—50 5 Claims

1. A process for recovering at least three transition metals from an ore by direct dissolution of the ore in a molten salt comprising the steps of

combining the ore with said molten salt containing mixed alkali or alkaline earth metal chlorides or mixtures thereof to dissolve the transition metals as chlorides in the molten salt, the salt being at a temperature of not more than 500° C.,

removing at least one transition metal chloride from the molten salt by distillation at a temperature below about 500° C.,

electrolytically recovering at least a second transition metal from the molten salt at a voltage with respect to Ag/AgCl that is not more negative than about −1.5 volts, and

treating the remaining molten salt with a source of oxygen to precipitate an oxide of at least a third transition metal.

4,762,695

METHODS FOR PREPARING HIGH-PURITY MOLYBDENUM OR TUNGSTEN POWDER AND HIGH-PURITY OXIDES POWDER OF THE SAME

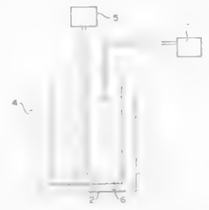
Hiroshi Endo; Shigeo Iiri; Masaru Hayashi; Tsutomu Yamashita, all of Yokohama; Satoshi Yamaguchi, Tokyo, and Motoo Seimiya, Yokosuka, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Continuation of Ser. No. 830,844, Feb. 19, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 94,074

Claims priority, application Japan, Mar. 4, 1985, 60-41238; Jun. 24, 1985, 60-136087; Sep. 4, 1985, 60-193814; Sep. 27, 1985, 60-212609

Int. Cl.[4] C01G *39/02, 41/02;* C22B *34/34, 34/36*

U.S. Cl. 423—54 22 Claims



1. A method for preparing a molybdenum or tungsten powder which comprises:

a first step of dissolving a first powder comprised of (a) molybdenum, an oxide of molybdenum, tungsten or an oxide of tungsten and (b) impurities in water that contains an acid and hydrogen peroxide such that the resulting aqueous solution has an acid concentration of 0.4N of less and said hydrogen peroxide is present in a concentration ranging between about 5% and 35% by weight;

a second step of bringing said aqueous solution, which comprises molybdenum or tungsten anion in the 7+ oxidation state, into contact with an H type cation exchange resin, such that impurities present as cations in said aqueous solution are adsorbed by said resin but molybdenum or tungsten anion in said aqueous solution pass through said resin, said impurities comprising at least one from the group consisting of Na, K, Mg, Ca, Cu, Mn, Fe, Ni, Cr, Zn, U, and Th;

a third step of concentrating said aqueous solution to produce a second powder; and

a fourth step of heating said second powder in the presence of hydrogen to produce a concentrated solid material consisting essentially of molybdenum or tungsten.

4,762,696

METHOD OF PURIFICATING TITANIUM TETRACHLORIDE

Hiroshi Ishizuka, 19-2, Ebara 6-chome, Tokyo, Japan

Continuation of Ser. No. 745,029, Jun. 17, 1985, abandoned. This application May 7, 1987, Ser. No. 48,491

Claims priority, application Japan, Jun. 30, 1984, 59-136036

Int. Cl.[4] C01G *23/02*

U.S. Cl. 423—77 6 Claims

1. A method of purifying titanium tetrachloride, comprising: heating in a vessel a loose mass of catalytic metal to a temperature over 300° C. introducing vapor of a crude titanium tetrachloride to contact with said metal, said chloride comprising a minor amount of titanium oxychloride of formula $TiOCl_2$, causing a reaction to deoxidize and convert a substantial part of the oxychloride to substances which are less volatile than titanium tetrachloride, removing such substances in condensed state from the titanium tetrachloride in fluid state, and recovering thus purified titanium tetrachloride.

4,762,697

REMOVAL OF PHOSPHORUS FROM MUD

Michael A. Nield, Placentia, Canada, and Basil N. Robbins, Birmingham, England, assignors to Tenneco Canada Inc., Islington, Canada

Filed May 5, 1986, Ser. No. 859,440

Int. Cl.[4] C01B *25/01*

U.S. Cl. 423—304 7 Claims



1. In a method of processing an aqueous phosphorus-containing solids-containing waste material containing about 5 to about 75 wt. % of elemental phosphorus and which is phosphorus mud obtained as a by-product in the electrothermal production of elemental phosphorus by removing the water and phosphorus substantially completely therefrom, the improvement in said processing which consists essentially of the steps of:

first boiling off said water from said waste material to effect said substantially-complete removal of water therefrom,

next boiling-off yellow phosphorus from said waste material, and

finally burning off residual phosphorus remaining from said boiling-off of yellow phosphorus from said waste material,

whereby said boiling-off of yellow phosphorus and said burning-off of said residual phosphorus effects substantially complete removal of phosphorus from said waste material to produce a substantially phosphorus-free solid residue.

4,762,698

METHOD FOR INCREASING FLUOSILICIC ACID RECOVERED FROM WET PROCESS PHOSPHORIC ACID PRODUCTION

J. Jay Yarnell; Craig A. Pflaum; Arthur F. Davidson, and Harry J. Kuhn, all of Lakeland, Fla., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed May 7, 1987, Ser. No. 46,737

Int. Cl.[4] C01B *33/08, 25/16, 11/00*

U.S. Cl. 423—341 4 Claims

1. In a method for increasing the fluosilicic acid (FSA) recovered from a wet process phosphoric acid manufacturing process wherein the filtrate obtained by washing the filter cake is pumped to a stripper and reacted with H_2SO_4 thereby converting the FSA dissolved in said filtrate to gaseous SiF_4, said gaseous SiF_4 being recovered from the acid-filtrate reaction mixture and converted to FSA, the improvement comprising:

adding a defoamer to said acid-filtrate mixture thereby reducing the foam produced by said reaction and increasing the amount of gaseous SiF_4 recovered from said reaction.

4,762,699

SYNTHESIS OF MOLYBDENUM HEXACARBONYL

Wilbur W. Swanson, Ann Arbor, Mich., assignor to Amax Inc., Greenwich, Conn.

Filed Apr. 20, 1987, Ser. No. 39,865

Int. Cl.[4] C01G *1/04, 39/00*

U.S. Cl. 423—417 8 Claims

1. The method for preparing molybdenum hexacarbonyl which comprises reacting diammonium oxopentachloromolybdate (V) in a coordinating organic solvent with carbon monoxide under pressure between about 500 psi up to about 2000 psi and a temperature of about 100° to about 150° C. in the presence of a metallic reductant and, optionally, an oxygen scavenger.

4,762,700

AMMONIUM OCTAMOLYBDATE-ALPHA

Dale K. Huggins, Golden, Colo., assignor to Amax Inc., Greenwich, Conn.

Filed May 11, 1987, Ser. No. 48,352

Int. Cl.[4] C01G *39/00*

U.S. Cl. 423—593 6 Claims

1. The method for producing fine ammonium octamolybdate-alpha which comprises adding fine molybdic oxide to ammonium molybdate dissoved in an aqueous medium, said molybdic oxide being added to said ammonium molybdate solution in substantially a stoichiometric amount to form a slurry, heating said slurry at substantially the boiling temperature sufficient to provide substantial thickening thereof and then digesting the thickened slurry, filtering and drying the resulting fine ammonium octamolybdate-alpha of high purity.

4,762,701

IN VIVO CELLULAR TRACKING

Paul K. Horan, West Chester, and Sue E. Slezak, Downingtown, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Oct. 31, 1986, Ser. No. 925,445

Int. Cl.[4] A61K *49/02, 49/00*

U.S. Cl. 424—1.1 40 Claims

1. A method for tracking cells in vivo in a subject that comprises determining the location of cyanine dye-labelled cells previously administered to the subject.

4,762,702

PHARMACEUTICAL PREPARATION CONTAINING IBUPROFEN AND A PROCESS FOR ITS PREPARATION

Gerhard Gergely; Thomas Gergely, and Irmgard Gergely, all of Gartengasse 8, A-1050 Vienna, Austria

Filed Nov. 4, 1985, Ser. No. 794,636

Claims priority, application Fed. Rep. of Germany, Nov. 5, 1984, 3440288

Int. Cl.[4] A61K *9/46*

U.S. Cl. 424—44 8 Claims

1. An ibuprofen containing pharmaceutical preparation for making up an instant drink and comprising a therapeutically effective amount of ibuprofen particles, a hydro-colloid, and fumaric acid, wherein said hydro-colloid and fumaric acid coat said ibuprofen particles.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,703

NITROCELLULOSE FREE NAIL LACQUER COMPOSITION

Eric S. Abrutyn, Middletown, N.Y., assignor to Dow Corning Corp., Midland, Mich.

Continuation-in-part of Ser. No. 809,846, Dec. 17, 1985, abandoned, which is a continuation of Ser. No. 635,723, Jul. 30, 1984, abandoned, which is a continuation of Ser. No. 342,397, Jan. 25, 1982, abandoned. This application Aug. 18, 1987, Ser. No. 87,998

Int. Cl.[4] A61K *7/043*

U.S. Cl. 424—61 9 Claims

1. In an anhydrous waterproof nitrocellulose free nail lacquer composition for human nails containing about 10 to about 40%, by weight, copolymers the improvement comprises copolymers which are the reaction products of about 5 to about 30%, by weight, of diacetone acrylamide and about 70 to about 95%, by weight, of esters of α, β unsaturated carboxylic acids and alcohols, said esters formed from a mixture comprising:

(i) about 5 to about 48%, by weight, of straight chain alcohols,

(ii) about 5 to about 60%, by weight, of cyclic alcohols,

(iii) about 1 to about 25%, by weight, of higher alkyl alcohols, and

(iv) about 1 to about 30%, by weight, of alkoxy or aryloxy alkyl alcohols.

4,762,704

ANTIPERSPIRANT COMPOSITIONS, CONTAINING CERTAIN ANTIHISTAMINES AND CERTAIN ANTIHISTAMINE ENHANCERS

Ronald R. Rafft, Towaco; Michael D. Helman, Edison, both of N.J., and Leonard Mackles, New York, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 506,930, Jun. 22, 1983, abandoned. This application Apr. 28, 1986, Ser. No. 859,188

Int. Cl.[4] A61K *7/32, 9/07, 9/08, 9/10*

U.S. Cl. 424—65 24 Claims

1. A topical antiperspirant comprising an active antiperspirant agent consisting essentially of an antihistamine distributed in a liquid vehicle containing an enhancer for the antiperspirant activity of said antihistamine,

(a) said antihistamine being selected from the group consisting of, pyrilamine, tripelennamine, diphenhydramine, phenindamine and their corresponding pharmaceutically acceptable salts;

(b) said antihistamine enhancer being selected from the group consisting of aqueous solutions of sodium sulfate, glutamic acid, octyl palmitate and propylene glycol methyl ether;

(c) said antihistamine being present in said vehicle in sufficient concentration to inhibit perspiration;

(d) said enhancer also being present in said vehicle at a concentration sufficient to enhance the antiperspirant effectiveness of said antihistamine; and

(e) said enhancer selected for said composition being one that enhances the antiperspirant effectiveness of the antihistamine contained in said composition.

4,762,705

CANCER THERAPY WITH INTERFERON

David Rubin, 5 Rav Zair, Jerusalem, Israel, assignor to Adolf W. Schwimmer, Savyon, Israel; Irwin Steven Schwartz, Tel-Aviv, Israel and David Rubin, Jerusalem, Israel

Continuation of Ser. No. 320,088, Nov. 10, 1981, abandoned. This application Mar. 29, 1984, Ser. No. 594,436

Int. Cl.[4] A61K *45/02*

U.S. Cl. 424—85 9 Claims

1. A method for improving the effectiveness of interferon in the treatment of neoplastic conditions accompanied by an increase of the patient's serum tyrosinase level substantially above normal, comprising administering an agent for inhibiting tyrosinase in an amount sufficient to substantially inactivate the tyrosinase in the serum of the patient being treated with interferon, and administering the interferon during the time in which the tyrosinase is being inhibited by said agent.

4,762,706

PEPTIDE ANTIBODIES AND THEIR USE IN DETECTING ONCOGENE PRODUCTS

Francis P. McCormick, Berkeley; Gail L. Wong, Oakland; Robin Clark, San Leandro; Norman Arnheim, Piedmont; Danute E. Nitecki, Berkeley, all of Calif., and James R. Fernisco, Cold Spring Harbor, N.Y., assignors to Cetus Corporation, Emeryville, Calif. and Cold Spring Harbor Laboratories, Cold Spring Harbor, N.Y.

Filed Oct. 17, 1984, Ser. No. 661,686

Int. Cl.[4] A61K *39/395*

U.S. Cl. 424—85 9 Claims

5. A process for inhibiting the growth of one or more cancerous cells comprising contacting one or more cancerous cells with a composition comprising an antibody which binds selectively to a characteristic marker epitope encompassing amino acid position 12 of an activated form of p21 protein, which epitope is at least partially responsible for the growth of said cancerous cells, said epitope not present in the corresponding proto-oncogene product.

4,762,707

NEW CONJUGATES ASSOCIATING, BY COVALENT BOND, AN ENZYME WITH AN ANTIBODY, AND MEDICINAL ASSOCIATIONS USING THE SAID CONJUGATES

Franz Jansen, St. Mathieu De Treviers, and Pierre Gros, Montpellier, both of France, assignors to Sanofi (Societe Anonyme), Paris, France

Continuation of Ser. No. 475,127, Mar. 14, 1983, abandoned. This application May 21, 1985, Ser. No. 736,334

Claims priority, application France, Mar. 17, 1982, 82 04547

Int. Cl.[4] A61K *39/395, 39/44, 37/48;* C12N *11/02*

U.S. Cl. 424—85 11 Claims

1. An immunoenzymic conjugate comprising an antibody or a fragment thereof having the capacity to recognize a specific antigen, covalently bonded to an enzyme capable of producing ammonium ions from natural substrates well tolerated in higher animal organisms.

4,762,708

MATERIALS AND METHODS FOR HERPES SIMPLEX VIRUS VACCINATION

Gary H. Cohen, Havertown, Pa., and Roselyn J. Eisenberg, Haddonfield, N.J., assignors to University Patents, Inc., Norwalk, Conn.

Continuation-in-part of Ser. No. 350,021, Feb. 18, 1982, abandoned. This application Feb. 4, 1983, Ser. No. 463,141

Int. Cl.[4] A61K *39/245*

U.S. Cl. 424—89 2 Claims

1. A vaccine composition for use in generating an immunological response protective against Herpes simplex virus type 1 and Herpes simplex virus type 2 disease states, said vaccine comprising: an immunologically effective amount of a protective immunologically active preparation of purified and isolated Herpes simplex virus type 1 envelope glycoprotein gD-1, purified by selective reversible binding to a monoclonal anti-gD antibody immunoadsorbent; and, an immunologically acceptable diluent, adjuvant or carrier.

4,762,709

LIQUID PROLONGED RELEASE PHARMACEUTICAL FORMULATIONS CONTAINING IONIC CONSTITUENTS

Jerry L. Sheumaker, Fairport, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 532,864, Sep. 16, 1983, abandoned. This application Jan. 31, 1986, Ser. No. 825,681

Int. Cl.[4] A61K *31/74*

U.S. Cl. 424—79 17 Claims

1. A formulation of an ionic drug wherein the drug is present as a component of a coated drug-resin complex suspended in a liquid carrier which carrier also contains a second ionic component bearing the same charge as the coated complexed drug,

the second ionic component being present as a component of an uncoated resin complex,

the resin particle of the coated drug-resin complex being an ion exchange resin having been treated in an amount sufficient to retard its rate of swelling in water with an impregnating agent selected from the group consisting of polyethylene glycol, propylene glycol, mannitol, lactose and methylcellulose, and which treated particle has been subsequently coated with a water-permeable diffusion barrier,

the second ionic component being present in an amount that would disturb the dissolution profile of the coated drug-resin complex if that amount was present in unbound form instead of as a component of an uncoated resin complex, and

the resin of the uncoated resin particle being an ion exchange resin present in an amount that is sufficient to bind the second ionic component but is not so large as to disturb the dissolution profile of the coated drug-resin complex.

4,762,710

NOVEL METHOD OF PREPARING TOXOID BY OXIDATION AND METAL IONS

Ronald D. Sekura, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Jun. 16, 1986, Ser. No. 874,637

Int. Cl.[4] A61K *39/10, 39/02;* C07K *15/04*

U.S. Cl. 424—92 18 Claims

1. A method of preparing toxoid comprising treating at least partially isolated protein toxin with an amount of an oxidant and trace amount of a metal ion to chemically inactivate said toxin while retaining immunogenic property of said toxin and thereafter recovering the inactivated toxin or parts thereof, wherein said oxidant oxidizes said toxin at specific positions in peptide chain of the toxin where amino acid residues selected from the group consisting of cysteine, cystine, methionine, tryptophan and tyrosine occur.

4,762,711

LIVE VACCINE FOR BOVINE BABESIOSIS

Gerald M. Buening, and Charles A. Carson, both of Columbia, Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 663,844, Oct. 31, 1984, Pat. No. 4,590,072, which is a continuation of Ser. No. 438,641, Nov. 3, 1982, abandoned. This application Feb. 25, 1986, Ser. No. 833,102

Int. Cl.[4] A61K *39/018;* C12N *1/10*

U.S. Cl. 424—93 2 Claims

1. A live parasite vaccine for safe immunization of bovines against severe babesiosis infection, which comprises an aqueous carrier administrable to bovines containing viable bovine erythrocytes parasitized with homologous fastgrowing avirulent *Babesia bovis* consisting of a clone population, identified as ATCC No. 40056, said vaccine being free of erythrocytes containing *B. bovis* other than said clone population, the clone population in said vaccine being composed of a sufficient number of viable parasites to produce a mild babesiosis infection when administered to a non-immune bovine.

4,762,712

ANTI-MASTITIS POLYVALENT VACCINE, METHOD OF ADMINISTRATION AND METHOD FOR PRODUCTION THEREOF

Ralph J. Stolle, Oregonia, Ohio, and Lee R. Beck, Birmingham, Ala., assignors to Stolle Research & Development Corporation, Cincinnati, Ohio

Filed Aug. 31, 1983, Ser. No. 528,132

Int. Cl.[4] A61K *39/02;* C12N *1/20*

U.S. Cl. 424—92 4 Claims



1. A process for the production of a polyvalent vaccine for the treatment and/or prevention of mastitis and hardened udder syndrome in bovine animals, comprising the steps of:

(1) culturing pathogens present in the milk of a plurality of bovine animals exhibiting preclinical mastitis;

(2) incorporating non-virulent forms of each strain of said pathogens in an appropriate pharmacological carrier in a biologically effective concentration; and

(3) repeating said step (1) periodically and incorporating in said carrier any pathogenic strains cultured in said repeated step (1) not previously incorporated in said carrier.

4,762,713

BOOSTING OF IMMUNOGENIC CONJUGATE VACCINATIONS BY UNCONJUGATED BACTERIAL CAPSULAR POLYMERS

Porter W. Anderson, Rochester, N.Y., assignor to The University of Rochester, Rochester, N.Y.

Continuation-in-part of Ser. No. 511,048, Jul. 5, 1983, Pat. No. 4,673,574, which is a continuation-in-part of Ser. No. 298,102, Aug. 31 1981, abandoned. This application May 8, 1985, Ser. No. 732,200

Int. Cl.' H61K *39/02, 39/095*

U.S. Cl. 424—92 33 Claims

1. A method for actively immunizing human infants against a bacterial pathogen having a capsular polymer, comprising:

(a) administering to a human infant an effective amount of an immunogenic-conjugate vaccine comprising a capsular polymer or fragment thereof, which is immunogenic in mature humans but less so in young humans, derived from a bacterial pathogen selected from the group consisting of *Haemophilus influenzae* type b, *Escherichia coli*, *Pseudomonas aeruginosa*, *Neisseria menigitidis* and *Streptococcus pneumoniae*, covalently attached to a bacterial outer membrane protein or to a bacterial toxin, toxoid or binding subunit thereof; and

(b) subsequently administering to said human infant an effective amount of the corresponding intact unconjugated capsular polymer.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,714
PREPARATION OF RETROVIRUS-FREE IMMUNOGLOBULINS

Gautam Mitra, Kensington, and Milton M. Mozen, Berkeley, both of Calif., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Apr. 8, 1986, Ser. No. 849,612
Int. Cl.⁴ A61K *35/14, 39/395;* **C07K** *15/06;* **C12N** *9/00*
U.S. Cl. 424—101 **2 Claims**

1. A method of preparing an immune serum globulin substantially free of infectious retroviruses comprising the steps of
(1) preparing an immune serum globulin from a human plasma source using a cold ethanol process at a pH equal to or less than about 5.4 and then
(2) storing the globulin at a pH equal to or less than about 4.25 at a temperature of about 27° C. for at least about 3 days.

2. A method of preparing an immune serum globulin substantially free of infectious retroviruses comprising the steps of
(1) preparing an immune serum globulin from a human plasma source using a cold ethanol process at a pH equal to or less than about 5.4 and then
(2) storing the globulin at a pH equal to or less than about 6.8 at a temperature of about 45° C. for at least about 8 hours.

4,762,715
ANTIHERPETICALLY ACTIVE LIPSTICK AND THE USE THEREOF FOR THE TREATMENT OF DISORDERS OF THE LIPS AND OTHER AREAS OF THE FACE CASUED BY HUMAN HERPES VIRUSES

Bohumir Lukas; Franz X. Fischer, both of Basel, and Elfy Aeschlimann, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 767,939, Aug. 21, 1985, abandoned, which is a continuation of Ser. No. 284,749, Jul. 20, 1981, abandoned. This application Oct. 15, 1987, Ser. No. 110,648
Claims priority, application Switzerland, Jul. 30, 1980, 5810/80; Oct. 2, 1980, 7361/80
Int. Cl.⁴ A61K *33/30*
U.S. Cl. 424—145 **16 Claims**

1. An antiherpetic lipstick consisting of
(A) a lipstick base consisting of a mixture in a weight ratio of from 15:85 to 30:70 of a liquid polyethylene glycol of an average molecular weight of 300–400 and of a solid polyethylene glycol of an average molecular weight of 1000–4000; and
(B) an antiherpetically effective amount of the active component consisting of a mixture, in weight ratio, of from 1:0.18 to 1:4.5 of heparin or a pharmaceutically acceptable salt thereof in a quantity equivalent to 32 to 1600 USP units of heparin sodium for 1 g of the lipstick, and of zinc ions provided in the form of a dissociable zinc salt; and,
(C) a member, in an amount of zero mg or in an amount of 0.2–50 mg per 1 g of the lipstick, which member is selected from a group consisting of polyoxyethylene sorbitan monostearate, polyoxyethylene sorbitan monolaurate, polyoxyethylene sorbitan monooleate, sorbitan monostearate, sorbitan monolaurate and sorbitan monooleate

4,762,716
PURE ANNONIN AND A PROCESS FOR THE PREPARATION THEREOF

Heinrich F. Moeschler, Cologne; Wolfgang Pflüger, Leichlingen, and Detlef Wendisch, Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 785,181, Oct. 7, 1985, Pat. No. 4,689,282. This application Jun. 22, 1987, Ser. No. 65,196
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1984, 3438763
The portion of the term of this patent subsequent to Aug. 25, 2004, has been disclaimed.
Int. Cl.⁴ A61K *35/78*
U.S. Cl. 424—195.1 **4 Claims**

1. A process for the preparation of pure annonin comprising
(a) comminuting parts of *Annona squamosa,*
(b) extracting the parts with petroleum ether and discarding the petroleum ether extract to leave an annonin-containing material,
(c) extracting the annonin-containing material with an aliphatic halogenohydrocarbon, an aliphatic ether, an ester, or mixtures thereof and discarding the residue, and
(d) evaporating off the solvent.

4,762,717
CONTINUOUS DELIVERY OF LUTEINIZING HORMONE RELEASING HORMONE COMPOSITIONS IN COMBINATION WITH SEX STEROID DELIVERY FOR USE AS A CONTRACEPTIVE

William F. Crowley, Jr., Newtonville, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed Mar. 21, 1986, Ser. No. 842,643
Int. Cl.⁴ A61F *2/00*
U.S. Cl. 424—425 **13 Claims**

1. A delivery system for preventing pregnancy in a female mammal, comprising for sequential administration first and second delivery systems,
said first delivery system for administration to said mammal during the follicular phase of the menstrual cycle, of an effective amount of a luteinizing hormone releasing hormone (LHRH) composition and an effective amount of an estrogenic steroid; and
said second delivery system for administration to said mammal during the luteal phase of the menstrual cycle, an effective amount of a luteinizing hormone releasing hormone (LHRH) composition, an effective amount of an estrogenic steroid, and an effective amount of progestational steroid.

4,762,718
IN SITU INSECTICIDE

George B. Marks, Sr., Hudson, Wis., assignor to Fearing Manufacturing Co., Inc., South St. Paul, Minn.

Continuation of Ser. No. 632,957, Jul. 20, 1984, abandoned, which is a continuation-in-part of Ser. No. 544,319, Oct. 21, 1983, abandoned. This application Apr. 20, 1987, Ser. No. 42,618
Int. Cl.⁴ A01N *25/26*
U.S. Cl. 424—409 **7 Claims**

1. A gellable slow release composition for killing organisms over an extended period of time comprising:
a microporous polymer powder carrier providing multiple insecticide reservoirs, said insecticide reservoirs containing an insecticide, said microporous polymer powder and said insecticide reservoirs located in a liquid water soluble film former and a volatile alcohol to provide a gellable liquid to permit application to an animal for protection against organisms over an extended period of time, said gellable liquid comprises about 1 to 10 percent insecticide, about 0.5 to 20 percent film former and sufficient liquid vehicle to provide up to 98.5 percent of the gellable liquid.

4,762,719
POWDER FILLED COUGH PRODUCT

Mark Forester, 8 Oak Park Dr., Convent Station, N.J. 07961

Filed Aug. 7, 1986, Ser. No. 894,068
Int. Cl.⁴ A61K *9/20, 9/28, 9/48*
U.S. Cl. 424—440 **20 Claims**

1. A cough drop product having an outer hard candy base shell and a centerfill comprising a rapidly-dissolving powder and menthol-eucalyptus in powdered form.

4,762,720
PROCESS FOR PREPARING LIPOSOME COMPOSITIONS

Hiroaki Jizomoto, Osaka, Japan, assignor to Shionogi & Co., Ltd., Osaka, Japan

Filed Sep. 19, 1985, Ser. No. 777,675
Claims priority, application Japan, Sep. 21, 1984, 59-199011
The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.
Int. Cl.⁴ A61K *37/22;* **A01N** *25/26, 25/28;* **B32B** *5/16*
U.S. Cl. 424—450 **4 Claims**

1. A process for preparing liposome compositions which comprises dispersing freeze-dried multilamella vesicles or small unilamella vesicles prepared from a lecithin in an aqueous medium containing both an active ingredient and a divalent cation selected from the group consisting of calcium, magnesium, zinc, manganese, iron, cobalt, and nickel, the amount of the divalent cation being sufficient to prevent the regeneration of multilamella vesicles and the process being carried out at or above the temperature of the gel-phase/liquid crystal-phase transition temperature of the lecithin employed.

4,762,721
OIL-IN-WATER EMULSION GLAZING AGENT FOR FOODSTUFFS

Ebo J. Holscher, Fijnaart; Nicolaas J. F. D. Verboef, Maasland, and Cynthia M. Ligeon, Vlaardingen, all of Netherlands, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed May 2, 1986, Ser. No. 859,060
Claims priority, application Netherlands, May 7, 1985, 8501283
Int. Cl.⁴ A23D *5/00;* **A23L** *1/04;* **A21D** *15/08*
U.S. Cl. 426—94 **18 Claims**

1. A homogenized oil-in-water emulsion glazing agent for bakery products, consisting essentially of from 5 to 15% by weight of the aqueous phase of the emulsion of a protein, from 10 to 50% by weight of the total emulsion of an edible oil, from 2 to 10% by weight of the total emulsion of a starch component consisting of a thin-boiling starch, and water, in which the weight ratio between the oil phase and the aqueous phase is from 1:1 to 1:9.

4,762,722
SEALED PACKAGE OF RAW MEAT OR FISH AND METHOD OF PRESERVING RAW MEAT OR FISH

Masatoshi Izumimoto, Obihiro; Syuji Wakamatsu, and Megumu Yuyama, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Continuation of Ser. No. 721,679, Apr. 10, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 70,666
Claims priority, application Japan, Apr. 16, 1984, 59-76374
Int. Cl.⁴ A23B *4/00;* **B65D** *81/20;* **C09K** *15/02*
U.S. Cl. 426—124 **5 Claims**

1. A sealed package of raw meat or fish comprising a substantially impermeable vessel, raw meat or fish housed in the vessel, and a deoxidant-CO_2 generating agent composition contained in the vessel, the deoxidant-CO_2 generating agent composition capable of generating CO_2 gas within the vessel immediately after initiation of oxygen absorption by the deoxidant at the rate of 0.2 to 2 mols per mol of oxygen gas absorbed, said deoxidant-CO_2 generating agent composition comprising, by weight, 100 parts of iron-based deoxidant, 50 to 100 parts of a metal halide, 10 to 500 parts of a bicarbonate, 5 to 200 parts of a solid acidifying agent, 10 to 200 parts of a pH buffering agent, and 10 to 1000 parts of activated carbon or a zeolite.

4,762,723
PROCESS FOR MAKING COEXTRUDED FILLED COOKIES

Dave R. Strong, Denville, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jun. 24, 1986, Ser. No. 877,799
Int. Cl.⁴ A23P *1/12*
U.S. Cl. 426—283 **9 Claims**

1. A process for making a coextruded cookie, comprising:
(a) mixing separately:
(i) a casing composition having a sugar content between about 2% and about 35% and
(ii) a filling composition having a sugar content between about 50% and about 75%;
(b) feeding simultaneously said casing composition into a twin screw cooker-extruder and said filling composition to an extruder die plate;
(c) coextruding simultaneously through said die plate attached to a cooker-extruder barrel, a crisp external cookie-like casing by continuous extrusion cooking of said casing composition and a soft internal cream filling by continuous extrusion of said filling composition whereby a coextruded product is formed; and
(d) machining said coextruded product into pieces.

4,762,724
COMPOSITIONS AND PROCESS FOR ALFALFA DRYING

Donald D. Staker, and William S. Kain, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 769,238, Aug. 26, 1985, abandoned. This application Mar. 16, 1987, Ser. No. 26,090
Int. Cl.⁴ A23K *1/00*
U.S. Cl. 426—302 **5 Claims**

1. A process for increasing the drying rate of alfalfa which comprises applying an effective amount of an aqueous composition to essentially uniformly coat the alfalfa during cutting, said aqueous composition consisting essentially of
(a) 85 to 99 weight percent water;
(b) 0.10 to 10 weight percent paraffinic or isoparaffinic hydrocarbon;
(c) 0.25 to 10 weight percent methyl ester of a C_{12-18} fatty acid or fatty acid mixture wherein the predominant acids have from 12 to 18 carbon atoms, said methyl ester having an acid value from 5 to 30; and
(d) 0.5 to 5 weight percent potassium or sodium carbonate.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,725

SHELF STABLE NON-AQUEOUS SPREADABLE COATINGS

Kenneth W. Player, Olmsted Falls, and Lonny L. Wilson, Brunswick, both of Ohio, assignors to Durkee Industrial Foods Corp., Cleveland, Ohio

Continuation-in-part of Ser. No. 612,976, May 23, 1984, abandoned. This application Jun. 25, 1986, Ser. No. 880,342

Int. Cl.[4] A23D *5/00*; A23G *3/00*

U.S. Cl. 426—582 9 Claims

1. A non-aqueous, lipid-based, stable, flavored filling which is spreadable at normal room temperature but capable of form retention when applied to a substrate at a temperature up to about 110° F., comprising, in proportions based upon the weight of the filling:

about 10–70% of a vegetable oil having an AOM stability of at least about 25 hours, a Wiley Melting Point less than about 90° F. and a Solids Fat Index at 100° F. of 1 maximum, at 90° F. of 3 maximum, and at 70° F. of 30 maximum;

about 30–90% of a non-peanut butter derived, particulate, friable, non-hygroscopic, bulking agent selected from the group consisting of cocoa powder, dried cheese powder, mono- and disaccharides, bland dairy-derived protein, bland vegetable protein, bland hydrolyzed corn syrup solids, and flavor compatible combinations thereof, the bulking agent containing up to about 50 weight percent fat, of which up to about 75% is releasable under the conditions of processing, the amount released being about 5–15% based on the weight of the total composition;

zero to a flavoring amount of a flavorant;

about 0.1 to about 8% of a stabilizing lipid having a Capillary Melting Point in the range of about 125°–150° F.;

said filling being prepared by mixing the ingredients thereof at a temperature sufficiently elevated to render the lipid components in a molten state forming a mixture of ingredients, and cooling said mixture of ingredients from said elevated temperature in a heat exchanger at a controlled rate to a temperature in the range of about 70°–100° F., said vegetable oil and stabilizing lipid defining on cooling a lipid matrix for the bulking agent, said bulking agent being substantially impalpable in the lipid matrix.

4,762,726

SHELF STABLE ACID FOOD DRESSINGS CONTAINING FIBROUS PROTEIN COMPLEXES

William G. Soucie, Gurnee; Wen-Sherng Chen, Glenview; Vernon C. Witte, Naperville; George A. Henry, Wilmette, and W. Dennis Drehkoff, Glencoe, all of Ill., assignors to Kraft, Inc., Glenview, Ill.

PCT No. PCT/US85/01265, § 371 Date Mar. 1, 1987, § 102(e) Date Mar. 1, 1987, PCT Pub. No. WO87/00009, PCT Pub. Date Jan. 15, 1987

Continuation-in-part of Ser. No. 567,096, Dec. 30, 1983, Pat. No. 4,563,360, and Ser. No. 567,277, Dec. 30, 1983, Pat. No. 4,559,233. This PCT application Jul. 1, 1985, Ser. No. 24,507

Int. Cl.[4] A23L *1/24*

U.S. Cl. 426—602 6 Claims

1. A shelf-stable acidic food dressing comprising a blend of from about 50 percent by weight to about 99.75 percent by weight of an acidic, aqueous food dressing vehicle having a pH of less than about 4.1 and from about 0.25 to about 50 percent by weight of a firm-bodied xanthan gum-protein fiber complex.

4,762,727

METHOD FOR APPLYING A LIQUEFIABLE MATERIAL ONTO A SUBSTRATE CONVEYED IN FORM OF A WEB

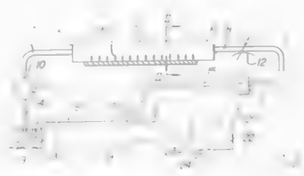
Gerhard Voswinckel, Aachen, Fed. Rep. of Germany, assignor to Gebrüder Sucker & Franz Müller GmbH & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Continuation of Ser. No. 722,296, Apr. 11, 1985, abandoned. This application Sep. 18, 1986, Ser. No. 910,248

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1984, 3413807

Int. Cl.[4] B05D *1/26*

U.S. Cl. 427—8 4 Claims



1. Method for applying a liquefiable material in the form of a foam or a high-viscosity solution from a storage container onto a substrate which is conveyed in form of a web, with the aid of a tubular application device which is provided with at least one discharge opening which is oriented in a line transversely to the direction the web is moving, which comprises introducing a stream of the liquefiable material at one end of the application device, metering said stream entering at one end and measuring the quantity of the liquefiable material introduced into the application device per time unit, applying a part of the liquefiable material in the application device through said at least one discharge opening therein onto the web disposed outside the application device, and discharging another part of said stream of liquefiable material at the other end of the application device, flowing liquefiable material continuously through the length of the tubular application device from the one end to the other end, and conducting said discharged part of the stream back to the storage container, passing said discharged part of the stream through a flow meter and measuring the flow-through quantity per time unit of said discharged part of the stream, comparing the difference of the measured quantities of liquefiable material entering the application device at the one end and liquefiable material discharging at the other end of the application device per time unit to a nominal value, and regulating the flow of the stream by dosing such that the difference of the measured quantities of liquefiable material entering at one end of the application device and discharging at the other end of the application device per time unit approaches the nominal value.

4,762,728

LOW TEMPERATURE PLASMA NITRIDATION PROCESS AND APPLICATIONS OF NITRIDE FILMS FORMED THEREBY

Thomas Keyser, Palm Bay, Fla.; Bruce R. Cairns, Los Altos Hills, Calif.; Kranti V. Anand, Sunnyvale, Calif.; William G. Petro, Cupertino, Calif., and Michael L. Barry, Palo Alto, Calif., assignors to Fairchild Semiconductor Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 721,422, Apr. 9, 1985, abandoned. This application Nov. 26, 1985, Ser. No. 801,955

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—38 34 Claims

1. A method of inducing a surface reaction on a silicon substrate to provide a thin film of silicon nitride or other nitrogen-containing composition on the silicon substrate, comprising the steps of:

placing the silicon substrate in contact with one of a pair of electrodes;

evacuating a chamber in which said electrodes and the substrate are located;

introducing a nitrogen-containing reagent gas into the chamber; and



applying an a.c. voltage having a frequency of about 10 KHz or greater between said electrodes to thereby ionize and activate the reagent gas and accelerate ions thereof into the substrate and thereby cause said ions to react with silicon of the substrate to form the film.

4,762,729

METHOD OF PRODUCING CUBIC BORON NITRIDE COATED MATERIAL

Shin-ichi Hirano, Nagoya, and Susumu Yamaya, Kawasaki, both of Japan, assignors to Toshiba Tungaloy Co., Ltd., Japan

Division of Ser. No. 886,068, Jul. 16, 1986, Pat. No. 4,731,303. This application Nov. 30, 1987, Ser. No. 126,884

Claims priority, application Japan, Jul. 17, 1985, 60-157682

Int. Cl.[4] B05D *3/06*

U.S. Cl. 427—38 6 Claims

1. A method for producing a cubic boron nitride coated material by forming, on a surface of a substrate, an outer layer consisting essentially of cubic boron nitride, which comprises:

providing, on the surface of the substrate, at least one intermediate layer comprising at least one nitrogen-containing compound selected from the group consisting of nitrides and nitroxides of Al, Ga, In and Tl and mutual solid solutions of the aforesaid nitrides and nitroxides; and

causing the outer layer to undergo oriented growth on a face of the intermediate layer, said face being densely packed with nitrogen atoms.

4,762,730

METHOD FOR PRODUCING TRANSPARENT PROTECTIVE COATINGS FROM SILICON COMPOUNDS

Knut Enke, Johannesberg, and Walter Zultzke, Hanau-Wachenbuchen, both of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Sep. 3, 1986, Ser. No. 903,511

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1986, 3624467

Int. Cl.[4] B05D *3/06, 5/06*

U.S. Cl. 427—40 5 Claims

1. A method for producing a transparent protective coating on a surface of a plastic optical substrate in a reaction chamber having at least two electrodes of opposed polarity, one of the electrodes functioning as a cathode, the method comprising the following steps:

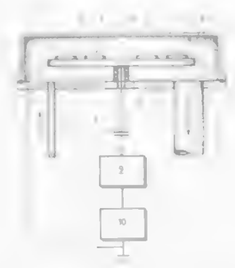
(a) positioning the substrate on the cathode in the reaction chamber;

(b) introducing a noble gas into the reaction chamber;

(c) exposing the surface of the plastic optical substrate to ion bombardment in the noble gas plasma, the ion bombardment being produced between the electrodes by a bias voltage formed at the cathode by a radiofrequency means;

(d) introducing a monomeric organic compound into the reaction chamber comprising a member of the group of siloxane and silazane, the organic compound being polymerized by the plasma to coat the surface of the plastic optical substrates;

(e) setting the bias voltage at the cathode at a value in the range of −80 to −500 volts; and



(f) introducing oxygen into the reaction chamber during polymerization of the monomeric organic compound, the oxygen having a partial pressure of at least five times the partial pressure of the monomeric organic compound to form a mixture with the compound.

4,762,731

BARRIER FILM STRUCTURES USING CARBON MONOXIDE-CONTAINING POLYMERS

Gerald M. Lancaster, Surfside; David C. Kelley, Angleton; Russell H. Cramm, Lake Jackson, all of Tex., and Charles V. Neywick, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 738,009, May 28, 1985, Pat. No. 4,640,865, which is a continuation-in-part of Ser. No. 645,990, Aug. 31, 1984, Pat. No. 4,601,948, which is a continuation-in-part of Ser. No. 531,110, Sep. 12, 1983, Pat. No. 4,600,614. This application Dec. 17, 1986, Ser. No. 943,300

Int. Cl.[4] B05D *3/06, 5/10*; C09J *7/02*

U.S. Cl. 427—40 8 Claims

1. A method for coating a microwave radiation heatable carbon monoxide-containing ethylene polymer with a halopolymer, said method consisting essentially of

corona-treating at least a portion of at least one surface of the carbon monoxide-containing polymer, using a treating level of about 0.1 to about 20 watts/ft.^{2}/minute,

applying to the corone-treated surface a fine particle aqueous dispersion or latex of a halopolymer,

and drying the halopolymer to form a barrier layer on the microwave heatable carbon monoxide-containing ethylene polymer, thereby producing a halopolymer-coated ethylene polymer which is heatable by the action of microwave radiation acting on the carbon monoxide-containing ethylene polymer,

wherein said carbon monoxide-containing ethylene polymer comprises at least one copolymer selected from the group consisting of ethylene/carbon monoxide, ethylene/carbon monoxide/vinyl acetate, ethylene/carbon monoxide/methacrylic acids, and ethylene/carbon monoxide/acrylic acid.

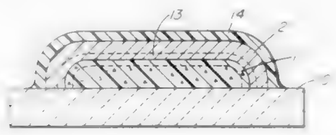
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,732

PROCESS FOR FORMING SILVER CONDUCTORS ON A SUBSTRATE

Allan R. Drake, Brampton; Roger C. Finn, Kanata, and Reginald B. P. Bennett, Oakville, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 28, 1987, Ser. No. 101,538
Claims priority, application Canada, Jul. 6, 1987, 541395
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—54.1 10 Claims



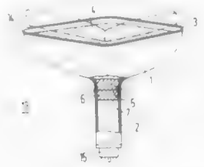
1. A process for forming an electrical conductor pattern on desired areas of a substrate comprising the steps of, applying a predetermined pattern of solderable silver polymer ink on the substrate, at least partially curing the silver polymer ink, applying a layer of silver solder paste over the cured polymer ink to a width larger than that of the ink and causing the silver solder to reflow and solidify, whereby the silver polymer ink is completely cured and becomes encapsulated in the reflowed silver solder to form the desired pattern of conductors.

4,762,733

COLOR PICTURE TUBE

Norbert Thiel, Esslingen; Volker Gerstle, Lorsch; Rolf Zondler, Stuttgart, and Otto Lederle, Esslingen, all of Fed. Rep. of Germany, assignors to Standard Elektrik Lorenz, A.G., Fed. Rep. of Germany

Filed Mar. 26, 1986, Ser. No. 844,109
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1985, 3511211
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—55 6 Claims



1. A method of manufacturing a color-picture tube, comprising the following steps:
applying a first conductive coating of a graphite suspension in admixture with a nonconductive inorganic constituent and a silicate binder to the inside of the cone and the neck of said picture tube;
drying said first coating in the cone using an infrared light source while leaving said first coating within said neck wet;
removing said still wet first coating in said neck by rinsing out said neck with a suspension of conductive material and graphite in admixture with an organic constituent and a silicate binder and thus;
applying a second conductive coating to the inside of the neck, said second coating including said organic constitutent; and
drying said second coating in the neck.

4,762,734

PROCESSES FOR THERMAL TRANSFER INK DONOR FILMS

James M. Duff, Mississauga, and Randolph E. Branston, Sarnia, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1986, Ser. No. 934,362
Int. Cl.[4] B41M *3/12*
U.S. Cl. 427—146 17 Claims

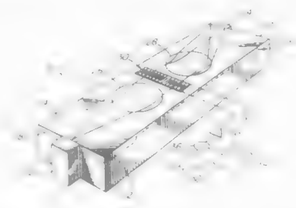
1. A process for the preparation of thermal ink donor films which comprises (1) adding to a nonpolar warm hydrocarbon solution wax components, polymer components, or a mixture of wax and polymer components; (2) thereafter adding to the resulting solution first additive components that are soluble therein; (3) forming an emulsion by adding the formed solution to an excess amount of a polar liquid which contains pigment particles; (4) subsequently grinding the resulting emulsion; (5) coating the emulsion product obtained on a supporting substrate; and (6) thereafter heating to enable evaporation of the hydrocarbon component.

4,762,735

INTEGRATED OPTICS SPECTRUM ANALYZER

Dennis J. Gregoris; Roger Arsenault, and Velimir M. Ristic, all of Toronto, Canada, assignors to Her Majesty the Queen in Right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Division of Ser. No. 38,095, Apr. 13, 1987. This application Dec. 7, 1987, Ser. No. 129,506
Claims priority, application Canada, Apr. 25, 1986, 507667
Int. Cl.[4] G02B *6/12*
U.S. Cl. 427—162 4 Claims



1. A method of forming an optical waveguide on the surface of a lithium niobate crystal substrate, comprising the steps of:
depositing a layer of a metal on a portion of said surface of said substrate while masking the balance of said surface;
heating said surface at a predetermined temperature below the Curie temperature of said substrate for a first predetermined time interval and simultaneously exposing said substrate to an Argon gas and water vapour environment to form a metal in-diffused waveguide section on said portion of said surface;
heating said surface at a predetermined temperature below the Curie temperature of said substrate for a second predetermined time interval and simultaneously exposing said substrate to a dry Argon gas environment to form out-diffused waveguide sections on the balance of said surface; and
exposing said substrate to an oxygen environment while permitting said substrate to cool to ambient temperature thereby forming a transition region intimately connecting said out diffused wave guide section and said in diffused wave guide section, the width of said transition region along its optical axis being much greater than the wavelength of the optical signal passing thru said wave guide and the depth of said out diffused section being greater than the depth of said in diffused section by about one order of magnitude.

4,762,736

PROCESS FOR FORMING A COATING

Michael J. Garvey, and Ian C. Griffiths, both of Merseyside, United Kingdom, assignors to Unilever Patent Holdings, B.V., Rotterdam, Netherlands

Filed Apr. 22, 1987, Ser. No. 41,330
Claims priority, application United Kingdom, Apr. 24, 1986, 8610025
Int. Cl.[4] B05D *1/20*
U.S. Cl. 427—215 8 Claims

1. A process for the deposition of a coating on a substrate characterised by generating an interface on a sol containing a surfactant, the amount of surfactant being sufficient to cause a film of colloidal material comprising the sol to form at the interface, and contacting the substrate and film so as to deposit the film onto the substrate.

4,762,737

MULTI-LAYER NON-CORROSIVE PLASTIC FILM

Pang-Chia Lu, Pittsford, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 7, 1985, Ser. No. 731,432
Int. Cl.[4] B65D *30/02*; B32B *27/08*
U.S. Cl. 428—35 16 Claims

1. A multi-layer film comprising:
(a) at least one high density polyolefin layer;
(b) at least one polyamide layer; and
(c) a minor amount of an agent promoting the adhesion of the polyamide layer to the high density polyolefin layer, the agent being substantially free of inorganic salt groups and comprising a non-ionic product of a polymerization reaction of at least one C_2–C_6 alpha-olefin with methacrylic acid.

4,762,738

MEANS FOR DISPOSAL OF ARTICLES BY FLUSHING AND OSTOMY POUCHES PARTICULARLY SUITED FOR SUCH DISPOSAL

Denis E. Keyes, Staten Island, and Marvin S. Aronoff, New York, both of N.Y., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Dec. 22, 1986, Ser. No. 944,891
Int. Cl.[4] B32B *7/02*
U.S. Cl. 428—36 35 Claims



1. An ostomy pouch which can be disposed of by flushing in a conventional toilet bowl comprising a front panel formed of a laminate of a film of water swellable, cold water insoluble, hot water soluble polyvinyl alcohol and water resistant tissue paper and a rear panel formed of a laminate of a film of water swellable, cold water insoluble, hot water soluble polyvinyl alcohol and either water resistant tissue paper or a film of cold water soluble polyvinyl alcohol both of which are relatively friction free when contacted with the clothing of the user, said front and rear panels joined together over a majority of their periphery to form said ostomy pouch, said front and rear panels oriented so that said films of hot water soluble polyvinyl alcohol constitute the pouch interior, said front panel having an opening therethrough that can fit or can be enlarged to fit around the stoma, and attachment means secured to said front panel around said stomal opening for attachment of said pouch to the body of the user wherein said pouch is capable of maintaining its structural integrity during the period of use.

4,762,739

CONCENTRIC TUBULAR ELEMENTS

Gerhard Kraus, Aurachtal, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Mar. 31, 1987, Ser. No. 33,025
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1986, 3614260
Int. Cl.[4] B60B *5/02*
U.S. Cl. 428—36 4 Claims



1. A structural element made of injection moldable or castable polymeric material comprising an external tubular element, an inner tubular element essentially concentric with the latter and integrally connected with the latter by ribs arranged in planes containing essentially the longitudinal axis of the structural element, characterized in that the ribs (3) have a radius (R_1) verging into the bore wall (7) of the external tubular element (1) which is considerably less than the radius of curvature (R_2) of the bore wall (7) section connecting the radii (R_1) of two adjacent ribs (3), the radius of curvature (R_2) being smaller than the radius (R_3) of the circle circumscribing the bore wall (7).

4,762,740

RESIN TRANSFER MOLDING CORE, PREFORM AND PROCESS

Carl F. Johnson, New Boston, and Norman G. Chavka, Allen Park, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 15, 1987, Ser. No. 61,763
Int. Cl.[4] B32B *3/02*; B29C *39/10*
U.S. Cl. 428—68 23 Claims



1. A core for a resin transfer molding preform, a selected surface portion of said core having a concavity therein, wherein said core comprises a flexible web secured thereto forming a convexity over said concavity, said convexity being deformable into said concavity and being sufficiently firm to support, without substantial deformation, oriented continuous fibers applied thereover under tension.

VOL 1093 ISS 2 AUG 9 1988 UMI

4,762,741

NON-SLIP FLOOR MAT COMBINATION

Terence M. Hedley, Leighton Buzzard, United Kingdom, assignor to Walk Off Mats Limited, Bedfordshire, United Kingdom

Filed Sep. 25, 1987, Ser. No. 101,052
Claims priority, application United Kingdom, Sep. 26, 1986, 8623165
Int. Cl.[4] B32B 5/16
U.S. Cl. 428—78 7 Claims

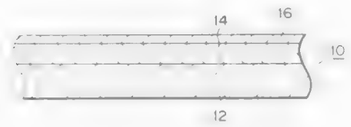
1. A floor mat combination for use on pile-carpeted surfaces to inhibit creep, comprising a flexible rubber-backed mat having a substantially flat backing surface, and an anchoring component designed to be detachably secured through its lower surface to pile carpeting and having a substantially flat upper surface designed to contact the backing surface of the mat and to restrict lateral movement of the mat relative to the anchoring component solely due to frictional resistance to relative movement between the substantially flat surfaces in contact with one another without the anchoring component being itself deformed.

4,762,742

PERPENDICULAR MAGNETIC RECORDING MEDIUM

Tomiya Sonoda, Machida; Takashi Hikosaka, Tokyo, and Hiroki Nakamura, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1986, Ser. No. 945,549
Claims priority, application Japan, Dec. 25, 1985, 60-295059
Int. Cl.[4] G11B 5/64
U.S. Cl. 428—141 7 Claims



1. A perpendicular magnetic recording medium comprising:
a base having a main surface; and
a magnetic layer formed on the main surface, said magnetic layer having a recording surface formed with a number of fine projections, said projections being distributed so that the difference between a height level corresponding to an area ratio of 1.0%, obtained when the projections are cut by an imaginary plane parallel to the recording surface, and another height level corresponding to an area ratio of 99.0%, obtained in a like manner, ranges from 40 to 600 Å and the density of said projections rising above said height level corresponding to the area ratio of 1.0% is about 400/0.1 mm^2 or less.

4,762,743

CORRUGATED WEDGE SPACERS FOR SLAB GEL MOLDS

Raymond D. von Alven, San Rafael, and Craig R. Davis, San Pablo, both of Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jul. 31, 1987, Ser. No. 80,042
Int. Cl.[4] B32B 3/28; G01N 27/26
U.S. Cl. 428—156 11 Claims

1. A spacer for use between two flat plates when forming a gel slab of graduated thickness therebetween, said spacer comprising a strip of sheet material, having an elongate longitudinal dimension terminating at first and second ends and a relatively narrow transverse dimension, said strip formed to contain at least one corrugation running longitudinally from said first end along at least a portion of the length thereof, said corrugation decreasing in depth from a maximum depth at said



first end to define an overall strip thickness greater at said first end than at said second end.

4,762,744

REINFORCING COMPOSITE FOR ROOFING MEMBRANES AND PROCESS FOR MAKING SUCH COMPOSITES

Mark Woiceshyn, St. Catherines; Terry J. O'Connor, Fonthill, and Ian G. Cooper, St. Catharines, all of Canada, assignors to Bay Mills Limited, St. Catharines, Canada

Filed Aug. 8, 1986, Ser. No. 894,851
Int. Cl.[4] B32B 5/06; D04H 3/02
U.S. Cl. 428—219 19 Claims

1. A process for making a composite for use in reinforcing roofing membranes comprising the steps of:
selecting as a first layer a non-woven network of continuous filament yarns,
which are neither fastened together mechanically nor adhered together,
selecting as a second layer a lightweight preformed synthetic mat or network,
selecting as a third layer a lightweight preformed synthetic mat or network,
placing the second layer on one side of the first layer and the third layer on the other side of the first layer as the first layer is being formed,
applying to the three layers as placed together an adhesive resin, and
drying and/or curing said resin,
wherein the resulting is flexible, capable of being impregnated by bituminous material, and of sufficient strength to be useful in reinforcing roofing membranes.

4. The composite of claim 1 in which the first layer is a non-woven fiberglass scrim of about 0.1 to 5 ounces per square yard.

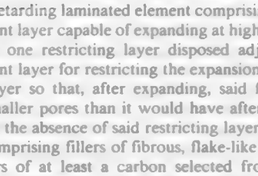
4,762,745

RUBBER/FABRIC COMPOSITE MANUFACTURE

Satoshi Mashimo, Akashi; Masayuki Tanaka, Kobe, and Takashi Kinoshita, Hyogo, all of Japan, assignors to Mitsuboshi Belting Ltd., Nagata, Japan

Continuation-in-part of Ser. No. 470,162, Feb. 28, 1983, abandoned. This application Dec. 19, 1986, Ser. No. 943,732
Int. Cl.[4] C08D 13/16; B32B 27/36
U.S. Cl. 428—252 10 Claims

1. A rubber/fabric composite manufacture comprising:
a body of rubber substantially free of sulfur comprising a blend of approximately 100 parts by weight hydronitrile rubber, 40 parts by weight FEF carbon black, 1.5 parts by weight plasticizers, 2 parts by weight zinc white, 1 part by weight stearic acid, 4 parts by weight magnesium oxide, 3.5 parts by weight antioxidant, and a vulcanizing agent having 3 parts by weight organic peroxide and 2.5 parts by weight triallyl isocyanurate; and
a fabric bonded to said body as a result of vulcanization of the rubber body while the fabric is maintained in association therewith, said fabric being formed of cords having a surface configuration resulting from the subjection



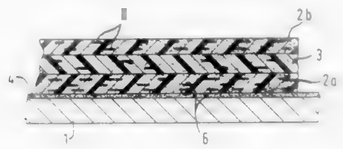
thereof, prior to the bonding of the fabric to the rubber body, to a liquid containing acrylonitrile-butadiene latex and a resorcinol-formalin mixture wherein the solid weight ratio of the acrylonitrile-butadiene-latex to the resorcinol-formalin is in the range of from approximately 10 to 1 to approximately 2 to 1, the mol ratio of resorcinol to formalin is in the range of from approximately 1 to 3 to approximately 3 to 1, and the acrylonitrile-butadiene-latex contains at least approximately 3% carboxyl groups.

4,762,746

FIRE-RETARDING LAMINATED ELEMENT AND A METHOD OF CONTROLLING EXPANSION OF EXPANDABLE, FIRE-RETARDING FOAMING-AGENT LAYERS

Ludwig Wesch, Heidelberg, and Edgar Weiss, Neckarsteinach, both of Fed. Rep. of Germany, assignors to Odenwald-Chemie GmbH, Schonau/Heidelberg, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 749,109, Jun. 26, 1985, abandoned. This application Jul. 21, 1987, Ser. No. 76,016
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423700
Int. Cl.[4] B32B 3/26, 5/22, 27/38
U.S. Cl. 428—305.5 13 Claims



1. A fire-retarding laminated element comprising at least one foaming-agent layer capable of expanding at high temperatures and at least one restricting layer disposed adjacent to said foaming-agent layer for restricting the expansion of said foaming-agent layer so that, after expanding, said foaming-agent layer has smaller pores than it would have after unrestrained expansion in the absence of said restricting layer; said restricting layer comprising fillers of fibrous, flake-like and/or platelet-like fibers of at least a carbon selected from the group consisting of pitchbased carbon, high tenacity (HT) carbon, high strain (HST) carbon, intermediate modulus (IM) carbon, pre-ox carbon and carbon black, and imparting a relatively stable structure to the combination formed of said layers after high temperature expansion of said layers, said layers having been prepared from epoxy resin based materials, and said restricting layer has a thickness of one to three times the thickness of said foaming-agent layer prior to heat induced expansion.

4,762,747

SINGLE COMPONENT AQUEOUS ACRYLIC ADHESIVE COMPOSITIONS FOR FLEXIBLE PRINTED CIRCUITS AND LAMINATES MADE THEREFROM

Jonq-Min Liu, Hsinchu; Fu-Lung Chen, Taipei, and Yeong-Cherng Chiou, Hsi-Chih, all of Taiwan, assignors to Industrial Technology Research Institute, Hsin Chu, Taiwan

Filed Jul. 29, 1986, Ser. No. 891,655
Int. Cl.[4] C09J 7/02; B32B 15/08
U.S. Cl. 428—343 11 Claims

1. An aqueous acrylic adhesive composition useful for flexible printed circuits consisting essentially of water and an acrylic polymer, the acrylic polymer comprising
(a) 15–60% by weight of acrylonitrile, methacrylonitrile or mixture thereof,
(b) 30–85% by weight of an alkyl acrylate or methacrylate having 1–12 carbon atoms in the alkyl group, or mixture thereof,
(c) 1–30% by weight of an oxirane-containing polymerizing ethylenic monomer,
(d) up to 15% by weight of a hydroxyl or amide-containing acrylate or methacrylate and,
(e) styrene;
the acrylic polymer being present in an amount of about 10–60% by weight of the composition; the composition comprising a single component adhesive.

2. A polyimide film coated with the acrylic adhesive composition of claims 1.

4,762,748

MULTILAYER FILM WITH BETTER LAYER ADHESION

Timothy T. Oberle, Lyman, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Filed Jun. 30, 1986, Ser. No. 880,257
Int. Cl.[4] B32B 27/00
U.S. Cl. 428—349 9 Claims

1. A multilayer shrink film, comprising:
(a) a first or sealing layer comprising a polymeric material selected from the group consisting of a propylene ethylene copolymer, an ionomer, a blend of a linear low density polyethylene and an ionomer, and a blend of a linear low density polyethylene and an ethylene acrylic acid copolymer;
(b) a second shrink layer, melt bonded to said first layer;
(c) a third adhesive layer, melt bonded to said second layer, which comprises a chemically modified ethylene alkyl acrylate copolymer or ethylene vinyl acetate copolymer;
(d) a fourth barrier layer, melt bonded to said third layer, which comprises an ethylene vinyl alcohol copolymer;
(e) a fifth adhesive layer as in said third layer, melt bonded to said fourth layer; and
(f) a sixth abuse layer, melt bonded to said fifth layer;
wherein ethylene alkyl acrylate copolymer is present in either the adhesive layers, or as a component blended with linear low density polyethylene in the shrink and abuse layers; and
wherein the second and sixth layers comprise a blend of a linear low density polyethylene and a polymeric material selected from the group consisting of ethylene alkyl acrylate copolymer and ethylene vinyl acetate copolymer.

4,762,749

FIBROUS POLYMER INSULATION

Mark A. Schuetz, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 2, 1985, Ser. No. 761,727
Int. Cl.[4] D02G 3/00
U.S. Cl. 428—372 4 Claims

1. A thermally insulating fiber comprising a blend of poly-

VOL 1093 ISS 2 AG 9 1988 UMI

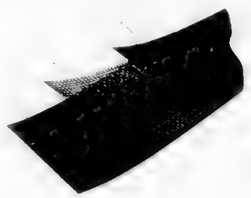
propylene and from about 4% to about 8.5% graphite evenly distributed within the polypropylene, said fiber being capable of absorbing infrared radiation and having a diameter of less than about 20 microns, said graphite being present in an amount sufficient to provide a fiber which when formed to a thermal insulating web provides for a web having an improved insulating value compared to a web formed from said polypropylene fiber but without graphite therein.

4,762,750

FLEXIBLE, CHEMICALLY TREATED BUNDLES OF FIBERS AND PROCESS

Mikhail M. Girgis, Pittsburgh, and Ernest L. Lawton, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 865,597, May 22, 1986, abandoned, which is a continuation of Ser. No. 535,952, Jul. 30, 1984, abandoned. This application Feb. 26, 1987, Ser. No. 21,534
The portion of the term of this patent subsequent to May 5, 2004, has been disclaimed.
Int. Cl.[4] D02G 3/00
U.S. Cl. 428—378 47 Claims



1. A flexible bundle of high modulus, low elongation fibers, having a modulus of elongation of at least 7×10^{-6} psi and an elongation at break of less than 5 percent comprising:

(a) a plurality of fibers constitutiing a bundle of fibers having a moisture reduced residue of an aqueous chemical sizing composition comprising at least a fiber protectorant on a substantial portion of the surfaces of the fibers in the bundle,

(b) a moisture-reduced, and at least partially cured residue impregnating said bundle of fibers wherein said residue resulted from the aqueous impregnataing composition comprising:

(1) at least one water soluble, emulsifiable or dispersible elastomeric curable polymer, that is essentially free of hydrocarbon diene and of chlorine functionalities,

(2) at least one crosslinking material that is water soluble, emulsifiable or dispersible in an effective amount to provide at least partial curing of the residue and

(3) water in an effective amount to provide said impregnating composition for said bundle of fibers.

4,762,751

FLEXIBLE, CHEMICALLY TREATED BUNDLES OF FIBERS, WOVEN AND NONWOVEN FABRICS AND COATED BUNDLES AND FABRICS THEREOF

Mikhail M. Girgis, Pittsburgh, and Ernest L. Lawton, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

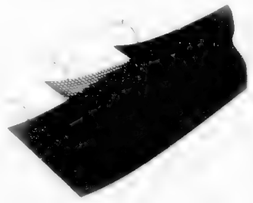
Continuation-in-part of Ser. No. 635,864, Jul. 30, 1984, abandoned. This application May 22, 1986, Ser. No. 866,017
Int. Cl.[4] D02G 3/00
U.S. Cl. 428—378 50 Claims

1. A flexible bundle of high modulus, low elongation fibers, comprising:

(a) a plurality of fibers constituting a bundle wherein the fibers have a moisture-reduced residue of an aqueous chemical sizing composition having at least a fiber protectorant,

(b) a moisture-reduced, and at least partially-cured residue that has a film hardness in the range of Shore values from A-10 to D-80 and film elongation of about 75 to about 1000 percent impregnating the bundle of the plurality of fibers where the residue resulted from the aqueous impregnating coating composition has:

(1) one or more elastomeric, curable polyurethanes selected from the group consisting of water soluble, emulsifiable or dispersible, internally softened polyurethanes, internally plasticized polyurethanes and unplasticized and unsoftened polyurethanes,



(2) one or more non-sulfur vulcanizing crosslinking materials that are water soluble, emulsifiable or dispersible in an effective amount to at least partially cure the polyurethane,

(3) when the unsoftened and unplasticized polyurethane is used, at least one softening agent selected from the group consisting of external softening agents and external plasticizers that are water soluble, dispersible or emulsifiable, and

(4) water in an effective amount to provide an impregnating coating composition for the bundles of glass fibers.

4,762,752

ADDITION COMPOUNDS, SUITABLE AS DISPERSING AGENTS, PROCESSES FOR THEIR PREPARATION, THEIR USE AND SOLIDS COATED THEREWITH

Karlheinz Haubennestel, and Peter Kramp, both of Wesel, Fed. Rep. of Germany, assignors to BYK-Chemie GmbH, Wesel, Fed. Rep. of Germany

Division of Ser. No. 685,384, Dec. 24, 1984, Pat. No. 4,647,647. This application Sep. 30, 1986, Ser. No. 913,301
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1984, 3402774; European Pat. Off., Oct. 27, 1984, 84112971
Int. Cl.[4] C03B 17/10
U.S. Cl. 428—407 19 Claims

1. Pulverulent or fibrous solids which are to be incorporated in liquid systems and, wherein said solids coated with a dispersing agent comprising at least one addition compound or salt thereof obtained by:

(a) reacting at least one polyisocyanate having an average functionality of 2.5 to 6 with at least one monohydroxyl compound of Formula I

Y—OH I

wherein Y is selected from the group consisting of (i) aliphatic and cycloaliphatic hydrocarbon groups having 8 to 30 carbon atoms or in which the hydrogen atoms of the hydrocarbon groups are partly replaced by at least one substituent selected from the group consisting of halogens and aryl groups, and (ii) aliphatic, cycloaliphatic and aromatic groups having molecular weights of from 350 to 8000 which contain at least one group selected from the group consisting of —O— and —COO—or in which the hydrogen atoms of the aliphatic, cycloaliphatic and aromatic groups are partly replaced by halogens,

in such a quantity that 15 to 50% of the NCO groups are reacted,

(b) reacting the reaction product from step (a) with at least one compound of Formula II

G—(E)$_n$ II

wherein E represents at least one group selected from the group consisting of —OH, —NH$_2$ and —NHR, R represents an alkyl group having 1 to 4 carbon atoms, n represents 2 or 3, and G represents a group selected from the group consisting of aliphatic, cycloaliphatic and aromatic groups having a molecular weight of at most 3000 and containing at least two carbon atoms, in such a quantity that a further 15 to 45% of the NCO groups of the polyisocyanate originally put into the process are reacted but the sum of the degrees of NCO reaction in steps (a) and (b) amounts to from 40% to 75%, and

(c) reacting the reaction product from step (b) with at least one compound of Formula III

Z—Q III

wherein Q represents —OH, NH$_2$, —SH, or —NHR', R' represents an alkyl group having 1 to 4 carbon atoms, and Z is an aliphatic group with 2 to 10 carbon atoms containing at least one tertiary amino group or comprises a heterocyclic group containing at least one basic ring nitrogen atom which does not carry a hydrogen atom, in such a quantity that at least one molecule of the compound Z—Q is available for each remaining isocyanate group unreacted in steps (a) and (b).

4,762,753

INSULATIVE COATING COMPOSITION

Bruno M. Perfetti, Westmoreland County, Pa., assignor to USX Corporation, Pittsburgh, Pa.

Filed Mar. 31, 1987, Ser. No. 50,984
Int. Cl.[4] C04B 12/04; H01F 1/04
U.S. Cl. 428—450 12 Claims

1. A composition for coating substrates, said composition consisting essentially of:

a solution or dispersion in an aqueous medium of 4 to 16 percent by weight of solids containing as a percent by weight of total solids, 24 to 38 percent sodium silicate, 18 to 28 percent magnesium oxide derived from a component selected from the group consisting of magnesium oxide, magnesium hydroxide and mixtures thereof, 7 to 19 percent titanium oxide, 22 to 53 percent mica, the weight ratio of mica to titanium oxide being within the range of 2.0 to 6.5.

11. Electrical steel sheet having an insulating coating thereon formed from a composition consisting essentially of:

a solution or dispersion in an aqueous medium of 4 to 16 percent by weight of solids containing as a percent by weight of total solids, 24 to 38 percent sodium silicate, 18 to 28 percent magnesium oxide derived from a component selected from the group consisting of magnesium oxide, magnesium hydroxide and mixtures thereof, 7 to 19 percent titanium oxide, 22 to 53 percent mica, the weight ratio of mica to titanium oxide being within the range of 2.0 to 6.5.

4,762,754

DYNAMIC HIGH PRESSURE PROCESS FOR FABRICATING SUPERCONDUCTING AND PERMANENT MAGNETIC MATERIALS

William J. Nellis, Berkeley; M. Brian Maple, Del Mar, and Theodore H. Geballe, Woodside, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 937,794, Dec. 4, 1986, Pat. No. 4,717,627. This application Oct. 23, 1987, Ser. No. 111,544
Int. Cl.[4] B22F 3/00
U.S. Cl. 428—552 32 Claims



1. In a method for producing superconducting electric and magnetic circuit components, the steps comprising:

disposing powdered superconducting ceramic oxide between sheets of conductive metal in a shock dissipative backing environment;

generating a supersonic shockwave generally normal to planes of said sheets of conductive metal and said layer of ceramic oxide to thereby compact said powdered ceramic oxide into a densified superconducting body having superconducting current paths therethrough enclosed in and integral with said sheets of conducting metal.

4,762,755

FERROMAGNETIC MATERIAL AND A MAGNETIC HEAD USING THE SAME MATERIAL

Kazuo Shiiki, Tsukui; Noriyuki Kumasaka, Ohme; Yoshihiro Shiroishi, Hachioji; Hitoshi Nakamura, Ohme; Yoshihiro Hamakawa, Kokubunji; Noritoshi Saito, Hachioji; Shigeo Aoki, Katsuta; Kiminari Shinagawa, Chiba, and Mitsuhiro Kudo, Nishitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1984, Ser. No. 665,911
Claims priority, application Japan, Nov. 2, 1983, 58-204834; Jan. 25, 1984, 59-10077
Int. Cl.[4] B32B 1/04
U.S. Cl. 428—635 25 Claims



21. A magnetic head wherein at least a portion of at least one magnetic pole is composed of a ferromagnetic multilayered film constituted by alternately laminating a main ferromagnetic film and a spacer material layer, said main ferromagnetic film being a crystalline iron alloy which consists essentially of 2 to 12% by weight of silicon, 10 to 20% by weight in total of at least one element selected from the group consisting of ruthenium, rhodium, palladium, iridium, platinum, gold and silver, less than 3% by weight of aluminum, up to less than 5% by

VOL 1093 ISS 2 AG 9 1988 UMI

weight of at least one element selected from the group consisting of chromium, vanadium, molybdenum, zirconium and niobium, and the balance iron, and said spacer element being composed of a material which adheres well to said main ferromagnetic film and which does not melt at operation temperatures of said ferromagnetic films.

4,762,756

THERMOCHEMICAL SURFACE TREATMENTS OF MATERIALS IN A REACTIVE GAS PLASMA

Erich Bergmann, Meis, and Elmar Hummer, Satteins, both of Austria, assignors to Balzers Aktiengesellschaft, Liechtenstein

Filed Jun. 12, 1987, Ser. No. 62,226

Claims priority, application Switzerland, Jun. 13, 1986, 02415/86

Int. Cl.⁴ B32B *9/00*

U.S. Cl. 428—698 **28 Claims**



1. A method for the thermochemical surface treatment of materials in a reaction chamber the method comprising the steps of: maintaining a gas pressure in the reaction chamber of less than 10 pascals (Pa) generating a gas plasma in an arc discharge of low voltage having a low current density lying in the range of 10^5 to 7×10^5 A/m^2 and treating the materials in the reaction chamber with said reactive gas plasma.

4,762,757

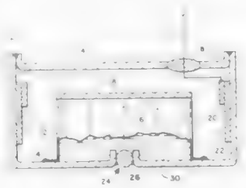
FLUID CONTROL APPARATUS

William J. Eppley, Skippack, Pa.; Warren E. Hawkins, Brooklyn Park, Minn., and Paul F. Schisselbauer, Southampton, Pa., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 13, 1987, Ser. No. 73,245

Int. Cl.⁴ H01M *6/30*

U.S. Cl. 429—114 **12 Claims**



1. A fluid control apparatus comprising
a housing means defining a fluid-tight interior volume,
a fluid container means located within said volume,
at least one score line located on an exterior surface of said fluid container means and
a weight means fixedly attached to said fluid container means for producing a rupture of said fluid container means along said score line in response to a force produced by said weight means during an acceleration of said weight means and said container means, said score line being parallel to the direction of the acceleration.

4,762,758

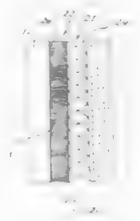
INTERELECTRODE SEPARATOR SYSTEM FOR ELECTROCHEMICAL CELLS

Nicholas Shuster, Madison, and Jerome F. Pallat, Fairport Harbor, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Dec. 12, 1985, Ser. No. 808,096

Int. Cl.⁴ H01M *2/16*

U.S. Cl. 429—144 **13 Claims**



1. An electrochemical cell, comprising:
a reactive metal anode;
a cathode spaced from said anode; and means for separating said anode and cathode disposed between said anode and cathode, said separating means comprising a non-conductive porous member disposed adjacent said cathode and a resilient non-conductive porous member disposed adjacent rigid porous member between said rigid porous member and said anode.

4,762,759

IMAGE-RECEIVING MATERIAL WITH SILOXANE, COLLOIDAL SILICA AND GELATIN FOR SILVER COMPLEX DIFFUSION TRANSFER

Leon L. Vermeulen, Herenthout; Ludovicus H. Vervloet, Kessel; Willy P. De Smedt, Mechelen, and Piet Kok, Gent, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Nov. 7, 1986, Ser. No. 928,102

Claims priority, application European Pat. Off., Nov. 15, 1985, 85201879.5

Int. Cl.⁴ G03C *5/54, 1/30*

U.S. Cl. 430—1 **16 Claims**

7. A laminar article containing in an image-receiving layer a black-and-white photograph produced by the silver complex DTR-process which layer is sandwiched between a clear protective resin cover sheet and a hydrophobic resin-support or resin coated paper support, wherein said image-receiving layer contains developing nuclei in a binder medium and comprises in percent by weight on its total weight the following:
2% to 45% of gelatin,
25% to 85% of colloidal silica,
1.0% to 50% of a copolymer consisting of copolymerized ethylene and an alpha,beta-unsaturated carboxylic acid monomer in free acid or salt form, wherein the polymerized ethylene content is not lower than 80% by weight, and 0.2% to 35% of a siloxane forming a reaction product with said colloidal silica, the dry coverage of the image-receiving layer being in the range of 1 g to 15 g per m2.

16. A laminar article according to claim 7, wherein said article contains a magnetic stripe and/or hologram.

4,762,760

ELECTROPHOTOGRAPHIC RECORDING MATERIAL COMPRISING A PYRAZOLINE DERIVATIVE

Wolfgang Wiedemann, Geisenheim-Johannisberg; Michael Drexler, Bischofsheim, and Juergen Fuerderer, Mainz, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

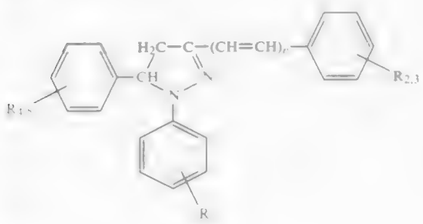
Filed Jan. 29, 1987, Ser. No. 8,357

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1986, 3603139

Int. Cl.⁴ G03G *5/06, 5/14*

U.S. Cl. 430—59 **15 Claims**

1. An electrophotographic recording material comprised of an electrically conducting film base and at least one photoconductive film provided on said film base, said photoconductive film comprising a binder, a charge-carrier generating compound and a pyrazoline charge-transporting compound represented by the formula



(1)

where
n denotes zero or 1,
R_1 denotes hydrogen, and
R_2, R_3, R_4 and R_5 respectively denote hydrogen or halogen, where at least one of R_4 and R_5 is a halogen and where, when n=1, at least one of R_2 and R_3 denotes a halogen.

4,762,761

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND THE METHOD OF MANUFACTURING THE SAME COMPRISING MICRO-CRYSTALLINE SILICON

Wataru Mitani, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 29, 1987, Ser. No. 8,356

Claims priority, application Japan, Mar. 12, 1986, 61-54099; Mar. 12, 1986, 61-54100

Int. Cl.⁴ G03G *5/14*

U.S. Cl. 430—65 **12 Claims**



1. An electrophotographic photosensitive member comprising:
a conductive substrate;
a photoconductive layer comprising amorphous silicon;
a first barrier layer comprising boron nitride and provided between the substrate and the photoconductive layer;
a second barrier layer comprising doped microcrystalline silicon and provided between the first barrier layer and the photoconductive layer; and
a surface layer provided on the photoconductive layer and formed of microcrystalline silicon containing at least one element selected from the group consisting of nitrogen, carbon and oxygen.

4,762,762

ELECTROPHOTOGRAPHIC LIGHT RECEIVING MEMBERS COMPRISING AMORPHOUS SILICON AND SUBSTRATE HAVING MINUTE IRREGULARITIES

Mitsuru Honda; Atsushi Koike, both of Chiba; Kyosuke Ogawa, Miye, and Keiichi Murai, Chiba, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1986, Ser. No. 921,638

Claims priority, application Japan, Oct. 24, 1985, 60-236286; Oct. 28, 1985, 60-239551; Oct. 29, 1985, 60-241891; Oct. 30, 1985, 60-241574; Oct. 31, 1985, 60-242786; Nov. 1, 1985, 60-244141

Int. Cl.⁴ G03G *5/082, 5/14*

U.S. Cl. 430—65 **57 Claims**

1. A light receiving member comprising a support and a light receiving layer of a multi-layered structure having at least a photosensitive layer composed of an amorphous material containing silicon atoms and at least one of the elements selected from oxygen atoms, carbon atoms and nitrogen atoms, said support having a surface provided with irregularities composed of spherical dimples, each of which having an inside face provided with minute irregularities.

4,762,763

TONER FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Yoshihiro Nomura, Numazu; Noriaki Ide, Fuji; Kazumi Ohtaki; Masami Tomita, both of Numazu; Hachiro Tosaka, Susono; Toshiki Nanya, Numazu; Motoi Orihara, Numazu; Shunichi Chiba, Numazu; Satoru Inoue, Mishima; Yasuo Asahina, and Hiroyuki Fushimi, both of Numazu, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

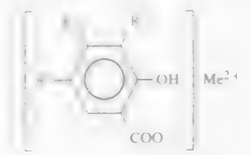
Filed Dec. 8, 1986, Ser. No. 939,386

Claims priority, application Japan, Dec. 19, 1985, 60-287318; Feb. 21, 1986, 61-38039; Jul. 11, 1986, 61-163371

Int. Cl.⁴ G03G *9/10*

U.S. Cl. 430—110 **18 Claims**

1. A toner for developing an electrostatic latent image, which contains a coloring agent, a binder resin and a charge controlling agent as the main components, said charge controlling agent being a metal salt of salicylic acid or derivatives thereof expressed by the following general formula



wherein R^1, R^2 and R^3 is/are hydrogen, aryl group or an alkyl group having 1 to 10 carbon atoms and Me is a metal selected from the group consisting of zinc, nickel, cobalt, copper and chromium.

4,762,764

LIQUID DEVELOPER

Dominic S. Ng, Toronto; Raymond W. Wong, Mississauga, and Melvin D. Croucher, Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1986, Ser. No. 946,548

Int. Cl.⁴ G03G *9/12*

U.S. Cl. 430—115 **13 Claims**

1. A stable colored liquid developer substantially free of pigment particles and substantially free of positively charged

VOL 1093 ISS 2 AG 9 1988 UMI

particles, said colored liquid developer comprising an insulating organic liquid dispersion medium having dispersed therein negatively charged, unipolar marking particles comprising a thermoplastic resin core substantially insoluble in said dispersion medium, an amphipathic copolymeric steric stabilizer irreversibly anchored to said thermoplastic resin core, said steric stabilizer being soluble in said dispersion medium and having a molecular weight of at least about 10,000, a colored dye imbibed in said thermoplastic resin core, said dye being soluble in said thermoplastic resin core, soluble in a polar solvent and insoluble in said dispersion medium, said polar solvent being insoluble in said insulating organic liquid, a charge control agent adsorbed at the interface of said marking particles and said insulating organic liquid dispersion medium, said charge control agent being selected from the group consisting of a polybutene succinimide, lecithin, basic barium petroleum sulfonates, and mixtures thereof, said charge control agent being present in an amount of from about 5 percent to about 0.1 percent by weight of said marking particles.

4,762,765

METHOD OF GENERATING A SPHERICAL GRAIN

Roland Nied, Bonstetten, and Herbert Hackl, Augsburg, both of Fed. Rep. of Germany, assignors to Alpine Aktiengesellschaft Augsburg, Augsburg, Fed. Rep. of Germany

Filed Mar. 24, 1986, Ser. No. 843,447

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1985, 3510610

Int. Cl.[4] G03G *9/00*

U.S. Cl. 430—137 **4 Claims**

1. A process for producing a spherical grain shape in fine-grain toners comprising:

(a) directing at least two gaseous streams into a bed of sized toner grains in order to fluidize the bed, said gaseous streams directed in opposite directions toward one another to subject the toner grains to a multitude of mutual collisions to permanently deform the toner grains into a substantially spherical shape and further producing a superfine portion, said gases being of a temperature which heats the toner grains to a temperature below the melting points of said toner grains; and

(b) subsequently separating the shaped grains from the superfine portion of toner resulting from said collisions and friction.

4,762,766

DRY TRANSFER FILM WITH PHOTOSENSITIZED COLOR CARRYING LAYER AND PHOTOSENSITIZED PRESSURE SENSITIVE ADHESIVE LAYER WHEREIN PHOTOSENSITIZER IS O-QUINONE DIAZIDE

Kenneth M. Melbye, Scottsdale, Ariz., assignor to Kroy Inc., Scottsdale, Ariz.

Filed Jan. 14, 1986, Ser. No. 818,796

Int. Cl.[1] G03C *1/60, 1/54, 1/90*

U.S. Cl. 430—156 **5 Claims**

1. A dry transfer film facilitating the formation of characters or the like and the transfer thereof to a receiving substrate, said transfer film comprising:

a carrier layer having release characteristics;

a photosensitized color carrying layer disposed adjacent to said carrier layer, said color carrying layer containing in mixture a color producing pigment and a photosensitizer component comprising an orthoquinone diazide in a quantity sufficient to alter the solubility of portions of said color carrying layer in a developer solvent as a result of exposure thereof to selected wavelengths of the electromagnetic spectrum, the quantity of said photosensitizer component being such that said color carrying layer is generally insoluble in said developer solvent except when exposed to said selected wavelengths;

a photosensitized pressure sensitive adhesive layer disposed adjacent to said color carrying layer, said adhesive layer containing in mixture a pressure sensitive adhesive and a photosensitizer component comprising an orthoquinone diazide component in a quantity sufficient to alter the solubility of portions of said adhesive layer in said developer solvent as a result of exposure thereof to said selected wavelengths, the quantity of said photosensitizer component being such that said adhesive layer is generally insoluble in said developer solution except when exposed to said selected second wavelengths, said carrier layer having release characteristics and said adhesive layer having adhesive characteristics such that the bonding force between said adhesive layer and the receiving substrate is greater than the bonding force between said color carrying layer and said carrier layer thereby facilitating the transfer of the non-exposed portions of said color carrying and adhesive layers from said carrier layer to the receiving substrate; and

a protective layer disposed adjacent to said adhesive layer, said protective layer being soluble in said developer solvent.

4,762,767

NEGATIVELY OPERATING PHOTORESIST COMPOSITION, WITH RADIATION-ABSORBING ADDITIVES

Günther Haas, Neckargemünd, and Karl H. Neisius, Darmstadt, both of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

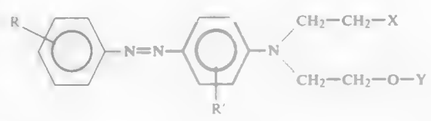
Continuation-in-part of Ser. No. 628,881, Jul. 9, 1984, abandoned. This application Apr. 30, 1986, Ser. No. 857,663

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1983, 3324795

Int. Cl.[4] G03C *1/60, 1/70, 1/71*

U.S. Cl. 430—167 **11 Claims**

1. In a negatively operating photoresist composition consisting essentially of a photoresist polymer which is a cyclized rubber and a photosensitive crosslinking agent which is an aromatic bisazido compound, the improvement wherein the composition further consists essentially of an amount effective as a radiation-absorbing substance of a compound of the formula



wherein

R and R′ independently are hydrogen, alkyl of up to 4C atoms or halogen,

X is hydrogen or O—Y and

Y is alkyl or alkanoyl in each case of up to 4C atoms, phenyl, phenyl substituted by C_{1-4}-alkyl or napthyl.

4,762,768

THERMALLY STABILIZED PHOTORESIST IMAGES

John J. Grunwald, New Haven, and Allen C. Spencer, Naugatuck, both of Conn., assignors to MacDermid, Incorporated, Waterbury, Conn.

Continuation-in-part of Ser. No. 823,942, Jan. 29, 1986, abandoned, which is a continuation-in-part of Ser. No. 802,514, Nov. 27, 1985, Pat. No. 4,701,390. This application Jun. 27, 1986, Ser. No. 879,385

Int. Cl.[4] G03C *5/00*

U.S. Cl. 430—324 **16 Claims**

1. A process for thermally stabilizing a photoresist image layer formed on a substrate against distortion or degradation caused by heat generated in subsequent pattern generation in fabrication of microelectronic circuitry on said substrate which process comprises the steps of coating said image layer

with a protective film of a hydrolized collagen and thereafter subjecting said coated image layer to a post-development bake prior to subjecting said image layer and substrate to pattern generation.

4,762,769

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Toshiro Takahashi; Ken-ichi Kuwabara, and Masahiro Okada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1986, Ser. No. 909,670

Claims priority, application Japan, Sep. 20, 1985, 60-206258

Int. Cl.[4] G03C *1/36*

U.S. Cl. 430—264 **9 Claims**

1. A silver halide photographic material which has at least one silver halide emulsion layer comprising silver halide grains selected from silver chloride grains and silver chlorobromide grains which have a bromide content of 5 mol % or less, and containing a rhodium salt in an amount of from 1×10^{-6} to 5×10^{-4} mole per mole of silver in said layer, and contains both a hydrazine derivative and a dye having an absorption peak in the wavelength range of from 400 nm to 550 nm in at least one of said emulsion layer and another hydrophilic colloid layer, to thereby control the ratio of sensitivity at 360 nm to sensitivity at 400 nm (S_{360}/S_{400} ratio) to not less than 30/1.

4,762,770

HIGH CONTRAST OPTICAL MEMORY DISK

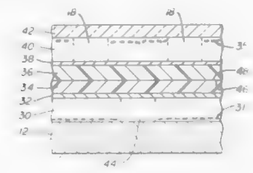
Eric W. Bouldin, Atherton, and Jerome Drexler, Los Altos Hills, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 935,999, Nov. 28, 1986, which is a continuation-in-part of Ser. No. 896,988, Aug. 15, 1986, abandoned, and Ser. No. 855,228, Apr. 23, 1986. This application Apr. 16, 1987, Ser. No. 39,505

The portion of the term of this patent subsequent to Jun. 28, 2005, has been disclaimed.

Int. Cl.[4] G03C *1/72, 1/78, 1/94*

U.S. Cl. 430—273 **14 Claims**



7. A double-sided optical memory disk comprising,

a self-supporting, optically transparent planar disk backing,

a first planar optical storage layer disposed over said disk backing, said optical storage layer having a crust of irregular oblong black silver particles within one-half micron of the storage layer proximal to the backing and substantially clear gelatin above the crust,

a first vapor or vacuum deposited reflective metallic layer disposed on said gelatin,

a first planar support layer disposed over said metallic layer, said support layer having opposed planar surfaces, including a lower surface proximate said disk backing and an upper surface distal to said disk backing,

a second planar support layer, substantially identical to said first planar support layer and adhered to the upper surface thereof,

a second vapor or vacuum deposited reflective metallic layer disposed over said second planar support layer,

a second planar optical storage layer disposed over said second metallic layer, said optical storage layer having a planar crust of irregular oblong black silver particles within the top one-half micron of the storage layer distal to the backing and substantially clear gelatin below the crust, and

a transparent, protective, planar layer disposed over said second optical storage layer.

4,762,771

METHOD OF TREATING PHOTOSENSITIVE PRINTING PLATE

Hiroshi Matsumoto, and Hitoshi Hagiwara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 30, 1986, Ser. No. 890,737

Claims priority, application Japan, Aug. 1, 1985, 60-170465

Int. Cl.[4] G03C *7/02*

U.S. Cl. 430—302 **13 Claims**

1. A method of treating a photosensitive lithographic printing plate comprising a support having coated thereon a lithographically suitable light-sensitive layer, which comprises the steps of subjecting the photosensitive lithographic printing plate to imagewise exposure to light so as to form light-struck areas and light-unstruck areas on the light-sensitive layer, developing the light-sensitive layer to remove therefrom the light-struck areas or the light-unstruck areas, and subjecting the resulting plate to burning-in treatment, in which a result effective amount of an aqueous solution containing, in admixture, (A) 1 to 40% by weight of phytic acid, its water-soluble salt, or a combination thereof and (B) 0.1 to 20% by weight of aminobenzenesulfonic acid, its water-soluble salt, or a combination thereof is applied to the lithographic plate after the development but prior to the burning-in treatment.

4,762,772

DESENSITIZING GUM FOR LITHOGRAPHIC PRINTING PLATES

Kesanao Kobayashi, and Hiroshi Matsumoto, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 8, 1986, Ser. No. 916,655

Claims priority, application Japan, Oct. 9, 1985, 60-225512

Int. Cl.[4] G03F *7/00;* **B41N** *3/00*

U.S. Cl. 430—309 **21 Claims**

1. A desensitizing gum for lithographic printing plates comprising (1) an aqueous solution of water-soluble and film forming hydroxyalkylated starch, the degree of etherification of the hydroxyalkylated starch being 0.03 to 0.08 and (2) at least one member selected from the group consisting of anionic and nonionic surfactants.

4,762,773

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING A HYDROQUINONE DERIVATIVE AND A PYRAZOLOAZOLE COUPLER

Osamu Takahashi, and Nobuo Sakai, both of Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 7, 1986, Ser. No. 916,431

Claims priority, application Japan, Oct. 7, 1985, 60-223346

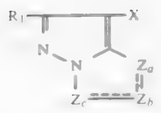
Int. Cl.[4] G03C *7/16*

U.S. Cl. 430—380 **50 Claims**

1. A silver halide color photographic light-sensitive material comprising at least one silver halide light-sensitive emulsion layer associated with a magenta coupler provided on a support, wherein at least one of said silver halide emulsion layer and the layer(s) adjacent to the emulsion layer contains a hydroquinone derivative,

wherein said coupler is at least one compound selected from the group consisting of compounds represented by formula (I), bis-compounds derived from the compounds, and polymers having coupler residues derived from the compounds.

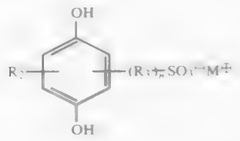
VOL 1093 ISS 2 AG 9 1988 UMI



(I)

wherein R_1 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group which can be released therefrom upon coupling with an oxidized form of an aromatic primary amine-developing agent; and Za, Zb, and Zc each represents methine, substituted methine, =N—, or —NH— group, one of Za-Zb bond and Zb-Zc bond is a double bond and the other is a single bond, and when the Zb-Zc bond is a carbon-carbon double bond, it can form a part of an aromatic ring, or R_1 or X is a group forming the bis-compound or the polymer, or Za, Zb or Zc represents a substituted methine group forming the bis-compound or the polymer, and

said hydroquinone derivative is represented by formula (II)



(II)

wherein R_2 represents a substituted or unsubstituted alkyl group, alkoxy group, aromatic group, or alkylthio group; R_3 represents an alkylene group; n represents an integer of 0 or 1; and M⊕ represents a cation

wherein said magenta coupler is incorporated in the light-sensitive material in an amount of from 1×10^{-3} mol to 1 mol per mol of silver halide in said light-sensitive silver halide emulsion layer.

4,762,774

METHOD FOR COLOR IMAGE FORMATION COMPRISING A RAPID DESILVERING PROCESS

Shinzo Kishimoto; Toshihiro Nishikawa; Akira Abe, and Junya Nakajima, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 17, 1986, Ser. No. 920,138
Claims priority, application Japan, Oct. 19, 1985, 60-233995
Int. Cl.[4] G03C 7/02, 5/44, 5/38, 1/06
U.S. Cl. 430—393 19 Claims

1. A method for color image formation which comprises:

(i) imagewise exposing to light a silver halide color photograph material having a silver halide emulsion layer containing mono-dispersed silver halide grains,

(ii) subjecting the exposed material to color development,

(iii) processing the material through a bath primarily having bleaching capacity, and then,

(iv) processing the material through a bath having bleach-fixing capacity,

wherein said bath primarily having bleaching capacity is capable of bleaching at least ½ the maximum amount of developed silver contained in the material and capable of desilvering less than ½ the total silver coverage of the material, and said bath having bleach-fixing capacity is capable of bleaching less than ½ the maximum developed silver content contained in the material and capable of desilvering at least ½ the total silver coverage of the material.

4,762,775

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tadashi Ogawa, and Takeshi Hirose, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kangawa, Japan

Filed Jul. 25, 1986, Ser. No. 889,526
Claims priority, application Japan, Jul. 25, 1986, 60-162874
Int. Cl.[4] G03C 1/46
U.S. Cl. 430—505 9 Claims

1. A silver halide photographic material comprising a support having provided thereon at least one light-sensitive silver halide emulsion layer, wherein said emulsion layer or a layer adjacent thereto contains at least one pyrazoloazole coupler and substantially all photographic layers including the light-sensitive silver halide layer and the layer adjacent thereto each having been coated on the same surface of the support and then dried have a pH lower than the pKa of said coupler by 1.0 or more.

4,762,776

SILVER HALIDE PHOTOGRAPHIC PAPER IMPROVED IN REMAINING CURL

Yutaka Uesawa, Hino, and Isamu Morimoto, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 74,706
Claims priority, application Japan, Jul. 18, 1986, 61-168071
Int. Cl.[4] G03C 1/76
U.S. Cl. 430—538 2 Claims

1. A silver halide pohotographic paper comprising a support having a paper substratum, being coated over to the both sides thereof with a polyolefin resin, and having a Tabler stiffness value of from 1.0 to 3.0 in machine direction, and having both at least one silver halide emulsion layer on one side and a hydrophilic colloidal backing layer on the other side thereof, wherein

said silver halide emulsion layer contains a polyhydric alcohol in an amount of from 5 to 40% by weight to an amount by weight of the gelatin binder forming said silver halide emulsion layer and an alkyl acrylate polymer latex in an amount of from 30 to 80% by weight thereto,

a total amount of gelatin coated over to the emulsion layer side of said support is not more than 4.0 g/m^2, and

a total amount of gelatin coated over to the backing layer side of said support is not more than 2.0 g/m^2.

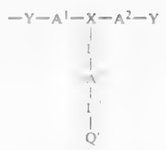
4,762,777

POLYUREA AND POLYURETHANE COMPOUNDS CONTAINING A PHOTOGRAPHICALLY USEFUL GROUP, AND A PHOTOGRAPHIC RECORDING MATERIAL CONTAINING SUCH COMPOUNDS

Güter Helling, Odenthal; Helmut Reiff, and Friedrich-Wilhelm Kunitz, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 804,481, Dec. 4, 1985, abandoned. This application Oct. 20, 1987, Ser. No. 112,056
Claims priority, application Fed. Rep. of Germany, Dec. 15, 1984, 3445790
Int. Cl.[4] G03C 7/26, 7/32, 1/04
U.S. Cl. 430—548 4 Claims

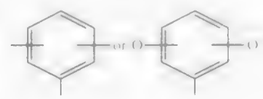
1. A photographic recording material comprising at least one photosensitive silver halide emulsion layer, characterized by a content of a polyurea or a polyurethane compound optionally having polyester and/or polyether structures, wherein the polyurea or polyurethane compound contains recurring structural units corresponding to the following formula II



in which

Q', either on its own or together with X (with inclusion of —L^1—A^3—L^2—), represents the essential part of a photographic redox compound or of a coupler capable of reacting with developer oxidation products to produce colored or non-colored reaction products in imagewise distribution,

X represents —CR^2—, —N—,



Y represents —O— or —NR^1—,

A^1 and A^2 represents C_1–C_4 alkylene,

A^3 represents C_1–C_8 alkylene, arylene or a chemical bond,

L^1 represents —CONH—, —NHCO—, —CO—, —SO_2—, —O— or a chemical bond,

L^2 represents —CONH—, —NH—, —O—, or a chemical bond,

R^1 represents H, C_1–C_6 alkyl, cycloalkyl or phenyl and

R^2 represents H or C_1–C_4 alkyl.

4,762,778

SILVER HALIDE PHOTOGRAPHIC LIGHT SENSITIVE MATERIAL

Katsumasa Yamazaki, Hachioji; Toshihiko Yagi, Kanagawa; Kenji Michiue; Sohei Goto, both of Hino, and Yoshiharu Mochizuki, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 680,281, Dec. 7, 1984, abandoned. This application Jun. 10, 1987, Ser. No. 62,343
Claims priority, application Japan, Dec. 8, 1983, 58-231913
Int. Cl.[4] G03C 1/02, 1/06
U.S. Cl. 430—567 3 Claims

1. A silver halide color photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer,

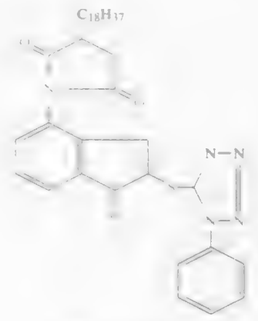
wherein at least one of said silver halide emulsion layers includes

a group of substantially monodisperse core/shell-type silver halide grains having a value of not greater than 0.15, said value being obtained by dividing a standard deviation value by the average grain size value, wherein said substantially monodisperse core/shell-type silver halide grains have a shell of a thickness of 0.01μ to 0.1μ and wherein the silver halide grains contain a silver iodide in the core thereof in an amount of not less than 8 mole % and a silver iodide in the shell thereof in an amount from 0.1 mole % to 6 mole %; and

(b) a development inhibitor releasing compound which releases a development inhibitor by the reaction thereof with the oxidized product of a color developing agent and wherein said development inhibiting releasing compound has a relative development inhibitability ρs of not less than 1, as defined below:



wherein, ρ represents a development inhibitability of the DIR compound to be used; γi represents a gamma value of a color developed silver halide color photographic light-sensitive material containing the aforementioned DIR compound; $\gamma 0$ represents a gamma value of a color developed silver halide color photographic light-sensitive material not containing the DIR compound; ρB represents a development inhibitability of the following DIR compound D_B



DIR compound D_B

4,762,779

COMPOSITIONS AND METHODS FOR FUNCTIONALIZING NUCLEIC ACIDS

David L. Snitman, Boulder, Colo., assignor to Amgen Inc., Thousand Oaks, Calif.

Filed Jun. 13, 1985, Ser. No. 744,508
Int. Cl.[4] C12Q 1/68; C12P 19/34; C07H 15/12
U.S. Cl. 435—6 4 Claims

4. A method of attaching an end-label to a nucleic acid during solid phase synthesis comprising the steps of:

preparing a phosphoramidite of a hydroxylamine; and

condensing the phosphoramidite of a hydroxylamine to a support-bound polynucleoside.

4,762,780

METHOD AND COMPOSITION FOR SCREENING AND DIAGNOSING "HCMV"

Deborah H. Spector, and Stephen A. Spector, both of Encinitas, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 601,094, Apr. 17, 1984, abandoned, which is a continuation of Ser. No. 438,662, Nov. 2, 1982, abandoned. This application Jan. 5, 1987, Ser. No. 4,291
Int. Cl.[4] C12Q 1/68, 1/70; C12P 19/34; C12N 15/00
U.S. Cl. 435—6 22 Claims

1. A method for determining the presence of human cytomegalovirus ("hCMV") or portions thereof in a clinical sample suspected of containing hCMV DNA,

said method comprising: combining under hybridizing conditions of predetermined stringency said sample and at least one single stranded DNA fragment of human cytomegalovirus having at least 20 bases, which fragment is non-cross-hybridizing with human DNA; and

determining the formation of duplexes between any of said DNA fragments and said sample DNA as diagnostic of the presence of CMV in said sample.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,781

ANTIBODIES CAPABLE OF SPECIFICALLY IDENTIFYING HAPTENIC GROUPS, THEIR PREPARATION AND THEIR USE AND TO NEW ANTIGENS PERMITTING THEIR PREPARATION

Michel Geffard, Merignac, France, assignor to Centre National de la Recherche Scientifique (CNRS) and Institut National de la Sante et de la Recherche Medicale (INSERM), both of Paris, France

Filed Dec. 28, 1984, Ser. No. 687,033
Claims priority, application France, Dec. 30, 1983, 83 21087
Int. Cl.[4] G01N *33/531, 33/532, 33/543*
U.S. Cl. 435—7 17 Claims

1. Antibodies capable of specifically identifying hapten groups having the formula

$$-NH-(CH_2)_n-NH-Hapt.$$

wherein
n is a whole number ranging from 4 to 6, and
Hapt. is the residue of a hapten molecule having the formula Hapt.—NH_2, wherein —NH_2 is a primary amine group or having the formula Hapt.=NH, wherein =NH is an imine or a guanidino group,
said hapten being dihydroxyphenylalanine, dopamine, norepinephrine, tyramine, octopamine, an indolamine, glutamic acid, aspartic acid, taurine, gamma-aminobutyric acid, phenylalanine, saxitoxin or tetrodotoxin.

4,762,782

ASSAY FOR BETA-LACTAM ANTIBIOTICS

Edward B. Goldberg, Brookline, and James T. Park, Weston, both of Mass., assignors to Micromol Corporation, Boston, Mass.

Filed May 16, 1985, Ser. No. 734,535
Int. Cl.[4] G01N *33/535, 33/543, 33/566, 33/577*
U.S. Cl. 435—7 17 Claims

1. A test method for assaying a Beta-lactam antibiotic in an aqueous liquid medium, said process comprising the steps of
(a) contacting said liquid to be tested with an antibiotic-binding-protein attached to a matrix and specific for said antibiotic to form a conjugate between (A) said antibiotic in said liquid and (B) said antibiotic-binding protein;
(b) contacting said conjugate with an antibody that specifically binds to said conjugate of (A) and (B) but does not specifically bind to either (A) or (B) in non-conjugated form;
(c) quantitatively analyzing the amount of product formed by binding between said conjugate and said antibody as a measure of said antibiotic in said liquid.

4,762,783

PROCESS AND REAGENT FOR THE DETERMINATION OF THE FOLLICLE-STIMULATING HORMONE AND MONOCLONAL ANTIBODIES SUITABLE THEREFOR

Christa Hübner-Parajsz, Tutzing; Hartmut Schetters, Neufahrn; Helmut Lenz, Tutzing, and Klaus Erler, Pöcking, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Feb. 27, 1986, Ser. No. 834,316
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1985, 3507849
Int. Cl.[4] G01N *33/532;* C12N *15/00*
U.S. Cl. 435—7 32 Claims

1. Hybridoma cell line which produces a monoclonal antibody which specifically binds to follicle stimulating hormone (FSH) and cross-reacts with other glycoprotein hormones to an extent less than 3%.

5. Monoclonal antibody which specifically binds to follicle stimulating hormone (FSH) and is cross-reactive with other glycoprotein hormones to an extent less than 3%.

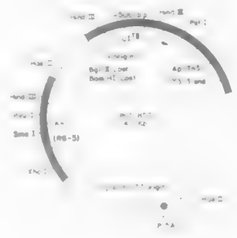
10. Process for determining the presence of follicle stimulating hormone (FSH) in a sample comprising contacting said sample with at least one monoclonal antibody which specifically binds to FSH and is cross-reactive with other glycoprotein hormones to an extent less than 3% under conditions favoring formation of complexes between said antibody and FSH, and determining the presence of said complexes.

4,762,784

FERMEMTATION PROCESS FOR THE HIGH LEVEL PRODUCTION OF BOVINE GROWTH HORMONE

Paula M. Keith, West Terre Haute, and Wendy J. Cain, Terre Haute, both of Ind., assignors to International Minerals & Chemical Corp., Ind.

Filed Jul. 15, 1985, Ser. No. 754,578
Int. Cl.[4] C12P *21/02;* C12N *15/00*
U.S. Cl. 435—70 20 Claims



1. A method of producing bovine growth hormone which comprises: inoculating an aqueous fermentation medium with a transformant *E. coli* strain containing an expression vector which directs the expression of bovine growth hormone under the control of a phage lambda promoter-operator and an expression vector which directs the expression of the λcI857 temperature-sensitive repressor protein; growing the transformant strain in the fermentation medium for an initial growth period during which the level of dissolved oxygen in the medium is maintained at from 20% to 60% of saturation and the temperature of the medium is maintained at about 26° to 30° C.; raising the temperature of the fermentation medium to at least about 42° C. to inactivate the temperature-sensitive repressor protein, thereby initiating an induction period during which bovine growth hormone is produced; reducing the temperature to 38° C. to 41° C. and continuing to cultivate the transformant strain for the remainder of the induction period, during which the level of dissolved oxygen in the medium is maintained at from 10% to 40% of saturation; and recovering the bovine growth hormone from the transformant cells.

4,762,785

NOVEL METHOD AND COMPOSITIONS FOR INTRODUCTING ALIEN DNA IN VIVO

Luca Comai, Davis, Calif., assignor to Calgene, Inc., Davis, Calif.

Continuation of Ser. No. 407,525, Aug. 12, 1982, abandoned.
This application Nov. 6, 1985, Ser. No. 796,484
Int. Cl.[4] C12N *15/00, 1/20;* C12P *21/00, 19/34*
U.S. Cl. 435—172.3 7 Claims

1. A method for stably inserting alien DNA into the DNA of the Ti plasmid of *A. tumefaciens,*
said method comprising:
mating with said *A. tumefaciens* a first *E. coli* host containing,
a first extrachromosomal element characterized as having: a narrow range replication system incapable of maintenance in said *A. tumefaciens;* a DNA sequence homologous with a DNA sequence of the T region of the Ti plasmid present in said *A. tumefaciens;* mobilization capability being self-transmissible or capable of transfer with a helper plasmid; a segment comprising alien DNA; and a marker capable of selection in said *A. tumefaciens* with the proviso that if the first extrachromosomal element is not self-transmissible, the first *E. coli* host also contains a second extrachromosomal element as said helper plasmid having a narrow range replication system and incapable of replication in said *A. tumefacians*: and genes capable of imparting transmissibility to said first and second extrachromosomal elements; and
selecting by means of said marker an exconjugant.

4,762,786

VECTORS AND CONDITIONS WHICH ALLOW GENETIC TRANSFORMATION OF CEPHALOSPORIUM

Jerry L. Chapman, Jr., Speedway; Thomas D. Ingolia, Indianapolis; Kevin R. Kaster; Stephen W. Queener, both of Indianapolis, and Paul L. Skatrud, Greenwood, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 27, 1984, Ser. No. 654,919
Int. Cl.[4] C12N *15/00, 1/20, 1/14;* C12P *21/00*
U.S. Cl. 435—172.3 43 Claims



1. A method for transforming a Cephalosporium host cell which comprises:
(1) introducing a recombinant DNA cloning vector into a Cephalosporium host cell, said vector comprising
(a) a *Saccharomyces cerevisiae* transcriptional and translational activating sequence positioned for expression of a sequence that codes for hygromycin B phosphotransferase and
(b) a sequence that codes for hygromycin B phosphotransferase, subject to the limitation that the sequence of (a) is positioned for the expression of the sequence of (b), and
(2) growing said host cell under selective conditions suitable for maintaining DNA comprising said vector in said host cell.

4,762,787

ANTI-HUMAN IGM IMMUNOADSORBENT AND PROCESS FOR PRODUCING SAID IMMUNOADSORBENT

Joseph P. Balint, Seattle, Wash., assignor to IMRE Corporation, Seattle, Wash.

Filed Nov. 21, 1986, Ser. No. 934,235
Int. Cl.[4] C12N *11/00*
U.S. Cl. 435—174 5 Claims

1. A method for preparing an immunoadsorbent material useful for removing IgM and IgM-related complexes from biological fluids, said method comprising:
introducing free hydroxyl groups onto a microcrystalline silica matrix;
activating the hydroxyl groups on silica matrix in the presence of cyanogen bromide at a pH in the range from 11.0 to 11.5; and



reacting the activated silica matrix with anti-IgM antibody at a pH in the range from 8.5 to 9.0 to covalently link the antibody to the activated silica substrate.

4,762,788

PROCESS FOR PRODUCING CELLULOLYTIC ENZYMES

Michel Warzywoda, Rueil Malmaison; Véronique Ferré, Boulogne Billancourt, and Jacques Pourquie, Palaiseau, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 28, 1984, Ser. No. 675,595
Claims priority, application France, Nov. 29, 1983, 83 19184
Int. Cl.[4] C12N *9/42, 1/14*
U.S. Cl. 435—209 10 Claims

1. A process for aerobic production of cellulase by cultivation of a *Trichoderma reesei* strain in a fermentation zone containing a nutrient medium, said process comprising feeding said fermentation zone with soluble sugar and being characterized by:
(a) a first step of subjecting to aerobic fermentation conditions a culture medium comprising a Trichoderma reesei strain, an inorganic salt and an initial carbon substrate containing at least one cellulose containing material and at least one soluble sugar, the amount by weight of said cellulose and said soluble sugar, in proportion to the culture medium, being each 0.01-2%, the first step being continued without further soluble sugar addition for a sufficient time to consume at least 10% of the sugar and to obtain a sugar concentration in the medium lower than 0.3% by weight, and
(b) a second step of continuing the aerobic fermentation by adding soluble sugar continuously so as to introduce a sugar amount totalling at least 3% by weight of the culture medium while maintaining the sugar concentration in said culture medium at a value lower than 0.3% by weight.

4,762,789

SERODIAGNOSTIC REAGENT FOR ENTAMOEBA HISTOLYTICA

William E. Keene, Berkeley, and James H. McKerrow, San Francisco, both of Calif., assignors to The University of California, Berkeley, Calif.

Filed Jan. 16, 1986, Ser. No. 819,892
Int. Cl.[4] C12N *9/50, 15/00;* C12Q *1/00;* G01N *33/54*
U.S. Cl. 435—219 3 Claims

1. A proteinaceous composition consisting essentially of a homogeneous neutral proteinase secreted by *Entamoeba histo-*

VOL 1093 ISS 2 AG 9 1988 UMI

lytica trophozoites wherein said proteinase has a subunit molecular weight of 56,000±4,000 by SDS-PAGE, a neutral pH optimum, and an isoelectric point of about 6.

4,762,790

PROCESS FOR MICROPLANT PROPAGATION THROUGH INCREASED MULTIPLE SHOOT FORMATION

George H. Whitten, Woodridge, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Jan. 29, 1986, Ser. No. 823,859
Int. Cl.[4] C12N *5/00, 5/02*
U.S. Cl. 435—240.45 11 Claims

1. A process for increasing the rate of shoot formation in plant tissue cultures comprising:

culturing an organized plant cell system selected from the group consisting of buds, stem segments, shoot tips, and meristems on a growth medium for said organized cell system;

wherein said growth medium comprises an amount of corn steepwater sufficient to increase the rate of shoot formation.

4,762,791

HUMAN IMMUNE INTERFERON

David V. Goeddel, Burlingame, and Patrick W. Gray, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 312,489, Oct. 19, 1981, abandoned. This application Jun. 20, 1985, Ser. No. 746,813
Int. Cl.[4] C12N *1/00, 5/00, 1/20, 1/16, 15/00;* C21P *21/00, 21/02, 21/04,* C12P *19/34;* CO7H *21/04*
U.S. Cl. 435—243 13 Claims

1. A transformant microorganism or cell culture transformed with a replicable expression vehicle capable in said transformant microorganism or cell culture or expressing a polypeptide comprising the amino acid sequence of des-CYS-TYR-CYS recombinant human immune interferon.

3. A transformant microorganism or cell culture transformed with a replicable expression vehicle capable in said transformant microorganism or cell culture of expressing a polypeptide comprising the amino acid sequence of recombinant human immune interferon.

4,762,792

CHOLESTEROL-RICH FRACTION USEFUL IN CULTURE MEDIA AND PROCESS OF PRODUCING SAME

Makram M. Girgis, Bradley; David E. Jackson, Bourbonnais; Gerald L. Kruse, Herscher, all of Ill.; Frank J. Mannuzza, Burlington, Mass., and Joseph G. Montalto, Bradley, Ill., assignors to Miles Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 732,856, May 10, 1985, abandoned. This application Oct. 28, 1986, Ser. No. 923,850
Int. Cl.[4] C12N *1/38*
U.S. Cl. 435—244 12 Claims

1. A process for isolating and purifying a cholesterol-rich fraction from mammalian blood plasma or serum or fraction thereof containing cholesterol which comprises the steps of:

(a) contacting a liquid cholesterol-containing plasma or serum or fraction thereof with a silica adsorbent to adsorb the cholesterol-rich fraction;

(b) separating the adsorbed cholesterol-rich fraction from the remaining liquid plasma or serum;

(c) freezing and thawing the adsorbed cholesterol-rich fraction;

(d) eluting the adsorbed cholesterol-rich fraction at a pH from 9.0 to 11.5;

(e) either before or after step (f) and prior to step (g) adjusting the pH of the cholesterol-rich solution to a value in the range from 11.0 to 13.0;

(f) concentrating the cholesterol-rich solution by ultrafiltration;

(g) dialyzing the concentrated cholesterol-rich solution sequentially against sodium carbonate and water;

(h) further concentrating the dialyzed cholesterol-rich solution by ultrafiltration;

(i) adjusting the pH of the concentrated cholesterol-rich solution to a value in the range from 7.0 to 11.0;

(j) heating the concentrated cholesterol-rich solution at 50° to 100° C. for 30 minutes to 24 hours;

(k) recovering therefrom a purified cholesterol-rich fraction.

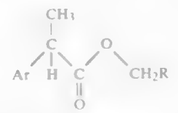
4,762,793

PROCESS FOR THE BIOTECHNOLOGICAL PREPARATION OF OPTICALLY ACTIVE ALPHA-ARYLALKANOIC ACIDS

Pietro Cesti, Novara, and Paolo Piccardi, Milan, both of Italy, assignors to Montedison S.p.A., Milan, Italy

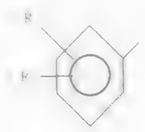
Filed Mar. 18, 1986, Ser. No. 840,856
Claims priority, application Italy, Mar. 22, 1985, 20036 A/85
Int. Cl.[4] C07P *41/00*
U.S. Cl. 435—280 5 Claims

1. Process for the biotechnological preparation of α-arylalkanoic acids, substantially in the form of an optical S(+)isomer, said process consisting in reacting a racemic (R,S) ester of an α-arylalkanoic acid of the formula:



(I)

wherein: R is a group selected from the group consisting of —C≡CH, —CH=CH_2, —CN, —$COCH_3$, —COO alkyl C1-C4 and a —CH_2—O-alkyl C_1–C_4 group, Ar represents a group selected from the group consisting of those having the formula:



(II)

and



(III)

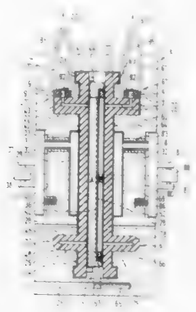
wherein: R' is a group selected from the group consisting of linear and branched alkyl containing from 1 to 8 carbon atoms, alkenyl containing from 1 to 4 carbon atoms, alkoxy, phenyl, phenoxy, tenoyl and heterocyclic; R'' is selected from the group consisting of hydrogen and halogen; R''' is an alkyl containing from 1 to 4 carbon atoms; with CANDIDA CYLINDRACEA lipase produced by microorganisms capable of asymmetrically hydrolyzing, in a predominant way, the S(+) form of the racemic ester of formula (I) and then separating the acid obtained, substantially in the S(+) form, from the unreacted ester, substantially in the R(−) form.

4,762,794

APPARATUS FOR CONTACTING BIOLOGICAL CELL SYSTEMS WITH A PERFUSION FLUID

Stephan Nees, Waldwiesenstr. 30b, München, Fed. Rep. of Germany

Filed May 14, 1984, Ser. No. 609,871
Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317551
Int. Cl.[4] C12M *3/00, 3/04, 1/14*
U.S. Cl. 435—284 10 Claims



1. Apparatus for contacting a substrate and a biological single- or multiple-row cell culture thereon with a perfusion fluid, comprising a housing defining a space; a holding and tensioning device arranged to support a substrate with a cell culture thereon and removably installed in said housing so as to divide, with a substrate thereon, said space into a pair of chambers with said device and the substrate therein disposed between said chambers, said housing having a first elastic wall adjacent one of said chambers, a second elastic wall adjacent the other of said chambers, first inlet means for admission of perfusion fluid into said one chamber, first outlet means for evacuation of perfusion fluid from said one chamber, second inlet means for admission of perfusion fluid into said other chamber, and second outlet means for evacuation of perfusion fluid from said other chamber; means for moving said first wall with reference to said device so as to alternatively increase and reduce the volume of said one chamber; first valve means provided in said housing and operative to seal said first inlet means from said one chamber in response to a reduction of the volume of said one chamber and also establish communication between said one chamber and said first inlet means in response to an increase of the volume of said one chamber, respectively; second valve means provided in said housing and operative to establish communication between said one chamber and said first outlet means in response to a reduction of the volume of said one chamber and also seal said one chamber from said first outlet means in response to an increase of the volume of said one chamber, respectively; means for moving said second wall with reference to said device so as to alternatively increase and reduce the volume of said other chamber; third valve means provided in said housing and operative to seal said second inlet means from said other chamber in response to a reduction of the volume of said other chamber and also establish communication between said other chamber and said second inlet means in response to an increase of the volume of said other chamber, respectively; and fourth valve means provided in said housing and operative to establish communication between said other chamber and said second outlet means in response to a reduction of the volume of said other chamber and also seal said second outlet means from said other chamber in response to an increase of the volume of said other chamber, respectively.

4,762,795

DEVICE BASED ON AN INORGANIC CRYSTALLINE MATTER CONNECTED TO A SOURCE OF ENERGY AND USE OF SAID DEVICE FOR IMPROVING BACTERIAL METABOLISM

Alain Masson, La Besserie, 86130 Saint-Cyr, France

Filed May 29, 1986, Ser. No. 868,620
Claims priority, application France, May 30, 1985, 85 08147
Int. Cl.[4] C12M *1/00;* C12N *13/00*
U.S. Cl. 435—287 19 Claims



1. A device for the transmission of energy comprising a source of energy and a means for transmitting the energy provided by the source, wherein the improvement comprises a means for transmitting energy which comprises a homogeneous mixture of an inorganic crystalline matter in powder form formed of kaolinite and talc, and of a carbohydrate.

4,762,796

PH CONTROL OF A PROCESS STREAM

Richard Weber, Humble, Tex., and Loren H. Haag, Denville, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 5, 1981, Ser. No. 308,467
Int. Cl.[4] G05D *21/00, 7/00*
U.S. Cl. 436—55 8 Claims



1. A method of controlling the pH of a continuous process stream, comprising the steps of:

(a) obtaining a substantially continuous sample of a process stream;

(b) backmixing solely said sample;

(c) substantially continuously analyzing the pH of said backmixed sample; and

(d) substantially continuously adding a reagent to an upstream portion of said process stream to control the pH of said sample stream in response to the pH analysis of the backmixed sample.

5. A system for controlling pH of a continuous process stream comprising:

a main process stream conduit providing substantially continuous conveyance of a process stream;

a backmixing vessel coupled to said main process stream conduit for receiving a substantially continuous sample of said process stream, said backmixing vessel functioning to backmix solely said sample and provide a process stream sample average of the pH of said sample;

inlet means for adding at least one reagent to said main process stream conduit upstream from the point at which said backmixing vessel is coupled to said main process stream conduit.

VOL 1093 ISS 2 AG 9 1988 UMI

a rapid oxidation vessel connected to said backmixing vessel for rapidly oxidizing the backmixed sample;

pH analyzing means operatively connected to said rapid oxidation vessel for continuous monitoring of the pH of the backmixed, oxidized sample; and

control means operatively connected to said pH analyzing means and being operative in response to said analysis of said pH analyzing means for delivery of at least one reagent to said process stream through said inlet means to achieve a desired pH for said process stream.

4,762,797

METHOD FOR DETERMINING THE FOULING TENDENCY OF HYDROCARBONS

Ghazi B. Dickakian, Kingwood, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Filed Apr. 8, 1986, Ser. No. 849,600
Int. Cl.[4] G01N *30/00, 33/28*
U.S. Cl. 436—60 15 Claims

1. A method for determining the tendency of a sample petroleum fraction to foul exposed heated metal surfaces comprising:

(a) determining the amount of saturates or aromatics in said sample petroleum fraction;

(b) determining the amount of asphaltenes in said sample petproleum fraction;

(c) calculating the ratio of saturates or aromatics in said sample petroleum fraction to asphaltenes in said sample petroleum fraction from the amounts determined in steps (a) and (b); and

(d) comparing said ratio to a previously determined tendency to foul exposed heated metal surfaces for a prior petroleum fraction having substantially the same ratio as said sample petroleum fraction to determine the tendency of said sample petorleum fraction to foul exposed heated metal surfaces.

4,762,798

DEVICE AND METHOD FOR DETERMINING A CHARACTERISTIC OF A FLUID SAMPLE

Marshall E. Deutsch, Sudbury, Mass., assignor to Marshall Diagnostics, Inc., Bedford, Mass.

Filed Dec. 31, 1985, Ser. No. 815,233
Int. Cl.[4] G01N *21/78, 33/72*
U.S. Cl. 436—67 14 Claims



1. A device for use in determining a characteristic of a fluid sample by using optical measurements and changing the optical density range of such a fluid sample, comprising:

a first container defining a first volume for receiving a fluid sample, wherein said first container has an inner wall, an internal diameter, and an open end, wherein said first container is sized and adapted to be disposed between a source of a measuring light beam and a detector in a manner such that a beam directed from such a source to such a detector is caused to pass through said first container and a fluid sample contained within the first volume, and wherein said first container is sized to provide for such a beam a path of predetermined effective length through a fluid sample contained within the first volume,

a second container defining a second volume, wherein said second container has an internal diameter substantially the same as the internal diameter of said first container and an open end sized and adapted for mating with said first container in a leak-tight, open end-to-open end relationship to define a uniform continuous volume comprising the first volume and the second volume,

an insert means comprising a body of predetermined dimeinsion, wherein said insert means is sized and adapted to be disposed within the first volume to change the effective length of the path of a beam directed through a fluid sample in the first volume and to slide by gravity between the first volume and the second volume when said first container and said second container are assembled in open end-to-open end relationship and the insert is disposed within the uniform continuous volume formed thereby, and wherein the material of said insert means has substantially 100% transmission of light at a selected wavelength, and

means for positioning the body of said insert means within the first volume such that the effective length of the path of a beam passing through a fluid sample within the first volume is reduced by said predetermined dimension of the body of said insert means.

12. A method for determining a characteristic of a fluid sample comprising:

(a) providing a first container defining a first volume, wherein said first container has a wall and wherein said first container is sized and adapted to be disposed between a source of a measuring light beam and a detector in a manner such that a beam directed from such a source to such a dectector is caused to pass through said first container and a fluid sample contained within the first volume;

(b) introducing a fluid sample having a first optical density into the first volume;

(c) introducing an insert means within the first volume, wherein the insert means is sized and adapted to be disposed within the first volume to change the effective length of the path of a beam directed through the fluid sample in the first volume, wherein said insert means comprises a body of predetermined dimension and is formed of a material having substantially 100% transmission of light at a selected wavelength, and wherein means extend between the body of the insert means and the wall of the first container to position the body of the insert means within the first volume

(d) disposing siad first container containing the fluid sample and the insert means within the first volume between said source of a measuring light beam and said detector;

(e) measuring an optical characteristic of the fluid sample within the first volume by passing a beam from the source of a measuring light beam to the detector such that the beam passes through said first container and the fluid sample contained within the first volume and has a path of first predetermined effective length through said fluid sample within the first volume;

(f) removing the insert means from said first volume;

(g) treating the fluid sample within the first volume to change the optical density of said fluid sample;

(h) disposing said first container containing the fluid sample within the first volume between said source of a measuring light beam and said detector;

(i) measuring the optical characteristic of the fluid sample within the first volume by passing the beam from the source of a measuring light beam to the detector such that the beam passed through said first container and the fluid sample contained within the first volume and has a path of second predetermined effective length through said fluid sample within the first volume, said first predetermined effective length being reduced by the predetermined dimension of the body of the insert means relative to said second predetermined effective length as a result of the insert means being within the first volume during the measuring in step (e); and

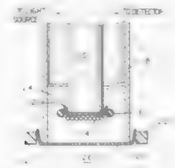
(j) determining the characteristic of said fluid sample from the optical characteristic measurements of steps (e) and (i).

4,762,799

METHOD AND DEVICE FOR FLUORESCENCE DETERMINATION OF ALKALI METAL CATIONS

William R. Seitz, Durham, N.H.; Zhang Zhujun, Sian Shaansi, China, and Jerome Mullin, Newmarket, N.H., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed Sep. 13, 1985, Ser. No. 775,563
Int. Cl.[4] G01N *21/77, 33/20*
U.S. Cl. 436—79 26 Claims



1. A method for determining the concentration of a selected alkali metal cation in an aqueous sample which comprises the steps of:

(a) providing an aqueous fill solution containing a dissolved polymeric cationic material and a dissolved fluorescent anionic material, wherein said polymeric cationic material is initially present in said fill solution as an ion paired complex with said fluorescent anionic material;

(b) providing in contact with the fill solution an ionophore selective for the selected alkali metal cation, said fluorescent anionic material being such that it is also capable of complexing in an ion pairing relationship with a complex of said ionophore and the selected alkali metal cation, the fluorescence of said fluorescent anionic material when it is complexed with said polymeric cationic material being different from the fluorescence of said fluorescent anionic material when it is complexed with a complex of said ionophore and the selected alkali metal cation;

(c) contacting the aqueous fill solution with an aqueous sample through a membrane which is permeable to alkali metal cations but impermeable to said polymeric cationic material; and

(d) determining the concentration of the selected alkali metal cation in said aqueous sample by detecting fluorescence from (1) fluorescent anionic material which has migrated from being complexed with said polymeric cationic material to being complexed with a complex of said ionophore and the seleced alkali metal cation, (2) fluorescent anionic material which has remained complexed with said polymeric cationic material, or (3) fluorescent anionic material as defined in both (1) and (2).

4,762,800

MONOCLONAL ANTIBODIES TO CELL SURFACE ANTIGENS OF HUMAN TERATOCARCINOMAS

Wolfgang Rettig; Carolos Cordon-Cardo, both of NY, N.Y.; Herbert F. Oettgen, New Canaan, Conn.; Lloyd J. Old, New York, N.Y.; Kenneth O. Lloyd, New York, N.Y., and Jennifer Ng, New York, N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Apr. 26, 1984, Ser. No. 604,080
Int. Cl.[4] C12N *5/00;* G01N *33/534, 33/533;* A61K *39/395*
U.S. Cl. 436—548 6 Claims

1. A hybridoma cell line deisgnated K4 (ATCC No. HB8550).

4,762,801

METHOD OF FABRICATING POLYCRYSTALLINE SILICON RESISTORS HAVING DESIRED TEMPERATURE COEFFICIENTS

Ashok K. Kapoor, Palo Alto, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 20, 1987, Ser. No. 17,388
Int. Cl.[4] H01L *21/265*
U.S. Cl. 437—024 15 Claims



1. A method of fabricating polycrystalline silicon resistors having substantially zero or positive temperature coefficient of resistance on semiconductor structures comprising:

depositing polycrystalline silicon on the semiconductor structure;

implanting the polycrystalline silicon to make it substantially amorphous silicon;

introducing at least one impurity into the amorphous silicon; and

annealing the amorphous silicon.

4,762,802

METHOD FOR PREVENTING LATCHUP IN CMOS DEVICES

Louis C. Parrillo, Warren, N.J., assignor to American Telephone and Telegraph Company AT&T, Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 669,957, Nov. 9, 1984, abandoned. This application Mar. 2, 1987, Ser. No. 20,268
Int. Cl.[4] H01L *21/265, 21/38*
U.S. Cl. 437—24 9 Claims

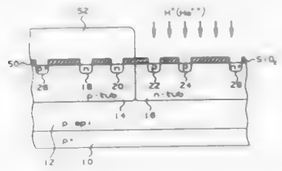
1. A method of preventing latchup in semiconductor devices comprising the steps of

(a) providing a semiconductor substrate whose surface includes n-type wells, wherein each well exhibits a predetermined lateral resistance;

(b) selectively bombarding the portion of said semiconduc-

VOL 1093 ISS 2 AG 9 1988 UMI

tor substrate which includes the n-type wells with protons to form n^+ regions within predetermined lateral portion



of said n-type wells, wherein said n^+ regions reduce the predetermined lateral resistance of said n-type wells to prevent latchup.

4,762,803

PROCESS FOR FORMING CRYSTALLINE FILMS BY GLOW DISCHARGE

Noritada Sato, and Yasukazu Seki, both of Yokosuka, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Dec. 6, 1985, Ser. No. 805,879
Claims priority, application Japan, Dec. 7, 1984, 59-258492
Int. Cl.⁴ H01L *21/365*
U.S. Cl. 437—24 **10 Claims**



1. A method for crystallizing an amorphous silicon film on a substrate comprising in sequence the steps of:
(a) placing the substrate and amorphous silicon film into a vacuum chamber;
(b) introducing an inert gas into the vacuum chamber to form an atmosphere consisting essentially of the inert gas within the vacuum chamber; and
(c) generating a glow discharge within the insert gas atmosphere in the vacuum chamber whereby the amorphous silicon is converted to a crystalline silicon film.

4,762,804

METHOD OF MANUFACTURING A BIPOLAR TRANSISTOR HAVING EMITTER SERIES RESISTORS

Petrus M. A. W. Moors, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 778,650, Sep. 23, 1985, abandoned. This application Jan. 23, 1987, Ser. No. 8,111
Claims priority, application Netherlands, Oct. 12, 1984, 8403111
Int. Cl.⁴ H01L *21/265*
U.S. Cl. 437—31 **3 Claims**

1. A method of manufacturing a semiconductor device with a bipolar transistor, said method comprising the steps of
(a) providing a surface adjacent collector region of a first conductivity type,
(b) providing an insulating layer on said collector region,
(c) forming in said insulating layer a base window and a rectangular opening adjacent to said base window,
(d) covering said rectangular opening by a masking layer,
(e) introducing a dopant determining the second, opposite conductivity type in said collector region through said base window to form a base zone,
(f) removing said masking layer,
(g) forming by thermal oxidation first and second oxide layers of substantially equal thickness in said base window and in said rectangular opening, respectively,
(h) forming a plurality of emitter windows in said first oxide layer in said base window,
(i) introducing a dopant determining said first conductivity type in said base zone through said plurality of emitter windows to form a plurality of emitter zones,
(j) then simultaneously etching a plurality of mutually separated resistance windows in said second oxide layer in said rectangular opening and a plurality of base contact windows in said first oxide layer of said base window, using an etching mask,



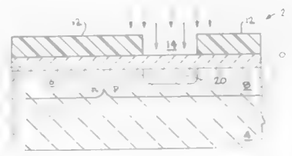
(k) forming a plurality of base contact zones and a plurality of emitter series resistors by introducing a dopant determining said second conductivity type through said etching mask into said base contact windows and said resistance windows, and
(l) providing connection conductors between said plurality of resistors and an emitter connection, providing a plurality of emitter electrodes between said resistors and said emitter zones, and providing a plurality of base electrodes between said base regions and a base connection.

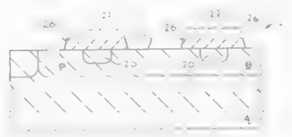
4,762,805

NITRIDE-LESS PROCESS FOR VLSI CIRCUIT DEVICE ISOLATION

Robin W. Cheung, Cupertino, and Hugo W. K. Chan, Fremont, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 17, 1985, Ser. No. 810,397
Int. Cl.⁴ H01L *21/475*
U.S. Cl. 437—63 **11 Claims**





1. In an integrated circuit fabrication process, a method of forming electrical insulation components in an integrated circuit having a semiconductor substrate, comprising:
forming a first insulator layer on said substrate;
forming a first mask on said layer to define a pattern of surface areas of said substrate beneath said insulator layer where isolation barrier components are to be formed;
introducing impurities into said surface areas to form said isolation barrier components in said substrate subjacent said surface areas;
removing said first mask
forming a second insulator layer on said first insulator layer;
forming a second mask on said second insulator layer to define a pattern of surface areas of said substrate where active device regions are to be formed; and
removing said second insulator layer from said substrate according to said second mask pattern to form field isolation insulator components on said substrate.

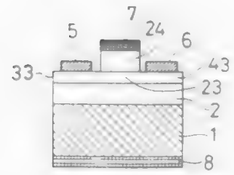
4,762,806

PROCESS FOR PRODUCING A SIC SEMICONDUCTOR DEVICE

Akira Suzuki, Nara, and Katsuki Furukawa, Osaka, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 19, 1984, Ser. No. 683,801
Claims priority, application Japan, Dec. 23, 1983, 58-252157; Dec. 27, 1983, 58-249981; Dec. 29, 1983, 58-246511
Int. Cl.⁴ H01L *29/163, 29/04*
U.S. Cl. 437—100 **7 Claims**





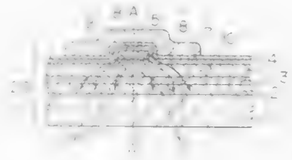
1. A process for producing a junction gate field effect transistor, comprising the steps of:
growing a first single-crystal film of SiC of one conductivity type on a single-crystal silicon substrate of said one conductivity type; forming a second single-crystal SiC film of the opposite conductivity type on said first film; forming a third single-crystal SiC film of said one conductivity type on said second film; etching said third film so that only a mesa shaped portion of said third film remains on a central portion of said second film; forming an ohmic gate electrode on the upper surface of said mesa; and forming respective ohmic source and drain electrodes on the surface of said second film with said mesa being disposed between said source and drain electrodes.

4,762,807

METHOD FOR MAKING A NON-SINGLE CRYSTAL INSULATED-GATE FIELD EFFECT TRANSISTOR

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Tokyo, Japan

Division of Ser. No. 706,881, Mar. 1, 1985, Pat. No. 4,651,182. This application Aug. 13, 1986, Ser. No. 895,947
Claims priority, application Japan, Mar. 5, 1984, 59-41755
Int. Cl.⁴ H01L *29/78*
U.S. Cl. 437—100 **2 Claims**



1. A method of fabricating an insulated-gate field effect semiconductor device comprising the steps of: forming a first non-single-crystal silicon semiconductor layer (3) having one conductivity type on a substrate or a conductive layer on said substrate, and a second non-single-crystal silicon semiconductor layer (4) of an intrinsic or virtually intrinsic conductivity type on said first semiconductor layer (3) by use of a chemical vapor deposition method;
forming a third non-single-crystal silicon semiconductor layer (5) of the same conductivity type as that of said first non-single-crystal silicon semiconductor layer (3) on said second non-single-crystal silicon semiconductor layer (4) by the chemical vapor deposition method;
removing a portion of said third non-single-crystal silicon semiconductor layer so that a protuberant portion of the third non-single-crystal silicon semiconductor layer remains on said second non-single-crystal silicon semiconductor layer, said protuberant portion having at least one side surface;
forming a fourth non-single-crystal silicon semiconductor layer (7) of an intrinsic or virtually intrinsic conductivity type on at least the side surface of said protuberant portion of said third non-single-crystal silicon semiconductor layer (5) and on an upper surface of said second semiconductor layer (4);
forming a gate insulation film (8) on said fourth non-single-crystal silicon semiconductor layer (7); and
forming a gate electrode on said gate insulation film (8), where said second non-single-crystal silicon semiconductor layer is formed of $Si_xC_{1-x}(0<x<1)$.

4,762,808

METHOD OF FORMING SEMICONDUCTING AMORPHOUS SILICON FILMS FROM THE THERMAL DECOMPOSITION OF FLUOROHYDRIDODISILANES

Kenneth G. Sharp, Midland, and John J. D'Errico, Fenton, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 22, 1987, Ser. No. 64,641
Int. Cl.⁴ H01L *21/205*
U.S. Cl. 437—101 **8 Claims**

1. A method of forming an amorphous silicon-containing film on a substrate, which method comprises the step of decomposing a vapor phase consisting essentially of a fluorohydridodisilane or mixture of fluorohydridodisilanes, wherein the fluorohydridodisilane is represented by the formula $Si_2F_xH_{6-x}$ wherein x is an integer from 1 to 5, at a temperature sufficient to cause the thermal decomposition of the fluorohydridodisilane or mixture of fluorohydridodisilanes in a reaction chamber which contains, or is connected to a chamber containing, a

VOL 1093 ISS 2 AG 9 1988 UMI

substrate which is thermally and chemically stable at the decomposition temperature in the atmosphere of the reaction chamber, whereby said film is formed on said substrate.

4,762,809

LOW DIELECTRIC FIBER GLASS COMPOSITION HAVING IMPROVED WATER RESISTANCE AND HEAT RESISTANCE

Katsuhiko Imai, Shiga, Japan, assignor to Nippon Electric Glass Company, Limited, Shign, Japan

Filed Jun. 19, 1987, Ser. No. 64,816
Claims priority, application Japan, Jun. 20, 1986, 61-145457
Int. Cl.⁴ C03C *13/00*
U.S. Cl. 501—35 **2 Claims**

1. A fiber glass composition having dielectric constant of 4.5 or less for 1 MHz at the room temperature, a strain point of 485° C. or more, and improved water resistance, and consisting essentially of, by weight, SiO_2 70–80%, Al_2O_3 0–2%, B_2O_3 15.0–21.5%, MgO 0–1.0%, CaO 0–2.0%, Li_2O 0–2.0%, Na_2O 0–3.0%, and K_2O 0–3.0%, $Li_2O+Na_2O+K_2O=2.0$–5.0%.

4,762,810

METHOD FOR THE PREPARATION OF A SINTERED BODY OF SILICON CARBIDE

Morinobu Endo, Nagano; Minoru Takamizawa, Minoru Takamizawa; Tatsuhiko Hongu, Kanagawa; Akira Hayashida, Niigata; Nobuaki Urasato, Niigata, and Hiromi Ohsaki, Niigata, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,818
Claims priority, application Japan, Feb. 24, 1986, 61-38877
Int. Cl.⁴ C04B *35/56*
U.S. Cl. 501—88 **2 Claims**

1. A method for the preparation of a sintered body of silicon carbide exhibiting extremely high volume resistivity and thermal conductivity and high density, which comprises the steps of

(a) admixing a fine powder of silicon carbide with boron or a boron compound selected from the group consisting of boron carbide, titanium boride and boron oxide in an amount in the range from 0.1 to 5% by weight as boron based on the silicon carbide powder to give a powdery mixture;

(b) shaping the powdery mixture by compression to give a first green body of silicon carbide; and

(c) sintering the first green body at a temperature in the range from 1800° to 2200° C. in the same furnace, at the same time and at substantially the same temperature as a second shaped body or powdery mixture composed of a fine powder of silicon carbide admixed with boron nitride in an amount in the range from 0.01 to 50% by weight, whereby the presence of the second shaped body or powdery mixture of boron nitride and silicon carbide during sintering has the effect of imparting extremely high volume resistivity and thermal conductivity and high density to the sintered first body of silicon carbide.

4,762,811

CASTABLE REFRACTORY

John T. Vayda, and George H. Criss, both of Bethel Park, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 21, 1987, Ser. No. 6,510
Int. Cl.⁴ C04B *35/02*
U.S. Cl. 501—124 **7 Claims**

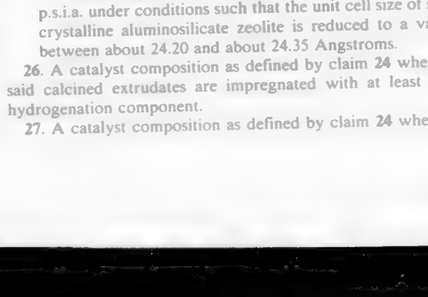
1. A refractory composition capable, when mixed with water, of forming a hydraulic-setting castable refractory resistant to aluminum penetration and adhesion and with good load bearing properties consisting essentially of a refractory aggregate, a binder for said refractory aggregate, and an aluminum anti-adhesive agent; said agent consisting of a fine powdered barium sulfate and a powdered zinc borosilicate frit in a weight ratio of 1.5:1 to 5:1 there being at least about 2% by weight of said borosilicate frit for each 100% by weight of said composition.

4,762,812

HEAVY OIL HYDROPROCESS INCLUDING RECOVERY OF MOLYBDENUM CATALYST

Jaime Lopez, Benicia, Calif.; Eugene A. Pasek, Export, and Anthony V. Cugini, Pittsburgh, both of Pa., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 527,414, Aug. 29, 1983, Pat. No. 4,557,821. This application Aug. 21, 1985, Ser. No. 767,821
Int. Cl.⁴ B01J *38/66*
U.S. Cl. 502—26 **24 Claims**



1. A method for the recovery of spent catalyst from a hydroprocess for treating vanadium-containing hydrocarbon oil, said spent catalyst comprising molybdenum sulfide which is contaminated with vanadium sulfide accumulated from said hydrocarbon oil, said method comprising passing said vanadium contaminated molybdenum sulfide catalyst through an oxidizing zone to convert said molybdenum sulfide and said vanadium sulfide to oxides, passing said oxides and aqueous ammonia to a dissolving zone to preferentially dissolve molybdenum from vanadium, removing undissolved vanadium from said dissolving zone, and removing an aqueous stream comprising dissolved molybdenum and ammonia from said dissolving zone, wherein the mole ratio of ammonia to total metals in said spent catalyst in said dissolving zone is at least 2.5.

4,762,813

HYDROCARBON CONVERSION CATALYST

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 793,567, Oct. 31, 1985, abandoned, and a continuation-in-part of Ser. No. 699,919, Feb. 8, 1985, Pat. No. 4,610,973, which is a continuation of Ser. No. 531,924, Sep. 13, 1982, Pat. No. 4,517,074, which is a division of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271. This application Mar. 20, 1987, Ser. No. 28,654
Int. Cl.⁴ B01J *29/06*
U.S. Cl. 502—66 **30 Claims**

24. A catalyst composition prepared by a process comprising:

(a) extruding a mixture of a porous, inorganic refractory oxide component and a crystalline aliminosilicate zeolite having cracking activity to form extrudates; and

(b) calcining said extrudates in the presence of added steam at a water vapor partial pressure greater than about 2.0 p.s.i.a. under conditions such that the unit cell size of said crystalline aluminosilicate zeolite is reduced to a value between about 24.20 and about 24.35 Angstroms.

26. A catalyst composition as defined by claim 24 wherein said calcined extrudates are impregnated with at least one hydrogenation component.

27. A catalyst composition as defined by claim 24 wherein said porous, inorganic refractory oxide component comprises a dispersion of silica-alumina in gamma alumina.

4,762,814

HYDROTREATING CATALYST AND PROCESS FOR ITS PREPARATION

Stephen L. Parrott, and Lloyd E. Gardner, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 930,637, Nov. 14, 1986, Pat. No. 4,707,246. This application Aug. 3, 1987, Ser. No. 80,843
Int. Cl.⁴ B01J *21/04, 23/80, 23/88, 27/185*
U.S. Cl. 502—211 **13 Claims**

1. A composition of matter useful as a hydrotreating catalyst composition, comprising:

(a) alumina,

(b) zinc titanate,

(c) at least one compound of molybdenum,

(d) at least one compound of nickel, and

(e) at least one compound containing phosphorus and oxygen.

4,762,815

METHANATION CATALYSTS

Reginald G. S. Banks, Solihull; David R. Bates, London; Stephen D. Jones, and James A. Oliver, both of Solihull, all of England, assignors to British Gas plc, London, England

Filed Dec. 22, 1986, Ser. No. 942,736
Int. Cl.⁴ B01J *21/12, 21/16, 23/74;* **C07C** *1/02*
U.S. Cl. 502—259 **6 Claims**

1. A process for the production of silicon containing methanation catalysts, comprising the steps of reducing a silicon-containing oxidic catalyst precursor at a temperature of at least 450° C. to produce a reduced catalyst, contacting the reduced catalyst with a gaseous mixture comprising steam and a reducing gas, reducing the temperature of the gaseous mixture while the same is in contact with the reduced catalyst and until liquid water condenses onto the catalyst, maintaining said catalyst in contact with said liquid condensed water for a period of time sufficient to cause silicon to be present in the catalyst in a non-labile form, and thereafter reheating the catalyst in a non-oxidising atmosphere to evaporate water therefrom.

4,762,816

HEAT-SENSITIVE RECORDING PAPER

Shigehisa Tamagawa, and Tetsuro Fuchizawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 2, 1985, Ser. No. 750,950
Claims priority, application Japan, Jul. 2, 1984, 59-136975
The portion of the term of this patent subsequent to Jan. 28, 2003, has been disclaimed.
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 503—200 **11 Claims**

1. A heat-sensitive recording paper comprising a paper support with a heat-sensitive color forming layer provided thereon, wherein the paper support has an internal bonding force (as determined by Tappi Useful Method-528) of from 0.5 to 2.0 kg-cm, a cobb water absorption (as determined by JIS P-8140) of from 10 to 20 g/m² and is prepared with a reaction product of maleic anhydride copolymers and polyalkyenepolyamine as a softening agent.

4,762,817

ALDEHYDE HYDROGENATION CATALYST

John E. Logsdon, Houston; Richard A. Loke, Santa Fe, both of Tex.; Jay S. Merriam, Louisville, Ky., and Richard W. Voight, Houston, Tex., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 3, 1986, Ser. No. 926,129
Int. Cl.⁴ B01J *23/72, 23/78, 23/80*
U.S. Cl. 502—329 **13 Claims**

1. An aldehyde hydrogenation catalyst composition made by reducing a precursor catalyst composition containing copper oxide and zinc oxide and consisting essentially of a mixture of reduced copper oxide and zinc oxide impregnated with a selectivity enhancer comprising the combination of

(i) an alkali metal selectivity enhancer selected from the group consisting of sodium, potassium, lithium, cesium and mixtures thereof in an amount of between about 0.05 and 7.0 percent by weight based on the weight of copper oxide and zinc oxide in said precursor catalyst composition, and

(ii) a transition metal selectivity enhancer selected from the group consisting of nickel, cobalt and mixtures thereof in an amount between about 0.5 and 5.0 percent by weight based on the weight of copper oxide and zinc oxide in said precursor catalyst composition.

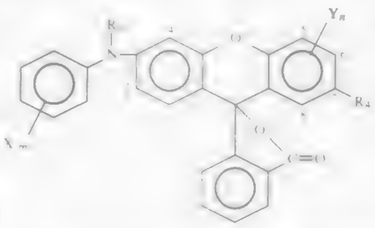
4,762,818

REVERSIBLE IMAGE-FORMING MATERIAL

Mikiya Sekine, Warabi; Toshihiko Matsushita, Tokyo; Sadao Morishita, Inashiki, and Yasuhiko Oiri, Tokyo, all of Japan, assignors to Mitsubishi Paper Mills, Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Continuation of Ser. No. 711,837, Mar. 14, 1985. This application May 6, 1986, Ser. No. 860,311
Claims priority, application Japan, Mar. 15, 1984, 59-50069; Jun. 1, 1984, 59-112261; Jun. 4, 1984, 59-115233
Int. Cl.⁴ B41M *5/18*
U.S. Cl. 503—214 **15 Claims**

1. A reversible image-forming material capable of forming images by a thermal head and conversely erasing the formed images by water or moisture which comprises a support having provided on one surface thereof a recording layer comprising at least one color former selected from the group consisting of a fluorane compound represented by general



formula (II)

wherein R_3 represents a lower aliphatic alkyl group having 1 to 4 carbon atoms; R_4 represents a hydrogen atom, an amino group (represented by formula:



wherein R_5 and R_6 each represents a hydrogen atom, a lower aliphatic alkyl group having 1 to 4 carbon atoms, a lower aliphatic acyl group having 1 to 4 carbon atoms, a benzoyl group, a phenyl group and a benzyl group; and the benzene rings of these substituents may further be substituted with a

VOL
1093
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halogen atom, a nitro group, a lower aliphatic alkyl group having 1 to 4 carbon atoms and a lower aliphatic alkoxy group having 1 to 2 carbon atoms) and an alicyclic amino group (represented by formula:



wherein R_7 represents a butylene group $—(CH_2)_4—$, a pentylene group $—(CH_2)_5—$ or a diethylene ether group $—(CH_2)_2—O—(CH_2)_2—$); X' represents a hydrogen atom, a lower aliphatic alkyl group having 1 to 4 carbon atoms, a halogen atom or a lower aliphatic alkoxy group having 1 to 4 carbon atoms; m represents an integer of 1 or 2; Y represents a lower aliphatic alkyl group having 1 to 4 carbon atoms, and a lower aliphatic alkoxy group having 1 to 2 carbon atoms; and n represents an integer of 1 or 2; at least one color developer selected from the group consisting of gallic acid and phloroglucinol; and a binder and further having provided an overcoat layer on said recording layer.

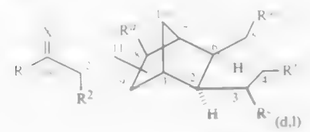
4,762,819

2,6-EXO CONFIGURED TRICYCLO-5.2.1.0^{2,6} DECANE DERIVATIVES WITH FUNCTIONAL SIDE CHAINS AT C-8/C-9 AND THEIR UTILIZATION THEREOF AS PERFUMES

Ernst-Joachim Brunke, Holzminden, Fed. Rep. of Germany, assignor to Dragoco Gerberding & Co. GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 658,199, filed as PCT EP84/00028 on Feb. 3, 1984, published as WO84/03086 on Aug. 16, 1984, abandoned. This application May 5, 1987, Ser. No. 48,483
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1983, 3303893
Int. Cl.^{4} A61K *7/46*
U.S. Cl. 512—14 13 Claims

1. 2,6-exo-configured tricyclo[5.2.1.0^{2,6}]decane derivatives of the general formula A,



(d,l)

wherein R^a, R^b, R^c and R^d are hydrogen or R^d is a methyl group and R^a, R^b, R^c are hydrogen or methyl groups of which one of the substituents is a methyl group and both of the others are hydrogen, the broken line between C11/C12 indicates a C—C double bond or a C—C single bond, R^1 and R^2 are hydrogen, or a straight-chain or branched-chain C_1–C_6 lower alkyl group, and X displays a carbonyl or hydroxyl function.

13. Use of compounds defined in claim 1 as scents or components of scent mixtures or perfume oils for cosmetic or industrial perfuming.

4,762,820

THERAPEUTIC TREATMENT FOR CONGESTIVE HEART FAILURE

Haralambos Gavras, Wayland, Mass., assignor to Trustees of Boston University, Boston, Mass.

Filed Mar. 3, 1986, Ser. No. 835,487
Int. Cl.^{4} A61K *37/02*
U.S. Cl. 514—10 5 Claims

1. A therapeutic method for treating a subject afflicted with congestive heart failure comprising the step of administering an effective amount of an antagonist selective for arginine-vasopressin to the subject.

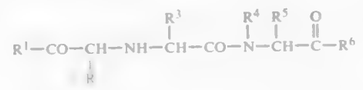
4,762,821

N',N''-DIALKYLGUANIDINO DIPEPTIDES

John J. Nestor, San Jose, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 714,767, Mar. 22, 1985, abandoned. This application Sep. 10, 1986, Ser. No. 905,828
Claims priority, application China, Mar. 19, 1986, 86101850
Int. Cl.^{4} A61K *37/43*; C07K *5/06*; C07D *207/00, 211/06, 211/60*
U.S. Cl. 514—19 19 Claims

1. A compound of the formula

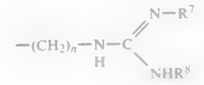


(A)

wherein

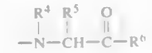
R^1 is hydroxy, lower alkoxy, benzyloxy, amino, (lower alkyl)amino, or di(lower alkyl)amino;

R^2 is

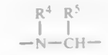


R^3 is hydrogen, lower alkyl, omega-phenyl-lower alkyl, or omega-naphthyl-lower alkyl;

the group



is an amino acid residue in which the subgroup



forms a heterocyclic radical containing one nitrogen atom and up to 9 ring carbon atoms;

R^6 is hydroxy, lower alkoxy, benzyloxy, amino, (lower alkyl)amino, or di(lower alkyl)amino;

R^7 and R^8 are independently lower alkyl or lower alkyl substituted on other than the alpha-carbon with 1 to 5 fluorine atoms; and

n is an integer from 3 to 5; or a pharmaceutically acceptable, non-toxic salt thereof.

4,762,822

REDUCTION OF GASTROINTESTINAL DISEASE-PRODUCING ORGANISMS WITH SIALIC ACID AND GANGLIOSIDES

Anna C. Ettinger, 11557 Hartland Rd., Fenton, Mich. 48430

Filed Aug. 8, 1985, Ser. No. 763,918
Int. Cl.^{4} A61K *31/70*
U.S. Cl. 514—25 13 Claims

1. An improved food for young mammals comprising a mother's milk substitute in the form of an animal feed or infant formula having N-acetylneuraminic acid or a ganglioside present at about 0.005 to about 0.1 percent of the total weight of the improved food.

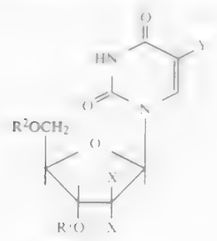
4,762,823

NUCLEOSIDES OF 5-MONOFLUOROMETHYLURACIL AND 5-DIFLUOROMETHYLURACIL

Kyoichi A. Watanabe, Rye Brook; Jasenka Matulic-Adamic, Mamaroneck; Richard W. Price, Scarsdale, and Jack J. Fox, White Plains, all of N.Y., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Filed Oct. 16, 1985, Ser. No. 787,973
Int. Cl.^{4} A61K *31/70*; C07H *19/06*
U.S. Cl. 514—50 10 Claims

1. Pyrimidine nucleosides having the formula:



wherein

either X or X' is H and the other is a halogen, a substituted sulfonyl group or OR^3, wherein R^3 is H, an organic acyl or a trisubstituted-silyl group;

Y is CH_2F or CHF_2; and

R^1 and R^2 are the same or different and are H, an organic acyl or a trisubstituted-silyl group.

10. Pharmaceutical composition useful as an antiviral agent comprising an effective amount of nucleoside of claim 1 and a pharmaceutically acceptable carrier.

4,762,824

COMPOSITIONS AND METHODS USEFUL FOR UROPATHOGENIC BACTERIAL IDENTIFICATION OR DIAGNOSIS AND INHIBITION OF ADHERENCE OF UROPATHOGENIC BACTERIA TO CELLS HAVING A STRUCTURAL ELEMENT SIMILAR TO THAT OF THE ACTIVE PRINCIPLE OF THE INVENTION

Gunilla P. Källenius, Enskede; Karl A. Lundblad, Uppsala; Nils R. Möllby, Gustavsberg; Stefan B. Svensson, Stockholm, and Jan Winberg, Stockholm, all of Sweden, assignors to Svenska Sockerfabriks AB, Malmö , Sweden

Division of Ser. No. 317,894, filed as PCT SE81/00065, publish as WO81/00065 on Mar. 5, 1981, Pat. No. 4,657,849.
This application Aug. 1, 1986, Ser. No. 892,807
Claims priority, application Sweden, Mar. 5, 1980, 8001748
Int. Cl.^{4} A61K *31/700, 35/18, 39/00*; C07G *3/00*
U.S. Cl. 514—54 19 Claims

1. A method for inhibiting the adhesion of uropathogenic bacteria to cells which involves the step of exposing the bacteria to an active principle which is an oligosaccharide compound comprising, in terminal position, a structural element consisting essentially of

α—D—Gal—(1-4)—D—Gal (I),

which structural element is recognized by the uropathogenic bacterial receptor system, wherein the oligosaccharide compound consists essentially of

α—D—Gal—(1-4)—D—Gal—(S)$_n$—T$_m$ (III),

wherein T is —L—MMB, wherein (S)$_n$ represents one or more additional saccharide moieties, L represents a linking arm covalently attached to the adjacent saccharide moiety, and MMB represents a nontoxic and noninterfering macromolecular carrier covalently attached to said linking arm and selected from the group consisting of proteins, polypeptides, polysaccharides, aliphatic hydrocarbons, and natural and synthetic polymers, or

wherein T is —1—OR, wherein R is a nontoxic and noninterfering organic residue,

wherein n is zero or an integer,

and wherein m is also zero or an integer.

3. A method for inhibiting the adhesion of uropathogenic bacteria to cells which involves the step of exposing the bacteria to an active principle which is an oligosaccharide compound comprising, in terminal position, a structural element consisting essentially of

: -D—Galp—(1-4)—α or β—D—Galp (Ia),

which structural element is recognized by the uropathogenic bacterial receptor system, wherein the oligosaccharide compound consists essentially of

α—D—Galp—(1-4)—α or β—D—Galp—(S)$_n$—T$_m$ (IV),

wherein T is —L—MMB, wherein (S)$_n$ represents one or more additional saccharide moieties, L represents a linking arm covalently attached to the adjacent saccharide moiety, and MMB represents a nontoxic and noninterfering macromolecular carrier covalently attached to said linking arm and selected from the group consisting of proteins, polypeptides, polysaccharides, aliphatic hydrocarbons, and natural and synthetic polymers, or

wherein T is —1—OR, wherein R is a nontoxic and noninterfering lower-aliphatic, nitrophenyl, or ceramide moiety, attached in either alpha or beta configuration,

wherein n is zero or an integer,

and wherein m is also zero or an integer.

4,762,825

POLYSACCHARIDE RON SUBSTANCE

Suguru Takeo; Hisao Yamamoto; Hisao Kado; Nobuhiro Watanabe; Minoru Kamimura, all of Yaizu; Kiichi Uchida, Fujisawa, and Yoshitada Mori, Tokyo, all of Japan, assignors to Sapporo Breweries Limited, Tokyo; Daicel Chemical Industries, Ltd., Sakai and Etsuo Ito, Urasoe, all of, Japan

Filed Aug. 12, 1985, Ser. No. 765,007
Claims priority, application Japan, Aug. 22, 1984, 59-173168
Int. Cl.^{4} A61K *31/73*; C08B *37/00*
U.S. Cl. 514—54 2 Claims

2. A pharmacological composition effective in inhibiting the growth of transplantable tumors, having immunomodulating activity in mice and potentiating the host defense ability of mice against infectious microorganisms, and inducing the production of tumor necrosis factor in mice, comprising an effective amount of a deproteinized polysaccharide RON substance and a pharmaceutically acceptable vehicle, said polysaccharide RON substance containing glucose as the sole sugar constituent, and composed solely of linear α-1,6-glucoside linkage in the linear part of the saccharide and having a small amout of 3,6 branched structure and is further characterized by:

(a) having as a structural repetition unit (6 G) wherein G is α-D-glucopyranosyl group;

(b) being incapable of passing through a dialysis membrane;

(c) being insoluble in alcohol, acetone, hexane, benzene, ethyl acetate, carbon tetrachloride, chloroform and ether; soluble in water, formamide and dimethyl sulfoxide;

(d) being neutral in a 1% aqueous solution;

(e) exhibiting elementary analysis:
C 40.4–42.4%, H 5.8–6.4%, ash 3.1–3.3%;

(f) containing in a combined state of a small amount of inorganic elements (Si, P, K, Na, Ca, Mg and Cl);

(g) being positive in anthrone-sulfuric acid reaction, phenol-sulfuric acid reaction, chromotrope-sulfuric acid reaction, negative in biuret reaction, the Lowry-Folin reaction, the Elson-Morgan reaction and starch-iodine, reaction;

(h) exhibiting a specific rotation as $[\alpha]D^{20} = +142°–145°$ (H_2O);

(i) having no definite melting point, turning brown at 220° C. and carbonizing at 280° C.;

VOL 1093 ISS 2 AG 9 1988 UMI

(j) showing ultraviolet absorption spectrum as shown in FIG. 1 of the attached drawings;
(k) showing infrared absorption spectrum as shown in FIG. 2 of the attached drawings;
(l) showing ^{13}C-NMR spectrum as shown in FIG. 3 of the attached drawings.

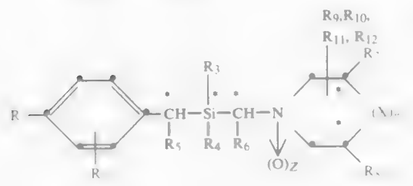
4,762,826

MICROBICIDES

Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Apr. 6, 1987, Ser. No. 34,196
Claims priority, application Switzerland, Apr. 11, 1986, 1433/86; Feb. 27, 1987, 754/87
Int. Cl.[4] **A01N** *55/00;* **C07E** *7/10*
U.S. Cl. 514—63 **24 Claims**

1. A compound of formula I



(I)

wherein
R_1 is hydrogen, C_1–C_{10}alkyl, C_3–C_7cycloalkyl, phenyl or trimethylsilyl,
R_2 is hydrogen or C_1–C_4alkyl, or
R_1 and R_2 together form a saturated or unsaturated ring containing 6 carbon atoms;
R_3 and R_4 are each independently of the other hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, and R_4 may also be C_3–C_7cycloalkyl;
R_5 to R_{12} are each independently hydrogen or C_1–C_4alkyl, and
R_8 and R_9 together may also form a saturated or unsaturated ring containing 6 carbon atoms;
X is CH_2, oxygen or sulfur, and
n and Z are each independently of the other 0 or 1,
or, if Z is 0, an acid addition salt thereof.

23. A method of controlling phytopathogenic microorganisms or of protecting cultivated plants from attack by said phytopathogenic microorganisms, which method comprises applying to the plant or to the locus thereof a microbicidally effective amount of a compound of formula I according to claim 1.

4,762,827

(5R,6S,8R)-6-(1-HYDROXYETHYL)-2-(3R-PYRROLIDIN-2-ONE-3-YL)THIOPENEM-3-CARBOXYLIC ACID

Stuart W. McCombie, Caldwell, and Jayaram R. Tagat, Westfield, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 900,066, Aug. 25, 1986, abandoned. This application Jun. 9, 1987, Ser. No. 59,720
Int. Cl.[4] **C07D** *499/00;* **A61K** *31/425*
U.S. Cl. 514—192 **14 Claims**

1. (5R,6S,8R)-6-(1-hydroxyethyl)-2-(3R-pyrrolidin-2-one-3-yl)thiopenem-3-carboxylic acid, the pharmaceutically acceptable salts and pharmaceutically acceptable esters thereof.

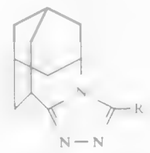
4,762,828

1,2,4-TRIAZOLO[4,3-d]-4-AZATRICYCLO-[4.3.1.1^{3,8}]UNDECANE AND 3-SUBSTITUTED DERIVATIVES, AND INTERMEDIATES THEREOF

Vassil S. Georgiev, Penfield, and Grace A. Bennett, Rochester, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 10, 1987, Ser. No. 61,067
Int. Cl.[4] **C07D** *223/14;* **A61K** *31/55*
U.S. Cl. 514—214 **11 Claims**

1. A compound having the formula:



(I)

or a pharmaceutically acceptable acid addition salt thereof wherein R is selected from the group of hydrogen, lower alkoxy and halogen.

7. A process for treating a warm-blooded animal for inflamation or hypoxia which comprises administering to such animal an effective amount of the compound of claim 1.

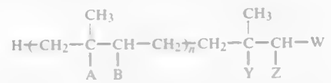
4,762,829

POLYPRENYL COMPOUND, PROCESS FOR THE PRODUCTION THEREOF AND DRUG CONTAINING THE SAME

Isao Yamatsu, Ushiku; Takeshi Suzuki, Ushikumachi; Shinya Abe, Kukizakimachi; Kouji Nakamoto, Tsuchiura; Akiharu Kajiwara, Yatabemachi; Tohru Fujimori, Toyosatomachi; Koukichi Harada, Yatabe, and Shinichi Kitamura, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

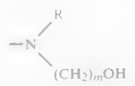
Continuation of Ser. No. 885,321, Jul. 14, 1986, Pat. No. 4,742,058, which is a continuation of Ser. No. 554,423, Nov. 23, 1983, abandoned. This application Oct. 23, 1986, Ser. No. 922,224
Claims priority, application Japan, Nov. 30, 1982, 57-208678
Int. Cl.[4] **A61K** *31/535;* **C07D** *295/18*
U.S. Cl. 514—218 **33 Claims**

1. A compound of the formula (I):

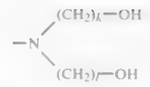


I

wherein A, B, Y and Z are each hydrogen, or the pair (1) A and B and/or the pair (2) Y and Z together represent a direct valence bond between the carbon atoms to which they are attached, thereby forming a double bond therebetween; W is a group of —COR or a group of X; and n is zero or an integer of 1 to 4 when W is the group of —COR; n is an integer of 1 to 3 when W is ghe group of X; R is selected from the group consisting of:
(1) a group of the formula



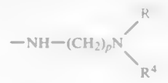
wherein R^1 is hydrogen or lower alkyl and m is an integer of from 1 to 5;
(2) a group of the formula



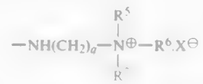
wherein k and l are the same or different and each is an integer of from 1 to 5;
(3) a group of the formula

$$-NHCH_2COOR^2$$

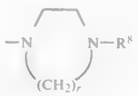
wherein R^2 is hydrogen, lower alkyl or aryl;
(4) a group of the formula



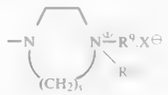
wherein p is an integer of from 0 to 5 and R^3 and R^4 are each hydrogen or lower alkyl;
(5) a group of the formula



wherein q is an integer of from 1 to 5, R^5, R^6 and R^7 are each hydrogen or lower alkyl, and X is a halogen;
(6) a group of the formula



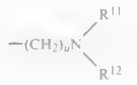
wherein r is 2 or 3 and R^8 is lower alkyl;
(7) a group of the formula



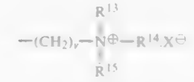
wherein s is 2 or 3, R^9 and R^{10} are each lower alkyl and X is a halogen;
(8) a group of the formula



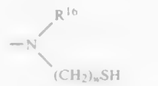
wherein D is a group of the formula $—(CH_2)_tOH$, in which t is an integer of from 0 to 5, a group of the formula



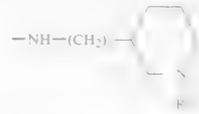
wherein u is an integer of from 0 to 5 and R^{11} and R^{12} are each hydrogen or lower alkyl, or a group of the formula



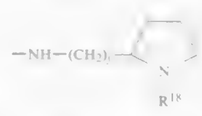
wherein v is an integer of from 0 to 5, R^{13}, R^{14} and R^{15} are each lower alkyl and X is a halogen;
(9) a group of the formula



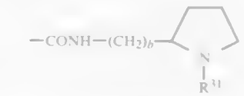
wherein R^{16} is hydrogen or lower alkyl and w is an integer of from 1 to 5;
(10) a group of the formula



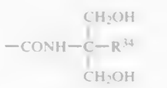
wherein R^{17} is hydrogen or lower alkyl and x is an integer of from 0 to 5; and
(11) a group of the formula



wherein R^{18} is hydrogen and y is integer of 1 to 5,
X is selected from the group consisting of:
(1) a group of the formula



wherein b is zero or an integer of 1 to 5 and R^{31} is a lower alkyl,
(2) a group of the formula



wherein R^{34} is a lower alkyl,
(3) a group of the formula



(4) a group of the formula

$$—CONH—CH_2CH(OH)CH_2OH$$

VOL 1093 ISS 2 AG 9 1988 UMI

or a pharmaceutically acceptable salt thereof.

4,762,830

5-(AZOLYLOXYPHENYLCARBAMOYL)BARBITURIC ACID DERIVATIVES AS ANTHELMINTICS

Elmar Sturm, Aesch; Jean J. Gallay, Magden; Haukur Kristinsson, Basel, all of Switzerland, and Georg Pissiotas, Lörrach, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

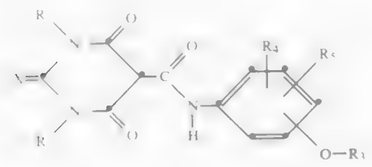
Filed Feb. 13, 1986, Ser. No. 830,430

Claims priority, application Switzerland, Feb. 15, 1985, 705/85

Int. Cl.[4] A61K *31/505*; C07D *403/10, 403/12*

U.S. Cl. 514—270 22 Claims

1. A compound of the formula



wherein

X is oxygen or sulfur;

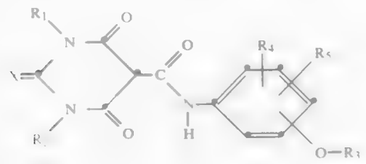
R_3 is C_1–C_6alkyl; C_1–C_6alkoxy, C_3–C_6cycloalkyl or allyl;

R_3 is a five-membered azole ring unsubstituted or substituted by one or two halogen or nitro groups or by alkyl, haloalkyl, alkoxy or alkylthio groups each of which alkyl-containing groups has 1 to 6 carbon atoms C_3–C_7cycloalkyl and which is bound through carbon and is selected from the group consisting of benzimidazole, benzoxazole, benzothiazole, imidazole, oxazole, thiazole, oxadiazole, thiadiazole and triazole; and

R_4 and R_5 are independently of the other hydrogen, C_1–C_6alkyl, C_1–C_6haloalkyl, C_1–C_6alkoxy or C_1–C_6haloalkoxy;

or a tautomer or salt thereof.

20. A method of controlling parasitic helminths, which method comprises administering to an animal an anthelmintically effective amount of a compound of the formula



wherein

X is oxygen or sulfur;

R_1 is C_1–C_6alkyl, C_1–C_6alkoxy, C_3–C_6cycloalkyl or allyl;

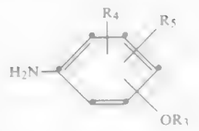
R_2 is C_1–C_6alkyl or allyl;

R_3 is five-membered azole ring unsubstituted or substituted by one or two halogen or nitro groups or by alkyl, haloalkyl, alkoxy or alkylthio groups each of which alkyl-containing groups has 1 to 6 carbon atoms C_3–C_7 cycloalkyl and which is bound through carbon and is selected from the group consisting of benzimidazole, benzoxazole, benzothiazole, imidazole, oxazole, thiazole, oxadiazole, thiadiazole and triazole; and

R_4 and R_5 are independently of the other hydrogen, C_1–C_6alkyl, C_1–C_6haloalkyl, C_1–C_6alkoxy or C_1–C_6haloalkoxy;

or a tautomer or salt thereof.

22. A compound of the formula



wherein R_4, R_5 and R_3 are as defined in claim 1.

4,762,831

ANTIBACTERIAL 1,8-BRIDGED 4-QUINOLONE-3-CARBOXYLIC ACIDS

Klaus Grohe, Odenthal, and Michael Schriewer, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

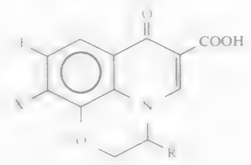
Filed Jun. 13, 1986, Ser. No. 874,182

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522406

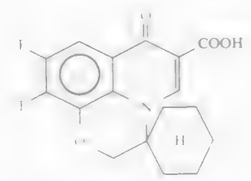
Int. Cl.[4] A61K *31/535*; C07D *498/06*

U.S. Cl. 514—230.2 14 Claims

8. A method of combating bacteria which comprises applying to such bacteria or to a bacterial host an antibacterially effective amount of a compound selected from the group consisting of compounds of the formula



and



in which

X^2 is Cl or CH_3, and

R^1 is H or CH_3.

4,762,832

MORPHOLINE CONTAINING PYRROLIDINONES PHARMACEUTICAL COMPOSITIONS AND USE

Karl-Heinz Weber, Gau-Algesheim; Claus Schneider, Ingelheim am Rhein; Gerhard Walther, Bingen am Rhein; Dieter Hinzen, Bingen; Franz J. Kuhn, Gau-Algesheim; Erich Lehr, Waldalgesheim; Helmut Ensinger, Wackernheim, and Wolfgang Tröger, Stromberg, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 738,152, May 24, 1985, Pat. No. 4,670,456.

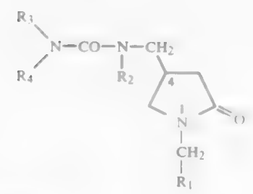
This application Dec. 18, 1986, Ser. No. 943,532

Claims priority, application Fed. Rep. of Germany, May 30, 1984, 3420193

Int. Cl.[4] A61K *31/535*; C07D *413/12*

U.S. Cl. 514—237.2 5 Claims

1. Substituted pyrrolidinones of the formula



(I)

wherein

R_1 is a phenyl group which can be mono- or di-substituted by methyl, methoxy, fluorine, chlorine, bromine or trifluoromethyl, or a pyridyl group;

R_2 is hydrogen or a straight-chained or branched alkyl group with 1–4 carbon atoms;

R_3 and R_4 together with the nitrogen atom form a morpholine ring, which ring can be substituted by 1 or 2 methyl groups;

as well as physiologically acceptable acid addition salts thereof.

4. A pharmaceutical composition for treating cerebral insufficiency comprising a pharmaceutically acceptable carrier and an effective amount of a compound in accordance with claims 1 or 2.

4,762,833

2,4,6-TRIS-TERTIARY-BUTYLAMINO-1,3,5-TRIAZINE USEFUL FOR THE PROPHYLAXIS AND TREATMENT OF EPILEPSY AND ANXIETY STATES

Alfred Kreutzberger, Mainz; Alfons Söder, Frankfurt am Main, and Hermann J. Gerhards, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

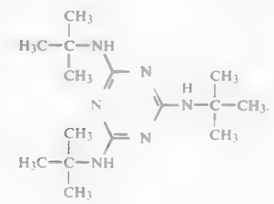
Filed Apr. 3, 1987, Ser. No. 33,628

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1986, 3611425

Int. Cl.[4] A61K *31/53*; C07D *251/54*

U.S. Cl. 514—245 2 Claims

2. A method for the treatment and prophylaxis of epilepsy and anxiety states, which comprises administering to a mammal in need of said treatment and prophylaxis an effective amount of 2,4,6-tris-tertiary-butylamino-1,3,5-triazine of the formula



4,762,834

3-ALKOXY-2-(N-PYRROLIDINO)-N-PYRIMIDINYL- OR -N-PYRAZINOLPROPYLAMINES USEFUL FOR TREATMENT OF CARDIOVASCULAR DISORDERS

Michel Combourieu, Aurillac; Jacques A. L. Simond, Les-Martres-de-Veyre, and André J. C. Monteil, Chatel-Guyon, all of France, assignors to Riom Laboratoires C.E.R.M. "Rl-Cerm", S.A., Riom, France

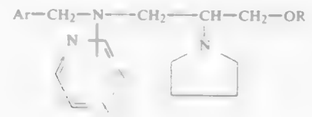
Continuation of Ser. No. 688,424, Jan. 2, 1985, abandoned. This application Aug. 20, 1986, Ser. No. 898,834

Claims priority, application France, Jan. 18, 1984, 84 00757

Int. Cl.[4] A61K *31/495, 31/505*; C07D *403/12, 403/14*

U.S. Cl. 514—252 8 Claims

1. A compound of the formula:



wherein

Ar is thienyl, furyl, pyridyl, phenyl or phenyl substituted by halogen, hydroxy, C_1–C_4 alkoxy or C_1–C_4 alkyl,

R is a linear or branched alkyl group with 1 to 7 carbon atoms, and

either X_1 or X_2 is nitrogen, the other being carbon or a pharmaceutically acceptable acid addition salt thereof.

8. A pharmaceutical composition for use in the treatment of cardiovascular disorders, characterized in that it contains, as the active principle, at least one of the compounds according to claim 1 in an effective amount of from 1 to 15 mg/kg of body weight in association with one or more suitable excipients.

4,762,835

PYRIMIDINE DERIVATIVES

Alan J. Whittle, Aldershot; Roger Salmon, Bracknell, and Edward McDonald, Marlow, all of England, assignors to Imperial Chemical Industries PLC, London, England

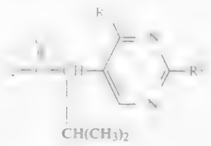
Filed Dec. 16, 1986, Ser. No. 942,436

Claims priority, application United Kingdom, Dec. 23, 1985, 8531637

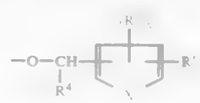
Int. Cl.[4] A61K *31/505*; C07D *239/02, 401/02*; C07F *7/02*

U.S. Cl. 514—256 7 Claims

1. A compound of the formula:



wherein R^1 represents hydrogen or halogen, R^2 represents an α-branched alkyl or a cycloalkyl group containing from 3 to 6 carbon atoms, which is optionally substituted by methyl Q represents hydroxy, halo, alkoxy of up to 6 carbon atoms or a group of formula:



wherein X is oxygen, sulphur, vinylene or a group of formula $-CR^5{=}Y-$ where Y is nitrogen or CR^5, R^4 is hydrogen,

VOL 1093 ISS 2 AG 9 1988 UMI

methyl, cyano or ethynyl, each R^5 is selected from hydrogen, halogen, alkoxy of up to 4 carbon atoms, alkyl of up to 4 carbon atoms optionally substituted with halogen, n has a value selected from 0, 1 or 2, and R^6 is hydrogen, halogen, alkyl of up to 4 carbon atoms, alkoxy of up to 4 carbon atoms, alkenyl of up to 6 carbon atoms, haloalkenyl of up to 6 carbon atoms, alkynyl of up to 4 carbon atoms, alkoxyalkyl of up to a total of 4 carbon atoms, phenyl, phenoxy or benzyl or phenyl phenony or benzyl substituted with halogen or alkyl.

4,762,836

AROMATASE INHIBITORS

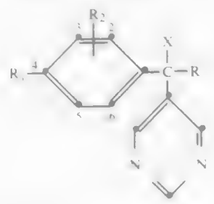
Kenneth S. Hirsch, New Palestine, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 463,086, Feb. 2, 1983, abandoned. This application Dec. 12, 1983, Ser. No. 560,282

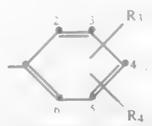
Int. Cl.⁴ A61K *31/505*

U.S. Cl. 514—256 **16 Claims**

1. The method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting dose of a compound of formula I



and pharmaceutically acceptable salts thereof, wherein R is



2-chloroethyl, C_3–C_8 cycloalkyl, phenoxy-substituted C_1–C_4 alkyl, or norbornan-2-yl,

R_1 is methyl, trifluoromethyl, methoxy, fluoro, chloro, bromo, or nitro;

R_2 is hydrogen, methyl, trifluoromethyl, methoxy, fluoro, chloro, bromo, or nitro;

each of R_3 and R_4 is independently hydrogen, methyl, methoxy, fluoro, or chloro; and

X is hydrogen, hydroxy, methyl, or halo, with the proviso that if R_1 is methoxy, R must be substituted phenyl with at least one of R_3 and R_4 being other than hydrogen.

4,762,837

4-ALKOXY-PYRIDO[2,3-d]PYRIMIDINE DERIVATIVES FOR TREATMENT OF MYOCARDIAC ISCHEMIA

Jürgen Kleinschroth; Gerhard Satzinger, both of Denzlingen; Karl Mannhardt, Elzach-Oberprechtal; Johannes Hartenstein, Stegen-Wittental; Hartmut Osswald, Waldkirch; Günter Weinheimer, Denzlingen, and Edgar Fritschi, St. Peter, all of Fed. Rep. of Germany, assignors to Godecke Aktiengesellschaft, Berlin, Fed. Rep. of Germany

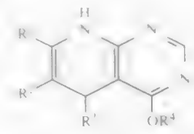
Division of Ser. No. 787,844, Oct. 16, 1985, Pat. No. 4,681,882. This application May 29, 1987, Ser. No. 55,816

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1984, 3438351

Int. Cl.⁴ A61K *31/505*

U.S. Cl. 514—258 **1 Claim**

1. A metod for treating myocardiac ischemia which comprises administering to a host suffering therefrom a pharmaceutical composition in unit dosage form comprising a calcium antagonist effective amount of a compound of the formula



wherein R^1 is phenyl, pyridyl or thienyl, or phenyl substituted by up to three of the same or different groups selected from a straight or branched alkyl with up to four carbon atoms, halogen, nitro, a straight or branched alkoxy with up to four carbon atoms, difluoromethoxy, trifluromethoxy, diloweralkylamino, loweralklthio or trifluoromethyl or a methylenedioxy group; R^2 represents a nitrile group, a carboxyl group or an alkoxycarbonyl residue with up to six carbon atoms; R^3 is a straight-chained or branched alkyl group with up to four carbon atoms or an amino group; and R^4 represents a straight-chained or branched alkyl group with up to four carbon atoms; or a pharmaceutically acceptable salt thereof with a pharmaceutically acceptable carrier in diluent.

4,762,838

QUINAZOLIN-4(3H)-ONE DERIVATIVES AS ANTICOCCIDIAL AGENTS

Edward A. Glazer, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

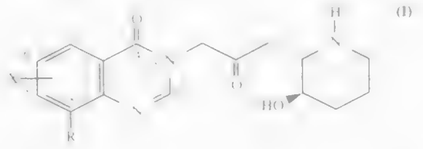
PCT No. PCT/US85/01685, § 371 Date Jun. 22, 1987, § 102(e) Date Jun. 22, 1987

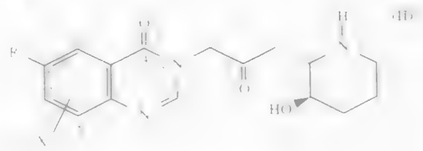
Filed Jun. 22, 1987, Ser. No. 67,766

Int. Cl.⁴ A61K *31/505;* **C07D** *401/06*

U.S. Cl. 514—259 **37 Claims**

1. A compound having the formula


(I)


(II)

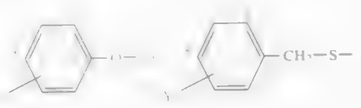
wherein

X is fluoro, chloro, bromo or iodo substituted at the 6- or 7-position;

R is (C_1–C_4) alkylthio;

X^1 is hydrogen or fluoro, chloro, bromo, iodo or methoxy substituted either at the 7- or at the 8-position; and

R^1 is cyano, trifluoromethyl, (C_1–C_4) alkylthio, 4-picolylthio, 3,5-dichlorophenoxy,



where Y^1 is hydrogen, fluoro, chloro, bromo or phenoxy; and Y^2 is chloro or bromo; with the proviso that Y^1 is other than hydrogen when X^1 is other than hydrogen,

or a pharmaceutically-acceptable acid addition salt thereof.

30. A method of controlling or preventing coccidiosis in poultry which comprises administering to said poultry an anticoccidially effective amount of a compound of claim 1 in drinking water or in nutritionally-balanced feed.

4,762,839

QUINAZOLINONE COPMPOUNDS USEFUL FOR THE PROPHYLOXIS AND TREATMENT OF DIABETIC COMPLICATIONS

Yoshihisa Yamada, Kyoto; Yuzo Matsuoka, Toyonaka, and Mamoru Matsumoto, Nara, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Japan

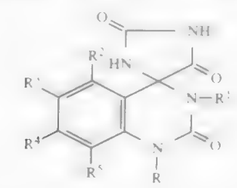
Filed May 22, 1986, Ser. No. 866,226

Claims priority, application Japan, Jun. 6, 1985, 60-124008; Oct. 18, 1985, 60-234160

Int. Cl.⁴ C07D *487/10;* **A61K** *31/505*

U.S. Cl. 514—259 **10 Claims**

1. A quinazolinone compound of the formula:



wherein R is hydrogen atom or lower alkyl, R^1 is a lower alkyl, and R^2, R^3, R^4 and R^5 are the same or different and are each hydrogen atom, a halogen atom, a lower alkyl or a lower alkoxy, or a salt thereof.

4,762,840

PYRIMIDO[2,1-b]BENZOTHIAZOLES HAVING ANTIALLERGIC ACTIVITY

David A. Rowlands, Malmesbury; Julian M. C. Golec, Swindon; Saroop S. Matharu, Cricklade, and Peter W. Hairsine, Swindon, all of England, assignors to Roussel Uclaf, Paris, France

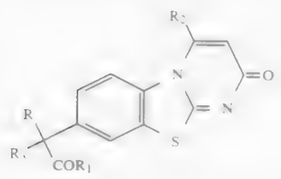
Continuation-in-part of Ser. No. 700,446, Feb. 11, 1985, abandoned. This application Jul. 31, 1986, Ser. No. 892,771

Claims priority, application United Kingdom, Feb. 13, 1984, 8403739; Jul. 31, 1985, 8519261

Int. Cl.⁴ A61K *31/505;* **C07D** *513/04*

U.S. Cl. 514—267 **34 Claims**

1. A compound selected from the group consisting of pyrimido[2,1-b]benzothiazoles of the formula



wherein R and R_3 are individually selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms or taken together with the carbon to which they are attached form a cycloalkyl of 3 to 6 carbon atoms, R_1 is selected from the group consisting of hydroxy, alkoxy of 1 to 12 carbon atoms, cycloalkoxy of 7 to 12 carbon atoms and



R_5 and R_6 are individually selected from the group consisting of hydrogen and alkyl of 1 to 6 carbon atoms or taken together with the nitrogen form piperidino or morpholino, R_2 is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, alkoxycarbonyl of 2 to 7 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, 2-thienyl, phenylalkyl and optionally substituted phenyl with at least one substituent selected from the group consisting of halogen, nitro and alkyl and alkoxy of 1 to 6 carbon atoms and their salts with non-toxic, pharmaceutically acceptable acids and bases.

13. An antiallergic composition comprising an antiallergically effective amount of at least one compound of claim 1 and an excipient.

24. A method of treating allergies in warm-blooded animals comprising administering to warm-blooded animals an antiallergically effective amount of at least one compound of claim 1.

4,762,841

SUBSTITUTED 9-AMINO-SPIRO(CYCLOALKYL(B)QUINOLINE-2,1'CYCLOALKANES)

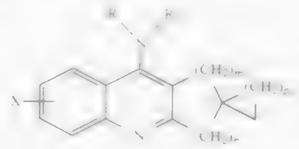
Gregory M. Shutske, Somerset, N.J., assignor to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Mar. 30, 1987, Ser. No. 31,825

Int. Cl.⁴ C07D *221/20;* **A61K** *31/435*

U.S. Cl. 514—278 **51 Claims**

1. A compound of the formula



wherein m is 1 or 2; n is 1 or 2; p is 1–5; X is hydrogen, lowralkyl, cycloalkyl, loweralkoxy, halogen, hydroxy, nitro, trifluoromethyl, formyl, loweralkylcarbonyl, arylcarbonyl, —SH, loweralkylthio, —$NHCOR_2$ or —NR_3R_4 where R_2 is hydrogen or loweralkyl, and R_3 and R_4 are independently hydrogen, loweralkyl or cycloalkyl; R is hydrogen, loweralkyl, or loweralkylcarbonyl; and R_1 is hydrogen, loweralkyl, loweralkylcarbonyl, aryl, diloweralkylaminoloweralkyl, aryllowerallkyl, diarylloweralkyl, aryloxyloweralkyl or di-aryloxy-loweralkyl; a stereo, optical, or geometrical isomer thereof, or a pharmaceutically acceptable acid addition salt thereof, the term aryl in each occurrence signifying a phenyl group optionally substituted with 1, 2 or 3 substituents each of which being independently loweralkyl, loweralkoxy, halogen, hydroxy, trifluoromethyl, phenoxy or benzyloxy, and the term cycloalkyl in each occurrence signifying a cycloalkyl of 3 to 7 carbon atoms.

45. A method of increasing the cholinergic function in a mammal which comprises administering to the mammal an effective cholinergic function increasing amount of a compound as defined in claim 1.

VOL 1093 ISS 2 AG 9 1988 UMI

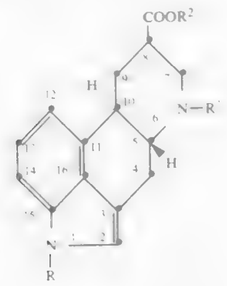
4,762,842

SELECTIVE METHOD FOR BLOCKING 5HT2 RECEPTORS

Marlene L. Cohen; Ray W. Fuller; William L. Garbrecht, all of Indianapolis, and Kathleen R. Whitten, Zionsville, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 782,338, Oct. 1, 1985, Pat. No. 4,713,384.
This application Oct. 5, 1987, Ser. No. 105,412
Int. Cl.[4] A61K *31/48*
U.S. Cl. 514—288 14 Claims

1. A method of treating hypertension without encountering side effects attributable to alpha receptor blockade which comprises administering to a hypertensive mammal a hypotensive dose which does not affect alpha receptors of an ergoline of the formula:



wherein R is primary or secondary C_{1-8} alkyl, CH_2C_{2-4} alkenyl, C_{3-8} cycloalkyl or C_{3-6} cycloalkyl-substituted C1-5 primary or secondary alkyl, the total number of carbon atoms in R not to exceed 8; R^1 is C_{1-4} straight chain alkyl or allyl, and R^2 is hydroxy C_{5-7} cycloalkyl, and pharmaceutically acceptable acid addition salts thereof.

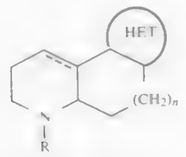
4,762,843

HETERO [F] FUSED CARBOCYCLIC PYRIDINES AS DOPAMINERGIC AGENTS

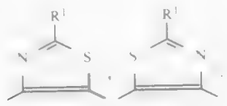
Bradley W. Caprathe, Redford; Juan C. Jaen, Plymouth, and Lawrence D. Wise, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 907,445, Sep. 15, 1986, abandoned. This application Jul. 17, 1987, Ser. No. 75,002
Int. Cl.[4] A61K *31/345;* C07D *498/04, 513/04*
U.S. Cl. 514—293 55 Claims

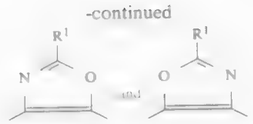
1. A compound of the formula



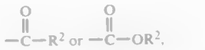
wherein --- indicates the presence of a single or double bond; HET is selected from the group consisting of



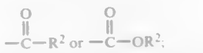
-continued



R is hydrogen, alkyl, alkenyl, cycloalkylalkyl, arylalkyl,



in which R^2 is alkyl or arylalkyl; R^1 is hydrogen, alkyl, or NR^3R^4 in which R^3 is hydrogen or alkyl and R^4 is hydrogen, alkyl, alkenyl, cycloalkylalkyl, arylalkyl,



n=0, 1 or 2; and corresponding geometric and optical isomers thereof; or a pharmaceutically acceptable acid addition salt thereof.

53. A method of treating psychoses, hypertension, galactorrhea, amenorrhea, menstrual disorders, sexual dysfunction, Parkinson's disease, Huntington's chorea or depression comprising administering to a host suffering therefrom a therapeutic effective amount of a compound according to claim 1 in unit dosage form.

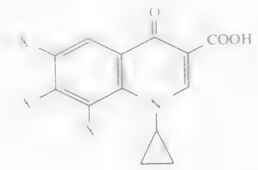
4,762,844

ANTIBACTERIALLY ACTIVE ALKYL-1-CYCLOPROPYL-1,4-DIHYDRO-4-OXO-3-QUINOLINECARBOXYLIC ACIDS

Klaus Grohe, Odenthal; Michael Schriewer, Leverkusen; Hans-Joachim Zeiler, Velbert, and Karl G. Metzger, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 5, 1985, Ser. No. 795,056
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1984, 3441788
Int. Cl.[4] A61K *31/47;* C07D *215/56*
U.S. Cl. 514—312 13 Claims

1. An alkyl-1-cyclopropyl-1,4-dihydro-4-oxo-3-quinolinecarboxylic acid of the formula



in which

X^1 is hydrogen, a nitro group or a halogen atom, and

X^2 and X^3 each independently is hydrogen, a nitro group, a halogen atom or an alkyl radical with 1 to 3 carbon atoms, with the proviso that at least one of them is an alkyl radical,

or a pharmaceutically acceptable salt or hydrate thereof.

8. An antibacterial or animal growth-promoting composition comprising an amount effective therefor of a compound salt or hydrate according to claim 1 in admixture with a diluent.

10. A method of combating bacteria which comprises applying to such bacteria or to a bacteria host an antibacterially effective amount of a compound, salt or hydrate according to claim 1.

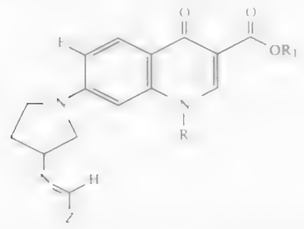
4,762,845

7-(3-SUBSTITUTED IMINO-1-PYRROLIDINYL)-QUINOLONE-3-CARBOXYLIC ACIDS

Daniel T. Chu, Vernon Hills; Andre G. Pernet, and Curt S. Cooper, both of Lake Bluff, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed May 21, 1986, Ser. No. 866,194
Int. Cl.[4] A61K *31/47;* C07D *401/04*
U.S. Cl. 514—312 6 Claims

1. A compound of the Formula I:



wherein R is lower alkyl, cyclopropyl, and a phenyl group of the formula:



wherein R_2 is one, two or three substituents independently selected from hydrogen, halogen, and C_1 to C_4 alkyl, halo substituted C_1 to C_4 alkyl, hydroxy substituted C_1 to C_4 alkyl, amino substituted C_1 to C_4 alkyl and R_1 is hydrogen or a carboxy-protecting group; and Z is selected from the group consisting of an aromatic heterocyclic ring having 5 or 6 atoms with one heteroatom selected from S, O and N and with the remaining atoms being carbon, and a phenyl group of the formula:



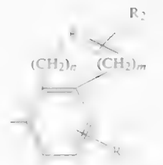
wherein R_3 is one, two or three substituents independently selected from hydrogen, halogen, nitro, carboxyl, cyano, methoxy, C_1 to C_4 alkyl, halo substituted C_1 to C_4 alkyl, hydroxy substituted C_1 to C_4 alkyl, amino substituted C_1 to C_4 alkyl, loweralkylamino substituted C_1 to C_4 alkyl, haloloweralkylamino substituted C_1 to C_4 alkyl, hydroxyloweralkylamino substituted C_1 to C_4 alkyl, aminoloweralkylamino substituted C_1 to C_4 alkyl, a group having the formula Y—R_4 wherein Y is —O— or —S— and wherein R_4 is hydrogen or C_1 to C_4 alkyl, and an amine of the formula:



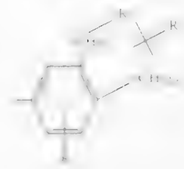
wherein

R_5 and R_6 are each independently hydrogen or C_1 to C_4 alkyl;

Z is also selected from substituted phenyl groups of the formulae A or B



(A)



(B)

wherein n and m can be independently 0, 1, or 2 with R_7 being selected from S, O, N—R_8, or C_2 wherein R_8 is hydrogen, C_1 to C_4 alkyl, 1, C_1 to C_4 hydroxyalkyl, C_1 to C_4 haloalkyl, C_1 to C_4 aminoalkyl, C_1 to C_4 alkyl substituted aminoalkyl; and pharmaceutically acceptable salts thereof.

4,762,846

METAPHIT AND RELATED COMPOUNDS AS ACYLATING AGENTS FOR THE (3H)PHENCYCLIDINE RECEPTORS

Kenner C. Rice, Rockville, Md.; Michael F. Rafferty, Ann Arbor, Mich.; Arthur E. Jacobson, Potomac, Md.; Patricia Contreras, Bethesda, Md.; Thomas L. O'Donohue, Silver Spring, Md.; Ralph A. Lessor, Bethesda, Md., and Mariena V. Mattson, Wheaton, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 683,428, Dec. 19, 1984, Pat. No. 4,598,153. This application Jan. 31, 1986, Ser. No. 824,848
Int. Cl.[4] C07D *211/28;* A61K *31/26, 31/445*
U.S. Cl. 514—331 1 Claim



1. A compound selected from the group consisting of

Thiophit, 1-[1-2(1-isothiocyanato)thionyl)cyclohexyl]piperidine, having a melting point as the oxalate salt of 140°–141° C.

Ethylphit, N[1-m-isothiocyanato-phenyl]cyclohexyl]ethylamine, having a melting point as the HCl salt of 283°–285° C. and as the amine oxalate salt of 170° C. and

Isopropylphit, N-[1-(m-isothiocyanatophenyl)cyclohexyl-

VOL 1093 ISS 2 AG 9 1988 UMI

]isopropylamine, having melting point as the hydrochloride salt of 223°–224° C.

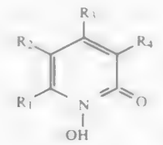
4,762,847

METHOD OF TREATING ACNE

Peter J. Edwards, Leatherhead; Carol A. Jeffryes, Isleworth, and Fiona M. Swain, Kettering, all of England, assignors to Beecham Group p.l.c., England

Filed Oct. 2, 1986, Ser. No. 914,265
Claims priority, application United Kingdom, Oct. 4, 1985, 8524508
Int. Cl.[4] A61K *31/44*
U.S. Cl. 514—336 3 Claims

1. A method of treating acne in humans comprising applying to the skin of a human suffering from acne a compound of formula (I)



(I)

or a topically acceptable salt in an anti-acne effective amount in which R_1 is hydrogen, alkyl of 1 to 17 carbon atoms, alkenyl of 2 to 17 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, bicycloalkyl of 7 to 9 carbon atoms, cycloalkylalkyl of 1 to 4 alkyl carbon atoms, the cycloalkyl groups being optionally substituted by alkyl groups of 1 to 4 carbon atoms, aryl, aralkyl of 1 to 4 alkyl carbon atoms, arylalkenyl of 2 to 4 alkenyl carbon atoms, aryloxy-alkyl or arylthio-alkyl of 1 to 4 alkyl carbon atoms, benzhydryl, phenylsulfonylalkyl of 1 to 4 alkyl carbon atoms, furyl or furylalkenyl of 2 to 4 alkenyl carbon atoms, all the aryl groups mentioned being optionally substituted by alkyl of 1 to 4 carbon atoms, by alkoxy of 1 to 4 carbon atoms, by nitro, cyano or halogen; R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl or alkinyl of 2 to 4 carbon atoms, halogen or benzyl; R_3 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl; and R_4 is hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, methoxymethyl, halogen or benzyl, together with a non-irritant topically acceptable carrier.

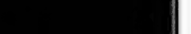
4,762,848

1,3-THIAZOLES AND THEIR USE AS IMMUNOMODULATORS

Karl-Heinz Scheunemann, Frankfurt am Main; Walter Dürckheimer, Hattersheim am Main; Jürgen Blumbach, Frankfurt am Main; Michael Limbert, Hofheim am Taunus; Hans-Ulrich Schorlemmer, Marburg; Gerhard Dickneite, Marburg, and Hans-Harald Sedlacek, Marburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 10, 1986, Ser. No. 837,700
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1985, 3508665
Int. Cl.[4] A61K *31/38*; C07D *277/34, 277/36, 213/62*
U.S. Cl. 514—369 18 Claims

1. A sulfide of the formula II



(II)

in which:

Het' represents a 1,3-thiazolyl group, or a 1,3-thiazolyl group substituted by

C_1–C_6-alkyl, or C_1–C_6-alkyl substituted by hydroxyl, C_1–C_4-alkoxy, amino, C_1–C_4-alkylamino, di-C_1–C_4-alkylamino, mercapto, C_1–C_4-alkylthio, C_1–C_4-alkoxycarbonyl, aminocarbonyl, N-C_1–C_4-alkyl-aminocarbonyl, N,N-di-C_1–C_4-alkylaminocarbonyl, or carboxyl,

phenyl,

hydoxyl, oxo, oxido,

C_1–C_4-alkoxy,

amino,

C_1–C_4-alkylamino,

C_1–C_4-di-alkylamino,

C_2–C_5-acylamino,

C_2–C_4-alkenyl, or C_2–C_4-alkenyl substituted by C_1–C_4-alkoxy, C_1–C_4-alkoxycarbonyl, aminocarbonyl, N-C_1–C_4-alkyl-aminocarbonyl, N,N-di-C_1–C_4-alkyl-aminocarbonyl, or carboxyl,

carboxyl or

C_1–C_4-alkoxycarbonyl; and

R^2 represents C_3–C_6-cycloalkyl, or represents C_1–C_6-alkyl or C_3–C_6-cycloalkyl substituted by

amino, hydroxyl, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy, aminocarbonyl, oximino, oximino, C_1–C_4-alkoximino, phenyl, or phenyl substituted by

C_1–C_4-alkyl, carboxyl, aminocarbonyl, C_1–C_4-carbonyl, or halogen,

or R^2 represents C_2–C_6-alkenyl or C_2–C_6-alkynyl, or C_2–C_6-alkenyl or C_2–C_6-alkynyl substituted by

amino, hydroxyl, carboxyl, C_1–C_4-alkoxycarbonyl, C_1–C_4-alkoxy, aminocarbonyl, phenyl or phenyl substituted by

C_1–C_4-alkyl, carboxyl, aminocarbonyl,

C_1–C_4-alkoxycarbonyl, or halogen,

with the proviso that the 1,3-thiazolyl group

(a) is not substituted by 4,5-dimethyl or 4,5-diphenyl,

(b) is not monsubstituted by methyl either in the 4- or in the 5-position, and

(c) is not unsubstituted if the substituent in the 2-position is carboxy-propylthio.

4. A pharmaceutical composition for immunostimulation or immunoenhancement containing a compound of the formula II as defined in claim 1 and a pharmaceutically acceptable carrier.

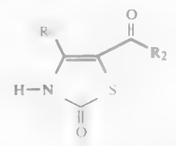
4,762,849

CARDIOTONIC ALKANOYLTHIAZOLONES

J. Martin Grisar, Wissembourg, France; Richard C. Dage, and Richard A. Schnettler, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

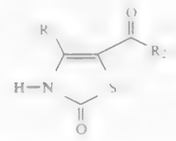
Filed Oct. 15, 1985, Ser. No. 787,276
Int. Cl.[4] C07D *277/34*; A61K *31/425*
U.S. Cl. 514—369 17 Claims

1. An alkanoylthiazolone of the formula



wherein R_1 is a hydrogen or (C_1–C_4)alkyl group and R_2 is a (C_2–C_6) alkenyl, (C_2–C_6)alkynyl, (C_3–C_6)cycloalkyl, or (C_3–C_7)cycloalkyl (C_1–C_6)

11. A method of enhancing mycardial contractile force in a patient in need thereof which comprises administering to the patient an effective amount of alkanoylthiazolone of the formula



wherein R_1 is a hydrogen or (C_1–C_4)alkyl group and R_2 is a

(C_1–C_6)alkyl, (C_2–C_6)alkenyl, (C_2–C_6) alkynyl, (C_3–C_7)cycloalkyl, or (C_3–C_7)cycloalkyl (C_1–C_6)alkyl group.

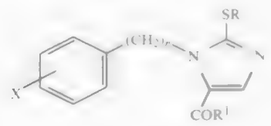
4,762,850

DOPAMINE-BETA-HYDROXYLASE INHIBITORS

Joseph A. Finkelstein, Philadelphia, Pa.; Lawrence I. Kruse, Tewin, England, and Thomas B. Leonard, Haverford, Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Filed Mar. 24, 1987, Ser. No. 29,512
Int. Cl.[4] A61K *31/415*; C07D *233/90*
U.S. Cl. 514—392 11 Claims

1. A compound represented by the formula:



in which:

X is H, F, Cl, Br, I, C_{1-4} alkyl, CN, NO_2, SO_2NH_2, COOH, OH, CHO, C_{1-4}Alkoxy, CH_2OH, CF_3, SO_2CH_3, SO_2CF_3, or $CO_2C_nH_{2n+1}$ wherein a is 1–5, of any accessible combination thereof of up to 5 substituients;

n is 0–5;

R is hydrogen or C_{1-4}alkyl; and

R^1 is OH or NHC_{1-4}alkylNH_2; or

any pharmaceutically acceptable salt or hydrate thereof, except compounds in which R^1 is OH, R is H, X is H, and n is 1.

9. A method of inhibiting dopamine-β-hydroxylase activity in mammals that comprises administering internally to a subject in need of such inhibition an effective amount of a compound of claim 1.

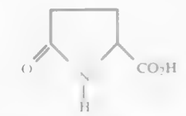
4,762,851

PYROGLUTAMIC ACID ESTERS USED AS DERMAL PENETRATION ENHANCERS FOR DRUGS

Jose Alexander, and Takeru Higuchi, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 29, 1985, Ser. No. 802,907
Int. Cl.[4] A61K *31/19, 31/20, 31/40*
U.S. Cl. 514—420 8 Claims

1. A method of enhancing the rate of dermal absorption of a composition which comprises topically administering to a patient a therapeutically effective dosage amount of said composition comprising a non-steroidal anti-inflammatory drug selected from the group consisting of indomethacin, naproxen, fenoprofen, ibuprofen, alcolfenac, diflunisal, sulindac, desoxysulindac, fluprofen, ketoprofen, naproxol, and fenbufen and a pyroglutamic acid ester absorption enhancing agent of the formula:



wherein R is a straight or branched chain alkyl (C_5–C_{20}), alkenyl (C_5–C_{20}) with 1–6 double bonds, hydroxyalkyl C_5–C_{20}) with 1–3 hydroxy groups, ketoalkyl (C_5–C_{20}), unsaturated hydroxyalkyl (C_5–C_{20}), carboxyalkyl C_5–C_{20}) or alkoxycarbonylalkyl C_5–C_{20}).

4,762,852

BENZODIOXEPANNE, PROCESS FOR THE SYNTHESIS THEREOF AND USE THEREOF

Denis Besancon, Paris, and Jacqueline Franceschini, l'Hay-les-Roses, both of France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France, Paris, France

Filed Aug. 12, 1986, Ser. No. 895,881
Claims priority, application France, Aug. 12, 1985, 85 12270
Int. Cl.[4] A61K *31/40*; C07D *405/12, 31/335*
U.S. Cl. 514—422 4 Claims

1. N-(1-cyclohexenylmethyl-2-pyrrolidinylmethyl)-8-ethylsulphonyl-1,5-benzodioxepanne-6-carboxamide and the pharmacologically acceptable salts thereof.

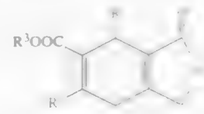
4,762,853

1-OXO-1,3,4,7-TETRAHYDROBENZO[c]FURANS

Siegfried Goldmann, Wuppertal; Matthias Schramm, Cologne; Günter Thomas, and Rainer Gross, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 724,374, Apr. 18, 1985, Pat. No. 4,668,691.
This application Oct. 10, 1986, Ser. No. 917,875
Claims priority, application Fed. Rep. of Germany, May 3, 1984, 3416293
Int. Cl.[4] C07D *407/02*; A61K *31/35*
U.S. Cl. 514—432 6 Claims

1. A furanone of the formula



in which

R is a chromonyl, thiochromonyl, chromenyl or thiochromenyl radical, each optionally substituted up to three times by substituents indepedently selected from the group consisting of alkyl (1 to 20 carbon atoms); alkenyl (2 to 20 carbon atoms); alkinyl (2 to 20C atoms); alkoxy (1 to 20C atoms); fluorine; chlorine; bromine; iodine; trifluoromethyl; monofluoroalkoxy (1 to 10C atoms); polyfluoroalkoxy (1 to 10C atoms); hydroxyl; amino; monoalkylamino (1 to 10C atoms); dialkylamino (1 to 10C atoms); nitro; cyano; azido; carboxyl; carbalkoxy (C_1–C_{10}); carboxamido; sulphonamido; SO_m-alkyl (m = 0 to 2, 1 to 20C atoms); and phenyl, benzyl, benzyloxy or benzylthio, each optionally substituted up to three times by substituents independently selected from the group consisting of alkyl (1 to 5C atoms), alkoxy (1 to 5C atoms), alkylthio (1 to 5C atoms), fluorine, chlorine, bromine, iodine, cyano, nitro, azido, hydroxyl, trifluoromethyl, amino, alkylamino (1 to 6C atoms) or dialkylamino (1 to 6C atoms),

R^1 is hydroxyl, NH-alkyl having 1 to 4C atoms or dialkylamino having 1 to 4C atoms in each alkyl group, and

R^3 is a straight-chain, branched or cyclic alkyl or alkenyl radical having up to 12C atoms, each of which is optionally substituted by alkoxy or alkylthio having 1 to 4C atoms, fluorine, chlorine, cyano, hydroxyl, amino, alkylamino or dialkylamino having 1 to 4C atoms in each alkyl group, nitro, phenyl or pyridyl.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,854
METHOD OF REDUCING URINE PH
William E. Lloyd, and Daniel J. Sullivan, both of Shenandoah, Iowa, assignors to Vet-A-Mix, Shenandoah, Iowa
Continuation of Ser. No. 821,524, Jan. 24, 1986, abandoned, which is a continuation of Ser. No. 666,751, Oct. 31, 1984, abandoned. This application Dec. 2, 1986, Ser. No. 937,475
Int. Cl.[4] A61K *31/19*
U.S. Cl. 514—557 4 Claims

1. In a method of reducing or preventing the concentration of urinary crystalloids in the urine of mammals in need thereof by the administration thereto of a urinary acidifier in amounts effective to reduce the urine pH to a level that reduces or prevents the concentration of urinary crystalloids, the improvement comprising selecting as the urinary acidifier 2-hydroxy-4-(methylthio) butyric acid and pharmaceutically aceptable salts thereof.

4,762,855
NOVEL PHARMACEUTICAL COMPOSITIONS IMPROVING OXYGENATION OF THE BRAIN AND A PROCESS FOR THEIR PRODUCTION
Jean-Claude Levy, Vincennes; Pierre Bessin, Chilly-Mazarin, and Jean-Pierre Labaune, Moulignon par Ponthierry, all of France, assignors to Albert Rolland S.A., Paris, France
Filed Nov. 4, 1986, Ser. No. 926,895
Claims priority, application France, Nov. 5, 1985, 85 16359
Int. Cl.[4] A61K *31/135*
U.S. Cl. 514—651 2 Claims

1. A method of improving brain disfunction in elderly patients due to reduction in brain oxygenation which comprises administering to such patients showing a decrease in the cerebral vascular output a safe but effective amount of an active compound selected from the group consisting of 2,2-bis-phenoxydimethylaminoethane or an acid addition salt thereof.

4,762,856
ANESTHETIC COMPOSITION AND METHOD OF USING THE SAME
Ross C. Terrell, Clark, N.J., assignor to BOC, Inc., Montvale, N.J.
Filed Feb. 2, 1987, Ser. No. 10,106
Int. Cl.[4] A61K *31/08*
U.S. Cl. 514—722 1 Claim

1. A method of inducing anesthesia in a warm blooded animal comprising administering by inhalation to said warm blooded animal an anesthesia inducing effective amount of 2-(difluoromethoxy)-1,1,1,2-tetrafluoroethane as an inhalation anesthetic while administering a life supporting amount of oxygen.

4,762,857
TREHALOSE AS STABILIZER AND TABLETING EXCIPIENT
Ernest Bollin, Jr., Bear, Del., and Mark G. Fletcher, Hartlend, Wis., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 868,668, May 30, 1986, Pat. No. 4,678,812. This application Apr. 23, 1987, Ser. No. 41,466
The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.
Int. Cl.[4] A61K *9/20, 31/70*
U.S. Cl. 514—777 1 Claim

1. In the method of tableting powders for therapeutic applications, wherein the powders are the product of an S-1 spray freezing process, for obtaining frozen droplets by spraying an aqueous solution of ingredients useful in therapeutic applications onto the surface of a moving bath of boiling perfluorocarbon liquid, followed by lyophilization of the droplets to dried powders suitable for tableting, the improvement comprising tableting the dried powders with the use of trehalose as tableting excipient and stabilizer.

4,762,858
SYNGAS CONVERSION TO OXYGENATES BY REDUCED YTTRIUM/LANTHANIDE/ACTINIDE-MODIFIED CATALYST
Dennis A. Hucul, and Rex R. Stevens, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 776,307, Sep. 16, 1985, abandoned. This application Oct. 31, 1986, Ser. No. 925,456
Int. Cl.[4] C07C *27/06*
U.S. Cl. 518—714 7 Claims

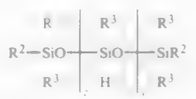
1. A process comprising contacting a mixture of carbon monoxide and hydrogen with a catalyst consisting of:
(1) a catalyst metal consisting a molybdenum in free or combined form;
(2) a cocatalyst metal selected from the group consisting of thorium, yttrium, lanthanum, gadolinium and praseodymium or mixtures thereof, in free or combined form;
under conditions, including a pressure of at least 500 psig, sufficient to form C_{1-5} alcohols in at least twenty percent CO_2 free carbon selectively.

4,762,859
LOW DENSITY SILICONE FOAM
Frank J. Modic, Scotia, and Richard A. Striker, Troy, both of N.Y., assignors to General Electric Company, Waterford, N.Y.
Filed Oct. 26, 1987, Ser. No. 113,023
Int. Cl.[4] C08J *9/02*
U.S. Cl. 521—82 48 Claims

1. A foamable composition comprising:
(a) 100 parts by weight of a vinyl-containing polysiloxane of the formula:



where R and R^1 are selected from substituted or unsubstituted hydrocarbon radicals of from 1 to 20 carbon atoms, such that the polymer contains from 0.0002 to 3% by weight vinyl and x varies such that the viscosity of the polymer varies from 100 to 1,000,000 centipoise at 25° C.;
(b) from 1 to 50 parts by weight of a hydride polysiloxane of the formula:



where R^2 is selected from the group consisting of independently, hydrogen, alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 1 to 8 carbon atoms, haloalkyl radicals of 3 to 8 carbon atoms and simultaneously, a single —O— to form a cyclic polymer and R^3 is selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 1 to 8 carbon atoms, and fluoroalkyl radicals of 3 to 8 carbon atoms, where the hydride polysiloxane has a hydrogen content varying from 0.3 to 1.6% by weight and z and y vary such that the polymer has a viscosity varying from 1 to 500 centipoise at 25° C.;
(c) a hydroxyl source selected from the group consisting of water, organic alcohol, hydroxylated siloxane, and combinations thereof in an amount to provide a molar ratio of from about 0.02/1 to about 5/1 of hydroxyl radicals to silicon-bonded hydrogen atoms of component (b);

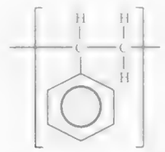
(d) from about 1 to about 250 parts per million of platinum catalyst; and
(e) a sufficient amount of surface treated filler having sufficient nitrogen on its surface to lower foam density.

4,762,860
ALCOHOL CONTROL OF LIGHTLY CROSSLINKED FOAMED POLYMER PRODUCTION
Chung P. Park, Pickerington, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 672,010, Nov. 16, 1984, Pat. No. 4,694,025. This application May 15, 1986, Ser. No. 863,628
Int. Cl.[4] C08J *9/14*
U.S. Cl. 521—88 5 Claims

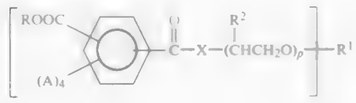
1. An expandable ethylene or styrene polymer composition comprising an ethylene or styrene polymer, a blowing agent, a crosslinking agent is selected from the group consisting of silane, azido silane, titanate and amino compounds which upon reaction with said ethylene or styrene polymer reversibly releases alcohol, and a sufficient amount of alcohol to control the degree of crosslinking of said ethylene or styrene polymer prior to activation of said blowing agent and foaming of said ethylene or styrene polymer.

4,762,861
TETRAHALOPHTHALATE ESTERS AS FLAME RETARDANTS FOR POLYSTYRENE RESINS
Joseph M. Bohen, King of Prussia, and Ronald F. Lovenguth, Doylestown, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Oct. 30, 1987, Ser. No. 115,211
Int. Cl.[4] C08J *9/14*
U.S. Cl. 521—97 11 Claims

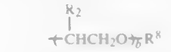
1. A flame retardant composition comprising
(i) a styrenic resin which is
a homopolymer of styrene having the following repeatable unit



wherein n is within the range of greater than 1 to about 3,000;
(ii) a flame retarding effective amount of a tetrahalophthalate ester flame retardant processing aid of the formula:

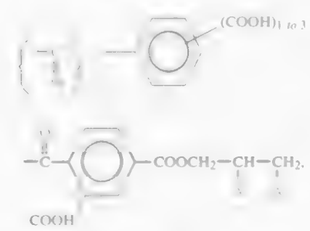


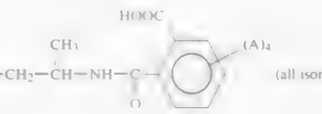
wherein:
(a) the ring can have all possible isomeric arrangements;
(b) R is selected from the group consisting of hydrogen, an alkyl or substituted alkyl of 1 to 30 carbons, hydroxyalkyl of 2 to 20 carbons, polyhydroxyalkyl of 3 to 10 carbons; and

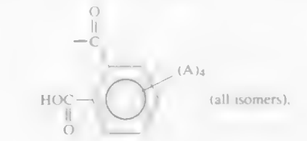


where R^8 is an alkyl or substituted alkyl of 1 to 18 carbons, and b is 1 to 50;
(c) R^1 is selected from the group consisting of hydrogen, an alkyl or substituted alkyl of 1 to 30 carbons, alkenyl or substituted alkenyl of 2 to 22 carbons,

where R^7 is an alkyl of 1 to 18 carbons; a polyhydroxyalkyl of 3 to 12 carbons;









(d) R^2 is independently selected from the class consisting of H and CH_3—;
(e) R^3, R^4, R^5, and R^6 are independently selected from the class consisting of H and an alkyl of 1 to 18 carbons;
(f) p is an integer of 0 to 50;
(g) q is an integer of 1 to 6;
(h) X is selected from O or NH; and
(i) A foamable is selected from Cl or Br; and
(iii) a liquid or gaseous blowing agent.

4,762,862
PROCESS FOR PREPARING HIGH MOLECULAR WEIGHT ACRYLIC POLYMERS
Akira Yada, Kusatsu; Shusaku Matsumoto, Kyoto; Yoshihiro Kawamori, Joyo; Yoshitugu Adachi, Kyoto, and Yoshio Hatakawa, Osaka, all of Japan, assignors to Dai-ichi Kogyo Seiyaku Co. Ltd., Kyoto, Japan
Filed Mar. 4, 1987, Ser. No. 21,647
Claims priority, application Japan, Apr. 4, 1986, 61-78921
Int. Cl.[4] C08F *2/50, 4/04, 20/34, 20/56*
U.S. Cl. 522—3 10 Claims

1. A process for preparing a particulate water-soluble acrylic polymer having a high molecular weight and an intrinsic viscosity of from 12 to 17 dl/g which comprises:
(a) adjusting an aqueous monomer solution containing a cationic vinyl monomer or a mixture of the cationic vinyl monomer and at least one other water-soluble vinyl mono-

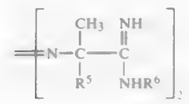
VOL 1093 ISS 2 AG 9 1988 UMI

mer to a monomer concentration of 50 to 80% by weight and a pH of 4 to 7,

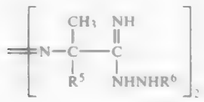
(b) adding one or more of non-ionic surfactants to the aqueous monomer solution in an amount of 0.001 to 1% by weight based on the total weight of the monomer,

(c) admixing the aqueous monomer solution with at most solution to at most 1 mg/liter,

(d) admixing the aqueous monomer solution with at most 0.6% by weight of an azoguanyl photopolymerization initiator and at most 0.03% by weight of at least one other photopolymerization initiator based on the total weight of the monomer, said azoguanyl photopolymerization initiator being at least one member selected from a group consisting of a compound of the formula:



a compound of the formula:



wherein R^5 is an alkyl group having 1 to 6 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms, and R^6 is hydrogen, and alkyl group having 1 to 6 carbon atoms or a cycloalkyl group having 3 to 6 carbon atoms, and their salts with a mineral acid, and said other photopolymerization initiator being a member selected from the group consisting of benzophenone, benzoin, a benzoin alkyl ether, anthraquinone, an acetophenone initiator, benzil and a thioxanthone initiator, and the ratio of said other photopolymerization initiator to said azoguanyl photopolymerization initiator being from 1/5 to 1/20 by weight,

(e) continuously feeding the aqueous monomer solution in the form of a layer having a thickness of 3 to 18 mm onto a moving support located in an atmosphere containing at most 1% by volume of oxygen,

(f) irradiating the layer of the aqueous monomer solution of the moving support with ultraviolet rays in at least two stages, the conditions of the first stage being a wavelength of 300 to 450 millimicrons, an irradiation time of 30 to 60 minutes and an intensity of 10 to 15 W/m^2, and the conditions of the second stage being a wavelength of 300 to 450 millimicrons, an irradiation time of 30 to 60 minutes and an intensity of 20 to 30 W/m^2,

(g) continuously taking out the produced polymer in the form of a rubber-like sheet having a thickness of 3 to 18 mm from the moving support,

(h) irradiating the polymer sheet with ultraviolet rays having a wavelength of 200 to 600 millimicrons for 1 to 6 minutes at an intensity of 1,000 to 2,000 W/m^2,

(i) breaking the polymer sheet to cubic pieces of 3 to 18 mm in length of a side by a roller cutter, while maintaining the polymer concentration at 50 to 85% by weight,

(j) pulverizing the cubic pieces to particles having a diameter of 0.3 to 3 mm by a vertical cutter, while maintaining the polymer concentration at 50 to 85% by weight, and

(k) drying the particles with hot air.

4,762,863

PHOTOPOLYMERIZABLE DENTAL COMPOSITION CONTAINING A HEXAFUNCTIONAL URETHANE METHACRYLATE BASED ON ISOCYANURIC ACID

Issao Sasaki, Saeki; Nobuhiro Mukai, Hiroshima, and Hitoshi Ige, Obtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1987, Ser. No. 84,096

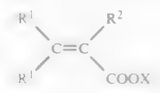
Claims priority, application Japan, Mar. 30, 1987, 62-077186

Int. Cl.[4] C08J *6/08*

U.S. Cl. 522—11 **8 Claims**

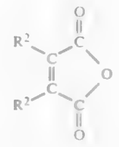
1. A photopolymerizable dental composition consisting essentially of

(A) a composite filler obtained by polymerizing at least one carboxylic monomer of the general formula



[I]

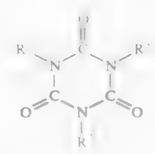
or



[II]

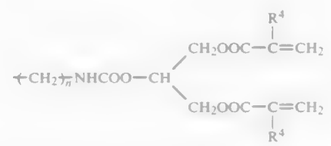
where each R^1 independently represents a hydrogen atom, an alkyl group of 1 to 15 carbon atoms, a —COOX group, a halogen atom, or a phenyl group or its derivative, each R^2 independently represents a hydrogen atom, an alkyl group of 1 to 15 carbon atoms, a halogen atom, or a phenyl group or its derivative, and X represents a hydrogen atom, an ammonium group or an alkali metal atom, with at least one radicalpolymerizable vinyl monomer in a polymerization system having an inorganic compound dispersed therein;

(B) a monomer mixture consisting of (i) 2,2-bis[4-(methacryloxyethoxy)phenyl]propane, (ii) at least one hexafunctional urethane (meth)acrylate of the general formula



[III]

where each R^3 represents



n is a whole number of 1 to 10, and each R^4 independently represents a hydrogen atom or a methyl group, and (iii) an ethylenic vinyl monomer diluent; and

(C) a photopolymerization initiator.

4,762,864

HIGH PERFORMANCE INDUCTION CURABLE TWO-COMPONENT STRUCTURAL ADHESIVE WITH NONSAGGING BEHAVIOR

Anil B. Goel, Worthington; Joseph G. Holehouse; Jeffrey P. Jones, both of Columbus, and Teresa DeLong, Marysville, all of Ohio, assignors to Ashland Oil Inc., Ashland, Ky.

Filed Jun. 19, 1986, Ser. No. 876,060

The portion of the term of this patent subsequent to Mar. 25, 2003, has been disclaimed.

Int. Cl.[4] C08K *3/22, 3/08;* **C08L** *13/00, 63/00*

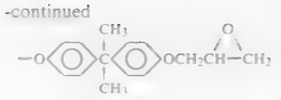
U.S. Cl. 523—428 **5 Claims**

1. A two component adhesive composition which is curable by induction heating which comprises a mixture of the components

(I) an epoxy resin component comprising (a) an epoxy resin, from 1 to 15% by weight of which is a flexible di- or tri-glycidyl ether of a poly(alkylene glycol), (b) from 1 to 15% by weight of the epoxy resin of a carboxylic acid terminated acrylonitrile-butadiene rubber and (c) from 2 to 50% by weight of an electromagnetic energy absorbing material selected from the group consisting of particulate, magnetizable iron, cobalt, nickel, alloys of nickel and iron, alloys of nickel and chromium, inorganic oxides of iron, inorganic oxides of nickel, carbonaceous materials and mixtures thereof, and

(II) a hardener component comprising (a) from 50 to 90% by weight of a poly(alkylene oxide) di- or tri-primary amine having a moleculare weight greater than 2000, (b) up to 20% by weight of a poly(alkylene oxide) di- or tri-primary amine and/or amido-amine having a molecular weight in the range of from 200 to 600, (c) up to 10% by weight of a compound selected from the group consisting of ethylene diamine, aminoethyl piperazine and di-ethanol amine, (d) from 2 to 15% by weight of a phenolic compound, (e) up to 15% by weight of an amine cure accelerator selected from the group consisting of tertiary amino group containing molecules and boron trifluoride-amine complexes and (f) from 20 to 60% by weight of an electromagnetic material selected from the group consisting of particulate, magnetizable iron, cobalt, nickel, alloys of nickel and iron, alloys of nickel and chromium, inorganic oxides of iron, inorganic oxides of nickel, carbonaceous materials and mixtures thereof.

-continued



where n would range from about an average of 1.5 to 4 or 5 or greater, wherein Additive A is of the general formula

and Y is selected from the group consisting of H, an akyl group of C_1–C_4, an alkylene group of C_2–C_3, an ethanol, propanol or isopropanol group, a 2–3 carbon ether group, and a C_1–C_3 haloalkyl group, said halo selected from the group consisting of being chloro or fluoro, wherein X is H or CH_3 and P is selected from the group consisting of moieties of polyhydroxybenzene compounds, substituted or unsubstituted ortho, meta and para aminophenols and aromatic diamines,

and wherein Additive B is a water soluble or dispersible polymer which was formed by the copolymerization of a first component which has at least 5% of its monomer constitutents being derived from a monomer selected from the group consisting of acrylamide and methacrylamide, and the balance being a second component of one or more vinyl monomers copolymerizable with said first component, thereby having yielded an amido copolymerizate,

said amido copolymerizate having been further condensed with formaldehyde to the extent of from 5% to 95% of the amide groups, said condensed amido copolymerizate having been still further condensed with a member selected from the group consisting of a polyhydroxy aromatic compound, an amino hydroxy aromatic compound, or a diamino aromatic compound, and

sufficient magnetic or pigment particles of a size suitable for dispersion as a film upon a substrate.

4,762,865

EPOXY COATINGS FOR COMPUTER HARD DISKS AND METAL COIL DECORATION AND PROTECTION

Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Continuation of Ser. No. 593,084, Mar. 26, 1984, Pat. No. 4,652,388, This application Feb. 17, 1987, Ser. No. 15,740

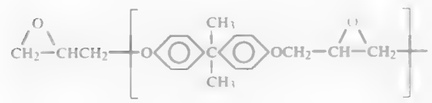
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.

Int. Cl.[4] C08K *3/20;* **C04B** *35/04*

U.S. Cl. 523—411 **26 Claims**

1. A water based dispersion system for coating particles selected from the group consisting of magnetic and pigment particles onto a substrate comprising:

water sufficient to form a dispersion, at least one adhesive plasticizer (Additive A), at least one adhesive polymer (Additive B), at least one surface active agent, an optional dispersing agent, at least one solid epoxy resin of the formula



4,762,866

LATEX ADHESIVE FOR BONDING POLYETHER URETHANE FOAM

Yen-Jer Shih, Somerset; Arthur B. Pruiksma, Chester, and Paul R. Mudge, Somerville, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 839,017, Mar. 12, 1986, abandoned. This application May 13, 1987, Ser. No. 50,259

Int. Cl.[4] C08L *63/02, 3/02;* **C09J** *3/16;* **B05D** *3/02*

U.S. Cl. 523—412 **19 Claims**

1. A two-part aqueous-based adhesive suitable for dry-bonding a polyether urethane foam to a rigid or semi-rigid substrate, the adhesive consisting essentially of as separate parts:

(a) an aqueous latex of an anionic emulsion polymer having a Tg of about 0° or less and consisting essentially of from about 10 to 30% of ethylene, about 40 to 80% of vinyl acetate, and about 4 to 10% of an ethylenically unsaturated monomer containing a carboxylic acid group, and from about 5 to 35% of a C_4–C_8-dialkyl maleate, percentages being by weight and totaling 100%; and

(b) an effective amount of a diepoxide or polyepoxide as a curing agent.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,867

CEMENT MORTAR AND CONCRETE WITH A REDUCED WATER ABSORPTION AND A METHOD FOR MANUFACTURE THEREOF

Per Flodin, Hovås; Olof Magnusson, Lerum, and Satish Chandra, Gothenburg, all of Sweden, assignors to Polyrand AB, Sovas, Sweden

Continuation of Ser. No. 668,150, Nov. 5, 1984, abandoned. This application Apr. 13, 1987, Ser. No. 37,055
Claims priority, application Sweden, Nov. 3, 1983, 8306039
Int. Cl.[4] C08K *3/00*
U.S. Cl. 524—5 9 Claims

1. A product comprising a member of the group consisting of cement mortar, concrete and mixtures of cement mortar and concrete having reduced water absorption and improved permanence and having a density of 2000–2500 kg/m^3, said product comprising:

0.2–10 weight % based on the weight of said product, of polymer particles in a disperse form wherein said polymer is formed from monomers consisting of

at least one hydrophilic monomer selected from the group consisting of acrylic acid, methacrylic acid, and acrylic amide; and

at least one hydrophobic monomer selected from the group consisting of styrene, alkyl esters of acrylic acid and alkyl esters of methacrylic acid;

wherein 1–15 weight % based on the total weight of the hydrophilic and hydrophobic monomers used is a methacrylate having an aliphatic side chain of 12 or more carbons.

4,762,868

COATED FRONT COPY PAPER

Adrian G. Wright, Devonport, Australia, assignor to North Broken Hill Limited, Burnie, Australia

Filed Jun. 13, 1988, Ser. No. 873,974
Claims priority, application Australia, Jun. 13, 1985, PH1016
Int. Cl.[4] B32B *9/04;* C08L *89/00*
U.S. Cl. 524—17 16 Claims

1. A method for pre-treatment of carboxylated soybean protein, characterized by the steps of

(a) adding carboxylated soybean protein to water in a mixer,

(b) continuing mixing to achieve an even dispersion,

(c) heating the dispersion to a temperature of 58°–65° C. while continuing mixing,

(d) adding sufficient ammonia solution to neutralize the carboxylic acid groups in the protein,

(e) maintaining the temperature in the range 58°–65° C. until the reaction is complete as indicated by pH, or by complete dissolution of the protein, and

(f) adding defoamer and mixing by gentle agitation.

4,762,869

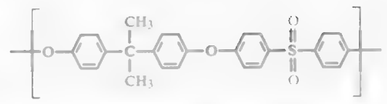
HIGH TEMPERATURE RESISTANT MOLDING MATERIALS

Gerhard Heinz, Weisenheim; Hermann Buchert, Bad Durkheim; Juergen Koch, Neuhofen; Georg N. Simon, Limburgerhof; Peter Ittemann, Ludwigshafen, and Hartmut Zeiner, Plankstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

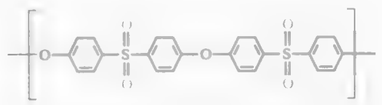
Filed Apr. 16, 1987, Ser. No. 38,896
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1986, 3614594
Int. Cl.[4] C08L *95/00*
U.S. Cl. 524—59 17 Claims

1. A high temperature resistant molding material, comprising:

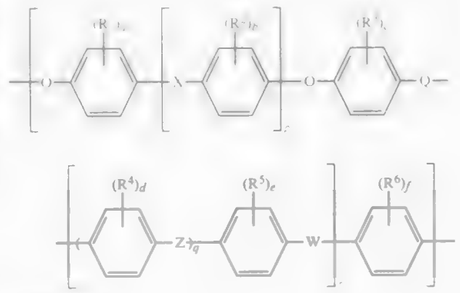
(A) 5–95 mol% of blocks having the structural unit I



(B) 5–95 mol% of blocks having the structural unit II



(C) 0–80 mol% of blocks having the structural unit III



wherein:

the weight average molecular weight of each of the blocks is within the range of 2,000 to 20,000;

X is —O—, —S, —SO_2—, —CO—, —CR^7R^8— or a chemical bond, wherein R^7 and R^8 are each independently a C_{1-6} alkoxy group, a C_{1-6} alkyl group, an aryl group or a hydrogen atom;

Q and W are each independently —CO— or —SO_2—;

Z is —O— or a chemical bond;

R^1, R^2, R^3, R^4, R^5 and R^6 are each independently a C_{1-6} alkyl group, a C_{1-6} alkoxy group, an aryl group, a chlorine atom or a fluorine atom;

p, q and r are each independently 0 or 1; and

a, b, c, d and e are each independently 0, 1, 2, 3 or 4 with the proviso that not both a and b are zero if X is —SO_2— or if R^7 and R^8 are both —CH_3.

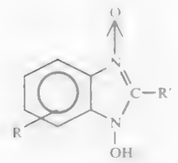
4,762,870

RUBBER COMPOSITIONS MODIFIED WITH HYDROXY-BENZ-IMIDAZOLE OXIDES

Daniel F. Graves, Clinton, Ohio, and Hans-Wilhelm Engels, Kerpen, Fed. Rep. of Germany, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 13, 1987, Ser. No. 37,485
Int. Cl.[4] C08K *5/34*
U.S. Cl. 524—93 28 Claims

1. A rubber composition comprising at least one rubber having an unsaturated carbon chain and a minor property-improving amount of at least one 1-hydroxy-benzimidazole 3-oxide compound of the formula



(I)

wherein R is hydrogen, or a, hydroxyl, lower acyl, lower hydrocarbyl, lower hydrocarbyloxy, lower hydrocarbylthio, carboxyl, cyano, amino, amide or —C(O)— lower hydrocarbyl group, and R′ is hydrogen, or a lower hydrocarbyl, lower hydrocarbyl amide, carboxamide carboxy acid, carboxy ester, or aryl group.

4,762,871

THERMOPLASTIC POLYESTER COMPOSITIONS HAVING IMPROVED RELEASE PROPERTIES

George R. Kriek, Bethel Park, Pa., assignor to Mobay Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1987, Ser. No. 5,728
Int. Cl.[4] C08L *67/02*
U.S. Cl. 524—94 1 Claim

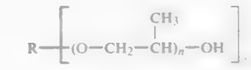
1. A thermoplastic molding composition having good mold release comprising

(a) polyethylene terephthalate;

(b) 15 to 50% by weight of glass fibers;

(c) a sufficient amount of 1,2-bis-(tetrabromophthalimide)-ethane to render the composition a rating of V–0 for $\frac{1}{8}$" specimen in accordance with UL-94; and

(d) an amount of a compound conforming to



wherein R is derived from glycerine and n is from 10 to 30, sufficient to impart to the composition improved mold release properties.

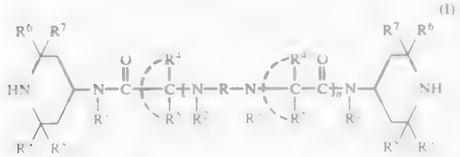
4,762,872

OLIGOMERIC LIGHT STABILIZERS WITH SUBSTITUTED PIPERIDINE ENDS

John T. Lai, Broadview Heights, and Pyong Nae-Son, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 793,823, Nov. 1, 1985, abandoned. This application Jul. 17, 1987, Ser. No. 74,831
Int. Cl.[4] C08K *5/34;* C07D *211/32*
U.S. Cl. 524—100 10 Claims

1. A poly(α-aminoacetamide) ("poly(AAMID") oligomer represented by the following structure:



(I)

wherein, R represents C_2–C_{18} alkylene, C_6–C_{18} aryl, C_7–C_{18} alkaryl or aralkyl, methylene-bis-C_6–C_{18} aryl, piperazinediyl or aryl substituted with Cl or Br, C_1–C_6 alkoxy, monocyano, or mononitro;

R^1, R^4 and R^5 represent a substituent selected from the group consisting of C_1–C_{20} alkyl, hydroxyalkyl, and N-alkylaminoalkyl, with R^4 and R^5 in combination being cyclizable to form a 5- to 8-membered alicyclic ring; and, in addition, only R^1 may be H;

R^2 and R^3 represent H or C_1–C_{18} alkyl;

R^6, R^7, R^8, and R^9 independently represent C_1–C_{24} alkyl, and C_4–C_7 polymethylene which are cyclizable forming a spiro cycloalkylene substituent with the C atom of the piperidine ring; and, n is an integer in the range from 2 to about 18

4,762,873

POLYCARBONATE RESIN COMPOSITION

Masayoshi Miyauchi, and Osamu Ohara, both of Matsuyama, Japan, assignors to Teijin Chemicals, Ltd., Tokyo, Japan

Filed Jun. 12, 1986, Ser. No. 873,782
Claims priority, application Japan, Jun. 14, 1985, 60-128228
Int. Cl.[4] C08K *5/10, 5/51, 5/52*
U.S. Cl. 524—128 7 Claims

1. A polycarbonate resin composition comprising a blended mixture of

(A) 100 parts by weight of a polycarbonate resin having a viscosity average molecular weight of from about 13,000 to about 18,000,

(B) 0.01 to 0.1 part by weight of a partial ester of a monobasic fatty acid having 10 to 22 carbon atoms with a polyhydric alcohol having 2 to 10 carbon atoms,

(C) 0.001 to 0.01 part by weight of trimethyl phosphate, and

(D) 0.00001 to 0.002 part by weight, calculated as phosphorus atoms, of a phosphite ester having 9 to 60 carbon atoms.

4,762,874

THERMOPLASTIC MOLDING MATERIALS

Juergen Hambrecht, Heidelberg; Karl H. Illers, Otterstadt; Adolf Echte, and Johann Swoboda, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 682,069, Dec. 17, 1984, abandoned. This application Mar. 5, 1986, Ser. No. 837,646
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1983, 3346303
The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.
Int. Cl.[4] C08K *5/51;* C08L *71/04*
U.S. Cl. 524—151 7 Claims

1. A thermoplastic molding material which contains a mixture of from 95 to 5% by weight of Component I which is a polyphenyl ether and

from 5 to 95% by weight of Component II which is a copolymer consisting of

(A_1) from 85 to 99 parts by weight of a monovinyl aromatic monomer, and

(A_2) from 1 to 15 parts by weight of an alkyl methacrylate where alkyl is of not more than 8 carbon atoms with 1 to 18 parts by weight of

Component III, which is

(B) an elastomer component in the form of a graft copolymer which consists of from 10 to 50 parts by weight of at least one vinyl-aromatic monomer of not more than 12 carbon atoms, and from 0.1 to 25 parts by weight of at least one acrylate, methacrylate, acrylonitrile, methacrylic acid or maleic anhydride, as the grafted shell, on 50 to 90 parts by weight of an elastomeric grafting base having a glass transition temperature of ≦0° C. the sum of the number of parts by weight of (A_1), (A_2) and B being 100.

3. A thermoplastic molding material as defined in claim 1, wherein component I is employed in an amount of from 30 to 70% and component II in an amount of from 70 to 30%.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,875

WATER BASED PRINTING INKS FOR PLASTIC AND METAL SURFACES

Marvin H. Gold, 5050 Dory Way, Fair Oaks, Calif. 95628

Continuation-in-part of Ser. No. 593,084, Mar. 26, 1984, Pat. No. 4,652,388. This application Feb. 17, 1987, Ser. No. 15,741
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] C08J 3/20
U.S. Cl. 524—248 26 Claims

1. A water based dispersion system for coating non-magnetic pigment particles onto a substrate comprising:

water sufficient to form a dispersion, at least one adhesive plasticizer (Additive A), at least one adhesive polymer (Additive B), at least one surface active agent, and optionally a dispersing agent, at least one polymeric latex capable of binding pigment particles into a coating, wherein Additive A is of the general formula

$$Y—CO—NX—CH_2—Q$$

and Y is selected from the group consisting of H, an akyl group of C_1–C_4, an alkylene group of C_2–C_3, an ethanol, propanol or isopropanol group, a 2–3 carbon ether group, and a C_1–C_3 haloalkyl group, said halo selected from the group consisting of being chloro or fluoro, wherein X is H or CH_3, and Q is selected from the group consisting of moieties of polyhydroxybenzene compounds, substituted or unsubstituted ortho, meta and para aminophenols and aromatic diamines,

and wherein Additive B is a water soluble or dispersible polymer which was formed by the copolymerization of a first component which has at least 5% of its monomer constitutents being derived from a monomer selected from the group consisting of acrylamide and methacrylamide, and the balance being a second component of one or more vinyl monomers copolymerizable with said first component, thereby having yielded an amido copolymerizate,

said amido copolymerizate having been further condensed with formaldehyde to the extent of from 5% to 95% of the amide groups, said condensed amido copolymerizate having been still further condensed with a member selected from the group consisting of a polyhydroxy aromatic compound, an amino hydroxy aromatic compound, or a diamino aromatic compound, and

sufficient non-magnetic pigment particles of a size suitable for forming a dispersion, and compatible with the said polymeric latex.

4,762,876

TFE-FREE SEALANT COMPOSITION

James L. Bunyan, Akron, Ohio, assignor to Cajon Company, Macedonia, Ohio

Continuation-in-part of Ser. No. 928,821, Nov. 10, 1986, abandoned. This application Aug. 13, 1987, Ser. No. 84,912
Int. Cl.[4] C08K 5/10
U.S. Cl. 524—310 19 Claims

1. A TFE-free sealant composition consisting essentially of an admixture of at least one polyolefin resin in particulate form, magnesium oxide, a metal salt of a fatty acid, and a liquid carrier selected from the group consisting of non-toxic plasticizers and mixtures of two or more such plasticizers, said admixture having a viscosity of at least 100,000 centipoise, and wherein said admixture contains, in parts by weight, from about 15 to 25 percent polyolefin, said polyolefin having particles with an average diameter in the range of about 0.005 to about 0.03 inches, from about 4 to about 6 percent of the metal salt of a fatty acid, from about 10 to 18 percent magnesium oxide and from about 53 to about 70 percent plasticizer; said admixtures containing not more than 10 percent other additives.

4,762,877

POLYOLEFINIC ELASTOMER COMPOSITIONS, PRODUCTION PROCESS AND ARTICLES OBTAINED FROM SAID COMPOSITIONS

Alain Heilbrunn, Paris, France, assignor to Societe Chimique Des Charbonnages S.A., France

PCT No. PCT/FR85/00362, § 371 Date Aug. 13, 1986, § 102(e) Date Aug. 13, 1986, PCT Pub. No. WO86/03761, PCT Pub. Date Jul. 3, 1986
PCT Filed Dec. 12, 1985, Ser. No. 905,342
Claims priority, application France, Dec. 14, 1984, 8419113
Int. Cl.[4] C08J 3/24; C08K 3/22
U.S. Cl. 524—432 11 Claims

1. A polyolefinic elastomer composition comprising:

(a) at least one terpolymer (A) containing repeat units derived from ethylene, repeat units derived from maleic anhydride, and repeat units derived from at least one ester of acrylic or methacrylic acid;

(b) at least one unsaturated polyolefin elastomer comprising a terpolymer (B) of ethylene with at least one alpha-olefin containing from 3 to 6 carbon atoms and at least one diene;

(c) at least one sulfur containing vulcanizing agent;

(d) at least one vulcanization activator for the elastomer selected from the group consisting of zinc dithiocarbamates, tellurium dithiocarbamates, alkyl benzothiazylsulphonamides, and alkylthiuram sulfides; and

(e) a reinforcing filler, the composition having a Shore hardness of at least 80.

4,762,878

POLYMER COMPOSITION AND THE USE THEREOF

Masami Takeda, Otake, and Tsuneaki Muro, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

PCT No. PCT/JP86/00259, § 371 Date Jan. 16, 1987, § 102(e) Date Jan. 16, 1987, PCT Pub. No. WO86/07079, PCT Pub. Date Dec. 4, 1986
PCT Filed May 21, 1986, Ser. No. 22,446
Claims priority, application Japan, May 21, 1985, 60-107048
Int. Cl.[4] C08K 5/011
U.S. Cl. 524—490 3 Claims

1. A polymer composition comprising:

(A) 15 to 40% by weight of a hydrogenated product of a block copolymer comprising a vinyl aromatic compound (a_1) and a conjugated diene compound (a_2);

(B) 4 to 30% by weight of an isopropenyltoluene polymer comprising meta-isopropenyltoluene as the main constituting unit; and

(C) 40 to 80% by weight of a compound selected from the group consisting of α-olefin polymers (c_1) having a number average molecular weight ranging from 250 to 5000 and squalane (c_2); the total amount of the components (A), (B) and (C) being 100% by weight.

4,762,879

SINGLE-COMPONENT, STORAGE-STABLE DIORGANOPOLYSILOXANE CVE COMPOSITIONS

Michel Letoffe, Sainte Foy les Lyon, and Pierre-Michel Peccoux, Lyons, both of France, assignors to Rhone-Poulenc Chimie, Courbevoie, France

Filed Apr. 28, 1987, Ser. No. 43,422
Claims priority, application France, Apr. 28, 1986, 86 06366
Int. Cl.[4] C08K 5/34
U.S. Cl. 524—720 11 Claims

1. A single-component, storage-stable organopolysiloxane cold vulcanizable elastomeric composition of matter, comprising:

(i) 100 parts of at least one diorganopolysiloxane polymer of the formula:

$$R^2{}_{3-a}R^1{}_aSi(OSiR_2)_rSiR^1{}_aR^2{}_{3-a} \quad (II)$$

in which each R, which may be identical or different, is a

hydrocarbon radical containing from 1 to 10 carbon atoms, or a substituted such hydrocarbon radical bearing at least one halogen atom or cyano group substituent, each R^1, which may be identical or different, is a C_1–C_{10} hydrocarbon radical, each R^2, which may be identical or different, is an alkoxy or polyalkoxy radical of the formulae ZO or ZOEO, in which Z is a C_1–C_4 alkyl radical, E is a straight or branched chain C_2–C_4 alkylene radical, a is zero or 1 and the symbol r is a number such that the polymer of the formula (II) has a viscosity of from 500 to 1,000,000 mPa.s at 25° C.;

(ii) 0 to 15 parts of at least one polyalkoxysilane of the formula:

$$R^1{}_aSiR^2{}_{3-a} \quad (III)$$

in which R^1, R^2 and a are as defined above;

(iii) 0 to 250 parts of inorganic filler material;

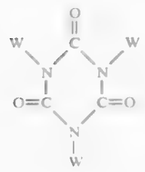
(iv) 0.001 to 3 parts of a condensation catalyst;

(v) 0.001 to 15 parts of at least one amino compound bearing at least one primary or secondary amine group comprising an organic amine having a pKb of less than 5 in aqueous media, or an aminoorganosilane or aminoorganopolysiloxane, said aminoorganosilane or aminoorganopolysiloxane bearing, per molecule:

(a) at least one C_3–C_{15} organic radical bonded to the silicon atom by an SiC bond and bearing at least one amino group, and

(b) at least one C_1–C_5 alkoxy radical or a C_3–C_6 alkoxyalkyleneoxy radical; and

(vi) an effective stabilizing amount of at least one isocyanurate of the formula:



in which W is a radical $(CH_2)_n—N=C=O$ and n is an integer of from 1 to 12.

4,762,880

WATER-BASED THERMOFORMING ADHESIVES

Pak T. Leung, Granger, Ind., assignor to Uniroyal Plastics Co., Inc., Mishawaka, Ind.

Filed May 5, 1987, Ser. No. 46,598
Int. Cl.[4] C08G 18/30
U.S. Cl. 524—853 25 Claims

1. An adhesive forming composition comprising:

(a) an aqueous aromatic polyurethane emulsion or dispersion comprising a polyurethane compound of repeating urethane subunits, each having at least one aromatic substituent associated therewith; and

(b) an effective amount of a cross-linking agent which is water-dispersible and stable in the presence of water yet being able to induce cross-linking of the polyurethane at room temperature at a rate sufficient to permit the composition to form an adhesive having suitable ultimate bond strength and green strength;

said emulsion or dispersion having a sufficient solids content to enable the resultant adhesive to join and hold components together.

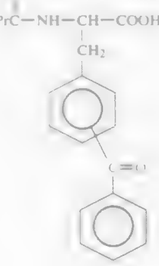
4,762,881

PHOTOREACTIVE BENZOYLPHENYLALANINES AND RELATED PEPTIDES

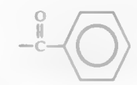
James C. Kauer, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 9, 1987, Ser. No. 1,874
Int. Cl.[4] C08F 283/00; C07C 101/42; C07K 1/04
U.S. Cl. 525—54.11 17 Claims

1. A benzoylphenylalanine having the formula:



wherein



is in the m or p position; and Pr is a protecting group which is easily cleavable in the presence of a peptide bond by a mild acid or base.

4,762,882

MODIFIED POLYOLEFIN RESIN AND A COMPOSITION CONTAINING THE SAME

Shigeaki Okano, Atsugi; Katsuhiko Hayashi, Machida; Yoshiteru Sakurazawa, Kawasaki, and Yoshinori Suga, Machida, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Jan. 26, 1986, Ser. No. 878,660
Claims priority, application Japan, Jul. 8, 1985, 60-149823
Int. Cl.[4] C08F 255/08, 255/10; C08L 51/06, 23/00
U.S. Cl. 525—74 4 Claims

1. A modified polyolefin resin, which consists essentially of:

(a) a copolymer of ethylene and an α-olefin of at least 4 carbon atoms, said copolymer having a density in the range of from 0.890 to 0.910 g/cm^3, a ratio of the weight-average molecular weight (Mw) to the number-average molecular weight (Mn) of Mw/Mn=2 to 15, and a product of the melt tension (g) and the melt index (g/10 min) of the molten copolymer measured at 160° C. of no more than 4; and

(b) an unsaturated carboxylic acid or derivative thereof grafted on said ethylene copolymer in an amount of from 0.01 to 3% by weight.

4,762,883

SOLUTIONS OF POLYMERS IN OXAZOLINES AND POLYMERIZATES THEREOF

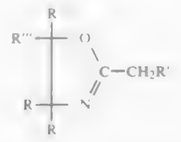
Anil Goel, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 6, 1985, Ser. No. 730,613
Int. Cl.[4] C08L 79/00
U.S. Cl. 525—113 16 Claims

1. A solution comprising a polymer which is not reactive with oxazolines selected from the group consisting of polyes-

VOL 1093 ISS 2 AG 9 1988 UMI

ters, polyethers, polysulfones, polyamides, polycarbonates, polyphenylene oxides, styrene-acrylonitrile copolymers, polyoxazolines, polyacrylates, and polyurethanes in a liquid oxazoline having formula I or formula II or both



wherein R and R''' independently represent hydrogen, an alkyl group having from 1 to 10 carbon atoms or a hydroxy alkyl group having from 1 to 10 carbon atoms, R' represents hydrogen, an alkyl group having from 1 to 19 carbon atoms, an aryl group having from 6 to 12 carbon atoms, or a hydroxy alkyl group having from 1 to 19 carbon atoms, and R'' represents an alkylene group having from 1 to 12 carbon atoms or an arylene group having from 6 to 12 carbon atoms in which said polymer is present in from about 10 to 50% by weight of the solution and which solution also contains an additive selected from the group consisting of polyisocyanates, polycarboxylic acids, carboxylic acid anhydrides, polyphenolic compounds containing two or more phenolic hydroxyl groups, thiols, acrylic acids and polyepoxides.

4,762,884

PROCESS FOR THE PRODUCTION OF RADIATION-CROSSLINKED THERMOPLASTIC POLYURETHANES

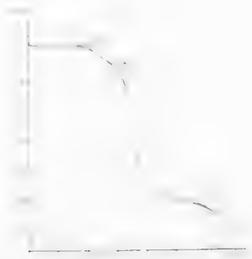
Wilhelm Goyert; Jürgen Winkler, both of Leverkusen; Hermann Perrey, Krefeld, and Herbert Heidingsfeld, Frechen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 20, 1987, Ser. No. 40,428

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1986, 3613790

Int. Cl.[4] C08G *18/40*

U.S. Cl. 525—28 **8 Claims**



1. A process for the production of polyurethanes suitable for thermoplastic processing comprising mixing

I. at least 75% by weight of preformed thermoplastic polyurethane elastomers, or of a blend of

(A) substantially bifunctional, compound essentially containing two Zerewitinoff-active hydrogen atoms per molecule and having a molecular weight of from 400 to 20,000,

(B) substantially bifunctional chain-extending agents selected from the group consisting of diols and diamines, having a molecular weight of from 32 to 399 and

(C) organic diisocyanates,

wherein the molar ratio of the sum of (A) and (B) to the diisocyanates (C) is from 0.9 to 1.1, and optionally

(D) which is at least one member selected from the group consisting of stabilizers, lubricants and other known additives and excluding peroxides and polymerization initiators which decompose into radicals under the effect of actinic light, with

II. (E) from 4 to 24% by weight of at least one monomeric acrylate and/or methacrylate compound which is characterized in that it is predominantly free of hydroxyl groups and predominantly nonincorporable and is derived from the corresponding acid and an aliphatic, cycloaliphatic or araliphatic monoalcohol containing at least six carbon atoms in the alcohol residue as crosslinking agent, and

III. (F) from 0.01 to 3% by weight of a polymerization inhibitor and/or an antioxidant

by adding said II and III to said I before complete formation of the highly polymeric polyurethane or to the melt of preformed polyurethane elastomer at a temperature below 230° C. and cooling the mixture to a temperature below 130° C. in less than 5 minutes in continuous extruders and optionally granulating the resulting mixture.

4,762,885

NEOCARZINOSTATIN DERIVATIVES AND A PROCESS FOR MANUFACTURING THE SAME

Hiroshi Maeda, 631-3, Aza-Tamukae, Hotakubohon-Machi, Kumamoto City, Kumamoto Pref.; Ryunosuke Kanamaru; Nakao Ishida, both of Sendai; Toshihiko Yoshitake, Kurashiki, and Minoru Ueda, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki; Yamanouchi Pharmaceutical Co., Ltd.; Kayaku Antibiotics Research Co., Ltd., both of Tokyo and Hiroshi Maeda, Kumamoto, all of, Japan

Continuation of Ser. No. 749,679, Jun. 28, 1985, abandoned, which is a continuation of Ser. No. 636,485, Aug. 1, 1984, abandoned. This application Sep. 25, 1986, Ser. No. 911,456

Claims priority, application Japan, Aug. 8, 1983, 58-145419

Int. Cl.[4] A61K *31/785;* **C08F** *8/32*

U.S. Cl. 525—54.1 **19 Claims**

1. A substantially pure neocarzinostatin derivative having the formula (A):

(SMA)-(NCS)-(SMA) (A)

wherein (NCS) is a divalent neocarzinostatin residue and (SMA) comprises the monovalent residue of a styrene-maleic acid copolymer having a weight-average molecular weight of from 800 to 2,500, said (NCS) residue being bonded to said (SMA) residues via amide linkages formed between primary amino groups of the neocarzinostatin molecule and carbonyl groups of the styrene-maleic acid copolymer.

4,762,886

WEATHER RESISTANT THERMOPLASTIC RESIN COMPOSITION

Mikio Hirai; Yoshiaki Nishikubo; Tomio Yoshida, all of Niihama, and Tsuneo Ochi, Ehime, all of Japan, assignors to Sumitomo Naugatick Co., Ltd., Osaka, Japan

Filed May 5, 1987, Ser. No. 47,543

Claims priority, application Japan, May 18, 1984, 59-101198; Dec. 13, 1984, 59-263642

Int. Cl.[4] C08L *51/04, 51/06, 25/12, 25/14*

U.S. Cl. 525—70 **4 Claims**

1. A weather resistant thermoplastic resin composition which comprises (A) a graft polymer coprising a rubber (A-1) produced by the use of monomers not comprising any conjugated diene, said rubber (A-1) being chosen from a copolymer of ethylene and propylene, a terpolymer of ethylene, propylene and a non-conjugated diene, a copolymer of ethylene and vinyl acetate, an alkyl acrylate or methacrylate polymer and a chlorinated polyethylene and (A-2) at least two kinds of monomers chosen from aromatic vinyl compounds, vinyl cyanide compounds and unsaturated carboxylic acid alkyl esters grafted thereon and (B) a terpolymer consisting of unsubstituted styrene, vinyl cyanide compounds and unsaturated carboxylic acid alkyl esters, the weight proportion of the graft polymer (A) and the terpolymer (B) being from 10:90 to 90:10, wherein the amounts of styrene, the vinyl cyanide compounds and the unsaturated carboxylic acid alkyl esters in the terpolymer (B) are defined to be 3 to 65% by weight, 2 to 35% by weight and 3 to 95% by weight, respectively.

4,762,887

PROCESS FOR PREPARING ACRYLATE-FUNCTIONAL ORGANOPOLYSILOXANE-URETHANE COPOLYMERS

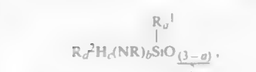
Roy M. Griswold, Hudson, Mich., and Douglas G. Vanderlaan, Jacksonville, Fla., assignors to Wacker Silicones Corporation, Adrian, Mich.

Filed Jan. 15, 1987, Ser. No. 3,512

Int. Cl.[4] C08F *2/46*

U.S. Cl. 522—99 **11 Claims**

1. A process for preparing radiation polymerizable acrylate-functional organopolysiloxane-urethane copolymers which comprises reacting an aminofunctional polysiloxane fluid having at least one unit of the formula



where R is a divalent radical selected from the group consisting of a saturated divalent hydrocarbon radical having up to 20 carbon atoms, a divalent hydrocarbonoxy radical in which the oxygen atom is in the form of an ether linkage and an unsaturated divalent hydrocarbon radical having from 2 to 20 carbon atoms, R^1 is a monovalent hydrocarbon radical having from 1 to 20 carbon atoms, R^2 is a radical selected from the group consisting of a monovalent hydrocarbon radical having from 1 to 20 carbon atoms and a radical of the formula

CH_2CH_2X,

where X is selected from the group consisting of $COOR^3$, $CONR^3$, CN and SO_2R^3, R^3 is a monovalent hydrocarbon radical having from 1 to 20 carbon atoms, a is 0, 1 or 2, b is 1, 2 or 3, c is 1, 2, 3 or 4 and d is 0, 1, 2 or 3, with the proviso that c equals b−d+1 with an acrylated urethane oligomer in a mole ratio of acrylate groups to amine groups of from 0.75 to 10 in the presence of an organic solvent at a temperature of from 25° to 150° C., in which the acrylated urethane oligomer is obtained by reacting an organic compound having at least two active hydrogen groups with an excess of an organic polyisocyanate having at least two —NCO groups per molecule to form a urethane prepolymer having at least two —NCO groups per molecule and thereafter the —NCO containing prepolymer is reacted with a hydroxy-containing compound selected from the group consisting of an acrylic compound, a methacrylic compound, and an acrylamide compound in a mole ratio of —NCO group to OH group of from 0.5:1 to 1:0.5 at a temperature of from 25° to 150° C.

4,762,888

HOT MELT PRESSURE SENSITIVE ADHESIVES

Robert L. Sun, Stanhope, and James F. Kenney, Mendham, both of N.J., assignors to Johnson & Johnson Products, Inc., New Brunswick, N.J.

Continuation-in-part of Ser. No. 634,716, Jul. 26, 1984, abandoned. This application Jan. 12, 1987, Ser. No. 2,316

Int. Cl.[4] C08L *33/08, 33/10, 75/04*

U.S. Cl. 525—125 **2 Claims**

1. A hot melt pressure sensitive adhesive composition suitable for application to human skin, which by means of reversible hydrogen bond formation and dissociation possesses the reversible properties of both (i) strong cohesive strength at ambient temperature, and also (ii) a melt viscosity at elevated coating temperatures such that it can be used in hot melt coating equipment, said composition comprising:

(A) from about 70 to 85 parts by weight of an acrylic copolymer having a low Tg in the range of from −20° C. to −80° C. comprising:

(a) from 85 to 95 parts by weight of an alkyl acrylate monomer wherein the alkyl group contains 4 to 12 carbon atoms and

(b) from 5 to 15 parts by weight of 1(2)-methyl-3-oxa-4-oxo-5-aza-nonyl methacrylate

(B) from about 15 to 30 parts by weight of an acrylic copolymer having a high Tg in the range of from 10° C. to 40° C. comprising:

(a) from about 85 to 95 parts by weight of an alkyl methacrylate monomer wherein the alkyl group contains 1 to 12 carbon atoms and

(b) from about 5 to 15 parts by weight of 1(2)-methyl-3-oxa-4-oxo-5-aza-nonyl methacrylate.

4,762,889

WATER ABSORPTIVE RESIN COMPOSITIONS AND PROCESS FOR PRODUCING THE SAME

Takeo Shimada; Noriyuki Okada; Takashi Fujimoto, and Shubei Yada, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed May 20, 1986, Ser. No. 865,050

Claims priority, application Japan, May 20, 1985, 60-107942

Int. Cl.[4] C08L *33/02, 43/00*

U.S. Cl. 525—201 **5 Claims**

1. A water absorptive resin composition which is a composite material comprising 95 to 5% of a crosslinked carboxylate-containing water absorptive resin and 5 to 95% of a glycidyl group-containing polyolefin, wherein the percentages are based on the total weight of both components, said carboxylate-containing water absorptive resin being an alkali metal salt of a crosslinked polyacrylic acid in which 40 to 100% of carboxyl groups have been converted into carboxylate groups, said crosslinked polyacrylic acid consisting essentially of acrylic acid and a copolymerizable crosslinking monomer selected from the group consisting of divinyl compounds and diacrylic compounds, said glycidyl group-containing polyolefin having a glycidyl content of 0.1 to 20% by weight, and said composite material being produced by the process comprising melt kneading the alkali metal salt of the crosslinked polyacrylic acid and the glycidyl group-containing polyolefin at the melting point of the glycidyl group-containing polyolefin or higher temperature.

4,762,890

METHOD OF GRAFTING MALEIC ANHYDRIDE TO POLYMERS

Chad A. Strait, Lake Jackson; Gerald M. Lancaster, Freeport, and Ricky L. Tabor, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1986, Ser. No. 905,099

Int. Cl.[4] C08F *255/02*

U.S. Cl. 525—257 **11 Claims**

1. A method for grafting maleic anhydride to polymers, comprising the steps of:

melting an ethylene polymer by heating and shearing the polymer in a co-rotating, twin-screw extruder;

injecting maleic anhydride and a free radical initiator into a polymer filled, pressurized section of the extruder; and

mixing the polymer and the maleic anhydride in the extruder for sufficient time to graft the maleic anhydride to the polymer.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,891

SCORCH-RESISTANT, CURABLE FLUORINATED ELASTOMER

Loren D. Albin, Oakdale, and Robert E. Kolb, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 13, 1987, Ser. No. 14,300
Int. Cl.[4] C08L 27/22
U.S. Cl. 525—276 25 Claims

1. A fluorinated elastomer composition comprising a free-radically curable, fluorinated elastomer gum and an aliphatically unsaturated, diorganosulfur compound in which at least one of the organo groups contains a β,γ-aliphatically unsaturated moiety having at least one hydrogen atom bonded to the α carbon atom of said moiety, said carbon atom being bonded to a sulfur atom of the compound.

4,762,892

POLYMERS MODIFIED BY A POLYMER-ANALOGOUS REACTION

Horst Koch, Grosskarlbach, and Walter Ziegler, Edingen-Neckarhausen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 28, 1987, Ser. No. 7,471
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1986, 3602472
Int. Cl.[4] C08F 8/00, 8/44, 210/02, 220/06
U.S. Cl. 525—279 22 Claims

1. A polymer modified by a polymer-analogous reaction in the acid form or in the form of its salts, which consists essentially of

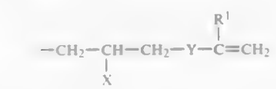
(A) a copolymer of

(a_1) from 30 to 70 parts by weight of ethylene,

(a_2) from 5 to 40 parts by weight of acrylic acid or methacrylic acid or a mixture of these, and

(a_3) from 5 to 50 parts by weight of one or more compounds selected from the group consisting of vinyl esters, vinyl ethers, acrylates, methacrylates, acrylamides and methacrylamides, and

(B) side radicals of the formula I,



I

where X is hydroxyl, amino or mercapto, Y is an ester, amide, ether or C_1–C_{10}-alkylene group and R^1 is hydrogen or methyl, which side radicals B have been introduced into the said copolymer A by the reaction of one or more of the carboxyl groups of the said copolymer A with an oxiran-2-yl, thiiran-2-yl or aziridin-2-yl compound to yield ester groups containing the said side radicals B.

4,762,893

BLOCK COPOLYMERS OF OLEFINES WITH VINYL AROMATIC MONOMERS

Roberto Nocci; Giancarlo Attalla, both of Novara; Luciano Del Giudice, Milan, all of Italy; Robert E. Cohen, Jamaica Plain, Mass., and Floriana Bertinotti, Novara, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 513,630, Jul. 14, 1983, abandoned. This application Dec. 23, 1985, Ser. No. 812,376
Claims priority, application Italy, Jul. 14, 1982, 22386 A/82
Int. Cl.[4] C08L 297/08
U.S. Cl. 525—323 2 Claims

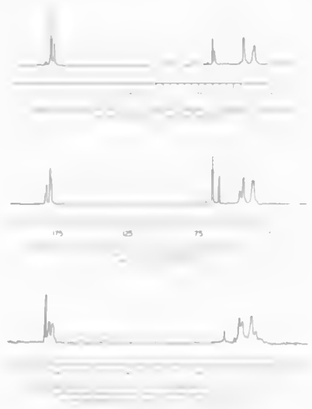
1. Block copolymers of polypropylene and vinyl aromatic monomers, consisting of structured polymeric blocks of stereoregular polypropylene and polystyrene, respectively, each block being made of at least 50 like monomeric units each, and which block copolymer consists of 30 to 70% of said polypropylene and from 70 to 30% of said vinyl aromatic units.

4,762,894

SULFOMETHYLAMIDE-CONTAINING POLYMERS

Dodd W. Fong, Naperville, and David J. Kowalski, La Grange Park, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Continuation of Ser. No. 804,036, Dec. 3, 1985, abandoned. This application Jan. 12, 1987, Ser. No. 4,841
Int. Cl.[4] C08F 8/34
U.S. Cl. 525—344 1 Claim



1. A method of reacting polyacrylamide with formaldehyde and bisulfite to produce sulfomethyl polyacrylamide wherein the initial pH of the reaction mixture is between about 3 and 8, and the reaction temperature is maintained from about 110° C. to 250° C.

4,762,895

PROCESS FOR THE PRECERAMIC METALLOPOLYSILANES AND THE POLYMERS THEREFROM

Grish Chandra, and Gregg A. Zank, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 10, 1987, Ser. No. 83,119
Int. Cl.[4] C08F 283/00
U.S. Cl. 525—474 62 Claims

1. A method of preparing a halogen-containing metallopolysilane, which method comprises treating a mixture containing 90 to 99.9 weight percent organohalogendisilanes and 0.1 to 10 weight percent reactive metal compound, where the reactive metal compound contains a metal M selected from the group consisting of aluminum, boron, chromium, lanthanum, molybdenum, neodymium, niobium, samarium, tantalum, titanium, tungsten, vanadium, yttrium, and zirconium, with 0.001 to 10 weight percent of a rearrangement catalyst at a temperature of 100° to 340° C. while distilling by-produced volatile materials until there is produced a halogen-containing metallopolysilane composed of $[R_2Si]$, [RSi], and [M] units where R is an alkyl radical containing 1 to 4 carbon atoms and M is a metal selected from the group consisting of aluminum, boron, chromium, lanthanum, molybdenum, neodymium, niobium, samarium, tantalum, titanium, tungsten, vanadium, yttrium, and zirconium, where the halogen-containing metallopolysilane contains 0 to 59.9 mole percent of $[R_2Si]$ units, 40 to 99.9 mole percent of [RSi] units, and 0.1 to 10 mole percent of [M] units, and where the other bonds on silicon are attached to other silicon atoms and halogen atoms.

4,762,896

PROCESS FOR PREPARING AROMATIC POLYCARBONATE OF IMPROVED MELT PROCESSABILITY WITH FATTY ACID

Daniel W. Fox, Pittsfield; Andrew A. Martin, and Edward N. Peters, both of Lenox, all of Mass., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 687,010, Dec. 28, 1984, abandoned. This application Feb. 9, 1987, Ser. No. 12,733
Int. Cl.[4] C08G 63/62
U.S. Cl. 525—462 15 Claims

1. A process for enhancing the melt flow of a preformed high molecular weight aromatic polycarbonate resin, comprising mixing with the resin, after it has been fully formed, an intrinsic viscosity reducing amount of a polymer chain cleaving agent comprising one or more fatty acids having the formula



in which R^1, R^2, R^3, R^4 and R^5 are the same or different and are hydrogen or are selected from the group consisting of fluorine, chlorine, bromine and iodine, and r is an integer from 7 to 24, and heating the mixture at a temperature greater than about 280° C. for a time sufficient to reduce the intrinsic viscosity of the aromatic polycarbonate by at least 0.02 deciliters per gram as measured in solution in chloroform at 25° C.

4,762,897

PROCESS FOR RECOVERING A MIXTURE OF UNREACTED ETHYLENE AND PROPYLENE

Tadashi Asanuma; Yoshiyuki Funakoshi, both of Takaishi, and Tatuo Ohoka, Izumi, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 804,614, Dec. 5, 1985, abandoned. This application Apr. 29, 1987, Ser. No. 45,718
Claims priority, application Japan, Dec. 12, 1984, 59-260796
Int. Cl.[4] C08F 6/04, 210/02
U.S. Cl. 526—68 2 Claims



1. A process for recovering a mixture of unreacted propylene and ethylene which is used as at least a part of the propylene and ethylene which is introduced into a polymerization tank where said mixture is copolymerized, which comprises:

introducing a recovered mixture of unreacted ethylene and propylene into a first distillation column at a first location other than the top or bottom of the first distillation column, and then withdrawing a fraction of components having boiling points higher than the boiling point of propylene from the bottom of the first distillation column, and withdrawing a fraction containing propylene and ethylene from the first distillation column at a second location other than the top or bottom of the first distillation column; and

introducing said withdrawn ethylene-propylene fraction into a second distillation column, and withdrawing an ethylene-propylene mixture from the top of said second distillation column under conditions in which the pressure at the top of the second distillation column is maintained constant and the withdrawn ethylene-propylene mixture is cooled in a cooler which is cooled by control of the amount and/or temperature of a cooling medium fed to the cooler, thereby forming an ethylene-propylene condensate, maintained at a constant temperature, which is then withdrawn as the ethylene-propylene mixture which is introduced into said polymerization tank, and withdrawing amounts of a bottom liquid consisting of propylene from said second distillation column such that the temperature at the top of said second distillation column is maintained constant.

4,762,898

PROCESS FOR POLYMERIZING ETHYLENE

Mitsuyuki Matsuura, and Katsumi Hirakawa, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 836,128, Mar. 4, 1986, abandoned. This application Sep. 28, 1987, Ser. No. 102,236
Claims priority, application Japan, Mar. 8, 1985, 60-45978; May 31, 1985, 60-117831; Oct. 8, 1985, 60-224112
Int. Cl.[4] C08F 2/02, 10/02
U.S. Cl. 526—125 10 Claims

1. A process for polymerizing ethylene, which comprises:

contacting ethylene or ethylene and at least one α-olefin at a temperature not less than 125° C. and under a pressure not less than 200 kg/cm^2 with a catalyst consisting essentially of a combination of components (A), (B) and (C) with the molar ratio of component (C) to aluminum in component (B) ranging from 0.05 to 2:

(A) a solid catalyst component containing at least titanium, magnesium and chlorine prepared by mixing and pulverizing at least the compounds (1) and (2) out of the following compounds (1) through (4):

(1) a halogenated magnesiumm compound,

(2) titanium trichloride,

(3) an electron donor, and

(4) a halogenated compound of an element of Group III, IV, or V in the Periodic Table;

(B) an organoaluminum compound; and

(C) an organic compound selected from the group consisting of a compound having a P-O-C bond structure, a compound having a B-O-C bond structure and a compound having a C-O-R bond structure, said C-O-R bond structure containing compound being of the formula:

(i) $R^1C(OR^2)_3$ (C-1)

wherein R^1 and R^2 each denote a hydrocarbon residue having 1 to 12 carbon atoms,

(ii) $R^3R^4C(OR^5)_2$ (C-2)

wherein R^3 and R^5 each denote a hydrocarbon residue having 1 to 12 carbon atoms; R^4 denotes hydrogen or a hydrocarbon residue having 1 to 12 carbon atoms; R^3 and R^4 may be bonded to each other to form a ring; and two R^5 groups, which may be identical or different, may be bonded to each other to form a ring, and

(iii) $R^6R^7R^8C(OR^9)$ (C-3)

wherein R^6 and R^9 each denote a hydrocarbon residue having 1 to 12 carbon atoms; R^7 and R^8 each denote hydrogen or a hydrocarbon residue having 1 to 12 carbon atoms; and at least two of the groups R^6, R^7, R^8, and R^9 may be bonded to each other to form a ring, thereby polymerizing said ethylene or ethylene-α-olefin mixture.

VOL 1093 ISS 2 AG 9 1988 UMI

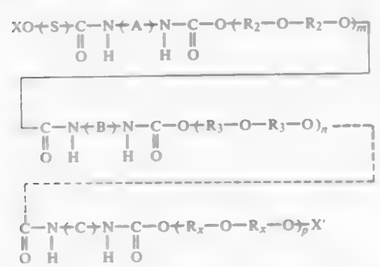
4,762,899

AMPHIPHILIC SEGMENT POLYURETHANES

Yasuo Shikinami, Osaka, Japan, assignor to Takiron Co., Ltd., Osaka, Japan

Filed May 14, 1987, Ser. No. 49,356
Claims priority, application Japan, May 14, 1986, 61-111477
Int. Cl.[4] C08G 18/08
U.S. Cl. 528—49 11 Claims

1. An amphiphilic segment polyurethane represented by the following general formula (A):



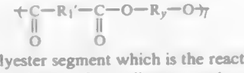
(A)

wherein (S) is selected from the group consisting of (a) a polyalkylene oxide segment represented by the following general formula (I):



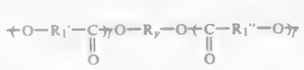
(I)

(b) an aliphatic polyester segment which is a reaction product of a dibasic acid and a dihydric alcohol represented by the following general formula (II):



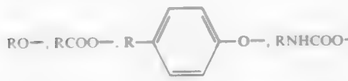
(II)

and (c) a polyester segment which is the reaction product of a ring-cleaved polymer of a cyclic ester and a dihydric alcohol represented by the following general formula (III):

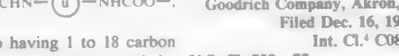


(III)

wherein R_1, R_2, R_3 and R_x each represents an alkylene group having from 7 to 2 carbon atoms, which may be unsubstituted or substituted with a side chain, forming an alkylene oxide segment; R_y represents an alkylene group of polyester-forming dihydric alcohol; R_1' and R_1'', which may be the same or different, each represents an alkylene group having from 7 to 2 carbon atoms; —OX represents a group selected from the group consisting of



RO—, RCOO—, R—(benzene)—O—, RNHCOO—, and



ROOCHN—(u)—NHCOO—.

.. .ein R represents an alkyl group having 1 to 18 carbon atoms or a vinyl group and (u) represents an isocyanate skeleton group; —OX′ represents a group selected from the group consisting of —OH, —OCl, —OBr and —OF; (A), (B) and (C), which may be the same or different, each represents an isocyanate skeleton group; m, n, p, l and l′ each is a positive integer; l and l′ may be the same or different; said polyurethane being a tapered hydrophobicity-hydrophilicity polyurethane.

4,762,900

OXAZOLIDONE POLYMER PREPARED IN THE PRESENCE OF HEXAMETHYLENE TETRAMINE

Miguel U. Velasco, Mexico City, Mexico, and Kenneth A. Hodd, Hillingdon, England, assignors to National Research Development Corporation, London, England

PCT No. PCT/GB85/00215, § 371 Date Feb. 21, 1986, § 102(e) Date Feb. 21, 1986, PCT Pub. No. WO85/05367, PCT Pub. Date Dec. 5, 1985
PCT Filed May 21, 1985, Ser. No. 827,980
Claims priority, application United Kingdom, May 21, 1984, 8412900
Int. Cl.[4] C08G 18/08, 18/20, 18/28, 18/77
U.S. Cl. 528—54 7 Claims

1. A method of preparing an oxazolidone polymer which comprises reacting a vicinal polyepoxide having a functionality greater than 1 with an organic polyisocyanate or polyisothiocyanate, in the presence of hexamethylene tetramine or an aliphatic derivative thereof, at a temperature between 20° and 250° C.

4,762,901

PROCESS FOR THE PREPARATION OF POLYMERIC NETWORKS HAVING SUPERSTRUCTURES, CORRESPONDING POLYMERIC NETWORKS AND THE USE THEREOF

Rolf Dhein, Krefeld; Hanns P. Müller, Odenthal; Helmut-Martin Meier, Ratingen, and Roland Gipp, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 22, 1987, Ser. No. 64,672
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1986, 3622613
Int. Cl.[4] C08G 18/38
U.S. Cl. 528—73 9 Claims

1. Process for the preparation of polymeric networks having superstructures, characterized in that
(a) functional units having a liquid-crystalline character, are, reacted with
(b) functional, preferably polyfunctional, units, with or without a liquid-crystalline character, by the polymerization, polyaddition or polycondensation processes within the liquid-crystalline, the temperature range of the (poly)functional units having a liquid-crystalline character and used for building up the polymeric networks with build-up to form the polymer, and, are post-cured at temperatures outside the liquid-crystalline range.

4,762,902

ELECTRON CURABLE POLYURETHANES

Walter T. Murphy, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 16, 1985, Ser. No. 809,591
Int. Cl.[4] C08G 18/10, 18/67
U.S. Cl. 528—75 16 Claims

1. Electron beam-curable polyurethanes containing terminal acrylic groups and pendant carboxyl groups comprising the reaction product of (1) hydroxyl terminated polymers, (2) carboxyl containing compounds having at least two active hydrogen terminal groups reactive with isocyanate groups, (3) an organic diisocyanate and (4) a hydroxyacrylate.

4,762,903

WATER-DILUTABLE BINDERS, CONTAINING LATENT PRIMARY AMINO GROUPS, FOR CATIONIC ELECTROCOATING FINISHES, AND A PROCESS FOR THEIR PREPARATION

Michael Geist; Günther Ott, both of Münster, and Georg Schön, Everswinkel, all of Fed. Rep. of Germany, assignors to BASF Lacke & Farben AG, Münster, Fed. Rep. of Germany

PCT No. PCT/EP86/00316, § 371 Date Jan. 23, 1987, § 102(e) Date Jan. 23, 1987, PCT Pub. No. WO86/07372, PCT Pub. Date Dec. 18, 1986
PCT Filed May 24, 1986, Ser. No. 10,196
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1985, 3519953
Int. Cl.[4] C08G 59/56
U.S. Cl. 528—107 20 Claims

1. A water-dilutable binder for cationic electrocoating finishes which contains latent primary amino groups and is based on reaction products of epoxy resins and polyamines, which contain at least one primary amino group blocked by ketiminization, and, if appropriate, further primary and/or secondary amines, wherein the binder is prepared from
(A) an epoxy resin and
(B) a reaction product obtained by reacting a ketone with a polyamine, which in addition to a sterically hindered primary amino group also contains at least one further primary amino group, and, if appropriate, further
(C) primary and/or secondary amines.

4,762,904

PLASTIC WINDOW GLASS HOLDER

Daiji Nakama, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan

Filed Feb. 24, 1987, Ser. No. 17,362
Claims priority, application Japan, Mar. 3, 1986, 61-29215[U]
Int. Cl.[4] E05F 11/44
U.S. Cl. 428—122 1 Claim



1. A plastic automotive window glass holder comprising a window glass holding part having a substantially U-shaped holding groove, in which the lower end of an automotive window glass is fitted, and a mounting leg part depending from the lower end of said window glass holding part and capable of being connected to a mechanism for raising and lowering a window glass, said window glass holding part and mounting leg part being formed integrally from a plastic material, the inner surfaces defining said holding grooves being formed with adhesive filling grooves facing each other on the opposite sides of the window glass and being open at one end to the outer surface of the holder and also with non-perpendicular prevention walls for preventing the upward displacement of the adhesive filling said adhesive filling grooves, the bottom of said holding groove being formed with a thin groove parallel to said holding groove to permit migration of the adhesive into said thin groove, said mounting leg part having two substantially parallel faces and including a recess opening at both of said faces, a nut member received in said recess, a guide rail disposed against at least one of said faces of said mounting leg part for cooperation with said raising and lowering mechanism, said guide rail having an aperture aligned with said recess, and a bolt threaded through said nut member and through said aperture to secure said holder to said guide rail.

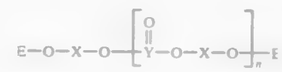
4,762,905

AROMATIC THERMOPLASTIC POLYPHOSPHONATOCARBONATE

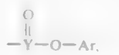
Manfred Schmidt, New Martinsville, W. Va.; Ludwig Bottenbruch, Krefeld, Fed. Rep. of Germany; Dieter Freitag, Krefeld, Fed. Rep. of Germany, and Werner Nouvertné, Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 305,170, Sep. 24, 1981, abandoned, which is a division of Ser. No. 160,644, Jun. 18, 1980, Pat. No. 4,322,520. This application May 20, 1985, Ser. No. 735,635
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925208
The portion of the term of this patent subsequent to Apr. 26, 2000, has been disclaimed.
Int. Cl.[4] C08G 63/62
U.S. Cl. 528—167 5 Claims

1. An aromatic, thermoplastic phosphonatocarbonate of the formula



wherein
E is



Ar is aryl having from 6 to 14 carbon atoms or said aryl substituted by at least one member selected from the group consisting of C_1–C_4-alkyl, fluorine, chlorine and bromine

each Y represents separately the connecting member —C(=O)— or the connecting member —P(=O)(R)— with a ratio of connecting members —C(=O)— to connecting members —P(=O)(R)— of between 5:95 and 95:5;

R is C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, C_6–C_{30}-aryl, C_6–C_{30}-cycloalkyl, C_6–C_{30}-cycloalkenyl, C_7–C_{30}-aralkyl, C_8–C_{30}-aralkenyl or said aryl or said aralkyl or aralkenyl substituted by at least one member selected from the group consisting of C_1–C_4-alkyl, fluorine, chlorine and bromine;

X is the deshydroxy radical of an aromatic dihydroxy compound having 6 to 30 carbon atoms, and

n is the average degree of polymerization which corresponds to a number-average molecular weight when measured by membrane osmometry in dioxane as the solvent of at least 11,000.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,906

WHOLLY AROMATIC MESOMORPHIC POLYETHER ESTER IMIDE AND THE PREPARATION THEREOF

Bernd Hisgen, Limburgerhof; Michael Portugall, Wachenheim, and Gerd Blinne, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,237

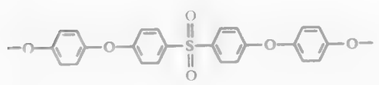
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542833

Int. Cl.[4] C08G *73/16*

U.S. Cl. 528—170 9 Claims

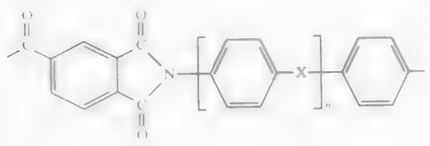
1. A wholly aromatic mesomorphic polyether ester imide which forms a liquid-crystalline fiber-forming melt below 320° C. and is composed of

(a) from 5 to 35 mol% of repeat units of the formula I

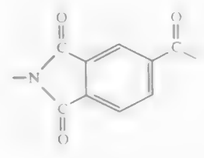


(I)

(b) from 5 to 35 mol% of repeat units of the formula II

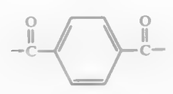


(II)



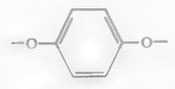
where X is a chemical bond or X is —O—, —S—, SO_2—, —CO—, $—CH_2—$ or $=C(CH_3)_2$, and n is 0 or 1,

(c) from 15 to 30 mol% of repeat units of the formula III

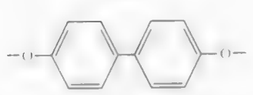


(III)

(d) a molar amount corresponding to the total amount of (b) plus (c) minus (a) of repeat units selected from the group consisting of formulae IV, V and mixtures thereof,



(IV)



(V)

and

(e) repeat units of the formula VI



(VI)

and the mole percentages of components a, b, c, d and e adding up to 100 mol% in each case.

4,762,907

WHOLLY AROMATIC POLYESTER CARBAMIDES AND THE PREPARATION THEREOF

Hans-Jakob Kock, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,063

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542777

Int. Cl.[4] C08G *63/60, 63/68*

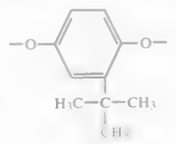
U.S. Cl. 528—183 9 Claims

1. A wholly aromatic polyester carbamide which forms a liquid-crystalline fiber-forming melt below 300° C. and is composed of

(a) not less than 20 mol % of repeat units of the formula I



(b) from 5 to 15 mol % of repeat units of the formula II

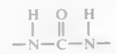


(c) from 5 to 15 mol % of repeat units of the formula III



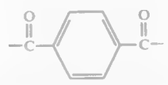
III

(d) from 1 to 10 mol % of units of the formula IV



IV

(e) a molar amount corresponding to the total amount of components (b), (c) and (d) of repeat units of the formula V



the molar proportions of components (a), (b), (c), (d) and (e) adding up to 100 mol % in each case.

4,762,908

POLYBENZOXAZOLE FROM ARYLOXY-2,6-NAPHTHALICDIACID

Tsu-Tzu Tsai, Dayton, and Fred E. Arnold, Centerville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

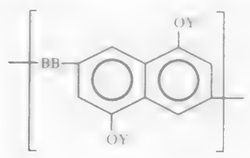
Division of Ser. No. 852,698, Apr. 16, 1986, Pat. No. 4,709,006.

This application Apr. 7, 1987, Ser. No. 35,339

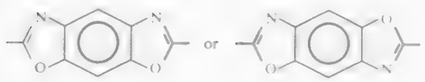
Int. Cl.[4] C08G *73/22*

U.S. Cl. 528—185 1 Claim

1. A polymer having repeating units of the formula



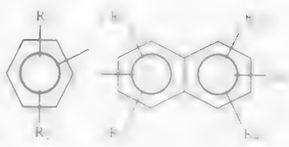
wherein BB is



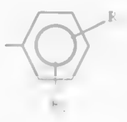
Y is



R is —H or a C_1 to C_3 alkyl group, and Q is —O— or —S—.



and which may be the same or different and wherein R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, chlorine, bromine, an alkyl or an alkoxy group having from 1 to 4 carbon atoms, a phenyl group or substituted phenyl group having the formula



wherein R_1 and R_2 have the aforesaid meaning, and A is a single valence bond, oxygen, sulfur, $—CH_2—CH_2—$,

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4,762,909

METHOD FOR MAKING POLYKETONES

Marlin E. Walters, West Columbia, Tex., assignor to The Dow Chemical Company, Midland, Mich.

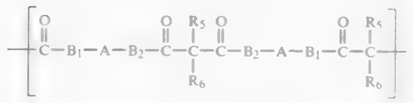
Continuation-in-part of Ser. No. 866,852, May 23, 1986, abandoned, which is a continuation-in-part of Ser. No. 740,451, Jun. 3, 1985, abandoned. This application Sep. 23, 1987, Ser. No. 99,946

Int. Cl.[4] C08G *8/02, 10/00*

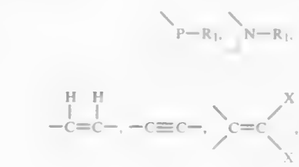
U.S. Cl. 528—220 26 Claims

1. A process for making polyketones by reacting (a) an organic compound containing at least one trichloromethylketone group with (b) an organic compound containing at least one acyl group and wherein the reactant molecules each contain at least two of said reactive functional groups.

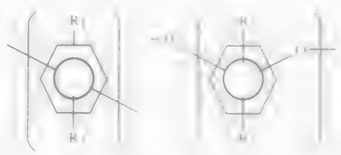
17. A poly-β-diketone having the formula

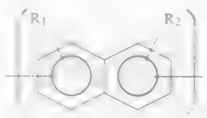


wherein B_1 and B_2 are independently selected from



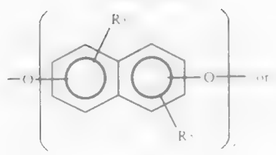
or an aromatic group having the formula

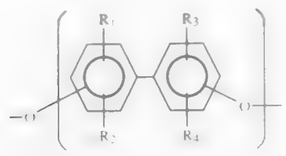




VOL 1093 ISS 2 AG 9 1988 UMI

-continued





wherein X is chlorine or bromine and R_1, R_2, R_3 and R_4 have the aforesaid meanings, and wherein n is an integer from 1 to 6, and wherein R_5 and R_6 are independently selected from hydrogen, fluorine, chlorine, bromine, alkyl groups having from 1 to 6 carbon atoms, which may be straight chain or branched, or phenyl, and wherein n' is an integer from 10 to about 5000.

4,762,910

PROCESS FOR THE PREPARATION OF COPOLYAMIDE FROM ADIPIC ACID, TEREPHTHALIC ACID AND HEXAMETHYLENE DIAMINE

Werner Nielinger; Wolfgang Alewelt; Rudolf Binsack; Ludwig Bottenbruch, all of Krefeld, and Heinz-Josef Füllmann, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 705,625, Feb. 26, 1985, abandoned. This application Aug. 18, 1986, Ser. No. 897,384

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1984, 3407492

Int. Cl.[4] C08G *69/28*

U.S. Cl. 528—339 6 Claims

1. A process for the preparation of a copolyamide condensate containing 25 to 48% by weight of units of hexamethylene terephthalamide which comprises heating a 40 to 70% by weight aqueous solution of adipic acid, terephthalic acid and hexamethylene diamine, to at least 250° C. under a pressure of at least 35 bar in less than 15 minutes and then distilling off water at a temperature of 260°–300° C. at a pressure of 1–40 bar in one or more stages, whereby a precondensate having a relative viscosity of 1.5–2.4, as measured in a 1% by weight m-cresol solution at 25° C., is obtained which is thereafter condensed to produce the copolyamide condensate.

4,762,911

PROCESS FOR THE PREPARATION OF HIGH-MOLECULAR, OPTIONALLY BRANCHED POLYARYLENE SULPHIDE WITH SODIUM SULFIDE, POTASSIUM SULFIDE AND HYDROGEN SULFIDE

Edgar Ostlinning, Düsseldorf; Karsten Idel, and Ludwig Bottenbruch, both of Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 1, 1986, Ser. No. 891,656

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1985, 3528977

Int. Cl.[4] C08G *75/16*

U.S. Cl. 528—388 5 Claims

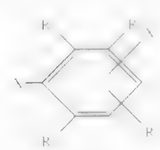
1. A process for the preparation of unbranched or branched polyarylene sulphides consisting essentially of reacting

(a) 50–100 mol % of at least one dihalogenoaromatic compound of the formula



(I)

and 0–50 mol % of at least one dihalogenoaromatic compound of the formula II



(II)

in which X represents halogen, in the meta-position or para-position in relation to one another and each R^1 is identical or different to the others and is hydrogen, C_1–C20-alkyl, C_5–C_{20}-cycloalkyl, C_6–C_{24}-aryl, C_7–C_{24}-arylalkyl, C_7–C_{24}-alkylaryl, or two R^1 moieties which are in the ortho-position relative to one another are attached to an aromatic or heterocyclic ring, with at least one R^1 in all cases being other than hydrogen, and

(b) 0–5 mol %, relative to the sum of the dihalogenoaromatic compounds of the formula I and II, of a trihalogenoaromatic or tetrahalogenoaromatic compound of the formula

$$ArX_n \quad \text{(III)}$$

wherein

Ar is an aromatic or heterocyclic radical,

X represents halogen, and

n represents the number 3 or 4, and

(c) a mixture of sodium and potassium sulphide and hydrogen-sulphide in

(d) a polar organic solvent,

wherein the mixture of sodium and potassium sulphide and hydrogensulphide contains sodium and potassium ions in a ratio from 95 to 5 up to 5 to 95 mol %.

4,762,912

PROCESS FOR PRODUCING POLYMERIC MEDIA EXHIBITING THIRD ORDER NONLINEAR OPTICAL RESPONSE

Thomas M. Leslie, Clinton Township, Morris County; Hyun-Nam Yoon, New Providence; Ronald N. DeMartino, Wayne, and James B. Stamatoff, Westfield, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 3, 1986, Ser. No. 915,180

Int. Cl.[4] C08F *6/00*

U.S. Cl. 528—503 10 Claims

1. A process for the production of a transparent nonlinear optical medium which comprises heating a thermotropic liquid crystalline polymer to form an isotropic melt phase, and cooling the isotropic melt phase rapidly within a time period between about 0.001–60 seconds to below the glass transition temperature of the polymer to form a transparent solid medium; wherein the polymer has mesogenic side chains which comprise at least about 25 weight percent of the polymer, and the polymer has a glass transition temperature above about 40° C., and wherein the transparent medium exhibits third order nonlinear optical response.

4,762,913

ANTIGENIC MODIFICATION OF POLYPEPTIDES

Vernon C. Stevens, Dublin, Ohio, assignor to The Ohio State University, Columbus, Ohio

Division of Ser. No. 667,863, Nov. 2, 1984, Pat. No. 4,691,006, which is a continuation-in-part of Ser. No. 472,190, Mar. 4, 1983, Pat. No. 4,526,716, which is a continuation-in-part of Ser. No. 323,690, Nov. 20, 1981, Pat. No. 4,384,995, which is a continuation-in-part of Ser. No. 112,628, Jan. 16, 1981, Pat. No. 4,302,386, which is a division of Ser. No. 936,876, Aug. 25, 1978, Pat. No. 4,201,770, which is a continuation-in-part of Ser. No. 622,031, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,955, Apr. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 406,821, Oct. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 357,892, May 7, 1973, abandoned. This application Jul. 15, 1987, Ser. No. 73,769

Int. Cl.[4] C07K *7/10*

U.S. Cl. 530—345 30 Claims

1. A process for preparing an isoimmunogen for controlling a biological action in an animal which comprises:

reacting a hormone endogenous to said animal, non-hormonal polypeptide endogenous to said animal, natural or synthetic fragment of either, or a peptide having a sequence analogous to at least a portion of said hormone or non-hormonal peptide, not having a sulfhydryl group but having an amino group, with an activator present as an active ester of chloro-, dichloro-, bromo- or iodo-acetic acid as to cause reaction of the activator with such amino group, thereby converting said amino group to a group of the formula —NH.CO.T, where T is a group of the formula CH_2CL, $CHCL_2$, CH_2Br or CH_2I, and

treating the resulting moiety with a sulfhydryl group-containing carrier biologically foreign to said animal and having a size sufficient to elicit antibody response following the administration thereof into the body of said animal, thereby causing reaction between said group T and said sulfhydryl group such that the carbon atom of said group T becomes bonded to the sulfur atom of said sulfhydryl group to form a thioether.

4,762,914

TRUNCATED PROTEIN OF INTERLEUKIN-1

Philip E. Auron, 119 Wilson Dr., Framingham, Mass. 01701; Andrew C. Webb, 6 Lovewell Rd., Wellesley, Mass. 02181; Lee Gehrke, 11 Blueberry Cir., Framingham, Mass. 01701; Charles A. Dinarello, 133 Mt. Vernon St., Boston, Mass. 02108; Lanny J. Rosenwasser, 58 Sherburn Cir., Weston, Mass. 02193; Alexander Rich, 2 Walnut Ave., Cambridge, Mass. 02140, and Sheldon M. Wolff, 12 Lowell Rd., Wellesley, Mass. 02181

Continuation-in-part of Ser. No. 611,699, May 18, 1984, abandoned. This application Feb. 11, 1985, Ser. No. 700,374

Int. Cl.[4] C07K *13/00*

U.S. Cl. 530—351 3 Claims

1. A protein having the following amino acid sequence:

MET ALA GLU VAL PRO LYS LEU ALA SER GLU
MET MET ALA TYR TYR SER GLY ASN GLU ASP
ASP LEU PHE PHE GLU ALA ASP GLY PRO LYS
GLN MET LYS CYS SER PHE GLN ASP LEU ASP
LEU CYS PRO LEU ASP GLY GLY ILE GLN LEU
ARG ILE SER ASP HIS HIS TYR SER LYS GLY
PHE ARG GLN ALA ALA SER VA; VAL VAL ALA
MET ASP LYS LEU ARG LYS MET LEU VAL PRO
CYS PRO GLN THE PHE GLN GLU ASN ASP LEU
SER THR PHE PHE PRO PHE ILE PHE GLU GLU
GLU PRO ILE PHE PHE ASP THR TRP ASP ASN
GLU ALA TYR VAL HIS ASP ALA PRO VAL ARG
SER LEU ASN CYS THR LEU ARG ASP SER GLN
GLN LYS SER LEU VAL MET SER GLY PRO TYR
GLU LEU LYS ALA LEU HIS LEU GLN GLY GLN
ASP MET GLU GLN GLN VAL VAL PHE SER MET
SER PHE VAL GLN GLY GLU GLU SER ASN ASP
LYS ILE PRO VAL ALA LEU GLY LEU LYS GLU

-continued

LYS ASN LEU TYR LEU SER CYS VAL LEU LYS
ASP ASP LYS PRO THR LEU GLN ASN SER ILE
TRP THR GLY VAL LEU SER LEU ASN GLN VAL LEU

4,762,915

PROTEIN-LIPOSOME CONJUGATES

Viola T. Kung, Menlo Park, and Carl T. Redemann, Walnut Creek, both of Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

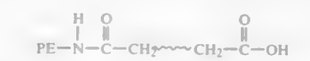
Filed Jan. 18, 1985, Ser. No. 692,679

Int. Cl.[4] A61K *39/00, 9/42;* A61J *5/00*

U.S. Cl. 530—405 2 Claims

1. A method of attaching protein molecules to liposomes at a concentration of at least about 150 μg protein per μmole lipid, comprising

providing a carboxylated lipid coupling reagent of the form



where PE—NH_2 is phosphatidylethanolamine and CH_2 - - - CH_2 is a carbon-containing chain having a total chain length between 3 and about 20 atoms

preparing liposomes containing between about 1 and 20 mole percent of the coupling reagent,

activating the liposomes with a water-soluble carbodiimide, and

reacting the activated liposomes with such protein, at a protein concentration of at least about 300–500 μg/μmole liposome lipid.

4,762,916

WATER-SOLUBLE DIS-, TRIS- AND TETRA-AZO COMPOUNDS CONTAINING FIBER-REACTIVE CHLORO-AND FLURO-TRIAZINYL GROUPS AND VINYLSULFONE GROUPS OR DERIVATIVES THEREOF, SUITABLE AS DYESTUFFS

Ludwig Schläfer, Kelkheim; Hartmut Springer, Königstein/-Taunus, and Michael Kunze, Hofheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

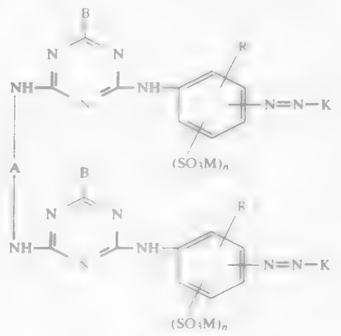
Filed Dec. 23, 1986, Ser. No. 945,491

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1985, 3546262; Feb. 17, 1986, 3604858

Int. Cl.[4] C09B *62/09, 62/513;* D06P *1/382, 1/384*

U.S. Cl. 534—631 17 Claims

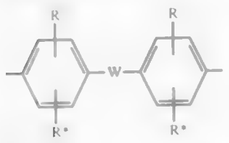
1. A water-soluble compound of the formula



in which:

VOL 1093 ISS 2 AG 9 1988 UMI

A is alkylene of 2 to 6 carbon atoms or phenylene unsubstituted or substituted by 1 or 2 substituents, or is a group of the formula



in which

W is a direct bond or a bridge member and and R′ and R* each are, independently on each other, hydrogen, chlorine, methyl, methoxy, ethoxy, carboxy or sulfo;

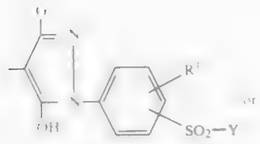
B is chlorine or fluorine;

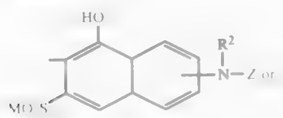
R is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms;

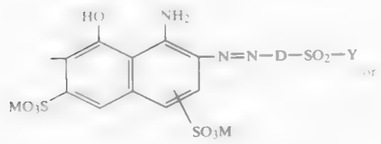
M is hydrogen or an alkali metal;

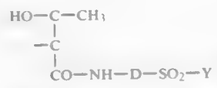
n is the number zero, 1 or 2 (where in the case of n=0 this group denotes a hydrogen atom);

K is a group of the formula









in which

D is phenylene unsubstituted or substituted by 1 or 2 substituents selected from the group consisting of chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, carboxy and sulfo, or is naphthylene unsubstituted or substituted by 1 or 2 sulfo groups,

R^1 is hydrogen, chlorine, alkyl of 1 to 4 carbon atoms or alkoxy group of 1 to 4 carbon atoms,

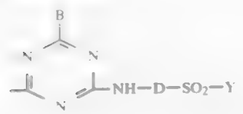
R^2 is hydrogen or alkyl of 1 to 4 carbon atoms,

G is carboxy, methyl or carbalkoxy of 2 to 5 carbon atoms,

Y is vinyl, β-sulfatoethyl, β-phosphatoethyl, β-thiosulfatoethyl or β-chloroethyl,

M has the abovementioned meaning and

Z is α- or β-bromoacryloyl or β-chloropropionyl or a group of the formula



in which B, D and Y are defined as above.

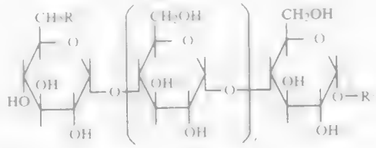
4,762,917

OLIGOSACCHARIDE DERIVATIVES AND THEIR USE AS SUBSTRATE FOR MEASURING α-AMYLASE ACTIVITY

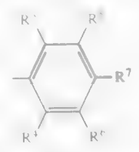
Tokuji Ikenaka, Sakai, and Kaoru Omichi, Toyonaka, both of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 13, 1985, Ser. No. 765,080
Claims priority, application Japan, Aug. 24, 1984, 59-176320
The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.
Int. Cl.[4] C08B *37/00*
U.S. Cl. 536—4.1 **12 Claims**

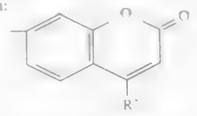
1. An oligosaccharide derivative represented by the formula: (III)



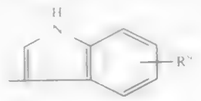
wherein n is an integer of 2 to 5; R^1 is a pyridylamino group, an anilino group, a methylanilino group, a hydroxyanilino group and a carboxyphenylamino group, an alkylamino group wherein the alkyl moiety has 1 to 4 carbon atoms, a carboxymethoxy group or a salt thereof; a R^2 is a group of the formula: (IV)



wherein R^3 through R^6 are independently hydrogen, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a nitro group, a carboxyl group, a sulfone group or a halogen; and R^7 is hydrogen, an alkoxy group having 1 to 4 carbon atoms, a halogen or a nitro group, a group of the formula: (V)



wherein R^8 is hydrogen or a methyl group, or a group of the formula: (VI)



wherein R^9 is a hydrogen or a halogen.

4,762,918

DECOLORIZATION OF GLYCOSIDES

Robert S. McDaniel, Jr.; Patrick M. McCurry; Rolland W. P. Short, and Paul R. Glor, all of Decatur, Ill., assignors to Staley Continental, Inc., Rolling Meadows, Ill.

Filed Nov. 21, 1984, Ser. No. 674,109
Int. Cl.[4] C07H *1/06*
U.S. Cl. 336—127 **22 Claims**

1. A process for reducing the color of a glycoside composition, which process comprises contacting a glycoside composition containing colored humins having conjugated unsaturation with a hydrogenation catalyst in the presence of hydrogen at a temperature of about 10 to 250° C. at a pressure of about 101 to 10,000 KPa for a sufficient time to decrease the color thereof and thereafter separating the hydrogenation catalyst from the glycoside composition and recovering the glycoside composition of reduced color.

4,762,919

ANTI-INFLAMMATORY CARBOXY PREGNANE DERIVATIVES

Henry J. Lee, Tallahassee, Fla., assignor to Florida Agricultural and Mechanical University, Tallahassee, Fla.

Filed Feb. 12, 1986, Ser. No. 828,460
Int. Cl.[4] C07J *21/00, 1/00*
U.S. Cl. 540—12 **26 Claims**

1. The process for preparing a pregnane derivative substituted in the 6-position with an alkyl ester group which comprises:

(1) reacting cortisol or prednisolone with formaldehyde and hydrogen chloride to produce (I) 17α,20,20,21-bis(methylenedioxy)-11β-hydroxy-pregn-4-ene-3-one;

(2) reacting (I) with ethylene glycol and pyridine hydrochloride to produce (II) 3,3-ethylenedioxy-17α,20,20,21-bis(-methylenedioxy)-pregn-5-ene-11β-ol;

(3) epoxidizing (II) by treatment with m-chloroperbenzoic acid to produce (III) 5,6α-epoxy-3,3-ethylenedioxy-17α,20,20,21-bis(methylenedioxy)-5α-pregnan-11β-ol;

(4) reacting (III) with a solution an alkenylmagnesium halide of 2–5 carbon atoms to produce (IV) 3,3-ethylenedioxy-17α,20,20,21-bis(methylenedioxy)-6β(alkenyl)-5α-pregnane-5-11β-diol;

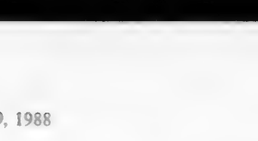
(5) reacting (IV) with potassium permanganate and sodium periodate to produce (V) 3,3-ethylene-dioxy-17α,20,20,21-bis(methylenedioxy)-6β-carboxyalkyl-5α-pregnane-5,11β-diol;

(6) esterifying the carboxyalkyl group by reacting (V) with an alkylating agent and recovering (VI) 3,3-ethylene-dioxy-17α,20,20,21-bis(methylenedioxy)-6β-alkoxy-carbonylalkyl-5α-pregnane-5-11β-diol;

(7) reacting (VI) with sulfuric acid to produce (VII) 17α,20,20,21-bis(methylenedioxy)-6β-alkoxycarbonyl-alkyl-5α-pregnan-3-one; and

(8) reacting (VII) with activated magnesium silicate to produce (VIII) 11β-hydroxy-6β-alkoxycarbonylalkyl-17α,20,20,21-bis(methylenedioxy)-pregn-4-en-3-one.

18 Carboxypregnane derivatives of the formula:

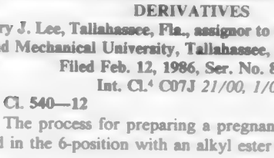


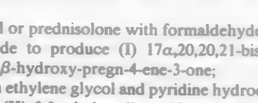
wherein:

one X is COOR, CONHR, or CH_2CONHR;

remaining X's are H, F, CH_3, OH, COOR, CONHR, or CH_2CONHR;

Y is





R is H, alkyl of 1–5 carbon atoms, or benzyl;

R_1 is CH_2OR_3, COOR, or CONHR;

R_2 is H, OR_3, or Br;

R_3 is H, COR_4, or tetrahydropyranyl;

R_4 is alkyl of 1–5 carbon atoms or benzyl;

R_5 is H or COR_4;

represents a single or double bond;

represents α-position, β-position or a mixture of α- and β-positions; and

represents α-position.

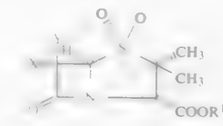
4,762,920

6,6-DIHALOPENICILLANIC ACID 1,1-DIOXIDES

Ronnie D. Carroll, and Robert A. Volkmann, both of Groton, Conn., assignors to Pfizer, Inc., New York, N.Y.

Continuation of Ser. No. 414,510, Sep. 2, 1982, abandoned, which is a division of Ser. No. 226,076, Jan. 19, 1981, abandoned, which is a continuation of Ser. No. 17,808, Mar. 5, 1979, abandoned. This application Aug. 5, 1986, Ser. No. 893,271
The portion of the term of this patent subsequent to Dec. 13, 2000, has been disclaimed.
Int. Cl.[4] C07D *499/00*; A61K *31/425*
U.S. Cl. 540—310 **5 Claims**

1. A compound of the formula



and the base salts thereof; wherein R^1 is selected from the group consisting of hydrogen, alkanoyloxymethyl having from 3 to 7 carbon atoms, 1-(alkanoyloxy)ethyl having from 4 to 8 carbon atoms, 1-methyl-1-(alkanoyloxy)ethyl having from 5 to 9 carbon atoms, alkoxycarbonyloxy methyl having from 3 to 6 carbon atoms, 1-(alkoxycarbonyloxy)ethyl having from 4 to 7 carbon atoms, 1-methyl-1-(alkoxycarbonyloxy)ethyl having from 5 to 8 carbon atoms, 3-phthalidyl, 4-crotonolactonyl and gamma-butyrolacton-4-yl;

X and Y are each selected from the group consisting of chloro, bromo and iodo;

provided that X and Y are not both chloro and X and Y are not both iodo.

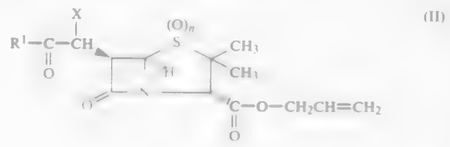
4,762,921

6-(1-ACYL-1-HYDROXYMETHYL)PENICILLANIC ACID DERIVATIVES

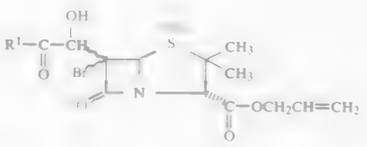
Lawrence A. Reed, III, deceased, late of Pawcatuck, Conn. (by Anne Reed, administrator), assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 839,834, Mar. 11, 1986, Pat. No. 4,675,186, which is a continuation-in-part of Ser. No. 724,857, Apr. 18, 1985, abandoned. This application Mar. 11, 1987, Ser. No. 24,505
Int. Cl.[4] C07D *499/00*; A61K *31/425*
U.S. Cl. 540—310 **18 Claims**

1. A compound having the formula



(II)



(III)

wherein

n is 0, 1 or 2;

X is hydroxy or $OCOR^2$ where R^2 is hydrogen or $(C_1–C_4)$alkyl; and

R^1 is $(C_1–C_7)$alkyl, $(C_5–C_7)$cycloalkyl, $(C_6–C_{12})$cycloalky-

VOL 1093 ISS 2 AG 9 1988 UMI

lalkyl, (C_6–C_{12})alkylcycloalkyl, adamantyl, phenyl, (C_7–C_{12})phenylalkyl, (C_7–C_{12})alkylphenyl, (C_7–C_{12})-phenoxyalkyl, naphthyl, furyl (C_5–C_{10})furylalkyl, benzofuranyl, benzofuranylmethyl, thienyl, (C_5–C_{10})thienylalkyl, benzothienyl, benzothienylmethyl, (C_5–C_8)-N-alkylpyrrolyl, N-phenylpyrrolyl, (C_{11}–C_{12})-N-(phenylalkyl)pyrrolyl, (C_6–C_{12})-N-alkylpyrrolylalkyl, (C_9–C_{12})-N-alkylindolyl, (C_9–C_{12})-N-alkylindolylmethyl, (C_9–C_{12})-N-alkylisoindolyl, (C_9–C_{12})-N-alkylisoindolylmethyl, indolizinyl, indolizinylmethyl, oxazolyl, (C_4–C_9)oxazolylalkyl, benzoxazolyl, benzoxazolylmethyl, isoxazolyl, (C_4–C_9)isoxazolylalkyl, benzisoxazolyl, benzisoxazolylmethyl, thiazolyl, (C_4–C_9)thiazolylalkyl, benzothiazolyl, benzothiazolylmethyl, isothiazolyl, (C_4–C_9)isothiazolylalkyl, benzothiazolyl, benzothiazolylmethyl, (C_4–C_7)-N-alkylpyrazolyl, (C_5–C_{11})-N-alkylpyrazolylalkyl, (C_8–C_{11})-N-alkylindazolyl, (C_8–C_{11})-N-alkylindazolylmethyl, (C_4–C_7)-N-alkylimidazolyl, (C_5–C_{11})-N-alkylimidazolylalkyl, (C_8–C_{11})-N-alkylbenzimidazolyl, (C_8–C_{11})-N-alkylbenzimidazolylmethyl, pyridyl, (C_6–C_{11})pyridylalkyl, quinolyl, quinolylmethyl, isoquinolyl, isoquinolylmethyl, pyrazinyl, (C_5–C_{10})pyrazinylalkyl, quinoxalinyl, quinoxalinylmethyl, pyrimidinyl, (C_5–C_{10})pyrimidinylalkyl, quinazolinyl, quinazolinylmethyl, pyridazinyl, (C_5–C_{10})pyridazinylalkyl, phthalazinyl, phthalazinylmethyl, cinnolinyl or cinnolinylmethyl;

or one of said groups mono- or disubstituted on aliphatic, aromatic or heterocyclic carbon with fluoro, chloro, bromo, (C_1–C_4)alkyl, phenyl, hydroxy, (C_1–C_4)alkoxy, phenoxy, benzyloxy, (C_2–C_5)alkoxycarbonyloxy, (C_2–C_4)alkenyloxy, formyloxy, (C_2–C_5)alkanoyloxy, (C_2–C_5)alkoxycarbonyl, (C_1–C_4)alkanesulfonamido, cyano, carbamoyl, (C_2–C_5)alkylcarbamoyl, di[(C_1–C_4)alkylcarbamoyl, aminosulfonyl, (C_1–C_4)alkylaminosulfonyl or di[(C_1–C_4)alkyl]aminosulfonyl, or



where

R^{10} and R^{11} are taken separately and

R^{10} is hydrogen, (C_1–C_4)alkyl, phenyl or benzyl, and

R^{11} is hydrogen, (C_1–C_4)alkyl, phenyl, benzyl, formyl, (C_2–C_5)alkanoyl, benzoyl, phenoxyacetyl, phenylacetyl or phenylacetyl substituted on aromatic carbon with hydroxy or amino; or

R^{10} and R^{11} are taken together with the nitrogen to which they are attached to form a pyrrolidine, piperidine, perhydroazepine, morpholine, piperazine, N-[(C_1–C_4)alkyl]piperazine or N-[(C_2–C_5)alkanoyl]piperazine ring; where said disubstituents may be the same or different; with the provisos that no tetrahedral carbon is simultaneously bonded to a nitrogen or oxygen atom and a fluoro, chloro, bromo or second nitrogen or oxygen atom; that no nitrogen is quaternary; and that primary and secondary amino groups are protected by benzyloxycarbonyl groups.

4,762,922

2-OXO-1-[[(SUBSTITUTED SULFONYL)AMINO]-CARBONYL]AZETIDINES

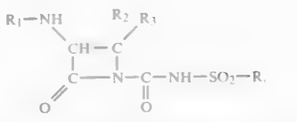
Hermann Breuer, Schoenhofen, and Uwe D. Treuner, Etterzhausen, both of Fed. Rep. of Germany, assignors to Squibb Corporation, Princeton, N.J.

Filed Jul. 1, 1987, Ser. No. 70,286

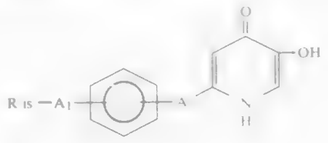
Int. Cl.[4] A61K *31/395, 31/425, 31/44;* **C07D** *705/08*

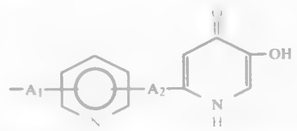
U.S. Cl. 540—363 **25 Claims**

1. A compound having the formula



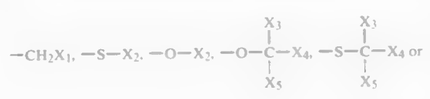
or a pharmaceutically acceptable salt thereof, wherein





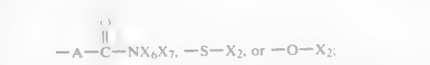
R_1 is an acyl group derived from a carboxylic acid;

R_2 and R_3 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4, 5, 6 or 7-membered hetrocycle or one of R_2 and R_3 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl,





X_1 is azido, amino, hydroxy, carboxyl, alkoxycarbonyl, alkanoylamino, phenylcarbonylamino, (substituted phenyl)carbonylamino, alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl)sulfonyloxy, phenyl, substituted phenyl, cyano,



X_2 is alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkanoyl, phenylalkanoyl, (substituted phenyl)alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, or heteroarylcarbonyl;

one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group;

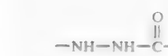
X_5 is formyl, alkanoyl, phenylcarbonyl, (substituted phenyl)-carbonyl, phenylalkylcarbonyl, (substituted phenyl)alkyl-carbonyl, carboxyl, alkoxycarbonyl, aminocarbonyl, (substituted amino)carbonyl, or cyano;

X_6 and X_7 are the same or different and each is hydrogen, alkyl, phenyl or substituted phenyl, or X_6 is hydrogen and X_7 is amino, substituted amino, alkanoylamino or alkoxy, or X_6 and X_7 when taken together with the nitrogen atom to which they are attached form a 4, 5, 6 or 7-membered heterocycle;

A is —CH=CH—, —$(CH_2)_m$—, —$(CH_2)_m$—O—, —$(CH_2)_m$—NH— or —CH_2—S—CH_2—;

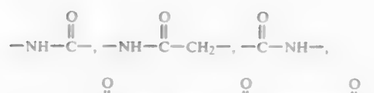
m is 0, 1 or 2;

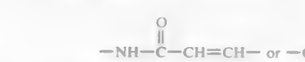
A_1 is —NH— or

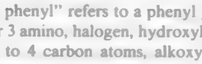


and

A_2 is







the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkanoyloxy, aminocarbonyl, or carboxy groups;

the term "substituted alkyl" refers to alkyl groups substituted with one or more azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl or alkylsulfonyl groups;

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one or more halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 of 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "a 5, 6 or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetidinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl or hexahydroazepinyl or one of the above groups substituted with one or more oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, 2-furfurylideneamino, benzylideneamino or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "substituted amino" refers to a group having the formula —NX_8X_9 wherein X_8 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, and X_9 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy or amino.

4,762,923

FERMENTATION ANALOGS OF VIRGINIAMYCIN M1

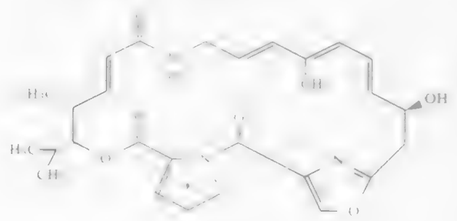
Yiu-Kuen T. Lam, Plainsboro, N.J.; Raymond S. Chang, Lansdale, Pa.; Otto D. Hensens, Red Bank, N.J.; Cheryl D. Schwartz, Westfield, N.J., and Deborah L. Zink, Manalapan, N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Nov. 21, 1986, Ser. No. 934,231

Int. Cl.[4] C07D *498/16;* **A61K** *31/42;* **C12P** *17/14*

U.S. Cl. 540—455 **10 Claims**

1. A compound of the Formula I:



4,762,924

BICYCLIC COMPOUNDS

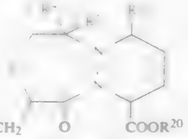
Cedric H. Hassall, Harpenden; Geoffrey Lawton, Hitchin, and Sally Redshaw, Stevenage, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 764,372, Aug. 12, 1985, Pat. No. 4,692,438. This application Jun. 15, 1987, Ser. No. 62,033

Int. Cl.[4] C07D *245/00, 487/06, 236/02;* **A61K** *31/50*

U.S. Cl. 540—501 **3 Claims**

1. A compound of the formula



IV

wherein R^3 is hydrogen or phenyl which may be substituted with one or more substituents selected from halogen, alkyl having 1 to 8 carbon atoms, alkoxy having 1 to 8 carbon atoms or trifluromethyl; R^4 and R^5 each are hydrogen or R^4 and R^5 taken together are oxo; R^{20} is alkyl having 1 to 8 carbon atoms; Y is —CH_2—, —CH_2CH_2 or —$N(R^{60})$— in which R^{60} is alkyl having 1 to 8 carbon atoms or benzyl, 2-phenylethyl, 3-phenylpropyl, 4-chlorobenzyl or 4-methoxybenzyl; and Z is a halogen atom, an alkylsulfonate group group having 1 to 8 carbon atoms or the p-toluenesulfonate group.

4,762,925

CYAN DYE-FORMING COUPLERS

Ivano Delprato, Rocchetta di Cairo Montenotte/Savona, Italy, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 856,821, Apr. 28, 1986, Pat. No. 4,672,013, which is a division of Ser. No. 755,266, Jul. 15, 1985, Pat. No. 4,591,548. This application Mar. 9, 1987, Ser. No. 23,782

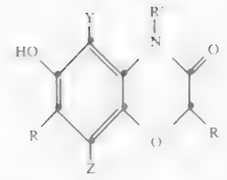
Claims priority, application Italy, Jul. 20, 1984, 21992 A/84

Int. Cl.[4] C07D *265/36*

U.S. Cl. 544—105 **6 Claims**

1. A 2-equivalent cyan dye-forming coupler having the general formula:

VOL 1093 ISS 2 AG 9 1988 UMI



wherein R represents R'''—X—NH, R' represents hydrogen or an alkyl group, R''' represents hydrogen or R^{IV}—X—, X represents a member selected from the group consisting of —CO—, —SO—, —OCOC— and —NH—CO—, R''' and R^{IV} represent an alkyl group or an aryl group and Y and Z, the same or different, represent hydrogen, halogen an alkyl or an alkoxy group wherein R''' and R^{IV} may be substituted with groups selected from the group consisting of halogen, nitro, cyano, aryl, alkoxy, aryloxy, carboxy, alkylcarbonyl, aryloxycarbonyl, acyloxy, sulfamoyl, carbamoyl, acylamino, dialkylamino, ureido, sulfonamido and hydroxy.

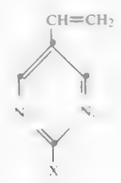
4,762,926

PROCESS FOR THE PREPARATION OF THE 2-SUBSTITUTED-5-VINYLPYRIMIDINES

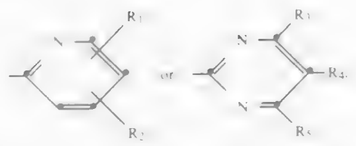
Vratislav Kvita, Reinach, Switzerland, and Jürgen Kaschig, Freiburg, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 629,378, Jul. 10, 1984, Pat. No. 4,582,881, which is a division of Ser. No. 385,586, Jun. 7, 1982, Pat. No. 4,476,305. This application Dec. 16, 1985, Ser. No. 809,445
Claims priority, application Switzerland, Jun. 10, 1981, 3793/81
Int. Cl.[4] C07D *401/04*
U.S. Cl. 544—276 2 Claims

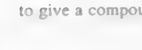
1. A process for the preparation of a compound of formula I



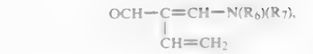
wherein X is



and each of R_1 to R_5 independently of the other is hydrogen, methyl or ethyl, which process comprises reacting 5-formyl-α-pyrone, in the presence of an organic solvent, with an amine of the formula II



to give a compound of the formula III



reacting said compound of the formula (III) with a compound of the formula IV



in which formulae X is as defined for formula I, each of R_6 and R_7 independently of the other is straight chain or branched alkyl which contains up to 10 carbon atoms and is unsubstituted or substituted by an OH group, or R_6 and R_7 together are $—C_pH_2—$ or $—(CH_2)_2—O—(CH_2)_2$, and p is an integer from 2 to 22.

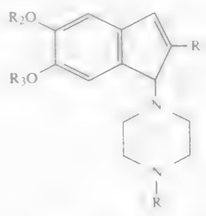
4,762,927

INDENE COMPOUNDS

Shozo Nakaoku; Kazuhiko Sakuma, both of Takayama; Yasuhiro Oshika, Sagamihara, and Kazuo Ohira, Takayama, all of Japan, assignors to Taiyo Pharmaceutical Industry Co., Ltd., Takayama, Japan

Filed Jul. 11, 1986, Ser. No. 884,649
Claims priority, application Japan, Feb. 3, 1986, 61-21732
Int. Cl.[4] C07D *405/04*
U.S. Cl. 544—378 9 Claims

1. An indene compound having the formula I:



wherein R_1 is a lower alkyl, R_2 and R_3 are, individually, a lower alkyl, or in combination are a methylenedioxy group, and R is a member selected from the group consisting of lower alkyl groups, lower hydroxyalkyl groups, benzyl, said benzyl optionally substituted with lower alkoxy groups, and benzoyl, said benzoyl optionally substituted with lower alkoxy groups.

4,762,928

AMINO-TRIFLUOROMETHYLPYRIDINE COMPOUND

Yasuhiro Tsujii; Tatsuo Isogai; Takao Awazu; Hisayoshi Jyonishi, and Tokiya Kimura, all of Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Dec. 18, 1986, Ser. No. 943,004
Claims priority, application Japan, Dec. 27, 1985, 60-295171
Int. Cl.[4] C07D *213/73*
U.S. Cl. 546—311 4 Claims

1. An amino-trifluoromethylpyridine compound selected from the group consisting of 3-amino-5-trifluoromethylpyridine, 2-amino-4-trifluoromethylpyridine, and 2-amino-4,6-bis(-trifluoromethyl)pyridine.

4,762,929

AROMATIZATION OF SATURATED NITROGEN-CONTAINING HETEROCYCLES

Walter Rebafka, Hirschberg, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 713,643, Mar. 19, 1985, abandoned. This application Jun. 4, 1987, Ser. No. 58,622
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1984, 3410542
Int. Cl.[4] C07D *213/133, 207/32, 241/12*
U.S. Cl. 546—252 9 Claims

1. In a process for preparing aromatic five- or 6-membered nitrogen-containing heterocycles selected from the group consisting of pyrrols, pyridines and pyrazines, wherein a corresponding saturated heterocycle is contacted with a catalyst in the gas phase, at from 150° to 350° C. and under a pressure of from 0.1 to 10 bar, whereby the saturated heterocycle is dehydrogenated and a corresponding aromatic heterocycle is formed, the improvement which comprises: using as the catalyst a supported palladium catalyst containing an alkaline earth metal halide.

4,762,930

PROCESS FOR THE PREPARATION OF THE ALUMINUM SALT OF SACCHARIN

Martin M. Rieger, and Robert K. Yang, both of Morris Plains, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 329,644, Dec. 11, 1981, abandoned. This application Jul. 27, 1984, Ser. No. 635,318
Int. Cl.[4] C07F *5/06*
U.S. Cl. 548—108 4 Claims

1. A process for preparing the aluminum salt of saccharin which comprises reacting the free acid form of saccharin with an aluminum alkoxide and finally adding a sufficient amount of water to form an aluminum salt of saccharin and recovering an aluminum salt of saccharin having the formula:



and the following percentage of components:
(a) Aluminum, 9.4 to 11.1;
(b) Saccharin (as the acid) 64.0 to 74.9; and
(c) OH 26.6 to 14, with the following infrared analysis:
(d) large peak at 3450 cm^{-1}; and
(e) strong doublet at 1640–1570 cm^{-1}.

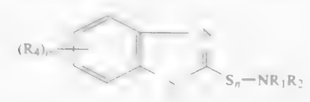
4,762,931

PROCESS FOR THE WORK-UP OF THE MOTHER LIQUORS FROM THE PREPARATION OF BENZOTHIAZOLE COMPOUNDS

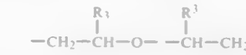
Gabriel Denecker, Kalmthout; Domien Sluyts, Stabroek, both of Belgium; Jean-Marie Biot, Rio de Janiero, Brazil; Tony van Osselaer, Belsele; Jan de Roos, Beveren, both of Belgium, and Pol Bamelis, Bergisch Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Nov. 24, 1986, Ser. No. 934,329
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542795; Jun. 21, 1986, 3620822
Int. Cl.[4] C07D *277/36*
U.S. Cl. 548—166 3 Claims

1. Process for the work-up of aqueous mother liquors comprising at least one member selected from the group consisting of benzothiazole-2-sulphinic acid, benzothiazole-2-sulphonic acid and their salts as by-products which originate from the oxidative prepration of compounds of the formula



in which
m denotes 0,1 or 2,
n denotes 1 or 2,
R_1 denotes hydrogen, C_1- to C_6-alkyl or C_5- to C_8-cycloalkyl,
R_2 denotes C_1- to C_6-alkyl or C_5- to C_8-cycloalkyl, or
R_1 and R_2 together denote $—(CH_2)_5—$ or



and
R_3 denotes C_1–C_6-alkyl or hydrogen, and
R_4 denotes hydrogen or C_1–C_6-alkyl,
from optionally nuclear-substituted 2-benzothiazolyl disulphides, 2-mercaptobenzothiazoles or 2-mercaptobenzothiazole salts and the corresponding amines and, if appropriate, sulphur, and contain unreacted amine or a low-boiling alcohol employed as solubilizer, or both, characterized in that the mother liquor is saturated by sodium sulphate, sodium chloride or both in such a fashion that the pH is adjusted to below 2 by the addition of concentrated sulphuric acid, hydrochloric acid or both are added, the mixture is subsequently kept at 20° to 250° C. for 3 minutes to 20 hours and then the pH is adjusted to 4 to 10 by the addition of a concentrated sodium hydroxide solution where upon two phases form, the phases are separated from one another, the aqueous phase is extracted with further alcohol or amine, the extraction agent and the extracted components are isolated from the combined organic phases, and amine or alcohol dissolved in the aqueous phase is removed therefrom by distillation.

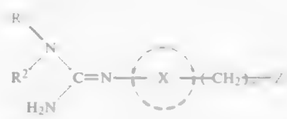
4,762,932

HALOGUANIDINE INTERMEDIATES

Tobias O. Yellin, Wallingford, Pa.; Philip N. Edwards, Bramhall, and Michael S. Large, Congleton, both of England, assignors to Imperial Chemical Industries, Ltd., England and ICI Americas, Inc., Del.

Division of Ser. No. 420,863, Sep. 21, 1982, Pat. No. 4,604,465, which is a division of Ser. No. 206,005, Nov. 12, 1980, Pat. No. 4,362,728. This application Jun. 2, 1986, Ser. No. 869,615
Claims priority, application United Kingdom, Nov. 13, 1979, 7939232; Apr. 18, 1980, 8012789; Aug. 13, 1980, 8026420
Int. Cl.[4] C07D *277/04, 285/08*
U.S. Cl. 548—198 5 Claims

1. A guanidine derivative of the formula:



in which
R^1 and R^2, which may be the same or different, are hydrogen atoms or branched or unbranched alkyl radicals of 1 to 10 carbon atoms, cycloalkyl radicals of 3 to 8 carbon atoms or cycloalkylalkyl radicals in which the alkyl part is of 1 to 6 carbon atoms and the cycloalkyl part is of 3 to 8 carbon atoms, each of the alkyl, cycloalkyl and cycloalkylalkyl radicals being optionally substituted by up to 7

VOL 1093 ISS 2 AG 9 1988 UMI

halogen atoms selected from fluorine, chlorine and bromine atoms, provided that at least one of R^1 and R^2 is a halogen substituted alkyl, cycloalkyl or cycloalkylalkyl radical and provided that there is no halogen substituent on the carbon atom of the alkyl, cycloalkyl or cycloalkylalkyl radical which is directly attached to the nitrogen atom;

ring X is a thiazole or thiadiazole ring which may, where possible, carry a single optional substituent, the optional substituents on ring X being selected from fluorine, chlorine, bromine and iodine atoms and alkyl, alkoxy and alkylthio radicals of 1 to 6 carbon atoms, trifluoromethyl, hydroxy and amino radicals;

Z is a radical of the formula —Y—$(CH_2)_n$—NH_2, —Q—H or —Cl;

Y is an oxygen or sulphur atom, a direct bond, a methylene, cis or trans vinylene or sulphinyl radical or a radical of the formula NR^4 in which R^4 is a hydrogen atom or an alkyl radical of 1 to 6 carbon atoms;

m is 0 to 4 and n is 1 to 5, provided that when Y is an oxygen atom, a sulphinyl radical or a radical of the formula NR^4, n is 2 to 5; and

Q is an oxygen or sulfur atom or a radical of the formula NR^4.

4,762,933

1-OXA-2-OXO-3-R-3-AZA-5-Z-CYCLOPENTANE DERIVATIVES

Heinz-Hermann Bokel, Duererstrasse 30, D-6100 Darmstadt, Fed. Rep. of Germany

Filed Jul. 17, 1986, Ser. No. 886,492

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525648

Int. Cl.[4] **C07D** *263/04*

U.S. Cl. 548—229 **15 Claims**

1. A 1-oxa-2-oxo-3-R-3-aza- 5-Z-cyclopentane wherein:

R is alkyl or hydroxyalkyl each of 1–6 C atoms, cycloalkyl or alkylcycloalkyl each of 3–8 total C atoms, hydrocarbon aryl or hydrocarbon aralkyl each of 6–15 total C atoms or hydrocarbon aryl or hydrocarbon aralkyl each of 6–15 C total atoms and each monosubstituted or disubstituted in the aryl group by C_{1-6}-alkyl, C_{1-6}-alkoxy, OH, Cl or a combination thereof, and/or monosubstituted by methylenedioxy,

Z is —$(CHOH)_n$—H and

n is 2, 3, 4 or 5.

4,762,934

DIAMINOETHER COMPOSITIONS

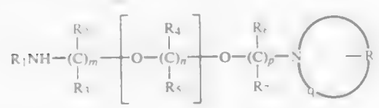
Eugene L. Stogryn, Edison, and Guido Sartori, Linden, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 339,884, Jan. 18, 1982, abandoned. This application Jan. 3, 1984, Ser. No. 567,569

Int. Cl.[4] **C07D** *211/14, 207/08, 223/04, 225/02*

U.S. Cl. 548—569 **4 Claims**

1. A diaminoether of the formula:



wherein R_1 is an alkyl or hydroxyalkyl radical having 2 to 8 carbon atoms or a cycloalkyl or hydroxycycloalkyl radical having 3 to 8 carbon atoms, R_2, R_3, R_4, R_5, R_6 and R_7 are each independently selected from the group consisting of hydrogen and C_1–C_4 alkyl and C_1–C_4 hydroxyalkyl radicals, with the proviso that if the carbon atom of R_1 which is directly attached to the nitrogen atom is secondary, at least one of R_2 or R_3 bonded to the carbon atom which is bonded to the nitrogen atom is an alkyl or hydroxyalkyl radical and if R_1 is primary, both R_2 and R_3 bonded to the carbon atom which is bonded to the nitrogen atom are alkyl or hydroxyalkyl radicals, m, n and p are positive integers each independently ranging from 2 to 4, o is either zero or a positive integer ranging from 1 to 10, q, representing the number of carbon atoms in the heterocyclic ring, is a positive integer ranging from 3 to 8, and R, which is optional, is selected from the group consisting of hydroxyl, C_1–C_4 alkyl, C_1–C_4 hydroxyalkyl, C_3–C_6 cycloalkyl and C_3–C_6 hydroxycycloalkyl radicals which may be substituents of one or more of the carbon atoms of the nitrogen heterocyclic ring.

3. The diaminoether, 1-(pyrrolidinylethoxy)-2-(t-butylaminoethoxy)ethane.

4,762,935

PRECURSORS AND SYNTHESIS OF METHYL-9-OXO-11α,16-DIHYDROXY-16-VINYL-5-CIS-13-TRANS-PROSTADIENOATES

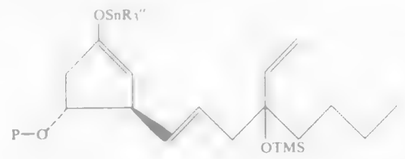
Allan Wissner, Ardsley; Kenneth E. Green, Suffern; Philip R. Hamann, Pearl River, and Jeremy Levin, Spring Valley, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Oct. 6, 1986, Ser. No. 915,432

Int. Cl.[4] **C07F** *7/22*

U.S. Cl. 549—210 **1 Claim**

1. A compound in optically active or racemic form selected from those of the formula:



wherein P is tetrahydropyranyl or trialkylsilyl (C_1 to C_6 straight or branched chain) and R'' is a phenyl ring or a phenyl ring optionally substituted with one or more C_1 to C_5 alkyl groups.

4,762,936

BICYCLO(3.3.0)OCTENE DERIVATIVES

Masakatsu Shibasaki; Toshiaki Mase, both of Tokyo; Mikiko Sodeoka, and Yuji Ogawa, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

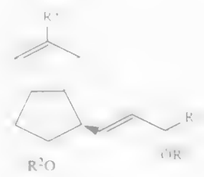
Division of Ser. No. 641,587, Aug. 17, 1984, Pat. No. 4,681,951. This application Dec. 11, 1986, Ser. No. 940,349

Claims priority, application Japan, Dec. 27, 1983, 58-244695; Feb. 10, 1984, 59-22010; Mar. 28, 1984, 59-58458

Int. Cl.[4] **C07D** *309/10;* **C07C** *47/40, 35/26*

U.S. Cl. 549—214 **3 Claims**

1. A bicyclo[3.3.0]octene derivative represented by the formula:



wherein

R^1: a straight, branched or cyclic alkyl group or alkenyl group each having 5 to 10 carbon atoms;

R^2 and R^3: each represent a hydrogen atom or a protective group of a hydroxy group; and

R^4: —CH=CH—$(CH_2)_2$—$COOR^5$ or —CH_2R^6;

where

R^5: a hydrogen atom or an alkyl group; and

R^6: a hydroxy group, an acetyloxy group or a butenyl group.

4,762,937

METHOD FOR PREPARING LINEAR ORGANOPOLYSILOXANEDIOLS

Ralph Ottlinger, Murnau, and Rudolf Reitmeier, Triftern, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Aug. 6, 1987, Ser. No. 82,606

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1986, 3629381

Int. Cl.[4] **C07F** *7/08*

U.S. Cl. 556—459 **4 Claims**

1. A method for preparing linear organopolysiloxanediols, which comprises continuously introducing cyclic organopolysiloxanes, water in an amount of at least 14 moles per gram atom of silicon present in the cyclic organopolysiloxanes and a water-soluble acid catalyst selected from the group consisting of Brönsted acids having an acid dissociation constant of at least $6.5 \cdot 10^{-2}$ at 25° C., Lewis acids and mixtures thereof into a loop reactor while continuously separating the aqueous phase from the organopolysiloxanediols as the reaction mixture exits from the reactor.

4,762,938

PROCESS FOR THE PREPARATION OF ALKOXYSILANES

Hans G. Fröhlen, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 28, 1987, Ser. No. 103,120

Claims priority, application Fed. Rep. of Germany, Oct. 10, 1986, 3634524

Int. Cl.[4] **C07F** *7/04, 7/18*

U.S. Cl. 556—470 **8 Claims**

1. In an improved process for the preparation of alkoxysilanes of the formula

$$R_x^1Si(OR^2)_{4-x}$$

by reacting a halosilane with an alcohol wherein:

each R^1, independently of one another, represents hydrogen, C_1–C_4-alkyl, C_2–C_4-alkenyl, or aryl having 6 to 10 carbon atoms;

R^2 represents alkyl having 1 to 4 carbon atoms; and

x has the value 0, 1, 2 or 3;

the improvement comprises reacting the halosilane with monohydric alcohol and a trialkyl phosphite.

4,762,939

PROCESS FOR TRIALKOXYSILANE/TETRAALKOXYSILANE MIXTURES FROM SILICON METAL AND ALCOHOL

Frank D. Mendicino, Marietta, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1987, Ser. No. 102,738

Int. Cl.[4] **C07F** *7/04*

U.S. Cl. 556—470 **11 Claims**

1. A process for producing controlled trialkoxysilane/tetraalkoxysilane mixtures of the formula $HSi(OR)_3/Si(OR)_4$ wherein R is an alkyl group containing from 1 to 6 carbon atoms which comprises:

(a) forming a reaction mixture comprising an alcohol of the formula ROH wherein R is as defined above, a mixed solvent, silicon metal, and a catalytically effective amount of copper catalyst; and

(b) reacting said alcohol with said silicon metal in the presence of said copper catalyst and mixed solvent to produce the trialkoxysilane/tetraalkoxysilane mixture,

wherein said mixed solvent comprises a first, inert solvent that does not degrade during the reaction and a second solvent which is a Lewis base that acts to promote the reaction between trialkoxysilanes and alcohol.

4,762,940

METHOD FOR PREPARATION OF ALKYLHALOSILANES

Roland L. Halm, Madison, Ind.; Andrew B. Pierce, Louisville, Ky., and Oliver K. Wilding, Jr., Sully, Wales, assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 11, 1987, Ser. No. 132,444

Int. Cl.[4] **C07F** *7/16;* **B01J** *23/72*

U.S. Cl. 556—472 **19 Claims**

1. A method for controlling a process for the manufacture of alkylhalosilanes, said method comprising contacting an alkyl halide with metallurgical grade silicon at a temperature in a range from about 250° to 350° C., said silicon being in a contact mass in the presence of zinc or zinc compounds, copper or copper compounds and phosphorous or phosphorous compounds and in the absence of tin or tin compounds, wherein the zinc or zinc compounds are present in an amount such that the zinc content of the contact mass is in a range from about 100 to 10,000 parts per million by weight; wherein the copper or copper compounds are present in an amount such that the copper content of the contact mass is in a range from 0.2 to 10 weight percent, wherein the phosphorous or phosphorous compounds are present in an amount such that the phosphorous content of the contact mass is in a range from about 25 to 2500 parts per million by weight, and wherein there is at least also present in the contact mass greater than about 50 parts per million by weight arsenic, wherein the arsenic is introduced as arsenic metal, a metal arsenide or a metal alloy of arsenic.

4,762,941

POLYURETHANE ELASTOMERS COMPRISING A CHARGE CONTROL AGENT AND SHAPED ELEMENTS THEREFROM

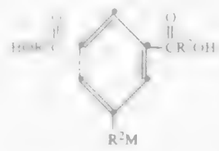
Tsang J. Chen, Rochester; Donald A. Upson, Webster, and Paul D. Yacobucci, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 944,127, Dec. 22, 1986, Pat. No. 4,729,925. This application Oct. 16, 1987, Ser. No. 109,135

Int. Cl.[4] **C07C** *41/16*

U.S. Cl. 558—44 **3 Claims**

1. A compound of the formula:



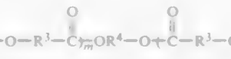
R^2 represents oxyphenylene sulfonate, oxycyclohexylene sulfonate, or p-toluenesulfonamidosulfonyl;

R^3 represents a straight or branched chain alkylene group having 2 to 7 carbon atoms;

R^4 is the same as R^3 or is —(—R^5—O—)$_x$—R^5;

R^5 is the same as R^3;

R^7 represents



m and n are integers which together are of sufficient value to achieve an R^7 molecular weight of 300 to 30,000; and

VOL 1093 ISS 2 AG 9 1988 UMI

M represents hydrogen, an alkali metal, ammonium or $P^+(C_6H_5)_3CH_3$

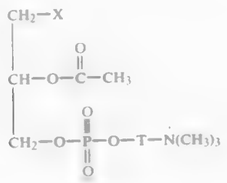
4,762,942

ANTIHYPERTENSIVE PHOSPHATE DERIVATIVES

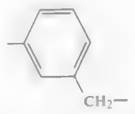
Allan Wissner, Ardsley; Phaik E. Sum, New City, both of N.Y., and Robert E. Schaub, Upper Saddle River, N.J., assignors to American Cyanamid Co., Stamford, Conn.

Filed Dec. 10, 1984, Ser. No. 679,788
Int. Cl.[4] C07F 9/10
U.S. Cl. 558—169 5 Claims

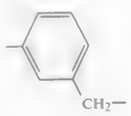
1. Compounds, including the individual R and S enantiomers and racemic mixtures, represented by the formula



wherein X is substituted phenoxy wherein the substituents are selected from C_1–C_{24} branched or straight chain alkyl and wherein T is a bivalent radical selected from the group consisting of $-(CHR)_p-$ and



wherein p is an integer from 1 to 15, the moiety $-(CHR)_p-$ represents an alkylene chain substituted at any position with one of more C_1–C_{10} alkyl groups or phenyl groups, and the moiety



is bound with the oxygen atom attached directly to the aromatic ring.

4,762,943

AROMATIZATION PROCESS

Venkataraman Ramachandran, and John R. Maloney, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 30, 1986, Ser. No. 880,070
Int. Cl.[4] C07C 121/62
U.S. Cl. 558—423 19 Claims

1. A process which comprises intimately mixing a 6-alkoxy-1-cyano-3,4-dihydronaphthalene with a base selected from alkali metal and tetraalkylammonium hydroxides and alkoxides in the presence of a hydrogen acceptor so as to aromatize the dihydronaphthalene.

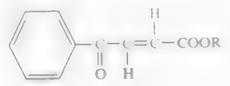
4,762,944

BUTENOIC ACID DERIVATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND PROCESS FOR PREPARING SAME

János Fischer; László Dobay; Elémer Ezer; Judit Matuz; László Szporny, and Tibor Wagner, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

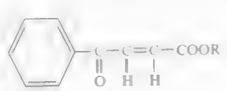
Filed Mar. 13, 1987, Ser. No. 25,339
Claims priority, application Hungary, Apr. 1, 1986, 1332/86
Int. Cl.[4] C07C 69/76
U.S. Cl. 560—051 4 Claims

1. A Butenoic acid derivative of the formula (Ia) having E-configuration



(Ia)

or a Z-isomer of the formula (Ib)



(Ib)

wherein
R is a (−)-menthyl or a (+)-menthyl group.

4,762,945

PROCESS FOR THE PREPARATION OF ASPIRIN PEROXIDE

Frederick A. Golec, Jr., Ossining, N.Y., assignor to USV Pharmaceutical Corporation, Fort Washington, Pa.

Filed Sep. 12, 1985, Ser. No. 775,272
Int. Cl.[4] C07C 69/157
U.S. Cl. 560—138 7 Claims

1. A process for preparing anhydrous 2,2'-diacetoxy-dibenzoyl-peroxide comprising the steps of:
(1) preparing a reaction mixture medium consisting of about 1 part by volume of tetrahydrofuran and about 4 parts by volume of dichloromethane;
(2) while maintaining the temperature of the reaction mixture medium below 5° C., dissolving in said reaction mixture medium 2-acetyl-salicyloyl chloride, adding a base selected from the group consisting of pyridine, sodium carbonate, potassium carbonate and calcium hydroxide to said reaction mixture medium, and adding of 50% w/w to 80% w/w aqueous hydrogen peroxide;
(3) causing a reaction between said 2-acetyl-salicyloyl chloride and said aqueous hydrogen peroxide to form 2,2'-diacetoxy-dibenzoyl-peroxide by maintaining the temperature of said reaction mixture at 5° C. to 10° C. for at least three hours but not longer than ten hours;
(4) partitioning the reaction mixture with ice water to form and retain a dichloromethane extract;
(5) diluting the dichloromethane extract with methanol; and
(6) crystallizing the anhydrous 2,2'-diacetoxy-dibenzoyl-peroxide from said extract.

4,762,946

ESTERS OF UNSATURATED CARBOXYLIC ACIDS

Wolfgang Ritter, Hilden, and Wolfgang Zoellner, Duesseldorf, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 14, 1986, Ser. No. 851,981
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1985, 3513356
Int. Cl.[4] C07C 69/68, 69/73
U.S. Cl. 560—179 25 Claims

1. An ester of an α,β-olefinically unsaturated carboxylic acid corresponding to the following formula

$$R_1—CO—[—O—A—CO—]_n—OR \quad (I)$$

wherein
R_1—CO— is an α,β-olefinically unsaturated carboxylic acid residue containing from 3 to 6 carbon atoms,
R is a saturated or unsaturated hydrocarbon radical containing from 10 to 24 carbon atoms,
—[—O—A—CO—]— is a residue or a hydroxycarboxylic acid having from 2 to 6 carbon atoms,
A is an aliphatic radical having from 1 to 5 carbon atoms, and
n is a number having a value of from 1 to 18.

16. An adduct of an alcohol and a hydroxycarboxylic acid or a reactive derivative thereof corresponding to the following formula

$$X—[—O—A—CO—]_n—OR \quad (II)$$

wherein
R is a saturated or unsaturated hydrocarbon radical containing from 10 to 24 carbon atoms,
—[—O—A—CO—]— is a residue of a hydroxycarboxylic acid having from 2 to 6 carbon atoms,
A is a aliphatic radical having from 1 to 5 carbon atoms,
X is a hydrogen atom or a radical reactive under esterification conditions, and
n is a number having a value of from 2 to 18.

4,762,947

PROCESS FOR PRODUCING 2,2-DIMETHYL-1,3-PROPANEDIOL MONO(HYDROXYPIVALATE)

Teruyuki Ninomiya, Okayama, and Yumiko Kudo, Kurashiki, both of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 11, 1986, Ser. No. 940,379
Claims priority, application Japan, Dec. 25, 1985, 60-290811
Int. Cl.[4] C07C 69/675
U.S. Cl. 560—189 5 Claims

1. A process for producing 2,2-dimethyl-3-hydroxypropyl-2,2-dimethyl-3-hydroxypropionate which comprises condensing two molecules of 2,2-dimethyl-3-hydroxypropanal in the presence of an organometallic complex compound containing a transition metal selected from the group consisting of Group III A, Group III B, Group IV A, Group IV B, Group V B, Group VI B, Group VII B, Group VIII and the Actinide series of the Periodic Table and having ligands selected from the group consisting of acetylacetonato, fluoroacetylacetonato and benzoylacetonato.

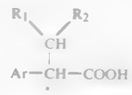
4,762,948

PROCESS FOR PREPARING OPTICALLY ACTIVE ARYLACETIC ACID DERIVATIVE

Yoshihiko Ito; Tamio Hayashi, both of Kyoto; Norio Kawamura, Yao, and Ichiki Takemoto, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 9, 1987, Ser. No. 71,306
Claims priority, application Japan, Jan. 21, 1987, 62-013248
Int. Cl.[4] C07C 57/30, 63/36
U.S. Cl. 562—496 17 Claims

1. A process for preparing an optically active arylacetic acid derivative of the formula:

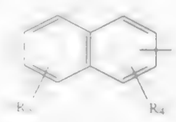


(I)

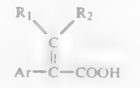
wherein R_1 and R_2 are the same or differnet and are a hydrogen atom, a lower alkyl group or a phenyl group; and Ar is a group of the formula:



a group of the formula:

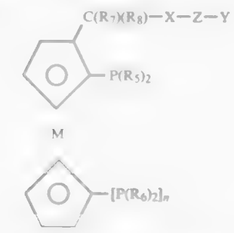


wherein R_3 and R_4 are the same or different and are each a hydrogen atom, a halogen atom, a lower alkyl group, a lower alkoxy group, a difluoromethoxy group, trifluoromethyl group or a phenyl group, which comprises asymmetrically reducing an ethylenically unsaturated compound of the formula:



(II)

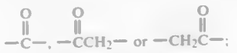
wherein R_1, R_2 and Ar are the same as defined above with hydrogen in the presence of a metal catalyst modified with a ligand selected from the group consisting of:
an optically active metallocenyl phosphine derivative of the formula:



wherein R_5 and R_6 are the same or different and are each a lower alkyl group, a C_5–C_8 cycloalkyl group, an aryl group or a C_5–C_6 heterocyclic group; R_7 and R_8 are the same or different and are each a hydrogen atom or a lower alkyl group; X is

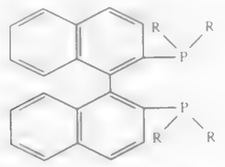
VOL 1093 ISS 2 AG 9 1988 UMI

a methylene group, an oxygen atom or a group of the formula: $-NR_9$ wherein R_9 is a hydrogen atom or a lower alkyl group; Z is an alkylene group, or a group of the formula:



Y is a group of the formula: $-OR_{10}$ or $-N<R_{11}R_{12}$ wherein R_{10}, R_{11} and R_{12} are the same or different and are each a hydrogen atom or a lower alkyl group or R_{11} and R_{12} together form a heterocyclic group containing the nitrogen atom to which they are bonded and optionally an additional oxygen or nitrogen atom; M is Fe, Ru or Os; and n is 0 (zero) or 1 (one) and

an optically active binaphthyl derivative of the formula:



wherein R is a phenyl group, a p-tolyl group, a p-methoxy-phenyl group or a cyclohexyl group.

4,762,949

ACYL AND CARBAMIMIDOYL ALKANEDIAMINES

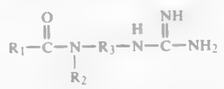
Kenneth L. Rinehart, Jr., Urbana, Ill.; Guy T. Carter, Suffern, N.Y., and Michael T. Cheng, Urbana, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Continuation of Ser. No. 50,139, Jun. 20, 1979, abandoned. This application Jan. 24, 1983, Ser. No. 460,287

Int. Cl.[4] **C07C** *103/22, 103/127, 103/133*

U.S. Cl. 564—183 **4 Claims**

1. A synthetically produced substantially pure compound having the formula



wherein R_1 is alkyl having 1–20 carbon atoms; cycloalkyl having 3–20 carbon atoms; alkylcycloalkyl or cycloalkylalkyl having 4–20 carbon atoms; phenyl; or phenyl substituted with a C1–C20 alkyl group;

R_2 is hydrogen or C_1–C_{10} alkyl; and

R_3 is a cyclic, straight or branched chain hydrocarbon group having 2–12 carbon atoms.

4,762,950

SELECTIVE OXYALKYLATON OF N-(2-HYDROXYALKYL)-ANILINE

Alexander Korczak, Grosse Ile, and William W. Levis, Jr., Wyandotte, both of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Dec. 16, 1985, Ser. No. 809,252

Int. Cl.[4] **C07C** *89/02*

U.S. Cl. 564—399 **6 Claims**

1. An oxyalkylated amine having a secondary amino nitrogen and hydroxy functional groups and a viscosity of less than about 540 cps at 25° C. prepared by reacting N-(2-hydroxyalkyl)-aniline with propylene oxide, ethylene oxide or mixtures thereof in the presence of from about 2.38 to about 5 percent based upon total charge of a catalyst at a temperature of from about 150° C. to about 200° C.

4,762,951

NARROWING THE MOLECULAR WEIGHT DISTRIBUTION OF POLY-TETRAHYDROFURAN AND OF COPOLYMERS OF TETRAHYDROFURAN AND ALKYLENE OXIDES

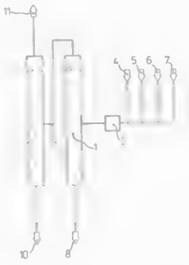
Herbert Mueller, Frankenthal, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 4, 1987, Ser. No. 21,799

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1986, 3607946

Int. Cl.[4] **C07C** *42/11;* **C08G** *59/68, 65/32*

U.S. Cl. 568—617 **10 Claims**



1. A process for narrowing the molecular weight distribution of a polymer selected from the group consisting of polytetrahydrofuran and copolymers of tetrahydrofuran and alkylene oxides, which process comprises:

mixing the polymer with a solvent mixture consisting of (a) an alkanol of 1 to 2 carbon atoms (b) a hydrocarbon of 4 to 12 carbon atoms and (c) water, the content of the individual components a, b and c in the mixture being from 8 to 60% by weight, with the ratio of solvent to polymer being sufficient to cause the mixture to separate into three phases upon standing;

allowing the mixture to form three phases;

separating said three phases from one another; and

then isolating a polymer having a narrower molecular weight distribution from each of the two lower phases.

4,762,952

METAL PERFLUOROSULPHONIC ACID POLYMER CATALYST

Michael J. Green, Yateley, England, assignor to BP Chemicals Limited, London, England

Division of Ser. No. 879,141, Jun. 26, 1986, Pat. No. 4,687,755. This application Mar. 10, 1987, Ser. No. 24,056

Claims priority, application United Kingdom, Jul. 6, 1985, 8517188

Int. Cl.[4] **C07C** *41/03*

U.S. Cl. 568—678 **8 Claims**

1. A process for the production of a glycol ether which comprises reacting an alkylene oxide with an alcohol in the presence as catalyst of a perfluorosulphonic acid polymer containing units of the formula:

$$[(SO_3)_wM(SO_3R)_{z-w}] \quad (1)$$

wherein

M is a multivalent metal cation, selected from the group consisting of Al, Zn, Se, Cu, Sn, Cr, Co, Hg, Mg, Mn, Ni, and B,

R is a C_1 to C_8 fluorinated alkyl group,

z is the valency of M, and

w is an integer having a value between 1 and z−1.

4,762,953

METHOD FOR THE PREPARATION OF SUBSTITUTED TRIHYDROXYBENZENES

Guenter Prescher, Hanau; Gebhard Ritter, Darmstadt, and Holger Sauerstein, Grosskrotzenburg, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

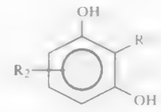
Filed Feb. 26, 1987, Ser. No. 19,093

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1986, 3607923

Int. Cl.[4] **C07C** *37/60*

U.S. Cl. 568—771 **11 Claims**

1. A method for the preparation of substituted 1,2,3- and 1,2,4-trihydroxybenzenes comprising contacting a compound which is a substituted resorcinol represented by the structural formula:



wherein

R_1 and R_2 represent hydrogen, aliphatic, saturated, straight or branched chain hydrocarbons containing 1 to 6 carbon atoms, or —COOH, $-COOR_3$, $-CH_2OR_3$, $-SO_3H$, $-NO_2$, NH_2, F, Cl, Br, or I;

R_3 represents an aliphatic saturated straight or branched chain hydrocarbon with 1 to 6 carbon atoms;

and R and R_1, with the exception of hydrogen, can be the same or different,

with aqueous hydrogen peroxide at a temperature of 60° to 150° C.,

wherein the amount of water present in the reaction composition at the initiation of the reaction is between 0.1 and 36 weight percent,

and continuing the reaction to obtain the desired trihydroxybenzenes.

4,762,954

CONTINUOUS METHOD FOR THE PRODUCTION OF 1,2-DIOLS

Rainer Siegmeier, Bad Homburg; Günther Prescher, Hanau, and Helmut Maurer, Rodenbach, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 7, 1987, Ser. No. 82,516

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1986, 3628674

Int. Cl.[4] **C07C** *29/10, 31/20*

U.S. Cl. 568—867 **9 Claims**

1. A continuous method for the production of a 1,2-diol in which an aliphatic straight-chain or branched epoxide which contains 8–30 carbon atoms or a cycloaliphatic epoxide or an epoxide cut is saponified with water at a pressure of 1–5 bar in the presence of an acidic catalyst and of a solubilizing agent which is miscible with water and inert in relation to the aqueous phase, the epoxide starting material and the diol formed, the boiling point or boiling range of said solubilizing agent being not above that of water at the prevailing column pressure of 1–5 bar, said method comprising introducing the water and the acidic catalyst as well as the epoxide to be saponified at the top of a column and flowing through the vapor-liquid mixture of the solubilizing agent located in the column and maintaining the temperature in the lower part of the column, above the column bottom, sufficiently high that the condensed solubilizing agent flowing down from the top part of the column re-evaporates before reaching the bottom and recondenses at the top of the column and the saponification of the epoxide to the corresponding diol occurs essentially in the gas-liquid phase of the solubilizing agent within the column, whereby the diols produced by the process and the aqueous acidic phase accumulate at the bottom of the column, and recovering the diols from the bottom of the column.



4,762,955

PROCESS FOR SEPARATING PARA-DICHLOROBENZENE FROM ISOMERIC MIXTURE OF DICHLOROBENZENES

Shigetoshi Yamaki, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi, Japan

Filed May 15, 1986, Ser. No. 863,601

Claims priority, application Japan, May 23, 1985, 60-111261

Int. Cl.[4] **C07C** *17/38, 25/08*

U.S. Cl. 570—211 **15 Claims**

1. A process for separating p-dichlorobenzene from an isomeric mixture of dichlorobenzenes, including m-dichlorobenzene, comprising adding 1-bromo-4-chlorobenzene, 1,4-dibromobenzene or a mixture of 1-bromo-4-chlorobenzene and 1,4-dibromobenzene, heating the thus formed mixture to dissolve a part or the whole of the solid material, cooling the thus obtained mixture to a temperature lower than 30° C., thereby crystallizing eutectic crystals consisting essentially of said 1-bromo-4-chlorobenzene and/or 1,4-dibromobenzene and p-dichlorobenzene, thus separating p-dichlorobenzene.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,956

NOVEL CATALYST AND PROCESS FOR HYDROGENATION OF UNSATURATED HYDROCARBONS

Xin X. Liu; Bing Y. Zhao, both of Beijing, China; Herbert Riegel, Maplewood, and Jo-Lung Chien, Cedar Grove, both of N.J., assignors to Beijing Research Institute of Chemical Industry He Ping Li, Beijing, China

Continuation of Ser. No. 484,626, Apr. 13, 1983, abandoned. This application Apr. 30, 1986, Ser. No. 858,546

Int. Cl.[4] C07C *5/08*

U.S. Cl. 585—259 27 Claims

1. A process for selectively hydrogenating an impurity selected from the group consisting of acetylenic compounds, dienes and mixtures thereof in a feed containing at least one mono-olefin and said impurity, comprising:

selectively hydrogenating said impurity in the presence of a catalyst consisting essentially of palladium supported on an alumina support which is substantially crystalline alpha-alumina, said support having been calcined at a temperature of at least 1150° C. and no greater than 1400° C., said palladium being present on said support in an amount effective to catalyze said selective hydrogenation, said catalyst having an average pore radius of from 200 to 2000 Å,

with at least 80% of the pores having a pore radius within the range of from 100 to 3000 Å.

4,762,957

PROCESS FOR ISOMERIZATION OF ALKYLAROMATICS

J. W. Adriaan Sachtler, Des Plaines, and R. Joe Lawson, Palatine, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jun. 10, 1987, Ser. No. 60,195

Int. Cl.[4] C07C *5/22*

U.S. Cl. 585—481 11 Claims

1. A process for the isomerization of a non-equilibrium feed mixture of xylenes containing ethylbenzene comprising contacting the feed mixture in the presence of hydrogen at isomerization process conditions with a catalyst containing 0.2–2.0 wt. % magnesium and consisting essentially of an alumina matrix, at least one Group VIII metal component, and 1 to 50 wt. % of a magnesium-containing zeolite, wherein the magnesium containing zeolite is prepared by contacting a hydrogel comprising pseudo-boehmite alumina and zeolite with an aqueous magnesium solution.

4,762,958

PROCESS AND FURNACE FOR THE STEAM CRACKING OF HYDROCARBONS FOR THE PREPARATION OF OLEFINS AND DIOLEFINS

André Martens, and Serge Bellet, both of Chateauneuf les Martigues, France, assignors to Naphtachimie S.A., Tour Neptune, France

Filed Jun. 16, 1987, Ser. No. 62,885

Claims priority, application France, Jun. 25, 1986, 86 09219; Jun. 25, 1986, 86 09221

Int. Cl.[4] C07C *4/04*; C10G *9/00*

U.S. Cl. 585—613 8 Claims

1. A process for the preparation of olefins and diolefins by the cracking of hydrocarbons in the presence of steam, wherein a mixture of hydrocarbons and steam flowing in a cracking tube disposed inside a furnace radiation zone is passed through such zone in a dwell time of between 300 and 1800 milliseconds at a furnace outlet pressure of between 120 and 240 kPa, the process being characterized in that

(a) the cracking temperature of the mixture of hydrocarbons and steam increases from the inlet temperature of the radiation zone of between 500° and 700° C. to the outlet temperature of such zone of between 800° and 880° C., the increase in temperature being associated with a non-homogeneous distribution of the thermal power of the furnace applied along the cracking tube, the distribution being such that the thermal power applied to the first half of the tube length, situated towards the inlet of the radiation zone, is 1.5 to 5 times greater than that applied to the second half of the tube length, situated towards the outlet of such zone, and

(b) the reaction volume of the second half of the length of the cracking tube, situated towards the outlet of the radiation zone, is 1.3 to 4 times greater than that of the first half of the tube length, situated towards the inlet of such zone.

4,762,959

COBALT CATALYSTS, AND USE THEREOF FOR THE CONVERSION OF METHANOL AND FOR FISCHER-TROPSCH SYNTHESIS, TO PRODUCE HYDROCARBONS

Charles H. Mauldin; Stephen M. Davis, and Kym B. Arcuri, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 922,885, Oct. 24, 1986, which is a division of Ser. No. 813,918, Dec. 27, 1985, Pat. No. 4,663,305. This application Jun. 4, 1987, Ser. No. 57,302

Int. Cl.[4] C07C *1/00*

U.S. Cl. 585—640 6 Claims

1. A process useful for the conversion of methanol to hydrocarbons which comprises contacting said methanol at reaction conditions with a catalyst which comprises from about 2 percent to about 25 percent cobalt, based on the weight of the catalyst composition, composited with titania, or a titania-containing support, to which is added a zirconium, hafnium, cerium, or uranium promoter, the weight ratio of the zirconium, hafnium, cerium, or uranium metal:cobalt being greater than about 0.010:1; said reaction conditions being defined within ranges as follows:

Methanol:H_2 ratio: greater than about 4:1
Space Velocities, hr^{-1}: about 0.1 to 10
Temperatures, °C.: about 150 to 350
Methanol Partial Pressure, psia: about 100 to 1000.

4,762,960

DEHYDROGENATION CATALYST COMPOSITION AND PARAFFIN DEHYDROGENATION

Tamotsu Imai, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 18,541, Feb. 25, 1987, Pat. No. 4,716,143, which is a continuation-in-part of Ser. No. 871,356, Jun. 6, 1986, abandoned. This application Aug. 12, 1987, Ser. No. 84,343

Int. Cl.[4] C07C *5/36*

U.S. Cl. 585—660 8 Claims

1. A hydrocarbon dehydrogenation process for enhancing the formation of total normal olefins comprising contacting a hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising a platinum group metal component; a modifier metal component selected from the group consisting of a tin component, germanium component, rhenium component, and mixtures thereof; an alkali metal component, or an alkaline earth metal component or mixtures thereof on a refractory oxide support having a nominal diameter of at least about 850 microns wherein the platinum group component and the modifier metal component are surface-impregnated such that the average concentration of the surface-impregnated platinum group metal component and modifier metal component on the outside 100 micron layer of the catalyst particle are each at least 2 times the concentration of the respective platinum group metal component and modifier metal component in the 200 micron diameter center core of the catalyst.

4,762,961

PREPARATION OF VANADIUM III OXIDIC COMPOUNDS AND DEHYDROGENATION OF PARAFFINS

Andrew T. Guttmann, Maple Heights; James F. Brazdil, Mayfield Village, and Robert K. Grasselli, Aurora, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 941,881, Dec. 15, 1986. This application Aug. 21, 1987, Ser. No. 88,918

Int. Cl.[4] C07C *5/333*

U.S. Cl. 585—661 2 Claims

1. The vapor phase catalytic dehydrogenation of a C_2–C_4 paraffin by contacting said paraffin with a spinel of the formula

$$A^{III}V_{2-x}{}^{III}C_x{}^{III}O_4 \qquad \text{formula (1)}$$

or a crystalline perovskite of the formula

$$D^{III}V_{1-y}{}^{III}C_y{}^{III}O_3 \qquad \text{formula (2)}$$

where A is one or more of Mg, Zn, Mn, Fe, Co, Ni, Cu and Cd; D is one or more of Y, the rare earths and Bi; C is one or more of Al, Ga, Cr, Fe and Co, x is zero to <1.9, and y is zero to <0.9, which spinel or perovskite is made by a process which comprises (1) reducing a pentavalent vanadium oxidic compound to substantially the V^{III} state by heating at 100° C. or less an aqueous medium slurry or solution of said pentavalent compound containing a reducing agent selected from hydrazine and a hydrocarbylhydrazine, (2) providing in said aqueous medium ether before, during or after said reducing step, A^{II}, D^{III} and C^{III} cations in solution in the ratio called for by the selected formula, (3) removing the liquid aqueous medium, and (4) calcining the resulting dry solid at a temperature in the range from 400° to 800° C. in an inert atmosphere.

4,762,962

PROCESS FOR THE ISOMERIZATION OF BRANCHED DIENES

Lawson G. Wideman, Tallmadge, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 8, 1987, Ser. No. 59,370

Int. Cl.[4] C07C *5/27, 11/12*

U.S. Cl. 585—671 14 Claims

1. In the process for the isomerization of a branched diene which comprises passing the branched diene in the vapor phase over a boron phosphate catalyst, the improvement comprising a catalyst which has an initial molar ratio of P/B of less than 1.0 but more than 0.6.

4,762,963

Patent Not Issued For This Number

4,762,964

YENSEN 3A

Nicholas P. Yensen, Tucson, Ariz., assignor to Salt Weeds, Tucson, Ariz.

Filed Sep. 29, 1986, Ser. No. 912,226

Int. Cl.[4] A01H *1/02*

U.S. Cl. 800—1 3 Claims

1. A new and distinct plant variety, Yensen 3a, of *Distichlis palmeri*, which is principally characterized by vigorous growth, high pollen production and ideal height for pollination.

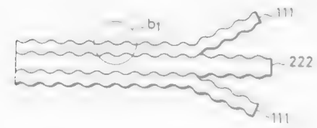
VOL
1093
ISS
2
AG
9
1988
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4,762,965

INSULATING POLYOLEFIN LAMINATE PAPER AND METHOD FOR PRODUCING SAME, AND ELECTRIC POWER SUPPLY CABLE

Ryosuke Hata; Shosuke Yamanouchi; Masayuki Hirose, all of Osaka; Hidemitsu Kuwabara, Shizuoka; Yasuharu Mizumoto, Shizuoka, and Yasuhiro Hagiuda, Shizuoka, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Division of Ser. No. 649,004, Sep. 10, 1984, Pat. No. 4,673,607.
This application Nov. 7, 1986, Ser. No. 927,984
Claims priority, application Japan, Sep. 9, 1983, 58-167082
Int. Cl.[4] H02G *15/20*
U.S. Cl. 174—23 R 7 Claims



1. An oil-filled electric power supply cable comprising a conductor, and a plurality of insulating layers, at least one of said insulating layers consisting of an insulating polyolefin laminated paper comprising first and second fiber paper layers having an impermeability of 20 to 4000 Gurley-seconds and a polyolefin film layer to which said first and second fiber paper layers are laminated, at least one of said fiber paper layers being mechanically deformed prior to lamination in such a manner that irregularities whose depth is 2 to 50% of the thickness of said fiber paper layer are formed thereon, and a water content of said fiber paper layers being controlled to 4% or less immediately before laminating to said polyolefin film layer, said fiber paper layers having a thickness of at least 30 microns.

4,762,966

ELECTROMAGNETIC SIGNAL INTERFERENCE SHIELDING GASKET APPARATUS

David E. Kosanda, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 26, 1987, Ser. No. 67,512
Int. Cl.[4] H05K *9/00*
U.S. Cl. 174—35 GC 7 Claims



2. Electomagnetic radiation interference (EMI) reduction apparatus for use in conjunction with a sheet metal edge which abuts a flat surface comprising, in combination:

a plurality of contact fingers electrically and mechanically interconnected at the base thereof, each of said contact fingers being substantially identical, formed from mechanically resilient material and comprising first, second, third and fourth substantially flat surface portions;

said first and second portions comprising a part of the base and forming a V-shaped first angle for supplying a force, in a direction away from said base, parallel to the side of the sheet metal; and

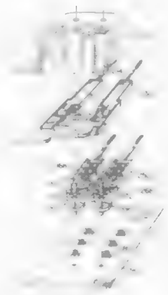
said third and fourth portions forming a U-shaped second angle for slideably enclosing a section of the sheet metal edge, the portions forming the second angle being connected to the portions forming said first angle and resiliently moving in an outwardly direction, parallel to the surface of the sheet metal, in response to forces from the portions forming said first angle.

4,762,967

MODULAR PUSH TYPE LATCHING AND CROSS CANCELLING SWITCHES

Robert C. Burdick, Romulus, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Jul. 2, 1987, Ser. No. 69,134
Int. Cl.[4] H01H *9/26*
U.S. Cl. 200—50 C 14 Claims



1. A plurality of push type latching switches which are capable of cross cancelling which comprises:

a first contact carrier mounted for sliding displacement including a contact carrier cam surface and an interference tab;

a second contact carrier mounted in juxtaposition to the first contact carrier for sliding displacement and including a contact carrier cam surface and an interference tab;

a first rotatable cam mounted adjacent the first contact carrier and including cam surfaces coacting with the first contact carrier cam surface for controlling positioning of the first contact carrier and rib means by which the first rotatable cam may be rotated;

a second rotatable cam mounted adjacent to the second contact carrier and including cam surfaces coacting with the second contact carrier cam surface for controlling positioning of the second contact carrier and rib means by which the second rotatable cam may be rotated;

a first cam actuator including a primary actuator tongue and, spaced therefrom, a secondary actuator tongue, said primary actuator tongue being positioned to engage the rib means of the first rotatable cam and said secondary actuator tongue being positioned to engage the rib means of the second rotatable cam; and

a second cam actuator including a primary actuator tongue and spaced therefrom a secondary actuator tongue, said primary actuator tongue being positioned to engage the rib means of the second rotatable cam and the secondary actuator tongue being positioned to engage the rib means of the first rotatable cam thereby upon displacement of one cam actuator one or both of said contact carriers may be displaced by interaction of the cam actuator with the first and second rotatable cams.

VOL 1093 ISS 2 AG 9 1988 UMI

4,762,968
EMERGENCY CUT OFF DEVICE
David Hilton, 13220 Night Owl La., Palm Beach Gardens, Fla. 33418, assignor to David Hilton, Palm Beach Gardens, Fla.
Filed Sep. 15, 1987, Ser. No. 96,905
Int. Cl.[4] H01H *35/00, 17/08;* G08B *23/00*
U.S. Cl. 200—52 R 8 Claims



1. A safety switch for a motor vehicle, comprising:
an enclosure, said enclosure comprising first and second switch terminal pair means, said first switch terminal pair means connected to first electrical circuit means, said first electrical circuit means disabling operation of the motor of said motor vehicle, and second switch terminal pair means connected to second electrical circuit means, said second electrical circuit means activating a sensory alarm means;
switch contactor means mounted in said enclosure for movement between a first position in which said switch contactor means electrically connects said first switch terminal pair means, and a second position in which said switch contactor means electrically connects said second switch terminal pair means;
biasing means for continuously biasing said switch contactor means into said second position;
displaceable holding means for maintaining said switch contactor means in said first position; whereby said motor will operate and said sensory alarm means will be deactivated;
means for attaching the displaceable holding means to a driver;
said displaceable holding means being displaced upon movement of said attachment means when said attachment means detects an abnormal condition of the driver;
whereby said biasing means biases said switch contactor means into said second position, said first electrical circuit means is opened thereby disabling operation of said motor, and said second circuit means is closed thereby causing actuation of said sensory alarm means.

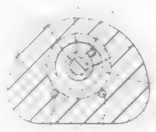
4,762,969
REMOTELY PRESSURE-OPERABLE ELECTRICAL SWITCH
Peter M. Tracey, Bury St. Edmonds, United Kingdom, assignor to Bestquint Limited, Edmonds, England
Filed Nov. 18, 1986, Ser. No. 932,230
Int. Cl.[4] H01H *35/34*
U.S. Cl. 200—81.4 12 Claims

12. A pressure switch comprising:
chamber means (**38, 40**) defining a variable volume chamber (**46**) to receive pressure pulses (via **44**) from an actuator, the variable volume chamber having a diaphragm (**38**) movable forwardly-and-rearwardly along a first axis in response to such pressure pulses;
an electrical switch (**72**) having first and second states and having an actuator element (**76**) movable to change the state of the switch; and
a mechanism (**22**) for transmitting motion from the diaphragm to the switch upon a first forward-and-rearward movement of the diaphragm and to change back the state of the switch upon a subsequent forward-and-rearward movement of the diaphragm;
the mechanism comprising:
a latch element (**32**) which is movable forward-and-rearward along said axis in response to movement of the diaphragm and which is rotatable about said axis, the element having rearward (at **P1**/**P10**) and forward (at **P5**) stable positions corresponding to the first and second states, respectively of the switch, the latch element having a radial projection (**64**); and
cam means (**C1, C2, C3, C4**) for guiding the projection (**64**) such that:



(a) upon a forward-and-rearward movement (**P1, P2, P3, P4, P5**) of the latch element from the rearward stable position (at **P1**) thereof, the cam means (**C1, C2**) (i) causes the latch element (**32**) to rotate to one angular position (at **P5**) and (ii) engages the projection (**64**) in said one angular position (at **P5**) of the latch element to prevent rearward movement of the latch element past the forward stable position (at **P5**) thereof; and
(b) upon a forward-and-rearward movement (**P5, P6, P7, P8, P9, P10**) from the forward stable position (at **P5**) thereof, the cam means (**C3, C4**) (i) causes the latch element (**32**) to rotate to a further angular position (at **P10**) and (ii) permits the latch element to move to the rearward stable position thereof in the further angular position.

4,762,970
ELONGATE PRESSURE ACTUATED ELECTRICAL SWITCH
Peter A. Brinsley, Warrington, England, assignor to BICC Public Limited Company, London, England
Filed Aug. 14, 1987, Ser. No. 85,976
Claims priority, application United Kingdom, Aug. 22, 1986, 8620474
Int. Cl.[4] H01H *3/14*
U.S. Cl. 200—86 R 9 Claims



1. An elongate pressure actuated electrical switch comprising a central elongate electric conductor; a flexible elongate element of electrically insulating material helically wound around the central conductor; a flexible tubular body of electrically conductive material which is coaxial with and surrounds the central conductor; at least one outer electric conductor in electrical contact with the outer surface of said flexible electrically conductive tubular body; and an overall outer sheath of electrically insulating material, wherein the outer conductor is of elongate form and extends lengthwise alongside the flexible electrically conductive tubular body, the overall outer electrically insulating sheath has at least one substantially flat surface for supporting the elongate electrical switch on the ground and the elongate outer conductor is embedded in the overall outer sheath at a position intermediate of said substantially flat surface of the sheath and the central longitudinal axis of the central conductor.

4,762,971
SPRING-TYPE OPERATING MECHANISM FOR A CIRCUIT INTERRUPTER
Kiyoshi Yabe, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan
Continuation of Ser. No. 784,037, Oct. 4, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 20,171
Int. Cl.[4] H01H *3/30*
U.S. Cl. 200—153 SC 2 Claims



1. A high-speed reclosing circuit interrupter comprising:
a circuit interrupter unit;
a frame;
a main shaft rotatably supported on the frame;
lever means connecting said main shaft to operate said circuit interrupter unit;
a ratchet wheel mounted for rotation with said main shaft, said ratchet wheel having teeth over a portion of the circumference thereof;
pawl means for engaging the teeth of said ratchet wheel to rotate said ratchet wheel and main shaft in a first direction and for holding said ratchet wheel and main shaft in open and closed positions spaced approximately 180 degrees apart;
a closing spring connected to said ratchet wheel to be compressed in a charged condition as said ratchet wheel rotates in the first direction to the open position;
latch means for holding said main shaft and lever means at an open position corresponding to an open position of said interrupter unit with said closing spring in the charged condition;
means for releasing said latch means to allow said closing spring to expand and release charged energy upon a closing operation of the interrupter unit;
means connecting said closing spring to rotate said ratchet wheel and main shaft in the first rotary direction and move said lever means from the open toward the closed position to carry out the closing operation when said closing spring expands, the rotation of said ratchet wheel and main shaft continuing in the first rotary direction to a point beyond the closed position where the direction of rotation momentarily reverses; and
a one-way rotary engagement means operatively connected between said main shaft and said frame to allow rotation of said ratchet wheel and shaft in the first rotary direction and immediately operating to brake the shaft and thereby prevent reverse rotation of the shaft beyond momentary movement sufficient to engage the engagement means at the point when the direction of rotation reverses and before the ratchet teeth engage the pawl means to reduce impact force upon engagement between the pawl means and the ratchet teeth.

4,762,972
ENCLOSED EXTERNALLY ACTUATED SWITCH ASSEMBLY
John O. Roeser, Barrington, Ill., assignor to Otto Engineering, Inc., Carpentersville, Ill.
Filed Nov. 14, 1986, Ser. No. 931,531
Int. Cl.[4] H01H *9/04*
U.S. Cl. 200—302.1 24 Claims



1. An apparatus comprising a housing having a bore through a wall portion thereof; a shaft movably mounted within said housing and having a portion extending through said bore; and a rotary seal structure capable of preventing molecules of gas under a predetermined pressure differential from passing into or out of said housing between said bore and shaft, said rotary seal structure comprising; first and second resilient O-ring seal members surrounding said shaft and disposed in sealing relation with surface portions of said shaft and bore radially respectively inwardly and outwardly of said first and second resilient O-ring seal members; a third resilient O-ring seal member surrounding said shaft between said first and second O-ring seal members and disposed in sealing relation with surface portions of said shaft and bore radially respectively inwardly and outwardly of said third resilient O-ring seal member; and a quantity of lubricating oil within said bore and in contact with said third O-ring seal member, said first and second O-ring seal members being of a size and composition to prevent passage of said lubricating oil therepast within said bore, and said third O-ring seal member being of a size and composition to prevent passage therepast within said bore of gas molecules under a predetermined pressure differential.

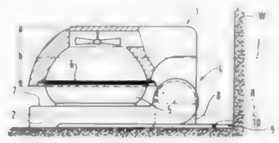
4,762,973
MICROWAVE OVEN WITH A HINGED COVER TO SEAL A COOKING CONTAINER
Horst Schultz, Massenheim, Fed. Rep. of Germany, assignor to Alfa Institut fur Hauswirtschafliche Produkt-und Verfahrens-Enwicklung GmbH, Fed. Rep. of Germany
PCT No. PCT/DE86/00356, § 371 Date Jul. 10, 1987, § 102(e) Date Jul. 10, 1987, PCT Pub. No. WO87/01550, PCT Pub. Date Mar. 12, 1987
PCT Filed Sep. 4, 1986, Ser. No. 50,702
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1985, 3532153
Int. Cl.[4] H05B *6/80*
U.S. Cl. 219—10.55 E 22 Claims

1. A microwave device for the preparation of food comprising;
(a) a lower part including a support surface;
(b) a cooking container in the form of a pot, bowl or pan

VOL 1093 ISS 2 AG 9 1988 UMI

having an upper rim and forming a first part of a cooking and microwave containment area, said container being adapted to be set onto said support surface of said lower part; and

(c) an upper part including a microwave source to direct microwave energy into said container, said upper part being pivotally connected to said lower part by a connecting piece, said upper part forming a second part of the



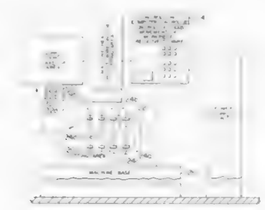
cooking and microwave containment area and wherein said upper part is pivotable about said connecting piece whereby an upper rim of said container rests against said upper part in a manner which seals against the leakage of microwave radiation from said container when said upper part is in a closed operating position and wherein said upper part is further pivotable to a resting position substantially against said support surface.

4,762,974

ELECTRICALLY INDEPENDENT WIRE ELECTROEROSION DISCHARGE MACHINE

Harry Kern, 82 Aspen Dr. W., Woodbury, N.Y. 11797

Filed Jan. 20, 1987, Ser. No. 4,647
Int. Cl.[4] B23H *7/10*
U.S. Cl. 219—69 W 7 Claims



1. An electrically independent multiple electroerosion apparatus comprising:

a plurality of workpieces;

a take-up and supply area for at least three supply spools and at least three take-up spools for at least three electrically conductive wires, each of said at least three wires being insulated from the remaining wires in said at least three wires so that differing currents can be simultaneously applied to said each of said at least three wires;

a cutting area in which said at least three wires operate simultaneously each with a different tension and a different speed, said each of said at least three wires being capable of being passed a sufficiently close distance to each workpiece of said plurality of workpieces so that when said differing currents are simultaneously passed through said each of said at least three wires said plurality of workpieces are electrically eroded simultaneously to form different figured workpieces from different materials of different thicknesses;

means for positioning and retaining said each of said at least three wires in said cutting area; and

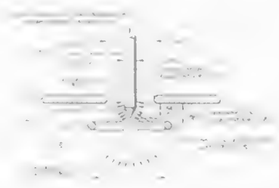
means for controlling said speed and said tension of said each of said at least three wires.

4,762,975

METHOD AND APPARATUS FOR MAKING SUBMICROM POWDERS

John F. Mahoney, So. Pasadena; Scott D. Taylor, Azusa, and Julius Perel, Altadena, all of Calif., assignors to Phrasor Scientific, Incorporated, Duarte, Calif.

Continuation of Ser. No. 577,073, Feb. 6, 1984, abandoned. This application Nov. 12, 1987, Ser. No. 120,679
Int. Cl.[4] B23K *15/00*; B05D *1/06*
U.S. Cl. 219—69 R 23 Claims



1. A method of forming ultrafine particles comprising the steps of:

providing a consumable rod of a material to be melted and formed into said particles, the rod having a diameter such that upon melting of the tip thereof the surface tension of the molten material will hold the molten tip against the unmelted portion of the rod;

melting the tip of the rod; and

applying an electric field to the molten tip to create electrostatic forces which are high enough to overcome the surface tension of the molten tip to thereby generate a beam of ultrafine droplets of said material.

4,762,976

ELECTRODE HOLDER

Richard M. Miller, Windsor, and Douglas J. Cote, Tecumseh, both of Canada, assignors to Newcor Canada, Ltd., Windsor, Canada

Filed Jul. 9, 1986, Ser. No. 883,795
Int. Cl.[4] B23K *11/30*
U.S. Cl. 219—119 7 Claims



1. An electrode holder for electrical welding of a workpiece, comprising:

housing means including a tubular body defining therein an axially elongated chamber, said tubular body having opposed inner surfaces;

electrode shaft means movably supported on said housing means for slidable displacement relative thereto in a direction substantially parallel with the longitudinal axis of said chamber, said shaft means having a head part which is disposed within said chamber and axially slidably supported on said tubular body, said shaft means also including an elongate stem portion which projects axially outwardly from said body for engagement with the workpiece;

a main biasing spring disposed within said chamber in coaxial alignment with said shaft means, said main biasing spring having opposite ends thereof seatingly supported on said housing means and said head part for urging said shaft means axially outwardly of said housing means;

contact means mounted on said head part and slidably cooperating with said tubular body for transmitting electrical current from said tubular body to said shaft means;

said contact means including first and second substantially identical contact structures disposed adjacent opposite sides of said head part and resiliently biased outwardly in opposite directions for slidable engagement with the opposed inner surfaces of said tubular body;

said head part having a pair of substantially parallel and oppositely directed contact surfaces thereon;

each said contact structure including a pair of separate and independently movable contact members, said pair of contact members defining thereon a pair of oppositely directed faces which are respectively maintained in supportive and slidable engagement with said contact surfaces; and

spring means urging said contact members in opposite directions for maintaining the faces thereon in supportive and slidable engagement with said contact surfaces, said spring means being structurally and functionally independent of said main biasing spring.

4,762,977

DOUBLE ARC PREVENTION FOR A TRANSFERRED-ARC FLAME SPRAY SYSTEM

James A. Browning, P.O. Box 6, Hanover, N.H. 03755

Filed Apr. 15, 1987, Ser. No. 38,569
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121.47 24 Claims



1. In a flame spray method including feeding at least one wire or rod into the transferred arc column from a plasma torch body nozzle bore exit as an anode electrode to effect that transfer of the arc, the improvement comprising of the step of concentrically surrounding the arc column extending beyond the exit of the nozzle of the plasma torch body with a high velocity annular gaseous sheath to form an arc column guide thereby restricting the arc column within a region closely spaced radially from an axial extension of said nozzle, bore to prevent the arc column from penetrating the sheath of high velocity of gas, the high velocity annular gaseous sheath thereby causing the arc to self extinguish when the wire or rod is withdrawn from the region whose boundaries are defined by the high velocity annular gaseous sheath.

4,762,978

AIRCRAFT BATTERY ASSEMBLY

Peter G. Tanis, R.R. 1, Glenwood, Minn. 56334

Filed Jul. 22, 1986, Ser. No. 888,766
Int. Cl.[4] H05B *3/36*
U.S. Cl. 219—209 5 Claims

1. An aircraft battery comprising:

a battery box including a box-like housing with an open top and a cover that fits on the top to close the top;

an aircraft battery having dimensions to be closely accommodated within the housing;

a battery heater including an elongate, flat, generally retangular jacket approximately 0.075" thick wrapped around the battery, having a width less than the height of the battery and a length approximately equal to the circumference of the battery, said jacket having first and second vertical edges having vertically aligned eyelets, lace means interconnecting the eyelets on the first and second edges of the jacket to secure the jacket to the battery;

said jacket comprised of inner and outer layers of silicon rubber impregnated glass fiber fabric and a flexible heat-



ing element of nichrome wire grid imbedded in a layer of silicon rubber disposed between the inner and outer layers of flexible material, said nichrome wire grid providing a watt density of 0.5 W. per square inch of jacket area;

a heating jacket power lead extending from the heating jacket outward of the battery box for extension to a remote power source; and

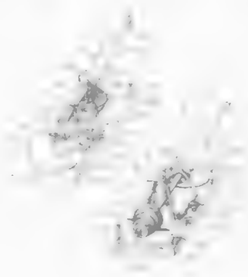
thermostat means connected to the heating jacket operative to turn power on and off to the jacket responsive to the ambient temperature, said thermostat means including a thermostat lead connected to the jacket power lead and a thermostat connected to the thermostat lead, and means securing the thermostat to a side wall of an aircraft.

4,762,979

HOLDER FOR HOLDING AN ELECTRIC SOLDERING IRON IN A USE OR A STANDBY/STORAGE POSITION

Louis E. G. Geoffroi, 10 Westdale Avenue, Nepean, Ontario, K2H 5J3, Canada

Filed Dec. 4, 1986, Ser. No. 937,902
Int. Cl.[4] H05B *1/00*; B23K *3/00*; F16M *11/00*
U.S. Cl. 219—242 17 Claims



1. A holder for a hand held type electric soldering iron which iron includes an insulated handle, a heater section and a bit, comprising

first support means;

bit support means;

base means for supporting said first support means and said bit support means in spaced relation, whereby said first support means and said bit support means are adapted to

VOL 1093 ISS 2 AG 9 1988 UMI

support an iron in a first position wherein said iron is in a stand-by or storage position with the bit in said bit support means;

said bit support means including means to inhibit air flow about a bit contained therein;

means about said bit support means constructed such as to prevent direct accidental contact with the bit support means, and second support means supported by said base means and spaced from said first support means, said first support means and second support means being adapted to hold an iron in a second position substantially opposite said first position wherein the iron is held in an operable soldering position.

4,762,980

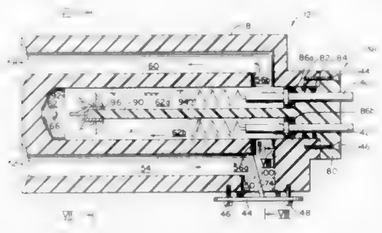
ELECTRICAL RESISTANCE FLUID HEATING APPARATUS

Harold Insley, Bridgeport, Conn., assignor to Thermar Corporation, Trumbull, Conn.

Filed Aug. 7, 1986, Ser. No. 894,269

Int. Cl.⁴ H05B *1/02, 3/82;* **F24H** *1/20*

U.S. Cl. 219—307 **15 Claims**



1. Apparatus for heating a fluid medium, comprising a housing having a fluid inlet channel and a fluid outlet channel, said housing defining a central passage opening into an exterior housing surface, a heating cartridge resident in said housing central passage, an electrical resistance heating element supported by said cartridge interiorly of said housing, said heating element including a mechanically stressed portion, and means for electrically shunting said portion of said heating element to eliminate electrical current flow through said portion to lessen the likelihood of failure of said heating element.

4,762,981

HEATING DEVICE IN PARTICULAR FOR AUTOMATIC SAMPLERS

Sorin Trestianu, Rodano Millepini, and Bruno Tosi, Carate Brianza, both of Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

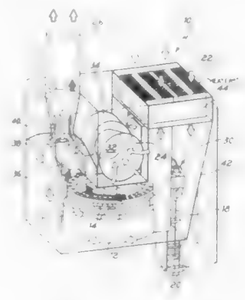
Filed Mar. 6, 1987, Ser. No. 22,410

Claims priority, application Italy, Mar. 7, 1986, 21158/86[U]

Int. Cl.⁴ H05B *3/62*

U.S. Cl. 219—400 **15 Claims**

1. Apparatus for providing heated samples to a predetermined location for chromatographic analysis comprising shroud means, sampling means within said shroud means, said sampling means including sample storage means for storing a plurality of samples and sample handling means for transporting said plurality of samples between said sample storage means and said predetermined location, said shroud means including air intake means for permitting entry of ambient air into said shroud means, heating means for heating said ambient air within said shroud means, venting means for venting said heated ambient air from said shroud means, air conducting means for conducting a flow of said ambient air from said air intake means and said heating means to said venting means, and air directing means for directing said flow of ambient air from said heating means directly to said venting means in a manner such that said flow of ambient air travels past said sample handling means and said sample storage means thereby heating



said samples in said sample handling means and said sample storage means and removing any gases generated therein.

4,762,982

METHOD AND DEVICE FOR SUPPLYING ELECTRIC CURRENT TO CERAMIC HEATERS

Michio Ohno, Kokubu; Noriyoshi Nakanishi, Hayatocho; Michihiko Miyasaka, Kokubu, and Yoshinori Shiraiwa, Kyoto, all of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Sep. 12, 1986, Ser. No. 907,074

Claims priority, application Japan, Sep. 14, 1985, 60-203999; Sep. 30, 1985, 60-150212[U]; Oct. 31, 1985, 60-245583

Int. Cl.⁴ H05B *1/02*

U.S. Cl. 219—508 **21 Claims**



1. A method of supplying electric current to a ceramic heater including a heating resistor embedded in a ceramic sintered body for heating said heating resistor, said method comprising:

supplying direct current of a given polarity to said heating resistor in a first current supply step to thereby raise said heating resistor to an elevated temperature; and

supplying direct current of an opposite polarity to said heating resistor in a second current supply step, said direct current of opposite polarity having a magnitude sufficient to maintain a stable saturation temperature of said heating resistor,

whereby ion movement in the ceramic sintered body is substantially reduced.

4,762,983

THIN ELECTRONIC APPARATUS

Yoshinori Oogita; Katsuhide Shino; Kazuhiro Nakao; Kazuhito Ozawa, and Shigeki Komaki, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 3, 1985, Ser. No. 783,465

Claims priority, application Japan, Oct. 5, 1984, 59-151653[U]

Int. Cl.⁴ G06C *5/02*

U.S. Cl. 235—1 D **3 Claims**



1. A card-type electronic calculator comprising, as a plurality of assembly elements,

a base panel, a driving circuit, a keyboard film and a front panel, including a display device, each having a thickness of about 0.1 to 0.5 μm, and

elastic, heat-sensitive adhesive synthetic resinous tape disposed between said base panel and said driving circuit, between said driving circuit and said keyboard film, and between said keyboard film and said front panel, said assembly elements being integrally bound together with the application of heat to form a composite structure which is thin in size and sufficiently elastic to resist bending and twisting, and said assembly elements being contained within a frame.

4,762,984

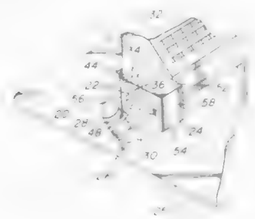
LASER SCANNER APPARATUS WITH ADJUSTABLE MOUNT FOR CONNECTORS

Carl H. Knowles, Moorestown, and Charles Naylor, Sewell, both of N.J., assignors to Metrologic Instruments, Inc., Bellmawr, N.J.

Filed Sep. 11, 1987, Ser. No. 95,744

Int. Cl.⁴ G06K *15/00*

U.S. Cl. 235—383 **18 Claims**



1. A laser scanning device for location at a counter for producing a laser beam in a scanning pattern adjacent said device to read a bar code brought into said pattern and for providing electrical output signals indicative thereof via electrical conductor means to associated equipment, said scanning device comprising a housing in which means for producing said beam and means for producing said electrical signals are located, said housing comprising at least first, second and third wall portions and connector mounting means, said wall portions being disposed at respective angles to one another, said first wall portion including a window therein and through which said scanning pattern passes, said housing being arranged to be mounted with respect to said counter so that said window is either disposed vertically or horizontally, said connector mounting means including a fourth wall portion and a fifth wall portion connected at an angle to each other and connector means secured thereto, said connector means being adapted to be electrically coupled to said electrical conductor means to provide said electrical signals to said associated equipment, said connector means comprising means electrically connected to said means for producing said electrical signals and at least a first electrical connector connected thereto, said first connector being adapted to be releasably secured electrically to said electrical conductor means and being fixedly mounted on said fourth wall portion of said connector mounting means, said connector mounting means being releasably secureable to said housing so that said first connector and said fourth wall portion may be disposed immediately adjacent either said second or third wall portions of said housing while said fifth wall portion is disposed immediately adjacent either said third or said second wall portions, respectively.

4,762,985

AUTO-FOCUS APPARATUS APPLIED TO IMAGE READING APPARATUS AND THE LIKE

Ryoichi Imai, Tokyo; Seiichiro Satomura, Kawasaki, and Toshio Iwaya, Shiki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1986, Ser. No. 854,569

Claims priority, application Japan, Apr. 25, 1985, 60-90314; Oct. 18, 1985, 60-230961; Oct. 18, 1985, 60-230962; Oct. 29, 1985, 60-242362; Oct. 31, 1985, 60-245481; Nov. 6, 1985, 60-249620; Nov. 13, 1985, 60-254233

Int. Cl.⁴ G03B *27/34;* **G02B** *7/11*

U.S. Cl. 250—201 **46 Claims**



1. An auto-focus apparatus comprising:

exposure means for exposing an image recorded on a film;

scanning means for scanning the image on a line by line basis and producing binary image signals representing the image;

optical means for projecting image light from the film exposed with said exposure means onto said scanning means;

setting means for setting a scanning position of said scanning means so as to scan a predetermined line in the image;

counting means for counting the number of times there is a transition of the binary image signals produced from said scanning means when it scans the predetermined line; and

VOL 1093 ISS 2 AG 9 1988 UMI

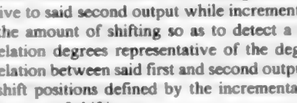
focusing means for focusing said optical means so that a count value of said counting means satisfies a predetermined condition.

4,762,986

AUTOMATIC FOCUSSING SYSTEM INCLUDING IN-FOCUS POSITION PREDICTION MEANS

Hirofumi Suda; Naoya Kaneda, both of Kanagawa, and Susumu Kozaki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1987, Ser. No. 22,740
Int. Cl.[4] H04N 3/26; G03B 3/00
U.S. Cl. 250—201 32 Claims



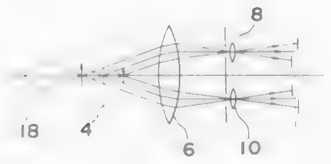
1. An automatic focussing system comprising:
(A) output means for sequentially outputting signals corresponding to a focus condition;
(B) prediction means for predicting a focus point by use of a plurality of signals outputted from said output means; and
(C) control means for controlling the focus on the basis of the result of prediction of said prediction means when the difference between the outputs of two of said signals outputted from said output means is below a predetermined value.

4,762,987

AUTOMATIC FOCUSING SYSTEM WITH CORRELATION-DETERMINED DISABLING

Tokuji Ishida, Daito, and Masataka Hamada, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 889,117, Jul. 22, 1986, abandoned. This application Aug. 20, 1987, Ser. No. 87,689
Claims priority, application Japan, Jul. 26, 1985, 60-166540
Int. Cl.[4] G01J 1/20
U.S. Cl. 250—201 16 Claims



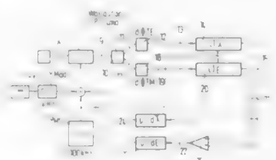
1. A deviation detecting device comprising:
optical means for forming first and second images of an object which are correlated to each other;
first and second image sensing means for sensing said first and second images so as to generate first and second outputs representative of the intensity distributions of said first and second images, respectively;
correlation detection means for shifting said first output relative to said second output while incrementally changing the amount of shifting so as to detect a plurality of correlation degrees representative of the degrees of the correlation between said first and second outputs at different shift positions defined by the incremental change in the amount of shifting;
highest correlation shift position detection means for detecting the shift position which is defined by the amount of shifting providing the highest correlation degree among said plurality of correlation degrees;
calculation means for calculating, based on said shift position detected by highest correlation shift position detection means, data corresponding to the amount of deviation of said first and second images from a reference value; and
first determination means for determining which of the correlation degree at the next shift position next to said shift position detected by said highest correlation shift position detection means and the correlation degree at the further next position next to said next shift position is lower than the other, and
wherein said deviation amount calculation means is arranged to be disabled when the determination by said first determination means indicates that the correlation degree at said next shift position is lower than that at said further next shift position.

4,762,988

CIRCUIT ARRANGEMENT FOR STABILIZING AN OPTICAL RESONATOR

Otto A. Strobel, Ostfildern, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 53,893
Claims priority, application Fed. Rep. of Germany, May 24, 1986, 3617562
Int. Cl.[4] G01J 1/32; G01B 9/02
U.S. Cl. 250—205 14 Claims



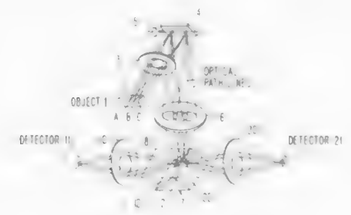
1. Circuit arrangement comprising: a controllable optical resonator having a filter characteristic with a transmission peak arranged to pass laser radiation at a wavelength in the region of the transmission peak, wherein said resonator is positioned to receive the laser radiation at an angle such that two modes of the radiation, having respectively different polarization states, and wavelengths, are capable of propagating in said resonator, said resonator having control electrodes connected for receiving a voltage which determines the wavelength of the transmission peak of the filter characteristic; means connected for applying to said electrodes a square-wave modulating voltage which varies between a first value which causes the transmission peak of said resonator to be substantially at the wavelength of one of the modes and a second value which causes the transmission peak of said resonator to be substantially at the wavelength of the other one of the modes; means optically coupled to said resonator for deriving two electrical signals each corresponding to radiation passing through said resonator in a respective one of the two modes; means connected for determining the phase difference between the two electrical signals; and means connected for acting on said resonator in a manner to reduce the phase difference to zero on the basis of at least one of the electrical signals.

4,762,989

IMAGE DETECTION WITH IMAGE PLANE DIVIDER

Wesley D. Motooka, Irvine, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Jun. 30, 1986, Ser. No. 880,455
Int. Cl.[4] H01J 3/14, 40/14
U.S. Cl. 250—216 8 Claims



1. Apparatus for generating an electronic image of a resolved object, comprising:
imaging means for converting the resolved object into a resolved optical image in an image plane;
dividing means for simultaneously dividing, in the image plane itself, the resolved optical image into n contiguous subimages, where n is a positive integer; and
detecting means for simultaneously converting each of the subimages into an electronic representation to form a composite electronic image in which at least one of the attributes from the set of attributes comprising resolution and field-of-view is enhanced, with no degradation in the signal-to-noise ratio for a given imaging time and with no loss in any portion of the image of the resolved object, with respect to systems in which said image plane dividing is not employed.

4,762,990

DATA PROCESSING INPUT INTERFACE DETERMINING POSITION OF OBJECT

Nathan S. Caswell, Yorktown Heights; Richard L. Garwin, Scarsdale, and James L. Levine, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 21, 1985, Ser. No. 789,610
Int. Cl.[4] G01V 9/04; G01B 11/14
U.S. Cl. 250—221 18 Claims



1. In data processing interface apparatus for establishing the location of an object in a work area by detecting the interruption of a scanning light beam during a single sweep, the improvement comprising
an object located in a work area surrounded by peripheral borders,
a source of a scanning light beam for scanning said beam across said work area from an initial start position,
means for determining the position of said object within said work area by measurement of the rotational arc of the scan of a single light beam from said initial start position to rotational angles represented by serially occurring signals produced by said beam striking said object after reflection from a peripheral border and directly striking said object.

4,762,991

PROBE FOR OPTICALLY MONITORING PROGRESS OF IN-SITU VITRIFICATION OF SOIL

Craig L. Timmerman; Kenton H. Oma, and Karl C. Davis, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed May 29, 1987, Ser. No. 56,582
Int. Cl.[4] H01J 5/16
U.S. Cl. 250—227 25 Claims



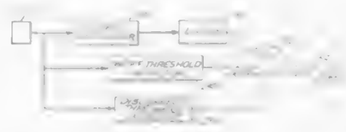
22. A detection system for sensing the progress of an ISV process along an expected path through a body of vitrifiable soil, the detector system comprising:
an optical fiber having first and second opposite ends and comprising a core of vitreous material and a cladding of vitreous material, the first end of the optical fiber being at a position on the expected path of the ISV process and the second end of the optical fiber being outside the body of soil, and
a photodetector in optically-coupled relationship with the second end of the optical fiber for generating an electrical signal that is representative of the power with which electromagnetic energy is received at the first end of the optical fiber.

4,762,992

ERROR DETECTION SYSTEM FOR TWO-STATE FIBER OPTIC SENSORS

Erann Gat; Eric D. Park, both of Blacksburg, and Talmage Mathis, Lafayette, all of Va., assignors to Kollmorgen Corporation, Simsbury, Conn.

Filed Jun. 10, 1987, Ser. No. 60,213
Int. Cl.[4] H01J 5/16
U.S. Cl. 250—227 12 Claims



1. A two-state fiber optic sensor comprising:
a light source;

VOL 1093 ISS 2 AG 9 1988 UMI

transducer means for modulating light in a manner indicative of the parameter being sensed;
first fiber optic means for transmitting light from said light source to said transducer means;
detector means for sensing light from said transducer means to produce a detector signal;
second fiber optic means for transmitting light from said transducer means to said detector means;
ON-OFF threshold detector means for determining whether said detector signal exceeds a threshold value indicative of the parameter of being sensed;
first error detection means for determining whether said detector signal is below a minimum threshold value indicative of sensor failure;
second error detection means for monitoring the rate of change of said detector signal to determine whether gradual sensor failure has occurred.

4,762,993

DIRECTIONAL SENSOR FOR NEUTRAL PARTICLE BEAMS

Kenneth G. Moses, 17 Via Seville, Rolling Hills Estates, Calif. 90274

Filed Jan. 9, 1987, Ser. No. 1,768
Int. Cl.[4] H05H *3/00*
U.S. Cl. 250—251 17 Claims



1. A nonintrusive apparatus for determining the deviation of a neutral particle beam from a reference direction, where the neutral particle beam is derived from a composite particle beam also containing charged particles having substantially the same directional characteristics as the neutral particles of the neutral particle beam, said apparatus comprising:
deflecting means for systematically deflecting at least a portion of said charged particles a fixed amount from said composite particle beam to form a beam of charged particles;
beam processing means for processing said beam of charged particles including means for freely transmitting a part of said beam therethrough so as to produce at least one charged particle beamlet;
downstream detector means positioned downstream of said beam processing means for detecting said charged particles in said charged particle beamlet; and
deviation determining means responsive to said downstream detector means for determining the deviation of said charged particle beamlet from a second direction differing from said reference direction by said fixed amount, said deviation of said charged particle beamlet from said second direction corresponding to the deviation of at least a corresponding part of said neutral particle beam from said reference direction.

4,762,994

COMPACT OPTICAL SCANNER DRIVEN BY A RESONANT GALVANOMETER

Kent A. Byerly, Boulder, Colo., and Duane E. Grant, San Jose, Calif., assignors to IBM Corp., Armonk, N.Y.

Filed Nov. 10, 1986, Ser. No. 928,488
Int. Cl.[4] G01D *5/30*
U.S. Cl. 250—236 8 Claims



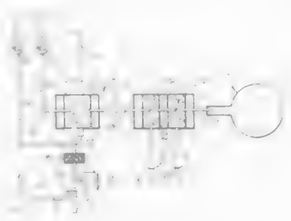
1. A compact optical scanner comprising:
a source of an optical beam,
a scan mirror,
a resonant galvanometer scanner supporting said scan mirror for oscillating motion about an oscillation axis,
means for supporting said resonant galvonometer scanner with said oscillation axis lying substantially parallel to a scan plan,
optical means for conducting said optical beam from said source to said scan mirror and from said scan mirror to develop an optical beam scanning to and fro in said scan plane which is defined by said scanning motion of said optical beam, wherein said optical means includes a fixed mirror both in a path from said source of said optical beam to said scan mirror and in a path from said scan mirror to said scan plane.

4,762,995

MONODISPERSE AEROSOL GENERATOR

Richard F. Browner, Atlanta, Ga., and Ross C. Willoughby, Pittsburgh, Pa., assignors to Georgia Tech Research Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 623,711, Jun. 22, 1984, Pat. No. 4,629,478. This application Mar. 19, 1986, Ser. No. 841,324
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] B01D *59/44*
U.S. Cl. 250—282 7 Claims



1. A method of introducing solute recovered from effluent of a liquid chromatograph into a mass spectrometer, which comprises the steps of:
(a) generating a monodisperse aerosol from the effluent by delivering the effluent through a conduit at a velocity such that monodisperse droplet formation occurs
(b) providing a dispersing gas;
(c) dispersing the formed droplets with the gas;

(d) entraining the aerosol in gas and desolvating the aerosol at substantially atmospheric pressure;
(e) expanding the components of step (b) (d) into low pressure environment while removing gas therefrom to form a high momentum monodisperse aerosol beam of solute particles;
(f) directing said beam into a mass spectrometer; and
(g) ionizing the monodisperse beam of solute particles by bombarding the solute particles with atoms originating from a fast atom bombardment source.

4,762,996

COARSE APPROACH POSITIONING DEVICE

Gerd K. Binning, Inning, and Christoph E. Gerber, Oberhaching-Deisenhofen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1987, Ser. No. 40,659
Int. Cl.[4] G21K *5/10, 5/08;* H01J *37/20*
U.S. Cl. 250—306 8 Claims



1. Coarse-approach positioning device for approaching an object to a predetermined position with a resolution on the order of micrometers, particularly for use in the microscope art, characterized in that the object (**1, 33**) to be positioned is attached to a movable block (**3, 17, 23**) which is tiltably supported (**4, 20**) along one of its edges and balanced between at least a first spring (**5, 20**) and a second spring (**9, 30**) having different spring characteristics, said movable block (**3, 17, 23**) being tilted through enforced deflection of one of the springs (**9, 30**), upon actuation of a pressure member (**8**), the angle of tilting of said block (**3, 17, 23**) being determined by the relationship of the spring characteristics of said first and second springs (**5, 20; 9, 30**), respectively, such that deflection of the said first spring (**9, 30**) through a predetermined first distance causes a resultant deflection of said second spring (**5, 20**) through a second distance smaller than said first distance and, hence, causes movement of said block (**3, 17, 23**) through a third distance smaller by at least one order of magnitude than the movement of said pressure member (**8**).

4,762,997

FLUID JET ASSISTED ION PROJECTION CHARGING METHOD

Richard F. Bergen, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 30, 1983, Ser. No. 556,730
Int. Cl.[4] G03G *15/02*
U.S. Cl. 250—326 14 Claims

1. A fluid jet assisted ion projection method for charging a receiver to a uniform DC voltage, comprising the steps of:
providing a fluid supply means;
providing an ion generation means including a grounded conductive chamber and an elongate corona wire positioned in said chamber and connected to a high potential source that is adapted to apply a predetermined voltage to said corona wire, said chamber and said corona wire extending in a direction transverse to the direction of transport fluid flow;
providing ion entrainment means including inlet means for delivering transport fluid into said chamber and outlet means for directing transport fluid out of said chamber, said inlet means and said outlet means extending in said transverse direction, and



biasing said receiver to said predetermined voltage with an opposite charge to ions emitted from said corona wire in order to control the charge level of the top surface of said receiver to a desired charge level.

4,762,998

METHOD FOR READING OUT AN IMAGE SIGNAL STORED IN A TRANSPARENT PHOTOSTIMULABLE PHOSPHOR

Anthony R. Lubinsky, Webster; James F. Owen, Rochester, and Donald M. Korn, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 12, 1987, Ser. No. 48,709
Int. Cl.[4] G03C *5/16*
U.S. Cl. 250—327.2 4 Claims



1. A method of reading an image from a photostimulable phosphor storage medium of the type that emits an imagewise pattern of radiation in response to stimulation by stimulating radiation comprising the steps of:
scanning the photostimulable phosphor storage medium with a beam of stimulating radiation of such power and at such a scanning speed effective to completely discharge the photostimulable phosphor in a fraction of the beam spot diameter in the direction of scanning, wherein the effective size of said scanning spot is smaller than the beam spot diameter; and
collecting and electronically detecting the radiation emitted in response to such scanning to produce an electronic image signal.

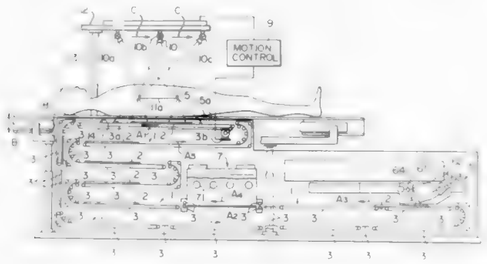
VOL 1093 ISS 2 AG 9 1988 UMI

4,762,999

RADIATION IMAGE RECORDING AND READ-OUT APPARATUS

Shigeru Saotome, and Masamitsu Ishida, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 16, 1985, Ser. No. 787,849
Claims priority, application Japan, Oct. 16, 1984, 59-216909; Oct. 20, 1984, 59-220741; Oct. 27, 1984, 59-226147
Int. Cl.[4] G03C *5/16*
U.S. Cl. 250—327.2 3 Claims



1. A radiation image information recording and read-out apparatus comprising:

a circulating and conveying means for conveying stimulable phosphor sheets along a predetermined circulation path,

an image recording section which is disposed in the circulation path and in which a radiation image of an object is recorded on each of the stimulable phosphor sheets by exposing the stimulable phosphor sheets to a radiation passing through the object,

an image read-out section including a stimulating ray source which is disposed in the circulation path and emits stimulating rays for scanning the stimulable phosphor sheet and a photoelectric read-out means which receives light emitted from the stimulable phosphor sheet to obtain an electric image signal,

an erasing section which disposed in the circulation path and releases residual radiation energy in the stimulable phosphor sheet before the stimulable phosphor sheet is returned to the image read-out section, and

a radiation source which emits said radiation and is provided opposed to the image recording section spaced therefrom by a predetermined distance,

characterized in that said image recording section is provided with a transport means comprising a shuttle means which includes a sheet holding means for holding said stimulable phosphor sheet in fixed position relative thereto, said shuttle means being movable between at least one position where said shuttle means is connected with the circulation path formed by said circulating and conveying means and further positions free from said circulation path, while the stimulable phosphor sheet held thereby receives radiation from said radiation source, and motion control means for controlling relative movement between the shuttle means, when at said further positions, and said radiation source in said recording section so as to substantially satisfy the linear law and the geometric law with respect to a desired cross section of the object.

4,763,000

SYSTEM FOR PASSIVE AND OPTICAL-MECHANIC SCANNING OF A VISUAL FIELD

Josef F. Menke, Glücksburg, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Continuation of Ser. No. 519,690, Aug. 2, 1983. This application Apr. 4, 1987, Ser. No. 45,753
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228914
Int. Cl.[4] H04N *5/33*
U.S. Cl. 250—334 24 Claims



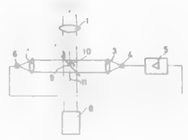
1. A system for passive and active optical-mechanical scanning of a visual field, characterized in a passive channel having a detector and a thermal imaging system scanning in two coordinates for receiving light from the visual field, and an active channel having a laser for producing a beam and means for deflecting the beam in two coordinates, and means for maintaining specific phase relations during scanning in said active and said passive channel such that only one channel is effective at any time by alternately directing the laser beam onto the visual field and then directing light from the visual field onto the detector.

4,763,001

APPARATUS FOR GENERATING AN IMAGE

Martin Poxleitner, Königsbronn; Josef Wohlfrom, Oberkochen, and Kurt Otomanski, Aalen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Sep. 5, 1986, Ser. No. 904,243
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1985, 3531666
Int. Cl.[4] G02B *26/10*
U.S. Cl. 250—334 5 Claims



5. Apparatus for generating an image of a scene such as an image of a heat image, the apparatus comprising:

a linear array of detectors defining a plane;

first imaging means for forming an image of said scene in said plane;

a scanning mirror for deflecting said image;

drive means for driving said scanning mirror;

control means for generating control signals to actuate said drive means and drive said scanning mirror so as to periodically move said image through a forward pass and a return pass in a direction perpendicular to said detectors and along successive scan lines spaced one from the other in a direction perpendicular to said scan lines so as to cause said detectors to issue respective detector signals;

a linear array of light-emitting elements for emitting light rays in response to said respective detector signals;

amplifier means for connecting said detectors to corresponding ones of said light-emitting elements and for applying respective output signals to the latter displaced in phase from said detector signals;

second imaging means for imaging the light rays emitted by said light-emitting elements onto said scanning mirror so as to direct said light rays toward a predetermined observing location; and,

non-focussing optical deflecting means disposed in the path of said light rays between said light-emitting elements and said scanning mirror, said non-focussing optical deflecting means being responsive to said control signals for movement between only two predetermined angular positions for deflecting said light rays by a predetermined angle after each pass through one of said scan lines with each successive deflection of said light rays being opposite to the immediate preceding deflection thereof so as to compensate for the displacement in phase between said output signals applied to said light-emitting elements and said detector signals.

4,763,002

PHOTON DETECTOR

Alfonso Zermeno, and Lee M. Marsh, Jr., both of Houston, Tex., assignors to University of Texas System, Austin, Tex.

Division of Ser. No. 22,989, Mar. 22, 1979, abandoned. This application May 14, 1979, Ser. No. 38,465
Int. Cl.[4] G01T *1/22*
U.S. Cl. 250—370.01 12 Claims



1. A multilayered detector apparatus comprising:

a first conductive layer;

a photoconductive layer the sensitivity and resolution of which when exposed to radiation of known energy is determined by the thickness of said photoconductive layer, one side of said photoconductive layer being in electrical communication through planar contact with one side of said first conductive layer;

a insulating phosphor layer capable of emitting light when irradiated by x-rays, one side of said phosphor layer being in planar contact with and affixed to the side of said photoconductive layer opposite said conductive layer; and

a second conductive layer in planar contact with and affixed to said phosphor layer on the side opposite said photoconductive layer.

4,763,003

METHOD AND APPARATUS FOR CORRECTING HIGH-ORDER ABBERATIONS IN PARTICLE BEAMS

Alfred W. Maschke, Torrance, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Feb. 17, 1987, Ser. No. 15,208
Int. Cl.[4] H01J *3/12*
U.S. Cl. 250—396 R 7 Claims



1. Apparatus for correcting a particle beam for spherical or higher-order aberration, the apparatus comprising:

a plurality m of compensating electric field arrays positioned to permit the particle beam to pass serially through the arrays, and angularly oriented at locations $2\pi/m$ radians apart, where m is the order of the aberration to be corrected;

wherein each of the compensating electric field arrays includes a plurality of parallel conductive wires stretched transversely across the path of the beam, the wires being arranged in rows such that all the wires in any row are the same distance from a central axis of the beam, and wherein each of the compensating electric field arrays also includes means for applying a voltage to each row of wires such that the electric field strength at any point in the array is proportional to the mth power of the distance between the point and the central row of wires, and wherein the arrangement of m such arrays results in a cylindrically symmetrical electric field that is proportional to the mth power of the radial distance from the central axis.

4,763,004

CALIBRATION METHOD FOR ELECTRON BEAM EXPOSER

Hiroshi Yasuda, and Takayuki Miyazaki, both of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 4, 1985, Ser. No. 689,010
Claims priority, application Japan, Jan. 10, 1984, 59-3081
Int. Cl.[4] G01M *23/00*
U.S. Cl. 250—396 R 19 Claims



1. A method of calibrating an electron beam exposer, for scanning an electron beam over a substrate, by determining correction currents I_x, I_y and I_F to be applied to correction coils to correct the aberration due to astigmatism in the X and Y directions and field curvature of focus, respectively, comprising the steps of:

(a) measuring a sharpness P of the electron beam, said sharpness P being defined as the product of p_x, which represents a sharpness defined as the differentiated value of a

VOL 1093 ISS 2 AG 9 1988 UMI

signal resulting when the electron beam is deflected in the X direction, and p_y, which represents a sharpness defined as the differentiated value of a signal resulting when the electron beam is deflected in the Y direction;

(b) varying one of said correction currents while keeping the other two correction currents constant, and repeating step (a) for each variation of the varied correction current; and

(c) determining an optimum value for said varied correction current from data obtained in the step (b).

4,763,005

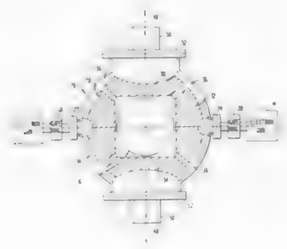
ROTATING FIELD ELECTRON BEAM APPARATUS AND METHOD

Steven E. Schumer, 3604 Mona Way, San Jose, Calif. 95130

Filed Aug. 6, 1986, Ser. No. 893,860

Int. Cl.[4] **H01J** *37/147*

U.S. Cl. 250—492.3 **11 Claims**



1. An apparatus for bombarding an object with charged particles, comprising:

a charged particle gun for directing said charged particles in a beam toward said object;

means for positioning said object in front of said charged particle gun;

at least one magnet positioned in front of said charged particle gun and shaped to spread said beam; and

a capture electrode positioned in front of said charged particle gun, so that said object is between said gun and said capture electrode, for attracting and capturing said charged particles.

4,763,006

DEVICE DETERMINING SURFACE ELEMENT INCLINATION ANGLE FOR THE OPTICAL DETECTION OF FORM ERRORS OF A LOW ORDER

Norbert Rau, Kirchheim/Teck; Gerd Hübner, Stuttgart; Wolfgang Staiger, Möglingen; Rainer Brodmann, Haar, and Oskar Gerstorfer, Dachau, all of Fed. Rep. of Germany, assignors to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

PCT No. PCT/DE86/00037, § 371 Date Dec. 3, 1986, § 102(e) Date Dec. 3, 1986, PCT Pub. No. WO86/04676, PCT Pub. Date Aug. 14, 1986

PCT Filed Feb. 5, 1986, Ser. No. 925,802

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1985, 3503858

Int. Cl.[4] **G01N** *21/86;* **G01B** *11/30, 11/24*

U.S. Cl. 250—561 **11 Claims**

1. Device for the optical detection of form errors of a low order comprising a light source for probing the body to be examined, a light-receiving device for the light reflected from the body, and an evaluation unit which determines the inclination angle (α) of the probed surface element of the body from the output signal designated by n_j of the light-receiving device, characterized by the fact that the light-receiving device consists of a number of light-receiving elements in a linear array, said angle being determined against a reference element in the surface of the body in accordance with the equation



$$\alpha \cong \tfrac{1}{2}\tan(2\alpha) = \frac{\quad}{2n_{ges}f} \sum_{j=-(k-1)}^{\quad} n_j x_j$$

where

$$n_{ges} = \sum_{\quad}^{l} \ldots n_l$$

$k + 1$: number of light-receiving elements

n_j: amplitude of the output signal of the light-receiving element j

b: width of a light-receiving element

f: distance o the linear array of the light-receiving elements from the surface element examined

x_j: distance of the light-receiving element j from the element "O", and

element "O": light-receiving element onto which the beam strikes at an "ideal" reflection on the reference element

whereby the evaluation unit determines the inclination angle from all output signals of the light-receiving elements.

4,763,007

IMAGE SENSOR DRIVING CIRCUIT

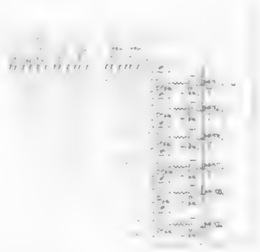
Junichi Takahashi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 20, 1985, Ser. No. 811,705

Claims priority, application Japan, Dec. 25, 1984, 59-279247; Dec. 25, 1984, 59-279248; Dec. 25, 1984, 59-279249

Int. Cl.[4] **H03F** *17/00*

U.S. Cl. 250—578 **4 Claims**



1. An image sensing device comprising:

a plurality of sensor elements arranged in the form of an array for converting light image information into an electrical image signal;

analog circuit means coupled with said array for receiving said electrical image signal and applying a predetermined analog function to said electrical image signal to thereby generate an output signal;

logic circuit means electrically connected to said analog circuit means for controlling the operation of said analog circuit means; and

wherein said analog circuit means is mounted on a first substrate and said logic circuit means is mounted on a second substrate which is separate from said first substrate.

4,763,008

IONIZATION DETECTOR WITH CONDUCTIVE SIGNAL AND GROUND TRACES

Douglas S. Steele, West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 565,670, Dec. 27, 1983. This application Aug. 4, 1986, Ser. No. 892,969

Int. Cl.[4] **G01T** *1/185;* **H01J** *47/02*

U.S. Cl. 250—385.1 **26 Claims**



1. An ionization detector comprising:

a substrate;

one or more conductive detector elements deposited on one or more sides of the substrate; and

one or more grounded conductive elements deposited on one or more sides of the substrate having the conductive detector elements, the grounded conductive elements being adjacent at least one of the detector elements for reducing distortion of signals carried by the detector elements.

4,763,009

METHOD AND APPARATUS FOR REMOTELY MEASURING THE DISTRIBUTION OF A PHYSICO-CHEMICAL PARAMETER IN A MEDIUM

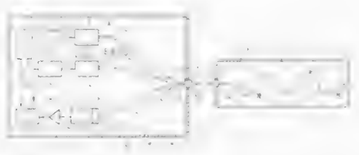
Hervé Février, Massy; Jean Robieux, Chatenay Malabry, and André Tardy, Egly, all of France, assignors to Compagnie Generale D'Electricite, Paris Cedex, France

Filed Jan. 30, 1987, Ser. No. 8,896

Claims priority, application France, Jan. 30, 1986, 86 01304

Int. Cl.[4] **G01N** *21/64*

U.S. Cl. 250—458.1 **8 Claims**



1. A method of remotely measuring the distribution of a physico-chemical parameter in a medium, the method comprising:

light pulse excitation of measurement points situated in said medium and subjected to the physico-chemical parameter, said excitation being emitted from a station at a distance from said medium and being transmitted to the measurement points by an optical waveguide, each excited measurement point returning optical radiation towards the station along the waveguide, said return optical radiation being representative of the value of the physical parameter at said measurement point; and

processing the returned optical radiation in the station;

the method being characterized in that said optical excitation comprises respective special excitations for the various measurement points performed one after the other, the excitation of a measurement point being performed by emitting in succession from the station a first pulse having a first optical wavelength and a second pulse having a second optical wavelength different from the first wavelength, the time interval between said two pulses being chosen so that the second pulse encounters the first pulse along the waveguide at said measurement point, the optical excitation of said measurement point being created by said point being illuminated simultaneously by said first and second pulses at the instant when said pulses encounter each other, the return optical radiation delivered by the measurement point towards the station in response to said optical excitation including at least one third wavelength different from the first and second wavelengths.

4,763,010

LONG SIZE IMAGE SENSOR HAVING IMPROVED CONSISTENCY AMONG INDIVIDUAL PHOTOSENSORS

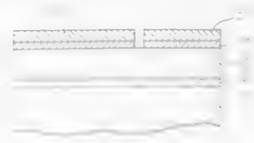
Masaki Fukaya, Yokohama; Toshiyuki Komatsu, Yamato; Tatsumi Shoji, Hiratsuka; Masaru Kamio, Atsugi, and Nobuyuki Sekimura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 749,632, Jun. 28, 1985, abandoned. This application Mar. 11, 1987, Ser. No. 24,701

Claims priority, application Japan, Jul. 19, 1984, 59-148648; Jul. 31, 1984, 59-158656; Jul. 31, 1984, 59-158657; Jul. 31, 1984, 59-158658

Int. Cl.[4] **H01L** *31/00, 27/14*

U.S. Cl. 250—578 **17 Claims**



17. A photosensor comprising:

a photoconductive layer containing amorphous silicon provided on a substrate, said photoconductive layer consisting of at least two laminated films each having different refractive indexes, the refractive index of the laminated film provided directly on the substrate being not larger than 3.2 for the light of a wavelength of 6328 A;

a pair of electrodes provided in electrical contact with said photoconductive layer; and

a photosensing section formed in said photoconductive layer and exposable to said image between said pair of electrodes.

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,011

ULTRAVIOLET RADIATION ACTINOMETER

Gerald J. Smith, Wellington, New Zealand, assignor to The New Zealand Government Property Corporation, Wellington, New Zealand

Filed Aug. 23, 1985, Ser. No. 768,759
Claims priority, application New Zealand, Aug. 23, 1984, 209325
Int. Cl.[4] G01J *1/48*
U.S. Cl. 250—372 10 Claims



1. An integrating device comprising means for monitoring solar erythemal radiation said means comprising a disulphide chemical in solution which undergoes a photochemical change, the extent of the change depending on the dose of erythemal UV radiation to which the device has been exposed, said disulphide chemical dissolved in a solvent capable of readily donating hydrogen atoms and which is completely transparent to UV radiation of wavelengths longer than 295 nm

4,763,012

EQUALIZER QUICK SWITCH

Blankinship Andrew B., 11 Bumgarner Dr., Forest, Va. 24551

Filed Mar. 12, 1987, Ser. No. 25,158
Int. Cl.[4] H04Q *3/00*
U.S. Cl. 307—43 6 Claims



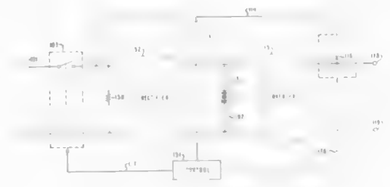
1. An equalizer quick switch comprising:
(a) at least two multichannel electrical output ports for source devices;
(b) a set of input and output ports for a multichannel frequency equalizer;
(c) at least one input port for a multichannel amplifier;
(d) a multipath wiring arrangement between the input and output ports; and
(e) switching means in said multipath wiring for selectively switching said output port for said source devices to an input port for said equalizer while simultaneously switching an output port for said equalizer to the appropriate input ports for said multichannel amplifier.

4,763,013

BACKUP PROTECTION SWITCH TO PREVENT REVERSE POWER FLOW IN A UPS

John Michael Gvoth, Jr., Haledon; Robert J. Kakalec, Madison, and Henry E. Menkes, Pine Brook, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 21, 1987, Ser. No. 99,042
Int. Cl.[4] H02J *9/04*
U.S. Cl. 307—66 10 Claims



1. In combination:
an uninterruptible power supply, comprising;
a first input for accepting a primary source of energy,
a second input for accepting a reserve source of energy,
an output for accepting a load to be energized,
energy coupling means for coupling energy from the first and second inputs to the output,
at least a first energy path including the energy coupling means for permitting energy flow from the second input to the first input,
primary means for disabling energy flow in the first energy path when energy flow to the output is derived from the reserve source of energy connected to the second input,
means for detecting a failure of the primary means for disabling energy flow,
secondary means for disabling connection of the first energy path to the first input in response to the means for detecting a failure.

4,763,014

BACKUP PROTECTION SWITCH TO PREVENT REVERSE POWER FLOW IN A UPS

Michael J. Model, Denville, and Daniel A. Wright, Parsippany, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 21, 1987, Ser. No. 99,041
Int. Cl.[4] H02J *9/04*
U.S. Cl. 307—66 8 Claims



1. An uninterruptible power supply, comprising:
a first input for accepting a primary source of energy,
a second input for accepting a reserve source of energy,

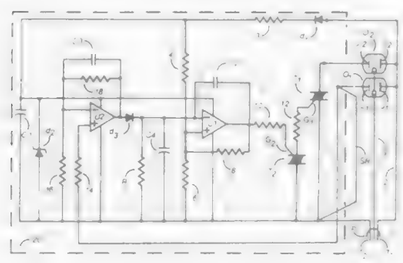
an output for accepting a load to be energized,
an energy coupling apparatus for coupling energy from the first and second inputs to the output and capable of coupling energy from the second input to the first input, and including first coupling means for directly coupling the first input to the output and second coupling means for coupling the first input to the output with amplification.
first and second primary disconnect switches for decoupling the first input from the first and second coupling means of the energy coupling apparatus when energy is being supplied to the output from the second input,
a backup disconnect switch for disabling energy flow from a reserve energy source connected to the second input into the first input,
means for faciltating a flow of energy from the second input to the first input should at least one of the first and second primary disconnect switches fail in a mode enabling energy flow through at least one of the first and second primary disconnect switches,
means for sensing energy flow from the energy coupling apparatus to the first input and operative to enable the backup disconect switch to open.

4,763,015

APPLIANCE/REFRIGERATOR POWER CONTROLLER

Raymond F. St. Louis, 32 Rensselaer Rd., Essex Fells, N.J. 07021

Filed Nov. 16, 1987, Ser. No. 120,870
Int. Cl.[4] H01H *35/00, 3/34*
U.S. Cl. 307—126 3 Claims



1. A power control circuit comprising first and second A.C. power input terminals,
a first power outlet having two contacts,
a second power outlet having two contacts,
a connection from said first input terminal to one contact in each power outlet,
a sensing impedance connected between said second input terminal and the other contact of said first power outlet,
a triac having a gate and two terminals,
a connection between one of said terminals of said triac and the other contact of said second power outlet,
a connection between the other of said terminals of said triac and said second input terminal, and
control means coupled to said sensing impedance for applying a voltage to said gate so as to permit current to flow between the terminals of said triac when less than a given value of current is flowing in said sensing impedance and to prevent current from flowing between said latter terminals from a time when current exceeding said given value first flows in said sensing impedance until a given time after current in excess of said given value ceases to flow in said sensing impedance.

4,763,016

FEEDBACK CONTROL DEVICE FOR SWITCHING OFF A TRANSISTOR

Davide Chieli, Milan, Italy, assignor to SCG-Thomson Microelectronics S.p.A., Catania, Italy

Filed Dec. 4, 1986, Ser. No. 937,879
Claims priority, application Italy, Feb. 6, 1986, 19309 A/86
Int. Cl.[4] H03K *17/60, 17/56, 13/33*
U.S. Cl. 307—254 9 Claims



1. A transfer circuit comprising an output transistor forming the last stage in the transfer circuit, a drive transistor, a switch-off transistor, and an input transistor forming the first stage in the transfer circuit, each of said transistors having base, emitter, and collector, the output transistor base being connected to the drive transistor collector and the switch-off transistor collector, the input transistor collector being connected to the drive transistor base and the switch-off transistor base, the emitter or collector of the output transistor constituting its output for connection to a load, and a feedback control circuit for controlling the turn-off of the output transistor, said feedback control circuit comprising:
a current sensor connected between the output of the output transistor and a supply line and generating a signal while the output transistor is ON,
a current transducer whose input is connected to receive the sensor signal and whose output is coupled to the transfer circuit, and
switch means connected between the current transducer output and the first stage of the transfer circuit for turning-off the output transistor.

4,763,017

ELECTRONIC BIPOLAR INTERFACE CIRCUIT

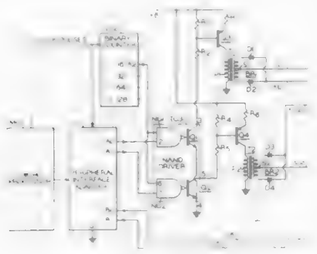
Richard D. Campbell, Ormond Beach, Fla., and John O. G. Darrow, Murrysville, Pa., assignors to American Standard Inc., North Hills, Pa.

Filed Oct. 21, 1985, Ser. No. 789,900
Int. Cl.[4] G05B *11/12*; H03K *17/00*
U.S. Cl. 307—262 18 Claims

1. An interface driver circuit for producing a bipolar voltage on a pair of output terminals comprising, a peripheral interface adapter circuit conditioned by control data to establish a first and a second electrical signal, a logic circuit connected to said peripheral interface adapter circuit said logic circuit having a first gate connected to a source of clock pulses and activated by said first electrical signal and having a second gate connected to said source of clock pulses and activated by said second electrical signal, a first switching amplifier connected to said first gate for generating a.c. signals when said first gate is activated and a second switching amplifier is connected to said second gate for generating a.c. signals when said second gate is activated, a first rectifier connected to said first switching amplifier for converting the a.c. signals of said first switching amplifier to a first d.c. voltage and a second rectifier con-

VOL 1093 ISS 2 AG 9 1988 UMI

nected to said second switching amplifier for converting the a.c. signals of said second switching amplifier to a second d.c. voltage, a first switching circuit connected to said first rectifier and conditioned by said first d.c. voltage to produce one polarity of voltage on the pair of output terminals and a second switching circuit connected to said second rectifier and conditioned by said second d.c. voltage to produce the opposite polarity of voltage on the pair of output terminals, and a monitoring circuit connected to said first and second switching circuits and conditioned by said first and second d.c. voltages to verify the polarity of the voltage on the pair of output terminals.





4,763,018

TRANSISTOR CONSTANT BIAS CIRCUITS

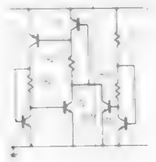
Philip A. K. Moon, Wiltshire, England, assignor to Plessey Overseas Limited, Ilford, England

Filed Feb. 5, 1987, Ser. No. 11,098

Claims priority, application United Kingdom, Feb. 7, 1986, 8603112

Int. Cl.[4] H03K *3/01;* H03G *3/10*

U.S. Cl. 307—296 R 3 Claims



1. A bias-current generator circuit comprising:

an NPN-type bipolar cascaded current amplifier comprised of:

a first power rail;

an NPN-type bipolar bias transistor, having an emitter, a base, and, a collector;

a first collector path conductor connected to the collector of the NPN-type bias transistor;

a first feedback conductor, connected between the first collector path conductor and the base of the NPN-type bias transistor;

a first resistor, inserted in the first collector path conductor, between the collector of the NPN-type bias transistor, and, the first feedback conductor;

an NPN-type bipolar drive transistor, having an emitter, a base, and a collector, the base of which NPN-type bipolar drive transistor is connected to the collector of the NPN-type bipolar bias transistor; and, wherein,

the emitters of the NPN-type bipolar bias and drive transistors are connected to the first power rail;

a PNP-type cascaded current amplifier comprised of:

a second power rail;

a PNP-type bipolar bias transistor, having an emitter, a base, and a collector;

a second collector path conductor connected to the collector of the PNP-type bias transistor;

a second feedback conductor, connected between the second collector path conductor and the base of the PNP-type bias transistor;

a second resistor, inserted in the second collector path conductor, between the collector of the PNP-type bias transistor, and, the second feedback conductor;

an PNP-type bipolar drive transistor, having an emitter, a base, and, a collector, the base of which PNP-type bipolar drive transistor is connected to the collector of the PNP-type bipolar bias transistor; and, wherein,

the emitters of the PNP-type bipolar bias and drive transistors are connected to the second power rail; and, wherein,

the first collector path conductor is connected to the collector of the PNP-type bipolar drive transistor, and, the second collector path conductor is connected to the collector of the NPN-type bipolar drive transistor such that the NPN-type bipolar drive transistor, the second resistor, the PNP-type drive transistor, and the first resistor are connected in a ring, and,

a start-up current bias circuit connected to a point in said ring.

4,763,019

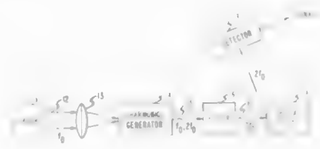
APPARATUS COMPRISING HARMONIC GENERATION MEANS

Michel A. Duguay, Fair Haven, and Joseph S. Weiner, Summit, both of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 9, 1986, Ser. No. 905,278

Int. Cl.[4] H03F *7/00*

U.S. Cl. 307—427 12 Claims



1. Apparatus comprising a source of first electromagnetic radiation of frequency f_o; first means for generating second radiation of frequency f_1 from the first radiation, with $f_o \neq f_1$, the second radiation to be emitted from the first means; and means for utilizing the second radiation emitted from the first means;

characterized in that

the first means comprise planar multilayer waveguide means capable of guiding at least one predetermined mode each of both the first radiation and the second radiation, the multilayer waveguide means comprising a core region, a bottom cladding region and a top cladding region, the bottom and top cladding regions bounding the core region from below and above, the bottom and top cladding regions having refractive indices n_b and n_t, respectively, the core region having an effective refractive index greater than n_b and n_t, the core region comprising a first and a second nonlinear layer and a linear spacer therebetween, the refractive indices of the first and second nonlinear layers and of the spacer being n_1, n_2, and n_s, respectively, with $n_s < n_1$, n_2, with n_b, n_t, n_1, n_2, n_s, and the thickness of the first and second nonlinear layer, the spacer layer, and the top and bottom cladding layer, respectively, chosen such that the predetermined mode of the first radiation is substantially phase-matched with the predetermined mode of the second radiation.

4,763,020

PROGRAMMABLE LOGIC DEVICE HAVING PLURAL PROGRAMMABLE FUNCTION CELLS

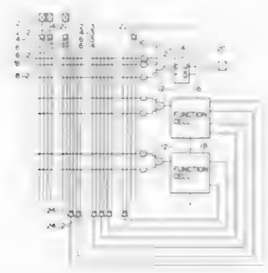
Akira Takata, and Koichi Fujii, both of Toyonaka, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 4, 1986, Ser. No. 903,781

Claims priority, application Japan, Sep. 6, 1985, 60-198102; Sep. 10, 1985, 60-201358; Sep. 13, 1985, 60-204157; Oct. 17, 1985, 60-232992

Int. Cl.[4] H03K *19/177*

U.S. Cl. 307—465 5 Claims



1. A programmable logic device, comprising:

a plurality of input terminals;

an AND plane connected to said plurality of input terminals;

an OR plane connected to said AND plane;

at least one output terminal connected to said OR plane;

at least one of said AND and OR planes including an array of programmable elements which can be selectively programmed to define a desired logic circuit therein; and

at least two function cells, each connected to at least said OR plane, each of said function cells having a particular structure for selectively providing one of a plurality of predetermined functions, said at least two function cells being operatively connected to each other to define an integrated function when a control signal supplied has a first state and disconnected from each other when said control signal has a second state which is different from said first state.

4,763,021

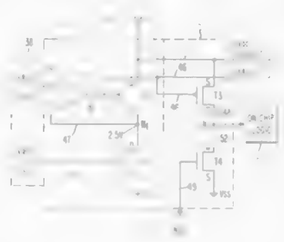
CMOS INPUT BUFFER RECEIVER CIRCUIT WITH ULTRA STABLE SWITCHPOINT

Tedd K. Stickel, Chalfont, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jul. 6, 1987, Ser. No. 69,736

Int. Cl.[4] H03K *17/094*

U.S. Cl. 307—475 18 Claims



1. A CMOS buffer receiver of the type having an ultra stable switching point, comprising:

a voltage generator for generating a first and a second reference voltage,

a compensation network coupled to said first and said second reference voltages,

said compensation network comprising a series connected CMOS transistor pair coupled in series between a V_{DD} supply voltage and a low reference voltage Vss,

said compensation network further comprising a third reference voltage output which varies with process, temperature and voltage supply conditions, and

a stabilized input converter comprising a series connected CMOS transistor pair coupled to said third reference voltage of said compensation network and having a signal output line connected between said transistor pair,

said stabilized input converter having a voltage input line for receiving a predetermined voltage level signal and to produce a stabilized output voltage over a narrow voltage range well within the voltage switchpoint variations caused by process, temperature and supply voltage conditions.

4,763,022

TTL-TO-CMOS BUFFER

Peter E. Sheldon, Mesa, Ariz., assignor to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Jan. 5, 1987, Ser. No. 354

Int. Cl.[4] H03K *5/01, 17/687*

U.S. Cl. 307—475 27 Claims



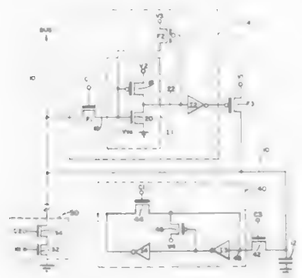
1. A TTL-to-CMOS Buffer consisting of a plurality N-channel and a plurality of P-channel MOS transistors, wherein each of the transistors is characterized by a predetermined channel Width-To-Length ratio (W/L) and wherein the transistors are configured to include:

an input complementary pair, Q1 and Q2, in which gate

VOL 1093 ISS 2 AG 9 1988 UMI

electrodes of Q1 and Q2 are connected in common for coupling to a source of TTL-level logic signals;
an output complementary pair, Q3 and Q4, in which gate electrodes of Q3 and Q4 are connected in common to a drain electrode of Q2 and in which drain electrodes of Q3 and Q4 are connected in common for providing CMOS-level logic signals; and
a tracking transistor, Q5, connected between the drain electrode of Q1 and the drain electrode of Q2 so as to provide enhanced immunity of the TTl-to-CMOS Buffer switching point to process variations and temperatures changes.

4,763,023
CLOCKED CMOS BUS PRECHARGE CIRCUIT HAVING LEVEL SENSING
John R. Spence, Villa Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.
Filed Feb. 17, 1987, Ser. No. 15,476
Int. Cl.[4] H03K *19/003, 19/096*
U.S. Cl. 307—480 17 Claims



10. A circut for precharging an integrated circuit bus during a first time period, comprising:
a voltage source input for receiving an input voltage;
a PFET having its conduction path connected between said input and said bus; and
a voltage regulator connected to said bus and to the gate of said PFET for causing said PFET to be conductive during said first time period only if the voltage on said bus is less than a predetermined voltage, wherein said voltage regulator causes said PFET to commence conducting at the beginning of said first time period.

4,763,024
GAIN CONTROL CELL
Michael J. Gay, Coppet, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 14, 1987, Ser. No. 73,236
Claims priority, application United Kingdom, Sep. 17, 1986, 8622440
Int. Cl.[4] G06G *7/12;* H03F *3/45*
U.S. Cl. 307—493 3 Claims



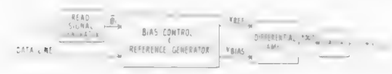
1. A gain control cell comprising an input stage having first and second input nodes and including a first current mirror, an output stage having first and second inputs coupled to said first and second input nodes respectively and an output node and including a second current mirror substantially matched to said first current mirror, and first and second current sources coupled to bias said input and output stages respectively, wherein the gain of the cell is defined by the ratio of said two current sources and is substantially independent of the current gains of said two current mirrors.

4,763,025
FREQUENCY DISCRIMINATION CIRCUIT
Kunihiro Takeuchi, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Mar. 10, 1986, Ser. No. 837,754
Claims priority, application Japan, Mar. 12, 1985, 60-047414
Int. Cl.[4] H03K *9/06;* H03D *3/02*
U.S. Cl. 307—526 5 Claims



1. A frequency discrimination circuit for discriminating whether or not a frequency of a signal being measured is higher than reference frequency, said circuit comprising,
a generating means responsive to the signal being measured for generating a trigger pulse signal with a period which coincides with that of the signal being measured;
a first retriggerable monostable multivibrator whose output level changes to a predetermined level condition for a period corresponding to a period of the reference frequency in response to the occurrence of the trigger pulse signal;
a frist circuit means for generating a repetitive pulse signal with a constant period independently of the signal being measured, said constant period being smaller than the pulse width of the first pulse output;
a second circuit means responsive to an output level of said first retriggerable monostable multivibrator and the repetitive pulse signal for permitting the repetitive pulse signal to pass therethrough only when the output level of said first retriggerable monostable multivibrator is in the predetermined level condition; and
a second retriggerable monostable multivibrator which produces a pulse output in response to the repetitive pulse signal derived from the second circuit means, a pulse width of the pulse output being wider than that of the period of the reference frequency,
whereby it can be discriminated on the basis of the level condition of the output of said second retriggerable monostable multivibrator whether or not the frequency of the signal being measured is higher than the reference frequency.

4,763,026
SENSE AMPLIFIER FOR SINGLE-ENDED DATA SENSING
Chan-Tang Tsen, Thousand Oaks, and Karl H. K. Yang, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.
Filed Apr. 9, 1987, Ser. No. 36,462
Int. Cl.[4] G01R *19/00;* H03K *5/153;* G11C *7/02*
U.S. Cl. 307—530 16 Claims



1. A method of providing a stable reference voltage derived from the dataline voltage and detecting a change in single ended data input, said method comprising the following steps:
(a) raising the bias line voltage to its maximum level;
(b) storing the dataline voltage;
(c) isolating the stored dataline voltage, thus obtaining the stable reference voltage;
(d) accessing the data such that the bias line voltage reflects the data input; and
(e) comparing the bias line voltage to the reference voltage and amplifying the difference with a difference amplifier such that an output voltage reflects the data input.

4,763,027
DEGLITCHING NETWORK FOR DIGITAL LOGIC CIRCUITS
Thomas M. Luich, Federal Way, Wash., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed May 7, 1985, Ser. No. 731,811
Int. Cl.[4] H03K *3/01, 3/26*
U.S. Cl. 307—546 11 Claims



8. A low-level clamping circuit for stabilizing a circuit node comprising:
a first transistor having a base connected to a reference voltage, an emitter coupled to ground and a collector connected to a first node;
a second transistor having a base connected to the first node, a collector connected to a second node, and an emitter coupled to ground through a diode;
a third transistor having a collector connected to a potential source, a base connected to the second node and an emitter coupled to the first node; and
a fourth transistor having a base connected to the second node, an emitter connected to the circuit node and a collector connected to the potential source, the second node also being coupled to the potential source.

4,763,028
CIRCUIT AND METHOD FOR SEMICONDUCTOR LEAKAGE CURRENT COMPENSATION
Paul M. Henry, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.
Continuation of Ser. No. 784,575, Oct. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 294,844, Aug. 21, 1981, abandoned. This application Nov. 27, 1987, Ser. No. 125,785
Int. Cl.[4] H03F *3/45;* H03K *17/10, 17/687, 19/003*
U.S. Cl. 307—573 20 Claims



1. A semiconductor circuit provided with input and output terminal for operation over a range of temperatures, comprising, in combination:
a first semiconductor device provided with at least a first, second and third main terminals and having a low room temperature leakage current and a larger higher temperature leakage current;
a semiconductor device means provided with a first, second and third main terminals and having temperature sensitive leakage current characteristics similar to said first semiconductor device and electrically connected to said first semiconductor device at a junction between a common point of said second and third main terminals of said semiconductor device means and said first main terminal of said first semiconductor device to supply at least a portion of the leakage current of said first semiconductor device; and
at least one variable zener means electrically connected to said second main terminal of said first semiconductor device and to said first main terminal of said semiconductor device means and adjusted at a higher temperature than room temperature for substantially matching the leakage current of said first semiconductor device and said semiconductor device means.

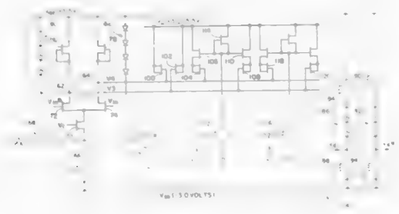
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,029

TRIGGERED VOLTAGE CONTROLLED OSCILLATOR USING FAST RECOVERY GATE

George J. Caspell, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Division of Ser. No. 875,030, Jun. 16, 1986, Pat. No. 4,686,489.
This application Apr. 20, 1987, Ser. No. 40,506
Int. Cl.[4] H03K *19/20, 5/13*
U.S. Cl. 307—600 6 Claims



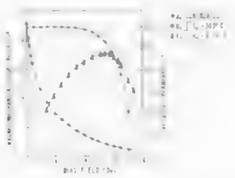
1. A circuit for producing an output signal of a state set in delayed response to a change in a state of an input signal, comprising:
a first circuit node;
a second circuit node, the output signal being developed across the first and second nodes;
a current source;
voltage source means;
first means responsive to a control signal for coupling said voltage source means to said first circuit node through a resistance and through a capacitance that varies in accordance with the control signal;
second means for capacitively and resistively coupling said voltage source means to said second circuit node; and
switch means responsive to said input signal for selectively applying current from said current source to either one of said first and second circuit nodes and for switching application of said current from one of said first and second circuit nodes to another of said first and second circuit nodes in response to said change in a state of said input signal.

4,763,030

MAGNETOMECHANICAL ENERGY CONVERSION

Arthur E. Clark, Adelphi; Lawrence T. Kabacoff, Silver Spring; Howard T. Savage, Greenbelt, and Christine Modzelewski, Columbia, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 438,211, Nov. 1, 1982, abandoned. This application May 24, 1984, Ser. No. 613,835
Int. Cl.[4] H01L *41/06*
U.S. Cl. 310—26 24 Claims



1. A magnetostrictive transducer comprising:
(1) a magnetostrictive transducer element comprising a metallic glass ribbon of the composition

$$Fe_wB_xSi_yC_z$$

wherein

$0.78 \leq w \leq 0.83$,

$0.13 \leq x \leq 0.17$,

$0.03 \leq y \leq 0.07$,

$0.005 \leq z \leq 0.03$,

and

wherein the metallic glass ribbon is essentially strain free, has a weak axis of magnetization which is in the plane of the ribbon transverse (at 90°) to the long axis of the ribbon, and has a magnetomechanical coupling factor (K_{33} greater than or equal to 0.90; and
(2) means for generating a change in magnetic field in the transducer element.

4,763,031

ELECTRIC MOTOR AND GEARBOX UNIT AND COMPONENT PARTS THEREOF

Patrick S. Wang, Repulse Bay, Hong Kong, assignor to Johnson Electric Industrial Manufactory Limited, Chai Wan, Hong Kong

Filed Jul. 30, 1986, Ser. No. 891,923
Claims priority, application United Kingdom, Feb. 6, 1986, 8602945
Int. Cl.[4] H02K *7/10*
U.S. Cl. 310—83 7 Claims



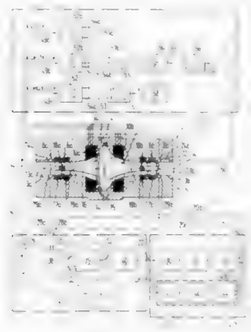
1. A motor/gearbox unit comprising:
an electric motor having an elongated drive shaft, a laminated stator, a laminated rotor on the drive shaft, and two frame parts, each frame part including two pillars secured to the stator, one of the frame parts defining bearing support for the motor, the other of the frame parts being formed integrally with a housing for the gearbox and a second bearing support for the motor;
the housing having a cylindrically shaped interior side wall concentric about a housing axis;
a ring gear disposed about said interior side wall;
a sun gear positioned within said housing to rotate about said housing axis, said sun gear having a bore for receiving the drive shaft of said motor;
a plurality of planetary gears operatively intermeshed between said ring gear and said sun gear;
gear carrier means having a central bore, said gear carrier means rotatably carrying said planetary gears; and
an output shaft having one end fixedly positioned within said carrier means, said output shaft having a longitudinal axis perpendicular to the surface of said carrier means, wherein the output shaft of said gearbox is coaxially aligned with the drive shaft of said motor.

4,763,032

MAGNETIC ROTOR BEARING

Günter Bramm, and Pavel Novak, both of Munich, Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Munich, Fed. Rep. of Germany

Filed Nov. 27, 1984, Ser. No. 675,144
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1983, 3343186
Int. Cl.[4] F16C *39/06*
U.S. Cl. 310—90.5 5 Claims



1. An absolutely-low energy consuming, and relatively-high electromagnetically efficient, magnetic rotor bearing assembly, comprising:
a stator;
a rotor having an axis of rotation that is disposed in the stator;
said rotor has a shaft, wherein the rotor and its shaft are hollow inside, and have a total density selected to be exactly adapted to that of human blood;
permanent first magnet means including a permanent magnet mounted to the rotor cooperative with a permanent magnet mounted to the stator for magnetically suspending said rotor in said stator by magnetic repulsion so that the rotor is free from mechanical contact with the stator and is axially movable by displacement along the axis of rotation, the permanent magnet mounted to the rotor is axially staggered with respect to the permanent magnet mounted to the stator to maximize centering forces;
second magnet means including a permanent magnet mounted to the rotor cooperative with an electromagnet having a field intensity mounted to the stator for stabilizing the rotor against displacement along the axis of rotation; and
means coupled to the second magnet means responsive to a desired value representing an intended axial position of the rotor and including a position sensor providing a signal respresentative of actual axial position of the rotor for providing a field intensity of the electromagnet of the second magnet means such that the rotor is always axially moved from its actual position to the intended axial position in the absence of symmetrical external forces.

4,763,033

LOW POWER ELECTRIC SPEED REDUCER, PARTICULARLY FOR A HOME-TRAINER

Marc Charbonnier, Franconville, France, assignor to Labavia S.G.E., Montigny Le Bretonneux, France

Filed Jul. 1, 1987, Ser. No. 68,881
Claims priority, application France, Jul. 4, 1986, 86 09776
Int. Cl.[4] H02K *49/04*
U.S. Cl. 310—105 12 Claims



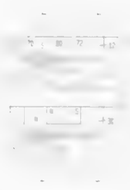
1. An electric speed reducer of low power comprising:
a frame having a shaft with an axis and bearing means for mounting said shaft to said frame;
an armature rotor including two parallel discs of magnetic material and a disc mounting means for fixedly mounting said discs to said shaft with a space between said discs;
an inductor stator including a single pair of cores, each said core having a longitudinal axis parallel to the axis of said shaft and being made of magnetic material whereby each said core has poles of opposite polarity; and
a core mounting means for mounting said cores in the space between said discs so as to be radially removable and such that said cores are closely spaced to each said disc and are adjacent each other with adjacent poles of said cores having an opposite polarity, each axis of said cores forming a plane with the axis of said shaft such that an angle between the planes is between about 45° to 90°.

4,763,034

MAGNETICALLY ENHANCED STEPPING MOTOR

John G. Gamble, Hull, Mass., assignor to Sigma Instruments, Inc., Braintree, Mass.

Filed Jul. 10, 1987, Ser. No. 72,213
Int. Cl.[4] H02K *21/00*
U.S. Cl. 310—181 20 Claims



1. An electric motor, comprising:
a stator;
a mover mounted for movement relative to said stator;
said stator having a plurality of poles projecting toward said mover;
said poles each having a plurality of teeth projecting toward said mover, said stator teeth being composed of soft magnetic material;
said mover having a plurality of mover teeth projecting toward said stator teeth and being composed of soft magnetic material;
winding means indictively coupled to said poles for magnetically actuating said stator teeth so as to cause magnetic interaction between said mover teeth and said stator teeth

VOL 1093 ISS 2 AG 9 1988 UMI

and move said mover teeth relative to said stator teeth along a given direction;

said stator teeth on each of said poles extending in a longitudinal direction and each of said poles being divided transverse to the longitudinal direction into two pole portions,

one portion of each of said poles having permanent magnetic means extending along at least one tooth for producing a magnetic field poled transverse to said mover, at least one of said poles having said permanent magnetic means in only one of said two pole portions.

4,763,035

INDUCTIVE WINDING FOR FLAT MOTOR

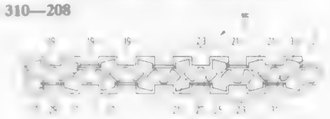
Leendert Zeeman, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

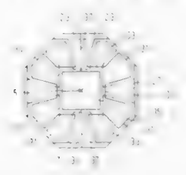
Filed Nov. 10, 1987, Ser. No. 119,006

Claims priority, application Netherlands, Nov. 20, 1986, [illegible]

Int. Cl.[4] H01F 5/00; H02K 3/26

U.S. Cl. 310—208 1 Claim





1. An inductive winding comprising a strip of an electrically insulating foil which is subdivided into successive foil parts which are separated by folding lines and which are folded against each other along the folding lines and each of which comprises on at least one of its major surfaces an electrically conductive track which extends according to a curved line around an axis which is perpendicular to the major surfaces of the foil parts, said conductor tracks being connected electrically together by means of connection tracks, the curved lines followed by the conductor tracks on the foil parts being meander-like with a number of curves connected by connection members, the curves cooperating with the connection tracks and the connection members so as to form coils arranged in a circle around the axis, characterized in that the long sides of the foil strip are crenellated so that the strip comprises a succession of wide and narrow rectangles and that the folding lines, viewed in the longitudinal direction of the strip, extend alternately from one long side of the strip to the other, each folding line extending from a corner point of a narrow rectangle present on one of the long sides to a corner point of the next narrow rectangle present on the oppositely located long side so that the foil parts have the form of parts of an octagon having a central aperture.

4,763,036

COMMUTATOR FOR A D. C. MOTOR

Kwong-Kwan Yu, Stanley, Hong Kong, assignor to Johnson Electric Industrial Manufactory, Limited, Chaiwan, Hong Kong

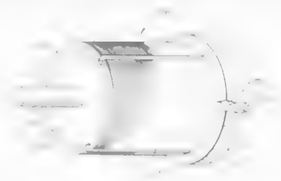
Filed Jan. 21, 1987, Ser. No. 5,838

Claims priority, application United Kingdom, Jan. 22, 1986, 8601459

Int. Cl.[4] H02K 13/10

U.S. Cl. 310—233 10 Claims

1. A commutator for a d.c. motor, comprising at least three commutator segments arranged to provide a substantially cylindrical outer surface wherein circumferentially extending striations between 0.02 mm and 0.06 mm deep are formed in said outer surface, the striations being separated by sharp



edged ridges for biting into abutting surfaces of brushes in the motor.

4,763,037

FLAT MOTOR HAVING A STATIONARY MAGNET

Nobuyuki Hashimoto, Toyota; Hiroyuki Amano, Kariya, and Katsumasa Shimizu, Toyoake, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Feb. 17, 1987, Ser. No. 15,471

Claims priority, application Japan, Feb. 15, 1986, 61-031704; Feb. 15, 1986, 61-031705; Feb. 15, 1986, 61-031706; Feb. 15, 1986, 61-031707

Int. Cl.[4] H02K 23/54, 15/12, 9/22

U.S. Cl. 310—268 10 Claims



1. A flat axial aircap electric motor comprising disk-shaped cover means adapted to be secured to a stationary support, a shaft fixedly secured at one end thereof to said cover means, a ring-shaped permanent magnet secured to said cover means about said shaft, a rotor comprising an electrical coil and yoke means for providing a magnetic flux circuit rotatably mounted on said shaft with a small gap between said permanent magnet and said electrical coil, and heat dissipating means secured to said rotor in heat conducting relation to said yoke means for dissipating heat from said coil to the atmosphere.

4,763,038

INCANDESCENT LAMP UNIT

Kazushige Takayama, Chigasaki, Japan, assignor to Ichikoh Industries Limited, Tokyo, Japan

Filed Jun. 18, 1987, Ser. No. 63,392

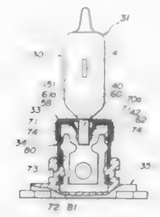
Claims priority, application Japan, Jun. 20, 1986, 61-93322[U]

Int. Cl.[4] H01J 5/48

U.S. Cl. 313—318 4 Claims

1. An incandescent lamp unit provided with a metallic base assembly and destined for use as an automotive headlight, comprising a bulb having provided at the rear end thereof a pinched portion of a rectangular section which has two opposite wide side faces and two opposite narrow side faces, said pinched portion being supported by a plurality of lugs formed on the metallic base assembly,

said base assembly comprising a first base having formed therein a first opening in which said pinched portion is introduced and provided with a pair of first lug members extending along edges of said first opening and which abut an upper portion of said pinched portion, and a second base attached to said first base, having formed therein a second opening in which said pinched portion is introduced and also provided with a pair of second lug members extending along edges of said second opening and which abut a lower portion of said pinched portion,



said second base being so arranged as to be fixed to a holder, said first lug members include at least two pairs of first horizontal lugs which abut said wide side faces, respectively, in pair and limit said pinched portion from moving laterally, and at least one pair of second horizontal lugs which abut said narrow side faces, respectively, in pair and limit said pinched portions from moving longitudinally, and in which said second lug members include at least one pair of lugs extending obliquely and downwardly from the edges of said second opening and which abut said wide side faces, respectively, in pair and limit said pinched portion from tilting.

4,763,039

COLOR DISPLAY TUBE WITH CORNER SUSPENSION MEANS

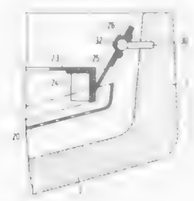
Piet C. J. Van Rens, and Willem Van Der Hoek, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1987, Ser. No. 32,412

Claims priority, application Netherlands, Apr. 2, 1986, [illegible]

Int. Cl.[4] H01J 29/07

U.S. Cl. 313—406 8 Claims



1. A color display tube comprising an envelope having a substantially rectangular display window with an upright edge, a substantially rectangular color selection electrode having a large number of apertures, and suspension means for suspending the color selection electrode in the corners of the upright edge, said suspension means comprising at each corner two parts, a first part comprising a flat resilient portion connected to the color selection electrode, which portion is substantially perpendicular to the electron beam paths at the corner regions, and a second part being a metal member in the corners of the upright edge of the display window, one of the parts having an aperture defined therein and the other part having a spherical portion engaging said one part in said aperture,

characterized in that: the aperture is defined in a non-flat portion of one of the parts; the center of the spherical portion is situated substantially in the center of the aperture; the spherical portion has at least three points of engagement with said one part in the aperture; the points of engagement define a circular cross-section having a circumference smaller than the circumference of the spherical portion; and at least one point of engagement is situated outside the plane of the flat resilient portion.

4,763,040

PICTURE DISPLAY DEVICE

Nicolaas G. Vink, and Albertus A. S. Sluyterman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Dec. 19, 1986, Ser. No. 945,111

Claims priority, application Netherlands, Nov. 6, 1986, [illegible]

Int. Cl.[4] H01F 5/00

U.S. Cl. 313—428 2 Claims



1. A picture display device for a projection color television receiver wherein a plurality of such devices project respective monochrome images which are converged into a composite color image, such device comprising a monochrome picture display tube having an envelope including at one end thereof an electron gun for producing an electron beam and a display screen at the other end thereof, and the following coil systems provided around the envelope of said display tube:

a system of deflection coils for deflecting the electron beam in two orthogonal directions, which system comprises a single pair of coaxial and coextensive line deflection coils for deflecting the electron beam in the line deflecting direction and a single pair of coaxial and coextensive field deflection coils for deflecting the electron beam in the field deflection direction ;and

a system of convergence correction coils for correcting the convergence of the electron beam; characterized in that the line deflection coils and the field deflection coils are arranged contiguously in the direction of the tube axis, the line deflection coils being closer to the display screen, and in that the convergence correction coil system comprises

a first pair of convergence correction coils which are arranged coaxially with respect to the line deflection coils and substantially coextensive therewith in the axial direction, said first pair of convergence correction coils generating a convergence correcting magnetic field in the field deflection direction, and

a second pair of convergence correction coils which are arranged coaxially with respect to the field deflection coils and substantially coextensive therewith in the axial direction, said second pair of convergence correction coils

VOL 1093 ISS 2 AG 9 1988 UMI

generating a convergence correcting magnetic field in the line deflection direction.

4,763,041

DOT ARRAY FLUORESCENT TUBE FOR WRITING OPTICAL INFORMATION IN OPTICAL PRINTER

Hideo Segawa, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 22, 1984, Ser. No. 663,440

Claims priority, application Japan, Oct. 24, 1983, 58-199449; Oct. 26, 1983, 58-200550; Nov. 17, 1983, 58-217507; Nov. 17, 1983, 58-217508

Int. Cl.[4] H01J *1/46*; G03B *27/54*; G01D *15/14*

U.S. Cl. 313—496 11 Claims



1. A frontview type dot array fluorescent tube for writing optical information which converts an information signal representative of an image to be recorded to optical information, comprising:

(a) a housing comprising a substrate and a face glass spaced from each other and enclosing between them an elongate vacuum space, said face glass having a transparent portion extending in a lengthwise direction of said housing;

(b) cathode means extending in the lengthwise direction in said vacuum space between the substrate and the face glass;

(c) anode means arranged in an array at a predetermined spacing in the lengthwise direction of the substrate and in a position to face the transparent portion of the face glass;

(d) fluorescent means provided on said respective anode means in an array to face the transparent portion of the face glass; and

(e) grid electrode means extending in the length-wise direction between the cathode means and said array of said fluorescent means, said grid electrode means comprising a pair of elongate opaque strips defining between them an elongate slit aligned with the array of fluorescent means and the transparent portion of the face glass;

including an insulating layer which is formed on selected portions of the substrate and faces the face glass, wherein the grid electrode means comprises a metal film formed on said insulating layer.

4,763,042

VACUUM ENVELOPE FOR A RADIATION IMAGE INTENSIFYING TUBE AND A PROCESS FOR MANUFACTURING SUCH AN ENVELOPE

Gilbert Colomb, Voiron; Jean P. Creusot, St. Martin d'Heres, and Henri Rougeot, St. Nazaire les Eymes, all of France, assignors to Thomson-CSF, Paris, France

Filed May 21, 1985, Ser. No. 736,474

Claims priority, application France, May 30, 1984, 84 08500

Int. Cl.[4] H01J *35/18*

U.S. Cl. 313—544 15 Claims

1. A vacuum envelope for radiation image intensifying tubes comprising a central body (2) formed by a glass cylinder ending on one side in a cylindrical ring (11) made from iron or an iron alloy and on the other side in an output window (3); and an input window (1) made from aluminum or an aluminum alloy having substantially the same diameter as the body (2) provided with a peripheral skirt (10) ending in a cone shaped bell-mouthed portion before welding to said ring (11), said skirt



(10) being welded to and overlying said ring (11) by magnetic induction welding so as to be vacuum tight.

4,763,043

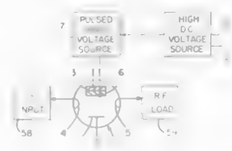
P-N JUNCTION SEMICONDUCTOR SECONDARY EMISSION CATHODE AND TUBE

George H. MacMaster, Lexington, and Lawrence J. Nichols, Burlington, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 23, 1985, Ser. No. 812,155

Int. Cl.[4] H01J *31/26*; H04N *3/14*

U.S. Cl. 315—5.12 15 Claims



1. A secondary-emission structure comprising:

a semiconductor material having a P region, an N region separated by a P-N junction;

means forward biasing said P-N junction into the conduction state and for reverse biasing into the non-conduction state;

means producing electrons impacting one of said regions with sufficient energy to produce secondary emission from said one of said regions;

said one region producing secondary emission electrons when said P-N junction is forward biased into the conductive state and not producing secondary emission electrons from said one region when said P-N junction is reverse biased in the non-conduction state.

4,763,044

START, HOT RESTART AND OPERATING LAMP CIRCUIT

Joe A. Nuckolls, Blacksburg, and Isaac L. Flory, IV, Harrisonburg, both of Va., assignors to Hubbell Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 821,804, Jan. 23, 1986, abandoned. This application Apr. 6, 1987, Ser. No. 35,243

Int. Cl.[4] H05B *41/26*; H01J *61/96*

U.S. Cl. 315—176 19 Claims

1. A starting and operating circuit for a high intensity discharge lamp comprising the combination of

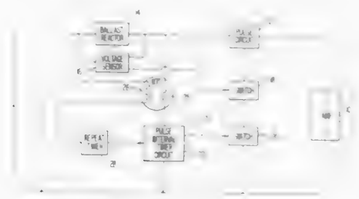
an AC voltage source;

lamp ballast means having an input connected to said source and having an AC output;

a controlled high-voltage lamp pulsing circuit means connected between said AC output of said ballast means and said lamp for applying to said lamp a series of high voltage

pulses having peak voltages significantly greater than the normal lamp starting and operating voltage magnitudes;

first circuit means for terminating said series of pulses after a first predetermined active interval in the absence of lamp ignition and for suspending the application of high voltage pulses to said lamp for a second or quiet interval and for allowing said lamp pulsing circuit means to again apply high voltage pulses to said lamp at the end of said second interval;



second circuit means for terminating application of said high voltage pulses to said lamp after the lamp completely ignites; and

third circuit means for terminating application of said high voltage pulses to said lamp after a predetermined number of active and quiet intervals without ignition until said AC source is turned off and back on to reset said starting and operating circuit.

4,763,045

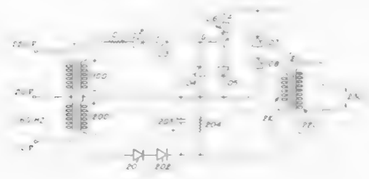
SPARK IGNITOR GENERATED BY CAPACITOR DISCHARGE SYNCHRONIZED WITH ALTERNATE CURRENT POWER FREQUENCY

Hyeong In Choi, Evanston, Ill., and Keh-Kun Choi, Seoul, Rep. of Korea, assignors to Bang H. MO, Chicago, Ill.

Filed May 4, 1987, Ser. No. 45,284

Int. Cl.[4] F02P *3/06*

U.S. Cl. 315—209 SC 8 Claims



1. Apparatus for generating an ignition spark across a spark gap comprising:

(a) charge storage means having charging circuit means and discharging circuit means, said charge storage means generating said ignition spark when discharging;

(b) an input transformer having a center tap defining first and second primary windings and first and second secondary windings, said first and second primary windings being coupled to said source of alternating current, one of said secondary windings being coupled to the charging circuit means of said charge storage means for supplying charging current thereto, and the other of said secondary windings being coupled to the discharging circuit means of said charge storage means to generate said trigger signal;

(c) a source of sinusoidal alternating current power for generating successive positive and negative half waves of power;

(d) means for applying a selected half wave of said power to the charging circuit of said charge storage means to charge the same to a peak voltage; and

(e) means for applying the next successive half wave following said selected half wave to the discharging circuit of said charge storage means, said next successive half wave generating a trigger signal to discharge said charge storage means and generate said ignition spark.

4,763,046

CRT PROTECTION CIRCUIT

Amir M. Sheikholeslami, Arlington Heights, and Michael G. White, Deerfield, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 8, 1987, Ser. No. 70,998

Int. Cl.[4] H01J *29/52*

U.S. Cl. 315—381 5 Claims



1. In combination:

a CRT having a cathode and a control grid;

means for negatively biasing said control grid with respect to said cathode;

video amplifier means for driving said cathode with a video signal;

a DC power supply;

first means coupled between said DC power supply and said video amplifier means for maintaining operating potential for said video amplifier means for a period after turn-off of said power supply; and

second means for driving said control grid more negative with respect to said cathode upon turn-off of said power supply.

4,763,047

ELECTRON GUN

Yuzuru Watanabe, Tokyo; Yoshifumi Nakayama, Chiba; Masanori Ando, Kanagawa, and Masahiro Kikuchi, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 826,836, Feb. 6, 1986, abandoned. This application May 8, 1987, Ser. No. 47,578

Claims priority, application Japan, Feb. 15, 1985, 60-27726

Int. Cl.[4] H01J *29/58*

U.S. Cl. 315—382 13 Claims



1. An electron gun for a cathode ray tube comprising, an object point forming lens region and a principal converging lens region, at least one through hole for said electron beam in a first grid electrode within said object point forming lens

VOL 1093 ISS 2 AG 9 1988 UMI

region is formed with an oblong shape such that the object point in the vertical direction is formed at a further position from said principal converging lens region than the object point in the horizontal direction, and the shapes of openings of electrodes within said principal converging lens region are determined such that the converging angle of said electron beam in the vertical direction is smaller than the converging angle in the horizontal direction so as to provide a beam spot with substantially no halo at the corners as well as the center of a screen in said cathode ray tube; and which includes a thrid grid and a fourth grid forming said principal lens, there being applied an anode voltage (V_H) to said fourth grid and a focus voltage (V_3) to said third grid wherein the focus voltage (V_3) is less than the anode voltage (V_H), each of said grids having a vertical segment and a horizontal segment, and the distance between the vertical segments of each grid being less than the distance between the horizontal segments, and wherein the end face of at least one of said grids includes a projecting vertical segment extending toward the end face of the other adjacent grid.

4,763,048

METHOD AND CIRCUIT FOR CONTROLLING THE OPERATING POINT OF A VIDEO AMPLIFIER

Wilfried Schiller, Hildesheim, Fed. Rep. of Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jan. 29, 1987, Ser. No. 8,310

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1986, 3610190

Int. Cl.⁴ H01J *29/52, 1/02*

U.S. Cl. 315—383 **10 Claims**



1. A method of controlling the operating point of a video amplifier (**18, 20**) in a data monitor whose raster scan outline normally falls entirely on a visible portion of a screen of a cathode ray tube (CRT) (**10**) forming part of said monitor,

utilizing the steps of

measuring cathode beam current and controlling the amplification of the amplifier as a function of measured cathode beam current,

and comprising, in accordance with the invention, the steps of

selecting a time interval for said cathode beam current measuring step, which time interval is not needed for presentation of information on the CRT screen; and

controlling the vertical deflection current to deflect the cathode ray beam during said time interval onto a portion of the CRT screen which is outside of the luminescent-material-coated portion of the screen.

4,763,049

BRUSHLESS DRIVE SYSTEM

Harold H. Magee, 485 Chinquapin Trail, Christiansburg, Va. 24073

Continuation-in-part of Ser. No. 839,960, Mar. 17, 1986, abandoned. This application Jun. 5, 1987, Ser. No. 58,916

Int. Cl.⁴ H02K *29/08*

U.S. Cl. 318—254 **6 Claims**



1. A brushless drive system for brushless D.C. motors which can be employed with known servo amplifiers and PWM amplifiers and systems, comprising in combination:

a MOSFET switch array for controlling directional rotation of a brushless D.C. motor, said MOSFET switch array including at least one pair of bi-directional MOSFET switches;

sensing means for sensing the rotor position of the brushless D.C. motor;

selecting means for selectively activating at least one pair of bi-directional MOSFET switches of said MOSFET switch array in response to signals received from said sensing means; and

a power source connected to each pair of bi-directional MOSFET switches of said MOSFET switch array, said power source being adapted to reverse voltage polarity to said at least one selectively activated pair of bi-directional MOSFET switches of said MOSFET switch array thereby reversing the directional rotation of said brushless D.C. motor.

4,763,050

DRIVING AND POSITIONING SYSTEM

Udo Ruppert, Berlin, Fed. Rep. of Germany, assignor to Deutsche Forschungs-Und Versuchsanstalt Fur Luft-Und Raumfahrt E.V., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 828,118, Feb. 10, 1986, abandoned. This application Jun. 18, 1987, Ser. No. 64,263

Int. Cl.⁴ H02K *29/08*

U.S. Cl. 318—254 **7 Claims**



1. In a driving and positioning system having a rotor with permanent magnets, a stator with at least two windings, rotor-

position sensors, an electronic voltage-supply circuit connected to the windings and controlled by the rotor-position sensors for commutating the current to the windings, the improvement wherein the stator is non-ferrous, the windings are disk-shaped and comprise coils including webs and empty spaces and are positioned in parallel planes and are overlapped such that the empty spaces inside the coils are all completely filled by webs, and wherein the rotor-position sensors are integrated into the at least two windings.

5. In a driving and positioning system having a rotor with permanent magnets, a stator with at least two windings, rotor-position sensors, an electronic voltage-supply circuit connected to the windings and controlled by the rotor-position sensors for commutating the current to the windings, the improvement wherein the rotor is an annular ferromagnetic support with a U-shaped cross-section and with a number of pairs of poles generated by the permanent magnets of the rotor which form an air gap that the stator windings engage and positioned on the opposing inner surfaces of the legs of the U-shaped cross-section, the stator is non-ferrous, the windings are cylindrical and comprise coils including webs and empty spaces and are positioned in parallel planes and are overlapped such that the empty spaces inside the coils are all completely filled by webs, and wherein the rotor-position sensors are integrated into the at least two windings.

4,763,051

DRIVING AND POSITIONING SYSTEM

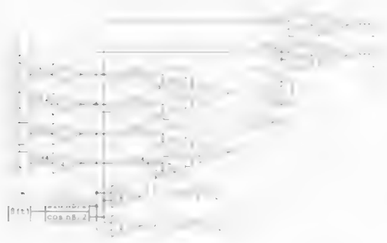
Udo Ruppert, Berlin, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt E.V., Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 828,118, Feb. 10, 1986, abandoned. This application Oct. 15, 1987, Ser. No. 110,644

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1985, 3504681

Int. Cl.⁴ H02P *6/02*

U.S. Cl. 318—254 **2 Claims**



1. In a driving and positioning system having a rotor with permanent magnets, a stator with at least two windings, rotor-position sensors, and an electronic voltage-supply circuit connected to the windings and controlled by the rotor-position sensors for commutating the current to the windings, the improvement wherein the circuit comprises amplifier means responsive to output signals from at least two rotor position sensors, first multiplication stages for multiplying the output signals from said amplifier means by signal values derived from a reference generator, power amplifiers connected to said at least two windings, addition means for adding the output signals from the first multiplication stages, second multiplication stages for multiplying the output signals from at least two rotor-position sensors with the output signals from the addition means and wherein the outputs of the second multiplication stages are connected to the inputs of the power amplifiers for controlling the commutation of said windings.

4,763,052

METHOD AND MEANS FOR DRIVING A BRUSHLESS D.C. MOTOR

Robert S. Lundin, Northfield, Conn., and Demetris C. Petritis, Athens, Greece, assignors to The Superior Electric Company, Bristol, Conn.

Filed Jun. 25, 1987, Ser. No. 66,679

Int. Cl.⁴ H02P *6/02*

U.S. Cl. 318—254 **5 Claims**



1. A circuit for driving a brushless D.C. motor, comprising:

(a) modulating means for modulating a D.C. voltage;

(b) switching means, responsive to a direction set point signal and a signal from shaft position encoding means which senses the position of the motor shaft, for receiving the modulated D.C. voltage and energizing the motor to provide desired speed and direction;

(c) bypass means for providing full D.C. voltage to the switching means; and

(d) control means, responsive to speed and current levels of the motor, for alternately activating the modulating means and the bypass means, whereby the modulating means is activated during periods when no demands are made on the motor to accelerate or decelerate and the bypass means is activated during periods when demands are made on the motor to accelerate or decelerate.

5. A circuit for driving a brushless D.C. motor, comprising:

(a) a D.C. bus adapted to receive a D.C. voltage from a D.C. power source;

(b) a pulse-width modulator connected to the D.C. bus;

(c) a pulse-width modulator bypass switch connected to the D.C. bus;

(d) a control logic circuit connected to control the pulse-width modulator and to activate the pulse-width modulator bypass switch;

(e) a current limit control circuit connected to receive as inputs a "set speed" command, a current level signal from the motor, and motor speed information from a tachometer which senses the speed of the motor, and connected to provide an input control signal to the control logic circuit; and

(f) a switching circuit connected to receive as inputs D.C. voltage from the pulse-width modulator and the pulse-width modulator bypass switch, a signal from the current limit control circuit to control chopping in the switching circuit, a "set direction" command, and a shaft position signal from an encoder which senses the position of the motor shaft and adapted to provide energization of the windings of the motor;

whereby the control logic circuit, in response to the control signal from the current limit control circuit will activate and control the pulse-width modulator during periods of no motor speed acceleration or deceleration to provide modulated D.C. voltage to the switching circuit and will activate the pulse-width modulator bypass switch to provide D.C. bus voltage to the switching circuit during periods of acceleration or deceleration.

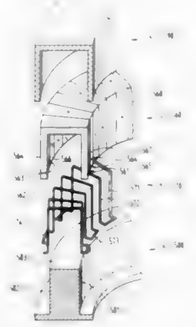
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,053

ELECTRONICALLY COMMUTATED DC MACHINE AND USE THEREOF

Erich Rabe, Auf der Schanz 44, 8500 Nürnberg 14, Fed. Rep. of Germany

Filed May 31, 1985, Ser. No. 739,091
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433695; May 3, 1985, 3515987
Int. Cl.[4] H02K *29/08, 3/00*
U.S. Cl. 318—254 27 Claims



1. An electronically commutated DC machine comprising a rotor having at least one permanent magnet with at least four poles adjacent an annular return circuit member, said poles being disposed concentrically to the rotary axis of the rotor and being polarized substantially perpendicularly thereto, at least one stationary meander-like conductive strip array in an annular gap between the rotor and the return circuit member, said strip array including linear forward and backward extending meander sections and being produced by preform winding such that at least one of the linear forward and backward extending meander sections comprises a number of parallel conductor sections, at least some of which are connected in series per linear meander sections, means for detecting the angular position of the rotor relative to one of the linear forward and backward extending meander sections of the conductive strip array, and an electronic control system for controlling on the basis of signals produced by the detecting means the flow of current through the conductive strip array such that the conductive strip array produces a magnetic field to drive the rotor, said electronic control system being mounted on a generally annular circuit board about the rotary axis of the rotor within the meander-like conductive strip array.

4,763,054

LEVEL DETECTOR

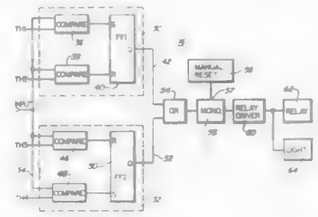
John E. Bundy, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Aug. 27, 1986, Ser. No. 900,719
Int. Cl.[4] G05B *19/40*
U.S. Cl. 318—301 13 Claims

1. A level detector, comprising:

first and second comparators each having two inputs and an output, the first comparator receiving an input signal and a first reference signal at the two inputs thereof and developing a first comparison signal at its output when the input signal level is greater than the first reference signal level and the second comparator receiving the input signal and a second reference signal at a different level than the first reference signal at the two inputs thereof and developing a second comparison signal at its output when the input signal is less than the second reference signal level; and

a flip-flop having first and second inputs coupled to the outputs of the first and second comparators, respectively, the flip-flop developing a high state signal when the first comparator develops the first comparison signal and de-



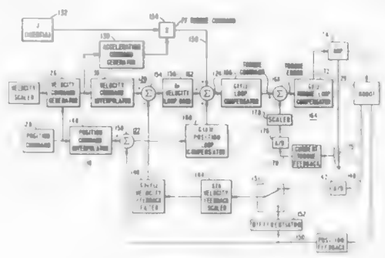
veloping a low state signal when the second comparator develops the second comparison signal.

4,763,065

DIGITAL ROBOT CONTROL HAVING HIGH PERFORMANCE SERVO CONTROL SYSTEM

Kenneth E. Daggett, Murrysville, Pa.; Eimei M. Onaga, Brookfield Center, and Richard J. Casler, Jr., Newtown, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 20, 1986, Ser. No. 932,976
Int. Cl.[4] B25J *1/02;* G06F *15/46*
U.S. Cl. 318—368 19 Claims



1. A robot comprising:

an arm having a plurality of joints;

each of said joints having an electric motor drive;

a power amplifier operable to supply drive current to each motor;

respective feedback control loop means for respectively controlling said power amplifier for each of said joint motors;

each of said feedback control loop means including digital position and velocity control loops being adaptable to control the associated drive current from the power amplifier to the respective joint motor;

first servo control means for performing control support tasks and calculation tasks for at least one of said control loops for each of the joint motors;

said first servo control means including a first microprocessor for performing calculation tasks including computing output torque control commands from stored algorithms for said one control loop for each joint motor;

said first microprocessor having a relatively high computing performance capability and a relatively low data processing interface capability;

said first servo control means further including a second microprocessor for supervising the operation of said first servo control means and performing interactive servo control support tasks in said one control loop for each joint motor including the routing of control command, status and feedback data to and from said first microprocessor;

said second microprocessor having a relatively high data processing performance capability; and

means for concurrently reading and writing through interlocking cyclic handshaking of shared memory channels by said first and second microprocessors relative to each other and relative to higher and lower level control circuitry, without impacting the control processing performance of either microprocessor, so as to enable said first servo control means to operate said one control loop for each joint motor and control the respective variable output torque commands for said control loops.

4,763,056

POWER SUPPLY SYSTEMS FOR RELUCTANCE MOTORS

John V. Byrne, Dalkey, and Jeremiah B. O'Dwyer, Naas, both of Ireland, assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jan. 7, 1986, Ser. No. 816,866
Claims priority, application Ireland, Jan. 15, 1985, 92/85
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—701 5 Claims



1. A power supply system for a reluctance motor having a plurality of phase windings, each of which has a first end and a second end, comprising

(a) first and second supply rails between which said plurality of phase windings may be connected,

(b) voltage source means for maintaining a supply voltage between said first and said supply rails,

(c) first switch means for each of said plurality of phase windings each said first switch means directly connecting the first end of the respective phase winding to said first supply rail without the interposition of any other electrical circuit element, and each said first switch means being a self-commutating, fast switch-off device,

(d) second switch means for each of said plurality of phase windings for connecting the second end of the respective phase winding to said second supply rail, each said second switch means being a device requiring forced commutation,

(e) an auxiliary supply rail,

(f) auxiliary voltage source means for maintaining a voltage between said auxiliary supply rail and said second rail which is substantially less than supply voltage, and

(g) commutation means for effecting switch-off of each said second switch means, said commutation means being defined by a respective low-power thyristor connected between said second end of each of said plurality of phase windings and said auxiliary supply rail and a single self-commutating device connected in said auxiliary supply rail between said auxiliary voltage source and the points of connection of said low-power thyristors to said auxiliary supply rail.

4,763,057

CONTROL FOR IMPROVING INDUCTION TRANSIENT RESPONSE BY EXCITATION ANGLE CONTROL

George E. Danz, Radford, and C. Calvin Shuler, Salem, both of Va., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Continuation of Ser. No. 912,168, Sep. 26, 1986, abandoned, which is a continuation of Ser. No. 567,340, Dec. 30, 1983, abandoned. This application Jul. 8, 1987, Ser. No. 71,554
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—809 11 Claims



1. In a servo control system for an AC induction motor of the type including

a. a servo loop providing an error signal,

b. a digital rotating vector indication with a rotational speed differing from the actual motor speed according to the desired slip, and

c. conversion of said rotating vector into motor excitation current having a frequency and phase according to said rotating vector and a magnitude proportional to said error signal,

the improvement comprising:

a phase advance circuit providing a phase shift indication which increases as a function of said error signal including circuit means in said phase advance circuit for advancing said phase shift indication to a maximum phase shift indication value when said error signal is in the range of 15% to 50% of maximum error signal, and

circuit means for shifting the phase of said rotating vector in accordance with said phase shift indication.

4,763,058

METHOD AND APPARATUS FOR DETERMINING THE FLUX ANGLE OF ROTATING FIELD MACHINE OR FOR POSITION-ORIENTED OPERATION OF THE MACHINE

Hans-Dieter Heining, Rednitzhembach, and Albert Wick, Baiersdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,022
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542941
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—807 21 Claims



1. Method for determining the flux angle of a rotating field machine comprising the steps of:

a. impressing a high frequency signal on an electrical state parameter of the stator winding system, said high frequency signal being generated by a stator current con-

VOL 1093 ISS 2 AG 9 1988 UMI

verter connected to said stator winding system for rotating said machine, said electrical state parameters of the stator winding system including the currents and voltage in the individual stator coils, the axes of those coils on which the high-frequency component is impressed determining the direction of the impressed high-frequency signal;

b. detecting a state signal which simulates another electrical state parameter of the stator winding system and determining the high frequency amplitude of said another state parameter; and

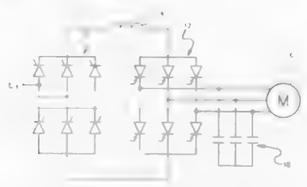
c. determining the direction of the flux angle in the stator from said amplitude.

4,763,059

METHOD AND APPARATUS FOR INDUCTION MOTOR DRIVE

Paul M. Espelage, Salem, and James M. Nowak, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Jun. 23, 1987, Ser. No. 65,529
Int. Cl.[4] H02P *5/34*
U.S. Cl. 318—811 **13 Claims**



1. An alternating current motor drive comprising:

(a) a polyphase induction motor having corresponding phase windings, said motor having a determined leakage inductance;

(b) a capacitor bank including a plurality of capacitors connected across said motor phase windings, said capacitor bank and said motor windings exhibiting a defined electrical resonance;

(c) a current source inverter circuit for supplying output electrical current at controlled frequencies to said motor and capacitor bank; and,

(d) control means for controlling the operation of said inverter circuit including,

(1) first means operative to effect an output current having a predetermined waveshape at a desired fundamental frequency,

(2) means to provide a frequency signal representative of said fundamental frequency, and,

(3) means responsive to said frequency signal to modify the current waveshape by selectively introducing notches thereinto, said notches varying in number and duration in accordance with a predetermined relationship defined as a function of said electrical resonance and which includes providing no notches at frequencies above a predetermined value and for increasing the number of notches as a function of a decreasing fundamental frequency.

4,763,060

AC MOTOR DRIVE METHOD AND SYSTEM USING A PULSE WIDTH MODULATED INVERTER

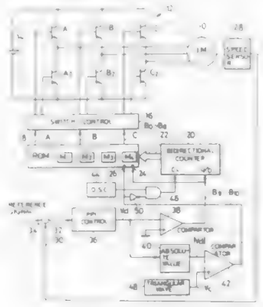
Isao Takahashi, Nagaoka, Japan, assignor to Sanken Electric Co., Ltd., Saitama, Japan

Filed Oct. 8, 1986, Ser. No. 916,386
Claims priority, application Japan, May 5, 1986, 61-47875
Int. Cl.[4] H02P *5/28*
U.S. Cl. 318—811 **9 Claims**

1. A method of controllably driving an alternating current motor via an inverter having a plurality of switches to be activated in prescribed on off patterns to provide a plurality of voltage vectors for creating a rotary field vector in the motor and a zero vector for arresting the rotation of the field vector, which method comprises:

(a) providing memory means having written thereon both voltage vector data representative of the on off patterns of the inverter switches for the production of the voltage vectors in a predetermined sequence, and zero vector data representative of the on off pattern of the inverter switches for the production of the zero vector;

(b) comparing a motor speed signal indicative of the actual running speed of the motor with a reference signal indicative of a desired speed at which the motor is to be driven, thereby providing a deviation signal representative of the departure of the actual motor speed from the desired speed;



(c) comparing the deviation signal with a triangular wave having a predetermined frequency; and

(d) reading out the voltage vector data and zero vector data from the memory means in accordance with the results of the comparison between the deviation signal and the triangular wave for activating the inverter switches so as to cause the inverter to generate the voltage vectors and zero vector accordingly;

(e) the voltage vector data being read out from the memory means when the deviation signal is of greater magnitude than the triangular wave, in order to cause the inverter to generate the voltage vectors in the predetermined sequence and at predetermined time intervals;

(f) the zero vector data being read out from the memory means during all the periods when the deviation signal is of smaller magnitude than the triangular wave, in order to cause the inverter to generate the zero vector.

4,763,061

SWITCHING POWER SUPPLY WITH A PRIMARY SWITCHED-MODE DIRECT-CURRECT CONVERTER AND A CIRCUIT ARRANGMENT THAT RESPONDS TO THE SUM OF A FIRST CONTROL SIGNAL PROPORTIONAL TO CURRENT FLOWING THROUGH A TRANSFER PRIMARY COIL

Gerhard Schwarz, Altena, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

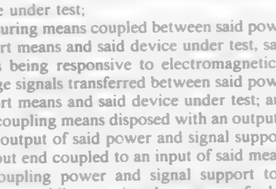
Filed Apr. 15, 1987, Ser. No. 38,816
Claims priority, application Fed. Rep. of Germany, May 30, 1986, 3618221
Int. Cl.[4] H02J *7/10*
U.S. Cl. 320—32 **7 Claims**

1. A switching power supply with a primary switched mode direct current converter for supplying regulated power to an electrical load from an input voltage source of different voltage levels comprising

a transformer having a primary coil and a secondary coil, a first controllable semiconductor having a main circuit and a control electrode, means including the main circuit of said first controllable semiconductor and a first resistor for connecting said primary coil of said transformer to an input voltage source,

means for connecting said secondary coil of the transformer to said electrical load, and means providing secondary feedback from said secondary coil to the control electrode of said first controllable semiconductor,

a second controllable semiconductor having a main circuit and a control electrode, means connecting said main circuit of said second controllable semiconductor between the control electrode of said first controllable semiconductor and one terminal of said input voltage source, and



a circuit arrangement provided between the other terminal of said input voltage source and the junction of said first resistor and said main circuit of said first controllable semiconductor, said circuit arrangement including a capacitor that provides at one of its ends the sum of a first control signal proportional to the primary current flowing through said primary coil and a second control signal proportional to the input voltage,

said circuit arrangement being connected to the control electrode of said second controllable semiconductor such that the sum of said two control signals operates on the conductivity of said second controllable semiconductor.

4,763,062

CONDUCTIVE EMI TEST SYSTEM, A DECOUPLING NETWORK THEREFOR

David J. Trzcinski, Redford Township, and Terry M. North, Harper Woods, both of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Oct. 6, 1986, Ser. No. 915,365
Int. Cl.[4] G01R *27/00*
U.S. Cl. 324—57 N **10 Claims**



1. A conductive electromagnetic interference test system determining electromagnetic interfering source components and receptor components within a device under test at worst-case electromagnetic interference conditions, said system comprising:

(a) means for supplying power and signal support to said device under test;

(b) measuring means coupled between said power and signal support means and said device under test, said measuring means being responsive to electromagnetic interference voltage signals transferred between said power and signal support means and said device under test; and

(c) a decoupling means disposed with an output end coupled to an output of said power and signal support means and an input end coupled to an input of said measuring means for coupling power and signal support to said device under test while opposing the passage of selected electromagnetic interfering voltage signals from both said device under test and said power and signal support means, said decoupling means providing a substantially worst-case high impedance load for said device under test while said device under test is operating in response to the power and signal support from said support means, the high impedance load causing interfering voltage signals from said device under test to confront substantially an open circuit impedance with respect to an input of said decoupling means, and causing said device under test to produce a worst case interference voltage signal which can be measured by said measuring means to provide a reference upon which a repeatable measure of an interference voltage signal can be determined when interference suppression techniques are applied to rid or reduce electromagnetic interfering source and receptor components of said device under test.

4,763,063

COMPACT DIGITAL PRESSURE SENSOR CIRCUITRY

Zvi Shkedi, Los Angeles, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 26, 1985, Ser. No. 759,627
Int. Cl.[4] G01R *27/26;* **G01L** *9/12*
U.S. Cl. 324—60 CD **14 Claims**



1. Apparatus for converting a capacitance C generated by a pressure transducer and varying as a function of pressure supplied to said pressure transducer to a digital output indicative of said pressure supplied to said pressure transducer, comprising:

means for charging and discharging said capacitance C, said charging and discharging means combining with said capacitance C to produce an R-C network, said charging and discharging means producing a pulse train having a time period determined by the value of said capacitance C, said charging and discharging means comprising a comparator having as an output said pulse train, an operational amplifier having its noninverting input grounded and connected to said comparator, a first resistor connected at one end thereof to both one side of said capacitance C and the output of said operational amplifier and at the other end thereof to the noninverting input of said comparator, a second resistor connected at one end thereof to the noninverting input of said comparator and at the other end thereof to the output of said comparator, a third resistor connected at one end to the positive power supply of said comparator and at the other end thereof to said output of said comparator, a fourth resistor connected at one end thereof to both the other side of said capacitance C and the inverting input of said operational amplifier and at the other end thereof to said output of said comparator;

means for periodically calculating a digital value representing said time period and thereby characterizing said value of said capacitance C; and

means for periodically converting said digital value into a digital output which digital output represents the pressure supplied to said transducer which produces said value of said capacitance C characterized by said digital value

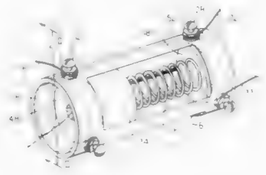
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,064

DEVICE FOR MEASURING THE ELECTRONIC CHARACTERISTICS OF SOLID MATERIALS

Arthur W. Johnson, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed Apr. 6, 1987, Ser. No. 34,530
Claims priority, application Canada, Apr. 18, 1986, 506123
Int. Cl.[4] G01R 27/02
U.S. Cl. 324—65 CP 13 Claims



1. A device for measuring electronic characteristics of solid materials comprising an elongated tubular retainer frame having a longitudinal axis and cutaway sides for providing access to the interior of the frame; a base plate secured to the frame near one end thereof, the base plate having an interior surface which is planar and perpendicular to the longitudinal axis of the frame; means for securing and adjustably centring the base plate within the frame; an end plate secured to the frame near the other end thereof; a piston having a forward surface and a rear surface, the piston being urged in operation towards the interior surface of the base plate to secure a sample of solid material therebetween for measurement, a spring means to extend between the end plate and the rear surface of the piston to urge the piston towards the interior surface of the base plate, the forward surface of the piston being perpendicular to the longitudinal axis of the frame; the piston, spring, end plate and base plate being made of electrically conductive material; electrical contacts electrically insulated from the frame being secured to the frame to electrically communicate respectively with the end plate and with the base plate while preventing electrical contact between the frame and either of these plates; and an elongated sleeve to fit within the frame and during operation circumscribe the piston, the sample to be measured and a portion of the base plate to permit longitudinal movement of the piston in a direction parallel to the longitudinal axis of the frame and to maintain lateral stability of the piston, the sleeve being made of an electrically non-conductive material which is inert to the material under test.

4,763,065

APPARATUS FOR THE DETECTION AND MEASUREMENT OF SUSPENDED PARTICULATES IN A MOLTEN METAL

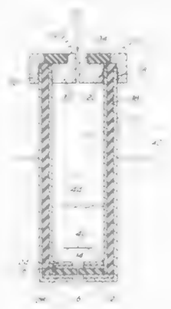
Raynald Hachey, Shipshaw, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed Jun. 5, 1985, Ser. No. 741,458
Claims priority, application United Kingdom, Jun. 11, 1984, 8414856
Int. Cl.[4] G01N 27/07; G01R 27/22
U.S. Cl. 324—71.4 8 Claims

1. Apparatus for the detection and measurement in a molten metal sample of suspended particulates comprising

a container defined by a composite wall and an electrically insulating barrier (**14**), the composite wall including an electrically conducting outer wall (**10**) and an electrically conducting inner wall (**12**), the inner wall and outer wall being electrically insulated from one another, and the electrically insulating barrier (**14**) including a passage (**16**) of predetermined size therethrough providing communication between the inside and outside of the container,

means for causing a sample of molten metal to pass through the passage into (or out of) the container so that molten metal in the container is in electrical contact with the inner wall and molten metal ouside the container is in electrical contact with the outer wall, establishing a current path from the inner wall through the passage to the outer wall,



and means connected to the inner wall and the outer wall for passing an electrical current along the current path while the molten metal is passing through the passage and for detecting voltage changes resulting from the passage through the passage of the suspended particulates.

4,763,066

AUTOMATIC TEST EQUIPMENT FOR INTEGRATED CIRCUITS

Paul K. K. Yeung, Bothell; Alan D. Howard, Edmonds; James W. Hoo, and James L. Pennock, both of Seattle, all of Wash., assignors to Huntron Instruments, Inc., Lynnwood, Wash.

Filed Sep. 23, 1986, Ser. No. 910,483
Int. Cl.[4] G01R 19/165, 19/10
U.S. Cl. 324—73 R 11 Claims



1. An apparatus for testing an electronic circuit, comprising:

means for connecting an electronic circuit having an operating condition which is to be tested to said apparatus, said electronic circuit havinq a plurality of selected node points;

means for automatically applying an electrical interrogation signal to said selected circuit node points in turn;

means for automatically obtaining from said circuit node points in response to said interrogation signal two electrical signal waveforms, one of which is a current waveform and the other of which is a voltage waveform, both of which have positive and negative portions, wherein said two waveforms, when combined, form an analog signature which is indicative of the operating condition of the electronic circuit relative to said circuit node points and wherein the apparatus includes means for combining said two waveforms to produce said analog signature;

means for integrating the positive and negative portions of one cycle of each of said two waveforms;

means for generating four digital values representative of the integrated portions, respectively, of said two waveforms;

means establishing and storing reference digital values for the selected circuit node points;

means comparing the generated digital values for each selected circuit node point with the corresponding reference digital values therefore and identifying those circuit node points having a generated digital value which is within a selected range relative to said corresponding reference digital value; and

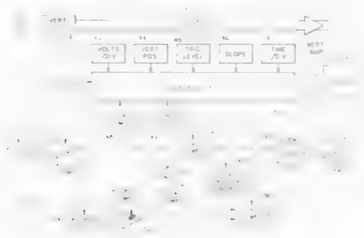
means for producing and displaying the analog signature for those circuit node points which do not have a generated digital value within said selected range.

4,763,067

OSCILLOSCOPE HAVING A DISPLAYED TRIGGER INDICATOR

Gary R. Fladstol, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 8, 1987, Ser. No. 107,220
Int. Cl.[4] G01R 13/20, 15/08; G09G 3/00
U.S. Cl. 324—121 R 3 Claims



1. In an oscilloscope having at least one vertical channel for processing electrical signals, at least one sweep generator for providing sweep signals, and a display device having a viewing screen and being responsive to said electrical signals and said sweep signals for displaying waveforms representing said electrical signals, a method of indicating trigger control settings, comprising:

generating a trigger level control range indicator having a vertical linear dimension corresponding to the overall range of a trigger level control and scaled proportionately with the amplitude of a displayed waveform;

generating a trigger level marker; and

displaying said trigger level range indicator on said viewing screen adjacent said displayed waveform wherein said trigger level marker is superimposed on said trigger level range indicator.

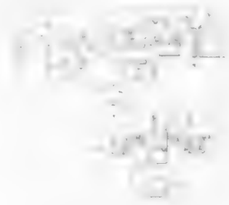
4,763,068

METHOD, CIRCUIT AND APPARATUS FOR THE ELIMINATION OF THE D.C. VOLTAGE COMPONENTS OF A CAPACITIVE A.C. VOLTAGE DIVIDER

Robert Schmitt, Bamberg, and Peter Steffens, Stegaurach, both of Fed. Rep. of Germany, assignors to MWB Messwandler-Bau Aktiengesellschaft, Bamberg, Fed. Rep. of Germany

Filed Jan. 24, 1986, Ser. No. 822,312
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1985, 3502638
Int. Cl.[4] G01R 19/25
U.S. Cl. 324—126 19 Claims

2. A method for elimination of d.c. voltage components of a capacitive voltage divider, especially for middle and high voltages, whose a.c. measuring voltage which may include a d.c. voltage component, is fed to a measurement transformer, comprising the steps of feeding the a.c. measuring voltage by way of a condenser to a measuring amplifier via two parallel lines, the a.c. measuring voltage being fed directly by way of a first line, determining in the other line the d.c. voltage component of the a.c. measuring voltage by subdividing the a.c. measuring voltage into such small time sections that an equal number of time sections is coordinated to each half period,



continuously forming at a frequency of the time sections from the instantaneous values of at least two successive time sections forming a partial interval of a half cycle, an average voltage value, comparing the average voltage value with a respective average voltage value of the time sections which are one half cycle earlier, and determining therefrom the voltage difference and feeding the same inverted to the measuring amplifier.

4,763,069

DIODE SAFETY BARRIER

Glisente Landrini, Agrate Brianza, Italy, assignor to Elcon Instruments SRL., Agrate Brianza, Italy

Filed Dec. 10, 1986, Ser. No. 940,116
Int. Cl.[4] G01R 27/02
U.S. Cl. 324—158 D 7 Claims



1. In a diode safety barrier, a module comprising a circuit having a plurality of diodes electrically interconnected at one and a current-limiting device connected in series with one of said diodes at the end opposite from said interconnected end thereof, a casing in which said circuit is mounted and encapsulated and input/output pins extending from said module and connected individually within the encapsulation to the inter-

VOL 1093 ISS 2 AG 9 1988 UMI

connected ends of said diodes and to the ends of each of said diodes opposite from said interconnected ends whereby each of the diodes can be individually tested in the encapsulation through the respective input/output pins, and means externally of said module and means for removably connecting the same to said module through said input/output pins for connecting the interconnected end of said diodes to ground and for connecting together the ends of said diodes opposite from said interconnected ends, and for connecting the end of one of said diodes opposite from said interconnected end in the encapsulation and the end of said current-limiting device opposite from the end connected to said diode to signal terminals.

4,763,070

METHOD AND APPARATUS TO COMPENSATE FOR LATERAL CHANGES OF A FERROMAGNETIC BODY DURING MAGNETIC TESTING

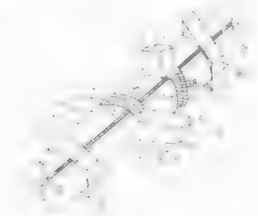
Gerhard Hüschelrath, Laufach, Fed. Rep. of Germany, assignor to NUKEM GmbH, Hanau, Fed. Rep. of Germany

Filed Sep. 20, 1985, Ser. No. 778,515

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1984, 3435442

Int. Cl.[4] G01N *27/72, 27/82;* G01R *33/12*

U.S. Cl. 324—225 8 Claims



4. Device for non-destructive testing of a ferromagnetic body for structural defects by means of magnetizing the body, the structural defects causing changes in the magnetic field pattern which changes are picked up by stationary magnetic field detectors arranged on or near the surface of said body, said detectors being arranged along the periphery of the body and having outputs connected in a specified sequence and in a time-division multiplex manner for evaluation, the device including:

a detection and coding circuit responsive to said magnetic field detectors for detecting and coding said magnetic field pattern during testing of a specimen having a weld in order to determine the extent of lateral changes in the position of the specimen with respect to the magnetic field detectors when the weld is deflected from a reference position;

a first memory connected via said detection and coding circuit to each of the magnetic field detectors, said first memory storing compensation values determined as a function of the positions of the respective magnetic field detectors with respect to the weld of a test specimen in the reference position, said compensation values being used to minimize measured values obtained in the measurement of the test specimen in the reference position of the weld, said test specimen not having any structural defects, and said first memory operating as a shift register;

a second memory connected via said detection and coding circuit to each of the magnetic field detectors, said memory functioning as a buffer memory;

a subtractor having a first input connected alternatively to outputs of the detection and coding circuit and the second memory and a second input connected to an output of said first memory for subtracting the compensation values from measured values of the specimen being tested to obtain corrected measured values which approach zero;

a threshold value detector settable to negative and positive threshold values, said threshold value detector comparing the output of said subtractor with predetermined threshold values; and

a compensation control circuit which outputs a control signal for shifting the compensation values stored in the first memory in accordance with the changes in the position of the weld of the specimen being tested such that the difference between measured values of the specimen being tested and the shifted compensation values is minimized; for reading the first and second memories; for selectively applying to said first input of the subtractor either the outputs of the detection and coding circuit or an output of the second memory; and for outputting the result of the comparison with said predetermined threshold values for further evaluation.

4,763,071

NONDESTRUCTIVE TEST INSTRUMENT FOR DETERMINING FIBER VOLUME, PLY COUNT AND THICKNESS OF FIBER-CONTAINING ELECTRICALLY CONDUCTIVE COMPOSITE MATERIALS

Allen C. McGee, Fremont, and Everett L. Solen, Los Gatos, both of Calif., assignors to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 796,377, Nov. 8, 1985, abandoned. This application May 20, 1987, Ser. No. 52,193

Int. Cl.[4] G01N *27/72;* G01R *33/12;* G01B *7/10*

U.S. Cl. 324—233 7 Claims



1. An instrument for nondestructively measuring a mechanical property of an electrically conductive test structure, said test structure comprising different materials having correspondingly different values of electrical conductivity, at least one of said materials having a non-zero value of electrical conductivity, measurement of said mechanical property being obtainable by specification of two electrical parameters for said test structure, said electrical parameters being variable in value independently of each other with respect to variations in said mechanical property of said test structure, said instrument comprising:

a. means for coupling electromagnetic energy into said test structure, said energy coupling means and said test structure thereby forming a system that is characterized by an impedance vector having a current component and a voltage component, said current and voltage components of said impedance vector determining said electrical parameters for said test structure;

b. means for making a magnitude measurement of one of said current and voltage components of said impedance vector, and thereby determining a corresponding magnitude measurement of the other of said current and voltage components;

c. means for measuring a phase relationship between said current and voltage components of said impedance vector simultaneously with the making of said magnitude measurement of said one of said current and voltage components, said means for measuring said phase relationship being independent of said means for making said magnitude measurement of said one of said current and voltage components, said magnitude measurement of said one of said current and voltage components together with the simultaneous measurement of said phase relationship between said current and voltage components thereby specifying values for said two electrical parameters; and

d. means defining a coordinate system in which said values specified for said two electrical parameters for said test structure are coordinates of a test point representing said test structure, said means defining said coordinate system also relating said test point to a plurality of reference points representing a corresponding plurality of other electrically conductive structures, each one of said reference points having a corresponding pair of coordinates that are known values of said two electrical parameters for a corresponding one of said other electrically conductive structures, said mechanical property having a known measurement for each one of said other electrically conductive structures, the relating of said test point to said reference points thereby providing a measured value of said mechanical property for said test structure.

4,763,072

MAGNETIC AZIMUTH DETECTOR

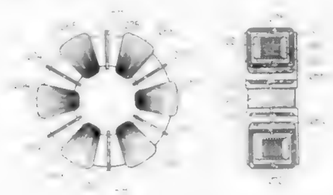
Mitsuru Katoh; Shin-Ichi Kawada, and Isao Masuzawa, all of Kuroiso, Japan, assignors to Kabushikikaisha Tokyo Keiki, Tokyo, Japan

Filed May 30, 1986, Ser. No. 869,003

Claims priority, application Japan, Jun. 7, 1985, 60-123905; Jun. 7, 1985, 60-123906; May 26, 1986, 61-120693

Int. Cl.[4] G01R *33/04*

U.S. Cl. 324—253 5 Claims



1. A magnetic azimuth detector comprising:

an annular core;

an annular hollow bobbin surrounding said core, said bobbin having a plurality of protrusions uniformly spaced about the circumference of said bobbin and extending axially parallel to the central axis of said core, said protrusions defining about said bobbin a plurality of circumferential sectors;

a primary winding wound on said bobbin having an equal number of turns in each of said circumferential sectors;

a bobbin shell surrounding said annular bobbin having means for receiving and maintaining said primary winding and said protrusions;

a secondary winding comprising at least two pairs of diametrically opposed windings, uniformly spaced about said bobbin shell, each winding having an equal number of turns;

adjusting means associated with the windings of said opposed pairs for correcting an azimuth error related to said secondary winding.

4,763,073

METHOD AND APPARATUS FOR THE RECONSTRUCTION OF NUCLEAR MAGNETIC RESONANCE IMAGES

Robert Turner, Bramcote, England, assignor to National Research Development Corporation, London, England

Filed Mar. 26, 1986, Ser. No. 844,165

Claims priority, application United Kingdom, Mar. 28, 1985, 8508154

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—312 11 Claims



1. A method of providing nuclear magnetic resonance images comprising the steps of:

obtaining a free induction signal from nuclei in an object under investigation in the presence of a homogeneous magnetic field on which a magnetic gradient field is superimposed,

modulating the free induction signal by a reference signal,

converting the modulated signal into an optical image, said converting step including intensity modulating an electron beam with said modulated signal and forming an image utilizing the intensity modulated beam,

illuminating the image with coherent light, and

focussing light from the image through a lens to constitute an image which is the Fourier transformation of the original image.

4,763,074

AUTOMATIC TUNING CIRCUIT FOR MAGNETIC RESONANCE QUADRATURE ANTENNA SYSTEM

Timothy R. Fox, Chicago, Ill., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 1, 1987, Ser. No. 32,630

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—314 13 Claims



1. An automatic tuning circuit for a quadrature coil antenna

VOL 1093 ISS 2 AG 9 1988 UMI

system of a magnetic resonance imaging system, said automatic tuning circuit comprising:

means for applying a test signal to each of a first and a second channel of the antenna to produce a first channel signal on said first channel and a second channel signal on said second channel;

means coupled to said first and said second antenna channels for measuring the phase of said second channel signal relative to the phase of said first channel signal to obtain an error signal; and

means coupled to said phase measuring means and to said second antenna channel for adjusting the resonant frequency of said second channel signal in response to said error signal to obtain a desired phase relationship between said first and said second channel signals.

4,763,075

ELECTRO-OPTICAL ISOLATOR FOR MAGNETIC RESONANCE TOMOGRAPHY

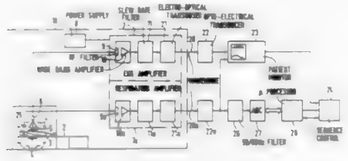
Kurt Weigert, Fuerth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 19, 1985, Ser. No. 756,883

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1984, 3430625

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—318 **3 Claims**



1. Apparatus for use with magnetic resonance tomography equipment to gate the imaging process without excessive electrical interference from gradient pulses and like electrical signals, wherein at least a part of said magnetic resonance tomography equipment is located inside a shielded region, comprising:

an electronic measuring system located inside said region and responding to a one of a patient's body functions to produce an electrical signal suitable for gating, said system comprising a slew rate filter;

an electro-optical transducer located inside said region and converting said electrical signal to an optical signal;

as waveguide coupled to the electro-optical transducer and transmitting said optical signal outside said region; and

an opto-electrical transducer located outside said region and coupled to said waveguide, said opto-electrical transducer converting said optical signal to an electrical output signal.

4,763,076

MRI TRANSMIT COIL DISABLE SWITCHING VIA RF IN/OUT CABLE

Mitsuaki Arakawa, Hillsborough, and Lawrence E. Crooks, Richmond, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 91,916, Sep. 1, 1987. This application Sep. 8, 1987, Ser. No. 93,670

Int. Cl.⁴ G01R *33/20*

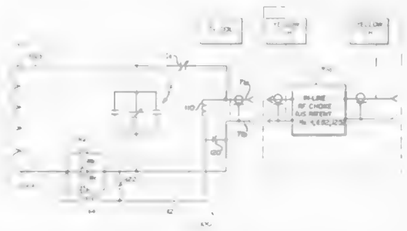
U.S. Cl. 324—322 **11 Claims**

1. Magnetic resonance imaging apparatus comprising:

resonant RF circuit means for resonating at a predetermined radio frequency;

transmission line means connected to said RF circuit means for applying a DC control signal to said circuit means and also adapted for conducting RF signals between said transmission line means and an external RF receiver and/or transmitter, said transmission line means including an inner conductor and a substantially cylindrical outer conductor surrounding and coaxial with said inner conductor, said outer conductor having inner and outer surfaces;

coaxial choke assembly means, disposed along said transmission line means, for preventing RF signals from flowing along said transmission line means outer conductor outer surface and for permitting DC signals to flow along said transmission line means outer conductor outer surface;



means coupled to said RF transmission line means and to said resonant RF circuit means for preventing said resonant circuit means from resonating at said predetermined frequency in response to said DC control signal; and

further structure disposed in proximity to said resonant circuit means and connected to said preventing means for conducting said DC control signal but not RF signals between said resonant circuit means and said transmission line means.

4,763,077

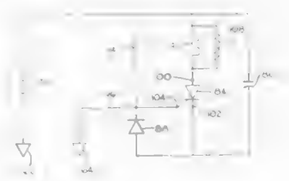
SENSOR CIRCUIT RESPONSIVE TO DIFFERENT FLUID CONDUCTIVITIES

Francis M. Miller, Clearwater, Fla., assignor to Conax Florida Corporation, St. Petersburg, Fla.

Filed Oct. 20, 1986, Ser. No. 922,074

Int. Cl.⁴ G01N *27/02*

U.S. Cl. 324—439 **15 Claims**



1. A circuit for operating a load in response to predetermined external conductivity conditions comprising:

(a) a pair of sensing electrodes;

(b) a source of electrical energy connected to one of said electrodes;

(c) a load;

(d) an operating circuit connected to said load, to said source and to the other of said sensing electrodes, said circuit including a first portion having means for storing electrical energy for operating said load and a second portion including a controlled switch connected to said load for providing a path enabling said stored energy to operate said load; and

(e) said circuit further including control means for allowing operation of only said first circuit portion when said sensing electrodes are exposed to a first medium having a predetermined electrical conductivity and then allowing operation of said second portion thereafter and when said sensing electrodes are exposed to a second medium having a different electrical conductivity.

4,763,078

SENSOR FOR ELECTROSTATIC VOLTMETER

Bruce T. Williams, 81 Warden St., Lockport, N.Y.

Filed Mar. 27, 1986, Ser. No. 844,517

Int. Cl.⁴ G01R *5/28*

U.S. Cl. 324—458 **16 Claims**



1. A sensor for an electrostatic voltmeter comprising:

(a) an elongated vibratory element having two ends;

(b) means for supporting said vibratory element at one of said ends as a cantilever beam;

(c) sensitive electrode means on said vibratory element near the other of said ends thereof and disposed directly toward an electrical field or potential being measured having capacitive coupling to said electrode means;

(d) drive means on said vibratory element for vibrating said element in a direction to vary the capacitive coupling between said electrode means and the electrical field or potential being measured; and

(e) amplifier means on said vibratory element in direct close physical proximity to said sensitive electrode means and having an input directly connected to said electrode means and an output for connection to the electrostatic voltmeter, the direct connection of said input to said electrode means being sufficiently short to eliminate extraneous coupling thereby avoiding the need for shielding.

4,763,079

METHOD FOR DECELERATING PARTICLE BEAMS

George R. Neil, San Pedro, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 3, 1987, Ser. No. 33,934

Int. Cl.⁴ H05H *11/00*

U.S. Cl. 328—233 **10 Claims**



1. A method for decelerating packets of charged particles that have been accelerated in a linear accelerator, the method comprising the steps of:

passing each packet of charged particles through at least one induction core positioned in the path of the charged particles;

generating an electrical current pulse as each packet of charged particles passes through the induction core; and simultaneously decelerating the each packet of charged particles as it passes through the induction core.

4,763,080

SWITCHING POWER AMPLIFIER

Zdzislaw Gulczynski, P.O. Box 441, Winchester, Mass. 01890

Filed May 26, 1987, Ser. No. 53,634

Int. Cl.⁴ H23F *3/38*

U.S. Cl. 330—10 **11 Claims**



1. Switching power amplifier for amplifying an input signal to provide an output signal, comprising:

a generator means for providing a generator signal and including at least one capacitor for storing a DC supply voltage of the generator means;

a low-pass filter having a substantially inductive input and including a first inductor, for providing the output signal;

a switch means responsive to the input, generator and output signals for selectively applying the generator signal to the low-pass filter input for providing corrections of the output signal of the switching power amplifier;

at least one second inductor magnetically coupled to the first inductor; and

rectifier means coupled for rectifying voltages appearing across the second inductor for providing charging current to the capacitor of the generator means.

4,763,081

REDUCING DISTORTION IN ACTIVE MOSFET-C LOW PASS FILTERS

Barry L. Jason, Bedford, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 13, 1987, Ser. No. 72,816

Int. Cl.⁴ H03F *1/32*

U.S. Cl. 330—149 **4 Claims**



4. In an active lowpass filter, the method of reducing distortion for signals having frequency components in the range from DC through a substantial portion of the passband of the lowpass filter, comprising the steps of predistorting input signals to the active lowpass filter to produce predistorted intermediate signals by passing the input signals through a feedback predistortion circuit preceding the active lowpass filter, the transfer function of the feedback predistortion circuit being determined by the ratio of resistive feedback and input devices that match, respectively, resistive input and feedback devices that determine the DC and low-frequency transfer function of the active lowpass filter, and filtering the predistorted intermediate signals to produce output signals, thereby reducing distortion in the output signals from the active lowpass filter.

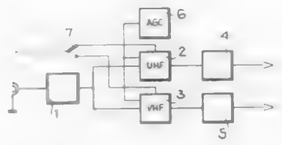
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,082

SELECTABLE TUNER PREAMPLIFIER

Roland Reuschle, Kirchheim /N, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed May 6, 1987, Ser. No. 46,533
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1986, 3626575
Int. Cl.[4] H03F 3/68
U.S. Cl. 330—295 8 Claims



1. In a selectable tuner preamplifier for receiving a high-frequency input signal and a control signal, said preamplifier including a field-effect transistor tetrode having first and second gate electrodes and a drain electrode, the high-frequency input signal being fed to one of said gate electrodes, the control signal to the other of said gate electrodes and a drain voltage supply being connected to said drain electrode, band selection being effected by switching off said drain voltage supply, the improvment comprising

means having a diode characteristic coupled to one of said gate electrodes, said means preventing undesired current flow at the gate electrode to which said high-frequency input signal is fed when a band is selected and said control voltage is applied to the other of said gate electrodes.

4,763,083

LOW PHASE NOISE RF SYNTHESIZER

Allen P. Edwards, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 2, 1986, Ser. No. 859,096
Int. Cl.[4] H03L 7/18, 7/22
U.S. Cl. 331—2 4 Claims



1. A frequency synthesizer for producing an output signal at any selected frequency within a set output range with predetermined resolution, comprising:

timebase means for producing a plurality of reference frequency signals;

means for producing an RF reference frequency signal synchronized with at least one of the timebase reference frequency signals and having a first step size;

means for producing an IF reference frequency signal synchronized with at least one of the timebase reference frequency signals, having a frequency range adequate to provide coverage over the step size of the RF reference frequency signal, and having a step size smaller than said predetermined resolution, said IF reference signal generating means comprising,

an IF reference loop for generating a first signal at a frequency that is a multiple of the desired IF reference frequency, and

a variable divider for dividing the first signal by the factor required to produce the desired IF reference frequency signal; and

means for combining the RF reference frequency signal and the IF reference frequency signal to produce the selected output signal having at least said predetermined resolution with respect to any selected frequency in the output range.

4,763,084

PUSH-PUSH DIELECTRIC RESONATOR OSCILLATOR

Anthony M. Pavio, Jr., Plano, and Mark A. Smith, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 867,843, May 27, 1986, abandoned.
This application Apr. 9, 1987, Ser. No. 35,213
Int. Cl.[4] H03B 5/18
U.S. Cl. 331—56 4 Claims



1. A push-push dielectric resonator oscillator circuit, comprising:

a first oscillator means for generating a first signal at a first frequency and phase;

a second oscillator means for generating a second signal at the first frequency and at a second phase;

a resonator means for maintaining an antiphase relationship between the first signal and the second signal;

combining means for vectorially combining the first and second signals to obtain an output signal at a second frequency; and

the first and second oscillator means each include a field effect transistor circuit including a field effect transistor having a gate, a drain and a source, a resonating circuit tuned to resonate at the first frequency as its fundamental frequency connected to the gate of the field effect transistor, a network circuit tuned for impedance matching at the first frequency and connected to the source, and an output circuit tuned for impedance matching at the first frequency and connected to the drain.

4,763,085

MUTUALLY INJECTION LOCKED MILLIMETER WAVE VOLTAGE CONTROLLED OSCILLATORS WITH POWER COMBINER

John R. Lamberg, Minnetonka, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Aug. 10, 1987, Ser. No. 83,071
Int. Cl.[4] H03B 7/14, 9/14; H03C 3/22
U.S. Cl. 331—56 8 Claims

1. Apparatus for power combining the outputs from at least two variable frequency signal sources comprising:

(a) first and second variable frequency oscillators operable at millimeter wave frequencies;

(b) power combining means having a pair of input terminals and a single output terminal, said power combining means exhibiting an isolation factor between said pair of input terminals in the range of from 10 to 30 dB; and

(c) phase shifting means coupling the outputs of said first and second variable frequency oscillators to respective ones of said first and second input terminals of said power combining means, the arrangement being such that a fraction of the output signal of each of said first and second variable frequency oscillators is injected through said phase shifting means into the other of said first and second variable frequency oscillators to effect frequency locking of said first and second variable frequency oscillators at a common frequency.

4,763,086

AUTOMATIC GAIN CONTROL FOR TANK TYPE VOLTAGE CONTROLLED OSCILLATOR

Michael H. Haight, Plano; William H. Giolma, Dallas, both of Tex., and Richard Boucher, Santa Clara, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 12, 1987, Ser. No. 49,186
Int. Cl.[4] H03B 5/08; H03L 5/00
U.S. Cl. 331—109 10 Claims



1. An oscillator circuit having a tank circuit for generating oscillations, comprising:

means for establishing a fixed bias voltage with respect to ground at a bias end of said tank circuit;

means for sensing voltage from an alternating voltage end of said tank so as to control the tank gain;

an automatic gain control (AGC) capacitor;

a constant current source coupled to said AGC capacitor for supplying a constant charging current to said AGC capacitor; and

means for discharging said AGC capacitor when the tank oscillation voltage exceeds a voltage level determined by a ratio of resistors, a transistor emitter-base ratio and a supply voltage.

4,763,087

IMPEDANCE MATCHING NETWORK

Paul D. Schrader, 7001 Briscoe La., Louisville, Ky. 40228

Filed May 27, 1986, Ser. No. 866,750
Int. Cl.[4] H03H 7/38, 7/48
U.S. Cl. 333—101 7 Claims



1. In an impedance matching network interconnecting an input to a load comprising an input side leg and an output side leg with an intervening common leg therebetween, the improvement comprising switch means for selectively interconnecting the input side leg to either the input or load of the network and concurrently alternately interconnecting the load side leg to the load or input respectively, of the network.

4,763,088

SWITCHING SCHEME FOR SWITCHED CAPACITOR FILTERS

Mehrdad Negahban-Hagh, Irvine, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.

Filed Apr. 30, 1986, Ser. No. 857,926
Int. Cl.[4] H03H 19/00; G11C 27/02
U.S. Cl. 333—173 6 Claims

1. A second order filter circuit comprising:

a first operational amplifier having a first output node and first and second input nodes;

a second operational amplifier having a second output node and third and fourth input nodes;

a first feedback capacitor coupled to said first amplifier at said first output node and said first input node;

a second feedback capacitor coupled to said second amplifier at said second output node and said third input node;

a first termination capacitor coupled to said first output node and said first input node;

a second termination capacitor coupled to said first output node and said first input node;

one of said first and second termination capacitors acting as a first sampling capacitor;

a second sampling capacitor coupled to said first input node and said second output node;

whereby a second order filter circuit is provided.

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,089
MICROWAVE MULTIBAND FILTER
Chuck Y. Pon, Belmont, Calif., assignor to Dalmo Victor, Inc., Belmont, Calif.
Filed Oct. 8, 1987, Ser. No. 105,899
Int. Cl.[4] H01P *1/213, 1/203*
U.S. Cl. 333—202 4 Claims



1. A microwave filter, comprising:
a first transmission line and a second transmission line, and an output port at one end of said first transmission line;
switch means, coupled to said first and second transmission lines, responsive to all pass and band pass mode selection signals for selectively transmitting an input signal to one of said first and second said transmission lines, respectively;
a plurality of directional filters, each directional filter having means for transmitting signals in a corresponding frequency band from one of said transmission lines to the other of said transmission lines; each of said directional filters including a separate diode means for enabling and disabling the operation of each said directional filter in accordance with a bias voltage applied to said separate diode means; and
control means coupled to said switch means and said directional filters for selecting a mode of operation for said microwave filter, including all pass mode selection means for generating an all pass mode selection signal and applying a bias voltage to each said diode means for disabling the operation of said directional filters, and band pass mode selection means for generating a band pass mode selection signal and applying bias voltages to said separate diode means to enable and disable selected ones of said directional filters;
whereby, said microwave filter can selectively transmit a broadband signal or any discrete or combination of the frequency bands transmitted by said directional filters.

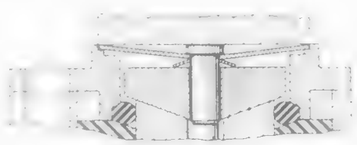
4,763,090
COAXIAL-LINE SECTION
Franz-Xaver Pitschi, Rottach-Egern, Fed. Rep. of Germany, assignor to Spinner GmbH, Elektrotechnische Fabrik, Munich, Fed. Rep. of Germany
Filed Dec. 21, 1987, Ser. No. 135,344
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644279
Int. Cl.[4] H01P *3/06;* H01R *11/01*
U.S. Cl. 333—260 12 Claims

12. A coaxial-line section; comprising:
an outer conductor;
an inner conductor;
supporting means for supporting said inner conductor in a position coaxial with said outer conductor;
displacement compensating means for providing a uniform dimensional change of said inner conductor relative to its cross sectional center plane during the heating phase and cooling phase, said displacement compensating means being arranged in said inner conductor and having an axial inner end and an axial outer free end, said supporting means having an end face defining a stop face with said outer free end of said displacement compensating elements; and



anchoring means for firmly connecting said inner ends of said displacement compensating elements to said inner conductor.

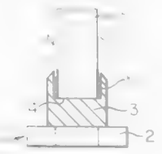
4,763,091
AIR GAP SETTING DEVICE FOR ELECTROMAGNETS
Armin Lang, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany
PCT No. PCT/EP86/00455, § 371 Date Apr. 2, 1987, § 102(e) Date Apr. 2, 1987, PCT Pub. No. WO87/00963, PCT Pub. Date Feb. 12, 1987
PCT Filed Aug. 1, 1986, Ser. No. 44,033
Claims priority, application Luxembourg, Aug. 3, 1985, 00392
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—258 5 Claims



1. In an electromagnet comprising a magnetic core (3) energized by a solenoid (2) to attract an armature (7) separated by an air gap (19) from said magnetic core; the improvement for adjusting the air gap comprising a pin (8) force fittable in said armature and having a collar (11) of a thickness equal to the desired air gap; spring means (17) engageable with said collar and stressable when said pin is force fitted into said armature; including means (21) to limit the final portion of traverse of forced fit of said pin to the thickness of said collar wherein said spring means is stressed and whereby return movement of said spring means moves said collar along with said armature a distance equal to the thickness of said collar from said magnetic core to set the desired air gap.

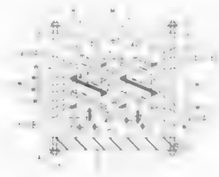
4,763,092
MAGNETIC FILTER
Kazuyuki Tomita, 12-7, Yamate-cho 2-chome, Suita-shi, Osaka, Japan
Filed May 20, 1987, Ser. No. 51,584
Claims priority, application Japan, Apr. 10, 1987, 62-53485[U]
Int. Cl.[4] H01F *7/02*
U.S. Cl. 335—305 5 Claims

1. A magnetic filter including a screw plug having a recess formed at the tip end of its screw rod portion as directed in the axial direction thereof, a rod-shaped permanent magnet piece fitted in said recess, and a non-magnetic member interposed between said permanent magnet piece and an inner circumferential surface of said recess; characterized in that said rod-shaped permanent magnet piece is magnetized so that magnetic poles appear on its circumferential surface at diametrically



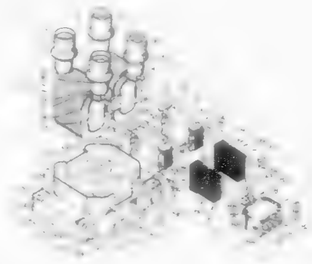
opposite ends of its transverse cross-section, and said rod-shaped permanent magnet piece is axially projected from the tip end surface of said screw rod portion.

4,763,093
HIGH-POWER PULSE TRANSFORMER FOR SHORT HIGH-VOLTAGE AND/OR HIGH-CURRENT PULSES
Hans-Jürgen Cirkel, Uttenreuth, and Willi Bette, Erlangen, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany
Filed Aug. 21, 1986, Ser. No. 898,707
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529915
Int. Cl.[4] H01F *27/10, 27/30*
U.S. Cl. 336—58 14 Claims



1. High-power pulse transformer for short, high-voltage and/or high-current pulses, comprising:
a container having walls, a base plate disposed in said container, high-voltage leadthroughs disposed in said container walls, an insulating, cooling dielectric liquid disposed in said container, said dielectric liquid having a given heat transfer coefficient $\alpha[w/m^2 \cdot K]$ with respect to an uncoated metal wall within the range of $\alpha_1 \leqq \alpha \leqq \alpha_2$, said uncoated metal wall comprising by definition a metal wall being covered by a thin oxide or lacquer film within the μm-range, the influence of which on the heat transfer coefficient or on the dielectric properties of the couple "metal wall - dielectric liquid" being negligible;
at least one magnet core disposed on said base plate in said container, said magnet core having a central window formed therein defining an axis of said window and defining self-enclosed magnet legs disposed around said central window, said core having relatively wide sides normal to said axis of said window and relatively narrow sides;
at least one undervoltage winding and at least one overvoltage winding each being disposed in said dielectric liquid, being wrapped in each other around parts of said magnet core immersed in said dielectric liquid and being linked to said magnet core and to each other, said windings including turns of substantially mutually doubly-wound electrically insulated metallic conductors having a given thickness and having terminal winding ends disposed in said leadthroughs, said conductors having surfaces with a heat transfer coefficient α with respect to said dielectric liquid being within said range $\alpha_1 \leqq \alpha \leqq \alpha_2$;
said turns of each of said windings being self-supported and spaced apart from said turns of the other of said windings by a first minimum spacing and being spaced from said magnet core by a second minimum spacing;
support insulators being partly disposed in said dielectric liquid and being adjacent and spaced from at least one of said sides of said magnet core by a third minimum spacing being greater than the sum of said second minimum spacing and said given thickness of said turns, at least said ends of said windings being secured in recesses formed in said support insulators; and
means for retaining said magnet core and said support insulators on said base plate in said container.

4,763,094
IGNITION COIL ASSEMBLY FOR INTERNAL COMBUSTION ENGINES
Masami Kojima, Chiryu, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan
Filed Dec. 3, 1987, Ser. No. 128,218
Claims priority, application Japan, Dec. 4, 1986, 61-289491
Int. Cl.[4] H01F *27/02*
U.S. Cl. 336—92 3 Claims



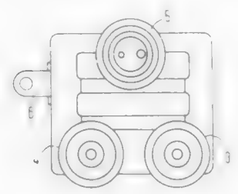
1. An ignition coil assembly for an internal combustion engine comprising:
a housing made of an electrically insulating material;
at least one first laminated core embedded in said housing and having a plurality of surface portions exposed to the outside of said housing and a plurality of magnetic path connection end faces exposed to the inside of said housing;
at least one second laminated core having a plurality of magnetic path connection end faces each opposing through a small gap one of said magnetic path connection end faces of said first laminated core and contained in said housing to form, along with said first laminated core, a closed magnetic path;
a primary coil and a secondary coil which are wound on said second laminated core;
a molding resin filling in said housing to insulate and fix in place said second laminated core, said primary coil and said secondary coil; and
a plurality of soft waterproof layers formed on inner walls of said housing to cover said magnetic path connection end faces of said first laminated core.

4,763,095
TRANSFORMER WITH CAST INSULATION JACKET
Peter Bradt, Ganderkesee, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Aug. 8, 1986, Ser. No. 894,781
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1985, 3531445
Int. Cl.[4] H01F *27/04*
U.S. Cl. 336—96 7 Claims

1. A transformer assembly comprising:

VOL 1093 ISS 2 AG 9 1988 UMI

a coil form of synthetic resin material, said coil form having a substantially rectangular hollow body portion;
a primary winding would about said coil form;
a secondary winding wound about said coil form;
a plurality of rubber socket members mounted on said coil form by prefixed retention means to selectively, independently maintain and position said coil form in an injection mold;
a plurality of connecting means disposed in respective ones of said socket members for receiving respective external electrical leads, said connecting means being operatively coupled to respective winding ends of said primary and secondary windings;
an iron transformer core having a central portion traversing said hollow body portion of said coil form;



spacing means including a plurality of spacer elements molded on an inner surface of said hollow body portion for spacing said central portion from said inner surface to form an interspace; and
exactly one integral cast resin insulating jacket being injection molded about said coil form, said primary winding, said secondary winding, said core and at least portions of said socket members when said rubber socket members independently maintain and position said coil form in said injection mold, said cast resin insulating jacket having a portion substantially completely occupying said interspace, said socket members being substantially permanently fixed to said coil form by said cast resin insulating jacket.

4,763,096

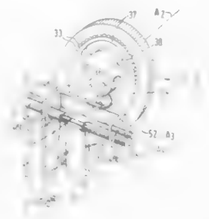
DEVICE FOR ADJUSTING THE THERMAL CURRENT OF A THERMAL BIMETALLIC STRIP TRIP AND A PROTECTION SWITCH INCLUDING SUCH A DEVICE

Raymond Ingrain, Quetigny, France, assignor to La Telemecanique Electrique, France

Filed Aug. 14, 1987, Ser. No. 86,340
Claims priority, application France, Aug. 14, 1986, 86 11738
Int. Cl.[4] H01H *71/16*
U.S. Cl. 337—82 4 Claims

1. A device for adjusting the tripping current of a thermal bimetallic strip tripping unit having a tripping piece housed in a case, said device including in the case:
a wheel accessible from outside the case and having inner toothing, the wheel carrying graduations which correspond to direct or relative tripping current values and which may be brought, by rotating said wheel, opposite an index carried by the case;
an inner flange centered on the wheel, adapted to be driven in rotation, having a member meshing with the teeth of the wheel, and formed with a groove of excentric shape with respect to the axis of rotation of the wheel;
a piece forming a tumbler rotatable about an axis perpendicular to the axis of rotation of the wheel through a drive member engaged in the groove of the flange, the axis of rotation of the tumbler being fixed with respect to the case.
a hook mounted for pivoting about an axis parallel to the axis of rotation of the tumbler and capable of cooperating with said tripping piece;
said device further including a lever which is pivotally mounted in its median part on the hook by means of a pin so as to form a broken link therewith, and which cooperates at one end with the tumbler through a connection





piece, the lever having a second free end intended to be situated with respect to the thermal bimetallic strip tripping unit at a distance depending on the chosen value of the tripping current.

4,763,097

MEASUREMENT TRANSFORMER

Bernhard Kant, Eschborn, and Wolfgang Porth, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 630,930, Jul. 16, 1984. This application Feb. 18, 1986, Ser. No. 831,074
Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325539
Int. Cl.[4] G01L *1/22*
U.S. Cl. 338—4 23 Claims



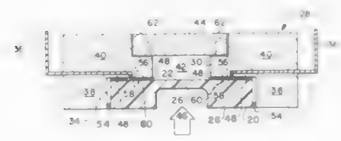
1. A measurement transformer having at least one flexural beam onto which a wire strain gauge is applied, and wherein
said transformer comprises a spring plate having an inner portion and an outer portion, and a set of webs extending across a space between said inner portion and said outer portion for interconnecting said inner portion with said outer potion, said flexural beam being formed as an extension of said inner portion;
the configuration of said set of webs with said inner portion and said outer portion constituting means for allowing a cutting away of a portion of a web to reduce its load-bearing cross section so as to permit the elasticity of the flexural beam to be varied by a reduction in its load-bearing cross section subsequent to deployment of said measurement transformer.
20. A method for the measurement of force by use of a measurement transformer including an electric strain guage secured to a flexible beam which can be flexed by the force upon connection of the beam to a force-producing apparatus, a flexing of the beam producing an electric signal from the strain guage, the method comprising the steps of:
forming a spring plate with portions cut out to produce webs, said plate having an inner portion and an outer perimetric portion, said webs extending from said inner portion to said outer portion, a central part of said plate defining said flexible beam;
mechanically connecting said plate to said apparatus to receive said force for bending said beam, said webs being sufficiently thin to flex with said beam and to permit a cutting of at least one of said webs;
electrically connecting said strain guage for receipt of an electrical signal therefrom; and subsequently
cutting at least one of said webs to vary elasticity of said plate for adjustment of a measurement range of said transformer.

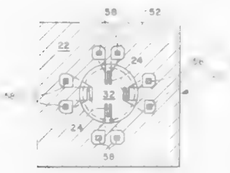
4,763,098

FLIP-CHIP PRESSURE TRANSDUCER

Max C. Glenn, and Raymond F. McMullen, both of Minnetonka, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 8, 1985, Ser. No. 721,107
The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.
Int. Cl.[4] G01L *9/06*
U.S. Cl. 338—4 7 Claims





1. A pressure transducer comprising:
a pressure sensitive silicon die having a front side exposing piezoresistive means and comprising means for flip-chip mounting the die to a pressure vessel;
a pressure vessel having an aperture, the pressure vessel comprising means for flip-chip mounting the die over the aperture, so that the front side of the die faces the aperture;
the die being flip-chip mounted over the aperture in the pressure vessel;
a hermetic seal between the pressure vessel and the die; and
a substantially flat, optically transparent coverplate, attached to the pressure vessel and positioned opposite said piezoresistive means.

4,763,099

TEMPERATURE SENSITIVE DEVICE

Simon N. Balderson, Reading, England, assignor to Thorn EMI plc, London, England

Filed Dec. 3, 1986, Ser. No. 937,486
Claims priority, application United Kingdom, Dec. 4, 1985, 8529867
Int. Cl.[4] H01C *3/04*
U.S. Cl. 338—22 R 6 Claims



1. A temperature-sensitive device comprising an electrically-conductive composite material consisting of, in predetermined proportions, a metal and an electrically non-conductive material which has the characteristic of undergoing a reversible phase transition at a predetermined temperature, said phase transition consisting of a reversible change in volume of said phase transition material, thereby effecting a reversible change in said proportions by volume of the said composite material and thus in said electrical conductivity of said composite material at said temperature.

4,763,100

JOYSTICK WITH ADDITIONAL DEGREE OF CONTROL

Lawson A. Wood, 905 N. Frederick St., Arlington, Va. 22205

Filed Aug. 13, 1987, Ser. No. 84,937
Int. Cl.[4] H01C *10/16*
U.S. Cl. 338—128 20 Claims

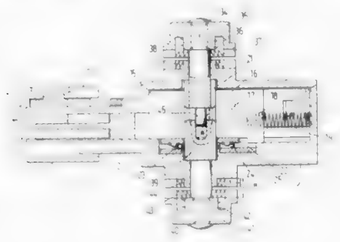


1. A joystick, comprising:
a chassis;
a first potentiometer mounted on the chassis;
a first yoke element mounted on the chassis for pivoting movement about a first axis;
first means for coupling the first potentiometer to the first yoke element;
a second potentiometer mounted on the chassis;
a second yoke element mounted on the chassis for pivoting movement about a second axis that is orthogonal to the first axis;
second means for coupling the second potentiometer to the second yoke element;
a platform member;
means for mounting the platform member on the first yoke

VOL 1093 ISS 2 AG 9 1988 UMI

element so that the platform member is pivotable about a third axis that is orthogonal to the first axis;
manually operable means for moving the platform member; and
coupling means, extending from the platform member and slidably engaging the second yoke element, for pivoting the second yoke element about the second axis when the platform member pivots about the third axis.

4,763,101
LOCKING SLIDE SWITCH
Karl-Heinz Bauer, Bad Neustadt/Saale, and Gerhard Spiller, Saal a.d. Saale, both of Fed. Rep. of Germany, assignors to Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany
Filed Apr. 2, 1985, Ser. No. 718,951
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1984, 3412377; Apr. 3, 1984, 3412378; Apr. 3, 1984, 3412379; Jun. 9, 1984, 3421670
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.⁴ H01C *10/50*
U.S. Cl. 338—198 **15 Claims**



1. A locking slide switch with a key slidable in a switch cover against the force of a spring, at the beginning of whose sliding movement an electrical switching bridge switches, and which adjusts a variable resistor depending on the length of the sliding travel, wherein the key has a row of teeth extending in the longitudinal direction, with which meshes pinion means, and a first push-button is provided on the shaft of the pinion means for locking, the first push-button having teeth on its circumference which teeth oppose teeth on one side of the switch cover, and the two sets of teeth are caught in each other when meshing with each other under the force of the spring, characterized in that a second push-button is provided on the shaft of the pinion means guided in the row of teeth, the second push-button means having teeth on its circumference which oppose the teeth of the other side of the switch cover, these two sets of teeth are caught in each other while meshing with each other under the force of the spring and said locking slide switch further comprises means for disengaging the two sets of teeth associated with said first push-button and disengaging the two sets of teeth associated with said second push-button in response to a single actuation of said disengaging means.

4,763,102
CARTRIDGE HEATER
Robert A. Ritt, Palatine, Ill., assignor to Acra Electric Corporation, Schiller Park, Ill.
Filed Jan. 29, 1987, Ser. No. 8,465
Int. Cl.⁴ H01C *1/03*
U.S. Cl. 338—240 **24 Claims**

1. A cartridge heater comprising:
a cylindrical shell having first and second ends;
first and second bushings, one in each end of said shell, the bushings having facing surfaces with complementary slotted recesses therein;



a flat rectangular core with ends received in said recesses to support the core within the shell; and
an electric heating element carried by said core.

4,763,103
PROCESS AND METHOD FOR WIDE BAND TRANSMISSION, PARTICULARLY FOR DATA TRANSMISSION OVER AN ELECTRICITY DISTRIBUTION NETWORK
William Galula, Montrouge, France, and Timothy J. Ridgers, Alpharetta, Ga., assignors to Enertec, Montrouge, France
Filed Feb. 13, 1986, Ser. No. 829,055
Claims priority, application France, Feb. 14, 1985, 85 02135
Int. Cl.⁴ H04M *11/04*
U.S. Cl. 340—310 R **11 Claims**



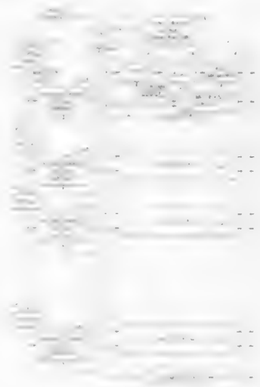
1. A method for wideband transmission and reception of data over an electricity distribution network for use by a least a data transmitter and a data receiver thereon, the data taking the form of words made up of information elements which may take one of several values, comprising the steps of:
(a) coding each information element for transmission by assigning a sequence of several different predetermined coding frequencies with a particular frequency combination being associated with each information element value, wherein the predetermined coding frequencies are divided into at least two distinct frequency bands which are spaced apart from each other and particular coding combinations are chosen such that frequencies ranking the same sequence place in the combinations occupy different frequency bands, and wherein at least some pairs of frequencies in corresponding sequence places of different information element values, and further wherein each information value contains frequencies in both said frequency bands;
(b) transmitting said coded information elements at said predetermined frequencies as an information signal over a communications channel on said network; and
(c) receiving said transmitted signal over said communications channel, comprising the steps of:
(i) applying the received signal to a pair of demdoulators, the demodulators being assigned to each of one of said respective frequency bands,
(ii) generating local signals, said locally generated signals reproducing, with a substantially constant frequency shift, said particular frequency combinations,
(iii) applying said locally generated signals to the demodulators, and
(iv) correlating said received signal with said locally generated signals to determine the value of the received information element as a function of said correlation.

4,763,104
GATEWAY FOR USE IN LOAD CONTROL SYSTEM
Masahiro Inoue; Ricko Yoshikawa; Yoshiji Minagawa, and Noriyuki Kushiro, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 17, 1987, Ser. No. 27,221
Claims priority, application Japan, Mar. 19, 1986, 61-61487; Mar. 20, 1986, 61-62658; Mar. 20, 1986, 61-62659; Mar. 20, 1986, 61-62660
Int. Cl.⁴ H04M *11/04*
U.S. Cl. 340—310 R **10 Claims**



1. In a gateway circuit providing a communication path for digital data and control signals between a leased line and an electrical power line, said gateway circuit having a leased line transceiver for transmitting data and control signals to, and receiving data and control signals from, said leased line in a first data format and a power line carrier transceiver for transmitting data and control signals to, and receiving data and control signals from, said power line by means of power line carrier in a second data format, the improvement comprising:
first converting means responsive to said leased line data and control signals for converting between said first data format and a third data format;
second converting means responsive to said power line carrier data and control signals for converting between said second data format and a fourth data format;
means responsive to data in said format for temporarily storing said third format data;
means responsive to data in said fourth format for temporarily storing said fourth format data; and
means for converting between stored data in said third format and stored data in said fourth format so that data can be transferred between said leased line and said power line.

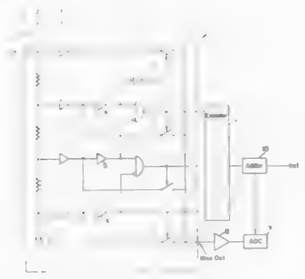
4,763,105
INTERLEAVED DIGITIZER ARRAY WITH CALIBRATED SAMPLE TIMING
Yih-Chyun Jenq, Lake Oswego, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Jul. 8, 1987, Ser. No. 71,671
Int. Cl.⁴ H03M *1/06*
U.S. Cl. 340—347 AD **12 Claims**



1. For a digitizer system comprising an array of M digitizers each responsive to an input signal and a periodic clock signal of known frequency, where M is an integer greater than 1, and means for delaying transmission of the clock signal to each digitizer by a separate delay time corresponding to said each digitizer, each digitizer comprising means for producing a separate waveform data sequence in response to the clock signal, each data element of the separate waveform data sequence representing an instantaneous magnitude of the input signal during each period of said clock signal, a method for determining a timing error in the delay time corresponding to each digitizer, the method comprising the steps of:
applying a sine wave signal of known frequency as the input signal to each digitizer such that the M digitizers produce M separate waveform data sequences in response to said input signal and said clock signal;
generating a single waveform data sequence in accordance with a combination of the M separate waveform data sequences, the single waveform data sequence being representative of said input signal;
generating a first sequence of complex numbers representing a frequency spectrum of the single waveform data sequence;
generating a second sequence of M complex numbers by extracting M elements representing relative magnitude peaks of the first sequence;
generating a third sequence of M complex numbers representing an inverse discrete Fourier transform of the second sequence;
generating a set of M phase angle numbers, each phase angle number representing a phase angle associated with a separate complex number of the third sequence and corresponding to a separate one of said digitizers; and
determining a sample timing error for each digitizer in accordance with the corresponding phase angle.

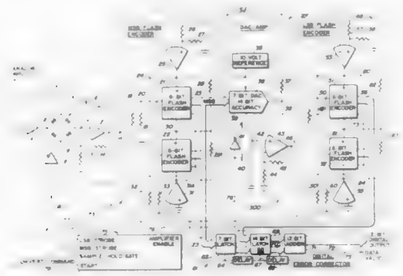
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,106
FLASH ANALOG-TO-DIGITAL CONVERTER
Zdzislaw Gulczynski, P.O. Box 441, Winchester, Mass. 01890
Filed Jul. 20, 1987, Ser. No. 75,447
Int. Cl.[4] H03M *1/36*
U.S. Cl. 340—347 AD 19 Claims



1. Analog-to-digital converter (ADC) for converting signal of input source into output code, comprising:
a reference current source;
a resistive means coupled between the input source and reference current source for providing a plurality of comparison signals;
amplifier means each coupled for amplifying a respective comparison signal and providing an output signal;
comparator means coupled for comparing the amplifier means output signals against ground, and producing a first code in response thereto;
a multiplexer means for selecting one of the amplifier means output signals in response to the first code;
an ADC means for converting the signal selected by the multiplexer means into a second code; and
a digital means for converting the first and second codes into the output code of the ADC.

4,763,107
SUBRANGING ANALOG-TO-DIGITAL CONVERTER WITH MULTIPLEXED INPUT AMPLIFIER ISOLATION CIRCUIT BETWEEN SUBTRACTION NODE AND LSB ENCODER
Myron J. Koen; Thomas R. Anderson, and Joel M. Halbert, all of Tucson, Ariz., assignors to Burr-Brown Corporation, Tucson, Ariz.
Continuation-in-part of Ser. No. 768,947, Aug. 23, 1985, Pat. No. 4,686,511. This application Aug. 7, 1987, Ser. No. 83,738
Int. Cl.[4] H03M *1/34*
U.S. Cl. 340—347 AD 6 Claims



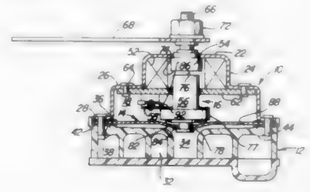
1. An X-bit subranging analog-to-digital converter, X being an integer, said subranging analog-to-digital converter comprising in combination:
(a) means for producing a first analog signal;
(b) first analog-to-digital converting means for producing a first Y-bit binary word representative of the first analog signal, Y being an integer that is less than X;
(c) digital-to-analog converting means receiving the first Y-bit binary word for producing a second analog signal, the digital-to-analog converting means having an accuracy of at least X bits, a difference between the first analog signal and the second analog signal being accurately representative of the X-Y least significant bits of an X-bit binary equivalent of the first analog signal;
(d) means for amplifying the difference by a predetermined factor to produce an amplified difference signal, the amplifying means including
i. a first selectable differential input circuit, having a first input coupled to receive the first analog signal and a second input coupled to receive the second analog signal,
ii a second selectable differential input circuit having a third input connected to a reference voltage conductor and a fourth input,
iii. output circuit means coupled to the first and second selectable differential input circuits for producing the amplified difference signal when the first selectable differential input circuit is selected and for producing an intermediate output signal level when the second selectable differential input circuit is selected, and,
iv. selecting means responsive to an amplifier enable signal for
(1) operatively coupling the first selectable differential input circuit to the output circuit means and decoupling the second selectable differential input circuit from the output means in response to a first level of the amplifier input signal, and
(2) operatively coupling the second selectable differential input circuit to the output circuit means and decoupling the first selectable differential input circuit from the output circuit means in response to a second level of the amplifier enable signal;
(e) second analog-to-digital converting means for producing a first Z-bit binary word representative of the amplified difference signal, Z being an integer less than X; and
(f) means for combining the Y-bit binary word and the Z-bit binary word to produce an X-bit binary word that precisely represents the first analog signal.

4,763,108
DIGITAL-TO-ANALOG CONVERSION SYSTEM
Osamu Kobayashi, Yokohama, Japan, assignor to Fujitsu Limited, Kanagawa, Japan
Filed Jun. 29, 1987, Ser. No. 67,048
Claims priority, application Japan, Jun. 30, 1986, 61-151696
Int. Cl.[4] H03M *1/66*
U.S. Cl. 340—347 DA 9 Claims



1. A digital-to-analog conversion system comprising:
a code conversion means for converting an input binary code to a three states code; said code conversion means designating each digit from one digit lower than a most significant digit to a least significant digit; when a designated digit and both lower and upper digits thereof are the same value, a corresponding digit of said three states code is set to a first state, except for the above case, said designated digit is inverted, and when the upper digit of said designated digit is "0", said corresponding digit of said three states code is set to a second state, and when the digit lower than said designated digit is "1", said corresponding digit of said three states code is set to a third state, and
a digital-to-analog conversion means connected to said code conversion and controlled by said three states code and outputting an analog value.

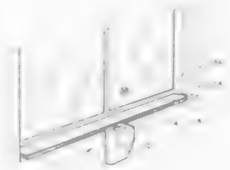
4,763,109
ACOUSTICAL VEHICLE HORN WITH IMPROVED VENT
Robert E. Smith, R.R. 1, Box 93, Rinard, Ill. 62878
Filed Jan. 2, 1986, Ser. No. 815,547
Int. Cl.[4] G08B *3/10*
U.S. Cl. 340—388 3 Claims



1. An electric vehicle horn of the type comprising a housing, a sound projector having an inlet and an outlet, a diaphragm disposed between said housing and said projector with its periphery clamped between the housing and the inlet of said projector said diaphragm and said housing forming a closed motor chamber, said projector having an air passage communicating between said diaphragm and the atmosphere at the outlet of said projector, electric motor means within said chamber coupled with said diaphragm and adapted to vibrate said diaphragm for generating sound energy, and vent means adapted to vent said chamber to the atmosphere to permit air flow into and out of said chamber the improvement wherein:
said electric motor means includes a vibratory plunger mounted in sealing relationship to the central portion of said diaphragm,
said periphery of said diaphragm is mounted in sealing relationship to said housing,
and said diaphragm includes a vent hole therethrough at a location intermediate said central portion and said periphery, said location being at a free surface of said diaphragm which is subject to vibratory motion by said motor,
whereby vibration of said diaphragm by said motor causes air flow into and out of said chamber through said vent hole thereby keeping the vent hole free from clogging by moisture or particulate matter.

4,763,110
WINDOW ALARM SYSTEM
Frank Zucker, 501 Anita St., Space 46, Chula Vista, Calif. 92011
Filed Jun. 22, 1987, Ser. No. 64,516
Int. Cl.[4] G08B *13/10*
U.S. Cl. 340—541 3 Claims

1. A window alarm system comprising:
a source of electrical power having at least one battery;
a pressure actuated electrical switch assembly having first and second terminals;
means electrically connecting said source of electrical power to the first terminal of said switch;
a siren alarm assembly;
means electrically connecting the second terminal of said switch to said siren alarm assembly;
means electrically connecting said siren alarm assembly to said source of electrical power;
said pressure actuated switch assembly comprising an elongated upper contact strip having a top and bottom surface and extending a predetermined length, a flat elongated upper metal strip attached to the bottom surface of said upper contact strip, an elongated lower contact strip having a top and bottom surface and extending a predetermined length, a flat elongated lower metal strip attached to the top surface of said lower contact strip, and spacer



means to keep said upper and lower flat metal strips from contacting each other when there is no weight applied to the top surface of said upper contact strip, said upper and lower contact strips have a predetermined width having lateral edges, said spacer means being in the form of an elongated strip of non-conductive material, said strip of non-conductive material extending along adjacent the same lateral edges of said upper and lower contact strips to function as an elongated hinge, said flat elongated metal strips extending along adjacent the other lateral edges of said upper and lower contact strips to function as a normally open pressure actuated electrical switch; and
a combination battery and siren alarm assembly housing that is rigidly connected to said lower contact strip.

4,763,111
DOOR CLOSER HAVING SOUND GENERATING FUNCTION
Isamu Matsuo, and Junji Mori, both of Hiroshima, Japan, assignors to Ryobi Ltd., Hiroshima, Japan
Filed Sep. 5, 1985, Ser. No. 772,803
Claims priority, application Japan, Sep. 5, 1984, 59-135630[U]; Jan. 31, 1985, 60-13278[U]; Apr. 19, 1985, 60-59163[U]; Jul. 29, 1985, 60-116892[U]
Int. Cl.[4] G08B *13/08*; H01H *3/16*
U.S. Cl. 340—545 4 Claims



1. A door closer having sound generating capability, comprising: a door closer mechanism body, a cover shaped to fit over at least a portion of said door closer mechanism body; sound generating means comprising a substrate mounted interiorly of said cover, a sound generating circuit formed on said substrate, a speaker mounted interiorly of said cover, and

VOL 1093 ISS 2 AG 9 1988 UMI

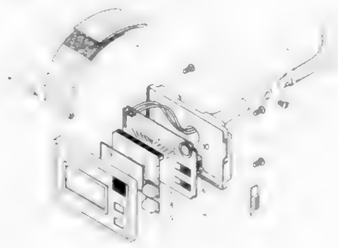
changeover switch means mounted interiorly of said cover and coupled to said circuit for selecting circuit operation between sound generation of at least one sound and silence; sensor means carried by said cover for sensing opening movement of a door on which said closer is mounted, said sensor means being coupled in said circuit to actuate said circuit when said door is opened; and an operating lever carried by said changeover switch means for making said sound selection, via said changeover switch means, said operating lever extending through said cover for access externally of said cover, and wherein said sensor means includes switch means within said door closer mechanism body and second, relatively moveable means responsive to door opening and closing for changing the state of said sensor switch means, and wherein said cover comprises two cover halves mounted on said closer mechanism body at opposite ends thereof, said cover halves being symmetrical with one another and being interchangeable with one another.

4,763,112

AUTOMATICALLY SELF-ALARMING ELECTRONIC CLINICAL THERMOMETER

Fung Hsing Hsieh, No. 83, Lane 174, Gon-Yi Rd., Taichung, Taiwan

Filed Jan. 27, 1987, Ser. No. 7,111
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—573 **7 Claims**



1. An automatic alarming electronic clinical thermometer comprising:

an outer case including a display panel and a circuit board in the interior of said outer case, a transparent panel in front of the display panel, and an electric power switch, a setting key, a counting key, and an alarm;

an upper fastening belt having first and second ends;

a lower fastening belt having first and second ends;

a fixing pin;

a screw;

a funnel-shaped measuring arm having a front end which is combined with said outer case and having a far end, the fixing pin connecting the first end of the upper fastening belt to the outer case adjacent the front end of the measuring arm and the screw connecting the first end of the lower fastening belt to the far end of the measuring arm;

a temperature sensor mounted on the measuring arm between the front end and far end thereof; and

means for connecting the second ends of the upper and lower fastening belts,

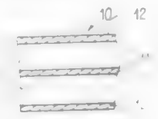
wherein the measuring arm can be fixed under the armpit by using the lower fastening belt and the upper fastening belt to allow sensing of the temperature of the armpit by using the sensor on the measuring arm, the temperature being displayed with the circuit board and the display panel, an alarm temperature being set with the setting key and counting key whereby when the temperature is over the set temperature an alarm signal will be produced.

4,763,113

TEMPERATURE MONITORING METHOD USING A FIRE WIRE

Pierre H. Sassier, Bercheres sur Vesgre, France, assignor to Thomson-CSF, Paris, France

Filed Sep. 24, 1986, Ser. No. 910,921
Claims priority, application France, Sep. 27, 1985, 85 14379
Int. Cl.[4] G08B *17/06*
U.S. Cl. 340—596 **5 Claims**



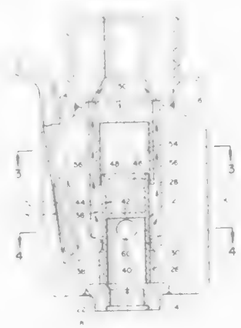
1. A method for monitoring temperature in an enclosed space, particularly in a transportation vehicle such as an aircraft, using a wire or cable which has, between an inner conductor and an outer conductor, an element made of material whose resistivity and dielectric permittivity vary according to temperature, wherein in order to monitor the said temperature, a product of resistance and capacitance between the inner conductor and the outer conductor is determined at an end of the cable.

4,763,114

FLUID FLOW INDICATOR

Paul G. Eidsmore, 2 Blue Hill Ct., Scotts Valley, Calif. 95066

Filed Jul. 9, 1987, Ser. No. 71,646
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—606 **11 Claims**



1. A gas flow indicator comprising:

a housing defining a cylindrical flow passage having axially spaced first and second ends;

gas supply means for supplying gas to said first end of said cylindrical passage;

gas discharge means for discharging gas from the second end of said cylindrical passage;

a cylindrical piston member having first and second terminal ends and an exterior diameter which is substantially less than the diameter of said passage, said piston member being axially positioned in said cylindrical passage with said first terminal end facing said first end of said passage and mounted for sliding movement from a first position adjacent said first end of said passage to a second position adjacent said second end of said passage when gas flow through said passage exceeds a predetermined level;

a flow passageway extending through said piston member from an inlet adjacent the first terminal end to an outlet spaced axially from said first terminal end; said flow passageway including a flow control orifice therein;

a metering ring formed circumferentially in said cylindrical flow passage and extending radially inwardly into closely spaced relationship with the exterior of said piston member, the location of said metering ring being such as to lie between said first terminal end of said piston member and said outlet of said flow passageway when said piston member is in said first position and between said first end of said cylindrical passage and said first terminal end of said piston member when said piston member is in said second position; and,

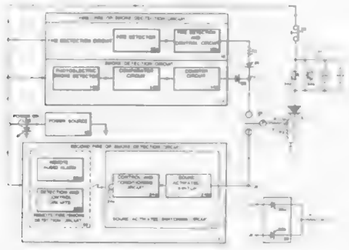
means responsive to movement of said piston member from said first position to said second position for providing a signal exterior to said housing indicative of movement of said piston member.

4,763,115

FIRE OR SMOKE DETECTION AND ALARM SYSTEM

Albert O. Cota, Granada Hills, Calif., assignor to Donald L. Trigg, Chatsworth, Calif.

Filed Dec. 9, 1986, Ser. No. 939,537
Int. Cl.[4] G08B *17/00, 7/00*
U.S. Cl. 340—628 **2 Claims**



1. A fire or smoke detection and alarm system comprising:

(a) a power source designed to provide all the voltages and currents required to operate said system wherein said power source further comprises:

(1) a regulated d-c power supply operated from houshold utility power,

(2) a rechargeable battery, and

(3) a battery charging circuit operated by said regulated d-c power supply and connected to said rechargeable battery where said rechargeable battery powers said system when there is a failure in the household utility power,

(b) a first fire or smoke detection circuit that produces a first SCR trigger signal when smoke is detected and a second SCR trigger signal when a fire is detected wherein said first circuit further comprises:

(1) a smoke detection circuit further comprising:

(A) a photoelectric smoke detector having a smoke chamber that incorporates a light source and a photodiode such that when smoke is detected, the light from the light source is reflected from the smoke blanket and received by the photodiode whereupon a detector signal is produced,

(B) a comparator circuit that receives the detector signal and that is set to produce a comparator signal when a preset alarm level is attained,

(C) a counter circuit that produces the first SCR trigger signal when a preset number of comparator signals are received within a specified time period,

(2) a fire detection circuit further comprising:

(A) a fire detector means that upon sensing a fire produces a fire detecting signal, and

(B) a fire detection and control circuit that receives and converts the fire detecting signal from said fire detector means to the second SCR trigger signal,

(c) a second fire or smoke detection circuit that produces a third SCR trigger signal when smoke or a fire is detected wherein said second circuit further comprises:

(1) a remote fire/smoke detection circuit further comprising:

(A) a remote audio alarm that when energized emits a substantial db sound level at an appropriate frequency,

(B) a set of detection and control circuits that upon the detection of smoke or fire produce a control signal that energizes said remote audio alarm,

(2) a sound activated switching circuit further comprising:

(A) a sound activated switch that when closed produces the third SCR trigger signal, and

(B) a control and conditioning circuit that upon the receipt of the sound level and frequency from said remote audio alarm a closure signal is produced that closes said sound activated switch, wherein said control and conditioning circuit includes circuitry and adjustments that allow the db sound level and frequency to be set to a level that will optimally close said sound activated switch,

(d) a manually operated circuit selection switch that allows the first, second or third SCR trigger signals to be received and the final SCR trigger signal to be produced, where said manually operated circuit selection switch comprises a single-pole double-throw switch where the first contact is connected to the outputs of said smoke detection circuit and said fire detection circuit and where the second contact is connected to the output of said sound activated switch and where the pole is connected through a resistor to the SCR gate lead,

(e) a load circuit,

(f) an SCR reset switch, and

(g) an SCR having its gate lead connected to the final SCR trigger signal, its cathode connected to circuit ground and its anode connected to one side of said load where other side of said load is connected through said SCR reset switch to said power source whereupon the application of the final SCR trigger signal, the SCR turnson, allowing the power from said power source to energize said load.

4,763,116

INPUT APPARATUS FOR DESIGN WORK ON AN IMAGE-BEARING SCREEN

Willi Eichholz, Haydnstrasse 9, D-4010 Hilden, Fed. Rep. of Germany

Filed Jul. 25, 1985, Ser. No. 759,587
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1984, 3428045
Int. Cl.[4] G09G *3/02*
U.S. Cl. 340—710 **8 Claims**



1. A device for inputting a graphic design to a computer comprising rotary disc means and wheel means adapted to be connected to a computer having at least one essentially planar graphical output device for reproducing a graphic design, said rotary disc means and wheel means being manually operable to input electronic signals to the computer to provide cursor movements and line images corresponding to said graphic design to be reproduced on said output device, said rotary disc

VOL 1093 ISS 2 AG 9 1988 UMI

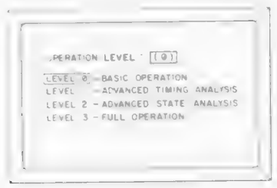
means including an arc control member arranged for manual rotational movement to a desired angular orientation and first electronic means to sense the angular orientation of the arc control member and to provide a similar angular orientation in the plane of said output device to cursor movements and line images as they are inputted, said rotary disc means in a first mode of operation inputting an electronic signal to provide a line image along an arcuate path in response to the manual rotational movement of the arc control member and in a second mode of operation inputting an electronic signal to provide cursor movement along the arcuate path in response to the manual rotational movement of the arc control member, said wheel means including a line control member arranged for manual rotational movement and second electronic means to sense the rotational movement of the line control member and input electronic signals to provide cursor movements and line images along a straight line in the plane of said output device, said wheel means in a third mode of operation inputting an electronic signal to provide a line image along a linear path in response to the manual rotational movement of the line control member and in a fourth mode of operation inputting an electronic signal to provide cursor movement along the linear path in response to the manual rotational movement of the line control member.

4,763,117

MEASUREMENT INSTRUMENTS WITH MULTIPLE OPERATION LEVELS

John D. Blattner, Beaverton; David B. Moser, Portland, and Sam M. Deleganes, Aloha, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 893,442, Aug. 5, 1986, abandoned, which is a continuation of Ser. No. 478,605, Mar. 23, 1983, abandoned. This application May 26, 1987, Ser. No. 54,093
Int. Cl.[4] H04Q *1/00*
U.S. Cl. 340—712 6 Claims



1. A measurement instrument for processing an input signal comprising:
- means for selecting one of a plurality of available operation levels for the measurement instrument, each of said available operation levels having a plurality of operational functions and each of said operational functions having at least two independently selectable characteristics, wherein the plurality of available operation levels include a higher level and a lower level, the set of operational functions associated with the lower level being a sub-set of the set of operational functions associated with the higher level;
- means for displaying the characteristics related to each operational function associated with the selected operation level;
- means for selecting from the displayed characteristics one characteristic related to each operational function associated with the selected operation level, the selected characteristics defining a plurality of parameters for processing the input signal; and
- means operative when the lower level is selected for automatically placing operational functions associated with the higher level, but not with the lower level, in a default setting.

4,763,118

GRAPHIC DISPLAY SYSTEM FOR PERSONAL COMPUTER

Yasuyuki Takai, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Apr. 30, 1985, Ser. No. 728,864
Claims priority, application Japan, May 7, 1984, 59-91312
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—735 3 Claims



1. A circuit for driving a graphic display comprising:
- programmable character generator means for storing a set of characters as display character font patterns in a plurality of blocks, each block representing a font, each font representing an attribute of said set of characters, the capacity of said programmable character generator means being sufficient to store a number of character patterns equal to the number of patterns capable of being simultaneously displayed on said display;
- video random access memory (V-RAM) means for storing display code data corresponding to said characters;
- attribute RAM means for storing block selection data for selecting one of the blocks of said character generator means; and
- control means responsive to said video RAM means and said attribute RAM means for controlling the selection of a character font pattern in said programmable character generator means.

4,763,119

IMAGE PROCESSING SYSTEM FOR AREA FILLING OF GRAPHICS

Shigeru Matsubara, Yamato; Tohru Mori, and Toshiroh Tabata, both of Fujisawa, all of Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 18, 1986, Ser. No. 853,802
Claims priority, application Japan, Apr. 24, 1985, 60-86478
Int. Cl.[4] G09G *1/14*
U.S. Cl. 340—747 4 Claims



1. In a graphic image processing system including:
- an image reproducing device;
- a random access memory having storage cells for storing pixel data of a two-dimensional image; and
- means for producing an area filled image in said memory for reproduction by said image reproducing device;
- the improvement wherein said image producing means comprises:
- means for specifying the pixel data for each of a series of line segments constituting the contour of an image beginning from one side of the image and proceeding toward the opposite side and omitting horizontal line segments;
- means for generating approximate pixels of each specified line segment;
- means responsive to said generating means for writing contour line pixels in said memory, comprising:
  - means for writing the exclusive OR of the contour pixel data and the existing pixel data read from the storage cell into which said contour pixel data is to be written;
  - means for omitting the start point of each line segment; and
  - means for limiting the representation of each line segment to one pixel per horizontal line; and
- means for scanning the contour line pixels written in said memory line by line and setting on the storage cells between an odd numbered contour pixel occurring in a line and the next occurring even numbered contour pixel in said line.

4,763,120

INTERLACED COLOR CATHODE RAY TUBE DISPLAY WITH REDUCED FLICKER

Andrew J. Morrish, Eastleigh, and John H. Wells, Fareham, both of United Kingdom, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1986, Ser. No. 897,221
Claims priority, application European Pat. Off., Sep. 3, 1985, 085306234.7
Int. Cl.[4] G09G *1/16*
U.S. Cl. 340—748 7 Claims



1. An interlaced color cathode ray tube display comprising a buffer for containing bit patterns representing data to be displayed on a raster scanned interlaced color cathode ray tube, and means for accessing said bit patterns to refresh said display, and means for temporally shifting the bit patterns relating to one of the colors having a selected persistence characteristic so as to display data corresponding thereto in an opposite field to that in which they would otherwise be displayed, thereby reducing the flicker on said display.

4,763,121

KEYLESS ENTRY SYSTEM FOR AUTOMATICALLY OPERATING AUTOMOTIVE DOOR LOCKING DEVICES WITHOUT MANUAL OPERATION

Takahisa Tomoda; Mikio Takeuchi; Kinichiro Nakano, and Motoki Hirano, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Aug. 11, 1986, Ser. No. 895,370
Claims priority, application Japan, Aug. 12, 1985, 60-177289
Int. Cl.[4] H04Q *9/00*; B60Q *1/00*; E05B *49/00*
U.S. Cl. 340—825.540 21 Claims



1. A keyless entry system for an automotive door lock comprising:
- a door lock actuator for operating said door lock between a first locking position and a second unlocking position;
- a pocket-portable radio code signal transmitter for transmitting a radio code signal containing a unique code which identifies said transmitter, said radio code signal transmitter being responsive to a radio demand signal to be activated to transmit said radio code signal; and
- a controller mounted on a vehicle and electrically connected to said door lock actuator for controlling operation of said actuator for operating said door lock between said first locking position and said second unlocking position, said controller cyclically and repeatedly transmitting said radio demand signal at a given timing, receiving said radio code signal transmitted from said radio code signal transmitter, comparing said unique code in the received radio code signal with a preset code for detecting the presence of an authorized transmitter in the vicinity of said controller by detecting whether said unique code matches said preset code at every occurrence of transmission of said radio demand signal, and operating said door lock actuator from said second door unlocking position to said first door locking position in response to an absence of said radio code signal at the occurrence of said radio demand signal.

4,763,122

PARALLEL SWITCHING WITH ROUND ROBIN PRIORITY

Peter A. Franaszek, Katonah, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

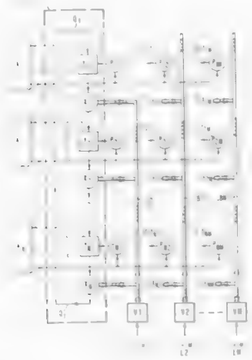
Filed Mar. 18, 1987, Ser. No. 28,628
Int. Cl.[4] H04Q *9/00*
U.S. Cl. 340—825.510 6 Claims

1. In a network of a plurality of stations and a plurality of transmission lines, an apparatus for parallel control of access of the stations to the transmission lines, comprising:
- (a) a reservation processing means, for each one of the transmission lines, for generating a signal which is used to inform a selected one of the stations that it can transmit over a corresponding one of the transmission lines;
- (b) station switch means for each one of the transmission lines, each of the station switch means being responsive to requests from the stations to transmit on a corresponding one of the transmission lines, each of the station switch means being used to provide part of a path for the signal

VOL 1093 ISS 2 AG 9 1988 UMI

generated in step (a) to be transmitted from a corresponding one of the reservation processing means to the selected one of the stations requesting to transmit on a corresponding one of the transmission lines;

(c) priority switch means, for each one of the transmission lines, for establishing priority as to which one of the stations will be selected to receive the signal generated in step (a), the one station being selected from stations requesting to transmit on a corresponding one of the transmission lines, the priority switch means being responsive to signals from a corresponding reservation processing means; and



(d) a transmission loop means for each one of the transmission lines, each loop intercoupling the station switch means and the priority switch means corresponding to one of the transmission lines, each loop, along with corresponding station and priority switch means, being used to provide a path from a corresponding one of the reservation processors to a corresponding selected one of the stations requesting to transmit on a corresponding one of the transmission lines, the path being used for the transmission of a corresponding signal of the signals generated in step (a) from a corresponding reservation processor to a corresponding station.

4,763,123

SIGNAL SELECTING CIRCUIT FOR SIMULTANEOUSLY PERFORMING PLURAL INPUT-OUTPUT OPERATIONS

Nobuyuki Yasuda, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 25, 1986, Ser. No. 833,098
Claims priority, application Japan, Feb. 28, 1985, 60-39490
Int. Cl.[4] H04Q *9/00*; G11B *7/00*
U.S. Cl. 340—825.650 4 Claims

1. A signal selecting circuit comprising:

a plurality of input terminals, each being supplied with a separate input signal;

a plurality of gate circuits, each being connected to a different one of said input terminals;

a plurality of output terminals, each being supplied with one of said input signals through a separate one of said gate circuits;

designating means for producing respective gate signals so as to make said plurality of gate circuits circulatively open;

inhibiting means for detecting when at least one of said plurality of input signals is obtained through one of said gate circuits which is in an open state and for keeping the designation of said designating means at the gate circuit last designated before said one of said plurality of input signals is detected; and



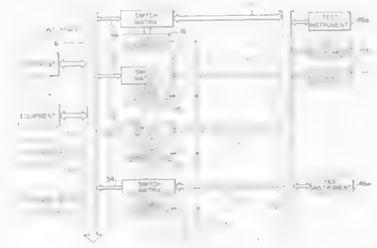
control means for selecting the number of said gate circuits to be made circulatively open by said designating means.

4,763,124

SIGNAL DISTRIBUTION SYSTEM HYBRID RELAY CONTROLLER/DRIVER

Eddie T. Kovacs, Kings Park, and Donald J. Eivers, Massapequa, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 6, 1986, Ser. No. 836,927
Int. Cl.[4] H04Q *9/00*; G01R *31/28*
U.S. Cl. 340—825.800 10 Claims



1. In a signal distribution system for selectively connecting an equipment under test to a test instrument, at least one control means adapted to communicate with a central processing means for controllably activating a corresponding switching matrix means, the switching matrix means having a plurality of relays, the central processing means communicating with the control means via a plurality of bi-directional and uni-directional data lines, the control means comprising:

a plurality of driving means connected to the bi-directional data lines and the switching matrix means;

a decoding means connected to the driving means and the central processing means, the decoding means receiving data from the central processing means for selectively activating a particular one of the plurality of driving means for receiving instruction data from the central processing means, the particular driving means, upon being selectively activated, actuating chosen relays in the switching matrix means to controllably connect the equipment under test to the test instrument;

means connected to the switching matrix means for sensing the statuses of the relays therein, the sensing means further being connected to the bi-directional data lines for communicating the statuses of the relays to the central processing means;

whereby the central processing means compares the statuses of the relays which have been actuated with statuses of the relays which should be actuated to obtain a feedback as to whether or not the correct relays have been actuated.

4,763,125

LIGHT ARRAY FOR PROVIDING PASSIVE RENDEZVOUS GUIDANCE BETWEEN CLOSING AIRCRAFT SPACECRAFT AND THE LIKE

Frank J. Newman; Robert K. Knapp, and Robert J. Davis, all of Wichita, Kans., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 625,111, Jun. 27, 1984. This application Jan. 7, 1987, Ser. No. 4,745
Int. Cl.[4] G08G *5/00*
U.S. Cl. 340—958 6 Claims



1. A light array for disposition along the ventral centerline of a lead aircraft to provide passive rendezvous guidance to a closing aircraft, said array comprising:

an elongated housing having fore and aft ends and an elongated opening in the bottom thereof extending from the aft end to proximate the fore end;

an elongated light source disposed in said housing along the centerline thereof and extending between the ends of said housing; and

light-blocking louver means disposed in said opening for progressively increasing the elongated length of light from said light source visible to said closing aircraft as the longitudinal distance between the lead and closing aircraft decreases.

4,763,126

MOORING LOCATION SYSTEM

Ira Jawetz, 9 New Harbor Rd., Eatons Neck, N.Y. 11768

Filed Nov. 4, 1986, Ser. No. 926,896
Int. Cl.[4] G08G *3/00*; B63B *22/02*
U.S. Cl. 340—985 8 Claims



1. A mooring locating system for marine vessels that is responsive to a transmitted RF signal of a set frequency transmitted from the marine vessel, comprising:

a floating pick-up buoy for retrieval by the marine vessle having a buoyant, water tight container and including an elongated stem disposed vertically on the top of said buoy;

a stem extending downwardly from said floating pick-up buoy for attachment to mooring lines of a fixed mooring so that upon retrieval of the pick-up buoy the vessel can be secured to its mooring;

an RF receiver disposed within the water tight container and tuned to the set frequency of the transmitted RF signal, said receiver producing a signal at its output in response to the RF signal;

an antenna wrapped along the length of said vertical elongated stem and coupled to the input of said RF receiver;

a switching circuit coupled to the RF receiver and responsive to the output signal of said receiver to produce a switching signal;

a lamp disposed at the free end of said elongated stem and having its input coupled to the output of said switching circuit and responsive to the switching signal thereof to turn on said lamp; and

a battery power source disposed within said buoyant container and coupled to said RF receiver, said switching circuit, and said lamp.

4,763,127

FIBER UNDER FOIL CHAFF COIL

Bradley T. Sallee, Austin, Tex., assignor to Tracor Aerospace Austin, Inc., Austin, Tex.

Filed Jan. 24, 1986, Ser. No. 822,127
Int. Cl.[4] F42B *13/28*
U.S. Cl. 342—12 7 Claims



1. A chaff device deployable under exoatmospheric conditions to dispense individual dipoles in a cloud, comprising:

a plurality of elongated foil members, each for providing a dipole; and

a plurality of elongated fiber members, each for providing a dipole; and

said foil dipole members being disposed in an end-to-end overlapping relationship and wrapped in a coil configuration;

said fiber dipole members being separated into a plurality of groups, each group of fiber dipole members being disposed adjacent one of said foil dipole members so as to be sandwiched between adjacent layers of coil wrapped foil dipole members.

4,763,128

ELECTRONIC COUNTERMEASURE TECHNIQUE

Robert L. Caswell, Placentia, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 31, 1968, Ser. No. 703,234
Int. Cl.[4] G01S *7/38*
U.S. Cl. 342—14 4 Claims

1. An electronic counter measure technique for protection of

VOL 1093 ISS 2 AG 9 1988 UMI

a low-flying aircraft from radiant energyguided missiles comprising the step of generating an upwardly reflected, non-scanning, substantially annular conical energy pattern which at least partially azimuthally encloses said aircraft.

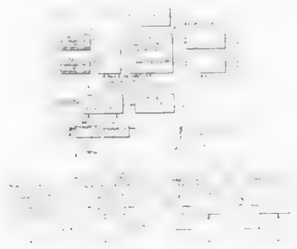


4,763,129

SS-TDMA TECHNIQUE TELECOMMUNICATION SATELLITE SYSTEMS

Giorgio Perrotta, Rome, Italy, assignor to Selenia Spazio SPA, L'Aquila, Italy

PCT No. PCT/IT86/00041, § 371 Date Feb. 5, 1987, § 102(e) Date Feb. 5, 1987, PCT Pub. No. WO86/07512, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 5, 1986, Ser. No. 26,611
Claims priority, application Italy, Jun. 6, 1985, 48177/85
Int. Cl.[4] H04B *7/185*
U.S. Cl. 342—356 4 Claims



1. A satellite-switched time-division multiple access communication system, comprising:

a satellite having a generally geostationary orbit;

a plurality of ground communication stations having respective ground communication antennae trained upon said satellite;

a plurality of ground beacon stations separate from one another and independent from said ground communication stations and having respective ground beacon antennae trained upon said satellite;

on-board antenna means including at least one on-board satellite fine-tracking antenna on said satellite for receiving signals from said ground antennae and transmitting signals at least to said communication antennae;

a reconfigurable on-board processor on said satellite for processing and switching information received from at least one of said communication antennae and retransmitting said information to at least another one of said communication antenna;

demodulation/regeneration means connected to said antenna means for transmitting communication signals to said processor;

remodulation means connected to said processor for delivering retransmitted communication signals representing the retransmitted information to said antenna means, said digital demodulation/regeneration means, said processor and said remodulation means forming a satellite switching system for time division multiple access communication between said communication stations;

a beacon carrier generator at each of said ground beacon stations for generating a respective radio-frequency beacon carrier signal (f_o) for fine-tracking control of said on-board fine-tracking antenna;

modulator means at each of said ground beacon stations for modulation of a subcarrier (CM_o) forming a reference clock signal with a high-speed telecommand signal (HSCMD) for controlling said on-board processor and for modulating, in turn, said beacon carrier signal (f_o) with the subcarrier (CM_o) as modulated by the high-speed telecommand signal (HSCMD) to form a transmitted modulated signal transmitted by the respective ground beacon antenna to the on-board antenna system;

respective on-board demodulators forming part of a radio-frequency receiver receiving the transmitted modulated signals transmitted by the respective ground beacon antennas and demodulating same to recover an antenna-control signal (ERR) for fine control of said on-board in response to said carrier (f_0), a clock signal (CM) at a communication symbol frequency as determined by the frequency of said subcarrier (CM_o), and the telecommand signal (HSCMD);

on-board selecting means on the satellite connected to said on-board demodulators for selecting among the demodulated signals for utilization of the qualitatively better of the signals selected between;

decoder means connected to said on-board selecting means and responsive to said telecommand signal (HSCMD) for controlling said processor to effect time division multiple access communication switching between said communication stations; and

synchronizing means connected to said on-board selecting means and responsive to said clock signal (CM) for synchronizing said digital demodulation/regeneration means, said processor and said remodulation means.

4,763,130

PROBE-FED SLOT ANTENNA WITH COUPLING RING

Michael E. Weinstein, Huntington Station, N.Y., assignor to General Instrument Corporation, New York, N.Y.

Filed May 11, 1987, Ser. No. 48,955
Int. Cl.[4] H01Q *13/12*
U.S. Cl. 343—770 23 Claims



1. A probe-fed slot antenna comprising:

an inner conductor;

a cylindrical outer conductor spaced about said inner conductor, said inner and outer conductors being associated with each other to form a co-axial transmission line adapted to guide a wave;

a plurality of slots in said outer conductor;

a coupling ring supported between said outer and inner conductors and adapted to couple energy of the wave between said inner and outer conductors; and

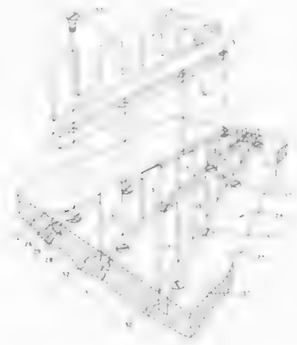
a plurality of probes extending from said cylindrical outer conductor toward said coupling ring.

4,763,131

LOG-PERIODIC MONOPOLE ANTENNA ARRAY

William D. Rosser, Los Altos; Samuel C. Kuo, Saratoga; Gustavo E. Bird, Redwood City, and Robert E. Davis, Sunnyvale, all of Calif., assignors to GTE Government Systems Corporation, Stamford, Conn.

Filed Feb. 26, 1987, Ser. No. 19,282
Int. Cl.[4] H01Q *11/10*
U.S. Cl. 343—792.5 7 Claims



1. In a log-periodic monopole antenna having a plurality of axially spaced log-periodically related active elements in a plane and connected to a feed line, and a like plurality of integrated log-periodically related axially spaced parasitic elements having an electrically conductive strip interconnecting same along adjacent ends thereof, said parasitic elements being insulated from and supported substantially in said plane between and axially alternating with said antenna elements, and an electrically conductive ground structure having a top surface, the improvement of means for electrically connecting said parasitic elements to said structure with said antenna and parasitic elements projecting outwardly from said surface, comprising:

an elongated block having top and bottom surfaces and side surfaces therebetween;

said structure having an elongated groove defined by side and bottom surfaces;

said block and said strip being juxtaposed in said groove, and

screw means threadly engaging said structure along an axis extending transversely of the top surface of said structure, said screw means having a head portion with a side surface abutting against said block, at least one of said side surfaces of said screw head portion and said groove being tapered for tightly squeezing said strip into electrical contact with said ground structure when said screw means is tightened into said structure and against said block.

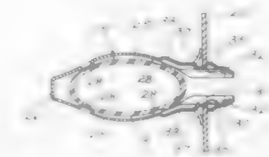
4,763,132

RESILIENT ONE PIECE WAVEGUIDE HANGER INTERLOCKABLE WITH ANTENNA TOWER

Richard C. Juds, Dolton, and John P. Morris, Lockport, both of Ill., assignors to Andrew Corporation, Orland Park, Ill.

Continuation of Ser. No. 674,558, Nov. 26, 1984, abandoned. This application Aug. 6, 1987, Ser. No. 83,895
Int. Cl.[4] H01Q *1/16, 1/22*
U.S. Cl. 343—890 2 Claims





2. In a ground station for microwave communication equipment, the combination of:

an antenna for transmission and reception of microwaves,

a microwave transmission and reception equipment tower for elevating the antenna into alignment with the microwave path,

housing facility for housing said microwave equipment,

a bridge between said tower and said housing,

an elongated microwave waveguide of substantially elliptical traverse cross-section, said waveguide comprising a corrugated tube of conductive metal surrounded by a protective exterior jacket; said waveguide connecting said antenna to said housing facility, where said antenna and said housing facility are at different heights, with a portion of said waveguide positioned vertically and the portion of said waveguide positioned horizontally;

supporting members having inner and outer sides and having at least one hole therein, said support members being attached to said tower and to said bridge, and a multiplicity of single-piece hangers for attaching said waveguide to said support members, each of said hangers comprising:

A. a single strip of resiliently yieldable metal bent generally into the shape of a U so as to form first and second legs, each leg having inner and outer end portions, and also to form a substantially flat bridge portion extending between and interconnecting the outer end portions of said legs,

B. said bridge portion supporting said legs in normally relaxed positions with said inner end portions opposite each other and spaced apart from one another in a direction extending transversely of said waveguide,

C. the resiliently of said strip and said bridge portion permit-

VOL 1093 ISS 2 AUG 9 1988 UMI

ting said legs to flex transversely apart and to flex transversely toward one another from relaxed positions and permitting said legs to spring back toward said relaxed positions, said legs being flexed apart upon being slipped inwardly onto said waveguide and thereafter springing into straddling relation with the waveguide,

D. each of said legs having inboard and outboard sides, the inboard sides of said legs being concave and corresponding substantially in shape to the long sides of the ellipse defined by the outer periphery of the waveguide whereby the legs closely embrace the waveguide when the legs are in the straddling relation with the waveguide,

E. a plurality of teeth in said inboard side of said legs and extending inwardly to bite into said protective jacket of said waveguide and positively grip said waveguide to retain said vertical position of said waveguide within said hangers,

F. a pair of transversely spaced prongs integral with and projecting inwardly from the inner end portions of said legs, each of said prongs having inboard and outboard sides and being generally semi-circular in radial cross-section and having an arcuate outboard side curved on substantially the same radius as said hole, said prongs being flexed toward one another upon being inserted into said hole and thereafter springing apart so that said curved outboard sides of said prongs are pressed into tight engagement with the corresponding curved edge of said hole,

G. transversely projecting detents integral with the outboard sides of said prongs and engageable with the inner side of said support member adjacent the edge of said hole to prevent removal of said prongs from said hole,

H. said waveguide camming against the inner end portions of said legs to positively force said prongs into engagement with the edge of said opening and thereby prevent said detents from slipping outwardly past the inner side of said support member, and

I. feet integral with the inner end portions of said legs and engageable with the outer side of said support member to restrict inward shifting, rocking upwardly and downwardly or side-to-side movement of said hanger, there being two feet on each leg with the prong of said leg being located between the feet on such leg, all of said feet extending transversely with the feet on one leg extending transversely opposite of the feet on the other leg.

4,763,133

REFLECTOR FOR CIRCULAR POLARIZATION ANTENNA AND PROCESS FOR THE PRODUCTION THEREOF

Kenji Takemura, Saitama; Mikio Kobayashi, Kanagawa; Mitsunobu Machida, Kanagawa, and Hirokazu Yoshida, Kanagawa, all of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1985, Ser. No. 694,193

Claims priority, application Japan, Jan. 23, 1984, 59-8535; Jan. 23, 1984, 59-8536; Jan. 24, 1984, 59-9465; Jan. 24, 1984, 59-9467; Jan. 30, 1984, 59-13517; Jan. 31, 1984, 59-14478; Feb. 10, 1984, 59-21856; Feb. 17, 1984, 59-26945; Mar. 7, 1984, 59-41982; Mar. 28, 1984, 59-58346; Apr. 5, 1984, 59-66652; Apr. 6, 1984, 59-67456

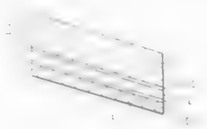
Int. Cl.[4] H01Q *15/14*

U.S. Cl. 343—912 **37 Claims**

1. A reflector for a circular polariztion antenna, comprising in sequence

(A) a thermoplastic resin layer having a thickness of from 5 μm to 5 mm;

(B) a metallic layer having a thickness of from 5 μm to 1 mm; and



(C) an inorganic filler-containing thermoplastic resin layer having a thickness of from 500 μm to 15 mm and an inorganic filler content of from 10 to 80% by weight.

4,763,134

LASER RECORDING APPARATUS HAVING VARIABLE RECORDING MAGNIFICATION AND BEAM INTENSITY CONTROL

Takashi Murahashi, Hino; Yoshiyuki Ichihara, Chofu; Toshihiko Nakazawa, Hachioji, and Toshihiro Takesue, Musashino, all of Japan, assignors to Konishiroku Photo Industry Co., Tokyo, Japan

Filed Aug. 20, 1986, Ser. No. 898,262

Claims priority, application Japan, Aug. 29, 1985, 60-188509; Aug. 29, 1985, 60-188510

Int. Cl.[4] G01D *9/42*

U.S. Cl. 346—1.1 **12 Claims**



8. A method for selecting a recording magnification of a laser recording apparatus having a laser light source for emitting a light beam, collimator means for making the beam parallel, scanning means for scanning the beam onto a photosensitive surface, focusing means for focusing the beam to form a spot image, and a photosensitive surface onto which the spot image of the light beam is directed to form a latent image for transfer to a recording medium, wherein the recording magnification is selected by correspondingly varying the radius of the light beam by the steps of:

forming an aperture of a selected radius by aperture means interposed through which the light beam is directed, and

driving the laser light source to emit a light beam of an intensity which is varied in accordance with the desired recording magnification, such that said laser light source emits a light beam of an intensity distribution having an effective recording radius of light capable of forming a recording image which corresponds to the selected radius for the light beam set by said aperture means.

4,763,135

THERMAL-HEAD RECORDING DEVICE AND METHOD

Shinichi Shimode, Ibaraki, and Kastubumi Ouchi, Chigasaki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 16, 1986, Ser. No. 919,422

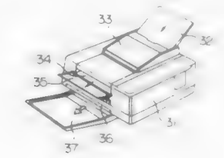
Claims priority, application Japan, Oct. 16, 1985, 60-228612

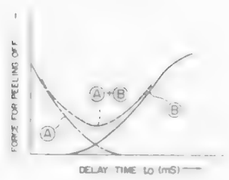
Int. Cl.[4] G01D *15/10;* **B41J** *3/20*

U.S. Cl. 346—1.1 **8 Claims**

1. A thermal-head type recording device including a thermal

head having a multiplicity of heat-generating elements arrayed thereon, a recording paper sheet adapted to be fed in a direction perpendicular to the direction of the array of said heat-generating elements, and a paper feeding motor for intermittently feeding said recording paper sheet in said direction, and wherein a recording operation for each recording line is conducted by dividing a single line of the array of said heat generating elements on said thermal head into a plurality of blocks in a time-dividing manner, comprising: controlling means for causing the timing of a signal for commencing the driving of said paper feeding motor to be delayed by a predetermined period behind the timing of a signal for commencing the recording by said thermal head for each recording line.





4,763,136

PLANAR THERMAL HEAD AND DISPLAY DEVICE INCORPORATING THE SAME

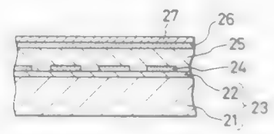
Minoru Isobe, Tokyo, Japan, assignor to OKI Electric Industry Co., Ltd., Tokyo, Japan

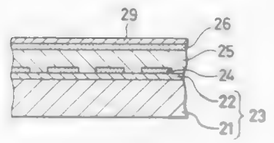
Filed Apr. 7, 1987, Ser. No. 35,511

Claims priority, application Japan, Apr. 8, 1986, 61-79122; Apr. 8, 1986, 61-79123

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 R **20 Claims**





1. A planar thermal head comprising:

4,763,137

TWO PASS THERMAL PRINTING

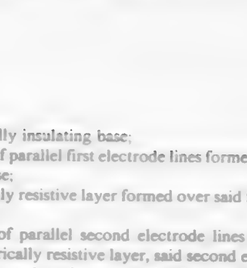
Brian W. Damon; Cary P. Ravitz, and Carl J. Voss, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 1, 1986, Ser. No. 914,032

Int. Cl.[4] G01D *15/10;* **B41J** *3/20*

U.S. Cl. 346—76 PH **16 Claims**





7. A thermal printing system having elements for thermal printing of only part of characters printed with each activation of said elements, said elements being in a column mounted perpendicular to a line to be printed by said elements by movement along said line, means to examine data to be printed in one of said lines in adjoining continuous segments, each segment comprising substantially all data corresponding to a plurality of said characters along parts of the length of said line, means to accumulate the results of said means to examine, means responsive to said means to accumulate to cause printing of alternating ones of said segments at a predetermined high proportion of data in one or more contiguous segments for which said elements are activated, and means to print segments not printed after said alternating is conducted by passing said print elements over said segments not printed a second time.

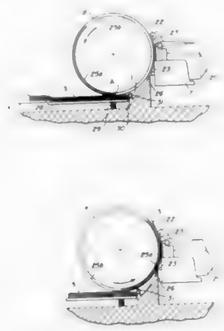
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,138

COMPACT PRINTER HAVING AN INTEGRAL CUT-SHEET FEEDER

Michael J. Piatt, Enon, Ohio, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,416
Int. Cl.[4] G01D *15/24*
U.S. Cl. 346—134 24 Claims



1. In printer apparatus of the kind having a housing, a print zone and means for printing across sectors of print media that are successively advanced into and out of said print zone, an improved construction for handling discrete sheets of print media comprising:

(a) a sheet-feeding and recording-transport member having a high-friction, peripheral surface sector that is movable around an endless path past a sheet-feed zone, a sheet ingress zone, the print zone and a sheet egress zone;

(b) drive means for moving said member so that said surface sector moves around said endless path;

(c) a sheet supply station formed within said housing and including means for positioning a stack of print media sheets with a face sheet at said sheet-feed zone; and

(d) engagement means for effecting periodic feeding contact between said high-friction surface sector and successive face sheets of a positioned stack.

4,763,139

OPTICAL INFORMATION STORAGE MEDIUM

Masaki Itoh; Akio Morimoto, and Sotaro Esho, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Aug. 1, 1986, Ser. No. 893,040
Claims priority, application Japan, Aug. 8, 1985, 60-175137; Aug. 8, 1985, 60-175138
Int. Cl.[4] G01D *15/34*
U.S. Cl. 346—135.1 13 Claims

FIG. 1



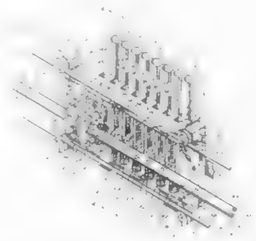
1. An optical information storage medium comprising a substantially transparent substrate and an information carrying layer positioned on one side of the substrate, wherein said information carrying layer contains at least 30 percent by volume of tin and at least 20 percent by volume of nickel oxide.

4,763,140

ROTARY ACTION GRAPHIC RECORDING SYSTEM

Robert H. Niemeyer, III, Martinez, Calif., assignor to AM International Corporation, Chicago, Ill.

Filed Jul. 20, 1987, Ser. No. 75,533
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—139 R 12 Claims



1. In a graphic recording system having motion means for supporting and moving a pen carriage along a path, rotary actuation means comprising:

a pen carriage supported and moved by and under the control of said motion means, having a plurality of pen shuttle channels;

a plurality of pen shuttles configured to receive a plurality of recording elements slideably supported within said plurality of pen shuttle channels;

an elongated actuator beam supported in a substantially parallel arrangement with said path; and

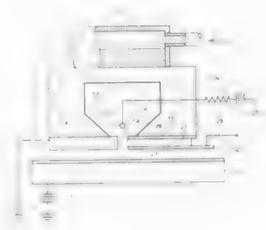
rotary drive means, supported by said pen carriage, rotatable between a first position engaging said actuator beam and a second position engaging said pen carriage and selectively couplable to selected ones of said pen shuttles and operative to move said selected pen shuttles, said rotary drive means being coupled to said actuator beam such that rotation of said actuator beam causes said rotary drive means to move said selected pen shuttle.

4,763,141

PRINTING APPARATUS WITH IMPROVED ION FOCUS

Robert W. Gundlach, Victor, and Richard F. Bergen, Ontario, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 3, 1987, Ser. No. 80,852
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—158 20 Claims



1. An electrographic marking apparatus for placing electrostatic charges upon a charge receptor surface, said apparatus being characterized by including:

an insulating housing having top and bottom surfaces;

electrode means positioned on said bottom surface(s) of said insulating housing and adapted to form a slit therein, one or more control electrode means positioned in a horizontal plane below said electrode means, said electrode means and said one or more control electrode means comprising at least two levels of said slit that are parallel to each other with respect to a plane through said slit, said slit being positioned less than 1mm away from the charge receptor surface, and

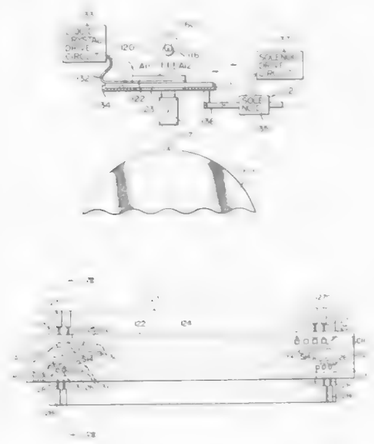
coronode means within said insulating housing adapted to emit ions through said slit on said charge receptor.

4,763,142

ELECTROPHOTOGRAPHIC PRINTER WITH LIGHT MICRO-SHUTTERS

Kouhei Saitoh; Hisashi Aoki; Kenzo Endo, and Atsushi Mawatari, all of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 3, 1986, Ser. No. 903,592
Claims priority, application Japan, Sep. 10, 1985, 60-200041; Sep. 10, 1985, 60-200042; Sep. 10, 1985, 60-200045
Int. Cl.[4] G01D *15/14*; G03G *15/04*
U.S. Cl. 346—160 25 Claims



1. An image forming apparatus, comprising:

at least one light source;

photosensitive means having a surface onto which light from the light source is radiated so that charges on at least a part of the surface that has been charged uniformly in advance, are discharged by photosensing light from the light source;

latent image-forming means having a plurality of light control means formed by a plurality of sets of microminiature regions of certain sizes wherein each microminiature region selectively controls the passage, interception and quantity of light emitted from the light source toward said photosensitive means, for forming a latent image on certain portions of said photosensitive means that have been illuminated by the light and other portions which have not been illuminated by the light, said microminiature regions of said light control means forming corresponding parts of said latent image, respectively, and the microminiature regions of one set each having a certain size which is different from the size of the microminiature regions of another set; and

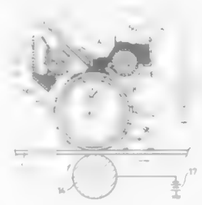
means for fixing the latent image formed on the photosensitive means as a visible image on a recording medium.

4,763,143

ELECTROGRAPHIC RECORDING APPARATUS

Sayoko Ohba; Kenji Okuna, and Hidefumi Ohtsuka, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1987, Ser. No. 63,113
Claims priority, application Japan, Jun. 18, 1986, 61-140111
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160.1 12 Claims



1. An electrographic recording apparatus comprising:

a movable recording body having a recording surface to which electromagnetic toner adheres, the recording surface being an insulated layer;

a recording electrode having a non-moving end spaced from the recording surface of the recording body to provide a fine gap between the electrode and the recording surface;

a toner supply means for supplying the electromagnetic toner continuously to the gap between the moving recording body and the non-moving end of the recording electrode;

a magnetic field generating means located on a side of the recording body opposite to the recording surface to form toner chains made up of electromagnetic toner particles in the gap; and

a voltage application means to apply voltage to the recording electrode according to the image to be developed;

whereby the non-moving end of the recording electrode is located upstream, with respect to the direction of movement of the recording body, of the intersection between the recording body and a line connecting the poles of the magnetic field generating means and also downstream of the intersection between the recording body and a line running perpendicular to the first line through the center of the magnetic field generating means.

4,763,144

CAMERA SYSTEM

Nobuyuki Taniguchi, Nishinomiya; Masatake Niwa, Sakai; Akira Fujii, Osaka; Takeo Hoda, Kawachinagano; Masaaki Nakai, Nara; Minoru Sekida, Sakai, and Masayoshi Sahara, Sennan, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 888,600, Jul. 23, 1986, Pat. No. 4,712,904, which is a division of Ser. No. 634,474, Jul. 25, 1984, Pat. No. 4,621,914. This application Apr. 29, 1987, Ser. No. 43,758
Claims priority, application Japan, Jul. 27, 1983, 58-138129; Jul. 29, 1983, 58-139600; Aug. 8, 1983, 58-144547; Aug. 8, 1983, 58-144549; Aug. 17, 1983, 58-150572; Jun. 22, 1984, 59-129572; Jun. 25, 1984, 59-131452; Jun. 25, 1984, 59-131453
The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.
Int. Cl.[4] G03B *7/24, 1/60, 17/18*
U.S. Cl. 354—21 3 Claims

1. A camera functioning with film speed data, comprising:

means for introducing film speed data;

first means for storing the film speed data;

means respoata, comprising:

means for introducing film speed data;

first means for storing the film speed data;

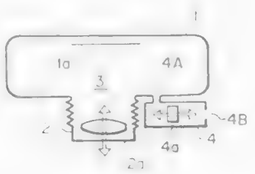
VOL 1093 ISS 2 AG 9 1988 UMI

means responsive to a manual operation for setting exposure time data;
second means for storing the exposure time data;
means for advancing a film loaded in the camera;
means for determining whether or not the film advancing means has completed a predetermined operation required for advancing a film to be loaded in the camera to a predetermined position;



means for alternatively indicating one of the film speed data or the exposure time data; and
means, responsive to said determining means, for controlling said indicating means to indicate the film speed data until the film advancing means has completed the predetermined operation and switching said indicating means to indicate the exposure time data in said second storing means when the film advancing means has completed the predetermined operation.

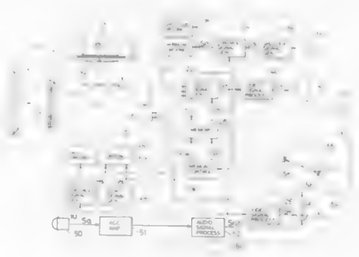
4,763,145
WATER-RESISTANT CAMERA WITH AUTOMATIC INTERNAL AIR-PRESSURE ADJUSTMENT
Masashi Takamura; Seimei Ushiro; Kiyotaka Kobayashi; Michio Cho, and Kimiaki Nakada, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Mar. 25, 1987, Ser. No. 30,056
Claims priority, application Japan, Mar. 26, 1986, 61-68178; Apr. 18, 1986, 61-58479[U]; Apr. 18, 1986, 61-58480[U]; Apr. 18, 1986, 61-59374[U]; Apr. 18, 1986, 61-59375[U]; Apr. 18, 1986, 61-90537; Apr. 18, 1986, 61-90538
Int. Cl.[4] G03G *17/08*
U.S. Cl. 354—64 23 Claims



1. A water-resistant camera comprising:
(i) a fluid-tight camera body;
(ii) a lens barrel mounted on said camera body and movable toward and away from said camera body in a fluid-tight manner, said camera body and said lens barrel having an inner space; and
(iii) means communicating with said inner space for automatically maintaining the air pressure in the inner space at a substantially constant level regardless of movement of said lens barrel toward and away from said camera body.

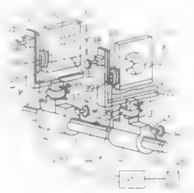
4,763,146
COMPOSITE CAMERA APPARATUS
Tsutomu Niikura, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Feb. 2, 1987, Ser. No. 9,813
Claims priority, application Japan, Feb. 6, 1986, 61-24690
Int. Cl.[4] G03B *29/00*
U.S. Cl. 354—75 10 Claims

1. A composite camera apparatus comprising:
lens means upon which light from a subject is incident;
film holding means for supporting a photosensitive film upon which an image of the subject is formed by the light having passed through said lens means;
image pickup means provided with a light receiving surface upon which an image of the subject is formed by the light having passed through said lens means for producing a pickup output signal in response to the image formed upon the light receiving surface;
video signal generating means connected to said image pickup means for continuously producing a video signal



based on the pickup output signal obtained from said image pickup means, even when a photographic image is being formed upon the film;
video signal processing means connected to said video signal generating means for producing a processed video signal appropriate for magnetic recording based on said video signal; and
wherein the light is unattenuated in passing from the lens means to said film and said image pickup means.

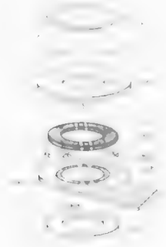
4,763,147
SPECIAL PURPOSE CAMERA
Philippe Vogt, Frohalpstrasse 65, CH-8038 Zurich, Switzerland
PCT No. PCT/CH84/00135, § 371 Date Apr. 24, 1985, § 102(e) Date Apr. 24, 1985, PCT Pub. No. WO85/01124, PCT Pub. Date Mar. 14, 1985
Continuation of Ser. No. 731,949, Apr. 24, 1985, abandoned. This PCT application Aug. 23, 1984, Ser. No. 9,614
Claims priority, application Switzerland, Aug. 25, 1983, 4626/83
Int. Cl.[4] G03B *5/06, 5/08, 19/10*
U.S. Cl. 354—160 20 Claims



1. An improved special purpose camera having a carrying rail (10) and a lens holder (11) and a picture holder (12) arranged for independently moving along the rail, each of which comprises a carriage (14,14') and a first hinge (21,21') for pivoting a carrying arm (22,22') about a vertical axis and a second hinge (26,26') for pivoting a lens frame (27) and a picture frame (31), respectively, about a horizontal axis, the improvement comprising means (41,41') associated with at least one carriage (14,14'), which means produces an electric signal corresponding to the longitudinal displacement of said carriage on the carrying rail, and further an electronic circuitry (45,46) having a microprocessor (50) for the processing of the electrical signal and for producing an optical signal when the sine of the pivot

angle of one hinge on the lens frame is equal to the ratio formed from the length of the displacement of the carriage (14') of the picture holder (12) along the carrier rail (10) and from the spacing of two parallel measuring lines (32,33) on the picture carrier 931) and arranged outside the centre of the picture.

4,763,148
VIBRATION WAVE MOTOR
Takayuki Tsukimoto, Fujisawa; Ichiro Okumura, Yokohama; Takuo Okuno, Yokohama, and Kazuhiro Izukawa, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 30, 1987, Ser. No. 44,289
Claims priority, application Japan, May 9, 1986, 61-106437
Int. Cl.[4] G03B *3/00;* **H01L** *41/08*
U.S. Cl. 354—195.1 8 Claims



1. A vibration wave motor comprising:
a circular vibration member for generating a travelling vibration wave in response to application of a periodic voltage to phase-differentially arranged or polarized electro-mechanical energy transducers, wherein a vibration amplitude of an outer circumferential portion of said vibration member is greater than that of an inner circumferential portion;
a movable member to be frictionally driven by the travelling vibration wave; and
a circular vibration absorption member for absorbing vibration of said vibration member;
said vibration absorption member having an outer diameter smaller than an outer diameter of said vibration member so that said absorption member contacts only the inner circumferential portion of said vibration member.

4,763,149
CAMERA STATUS DISPLAY DEVICE
Akira Takahashi, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 786,945, Oct. 11, 1985, abandoned. This application Sep. 4, 1987, Ser. No. 94,095
Claims priority, application Japan, Oct. 11, 1984, 59-212948
Int. Cl.[4] G03B *17/36*
U.S. Cl. 354—217 2 Claims



1. A camera status display device comprising:
a motor for winding the film in the camera;
a perforation sensor for sensing perforations in the film and producing perforation pulses in response to the movement of the film;
a first counter for counting said perforation pulses;
a decoder connected to said first counter for sequentially actuating a plurality of outputs in response to the count in said first counter;
display means with a plurality of indicators, with each indicator being connected to a corresponding one of said plurality of outputs from said decoder;
each of said plural indicators being actuated sequentially in response to the winding of the film to produce an indication of a remaining exposure and an indication of moving film;
an oscillator for producing oscillator pulses;
logic means having inputs connected to said oscillator and to said perforation sensor for receiving input pulses therefrom and an output connected to said first counter;
a second counter connected to said decoder and being incremented once each time a given one of the indicators is actuated;
said logic means being controlled by said second counter to pass pulses only from said perforation sensor when the count in the second counter is a first value and to pass pulses only from said oscillator when the count in the second counter is a second value and to pass neither pulses when the count in the second counter is a third value.

4,763,150
MOTOR-BUILT-IN PHOTOGRAPHIC LENS
Akiyasu Sumi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 678,388, Dec. 6, 1984, abandoned, which is a continuation of Ser. No. 437,017, Oct. 27, 1982, abandoned. This application Nov. 17, 1987, Ser. No. 122,584
Claims priority, application Japan, Nov. 4, 1981, 56-176664
Int. Cl.[4] G03B *9/06*
U.S. Cl. 354—271.1 4 Claims

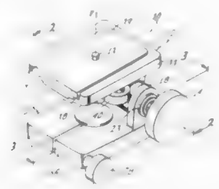


1. An arrangement for operating a diaphragm device within a lens barrel having an optical axis comprising:
a stepping motor including a plurality of ring-shaped field yokes each having pole teeth extending substantially parallel to the optical axis and spaced relative to the teeth of another yoke;
a plurality of field coils fixedly mounted on said yokes;
a ring-like permanent magnet positioned on the outer periphery of said yoke and rotatable stepwise relative to said yoke of energization of said field coils;
said ring-like permanent magnet being made of plastic magnetic material;
a diaphragm blade operating member arranged for operating diaphragm blades of the diaphragm device;
a drive connection for transmitting stepwise rotation of said ring-like permanent magnet to said diaphragm blade operating member; and
said drive connection having a guide groove formed in said ring-like permanent magnet and an arm extending from

VOL 1093 ISS 2 AUG 9 1988 UMI

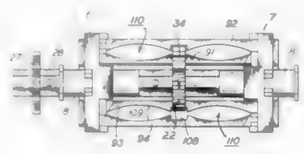
said operating member, said arm being engageable with said guide groove to integrally connect said permanent magnet and said operating member.

4,763,151
UNIVERSAL TRIPOD HEAD
Joseph K. Klinger, 3402-I West MacArthur Blvd., Santa Ana, Calif. 92704
Filed May 14, 1987, Ser. No. 50,093
Int. Cl.[4] G03B *17/00*
U.S. Cl. 354—293 **13 Claims**



1. A tripod head, comprising:
a base member adapted to be mounted on a separate tripod for pivotal movement about a panning axis;
a platform member on which to mount a separate camera;
platform mounting means for mounting the platform member on the base member to enable independent pivotal movement of the platform member about each one of a pair of first and second mutually perpendicular tilting axes, including
locking means for locking the platform member against pivotal movement about both of the tilting axes by operation of a single locking member; and
friction plate means for enhancing operation of the locking means in locking against pivotal movement about at least one of the first and second tilting axes;
wherein the platform mounting means includes:
a pair of first and second upstanding mounting members attached to the base member in spaced apart relationship, the first mounting member defining a first bore that extends through the mounting member in alignment with the first tilting axis and the second mounting member defining a second bore that extends at least partially through the second mounting member in alignment with the first tilting axis;
a first shaft extending along the first tilting axis, the first shaft having a first end portion extending through the first bore and a second end portion extending at least partially within the second bore;
a split coupling member mounted on the first shaft between the first and second mounting members for pivotal movement about the first tilting axis, which coupling member defines a variable diameter through bore aligned with the second tilting axis that can be reduced in diameter by compressing the split coupling member along the first tilting axis;
a second shaft extending along the second tilting axis through the variable diameter through bore; and
a pair of first and second downwardly extending mounting ears on the platform member that are mounted on the second shaft for pivotal movement about the second tilting axis.

4,763,152
PHOTOGRAPHIC FILM PROCESSING RACK AND METHOD OF ASSEMBLING THE SAME
Robert J. Blackman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 13, 1987, Ser. No. 72,939
Int. Cl.[4] G03D *3/13*
U.S. Cl. 354—321 **9 Claims**

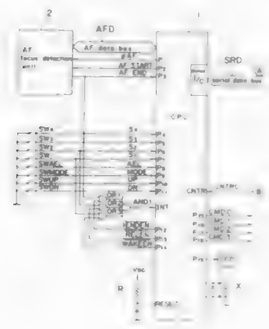


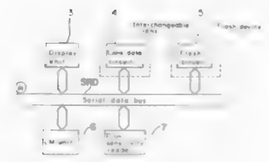
1. A photographic film processing rack comprising:
four identical end blocks each having a central journal bearing, including two bottom end blocks disposed with their journal bearings in axial alignment and extending inwardly, and two top end blocks disposed with their journal bearings in axial alignment and extending outwardly;
an idler sprocket on an idler shaft rotatably mounted in said journal bearings of said bottom end blocks;
a drive sprocket and a power input sprocket on a drive shaft rotatably mounted in said journal bearings of said top end blocks;
a timing belt extendin8 over and in positive engagement with said drive sprocket and said idler sprocket;
a bottom concave guide member supported by and between said bottom end blocks and forming a partial peripheral enclosure around said idler shaft and said idler sprocket;
a top crossover member supported by and between said top end blocks for operative connection to a like pair of end blocks of another processing rack; and
four identical vertical rack panels each having an outer face and an inner face and an extended hinge edge, the inner faces of said rack panels each including a central vertical belt clearance slot and a vertical concavity on each side of said belt clearance slot, said rack panels being joined in mating pairs with their inner faces together defining a vertical belt path and a vertical film process channel on each side of said belt path, and said extended hinge edges of the rack panels being in locking engagement with said end blocks.

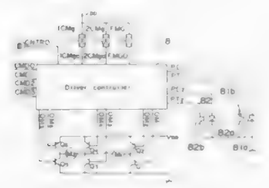
4,763,153
CONTROL DEVICE FOR USE IN A CAMERA SYSTEM
Toshihiko Ishimura, Habikino; Norio Ishikawa; Yasuaki Akada, both of Osaka; Reiji Seki, Sakai, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Mar. 10, 1987, Ser. No. 24,387
Claims priority, application Japan, Mar. 11, 1986, 61-54139; Mar. 12, 1986, 61-55965
Int. Cl.[4] G03B *1/00, 17/40*
U.S. Cl. 354—400 **3 Claims**

1. A control device for use in a camera system which comprises a release switch for generating a signal for starting an exposure control during operation of said release switch,
means for executing a preparatory operation such as film winding for a subsequent photographing operation after finishing the exposure control,
a timer for counting a predetermined time period from completion of the preparatory operation,
means for stopping said timer when the operation of said release switch is canceled so that the signal for starting the exposure control is eliminated, during the counting of the predetermined time period by said timer,

means for starting exposure control when said release switch is operated and the signal for starting exposure control is generated after the counting of the predetermined time period by said timer,
means for detecting the focusing condition of a photographic lens,







lens control means for moving the photographic lens on the basis of an output of said detecting means and inhibiting the movement of the photographic lens when the photographic lens is once placed at an in-focus position, and
means for inhibiting the operation of the lens control means during the counting of the predetermined time period by said timer.

4,763,154
FOCUS DETECTING DEVICE AND IMAGE SIGNAL AMPLIFIER CIRCUIT THEREFOR
Susumu Iguchi, Yokohama; Daisuke Hata, Funabashi; Yoshimi Ohno, Kawasaki; Takayuki Hatase; Takao Yamaguchi, both of Yokohama, and Kazumasa Aoki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Dec. 24, 1986, Ser. No. 946,032
Claims priority, application Japan, Dec. 27, 1985, 60-295791; Feb. 27, 1986, 61-042355; Feb. 28, 1986, 61-042849
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—403 **3 Claims**

1. An image signal amplifier circuit for a focus detecting device for detecting the focus of a camera by processing an image signal from a self-scanned image sensor having a storage electrode and an analog shift register for transferring a stored charge from said storage electrode, said image signal amplifier circuit comprising monitor photodetector means for detecting the brightness of an object to be photographed by the camera, amplifier means having automatic gain control means for controlling the amplification degree of the image signal based on an output signal from said monitor photodetector means so that the amplified image signal from said image sensor will be of a constant level, offset generator means for adding an offset voltage to an output signal from said amplifier means, detector



means for detecting when a limit of the ability of said automatic gain control means is exceeded, means for producing an auxiliary light in response to an output from said detector means, and offset reducer means for eliminating said offset voltage in response to said output signal from said detector means.

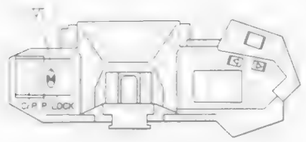
4,763,155
SHUTTER CONTROL DEVICE FOR CAMERA
Hajime Oda; Hiroyuki Saito; Keiji Arai; Atsushi Misawa; Toshiya Tamura; Michio Taniwaki, and Katsuhito Niwa, all of Yotsukaido, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan
Filed Jan. 13, 1987, Ser. No. 4,140
Claims priority, application Japan, Jan. 13, 1986, 61-4494; Feb. 21, 1986, 61-36782
Int. Cl.[4] G03B *7/097*
U.S. Cl. 354—435 **21 Claims**



1. A device for controlling a camera shutter having a shutter driving motor and sector means driven by the shutter driving motor to effect opening and closing of a shutter aperture, the device comprising: detecting means for detecting a rotational speed of the shutter driving motor after the shutter driving motor has started to rotate and before the sector means effects the opening of the shutter aperture; correcting means for correcting an amount of exposure based on the detected rotational speed of the shutter driving motor; and means for determining a shutter aperture closing timing according to a signal from the correcting means.

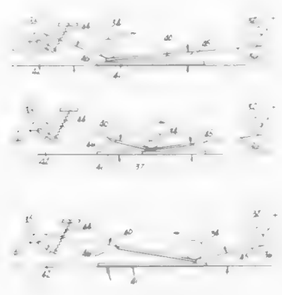
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,156
CAMERA WITH A BARRIER
Norio Ishikawa; Toshihiko Ishimura, both of Osaka; Nobuyuki Taniguchi, Nishinomiya; Yasuaki Akada, Osaka, and Reiji Seki, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 27, 1987, Ser. No. 19,792
Claims priority, application Japan, Feb. 28, 1986, 61-45770; Feb. 28, 1986, 61-45772; Mar. 10, 1986, 61-53063
Int. Cl.[4] G03B 7/08, 7/26, 17/00, 17/18
U.S. Cl. 354—442 13 Claims



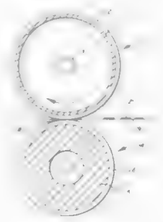
1. A camera comprising:
a member that is manually operable in accordance with the intention of a photographer on exposure;
a barrier mounted for movement between an open position in which said operable member is exposed to allow operation of said operable member and a closed position in which said barrier covers said operable member to prevent operation of said operable member; and
controlling means for selecting an exposure controlling mode in whch the intention of the photographer is not reflected on exposure when said barrier is in the closed position and for enabling selection of another exposure controlling mode in which the intention of the photographer is reflected on exposure by operation of said operable member when said barrier is in the open position.

4,763,157
TRANSFER ROLLER
David P. Bujese, Butler, N.J., assignor to Olin Hunt Specialty Products Inc., Palisades Park, N.J.
Filed Aug. 31, 1987, Ser. No. 91,617
Int. Cl.[4] G03G 15/16
U.S. Cl. 355—3 TR 20 Claims



20. Apparatus for the electrostatic transfer of a developed image from an electrostatically developable surface supported by carrier means to a conductive receiving surface, the improvement comprising in combination:
(a) transfer means contactable with the carrier means to move the electrostatically developable surface adjacent to, but not in contact with the conductive receiving surface to effect the electrostatic transfer of the developed image, the transfer means being reversible and traversing the carrier means a distance equal to at least the length of the electrostatically developable surface;
(b) tensioning means for tensioning the carrier means causing the carrier means to form a trailing angle with the conductive receiving surface as the transfer means traverses the carrier means during the electrostatic transfer; and
(c) retention means for retaining the carrier means and positioned such that the transfer means is intermediate the tensioning means and the retention means causing the carrier means to form a leading angle with the conductive receiving surface as the transfer means traverses the carrier means during the electrostatic transfer.

4,763,158
BORON NITRIDE FILLED FUSER ROLLS
Edward L. Schlueter, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Sep. 11, 1987, Ser. No. 95,193
Int. Cl.[4] G03G 15/20
U.S. Cl. 355—3 FU 15 Claims



1. A fuser member for use in an electrostatographic printing machine comprising:
a base member having a thermally conductive elastomeric surface layer coated thereon, said elastomer surface layer containing boron nitride filler particles dispersed therein in an amount to increase the thermal conductivity of the elastomer while maintaining good release characteristics of the elastomeric surface.

4,763,159
MULTIMAGNIFICATION OPTICAL SYSTEM IN A DUAL MODE COPIER
Russell A. Temple, Sierra Madre; Martin G. Wesseler, Arcadia, and David C. Harper, Claremont, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Jul. 14, 1983, Ser. No. 513,884
Int. Cl.[4] G03G 21/00
U.S. Cl. 355—3 R 3 Claims



1. A dual mode copier comprising:

first optical and lens means for receiving reflected light from a document to be copied in a first mode;
a document handling module being selectively positioned contiguous with said first optical and lens means for receiving reflected light from a document to be copied in a second mode, said document handling module including second optical and lens means to direct said reflected light from a document in said second mode in a direction towards said first optical and lens means;
said first optical and lens means being positioned within the body of said dual mode copier and including in said first mode a full rate mirror means for scanning at a predetermined rate an input document being illuminated by a first exposure lamp, a half rate mirror means moving along with said full rate mirror means at one half said predetermined rate for receiving the reflected light from said input document and reflected towards said half rate mirror means by said full rate mirror means, and mirror/lens means for receiving the light reflected by said half rate mirror means for further reflecting and focussing the light reflected by said document for development and printing of a copy of said input document;
said first optical and lens means further including a flip mirror means being positioned so as to be out of the path of reflected light in said first mode and partially rotated about its axis to receive reflected light from the document handling module in said second mode;
said second optical and lens means in said document handling module comprising a fold mirror means for receiving said light reflected from a document being illuminated by a second exposure lamp, said fold mirror means being in a first position to further reflect said light reflected from said document down into the body of said copier towards said flip mirror means; and
reduction mirror means adjacent to said fold mirror means for receiving said light reflected from said document by said fold mirror means when said fold mirror means is in a second position rotated about a longitudinal axis thereof, said reduction mirror means further reflecting said light from said document back along a path essentially parallel to the path of light from said fold mirror means and into the body of said copier towards said flip mirror means.

4,763,160
APPARATUS FOR HANDLING AN ORIGINAL
Takeshi Honjo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 543,029, Oct. 18, 1983, abandoned. This application Feb. 2, 1987, Ser. No. 9,544
Claims priority, application Japan, Oct. 25, 1982, 57-187250; Oct. 25, 1982, 57-187251; Oct. 25, 1982, 57-187252
Int. Cl.[4] G03G 15/00; B65H 5/02
U.S. Cl. 355—3 SH 30 Claims



1. An apparatus for handling an original comprising:
feed means for feeding an original to a predetermined position and feeding out the original along a feed-out path of a predetermined length from said predetermined position;
detection means for detecting the size of the original to be fed by said feed means, while the original is being fed; and
control means for maintaining a distance between the original to be fed out from said predetermined position and an original to be fed next on the basis of the size of said original and for controlling said feed means in accordance with the maintained distance and the length of said feed-out path,
wherein said control means is arranged to control said feed means so as to initiate the feeding of a successive original to said predetermined position, in the event that the length of said feed-out path is shorter than the maintained distance, with a first timing prior to completion of feed-out of said preceding original, and in the event that the length of said feed-out path is longer than the maintained distance, with a second timing later than the first timing
9. An apparatus for handling a sheet comprising:
feed means for feeding a sheet to a predetermined position and feeding out the sheet from the predetermined position;
abnormality detection means for detecting an abnormality in the feeding-out operation of the sheet to be fed out by said feed means, said abnormality detection means having timer means for performing a timing operation for sensing an abnormality; and
size sensing means for sensing the size of the sheet while the sheet is being fed to the predetermined position and prior to operation of said abnormality detection means;
wherein said timer means performs the timing operation based on a first time period when the size of the sheet sensed by said sensing means is larger than a predetermined size, and performs the timing operation based on a second time period when the size of the sheet is smaller than the predetermined size.

4,763,161
COPIER OPERABLE IN AN INSERT MODE
Paul H. Forest, and Thomas J. Murray, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 21, 1986, Ser. No. 899,134
Int. Cl.[4] G03G 15/00
U.S. Cl. 355—14 SH 5 Claims



2. In copier apparatus including (1) an exposure position, (2) means for repeatedly circulating successive originals of an original set to the exposure position, (3) means for selectively producing images of an original at the exposure position, and (4) means for selectively presenting copy sheets of either a first characteristic or a second characteristic to an image receiving position for receiving images from the producing means; the improvement for use with keysheets adapted to be interleaved into the original set at positions for designating individual originals, said keysheets having indicia means for identifying keysheet orientation in the set wherein said copier further comprises:
means for sensing the presence and orientation of a keysheet;
means, responsive to said sensing means, for controlling the presenting means to supply a copy sheet of the first characteristic if a keysheet is not sensed and a copy sheet of the second characteristic if a keysheet is sensed; and
means, responsive to said sensing means, for controlling the producing means to either produce or not produce images of the designated individual original in accordance with the orientation of the keysheet; and
means for ejecting said keysheets from the original set dur-

VOL 1093 ISS 2 AG 9 1988 UMI

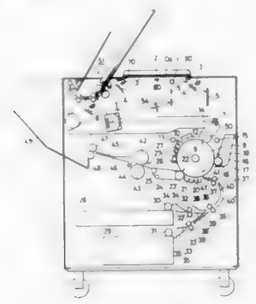
ing a circulation of the original set subsequent to the first such circulation.

4,763,162

COPY SHEET FEED CONTROLLER FOR AN ELECTROSTATIC COPIER

Toshiaki Yagasaki, Hino, Japan, assignor to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 350,608, Feb. 22, 1982, abandoned.
This application Nov. 12, 1985, Ser. No. 796,538
Claims priority, application Japan, Feb. 27, 1981, 61-27758; Mar. 3, 1981, 61-30354; Mar. 5, 1981, 61-31889; Mar. 12, 1981, 61-36259; Mar. 13, 1981, 61-36927; Mar. 18, 1981, 61-38889; Mar. 25, 1981, 61-43441; Mar. 27, 1981, 61-45967; Apr. 7, 1981, 61-52217; Apr. 7, 1981, 61-52218
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—14 SH 11 Claims



1. An image forming apparatus comprising:
a container for storing recording media;
a plurality of processing means for forming images on recording media fed from said container;
detection means for detecting a multi-feed of the recording media fed from said container;
separation means for separating the multi-fed recording media one from others; and
control means for controlling said processing means, in response to the detection of a multi-feed by said detection means, to form an image on one of the multi-fed recording media separated by said separation means and to disable at least one of said plurality of processing means to prevent the formation of an image on the other ones of the multi-fed recording media.

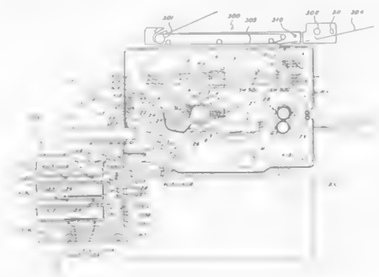
4,763,163

ELECTROSTATIC PHOTOCOPIERS

Hiroaki Hamano; Hiroyuki Hanamoto, both of Toyokawa; and Masazumi Ito, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 879,995, Jun. 30, 1986, abandoned.
This application May 12, 1987, Ser. No. 48,901
Claims priority, application Japan, Jul. 3, 1985, 60-147542; Jul. 7, 1985, 60-153112; Jul. 9, 1985, 60-153111
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 SH 14 Claims

1. An electrostatic copying machine comprising:
means for designating a book copy mode;
means for executing the book copy mode by successive scannings with use of an optical system wherein a first half of a document to be copied is scanned and then a latter half;
means for automatically feeding a document onto a transparent plate for positioning said document thereon;
means for sensing an operable condition of said automatic feeding means; and
a book copy control means, responsive to said sensing means, for releasing the book copy mode having been designated by said designating means when a condition of



said automatic document feeding means is changed into the operable condition.

4,763,164

IMAGE FORMING APPARATUS

Masao Ariga, Kawasaki; Hiroyuki Hattori, Inagi; Katsuichi Shimizu, Hoya; Hirotoshi Kishi, Tokyo; Hiroshi Ogawa, Kawasaki; Takahiko Amanuma, Tokyo; Kazumi Umezawa; Seiji Sagara, both of Kawasaki, and Kenji Kurita, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 288,211, Jul. 29, 1981, abandoned, which is a division of Ser. No. 882,614, Mar. 1, 1978, Pat. No. 4,312,587.
This application Oct. 11, 1984, Ser. No. 659,784
Claims priority, application Japan, Mar. 2, 1977, 52-22981
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—14 R 5 Claims



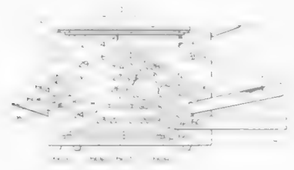
1. An image forming apparatus comprising:
means for transporting a recording medium;
means for forming an image on a recording medium transported by said transporting means;
means provided at a pedetermined position in a transport path for the recording medium for detecting the same;
means for discriminating as to whether or not the recording medium detected by said detecting means has reached the predetermined position;
means for identifying a size of the recording medium in transportation in such a manner that if said detecting means does not detect the recording medium in a predetermined time after discrimination of the arrival of the recording medium to the predetermined position by said discriminating means, the recording medium is identified as of a first size, and if detected, the recording medium is identified as of a second size larger than the first size; and
means for controlling the image forming operation of said forming means in accordance with a result of the size identification by said identifying means.

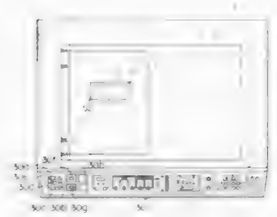
4,763,165

IMAGE FORMING APPARATUS WITH IMAGE ADDING FUNCTION

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 10, 1986, Ser. No. 838,336
Claims priority, application Japan, Mar. 18, 1985, 60-53737; Mar. 20, 1985, 60-56533; Apr. 15, 1985, 60-79960; Apr. 15, 1985, 60-79961; May 29, 1985, 60-115938
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—14 R 9 Claims





1. An image forming appartus with an image adding function, said apparatus comprising:
an original table on which an original is placed, the original being capable of transmitting light therethrough;
light-transmitting means for emitting the light onto the original placed on said original table while the light is moved therealong;
additional image formation specifying means for specifying a desired additional image formation, an additional image formed by the additional image formation being comprised of pixel elements having a variable width and length which are determined at a desired portion of the original on said original table when the light emitted from said light-transmitting means moves;
first controlling means for calculating positional data for an image area outside the desired additional image formation specified by said additional image formation specifying means, based on movement of the light emitted by said light-transmitting means, and for storing the calculated positional data;
original scanning means, movable along said original table, for optically scanning the original placed on said original table and for forming a reflected light image thereof;
image forming means for focusing the reflected light image obtained by said original scanning means, developing the image, and forming a corresponding image on an image forming medium;
image forming medium feed-back means for selectively feeding back said image forming medium on which an image is formed by said image forming means;
image erasing means for selectively erasing the image formed by said image forming means;
second controlling means for enabling said original scanning means and said image forming means, and for disabling said image erasing means and said image forming medium feed-back means during formation of a first image;
third controlling means for disabling said original scanning means and enabling said image forming medium feed-back means, said image forming means, and said image erasing means during formation of a second image; and
fourth controlling means for, during formation of the second image, reading out positional data of an image portion outside the desired additional image formation from said first controlling means and supplying the readout positional data to said image erasing means, thereby allowing said image forming means to form a desired additional image in a corresponding portion image forming range on said image forming medium, which has been fed back

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4,763,166

IMAGE FORMING APPARATUS

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 23, 1986, Ser. No. 910,665
Claims priority, application Japan, Sep. 27, 1985, 60-212530; Nov. 22, 1985, 60-263021
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 SH 42 Claims



1. An image forming apparatus for forming an image on a document, on a sheet, comprising:
an image carrier;
image forming means for forming an electrostatic image corresponding to an image on a document, on the image carrier;
transfer means which causes the sheet to be in contact with said image carrier, to transfer the latent image formed on said image carrier onto the sheet;
first peel-off means for electrically peeling the sheet off said image carrier, after the transfer operation;
second peel-off means which is engaged with the sheet to mechanically peel the sheet off said image carrier, after the transfer operation; and
sheet position-control means for selectively moving the sheet between a first position at which the sheet is engaged with said second peel-off means and a second position at which the sheet is not engaged with said second peel-off means

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,167

IMAGE FORMING APPARATUS

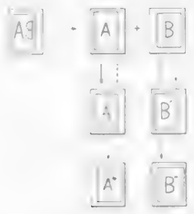
Tsutomu Watanabe; Nobuhiro Kasama, both of Yokohama; Masafumi Wataya, Tokyo; Takaaki Ashinuma; Yoshihiko Hirose, both of Yokohama, and Yasuo Suzuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1987, Ser. No. 24,372

Claims priority, application Japan, Mar. 13, 1986, 61-55275; Mar. 13, 1986, 61-55276; Mar. 13, 1986, 61-55267; Mar. 13, 1986, 61-55272

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R 7 Claims



1. An image forming apparatus comprising:

means for generating plural image information;

means for forming, on a sheet, an image based on the image information generated by said image information generating means; wherein said image forming means has a mode of forming plural images on a side of said sheet;

means for applying a post process to the sheet bearing thus formed image; and

control means for varying, when said mode is adopted, the positions of plural images to be formed on said sheet according to the position of said post process on the sheet.

4,763,168

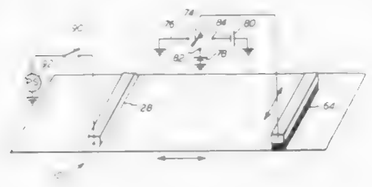
REPRODUCING APPARATUS INCLUDING TONER REMOVAL APPARATUS UTILIZING ELECTROSTATIC ATTRACTION

Nero R. Lindblad, Palmyra, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1983, Ser. No. 471,412

Int. Cl.[4] G03G *21/00*

U.S. Cl. 355—15 1 Claim



1. Reproducing apparatus including a charge retentive surface on which toner images are formed for transfer to a copy substrate, said surface having diposed adjacent thereto charge, exposure and development systems which are capable of forming a visible image on said charge retentive surface by applying toner material thereto and also removing residual toner from the surface after the images have been transferred to the substrate, said apparatus comprising:

a conductive brush having fibers supported for contact with said surface;

means cooperating with said brush adapted to selectively enhance the brush's ability to attract toner of a predetermined polarity thereto;

means including a d.c. voltage source adapted to selectively create an electrostatic field about the fibers of said brush, the polarity of said field being the same as said predetermined polarity;

means operatively coupled to said electrostatic field creating means and said means for enhancing the brush's toner attracting ability for alternately rendering them operative whereby said brush is able to collect toner in the fibers thereof and store is until the electrostatic field of opposite polarity is established whereupon the toner is repelled from the brush such that it is deposited on the surface to be transported to the development system for removal; and

means cooperating with said charge system to render it temporarily inoperative to allow movement of said toner repelled from said brush to be transported to said development system without altering the charge on said toner by said charge system.

4,763,169

PHOTOGRAPHIC OPTICAL BENCH

Sidney G. Jackson, 54 Avenue Road, Erith, Kent DA8 3AS, England

Filed Jul. 29, 1987, Ser. No. 79,176

Claims priority, application United Kingdom, Aug. 6, 1986, 8619211

Int. Cl.[4] G03B *27/52*

U.S. Cl. 355—30 14 Claims



1. A photographic optical bench comprising a pulsed source of illumination (1), an aspheric lens condenser system (2), a number of filters (21) located in the optical path of said optical bench and arranged to transmit light of different colours, a corresponding number of apertures (22) located between said pulsed source of illumination (1) and condenser system (2) and adapted to provide an apparent object for said condenser system (2), said number of apertures (22) having different spacings from said condenser system (2), means to move said apertures (22) and said filters (21) into and out of an optical path of said condenser system (2) so that a particular aperture (22) forms an apparent object for light of a particular colour at a distance from said condenser such that light of all colours pass through a common focal point (25) on a downstream side of said condenser system (2), said different spacings between said apertures (22) and said condenser system (2) thereby compensating for chromatic aberrations in said condenser system (2), a tank (3) adapted to hold a transparent photographic medium and refractive index matching liquid located between said condenser system (2) and said common focal point (25), and a camera (5) including an imaging lens system (6) having its optical centre located at said common focal point (25) and support means (7) to support a secondary photographic medium to be exposed downstream of said imaging lens (6) and on which, in use, an image of said transparent photographic medium is formed, said size of said number of apertures (22) being matched to that of said aperture of said imaging lens (6) so that said diameter of a light beam passing through said optical centre of said imaging lens (6) falls within its aperture.

4,763,170

COMPOSITE COPYING APPARATUS

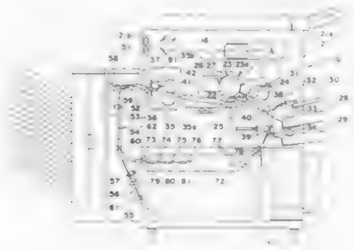
Norihisa Nishimura, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1987, Ser. No. 82,486

Claims priority, application Japan, Aug. 8, 1986, 61-187066

Int. Cl.[4] G03B *27/52*

U.S. Cl. 355—40 1 Claim



1. A composite copying apparatus comprising:

a trimming mode and a masking mode for effecting trimming and masking with respect to any desired area set within an image range of an original document;

a two-surface continuous copying means, which bisects the image range in an original document scanning direction, for effecting an independent copying process continuously two times with respect to the respective ranges;

circulation transport means for leading paper sheets completed for the copying process into the copying process section again through an intermediate storage portion;

area memory means for memorizing the set area within the image range;

continuous transport means for making said circulation transport means effective in the two copying processes of said two-surface continuous copying means; and

continuous composite copying means for initiating the respective trimming mode and masking mode independently with respect to the area stored in said area memory means in each of the two copying processes of said two-surface continuous copying means.

4,763,171

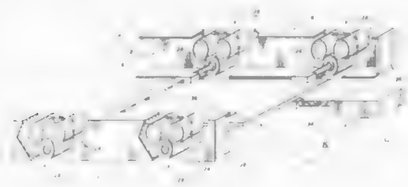
TRI-ROLL SCANNING ARRANGEMENT

Richard P. Schell, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 23, 1987, Ser. No. 76,822

Int. Cl.[4] G03B *27/48, 27/50;* G03G *15/28, 15/32*

U.S. Cl. 355—50 10 Claims



1. A scanning arrangement for supporting a device for scanning movement across a field, said arrangement comprising:

a carriage for supporting a device for scanning;

said carriage supported on at least one axle member;

said axle member supported for scanning movement through two parallel and co-planar U-shaped channel members, each channel having upper and lower bearing surfaces, and an open side facing the opposite channel;

each end of said axle member supported in one of said channel member on a tri-roll bearing, said bearing including a rigid driver roll drivingly coupled to said axle member and in driving engagement with one of said bearing surfaces, and first and second rigid idler rollers, each in driven engagement with said driver roll and the other of said bearing surfaces, and maintained in non-contacting relationship, while provided with a spring force biasing said idler rolls toward one another; and

means for driving said carriage in scanning movement

4,763,172

IMAGE SCANNER APPARATUS

Junichi Tsubota, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 12, 1987, Ser. No. 2,231

Claims priority, application Japan, Jan. 17, 1986, 61-7267

Int. Cl.[4] G03B *27/48, 27/50*

U.S. Cl. 355—50 18 Claims



1. An image scanner apparatus comprising:

means for supporting a set of originals thereon;

means for detecting that the originals have been placed on said supporting means to output a detection signal;

means for separating the originals placed on said supporting means in response to the detection of said detecting means;

means for scanning the image of each original separated by said separating means;

means for inputting an instruction to initiate the scanning operation of said scanning means; and

means for permitting said scanning means to scan the originals in response to the instruction of said inputting means.

4,763,173

IMAGING SYSTEM FOR COMPENSATING FOR IMAGE DISTORTION DUE TO WRINKLED OR CURLED DOCUMENTS

Michael E. Harrigan, Webster; James D. Rees, Pittsford, and Robert P. Rebres, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 18, 1987, Ser. No. 98,175

Int. Cl.[4] G03B *27/68*

U.S. Cl. 355—52 5 Claims

1. A document imaging system including:

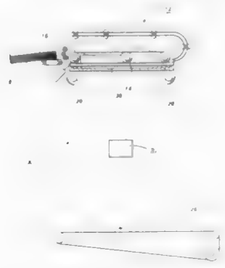
a transparent platen located in an object plane;

means for positioning an original document on the surface of said platen;

means for projecting an image of said document onto a photosensitive surface; and

VOL 1093 ISS 2 AG 9 1988 UMI

a positive lens element positioned between said platen and said projection lens said lens adapted to compensate for



distortion caused by imaging of non-planar portions of said documents.

4,763,174

MAGNIFICATION SELECTING DEVICE IN A PHOTOCOPIER

Yoshinori Makiura, Tondabayashi; Takahiro Wakikaido, Yao; Haruo Yamamoto, Sennan; Shusaku Ogawa, Sumiyoshi, and Takao Ichihashi, Sakai, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Oct. 23, 1986, Ser. No. 922,423
Claims priority, application Japan, Oct. 28, 1985, 60-242289
Int. Cl.[4] G02B *7/11*; G03B *27/52*
U.S. Cl. 355—55 3 Claims



1. In a photocopier including a magnification level indicator, an up control key for increasing the magnification level indication of the magnification level indicator with a fixed rate of increase, a down control key for reducing the magnification level indication of the magnification level indicator with a fixed rate of decrease, and copying means for providing a photocopy of an original document at the magnification level indicated by the magnification level indication of the magnification level indicator, the improvement comprising:

first means, responsive to actuation of the up control key, for determining the amount by which the magnification level indication differs from a predetermined magnification level indication;

second means, responsive to determination by said first means that the magnification level indication is less than the predetermined magnification level indication by a predetermined amount, for causing the magnification level indication to increase with a rate of increase less than the fixed rate of increase;

third means, responsive to actuation of the down control key, for determining the amount by which the magnification level indication differs from the predetermined magnification level indication; and

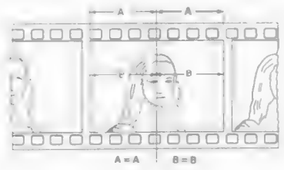
fourth means, responsive to determination by said third means that the magnification level indication is greater than the predetermined magnification level indication by a predetermined amount, for causing the magnification level indication to decrease with a rate of decrease less than the fixed rate of decrease.

4,763,175

APPARATUS AND METHOD FOR FILM PIECES

Kenneth R. Mowat, P.O. Box 11335, Station H, Nepean, Ontario, Canada K2H 7V1

Filed Sep. 30, 1985, Ser. No. 782,000
Claims priority, application Canada, Oct. 4, 1984, 464223
Int. Cl.[4] G03B *27/62*
U.S. Cl. 355—75 30 Claims



1. Apparatus for retaining a piece of photographic film (chip) in a predetermined location comprising a chip holder, means for accurately retaining the chip in a predetermined location in the chip holder, and a tool placement referencing guide, the dimensions and shape of said guide corresponding to dimensions and corresponding shape of a chip grasping portion of a chip handling tool, whereby the chip handling tool may be guided at a predetermined and invariably specific accessing and grasping sector of a chip retained in said apparatus.

4,763,176

METAL-SEMICONDUCTOR-METAL SCHOTTKY PHOTODIODE

Masanori Ito, Sagamihara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 7, 1987, Ser. No. 1,031
Claims priority, application Japan, Jan. 8, 1986, 61-000776
Int. Cl.[4] H01L *29/48, 27/14, 23/48*
U.S. Cl. 357—15 8 Claims

1. A metal-semiconductor-metal photodiode having reduced dark current characteristics comprising:

a semiconductor layer having an energy band gap Eg;

a cathode electrode formed on said semiconductor layer so as to form a first Schottky barrier with said semiconductor layer, said cathode electrode being made of a first electrode material having a first Schottky barrier height ϕ_{bn} from a conduction band of said semiconductor layer satisfying the relationship $\phi_{bn} > Eg/2$;

an anode electrode formed on said semiconductor layer so as to form a second Schottky barrier with said semiconductor layer, said anode electrode being made of a second



electrode material different from said first electrode material and having a second Schottky barrier height ϕ_{bp} from a valence band of said semiconductor layer satisfying the relationship $\phi_{bp} > Eg/2$; and

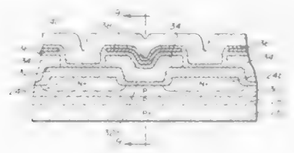
a bias voltage means, operatively connected between said cathode electrode and said anode electrode, for applying a bias voltage so as to make the voltage of said anode electrode higher than that of said cathode electrode.

4,763,177

READ ONLY MEMORY WITH IMPROVED CHANNEL LENGTH ISOLATION AND METHOD OF FORMING

James L. Paterson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 702,562, Feb. 19, 1985, abandoned.
This application May 20, 1987, Ser. No. 54,113
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.5 13 Claims



1. A non-volatile memory cell formed in a substrate having a semiconductor surface portion of a first conductivity type, comprising:

a source region and a drain region, each comprising a second conductivity type diffusion at the surface of said substrate having thick oxide thereover;

a channel region comprising a portion of said substrate underlying a recess therein between said source and drain regions;

a thin gate insulator overlying said channel region;

sidewall dielectric covering the sidewalls of said recess;

a floating gate comprising a dielectrically isolated conductive layer overlying said channel region and extending onto said thick oxide over said source and drain regions; and

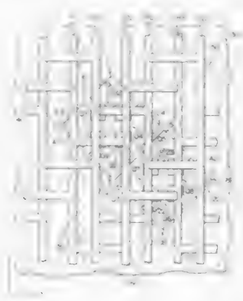
a control gate overlying and capacitively coupled to said floating gate.

4,763,178

SEMICONDUCTOR MEMORY DEVICE

Koji Sakui, Tokyo, and Mitsugi Ogura, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 515,670, Jul. 20, 1983, abandoned. This application Nov. 7, 1986, Ser. No. 928,694
Claims priority, application Japan, Jul. 28, 1982, 57-131567
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.6 11 Claims



1. A semiconductor memory device comprising:

a semiconductor substraste having a surface and a first conductivity type;

a plurality of cell groups which are formed on said substrate in such a manner that each group has a group area of a substantially square shape upon the substrate surface and includes four memory cells each having a switching transistor and a capacitor and a single semiconductor layer of a second conductivity type serving as a common drain region for all transistors included therein, said four memory cells being respectively positioned at four corners of the square-shaped cell area such that the area of the switching transistor and of the capacitor of one memory cell is symmetrical with the area of the switching transistor and of the capacitor of the diagonally associated memory cell; and

parallel gate wiring lines which are electrically connected to gates of transistors included in said cell groups,

said gate wiring lines being formed in first and second stacking wiring pattern layers which are provided over said substrate, and

said square-shaped cell area being arranged on said substrate in such a manner as to be positioned aslant the extending direction of said gate wiring lines by substantially forty-five degrees.

4,763,179

SEMICONDUCTOR MEMORY DEVICE

Natsuro Tsubouchi, and Masafumi Kimata, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,377, Nov. 22, 1985, abandoned.
This application Jun. 24, 1987, Ser. No. 67,398
Claims priority, application Japan, Dec. 5, 1984, 59-258671
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.6 3 Claims

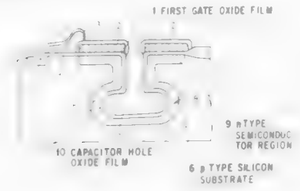
1. A semiconductor memory device using a capacitor as a memory device, comprising:

a substrate (6) of a first conductive type formed with a generally vertical hole (21) extending substantially vertically to an upper surface thereof and including an en-

VOL 1093 ISS 2 AG 9 1988 UMI

larged buried well formed within the substrate at a lower end of the generally vertical hole, a semiconductor region (9) of a second conductive type formed in said substrate (6) of the first conductive type, said semiconductor region (9) extending along said generally vertical hole (21) and along said enlarged buried well, and

said enlarged buried well establishing a capacitor region



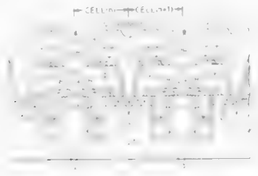
between said substrate (6) of the first conductive type and said semiconductor region (9) of the second conductive type, said buried well being an isotropically etched well thereby having a generally flat bottom surface and including a curved surface region (8) extending continuously between said bottom to the lower end of the generally vertical hole, said well being wider than the generally vertical hole.

4,763,180

METHOD AND STRUCTURE FOR A HIGH DENSITY VMOS DYNAMIC RAM ARRAY

Wei Hwang, Armonk; Stanley E. Schuster, Granite Sprints, and Lewis M. Terman, South Salem, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1986, Ser. No. 945,275
Int. Cl.[4] H01L *27/04*; **G11C** *11/40*
U.S. Cl. 357—23.6 **4 Claims**



1. A semiconductor memory storage cell comprising a semiconductor substrate,

at least two laterally spaced vertical trenches disposed in said substrate, said trenches being filled with doped polysilicon material,

conductive material disposed between each of said laterally spaced trenches to form a conductive path between said doped polysilicon material in each of said trenches,

a layer of epitaxial material disposed over said substrate covering at least said conductive material between said trenches,

a doped layer region on the surface of said epitaxial layer,

a V-shaped groove disposed in said epitaxial layer between said trenches said V-shaped groove extending through said doped layer region on the surface of said epitaxial layer, through said epitaxial layer, and through said conductive material between said trenches, and

a layer of insulating material disposed on the sides of said V-shaped groove and over said doped surface of said epitaxial material,

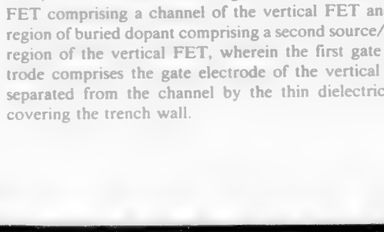
wherein said insulator coated V-shaped groove provides a gate oxide which separates said conductive material between said trenches and said polysilicon filled trenches into separate storage capacitor means, and further separates said doped layer region on said epitaxial layer surface into separate bit lines.

4,763,181

HIGH DENSITY NON-CHARGE-SENSING DRAM CELL

Al F. Tasch, Jr., Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1986, Ser. No. 938,913
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.6 **17 Claims**



1. A high density non-charge-sensing dynamic random access memory (DRAM) cell in a semiconductor substrate comprising:

a region of buried dopant within the substrate;

a vertical trench capacitor extending into the substrate into contact with the region of buried dopant, the trench capacitor comprising:

a trench wall forming a first plate electrode of the trench capacitor;

a thin dielectric film covering the trench wall leaving a narrowed trench; and

a first gate electrode of conductive material filling the narrowed trench and forming a second plate electrode of the trench capacitor;

a first lateral field effect transistor (FET) in the substrate, the first lateral FET having first and second source/drain regions spaced apart from each other by a channel region which is covered by a second gate electrode insulated from the channel region, the first gate electrode of the trench capacitor being in electrical contact with the first source/drain region of the lateral FET;

a second lateral FET adjacent the vertical trench capacitor, but spaced apart from the first lateral FET, the second lateral FET having a first source/drain region along the trench wall of the vertical trench capacitor and a second source/drain region in the substrate separated from each other by a channel region covered by a third gate electrode insulated from the channel; and

a vertical FET on the trench wall of the capacitor adjacent the second lateral FET, the channel of the second lateral FET comprising a first source/drain region of the vertical FET, the first source/drain region of the second lateral FET comprising a channel of the vertical FET and the region of buried dopant comprising a second source/drain region of the vertical FET, wherein the first gate electrode comprises the gate electrode of the vertical FET separated from the channel by the thin dielectric film covering the trench wall.

4,763,182

SEMICONDUCTOR MEMORY DEVICE WITH DEEP BIT-LINE CHANNEL STOPPER

Hiroji Ozaki; Shinichi Sato; Akira Tokui; Akira Kawai; Masayuki Nakajima, and Masao Nagatomo, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1986, Ser. No. 941,216
Claims priority, application Japan, Dec. 16, 1985, 60-284627
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.6 **2 Claims**



1. A semiconductor memory device comprising a first conductivity type semiconductor substrate formed thereon with a second conductivity type charge storage region, a second conductivity type region service as a bit line, and first and second gate electrodes on a surface thereof,

said device further comprising first conductivity type highly concentrated regions having deep junctions disposed between a portion of said second conductivity type charge storage region said substrate and separating said bit line region and said substrate, said highly concentrated regions being at least ten times higher in concentration than said first conductivity type semiconductor substrate,

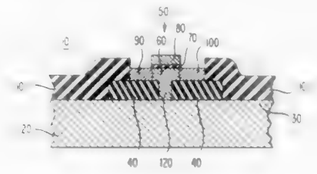
said highly concentrated region at said bit line region being deeper in said substrate than said highly concentrated region at said storage region and thinner at the side interface with said bit line region than at the bottom thereof, said highly concentrated regions being formed by ion implantation in a direction perpendicular to the surface of said substrate.

4,763,183

SEMICONDUCTOR-ON-INSULATOR (SOI) DEVICES AND SOI IC FABRICATION METHOD

Kwok K. Ng, Union, and Simon M. Sze, Berkeley Heights, both of N.J., assignors to American Telephone and Telegraph Co., AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 636,730, Aug. 1, 1984, abandoned. This application Oct. 24, 1986, Ser. No. 921,899
Int. Cl.[4] H01L *29/78, 27/12, 29/80, 29/48*
U.S. Cl. 357—23.7 **8 Claims**



1. A device, comprising:

a substrate which includes semiconductor material, a first region of electrically insulating material, and a non-active region; and

a first volume of substantially single-crystal semiconductor material overlying said region of insulating material,

CHARACTERIZED IN THAT

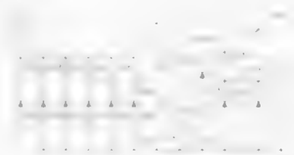
said device further comprises an electrically conductive pathway, having a resistance less than about 100 kilohms, extending from said volume to, and terminating in, said non-active region of said substrate, and an electrical contact to said substrate adapted for applying a back-gate bias to said device.

4,763,184

INPUT CIRCUIT FOR PROTECTING AGAINST DAMAGE CAUSED BY ELECTROSTATIC DISCHARGE

Gadi Krieger, Stanford, and Boaz Eitan, Sunnyvale, both of Calif., assignors to WaferScale Integration, Inc., Fremont, Calif.

Filed Apr. 30, 1985, Ser. No. 728,738
Int. Cl.[4] H01L *29/78, 27/02, 29/72*; **H02H** *9/00*
U.S. Cl. 357—23.13 **15 Claims**



1. A circuit for coupling to a bonding pad and for protecting an input transistor comprising:

a plurality of diodes, each diode within said plurality of diodes having a first lead coupled to ground and a second lead;

a plurality of resistors, each resistor associated with one of said diodes within said plurality of diodes, each resistor coupled between the second lead of said associated diode and said bonding pad, said resistors tending to cause an even current distribution between said diodes when said diodes break down;

a bipolar transistor having a collector coupled to said bonding pad, a base resistively coupled to ground, and an emitter coupled to ground, said bipolar transistor conducting current in response to a voltage at said bonding pad greater than the base collector break down voltage, whereby said bipolar transistor prevents damage to said input transistor when an electrostatic discharge pulse is applied to said bonding pad; and

a resistor diode network comprising:

a first resistor having a first lead connected to said bonding pad and a second lead;

a first diode having a first lead coupled to said second lead of said first resistor and a second lead coupled to ground;

a second resistor connected having a first lead connected to the second lead of said first resistor and a second lead;

a second diode having a first lead coupled to the second lead of said second resistor and a second lead coupled to ground, said second

lead of said second diode being resistively

coupled to the gate of said input transistor, whereby said plurality of diodes, said transistor and said resistor diode network act to prevent damage to said input transistor when a large voltage is applied to said bonding pad.

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,185

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAME

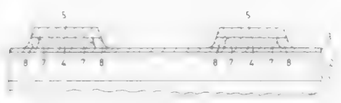
Hermanus L. Peek, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 24, 1983, Ser. No. 507,409

Claims priority, application Netherlands, Jul. 9, 1982, 8202777

Int. Cl.[4] H01L *29/34*

U.S. Cl. 357—54 12 Claims



1. A semiconductor device comprising:
a semiconductor body having a surface,
a first insulating layer on the surface,
at least one pattern of conductor strips on the first insulating layer,
a pattern of a second insulating layer comprising strips overlying each of the conductor strips, the second insulating layer being of the same material as that of the first insulating layer, and the insulating strips having edges projecting beyond the conductor strips to form tracks between the first and second insulating layers, and
a pattern of a third insulating layer covering at least the sides of the conductor strips in the tracks, the third insulating layer being of a different material than that of the first and second insulating layers, and the third insulating layer being selectively etchable with respect to the first insulating layer.

4,763,186

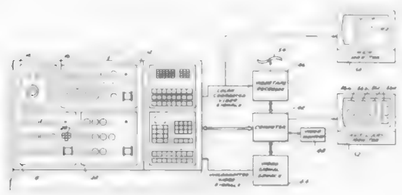
COLOR CORRECTION SYSTEM WITH MONITOR FOR USE IN RECALLING COLOR CORRECTIONS AND CORRESPONDING METHOD

Armand Belmares-Sarabia, Catskill, N.Y., and Stanley J. Chayka, Parsippany, N.J., assignors to Corporate Communications Consultants, Inc., Fairfield, N.J.

Continuation-in-part of Ser. No. 598,468, Apr. 9, 1984, Pat. No. 4,679,067, and a continuation-in-part of Ser. No. 851,164, Apr. 14, 1986. This application Dec. 17, 1986, Ser. No. 943,298

Int. Cl.[4] H04N *9/64, 9/74*

U.S. Cl. 358—22 36 Claims



1. A color correction system for color correcting video picture signals representative of images stored in an image recording medium and displayed as video pictures by a first display means, comprising:
color correction means for selectively generating color correction signals for at least one selected frame of each of a plurality of scenes recorded on said image recording medium;
storage means for storing said color correction signals;
second display means for displaying a plurality of pictures, each picture corresponding to the video picture signals for one of said selected frames; and
recall means for recalling from storage the color correction signals for a selected one of said frames displayed by said second display means.

4,763,187

METHOD OF FORMING IMAGES ON A FLAT VIDEO SCREEN

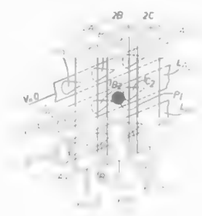
Jean P. Biberian, Marseilles, France, assignor to Laboratoire d'Etude Des Surfaces, Marseilles, France

Filed Mar. 8, 1985, Ser. No. 709,671

Claims priority, application France, Mar. 9, 1984, 84 03877

Int. Cl.[4] H04N *9/12*

U.S. Cl. 358—56 9 Claims



1. A method of forming images on a flat video screen by a line- and column-addressed point matrix using field emission tips as electron sources, said tips being connected in respective lines, and respective fluorescent screen portions for said tips being connected in columns, said method comprising
applying successively an electric field between each of said tips and the respective fluorescent screen portion such that the respective tip emits electrons and forms on said flat video screen a respective light spot, the intensity of which depends upon the applied electric field for attracting electrons,
while simultaneously blocking emission from others of said tips by applying a negative voltage to the columns other than the column in which the electron emission from the respective tip is occurring,
and successively switching the addressed line and column to selectively form on the flat video screen successive luminous spots corresponding to the matrix,
wherein both the intensity of the emitted electrons from the respective tip and the energy of the electrons reaching the respective fluorescent screen portions are modulated by separating the addressing and the light intensity modulation functions by means of at least a first grid between each respective tip and fluorescent screen portion, and by applying an addressing voltage to two of the respective tip, grid and fluorescent screen portion and a modulation voltage to the third one thereof.

4,763,188

PACKAGING SYSTEM FOR MULTIPLE SEMICONDUCTOR DEVICES

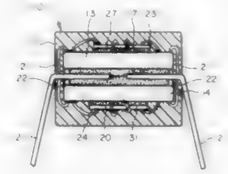
Thomas Johnson, 1936 Highland, Northbrook, Ill. 60062

Continuation of Ser. No. 894,557, Aug. 8, 1986, abandoned. This application Nov. 4, 1987, Ser. No. 117,917

Int. Cl.[4] H01L *23/02*

U.S. Cl. 357—74 15 Claims

1. A high density integrated circuit packaging system comprising:
a first substrate assembly including a first generally wafer-shaped substrate having inside and outside surfaces, a first metalization layer forming a first electrical interconnection network on said outside surface, at least one integrated circuit device mounted on said outside surface and including a plurality of electrical contacts for establishing electrical connection therewith, and first electrical interconnection means for connecting said contacts with said first electrical interconnection network;
a second substrate assembly including a second generally wafer-shaped substrate having inside and outside surfaces, a second metalization layer forming a second electrical interconnection network for devices and said outside surface, and at least one integrated circuit device mounted on said outside surface and including a plurality of electrical contacts for establishing electrical communication therewith, and second electrical interconnection means for connecting said contacts with said second electrical interconnection network;
said substrates having like dimensions and being disposed in a parallel-spaced arrangement;



a lead frame including a plurality of leads each having a proximate end and a distal end, said proximate ends of said leads being arranged in generally opposed pairs in a generally planar configuration and each including an interior portion disposed between and engaged by said inside surfaces of said substrates whereby said leads are fixedly positioned relative to said substrates, and an exterior portion disposed outside of said substrate arrangement for establishing electrical, connections to said lead;
bonding means for securing said substrates on either side of said interior portions of said proximate lead ends; and
connection means for electrically interconnecting said exterior portions of said proximate lead ends with said first and second electrical interconnection networks whereby said integrated circuit devices are electrically interconnected and electrically accessible through said leads.

4,763,189

COLOR IMAGE SENSOR WITH THREE LINE SENSORS ON DIFFERENT LAYERS SEPARATED BY ELECTRICALLY-INSULATING LAYERS

Toshiyuki Komatsu, Yamato; Masaki Fukaya, Yokohama; Tatsumi Shoji, Hiratsuka; Masaru Kamio, Atsugi; Nobuyuki Sekimura; Katsumi Nakagawa, both of Kawasaki; Hirofumi Iwamoto, Machida, and Shinichi Seitoh, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 908,883, Sep. 15, 1986, which is a continuation of Ser. No. 770,085, Aug. 28, 1985, abandoned. This application Mar. 19, 1987, Ser. No. 28,052

Claims priority, application Japan, Aug. 31, 1984, 59-180684; Sep. 4, 1984, 59-183746

Int. Cl.[4] H04N *1/46, 1/028;* H01L *27/14, 31/00*

U.S. Cl. 358—75 8 Claims

1. A line sensor for color reading which comprises:
a substrate;
a first line sensor and a first electrode-wiring portion electrically connected to said first line sensor provided on said substrate;
a first electrically-insulating layer provided at least on said first electrode-wiring portion;
a second line sensor and a second electrode-wiring portion electrically connected to said second line sensor provided on said first electrically-insulating layer;
a second electrically-insulating layer provided at least on said second electrode-wiring portion;
a third line sensor and a third electrode-wiring portion electrically connected to said third line sensor provided on said second electrically-insulating layer; and



color filters having different color separation characteristics from each other, provided so as to correspond to said first, second and third line sensors.

4,763,190

DIGITAL COLOR CORRECTION CIRCUIT

Ronald W. Froelich, Covina, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1986, Ser. No. 880,241

Int. Cl.[4] G03F *3/08*

U.S. Cl. 358—79 3 Claims



1. A copier circuit for converting first, second and third raster input scanner color signals into an ink signal representing an amount of ink needed to print a dot on a color copy comprising:
first, second and third means for converting said first, second and third color signals into first, second and third functions of said first, second and third signals by multiplying each signal by its own factor,
fourth, fifth and sixth means for converting said second, third and first color signals into fourth, fifth and sixth functions of said second, third and first color signals by multiplying each signal by its own factor,
seventh, eighth and ninth means for converting said third, first and second color signals into seventh, eighth and ninth functions of said third, first and second color signals by multiplying each signal bit its own factor,
first means for substracting said second and third functions from said first function to produce a first ink signal,
second means for subtracting said fifth and sixth functions from said fourth function to produce a second ink signal,
third means for subtracting said eighth and ninth functions from said seventh function to produce a third ink signal.
means for comparing said first, second and third ink signals and outputting a signal representing a least amount of ink.

VOL 1093 ISS 2 AG 9 1988 UMI

means for selecting one of said first, second or third ink signals as an ink to be printed as the current dot,

means for substracting said least amount of ink signal from said selected current dot ink signal to determine an amount of the selected ink to be printed.

4,763,191

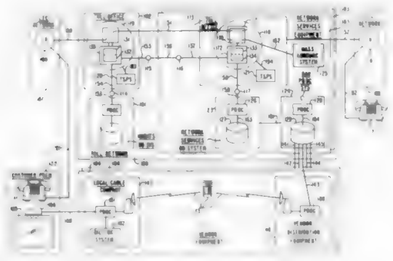
DIAL-UP TELEPHONE NETWORK EQUIPMENT FOR REQUESTING AN IDENTIFIED SELECTION

Travis H. Gordon, Madison, Steven D. Simon, and Robert Sorrentino, both of Middletown, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 17, 1986, Ser. No. 840,375

Int. Cl.[4] H04M *11/08, 15/00;* H04N *7/10;* H04H *9/00*

U.S. Cl. 358—86 50 Claims



1. A telecommunications network comprising:

a first switching office responsive to a number from a calling station for controlling establishment of a call for requesting video programming identified by said number,

a network routing database system serving at least one other switching office and said first office and responsive to said number for providing a routing message for said first office to route said call to network services equipment, and

said network services equipment serving at least one other switching office and said first office and being responsive to said call for forwarding an identity of said identified video programming and information identifying said calling station to vendor equipment for supplying said identified programming to customer equipment identified by said calling station identifying information.

24. A method of charging for a call routed in response to a telephone number to network services equipment under control of a network database system serving a plurality of switching systems, said call for automatically requesting a selection specified by said telephone number, comprising:

deriving at said network services equipment in response to said call a charge for said call routed thereto under control of said network database system, and

deriving at said network services equipment a charge for supplying selection supply facilities a message indicating said selection.

50. An interconnect carrier switching system serving a plurality of local exchange switching systems comprising:

means responsive to a call from a calling station having an identity and served by one of said local exchange systems, said call being originated with a number identifying an order selection requested from said calling station, for obtaining said calling station identity from either said one local exchange system or said calling station; and

means responsive to said selection identifying number for extending said call, including forwarding said calling station identity and information identifying said selection specified by said selection identifying number, to network services equipment serving said interconnect carrier switching system and at least one other switching system.

4,763,192

IMAGING APPARATUS

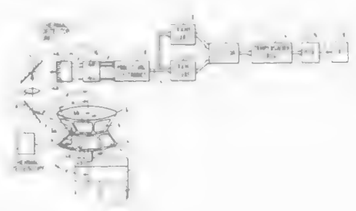
William T. Moore, Buckhurst Hill; Paul J. Robertson, Ilford, United Kingdom, and Kenneth J. Wallace, Woodford Green, England, assignors to Rank Pullin Controls Limited, Loughton, England

Filed Aug. 19, 1986, Ser. No. 897,855

Claims priority, application United Kingdom, Aug. 22, 1985, 8521018

Int. Cl.[4] H04N *5/33, 3/08*

U.S. Cl. 358—113 25 Claims



1. Imaging apparatus, comprising;

optical image forming means for optically forming a first image; and

electronic means for producing a second image defined by signals provided in a plurality of scan lines, said optical means and said electronic means being coupled together such that one of said images is producible from the other but with different amounts of distortion in different lines;

said electronic means including conversion means for converting said signals between analogue form and digital form at any one of a plurality of discrete frequencies, and control means controlling said conversion means to vary the relative time periods during which said conversion is performed at different ones of said frequencies in each line as a function of the amount of said distortion in said line to compensate for said distortion.

4,763,193

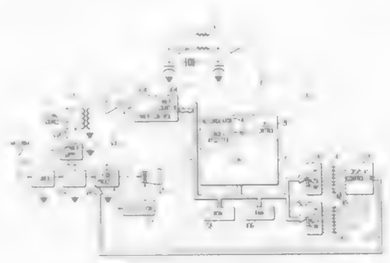
AUTOMATIC DETERMINATION OF TIME BASE IN ELECTRONIC TIME-KEEPING APPARATUS

Warren C. DeVilbiss, Noblesville, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Jan. 8, 1987, Ser. No. 1,361

Int. Cl.[4] G04F *5/00;* H04N *5/262*

U.S. Cl. 358—149 10 Claims



1. Apparatus for use in a television receiver capable of tuning television signals broadcast in accordance with one of plural different broadcast standards, comprising:

counting means for counting transitions of one of plural external time-base signals said counting means generating signals indicative of time when counts of said counting means attain a reference value;

oscillator means for producing an oscillator signal at a predetermined frequency greater than the highest frequency of said plural external signals;

frequency determining means responsive to said time-base signal and said oscillator signal for determining the frequency of said time-base signal;

control means responsive to said frequency determining means for changing said reference value in response to said frequency determination; and

means for responsive to said control signal for causing said receiver to properly process a television signal broadcast with one of said broadcast standards in accordance with the condition of said control signal.

4,763,194

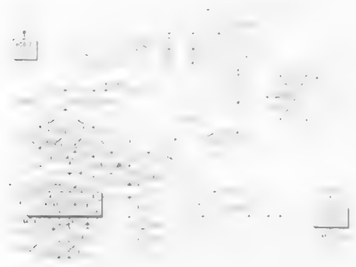
SELECTABLE RASTER SIZE FOR VIDEO DISPLAY

Peter D. Osman, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Continuation of Ser. No. 765,734, Aug. 14, 1985, abandoned. This application Oct. 9, 1987, Ser. No. 107,127

Int. Cl.[4] H04N *5/63*

U.S. Cl. 358—180 11 Claims



1. A video display apparatus including means for generating rasters having different horizontal and vertical deflection amplitudes comprising:

means for receiving a digitally encoded signal;

means for decoding said digitally encoded signal for generating one of a plurality of first signals in response to information embodied in said digitally encoded signal, each of said one of said first signals identifying a predetermined horizontal deflection amplitude, and for generating one of a plurality of second signals in response to information embodied in said digitally encoded signal, each of said one of said second signals identifying a predetermined vertical deflection amplitude;

means for generating horizontal deflection current having a maximum amplitude determined in response to said first signals; and

means for generating vertical deflection current having a maximum amplitude determined in response to said second signals.

4,763,195

TELEVISION TUNING SYSTEM WITH PROVISIONS FOR QUICKLY LOCATING ACTIVE CABLE CHANNELS

Juri Tults, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed May 8, 1987, Ser. No. 47,849

Int. Cl.[4] H04N *5/50*

U.S. Cl. 358—193.1 6 Claims



1. Tuning apparatus for a television channel comprising:

an RF input for providing a plurality of RF signals corresponding to respective channels; each of said RF signals having a carrier with either a standard broadcast frequency or a non-standard frequency which may be offset from a respective one of said standard frequencies; some of said non-standard frequencies being predictable and others of said non-standard frequencies being unpredictable;

RF means for providing one of said RF signals;

local oscillator means generating a local oscillator signal having a frequency determined by a control signal;

mixer means for combining said one RF signal and said local oscillator signal to produce at an output an IF signal having a carrier corresponding to said carrier of said one RF signal;

detector means coupled to said output of said mixer means for generating an output signal indicating whether or not said carrier of said IF signal is present;

channel selection means coupled to a control means for selecting channels to be tuned; and

said control means being coupled to said detector means for generating said control signal for controlling the frequency of said local oscillator signal;

for each channel that is selected, said control means being responsive to said output signal of said detector means for initially automatically causing the frequency of said local oscillator signal to change in first steps between frequencies in a first group of a first plurality of frequencies corresponding to said predictable frequencies and for thereafter automatically causing the frequency of said local oscillator signal to change in second steps between frequencies in a second group of a second plurality of frequencies which is greater than said first group and which extends over a larger frequency range

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4,763,196

IMAGE SENSING DEVICE

Shinji Sakai, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 621,503, Jun. 18, 1984. This application Jun. 29, 1987, Ser. No. 68,736

Claims priority, application Japan, Jun. 20, 1983, 58-111721

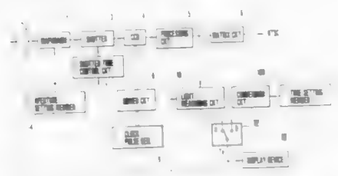
Int. Cl.[4] H04N *3/14*

U.S. Cl. 358—213.13 40 Claims

1. An image sensing device comprising:

VOL 1093 ISS 2 AG 9 1988 UMI

(a) image sensing means for converting an optical image into an electrical signal;
(b) reading means for reading out the electrical signal of said image sensing means at a standard television period; and
(c) time control means for discretely controlling image signal forming time at said image sensing means, said time



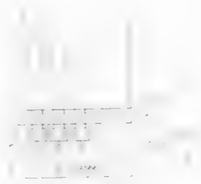
control means being capable of selecting for said control a plurality of time values Td satisfying the following condition at least in cases where the value Td is smaller than Ts; $Td = Ts \times 2^{-n}$, wherein Ts represents the vertical period of a standard television signal, and n represents natural numbers.

4,763,197
CHARGE DETECTING CIRCUIT
Shinji Masuda, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Jul. 28, 1986, Ser. No. 891,354
Claims priority, application Japan, Jul. 26, 1985, 60-166477
Int. Cl.[4] H04N 3/14
U.S. Cl. 358—213.16 33 Claims



22. A charge detecting circuit comprising:
a plurality of charge storage type detecting elements;
a first multiplexer having a plurality of inputs connected to the detecting elements, respectively and operative to selectively connect one of its inputs to its output,
a bias voltage source connected through a first preconditioning switch to the output of the first multiplexer;
a first isolation switch connected at its one end to the output of the first multiplexer, the first isolation switch being adapted to be turned on when the first preconditioning switch is turned off and to be turned off when the first preconditioning switch is turned on;
an amplifier having an input connected to the other end of the first isolation switch and operative to generate a charge detection signal;
at least one dummy element having substantially the same impedance as the detecting elements;
a second preconditioning switch connected at its one end to the dummy element; and
A second isolation switch connected at its one end to the dummy element ; and
wherein the amplifier is a differential amplifier having a first input connected to the output of the first multiplexer and a second input connected to the other end of the second isolation switch, and operative to generate a charge detection signal;
the first and second isolation switches and the first and second preconditioning switches being operated in synchronism in such a manner that when the first and second isolation switches assume the same on-off condition, the first and second preconditioning switches assume the same on-off condition which is opposite to the on-off condition of the first and second isolation switches.

4,763,198
INTERLINE TRANSFER CCD SENSOR WITH A CID READOUT STAGE
Masatoshi Tabei, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 2, 1987, Ser. No. 33,376
Claims priority, application Japan, Apr. 2, 1986, 61-74153; Apr. 2, 1986, 61-88256; Apr. 2, 1986, 61-89506
Int. Cl.[4] H04N 3/14
U.S. Cl. 358—213.26 6 Claims



1. An image sensor, comprising:
a plurality of photosensing elements arranged in a plurality of columns;
a plurality of vertical transfer CCDs arranged along said columns between said columns for receiving imaging signals from said photosensing elements and shifting said imaging signals to first positions near respective ends of a plurality of signal channels of said vertical transfer CCDs;
a first MOS gate electrode commonly applied to said signal channels at said first position for gating in parallel said imaging signals to second positions nearer said respective ends;
a plurality of second MOS gate electrodes respectively applied at said second positions for injecting said imaging signals to a substrate underlying said second MOS gate electrodes;
means for separately controlling said second MOS gate electrodes; and
means for sensing charge injected into said substrate.

4,763,199
IMAGE PROCESSING APPARATUS AND METHOD OF ADJUSTING SAME
Yoshiyuki Suzuki, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 16, 1986, Ser. No. 919,763
Claims priority, application Japan, Oct. 17, 1985, 60-229958
Int. Cl.[4] H04N 1/04
U.S. Cl. 358—280 14 Claims

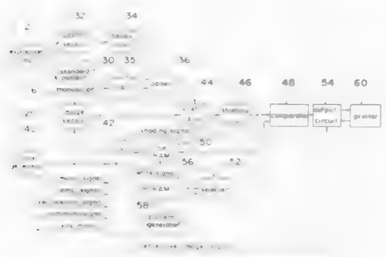
1. An image processing apparatus comprising:
image data inputting means;
means, including a reference conversion characteristic for converting the characteristic of said image data, for producing conversion data for said image data based on said

reference characteristic and at least one predetermined correction parameter; and
means for outputting a pulse-width modulated signal using



said conversion data and a pattern signal having a predetermined period;
wherein said predetermined parameter is associated with said pattern signal.

4,763,200
IMAGE OUTPUT APPARATUS
Munehiro Nakatani, and Masamichi Sugiura, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Apr. 9, 1986, Ser. No. 849,885
Claims priority, application Japan, Apr. 11, 1985, 60-78042; Apr. 22, 1985, 60-87262
Int. Cl.[4] H04N 1/40
U.S. Cl. 358—282 16 Claims



1. An image scanning apparatus, comprising:
a platen on which an original is to be placed;
a scanning means for scanning the original, which scanning means includes a lens means for projecting an image of the original on an imaging plane and an image sensor means for sensing the image projected on the imaging plane, which image sensor means consists of a plurality of sensor elements arranged linearly relative to the imaging plane;
an area determining means for determining a real image area from the original on the data sensed by the image sensor means;
an attributes evaluating means for evaluating attributes of the image processing based on the data sensed by the image sensor means and for setting a threshold value to be used for the image processing; and
a means for controlling the scanning means on the movement in a preliminary scanning motion and then in an actual scanning motion, wherein when the scanning means is put in the preliminary scanning motion, the area determining means and the attributes evaluating means are activated to determine the real image area, attributes, and the threshold value, and when the scanning means is put in the actual scanning motion, the image data of the original sensed by the image sensor means is outputted according to the actual scanning motion with making reference to the real image area, the attributes, and the threshold value having beeen obtained in the preliminary scanning motion.

4,763,201
IMAGE READOUT APPARATUS
Masahiro Sakamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 7, 1986, Ser. No. 827,153
Claims priority, application Japan, Feb. 15, 1985, 60-026419
Int. Cl.[4] H04H 1/40
U.S. Cl. 358—282 13 Claims



1. An image readout apparatus comprising:
reading means for reading an original image;
storage means for storing a shading distortion wave signal obtained by said reading means while reading an image having a predetermined reflectance;
shading distortion wave signal reading means for reading the shading distortion wave signal from said storage means while reading the original image;
variable changing means for variably and totally changing, based on the shading distortion wave signal read out from said shading distortion wave signal reading means and an output of said reading means, a level of the shading distortion wave signal such that the output value of said reading means corresponding to a maximum-reflectance portion of the original image coincides with the shading distortion wave signal; and
quantizing means for quantizing the output signal of said reading means on the basis of the shading distortion wave signal output from said variable changing means.

4,763,202
TIME DIVISION MULTIPLEX VIDEO RECORDER WITH HIGH RESOLUTION
William K. Hickok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 6, 1986, Ser. No. 915,486
Int. Cl.[4] H04N 9/80
U.S. Cl. 358—319 17 Claims



1. A time division multiplex video tape recorder characterized by a bandwidth-limiting tape-to-head interaction cut-off frequency, and adaptable to record an incoming video signal, said video signal including luminance and chrominance signals occurring during an active interval, and a sync pulse prefix appended to said luminance signal and occurring during a blanking interval, said video signal being characterized by a sync repetition period, said recorder comprising:

VOL 1093 ISS 2 AG 9 1988 UMI

means for separating said chrominance signal from the remainder of said video signal including said luminance signal and said sync pulse prefix;

means for removing said sync pulse prefix from said luminance signal and appending it to said chrominance signal;

means, characterized by a luminance compression ratio, for time compressing said luminance signal from which said sync pulse prefix has been removed into a first time segment;

means, characterized by a chrominance compression ratio greater than said luminance compression ratio, for time compressing said chrominance signal with said sync pulse prefix into a second time segment, wherein the combined duration of said first and second segments corresponds to said sync repetition period; and

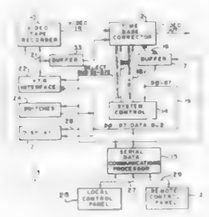
means for magnetically recording in succession said first and second segments onto a video tape, whereby said chrominance signal occupies only a portion of said second segment not occupied by said sync pulse prefix and said sync pulse prefix is compressed with said chrominance signal in accordance with said chrominance compression ratio, while said luminance signal occupies the entirety of said first segment, so as to minimize the luminance time-compressed bandwidth whereby to reduce the portion of said time-compressed luminance bandwidth which extends beyond said cut-off frequency.

4,763,203

TIME BASE CORRECTOR WITH ACCURATE TIMING CORRECTOR CONTROL

Reginald W. Oldershaw, Redwood City; Steven D. Wagner, San Jose, and Jan S. Wesolowski, Redwood City, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Oct. 17, 1985, Ser. No. 788,997
Int. Cl.[4] H04N 5/76
U.S. Cl. 358—320 21 Claims



1. A digital time base corrector for correcting time base errors of an unstabilized video signal of digital data samples by synchronizing the video signal with a reference signal, wherein the video signal is coherent with a plurality of unstable timing components including a subcarrier frequency, a horizontal frequency which is a multiple of the subcarrier frequency, and a vertical frequency which is a multiple of the horizontal frequency and wherein the reference signal includes a plurality of stable timing components including a reference subcarrier frequency, a reference horizontal frequency which is a multiple of the reference subcarrier frequency, and a reference vertical frequency which is a multiple of the reference horizontal frequency, said time base corrector comprising:

first clock generating means for generating a plurality of unstable clock signals timed to the unstable timing components including a first clock signal coherent with the subcarrier frequency, a second clock signal coherent with the horizontal frequency, and a third clock signal coherent with the vertical frequency;

second clock generating means for generating a plurality of reference clock signals timed to the stable timing components including a first reference clock signal coherent with the reference subcarrier frequency, a second reference clock signal coherent with the reference horizontal frequency , and a third reference clock signal coherent with the reference vertical frequency;

first memory means for storing at least three of said data samples;

first writing means for generating write addresses and control signals for said first memory means to effect storing of said data samples in said first memory means synchronously with said first clock signal;

first reading means for generating read addresses and control signals for said first memory to effect reading of said data samples from said first memory means synchronously with said first reference signal, including means for changing the read address for selected states of the write address so that the read and write addresses do not conflict and all data samples written into said first memory are read from said first memory;

second memory means for storing said data samples as they are read from said first memory in increments of video horizontal lines, said second memory means being long enough to buffer the difference between the data rate of writing horizontal lines of said data samples at the rate of said second clock and the data rate of reading horizontal lines of said data samples at the rate of said second reference clock;

second writing means for generating write addresses and control signals for said second memory means to effect storing of said data samples in said second memory means synchronously with said second clock signal;

second reading means for generating read addresses and control signals for said second memory to effect reading of said data samples from said second memory means synchronously with said second reference clock signal, including means for changing the second read address for selected states of the second write address so they do not conflict and the data samples are read out of the second memory means at the rate of said second reference clock;

third memory means for storing said data samples as they are read from said second memory means in increments of horizontal video lines; said third memory means being long enough to buffer the phase error difference between said third clock signal and said third reference clock signal;

third writing means for generating write addresses and control signals for said third memory means to effect storing of said data sample in said third memory means synchronously with said third clock signal; and

third reading means for generating read addresses and control signals for said third memory means to effect reading of said data samples from said third memory means synchronously with said third reference clock signal.

4,763,204

SOLID STATE IMAGE PICK-UP DEVICE HAVING A SHUTTER WHICH IS CAPABLE OF STILL AND MOTION PICTURE PHOTOGRAPHY

Takao Kinoshita, Tokyo; Akihiko Tojo, Kanagawa; Tsutomu Takayama, Kanagawa; Toshio Kaji, Kanagawa, and Nobuyoshi Tanaka, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 452,500, Dec. 23, 1982, Pat. No. 4,599,657. This application May 7, 1986, Ser. No. 860,513
Claims priority, application Japan, Dec. 29, 1981, 56-215333; Dec. 29, 1981, 56-215337; Dec. 29, 1981, 56-215342; Dec. 29, 1981, 56-215343; Dec. 29, 1981, 56-215344; Dec. 29, 1981, 56-215345
Int. Cl.[4] H04N 5/76
U.S. Cl. 358—335 18 Claims

1. An image pick-up device comprising:

(a) image pick-up means for converting an optical image into an electrical signal;

(b) control means having a first mode for causing said image pick-up means to generate signals for one image and a second mode for causing said image pick-up means to intermittently generate signals for a predetermined plurality of images; and



(c) exposure means for exposing said image pick-up means for a predetermined limited period in said first mode of said control means, and exposing said image pick-up means all the time in said second mode of said control means.

4,763,205

METHOD OF TIME AXIS CONTROL IN AN INFORMATION RECORDING SYSTEM FOR COMPENSATION OF TRACKING ERROR CAUSED BY TRACK JUMPING

Takashi Okano, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 20, 1985, Ser. No. 767,450
Claims priority, application Japan, Aug. 21, 1984, 59-173716
Int. Cl.[4] H04N 5/95
U.S. Cl. 358—337 7 Claims



1. A method of time axis control for performing coarse time axis adjustment and fine time axis adjustment in accordance with relative speeds of a recording medium and signal recording/playback means while said signal recording/playback means is recording or reproducing signals on or from said recording medium, comprising the steps of:

in a tracking control operation, causing said signal recording/playback means to follow a track formed on said recording medium; performing coarse and fine time axis adjustment including using a time constant means;

effecting repetitive track jumping operations over successive tracks by moving said signal recording/playback means; and

resetting said time constant means only for the duration of each track jumping operation.

4,763,206

APPARATUS FOR RECORDING VIDEO AND AUDIO SIGNALS

Takao Takahashi, and Hajime Inoue, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1986, Ser. No. 849,903
Claims priority, application Japan, Apr. 15, 1985, 60-079985
Int. Cl.[4] H04N 5/91
U.S. Cl. 360—8 2 Claims



1. A helical scan type magnetic recording apparatus for recording video and audio signals on a magnetic tape wrapped about a reduced-size guide drum and in which a video signal has its time base compressed to 1/N that of a standard television signal and the time base compressed video signal is recorded in a standard recording format of slant tracks on said tape with video information of one field in each of said tracks; said apparatus comprising:

means for time base compressing a time base of an input audio signal in correspondence with said time base compressed video signal and including bucket brigade devices, means for writing said audio signal in said bucket brigade devices at one speed, and means for reading said audio signal from said bucket brigade devices at a faster speed for achieving said time base compressing of the audio signal in a way so that the time base compressed audio signal corresponding to each field of the video information is contemporaneous with the latter in said time base compressed video signal; means for frequency modulating a carrier signal by said time base compressed audio signal; means for mixing the time base compressed frequency modulated audio signal with the contemporaneous time base compressed video signal to provide a mixed signal; and rotary head means arranged to record said mxied signal on said tape while the latter is driven so as to provide said standard recording format.

4,763,207

DIGITAL METHOD AND SYSTEM FOR REPRODUCING ANALOG DATA

J. B. Podolak, Schaumburg; Douglas R. Adler, Chicago, and Ronald B. Saluski, Bolingbrook, all of Ill., assignors to R. R. Donnelley & Sons Company, Chicago, Ill.

Continuation-in-part of Ser. No. 787,504, Oct. 15, 1985, abandoned. This application Dec. 12, 1986, Ser. No. 941,205
Int. Cl.[4] G11B 5/09; H03M 1/00
U.S. Cl. 360—32 77 Claims

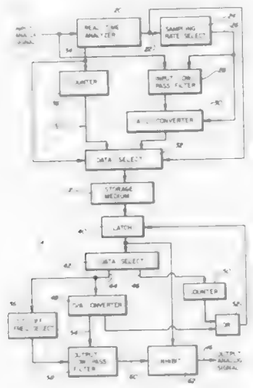
1. A method of encoding an analog signal in digital form, comprising the steps of:

(a) analyzing the analog signal to detect the upper bandwidth limit thereof;

(b) sampling the analog signal at a variable sampling rate determined in accordance with the determined upper

VOL 1093 ISS 2 AG 9 1988 UMI

bandwidth limit to derive a sequence of voltage levels; and



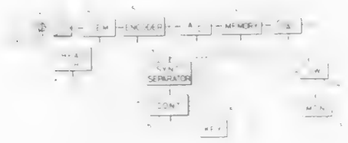
(c) generating a plurality of digital signals representing the sampling rate at which the analog signal was sampled and each voltage level.

4,763,208

PLAYBACK APPARATUS IN ELECTRONIC STILL CAMERA SYSTEM

Koichiro Kawamura, Shonanmachi, and Tadashi Ohta, Tokyo, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Nov. 5, 1985, Ser. No. 795,185
Claims priority, application Japan, Nov. 13, 1984, 59-239013
Int. Cl.[4] H04N *5/78;* **G11B** *27/02*
U.S. Cl. 360—33.1 **11 Claims**



1. A playback apparatus for a medium having plural portions at each of which a video signal is recorded, comprising:
(a) producing means for regenerating said video signals from said medium one by one and producing corresponding information signals;
(b) memory means including plural memory parts;
(c) writing means for writing each of said information signals one by one into a common predetermined one of said plural memory parts;
(d) generating means for generating a storage signal;
(e) transfer means responsive to said storage signal for transferring the information signal written in said predetermined memory part to one of the remaining memory parts;
(f) visual display means for visually displaying images representing the video signals in a predetermined area; and
(g) transmitting means for transmitting information signals written in said plural memory parts to said visual display means and causing said visual display means to display images representing the transmitted information signals in respectively different portions of said predetermined area.

4,763,209

AUTOREVERSE DOUBLE DECK SYSTEM

Kiu-Ahn Lee, Suwon, Rep. of Korea, assignor to Sam Sung Electronics Co., Ltd., Rep. of Korea

Filed Sep. 24, 1986, Ser. No. 911,188
Claims priority, application Rep. of Korea, Sep. 25, 1985, 85-7023[U]
Int. Cl.[4] G11B *15/44, 15/12*
U.S. Cl. 360—74.1 **4 Claims**



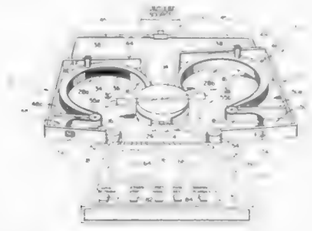
3. An autoreverse double deck control system comprising:
(a) a head selection switch for selecting an electric connecting configuration to selected elements of an autoreverse head and generating a pulse at each time when autoreverse playing is desired, said head selection switch being operatingly associated with an autoreverse mechanism;
(b) a deck operation control unit for generating a clock signal for the deck operation control by differentiating the pulse coming from said head selection switch;
(c) a deck operation mode selection unit for choosing one of a plurality of operation modes in which the respective double decks are played in sequence or alternately said unit consisting of
(i) two flip-flops toggling in response to said clock signal from said deck operation control unit; and
(ii) two coupled switches for respectively receiving output signals of said two flip-flops and a DC voltage of a power source and selectively supplying one of them for the corresponding power transistors, one of said transistors driving a main motor, the other of said transistors driving a submotor;
(d) a switch for selecting a motor to be preferentially driven between said motors in a sequential forwarding mode or an alternative forwarding mode in response to the position of said coupled switches;
(e) a pulse generator for generating a pulse to be applied to CLEAR terminals of said two flip-flops in response to a first position of said switch so as to start said main motor preferentially; and
(f) a pulse generator for generating a pulse to be applied to PRESET terminals of said two flip-flops in response to a second position of said switch so as to start said sub motor preferentially.

4,763,210

HELICAL SCAN TAPE GUIDE APPARATUS

Frederic F. Grant, Bellflower, Calif., assignor to Datatape Incorporated, Pasadena, Calif.

Filed Apr. 2, 1987, Ser. No. 33,272
Int. Cl.[4] G11B *5/027, 15/58*
U.S. Cl. 360—84 **8 Claims**



1. In magnetic tape record/playback apparatus having a rotary head scanner and means for receiving a first, supply reel and a second, take-up reel which are cooperatively rotatable for transporting magnetic tape from the supply reel to the take-up reel past said rotary head scanner at a predetermined angle other than zero degrees, wherein the improvement comprises:
(a) tape guide means defining a pair of elongate arcuate air-bearing surfaces, arranged to confront the information-receptive surface of magnetic tape and disposed immediately adjacent and tangential to opposing sides of a circumferential surface of said rotary head scanner at a first elevation and angle and a second elevation and angle, respectively, to cooperatively form an operative path for guiding magnetic tape at the aforementioned predetermined angle while wrapped at least partially around said head scanner; and
(b) means, cooperating with said tape guide means, for creating an air pressure gradient the effect of which is to urge the magnetic tape toward each air-bearing surface, and air pressure means to maintain the tape in its operative path with a thin film of air sandwiched between the information-receptive surface of the tape and each air-bearing surface while the tape is wrapped around said head scanner during transport movement of the tape from the supply reel to the take-up reel.

4,763,211

FLOPPY DISC DRIVE CONTROL CIRCUIT SECTION SUBSTRATE

Kanji Yamamoto, and Isao Yamazaki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 26, 1985, Ser. No. 769,320
Claims priority, application Japan, Sep. 5, 1984, 59-184653
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—97 **11 Claims**

1. In a floppy disc drive apparatus comprising; a drive motor for driving a floppy disc; a head mechanism for reading/writing data; a stepping motor for moving said head mechanism; a card edge terminal connected to a system for transmitting signals to and from the system; a power socket for receiving source power; a connector for connecting lead wires of said head mechanism; a control circuit section for executing various types of control and signal processing; a printed wiring board, said control circuit section, said card edge terminal, said power socket and said connector being located on said printed wiring board, said control circuit section including therein an overall control circuit and write circuit section, a head switching circuit and reproduction circuit section, and a motor drive circuit section; and said overall control circuit and write section, said head switching circuit and reproduction circuit section and said motor drive circuit section are mounted on said printed wiring board formed of a single printed wiring board, wherein said drive motor is installed on said single printed wiring board, said motor drive circuit section is disposed in opposite relation to said overall control circuit and write circuit section and said head switching circuit and



reproduction circuit section with said drive motor therebetween to increase noise resistance in the control circuit section, and said overall control circuit and write circuit section and said head switching circuit and reproduction circuit section are disposed between said drive motor and said card edge terminal.

4,763,212

FLOPPY DISK DRIVE WITH A LINEARLY OPERATED MEDIA CLAMP

Tetsuo Kanno, Ebina, and Kazumi Tanabe, Sagamihara, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 532,187, Sep. 14, 1983, abandoned. This application May 15, 1987, Ser. No. 52,212
Claims priority, application Japan, Sep. 16, 1982, 57-140353[U]; Oct. 1, 1982, 57-149608[U]; Oct. 8, 1982, 57-152864[U]
Int. Cl.[4] G11B *5/016, 5/82*
U.S. Cl. 360—99 **15 Claims**



1. A floppy disk drive having a slot through which a floppy disk may be inserted in use, comprising:
a driving hub having a rotation axis;
a pressure cone movable between a disengaged position, in which it is spaced from the driving hub along the rotation axis of the hub, and an engagement position, in which it is closer to the hub and engages with a floppy disk and holds it in engagement with said driving hub;
a leaf spring having a central portion carrying said pressure

VOL 1093 ISS 2 AG 9 1988 UMI

cone in an opposed relation to said driving hub and a pair of side portions which extends downwardly from the central portion in opposite directions when the pressure cone is in its disengaged position;

a profiled plate provided to be movable between a first position and a second position, at which second position it depresses said side portions of the leaf spring to press said pressure cone into said engagement position thereof, said profiled plate including a pair of pressure projections each located above a corresponding side portion of said leaf spring, wherein the movement of said profiled plate from its first to its second position causes said pressure cone to move substantially linearly along the rotation axis of said driving hub, and wherein said pair of pressure projections press the corresponding side portions of said leaf spring when said plate is located at said second position thereof; and

position control means operatively coupled to said profiled plate for controlling the position thereof.

4,763,213

DOUBLE-SIDED FLOPPY DISK DRIVING APPARATUS HAVING A MECHANISM FOR PREVENTING HEADS FROM COMING INTO CONTACT WITH EACH OTHER

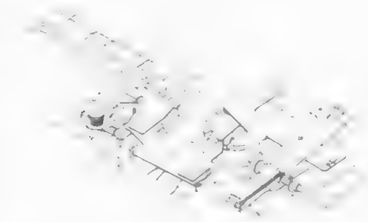
Seiichi Muroyama, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawaski, Japan

Filed Aug. 28, 1986, Ser. No. 901,521

Claims priority, application Japan, Aug. 30, 1985, 60-191547

Int. Cl.[4] G11B *21/22, 21/12, 17/03*

U.S. Cl. 360—105 **11 Claims**



1. A double-side floppy disk driving apparatus, for reading data from and/or writing data with a pair of heads on both sides of a medium inserted wherein, comprising:

head supporting means for supporting each head on each side of the medium in a read/write operation, said head supporting means including arm means for supporting one of the heads, said one head supported by said arm means being movable toward and away from the medium with said arm means;

rotating means for rotating the medium inserted into the disk driving apparatus;

clamping means for clamping the medium inserted into the disk driving apparatus on said rotating means, said clamping means being movable toward and away from said rotating means and moving toward said rotating means when clamping the medium;

lifting means for lifting said arm means such that said one head on said arm means moves away from the medium and the other head and for holding said arm means in a lifted position, said lifting means also moving said one head on said arm means into contact with one side of the medium together with movement of said clamping means toward said rotating means when clamping the medium; and

head mutual contact-prevention means for holding said lifting means to prevent said one head on said arm means from moving toward the other head with the arm means when said clamping means moves toward said rotating means at times when no medium is inserted into the disk driving apparatus, said head mutual contact-prevention means being released from said lifting means by contacting with the edge of the inserted medium.

4,763,214

HEAD DRIVE MECHANISM FOR ELECTRONIC STILL CAMERA

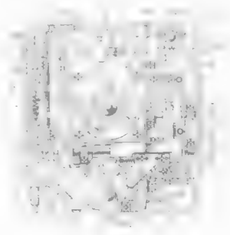
Narito Shibaike, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 29, 1986, Ser. No. 924,531

Claims priority, application Japan, Nov. 1, 1985, 60-246569; Nov. 1, 1985, 60-246571; Nov. 1, 1985, 60-246572; Nov. 1, 1985, 60-246573; Dec. 16, 1985, 60-283391; Apr. 15, 1986, 61-86473

Int. Cl.[4] G11B *5/55, 21/08*

U.S. Cl. 360—106 **19 Claims**



1. A recording apparatus for recording information by a recording head on a plural track recording medium in a cassette set therein, comprising:

a first slide member held slidably by a chassis of said recording apparatus and engaged with said cassette in response to an insertion of said cassette into a cassette receiving compartment provided in said chassis so as to be slid, the moving direction of said first slide member being coincident with the insertion direction of said cassette into said cassette receiving compartment;

a second slide member held slidably by said chassis and coupled through a spring to said first slide member to receive a biasing force of said spring produced in accordance with the movement of said first slide member caused by the insertion of said cassette, the biasing force between said first slide member and said second slide member being applied in such direction that the first slide member and the second slide member pull on each other;

first stopper means engaged with said second slide member in response to the insertion of said cassette so as to hold the movement of said second slide member caused by the biasing force of said spring toward said first slide member;

second stopper means engaged with said first slide member at the time of termination of the insertion of said cassette so as to hold the movement of said first slide member, caused by the biasing force of said spring, toward said second slide member; and

transmission means for releasing said first slide member from said first stopper means after the termination of the insertion of said cassette so that said second slide member is movable toward said first slide member by means of the biasing force of said spring, said transmission means trasnferring the movement of said second slide member toward said first slide member to said recording head so that said recording head is moved across the plural track recording medium.

4,763,215

DEVICE FOR WRITING HIGH DENSITY DATA ON A MAGNETIC MEDIUM

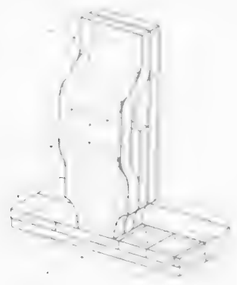
Catherine Gueugnon, Paris; Jacques Desserre, Rambouillet, and Pierre Bernstein, Meudon, all of France, assignors to CII-Honeywell Bull (Societe Anonyme), France

Continuation of Ser. No. 542,032, Oct. 14, 1983, abandoned. This application Mar. 18, 1987, Ser. No. 28,033

Claims priority, application France, Oct. 22, 1982, 82 17730

Int. Cl.[4] G11B *5/23, 5/187*

U.S. Cl. 360—119 **12 Claims**



1. Apparatus for perpendicularly writing data on a magnetic carrier having a recording layer of a magnetic anisotropic material, the material having an axis of easy magnetization perpendicular to a surface of the recording layer, comprising a magnetic transducer, the carrier and recording layer being adapted to move past the magnetic transducer for writing data onto the recording layer, said transducer comprising two substantially planar thin film poles having first ends which are magnetically coupled together and having second ends which are spaced apart to form between adjacent edges of the second ends a rectangularly-shaped gap having a length parallel to the adjacent edges and a width perpendicular to said length, the length of the gap being greater than the width of the gap, the poles being oriented perpendicular to the surface of the recording layer with the second ends and said gap disposed adjacent to said surface in a plane parallel to the surface, and a winding between said poles for establishing a magnetic circuit, said magnetic circuit comprising said two poles and a portion of the magnetic carrier adjacent to the gap, said poles being of opposite polarity for respectively supplying simultaneously to said surface magnetic writing fields which are normal to said surface and of opposite polarity, and wherein said poles are oriented with respect to the recording layer such that the length of said gap extends parallel to the direction of movement of the recording layer.

4,763,216

CLEANING CASSETTE FOR A MAGNETIC TAPE RECORDER MEANS

Erik Solhjell, Oslo, and Guttorm Rudi, Fjellhamar, both of Norway, assignors to Tandberg Data A/S, Oslo, Norway

Filed Aug. 14, 1987, Ser. No. 85,371

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633221

Int. Cl.[4] G11B *5/41*

U.S. Cl. 360—128 **15 Claims**

1. A cleaning cassette for a magnetic tape recorder which is introduced into the magnetic tape recorder instead of a magnetic tape cassette, comprising:

the cleaning cassette having first and second insertion ends opposite one another;

at said first insertion end a first cleaning means being provided for cleaning the magnetic head of the magnetic tape recorder; and

at said opposite second insertion end a second cleaning



means being provided for cleaning a tape drive roller of the magnetic tape recorder, whereby depending upon a direction of insertion of the cleaning cassette, either the magnetic head or the tape drive roller is cleaned.

4,763,217

OPTICAL TAPE END DETECTOR IN MAGNETIC TAPE CASETTE WITH MEANS TO COMPENSATE FOR MISALIGNMENT OF LIGHT SOURCE AND REFRACTING

Kengo Oishi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 8, 1986, Ser. No. 894,539

Claims priority, application Japan, Nov. 5, 1985, 60-169150

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—132 **5 Claims**





1. A tape cassette, comprising:

a case having an upper half and a lower half with an internal space therebetween;

hubs mounted in said internal space for transporting a recording tape past a tape running region;

means for detecting an end region of said tape, including a prism member (1), disposed in said internal space, for receiving light at a light receiving end (2) thereof and refracting said light to direct said light toward said tape at said tape running region, wherein said light receiving end includes a convex outer surface comprising a lens for concentrating said light within said prism

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,218

VIDEO TAPE CASSETTE WITH INTERNAL TAPE ERASING MEANS

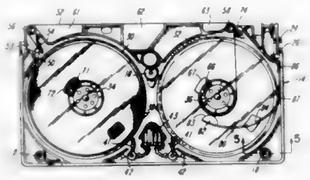
Wade H. Westfall; Roy Wheaton, both of P.O. Box 1485, Piqua, Ohio 45356, and Alan F. Meckstroth, 2310 Far Hills Ave., Dayton, Ohio 45419

Continuation-in-part of Ser. No. 725,423, Apr. 22, 1985, Pat. No. 4,660,116, which is a continuation-in-part of Ser. No. 713,300, Mar. 18, 1985, Pat. No. 4,660,115. This application Apr. 20, 1987, Ser. No. 40,226

The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—132 9 Claims



1. A video tape cassette adapted to be inserted into a video-cassette recorder and to be removed from the recorder, said cassette comprising a housing defining a generally enclosed chamber, a supply reel and a take-up reel each having a hub portion and supported within said chamber for rotation on parallel spaced axes, a flexible magnetic tape having prerecorded information thereon, said tape being wound on said hub portion of said supply reel and having a leading end portion connected to said hub portion of said take-up reel, means supported by said housing for guiding said tape from said supply reel to said take-up reel and along a predetermined path, tape erasing means disposed within said chamber, means supporting said tape erasing means adjacent said take-up reel for progressively erasing said information on said tape as said tape is wound on said take-up reel and after said tape is diverted from said path into the recorder to permit one-time viewing of the prerecorded information on said tape prior to erasing the prerecorded information, and means for positioning said tape erasing means in an ineffective position after said tape is erased to permit reusing said cassette as a blank cassette.

4,763,219

OVERLOAD PROTECTION FOR DC MOTOR-DRIVEN LINEAR ACTUATOR

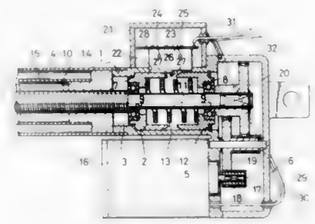
Kenichiro Nakamura, Moriyama, Japan, assignor to Tsubakimoto Chain Co., Osaka, Japan

Filed Sep. 1, 1987, Ser. No. 91,827

Claims priority, application Japan, Nov. 14, 1986, 61-174045[U]; Dec. 25, 1986, 61-198342[U]

Int. Cl.[4] H02H *5/00*

U.S. Cl. 361—23 2 Claims



1. A DC motor-driven linear actuator comprising a permanent magnet DC motor having a pair of electrical terminals for connection to an electrical power source, a screw shaft connected to be rotated by said motor, a nut threaded on the screw shaft, an operating rod connected to the nut, bearing means for supporting the screw shaft for rotation on an axis, spring means held under a predetermined stress for normally maintaining the bearing means and screw shaft in a fixed axial position, and allowing the bearing means and screw shaft to move axially in either direction when the thrust of the operating rod exceeds the predetermined stress of the spring means, first and second self-resetting switches having normally closed contacts connected in series with each other and with the electrical terminals of the motor to conduct DC current from an electrical power source to the motor, actuator means for the switches, means connected to the screw shaft for operating the actuator means so that normally closed contacts of the first switch are opened when the screw shaft moves in a first axial direction and so that the normally closed contacts of the second switch open when the screw shaft moves in the opposite axial direction, a first diode connected across the normally closed contacts of the first switch in a direction to block current from the supply toward the motor when the motor is operating in a direction such that an excessive thrust on the operating rod would cause the normally closed contact of the first switch to open, and a second diode connected across the normally closed contacts of the second switch in a direction to block current from the supply toward the motor when the motor is operating in a direction such that an excessive thrust on the operating rod would cause the normally closed contacts of the second switch to open.

4,763,220

STATIC SWITCH CIRCUIT OR DEVICE FOR THE PROTECTED SUPPLY OF A LOAD, AND ITS LINE

Elie Belbel, Epinay sur Seine; Louis Fechant, Le Vesinet, and Jaan Paul Riotte, Epinay sur Seine, all of France, assignors to La Telemecanique Electrique, France

PCT No. PCT/FR86/00188, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/07510, PCT Pub. Date Dec. 18, 1986

PCT Filed Jun. 3, 1986, Ser. No. 22,449

Claims priority, application France, Jun. 4, 1985, 85 08381

Int. Cl.[4] H02H *3/08*

U.S. Cl. 361—93 8 Claims



2. An electric switch device having a rated current and comprising between two input and output AC terminals a semiconductor component having an anode, a cathode and a control electrode, control circuit means connected to said control electrode and generating switching signals for establishing and interrupting the passage of the current between these terminals respectively when conduction and interruption orders are applied to said control circuit means in normal operation of the switch device; protection input means connected to said control circuit means, for applying thereto disabling orders, and detecting means connected in series between these terminals, said detecting means further being connected to said protection circuit means for actuating said protection means each time an overflow of current is detected by said detecting means, wherein said protection circuit means comprise the serial arrangement of a current limiting resistor withstanding a high overload and a normally open protection switch, said serial arrangement being connected in parallel across said anode and cathode, high speed relay means controlling said protection switch, a first discriminator circuit connected to said detecting means and energizing said relay means for closing the protection switch at each occurence of a current overload of a first type in which the current is substantially comprised between 1.25 and 6 times the rated current; first disabling circuit means for applying a disabling order to said control circuit means each time the duration of said current overload of the first type exceeds a predetermined value; second discriminator circuit means connected to said detecting means and providing a disabling signal at each occurence of a current overload of a second type in which the current gradient is greater than about six times the rated current gradient and second disabling circuit means connecting said second discriminator circuit means to said control circuit means.

4,763,221

SUPERCONDUCTING MAGNET APPARATUS WITH EMERGENCY RUN DOWN UNIT

Moriaki Takechi, Ako, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1987, Ser. No. 92,588

Claims priority, application Japan, Sep. 9, 1986, 61-210843

Int. Cl.[4] H02H *7/00*

U.S. Cl. 361—141 3 Claims



1. A superconducting magnet apparatus comprising an emergency run down unit having a heater power source and a heater circuit switch, a superconducting coil, and a persistent current switch circuit, said persistent current switch circuit being connected in parallel to said superconducting coil and including a first persistent current switch connected in parallel to a first protective element of low resistance and a second persistent current switch connected in parallel to a second protective element of high resistance, said second persistent current switch having a persistent current switch-heater connected to said heater power source through said heater circuit switch.

4,763,222

VEHICLE SUSPENSION CONTROL WITH ACTUATING CIRCUIT PROTECTION

Bruce A. Heaston, Union, and Jeff A. Foust, Farmersville, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 13, 1987, Ser. No. 37,775

Int. Cl.[4] H01H *47/18*

U.S. Cl. 361—195 2 Claims

1. A suspension control for a motor vehicle including a solenoid actuator, the solenoid including an actuating coil connected in series with a transistor across an electric power source, the suspension control comprising circuit protection apparatus comprising, in combination:

means responsive to sensor elements in the suspension control to generate an on signal when a condition is sensed which requires activation of the solenoid after a predetermined time period of the continuous existence of the condition;

an inverter effective to invert the ON signal;

oscillator means generating pulses at a constant frequency;

counter means responsive to the output of the oscillator means to count the pulses therefrom, the counter means including a reset input provided with the inverted ON signal and being effective to generate an output signal after the appearance of the ON signal at a count corresponding substantially to the predetermined time period at the constant frequency of the oscillator means;

a first bistable latch having first and second stable states, a set input and a reset input, the set input being connected to receive the output of the oscillator means such that, subject to the reset input, the first bistable latch attempts to enter its first bistable state at the end of each oscillator pulse;

a first logical AND circuit responsive to the first stable state of the first bistable latch and a voltage at the junction of the solenoid coil and transistor indicating excessive current to generate a short signal;

a second bistable latch having a set input and a reset input, the set input being connected to receive the output of the counter such that, subject to the reset input, the second bistable latch attempts to enter its first stable state with each output signal of the counter means;

a first logical OR circuit connecting the reset input of the second bistable circuit to receive the inverted ON signal and the output of the first logical AND circuit such that the second bistable latch is held in its second stable state in the absence of the ON signal or the existence of the short signal;

a second logical AND circuit responsive to the first stable state of the second bistable latch and the ON signal to generate a drive signal to the transistor and otherwise to generate an OFF signal to the transistor, the OFF signal of the second logical AND circuit being provided to the reset input of the first bistable latch to hold the same in its second stable state, whereby the transistor is turned on the predetermined time period after the ON signal first appears and, if an excessive current is detected after a time delay corresponding to the first oscillator pulse, the transistor is turned off again for a time equal to the predetermined time period before being turned on again.

4,763,223

NON-SOLDERED LEAD APPARATUS

Sang T. Tang, Pomona, Calif., assignor to Babcock Display Products, Inc., Anaheim, Calif.

Filed Dec. 5, 1986, Ser. No. 938,428

Int. Cl.[4] H05K *1/02*

U.S. Cl. 361—380 15 Claims

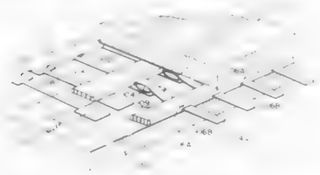
1. A display apparatus comprising,

a pair of spaced apart substrates (100, 103).

VOL 1093 ISS 2 AG 9 1988 UMI

at least one of said substrates (**103**) having a transparent portion thereof,

first and second sealing means (**105, 106**) disposed between said pair of spaced apart substrates to retain said substrates in position and to define two separate but adjacent hermetically sealed chambers (**109, 210**) between said pair of spaced apart substrates,



electrodes (**201, 202**) disposed in a predetermined pattern on at least one surface of each of said substrates, and

electrical terminals (**104**) adapted to make electrical contact with said electrodes in one of said chambers (**109**) and extending outwardly through one of said sealing means (**106**) and beyond said pair of substrates.

4,763,224

HOUSING FOR RECEIVING ELECTRIC CONTROL DEVICES, IN PARTICULAR FOR MOTOR VEHICLES

Willy Bentz, Sachsenheim, and Willi Gansert, Kornwestheim, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

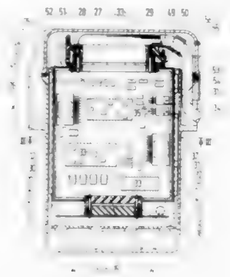
PCT No. PCT/DE86/00028, § 371 Date Oct. 9, 1986, § 102(e) Date Oct. 9, 1986, PCT Pub. No. WO86/06334, PCT Pub. Date Nov. 6, 1986

PCT Filed Jan. 28, 1986, Ser. No. 19,243

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1985, 3514440

Int. Cl.⁴ H05K *7/20*

U.S. Cl. 361—386 **8 Claims**



1. In a housing receiving electrical control devices having electrical components, in particular for motor vehicles, which is closed with a lid and comprising a central connecting plate provided with conductor paths and detachable connecting means for a voltage supply, a sensor for each electric control device, each of the control devices being provided with connecting means for mating with said central connecting plate and detachably connected to a laced wire harness which feeds output signals of the control devices to aggregates being controlled, said connecting means being all mounted in the housing, the improvement comprising said housing being formed with recesses and each control device (**17** to **21**) being provided with a thermally conducting base plate (**22**) which is inserted into said recesses (**4**) of said housing (**1**), said housing having a heat dissipation faces at two sides of said base plate; and at least one locking device (**38** to **40**; **47, 48**) mounted in said housing (**1**) which tightly holds the base plate (**22**) against the heat dissipation faces, whereby in an unlocked position of said locking device a portion of the locking device prevents closing of said housing lid (**44**).

4,763,225

HEAT DISSIPATING HOUSING FOR AN ELECTRONIC COMPONENT

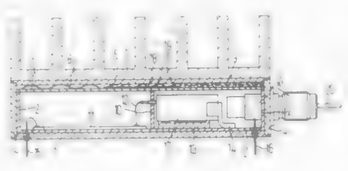
Ferdinand Frenkel, Augsburg; Herbert Prussas, Reichertshausen, and Lothar Rapp, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 25, 1986, Ser. No. 900,070

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1985, 3531135

Int. Cl.⁴ H02B *1/00;* **H05K** *7/20*

U.S. Cl. 361—388 **11 Claims**



1. A heat dissipating housing surrounded by a cooling medium, said housing comprising:

a tub defining an opening and a bottom for containing at least one circuit component which in operation gives off heat to be dissipated, wherein the circuit component is mounted on the bottom of the tub, the bottom defining an inner surface and the sidewalls are made of relatively poor heat conducting material;

a heat-conducting outer cover defining an outer surface for transferring heat to the cooling medium, the outer cover being positioned on the opening of the tub; and

at least one heat-conducting lining sheet, the lining sheet having a relatively good heat conduction toward the circuit component as well as toward the heat-conducting outer cover, wherein a substantial portion of the heat to be dissipated is transferred by the lining sheet from the circuit component to the outer cover.

4,763,226

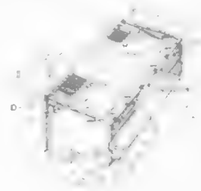
CONNECTING BLOCKS AND MOUNTING ARRANGEMENTS FOR TELEPHONE SYSTEMS

Claude Pelletier, Laval, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 22, 1987, Ser. No. 52,924

Int. Cl.⁴ H01R *9/24*

U.S. Cl. 361—426 **7 Claims**



1. A connector block and mounting arrangement comprising a connector block having a housing and a terminal support member carried at a front of the housing, the housing having side walls extending from the front to a rear of the housing and

including at the rear of the housing a rigid upper element extending across the rear and a lower resiliently flexible element also extending across the rear and spaced from the upper element to define a gap in the housing, the upper element having a downward rigid lip;

the arrangement also including a mounting member which is engageable with the rigid upper element by reception of the mounting member through the gap between the upper and lower elements and against a forward surface of the lip to support the weight of the block, and a latching means to enable interengagement of the mounting member with the lower flexible element by a resilient flexing movement of the lower element to hold the block in a detachable manner upon the mounting member with the mounting member engaged with the rigid upper element.

4,763,227

ALUMINUM ELECTROLYTIC CAPACITOR PACKAGE WITH STABILIZING THIRD LEAD

William G. Novacek, Hillsville, Va., assignor to Sprague Electric Company, North Adams, Mass.

Filed Aug. 3, 1987, Ser. No. 80,937

Int. Cl.⁴ H01G *9/00;* **H05K** *1/18*

U.S. Cl. 361—433 **6 Claims**



1. An aluminum electrolytic capacitor package comprising:

(a) an aluminum electrolytic capacitor section having an anode and a cathode lead extending therefrom;

(b) a cylindrical metal can having a closed end and an open end, said section being positioned within said can with said leads extending axially through said open end and in one axial direction out of said can;

(c) a third lead being attached to said closed can end and extending away from said can in the other axial direction, said third lead being electrically isolated from said capacitor section,

said three leads being bent at about right angles away from a leads plane formed by said three leads as they initially extend away from said can, said bent-away portions of said three leads all having straight distal portions that are mutually parallel and that extend through an imaginary capacitor-mounting plane that is tangent to said cylindrical can, said bent-away portion of only one of said leads having an ox-bow bend that extends orthogonally away from a can-axis-containing plane that is at right angles to said leads plane.

4,763,228

FUSE ASSEMBLY FOR SOLID ELECTROLYTIC CAPACITOR

Tsung-Yuan Su, Greenville, S.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 20, 1987, Ser. No. 123,359

Int. Cl.⁴ H01G *9/00;* **H01H** *85/04*

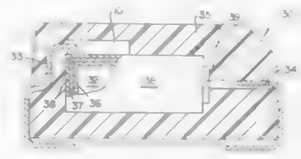
U.S. Cl. 361—433 **7 Claims**

1. A capacitor package for forming a fused solid electrolyte capacitor including a capacitor body having a positive and negative terminal, a lead for each terminal, a miniature fuse assembly electrically connected between one of said terminals and its corresponding lead and a molded resinous material surrounding said capacitor package with each lead frame extending therefrom, said miniature fuse assembly comprising:

a strip of a composite of exothermically alloying metals of predetermined length and cross-section;

a high temperature composition of silicone exhibiting an adhesive characteristic surrounding said alloying strip;

a film strip of an organic polymer disposed on opposite sides



and in contact with said silicone composition to form a sandwich; and

means for electrically coupling said alloying strip at one end thereof to one of said terminals with said corresponding lead frame electrically coupled to said alloying strip at its opposite end.

4,763,229

ALUMINUM CAPACITOR PLATE FOR ELECTROLYTIC CAPACITOR AND PROCESS FOR MAKING THE SAME

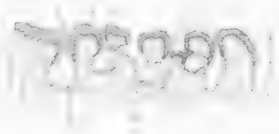
Tatsuo Ohtuka, Oyamashi; Shiuchi Murooka, Yukishi; Satoko Arai, Fujiokamachi, and Takeshi Nishizaki, Koochi Naganoshi, all of Japan, assignors to Showa Aluminum Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1987, Ser. No. 137,416

Claims priority, application Japan, Dec. 24, 1986, 61-310058; Dec. 24, 1986, 61-310059

Int. Cl.⁴ H01G *9/00*

U.S. Cl. 361—433 **17 Claims**



1. An aluminum capacitor plate for use in an electrolytic capacitor, the capacitor plate comprising:

a layer of a sponge-like structure having a predetermined thickness, the layer including a plurality of projections projecting inward and outward with respect thereto, the projections individually having heights of not higher than 1 μm on average; and

a titanium film having accumulated titanium particles each including projections having heights of not higher than 1 μm, wherein the titanium particles are unevenly distributed in the film with a number of pores interposed therebetween.

4,763,230

WHEEL LIGHTS

Donald G. Cummings, 3130 Meadowlane West, Dickinson, Tex. 77539, and Kenneth G. Rose, 2501 20th St. North, Texas City, Tex. 77590

Filed Jun. 8, 1987, Ser. No. 59,322

Int. Cl.⁴ B62J *5/00*

U.S. Cl. 362—78 **2 Claims**

1. A string of lights adapted to be intertwined among the spokes of a wheel, said string comprising:

a source of eletric power, comprising a two-terminal battery secured to said spokes of said wheel;

an electrical circuit comprising.

VOL 1093 ISS 2 AG 9 1988 UMI

a pair of flexible conductive leads adapted to be intertwined among the spokes of said wheel, each said lead providing means for linking one of said battery terminals with one terminal of a plurality of parallel connected lamps, said circuit further comprising means for selectively opening and closing said circuit.

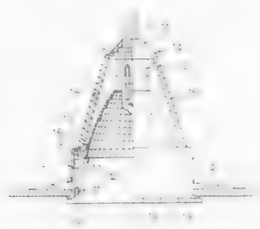


4,763,231

FITTING WITH REMOVABLE SUPPORT FOR LIGHTING FIXTURES FIXED IN CEILING

Georges Houplain, Route d'Abetze 64500, Saint Jean De Luz, France

Filed Jun. 19, 1987, Ser. No. 64,869
Claims priority, application France, Feb. 9, 1987, 87 01894
Int. Cl.[4] F21S *1/02*
U.S. Cl. 362—148 6 Claims



1. A fitting for a lighting fixture mountable in an aperture of a ceiling board, and wherein the ceiling board defines a first plane, comprising in combination

support means supporting said lighting fixture, and defining along a contour thereof a second plane substantially parallel with said first plane,

fixture-shift aiding means for shifting said lighting fixture between first and second stable positions along said support means, so that said second plane of said lighting fixture may be positioned at first and second respective distances from said first plane of said ceiling board, and

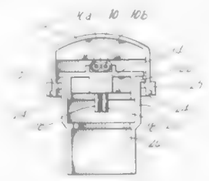
a socket cover arranged to abut an upper portion of said lighting fixture, and wherein said support means includes a tube member having on the interior thereof an inwardly projecting shoulder, a cylindrical cover slidable over said tube member, and resilient means connecting said socket cover to said tube member, a lower portion of said lighting fixture being arranged to abut said inwardly projecting shoulder, and wherein said fixture shift-aiding means includes an O-ring fittable between said tube member and said cylindrical cover, and first and second outer peripheral grooves formed in said tube member, and being spaced from one another, said O-ring being capable to snap into respective of said grooves when said tube member is shifted between said first and second positions.

4,763,232

FESTOON LIGHTING

Eric Woodside, 25 Dovedale Road, Offerton, Stockport, England

Filed Jun. 19, 1987, Ser. No. 64,018
Claims priority, application United Kingdom, Jun. 20, 1986, 8615087
Int. Cl.[4] F21V *21/00*
U.S. Cl. 362—249 7 Claims



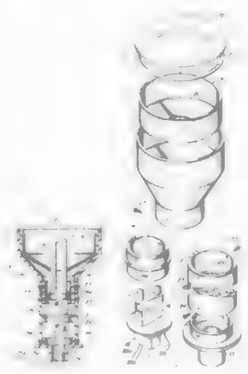
1. Festoon lighting of the kind referred to wherein each lamp holder fitting comprises a lamp holder base having pins projecting therefrom which penetrate the cores of the electric cable, a cylindrical shroud extending from the lamp holder base on one side of the cable and a cap overlying the lamp holder base on the other side of the cable, said shroud and said cap being interengageable with one another when pressed together in an axial direction to clamp the cable therebetween and there being positive locking means having a securing ring adapted to snap over lugs depending from the cap to prevent accidental separation of the cap and the shroud.

4,763,233

OUTDOOR MARINE LIGHTING FIXTURE

David D. Poyer, 858 Roseway St., Naples, Fla. 33942

Filed Dec. 19, 1986, Ser. No. 943,745
Int. Cl.[4] F21V *29/00*
U.S. Cl. 362—267 3 Claims



1. A fluorescent lighting fixture designed for outdoor use comprising:

a funnel-shaped main housing of polyvinyl chloride having a cylindrical upper end, a conically flaring center portion, and a cylindrical lower end of reduced diameter,

a main housing extension of polyvinyl chloride having the same diameter as the lower end of the main housing and having an annular ring projecting from its inner wall,

a circular bracket having upper and lower flat faces and sized to fit onto the annular ring projecting from the inner wall of the housing extension,

a lamp socket mounted on the upper flat face of the bracket,

a U-shaped fluorescent lamp mounted in the socket,

a 120 volt transformer mounted on the lower flat face of the bracket and electrically connected to the socket,

a cylindrical spacer whose outer diameter is slightly less than the inner diameter of the upper end of the main housing and whose length equals the length of the upper end of the main housing,

a dish-shaped reflector sized to fit within the main housing and whose outer circular edge is secured between the flared inner wall of the main housing and the lower end of the cylindrical spacer, and

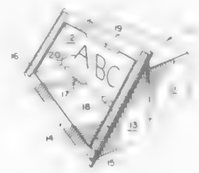
a circular-edged transparent lens bonded to the upper end of the main housing.

4,763,234

ILLUMINATED DEVICES

Peter S. Scott, 11 Pebble Beach Drive, Runaway Island, Queensland, 4216, Australia

Filed May 28, 1987, Ser. No. 55,065
Claims priority, application Australia, May 29, 1986, PH6160
Int. Cl.[4] F21V *9/00*
U.S. Cl. 362—293 8 Claims



1. A signal lamp comprising:

(a) a housing,

(b) a source of light mounted in said housing and by means of which a light field may be selectively generated through activation of a switching mechanism operable to switch a supply of power to the light source, and

(c) a support surface mounted in front of said light source, said support surface comprising the face plate of the signal lamp and having mounted thereon a pattern, symbol, or indicia which is displayed for the attention of an observer when said light source is inoperative, and

wherein the pattern, symbol, or indicia is provided in a thickness such as to reflect ambient light while being thin enough to transmit the light field of the signal lamp whereby the pattern, symbol, or indicia is visible when the light source is inoperative and obscured when the light source is activated.

4,763,235

DC-DC CONVERTER

Koichi Morita, Fujimi, Japan, assignor to Sanken Electric Co., Ltd., Saitama, Japan

Filed Jan. 15, 1987, Ser. No. 4,345
Claims priority, application Japan, Jan. 16, 1986, 61-6669
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—19 6 Claims

1. A DC-DC converter for supplying DC power to a load, comprising:

(a) a pair of DC supply terminals;

(b) a field effect transistor connected between the pair of DC supply terminals and having drain, source and gate;

(c) a transformer having a primary winding connected in series with the field effect transistor, a secondary winding, and a tertiary winding having a first extremity connected to the gate of the field effect transistor and a second extremity connected to the source of the field effect transistor;

(d) a rectifying and smoothing circuit connected between the secondary winding and the load;

(e) a capacitor connected in series to the tertiary winding;

(f) means for charging the capacitor;

(g) a current detecting resistor having a first extremity connected to one of the DC supply terminals and a second extemity connected to both the source of the field effect transistor and the second extremity of the tertiary winding of the transformer, said current detecting resistor providing a current detecting voltage;

(h) a source of DC voltage;

(i) a variable voltage dividing circuit connected across the DC voltage source, said variable voltage dividing circuit having a pair of output lines for providing a variable



fraction of the DC voltage, one of the output lines being connected to the second extremity of the current detecting resistor; and

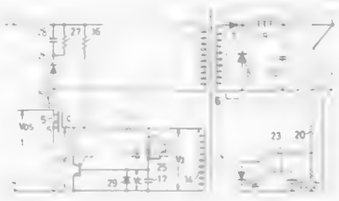
(j) a switching element having a first main electrode connected to the gate of the field effect transistor, a second main electrode connected to the first extremity of the current detecting resistor, and a control electrode connected to the other of the output lines of the variable voltage dividing circuit, the switching element being turned ON when the sum of the current detection voltage and the variable fraction of the DC voltage becomes higher than a prescribed value.

4,763,236

DC-DC CONVERTER

Hiroshi Usui, Tokyo, Japan, assignor to Sanken Electric Co., Ltd., Saitama, Japan

Filed Jan. 15, 1987, Ser. No. 4,341
Claims priority, application Japan, Jan. 16, 1986, 61-6668
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—19 2 Claims



1. A DC-DC converter for supplying DC power to a load, comprising:

(a) first and second DC supply input terminals;

(b) a field effect transistor connected between the first and second DC supply input terminals and having drain, source and gate;

(c) a transformer having a primary winding connected in series with the field effect transistor, a secondary winding and a tertiary winding having a first extremity connected to the gate of the field effect transistor and a second ex-

VOL 1093 ISS 2 AG 9 1988 UMI

tremity connected to the source of the field effect transistor;
(d) a rectifying and smoothing circuit connected between the secondary winding and the load;
(e) a first resistor connected between the first extremity of the tertiary winding of the transformer and the gate of the field effect transistor;
(f) a second resistor connected between the first DC supply terminal and the gate of the field effect transistor;
(g) a capacitor connected in parallel with the tertiary winding;
(h) a third resistor connected between the capacitor and the first extremity of the tertiary winding of the transformer;
(i) a variable conducting element connected in parallel to the third resistor;
(j) means for controlling the variable conducting element so that the DC output voltage supplied to the load is made constant;
(k) a current detecting resistor having a first extremity connected to both the source of the field effect transistor and the capacitor, and a second extremity connected to the second DC supply terminal; and
(l) a transistor having a collector connected to the gate of the field effect transistor, a base connected to the capacitor, and an emitter connected to the second extremity of the current detecting resistor, the transistor becoming conductive in response to the sum of a voltage across the capacitor and a voltage across the current detecting resistor for causing nonconduction through the field effect transistor.

4,763,237

DC/AC/DC POWER CONVERSION SYSTEM INCLUDING PARALLEL TRANSFORMERS

John P. Wieczorek, 26 Alhambra Avenue, Toronto, Ontario, Canada M6R 2S5

Filed Oct. 17, 1986, Ser. No. 919,961
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—20 17 Claims



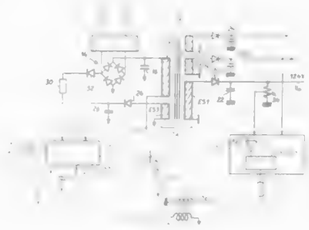
1. A power conversion apparatus comprising:
a pair of unipolar transformers having a primary and a secondary, a regulation means coupled to a line source, so as to provide regulated power to said transformers, each of said transformers being operable in a transforming phase wherein said primary receives said regulated power at a transforming voltage level and said transformer transforms said regulated power, and a re-biasing phase during which said primary receives power at a rebiasing voltage level and the transforming capability of said transformer is restored, each of said transformers being responsive to a control signal from a control means, to energize alternately said transformers.

4,763,238

EXTENDED OVERLOAD PROTECTION CIRCUIT FOR A SWITCH MODE POWER SUPPLY HAVING CYCLE DETECTOR, MEMORY AND FLIP-FLOP INHIBITION

Philippe Maige, Syssinet Pariset, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 1, 1987, Ser. No. 32,559
Claims priority, application France, Apr. 4, 1986, 86 04855
Int. Cl.[4] H02M *3/335*; H02H *7/122*
U.S. Cl. 363—21 6 Claims





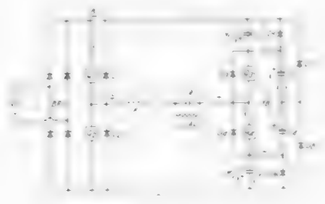
1. A device for protection against long duration overloading in switch mode power supplies comprising a main switch controlled by output signals from a first flip-flop, the set and reset inputs of which receive regulation control signals, a first protection circuit supplying on the reset input priority signals with respect to the regulation signals when the current in the main switch exceeds a predetermined threshold, further comprising a second protection circuit itself comprising:
means for detecting cycles for which the first protection circuit is active and interrupts the on state of the main switch prior to the arrival of the order for the off state of the regulation signal;
memorization means accumulating at each cycle a value proportional to the duration between a signal from the detection means and the set signal associated with the regulation signal of the following cycle; and
inhibition means for inhibiting the set input of the flip-flop when the memorization means has accumulated a signal higher than a predetermined threshold;
wherein the means for detecting includes a second flip-flop, a third flip-flop and an AND gate, the second flip-flop receiving at its reset input the starting output of the regulation signal, the set input of the second flip-flop receiving the output of the AND gate and the output of the second flip-flop controlling the memorization means; the third flip-flop having its set input connected to the reset input of the second flip-flop, the reset input of the third flip-flop connected to the reset regulation signal and the output of the third flip-flop connected to a first input of the AND gate; the second input of the AND gate being connected to the output of the first protection circuit.

4,763,239

SWITCHED MODE POWER SUPPLIES

David P. Ball, Henderson, New Zealand, assignor to Thorn Emi Lighting (NZ) Limited, Avondale, New Zealand

Filed Jun. 3, 1986, Ser. No. 870,185
Claims priority, application New Zealand, Jun. 4, 1985, 212287
Int. Cl.[4] H02M *3/335*; H05B *41/29, 41/392*
U.S. Cl. 363—98 14 Claims



1. A switched mode power supply operative on a unidirectional input current from a rectified supply having positive and negative supply lines derived by a full wave rectifier from an alternating supply for providing an output current to a load, the power supply comprising:
capacitive smoothing means,
a first switching means and a second switching means, said switching means being alternately conductive, each switching means comprising a first switching element and a second switching element, and, in use, being operative to connect a load between the positive and negative supply lines of the rectified supply, in use the current through the load being in one direction when said first switching means is conductive, and being in the opposite direction when said second switching means is conductive, each switching element of said first and second switching means being shunted by a return unidirectional device,
said first switching element of said first switching means and said first switching element of said second switching means being connected in series to form a first series connection,
said second switching element of said first switching means and said second switching element of said second switching means being connected in series to form a second series connection,
the capacitive smoothing means being connected in parallel across said first series connection and being coupled to the positive supply line of the rectified supply via a first further capacitive means and to the negative supply line of the rectified supply via a second further capacitive means, such that said capacitive smoothing means and said first and second further capacitive means form a series connection across the positive and negative supply lines,
each of the further capacitive means being shunted by a respective unidirectional device, whereby, in operation, said capacitive smoothing means may discharge through, and so as to charge, one or other of said first and second further capacitive means,
said second series connection being connected directly across the positive and negative supply lines,
the arrangement being such that, in operation, current draw from the rectified supply is substantially continuous.

4,763,240

POLYPHASE POWER ADAPTER FOR FREQUENCY REDUCTION

Earl Voss, Seymour, Ind., assignor to Diversified Electronics, Inc., Evansville, Ind.

Filed Aug. 6, 1987, Ser. No. 82,105
Int. Cl.[4] H02M *5/257*
U.S. Cl. 363—161 20 Claims



1. A polyphase power line adapter for providing polyphase electric power to operate a polyphase motor at a speed less than rated speed by an integer factor, herein designated N, comprising
(1) at least three input terminals adapted to connect to respective conductors of said polyphase power line,
(2) means connected to said input terminals for producing a plurality of cyclic pulse control signals each such signal being synchronized with a wave-form of a respective phase of said polyphase power line,
(3) at least three output terminals for connection to said motor,
(4) a bridge of at least six electronically gated switches connecting respective ones of said input terminal to at least two of said output terminals,
(5) a divider circuit having an input connected to receive one output from said means of (2), the effective division factor of the divider circuit output being equal to N, and
(6) a plurality of logical "and" circuits each having an output connected to a gate of one of said switches and a plurality of inputs with at least one input connected from said means of (2) and at least one input connected from said divider, the inputs of said "and" circuits being connected to divider circuit in a fashion such that only each Nth half-wave of one phase from said power line is transmitted to each respective pair of said output terminals, whereby polyphase half-wave voltage pulses with a repetition rate 1/N times the rate of said power line half-wave rate are transmitted to respective pairs of said output terminals.

4,763,241

IMAGE FORMING APPARATUS

Jiro Egawa, Yokohama; Moriya Nagasawa, Hiratuska, and Hironobu Machida, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 23, 1987, Ser. No. 29,457
Claims priority, application Japan, Mar. 22, 1986, 61-62011
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—154 9 Claims

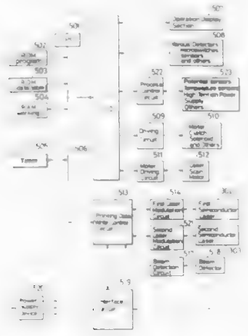
1. An image forming apparatus in which a data is recorded by irradiating laser beams on a charged image bearing member to form an electrostatic latent image and by developing and transferring the electrostatic latent image, comprising:
means for charging the image bearing member;
at least two image forming means disposed around the recording medium for recording data in a plurality of print

VOL 1093 ISS 2 AG 9 1988 UMI

modes, said image forming means comprising means for forming electrostatic latent images on the image bearing member by scanning laser beams in accordance with the data to be recorded and means for developing the electrostatic latent image, the electrostatic latent image forming means is constructed to irradiate a laser beam between a beam irradiation starting point and a data record starting point;

means for supplying a print data transfer start signal and the data to be recorded;

means for detecting the laser beam from the electrostatic latent image forming means;



at least two counter means for counting beam detecting signals from said detecting means in accordance with a print data transfer start signal and for generating allowable signals when the counted values of the detecting signal reach to predetermined set values;

write control means for controlling said data supplying means and the electrostatic latent image forming means such that the data to be recorded are supplied from said data supplying means upon the generation of the allowable signals and in accordance with the data to be recorded electrostatic latent images are formed on the image bearing member by the electrostatic latent image forming means, whereby each of print starting points is adjusted by adjusting the set values of said counter means.

4,763,242

COMPUTER PROVIDING FLEXIBLE PROCESSOR EXTENSION, FLEXIBLE INSTRUCTION SET EXTENSION, AND IMPLICIT EMULATION FOR UPWARD SOFTWARE COMPATIBILITY

Ruby B. Lee, Cupertino, and Michael J. Mahon, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 23, 1985, Ser. No. 790,570
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—200 13 Claims

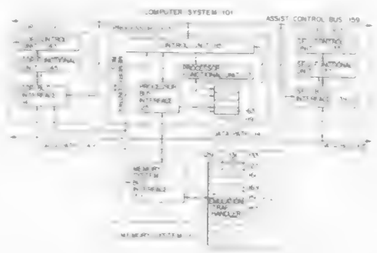
1. A computing device, comprising:

a bus which carries data;

an assist, which can be coupled to the bus and which can be uncoupled from the bus, including a first functional means for executing an assist instruction; a main processor, coupled to the bus, including a second functional means for executing a set of basic instructions;

a system memory which contains emulation code allowing the emulation of the assist instruction; and,

a communication means, coupled to the main processor and coupled to the assist when the assist is coupled to the data bus, for enabling the main processor to determine if the assist is able to execute the assist instruction, wherein the main processor, via the data bus, transfers the assist instruction to the assist when the assist is able to execute the assist instruction and wherein the main processor, using the emulation code within the system memory, executes



the assist instruction when the assist is unable to execute the assist instruction.

4,763,243

RESILIENT BUS SYSTEM

George J. Barlow, Tewksbury, Mass., and James W. Keeley, Hudson, N.H., assignors to Honeywell Bull Inc., Waltham, Mass.

Filed Jun. 21, 1984, Ser. No. 623,264
Int. Cl.[4] G06F *13/14, 13/38, 13/42*
U.S. Cl. 364—200 20 Claims



1. A system including a plurality of units coupled in common to a system bus for transferring requests between said plurality of units during different allocated bus cycles of operation, each request being transferred during a number of said allocated bus cycles of operation, said system further including:

means included in at least one of said plurality of units for generating requests on said bus, each request containing a number of different parts, said parts each containing a number of integrity bits for verifying when said request is validly received by another unit of said plurality of units designated by said request during each of said number of allocated bus cycles of operation and at least one of said parts being coded to specify an operation to be performed by said another unit;

checking means included in said another unit, said checking means being coupled to said bus for verifying during each allocated bus cycle of operation that all of said number of different parts of said each request received from said bus by said checking means of said another unit are valid;

response means included in said another unit, said response means being coupled to said checking means and to said bus, said response means being inhibited by said checking means from generating any response on said bus to said one unit signalling acceptance of said request when said checking means verifies that less than all of said parts of said received request received during said each allocated bus cycle of operation are valid; and,

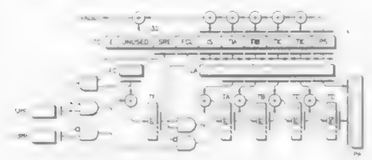
means for accepting said request, said means for accepting being coupled to said bus and to said response means, said means for accepting being enabled to accept said request from said bus during each of said allocated bus cycles of operation upon said response means signalling said acceptance of said request and said means for accepting, rejecting said request applied to said bus during each of said allocated bus cycles of operation when said response means is inhibited from generating any response on said bus thereby ensuring that said another unit does not attempt to perform any operation specified by an invalid request.

4,763,244

PAGED MEMORY MANAGEMENT UNIT CAPABLE OF SELECTIVELY SUPPORTING MULTIPLE ADDRESS SPACES

William C. Moyer; Michael W. Cruess, both of Austin; William M. Keshlear, Richmond, all of Tex., and John Zolnowsky, Milpitas, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 15, 1986, Ser. No. 819,180
Int. Cl.[4] G06F *9/36*
U.S. Cl. 364—200 6 Claims



1. In a paged memory management unit (PMMU) adapted to selectively access a plurality of pointer tables and page tables stored in a memory to translate a selected logical address into a corresponding physical address by first combining a first portion of said logical address and a first table pointer to access a first one of said pointer tables to obtain therefrom a page table pointer to a selected one of said page tables and then combining a second portion of said logical address and said page table pointer to access said selected page table to obtain therefrom said physical address, the improvement wherein said logical address includes an address space selector portion, said PMMU being selectively enabled to initially combine said first table pointer and said address space selector portion of said logical address to access a second one of said pointer tables to obtain therefrom a second table pointer and then combine said first portion of said logical address and said second table pointer to access said first one of said pointer tables to obtain therefrom said page table pointer.

4,763,245

BRANCH PREDICTION MECHANISM IN WHICH A BRANCH HISTORY TABLE IS UPDATED USING AN OPERAND SENSITIVE BRANCH TABLE

Philip G. Emma, Danbury, Conn.; James H. Pomerene, Chappaqua, N.Y.; Gururaj S. Rao, Peekskill, N.Y.; Rudolph N. Rechtschaffen, Scarsdale, N.Y.; Howard E. Sachar, New Paltz, N.Y., and Frank J. Sparacio, North Bergen, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1985, Ser. No. 793,057
Int. Cl.[4] G06F *9/34*
U.S. Cl. 364—200 12 Claims



1. In a computing machine, apparatus for predicting the outcome of branch instructions, the combination comprising:

a processor;

a memory for storing information to be processed by said processor, said information including instructions and operands;

a branch history table for storing prior actions of branch instructions that are processed by said processor;

means for detecting the occurrence of specific ones of said operands with specific ones of said branch instructions and with said prior actions of said branch instructions;

means for determining specific occurrences of said branch instructions, and said prior actions resulting from said specific occurrences of said branch instructions;

a storage means for storing said specific occurrences of branch instructions and said resulting actions;

means for monitoring stores made to operands in said memory by said processor to determine if a given operand being stored to is one of said specific operands stored in said storage means; and

means responsive to said specific occurrences of branch instructions and said resulting actions for determining, if the subsequent branch action of a given branch instruction in said storage means is different than the branch action of said given branch instruction in said branch history table, including means for updating the branch action of said given branch instruction in said branch history table, in the event that the branch actions differ.

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,246

MICROPROGRAM CONTROL

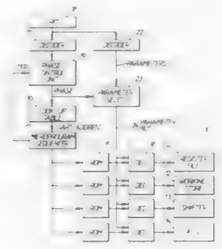
Nicholas P. Holt, Hadfield, via Hyde, and Brian J. Procter, Hyde, both of Great Britain, assignors to International Computers Limited, London, England

Filed Aug. 13, 1985, Ser. No. 765,379

Claims priority, application United Kingdom, Aug. 18, 1984, 8421006

Int. Cl.[4] G06F 9/22

U.S. Cl. 364—200 4 Claims



1. Data processing apparatus comprising:

(a) an instruction register for holding a machine-level instruction,

(b) a plurality of separate functional units for performing data processing operations,

(c) a plurality of microprogram stores, one for each of said functional units, each store holding a plurality of sequences of microinstructions,

(d) a plurality of decoders connected respectively to said microprogram stores, for decoding said microinstructions to produce control signals for the respective functional units,

(e) phase control means, responsive to the machine-level instruction in said instruction register, for producing a succession of phase signals indicating a succession of phases required to execute that machine-level instruction,

(f) microprogram sequencing means responsive to each said phase signal to initiate one of said sequences of microinstructions in each said microprogram store,

(g) parameter generating means for generating a plurality of microprogram parameters, from the machine-level instruction in said instruction register,

(h) parameter selection means, controlled by said phase signals, for selecting a predetermined sub-set of said parameters during each said phase, and

(i) a multi-line bus for applying the selected parameters in parallel to all said decoders to qualify operation of said decoders.

4,763,247

MULTIPROCESSOR SYSTEM FORMED BY MICROPROCESSOR MATRIX

Boris H. Borovski, and Plamenka I. Ilieva, both of Sofia, Bulgaria, assignors to Vmei "Lenin", Sofia, Bulgaria

Filed Dec. 23, 1985, Ser. No. 812,252

Claims priority, application Bulgaria, Dec. 26, 1984, 68107; Oct. 15, 1985, 72032

Int. Cl.[4] G06F 15/16, 15/56

U.S. Cl. 364—200 4 Claims

1. A multiprocessor system comprising a matrix of 32 standard microcomputer modules, connected for microprocessor exchange by an interconnection network of communication nodes with cyclic structure, distributed uniformly in four stages, and wherein each connection between the communication nodes is a bus which comprises data and control lines, wherein:
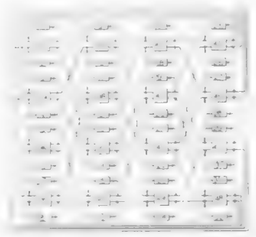
a first output of a first communication node of a first of said stages of the interconnection network (33) is connected to a first input of a first communication node of a second of said stages (37);

a second input of the first communication node of the first stage (33) is connected to a first input of a third communication node of the second stage (39);

a first output of a second communication node of the first stage (34) is connected to a second input of a first communication node of the second stage (37);

a second output of the second communication node of the first stage (34) is connected to a second input of a third communication node of the second stage (39); a first output of a third communication node of the first stage (35) is connected to a first input of the second communication node of the second stage (38);

a second output of the third communication node of the first stage (35) is connected to a first input of a fourth communication node (36) of the second stage (40), a first output of



the fourth communication node (36) of the first stage is connected to a second input of a second communication node of the second stage (38);

a second output of the fourth communication node of the first stage (36) is connected to a second input of the fourth communication node of the second stage (40);

the communication connection between the second and a third of said stages are identical to the communication connections between the first and the second stages;

the outputs of the communication nodes of the third stage are distributed uniformly in two groups and the outputs of the communication nodes of a first of said groups (41 and 42) are connected respectively to the first inputs of the communication nodes of a fourth of said stages (45, 46, 47, 48);

the outputs of the communication nodes of a second of said groups (43 and 44) are connected respectively to the second inputs of the communication nodes of the fourth stage; and

the communication connections between the fourth and the first stages are identical to the communication connections between the third and the fourth stages.

4,763,248

MICROCOMPUTER WITH A DETECTING FUNCTION OF A MEMORY ACCESS ERROR

Yoshitaka Kitada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1984, Ser. No. 644,631

Claims priority, application Japan, Aug. 26, 1983, 58-156080

Int. Cl.[4] G06F 11/00

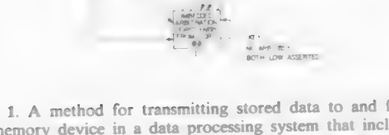
U.S. Cl. 364—200 8 Claims

1. A microcomputer comprising:

a memory having a plurality of memory locations, each memory location consisting of a plurality of bits, a plurality of program instruction codes containing both "0" and "1" bits being stored in a portion of said memory locations and the remaining portion of said memory locations storing a predetermined code wherein said predetermined code is not a program instruction code;

a memory access means coupled to said memory for applying an address to said memory to select one of said plurality of memory locations for reading a plurality of bits of the selected memory location;

an instruction decoding means coupled to said memory for decoding the plurality of bits of the selected memory location read out of said memory;



a processing means coupled to said instruction decoding means for executing a processing operation in response to an output of said instruction decoding means;

a detecting means coupled to said memory for receiving the plurality of bits of the selected memory location read out of said memory to detect said predetermined code for generating a detection signal which indicates that a memory access error has occurred when the predetermined code is detected; and

a control means coupled to said detecting means for starting an error operation in response to said detection signal.

4,763,249

BUS DEVICE FOR USE IN A COMPUTER SYSTEM HAVING A SYNCHRONOUS BUS

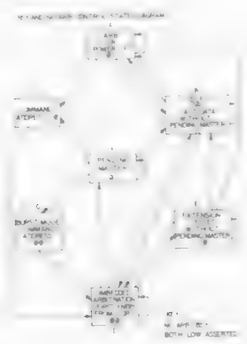
Frank C. Bomba, Andover; Reinhard Schumann, Stow; Stephen R. Jenkins, Acton, all of Mass., and Paul Binder, Coral Springs, Fla., assignors to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 534,781, Sep. 22, 1983, Pat. No. 4,661,905.

This application Oct. 29, 1986, Ser. No. 924,578

Int. Cl.[4] G06F 13/14, 13/38, 13/40

U.S. Cl. 364—200 8 Claims



1. A method for transmitting stored data to and from a memory device in a data processing system that includes a plurality of bus devices and a common synchronous communications path for conducting signals thereon, the path including a plurality of command lines, a plurality of data/address lines, a NO ARB line precluding access to the data/address lines during the next cycle for purposes of arbitration when asserted, a BUSY line for indicating that a transaction is in progress during the next cycle when asserted, and at least one timing line for carrying timing signals defining timing cycles, the memory device being connected to the communciations path to operate in cycles in accordance with the timing signals on the timing line and including a plurality of storage locations each associated with a separate bus address, the method comprising:

a first step of monitoring the BUSY and NO ARB lines to detect a cycle in which the BUSY line is asserted and that immediately follows a cycle in which the BUSY line was unasserted and the NO ARB line was asserted, such cycle being denominated a command/address cycle;

a second step of monitoring the command and data/address lines during the command/address cycle to detect one of a read and a write command on the command lines and to detect signals on the data/address lines representing a bus address with which a storage location is associated; and

a third step of exchanging data between the memory device and another device over the data/address lines on the communications path during a data cycle which is the second cycle after the command/address cycle during which a bus address with which a storage location is associated has been detected on the data/address lines, and during which one of the read and write commands has been detected on the command lines.

4,763,250

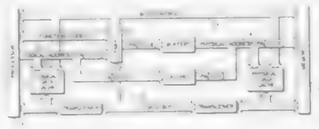
PAGED MEMORY MANAGEMENT UNIT HAVING VARIABLE NUMBER OF TRANSLATION TABLE LEVELS

William M. Keshlear, Richmond; William C. Moyer, Austin, both of Tex., and John Zolnowsky, Menlo Park, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 1, 1985, Ser. No. 718,753

Int. Cl.[4] G06F 12/08

U.S. Cl. 364—200 8 Claims



1. In a paged memory management unit (PMMU) for use in a data processing system which operates under the control of an operating system, the PMMU selectively translating each logical address provided by the data processing system into a respective physical address in a memory using one of a plurality of translation descriptors constructed by said operating system and stored in said memory, each translation descriptor being addressable in said memory using a respective one of a plurality of pointer descriptors constructed by said operating system and stored in said memory, the improvement:

wherein said pointer descriptor includes a descriptor type field for storing a first value provided by said operating system if said pointer descriptor is constructed by said operating system to comprise a pointer descriptor and a second value provided by said operating system if said pointer descriptor is constructed by said operating system to comprise a translation descriptor; and

wherein said PMMU translates said logical address into the respective physical address using said pointer descriptor as said one of said translation descriptors if said second value is stored in said type field of said pointer descriptor.

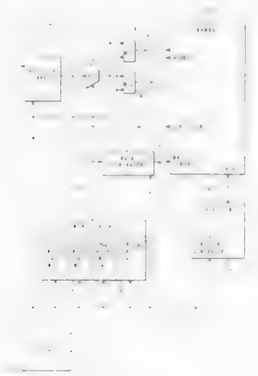
VOL 1093 ISS 2 AG 9 1988 UMI

4,763,251

MERGE AND COPY BIT BLOCK TRANSFER IMPLEMENTATION

Arthur A. Kauffman, Jr., and John S. Muhich, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1986, Ser. No. 820,466
Int. Cl.[4] G06F *12/02*
U.S. Cl. 364—200 15 Claims



1. A memory circuit comprising:

means for storing bit addressable binary data arranged in a plurality of dimensional directions;

means for accessing a group of data in said storing means in at least two of said dimensional directions, said accessing means including means for selecting either incrementing or decrementing of a source address during the accessing of said data; and

moving means for moving said group of data to a different dimensional location specified by a destination address while maintaining the data within the group.

4,763,252

COMPUTER ENTRY SYSTEM FOR PREDETERMINED TEXT DATA SEQUENCES

David K. Rose, 5-2 Shinsen, No. 304, Shibuya-ku, Tokyo 150, Japan

Filed Mar. 21, 1985, Ser. No. 714,443
Int. Cl.[4] G06F *3/023, 13/12*
U.S. Cl. 364—200 6 Claims



1. A computer entry system for entering text data into a computer system from a terminal device, said terminal device including keyboard input means having a plurality of keyboard keys, said entry system being serially interconnected between said terminal device and said computer system, comprising:

means for bi-directionally receiving and transmitting serial data from and to (1) said computer system and, (2) said terminal device,

random access read/write memory means for storing predetermined sequences of said text data and corresponding code names received from said computer system, each of said predetermined sequences of text data having a corresponding single- or multi-character alphanumeric code name associated therewith for retrieving said predetermined sequences of text data from said read/write memory means for transmission to said computer system responsive to receipt of a first control code and said code name from said keyboard input means,

microprocessor means for controlling said means for bi-directionally receiving and transmitting said serial data, and said random access read/write memory means, said microprocessor means being coupled to (1) said means for bi-directionally receiving and transmitting said serial data, and (2) to said random access read/write memory means, and,

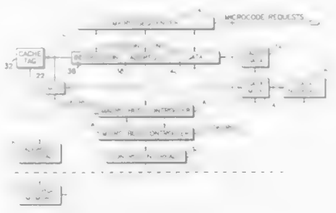
read-only memory means coupled to said microprocessor means for storing a program to control the operation of said microprocessor means; said operation of said microprocessor means (1) receives data from said keyboard input means and re-transmits said data to said computer system without modifying said data, said data comprising characters represented by any of said plurality of keyboard keys, (2) receives and subsequently stores said predetermined sequences of text data and said corresponding code names from said computer system, and (3) in response to said first control code receives said code names from said keyboard input means and retrieves said corresponding predetermined text data sequences from said read/write memory means and transmits said predetermined text data sequences in response to a second control code to said computer system, upon which said operation of said microprocessor means returns to said receiving and said re-transmitting without modifying data.

4,763,253

MICROCOMPUTER WITH CHANGE OF FLOW

Mark W. Bluhm; Robert R. Thompson; David S. Mothersole, and Douglas B. MacGregor, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 655,014, Sep. 26, 1986, abandoned. This application Nov. 17, 1986, Ser. No. 931,029
Int. Cl.[4] G06F *9/38*
U.S. Cl. 364—200 7 Claims



1. A data processor comprising:

instruction execution control means for executing each of a plurality of instructions and, prior to completion of the execution of each of said instructions, requesting a transfer of a next one of said instructions, and

a bus controller, connected to the instruction execution control means and adapted to be connected to a memory external to said microcomputer, said memory storing a predetermined set of said instructions, the bus controller receiving said requests from said instruction execution control means for the transfer of said instructions, storing said received transfer requests in a transfer request queue, and performing each of said requested transfers of said instructions between said memory and said instruction execution control means in accordance with the respective transfer request in said transfer request queue,

characterized:

in that the instruction execution control means provides a first control signal during the execution of a first predetermined one of said instructions, and

in that the bus controller, in response to said first control signal, flushes all of said transfer requests stored in said transfer request queue.

4,763,254

INFORMATION PROCESSING SYSTEM WITH DATA STORAGE ON PLURAL LOOP TRANSMISSION LINE

Kinji Mori; Yuko Kunai, both of Kawasaki; Masakazu Akiyama, Katsuta; Tadaaki Kadoya, Narashino; Katsumi Kawano, Nerima; Shoji Miyamoto; Makoto Nohmi, both of Kawasaki; Sadanori Shingai, Yokohama, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 26, 1983, Ser. No. 498,553
Int. Cl.[4] G06F *13/02*
U.S. Cl. 364—200 15 Claims



1. An information processing and storage system comprising:

means in the form of a first loop-shaped signal transmission line for repeatedly circulating data for purposes of storing that data;

first means connected to said first signal transmission line for inputting and outputting data to and from said first signal transmission line; and

second means connected to said first means for selectively fetching and processing data from said first signal transmission line via said first means;

said first means including third means for controlling the storage of data on said first signal transmission line by attenuating the signal amplitude of data flowing around said first signal transmission line only when the data is not fetched by said second means.

4,763,255

METHOD FOR GENERATING SHORT FORM INSTRUCTIONS IN AN OPTIMIZING COMPILER

Martin E. Hopkins, Chappaqua, and Henry S. Warren, Jr., Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 666,800, Oct. 31, 1984, abandoned. This application Jun. 16, 1987, Ser. No. 65,175
Int. Cl.[4] G06F *9/28, 9/44*
U.S. Cl. 364—300 11 Claims

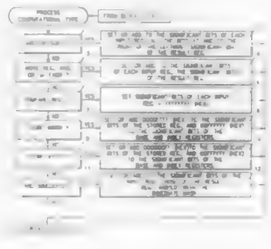
1. In a high speed electronic computing system having an optimizing compiler or assembler program resident in the system memory together with a program to be optimized, the improvement which comprises a code optimizing method operable within said optimizing compiler or assembler after the register allocation phase for performing significant bit analysis, the results of said analysis being utilized during the final code generation phase of the compiler operations for generating the most efficient form of computer instruction available for producing the required result, said method comprising:

establishing in the system a significant bit table (SBT) in memory having an addressable storage location relating to each working register assigned to a program being compiled and accessing said table at a location derivable from the register number assignment of the operands of an instruction sequence,

sequentially examining in the system linear blocks in a linear code instruction stream in reverse order and determining:

if an instruction being evaluated is a non-computational "label," then obtaining the next instruction,

if an instruction is a return or branch instruction, then setting the significance value of all of the storage locations in the significant bit table to "all bits significant" and obtaining the next instruction,



if an instruction is computational type, then determining from the instruction format for each instruction those bits of the result which must be retained to produce a required significance value and storing said significance a value in the SBT for each input operand to that instruction,

sequentially accessing and evaluating in the system preceding instructions in the instruction stream and utilizing and storing in the SBT a particular input operand's significance value to establish a new significance value for the operand in any such preceding instruction whose result becomes an input operand to a subsequent instruction,

continuing said method in reverse order, in the system until all of the instructions in each linear block of the instruction stream have been evaluated and the appropriate significance values stored in the SBT, and

generating in the system the most efficient instruction form for each instruction by utilizing the values stored in the SBT by said evaluation procedure by specifying an instruction form which will generate the minimum number of significant bits required to meet each operand's computed significance value.

4,763,256

SYSTEM TO DETECT AND BYPASS INOPERATIVE GAME FEATURES IN AN AMUSEMENT DEVICE

Lawrence E. DeMar, Chicago, Ill., assignor to Williams Electronics Games, Inc., Chicago, Ill.

Filed Sep. 19, 1986, Ser. No. 909,180
Int. Cl.[4] G06F *15/44;* G08B *21/00;* A63F *7/02, 7/22*
U.S. Cl. 364—410 10 Claims

1. A control system for detecting and bypassing inoperative game features of an amusement device comprising:

(a) memory means for storing values, each value representative of the operative state of one game feature;

(b) means for periodically altering said representative values to cause them to reach a final value indicative of an inoperative state;

VOL 1093 ISS 2 AUG 9 1988 UMI

(c) means for detecting operation of each of said game features;

(d) means for initializing the corresponding representative value stored in said memory means to prevent it from reaching said final value if a game feature operates during game play; and



(e) means responsive to a game feature having a representative value equal to said final value for bypassing said game feature to permit game players to obtain the award normally associated with successfully operating said game feature.

4,763,257

COMPUTERIZED SYSTEM FOR IMPARTING AN EXPRESSIVE MICROSTRUCTURE TO SUCCESSIVE NOTES IN A MUSICAL SCORE

Manfred Clynes, 9/5 Longworth Avenue, Point Piper, Sydney, Australia 2027

Continuation of Ser. No. 552,075, Nov. 15, 1983, Pat. No. 4,704,682. This application Jun. 1, 1987, Ser. No. 56,441

The portion of the term of this patent subsequent to Nov. 3, 2004, has been disclaimed.

Int. Cl.[4] **G10F** *1/00;* **G10H** *7/00*

U.S. Cl. 364—419 **5 Claims**

1. A computerized system for imparting an emotionally expressive microstructure to the respective notes in the score of a musical composition constituted by a succession of notes whose notation provides the nominal value for each note in regard to its pitch and duration, said system comprising:

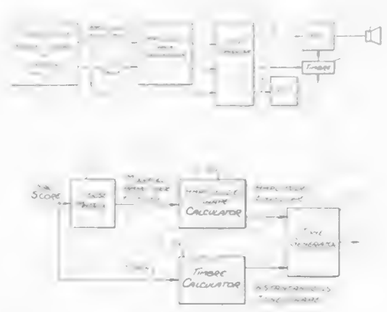
A. a digital computer;

B. means to enter into said computer nominal data representing the nominal pitch and duration of each of the successive notes in the musical score to be processed;

C. a matrix having stored therein microstructure data relating to the relative loudness and duration values of a series of notes forming a group representing the inner pulse of a given musical composer;

D. means to enter into said computer said microstructure data, said computer including means to process the nominal data entered therein with reference to the microstructure data entered therein to yield in its output with respect to each note in the succession thereof a series of digital values representing loudness and duration changes in accordance with their interrelationship to said inner pulse; and

E. means responsive to said computer output to generate and



audibly reproduce tones representing the notes of said score with said microstructure data impressed thereon to render the reproduced music derived from the score expressive.

4,763,258

METHOD AND APPARATUS FOR TRELEMETRY WHILE DRILLING BY CHANGING DRILL STRING ROTATION ANGLE OR SPEED

Paul D. Engelder, Rancho Palos Verdes, Calif., assignor to Eastman Christensen Company, Salt Lake City, Utah

Filed Feb. 26, 1986, Ser. No. 833,139

Int. Cl.[4] **G01V** *1/40*

U.S. Cl. 364—422 **20 Claims**



1. A method for communicating well platform information from a well platform downhole comprising the steps of:

selectively rotating a drill string according to said well platform information to be communicated downhole;

simultaneously measuring downhole an angularly dependent geophysical parameter while rotating said drill string, said step of rotating and measuring being effectuated during a predetermined data time interval; and

converting downhole variations of said geophysical parameter, which variations arise during said step of selectively rotating said drill string in accordance with said well platform information, into corresponding information so that said well platform information is transmitted downhole through selective rotation of said drill string.

2. The method of claim 1 where said step of selectively rotating said drill string comprises the step of selectively rotating said drill string through predetermined multiples of angular displacement during said data time interval, each predetermined multiple of said angular displacement corresponding to a distinguishable unit of information.

7. The method of claim 1 where said step of selectively rotating said drill string comprises selectively rotating said drill string with predetermined multiples of an angular velocity during said data time interval, each predetermined multiple of said angular velocity corresponding to a distinguishable unit of information.

12. The method of claim 1 where in said step of measuring said geophysical parameter, a directional component of terrestrial magnetic field is measured.

14. The method of claim 1 where in said step of measuring said geophysical parameter, a directional component of terrestrial gravitational field is measured.

4,763,259

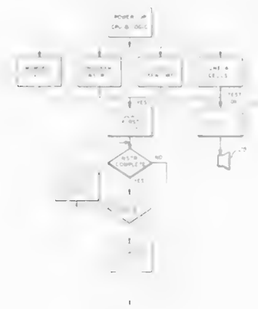
MEMORY PROCESSING SYSTEMS FOR WELL TOOLS

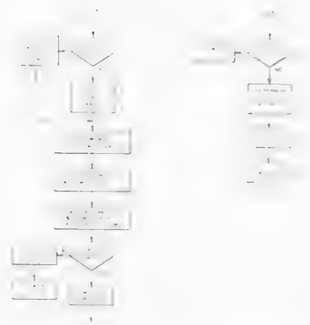
Leroy C. Delatorre, Sugar Land; Homer M. Wilson, Houston, both of Tex., and E. René Pingenot, Springfield, Mo., assignors to Panex Corporation, Sugar Land, Tex.

Filed Mar. 29, 1985, Ser. No. 718,118

Int. Cl.[4] **E21B** *47/06*

U.S. Cl. 364—422 **9 Claims**





1. A method for programming an internal microprocessor (CPU) means and memory means including a programmable non-volatile memory element which are enclosed within an elongated electronics housing for use in a well bore and recording pressure and temperature data and where the electronics housing is adapted to be rigidly connected at one end to an elongated sensor housing by electrical connector means in each of the housings for electrically coupling pressure and temperature sensor means in the sensor housing to the microprocessor means and memory means including non-volatile memory element in the electronics housing and adapted to be rigidly connected to an elongated battery housing at its other end where the battery housing contains batteries for providing electrical power, the method including the steps of:

prior to connecting the battery housing and the sensor housing to the electronics housing at the earth's surface, applying a conditioning reference voltage to the connector means at said one end of the electronics housing for conditioning the internal CPU means for receiving electronic data from or for sending electronic data to the connector means and for supplying operating voltage to the circuits in the internal CPU means and memory means;

inputting binary encoded data representative of a software program for the internal CPU means from an external host CPU means to the internal CPU means and the non-volatile memory element of the memory means in the electronics housing via the connector means to input the software program into the non-volatile memory element where the software program can be used to implement operation of the internal CPU means; and

thereafter, while maintaining said reference voltage, reading out said binary encoded data from the internal CPU means and memory means in the electronics housing to the external host CPU means for verifying the entry of said binary encoded data to the non-volatile memory element in the memory means.

4,763,260

ANTISKID CONTROL DEVICE

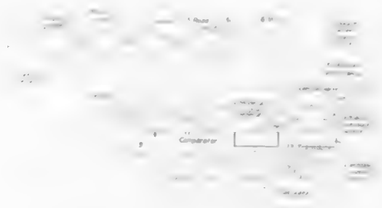
Masaru Sakuma, Kawasaki, and Susumu Sawano, Koganei, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Nov. 18, 1986, Ser. No. 932,143

Claims priority, application Japan, Nov. 20, 1985, 60-260616

Int. Cl.[4] **B60T** *8/32*

U.S. Cl. 364—426 **3 Claims**



1. An antiskid control device comprising:

a detector for detecting signals corresponding to a circumferential speed of a wheel;

valve means for controlling a hydraulic braking force to the wheel; and

electronic control circuit means for determining a ratio of a mean angular acceleration of the wheel to a mean angular deceleration of the wheel in a predetermined period of time based on detection signals from said detector during an antiskid control cycle for raising and lowering the circumferential speed of the wheel, for estimating a coefficient of friction of road surface from said ratio, for determining a target circumferential speed of the wheel based on said estimated coefficient of friction of road surface, and for activating said valve means to cause the wheel circumferential speed to approach said target circumferential speed.

VOL 1093 ISS 2 AG 9 1988 UMI

4,763,261

WHEEL-SPEED DETECTING ARRANGEMENT

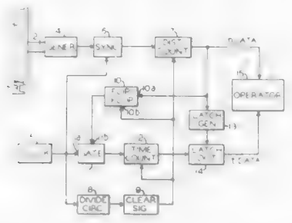
Asaji Imanaka; Tatsuo Fujiwara, both of Kobe, and Shuichi Osaka, Osaka, all of Japan, assignors to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Apr. 23, 1986, Ser. No. 855,049

Claims priority, application Japan, Apr. 23, 1985, 60-88346

Int. Cl.⁴ G01P *3/481*

U.S. Cl. 364—426 10 Claims



1. A wheel-speed detecting method for detecting the speed of a fixed wheel-and-axle configuration, said wheel-speed detecting method comprising:

(a) measuring the rotational displacement of the fixed wheel-and-axle configuration, and outputting a first count signal representing said measured displacement value;

(b) synchronizing such first count signal in conjunction with a clock pulse signal;

(c) generating a clear signal upon completion of a preselected number of clock pulses, the time between two consecutive clear signals representing the time period within which said rotational displacement is detected;

(d) counting the first count signals that occur within any two consecutive clear signal occurrences, and outputting a first data signal representing a cumulative total of said first count signals;

(e) generating a first enabling signal as a function of said first data signal;

(f) counting the clock pulses that occur following occurrence of said first enabling signal, and outputting a second data signal representing a cumulative total of said clock pulse signals;

(g) latching said second data signal upon occurrence of any of said first count signals, and communicating such second data signal only in conjunction with an occurrence of said first count signal; and

(h) calculating said rotational displacement by use of said first data signal and said latched second data signal in the relationship $V=k \cdot (n-1)\,t$ where V is said rotational displacement, k is a constant of proportionality, n is said first data signal, and t is said latched second data signal.

4,763,262

PROPULSION CONTROL USING LONGITUDINAL ACCELERATION, STEERING ANGLE, AND SPEED TO SELECT SLIP THRESHOLD

Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 943,693

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545652

Int. Cl.⁴ B60T *8/32*

U.S. Cl. 364—426 16 Claims

1. In a propulsion control system for a motor vehicle for preventing an undesirable spinning of driven vehicle wheels, having a plurality of wheel sensor means for providing a signal indicative of the speed of the vehicle wheels, having slip means for determining the slip of the driven vehicle wheels from said signals of said sensor means, having a first slip comparator means for each driven vehicle wheel for comparing the driven wheel speed to a first indicated threshold value and providing an output signal when the first threshold is exceeded, having means for actuating a control element to reduce the output torque of an engine of the vehicle in response to an output signal indicative of at least one of the driven wheels of the vehicle tends to spin, having a vehicle speed comparator means for comparing vehicle speed to a third indicated threshold value and providing an output signal when the third threshold is exceeded, having a determining means for determining the longitudinal acceleration of the vehicle, having a longitudinal acceleration comparator means for comparing said longitudinal acceleration to a second indicated threshold value and providing an output signal when the second threshold is exceeded, having a steering angle sensor means for sensing steering angle and, having a steering angle comparator means for comparing said steering angle to a fourth indicated threshold value and providing an output signal when the fourth threshold is exceeded, the improvement comprising:



two additional slip comparator means each for comparing the associated driven wheel speed to indicated threshold values, one of which has a lower and one has a higher threshold value with respect to said first indicated threshold value for each driven vehicle wheel and providing an output signal when the respective threshold is exceeded;

an additional longitudinal acceleration comparator means for comparing said longitudinal acceleration to an indicated higher threshold value with respect to said second indicated threshold and providing an output when the higher threshold is exceeded; and

a logic means for selectively enabling one of said first slip and said two additional slip comparator means in response to predetermined combinations of:

(a) said output signal from the vehicle speed comparator means,

(b) said output signal from one of the longitudinal acceleration comparator means,

(c) said output signal from the steering angle comparator means as well as said input signal to the actuating means for the control element affecting the engine torque.

4,763,263

PROPULSION CONTROL USING LONGITUDINAL ACCELERATION TO DETERMINE SLIP THRESHOLDS

Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 943,783

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545546

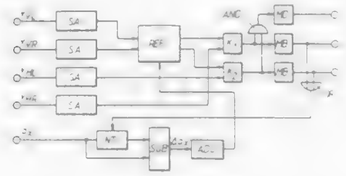
Int. Cl.⁴ B60T *8/32*

U.S. Cl. 364—426 4 Claims

1. In a propulsion control system for preventing an undesirable spinning of the wheels of a vehicle that are to be controlled, particularly of a motor vehicle equipped with multi-

axle drive, having a plurality of sensor means for providing speed signals indicative of the sensed speed of the associated wheels, having a threshold means for forming slip threshold value, having a slip comparator means assigned to each wheel to be controlled for comparing the sensed speed signal of the wheel to be controlled with the assigned slip threshold value, having means for activating the brake of a wheel to be controlled when said wheel tends to spin, having means for reducing the output torque of the vehicle engine when the wheels of both vehicle sides that are to be controlled tend to spin, and having measuring means for measuring the longitudinal acceleration of the vehicle, the improvement comprising:

an integrator means for integrating the output signal of the measuring means for the longitudinal acceleration of the vehicle,



a subtractor means for forming the difference of the output signals of the measuring means for the longitudinal acceleration of the vehicle and of the integrator means,

an adder means for adding to the output signal of the subtractor a constant value assigned to a certain acceleration value, and

said threshold means for forming the slip threshold value by assigning one of said speed signals of one of said plurality of sensor means as the driving speed and multiplying the assigned speed signal with a factor to produce the slip threshold value, said threshold means includes an integrating circuit for integrating the assigned speed signal with a time constant represented by the output signal of the adder means before multiplying.

4,763,264

ENGINE CONTROL SYSTEM

Itaru Okuno; Hiroyuki Oda, and Tadashi Kaneko, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Sep. 20, 1985, Ser. No. 778,268

Claims priority, application Japan, Sep. 29, 1984, 59-205164

Int. Cl.⁴ G06G *7/66;* **F02D** *33/02, 41/02;* **F02M** *51/00*

U.S. Cl. 364—431.01 18 Claims

1. An engine control system comprising:

an accelerator manipulation detecting means for detecting the amount of manipulation of an accelerator of the engine and for supplying an output signal corresponding to a position at an accelerator;

a computing means which includes:

(a) a target intake air amount determining means for determining a target intake air amount based upon the output of the accelerator manipulation detecting means and a predetermined accelerator manipulation amount-target intake air amount characteristic, and

(b) a target fuel feed amount determining means for determining a target fuel feed amount based upon the output of the accelerator manipulation detecting means and a predetermined accelerator manipulation amount-target fuel feed amount characteristic;

a throttle valve driving means responsive to the output of the target intake air amount determining means for controlling a position of a throttle valve to cause the throttle valve to reach a target throttle valve opening position corresponding to the determined target intake air amount; and

a fuel feed control means responsive to the output of the target fuel feed amount determining means for controlling the amount of fuel to be fed to the engine to the target fuel feed amount;



said throttle valve driving means and said fuel feed control means being substantially simultaneously responsive to changes in the position of the accelerator.

4,763,265

AIR INTAKE SIDE SECONDARY AIR SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE WITH AN IMPROVED DUTY RATIO CONTROL OPERATION

Tomohiko Kawanabe, Utsunomiya; Masahiko Asakura, Tokorozawa; Noritaka Kushida, Tokyo; Yasunari Seki; Takanori Shiina, both of Utsunomiya, and Minoru Muroya, Wako, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 5, 1986, Ser. No. 826,467

Claims priority, application Japan, Apr. 16, 1985, 60-081174; Apr. 16, 1985, 60-081175

Int. Cl.⁴ F02B *3/00*

U.S. Cl. 364—431.04 6 Claims

1. An air intake side secondary air supply system for an internal combustion engine having an air intake passage with a carburetor and an exhaust passage, comprising:

an air intake side secondary air supply passage communicating with the air intake passage on the downstream side of the carburetor;

an open/close valve disposed in said air intake side secondary air supply passage;

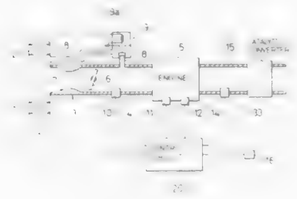
an oxygen concentration sensor disposed in the exhaust

VOL 1093 ISS 2 AUG 9 1988 UMI

passage and producing an output signal indicating an oxygen concentration in exhaust gas of the engine;

means for setting a target air-fuel ratio in response to engine operation; and

control means for controlling a duty ratio of opening and closing of said open/close valve by comparing the output signal of the oxygen concentration sensor with a level corresponding to said target air-fuel ratio, calculating an output valve open period within each cyclic period of control operation in accordance with a result of said comparison subsequently, and opening said open/close valve for said output valve open period within each of said



cyclic periods, said duty ratio control means being operative, when said calculated output valve open period becomes longer than a maximum limit of valve open period, to set said calculated output valve open period to be equal to said maximum limit, and to open said open/close valve for said output valve opening period within each of said cyclic periods and when said calculated output valve open period becomes shorter than a minimum limit valve open period, to set said calculated output valve open period to be equal to said minimum limit, and to open said open/close valve for said output valve open period within each of said cyclic periods.

4,763,266

AIRCRAFT FLIGHT COMMAND AND DISPLAY SYSTEM

Larry R. Schultz; Peter J. Super, both of Auburn, and Francis J. van Leynseele, Edmonds, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1982, Ser. No. 453,433

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—433 **19 Claims**



1. An aircraft flight command system comprising:

wind shear detecting and indicating means for producing a warning signal in response to detecting that the aircraft is flying in a wind shear condition;

thrust command means; operable during an aircraft approach maneuver responsive to aircraft altitude and altitude loss, for producing a thrust command signal for controlling aircraft thrust to compensate for aircraft deviations due to a detected wind shear condition from both a horizontal and a vertial predetermined approach profile; and

pitch command means, operable in aircraft go-around and takeoff maneuvers responsive to aircraft altitude and altitude loss, for producing a pitch command signal for predeterminedly minimizing aircraft altitude loss in a detected wind shear condition.

4,763,267

SYSTEM FOR INDICATING TRACK SECTIONS IN AN INTERLOCKING AREA AS OCCUPIED OR UNOCCUPIED

Alan C. Knight, Korntal-Muchingen, and Helmut Uebel, Gerlingen, both of Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Jun. 19, 1986, Ser. No. 876,022

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522418

Int. Cl.[4] G06F *15/48*

U.S. Cl. 364—436 **10 Claims**



1. System for indicating whether each of at least two track sections in an interlocking area is unoccupied or occupied to a remote interlocking station, said system comprising:

at least one track circuit associated with each of the individual track sections, each said track circuit comprising

a track-circuit transmitter for transmitting an ocupancy detection signal, each said transmitter including switching means responsive to a check signal applied to a test signal input for causing the occupancy detection signal from the individual track-circuit transmitter to be temporarily switched off, and

one or more track-circuit receivers each having an input for receiving said occupancy detection signal, each said track circuit receiver having an unoccupancy-indicating output and an occupancy-indicating output responsive to changes in the received occupancy detection signal caused by a change in the occupancy condition of the associated track section, said receiver outputs in a properly functioning track circuit also being responsive to the switching off of the associated transmitter to indicate an occupied condition, thereby providing the capability to distinguish a failure condition from a true non-occupancy condition;

a multi-computer system having at least two independent computers operating in parallel, each having a plurality of inputs respectively connected to all the unoccupancy-indicating outputs and occupancy-indicating outputs of all the track-circuit receivers in the interlocking area and at least one of said computers having at least one test signal output connected to the test signal inputs of all the track-circuit transmitters in the interlocking area, for generating the check signal and for analyzing and checking said receiver outputs in normal operation and in response to the switching off of an associated transmitter and for generating output data indicative of the unoccupied or occupied or failed condition of the individual track circuits, each of said computers responsive to the output data from another of said computers for comparing its own output data for agreement with said output data from another of said computers and for providing a failure indication if a disagreement is detected therebetween; and

a communication link between the multi-computer system and the interlocking station for communicating said output data and any said failure indication to the interlocking station.

4,763,268

DIRECTION DISPLAY APPARATUS

Hisatsugu Itoh, and Kosaku Uota, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 22, 1986, Ser. No. 854,629

Claims priority, application Japan, Apr. 23, 1985, 60-86760

Int. Cl.[4] G01C *21/00;* **G06F** *15/50*

U.S. Cl. 364—449 **4 Claims**



1. A direction display apparatus for displaying direction of a specified location from a vehicle, said apparatus comprising a device displaying a pictorial display representing the vehicle, traveling azimuth measurement means to measure and produce an output representing a heading of the vehicle, angular coordinate input means to determine and provide an output representing an angular coordinate of the vehicle on a polar coordinate system with an origin set at the specified location, specified location direction calculation means responsive to outputs of said traveling azimuth measurement means and said angular coordinate input means to determine the direction of the specified location from the vehicle and generate an output representative thereof, and an indicator associated with said device displaying the direction of the specified location with reference to the pictorial display representing the vehicle on the basis of the output of said specified location direction calculation means.

4,763,269

POSITION DETERMINING APPARATUS FOR VEHICLE

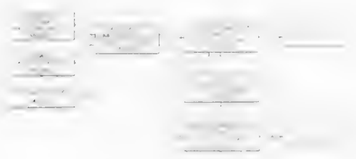
Michiyo Suyama, and Yasuyuki Akama, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 3, 1986, Ser. No. 847,527

Claims priority, application Japan, Apr. 5, 1985, 60-72943

Int. Cl.[4] G01C *21/00;* **G06F** *15/50*

U.S. Cl. 364—449 **2 Claims**



1. A position determining and indicating apparatus for a vehicle comprising:

a running distance detecting means for detecting a running distance of the vehicle based upon rotation of a vehicle wheel detected by a distance sensor producing an output, a vehicle heading detecting means for detecting a heading of the vehicle based upon direction of travel of the vehicle detected by an azimuth sensor producing an output, a movement component calculation means for determining first latitudinal movement components and first longitudinal movement components per unit running distance of the vehicle from the running distance and the heading provided by the outputs of both of said distance sensor and said azimuth sensor, a longitudinal distance calculation means for integrating the first longitudinal movement components per unit running distance provided by said movement component calculation means to determine a longitudinal distance taken from an initial location, a virtual latitude calculation means for determining a latitude difference between the initial location and a current position of the vehicle from the longitudinal distance of the vehicle provided by said longitudinal distance calculation means and for adding the latitude difference to a preset reference latitude to determine a virtual latitude of the current position of the vehicle, a latitudinal distance calculation means for determining second latitudinal movement components per unit running distance of the vehicle at the reference latitude by the use of the reference latitude and the virtual latitude provided by said virtual latitude calculation means on the basis of the first latitudinal movement components and for integrating the second latitudinal movement components to determine a latitudinal distance taken from the initial location, an initialization means for setting initial values of the latitudinal distance and the longitudinal distance in said distance calculation means at the initial location; and means for indicating the current position of the vehicle on the basis of the latitudinal and longitudinal distances determined by said latitudinal and longitudinal distance calculating means.

4,763,270

NAVIGATION SYSTEM FOR A VEHICLE AND METHOD THEREFOR

Toshiyuki Itoh; Hiroshi Ueno, both of Yokosuka; Masakazu Tsunoda, Fujisawa, and Seiichi Tohjyo, Zama, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 19, 1986, Ser. No. 842,363

Claims priority, application Japan, Mar. 20, 1985, 60-57477

Int. Cl.[4] G06F *15/50*

U.S. Cl. 364—449 **14 Claims**



1. A system for navigating a vehicle, comprising:

(a) first means for monitoring a distance travelled by the vehicle and vehicle direction and deriving the present position of the vehicle from the monitored distance and direction;

(b) second means for storing roadmap data including data on a plurality of known branching points;

(c) third means for designating a route of travel from a first

VOL 1093 ISS 2 AG 9 1988 UMI

known branching point through which the vehicle first passes en route to a final destination;

(d) fourth means for searching through the known branching points present on the designated route of travel for the known branching point which is nearest to the present position of the vehicle derived by said first means; and

(e) fifth means responsive to a start command for initiating navigation for guiding the vehicle along the designated route of travel from the known branching point found by said fourth means to the destination.

4,763,271

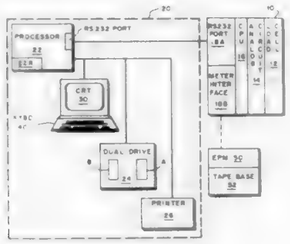
METHOD AND APPARATUS FOR UPDATING PARAMETER DATA

Michael E. Field, Brookfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation of Ser. No. 530,932, Sep. 12, 1983, abandoned. This application Feb. 18, 1987, Ser. No. 17,006

Int. Cl.⁴ G06F *15/20*

U.S. Cl. 364—466 8 Claims



1. A data processing system comprising:

(a) a processor;

(b) a processor memory operatively associated with said processor for storing programs to be executed;

(c) first portable media drive means operatively associated with said processor for providing access to a portable media;

(d) second portable media drive means operatively associated with said processor for providing access to a portable media;

(e) initializing means for, in response to an initializing signal, controlling the transfer of program data from a predetermined location on a portable medium mounted in said first drive means to predetermined locations in said memory, and for transferring control of said processor to the program defined by said program data;

(f) a first portable medium, said first medium including a boot loader program in said predetermined locations, a system program, and selected parameter data to be used in execution of said system program, whereby said system may be operated in a normal mode to execute said system program in accordance with said parameter data by mounting said first medium in said first drive and generating an initializing signal;

(g) a second portable medium, said second medium including data for updating said selected parameter data and further including data defining an updating program for controlling the updating of said selected parameter data when said first medium is mounted in said second drive, said updating program being loadable by said initializing means, said updating program first updating said selecting parameter data and then, without operator intervention, destroying at least a portion of the data on said second medium so as to render said second medium unusable for updating of other copies of said first medium;

(h) a scale operatively associated with said processor for determining the weight of items to be mailed;

(i) means for entry by an operator of postal information, said postal information including information defining a selected class of service for said items; and wherein

(j) said selected parameter data comprises a plurality of postal rate charts; and,

(k) said system program computes the appropriate postage values for said items to be mailed in accordance with said weight of said items, said additional information, and one of said postal rate charts corresponding to said selected class of service.

4,763,272

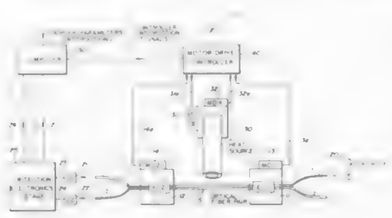
AUTOMATED AND COMPUTER CONTROLLED PRECISION METHOD OF FUSED ELONGATED OPTICAL FIBER COUPLER FABRICATION

Matthew N. McLandrich, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 29, 1987, Ser. No. 62,741

Int. Cl.⁴ G06F *15/46;* **G02B** *6/38*

U.S. Cl. 364—468 36 Claims



1. An apparatus for optically coupling lengths of at least two optical fibers held together in at least a partially contiguously abutting relationship along a longitudinal axis by translating motors at opposite ends that pull in opposite directions in response to translating motor drive control signals, the fibers being near a heat source that fuses the fibers at least partially together to help effect an optical coupling therebetween, when displacing motors laterally and longitudinally displace the heat source in response to displacing motor drive control signals and detectors each adjacent an end of each length of the optical fibers sense the amount of light received from a light source coupled to one fiber to provide representative detected signals, to create predetermined optical coupling characteristics comprising:

means coupled to receive each representative detected signal from all the detectors for generating appropriate translating motor drive control signals for the translating motors and for generating appropriate displacing motor drive control signals for the laterally and longitudinally displacing motors in response to the representative detected signals and in accordance with a computer program and parameter instruction signals so as to reproducibly create said predetermined optical coupling characteristics in the optical coupling.

4,763,273

APPARATUS FOR DETECTING ECCENTRICITY OF ROLL IN ROLLING MILL

Yoshiharu Anbe, Kodaira; Toshimi Mineura, Hamura; Hajime Kai, Fuchu; Sumiyasu Kodama, Tokyo, and Takao Dobashi, Hachioji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 25, 1986, Ser. No. 889,265

Int. Cl.⁴ B21B *37/00*

U.S. Cl. 364—472 4 Claims

1. An apparatus for detecting a roll eccentricity in a rolling mill comprising:

mark pulse generators provided, respectively, for upper and lower rolls from which an eccentricity is to be detected, said mark pulse generators genterating, respectively, one pulse per one rotation of said rolls, and sampling pulse generators provided, respectively, for said upper and lower rolls for generating, respectively, n pulses per one rotation of said rolls;

a rolling pressure detector for detecting a rolling pressure of said rolls and outputting a rolling pressure signal indicative thereof;

a roll eccentricity calculation/memory unit which, during rotation of said rolls, samples the rolling pressure signal outputted from said rolling pressure detector at the output timings of said sampling pulse generators after the time when said mark pulse generators generate said mark pulses, and calculates to store the roll eccentricity of each of said rolls based on said rolling pressure signal;

a Fourier transformation/calculation unit for calculating a difference between outputs from said roll eccentricity calculation/memory unit and performing a Fourier transformation of said difference, said outputs corresponding to those before and after relative phases of said upper and lower rolls are changed;

an angle calculation unit for outputting signals regarding the rotary angle and said relative phase of each of said rolls, based on the outputs form said mark pulse generators and said sampling generators; and

an eccentricity quantities outputting unit for outputting the eccentricity quantity independently for each of said rolls, based on the output signals from said Fourier transformation calculation unit and said angle calculation unit.







operating the digital computer to group the lobes into signatures;

storing a set of rules in the digital computer for characterizing as a function of selected characteristics of said signatures, structural features surrounding the tubes and defects in the tubes; and

operating the digital computer to apply said rules to said signatures to identify the structural features and defects and to generate an output identifying the structural features and defects identified.

4,763,274

MACHINE IMPLEMENTED ANALYSIS EDDY CURRENT DATA

Warren R. Junker, Monroeville; George A. Savage, Belle Vernon; Ronald H. Ingraham, Swissvale; David A. Bone, Penn Hills; Mustan Attaar; Raymond P. Castner, both of Monroeville, and Bruce J. Taszarek, Mt. Lebanon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 24, 1986, Ser. No. 878,095

Int. Cl.⁴ G01R *33/12*

U.S. Cl. 364—481 38 Claims

1. A method of machine implemented analysis of eddy current test data recorded in quadrature channels at spaced data points as a probe is passed through the tubes of a heat exchanger, comprising the steps of:

storing the eddy current data for the spaced data points in a data array in a programmed digital computer;

operating the digital computer to examine the data in the array point by point to identify lobes;

operating the digital computer to group the lobes into signatures;

storing a set of rules in the digital computer for characterizing as a function of selected characteristics of said signatures, structural features surrounding the tubes and defects in the tubes; and

operating the digital computer to apply said rules to said signatures to identify the structural features and defects and to generate an output identifying the structural features and defects identified.

4,763,275

FORCE ACCUMULATING DEVICE FOR SPORTING PROTECTIVE GEAR

John A. Carlin, 1795 S. St. Paul, Denver, Colo. 80210

Filed Feb. 20, 1986, Ser. No. 831,653

Int. Cl.⁴ G01M *7/00;* **G01D** *9/00;* **G08B** *23/00;* **A63B** *69/00*

U.S. Cl. 364—508 14 Claims



6. A device for displaying accumulated force encountered by a participant (40) wearing protective gear (10) in a sporting event, so that the participant will not sustain a harmful amount of accumulated force over a period of time, said device comprising:

a housing affixed to said protective gear, said housing being selectively removable from said protective gear,

means (1600, 1610, 1620) contained in said housing for sensing the magnitude of forces encountered by said protective gear, said sensing means also generating a signal (1624) proportional to each said force above a predetermined value, (V_p.)

VOL 1093 ISS 2 AG 9 1988 UMI

means (**1630**, **1640**, **1650**) in said housing, connected to said sensing means and receptive of said signals from said sensing means for determining the amount of accumulated force encountered by said protective gear over a period of time from said forces, said determining means also simultaneously decrementing said accumulated force according to a predetermined force-time pattern (**620**) thereby allowing time for said participant to recover,

means (**1670**) in said housing and connected to said determining means for issuing an alarm when said accumulated force exceeds a predetermined amount, and

means (**1400**) selectively engaging said housing for preventing the removal of said sensing means from said protective gear unless said preventing means is permanently altered, said preventing means having a unique serial number placed thereon.

4,763,276

METHODS FOR REFINING ORIGINAL ROBOT COMMAND SIGNALS

Noel D. Perreirra, Allentown, and Michael Tucker, Bethlehem, both of Pa., assignors to Actel Partnership, Arlington, Tex.

Filed Mar. 21, 1986, Ser. No. 842,173
Int. Cl.[4] **G05B** *19/18, 19/42*
U.S. Cl. 364—513 **18 Claims**



1. A method for refining original command signals which are intended, by conversion to corresponding pair variable signals, to place, in response to said pair variable signals, a robot having mechanical linkage and joint actuators at a desired position and orientation (pose), comprising the steps of:

a. identifying actual system parameters of said robot which describe said mechanical linkage and joint actuators of said robot;

b. predicting, through the utilization of said actual system parameters and said original command signals, a predicted anticipated pose of said robot which would actually be obtained as a result of said original command signals;

c. calculating, as a function of the difference between said desired pose and said predicted anticipated pose, corrected command signals required to minimize the difference between said desired pose and said predicted anticipated pose; and

d. employing said corrected command signals to place said robot in said desired pose.

4,763,277

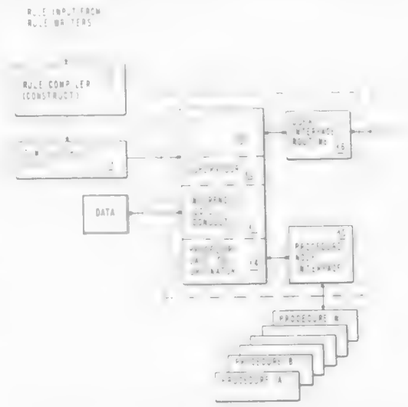
METHOD FOR OBTAINING INFORMATION IN AN EXPERT SYSTEM

Thomas J. Ashford, San Jose, Calif.; Nancy A. Burns, Austin, Tex.; Richard L. Flagg, Boeblingen, Fed. Rep. of Germany; Christine T. Iwaskiw, Columbia, Md., and Roberta P. Starbird, Pasadena, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 17, 1986, Ser. No. 819,663
Int. Cl.[4] **G06F** *15/18*
U.S. Cl. 364—513 **9 Claims**

1. In a method for collecting information by tracing a rule base of an expert system with a data processing system having a processing unit which functions with said expert system program as an inference engine, the improvement comprising the following steps in combination,

(a) establishing in said rule base, a rule tree having a goal node and at least one evidence node which functions to present a class question to a user of said system, and,



(b) selectively setting the answer in said one evidence node without obtaining said answer in response to asking said class question to said user, said step of setting the answer including the step of determining the answer to be set in accordance with information obtained from at least one other node in said rule base which does not ask the same class question.

4,763,278

SPEAKER-INDEPENDENT WORD RECOGNIZER

Periagaram K. Rajasekaran, and George R. Doddington, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1983, Ser. No. 484,820
Int. Cl.[4] **G10L** *5/00*
U.S. Cl. 364—513.5 **18 Claims**



1. A method for recognizing speech independent of the speaker thereof, said method comprising:

receiving an analog input speech signal;

conditioning said analog speech signal to produce a sequence of rectangular waveforms of polarity signs alternating between plus and minus polarities as a digital waveform signal;

counting the number of polarity transitions in the digital waveform signal to obtain a zero-crossing count for each frame of the digital waveform signal;

measuring the time duration intervals between zero-crossings of the digital waveform signal;

providing a sequence of binary feature vectors based upon the measurements of the time duration intervals between zero-crossings of the digital waveform signal and corresponding to respective frames of the digital waveform signal;

providing a vocabulary consisting of a relatively small number of words, wherein each of the words included in the vocabulary is represented by a plurality of binary reference vectors which have been organized in sequences with each of said binary reference vector sequences corresponding to a word acoustically distinct from the other words included in the vocabulary;

comparing each of said binary feature vectors with each of said plurality of binary reference vectors;

determining a distance measure with respect to each of said binary reference vectors for each successive binary feature vector in said sequence of binary feature vectors in response to the comparison therebetween; and

recognizing words in accordance with the distance measures between each of said binary reference vector sequences and successively received binary feature vectors corresponding to respective frames of the digital waveform signal.

4,763,279

METHOD AND APPARATUS FOR CONVERTING DOT MATRIX DISPLAY DATA OF ONE RESOLUTION TO A FORMAT FOR DISPLAYING ON A DISPLAY DEVICE HAVING A DIFFERENT RESOLUTION

Karen K. Kellam, and Ronnie C. Tong, both of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1985, Ser. No. 813,763
Int. Cl.[4] **G06F** *15/66*
U.S. Cl. 364—518 **16 Claims**



1. A method of converting original serial graphics display data of one resolution N to data of a higher resolution M, said original data comprising a plurality of binary data digits where a "1" indicates a displayed command, and a "0" indicates a blank command, comprising:

determining the smallest segment N1 of original data to be converted to data of said second higher resolution by forming a ratio of the lower and higher resolution N and M as N1/M1;

adding additional data to said original data by inserting B blank data commands evenly between each of said original data, where B=M1−N1; and

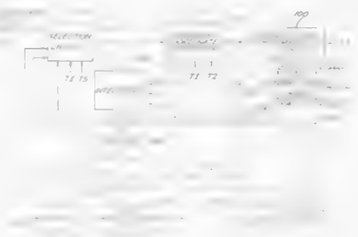
converting each of said inserted blank commands which lie between two consecutive print commands to a display command, whereby a segment M1 of data is produced for printing at said higher resolution.

4,763,280

CURVILINEAR DYNAMIC IMAGE GENERATION SYSTEM

John A. Robinson, Sandy, and Robert A. Schumacker, Salt Lake City, both of Utah, assignors to Evans & Sutherland Computer Corp., Salt Lake City, Utah

Filed Apr. 29, 1985, Ser. No. 728,360
Int. Cl.[4] **G06F** *15/72, 15/62;* **G09G** *3/00*
U.S. Cl. 364—518 **13 Claims**



1. An image generator system for curvilinear displays wherein images are developed from polygons having edges defined by signal-represented vertices, said generator comprising:

means for providing processed vertices signals defining edges for a desired image;

generator means for converting said processed vertices signals specifying edges to test vertices signals, which signals are in spherical coordinates and specify said edges at least in terms of two differential angles;

means for testing said test vertices signals specifying edges with respect to predetermined segmentation criteria to provide signals representative of acceptance or rejection;

means for segmenting said processed vertices signals defining an edge into other processed vertices signals defining plural equivalent edges, said means for segmenting connected for operation on occurrence of a rejection signal from said means for testing;

means for cycling said processed vertices signals defining edges through said generator means to said means for testing and through said means for segmenting to said means for providing processed vertices signals, to ultimately attain corrected vertices signals defining said edges in accordance with said predetermined segmentation criteria; and

means coupled to receive said corrected vertices signals for displaying images.

4,763,281

RECORDING SYSTEM COMPRISING A RECORDING APPARATUS AND/OR AN INFORMATION STORAGE CARTRIDGE DETACHABLY ATTACHED TO THE RECORDING APPARATUS

Junichi Arakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1985, Ser. No. 751,223
Claims priority, application Japan, Jul. 9, 1984, 59-141654
Int. Cl.[4] **G06F** *9/00;* **B41B** *25/26;* **G06K** *15/20*
U.S. Cl. 364—523 **18 Claims**

5. A recording system comprising:

a recording apparatus; and

an information storing cartridge detachably attached to said recordng apparatus, wherein said information storing cartridge includes:

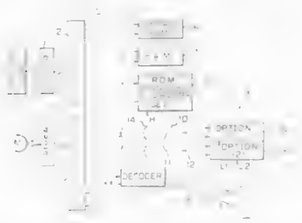
first memory means having stored therein a first dot pattern group;

second memory means having stored therein a second dot pattern group; and

VOL 1093 ISS 2 AG 9 1988 UMI

means for manually determining which of said first dot pattern group and said second dot pattern group is used to record data when said information storing cartridge is attached to said recording apparatus, wherein said determining means comprises switching means; and

wherein said recording apparatus includes:



recording means for recording on a recording medium; and

controlling means for discriminating the state of said switching means and to effect recording of data using the dot patterns designated by said switching means when said information storing cartridge is attached to said recording apparatus

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4,763,282

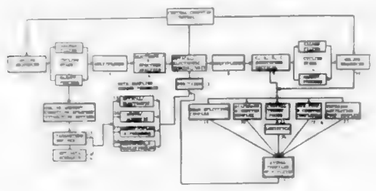
PROGRAMMING FORMAT AND APPARATUS FOR THE IMPROVED COHERENT BEAM COUPLER SYSTEM AND METHOD

Larry Rosenberg, 3440 Caroline Ave., Culver City, Calif. 90230

Continuation-in-part of Ser. No. 498,773, May 27, 1983, Pat. No. 4,589,078. This application Nov. 14, 1985, Ser. No. 798,011

Int. Cl.[4] **G06F** *15/20;* **G05B** *19/00*

U.S. Cl. 364—524 **4 Claims**



1. In a Coherent Beam Coupler System comprising a source of variable-wavelength laser light, automated beam-splitting means optically coupled to said source of variable-wavelength laser light and having a plurality of optical output channels, automated dye cell means optically coupled to said optical output channels of said beam splitting means to produce coherent light at predetermined wavelengths;

optical-fiber light transmission means coupled to said automated dye cell means for carrying laser light at selected frequencies to aberrant organic sites for bombardment of same;

combination sensor and fiber-optic networks for carrying light returned by said aberrant sites and analyzing the spectral content of such returned light;

infusate insertion means coupled hydraulically to said aberrant sites;

microelectrophoresis means hydraulically coupled to said aberrant sites for analyzing exudants therefrom; and

digital computer and data storage means, having an operating program, coupled electronically to said source of laser light, to said automated beam splitting means, to said automated dye-cell means and to said infusate insertion means for controlling all of the foregoing in accordance with the interactive operating program of said digital computer and data storage means and coupled electronically to said combination sensor and fiber-optic network for receiving input information therefrom, as to conditions at said aberrant sites, the method of eliminating aberration at said aberrant sites, which includes the step of introducing to said aberrant organic sites, by way of said infusate insertion means, infusates of an amount and nature controlled by said digital storage and computer means in response to return signals from said laser-bombarded aberrant sites.

4,763,283

COLOR TRANSCODING PROCESS PERMITTING THE INTERCONNECTION OF TWO DEFINITION EQUIPMENTS OF DIFFERENT COLORS AND THE CORRESPONDING TRANSCODER

Francoise Coutrot, Ercé-prés-Liffré , France, assignor to Centre National d'Etudes des Telecommunications and l'Etablissement Public Telediffusion de France, Les Ulis, France

PCT No. PCT/FR85/00088, § 371 Date Dec. 10, 1985, § 102(e) Date Dec. 10, 1985, PCT Pub. No. WO85/04977, PCT Pub. Date Nov. 7, 1985

PCT Filed Apr. 16, 1985, Ser. No. 817,834

Claims priority, application France, Apr. 20, 1984, 84 06304

Int. Cl.[4] **G06F** *15/62;* **G09G** *1/28*

U.S. Cl. 364—526 **7 Claims**



2. A color transcoder permitting the interconnection between an input equipment and an output equipment, said input equipment incorporating a page memory, whose content is able to define a mosaic-type image formed from characters each of which is defined by a shape (F), a character color (Cc), a background color (Cf) and various other character features, the character and background colors (Cc) and (Cf) being taken from a group of N colors, said output equipment incorporating a means for displaying the mosaic-type image in question with the aid of characters having a shape, a character color and a background color, the character and background colors being taken from a group of M colors, M being smaller than N, said transcoder comprising:

a group of input registers connected to the page memory of the input equipment and able to store digital data corresponding to various characters to be displayed, said group in particular having a register storing a word of n bits corresponding to the character color Cc and a register storing a word of n bits corresponding to the background color Cf,

a first comparator with n bits having two inputs respectively connected to two input registers, from where they receive the words corresponding to colors Cc and Cf and three outputs, whereof the binary state indicates whether Cc is smaller, equal to or higher than Cf,

a read-only memory having M words (C0, C1, . . . Ci, Ci+1 . . . Cj, Cj+1 . . . , CM−1) of n bits correspond to M colors of the output equipment, said words being completed to n bits and classified in a given order, each word being addressable in the memory by a symbol (i or j) defining the order of the word,

a first subassembly making it possible to determine in which range Ci−Ci+1 is located the word Cc, said first subassembly having a first input connected to the input register from which it receives the word Cc and a second input connected to the read-only memory, as well as two outputs supplying the words Ci and Ci+1 defining the range in which Cc is located,

a second subassembly making it possible to determine in which range Cj−Cj+1 is located the word Cf, said second subassembly having a first input connected to the input register from which it receives the word Cf and a second input connected to the read-only memory, as well as two outputs supplying the words Cj, Cj+1 defining the range in which Cf is located,

a second comparator having two inputs receiving the words Ci and Cj and having an output, whereof the binary state indicates whether Ci and Cj are or are not equal,

a first comparison unit to calculate differences Cc−Ci and Ci+1−Cc and determine which of these two differences is the smaller, said first unit having first and second inputs respectively connected to the two outputs of the first subassembly from where they receive the words Ci and Ci+1, as well as a third input connected to the input register from where it receives the word Cc, said first unit having an output, whose binary state indicates whether Cc−Ci is or is not smaller than Ci+1−Cc,

a second comparison unit to calculate the differences Cf−Cj and Cj+1−Cf and determine which of said two differences is the smaller, said second unit having first and second inputs respectively connected to the two outputs of the second subassembly from where they receive the words Cj and Cj+1 and a third input connected to the input register from where it receives the word Cf, said second unit having an output, whereof the binary state indicates if Cf−Cj is or is not lower than Cj+1−Cf,

a logic decision circuit incorporating at least six inputs respectively connected to the inputs of the first comparator, to the output of the first comparison unit, to the output of the second comparison unit and to the output of the second comparator, said logic circuit performing a choice operation said circuit having three outputs, the first supplying a first bit, the second supplying a second bit and the third supplying a third bit,

a multiplexer means having data input connected to the first and second subassemblies and receiving words defining character features, as well as control inputs connected to the outputs of the logic decision circuit, said multiplexer means having a data output,

a group of output registers having an input connected to the output of the multiplexer means and an output connected to the output equipment, and

a sequencing and address counting circuit having a plurality of inputs respectively for receiving initialization, transcoding request, character reading and incrementation clock commands, as well as a plurality of outputs for outputting respectively control, page memory read, loading the group of input registers, loading the group of output registers, character validation and address output commands.

4,763,284

REACTION TIME AND FORCE FEEDBACK SYSTEM

John A. Carlin, 1795 S. St. Paul, Denver, Colo. 80210

Filed Feb. 20, 1986, Ser. No. 831,979

Int. Cl.[4] **G01M** *7/00;* **A63B** *69/00;* **G01D** *9/00;* **G08B** *23/00*

U.S. Cl. 364—550 **4 Claims**

1. An improved system for displaying the actual magnitude of forces produced by the limbs of a sport participant in a sporting event, said system comprising:

a first portable housing (10) for placement on at least one limb of said participant,

means (200) in said first portable housing for sensing the magnitude of each said force produced by said limb,

means firmly engaging around said limb and connected to said first portable housing for holding said sensing means firmly against the outer surface of said limb in close proximity to the internal bone structure of said limb such as the wrist or ankle in order to maximize the detection of said magnitude of said forces so that said sensed magnitude of said forces corresponds to said actual magnitude of said forces, said sensing means also generating a digital signal (642) proportional to the magnitude of each said force,

a second protable housing (20) for placement on the body of said participant remote from said first portable housing,

means (25) in said second portable housing receptive of said digital magnitude signal from said sensing means for storing information corresponding to (a) said actual magnitude of said force, (b) the relative time of each sensed force, and (c) the differential time between occurrences of each said sensed force signal, said receiving means also transmitting said magnitude and differential time information (40) to a remote location, and

means (30) at said remote location for receiving said transmitted magnitude and time information from said storing means, said receiving means also displaying said information.



4,763,285

HELICOPTER LOW-G MONITOR, RECORDER AND WARNING SYSTEM

M. Samuel Moore, and Charles F. Paluka, both of Northridge, Calif., assignors to Semco Instruments, Inc., Valencia, Calif.

Continuation-in-part of Ser. No. 784,724, Oct. 4, 1985. This application Aug. 19, 1986, Ser. No. 897,994

Int. Cl.[4] **G06G** *7/48;* **G08B** *23/00;* **G01C** *21/00*

U.S. Cl. 364—551 **19 Claims**



1. A comprehensive digital monitoring and recording system for turbine engine powered helicopters wherein the helicopter and turbine engine have predetermined normal operating parameters, said system comprising:

means for sensing the temperature of said turbine engine;

VOL 1093 ISS 2 AG 9 1988 UMI

means for sensing the acceleration or "g" force acting vertically on said helicopter;

digital data processing means for determining exceedances indicating operation of said turbine engine over the normal operating temperature of said engine and when said "g" force drops below predetermined levels;

non-volatile storage means for permanently storing data giving the duration and magnitude of each said exceedance, and the total duration of the exceedances; and

means for providing a warning signal to the pilot when the "g" force reaches a predetermined low level.

4,763,286

MEASURED DATA PASS-FAIL DISCRIMINATING APPARATUS

Takeji Nishimura, and Hiroshi Koizumi, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

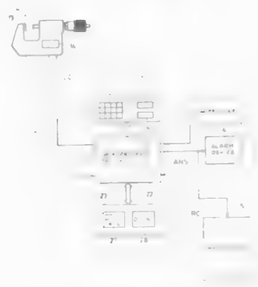
PCT No. PCT/JP84/00388, § 371 Date Mar. 8, 1985, § 102(e) Date Mar. 8, 1985, PCT Pub. No. WO85/00880, PCT Pub. Date Feb. 28, 1985

PCT Filed Jul. 31, 1984, Ser. No. 717,272

Claims priority, application Japan, Aug. 4, 1983, 58-143338

Int. Cl.[4] **G08B** *19/00*

U.S. Cl. 364—352 **8 Claims**



1. A measured data pass-fail discriminating apparatus for measuring a work being machined by a machine tool, comprising:

a measuring instrument for outputting measured data;

a data discriminating device for discriminating said measured data as digital values to output an alarm signal, said data discriminating device including storing means for storing first limiting values for discriminating pass or fail of said work to be measured at both an upper limit and a lower limit, said upper and lower limits being located on opposite sides of acceptable values for said work, second limiting values on both sides of said acceptable values set closer to said acceptable values than said first upper and lower limit values and preview judging frequencies, respectively, and means for comparing said measured data with said limiting values, means for counting the number of measured data continuously lying within the region between said first limiting values and said second limiting values, means for resetting the number of measured data lying in the region between said first and second limiting values to zero when the measured data lies within an allowable region between said second limiting values, and alarm means for providing an alarm signal when at least one of said measured data exceeds one of said first limiting values, said measured data continues to lie within a region between said first limiting values and said second limiting values and a number of said measured data lying within a one of said regions has a predetermined relation with one of said preview judging frequencies belonging to said one of said regions.

4,763,287

MEASURING PERFORMANCE INFORMATION IN RUNNING DISCIPLINES AND SHOE SYSTEMS

Heinz Gerhaeuser, Waischenfeld; Gerhard Pirner, Etzelwang, and Thomas Rueckert, Hausen, all of Fed. Rep. of Germany, assignors to PUMA AG Rudolf Dassler Sport, Herzogenaurach, Fed. Rep. of Germany

Filed May 21, 1987, Ser. No. 52,061

Claims priority, application Fed. Rep. of Germany, May 24, 1986, 3617591

Int. Cl.[4] **G01C** *22/00;* **G08B** *23/00*

U.S. Cl. 364—561 **20 Claims**



15. System for the determination of movement characteristics in running disciplines, such as stride length, running speed or the like with shoes, especially athletic shoes, comprising:

(a) first and second shoes;

(b) first sensor means, in said first shoe, for responding to contacting of the first shoe with the ground;

(c) second sensor means, in said second shoe, for responding to lifting-off of the second shoe with the ground;

(d) first transmitter means, in said first shoe, linked to said first sensor means and being activatable for radiating a first signal by a response from the first sensor means;

(e) second transmitter means, in said second shoe, for radiating second and third signals;

(f) receiver means in said second shoe for receiving the first signal, said receiver means in said second shoe processing said first signal and triggering issuance of said second signal;

(g) receiver means in said first shoe for receiving the second and third signals;

(h) first counter means in said first shoe, said first counter being linked to said first sensor means for being activatable by a response from said first sensor means and being linked to the receiver means of the first shoe for being deactivatable by receipt of said second signal by said receiver means of the first shoe;

(i) second counter means, in said second shoe, said second counter being linked to the second sensor means for being activatable by a response from said second sensor means, being linked to said receiver means of the second shoe for being deactivatable by receipt of said first signal by the receiver means of the second shoe means, and being linked to said second transmitter means for emitting a value determined by said second counter as said third signal; and

(j) means for performing said determination of movement characteristics utilizing value determined by said counters.

4,763,288

SYSTEM FOR SIMULATING ELECTRONIC DIGITAL CIRCUITS

Michael F. Deering, and Neil Hunt, both of Mountain View, Calif., assignors to Schlumberger Systems & Services, Inc., Palo Alto, Calif.

Filed Dec. 31, 1985, Ser. No. 815,471

Int. Cl.[4] **G06G** *7/48;* **G06F** *11/00*

U.S. Cl. 364—578 **13 Claims**

7. An apparatus for simulating an electronic circuit for processing visual image data, said circuit comprising a plurality of components and a plurality of nets for connecting said components, at least one of the components being connected to at least one input net and to at least one output net for generating an output frame on each of said output nets in response to an input frame on each of said input nets according to a known processing behavior, said input frame and said output frame comprising an ordered set of picture elements transmitted serially on a net, the apparatus comprising:

a camera;

a frame buffer card coupled to said camera;

a computer workstation coupled to said frame buffer card for reading and writing to said frame buffer;

a monitor coupled to said frame buffer;

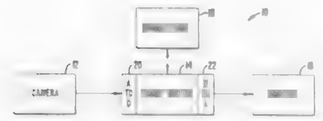
said workstation being programmed to simulate the circuit in response to an image from said camera, and to cause an output image to be written to said frame buffer and displayed on said monitor, said program comprising:

means for:

(a) defining a group of components which must operate in synchronism;

(b) calculating a scaling factor for each input net connected to any component in the group, the scaling factor indicating a rate at which valid picture elements arrive at the input net;

(c) calculating a reference element input time for each input net connected to any component in the group, the reference element input time indicating a time at which



a predetermined one of the ordered set of picture elements arrives at the input net;

(d) for each component connected to a plurality of input nets;

(i) comparing the calculated scaling factors for all of the component's input nets; and

(ii) comparing the calculated reference element input times for all of the component's input nets;

thereby synchronizing the timing of said group by ensuring that corresponding picture elements will arrive together at components having a plurality of inputs;

(e) generating and storing at least one output frame in response to at least one input frame according to the known processing behavior of a first component in the group;

(f) repeating step (e) for each component in the group having at least one input net and at least one output net, to generate at least one group output frame;

(g) determining a component finish time for each component in the group to generate a latest component finish time;

(h) repeating steps (a) thru (g) for each group of components which must operate in synchronism, to generate a circuit output frame; and

(i) writing the circuit output frame to said frame buffer card for display on said monitor.

4,763,289

METHOD FOR THE MODELING AND FAULT SIMULATION OF COMPLEMENTARY METAL OXIDE SEMICONDUCTOR CIRCUITS

Zeev Barzilai, Millwood; Vijay S. Iyengar, Peekskill; Barry K. Rosen, Stormville, all of N.Y., and Gabriel M. Silberman, Haifa, Israel, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1985, Ser. No. 815,435

Int. Cl.[4] **G06F** *15/20, 11/22*

U.S. Cl. 364—578 **6 Claims**



1. In a method operable on an electronic data processing system for generating Boolean gate level logic models of complementary metal oxide semiconductor circuits wherein the complete logic description of all of the transistors making up the CMOS circuit (to be modeled) specifying all logic functions and including the interconnectivity of the transistors is stored in machine readable form in system memory as a series of Boolean gate level descriptions and access to each individual CMOS gate making up said overall logic circuit description is available, the improvement which comprises a procedure for accurately representing the operation of the circuits to be modeled by considering all static hazard and charge storage effects inherent in the circuits in turn, utilizing Boolean logic equations to reflect a series of logic transformations in the gate level logic descriptions in accordance with a series of predetermined logic transformations and simplifications and including generating models for both faultless and faulty circuits and storing same in memory for use in analyzing the performance of the simulated CMOS circuits said procedure including

a method for modeling a faultless CMOS gate circuit comprising both nFET and pFET networks wherein the nFET and pFET networks both contain identical static hazards, comprising

generating a Boolean logic network for a function Tp derived from the combinatorial logic description of the circuit accessed from memory wherein the inputs to the network are the logical inputs to the circuit such that Tp is represented functionally as the output of an OR function,

defining said OR function for Tp as having an input for each acyclic path from the circuit power source VDD to the CMOS gate's output net, such that said input is the output of an AND function with a complemented literal for each input to the CMOS gate that gates a transistor on said acyclic path from VDD,

successively substituting in the resultant network only static hazard preserving transformations in the logic defining the circuit to simplify same, and

representing the output F of the simulated circuit as being

VOL 1093 ISS 2 AUG 9 1988 UMI

represented by the output of the generated logic circuit which produces Tp.

4,763,290

APPARATUS FOR PERFORMING A FAST FOURIER TRANSFORM

David W. Cowen, Corsham, England, assignor to Westinghouse Brake & Signal Co., Ltd., England

Filed Apr. 24, 1986, Ser. No. 855,247
Claims priority, application United Kingdom, Jun. 3, 1985, 8513959
Int. Cl.[4] G06F *15/332 A*
U.S. Cl. 364—604 6 Claims



1. Apparatus for performing a fast Fourier transform, comprising:

means for receiving an input signal;

complex heterodyne means for performing a complex heterodyning operation on said input signal to generate first and second heterodyned signals having a quadrature phase relationship, said complex heterodyne means comprising:

first and second heterodyne mixing circuits;

means for detecting a carrier signal of a received input signal and producing a control signal in dependence on the frequency of said detected carrier signal;

a signal source connected to said detecting means to receive said control signal, said signal source producing a dependent signal at a frequency determined in dependence on said control signal; and

heterodyne signal generating means connected to said signal source for using said dependent signal at a determined frequency to generate first and second local heterodyne signals having the same frequency as each other and having a quadrature phase relationship with each other, said generating means connected to each of said heterodyne mixing circuits for transmiting respective ones of said first and second local heterodyne signals thereto;

processor means for performing a fast Fourier transform, the processor means having a real data array for the Fourier transform process and an imaginary data array for the Fourier transform process;

first digital sampling means, connected to an output of said first heterodyne mixing circuit, for receiving said first heterodyned signal, obtaining real time series samples of said first heterodyned signal and loading these samples into said real data array; and

second digital sampling means, connected to an output of said second heterodyne mixing circuit, for receiving said second heterodyned signal, obtaining real time series samples of said second heterodyned signal and loading these samples into said imaginary data array.

4,763,291

REMOTE DISPLAY DEVICE FOR A MICROCOMPUTER

Jeffrey S. Schwaber, Winter Park, Fla., assignor to Project Benjamin, Ltd., Winter Park, Fla.

Filed Mar. 6, 1986, Ser. No. 836,843
Int. Cl.[4] H04L *11/02*; G06F *13/00*; G09B *5/00*
U.S. Cl. 364—704 4 Claims



2. An optically linked portable calculator system comprising:

a first calculator unit having a keyboard for manually entering data and command functions into said first calculator, processing means responsive to data and command functions entered into said calculator for operating thereon to generate corresponding results in a digital data format and display means coupled to said processing means for displaying said data and command functions and said results in a human readable form, said first calculator further including optical means for converting said digital data formatted results into atmospherically transmitted pulses of optical radiation within a predetermined optical frequency range;

at least one detached remote calculating means having a local keyboard for manually entering local data and command functions, a local processing means for receiving local data and command functions and for operating thereon to generate corresponding local results, a local display means coupled to said local processing means for displaying results obtained from said local processing means, said at least one remote calculating means further including optical means for receiving atmospherically transmitted pulses of optical radiation within the predetermined optical frequency range, said optical means converting received pulses into digitally formatted data and command functions for application to said local processing means, said local microcomputer means causing said data and command functions to be displayed on said local display means; said first calculator unit and each of said at least one detached remote calculating means including means for reversing the function of its respective optical means to either a transmit or receive mode for permitting signal transmission between said first calculator unit and; and at least on detached remote calculating means

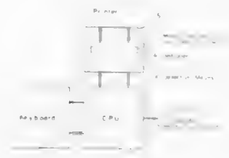
means in each said first calculator unit and said at least one detached remote calculating means for selectively displaying data and command functions from its associated keyboard and from optically received pulses from said first calculator unit or said at least one detached remote calculating means.

4,763,292

PRINTER CONTROLLER

Yasuhiro Kotani, Nara; Koichi Oda, Sakai, and Shoichi Kawai, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 484,461, Apr. 13, 1983, abandoned.
This application Apr. 28, 1986, Ser. No. 859,197
Claims priority, application Japan, Apr. 14, 1982, 57-67287; Apr. 14, 1982, 57-62790
Int. Cl.[4] G06F *3/12*
U.S. Cl. 364—710 1 Claim



1. In an electronic calculator apparatus having a keyboard with numerical keys and function keys for inputting numerical and function data, a printer for printing out data input by the numerical and function keys as well as calculation results related to the data input, and printer controller means for controlling the format and content of data printed out by the printer, an improvement in said printer controller means comprising:

detection means for determining if two function keys are actuated in succession without the actuation of a numerical key in between, and generating a signal indicative thereof; and

means responsive to said signal for causing said printer to print out on the record medium successive function symbols without numerical data symbols therebetween in the sequence of input data printed on the record medium, said function symbols corresponding to the symbols on the function keys which were successively actuated;

whereby an operator may observe the record medium and locate amended function key input data on the record medium.

4,763,293

DATA PROCESSING DEVICE FOR INTERPOLATION

Masahiro Takei, Kanagawa; Susumu Kozuki, Tokyo; Toshiyuki Masui; Masahide Hirasawa, both of Kanagawa, and Motokazu Kashida, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha

Filed Feb. 26, 1985, Ser. No. 705,562
Claims priority, application Japan, Feb. 27, 1984, 59-35705; Feb. 29, 1984, 59-38338; Feb. 29, 1984, 59-38339; Mar. 1, 1984, 59-39288; Mar. 1, 1984, 59-39289
Int. Cl.[4] G06F *15/353*
U.S. Cl. 364—723 22 Claims

1. A data processing device for processing data included in a sequence of data obtained by sampling an analog information signal, said device comprising:

(a) a plurality of computing means for generating a plurality of interpolating data by processing first and second correct data included in said data sequence;

(b) discriminating means for discriminating the quadratic differential characteristic of a part of said analog information signal relating to incorrect data located between said first and second correct data;

(c) selecting means for selecting one of said plurality of interpolating data on the basis of an output of said discriminating means to generate a selected interpolating data; and

(d) replacing means for replacing said incorrect data with said selected interpolating data.



4,763,294

METHOD AND APPARATUS FOR FLOATING POINT OPERATIONS

Anthony S. Fong, Southboro, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Dec. 19, 1985, Ser. No. 810,795
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—748 23 Claims



11. In an information processing system including memory means for storing instructions and operands, central processor means including means for fetching and decoding instructions and operands, bus means connected between the processor and memory means, floating point means connected from the bus means and responsive to decoded floating point instructions for performing floating point operations, and means for controlling the execution of floating point instructions, said means for controlling the execution of floating point instructions comprising:

in the central processor means

instruction type determining means for determining whether a floating point instruction is a member of a first group of instructions requiring an interlock of operation between the floating point means and the central processor means or is a member of a second group of instructions not requiring interlock of operation between the floating point means and the central processor means;

state determining means for determining whether the floating point means is in an idle state or is in an available state; and

floating point instruction dispatching means, responsive to the operation of said instruction type determining means and to the operation of said state determining means, for dispatching to said floating point means an instruction belonging to said first group when said floating point means is determined be in an idle state and for dispatching

VOL 1093 ISS 2 AG 9 1988 UMI

to said floating point means an instruction belonging to said second group when said floating point means is determined to be in an available state.

4,763,295

CARRY CIRCUIT SUITABLE FOR A HIGH-SPEED ARITHMETIC OPERATION

Kouichi Yamada, and Masatoshi Mizuno, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 27, 1984, Ser. No. 686,802

Claims priority, application Japan, Dec. 27, 1983, 58-250105; Dec. 28, 1983, 58-247006

Int. Cl.[4] G06F *7/50*

U.S. Cl. 364—786 7 Claims



7. A carry circuit having a first block which produces a first carry signal (C1) according to sum data of a first plurality of bits and carry data of said first plurality of bits which are arithmetically operated therein, and a second block (10') which produces a second carry signal (C2) according to said first carry signal and sum data ($\overline{S}_4$ to $\overline{S}_7$) of a second plurality of bits and carry data ($\overline{C}_4$ to $\overline{C}_7$) of said second plurality of bits which are arithmetically operated therein, said second block comprising:

a first means (70,71) for generating a first signal having a fixed first level which corresponds to the one of two levels that said first carry signal takes and a second signal having a fixed second level which corresponds to the other of said two levels independently of said first carry signal,

a second means (50,51,52,53,57, . . . , 50'',51'',52'',53'',57'') receiving said first signal, said second signal, said sum data of said second plurality of bits and said carry data of said second plurality of bits for producing two output signals independently of said first carry signal before said second block receives said first carry signal, said two output signals having a first level and a second level, respectively, according to said first and second signals when said sum data of said second plurality of bits all have the same one of said first and second levels, said two output signals having the same level as one another according to carry data of one of said second plurality of bits when the sum data of any one of said second plurality of bits has the other of said first and second levels, and

a third means (60,61) for selecting either one of said two output signals in accordance with said first carry signal after said second block receives said first carry signal, the selected output signal being outputted from said second block as said second carry signal (C2).

4,763,296

WATCHDOG TIMER

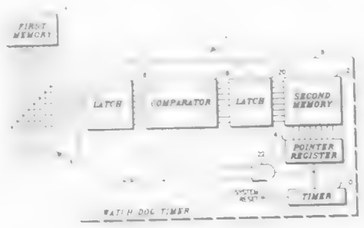
Anil Gercekci, Geneva, Switzerland, assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 3, 1986, Ser. No. 881,550

Claims priority, application United Kingdom, Jul. 5, 1985, 8517113

Int. Cl.[4] G06F *9/22, 11/28*

U.S. Cl. 364—900 17 Claims



1. A data processor including a watchdog timer comprising:

first memory means holding a primary operating routine for cyclic execution during operation of the data processor,

an address bus for addressing locations in said first memory means,

a timer for continuous operation during operation of the data processor and for effecting a system reset in response to the timer reaching a predetermined value,

the primary operating routine including at at least one predetermined location an instruction to reset the timer, whereby in normal operation of the data processor the timer does not reach the predetermined value,

wherein the data processor further includes

second memory means for holding the address of the location containing the instruction to reset the timer, and

comparator means coupled to the address bus, the second memory means and the timer for comparing the address on the address bus to the address held in the second memory means and for preventing the timer from being reset in response to an instruction to reset the timer unless the address on the address bus is held in the second memory means.

4,763,297

MONOLITHIC INTEGRATED DIGITAL CIRCUIT INCLUDING AN INTERNAL CLOCK GENERATOR AND CIRCUITRY FOR PROCESSING MULTI-DIGIT SIGNALS

Arnold Uhlenhoff, Emmendingen, Fed. Rep. of Germany, assignor to Deutsche ITT Industries GmbH, Freiburg, Fed. Rep. of Germany

Filed May 7, 1986, Ser. No. 860,559

Claims priority, application European Pat. Off., May 7, 1985, 85105578.0

Int. Cl.[4] G06F *1/04*

U.S. Cl. 364—900 1 Claim

1. A monolithic integrated digital circuit comprising:

a clock oscillator for producing an internal clocking signal, said clock oscillator comprising n ring connected inverting stages, where n is an odd number greater than one, said clock oscillator having a stop input for stopping production of said internal clocking signal and a clock output, said clock output for supplying said internal clocking signal;

circuit means for processing multidigit data signals, said circuit means including means for receiving said internal clocking signal from said clock output, means for receiving said multidigit data signals in parallel and means for receiving a system clock input, said circuit means for receiving said multidigit data signal in synchronism with said system clock input and for providing multidigit parallel output signals having a number of digits (m) in synchronism with said system clock input;

a counter having a clock input coupled to said clock output, a reset input for receiving said system clock input and a count output having an ordinal number (M) identical to the number of digits (m) of said output signals, said count output being coupled to said stop input of said clock oscillator; and wherein



said internal clocking signal has a frequency (f) fixed by the number n of ring connected inverting stages and the frequency (f) of said internal clocking signal is selected such that the product of said number of digits (m) of said output signals and the period (t) of said internal clocking signal is equal to or less than the period (T) of said system clock input, and said internal clocking signal having a frequency (f) which is further selected such that the period (t) of said internal clocking frequency is greater than or equal to a time interval (v) for said circuit means to process one digit of said multidigit data signals.

4,763,298

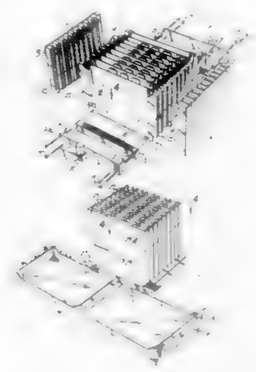
MEMORY ASSEMBLY WITH COOLING INSERT

Roy J. Hoelzel, and Brent H. Doyle, both of Minneapolis, Minn., assignors to ETA Systems, Inc., St. Paul, Minn.

Filed Jan. 15, 1987, Ser. No. 3,495

Int. Cl.[4] G11C *5/04;* H05K *7/14, 7/20*

U.S. Cl. 365—51 31 Claims



1. A memory system assembly, said assembly comprising:

an input interconnection network substrate having a system input electrical connector pair first member affixed at a first edge portion thereof which can be selectively mated with a system input electrical connector pair second member connected to external electrical apparatus to pass electrical signals therebetween, said input substrate first edge portion being located between input substrate second and third edge portions with said input substrate second edge portion having a first internal electrical connector pair first member affixed thereto and with said input substrate third edge portion having a second internal electrical connector pair first member affixed thereto, there being electrical interconnections provided between each of said first and second internal electrical connector pair first members and said system input electrical connector pair first member;

an output interconnection network substrate having a system output electrical connector pair first member affixed at a first edge portion thereof which can be selectively mated with a system output electrical connector pair second member connected to external electrical apparatus to pass electrical signals therebetween, said output substrate first edge portion being located between output substrate second and third edge portions with said output substrate second edge portion having a third internal electrical connector pair first member affixed thereto and with said output substrate third edge portion having a fourth internal connector pair first member affixed thereto, there being electrical interconnections provided between each said third and fourth internal electrical connector pair first members and said system output electrical connector first member;

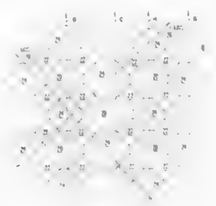
a first transmission interconnection network substrate having selected internal electrical connector pair second members affixed thereto including first and third internal electrical connection pair second members capable of being mechanically and electrically connected with said first and third internal electrical pair first members, respectively, there being electrical interconnections selectively provided between said plurality of internal electrical connector pair second members, said first and third internal electrical connector pair first members being mechanically and electrically connected with said first and third internal electrical connector pair second members, respectively;

a second transmission interconnection network substrate having selected internal electrical connector pair second members affixed thereto including second and fourth internal electrical connector pair second members capable of being mechanically and electrically connected with said second and fourth internal electrical pair first members, respectively, there being electrical interconnections selectively provided between said plurality of internal electrical connector pair second members, said second and fourth internal electrical connector pair first members being mechanically and electrically connected with said second and fourth internal electrical connector pair second members, respectively; and

a plurality of memory module interconnection network substrates each having a pair of internal electrical connector pair first members affixed at selected edges thereof one of which is capable of being, and is, mechanically and electrically connected with at least one of said selected internal electrical connector pair second members affixed to said first transmission interconnection network substrate, as aforesaid, and that one remaining capable of being, and is, mechanically and electrically connected with at least one of said selected internal electrical connector pair second members affixed to said second transmission interconnection network substrate, as aforesaid, each of said plurality of memory module interconnection network substrates having at least one electronic memory circuit means affixed thereto with each said electronic memory circuit means having an electrical interconnection to each of said internal electrical connector pair first members affixed thereto, as aforesaid, said connections of said internal electrical connector pair first and second members being solely relied upon to mechanically connect, in that manner aforesaid, said input, output, first transmission, second transmission and plurality of memory module interconnection network substrates.

VOL 1093 ISS 2 AG 9 1988 UMI

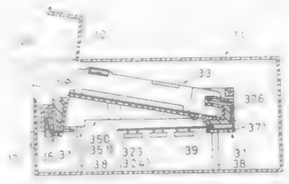
4,763,299
E²PROM CELL AND ARCHITECTURE
Emanuel Hazani, 1210 Sesame Dr., Sunnyvale, Calif. 94087
Filed Oct. 15, 1985, Ser. No. 787,279
Int. Cl.⁴ G11C *13/00, 11/42*
U.S. Cl. 365—51 6 Claims



5. In an E²PROM array, having a plurality of bit lines oriented substantially parallel to a bit line axis, an E²PROM cell, formed along the surface of a silicon substrate of a first conductivity type, comprising:
- a first terminal region, of a second conductivity type, formed along the surface of said substrate;
- a second terminal region, of a second conductivity type, formed along the surface of said substrate;
- a channel separating said first and second terminal regions, said channel being a region, of the first conductivity type, of said substrate disposed substantially symmetrically about a channel axis, with said channel axis oriented about 45° from said bit line axis;
- a first isolation region formed along the surface of said substrate, with a first end of said channel terminated at said first isolation region;
- a second isolation region formed along the surface of said substrate, with a second end of said channel terminated at said second isolation region;
- a word line, being a polysilicon structure disposed over said substrate, with said word line having a first substantially rectangular segment with an edge oriented at about 90° from said BL axis and positioned over said first isolation region, a second substantially rectangular segment having an edge oriented about parallel to said channel axis and positioned over said channel, and a third substantially rectangular segment with an edge oriented at about 90° from said BL axis and positioned over said second isolation region;
- a floating gate, being a polysilicon structure disposed over said substrate and below said word line, having a substantially rectangular programming section disposed over said channel and an erase section disposed over said first isolation region, said programming section having a first edge and second edge disposed about parallel to said channel axis, with the first edge being closer to said first terminal region than the second edge is to said second terminal region; and
- an erase region, being a polysilicon structure disposed over said first isolation region and positioned between said erase section of said floating gate and said word line.

4,763,300
FRONT LOADING APPARATUS FOR A MEMORY CARTRIDGE UTILIZED FOR A DATA PROCESSING MACHINE
Masayuki Yukawa, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Aug. 27, 1986, Ser. No. 900,717
Claims priority, application Japan, Aug. 28, 1985, 60-190372
Int. Cl.⁴ G11C *17/00;* H05K *5/04, 5/06*
U.S. Cl. 365—52 17 Claims

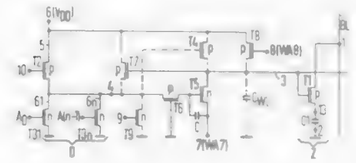
1. A front loading electronic gaming device adapted for use with a memory cartridge containing a first printed circuit board that has a first plurality of electrical contacts spaced along one board edge, said apparatus comprising:
- a main unit having a front and rear and containing a second printed circuit board having a second plurality of electrical contacts;
- a frame structure mounted to the main unit;
- a cartridge tray pivotally mounted to said frame structure for a rotation within a predetermined angular range between a cartridge loading and a cartridge operating position, and having an opening at one end located at the front of the main unit and adapted to slideably receive the cartridge when the tray is in said cartridge loading position;
- means biasing said cartridge tray toward said cartridge loading position;
- releasable means attached to the frame for locking said cartridge tray in said cartridge operating position; and



- an edge connector mounted within said main unit, said edge connector including a connector housing having upper and lower parallel elongated openings adapted to receive the first and second printed circuit boards, respectively, and a plurality of spring electrodes disposed within said connector housing for providing electrical interconnection between the first and second pluralities of electrical contacts of the first and second printed circuit boards, respectively, said spring electrodes having an offset configuration adapted for relatively low insertion force entry of the contacts of the first printed circuit board when said cartridge tray is in the cartridge loading position and being resiliently movable into positive electrical engagement with the contacts of the first printed circuit board as it is rotated with said cartridge tray into said operating position.

4,763,301
INTEGRATED DYNAMIC SEMICONDUCTOR MEMORY WITH COMPLEMENTARY CIRCUITRY AND WORD LINE VOLTAGE CONTROL
Alfred Schuetz, Zorneding; Wolfgang Mueller, and Ewald Soutschek, both of Putzbrunn, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jul. 1, 1985, Ser. No. 750,145
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1984, 3427454
Int. Cl.⁴ G11C *8/00;* H03K *19/094*
U.S. Cl. 365—181 5 Claims

1. An integrated circuit for a dynamic semiconductor random access memory constructed with complimentary transistors, having one or more memory cells connected to allocated bit lines through individual selection transistors of a first channel type, said selection transistors each having a gate electrode and first and second other electrodes, and including one or more word lines allocated to said selection transistors, said gate electrode being connected to said allocated word line, decoder means for supplying a decoder output signal, a first switching transistor of a second channel type connected to said decoder output signal and operative for controlling the voltage level on said word line, said first switching transistor having a gate electrode and first and second other electrodes, said first other electrode being connected to said word line, a selection voltage terminal for presenting a selection voltage assuming two voltage values having different operational signs, said second other electrode of said first switching transistor being connected to said selection voltage terminal, a capacitor con-



nected between the gate of said first switching transistor and said selection voltage terminal and a second switching transistor interconnected between the output of said decoder and the gate of said first switching transistor, and means for connecting the gate of said second switching transistor to a fixed reference potential.

4,763,302
ALTERNATIVELY ADDRESSED SEMICONDUCTOR MEMORY ARRAY
Tatsuo Yamada, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1986, Ser. No. 854,639
Claims priority, application Japan, Jun. 21, 1985, 60-136539
Int. Cl.⁴ G11C *11/40*
U.S. Cl. 365—189 9 Claims



1. A semiconductor memory device, comprising:
- first address signal generating means for generating a first address signal determining an address of a memory cell to which a data read/write operation is to be performed;
- at least one second address signal generating means responsive to said first address signal for performing a predetermined operation on said first address signal to produce a second address signal;
- address selection signal generating means for producing an address selection signal indicative of whether said first or second address signal is selected;
- address selection means responsive to said address selection signal for selectively passing either said first or said second address signal therethrough;
- memory cell selection means responsive to said first and second address signals passed through said address selection means for selecting a corresponding memory cell; and
- data read/write means for reading/writing said data from/to said memory cell selected by said memory cell selection means.

4,763,303
WRITE-DRIVE DATA CONTROLLER
Stephen T. Flannagan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 24, 1986, Ser. No. 832,607
Int. Cl.⁴ G11C *7/00, 11/34*
U.S. Cl. 365—189 9 Claims



1. A write drive data control circuit for controlling the transmission of data to a memory array, comprising:
- data input means for receiving at at least one input thereof a serial data stream of alternating valid and invalid data, and having at least one output;
- control means coupled to said data input means for receiving a first control signal capable of assuming at least first and second stable states, said control means for enabling the passage of valid data from said at least one input to said at least one output when said first control signal is in said first state, and for disabling said data input means when said first control signal is in said second state;
- latching means coupled to said at least one output for latching the data appearing thereon when said first control signal changes from said first state to said second state; and
- data output means coupled to said latching means and to said at least one output for providing a data signal to said memory array from (i) said at least one output when said first control signal is in said first state, and (ii) from said latching means for a predetermined period of time after said data input means has been disabled.

4,763,304
SEMICONDUCTOR RANDOM ACCESS MEMORY DEVICE HAVING SWITCHABLE INPUT AND OUTPUT BIT FORMS
Masaru Uesugi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jul. 7, 1986, Ser. No. 882,534
Claims priority, application Japan, Jul. 8, 1985, 60-149623
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—190 5 Claims

1. A semiconductor random access memory device having input terminals for receiving multi-bit data and output terminals for transmitting multi-bit data, comprising:
- (a) a memory cell matrix connected to a plurality of pairs of data lines and including a plurality of memory cells;
- (b) an address decoder circuit responsive to an external address signal for providing address selection signals;
- (c) a plurality of data input control circuits, each of which has a first input for receiving a 1-bit data signal in response to a 1-bit data input control signal and to an address selection signal, and has a second input for receiving a one-bit signal of said multi-bit data signal in response to a multi-bit

VOL 1093 ISS 2 AG 9 1988 UMI

data input control signal and has an output for selectively providing, as a pair of complementary signals, said 1-bit data signal or said one bit signal of said multi-bit data signal to a respective pair of data lines in response to a read/write control signal;

(d) a plurality of data input/output switching circuits, each of which is connected to an associated pair of data lines







for selectively transmitting the pair of complementary signals on said associated pair of data lines to an output thereof in response to said read/write control signal;

(e) a plurality of bit data output control circuits, each of which is connected to the output of a respective data input/output switching circuit, and provides the pair of signals from said respective data input/output switching circuits in response to both an address selection signal and to said 1-bit data input control signal;

(f) a 1-bit data output circuit connected to said plurality of said bit data output control circuits for outputting 1-bit data in response to bit data from a pair of selected data lines; and

(g) a plurality of bit signal output control circuits, each of which is connected to the output of a respective data input/output switching circuit for providing a one bit signal of said multi-bit data in response to said multi-bit data input control signal.

4,763,305

INTELLIGENT WRITE IN AN EEPROM WITH DATA AND ERASE CHECK

Clinton Kuo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 27, 1985, Ser. No. 802,299
Int. Cl.[4] G11C *11/34, 29/00*
U.S. Cl. 365—200 **5 Claims**



1. A memory having a write mode for programming a selected memory location according to a data input signal, comprising:

an array of memory locations, wherein a memory location is selected in response to an address, and each memory location is comprised of a set of memory cells, wherein each memory cell is in either a programmed or erased state;

programming means, coupled to the array, for programming selected ones of the memory cells of a selected memory location from an erased state to a programmed state according to the data input signal;

erasing means, coupled to the array, for erasing all of the memory cells of a selected location;

reading means, coupled to the array, for reading the state of memory cells of a selected location and providing a data output signal representative of the state of the memory cells of the selected location; and
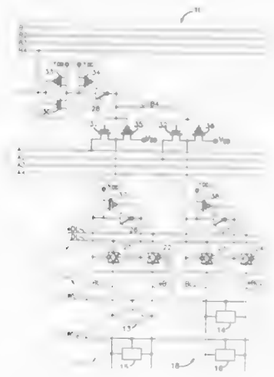
control means for performing an initial program check by comparing the data input signal to the data output signal after the write mode has been entered but prior to erasing the selected location, for providing a ready signal is the data input signal is the same as the data output signal, for causing the erase means to erase the selected memory location is the data input signal is not the same as the data output signal, and for performing an erase check by determining if all of the memory cells in the selected location are in the erased state after performing the initial program check but before performing an erase of the memory cells of the selected location.

4,763,306

CIRCUIT FOR ENABLING A TRANSMISSION GATE IN RESPONSE TO PREDECODED SIGNALS

Stephen T. Flannagan, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1986, Ser. No. 944,711
Int. Cl.[4] G11C *7/00*
U.S. Cl. 365—203 **16 Claims**



1. In a memory having a plurality of memory cells located at intersections of word lines and bit lines, a coupling circuit comprising:

a first transmission gate having a first data terminal coupled to a first bit line, a second data terminal coupled to a first data line, a first control terminal, and a second control terminal;

a first inverter having an input coupled to the first control terminal of the first transmission gate, and an output coupled to the second control terminal of the first transmisison gate;

a first transistor of a first conductivity type having a first current electrode coupled to a first power supply terminal, a second current electrode coupled to the input of the first inverter, and a control electrode coupled to the output of the first inverter;

a second transistor of the first conductivity type having a first current electrode coupled to the first power supply terminal, a second current electrode coupled to the input of the first inverter, and a control electrode for receiving a first predecoded signal; and

a third transistor of second conductivity type having a first current electrode coupled to the input of the first inverter, a second current electrode for receiving a second predecoded signal, and a control electrode for receiving the first predecoded signal.

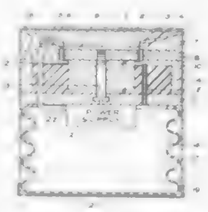
4,763,307

WIDE-RANGE AUDIO FREQUENCY UNDERWATER TRANSDUCER

Frank Massa, 280 Lincoln St., Hingham, Mass. 02043, assignor to Frank Massa; Donald P. Massa; Gitta M. Kurlat and Trustees of the Stoneleigh Trust, all of Cohasset, Mass.

Filed Jan. 20, 1987, Ser. No. 4,441
Int. Cl.[4] H04R *13/00*
U.S. Cl. 367—174 **20 Claims**

1. An underwater electroaccoustic transducer comprising a rigid frame structure, a massive, rugged vibratile plate member having an outer surface area portion adapted for imparting oscillatory vibrations into the water when the transducer is immersed therein, said vibratile plate member also having an inner surface area portion which is sealed from exposure to the water when the transducer is submerged therein, flexible support means attached to said vibratile plate member, said flexible support means characterized in that it holds said vibratile plate member accurately positioned with reference to a prescribed mechanical axis of said rigid frame structure, said prescribed mechanical axis characterized in that it is an axis of symmetry along which said oscillatory vibrations from said vibratile plate member are propagated in the water during operation of the transducer, electromechanical oscillatory force generating means associated with said vibratile plate structure, electrical terminal means connected to said electro-



mechanical oscillatory force generating means, said flexible support means further characterized in that the stiffness of said flexible support means in combination with the total effective mass of said vibratile plate member including the water load on said vibratile plate member resonates at a frequency below the operating frequency of the transducer, said vibratile plate member further characterized in that the equivalent diameter of said vibratile plate member is less than ½ wavelength of the sound generated by said vibratile plate member at the operating frequency of the transducer.

4,763,308

BATTERY HOUSING FOR AN ELECTRONIC WATCH

Philippe Morata, Bienne, Switzerland, assignor to ETA SA Fabriques d'Ebauches, Granges, Switzerland

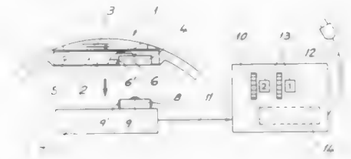
Filed Jun. 25, 1986, Ser. No. 878,544
Claims priority, application Switzerland, Jun. 25, 1985, 2708/85
Int. Cl.[4] G04B *37/00, 1/00*
U.S. Cl. 368—88 **8 Claims**
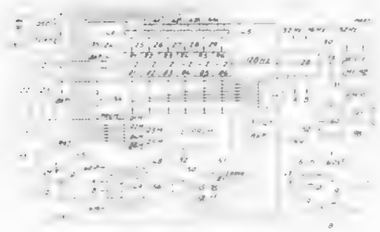


1. A battery housing for an electronic watch of the type including a base plate (1) located between a back cover (3) and a dial (2), a printed circuit (11) comprising an insulating substrate (12) and at least one conductive track (13), said housing including a hole (4) entirely piercing said base plate, a cover (5) to block said hole at the dial side of said base plate, said cover comprising support areas (7) distributed over its periphery, a fastening means (6, 21) provided on the rim of said hole nearest said dial, and cooperating with said support areas to hold said cover, a tongue being raised in said cover to serve as a support to one face (9) of a battery, within said hole, the electrical contact with said face being obtained by the printed circuit inserted between said tongue and said battery.

VOL 1093 ISS 2 AUG 9 1988 UMI

4,763,309
PROGRAMMING ARRANGEMENT FOR A NON-VOLATILE MEMORY FOR A TIMEPIECE
Arthur Descombes, Kerzers, Switzerland, assignor to EM Microelectronic-Marin SA, Marin, Switzerland
Filed Jul. 9, 1987, Ser. No. 71,503
Claims priority, application Switzerland, Jul. 10, 1986, 2773/86
Int. Cl.[4] G04B *17/12*
U.S. Cl. 368—201 2 Claims





1. In a timepiece having an electrically alterable non-volatile memory, said timepiece including an oscillator, a multistage frequency divider the division rate of which is adjustable by alteration of a number k of pulses furnished by a stage thereof, the number k being representative of the frequency difference between the oscillator frequency and a standard frequency and appearing in a binary form recorded in the non-volatile memory in order to modify the contents of certain predetermined stages of the divider at regular intervals, a stepping motor receiving driving pulses from the divider to display time in an analog manner and a receptacle adapted to accommodate an energy cell, a programming arrangement for said non-volatile memory, said programming arrangement comprising;

first means controlled by the end of a driving pulse so as to introduce into said predetermined divider stages a binary state corresponding to said number k and second means for blocking the contents of said stages as soon as said binary state has been attained and thereafter recording said contents in said non-volatile memory, said first means being located externally to the timepiece and electrically coupled thereto by means of a connector plugged into the energy cell receptacle by its two terminals, said first means comprising an energy source for energizing the timepiece by a low level voltage or a high level voltage, a memory-counter into which may be introduced the number k, a time base the frequency of which is coarsely adjusted to the frequency of the timepiece oscillator, a detector for driving pulses the output edges of which coincide with the zero resetting of said predetermined divider stages, the output edge of one of said driving pulses defining the beginning of a period TD the duration of which is defined by the time necessary to introduce into said predetermined stages the binary state corresponding to the number k contained in the memory-counter, a switch for switching the energy source over to the high level voltage as soon as the end of said period TD is reached and a delay circuit for maintaining said voltage at its high level over a predetermined period Ti, and wherein the second means are incorporated into the timepiece and include a voltage level detector which when said voltage has attained a predetermined value situated between said low and high level voltages blocks the contents of said predetermined divider stages at the binary value they have attained at the end of said period TD and records said contents in said non-volatile memory during said predetermined period Ti.

4,763,310
ELECTRONIC CLOCK WITH SOLAR CELL AND RECHANGEABLE BATTERY
Adolf Goetzberger, Merzhausen, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Forderung, Freiburg, Fed. Rep. of Germany
Filed Jan. 5, 1987, Ser. No. 399
Claims priority, application Fed. Rep. of Germany, Jan. 10, 1986, 3600515
Int. Cl.[4] G04G *1/00*; G04C *3/00*
U.S. Cl. 368—205 9 Claims



1. An electronic clock comprising:

means for storing electrical energy;

means connected to said storage means and powered thereby for counting the passage of time, said counting means having an output representative of the time of day;

means for converting light into electrical energy; and

means responsive to said output of said counting means for displaying the time of day, said means deriving operating power only from said light converting means.

4,763,311
DOUBLE CLOCK FOR DAYLIGHT SAVING
Daniel Marvosh, 3085 Clarmeya La., Pasadena, Calif. 91107
Filed Nov. 2, 1987, Ser. No. 115,843
Int. Cl.[4] G04B *19/00*
U.S. Cl. 368—223 6 Claims

1. A double clock for daylight saving, comprising:

(a) a first clock having a clock movement;

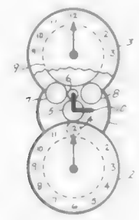
(b) a drive means for driving said clock movement of said first clock;

(c) a second clock having a drive movement;

(d) transmission means operatively interconnecting said drive means and said clock movement of said second clock, said transmission means comprising:

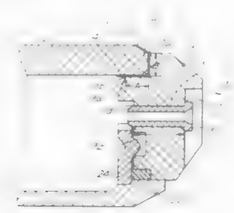
(i) a first means for driving said clock movement of said second clock at a first rate of speed;

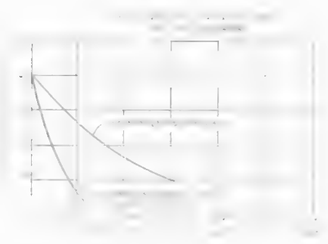
(ii) a second means for driving said clock movement of second clock at a second rate of speed; and



(iii) selector means for selectively interconnecting said first and second means with said drive means.

4,763,312
BONDING STRUCTURE FOR TIMEPIECES
Ikuo Tokunaga, and Shigemi Sasaki, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Dec. 14, 1987, Ser. No. 132,247
Claims priority, application Japan, Dec. 15, 1986, 61-297901; Sep. 24, 1987, 62-239646
Int. Cl.[4] G04B *37/00*
U.S. Cl. 368—280 11 Claims





1. A bonding structure for timepiece case components, wherein a bonding agent comprises on a weight basis;

(A) based on about 100 parts of a urethane (meta) acrylate having at least one of an acryloyl group and methacryloyl group per molecule;

(B) 30 to 200 parts of at least one (meta) acrylate having more than one hydroxyl group per molecule;

(C) 30 to 200 parts isobornyl acrylate;

(D) 30 to 200 parts of at least one pre-tacky resin which is soluble in (meta) acrylate monomer, selected from the group consisting of petroleum series, coal series rosin ester series, and mixtures thereof;

(E) 5 to 50 parts of at least one acid selected from the group consisting of acrylic acid and methacrylic acid and mixtures thereof; and

(F) 0.5 to 15 parts of a photopolymerization initiator.

4,763,313
PLURAL ORIENTATION WATCH MOUNT
Jerry A. Greer, Woodland Hills, and Lisa J. Lowe, Santa Barbara, both of Calif., assignors to Partz Partnership, Fullerton, Calif.
Filed Mar. 13, 1987, Ser. No. 25,480
Int. Cl.[4] G04B *37/00*; A47F *7/00*
U.S. Cl. 368—317 9 Claims



1. A plural orientation watch mount comprising:

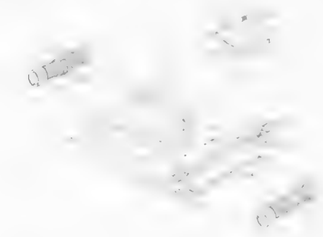
a receptacle means adapted to retentionally receive a subject wrist watch;

carrier means adapted for mountability onto an independent structure of interest; and

mounting means for mounting said receptacle means onto said carrier means in a selectably alterable orientation;

said receptacle means defines a surface aperture of companion planar configuration to a given pin-tabbed watch, with a first side of said aperture being adapted for an inserted-pin securement of a first tabbed side of said watch and with a second side of said aperture being sized for a press-fit securement of a second tabbed side of said watch.

4,763,314
LINEAR ACTUATOR FOR AN OPTICAL DISK STORAGE APPARATUS
Martin J. McCaslin, Pleasanton, and John C. Kolar, Palo Alto, both of Calif., assignors to Optimem, Mt. View, Calif.
Filed Aug. 13, 1986, Ser. No. 896,392
Int. Cl.[4] G11B *17/00*
U.S. Cl. 369—249 14 Claims



1. A linear actuator for controlling access to a track element belonging to a plurality of adjacent track elements arranged in a reference surface of an optical disk rotatable about a spindle, comprising:

objective lens means for projecting a light spot for interaction with a selected one of the track elements;

first means for supporting the objective lens means for movement along a first direction substantially perpendicular to the reference surface for controlling the focusing of the light spot;

second means for supporting the objective lens means for

VOL 1093 ISS 2 AG 9 1988 UMI

movement along a second direction substantially parallel to the reference surface and generally transverse to the track elements for controlling the access thereto, including a pair of spaced apart, parallel rods made of a ferromagnetic material, the rods having a round cross-section and extending generally transverse to the track elements, and a carriage supporting the object lens means and having a plurality of wheels positioned between and engaged with the rods for movement along the same;

a pair of round actuator coils connected to the carriage and surrounding corresponding ones of the rods;

a pair of generally C-shaped radially polarized permanent magnets each extending along and partially surrounding a corresponding one of the rods so as not to obstruct movement of the carriage therealong; and

means adjacent each of the magnets for providing a return flux path.

4,763,315

RING COMMUNICATION NETWORK SYSTEM AND A METHOD FOR CONTROLLING SAME

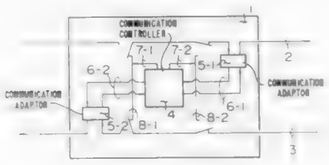
Susumu Nakayashiki, Yokohama; Jiro Kashio, Kawasaki; Takeshi Harakawa, and Masahiro Fuse, both of Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 5, 1986, Ser. No. 826,255

Claims priority, application Japan, Feb. 15, 1985, 60-26235; Feb. 15, 1985, 60-26236

Int. Cl.[4] H04J *3/14*

U.S. Cl. 370—16 12 Claims



1. A method for controlling a plurality of stations in a communication network system in which the stations are interconnected through first and second ring transmission lines which transmit signals in opposite signal transmission directions relative to each other, comprising the steps of:

sending out at least one failure notice frame downstream in the direction of signal transmission via said first transmission line from one of said stations which detects a failure in said first transmission line and setting said one station in a failure notice frame waiting mode in which said one station operates to wait for the receipt of the failure notice frame via said first transmission line on its upstream side while stopping re-transmission of a received signal on said second transmission line;

relaying the failure notice frame received by each station from said first transmission line to a next downstream adjacent station through said first transmission line and returning the operation mode of the station which receives the failure notice frame to a normal mode if the station has been set in said failure notice frame waiting mode; and

forming a loop-back path from said second transmission line to said first transmission line at a station which is in said failure notice frame waiting mode when the failure notice frame sent from that station is not received from said first transmission line by that station within a predetermined time period after the station was set in said failure notice frame waiting mode.

4,763,316

CIRCUIT ARRANGEMENT FOR CENTRALLY CONTROLLED TIME DIVISION MULTIPLEX TELECOMMUNICATION EXCHANGE FACILITIES

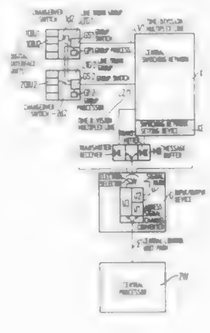
Gerhard Schaich, Fuerstenfeldbruck, and Ludwig Schoenauer, Sauerlach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 19, 1987, Ser. No. 16,434

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1986, 3607903; Mar. 27, 1986, 3610572

Int. Cl.[4] H04J *1/16*

U.S. Cl. 370—16 3 Claims



1. A circuit for a centrally controlled PCM time division multiplex telecommunication exchange having long distance facilities, comprising:

a multistage central switching network means having time division multiplex inputs and time division multiplex outputs and a central processor;

a plurality of line/trunk groups connected to time division multiplex interexchange trunks, each of said trunks being connected to a time division multiplex input and a time division multiplex output of said switching network means;

a plurality of line units connecting one time division multiplex interexchange trunk with a time division multiplex switching device associated with the particular line/trunk group and being connectable with channels of the time division multiplex input corresponding to the line/trunk group and the corresponding time division multiplex output of the switching network means; and

wherein two line/trunk groups are assigned to each other in pairs such that the connection devices of each of said two line/trunk groups which are normally connected with the time division multiplex switching device of a respective line/trunk group are changed over to the time division multiplex switching device of another line/trunk group, and wherein the line units each include;

means coupled to the central processor with a first address for normal operation and with a second address for emergency operation such that for emergency operation a group control circuit means unblocks the emergency operation address of the particular line units and blocks the normal operation addresses.

4,763,317

DIGITAL COMMUNICATION NETWORK ARCHITECTURE FOR PROVIDING UNIVERSAL INFORMATION SERVICES

Harvey R. Lehman, Batavia; William P. Lidinsky, Naperville; Harry E. Mussman, Glen Ellyn; David A. Spicer, Batavia, and David Vlack, St. Charles, all of Ill., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 13, 1985, Ser. No. 809,196

Int. Cl.[4] H04Q *11/04*

U.S. Cl. 370—58 40 Claims



1. A communication network comprising:

a plurality of communication links;

wideband channel switching means coupled to the links and operable for establishing switched wideband channels on the links;

narrowband channel switching means coupled to the links and operable for establishing switched narrowband channels on the links;

control means, responsive to signaling messages received over the links for effecting operation of the wideband and the narrowband switching means and sending signaling messages over the links to effect establishment of wideband and narrowband communication paths through the wideband and the narrowband switching means over the channels;

control communication means, interconnecting the wideband and the narrowband switching means with the control means, for communicating control signals among the control means and the wideband and the narrowband switching means, the signals for controlling establishment of the channels; and

signal transfer means, responsive to receipt of signaling messages received over the links through the narrowband switching means for communicating these signaling messages to the control means over the control communication means, and responsive to receipt of signaling messages received from the control means over the control communication means for communicating these signaling messages over the links through the narrowband switching means.

4,763,318

TRANSMISSION AND RECEPTION OF SYNCHRONOUS DATA AND TIMING SIGNALS USING A STEADY BIT STREAM

James E. Westbrook, Sylmar, and Adolfo B. Suarez, Los Angeles, both of Calif., assignors to Datos Corporation, Van Nuys, Calif.

Filed May 2, 1986, Ser. No. 859,285

Int. Cl.[4] H04J *3/16*

U.S. Cl. 370—84 4 Claims



1. In a distributed data-over-voice communication system with a global system clock, said global system clock having a data rate substantially greater than a transmission rate of asynchronous data signals in said system, a method of routing said data signals from a source device to a destination device, comprising the steps of

sampling said asynchronous data signals with reference to said global system clock to generate sampling data signals;

routing said sampling data signals from said source device to said destination device; and

decoding said sampling data signals with reference to said global system clock to reconstruct said asynchronous data signals by said destination device.

4,763,319

MULTI-RATE SYNCHRONOUS VIRTUAL CIRCUIT NETWORK FOR VOICE AND DATA COMMUNICATIONS

Moshe Rozenblit, Chatham, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed May 19, 1986, Ser. No. 864,782

Int. Cl.[4] H04J *3/16*

U.S. Cl. 370—84 7 Claims

1. A synchronous virtual circuit communications network capable of supporting multiple bit rate communications between pairs of user stations, said network comprising an array of interconnected switching nodes,

each of said virtual circuits connecting a pair of user stations

VOL 1093 ISS 2 AG 9 1988 UMI

passing through one or more switching nodes in said network,

each of said switching nodes being adapted to synchronously exchange frames of data with neighboring switching nodes, said frames being divided into slots,

the slots in each of said frames exchanged between a given pair of said switching nodes being allocated among the virtual circuits passing through said pair of switching nodes, virtual circuits having different bit rates being allocated different numbers of slots in each frame,

each of said switching nodes including means for interpreting incoming slots to determine to which virtual circuit each of said incoming slots belong, and means for allocating outgoing slots to virtual circuits requiring such slots and for deallocating slots from virtual circuits no longer requiring slots.

4,763,320

METHOD AND ARRANGEMENT FOR TRANSMITTING DATA, ESPECIALLY IN AN AIRCRAFT

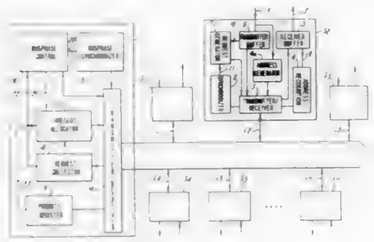
Ralph Rudolph, and Werner Weiler, both of Hamburg, Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Bremen, Fed. Rep. of Germany

Filed Jun. 14, 1985, Ser. No. 745,315

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1984, 3424866

Int. Cl.⁴ H04J *3/16*

U.S. Cl. 370—85 **6 Claims**



1. A method for time-division multiplex transmission of data, in digital form, in a serial data bus system, with varying signals being possible; the bus system includes a central unit, several equivalent subscribing stations which are provided with individual addresses and which are subordinate to said central unit, and at least one bus line or data bus, which connects all of said stations, whereby time slots are alloted or taken away from the stations by said central unit in a predetermined manner and data transmission transpires in different phases subject to employment of normal request techniques; said method comprises the steps of carrying out the following transmission phases:

undergoing an initiation phase, in which said central unit accordingly determines and acertains number of said stations participating and accordingly allocates to each ascertained station a fixed predetermined time slot for the request phase as to said stations participating;

proceeding with said request phase, in which the individual stations request a time slot from said central unit for purposes of a required bus access, with each station then accordingly having its predetermined fixed time slot;

continuing in an allocation phase, in which said central unit allocates to each of said stations a time slot in response to request therefor;

obtaining a data phase, in which the data is transmitted; and

providing, in each of said data phases, for the signalling of bus requests, a time slot in which at least one preferred station can emit a request pulse which causes said central unit, after completion of this data phase, to go on proceeding to carry out immediately thereafter the request phase and assuring that the requesting station receives a time slot in the new bus allocation.

4,763,321

DYNAMIC BANDWIDTH ALLOCATION MECHANISM BETWEEN CIRCUIT SLOTS AND PACKET BIT STREAM IN A COMMUNICATION NETWORK

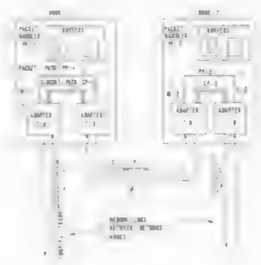
Jean Calvignac, LaGande, and Pierre Secondo, Saint Jeannet, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1986, Ser. No. 892,649

Claims priority, application European Pat. Off., Aug. 13, 1985, 85430026.6

Int. Cl.⁴ H04J *3/26*

U.S. Cl. 370—94 **7 Claims**



1. System to be used for dynamically allocating circuit slots in the frames which are used for exchanging bits between users connected to nodes of a communication network linked by means of medium links having transmit and receive interfaces, said frames being delimited by flags and divided into bit slots which may be devoted to synchronous circuit flow and to asynchronous packet flow, characterized in that it comprises in each node:

means (20, 238, 232) for changing the flags preceding at least one frame in which at least one slot is to be added or deleted to a value including a first number of delimiting bits and a second number of bits which are coded to indicate that one or more slots are to be added or deleted and the corresponding slot numbers,

means (418, 404) for sending all control packets which are propagated through the network nodes, comprising call control information, routing information and indicating the circuit user slot numbers to be added or deleted on specified link interfaces,

means (418, 128, 106) for receiving the call control packets and the changed flags for adding or deleting circuit user slots in the subsequent frames depending upon the flag value.

4,763,322

DIGITAL RADIO TRANSMISSION SYSTEM WITH VARIABLE DURATION OF THE TIME SLOTS IN THE TIME-DIVISION MULTIPLEX FRAME

Alfons Eizenhöfer, Altdorf, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jul. 30, 1986, Ser. No. 891,982

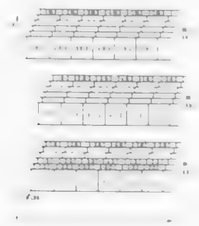
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1985, 3527329

Int. Cl.⁴ H04J *3/12, 3/22*

U.S. Cl. 370—95 **3 Claims**

1. In a cellular digital radio transmission system comprising a plurality of base stations and a plurality of mobile stations assigned to each base station, communication channels between a base station and its mobile stations being established by time-division multiplexing of time slots in successive time

frames, each time slot being allocated to a particular mobile station; the improvement characterized in that the base station comprises: means for establishing a plurality of time slots of different durations in each TDM time frame, the duration of



the time slot allocated to a mobile station remaining the same in all successive TDM time frames; and means for allocating the mobile stations assigned to such base station to respective ones of such time slots having durations corresponding to the bandwidth requirements of such mobile stations.

4,763,323

COMMUNICATION SYSTEM FOR THE TRANSFER OF SMALL DIGITAL MESSAGE BLOCKS AND LARGE DIGITAL MESSAGE BLOCKS

Owen L. Nelson, and Charles L. Rennolet, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 789,093, Oct. 18, 1985, abandoned. This application Nov. 24, 1987, Ser. No. 129,386

Int. Cl.⁴ H04J *3/16*

U.S. Cl. 370—96 **24 Claims**



1. A communication system for the transfer of small digital message blocks and large digital message blocks, comprising:

a common communication channel capable of facilitating the transfer of small digital message blocks and large digital message blocks, said large digital message blocks being at least about 4,096 bytes and said large digital message blocks being at least about 8 times said small digital message blocks;

a plurality of nodes connected to said channel, each being adapted to be coupled to a digital handling device;

one of said plurality of nodes being designated as a master node, said master node controlling communication on said channel by selectively polling the other of said plurality of nodes;

said communication system having a first protocol for the transmission of small digital message blocks and having a second protocol for the transmission of said large digital message blocks;

said first protocol, in direct response to said poll, being a data communication of said small digital message block or a request to send or receive said large digital message block and said second protocol being the direct communication between said nodes of said large digital message blocks;

said master node establishing a polling priority for each of said plurality of nodes and polling those of said plurality of nodes with a higher of said polling priority more frequently than those of said plurality of nodes with a lower of said polling priority;

said master node allowing the one of said plurality of of nodes which is being polled to communicate without interruption over said channel with either said small digital message block or said large digital message block;

said master node adapting said polling priority for each of said plurality of nodes based upon a predetermined algorithm.

4,763,324

FRAME DECODING

Theodor Schwierz, Aichach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 10, 1987, Ser. No. 13,066

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1986, 3604183

Int. Cl.⁴ H04J *3/06;* **H04L** *7/08*

U.S. Cl. 370—100 **3 Claims**



1. A method of frame decoding, in a multiplexer-demultiplexer system for digital signal transmission in which a series data flow (DS) has a frame structure including an item of periodically occurring synchronizing information which characterizes the start of each frame, comprising the steps of

synchronizing a frame recognition circuit (SZ) to the periodically occurring item of synchronizing information, in which one single synchronizing bit (SB) is used as said synchronizing information,

following a predetermined number of correctly recognized items of synchronizing information, coupling a frame generator (AZ) to said frame recognition circuit,

determining in each successive frame coincidence between a synchronizing signal (SS) which is emitted from the frame generator and the item of synchronizing information, to establish that synchronous coincidence is maintained,

increasing the count of a weighting counter (GZ) by a predetermined quantity, periodically, in the case of synchronous coincidence, up to a maximum count, and reducing the count of said weighting counter by a predetermined quantity, periodically, in the case of non-coincidence, down to a minimum count,

decoupling said frame generator from said frame recognition circuit, when the maximum count of the weighting counter (GZ) is reached,

checking said data flow for a further item of synchronizing information in each frame and gating out each item of synchronizing information contained in the frame generator,

performing resynchronization of the frame generator to the frame recognition circuit only when the count of the weighting counter (GZ) has reached its minimum count and the frame recognition circuit has correctly recognized

VOL 1093 ISS 2 AG 9 1988 UMI

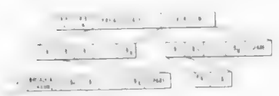
a predetermined number of items of synchronizing information,
supplying said data flow (DS) to the input of a shift register (SR),
tapping an output (A) of said shift register (SR) which occupies a specific bit position within the frame,
logic-linking data at the said tappped output via an AND-gate (AD2) with a bit of the data flow (DS) which occupies the same bit position,
supplying the logic-link result to an input (E) of the shift register (SR), whereby, after a plurality of frame lengths only the synchronizing bit (SB) passes through the shift register (SR),
said search counter (SZ), having a maximum count corresponding to the number of bits in the frame,
resetting said search counter by supplying thereto logic ones emitted from the output A of the shift register (SR) whereby, when only one bit corresponding to the synchronizing bits (SB) is set at logic "1" in the shift register (SR), a pulse which is synchronous to said synchronizing bit (SB) is emitted from the carry output (TC) of the search counter (SZ).

4,763,325

DEMAND ASSIGNED REFORMATTING WITH AN OVERFLOW AREA FOR TIME DIVISION MULTIPLE ACCESS COMMUNICATION

William H. Wolfe, Burke, and William P. Osborne, Leesburg, both of Va., assignors to Comsat Telesystems, Inc., Fairfax, Va.

Filed Sep. 4, 1985, Ser. No. 772,536
Int. Cl.[4] H04J *3/16*
U.S. Cl. 370—104 5 Claims



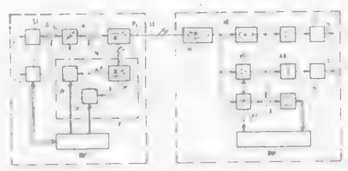
1. A time division multiple access communication system, comprising:
a plurality of data stations for transmitting and receiving sub-bursts of data between said stations, each said station being assigned, for transmitting a plurality of repeating sub-bursts, at least one preallocated burst portion of predetermined duration in a repeating frame of predetermined duration, said frame further comprising an overflow portion;
a reference station;
means associated with each said data station for receiving a request for transmission of a repeating sub-burst of predetermined duration in said frame and for assigning said requested sub-burst to a previously non-assigned portion of the preallocated burst portion assigned to said each data station if such a nonassigned portion is available, and, if said such a nonassigned portion is not available, transmitting an overflow request for said requested sub-burst to said reference station;
means associated with said reference station for receiving said overflow request from a requesting data station, assigning a previously non-assigned portion of said overflow portion to said requested sub-burst and transmitting the assignment of said overflow portion to said requesting data station; and
wherein said requesting data station transmits the requested sub-burst in the portion of said frame assigned to said sub-burst.

4,763,326

SERVICE-INTEGRATING, DIGITAL MESSAGE TRANSMISSION SYSTEM FOR JOINT TRANSMISSION OF NARROW-BAND AND BROADBAND SIGNALS

Wolfgang Krick, Lauf, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Dec. 3, 1986, Ser. No. 937,598
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1985, 3544393
Int. Cl.[4] H04B *9/00*
U.S. Cl. 370—110.4 5 Claims



1. An integrated services digital signal transmission system for jointly transmitting a narrow-band binary signal (b_1) and a broadband binary signal (b_2) from a transmitting station to a receiving station over an optical waveguide transmission path, the bit rate of the narrow-band signal (b_1) being lower than that of the broadband signal (b_2), such signals being additively combined at the transmitter and being recovered again at the receiver by the inverse of such addition, characterized in that:
said transmitter comprises:
means for additively superimposing the amplitudes of the narrow-band signal (b_1) and the broadband signal (b_2) using bit rate ratio-dependent weighting factors so as to derive a combined sum signal (a_i) having a multi-level amplitude, the respective amplitude levels of such sum signal (a_i) corresponding to respective bit combinations of the broadband and narrow-band signals; and
a laser producing an optical signal and means for modulating such optical signal with said sum signal (a_i) to produce a multi-level optical transmission signal (P_i);
said receiver comprises:
means for demodulating the received optical transmission signal (P_i) to recover the modulating sum signal (a_i);
means for recovering the narrow-band signal (b_1) from the sum signal (a_i) by amplitude demodulation thereof; and
means for recovering the broadband signal (b_2) from the sum signal (a_i) by amplitude limitation thereof.

4,763,327

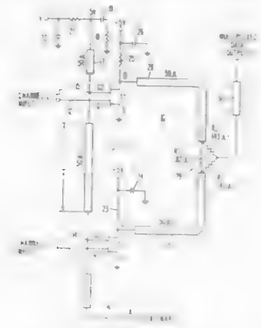
DISTRIBUTED DIGITAL SIGNAL PROCESS MULTIPLEXER

John M. Fontaine, Scottsdale, Ariz., and Patrick W. Dennis, Salt Lake City, Utah, assignors to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 17, 1987, Ser. No. 85,919
Int. Cl.[4] H04J *3/04*
U.S. Cl. 370—112 10 Claims

1. A digital signal processor multiplexer for ultra high frequencies, comprising:
a plurality of GaAs field-effect transistors each having a first and second gate input and a drain output,
a biasing network coupled to the drain of each of said transistors and providing a termination network,
a distributed transmission line having a delay line portion,

delay taps connected to said delay line portion and to the second gate of each of said GaAs transistors,
each said delay line tap being spaced apart from another delay tap by a desired time data rate period $1/\tau$,
an ultra high frequency clock pulse source coupled to one end of said transmission line,
a termination network coupled to the other end of said transmission line,
data input channels each being coupled to one of said first gates of said GaAs transistors so that the presence of an input data pulse at an input channel simultaneously with a



clock pulse on said data transmission line at the second gate of said transistors produces an output data pulse having the width of said clock pulses at the drain of said GaAs transistors,
output transmission lines each coupled at one of its ends to the drain of one of said GaAs transistors,
a combining network coupled to the other end of each of said output transmission lines providing a matched termination network, and
a data output line coupled to said combining network for providing an output data rate which is a multiple of the rate of said input data pulses.

4,763,328

VITERBI DECODER AND METHOD FOR TESTING THE VITERBI DECODER

Kaneyasu Shimoda; Atsushi Yamashita, and Tadayoshi Katoh, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 16, 1986, Ser. No. 919,698
Claims priority, application Japan, Oct. 29, 1985, 60-240667
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—3 3 Claims

1. An integrated viterbi decoder for decoding received code sequences, comprising:
input means for receiving test code sequences and for outputting signals varying in accordance with said received test code sequences;
distributor means, operatively connected to said input means, for calculating branch metrics and for outputting signals responsive to said calculation;
first selector means, operatively connected to receive first control signals, to said input means and to said distributor means, for selectively providing said signals output from said distributor means and from said input means in accordance with said first control signals;
ACS means, operatively connected to said input means and to said distributor means, for adding branch metrics in order to generate path metrics, for comparing the generated path metrics, for selecting a maximum likelihood path in accordance with the results of comparing the path metrics, and for outputting signals responsive to said selection;
second selector means, operatively connected to receive the first control signal, to said ACS means and to said input means, for selectively providing said signals from said ACS means and from said input means in accordance with the first control signals;
path memory means, operatively connected to said ACS means and to said input means, for storing an initial predetermined pattern and for storing transitions in the maximum likelihood path selected by said ACS means; and
output means, operatively connected to receive second control signals, to said distributor means, to said ACS means and to said path memory means, for selectively providing said signals output from said distributor means, said ACS means and to said path memory means, for selectively providing said signals output from said distributor means, said ACS means and said path memory means in accordance with said second control signals.



4,763,329

MODULAR DATA ROUTING SYSTEM

Michael W. Green, St. Louis, Mo., assignor to Techlan, Inc., Mo.

Filed Feb. 10, 1986, Ser. No. 827,415
Int. Cl.[4] H04L *1/22*; G06F *11/16*
U.S. Cl. 371—11 40 Claims

1. A modular system for controlling the routing of data through a plurality of data terminals comprising:
at least one first-level module;

VOL 1093 ISS 2 AUG 9 1988 UMI

at least one second-level module;
each of said modules having means for receiving a data stream from a source, the first-level module being the source for the second-level module;
each of said modules further having a plurality of ports, each port being suitable for transmitting data to and receiving data from data devices such as data terminals and other modules, the second-level module being connected to a port of the first-level module;
each of said modules including interconnecting means connected to the ports thereof for serially connecting the ports for flow of the data stream serially through the operable data devices connected to said ports, said interconnecting means being internally controllable to open a selected one of a plurality of data paths among the ports;
at least some of the ports having driver means associated therewith for regenerating the data stream as it passes between ports in the selected data path;
each module having module output means for supplying the data stream from the module to a destination device, the destination device of the second-level module being the first-level module; and
internal means for each module for automatically detecting a fault between the receiving means and the output means of that module, said detecting means being responsive to the detection of such a fault to control the interconnecting means to open a fault-free data path between the receiving means and the output means if any such path exists.

4,763,330

SYNDROME CALCULATING APPARATUS

Hiroshi Shimizu, Tama, Japan, assignor to Mita Industrial Co., Ltd., Japan

Filed May 1, 1987, Ser. No. 44,916
Int. Cl.[4] G06F *11/12, 11/10*
U.S. Cl. 371—37 4 Claims



1. Syndrome calculating apparatus to which received codes are successively supplied to obtain syndromes, comprising:
first addition means for respectively supplying the bits of each of unit codes constituting a received code, to a plurality of latch means;
second addition means for supplying, to at least one of said plurality of latch means, the output bit of at least one of said plurality of latch means;
gate means for supplying the signals of said first and second addition means to said plurality of latch means, respectively; and
gate control means for selectively opening said gate means;
the output bits of said plurality of latch means being supplied to said first addition means connected to said plurality of latch means;
the output bit of said at least one of said plurality of latch means being supplied to said second addition means connected to said at least one of said plurality of latch means so as to produce the same result as that obtained by the operation of multiplication of power of the root of the primitive polynomial in the Galois field.

4,763,331

METHOD FOR DECODING ERROR CORRECTING BLOCK CODES

Tadashi Matsumoto, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,176
Claims priority, application Japan, Dec. 11, 1985, 60-278276; Dec. 20, 1985, 60-288934; May 26, 1986, 61-121698; Jul. 2, 1986, 61-157034
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—37 16 Claims



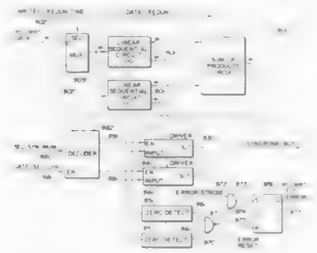
1. A method for decoding error correcting block codes having redundant bits added to information data bits transmitted as an error correcting block code, comprising:
a demodulating step for demodulating a received signal to produce a detected waveform;
a bitwise decoding step for conducting bitwise decoding on the detected wavform to produce a received word;
a level detecting step for detecting a receiving electric field level at each digit of the received word to obtain reliability information for the digit;
an erasure bit selecting step for selecting, as erasure bit, a predetermined number of digits in the received word at which values indicating the reliability information are smallest;
a pattern applying step for applying each of a plurality of possible bit patterns to the erasure bits of the received word to produce composite code words each having, at its bit positions corresponding to the erasure bits of the received word, respective bits of a corresponding one of the possible bit patterns;
a minumun distance decoding step to which each of said composite words is subjected to determine a plurality of candidate code words;
a comparison step for comparing each of said candidate code words with the received word for each digit and detecting a disagreement or agreement, if any, between each digit of the received word and a corresponding digit of the candidate code word;
a summing step for summing up only the reliability information corresponding to the digits where the candidate code word and the received word disagree or agree with each other, thereby producing a sum of the reliability information for each of the candidate code words; and
a determining step for determining one of the candidate code words as a decoded result which gives the minimum or maximum one of the sums of the reliability information.

4,763,332

SHARED CIRCUITRY FOR THE ENCODING AND SYNDROME GENERATION FUNCTIONS OF A REED-SOLOMON CODE

Neal Glover, Boulder County, Colo., assignor to Data Systems Technology Corp., Broomfield, Colo.

Filed Mar. 2, 1987, Ser. No. 20,503
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—37 25 Claims



1. In an error detection and correction system using a Reed-Solomon code for the detection and correction of a plurality of errors in a codeword C(x) comprising k data symbols and r check symbols wherein said k data symbols comprise coefficients I_i of a data polynomial

$$I(x) = \sum_{i=0}^{k-1} o\ I_i * x^i$$

and said r check symbols comprise coefficients W_i of a write redundancy polynomial

$$W(x) \quad \sum_{i=0}^{r-1} o\ W_i * x$$

and further wherein each said symbol comprises an element of a finite field $GF(2^m)$ comprised of m binary bits of information, and a code generator polynomial G(x) of said code having a degree r+1 is given by

$$G(x) = \prod_{j=0}^{r-1} (x \oplus \alpha^{m0+j}),$$

wherein m_0 is a parameter of said code, an encoder and frequency-domain syndrome generator circuit comprising:
(a) means for computing
a plurality r of parameters

$$P_j = I(x) MOD (x \oplus \alpha^{m0+j})$$

from said data polynomial I(x) wherein j varies from 0 to r−1 and each of said plurality r of parameters P_j is updated with a coefficient I_i of said data polynomial I(x) according to

$$P \quad \alpha^{m1+j} * P_j \oplus I_i.$$

a plurality of modified parameters

$$P_j' = \alpha^{m0+j} * P_j,$$

a plurality r of frequency-domain syndromes

$$S_j = C'(x) MOD (x \oplus \alpha^{m0+j})$$

from a received codeword C'(x), wherein j varies from 0 to r−1 and each of said plurality r of frequency-domain syndromes S_j is updated with a coefficient C_i' of said received codeword C'(x) according to

$$\quad \alpha^{m0+j} * S_j$$

and

a plurality of modified frequency-domain syndromes

$$\quad \alpha^{m0+j} * S_j$$

(b) means for computing a plurality r of coefficients W_i of said write redundancy polynomial according to

$$W_i = \sum_{j=0}^{r-1} o\ K_{r-1,j} * P_j,$$

wherein constants $K_{r-1,j}$ are obtained by solution of a system of equations

$$P_j = \sum_{i=0}^{r-1} o\ \alpha^{(i-r)(m0+j)} * W_i; \text{ and}$$

(c) means for updating each of said plurality r of parameters P_j with each of said coefficients W_i according to

$$P \quad \alpha^{m0+j} * P_j \oplus H$$

and for updating each of said plurality r of modified parameters R_j' with each of said coefficients W_i according to

$$P_j' = \alpha^{m0+j} * (\alpha^{m0+j} * P_j \oplus W_i).$$

4,763,333

WORK-SAVING SYSTEM FOR PREVENTING LOSS IN A COMPUTER DUE TO POWER INTERRUPTION

Kerry Byrd, Falls Church, Va., assignor to Universal Vectors Corporation, Washington, D.C.

Filed Aug. 8, 1986, Ser. No. 894,570
Int. Cl.[4] G06F *11/00, 13/00*
U.S. Cl. 371—66 18 Claims

1. In a digital computer having a central processing unit (CPU) driven by an operating system environment external to the CPU and volatile random-access memory (RAM), a data protection system for preventing an unintentional loss due to an interruption of a main power supply of the computer's application program and operating system stored in RAM and the CPU's state, comprising:
means for supplying electric power to the computer and the data protection system;
means for monitoring the main electric power supply and for generating a signal indicative of an interruption thereof;
means for directing an operation of the computer and for conserving power to be supplied by the power supply

VOL 1093 ISS 2 AG 9 1988 UMI

means, the directing means being connected to the CPU, being responsive to the interruption signal, including an interrupt program stored in a non-volatile memory, and selectively enabling the power supply means to supply power to the computer; and

means for storing the application program and operating system stored in the RAM and the CPU's state, the storing means being responsive to the directing means.

4,763,334

LASER BEAM EMITTING APPARATUS

Kazuyuki Shimada, Tokyo; Isamu Shibata, Fuchu; Yutaka Kaneko, and Susumu Imagawa, both of Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jan. 23, 1986, Ser. No. 821,683

Claims priority, application Japan, Jan. 30, 1985, 60-16007; Jan. 30, 1985, 60-16011; Jan. 30, 1985, 60-16014

Int. Cl.⁴ H01S *3/13*

U.S. Cl. 372—29 **24 Claims**



1. A detachable laser beam emitting assembly for use in a light scanning apparatus having a housing with a mounting hole in which said assembly can be detachably fitted to thereby detachably secure said assembly to said apparatus, said detachable laser beam assembly comprising:

a source for emitting a laser beam;

supporting means for supporting said source, said supporting means including a mounting projection detachably fitting into said mounting hole in said housing of said light scanning apparatus;

detecting means mounted on said supporting means for detecting an intensity of said laser beam by receiving said beam emitted from said source and for supplying as an output a detection signal related to the detected intensity;

amplifying means mounted on said supporting means for amplifying said detection signal; and

gain adjusting means mounted on said supporting means for adjusting a gain of said amplifying means, wherein said laser beam emitting assembly can be detachably mounted in position in said light scanning apparatus as a unit when said mounting projection thereof is fitted into said mounting hole.

4,763,335

LASER DIODE ACOUSTIC NOISE REDUCTION

Jacques R. Chamuel, Framingham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Continuation of Ser. No. 837,872, Mar. 4, 1986, abandoned, which is a continuation of Ser. No. 488,784, Apr. 26, 1983, abandoned. This application Nov. 24, 1987, Ser. No. 129,376

Int. Cl.⁴ H01S *3/096*

U.S. Cl. 372—33 **4 Claims**

1. A lasing apparatus for producing output emissions having desired spectral characteristics, comprising:

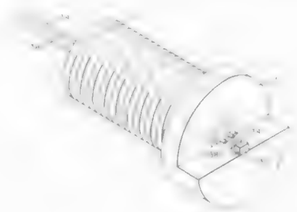
a heat sink body of heat conductive material having a mounting surface;

an electrically activated lasing element operative to produce the output emissions having the desired spectral characteristics mounted on said mounting surface;

an input excitation current lead electrically coupled to said electrically activated lasing element, said input excitation current lead operative to conduct a pulsed activation current therethrough for activation of said lasing element to produce the output emissions having the desired spectral characteristics, and wherein flow of the pulsed activation current through said input excitation current lead produces a first magnetic field around said input excitation current lead;

a return excitation current lead electrically coupled to said lasing element, said return excitation lead operative to conduct the pulsed activation current away from said lasing element, and wherein flow of the pulsed activation current through said return excitation current lead produces a second magnetic field around said return excitation current lead, and wherein

said return excitation current lead is disposed adjacent and in substantially parallel confronting relation to said input excitation current lead in a magnetic field cancellation arrangement wherein the second magnetic field produced by flow of the pulsed activation current through said



return excitation current lead substantially cancels the first magnetic field produced by flow of the pulsed activation current through said input excitation current lead;

at least one of said heat sink body, said input excitation current lead and said return excitation current lead is formed from magnetostrictive material; and wherein

said lasing apparatus is operative upon activation of said lasing element by flow of the pulsed activation current therethrough to produce the output emissions having the desired spectral characteristics, said magnetic field cancellation arrangement between said input excitation current lead and said return excitation current lead avoiding introduction of stress waves in said lasing apparatus due to magnetostrictive effects and vibrations induced in said input and return excitation current leads by external magnetic fields thereby preventing undesirable altering of the desired spectral characteristics of the output emissions of said lasing apparatus.

4,763,336

SWITCHING GAS-DISCHARGE ION LASERS

F. Clark Stephens, 2315 Overland Ave., Los Angeles, Calif. [sic]

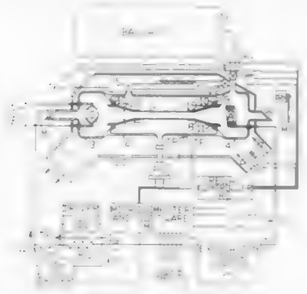
Filed Apr. 24, 1986, Ser. No. 855,451

Int. Cl.⁴ H01S *3/03*

U.S. Cl. 372—81 **17 Claims**

1. In a pulsed gas laser of the type including an enclosed volume of gas, an anode, a cathode, means for providing a defined path through the gas for an electrical discharge current between said anode and cathode, said means including an elongated tubular bore of an electrically-nonconductive refractory material, which defines a column of gas in which a low current keeps the gas ionized and pulses of higher current deliver laser output pulses, envelope means surrounding said bore and enclosing the bore in a low density gas medium that causes heat to be removed from the bore mainly by radiative transfer, a gas return tubing between the end volumes containing said anode and cathode to return gas that is pumped by the discharge current, power supply means coupled to said anode and cathode by electronic switching devices that switch the

discharge current from the lower level that keeps the gas ionized to the higher level that produces output pulses, then back again, an electronic pulse controller for setting pulse duration, interpulse period and number of pulses, an improvement of method which pre-saturates the wall of the bore to avoid characteristic interruptions of pulse current and laser output, known in the art as arc starvation, which occur when sustained pulses of current deplete the gas column by sending to the wall of the bore too many of the ions and electrons that are needed for maintaining the current, the pre-saturated wall condition of the improvement enabling a majority of the ions subsequently going to the wall to encounter electrons already on the wall and combine with the electrons to produce neutral atoms that have no electrostatic charge to hold them on the wall and hence are returned to the gas column, the pre-saturating method comprising the steps of: (1) determining experimentally the values of current, pulse duration, interpulse period and number of pulses of a series of bore-conditioning pulses



applied to the particular tube model and gas medium, while its bore is cold, which cause the wall of the bore to be covered with a density of ions and electrons that enables a majority of ions subsequently arriving at the wall to encounter electrons and produce neutral atoms that return to the gas column, (2) applying said experimentally-determined series of pulses each time the laser is turned on, but after discharge current has been off long enough for the bore to have cooled to a temperature near room ambient, (3) causing at the conclusion of the series a pre-saturated condition of the bore wall, which is followed by (4) a further step selecting and applying repetitive pulses of reduced duty factor, also experimentally predetermined in step (1) to maintain the ...turation through times of low demand in the use of the laser by sending to the wall of the bore during this step more ions and electrons than are given up by the wall during interpulse periods as microcurrents in the relatively noncoductive bore material produce a finite but inherently low rate of spontaneous ion/electron neutralizations and releases.

4,763,337

PROCESS FOR MELTING PARTICULATE MATERIAL

Hansjörg Wohlkönig, Salzburg; Heinz Müller, Neuhofen, and Heinrich Auberger, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 6, 1987, Ser. No. 106,547

Int. Cl.⁴ F27D *3/00*

U.S. Cl. 373—86 **10 Claims**

2. In a melting furnace to be used for melting particulate material by means of at least one electric arc so as to obtain a melt bath of molten material, and of the type including a tub-shaped furnace bottom part equipped with at least one bottom electrode, a furnace central part following upon said furnace bottom part and including a shell, and a furnace lid covering said furnace central part and equipped with at least one burner electrode, said furnace parts defining a furnace interior, and said at least one electric arc burning between said burner electrode and said bottom electrode, the improvement wherein said furnace central part is rotatably mounted with respect to said furnace bottom part and at least one projection is provided



on its surface facing said furnace interior, said projection extending radially inwards and being wedge-shaped in the circumferential direction.

4,763,338

SYNCHRONOUS SIGNAL DECODER

Robert A. Barndt, Sr., Coatesville, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Aug. 20, 1987, Ser. No. 87,532

Int. Cl.⁴ H04L *27/22*

U.S. Cl. 375—82 **10 Claims**



1. A synchronuous detector for phase-encoded binary signals comprised of a plurality of sequential pulses, ones of said sequential pulses encoded to designate a binary logic state in synchronism with a predetermined clock rate, said synchronous detector comprising:

first digital storage means for providing a first output signal in accordance with the logic state of a first predetermined portion of one of said binary signals having first and secnd portions,

second digital storage means for providing a second output signal in accordance with the logic state of a second predetermined portion of said one of said binary signals;

said first and second predetermined portions of said one binary signal comprising a binary character of predetermined duration;

gate means responsive to said first and second output signals for providing a third output signal when said first and second output signals are in opposing binary states, and for producing a null output when said first and second output signals are in the same binary state;

means for inverting said third output signal; and

digital switch means responsive to said third output signal and said inverted third output signal for providing a further output signal indicative of the logic state of said one of said binary signals, said third output signal corresponding to a first transition demarking the beginning of said binary signal and said inverted output signal corresponding to a second transition demarking the end of said binary signal, said switch means so constructed and arranged as to change to a first logic state said third output signal is applied and to an opposing logic state when said inverted

VOL 1093 ISS 2 AG 9 1988 UMI

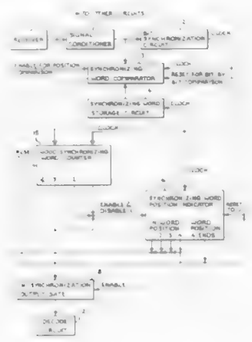
output signal is sequentially applied, the time interval between said first and second logic states corresponding to multiples of a period corresponding to a binary character.

4,763,339

DIGITAL WORD SYNCHRONIZING ARRANGEMENT

Melvin W. Sutphin, Goode, and Theodore E. Taylor, Lynchburg, both of Va., assignors to General Electric Company, Lynchburg, Va.

Continuation of Ser. No. 589,716, Mar. 15, 1984, abandoned. This application Sep. 4, 1986, Ser. No. 903,485
Int. Cl.[4] H04L 7/00
U.S. Cl. 375—114 20 Claims



1. An improved arrangement for achieving synchronization with a data message comprising a synchronizing word transmitted a plurality of times during said message in a communication system in which said data message is not analyzed until after achieving said synchronization, comprising:

a. input means for receiving said transmitted synchronizing words;

b. means for storing a predetermined synchronizing word;

c. means coupled to said input means and to said storing means for comparing each received synchronizing word with said stored synchronizing word, and producing a first signal in response to each received synchronizing word that corresponds to said stored synchronizing word; and

d. in-synchronization signal generating means coupled to said comparing means for producing an in-sychronization signal in response to one of said first signals followed by the production of at least two more of said first signals during any sequence of any of the next four comparisons of said received synchronizing words with said stored predetermined synchronizing word even when a first signal is not produced during each of two consecutive comparisons, whereby data message analysis is initiated in response to said in-synchronization signal.

4,763,340

CAPACITIVE COUPLING TYPE DATA TRANSMISSION CIRCUIT FOR PORTABLE ELECTRONIC APPARATUS

Shigeo Yoneda, Yamatokoriyama; Masato Hiramoto, Kyoto, and Akira Kanayama, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

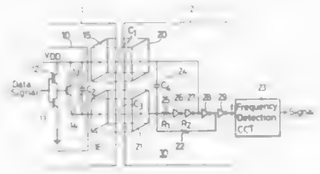
Filed Dec. 19, 1984, Ser. No. 683,645
Claims priority, application Japan, Dec. 22, 1983, 58-249779
Int. Cl.[4] H04J 23/00; H01J 9/38
U.S. Cl. 375—121 10 Claims

1. A data transmission system for an electronic apparatus comprising:

input means for inputting a data signal to be transmitted;

capacitance changing means responsive to said input means and being operable to change its capacitance value according to the value of said data signal;

transmitting means and receiving means, said transmitting means responsive to said capacitance changing means for capacitively coupling the capacitance value of said capacitance changing means to said receiving means,



said receiving means for sensing the capacitance value from said transmitting means; and

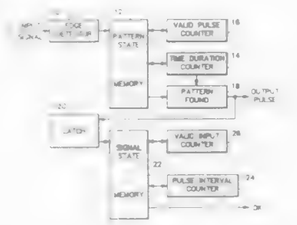
detecting means in said receiving means for detecting the capacitance value of said capacitance changing means and generating an output signal of the data signal inputted to said input means.

4,763,341

DIGITAL TIMING USING A STATE MACHINE

Richard L. Murphy, Grass Valley, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Feb. 25, 1987, Ser. No. 19,081
Int. Cl.[4] H03K 5/19, 9/08
U.S. Cl. 377—20 10 Claims



1. A digital timing generator for detecting an input signal having a predetermined pulse pattern recurring at a periodic rate comprising:

means for detecting pulse edges of pulses in the input signal;

means for determining from the pulse edges the pulse widths for each pulse;

means for counting the consecutive pulses having pulse widths which satisfy the predetermined pulse pattern; and

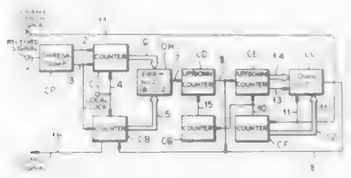
means for generating a valid pulse output when the output of the counting means reaches a predetermined valve indicating the presence of the predetermined pulse pattern.

4,763,342

DIGITAL PHASE-LOCKED LOOP CIRCUITS WITH STORAGE OF CLOCK ERROR SIGNAL

Renato Ambrosio, San Raffaele Cimena, and Carlo M. Bruno, Turin, both of Italy, assignors to Cselt—Centro Studi e Laboratori Telecomunicazioni S.P.A., Turin, Italy

Filed Nov. 24, 1986, Ser. No. 934,250
Claims priority, application Italy, Dec. 17, 1985, 68061 A 85
Int. Cl.[4] G01R 25/08; H03L 7/18
U.S. Cl. 377—43 4 Claims



1. A digital phase-locked loop circuit for correction of a local clock even in the absence of an input signal from which a remote clock signal can be extracted, comprising:

a transition detector having an input receiving an input signal controlled by a remote clock and from which a remote clock signal can be extracted and having outputs at which transitions of two opposite types appear as detected by said transition detector;

counter means having an output connected to a local oscillator generating a local clock and including:

a first counter of said counter means connected to at least one of said outputs of said transition detector and started or blocked by said transition,

a second counter of said counter means connected to one of said outputs of said transition means and enabled by a transition of one of said types to transfer a count to an output of said second counter, said first counter having an output, and

means for applying said local clock to said first and second counters;

a phase-difference circuit connected to the outputs of said first and second counters for generating at an output of said phase-difference circuit signals relating to the sign of phase differences between said input signal and said local clock based upon counts accumulated in said first and second counters;

a digital filter having an input connected to the output of said phase-difference circuit for delivering to an output of said digital filter digitally filtered signals, the output of said digital filter being connected to said second counter for incrementing or decrementing said second counter with corrections to regenerate a clock signal which forms said output of said counter means and serves to control said local oscillator;

a correction-signal counter having an input connected to the output of said digital filter and incremented or decremented by signals outgoing from said digital filter;

a frame-signal counter receiving frame synchronization signals and connected to said correction-signal counter to enable said correction-signal counter to present at an output thereof an accumulated count in response to an overflow signal of said frame-signal counter; and

a logic circuit connected to said output of said correction-signal counter and to an output of said frame-signal counter and having an output at which a signal appears representing the number and types of corrections uniformly distributed over a number of frames as determined by counts accumulated in said correction-signal and frame-signal counters, said output of said logic circuit being connected to said second counter to increment or decrement same, said logic circuit storing a signal representing difference between said local clock and said remote clock signal for control of said local oscillator even in the absence of said input signal.

4,763,343

METHOD AND STRUCTURE FOR OPTIMIZING RADIOGRAPHIC QUALITY BY CONTROLLING X-RAY TUBE VOLTAGE, CURRENT, FOCAL SPOT SIZE AND EXPOSURE TIME

Nicola E. Yanaki, 6199 Dunn Ave., San Jose, Calif. 95123

Filed Sep. 23, 1986, Ser. No. 910,496
Int. Cl.[4] H05G 1/34
U.S. Cl. 378—110 34 Claims



24. A method for optimizing an X-ray image from an X-ray apparatus comprising

an X-ray tube having a cathode which emits electrons and an anode on which said electrons impinge and which is a source of X-rays, said tube having an operating voltage which is the voltage drop between said anode and said cathode, a tube current which is the current between said anode and said cathode, and a focal spot size which is the area of said anode on which said electrons impinge, and in which said voltage, said current and said focal spot size have initial settings;

a collimator having an opening through which said X-rays leaving said source in the direction of said opening may pass;

means for holding tissue to be examined in position for being irradiated;

means for showing an image of X-rays which have passed through said tissue;

at least one sensor which generates sensor signals for detecting radiation passed through said tissue and through said means for showing an image, and for calibrating said X-ray apparatus; and

means for receiving said sensor signals from said at least one sensor and based on said sensor signals sending control signals which control said operating voltage, said tube current, and said focal spot size; comprising the steps of:

positioning said tissue;

determining thickness of said tissue and providing said tissue thickness to said microprocssor;

operating said X-ray apparatus at said initial settings;

in a sampling time small in comparison to an expected total exposure time calculating optimum voltage, current and focal spot size settings for the tissue being exposed;

at the end of said small sampling time changing voltage, current and focal spot size settings to said optimum voltage, current and focal spot size settings for the tissue being exposed; and

continuing to operate said X-ray apparatus at said optimal

VOL 1093 ISS 2 AG 9 1988 UMI

settings until an optimum visualization of said means for showing an image is achieved.

4,763,344

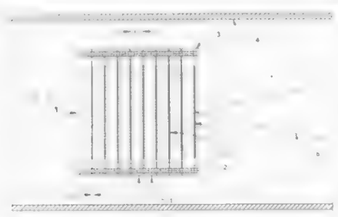
X-RAY SOURCE FROM TRANSITION RADIATION USING HIGH DENSITY FOILS

Melvin A. Piestrup, 13800 Skyline Blvd., Woodside, Calif. 94062

Filed Aug. 7, 1986, Ser. No. 893,977

Int. Cl.[4] **G21G** *4/00*

U.S. Cl. 378—119 **20 Claims**



1. A source for producing X-rays at an energy greater than 2 keV corresponding to a peak frequency ω, comprising:

a number of foils, M, arranged as a succession of parallel elements to form a stack, the foils being constructed of a material having an atomic weight A, atomic number $15 \leqq Z \leqq 79$, and a density $\rho \geqq 3$ gm/cm^3, with each foil having a minimum thickness l_2;

holding means for holding the foils in the stack and for maintaining a spacing l_1 between adjacent foils in the stack;

electron accelerating means for directing an electron beam toward the stack to create transition radiation, the electron beam having an energy

$$E > E_o\omega\left[\frac{Am_e}{4\pi N_o Z\rho e^2}\right]^{\frac{1}{2}} \tag{17}$$

but less than 500 MeV, where E_o is the electron rest energy, A is the atomic weight of the foil material, Z is the atomic number of the foil material, m_e is the mass of the electron, N_o is Avogadro's number, ρ is the density of the foils, and e is the electron charge, all units in the cgs system;

housing means for providing a controlled environment for the electron beam and the foil stack;

where $M \geqq (0.5)2/\mu l_2$, where μ is the absorption coefficient of the foil material at the frequency ω;

where

$$l_2 \geqq (0.7)\frac{\lambda}{(2/\gamma^2 + \omega_p{}^2/\omega^2)} \tag{18}$$

where λ is the wavelength of the X-rays at the peak frequency ω, and where $\gamma=(1-\beta^2)^{\frac{1}{2}}$ where β is the velocity of the electrons in the electron beam relative to the speed of light, and ω_p is the plasma frequency of the foil material;

where

$$l_1 \geqq (0.5)\frac{\gamma^2\lambda}{2} \tag{19}$$

if the housing means provides a vacuum environment; and where

$$l_1 \geqq (0.5)\frac{\lambda}{(2/\gamma^2 + \omega_{pg}{}^2/\omega^2)} \tag{20}$$

if the housing means provides a gas environment, where ω_{pg} is the plasma frequency of the gas.

4,763,345

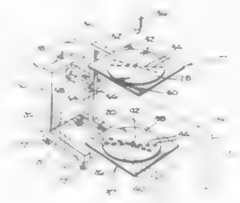
SLIT SCANNING AND DETECHING SYSTEM

Zoran L. Barbaric, Malibu; Michael Deckard, Sunland, and Robert S. Nelson, Santa Monica, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation-in-part of Ser. No. 636,238, Jul. 31, 1984. This application Jul. 3, 1986, Ser. No. 882,093

Int. Cl.[4] **G21K** *5/10*

U.S. Cl. 378—146 **20 Claims**



14. A movable X-ray device having a wide dynamic range, for use with existing X-ray installations, including means for emitting an X-ray beam, fixed to and associated with the existing X-ray installation, comprising:

radiopaque apertured disk means having a plurality of at least five separate radially extending slits, said slits being interrupted and overlapping to provide at least one slit having an opening at each radial distance;

solid state receptor means mounted on a second disk, said receptor means being aligned with the respective slits in said radiopaque disk means, said receptor means including a plurality of spaced individual receptor assemblies aligned, respectively, with said slits; and

means for rotating said radiopaque disk and said second disk synchronously and coaxially, with said fixed X-ray source adjacent said radiopaque disk, a radiographic target between said two disks; and

means for mounting (1) said radiopaque disk means, (2) said receptor means and said second disk, and (3) said means for rotating said radiopaque disk and said second disk, all in a single movable assembly as a unit, for movement toward and away from existing X-ray installations which existing installations include the fixed means for emitting an X-Ray beam;

so that said movable device may be selectively employed with existing X-ray installations.

4,763,346

PHOTOGRAPHIC CASSETTE AND METHOD OF DISPENSING

John J. Niedospial, and Bruce R. Muller, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1986, Ser. No. 879,245

Int. Cl.[4] **G03B** *17/26*

U.S. Cl. 378—187 **10 Claims**

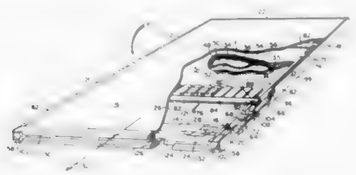
1. An improved X-ray cassette having improved performance capability in a weight-bearing examination condition, the cassette having one end with a slot therein through which a sheet is movable therethrough along an inlet path, an opposite end, opposite sides joining said one end and opposite ends,

and opposing front and rear covers joined to said ends and sides, the combination comprising:

a pressure plate adjacent said rear cover;

an unsecured floating plate adjacent said front cover, said pressure and floating plates having substantially planar interior surfaces in substantially parallel, facing relationship with each other to support the sheet therebetween;

pressure applying means biasing said pressure plate towards



said floating plate to press the sheet flat between said interior surfaces even when said front cover is deformed in a weight-bearing examination; and

pressure relieving means actuatable to engage each of said pressure and floating plates for urging said pressure and floating plates apart to relieve the sheet of pressure applied thereto by said interior surfaces, thereby allowing the sheet to enter said slot for succeeding movement along said inlet path.

4,763,347

CONTROL SYSTEM, ELECTRONICALLY COMMUTATED MOTOR SYSTEM, BLOWER APPARATUS AND METHODS

David M. Erdman, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Continuation-in-part of Ser. No. 463,147, Feb. 2, 1983, Pat. No. 4,654,566, which is a continuation-in-part of Ser. No. 412,421, Aug. 27, 1982, Pat. No. 4,449,079, which is a continuation of Ser. No. 141,267, Apr. 17, 1980, abandoned, which is a continuation-in-part of Ser. No. 77,656, Sep. 21, 1979, abandoned, which is a continuation-in-part of Ser. No. 802,484, Jun. 1, 1977, Pat. No. 4,169,990, which is a continuation-in-part of Ser. No. 729,761, Oct. 5, 1976, abandoned, which is a continuation-in-part of Ser. No. 482,409, Jun. 24, 1974, Pat. No. 4,005,347. This application Feb. 17, 1987, Ser. No. 15,409

Int. Cl.[4] **H02P** *6/02*

U.S. Cl. 318—254 **57 Claims**



1. A control system for an electronically commutated motor having a stationary assembly with a plurality of winding stages and further having a rotatable assembly, and which control system is to be supplied with an externally derived first pulse width modulated series of pulses having a first duty cycle which is subject to sudden changes which would cause a substantial inrush current to the motor if used directly for control purposes, the control system comprising:

means for generating a second series of pulses and means for modulating their width in response to the first series of pulses to produce a second pulse width modulated series of pulses that has a second duty cycle which varies less rapidly over time than the first duty cycle varies when the first duty cycle changes suddenly; and

means for applying a voltage to one or more of the winding stages at a time in accordance with the second pulse width modulated series of pulses and commutating the winding stages in a preselected sequence to rotate the rotatable assembly, whereby inrush current to the motor is substantially reduced when the first duty cycle changes suddenly.

30. Blower apparatus for use with a heat exchanger to heat or cool a compartment, comprising:

a fan for moving air over the heat exchanger to condition the air and thereby heat or cool the compartment by blowing conditioned air thereto;

an electronically commutated motor including a stationary armature having a core and at least two energizable winding stages arranged to establish a predetermined number of magnetic poles, and a permanent magnet rotor coupled to said fan and adapted to rotate in response to the magnetic poles established by said winding stages;

sensor means for sensing temperature within the compartment;

level setting means for variably setting a desired level of temperature for the compartment;

means connected to said sensor means and to said level setting means for deriving a first pulse width modulated series of pulses having a first duty cycle varying as a function of the the temperature and the desired level, which first duty cycle is subject to sudden changes which would cause a substantial inrush current to said motor if used directly for control purposes;

means for generating a second series of pulses and means for modulating their width in response to the first series of pulses to produce a second pulse width modulated series of pulses that has a second duty cycle which varies less rapidly over time than the first duty cycle varies when the first duty cycle changes suddenly; and

means for applying a voltage to one or more of said winding stages at a time in accordance with the second pulse width modulated series of pulses and commutating said winding stages in a preselected sequence to rotate said rotar and said fan with a variable speed to blow conditioned air to the compartment at a rate related to the second duty cycle, whereby inrush current to said motor is substantially reduced when the first duty cycle changes suddenly.

53. A method of controlling an electronically commutated motor having a stationary assembly with a plurality of winding stages and further having a rotatable assembly, which method is for use with an externally derived first pulse width modulated series of pulses having a first duty cycle which is subject to sudden changes which would cause a substantial inrush current to the motor if used directly for control purposes, the method comprising the steps of:

generating a second series of pulses and modulating their width in response to the first series of pulses to produce a second pulse width modulated series of pulses that has a second duty cycle which varies less rapidly over time than the first duty cycle varies when the first duty cycle changes suddenly; and

applying a voltage to one or more of the winding stages at a time in accordance with the second pulse width modulated series of pulses and commutating the winding stages in a preselected sequence to rotate the rotatable assembly, whereby inrush current to the motor is substantially reduced when the first duty cycle changes suddenly.

57. A method for operating a blower system having a fan for moving air over a heat exchanger to heat or cool a compartment, and an electronically commutated motor including a stationary armature having a core and at least two energizable winding stages arranged to establish a predetermined number of magnetic poles, and a permanent magnet rotor coupled to the fan and adapted to rotate in response to the magnetic poles

VOL 1093 ISS 2 AG 9 1988 UMI

established by the winding stages, the method comprising the steps of:

sensing temperature within the compartment;

variably setting a desired level of temperature for the compartment;

deriving a first pulse width modulated series of pulses having a first duty cycle varying as a function of the temperature and the desired level, which first duty cycle is subject to sudden changes which would cause a substantial inrush current to the motor if used directly for control purposes;

generating a second series of pulses and modulating their width in response to the first series of pulses to produce a second pulse width modulated series of pulses that has a second duty cycle which varies less rapidly over time than the first duty cycle varies when the first duty cycle changes suddenly; and

applying a voltage to one or more of the winding stages at a time in accordance with the second pulse width modulated series of pulses and commutating the winding stages in a preselected sequence to rotate the rotor and the fan with a variable speed to blow conditioned air to the compartment at a rate related to the second duty cycle, whereby inrush current to the motor is substantially reduced when the first duty cycle changes suddenly.

4,763,348

CONTROLLED POWER SUPPLY FOR KEY TELEPHONE SYSTEM

Yoichiro Sano, Tokyo; Teruo Matsufuji, Koganei, and Akira Sato, Fujisawa, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1986, Ser. No. 853,225
Claims priority, application Japan, Apr. 30, 1985, 60-93089
Int. Cl.[4] H04M *1/64, 19/00*
U.S. Cl. 379—165 2 Claims



1. A key telephone system having key telephone sets comprising, specified power supply means for supplying power to a specified key telephone set at all times, controlled power supply means capable of turning ON and OFF power supply to controlled key telephone sets other than the specified one, said controlled power supply means comprising means for automatically turning the power supply means ON in response to a specified dial signal incoming call and OFF after automatically answering the incoming call.

4,763,349

MONITORING APPARATUS USING TELEPHONE LINK

Howard Siegel, 3095 Lawson Blvd., Oceanside, N.Y. 11572; Theodore Simon, 35 Melrose Rd., Dix Hills, N.Y. 11746, and Barry D. Schweiger, 9 Richbourn La., Melville, N.Y. 11747

Continuation of Ser. No. 336,408, Dec. 31, 1981, abandoned.
This application Apr. 9, 1987, Ser. No. 36,337
Int. Cl.[4] H04M *11/04, 1/60*
U.S. Cl. 379—38 1 Claim

1. Apparatus to establish two-way communications between a dwelling and a remote monitoring station using a telephone link and an existing automatic telephone dialer in the dwelling, comprising a microphone adapted to pick up sounds in the dwelling, a speaker placed in the dwelling, transfer means for effecting alternate, isolated connection of said microphone and said speaker to said telephone link, diplexer means electrically coupled to the dialer and responsive to a tone of a given frequency transmitted through said telephone link to activate said transfer means selectively to connect said microphone and speaker to said telephone link, microphone amplifier means between said microphone and said telephone link and adapted to amplify the output of said microphone, speaker driver means adapted to amplify signals from the telephone link and drive said speaker, and filter means for removing by filtering said tone of given frequency from said microphone amplifier means and said speaker driver means, said transfer means comprising an electromechanical relay having two contact positions, one of said positions connecting said microphone to said microphone amplifier means, the second contact position connecting



said speaker to said speaker driver means, and means for selectively activating one of said microphone amplifier means and said speaker driver means, said electromechanical relay means and said selective activation means being operable simultaneously such that upon an emergency and the automatic operation of the dialer, a telephone link is established between the remote station and dwelling whereby said transfer means electrically couples one of said microphone and speaker to said diplexer means and electrically isolates the other of said microphone and speaker so that signals from the microphone are amplified by said microphone amplifier means and coupled into the link for transmission therethrough and signals from said remote station are amplified by said speaker driver means and broadcast by said speaker, thus establishing alternating voice communications between the dwelling and the remote station without interference by said tone previously removed by said filter means.

4,763,350

FACILITY FOR DETECTING AND CONVERTING DIAL INFORMATION AND CONTROL INFORMATION FOR SERVICE FEATURES OF A TELEPHONE SWITCHING SYSTEM

Manfred Immendorfer, Ditzingen; Dieter Kopp, Hemmingen; Gebhard Thierer, Ditzingen, and Helmut Seichter, Pfullingen, all of Fed. Rep. of Germany, assignors to Alcatel, N.V., Amsterdam, Netherlands

Filed Jun. 13, 1985, Ser. No. 744,343
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1984, 3422409
Int. Cl.[4] H04M *1/50, 3/42;* H04Q *1/50, 3/04*
U.S. Cl. 379—67 4 Claims

1. A facility for detecting and converting dial information and control information for service features of a telephone switching system, comprising:

a voice-controlled dial signal receiver unit including a voice recognition unit and a control unit;

a first message path and a second message path;

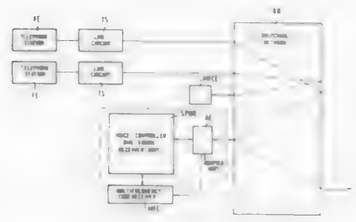
an adapter unit having means for interfacing to a switching network of the telephone switching system, respectively

connected by said first message path and said second message path to said voice recognition unit and said control unit;

a multifrequency code receiver connected to said control unit and, in parallel with said voice-controlled dial signal receiver unit by said first message path, to said adapter unit;

a third message path; and

a voice output unit, said voice output unit being disposable in the telephone switching system and connected with said control unit and said voice recognition unit and, by said third message path, to said adapter unit, said control unit



being responsive to activation of said voice-controlled dial signal receiver unit by the telephone switching system to control said voice output unit to provide voice prompts to a subscriber and control said voice recognition unit to receive acoustic dial and control information and convert the acoustic dial and control information into a dial code;

said multifrequency code receiver comprising means for detecting dial and control information entered by a subscriber through a numeric keypad, said multifrequency code receiver and said control unit being responsive to dial or code information received by said multifrequency code receiver to interrupt said voice recognition unit through said control unit.

4,763,351

COMPUTER SECURITY SYSTEM

Bernard N. Lipscher, and Kevin G. Coleman, both of 1342 Grant St. Station, Pittsburgh, Pa. 15230

Filed Apr. 24, 1985, Ser. No. 726,619
Int. Cl.[4] H04L *9/00*
U.S. Cl. 379—95 7 Claims



1. A security system for a computer accessible through a telephone switching network, comprising

electrically operable switch means having a normally open circuit for being connected in series with a first telephone line from the telephone network to the computer,

a signal sensing circuit connectable to a second telephone line from the telephone network for responding to a predetermined signal on the second telephone line to operate the switch means to close the normally open circuit, and

a user security unit for generating the predetermined signal and for transmitting the generated signal to the signal sensing circuit through a third telephone line to the telephone network to enable connection of a user terminal to the computer through a fourth telephone line to the telephone network.

4,763,352

SECURE HOLDER FOR A DESK TOP COIN OPERATED TELEPHONE

Walter S. Goff, 11816 Brownell, Plymouth, Mich. 48170

Filed Nov. 25, 1987, Ser. No. 125,159
Int. Cl.[4] H04M *17/00*
U.S. Cl. 379—145 13 Claims



1. A security lock-down holder for a desk top coin operated telephone comprising:

a base adapted to receive and retain a desk top coin operated telephone, said base including attachment means adapted to secure the base to a subjacent surface and disposed so as to be inaccessible when a telephone is retained therein, said base further including retaining means adapted to engage and retain a first portion of the base of the telephone; and

lockable mounting means operative in cooperation with the base to releasably, retain a second portion of the body of the telephone, whereby the telephone is lockably retained in a fixed relationship with the subjacent surface.

4,763,353

TERMINAL BASED ADJUNCT CALL MANAGER FOR A COMMUNICATION SYSTEM

Leonard M. Canale, Middletown; Michael J. Collins, East Windsor; Paul J. O'Brien, Atlantic Highlands; Lisa L. Scott, and Martin H. Singer, Fair Haven, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Filed Feb. 14, 1986, Ser. No. 830,058
Int. Cl.[4] H04M *3/50*
U.S. Cl. 379—157 16 Claims

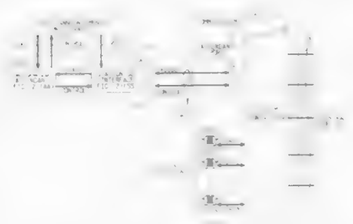
1. An adjunct call manager unit arranged for connection to a station port of a telephone communication system for controlling the management of calls received over a plurality of communication lines connected to said system, said adjunct comprising

means for receiving a station line status signal from predetermined ones of said lines via said station port;

means for sending via said station port one or more station line control signals selected from a group including feature control signals, line control signals, and switchhook control signals; and

VOL 1093 ISS 2 AG 9 1988 UMI

means responsive to said station line status signal for generating a predetermined call control command for output to



said sending means wherein said control command includes one or more of said station line control signals.

4,763,354
KEY TELEPHONE SYSTEM
Hiroshi Fukushima, and Teruo Matsufuji, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan
Filed May 28, 1987, Ser. No. 55,124
Claims priority, application Japan, Jun. 5, 1986, 61-129141
Int. Cl.[4] H04M *1/72*
U.S. Cl. 379—165 5 Claims



1. A key telephone system comprising a key service unit and a plurality of key telephone sets further comprising an IC card having user data registered therein and an IC card connector fixed in position within each of said key telephone sets in said plurality thereof and connected to an address bus, a data bus, and a control line provided in its corresponding said key telephone sets, said IC card connector adapted to receive therein said IC card, wherein registration of user data in said IC card and reading of said user data from said IC card are effected through the medium of said IC card connector.

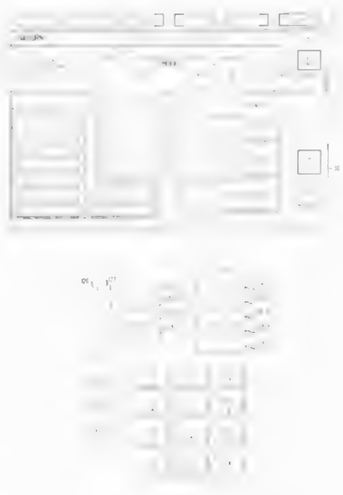
4,763,355
COMBINED WRITING AND SIGNALING INSTRUMENT
James A. Cox, 116 Rue du Bois, Cherry Hill, N.J. 08003
Filed Mar. 24, 1987, Ser. No. 29,856
Int. Cl.[4] H04M *1/50*
U.S. Cl. 379—355 15 Claims

1. A writing instrument capable of producing and transmitting telephonic sound tones comprising:
(a) elongated housing means having a writing end and a sound transmitting end;
(b) inscribing means including a writing point carried by said housing at the writing end thereof;
(c) electronic memory means spaced from said inscribing means and also carried by said housing for storing numbers therein;
(d) a sound transducer adjacent an end of said housing remote from said inscribing means and connected to said electronic memory means for producing and transmitting sound tones corresponding to said stored numbers;
(e) a battery carried by said housing and connected to supply power to said memory means and said transducer; and



(f) switch means connected to said electronic memory means and to said transducer to actuate transmission of said sound tones.

4,763,356
TOUCH SCREEN FORM ENTRY SYSTEM
Benjamin W. Day, Jr., Rumson; Alexander C. Gillon, Aberdeen, and Raoul A. LeConte, Howell, all of N.J., assignors to AT&T Information Systems, Inc. American Telephone and Telegraph Company, Murray Hill, N.J.
Filed Dec. 11, 1986, Ser. No. 940,408
Int. Cl.[4] H04M *1/23;* **G06F** *15/18;* **G08C** *21/00*
U.S. Cl. 379—368 22 Claims



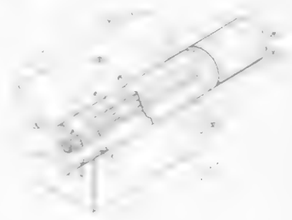
1. An arrangement for use in a computer having a display associated therewith comprising
means for displaying on said display a pattern including a plurality of information fields and for identifying for each field a kind of information to be inserted therein,
means for indicating a particular one of said information fields into which information is to be inserted and for concurrently displaying a predefined tool associated with said one of said fields, said predefined tool being operable to supply information of the kind identified for said one field, said tool being selected from a group of predefined tools including at least a tool adapted to supply an individual entry from a menu of alternatives and at least a tool adapted to allow said user to compose said information, and
means for inserting in said one field information that is derived as a result of said user operating said displayed tool.

4,763,357
METHOD AND APPARATUS FOR PROVIDING SECURE ELECTRONIC COMMUNICATIONS
William S. Barr, 249 Oak Beach Rd. #2249, Oak Beach, N.Y. 11702
Filed Apr. 18, 1985, Ser. No. 724,450
Int. Cl.[4] H04L *9/00*
U.S. Cl. 380—48 36 Claims



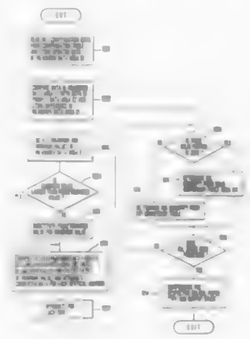
1. Apparatus coupling to each end of a communications system providing secure electronic communications between digital electronic data devices located at respective ends of the system comprising:
means for providing a plurality of characteristics to an information message signal containing an information message generated by one of the data devices for transmission to the other data device over a communications channel of the communications system, said plurality of characteristics comprising at least the baud rate of the information message signal selected from a plurality of baud rates, the modulation technique selected from a plurality of modulation techniques and the frequency of the carrier of the information message signal selected from a plurality of carrier frequencies;
control means coupled to the data device for automatically and randomly determining a configuration of the information message signal to be transmitted over the communications channel, thereby allowing the random selection of the characteristics of said information message signal, said configuration comprising a selection of at least one variation of each of said plurality of characteristics, said configuration being defined by a configuration message which changes at random times, thereby changing said configuration at the random times; and
switching means coupled to said data device, said control means and to said means for providing for selecting at least one variation of each of said plurality of characteristics, said switching means being responsive to the configuration message defining said configuration generated by said control means.

4,763,358
ROTARY SOUND TRANSDUCER
Thomas J. Danley, Highland Park, Ill., assignor to Intersonics Incorporated, Northbrook, Ill.
Filed Dec. 16, 1986, Ser. No. 942,302
Int. Cl.[4] H04R *1/02, 7/00*
U.S. Cl. 381—156 9 Claims



1. A transducer for producing sound in response to an audio signal comprising a cylindrical enclosure having an axis, an opening in the enclosure, a vane mounted for rotation about said axis, and rotary motor means connected to said audio signal for rotating said vane back and forth to produce sound through said opening.

4,763,359
METHOD AND SYSTEM OF PROCESSING IMAGE SIGNALS
Teruo Tsunoda, Chiba, and Ryoichi Kokawa, Nara, both of Japan, assignors to Komori Printing Machinery Co., Ltd., Japan
Division of Ser. No. 447,749, Dec. 8, 1982, Pat. No. 4,649,566.
This application Oct. 14, 1986, Ser. No. 918,485
Claims priority, application Japan, May 19, 1982, 57-84545
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—1 1 Claim



1. A method of judging an image signal for use in an image area measuring apparatus of the type wherein an image bearing surface of a lithographic printing plate is photographed with a television camera to produce image signals, the image signals being converted into digital signals to obtain measured value data, and an image area of each one of a plurality of zones formed by dividing said image bearing surface is determined by an arithmetic operation utilizing said measured value data, said method comprising the steps of:
selecting maximum and minimum values from said measured value data;
comparing said selected maximum value with a predetermined value which is less than the value corresponding to

VOL 1093 ISS 2 AG 9 1988 UMI

an actual 100% dot ratio to determine which has a greater value; and

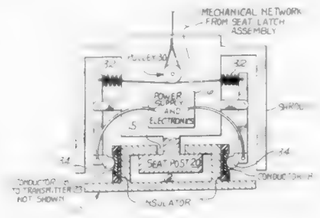
converting each value of said measured value data to a dot area ratio wherein said determined greater value corresponds to a 100% dot ratio and said selected minimum value corresponds to a 0% dot ratio.

4,763,360

PASSENGER ENTERTAINMENT SYSTEM HAVING DIRECT COUPLED SEAT RECEIVERS

James W. Daniels, Kent, and Carl W. Erickson, Maple Valley, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 17, 1986, Ser. No. 908,449
Int. Cl.[4] H04B 5/00
U.S. Cl. 455—3 3 Claims



1. An audio passenger entertainment system for transmission of receiver power and intelligence information to a plurality of receiver means associated with a respective plurality of seat units distributed along a seat track comprising in combination:

an electrically conductive transmission line extending along the length of said seat track and parallel therewith, said electrically conductive transmission line including an electrical insulator strip disposed between an electrically conductive strip and said seat track; and,

electrical connector means disposed between each of said plurality of receiver means associated with each of a corresponding plurality of seat units distributed along said seat track and said seat track for making direct coupling by conductive contact therebetween.

4,763,361

SYSTEM AND DEVICE FOR RECOGNITION OR IFF USE

Thomas E. Honeycutt, Somerville, and Thomas G. Roberts, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 13, 1986, Ser. No. 835,858
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—605 5 Claims



1. In a system for identifying whether the target object is a friend or foe, the improvement comprising a first generating means for generating an unpolarized output beam which is sent to an object to be identified, reflecting means mounted on friendly objects whereby the unpolarized output beam will be polarized and reflected, an interrogator means for receiving reflected energy from said object, said interrogator means having a polarization anlayzer for detecting whether the return signal is polarized or unpolarized and therefore determining whether the object is a friend of foe.

DESIGNS

AUGUST 9, 1983

297,065

SPORTS HAT

Garrison A. Ross, 1035 S. Howard St., Tacoma, Wash. 98465

Filed Dec. 27, 1983, Ser. No. 565,767
Term of patent 14 years
U.S. Cl. D2—247



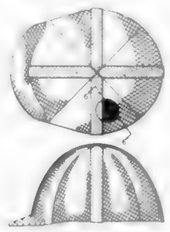


297,066

HARD HAT COVER

Steven B. Schonwetter, 380 Reynolds St., and Sarah Schonwetter, 585 Warren Ave., both of Kingston, Pa. 18704

Filed Aug. 5, 1985, Ser. No. 762,289
Term of patent 14 years
U.S. Cl. D2—260

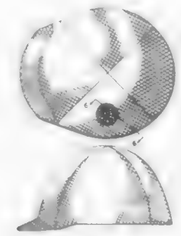


297,067

HARD HAT COVER

Steven B. Schonwetter, 380 Reynolds St., and Sarah Schonwetter, 585 Warren Ave., both of Kingston, Pa. 18704

Filed Aug. 5, 1985, Ser. No. 762,292
Term of patent 14 years
U.S. Cl. D2—260



297,068

COMBINED STOCKING AND SLIPPER

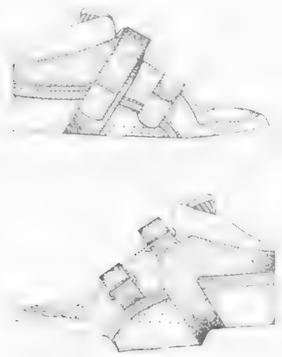
George K. C. Lee, Honolulu, Hi., assignor to Annette M. Lee; Wanda M. Lee; Terence H. Lee and Eric H. Lee, all of Honolulu, Hi.

Filed Nov. 1, 1985, Ser. No. 794,087
Term of patent 14 years
U.S. Cl. D2—265



VOL 1093 ISS 2 AG 9 1988 UMI

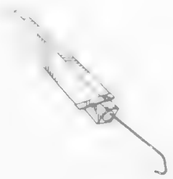
297,069
SHOE UPPER
Tuan N. Le, Cohasset, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Jul. 16, 1987, Ser. No. 74,477
Term of patent 14 years
U.S. Cl. D2—314



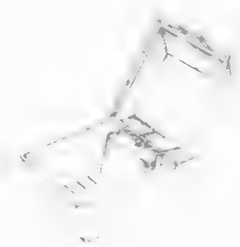
297,070
ELEMENT OF A SHOE UPPER
Lawrence Selbiger, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Aug. 21, 1987, Ser. No. 87,904
Term of patent 14 years
U.S. Cl. D2—314



297,071
BUTTONER
Judy Mayer, No. 6 Northridge La., Sandy, Utah 84092
Filed Sep. 3, 1985, Ser. No. 771,724
Term of patent 14 years
U.S. Cl. D2—643



297,072
STORAGE CASE FOR DISKETTES OR THE LIKE
Craig D. Drake, and Ross A. Jessen, both of Muscatine, Iowa, assignors to Ring King Visibles, Inc., Muscatine, Iowa
Filed Jun. 7, 1985, Ser. No. 742,630
Term of patent 14 years
U.S. Cl. D3—35



297,073
FISHING TACKLE BOX
William Curci, 3820 - 20th St., N.W., Canton, Ohio 44708
Filed Dec. 5, 1985, Ser. No. 804,879
Term of patent 14 years
U.S. Cl. D3—38



297,074
PURSE HOLDER
William L. Burke, and Elwood Marple, both of 1701 W. Brandon Blvd., Brandon, Fla. 33511
Filed Jun. 17, 1985, Ser. No. 745,490
Term of patent 14 years
U.S. Cl. D3—54



297,075
HAND SAW CARRYING CASE
Carl Olsen, 889 Salem Rd., Yorkstown Heights, N.Y. 10598
Filed Aug. 5, 1985, Ser. No. 762,316
Term of patent 14 years
U.S. Cl. D3—73



297,076
CAMOUFLAGE FABRIC OR SIMILAR ARTICLE
Ronald N. Kolpin, Berlin, and Richard L. Schultz, Pickett, both of Wis., assignors to Kolpin Manufacturing, Inc., Berlin, Wis.
Filed Feb. 20, 1986, Ser. No. 834,439
Term of patent 14 years
U.S. Cl. D5—62

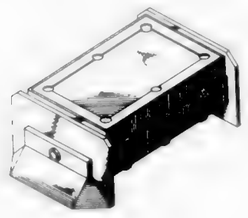


297,077
CHAIR
Erling Revheim, Bergen, Norway, assignor to Hove Mobler A.S., Norway
Filed Jun. 9, 1986, Ser. No. 872,745
Term of patent 14 years
U.S. Cl. D6—379



VOL 1093 ISS 2 AG 9 1988 UMI

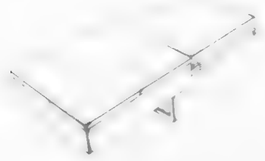
297,078
COMBINATION POOL TABLE AND BED
William M. Peterson, Rte. 8, Box 775, New Braunfels, Tex. 78130
Filed Jan. 23, 1986, Ser. No. 821,779
Term of patent 14 years
U.S. Cl. D6—384



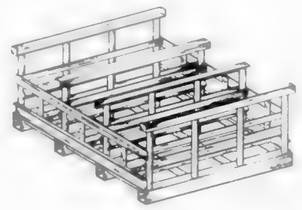
297,079
FOLDABLE BEVERAGE TABLE OR SIMILAR ARTICLE
Charles M. Weldon, 9701 Buteshire Rd., Richmond, Va. 23236
Filed Jan. 9, 1986, Ser. No. 817,418
Term of patent 14 years
U.S. Cl. D6—429



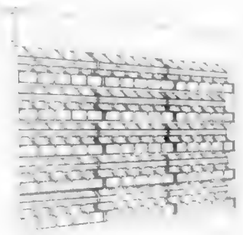
297,080
EXTENDIBLE BEDSIDE TABLE
Jan Hemberg, Lidköping, Sweden, assignor to EuroContact AB, Lidköping, Sweden
Filed Aug. 23, 1985, Ser. No. 768,727
Claims priority, application Sweden, Feb. 25, 1985, 85-0447
Term of patent 14 years
U.S. Cl. D6—430



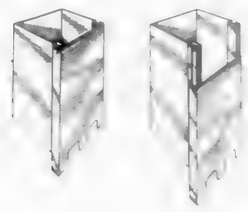
297,081
RACK FOR SUPPORTING A PLURALITY OF VERTICALLY ORIENTED RINGS
Marvin J. Baldree, Rte. 1, Box 219, Rice, Tex. 75155, and Raymon D. Utz, 309 Sheri La., Hurst, Tex. 76053
Filed Feb. 10, 1986, Ser. No. 827,869
Term of patent 14 years
U.S. Cl. D6—462



297,082
DISPLAY RACK FOR SPICE CONTAINER OR THE LIKE
J. Morris Binder, West Des Moines; Archie G. Drummond, Jr., Palatine, and Dale E. Fahnstrom, Riverside, both of Ill., assignors to Tone Brothers, Inc., Des Moines, Iowa
Filed Nov. 22, 1985, Ser. No. 803,880
Term of patent 14 years
U.S. Cl. D6—463



297,083
STORAGE BOX OR THE LIKE
Gunnar Olovsson, P.O. Box 3031, S-981 03 Kiruna, Sweden
Filed Sep. 23, 1985, Ser. No. 779,023
Claims priority, application Sweden, Mar. 29, 1985, 85-0846
Term of patent 14 years
U.S. Cl. D6—475



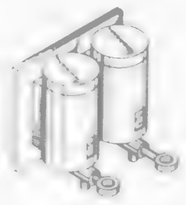
297,084
FLOOR DISPLAY
William V. Silver, New York County, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.
Filed Jan. 13, 1986, Ser. No. 818,110
Term of patent 14 years
U.S. Cl. D6—476



297,085
SHELF UNIT
Douglas C. Gieber, 704 E. 9th St., Wamego, Kans. 66547
Filed Apr. 22, 1985, Ser. No. 725,774
Term of patent 14 years
U.S. Cl. D6—479



297,086
DISPENSER UNIT FOR TOILETRIES OR THE LIKE
Konstantinos Paphis, 724 Macon Rd., Hampton, Va. 23666
Filed Nov. 27, 1985, Ser. No. 806,932
Term of patent 14 years
U.S. Cl. D6—544

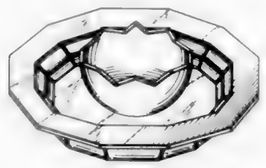


VOL 1093 ISS 2 AG 9 1988 UMI

297,087
WALL MOUNTED STORAGE CABINET
Ann D. Fortescue, 1129 Wilderness Trail, Richardson, Tex. 75080
Filed May 10, 1985, Ser. No. 732,679
Term of patent 14 years
U.S. Cl. D6—559



297,088
COMBINED SAUCE BOAT AND ENTREE PLATE
Charles E. Finsilver, Hartsdale; Sylvia Schur, New Rochelle, and Mary W. Yuan, No. Tarrytown, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Aug. 12, 1985, Ser. No. 764,453
Term of patent 14 years
U.S. Cl. D7—3

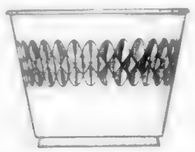


297,089
BEVERAGE TUMBLER
John W. West, Oakville, Canada, assignor to Canada Cup, Inc., Toronto, Canada
Filed Sep. 26, 1985, Ser. No. 780,167
Term of patent 14 years
U.S. Cl. D7—14



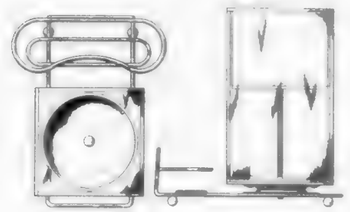


297,090
BEVERAGE TUMBLER
John W. West, Oakville, Canada, assignor to Canada Cup, Inc., Toronto, Canada
Filed Sep. 26, 1985, Ser. No. 780,270
Term of patent 14 years
U.S. Cl. D7—14





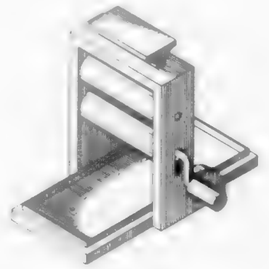
297,091
COMBINED ARTICLE STAND AND ADVERTISING CARD HOLDER
Arlene Kyler, 3445 Park Ave., Oceanside, N.Y. 11572
Division of Ser. No. 757,077, Jul. 19, 1985. This application Nov. 13, 1987, Ser. No. 120,009
Term of patent 14 years
U.S. Cl. D7—52



297,092
UTENSIL FOR PASTA
Pak H. Leung, 95 Wai Yip St., Kowloon, Hong Kong, assignor to Cassano's Inc., Dayton, Ohio
Filed Nov. 7, 1985, Ser. No. 803,933
Claims priority, application United Kingdom, Jul. 25, 1985, 85 [illegible]
Term of patent 14 years
U.S. Cl. D7—102



297,093
CRAB AND CRAWFISH PEELER
Dale D. Smith, Sr., Rte. 2, Box 228, Jeanerette, La. 70544
Filed Dec. 27, 1985, Ser. No. 814,037
Term of patent 14 years
U.S. Cl. D7—106



297,094
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Sep. 6, 1985, Ser. No. 773,182
Term of patent 14 years
U.S. Cl. D7—137

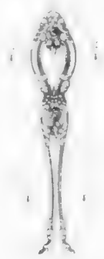


VOL 1093 ISS 2 AG 9 1988 UMI

297,095
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 12, 1985, Ser. No. 808,057
Term of patent 14 years
U.S. Cl. D7—137



297,096
FORK OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 12, 1985, Ser. No. 808,058
Term of patent 14 years
U.S. Cl. D7—137



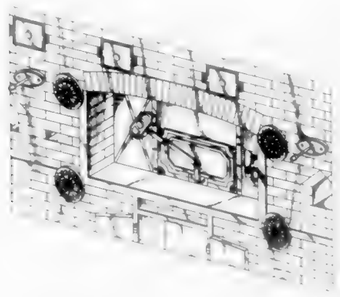
297,097
KNIFE OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Dec. 12, 1985, Ser. No. 808,059
Term of patent 14 years
U.S. Cl. D7—137



297,098
EXPRESSO COFFEE MAKER
Yoshio Ohya, Kamo; Koichi Tamaki, Niigata, and Junichi Sano, Kamo, all of Japan, assignors to Toshiba Heating Appliances Company, Ltd., Niigata, Japan
Filed Dec. 14, 1984, Ser. No. 681,807
Claims priority, application Japan, Oct. 3, 1984, 59-41254
Term of patent 14 years
U.S. Cl. D7—309



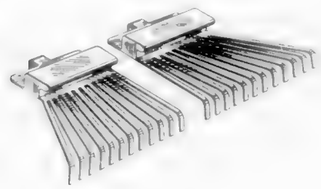
297,099
COMBINED OVEN DOOR AND WALL UNIT
Lionel Poilane, Paris, France, assignor to S.A.R.L. Poilane, Paris, France
Filed Apr. 19, 1985, Ser. No. 725,366
Claims priority, application France, Oct. 19, 1984, 844637
Term of patent 14 years
U.S. Cl. D7—348



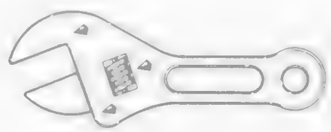
297,100
COOKWARE SET
Pierre A. Schalier, Lyon, France, assignor to Manufacture Metallurgique de Tournus Societe anonyme, Tournus, France
Filed Apr. 30, 1985, Ser. No. 728,873
Claims priority, application France, Oct. 31, 1984, DM004367
Term of patent 14 years
U.S. Cl. D7—356



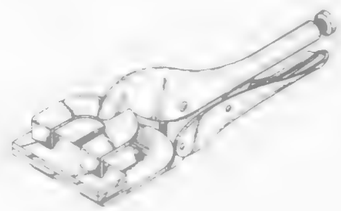
297,101
PAIR OF HAND RAKES
Loren L. Licht, 6255 Veemac Ave., La Mesa, Calif. 92041
Filed Jul. 30, 1987, Ser. No. 79,339
Term of patent 14 years
U.S. Cl. D8—13



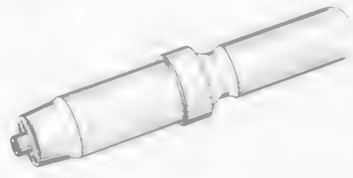
297,102
WRENCH
Linden R. McCormack, 147 Fair Meadows Dr., Aurora, Ind. 47001
Filed Sep. 18, 1985, Ser. No. 777,417
Term of patent 14 years
U.S. Cl. D8—22



297,103
SHEET METAL BENDING PLIERS
Theodore S. Parish, Sr., 4435 16th St., Wyandotte, Mich. 48192
Filed May 3, 1985, Ser. No. 730,077
Term of patent 14 years
U.S. Cl. D8—52

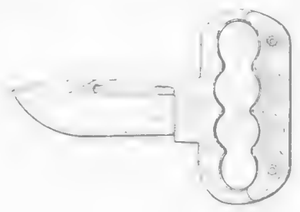


297,104
CORDLESS SCREWDRIVER
Kenneth N. Svetlik, Schaumburg, Ill., assignor to Skil Corporation, Chicago, Ill.
Filed Dec. 12, 1985, Ser. No. 808,247
Term of patent 14 years
U.S. Cl. D8—61



VOL 1093 ISS 2 AG 9 1988 UMI

297,105
KNIFE
Clive Hollinshead, 20691 Lari Mark, Perris, Calif. 92370
Filed Aug. 14, 1985, Ser. No. 764,598
Term of patent 14 years
U.S. Cl. D8—98



297,106
DOOR HANDLE
Paul S. White, Barnsley, and Arthur N. Searl, Parbold, both of United Kingdom, assignors to GKN Crompton Limited, Lancashire, England
Filed Feb. 27, 1986, Ser. No. 836,599
Claims priority, application United Kingdom, Sep. 3, 1985, 1028997
Term of patent 14 years
U.S. Cl. D8—307



297,107
COMBINED CUSHIONED DOORKNOB COVER AND WALL PROTECTOR
James R. Jones, 123 N. State St., Clarks Summit, Pa. 18411
Filed Nov. 15, 1985, Ser. No. 805,214
Term of patent 14 years
U.S. Cl. D8—322



297,108
HATCHBACK SUPPORT MEMBER
Alexander Behring, 828 9th St., Santa Monica, Calif. 90403
Filed Jan. 21, 1986, Ser. No. 820,133
Term of patent 14 years
U.S. Cl. D8—330



297,109
LOCK BOLT HOUSING
John A. Christie, Heathmont, Australia, assignor to Ogden Industries Pty. Ltd., Australia
Filed Jun. 24, 1986, Ser. No. 879,516
Claims priority, application Australia, Jan. 8, 1986, 3802/86
Term of patent 14 years
U.S. Cl. D8—341



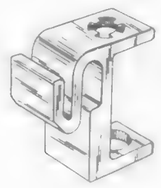
297,110
GASOLINE PUMP NOZZLE TRIGGER HOLDER
James J. Zagorski, 5419 Andrew Dr., La Palma, Calif. 90623
Filed Jun. 30, 1986, Ser. No. 880,911
Term of patent 14 years
U.S. Cl. D8—349



297,111
TOOL HOLDER
Robert D. Thompson, Dayton, and Wayne E. Sturgeon, Xenia, both of Ohio, assignors to Beta Industries, Inc., Dayton, Ohio
Filed Dec. 9, 1985, Ser. No. 806,485
Term of patent 14 years
U.S. Cl. D8—373



297,112
EXTENSION TUBE CLIP FOR AEROSOL CANS OR THE LIKE
Gary J. Holdaway, North Rocks, Australia, assignor to Hawker Pacific Pty. Ltd., New South Wales, Australia
Filed Apr. 17, 1985, Ser. No. 724,252
Claims priority, application Australia, Oct. 17, 1984, 9256/84
Term of patent 14 years
U.S. Cl. D8—395



297,113
RAT
Gordon L. Benoit, Macedon, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 8, 1985, Ser. No. 721,261
Term of patent 14 years
U.S. Cl. D9—305



297,114
PAINT APPLICATOR OR SIMILAR ARTICLE
Ronald J. Holmstadt, Eden Prairie, and Warren J. Walsh, Waverly, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.
Filed Jul. 22, 1986, Ser. No. 888,014
Term of patent 14 years
U.S. Cl. D9—338



297,115
COMPARTMENTED PACKAGING CONTAINER
Robert M. Fontana, Niles, and Audri J. Evans, Morton Grove, both of Ill., assignors to Kraft, Inc., Glenview, Ill.
Filed Oct. 8, 1985, Ser. No. 785,578
Term of patent 14 years
U.S. Cl. D9—347



297,116
COMPARTMENTED PACKAGING CONTAINER
Robert M. Fontana, Niles, and Audri J. Evans, Morton Grove, both of Ill., assignors to Kraft, Inc., Glenview, Ill.
Filed Oct. 9, 1985, Ser. No. 785,893
Term of patent 14 years
U.S. Cl. D9—347



VOL 1093 ISS 2 AG 9 1988 UMI

297,117
COMPARTMENTED PACKAGING CONTAINER
Robert M. Fontana, Niles, and Audri J. Evans, Morton Grove, both of Ill., assignors to Kraft, Inc., Glenview, Ill.
Filed Oct. 9, 1985, Ser. No. 785,894
Term of patent 14 years
U.S. Cl. D9—347



297,118
COMPARTMENTED PACKAGING CUP
Robert M. Fontana, Niles, and Audri J. Evans, Morton Grove, both of Ill., assignors to Kraft, Inc., Glenview, Ill.
Filed Oct. 9, 1985, Ser. No. 785,896
Term of patent 14 years
U.S. Cl. D9—347



297,119
COMPARTMENTED PACKAGING CONTAINER
Robert M. Fontana, Niles, and Audri J. Evans, Morton Grove, both of Ill., assignors to Kraft, Inc., Glenview, Ill.
Filed Oct. 9, 1985, Ser. No. 785,902
Term of patent 14 years
U.S. Cl. D9—347



297,120
STOPPER FOR A BOTTLE OR THE LIKE
Robert J. Miskinis, 9330 Stevens Rd., Santee, Calif. 92071
Filed Nov. 12, 1985, Ser. No. 805,048
Term of patent 14 years
U.S. Cl. D9—439



297,121
SPORT WATCH
Ferdinand A. Porsche, Stuttgart, Fed. Rep. of Germany, and Michael Rabe, Zell am See, Austria, assignors to Porsche Design GmbH, Zell am See, Austria
Filed Jan. 3, 1986, Ser. No. 816,077
Claims priority, application United Kingdom, Dec. 3, 1985, 1030[illegible]
Term of patent 14 years
U.S. Cl. D10—32



297,122
WRIST WATCH
Harumichi Kabaya, Yokohama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Nov. 18, 1985, Ser. No. 805,548
Claims priority, application Japan, Oct. 2, 1985, 60-41076
Term of patent 14 years
U.S. Cl. D10—32



297,123
WRIST WATCH
Harumichi Kabaya, Yokohama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Nov. 18, 1985, Ser. No. 805,549
Claims priority, application Japan, Oct. 2, 1985, 60-41077
Term of patent 14 years
U.S. Cl. D10—32



297,124
WRIST WATCH
Gedalio Grinberg, New York, N.Y., assignor to North American Watch Corporation, New York, N.Y.
Filed Mar. 25, 1987, Ser. No. 30,212
Term of patent 14 years
U.S. Cl. D10—39



297,125
WRIST WATCH
Gedalio Grinberg, New York, N.Y., assignor to North American Watch Corporation, New York, N.Y.
Filed Mar. 25, 1987, Ser. No. 30,812
Term of patent 14 years
U.S. Cl. D10—39



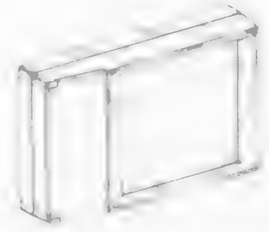
297,126
WRIST WATCH
Gedalio Grinberg, New York, N.Y., assignor to North American Watch Corporation, New York, N.Y.
Filed Mar. 25, 1987, Ser. No. 30,822
Term of patent 14 years
U.S. Cl. D10—39



297,127
COMPASS
Richard J. Keohan, Braintree, and W. Gordon White, Dover, both of Mass., assignors to Rule Industries, Inc., Gloucester, Mass.
Filed Sep. 10, 1985, Ser. No. 774,415
Term of patent 14 years
U.S. Cl. D10—68



297,128
ALARM DISPLAY
John K. Guscott, Lynnfield; Bryan Hotaling, Arlington; H. Patrick Thornton, Acton, and George Vulgaris, Sharon, all of Mass., assignors to ADT, Inc., Parsippany, N.J.
Filed Aug. 1, 1985, Ser. No. 761,605
Term of patent 14 years
U.S. Cl. D10—106



VOL 1093 ISS 2 AG 9 1988 UMI

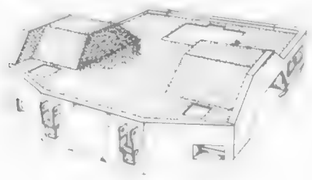
297,129
WIND CHIME
Michael Andersen, 2613 Dunbar Ave., Fort Collins, Colo. 80526
Filed Sep. 11, 1985, Ser. No. 774,955
Term of patent 14 years
U.S. Cl. D10—116



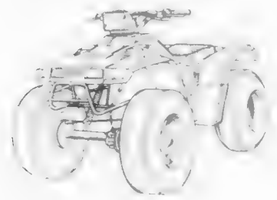
297,130
NECKLACE OR SIMILAR ARTICLE
Geraldine D. Lucas, 1920 "S" St. North West, Washington, D.C. 20009
Filed Sep. 27, 1985, Ser. No. 780,971
Term of patent 14 years
U.S. Cl. D11—8



297,131
WRECKER BODY
Ted D. Thomison, Dyersburg, Tenn., and Michael E. Micheli, Menomonee, Wis, assignors to Holmes International Inc., Chattanooga, Tenn.
Filed Sep. 12, 1985, Ser. No. 775,153
Term of patent 14 years
U.S. Cl. D12—14



297,132
FOUR-WHEELED MOTORCYCLE
Kuniaki Ryuzoji, Kanagawa; Mitsuru Yamamoto, Saitama; Kazutaka Kimura, Tokyo; Yukinori Kawaguchi, and Yoshiharu Hashimoto, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 15, 1985, Ser. No. 712,350
Claims priority, application Japan, Sep. 22, 1984, 59-39579
Term of patent 14 years
U.S. Cl. D12—107



297,133
STEM FOR BICYCLE HANDLEBARS
Domenico Modolo, Conegliano Vto. Treviso, Italy, assignor to Modolo Adamo & C. S.n.c., Sarano S. Lucia Di Piave, Italy
Filed Apr. 15, 1986, Ser. No. 852,882
Claims priority, application Italy, Oct. 29, 1985, 23567/85[U]
Term of patent 14 years
U.S. Cl. D12—118



297,134
COMBINED BOAT AND LUGGAGE CARRIER
Howard E. Levine, 4401 E. Hearn Rd., Phoenix, Ariz. 85032
Filed Sep. 3, 1985, Ser. No. 771,615
Term of patent 14 years
U.S. Cl. D12—157

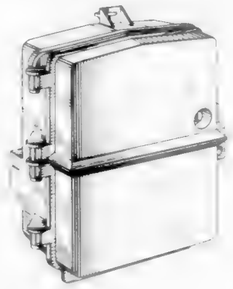


297,135
RUNNING BOARD
Bobby E. Davenport, Madison, Tenn., assignor to D & G Products, Lebanon, Tenn.
Filed Jan. 21, 1986, Ser. No. 820,645
Term of patent 14 years
U.S. Cl. D12—203



VOL
1093
ISS
2
AG
9
1988
UMI

297,136
NETWORK INTERFACE ENCLOSURE
Thomas J. Collins, Wall, and Pina Schneider, Ocean Township, Ocean County, both of N.J., assignors to Keptel, Inc., Tinton Falls, N.J.
Filed Mar. 20, 1985, Ser. No. 713,818
Term of patent 14 years
U.S. Cl. D13—40

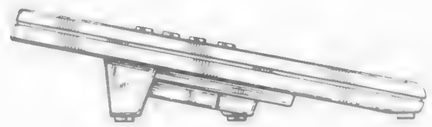


297,137
TELEPHONE SET
Ludwig Richter, H. v. Stephan Str. 34, Heusenstamm, Fed. Rep. of Germany 6056; Dieter Kraemer, Im Hain 5, Idstein, Fed. Rep. of Germany 6270; Helmut Mayer; Hajo von Reyer, both of Höhenweg 22, Bad Nauheim, Fed. Rep. of Germany 6350; Wolgang Girscher, Woogstr. 27, Frankfurt a/M, Fed. Rep. of Germany 6000; Gerhard Sussner, Waldstr. 45, Meerholz, Fed. Rep. of Germany 6462, and Karl-Heinz Niederhoefer, Dalbergstr. 4, Frankfurt am Main, Fed. Rep. of Germany 6230
Filed Jul. 28, 1986, Ser. No. 890,698
Term of patent 14 years
U.S. Cl. D14—58

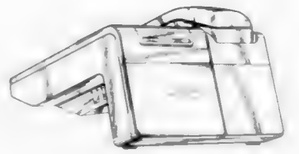


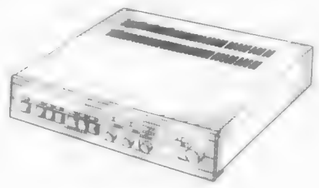
297,138
BASE FOR A TELEPHONE SET
Duncan Culver, Manotick; Ezra T. Peachey, Nepean, and Michael G. Sirois, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 20, 1987, Ser. No. 28,624
Term of patent 14 years
U.S. Cl. D14—62



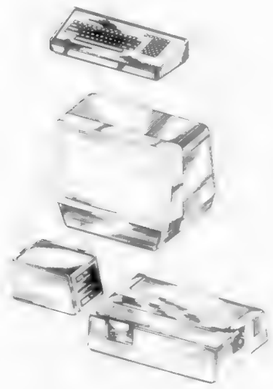


297,139
TELEVISION RECEIVER
Chun I. Lee, Seoul, Rep. of Korea, assignor to Hyundai Electronics Industries Co., Ltd., Kyoungki-do, Rep. of Korea
Filed Sep. 23, 1985, Ser. No. 779,134
Claims priority, application Rep. of Korea, Jul. 26, 1985, 10447/1985
Term of patent 14 years
U.S. Cl. D14—77





297,140
SIMULATED COMPUTER SYSTEM
Ray W. Milliman, c/o Proptronics Co., 350 Wainwright, Northbrook, Ill. 60062
Filed Jan. 28, 1985, Ser. No. 695,567
Term of patent 14 years
U.S. Cl. D14—100



297,141
TWO-WAY ACOUSTICAL CABINET FOR COMPUTER PRINTER
Theodore J. Goodlander, Nashua, N.H., assignor to Cab-Tek, Inc., Nashua, N.H.
Filed Nov. 5, 1985, Ser. No. 795,096
Term of patent 14 years
U.S. Cl. D14—114

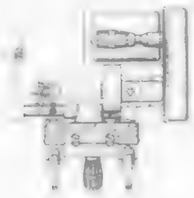




297,142
CAB FOR AN AGRICULTURAL TRACTOR
Genichi Funabashi, and Kenichi Sato, both of Osaka, Japan, assignors to Kubota Ltd., Osaka, Japan
Filed Jul. 12, 1985, Ser. No. 754,176
Claims priority, application Japan, Jan. 16, 1985, 60-1057
Term of patent 14 years
U.S. Cl. D15—30

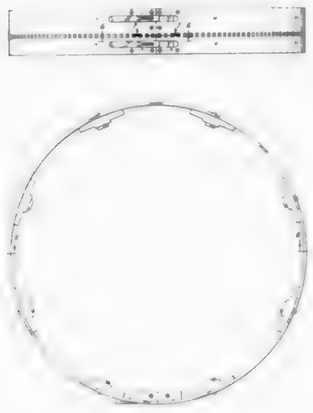


297,143
KEY DUPLICATING MACHINE
Kuo-Shen Wu, No. 10, Alley 14, Lane 74, Pa Te Road Section 3, Taipei, Taiwan
Filed Sep. 16, 1985, Ser. No. 776,408
Term of patent 14 years
U.S. Cl. D15—125



VOL 1093 ISS 2 AG 9 1988 UMI

297,144
WELDING HEAD TRACK
Gasparas Kazlauskas, 10941 LaTuna Canyon, Sun Valley, Calif. 91352
Filed Aug. 29, 1985, Ser. No. 770,620
Term of patent 14 years
U.S. Cl. D15—144



297,145
CAMERA
Nobuo Kikuchi, Tokyo; Akio Sunouchi, and Toyokazu Mizogui, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 9, 1986, Ser. No. 872,437
Claims priority, application Japan, Dec. 13, 1985, 60-52095
Term of patent 14 years
U.S. Cl. D16—1



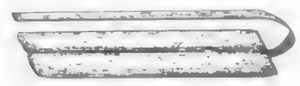
297,146
GUITAR BODY
David Petschulat, 200 W. Union, Apartment 2, Fullerton, Calif. 92632
Filed Oct. 4, 1985, Ser. No. 784,482
Term of patent 14 years
U.S. Cl. D17—20



297,147
ALPHANUMERIC FONT MATRIX
J. L. Allyn, 4644 College Ave., San Diego, Calif. 92115
Filed Sep. 25, 1985, Ser. No. 779,835
Term of patent 14 years
U.S. Cl. D18—26



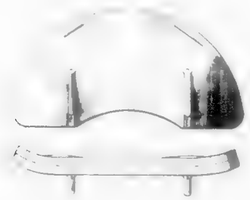
297,148
COMBINED PAGE WEIGHT AND MARKER
Stephen Freedman, 1715 Butler Pike, Ambler, Pa. 19002
Filed Oct. 17, 1985, Ser. No. 788,332
Term of patent 14 years
U.S. Cl. D19—34



297,149
ADVERTISEMENT DISPLAY FRAME
Daniel D. Johnston, 1216 E. Crawford Dr., Indianapolis, Ind. 46120
Filed Oct. 15, 1985, Ser. No. 787,366
Term of patent 14 years
U.S. Cl. D20—43



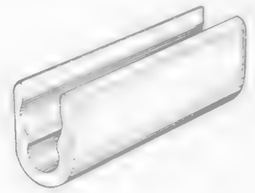
297,150
PLAYING CARD HOLDER WITH CURVATURE
Richard F. Sweet, 1454 Briarglen Ave., Westlake Village, Calif. 91361
Filed Feb. 10, 1986, Ser. No. 833,471
Term of patent 14 years
U.S. Cl. D21—54



297,151
TOY HORSE
Thomas C. Lewis, 2011 Bethel Dr., High Point, N.C. 27260
Filed May 28, 1985, Ser. No. 737,682
Term of patent 14 years
U.S. Cl. D21—75



297,152
REVOLVER RECOIL COMPENSATOR
Tom E. Clarke, 2510 Castillo St., Santa Barbara, Calif. 93105
Filed Nov. 20, 1985, Ser. No. 805,900
Term of patent 14 years
U.S. Cl. D22—108

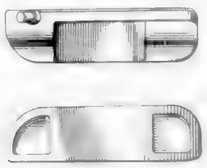


297,153
PHYSICAL EXERCISER
Roger Smith, Yoxall, England, assignor to Justwise Limited, London, England
Filed Nov. 25, 1985, Ser. No. 806,213
Claims priority, application United Kingdom, Jun. 7, 1985, 1027237
Term of patent 14 years
U.S. Cl. D21—194



VOL 1093 ISS 2 AG 9 1988 UMI

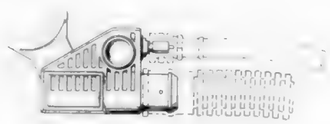
297,154
GOLF CLUB HEAD
Anthony J. Antonious, 205 E. Joppa Rd., Towson, Md. 21204
Filed Jun. 12, 1985, Ser. No. 744,139
Term of patent 14 years
U.S. Cl. D21—217



297,155
FLOAT
Henry S. Wolfe, P.O. Box 6025, Clearwater, Fla. 33518, assignor to Henry S. Wolfe, St. Petersburg, Fla.
Filed Mar. 20, 1985, Ser. No. 715,032
Term of patent 14 years
U.S. Cl. D21—237



297,156
INFLATOR FOR BUOYANCY COMPENSATOR
Robert L. Applegate, Jr., Long Beach; Dennis L. Hart, Hacienda Heights, and Dean R. Garraffa, Garden Grove, all of Calif., assignors to Under Sea Industries, Inc., Rancho Dominguez, Calif.
Filed Mar. 24, 1986, Ser. No. 845,779
Term of patent 14 years
U.S. Cl. D21—237



297,157
BATHTUB SHOWER SPLASH GUARD
Janet M. Eder, 605 Windsor, Round Rock, Tex. 78664
Filed Jul. 23, 1986, Ser. No. 888,230
Term of patent 14 years
U.S. Cl. D23—307

297,158
AIR DELIVERY DUCT
Lewis Marton, Randwick, and Colin Ward, Gordon, both of Australia, assignors to Atlas Air Australia Pty., Limited, Rozelle, Australia
Filed Jul. 1, 1986, Ser. No. 880,908
Claims priority, application Australia, Jan. 13, 1986, 3838/86
Term of patent 14 years
U.S. Cl. D23—387



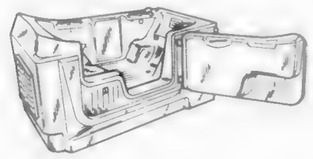
297,159
COMBINED WATER PURIFIER AND SUPPORT BRACKET
Dennis J. Kool, Kentwood, Mich., assignor to Amway Corporation, Ada, Mich.
Filed Jun. 10, 1986, Ser. No. 872,770
Term of patent 14 years
U.S. Cl. D23—207



297,160
SHOWER HEAD
Tom E. Robbins, 2905 Shady Hollow West, Boulder, Colo. 80303
Filed Aug. 20, 1985, Ser. No. 767,376
Term of patent 14 years
U.S. Cl. D23—213



297,161
BATH TUB FOR INVALIDS
Georg R. Weschta, P.O. Box 2512, Port Elizabeth, South Africa
Filed Oct. 17, 1985, Ser. No. 788,646
Claims priority, application South Africa, Apr. 18, 1985, 85/0332
Term of patent 14 years
U.S. Cl. D23—279



297,162
SINK
Manfred Mück, Kürnbach, and Ingbert Kilian, Oberderdingen, both of Fed. Rep. of Germany, assignors to Blanc GmbH & Co., Oberderdingen, Fed. Rep. of Germany
Filed Feb. 10, 1986, Ser. No. 827,746
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1985, MRII/134BR
Term of patent 14 years
U.S. Cl. D23—290



297,163
SINK
Walter Blanc, Oberderdingen, and Uwe Johannböke, Eppingen, both of Fed. Rep. of Germany, assignors to Blanc GmbH & Co., Oberderdingen, Fed. Rep. of Germany
Filed Feb. 10, 1986, Ser. No. 827,747
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1985, MRII/134BR
Term of patent 14 years
U.S. Cl. D23—290

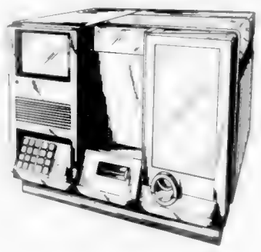


297,164
FIREPLACE UNIT
Curtis J. Hill, Fargo, N. Dak., assignor to Pressure Heat Systems, Inc., Fargo, N. Dak.
Filed Jun. 19, 1985, Ser. No. 746,588
Term of patent 14 years
U.S. Cl. D23—344

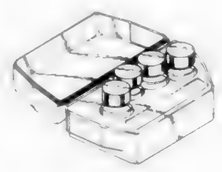


VOL 1093 ISS 2 AG 9 1988 UMI

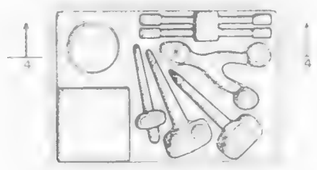
297,165
AUTOMATED CHEMISTRY ANALYZER FOR ANALYSIS OF BLOOD COMPONENTS OR OTHER BODY FLUIDS
Fred Spaziani, Lexington, Mass., assignor to Nova Biomedical Corporation, Waltham, Mass.
Filed Jul. 22, 1985, Ser. No. 757,704
Term of patent 14 years
U.S. Cl. D24—1.1



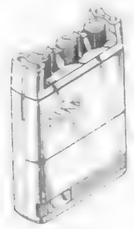
297,166
REAGENT CASSETTE
Robert C. Hollar, Wildwood, and Tung-Ming Huang, Elk Grove Village, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jul. 22, 1985, Ser. No. 757,720
Term of patent 14 years
U.S. Cl. D24—17



297,167
MEDICAL EQUIPMENT STORAGE TRAY
Mark E. Steinman, 6831 Uppingham Rd., Fayetteville, N.C. 28306
Filed Dec. 27, 1985, Ser. No. 813,868
Term of patent 14 years
U.S. Cl. D24—31



297,168
TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR
Zosim Ioffe, St. Paul, Minn.; Stephen H. Ober, Salt Lake City, Utah, and Donald D. Maurer, Anoka, Minn., assignors to Empi, Inc., St. Paul, Minn.
Filed Jul. 12, 1985, Ser. No. 754,355
Term of patent 14 years
U.S. Cl. D24—41



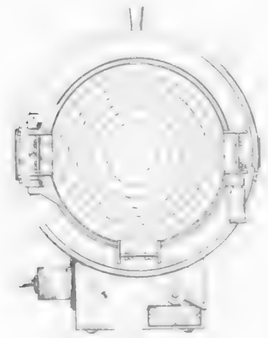
297,169
TREE STEP
Joseph F. Trani, Sr., Box 187, Seventh St., Flagtown, N.J. 08821
Filed Oct. 28, 1985, Ser. No. 791,707
Term of patent 14 years
U.S. Cl. D25—69

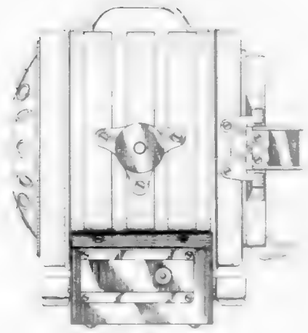


297,170
STROBE LIGHT
John B. Elliott, 225 W. El Norte Pkwy. #106, Escondido, Calif. 02026
Filed Oct. 21, 1985, Ser. No. 789,429
Term of patent 14 years
U.S. Cl. D26—24

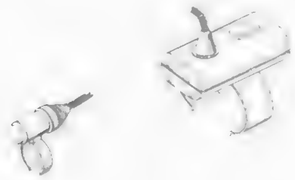


297,171
SPOTLIGHT
Warren K. Parker, 3960 Alomar Dr., Sherman Oaks, Calif. 91423
Filed Aug. 25, 1986, Ser. No. 899,990
Term of patent 14 years
U.S. Cl. D26—24

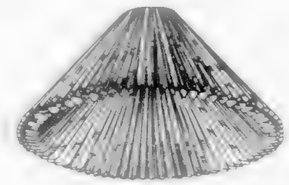




297,172
COMBINED FINGER-MOUNTED PORTABLE LAMP AND WRIST-MOUNTED POWER PACK THEREFOR
Gerd Flohr, Schwabish Gmund, Fed. Rep. of Germany, assignor to A.Bianchi s.r.l., Milan, Italy
Filed Dec. 13, 1985, Ser. No. 808,751
Claims priority, application Italy, Jun. 17, 1985, 22202/85[U]
Term of patent 14 years
U.S. Cl. D26—39



297,173
LAMP SHADE, OR SIMILAR ARTICLE
Ib Andersen, Copenhagen, Denmark, assignor to Danette Design Svendborg A/S, Svendborg, Denmark
Filed Apr. 16, 1985, Ser. No. 723,890
Claims priority, application Denmark, Oct. 25, 1984, 950/84
Term of patent 14 years
U.S. Cl. D26—136



297,174
ASHTRAY
Lloyd E. Lindroth, and George L. Michaud, both of 3125 Windemere Cir., Nashville, Tenn. 37214
Filed Dec. 8, 1986, Ser. No. 939,491
Term of patent 14 years
U.S. Cl. D27—106

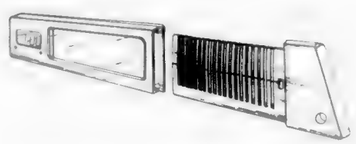


297,175
CASE FOR CIGARETTE LIGHTER
Tomio Nitta, Yokoha, Japan, assignor to Tokai Corporation, Kanagawa, Japan
Filed Nov. 25, 1986, Ser. No. 934,987
Claims priority, application Japan, Jul. 3, 1986, 61-25671
Term of patent 14 years
U.S. Cl. D27—161

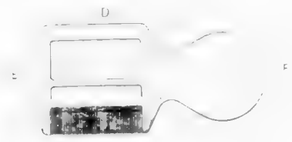


VOL 1093 ISS 2 AG 9 1988 UMI

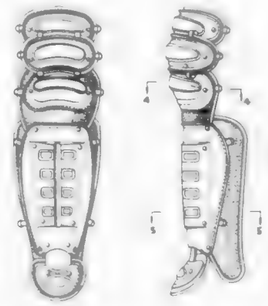
297,176
COMBINED CLOCK AND COMB WITH SHEATH
Jui C. Tsai, 2nd Fl., 349, Nanking E. Rd., Sec. 5, Taipei, Taiwan
Filed Oct. 4, 1985, Ser. No. 784,103
Term of patent 14 years
U.S. Cl. D28—25



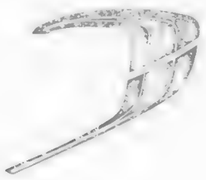
297,177
COMB
Hugh Smith, Stonehaven, and Donald H. Smith, Aberdeen, both of Scotland, assignors to Albyn of Stonehaven Limited of Spurryhillock Industrial Estate, Kincardineshire, Scotland
Filed Feb. 14, 1986, Ser. No. 829,807
Claims priority, application United Kingdom, Aug. 22, 1985, 10287/85
Term of patent 14 years
U.S. Cl. D28—30



297,178
CATCHER'S LEG GUARD
Stanley M. Jurga, Shirley, Mass., assignor to George Frost Company, Shirley, Mass.
Filed Jul. 31, 1986, Ser. No. 891,384
Term of patent 14 years
U.S. Cl. D29—10



297,179
MOTORCYCLE HELMET ORNAMENTATION
Wolfgang Seehaus, Karlsfeld, and Klaus-Volker Gevert, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 19, 1985, Ser. No. 810,746
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1985, MR 16207
Term of patent 14 years
U.S. Cl. D29—16





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TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF AUGUST, 1988

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abbott Laboratories: *See*—
Chu, Daniel T.; Pernet, Andre G.; and Cooper, Curt S., 4,762,845, Cl. 514-312.000.
Abe, Akira: *See*—
Kishimoto, Shinzo; Nishikawa, Toshihiro; Abe, Akira; and Nakajima, Junya, 4,762,774, Cl. 430-393.000.
Abe, Shinya: *See*—
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000.
Abe, Takeo: *See*—
Miyamori, Tamotsu; Kameyama, Iwao; and Abe, Takeo, 4,762,652, Cl. 264-6.000.
Abrutyn, Eric S., to Dow Corning Corp. Nitrocellulose free nail lacquer composition. 4,762,703, Cl. 424-61.000.
Acco Babcock Inc.: *See*—
Jaksic, Miroslav, 4,762,017, Cl. 74-501.00R.
ACED S.A.: *See*—
Marchand, Eric, 4,762,050, Cl. 91-1.000.
Ackermann, Hans; Koecher, Ralf; Steinberner, Udo; and Michel, Otto, to Henkel Kommanditgesellschaft auf Aktien. Method for controlling the pressure ratio of a jet pump. 4,762,467, Cl. 417-54.000.
Acra Electric Corporation: *See*—
Ritt, Robert A., 4,763,102, Cl. 338-240.000.
Actel Partnership: *See*—
Perreirra, Noel D.; and Tucker, Michael, 4,763,276, Cl. 364-513.000.
Acushnet Company: *See*—
Gobush, William, 4,762,326, Cl. 273-232.000.
Adachi, Akio: *See*—
Higashi, Izumi; Adachi, Akio; Tajima, Takayoshi; and Hiroshige, Norimichi, 4,762,048, Cl. 89-14.100.
Adachi, Yoshitugu: *See*—
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Adachi, Yoshitugu; and Hatakawa, Yoshio, 4,762,862, Cl. 522-3.000.
Adair, Edwin L.: *See*—
Bayne, Irman D.; and Adair, Edwin L., 4,762,133, Cl. 128-756.000.
Adams, Darwin P., to Picker International, Inc. Probe array for ultrasonic imaging. 4,762,002, Cl. 73-625.000.
Adams, David G.: *See*—
Sanok, John L.; and Adams, David G., 4,761,916, Cl. 49-381.000.
Addison, Oswald G., Jr. Timing device for skiers. 4,762,340, Cl. 280-816.000.
Adler, Douglas R.: *See*—
Podolak, J. B.; Adler, Douglas R.; and Saluski, Ronald B., 4,763,207, Cl. 360-32.000
Adrian, Gerhard: *See*—
Gawol, Manfred; and Adrian, Gerhard, 4,762,523, Cl. 8-524.000.
Advanced Micro Devices, Inc.: *See*—
Cheung, Robin W.; and Chan, Hugo W. K., 4,762,805, Cl. 437-63.000.
Advanced Surgical Intervention, Inc.: *See*—
Rosenbluth, Robert F., 4,762,128, Cl. 128-343.000.
Aeroquip GmbH: *See*—
Wetzel, Hans J.; and Matuszczak, Bernd, 4,761,873, Cl. 29-517.000.
Aeschlimann, Elfy: *See*—
Lukas, Bohumir; Fischer, Franz X.; and Aeschlimann, Elfy, 4,762,715, Cl. 424-145.000
Agfa-Gevaert AG: *See*—
Helling, Guter; Reiff, Helmut; and Kunitz, Friedrich-Wilhelm, 4,762,777, Cl. 430-548.000.
Agfa-Gevaert Aktiengesellschaft: *See*—
Nicko, Reinhard; Meschenmoser, Friedrich; Sager, Karl-Heinz; and Turcke, Rainer, 4,761,933, Cl. 53-374.000.
AGFA-Gevaert N.V.: *See*—
Vermeulen, Leon L.; Vervloet, Ludovicus H.; De Smedt, Willy P.; and Kok, Piet, 4,762,759, Cl. 430-1.000.
Air Products and Chemicals, Inc.: *See*—
Pez, Guido P.; and Laciak, Daniel V., 4,762,535, Cl. 55-16.000.
Air Vent Inc.: *See*—
Wolfert, Clarke K., 4,762,052, Cl. 98-37.000.
Airfoil Textron Inc.: *See*—
Doble, Gordon S., 4,762,268, Cl. 228-186.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Hashimoto, Nobuyuki; Amano, Hiroyuki; and Shimizu, Katsumasa, 4,763,037, Cl. 310-268.000.
Takeda, Hisanobu, 4,761,837, Cl. 4-443.000.
Akada, Yasuaki: *See*—
Ishikawa, Norio; Ishimura, Toshihiko; Taniguchi, Nobuyuki; Akada, Yasuaki; and Seki, Reiji, 4,763,156, Cl. 354-442.000.
Ishimura, Toshihiko; Ishikawa, Norio; Akada, Yasuaki; Seki, Reiji; and Taniguchi, Nobuyuki, 4,763,153, Cl. 354-400.000.
Akama, Yasuyuki: *See*—
Suyama, Michiyo; and Akama, Yasuyuki, 4,763,269, Cl. 364-449.000.
Akebono Brake Industry Co., Ltd.: *See*—
Maki, Takao; Yamaki, Isao; Akima, Hideo; and Hoashi, Akira, 4,762,375, Cl. 303-96.000
Matsubara, Yuji, 4,762,376, Cl. 303-115.000.
Akima, Hideo: *See*—
Maki, Takao; Yamaki, Isao; Akima, Hideo; and Hoashi, Akira, 4,762,375, Cl. 303-96.000
Akita, Tadashi: *See*—
Asakawa, Kazuo; Onda, Nobuhiko; Akita, Tadashi; and Kamada, Toru, 4,762,006, Cl. 73-862.040
Akiyama, Masakazu: *See*—
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000.
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Akiyama, Shunichi: *See*—
Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, 4,761,894, Cl. 34-39.000
Albert Rolland S.A.: *See*—
Levy, Jean-Claude; Bessin, Pierre; and Labaune, Jean-Pierre, 4,762,855, Cl. 514-651.000
Alberter, Gunther: *See*—
Schmid, Hans-Dieter; Alberter, Gunther; and Hettuch, Gerhard, 4,761,996, Cl. 73-146.500
Albin, Loren D.; and Kolb, Robert E., to Minnesota Mining and Manufacturing Company. Scorch-resistant, curable fluorinated elastomer. 4,762,891, Cl. 525-276.000
Alcan International Limited: *See*—
Hachey, Raynald, 4,763,065, Cl. 324-71.400
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Andrada Galan, Mario, to Investronica, S.A. Blade sharpening and guide mechanism. 4,762,040, Cl. 83-56.000
Alcatel, N.V.: *See*—
Immendorfer, Manfred; Kopp, Dieter; Thierer, Gebhard; and Seichter, Helmut, 4,763,350, Cl. 379-67.000.
Knight, Alan C.; and Uebel, Helmut, 4,763,267, Cl. 364-436.000
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., to Exxon Research and Engineering Company. Hydroconversion process with combined temperature and feed staging. 4,762,607, Cl. 208-59.000
Alewelt, Wolfgang: *See*—
Nielinger, Werner; Alewelt, Wolfgang; Binsack, Rudolf; Bottenbruch, Ludwig; and Fullmann, Heinz-Josef, 4,762,910, Cl 528-339.000
Alexander, Jose; and Higuchi, Takeru, to Merck & Co., Inc. Pyroglutamic acid esters used as dermal penetration enhancers for drugs 4,762,851, Cl. 514-420.000
Alfa Institut fur Hauswirtschafliche Produkr-und Verfahrens-Enwicklung GmbH: *See*—
Schultz, Horst, 4,762,973, Cl. 219-10.55E
Alfa-Laval AB: *See*—
Hallstrom, Bengt; Olsson, Olle; Bolmstedt, Ulf; and Johansson, Bjorn-Olow, 4,762,171, Cl. 165-147.000
Allen-Brady Company, Inc.: *See*—
Gasperi, Michael L.; and Ray, Glen, 4,762,007, Cl. 73-862.340
Allied Plastics Enterprises, Inc.: *See*—
Hoffman, George H., 4,761,853, Cl. 16-302.000
Allied-Signal Inc.: *See*—
Dolgin, Benjamin P., 4,762,677, Cl. 419-11.000
Dolgin, Benjamin P., 4,762,678, Cl. 419-28.000
Figiel, Francis J.; and Osterman, Harry F., 4,762,614, Cl. 210-195.100
Romey, Russell P.; and Greer, Lonny R., 4,761,959, Cl. 60-740.000
Shkedi, Zvi, 4,763,063, Cl. 324-60.0CD.
Allison, Larry S. Tool for bearing removal. 4,761,868, Cl. 29-256.000
Allred, Jimmie B., III; and Krauter, Allan I., to Welch Allyn, Inc Self-adjusting steering mechanism for borescope or endoscope. 4,762,119, Cl. 128-4.000.
Allred, Mark. Bobbin winder for a spinning wheel. 4,762,285, Cl. 242-47.000
Almares, Louie S.: *See*—
Walters, Richard D.; De Young, Jon; Rasmussen, Clarence M.; and Almares, Louie S., 4,762,219, Cl. 198-358.000
Alpha Foundation, The: *See*—
Sorensen, Leif E., 4,762,074, Cl. 110-346.000

VOL 1093 ISS 2 AG 9 1988 UMI

Alpine Aktiengesellschaft Augsburg: *See*—
Nied, Roland; and Hackl, Herbert, 4,762,765, Cl. 430-137.000.
Altherr, Russell G., to AMSTED Industries Incorporated. Fifth wheel bracket mounting assembly. 4,762,334, Cl. 280-433.000.
Aluminium Pechiney: *See*—
Chantriaux, Eric; Grobelny, Henri; and Perret, Yves, 4,762,684, Cl. 422-106.000.
Aluminum Company of America: *See*—
Fleming, Hubert L.; Goodboy, Kenneth P.; and Saforo, Emmanuel K., 4,762,537, Cl. 55-71.000.
AM International Corporation: *See*—
Niemeyer, Robert H., III, 4,763,140, Cl. 346-139.00R
Amano, Hiroyuki: *See*—
Hashimoto, Nobuyuki; Amano, Hiroyuki; and Shimizu, Katsumasa, 4,763,037, Cl. 310-268.000.
Amanuma, Takahiko: *See*—
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R.
Amaray International Corporation: *See*—
McConnell, Joseph W., III; Wilburn, Richard D., Jr.; Northrup, Allan R.; and Neal, Lloyd D., 4,762,228, Cl. 206-387.000.
Amax Inc.: *See*—
Huggins, Dale K., 4,762,700, Cl. 423-593.000.
Swanson, Wilbur W., 4,762,699, Cl. 423-417.000.
Ambrosio, Renato; and Bruno, Carlo M., to Cselt—Centro Studi e Laboratori Telecomunicazioni S.P.A. Digital phase-locked loop circuits with storage of clock error signal. 4,763,342, Cl. 377-43.000.
Amchem Products, Inc.: *See*—
Dollman, David Y.; and Blaszczyk, Stanley L., 4,762,638, Cl. 252-135.000
Amerace Corporation: *See*—
Borgstrom, Alan D.; and Siebens, Larry N., 4,762,501, Cl. 439-131.000.
American Cord & Webbing Co., Inc.: *See*—
Krauss, Mark, 4,761,860, Cl. 24-142.000.
American Cyanamid Company: *See*—
Morin, Louis G., 4,762,603, Cl. 204-279.000.
Wissner, Allan; Green, Kenneth E.; Hamann, Philip R.; and Levin, Jeremy, 4,762,935, Cl. 549-210.000.
Wissner, Allan; Sum, Phaik E.; and Schaub, Robert E., 4,762,942, Cl. 558-169.000
American Standard Inc.: *See*—
Campbell, Richard D.; and Darrow, John O. G., 4,763,017, Cl 307-262.000.
Tischer, James C., 4,762,469, Cl. 417-279.000.
American Telephone and Telegraph Company, AT&T Information Systems, Inc.: *See*—
Day, Benjamin W., Jr.; Gillon, Alexander C.; and LeConte, Raoul A., 4,763,356, Cl. 379-368.000.
American Telephone and Telegraph Company: *See*—
Canale, Leonard M.; Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Martin H., 4,763,353, Cl. 379-157.000.
American Telephone and Telegraph Company, AT&T Bell Laboratories: *See*—
Batdorf, Robert L.; Murphy, Edmond J.; Poteat, Tommy L.; and Simpson, Jay R., 4,762,387, Cl. 350-96.200.
Duguay, Michel A.; and Weiner, Joseph S., 4,763,019, Cl 307-427.000
Gordon, Travis H.; and Simon, Steven D., 4,763,191, Cl. 358-86.000
Gvoth, John Michael, Jr.; Kakalec, Robert J.; and Menkes, Henry E., 4,763,013, Cl. 307-66.000.
Hegarty, John; and Wolfe, Raymond, 4,762,384, Cl. 350-96.120.
Lehman, Harvey R.; Lidinsky, William P.; Mussman, Harry E.; Spicer, David A.; and Vlack, David, 4,763,317, Cl. 370-58.000
Model, Michael J.; and Wright, Daniel A., 4,763,014, Cl. 307-66.000
Ng, Kwok K.; and Sze, Simon M., 4,763,183, Cl. 357-23.700.
Parrillo, Louis C., 4,762,802, Cl. 437-24.000.
Amgen Inc.: *See*—
Snitman, David L., 4,762,779, Cl. 435-6.000
Amjad, Zahid: *See*—
Masler, III: William F.; and Amjad, Zahid, 4,762,621, Cl 210-701.000
Amoco Corporation: *See*—
Pantermuehl, Leroy A.; and Krisa, Thomas E., 4,762,543, Cl. 62-28.000.
Amos, Walter; and Klein, Horst, to Blendax-Werke R. Schneider GmbH & Co. Process for rounding the bristle tips of toothbrushes and toothbrushes prepared by this process. 4,762,373, Cl. 300-21.000
AMP Incorporated: *See*—
Asick, John C.; Landis, John M.; and Yingst, Stephen M., 4,762,505, Cl. 439-347.000.
Dola, Frank P.; and Feldman, Steven, 4,762,500, Cl. 439-79.000.
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., 4,762,386, Cl. 350-96.200
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., 4,762,395, Cl. 350-252.000
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 4,762,507, Cl. 439-595.000.
Ampex Corporation: *See*—
Oldershaw, Reginald W.; Wagner, Steven D.; and Wesolowski, Jan S., 4,763,203, Cl. 358-320.000.
Amsler, Kurt: *See*—
Schneider, Wolfgang; and Amsler, Kurt, 4,762,585, Cl. 156-294.000.
AMSTED Industries Incorporated: *See*—
Altherr, Russell G., 4,762,334, Cl. 280-433.000.
Anand, Kranti V.: *See*—
Keyser, Thomas; Cairns, Bruce R.; Anand, Kranti V.; Petro, William G.; and Barry, Michael L., 4,762,728, Cl. 427-38.000.
Anbe, Yoshiharu; Mineura, Toshimi; Kai, Hajime; Kodama, Sumiyasu; and Dobashi, Takao, to Kabushiki Kaisha Toshiba. Apparatus for detecting eccentricity of roll in rolling mill. 4,763,273, Cl. 364-472.000.
Andersen, Jurgen; and Busch, Lothar, to Bayerische Motoren Werke Aktiengesellschaft. Heating and/or air-conditioning system for the interior of motor vehicles. 4,762,169, Cl. 165-25.000.
Anderson, Donald A. Gold club. 4,762,324, Cl. 273-164.000.
Anderson, James D., to Burndy Corporation. Connector installation station for compact semi-automatic cable assembly system. 4,761,879, Cl. 29-749.000.
Anderson, Porter W., to University of Rochester, The. Boosting of immunogenic conjugate vaccinations by unconjugated bacterial capsular polymers. 4,762,713, Cl. 424-92.000.
Anderson, Raymond G. Scented teaching aid, particularly crayons. 4,762,493, Cl. 434-84.000.
Anderson, Richard N., to Hunter Douglas Inc. Locking device for use with a blind assembly. 4,762,161, Cl. 160-178.200.
Anderson, Thomas R.: *See*—
Koen, Myron J.; Anderson, Thomas R.; and Halbert, Joel M., 4,763,107, Cl. 340-347.0AD.
Andersson, Alvar, to Frigoscandia Contracting AB. Process and apparatus for freezing liquid or semiliquid foods in the form of essentially uniform pellets. 4,761,962, Cl. 62-63.000.
Andersson, Bengt, to Waco Jonsereds AB. Method and machine for resawing and working boards of optional width into laths. 4,762,157, Cl. 144-369.000.
Ando, Masanori: *See*—
Watanabe, Yuzuru; Nakayama, Yoshifumi; Ando, Masanori; and Kiku :hi, Masahiro, 4,763,047, Cl. 315-382.000.
Ando, Outaro: *See*—
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000.
Andrada Galan, Mario: *See*—
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Andrada Galan, Mario, 4,762,040, Cl. 83-56.000.
Andreas Stihl: *See*—
Zerrer, Gerhard, 4,761,939, Cl. 56-12.700.
Andreasen, James E.; Childre, Casey J.; and Peed, David B., to Lew Childre & Sons, Inc. Method of molding a one piece integral fishing rod handle. 4,762,584, Cl. 156-245.000.
Andrew Corporation: *See*—
Juds, Richard C.; and Morris, John P., 4,763,132, Cl. 343-890.000.
Andrews, Dale D.; and Andrews, Durwood T. Tree ladder. 4,762,200, Cl. 182-151.000
Andrews, Durwood T.: *See*—
Andrews, Dale D.; and Andrews, Durwood T., 4,762,200, Cl. 182-151.000.
Anger, Wilhelm; and Steinhauer, Eric, to Anger, Wilhelm. Process for preparation of spectacles. 4,762,407, Cl. 351-204.000.
Aoki, Hisashi: *See*—
Saitoh, Kouhei; Aoki, Hisashi; Endo, Kenzo; and Mawatari, Atsushi, 4,763,142, Cl. 346-160.000.
Aoki, Kazumasa: *See*—
Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi; Hatase, Takayuki; Yamaguchi, Takao; and Aoki, Kazumasa, 4,763,154, Cl. 354-403.000
Aoki, Shigeo: *See*—
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.
Aprica Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,762,335, Cl. 280-649.000.
Arai, Keiji: *See*—
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000.
Arai, Satoko: *See*—
Ohtuka, Tatsuo; Murooka, Shiuchi; Arai, Satoko; and Nishizaki, Takeshi, 4,763,229, Cl. 361-433.000.
Arakawa, Junichi, to Canon Kabushiki Kaisha. Recording system comprising a recording apparatus and/or an information storage cartridge detachably attached to the recording apparatus. 4,763,281, Cl. 364-523.000
Arakawa, Mitsuaki; and Crooks, Lawrence E., to University of California, The Regents of the. MRI transmit coil disable switching via RF in/out cable. 4,763,076, Cl. 324-322.000.
Arcuri, Kym B.: *See*—
Mauldin, Charles H.; Davis, Stephen M.; and Arcuri, Kym B., 4,762,959, Cl. 585-640.000.
Argandona, Toby. Spill containment device. 4,762,440, Cl. 405-52.000.
Arieh, Simon: *See*—
Courvoisier, Guy; Arieh, Simon; and Marxer, Herbert, 4,761,898, Cl. 36-50.000
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, to Canon Kabushiki Kaisha. Image forming apparatus. 4,763,164, Cl. 355-14.00R.
Ariga, Sadakazu: *See*—
Tanaka, Toshiyasu; and Ariga, Sadakazu, 4,762,388, Cl. 350-96.200
Arimitsu, Satoshi, to Nippon Air Brake Co., Ltd. Disc brake. 4,762,206, Cl. 188-73.450
Armstrong World Industries, Inc.: *See*—
Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., 4,762,643, Cl. 252-378.00R
Arnheim, Norman: *See*—
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000.
Arnold, Fred E.: *See*—
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,762,908, Cl. 528-185.000.
Aronoff, Marvin S.: *See*—
Keyes, Denis E.; and Aronoff, Marvin S., 4,762,738, Cl. 428-36.000.
Aronson, Michael; Lock, Michele R.; and Santos, Edward, to Lever Brothers Company. Encapsulated bleach particles for machine dishwashing compositions. 4,762,637, Cl. 252-99.000.
Arsenault, Roger: *See*—
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., 4,762,735, Cl. 427-162.000.
Artus, Raymonde G. C. Heat sink. 4,762,174, Cl. 165-185.000
Asahina, Yasuo: *See*—
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.
Asakawa, Kazuo; Onda, Nobuhiko; Akita, Tadashi; and Kamada, Toru, to Fujitsu Limited. Force-detecting apparatus. 4,762,006, Cl. 73-862.040.
Asakura, Masahiko; Kushida, Noritaka; Shiina, Takanori; and Kubota, Shin'ichi, to Honda Giken Kogyo Kabushiki Kaisha. Oxygen concentration sensing apparatus. 4,762,604, Cl. 204-406.000.
Asakura, Masahiko: *See*—
Kawanabe, Tomohiko; Asakura, Masahiko; Kushida, Noritaka; Seki, Yasunari; Shiina, Takanori; and Muroya, Minoru, 4,763,265, Cl. 364-431.040.
Asanuma, Hajime; and Tokairin, Masatsugu, to Kabushiki Kaisha Toshiba. Rotary compressor for refrigerant. 4,762,471, Cl. 417-372.000.
Asanuma, Tadashi; Funakoshi, Yoshiyuki; and Ohoka, Tatuo, to Mitsui Toatsu Chemicals, Incorporated. Process for recovering a mixture of unreacted ethylene and propylene. 4,762,897, Cl. 526-68.000.
ASE (UK) Limited: *See*—
Nicod, Frederick C., 4,762,369, Cl. 297-484.000.
Ashford, Thomas J.; Burns, Nancy A.; Flagg, Richard L.; Iwaskiw, Christine T.; and Starbird, Roberta P., to International Business Machines Corporation. Method for obtaining information in an expert system. 4,763,277, Cl. 364-513.000.
Ashinuma, Takaaki: *See*—
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, 4,763,167, Cl. 355-14.00R.
Ashland Oil, Inc.: *See*—
Goel, Anil, 4,762,883, Cl. 525-113.000.
Goel, Anil B.; Holebouse, Joseph G.; Jones, Jeffrey P.; and DeLong, Teresa, 4,762,864, Cl. 523-428.000
Ashley, Robert J.; Miller, John D.; and Ring, Maurice F., to Metal Box Public Limited Company. Containers. 4,762,246, Cl. 220-270.000.
Asick, John C.; Landis, John M.; and Yingst, Stephen M., to AMP Incorporated. Positive retention connector latch. 4,762,505, Cl. 439-347.000.
Aspri, Roberto; Mauffette, Claude; and Dallaire, Michel, to Les Entreprises Roberto Aspri Ltee. Sound reverberator device for detachable connection to the strings of a string musical instrument. 4,762,046, Cl. 84-294.000.
AT&T Information Systems Inc.: *See*—
Canale, Leonard M.; Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Martin H., 4,763,353, Cl. 379-157.000.
Atchley, Frank W. Water fount for animal cages. 4,762,086, Cl. 119-18.000.
Atkinson, Alan: *See*—
Denton, Sven T.; and Atkinson, Alan, 4,762,641, Cl. 252-378.00R.
Atlantic Richfield Company: *See*—
Baillie, Lloyd A., 4,761,990, Cl. 73-7.000.
Dech, James A.; Hearn, David D.; and Schuh, Frank J., 4,762,186, Cl. 175-61.000.
Atlas Fahrzeugtechnik GmbH: *See*—
Blauhut, Reinhold, 4,762,106, Cl. 123-425.000.
Atsumi, Shinya: *See*—
Takeuchi, Toshio; and Atsumi, Shinya, 4,762,079, Cl. 114-152.000.
Atsumi, Tetsuro: *See*—
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl. 165-11.100.
Attaar, Mustan: *See*—
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000.
Attalla, Giancarlo: *See*—
Nocci, Roberto; Attalla, Giancarlo; Del Giudice, Luciano; Cohen, Robert E.; and Bertinotti, Floriana, 4,762,893, Cl. 525-323.000
Auberger, Heinrich: *See*—
Wohlkonig, Hansjorg; Muller, Heinz; and Auberger, Heinrich, 4,763,337, Cl. 373-86.000
Audi AG: *See*—
Marz, Helmut, 4,761,915, Cl. 49-374.000.
August Bunger Bob-Textilwerk KG. GmbH & Co.: *See*—
Bunger, Claus M., 4,761,945, Cl. 57-224.000.
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M Truncated protein of interleukin-1. 4,762,914, Cl. 530-351.000
Avery, Frederick M.: *See*—
Jackle, William C., III; Sherwood, Richard A.; Avery, Frederick M.; and Seifert, James V., 4,762,236, Cl. 211-59.300
Avon Plastics, Inc.: *See*—
Reum, Donald J.; and Reum, Mark T., 4,761,923, Cl. 52-102.000.
Awazu, Takao: *See*—
Tsujii, Yasuhiro; Isogai, Tatsuo; Awazu, Takao; Jyonishi, Hisayoshi; and Kimura, Tokiya, 4,762,928, Cl. 546-311.000
Axis S.p.A.: *See*—
Sabatino, Luciani, 4,762,283, Cl. 242-1.10R
Azekura, Kazuo: *See*—
Kurihara, Kunitoshi; Kawashima, Katsuyuki; Masumi, Ryoji; and Azekura, Kazuo, 4,762,672, Cl. 376-333.000.
B.A.T. Cigarettenfabriken GmbH: *See*—
Kuhne Manfred; Gast, Theodor; Kramm, Karl-Ulrich; and Nolte, Karl, 4,762,138, Cl. 131-280.000.
B. F. Goodrich Company, The: *See*—
Lai, John T.; and Nae-Son, Pyong, 4,762,872, Cl. 524-100.000
Masler, III: William F.; and Amjad, Zahid, 4,762,621, Cl 210-701.000
Murphy, Walter T., 4,762,902, Cl. 528-75.000
Baader North America Corporation: *See*—
Ewing, Richard C., 4,761,856, Cl. 17-58.000
Babcock Display Products, Inc.: *See*—
Tang, Sang T., 4,763,223, Cl. 361-380.000
Babcock & Wilcox Company, The: *See*—
Hall, George R., II, 4,762,502, Cl. 439-144.000.
Babusek, James C.: *See*—
Siblik, Allen D.; and Babusek, James C., 4,762,347, Cl. 292-147.000
Bagshaw, Stanley R.: *See*—
Rea, Philip L.; and Bagshaw, Stanley R., 4,761,926, Cl. 52-387.000
Baillie, Lloyd A., to Atlantic Richfield Company. Method and apparatus for measurement of attrition rate of particulate material. 4,761,990, Cl. 73-7.000
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., to Electric Power Research Institute, Inc. Plug for kinetic bonding procedure 4,762,265, Cl. 228-50.000
Baker, Ross G., Jr., to Intermedics, Inc. Low polarization pacing electrodes for capture verification. 4,762,136, Cl. 128-786.000
Baker, Steven F., to General Motors Corporation. Engine with hydraulically variable cam timing. 4,762,097, Cl. 123-90.310.
Balderson, Simon N., to Thorn EMI plc. Temperature sensitive device. 4,763,099, Cl. 338-22.00R
Baldwin, Roger A.; Laughlin, William C.; Patel, Keshav P.; and Shreve, Patricia J., to Kerr-McGee Chemical Corporation. Improved process for beneficating iron-containing titaniferous ores. 4,762,552, Cl. 75-1.00T.
Balint, Joseph P., to IMRE Corporation. Anti-human IGM immunoadsorbent and process for producing said immunoadsorbent. 4,762,787, Cl. 435-174.000
Ball, David P., to Thorn Emi Lighting (NZ) Limited. Switched mode power supplies. 4,763,239, Cl. 363-98.000.
Ballard, Ambrose H.; Godfrey, Thomas G., Jr.; and Mowery, Erb H., to United States of America, Energy. Method for hot pressing beryllium oxide articles. 4,762,656, Cl. 264-82.000
Ballhorn, Reinhard: *See*—
Brunner, Herbert; Ballhorn, Reinhard; and Schwab, Roland, 4,762,690, Cl. 423-3.000.
Balliello, Paolo; Bruttel, Beat; and Will, Hanspeter, to Ciba-Geigy Corporation. Process for the preparation of granules containing an active substance and to the use thereof as speckles for treating substrates. 4,762,636, Cl. 252-95.000
Balzers Aktiengesellschaft: *See*—
Bergmann, Erich; and Hummer, Elmar, 4,762,756, Cl. 428-698.000
Bamelis, Pol: *See*—
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, 4,762,931, Cl. 548-166.000
Bandou, Masaaki; Sugita, Masao; and Marumo, Takachi, to Jidosha Kiki Co., Ltd.; and Gunma Seikou Co., Ltd. Valve sleeve and method of manufacturing same. 4,762,302, Cl. 251-360.000.
Bang H. MO: *See*—
Choi, Hyeong In; and Choi, Keh-Kun, 4,763,045, Cl. 315-209.0SC
Banks, Reginald G. S.; Bates, David R.; Jones, Stephen D.; and Oliver, James A., to British Gas plc. Methanation catalysts. 4,762,815, Cl. 502-259.000
Bansho, Kenji: *See*—
Miyazaki, Akira; Bansho, Kenji; Kimura, Akira; and Tao, Hiroaki, 4,762,691, Cl. 423-24.000
Barbaric, Zoran L.; Deckard, Michael; and Nelson, Robert S., to University of California, The Regents of the. Slit scanning and detecting system. 4,763,345, Cl. 378-146.000.
Baricevac, Thomas A.; and Raffalski, Karl-Heinz, to Theta Industries, Inc. Low temperature dilatometer. 4,762,424, Cl. 374-56.000

VOL 1093 ISS 2 AG 9 1988 UMI

Barker, Douglas R.: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000.

Barker, James M.; Grigar, Larry L.; Schramek, Dennis E.; Reid, Starlin M.; and Sumner, Cyril R., to Halliburton Company. Downhole perforating method and apparatus using secondary explosive detonators. 4,762,067, Cl. 102-313.000.

Barlow, George J.; and Keeley, James W., to Honeywell Bull Inc Resilient bus system. 4,763,243, Cl. 364-200.000.

Barndt, Robert A., Sr., to Unisys Corporation. Synchronous signal decoder. 4,763,338, Cl. 375-82.000.

Barr, William S. Method and apparatus for providing secure electronic communications. 4,763,357, Cl. 380-48.000.

Barrio, Ramon M.: *See—*
Rodriguez, Manuel V.; Barrio, Ramon M.; and Dobarro, Juan P., 4,762,137, Cl. 131-299.000.

Barry, Gerald E.; and Sandberg, James L., to Owatonna Tool Company. Bar-type puller. 4,761,869, Cl. 29-261.000.

Barry, Michael L.: *See—*
Keyser, Thomas; Cairns, Bruce R.; Anand, Kranti V.; Petro, William G.; and Barry, Michael L., 4,762,728, Cl. 427-38.000.

Bart, Joseph: *See—*
Schwind, Richard J.; Bart, Joseph; and Wollar, Burnell, 4,762,450, Cl. 411-34.000.

Barzilai, Zeev; Iyengar, Vijay S.; Rosen, Barry K.; and Silberman, Gabriel M., to International Business Machines Corporation. Method for the modeling and fault simulation of complementary metal oxide semiconductor circuits. 4,763,289, Cl. 364-578.000.

BASF Aktiengesellschaft: *See—*
Hambrecht, Juergen; Illers, Karl H.; Echte, Adolf; and Swoboda, Johann, 4,762,874, Cl. 524-151.000.
Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, 4,762,869, Cl. 524-59.000.
Hisgen, Bernd; Portugall, Michael; and Blinne, Gerd, 4,762,906, Cl. 528-170.000.
Koch, Horst; and Ziegler, Walter, 4,762,892, Cl. 525-279.000.
Kock, Hans-Jakob, 4,762,907, Cl. 528-183.000.
Mueller, Herbert, 4,762,951, Cl. 568-617.000.
Rebafka, Walter, 4,762,929, Cl. 546-252.000.

BASF Corporation: *See—*
Korczak, Alexander; and Levis, William W., Jr., 4,762,950, Cl. 564-399.000.

BASF Lacke & Farben AG: *See—*
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,762,903, Cl. 528-107.000.

Basseen, Sanjiv K.; and Harlan, Richard A., to Pioneer Air Systems, Inc. High efficiency air drying system. 4,761,968, Cl. 62-271.000.

Basta, Walter. Evaporation calorimeter. 4,762,423, Cl. 374-31.000.

Batdorf, Robert L.; Murphy, Edmond J.; Poteat, Tommy L.; and Simpson, Jay R., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Array connector for optical fibers. 4,762,387, Cl. 350-96.200.

Bates, David R.: *See—*
Banks, Reginald G. S.; Bates, David R.; Jones, Stephen D.; and Oliver, James A., 4,762,815, Cl. 502-259.000.

Battelle Memorial Institute: *See—*
Nagarajan, Vaidyanathan; and Wright, Ian G., 4,762,557, Cl. 75-244.000.
Timmerman, Craig L.; Oma, Kenton H.; and Davis, Karl C., 4,762,991, Cl. 250-227.000.

Batts, Inc.: *See—*
Blanchard, Russell O., 4,762,238, Cl. 211-123.000.

Baucke, Friedrich; Mucke, Klaus; and Metz, Bernd, to Schott Glaswerke. Electrochromatic system with third electrode. 4,762,401, Cl. 350-357.000.

Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, to C. Rob. Hammerstein GmbH; and Daimler-Benz AG. Self-locking revolute joint, adjustable step by step to an angle by means of pumping movements of an activation lever. 4,762,366, Cl. 297-367.000.

Bauer Kaba AG: *See—*
Kleinhany, Arno, 4,761,976, Cl. 70-277.000.

Bauer, Karl-Heinz; and Spiller, Gerhard, to Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co. Locking slide switch. 4,763,101, Cl. 338-198.000.

Bay Mills Limited: *See—*
Woiceshyn, Mark; O'Connor, Terry J.; and Cooper, Ian G., 4,762,744, Cl. 428-219.000.

Bayer Aktiengesellschaft: *See—*
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, 4,762,931, Cl. 548-166.000.
Dhein, Rolf; Muller, Hanns P.; Meier, Helmut-Martin; and Gipp, Roland, 4,762,901, Cl. 528-73.000
Frohlen, Hans G., 4,762,938, Cl. 556-470.000.
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,762,853, Cl. 514-432.000.
Goyert, Wilhelm; Winkler, Jurgen; Perrey, Hermann; and Heidingsfeld, Herbert, 4,762,884, Cl. 525-28.000.
Grohe, Klaus; and Schriewer, Michael, 4,762,831, Cl. 514-230.200.
Grohe, Klaus; Schriewer, Michael; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,762,844, Cl. 514-312.000.
Moeschler, Heinrich F.; Pfluger, Wolfgang; and Wendisch, Detlef, 4,762,716, Cl. 424-195.100.
Nielinger, Werner; Alewelt, Wolfgang; Binsack, Rudolf; Bottenbruch, Ludwig; and Fullmann, Heinz-Josef, 4,762,910, Cl. 528-339.000.
Ostlinning, Edgar; Idel, Karsten; and Bottenbruch, Ludwig, 4,762,911, Cl. 528-388.000.
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,762,905, Cl. 528-167.000.

Bayerische Motoren Werke Aktiengesellschaft: *See—*
Andersen, Jurgen; and Busch, Lothar, 4,762,169, Cl. 165-25.000.

Bayne, Irman D.; and Adair, Edwin L., to Medical Dynamics, Inc. Cervical cytology device. 4,762,133, Cl. 128-756.000.

BBC Brown, Boveri & Company, Ltd.: *See—*
Hellat, Jaan, 4,761,958, Cl. 60-737.000.

Beam, John W.; and Latino, Richard M., to Wright Line Inc. Blow molded panels and a mold and method of making them. 4,762,379, Cl. 312-320.000.

Bearden, Roby, Jr.: *See—*
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,762,607, Cl. 208-59.000.

Beaulieu, William B.: *See—*
O'Connor, James E.; and Beaulieu, William B., 4,761,871, Cl. 29-432.100.

Becerra Carrasco, Rodrigo: *See—*
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Andrada Galan, Mario, 4,762,040, Cl. 83-56.000.

Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, to Hoesch Stahl Aktiengesellschaft. Method and apparatus for processing metal strip in vertical electroplating cells. 4,762,602, Cl. 204-206.000.

Bechtold, Alec W.: *See—*
Bechtold, Stephen K.; and Bechtold, Alec W., 4,762,160, Cl. 160-98.000

Bechtold, Stephen K.; and Bechtold, Alec W. Skylight shade assembly. 4,762,160, Cl. 160-98.000.

Beck, Lee R.: *See—*
Stolle, Ralph J.; and Beck, Lee R., 4,762,712, Cl. 424-92.000.

Becker, Burckhard: *See—*
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000.

Beecham Group p.l.c.: *See—*
Edwards, Peter J.; Jeffryes, Carol A.; and Swain, Fiona M., 4,762,847, Cl. 514-336.000.

Beery, James P.: *See—*
Parker, Richard W.; Beery, James P.; Boblitt, Donald L.; and Starr, Robert L., 4,761,943, Cl. 56-202.000.

Beijing Research Institute of Chemical Industry He Ping Li: *See—*
Liu, Xin X.; Zhao, Bing Y.; Riegel, Herbert; and Chien, Jo-Lung, 4,762,956, Cl. 585-259.000.

Belbel, Elie; Fechant, Louis; and Riotte, Jaan Paul, to La Telemecanique Electrique. Static switch circuit or device for the protected supply of a load, and its line. 4,763,220, Cl. 361-93.000.

Bell Communications Research, Inc.: *See—*
Rozenblit, Moshe, 4,763,319, Cl. 370-84.000.

Bellet, Serge: *See—*
Martens, Andre ; and Bellet, Serge, 4,762,958, Cl. 585-613.000.

Belmares-Sarabia, Armand; and Chayka, Stanley J., to Corporate Communications Consultants, Inc. Color correction system with monitor for use in recalling color corrections and corresponding method. 4,763,186, Cl. 358-22.000.

Belouet, Christian; and Mautref, Michel, to Societe Nationale Elf Aquitaine; and Compagnie General d'Electricite. Means for forming a melt of a semiconductor material in order to make a crystalline element grow therein. 4,762,687, Cl. 422-253.000.

Beltz, Klaus; Frankenfeld, Klaus; Ruschke, Peter; and Eich, Gerhard, to Chemische Fabrik Budenheim Rudolf A. Oetker. Process for the precipitation and separation of cadmium sulphide from the raffinates derived from phosphoric acid purification. 4,762,692, Cl. 423-321.00R.

Bennes Marrel: *See—*
Corompt, Antoine; Lablanche, Jean; and Michalon, Fernand, 4,762,370, Cl. 298-19.00R.

Bennett, Grace A.: *See—*
Georgiev, Vassil S.; and Bennett, Grace A., 4,762,828, Cl. 514-214.000

Bennett, Reginald B. P.: *See—*
Drake, Allan R.; Finn, Roger C.; and Bennett, Reginald B. P., 4,762,732, Cl. 427-54.100.

Bentz, Willy; and Gansert, Willi, to Robert Bosch GmbH. Housing for receiving electric control devices, in particular for motor vehicles. 4,763,224, Cl. 361-386.000.

Bergamo, Samuel, to General Motors Corporation. Linear action gripper for a robot. 4,762,357, Cl. 294-119.100.

Bergen, Richard F., to Xerox Corporation. Fluid jet assisted ion projection charging method. 4,762,997, Cl. 250-326.000.

Bergen, Richard F.: *See—*
Gundlach, Robert W.; and Bergen, Richard F., 4,763,141, Cl. 346-158.000.

Berger, Johann; and Berger, Josef, to Elastic-Berger OHG. Parallel thread supply system. 4,761,864, Cl. 28-218.000.

Berger, Josef: *See—*
Berger, Johann; and Berger, Josef, 4,761,864, Cl. 28-218.000.

Berger, Martin J., to Pepsico Inc. Ratio measuring cup. 4,762,251, Cl. 222-49.000

Bergeson, Larry W.; Lasorso, Vincent J., Jr.; Petersen, Russell H.; and Ruffalo, Ronald G., to S. C. Johnson & Son, Inc. Fluid applicator for shoes and the like. 4,762,433, Cl. 401-206.000.

Bergmann, Erich; and Hummer, Elmar, to Balzers Aktiengesellschaft. Thermochemical surface treatments of materials in a reactive gas plasma. 4,762,756, Cl. 428-698.000.

Bergren, Orton D.: *See—*
Maloney, William F.; Hall, Deborah K.; Parkinson, Dean B.; Bergren, Orton D.; and Dodge, Allen L., 4,762,496, Cl 434-271.000.

Bermudez, Jorge E.: *See—*
Lalin, Hill S.; Fleming, William T., Jr.; and Bermudez, Jorge E., 4,762,004, Cl. 73-861.050.

Bernatets, Jean-Luc: *See—*
Nicolas, Jean-Marie; and Bernatets, Jean-Luc, 4,762,132, Cl. 128-660.000.

Bernstein, Pierre: *See—*
Gueugnon, Catherine; Desserre, Jacques; and Bernstein, Pierre, 4,763,215, Cl. 360-119.000.

Berry, Bernie B., Jr. Autoclave tray for surgical apparatus. 4,762,688, Cl. 422-310.000.

Bertacchi, Roy J.: *See—*
Phillips, Bradford E.; and Bertacchi, Roy J., 4,762,318, Cl. 272-137.000.

Bertinotti, Floriana: *See—*
Nocci, Roberto; Attalla, Giancarlo; Del Giudice, Luciano; Cohen, Robert E.; and Bertinotti, Floriana, 4,762,893, Cl. 525-323.000.

Besancon, Denis; and Franceschini, Jacqueline, to Societe d'Etudes Scientifiques et Industrielles de l'Ile de France. Benzodioxepanne, process for the synthesis thereof and use thereof. 4,762,852, Cl. 514-422.000

Beshore, David G.; and Giampa, Vincent M., to Electric Fuels Corporation. Slurry fuel comprised of a heat treated, partially dewatered sludge with a particulate solid fuel and its method of manufacture. 4,762,527, Cl. 44-51.000.

Besic, Dragan; and Smith, Wilbur C., to Dresser Industries, Inc. Single acting pump with double acting drive. 4,762,051, Cl. 92-165.00R.

Bessin, Pierre: *See—*
Levy, Jean-Claude; Bessin, Pierre; and Labaune, Jean-Pierre, 4,762,855, Cl. 514-651.000.

Bestquint Limited: *See—*
Tracey, Peter M., 4,762,969, Cl. 200-81.400.

Bette, Willi: *See—*
Cirkel, Hans-Jurgen; and Bette, Willi, 4,763,093, Cl. 336-58.000.

Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, to Robert Bosch GmbH. Control system for an extrinsic-ignition internal combustion engine responsive to an engine load signal provided to dual control units. 4,762,105, Cl. 123-417.000

Beyl, James A. Arrowhead with refillable cartridges for high impact arrows. 4,762,328, Cl. 273-420.000.

Beyl, Jean J. Device for fixing a shoe on a pedal, a shoe and a pedal thus fitted out. 4,762,019, Cl. 74-594.600.

Biberian, Jean P., to Laboratoire d'Etude Des Surfaces. Method of forming images on a flat video screen. 4,763,187, Cl. 358-56.000.

BICC Public Limited Company: *See—*
Brinsley, Peter A., 4,762,970, Cl. 200-86.00R.

Billington, Alan J.; and Rice, Thomas G., to British Nuclear Fuels plc. Stack forming apparatus. 4,762,665, Cl. 376-261.000.

Binder, Paul: *See—*
Bomba, Frank C.; Schumann, Reinhard; Jenkins, Stephen R.; and Binder, Paul, 4,763,249, Cl. 364-200.000.

Binning, Gerd K.; and Gerber, Christoph E., to International Business Machines Corporation. Coarse approach positioning device. 4,762,996, Cl. 250-306.000.

Binsack, Rudolf: *See—*
Nielinger, Werner; Alewelt, Wolfgang; Binsack, Rudolf; Bottenbruch, Ludwig; and Fullmann, Heinz-Josef, 4,762,910, Cl. 528-339.000.

Bio-Rad Laboratories, Inc.: *See—*
von Alven, Raymond D.; and Davis, Craig R., 4,762,743, Cl. 428-156.000.

Biot, Jean-Marie: *See—*
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, 4,762,931, Cl. 548-166.000

Bird, Gustavo E.: *See—*
Rosser, William D.; Kuo, Samuel C.; Bird, Gustavo E.; and Davis, Robert E., 4,763,131, Cl. 343-792.500.

Biverstedt, Arne, to Ytkemiska Institutet. Fluxing agent and soldering process. 4,762,573, Cl. 148-23.000.

Black, Brian E. Partition wall construction. 4,761,922, Cl. 52-71.000.

Black, Fred M. Scanned electromechanical display. 4,761,905, Cl. 40-447.000.

Blackman, Robert J., to Eastman Kodak Company. Photographic film processing rack and method of assembling the same. 4,763,152, Cl. 354-321.000.

Blackwood, Donna L. J.: *See—*
Blackwood, Leo; and Blackwood, Donna L. J., 4,761,941, Cl. 56-36.000.

Blackwood, Leo; and Blackwood, Donna L. J. Cotton picker lower picker drum cleaner. 4,761,941, Cl. 56-36.000.

Blagg, Dennis. Game apparatus and method. 4,762,323, Cl. 273-126.00R.

Blain, Jeffrey W.; and Chen, Jean, to Westinghouse Electric Corp. Elevator system master car switching. 4,762,204, Cl. 187-101.000.

Blakely, Robert L.; Roebelen, George J., Jr.; and Davenport, Arthur K., to United States of America, National Aeronautics and Space Administration. High effectiveness contour matching contact heat exchanger. 4,762,173, Cl. 165-170.000.

Blanchard, Russell O., to Batts, Inc. Auxiliary hanger rod support 4,762,238, Cl. 211-123.000

Blanco, Ernesto E.: *See—*
Richards, William D.; Blanco, Ernesto E.; Clark, Richard A.; and Meade, John C., 4,762,260, Cl. 227-19.000.

Blankemeyer, William J. Portable cooking apparatus with a removable work table. 4,762,114, Cl. 126-373.000.

Blankinship Andrew B. Equalizer quick switch. 4,763,012, Cl. 307-43.000.

Blaszczyk, Stanley L.: *See—*
Dollman, David Y.; and Blaszczyk, Stanley L., 4,762,638, Cl 252-135.000

Blattner, John D.; Moser, David B.; and Deleganes, Sam M., to Tektronix, Inc. Measurement instruments with multiple operation levels. 4,763,117, Cl. 340-712.000

Blauhut, Reinhold, to Atlas Fahrzeugtechnik GmbH. Arrangement for the generation of a trigger pulse for the ignition of fuel in an internal combustion engine. 4,762,106, Cl. 123-425.000.

Blaupunkt-Werke GmbH: *See—*
Schiller, Wilfried, 4,763,048, Cl. 315-383.000.

Blechar, Theodore J.: *See—*
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., 4,762,265, Cl. 228-50.000

Blendax-Werke R. Schneider GmbH & Co.: *See—*
Amos, Walter; and Klein, Horst, 4,762,373, Cl. 300-21.000.

Blinne, Gerd: *See—*
Hisgen, Bernd; Portugall, Michael; and Blinne, Gerd, 4,762,906, Cl. 528-170.000

Bloch, Joseph T., to Boeing Company, The. Rotary actuator utilizing a shape memory alloy. 4,761,955, Cl. 60-528.000.

Bluhm, Mark W.; Thompson, Robert R.; Mothersole, David S.; and MacGregor, Douglas B., to Motorola, Inc. Microcomputer with change of flow. 4,763,253, Cl. 364-200.000

Blumbach, Jurgen: *See—*
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000

Boblitt, Donald L.: *See—*
Parker, Richard W.; Beery, James P.; Boblitt, Donald L.; and Starr, Robert L., 4,761,943, Cl. 56-202.000

BOC Group, Inc., The: *See—*
Mishkovsky, Vladimir; Hwang, Wei S.; and Kamrath, David J., 4,762,542, Cl. 62-28.000.

BOC, Inc.: *See—*
Terrell, Ross C., 4,762,856, Cl. 514-722.000.

Bodnar, Steven A.: *See—*
Windstrup, Robert F.; Bodnar, Steven A.; and Larsen, B. Pershing, 4,762,486, Cl. 425-541.000

Boehringer Ingelheim KG: *See—*
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.

Boehringer Mannheim GmbH: *See—*
Hubner-Parajsz, Christa; Schetters, Hartmut; Lenz, Helmut; and Erler, Klaus, 4,762,783, Cl. 435-7.000.

Boeing Company, The: *See—*
Bloch, Joseph T., 4,761,955, Cl. 60-528.000.
Daniels, James W.; and Erickson, Carl W., 4,763,360, Cl. 455-3.000
Newman, Frank J.; Knapp, Robert K.; and Davis, Robert J., 4,763,125, Cl. 340-958.000.
Pitalo, Stephen K.; Walden, Donnie T.; and Lay, Henry P., 4,762,411, Cl. 356-152.000
Schultz, Larry R.; Super, Peter J.; and van Leynseele, Francis J., 4,763,266, Cl. 364-433.000.

Boerema, Edward T.; Suman, Michael J.; and Fleming, Dennis J., to Prince Corporation. Visor system. 4,762,359, Cl. 296-97.00K

Bohen, Joseph M.; and Lovenguth, Ronald F., to Pennwalt Corporation. Tetrahalophthalate esters as flame retardants for polystyrene resins. 4,762,861, Cl. 521-97.000.

Bohle, Franz-Josef; Brockmeyer, Hans-Peter; Brugger, Theodor; and Panzer, Klaus, to Hella KG Hueck Co. Mounting for an electrical light bulb with a bayonet lamp base. 4,762,503, Cl. 439-336.000.

Bohnhorst, Detlev: *See—*
Mady, Raschad; Daniel, Caecillie; Bohnhorst, Detlev; Gottwald, Karl-Heinz; and Morlock, Roland, 4,762,572, Cl. 148-6.15Z.

Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., to Armstrong World Industries, Inc. Binders and fibers combined with flocced mineral materials and water-resistant articles made therefrom. 4,762,643, Cl. 252-378.00R.

Boitani, Maria. Small case equipped with accessories for professional tasters of alcoholic drinks. 4,762,210, Cl. 190-111.000.

Bokel, Heinz-Hermann. 1-Oxa-2-oxo-3-r-3-aza-5-z-cyclopentane derivatives. 4,762,933, Cl. 548-229.000.

Boles, Jeffrey L., to Tennessee Valley Authority. Production of high-grade nitrogen-sulfur suspension fertilizers. 4,762,546, Cl. 71-30.000.

Bolger, Stephen R.: *See—*
Litzen, David B.; and Bolger, Stephen R., 4,762,616, Cl. 210-634.000

VOL 1093 ISS 2 AG 9 1988 UMI

Bollin, Ernest, Jr.; and Fletcher, Mark G., to Du Pont de Nemours, E I., and Company. Trehalose as stabilizer and tableting excipient. 4,762,857, Cl. 514-777.000.

Bolmstedt, Ulf: *See—*
Hallstrom, Bengt; Olsson, Olle; Bolmstedt, Ulf; and Johansson, Bjorn-Olow, 4,762,171, Cl. 165-147.000.

Bolton, Wayne A. Dental measuring instrument. 4,762,491, Cl. 433-72.000.

Bomba, Frank C.; Schumann, Reinhard; Jenkins, Stephen R.; and Binder, Paul, to Digital Equipment Corporation. Bus device for use in a computer system having a synchronous bus. 4,763,249, Cl. 364-200.000.

Bond, Charles R., Jr. Fluid level indicating apparatus. 4,762,000, Cl. 73-290.00R.

Bone, David A.: *See—*
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000.

Bonitz, Jorg: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Bonzel, Tassilo. Dilatation catheter. 4,762,129, Cl. 128-344.000.

Bora, Muhammad-Yusuf J.; and Hoebener, Karl G., to International Business Machines Corporation. Single step solder process. 4,761,881, Cl. 29-840.000.

Borghard, William S.; and Schoennagel, Hans J., to Mobil Oil Corporation. Apparatus and method for adsorption and desorption studies, particularly for characterization of catalysts. 4,762,010, Cl. 73-865.500.

Borgstrom, Alan D.; and Siebens, Larry N., to Amerace Corporation. Extended contact. 4,762,501, Cl. 439-131.000.

Borovski, Boris H.; and Ilieva, Plamenka I., to Vmei "Lenin". Multiprocessor system formed by microprocessor matrix. 4,763,247, Cl. 364-200.000.

Bose, Animesh: *See—*
German, Randall M.; Bose, Animesh; and Sims, David, 4,762,558, Cl. 75-246.000.

Bosman, Peter B., to WLPU Holdings Proprietary Limited. Packing elements for evaporative coolers and a method of supporting packing elements in cooling towers. 4,762,650, Cl. 261-100.000.

Bost, James: *See—*
Penrice, Thomas W.; and Bost, James, 4,762,559, Cl. 75-248.000

Boston University, Trustees of: *See—*
Gavras, Haralambos, 4,762,820, Cl. 514-10.000.
Khader, Mahmoud M.; and Lichtin, Norman N., 4,762,600, Cl. 204-157.460.

Both, Hans W.: *See—*
Michler, Wilhelm; Both, Hans W.; and Keppler, Rolf, 4,762,538, Cl. 55-84.000.

Botnick, Irlin H. Faucet manifold. 4,762,143, Cl. 137-315.000.

Bottenbruch, Ludwig: *See—*
Nielinger, Werner; Alewelt, Wolfgang; Binsack, Rudolf; Bottenbruch, Ludwig; and Fullmann, Heinz-Josef, 4,762,910, Cl. 528-339.000.
Ostlinning, Edgar; Idel, Karsten; and Bottenbruch, Ludwig, 4,762,911, Cl. 528-388.000.
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,762,905, Cl. 528-167.000.

Boucher, Richard: *See—*
Haight, Michael H.; Giolma, William H.; and Boucher, Richard, 4,763,086, Cl. 331-109.000.

Bouiller, Jean G.; Payen, Jean-Michel; and Ruis, Jean Pierre, to Societe Nationale d'Etude et de Construction de Monteurs d'Aviation (SNECMA). Carrier ring for a propeller blade system. 4,762,466, Cl 416-205.000.

Bouldin, Eric W.; and Drexler, Jerome, to Drexler Technology Corporation. High contrast optical memory disk. 4,762,770, Cl. 430-273.000.

Boundy, Bruce K.; and Vander Till, Gerald N., to Westinghouse Electric Corp. Desk and space dividing wall panel assembly. 4,762,072, Cl. 108-50.000.

Bourgault, Francois P.; and Bourgault, Joseph L., to F. P. Bourgault Industries Cultivator Division Ltd. Farming implement with adjustable earthworking tool framer. 4,762,183, Cl. 172-400.000.

Bourgault, Joseph L.: *See—*
Bourgault, Francois P.; and Bourgault, Joseph L., 4,762,183, Cl. 172-400.000.

Boussac Saint Freres B.S.F.: *See—*
de Jonckheere, Raphael, 4,762,582, Cl. 156-164.000.

Bowley, Alan R., to Fisons plc. Photometric reading device for serological analysis. 4,762,420, Cl. 356-436.000.

Bowman, Edward W. Security device for doors. 4,762,351, Cl. 292-263.000.

BP Chemicals Limited: *See—*
Green, Michael J., 4,762,952, Cl. 568-678.000.

Bradley, Ross. Ratchet wrenches. 4,762,031, Cl. 81-57.220.

Bradt, Peter, to Siemens Aktiengesellschaft. Transformer with cast insulation jacket. 4,763,095, Cl. 336-96.000.

Bramm, Gunter; and Novak, Pavel, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Magnetic rotor bearing. 4,763,032, Cl. 310-90.500.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Ernst, Horst-Manfred; Stolz, Robert; and Neder, Gunter, 4,762,207, Cl. 188-196.00D.

Brandon, Craig A.: *See—*
Gaddis, Joseph L.; and Brandon, Craig A., 4,762,619, Cl. 210-639.000

Branover, Alexander: *See—*
Fish, Aaron M.; Mayzels, Leon; Branover, Alexander; Miresmaili, Masoud; and Dausseing, Jean-Paul, 4,762,212, Cl. 192-24.000.

Branston, Randolph E.: *See—*
Duff, James M.; and Branston, Randolph E., 4,762,734, Cl. 427-146.000.

Brasch, William R., to LeaRonal, Inc. Copper colloid and method of activating insulating surfaces for subsequent electroplating. 4,762,560, Cl. 106-1.110.

Brashear, Daniel F.: *See—*
Camfield, David K.; Brashear, Daniel F.; and Craig, Marion N., 4,762,317, Cl. 272-73.000.

Bratro, Frederick E.: *See—*
Kachnowski, Thomas A.; Bratro, Frederick E.; Kaplan, Elhanan; and Sudol, George A., 4,761,975, Cl. 70-232.000.

Brauer, Wolfgang: *See—*
Harting, Dietmar; Nagel, Hans; and Brauer, Wolfgang, 4,762,498, Cl. 439-82.000.

Braun Aktiengesellschaft: *See—*
Schwarz, Gerhard, 4,763,061, Cl. 320-32.000.

Braunschweigische Maschinenbauanstalt AG: *See—*
Schaper, Helmut, 4,762,570, Cl. 127-19.000.

Brazdil, James F.: *See—*
Guttmann, Andrew T.; Brazdil, James F.; and Grasselli, Robert K., 4,762,961, Cl. 585-661.000.

Breuer, Hermann; and Treuner, Uwe D., to Squibb Corporation. 2-oxo-1-[[(substituted sulfonyl)amino]-carbonyl]azetidines. 4,762,922, Cl. 540-363.000.

Breuer, Oswald: *See—*
Rassmann, Christoph; Breuer, Oswald; and Steinkuhl, Bernd, 4,762,372, Cl. 299-91.000.

Bridgeford, Douglas J., to Teepak, Inc. Reinforced cellulose aminomethanate. 4,762,564, Cl. 106-204.000.

Bridgestone Corporation: *See—*
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300.
Fuchigami, Nobuhisa; Yoshida, Takeo; and Fukuda, Hiroya, 4,762,654, Cl. 264-45.100
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, 4,761,925, Cl. 52-167.000.
Furuya, Shinichi; Kadota, Kuninobu; Togashi, Minoru; and Kato, Kenshiro, 4,762,158, Cl. 152-454.000.
Hashimoto, Kunio; and Okazaki, Haruo, 4,762,221, Cl. 198-819.000.

Briggs, Aubrey C.: *See—*
Pater, Larry L.; and Briggs, Aubrey C., 4,762,277, Cl. 239-99.000.

Briggs Technology Inc.: *See—*
Pater, Larry L.; and Briggs, Aubrey C., 4,762,277, Cl. 239-99.000

Brinsley, Peter A., to BICC Public Limited Company. Elongate pressure actuated electrical switch. 4,762,970, Cl. 200-86.00R.

Bristol-Myers Company: *See—*
Rafft, Ronald R.; Helman, Michael D.; and Mackles, Leonard, 4,762,704, Cl. 424-65.000.

British Aerospace Plc: *See—*
Geen, John A.; and Guppy, David J., 4,762,415, Cl. 356-350.000

British Gas plc: *See—*
Banks, Reginald G. S.; Bates, David R.; Jones, Stephen D.; and Oliver, James A., 4,762,815, Cl. 502-259.000.

British Nuclear Fuels plc: *See—*
Billington, Alan J.; and Rice, Thomas G., 4,762,665, Cl. 376-261.000

Brockmeyer, Hans-Peter: *See—*
Bohle, Franz-Josef; Brockmeyer, Hans-Peter; Brugger, Theodor; and Panzer, Klaus, 4,762,503, Cl. 439-336.000.

Brodin, Glenn H.: *See—*
Stoll, Mark S.; Brodin, Glenn H.; and Miller, LeRoy, 4,762,270, Cl. 229-23.00A.

Brodmann, Rainer: *See—*
Rau, Norbert; Hubner, Gerd; Staiger, Wolfgang; Brodmann, Rainer; and Gerstorfer, Oskar, 4,763,006, Cl. 250-561.000

Brown, Alvin E., to Manning Technologies, Inc. Universal upstream-downstream flowmeter tester. 4,762,012, Cl. 73-866.400.

Brown, Bernard J.; and Ritter, Kerry L., to Control Gaging, Inc. Temperature insensitive gauge. 4,761,887, Cl. 33-148.00H.

Brown, Nancy A.: *See—*
Hargrove, John W., 4,761,838, Cl. 4-542.000.

Brown, Robert C.; and Buttermore, William H., to Iowa State University Research Foundation, Inc. Means and method for controlling load turndown in a fluidized bed combuster. 4,762,090, Cl. 122-4.00D.

Brown, Trevor J., to General Motors Corporation. Wheel cover assembly. 4,762,374, Cl. 301-37.00P.

Browner, Richard F.; and Willoughby, Ross C., to Georgia Tech Research Corporation. Monodisperse aerosol generator. 4,762,995, Cl. 250-282.000.

Browning, James A. Double arc prevention for a transferred-arc flame spray system. 4,762,977, Cl. 219-121.470.

Brubaker, Richard A.: *See—*
Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., 4,762,643, Cl. 252-378.00R.

Brugger, Theodor: *See—*
Bohle, Franz-Josef; Brockmeyer, Hans-Peter; Brugger, Theodor; and Panzer, Klaus, 4,762,503, Cl. 439-336.000.

Brunke, Ernst-Joachim, to Dragoco Gerberding & Co. GmbH. 2,6-exo configured tricyclo-5.2.1.$0^{2,6}$ decane derivatives with functional side chains at C-8/C-9 and their utilization thereof as perfumes. 4,762,819, Cl. 512-14.000.

Brunn, Oswald. Folding piece of furniture. 4,762,362, Cl. 297-26.000.

Brunner, Herbert; Ballhorn, Reinhard; and Schwab, Roland. Process for the separation of cations from aqueous solutions. 4,762,690, Cl. 423-3.000.

Bruno, Carlo M.: *See—*
Ambrosio, Renato; and Bruno, Carlo M., 4,763,342, Cl. 377-43.000

Brunswick Corporation: *See—*
Staerzl, Richard E., 4,761,992, Cl. 73-35.000.

Bruttel, Beat: *See—*
Balliello, Paolo; Bruttel, Beat; and Will, Hanspeter, 4,762,636, Cl. 252-95.000.

Buchert, Hermann: *See—*
Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, 4,762,869, Cl 524-59.000.

Buddy L Corporation: *See—*
Lee, Shao-Wei; and Chow, Kwong-Wai, 4,762,511, Cl. 446-6.000.

Buening, Gerald M.; and Carson, Charles A., to University of Missouri, The Curators of the. Live vaccine for bovine babesiosis. 4,762,711, Cl. 424-93.000.

Buettner, Donald D.: *See—*
Buettner, E. Jane; and Buettner, Donald D., 4,761,872, Cl. 29-451.000.

Buettner, E. Jane; and Buettner, Donald D. Method of making a pillow. 4,761,872, Cl. 29-451.000.

Bujese, David P., to Olin Hunt Specialty Products Inc. Transfer roller 4,763,157, Cl. 355-3.0TR

Bullard, Edward M., to Mobil Oil Corporation. Ribbed draw tape for thermoplastic bag. 4,762,430, Cl. 383-75.000

Bundy, John E., to Sundstrand Corporation. Level detector. 4,763,054, Cl. 318-301.000.

Bunger, Claus M., to August Bunger Bob-Textilwerk KG. GmbH & Co. Weighting cord for curtains, drapes and the like. 4,761,945, Cl. 57-224.000.

Bunting, John A.; and Hanks, Kenneth H., to Precorp, Inc. Composite sintered twist drill. 4,762,445, Cl. 408-144.000.

Bunyan, James L., to Cajon Company. TFE-free sealant composition. 4,762,876, Cl. 524-310.000.

Burckhalter, Joseph H. Method of surgical intervention for removal of fluorescable glass fragments. 4,762,117, Cl. 128-1.00R.

Burdick, Robert C., to United Technologies Automotive, Inc. Modular push type latching and cross cancelling switches. 4,762,967, Cl. 200-50.00C.

Burgin, John I., Jr.; Kane, Michael J.; and Levie, Michael M., to Universal Instruments Corporation. Non-contact sensing and controlling of spacing between a depositing tip and each selected depositing location on a substrate. 4,762,578, Cl. 156-64.000.

Burls, Gary E.; and Parmentar, William F., to Parker-Hannifin Corporation. Inductor nozzle assembly for crop sprayers. 4,762,274, Cl. 239-3.000.

Burmeister, Fredrik K. Mattress construction for pneumatic mattress track system. 4,762,377, Cl. 305-34.000.

Burndy Corporation: *See—*
Anderson, James D., 4,761,879, Cl. 29-749.000

Burns, Nancy A.: *See—*
Ashford, Thomas J.; Burns, Nancy A.; Flagg, Richard L.; Iwaskiw, Christine T.; and Starbird, Roberta P., 4,763,277, Cl. 364-513.000

Burr-Brown Corporation: *See—*
Henry, Paul M., 4,763,028, Cl. 307-573.000.
Koen, Myron J.; Anderson, Thomas R.; and Halbert, Joel M., 4,763,107, Cl. 340-347.0AD.

Burvee, Richard W., to Minnesota Mining and Manufacturing Company. Electrical connector for electrically connecting through a fabric. 4,762,497, Cl. 439-37.000.

Busch, Lothar: *See—*
Andersen, Jurgen; and Busch, Lothar, 4,762,169, Cl. 165-25.000.

Buscher, John H.; and Hoffman, Michael E., to Eastman Machine Company. Method of making one part of a two part electrical connector. 4,761,878, Cl. 29-631.000.

Butera, Richard E. Self-actuating animal snare. 4,761,911, Cl. 43-87.000.

Butler, Bruce D.: *See—*
Leiman, Basil C.; Butler, Bruce D.; and Katz, Jeffrey, 4,762,125, Cl. 128-207.150.

Buttermore, William H.: *See—*
Brown, Robert C.; and Buttermore, William H., 4,762,090, Cl 122-4.00D.

Byerly, Kent A.; and Grant, Duane E., to International Business Machines Corporation. Compact optical scanner driven by a resonant galvanometer. 4,762,994, Cl. 250-236.000.

BYK-Chemie GmbH: *See—*
Haubennestel, Karlheinz; and Kramp, Peter, 4,762,752, Cl: 428-407.000.

Byrd, Kerry, to Universal Vectors Corporation. Work-saving system for preventing loss in a computer due to power interruption. 4,763,333, Cl. 371-66.000

Byrne, John V.; and O'Dwyer, Jeremiah B., to Kollmorgen Technologies Corporation. Power supply systems for reluctance motors. 4,763,056, Cl. 318-701.000

C. Rob. Hammerstein GmbH: *See—*
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000

Cadieux, Timothy P.: *See—*
McIntyre, Jeffrey A.; and Cadieux, Timothy P., 4,762,517, Cl 604-175.000

Cain, Wendy J.: *See—*
Keith, Paula M.; and Cain, Wendy J., 4,762,784, Cl. 435-70.000

Cairns, Bruce R.: *See—*
Keyser, Thomas; Cairns, Bruce R.; Anand, Kranti V.; Petro, William G.; and Barry, Michael L., 4,762,728, Cl. 427-38.000

Cajon Company: *See—*
Bunyan, James L., 4,762,876, Cl. 524-310.000.

Calabrigo, Giovanni B., to Icaro Olivieri & C. S.p.A. Ski boot adjustment device. 4,761,859, Cl. 24-68.0SK.

Calgene, Inc.: *See—*
Comai, Luca, 4,762,785, Cl. 435-172.300.

California Institute of Technology: *See—*
Kwong, Sze-Keung; Rakuljic, George A.; Leyva, Victor; and Yariv, Amnon, 4,762,394, Cl. 350-171.000

Calmac Manufacturing Corporation: *See—*
MacCracken, Calvin D., 4,761,970, Cl. 62-500.000.

Calvignac, Jean; and Secondo, Pierre, to International Business Machines Corporation. Dynamic bandwidth allocation mechanism between circuit slots and packet bit stream in a communication network. 4,763,321, Cl. 370-94.000.

Camaret, Timothy L.: *See—*
Harty, Richard B.; and Camaret, Timothy L., 4,762,662, Cl 376-220.000.

Camfield, David K.; Brashear, Daniel F.; and Craig, Marion N., to Roadmaster Corporation. Stationary exercise device. 4,762,317, Cl 272-73.000

Campbell, Richard D.; and Darrow, John O. G., to American Standard Inc. Electronic bipolar interface circuit. 4,763,017, Cl. 307-262.000

Canada, Her Majesty the Queen in Right of, as represented by the Minister of National Defence: *See—*
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., 4,762,735, Cl. 427-162.000

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Johnson, Arthur W., 4,763,064, Cl. 324-65.0CP

Canale, Leonard M.; Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Marun H., to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Terminal based adjunct call manager for a communication system. 4,763,353, Cl. 379-157.000

Canat, Jean N.: *See—*
Leclercq, Joseph; and Canat, Jean N., 4,762,661, Cl. 376-209.000

Canon Kabushiki Kaisha: *See—*
Arakawa, Junichi, 4,763,281, Cl. 364-523.000
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuchi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R.
Fukaya, Masaki; Komatsu, Toshiyuki; Shoji, Tatsumi; Kamio, Masaru; and Sekimura, Nobuyuki, 4,763,010, Cl. 250-578.000
Hattori, Jun, 4,762,403, Cl. 350-413.000
Hirano, Horofumi, 4,762,434, Cl. 400-236.200.
Honda, Mitsuru; Koike, Atsushi; Ogawa, Kyosuke; and Murai, Keiichi, 4,762,762, Cl. 430-65.000
Honjo, Takeshi, 4,763,160, Cl. 355-3.0SH.
Imai, Ryoichi; Satomura, Seiichiro; and Iwaya, Toshio, 4,762,985, Cl. 250-201.000
Kinoshita, Takao; Tojo, Akihiko; Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, 4,763,204, Cl. 358-335.000
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000
Sakai, Shunji, 4,763,196, Cl. 358-213.130.
Sakamoto, Masahiro, 4,763,201, Cl. 358-282.000
Sekiguchi, Kyoji; Matsumura, Isao; and Madate, Haruhisa, 4,762,410, Cl. 351-206.000.
Suda, Hirofumi; Kaneda, Naoya; and Kozuki, Susumu, 4,762,986, Cl. 250-201.000
Sumi, Akiyasu, 4,763,150, Cl. 354-271.100.
Suzuki, Yoshiyuki, 4,763,199, Cl. 358-280.000
Takei, Masahiro; Kozuki, Susumu; Masui, Toshiyuki; Hirasawa, Masahide; and Kashida, Motokazu, 4,763,293, Cl. 364-723.000
Tsukimoto, Takayuki; Okumura, Ichuro; Okuno, Takuo; and Izukawa, Kazuhiro, 4,763,148, Cl. 354-195.100
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, 4,763,167, Cl. 355-14.00R
Yagasaki, Toshiaki, 4,763,162, Cl. 355-14.0SH

Cantrell, Robert L. Waterproof display frame. 4,761,903, Cl. 40-159.000

Capece, Stephen L.: *See—*
Sedutto, Anthony J.; and Capece, Stephen L., 4,762,232, Cl 206-525.000

Caprathe, Bradley W.; Jaen, Juan C.; and Wise, Lawrence D., to Warner-Lambert Company. Hetero [f] fused carbocyclic pyridines as dopaminergic agents. 4,762,843, Cl. 514-293.000

Carl Zeiss-Stiftung: *See—*
Menke, Josef F., 4,763,000, Cl. 250-334.000

VOL 1093 ISS 2 AG 9 1988 UMI

Poxleitner, Martin; Wohlfrom, Josef; and Otomanski, Kurt, 4,763,001, Cl. 250-334.000

Carlin, John A. Force accumulating device for sporting protective gear. 4,763,275, Cl. 364-508.000.

Carlin, John A. Reaction time and force feedback system. 4,763,284, Cl. 364-550.000.

Carlo Erba Strumentazione S.p.A.: *See*—
Trestianu, Sorin; and Tosi, Bruno, 4,762,981, Cl. 219-400.000.

Carlyle, Martin P. Security barrier device. 4,762,439, Cl. 404-6.000.

Carr, Ronald H.: *See*—
Paul, Gary E.; Carr, Ronald H.; and Stern, Lee W., 4,762,673, Cl. 376-333.000.

Carroll, Ronnie D.; and Volkmann, Robert A., to Pfizer, Inc. 6,6-Dihalopenicillanic acid 1,1-dioxides. 4,762,920, Cl. 540-310.000.

Carson, Charles A.: *See*—
Buening, Gerald M.; and Carson, Charles A., 4,762,711, Cl. 424-93.000.

Carter, Guy T.: *See*—
Rinehart, Kenneth L., Jr.; Carter, Guy T.; and Cheng, Michael T., 4,762,949, Cl. 564-183.000.

Casio Computer Co., Ltd.: *See*—
Saitoh, Kouhei; Aoki, Hisashi; Endo, Kenzo; and Mawatari, Atsushi, 4,763,142, Cl. 346-160.000.

Casler, Richard J., Jr.: *See*—
Daggett, Kenneth E.; Onaga, Eimei M.; and Casler, Richard J., Jr., 4,763,055, Cl. 318-368.000.

Caspell, George J., to Tektronix, Inc. Triggered voltage controlled oscillator using fast recovery gate. 4,763,029, Cl. 307-600.000.

Castner, Raymond P.: *See*—
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000.

Caswell, Nathan S.; Garwin, Richard L.; and Levine, James L., to International Business Machines Corporation. Data processing input interface determining position of object. 4,762,990, Cl. 250-221.000.

Caswell, Robert L., to Rockwell International Corporation. Electronic countermeasure technique. 4,763,128, Cl. 342-14.000.

Caussignac, Jean-Marie; and Morel, Gerard, to Laboratoire Central Des Ponts Et Chaussees. Method of determining surface relief without making contact therewith. 4,762,419, Cl. 356-371.000.

Cavanna S.p.A.: *See*—
Francioni, Renzo, 4,761,937, Cl. 53-550.000.

Central Soya Company, Inc.: *See*—
Rothfuss, Diane; and Lantz, Roger A., 4,762,658, Cl. 264-122.000.

Centre National de la Recherche Scientifique (CNRS): *See*—
Geffard, Michel, 4,762,781, Cl. 435-7.000.

Centre National d'Etudes des Telecommunications and l'Establissement Public Telediffusion de France: *See*—
Coutrot, Francoise, 4,763,283, Cl. 364-526.000.

Cesti, Pietro; and Piccardi, Paolo, to Montedison S.p.A. Process for the biotechnological preparation of optically active alpha-arylalkanoic acids. 4,762,793, Cl. 435-280.000.

Cetus Corporation: *See*—
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000.

Chambers, Thomas V.; Deicke, Manfred; and Fleming, Suzanne C., to Hoechst Celanese Corporation. Composition comprising the addition product of a vinyl-sulfone dye and a secondary amine and process for dyeing a polyamide therewith. 4,762,524, Cl. 8-549.000.

Chamuel, Jacques R., to Charles Stark Draper Laboratory, Inc., The. Laser diode acoustic noise reduction. 4,763,335, Cl. 372-33.000

Chan, Hugo W. K.: *See*—
Cheung, Robin W.; and Chan, Hugo W. K., 4,762,805, Cl. 437-63.000

Chandra, Grish; and Zank, Gregg A., to Dow Corning Corporation Process for the preparation of preceramic metallopolysilanes and the polymers therefrom. 4,762,895, Cl. 525-474.000.

Chandra, Satish: *See*—
Flodin, Per; Magnusson, Olof; and Chandra, Satish, 4,762,867, Cl. 524-5.000

Chang, Raymond S.: *See*—
Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 4,762,923, Cl 540-455.000.

Chang, Shih-Chih; Schuck, William J.; and Gilmore, Richard F., to United States of America, Energy. Automatically closing swing gate closure assembly. 4,762,666, Cl. 376-264.000.

Chang, Yong-Hong. Foldaway table tennis support structure. 4,762,321, Cl. 273-30.000

Chantriaux, Eric; Grobelny, Henri; and Perret, Yves, to Aluminium Pechiney. Apparatus for decomposing sodium aluminate liquors without agitation to produce alumina. 4,762,684, Cl. 422-106.000

Chapman, Jerry L., Jr.; Ingolia, Thomas D.; Kaster, Kevin R.; Queener, Stephen W.; and Skatrud, Paul L., to Eli Lilly and Company. Vectors and conditions which allow genetic transformation of cephalosporium. 4,762,786, Cl. 435-172.300.

Chapman, Richard C.; and Hamerly, Michael E., to CompuCap, Inc Release mechanism for animal telemetry and data acquisition devices. 4,762,088, Cl. 119-106.000.

Charbonnier, Marc, to Labavia S.G.E. Low power electric speed reducer, particularly for a home-trainer. 4,763,033, Cl. 310-105.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Chamuel, Jacques R., 4,763,335, Cl. 372-33.000.

Chavka, Norman G.: *See*—
Johnson, Carl F.; and Chavka, Norman G., 4,762,740, Cl. 428-68.000

Chayka, Stanley J.: *See*—
Belmares-Sarabia, Armand; and Chayka, Stanley J., 4,763,186, Cl. 358-22.000.

Chemische Fabrik Budenheim Rudolf A. Oetker: *See*—
Beltz, Klaus; Frankenfeld, Klaus; Ruschke, Peter; and Eich, Gerhard, 4,762,692, Cl. 423-321.00R.

Chen, Fu-Lung: *See*—
Liu, Jonq-Min; Chen, Fu-Lung; and Chiou, Yeong-Cherng, 4,762,747, Cl. 428-343.000.

Chen, Isabelita Hilario: *See*—
Chen, Joseph, 4,762,029, Cl. 81-3.200.

Chen, Jean: *See*—
Blain, Jeffrey W.; and Chen, Jean, 4,762,204, Cl. 187-101.000.

Chen, Joseph, to Chen, Isabelita Hilario. Bottle closure opener. 4,762,029, Cl. 81-3.200.

Chen, Si-Fong. Information indicating glove. 4,761,835, Cl. 2-160.000.

Chen, Tsang J.; Upson, Donald A.; and Yacobucci, Paul D., to Eastman Kodak Company. Polyurethane elastomers comprising a charge control agent and shaped elements therefrom. 4,762,941, Cl. 558-44.000.

Chen, Wen-Sherng: *See*—
Soucie, William G.; Chen, Wen-Sherng; Witte, Vernon C.; Henry, George A.; and Drehkoff, W. Dennis, 4,762,726, Cl. 426-602.000.

Chen, Xiangzhen: *See*—
Wu, Shudong; Chen, Xiangzhen; and Tao, Xiou, 4,762,417, Cl. 356-351.000

Cheng, Michael T.: *See*—
Rinehart, Kenneth L., Jr.; Carter, Guy T.; and Cheng, Michael T., 4,762,949, Cl. 564-183.000.

Cheng, Wenche W.; Stoner, Donald R.; and Keller, Harold T., deceased (by Keller, Patricia A., Administratrix), to Westinghouse Electric Corp. Brazing sleeve having ceramic flux band and method for applying same. 4,762,674, Cl. 376-405.000.

Chesnut, Gary R.: *See*—
Emmons, Daniel; and Chesnut, Gary R., 4,762,626, Cl. 252-8.552.

Cheung, Robin W.; and Chan, Hugo W. K., to Advanced Micro Devices, Inc. Nitride-less process for VLSI circuit device isolation. 4,762,805, Cl. 437-63.000.

Chevron Research Company: *See*—
Graf, Peter E., 4,762,565, Cl. 106-281.00R.
Lopez, Jaime; Pasek, Eugene A.; and Cugini, Anthony V., 4,762,812, Cl. 502-26.000.

Chiba, Shunichi: *See*—
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.

Chieda, Robert A.: *See*—
Romeo, Robert; and Chieda, Robert A., 4,761,850, Cl. 15-323.000.

Chieli, Davide, to SCG-Thomson Microelectronics S.p.A. Feedback control device for switching off a transistor. 4,763,016, Cl. 307-254.000

Chien, Jo-Lung: *See*—
Liu, Xin X.; Zhao, Bing Y.; Riegel, Herbert; and Chien, Jo-Lung, 4,762,956, Cl. 585-259.000.

Childre, Casey J.: *See*—
Andreasen, James E.; Childre, Casey J.; and Peed, David B., 4,762,584, Cl. 156-245.000

Chiou, Yeong-Cherng: *See*—
Liu, Jonq-Min; Chen, Fu-Lung; and Chiou, Yeong-Cherng, 4,762,747, Cl. 428-343.000.

Cho, Michio: *See*—
Takamura, Masashi; Ushiro, Seimei; Kobayashi, Kiyotaka; Cho, Michio; and Nakada, Kimiaki, 4,763,145, Cl. 354-64.000.

Chochrek, Frank S. Shade brackets and assembly. 4,762,162, Cl. 160-323.100.

Choi, Hyeong In; and Choi, Keh-Kun, to Bang H. MO. Spark ignitor generated by capacitor discharge synchronized with alternate current power frequency. 4,763,045, Cl. 315-209.0SC.

Choi, Keh-Kun: *See*—
Choi, Hyeong In; and Choi, Keh-Kun, 4,763,045, Cl. 315-209.0SC.

Choksi, Pradip V.: *See*—
Luther, Ronald B.; and Choksi, Pradip V., 4,762,516, Cl. 604-164.000.

Chori Company, Ltd.: *See*—
Hamasaki, Masafumi, 4,762,113, Cl. 126-263.000.

Chow, Kirk K. Socket release assembly for ratchet drive. 4,762,032, Cl. 81-63.000

Chow, Kirk K., to National Hand Tool Corporation. Ratchet wrench with manual disassembly capability. 4,762,033, Cl. 81-63.200.

Chow, Kwong-Wai: *See*—
Lee, Shao-Wei; and Chow, Kwong-Wai, 4,762,511, Cl. 446-6.000.

Choy, Terence A.; Hartleben, Harold A.; and Serna, Jaime, to Mattel, Inc. Reconfigurable walking toy with gear mechanism. 4,762,513, Cl. 446-359.000.

Christenson, Ronald E.; and McNeilus, Garwin B., to McNeilus Truck and Manufacturing, Inc. Tag axle assembly for work vehicles. 4,762,421, Cl. 366-54.000.

Christian, Gregory A.; Gray, Patrick L.; and Gray, Brian S. Ice hole fishing plug. 4,761,909, Cl. 43-4.000.

Christy, Harold L. Threading apparatus for milling machines. 4,762,448, Cl. 409-233.000

Chromalloy Gas Turbine Corporation: *See*—
Vertz, Richard J.; and Mosavi, Reza K., 4,762,464, Cl. 416-97.00R.

Chrysler Motors Corporation: *See*—
Trzcinski, David J.; and North, Terry M., 4,763,062, Cl. 324-57.00N.

Chu, Daniel T.; Pernet, Andre G.; and Cooper, Curt S., to Abbott Laboratories. 7-(3-Substituted imino-1-pyrrolidinyl)-quinolone-3-carboxylic acids. 4,762,845, Cl. 514-312.000.

Chuang, Vincent: *See*—
Chuang, Wu-Chen; Huang, Chi-Shuang; and Chuang, Vincent, 4,762,153, Cl. 139-134.000.

Chuang, Wu-Chen; Huang, Chi-Shuang; and Chuang, Vincent. Weaving loom with magnetic shuttle. 4,762,153, Cl. 139-134.000.

Cianciullo, Guido. Automatic apparatus for strapping elongated superposed bodies. 4,762,154, Cl. 140-119.000.

Ciba-Geigy Corporation: *See*—
Balliello, Paolo; Bruttel, Beat; and Will, Hanspeter, 4,762,636, Cl. 252-95.000.
Eckhardt, Wolfgang, 4,762,826, Cl. 514-63.000.
Kvita, Vratislav; and Kaschig, Jurgen, 4,762,926, Cl. 544-276.000.
Lukas, Bohumir; Fischer, Franz X.; and Aeschlimann, Elfy, 4,762,715, Cl. 424-145.000.
Phillips, Emyr; O'Neil, Robert M.; and Wirth, Hermann O., 4,762,628, Cl. 252-51.50R.
Schneider, Wolfgang; and Amsler, Kurt, 4,762,585, Cl. 156-294.000.
Sturm, Elmar; Gallay, Jean J.; Kristinsson, Haukur; and Pissiotas, Georg, 4,762,830, Cl. 514-270.000.

CII-Honeywell Bull (Societe Anonyme): *See*—
Gueugnon, Catherine; Desserre, Jacques; and Bernstein, Pierre, 4,763,215, Cl. 360-119.000.

Cioletti, Olisse C., to United States of America, Energy. Material test machine for tension-compression tests at high temperature. 4,762,003, Cl. 73-825.000.

Cirkel, Hans-Jurgen; and Bette, Willi, to Kraftwerk Union Aktiengesellschaft. High-power pulse transformer for short high-voltage and/or high-current pulses. 4,763,093, Cl. 336-58.000.

Citizen Watch Co., Ltd.: *See*—
Fujikawa, Toyoharu, 4,762,429, Cl. 374-163.000

Claffey, Dan: *See*—
Morrell, Michael F., 4,761,890, Cl. 33-473.000

Clare, Leslie T.: *See*—
McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., 4,761,857, Cl. 19-98.000.

Clark, Arthur E.; Kabacoff, Lawrence T.; Savage, Howard T.; and Modzelewski, Christine, to United States of America, Navy. Magnetomechanical energy conversion. 4,763,030, Cl. 310-26.000.

Clark, Richard A.: *See*—
Richards, William D.; Blanco, Ernesto E.; Clark, Richard A.; and Meade, John C., 4,762,260, Cl. 227-19.000.

Clark, Robert E., to Westinghouse Electric Corp. 9 Chromium- 1 molybdenum steel alloy having superior high temperature properties and weldability, a method for preparing same and articles fabricated therefrom. 4,762,577, Cl. 148-325.000.

Clark, Robin: *See*—
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000.

Clausen, Edvin L., to Norsk Hydro A.S. Assembly of a closing baffle inside a tubular member. 4,762,152, Cl. 138-89.000.

Clecim: *See*—
Damiron, Pierre-Marie; Le Goupil, Jean-Luc; and Menage, Pascal, 4,762,599, Cl. 204-144.500.

Clemens, Philip M.: *See*—
Lansky, Marc A.; and Clemens, Philip M., 4,761,902, Cl. 40-155.000

Clynes, Manfred. Computerized system for imparting an expressive microstructure to successive notes in a musical score. 4,763,257, Cl. 364-419.000.

Cobern, Martin E.; Stone, Frederick A.; and Hamlin, Edmund M., to Teleco Oilfield Services Inc. Method for the detection and correction of magnetic interference in the surveying of boreholes. 4,761,889, Cl. 33-302.000

Cohen, Gary H.; and Eisenberg, Roselyn J., to University Patents, Inc. Materials and methods for herpes simplex virus vaccination. 4,762,708, Cl. 424-89.000.

Cohen, Marlene L.; Fuller, Ray W.; Garbrecht, William L.; and Whitten, Kathleen R., to Eli Lilly and Company. Selective method for blocking 5HT2 receptors. 4,762,842, Cl. 514-288.000.

Cohen, Robert E.: *See*—
Nocci, Roberto; Attalla, Giancarlo; Del Giudice, Luciano; Cohen, Robert E.; and Bertinotti, Floriana, 4,762,893, Cl. 525-323.000.

Cold Spring Harbor Laboratories: *See*—
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000.

Coleman, James P., to Monsanto Company. Polymeric alkylene diphosphonate anhydrides, their production and use. 4,762,649, Cl. 260-545.00P.

Coleman, Kevin G.: *See*—
Lipscher, Bernard N.; and Coleman, Kevin G., 4,763,351, Cl. 379-95.000.

Colgate-Palmolive Company: *See*—
Joshi, David P.; and Divone, Peter A., 4,762,642, Cl. 252-368.000.

Colin, Laurence. Thixotropic cement base paint composition and method. 4,762,563, Cl. 106-97.000.

Collins, James F., to General Motors Corporation. Caged nut with isolators. 4,762,451, Cl. 411-177.000

Collins, Michael J.: *See*—
Canale, Leonard M.; Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Martin H., 4,763,353, Cl. 379-157.000.

Colomb, Gilbert; Creusot, Jean P.; and Rougeot, Henri, to Thomson-CSF. Vacuum envelope for a radiation image intensifying tube and a process for manufacturing such an envelope. 4,763,042, Cl 313-544.000

Comai, Luca, to Calgene, Inc. Novel method and compositions for introducting alien DNA in vivo. 4,762,785, Cl. 435-172.300

Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J. C., to Rhom Laboratoires C.E.R.M. "Rl-Cerm", S.A. 3-alkoxy-2-(N-pyrrolidino)-N-pyrimidinyl- or -N-pyrazinolpropylamines useful for treatment of cardiovascular disorders. 4,762,834, Cl. 514-252.000

Commissariat A L'Energie Atomique: *See*—
Michon, Maurice; and Rigny, Paul, 4,762,402, Cl. 350-370.000.

Commonwealth Scientific and Industrial Research Organization: *See*—
Hodgkin, Jonathan H.; and Eibl, Robert, 4,762,556, Cl. 75-118.00R.

Compagnie General d'Electricite: *See*—
Belouet, Christian; and Mautref, Michel, 4,762,687, Cl. 422-253.000

Compagnie Generale D'Electricite: *See*—
Fevrier, Herve ; Robieux, Jean; and Tardy, Andre , 4,763,009, Cl. 250-458.100

CompuCap, Inc.: *See*—
Chapman, Richard C.; and Hamerly, Michael E., 4,762,088, Cl. 119-106.000

Comsat Telesystems, Inc.: *See*—
Wolfe, William H.; and Osborne, William P., 4,763,325, Cl. 370-104.000.

Conax Florida Corporation: *See*—
Miller, Francis M., 4,763,077, Cl. 324-439.000

Conoco Inc.: *See*—
Wybro, Pieter G.; and Leach, Colin P., 4,762,180, Cl. 166-350.000

Construction Products Research, Inc.: *See*—
Holub, Edward P.; and Grabowski, Richard J., 4,762,561, Cl. 106-89.000

Continental Group, Inc., The: *See*—
Windstrup, Robert F.; Bodnar, Steven A.; and Larsen, B. Pershing, 4,762,486, Cl. 425-541.000.

Contreras, Patricia: *See*—
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Mariena V., 4,762,846, Cl. 514-331.000.

Control Gaging, Inc.: *See*—
Brown, Bernard J.; and Ritter, Kerry L., 4,761,887, Cl. 33-148.00H

Cook, Henry F.; Sutherland, James F.; and Weisner, Ronald J., to Westinghouse Electric Corp. Self-testing monitoring circuit. 4,762,663, Cl. 376-259.000

Cooper, Curt S.: *See*—
Chu, Daniel T.; Pernet, Andre G.; and Cooper, Curt S., 4,762,845, Cl. 514-312.000

Cooper, Ian G.: *See*—
Woiceshyn, Mark; O'Connor, Terry J.; and Cooper, Ian G., 4,762,744, Cl. 428-219.000.

Cooper Industries: *See*—
Ford, Alan A., 4,762,159, Cl. 160-84.100.

Copp, Douglas M., to General Motors Corporation. Drum brake assembly and shoe hold-down and retraction spring therefor. 4,762,209, Cl. 188-328.000.

Cordon-Cardo, Carolos: *See*—
Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F.; Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, 4,762,800, Cl. 436-548.000

Corompt, Antoine; Lablanche, Jean; and Michalon, Fernand, to Bennes Marrel. Tipping device to control the tipping of a body mounted on a vehicle. 4,762,370, Cl. 298-19.00R.

Corporate Communications Consultants, Inc.: *See*—
Belmares-Sarabia, Armand; and Chayka, Stanley J., 4,763,186, Cl. 358-22.000

Cota, Albert O., to Trigg, Donald L. Fire or smoke detection and alarm system. 4,763,115, Cl. 340-628.000

Cote, Douglas J.: *See*—
Miller, Richard M.; and Cote, Douglas J., 4,762,976, Cl 219-119.000

Coughlan, Joel B.; Harvey, Howard W.; Upton, R. Glen; and White, John R., to Remote Technology Corporation. Remote manipulator. 4,762,455, Cl. 414-4.000

Coulson, Clifford B., to Profilex Limited. Loft hatch frames. 4,761,920, Cl. 52-19.000

Courvoisier, Guy; Arieh, Simon; and Marxer, Herbert, to Lange International S.A. Footwear fastener and ski boot equipped therewith. 4,761,898, Cl. 36-50.000

Coutrot, Francoise, to Centre National d'Etudes des Telecommunications and l'Establissement Public Telediffusion de France. Color transcoding process permitting the interconnection of two definition equipments of different colors and the corresponding transcoder. 4,763,283, Cl. 364-526.000

Cowen, David W., to Westinghouse Brake & Signal Co., Ltd. Apparatus for performing a fast Fourier transform. 4,763,290, Cl 364-604.000

Cox, Bobby E.; and Smith, Jay S., to Shell Offshore Inc. Modular bridge with torsion pipe expansion loops. 4,761,846, Cl. 14-3.000

VOL 1093 ISS 2 AG 9 1988 UMI

Cox, Inc.: *See*—
Cox, Randal A., 4,762,181, Cl. 172-196.000.
Cox, James A. Combined writing and signaling instrument. 4,763,355, Cl. 379-355.000.
Cox, Randal A., to Cox, Inc. Minimum tillage implement. 4,762,181, Cl. 172-196.000
CPC International Inc.: *See*—
Whitten, George H., 4,762,790, Cl. 435-240.450
Craig, Marion N.: *See*—
Camfield, David K.; Brashear, Daniel F.; and Craig, Marion N., 4,762,317, Cl. 272-73.000.
Cramm, Russell H.: *See*—
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,762,731, Cl. 427-40.000.
Creusot, Jean P.: *See*—
Colomb, Gilbert; Creusot, Jean P.; and Rougeot, Henri, 4,763,042, Cl. 313-544.000.
Criss, George H.: *See*—
Vayda, John T.; and Criss, George H., 4,762,811, Cl. 501-124.000.
Croce, Carlo P., to Warner-Lambert Company. Tear oriented package. 4,762,230, Cl. 206-469.000.
Crooks, Lawrence E.: *See*—
Arakawa, Mitsuaki; and Crooks, Lawrence E., 4,763,076, Cl. 324-322.000.
Crosby Valve & Gage Company: *See*—
Thompson, Leonard J., 4,761,999, Cl. 73-168.000.
Croucher, Melvin D.: *See*—
Ng, Dominic S.; Wong, Raymond W.; and Croucher, Melvin D., 4,762,764, Cl. 430-115.000.
Crow, John Q. Spool rewinder. 4,762,286, Cl. 242-47.000.
Crowley, William F., Jr., to General Hospital Corporation, The. Continuous delivery of luteinizing hormone releasing hormone compositions in combination with sex steroid delivery for use as a contraceptive. 4,762,717, Cl. 424-425.000.
Cruess, Michael W.: *See*—
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,763,244, Cl. 364-200.000.
Cselt-Centro Studi e Laboratori Telecomunicazioni S.P.A.: *See*—
Grego, Giorgio, 4,762,414, Cl. 356-349.000.
Cselt—Centro Studi e Laboratori Telecomunicazioni S.P.A.: *See*—
Ambrosio, Renato; and Bruno, Carlo M., 4,763,342, Cl. 377-43.000.
Cugini, Anthony V.: *See*—
Lopez, Jaime; Pasek, Eugene A.; and Cugini, Anthony V., 4,762,812, Cl. 502-26.000.
Cummings, Donald G.; and Rose, Kenneth G. Wheel lights. 4,763,230, Cl. 362-78.000
Cunningham, Julius H. Anti "click" electronic pickup device for stringed instruments. 4,762,045, Cl. 84-1.160.
Dadgar, Ahmad, to Great Lakes Chemical Corp. Viscosifiers for brines utilizing hydrophilic polymer-mineral oil systems. 4,762,625, Cl. 252-8.551.
Dage, Richard C.: *See*—
Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., 4,762,849, Cl. 514-369.000.
Daggett, Kenneth E.; Onaga, Eimei M.; and Casler, Richard J., Jr., to Westinghouse Electric Corp. Digital robot control having high performance servo control system. 4,763,055, Cl. 318-368.000.
Dai-ichi Kogyo Seiyaku Co. Ltd.: *See*—
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Adachi, Yoshitugu; and Hatakawa, Yoshio, 4,762,862, Cl. 522-3.000.
Daicel Chemical Industries, Ltd.: *See*—
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000.
Daichiku Co., Ltd.: *See*—
Oide, Kunimasa, 4,762,533, Cl. 51-298.000.
Daimler-Benz AG: *See*—
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000.
Daimler-Benz Aktiengesellschaft: *See*—
Leiber, Heinz, 4,763,262, Cl. 364-426.000.
Leiber, Heinz, 4,763,263, Cl. 364-426.000.
Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See*—
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000.
Dallaire, Michel: *See*—
Aspri, Roberto; Mauffette, Claude; and Dallaire, Michel, 4,762,046, Cl. 84-294.000.
Dalmo Victor, Inc.: *See*—
Pon, Chuck Y., 4,763,089, Cl. 333-202.000.
Damiron, Pierre-Marie; Le Goupil, Jean-Luc; and Menage, Pascal, to Clecim. Process and plant for an electrolytic treatment of a metal strip. 4,762,599, Cl. 204-144.500.
Damon, Brian W.; Ravitz, Cary P.; and Voss, Carl J., to International Business Machines Corporation. Two pass thermal printing. 4,763,137, Cl. 346-76.0PH.
Dana Corporation: *See*—
Flotow, Richard A.; and Sink, William H., 4,762,215, Cl. 192-107.00C
Graft, John T., 4,762,024, Cl. 74-715.000.
McBurnett, James R., 4,762,195, Cl. 180-133.000.
D'Anci, Alexander M. Vacuum column web loop position sensing system. 4,762,292, Cl. 242-184.000.
Daniel, Caecillie: *See*—
Mady, Raschad; Daniel, Caecillie; Bohnhorst, Detlev; Gottwald, Karl-Heinz; and Morlock, Roland, 4,762,572, Cl. 148-6.15Z.
Daniels, James W.; and Erickson, Carl W., to Boeing Company, The. Passenger entertainment system having direct coupled seat receivers. 4,763,360, Cl. 455-3.000.
Danley, Thomas J., to Intersonics Incorporated. Rotary sound transducer. 4,763,358, Cl. 381-156.000.
Dann, Jeffrey N.: *See*—
Kasenga, Anthony F.; and Dann, Jeffrey N., 4,762,639, Cl. 252-301.40R.
Danz, George E.; and Shuler, C. Calvin, to Kollmorgen Technologies Corporation. Control for improving induction transient response by excitation angle control. 4,763,057, Cl. 318-809.000
Darrow, John O. G.: *See*—
Campbell, Richard D.; and Darrow, John O. G., 4,763,017, Cl. 307-262.000
Dart Industries Inc.: *See*—
Newton, Brian L., 4,762,237, Cl. 211-115.000.
Dartnall, William J. Pump having reciprocating pipe and slidably supported hollow body. 4,762,474, Cl. 417-469.000.
Data Systems Technology Corp.: *See*—
Glover, Neal, 4,763,332, Cl. 371-37.000.
Datatape Incorporated: *See*—
Grant, Frederic F., 4,763,210, Cl. 360-84.000.
Datos Corporation: *See*—
Westbrook, James E.; and Suarez, Adolfo B., 4,763,318, Cl. 370-84.000.
Dausseing, Jean-Paul: *See*—
Fish, Aaron M.; Mayzels, Leon; Branover, Alexander; Miresmaili, Masoud; and Dausseing, Jean-Paul, 4,762,212, Cl. 192-24.000
Davenport, Arthur K.: *See*—
Blakely, Robert L.; Roebelen, George J., Jr.; and Davenport, Arthur K., 4,762,173, Cl. 165-170.000.
Davey, Richard G., to Owens-Illinois Glass Container Inc. Automated control of glass container manufacture. 4,762,544, Cl. 65-29.000.
Davidson, Arthur F.: *See*—
Yarnell, J. Jay; Pflaum, Craig A.; Davidson, Arthur F.; and Kuhn, Harry J., 4,762,698, Cl. 423-341.000.
Davis, Billy R. Permanent spike member for wooden objects. 4,762,454, Cl. 411-446.000.
Davis, Craig R.: *See*—
von Alven, Raymond D.; and Davis, Craig R., 4,762,743, Cl. 428-156.000.
Davis, Edward A. Snap-off plug valve. 4,762,140, Cl. 137-71.000.
Davis, Karl C.: *See*—
Timmerman, Craig L.; Oma, Kenton H.; and Davis, Karl C., 4,762,991, Cl. 250-227.000.
Davis, Robert E.: *See*—
Rosser, William D.; Kuo, Samuel C.; Bird, Gustavo E.; and Davis, Robert E., 4,763,131, Cl. 343-792.500.
Davis, Robert J.: *See*—
Newman, Frank J.; Knapp, Robert K.; and Davis, Robert J., 4,763,125, Cl. 340-958.000.
Davis, Stephen C.: *See*—
Krulik, Gerald; Davis, Stephen C.; and Davison, John B., 4,762,601, Cl. 204-182.400.
Davis, Stephen M.: *See*—
Mauldin, Charles H.; Davis, Stephen M.; and Arcuri, Kym B., 4,762,959, Cl. 585-640.000.
Davison, John B.: *See*—
Krulik, Gerald; Davis, Stephen C.; and Davison, John B., 4,762,601, Cl. 204-182.400.
Day, Benjamin W., Jr.; Gillon, Alexander C.; and LeConte, Raoul A., to American Telephone and Telegraph Company, AT&T Information Systems, Inc. Touch screen form entry system. 4,763,356, Cl. 379-368.000.
Day, John A.; and Messenger, Roger M., to Healey Mouldings Limited. Article with a handle being retained by a cup shaped retaining element. 4,761,851, Cl. 16-110.00A.
De La Rue Giori S.A.: *See*—
Moore, John, 4,762,064, Cl. 101-150.000.
Deal, Philip A., to R. J. Reynolds Tobacco Company. Universal tax stamping assembly. 4,762,587, Cl. 156-542.000.
De Bernardini, Carlo. Device for the transformation of a weapon intended to shoot bullets into a laser shot training weapon. 4,761,907, Cl. 42-106.000.
DeCaro, Charles J., to Textron, Inc. Helical coil fastener. 4,762,453, Cl. 411-383.000.
Dech, James A.; Hearn, David D.; and Schuh, Frank J., to Atlantic Richfield Company. Medium curvature directional drilling method. 4,762,186, Cl. 175-61.000.
DeChellis, Richard C.: *See*—
Ginzburg, Vladimir B.; DeChellis, Richard C.; and Ellis, Robert H., 4,761,983, Cl. 72-148.000.
Deckard, Michael: *See*—
Barbaric, Zoran L.; Deckard, Michael; and Nelson, Robert S., 4,763,345, Cl. 378-146.000.
de Concini, Roberto, to Weber S.r.l. Non-linear position transducer for detecting the position of a valve controlling the rate of flow of air inducted to the cylinders of a heat engine. 4,762,108, Cl. 123-488.000.
Dedo, Richard G. Heel padding. 4,762,123, Cl. 128-153.000.
Deering, Michael F.; and Hunt, Neil, to Schlumberger Systems & Services, Inc. System for simulating electronic digital circuits. 4,763,288, Cl. 364-578.000.

de Framond, Remy: *See*—
Senillou, Claude; de Framond, Remy; Garnier, Marcel; Yavari, Ali R.; and Joud, Jean-Charles, 4,762,653, Cl. 264-22.000.
Degussa Aktiengesellschaft: *See*—
Prescher, Guenter; Ritter, Gebhard; and Sauerstein, Holger, 4,762,953, Cl. 568-771.000.
Siegmeier, Rainer; Prescher, Gunther; and Maurer, Helmut, 4,762,954, Cl. 568-867.000.
Deicke, Manfred: *See*—
Chambers, Thomas V.; Deicke, Manfred; and Fleming, Suzanne C., 4,762,524, Cl. 8-549.000.
de Jonckheere, Raphael, to Boussac Saint Freres B.S.F. Continuous process for the manufacture of disposable diapers. 4,762,582, Cl. 156-164.000
Delatorre, Leroy C.; Wilson, Homer M.; and Pingenot, E. Rene, to Panex Corporation. Memory processing systems for well tools. 4,763,259, Cl. 364-422.000.
Deleganes, Sam M.: *See*—
Blattner, John D.; Moser, David B.; and Deleganes, Sam M., 4,763,117, Cl. 340-712.000.
Del Giudice, Luciano: *See*—
Nocci, Roberto; Attalla, Giancarlo; Del Giudice, Luciano; Cohen, Robert E.; and Bertinotti, Floriana, 4,762,893, Cl. 525-323.000.
DeLong, Teresa: *See*—
Goel, Anil B.; Holehouse, Joseph G.; Jones, Jeffrey P.; and DeLong, Teresa, 4,762,864, Cl. 523-428.000
Delprato, Ivano, to Minnesota Mining and Manufacturing Company. Cyan dye-forming couplers. 4,762,925, Cl. 544-105.000.
Delsey Luggage Company: *See*—
Krenzel, Ronald L., 4,762,211, Cl. 190-122.000.
DeMar, Lawrence E., to Williams Electronics Games, Inc. System to detect and bypass inoperative game features in an amusement device 4,763,256, Cl. 364-410.000.
DeMartino, Ronald N.: *See*—
Leslie, Thomas M.; Yoon, Hyun-Nam; DeMartino, Ronald N.; and Stamatoff, James B., 4,762,912, Cl. 528-503.000
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, to Bayer Aktiengesellschaft. Process for the work-up of the mother liquors from the preparation of benzothiazole compounds. 4,762,931, Cl. 548-166.000.
Dennis, Patrick W.: *See*—
Fontaine, John M.; and Dennis, Patrick W., 4,763,327, Cl. 370-112.000.
Denny, Clifford M.; Findlay, Hugh T.; Popyach, Stephen A.; and Tao, Deh C., to International Business Machines Corporation. Modified thermal printing using a heated roller and with lift-off correction. 4,762,431, Cl. 400-120.000.
Denter, Ulrich; Himmighofen, Dieter; and Schulein, Rolf G., to Leifheit AG. Refillable dispenser for rolls of paper or foil. 4,762,042, Cl. 83-374.000.
Denton, Gary G., to General Motors Corporation. Vehicle headrest 4,762,367, Cl. 297-409.000.
Denton, Sven T.; and Atkinson, Alan, to T & N Materials Research Limited. Vermiculite moulding compositions and articles made therefrom. 4,762,641, Cl. 252-378.00R.
De Pasquale, Adrian: *See*—
McNulty, Robert A., 4,762,089, Cl. 119-109.000.
de Roos, Jan: *See*—
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, 4,762,931, Cl. 548-166.000.
D'Errico, John J.: *See*—
Sharp, Kenneth G.; and D'Errico, John J., 4,762,808, Cl 437-101.000.
Descombes, Arthur, to EM Microelectronic-Marin SA. Programming arrangement for a non-volatile memory for a timepiece. 4,763,309, Cl. 368-201.000.
De Smedt, Willy P.: *See*—
Vermeulen, Leon L.; Vervloet, Ludovicus H.; De Smedt, Willy P.; and Kok, Piet, 4,762,759, Cl. 430-1.000.
Desserre, Jacques: *See*—
Gueugnon, Catherine; Desserre, Jacques; and Bernstein, Pierre, 4,763,215, Cl. 360-119.000.
Detroit Stoker Company: *See*—
Giaier, Thomas A.; Johnson, Neil H.; Knox, Harold L.; Reschly, David C.; and Spurlock, Kim E., 4,762,073, Cl. 110-101.0CD
Deutsch, Marshall E., to Marshall Diagnostics, Inc. Device and method for determining a characteristic of a fluid sample. 4,762,798, Cl 436-67.000.
Deutsche Forschungs-Und Versuchsanstalt Fur Luft-Und Raumfahrt E.V.: *See*—
Ruppert, Udo, 4,763,050, Cl. 318-254.000
Ruppert, Udo, 4,763,051, Cl. 318-254.000.
Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH: *See*—
Schroder, Gunter; and Eichhhorn, Rudolf, 4,762,266, Cl 228-103.000.
Deutsche ITT Industries GmbH: *See*—
Uhlenhoff, Arnold, 4,763,297, Cl. 364-900.000.
DeVilbiss Company, The: *See*—
Peter, Dirk A.; and Drury, Timothy H., 4,762,013, Cl. 74-104.000.
DeVilbiss, Warren C., to RCA Licensing Corporation. Automatic determination of time base in electronic time-keeping apparatus. 4,763,193, Cl. 358-149.000.
Dewing, Kenneth M., to Dewtek Corporation. Lightweight parking curb. 4,762,438, Cl. 404-6.000.
Dewtek Corporation: *See*—
Dewing, Kenneth M., 4,762,438, Cl. 404-6.000
Dexon, Inc.: *See*—
Molinaro, James S., 4,762,353, Cl. 294-1.100.
De Young, Jon: *See*—
Walters, Richard D.; De Young, Jon; Rasmussen, Clarence M.; and Almares, Louie S., 4,762,219, Cl. 198-358.000
Dhein, Rolf; Muller, Hanns P.; Meier, Helmut-Martin; and Gipp, Roland, to Bayer Aktiengesellschaft. Process for the preparation of polymeric networks having superstructures, corresponding polymeric networks and the use thereof. 4,762,901, Cl. 528-73.000
Diamants Applications: *See*—
Magnien, Emile G.; and Plantureux, Alain M., 4,761,865, Cl. 29-10.000
Dickakian, Ghazi B., to Exxon Chemical Patents Inc. Method for determining the fouling tendency of hydrocarbons. 4,762,797, Cl 436-60.000
Dickinson, Eric M.: *See*—
Didchenko, Rostislav; and Dickinson, Eric M., 4,762,608, Cl 208-89.000
Dickneite, Gerhard: *See*—
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000
Didchenko, Rostislav; and Dickinson, Eric M., to Union Carbide Corporation. Upgrading of pyrolysis tar. 4,762,608, Cl. 208-89.000
Didier-Werke AG: *See*—
Frey, Alfred; Grimm, Daniel; and Kainer, Hartmut, 4,762,689, Cl 422-310.000
Diehl GmbH & Co.: *See*—
Rudenauer, Werner; Muller, Fritz; Kufner, Dieter; and Furtmayr, Joachim, 4,762,066, Cl. 102-226.000.
Diesel Kiki Co., Ltd.: *See*—
Takeuchi, Kunihiro, 4,763,025, Cl. 307-526.000
Diesel Kiki Kabushiki Kaisha: *See*—
Sumikawa, Seiji; Furuya, Yoichiro; and Sutoh, Shinji, 4,761,967, Cl. 62-201.000
Digital Equipment Corporation: *See*—
Bomba, Frank C.; Schumann, Reinhard; Jenkins, Stephen R.; and Binder, Paul, 4,763,249, Cl. 364-200.000.
Dinarello, Charles A.: *See*—
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M., 4,762,914, Cl. 530-351.000.
Director General of Agency of Industrial Science and Technology: *See*—
Miyazaki, Akira; Bansho, Kenji; Kimura, Akira; and Tao, Hiroaki, 4,762,691, Cl. 423-24.000
Diversified Electronics, Inc.: *See*—
Voss, Earl, 4,763,240, Cl. 363-161.000
Divnick International, Inc.: *See*—
Divnick, Stevan M., 4,762,512, Cl. 446-8.000.
Divnick, Stevan M., to Divnick International, Inc. Coin collector. 4,762,512, Cl. 446-8.000
Divone, Peter A.: *See*—
Joshi, David P.; and Divone, Peter A., 4,762,642, Cl. 252-368.000
Dobarro, Juan P.: *See*—
Rodriguez, Manuel V.; Barrio, Ramon M.; and Dobarro, Juan P., 4,762,137, Cl. 131-299.000
Dobashi, Takao: *See*—
Anbe, Yoshiharu; Mineura, Toshimi; Kai, Hajime; Kodama, Sumiyasu; and Dobashi, Takao, 4,763,273, Cl. 364-472.000.
Dobay, La / szlo : *See*—
Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, 4,762,944, Cl. 560-051.000
Doble, Gordon S., to Airfoil Textron Inc. Fabrication method for long-length or large-sized dense filamentary monotapes. 4,762,268, Cl. 228-186.000
Dobson, Thomas R., to Tricorn, Inc. Water management system. 4,762,167, Cl. 165-11.100.
Dr. Hans Heubach Gmbh & Co. KG: *See*—
Gawol, Manfred; and Adrian, Gerhard, 4,762,523, Cl. 8-524.000.
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Mezger, Hans; Konneker, Reinhard; and Esch, Hans-Joachim, 4,762,095, Cl. 123-90.110
Doddington, George R.: *See*—
Rajasekaran, Periagaram K.; and Doddington, George R., 4,763,278, Cl. 364-513.500
Dodge, Allen L.: *See*—
Maloney, William F.; Hall, Deborah K.; Parkinson, Dean B.; Bergren, Orton D.; and Dodge, Allen L., 4,762,496, Cl. 434-271.000
Dola, Frank P.; and Feldman, Steven, to AMP Incorporated. Impedance matched electrical connector. 4,762,500, Cl. 439-79.000
Dolgin, Benjamin P., to Allied-Signal Inc. Method of preparing a bulk amorphous metal article. 4,762,677, Cl. 419-11.000.
Dolgin, Benjamin P., to Allied-Signal Inc. Method of preparing a bulk amorphous metal article. 4,762,678, Cl. 419-28.000.
Dollman, David Y.; and Blaszczyk, Stanley L., to Amchem Products, Inc. Alkaline cleaner for aluminum. 4,762,638, Cl. 252-135.000
Domlatil, Miroslav: *See*—
Schnell, Karl; and Domlatil, Miroslav, 4,761,854, Cl. 17-1.00R.
Doraivelu, Sokka M.: *See*—
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.;

VOL 1093 ISS 2 AG 9 1988 UMI

Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000.

Dorothy Margaret Levine: *See*—
Levine, Sidney S., 4,762,193, Cl. 180-65.100.

Doshi, Pratap K., to Westinghouse Electric Corp. Nuclear reactor core containing fuel assemblies positioned adjacent core baffle structure having annular anti-vibration grids. 4,762,669, Cl. 376-442.000.

Dovo Stahlwaren Bracht GmbH & Co KG: *See*—
Mertens, Wolfgang, 4,761,883, Cl. 30-239.000.

Dow Chemical Company, The: *See*—
Hucul, Dennis A.; and Stevens, Rex R., 4,762,858, Cl. 518-714.000.
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,762,731, Cl. 427-40.000.
Lipp, Charles W., 4,762,532, Cl. 48-197.00R.
Martinez, Robert G.; Treybig, Duane S.; and Glass, Terry W., 4,762,627, Cl. 252-8.555.
Park, Chung P., 4,762,860, Cl. 521-88.000.
Rogers, Charles E.; and Shen, Zhong-He, 4,762,657, Cl. 264-83.000.
Strait, Chad A.; Lancaster, Gerald M.; and Tabor, Ricky L., 4,762,890, Cl. 525-257.000.
Walters, Marlin E., 4,762,909, Cl. 528-220.000.

Dow Corning Corp.: *See*—
Abrutyn, Eric S., 4,762,703, Cl. 424-61.000.
Chandra, Grish; and Zank, Gregg A., 4,762,895, Cl. 525-474.000.
Halm, Roland L.; Pierce, Andrew B.; and Wilding, Oliver K., Jr., 4,762,940, Cl. 556-472.000.
Schiefer, Harry M., 4,762,640, Cl. 252-321.000.
Sharp, Kenneth G.; and D'Errico, John J., 4,762,808, Cl. 437-101.000.

Dowdy, Jack A.: *See*—
Levosky, John M.; Dowdy, Jack A.; and Herrera, Carlos, 4,762,358, Cl. 296-97.00G.

Doyle, Brent H.: *See*—
Hoelzel, Roy J.; and Doyle, Brent H., 4,763,298, Cl. 365-51.000.

Dragoco Gerberding & Co. GmbH: *See*—
Brunke, Ernst-Joachim, 4,762,819, Cl. 512-14.000.

Drake, Allan R.; Finn, Roger C.; and Bennett, Reginald B. P., to Northern Telecom Limited. Process for forming silver conductors on a substrate. 4,762,732, Cl. 427-54.100.

Drehkoff, W. Dennis: *See*—
Soucie, William G.; Chen, Wen-Sherng; Witte, Vernon C.; Henry, George A.; and Drehkoff, W. Dennis, 4,762,726, Cl. 426-602.000.

Dresser Industries, Inc.: *See*—
Besic, Dragan; and Smith, Wilbur C., 4,762,051, Cl. 92-165.00R.
Vayda, John T.; and Criss, George H., 4,762,811, Cl. 501-124.000.

Drew, Peter R. Electrolytic metal recovery. 4,762,598, Cl. 204-109.000.

Drewitz, Hans J.: *See*—
Hagin, Faust; and Drewitz, Hans J., 4,762,191, Cl. 180-14.200.

Drexler, Jerome: *See*—
Bouldin, Eric W.; and Drexler, Jerome, 4,762,770, Cl. 430-273.000.

Drexler, Michael: *See*—
Wiedemann, Wolfgang; Drexler, Michael; and Fuerderer, Juergen, 4,762,760, Cl. 430-59.000.

Drexler Technology Corporation: *See*—
Bouldin, Eric W.; and Drexler, Jerome, 4,762,770, Cl. 430-273.000.

DRG (UK) Limited: *See*—
Simpson, Brian K., 4,762,185, Cl. 175-5.000.

Drori, Mordeki. Semi-automatic fluid filter. 4,762,615, Cl. 210-333.010.

Drury, Timothy H.: *See*—
Peter, Dirk A.; and Drury, Timothy H., 4,762,013, Cl. 74-104.000.

Duff, James M.; and Branston, Randolph E., to Xerox Corporation. Processes for thermal transfer ink donor films. 4,762,734, Cl. 427-146.000.

Duguay, Michel A.; and Weiner, Joseph S., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Apparatus comprising harmonic generation means. 4,763,019, Cl. 307-427.000.

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Dummler, Ulrich, to GEA Wiegand GmbH. Method for the heating of a fluid and apparatus for carrying out the method. 4,762,166, Cl 165-1.000.

Dunn, John J. Bicycle equipment carrier apparatus. 4,762,255, Cl. 224-32.00R.

Du Pont de Nemours, E. I., and Company: *See*—
Bollin, Ernest, Jr.; and Fletcher, Mark G., 4,762,857, Cl. 514-777.000.
Hartzell, Stephen L., 4,762,550, Cl. 71-94.000.
Kauer, James C., 4,762,881, Cl. 525-54.110.
King, William J., 4,762,346, Cl. 292-38.000.
Romanauskas, William A., 4,762,683, Cl. 422-72.000.
Tanaka, Toshiyasu; and Ariga, Sadakazu, 4,762,388, Cl. 350-96.200.

Durckheimer, Walter: *See*—
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000.

Durkee Industrial Foods Corp.: *See*—
Player, Kenneth W.; and Wilson, Lonny L., 4,762,725, Cl. 426-582.000.

DVG Deutsche Verpackungsmittel GmbH: *See*—
Martin, Roland, 4,762,222, Cl. 206-3.000.

Dyer, Robert L.; and Pogue, Lonnie C. Snail trap. 4,761,912, Cl. 43-121.000.

Dynamic Hydraulic Systems, Inc.: *See*—
Rosman, Alan H., 4,761,953, Cl. 60-414.000.
Rosman, Alan H., 4,761,954, Cl. 60-414.000.

Dynamotion Corporation: *See*—
Kosmowski, Wojciech B., 4,761,876, Cl. 29-568.000.

Dynapert-HTC Corporation: *See*—
Peck, Douglas J., 4,762,264, Cl. 228-37.000.

E. H. Wachs Company, The: *See*—
Olson, Peter K., 4,762,038, Cl. 82-4.00C.

E. R. Squibb & Sons, Inc.: *See*—
Keyes, Denis E.; and Aronoff, Marvin S., 4,762,738, Cl. 428-36.000.

Eastman Christensen Company: *See*—
Engelder, Paul D., 4,763,258, Cl. 364-422.000.

Eastman Kodak Company: *See*—
Blackman, Robert J., 4,763,152, Cl. 354-321.000.
Chen, Tsang J.; Upson, Donald A.; and Yacobucci, Paul D., 4,762,941, Cl. 558-44.000.
Forest, Paul H.; and Murray, Thomas J., 4,763,161, Cl. 355-14.0SH.
Hickok, William K., 4,763,202, Cl. 358-319.000.
Lubinsky, Anthony R.; Owen, James F.; and Korn, Donald M., 4,762,998, Cl. 250-327.200.
Niedospial, John J.; and Muller, Bruce R., 4,763,346, Cl. 378-187.000.
Piatt, Michael J., 4,763,138, Cl. 346-134.000.

Eastman Machine Company: *See*—
Buscher, John H.; and Hoffman, Michael E., 4,761,878, Cl. 29-631.000.

Eaton Corporation: *See*—
Kamm, Lawrence J.; Meyer, Lawrence L.; and Walton, Erlen B., 4,762,096, Cl. 123-90.160.
Pusatcioglu, Selami Y.; and Genise, Thomas A., 4,762,216, Cl. 192-107.00M.
Uppal, Sohan L., 4,762,479, Cl. 418-61.300.
Vollmer, George W.; and Sabroff, Alvin M., 4,761,867, Cl. 29-159.200.

Eberhardt, H. Alfred, to Hale Fire Pump Company. Drive arrangements for comminutor-pump assembly. 4,762,281, Cl. 241-46.060.

Eberhardt, John D.; Hovde, Peter L.; Koerber, John M.; Neary, Robert J.; and Peltier, Robert V., to Solar Turbines Incorporated. Indirectly heated gas turbine engine. 4,761,957, Cl. 60-650.000.

Echolag Co., Ltd.: *See*—
Lii, Shih M., 4,761,974, Cl. 70-4.000.

Echte, Adolf: *See*—
Hambrecht, Juergen; Illers, Karl H.; Echte, Adolf; and Swoboda, Johann, 4,762,874, Cl. 524-151.000.

Eckels, Robert E. Holder for rolled products and the like. 4,762,288, Cl. 242-55.200.

Eckhardt, Wolfgang, to Ciba-Geigy Corporation. Microbicides. 4,762,826, Cl. 514-63.000.

Econ Group Limited: *See*—
Lupton, William G., 4,762,371, Cl. 299-39.000.

Edson, Sydney: *See*—
Howard, Fred; and Edson, Sydney, 4,762,235, Cl. 211-59.300.

Edwards, Allen P., to Hewlett-Packard Company. Low phase noise RF synthesizer. 4,763,083, Cl. 331-2.000.

Edwards, Peter J.; Jeffryes, Carol A.; and Swain, Fiona M., to Beecham Group p.l.c. Method of treating acne. 4,762,847, Cl. 514-336.000.

Edwards, Philip N.: *See*—
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,762,932, Cl. 548-198.000.

Egawa, Jiro; Nagasawa, Moriya; and Machida, Hironobu, to Kabushiki Kaisha Toshiba. Image forming apparatus. 4,763,241, Cl. 346-154.000.

Eibl, Robert. *See*—
Hodgkin, Jonathan H.; and Eibl, Robert, 4,762,556, Cl. 75-118.00R.

Eich, Gerhard: *See*—
Beltz, Klaus; Frankenfeld, Klaus; Ruschke, Peter; and Eich, Gerhard, 4,762,692, Cl. 423-321.00R.

Eichhhorn, Rudolf: *See*—
Schroder, Gunter; and Eichhhorn, Rudolf, 4,762,266, Cl. 228-103.000.

Eichholz, Willi. Input apparatus for design work on an image-bearing screen. 4,763,116, Cl. 340-710.000.

Eidsmore, Paul G. Fluid flow indicator. 4,763,114, Cl. 340-606.000.

Eilerman, John F.: *See*—
Knecht, Allen F.; Eilerman, John F.; Smith, Stanley E.; and Smith, Jack E., 4,761,917, Cl. 49-477.000.

Eisai Co., Ltd.: *See*—
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000.

Eisenberg, Roselyn J.: *See*—
Cohen, Gary H.; and Eisenberg, Roselyn J., 4,762,708, Cl. 424-89.000

Eitan, Boaz: *See*—
Krieger, Gadi; and Eitan, Boaz, 4,763,184, Cl. 357-23.130.

Eivers, Donald J.: *See*—
Kovacs, Eddie T.; and Eivers, Donald J., 4,763,124, Cl. 340-825.800.

Eizenhofer, Alfons, to U.S. Philips Corp. Digital radio transmission system with variable duration of the time slots in the time-division multiplex frame. 4,763,322, Cl. 370-95.000.

Elastic-Berger OHG: *See*—
Berger, Johann; and Berger, Josef, 4,761,864, Cl. 28-218.000.

Elcon Instruments SRL.: *See*—
Landrini, Glisente, 4,763,069, Cl. 324-158.00D.

Electric Fuels Corporation: *See*—
Beshore, David G.; and Giampa, Vincent M., 4,762,527, Cl. 44-51.000

Electric Power Research Institute, Inc.: *See*—
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., 4,762,265, Cl. 228-50.000.

Eli Lilly and Company: *See*—
Chapman, Jerry L., Jr.; Ingolia, Thomas D.; Kaster, Kevin R.; Queener, Stephen W.; and Skatrud, Paul L., 4,762,786, Cl 435-172.300.
Cohen, Marlene L.; Fuller, Ray W.; Garbrecht, William L.; and Whitten, Kathleen R., 4,762,842, Cl. 514-288.000
Hirsch, Kenneth S., 4,762,836, Cl. 514-256.000.

Ellis, Robert H.: *See*—
Ginzburg, Vladimir B.; DeChellis, Richard C.; and Ellis, Robert H., 4,761,983, Cl. 72-148.000.

Elmore, David: *See*—
Wilson, David J.; and Elmore, David, 4,761,886, Cl. 33-126.70R.

EM Microelectronic-Marin SA: *See*—
Descombes, Arthur, 4,763,309, Cl. 368-201.000.

Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., to International Business Machines Corporation. Branch prediction mechanism in which a branch history table is updated using an operand sensitive branch table. 4,763,245, Cl. 364-200.000.

Emmons, Daniel; and Chesnut, Gary R., to Nalco Chemical Company Hydroxyethylacrylate/acrylate copolymers as zinc sulfide scale inhibitors. 4,762,626, Cl. 252-8.552.

Emrich, Robert K., to ESCO Corporation. Excavating tooth assembly. 4,761,900, Cl. 37-142.00R.

Emura, Masaharu; and Kobayashi, Takehiro, to Ryobi, Ltd. Fishline holder for a fishing reel. 4,762,290, Cl. 242-84.10K.

Enard, Alain: *See*—
Lefevre, Herve ; and Enard, Alain, 4,762,416, Cl. 356-350.000.

Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, to Kabushiki Kaisha Toshiba. Methods for preparing high-purity molybdenum or tungsten powder and high-purity oxides powder of the same. 4,762,695, Cl 423-54.000.

Endo, Itaru: *See*—
Inoue, Yasuo; and Endo, Itaru, 4,762,405, Cl. 350-507.000.

Endo, Kenzo: *See*—
Saitoh, Kouhei; Aoki, Hisashi; Endo, Kenzo; and Mawatari, Atsushi, 4,763,142, Cl. 346-160.000

Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki; and Ohsaki, Hiromi, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a sintered body of silicon carbide. 4,762,810, Cl. 501-88.000.

Endres, Dan D.: *See*—
Roessler, Thomas H.; Endres, Dan D.; Enloe, Kenneth M.; Huntoon, Andrew E.; and Lippert, Mary E., 4,762,521, Cl. 604-38.0SA.

Enertec: *See*—
Galula, William; and Ridgers, Timothy J., 4,763,103, Cl. 340-310.00R.

Engdahl, Holger, to Enso-Gutzeit Oy. Causticizing process. 4,762,590, Cl. 162-30.110.

Engelder, Paul D., to Eastman Christensen Company. Method and apparatus for trelemetry while drilling by changing drill string rotation angle or speed. 4,763,258, Cl. 364-422.000

Engels, Hans-Wilhelm: *See*—
Graves, Daniel F.; and Engels, Hans-Wilhelm, 4,762,870, Cl. 524-93.000

Enke, Knut; and Zultzke, Walter, to Leybold-Heraeus GmbH. Method for producing transparent protective coatings from silicon compounds. 4,762,730, Cl. 427-40.000.

Enloe, Kenneth M.: *See*—
Roessler, Thomas H.; Endres, Dan D.; Enloe, Kenneth M.; Huntoon, Andrew E.; and Lippert, Mary E., 4,762,521, Cl. 604-38.0SA.

Enomoto, Koji, to Honda Giken Kogyo Kabushiki Kaisha. Synthetic resin bumper assembly. 4,762,352, Cl. 293-120.000.

Ensinger, Helmut: *See*—
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.

Enso-Gutzeit Oy: *See*—
Engdahl, Holger, 4,762,590, Cl. 162-30.110.

Entenmann, Robert: *See*—
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Eppig, Christopher P.: *See*—
Paspek, Stephen C.; and Eppig, Christopher P., 4,762,609, Cl 208-187.000

Eppley, William J.; Hawkins, Warren E.; and Schisselbauer, Paul F., to Honeywell Inc. Fluid control apparatus. 4,762,757, Cl. 429-114.000.

Erdman, David M., to General Electric Company. Control system, electronically commutated motor system, blower apparatus and methods. 4,763,347, Cl. 318-254.000

Erickson, Carl W.: *See*—
Daniels, James W.; and Erickson, Carl W., 4,763,360, Cl. 455-3.000.

Erler, Klaus: *See*—
Hubner-Parajsz, Christa; Schetters, Hartmut; Lenz, Helmut; and Erler, Klaus, 4,762,783, Cl. 435-7.000.

Ernst, Horst-Manfred: *See*—
Olschewski, Armin; Brandenstein, Manfred; Ernst, Horst-Manfred; Stolz, Robert; and Neder, Gunter, 4,762,207, Cl. 188-196.00D

Esch, Hans-Joachim: *See*—
Mezger, Hans; Konneker, Reinhard; and Esch, Hans-Joachim, 4,762,095, Cl. 123-90.110.

ESCO Corporation: *See*—
Emrich, Robert K., 4,761,900, Cl. 37-142.00R

Esho, Sotaro: *See*—
Itoh, Masaki; Monmoto, Akio; and Esho, Sotaro, 4,763,139, Cl. 346-135.100

Espelage, Paul M.; and Nowak, James M., to General Electric Company. Method and apparatus for induction motor drive. 4,763,059, Cl 318-811.000

Esperanza y Cia: *See*—
Ibarra, Inigo Arana, 4,762,047, Cl. 89-1.350.

ETA SA Fabriques d'Ebauches: *See*—
Morata, Philippe, 4,763,308, Cl. 368-88.000

ETA Systems, Inc.: *See*—
Hoelzel, Roy J.; and Doyle, Brent H., 4,763,298, Cl. 365-51.000

Ethyl Corporation: *See*—
Ramachandran, Venkataraman; and Maloney, John R., 4,762,943, Cl. 558-423.000

Ettinger, Anna C. Reduction of gastrointestinal disease-producing organisms with sialic acid and ganglıosides. 4,762,822, Cl. 514-25.000

Evans & Sutherland Computer Corp.: *See*—
Robinson, John A.; and Schumacker, Robert A., 4,763,280, Cl. 364-518.000

Ewbank, Michael E.; and Heitz, Steven A., to Sundstrand Corporation. Flow control valve. 4,762,146, Cl. 137-625.300

Ewing, Richard C., to Baader North America Corporation. Apparatus for processing fish. 4,761,856, Cl. 17-58.000

Exxon Chemical Patents Inc.: *See*—
Dickakian, Ghazi B., 4,762,797, Cl. 436-60.000

Exxon Research and Engineering Company: *See*—
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,762,607, Cl. 208-59.000
Mauldin, Charles H.; Davis, Stephen M.; and Arcuri, Kym B., 4,762,959, Cl. 585-640.000.
Stogryn, Eugene L.; and Sartori, Guido, 4,762,934, Cl. 548-569.000
Weber, Richard; and Haag, Loren H., 4,762,796, Cl. 436-55.000

Eylon, Daniel: *See*—
Savage, Steven J.; and Eylon, Daniel, 4,762,553, Cl. 75-0.50C.

Ezer, Elemer: *See*—
Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, 4,762,944, Cl. 560-051.000

F. P. Bourgault Industries Cultivator Division Ltd.: *See*—
Bourgault, Francois P.; and Bourgault, Joseph L., 4,762,183, Cl. 172-400.000

Fagiolini, Floriano; and Storti, Gianfranco, to Fercad S.P.A. Rotating grinding wheel device for sharpening chain saws. 4,762,027, Cl 76-25.00A.

Fairchild Semiconductor Corporation: *See*—
Keyser, Thomas; Cairns, Bruce R.; Anand, Kranti V.; Petro, William G.; and Barry, Michael L., 4,762,728, Cl. 427-38.000

Falcone, Thomas L. Jewelry ornament. 4,761,972, Cl. 63-20.000

Falls, Andrew H.; and Kuhlman, Myron I., to Shell Oil Company. Oil recovery with water containing carbonate salt and CO_2. 4,762,178, Cl. 166-268.000

Fast, Jacob; and Smith, Michael M., to Fast, Jacob. Label holder 4,761,904, Cl. 40-308.000

Faulder, Leslie J.: *See*—
Sood, Virendra M.; and Faulder, Leslie J., 4,761,948, Cl. 60-39.281.

Fearing Manufacturing Co., Inc.: *See*—
Marks, George B., Sr., 4,762,718, Cl. 424-409.000

Fechant, Louis: *See*—
Belbel, Elie; Fechant, Louis; and Riotte, Jaan Paul, 4,763,220, Cl 361-93.000

Feild, Alexander L., Jr., to Westinghouse Electric Corp. Process for coating the internal surface of zirconium tubes with neutron absorbers. 4,762,675, Cl. 376-414.000

Feldman, Steven: *See*—
Dola, Frank P.; and Feldman, Steven, 4,762,500, Cl. 439-79.000

Fembock, Josef, to Richard Langlechner GmbH. Method and apparatus for checking the chassis of a motor vehicle. 4,761,991, Cl. 73-11.000

Feramisco, James R.: *See*—
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000

Fercad S.P.A.: *See*—
Fagiolini, Floriano; and Storti, Gianfranco, 4,762,027, Cl. 76-25.00A.

Ferenc, Robert R.: *See*—
Nguyen, Peter D.; and Ferenc, Robert R., 4,761,884, Cl. 30-373.000

Ferre, Veronique: *See*—
Warzywoda, Michel; Ferre, Veronique; and Pourquie, Jacques, 4,762,788, Cl. 435-209.000

Fevrier, Herve ; Robieux, Jean; and Tardy, Andre , to Compagnie Generale D'Electricite. Method and apparatus for remotely measuring the distribution of a physico-chemical parameter in a medium 4,763,009, Cl. 250-458.100

Fibergrate Corporation: *See*—
Tepera, Joseph E., 4,761,930, Cl. 52-669.000.

VOL 1093 ISS 2 AG 9 1988 UMI

Ficker, Stefan, to Ingenieurburo S. Ficker. Apparatus for the continuous, dry, non-pressurized regeneration of salvaged rubber. 4,762,484, Cl. 425-174.80R.

Fidon, Jean J.: *See—*
Fougeron, Charles; Fidon, Jean J.; and Janiaut, Herve, 4,762,646, Cl. 252-628.000.

Field, Michael E., to Pitney Bowes Inc. Method and apparatus for updating parameter data. 4,763,271, Cl. 364-466.000.

Figiel, Francis J.; and Osterman, Harry F., to Allied-Signal Inc. Apparatus for removal of surface films from non-absorbent articles. 4,762,614, Cl. 210-195.100.

Fijii, Akira: *See—*
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000.

Findlay, Hugh T.: *See—*
Denny, Clifford M.; Findlay, Hugh T.; Popyach, Stephen A.; and Tao, Deh C., 4,762,431, Cl. 400-120.000.

Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., to SmithKline Beckman Corporation. Dopamine-beta-hydroxylase inhibitors. 4,762,850, Cl. 514-392.000.

Finn, James C., III: *See—*
Fogarty, Thomas J.; Kinney, Thomas B.; and Finn, James C., III, 4,762,130, Cl. 128-348.100.

Finn, Roger C.: *See—*
Drake, Allan R.; Finn, Roger C.; and Bennett, Reginald B. P., 4,762,732, Cl. 427-54.100.

Finzel, Lothar, to Siemens Aktiengesellschaft. Connector element for a plurality of light waveguides in a row. 4,762,390, Cl. 350-96.210.

Firestone Tire & Rubber Company, The: *See—*
Geno, Wayne H., 4,762,308, Cl. 267-64.270.
Graves, Daniel F.; and Engels, Hans-Wilhelm, 4,762,870, Cl. 524-93.000.

Fischer, Franz X.: *See—*
Lukas, Bohumir; Fischer, Franz X.; and Aeschlimann, Elfy, 4,762,715, Cl. 424-145.000.

Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, to Richtar Gedeon Vegyeszeti Gyar RT. Butenoic acid derivatives, pharmaceutical compositions containing them and process for preparing same. 4,762,944, Cl. 560-051.000.

Fish, Aaron M.; Mayzels, Leon; Branover, Alexander; Miresmaili, Masoud; and Dausseing, Jean-Paul, to Ilco Unican Inc. Lock actuator assembly and card reader. 4,762,212, Cl. 192-24.000.

Fisher Scientific Company: *See—*
Seitz, William R.; Zhujun, Zhang; and Mullin, Jerome, 4,762,799, Cl. 436-79.000.

Fisons plc: *See—*
Bowley, Alan R., 4,762,420, Cl. 356-436.000.

Fladstol, Gary R., to Tektronix, Inc. Oscilloscope having a displayed trigger indicator. 4,763,067, Cl. 324-121.00R.

Flagg, Richard L.: *See—*
Ashford, Thomas J.; Burns, Nancy A.; Flagg, Richard L.; Iwaskiw, Christine T.; and Starbird, Roberta P., 4,763,277, Cl. 364-513.000.

Flannagan, Stephen T., to Motorola, Inc. Write-drive data controller. 4,763,303, Cl. 365-189.000.

Flannagan, Stephen T., to Motorola, Inc. Circuit for enabling a transmission gate in response to predecoded signals. 4,763,306, Cl. 365-203.000.

Fleming, Dennis J.: *See—*
Boerema, Edward T.; Suman, Michael J.; and Fleming, Dennis J., 4,762,359, Cl. 296-97.00K.

Fleming, Hubert L.; Goodboy, Kenneth P.; and Saforo, Emmanuel K., to Aluminum Company of America. Adsorbent for HCl comprising alumina and acid-treated Y zeolite. 4,762,537, Cl. 55-71.000.

Fleming, Suzanne C.: *See—*
Chambers, Thomas V.; Deicke, Manfred; and Fleming, Suzanne C., 4,762,524, Cl. 8-549.000.

Fleming, William T., Jr.: *See—*
Lalin, Hill S.; Fleming, William T., Jr.; and Bermudez, Jorge E., 4,762,004, Cl. 73-861.050.

Fletcher, Mark G.: *See—*
Bollin, Ernest, Jr.; and Fletcher, Mark G., 4,762,857, Cl. 514-777.000.

Flexcon Co., Inc.: *See—*
Pennace, John R.; and Quinn, Sharon A., 4,762,680, Cl. 428-40.000.

Flodin, Per; Magnusson, Olof; and Chandra, Satish, to Polyrand AB. Cement mortar and concrete with a reduced water absorption and a method for manufacture thereof. 4,762,867, Cl. 524-5.000.

Florida Agricultural and Mechanical University: *See—*
Lee, Henry J., 4,762,919, Cl. 540-12.000.

Florig Equipment Company, Inc.: *See—*
Stluka, Eugene F.; and Huber, William J., 4,762,345, Cl. 292-26.000.

Flory, Isaac L., IV: *See—*
Nuckolls, Joe A.; and Flory, Isaac L., IV, 4,763,044, Cl. 315-176.000.

Flotow, Richard A.; and Sink, William H., to Dana Corporation. Brake torque limiting coupling. 4,762,215, Cl. 192-107.00C.

Flueli, Adolf; Schefer, Kurt; and Oswald, Heinz, to Maschinenfabrik Rieter AG. Enclosures for high-speed winders. 4,762,284, Cl. 242-18.00A.

Fogarty, Thomas J.; Kinney, Thomas B.; and Finn, James C., III, to Fogarty, Thomas J. Catheter with corkscrew-like balloon. 4,762,130, Cl. 128-348.100.

Fong, Anthony S., to Wang Laboratories, Inc. Method and apparatus for floating point operations. 4,763,294, Cl. 364-748.000.

Fong, Dodd W.; and Kowalski, David J., to Nalco Chemical Company. Sulfomethylamide-containing polymers. 4,762,894, Cl. 525-344.000.

Fontaine, John M.; and Dennis, Patrick W., to Unisys Corporation. Distributed digital signal process multiplexer. 4,763,327, Cl. 370-112.000.

Forbus, Thomas R., to Mobil Oil Corporation. High traction synthetic hydrocarbon fluids. 4,762,635, Cl. 252-73.000.

Ford Aerospace & Communications Corporation: *See—*
Motooka, Wesley D., 4,762,989, Cl. 250-216.000.

Ford, Alan A., to Cooper Industries. Shade system. 4,762,159, Cl. 160-84.100.

Ford, John, to Ford-Manwaring Limited. Valve cover apparatus. 4,762,144, Cl. 137-382.500.

Ford-Manwaring Limited: *See—*
Ford, John, 4,762,144, Cl. 137-382.500.

Ford Motor Company: *See—*
Johnson, Carl F.; and Chavka, Norman G., 4,762,740, Cl. 428-68.000.

Foreman, Howard R. Constrictor lock wrench system. 4,762,034, Cl. 81-111.000.

Forest, Paul H.; and Murray, Thomas J., to Eastman Kodak Company. Copier operable in an insert mode. 4,763,161, Cl. 355-14.0SH.

Forester, Mark. Powder filled cough product. 4,762,719, Cl. 424-440.000

Forster, Siegmar: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Fortuna, Vincent; and MacLaughlin, Donald, to Packaging Resources Incorporated. Thermoplastic container end for inertial spinwelding of thermoplastic container ends. 4,762,249, Cl. 220-359.000.

Foss, Norman A., to Honeywell Inc. Remote passive temperature sensor. 4,762,426, Cl. 374-130.000.

Fougeron, Charles; Fidon, Jean J.; and Janiaut, Herve, to Somafer S.A. Method of treating radioactive liquids. 4,762,646, Cl. 252-628.000.

Foust, H. Clyde. Fluid evaporation device for mud pits. 4,762,276, Cl. 239-8.000.

Foust, Jeff A.: *See—*
Heaston, Bruce A.; and Foust, Jeff A., 4,763,222, Cl. 361-195.000.

Fox, Daniel W.; Martin, Andrew A.; and Peters, Edward N., to General Electric Company. Process for preparing aromatic polycarbonate of improved melt processability with fatty acid. 4,762,896, Cl. 525-462.000.

Fox, Jack J.: *See—*
Watanabe, Kyoichi A.; Matulic-Adamic, Jasenka; Price, Richard W.; and Fox, Jack J., 4,762,823, Cl. 514-50.000.

Fox, Timothy R., to Kabushiki Kaisha Toshiba. Automatic tuning circuit for magnetic resonance quadrature antenna system. 4,763,074, Cl. 324-314.000

FRAGEMA: *See—*
Leclercq, Joseph; and Canat, Jean N., 4,762,661, Cl. 376-209.000.

Franaszek, Peter A., to International Business Machines Corporation. Parallel switching with round robin priority. 4,763,122, Cl. 340-825.510.

Franceschini, Jacqueline: *See—*
Besancon, Denis; and Franceschini, Jacqueline, 4,762,852, Cl. 514-422.000.

Francioni, Renzo, to Cavanna S.p.A. Adjustable forming unit for packaging machines for wrappers of the flow-pack type and the like. 4,761,937, Cl. 53-550.000.

Frankenfeld, Klaus: *See—*
Beltz, Klaus; Frankenfeld, Klaus; Ruschke, Peter; and Eich, Gerhard, 4,762,692, Cl. 423-321.00R.

Fraunhofer-Gesellschaft zur Forderung: *See—*
Goetzberger, Adolf, 4,763,310, Cl. 368-205.000.

Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Bramm, Gunter; and Novak, Pavel, 4,763,032, Cl. 310-90.500.

Freier, Marilyn H. Jewelry coating. 4,761,971, Cl. 63-12.000.

Freissle, Manfred F. A., to Screenex Wire Weaving Manufacturers (Proprietary) Limited. Screening arrangement. 4,762,610, Cl. 209-397.000.

Freitag, Dieter: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,762,905, Cl. 528-167.000.

Frenkel, Ferdinand; Prussas, Herbert; and Rapp, Lothar, to Siemens Aktiengesellschaft. Heat dissipating housing for an electronic component. 4,763,225, Cl. 361-388.000.

Frey, Alfred; Grimm, Daniel; and Kainer, Hartmut, to Didier-Werke AG. Combination of retaining module and catalyst plates. 4,762,689, Cl. 422-310.000.

Friberg, Bo S. Vending machine. 4,762,250, Cl. 221-123.000.

Friedrichs, K. Gerd, to Klifa-Fahrzeugteile GmbH + Co. Water pump impeller. 4,762,465, Cl. 416-185.000.

Frigoscandia Contracting AB: *See—*
Andersson, Alvar, 4,761,962, Cl. 62-63.000.

Frimberger, Eckart, to Frimberger, Erintrud. Apparatus for placing a feeding tube in the stomach of the human or animal body. 4,762,519, Cl. 604-280.000

Frimberger, Erintrud: *See—*
Frimberger, Eckart, 4,762,519, Cl. 604-280.000.

Fritschi, Edgar: *See—*
Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl. 514-258.000.

Fritz Stahlecker: *See—*
Stahlecker, Fritz, 4,761,946, Cl. 57-328.000.

Froelich, Ronald W., to Xerox Corporation. Digital color correction circuit. 4,763,190, Cl. 358-79.000.

Frohlen, Hans G., to Bayer Aktiengesellschaft. Process for the preparation of alkoxysilanes. 4,762,938, Cl. 556-470.000.

Frohnhaus, Ernst-Reiner: *See—*
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000

Fry, Boyd M.: *See—*
Stankus, John J.; and Fry, Boyd M., 4,761,880, Cl. 29-840.000.

Fryburg, George A.: *See—*
Rhodes, William H.; Wei, George C.; and Fryburg, George A., 4,762,655, Cl. 264-65.000.

Fuchigami, Nobuhisa; Yoshida, Takeo; and Fukuda, Hiroya, to Bridgestone Corporation. Method for making foamed articles having a laminated structure. 4,762,654, Cl. 264-45.100.

Fuchizawa, Tetsuro: *See—*
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,762,816, Cl. 503-200.000.

Fuchs, Karl-Heinz, to Ing. Erich Pfeiffer GmbH & Co., KG. Thrust piston pump for the discharge of media. 4,762,475, Cl. 417-550.000.

Fuerderer, Juergen: *See—*
Wiedemann, Wolfgang; Drexler, Michael; and Fuerderer, Juergen, 4,762,760, Cl. 430-59.000.

Fuji Electric Co., Ltd.: *See—*
Higashi, Izumi; Adachi, Akio; Tajima, Takayoshi; and Hiroshige, Norimichi, 4,762,048, Cl. 89-14.100.
Sato, Noritada; and Seki, Yasukazu, 4,762,803, Cl. 437-24.000.
Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, 4,762,605, Cl. 204-406.000

Fuji Jukogyo Kabushiki Kaisha: *See—*
Sogawa, Yoshiyuki, 4,761,994, Cl. 73-118.200.

Fuji Photo Film Co., Ltd.: *See—*
Kishimoto, Shinzo; Nishikawa, Toshihiro; Abe, Akira; and Nakajima, Junya, 4,762,774, Cl. 430-393.000.
Kobayashi, Kesanao; and Matsumoto, Hiroshi, 4,762,772, Cl. 430-309.000.
Matsumoto, Hiroshi; and Hagiwara, Hitoshi, 4,762,771, Cl. 430-302.000
Ogawa, Tadashi; and Hirose, Takeshi, 4,762,775, Cl. 430-505.000.
Oishi, Kengo, 4,761,875, Cl. 29-527.400.
Oishi, Kengo, 4,763,217, Cl. 360-132.000.
Saotome, Shigeru; and Ishida, Masamitsu, 4,762,999, Cl. 250-327.200.
Tabei, Masatoshi, 4,763,198, Cl. 358-213.260.
Takahashi, Osamu; and Sakai, Nobuo, 4,762,773, Cl. 430-380.000.
Takahashi, Toshiro; Kuwabara, Ken-ichi; and Okada, Masahiro, 4,762,769, Cl. 430-264.000.
Takamura, Masashi; Ushiro, Seimei; Kobayashi, Kiyotaka; Cho, Michio; and Nakada, Kimiaki, 4,763,145, Cl. 354-64.000.
Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, 4,762,816, Cl. 503-200.000.
Utsui, Masaaki, 4,761,874, Cl. 29-527.200.

Fujii, Akio: *See—*
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200

Fujii, Koichi: *See—*
Takata, Akira; and Fujii, Koichi, 4,763,020, Cl. 307-465.000.

Fujii, Noriaki; Iwata, Takeshi; Oikawa, Toshihiro; and Takahara, Naoki, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating device of four-cycle internal combustion engine. 4,762,099, Cl. 123-90.440.

Fujikawa, Tetsuzo; Hirata, Makizo; Tamba, Shinichi; and Yamane, Yoshiro, to Kawasaki Jukogyo Kabushiki Kaisha. Valve gear for four-cycle engine. 4,762,094, Cl. 123-90.600.

Fujikawa, Toyoharu, to Citizen Watch Co., Ltd. Electronic clinical thermometer with a battery life warning display. 4,762,429, Cl. 374-163.000

Fujimori Kogyo Co., Ltd.: *See—*
Yoshida, Tokio, deceased, 4,762,514, Cl. 493-227.000.

Fujimori, Tohru: *See—*
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000

Fujimoto, Hiroshi: *See—*
Sakakura, Akira; Hoshino, Kazuo; Uematsu, Yoshihiro; Igawa, Takashi; and Fujimoto, Hiroshi, 4,762,575, Cl. 148-111.000.

Fujimoto, Takashi: *See—*
Shimada, Takeo; Okada, Noriyuki; Fujimoto, Takashi; and Yada, Shuhei, 4,762,889, Cl. 525-201.000.

Fujitsu Limited: *See—*
Asakawa, Kazuo; Onda, Nobuhiko; Akita, Tadashi; and Kamada, Toru, 4,762,006, Cl. 73-862.040.
Ito, Masanori, 4,763,176, Cl. 357-15.000.
Kobayashi, Osamu, 4,763,108, Cl. 340-347.0DA.
Maki, Takao; Yamaki, Isao; Akima, Hideo; and Hoashi, Akira, 4,762,375, Cl. 303-96.000.
Shimoda, Kaneyasu; Yamashita, Atsushi; and Katoh, Tadayoshi, 4,763,328, Cl. 371-3.000
Yasuda, Hiroshi; and Miyazaki, Takayuki, 4,763,004, Cl. 250-396.00R

Fujiwara, Tatsuo: *See—*
Imanaka, Asaji; Fujiwara, Tatsuo; and Osaka, Shuichi, 4,763,261, Cl. 364-426.000

Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, to Bridgestone Corporation. Anti-seismic rubber bearing. 4,761,925, Cl 52-167.000.

Fukaya, Masaki; Komatsu, Toshiyuki; Shoji, Tatsumi; Kamio, Masaru; and Sekimura, Nobuyuki, to Canon Kabushiki Kaisha. Long size image sensor having improved consistency among individual photosensors. 4,763,010, Cl. 250-578.000.

Fukaya, Masaki: *See—*
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000

Fukubi Kagaku Kogyo Kabushiki Kaishi: *See—*
Hamasaki, Masafumi, 4,762,113, Cl. 126-263.000

Fukuda, Hiroya: *See—*
Fuchigami, Nobuhisa; Yoshida, Takeo; and Fukuda, Hiroya, 4,762,654, Cl. 264-45.100

Fukui, Akio: *See—*
Ogawa, Masahiro; and Fukui, Akio, 4,762,202, Cl. 185-39.000

Fukui, Yoshiro: *See—*
Morita, Hirobumi; and Fukui, Yoshiro, 4,762,459, Cl. 414-680.000

Fukushima, Hiroshi; and Matsufuji, Teruo, to Iwatsu Electric Co., Ltd. Key telephone system. 4,763,354, Cl. 379-165.000

Fukuura, Yukio: *See—*
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300.

Fuller, Ray W.: *See—*
Cohen, Marlene L.; Fuller, Ray W.; Garbrecht, William L.; and Whitten, Kathleen R., 4,762,842, Cl. 514-288.000.

Fullmann, Heinz-Josef: *See—*
Nielinger, Werner; Alewelt, Wolfgang; Binsack, Rudolf; Bottenbruch, Ludwig; and Fullmann, Heinz-Josef, 4,762,910, Cl. 528-339.000.

Fumioka, Jun: *See—*
Ito, Yasushi; Imamura, Masaaki; Kato, Yoshiki; and Fumioka, Jun, 4,762,534, Cl. 51-293.000

Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, to Tokyo Electric Power Co., Inc., The; Mitsui Engineering & Shipbuilding Co., Ltd.; and Mitsui & Co., Ltd. Process for deashing coal. 4,762,526, Cl. 44-627.000.

Funakoshi, Yoshiyuki: *See—*
Asanuma, Tadashi; Funakoshi, Yoshiyuki; and Ohoka, Tatuo, 4,762,897, Cl. 526-68.000.

Funck, Herbert. Bonding press for shoes. 4,761,845, Cl. 12-33.000

Furtmayr, Joachim: *See—*
Rudenauer, Werner; Muller, Fritz; Kufner, Dieter; and Furtmayr, Joachim, 4,762,066, Cl. 102-226.000

Furukawa, Katsuki: *See—*
Suzuki, Akira; and Furukawa, Katsuki, 4,762,806, Cl. 437-100.000.

Furuya, Shinichi; Kadota, Kuninobu; Togashi, Minoru; and Kato, Kenshiro, to Bridgestone Corporation. Reduced rolling resistance pneumatic radial tire. 4,762,158, Cl. 152-454.000

Furuya, Yoichiro: *See—*
Sumikawa, Seiji; Furuya, Yoichiro; and Sutoh, Shinji, 4,761,967, Cl. 62-201.000

Fuscaldo, Frank, Jr. Apparatus for supporting a vehicle for straightening and alignment. 4,761,984, Cl. 72-305.000.

Fuse, Jiro, to Kabushiki Kaisha Machida Seisakusho. Laser beam admitting device. 4,762,385, Cl. 350-96.180.

Fuse, Masahiro: *See—*
Nakayashiki, Susumu; Kashio, Jiro; Harakawa, Takeshi; and Fuse, Masahiro, 4,763,315, Cl. 370-16.000.

Fushimi, Hiroyuki: *See—*
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000

Fushiya, Fusao; and Kaneko, Tetsuhisa, to Makita Electric Works, Ltd Depth adjusting device for screwdrivers. 4,762,035, Cl. 81-429.000.

G.S.D. Sports Equipment S.R.L.: *See—*
Stradella, Fabio, 4,762,145, Cl. 137-599.200

Gaddis, Joseph L.; and Brandon, Craig A., to United States of America, National Aeronautics and Space Administration. Method of forming dynamic membrane on stainless steel support. 4,762,619, Cl 210-639.000

GAF Corporation: *See—*
Maue, Marilyn J., 4,762,522, Cl. 8-94.19R.

Gala, Jeffery. Vertebrae diagnostic and treatment apparatus. 4,762,134, Cl. 128-781.000

Gallay, Jean J.: *See—*
Sturm, Elmar; Gallay, Jean J.; Kristinsson, Haukur; and Pissiotas, Georg, 4,762,830, Cl. 514-270.000.

Galula, William; and Ridgers, Timothy J., to Enertec. Process and method for wide band transmission, particularly for data transmission over an electricity distribution network. 4,763,103, Cl. 340-310.00R

Gamauf, Richard J. Door lock opening restoring tool and method for using the same. 4,761,987, Cl. 72-414.000

VOL 1093 ISS 2 AG 9 1988 UMI

Gamble, John G., to Sigma Instruments, Inc. Magnetically enhanced stepping motor. 4,763,034, Cl. 310-181.000.
Gambro AB: *See*—
Gummesson, Bengt-Ake G.; Petersen, Preben A.; and Sternby, Jan P., 4,762,618, Cl. 210-637.000.
Ganaway, Richard M. Sink spray and auxiliary attachment device. 4,761,839, Cl. 4-654.000.
Ganeaux Industries, Inc.: *See*—
Gruber, David E., 4,762,155, Cl. 141-19.000.
Gangi, Richard. Warp knitting/crochet warp knitting machine. 4,761,973, Cl. 66-204.000.
Gansert, Willi: *See*—
Bentz, Willy; and Gansert, Willi, 4,763,224, Cl. 361-386.000.
Garbrecht, William L.: *See*—
Cohen, Marlene L.; Fuller, Ray W.; Garbrecht, William L.; and Whitten, Kathleen R., 4,762,842, Cl. 514-288.000.
Garcia, Sonny Q.: *See*—
O'Keeffe, William F.; and Garcia, Sonny Q., 4,761,919, Cl 52-14.000.
O'Keeffe, William F.; and Garcia, Sonny Q., 4,761,927, Cl. 52-403.000.
Gardner, Lloyd E.: *See*—
Parrott, Stephen L.; and Gardner, Lloyd E., 4,762,814, Cl. 502-211.000.
Garman, Shelly N.: *See*—
Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., 4,762,643, Cl. 252-378.00R.
Garnier, Marcel: *See*—
Senillou, Claude; de Framond, Remy; Garnier, Marcel; Yavari, Ali R.; and Joud, Jean-Charles, 4,762,653, Cl. 264-22.000.
Garvey, Michael J.; and Griffiths, Ian C., to Unilever Patent Holdings, B.V. Process for forming a coating. 4,762,736, Cl. 427-215.000.
Garwin, Richard L.: *See*—
Caswell, Nathan S.; Garwin, Richard L.; and Levine, James L., 4,762,990, Cl. 250-221.000.
Gas Research Institute: *See*—
Zappa, Oswald L., 4,762,487, Cl. 431-1.000.
Gaspers, Michael L.; and Ray, Glen, to Allen-Brady Company, Inc Torque measuring apparatus. 4,762,007, Cl. 73-862.340.
Gast, Theodor: *See*—
Kuhne Manfred; Gast, Theodor; Kramm, Karl-Ulrich; and Nolte, Karl, 4,762,138, Cl. 131-280.000.
Gat, Erann; Park, Eric D.; and Mathis, Talmage, to Kollmorgen Corporation. Error detection system for two-state fiber optic sensors. 4,762,992, Cl. 250-227.000.
Gatton, John R., to White Consolidated Industries, Inc. Shipping container for major appliances. 4,762,226, Cl. 206-320.000.
Gavras, Haralambos, to Boston University, Trustees of. Therapeutic treatment for congestive heart failure. 4,762,820, Cl. 514-10.000.
Gawol, Manfred; and Adrian, Gerhard, to Dr. Hans Heubach Gmbh & Co. KG. Permanently non-dusting pigment and dye preparations, method for producing them, and measuring device therefore. 4,762,523, Cl. 8-524.000.
Gay, Michael J., to Motorola, Inc. Gain control cell. 4,763,024, Cl. 307-493.000.
GEA Wiegand GmbH: *See*—
Dummler, Ulrich, 4,762,166, Cl. 165-1.000.
Geballe, Theodore H.: *See*—
Nellis, William J.; Maple, M. Brian; and Geballe, Theodore H., 4,762,754, Cl. 428-552.000.
Gebruder Honsberg GmbH: *See*—
Rupp, Peter, 4,761,877, Cl. 29-568.000.
Gebruder Sucker & Franz Muller GmbH & Co.: *See*—
Voswinckel, Gerhard, 4,762,727, Cl. 427-8.000.
Gedig, Alfred: *See*—
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000.
Gee-I-Go, Inc.: *See*—
Tucker, J. Camille; and Weiswurm, Klaus D., 4,762,331, Cl. 280-30.000.
Geen, John A.; and Guppy, David J., to British Aerospace Plc. Multiple axis ring laser gyroscopes. 4,762,415, Cl. 356-350.000.
Geffard, Michel, to Centre National de la Recherche Scientifique (CNRS); and Institut National de la Sante et de la Recherche Medicale (INSERM). Antibodies capable of specifically identifying haptenic groups, their preparation and their use and to new antigens permitting their preparation. 4,762,781, Cl. 435-7.000.
Gefitech S.A.: *See*—
Posso, Patrick P. P., 4,762,223, Cl. 206-53.000.
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., to United States of America, Air Force. Billet conditioning technique for manufacturing powder metallurgy preforms. 4,762,679, Cl. 419-28.000.
Gehrke, Lee: *See*—
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M., 4,762,914, Cl. 530-351.000.
Geist, Michael; Ott, Gunther; and Schon, Georg, to BASF Lacke & Farben AG. Water-dilutable binders, containing latent primary amino groups, for cationic electrocoating finishes, and a process for their preparation. 4,762,903, Cl. 528-107.000.
Genentech, Inc.: *See*—
Goeddel, David V.; and Gray, Patrick W., 4,762,791, Cl. 435-243.000.
General Company Limited: *See*—
Ueyama, Seiji; Taniguchi, Hideo; and Ogata, Hiromi, 4,762,432, Cl. 400-241.100.
General Dynamics Corporation/Convair Div.: *See*—
Nguyen, Peter D., 4,762,030, Cl. 81-55.000.
General Dynamics Corporation/Convair Division: *See*—
Nguyen, Peter D.; and Ferenc, Robert R., 4,761,884, Cl. 30-373.000.
General Electric Company: *See*—
Erdman, David M., 4,763,347, Cl. 318-254.000.
Espelage, Paul M.; and Nowak, James M., 4,763,059, Cl. 318-811.000.
Fox, Daniel W.; Martin, Andrew A.; and Peters, Edward N., 4,762,896, Cl. 525-462.000.
Modic, Frank J.; and Striker, Richard A., 4,762,859, Cl. 521-82.000.
Steele, Douglas S., 4,763,008, Cl. 250-385.100.
Sutphin, Melvin W.; and Taylor, Theodore E., 4,763,339, Cl. 375-114.000.
Yon, Terrell H., Jr., 4,762,295, Cl. 244-115.000.
General Hospital Corporation, The: *See*—
Crowley, William F., Jr., 4,762,717, Cl. 424-425.000.
General Instrument Corporation: *See*—
Weinstein, Michael E., 4,763,130, Cl. 343-770.000.
General Methods Corporation: *See*—
Kuykendall, Harold D., 4,762,041, Cl. 83-278.000.
General Motors Corporation: *See*—
Baker, Steven F., 4,762,097, Cl. 123-90.310.
Bergamo, Samuel, 4,762,357, Cl. 294-119.100.
Brown, Trevor J., 4,762,374, Cl. 301-37.00P.
Collins, James F., 4,762,451, Cl. 411-177.000.
Copp, Douglas M., 4,762,209, Cl. 188-328.000.
Denton, Gary G., 4,762,367, Cl. 297-409.000.
Hayden, Richard A., 4,762,338, Cl. 280-801.000.
Heaston, Bruce A.; and Foust, Jeff A., 4,763,222, Cl. 361-195.000.
Jacob, Paravila O., 4,762,011, Cl. 73-865.800.
Knecht, Allen F.; Eilerman, John F.; Smith, Stanley E.; and Smith, Jack E., 4,761,917, Cl. 49-477.000.
Koch, Julius F., Jr., 4,762,103, Cl. 123-193.0CH
Krajewski, Casimir; Melville, Randolph I.; and Porter, William W., 4,762,310, Cl. 267-141.200.
Malik, Marvin J., 4,762,201, Cl. 184-6.130.
McCabe, Robert W.; McCready, David F.; Mohan, Philip V.; and Potter, Robert A., 4,762,093, Cl. 123-3.000.
Rice, Hal H., 4,762,305, Cl. 266-281.000.
Snyder, George K., 4,761,982, Cl. 72-58.000.
Vogel, William C., 4,762,452, Cl. 411-194.000.
General Motors Corporaton: *See*—
Rich, Gregory E., 4,762,156, Cl. 141-46.000.
General Signal Corporation: *See*—
Kaufman, Edwin E.; Shuttleworth, William E.; and Wiese, John R., 4,762,571, Cl. 136-234.000.
Genise, Thomas A.: *See*—
Pusatcioglu, Selami Y.; and Genise, Thomas A., 4,762,216, Cl. 192-107.00M.
Geno, Wayne H., to Firestone Tire & Rubber Company, The. Damping valve for air spring suspension systems. 4,762,308, Cl. 267-64.270.
Geoffroi, Louis E. G. Holder for holding an electric soldering iron in a use or a standby/storage position. 4,762,979, Cl. 219-242.000.
Georg Fischer Aktiengesellschaft: *See*—
Henych, Ivo; and Gut, Karl, 4,762,555, Cl. 75-48.000.
George, Flint R.: *See*—
Wesson, David S.; Luke, Robert R.; George, Flint R.; Haugen, David M.; and George, Kevin R., 4,762,179, Cl. 166-297.000.
George, Kevin R.: *See*—
Wesson, David S.; Luke, Robert R.; George, Flint R.; Haugen, David M.; and George, Kevin R., 4,762,179, Cl. 166-297.000.
Georgia Tech Research Corporation: *See*—
Browner, Richard F.; and Willoughby, Ross C., 4,762,995, Cl. 250-282.000.
Georgiev, Vassil S.; and Bennett, Grace A., to Pennwalt Corporation. 1,2,4-triazolo[4,3-d]-4-azatricyclo-[4.3.1.1^{3,8}]undecane and 3-substituted derivatives, and intermediates thereof. 4,762,828, Cl. 514-214.000.
Gerber, Christoph E.: *See*—
Binning, Gerd K.; and Gerber, Christoph E., 4,762,996, Cl. 250-306.000.
Gercekci, Anil, to Motorola, Inc. Watchdog timer. 4,763,296, Cl. 364-900.000.
Gergely, Gerhard; Gergely, Thomas; and Gergely, Irmgard. Pharmaceutical preparation containing ibuprofen and a process for its preparation. 4,762,702, Cl. 424-44.000.
Gergely, Irmgard: *See*—
Gergely, Gerhard; Gergely, Thomas; and Gergely, Irmgard, 4,762,702, Cl. 424-44.000.
Gergely, Thomas: *See*—
Gergely, Gerhard; Gergely, Thomas; and Gergely, Irmgard, 4,762,702, Cl. 424-44.000.
Gerhaeuser, Heinz; Pirner, Gerhard; and Rueckert, Thomas, to PUMA AG Rudolf Dassler Sport. Measuring performance information in running disciplines and shoe systems. 4,763,287, Cl. 364-561.000.

Gerhard Collardin GmbH: *See*—
Mady, Raschad; Daniel, Caecillie; Bohnhorst, Detlev; Gottwald, Karl-Heinz; and Morlock, Roland, 4,762,572, Cl. 148-6.15Z.
Gerhards, Hermann J.: *See*—
Kreutzberger, Alfred; Soder, Alfons; and Gerhards, Hermann J., 4,762,833, Cl. 514-245.000.
German, Randall M.; Bose, Animesh; and Sims, David, to Rensselaer Polytechnic Institute. Production of reactive sintered nickel aluminide material. 4,762,558, Cl. 75-246.000.
Gerritsen, Gerrit B.; Vriens, Leendert; and van de Ven, Johannes C., to U.S. Philips Corporation. Rear projection screen and rear projection system provided with such a screen. 4,762,393, Cl. 350-128.000.
Gerstle, Volker: *See*—
Thiel, Norbert; Gerstle, Volker; Zondler, Rolf; and Lederle, Otto, 4,762,733, Cl. 427-55.000.
Gerstorfer, Oskar: *See*—
Rau, Norbert; Hubner, Gerd; Staiger, Wolfgang; Brodmann, Rainer; and Gerstorfer, Oskar, 4,763,006, Cl. 250-561.000.
Gewerkschaft Eisenhutte Westfalia GmbH: *See*—
Rassmann, Christoph; Breuer, Oswald; and Steinkuhl, Bernd, 4,762,372, Cl. 299-91.000.
Gfeller, Martin; and Wanner, Rudolf, to Zevatech AG. Device for picking and transporting components. 4,762,354, Cl. 294-2.000.
Ghandehari, Mohammad H., to Union Oil Company of California. Rare earth-iron-boron premanent magnets. 4,762,574, Cl. 148-103.000.
Giaier, Thomas A.; Johnson, Neil H.; Knox, Harold L.; Reschly, David C.; and Spurlock, Kim E., to Detroit Stoker Company. Metering feeder. 4,762,073, Cl. 110-101.0CD.
Giampa, Vincent M.: *See*—
Beshore, David G.; and Giampa, Vincent M., 4,762,527, Cl. 44-51.000
Giesen, Franz-Josef: *See*—
Lonne, Klaus; Majewski, Klaus-Peter; Giesen, Franz-Josef; and Voigt, Rudiger, 4,762,330, Cl. 277-230.000.
Giladett, Leo V. B.: *See*—
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., 4,762,265, Cl. 228-50.000
Gilian Instrument Corp.: *See*—
Lalin, Hill S.; Fleming, William T., Jr.; and Bermudez, Jorge E., 4,762,004, Cl. 73-861.050.
Gillon, Alexander C.: *See*—
Day, Benjamin W., Jr.; Gillon, Alexander C.; and LeConte, Raoul A., 4,763,356, Cl. 379-368.000.
Gilmore, Richard F.: *See*—
Chang, Shih-Chih; Schuck, William J.; and Gilmore, Richard F., 4,762,666, Cl. 376-264.000.
Ginzburg, Vladimir B.; DeChellis, Richard C.; and Ellis, Robert H., to International Rolling Mill Consultants, Inc.; and United Engineering, Inc. Method and apparatus for winding material on a drum. 4,761,983, Cl. 72-148.000.
Giolma, William H.: *See*—
Haight, Michael H.; Giolma, William H.; and Boucher, Richard, 4,763,086, Cl. 331-109.000.
Gipp, Roland: *See*—
Dhein, Rolf; Muller, Hanns P.; Meier, Helmut-Martin; and Gipp, Roland, 4,762,901, Cl. 528-73.000.
Girgis, Makram M.; Jackson, David E.; Kruse, Gerald L.; Mannuzza, Frank J.; and Montalto, Joseph G., to Miles Inc. Cholesterol-rich fraction useful in culture media and process of producing same. 4,762,792, Cl. 435-244.000
Girgis, Mikhail M.; and Lawton, Ernest L., to PPG Industries, Inc. Flexible, chemically treated bundles of fibers and process. 4,762,750, Cl. 428-378.000
Girgis, Mikhail M.; and Lawton, Ernest L., to PPG Industries, Inc. Flexible, chemically treated bundles of fibers, woven and nonwoven fabrics and coated bundles and fabrics thereof. 4,762,751, Cl. 428-378.000.
Gjertsen, Robert K.; Wilson, John F.; and Kirby, William E., to Westinghouse Electric Corp. Top nozzle adapter plate with fuel rod capture grid having pressure drop adjusting means. 4,762,676, Cl. 376-443.000.
Glang, Siegfried, to Phoenix Aktiengesellschaft. Sealing profile. 4,762,441, Cl. 405-152.000.
Glass, Terry W.: *See*—
Martinez, Robert G.; Treybig, Duane S.; and Glass, Terry W., 4,762,627, Cl. 252-8.555.
Glazer, Edward A., to Pfizer Inc. Quinazolin-4(3H)-one derivatives as anticoccidial agents. 4,762,838, Cl. 514-259.000.
Glenn, Max C.; and McMullen, Raymond F., to Honeywell Inc. Flip-chip pressure transducer. 4,763,098, Cl. 338-4.000.
Glisan, Ronald G. Bush trimming catcher. 4,761,944, Cl. 56-329.000
Glor, Paul R.: *See*—
McDaniel, Robert S., Jr.; McCurry, Patrick M.; Short, Rolland W. P.; and Glor, Paul R., 4,762,918, Cl. 336-127.000.
Glorioso, John D. Sludge treatment process. 4,761,893, Cl. 34-11.000.
Glover, Neal, to Data Systems Technology Corp. Shared circuitry for the encoding and syndrome generation functions of a Reed-Solomon code. 4,763,332, Cl. 371-37.000
Gobush, William, to Acushnet Company. Golf ball. 4,762,326, Cl. 273-232.000
Godecke Aktiengesellschaft: *See*—
Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl. 514-258.000.
Godfrey, Thomas G., Jr.: *See*—
Ballard, Ambrose H.; Godfrey, Thomas G., Jr.; and Mowery, Erb H., 4,762,656, Cl. 264-82.000
Goeddel, David V.; and Gray, Patrick W., to Genentech, Inc. Human immune interferon. 4,762,791, Cl. 435-243.000.
Goel, Anil, to Ashland Oil, Inc. Solutions of polymers in oxazolines and polymerizates thereof. 4,762,883, Cl. 525-113.000
Goel, Anil B.; Holehouse, Joseph G.; Jones, Jeffrey P.; and DeLong, Teresa, to Ashland Oil Inc. High performance induction curable two-component structural adhesive with nonsagging behavior. 4,762,864, Cl. 523-428.000
Goetzberger, Adolf, to Fraunhofer-Gesellschaft zur Forderung. Electronic clock with solar cell and rechangeable battery. 4,763,310, Cl. 368-205.000
Goetze AG: *See*—
Lonne, Klaus; Majewski, Klaus-Peter; Giesen, Franz-Josef; and Voigt, Rudiger, 4,762,330, Cl. 277-230.000.
Goff, Walter S. Secure holder for a desk top coin operated telephone 4,763,352, Cl. 379-145.000
Gold, Marvin H. Epoxy coatings for computer hard disks and metal coil decoration and protection. 4,762,865, Cl. 523-411.000.
Gold, Marvin H. Water based printing inks for plastic and metal surfaces. 4,762,875, Cl. 524-248.000.
Goldberg, Edward B.; and Park, James T., to Micromol Corporation. Assay for Beta-lactam antibiotics. 4,762,782, Cl. 435-7.000.
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, to Bayer Aktiengesellschaft. 1-oxo-1,3,4,7-tetrahydrobenzo[C]furans. 4,762,853, Cl. 514-432.000.
Golec, Frederick A., Jr., to USV Pharmaceutical Corporation. Process for the preparation of aspirin peroxide. 4,762,945, Cl. 560-138.000
Golec, Julian M. C.: *See*—
Rowlands, David A.; Golec, Julian M. C.; Matharu, Saroop S.; and Hairsine, Peter W., 4,762,840, Cl. 514-267.000
Gomez, Sergio. Game table. 4,762,327, Cl. 273-309.000
Goodboy, Kenneth P.: *See*—
Fleming, Hubert L.; Goodboy, Kenneth P.; and Saforo, Emmanuel K., 4,762,537, Cl. 55-71.000.
Goodyear Tire & Rubber Company, The: *See*—
Wideman, Lawson G., 4,762,962, Cl. 585-671.000
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., to AMP Incorporated. Optical fiber assembly including means utilizing a column load to compensate for thermal effects. 4,762,386, Cl 350-96.200
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., to AMP Incorporated. Lens assembly for optical coupling with a semiconductor laser. 4,762,395, Cl. 350-252.000.
Gordon, Travis H.; and Simon, Steven D., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Dial-up telephone network equipment for requesting an identified selection. 4,763,191, Cl. 358-86.000
Goto, Sohei: *See*—
Yamazaki, Katsumasa; Yagi, Toshihiko; Michiue, Kenji; Goto, Sohei; and Mochizuki, Yoshiharu, 4,762,778, Cl. 430-567.000
Gottwald, Karl-Heinz: *See*—
Mady, Raschad; Daniel, Caecillie; Bohnhorst, Detlev; Gottwald, Karl-Heinz; and Morlock, Roland, 4,762,572, Cl. 148-6.15Z.
Gould Inc.: *See*—
Shuster, Nicholas; and Pallat, Jerome F., 4,762,758, Cl. 429-144.000
Gouvenot, Daniel, to Soletanche. Method of rendering soils impervious. 4,762,443, Cl. 405-263.000.
Goyert, Wilhelm; Winkler, Jurgen; Perrey, Hermann; and Heidingsfeld, Herbert, to Bayer Aktiengesellschaft. Process for the production of radiation-crosslinked thermoplastic polyurethanes. 4,762,884, Cl. 525-28.000.
Grabowski, Richard J.: *See*—
Holub, Edward P.; and Grabowski, Richard J., 4,762,561, Cl. 106-89.000
Gradl, Reinhard: *See*—
Schimmel, Gunther; Gradl, Reinhard; and Kolkmann, Friedrich, 4,762,693, Cl. 423-321.00S.
Graf, Peter E., to Chevron Research Company. Open-graded asphalt. 4,762,565, Cl. 106-281.00R.
Graft, John T., to Dana Corporation. Shaft retaining means for a differential gear assembly. 4,762,024, Cl. 74-715.000
Grant, Duane E.: *See*—
Byerly, Kent A.; and Grant, Duane E., 4,762,994, Cl. 250-236.000
Grant, Frederic F., to Datatape Incorporated. Helical scan tape guide apparatus. 4,763,210, Cl. 360-84.000
Grapentin, Manfred: *See*—
Spoeler, Johannes G.; and Grapentin, Manfred, 4,762,069, Cl. 104-107.000
Grass Valley Group, Inc., The: *See*—
Murphy, Richard L., 4,763,341, Cl. 377-20.000
Grasselli, Robert K.: *See*—
Guttmann, Andrew T.; Brazdil, James F.; and Grasselli, Robert K., 4,762,961, Cl. 585-661.000
Grasso's Koninklijke Machinefabrieken N.V.: *See*—
Thijssen, Henricus A. C., 4,762,622, Cl. 210-737.000
Graves, Daniel F.; and Engels, Hans-Wilhelm, to Firestone Tire & Rubber Company, The. Rubber compositions modified with hydroxy-benz-imidazole oxides. 4,762,870, Cl. 524-93.000
Graves, J. W.: *See*—
Savage, Carl P.; Knight, John E.; Graves, J. W.; and Tate, Harold, 4,761,847, Cl. 14-69.500

VOL 1093 ISS 2 AG 9 1988 UMI

Gray, Brian S.: *See—*
Christian, Gregory A.; Gray, Patrick L.; and Gray, Brian S., 4,761,909, Cl. 43-4.000.

Gray, Patrick L.: *See—*
Christian, Gregory A.; Gray, Patrick L.; and Gray, Brian S., 4,761,909, Cl. 43-4.000.

Gray, Patrick W.: *See—*
Goeddel, David V.; and Gray, Patrick W., 4,762,791, Cl. 435-243.000.

Gray, Reed A.; and Pallos, Ferenc M., to Stauffer Chemical Co. Herbicide compositions of extended soil life. 4,762,548, Cl. 71-100.000.

Great Lakes Chemical Corp.: *See—*
Dadgar, Ahmad, 4,762,625, Cl. 252-8.551.

Green, Kenneth E.: *See—*
Wissner, Allan; Green, Kenneth E.; Hamann, Philip R.; and Levin, Jeremy, 4,762,935, Cl. 549-210.000.

Green, Michael J., to BP Chemicals Limited. Metal perfluorosulphonic acid polymer catalyst. 4,762,952, Cl. 568-678.000.

Green, Michael W., to Techlan, Inc. Modular data routing system. 4,763,329, Cl. 371-11.000.

Greer, Jerry A.; and Lowe, Lisa J., to Partz Partnership. Plural orientation watch mount. 4,763,313, Cl. 368-317.000.

Greer, Lonny R.: *See—*
Romey, Russell P.; and Greer, Lonny R., 4,761,959, Cl. 60-740.000.

Grego, Giorgio, to Cselt-Centro Studi e Laboratori Telecomunicazioni S.P.A. Static interferometric ellipsometer. 4,762,414, Cl. 356-349.000.

Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., to Canada, Her Majesty the Queen in Right of, as represented by the Minister of National Defence. Integrated optics spectrum analyzer. 4,762,735, Cl. 427-162.000.

Gregory, Stephen O.; West, Michael W.; Wolf, James L.; and Sallis, Daniel V., to Gregory, Stephen O. Electronic faucet with spout position sensing means. 4,762,273, Cl. 236-93.00R.

Grehier, Alain; and Rojey, Alexandre, to Institute Francais du Petrole. Heat exchange device of the perforated plate exchanger type with improved sealing. 4,762,172, Cl. 165-165.000.

Greinke, Ronald A., to Union Carbide Corporation. High coking value pitch binders. 4,762,566, Cl. 106-284.000.

Greven, Hillebrand J., to RMO-Wrkspoor Srvices BV. Testing device for ordnance. 4,761,998, Cl. 73-167.000.

Griffiths, Ian C.: *See—*
Garvey, Michael J.; and Griffiths, Ian C., 4,762,736, Cl. 427-215.000.

Grigar, Larry L.: *See—*
Barker, James M.; Grigar, Larry L.; Schramek, Dennis E.; Reid, Starlin M.; and Sumner, Cyril R., 4,762,067, Cl. 102-313.000.

Grigo, Dietrich: *See—*
Hennecke, Dietmar; Pfaff, Klaus; and Grigo, Dietrich, 4,761,947, Cl. 60-39.750.

Grimm, C. Louis, to Ivy Laboratories, Inc. Medicament implant applicator. 4,762,515, Cl. 604-61.000.

Grimm, Daniel: *See—*
Frey, Alfred; Grimm, Daniel; and Kainer, Hartmut, 4,762,689, Cl. 422-310.000.

Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., to Merrell Dow Pharmaceuticals Inc. Cardiotonic alkanoylthiazolones. 4,762,849, Cl. 514-369.000.

Griswold, Roy M.; and Vanderlaan, Douglas G., to Wacker Silicones Corporation. Process for preparing acrylate-functional organopolysiloxane-urethane copolymers. 4,762,887, Cl. 522-99.000.

Grobelny, Henri: *See—*
Chantriaux, Eric; Grobelny, Henri; and Perret, Yves, 4,762,684, Cl. 422-106.000.

Grohe, Klaus; and Schriewer, Michael, to Bayer Aktiengesellschaft. Antibacterial 1,8-bridged 4-quinolone-3-carboxylic acids. 4,762,831, Cl. 514-230.200.

Grohe, Klaus; Schriewer, Michael; Zeiler, Hans-Joachim; and Metzger, Karl G., to Bayer Aktiengesellschaft. Antibacterially active alkyl-1-cyclopropyl-1,4-dihydro-4-oxo-3-quinolinecarboxylic acids. 4,762,844, Cl. 514-312.000.

Gros, Pierre: *See—*
Jansen, Franz; and Gros, Pierre, 4,762,707, Cl. 424-85.000.

Gross, Rainer: *See—*
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,762,853, Cl. 514-432.000.

Grossfield, Karl, to Hartana Developments Limited. Chair having a base configuration enabling selective enabling static or mobil use. 4,762,365, Cl. 297-325.000.

Grove, John W., to USX Corporation. Mold friction monitoring for breakout protection. 4,762,164, Cl. 164-150.000.

Gruber, David E., to Ganeaux Industries, Inc. Method and kit for removing and disposing of oil from a vehicle. 4,762,155, Cl. 141-10.000.

Grumman Aerospace Corporation: *See—*
Kovacs, Eddie T.; and Eivers, Donald J., 4,763,124, Cl. 340-825.800.

Grunwald, John J.; and Spencer, Allen C., to MacDermid, Incorporated. Thermally stabilized photoresist images. 4,762,768, Cl. 430-324.000.

GTE Communication Systems Corporation: *See—*
Sheldon, Peter E., 4,763,022, Cl. 307-475.000.

GTE Government Systems Corporation: *See—*
Rosser, William D.; Kuo, Samuel C.; Bird, Gustavo E.; and Davis, Robert E., 4,763,131, Cl. 343-792.500.

GTE Laboratories Incorporated: *See—*
Rhodes, William H.; Wei, George C.; and Fryburg, George A., 4,762,655, Cl. 264-65.000.

GTE Products Corporation: *See—*
Kasenga, Anthony F.; and Dann, Jeffrey N., 4,762,639, Cl. 252-301.40R.

Gueugnon, Catherine; Desserre, Jacques; and Bernstein, Pierre, to CII-Honeywell Bull (Societe Anonyme). Device for writing high density data on a magnetic medium. 4,763,215, Cl. 360-119.000.

Guevara, Michael G. Firearm safety device. 4,761,906, Cl. 42-70.110.

Guiterrez, William A.: *See—*
Wilson, Herbert L.; and Guterrez, William A., 4,762,576, Cl. 156-611.000.

Gulczynski, Zdzislaw. Switching power amplifier. 4,763,080, Cl. 330-10.000.

Gulczynski, Zdzislaw. Flash analog-to-digital converter. 4,763,106, Cl. 340-347.0AD.

Gummesson, Bengt-Ake G.; Petersen, Preben A.; and Sternby, Jan P., to Gambro AB. Apparatus and method for controlling fluid flow in dialysis and the like. 4,762,618, Cl. 210-637.000.

Gunasekera, J. S.: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000.

Gundlach, Robert W.; and Bergen, Richard F., to Xerox Corporation. Printing apparatus with improved ion focus. 4,763,141, Cl. 346-158.000.

Gunma Seikou Co., Ltd.: *See—*
Bandou, Masaaki; Sugita, Masao; and Marumo, Takachi, 4,762,302, Cl. 251-360.000.

Guppy, David J.: *See—*
Geen, John A.; and Guppy, David J., 4,762,415, Cl. 356-350.000.

Guruswamy, Vinodhini, to MedTest Systems, Inc. Apparatus and methods for sensing fluid components. 4,762,594, Cl. 204-1.00T.

Gustafson, Harold L., to Russell Lorenz & Wilma Lorenz. Support member for a building structure support system. 4,761,924, Cl. 52-126.600.

Gut, Karl: *See—*
Henych, Ivo; and Gut, Karl, 4,762,555, Cl. 75-48.000.

Guttmann, Andrew T.; Brazdil, James F.; and Grasselli, Robert K., to Standard Oil Company. Preparation of vanadium III oxidic compounds and dehydrogenation of paraffins. 4,762,961, Cl. 585-661.000.

Gvoth, John Michael, Jr.; Kakalec, Robert J.; and Menkes, Henry E., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Backup protection switch to prevent reverse power flow in a UPS. 4,763,013, Cl. 307-66.000.

Gyarmati, Erno ; and Naoumidis, Aristides, to Kernforschungsanlage Julich GmbH. Method of joining molded silicon carbide parts. 4,762,269, Cl. 228-194.000.

Haag, Loren H.: *See—*
Weber, Richard; and Haag, Loren H., 4,762,796, Cl. 436-55.000.

Haas, Gunther; and Neisius, Karl H., to Merck Patent Gesellschaft Mit Beschrankter Haftung. Negatively operating photoresist composition, with radiation-absorbing additives. 4,762,767, Cl. 430-167.000.

Hachey, Raynald, to Alcan International Limited. Apparatus for the detection and measurement of suspended particulates in a molten metal. 4,763,065, Cl. 324-71.400.

Hackl, Herbert: *See—*
Nied, Roland; and Hackl, Herbert, 4,762,765, Cl. 430-137.000.

Hadaway, Bernard M., to Repco Limited. Clutch plate and method of making same. 4,762,214, Cl. 192-107.00C.

Hagin, Faust; and Drewitz, Hans J., to MAN Nutzfahrzeuge GmbH. Articulated vehicle selectively driven at two axles from two power sources. 4,762,191, Cl. 180-14.200.

Hagiuda, Yasuhiro: *See—*
Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, 4,762,965, Cl. 174-23.00R.

Hagiwara, Hitoshi: *See—*
Matsumoto, Hiroshi; and Hagiwara, Hitoshi, 4,762,771, Cl. 430-302.000.

Hagiwara, Kenzo: *See—*
Oishibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100.

Haight, Michael H.; Giolma, William H.; and Boucher, Richard, to Texas Instruments Incorporated. Automatic gain control for tank type voltage controlled oscillator. 4,763,086, Cl. 331-109.000.

Hairsine, Peter W.: *See—*
Rowlands, David A.; Golec, Julian M. C.; Matharu, Saroop S.; and Hairsine, Peter W., 4,762,840, Cl. 514-267.000.

Hakusan Seisakusho Co., Ltd.: *See—*
Oishibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100.

Halbert, Joel M.: *See—*
Koen, Myron J.; Anderson, Thomas R.; and Halbert, Joel M., 4,763,107, Cl. 340-347.0AD.

Hale Fire Pump Company: *See—*
Eberhardt, H. Alfred, 4,762,281, Cl. 241-46.060.

Halford, James W. Seed/fertilizer minimum tillage planter. 4,762,075, Cl. 111-73.000.

Hall, Deborah K.: *See—*
Maloney, William F.; and Hall, Deborah K., 4,762,495, Cl. 434-271.000.

Maloney, William F.; Hall, Deborah K.; Parkinson, Dean B.; Bergren, Orton D.; and Dodge, Allen L., 4,762,496, Cl. 434-271.000.

Hall, George R., II, to Babcock & Wilcox Company, The. Method for concealment and access to control panel functions. 4,762,502, Cl. 439-144.000.

Hall, John E. Mixing container with segregated ingredient compartments. 4,762,224, Cl. 206-221.000.

Hallen Products, Ltd.: *See—*
Siblik, Allen D.; and Babusek, James C., 4,762,347, Cl. 292-147.000.

Halliburton Company: *See—*
Barker, James M.; Grigar, Larry L.; Schramek, Dennis E.; Reid, Starlin M.; and Sumner, Cyril R., 4,762,067, Cl. 102-313.000.
Wesson, David S.; Luke, Robert R.; George, Flint R.; Haugen, David M.; and George, Kevin R., 4,762,179, Cl. 166-297.000.

Hallstrom, Bengt; Olsson, Olle; Bolmstedt, Ulf; and Johansson, Bjorn-Olow, to Alfa-Laval AB. Plate type evaporator. 4,762,171, Cl. 165-147.000.

Halm, Roland L.; Pierce, Andrew B.; and Wilding, Oliver K., Jr., to Dow Corning Corporation. Method for preparation of alkylhalosilanes. 4,762,940, Cl. 556-472.000.

Hama Corporation Co., Ltd.: *See—*
Hamasaki, Masafumi, 4,762,113, Cl. 126-263.000.

Hamada, Masataka: *See—*
Ishida, Tokuji; and Hamada, Masataka, 4,762,987, Cl. 250-201.000.

Hamakawa, Yoshihiro: *See—*
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.

Hamamatsu Photonics Kabushiki Kaisha: *See—*
Ito, Toshiaki; Hiramatsu, Mitsuo; and Hirano, Isuke, 4,762,418, Cl. 356-364.000.

Hamann, Philip R.: *See—*
Wissner, Allan; Green, Kenneth E.; Hamann, Philip R.; and Levin, Jeremy, 4,762,935, Cl. 549-210.000.

Hamano, Hiroaki; Hanamoto, Hiroyuki; and Ito, Masazumi, to Minolta Camera Kabushiki Kaisha. Electrostatic photocopiers. 4,763,163, Cl. 355-14.0SH.

Hamasaki, Masafumi, to Chori Company, Ltd.; Fukubi Kagaku Kogyo Kabushiki Kaishi; and Hama Corporation Co., Ltd. Self-heating container. 4,762,113, Cl. 126-263.000.

Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, to Trinity Industrial Corporation; and Toyota Jidosha Kabushiki Kaisha. Drying furnace for use in coating drying. 4,761,894, Cl. 34-39.000.

Hambrecht, Juergen; Illers, Karl H.; Echte, Adolf; and Swoboda, Johann, to BASF Aktiengesellschaft. Thermoplastic molding materials. 4,762,874, Cl. 524-151.000.

Hamerly, Michael E.: *See—*
Chapman, Richard C.; and Hamerly, Michael E., 4,762,088, Cl. 119-106.000.

Hamlin, Edmund M.: *See—*
Cobern, Martin E.; Stone, Frederick A.; and Hamlin, Edmund M., 4,761,889, Cl. 33-302.000.

Hanafusa, Hiroyuki; Tanaka, Fusatoshi; Nakayama, Hideo; and Nakatani, Shuichi, to Mazda Motor Corporation. Head cover arrangement for double overhead cam type engine. 4,762,111, Cl. 123-647.000.

Hanamoto, Hiroyuki: *See—*
Hamano, Hiroaki; Hanamoto, Hiroyuki; and Ito, Masazumi, 4,763,163, Cl. 355-14.0SH.

Haney, Keith M., to W-N Apache Corporation. Internal wrench for a top head drive assembly. 4,762,187, Cl. 175-171.000.

Hanks, Kenneth H.: *See—*
Bunting, John A.; and Hanks, Kenneth H., 4,762,445, Cl. 408-144.000.

Hans Stahlecker: *See—*
Stahlecker, Fritz, 4,761,946, Cl. 57-328.000.

Harada, Hiroshi. Envelope feeder. 4,762,314, Cl. 271-267.000.

Harada, Koukichi: *See—*
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000.

Harada, Takamasa: *See—*
Shimoda, Sadashi; Harada, Takamasa; Taguchi, Masaaki; and Ito, Kokichi, 4,762,400, Cl. 350-350.00S.

Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, to Mazda Motor Corporation. Vehicle slip control apparatus. 4,762,196, Cl. 180-197.000.

Harakawa, Takeshi: *See—*
Nakayashiki, Susumu; Kashio, Jiro; Harakawa, Takeshi; and Fuse, Masahiro, 4,763,315, Cl. 370-16.000.

Harding, George W., to Poly-John Enterprises Corp. Portable toilet cabana. 4,761,840, Cl. 4-664.000.

Hargrove, John W., to Brown, Nancy A. Contrast-healing water spa system. 4,761,838, Cl. 4-542.000.

Harlan, Richard A.: *See—*
Basseen, Sanjiv K.; and Harlan, Richard A., 4,761,968, Cl. 62-271.000.

Harland Machine Systems Limited: *See—*
Nuttall, Alan T., 4,762,289, Cl. 242-58.100.

Harper, David C.: *See—*
Temple, Russell A.; Wesseler, Martin G.; and Harper, David C., 4,763,159, Cl. 355-3.00R.

Harrigan, Michael E.; Rees, James D.; and Rebres, Robert P., to Xerox Corporation. Imaging system for compensating for image distortion due to wrinkled or curled documents. 4,763,173, Cl. 355-52.000.

Harris, Jesse W.; and Kuhns, James K. Retractable cover for an opening having limited stacking space. 4,762,242, Cl. 220-18.000.

Hart, Victor R. Exercise chair. 4,762,363, Cl. 297-113.000.

Hartana Developments Limited: *See—*
Grossfield, Karl, 4,762,365, Cl. 297-325.000.

Hartenstein, Johannes: *See—*
Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl. 514-258.000.

Harting, Dietmar; Nagel, Hans; and Brauer, Wolfgang, to Harting Elektronik GmbH. Pin-shaped contact element to be connected in conductor plate bores. 4,762,498, Cl. 439-82.000.

Harting Elektronik GmbH: *See—*
Harting, Dietmar; Nagel, Hans; and Brauer, Wolfgang, 4,762,498, Cl. 439-82.000.

Hartleben, Harold A.: *See—*
Choy, Terence A.; Hartleben, Harold A.; and Serna, Jaime, 4,762,513, Cl. 446-359.000.

Harty, Richard B.; and Camaret, Timothy L., to Rockwell International Corporation. Thermally activated trigger device. 4,762,662, Cl. 376-220.000.

Hartzell, Stephen L., to Du Pont de Nemours, E. I., and Company. Herbicidal pyrazolesulfonamides. 4,762,550, Cl. 71-94.000.

Harvey, Howard W.: *See—*
Coughlan, Joel B.; Harvey, Howard W.; Upton, R. Glen; and White, John R., 4,762,455, Cl. 414-4.000.

Harvey, Larry L.; and Volpe, Ralph A., to Warner-Lambert Company. Capsule sealing machine. 4,761,932, Cl. 53-329.000.

Hashimoto, Kunio; and Okazaki, Haruo, to Bridgestone Corporation. Tubular belt conveyor. 4,762,221, Cl. 198-819.000.

Hashimoto, Nobuyuki; Amano, Hiroyuki; and Shimizu, Katsumasa, to Aisin Seiki Kabushiki Kaisha. Flat motor having a stationary magnet. 4,763,037, Cl. 310-268.000.

Haskel, Inc.: *See—*
Kelly, John W., 4,761,981, Cl. 72-58.000.

Hassall, Cedric H.; Lawton, Geoffrey; and Redshaw, Sally, to Hoffmann-La Roche Inc. Bicyclic compounds. 4,762,924, Cl. 540-501.000.

Hata, Daisuke: *See—*
Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi; Hatase, Takayuki, Yamaguchi, Takao; and Aoki, Kazumasa, 4,763,154, Cl. 354-403.000.

Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, to Sumitomo Electric Industries, Ltd. Insulating polyolefin laminate paper and method for producing same, and electric power supply cable. 4,762,965, Cl. 174-23.00R.

Hatakawa, Yoshio: *See—*
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Adachi, Yoshitugu; and Hatakawa, Yoshio, 4,762,862, Cl. 522-3.000.

Hatase, Takayuki: *See—*
Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi; Hatase, Takayuki, Yamaguchi, Takao; and Aoki, Kazumasa, 4,763,154, Cl. 354-403.000.

Hatori, Mitsuo: *See—*
Hayano, Makoto; Nagatomo, Shigemi; Sakata, Hirotsugu; and Hatori, Mitsuo, 4,762,477, Cl. 418-1.000.

Hattori, Hiroyuki: *See—*
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R.

Hattori, Jun, to Canon Kabushiki Kaisha. Imaging optical system having a distributed index lens. 4,762,403, Cl. 350-413.000.

Hattori, Tadashi: *See—*
Ohta, Minoru; Miura, Kazuhiko; Onoda, Michitoshi; and Hattori, Tadashi, 4,761,995, Cl. 73-118.200.

Hattori, Yoshiyuki: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060.

Haubennestel, Karlheinz; and Kramp, Peter, to BYK-Chemie GmbH. Addition compounds, suitable as dispersing agents, processes for their preparation, their use and solids coated therewith. 4,762,752, Cl. 428-407.000.

Haugen, David M.: *See—*
Wesson, David S.; Luke, Robert R.; George, Flint R.; Haugen, David M.; and George, Kevin R., 4,762,179, Cl. 166-297.000.

Hawkins, Warren E.: *See—*
Eppley, William J.; Hawkins, Warren E.; and Schisselbauer, Paul F., 4,762,757, Cl. 429-114.000.

Hawly, Rudolf; and Schmid, Gunter, to Messerschmitt-Boelkow Blohm Gesellschaft mit beschraenkter Haftung. Riveting robot. 4,762,261, Cl. 227-66.000.

Hayano, Makoto; Nagatomo, Shigemi; Sakata, Hirotsugu; and Hatori, Mitsuo, to Kabushiki Kaisha Toshiba. Scroll compressor with control of lubricant flow. 4,762,477, Cl. 418-1.000.

Hayashi, Katsuhiko: *See—*
Okano, Shigeaki; Hayashi, Katsuhiko; Sakurazawa, Yoshiteru; and Suga, Yoshinori, 4,762,882, Cl. 525-74.000.

Hayashi, Keiji: *See—*
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200.

VOL 1093 ISS 2 AG 9 1988 UMI

Hayashi, Masaru: *See—*
Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, 4,762,695, Cl. 423-54.000.

Hayashi, Tamio: *See—*
Ito, Yoshihiko; Hayashi, Tamio; Kawamura, Norio; and Takemoto, Ichiki, 4,762,948, Cl. 562-496.000.

Hayashida, Akira: *See—*
Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki; and Ohsaki, Hiromi, 4,762,810, Cl. 501-88.000.

Hayden, Richard A., to General Motors Corporation. Belt clamping guide loop. 4,762,338, Cl. 280-801.000

Hayes, Alphis H. Portable hunting blind. 4,761,908, Cl. 43-1.000.

Haynes International, Inc.: *See—*
Klarstrom, Dwaine L., 4,762,682, Cl. 420-454.000.

Hazani, Emanuel. E^2PROM cell and architecture. 4,763,299, Cl. 365-51.000.

Healey Mouldings Limited: *See—*
Day, John A.; and Messenger, Roger M., 4,761,851, Cl. 16-110.00A

Healthcare Technologies, Inc.: *See—*
McIntyre, Jeffrey A.; and Cadieux, Timothy P. (said Timothy P. Cadieux assors. to), 4,762,517, Cl. 604-175.000.

Hearn, David D.: *See—*
Dech, James A.; Hearn, David D.; and Schuh, Frank J., 4,762,186, Cl. 175-61.000.

Heaston, Bruce A.; and Foust, Jeff A., to General Motors Corporation. Vehicle suspension control with actuating circuit protection 4,763,222, Cl. 361-195.000.

Hedley, Terence M., to Walk Off Mats Limited. Non-slip floor mat combination. 4,762,741, Cl. 428-78.000.

Hegarty, John; and Wolfe, Raymond, to American Telephone and Telegraph Company, AT&T Bell Laboratories. Optical systems with antireciprocal polarization rotators. 4,762,384, Cl. 350-96.120.

Heidel, Hans-Joachim: *See—*
Kruger-Hoiss, Werner; Heidel, Hans-Joachim; and Troue, Heinrich, 4,762,287, Cl. 242-48.000.

Heidingsfeld, Herbert: *See—*
Goyert, Wilhelm; Winkler, Jurgen; Perrey, Hermann; and Heidingsfeld, Herbert, 4,762,884, Cl. 525-28.000

Heilbrunn, Alain, to Societe Chimique Des Charbonnages S.A. Polyolfinic elastomer compositions, production process and articles obtained from said compositions. 4,762,877, Cl. 524-432.000

Heining, Hans-Dieter; and Wick, Albert, to Siemens Aktiengesellschaft. Method and apparatus for determining the flux angle of rotating field machine or for position-oriented operation of the machine. 4,763,058, Cl. 318-807.000.

Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, to BASF Aktiengesellschaft. High temperature resistant molding materials. 4,762,869, Cl. 524-59.000

Heitz, Steven A.: *See—*
Ewbank, Michael E.; and Heitz, Steven A., 4,762,146, Cl. 137-625.300

Helix Technology Corporation: *See—*
Higham, Graham J.; Snively, Howard D.; Nicoll, Harry G.; and Pruitt, Gerald R., 4,761,960, Cl. 62-6.000.

Hella KG Hueck Co.: *See—*
Bohle, Franz-Josef; Brockmeyer, Hans-Peter; Brugger, Theodor; and Panzer, Klaus, 4,762,503, Cl. 439-336.000.

Hellat, Jaan, to BBC Brown, Boveri & Company, Ltd. Fuel lance for the combustion chamber of a gas turbine. 4,761,958, Cl. 60-737.000.

Hellgren, Olof: *See—*
Henningsson, Goran; and Hellgren, Olof, 4,761,913, Cl. 47-17.000.

Helling, Guter; Reiff, Helmut; and Kunitz, Friedrich-Wilhelm, to Agfa-Gevaert AG. Polyurea and polyurethane compounds containing a photographically useful group, and a photographic recording material containing such compounds. 4,762,777, Cl. 430-548.000.

Helman, Michael D.: *See—*
Rafft, Ronald R.; Helman, Michael D.; and Mackles, Leonard, 4,762,704, Cl. 424-65.000.

Henecke, Daniel C. Pet feeding utensil. 4,762,087, Cl. 119-61.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Ackermann, Hans; Koecher, Ralf; Steinberner, Udo; and Michel, Otto, 4,762,467, Cl. 417-54.000
Ritter, Wolfgang; and Zoellner, Wolfgang, 4,762,946, Cl. 560-179.000.

Henkel, Walter R. Compact disc guard and carrying system. 4,762,225, Cl. 206-311.000.

Hennecke, Dietmar; Pfaff, Klaus; and Grigo, Dietrich, to MTU Motoren- Und Turbinen- Union Munchen GmbH. Gas turbine propulsion unit with devices for branching off compressor air for cooling of hot parts. 4,761,947, Cl. 60-39.750.

Henningsson, Goran; and Hellgren, Olof, to Ludvig Svensson International BV. Greenhouse screen. 4,761,913, Cl. 47-17.000.

Henry, George A.: *See—*
Soucie, William G.; Chen, Wen-Sherng; Witte, Vernon C.; Henry, George A.; and Drehkoff, W. Dennis, 4,762,726, Cl. 426-602.000.

Henry, Paul M., to Burr-Brown Corporation. Circuit and method for semiconductor leakage current compensation. 4,763,028, Cl 307-573.000.

Hensens, Otto D.: *See—*
Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 4,762,923, Cl. 540-455.000.

Henych, Ivo; and Gut, Karl, to Georg Fischer Aktiengesellschaft Process for the production of nodular cast iron. 4,762,555, Cl. 75-48.000.

Herbert, Wendel; and Serge, Wendel, to Societe International de Fabrication et de Diffusion de Produits Parfumes-I.P.P. Diffuser for volatile liquid fluids. 4,762,275, Cl. 239-6.000.

Herrera, Carlos: *See—*
Levosky, John M.; Dowdy, Jack A.; and Herrera, Carlos, 4,762,358, Cl. 296-97.00G

Herrin, Lenny. Box formed from two tray-type containers. 4,762,272, Cl. 229-125.080.

Hertrich, Klaus, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Adjusting roller arrangement particularly for rotary folders. 4,762,311, Cl. 270-41.000

Herzog, Barbara D.; and Herzog, Stuart. Bio-mechanical neuro-sensory keyboard structure and operating methods. 4,762,436, Cl. 400-491.300

Herzog, Stuart: *See—*
Herzog, Barbara D.; and Herzog, Stuart, 4,762,436, Cl. 400-491.300.

Hettich, Gerhard: *See—*
Schmid, Hans-Dieter; Alberter, Gunther; and Hettich, Gerhard, 4,761,996, Cl. 73-146.500.

Hewlett-Packard Company: *See—*
Edwards, Allen P., 4,763,083, Cl. 331-2.000.
Lee, Ruby B.; and Mahon, Michael J., 4,763,242, Cl. 364-200.000.

Hi-Ranger, Inc.: *See—*
Holmes, William K., 4,762,199, Cl. 182-2.000.

Hickok, William K., to Eastman Kodak Company. Time division multiplex video recorder with high resolution. 4,763,202, Cl. 358-319.000.

Higashi, Izumi; Adachi, Akio; Tajima, Takayoshi; and Hiroshige, Norimichi, to Fuji Electric Co., Ltd. Apparatus for uniforming heat of gun barrel. 4,762,048, Cl. 89-14.100.

Higham, Graham J.; Snively, Howard D.; Nicoll, Harry G.; and Pruitt, Gerald R., to Helix Technology Corporation. Cryogenic refrigeration system having an involute laminated stator for its linear drive motor. 4,761,960, Cl. 62-6.000.

Higuchi, Mitsuhiro: *See—*
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200

Higuchi, Takeru: *See—*
Alexander, Jose; and Higuchi, Takeru, 4,762,851, Cl. 514-420.000.

Hihn, Gerhard: *See—*
Stoll, Kurt; and Hihn, Gerhard, 4,762,052, Cl. 92-172.000.

Hikosaka, Takashi: *See—*
Sonoda, Tomiya; Hikosaka, Takashi; and Nakamura, Hiroki, 4,762,742, Cl. 428-141.000.

Hill, Anthony, to Stafford Hill Arms Company Limited. Fluid-operated door opener. 4,762,304, Cl. 254-93.00R.

Hilton, David, to Hilton, David. Emergency cut off device. 4,762,968, Cl. 200-52.00R.

Himmighofen, Dieter: *See—*
Denter, Ulrich; Himmighofen, Dieter; and Schulein, Rolf G., 4,762,042, Cl. 83-374.000.

Hinzen, Dieter: *See—*
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.

Hioki, Yuichi: *See—*
Iwasaki, Tetsuji; and Hioki, Yuichi, 4,762,547, Cl. 71-65.000.

Hirai, Mikio; Nishikubo, Yoshiaki; Yoshida, Tomio; and Ochi, Tsuneo, to Sumitomo Naugatick Co., Ltd. Weather resistant thermoplastic resin composition. 4,762,886, Cl. 525-70.000.

Hirakawa, Katsumi: *See—*
Matsuura, Mitsuyuki; and Hirakawa, Katsumi, 4,762,898, Cl. 526-125.000

Hiramatsu, Mitsuo: *See—*
Ito, Toshiaki; Hiramatsu, Mitsuo; and Hirano, Isuke, 4,762,418, Cl. 356-364.000.

Hiramoto, Masato: *See—*
Yoneda, Shigeo; Hiramoto, Masato; and Kanayama, Akira, 4,763,340, Cl. 375-121.000.

Hirano, Horofumi, to Canon Kabushiki Kaisha. Ribbon feed device. 4,762,434, Cl. 400-236.200.

Hirano, Isuke: *See—*
Ito, Toshiaki; Hiramatsu, Mitsuo; and Hirano, Isuke, 4,762,418, Cl. 356-364 000.

Hirano, Motoki: *See—*
Tomoda, Takahisa; Takeuchi, Mikio; Nakano, Kinichiro; and Hirano, Motoki, 4,763,121, Cl. 340-825.540.

Hirano, Shin-ichi; and Yamaya, Susumu, to Toshiba Tungaloy Co., Ltd. Method of producing cubic boron nitride coated material. 4,762,729, Cl. 427-38.000.

Hirano, Shinichi; Toyokuni, Ryo; and Kuroda, Hiroshi, to Seiko Instruments & Electronics Ltd.; and Hirano, Shinichi. Method of manufacturing calcium carbonate single crystal. 4,762,588, Cl. 156-623.00R.

Hirasawa, Masahide: *See—*
Takei, Masahiro; Kozuki, Susumu; Masui, Toshiyuki; Hirasawa, Masahide; and Kashida, Motokazu, 4,763,293, Cl. 364-723.000.

Hirata, Makizo: *See—*
Fujikawa, Tetsuzo; Hirata, Makizo; Tamba, Shinichi; and Yamane, Yoshiro, 4,762,094, Cl. 123-90.600.

Hirohata, Toshio, to Nifco Inc. Tube connector. 4,762,343, Cl. 285-158.000

Hiromori Industrial Company: *See—*
Hiromori, Junji, 4,761,862, Cl. 24-67.900.

Hiromori, Junji, to Hiromori Industrial Company. Clip used for business. 4,761,862, Cl. 24-67.900

Hirose, Masayuki: *See—*
Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, 4,762,965, Cl. 174-23.00R.

Hirose, Takeshi: *See—*
Ogawa, Tadashi; and Hirose, Takeshi, 4,762,775, Cl. 430-505.000.

Hirose, Yoshihiko: *See—*
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, 4,763,167, Cl. 355-14.00R.

Hiroshige, Norimichi: *See—*
Higashi, Izumi; Adachi, Akio; Tajima, Takayoshi; and Hiroshige, Norimichi, 4,762,048, Cl. 89-14.100

Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, to Matsushita Electric Industrial Co., Ltd. Automatic bread producing machine. 4,762,057, Cl. 99-348.000

Hirota, Hisashi, to Nippon Thompson Co., Ltd. Work reciprocated surface grinding apparatus. 4,761,918, Cl. 51-114.000.

Hirota, Kazumi: *See—*
Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, 4,762,579, Cl. 156-69.000.

Hirsch, Kenneth S., to Eli Lilly and Company. Aromatase inhibitors. 4,762,836, Cl. 514-256.000

Hisgen, Bernd; Portugall, Michael; and Blinne, Gerd, to BASF Aktiengesellschaft. Wholly aromatic mesomorphic polyether ester imide and the preparation thereof. 4,762,906, Cl. 528-170.000.

Hitachi, Ltd.: *See—*
Ito, Yasushi; Imamura, Masaaki; Kato, Yoshiki; and Fumioka, Jun, 4,762,534, Cl. 51-293.000.
Kurihara, Kunitoshi; Kawashima, Katsuyuki; Masumi, Ryoji; and Azekura, Kazuo, 4,762,672, Cl. 376-333.000
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000.
Nakayashiki, Susumu; Kashio, Jiro; Harakawa, Takeshi; and Fuse, Masahiro, 4,763,315, Cl. 370-16.000
Ohba, Sayoko; Okuna, Kenji; and Ohtsuka, Hidefumi, 4,763,143, Cl. 346-160.100.
Sakurai, Kazuo; and Tamura, Takahiro, 4,762,478, Cl. 418-55.000.
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000
Shimode, Shinichi; and Ouchi, Kastubumi, 4,763,135, Cl. 346-1.100.
Yamamoto, Kanji; and Yamazaki, Isao, 4,763,211, Cl. 360-97.000.
Yoshida, Tomiharu; Omote, Tatsuyuki; Ishii, Yoshimi; and Izumi, Kiyoshi, 4,762,670, Cl. 376-313.000.

Hoashi, Akira: *See—*
Maki, Takao; Yamaki, Isao; Akima, Hideo; and Hoashi, Akira, 4,762,375, Cl. 303-96.000.

Hoda, Takeo: *See—*
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekid:, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000

Hodd, Kenneth A.: *See—*
Velasco, Miguel U.; and Hodd, Kenneth A., 4,762,900, Cl. 528-54.000

Hodgkin, Jonathan H.; and Eibl, Robert, to Commonwealth Scientific and Industrial Research Organization. Selective extraction of gold. 4,762,556, Cl. 75-118.00R.

Hoebener, Karl G.: *See—*
Bora, Muhammad-Yusuf J.; and Hoebener, Karl G., 4,761,881, Cl. 29-840.000

Hoechst Aktiengesellschaft: *See—*
Kreutzberger, Alfred; Soder, Alfons; and Gerhards, Hermann J., 4,762,833, Cl. 514-245.000.
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000
Schimmel, Gunther; Gradl, Reinhard; and Kolkmann, Friedrich, 4,762,693, Cl. 423-321.00S.
Schlafer, Ludwig; Springer, Hartmut; and Kunze, Michael, 4,762,916, Cl. 534-631.000
Stache, Ulrich; Kraemer, Hans P.; and Sedlacek, Hans-Harald, 4,762,648, Cl. 260-383.000
Wiedemann, Wolfgang; Drexler, Michael; and Fuerderer, Juergen, 4,762,760, Cl. 430-59.000

Hoechst Celanese Corporation: *See—*
Chambers, Thomas V.; Deicke, Manfred; and Fleming, Suzanne C., 4,762,524, Cl. 8-549.000.
Leslie, Thomas M.; Yoon, Hyun-Nam; DeMartino, Ronald N.; and Stamatoff, James B., 4,762,912, Cl. 528-503.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Shutske, Gregory M., 4,762,841, Cl. 514-278.000.

Hoek, Nicholas G. M. Seat for skier. 4,762,339, Cl. 280-812.000

Hoelzel, Roy J.; and Doyle, Brent H., to ETA Systems, Inc. Memory assembly with cooling insert. 4,763,298, Cl. 365-51.000.

Hoesch Stahl Aktiengesellschaft: *See—*
Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, 4,762,602, Cl 204-206.000

Hoffman, George H., to Allied Plastics Enterprises, Inc. Self-closing hinge structure. 4,761,853, Cl. 16-302.000

Hoffman, John F.: *See—*
Lansky, Marc A.; and Clemens, Philip M., 4,761,902, Cl. 40-155.000

Hoffman, Louis S.: *See—*
Kerch, Martha E.; and Hoffman, Louis S., 4,762,124, Cl 128-156.000

Hoffman, Michael E.: *See—*
Buscher, John H.; and Hoffman, Michael E., 4,761,878, Cl. 29-631.000

Hoffmann-La Roche Inc.: *See—*
Hassall, Cedric H.; Lawton, Geoffrey; and Redshaw, Sally, 4,762,924, Cl. 540-501.000

Hofmann, Helmut J. Suction-operated automatic swimming pool cleaner. 4,761,848, Cl. 15-1.700.

Hogg, John P. C. Self equalizing lifting device. 4,762,355, Cl 294-82.120.

Holehouse, Joseph G.: *See—*
Goel, Anil B.; Holehouse, Joseph G.; Jones, Jeffrey P.; and DeLong, Teresa, 4,762,864, Cl. 523-428.000.

Holler, Heinz, to Voith Turbo GmbH & Co. KG. Hydraulic coupling. 4,761,952, Cl. 60-330.000

Holmes, William K., to Hi-Ranger, Inc. Aerial lift including fiber optics boom control. 4,762,199, Cl. 182-2.000

Holscher, Ebo J.; Verhoef, Nicolaas J. F. D.; and Ligeon, Cynthia M., to Thomas J. Lipton, Inc. Oil-in-water emulsion glazing agent for foodstuffs. 4,762,721, Cl. 426-94.000.

Holt, Nicholas P.; and Procter, Brian J., to International Computers Limited. Microprogram control. 4,763,246, Cl. 364-200.000.

Holub, Edward P.; and Grabowski, Richard J., to Construction Products Research, Inc. Volume-stable hardened hydraulic cement 4,762,561, Cl. 106-89.000

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Asakura, Masahiko; Kushida, Noritaka; Shuna, Takanori; and Kubota, Shin'ichi, 4,762,604, Cl. 204-406.000
Enomoto, Koji, 4,762,352, Cl. 293-120.000
Kawanabe, Tomohiko; Asakura, Masahiko; Kushida, Noritaka; Seki, Yasunari; Shiina, Takanori; and Muroya, Minoru, 4,763,265, Cl. 364-431.040
Morita, Hirobumi; and Fukui, Yoshiro, 4,762,459, Cl. 414-680.000
Yamada, Toshiyuki; Kitagawa, Makoto; and Kurihara, Toshio, 4,762,197, Cl. 180-219.000

Honda Giken Koygo Kabushiki Kaisha: *See—*
Fujii, Noriaki; Iwata, Takeshi; Okawa, Toshihiro; and Takahara, Naoki, 4,762,099, Cl. 123-90.440

Honda, Mitsuru; Koike, Atsushi; Ogawa, Kyosuke; and Murai, Keiichi, to Canon Kabushiki Kaisha. Electrophotographic light receiving members comprising amorphous silicon and substrate having minute irregularities. 4,762,762, Cl. 430-65.000.

Honeycutt, Thomas E.; and Roberts, Thomas G., to United States of America, Army. System and device for recognition or IFF use. 4,763,361, Cl. 455-605.000

Honeywell Bull Inc.: *See—*
Barlow, George J.; and Keeley, James W., 4,763,243, Cl. 364-200.000

Honeywell Inc.: *See—*
Eppley, William J.; Hawkins, Warren E.; and Schisselbauer, Paul F., 4,762,757, Cl. 429-114.000
Foss, Norman A., 4,762,426, Cl. 374-130.000
Glenn, Max C.; and McMullen, Raymond F., 4,763,098, Cl. 338-4.000
Husain, Anis; and Sullivan, Charles T., 4,762,382, Cl. 350-96.120
Lamberg, John R., 4,763,085, Cl. 331-56.000

Hongu, Tatsuhiko: *See—*
Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki; and Ohsaki, Hiromi, 4,762,810, Cl. 501-88.000

Honjo, Takeshi, to Canon Kabushiki Kaisha. Apparatus for handling an original. 4,763,160, Cl. 355-3.0SH.

Hoo, James W.: *See—*
Yeung, Paul K. K.; Howard, Alan D.; Hoo, James W.; and Pennock, James L., 4,763,066, Cl. 324-73.00R

Hopkins, Martin E.; and Warren, Henry S., Jr., to International Business Machines Corporation. Method for generating short form instructions in an optimizing compiler. 4,763,255, Cl. 364-300.000

Horan, Paul K.; and Slezak, Sue E., to SmithKline Beckman Corporation. In vivo cellular tracking. 4,762,701, Cl. 424-1.100.

Hori, Tomoshige; and Itoh, Kensuke, to Snow Brand Milk Products Co., Ltd. Sensor for measurement by electrical heating. 4,762,427, Cl. 374-141.000

Horiguchi, Shojiro: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000

Horii, Kiyoshi: *See—*
Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, 4,762,148, Cl. 137-808.000

Horner, Reginald M.: *See—*
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., 4,762,265, Cl. 228-50.000

VOL 1093 ISS 2 AG 9 1988 UMI

Horton, Terry; and Zavalza, Emilio, to Utility Trailer Mfg. Co. Folding device for heavy curtains. 4,762,361, Cl. 296-181.000.

Hosfeld, Lewis K.: *See—*
Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., 4,762,643, Cl. 252-378.00R.

Hoshino, Kazuo: *See—*
Sakakura, Akira; Hoshino, Kazuo; Uematsu, Yoshihiro; Igawa, Takashi; and Fujimoto, Hiroshi, 4,762,575, Cl. 148-111.000.

Hosiden Electronics Co., Ltd.: *See—*
Yasui, Masaru; and Miyazu, Tatsuke, 4,762,398, Cl. 350-334.000.

Houplain, Georges. Fitting with removable support for lighting fixtures fixed in ceiling. 4,763,231, Cl. 362-148.000.

Hovde, Peter L.: *See—*
Eberhardt, John D.; Hovde, Peter L.; Koerber, John M.; Neary, Robert J.; and Peltier, Robert V., 4,761,957, Cl. 60-650.000.

Howard, Alan D.: *See—*
Yeung, Paul K. K.; Howard, Alan D.; Hoo, James W.; and Pennock, James L., 4,763,066, Cl. 324-73.00R

Howard, Fred; and Edson, Sydney, to Sara Lee Corporation. Integrated modular store fixture system and a tray and header therefor. 4,762,235, Cl. 211-59.300.

Hoyt, Tim K.: *See—*
Thompson, John M.; and Hoyt, Tim K., 4,762,506, Cl. 439-418.000.

Hsieh, Fung Hsing. Automatically self-alarming electronic clinical thermometer. 4,763,112, Cl. 340-573.000.

Huang, Chi-Shuang: *See—*
Chuang, Wu-Chen; Huang, Chi-Shuang; and Chuang, Vincent, 4,762,153, Cl. 139-134.000.

Huang, Hann S.; and Sather, Norman F., to United States of America, Energy. Process for removal of hydrogen halides or halogens from incinerator gas. 4,762,596, Cl. 204-60.000.

Hubbell Incorporated: *See—*
Nuckolls, Joe A.; and Flory, Isaac L., IV, 4,763,044, Cl. 315-176.000.

Huber, Roy L. Demountable pick-up truck tonneau cover. 4,762,360, Cl. 296-100.000.

Huber, William J.: *See—*
Stluka, Eugene F.; and Huber, William J., 4,762,345, Cl. 292-26.000.

Hubner, Gerd: *See—*
Rau, Norbert; Hubner, Gerd; Staiger, Wolfgang; Brodmann, Rainer; and Gerstorfer, Oskar, 4,763,006, Cl. 250-561.000

Hubner-Parajsz, Christa; Schetters, Hartmut; Lenz, Helmut; and Erler, Klaus, to Boehringer Mannheim GmbH. Process and reagent for the determination of the follicle-stimulating hormone and monoclonal antibodies suitable therefor. 4,762,783, Cl. 435-7.000.

Hucul, Dennis A.; and Stevens, Rex R., to Dow Chemical Company, The. Syngas conversion to oxygenates by reduced yttrium/lanthanide/actinide-modified catalyst. 4,762,858, Cl. 518-714.000

Huggins, Dale K., to Amax Inc. Ammonium octamolybdate-alpha. 4,762,700, Cl. 423-593.000.

Hughes Aircraft Company: *See—*
Pepper, David M., 4,762,397, Cl. 350-331.00R.
Root, Randolph E., 4,762,606, Cl. 206-328.000.
Wu, Shin-Tson, 4,762,399, Cl. 350-347.00V.

Hughes, Rodney V., to Lucas Industries plc. Feed system for linked ammunition. 4,762,049, Cl. 89-33.140.

Hughes Tool Company: *See—*
Smith, Sidney K., Jr., 4,762,177, Cl. 166-216.000.

Hummer, Elmar: *See—*
Bergmann, Erich; and Hummer, Elmar, 4,762,756, Cl. 428-698.000.

Hunt, Neil: *See—*
Deering, Michael F.; and Hunt, Neil, 4,763,288, Cl. 364-578.000.

Hunt X-Acto, Inc.: *See—*
Silverstein, Sidney, 4,761,882, Cl. 30-162.000.

Hunter Douglas Inc.: *See—*
Anderson, Richard N., 4,762,161, Cl. 160-178.200.

Huntoon, Andrew E.: *See—*
Roessler, Thomas H.; Endres, Dan D.; Enloe, Kenneth M.; Huntoon, Andrew E.; and Lippert, Mary E., 4,762,521, Cl. 604-38.0SA.

Huntron Instruments, Inc.: *See—*
Yeung, Paul K. K.; Howard, Alan D.; Hoo, James W.; and Pennock, James L., 4,763,066, Cl. 324-73.00R.

Huon de Kermadec, Jean; and Thomas, Guy M. C. M., to SOULE. Transport installation comprising a guide track and circulating cable driven cars. 4,762,070, Cl. 104-173.100.

Hurtado, Otto. Cross bar locking device. 4,762,350, Cl. 292-259.00R

Husain, Anis; and Sullivan, Charles T., to Honeywell Inc. Optical interconnect circuit for GaAs optoelectronics and Si VLSI/VHSIC. 4,762,382, Cl. 350-96.120.

Huschelrath, Gerhard, to NUKEM GmbH. Method and apparatus to compensate for lateral changes of a ferromagnetic body during magnetic testing. 4,763,070, Cl. 324-225.000.

Husqvarna Aktiebolag: *See—*
Skogward, Kenneth O. E., 4,762,077, Cl. 112-323.000.

Hussein, Hany M. G., to Laserscope, Inc. Endoscopic device having handle assembly and catheter assembly. 4,762,120, Cl. 128-6.000.

Hutchins, Bruce E., to Saturn Corporation. Hydraulic mount having a flexible decoupler with an orifice therethrough. 4,762,309, Cl 267-140.100.

Hwang, Wei; Schuster, Stanley E.; and Terman, Lewis M., to International Business Machines Corporation. Method and structure for a high density VMOS dynamic ram array. 4,763,180, Cl. 357-23.600.

Hwang, Wei S.: *See—*
Mishkovsky, Vladimir; Hwang, Wei S.; and Kamrath, David J., 4,762,542, Cl. 62-28.000.

Hyer, Frank S.; and Kintner, Paul M., to Hyer Industries, Inc. Adaptation to major or sporadic disturbance error in weigh feeding apparatus. 4,762,252, Cl. 222-56.000.

Hyer Industries, Inc.: *See—*
Hyer, Frank S.; and Kintner, Paul M., 4,762,252, Cl. 222-56.000.

Ibarra, Inigo Arana, to Esperanza y Cia. Mortar. 4,762,047, Cl. 89-1.350.

Icaro Olivieri & C. S.p.A.: *See—*
Calabrigo, Giovanni B., 4,761,859, Cl. 24-68.0SK.

Ichihara, Yoshiyuki: *See—*
Murahashi, Takashi; Ichihara, Yoshiyuki; Nakazawa, Toshihiko; and Takesue, Toshihiro, 4,763,134, Cl. 346-1.100.

Ichihashi, Takao: *See—*
Makiura, Yoshinori; Wakikaido, Takahiro; Yamamoto, Haruo; Ogawa, Shusaku; and Ichihashi, Takao, 4,763,174, Cl. 355-55.000.

Ichikoh Industries Limited: *See—*
Takayama, Kazushige, 4,763,038, Cl. 313-318.000.

ICI Americas, Inc.: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,762,932, Cl. 548-198.000.

Ide, Noriaki: *See—*
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.

Idel, Karsten: *See—*
Ostlinning, Edgar; Idel, Karsten; and Bottenbruch, Ludwig, 4,762,911, Cl. 528-388.000.

Igawa, Takashi: *See—*
Sakakura, Akira; Hoshino, Kazuo; Uematsu, Yoshihiro; Igawa, Takashi; and Fujimoto, Hiroshi, 4,762,575, Cl. 148-111.000.

Ige, Hitoshi: *See—*
Sasaki, Isao; Mukai, Nobuhiro; and Ige, Hitoshi, 4,762,863, Cl. 522-11.000

Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi; Hatase, Takayuki; Yamaguchi, Takao; and Aoki, Kazumasa, to Ricoh Company, Ltd. Focus detecting device and image signal amplifier circuit therefor. 4,763,154, Cl. 354-403.000.

Ihara, Hirokazu: *See—*
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000.

Iiri, Shigeo: *See—*
Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, 4,762,695, Cl. 423-54.000.

Ikeda, Hayato; Kitahama, Satoshi; and Onomura, Hiroshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Shoe-and-socket joint in a swash plate type compressor. 4,762,468, Cl. 417-269.000.

Ikeda, Ichio, to Kabushikikaisha Anseikogyo. Latch for an automobile door. 4,762,349, Cl. 292-216.000

Ikenaka, Tokuji; and Omichi, Kaoru, to Wako Pure Chemical Industries, Ltd. Oligosaccharide derivatives and their use as substrate for measuring α-amylase activity. 4,762,917, Cl. 536-4.100.

Ilco Unican Inc.: *See—*
Fish, Aaron M.; Mayzels, Leon. Branover, Alexander; Miresmaili, Masoud; and Dausseing, Jean-Paul, 4,762,212, Cl. 192-24.000.

Ilieva, Plamenka I.: *See—*
Borovski, Boris H.; and Ilieva, Plamenka I., 4,763,247, Cl. 364-200.000.

Illers, Karl H.: *See—*
Hambrecht, Juergen; Illers, Karl H.; Echte, Adolf; and Swoboda, Johann, 4,762,874, Cl. 524-151.000.

Imagawa, Susumu: *See—*
Shimada, Kazuyuki; Shibata, Isamu; Kaneko, Yutaka; and Imagawa, Susumu, 4,763,334, Cl. 372-29.000.

Imai, Katsuhiko, to Nippon Electric Glass Company, Limited. Low dielectric fiber glass composition having improved water resistance and heat resistance. 4,762,809, Cl. 501-35.000.

Imai, Ryoichi; Satomura, Seiichiro; and Iwaya, Toshio, to Canon Kabushiki Kaisha. Auto-focus apparatus applied to image reading apparatus and the like. 4,762,985, Cl. 250-201.000.

Imai, Tamotsu, to UOP Inc. Dehydrogenation catalyst composition and paraffin dehydrogenation. 4,762,960, Cl. 585-660.000.

Imamura, Masaaki: *See—*
Ito, Yasushi; Imamura, Masaaki; Kato, Yoshiki; and Fumioka, Jun, 4,762,534, Cl. 51-293.000.

Imanaka, Asaji; Fujiwara, Tatsuo; and Osaka, Shuichi, to Nippon Air Brake Co., Ltd. Wheel-speed detecting arrangement. 4,763,261, Cl. 364-426.000.

Immendorfer, Manfred; Kopp, Dieter; Thierer, Gebhard; and Seichter, Helmut, to Alcatel, N.V. Facility for detecting and converting dial information and control information for service features of a telephone switching system. 4,763,350, Cl. 379-67.000.

Imoto, Yuzo: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060

Imperial Chemical Industries, Ltd.: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., 4,762,932, Cl. 548-198.000.

Imperial Chemical Industries PLC: *See—*
Whittle, Alan J.; Salmon, Roger; and McDonald, Edward, 4,762,835, Cl. 514-256.000.

IMRE Corporation: *See—*
Balint, Joseph P., 4,762,787, Cl. 435-174.000.

INA Walzlager Schaeffler KG: *See—*
Kraus, Gerhard, 4,762,739, Cl. 428-36.000.

Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Control valve for controlling fluid passage 4,762,300, Cl. 251-129.060.

Inco Alloys International, Inc.: *See—*
Tassen, Curtis S.; and Smith, Gaylord D., 4,762,681, Cl. 420-443.000

Industrial Technology Research Institute: *See—*
Liu, Jonq-Min; Chen, Fu-Lung; and Chiou, Yeong-Cherng, 4,762,747, Cl. 428-343.000

Ing. Erich Pfeiffer GmbH & Co., KG: *See—*
Fuchs, Karl-Heinz, 4,762,475, Cl. 417-550.000

Ingenieurburo S. Ficker: *See—*
Ficker, Stefan, 4,762,484, Cl. 425-174.80R

Ingolia, Thomas D.: *See—*
Chapman, Jerry L., Jr.; Ingolia, Thomas D.; Kaster, Kevin R.; Queener, Stephen W.; and Skatrud, Paul L., 4,762,786, Cl 435-172.300

Ingraham, Ronald H.: *See—*
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000.

Ingrain, Raymond, to La Telemecanique Electrique. Device for adjusting the thermal current of a thermal bimetallic strip trip and a protection switch including such a device. 4,763,096, Cl. 337-82.000.

Inomata, Koichiro: *See—*
Kobayashi, Tadahiko; Sahashi, Masashi; and Inomata, Koichiro, 4,762,008, Cl. 73-862.360.

Inoue, Hajime: *See—*
Takahashi, Takao; and Inoue, Hajime, 4,763,206, Cl. 360-8.000.

Inoue, Nobuhisa: *See—*
Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Inoue, Nobuhisa, 4,762,383, Cl. 350-96.130.

Inoue, Satoru: *See—*
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.

Inoue, Shigehiko: *See—*
Ogino, Sekiya; Inoue, Shigehiko; Tomai, Touru; and Tamura, Masami, 4,762,165, Cl. 164-457.000

Inoue, Yasuo; and Endo, Itaru, to Olympus Optical Co., Ltd. Inverted-design microscope. 4,762,405, Cl. 350-507.000.

Inphardial S.p.A.: *See—*
Sama, Claudio, 4,762,620, Cl. 210-646.000

Insley, Harold, to Thermar Corporation. Electrical resistance fluid heating apparatus. 4,762,980, Cl. 219-307.000

Institut Francais du Petrole: *See—*
Warzywoda, Michel; Ferre, Veronique; and Pourquie, Jacques, 4,762,788, Cl. 435-209.000

Institut National de la Sante et de la Recherche Medicale (INSERM): *See—*
Geffard, Michel, 4,762,781, Cl. 435-7.000.

Institute Francais du Petrole: *See—*
Grehier, Alain; and Rojey, Alexandre, 4,762,172, Cl. 165-165.000.

Intermedics, Inc.: *See—*
Baker, Ross G., Jr., 4,762,136, Cl. 128-786.000.

International Business Machines Corporation: *See—*
Ashford, Thomas J.; Burns, Nancy A.; Flagg, Richard L.; Iwaskiw, Christine T.; and Starbird, Roberta P., 4,763,277, Cl. 364-513.000
Barzilai, Zeev; Iyengar, Vijay S.; Rosen, Barry K.; and Silberman, Gabriel M., 4,763,289, Cl. 364-578.000.
Binning, Gerd K.; and Gerber, Christoph E., 4,762,996, Cl 250-306.000
Bora, Muhammad-Yusuf J.; and Hoebener, Karl G., 4,761,881, Cl. 29-840.000
Byerly, Kent A.; and Grant, Duane E., 4,762,994, Cl. 250-236.000
Calvignac, Jean; and Secondo, Pierre, 4,763,321, Cl. 370-94.000
Caswell, Nathan S.; Garwin, Richard L.; and Levine, James L., 4,762,990, Cl. 250-221.000
Damon, Brian W.; Ravitz, Cary P.; and Voss, Carl J., 4,763,137, Cl. 346-76.0PH
Denny, Clifford M.; Findlay, Hugh T.; Popyach, Stephen A.; and Tao, Deh C., 4,762,431, Cl. 400-120.000
Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., 4,763,245, Cl. 364-200.000.
Franaszek, Peter A., 4,763,122, Cl. 340-825.510.
Hopkins, Martin E.; and Warren, Henry S., Jr., 4,763,255, Cl. 364-300.000
Hwang, Wei; Schuster, Stanley E.; and Terman, Lewis M., 4,763,180, Cl. 357-23.600.
Kauffman, Arthur A., Jr.; and Muhich, John S., 4,763,251, Cl 364-200.000
Kellam, Karen K.; and Tong, Ronnie C., 4,763,279, Cl. 364-518.000.
Matsubara, Shigeru; Mori, Tohru; and Tabata, Toshiroh, 4,763,119, Cl. 340-747.000
Morrish, Andrew J.; and Wells, John H., 4,763,120, Cl. 340-748.000.
Stankus, John J.; and Fry, Boyd M., 4,761,880, Cl. 29-840.000.

International Computers Limited: *See—*
Holt, Nicholas P.; and Procter, Brian J., 4,763,246, Cl. 364-200.000

International Minerals & Chemical Corp.: *See—*
Keith, Paula M.; and Cain, Wendy J., 4,762,784, Cl. 435-70.000
Yarnell, J. Jay; Pflaum, Craig A.; Davidson, Arthur F., and Kuhn, Harry J., 4,762,698, Cl. 423-341.000.

International Rolling Mill Consultants, Inc.: *See—*
Ginzburg, Vladimir B.; DeChellis, Richard C.; and Ellis, Robert H., 4,761,983, Cl. 72-148.000

Intersonics Incorporated: *See—*
Danley, Thomas J., 4,763,358, Cl. 381-156.000

Investronica, S.A.: *See—*
Alcantara Perez, Bernardo; Becerra Carrasco, Rodrigo; and Andrada Galan, Mario, 4,762,040, Cl. 83-56.000

Iowa State University Research Foundation, Inc.: *See—*
Brown, Robert C.; and Buttermore, William H., 4,762,090, Cl 122-4.00D.

Ishida, Masamitsu: *See—*
Saotome, Shigeru; and Ishida, Masamitsu, 4,762,999, Cl. 250-327.200.

Ishida, Nakao: *See—*
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100.

Ishida, Noboru; Kato, Norio; and Kawamura, Mitsuyoshi, to NGK Spark Plug Co., Ltd. Particulate extraction arrangement for automotive turbocharger or the like. 4,761,951, Cl. 60-280.000

Ishida, Tokuji; and Hamada, Masataka, to Minolta Camera Kabushiki Kaisha. Automatic focusing system with correlation-determined disabling. 4,762,987, Cl. 250-201.000

Ishihara Sangyo Kaisha Ltd.: *See—*
Tsujii, Yasuhiro; Isogai, Tatsuo; Awazu, Takao; Jyonishi, Hisayoshi; and Kimura, Tokiya, 4,762,928, Cl. 546-311.000

Ishii, Yoshimi: *See—*
Yoshida, Tomiharu; Omote, Tatsuyuki; Ishii, Yoshimi; and Izumi, Kiyoshi, 4,762,670, Cl. 376-313.000

Ishikawa, Haruo: *See—*
Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, 4,762,057, Cl. 99-348.000

Ishikawa, Norio; Ishimura, Toshihiko; Taniguchi, Nobuyuki; Akada, Yasuaki; and Seki, Reiji, to Minolta Camera Kabushiki Kaisha. Camera with a barrier. 4,763,156, Cl. 354-442.000

Ishikawa, Norio: *See—*
Ishimura, Toshihiko; Ishikawa, Norio; Akada, Yasuaki; Seki, Reiji, and Taniguchi, Nobuyuki, 4,763,153, Cl. 354-400.000.

Ishimura, Toshihiko; Ishikawa, Norio; Akada, Yasuaki; Seki, Reiji; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Control device for use in a camera system. 4,763,153, Cl. 354-400.000

Ishimura, Toshihiko: *See—*
Ishikawa, Norio; Ishimura, Toshihiko; Taniguchi, Nobuyuki, Akada, Yasuaki; and Seki, Reiji, 4,763,156, Cl. 354-442.000

Ishizuka, Hiroshi. Method of purificating titanium tetrachloride 4,762,696, Cl. 423-77.000

Iso, Haruo: *See—*
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000

Isobe, Minoru, to OKI Electric Industry Co., Ltd. Planar thermal head and display device incorporating the same. 4,763,136, Cl. 346-76.00R.

Isogai, Tatsuo: *See—*
Tsujii, Yasuhiro; Isogai, Tatsuo; Awazu, Takao; Jyonishi, Hisayoshi; and Kimura, Tokiya, 4,762,928, Cl. 546-311.000

Isoport Verbundbauteile G.m.b.H.: *See—*
Woltron, Herbert, 4,762,307, Cl 267-47.000

Ito, Etsuo: *See—*
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000

Ito, Kokichi: *See—*
Shimoda, Sadashi; Harada, Takamasa; Taguchi, Masaaki; and Ito, Kokichi, 4,762,400, Cl. 350-350.00S.

Ito, Masanori, to Fujitsu Limited. Metal-semiconductor-metal schottky photodiode. 4,763,176, Cl. 357-15.000

Ito, Masazumi: *See—*
Hamano, Hiroaki; Hanamoto, Hiroyuki; and Ito, Masazumi, 4,763,163, Cl. 355-14.0SH.

Ito, Toshiaki; Hiramatsu, Mitsuo; and Hirano, Isuke, to Hamamatsu Photonics Kabushiki Kaisha. Angle-of-optical-rotation variation measuring apparatus 4,762,418, Cl. 356-364.000

Ito, Yasushi; Imamura, Masaaki; Kato, Yoshiki; and Fumioka, Jun, to Hitachi, Ltd. Method of producing magnetic disk. 4,762,534, Cl 51-293.000

Ito, Yoshihiko; Hayashi, Tamio; Kawamura, Norio; and Takemoto, Ichiki, to Sumitomo Chemical Company, Limited. Process for preparing optically active arylacetic acid derivative. 4,762,948, Cl. 562-496.000

Itoh, Hisatsugu; and Uota, Kosaku, to Mitsubishi Denki Kabushiki Kaisha. Direction display apparatus. 4,763,268, Cl. 364-449.000

Itoh, Kensuke: *See—*
Hori, Tomoshige; and Itoh, Kensuke, 4,762,427, Cl. 374-141.000

Itoh, Masaki; Morimoto, Akio; and Esho, Sotaro, to NEC Corporation. Optical information storage medium. 4,763,139, Cl. 346-135.100.

Itoh, Toshiyuki; Ueno, Hiroshi; Tsunoda, Masakazu; and Tohjyo, Seiichi, to Nissan Motor Company, Limited. Navigation system for a vehicle and method therefor. 4,763,270, Cl. 364-449.000

Ittemann, Peter: *See—*
Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, 4,762,869, Cl 524-59.000

VOL 1093 ISS 2 AG 9 1988 UMI

Ivy, Jessie T. Vehicle differential which distributes torque between vehicle wheels in accordance with operating demands. 4,762,023, Cl. 74-714.000.

Ivy Laboratories, Inc.: *See*—
Grimm, C. Louis, 4,762,515, Cl. 604-61.000.

Iwamoto, Hirofumi: *See*—
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000.

Iwasaki, Tetsuji; and Hioki, Yuichi, to Kao Corporation. Enhancement of biocide. 4,762,547, Cl. 71-65.000.

Iwaskiw, Christine T.: *See*—
Ashford, Thomas J.; Burns, Nancy A.; Flagg, Richard L.; Iwaskiw, Christine T.; and Starbird, Roberta P., 4,763,277, Cl. 364-513.000

Iwata, Takeshi: *See*—
Fujii, Noriaki; Iwata, Takeshi; Oikawa, Toshihiro; and Takahara, Naoki, 4,762,099, Cl. 123-90.440.

Iwata, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Ignition control device for internal combustion engine. 4,762,110, Cl. 123-609.000.

Iwatsu Electric Co., Ltd.: *See*—
Fukushima, Hiroshi; and Matsufuji, Teruo, 4,763,354, Cl 379-165.000.
Sano, Yoichiro; Matsufuji, Teruo; and Sato, Akira, 4,763,348, Cl 379-165.000.

Iwaya, Toshio: *See*—
Imai, Ryoichi; Satomura, Seiichiro; and Iwaya, Toshio, 4,762,985, Cl. 250-201.000.

Iyengar, Vijay S.: *See*—
Barzilai, Zeev; Iyengar, Vijay S.; Rosen, Barry K.; and Silberman, Gabriel M., 4,763,289, Cl. 364-578.000.

Izukawa, Kazuhiro: *See*—
Tsukimoto, Takayuki; Okumura, Ichiro; Okuno, Takuo; and Izukawa, Kazuhiro, 4,763,148, Cl. 354-195.100.

Izumi, Kiyoshi: *See*—
Yoshida, Tomiharu; Omote, Tatsuyuki; Ishii, Yoshimi; and Izumi, Kiyoshi, 4,762,670, Cl. 376-313.000.

Izumimoto, Masatoshi; Wakamatsu, Syuji; and Yuyama, Megumu, to Mitsubishi Gas Chemical Company, Inc. Sealed package of raw meat or fish and method of preserving raw meat or fish. 4,762,722, Cl. 426-124.000.

J. Viola, Jr.: *See*—
Levosky, John M.; Dowdy, Jack A.; and Herrera, Carlos, 4,762,358, Cl. 296-97.00G.

Jackle, William C., III; Sherwood, Richard A.; Avery, Frederick M.; and Seifert, James V., to Niven Marketing Group, The. Adjustable tray dispensing apparatus. 4,762,236, Cl. 211-59.300.

Jackson, David E.: *See*—
Girgis, Makram M.; Jackson, David E.; Kruse, Gerald L.; Mannuzza, Frank J.; and Montalto, Joseph G., 4,762,792, Cl. 435-244.000

Jackson, Sidney G. Photographic optical bench. 4,763,169, Cl. 355-30.000.

Jacob, Paravila O., to General Motors Corporation. Electronic gage. 4,762,011, Cl. 73-865.800.

Jacobson, Arthur E.: *See*—
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Mariena V., 4,762,846, Cl. 514-331.000.

Jaen, Juan C.: *See*—
Caprathe, Bradley W.; Jaen, Juan C.; and Wise, Lawrence D., 4,762,843, Cl. 514-293.000.

Jaksic, Miroslav, to Acco Babcock Inc. Self-adjusting cable control device. 4,762,017, Cl. 74-501.00R.

Janiaut, Herve: *See*—
Fougeron, Charles; Fidon, Jean J.; and Janiaut, Herve, 4,762,646, Cl. 252-628.000.

Jankkila, Martti J., to Outokumpu Oy. Apparatus for measuring the length of electrodes in an electric furnace. 4,761,892, Cl. 33-556.000.

Janome Sewing Machine Co. Ltd.: *See*—
Wakaizumi, Kiyoshi, 4,762,076, Cl. 112-103.000.

Jansen, Franz; and Gros, Pierre, to Sanofi (Societe Anonyme). New conjugates associating, by covalent bond, an enzyme with an antibody, and medicinal associations using the said conjugates. 4,762,707, Cl. 424-85.000.

Japan National Railways: *See*—
Ohta, Yoshio; and Tabata, Koji, 4,762,071, Cl. 105-8.100.

Jason, Barry L., to Motorola, Inc. Reducing distortion in active MOSFET-C low pass filters. 4,763,081, Cl. 330-149.000.

Jawetz, Ira. Mooring location system. 4,763,126, Cl. 340-985.000.

Jay, Eric C., to Jay Medical, Ltd. Hemorrhoid seat cushion. 4,761,843, Cl. 5-431.000.

Jay Medical, Ltd.: *See*—
Jay, Eric C., 4,761,843, Cl. 5-431.000.

Jeenicke, Edmund, to Robert Bosch GmbH. Device for and method of affecting control of operational magnitudes of internal combustion engines having exhaust gas circulation. 4,762,109, Cl. 123-571.000.

Jeffers, Albert L.: *See*—
Lansky, Marc A.; and Clemens, Philip M., 4,761,902, Cl. 40-155.000.

Jeffryes, Carol A.: *See*—
Edwards, Peter J.; Jeffryes, Carol A.; and Swain, Fiona M., 4,762,847, Cl. 514-336.000.

Jenkins, Stephen R.: *See*—
Bomba, Frank C.; Schumann, Reinhard; Jenkins, Stephen R.; and Binder, Paul, 4,763,249, Cl. 364-200.000.

Jenq, Yih-Chyun, to Tektronix, Inc. Interleaved digitizer array with calibrated sample timing. 4,763,105, Cl. 340-347.0AD.

Jensen, Jack D.: *See*—
St. Pierre, Frank H.; and Jensen, Jack D., 4,762,449, Cl. 410-107.000.

Jidosha Kiki Co., Ltd.: *See*—
Bandou, Masaaki; Sugita, Masao; and Marumo, Takachi, 4,762,302, Cl. 251-360.000.

Jieping, Liu: *See*—
Youjun, Liu; Xiujing, Shang; Yinlong, Liu; Shixiong, Wan; and Jieping, Liu, 4,762,104, Cl. 123-293.000.

Jizomoto, Hiroaki, to Shionogi & Co., Ltd. Process for preparing liposome compositions. 4,762,720, Cl. 424-450.000.

Johansson, Bjorn-Olow: *See*—
Hallstrom, Bengt; Olsson, Olle; Bolmstedt, Ulf; and Johansson, Bjorn-Olow, 4,762,171, Cl. 165-147.000.

Johnshoy, Edward W. Torque retaining and proportioning differential drive assembly. 4,762,022, Cl. 74-711.000.

Johnson, Alfred N.: *See*—
Prisco, Anthony J.; and Johnson, Alfred N., 4,762,280, Cl. 241-3.000.

Johnson, Arthur W., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Device for measuring the electronic characteristics of solid materials. 4,763,064, Cl. 324-65.0CP

Johnson, Carl F.; and Chavka, Norman G., to Ford Motor Company. Resin transfer molding core, preform and process. 4,762,740, Cl. 428-68.000

Johnson Electric Industrial Manufactory Limited: *See*—
Wang, Patrick S., 4,763,031, Cl. 310-83.000.
Yu, Kwong-Kwan, 4,763,036, Cl. 310-233.000.

Johnson, Henry G., Jr. Surface mount connector and mating connector therefor. 4,762,499, Cl. 439-66.000.

Johnson & Johnson Products, Inc.: *See*—
Sun, Robert L.; and Kenney, James F., 4,762,888, Cl. 525-125.000.

Johnson, Neil H.: *See*—
Giaier, Thomas A.; Johnson, Neil H.; Knox, Harold L.; Reschly, David C.; and Spurlock, Kim E., 4,762,073, Cl. 110-101.0CD.

Johnson, Thomas. Packaging system for multiple semiconductor devices. 4,763,188, Cl. 357-74.000.

Johnston, Richard, to Precision Shooting Equipment Company. Method for stringing a bow limb. 4,762,112, Cl. 124-86.000.

Jones, Jeffrey P.: *See*—
Goel, Anil B.; Holehouse, Joseph G.; Jones, Jeffrey P.; and DeLong, Teresa, 4,762,864, Cl. 523-428.000.

Jones, Melvin: *See*—
McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., 4,761,857, Cl. 19-98.000.

Jones, Stephen D.: *See*—
Banks, Reginald G. S.; Bates, David R.; Jones, Stephen D.; and Oliver, James A., 4,762,815, Cl. 502-259.000.

Joshi, David P.; and Divone, Peter A., to Colgate-Palmolive Company. Process for manufacturing translucent antibacterial soap. 4,762,642, Cl. 252-368.000

Joud, Jean-Charles: *See*—
Senillou, Claude; de Framond, Remy; Garnier, Marcel; Yavari, Ali R.; and Joud, Jean-Charles, 4,762,653, Cl. 264-22.000.

Juds, Richard C.; and Morris, John P., to Andrew Corporation. Resilient one piece waveguide hanger interlockable with antenna tower. 4,763,132, Cl. 343-890.000.

Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., to Westinghouse Electric Corp. Machine implemented analysis eddy current data. 4,763,274, Cl. 364-481.000.

Jyonishi, Hisayoshi: *See*—
Tsujii, Yasuhiro; Isogai, Tatsuo; Awazu, Takao; Jyonishi, Hisayoshi; and Kimura, Tokiya, 4,762,928, Cl. 546-311.000.

K. R. Pfiffner Engineering: *See*—
Stoffel, Kurt, 4,762,037, Cl. 82-2.00E.

Kabacoff, Lawrence T.: *See*—
Clark, Arthur E.; Kabacoff, Lawrence T.; Savage, Howard T.; and Modzelewski, Christine, 4,763,030, Cl. 310-26.000.

Kabushiki Kaisha Machida Seisakusho: *See*—
Fuse, Jiro, 4,762,385, Cl. 350-96.180.

Kabushiki Kaisha Morita Seisakusho: *See*—
Ogino, Sekiya; Inoue, Shigehiko; Tomai, Touru; and Tamura, Masami, 4,762,165, Cl. 164-457.000.

Kabushiki Kaisha Toshiba: *See*—
Anbe, Yoshiharu; Mineura, Toshimi; Kai, Hajime; Kodama, Sumiyasu; and Dobashi, Takao, 4,763,273, Cl. 364-472.000
Asanuma, Hajime; and Tokairin, Masatsugu, 4,762,471, Cl. 417-372.000.
Egawa, Jiro; Nagasawa, Moriya; and Machida, Hironobu, 4,763,241, Cl. 346-154.000.
Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, 4,762,695, Cl. 423-54.000.
Fox, Timothy R., 4,763,074, Cl. 324-314.000.
Hayano, Makoto; Nagatomo, Shigemi; Sakata, Hirotsugu; and Hatori, Mitsuo, 4,762,477, Cl. 418-1.000.
Kobayashi, Masahiro; and Takahashi, Masaru, 4,762,671, Cl. 376-316.000.
Kobayashi, Tadahiko; Sahashi, Masashi; and Inomata, Koichiro, 4,762,008, Cl. 73-862.360.
Mitani, Wataru, 4,762,761, Cl. 430-65.000.

Muroyama, Seiichi, 4,763,213, Cl. 360-105.000
Shimizu, Yasuhiko, 4,762,267, Cl. 228-179.000
Shimomura, Nobuo, 4,762,055, Cl. 99-285.000
Sonoda, Tomiya; Hikosaka, Takashi; and Nakamura, Hiroki, 4,762,742, Cl. 428-141.000
Tsubota, Junichi, 4,763,172, Cl. 355-50.000
Watanabe, Junji, 4,763,165, Cl. 355-14.00R
Watanabe, Junji, 4,763,166, Cl. 355-14.0SH

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Ikeda, Hayato; Kitahama, Satoshi; and Onomura, Hiroshi, 4,762,468, Cl. 417-269.000

Kabushikikaisha Anseikogyo: *See*—
Ikeda, Ichio, 4,762,349, Cl. 292-216.000.

Kabushikikaisha Tokyo Keiki: *See*—
Katoh, Mitsuru; Kawada, Shin-Ichi; and Masuzawa, Isao, 4,763,072, Cl. 324-253.000.

Kachnowski, Thomas A.; Bratro, Frederick E.; Kaplan, Elhanan; and Sudol, George A., to Unisys Corporation. Module security locking device. 4,761,975, Cl. 70-232.000

Kado, Hisao: *See*—
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000

Kadota, Kuninobu: *See*—
Furuya, Shinichi; Kadota, Kuninobu; Togashi, Minoru; and Kato, Kenshiro, 4,762,158, Cl. 152-454.000.

Kadoya, Tadaaki: *See*—
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000.

Kaempen, Charles E. Method for making composite twine structures. 4,762,583, Cl. 156-173.000

Kagami, Haruhiko, to Sanyo Electric Co., Ltd. Display apparatus. 4,762,378, Cl. 312-7.200.

Kai, Hajime: *See*—
Anbe, Yoshiharu; Mineura, Toshimi; Kai, Hajime; Kodama, Sumiyasu; and Dobashi, Takao, 4,763,273, Cl. 364-472.000.

Kaihara, Shigeru, to NEC Corporation. Optical fiber connector 4,762,389, Cl. 350-96.210.

Kain, William S.: *See*—
Staker, Donald D.; and Kain, William S., 4,762,724, Cl. 426-302.000

Kainer, Hartmut: *See*—
Frey, Alfred; Grimm, Daniel; and Kainer, Hartmut, 4,762,689, Cl. 422-310.000

Kaji, Toshio: *See*—
Kinoshita, Takao; Tojo, Akihiko; Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, 4,763,204, Cl. 358-335.000.

Kajiwara, Akiharu: *See*—
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000.

Kakalec, Robert J.: *See*—
Gvoth, John Michael, Jr.; Kakalec, Robert J.; and Menkes, Henry E., 4,763,013, Cl. 307-66.000.

Kallenius, Gunilla P.; Lundblad, Karl A.; Molliby, Nils R.; Svensson, Stefan B.; and Winberg, Jan, to Svenska Sockerfabriks AB. Compositions and methods useful for uropathogenic bacterial identification or diagnosis and inhibition of adherence of uropathogenic bacteria to cells having a structural element similar to that of the active principle of the invention. 4,762,824, Cl. 514-54.000

Kamada, Toru: *See*—
Asakawa, Kazuo; Onda, Nobuhiko; Akita, Tadashi; and Kamada, Toru, 4,762,006, Cl. 73-862.040.

Kameyama, Iwao: *See*—
Miyamori, Tamotsu; Kameyama, Iwao; and Abe, Takeo, 4,762,652, Cl. 264-6.000

Kamimura, Minoru: *See*—
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000.

Kamio, Masaru: *See*—
Fukaya, Masaki; Komatsu, Toshiyuki; Shoji, Tatsumi; Kamio, Masaru; and Sekimura, Nobuyuki, 4,763,010, Cl. 250-578.000.
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000.

Kamm, Lawrence J.; Meyer, Lawrence L.; and Walton, Erlen B., to Eaton Corporation. Engine valve control mechanism. 4,762,096, Cl. 123-90.160

Kamrath, David J.: *See*—
Mishkovsky, Vladimir; Hwang, Wei S.; and Kamrath, David J., 4,762,542, Cl. 62-28.000.

Kanamaru, Ryunosuke: *See*—
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100.

Kanayama, Akira: *See*—
Yoneda, Shigeo; Hiramoto, Masato; and Kanayama, Akira, 4,763,340, Cl. 375-121.000

Kanda, Mutsumi, to Toyota Jidosha Kabushiki Kaisha. Intake device of an internal combustion engine. 4,762,102, Cl. 123-188.00M.

Kane, Michael J.: *See*—
Burgin, John L., Jr.; Kane, Michael J.; and Levie, Michael M., 4,762,578, Cl. 156-64.000

Kaneda, Naoya: *See*—
Suda, Hirofumi; Kaneda, Naoya; and Kozuki, Susumu, 4,762,986, Cl. 250-201.000

Kaneko, Tadashi: *See*—
Okuno, Itaru; Oda, Hiroyuki; and Kaneko, Tadashi, 4,763,264, Cl 364-431.010.

Kaneko, Tetsuhisa: *See*—
Fushiya, Fusao; and Kaneko, Tetsuhisa, 4,762,035, Cl. 81-429.000

Kaneko, Yutaka: *See*—
Shimada, Kazuyuki; Shibata, Isamu; Kaneko, Yutaka; and Imagawa, Susumu, 4,763,334, Cl. 372-29.000.

Kanno, Tetsuo; and Tanabe, Kazumi, to Ricoh Company, Ltd. Floppy disk drive with a linearly operated media clamp. 4,763,212, Cl. 360-99.000

Kanno, Yoshio: *See*—
Uyama, Kiyoshi; Kanno, Yoshio; Segawa, Kiyoteru; and Kihara, Yasuhiko, 4,761,895, Cl. 34-69.000

Kansai Electric Power Company, Incorporated, The: *See*—
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl. 165-11.100.

Kant, Bernhard; and Porth, Wolfgang, to VDO Adolf Schindling AG Measurement transformer. 4,763,097, Cl. 338-4.000

Kanzaki, Ichiro, to Kanzaki, Ichiro; and Ogura, Mitsuharu. Casting frame structure of centrifugal casting machine. 4,762,485, Cl 425-434.000

Kao Corporation: *See*—
Iwasaki, Tetsuji; and Hioki, Yuichi, 4,762,547, Cl. 71-65.000

KAP, Inc.: *See*—
Peters, Arthur A., 4,761,855, Cl. 17-46.000.

Kaplan, Elhanan: *See*—
Kachnowski, Thomas A.; Bratro, Frederick E.; Kaplan, Elhanan; and Sudol, George A., 4,761,975, Cl. 70-232.000.

Kapland, Mitchell A., to Trident Engineering Associates, Inc. Landfill composition and method of producing the same. 4,762,623, Cl. 210-751.000

Kapoor, Ashok K., to National Semiconductor Corporation. Method of fabricating polycrystalline silicon resistors having desired temperature coefficients. 4,762,801, Cl. 437-024.000.

Karaki, Kouichi: *See*—
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000.

Karl Schnell Maschinenfabrik: *See*—
Schnell, Karl; and Domlatil, Miroslav, 4,761,854, Cl. 17-1.00R

Karpis, John J. Fluid flow regulator. 4,762,141, Cl. 137-312.000.

Kasama, Nobuhiro: *See*—
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, 4,763,167, Cl. 355-14.00R

Kaschig, Jurgen: *See*—
Kvita, Vratislav; and Kaschig, Jurgen, 4,762,926, Cl. 544-276.000

Kasenga, Anthony F.; and Dann, Jeffrey N., to GTE Products Corporation. Method of making terbium activated yttrium aluminate phosphor. 4,762,639, Cl. 252-301.40R

Kashida, Motokazu: *See*—
Takei, Masahiro; Kozuki, Susumu; Masui, Toshiyuki; Hirasawa, Masahide; and Kashida, Motokazu, 4,763,293, Cl. 364-723.000

Kashio, Jiro: *See*—
Nakayashiki, Susumu; Kashio, Jiro; Harakawa, Takeshi; and Fuse, Masahiro, 4,763,315, Cl. 370-16.000

Kassai, Kenzou, to Aprica Kassai Kabushikikaisha. Baby carriage 4,762,335, Cl. 280-649.000

Kaster, Kevin R.: *See*—
Chapman, Jerry L., Jr.; Ingolia, Thomas D.; Kaster, Kevin R.; Queener, Stephen W.; and Skatrud, Paul L., 4,762,786, Cl. 435-172.300

Katayama, Kazuo, to Mazda Motor Corporation. Tiltable vehicle steering column assembly. 4,762,015, Cl. 74-473.0SW.

Kato, Heizaburou, to Sankyo Manufacturing Company, Ltd. Press apparatus for small precision part. 4,761,988, Cl. 72-452.000.

Kato, Kenshiro: *See*—
Furuya, Shinichi; Kadota, Kuninobu; Togashi, Minoru; and Kato, Kenshiro, 4,762,158, Cl. 152-454.000

Kato, Norio: *See*—
Ishida, Noboru; Kato, Norio; and Kawamura, Mitsuyoshi, 4,761,951, Cl. 60-280.000

Kato, Yoshiki: *See*—
Ito, Yasushi; Imamura, Masaaki; Kato, Yoshiki; and Fumioka, Jun, 4,762,534, Cl. 51-293.000

Katoh, Mitsuru; Kawada, Shin-Ichi; and Masuzawa, Isao, to Kabushikikaisha Tokyo Keiki. Magnetic azimuth detector. 4,763,072, Cl. 324-253.000.

Katoh, Tadayoshi: *See*—
Shimoda, Kaneyasu; Yamashita, Atsushi; and Katoh, Tadayoshi, 4,763,328, Cl. 371-3.000

Katsuno, Toshiyasu: *See*—
Nagai, Toshinari; Masui, Takatoshi; Satou, Yasushi; and Katsuno, Toshiyasu, 4,761,950, Cl. 60-274.000

Katz, Jeffrey: *See*—
Leiman, Basil C.; Butler, Bruce D.; and Katz, Jeffrey, 4,762,125, Cl. 128-207.150

Kauer, James C., to Du Pont de Nemours, E. I., and Company. Photoreactive benzoylphenylalanines and related peptides. 4,762,881, Cl. 525-54.110

VOL 1093 ISS 2 AG 9 1988 UMI

Kauffman, Arthur A., Jr.; and Muhich, John S., to International Business Machines Corporation. Merge and copy bit block transfer implementation. 4,763,251, Cl. 364-200.000.

Kaufman, Edwin E.; Shuttleworth, William E.; and Wiese, John R., to General Signal Corporation. Expendable immersion device for combining an expendable immersion sensor and molten metal sampler 4,762,571, Cl. 136-234.000.

Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, to Sumitomo Light Metal Industries, Ltd.; and Kansai Electric Power Company, Incorporated, The. Condenser having apparatus for monitoring conditions of inner surface of condenser tubes. 4,762,168, Cl. 165-11.100.

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Katoh, Mitsuru; Kawada, Shin-Ichi; and Masuzawa, Isao, 4,763,072, Cl. 324-253.000

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Kawai, Akira: *See*—
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Kawai, Shoichi: *See*—
Kotani, Yasuhiro; Oda, Koichi; and Kawai, Shoichi, 4,763,292, Cl. 364-710.000

Kawamori, Yoshihiro: *See*—
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Adachi, Yoshitugu; and Hatakawa, Yoshio, 4,762,862, Cl. 522-3.000.

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Kawamura, Mitsuyoshi: *See*—
Ishida, Noboru; Kato, Norio; and Kawamura, Mitsuyoshi, 4,761,951, Cl. 60-280.000.

Kawamura, Norio: *See*—
Ito, Yoshihiko; Hayashi, Tamio; Kawamura, Norio; and Takemoto, Ichiki, 4,762,948, Cl. 562-496.000.

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Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Fujikawa, Tetsuzo; Hirata, Makizo; Tamba, Shinichi; and Yamane, Yoshiro, 4,762,094, Cl. 123-90.600
Tamba, Shinichi; Yamamoto, Hitoshi; and Shimizu, Akihito, 4,762,098, Cl. 123-90.330.

Kawasaki Kisen Kaisha, Ltd.: *See*—
Unrinin, Nobuyuki, 4,762,243, Cl. 220-22.000.

Kawasaki Steel Corporation: *See*—
Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, 4,762,148, Cl. 137-808.000.

Kawashima, Katsuyuki: *See*—
Kurihara, Kunitoshi; Kawashima, Katsuyuki; Masumi, Ryoji; and Azekura, Kazuo, 4,762,672, Cl. 376-333.000.

Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, to Sumitomo Metal Industries, Ltd.; and Sumitomo Heavy Industries, Ltd. Method of feeding material to hot forging machine. 4,761,980, Cl. 72-24.000

Kayaku Antibiotics Research Co., Ltd.: *See*—
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100.

Keeley, James W.: *See*—
Barlow, George J.; and Keeley, James W., 4,763,243, Cl. 364-200.000

Keene, William E.; and McKerrow, James H., to University of California, The. Serodiagnostic reagent for entamoeba histolytica. 4,762,789, Cl. 435-219.000

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Kellam, Karen K.; and Tong, Ronnie C., to International Business Machines Corporation. Method and apparatus for converting dot matrix display data of one resolution to a format for displaying on a display device having a different resolution. 4,763,279, Cl. 364-518.000

Keller, Harold T., deceased: *See*—
Cheng, Wenche W.; Stoner, Donald R.; and Keller, Harold T., deceased, 4,762,674, Cl. 376-405.000

Keller, Patricia A., Administratrix: *See*—
Cheng, Wenche W.; Stoner, Donald R.; and Keller, Harold T., deceased, 4,762,674, Cl. 376-405.000

Kelley, David C.: *See*—
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,762,731, Cl. 427-40.000.

Kelly, John W., to Haskel, Inc. Swaging apparatus for flaring and anchoring tubes. 4,761,981, Cl. 72-58.000.

Kennerley, Cyril: *See*—
Stancliffe, Norman J.; Mercer, Frank B.; and Kennerley, Cyril, 4,762,581, Cl. 156-84.000

Kenney, James F.: *See*—
Sun, Robert L.; and Kenney, James F., 4,762,888, Cl. 525-125.000.

Keppler, Rolf: *See*—
Michler, Wilhelm; Both, Hans W.; and Keppler, Rolf, 4,762,538, Cl. 55-84.000

Kerch, Martha E.; and Hoffman, Louis S., to Kimberly-Clark Corporation. Liquid dispensing pouch. 4,762,124, Cl. 128-156.000.

Kern, Harry. Electrically independent wire electroerosion discharge machine. 4,762,974, Cl. 219-69.00W.

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Gyarmati, Erno ; and Naoumidis, Aristides, 4,762,269, Cl. 228-194.000

Kerr-McGee Chemical Corporation: *See*—
Baldwin, Roger A.; Laughlin, William C.; Patel, Keshav P.; and Shreve, Patricia J., 4,762,552, Cl. 75-1.00T.

Keshlear, William M.; Moyer, William C.; and Zolnowsky, John, to Motorola, Inc. Paged memory management unit having variable number of translation table levels. 4,763,250, Cl. 364-200.000.

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Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,763,244, Cl. 364-200.000.

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Keyser, Thomas; Cairns, Bruce R.; Anand, Kranti V.; Petro, William G.; and Barry, Michael L., to Fairchild Semiconductor Corporation. Low temperature plasma nitridation process and applications of nitride films formed thereby. 4,762,728, Cl. 427-38.000.

Khader, Mahmoud M.; and Lichtin, Norman N., to Boston University, Trustees of. Partially reduced ferric oxide catalyst for the making of ammonia via the photassisted reduction of molecular nitrogen. 4,762,600, Cl. 204-157.460.

Kiese, Gerhard, to Leybold Aktiengesellschaft. Method of exchanging the displacement element of a refrigerator and refrigerator for implementing the method. 4,761,963, Cl. 62-77.000

Kihara, Yasuhiko: *See*—
Uyama, Kiyoshi; Kanno, Yoshio; Segawa, Kiyoteru; and Kihara, Yasuhiko, 4,761,895, Cl. 34-69.000.

Kikuchi, Masahiro: *See*—
Watanabe, Yuzuru; Nakayama, Yoshifumi; Ando, Masanori; and Kikuchi, Masahiro, 4,763,047, Cl. 315-382.000.

Kim, Hyunsoo: *See*—
Marshek, Kurt M.; and Kim, Hyunsoo, 4,762,005, Cl. 73-862.040.

Kimata, Masafumi: *See*—
Tsubouchi, Natsuro; and Kimata, Masafumi, 4,763,179, Cl. 357-23.600

Kimberly-Clark Corporation: *See*—
Kerch, Martha E.; and Hoffman, Louis S., 4,762,124, Cl. 128-156.000.
Roessler, Thomas H.; Endres, Dan D.; Enloe, Kenneth M.; Huntoon, Andrew E.; and Lippert, Mary E., 4,762,521, Cl. 604-38.0SA.

Kimura, Akira: *See*—
Miyazaki, Akira; Bansho, Kenji; Kimura, Akira; and Tao, Hiroaki, 4,762,691, Cl. 423-24.000

Kimura, Shuzo, to Yachiyoda Sangyo Co., Ltd.; and Yachiyoda Kogyo Co., Ltd. Shock wave generating apparatus. 4,762,126, Cl. 128-328.000

Kimura, Tokiya: *See*—
Tsujii, Yasuhiro; Isogai, Tatsuo; Awazu, Takao; Jyonishi, Hisayoshi; and Kimura, Tokiya, 4,762,928, Cl. 546-311.000.

King, Feather W.; and Leibthal, Siegfried G. V. Device for retaining carton flaps in closed or open position. 4,761,935, Cl. 53-416.000.

King, Peter J. Air pump assemblies. 4,762,472, Cl. 417-366.000.

King, William J., to Du Pont de Nemours, E. I., and Company. Peripherally arrayed closure fastener system. 4,762,346, Cl. 292-38.000.

Kinnan, Frank R., to L & F Company. Blank plug assembly. 4,762,151, Cl. 138-89.000.

Kinney, Thomas B.: *See*—
Fogarty, Thomas J.; Kinney, Thomas B.; and Finn, James C., III, 4,762,130, Cl. 128-348.100.

Kinoshita, Takao; Tojo, Akihiko; Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, to Canon Kabushiki Kaisha. Solid state image pick-up device having a shutter which is capable of still and motion picture photography. 4,763,204, Cl. 358-335.000.

Kinoshita, Takashi: *See*—
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,762,745, Cl. 428-252.000.

Kintner, Paul M.: *See*—
Hyer, Frank S.; and Kintner, Paul M., 4,762,252, Cl. 222-56.000.

Kinugasa, Yukio; and Yaegashi, Takehisa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Speed change control method and device of automatic transmission for vehicle. 4,762,026, Cl. 74-866.000.

Kirby, William E.: *See*—
Gjertsen, Robert K.; Wilson, John F.; and Kirby, William E., 4,762,676, Cl. 376-443.000.

Kirin Beer Kabushiki Kaisha: *See*—
Suzuki, Akira; and Matsukura, Hideki, 4,761,936, Cl. 53-510.000

Kischel, Reinhard; Salzinger, Josef; and Schottner, Richard, to SKW Trostberg Aktiengesellschaft. Method for regulating the pressure of a gas produced in a reactor. 4,762,531, Cl. 48-191.000.

Kiselewski, Donald L. Pneumatic device for holding articles in containers. 4,762,231, Cl. 206-522.000

Kishi, Hirotoshi: *See*—
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa,

Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R

Kishimoto, Shinzo; Nishikawa, Toshihiro; Abe, Akira; and Nakajima, Junya, to Fuji Photo Film Co., Ltd. Method for color image formation comprising a rapid desilvering process. 4,762,774, Cl. 430-393.000.

Kitada, Yoshitaka, to NEC Corporation. Microcomputer with a detecting function of a memory access error. 4,763,248, Cl. 364-200.000.

Kitagawa, Kunio: *See*—
Oishibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100.

Kitagawa, Makoto: *See*—
Yamada, Toshiyuki; Kitagawa, Makoto; and Kurihara, Toshio, 4,762,197, Cl. 180-219.000

Kitagawa, Mikio: *See*—
Yoda, Motoyuki; Kitagawa, Mikio; and Watanabe, Miwako, 4,762,612, Cl. 210-150.000.

Kitahama, Satoshi: *See*—
Ikeda, Hayato; Kitahama, Satoshi; and Onomura, Hiroshi, 4,762,468, Cl. 417-269.000.

Kitamura, Shinichi: *See*—
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000.

Kiyoshi Horii: *See*—
Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, 4,762,148, Cl. 137-808.000.

Klarstrom, Dwaine L., to Haynes International, Inc Nickel-base super alloy. 4,762,682, Cl. 420-454.000

Klein, Horst: *See*—
Amos, Walter; and Klein, Horst, 4,762,373, Cl. 300-21.000

Klein, Jean-Luc R. G.: *See*—
Kraus, Willibald; and Klein, Jean-Luc R. G., 4,762,296, Cl. 248-74.200.

Kleinhany, Arno, to Bauer Kaba AG. Lock cylinder with integrated electromagnetic locking mechanism. 4,761,976, Cl. 70-277.000

Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, to Godecke Aktiengesellschaft. 4-alkoxy-pyrido[2,3-D]pyrimidine derivatives for treatment of myocardiac ischemia. 4,762,837, Cl. 514-258.000.

Klepacki, Wojciech, to Societe D'Etudes De Machines Thermiques. Method for monitoring the operation of an internal combustion engine. 4,761,993, Cl. 73-115.000.

Klifa-Fahrzeugteile GmbH + Co.: *See*—
Friedrichs, K. Gerd, 4,762,465, Cl. 416-185.000.

Klinger, Joseph K. Universal tripod head. 4,763,151, Cl. 354-293.000.

Klingesberger, Johann, to Voest-Alpine Aktiengesellschaft. Apparatus for flanging sheet metal blanks. 4,761,985, Cl. 72-316.000.

Klink, Josef: *See*—
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000

Knab, Rochus: *See*—
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Knapp, Robert K.: *See*—
Newman, Frank J.; Knapp, Robert K.; and Davis, Robert J., 4,763,125, Cl. 340-958.000.

Knecht, Allen F.; Eilerman, John F.; Smith, Stanley E.; and Smith, Jack E., to General Motors Corporation. Deflatable weatherstrips. 4,761,917, Cl. 49-477.000

Knight, Alan C.; and Uebel, Helmut, to Alcatel N.V. System for indicating track sections in an interlocking area as occupied or unoccupied. 4,763,267, Cl. 364-436.000.

Knight, John E.: *See*—
Savage, Carl P.; Knight, John E.; Graves, J. W.; and Tate, Harold, 4,761,847, Cl. 14-69.500.

Knowles, Carl H.; and Naylor, Charles, to Metrologic Instruments, Inc Laser scanner apparatus with adjustable mount for connectors. 4,762,984, Cl. 235-383.000

Knox, Harold L.: *See*—
Glaier, Thomas A.; Johnson, Neil H.; Knox, Harold L.; Reschly, David C.; and Spurlock, Kim E., 4,762,073, Cl. 110-101.0CD.

Knudsen, Christopher G., to Stauffer Chemical Company. Certain 3-(substituted thio)-2-benzoyl-cyclohex-2-enones. 4,762,551, Cl. 71-103.000

Ko, Kenneth K.: *See*—
Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., 4,762,643, Cl. 252-378.00R.

Kobayashi, Kesanao; and Matsumoto, Hiroshi, to Fuji Photo Film Co., Ltd. Desensitizing gum for lithographic printing plates. 4,762,772, Cl. 430-309.000.

Kobayashi, Kiyotaka: *See*—
Takamura, Masashi; Ushiro, Seimei; Kobayashi, Kiyotaka; Cho, Michio; and Nakada, Kimiaki, 4,763,145, Cl. 354-64.000.

Kobayashi, Masahiro; and Takahashi, Masaru, to Kabushiki Kaisha Toshiba. Injection device. 4,762,671, Cl. 376-316.000

Kobayashi, Mikio: *See*—
Takemura, Kenji; Kobayashi, Mikio; Machida, Mitsunobu; and Yoshida, Hirokazu, 4,763,133, Cl. 343-912.000.

Kobayashi, Osamu, to Fujitsu Limited. Digital-to-analog conversion system. 4,763,108, Cl. 340-347.0DA.

Kobayashi, Seishichi: *See*—
Matsubayashi, Hiroshi; Watanabe, Naoto; Kobayashi, Seishichi, Sue, Toshio; and Taira, Kazuo, 4,762,245, Cl. 220-269.000.

Kobayashi, Tadahiko; Sahashi, Masashi; and Inomata, Koichiro, to Kabushiki Kaisha Toshiba. Torque detecting apparatus. 4,762,008, Cl. 73-862.360

Kobayashi, Takehiro: *See*—
Emura, Masaharu; and Kobayashi, Takehiro, 4,762,290, Cl. 242-84.10K

Kobayashi, Yukio; and Takeuchi, Masataka, to Showa Denko Kabushiki Kaisha. Electroconductive polymer solution and manufacture of electroconductive article therefrom. 4,762,644, Cl. 252-500.000

Koch, Horst; and Ziegler, Walter, to BASF Aktiengesellschaft. Polymers modified by a polymer-analogous reaction. 4,762,892, Cl. 525-279.000

Koch, Juergen: *See*—
Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, 4,762,869, Cl. 524-59.000

Koch, Julius F., Jr., to General Motors Corporation. Engine with sealing head seat ring. 4,762,103, Cl. 123-193.0CH.

Kock, Hans-Jakob, to BASF Aktiengesellschaft. Wholly aromatic polyester carbamides and the preparation thereof. 4,762,907, Cl. 528-183.000

Kodama, Sumiyasu: *See*—
Anbe, Yoshiharu; Mineura, Toshimi; Kai, Hajime; Kodama, Sumiyasu; and Dobashi, Takao, 4,763,273, Cl. 364-472.000

Koecher, Ralf: *See*—
Ackermann, Hans; Koecher, Ralf; Steinberner, Udo; and Michel, Otto, 4,762,467, Cl. 417-54.000

Koehler, Albert: *See*—
Orlitzky, Anton; and Koehler, Albert, 4,762,036, Cl. 81-437.000

Koen, Myron J.; Anderson, Thomas R.; and Halbert, Joel M., to Burr-Brown Corporation. Subranging analog-to-digital converter with multiplexed input amplifier isolation circuit between subtraction node and LSB encoder. 4,763,107, Cl. 340-347.0AD

Koerber, John M.: *See*—
Eberhardt, John D.; Hovde, Peter L.; Koerber, John M.; Neary, Robert J.; and Peltier, Robert V., 4,761,957, Cl. 60-650.000

Kohge, Shinichi: *See*—
Morishita, Mitsuharu; and Kohge, Shinichi, 4,762,194, Cl. 180-79.100

Koike, Atsushi: *See*—
Honda, Mitsuru; Koike, Atsushi; Ogawa, Kyosuke; and Murai, Keiichi, 4,762,762, Cl. 430-65.000

Koizumi, Hiroshi: *See*—
Nishimura, Takeji; and Koizumi, Hiroshi, 4,763,286, Cl. 364-352.000

Kojima, Masami, to Nippondenso Co., Ltd. Ignition coil assembly for internal combustion engines. 4,763,094, Cl. 336-92.000

Kok, Piet: *See*—
Vermeulen, Leon L.; Vervloet, Ludovicus H., De Smedt, Willy P.; and Kok, Piet, 4,762,759, Cl. 430-1.000

Kokawa, Ryoichi: *See*—
Tsunoda, Teruo; and Kokawa, Ryoichi, 4,763,359, Cl. 382-1.000

Kokkinis, Theodore: *See*—
Stoughton, Robert; and Kokkinis, Theodore, 4,762,016, Cl 74-479.000

Kokuryu, Yuji, to Toyoda Gosei Co., Ltd. Hose having orifice 4,762,150, Cl. 138-44.000

Kolar, John C.: *See*—
McCaslin, Martin J.; and Kolar, John C., 4,763,314, Cl. 369-249.000

Kolb, Joseph J. System for facilitating protection of an athlete's hip and pelvic area. 4,761,834, Cl. 2-2.000

Kolb, Robert E.: *See*—
Albin, Loren D.; and Kolb, Robert E., 4,762,891, Cl. 525-276.000

Kolkmann, Friedrich: *See*—
Schimmel, Gunther; Gradl, Reinhard; and Kolkmann, Friedrich, 4,762,693, Cl. 423-321.00S

Kollmorgen Corporation: *See*—
Gat, Erann; Park, Eric D.; and Mathis, Talmage, 4,762,992, Cl 250-227.000

Kollmorgen Technologies Corporation: *See*—
Byrne, John V.; and O'Dwyer, Jeremiah B., 4,763,056, Cl. 318-701.000
Danz, George E.; and Shuler, C. Calvin, 4,763,057, Cl. 318-809.000

Kolve, Gerald C. Saw chain tooth. 4,762,044, Cl. 83-832.000

Komaki, Shigeki: *See*—
Oogita, Yoshinori; Shino, Katsuhide; Nakao, Kazuhiro; Ozawa, Kazuhito; and Komaki, Shigeki, 4,762,983, Cl. 235-1.00D

Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, to Canon Kabushiki Kaisha. Color image sensor with three line sensors on different layers separated by electrically-insulating layers. 4,763,189, Cl. 358-75.000.

Komatsu, Toshiyuki: *See*—
Fukaya, Masaki; Komatsu, Toshiyuki; Shoji, Tatsumi; Kamio, Masaru; and Sekimura, Nobuyuki, 4,763,010, Cl. 250-578.000

Komori Printing Machinery Co., Ltd.: *See*—
Tsunoda, Teruo; and Kokawa, Ryoichi, 4,763,359, Cl. 382-1.000

Kondoh, Fumio: *See*—
Takehisa, Fumitaka; Yokoi, Mitsuyoshi; and Kondoh, Fumio, 4,762,163, Cl. 164-72.000

VOL 1093 ISS 2 AG 9 1988 UMI

Konishiroku Photo Industry Co.: *See—*
Murahashi, Takashi; Ichihara, Yoshiyuki; Nakazawa, Toshihiko; and Takesue, Toshihiro, 4,763,134, Cl. 346-1.100.

Konishiroku Photo Industry Co., Ltd.: *See—*
Uesawa, Yutaka; and Morimoto, Isamu, 4,762,776, Cl. 430-538.000.
Yamazaki, Katsumasa; Yagi, Toshihiko; Michiue, Kenji; Goto, Sohei; and Mochizuki, Yoshiharu, 4,762,778, Cl. 430-567.000.

Konneker, Reinhard: *See—*
Mezger, Hans; Konneker, Reinhard; and Esch, Hans-Joachim, 4,762,095, Cl. 123-90.110.

Kooroki, Takeo, to Nippon Piston Ring Co., Ltd. Spacer expander for piston rings. 4,762,329, Cl. 277-139.000.

Kopp, Dieter: *See—*
Immendorfer, Manfred; Kopp, Dieter; Thierer, Gebhard; and Seichter, Helmut, 4,763,350, Cl. 379-67.000.

Korczak, Alexander; and Levis, William W., Jr., to BASF Corporation Selective oxyalkylaton of N-(2-hydroxyalkyl)-aniline. 4,762,950, Cl. 564-399.000.

Kori, Yoshitake: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000.

Korn, Donald M.: *See—*
Lubinsky, Anthony R.; Owen, James F.; and Korn, Donald M., 4,762,998, Cl. 250-327.200.

Kosa, Edward. Rolled sheet material dispensing device. 4,762,259, Cl. 225-37.000

Kosanda, David E., to Rockwell International Corporation. Electromagnetic signal interference shielding gasket apparatus. 4,762,966, Cl. 174-35.0GC.

Kosmowski, Wojciech B., to Dynamotion Corporation. High speed precision drilling system. 4,761,876, Cl. 29-568.000.

Kotani, Yasuhiro; Oda, Koichi; and Kawai, Shoichi, to Sharp Kabushiki Kaisha. Printer controller. 4,763,292, Cl. 364-710.000.

Koucky, Antonin: *See—*
Bauer, Heinz; Becker, Burckhard; Frohnhaus, Ernst-Reiner; Gedig, Alfred; Klink, Josef; and Koucky, Antonin, 4,762,366, Cl. 297-367.000

Kovacs, Eddie T.; and Eivers, Donald J., to Grumman Aerospace Corporation. Signal distribution system hybrid relay controller/-driver. 4,763,124, Cl. 340-825.800

Kowal, Herbert: *See—*
Schmidberger, Peter; and Kowal, Herbert, 4,762,020, Cl. 74-612.000

Kowal, Steven J., to Stanadyne, Inc. Inverted bucket tappet with improved seal and valve stem pad. 4,762,100, Cl. 123-90.580.

Kowalski, David J.: *See—*
Fong, Dodd W.; and Kowalski, David J., 4,762,894, Cl. 525-344.000

Koyo Jidoki Kabushiki Kaisha: *See—*
Sano, Osamu, 4,762,014, Cl. 74-422.000.

Koziol, Walter, to Modern Home Products Corp. Internal air shutter for gas burner. 4,762,530, Cl. 48-180.100.

Kozuki, Susumu: *See—*
Suda, Hirofumi; Kaneda, Naoya; and Kozuki, Susumu, 4,762,986, Cl. 250-201.000
Takei, Masahiro; Kozuki, Susumu; Masui, Toshiyuki; Hirasawa, Masahide; and Kashida, Motokazu, 4,763,293, Cl. 364-723.000.

Kraemer, Hans P.: *See—*
Stache, Ulrich; Kraemer, Hans P.; and Sedlacek, Hans-Harald, 4,762,648, Cl. 260-383.000.

Kraft, Inc.: *See—*
Soucie, William G.; Chen, Wen-Sherng; Witte, Vernon C.; Henry, George A.; and Drehkoff, W. Dennis, 4,762,726, Cl. 426-602.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Cirkel, Hans-Jurgen; and Bette, Willi, 4,763,093, Cl. 336-58.000

Krajewski, Casimir; Melville, Randolph I.; and Porter, William W., to General Motors Corporation. Pivot bushing assembly application. 4,762,310, Cl. 267-141.200

Kramm, Karl-Ulrich: *See—*
Kuhne Manfred; Gast, Theodor; Kramm, Karl-Ulrich; and Nolte, Karl, 4,762,138, Cl. 131-280.000

Kramp, Peter: *See—*
Haubennestel, Karlheinz; and Kramp, Peter, 4,762,752, Cl. 428-407.000

Kraus, Gerhard, to INA Walzlager Schaeffler KG. Concentric tubular elements. 4,762,739, Cl. 428-36.000

Kraus, Willibald; and Klein, Jean-Luc R. G., to TRW United-Carr GmbH. Mounting device for supporting tubing of different diameters. 4,762,296, Cl. 248-74.200

Krauss, Mark, to American Cord & Webbing Co., Inc. Two part grommet with interengaging projections. 4,761,860, Cl. 24-142.000.

Krauter, Allan I.: *See—*
Allred, Jimmie B., III; and Krauter, Allan I., 4,762,119, Cl. 128-4.000
Lia, Raymond A.; and Krauter, Allan I., 4,762,118, Cl. 128-4.000.

Kreinick, Stephen J., to Pancretec, Inc. Blockage hazard alarm in an intravenous system. 4,762,518, Cl. 604-245.000.

Krenzel, Ronald L., to Delsey Luggage Company. Soft sided luggage frame. 4,762,211, Cl. 190-122.000

Kreutzberger, Alfred; Soder, Alfons; and Gerhards, Hermann J., to Hoechst Aktiengesellschaft. 2,4,6-tris-tertiary-butylamino-1,3,5-triazine useful for the prophylaxis and treatment of epilepsy and anxiety states. 4,762,833, Cl. 514-245.000

Krick, Wolfgang, to U.S. Philips Corp. Service-integrating, digital message transmission system for joint transmission of narrow-band and broadband signals. 4,763,326, Cl. 370-110.400.

Krieger, Gadi; and Eitan, Boaz, to WaferScale Integration, Inc. Input circuit for protecting against damage caused by electrostatic discharge. 4,763,184, Cl. 357-23.130.

Kriek, George R., to Mobay Corporation. Thermoplastic polyester compositions having improved release properties. 4,762,871, Cl. 524-94.000.

Krisa, Thomas E.: *See—*
Pantermuehl, Leroy A.; and Krisa, Thomas E., 4,762,543, Cl. 62-28.000

Kristinsson, Haukur: *See—*
Sturm, Elmar; Gallay, Jean J.; Kristinsson, Haukur; and Pissiotas, Georg, 4,762,830, Cl. 514-270.000.

Kroy Inc.: *See—*
Melbye, Kenneth M., 4,762,766, Cl. 430-156.000.
Richardson, Michael M.; Sega, Joseph M.; and Tuckner, Ronald F., 4,762,435, Cl. 400-304.000.

Kruger-Hoiss, Werner; Heidel, Hans-Joachim; and Troue, Heinrich, to Neumunstersche Maschinen-Und Apparatebau GmbH. Device for laying spinning cables into containers. 4,762,287, Cl. 242-48.000.

Krulik, Gerald; Davis, Stephen C.; and Davison, John B., to Morton Thiokol, Inc. Copper bath for electroless plating having excess counter-cation and process using same. 4,762,601, Cl. 204-182.400.

Krumholz, Jerrold J. Convertible sports stand construction. 4,762,319, Cl. 273-1.50R.

Krupp Polysius AG: *See—*
Lutke, Hubert, 4,762,220, Cl. 198-519.000.
Schmits, Heinz-Herbert; and Niemerg, Hermann, 4,762,489, Cl. 432-77.000.

Kruse, Gerald L.: *See—*
Girgis, Makram M.; Jackson, David E.; Kruse, Gerald L.; Mannuzza, Frank J.; and Montalto, Joseph G., 4,762,792, Cl. 435-244.000

Kruse, Lawrence I.: *See—*
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., 4,762,850, Cl. 514-392.000.

Kubota, Ltd.: *See—*
Tazaki, Mitsuo; and Ohata, Kenji, 4,761,897, Cl. 34-180.000.

Kubota, Shin'ichi: *See—*
Asakura, Masahiko; Kushida, Noritaka; Shiina, Takanori; and Kubota, Shin'ichi, 4,762,604, Cl. 204-406.000.

Kudlacek, Donald S. Archery bowsight mount and method of adjustment. 4,761,888, Cl. 33-265.000.

Kudo, Mitsuhiro: *See—*
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.

Kudo, Yumiko: *See—*
Ninomiya, Teruyuki; and Kudo, Yumiko, 4,762,947, Cl. 560-189.000

Kufner, Dieter: *See—*
Rudenauer, Werner; Muller, Fritz; Kufner, Dieter; and Furtmayr, Joachim, 4,762,066, Cl. 102-226.000.

Kugler, Wolfgang: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Kuhlman, Myron I.: *See—*
Falls, Andrew H.; and Kuhlman, Myron I., 4,762,178, Cl. 166-268.000

Kuhn, Franz J.: *See—*
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200

Kuhn, Harry J.: *See—*
Yarnell, J. Jay; Pflaum, Craig A.; Davidson, Arthur F.; and Kuhn, Harry J., 4,762,698, Cl. 423-341.000.

Kuhn, S. A.: *See—*
Wolff, Michel, 4,761,940, Cl. 56-13.600.

Kuhne Manfred; Gast, Theodor; Kramm, Karl-Ulrich; and Nolte, Karl, to B.A.T. Cigarettenfabriken GmbH. Device for monitoring the end dropout of cigarettes. 4,762,138, Cl. 131-280.000.

Kuhns, James K.: *See—*
Harris, Jesse W.; and Kuhns, James K., 4,762,242, Cl. 220-18.000.

Kumasaka, Noriyuki: *See—*
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.

Kunai, Yuko: *See—*
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000.

Kung, Viola T.; and Redemann, Carl T., to Liposome Technology, Inc Protein-liposome conjugates. 4,762,915, Cl. 530-405.000.

Kunitz, Friedrich-Wilhelm: *See—*
Helling, Guter; Reiff, Helmut; and Kunitz, Friedrich-Wilhelm, 4,762,777, Cl. 430-548.000.

Kuno, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Coil arrangement for nuclear fusion apparatus. 4,762,659, Cl. 376-142.000.

Kuno, Kazuo, to Mitsubishi Denki Kabushiki Kaisha. Coil arrangement for nuclear fusion apparatus. 4,762,660, Cl. 376-142.000.

Kuno, Tsutomu: *See—*
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Kunze, Michael: *See—*
Schlafer, Ludwig; Springer, Hartmut; and Kunze, Michael, 4,762,916, Cl. 534-631.000

Kunzel, Walter: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000

Kuo, Clinton, to Motorola, Inc. Intelligent write in an EEPROM with data and erase check. 4,763,305, Cl. 365-200.000

Kuo, Samuel C.: *See—*
Rosser, William D.; Kuo, Samuel C.; Bird, Gustavo E.; and Davis, Robert E., 4,763,131, Cl. 343-792.500.

Kuraray Co., Ltd.: *See—*
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Miyamori, Tamotsu; Kameyama, Iwao; and Abe, Takeo, 4,762,652, Cl. 264-6.000
Yamaki, Shigetoshi, 4,762,955, Cl. 570-211.000.

Kurihara, Kunitoshi; Kawashima, Katsuyuki; Masumi, Ryoji; and Azekura, Kazuo, to Hitachi, Ltd. Fast breeder reactor. 4,762,672, Cl. 376-333.000

Kurihara, Toshio: *See—*
Yamada, Toshiyuki; Kitagawa, Makoto; and Kurihara, Toshio, 4,762,197, Cl. 180-219.000.

Kurita, Kenji: *See—*
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R.

Kurita Water Industries Ltd.: *See—*
Yoda, Motoyuki; Kitagawa, Mikio; and Watanabe, Miwako, 4,762,612, Cl. 210-150.000.

Kurlat, Gitta M.: *See—*
Massa, Frank, 4,763,307, Cl. 367-174.000.

Kuroda, Hiroshi: *See—*
Hirano, Shinichi; Toyokuni, Ryo; and Kuroda, Hiroshi, 4,762,588, Cl. 156-623.00R.

Kushida, Noritaka: *See—*
Asakura, Masahiko; Kushida, Noritaka; Shiina, Takanori; and Kubota, Shin'ichi, 4,762,604, Cl. 204-406.000.
Kawanabe, Tomohiko; Asakura, Masahiko; Kushida, Noritaka; Seki, Yasunari; Shiina, Takanori; and Muroya, Minoru, 4,763,265, Cl. 364-431.040

Kushiro, Noriyuki: *See—*
Minagawa, Yoshiji; and Kushiro, Noriyuki, 4,763,104, Cl. 340-310.00R

Kuwabara, Hidemitsu: *See—*
Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, 4,762,965, Cl. 174-23.00R.

Kuwabara, Ken-ichi: *See—*
Takahashi, Toshiro; Kuwabara, Ken-ichi; and Okada, Masahiro, 4,762,769, Cl. 430-264.000

Kuwahara, Hidehiko: *See—*
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200

Kuykendall, Harold D., to General Methods Corporation. Dispensing mechanism for separating coupons from a connected ribbon of coupons. 4,762,041, Cl. 83-278.000.

Kvita, Vratislav; and Kaschig, Jurgen, to Ciba-Geigy Corporation. Process for the preparation of the 2-substituted-5-vinylpyrimidines. 4,762,926, Cl. 544-276.000.

Kwong, Sze-Keung; Rakuljic, George A.; Leyva, Victor; and Yariv, Amnon, to California Institute of Technology. Real time optical computing and image processing using self-pumped conjugate mirror. 4,762,394, Cl. 350-171.000

Kyocera Corporation: *See—*
Ohno, Michio; Nakanishi, Noriyoshi; Miyasaka, Michihiko; and Shiraiwa, Yoshinori, 4,762,982, Cl. 219-508.000

L & F Company: *See—*
Kinnan, Frank R., 4,762,151, Cl. 138-89.000.

L. Schuler GmbH: *See—*
Maunz, Hermann; Rahn, Oskar; and Voss, Wilfried, 4,761,986, Cl. 72-405.000

La Telemecanique Electrique: *See—*
Belbel, Elie; Fechant, Louis; and Riotte, Jaan Paul, 4,763,220, Cl. 361-93.000
Ingrain, Raymond, 4,763,096, Cl. 337-82.000.

Labaune, Jean-Pierre: *See—*
Levy, Jean-Claude; Bessin, Pierre; and Labaune, Jean-Pierre, 4,762,855, Cl. 514-651.000.

Labavia S G E *See—*
Charbonnier, Marc, 4,763,033, Cl. 310-105.000

Lablanche, Jean. *See—*
Corompt, Antoine; Lablanche, Jean; and Michalon, Fernand, 4,762,370, Cl. 298-19.00R.

Laboratoire Central Des Ponts Et Chaussees *See—*
Caussignac, Jean-Marie; and Morel, Gerard, 4,762,419, Cl 356-371.000

Laboratoire d'Etude Des Surfaces *See—*
Biberian, Jean P., 4,763,187, Cl. 358-56.000

Laciak, Daniel V.: *See—*
Pez, Guido P.; and Laciak, Daniel V., 4,762,535, Cl. 55-16.000

Lai, John T.; and Nae-Son, Pyong, to B. F. Goodrich Company, The Oligomeric light stabilizers with substituted piperidine ends 4,762,872, Cl. 524-100.000

Lalin, Hill S.; Fleming, William T., Jr.; and Bermudez, Jorge E., to Gilian Instrument Corp. Gas flowmeter and soap bubble generator 4,762,004, Cl. 73-861.050

Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., to Merck & Co. Inc. Fermentation analogs of virginiamycin M1. 4,762,923, Cl. 540-455.000

Lamberg, John R., to Honeywell, Inc. Mutually injection locked millimeter wave voltage controlled oscillators with power combiner 4,763,085, Cl. 331-56.000

Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., to Dow Chemical Company, The. Barrier film structures using carbon monoxide-containing polymers. 4,762,731, Cl 427-40.000

Lancaster, Gerald M *See—*
Strait, Chad A.; Lancaster, Gerald M.; and Tabor, Ricky L., 4,762,890, Cl. 525-257.000

Lancaster, William G., to Lantech. Parallel belted clamp. 4,761,934, Cl 53-399.000

Landis, John M.: *See—*
Asick, John C.; Landis, John M.; and Yingst, Stephen M., 4,762,505, Cl. 439-347.000

Landrini, Glisente, to Elcon Instruments SRL. Diode safety barrier 4,763,069, Cl. 324-158.00D.

Lang, Armin, to Zahnradfabrik Friedrichshafen, AG. Air gap setting device for electromagnets. 4,763,091, Cl. 335-258.000

Lang, Richard R. Container with supplemental opening for extracting contents. 4,762,241, Cl. 215-250.000

Lange International S.A.: *See—*
Courvoisier, Guy; Aneh, Simon; and Marxer, Herbert, 4,761,898, Cl. 36-50.000
Marxer, Herbert, 4,761,899, Cl. 36-121.000

Langelier, Andre . Peg board hooking support rod. 4,762,299, Cl 248-220.400

Lansky, Marc A.; and Clemens, Philip M., to Hoffman, John F.; and Jeffers, Albert L., a part interest to each. Universal picture support assembly and method. 4,761,902, Cl. 40-155.000

Lantech: *See—*
Lancaster, William G., 4,761,934, Cl. 53-399.000

Lantz, Roger A.: *See—*
Rothfuss, Diane; and Lantz, Roger A., 4,762,658, Cl. 264-122.000

Lardellier, Alain M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA). Housing for an axial compressor. 4,762,462, Cl. 415-177.000

Large, Michael S.: *See—*
Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S, 4,762,932, Cl. 548-198.000

Lark, Kristine A.: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000

Larsen, B. Pershing: *See—*
Windstrup, Robert F.; Bodnar, Steven A.; and Larsen, B. Pershing 4,762,486, Cl. 425-541.000

Larsen, Erling A. Skin stimulator and method for sports training 4,762,320, Cl. 273-26.00C.

Larsen, Ralph E. Hospital gurney having a patient transfer device 4,761,841, Cl. 5-81.00R

Larvco, Inc.: *See—*
Spillers, Robert L.; Martinez, Alonzo; Perry, Vergel G.; and Smith Lonnie L., 4,762,257, Cl. 224-216.000

Laserscope, Inc.: *See—*
Hussein, Hany M. G., 4,762,120, Cl. 128-6.000

Lasorso, Vincent J., Jr.: *See—*
Bergeson, Larry W.; Lasorso, Vincent J., Jr.; Petersen, Russell H and Ruffalo, Ronald G., 4,762,433, Cl. 401-206.000

Latino, Richard M.: *See—*
Beam, John W.; and Latino, Richard M., 4,762,379, Cl. 312-320.000

Latombe, Bruno: *See—*
Dumant, Jean M.; and Latombe, Bruno, 4,762,396, Cl. 350-320.000

Laughlin, William C.: *See—*
Baldwin, Roger A.; Laughlin, William C.; Patel, Keshav P.; and Shreve, Patricia J., 4,762,552, Cl. 75-1.00T.

Lawson, R. Joe: *See—*
Sachtler, J. W. Adriaan; and Lawson, R. Joe, 4,762,957, Cl 585-481.000

Lawton, Ernest L.: *See—*
Girgis, Mikhail M.; and Lawton, Ernest L., 4,762,750, Cl 428-378.000
Girgis, Mikhail M.; and Lawton, Ernest L., 4,762,751, Cl 428-378.000

VOL 1093 ISS 2 AG 9 1988 UMI

Lawton, Geoffrey: *See—*
Hassall, Cedric H.; Lawton, Geoffrey; and Redshaw, Sally, 4,762,924, Cl. 540-501.000.

Lay, Henry P.: *See—*
Pitalo, Stephen K.; Walden, Donnie T.; and Lay, Henry P., 4,762,411, Cl. 356-152.000.

Lazcano-Navarro, Arturo. Process to eliminate hazardous components from the electric arc furnace flue dust and recovering of metals. 4,762,554, Cl. 75-10.140.

Leach, Colin P.: *See—*
Wybro, Pieter G.; and Leach, Colin P., 4,762,180, Cl. 166-350.000.

LeaRonal, Inc.: *See—*
Brasch, William R., 4,762,560, Cl. 106-1.110.

Leclercq, Guy E. O., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA). Thrust reverser position indicator shaft bearing assembly. 4,761,949, Cl. 60-226.200

Leclercq, Joseph; and Canat, Jean N., to FRAGEMA. Upper end piece for nuclear fuel assemblies. 4,762,661, Cl. 376-209.000.

LeConte, Raoul A.: *See—*
Day, Benjamin W., Jr.; Gillon, Alexander C.; and LeConte, Raoul A., 4,763,356, Cl. 379-368.000

Lederle, Otto: *See—*
Thiel, Norbert; Gerstle, Volker; Zondler, Rolf; and Lederle, Otto, 4,762,733, Cl. 427-55.000

Lee, Henry J., to Florida Agricultural and Mechanical University. Anti-inflammatory carboxy pregnane derivatives. 4,762,919, Cl. 540-12.000

Lee, Kiu-Ahn, to Sam Sung Electronics Co., Ltd. Autoreverse double deck system. 4,763,209, Cl. 360-74.100.

Lee, Ruby B.; and Mahon, Michael J., to Hewlett-Packard Company. Computer providing flexible processor extension, flexible instruction set extension, and implicit emulation for upward software compatibility. 4,763,242, Cl. 364-200.000.

Lee, Shao-Wei; and Chow, Kwong-Wai, to Buddy L Corporation. Toy crash vehicle with skewable front wheels. 4,762,511, Cl. 446-6.000.

Lefevre, Herve ; and Enard, Alain, to Thomson-CSF. Monomode optical fiber reciprocal ring interferometer device. 4,762,416, Cl. 356-350.000

Le Goupil, Jean-Luc: *See—*
Damiron, Pierre-Marie; Le Goupil, Jean-Luc; and Menage, Pascal, 4,762,599, Cl. 204-144.500.

Lehman, Harvey R.; Lidinsky, William P.; Mussman, Harry E.; Spicer, David A.; and Vlack, David, to American Telephone and Telegraph Company, AT&T Bell Laboratories. Digital communication network architecture for providing universal information services. 4,763,317, Cl. 370-58.000

Lehr, Erich: *See—*
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.

Lehto, John M., to Northern States Power Company. Flue gas scrubber system. 4,762,686, Cl. 422-168.000

Leiber, Heinz, to Daimler-Benz Aktiengesellschaft. Propulsion control using longitudinal acceleration, steering angle, and speed to select slip threshold. 4,763,262, Cl. 364-426.000.

Leiber, Heinz, to Daimler-Benz Aktiengesellschaft. Propulsion control using longitudinal acceleration to determine slip thresholds. 4,763,263, Cl. 364-426.000

Leibthal, Siegfried G. V.: *See—*
King, Feather W.; and Leibthal, Siegfried G. V., 4,761,935, Cl. 53-416.000

Leifheit AG: *See—*
Denter, Ulrich; Himmighofen, Dieter; and Schulein, Rolf G., 4,762,042, Cl. 83-374.000

Leiman, Basil C.; Butler, Bruce D.; and Katz, Jeffrey, to University of Texas System, The. Balloon-tipped suction catheter. 4,762,125, Cl. 128-207.150

Lenz, Helmut: *See—*
Hubner-Parajsz, Christa; Schetters, Hartmut; Lenz, Helmut; and Erler, Klaus, 4,762,783, Cl. 435-7.000

Leonard, Thomas B.: *See—*
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., 4,762,850, Cl. 514-392.000.

Les Entreprises Roberto Aspri Ltee: *See—*
Aspri, Roberto; Mauffette, Claude; and Dallaire, Michel, 4,762,046, Cl. 84-294.000

Leslie, Thomas M.; Yoon, Hyun-Nam; DeMartino, Ronald N.; and Stamatoff, James B., to Hoechst Celanese Corporation. Process for producing polymeric media exhibiting third order nonlinear optical response. 4,762,912, Cl. 528-503.000.

Lesser, Bertram: *See—*
Schwartz, Larry A.; and Lesser, Bertram, 4,762,368, Cl. 297-445.000

Lessor, Ralph A.: *See—*
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Marlena V., 4,762,846, Cl. 514-331.000.

Letoffe, Michel; and Peccoux, Pierre-Michel, to Rhone-Poulenc Chimie. Single-component, storage-stable diorganopolysiloxane CVE compositions. 4,762,879, Cl. 524-720.000

Leung, Pak T., to Uniroyal Plastics Co., Inc. Water-based thermoforming adhesives. 4,762,880, Cl. 524-853.000

Lever Brothers Company: *See—*
Aronson, Michael; Lock, Michele R.; and Santos, Edward, 4,762,637, Cl. 252-99.000

Levie, Michael M.: *See—*
Burgin, John I., Jr.; Kane, Michael J.; and Levie, Michael M., 4,762,578, Cl. 156-64.000

Levin, Jeremy: *See—*
Wissner, Allan; Green, Kenneth E.; Hamann, Philip R.; and Levin, Jeremy, 4,762,935, Cl. 549-210.000

Levine, James L.: *See—*
Caswell, Nathan S.; Garwin, Richard L.; and Levine, James L., 4,762,990, Cl. 250-221.000

Levine, Sidney S., to Dorothy Margaret Levine. Motorized golf trolley. 4,762,193, Cl. 180-65.100.

Levis, William W., Jr.: *See—*
Korczak, Alexander; and Levis, William W., Jr., 4,762,950, Cl. 564-399.000

Levosky, John M.; Dowdy, Jack A.; and Herrera, Carlos, to J. Viola, Jr. Automotive sun screen. 4,762,358, Cl. 296-97.00G.

Levy, Jean-Claude; Bessin, Pierre; and Labaune, Jean-Pierre, to Albert Rolland S.A. Novel pharmaceutical compositions improving oxygenation of the brain and a process for their production. 4,762,855, Cl. 514-651.000

Lew Childre & Sons, Inc.: *See—*
Andreasen, James E.; Childre, Casey J.; and Peed, David B., 4,762,584, Cl. 156-245.000.

Lew, Hyok S. All orbiting gear planetary drive. 4,762,025, Cl. 74-804.000

Lewis, William E.: *See—*
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,762,607, Cl. 208-59.000.

Lewyt, Alexander. Compartmented and separable mailing envelope. 4,762,271, Cl. 229-72.000.

Leybold Aktiengesellschaft: *See—*
Kiese, Gerhard, 4,761,963, Cl. 62-77.000

Leybold-Heraeus GmbH: *See—*
Enke, Knut; and Zultzke, Walter, 4,762,730, Cl. 427-40.000.

Leyva, Victor: *See—*
Kwong, Sze-Keung; Rakuljic, George A.; Leyva, Victor; and Yariv, Amnon, 4,762,394, Cl. 350-171.000

Li, Yao T. Orbital drive evaporator. 4,762,592, Cl. 202-172.000.

Lia, Raymond A.; and Krauter, Allan I., to Welch Allyn, Inc. Self-adjusting steering mechanism for borescope, endoscope, or guide tube 4,762,118, Cl. 128-4.000.

Liang, Marc D.: *See—*
Narayanan, Krishna; and Liang, Marc D., 4,762,127, Cl. 128-334.00R

Libbey-Owens-Ford Co.: *See—*
Weaver, William R., 4,762,481, Cl. 425-116.000.

Liberty Diversified Industries: *See—*
Stoll, Mark S.; Brodin, Glenn H.; and Miller, LeRoy, 4,762,270, Cl. 229-23.00A.

Lichtin, Norman N.: *See—*
Khader, Mahmoud M.; and Lichtin, Norman N., 4,762,600, Cl. 204-157.460

Lidinsky, William P.: *See—*
Lehman, Harvey R.; Lidinsky, William P.; Mussman, Harry E.; Spicer, David A.; and Vlack, David, 4,763,317, Cl. 370-58.000.

Ligeon, Cynthia M.: *See—*
Holscher, Ebo J.; Verhoef, Nicolaas J. F. D.; and Ligeon, Cynthia M., 4,762,721, Cl. 426-94.000.

Lii, Shih M., to Echolag Co., Ltd. Combination lock for luggage cases. 4,761,974, Cl. 70-4.000.

Limbert, Michael: *See—*
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000.

Lindblad, Nero R., to Xerox Corporation. Reproducing apparatus including toner removal apparatus utilizing electrostatic attraction. 4,763,168, Cl. 355-15.000.

Liposome Technology, Inc.: *See—*
Kung, Viola T.; and Redemann, Carl T., 4,762,915, Cl. 530-405.000.

Lipp, Charles W., to Dow Chemical Company, The. Partial oxidation process using a nozzle for achieving constant mixing energy. 4,762,532, Cl. 48-197.00R.

Lippert, Mary E.: *See—*
Roessler, Thomas H.; Endres, Dan D.; Enloe, Kenneth M.; Huntoon, Andrew E.; and Lippert, Mary E., 4,762,521, Cl. 604-38.00A

Lipscher, Bernard N.; and Coleman, Kevin G. Computer security system. 4,763,351, Cl. 379-95.000

Littelfuse, Inc.: *See—*
Schaefer, Rudolf K., 4,762,509, Cl. 439-621.000.

Littlefuse, Inc.: *See—*
Schaefer, Rudolf K., 4,762,510, Cl. 439-621.000

Litzen, David B.; and Bolger, Stephen R., to Shell Oil Company. Isopropyl alcohol purification process. 4,762,616, Cl. 210-634.000.

Liu, Jonq-Min; Chen, Fu-Lung; and Chiou, Yeong-Cherng, to Industrial Technology Research Institute. Single component aqueous acrylic adhesive compositions for flexible printed circuits and laminates made therefrom. 4,762,747, Cl. 428-343.000

Liu, Xin X.; Zhao, Bing Y.; Riegel, Herbert; and Chien, Jo-Lung, to Beijing Research Institute of Chemical Industry He Ping Li. Novel catalyst and process for hydrogenation of unsaturated hydrocarbons 4,762,956, Cl. 585-259.000

Lloyd, Kenneth O.: *See—*
Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F.; Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, 4,762,800, Cl. 436-548.000

Lloyd, William E.; and Sullivan, Daniel J., to Vet-A-Mix. Method of reducing urine pH. 4,762,854, Cl. 514-557.000.

Lock, Michele R.: *See—*
Aronson, Michael; Lock, Michele R.; and Santos, Edward, 4,762,637, Cl. 252-99.000.

Lockheed Missiles & Space Company, Inc.: *See—*
McGee, Allen C.; and Solen, Everett L., 4,763,071, Cl. 324-233.000.
Mercado, Romeo I.; and Robb, Paul N., 4,762,404, Cl. 350-483.000.

Logsdon, John E.; Loke, Richard A.; Merriam, Jay S.; and Voight, Richard W., to Union Carbide Corporation. Aldehyde hydrogenation catalyst. 4,762,817, Cl. 502-329.000.

Loke, Richard A.: *See—*
Logsdon, John E.; Loke, Richard A.; Merriam, Jay S.; and Voight, Richard W., 4,762,817, Cl. 502-329.000.

Lonne, Klaus; Majewski, Klaus-Peter; Giesen, Franz-Josef; and Voigt, Rudiger, to Goetze AG. Sealing ring. 4,762,330, Cl. 277-230.000.

Loose, Robert A.; and Rice, William R., to Westinghouse Electric Corp. Venturi flow nozzle ultrasonic cleaning device. 4,762,668, Cl. 376-310.000

Lopez, Jaime; Pasek, Eugene A.; and Cugini, Anthony V., to Chevron Research Company. Heavy oil hydroprocess including recovery of molybdenum catalyst. 4,762,812, Cl. 502-26.000

Lovenguth, Ronald F.: *See—*
Bohen, Joseph M.; and Lovenguth, Ronald F., 4,762,861, Cl. 521-97.000

Lowe, Lisa J.: *See—*
Greer, Jerry A.; and Lowe, Lisa J., 4,763,313, Cl. 368-317.000.

Lu, Pang-Chia, to Mobil Oil Corporation. Multi-layer non-corrosive plastic film. 4,762,737, Cl. 428-35.000.

Lubbers, Willi, to Nico-Pyrotechnik Hanns-Jurgen Diederichs GmbH & Co KG. Cartridge-type ammunition. 4,762,068, Cl. 102-439.000

Lubinsky, Anthony R.; Owen, James F.; and Korn, Donald M., to Eastman Kodak Company. Method for reading out an image signal stored in a transparent photostimulable phosphor. 4,762,998, Cl. 250-327.200

Lucas Industries plc: *See—*
Hughes, Rodney V., 4,762,049, Cl. 89-33.140.

Ludvig Svensson International BV: *See—*
Henningsson, Goran; and Hellgren, Olof, 4,761,913, Cl. 47-17.000

Ludwigs, Horst. Tooth setting aid arrangement for positionally correctly setting artificial teeth in a complete lower denture. 4,762,490, Cl. 433-56.000

Luich, Thomas M., to National Semiconductor Corporation. Deglitching network for digital logic circuits. 4,763,027, Cl. 307-546.000.

Lukas, Bohumir; Fischer, Franz X.; and Aeschlimann, Elfy, to Ciba-Geigy Corporation. Antiherpetically active lipstick and the use thereof for the treatment of disorders of the lips and other areas of the face casued by human herpes viruses. 4,762,715, Cl. 424-145.000

Luke, Robert R.: *See—*
Wesson, David S.; Luke, Robert R.; George, Flint R.; Haugen, David M.; and George, Kevin R., 4,762,179, Cl. 166-297.000.

Lundblad, Karl A.: *See—*
Kallenius, Gunilla P.; Lundblad, Karl A.; Mollby, Nils R.; Svensson, Stefan B.; and Winberg, Jan, 4,762,824, Cl. 514-54.000.

Lundin, Robert S.; and Petritis, Demetris C., to Superior Electric Company, The. Method and means for driving a brushless D.C motor. 4,763,052, Cl. 318-254.000

Lupton, William G., to Econ Group Limited. Road planning equipment. 4,762,371, Cl. 299-39.000

Luther Medical Products, Inc.: *See—*
Luther, Ronald B.; and Choksi, Pradip V., 4,762,516, Cl 604-164.000

Luther, Ronald B.; and Choksi, Pradip V., to Luther Medical Products, Inc. Assembly of needle catheter protector. 4,762,516, Cl. 604-164.000

Lutke, Hubert, to Krupp Polysius AG. Side scraper for a heap of loose material. 4,762,220, Cl. 198-519.000

MacCarthy, Patrick. Interactive kaleidoscope. 4,762,380, Cl. 350-4.100

MacCracken, Calvin D., to Calmac Manufacturing Corporation. Immiscible propellant and refrigerant pairs for ejector-type refrigeration systems. 4,761,970, Cl. 62-500.000

MacDermid, Incorporated: *See—*
Grunwald, John J.; and Spencer, Allen C., 4,762,768, Cl 430-324.000

MacGregor, Douglas B.: *See—*
Bluhm, Mark W.; Thompson, Robert R.; Mothersole, David S.; and MacGregor, Douglas B., 4,763,253, Cl. 364-200.000

Machida, Hironobu: *See—*
Egawa, Jiro; Nagasawa, Moriya; and Machida, Hironobu, 4,763,241, Cl. 346-154.000

Machida, Mitsunobu: *See—*
Takemura, Kenji; Kobayashi, Mikio; Machida, Mitsunobu; and Yoshida, Hirokazu, 4,763,133, Cl. 343-912.000

Mackles, Leonard: *See—*
Rafft, Ronald R.; Helman, Michael D.; and Mackles, Leonard, 4,762,704, Cl. 424-65.000.

MacLaughlin, Donald: *See—*
Fortuna, Vincent; and MacLaughlin, Donald, 4,762,249, Cl 220-359.000

MacMaster, George H.; and Nichols, Lawrence J., to Raytheon Company. P-N junction semiconductor secondary emission cathode and tube. 4,763,043, Cl. 315-5.120.

Madate, Haruhisa: *See—*
Sekiguchi, Kyoji; Matsumura, Isao; and Madate, Haruhisa, 4,762,410, Cl. 351-206.000

Mady, Raschad; Daniel, Caecillie; Bohnhorst, Detlev; Gottwald, Karl-Heinz; and Morlock, Roland, to Gerhard Collardin GmbH. Process for phosphating electrolytically zinc-coated metals. 4,762,572, Cl 148-6.15Z

Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, to Kuraray Co., Ltd.; Yamanouchi Pharmaceutical Co., Ltd.; Kayaku Antibiotics Research Co., Ltd.; and Maeda, Hiroshi. Neocarzinostatin derivatives and a process for manufacturing the same. 4,762,885, Cl. 525-54.100

Maeda, Mitsuaki: *See—*
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko 4,761,925, Cl. 52-167.000

Magee, Harold H. Brushless drive system. 4,763,049, Cl. 318-254.000

Magline, Inc.: *See—*
Mortenson, Carl N., 4,762,333, Cl. 280-43.100.

Magnien, Emile G.; and Plantureux, Alain M., to Diamants Applications. Process for the mechanized production of jewelry comprising a plurality of small contiguous stones set in a metal support. 4,761,865, Cl. 29-10.000

Magnusson, Olof: *See—*
Flodin, Per; Magnusson, Olof; and Chandra, Satish, 4,762,867, Cl 524-5.000

Mahaffey, Steven J.: *See—*
Moliter, Robert P.; McDermott, Bernard; Swistro, Dominick J and Mahaffey, Steven J., 4,762,322, Cl. 273-77.00A.

Mahlberg, Alfred: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000

Mahon, Michael J.: *See—*
Lee, Ruby B.; and Mahon, Michael J., 4,763,242, Cl. 364-200.000

Mahoney, John F.; Taylor, Scott D.; and Perel, Julius, to Phrasor Scientific, Incorporated. Method and apparatus for making submicrom powders. 4,762,975, Cl. 219-69.00R.

Maige, Philippe, to Thomson-CSF. Extended overload protection circuit for a switch mode power supply having cycle detector, memory and flip-flop inhibition. 4,763,238, Cl. 363-21.000

Maijala, Ari, to Yhtyneet Paperitehtaat Oy Jylhavaara. Procedure and apparatus for controlling the surface mass distribution of paper web 4,761,858, Cl. 19-296.000

Majewski, Klaus-Peter: *See—*
Lonne, Klaus; Majewski, Klaus-Peter; Giesen, Franz-Josef; and Voigt, Rudiger, 4,762,330, Cl. 277-230.000

Maki, Takao; Yamaki, Isao; Akima, Hideo; and Hoashi, Akira, to Akebono Brake Industry Co., Ltd.; and Fujitsu Limted. Anti-skid control system for motor vehicles. 4,762,375, Cl. 303-96.000

Makita Electric Works, Ltd.: *See—*
Fushiya, Fusao; and Kaneko, Tetsuhisa, 4,762,035, Cl. 81-429.000

Makiura, Yoshinori; Wakikaido, Takahiro; Yamamoto, Haruo; Ogawa, Shusaku; and Ichihashi, Takao, to Mita Industrial Co., Ltd. Magnification selecting device in a photocopier. 4,763,174, Cl. 355-55.000

Malas, James C.: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000

Malcor, Jean G.: *See—*
Reynier, Rene ; Malcor, Jean G.; Moresco, Gilles; and Ramoger Francois, 4,762,208, Cl. 188-288.000

Malik, Marvin J., to General Motors Corporation. Dry sump scavenging system with independent head source. 4,762,201, Cl. 184-6.130.

Maloney, John R.: *See—*
Ramachandran, Venkataraman; and Maloney, John R., 4,762,943, Cl. 558-423.000

Maloney, William F.; and Hall, Deborah K. Ophtalmologic lens phantom system. 4,762,495, Cl. 434-271.000

Maloney, William F.; Hall, Deborah K.; Parkinson, Dean B.; Bergren Orton D.; and Dodge, Allen L., to Maloney, William F.; and Hall, Deborah K. Ophthalmologic lens phantom system. 4,762,496, Cl 434-271.000

MAN Nutzfahrzeuge GmbH: *See—*
Hagin, Faust; and Drewitz, Hans J., 4,762,191, Cl. 180-14.200

Mannesmann Aktiengesellschaft: *See—*
Spoeler, Johannes G.; and Grapentin, Manfred, 4,762,069, Cl 104-107.000

Mannhardt, Karl: *See—*
Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl 514-258.000

Manning Technologies, Inc.: *See—*
Brown, Alvin E., 4,762,012, Cl. 73-866.400

Mannuzza, Frank J.: *See—*
Girgis, Makram M.; Jackson, David E.; Kruse, Gerald L.; Mannuzza, Frank J.; and Montalto, Joseph G., 4,762,792, Cl 435-244.000

Manolis, John. Glow plug. 4,762,101, Cl. 123-145.00A

Maple, M. Brian: *See—*
Nellis, William J.; Maple, M. Brian; and Geballe, Theodore H 4,762,754, Cl. 428-552.000

Marantette, William F., to Optima Industries, Inc. Dual-plane high speed collet. 4,762,447, Cl. 409-131.000

Marchand, Eric, to ACED S.A. Rotary hydraulic actuator. 4,762,050 Cl. 91-1.000

VOL 1093 ISS 2 AG 9 1988 UMI

Margolin, George, to Photon Devices, Ltd. Graphic input device and method including a fiber optic bundle with electronic means for improving images. 4,762,391, Cl. 350-96.250.

Marks, George B., Sr., to Fearing Manufacturing Co., Inc. In situ insecticide. 4,762,718, Cl. 424-409.000.

Maroni, Victor A.; and von Winbush, Samuel, to United States of America, Energy. Molten salt extraction process for the recovery of valued transition metals from land-based and deep-sea minerals. 4,762,694, Cl. 423-50.000.

Marsh, Lee M., Jr.: *See—*
Zermeno, Alfonso; and Marsh, Lee M., Jr., 4,763,002, Cl. 250-370.010.

Marshall Diagnostics, Inc.: *See—*
Deutsch, Marshall E., 4,762,798, Cl. 436-67.000.

Marshek, Kurt M.; and Kim, Hyunsoo. Abrasive grinding belt test machine. 4,762,005, Cl. 73-862.040.

Martens, Andre ; and Bellet, Serge, to Naphtachimie S.A. Process and furnace for the steam cracking of hydrocarbons for the preparation of olefins and diolefins. 4,762,958, Cl. 585-613.000.

Martin, Andrew A.: *See—*
Fox, Daniel W.; Martin, Andrew A.; and Peters, Edward N., 4,762,896, Cl. 525-462.000.

Martin, Roland, to DVG Deutsche Verpackungsmittel GmbH. Container construction particularly for ammunition. 4,762,222, Cl. 206-3.000.

Martinez, Alonzo: *See—*
Spillers, Robert L.; Martinez, Alonzo; Perry, Vergel G.; and Smith, Lonnie L., 4,762,257, Cl. 224-216.000.

Martinez, Manuel T. System of construction of terraced structures for crops. 4,761,914, Cl. 47-83.000.

Martinez, Robert G.; Treybig, Duane S.; and Glass, Terry W., to Dow Chemical Company, The. Corrosion inhibitors. 4,762,627, Cl. 252-8.555.

Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, to Kawasaki Steel Corporation; and Kiyoshi Horii. Apparatus and method for the generation and utilization of a spiral gas stream in a pipeline. 4,762,148, Cl. 137-808.000.

Marumo, Takachi: *See—*
Bandou, Masaaki; Sugita, Masao; and Marumo, Takachi, 4,762,302, Cl. 251-360.000.

Marvosh, Daniel. Double clock for daylight saving. 4,763,311, Cl. 368-223.000.

Marx, Bodo, to Messer, Griesheim GmbH. Procedure for removal of low-boiling refrigerants from refrigerative and air-conditioning units. 4,761,961, Cl. 62-55.000.

Marxer, Herbert, to Lange International S.A. Ski boot. 4,761,899, Cl. 36-121.000.

Marxer, Herbert: *See—*
Courvoisier, Guy; Arneh, Simon; and Marxer, Herbert, 4,761,898, Cl. 36-50.000.

Marz, Helmut, to Audi AG. Door for an automotive vehicle. 4,761,915, Cl. 49-374.000.

Maschinenfabrik Rieter AG: *See—*
Flueh, Adolf; Schefer, Kurt; and Oswald, Heinz, 4,762,284, Cl. 242-18.00A.

Maschke, Alfred W., to TRW Inc. Method and apparatus for correcting high-order abberations in particle beams. 4,763,003, Cl. 250-396.00R.

Mase, Toshiaki: *See—*
Shibasaki, Masakatsu; Mase, Toshiaki; Sodeoka, Mikiko; and Ogawa, Yuji, 4,762,936, Cl. 549-214.000.

Masel, Ruben; and Valdshtein, George, to Masel, Ruben. Grilling appliance. 4,762,058, Cl. 99-425.000.

Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, to Mitsuboshi Belting Ltd. Rubber/fabric composite manufacture. 4,762,745, Cl. 428-252.000.

Masler, III: William F.; and Amjad, Zahid, to B. F. Goodrich Company, The. Itaconate ester copolymers as scale inhibitors. 4,762,621, Cl. 210-701.000.

Massa, Donald P.: *See—*
Massa, Frank, 4,763,307, Cl. 367-174.000.

Massa, Frank, to Massa, Frank; Massa, Donald P.; Kurlat, Gitta M.; and Stoneleigh Trust, Trustees of the. Wide-range audio frequency underwater transducer. 4,763,307, Cl. 367-174.000.

Masse , Roger. Drill bit. 4,762,188, Cl. 175-361.000.

Masson, Alain. Device based on an inorganic crystalline matter connected to a source of energy and use of said device for improving bacterial metabolism. 4,762,795, Cl. 435-287.000.

Masuda, Masahiko: *See—*
Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, 4,762,605, Cl. 204-406.000.

Masuda, Shinji, to NEC Corporation. Charge detecting circuit. 4,763,197, Cl. 358-213.160.

Masui, Takatoshi: *See—*
Nagai, Toshinari; Masui, Takatoshi; Satou, Yasushi; and Katsuno, Toshiyasu, 4,761,950, Cl. 60-274.000.

Masui, Toshiyuki: *See—*
Takei, Masahiro; Kozuki, Susumu; Masui, Toshiyuki; Hirasawa, Masahide; and Kashida, Motokazu, 4,763,293, Cl. 364-723.000.

Masumi, Ryoji: *See—*
Kurihara, Kunitoshi; Kawashima, Katsuyuki; Masumi, Ryoji; and Azekura, Kazuo, 4,762,672, Cl. 376-333.000.

Masuzawa, Isao: *See—*
Katoh, Mitsuru; Kawada, Shin-Ichi; and Masuzawa, Isao, 4,763,072, Cl. 324-253.000

Matano, Masaharu: *See—*
Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Inoue, Nobuhisa, 4,762,383, Cl. 350-96.130.

Matharu, Saroop S.: *See—*
Rowlands, David A.; Golec, Julian M. C.; Matharu, Saroop S.; and Hairsine, Peter W., 4,762,840, Cl. 514-267.000.

Mathis, Talmage: *See—*
Gat, Erann; Park, Eric D.; and Mathis, Talmage, 4,762,992, Cl. 250-227.000

Matson, Lawrence E.: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000

Matsubara, Shigeru; Mori, Tohru; and Tabata, Toshiroh, to International Business Machines Corporation. Image processing system for area filling of graphics. 4,763,119, Cl. 340-747.000.

Matsubara, Yuji, to Akebono Brake Industry Co., Ltd. Anti-skid control system for motor vehicles of the type switchable between two-wheel drive (2WD) and four-wheel drive (4WD). 4,762,376, Cl. 303-115.000.

Matsubayashi, Hiroshi; Watanabe, Naoto; Kobayashi, Seishichi; Sue, Toshio; and Taira, Kazuo, to Toyo Seikan Kaisha, Ltd. Easy-open can lid. 4,762,245, Cl. 220-269.000.

Matsubayashi, Hiroshi: *See—*
Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, 4,762,579, Cl. 156-69.000.

Matsuda, Takeyuki: *See—*
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300.

Matsufuji, Teruo: *See—*
Fukushima, Hiroshi; and Matsufuji, Teruo, 4,763,354, Cl. 379-165.000
Sano, Yoichiro; Matsufuji, Teruo; and Sato, Akira, 4,763,348, Cl. 379-165.000

Matsukura, Hideki: *See—*
Suzuki, Akira; and Matsukura, Hideki, 4,761,936, Cl. 53-510.000.

Matsumoto, Hiroshi; and Hagiwara, Hitoshi, to Fuji Photo Film Co., Ltd. Method of treating photosensitive printing plate. 4,762,771, Cl. 430-302.000

Matsumoto, Hiroshi: *See—*
Kobayashi, Kesanao; and Matsumoto, Hiroshi, 4,762,772, Cl. 430-309.000.

Matsumoto, Mamoru: *See—*
Yamada, Yoshihisa; Matsuoka, Yuzo; and Matsumoto, Mamoru, 4,762,839, Cl. 514-259.000.

Matsumoto, Masaharu, to Ohi Seisakusho Co., Ltd. Electric door lock system. 4,762,348, Cl. 292-201.000.

Matsumoto, Shusaku: *See—*
Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Adachi, Yoshitugu; and Hatakawa, Yoshio, 4,762,862, Cl. 522-3.000.

Matsumoto, Tadashi, to Nippon Telegraph and Telephone Corporation. Method for decoding error correcting block codes. 4,763,331, Cl. 371-37.000

Matsumura, Isao: *See—*
Sekiguchi, Kyoji; Matsumura, Isao; and Madate, Haruhisa, 4,762,410, Cl. 351-206.000

Matsuno, Mitsuo: *See—*
Yuasa, Hitoshi; Matsuno, Mitsuo; and Satoh, Tetsuo, 4,762,092, Cl. 123-1.00A.

Matsuo, Isamu; and Mori, Junji, to Ryobi Ltd. Door closer having sound generating function. 4,763,111, Cl. 340-545.000.

Matsuoka, Kikuo: *See—*
Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, 4,762,579, Cl. 156-69.000.

Matsuoka, Toshihiro: *See—*
Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, 4,762,196, Cl. 180-197.000.

Matsuoka, Yuzo: *See—*
Yamada, Yoshihisa; Matsuoka, Yuzo; and Matsumoto, Mamoru, 4,762,839, Cl. 514-259.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, 4,762,057, Cl. 99-348.000
Shibaike, Narito, 4,763,214, Cl. 360-106.000.

Matsushita, Toshihiko: *See—*
Sekine, Mikiya; Matsushita, Toshihiko; Morishita, Sadao; and Ohri, Yasuhiko, 4,762,818, Cl. 503-214.000.

Matsuura, Mitsuyuki; and Hirakawa, Katsumi, to Mitsubishi Petrochemical Company Limited. Process for polymerizing ethylene. 4,762,898, Cl. 526-125.000.

Mattel, Inc.: *See—*
Choy, Terence A.; Hartleben, Harold A.; and Serna, Jaime, 4,762,513, Cl. 446-359.000.

Mattson, Mariena V.: *See—*
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Mariena V., 4,762,846, Cl. 514-331.000.

Matulic-Adamic, Jasenka: *See—*
Watanabe, Kyoichi A.; Matulic-Adamic, Jasenka; Price, Richard W.; and Fox, Jack J., 4,762,823, Cl. 514-50.000.

Matuszczak, Bernd: *See—*
Wetzel, Hans J.; and Matuszczak, Bernd, 4,761,873, Cl. 29-517.000.

Matuz, Judit: *See—*
Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, 4,762,944, Cl. 560-051.000

Maue, Marilyn J., to GAF Corporation. Agent for treatment of hides and pelts. 4,762,522, Cl. 8-94.19R.

Mauffette, Claude: *See—*
Aspri, Roberto; Mauffette, Claude; and Dallaire, Michel, 4,762,046, Cl. 84-294.000.

Mauldin, Charles H.; Davis, Stephen M.; and Arcuri, Kym B., to Exxon Research and Engineering Company. Cobalt catalysts, and use thereof for the conversion of methanol and for Fischer-Tropsch synthesis, to produce hydrocarbons. 4,762,959, Cl. 585-640.000.

Maunz, Hermann; Rahn, Oskar; and Voss, Wilfried, to L. Schuler GmbH. Arrangement for transporting workpieces in multi-stage deformation presses. 4,761,986, Cl. 72-405.000.

Maurer, Helmut: *See—*
Siegmeier, Rainer; Prescher, Gunther; and Maurer, Helmut, 4,762,954, Cl. 568-867.000.

Mautref, Michel: *See—*
Belouet, Christian; and Mautref, Michel, 4,762,687, Cl. 422-253.000.

Mawatari, Atsushi: *See—*
Saitoh, Kouhei; Aoki, Hisashi; Endo, Kenzo; and Mawatari, Atsushi, 4,763,142, Cl. 346-160.000.

Maxwell, Carroll B. Beam hauler for trucks. 4,762,192, Cl. 180-14.200.

May, Johann J.: *See—*
Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, 4,762,602, Cl. 204-206.000.

Mayer, Francis X.: *See—*
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,762,607, Cl. 208-59.000.

Mayzels, Leon: *See—*
Fish, Aaron M.; Mayzels, Leon; Branover, Alexander; Miresmaili, Masoud; and Dausseing, Jean-Paul, 4,762,212, Cl. 192-24.000

Mazda Motor Corporation: *See—*
Hanafusa, Hiroyuki; Tanaka, Fusatoshi; Nakayama, Hideo; and Nakatani, Shuichi, 4,762,111, Cl. 123-647.000.
Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, 4,762,196, Cl. 180-197.000.
Katayama, Kazuo, 4,762,015, Cl. 74-473.0SW.
Okuno, Itaru; Oda, Hiroyuki; and Kaneko, Tadashi, 4,763,264, Cl. 364-431.010.
Watanabe, Kenichi, 4,762,213, Cl. 192-82.00T.
Watanabe, Kenichi; and Taniguchi, Haruyuki, 4,762,306, Cl. 267-195.000.

McBurnett, James R., to Dana Corporation. Hydraulic steering system. 4,762,195, Cl. 180-133.000.

McCabe, Robert W.; McCready, David F.; Mohan, Philip V.; and Potter, Robert A., to General Motors Corporation. Compact catalytic dissociator system for cold starting methanol-fueled cars. 4,762,093, Cl. 123-3.000.

McCaslin, Martin J.; and Kolar, John C., to Optimem. Linear actuator for an optical disk storage apparatus. 4,763,314, Cl. 369-249.000.

McCleery, Ray A. Training device for golfers. 4,762,325, Cl. 273-183.00B.

McCombie, Stuart W.; and Tagat, Jayaram R., to Schering Corporation. (5R,6S,8R)-6-(1-hydroxyethyl)-2-(3R-pyrrolidin-2-one-3-yl)thiopenem-3-carboxylic acid. 4,762,827, Cl. 514-192.000.

McConnell, Joseph W., III; Wilburn, Richard D., Jr.; Northrup, Allan R.; and Neal, Lloyd D., to Amaray International Corporation. Video tape reel box with self opening top. 4,762,228, Cl. 206-387.000.

McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., to Cetus Corporation; and Cold Spring Harbor Laboratories. Peptide antibodies and their use in detecting oncogene products. 4,762,706, Cl. 424-85.000.

McCready, David F.: *See—*
McCabe, Robert W.; McCready, David F.; Mohan, Philip V.; and Potter, Robert A., 4,762,093, Cl. 123-3.000.

McCurry, Patrick M.: *See—*
McDaniel, Robert S., Jr.; McCurry, Patrick M.; Short, Rolland W. P.; and Glor, Paul R., 4,762,918, Cl. 336-127.000

McDaniel, Keith K.: *See—*
Smeltzer, Eugene E.; Skriba, Michael C.; and McDaniel, Keith K., 4,762,647, Cl. 252-632.000.

McDaniel, Robert S., Jr.; McCurry, Patrick M.; Short, Rolland W. P.; and Glor, Paul R., to Staley Continental, Inc. Decolorization of glycosides. 4,762,918, Cl. 336-127.000.

McDermott, Bernard: *See—*
Moliter, Robert P.; McDermott, Bernard; Swistro, Dominick J.; and Mahaffey, Steven J., 4,762,322, Cl. 273-77.00A.

McDevitt, Thomas M. Method of calibrating a torque testing device and a magnetic calibration device therefor. 4,761,989, Cl. 73-1.00C.

McDonald, Edward: *See—*
Whittle, Alan J.; Salmon, Roger; and McDonald, Edward, 4,762,835, Cl. 514-256.000.

McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., to Wool Research Organisation of New Zealand Inc. Method and apparatus for making long-tailed neps. 4,761,857, Cl. 19-98.000.

McGee, Allen C.; and Solen, Everett L., to Lockheed Missiles & Space Company, Inc. Nondestructive test instrument for determining fiber volume, ply count and thickness of fiber-containing electrically conductive composite materials. 4,763,071, Cl. 324-233.000

McIntyre, Jeffrey A.; and Cadieux, Timothy P., to Healthcare Technologies, Inc., by said Timothy P. Cadieux. Subcutaneously-implanted drug delivery system for intravenous injections, and the like. 4,762,517, Cl. 604-175.000

McKerrow, James H.: *See—*
Keene, William E.; and McKerrow, James H., 4,762,789, Cl. 435-219.000

McLandrich, Matthew N., to United States of America, Navy. Automated and computer controlled precision method of fused elongated optical fiber coupler fabrication. 4,763,272, Cl. 364-468.000

McLane, Jack S., Sr. Cooking grill with grease collector. 4,762,059, Cl. 99-445.000

McMillan, Colin W. Sharpener for compass leads and pencil leads 4,761,885, Cl. 30-451.000

McMullen, Raymond F.: *See—*
Glenn, Max C.; and McMullen, Raymond F., 4,763,098, Cl 338-4.000

McNeilus, Garwin B.: *See—*
Christenson, Ronald E.; and McNeilus, Garwin B., 4,762,421, Cl. 366-54.000

McNeilus Truck and Manufacturing, Inc.: *See—*
Christenson, Ronald E.; and McNeilus, Garwin B., 4,762,421, Cl. 366-54.000

McNulty, Robert A., to De Pasquale, Adrian, a part interest. Horse-grooming tether device and improved horse grooming stall. 4,762,089, Cl. 119-109.000

Meade, John C.: *See—*
Richards, William D.; Blanco, Ernesto E.; Clark, Richard A.; and Meade, John C., 4,762,260, Cl. 227-19.000.

Mecapec S.A: *See—*
Rimmele, Karl, 4,762,039, Cl. 83-37.000.

Meckstroth, Alan F.: *See—*
Westfall, Wade H.; Wheaton, Roy; and Meckstroth, Alan F., 4,763,218, Cl. 360-132.000

Medical Dynamics, Inc.: *See—*
Bayne, Irman D.; and Adair, Edwin L., 4,762,133, Cl. 128-756.000

MedTest Systems, Inc.: *See—*
Guruswamy, Vinodhini, 4,762,594, Cl. 204-1.00T.

Mego Afek, Industrial Measuring Instruments: *See—*
Shtenfeld, Izhar, 4,762,121, Cl. 128-64.000

Meier, Helmut-Martin: *See—*
Dhein, Rolf; Muller, Hanns P.; Meier, Helmut-Martin; and Gipp, Roland, 4,762,901, Cl. 528-73.000.

Meixner, Erwin, to Mettler Instrumente AG. Weighing apparatus including wind shielding means. 4,762,190, Cl. 177-181.000.

Melbye, Kenneth M., to Kroy Inc. Dry transfer film with photosensitized color carrying layer and photosensitized pressure sensitive adhesive layer wherein photoaensitizer is o-quinone diazide 4,762,766, Cl. 430-156.000

Melville, Phillip L.; and Wallyn, Rene M., to Sacatec, Inc. Exhaust extraction rail assembly. 4,762,054, Cl. 98-115.400.

Melville, Randolph I.: *See—*
Krajewski, Casimir; Melville, Randolph I.; and Porter, William W., 4,762,310, Cl. 267-141.200.

Mena, Carl M. Screw tap with lubrication and extraction bores. 4,762,444, Cl. 408-59.000

Menage, Pascal: *See—*
Damiron, Pierre-Marie; Le Goupil, Jean-Luc; and Menage, Pascal, 4,762,599, Cl. 204-144.500.

Mendicino, Frank D., to Union Carbide Corporation. Process for trialkoxysilane/tetraalkoxysilane mixtures from silicon metal and alcohol. 4,762,939, Cl. 556-470.000.

Menke, Josef F., to Carl Zeiss-Stiftung. System for passive and optical-mechanic scanning of a visual field. 4,763,000, Cl. 250-334.000.

Menkes, Henry E.: *See—*
Gvoth, John Michael, Jr.; Kakalec, Robert J.; and Menkes, Henry E., 4,763,013, Cl. 307-66.000.

Mercado, Romeo I.; and Robb, Paul N., to Lockheed Missiles & Space Company, Inc. Color-corrected lens systems. 4,762,404, Cl 350-483.000

Mercer, Frank B.: *See—*
Stancliffe, Norman J.; Mercer, Frank B.; and Kennerley, Cyril, 4,762,581, Cl. 156-84.000

Merck & Co., Inc.: *See—*
Alexander, Jose; and Higuchi, Takeru, 4,762,851, Cl. 514-420.000.
Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 4,762,923, Cl. 540-455.000

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See—*
Haas, Gunther; and Neisius, Karl H., 4,762,767, Cl. 430-167.000.

Merino, Dennis, to Trade Source International. Wave surfing simulation apparatus. 4,762,316, Cl. 272-56.50R.

Merrell Dow Pharmaceuticals Inc.: *See—*
Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., 4,762,849, Cl. 514-369.000.

Merriam, Jay S.: *See—*
Logsdon, John E.; Loke, Richard A.; Merriam, Jay S.; and Voight, Richard W., 4,762,817, Cl. 502-329.000

Mertens, Wolfgang, to Dovo Stahlwaren Bracht GmbH & Co KG. Cutting tool with drawing cut. 4,761,883, Cl. 30-239.000

Meschenmoser, Friedrich: *See—*
Nicko, Reinhard; Meschenmoser, Friedrich; Sager, Karl-Heinz; and Turcke, Rainer, 4,761,933, Cl. 53-374.000

Messenger, Roger M.: *See—*
Day, John A.; and Messenger, Roger M., 4,761,851, Cl. 16-110.00A.

VOL 1093 ISS 2 AG 9 1988 UMI

Messer, Griesheim GmbH: *See*—
Marx, Bodo, 4,761,961, Cl. 62-55.000.
Messerschmitt-Boelkow Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Hawly, Rudolf; and Schmid, Gunter, 4,762,261, Cl. 227-66.000.
Udo, Carl, 4,762,294, Cl. 244-75.00R.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Rudolph, Ralph; and Weiler, Werner, 4,763,320, Cl. 370-85.000.
Metal Box Public Limited Company: *See*—
Ashley, Robert J.; Miller, John D.; and Ring, Maurice F., 4,762,246, Cl. 220-270.000.
Metallgesellschaft AG: *See*—
Michler, Wilhelm; Both, Hans W.; and Keppler, Rolf, 4,762,538, Cl. 55-84.000.
Metrologic Instruments, Inc.: *See*—
Knowles, Carl H.; and Naylor, Charles, 4,762,984, Cl. 235-383.000.
Mettler Instrumente AG: *See*—
Meixner, Erwin, 4,762,190, Cl. 177-181.000.
Villiger, Robert, 4,762,428, Cl. 374-149.000.
Metz, Bernd: *See*—
Baucke, Fnedrich; Mucke, Klaus; and Metz, Bernd, 4,762,401, Cl. 350-357.000.
Metzger, Karl G.: *See*—
Grohe, Klaus; Schriewer, Michael; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,762,844, Cl. 514-312.000.
Meyer, Lawrence L.: *See*—
Kamm, Lawrence J.; Meyer, Lawrence L.; and Walton, Erlen B., 4,762,096, Cl. 123-90.160.
Metzger, Hans; Konneker, Reinhard; and Esch, Hans-Joachim, to Dr Ing. h.c.F. Porsche Aktiengesellschaft. Device for actuating a fuel-exchange poppet valve of a reciprocating internal-combustion engine. 4,762,095, Cl. 123-90.110.
Michaels, Leonard H.; and Miller, Robert A., to Molex Incorporated. Connector coupling lock. 4,762,504, Cl. 439-345.000.
Michalon, Fernand: *See*—
Corompt, Antoine; Lablanche, Jean; and Michalon, Fernand, 4,762,370, Cl. 298-19.00R
Michel, Otto: *See*—
Ackermann, Hans; Koecher, Ralf; Steinberner, Udo; and Michel, Otto, 4,762,467, Cl. 417-54.000
Michiue, Kenji: *See*—
Yamazaki, Katsumasa; Yagi, Toshihiko; Michiue, Kenji; Goto, Sohei; and Mochizuki, Yoshiharu, 4,762,778, Cl. 430-567.000.
Michler, Wilhelm; Both, Hans W.; and Keppler, Rolf, to Metallgesellschaft AG. Spray absorber and method of operating. 4,762,538, Cl 55-84.000
Michon, Maurice; and Rigny, Paul, to Commissariat A L'Energie Atomique. System making it possible to obtain a selective reaction in photochemical processes on the basis of laser beams incorporating means for distributing said beams. 4,762,402, Cl. 350-370.000.
Micromol Corporation: *See*—
Goldberg, Edward B.; and Park, James T., 4,762,782, Cl. 435-7.000.
Miki, Toshiyuki; and Takeya, Mitsumasa, to Sanyo Color Works, Ltd Easily dispersible pigment composition and dispersing method 4,762,569, Cl. 106-476.000
Miles Inc.: *See*—
Girgis, Makram M.; Jackson, David E.; Kruse, Gerald L.; Mannuzza, Frank J.; and Montalto, Joseph G., 4,762,792, Cl. 435-244.000
Miles Laboratories, Inc.: *See*—
Mitra, Gautam; and Mozen, Milton M., 4,762,714, Cl. 424-101.000.
Miller, Bernhard: *See*—
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000
Miller, Francis M., to Conax Florida Corporation. Sensor circuit responsive to different fluid conductivities. 4,763,077, Cl. 324-439.000.
Miller, Gene W.: *See*—
Youssef, Nabil N.; and Miller, Gene W., 4,762,545, Cl. 71-27.000.
Miller, John D.: *See*—
Ashley, Robert J.; Miller, John D.; and Ring, Maurice F., 4,762,246, Cl. 220-270.000
Miller, LeRoy: *See*—
Stoll, Mark S.; Brodin, Glenn H.; and Miller, LeRoy, 4,762,270, Cl 229-23.00A
Miller, Orand C. Air-water separator. 4,762,176, Cl. 166-105.500.
Miller, Richard M.; and Cote, Douglas J., to Newcor Canada, Ltd. Electrode holder. 4,762,976, Cl. 219-119.000
Miller, Robert A.: *See*—
Michaels, Leonard H.; and Miller, Robert A., 4,762,504, Cl. 439-345.000
Milligan, Dale. Method and apparatus for temporarily storing household waste. 4,762,297, Cl. 248-99.000.
Minagawa, Yoshiji; and Kushiro, Noriyuki, to Mitsubishi Denki Kabushiki Kaisha. Gateway for use in load control system. 4,763,104, Cl. 340-310.00R.
Mineura, Toshimi: *See*—
Anbe, Yoshiharu; Mineura, Toshimi; Kai, Hajime; Kodama, Sumiyasu; and Dobashi, Takao, 4,763,273, Cl. 364-472.000.
Minnesota Mining and Manufacturing Company: *See*—
Albin, Loren D.; and Kolb, Robert E., 4,762,891, Cl. 525-276.000
Burvee, Richard W., 4,762,497, Cl. 439-37.000
Delprato, Ivano, 4,762,925, Cl. 544-105.000.
Nelson, Owen L.; and Rennolet, Charles L., 4,763,323, Cl. 370-96.000.
Rabuse, George R., 4,762,341, Cl. 281-29.000.
Tengler, John N.; and Pilny, James C., 4,762,508, Cl. 439-607.000.
Thompson, John M.; and Hoyt, Tim K., 4,762,506, Cl. 439-418.000.
Wyberg, Gregory R., 4,762,234, Cl. 206-631.300.
Minolta Camera Kabushiki Kaisha: *See*—
Hamano, Hiroaki; Hanamoto, Hiroyuki; and Ito, Masazumi, 4,763,163, Cl. 355-14.0SH.
Ishida, Tokuji; and Hamada, Masataka, 4,762,987, Cl. 250-201.000.
Ishikawa, Norio; Ishimura, Toshihiko; Taniguchi, Nobuyuki; Akada, Yasuaki; and Seki, Reiji, 4,763,156, Cl. 354-442.000.
Ishimura, Toshihiko; Ishikawa, Norio; Akada, Yasuaki; Seki, Reiji; and Taniguchi, Nobuyuki, 4,763,153, Cl. 354-400.000.
Nakatani, Munehiro; and Sugiura, Masamichi, 4,763,200, Cl. 358-282.000
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000.
Miresmaili, Masoud: *See*—
Fish, Aaron M.; Mayzels, Leon; Branover, Alexander; Miresmaili, Masoud; and Dausseing, Jean-Paul, 4,762,212, Cl. 192-24.000.
Misawa, Atsushi: *See*—
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000.
Mishkovsky, Vladimir; Hwang, Wei S.; and Kamrath, David J., to BOC Group, Inc., The. Process for the recovery of argon. 4,762,542, Cl. 62-28.000
Mita Industrial Co., Ltd.: *See*—
Makiura, Yoshinori; Wakikaido, Takahiro; Yamamoto, Haruo; Ogawa, Shusaku; and Ichihashi, Takao, 4,763,174, Cl. 355-55.000.
Shimizu, Hiroshi, 4,763,330, Cl. 371-37.000
Mita, Minoru: *See*—
Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, 4,762,148, Cl. 137-808.000.
Mitani, Wataru, to Kabushiki Kaisha Toshiba. Electrophotographic photosensitive member and the method of manufacturing the same comprises micro-crystalline silicon. 4,762,761, Cl. 430-65.000.
Mitomi, Seiji, to Nifco Inc. Fastener. 4,762,437, Cl. 403-406.100.
Mitra, Gautam; and Mozen, Milton M., to Miles Laboratories, Inc. Preparation of retrovirus-free immunoglobulins. 4,762,714, Cl. 424-101.000
Mitsubishi Chemical Industries Limited: *See*—
Okano, Shigeaki; Hayashi, Katsuhiko; Sakurazawa, Yoshiteru; and Suga, Yoshinori, 4,762,882, Cl. 525-74.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Itoh, Hisatsugu; and Uota, Kosaku, 4,763,268, Cl. 364-449.000.
Iwata, Toshio, 4,762,110, Cl. 123-609.000.
Kawaguchi, Kenji; and Yoshida, Akio, 4,761,979, Cl. 72-9.000
Kuno, Kazuo, 4,762,659, Cl. 376-142.000.
Kuno, Kazuo, 4,762,660, Cl. 376-142.000.
Minagawa, Yoshiji; and Kushiro, Noriyuki, 4,763,104, Cl. 340-310.00R
Morishita, Mitsuharu; and Kohge, Shinichi, 4,762,194, Cl. 180-79.100.
Ozaki, Hiroji; Sato, Shinichi; Tokui, Akira; Kawai, Akira; Nakajima, Masayuki; and Nagatomo, Masao, 4,763,182, Cl. 357-23.600
Suyama, Michiyo; and Akama, Yasuyuki, 4,763,269, Cl. 364-449.000
Takechi, Moriaki, 4,763,221, Cl. 361-141.000
Tsubouchi, Natsuro; and Kimata, Masafumi, 4,763,179, Cl. 357-23.600.
Yabe, Kiyoshi, 4,762,971, Cl. 200-153.0SC.
Yamada, Tatsuo, 4,763,302, Cl. 365-189.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Izumimoto, Masatoshi; Wakamatsu, Syuji; and Yuyama, Megumu, 4,762,722, Cl. 426-124.000.
Ninomiya, Teruyuki; and Kudo, Yumiko, 4,762,947, Cl. 560-189.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Sekine, Mikiya; Matsushita, Toshihiko; Morishita, Sadao; and Oiri, Yasuhiko, 4,762,818, Cl. 503-214.000.
Mitsubishi Petrochemical Company Limited: *See*—
Matsuura, Mitsuyuki; and Hirakawa, Katsumi, 4,762,898, Cl. 526-125.000
Shimada, Takeo; Okada, Noriyuki; Fujimoto, Takashi; and Yada, Shuhei, 4,762,889, Cl. 525-201.000
Mitsubishi Rayon Co., Ltd.: *See*—
Sasaki, Isao; Mukai, Nobuhiro; and Ige, Hitoshi, 4,762,863, Cl. 522-11.000.
Yamamoto, Takashi; Murata, Ryuji; Tahara, Yasuteru; Terada, Hiromu; and Sakunaga, Kenichi, 4,762,392, Cl. 350-96.300.
Mitsuboshi Belting Ltd.: *See*—
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,762,745, Cl. 428-252.000
Mitsui & Co., Ltd.: *See*—
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000.
Mitsui, Hideto: *See*—
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000

Mitsui Petrochemical Industries, Ltd.: *See*—
Takeda, Masami; and Muro, Tsuneaki, 4,762,878, Cl. 524-490.000
Mitsui Toatsu Chemicals, Incorporated: *See*—
Asanuma, Tadashi; Funakoshi, Yoshiyuki; and Ohoka, Tatuo, 4,762,897, Cl. 526-68.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
Nishimura, Takeji; and Koizumi, Hiroshi, 4,763,286, Cl. 364-352.000.
Miura, Kazuhiko: *See*—
Ohta, Minoru; Miura, Kazuhiko; Onoda, Michitoshi; and Hattori, Tadashi, 4,761,995, Cl. 73-118.200.
Miyamori, Tamotsu; Kameyama, Iwao; and Abe, Takeo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process and apparatus for producing carbon fiber mat. 4,762,652, Cl. 264-6.000.
Miyamoto, Shoji: *See*—
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000
Miyasaka, Michihiko: *See*—
Ohno, Michio; Nakanishi, Noriyoshi; Miyasaka, Michihiko; and Shiraiwa, Yoshinori, 4,762,982, Cl. 219-508.000
Miyata, Yukio. Apparatus for processing dry-cleaned clothes. 4,761,896, Cl. 34-77.000.
Miyauchi, Masayoshi; and Ohara, Osamu, to Teijin Chemicals, Ltd. Polycarbonate resin composition. 4,762,873, Cl. 524-128.000.
Miyazaki, Akira; Bansho, Kenji; Kimura, Akira; and Tao, Hiroaki, to Director General of Agency of Industrial Science and Technology. Method and a device for extracting metal ions. 4,762,691, Cl. 423-24.000.
Miyazaki, Takayuki: *See*—
Yasuda, Hiroshi; and Miyazaki, Takayuki, 4,763,004, Cl. 250-396.00R.
Miyazu, Taisuke: *See*—
Yasui, Masaru; and Miyazu, Taisuke, 4,762,398, Cl. 350-334.000.
Mizumoto, Yasuharu: *See*—
Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, 4,762,965, Cl. 174-23.00R.
Mizuno, Masatoshi: *See*—
Yamada, Kouichi; and Mizuno, Masatoshi, 4,763,295, Cl. 364-786.000.
Mo och Domsjo Aktiebolag: *See*—
Samuelson, Hans O., 4,762,591, Cl. 162-237.000
Mobay Corporation: *See*—
Kriek, George R., 4,762,871, Cl. 524-94.000.
Mobil Oil Corporation: *See*—
Borghard, William S.; and Schoennagel, Hans J., 4,762,010, Cl 73-865.500.
Bullard, Edward M., 4,762,430, Cl. 383-75.000
Forbus, Thomas R., 4,762,635, Cl. 252-73.000
Lu, Pang-Chia, 4,762,737, Cl. 428-35.000.
Mochizuki, Yoshiharu: *See*—
Yamazaki, Katsumasa; Yagi, Toshihiko; Michiue, Kenji; Goto, Sohei; and Mochizuki, Yoshiharu, 4,762,778, Cl. 430-567.000.
Model, Michael J.; and Wright, Daniel A., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Backup protection switch to prevent reverse power flow in a UPS. 4,763,014, Cl. 307-66.000.
Modern Home Products Corp.: *See*—
Koziol, Walter, 4,762,530, Cl. 48-180.100.
Modic, Frank J.; and Striker, Richard A., to General Electric Company. Low density silicone foam. 4,762,859, Cl. 521-82.000.
Modzelewski, Christine: *See*—
Clark, Arthur E.; Kabacoff, Lawrence T.; Savage, Howard T.; and Modzelewski, Christine, 4,763,030, Cl. 310-26.000.
Moe, James S. Refrigeration system. 4,761,969, Cl. 62-388.000.
Moeschler, Heinrich F.; Pfluger, Wolfgang; and Wendisch, Detlef, to Bayer Aktiengesellschaft. Pure annonin and a process for the preparation thereof. 4,762,716, Cl. 424-195.100.
Mohan, Philip V.: *See*—
McCabe, Robert W.; McCready, David F.; Mohan, Philip V.; and Potter, Robert A., 4,762,093, Cl. 123-3.000.
Molex Incorporated: *See*—
Michaels, Leonard H.; and Miller, Robert A., 4,762,504, Cl. 439-345.000.
Molinaro, James S., to Dexon, Inc. Flexible carrier for semiconductor wafer cassettes. 4,762,353, Cl. 294-1.100.
Moliter, Robert P.; McDermott, Bernard; Swistro, Dominick J.; and Mahaffey, Steven J., to Spalding & Evenflo Companies, Inc. Golf club. 4,762,322, Cl. 273-77.00A.
Mollby, Nils R.: *See*—
Kallenius, Gunilla P.; Lundblad, Karl A.; Mollby, Nils R.; Svensson, Stefan B.; and Winberg, Jan, 4,762,824, Cl. 514-54.000
Molnlycke AB: *See*—
Wallstrom, Leif, 4,762,520, Cl. 604-366.000.
Monobe, Hisanobu: *See*—
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300
Monsanto Company: *See*—
Coleman, James P., 4,762,649, Cl. 260-545.00P.
Montalto, Joseph G.: *See*—
Girgis, Makram M.; Jackson, David E.; Kruse, Gerald L.; Mannuzza, Frank J.; and Montalto, Joseph G., 4,762,792, Cl. 435-244.000
Montedison S.p.A.: *See*—
Cesti, Pietro; and Piccardi, Paolo, 4,762,793, Cl. 435-280.000
Nocci, Roberto; Attalla, Giancarlo; Del Giudice, Luciano; Cohen, Robert E.; and Bertinotti, Floriana, 4,762,893, Cl. 525-323.000
Montefiore Hospital Association of Western Pennsylvania, The: *See*—
Narayanan, Krishna; and Liang, Marc D., 4,762,127, Cl. 128-334.00R.
Monteil, Andre J. C.: *See*—
Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J. C., 4,762,834, Cl. 514-252.000.
Moon, Philip A. K., to Plessey Overseas Limited. Transistor constant bias circuits. 4,763,018, Cl. 307-296.00R
Moore, John, to De La Rue Giori S.A. Arrangement for attaching intaglio printing plates to a cylinder. 4,762,064, Cl. 101-150.000.
Moore, M. Samuel; and Paluka, Charles F., to Semco Instruments, Inc Helicopter low-g monitor, recorder and warning system. 4,763,285, Cl. 364-551.000
Moore, William T.; Robertson, Paul J.; and Wallace, Kenneth J., to Rank Pullin Controls Limited. Imaging apparatus. 4,763,192, Cl 358-113.000
Moors, Petrus M. A. W., to U.S. Philips Corporation. Method of manufacturing a bipolar transistor having emitter series resistors. 4,762,804, Cl. 437-31.000
Morata, Philippe, to ETA SA Fabriques d'Ebauches. Battery housing for an electronic watch. 4,763,308, Cl. 368-88.000.
Morel, Gerard: *See*—
Caussignac, Jean-Marie; and Morel, Gerard, 4,762,419, Cl. 356-371.000
Moresco, Gilles: *See*—
Reynier, Rene ; Malcor, Jean G.; Moresco, Gilles; and Ramoger, Francois, 4,762,208, Cl. 188-288.000.
Morgan, James T., Jr.: *See*—
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000
Mori, Junji: *See*—
Matsuo, Isamu; and Mori, Junji, 4,763,111, Cl. 340-545.000
Mori, Kazuhiko: *See*—
Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Inoue, Nobuhisa, 4,762,383, Cl. 350-96.130
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, to Hitachi, Ltd. Information processing system with data storage on plural loop transmission line. 4,763,254, Cl. 364-200.000
Mori, Tohru: *See*—
Matsubara, Shigeru; Mori, Tohru; and Tabata, Toshiroh, 4,763,119, Cl. 340-747.000
Mori, Yoshitada: *See*—
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000
Morimoto, Akio: *See*—
Itoh, Masaki; Morimoto, Akio; and Esho, Sotaro, 4,763,139, Cl. 346-135.100
Morimoto, Hiroyuki: *See*—
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000
Morimoto, Isamu: *See*—
Uesawa, Yutaka; and Morimoto, Isamu, 4,762,776, Cl. 430-538.000
Morin, Louis G., to American Cyanamid Company. Process for forming electrodes. 4,762,603, Cl. 204-279.000.
Morishita, Mitsuharu; and Kohge, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Motor-driven power steering system for a vehicle 4,762,194, Cl. 180-79.100
Morishita, Sadao: *See*—
Sekine, Mikiya; Matsushita, Toshihiko; Morishita, Sadao; and Oiri, Yasuhiko, 4,762,818, Cl. 503-214.000
Morita, Hirobumi; and Fukui, Yoshiro, to Honda Giken Kogyo Kabushiki Kaisha. Industrial robot. 4,762,459, Cl. 414-680.000
Morita, Koichi, to Sanken Electric Co., Ltd. DC-DC converter 4,763,235, Cl. 363-19.000
Morlock, Roland: *See*—
Mady, Raschad; Daniel, Caecillie; Bohnhorst, Detlev; Gottwald, Karl-Heinz; and Morlock, Roland, 4,762,572, Cl. 148-6.15Z.
Morrell, Michael F., to Claffey, Dan, a part interest. Adjustable carpenters measuring tool. 4,761,890, Cl. 33-473.000.
Morris, John P.: *See*—
Juds, Richard C.; and Morris, John P., 4,763,132, Cl. 343-890.000
Morrish, Andrew J.; and Wells, John H., to International Business Machines Corporation. Interlaced color cathode ray tube display with reduced flicker. 4,763,120, Cl. 340-748.000
Mortenson, Carl N., to Magline, Inc. Repositionable hand truck. 4,762,333, Cl. 280-43.100.
Morton Thiokol, Inc.: *See*—
Krulik, Gerald; Davis, Stephen C.; and Davison, John B., 4,762,601, Cl. 204-182.400
Mosavi, Reza K.: *See*—
Vertz, Richard J.; and Mosavi, Reza K., 4,762,464, Cl. 416-97.00R.
Moser, David B.: *See*—
Blattner, John D.; Moser, David B.; and Deleganes, Sam M., 4,763,117, Cl. 340-712.000

VOL 1093 ISS 2 AG 9 1988 UMI

Moses, Kenneth G. Directional sensor for neutral particle beams. 4,762,993, Cl. 250-251.000.

Mothersole, David S.: *See*—
Bluhm, Mark W.; Thompson, Robert R.; Mothersole, David S.; and MacGregor, Douglas B., 4,763,253, Cl. 364-200.000

Motooka, Wesley D., to Ford Aerospace & Communications Corporation. Image detection with image plane divider. 4,762,989, Cl. 250-216.000

Motorola, Inc.: *See*—
Bluhm, Mark W.; Thompson, Robert R.; Mothersole, David S.; and MacGregor, Douglas B., 4,763,253, Cl. 364-200.000.
Flannagan, Stephen T., 4,763,303, Cl. 365-189.000.
Flannagan, Stephen T., 4,763,306, Cl. 365-203.000.
Gay, Michael J., 4,763,024, Cl. 307-493.000.
Gercekci, Anil, 4,763,296, Cl. 364-900.000.
Jason, Barry L., 4,763,081, Cl. 330-149.000.
Keshlear, William M.; Moyer, William C.; and Zolnowsky, John, 4,763,250, Cl. 364-200.000.
Kuo, Clinton, 4,763,305, Cl. 365-200.000.
Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, 4,763,244, Cl. 364-200.000.
Tasch, Al F., Jr., 4,763,181, Cl. 357-23.600.

Mowat, Kenneth R. Apparatus and method for film pieces. 4,763,175, Cl. 355-75.000

Mowery, Erb H.: *See*—
Ballard, Ambrose H.; Godfrey, Thomas G., Jr.; and Mowery, Erb H., 4,762,656, Cl. 264-82.000

Moyer, William C.; Cruess, Michael W.; Keshlear, William M.; and Zolnowsky, John, to Motorola, Inc. Paged memory management unit capable of selectively supporting multiple address spaces. 4,763,244, Cl. 364-200.000

Moyer, William C.: *See*—
Keshlear, William M.; Moyer, William C.; and Zolnowsky, John, 4,763,250, Cl. 364-200.000.

Mozen, Milton M.: *See*—
Mitra, Gautam; and Mozen, Milton M., 4,762,714, Cl. 424-101.000.

MTU Motoren- Und Turbinen- Union Munchen GmbH: *See*—
Hennecke, Dietmar; Pfaff, Klaus; and Grigo, Dietrich, 4,761,947, Cl. 60-39.750.

Mucke, Klaus: *See*—
Baucke, Friedrich; Mucke, Klaus; and Metz, Bernd, 4,762,401, Cl. 350-357.000

Mudge, Paul R.: *See*—
Shih, Yen-Jer; Pruiksma, Arthur B.; and Mudge, Paul R., 4,762,866, Cl. 523-412.000

Mueller, Herbert, to BASF Aktiengesellschaft. Narrowing the molecular weight distribution of poly-tetrahydrofuran and of copolymers of tetrahydrofuran and alkylene oxides. 4,762,951, Cl. 568-617.000.

Mueller, Wolfgang: *See*—
Schuetz, Alfred; Mueller, Wolfgang; and Soutschek, Ewald, 4,763,301, Cl. 365-181.000.

Muhich, John S.: *See*—
Kauffman, Arthur A., Jr.; and Muhich, John S., 4,763,251, Cl. 364-200.000

Mukai, Nobuhiro: *See*—
Sasaki, Isao; Mukai, Nobuhiro; and Ige, Hitoshi, 4,762,863, Cl. 522-11.000

Muller, Bruce R.: *See*—
Niedospial, John J.; and Muller, Bruce R., 4,763,346, Cl. 378-187.000

Muller, Fritz: *See*—
Rudenauer, Werner; Muller, Fritz; Kufner, Dieter; and Furtmayr, Joachim, 4,762,066, Cl. 102-226.000

Muller, Hanns P.: *See*—
Dhein, Rolf; Muller, Hanns P.; Meier, Helmut-Martin; and Gipp, Roland, 4,762,901, Cl. 528-73.000

Muller, Heinz: *See*—
Wohlkonig, Hansjorg; Muller, Heinz; and Auberger, Heinrich, 4,763,337, Cl. 373-86.000

Mullin, Jerome: *See*—
Seitz, William R.; Zhujun, Zhang; and Mullin, Jerome, 4,762,799, Cl. 436-79.000.

Murahashi, Takashi; Ichihara, Yoshiyuki; Nakazawa, Toshihiko; and Takesue, Toshihiro, to Konishiroku Photo Industry Co. Laser recording apparatus having variable recording magnification and beam intensity control. 4,763,134, Cl. 346-1.100.

Murai, Keiichi: *See*—
Honda, Mitsuru; Koike, Atsushi; Ogawa, Kyosuke; and Murai, Keiichi, 4,762,762, Cl. 430-65.000

Murakami, Hisao: *See*—
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Murata, Ryuji: *See*—
Yamamoto, Takashi; Murata, Ryuji; Tahara, Yasuteru; Terada, Hiromu; and Sakunaga, Kenichi, 4,762,392, Cl. 350-96.300

Murata, Toshiaki: *See*—
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000.

Muro, Tsuneaki: *See*—
Takeda, Masami; and Muro, Tsuneaki, 4,762,878, Cl. 524-490.000

Murooka, Shiuchi: *See*—
Ohtuka, Tatsuo; Murooka, Shiuchi; Arai, Satoko; and Nishizaki, Takeshi, 4,763,229, Cl. 361-433.000.

Muroya, Minoru: *See*—
Kawanabe, Tomohiko; Asakura, Masahiko; Kushida, Noritaka; Seki, Yasunari; Shiina, Takanori; and Muroya, Minoru, 4,763,265, Cl. 364-431.040.

Muroyama, Seiichi, to Kabushiki Kaisha Toshiba. Double-sided floppy disk driving apparatus having a mechanism for preventing heads from coming into contact with each other. 4,763,213, Cl. 360-105.000.

Murphy, Edmond J.: *See*—
Batdorf, Robert L.; Murphy, Edmond J.; Poteat, Tommy L.; and Simpson, Jay R., 4,762,387, Cl. 350-96.200.

Murphy, I. Leon. Universal support device for a vehicle. 4,762,258, Cl. 224-273.000

Murphy, Mark A., to Sundstrand Corporation. Method of working in situ the end of a heat exchanger tube. 4,761,866, Cl. 29-157.30C.

Murphy, Richard L., to Grass Valley Group, Inc., The. Digital timing using a state machine. 4,763,341, Cl. 377-20.000.

Murphy, Walter T., to B. F. Goodrich Company, The. Electron curable polyurethanes. 4,762,902, Cl. 528-75.000.

Murray, Thomas J.: *See*—
Forest, Paul H.; and Murray, Thomas J., 4,763,161, Cl. 355-14.0SH.

Mussman, Harry E.: *See*—
Lehman, Harvey R.; Lidinsky, William P.; Mussman, Harry E.; Spicer, David A.; and Vlack, David, 4,763,317, Cl. 370-58.000.

Muto, Rudolph. Universal/scrubber/precipitator for scrubbing smoke. 4,762,539, Cl. 55-232.000.

MWB Messwandler-Bau Aktiengesellschaft: *See*—
Schmitt, Robert; and Steffens, Peter, 4,763,068, Cl. 324-126.000.

Myojo, Toyoshige: *See*—
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Myron L Company, Inc.: *See*—
Schipper, Richard A., 4,762,611, Cl. 210-85.000.

Nabisco Brands, Inc.: *See*—
Strong, Dave R., 4,762,723, Cl. 426-283.000.

Nae-Son, Pyong: *See*—
Lai, John T.; and Nae-Son, Pyong, 4,762,872, Cl. 524-100.000

Nagai, Noriyuki, to Yamaura Seisakusho Ltd., a part interest. Artificial tooth root member and method of implanting same. 4,762,492, Cl. 433-174.000

Nagai, Toshinari; Masui, Takatoshi; Satou, Yasushi; and Katsuno, Toshiyasu, to Toyota Jidosha Kabushiki Kaisha. Double air-fuel ratio sensor system carrying out learning control operation. 4,761,950, Cl. 60-274.000.

Nagaoka, Mitsuru: *See*—
Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, 4,762,196, Cl 180-197.000

Nagarajan, Vaidyanathan; and Wright, Ian G., to Battelle Memorial Institute. Refractory metal alloys having inherent high temperature oxidation protection. 4,762,557, Cl. 75-244.000.

Nagasaki, Tatsuo: *See*—
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000.

Nagasawa, Moriya: *See*—
Egawa, Jiro; Nagasawa, Moriya; and Machida, Hironobu, 4,763,241, Cl. 346-154.000.

Nagata, Kenichi: *See*—
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000.

Nagata, Koji: *See*—
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl. 165-11.100

Nagatomo, Masao: *See*—
Ozaki, Hiroji; Sato, Shinichi; Tokui, Akira; Kawai, Akira; Nakajima, Masayuki; and Nagatomo, Masao, 4,763,182, Cl. 357-23.600

Nagatomo, Shigemi: *See*—
Hayano, Makoto; Nagatomo, Shigemi; Sakata, Hirotsugu; and Hatori, Mitsuo, 4,762,477, Cl. 418-1.000.

Nagel, Hans: *See*—
Harting, Dietmar; Nagel, Hans; and Brauer, Wolfgang, 4,762,498, Cl. 439-82.000

Nakada, Kimiaki: *See*—
Takamura, Masashi; Ushiro, Seimei; Kobayashi, Kiyotaka; Cho, Michio; and Nakada, Kimiaki, 4,763,145, Cl. 354-64.000.

Nakagawa, Katsumi: *See*—
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000

Nakai, Masaaki: *See*—
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000

Nakajima, Junya: *See*—
Kishimoto, Shinzo; Nishikawa, Toshihiro; Abe, Akira; and Nakajima, Junya, 4,762,774, Cl. 430-393.000.

Nakajima, Masayuki: *See*—
Ozaki, Hiroji; Sato, Shinichi; Tokui, Akira; Kawai, Akira; Nakajima, Masayuki; and Nagatomo, Masao, 4,763,182, Cl. 357-23.600

Nakakura, Hirofumi: *See*—
Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, 4,762,057, Cl. 99-348.000

Nakama, Daiji, to Nifco Inc. Plastic window glass holder. 4,762,904, Cl 428-122.000

Nakamoto, Kouji: *See*—
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000

Nakamura, Hiroki: *See*—
Sonoda, Tomiya; Hikosaka, Takashi; and Nakamura, Hiroki, 4,762,742, Cl. 428-141.000

Nakamura, Hitoshi: *See*—
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.

Nakamura, Kenichiro, to Tsubakimoto Chain Co. Overload protection for DC motor-driven linear actuator. 4,763,219, Cl. 361-23.000

Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Pigment composition. 4,762,568, Cl. 106-403.000.

Nakanishi, Noriyoshi: *See*—
Ohno, Michio; Nakanishi, Noriyoshi; Miyasaka, Michihiko; and Shiraiwa, Yoshinori, 4,762,982, Cl. 219-508.000

Nakano, Akihisa: *See*—
Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, 4,762,057, Cl. 99-348.000

Nakano, Kinichiro: *See*—
Tomoda, Takahisa; Takeuchi, Mikio; Nakano, Kinichiro; and Hirano, Motoki, 4,763,121, Cl. 340-825.540.

Nakao, Kazuhiro: *See*—
Oogita, Yoshinori; Shino, Katsuhide; Nakao, Kazuhiro; Ozawa, Kazuhito; and Komaki, Shigeki, 4,762,983, Cl. 235-1.00D.

Nakaoku, Shozo; Sakuma, Kazuhiko; Oshika, Yasuhiro; and Ohira, Kazuo to Taiyo Pharmaceutical Industry Co., Ltd. Indene compounds. 4,762,927, Cl. 544-378.000.

Nakatani, Munehiro; and Sugiura, Masamichi, to Minolta Camera Kabushiki Kaisha. Image output apparatus. 4,763,200, Cl. 358-282.000

Nakatani, Shuichi: *See*—
Hanafusa, Hiroyuki; Tanaka, Fusatoshi; Nakayama, Hideo; and Nakatani, Shuichi, 4,762,111, Cl. 123-647.000.

Nakayama, Hideo: *See*—
Hanafusa, Hiroyuki; Tanaka, Fusatoshi; Nakayama, Hideo; and Nakatani, Shuichi, 4,762,111, Cl. 123-647.000.

Nakayama, Yoshifumi: *See*—
Watanabe, Yuzuru; Nakayama, Yoshifumi; Ando, Masanori; and Kikuchi, Masahiro, 4,763,047, Cl. 315-382.000

Nakayashiki, Susumu; Kashio, Jiro; Harakawa, Takeshi; and Fuse, Masahiro, to Hitachi, Ltd. Ring communication network system and a method for controlling same. 4,763,315, Cl. 370-16.000.

Nakazawa, Toshihiko: *See*—
Murahashi, Takashi; Ichihara, Yoshiyuki; Nakazawa, Toshihiko; and Takesue, Toshihiro, 4,763,134, Cl. 346-1.100.

Nalco Chemical Company: *See*—
Emmons, Daniel; and Chesnut, Gary R., 4,762,626, Cl. 252-8.552.
Fong, Dodd W.; and Kowalski, David J., 4,762,894, Cl. 525-344.000.

Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, to Olympus Optical Co., Ltd. Method and apparatus for measuring immunological reaction with the aid of fluctuation in intensity of scattered light. 4,762,413, Cl. 356-339.000.

Nanya, Toshiki: *See*—
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000

Naoumidis, Aristides: *See*—
Gyarmati, Erno ; and Naoumidis, Aristides, 4,762,269, Cl. 228-194.000

Naphtachimie S.A.: *See*—
Martens, Andre ; and Bellet, Serge, 4,762,958, Cl. 585-613.000

Narayanan, Krishna; and Liang, Marc D., to Montefiore Hospital Association of Western Pennsylvania, The. Apparatus and method for enlarging the ends of a vessel prior to anastomosis. 4,762,127, Cl. 128-334.00R.

Narita Seisakusho Mfg., Ltd.: *See*—
Ohta, Yoshio; and Tabata, Koji, 4,762,071, Cl. 105-8.100.

National Distillers and Chemical Corporation: *See*—
Staker, Donald D.; and Kain, William S., 4,762,724, Cl. 426-302.000

National Hand Tool Corporation: *See*—
Chow, Kirk K., 4,762,033, Cl. 81-63.200.

National Research Development Corporation: *See*—
Turner, Robert, 4,763,073, Cl. 324-312.000.
Velasco, Miguel U.; and Hodd, Kenneth A., 4,762,900, Cl. 528-54.000.

National Semiconductor Corporation: *See*—
Kapoor, Ashok K., 4,762,801, Cl. 437-024.000.
Luich, Thomas M., 4,763,027, Cl. 307-546.000
Tsen, Chan-Tang; and Yang, Karl H. K., 4,763,026, Cl. 307-530.000

National Starch and Chemical Corporation: *See*—
Shih, Yen-Jer; Pruiksma, Arthur B.; and Mudge, Paul R., 4,762,866, Cl. 523-412.000

Naudin, Jean C.: *See*—
Thomas, Pierre-Armand; Naudin, Jean C.; and Ningler, Michel, 4,762,442, Cl. 405-196.000

Naylor, Charles: *See*—
Knowles, Carl H.; and Naylor, Charles, 4,762,984, Cl. 235-383.000

Neal, Lloyd D.: *See*—
McConnell, Joseph W., III; Wilburn, Richard D., Jr.; Northrup, Allan R.; and Neal, Lloyd D., 4,762,228, Cl. 206-387.000

Neary, Robert J.: *See*—
Eberhardt, John D.; Hovde, Peter L.; Koerber, John M., Neary, Robert J.; and Peltier, Robert V., 4,761,957, Cl. 60-650.000

NEC Corporation: *See*—
Itoh, Masaki; Morimoto, Akio; and Esho, Sotaro, 4,763,139, Cl 346-135.100
Kaihara, Shigeru, 4,762,389, Cl. 350-96.210.
Kitada, Yoshitaka, 4,763,248, Cl. 364-200.000
Masuda, Shinji, 4,763,197, Cl. 358-213.160
Yamada, Kouichi; and Mizuno, Masatoshi, 4,763,295, Cl 364-786.000

Neder, Gunter: *See*—
Olschewski, Armin; Brandenstein, Manfred; Ernst, Horst-Manfred, Stolz, Robert; and Neder, Gunter, 4,762,207, Cl. 188-196.00D

Nees, Stephan. Apparatus for contacting biological cell systems with a perfusion fluid. 4,762,794, Cl. 435-284.000.

Neff, Joseph J.: *See*—
Nijjar, Parmjit S.; and Neff, Joseph J., 4,762,170, Cl. 165-43.000

Negahban-Hagh, Mehrdad, to Silicon Systems, Inc. Switching scheme for switched capacitor filters. 4,763,088, Cl. 333-173.000.

Neil, George R., to TRW Inc. Method for decelerating particle beams 4,763,079, Cl. 328-233.000

Neisius, Karl H.: *See*—
Haas, Gunther; and Neisius, Karl H., 4,762,767, Cl. 430-167.000

Nellis, William J.; Maple, M. Brian; and Geballe, Theodore H., to United States of America, Energy. Dynamic high pressure process for fabricating superconducting and permanent magnetic materials. 4,762,754, Cl. 428-552.000

Nelson, Arthur J. Accommodations to exchange containers between vessels. 4,762,456, Cl. 414-138.000

Nelson, Owen L.; and Rennolet, Charles L., to Minnesota Mining and Manufacturing Company. Communication system for the transfer of small digital message blocks and large digital message blocks. 4,763,323, Cl. 370-96.000

Nelson, Philip H. Sound-masking system for core modules used in an office. 4,761,921, Cl. 52-33.000

Nelson Research & Development Co.: *See*—
Rajadhyaksha, Vithal J., 4,762,549, Cl. 71-88.000

Nelson, Robert S.: *See*—
Barbaric, Zoran L.; Deckard, Michael; and Nelson, Robert S., 4,763,345, Cl. 378-146.000

Nesbitt, Daniel F.: *See*—
Tucker, James R.; and Nesbitt, Daniel F., 4,762,645, Cl 252-544.000

Nestec S.A.: *See*—
Wadell, Lars G. A., 4,762,083, Cl. 118-16.000

Nestor, John J., to Syntex (U.S.A.) Inc. N',N''-dialkylguanidino dipeptides. 4,762,821, Cl. 514-19.000

Netlon Limited: *See*—
Stancliffe, Norman J.; Mercer, Frank B.; and Kennerley, Cyril, 4,762,581, Cl. 156-84.000

Neumunstersche Maschinen-Und Apparatebau GmbH: *See*—
Kruger-Hoiss, Werner; Heidel, Hans-Joachim; and Troue, Heinrich, 4,762,287, Cl. 242-48.000

New Zealand Government Property Corporation, The: *See*—
Smith, Gerald J., 4,763,011, Cl. 250-372.000

Newcor Canada, Ltd.: *See*—
Miller, Richard M.; and Cote, Douglas J., 4,762,976, Cl 219-119.000

Newman, Frank J.; Knapp, Robert K.; and Davis, Robert J., to Boeing Company, The. Light array for providing passive rendezvous guidance between closing aircraft spacecraft and the like. 4,763,125, Cl 340-958.000

Newton, Brian L., to Dart Industries Inc. Storage system. 4,762,237, Cl 211-115.000.

Neywick, Charles V.: *See*—
Lancaster, Gerald M.; Kelley, David C.; Cramm, Russell H.; and Neywick, Charles V., 4,762,731, Cl. 427-40.000.

Ng, Dominic S.; Wong, Raymond W.; and Croucher, Melvin D., to Xerox Corporation. Liquid developer. 4,762,764, Cl. 430-115.000

Ng, Jennifer: *See*—
Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F.; Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, 4,762,800, Cl. 436-548.000

Ng, Kwok K.; and Sze, Simon M., to American Telephone and Telegraph Co., AT&T Bell Laboratories. Semiconductor-on-insulator (SOI) devices and SOI IC fabrication method. 4,763,183, Cl 357-23.700

NGK Insulators Ltd.: *See*—
Ushikoshi, Ryusuke, 4,762,461, Cl. 415-14.000

NGK Spark Plug Co., Ltd.: *See*—
Ishida, Noboru; Kato, Norio; and Kawamura, Mitsuyoshi, 4,761,951, Cl. 60-280.000

VOL 1093 ISS 2 AG 9 1988 UMI

Nguyen, Peter D.; and Ferenc, Robert R., to General Dynamics Corporation/Convair Division. Device for trimming to a net shape the edge of a metal skin. 4,761,884, Cl. 30-373.000.

Nguyen, Peter D., to General Dynamics Corporation/Convair Div. Fastener collar removal tool. 4,762,030, Cl. 81-55.000.

Nichols, Lawrence J.: *See—*
MacMaster, George H.; and Nichols, Lawrence J., 4,763,043, Cl. 315-5.120.

Nicko, Reinhard; Meschenmoser, Friedrich; Sager, Karl-Heinz; and Turcke, Rainer, to Agfa-Gevaert Aktiengesellschaft. Arrangement for closing a receptacle for photographs and negatives. 4,761,933, Cl. 53-374.000

Nico-Pyrotechnik Hanns-Jurgen Diederichs GmbH & Co KG: *See—*
Lubbers, Willi, 4,762,068, Cl. 102-439.000.

Nicod, Frederick C., to ASE (UK) Limited. Harness with strap length adjustment device. 4,762,369, Cl. 297-484.000.

Nicolas, Jean-Marie; and Bernatets, Jean-Luc, to U.S. Philips Corporation. Device for scanning objects by means of ultrasound echography. 4,762,132, Cl. 128-660.000.

Nicoll, Harry G.: *See—*
Higham, Graham J.; Snively, Howard D.; Nicoll, Harry G.; and Pruitt, Gerald R., 4,761,960, Cl. 62-6.000.

Nied, Roland; and Hackl, Herbert, to Alpine Aktiengesellschaft Augsburg. Method of generating a spherical grain. 4,762,765, Cl. 430-137.000.

Niedospial, John J.; and Muller, Bruce R., to Eastman Kodak Company. Photographic cassette and method of dispensing. 4,763,346, Cl. 378-187.000

Nield, Michael A.; and Robbins, Basil N., to Tenneco Canada Inc. Removal of phosphorus from mud. 4,762,697, Cl. 423-304.000.

Nielinger, Werner; Alewelt, Wolfgang; Binsack, Rudolf; Bottenbruch, Ludwig; and Fullmann, Heinz-Josef, to Bayer Aktiengesellschaft. Process for the preparation of copolyamide from adipic acid, terephthalic acid and hexamethylene diamine. 4,762,910, Cl. 528-339.000.

Nielsen, Robert J.: *See—*
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., 4,762,386, Cl. 350-96.200
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., 4,762,395, Cl. 350-252.000

Niemerg, Hermann: *See—*
Schmits, Heinz-Herbert; and Niemerg, Hermann, 4,762,489, Cl. 432-77.000.

Niemeyer, Robert H., III, to AM International Corporation. Rotary action graphic recording system. 4,763,140, Cl. 346-139.00R.

Nifco Inc.: *See—*
Hirohata, Toshio, 4,762,343, Cl. 285-158.000.
Mitomi, Seiji, 4,762,437, Cl. 403-406.100.
Nakama, Daiji, 4,762,904, Cl. 428-122.000.

Nitkura, Tsutomu, to Sony Corporation. Composite camera apparatus 4,763,146, Cl. 354-75.000

Nijjar, Parmjit S.; and Neff, Joseph J., to Paccar Inc. Auxiliary power system for trucks and other heavy duty vehicles. 4,762,170, Cl. 165-43.000

Nilsson, Ingvar, to Svecia Antiqua SA. Production of paper with decorative, non-rectilinear edges. 4,762,313, Cl. 271-187.000.

Ningler, Michel: *See—*
Thomas, Pierre-Armand; Naudin, Jean C.; and Ningler, Michel, 4,762,442, Cl. 405-196.000

Ninomiya, Masaki, to Tackle House Co., Ltd. Artificial bait device. 4,761,910, Cl. 43-42.310.

Ninomiya, Teruyuki; and Kudo, Yumiko, to Mitsubishi Gas Chemical Company, Inc. Process for producing 2,2-dimethyl-1,3-propanediol mono(hydroxypivalate). 4,762,947, Cl. 560-189.000.

Nintendo Co., Ltd.: *See—*
Yukawa, Masayuki, 4,763,300, Cl. 365-52.000.

Nippon Air Brake Co., Ltd.: *See—*
Arimitsu, Satoshi, 4,762,206, Cl. 188-73.450.
Imanaka, Asaji; Fujiwara, Tatsuo; and Osaka, Shuichi, 4,763,261, Cl. 364-426.000

Nippon Chemi-Con Corporation: *See—*
Shinozaki, Fumihiko; and Yokoyama, Yutaka, 4,762,629, Cl. 252-62.200
Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,630, Cl. 252-622.000
Shinozaki, Fumihiko; and Yokoyama, Yutaka, 4,762,631, Cl. 252-62.200
Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,632, Cl. 252-62.200
Shinozaki, Fumihiko; and Yokoyama, Yutaka, 4,762,633, Cl. 252-62.200
Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,634, Cl. 252-62.200.

Nippon Electric Glass Company, Limited: *See—*
Imai, Katsuhiko, 4,762,809, Cl. 501-35.000.

Nippon Hoso Kyokai: *See—*
Sekine, Mikiya; Matsushita, Toshihiko; Morishita, Sadao; and Oiri, Yasuhiko, 4,762,818, Cl. 503-214.C00.

Nippon Kogaku K. K.: *See—*
Kawamura, Koichiro; and Ohta, Tadashi, 4,763,208, Cl. 360-33.100

Nippon Kokan Kabushiki Kaisha: *See—*
Uyama, Kiyoshi; Kanno, Yoshio; Segawa, Kiyoteru; and Kihara, Yasuhiko, 4,761,895, Cl. 34-69.000.

Nippon Oil Co., Ltd.: *See—*
Yuasa, Hitoshi; Matsuno, Mitsuo; and Satoh, Tetsuo, 4,762,092, Cl 123-1.00A

Nippon Piston Ring Co., Ltd.: *See—*
Kooroki, Takeo, 4,762,329, Cl. 277-139.000.
Urano, Shigeru, 4,761,870, Cl. 29-421.100.

Nippon Soken, Inc.: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060.
Ohta, Minoru; Miura, Kazuhiko; Onoda, Michitoshi; and Hattori, Tadashi, 4,761,995, Cl. 73-118.200.

Nippon Telegraph and Telephone Corporation: *See—*
Matsumoto, Tadashi, 4,763,331, Cl. 371-37.000.

Nippon Thompson Co., Ltd.: *See—*
Hirota, Hisashi, 4,761,918, Cl. 51-114.000.

Nippondenso Co., Ltd.: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060
Kojima, Masami, 4,763,094, Cl. 336-92.000.
Takehisa, Fumitaka; Yokoi, Mitsuyoshi; and Kondoh, Fumio, 4,762,163, Cl. 164-72.000

Nishikawa, Mamoru: *See—*
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl 165-11.100.

Nishikawa, Toshihiro: *See—*
Kishimoto, Shinzo; Nishikawa, Toshihiro; Abe, Akira; and Nakajima, Junya, 4,762,774, Cl. 430-393.000

Nishikubo, Yoshiaki: *See—*
Hirai, Mikio; Nishikubo, Yoshiaki; Yoshida, Tomio; and Ochi, Tsuneo, 4,762,886, Cl. 525-70.000

Nishimura, Akira: *See—*
Uemiya, Takafumi; Shibata, Yutaka; Nishimura, Akira; Niwa, Shin-ichiro; and Osawa, Yoshitaka, 4,762,381, Cl. 350-96.110.

Nishimura, Eizi: *See—*
Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, 4,762,196, Cl. 180-197.000

Nishimura, Norihisa, to Sharp Kabushiki Kaisha. Composite copying apparatus. 4,763,170, Cl. 355-40.000.

Nishimura, Takeji; and Koizumi, Hiroshi, to Mitutoyo Mfg. Co., Ltd. Measured data pass-fail discriminating apparatus. 4,763,286, Cl. 364-352.000.

Nishiwaki, Toshihiro, to Obara Corporation. Cutter of tip dresser for welding apparatus. 4,762,446, Cl. 408-203.500.

Nishizaki, Takeshi: *See—*
Ohtuka, Tatsuo; Murooka, Shiuchi; Arai, Satoko; and Nishizaki, Takeshi, 4,763,229, Cl. 361-433.000.

Nissan Motor Company, Limited: *See—*
Itoh, Toshiyuki; Ueno, Hiroshi; Tsunoda, Masakazu; and Tohjyo, Seiichi, 4,763,270, Cl. 364-449.000.
Tomoda, Takahisa; Takeuchi, Mikio; Nakano, Kinichiro; and Hirano, Motoki, 4,763,121, Cl. 340-825.540.

Nisshin Steel Co., Ltd.: *See—*
Sakakura, Akira; Hoshino, Kazuo; Uematsu, Yoshihiro; Igawa, Takashi; and Fujimoto, Hiroshi, 4,762,575, Cl. 148-111.000.

Nitecki, Danute E.: *See—*
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000.

Nitta, Tomio, to Tokai Corporation. Pressure container for aerosol. 4,762,254, Cl. 222-402.240.

Niven Marketing Group, The: *See—*
Jackle, William C., III; Sherwood, Richard A.; Avery, Frederick M.; and Seifert, James V., 4,762,236, Cl. 211-59.300.

Niwa, Katsuhito: *See—*
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000

Niwa, Masatake: *See—*
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000

Niwa, Shin-ichiro: *See—*
Uemiya, Takafumi; Shibata, Yutaka; Nishimura, Akira; Niwa, Shin-ichiro; and Osawa, Yoshitaka, 4,762,381, Cl. 350-96.110.

NL Petroleum Products Limited: *See—*
Regan, Michael C., 4,762,028, Cl. 76-108.00A.

Nobumoto, Kazutoshi: *See—*
Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, 4,762,196, Cl. 180-197.000

Nocci, Roberto; Attalla, Giancarlo; Del Giudice, Luciano; Cohen, Robert E.; and Bertinotti, Floriana, to Montedison S.p.A. Block copolymers of olefines with vinyl aromatic monomers. 4,762,893, Cl. 525-323.000

Nohmi, Makoto: *See—*
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000

Nolte, Karl: *See—*
Kuhne Manfred; Gast, Theodor; Kramm, Karl-Ulrich; and Nolte, Karl, 4,762,138, Cl. 131-280.000

Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, to Ricoh Co., Ltd. Toner for developing electrostatic latent image. 4,762,763, Cl. 430-110.000.

Norsk Hydro A.S.: *See—*
Clausen, Edvin L., 4,762,152, Cl. 138-89.000

North Broken Hill Limited: *See—*
Wright, Adrian G., 4,762,868, Cl. 524-17.000

North, Terry M.: *See—*
Trzcinski, David J.; and North, Terry M., 4,763,062, Cl. 324-57.00N.

Northern States Power Company: *See—*
Lehto, John M., 4,762,686, Cl. 422-168.000

Northern Telecom Limited: *See—*
Drake, Allan R.; Finn, Roger C.; and Bennett, Reginald B. P., 4,762,732, Cl. 427-54.100
Pelletier, Claude, 4,763,226, Cl. 361-426.000.

Northrup, Allan R.: *See—*
McConnell, Joseph W., III; Wilburn, Richard D., Jr.; Northrup, Allan R.; and Neal, Lloyd D., 4,762,228, Cl. 206-387.000.

Nothmann, Gerhard W., to Xerox Corporation. Sheet infeed mechanism for a printing machine. 4,762,065, Cl. 101-409.000.

Nouvertne, Werner: *See—*
Schmidt, Manfred; Bottenbruch, Ludwig; Freitag, Dieter; and Nouvertne, Werner, 4,762,905, Cl. 528-167.000.

Novacek, William G., to Sprague Electric Company. Aluminum electrolytic capacitor package with stabilizing third lead. 4,763,227, Cl. 361-433.000.

Novak, Pavel: *See—*
Bramm, Gunter; and Novak, Pavel, 4,763,032, Cl. 310-90.500.

Nowak, James M.: *See—*
Espelage, Paul M.; and Nowak, James M., 4,763,059, Cl. 318-811.000

Nuckolls, Joe A.; and Flory, Isaac L., IV, to Hubbell Incorporated. Start, hot restart and operating lamp circuit. 4,763,044, Cl 315-176.000

NUKEM GmbH: *See—*
Huschelrath, Gerhard, 4,763,070, Cl. 324-225.000.

Nuttall, Alan T., to Harland Machine Systems Limited. Continuous supply of elongate material. 4,762,289, Cl. 242-58.100.

Obara Corporation: *See—*
Nishiwaki, Toshihiro, 4,762,446, Cl. 408-203.500

Oberle, Timothy T., to W. R. Grace & Co. Multilayer film with better layer adhesion. 4,762,748, Cl. 428-349.000

O'Brien, Paul J.: *See—*
Canale, Leonard M.; Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Martin H., 4,763,353, Cl. 379-157.000

Ochi, Tsuneo: *See—*
Hirai, Mikio; Nishikubo, Yoshiaki; Yoshida, Tomio; and Ochi, Tsuneo, 4,762,886, Cl. 525-70.000

O'Connor, James E.; and Beaulieu, William B., to Phillips Petroleum Company. Method of joining two thermoplastic articles. 4,761,871, Cl. 29-432.100.

O'Connor, Terry J.: *See—*
Woiceshyn, Mark; O'Connor, Terry J.; and Cooper, Ian G., 4,762,744, Cl. 428-219.000

Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, to Seikosha Co., Ltd. Shutter control device for camera. 4,763,155, Cl. 354-435.000

Oda, Hiroyuki: *See—*
Okuno, Itaru; Oda, Hiroyuki; and Kaneko, Tadashi, 4,763,264, Cl. 364-431.010.

Oda, Koichi: *See—*
Kotani, Yasuhiro; Oda, Koichi; and Kawai, Shoichi, 4,763,292, Cl. 364-710.000

Odenwald-Chemie GmbH: *See—*
Wesch, Ludwig; and Weiss, Edgar, 4,762,746, Cl. 428-305.500.

O'Donohue, Thomas L.: *See—*
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Mariena V., 4,762,846, Cl. 514-331.000

O'Dwyer, Jeremiah B.: *See—*
Byrne, John V.; and O'Dwyer, Jeremiah B., 4,763,056, Cl. 318-701.000

Oettgen, Herbert F.: *See—*
Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F.; Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, 4,762,800, Cl. 436-548.000

Ogata, Hiromi: *See—*
Ueyama, Seiji; Taniguchi, Hideo; and Ogata, Hiromi, 4,762,432, Cl. 400-241.100

Ogata, Shunji: *See—*
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Ogawa, Hiroshi: *See—*
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R.

Ogawa, Hisashi; and Yamashita, Kazuhiko, to Toyota Jidosha Kabushiki Kaisha. Structure for supporting lower suspension arm on vehicle chassis. 4,762,336, Cl. 280-673.000

Ogawa, Kyosuke: *See—*
Honda, Mitsuru; Koike, Atsushi; Ogawa, Kyosuke; and Murai, Keiichi, 4,762,762, Cl. 430-65.000

Ogawa, Masahiro; and Fukui, Akio, to Toyota Jidosha Kabushiki Kaisha. Elastic energy storing device. 4,762,202, Cl. 185-39.000

Ogawa, Shusaku: *See—*
Makiura, Yoshinori; Wakikaido, Takahiro; Yamamoto, Haruo Ogawa, Shusaku; and Ichihashi, Takao, 4,763,174, Cl. 355-55.000

Ogawa, Tadashi; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd Silver halide photographic material. 4,762,775, Cl. 430-505.000

Ogawa, Yuji: *See—*
Shibasaki, Masakatsu; Mase, Toshiaki; Sodeoka, Mikiko; and Ogawa, Yuji, 4,762,936, Cl. 549-214.000

Ogino, Akihiko: *See—*
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, 4,761,925, Cl. 52-167.000

Ogino, Sekiya; Inoue, Shigehiko; Tomai, Touru; and Tamura, Masami, to Kabushiki Kaisha Morita Seisakusho. Arc melting and casting method and apparatus thereof. 4,762,165, Cl. 164-457.000

Ogura, Mitsugi: *See—*
Saku, Koji; and Ogura, Mitsugi, 4,763,178, Cl. 357-23.600

Ogura, Mitsuharu: *See—*
Kanzaki, Ichiro, 4,762,485, Cl. 425-434.000

Ohara, Muneyuki: *See—*
Oishibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100

Ohara, Osamu: *See—*
Miyauchi, Masayoshi; and Ohara, Osamu, 4,762,873, Cl 524-128.000

Ohata, Kenji: *See—*
Tazaki, Mitsuo; and Ohata, Kenji, 4,761,897, Cl. 34-180.000

Ohba, Sayoko; Okuna, Kenji; and Ohtsuka, Hidefumi, to Hitachi, Ltd Electrographic recording apparatus. 4,763,143, Cl. 346-160.100

Ohi Seisakusho Co., Ltd.: *See—*
Matsumoto, Masaharu, 4,762,348, Cl. 292-201.000

Ohio State University, The: *See—*
Stevens, Vernon C., 4,762,913, Cl. 530-345.000

Ohira, Kazuo: *See—*
Nakaoku, Shozo; Sakuma, Kazuhiko; Oshika, Yasuhiro; and Ohira, Kazuo, 4,762,927, Cl. 544-378.000

Ohkubo, Kunihiko; and Sasaki, Shunichiro, to Shimadzu Corporation Optical scanning device. 4,762,412, Cl. 356-319.000.

Ohkubo, Shigeki: *See—*
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300

Ohno, Masahiro: *See—*
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000

Ohno, Michio; Nakanishi, Noriyoshi; Miyasaka, Michihiko; and Shiraiwa, Yoshinori, to Kyocera Corporation. Method and device for supplying electric current to ceramic heaters. 4,762,982, Cl. 219-508.000

Ohno, Yoshimi: *See—*
Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi, Hatase, Takayuki, Yamaguchi, Takao; and Aoki, Kazumasa, 4,763,154, Cl 354-403.000

Ohoka, Tatuo: *See—*
Asanuma, Tadashi; Funakoshi, Yoshiyuki; and Ohoka, Tatuo, 4,762,897, Cl. 526-68.000

Ohsaki, Hiromi: *See—*
Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki, and Ohsaki, Hiromi, 4,762,810, Cl. 501-88.000

Ohta, Minoru; Miura, Kazuhiko; Onoda, Michitoshi, and Hattori, Tadashi, to Nippon Soken, Inc. Direct-heated flow measuring apparatus having improved sensitivity and response speed. 4,761,995, Cl 73-118.200

Ohta, Tadashi: *See—*
Kawamura, Koichiro; and Ohta, Tadashi, 4,763,208, Cl. 360-33.100

Ohta, Yoshio; and Tabata, Koji, to Narita Seisakusho Mfg., Ltd.; and Japan National Railways. Hood device for coupling cars. 4,762,071, Cl. 105-8.100

Ohtaki, Kazumi: *See—*
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi, Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi, Chiba, Shunichi, Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000

Ohtsuka, Hidefumi: *See—*
Ohba, Sayoko; Okuna, Kenji; and Ohtsuka, Hidefumi, 4,763,143, Cl. 346-160.100

Ohtuka, Tatsuo; Murooka, Shiuchi; Arai, Satoko; and Nishizaki, Takeshi, to Showa Aluminum Kabushiki Kaisha. Aluminum capacitor plate for electrolytic capacitor and process for making the same. 4,763,229, Cl. 361-433.000

Oide, Kunimasa, to Daichiku Co., Ltd. Flat type resinoid grinding wheel. 4,762,533, Cl. 51-298.000

Oikawa, Toshihiro: *See—*
Fujii, Noriaki; Iwata, Takeshi; Oikawa, Toshihiro; and Takahara, Naoki, 4,762,099, Cl. 123-90.440

Oiri, Yasuhiko: *See—*
Sekine, Mikiya; Matsushita, Toshihiko; Morishita, Sadao; and Oiri, Yasuhiko, 4,762,818, Cl. 503-214.000

Oishi, Kengo, to Fuji Photo Film Co., Ltd. Method of manufacturing pad for magnetic recording tape cassette. 4,761,875, Cl. 29-527.400

VOL 1093 ISS 2 AG 9 1988 UMI

Oishi, Kengo, to Fuji Photo Film Co., Ltd. Optical tape end detector in magnetic tape casette with means to compensate for misalignment of light source and refracting. 4,763,217, Cl. 360-132.000.

Oishibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, to Hakusan Seisakusho Co., Ltd.; and Railway Technical Research Institute. Small-sized gas pressure welding machine for rails with two separate mechanisms for punching-shearing excess metal. 4,762,263, Cl. 228-5.100.

Okada, Masahiro: *See*—
Takahashi, Toshiro; Kuwabara, Ken-ichi; and Okada, Masahiro, 4,762,769, Cl. 430-264.000.

Okada, Noriyuki: *See*—
Shimada, Takeo; Okada, Noriyuki; Fujimoto, Takashi; and Yada, Shuhei, 4,762,889, Cl. 525-201.000

Okano, Shigeaki; Hayashi, Katsuhiko; Sakurazawa, Yoshiteru; and Suga, Yoshinori, to Mitsubishi Chemical Industries Limited. Modified polyolefin resin and a composition containing the same. 4,762,882, Cl. 525-74.000.

Okano, Takashi, to Pioneer Electronic Corporation. Method of time axis control in an information recording system for compensation of tracking error caused by track jumping. 4,763,205, Cl. 358-337.000.

Okazaki, Haruo: *See*—
Hashimoto, Kunio; and Okazaki, Haruo, 4,762,221, Cl. 198-819.000

O'Keeffe, William F.; and Garcia, Sonny Q., to O'Keeffe's, Inc. Multiple skylight guttering system. 4,761,919, Cl. 52-14.000.

O'Keeffe, William F.; and Garcia, Sonny Q., to O'Keeffe's, Inc. Panelized enclosure system with reverse camber seal. 4,761,927, Cl. 52-403.000

O'Keeffe's, Inc.: *See*—
O'Keeffe, William F.; and Garcia, Sonny Q., 4,761,919, Cl. 52-14.000.
O'Keeffe, William F.; and Garcia, Sonny Q., 4,761,927, Cl. 52-403.000.

OKI Electric Industry Co., Ltd.: *See*—
Isobe, Minoru, 4,763,136, Cl. 346-76.00R.
Uesugi, Masaru, 4,763,304, Cl. 365-190.000

Okuda, Shigeru. Driller providing light and sound stimuli for stimulating the visuosensory and audiosensory nerves, for use in the rehabilitation of postapoplectic paralytic patients. 4,762,131, Cl. 128-396.000.

Okumura, Ichiro: *See*—
Tsukimoto, Takayuki; Okumura, Ichiro; Okuno, Takuo; and Izukawa, Kazuhiro, 4,763,148, Cl. 354-195.100.

Okuna, Kenji: *See*—
Ohba, Sayoko; Okuna, Kenji; and Ohtsuka, Hidefumi, 4,763,143, Cl. 346-160.100

Okuno, Itaru; Oda, Hiroyuki; and Kaneko, Tadashi, to Mazda Motor Corporation. Engine control system. 4,763,264, Cl. 364-431.010.

Okuno, Takuo: *See*—
Tsukimoto, Takayuki; Okumura, Ichiro; Okuno, Takuo; and Izukawa, Kazuhiro, 4,763,148, Cl. 354-195.100

Old, Lloyd J.: *See*—
Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F.; Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, 4,762,800, Cl. 436-548.000

Oldershaw, Reginald W.; Wagner, Steven D.; and Wesolowski, Jan S., to Ampex Corporation. Time base corrector with accurate timing corrector control. 4,763,203, Cl. 358-320.000

Olin Hunt Specialty Products Inc.: *See*—
Bujese, David P., 4,763,157, Cl. 355-3.0TR

Oliver, James A.: *See*—
Banks, Reginald G. S.; Bates, David R.; Jones, Stephen D.; and Oliver, James A., 4,762,815, Cl. 502-259.000

Olschewski, Armin; Brandenstein, Manfred; Ernst, Horst-Manfred; Stolz, Robert; and Neder, Gunter, to SKF GmbH. Automatic adjustment arrangement for disk brakes. 4,762,207, Cl. 188-196.00D.

Olson, Peter K., to E. H. Wachs Company, The. Pipe machining apparatus. 4,762,038, Cl. 82-4.00C.

Olsson, Olle: *See*—
Hallstrom, Bengt; Olsson, Olle; Bolmstedt, Ulf; and Johansson, Bjorn-Olow, 4,762,171, Cl. 165-147.000.

Olympus Optical Co., Ltd.: *See*—
Inoue, Yasuo; and Endo, Itaru, 4,762,405, Cl. 350-507.000.
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000.

Oma, Kenton H.: *See*—
Timmerman, Craig L.; Oma, Kenton H.; and Davis, Karl C., 4,762,991, Cl. 250-227.000.

Omichi, Kaoru: *See*—
Ikenaka, Tokuji; and Omichi, Kaoru, 4,762,917, Cl. 536-4.100.

Omni Products International, Inc.: *See*—
Schwartz, Larry A.; and Lesser, Bertram, 4,762,368, Cl 297-445.000

Omote, Tatsuyuki: *See*—
Yoshida, Tomiharu; Omote, Tatsuyuki; Ishii, Yoshimi; and Izumi, Kiyoshi, 4,762,670, Cl. 376-313.000.

Omron Tateisi Electronics Co.: *See*—
Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Inoue, Nobuhisa, 4,762,383, Cl. 350-96.130.

Onaga, Eimei M.: *See*—
Daggett, Kenneth E.; Onaga, Eimei M.; and Casler, Richard J., Jr., 4,763,055, Cl. 318-368.000

Onaka, Toru: *See*—
Harada, Yasuhiro; Nobumoto, Kazutoshi; Nishimura, Eizi; Onaka, Toru; Nagaoka, Mitsuru; and Matsuoka, Toshihiro, 4,762,196, Cl. 180-197.000.

Onda, Nobuhiko: *See*—
Asakawa, Kazuo; Onda, Nobuhiko; Akita, Tadashi; and Kamada, Toru, 4,762,006, Cl. 73-862.040

Ondrasik, Vladimir J. Collapsible wire cage. 4,762,085, Cl. 119-17.000.

O'Neil, Robert M.: *See*—
Phillips, Emyr; O'Neil, Robert M.; and Wirth, Hermann O., 4,762,628, Cl. 252-51.50R.

Onoda, Michitoshi: *See*—
Ohta, Minoru; Miura, Kazuhiko; Onoda, Michitoshi; and Hattori, Tadashi, 4,761,995, Cl. 73-118.200.

Onomura, Hiroshi: *See*—
Ikeda, Hayato; Kitahama, Satoshi; and Onomura, Hiroshi, 4,762,468, Cl. 417-269.000.

Oogita, Yoshinori; Shino, Katsuhide; Nakao, Kazuhiro; Ozawa, Kazuhito; and Komaki, Shigeki, to Sharp Kabushiki Kaisha. Thin electronic apparatus. 4,762,983, Cl. 235-1.00D.

Ophthalmic Ventures Limited Partnership: *See*—
Richards, William D.; Blanco, Ernesto E.; Clark, Richard A.; and Meade, John C., 4,762,260, Cl. 227-19.000.

Optima Industries, Inc.: *See*—
Marantette, William F., 4,762,447, Cl. 409-131.000.

Optimem: *See*—
McCaslin, Martin J.; and Kolar, John C., 4,763,314, Cl. 369-249.000

Optische Werke G. Rodenstock: *See*—
Rau, Norbert; Hubner, Gerd; Staiger, Wolfgang; Brodmann, Rainer; and Gerstorfer, Oskar, 4,763,006, Cl. 250-561.000

Orihara, Motoi: *See*—
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nahya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.

Orlitzky, Anton; and Koehler, Albert. Screw driver. 4,762,036, Cl. 81-437.000.

Ortman, Michael J., to Simmonds Precision. Flight control surface actuator for aircraft including remote braking failure detection. 4,762,205, Cl. 188-71.200.

Osaka, Shuichi: *See*—
Imanaka, Asaji; Fujiwara, Tatsuo; and Osaka, Shuichi, 4,763,261, Cl. 364-426.000.

Osawa, Yoshitaka: *See*—
Uemiya, Takafumi; Shibata, Yutaka; Nishimura, Akira; Niwa, Shin-ichiro; and Osawa, Yoshitaka, 4,762,381, Cl. 350-96.110.

Osborne, William P.: *See*—
Wolfe, William H.; and Osborne, William P., 4,763,325, Cl. 370-104.000

Oshika, Yasuhiro: *See*—
Nakaoku, Shozo; Sakuma, Kazuhiko; Oshika, Yasuhiro; and Ohira, Kazuo, 4,762,927, Cl. 544-378.000.

Osman, Peter D., to RCA Licensing Corporation. Selectable raster size for video display. 4,763,194, Cl. 358-180.000.

Osswald, Hartmut: *See*—
Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl. 514-258.000.

Osterman, Harry F.: *See*—
Figiel, Francis J.; and Osterman, Harry F., 4,762,614, Cl. 210-195.100.

Ostlinning, Edgar; Idel, Karsten; and Bottenbruch, Ludwig, to Bayer Aktiengesellschaft. Process for the preparation of high-molecular, optionally branched polyarylene sulphide with sodium sulfide, potassium sulfide and hydrogen sulfide. 4,762,911, Cl. 528-388.000.

Oswald, Heinz: *See*—
Flueli, Adolf; Schefer, Kurt; and Oswald, Heinz, 4,762,284, Cl. 242-18.00A.

Otis Elevator Company: *See*—
Steacy, Robert J., 4,762,217, Cl. 198-337.000.

Otomanski, Kurt: *See*—
Poxleitner, Martin; Wohlfrom, Josef; and Otomanski, Kurt, 4,763,001, Cl. 250-334.000.

Ott, Gunther: *See*—
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,762,903, Cl. 528-107.000.

Ottlinger, Ralph; and Reitmeier, Rudolf, to Wacker-Chemie GmbH. Method for preparing linear organopolysiloxanediols. 4,762,937, Cl. 556-459.000

Otto Engineering, Inc.: *See*—
Roeser, John O., 4,762,972, Cl. 200-302.100.

Ouchi, Kastubumi: *See*—
Shimode, Shinichi; and Ouchi, Kastubumi, 4,763,135, Cl. 346-1.100.

Outokumpu Oy: *See*—
Jankkila, Martti J., 4,761,892, Cl. 33-556.000.

Owatonna Tool Company: *See*—
Barry, Gerald E.; and Sandberg, James L., 4,761,869, Cl. 29-261.000

Owen, James F.: *See*—
Lubinsky, Anthony R.; Owen, James F.; and Korn, Donald M., 4,762,998, Cl. 250-327.200

Owens-Corning Fiberglas Corporation: *See*—
Schuetz, Mark A., 4,762,749, Cl. 428-372.000

Owens-Illinois Glass Container Inc.: *See*—
Davey, Richard G., 4,762,544, Cl. 65-29.000.

Oyabu, Hajime: *See*—
Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, 4,762,057, Cl. 99-348.000

Ozaki, Hiroji; Sato, Shinichi; Tokui, Akira; Kawai, Akira; Nakajima, Masayuki; and Nagatomo, Masao, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device with deep bit-line channel stopper. 4,763,182, Cl. 357-23.600.

Ozawa, Kazuhito: *See*—
Oogita, Yoshinori; Shino, Katsuhide; Nakao, Kazuhiro; Ozawa, Kazuhito; and Komaki, Shigeki, 4,762,983, Cl. 235-1.00D.

Paccar Inc.: *See*—
Nijjar, Parmjit S.; and Neff, Joseph J., 4,762,170, Cl. 165-43.000.

Pacecc, Inc.: *See*—
Thompson, George J., 4,762,240, Cl. 212-187.000.

Pacheco, Jerry J. Apparatus for enhancing the performance of a heat pump and the like. 4,761,964, Cl. 62-160.000.

Packaging Resources Incorporated: *See*—
Fortuna, Vincent; and MacLaughlin, Donald, 4,762,249, Cl. 220-359.000.

Pallat, Jerome F.: *See*—
Shuster, Nicholas; and Pallat, Jerome F., 4,762,758, Cl. 429-144.000.

Pallos, Ferenc M.: *See*—
Gray, Reed A.; and Pallos, Ferenc M., 4,762,548, Cl. 71-100.000.

Palmer, John M., Jr. Inflatable aquatic vessels. 4,762,078, Cl. 114-39.100.

Palmert, Steven H., to RHH Enterprises, Inc. Foam dispensing gun. 4,762,253, Cl. 222-145.000.

Paluka, Charles F.: *See*—
Moore, M. Samuel; and Paluka, Charles F., 4,763,285, Cl. 364-551.000.

Pancretec, Inc.: *See*—
Kreinick, Stephen J., 4,762,518, Cl. 604-245.000.

Panex Corporation: *See*—
Delatorre, Leroy C.; Wilson, Homer M.; and Pingenot, E. Rene, 4,763,259, Cl. 364-422.000.

Pantermuehl, Leroy A.; and Krisa, Thomas E., to Amoco Corporation. Carbon dioxide recovery. 4,762,543, Cl. 62-28.000.

Panzer, Klaus: *See*—
Bohle, Franz-Josef; Brockmeyer, Hans-Peter; Brugger, Theodor; and Panzer, Klaus, 4,762,503, Cl. 439-336.000.

Park, Chung P., to Dow Chemical Company, The. Alcohol control of lightly crosslinked foamed polymer production. 4,762,860, Cl. 521-28.000.

Park, Eric D.: *See*—
Gat, Erann; Park, Eric D.; and Mathis, Talmage, 4,762,992, Cl. 250-227.000.

Park, James T.: *See*—
Goldberg, Edward B.; and Park, James T., 4,762,782, Cl. 435-7.000.

Parker, Byron M.; and Parker, Trent J., to Uni-frac, Inc. Vapor/liquid contact device. 4,762,651, Cl. 261-114.100.

Parker-Hannifin Corporation: *See*—
Burls, Gary E.; and Parmentar, William F., 4,762,274, Cl. 239-3.000.

Parker, Richard W.; Beery, James P.; Boblitt, Donald L.; and Starr, Robert L., to Parker Sweeper Company. Mobile vacuum system for use with a riding tractor mower. 4,761,943, Cl. 56-202.000.

Parker Sweeper Company: *See*—
Parker, Richard W.; Beery, James P.; Boblitt, Donald L.; and Starr, Robert L., 4,761,943, Cl. 56-202.000.

Parker, Trent J.: *See*—
Parker, Byron M.; and Parker, Trent J., 4,762,651, Cl. 261-114.100.

Parkinson, Dean B.: *See*—
Maloney, William F.; Hall, Deborah K.; Parkinson, Dean B.; Bergren, Orton D.; and Dodge, Allen L., 4,762,496, Cl. 434-271.000.

Parmentar, William F.: *See*—
Burls, Gary E.; and Parmentar, William F., 4,762,274, Cl. 239-3.000.

Parrillo, Louis C., to American Telephone and Telegraph Company AT&T, Bell Laboratories. Method for preventing latchup in CMOS devices. 4,762,802, Cl. 437-24.000.

Parrott, Stephen L.; and Gardner, Lloyd E., to Phillips Petroleum Company. Hydrotreating catalyst and process for its preparation. 4,762,814, Cl. 502-211.000.

Partz Partnership: *See*—
Greer, Jerry A.; and Lowe, Lisa J., 4,763,313, Cl. 368-317.000

Pasek, Eugene A.: *See*—
Lopez, Jaime; Pasek, Eugene A.; and Cugini, Anthony V., 4,762,812, Cl. 502-26.000.

Paspek, Stephen C.; and Eppig, Christopher P., to Standard Oil Company, The. Extraction of oil from stable oil-water emulsions. 4,762,609, Cl. 208-187.000.

Patel, Keshav P.: *See*—
Baldwin, Roger A.; Laughlin, William C.; Patel, Keshav P.; and Shreve, Patricia J., 4,762,552, Cl. 75-1.00T.

Pater, Larry L.; and Briggs, Aubrey C., to Briggs Technology Inc. Apparatus for accelerating slugs of liquid. 4,762,277, Cl. 239-99.000.

Paterson, James L., to Texas Instruments Incorporated. Read only memory with improved channel length isolation and method of forming. 4,763,177, Cl. 357-23.500.

Patterson, Robert C. Resilient housing for remote controllers. 4,762,227, Cl. 206-328.000.

Paul, Gary E.; Carr, Ronald H.; and Stern, Lee W., to Westinghouse Electric Corp. Burnable poison rod for use in a nuclear reactor. 4,762,673, Cl. 376-333.000.

Pavio, Anthony M., Jr.; and Smith, Mark A., to Texas Instruments Incorporated. Push-push dielectric resonator oscillator. 4,763,084, Cl. 331-56.000.

Payen, Jean-Michel: *See*—
Bouiller, Jean G.; Payen, Jean-Michel; and Ruis, Jean Pierre, 4,762,466, Cl. 416-205.000.

Pearson, Bruce E. Consumable replaceable bow guard. 4,762,080, Cl. 114-219.000.

Peccoux, Pierre-Michel: *See*—
Letoffe, Michel; and Peccoux, Pierre-Michel, 4,762,879, Cl. 524-720.000

Peck, Douglas J., to Dynapert-HTC Corporation. Vapor phase soldering system. 4,762,264, Cl. 228-37.000.

Peed, David B.: *See*—
Andreasen, James E.; Childre, Casey J.; and Peed, David B., 4,762,584, Cl. 156-245.000.

Peek, Hermanus L., to U.S. Philips Corporation. Semiconductor device and method of manufacturing same. 4,763,185, Cl. 357-54.000.

Peles, Eliezer. Fastening means for belts. 4,761,861, Cl. 24-196.000

Pelletier, Claude, to Northern Telecom Limited. Connecting blocks and mounting arrangements for telephone systems. 4,763,226, Cl. 361-426.000.

Peltier, Robert V.: *See*—
Eberhardt, John D.; Hovde, Peter L.; Koerber, John M.; Neary, Robert J.; and Peltier, Robert V., 4,761,957, Cl. 60-650.000

Pennace, John R.; and Quinn, Sharon A., to Flexcon Co., Inc. Silicone release layers, laminates and methods. 4,762,680, Cl. 428-40.000.

Penner, Peter. Draft plugging device for a chimney flue. 4,762,115, Cl. 126-319.000.

Pennock, James L.: *See*—
Yeung, Paul K. K.; Howard, Alan D.; Hoo, James W.; and Pennock, James L., 4,763,066, Cl. 324-73.00R.

Pennwalt Corporation: *See*—
Bohen, Joseph M.; and Lovenguth, Ronald F., 4,762,861, Cl. 521-97.000
Georgiev, Vassil S.; and Bennett, Grace A., 4,762,828, Cl. 514-214.000
Sheumaker, Jerry L., 4,762,709, Cl. 424-79.000.
Walters, Richard D.; De Young, Jon; Rasmussen, Clarence M.; and Almares, Louie S., 4,762,219, Cl. 198-358.000

Penrice, Thomas W.; and Bost, James, to Teledyne Industries, Incorporated. High density tungsten-nickel-iron-cobalt alloys having improved hardness and method for making same. 4,762,559, Cl 75-248.000.

Pepper, David M., to Hughes Aircraft Company. Optical phase conjugator with spatially resolvable thresholding utilizing liquid crystal light valve. 4,762,397, Cl. 350-331.00R.

Pepsico Inc.: *See*—
Berger, Martin J., 4,762,251, Cl. 222-49.000

Perel, Julius: *See*—
Mahoney, John F.; Taylor, Scott D.; and Perel, Julius, 4,762,975, Cl. 219-69.00R

Perfetti, Bruno M., to USX Corporation. Insulative coating composition. 4,762,753, Cl. 428-450.000

Perkins Engines Group Limited: *See*—
Wilson, David J.; and Elmore, David, 4,761,886, Cl. 33-126.70R

Perkins, Lee E.; and Petrella, James J., to Perkins, Lee E. Well casing connection. 4,762,344, Cl. 285-175.000

Pernet, Andre G.: *See*—
Chu, Daniel T.; Pernet, Andre G.; and Cooper, Curt S., 4,762,845, Cl. 514-312.000

Perreirra, Noel D.; and Tucker, Michael, to Actel Partnership. Methods for refining original robot command signals. 4,763,276, Cl. 364-513.000

Perret, Yves: *See*—
Chantriaux, Eric; Grobelny, Henri; and Perret, Yves, 4,762,684, Cl. 422-106.000

Perrey, Hermann: *See*—
Goyert, Wilhelm; Winkler, Jurgen; Perrey, Hermann; and Heidingsfeld, Herbert, 4,762,884, Cl. 525-28.000.

Perricone, James M., to Petro-Tech Tools Incorporated. Apparatus for connecting jars to a downhole tool. 4,762,175, Cl. 166-63.000

Perrotta, Giorgio, to Selenia Spazio SPA. SS-TDMA technique telecommunication satellite systems. 4,763,129, Cl. 342-356.000

Perry, Vergel G.: *See*—
Spillers, Robert L.; Martinez, Alonzo; Perry, Vergel G.; and Smith, Lonnie L., 4,762,257, Cl. 224-216.000

Peter, Dirk A.; and Drury, Timothy H., to DeVilbiss Company, The Reciprocating device for spray coating. 4,762,013, Cl. 74-104.000.

Peter, Heinz: *See*—
Winkler, Otmar; Peter, Heinz; and Pfaller, Egon, 4,762,480, Cl 418-266.000

Peters, Arthur A., to KAP, Inc. Device and method for filleting fish. 4,761,855, Cl. 17-46.000

Peters, Edward N.: *See*—
Fox, Daniel W.; Martin, Andrew A.; and Peters, Edward N., 4,762,896, Cl. 525-462.000.

Peters, Hubertus: *See*—
Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, 4,762,602, Cl. 204-16.00F

Petersen, Preben A.: *See*—
Gummesson, Bengt-Ake G.; Petersen, Preben A.; and Sternby, Jan P., 4,762,618, Cl. 210-637.000.

Petersen, Russell H.: *See*—
Bergeson, Larry W.; Lasorso, Vincent J., Jr.; Petersen, Russell H.; and Ruffalo, Ronald G., 4,762,433, Cl. 401-206.000

Petrella, James J.: *See*—
Perkins, Lee E.; and Petrella, James J., 4,762,344, Cl. 285-175.000

Petritis, Demetris C.: *See*—
Lundin, Robert S.; and Petritis, Demetris C., 4,763,052, Cl. 318-254.000

VOL 1093 ISS 2 AG 9 1988 UMI

Petro-Tech Tools Incorporated: *See—*
Perricone, James M., 4,762,175, Cl. 166-63.000.

Petro, William G.: *See—*
Keyser, Thomas; Cairns, Bruce R.; Anand, Kranti V.; Petro, William G.; and Barry, Michael L., 4,762,728, Cl. 427-38.000

Pez, Guido P.; and Laciak, Daniel V., to Air Products and Chemicals, Inc. Ammonia separation using semipermeable membranes. 4,762,535, Cl. 55-16.000

Pfaff, Klaus: *See—*
Hennecke, Dietmar; Pfaff, Klaus; and Grigo, Dietrich, 4,761,947, Cl. 60-39.750.

Pfaller, Egon: *See—*
Winkler, Otmar; Peter, Heinz; and Pfaller, Egon, 4,762,480, Cl. 418-266.000

Pfizer, Inc.: *See—*
Carroll, Ronnie D.; and Volkmann, Robert A., 4,762,920, Cl. 540-310.000.
Glazer, Edward A., 4,762,838, Cl. 514-259.000.
Reed, Lawrence A., III, deceased, 4,762,921, Cl. 540-310.000.

Pflaum, Craig A.: *See—*
Yarnell, J. Jay; Pflaum, Craig A.; Davidson, Arthur F.; and Kuhn, Harry J., 4,762,698, Cl. 423-341.000.

Pfluger, Wolfgang: *See—*
Moeschler, Heinrich F.; Pfluger, Wolfgang; and Wendisch, Detlef, 4,762,716, Cl. 424-195.100.

Philipp, Matthias: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Phillips, Bradford E.; and Bertacchi, Roy J., to 'totes', incorporated. Exerciser. 4,762,318, Cl. 272-137.000.

Phillips, Emyr; O'Neil, Robert M.; and Wirth, Hermann O., to Ciba-Geigy Corporation. Nitrogen-containing additives for non-aqueous functional fluids. 4,762,628, Cl. 252-51.50R

Phillips Petroleum Company: *See—*
O'Connor, James E.; and Beaulieu, William B., 4,761,871, Cl. 29-432.100
Parrott, Stephen L.; and Gardner, Lloyd E., 4,762,814, Cl. 502-211.000

Phillips Plastics Corp.: *See—*
Schwind, Richard J.; Bart, Joseph; and Wollar, Burnell, 4,762,450, Cl. 411-34.000

Phoenix Aktiengesellschaft: *See—*
Glang, Siegfried, 4,762,441, Cl. 405-152.000.

Photon Devices, Ltd.: *See—*
Margolin, George, 4,762,391, Cl. 350-96.250.

Phrasor Scientific, Incorporated: *See—*
Mahoney, John F.; Taylor, Scott D.; and Perel, Julius, 4,762,975, Cl. 219-69.00R

Piatt, Michael J., to Eastman Kodak Company. Compact printer having an integral cut-sheet feeder. 4,763,138, Cl. 346-134.000.

Piccardi, Paolo: *See—*
Cesti, Pietro; and Piccardi, Paolo, 4,762,793, Cl. 435-280.000.

Pichette, Carold. Insulating batts sag preventing wall frame stud 4,761,928, Cl. 52-404.000

Picker International, Inc.: *See—*
Adams, Darwin P., 4,762,002, Cl. 73-625.000

Pickl, Joseph, Jr. Double seal press assembled check valve. 4,762,149, Cl. 137-843.000

Pierce, Andrew B.: *See—*
Halm, Roland L.; Pierce, Andrew B.; and Wilding, Oliver K., Jr., 4,762,940, Cl. 556-472.000.

Piestrup, Melvin A. X-ray source from transition radiation using high density foils. 4,763,344, Cl. 378-119.000.

Pillsbury Co., The: *See—*
Sedutto, Anthony J.; and Capece, Stephen L., 4,762,232, Cl. 206-525.000

Pilny, James C.: *See—*
Tengler, John N.; and Pilny, James C., 4,762,508, Cl. 439-607.000.

Pingenot, E. Rene: *See—*
Delatorre, Leroy C.; Wilson, Homer M.; and Pingenot, E. Rene, 4,763,259, Cl. 364-422.000

Pioneer Air Systems, Inc.: *See—*
Basseen, Sanjiv K.; and Harlan, Richard A., 4,761,968, Cl. 62-271.000

Pioneer Electronic Corporation: *See—*
Okano, Takashi, 4,763,205, Cl. 358-337.000.

Pirner, Gerhard: *See—*
Gerhaeuser, Heinz; Pirner, Gerhard; and Rueckert, Thomas, 4,763,287, Cl. 364-561.000

Pissiotas, Georg: *See—*
Sturm, Elmar; Gallay, Jean J.; Kristinsson, Haukur; and Pissiotas, Georg, 4,762,830, Cl. 514-270.000.

Pitalo, Stephen K.; Walden, Donnie T.; and Lay, Henry P., to Boeing Company, The. Boresight alignment verification device. 4,762,411, Cl. 356-152.000.

Pitney Bowes Inc.: *See—*
Field, Michael E., 4,763,271, Cl. 364-466.000.

Pitschi, Franz-Xaver, to Spinner GmbH, Elektrotechnische Fabrik. Coaxial-line section. 4,763,090, Cl. 333-260.000

Plantureux, Alain M.: *See—*
Magnien, Emile G.; and Plantureux, Alain M., 4,761,865, Cl. 29-10.000

Plastic Technologies: *See—*
Uhlig, Albert R., 4,762,248, Cl. 220-307.000.

Player, Kenneth W.; and Wilson, Lonny L., to Durkee Industrial Foods Corp. Shelf stable non-aqueous spreadable coatings. 4,762,725, Cl. 426-582.000

Plessey Overseas Limited: *See—*
Moon, Philip A. K., 4,763,018, Cl. 307-296.00R.

Podolak, J. B.; Adler, Douglas R.; and Saluski, Ronald B., to R. R. Donnelley & Sons Company. Digital method and system for reproducing analog data. 4,763,207, Cl. 360-32.000.

Pogue, Lonnie C.: *See—*
Dyer, Robert L.; and Pogue, Lonnie C., 4,761,912, Cl. 43-121.000.

Poly-John Enterprises Corp.: *See—*
Harding, George W., 4,761,840, Cl. 4-664.000.

Polyrand AB: *See—*
Flodin, Per; Magnusson, Olof; and Chandra, Satish, 4,762,867, Cl. 524-5.000

Pomerene, James H.: *See—*
Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., 4,763,245, Cl. 364-200.000

Pon, Carlos R.: *See—*
van der Puije, P. D.; and Pon, Carlos R., 4,762,135, Cl. 128-784.000

Pon, Chuck Y., to Dalmo Victor, Inc. Microwave multiband filter. 4,763,089, Cl. 333-202.000

Popyach, Stephen A.: *See—*
Denny, Clifford M.; Findlay, Hugh T.; Popyach, Stephen A.; and Tao, Deh C., 4,762,431, Cl. 400-120.000

Porter, Stuart J. Platform bracket. 4,762,081, Cl. 114-364.000

Porter, William W.: *See—*
Krajewski, Casimir; Melville, Randolph I.; and Porter, William W., 4,762,310, Cl. 267-141.200

Porth, Wolfgang: *See—*
Kant, Bernhard; and Porth, Wolfgang, 4,763,097, Cl. 338-4.000.

Portugall, Michael: *See—*
Hisgen, Bernd; Portugall, Michael; and Blinne, Gerd, 4,762,906, Cl. 528-170.000

Posso, Patrick P. P., to Gefitiech S.A. Tying and storage ring for a reel of recording tape. 4,762,223, Cl. 206-53.000.

Postupack, Dennis S.; and Pressau, Jean P., to PPG Industries, Inc. Electroforming elements. 4,762,595, Cl. 204-11.000

Poteat, Tommy L.: *See—*
Batdorf, Robert L.; Murphy, Edmond J.; Poteat, Tommy L.; and Simpson, Jay R., 4,762,387, Cl. 350-96.200.

Potter, Robert A.: *See—*
McCabe, Robert W.; McCready, David F.; Mohan, Philip V.; and Potter, Robert A., 4,762,093, Cl. 123-3.000.

Pourquie, Jacques: *See—*
Warzywoda, Michel; Ferre, Veronique; and Pourquie, Jacques, 4,762,788, Cl. 435-209.000

Poxleitner, Martin; Wohlfrom, Josef; and Otomanski, Kurt, to Carl-Zeiss-Stiftung. Apparatus for generating an image. 4,763,001, Cl. 250-334.000

Poyer, David D. Outdoor marine lighting fixture. 4,763,233, Cl. 362-267.000

PPG Industries, Inc.: *See—*
Girgis, Mikhail M.; and Lawton, Ernest L., 4,762,750, Cl. 428-378.000
Girgis, Mikhail M.; and Lawton, Ernest L., 4,762,751, Cl. 428-378.000
Postupack, Dennis S.; and Pressau, Jean P., 4,762,595, Cl. 204-11.000

Prasad, Yellapregada V. R. K.: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000.

Precision Shooting Equipment Company: *See—*
Johnston, Richard, 4,762,112, Cl. 124-86.000.

Precorp, Inc.: *See—*
Bunting, John A.; and Hanks, Kenneth H., 4,762,445, Cl. 408-144.000

Preh, Elektrofeinmechanische Werke, Jakob Preh, Nachf. GmbH & Co.: *See—*
Bauer, Karl-Heinz; and Spiller, Gerhard, 4,763,101, Cl. 338-198.000

Prescher, Guenter; Ritter, Gebhard; and Sauerstein, Holger, to Degussa Aktiengesellschaft. Method for the preparation of substituted trihydroxybenzenes. 4,762,953, Cl. 568-771.000.

Prescher, Gunther: *See—*
Siegmeier, Rainer; Prescher, Gunther; and Maurer, Helmut, 4,762,954, Cl. 568-867.000

Pressau, Jean P.: *See—*
Postupack, Dennis S.; and Pressau, Jean P., 4,762,595, Cl. 204-11.000

Price, Richard W.: *See—*
Watanabe, Kyoichi A.; Matulic-Adamic, Jasenka; Price, Richard W.; and Fox, Jack J., 4,762,823, Cl. 514-50.000.

Prince Corporation: *See—*
Boerema, Edward T.; Suman, Michael J.; and Fleming, Dennis J., 4,762,359, Cl. 296-97.00K.

Prisco, Anthony J.; and Johnson, Alfred N., to Westinghouse Electric Corp. Sorting method for radioactive waste. 4,762,280, Cl. 241-3.000

Procter, Brian J.: *See—*
Holt, Nicholas P.; and Procter, Brian J., 4,763,246, Cl. 364-200.000

Procter & Gamble Company, The: *See—*
Tucker, James R.; and Nesbitt, Daniel F., 4,762,645, Cl. 252-544.000.

Profilex Limited: *See—*
Coulson, Clifford B., 4,761,920, Cl. 52-19.000

Project Benjamin, Ltd.: *See—*
Schwaber, Jeffrey S., 4,763,291, Cl. 364-704.000.

Prouty, Gerald G.: *See—*
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., 4,762,265, Cl. 228-50.000.

Pruiksma, Arthur B.: *See—*
Shih, Yen-Jer; Pruiksma, Arthur B.; and Mudge, Paul R., 4,762,866, Cl. 523-412.000.

Pruitt, Gerald R.: *See—*
Higham, Graham J.; Snively, Howard D.; Nicoll, Harry G.; and Pruitt, Gerald R., 4,761,960, Cl. 62-6.000.

Prussas, Herbert: *See—*
Frenkel, Ferdinand; Prussas, Herbert; and Rapp, Lothar, 4,763,225, Cl. 361-388.000.

PUMA AG Rudolf Dassler Sport: *See—*
Gerhaeuser, Heinz; Pirner, Gerhard; and Rueckert, Thomas, 4,763,287, Cl. 364-561.000.

Purtschert, Werner, to Sulzer Brothers Limited. Adsorber for cleaning gases. 4,762,536, Cl. 55-66.000.

Pusatcioglu, Selami Y.; and Genise, Thomas A., to Eaton Corporation. Vehicle component having improved friction material. 4,762,216, Cl. 192-107.00M.

Queener, Stephen W.: *See—*
Chapman, Jerry L., Jr.; Ingolia, Thomas D.; Kaster, Kevin R.; Queener, Stephen W.; and Skatrud, Paul L., 4,762,786, Cl 435-172.300.

Quinn, Sharon A.: *See—*
Pennace, John R.; and Quinn, Sharon A., 4,762,680, Cl. 428-40.000.

R. J. Reynolds Tobacco Company: *See—*
Deal, Philip A., 4,762,587, Cl. 156-542.000

R. R. Donnelley & Sons Company: *See—*
Podolak, J. B.; Adler, Douglas R.; and Saluski, Ronald B., 4,763,207, Cl. 360-32.000.

Rabe, Erich. Electronically commutated DC machine and use thereof. 4,763,053, Cl. 318-254.000.

Rabuse, George R., to Minnesota Mining and Manufacturing Company. Booklet cover. 4,762,341, Cl. 281-29.000.

Radford, Edward C.: *See—*
McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., 4,761,857, Cl. 19-98.000.

Raffalski, Karl-Heinz: *See—*
Baricevac, Thomas A.; and Raffalski, Karl-Heinz, 4,762,424, Cl. 374-56.000.

Rafferty, Michael F.: *See—*
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Marlena V., 4,762,846, Cl. 514-331.000

Rafft, Ronald R.; Helman, Michael D.; and Mackles, Leonard, to Bristol-Myers Company. Antiperspirant compositions, containing certain antihistamines and certain antihistamine enhancers. 4,762,704, Cl. 424-65.000.

Raheb, Richard: *See—*
Vagnone, Louis M.; and Raheb, Richard, 4,762,198, Cl 180-287.000.

Rahn, Oskar: *See—*
Maunz, Hermann; Rahn, Oskar; and Voss, Wilfried, 4,761,986, Cl. 72-405.000

Raidel, John E. Suspension assembly with stub bolster hanger assembly. 4,762,337, Cl. 280-688.000.

Railway Technical Research Institute: *See—*
Oshibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100.

Rajadhyaksha, Vithal J., to Nelson Research & Development Co. Delivery of plant growth regulators. 4,762,549, Cl. 71-88.000.

Rajasekaran, Periagaram K.; and Doddington, George R., to Texas Instruments Incorporated. Speaker-independent word recognizer. 4,763,278, Cl. 364-513.500.

Rakuljic, George A.: *See—*
Kwong, Sze-Keung; Rakuljic, George A.; Leyva, Victor; and Yariv, Amnon, 4,762,394, Cl. 350-171.000

Ramachandran, Venkataraman; and Maloney, John R., to Ethyl Corporation. Aromatization process. 4,762,943, Cl. 558-423.000.

Ramoger, Francois: *See—*
Reynier, Rene ; Malcor, Jean G.; Moresco, Gilles; and Ramoger, Francois, 4,762,208, Cl. 188-288.000

Rank Pullin Controls Limited: *See—*
Moore, William T.; Robertson, Paul J.; and Wallace, Kenneth J., 4,763,192, Cl. 358-113.000.

Rao, Gururaj S.: *See—*
Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., 4,763,245, Cl. 364-200.000.

Rapp, Lothar: *See—*
Frenkel, Ferdinand; Prussas, Herbert; and Rapp, Lothar, 4,763,225, Cl. 361-388.000.

Rasmussen, Clarence M.: *See—*
Walters, Richard D.; De Young, Jon; Rasmussen, Clarence M.; and Almares, Louie S., 4,762,219, Cl. 198-358.000.

Rassmann, Christoph; Breuer, Oswald; and Steinkuhl, Bernd, to Gewerkschaft Eisenhutte Westfalia GmbH. Cutter-bit assemblies. 4,762,372, Cl. 299-91.000

Rau, Norbert; Hubner, Gerd; Staiger, Wolfgang; Brodmann, Rainer; and Gerstorfer, Oskar, to Optische Werke G. Rodenstock. Device determining surface element inclination angle for the optical detection of form errors of a low order. 4,763,006, Cl. 250-561.000

Ravitz, Cary P.: *See—*
Damon, Brian W.; Ravitz, Cary P.; and Voss, Carl J., 4,763,137, Cl. 346-76.0PH

Ray, Glen: *See—*
Gasperi, Michael L.; and Ray, Glen, 4,762,007, Cl. 73-862.340

Raymond Corporation, The: *See—*
Ryan, Kenneth E., 4,762,203, Cl. 187-9.00E.

Raytheon Company: *See—*
MacMaster, George H.; and Nichols, Lawrence J., 4,763,043, Cl. 315-5.120.

RCA Licensing Corporation: *See—*
DeVilbiss, Warren C., 4,763,193, Cl. 358-149.000.
Osman, Peter D., 4,763,194, Cl. 358-180.000
Tults, Juri, 4,763,195, Cl. 358-193.100

Rea, Philip L.; and Bagshaw, Stanley R. Tile mounting system 4,761,926, Cl. 52-387.000

Rebafka, Walter, to BASF Aktiengesellschaft. Aromatization of saturated nitrogen-containing heterocycles. 4,762,929, Cl. 546-252.000.

Rebres, Robert P.: *See—*
Harrigan, Michael E.; Rees, James D.; and Rebres, Robert P., 4,763,173, Cl. 355-52.000

Rechtschaffen, Rudolph N.: *See—*
Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., 4,763,245, Cl. 364-200.000

Redemann, Carl T.: *See—*
Kung, Viola T.; and Redemann, Carl T., 4,762,915, Cl. 530-405.000

Redshaw, Sally: *See—*
Hassall, Cedric H.; Lawton, Geoffrey; and Redshaw, Sally, 4,762,924, Cl. 540-501.000.

Reed, Anne, administrator: *See—*
Reed, Lawrence A., III, deceased, 4,762,921, Cl. 540-310.000

Reed, Lawrence A., III, deceased (by Reed, Anne, administrator), to Pfizer Inc. 6-(1-acyl-1-hydroxymethyl)penicillanic acid derivatives. 4,762,921, Cl. 540-310.000

Rees, James D.: *See—*
Harrigan, Michael E.; Rees, James D.; and Rebres, Robert P., 4,763,173, Cl. 355-52.000

Regan, Michael C., to NL Petroleum Products Limited. Rotary drill bits. 4,762,028, Cl. 76-108.00A.

Regina Co., Inc., The: *See—*
Romeo, Robert; and Chieda, Robert A., 4,761,850, Cl. 15-323.000

Reich, Jacob L.: *See—*
Sneed, Sonny, 4,762,043, Cl. 83-688.000.

Reichl, Eric H. Fluid fuel from coal and method of making same. 4,762,528, Cl. 44-51.000

Reid, Starlin M.: *See—*
Barker, James M.; Grigar, Larry L.; Schramek, Dennis E.; Reid, Starlin M.; and Sumner, Cyril R., 4,762,067, Cl. 102-313.000

Reiff, Helmut: *See—*
Helling, Guter; Reiff, Helmut; and Kunitz, Friedrich-Wilhelm, 4,762,777, Cl. 430-548.000

Reijonen, Risto: *See—*
Reijonen, Veli E.; and Reijonen, Risto, 4,761,997, Cl. 73-155.000

Reijonen, Veli E.; and Reijonen, Risto, to Veli Reijonen Oy. Ground water well dimensioning procedure. 4,761,997, Cl. 73-155.000

Reimann, Harold J. Auxiliary mounting device for cultivating implements. 4,762,182, Cl. 172-327.000

Reitmeier, Rudolf: *See—*
Ottlinger, Ralph; and Reitmeier, Rudolf, 4,762,937, Cl. 556-459.000.

Remote Technology Corporation: *See—*
Coughlan, Joel B.; Harvey, Howard W.; Upton, R. Glen; and White, John R., 4,762,455, Cl. 414-4.000

Rennolet, Charles L.: *See—*
Nelson, Owen L.; and Rennolet, Charles L., 4,763,323, Cl. 370-96.000

Rensselaer Polytechnic Institute: *See—*
German, Randall M.; Bose, Animesh; and Sims, David, 4,762,558, Cl. 75-246.000

Repco Limited: *See—*
Hadaway, Bernard M., 4,762,214, Cl. 192-107.00C.

Reschly, David C.: *See—*
Glaier, Thomas A.; Johnson, Neil H.; Knox, Harold L.; Reschly, David C.; and Spurlock, Kim E., 4,762,073, Cl. 110-101.0CD.

Research Foundation of State University of New York: *See—*
Scrudto, Ronald J., 4,762,009, Cl. 73-863.520

Retallick, William B., to W. R. Grace & Co. Washcoat for a catalyst support. 4,762,567, Cl. 106-287.170.

Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F.; Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, to Sloan-Kettering Institute for Cancer Research. Monoclonal antibodies to cell surface antigens of human teratocarcinomas. 4,762,800, Cl. 436-548.000

Reum, Donald J.; and Reum, Mark T., to Avon Plastics, Inc. Landscape edging. 4,761,923, Cl. 52-102.000.

Reum, Mark T.: *See—*
Reum, Donald J.; and Reum, Mark T., 4,761,923, Cl. 52-102.000

Reuschle, Roland, to Telefunken Electronic GmbH. Selectable tuner preamplifier. 4,763,082, Cl. 330-295.000

VOL 1093 ISS 2 AG 9 1988 UMI

Reynier, Rene ; Malcor, Jean G.; Moresco, Gilles; and Ramoger, Francois, to Thomson-CSF. Vibration damper for a towed body. 4,762,208, Cl. 188-288.000.

RHH Enterprises, Inc.: *See*—
Palmert, Steven H., 4,762,253, Cl. 222-145.000.

Rhodes, William H.; Wei, George C.; and Fryburg, George A., to GTE Laboratories Incorporated. Method of sintering translucent alumina. 4,762,655, Cl. 264-65.000.

Rhone-Poulenc Chimie: *See*—
Letoffe, Michel; and Peccoux, Pierre-Michel, 4,762,879, Cl 524-720.000.

Rice, Hal H., to General Motors Corporation. Ramming mix for forming a mullite-corundum lining within a foundry furnace. 4,762,305, Cl. 266-281.000.

Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Mariena V., to United States of America, Health and Human Services. Metaphit and related compounds as acylating agents for the (3H)phencyclidine receptors. 4,762,846, Cl. 514-331.000.

Rice, Thomas G.: *See*—
Billington, Alan J.; and Rice, Thomas G., 4,762,665, Cl. 376-261.000.

Rice, William R.: *See*—
Loose, Robert A.; and Rice, William R., 4,762,668, Cl. 376-310.000.

Rich, Alexander: *See*—
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M., 4,762,914, Cl. 530-351.000.

Rich, Gregory E., to General Motors Corporaton. Fuel fill vapor recovery system with vapor recirculation. 4,762,156, Cl. 141-46.000

Richard Langlechner GmbH: *See*—
Fembock, Josef, 4,761,991, Cl. 73-11.000.

Richards, William D.; Blanco, Ernesto E.; Clark, Richard A.; and Meade, John C., to Ophthalmic Ventures Limited Partnership. Surgical microstapler. 4,762,260, Cl. 227-19.000.

Richardson, Michael M.; Sega, Joseph M.; and Tuckner, Ronald F., to Kroy Inc. Lettering apparatus having a printer-keyboard interface. 4,762,435, Cl. 400-304.000

Richtar Gedeon Vegyeszeti Gyar RT: *See*—
Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, 4,762,944, Cl. 560-051.000.

Ricoh Company, Ltd.: *See*—
Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi; Hatase, Takayuki; Yamaguchi, Takao; and Aoki, Kazumasa, 4,763,154, Cl. 354-403.000
Kanno, Tetsuo; and Tanabe, Kazumi, 4,763,212, Cl. 360-99.000.
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.
Segawa, Hideo, 4,763,041, Cl. 313-496.000.
Shimada, Kazuyuki; Shibata, Isamu; Kaneko, Yutaka; and Imagawa, Susumu, 4,763,334, Cl. 372-29.000.
Takahashi, Akira, 4,763,149, Cl. 354-217.000
Takahashi, Junichi, 4,763,007, Cl. 250-578.000
Takata, Akira; and Fujii, Koichi, 4,763,020, Cl. 307-465.000.
Ushirogata, Yoshiaki, 4,762,312, Cl. 270-53.000.

Ridgers, Timothy J.: *See*—
Galula, William; and Ridgers, Timothy J., 4,763,103, Cl. 340-310.00R

Riegel, Herbert: *See*—
Liu, Xin X.; Zhao, Bing Y.; Riegel, Herbert; and Chien, Jo-Lung, 4,762,956, Cl. 585-259.000

Rieger, Martin M.; and Yang, Robert K., to Warner-Lambert Company. Process for the preparation of the aluminum salt of saccharin. 4,762,930, Cl. 548-108.000.

Rigny, Paul: *See*—
Michon, Maurice; and Rigny, Paul, 4,762,402, Cl. 350-370.000.

Rimmele, Karl, to Mecapec S.A. Method of and apparatus for severing profiled strips of metallic material. 4,762,039, Cl. 83-37.000.

Rinde, David L.: *See*—
Baird, Richard H.; Blechar, Theodore J.; Giladett, Leo V. B.; Horner, Reginald M.; Prouty, Gerald G.; and Rinde, David L., 4,762,265, Cl. 228-50.000

Rinehart, Kenneth L., Jr.; Carter, Guy T.; and Cheng, Michael T., to University of Illinois Foundation. Acyl and carbamimidoyl alkanediamines. 4,762,949, Cl. 564-183.000

Ring, Maurice F.: *See*—
Ashley, Robert J.; Miller, John D.; and Ring, Maurice F., 4,762,246, Cl. 220-270.000

Riom Laboratoires C.E.R.M. "RI-Cerm", S.A.: *See*—
Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J. C., 4,762,834, Cl. 514-252.000.

Riotte, Jaan Paul: *See*—
Belbel, Elie; Fechant, Louis; and Riotte, Jaan Paul, 4,763,220, Cl. 361-93.000

Ristic, Velimir M.: *See*—
Gregoris, Dennis J.; Arsenault, Roger; and Ristic, Velimir M., 4,762,735, Cl. 427-162.000.

Ritt, Robert A., to Acra Electric Corporation. Cartridge heater. 4,763,102, Cl. 338-240.000

Ritter, Gebhard: *See*—
Prescher, Guenter; Ritter, Gebhard; and Sauerstein, Holger, 4,762,953, Cl. 568-771.000.

Ritter, Kerry L.: *See*—
Brown, Bernard J.; and Ritter, Kerry L., 4,761,887, Cl. 33-148.00H.

Ritter, Wolfgang; and Zoellner, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Esters of unsaturated carboxylic acids. 4,762,946, Cl. 560-179.000.

RMO-Wrkspoor Srvices BV: *See*—
Greven, Hillebrand J., 4,761,998, Cl. 73-167.000

Roadmaster Corporation: *See*—
Camfield, David K.; Brashear, Daniel F.; and Craig, Marion N., 4,762,317, Cl. 272-73.000

Robb, Paul N.: *See*—
Mercado, Romeo I.; and Robb, Paul N., 4,762,404, Cl. 350-483.000.

Robbins, Basil N.: *See*—
Nield, Michael A.; and Robbins, Basil N., 4,762,697, Cl. 423-304.000

Robert Bosch GmbH: *See*—
Bentz, Willy; and Gansert, Willi, 4,763,224, Cl. 361-386.000.
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.
Jeenicke, Edmund, 4,762,109, Cl. 123-571.000.
Schmid, Hans-Dieter; Alberter, Gunther; and Hettich, Gerhard, 4,761,996, Cl. 73-146.500.
Schoneck, Gunter; Stumpp, Gerhard; and Wessel, Wolf, 4,762,107, Cl. 123-478.000

Roberts, Thomas G.: *See*—
Honeycutt, Thomas E.; and Roberts, Thomas G., 4,763,361, Cl. 455-605.000

Robertson, Alexander J., to STC PLC. Optical fibre splice reinstatement sheathing. 4,762,580, Cl. 156-83.000.

Robertson, Paul J.: *See*—
Moore, William T.; Robertson, Paul J.; and Wallace, Kenneth J., 4,763,192, Cl. 358-113.000.

Robieux, Jean: *See*—
Fevrier, Herve ; Robieux, Jean; and Tardy, Andre , 4,763,009, Cl. 250-458.100

Robins, David J. Ender and choker hook for logging rigging. 4,762,356, Cl. 294-82.140

Robinson, John A.; and Schumacker, Robert A., to Evans & Sutherland Computer Corp. Curvilinear dynamic image generation system. 4,763,280, Cl. 364-518.000

Rock-A-Bye Restraint Company, Inc.: *See*—
Young, Quentin, 4,762,364, Cl. 297-250.000.

Rockwell International Corporation: *See*—
Caswell, Robert L., 4,763,128, Cl. 342-14.000.
Harty, Richard B.; and Camaret, Timothy L., 4,762,662, Cl. 376-220.000
Kosanda, David E., 4,762,966, Cl. 174-35.0GC.
Spence, John R., 4,763,023, Cl. 307-480.000

Rodriguez, Manuel V.; Barrio, Ramon M.; and Dobarro, Juan P. Heat transfer system for tobacco curing. 4,762,137, Cl. 131-299.000.

Roebelen, George J., Jr.: *See*—
Blakely, Robert L.; Roebelen, George J., Jr.; and Davenport, Arthur K., 4,762,173, Cl. 165-170.000.

Roeser, John O., to Otto Engineering, Inc. Enclosed externally actuated switch assembly. 4,762,972, Cl. 200-302.100

Roessler, Thomas H.; Endres, Dan D.; Enloe, Kenneth M.; Huntoon, Andrew E.; and Lippert, Mary E., to Kimberly-Clark Corporation. Absorbent garment with quilted and conformable absorbent pad. 4,762,521, Cl. 604-38.0SA.

Rogers, Charles E.; and Shen, Zhong-He, to Dow Chemical Company, The. Formation of porous membranes by mechanical deformation. 4,762,657, Cl. 264-83.000.

Rohde, Siegfried: *See*—
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.

Rohm Company Limited: *See*—
Ueyama, Seiji; Taniguchi, Hideo; and Ogata, Hiromi, 4,762,432, Cl 400-241.100.

Rojey, Alexandre: *See*—
Grehier, Alain; and Rojey, Alexandre, 4,762,172, Cl. 165-165.000.

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Analysis device. 4,762,683, Cl. 422-72.000.

Romeo, Robert; and Chieda, Robert A., to Regina Co., Inc., The. Vacuum cleaner having an integral tool holder. 4,761,850, Cl. 15-323.000

Romey, Russell P.; and Greer, Lonny R., to Allied-Signal Inc. Adjustable non-piloted air blast fuel nozzle. 4,761,959, Cl. 60-740.000.

Root, Randolph E., to Hughes Aircraft Company. Mini chip carrier slotted array. 4,762,606, Cl. 206-328.000.

Rose, David K. Computer entry system for predetermined text data sequences. 4,763,252, Cl. 364-200.000.

Rose, Kenneth G.: *See*—
Cummings, Donald G.; and Rose, Kenneth G., 4,763,230, Cl. 362-78.000

Rosen, Barry K.: *See*—
Barzilai, Zeev; Iyengar, Vijay S.; Rosen, Barry K.; and Silberman, Gabriel M., 4,763,289, Cl. 364-578.000.

Rosenberg, Larry. Programming format and apparatus for the improved coherent beam coupler system and method. 4,763,282, Cl. 364-524.000

Rosenbluth, Robert F., to Advanced Surgical Intervention, Inc. Method and apparatus for treating hypertrophy of the prostate gland. 4,762,128, Cl. 128-343.000.

Rosenwasser, Lanny J.: *See*—
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M., 4,762,914, Cl. 530-351.000.

Rosman, Alan H., to Dynamic Hydraulic Systems, Inc. Hydraulic elevator mechanism. 4,761,953, Cl. 60-414.000

Rosman, Alan H., to Dynamic Hydraulic Systems, Inc. Fork-lift system. 4,761,954, Cl. 60-414.000

Rosser, William D.; Kuo, Samuel C.; Bird, Gustavo E.; and Davis, Robert E., to GTE Government Systems Corporation. Log-periodic monopole antenna array. 4,763,131, Cl. 343-792.500.

Rothfuss, Diane; and Lantz, Roger A., to Central Soya Company, Inc. Method of tableting of de-oiled phosphatides (lecithin). 4,762,658, Cl 264-122.000

Rougeot, Henri: *See*—
Colomb, Gilbert; Creusot, Jean P.; and Rougeot, Henri, 4,763,042, Cl. 313-544.000

Roussel Uclaf: *See*—
Rowlands, David A.; Golec, Julian M. C.; Matharu, Saroop S.; and Hairsine, Peter W., 4,762,840, Cl. 514-267.000

Rowlands, David A.; Golec, Julian M. C.; Matharu, Saroop S.; and Hairsine, Peter W., to Roussel Uclaf. Pyrimido[2,1-b]benzothiazoles having antiallergic activity. 4,762,840, Cl. 514-267.000

Rozenblit, Moshe, to Bell Communications Research, Inc. Multi-rate synchronous virtual circuit network for voice and data communications. 4,763,319, Cl. 370-84.000

Rubin, David, to Schwimmer, Adolf W.; Schwartz, Irwin Steven; and Rubin, David. Cancer therapy with interferon. 4,762,705, Cl. 424-85.000

Rudenauer, Werner; Muller, Fritz; Kufner, Dieter; and Furtmayr, Joachim, to Diehl GmbH & Co. Fuze for a parachute-stabilized or band-stabilized small bomb which rotates during flight. 4,762,066, Cl. 102-226.000

Rudi, Guttorm: *See*—
Solhjell, Erik; and Rudi, Guttorm, 4,763,216, Cl. 360-128.000.

Rudolph, Ralph; and Weiler, Werner, to Messerschmitt-Bolkow-Blohm GmbH. Method and arrangement for transmitting data, especially in an aircraft. 4,763,320, Cl. 370-85.000.

Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., to AMP Incorporated. Electrical contact retention system, and tool for removal and method therefor. 4,762,507, Cl. 439-595.000

Rueckert, Thomas: *See*—
Gerhaeuser, Heinz; Pirner, Gerhard; and Rueckert, Thomas, 4,763,287, Cl. 364-561.000

Ruffalo, Ronald G.: *See*—
Bergeson, Larry W.; Lasorso, Vincent J., Jr.; Petersen, Russell H.; and Ruffalo, Ronald G., 4,762,433, Cl. 401-206.000.

Ruis, Jean Pierre: *See*—
Bouiller, Jean G.; Payen, Jean-Michel; and Ruis, Jean Pierre, 4,762,466, Cl. 416-205.000.

Ruiz, David M.; and Timmons, Alvin S., to Union Oil Company of California. Noise suppression and particle separation apparatus for high pressure gaseous fluid flows. 4,762,540, Cl. 55-276.000.

Rupp, Peter, to Gebruder Honsberg GmbH. Tool changer for machine tool. 4,761,877, Cl. 29-568.000.

Ruppert, Udo, to Deutsche Forschungs-Und Versuchsanstalt Fur Luft-Und Raumfahrt E.V. Driving and positioning system. 4,763,050, Cl. 318-254.000

Ruppert, Udo, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt E.V. Driving and positioning system. 4,763,051, Cl. 318-254.000

Ruschke, Peter: *See*—
Beltz, Klaus; Frankenfeld, Klaus; Ruschke, Peter; and Eich, Gerhard, 4,762,692, Cl. 423-321.00R

Russell Lorenz & Wilma Lorenz: *See*—
Gustafson, Harold L., 4,761,924, Cl. 52-126.600

Ryan, Kenneth E., to Raymond Corporation, The. Lift truck lowering system. 4,762,203, Cl. 187-9.00E.

Ryobi, Ltd.: *See*—
Emura, Masaharu; and Kobayashi, Takehiro, 4,762,290, Cl. 242-84.10K.
Matsuo, Isamu; and Mori, Junji, 4,763,111, Cl. 340-545.000

S. C. Johnson & Son, Inc.: *See*—
Bergeson, Larry W.; Lasorso, Vincent J., Jr.; Petersen, Russell H.; and Ruffalo, Ronald G., 4,762,433, Cl. 401-206.000.

S. W. Hart & Co. Pty. Ltd.: *See*—
Vincent, Colin C., 4,762,116, Cl. 126-448.000.

Sabatino, Luciani, to Axis S.p.A. Machine and method for forming windings on electric motor stators. 4,762,283, Cl. 242-1.10R.

Sabroff, Alvin M.: *See*—
Vollmer, George W.; and Sabroff, Alvin M., 4,761,867, Cl. 29-159.200

Sacatec, Inc.: *See*—
Melville, Phillip L.; and Wallyn, Rene M., 4,762,054, Cl. 98-115.400

Sachar, Howard E.: *See*—
Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., 4,763,245, Cl. 364-200.000

Sachtler, J. W. Adriaan; and Lawson, R. Joe, to UOP Inc. Process for isomerization of alkylaromatics. 4,762,957, Cl. 585-481.000

Saforo, Emmanuel K.: *See*—
Fleming, Hubert L.; Goodboy, Kenneth P.; and Saforo, Emmanuel K., 4,762,537, Cl. 55-71.000

Sagami Chemical Research Center: *See*—
Shibasaki, Masakatsu; Mase, Toshiaki; Sodeoka, Mikiko; and Ogawa, Yuji, 4,762,936, Cl. 549-214.000

Sagara, Seiji: *See*—
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R

Sager, Karl-Heinz: *See*—
Nicko, Reinhard; Meschenmoser, Friedrich; Sager, Karl-Heinz; and Turcke, Rainer, 4,761,933, Cl. 53-374.000

Sahara, Masayoshi: *See*—
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000

Sahashi, Masashi: *See*—
Kobayashi, Tadahiko; Sahashi, Masashi; and Inomata, Koichiro, 4,762,008, Cl. 73-862.360

St. Louis, Raymond F. Appliance/refrigerator power controller 4,763,015, Cl. 307-126.000

St. Pierre, Frank H.; and Jensen, Jack D. Tie down fitting. 4,762,449, Cl 410-107.000

Saito, Hiroyuki: *See*—
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000

Saito, Noritoshi: *See*—
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro, Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi, Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000

Saito, Yasuhiko: *See*—
Watanabe, Kouzou; and Saito, Yasuhiko, 4,762,061, Cl. 100-35.000

Saitoh, Kouhei; Aoki, Hisashi; Endo, Kenzo; and Mawatari, Atsushi, to Casio Computer Co., Ltd. Electrophotographic printer with light micro-shutters. 4,763,142, Cl. 346-160.000

Sakai, Nobuo: *See*—
Takahashi, Osamu; and Sakai, Nobuo, 4,762,773, Cl. 430-380.000

Sakai, Shinji, to Canon Kabushiki Kaisha. Image sensing device 4,763,196, Cl. 358-213.130

Sakakura, Akira; Hoshino, Kazuo; Uematsu, Yoshihiro; Igawa, Takashi, and Fujimoto, Hiroshi, to Nisshin Steel Co., Ltd. Process for producing electrical steel sheet. 4,762,575, Cl. 148-111.000.

Sakamoto, Masahiro, to Canon Kabushiki Kaisha. Image readout apparatus. 4,763,201, Cl. 358-282.000

Sakata, Hirotsugu: *See*—
Hayano, Makoto; Nagatomo, Shigemi; Sakata, Hirotsugu; and Hatori, Mitsuo, 4,762,477, Cl. 418-1.000

Sakui, Koji; and Ogura, Mitsugi, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,763,178, Cl. 357-23.600

Sakuma, Kazuhiko: *See*—
Nakaoku, Shozo; Sakuma, Kazuhiko; Oshika, Yasuhiro; and Ohira, Kazuo, 4,762,927, Cl. 544-378.000

Sakuma, Masaru; and Sawano, Susumu, to Tokico Ltd. Antiskid control device. 4,763,260, Cl. 364-426.000

Sakunaga, Kenichi: *See*—
Yamamoto, Takashi; Murata, Ryuji; Tahara, Yasuteru; Terada, Hiromu; and Sakunaga, Kenichi, 4,762,392, Cl. 350-96.300

Sakurai, Kazuo; and Tamura, Takahiro, to Hitachi, Ltd. Scroll compressor with balancer mounted in single frame. 4,762,478, Cl 418-55.000

Sakurazawa, Yoshiteru: *See*—
Okano, Shigeaki; Hayashi, Katsuhiko; Sakurazawa, Yoshiteru; and Suga, Yoshinori, 4,762,882, Cl. 525-74.000

Sallee, Bradley T., to Tracor Aerospace Austin, Inc. Fiber under foil chaff coil. 4,763,127, Cl. 342-12.000

Sallis, Daniel V.: *See*—
Gregory, Stephen O.; West, Michael W.; Wolf, James L.; and Sallis, Daniel V., 4,762,273, Cl. 236-93.00R

Salmon, Roger: *See*—
Whittle, Alan J.; Salmon, Roger; and McDonald, Edward, 4,762,835, Cl. 514-256.000

Salt Weeds: *See*—
Yensen, Nicholas P., 4,762,964, Cl. 800-1.000

Saluski, Ronald B.: *See*—
Podolak, J. B.; Adler, Douglas R.; and Saluski, Ronald B., 4,763,207, Cl. 360-32.000

Salzinger, Josef: *See*—
Kischel, Reinhard; Salzinger, Josef; and Schottner, Richard, 4,762,531, Cl. 48-191.000

Sam Sung Electronics Co., Ltd.: *See*—
Lee, Kiu-Ahn, 4,763,209, Cl. 360-74.100

Sama, Claudio, to Inphardial S.p.A. Method and apparatus for measuring the quantity of plasma water removed during hemodialysis 4,762,620, Cl. 210-646.000

Samuelson, Hans O., to Mo och Domsjo Aktiebolag. Apparatus for reacting lignocellulosic material with a gas phase comprising a nitrogen oxide and oxygen under controlled gas pressure. 4,762,591, Cl 162-237.000

Sandberg, James L.: *See*—
Barry, Gerald E.; and Sandberg, James L., 4,761,869, Cl. 29-261.000

VOL 1093 ISS 2 AG 9 1988 UMI

Sanken Electric Co., Ltd.: *See—*
Morita, Koichi, 4,763,235, Cl. 363-19.000.
Takahashi, Isao, 4,763,060, Cl. 318-811.000.
Usui, Hiroshi, 4,763,236, Cl. 363-19.000.

Sankyo Manufacturing Company, Ltd.: *See—*
Kato, Heizaburou, 4,761,988, Cl. 72-452.000.

Sano, Osamu, to Koyo Jidoki Kabushiki Kaisha. Rack-pinion mechanism in steering device. 4,762,014, Cl. 74-422.000.

Sano, Yoichiro; Matsufuji, Teruo; and Sato, Akira, to Iwatsu Electric Co., Ltd. Controlled power supply for key telephone system. 4,763,348, Cl. 379-165.000.

Sanofi (Societe Anonyme): *See—*
Jansen, Franz; and Gros, Pierre, 4,762,707, Cl. 424-85.000.

Sanok, John L.; and Adams, David G., to Sheller Globe Corporation. Molded urethane window gasket assembly with hinge member and apparatus and method for making same. 4,761,916, Cl. 49-381.000.

Santa Cruz, Arthur W. Apparatus for controlled heating and dispensing of a mixed liquid and solid material. 4,762,060, Cl. 99-483.000.

Santos, Edward: *See—*
Aronson, Michael; Lock, Michele R.; and Santos, Edward, 4,762,637, Cl. 252-99.000.

Sanyo Color Works, Ltd.: *See—*
Miki, Toshiyuki; and Takeya, Mitsumasa, 4,762,569, Cl. 106-476.000.

Sanyo Electric Co., Ltd.: *See—*
Kagami, Haruhiko, 4,762,378, Cl. 312-7.200.

Saotome, Shigeru; and Ishida, Masamitsu, to Fuji Photo Film Co., Ltd. Radiation image recording and read-out apparatus. 4,762,999, Cl. 250-327.200.

Sapporo Breweries Limited: *See—*
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000.

Sara Lee Corporation: *See—*
Howard, Fred; and Edson, Sydney, 4,762,235, Cl. 211-59.300.

Sarasota Quality Products, Inc.: *See—*
Weatherby, Robert G., 4,761,977, Cl. 70-493.000.

Sartori, Guido: *See—*
Stogryn, Eugene L.; and Sartori, Guido, 4,762,934, Cl. 548-569.000.

Sasaki, Isao; Mukai, Nobuhiro; and Ige, Hitoshi, to Mitsubishi Rayon Co., Ltd. Photopolymerizable dental composition containing a hexafunctional urethane methacrylate based on isocyanuric acid. 4,762,863, Cl. 522-11.000.

Sasaki, Shigemi: *See—*
Tokunaga, Ikuo; and Sasaki, Shigemi, 4,763,312, Cl. 368-280.000.

Sasaki, Shunichiro: *See—*
Ohkubo, Kunihiko; and Sasaki, Shunichiro, 4,762,412, Cl. 356-319.000.

Sasaya, Hideaki: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060.

Sassier, Pierre H., to Thomson-CSF. Temperature monitoring method using a fire wire. 4,763,113, Cl. 340-596.000.

Sather, Norman F.: *See—*
Huang, Hann S.; and Sather, Norman F., 4,762,596, Cl. 204-60.000.

Sato, Akira: *See—*
Sano, Yoichiro; Matsufuji, Teruo; and Sato, Akira, 4,763,348, Cl. 379-165.000.

Sato, Noritada; and Seki, Yasukazu, to Fuji Electric Co., Ltd. Process for forming crystalline films by glow discharge. 4,762,803, Cl. 437-24.000.

Sato, Shunichi: *See—*
Ozaki, Hiroji; Sato, Shinichi; Tokui, Akira; Kawai, Akira; Nakajima, Masayuki; and Nagatomo, Masao, 4,763,182, Cl. 357-23.600.

Satoh, Tetsuo: *See—*
Yuasa, Hitoshi; Matsuno, Mitsuo; and Satoh, Tetsuo, 4,762,092, Cl. 123-1.00A.

Satomura, Seiichiro: *See—*
Imai, Ryoichi; Satomura, Seiichiro; and Iwaya, Toshio, 4,762,985, Cl. 250-201.000.

Satou, Yasushi: *See—*
Nagai, Toshinari; Masui, Takatoshi; Satou, Yasushi; and Katsuno, Toshiyasu, 4,761,950, Cl. 60-274.000.

Saturn Corporation: *See—*
Hutchins, Bruce E., 4,762,309, Cl. 267-140.100.

Satzinger, Gerhard: *See—*
Kleinschroth, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl. 514-258.000.

Sauber, Charles J. Hinge for vehicle panel door. 4,761,852, Cl. 16-237.000.

Sauber, Charles J. Self-loading reel trailer. 4,762,291, Cl. 242-86.50R.

Sauerbruch, Ernst. Feed device for injection molding machines. 4,762,482, Cl. 425-185.000.

Sauerstein, Holger: *See—*
Prescher, Guenter; Ritter, Gebhard; and Sauerstein, Holger, 4,762,953, Cl. 568-771.000.

Savage, Carl P.; Knight, John E.; Graves, J. W.; and Tate, Harold. Folding ramp. 4,761,847, Cl. 14-69.500.

Savage, George A.: *See—*
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000.

Savage, Howard T.: *See—*
Clark, Arthur E.; Kabacoff, Lawrence T.; Savage, Howard T.; and Modzelewski, Christine, 4,763,030, Cl. 310-26.000.

Savage, Steven J.; and Eylon, Daniel, to United States of America, Air Force. Method for making rapidly solidified powder. 4,762,553, Cl. 75-0.50C.

Sawano, Susumu: *See—*
Sakuma, Masaru; and Sawano, Susumu, 4,763,260, Cl. 364-426.000.

SCG-Thomson Microelectronics S.p.A.: *See—*
Chieli, Davide, 4,763,016, Cl. 307-254.000.

Schaefer, Rudolf K., to Littelfuse, Inc. Shock-safe fuseholder assembly. 4,762,509, Cl. 439-621.000.

Schaefer, Rudolf K., to Littlefuse, Inc. Shockproof fuseholder. 4,762,510, Cl. 439-621.000.

Schaich, Gerhard; and Schoenauer, Ludwig, to Siemens Aktiengesellschaft. Circuit arrangement for centrally controlled time division multiplex telecommunication exchange facilities. 4,763,316, Cl. 370-16.000.

Schaper, Helmut, to Braunschweigische Maschinenbauanstalt AG. Continuously operable sugar centrifuge. 4,762,570, Cl. 127-19.000.

Schatz, Oskar. Positive displacement supercharger using the exhaust gases of an internal combustion engine. 4,761,956, Cl. 60-605.100.

Schaub, Robert E.: *See—*
Wissner, Allan; Sum, Phaik E.; and Schaub, Robert E., 4,762,942, Cl. 558-169.000.

Schefer, Kurt: *See—*
Flueli, Adolf; Schefer, Kurt; and Oswald, Heinz, 4,762,284, Cl. 242-18.00A.

Schell, Richard P., to Xerox Corporation. Tri-roll scanning arrangement. 4,763,171, Cl. 355-50.000.

Schering Corporation: *See—*
McCombie, Stuart W.; and Tagat, Jayaram R., 4,762,827, Cl. 514-192.000.

Schetters, Hartmut: *See—*
Hubner-Parajsz, Christa; Schetters, Hartmut; Lenz, Helmut; and Erler, Klaus, 4,762,783, Cl. 435-7.000.

Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, to Hoechst Aktiengesellschaft. 1,3-thiazoles and their use as immunomodulators. 4,762,848, Cl. 514-369.000.

Schiefer, Harry M., to Dow Corning Corporation. Foam control process for highly acidic aqueous systems. 4,762,640, Cl. 252-321.000.

Schiller, Wilfried, to Blaupunkt-Werke GmbH. Method and circuit for controlling the operating point of a video amplifier. 4,763,048, Cl. 315-383.000.

Schilling, Thaddeus A. Portable gas-fired forced-draft heater. 4,762,488, Cl. 431-350.000.

Schimmel, Gunther; Gradl, Reinhard; and Kolkmann, Friedrich, to Hoechst Aktiengesellschaft. Process for working up heavy metal-containing residues originally from the decontamination of crude phosphoric acid. 4,762,693, Cl. 423-321.00S.

Schipper, Richard A., to Myron L Company, Inc. Water quality indication system. 4,762,611, Cl. 210-85.000.

Schisselbauer, Paul F.: *See—*
Eppley, William J.; Hawkins, Warren E.; and Schisselbauer, Paul F., 4,762,757, Cl. 429-114.000.

Schlafer, Ludwig; Springer, Hartmut; and Kunze, Michael, to Hoechst Aktiengesellschaft. Water-soluble dis-, tris- and tetra-azo compounds containing fiber-reactive chloro-and fluro-triazinyl groups and vinylsulfone groups or derivatives thereof, suitable as dyestuffs. 4,762,916, Cl. 534-631.000.

Schlueter, Edward L., Jr., to Xerox Corporation. Boron nitride filled fuser rolls. 4,763,158, Cl. 355-3.0FU.

Schlumberger Systems & Services, Inc.: *See—*
Deering, Michael F.; and Hunt, Neil, 4,763,288, Cl. 364-578.000.

Schmid, Gunter: *See—*
Hawly, Rudolf; and Schmid, Gunter, 4,762,261, Cl. 227-66.000.

Schmid, Hans-Dieter; Alberter, Gunther; and Hettich, Gerhard, to Robert Bosch GmbH. Device for transmitting measuring signals, for example, for the tire pressure, to twin wheels of motor vehicles. 4,761,996, Cl. 73-146.500.

Schmidberger, Peter; and Kowal, Herbert, to Schmidberger, Peter. Link-type apron arrangement. 4,762,020, Cl. 74-612.000.

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Schmits, Heinz-Herbert; and Niemerg, Hermann, to Krupp Polysius AG. Cooling apparatus. 4,762,489, Cl. 432-77.000.

Schmitt, Robert; and Steffens, Peter, to MWB Messwandler-Bau Aktiengesellschaft. Method, circuit and apparatus for the elimination of the d.c. voltage components of a capacitive a.c. voltage divider. 4,763,068, Cl. 324-126.000.

Schneider, Claus: *See—*
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.

Schneider, Wolfgang; and Amsler, Kurt, to Ciba-Geigy Corporation. Process for lining the inner surfaces of pipes or pipe sections. 4,762,585, Cl. 156-294.000.

Schnell, Karl; and Domlatil, Miroslav, to Karl Schnell Maschinenfabrik. Suspension device for strings of sausage links. 4,761,854, Cl. 17-1.00R.

Schnettler, Richard A.: *See—*
Grisar, J. Martin; Dage, Richard C.; and Schnettler, Richard A., 4,762,849, Cl. 514-369.000

Schnettler, Roland: *See—*
Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, 4,762,602, Cl. 204-206.000

Schoenauer, Ludwig: *See—*
Schaich, Gerhard; and Schoenauer, Ludwig, 4,763,316, Cl. 370-16.000.

Schoennagel, Hans J.: *See—*
Borghard, William S.; and Schoennagel, Hans J., 4,762,010, Cl. 73-865.500.

Schon, Georg: *See—*
Geist, Michael; Ott, Gunther; and Schon, Georg, 4,762,903, Cl. 528-107.000

Schoneck, Gunter; Stumpp, Gerhard; and Wessel, Wolf, to Robert Bosch GmbH. Electronic control device for operating parameters. 4,762,107, Cl. 123-478.000.

Schorlemmer, Hans-Ulrich: *See—*
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000.

Schott Glaswerke: *See—*
Baucke, Friedrich; Mucke, Klaus; and Metz, Bernd, 4,762,401, Cl. 350-357.000.

Schottner, Richard: *See—*
Kischel, Reinhard; Saizinger, Josef; and Schottner, Richard, 4,762,531, Cl. 48-191.000

Schrader, Paul D. Impedance matching network. 4,763,087, Cl. 333-101.000.

Schramek, Dennis E.: *See—*
Barker, James M.; Grigar, Larry L.; Schramek, Dennis E.; Reid, Starlin M.; and Sumner, Cyril R., 4,762,067, Cl. 102-313.000.

Schramm, Matthias: *See—*
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,762,853, Cl. 514-432.000.

Schriewer, Michael: *See—*
Grohe, Klaus; and Schriewer, Michael, 4,762,831, Cl. 514-230.200.
Grohe, Klaus; Schriewer, Michael; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,762,844, Cl. 514-312.000.

Schroder, Gunter; and Eichhhorn, Rudolf, to Deutsche Gesellschaft fur Wiederaufarbeitung von Kernbrennstoffen mbH. Method for performing remotely-manipulated work on a conduit of a nuclear facility. 4,762,266, Cl. 228-103.000.

Schrunk, Thomas R. Stained glass table frame. 4,761,931, Cl. 52-788.000

Schuck, William J.: *See—*
Chang, Shih-Chih; Schuck, William J.; and Gilmore, Richard F., 4,762,666, Cl. 376-264.000

Schuetz, Alfred; Mueller, Wolfgang; and Soutschek, Ewald, to Siemens Aktiengesellschaft. Integrated dynamic semiconductor memory with complementary circuitry and word line voltage control. 4,763,301, Cl. 365-181.000

Schuetz, Mark A., to Owens-Corning Fiberglas Corporation. Fibrous polymer insulation. 4,762,749, Cl. 428-372.000.

Schuh, Frank J.: *See—*
Dech, James A.; Hearn, David D.; and Schuh, Frank J., 4,762,186, Cl. 175-61.000.

Schulein, Rolf G.: *See—*
Denter, Ulrich; Himmighofen, Dieter; and Schulein, Rolf G., 4,762,042, Cl. 83-374.000.

Schultz, Horst, to Alfa Institut fur Hauswirtschafliche Produkr-und Verfahrens-Enwicklung GmbH. Microwave oven with a hinged cover to seal a cooking container. 4,762,973, Cl. 219-10.55E.

Schultz, Larry R.; Super, Peter J.; and van Leynseele, Francis J., to Boeing Company, The. Aircraft flight command and display system. 4,763,266, Cl. 364-433.000.

Schulz, Johann G. Novel fuel for use in energy generating processes. 4,762,529, Cl. 44-53.000.

Schumacker, Robert A.: *See—*
Robinson, John A.; and Schumacker, Robert A., 4,763,280, Cl. 364-518.000.

Schumann, Reinhard: *See—*
Bomba, Frank C.; Schumann, Reinhard; Jenkins, Stephen R.; and Binder, Paul, 4,763,249, Cl. 364-200.000.

Schumer, Steven E. Rotating field electron beam apparatus and method. 4,763,005, Cl. 250-492.300.

Schuster, Stanley E.: *See—*
Hwang, Wei; Schuster, Stanley E.; and Terman, Lewis M., 4,763,180, Cl. 357-23.600.

Schwab, Roland: *See—*
Brunner, Herbert; Ballhorn, Reinhard; and Schwab, Roland, 4,762,690, Cl. 423-3.000.

Schwaber, Jeffrey S., to Project Benjamin, Ltd. Remote display device for a microcomputer. 4,763,291, Cl. 364-704.000.

Schwartz, Cheryl D.: *See—*
Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 4,762,923, Cl. 540-455.000.

Schwartz, Irwin Steven: *See—*
Rubin, David, 4,762,705, Cl. 424-85.000.

Schwartz, Larry A.; and Lesser, Bertram, to Omni Products International, Inc. Lawn furniture and method of making same. 4,762,368, Cl. 297-445.000.

Schwarz, Gerhard, to Braun Aktiengesellschaft. Primary switched-mode DC-DC converter with summed input current and input voltage responsive control. 4,763,061, Cl. 320-32.000.

Schweiger, Barry D.: *See—*
Siegel, Howard; Simon, Theodore; and Schweiger, Barry D., 4,763,349, Cl. 379-38.000

Schwierz, Theodor, to Siemens Aktiengesellschaft. Frame decoding. 4,763,324, Cl. 370-100.000.

Schwimmer, Adolf W.: *See—*
Rubin, David, 4,762,705, Cl. 424-85.000

Schwind, Richard J.; Bart, Joseph; and Wollar, Burnell, to Phillips Plastics Corp. Damage resistant plastic expansion nut and screw therefor. 4,762,450, Cl. 411-34.000

Scott, David M. Electrochemical oxidation of an ore to release metal values of interest. 4,762,597, Cl. 204-105.00R.

Scott, Lisa L.: *See—*
Canale, Leonard M.; Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Martin H., 4,763,353, Cl. 379-157.000.

Scott, Peter S. Illuminated devices. 4,763,234, Cl. 362-293.000

Scovill Japan Kabushiki Kaisha: *See—*
Sugihara, Kouki, 4,761,863, Cl. 24-692.000.

Screenex Wire Weaving Manufacturers (Proprietary) Limited: *See—*
Freissle, Manfred F. A., 4,762,610, Cl. 209-397.000.

Scrudto, Ronald J., to Research Foundation of State University of New York. In-situ integrated suspended sediment stream sampler. 4,762,009, Cl. 73-863.520.

Sears, Jack L.; and Spector, George. Contracting container. 4,762,233, Cl. 206-627.000

Secondo, Pierre: *See—*
Calvignac, Jean; and Secondo, Pierre, 4,763,321, Cl. 370-94.000

Secretary of State for Defence in Her Britannic Majesty's Government of the United Kindgom of Great Britain and Northern Ireland, The: *See—*
Waddington, John F., 4,762,293, Cl. 244-3.220.

Sedlacek, Hans-Harald: *See—*
Scheunemann, Karl-Heinz; Durckheimer, Walter; Blumbach, Jurgen; Limbert, Michael; Schorlemmer, Hans-Ulrich; Dickneite, Gerhard; and Sedlacek, Hans-Harald, 4,762,848, Cl. 514-369.000
Stache, Ulrich; Kraemer, Hans P.; and Sedlacek, Hans-Harald, 4,762,648, Cl. 260-383.000

Sedutto, Anthony J.; and Capece, Stephen L., to Pillsbury Co., The Frozen confection container and method. 4,762,232, Cl. 206-525.000

Sega, Joseph M.: *See—*
Richardson, Michael M.; Sega, Joseph M.; and Tuckner, Ronald F., 4,762,435, Cl. 400-304.000

Segawa, Hideo, to Ricoh Company, Ltd. Dot array fluorescent tube for writing optical information in optical printer. 4,763,041, Cl. 313-496.000

Segawa, Kiyoteru: *See—*
Uyama, Kiyoshi; Kanno, Yoshio; Segawa, Kiyoteru; and Kihara, Yasuhiko, 4,761,895, Cl. 34-69.000

Seichter, Helmut: *See—*
Immendorfer, Manfred; Kopp, Dieter; Thierer, Gebhard; and Seichter, Helmut, 4,763,350, Cl. 379-67.000

Seifert, James V.: *See—*
Jackle, William C., III; Sherwood, Richard A.; Avery, Frederick M.; and Seifert, James V., 4,762,236, Cl. 211-59.300.

Seiko Epson Corporation: *See—*
Shinohara, Toshihide, 4,762,408, Cl. 351-169.000
Tokunaga, Ikuo; and Sasaki, Shigemi, 4,763,312, Cl. 368-280.000

Seiko Instruments & Electronics Ltd.: *See—*
Hirano, Shinichi; Toyokuni, Ryo; and Kuroda, Hiroshi, 4,762,588, Cl. 156-623.00R

Seiko Instruments Inc.: *See—*
Shimoda, Sadashi; Harada, Takamasa; Taguchi, Masaaki; and Ito, Kokichi, 4,762,400, Cl. 350-350.00S.

Seikosha Co., Ltd.: *See—*
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000

Seimiya, Motoo: *See—*
Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, 4,762,695, Cl. 423-54.000

Seitoh, Shinichi: *See—*
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000

Seitz, William R.; Zhujun, Zhang; and Mullin, Jerome, to Fisher Scientific Company. Method and device for fluorescence determination of alkali metal cations. 4,762,799, Cl. 436-79.000.

Seki, Reiji: *See—*
Ishikawa, Norio; Ishimura, Toshihiko; Taniguchi, Nobuyuki, Akada, Yasuaki; and Seki, Reiji, 4,763,156, Cl. 354-442.000.
Ishimura, Toshihiko; Ishikawa, Norio; Akada, Yasuaki; Seki, Reiji; and Taniguchi, Nobuyuki, 4,763,153, Cl. 354-400.000.

Seki, Wataru: *See—*
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, 4,761,925, Cl. 52-167.000

Seki, Yasukazu: *See—*
Sato, Noritada; and Seki, Yasukazu, 4,762,803, Cl. 437-24.000.

Seki, Yasunari: *See—*
Kawanabe, Tomohiko; Asakura, Masahiko; Kushida, Nontaka; Seki, Yasunari; Shima, Takanori; and Muroya, Minoru, 4,763,265, Cl. 364-431.040

VOL 1093 ISS 2 AG 9 1988 UMI

Sekida, Minoru: *See—*
Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, 4,763,144, Cl. 354-21.000.

Sekiguchi, Kyoji; Matsumura, Isao; and Madate, Haruhisa, to Canon Kabushiki Kaisha. Ophthalmic instrument. 4,762,410, Cl. 351-206.000.

Sekimura, Nobuyuki: *See—*
Fukaya, Masaki; Komatsu, Toshiyuki; Shoji, Tatsumi; Kamio, Masaru; and Sekimura, Nobuyuki, 4,763,010, Cl. 250-578.000.
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000.

Sekine, Mikiya; Matsushita, Toshihiko; Morishita, Sadao; and Oiri, Yasuhiko, to Mitsubishi Paper Mills, Ltd.; and Nippon Hoso Kyokai. Reversible image-forming material. 4,762,818, Cl. 503-214.000.

Sekura, Ronald D., to United States of America, Health and Human Services. Novel method of preparing toxoid by oxidation and metal ions. 4,762,710, Cl. 424-92.000.

Selenia Spazio SPA: *See—*
Perrotta, Giorgio, 4,763,129, Cl. 342-356.000.

Semco Instruments, Inc.: *See—*
Moore, M. Samuel; and Paluka, Charles F., 4,763,285, Cl. 364-551.000.

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,762,807, Cl. 437-100.000.

Senillou, Claude; de Framond, Remy; Garnier, Marcel; Yavari, Ali R.; and Joud, Jean-Charles, to Union Siderurgique du nord et de l'Est de la France (USINOR). Process for preparing especially metallic and semi-metallic bands of small thickness. 4,762,653, Cl. 264-22.000.

Seol, Mam T., to Yim, Byung D. Wheel chair. 4,762,332, Cl. 280-242.0WC.

Serge, Wendel: *See—*
Herbert, Wendel; and Serge, Wendel, 4,762,275, Cl. 239-6.000.

Serna, Jaime: *See—*
Choy, Terence A.; Hartleben, Harold A.; and Serna, Jaime, 4,762,513, Cl. 446-359.000.

Shaffer, Howard R.: *See—*
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 4,762,507, Cl. 439-595.000.

Shakkottai, Parthasarathy; and Venkateshan, Shakkottai P. System for temperature profile measurement in large furnances and kilns and method therefor. 4,762,425, Cl. 374-117.000.

Shanghai Institute of Optics and Fine Mechanics, Academia Sinica: *See—*
Wu, Shudong; Chen, Xiangzhen; and Tao, Xiou, 4,762,417, Cl. 356-351.000

Shansin Kogyo Kabushiki Kaisha: *See—*
Takeuchi, Toshio; and Atsumi, Shinya, 4,762,079, Cl. 114-152.000.

Sharbaugh, John E., to Westinghouse Electric Corp. Passive reactor auxiliary cooling system. 4,762,667, Cl. 376-298.000.

Sharp Kabushiki Kaisha: *See—*
Kotani, Yasuhiro; Oda, Koichi; and Kawai, Shoichi, 4,763,292, Cl. 364-710.000.
Nishimura, Norihisa, 4,763,170, Cl. 355-40.000.
Oogita, Yoshinori; Shino, Katsuhide; Nakao, Kazuhiro; Ozawa, Kazuhito; and Komaki, Shigeki, 4,762,983, Cl. 235-1.00D.
Suzuki, Akira; and Furukawa, Katsuki, 4,762,806, Cl. 437-100.000.
Takai, Yasuyuki, 4,763,118, Cl. 340-735.000.
Yoneda, Shigeo; Hiramoto, Masato; and Kanayama, Akira, 4,763,340, Cl. 375-121.000.

Sharp, Kenneth G.; and D'Errico, John J., to Dow Corning Corporation. Method of forming semiconducting amorphous silicon films from the thermal decomposition of fluorohydridodisilanes. 4,762,808, Cl. 437-101.000.

Sheikholeslami, Amir M.; and White, Michael G., to Zenith Electronics Corporation. CRT protection circuit. 4,763,046, Cl. 315-381.000

Sheldon, Peter E., to GTE Communication Systems Corporation. TTL-to-CMOS buffer. 4,763,022, Cl. 307-475.000.

Shell Offshore Inc.: *See—*
Cox, Bobby E.; and Smith, Jay S., 4,761,846, Cl. 14-3.000.

Shell Oil Company: *See—*
Falls, Andrew H.; and Kuhlman, Myron L., 4,762,178, Cl. 166-268.000.
Litzen, David B.; and Bolger, Stephen R., 4,762,616, Cl 210-634.000.

Sheller Globe Corporation: *See—*
Sanok, John L.; and Adams, David G., 4,761,916, Cl. 49-381.000.

Shen, Zhong-He: *See—*
Rogers, Charles E.; and Shen, Zhong-He, 4,762,657, Cl. 264-83.000.

Sherwood, Richard A.: *See—*
Jackle, William C., III; Sherwood, Richard A.; Avery, Frederick M.; and Seifert, James V., 4,762,236, Cl. 211-59.300.

Sheumaker, Jerry L., to Pennwalt Corporation. Liquid prolonged release pharmaceutical formulations containing ionic constituents. 4,762,709, Cl. 424-79.000.

Shibaike, Narito, to Matsushita Electric Industrial Co., Ltd. Head drive mechanism for electronic still camera. 4,763,214, Cl. 360-106.000

Shibasaki, Masakatsu; Mase, Toshiaki; Sodeoka, Mikiko; and Ogawa, Yuji, to Sagami Chemical Research Center. Bicyclo(3.3.0)Octene derivatives. 4,762,936, Cl. 549-214.000.

Shibata, Isamu: *See—*
Shimada, Kazuyuki; Shibata, Isamu; Kaneko, Yutaka; and Imagawa, Susumu, 4,763,334, Cl. 372-29.000

Shibata, Yutaka: *See—*
Uemiya, Takafumi; Shibata, Yutaka; Nishimura, Akira; Niwa, Shin-ichiro; and Osawa, Yoshitaka, 4,762,381, Cl. 350-96.110.

Shienfeld, Izhar, to Mego Afek, Industrial Measuring Instruments. Massaging sleeve for body limbs. 4,762,121, Cl. 128-64.000.

Shih, Yen-Jer; Pruiksma, Arthur B.; and Mudge, Paul R., to National Starch and Chemical Corporation. Latex adhesive for bonding polyether urethane foam. 4,762,866, Cl. 523-412.000.

Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, to Hitachi, Ltd. Ferromagnetic material and a magnetic head using the same material. 4,762,755, Cl. 428-635.000.

Shiina, Takanori: *See—*
Asakura, Masahiko; Kushida, Noritaka; Shiina, Takanori; and Kubota, Shin'ichi, 4,762,604, Cl. 204-406.000.
Kawanabe, Tomohiko; Asakura, Masahiko; Kushida, Noritaka; Seki, Yasunari; Shiina, Takanori; and Muroya, Minoru, 4,763,265, Cl. 364-431.040.

Shikinami, Yasuo, to Takiron Co., Ltd. Amphiphilic segment polyurethanes. 4,762,899, Cl. 528-49.000.

Shimada, Kazuyuki; Shibata, Isamu; Kaneko, Yutaka; and Imagawa, Susumu, to Ricoh Company, Ltd. Laser beam emitting apparatus. 4,763,334, Cl. 372-29.000.

Shimada, Takeo; Okada, Noriyuki; Fujimoto, Takashi; and Yada, Shuhei, to Mitsubishi Petrochemical Company Limited. Water absorptive resin compositions and process for producing the same. 4,762,889, Cl. 525-201.000.

Shimadzu Corporation: *See—*
Ohkubo, Kunihiko; and Sasaki, Shunichiro, 4,762,412, Cl. 356-319.000

Shimizu, Akihito: *See—*
Tamba, Shinichi; Yamamoto, Hitoshi; and Shimizu, Akihito, 4,762,098, Cl. 123-90.330.

Shimizu, Hiroshi, to Mita Industrial Co., Ltd. Syndrome calculating apparatus. 4,763,330, Cl. 371-37.000.

Shimizu, Katsuichi: *See—*
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R

Shimizu, Katsumasa: *See—*
Hashimoto, Nobuyuki; Amano, Hiroyuki; and Shimizu, Katsumasa, 4,763,037, Cl. 310-268.000.

Shimizu, Kimio: *See—*
Oishibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100.

Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, to Toyo Seikan Kaisha, Ltd. Process for producing easily openable closure. 4,762,579, Cl. 156-69.000.

Shimizu, Yasuhiko, to Kabushiki Kaisha Toshiba. Wire bonding method. 4,762,267, Cl. 228-179.000.

Shimoda, Kaneyasu; Yamashita, Atsushi; and Katoh, Tadayoshi, to Fujitsu Limited. Viterbi decoder and method for testing the viterbi decoder. 4,763,328, Cl. 371-3.000.

Shimoda, Sadashi; Harada, Takamasa; Taguchi, Masaaki; and Ito, Kokichi, to Seiko Instruments Inc. Ferroelectric liquid crystal electro-optical device having half-select voltage to maximize contrast. 4,762,400, Cl. 350-350.00S.

Shimode, Shinichi; and Ouchi, Kastubumi, to Hitachi, Ltd. Thermal-head recording device and method. 4,763,135, Cl. 346-1.100.

Shimomura, Nobuo, to Kabushiki Kaisha Toshiba. Coffee makers. 4,762,055, Cl. 99-285.000

Shimura, Yoshiaki: *See—*
Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, 4,762,148, Cl. 137-808.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki; and Ohsaki, Hiromi, 4,762,810, Cl. 501-88.000.

Shinagawa, Kiminari: *See—*
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.

Shingai, Sadanori: *See—*
Mori, Kinji; Kunai, Yuko; Akiyama, Masakazu; Kadoya, Tadaaki; Kawano, Katsumi; Miyamoto, Shoji; Nohmi, Makoto; Shingai, Sadanori; and Ihara, Hirokazu, 4,763,254, Cl. 364-200.000.

Shino, Katsuhide: *See—*
Oogita, Yoshinori; Shino, Katsuhide; Nakao, Kazuhiro; Ozawa, Kazuhito; and Komaki, Shigeki, 4,762,983, Cl. 235-1.00D.

Shinoda, Takamitsu: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000.

Shinohara, Toshihide, to Seiko Epson Corporation. Progressive multifocal lens and spectacles using same. 4,762,408, Cl. 351-169.000.

Shinozaki, Fumihiko; and Yokoyama, Yutaka, to Nippon Chemi-Con Corporation. Electrolyte for electrolytic capacitor. 4,762,629, Cl. 252-62.200.

Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, to Nippon Chemi-Con Corporation. Electrolyte for electrolytic capacitor. 4,762,630, Cl. 252-622.000.

Shinozaki, Fumihiko; and Yokoyama, Yutaka, to Nippon Chemi-Con Corporation. Electrolyte for electrolytic capacitor. 4,762,631, Cl 252-62.200.

Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, to Nippon Chemi-Con Corporation. Electrolyte for electrolytic capacitor. 4,762,632, Cl. 252-62.200

Shinozaki, Fumihiko; and Yokoyama, Yutaka, to Nippon Chemi-Con Corporation. Electrolyte for electrolytic capacitor. 4,762,633, Cl 252-62.200

Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, to Nippon-Chemi Con Corporation. Electrolyte for electrolytic capacitor. 4,762,634, Cl. 252-62.200.

Shionogi & Co., Ltd.: *See—*
Jizomoto, Hiroaki, 4,762,720, Cl. 424-450.000

Shiraishi, Hideo: *See—*
Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, 4,762,605, Cl. 204-406.000

Shiraiwa, Yoshinori: *See—*
Ohno, Michio; Nakanishi, Noriyoshi; Miyasaka, Michihiko; and Shiraiwa, Yoshinori, 4,762,982, Cl. 219-508.000

Shiroishi, Yoshihiro: *See—*
Shiiki, Kazuo; Kumasaka, Noriyuki; Shiroishi, Yoshihiro; Nakamura, Hitoshi; Hamakawa, Yoshihiro; Saito, Noritoshi; Aoki, Shigeo; Shinagawa, Kiminari; and Kudo, Mitsuhiro, 4,762,755, Cl. 428-635.000.

Shixiong, Wan: *See—*
Youjun, Liu; Xiujing, Shang; Yinlong, Liu; Shixiong, Wan; and Jieping, Liu, 4,762,104, Cl. 123-293.000.

Shkedi, Zvi, to Allied-Signal Inc. Compact digital pressure sensor circuitry. 4,763,063, Cl. 324-60.0CD.

Shoji, Tatsumi: *See—*
Fukaya, Masaki; Komatsu, Toshiyuki; Shoji, Tatsumi; Kamio, Masaru; and Sekimura, Nobuyuki, 4,763,010, Cl. 250-578.000
Komatsu, Toshiyuki; Fukaya, Masaki; Shoji, Tatsumi; Kamio, Masaru; Sekimura, Nobuyuki; Nakagawa, Katsumi; Iwamoto, Hirofumi; and Seitoh, Shinichi, 4,763,189, Cl. 358-75.000.

Short, Rolland W. P.: *See—*
McDaniel, Robert S., Jr.; McCurry, Patrick M.; Short, Rolland W. P.; and Glor, Paul R., 4,762,918, Cl. 336-127.000

Showa Aluminum Kabushiki Kaisha: *See—*
Ohtuka, Tatsuo; Murooka, Shiuchi; Arai, Satoko; and Nishizaki, Takeshi, 4,763,229, Cl. 361-433.000

Showa Denko Kabushiki Kaisha: *See—*
Kobayashi, Yukio; and Takeuchi, Masataka, 4,762,644, Cl. 252-500.000.
Takemura, Kenji; Kobayashi, Mikio; Machida, Mitsunobu; and Yoshida, Hirokazu, 4,763,133, Cl. 343-912.000.

Shreve, Patricia J.: *See—*
Baldwin, Roger A.; Laughlin, William C.; Patel, Keshav P.; and Shreve, Patricia J., 4,762,552, Cl. 75-1.00T.

Shuler, C. Calvin: *See—*
Danz, George E.; and Shuler, C. Calvin, 4,763,057, Cl. 318-809.000.

Shuster, Nicholas; and Pallat, Jerome F., to Gould Inc. Interelectrode separator system for electrochemical cells. 4,762,758, Cl. 429-144.000.

Shutske, Gregory M., to Hoechst-Roussel Pharmaceuticals Inc. Substituted 9-amino-spiro(cycloalkyl(b)quinoline-2,1'cycloalkanes). 4,762,841, Cl. 514-278.000

Shuttleworth, William E.: *See—*
Kaufman, Edwin E.; Shuttleworth, William E.; and Wiese, John R., 4,762,571, Cl. 136-234.000

Siblik, Allen D.; and Babusek, James C., to Hallen Products, Ltd Security door and lock assembly. 4,762,347, Cl. 292-147.000.

Siebens, Larry N.: *See—*
Borgstrom, Alan D.; and Siebens, Larry N., 4,762,501, Cl. 439-131.000.

Siegel, Howard; Simon, Theodore; and Schweiger, Barry D. Monitoring apparatus using telephone link. 4,763,349, Cl. 379-38.000.

Siegmeier, Rainer; Prescher, Gunther; and Maurer, Helmut, to Degussa Aktiengesellschaft. Continuous method for the production of 1,2-diols. 4,762,954, Cl. 568-867.000.

Siemens Aktiengesellschaft: *See—*
Bradt, Peter, 4,763,095, Cl. 336-96.000
Finzel, Lothar, 4,762,390, Cl. 350-96.210
Frenkel, Ferdinand; Prussas, Herbert; and Rapp, Lothar, 4,763,225, Cl. 361-388.000
Heining, Hans-Dieter; and Wick, Albert, 4,763,058, Cl. 318-807.000
Schaich, Gerhard; and Schoenauer, Ludwig, 4,763,316, Cl. 370-16.000.
Schuetz, Alfred; Mueller, Wolfgang; and Soutschek, Ewald, 4,763,301, Cl. 365-181.000
Schwierz, Theodor, 4,763,324, Cl. 370-100.000
Weigert, Kurt, 4,763,075, Cl. 324-318.000.
Wuttke, Gero, 4,762,001, Cl. 73-597.000

Sigma Instruments, Inc.: *See—*
Gamble, John G., 4,763,034, Cl. 310-181.000

Silberman, Gabriel M.: *See—*
Barzilai, Zeev; Iyengar, Vijay S.; Rosen, Barry K.; and Silberman, Gabriel M., 4,763,289, Cl. 364-578.000

Silicon Systems, Inc.: *See—*
Negahban-Hagh, Mehrdad, 4,763,088, Cl. 333-173.000.

Silverstein, Sidney, to Hunt X-Acto, Inc. Utility knife. 4,761,882, Cl. 30-162.000

Simmonds Precision: *See—*
Ortman, Michael J., 4,762,205, Cl. 188-71.200.

Simon, Georg N.: *See—*
Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, 4,762,869, Cl 524-59.000

Simon, Steven D.: *See—*
Gordon, Travis H.; and Simon, Steven D., 4,763,191, Cl 358-86.000

Simon, Theodore: *See—*
Siegel, Howard; Simon, Theodore; and Schweiger, Barry D., 4,763,349, Cl. 379-38.000

Simond, Jacques A. L.: *See—*
Combourieu, Michel; Simond, Jacques A. L.; and Monteil, Andre J C., 4,762,834, Cl. 514-252.000

Simpson, Brian K., to DRG (UK) Limited. Off-shore drilling. 4,762,185, Cl. 175-5.000

Simpson, Jay R.: *See—*
Batdorf, Robert L.; Murphy, Edmond J.; Poteat, Tommy L.; and Simpson, Jay R., 4,762,387, Cl. 350-96.200

Sims, David: *See—*
German, Randall M., Bose, Animesh, and Sims, David, 4,762,558, Cl. 75-246.000

Singer, Martin H.: *See—*
Canale, Leonard M., Collins, Michael J.; O'Brien, Paul J.; Scott, Lisa L.; and Singer, Martin H., 4,763,353, Cl. 379-157.000

Sink, William H.: *See—*
Flotow, Richard A.; and Sink, William H., 4,762,215, Cl. 192-107.00C.

Skatrud, Paul L.: *See—*
Chapman, Jerry L., Jr., Ingolia, Thomas D.; Kaster, Kevin R., Queener, Stephen W.; and Skatrud, Paul L., 4,762,786, Cl 435-172.300

SKF GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; Ernst, Horst-Manfred, Stolz, Robert; and Neder, Gunter, 4,762,207, Cl. 188-196.00D
Winkler, Otmar; Peter, Heinz; and Pfaller, Egon, 4,762,480, Cl. 418-266.000

Skogward, Kenneth O. E., to Husqvarna Aktiebolag. Arrangement of a cloth feeder in a sewing machine. 4,762,077, Cl. 112-323.000

Skriba, Michael C.: *See—*
Smeltzer, Eugene E.; Skriba, Michael C.; and McDaniel, Keith K., 4,762,647, Cl. 252-632.000

SKW Trostberg Aktiengesellschaft: *See—*
Kischel, Reinhard; Salzinger, Josef; and Schottner, Richard, 4,762,531, Cl. 48-191.000

Slezak, Sue E.: *See—*
Horan, Paul K.; and Slezak, Sue E., 4,762,701, Cl. 424-1.100

Sloan-Kettering Institute for Cancer Research: *See—*
Rettig, Wolfgang; Cordon-Cardo, Carolos; Oettgen, Herbert F., Old, Lloyd J.; Lloyd, Kenneth O.; and Ng, Jennifer, 4,762,800, Cl. 436-548.000
Watanabe, Kyoichi A.; Matulic-Adamic, Jasenka; Price, Richard W.; and Fox, Jack J., 4,762,823, Cl. 514-50.000

Sloate, Harry M. Servo valve with torque feedback. 4,762,147, Cl 137-625.640

Slocum, Barclay. Device and method for pelvic osteotomy fixation. 4,762,122, Cl. 128-92.0YP

Sluyterman, Albertus A. S.: *See—*
Vink, Nicolaas G.; and Sluyterman, Albertus A. S., 4,763,040, Cl 313-428.000

Sluyts, Domien: *See—*
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, 4,762,931, Cl. 548-166.000

Smeltzer, Eugene E.; Skriba, Michael C.; and McDaniel, Keith K., to Westinghouse Electric Corp. Ion exchange resin volume reduction 4,762,647, Cl. 252-632.000

Smith, Allen C., Jr., to Westinghouse Electric Corp. Sludge trap with internal baffles for use in nuclear steam generator. 4,762,091, Cl. 122-32.000

Smith, Gaylord D.: *See—*
Tassen, Curtis S.; and Smith, Gaylord D., 4,762,681, Cl. 420-443.000

Smith, Gerald J., to New Zealand Government Property Corporation, The. Ultraviolet radiation actinometer. 4,763,011, Cl. 250-372.000

Smith, Jack E.: *See—*
Knecht, Allen F.; Eilerman, John F.; Smith, Stanley E.; and Smith, Jack E., 4,761,917, Cl. 49-477.000

Smith, Jay S.: *See—*
Cox, Bobby E.; and Smith, Jay S., 4,761,846, Cl. 14-3.000

Smith, Lonnie L.: *See—*
Spillers, Robert L.; Martinez, Alonzo; Perry, Vergel G.; and Smith, Lonnie L., 4,762,257, Cl. 224-216.000.

Smith, Mark A.: *See—*
Pavio, Anthony M., Jr.; and Smith, Mark A., 4,763,084, Cl 331-56.000

Smith, Michael M.: *See—*
Fast, Jacob; and Smith, Michael M., 4,761,904, Cl. 40-308.000

Smith, Robert E. Acoustical vehicle horn with improved vent. 4,763,109, Cl. 340-388.000

Smith, Sidney K., Jr., to Hughes Tool Company. Slip gripping mechanism with floating cone segments. 4,762,177, Cl. 166-216.000

Smith, Stanley E.: *See—*
Knecht, Allen F.; Eilerman, John F.; Smith, Stanley E.; and Smith, Jack E., 4,761,917, Cl 49-477.000

Smith, Wilbur C.: *See—*
Besic, Dragan; and Smith, Wilbur C., 4,762,051, Cl. 92-165.00R

VOL 1093 ISS 2 AG 9 1988 UMI

SmithKline Beckman Corporation: *See—*
Finkelstein, Joseph A.; Kruse, Lawrence I.; and Leonard, Thomas B., 4,762,850, Cl. 514-392.000.
Horan, Paul K.; and Slezak, Sue E., 4,762,701, Cl. 424-1.100.

Sneed, Sonny, to Reich, Jacob L. Long wearing punch. 4,762,043, Cl. 83-688.000

Snitman, David L., to Amgen Inc. Compositions and methods for functionalizing nucleic acids. 4,762,779, Cl. 435-6.000.

Snively, Howard D.: *See—*
Higham, Graham J.; Snively, Howard D.; Nicoll, Harry G.; and Pruitt, Gerald R., 4,761,960, Cl. 62-6.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Hori, Tomoshige; and Itoh, Kensuke, 4,762,427, Cl. 374-141.000.

Snowball, Malcolm R., to William Still & Sons Limited. Water purifiers. 4,762,613, Cl. 210-192.000.

Snyder, George K., to General Motors Corporation. Method and apparatus for forming a heat exchanger turbulator and tube. 4,761,982, Cl. 72-58.000.

Societe Chimique Des Charbonnages S.A.: *See—*
Heilbrunn, Alain, 4,762,877, Cl. 524-432.000

Societe D'Etudes De Machines Thermiques: *See—*
Klepacki, Wojciech, 4,761,993, Cl. 73-115.000

Societe d'Etudes Scientifiques et Industrielles de l'Ile de France: *See—*
Besancon, Denis; and Franceschini, Jacqueline, 4,762,852, Cl 514-422.000

Societe International de Fabrication et de Diffusion de Produits Parfumes-I.P.P.: *See—*
Herbert, Wendel; and Serge, Wendel, 4,762,275, Cl. 239-6.000.

Societe Nationale d'Etude et de Construction de Monteurs d'Aviation (SNECMA): *See—*
Bouiller, Jean G.; Payen, Jean-Michel; and Ruis, Jean Pierre, 4,762,466, Cl. 416-205.000

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA): *See—*
Lardellier, Alain M. J., 4,762,462, Cl. 415-177.000.
Leclercq, Guy E. O., 4,761,949, Cl. 60-226.200.

Societe Nationale Elf Aquitaine: *See—*
Belouet, Christian; and Mautref, Michel, 4,762,687, Cl. 422-253.000

Sodeoka, Mikiko: *See—*
Shibasaki, Masakatsu; Mase, Toshiaki; Sodeoka, Mikiko; and Ogawa, Yuji, 4,762,936, Cl. 549-214.000.

Soder, Alfons: *See—*
Kreutzberger, Alfred; Soder, Alfons; and Gerhards, Hermann J., 4,762,833, Cl. 514-245.000

Sogawa, Yoshiyuki, to Fuji Jukogyo Kabushiki Kaisha. System for measuring quantity of intake air in an engine. 4,761,994, Cl. 73-118.200

Solar Turbines Incorporated: *See—*
Eberhardt, John D.; Hovde, Peter L.; Koerber, John M.; Neary, Robert J.; and Peltier, Robert V., 4,761,957, Cl. 60-650.000
Sood, Virendra M.; and Faulder, Leslie J., 4,761,948, Cl. 60-39.281

Solbach, Werner: *See—*
Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, 4,762,602, Cl. 204-206.000

Solen, Everett L.: *See—*
McGee, Allen C.; and Solen, Everett L., 4,763,071, Cl. 324-233.000.

Soletanche: *See—*
Gouvenot, Daniel, 4,762,443, Cl. 405-263.000.

Solhjell, Erik; and Rudi, Guttorm, to Tandberg Data A/S. Cleaning cassette for a magnetic tape recorder means. 4,763,216, Cl 360-128.000

Somafer S.A.: *See—*
Fougeron, Charles; Fidon, Jean J.; and Janiaut, Herve, 4,762,646, Cl. 252-628.000

Sonoda, Tomiya; Hikosaka, Takashi; and Nakamura, Hiroki, to Kabushiki Kaisha Toshiba. Perpendicular magnetic recording medium. 4,762,742, Cl. 428-141.000.

Sony Corporation: *See—*
Niikura, Tsutomu, 4,763,146, Cl. 354-75.000
Takahashi, Takao; and Inoue, Hajime, 4,763,206, Cl. 360-8.000
Watanabe, Yuzuru; Nakayama, Yoshifumi; Ando, Masanori; and Kikuchi, Masahiro, 4,763,047, Cl. 315-382.000
Yasuda, Nobuyuki, 4,763,123, Cl. 340-825.650.

Sood, Virendra M.; and Faulder, Leslie J., to Solar Turbines Incorporated. Wide range gaseous fuel combustion system for gas turbine engines. 4,761,948, Cl. 60-39.281.

Sorensen, Leif E., to Alpha Foundation, The. Process for the incineration of combustible materials. 4,762,074, Cl. 110-346.000

Soucie, William G.; Chen, Wen-Sherng; Witte, Vernon C.; Henry, George A.; and Drehkoff, W. Dennis, to Kraft, Inc. Shelf stable acid food dressings containing fibrous protein complexes. 4,762,726, Cl. 426-602.000

SOULE: *See—*
Huon de Kermadec, Jean; and Thomas, Guy M. C. M., 4,762,070, Cl. 104-173.100.

Soutschek, Ewald: *See—*
Schuetz, Alfred; Mueller, Wolfgang; and Soutschek, Ewald, 4,763,301, Cl. 365-181.000

Spalding & Evenflo Companies, Inc.: *See—*
Molitor, Robert P.; McDermott, Bernard; Swistro, Dominick J.; and Mahaffey, Steven J., 4,762,322, Cl. 273-77.00A.

Sparacio, Frank J.: *See—*
Emma, Philip G.; Pomerene, James H.; Rao, Gururaj S.; Rechtschaffen, Rudolph N.; Sachar, Howard E.; and Sparacio, Frank J., 4,763,245, Cl. 364-200.000.

Spector, Deborah H.; and Spector, Stephen A., to University of California, The Regents of the. Method and composition for screening and diagnosing "HCMV". 4,762,780, Cl. 435-6.000.

Spector, George: *See—*
Sears, Jack L.; and Spector, George, 4,762,233, Cl. 206-627.000.

Spector, Stephen A.: *See—*
Spector, Deborah H.; and Spector, Stephen A., 4,762,780, Cl. 435-6.000

Spence, John R., to Rockwell International Corporation. Clocked CMOS bus precharge circuit having level sensing. 4,763,023, Cl. 307-480.000

Spencer, Allen C.: *See—*
Grunwald, John J.; and Spencer, Allen C., 4,762,768, Cl. 430-324.000

Spicer, David A.: *See—*
Lehman, Harvey R.; Lidinsky, William P.; Mussman, Harry E.; Spicer, David A.; and Vlack, David, 4,763,317, Cl. 370-58.000.

Spiller, Gerhard: *See—*
Bauer, Karl-Heinz; and Spiller, Gerhard, 4,763,101, Cl. 338-198.000.

Spillers, Robert L.; Martinez, Alonzo; Perry, Vergel G.; and Smith, Lonnie L., to Larvco, Inc. Hose handler. 4,762,257, Cl. 224-216.000.

Spinner GmbH, Elektrotechnische Fabrik: *See—*
Pitschi, Franz-Xaver, 4,763,090, Cl. 333-260.000.

Spoeler, Johannes G.; and Grapentin, Manfred, to Mannesmann Aktiengesellschaft. Rail with suspension and conductor holding claws. 4,762,069, Cl. 104-107.000.

Sprague Electric Company: *See—*
Novacek, William G., 4,763,227, Cl. 361-433.000.

Springer, Hartmut: *See—*
Schlafer, Ludwig; Springer, Hartmut; and Kunze, Michael, 4,762,916, Cl. 534-631.000.

Spurlock, Kim E.: *See—*
Glaier, Thomas A.; Johnson, Neil H.; Knox, Harold L.; Reschly, David C.; and Spurlock, Kim E., 4,762,073, Cl. 110-101.0CD.

Squibb Corporation: *See—*
Breuer, Hermann; and Treuner, Uwe D., 4,762,922, Cl. 540-363.000.

Srinivasan, Raghavan: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000.

Stache, Ulrich; Kraemer, Hans P.; and Sedlacek, Hans-Harald, to Hoechst Aktiengesellschaft. Monofunctional and bisfunctional anthraquinone-(oxy-2,3-oxidopropanes), processes for their preparation, and their use as drugs. 4,762,648, Cl. 260-383.000.

Staerzl, Richard E., to Brunswick Corporation. Knock detection circuit with gated automatic gain control. 4,761,992, Cl. 73-35.000.

Stafford Hill Arms Company Limited: *See—*
Hill, Anthony, 4,762,304, Cl. 254-93.00R.

Stafford, John W.: *See—*
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., 4,762,386, Cl. 350-96.200.
Gordon, Eugene I.; Nielsen, Robert J.; and Stafford, John W., 4,762,395, Cl. 350-252.000.

Stahl, Daniel E.: *See—*
Rudy, William J., Jr.; Shaffer, Howard R.; and Stahl, Daniel E., 4,762,507, Cl. 439-595.000.

Stahlecker, Fritz, to Fritz Stahlecker; and Hans Stahlecker. Arrangement for the prestrengthening of thread components to be twisted together. 4,761,946, Cl. 57-328.000.

Staiger, Wolfgang: *See—*
Rau, Norbert; Hubner, Gerd; Staiger, Wolfgang; Brodmann, Rainer; and Gerstorfer, Oskar, 4,763,006, Cl. 250-561.000.

Staker, Donald D.; and Kain, William S., to National Distillers and Chemical Corporation. Compositions and process for alfalfa drying. 4,762,724, Cl. 426-302.000.

Staley Continental, Inc.: *See—*
McDaniel, Robert S., Jr.; McCurry, Patrick M.; Short, Rolland W. P.; and Glor, Paul R., 4,762,918, Cl. 336-127.000.

Stamatoff, James B.: *See—*
Leslie, Thomas M.; Yoon, Hyun-Nam; DeMartino, Ronald N.; and Stamatoff, James B., 4,762,912, Cl. 528-503.000.

Stanadyne, Inc.: *See—*
Kowal, Steven J., 4,762,100, Cl. 123-90.580.

Stancliffe, Norman J.; Mercer, Frank B.; and Kennerley, Cyril, to Netlon Limited. Method of making high-profile structures. 4,762,581, Cl. 156-84.000.

Standard Elektrik Lorenz AG: *See—*
Strobel, Otto A., 4,762,988, Cl. 250-205.000.

Standard Elektrik Lorenz, A.G.: *See—*
Thiel, Norbert; Gerstle, Volker; Zondler, Rolf; and Lederle, Otto, 4,762,733, Cl. 427-55.000.

Standard Oil Company: *See—*
Guttmann, Andrew T.; Brazdil, James F.; and Grasselli, Robert K., 4,762,961, Cl. 585-661.000.
Paspek, Stephen C.; and Eppig, Christopher P., 4,762,609, Cl. 208-187.000

Stankus, John J.; and Fry, Boyd M., to International Business Machines Corporation. Method of obtaining surface mount component planarity. 4,761,880, Cl. 29-840.000.

Starbird, Roberta P.: *See—*
Ashford, Thomas J.; Burns, Nancy A.; Flagg, Richard L.; Iwaskiw, Christine T.; and Starbird, Roberta P., 4,763,277, Cl. 364-513.000

Stark, Walter. Dehumidification and cooling system. 4,761,966, Cl. 62-176.600

Starr, Robert L.: *See—*
Parker, Richard W.; Beery, James P.; Boblitt, Donald L.; and Starr, Robert L., 4,761,943, Cl. 56-202.000

Stauffer Chemical Co.: *See—*
Gray, Reed A.; and Pallos, Ferenc M., 4,762,548, Cl. 71-100.000
Knudsen, Christopher G., 4,762,551, Cl. 71-103.000.

STC PLC: *See—*
Robertson, Alexander J., 4,762,580, Cl. 156-83.000.

Steacy, Robert J., to Otis Elevator Company. Escalator handrail guide 4,762,217, Cl. 198-337.000

Steele, Douglas S., to General Electric Company. Ionization detector with conductive signal and ground traces. 4,763,008, Cl. 250-385.100.

Stefan, Alexander. Storage and rapid retrieval system. 4,762,457, Cl. 414-276.000

Steffens, Peter: *See—*
Schmitt, Robert; and Steffens, Peter, 4,763,068, Cl. 324-126.000

Steinberner, Udo: *See—*
Ackermann, Hans; Koecher, Ralf; Steinberner, Udo; and Michel, Otto, 4,762,467, Cl. 417-54.000

Steiner, Walter. Modular eyeglasses. 4,762,406, Cl. 351-154.000.

Steinhauer, Eric: *See—*
Anger, Wilhelm; and Steinhauer, Eric, 4,762,407, Cl. 351-204.000

Steinhobel, Brian A.: *See—*
van der Merwe, Deon A.; and Steinhobel, Brian A., 4,762,458, Cl. 414-378.000

Steinkuhl, Bernd: *See—*
Rassmann, Christoph; Breuer, Oswald; and Steinkuhl, Bernd, 4,762,372, Cl. 299-91.000

Stephens, F. Clark. Switching gas-discharge ion lasers. 4,763,336, Cl. 372-81.000.

Stern, Lee W.: *See—*
Paul, Gary E.; Carr, Ronald H.; and Stern, Lee W., 4,762,673, Cl 376-333.000

Sternby, Jan P.: *See—*
Gummesson, Bengt-Ake G.; Petersen, Preben A.; and Sternby, Jan P., 4,762,618, Cl. 210-637.000.

Stevens, Fred J., to United States of America, Energy. Size-exclusion chromatography system for macromolecular interaction analysis. 4,762,617, Cl. 210-635.000

Stevens, Rex R.: *See—*
Hucul, Dennis A.; and Stevens, Rex R., 4,762,858, Cl. 518-714.000.

Stevens, Vernon C., to Ohio State University, The. Antigenic modification of polypeptides. 4,762,913, Cl. 530-345.000.

Stewart, Robert C.: *See—*
Wozniak, Richard F.; Stewart, Robert C.; and Williams, Peter C., 4,762,301, Cl. 251-171.000.

Sticht, Walter. Production plant with several single stations. 4,762,218, Cl. 198-345.000

Stickel, Tedd K., to Unisys Corporation. CMOS input buffer receiver circuit with ultra stable switchpoint. 4,763,021, Cl. 307-475.000.

Stissing Havbrugsartikler APS: *See—*
Stissing, Steen, 4,762,084, Cl. 119-3.000.

Stissing, Steen, to Stissing Havbrugsartikler APS. Fish breeding net. 4,762,084, Cl. 119-3.000.

Stluka, Eugene F.; and Huber, William J., to Florig Equipment Company, Inc. Air operated positive lock for refuse trailer and the like 4,762,345, Cl. 292-26.000.

Stoffel, Kurt, to K. R. Pfiffner Engineering. Face and internal turning head. 4,762,037, Cl. 82-2.00E.

Stogryn, Eugene L.; and Sartori, Guido, to Exxon Research and Engineering Company. Diaminoether compositions. 4,762,934, Cl. 548-569.000

Stoll, Kurt; and Hihn, Gerhard. Piston. 4,762,052, Cl. 92-172.000.

Stoll, Kurt. Positioning device. 4,762,460, Cl. 414-750.000

Stoll, Mark S.; Brodin, Glenn H.; and Miller, LeRoy, to Liberty Diversified Industries. Snap open tote container assembly. 4,762,270, Cl 229-23.00A.

Stolle, Ralph J.; and Beck, Lee R., to Stolle Research & Development Corporation. Anti-mastitis polyvalent vaccine, method of administration and method for production thereof. 4,762,712, Cl. 424-92.000.

Stolle Research & Development Corporation: *See—*
Stolle, Ralph J.; and Beck, Lee R., 4,762,712, Cl. 424-92.000

Stoltman, Donald D.: *See—*
Stettner, Ernest R.; and Stoltman, Donald D., 4,762,279, Cl. 239-408.000

Stolz, Robert: *See—*
Olschewski, Armin; Brandenstein, Manfred; Ernst, Horst-Manfred; Stolz, Robert; and Neder, Gunter, 4,762,207, Cl. 188-196.00D

Stone, Frederick A.: *See—*
Cobern, Martin E.; Stone, Frederick A.; and Hamlin, Edmund M., 4,761,889, Cl. 33-302.000

Stoneleigh Trust, Trustees of the: *See—*
Massa, Frank, 4,763,307, Cl. 367-174.000.

Stoner, Donald R.: *See—*
Cheng, Wenche W.; Stoner, Donald R.; and Keller, Harold T., deceased, 4,762,674, Cl. 376-405.000

Storti, Gianfranco: *See—*
Fagiolini, Floriano; and Storti, Gianfranco, 4,762,027, Cl. 76-25.00A

Stoughton, Robert; and Kokkinis, Theodore, to University of California, The Regents of the. Robotic manipulator having three degrees of freedom. 4,762,016, Cl. 74-479.000

Stradella, Fabio, to G.S.D. Sports Equipment S.R.L. Underwater pressure relief valve. 4,762,145, Cl. 137-599.200

Strait, Chad A.; Lancaster, Gerald M.; and Tabor, Ricky L., to Dow Chemical Company, The. Method of grafting maleic anhydride to polymers. 4,762,890, Cl. 525-257.000

Striker, Richard A.: *See—*
Modic, Frank J.; and Striker, Richard A., 4,762,859, Cl. 521-82.000

Strobel, Otto A., to Standard Elektrik Lorenz AG. Circuit arrangement for stabilizing an optical resonator. 4,762,988, Cl. 250-205.000

Strong, Dave R., to Nabisco Brands, Inc. Process for making coextruded filled cookies. 4,762,723, Cl. 426-283.000

Stumpp, Gerhard: *See—*
Schoneck, Gunter; Stumpp, Gerhard; and Wessel, Wolf, 4,762,107, Cl. 123-478.000

Sturm, Elmar; Gallay, Jean J.; Kristinsson, Haukur; and Pissiotas, Georg, to Ciba-Geigy Corporation. 5-(azolyloxyphenylcarbamoyl)-barbituric acid derivatives as anthelmintics. 4,762,830, Cl 514-270.000

Su, Tsung-Yuan, to Union Carbide Corporation. Fuse assembly for solid electrolytic capacitor. 4,763,228, Cl. 361-433.000

Suarez, Adolfo B.: *See—*
Westbrook, James E.; and Suarez, Adolfo B., 4,763,318, Cl. 370-84.000

Suchevits, Edward E. Alarm device. 4,762,082, Cl. 116-87.000

Suda, Hirofumi; Kaneda, Naoya; and Kozuki, Susumu, to Canon Kabushiki Kaisha. Automatic focussing system including in-focus position prediction means. 4,762,986, Cl. 250-201.000

Sudol, George A.: *See—*
Kachnowski, Thomas A.; Bratro, Frederick E.; Kaplan, Elhanan, and Sudol, George A., 4,761,975, Cl. 70-232.000

Sue, Toshio: *See—*
Matsubayashi, Hiroshi; Watanabe, Naoto; Kobayashi, Seishichi; Sue, Toshio; and Taira, Kazuo, 4,762,245, Cl. 220-269.000

Suga, Takeshi: *See—*
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, 4,761,925, Cl. 52-167.000

Suga, Yoshinori: *See—*
Okano, Shigeaki; Hayashi, Katsuhiko; Sakurazawa, Yoshiteru; and Suga, Yoshinori, 4,762,882, Cl. 525-74.000

Sugihara, Kouki, to Scovill Japan Kabushiki Kaisha. Structure of snap. 4,761,863, Cl. 24-692.000

Sugimoto, Keisuke: *See—*
Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, 4,762,605, Cl. 204-406.000

Sugimura, Nobuyuki. Method and appartus for machining a screw thread with little dispersion. 4,761,891, Cl. 33-503.000

Sugita, Masao: *See—*
Bandou, Masaaki; Sugita, Masao; and Marumo, Takachi, 4,762,302, Cl. 251-360.000

Sugiura, Masamichi: *See—*
Nakatani, Munehiro; and Sugiura, Masamichi, 4,763,200, Cl. 358-282.000

Sugiyama, Yuji: *See—*
Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, 4,762,605, Cl. 204-406.000

Sullivan, Charles T.: *See—*
Husain, Anis; and Sullivan, Charles T., 4,762,382, Cl. 350-96.120.

Sullivan, Daniel J.: *See—*
Lloyd, William E.; and Sullivan, Daniel J., 4,762,854, Cl 514-557.000

Sulzer Brothers Limited: *See—*
Purtschert, Werner, 4,762,536, Cl. 55-66.000

Sum, Phaik E.: *See—*
Wissner, Allan; Sum, Phaik E.; and Schaub, Robert E., 4,762,942, Cl. 558-169.000

Suman, Michael J.: *See—*
Boerema, Edward T.; Suman, Michael J.; and Fleming, Dennis J., 4,762,359, Cl. 296-97.00K

Sumi, Akiyasu, to Canon Kabushiki Kaisha. Motor-built-in photographic lens. 4,763,150, Cl. 354-271.100.

Sumikawa, Seiji; Furuya, Yoichiro; and Sutoh, Shinji, to Diesel Kiki Kabushiki Kaisha. Car air conditioner with heat storage tank for cooling energy. 4,761,967, Cl. 62-201.000

Sumitomo Chemical Company, Limited: *See—*
Ito, Yoshihiko; Hayashi, Tamio; Kawamura, Norio; and Takemoto, Ichiki, 4,762,948, Cl. 562-496.000

Sumitomo Electric Industries, Ltd.: *See—*
Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, 4,762,965, Cl. 174-23.00R
Uemiya, Takafumi; Shibata, Yutaka; Nishimura, Akira; Niwa, Shin-ichiro; and Osawa, Yoshitaka, 4,762,381, Cl. 350-96.110.

Sumitomo Heavy Industries, Ltd.: *See—*
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000

Sumitomo Light Metal Industries, Ltd.: *See—*
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl 165-11.100

VOL 1093 ISS 2 AG 9 1988 UMI

Sumitomo Metal Industries, Ltd.: *See—*
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Sumitomo Naugatick Co., Ltd.: *See—*
Hirai, Mikio; Nishikubo, Yoshiaki; Yoshida, Tomio; and Ochi, Tsuneo, 4,762,886, Cl. 525-70.000

Sumner, Cyril R.: *See—*
Barker, James M.; Grigar, Larry L.; Schramek, Dennis E.; Reid, Starlin M.; and Sumner, Cyril R., 4,762,067, Cl. 102-313.000.

Sun, Robert L.; and Kenney, James F., to Johnson & Johnson Products, Inc. Hot melt pressure sensitive adhesives. 4,762,888, Cl. 525-125.000

Sundstrand Corporation: *See—*
Bundy, John E., 4,763,054, Cl. 318-301.000.
Ewbank, Michael E.; and Heitz, Steven A., 4,762,146, Cl. 137-625.300
Murphy, Mark A., 4,761,866, Cl. 29-157.30C

Super, Peter J.: *See—*
Schultz, Larry R.; Super, Peter J.; and van Leynseele, Francis J., 4,763,266, Cl. 364-433.000

Superior Electric Company, The: *See—*
Lundin, Robert S.; and Petritis, Demetris C., 4,763,052, Cl. 318-254.000

Sutherland, James F.: *See—*
Cook, Henry F.; Sutherland, James F.; and Weisner, Ronald J., 4,762,663, Cl. 376-259.000

Sutoh, Shinji: *See—*
Sumikawa, Seiji; Furuya, Yoichiro; and Sutoh, Shinji, 4,761,967, Cl. 62-201.000

Sutphin, Melvin W.; and Taylor, Theodore E., to General Electric Company. Digital word synchronizing arrangement. 4,763,339, Cl 375-114.000

Suyama, Michiyo; and Akama, Yasuyuki, to Mitsubishi Denki Kabushiki Kaisha. Position determining apparatus for vehicle. 4,763,269, Cl. 364-449.000

Suzuki, Akira; and Matsukura, Hideki, to Kirin Beer Kabushiki Kaisha System for automatically handling roller bottles for cell cultivation. 4,761,936, Cl. 53-510.000

Suzuki, Akira; and Furukawa, Katsuki, to Sharp Kabushiki Kaisha Process for producing a SiC semiconductor device. 4,762,806, Cl 437-100.000

Suzuki, Shigenobu: *See—*
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, 4,761,925, Cl. 52-167.000.

Suzuki, Takeshi: *See—*
Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, 4,762,829, Cl. 514-218.000

Suzuki, Toshiro. Method of preparing and molding mortar or like. 4,762,562, Cl. 106-97.000

Suzuki, Yasuo: *See—*
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, 4,763,167, Cl. 355-14.00R

Suzuki, Yoshiyuki, to Canon Kabushiki Kaisha. Image processing apparatus and method of adjusting same. 4,763,199, Cl. 358-280.000.

Svecia Antiqua SA: *See—*
Nilsson, Ingvar, 4,762,313, Cl. 271-187.000.

Svenska Sockerfabriks AB: *See—*
Kallenius, Gunilla P.; Lundblad, Karl A.; Mollby, Nils R.; Svensson, Stefan B.; and Winberg, Jan, 4,762,824, Cl. 514-54.000.

Svensson, Stefan B.: *See—*
Kallenius, Gunilla P.; Lundblad, Karl A.; Mollby, Nils R.; Svensson, Stefan B.; and Winberg, Jan, 4,762,824, Cl. 514-54.000.

Swain, Fiona M.: *See—*
Edwards, Peter J.; Jeffryes, Carol A.; and Swain, Fiona M., 4,762,847, Cl. 514-336.000

Swannie, Mark K. Light bulb unit for a slit lamp. 4,762,409, Cl 351-214.000

Swansiger, William A., to United States of America, Energy. Apparatus to recover tritium from tritiated molecules. 4,762,685, Cl. 422-159.000.

Swanson, Wilbur W., to Amax Inc. Synthesis of molybdenum hexacarbonyl. 4,762,699, Cl. 423-417.000

Swistro, Dominick J.: *See—*
Molter, Robert P.; McDermott, Bernard; Swistro, Dominick J.; and Mahaffey, Steven J., 4,762,322, Cl. 273-77.00A.

Swoboda, Johann: *See—*
Hambrecht, Juergen; Illers, Karl H.; Echte, Adolf; and Swoboda, Johann, 4,762,874, Cl. 524-151.000

Syntex (U.S.A.) Inc.: *See—*
Nestor, John J., 4,762,821, Cl. 514-19.000

Szafarz, Henry. Safety guard for a power tool discharge chute. 4,761,901, Cl. 37-262.000.

Sze, Simon M.: *See—*
Ng, Kwok K.; and Sze, Simon M., 4,763,183, Cl. 357-23.700

Szporny, Laszlo : *See—*
Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, 4,762,944, Cl. 560-051.000

T & N Materials Research Limited: *See—*
Denton, Sven T.; and Atkinson, Alan, 4,762,641, Cl. 252-378.00R

Tabata, Koji: *See—*
Ohta, Yoshio; and Tabata, Koji, 4,762,071, Cl. 105-8.100.

Tabata, Toshiroh: *See—*
Matsubara, Shigeru; Mori, Tohru; and Tabata, Toshiroh, 4,763,119, Cl. 340-747.000

Tabei, Masatoshi, to Fuji Photo Film Co., Ltd. Interline transfer CCD sensor with a CID readout stage. 4,763,198, Cl. 358-213.260

Tabor, Ricky L.: *See—*
Strait, Chad A.; Lancaster, Gerald M.; and Tabor, Ricky L., 4,762,890, Cl. 525-257.000.

Tackle House Co., Ltd.: *See—*
Ninomiya, Masaki, 4,761,910, Cl. 43-42.310.

Tagat, Jayaram R.: *See—*
McCombie, Stuart W.; and Tagat, Jayaram R., 4,762,827, Cl. 514-192.000

Taguchi, Masaaki: *See—*
Shimoda, Sadashi; Harada, Takamasa; Taguchi, Masaaki, and Ito, Kokichi, 4,762,400, Cl. 350-350.00S.

Tahara, Yasuteru: *See—*
Yamamoto, Takashi; Murata, Ryuji; Tahara, Yasuteru; Terada, Hiromu; and Sakunaga, Kenichi, 4,762,392, Cl. 350-96.300.

Taira, Kazuo: *See—*
Matsubayashi, Hiroshi; Watanabe, Naoto; Kobayashi, Seishichi; Sue, Toshio; and Taira, Kazuo, 4,762,245, Cl. 220-269.000.

Taiyo Pharmaceutical Industry Co., Ltd.: *See—*
Nakaoku, Shozo; Sakuma, Kazuhiko; Oshika, Yasuhiro; and Ohira, Kazuo, 4,762,927, Cl. 544-378.000

Tajima, Takayoshi: *See—*
Higashi, Izumi; Adachi, Akio; Tajima, Takayoshi; and Hiroshige, Norimichi, 4,762,048, Cl. 89-14.100.

Takahama, Teizo: *See—*
Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, 4,762,605, Cl. 204-406.000

Takahara, Naoki: *See—*
Fujii, Noriaki; Iwata, Takeshi; Oikawa, Toshihiro; and Takahara, Naoki, 4,762,099, Cl. 123-90.440.

Takahashi, Akira, to Ricoh Company, Ltd. Camera status display device. 4,763,149, Cl. 354-217.000

Takahashi, Isao, to Sanken Electric Co., Ltd. AC motor drive method and system using a pulse width modulated inverter. 4,763,060, Cl. 318-811.000

Takahashi, Junichi, to Ricoh Company, Ltd. Image sensor driving circuit. 4,763,007, Cl. 250-578.000

Takahashi, Masaru: *See—*
Kobayashi, Masahiro; and Takahashi, Masaru, 4,762,671, Cl. 376-316.000

Takahashi, Osamu; and Sakai, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material containing a hydroquinone derivative and a pyrazoloazole coupler. 4,762,773, Cl. 430-380.000

Takahashi, Takao; and Inoue, Hajime, to Sony Corporation. Apparatus for recording video and audio signals. 4,763,206, Cl. 360-8.000

Takahashi, Tetsujiro: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000.

Takahashi, Toshiro; Kuwabara, Ken-ichi; and Okada, Masahiro, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 4,762,769, Cl. 430-264.000

Takai, Yasuyuki, to Sharp Kabushiki Kaisha. Graphic display system for personal computer. 4,763,118, Cl. 340-735.000

Takamizawa, Minoru: *See—*
Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki; and Ohsaki, Hiromi, 4,762,810, Cl. 501-88.000

Takamura, Masashi; Ushiro, Seimei; Kobayashi, Kiyotaka; Cho, Michio; and Nakada, Kimiaki, to Fuji Photo Film Co., Ltd. Water-resistant camera with automatic internal air-pressure adjustment. 4,763,145, Cl. 354-64.000

Takarada, Masaaki: *See—*
Marui, Tomohiro; Takarada, Masaaki; Shimura, Yoshiaki; Mita, Minoru; and Horii, Kiyoshi, 4,762,148, Cl. 137-808.000.

Takata, Akira; and Fujii, Koichi, to Ricoh Company, Ltd. Programmable logic device having plural programmable function cells. 4,763,020, Cl. 307-465.000

Takayama, Kazushige, to Ichikoh Industries Limited. Incandescent lamp unit. 4,763,038, Cl. 313-318.000.

Takayama, Tsutomu: *See—*
Kinoshita, Takao; Tojo, Akihiko; Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, 4,763,204, Cl. 358-335.000.

Takechi, Moriaki, to Mitsubishi Denki Kabushiki Kaisha. Superconducting magnet apparatus with emergency run down unit. 4,763,221, Cl. 361-141.000

Takeda, Hisanobu, to Aisin Seiki Kabushiki Kaisha. Washing device for parts of body. 4,761,837, Cl. 4-443.000.

Takeda, Kenji: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060.

Takeda, Masami; and Muro, Tsuneaki, to Mitsui Petrochemical Industries, Ltd. Polymer composition and the use thereof. 4,762,878, Cl. 524-490.000

Takehisa, Fumitaka; Yokoi, Mitsuyoshi; and Kondoh, Fumio, to Nippondenso Co., Ltd. Die casting arrangement. 4,762,163, Cl. 164-72.000

Takei, Masahiro; Kozuki, Susumu; Masui, Toshiyuki; Hirasawa, Masahide; and Kashida, Motokazu, to Canon Kabushiki Kaisha. Data processing device for interpolation. 4,763,293, Cl. 364-723.000.

Takei, Toshihiro: *See—*
Inagaki, Mitsuo; Sasaya, Hideaki; Takeda, Kenji; Hattori, Yoshiyuki; Imoto, Yuzo; and Takei, Toshihiro, 4,762,300, Cl. 251-129.060.

Takemoto, Ichiki: *See—*
Ito, Yoshihiko; Hayashi, Tamio; Kawamura, Norio; and Takemoto, Ichiki, 4,762,948, Cl. 562-496.000.

Takemura, Kenji; Kobayashi, Mikio; Machida, Mitsunobu; and Yoshida, Hirokazu, to Showa Denko Kabushiki Kaisha. Reflector for circular polarization antenna and process for the production thereof. 4,763,133, Cl. 343-912.000

Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, to Sapporo Breweries Limited; Daicel Chemical Industries, Ltd.; and Ito, Etsuo Polysaccharide RON substance. 4,762,825, Cl. 514-54.000

Takesue, Toshihiro: *See—*
Murahashi, Takashi; Ichihara, Yoshiyuki; Nakazawa, Toshihiko; and Takesue, Toshihiro, 4,763,134, Cl. 346-1.100.

Takeuchi, Hirofumi: *See—*
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200.

Takeuchi, Hitoshi: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000.

Takeuchi, Kunihiro, to Diesel Kiki Co., Ltd. Frequency discrimination circuit. 4,763,025, Cl. 307-526.000

Takeuchi, Masataka: *See—*
Kobayashi, Yukio; and Takeuchi, Masataka, 4,762,644, Cl. 252-500.000.

Takeuchi, Mikio: *See—*
Tomoda, Takahisa; Takeuchi, Mikio; Nakano, Kinichiro; and Hirano, Motoki, 4,763,121, Cl. 340-825.540.

Takeuchi, Toshio; and Atsumi, Shinya, to Shansin Kogyo Kabushiki Kaisha. Trim tab actuator for marine propulsion device. 4,762,079, Cl. 114-152.000

Takeya, Mitsumasa: *See—*
Miki, Toshiyuki; and Takeya, Mitsumasa, 4,762,569, Cl. 106-476.000

Takiron Co., Ltd.: *See—*
Shikinami, Yasuo, 4,762,899, Cl. 528-49.000.

Takizawa, Minoru: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,762,568, Cl. 106-403.000.

Tamagawa, Shigehisa; and Fuchizawa, Tetsuro, to Fuji Photo Film Co., Ltd. Heat-sensitive recording paper. 4,762,816, Cl. 503-200.000.

Tamba, Shinichi; Yamamoto, Hitoshi; and Shimizu, Akihito, to Kawasaki Jukogyo Kabushiki Kaisha. Lubricating device for overhead valve engine. 4,762,098, Cl. 123-90.330.

Tamba, Shinichi: *See—*
Fujikawa, Tetsuzo; Hirata, Makizo; Tamba, Shinichi; and Yamane, Yoshiro, 4,762,094, Cl. 123-90.600.

Tams, Joseph. Metered float controlled valve. 4,762,142, Cl. 437-315.000.

Tamura, Masami: *See—*
Ogino, Sekiya; Inoue, Shigehiko; Tomai, Touru; and Tamura, Masami, 4,762,165, Cl. 164-457.000

Tamura, Takahiro: *See—*
Sakurai, Kazuo; and Tamura, Takahiro, 4,762,478, Cl. 418-55.000

Tamura, Toshiya: *See—*
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi; Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000

Tanabe, Kazumi: *See—*
Kanno, Tetsuo; and Tanabe, Kazumi, 4,763,212, Cl. 360-99.000

Tanabe Seiyaku Co., Ltd.: *See—*
Yamada, Yoshihisa; Matsuoka, Yuzo; and Matsumoto, Mamoru, 4,762,839, Cl. 514-259.000

Tanaka, Fusatoshi: *See—*
Hanafusa, Hiroyuki; Tanaka, Fusatoshi; Nakayama, Hideo; and Nakatani, Shuichi, 4,762,111, Cl. 123-647.000

Tanaka, Masayuki: *See—*
Mashimo, Satoshi; Tanaka, Masayuki; and Kinoshita, Takashi, 4,762,745, Cl. 428-252.000

Tanaka, Nobuyoshi: *See—*
Kinoshita, Takao; Tojo, Akihiko; Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, 4,763,204, Cl. 358-335.000

Tanaka, Takeo; Sugimoto, Keisuke; Sugiyama, Yuji; Shiraishi, Hideo; Takahama, Teizo; and Masuda, Masahiko, to Fuji Electric Co., Ltd Oxygen sensor. 4,762,605, Cl. 204-406.000

Tanaka, Toshihiro: *See—*
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000

Tanaka, Toshihiro: *See—*
Hirota, Hiromi; Nakakura, Hirofumi; Ishikawa, Haruo; Oyabu, Hajime; Nakano, Akihisa; and Tanaka, Toshiichiro, 4,762,057, Cl. 99-348.000

Tanaka, Toshiyasu; and Ariga, Sadakazu, to Du Pont de Nemours, E. I., and Company. Optical connector receptacle and plug. 4,762,388, Cl 350-96.200

Tandberg Data A/S: *See—*
Solhjell, Erik; and Rudi, Guttorm, 4,763,216, Cl. 360-128.000

Tang, Sang T., to Babcock Display Products, Inc. Non-soldered lead apparatus. 4,763,223, Cl. 361-380.000

Taniguchi, Haruyuki: *See—*
Watanabe, Kenichi; and Taniguchi, Haruyuki, 4,762,306, Cl 267-195.000

Taniguchi, Hideo: *See—*
Ueyama, Seiji; Taniguchi, Hideo; and Ogata, Hiromi, 4,762,432, Cl 400-241.100

Taniguchi, Michio: *See—*
Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, 4,761,894, Cl. 34-39.000

Taniguchi, Nobuyuki; Niwa, Masatake; Fijii, Akira; Hoda, Takeo; Nakai, Masaaki; Sekida, Minoru; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Camera system. 4,763,144, Cl. 354-21.000

Taniguchi, Nobuyuki: *See—*
Ishikawa, Norio; Ishimura, Toshihiko; Taniguchi, Nobuyuki, Akada, Yasuaki; and Seki, Reiji, 4,763,156, Cl. 354-442.000
Ishimura, Toshihiko; Ishikawa, Norio; Akada, Yasuaki; Seki, Reiji, and Taniguchi, Nobuyuki, 4,763,153, Cl. 354-400.000

Tanimichi, Jisaku: *See—*
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi, Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000

Tanis, Peter G. Aircraft battery assembly. 4,762,978, Cl. 219-209.000

Taniwaki, Michio: *See—*
Oda, Hajime; Saito, Hiroyuki; Arai, Keiji; Misawa, Atsushi, Tamura, Toshiya; Taniwaki, Michio; and Niwa, Katsuhito, 4,763,155, Cl. 354-435.000

Tao, Deh C.: *See—*
Denny, Clifford M.; Findlay, Hugh T.; Popyach, Stephen A.; and Tao, Deh C., 4,762,431, Cl. 400-120.000

Tao, Hiroaki: *See—*
Miyazaki, Akira; Bansho, Kenji; Kimura, Akira; and Tao, Hiroaki, 4,762,691, Cl. 423-24.000

Tao, Xiou: *See—*
Wu, Shudong; Chen, Xiangzhen; and Tao, Xiou, 4,762,417, Cl 356-351.000

Tardy, Andre : *See—*
Fevrier, Herve ; Robieux, Jean; and Tardy, Andre , 4,763,009, Cl 250-458.100

Tasch, Al F., Jr., to Motorola, Inc. High density non-charge-sensing DRAM cell. 4,763,181, Cl. 357-23.600

Tassen, Curtis S.; and Smith, Gaylord D., to Inco Alloys International, Inc. Carburization resistant alloy. 4,762,681, Cl. 420-443.000

Taszarek, Bruce J.: *See—*
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000

Tate, Harold: *See—*
Savage, Carl P.; Knight, John E.; Graves, J. W.; and Tate, Harold, 4,761,847, Cl. 14-69.500

Tateoka, Hitoshi: *See—*
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouichi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000.

Tatum, David M. Seal and seal shield assembly for rotary drill bits 4,762,189, Cl. 175-371.000

Taylor, Conrad C. Combination lawn mower washer and sharpener. 4,762,278, Cl. 239-281.000

Taylor, Norma L. Washcloth. 4,761,849, Cl. 15-222.000

Taylor, Scott D.: *See—*
Mahoney, John F.; Taylor, Scott D.; and Perel, Julius, 4,762,975, Cl. 219-69.00R

Taylor, Theodore E.: *See—*
Sutphin, Melvin W.; and Taylor, Theodore E., 4,763,339, Cl 375-114.000

Tazaki, Mitsuo; and Ohata, Kenji, to Kubota, Ltd. Screw conveyor type drying apparatus. 4,761,897, Cl. 34-180.000.

Techlan, Inc.: *See—*
Green, Michael W., 4,763,329, Cl. 371-11.000

Technip Geoproduction: *See—*
Thomas, Pierre-Armand; Naudin, Jean C.; and Ningler, Michel, 4,762,442, Cl. 405-196.000

Teepak, Inc.: *See—*
Bridgeford, Douglas J., 4,762,564, Cl. 106-204.000

Teijin Chemicals, Ltd.: *See—*
Miyauchi, Masayoshi; and Ohara, Osamu, 4,762,873, Cl. 524-128.000

Tektronix, Inc.: *See—*
Blattner, John D.; Moser, David B.; and Deleganes, Sam M., 4,763,117, Cl. 340-712.000
Caspell, George J., 4,763,029, Cl. 307-600.000
Fladstol, Gary R., 4,763,067, Cl. 324-121.00R.
Jeng, Yih-Chyun, 4,763,105, Cl. 340-347.0AD.

Teleco Oilfield Services Inc.: *See—*
Cobern, Martin E.; Stone, Frederick A.; and Hamlin, Edmund M., 4,761,889, Cl. 33-302.000

Teledyne Industries, Incorporated: *See—*
Penrice, Thomas W.; and Bost, James, 4,762,559, Cl. 75-248.000

Telefunken Electronic GmbH: *See—*
Reuschle, Roland, 4,763,082, Cl. 330-295.000

VOL 1093 ISS 2 AG 9 1988 UMI

Temmesfeld, Angelika B., to Temtec Fahrzeugtechnik Entwicklungsgesellschaft mbH. Orifice ring for a filling cap. 4,762,247, Cl. 220-303.000.

Temple, Russell A.; Wesseler, Martin G.; and Harper, David C., to Xerox Corporation. Multimagnification optical system in a dual mode copier. 4,763,159, Cl. 355-3.00R.

Temtec Fahrzeugtechnik Entwicklungsgesellschaft mbH: *See*—
Temmesfeld, Angelika B., 4,762,247, Cl. 220-303.000.

Tenaglia, Vincent: *See*—
Wissman, Edward E.; and Tenaglia, Vincent, 4,762,239, Cl. 212-179.000.

Tengler, John N.; and Pilny, James C., to Minnesota Mining and Manufacturing Company. Modular electrical connector system. 4,762,508, Cl. 439-607.000.

Tenneco Canada Inc.: *See*—
Nield, Michael A.; and Robbins, Basil N., 4,762,697, Cl. 423-304.000.

Tennessee Valley Authority: *See*—
Boles, Jeffrey L., 4,762,546, Cl. 71-30.000.

Tepera, Joseph E., to Fibergrate Corporation. Grating system. 4,761,930, Cl. 52-669.000.

Terada, Hiromu: *See*—
Yamamoto, Takashi; Murata, Ryuji; Tahara, Yasuteru; Terada, Hiromu; and Sakunaga, Kenichi, 4,762,392, Cl. 350-96.300.

Teraoka, Masao, to Tochigifujisangyo Kabushikigaisha. Transfer case for four-wheel-drive vehicles. 4,762,021, Cl. 74-665.0GA.

Terman, Lewis M.: *See*—
Hwang, Wei; Schuster, Stanley E.; and Terman, Lewis M., 4,763,180, Cl. 357-23.600.

Terrell, Ross C., to BOC, Inc. Anesthetic composition and method of using the same. 4,762,856, Cl. 514-722.000.

Texas Instruments Incorporated: *See*—
Haight, Michael H.; Giolma, William H.; and Boucher, Richard, 4,763,086, Cl. 331-109.000.
Paterson, James L., 4,763,177, Cl. 357-23.500.
Pavio, Anthony M., Jr.; and Smith, Mark A., 4,763,084, Cl 331-56.000.
Rajasekaran, Periagaram K.; and Doddington, George R., 4,763,278, Cl. 364-513.500.

Textron, Inc.: *See*—
DeCaro, Charles J., 4,762,453, Cl. 411-383.000.

Thermar Corporation: *See*—
Insley, Harold, 4,762,980, Cl. 219-307.000.

Thermo King Corporation: *See*—
Ziegler, David B., 4,762,244, Cl. 220-203.000.

Theta Industries, Inc.: *See*—
Baricevac, Thomas A.; and Raffalski, Karl-Heinz, 4,762,424, Cl. 374-56.000.

Thiel, Norbert; Gerstle, Volker; Zondler, Rolf; and Lederle, Otto, to Standard Elektrik Lorenz, A.G. Color picture tube. 4,762,733, Cl. 427-55.000.

Thierer, Gebhard: *See*—
Immendorfer, Manfred; Kopp, Dieter; Thierer, Gebhard; and Seichter, Helmut, 4,763,350, Cl. 379-67.000.

Thijssen, Henricus A. C., to Grasso's Koninklijke Machinefabrieken N.V. Apparatus and process for separating solid particles from a liquid suspension and/or for the purification or leaching of solid particles. 4,762,622, Cl. 210-737.000.

Thomas, Gunter: *See*—
Goldmann, Siegfried; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,762,853, Cl. 514-432.000.

Thomas, Guy M. C. M.: *See*—
Huon de Kermadec, Jean; and Thomas, Guy M. C. M., 4,762,070, Cl. 104-173.100.

Thomas J. Lipton, Inc.: *See*—
Holscher, Ebo J.; Verhoef, Nicolaas J. F. D.; and Ligeon, Cynthia M., 4,762,721, Cl. 426-94.000.

Thomas, Philip G. Lumber turning tool. 4,762,303, Cl. 254-25.000.

Thomas, Pierre-Armand; Naudin, Jean C.; and Ningler, Michel, to Technip Geoproduction. Support device for an off-shore oil drilling jack-up platform leg and platform including said device. 4,762,442, Cl. 405-196.000.

Thompson, Gary J. Manifold form assembly. 4,762,342, Cl. 282-9.00R.

Thompson, George J., to Paceco, Inc. Articulating crane. 4,762,240, Cl. 212-187.000.

Thompson, John M.; and Hoyt, Tim K., to Minnesota Mining and Manufacturing Company. Dual direction insulation displacement connection cable termination assembly. 4,762,506, Cl. 439-418.000.

Thompson, Leonard J., to Crosby Valve & Gage Company. Set pressure verification device and method. 4,761,999, Cl. 73-168.000.

Thompson, Robert R.: *See*—
Bluhm, Mark W.; Thompson, Robert R.; Mothersole, David S.; and MacGregor, Douglas B., 4,763,253, Cl. 364-200.000.

Thomson-CSF: *See*—
Colomb, Gilbert; Creusot, Jean P.; and Rougeot, Henri, 4,763,042, Cl. 313-544.000.
Lefevre, Herve ; and Enard, Alain, 4,762,416, Cl. 356-350.000.
Maige, Philippe, 4,763,238, Cl. 363-21.000.
Reynier, Rene ; Malcor, Jean G.; Moresco, Gilles; and Ramoger, Francois, 4,762,208, Cl. 188-288.000.
Sassier, Pierre H., 4,763,113, Cl. 340-596.000.

Thorn Emi Lighting (NZ) Limited: *See*—
Ball, David P., 4,763,239, Cl. 363-98.000.

Thorn EMI plc: *See*—
Balderson, Simon N., 4,763,099, Cl. 338-22.00R.

Thornton, Christopher G.: *See*—
Timmes, Daniel; and Thornton, Christopher G., 4,762,139, Cl. 134-199.000.

Tianjin University: *See*—
Youjun, Liu; Xiujing, Shang; Yinlong, Liu; Shixiong, Wan; and Jieping, Liu, 4,762,104, Cl. 123-293.000.

Tieben, James B. Pumping unit drive system. 4,762,473, Cl. 417-399.000.

Timberline Supply Ltd.: *See*—
Walla, Gregg W., 4,761,978, Cl. 70-367.000.

Timmerman, Craig L.; Oma, Kenton H.; and Davis, Karl C., to Battelle Memorial Institute. Probe for optically monitoring progress of in-situ vitrification of soil. 4,762,991, Cl. 250-227.000.

Timmes, Daniel; and Thornton, Christopher G. Portable sailboard frame. 4,762,139, Cl. 134-199.000.

Timmons, Alvin S.: *See*—
Ruiz, David M.; and Timmons, Alvin S., 4,762,540, Cl. 55-276.000.

Tischer, James C., to American Standard Inc. Rotor anti-reverse rotation arrangement in a screw compressor. 4,762,469, Cl. 417-279.000.

Tochigifujisangyo Kabushikigaisha: *See*—
Teraoka, Masao, 4,762,021, Cl. 74-665.0GA.

Togashi, Minoru: *See*—
Furuya, Shinichi; Kadota, Kuninobu; Togashi, Minoru; and Kato, Kenshiro, 4,762,158, Cl. 152-454.000.

Tohjyo, Seiichi: *See*—
Itoh, Toshiyuki; Ueno, Hiroshi; Tsunoda, Masakazu; and Tohjyo, Seiichi, 4,763,270, Cl. 364-449.000.

Tojo, Akihiko: *See*—
Kinoshita, Takao; Tojo, Akihiko; Takayama, Tsutomu; Kaji, Toshio; and Tanaka, Nobuyoshi, 4,763,204, Cl. 358-335.000.

Tokai Corporation: *See*—
Nitta, Tomio, 4,762,254, Cl. 222-402.240.

Tokairin, Masatsugu: *See*—
Asanuma, Hajime; and Tokairin, Masatsugu, 4,762,471, Cl. 417-372.000.

Tokico Ltd.: *See*—
Sakuma, Masaru; and Sawano, Susumu, 4,763,260, Cl. 364-426.000.

Tokui, Akira: *See*—
Ozaki, Hiroji; Sato, Shinichi; Tokui, Akira; Kawai, Akira; Nakajima, Masayuki; and Nagatomo, Masao, 4,763,182, Cl 357-23.600.

Tokunaga, Ikuo; and Sasaki, Shigemi, to Seiko Epson Corporation. Bonding structure for timepieces. 4,763,312, Cl. 368-280.000.

Tokushima, Yasuo: *See*—
Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, 4,761,894, Cl. 34-39.000.

Tokyo Electric Power Co., Inc., The: *See*—
Funaji, Taiichi; Iso, Haruo; Tanimichi, Jisaku; Nagata, Kenichi; Murata, Toshiaki; and Mitsui, Hideto, 4,762,526, Cl. 44-627.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Sakui, Koji; and Ogura, Mitsugi, 4,763,178, Cl. 357-23.600.

Tomai, Touru: *See*—
Ogino, Sekiya; Inoue, Shigehiko; Tomai, Touru; and Tamura, Masami, 4,762,165, Cl. 164-457.000.

Tomiku, Masato: *See*—
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Tomita, Kazuyuki. Magnetic filter. 4,763,092, Cl. 335-305.000.

Tomita, Masami: *See*—
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.

Tomoda, Takahisa; Takeuchi, Mikio; Nakano, Kinichiro; and Hirano, Motoki, to Nissan Motor Company, Limited. Keyless entry system for automatically operating automotive door locking devices without manual operation. 4,763,121, Cl. 340-825.540.

Toncelli, Luca. Device for automatically controlling the density and viscosity of the abrasive mixture and the quantity of metallic middlings used in the sawing of granite or hard stone. 4,762,422, Cl. 366-141.000.

Tong, Ronnie C.: *See*—
Kellam, Karen K.; and Tong, Ronnie C., 4,763,279, Cl. 364-518.000.

Tosaka, Hachiro: *See*—
Nomura, Yoshihiro; Ide, Noriaki; Ohtaki, Kazumi; Tomita, Masami; Tosaka, Hachiro; Nanya, Toshiki; Orihara, Motoi; Chiba, Shunichi; Inoue, Satoru; Asahina, Yasuo; and Fushimi, Hiroyuki, 4,762,763, Cl. 430-110.000.

Toshiba Tungaloy Co., Ltd.: *See*—
Hirano, Shin-ichi; and Yamaya, Susumu, 4,762,729, Cl. 427-38.000.

Tosi, Bruno: *See*—
Trestianu, Sorin; and Tosi, Bruno, 4,762,981, Cl. 219-400.000.

'totes', incorporated: *See*—
Phillips, Bradford E.; and Bertacchi, Roy J., 4,762,318, Cl. 272-137.000.

Toto Ltd.: *See*—
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200.

Townsend Engineering Company: *See*—
Townsend, Ray T., 4,761,938, Cl. 54-47.000.

Townsend, Ray T., to Townsend Engineering Company. Stirrup extension. 4,761,938, Cl. 54-47.000.

Toyo Seikan Kaisha, Ltd.: *See*—
Matsubayashi, Hiroshi; Watanabe, Naoto; Kobayashi, Seishichi; Sue, Toshio; and Taira, Kazuo, 4,762,245, Cl. 220-269.000.
Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, 4,762,579, Cl. 156-69.000.

Toyoda Gosei Co., Ltd.: *See*—
Kokuryu, Yuji, 4,762,150, Cl. 138-44.000.

Toyokuni, Ryo: *See*—
Hirano, Shinichi; Toyokuni, Ryo; and Kuroda, Hiroshi, 4,762,588, Cl. 156-623.00R.

Toyota Jidosha Kabushiki Kaisha: *See*—
Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, 4,761,894, Cl. 34-39.000.
Kanda, Mutsumi, 4,762,102, Cl. 123-188.00M.
Nagai, Toshinari; Masui, Takatoshi; Satou, Yasushi; and Katsuno, Toshiyasu, 4,761,950, Cl. 60-274.000.
Ogawa, Hisashi; and Yamashita, Kazuhiko, 4,762,336, Cl. 280-673.000.
Ogawa, Masahiro; and Fukui, Akio, 4,762,202, Cl. 185-39.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kinugasa, Yukio; and Yaegashi, Takehisa, 4,762,026, Cl 74-866.000.

Tracey, Peter M., to Bestquint Limited. Remotely pressure-operable electrical switch. 4,762,969, Cl. 200-81.400.

Tracor Aerospace Austin, Inc.: *See*—
Sallee, Bradley T., 4,763,127, Cl. 342-12.000.

Trade Source International: *See*—
Merino, Dennis, 4,762,316, Cl. 272-56.50R.

Trestianu, Sorin; and Tosi, Bruno, to Carlo Erba Strumentazione S.p.A. Heating device in particular for automatic samplers. 4,762,981, Cl. 219-400.000.

Treuner, Uwe D.: *See*—
Breuer, Hermann; and Treuner, Uwe D., 4,762,922, Cl. 540-363.000.

Treybig, Duane S.: *See*—
Martinez, Robert G.; Treybig, Duane S.; and Glass, Terry W., 4,762,627, Cl. 252-8.555.

Tricorn, Inc.: *See*—
Dobson, Thomas R., 4,762,167, Cl. 165-11.100.

Trident Engineering Associates, Inc.: *See*—
Kapland, Mitchell A., 4,762,623, Cl. 210-751.000.

Trigg, Donald L.: *See*—
Cota, Albert O., 4,763,115, Cl. 340-628.000.

Trinity Industrial Corporation: *See*—
Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, 4,761,894, Cl. 34-39.000.

Troger, Wolfgang: *See*—
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.

Troue, Heinrich: *See*—
Kruger-Hoiss, Werner; Heidel, Hans-Joachim; and Troue, Heinrich, 4,762,287, Cl. 242-48.000.

TRW Inc.: *See*—
Maschke, Alfred W., 4,763,003, Cl. 250-396.00R.
Neil, George R., 4,763,079, Cl. 328-233.000.

TRW United-Carr GmbH: *See*—
Kraus, Willibald; and Klein, Jean-Luc R. G., 4,762,296, Cl. 248-74.200.

Trzcinski, David J.; and North, Terry M., to Chrysler Motors Corporation. Conductive EMI test system, a decoupling network therefor. 4,763,062, Cl. 324-57.00N.

Tsai, Tsu-Tzu; and Arnold, Fred E., to United States of America, Air Force. Polybenzoxazole from aryloxy-2,6-naphthalicdiacid 4,762,908, Cl. 528-185.000

Tsen, Chan-Tang; and Yang, Karl H. K., to National Semiconductor Corporation. Sense amplifier for single-ended data sensing. 4,763,026, Cl. 307-530.000.

Tsubakimoto Chain Co.: *See*—
Nakamura, Kenichiro, 4,763,219, Cl. 361-23.000.

Tsubota, Junichi, to Kabushiki Kaisha Toshiba. Image scanner apparatus. 4,763,172, Cl. 355-50.000.

Tsubouchi, Natsuro; and Kimata, Masafumi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device. 4,763,179, Cl 357-23.600.

Tsuji, Tatsunori: *See*—
Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,630, Cl. 252-622.000.
Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,632, Cl. 252-62.200.
Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,634, Cl. 252-62.200.

Tsujii, Yasuhiro; Isogai, Tatsuo; Awazu, Takao; Jyonishi, Hisayoshi; and Kimura, Tokiya, to Ishihara Sangyo Kaisha Ltd. Amino-trifluoromethylpyridine compound. 4,762,928, Cl. 546-311.000.

Tsukimoto, Takayuki; Okumura, Ichiro; Okuno, Takuo; and Izukawa, Kazuhiro, to Canon Kabushiki Kaisha. Vibration wave motor 4,763,148, Cl. 354-195.100

Tsung Ming, Young. Side-fed stapler. 4,762,262, Cl. 227-120.000

Tsunoda, Masakazu: *See*—
Itoh, Toshiyuki; Ueno, Hiroshi; Tsunoda, Masakazu; and Tohjyo, Seiichi, 4,763,270, Cl. 364-449.000.

Tsunoda, Teruo; and Kokawa, Ryoichi, to Komori Printing Machinery Co., Ltd. Method and system of processing image signals. 4,763,359, Cl. 382-1.000

Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, to Toto Ltd. Washing device for parts of human body. 4,761,836, Cl. 4-420.200

Tucker, J. Camille; and Weiswurm, Klaus D., to Gee-I-Go, Inc. Combination automobile seat and stroller. 4,762,331, Cl. 280-30.000.

Tucker, James R.; and Nesbitt, Daniel F., to Procter & Gamble Company, The. Detergent plus softener with amide ingredient. 4,762,645, Cl. 252-544.000

Tucker, Michael: *See*—
Perreirra, Noel D.; and Tucker, Michael, 4,763,276, Cl 364-513.000

Tuckner, Ronald F.: *See*—
Richardson, Michael M.; Sega, Joseph M.; and Tuckner, Ronald F., 4,762,435, Cl. 400-304.000.

Tults, Juri, to RCA Licensing Corporation. Television tuning system with provisions for quickly locating active cable channels. 4,763,195, Cl. 358-193.100

Turchan, Manuel C. Combined hole making and threading tool 4,761,844, Cl. 10-140.000

Turcke, Rainer: *See*—
Nicko, Reinhard; Meschenmoser, Friedrich; Sager, Karl-Heinz, and Turcke, Rainer, 4,761,933, Cl. 53-374.000.

Turner, Richard L. Oil well pump. 4,762,476, Cl. 417-544.000

Turner, Robert, to National Research Development Corporation Method and apparatus for the reconstruction of nuclear magnetic resonance images. 4,763,073, Cl. 324-312.000

Tymon, Thomas M.: *See*—
Bohrn, Walter J.; Brubaker, Richard A.; Garman, Shelly N.; Hosfeld, Lewis K.; Tymon, Thomas M.; and Ko, Kenneth K., 4,762,643, Cl. 252-378.00R.

Uchida, Kiichi: *See*—
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000

Uchino, Fumio: *See*—
Namba, Akihiro; Uchino, Fumio; Tateoka, Hitoshi; Ohno, Masahiro; Ando, Outaro; Karaki, Kouchi; and Nagasaki, Tatsuo, 4,762,413, Cl. 356-339.000.

Udo, Carl, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Elevator control system especially for an aircraft 4,762,294, Cl. 244-75.00R

Uebel, Helmut: *See*—
Knight, Alan C.; and Uebel, Helmut, 4,763,267, Cl. 364-436.000

Ueda, Minoru: *See*—
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100

Uematsu, Yoshihiro: *See*—
Sakakura, Akira; Hoshino, Kazuo; Uematsu, Yoshihiro; Igawa, Takashi; and Fujimoto, Hiroshi, 4,762,575, Cl. 148-111.000

Uemiya, Takafumi; Shibata, Yutaka; Nishimura, Akira; Niwa, Shinichiro; and Osawa, Yoshitaka, to Sumitomo Electric Industries, Ltd Optical element integrated optical waveguide and production of the same. 4,762,381, Cl. 350-96.110

Ueno, Hiroshi: *See*—
Itoh, Toshiyuki; Ueno, Hiroshi; Tsunoda, Masakazu; and Tohjyo, Seiichi, 4,763,270, Cl. 364-449.000

Uesawa, Yutaka; and Morimoto, Isamu, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic paper improved in remaining curl. 4,762,776, Cl. 430-538.000.

Uesugi, Masaru, to Oki Electric Industry Co., Ltd. Semiconductor random access memory device having switchable input and output bit forms. 4,763,304, Cl. 365-190.000

Ueyama, Seiji; Taniguchi, Hideo; and Ogata, Hiromi, to General Company Limited; and Rohm Company Limited. Method of thermal printing. 4,762,432, Cl. 400-241.100

Uhlenhoff, Arnold, to Deutsche ITT Industries GmbH. Monolithic integrated digital circuit including an internal clock generator and circuitry for processing multi-digit signals. 4,763,297, Cl. 364-900.000

Uhlig, Albert R., to Plastic Technologies. Tamper resistant wide mouth package. 4,762,248, Cl. 220-307.000.

Umezawa, Kazumi: *See*—
Ariga, Masao; Hattori, Hiroyuki; Shimizu, Katsuichi; Kishi, Hirotoshi; Ogawa, Hiroshi; Amanuma, Takahiko; Umezawa, Kazumi; Sagara, Seiji; and Kurita, Kenji, 4,763,164, Cl. 355-14.00R

Uni-frac, Inc.: *See*—
Parker, Byron M.; and Parker, Trent J., 4,762,651, Cl. 261-114.100.

Unilever Patent Holdings, B.V.: *See*—
Garvey, Michael J.; and Griffiths, Ian C., 4,762,736, Cl. 427-215.000

Union Carbide Corporation: *See*—
Didchenko, Rostislav; and Dickinson, Eric M., 4,762,608, Cl. 208-89.000
Greinke, Ronald A., 4,762,566, Cl. 106-284.000
Logsdon, John E.; Loke, Richard A.; Merriam, Jay S.; and Voight, Richard W., 4,762,817, Cl. 502-329.000
Mendicino, Frank D., 4,762,939, Cl. 556-470.000
Su, Tsung-Yuan, 4,763,228, Cl. 361-433.000

Union Oil Company of California: *See*—
Ghandehari, Mohammad H., 4,762,574, Cl. 148-103.000
Ruiz, David M.; and Timmons, Alvin S., 4,762,540, Cl. 55-276.000
Ward, John W., 4,762,813, Cl. 502-66.000.

Union Siderurgique du nord et de l'Est de la France (USINOR): *See*—
Senillou, Claude; de Framond, Remy; Garnier, Marcel; Yavari, Ali R.; and Joud, Jean-Charles, 4,762,653, Cl. 264-22.000

VOL 1093 ISS 2 AG 9 1988 UMI

Uniroyal Plastics Co., Inc.: *See—*
Leung, Pak T., 4,762,880, Cl. 524-853.000.
Unisys Corporation: *See—*
Barndt, Robert A., Sr., 4,763,338, Cl. 375-82.000.
Fontaine, John M.; and Dennis, Patrick W., 4,763,327, Cl. 370-112.000.
Kachnowski, Thomas A.; Bratro, Frederick E.; Kaplan, Elhanan; and Sudol, George A., 4,761,975, Cl. 70-232.000.
Stickel, Tedd K., 4,763,021, Cl. 307-475.000.
United Engineering, Inc.: *See—*
Ginzburg, Vladimir B.; DeChellis, Richard C.; and Ellis, Robert H., 4,761,983, Cl. 72-148.000.
United States of America
Air Force: *See—*
Gegel, Harold L.; Prasad, Yellapregada V. R. K.; Doraivelu, Sokka M.; Srinivasan, Raghavan; Gunasekera, J. S.; Barker, Douglas R.; Morgan, James T., Jr.; Malas, James C.; Lark, Kristine A.; and Matson, Lawrence E., 4,762,679, Cl. 419-28.000.
Savage, Steven J.; and Eylon, Daniel, 4,762,553, Cl. 75-0.50C.
Tsai, Tsu-Tzu; and Arnold, Fred E., 4,762,908, Cl. 528-185.000.
Army: *See—*
Honeycutt, Thomas E.; and Roberts, Thomas G., 4,763,361, Cl. 455-605.000.
Wilson, Herbert L.; and Guiterrez, William A., 4,762,576, Cl. 156-611.000.
Energy: *See—*
Ballard, Ambrose H.; Godfrey, Thomas G., Jr.; and Mowery, Erb H., 4,762,656, Cl. 264-82.000.
Chang, Shih-Chih; Schuck, William J.; and Gilmore, Richard F., 4,762,666, Cl. 376-264.000.
Cioletti, Olisse C., 4,762,003, Cl. 73-825.000.
Huang, Hann S.; and Sather, Norman F., 4,762,596, Cl. 204-60.000.
Maroni, Victor A.; and von Winbush, Samuel, 4,762,694, Cl. 423-50.000.
Nellis, William J.; Maple, M. Brian; and Geballe, Theodore H., 4,762,754, Cl. 428-552.000.
Stevens, Fred J., 4,762,617, Cl. 210-635.000.
Swansiger, William A., 4,762,685, Cl. 422-159.000.
Wood, Richard L., 4,762,298, Cl. 248-179.000.
Health and Human Services: *See—*
Rice, Kenner C.; Rafferty, Michael F.; Jacobson, Arthur E.; Contreras, Patricia; O'Donohue, Thomas L.; Lessor, Ralph A.; and Mattson, Marlena V., 4,762,846, Cl. 514-331.000.
Sekura, Ronald D., 4,762,710, Cl. 424-92.000.
National Aeronautics and Space Administration: *See—*
Blakely, Robert L.; Roebelen, George J., Jr.; and Davenport, Arthur K., 4,762,173, Cl. 165-170.000.
Gaddis, Joseph L.; and Brandon, Craig A., 4,762,619, Cl. 210-639.000.
Navy: *See—*
Clark, Arthur E.; Kabacoff, Lawrence T.; Savage, Howard T.; and Modzelewski, Christine, 4,763,030, Cl. 310-26.000.
McLandrich, Matthew N., 4,763,272, Cl. 364-468.000.
U.S. Philips Corp.: *See—*
Eizenhofer, Alfons, 4,763,322, Cl. 370-95.000.
Gerritsen, Gerrit B.; Vriens, Leendert; and van de Ven, Johannes C., 4,762,393, Cl. 350-128.000.
Krick, Wolfgang, 4,763,326, Cl. 370-110.400.
Moors, Petrus M. A. W., 4,762,804, Cl. 437-31.000.
Nicolas, Jean-Marie; and Bernatets, Jean-Luc, 4,762,132, Cl. 128-660.000.
Peek, Hermanus L., 4,763,185, Cl. 357-54.000.
Van Rens, Piet C. J.; and Van Der Hoek, Willem, 4,763,039, Cl 313-406.000.
Vink, Nicolaas G.; and Sluyterman, Albertus A. S., 4,763,040, Cl. 313-428.000.
Zeeman, Leendert, 4,763,035, Cl. 310-208.000.
U.S. Tool & Die, Inc.: *See—*
Wachter, William J., 4,762,664, Cl. 376-261.000
United Technologies Automotive, Inc.: *See—*
Burdick, Robert C., 4,762,967, Cl. 200-50.00C.
Universal Instruments Corporation: *See—*
Burgin, John L., Jr.; Kane, Michael J.; and Levie, Michael M., 4,762,578, Cl. 156-64.000.
Universal Vectors Corporation: *See—*
Byrd, Kerry, 4,763,333, Cl. 371-66.000.
University of California, The Regents of the: *See—*
Arakawa, Mitsuaki; and Crooks, Lawrence E., 4,763,076, Cl. 324-322.000.
Barbaric, Zoran L.; Deckard, Michael; and Nelson, Robert S., 4,763,345, Cl. 378-146.000.
Keene, William E.; and McKerrow, James H., 4,762,789, Cl. 435-219.000.
Spector, Deborah H.; and Spector, Stephen A., 4,762,780, Cl. 435-6.000.
Stoughton, Robert; and Kokkinis, Theodore, 4,762,016, Cl. 74-479.000.
University of Illinois Foundation: *See—*
Rinehart, Kenneth L., Jr.; Carter, Guy T.; and Cheng, Michael T., 4,762,949, Cl. 564-183.000.
University of Missouri, The Curators of the: *See—*
[illegible]ening, Gerald M.; and Carson, Charles A., 4,762,711, Cl. 24-93.000.
University of Rochester, The: *See—*
Anderson, Porter W., 4,762,713, Cl. 424-92.000.
University of Texas System, The: *See—*
Leiman, Basil C.; Butler, Bruce D.; and Katz, Jeffrey, 4,762,125, Cl. 128-207.150.
Zermeno, Alfonso; and Marsh, Lee M., Jr., 4,763,002, Cl. 250-370.010.
University Patents, Inc.: *See—*
Cohen, Gary H.; and Eisenberg, Roselyn J., 4,762,708, Cl. 424-89.000
Unland, Stefan: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.
Unrinin, Nobuyuki, to Kawasaki Kisen Kaisha, Ltd. Dry container capable of accommodating bulk cargo. 4,762,243, Cl. 220-22.000.
UOP Inc.: *See—*
Imai, Tamotsu, 4,762,960, Cl. 585-660.000.
Sachtler, J. W. Adriaan; and Lawson, R. Joe, 4,762,957, Cl. 585-481.000.
Uota, Kosaku: *See—*
Itoh, Hisatsugu; and Uota, Kosaku, 4,763,268, Cl. 364-449.000.
Uppal, Sohan L., to Eaton Corporation. Motor lubrication with no external case drain. 4,762,479, Cl. 418-61.300.
Upson, Donald A.: *See—*
Chen, Tsang J.; Upson, Donald A.; and Yacobucci, Paul D., 4,762,941, Cl. 558-44.000.
Upton, R. Glen: *See—*
Coughlan, Joel B.; Harvey, Howard W.; Upton, R. Glen; and White, John R., 4,762,455, Cl. 414-4.000.
Urano, Shigeru, to Nippon Piston Ring Co., Ltd. Method for making a camshaft. 4,761,870, Cl. 29-421.100.
Urasato, Nobuaki: *See—*
Endo, Morinobu; Takamizawa, Minoru; Hongu, Tatsuhiko; Hayashida, Akira; Urasato, Nobuaki; and Ohsaki, Hiromi, 4,762,810, Cl. 501-88.000
Ushikoshi, Ryusuke, to NGK Insulators Ltd. Leakless pump. 4,762,461, Cl. 415-14.000
Ushiro, Seimei: *See—*
Takamura, Masashi; Ushiro, Seimei; Kobayashi, Kiyotaka; Cho, Michio; and Nakada, Kimiaki, 4,763,145, Cl. 354-64.000.
Ushirogata, Yoshiaki, to Ricoh Company, Ltd. Sorter with a function of binding copy sheets. 4,762,312, Cl. 270-53.000.
Usui, Hiroshi, to Sanken Electric Co., Ltd. DC-DC converter. 4,763,236, Cl. 363-19.000.
USV Pharmaceutical Corporation: *See—*
Golec, Frederick A., Jr., 4,762,945, Cl. 560-138.000.
USX Corporation: *See—*
Grove, John W., 4,762,164, Cl. 164-150.000.
Perfetti, Bruno M., 4,762,753, Cl. 428-450.000.
Utility Trailer Mfg. Co.: *See—*
Horton, Terry; and Zavalza, Emilio, 4,762,361, Cl. 296-181.000.
Utsui, Masaaki, to Fuji Photo Film Co., Ltd. Method of making magnetic recording medium. 4,761,874, Cl. 29-527.200.
Uyama, Kiyoshi; Kanno, Yoshio; Segawa, Kiyoteru; and Kihara, Yasuhiko, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for dehydrating sludge. 4,761,895, Cl. 34-69.000.
Vagnone, Louis M.; and Raheb, Richard. Vehicle anti-theft system. 4,762,198, Cl. 180-287.000.
Valdshtein, George: *See—*
Masel, Ruben; and Valdshtein, George, 4,762,058, Cl. 99-425.000.
Van Der Hoek, Willem: *See—*
Van Rens, Piet C. J.; and Van Der Hoek, Willem, 4,763,039, Cl. 313-406.000.
Vanderlaan, Douglas G.: *See—*
Griswold, Roy M.; and Vanderlaan, Douglas G., 4,762,887, Cl. 522-99.000.
van der Merwe, Deon A.; and Steinhobel, Brian A. Bottom discharge hopper. 4,762,458, Cl. 414-378.000.
van der Puije, P. D.; and Pon, Carlos R. Cochlea implant. 4,762,135, Cl. 128-784.000.
Vander Till, Gerald N.: *See—*
Boundy, Bruce K.; and Vander Till, Gerald N., 4,762,072, Cl. 108-50.000
van de Ven, Johannes C.: *See—*
Gerritsen, Gerrit B.; Vriens, Leendert; and van de Ven, Johannes C., 4,762,393, Cl. 350-128.000.
van Leynseele, Francis J.: *See—*
Schultz, Larry R.; Super, Peter J.; and van Leynseele, Francis J., 4,763,266, Cl. 364-433.000.
van Osselaer, Tony: *See—*
Denecker, Gabriel; Sluyts, Domien; Biot, Jean-Marie; van Osselaer, Tony; de Roos, Jan; and Bamelis, Pol, 4,762,931, Cl. 548-166.000.
Van Rens, Piet C. J.; and Van Der Hoek, Willem, to U.S. Philips Corporation. Color display tube with corner suspension means. 4,763,039, Cl. 313-406.000.
Vayda, John T.; and Criss, George H., to Dresser Industries, Inc. Castable refractory. 4,762,811, Cl. 501-124.000.
VDO Adolf Schindling AG: *See—*
Kant, Bernhard; and Porth, Wolfgang, 4,763,097, Cl. 338-4.000
Veb Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Hertrich, Klaus, 4,762,311, Cl. 270-41.000.

Velasco, Miguel U.; and Hodd, Kenneth A., to National Research Development Corporation. Oxazolidone polymer prepared in the presence of hexamethylene tetramine. 4,762,900, Cl. 528-54.000.
Veli Reijonen Oy: *See—*
Reijonen, Veli E.; and Reijonen, Risto, 4,761,997, Cl. 73-155.000
Venkateshan, Shakkottai P.: *See—*
Shakkottai, Parthasarathy; and Venkateshan, Shakkottai P., 4,762,425, Cl. 374-117.000.
Verhoef, Nicolaas J. F. D.: *See—*
Holscher, Ebo J.; Verhoef, Nicolaas J. F. D ; and Ligeon, Cynthia M., 4,762,721, Cl. 426-94.000
Vermeulen, Leon L.; Vervloet, Ludovicus H.; De Smedt, Willy P.; and Kok, Piet, to AGFA-Gevaert N.V. Image-receiving material with siloxane, colloidal silica and gelatin for silver complex diffusion transfer. 4,762,759, Cl. 430-1.000.
Vertz, Richard J.; and Mosavi, Reza K., to Chromalloy Gas Turbine Corporation. Airfoil with diffused cooling holes and method and apparatus for making the same. 4,762,464, Cl. 416-97.00R.
Vervloet, Ludovicus H.: *See—*
Vermeulen, Leon L.; Vervloet, Ludovicus H.; De Smedt, Willy P.; and Kok, Piet, 4,762,759, Cl. 430-1.000.
Vet-A-Mix: *See—*
Lloyd, William E.; and Sullivan, Daniel J., 4,762,854, Cl. 514-557.000
Viess, Walter: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.
Villiger, Robert, to Mettler Instrumente AG. Temperature sensor for a dryer accessory on a weighing device. 4,762,428, Cl. 374-149.000.
Vincent, Colin C., to S. W. Hart & Co. Pty. Ltd. Solar water heaters especially intended for use with swimming pools. 4,762,116, Cl. 126-448.000.
Viner, Stephen G. Evaporative roof cooling system. 4,761,965, Cl. 62-171.000
Vink, Nicolaas G.; and Sluyterman, Albertus A. S., to U.S. Philips Corp. Picture display device. 4,763,040, Cl. 313-428.000.
Virag, Janos. Combined package and cooking container. 4,762,056, Cl. 99-345.000
Vlack, David: *See—*
Lehman, Harvey R.; Lidinsky, William P.; Mussman, Harry E.; Spicer, David A.; and Vlack, David, 4,763,317, Cl. 370-58.000.
Vmei "Lenin": *See—*
Borovski, Boris H.; and Ilieva, Plamenka I., 4,763,247, Cl. 364-200.000
Voest-Alpine Aktiengesellschaft: *See—*
Klingesberger, Johann, 4,761,985, Cl. 72-316.000.
Wohlkonig, Hansjorg; Muller, Heinz; and Auberger, Heinrich, 4,763,337, Cl. 373-86.000.
Vogel, William C., to General Motors Corporation. Attachment nut with anti-back up means. 4,762,452, Cl. 411-194.000.
Vogt, Philippe. Special purpose camera. 4,763,147, Cl. 354-160.000
Voight, Richard W.: *See—*
Logsdon, John E.; Loke, Richard A.; Merriam, Jay S.; and Voight, Richard W., 4,762,817, Cl. 502-329.000
Voigt, Rudiger: *See—*
Lonne, Klaus; Majewski, Klaus-Peter; Giesen, Franz-Josef; and Voigt, Rudiger, 4,762,330, Cl. 277-230.000
Voith Turbo GmbH & Co. KG: *See—*
Holler, Heinz, 4,761,952, Cl. 60-330.000
Volkmann, Robert A.: *See—*
Carroll, Ronnie D.; and Volkmann, Robert A., 4,762,920, Cl 540-310.000
Vollmer, George W.; and Sabroff, Alvin M., to Eaton Corporation. Method for producing ring gears for heavy-duty drive axles. 4,761,867, Cl. 29-159.200.
Volpe, Ralph A.: *See—*
Harvey, Larry L.; and Volpe, Ralph A., 4,761,932, Cl. 53-329.000
von Alven, Raymond D.; and Davis, Craig R., to Bio-Rad Laboratories, Inc. Corrugated wedge spacers for slab gel molds. 4,762,743, Cl. 428-156.000.
von Winbush, Samuel: *See—*
Maroni, Victor A.; and von Winbush, Samuel, 4,762,694, Cl. 423-50.000
Voss, Carl J.: *See—*
Damon, Brian W.; Ravitz, Cary P.; and Voss, Carl J., 4,763,137, Cl. 346-76.0PH
Voss, Earl, to Diversified Electronics, Inc. Polyphase power adapter for frequency reduction. 4,763,240, Cl. 363-161.000.
Voss, Wilfried: *See—*
Maunz, Hermann; Rahn, Oskar; and Voss, Wilfried, 4,761,986, Cl. 72-405.000
Voswinckel, Gerhard, to Gebruder Sucker & Franz Muller GmbH & Co. Method for applying a liquefiable material onto a substrate conveyed in form of a web. 4,762,727, Cl. 427-8.000.
Vriens, Leendert: *See—*
Gerritsen, Gerrit B.; Vriens, Leendert; and van de Ven, Johannes C., 4,762,393, Cl. 350-128.000
W-N Apache Corporation: *See—*
Haney, Keith M., 4,762,187, Cl. 175-171.000.
W. R. Grace & Co.: *See—*
Oberle, Timothy T., 4,762,748, Cl. 428-349.000.
Retallick, William B., 4,762,567, Cl. 106-287.170.
Wachter, William J., to U.S. Tool & Die, Inc. Method and apparatus for compacting spent nuclear reactor fuel rods. 4,762,664, Cl 376-261.000
Wacker-Chemie GmbH: *See—*
Ottlinger, Ralph; and Reitmeier, Rudolf, 4,762,937, Cl. 556-459.000
Wacker Silicones Corporation: *See—*
Griswold, Roy M.; and Vanderlaan, Douglas G., 4,762,887, Cl 522-99.000
Waco Jonsereds AB: *See—*
Andersson, Bengt, 4,762,157, Cl. 144-369.000
Waddington, John F., to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kindgom of Great Britain and Northern Ireland, The. Rocket projectiles. 4,762,293, Cl. 244-3.220.
Wadell, Lars G. A., to Nestec S.A. Coating of foodstuffs. 4,762,083, Cl 118-16.000
WaferScale Integration, Inc.: *See—*
Krieger, Gadi; and Eitan, Boaz, 4,763,184, Cl. 357-23.130
Wagner, Steven D.: *See—*
Oldershaw, Reginald W.; Wagner, Steven D.; and Wesolowski, Jan S., 4,763,203, Cl. 358-320.000
Wagner, Tibor: *See—*
Fischer, Janos; Dobay, La / szlo ; Ezer, Elemer; Matuz, Judit; Szporny, Laszlo ; and Wagner, Tibor, 4,762,944, Cl. 560-051.000
Wakaizumi, Kiyoshi, to Janome Sewing Machine Co. Ltd. Ruler device for setting embroidering fabric. 4,762,076, Cl. 112-103.000
Wakamatsu, Syuji: *See—*
Izumimoto, Masatoshi; Wakamatsu, Syuji, and Yuyama, Megumu, 4,762,722, Cl. 426-124.000
Wakikaido, Takahiro: *See—*
Makiura, Yoshinori; Wakikaido, Takahiro; Yamamoto, Haruo; Ogawa, Shusaku; and Ichihashi, Takao, 4,763,174, Cl. 355-55.000
Wako Pure Chemical Industries, Ltd.: *See—*
Ikenaka, Tokuji; and Omichi, Kaoru, 4,762,917, Cl. 536-4.100
Walden, Donnie T.: *See—*
Pitalo, Stephen K.; Walden, Donnie T.; and Lay, Henry P., 4,762,411, Cl. 356-152.000
Walk Off Mats Limited: *See—*
Hedley, Terence M., 4,762,741, Cl. 428-78.000
Walla, Gregg W., to Timberline Supply Ltd. Lock with key operated removable plug. 4,761,978, Cl. 70-367.000
Wallace, Kenneth J.: *See—*
Moore, William T.; Robertson, Paul J.; and Wallace, Kenneth J., 4,763,192, Cl. 358-113.000
Walls, Richard J.: *See—*
McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., 4,761,857, Cl 19-98.000
Wallstrom, Leif, to Molnlycke AB. Absorbent article. 4,762,520, Cl 604-366.000
Wallyn, Rene M.: *See—*
Melville, Phillip L.; and Wallyn, Rene M., 4,762,054, Cl 98-115.400
Walters, Marlin E., to Dow Chemical Company, The. Method for making polyketones. 4,762,909, Cl. 528-220.000
Walters, Richard D.; De Young, Jon; Rasmussen, Clarence M.; and Almares, Louie S., to Pennwalt Corporation. Box conveying and indexing system. 4,762,219, Cl. 198-358.000
Walther, Gerhard: *See—*
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard, Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, 4,762,832, Cl. 514-237.200.
Walton, Erlen B.: *See—*
Kamm, Lawrence J.; Meyer, Lawrence L.; and Walton, Erlen B., 4,762,096, Cl. 123-90.160
Wang, Chiao-Ming. Structure of air pump for fish bowl. 4,762,470, Cl. 417-312.000
Wang Laboratories, Inc.: *See—*
Fong, Anthony S., 4,763,294, Cl. 364-748.000
Wang, Patrick S., to Johnson Electric Industrial Manufactory Limited. Electric motor and gearbox unit and component parts thereof 4,763,031, Cl. 310-83.000
Wanner, Rudolf: *See—*
Gfeller, Martin; and Wanner, Rudolf, 4,762,354, Cl. 294-2.000
Wanzke, Manfred. Mechanical press. 4,762,062, Cl. 100-280.000
Ward, John W., to Union Oil Company of California. Hydrocarbon conversion catalyst. 4,762,813, Cl. 502-66.000
Warner-Lambert Company: *See—*
Caprathe, Bradley W.; Jaen, Juan C.; and Wise, Lawrence D., 4,762,843, Cl. 514-293.000
Croce, Carlo P., 4,762,230, Cl. 206-469.000
Harvey, Larry L.; and Volpe, Ralph A., 4,761,932, Cl. 53-329.000
Rieger, Martin M.; and Yang, Robert K., 4,762,930, Cl 548-108.000
Warren, Henry S., Jr.: *See—*
Hopkins, Martin E.; and Warren, Henry S., Jr., 4,763,255, Cl 364-300.000
Warzywoda, Michel; Ferre, Veronique; and Pourque, Jacques, to Institut Francais du Petrole. Process for producing cellulolytic enzymes. 4,762,788, Cl. 435-209.000
Washington Suburran Sanitary Commission: *See—*
Wissman, Edward E.; and Tenaglia, Vincent, 4,762,239, Cl 212-179.000
Watanabe, Junji, to Kabushiki Kaisha Toshiba. Image forming apparatus with image adding function. 4,763,165, Cl 355-14.00R

VOL 1093 ISS 2 AG 9 1988 UMI

Watanabe, Junji, to Kabushiki Kaisha Toshiba. Image forming apparatus. 4,763,166, Cl. 355-14.0SH.
Watanabe, Kenichi, to Mazda Motor Corporation. Driving system for a four-wheel drive vehicle. 4,762,213, Cl. 192-82.00T.
Watanabe, Kenichi; and Taniguchi, Haruyuki, to Mazda Motor Corporation. Hydraulic mounting system for a power unit. 4,762,306, Cl. 267-195.000.
Watanabe, Kouzou; and Saito, Yasuhiko. Method of producing compressed roll of paper. 4,762,061, Cl. 100-35.000.
Watanabe, Kozo: *See—*
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.
Watanabe, Kyoichi A.; Matulic-Adamic, Jasenka; Price, Richard W.; and Fox, Jack J., to Sloan-Kettering Institute for Cancer Research. Nucleosides of 5-monofluoromethyluracil and 5-difluoromethyluracil. 4,762,823, Cl. 514-50.000.
Watanabe, Michio: *See—*
Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, 4,762,579, Cl. 156-69.000.
Watanabe, Miwako: *See—*
Yoda, Motoyuki; Kitagawa, Mikio; and Watanabe, Miwako, 4,762,612, Cl. 210-150.000.
Watanabe, Naoto: *See—*
Matsubayashi, Hiroshi; Watanabe, Naoto; Kobayashi, Seishichi; Sue, Toshio; and Taira, Kazuo, 4,762,245, Cl. 220-269.000.
Shimizu, Takashi; Matsubayashi, Hiroshi; Watanabe, Michio; Hirota, Kazumi; Watanabe, Naoto; and Matsuoka, Kikuo, 4,762,579, Cl. 156-69.000.
Watanabe, Nobuhiro: *See—*
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000.
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, to Canon Kabushiki Kaisha. Image forming apparatus. 4,763,167, Cl. 355-14.00R.
Watanabe, Yuzuru; Nakayama, Yoshifumi; Ando, Masanori; and Kikuchi, Masahiro, to Sony Corporation. Electron gun. 4,763,047, Cl. 315-382.000.
Wataya, Masafumi: *See—*
Watanabe, Tsutomu; Kasama, Nobuhiro; Wataya, Masafumi; Ashinuma, Takaaki; Hirose, Yoshihiko; and Suzuki, Yasuo, 4,763,167, Cl. 355-14.00R.
Watson, Mark: *See—*
McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., 4,761,857, Cl. 19-98.000.
Weatherby, Robert G., to Sarasota Quality Products, Inc. Dual function lock/latch device. 4,761,977, Cl. 70-493.000.
Weaver, William R., to Libbey-Owens-Ford Co. Mold structure for producing a window assembly. 4,762,481, Cl. 425-116.000.
Webb, Andrew C.: *See—*
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M., 4,762,914, Cl. 530-351.000.
Weber, Karl-Heinz; Schneider, Claus; Walther, Gerhard; Hinzen, Dieter; Kuhn, Franz J.; Lehr, Erich; Ensinger, Helmut; and Troger, Wolfgang, to Boehringer Ingelheim KG. Morpholine containing pyrrolidinones pharmaceutical compositions and use. 4,762,832, Cl. 514-237.200.
Weber, Richard; and Haag, Loren H., to Exxon Research and Engineering Company. pH control of a process stream. 4,762,796, Cl. 436-55.000.
Weber S.r.l.: *See—*
de Concini, Roberto, 4,762,108, Cl. 123-488.000.
Wei, George C.: *See—*
Rhodes, William H.; Wei, George C.; and Fryburg, George A., 4,762,655, Cl. 264-65.000.
Weigert, Kurt, to Siemens Aktiengesellschaft. Electro-optical isolator for magnetic resonance tomography. 4,763,075, Cl. 324-318.000.
Weiler, Werner: *See—*
Rudolph, Ralph; and Weiler, Werner, 4,763,320, Cl. 370-85.000.
Weiner, Joseph S.: *See—*
Duguay, Michel A.; and Weiner, Joseph S., 4,763,019, Cl. 307-427.000.
Weiner, Rudolf. Invalid handling device. 4,761,842, Cl. 5-81.00B.
Weinheimer, Gunter: *See—*
Kleinschrot, Jurgen; Satzinger, Gerhard; Mannhardt, Karl; Hartenstein, Johannes; Osswald, Hartmut; Weinheimer, Gunter; and Fritschi, Edgar, 4,762,837, Cl. 514-258.000.
Weinstein, Michael E., to General Instrument Corporation. Probe-fed slot antenna with coupling ring. 4,763,130, Cl. 343-770.000.
Weisner, Ronald J.: *See—*
Cook, Henry F.; Sutherland, James F.; and Weisner, Ronald J., 4,762,663, Cl. 376-259.000.
Weiss, Edgar: *See—*
Wesch, Ludwig; and Weiss, Edgar, 4,762,746, Cl. 428-305.500.
Weiswurm, Klaus D.: *See—*
Tucker, J. Camille; and Weiswurm, Klaus D., 4,762,331, Cl. 280-30.000.
Welch Allyn, Inc.: *See—*
Allred, Jimmie B., III; and Krauter, Allan I., 4,762,119, Cl. 128-4.000.
Lia, Raymond A.; and Krauter, Allan I., 4,762,118, Cl. 128-4.000.
Wells, John H.: *See—*
Morrish, Andrew J.; and Wells, John H., 4,763,120, Cl. 340-748.000.
Wendisch, Detlef: *See—*
Moeschler, Heinrich F.; Pfluger, Wolfgang; and Wendisch, Detlef, 4,762,716, Cl. 424-195.100.
Wesch, Ludwig; and Weiss, Edgar, to Odenwald-Chemie GmbH. Fire-retarding laminated element and a method of controlling expansion of expandable, fire-retarding foaming-agent layers. 4,762,746, Cl. 428-305.500.
Wesolowski, Jan S.: *See—*
Oldershaw, Reginald W.; Wagner, Steven D.; and Wesolowski, Jan S., 4,763,203, Cl. 358-320.000.
Wessa, Theo. Device for comminuting small ice bodies. 4,762,282, Cl. 241-190.000.
Wessel, Wolf: *See—*
Schoneck, Gunter; Stumpp, Gerhard; and Wessel, Wolf, 4,762,107, Cl. 123-478.000.
Wesseler, Martin G.: *See—*
Temple, Russell A.; Wesseler, Martin G.; and Harper, David C., 4,763,159, Cl. 355-3.00R.
Wesson, David S.; Luke, Robert R.; George, Flint R.; Haugen, David M.; and George, Kevin R., to Halliburton Company. Pressure assist detonating bar and method for a tubing conveyed perforator 4,762,179, Cl. 166-297.000.
West, Michael W.: *See—*
Gregory, Stephen O.; West, Michael W.; Wolf, James L.; and Sallis, Daniel V., 4,762,273, Cl. 236-93.00R.
Westbrook, James E.; and Suarez, Adolfo B., to Datos Corporation Transmission and reception of synchronous data and timing signals using a steady bit stream. 4,763,318, Cl. 370-84.000.
Westfall, Wade H.; Wheaton, Roy; and Meckstroth, Alan F. Video tape cassette with internal tape erasing means. 4,763,218, Cl. 360-132.000.
Westinghouse Brake & Signal Co., Ltd.: *See—*
Cowen, David W., 4,763,290, Cl. 364-604.000.
Westinghouse Electric Corp.: *See—*
Blain, Jeffrey W.; and Chen, Jean, 4,762,204, Cl. 187-101.000.
Boundy, Bruce K.; and Vander Till, Gerald N., 4,762,072, Cl. 108-50.000.
Cheng, Wenche W.; Stoner, Donald R.; and Keller, Harold T., deceased, 4,762,674, Cl. 376-405.000.
Clark, Robert E., 4,762,577, Cl. 148-325.000.
Cook, Henry F.; Sutherland, James F.; and Weisner, Ronald J., 4,762,663, Cl. 376-259.000.
Daggett, Kenneth E.; Onaga, Eimei M.; and Casler, Richard J., Jr., 4,763,055, Cl. 318-368.000.
Doshi, Pratap K., 4,762,669, Cl. 376-442.000.
Feild, Alexander L., Jr., 4,762,675, Cl. 376-414.000.
Gjertsen, Robert K.; Wilson, John F.; and Kirby, William E., 4,762,676, Cl. 376-443.000.
Junker, Warren R.; Savage, George A.; Ingraham, Ronald H.; Bone, David A.; Attaar, Mustan; Castner, Raymond P.; and Taszarek, Bruce J., 4,763,274, Cl. 364-481.000.
Loose, Robert A.; and Rice, William R., 4,762,668, Cl. 376-310.000.
Paul, Gary E.; Carr, Ronald H.; and Stern, Lee W., 4,762,673, Cl. 376-333.000.
Prisco, Anthony J.; and Johnson, Alfred N., 4,762,280, Cl. 241-3.000.
Sharbaugh, John E., 4,762,667, Cl. 376-298.000.
Smeltzer, Eugene E.; Skriba, Michael C.; and McDaniel, Keith K., 4,762,647, Cl. 252-632.000.
Smith, Allen C., Jr., 4,762,091, Cl. 122-32.000.
Wetzel, Hans J.; and Matuszczak, Bernd, to Aeroquip GmbH. Method of manufacturing a hose stem for hydraulically loaded friction fittings or threaded fittings. 4,761,873, Cl. 29-517.000.
Wheaton, Roy: *See—*
Westfall, Wade H.; Wheaton, Roy; and Meckstroth, Alan F., 4,763,218, Cl. 360-132.000.
Whitaker, Len. Convertible stroller-backpack baby carrier. 4,762,256, Cl. 224-161.000.
White Consolidated Industries, Inc.: *See—*
Gatton, John R., 4,762,226, Cl. 206-320.000.
White, John R.: *See—*
Coughlan, Joel B.; Harvey, Howard W.; Upton, R. Glen; and White, John R., 4,762,455, Cl. 414-4.000.
White, Michael G.: *See—*
Sheikholeslami, Amir M.; and White, Michael G., 4,763,046, Cl. 315-381.000.
Whitey Co.: *See—*
Wozniak, Richard F.; Stewart, Robert C.; and Williams, Peter C., 4,762,301, Cl. 251-171.000.
Whitten, George H., to CPC International Inc. Process for microplant propagation through increased multiple shoot formation. 4,762,790, Cl. 435-240.450.
Whitten, Kathleen R.: *See—*
Cohen, Marlene L.; Fuller, Ray W.; Garbrecht, William L.; and Whitten, Kathleen R., 4,762,842, Cl. 514-288.000.
Whittle, Alan J.; Salmon, Roger; and McDonald, Edward, to Imperial Chemical Industries PLC. Pyrimidine derivatives. 4,762,835, Cl. 514-256.000.
Wick, Albert: *See—*
Heining, Hans-Dieter; and Wick, Albert, 4,763,058, Cl. 318-807.000.
Wickre, Monica. Method and apparatus for orienting or labeling a beverage dispensing container responsive to tactile stimuli. 4,762,229, Cl. 206-459.000.

Wideman, Lawson G., to Goodyear Tire & Rubber Company, The Process for the isomerization of branched dienes. 4,762,962, Cl. 585-671.000.
Wieczorek, John P. DC/AC/DC Power conversion system including parallel transformers. 4,763,237, Cl. 363-20.000.
Wiedemann, Wolfgang; Drexler, Michael; and Fuerderer, Juergen, to Hoechst Aktiengesellschaft. Electrophotographic recording material comprising a pyrazoline derivative. 4,762,760, Cl. 430-59.000.
Wiese, John R.: *See—*
Kaufman, Edwin E.; Shuttleworth, William E.; and Wiese, John R., 4,762,571, Cl. 136-234.000.
Wilburn, Richard D., Jr.: *See—*
McConnell, Joseph W., III; Wilburn, Richard D., Jr.; Northrup, Allan R.; and Neal, Lloyd D., 4,762,228, Cl. 206-387.000.
Wilding, Oliver K., Jr.: *See—*
Halm, Roland L.; Pierce, Andrew B.; and Wilding, Oliver K., Jr., 4,762,940, Cl. 556-472.000.
Wilkie, Robert C. Combination tape applicator and tape dispenser. 4,762,586, Cl. 156-527.000.
Will, Hanspeter: *See—*
Balliello, Paolo; Bruttel, Beat; and Will, Hanspeter, 4,762,636, Cl. 252-95.000.
William Still & Sons Limited: *See—*
Snowball, Malcolm R., 4,762,613, Cl. 210-192.000.
Williames, Geoffrey A., to Williames Hi-Tech International Pty. Ltd. Flower harvesters. 4,761,942, Cl. 56-130.000.
Williames Hi-Tech International Pty. Ltd.: *See—*
Williames, Geoffrey A., 4,761,942, Cl. 56-130.000.
Williams, Bruce T. Sensor for electrostatic voltmeter. 4,763,078, Cl. 324-458.000.
Williams Electronics Games, Inc.: *See—*
DeMar, Lawrence E., 4,763,256, Cl. 364-410.000.
Williams, Peter C.: *See—*
Wozniak, Richard F.; Stewart, Robert C.; and Williams, Peter C., 4,762,301, Cl. 251-171.000.
Willoughby, Ross C.: *See—*
Browner, Richard F.; and Willoughby, Ross C., 4,762,995, Cl. 250-282.000.
Wilson, David J.; and Elmore, David, to Perkins Engines Group Limited. Dipstick for measuring oil or fluid levels. 4,761,886, Cl. 33-126.70R.
Wilson, Herbert L.; and Guiterrez, William A., to United States of America, Army. Close space epitaxy process. 4,762,576, Cl. 156-611.000.
Wilson, Homer M.: *See—*
Delatorre, Leroy C.; Wilson, Homer M.; and Pingenot, E. Rene, 4,763,259, Cl. 364-422.000.
Wilson, John F.: *See—*
Gjertsen, Robert K.; Wilson, John F.; and Kirby, William E., 4,762,676, Cl. 376-443.000.
Wilson, Lonny L.: *See—*
Player, Kenneth W.; and Wilson, Lonny L., 4,762,725, Cl. 426-582.000.
Winberg, Jan: *See—*
Kallenius, Gunilla P.; Lundblad, Karl A.; Mollby, Nils R.; Svensson, Stefan B.; and Winberg, Jan, 4,762,824, Cl. 514-54.000.
Windstrup, Robert F.; Bodnar, Steven A.; and Larsen, B. Pershing, to Continental Group, Inc., The. Blow molding machine. 4,762,486, Cl. 425-541.000.
Winkler, Jurgen: *See—*
Goyert, Wilhelm; Winkler, Jurgen; Perrey, Hermann; and Heidingsfeld, Herbert, 4,762,884, Cl. 525-28.000.
Winkler, Otmar; Peter, Heinz; and Pfaller, Egon, to SKF GmbH Rotary pump. 4,762,480, Cl. 418-266.000.
Winter, Herbert: *See—*
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000.
Wirth, Hermann O.: *See—*
Phillips, Emyr; O'Neil, Robert M.; and Wirth, Hermann O., 4,762,628, Cl. 252-51.50R.
Wise, Lawrence D.: *See—*
Caprathe, Bradley W.; Jaen, Juan C.; and Wise, Lawrence D., 4,762,843, Cl. 514-293.000.
Wissman, Edward E.; and Tenaglia, Vincent, to Washington Suburran Sanitary Commission. Apparatus including a portable hoist and grapples for use in repairing water main meters. 4,762,239, Cl. 212-179.000.
Wissner, Allan; Green, Kenneth E.; Hamann, Philip R.; and Levin, Jeremy, to American Cyanamid Company. Precursors and synthesis of methyl-9-oxo-11α,16-dihydroxy-16-vinyl-5-cis-13-trans-prostadienoates. 4,762,935, Cl. 549-210.000.
Wissner, Allan; Sum, Phaik E.; and Schaub, Robert E., to American Cyanamid Co. Antihypertensive phosphate derivatives. 4,762,942, Cl. 558-169.000.
Witte, Vernon C.: *See—*
Soucie, William G.; Chen, Wen-Sherng; Witte, Vernon C.; Henry, George A.; and Drehkoff, W. Dennis, 4,762,726, Cl. 426-602.000.
Witter, Judith M. Child restraint device. 4,762,315, Cl. 272-1.00R.
WLPU Holdings Proprietary Limited: *See—*
Bosman, Peter B., 4,762,650, Cl. 261-100.000.
Wohlfrom, Josef: *See—*
Poxleitner, Martin; Wohlfrom, Josef; and Otomanski, Kurt, 4,763,001, Cl. 250-334.000.
Wohlkonig, Hansjorg; Muller, Heinz; and Auberger, Heinrich, to Voest-Alpine Aktiengesellschaft. Process for melting particulate material. 4,763,337, Cl. 373-86.000.
Woiceshyn, Mark; O'Connor, Terry J.; and Cooper, Ian G., to Bay Mills Limited. Reinforcing composite for roofing membranes and process for making such composites. 4,762,744, Cl. 428-219.000.
Wolf, James L.: *See—*
Gregory, Stephen O.; West, Michael W.; Wolf, James L.; and Sallis, Daniel V., 4,762,273, Cl. 236-93.00R.
Wolfe, Raymond: *See—*
Hegarty, John; and Wolfe, Raymond, 4,762,384, Cl. 350-96.120.
Wolfe, William H.; and Osborne, William P., to Comsat Telesystems, Inc. Demand assigned reformatting with an overflow area for time division multiple access communication. 4,763,325, Cl. 370-104.000.
Wolfert, Clarke K., to Air Vent Inc. Replacement filtered soffit ventilator. 4,762,053, Cl. 98-37.000.
Wolff, Michel, to Kuhn, S. A. Rotary mower. 4,761,940, Cl. 56-13.600.
Wolff, Sheldon M.: *See—*
Auron, Philip E.; Webb, Andrew C.; Gehrke, Lee; Dinarello, Charles A.; Rosenwasser, Lanny J.; Rich, Alexander; and Wolff, Sheldon M., 4,762,914, Cl. 530-351.000.
Wolfhard, Dietrich: *See—*
Bechem, Werner; May, Johann J.; Peters, Hubertus; Schnettler, Roland; Solbach, Werner; and Wolfhard, Dietrich, 4,762,602, Cl. 204-206.000.
Wollar, Burnell: *See—*
Schwind, Richard J.; Bart, Joseph; and Wollar, Burnell, 4,762,450, Cl. 411-34.000.
Woltron, Herbert, to Isoport Verbundbauteile G.m.b.H. Leaf spring of plastic material and method for its manufacture. 4,762,307, Cl. 267-47.000.
Wong, Gail L.: *See—*
McCormick, Francis P.; Wong, Gail L.; Clark, Robin; Arnheim, Norman; Nitecki, Danute E.; and Feramisco, James R., 4,762,706, Cl. 424-85.000.
Wong, Raymond W.: *See—*
Ng, Dominic S.; Wong, Raymond W.; and Croucher, Melvin D., 4,762,764, Cl. 430-115.000.
Wood, Lawson A. Joystick with additional degree of control 4,763,100, Cl. 338-128.000.
Wood, Richard L., to United States of America, Energy Support and maneuvering device. 4,762,298, Cl. 248-179.000.
Wood, William P. Prepackaged firebox apparatus for outdoor cooking or the like. 4,762,525, Cl. 44-534.000.
Woods, Ruth E. Psychotherapy device. 4,762,494, Cl. 434-236.000.
Woodside, Eric. Festoon lighting. 4,763,232, Cl. 362-249.000.
Wool Research Organisation of New Zealand Inc.: *See—*
McFarlane, Ian D.; Jones, Melvin; Watson, Mark; Walls, Richard J.; Clare, Leslie T.; and Radford, Edward C., 4,761,857, Cl. 19-98.000.
Wozniak, Richard F.; Stewart, Robert C.; and Williams, Peter C., to Whitey Co. Compact multi-service ball valve. 4,762,301, Cl. 251-171.000.
Wright, Adrian G., to North Broken Hill Limited. Coated front copy paper. 4,762,868, Cl. 524-17.000.
Wright, Daniel A.: *See—*
Model, Michael J.; and Wright, Daniel A., 4,763,014, Cl. 307-66.000.
Wright, Ian G.: *See—*
Nagarajan, Vaidyanathan; and Wright, Ian G., 4,762,557, Cl. 75-244.000.
Wright Line Inc.: *See—*
Beam, John W.; and Latino, Richard M., 4,762,379, Cl. 312-320.000.
Wu, Shin-Tson, to Hughes Aircraft Company. Voltage-biased liquid crystal optical power limiter. 4,762,399, Cl. 350-347.00V.
Wu, Shudong; Chen, Xiangzhen; and Tao, Xiou, to Shanghai Institute of Optics and Fine Mechanics, Academia Sinica. Fringe scanning point diffraction interferometer by polarization. 4,762,417, Cl. 356-351.000.
Wuttke, Gero, to Siemens Aktiengesellschaft. Arrangement for identifying the position of a movable body with ultrasound. 4,762,001, Cl. 73-597.000.
Wyberg, Gregory R., to Minnesota Mining and Manufacturing Company. Gable-top container. 4,762,234, Cl. 206-631.300.
Wybro, Pieter G.; and Leach, Colin P., to Conoco Inc. Modular near-surface completion system. 4,762,180, Cl. 166-350.000.
Xerox Corporation: *See—*
Bergen, Richard F., 4,762,997, Cl. 250-326.000.
Duff, James M.; and Branston, Randolph E., 4,762,734, Cl. 427-146.000.
Froelich, Ronald W., 4,763,190, Cl. 358-79.000.
Gundlach, Robert W.; and Bergen, Richard F., 4,763,141, Cl. 346-158.000.
Harrigan, Michael E.; Rees, James D.; and Rebres, Robert P., 4,763,173, Cl. 355-52.000.
Lindblad, Nero R., 4,763,168, Cl. 355-15.000.
Ng, Dominic S.; Wong, Raymond W.; and Croucher, Melvin D., 4,762,764, Cl. 430-115.000.
Nothmann, Gerhard W., 4,762,065, Cl. 101-409.000.
Schell, Richard P., 4,763,171, Cl. 355-50.000.
Schlueter, Edward L., Jr., 4,763,158, Cl. 355-3.0FU.
Temple, Russell A.; Wesseler, Martin G.; and Harper, David C., 4,763,159, Cl. 355-3.00R.
Xiujing, Shang: *See—*
Youjun, Liu; Xiujing, Shang; Yinlong, Liu; Shixiong, Wan; and Jieping, Liu, 4,762,104, Cl. 123-293.000.

VOL 1093 ISS 2 AG 9 1988 UMI

Yabe, Kiyoshi, to Mitsubishi Denki Kabushiki Kaisha. Spring-type operating mechanism for a circuit interrupter. 4,762,971, Cl. 200-153.0SC

Yachiyoda Kogyo Co., Ltd.: *See*—
Kimura, Shuzo, 4,762,126, Cl. 128-328.000

Yachiyoda Sangyo Co., Ltd.: *See*—
Kimura, Shuzo, 4,762,126, Cl. 128-328.000.

Yacobucci, Paul D.: *See*—
Chen, Tsang J.; Upson, Donald A.; and Yacobucci, Paul D., 4,762,941, Cl. 558-44.000.

Yada, Akira; Matsumoto, Shusaku; Kawamori, Yoshihiro; Adachi, Yoshitugu; and Hatakawa, Yoshio, to Dai-ichi Kogyo Seiyaku Co. Ltd. Process for preparing high molecular weight acrylic polymers. 4,762,862, Cl. 522-3.000.

Yada, Shuhei: *See*—
Shimada, Takeo; Okada, Noriyuki; Fujimoto, Takashi; and Yada, Shuhei, 4,762,889, Cl. 525-201.000.

Yaegashi, Takehisa: *See*—
Kinugasa, Yukio; and Yaegashi, Takehisa, 4,762,026, Cl 74-866.000

Yagasaki, Toshiaki, to Canon Kabushiki Kaisha. Copy sheet feed controller for an electrostatic copier. 4,763,162, Cl. 355-14.0SH

Yagi, Toshihiko: *See*—
Yamazaki, Katsumasa; Yagi, Toshihiko; Michiue, Kenji; Goto, Sohei; and Mochizuki, Yoshiharu, 4,762,778, Cl. 430-567.000.

Yagishita, Aisaburo. Apparatus and method for filtration and concentration of suspension. 4,762,624, Cl. 210-778.000.

Yamada, Kouichi; and Mizuno, Masatoshi, to NEC Corporation. Carry circuit suitable for a high-speed arithmetic operation. 4,763,295, Cl. 364-786.000

Yamada, Tatsuo, to Mitsubishi Denki Kabushiki Kaisha. Alternatively addressed semiconductor memory array. 4,763,302, Cl. 365-189.000.

Yamada, Toshiyuki; Kitagawa, Makoto; and Kurihara, Toshio, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle. 4,762,197, Cl. 180-219.000

Yamada, Tsuneo: *See*—
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000.

Yamada, Yoshihisa; Matsuoka, Yuzo; and Matsumoto, Mamoru, to Tanabe Seiyaku Co., Ltd. Quinazolinone copmpounds useful for the prophyloxis and treatment of diabetic complications. 4,762,839, Cl. 514-259.000

Yamaguchi, Satoshi: *See*—
Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, 4,762,695, Cl. 423-54.000

Yamaguchi, Takao: *See*—
Iguchi, Susumu; Hata, Daisuke; Ohno, Yoshimi; Hatase, Takayuki; Yamaguchi, Takao; and Aoki, Kazumasa, 4,763,154, Cl. 354-403.000

Yamaki, Isao: *See*—
Maki, Takao; Yamaki, Isao; Akima, Hideo; and Hoashi, Akira, 4,762,375, Cl. 303-96.000.

Yamaki, Shigetoshi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for separating para-dichlorobenzene from isomeric mixture of dichlorobenzenes. 4,762,955, Cl. 570-211.000

Yamamoto, Haruo: *See*—
Makiura, Yoshinori; Wakikaido, Takahiro; Yamamoto, Haruo; Ogawa, Shusaku; and Ichihashi, Takao, 4,763,174, Cl. 355-55.000.

Yamamoto, Hisao: *See*—
Takeo, Suguru; Yamamoto, Hisao; Kado, Hisao; Watanabe, Nobuhiro; Kamimura, Minoru; Uchida, Kiichi; and Mori, Yoshitada, 4,762,825, Cl. 514-54.000.

Yamamoto, Hitoshi: *See*—
Tamba, Shinichi; Yamamoto, Hitoshi; and Shimizu, Akihito, 4,762,098, Cl. 123-90.330

Yamamoto, Kanji; and Yamazaki, Isao, to Hitachi, Ltd. Floppy disc drive control circuit section substrate. 4,763,211, Cl. 360-97.000

Yamamoto, Masaki: *See*—
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl. 165-11.100

Yamamoto, Takashi; Murata, Ryuji; Tahara, Yasuteru; Terada, Hiromu; and Sakunaga, Kenichi, to Mitsubishi Rayon Co., Ltd. Plastic optical fibers. 4,762,392, Cl. 350-96.300.

Yamane, Yoshiro: *See*—
Fujikawa, Tetsuzo; Hirata, Makizo; Tamba, Shinichi; and Yamane, Yoshiro, 4,762,094, Cl. 123-90.600

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100.

Yamanouchi, Shosuke: *See*—
Hata, Ryosuke; Yamanouchi, Shosuke; Hirose, Masayuki; Kuwabara, Hidemitsu; Mizumoto, Yasuharu; and Hagiuda, Yasuhiro, 4,762,965, Cl. 174-23.00R.

Yamashita, Atsushi: *See*—
Shimoda, Kaneyasu; Yamashita, Atsushi; and Katoh, Tadayoshi, 4,763,328, Cl. 371-3.000

Yamashita, Kazuhiko: *See*—
Ogawa, Hisashi; and Yamashita, Kazuhiko, 4,762,336, Cl. 280-673.000

Yamashita, Tsukasa; Matano, Masaharu; Mori, Kazuhiko; and Inoue, Nobuhisa, to Omron Tateisi Electronics Co. Two dimensional light beam deflectors utilizing thermooptical effect and method of using same. 4,762,383, Cl. 350-96.130.

Yamashita, Tsutomu: *See*—
Endo, Hiroshi; Iiri, Shigeo; Hayashi, Masaru; Yamashita, Tsutomu; Yamaguchi, Satoshi; and Seimiya, Motoo, 4,762,695, Cl. 423-54.000.

Yamatsu, Isao; Suzuki, Takeshi; Abe, Shinya; Nakamoto, Kouji; Kajiwara, Akiharu; Fujimori, Tohru; Harada, Koukichi; and Kitamura, Shinichi, to Eisai Co., Ltd. Polyprenyl compound, process for the production thereof and drug containing the same. 4,762,829, Cl. 514-218.000.

Yamaura Seisakusho Ltd.: *See*—
Nagai, Noriyuki, 4,762,492, Cl. 433-174.000.

Yamaya, Susumu: *See*—
Hirano, Shin-ichi; and Yamaya, Susumu, 4,762,729, Cl. 427-38.000.

Yamazaki, Isao: *See*—
Yamamoto, Kanji; and Yamazaki, Isao, 4,763,211, Cl. 360-97.000.

Yamazaki, Katsumasa; Yagi, Toshihiko; Michiue, Kenji; Goto, Sohei; and Mochizuki, Yoshiharu, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light sensitive material. 4,762,778, Cl. 430-567.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method for making a non-single crystal insulated-gate field effect transistor. 4,762,807, Cl. 437-100.000

Yanaki, Nicola E. Method and structure for optimizing radiographic quality by controlling X-ray tube voltage, current, focal spot size and exposure time. 4,763,343, Cl. 378-110.000.

Yang, Karl H. K.: *See*—
Tsen, Chan-Tang; and Yang, Karl H. K., 4,763,026, Cl. 307-530.000.

Yang, Robert K.: *See*—
Rieger, Martin M.; and Yang, Robert K., 4,762,930, Cl. 548-108.000

Yang, Tai-Her. Fan having speed indicator. 4,762,463, Cl. 416-61.000.

Yariv, Amnon: *See*—
Kwong, Sze-Keung; Rakuljic, George A.; Leyva, Victor; and Yariv, Amnon, 4,762,394, Cl. 350-171.000

Yarnell, J. Jay; Pflaum, Craig A.; Davidson, Arthur F.; and Kuhn, Harry J., to International Minerals & Chemical Corp. Method for increasing fluosilicic acid recovered from wet process phosphoric acid production. 4,762,698, Cl. 423-341.000.

Yasuda, Hirohiko: *See*—
Tsutsui, Osamu; Yasuda, Hirohiko; Kuwahara, Hidehiko; Takeuchi, Hirofumi; Hayashi, Keiji; Higuchi, Mitsuhiro; and Fujii, Akio, 4,761,836, Cl. 4-420.200.

Yasuda, Hiroshi; and Miyazaki, Takayuki, to Fujitsu Limited. Calibration method for electron beam exposer. 4,763,004, Cl. 250-396.00R.

Yasuda, Nobuyuki, to Sony Corporation. Signal selecting circuit for simultaneously performing plural input-output operations. 4,763,123, Cl. 340-825.650.

Yasui, Katsumi: *See*—
Kawabe, Atsushi; Yasui, Katsumi; Yamamoto, Masaki; Nagata, Koji; Atsumi, Tetsuro; and Nishikawa, Mamoru, 4,762,168, Cl. 165-11.100.

Yasui, Masaru; and Miyazu, Taisuke, to Hosiden Electronics Co., Ltd. Pixel transistor free of parasitic capacitance fluctuations from misalignment. 4,762,398, Cl. 350-334.000.

Yavari, Ali R.: *See*—
Senillou, Claude; de Framond, Remy; Garnier, Marcel; Yavari, Ali R.; and Joud, Jean-Charles, 4,762,653, Cl. 264-22.000.

Yeagle, Paul H. Bar code printing method. 4,762,063, Cl. 101-93.010

Yellin, Tobias O.; Edwards, Philip N.; and Large, Michael S., to Imperial Chemical Industries, Ltd.; and ICI Americas, Inc. Haloguanidine intermediates. 4,762,932, Cl. 548-198.000.

Yensen, Nicholas P., to Salt Weeds. Yensen 3a. 4,762,964, Cl. 800-1.000.

Yeomans, Allan J. Digging point assembly. 4,762,184, Cl. 172-704.000.

Yeung, Paul K. K.; Howard, Alan D.; Hoo, James W.; and Pennock, James L., to Huntron Instruments, Inc. Automatic test equipment for integrated circuits. 4,763,066, Cl. 324-73.00R

Yhtyneet Paperitehtaat Oy Jylhavaara: *See*—
Maijala, Ari, 4,761,858, Cl. 19-296.000.

Yim, Byung D.: *See*—
Seol, Mam T., 4,762,332, Cl. 280-242.0WC.

Yingst, Stephen M.: *See*—
Asick, John C.; Landis, John M.; and Yingst, Stephen M., 4,762,505, Cl. 439-347.000

Yinlong, Liu: *See*—
Youjun, Liu; Xiujing, Shang; Yinlong, Liu; Shixiong, Wan; and Jieping, Liu, 4,762,104, Cl. 123-293.000.

Yoda, Motoyuki; Kitagawa, Mikio; and Watanabe, Miwako, to Kurita Water Industries Ltd. Anaerobic fluidized bed apparatus. 4,762,612, Cl. 210-150.000

Yokoi, Masanori: *See*—
Hamasaki, Shuji; Taniguchi, Michio; Yokoi, Masanori; Akiyama, Shunichi; and Tokushima, Yasuo, 4,761,894, Cl. 34-39.000.

Yokoi, Mitsuyoshi: *See*—
Takehisa, Fumitaka; Yokoi, Mitsuyoshi; and Kondoh, Fumio, 4,762,163, Cl. 164-72.000.

Yokoyama, Masaaki: *See*—
Kawashima, Yoshio; Ogata, Shunji; Yokoyama, Masaaki; Tomiku, Masato; Yamada, Tsuneo; Kuno, Tsutomu; Murakami, Hisao; Morimoto, Hiroyuki; Myojo, Toyoshige; Watanabe, Kozo; and Tanaka, Toshihiro, 4,761,980, Cl. 72-24.000

Yokoyama, Yutaka: *See*—
Shinozaki, Fumihiko; and Yokoyama, Yutaka, 4,762,629, Cl. 252-62.200

Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,630, Cl. 252-622.000.

Shinozaki, Fumihiko; and Yokoyama, Yutaka, 4,762,631, Cl. 252-62.200.

Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,632, Cl. 252-62.200

Shinozaki, Fumihiko; and Yokoyama, Yutaka, 4,762,633, Cl. 252-62.200

Shinozaki, Fumihiko; Tsuji, Tatsunori; and Yokoyama, Yutaka, 4,762,634, Cl. 252-62.200.

Yon, Terrell H., Jr., to General Electric Company. Aerostat structure with conical nose. 4,762,295, Cl. 244-115.000

Yoneda, Shigeo; Hiramoto, Masato; and Kanayama, Akira, to Sharp Kabushiki Kaisha. Capacitive coupling type data transmission circuit for portable electronic apparatus. 4,763,340, Cl. 375-121.000

Yoon, Hyun-Nam: *See*—
Leslie, Thomas M.; Yoon, Hyun-Nam; DeMartino, Ronald N.; and Stamatoff, James B., 4,762,912, Cl. 528-503.000

Yoshida, Akio: *See*—
Kawaguchi, Kenji; and Yoshida, Akio, 4,761,979, Cl. 72-9.000.

Yoshida, Hirokazu: *See*—
Takemura, Seiki; Kobayashi, Mikio; Machida, Mitsunobu; and Yoshida, Hirokazu, 4,763,133, Cl. 343-912.000

Yoshida, Hisashi: *See*—
Otshibashi, Hirotsugu; Ohara, Muneyuki; Hagiwara, Kenzo; Yoshida, Hisashi; Kitagawa, Kunio; and Shimizu, Kimio, 4,762,263, Cl. 228-5.100.

Yoshida, Makiko, administrator: *See*—
Yoshida, Tokio, deceased, 4,762,514, Cl. 493-227.000

Yoshida, Shiro: *See*—
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300

Yoshida, Takeo: *See*—
Fuchigami, Nobuhisa; Yoshida, Takeo; and Fukuda, Hiroya, 4,762,654, Cl. 264-45.100

Yoshida, Tokio, deceased (by Yoshida, Makiko, administrator), to Fujimori Kogyo Co., Ltd. Method of making beverage packaging bag. 4,762,514, Cl. 493-227.000.

Yoshida, Tomiharu; Omote, Tatsuyuki; Ishii, Yoshimi; and Izumi, Kiyoshi, to Hitachi, Ltd. Cleaning apparatus for atomic reactor control rod driving means (CRD). 4,762,670, Cl. 376-313.000

Yoshida, Tomio: *See*—
Hirai, Mikio; Nishikubo, Yoshiaki; Yoshida, Tomio; and Ochi, Tsuneo, 4,762,886, Cl. 525-70.000

Yoshigai, Toshinobu. Brake lever device. 4,762,018, Cl. 74-523.000.

Yoshikawa, Masato: *See*—
Akiyama, Setsuo; Fukuura, Yukio; Yoshikawa, Masato; Matsuda, Takeyuki; Monobe, Hisanobu; Ohkubo, Shigeki; and Yoshida, Shiro, 4,762,589, Cl. 156-307.300.

Yoshitake, Toshihiko: *See*—
Maeda, Hiroshi; Kanamaru, Ryunosuke; Ishida, Nakao; Yoshitake, Toshihiko; and Ueda, Minoru, 4,762,885, Cl. 525-54.100.

Yoshizawa, Toshikazu: *See*—
Fukahori, Yoshihide; Seki, Wataru; Yoshizawa, Toshikazu; Suzuki, Shigenobu; Suga, Takeshi; Maeda, Mitsuaki; and Ogino, Akihiko, 4,761,925, Cl. 52-167.000

Youjun, Liu; Xiujing, Shang; Yinlong, Liu; Shixiong, Wan; and Jieping, Liu, to Tianjin University. Tj-jet chamber of gasoline engine. 4,762,104, Cl. 123-293.000

Young, Quentin, to Rock-A-Bye Restraint Company, Inc. Child restraint device. 4,762,364, Cl. 297-250.000.

Youngner, Philip G. Distilling apparatus. 4,762,593, Cl. 202-186.000.

Youssef, Nabil N.; and Miller, Gene W. Soil amendment material and process for preparation thereof. 4,762,545, Cl. 71-27.000

Ytkemiska Institutet: *See*—
Biverstedt, Arne, 4,762,573, Cl. 148-23.000.

Yu, Kwong-Kwan, to Johnson Electric Industrial Manufactory, Limited. Commutator for a d. c. motor. 4,763,036, Cl. 310-233.000

Yuasa, Hitoshi; Matsuno, Mitsuo; and Satoh, Tetsuo, to Nippon Oil Co., Ltd. High-density liquid fuel. 4,762,092, Cl. 123-1.00A

Yukawa, Masayuki, to Nintendo Co., Ltd. Front loading apparatus for a memory cartridge utilized for a data processing machine. 4,763,300, Cl. 365-52.000

Yuyama, Megumu: *See*—
Izumimoto, Masatoshi; Wakamatsu, Syuji; and Yuyama, Megumu, 4,762,722, Cl. 426-124.000

Zahnradfabrik Friedrichshafen, AG.: *See*—
Lang, Armin, 4,763,091, Cl. 335-258.000

Zank, Gregg A.: *See*—
Chandra, Grish; and Zank, Gregg A., 4,762,895, Cl. 525-474.000

Zappa, Oswald L., to Gas Research Institute. Diode supplied pulsed combustor. 4,762,487, Cl. 431-1.000

Zavalza, Emilio: *See*—
Horton, Terry; and Zavalza, Emilio, 4,762,361, Cl. 296-181.000

Zeeman, Leendert, to U.S. Philips Corporation. Inductive winding for flat motor. 4,763,035, Cl. 310-208.000

Zeigler, Theodore R. Collapsible/expandable structural frameworks. 4,761,929, Cl. 52-646.000.

Zeiler, Hans-Joachim: *See*—
Grohe, Klaus; Schriewer, Michael; Zeiler, Hans-Joachim; and Metzger, Karl G., 4,762,844, Cl. 514-312.000

Zeiner, Hartmut: *See*—
Heinz, Gerhard; Buchert, Hermann; Koch, Juergen; Simon, Georg N.; Ittemann, Peter; and Zeiner, Hartmut, 4,762,869, Cl 524-59.000

Zenith Electronics Corporation: *See*—
Sheikholeslami, Amir M.; and White, Michael G., 4,763,046, Cl 315-381.000

Zermeno, Alfonso; and Marsh, Lee M., Jr., to University of Texas System. Photon detector. 4,763,002, Cl. 250-370.010

Zerrer, Gerhard, to Andreas Stihl. Brushcutter. 4,761,939, Cl 56-12.700.

Zevatech AG: *See*—
Gfeller, Martin; and Wanner, Rudolf, 4,762,354, Cl. 294-2.000

Zevlakis, John M. Apparatus for packaging and dispensing ice cream and the like. 4,762,483, Cl. 425-140.000

Zhao, Bing Y.: *See*—
Liu, Xin X.; Zhao, Bing Y.; Riegel, Herbert; and Chien, Jo-Lung, 4,762,956, Cl. 585-259.000

Zhujun, Zhang: *See*—
Seitz, William R.; Zhujun, Zhang; and Mullin, Jerome, 4,762,799, Cl. 436-79.000

Ziegler, David B., to Thermo King Corporation. Radiator overflow container. 4,762,244, Cl. 220-203.000

Ziegler, Walter: *See*—
Koch, Horst; and Ziegler, Walter, 4,762,892, Cl. 525-279.000

Zimmermann, Jurgen: *See*—
Beyer, Hans-Ernst; Bonitz, Jorg; Entenmann, Robert; Forster, Siegmar; Knab, Rochus; Kunzel, Walter; Kugler, Wolfgang; Mahlberg, Alfred; Miller, Bernhard; Philipp, Matthias; Rohde, Siegfried; Unland, Stefan; Viess, Walter; Winter, Herbert; and Zimmermann, Jurgen, 4,762,105, Cl. 123-417.000

Zink, Deborah L.: *See*—
Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D., Schwartz, Cheryl D.; and Zink, Deborah L., 4,762,923, Cl. 540-455.000

Zoellner, Wolfgang: *See*—
Ritter, Wolfgang; and Zoellner, Wolfgang, 4,762,946, Cl 560-179.000

Zolnowsky, John: *See*—
Keshlear, William M.; Moyer, William C.; and Zolnowsky, John, 4,763,250, Cl. 364-200.000
Moyer, William C.; Cruess, Michael W.; Keshlear, William M., and Zolnowsky, John, 4,763,244, Cl. 364-200.000

Zondler, Rolf: *See*—
Thiel, Norbert; Gerstle, Volker; Zondler, Rolf; and Lederle, Otto, 4,762,733, Cl. 427-55.000

Zucker, Frank. Window alarm system. 4,763,110, Cl. 340-541.000

Zultzke, Walter: *See*—
Enke, Knut; and Zultzke, Walter, 4,762,730, Cl. 427-40.000

VOL 1093 ISS 2 AG 9 1988 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Albers, Teo, Sr. Cattle stanchion apparatus. Re. 32,728, Cl. 119-148.000.

Aoki, Eiichiro: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 32,726, Cl. 84-1.260.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary offset sheet printing machine for prime and verso printing. Re. 32,727, Cl. 101-232.000.

Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, to Nippon Gakki Seizo Kabushiki Kaisha. Envelope generator. Re. 32,726, Cl. 84-1.260

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Fischer, Hermann, Re. 32,727, Cl. 101-232.000.

Nakada, Akira: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 32,726, Cl. 84-1.260.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 32,726, Cl. 84-1.260.

Schmitt, Eugene W., to Sloan Valve Company. Compression type railroad brake slack adjuster. Re. 32,729, Cl. 188-196.00D.

Sloan Valve Company: *See*—
Schmitt, Eugene W., Re. 32,729, Cl. 188-196.00D.

Yamada, Shigeru: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 32,726, Cl. 84-1.260.

Yamaga, Eiichi: *See*—
Hiyoshi, Teruo; Nakada, Akira; Yamada, Shigeru; Aoki, Eiichiro; and Yamaga, Eiichi, Re. 32,726, Cl. 84-1.260.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Abbott, Thomas I.; and Jones, Cynthia G., to Eastman Kodak Company. Radiographic elements exhibiting reduced crossover. B1 4,425,426, 8-9-88, Cl. 430-502.000

Bliss, George N.: *See*—
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., B1 4,569,444, Cl. 209-510.000

Diamond Automations, Inc.: *See*—
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., B1 4,569,444, Cl. 209-510.000

Eastman Kodak Company: *See*—
Abbott, Thomas I.; and Jones, Cynthia G., B1 4,425,426, Cl 430-502 000

Jones, Cynthia G.: *See*—
Abbott, Thomas I.; and Jones, Cynthia G., B1 4,425,426, Cl. 430-502.000.

Kaljas Pty. Limited: *See*—
Kalocsai, Guy I. Z., B1 4,684,404, Cl. 75-118.00R.

Kalocsai, Guy I. Z., to Kaljas Pty. Limited. Dissolution of noble metals. B1 4,684,404, 8-9-88, Cl. 75-118.00R.

McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., to Diamond Automations, Inc. Egg processing system. B1 4,569,444, 8-9-88, Cl. 209-510.000.

Thomas, Leslie P.: *See*—
McEvoy, John C.; Bliss, George N.; and Thomas, Leslie P., B1 4,569,444, Cl. 209-510.000

LIST OF DESIGN PATENTEES

A.Bianchi s.r.l.: *See*—
Flohr, Gerd, 297,172, Cl. D26-39.000

Abbott Laboratories: *See*—
Hollar, Robert C.; and Huang, Tung-Ming, 297,166, Cl. D24-17.000

ADT, Inc.: *See*—
Guscott, John K.; Hotaling, Bryan; Thornton, H. Patrick; and Vulgaris, George, 297,128, Cl. D10-106.000.

Albyn of Stonehaven Limited of Spurryhillock Industrial Estate: *See*—
Smith, Hugh; and Smith, Donald H., 297,177, Cl. D28-30.000

Allyn, J. L. Alphanumeric font matrix. 297,147, 8-9-88, Cl. D18-26.000.

Amway Corporation: *See*—
Kool, Dennis J., 297,159, Cl. D23-207.000.

Andersen, Ib, to Danette Design Svendborg A/S. Lamp shade, or similar article. 297,173, 8-9-88, Cl. D26-136.000

Andersen, Michael. Wind chime. 297,129, 8-9-88, Cl. D10-116.000

Antonious, Anthony J. Golf club head. 297,154, 8-9-88, Cl. D21-217.000

Applegate, Robert L., Jr.; Hart, Dennis L.; and Garraffa, Dean R., to Under Sea Industries, Inc. Inflator for buoyancy compensator 297,156, 8-9-88, Cl. D21-237.000

Atlas Air Australia Pty., Limited: *See*—
Marton, Lewis; and Ward, Colin, 297,158, Cl. D23-387.000.

AVIA Group International, Inc.: *See*—
Selbiger, Lawrence, 297,070, Cl. D2-314.000.

Baldree, Marvin J.; and Utz, Raymon D. Rack for supporting a plurality of vertically oriented rings. 297,081, 8-9-88, Cl. D6-462.000.

Bayerische Motoren Werke Aktiengesellschaft: *See*—
Seehaus, Wolfgang; and Gevert, Klaus-Volker, 297,179, Cl. D29-16.000

Behring, Alexander. Hatchback support member. 297,108, 8-9-88, Cl. D8-330.000

Benoit, Gordon L., to Mobil Oil Corporation. Bag. 297,113, 8-9-88, Cl. D9-305.000

Beta Industries, Inc.: *See*—
Thompson, Robert D.; and Sturgeon, Wayne E., 297,111, Cl. D8-373.000

Binder, J. Morris; Drummond, Archie G., Jr.; and Fahnstrom, Dale E., to Tone Brothers, Inc. Display rack for spice container or the like. 297,082, 8-9-88, Cl. D6-463.000.

Blanc GmbH & Co.: *See*—
Blanc, Walter; and Johannboke, Uwe, 297,163, Cl. D23-290.000.
Muck, Manfred; and Kilian, Ingbert, 297,162, Cl. D23-290.000.

Blanc, Walter; and Johannboke, Uwe, to Blanc GmbH & Co. Sink. 297,163, 8-9-88, Cl. D23-290.000

Burke, William L.; and Marple, Elwood. Purse holder. 297,074, 8-9-88, Cl. D3-54.000.

Cab-Tek, Inc.: *See*—
Goodlander, Theodore J., 297,141, Cl. D14-114.000.

Canada Cup, Inc.: *See*—
West, John W., 297,089, Cl. D7-14.000
West, John W., 297,090, Cl. D7-14.000

Canon Kabushiki Kaisha: *See*—
Kikuchi, Nobuo; Sunouchi, Akio; and Mizogui, Toyokazu, 297,145, Cl. D16-1.000

Cassano's Inc.: *See*—
Leung, Pak H., 297,092, Cl. D7-102.000.

Christie, John A., to Ogden Industries Pty. Ltd. Lock bolt housing. 297,109, 8-9-88, Cl. D8-341.000.

Citizen Watch Co., Ltd.: *See*—
Kabaya, Harumichi, 297,122, Cl. D10-32.000
Kabaya, Harumichi, 297,123, Cl. D10-32.000

Clarke, Tom E. Revolver recoil compensator. 297,152, 8-9-88, Cl. D22-108.000.

Collins, Thomas J.; and Schneider, Pina, to Keptel, Inc. Network interface enclosure. 297,136, 8-9-88, Cl. D13-40.000

Culver, Duncan; Peachey, Ezra T.; and Sirois, Michael G., to Northern Telecom Limited. Base for a telephone set. 297,138, 8-9-88, Cl. D14-62.000

Curci, William. Fishing tackle box. 297,073, 8-9-88, Cl. D3-38.000

D & G Products: *See*—
Davenport, Bobby E., 297,135, Cl. D12-203.000.

Danette Design Svendborg A/S: *See*—
Andersen, Ib, 297,173, Cl. D26-136.000.

Davenport, Bobby E., to D & G Products. Running board. 297,135, 8-9-88, Cl. D12-203.000.

Drake, Craig D.; and Jessen, Ross A., to Ring King Visibles, Inc. Storage case for diskettes or the like. 297,072, 8-9-88, Cl. D3-35.000.

Drummond, Archie G., Jr.: *See*—
Binder, J. Morris; Drummond, Archie G., Jr.; and Fahnstrom, Dale E., 297,082, Cl. D6-463.000.

Eder, Janet M. Bathtub shower splash guard. 297,157, 8-9-88, Cl. D23-307.000

Elliott, John B. Strobe light. 297,170, 8-9-88, Cl. D26-24.000

Empi, Inc.: *See*—
Ioffe, Zosim; Ober, Stephen H.; and Maurer, Donald D., 297,168, Cl. D24-41.000.

EuroContact AB: *See*—
Hemberg, Jan, 297,080, Cl. D6-430.000

Evans, Audri J.: *See*—
Fontana, Robert M.; and Evans, Audri J., 297,115, Cl. D9-347.000.
Fontana, Robert M.; and Evans, Audri J., 297,116, Cl. D9-347.000
Fontana, Robert M.; and Evans, Audri J., 297,117, Cl. D9-347.000.
Fontana, Robert M.; and Evans, Audri J., 297,118, Cl. D9-347.000.
Fontana, Robert M.; and Evans, Audri J., 297,119, Cl. D9-347.000

Fahnstrom, Dale E.: *See*—
Binder, J. Morris; Drummond, Archie G., Jr.; and Fahnstrom, Dale E., 297,082, Cl. D6-463.000

Finsilver, Charles E.; Schur, Sylvia; and Yuan, Mary W., to General Foods Corporation. Combined sauce boat and entree plate. 297,088, 8-9-88, Cl. D7-3.000.

Flohr, Gerd, to A.Bianchi s.r.l. Combined finger-mounted portable lamp and wrist-mounted power pack therefor. 297,172, 8-9-88, Cl D26-39.000.

Fontana, Robert M.; and Evans, Audri J., to Kraft, Inc. Compartmented packaging container. 297,115, 8-9-88, Cl. D9-347.000.

Fontana, Robert M.; and Evans, Audri J., to Kraft, Inc. Compartmented packaging container. 297,116, 8-9-88, Cl. D9-347.000.

Fontana, Robert M.; and Evans, Audri J., to Kraft, Inc. Compartmented packaging container. 297,117, 8-9-88, Cl. D9-347.000.

Fontana, Robert M.; and Evans, Audri J., to Kraft, Inc. Compartmented packaging cup. 297,118, 8-9-88, Cl. D9-347.000.

Fontana, Robert M.; and Evans, Audri J., to Kraft, Inc. Compartmented packaging container. 297,119, 8-9-88, Cl. D9-347.000.

Fortescue, Ann D. Wall mounted storage cabinet. 297,087, 8-9-88, Cl. D6-559.000

Freedman, Stephen. Combined page weight and marker. 297,148, 8-9-88, Cl. D19-34.000.

Funabashi, Genichi; and Sato, Kenichi, to Kubota Ltd. Cab for an agricultural tractor. 297,142, 8-9-88, Cl. D15-30.000

Garraffa, Dean R.: *See*—
Applegate, Robert L., Jr.; Hart, Dennis L.; and Garraffa, Dean R., 297,156, Cl. D21-237.000

General Foods Corporation: *See*—
Finsilver, Charles E.; Schur, Sylvia; and Yuan, Mary W., 297,088, Cl. D7-3.000

George Frost Company: *See*—
Jurga, Stanley M., 297,178, Cl. D29-10.000

Gevert, Klaus-Volker: *See*—
Seehaus, Wolfgang; and Gevert, Klaus-Volker, 297,179, Cl. D29-16.000.

Gieber, Douglas C. Shelf unit. 297,085, 8-9-88, Cl. D6-479.000

Girscher, Wolfgang: *See*—
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz, 297,137, Cl. D14-58.000.

GKN Crompton Limited: *See*—
White, Paul S.; and Searl, Arthur N., 297,106, Cl. D8-307.000

Goodlander, Theodore J., to Cab-Tek, Inc. Two-way acoustical cabinet for computer printer. 297,141, 8-9-88, Cl. D14-114.000.

Grinberg, Gedalio, to North American Watch Corporation. Wrist watch. 297,124, 8-9-88, Cl. D10-39.000

Grinberg, Gedalio, to North American Watch Corporation. Wrist watch. 297,125, 8-9-88, Cl. D10-39.000

Grinberg, Gedalio, to North American Watch Corporation. Wrist watch. 297,126, 8-9-88, Cl. D10-39.000

Guscott, John K.; Hotaling, Bryan; Thornton, H. Patrick; and Vulgaris, George, to ADT, Inc. Alarm display. 297,128, 8-9-88, Cl. D10-106.000

Hart, Dennis L.: *See*—
Applegate, Robert L., Jr.; Hart, Dennis L.; and Garraffa, Dean R., 297,156, Cl. D21-237.000

Hashimoto, Yoshiharu: *See*—
Ryuzoji, Kuniaki; Yamamoto, Mitsuru; Kimura, Kazutaka; Kawaguchi, Yukinori; and Hashimoto, Yoshiharu, 297,132, Cl. D12-107.000

Hawker Pacific Pty. Ltd.: *See*—
Holdaway, Gary J., 297,112, Cl. D8-395.000

Hemberg, Jan, to EuroContact AB. Extendible bedside table. 297,080, 8-9-88, Cl. D6-430.000

Hill, Curtis J., to Pressure Heat Systems, Inc. Fireplace unit. 297,164, 8-9-88, Cl. D23-344.000

Holdaway, Gary J., to Hawker Pacific Pty. Ltd. Extension tube clip for aerosol cans or the like. 297,112, 8-9-88, Cl. D8-395.000

Hollar, Robert C.; and Huang, Tung-Ming, to Abbott Laboratories Reagent cassette. 297,166, 8-9-88, Cl. D24-17.000

Hollinshead, Clive. Knife. 297,105, 8-9-88, Cl. D8-98.000

Holmes International Inc.: *See*—
Thomison, Ted D., 297,131, Cl. D12-14.000

Holmstadt, Ronald J.; and Walsh, Warren J., to Wagner Spray Tech Corporation. Paint applicator or similar article. 297,114, 8-9-88, Cl. D9-338.000

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ryuzoji, Kuniaki; Yamamoto, Mitsuru; Kimura, Kazutaka; Kawaguchi, Yukinori; and Hashimoto, Yoshiharu, 297,132, Cl. D12-107.000

Hotaling, Bryan: *See*—
Guscott, John K.; Hotaling, Bryan; Thornton, H. Patrick; and Vulgaris, George, 297,128, Cl. D10-106.000

Hove Mobler A.S.: *See*—
Revheim, Erling, 297,077, Cl. D6-379.000

Huang, Tung-Ming: *See*—
Hollar, Robert C.; and Huang, Tung-Ming, 297,166, Cl. D24-17.000

Hyundai Electronics Industries Co., Ltd.: *See*—
Lee, Chun I., 297,139, Cl. D14-77.000

Ioffe, Zosim; Ober, Stephen H.; and Maurer, Donald D., to Empi, Inc Transcutaneous electrical nerve stimulator. 297,168, 8-9-88, Cl. D24-41.000

Jessen, Ross A.: *See*—
Drake, Craig D.; and Jessen, Ross A., 297,072, Cl. D3-35.000

Johannboke, Uwe: *See*—
Blanc, Walter; and Johannboke, Uwe, 297,163, Cl. D23-290.000

Johnston, Daniel D. Advertisement display frame. 297,149, 8-9-88, Cl D20-43.000

Jones, James R. Combined cushioned doorknob cover and wall protector. 297,107, 8-9-88, Cl. D8-322.000

Jurga, Stanley M., to George Frost Company. Catcher's leg guard 297,178, 8-9-88, Cl. D29-10.000

Justwise Limited: *See*—
Smith, Roger, 297,153, Cl. D21-194.000

Kabaya, Harumichi, to Citizen Watch Co., Ltd. Wrist watch. 297,122, 8-9-88, Cl. D10-32.000

Kabaya, Harumichi, to Citizen Watch Co., Ltd. Wrist watch. 297,123, 8-9-88, Cl. D10-32.000

Kawaguchi, Yukinori: *See*—
Ryuzoji, Kuniaki; Yamamoto, Mitsuru; Kimura, Kazutaka; Kawaguchi, Yukinori; and Hashimoto, Yoshiharu, 297,132, Cl. D12-107.000

Kazlauskas, Gasparas. Welding head track. 297,144, 8-9-88, Cl. D15-144.000

Keohan, Richard J.; and White, W. Gordon, to Rule Industries, Inc Compass. 297,127, 8-9-88, Cl. D10-68.000

Keptel, Inc.: *See*—
Collins, Thomas J.; and Schneider, Pina, 297,136, Cl. D13-40.000

Kikuchi, Nobuo; Sunouchi, Akio; and Mizogui, Toyokazu, to Canon Kabushiki Kaisha. Camera. 297,145, 8-9-88, Cl. D16-1.000

Kilian, Ingbert: *See*—
Muck, Manfred; and Kilian, Ingbert, 297,162, Cl. D23-290.000

Kimura, Kazutaka: *See*—
Ryuzoji, Kuniaki; Yamamoto, Mitsuru; Kimura, Kazutaka; Kawaguchi, Yukinori; and Hashimoto, Yoshiharu, 297,132, Cl. D12-107.000

Kolpin Manufacturing, Inc.: *See*—
Kolpin, Ronald N.; and Schultz, Richard L., 297,076, Cl. D5-62.000

Kolpin, Ronald N.; and Schultz, Richard L., to Kolpin Manufacturing, Inc. Camouflage fabric or similar article. 297,076, 8-9-88, Cl. D5-62.000

Kool, Dennis J., to Amway Corporation. Combined water purifier and support bracket. 297,159, 8-9-88, Cl. D23-207.000

Kraemer, Dieter: *See*—
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz, 297,137, Cl. D14-58.000

Kraft, Inc.: *See*—
Fontana, Robert M.; and Evans, Audri J., 297,115, Cl. D9-347.000
Fontana, Robert M.; and Evans, Audri J., 297,116, Cl. D9-347.000
Fontana, Robert M.; and Evans, Audri J., 297,117, Cl. D9-347.000
Fontana, Robert M.; and Evans, Audri J., 297,118, Cl. D9-347.000
Fontana, Robert M.; and Evans, Audri J., 297,119, Cl. D9-347.000

Kubota Ltd.: *See*—
Funabashi, Genichi; and Sato, Kenichi, 297,142, Cl. D15-30.000

Kyler, Arlene. Combined article stand and advertising card holder 297,091, 8-9-88, Cl. D7-52.000

VOL 1093 ISS 2 AG 9 1988 UMI

Le, Tuan N., to Reebok International Ltd. Shoe upper. 297,069, 8-9-88, Cl. D2-314.000
Lee, Annette M.: *See—*
Lee, George K. C., 297,068, Cl. D2-265.000.
Lee, Chun I., to Hyundai Electronics Industries Co., Ltd. Television receiver. 297,139, 8-9-88, Cl. D14-77.000
Lee, Eric H.: *See—*
Lee, George K. C., 297,068, Cl. D2-265.000.
Lee, George K. C., to Lee, Annette M.; Lee, Wanda M.; Lee, Terence H.; and Lee, Eric H. Combined stocking and slipper. 297,068, 8-9-88, Cl. D2-265.000
Lee, Terence H.: *See—*
Lee, George K. C., 297,068, Cl. D2-265.000.
Lee, Wanda M.: *See—*
Lee, George K. C., 297,068, Cl. D2-265.000.
Leung, Pak H., to Cassano's Inc. Utensil for pasta. 297,092, 8-9-88, Cl. D7-102.000.
Levine, Howard E. Combined boat and luggage carrier. 297,134, 8-9-88, Cl. D12-157.000.
Lewis, Thomas C. Toy horse. 297,151, 8-9-88, Cl. D21-75.000.
Licht, Loren L. Pair of hand rakes. 297,101, 8-9-88, Cl. D8-13.000
Lindroth, Lloyd E.; and Michaud, George L. Ashtray. 297,174, 8-9-88, Cl. D27-106.000
Lucas, Geraldine D. Necklace or similar article. 297,130, 8-9-88, Cl. D11-8.000
Manufacture Metallurgique de Tournus Societe anonyme: *See—*
Schaller, Pierre A., 297,100, Cl. D7-356.000
Marple, Elwood: *See—*
Burke, William L.; and Marple, Elwood, 297,074, Cl. D3-54.000
Marton, Lewis; and Ward, Colin, to Atlas Air Australia Pty., Limited. Air delivery duct. 297,158, 8-9-88, Cl. D23-387.000.
Maurer, Donald D.: *See—*
Ioffe, Zosim; Ober, Stephen H.; and Maurer, Donald D., 297,168, Cl. D24-41.000
Mayer, Helmut: *See—*
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz, 297,137, Cl. D14-58.000.
Mayer, Judy. Buttoner. 297,071, 8-9-88, Cl. D2-643.000.
McCormack, Linden R. Wrench. 297,102, 8-9-88, Cl. D8-22.000.
Michaud, George L.: *See—*
Lindroth, Lloyd E.; and Michaud, George L., 297,174, Cl. D27-106.000
Milliman, Ray W. Simulated computer system. 297,140, 8-9-88, Cl. D14-100.000
Miskinis, Robert J. Stopper for a bottle or the like. 297,120, 8-9-88, Cl. D9-439.000
Mizogui, Toyokazu: *See—*
Kikuchi, Nobuo; Sunouchi, Akio; and Mizogui, Toyokazu, 297,145, Cl. D16-1.000.
Mobil Oil Corporation: *See—*
Benoit, Gordon L., 297,113, Cl. D9-305.000
Modolo Adamo & C. S.n.c.: *See—*
Modolo, Domenico, 297,133, Cl. D12-118.000
Modolo, Domenico, to Modolo Adamo & C. S.n.c. Stem for bicycle handlebars. 297,133, 8-9-88, Cl. D12-118.000
Muck, Manfred; and Kilian, Ingbert, to Blanc GmbH & Co. Sink. 297,162, 8-9-88, Cl. D23-290.000.
Niederhoefer, Karl-Heinz: *See—*
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz, 297,137, Cl. D14-58.000
Nitta, Tomio, to Tokai Corporation. Case for cigarette lighter. 297,175, 8-9-88, Cl. D27-161.000
North American Watch Corporation: *See—*
Grinberg, Gedalio, 297,124, Cl. D10-39.000
Grinberg, Gedalio, 297,125, Cl. D10-39.000
Grinberg, Gedalio, 297,126, Cl. D10-39.000.
Northern Telecom Limited: *See—*
Culver, Duncan; Peachey, Ezra T.; and Sirois, Michael G., 297,138, Cl. D14-62.000
Nova Biomedical Corporation: *See—*
Spaziani, Fred, 297,165, Cl. D24-1.100.
Ober, Stephen H.: *See—*
Ioffe, Zosim; Ober, Stephen H.; and Maurer, Donald D., 297,168, Cl. D24-41.000
Ogden Industries Pty. Ltd.: *See—*
Christie, John A., 297,109, Cl. D8-341.000.
Ohya, Yoshio; Tamaki, Koichi; and Sano, Junichi, to Toshiba Heating Appliances Company, Ltd. Expresso coffee maker. 297,098, 8-9-88, Cl. D7-309.000
Olovsson, Gunnar. Storage box or the like. 297,083, 8-9-88, Cl. D6-475.000
Olsen, Carl. Hand saw carrying case. 297,075, 8-9-88, Cl. D3-73.000.
Oneida Ltd.: *See—*
Richmond, Colin B., II, 297,094, Cl. D7-137.000.
Richmond, Colin B., II, 297,095, Cl. D7-137.000.
Richmond, Colin B., II, 297,096, Cl. D7-137.000.
Richmond, Colin B., II, 297,097, Cl. D7-137.000.
Paphis, Konstantinos. Dispenser unit for toiletries or the like. 297,086, 8-9-88, Cl. D6-544.000.
Parish, Theodore S., Sr. Sheet metal bending pliers. 297,103, 8-9-88, Cl. D8-52.000
Parker, Warren K. Spotlight. 297,171, 8-9-88, Cl. D26-24.000.
Peachey, Ezra T.: *See—*
Culver, Duncan; Peachey, Ezra T.; and Sirois, Michael G., 297,138, Cl. D14-62.000
Peterson, William M. Combination pool table and bed. 297,078, 8-9-88, Cl. D6-384.000.
Petschulat, David. Guitar body. 297,146, 8-9-88, Cl. D17-20.000.
Poilane, Lionel, to S.A.R.L. Poilane. Combined oven door and wall unit. 297,099, 8-9-88, Cl. D7-348.000
Porsche Design GmbH: *See—*
Porsche, Ferdinand A.; and Rabe, Michael, 297,121, Cl. D10-32.000
Porsche, Ferdinand A.; and Rabe, Michael, to Porsche Design GmbH. Sport watch. 297,121, 8-9-88, Cl. D10-32.000.
Pressure Heat Systems, Inc.: *See—*
Hill, Curtis J., 297,164, Cl. D23-344.000.
Rabe, Michael: *See—*
Porsche, Ferdinand A.; and Rabe, Michael, 297,121, Cl. D10-32.000
Reebok International Ltd.: *See—*
Le, Tuan N., 297,069, Cl. D2-314.000.
Revheim, Erling, to Hove Mobler A.S. Chair. 297,077, 8-9-88, Cl. D6-379.000
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 297,094, 8-9-88, Cl. D7-137.000.
Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 297,095, 8-9-88, Cl. D7-137.000.
Richmond, Colin B., II, to Oneida Ltd. Fork or similar article. 297,096, 8-9-88, Cl. D7-137.000.
Richmond, Colin B., II, to Oneida Ltd. Knife or similar article. 297,097, 8-9-88, Cl. D7-137.000
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz. Telephone set. 297,137, 8-9-88 Cl. D14-58.000
Ring King Visibles, Inc.: *See—*
Drake, Craig D.; and Jessen, Ross A., 297,072, Cl. D3-35.000.
Robbins, Tom E. Shower head. 297,160, 8-9-88, Cl. D23-213.000.
Ross, Garrison A. Sports hat. 297,065, 8-9-88, Cl. D2-247.000.
Rule Industries, Inc.: *See—*
Keohan, Richard J.; and White, W. Gordon, 297,127, Cl. D10-68.000
Ryuzoji, Kuniaki; Yamamoto, Mitsuru; Kimura, Kazutaka; Kawaguchi, Yukinori; and Hashimoto, Yoshiharu, to Honda Giken Kogyo Kabushiki Kaisha. Four-wheeled motorcycle. 297,132, 8-9-88, Cl. D12-107.000.
S.A.R.L. Poilane: *See—*
Poilane, Lionel, 297,099, Cl. D7-348.000
Sano, Junichi: *See—*
Ohya, Yoshio; Tamaki, Koichi; and Sano, Junichi, 297,098, Cl. D7-309.000
Sato, Kenichi: *See—*
Funabashi, Genichi; and Sato, Kenichi, 297,142, Cl. D15-30.000.
Schaller, Pierre A., to Manufacture Metallurgique de Tournus Societe anonyme. Cookware set. 297,100, 8-9-88, Cl. D7-356.000
Schneider, Pina: *See—*
Collins, Thomas J.; and Schneider, Pina, 297,136, Cl. D13-40.000
Schonwetter, Sarah: *See—*
Schonwetter, Steven B.; and Schonwetter, Sarah, 297,066, Cl D2-260.000
Schonwetter, Steven B.; and Schonwetter, Sarah, 297,067, Cl. D2-260.000
Schonwetter, Steven B.; and Schonwetter, Sarah. Hard hat cover. 297,066, 8-9-88, Cl. D2-260.000.
Schonwetter, Steven B.; and Schonwetter, Sarah. Hard hat cover. 297,067, 8-9-88, Cl. D2-260.000
Schultz, Richard L.: *See—*
Kolpin, Ronald N.; and Schultz, Richard L., 297,076, Cl. D5-62.000
Schur, Sylvia: *See—*
Finsilver, Charles E.; Schur, Sylvia; and Yuan, Mary W., 297,088, Cl. D7-3.000
Searl, Arthur N.: *See—*
White, Paul S.; and Searl, Arthur N., 297,106, Cl. D8-307.000
Seehaus, Wolfgang; and Gevert, Klaus-Volker, to Bayerische Motoren Werke Aktiengesellschaft. Motorcycle helmet ornamentation. 297,179, 8-9-88, Cl. D29-16.000.
Selbiger, Lawrence, to AVIA Group International, Inc. Element of a shoe upper. 297,070, 8-9-88, Cl. D2-314.000
Silver, William V., to Thomson-Leeds Company, Inc. Floor display. 297,084, 8-9-88, Cl. D6-476.000.
Sirois, Michael G.: *See—*
Culver, Duncan; Peachey, Ezra T.; and Sirois, Michael G., 297,138, Cl. D14-62.000
Skil Corporation: *See—*
Svetlik, Kenneth N., 297,104, Cl. D8-61.000
Smith, Dale D., Sr. Crab and crawfish peeler. 297,093, 8-9-88, Cl. D7-106.000.
Smith, Donald H.: *See—*
Smith, Hugh; and Smith, Donald H., 297,177, Cl. D28-30.000.
Smith, Hugh; and Smith, Donald H., to Albyn of Stonehaven Limited of Spurryhillock Industrial Estate. Comb. 297,177, 8-9-88, Cl. D28-30.000
Smith, Roger, to Justwise Limited. Physical exerciser. 297,153, 8-9-88, Cl. D21-194.000
Spaziani, Fred, to Nova Biomedical Corporation. Automated chemistry analyzer for analysis of blood components or other body fluids 297,165, 8-9-88, Cl. D24-1.100.

Steinman, Mark E. Medical equipment storage tray. 297,167, 8-9-88, Cl. D24-31.000.
Sturgeon, Wayne E.: *See—*
Thompson, Robert D.; and Sturgeon, Wayne E., 297,111, Cl. D8-373.000.
Sunouchi, Akio: *See—*
Kikuchi, Nobuo; Sunouchi, Akio; and Mizogui, Toyokazu, 297,145, Cl. D16-1.000.
Sussner, Gerhard: *See—*
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz, 297,137, Cl. D14-58.000.
Svetlik, Kenneth N., to Skil Corporation. Cordless screwdriver. 297,104, 8-9-88, Cl. D8-61.000.
Sweet, Richard F. Playing card holder with curvature. 297,150, 8-9-88, Cl. D21-54.000.
Tamaki, Koichi: *See—*
Ohya, Yoshio; Tamaki, Koichi; and Sano, Junichi, 297,098, Cl. D7-309.000.
Thomison, Ted D., to Holmes International Inc. Wrecker body. 297,131, 8-9-88, Cl. D12-14.000.
Thompson, Robert D.; and Sturgeon, Wayne E., to Beta Industries, Inc. Tool holder. 297,111, 8-9-88, Cl. D8-373.000.
Thomson-Leeds Company, Inc.: *See—*
Silver, William V., 297,084, Cl. D6-476.000
Thornton, H. Patrick: *See—*
Guscott, John K.; Hotaling, Bryan; Thornton, H. Patrick; and Vulgaris, George, 297,128, Cl. D10-106.000.
Tokai Corporation: *See—*
Nitta, Tomio, 297,175, Cl. D27-161.000.
Tone Brothers, Inc.: *See—*
Binder, J. Morris; Drummond, Archie G., Jr.; and Fahnstrom, Dale E., 297,082, Cl. D6-463.000.
Toshiba Heating Appliances Company, Ltd.: *See—*
Ohya, Yoshio; Tamaki, Koichi; and Sano, Junichi, 297,098, Cl. D7-309.000.
Trani, Joseph F., Sr. Tree step. 297,169, 8-9-88, Cl. D25-69.000.
Tsai, Jui C. Combined clock and comb with sheath. 297,176, 8-9-88, Cl. D28-25.000
Under Sea Industries, Inc.: *See—*
Applegate, Robert L., Jr.; Hart, Dennis L.; and Garraffa, Dean R., 297,156, Cl. D21-237.000.
Utz, Raymon D.: *See—*
Baldree, Marvin J.; and Utz, Raymon D., 297,081, Cl. D6-462.000
von Reyer, Hajo: *See—*
Richter, Ludwig; Kraemer, Dieter; Mayer, Helmut; von Reyer, Hajo; Girscher, Wolfgang; Sussner, Gerhard; and Niederhoefer, Karl-Heinz, 297,137, Cl. D14-58.000
Vulgaris, George: *See—*
Guscott, John K.; Hotaling, Bryan; Thornton, H. Patrick; and Vulgaris, George, 297,128, Cl. D10-106.000
Wagner Spray Tech Corporation: *See—*
Holmstadt, Ronald J.; and Walsh, Warren J., 297,114, Cl. D9-338.000
Walsh, Warren J.: *See—*
Holmstadt, Ronald J.; and Walsh, Warren J., 297,114, Cl. D9-338.000
Ward, Colin: *See—*
Marton, Lewis; and Ward, Colin, 297,158, Cl. D23-387.000
Weldon, Charles M. Foldable beverage table or similar article. 297,079, 8-9-88, Cl. D6-429.000.
Weschta, Georg R. Bath tub for invalids. 297,161, 8-9-88, Cl. D23-279.000
West, John W., to Canada Cup, Inc. Beverage tumbler. 297,089, 8-9-88, Cl. D7-14.000
West, John W., to Canada Cup, Inc. Beverage tumbler. 297,090, 8-9-88, Cl. D7-14.000
White, Paul S.; and Searl, Arthur N., to GKN Crompton Limited. Door handle. 297,106, 8-9-88, Cl. D8-307.000
White, W. Gordon: *See—*
Keohan, Richard J.; and White, W. Gordon, 297,127, Cl. D10-68.000
Wolfe, Henry S., to Wolfe, Henry S. Float. 297,155, 8-9-88, Cl. D21-237.000
Wu, Kuo-Shen. Key duplicating machine. 297,143, 8-9-88, Cl. D15-125.000
Yamamoto, Mitsuru: *See—*
Ryuzoji, Kuniaki; Yamamoto, Mitsuru; Kimura, Kazutaka; Kawaguchi, Yukinori; and Hashimoto, Yoshiharu, 297,132, Cl. D12-107.000
Yuan, Mary W.: *See—*
Finsilver, Charles E.; Schur, Sylvia; and Yuan, Mary W., 297,088, Cl. D7-3.000
Zagorski, James J. Gasoline pump nozzle trigger holder. 297,110, 8-9-88, Cl. D8-349.000

LIST OF PLANT PATENTEES

De Ruiter's Nieuwe Rozen B.V.: *See—*
De Ruiter, Gijsbert, 6,243, Cl. 9.000
de Ruiter, Gijsbert, 6,244, Cl. 10.000.
De Ruiter, Gijsbert, to De Ruiter's Nieuwe Rozen B.V. Miniature rose plant named 'Ruimarso'. 6,243, 8-9-88, Cl. 9.000.
de Ruiter, Gijsbert, to De Ruiter's Nieuwe Rozen B.V. Miniature rose plant named 'Ruiforto'. 6,244, 8-9-88, Cl. 10.000.
McColley, Cora: *See—*
Miller, Howard N., 6,246, Cl. 88.000
McCoy, Matthew G., administrator: *See—*
Reimer, Frank, deceased, 6,245, Cl. 36.000.
Miller, Howard N., to McColley, Cora. Philodendron plant. 6,246, 8-9-88, Cl. 88.000
Reimer, Frank, deceased (by McCoy, Matthew G., administrator), to State of Oregon/Oregon State University, The. Reimer cultivar pear tree. 6,245, 8-9-88, Cl. 36.000
State of Oregon/Oregon State University, The: *See—*
Reimer, Frank, deceased, 6,245, Cl. 36.000

VOL
1093
ISS
2
AUG
9
1988
UMI

CLASSIFICATION OF PATENTS

ISSUED AUGUST 9, 1988

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 4,761,834
160 4,761,835

CLASS 4
420.2 4,761,836
443 4,761,837
542 4,761,838
654 4,761,839
664 4,761,840

CLASS 5
81 B 4,761,842
81 R 4,761,841
431 4,761,843

CLASS 8
94.19 R 4,762,522
524 4,762,523
549 4,762,524

CLASS 10
140 4,761,844

CLASS 12
33 4,761,845

CLASS 14
3 4,761,846
69.5 4,761,847

CLASS 15
1.7 4,761,848
222 4,761,849
323 4,761,850

CLASS 16
110 A 4,761,851
237 4,761,852
302 4,761,853

CLASS 17
1 R 4,761,854
46 4,761,855
58 4,761,856

CLASS 19
98 4,761,857
296 4,761,858

CLASS 24
67.9 4,761,862
68 SK 4,761,859
142 4,761,860
196 4,761,861
692 4,761,863

CLASS 28
218 4,761,864

[illegible]
10 4,761,865
157.3 C 4,761,866
159.2 4,761,867
256 4,761,868
261 4,761,869
421.1 4,761,870
432.1 4,761,871
451 4,761,872
517 4,761,873
527.2 4,761,874
527.4 4,761,875
568 4,761,876
4,761,877
631 4,761,878
749 4,761,879
840 4,761,880
4,761,881

CLASS 30
162 4,761,882
239 4,761,883
373 4,761,884
451 4,761,885

CLASS 33
126.7 R 4,761,886
148 H 4,761,887
265 4,761,888
302 4,761,889
473 4,761,890
503 4,761,891
556 4,761,892

[illegible]
11 4,761,893
39 4,761,894
69 4,761,895
77 4,761,896
[illegible] 4,761,897

CLASS 36
50 4,761,898
121 4,761,899

CLASS 37
142 R 4,761,900
262 4,761,901

CLASS 40
155 4,761,902
159 4,761,903
[illegible] 4,761,904
447 4,761,905

CLASS 42
70.11 4,761,906
106 4,761,907

CLASS 43
1 4,761,908
[illegible] 4,761,909
42.31 4,761,910
87 4,761,911
121 4,761,912

CLASS 44
51 4,762,527
4,762,528
53 4,762,529
534 4,762,525
627 4,762,526

CLASS 47
17 4,761,913
83 4,761,914

[illegible]
180.1 4,762,530
191 4,762,531
197 R 4,762,532

[illegible]
374 4,761,915
381 4,761,916
477 4,761,917

CLASS 51
114 4,761,918
293 4,762,534
[illegible] 4,762,533

CLASS 52
14 4,761,919
19 4,761,920
33 4,761,921
71 4,761,922
102 4,761,923
126.6 4,761,924
167 4,761,925
387 4,761,926
403 4,761,927
[illegible] 4,761,928
[illegible] 4,761,929
[illegible] 4,761,930
788 4,761,931

[illegible]
329 4,761,932
374 4,761,933
399 4,761,934
416 4,761,935
510 4,761,936
550 4,761,937

CLASS 54
47 4,761,938

CLASS 55
16 4,762,535
[illegible] 4,762,536
71 4,762,537
[illegible] 4,762,538
232 4,762,539
276 4,762,540

[illegible]
12.7 4,761,939
13.6 4,761,940
36 4,761,941
130 4,761,942
[illegible] 4,761,943
329 4,761,944

CLASS 57
224 4,761,945
328 4,761,946

[illegible]
39.281 4,761,948
39.75 4,761,947
226.2 4,761,949
274 4,761,950
[illegible] 4,761,951
330 4,761,952
414 4,761,953
4,761,954
528 4,761,955
605.1 4,761,956
650 4,761,957
737 4,761,958
740 4,761,959

CLASS 62
[illegible] 4,761,960
[illegible] 4,762,542
4,762,543
55 4,761,961
63 4,761,962
77 4,761,963
[illegible] 4,761,964
171 4,761,965
176.6 4,761,966
[illegible] 4,761,967
271 4,761,968
388 4,761,969
[illegible] 4,761,970

CLASS 63
12 4,761,971
20 4,761,972

[illegible]
29 4,762,544

[illegible]
[illegible] 4,761,973

[illegible]
[illegible] 4,761,974
232 4,761,975
277 4,761,976
367 4,761,978
493 4,761,977

CLASS 71
27 4,762,545
30 4,762,546
65 4,762,547
[illegible] 4,762,549
94 4,762,550
100 4,762,548
103 4,762,551

CLASS 72
[illegible] 4,761,979
24 4,761,980
58 4,761,981
4,761,982
[illegible] 4,761,983
305 4,761,984
316 4,761,985
405 4,761,986
414 4,761,987
452 4,761,988

CLASS 73
1 C 4,761,989
7 4,761,990
11 4,761,991
35 4,761,992
115 4,761,993
118.2 4,761,994
4,761,995
146.5 4,761,996
155 4,761,997
167 4,761,998
[illegible] 4,761,999
290 R 4,762,000
597 4,762,001
625 4,762,002
825 4,762,003
861.05 4,762,004
862.04 4,762,005
4,762,006
862.34 4,762,007
862.36 4,762,008
863.52 4,762,009
865.5 4,762,010
865.8 4,762,011
866.4 4,762,012

CLASS 74
104 4,762,013
422 4,762,014
473 SW 4,762,015
479 4,762,016
501 R 4,762,017
523 4,762,018
594.6 4,762,019
612 4,762,020
665 GA 4,762,021
711 4,762,022
714 4,762,023
715 4,762,024
804 4,762,025
866 4,762,026

CLASS 75
0.5 C 4,762,553
1 T 4,762,552
10.14 4,762,554
48 4,762,555
118 R 4,762,556
B1 4,684,404
244 4,762,557
246 4,762,558
248 4,762,559

CLASS 76
25 A 4,762,027
108 A 4,762,028

[illegible]
3.2 4,762,029
55 4,762,030
57.22 4,762,031
63 4,762,032
63.2 4,762,033
111 4,762,034
429 4,762,035
437 4,762,036

CLASS 82
2 E 4,762,037
4 C 4,762,038

CLASS 83
37 4,762,039
56 4,762,040
278 4,762,041
374 4,762,042
688 4,762,043
832 4,762,044

[illegible]
1.16 4,762,045
1.26 Re.32,726
294 4,762,046

[illegible]
1.35 4,762,047
14.1 4,762,048
33.14 4,762,049

CLASS 91
1 4,762,050

CLASS 92
165 R 4,762,051
172 4,762,052

[illegible]
37 4,762,053
115.4 4,762,054

CLASS 99
285 4,762,055
345 4,762,056
348 4,762,057
425 4,762,058
445 4,762,059
483 4,762,060

[illegible]
35 4,762,061
280 4,762,062

CLASS 101
93.01 4,762,063
150 4,762,064
232 Re.32,727
409 4,762,065

CLASS 102
226 4,762,066
313 4,762,067
439 4,762,068

[illegible]
107 4,762,069
173.1 4,762,070

[illegible]
8.1 4,762,071

[illegible]
1.11 4,762,560
89 4,762,561
97 4,762,562
4,762,563
204 4,762,564
281 R 4,762,565
284 4,762,566
287.17 4,762,567
403 4,762,568
476 4,762,569

[illegible]
50 4,762,072

CLASS 110
101 CD 4,762,073
346 4,762,074

CLASS 111
73 4,762,075

CLASS 112
103 4,762,076
323 4,762,077

CLASS 114
39.1 4,762,078
152 4,762,079
219 4,762,080
364 4,762,081

CLASS 116
87 4,762,082

CLASS 118
16 4,762,083

CLASS 119
3 4,762,084
17 4,762,085
18 4,762,086
61 4,762,087
106 4,762,088
109 4,762,089
148 Re.32,728

CLASS 122
4 D 4,762,090
32 4,762,091

CLASS 123
1 A 4,762,092
3 4,762,093
90.11 4,762,095
90.16 4,762,096
90.31 4,762,097
90.33 4,762,098
90.64 4,762,099
90.58 4,762,100
90.6 4,762,094
145 A 4,762,101
188 M 4,762,102
193 CH 4,762,103
293 4,762,104
417 4,762,105
425 4,762,106
478 4,762,107
488 4,762,108
571 4,762,109
609 4,762,110
647 4,762,111

CLASS 124
86 4,762,112

CLASS 126
263 4,762,113
319 4,762,115
373 4,762,114
448 4,762,116

CLASS 127
19 4,762,570

CLASS 128
1 R 4,762,117
4 4,762,118
4,762,119
6 4,762,120
64 4,762,121
92 YP 4,762,122
153 4,762,123
156 4,762,124
207.15 4,762,125
328 4,762,126
334 R 4,762,127
343 4,762,128
344 4,762,129
348.1 4,762,130
396 4,762,131
660 4,762,132
756 4,762,133
781 4,762,134
784 4,762,135
786 4,762,136

CLASS 131
280 4,762,138
299 4,762,137

CLASS 134
199 4,762,139

CLASS 136
234 4,762,571

CLASS 137
71 4,762,140
312 4,762,141
315 4,762,143
382.5 4,762,144
599.2 4,762,145
625.3 4,762,146
625.64 4,762,147
808 4,762,148
843 4,762,149

CLASS 138
44 4,762,150
89 4,762,151
4,762,152

[illegible]
134 4,762,153

[illegible]
119 4,762,154

CLASS 141
10 4,762,155
46 4,762,156

CLASS 144
369 4,762,157

[illegible]
6.15 Z 4,762,572
2.1 4,762,573
103 4,762,574
111 4,762,575
325 4,762,577

CLASS 152
454 4,762,158

CLASS 156
64 4,762,578
69 4,762,579
83 4,762,580
84 4,762,581
164 4,762,582
173 4,762,583
245 4,762,584
294 4,762,585
307.3 4,762,589
527 4,762,586
542 4,762,587
611 4,762,576
623 R 4,762,588

VOL 1093 ISS 2 AG 9 1988 UMI

CLASS 160
84 1 4,762,159
98 4,762,160
178 2 4,762,161
323.1 4,762,162

CLASS 162
30 11 4,762,590
237 4,762,591

CLASS 164
72 4,762,163
150 4,762,164
457 4,762,165

CLASS 165
1 4,762,166
11 1 4,762,167
4,762,168
25 4,762,169
43 4,762,170
147 4,762,171
165 4,762,172
170 4,762,173
185 4,762,174

CLASS 166
63 4,762,175
105 5 4,762,176
216 4,762,177
268 4,762,178
297 4,762,179
350 4,762,180

CLASS 172
196 4,762,181
327 4,762,182
400 4,762,183
704 4,762,184

CLASS 174
23 R 4,762,965
35 GC 4,762,966

CLASS 175
5 4,762,185
61 4,762,186
171 4,762,187
361 4,762,188
371 4,762,189

CLASS 177
181 4,762,190

CLASS 180
14 2 4,762,191
4,762,192
65 1 4,762,193
79 1 4,762,194
133 4,762,195
197 4,762,196
219 4,762,197
287 4,762,198

CLASS 182
2 4,762,199
151 4,762,200

CLASS 184
6 13 4,762,201

CLASS 185
39 4,762,202

CLASS 187
9 E 4,762,203
101 4,762,204

CLASS 188
71 2 4,762,205
73 45 4,762,206
196 D Re.32,729
4,762,207
288 4,762,208
328 4,762,209

CLASS 190
111 4,762,210
122 4,762,211

CLASS 192
24 4,762,212
82 T 4,762,213
107 C 4,762,214
4,762,215
107 M 4,762,216

CLASS 198
337 4,762,217
345 4,762,218
358 4,762,219
519 4,762,220
819 4,762,221

CLASS 200
50 C 4,762,967
52 R 4,762,968
81 4 4,762,969
86 R 4,762,970
153 SC 4,762,971
302 1 4,762,972

CLASS 202
172 4,762,592
186 4,762,593

CLASS 204
1 T 4,762,594
11 4,762,595
60 4,762,596
105 R 4,762,597
109 4,762,598
144 5 4,762,599
157 46 4,762,600
182 4 4,762,601
206 4,762,602
279 4,762,603
406 4,762,604
4,762,605

CLASS 206
3 4,762,222
53 4,762,223
221 4,762,224
311 4,762,225
320 4,762,226
328 4,762,227
4,762,606
387 4,762,228
459 4,762,229
469 4,762,230
522 4,762,231
525 4,762,232
627 4,762,233
631 3 4,762,234

CLASS 208
59 4,762,607
89 4,762,608
187 4,762,609

CLASS 209
397 4,762,610
510 B1 4,569,444

CLASS 210
85 4,762,611
150 4,762,612
192 4,762,613
195 1 4,762,614
333 01 4,762,615
634 4,762,616
635 4,762,617
637 4,762,618
639 4,762,619
646 4,762,620
701 4,762,621
737 4,762,622
751 4,762,623
778 4,762,624

CLASS 211
59.3 4,762,235
4,762,236
115 4,762,237
123 4,762,238

CLASS 212
179 4,762,239
187 4,762,240

CLASS 215
250 4,762,241

CLASS 219
10 55 E 4,762,973
69 R 4,762,975
69 W 4,762,974
119 4,762,976
121 47 4,762,977
209 4,762,978
242 4,762,979
307 4,762,980
400 4,762,981
508 4,762,982

CLASS 220
18 4,762,242
22 4,762,243
203 4,762,244
269 4,762,245
270 4,762,246
303 4,762,247
307 4,762,248
359 4,762,249

CLASS 221
123 4,762,250

CLASS 222
49 4,762,251
56 4,762,252
145 4,762,253
402 24 4,762,254

CLASS 224
32 R 4,762,255
161 4,762,256
216 4,762,257
273 4,762,258

CLASS 225
37 4,762,259

CLASS 227
19 4,762,260
66 4,762,261
120 4,762,262

CLASS 228
5 1 4,762,263
37 4,762,264
50 4,762,265
103 4,762,266
179 4,762,267
186 4,762,268
194 4,762,269

CLASS 229
23 A 4,762,270
72 4,762,271
125 08 4,762,272

CLASS 235
1 D 4,762,983
383 4,762,984

CLASS 236
93 R 4,762,273

CLASS 239
3 4,762,274
6 4,762,275
4,762,276
99 4,762,277
281 4,762,278

CLASS 241
3 4,762,280
46 06 4,762,281
190 4,762,282

CLASS 242
11 R 4,762,283
18 A 4,762,284
47 4,762,285
4,762,286
48 4,762,287
55 2 4,762,288
58 1 4,762,289
84 1 K 4,762,290
86 5 R 4,762,291
184 4,762,292

CLASS 244
3 22 4,762,293
75 R 4,762,294
115 4,762,295

CLASS 248
74 2 4,762,296
99 4,762,297
179 4,762,298
220 4 4,762,299

CLASS 250
201 4,762,985
4,762,986
4,762,987
205 4,762,988
216 4,762,989
221 4,762,990
227 4,762,991
4,762,992
236 4,762,994
251 4,762,993
282 4,762,995
306 4,762,996
326 4,762,997
327 2 4,762,998
4,762,999
334 4,763,000
4,763,001
370 01 4,763,002
372 4,763,011
385 1 4,763,008
396 R 4,763,003
4,763,004
458 1 4,763,009
492 3 4,763,005
561 4,763,006
578 4,763,007
4,763,010

CLASS 251
129 06 4,762,300
171 4,762,301
360 4,762,302

CLASS 252
8 551 4,762,625
8 552 4,762,626
8 555 4,762,627
51 5 R 4,762,628
62 4,762,629
4,762,631
4,762,632
4,762,633
4,762,634
73 4,762,635
95 4,762,636
99 4,762,637
135 4,762,638
301 4 R 4,762,639
321 4,762,640
368 4,762,642
378 R 4,762,641
4,762,643
500 4,762,644
544 4,762,645
622 4,762,630
628 4,762,646
632 4,762,647

CLASS 254
25 4,762,303
93 R 4,762,304

CLASS 260
383 4,762,648
545 P 4,762,649

CLASS 261
100 4,762,650
114 1 4,762,651

CLASS 264
6 4,762,652
22 4,762,653
45 1 4,762,654
65 4,762,655
82 4,762,656
83 4,762,657
122 4,762,658

CLASS 266
281 4,762,305

CLASS 267
47 4,762,307
64 27 4,762,308
140.1 4,762,309
141.2 4,762,310
195 4,762,306

CLASS 270
41 4,762,311
53 4,762,312

CLASS 271
187 4,762,313
267 4,762,314

CLASS 272
1 R 4,762,315
56 5 R 4,762,316
73 4,762,317
137 4,762,318

CLASS 273
1 5 R 4,762,319
26 C 4,762,320
30 4,762,321
77 A 4,762,322
126 R 4,762,323
164 4,762,324
183 B 4,762,325
232 4,762,326
309 4,762,327
420 4,762,328

CLASS 277
4,762,329
4,762,330

CLASS 280
30 4,762,331
43 1 4,762,333
242 WC 4,762,332
433 4,762,334
649 4,762,335
673 4,762,336
688 4,762,337
801 4,762,338
812 4,762,339
816 4,762,340

CLASS 281
29 4,762,341

CLASS 282
9 R 4,762,342

CLASS 285
158 4,762,343
175 4,762,344

CLASS 292
26 4,762,345
38 4,762,346
147 4,762,347
201 4,762,348
216 4,762,349
259 R 4,762,350
263 4,762,351

CLASS 293
120 4,762,352

CLASS 294
1.1 4,762,353
2 4,762,354
82 12 4,762,355
82.14 4,762,356
119 1 4,762,357

CLASS 296
97 G 4,762,358
97 K 4,762,359
100 4,762,360
181 4,762,361

CLASS 297
4,762,362
4,762,363
4,762,364
4,762,365
4,762,366
4,762,367
4,762,368
4,762,369

CLASS 298
19 R 4,762,370

CLASS 299
39 4,762,371
91 4,762,372

CLASS 300
21 4,762,373

CLASS 301
37 P 4,762,374

CLASS 303
96 4,762,375
115 4,762,376

CLASS 305
34 4,762,377

CLASS 307
43 4,763,012
66 4,763,013
4,763,014
126 4,763,015
254 4,763,016
262 4,763,017
296 R 4,763,018
427 4,763,019
465 4,763,020
475 4,763,021
4,763,022
480 4,763,023
493 4,763,024
526 4,763,025
530 4,763,026
546 4,763,027
573 4,763,028
600 4,763,029

CLASS 310
26 4,763,030
83 4,763,031
90 5 4,763,032
105 4,763,033
181 4,763,034
208 4,763,035
233 4,763,036
268 4,763,037

CLASS 312
7 2 4,762,378
320 4,762,379

CLASS 313
318 4,763,038
406 4,763,039
428 4,763,040
496 4,763,041
544 4,763,042

CLASS 315
5 12 4,763,043
176 4,763,044
209 SC 4,763,045
381 4,763,046
382 4,763,047
383 4,763,048

CLASS 318
4,763,049
4,763,050
4,763,051
4,763,052
4,763,053
4,763,347
4,763,054
4,763,055
4,763,056
4,763,058
809 4,763,057
811 4,763,059
4,763,060

CLASS 320
32 4,763,061

CLASS 324
57 N 4,763,062
60 CD 4,763,063
65 CP 4,763,064
71 4 4,763,065
73 R 4,763,066
121 R 4,763,067
126 4,763,068
158 D 4,763,069
225 4,763,070
233 4,763,071
253 4,763,072
312 4,763,073
314 4,763,074
318 4,763,075
322 4,763,076
439 4,763,077
458 4,763,078

CLASS 328
233 4,763,079

CLASS 330
10 4,763,080
149 4,763,081
295 4,763,082

CLASS 331
2 4,763,083
56 4,763,084
4,763,085
109 4,763,086

CLASS 333
101 4,763,087
173 4,763,088
202 4,763,089
260 4,763,090

CLASS 335
258 4,763,091
305 4,763,092

CLASS 336
4,763,093
4,763,094
4,763,095
127 4,762 918

CLASS 337
82 4,763,096

CLASS 338
4 4,763,097
4,763,098
22 R 4,763,099
128 4,763,100
198 4,763,101
240 4,763,102

CLASS 340
310 R 4,763,103
4,763,104
347 AD 4,763,105
4,763,106
4,763,107
347 DA 4,763,108
388 4,763,109
541 4,763,110
545 4,763,111
573 4,763,112
596 4,763,113
606 4,763,114
628 4,763,115
710 4,763,116
712 4,763,117
735 4,763,118
747 4,763,119
748 4,763,120
825 510 4,763,122
825 540 4,763,121
825 650 4,763,123
825 800 4,763,124
958 4,763,125
985 4,763,126

CLASS 342
12 4,763,127
14 4,763,128
356 4,763,129

CLASS 343
770 4,763,130
792 5 4,763,131
890 4,763,132
912 4,763,133

CLASS 346
1.1 4,763,134

76 PH 4,763,137
76 R 4,763,136
134 4,763,138
135.1 4,763,139
139 R 4,763,140
154 4,763,241
158 4,763,141
160 4,763,142
160.1 4,763,143

CLASS 350
4.1 4,762,380
96.11 4,762,381
96.12 4,762,382
4,762,384
96.13 4,762,383
96.18 4,762,385
96.2 4,762,387
96.20 4,762,386
4,762,388
96.21 4,762,389
4,762,390
96.25 4,762,391
96.30 4,762,392
128 4,762,393
171 4,762,394
252 4,762,395
320 4,762,396
331 R 4,762,397
334 4,762,398
347 V 4,762,399
350 S 4,762,400
357 4,762,401
370 4,762,402
413 4,762,403
483 4,762,404
507 4,762,405

CLASS 351
154 4,762,406
169 4,762,408
204 4,762,407
206 4,762,410
214 4,762,409

CLASS 354
21 4,763,144
64 4,763,145
75 4,763,146
160 4,763,147
195.1 4,763,148
217 4,763,149
271.1 4,763,150
293 4,763,151
321 4,763,152
400 4,763,153
403 4,763,154
435 4,763,155
442 4,763,156

CLASS 355
3 FU 4,763,158
3 R 4,763,159
3 SH 4,763,160
3 TR 4,763,157
14 R 4,763,164
4,763,165
4,763,167
14 SH 4,763,161
4,763,162
4,763,163
4,763,166
15 4,763,168
30 4,763,169
40 4,763,170
50 4,763,171
4,763,172
52 4,763,173
55 4,763,174
75 4,763,175

CLASS 356
152 4,762,411
319 4,762,412
339 4,762,413
349 4,762,414
350 4,762,415
4,762,416
351 4,762,417
364 4,762,418
371 4,762,419
436 4,762,420

CLASS 357
15 4,763,176
23 13 4,763,184
23.5 4,763,177
23 6 4,763,178
4,763,179
4,763,180
4,763,181
4,763,182
23.7 4,763,183
54 4,763,185
74 4,763,188

CLASS 358
22 4,763,186
56 4,763,187
75 4,763,189
79 4,763,190
86 4,763,191
113 4,763,192
149 4,763,193
180 4,763,194
193 1 4,763,195
213 13 4,763,196
213 16 4,763,197
213 26 4,763,198
280 4,763,199
282 4,763,200
4,763,201
319 4,763,202
320 4,763,203
335 4,763,204
337 4,763,205

CLASS 360
8 4,763,206
32 4,763,207
33.1 4,763,208
74.1 4,763,209
88 4,763,210
97 4,763,211
99 4,763,212
105 4,763,213
106 4,763,214
119 4,763,215
128 4,763,216
132 4,763,217
4,763,218

CLASS 361
23 4,763,219
93 4,763,220
141 4,763,221
195 4,763,222
380 4,763,223
386 4,763,224
388 4,763,225
426 4,763,226
433 4,763,227
4,763,228
4,763,229

CLASS 362
78 4,763,230
148 4,763,231
249 4,763,232
267 4,763,233
293 4,763,234

CLASS 363
19 4,763,235
4,763,236
20 4,763,237
21 4,763,238
98 4,763,239
161 4,763,240

CLASS 364
200 4,763,242
4,763,243
4,763,244
4,763,245
4,763,246
4,763,247
4,763,248
4,763,249
4,763,250
4,763,251
4,763,252
4,763,253
4,763,254
300 4,763,255
352 4,763,286
410 4,763,256
419 4,763,257
422 4,763,258
4,763,259
426 4,763,260
4,763,261
4,763,262
4,763,263
431 01 4,763,264
431 04 4,763,265
433 4,763,266
436 4,763,267
449 4,763,268
4,763,269
4,763,270
466 4,763,271
468 4,763,272
472 4,763,273
481 4,763,274
508 4,763,275
513 4,763,276
4,763,277
513 5 4,763,278
518 4,763,279
4,763,280
523 4,763,281
524 4,763,282
526 4,763,283
550 4,763,284
551 4,763,285
561 4,763,287
578 4,763,288
4,763,289
604 4,763,290
704 4,763,291
710 4,763,292
723 4,763,293
748 4,763,294
786 4,763,295
900 4,763,296
4,763,297

CLASS 365
51 4,763,298
4,763,299
52 4,763,300
181 4,763,301
189 4,763,302
4,763,303
190 4,763,304
200 4,763,305
203 4,763,306

CLASS 366
54 4,762,421
141 4,762,422

CLASS 367
174 4,763,307

CLASS 368
88 4,763,308
201 4,763,309
205 4,763,310
223 4,763,311
280 4,763,312
317 4,763,313

CLASS 369
249 4,763,314

CLASS 370
16 4,763,315
4,763,316
58 4,763,317
84 4,763,318
4,763,319
85 4,763,320
94 4,763,321
95 4,763,322
96 4,763,323
100 4,763,324
104 4,763,325
110 4 4,763,326
112 4,763,327

CLASS 371
3 4,763,328
11 4,763,329
37 4,763,330
4,763,331
4,763,332
66 4,763,333

CLASS 372
29 4,763,334
33 4,763,335
81 4,763,336
4,763,337

CLASS 374
31 4,762,423
56 4,762,424
117 4,762,425
130 4,762,426
141 4,762,427
149 4,762,428
163 4,762,429

CLASS 375
82 4,763,338
114 4,763,339
121 4,763,340

CLASS 376
142 4,762,659
4,762,660
209 4,762,661
220 4,762,662
259 4,762,663
261 4,762,664
4,762,665
264 4,762,666
298 4,762,667
310 4,762,668
313 4,762,670
316 4,762,671
333 4,762,672
4,762,673
4,762,674
414 4,762,675
442 4,762,669
443 4,762,676

CLASS 377
20 4,763,341
43 4,763,342

CLASS 378
4,762,678
4,762,679

CLASS 420
4,762,681
454 4,762,682

CLASS 422
72 4,762,683
106 4,762,684
159 4,762,685
168 4,762,686
253 4,762,687
310 4,762,688
4,762,689

CLASS 423
4,762,690
4,762,691
4,762,694
4,762,695
4,762,696
4,762,697
321 R 4,762,692
321 S 4,762,693
4,762,698
4,762,699
4,762,700

CLASS 424
4,762,701
4,762,702
4,762,703
4,762,704
4,762,709
4,762,705
4,762,706
4,762,707
4,762,708
4,762,710
4,762,712
4,762,713
4,762,711
4,762,714
4,762,715
4,762,716
4,762,718
4,762,717
4,762,719
4,762,720

CLASS 425
4,762,481
4,762,483
4,762,484
4,762,482
4,762,485
4,762,486

CLASS 426
4,762,721
4,762,722
4,762,723
4,762,724
4,762,725
4,762,726

CLASS 427
4,762,727
4,762,728
4,762,729
4,762,730
4,762,731
4,762,732
4,762,733
4,762,734
4,762,735
4,762,736

CLASS 428
4,762,737
4,762,738
4,762,739
4,762,680
4,762,740
4,762,741
4,762,904
4,762,742
4,762,743
4,762,744
4,762,745
4,762,746
4,762,747
4,762,748
4,762,749
4,762,750
4,762,751
4,762,752
4,762,753
4,762,754
4,762,755
4,762,756

CLASS 429
114 4,762,757
144 4,762,758

CLASS 430
4,762,759
59 4,762,760
65 4,762,761
4,762,762
110 4,762,763
115 4,762,764
137 4,762,765
156 4,762,766
167 4,762,767
264 4,762,769
273 4,762,770
302 4,762,771
309 4,762,772
324 4,762,768
380 4,762,773
393 4,762,774
502 B1 4,425,426
505 4,762,775
538 4,762,776
546 4,762,777
567 4,762,778

CLASS 431
4,762,487
350 4,762,488

CLASS 432
77 4,762,489

CLASS 433
56 4,762,490
72 4,762,491
174 4,762,492

CLASS 434
84 4,762,493
236 4,762,494
271 4,762,495
4,762,496

CLASS 435
6 4,762,779
4,762,780
7 4,762,781
4,762,782
4,762,783
70 4,762,784
172 3 4,762,785
4,762,786
174 4,762,787
209 4,762,788
219 4,762,789
240 45 4,762,790
243 4,762,791
244 4,762,792
280 4,762,793
284 4,762,794
287 4,762,795

CLASS 436
55 4,762,796
60 4,762,797
67 4,762,798
79 4,762,799
548 4,762,800

CLASS 437
24 4,762,802
4,762,803
31 4,762,804
63 4,762,805
024 4,762,801
100 4,762,806
4,762,807
101 4,762,808
315 4,762,142

CLASS 439
37 4,762,497
66 4,762,499
79 4,762,500
82 4,762,498
131 4,762,501
144 4,762,502
336 4,762,503
345 4,762,504
347 4,762,505
418 4,762,506
595 4,762,507
607 4,762,508
621 4,762,509
4,762,510

CLASS 446
6 4,762,511
4,762,512
359 4,762,513

CLASS 455
4,763,360
605 4,763,361

VOL 1093 ISS 2 AG 9 1988 UMI

CLASS 493
227 4,762,514
CLASS 501
35 4,762,809
88 4,762,810
124 4,762,811
CLASS 502
26 4,762,812
66 4,762,813
211 4,762,814
259 4,762,815
329 4,762,817
CLASS 503
200 4,762,816
214 4,762,818
CLASS 512
14 4,762,819
CLASS 514
10 4,762,820
19 4,762,821
25 4,762,822
50 4,762,823
54 4,762,824
4,762,825
63 4,762,826
192 4,762,827
214 4,762,828
218 4,762,829
230.2 4,762,831
237.2 4,762,832
245 4,762,833
252 4,762,834
256 4,762,835
4,762,836
258 4,762,837
259 4,762,838
4,762,839
267 4,762,840
270 4,762,830
278 4,762,841
288 4,762,842
293 4,762,843
312 4,762,844
4,762,845
331 4,762,846
336 4,762,847
369 4,762,848
4,762,849
392 4,762,850
420 4,762,851
422 4,762,852
432 4,762,853
557 4,762,854
651 4,762,855
722 4,762,856
777 4,762,857
CLASS 518
714 4,762,858
CLASS 521
82 4,762,859
88 4,762,860
97 4,762,861
CLASS 522
3 4,762,862
11 4,762,863
99 4,762,887
CLASS 523
411 4,762,865
412 4,762,866
428 4,762,864
CLASS 524
5 4,762,867
17 4,762,868
59 4,762,869
93 4,762,870
94 4,762,871
100 4,762,872
128 4,762,873
151 4,762,874
248 4,762,875
310 4,762,876
432 4,762,877
490 4,762,878
720 4,762,879
853 4,762,880
CLASS 525
28 4,762,884
54.1 4,762,885
54.11 4,762,881
70 4,762,886
74 4,762,882
113 4,762,883
125 4,762,888
201 4,762,889
257 4,762,890
276 4,762,891
279 4,762,892
323 4,762,893
344 4,762,894
462 4,762,896
474 4,762,895
CLASS 526
68 4,762,897
125 4,762,898
CLASS 528
49 4,762,899
54 4,762,900
73 4,762,901
75 4,762,902
107 4,762,903
167 4,762,905
170 4,762,906
183 4,762,907
185 4,762,908
220 4,762,909
339 4,762,910
388 4,762,911
503 4,762,912
CLASS 530
345 4,762,913
351 4,762,914
405 4,762,915
CLASS 534
631 4,762,916
CLASS 536
4.1 4,762,917
CLASS 540
12 4,762,919
310 4,762,920
4,762,921
363 4,762,922
455 4,762,923
501 4,762,924
CLASS 544
105 4,762,925
276 4,762,926
378 4,762,927
CLASS 546
252 4,762,929
311 4,762,928
CLASS 548
108 4,762,930
166 4,762,931
198 4,762,932
229 4,762,933
569 4,762,934
CLASS 549
210 4,762,935
214 4,762,936
CLASS 556
459 4,762,937
470 4,762,938
4,762,939
472 4,762,940
CLASS 558
44 4,762,941
169 4,762,942
423 4,762,943
CLASS 560
051 4,762,944
138 4,762,945
179 4,762,946
189 4,762,947
CLASS 562
496 4,762,948
CLASS 564
183 4,762,949
399 4,762,950
CLASS 568
617 4,762,951
678 4,762,952
771 4,762,953
867 4,762,954
CLASS 570
211 4,762,955
CLASS 585
259 4,762,956
481 4,762,957
613 4,762,958
640 4,762,959
660 4,762,960
661 4,762,961
671 4,762,962
CLASS 604
38 SA 4,762,521
61 4,762,515
164 4,762,516
175 4,762,517
245 4,762,518
280 4,762,519
366 4,762,520
CLASS 800
1 4,762,964

D2— 247 297,065
260 297,066
297,067
265 297,068
314 297,069
297,070
643 297,071
D3— 35 297,072
38 297,073
54 297,074
73 297,075
D5— 62 297,076
D6— 379 297,077
384 297,078
429 297,079
430 297,080
462 297,081
463 297,082
476 297,083
476 297,084
479 297,085
544 297,086
559 297,087
D7— 3 297,088
14 297,089
297,090
52 297,091
102 297,092
106 297,093
137 297,094
297,095
297,096
297,097
309 297,098
348 297,099
356 297,100
D8— 13 297,101
22 297,102
52 297,103
61 297,104
98 297,105
307 297,106
322 297,107
330 297,108
341 297,109
349 297,110
373 297,111
395 297,112
D9— 305 297,113
338 297,114
347 297,115
297,116
297,117
297,118
297,119
439 297,120
D10— 32 297,121
297,122
297,123
39 297,124
297,125
297,126
68 297,127
106 297,128
116 297,129
D11— 8 297,130
D12— 14 297,131
107 297,132
118 297,133
157 297,134
203 297,135
D13— 40 297,136
D14— 58 297,137
62 297,138
77 297,139
100 297,140
114 297,141
D15— 30 297,142
125 297,143
144 297,144
D16— 1 297,145
D17— 20 297,146
D18— 26 297,147
D19— 34 297,148
D20— 43 297,149
D21— 54 297,150
75 297,151
194 297,153
217 297,154
237 297,155
297,156
D22— 108 297,152
D23— 207 297,159
213 297,160
279 297,161
290 297,162
297,163
307 297,157
344 297,164
387 297,158
D24— 1 1 297,165
17 297,166
31 297,167
41 297,168
69 297,169
D25— 69 297,169
D26— 24 297,170
297,171
39 297,172
136 297,173
D27— 106 297,174
161 297,175
D28— 25 297,176
30 297,177
D29— 10 297,178
16 297,179

P 9 6,243
10 6,244
36 6,245
38 6,246

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,762,173
4,762,411
4,762,546
4,762,584
4,763,361
04 : 4,762,080
4,762,087
4,762,112
4,762,236
4,762,320
4,762,435
4,762,436
4,762,448
4,762,525
4,762,766
4,762,964
4,763,022
4,763,028
4,763,107
4,763,327
06 : Re.32,728
4,761,876
4,761,884
4,761,890
4,761,906
4,761,912
4,761,919
4,761,927
4,761,941
4,761,948
4,761,953
4,761,954
4,761,957
4,761,964
4,761,965
4,761,981
4,762,012
4,762,016
4,762,030
4,762,045
4,762,065
4,762,081
4,762,085
4,762,086
4,762,096
4,762,120
4,762,123
4,762,128
4,762,130
4,762,139
4,762,140
4,762,141
4,762,170
4,762,219
4,762,227
4,762,249
4,762,256
4,762,259
4,762,265
4,762,297
4,762,315
4,762,316
4,762,324
4,762,351
4,762,361
4,762,391
4,762,394
4,762,397
4,762,399
4,762,404
4,762,425
4,762,438
4,762,440
4,762,447
4,762,449
4,762,454
4,762,456
4,762,495
4,762,496
4,762,513
4,762,516
4,762,518
4,762,540
4,762,548
4,762,549
4,762,551
4,762,565
4,762,574
4,762,583
4,762,586
4,762,600
4,762,601
4,762,606
4,762,611
4,762,662
4,762,685
4,762,706
4,762,714
4,762,743
4,762,754
4,762,770
4,762,780
4,762,785
4,762,789
4,762,791
4,762,801
4,762,805
4,762,812
4,762,813
4,762,821
4,762,865
4,762,875
4,762,915
4,762,975
4,762,989
4,762,993
4,763,003
4,763,005
4,763,023
4,763,026
4,763,063
4,763,071
4,763,076
4,763,079
4,763,083
4,763,088
4,763,089
4,763,110
4,763,114
4,763,115
4,763,128
4,763,131
4,763,140
4,763,151
4,763,159
4,763,184
4,763,190
4,763,203
4,763,210
4,763,223
4,763,242
4,763,258
4,763,272
4,763,277
4,763,282
4,763,285
4,763,288
4,763,299
4,763,311
4,763,313
4,763,314
4,763,318
4,763,336
4,763,341
4,763,343
4,763,344
4,763,345
08 : 4,761,843
4,762,025
4,762,133
4,762,211
4,762,273
4,762,288
4,762,298
4,762,380
4,762,409
4,762,700
4,762,779
4,762,994
4,763,275
4,763,284
4,763,332
09 : 4,761,879
4,761,889
4,762,002
4,762,217
4,762,499
4,762,561
4,762,683
4,762,768
4,762,838
4,762,920
4,762,921
4,762,980
4,763,052
4,763,245
4,763,271
10 : 4,762,346
4,762,550
4,762,857
11 : 4,761,929
12 : 4,761,839
4,761,840
4,761,848
4,761,893
4,761,904
4,761,959
4,761,977
4,762,078
4,762,117
4,762,134
4,762,142
4,762,192
4,762,225
4,762,231
4,762,295
4,762,327
4,762,494
4,762,500
4,762,527
4,762,577
4,762,698
4,762,728
4,762,919
4,762,968
4,763,017
4,763,077
4,763,233
4,763,291
13 : 4,762,995
17 : Re.32,729
4,761,852
4,761,944
4,761,978
4,761,987
4,762,038
4,762,041
4,762,053
4,762,100
4,762,103
4,762,146
4,762,291
4,762,317
4,762,347
4,762,350
4,762,486
4,762,504
4,762,509
4,762,510
4,762,517
4,762,530
4,762,564
4,762,596
4,762,617
4,762,677
4,762,678
4,762,694
4,762,726
4,762,790
4,762,792
4,762,845
4,762,894
4,762,918
4,762,949
4,762,957
4,762,960
4,762,972
4,763,045
4,763,046
4,763,054
4,763,074
4,763,102
4,763,109
4,763,132
4,763,188
18 : 4,761,866
4,761,902
4,762,024
4,762,215
4,762,258
4,762,308
4,762,334
4,762,444
4,762,625
4,762,658
4,762,682
4,762,688
4,762,784
4,762,786
4,762,836
4,762,842
4,762,880
4,762,940
4,763,193
4,763,194
4,763,195
4,763,240
4,763,347
19 : 4,761,872
4,761,938
4,762,090
4,762,181
4,762,493
4,762,854
20 : 4,762,176
4,762,224
4,762,473
4,762,515
4,762,851
4,763,125
21 : 4,761,867
4,761,934
4,762,161
4,762,431
4,763,087
4,763,137
22 : 4,761,846
4,762,276
4,762,344
4,762,532
4,762,607
4,762,943
4,762,959
4,762,292
4,763,207
4,763,256
4,763,317
4,763,358
4,763,256
4,763,317

VOL 1093 ISS 2 AG 9 1988 UMI

24 : 4,762,239
4,762,340
4,762,594
4,762,623
4,762,710
4,762,846
4,763,030
25 : 4,761,856
4,761,901
4,761,960
4,761,999
4,762,147
4,762,162
4,762,252
4,762,255
4,762,260
4,762,264
4,762,326
4,762,379
4,762,487
4,762,539
4,762,592
4,762,655
4,762,680
4,762,717
4,762,782
4,762,798
4,762,820
4,762,896
4,762,914
4,763,034
4,763,043
4,763,080
4,763,106
4,763,243
4,763,249
4,763,294
4,763,307
4,763,335
26 : 4,761,844
4,761,855
4,761,868
4,761,887
4,761,916
4,762,000
4,762,011
4,762,013
4,762,017
4,762,031
4,762,060
4,762,072
4,762,073
4,762,093
4,762,149
4,762,156
4,762,159
4,762,200
4,762,201
4,762,238
4,762,305
4,762,309
4,762,310
4,762,322
4,762,325
4,762,333
4,762,338
4,762,357
4,762,359
4,762,360
4,762,374
4,762,451
4,762,640
4,762,699
4,762,740
4,762,808
4,762,822
4,762,843
4,762,858
4,762,887
4,762,895
4,762,950
4,762,967
4,763,062
4,763,352
4,569,444
27 : 4,761,869
4,761,909
4,761,923
4,761,931
4,761,971
4,762,022
4,762,088
4,762,234
4,762,244
4,762,270
4,762,341
4,762,382
4,762,421
4,762,426
4,762,469
4,762,479
4,762,593
4,762,686
4,762,891
4,762,978
4,763,085
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40 : 4,761,871
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41 : 4,761,900
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4,762,303
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42 : 4,761,932
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4,762,003
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4,762,127
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44 : 4,761,860
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4,762,237
45 : 4,762,059
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4,762,748
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46 : 4,762,229
47 : 4,761,847
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48 : 4,761,838
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4,762,178
4,762,179
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49 : 4,762,445
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53 : 4,761,888
4,761,924
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54 : 4,761,984
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4,762,199
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4,762,433
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04 297,134
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297,105
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297,110
297,120
297,144
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297,152
297,156
297,170
297,171
08 297,129
297,160
11 297,130
12 297,074
297,155
15 297,068
17 297,104
297,115
297,116
297,117
297,118
297,119
297,140
297,166
18 : 297,102
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19 : 297,072
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20 297,085
22 297,093
24 : 297,154
25 : 297,069
297,127
297,128
297,165
297,178
26 297,103
297,159
27 : 297,114
297,168
33 : 297,141
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297,169
36 : 297,075
297,084
297,088
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297,096
297,097
297,113
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37 : 297,151
297,167
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39 : 297,073
297,111
41 297,070
42 : 297,066
297,067
297,107
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47 : 297,131
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PLANT PATENTS

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ISS
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AG
9

1988

UMI

VOL
1093

ISS
2

AG
9

1988

UMI

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C. William Verity, *Secretary*
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VOL
1093

ISS
3

AG
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1988

UMI

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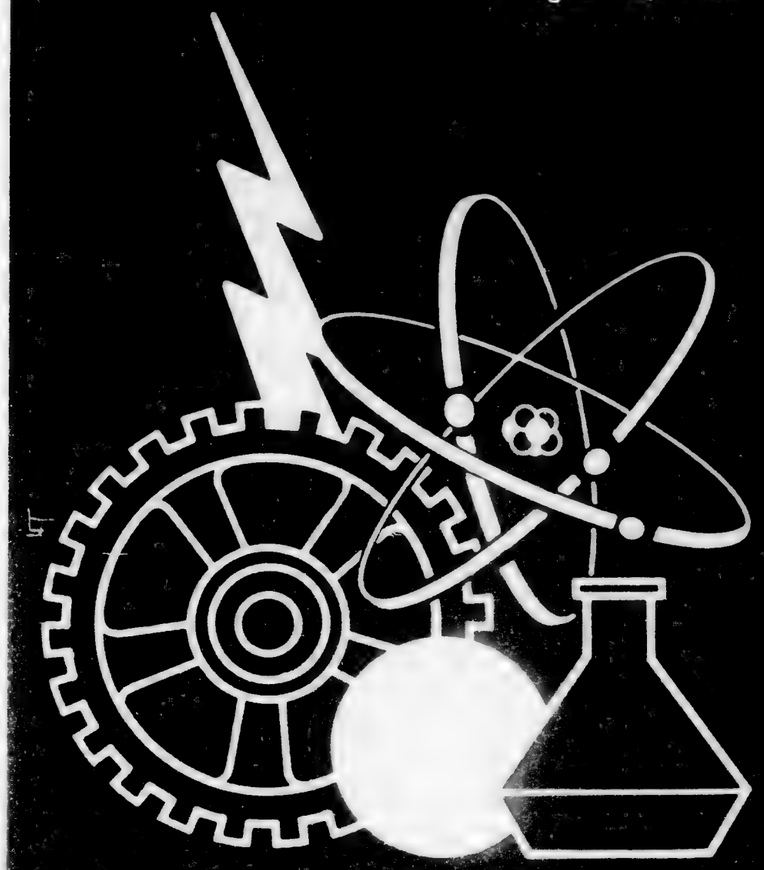
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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 16, 1988



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VOL
1093

ISS
3

AG
16

1988

UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 16, 1988 Volume 1093 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1093 OG 24
Notice of Maintenance Fees Payable	1093 OG 24
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1093 OG 25
Notification of Acceptance of Delayed Payment of Maintenance Fees	1093 OG 26
Reissue Applications Filed	1093 OG 27
Requests for Reexaminations Filed	1093 OG 27
Erratum	1093 OG 27
Service by Publication	1093 OG 27
Notice of Inquiry	1093 OG 28
Advisory Committee for Patent and Trademarks Notice of Open Meetings	1093 OG 29
Patent Certificates of Correction	1093 OG 30
Special Boxes for Mail	1093 OG 31
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1093 OG 32
Condition of Patent Applications	1093 OG 33
Reissue Patents Granted (32,730)	983
Plant Patents Granted (6,247)	985
Patents Granted	
General and Mechanical (4,763,362)	987
Chemical (4,764,173)	1271
Electrical (4,764,644)	1407
Design Patents Granted (297,180)	1529
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 61
Classification of	
Patents (Including Reissues)	PI 65
Designs and Plant Applications	PI 68
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 69
Designs and Plant Applications	PI 71
Change of Address Form and Subscription Order Form	Back Page

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VOL
1093
ISS
3
AG
16
1988
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Mar. 15, 1988, and was announced in the *Official Gazette* at 1087 O.G. 24 on Feb. 16, 1988.

Domestic PCT Fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1300.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(1) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Mar. 21, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 6, 1985, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,534,065 through 4,535,476
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED MAY 29, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,450,592	06/338,195	5/29/84
4,450,594	06/490,777	5/29/84
4,450,599	06/371,194	5/29/84
4,450,600	06/401,100	5/29/84
4,450,602	06/378,778	5/29/84
4,450,603	06/427,499	5/29/84
4,450,604	06/421,374	5/29/84
4,450,606	06/368,757	5/29/84
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4,450,631	06/417,842	5/29/84
4,450,636	06/373,836	5/29/84
4,450,638	06/412,414	5/29/84
4,450,648	06/427,718	5/29/84
4,450,649	06/422,686	5/29/84
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4,450,703	06/224,876	5/29/84
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VOL
1093
ISS
3
AG
16
1988
UMI

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4,450,992	06/409,546	5/29/84
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4,451,017	06/431,886	5/29/84
4,451,019	06/332,537	5/29/84
4,451,026	06/393,744	5/29/84
4,451,035	06/409,623	5/29/84
4,451,036	06/279,720	5/29/84
4,451,038	06/377,692	5/29/84
4,451,039	06/347,183	5/29/84
4,451,040	06/391,165	5/29/84
4,451,045	06/495,309	5/29/84
4,451,048	06/425,562	5/29/84
4,451,049	06/375,397	5/29/84
4,451,053	06/310,490	5/29/84
4,451,065	06/389,664	5/29/84
4,451,068	06/330,348	5/29/84
4,451,070	06/245,186	5/29/84
4,451,082	06/284,493	5/29/84
4,451,084	06/330,280	5/29/84
4,451,089	06/334,068	5/29/84
4,451,090	06/366,151	5/29/84
4,451,091	06/434,376	5/29/84
4,451,101	06/390,619	5/29/84
4,451,102	06/361,969	5/29/84
4,451,106	06/309,234	5/29/84
4,451,108	06/412,924	5/29/84
4,451,111	06/482,771	5/29/84
4,451,113	06/404,643	5/29/84
4,451,120	06/388,518	5/29/84
4,451,124	06/422,341	5/29/84
4,451,127	06/245,308	5/29/84
4,451,130	06/385,328	5/29/84
4,451,135	06/486,019	5/29/84
4,451,143	06/367,154	5/29/84
4,451,146	06/301,400	5/29/84
4,451,147	06/276,515	5/29/84
4,451,153	06/280,319	5/29/84
4,451,154	06/300,905	5/29/84
4,451,161	06/257,278	5/29/84
4,451,164	06/410,303	5/29/84
4,451,168	06/395,915	5/29/84
4,451,178	06/285,889	5/29/84
4,451,180	06/331,836	5/29/84
4,451,186	06/251,171	5/29/84
4,451,191	06/373,547	5/29/84
4,451,197	06/401,936	5/29/84
4,451,214	06/418,743	5/29/84
4,451,222	06/391,448	5/29/84
4,451,229	06/482,977	5/29/84
4,451,234	06/441,044	5/29/84
4,451,246	06/322,512	5/29/84
4,451,262	06/338,724	5/29/84
4,451,269	06/458,897	5/29/84
4,451,283	06/281,776	5/29/84
4,451,284	06/399,504	5/29/84
4,451,292	06/305,625	5/29/84
4,451,307	06/529,658	5/29/84
4,451,309	06/470,588	5/29/84
4,451,313	06/366,169	5/29/84
4,451,325	06/377,883	5/29/84
4,451,330	06/417,823	5/29/84
4,451,334	06/320,100	5/29/84
4,451,337	06/513,967	5/29/84
4,451,338	06/490,756	5/29/84
4,451,339	06/361,431	5/29/84
4,451,346	06/276,763	5/29/84
4,451,347	06/338,533	5/29/84
4,451,354	06/454,875	5/29/84
4,451,368	06/537,709	5/29/84
4,451,371	06/456,862	5/29/84
4,451,372	06/304,995	5/29/84
4,451,399	06/445,663	5/29/84
4,451,405	06/447,190	5/29/84
4,451,411	06/426,062	5/29/84
4,451,439	06/324,060	5/29/84
4,451,459	06/401,306	5/29/84
4,451,461	06/395,235	5/29/84
4,451,462	06/542,334	5/29/84
4,451,468	06/307,189	5/29/84
4,451,470	06/395,597	5/29/84
4,451,471	06/355,989	5/29/84
4,451,475	06/368,329	5/29/84
4,451,476	06/542,871	5/29/84
4,451,498	06/316,823	5/29/84
4,451,504	06/496,358	5/29/84
4,451,514	06/334,223	5/29/84
4,451,526	06/410,035	5/29/84
4,451,549	06/454,675	5/29/84
4,451,564	06/404,456	5/29/84
4,451,580	06/424,236	5/29/84
4,451,583	06/342,859	5/29/84
4,451,591	06/388,836	5/29/84
4,451,620	06/491,723	5/29/84
4,451,647	06/390,344	5/29/84
4,451,671	06/412,527	5/29/84
4,451,681	06/456,672	5/29/84
4,451,694	06/440,752	5/29/84
4,451,695	06/369,238	5/29/84
4,451,703	06/335,648	5/29/84
4,451,716	06/411,815	5/29/84
4,451,727	06/326,154	5/29/84
4,451,728	06/344,628	5/29/84
4,451,730	06/492,651	5/29/84
4,451,738	06/286,715	5/29/84
4,451,744	06/349,888	5/29/84
4,451,749	06/411,361	5/29/84
4,451,759	06/306,158	5/29/84
4,451,764	06/491,750	5/29/84
4,451,781	06/265,279	5/29/84
4,451,792	06/314,162	5/29/84
4,451,797	06/352,829	5/29/84
4,451,809	06/355,833	5/29/84
4,451,811	06/424,570	5/29/84
4,451,812	06/372,371	5/29/84
4,451,814	06/387,968	5/29/84
4,451,816	06/336,403	5/29/84
4,451,819	06/275,682	5/29/84
4,451,855	06/299,590	5/29/84
4,451,858	06/339,987	5/29/84
4,451,871	06/428,113	5/29/84
4,451,877	06/300,798	5/29/84
4,451,888	06/232,221	5/29/84
4,451,890	06/225,371	5/29/84
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4,451,928	06/421,190	5/29/84

Notification of Acceptance of Delayed Payment of Maintenance Fee
(35 U.S.C. 41(c); 37 CFR 1.378)

The patents listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,420,231	06/378,854	12/13/83	5/17/82	7/7/88

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,937,283, Re. S.N. 187,142, Filed Apr. 28, 1988, Cl. 166/307, FORMATION FRACTURING WITH STABLE FOAM, Roland W. Blauer, et al., Owner of Record: *Scientific Software Corp., Denver, Colo.,* Attorney or Agent: James R. Head, Ex. Gp.: 356

4,558,428, Re. S.N. 131,110, Filed Dec. 10, 1987, Cl. 364/900, DATA TRANSMISSION SYSTEM ADAPTED TO FACILITATE DETECTION OF SAFE RECEIPT OF A TRANSMITTED DATA FRAME BY A RECEIVING STATION, Hisashi Matsumura, et al., Owner of Record: *Hitachi Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 231

4,573,210, Re. S.N. 160,216, Filed Feb. 24, 1988, Cl. 455/166, NULL INITIATED METHOD AND SYSTEM FOR MONITORING A PRIORITY CHANNEL, Joseph P. Heck, Owner of Record: *Motorola Inc.,* Attorney or Agent: Anthony J. Sarli, Ex. Gp.: 263

4,574,335, Re. S.N. 156,862, Filed Feb. 17, 1988, Cl. 362/84, LIGHTED GUN SIGHTS, Itzchak Frimer, Owner of Record: *Mepro Kibbutz Hagoshrim, Galil Elyon, Israel,* Attorney or Agent: Roger L. Browdy, Ex. Gp.: 346

4,576,345, Re. S.N. 169,801, Filed Mar. 18, 1988, Cl. 242/198, MAGNETIC TAPE CASSETTE WITH A LATCHING COVER PLATE, Karel G. M. Koken, et al., Owner of Record: *U.S. Philips Corp., Tarrytown, N.Y.,* Attorney or Agent: Thomas A. Briody, Ex. Gp.: 245

4,585,060, Re. S.N. 192,288, Filed May 9, 1988, Cl. 166/64, FLUID SAMPLING APPARATUS, Bernardin, et al., Owner of Record: *QED Environmental Systems Inc.,* Attorney or Agent: H. Keith Miller, Ex. Gp.: 356

4,585,337, Re. S.N. 187,949, Filed Apr. 29, 1988, Cl. 355/45, STEP-AND-REPEAT ALIGNMENT AND EXPOSURE SYSTEM, Edward H. Phillips, Owner of Record: *Inventor,* Attorney or Agent: Gerald P. Sekimurn, Ex. Gp.: 211

4,616,030 Re. S.N. 192,744, Filed May 4, 1988, Cl. 514/412, PERHYDROINDOLE-2-CARBOXYLIC ACID AS ANTIHYPERTENSIVES, Michael Vincent George Remond, et al., Owner of Record: *Inventors,* Attorney or Agent: Gordon W. Hueschen, Ex. Gp.: 125

4,646,828, Re. S.N. 125,591, Filed Nov. 25, 1987, Cl. 166/117.5, APPARATUS FOR ENHANCED OIL RECOVERY, Carl M. Schwab, Jr., et al., Owner of Record: *Otis Engineering Corp., Dallas, Tex.,* Attorney or Agent: None, Ex. Gp.: 356

4,654,696, Re. S.N. 170,442, Filed Mar. 18, 1988, Cl. 358/11, VIDEO SIGNAL FORMAT, Leon J. Stanger, et al., Owner of Record: *Grass Valley Group Inc., Grass Valley, Calif.,* Attorney or Agent: Francis I. Gray, Ex. Gp.: 262

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a))

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,598,675, Reexam. No. 90/001,543, Requested: June 22, 1988, Cl. 156/256, METHOD FOR SECURING STRIP MEMBERS TO CONTAINER BODIES, Carl Bofinger, et al., Owner of Record: *American Can Co., New York, N.Y.,* Attorney or Agent: Unknown, Ex. Gp.: 130, Requester: Duckworth, Allen, et al., Orlando, Fla.

4,049,038, Reexam. No. 90/001,547, Requested: July 1, 1988, Cl. 160/166.1, LOUVERED COVERING SYSTEM, David Hyman, et al., Owner of Record: *Louver Drape Inc., Santa Monica, Calif.,* Attorney or Agent: Unknown, Ex. Gp.: 350, Requester: Owner

4,435,047, Reexam. No. 90/001,546, Requested: June 30, 1988, Cl. 350/334, ENCAPSULATED LIQUID CRYSTAL AND METHOD, James L. Fergason, Owner of Record: *Manchester R&D Partnership, Pepper Pike, Ohio,* Attorney or Agent: Warren A. Sklar, Ex. Gp.: 250, Requester: Owner

4,466,241, Reexam. No. 90/001,545, Requested: June 30, 1988, Cl. 60/39.182, WASTE HEAT RECOVERY BOILER, Taiji Inui, et al., Owner of Record: *Hitachi Ltd., Tokyo, Japan,* Attorney or Agent: Antonelli, Terry, et al., Ex. Gp.: 340, Requester: Combustion Engineering Inc., Windsor, Conn.

4,627,192, Reexam. No. 90/001,544, Requested: June 28, 1988, Cl. 47/58, SUNFLOWER PRODUCTS AND METHODS OF THEIR PRODUCTION, Gerhardt N Fick, Owner of Record: *Sigco Research Inc., Breckenridge, Minn.,* Attorney or Agent: Stephen A. Bent, Ex. Gp.: 330, Requester: Saidman, Sterne, et al., Washington, D.C.

Erratum

The following registration number was incorrectly listed as cancelled in the "Trademark Registrations Cancelled, Section 8" section of the Trademark Official Gazette of Mar. 29, 1988.

1,456,738	TM 179	Mar. 29, 1988

Consequently, the above-identified registration is still active. It will later be processed as inadvertently issued (as originally intended), restored to pendency, and republished after being corrected.

DAVID E. BUCHER,
Director, Trademark Examining Operation.

July 19, 1988.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

VOL
1093
ISS
3
AUG
16
1988
UMI

Mirage Nails of California, Inc., Del Mar, Calif., Reg. No. 1,412,917, for the mark "MY RAGE", Canc. No. 17,009.

G.D.I. Electronics, Inc., Chicago, Ill., Reg. No. 1,267,728, for the mark "CHECKMATE", Canc. No. 17,063.

Metalbank Atlanta, Atlanta, Ga., Reg. No. 1,354,607, for the mark "METALBANK", Canc. No. 16,420.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.

For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Department of Commerce
Patent and Trademark Office
Docket No. 80743-8143

Notice of Inquiry

Agency: Patent and Trademark Office, Department of Commerce

Action: Notice of Inquiry and Request for Comments

Summary: The Patent and Trademark Office solicits written comments concerning the applicability of the Trademark Act of 1946, and in particular section 43(a) of the Act, to new technologies for the alteration of existing motion pictures, including colorization, time compression, and panning and scanning.

Date: Written comments should be submitted to the Patent and Trademark Office by Sept. 23, 1988.

Address: Comments should be sent to: Commissioner of Patents and Trademarks, Box 4, Washington, D.C. 20231.

For Further Information Contact: Richard Owens, Office of Legislation and International Affairs, U.S. Patent and Trademark Office, Box 4, Washington, D.C. 20231. Telephone: (703)557-3065.

Supplementary Information: The Subcommittee on Courts, Civil Liberties and the Administration of Justice of the House Committee on the Judiciary has asked the Patent and Trademark Office to study the extent to which the Trademark Act of 1946 (Lanham Act), 15 U.S.C. 1051 *et seq.*, may be utilized to address potential problems relating to the use of new technologies for the alteration of existing motion pictures, including colorization, time compression, and panning and scanning. In particular, the Subcommittee has asked the Patent and Trademark Office to examine the applicability of section 43(a) of the Lanham Act, 15 U.S.C. 1125(a), to such technologies.

The Subcommittee has asked the U.S. Copyright Office to prepare a related, more comprehensive study. In a Request for Information published at 53 FR 18937 (May 25, 1988), the Copyright Office announced that it would conduct an inquiry concerning the nature, extent and effect of the new technologies on the creators and users of audiovisual works, including motion pictures and television programming. The Copyright Office stated that it will also examine the impact of the new technologies on the integrity of our national film heritage and the creative freedom of filmmakers.

The scope of the Patent and Trademark Office's inquiry is narrower. The Office seeks specific, thorough comment on the extent to which the Lanham Act may be applied to address potential problems relating to the use of new technologies for the alteration of existing motion pictures. The Office solicits information on whether legal arguments have been or are likely to be made for the application of the Lanham Act, and particularly section 43(a), to such technologies. Discussion of relevant case law, including unreported cases, is requested. The Office also seeks comment on whether the Lanham Act should be amended to provide expanded protection against such alteration, and, if so, on the proper scope of such amendments. Recommendations for amending the Act should be precise and detailed.

Questions

(1) To what extent is it contemplated that the Lanham Act, 15 U.S.C. 1051 *et seq.*, and particularly section 43(a) of the Act, 15 U.S.C. 1125(a), may be used to address potential problems relating to the use of new technologies for the alteration of existing motion pictures, including but not limited to colorization, time compression, and panning and scanning?

(2) Should the Lanham Act be amended to provide more or different protection than is currently available? If so, what form should new legislation take? Who should be protected?

Copies of all comments received will be available for public inspection after Sept. 26, 1988, in Suite 902, Crystal Park Bldg. 2, 2121 Crystal Dr., Arlington, Va. 22202.

July 20, 1988.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

OFFICIAL GAZETTE NOTICE

Advisory Committee for Patents and Trademarks

Notice of Open Meeting

In accordance with Section 10(a) (2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the following Committee Meeting:

The Advisory Committee for Patents and Trademarks will meet from 9:00 a.m. to 4:30 p.m. on September 14, 1988, at the U.S. Patent and Trademark Office in Crystal City, Arlington, Virginia. The meeting will be held in the Commissioner's Conference Room in Crystal Park 2, Room 912.

The agenda for the meeting follows:

(1) Technology Transfer
(2) PTO In The Year 2000

The meeting will be open to public observation; approximately 12 seats will be available for the public on a first-come, first-served basis. If time permits, oral comments by the public of no more than three minutes on each topic within the above agenda will be allowed. Written comments and suggestions will be accepted before or after the meeting on any of the agenda matters.

For further information, contact E. R. Kazenske, Executive Assistant to the Assistant Secretary, Patent and Trademark Office, Crystal Park 2, Suite 906, Washington, DC 20231. Telephone: 703/557-3071.

Date July 28, 1988

Donald J. Quigg
Assistant Secretary and Commissioner
of Patents and Trademarks

VOL
1093
ISS
3
AG
16
1988
UMI

PATENT NOTICES

Certificates of Correction for the Week of Aug. 16, 1988

PP. 5,466	4,692,274	4,715,620	4,730,264
PP. 6,047	4,693,906	4,715,996	4,730,461
Re. 32,627	4,693,921	4,716,119	4,730,556
D. 294,404	4,695,090	4,716,137	4,730,609
4,406,399	4,697,095	4,716,792	4,730,988
4,437,426	4,698,350	4,716,853	4,730,995
4,462,087	4,698,495	4,717,317	4,731,058
4,473,116	4,698,785	4,717,956	4,731,261
4,525,842	4,700,253	4,718,156	4,731,657
4,542,406	4,700,342	4,719,188	4,731,931
4,579,349	4,701,051	4,719,374	4,732,374
4,591,707	4,701,743	4,719,381	4,732,719
4,596,511	4,705,100	4,719,894	4,733,136
4,614,550	4,706,130	4,720,263	4,733,575
4,633,751	4,706,511	4,720,743	4,733,898
4,634,127	4,707,420	4,722,478	4,734,036
4,644,595	4,707,705	4,723,431	4,734,278
4,648,436	4,708,412	4,723,912	4,734,963
4,649,695	4,709,226	4,723,989	4,735,729
4,661,141	4,709,272	4,724,025	4,735,730
4,666,468	4,709,931	4,725,595	4,736,369
4,668,967	4,710,348	4,726,076	4,736,370
4,670,672	4,710,865	4,726,222	4,736,498
4,672,583	4,710,896	4,726,286	4,736,785
4,674,047	4,712,435	4,726,431	4,737,100
4,674,864	4,713,036	4,726,777	4,737,304
4,675,419	4,713,063	4,726,855	4,737,610
4,675,823	4,713,280	4,726,896	4,737,743
4,676,108	4,713,832	4,727,018	4,737,884
4,676,216	4,714,230	4,727,196	4,738,971
4,679,081	4,714,428	4,727,436	4,739,216
4,680,290	4,714,598	4,727,504	4,739,250
4,683,308	4,714,964	4,727,784	4,739,506
4,684,925	4,715,043	4,728,080	4,740,247
4,684,956	4,715,115	4,728,208	4,740,667
4,686,848	4,715,168	4,728,701	4,740,671
4,687,044	4,715,203	4,728,709	4,740,942
4,687,318	4,715,229	4,728,882	4,741,875
4,688,256	4,715,317	4,729,000	4,742,024
4,689,639	4,715,398	4,729,245	4,742,207
4,690,115	4,715,543	4,729,619	4,748,275
4,691,819	4,715,558	4,729,918	

SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement.
Box 7	Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8	All papers for the Office of the Solicitor except communications relating to pending litigation.
Box 9	Coupon orders for U.S. patent and trademark copies.
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Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box FWC	Requests for File Wrapper Continuation Applications. (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	Issue Fee Transmittals (PTOL Form 85) and associated fees and corrected drawings.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non Fee Amendment	Non-fee amendments to patent applications.
Box OED	Mail for the Office of Enrollment and Discipline.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain data received and/or serial number for patent applications prior to the Office's standard notification (return post card or the official "Filing Receipt", "Notice to File Missing Parts," or " Notice of Incomplete Information Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

VOL
1093
ISS
3
AG
16
1988
UMI

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions,* and provides technical staff assistance in their use to aid the public, in gaining effective access to information contained in patents. CASSIS (Classification And Search Support Information System); which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours in order to avert possible inconvenience

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 261-2907
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7140
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3200
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
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Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
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	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
Kentucky	Louisville Free Public Library	(502) 561-8614
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4222
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada-Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, North Carolina State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, Free Library of	(215) 686-5330
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin -Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 16, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	12-9-86
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	10-24-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-8-86
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-14-85
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-6-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	1-12-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-8-87
DESIGN, GROUP 290—K. L. CAGE, Director	8-8-85
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-13-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	8-26-86
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	4-9-86
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	3-2-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-1-87

Expiration of patents: The patents within the range of numbers indicated below expire during July 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,590,388 to 3,596,287, inclusive

Plant Patents . . . . . None

VOL
1093
ISS
3
AG
16
1988
UMI

REISSUES

AUGUST 16, 1988

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,730

LAWN MOWER BLADE CLUTCH AND BRAKE

Gerald H. Wick, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Original No. 4,044,533, dated Aug. 30, 1977, Ser. No. 690,632, May 27, 1976. Application for reissue Aug. 22, 1979, Ser. No. 68,672

Int. Cl.[4] A01D *69/10;* F16D *69/00*

U.S. Cl. 56—11.3 58 Claims



1. A lawn mower comprising a blade housing supported for travel over the ground, a drive shaft mounted for rotation by said blade housing and including thereon a clutch drum *located in radially outward relation from said drive shaft,* an engine drivingly connected to said drive shaft for rotation thereof, a cutter blade located in said blade housing and mounted for rotation coaxially with and relative to said drive shaft, a clutch shoe connected to said cutter blade for common rotation therewith and for movement relative to a position of engagement with said clutch drum, biasing means urging said clutch shoe into said position of engagement, a brake surface fixed to said clutch shoe, [and] a brake member movable between a first position wherein said brake member is spaced from said brake surface, and a second position wherein said brake member engages said brake surface to brake rotation of said cutter blade and to displace said clutch shoe from said position of engagement against the action of said biasing means, *and means biasing said brake member to said second position and normally overpowering said clutch shoe biasing means.*

Re. 32,731

SILK SCREEN PRINTING ONTO THE FRONT PANEL OF A CAP

Roger L. Jennings, and Russell A. Serrianne, both of Glens Falls, N.Y., assignors to R. Jennings Manufacturing Co., Inc., Glens Falls, N.Y.

Original No. 4,438,693, dated Mar. 27, 1984, Ser. No. 441,672, Nov. 15, 1982. Application for reissue Aug. 7, 1984, Ser. No. 638,370

Int. Cl.[4] B41M *1/12;* B41F *17/00*

U.S. Cl. 101—35 13 Claims

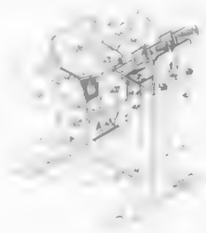
11. A cap printing device for screen printing onto front panel of a cap of the type having a sweatband and a bill comprising:

a frame member;

a substantially flat platen operatively attached to the frame member for mounting the front panel of a cap when the cap is mounted thereon;

means for blocking a cap mounted on said platen, said blocking means including a pair of side forming surfaces operatively connected to the platen in an opposed relationship to one another for shaping the sides of a mounted cap so that tension is applied evenly across the platen; the blocking means further comprising a rear forming member for shaping the top of a cap, and said rear forming member comprising an edge of said platen forming a non-linear edge surface for engaging a cap; and wherein said platen comprises a linear edge opposite said non-linear edge, said linear and non-linear edges being disposed between said side forming members of said platen; and

means for movably securing the screen in operative association



with said frame for movement between an advanced position wherein the screen contacts the front panel of the cap mounted on the platen and a retracted position wherein the screen is withdrawn for changing caps.

Re. 32,732

METHOD FOR PROVIDING HIGH TEMPERATURE INTERNAL INSULATION

Robert A. Sauder; Gary R. Kendrick, and John R. Mase, all of Emporia, Kans., assignors to The Babcock & Wilcox Company, New Orleans, La.

Original No. 3,993,237, dated Nov. 23, 1976, Ser. No. 595,738, Jul. 14, 1975. Continuation of Ser. No. 445,807, Feb. 25, 1974, abandoned, which is a division of Ser. No. 157,433, Jun. 28, 1971, Pat. No. 3,819,468. Application for reissue Oct. 6, 1978, Ser. No. 949,386

Int. Cl.[4] F23M *5/00;* F27D *1/16*

U.S. Cl. 228—140 31 Claims



10. A method of insulating an interior furnace wall comprising:

constructing a plurality of insulating blocks, each of said blocks having a first side defining a cold face and a second side remote from but generally parallel to said first side and defining a hot face, said cold face being adapted for attachment to the inside wall of a furnace and said blocks being comprised of at least one strip of resilient insulating fibers, the fibers being generally randomly oriented within a plurality of planes substantially parallel to each other and generally perpendicular to said hot face of said blocks, said cold face of each of said blocks including a supporting member accesible from said hot face by a displacement of said resilient fibers at said hot face;

positioning each of said blocks at a desired location with said cold face adjacent the furnace wall;

attaching the supporting member of each of said blocks to the furnace wall by resiliently displacing the resilient fibers,

VOL 1093 ISS 3 AG 16 1988 UMI

inserting a tool through said hot face, and securing said supporting member to said furnace wall by operating said tool.

Re. 32,733

POLYMER/POLYOL COMPOSITIONS HAVING IMPROVED COMBUSTION RESISTANCE

Donald W. Simroth, Charleston; Frank E. Critchfield, and Edgar G. Shook, both of S. Charleston, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Original No. 4,463,107, dated Jul. 31, 1984, Ser. No. 409,177, Aug. 18, 1982. Continuation-in-part of Ser. No. 378,651, May 18, 1982, abandoned. Application for reissue Dec. 12, 1985, Ser. No. 808,268

Int. Cl.[4] **C08L** *75/04*

U.S. Cl. 521—137 **24 Claims**

1. A stable dispersion of a polymer in a polyol, said dispersion being useful in the preparation of polyurethane foams having improved combustion resistance, wherein the polymer is a [free-radical initiated] copolymer containing from about 0.5 to [75] *70* weight percent, based on the copolymer, of acrylonitrile and from about [25] *30* to 99.5 weight percent, based on the copolymer, of at least one other polymerizable ethylenically unsaturated monomer, *with the proviso that styrene is said other monomer when only one other monomer is present,* and [wherein the] *said* copolymer [is] *being* characterized by a crosslinking coefficient of less than about 55[.], *and being prepared by a free-radical catalyst initiated process carried out in the presence of a chain transfer agent selected from the group consisting of mercaptans, ketones, alcohols, aldehydes and halogenated compounds at a temperature in excess of 100° C.*

PLANT PATENTS

GRANTED AUGUST 16, 1988

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,247

GERANIUM PLANT "HELEN"

Richard Craig, State College, Pa., assignor to Research Corporation, N.Y.

Filed Jul. 3, 1986, Ser. No. 882,129

Int. Cl.[4] **A01H** *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new distinct cultivar of geranium, substantially as illustrated and described, characterized as being particularly well adapted to both commercial greenhouse production and garden performance, possessing unique flavonol and anthocyanin profiles and having more fully double flowers, better garden performance, and better heat tolerance when compared with geranium cultivar "Ivalo".

6,248

NECTARINE TREE "OLYMPIA"

Walter D. Krause, 31671 Indian Guide Rd., Squaw Valley, Calif. [illegible]

Filed Sep. 2, 1986, Ser. No. 902,620

Int. Cl.[4] **A01H** *5/03*

U.S. Cl. Plt.—41 **1 Claim**

1. A new and distinct variety of nectarine tree substantially as illustrated and described which is somewhat remotely similar to the Royal Giant Nectarine Tree, U.S. Plant Pat. No. 4,107, with which it was discovered as an open-pollinated seedling, but from which it is distinguished by bearing fruit which is mature for commercial harvesting approximately (7) seven days after the Red Jim Nectarine Tree, U.S. Plant Pat. No. 4,518, approximately September 2 through September 23 at Fresno, Calif.; and which furthermore has a brilliant red and glabrous skin; a uniformly firm flesh; and a chilling requirement of at least five hundred hours below 45° F.

6,249

AFRICAN VIOLET NAMED ARCTIC PRINCESS

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Sep. 24, 1986, Ser. No. 911,638

Int. Cl.[4] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,250

AFRICAN VIOLET NAMED ARCTIC STAR

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Sep. 24, 1986, Ser. No. 911,639

Int. Cl.[4] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,251

AFRICAN VIOLET NAMED ARCTIC FROST

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Sep. 24, 1986, Ser. No. 911,640

Int. Cl.[4] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,252

AFRICAN VIOLET NAMED ARCTIC SNOW

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540

Filed Sep. 24, 1986, Ser. No. 911,641

Int. Cl.[4] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,253

AFRICAN VIOLET NAMED ARCTIC MAIDEN

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Sep. 24, 1986, Ser. No. 911,642

Int. Cl.[4] **A01H** *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

VOL
1093

ISS
3

AG
16

1988

UMI

PATENTS

GRANTED AUG. 16, 1988

ERRATA

For CLASS	See PATENT NO.
128-024	4,763,893
180-197	4,763,912
354-100	4,764,034
514-255	4,764,376
428-269	4,764,397
424-101	4,764,463
106-122	4,764,539
427-118	4,764,549
524-265	4,764,576
525-409	4,764,577
071-092	4,764,611
544-357	4,764,619
071-092	4,764,624
343-897	4,764,779
358-031	4,764,964

VOL
1093
ISS
3
AG
16
1988
UMI

PATENTS

GRANTED AUGUST 16, 1988

GENERAL AND MECHANICAL

4,763,362

VELCRO LATCHING DEVICE FOR A TOILET SEAT

Lee B. Eure, 101 First Street, N.W., Pulaski, Va. 24301

Filed Mar. 4, 1987, Ser. No. 21,698
Int. Cl.[4] A47K *13/00*
U.S. Cl. 4—234 3 Claims



1. In a Velcro latching device for a toilet having a water closet, a torroidal toilet seat member and a toilet seat cover member having upper and lower surfaces with each member pivoting about the same axis, the combination which comprises:

a. an elongated attaching strap having one end thereof adhesively secured to the upper surface of said toilet seat cover,

(1) said elongated attaching strap having Velcro attaching means at its other end,

b. a Velcro patch member being adhesively secured to the lower surface of said toilet seat cover member at a location within the opening of said torroidal toilet seat member,

(1) said Velcro patch member having a Velcro latch receiving means on its exposed surface,

c. said elongated attaching strap and said Velcro patch member lying in a plane which is substantially perpendicular to the water closet of the toilet and which bisects said toilet seat member and said toilet seat cover member,

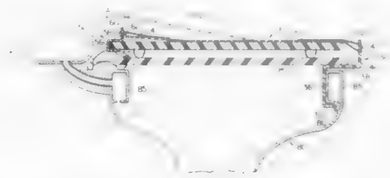
d. and said elongated attaching strap being of sufficient length to be looped over said torroidal toilet seat member and engage said Velcro latch receiving means on said Velcro patch member with said Velcro attaching means, thereby securing said toilet seat member to said toilet seat cover member when said members are in a raised position.

4,763,363

TOILET LOCKING APPARATUS

Albert A. Lallemand, 1323-B E. Pl. Valley Blvd., Altoona, Pa. 16602

Filed Aug. 23, 1983, Ser. No. 525,689
Int. Cl.[4] A47K *13/00*
U.S. Cl. 4—253 15 Claims



1. An improved toilet locking apparatus of the type comprising a strap means having clip means attached at each end thereof for securing a toilet lid and seat in a closed position onto a toilet bowl having an internal annular spillway bowl rim wherein the improvement comprises providing clip means further comprising:

a generally flat bottom portion oriented in a substantially horizontal plane;

a generally flat second portion having one portion thereof connected to one portion of said bottom portion and extending vertically upward therefrom;

a substantially flat third portion having one portion thereof connected to another portion of said second portion and extending in a substantially horizontal plane so that said third portion is in spaced parallel relationship with respect to said bottom portion; and

a substantially flat fourth portion having one portion thereof connected to another portion of said third portion and extending vertically upward therefrom,

first said clip means is sized to engaging a portion of said spillway rim, the second said clip means is sized to engaging a portion of said toilet lid,

said first clip means being larger than said second clip means, and

said strap means being elastic.

4,763,364

SHAMPOO BOWL NECK CUSHIONING DEVICE

Millie D. Morgan, 220 South St., Chagrin Falls, Ohio 44022

Filed Apr. 10, 1987, Ser. No. 37,035
Int. Cl.[4] A45D *44/10*
U.S. Cl. 4—523 6 Claims



1. A neck cushioning device adapted for attachment to a shampoo bowl having a U-shaped, neck-receiving notch in the front wall of the bowl, said neck cushioning device comprising a framework of resilient material coated with a flexible, water-repellent coating over its entire surface;

said framework including:

a first, neck-supporting portion adapted to overlie a segment of the U-shaped, neck-receiving notch in the shampoo bowl and having a downwardly deflecting notch at the center, arcuately shaped such that the lower surface of the first portion is in intimate contact with the upper surface of the notch in the shampoo bowl;

a second portion integrally connected to the first portion, downwardly projecting therefrom, and sized to overlie a

VOL 1093 ISS 3 AG 16 1988 UMI

portion of the forwardmost inner bowl surface adjacent the notch; and,

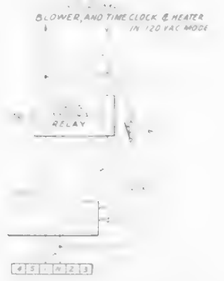
a third portion integrally connected to the first portion, downwardly projecting therefrom, and having a lip sized to curl inwardly under the notch in said front wall and so secure the device to the bowl.

4,763,365

SPA SYSTEM HAVING HIGH TEMPERATURE SAFETY DEVICE

Joe Gerondale, and Jack Rainwater, both of Santa Ana, Calif., assignors to Tolo, Inc., Santa Ana, Calif.

Filed Apr. 15, 1987, Ser. No. 38,500
Int. Cl.[4] A47K *3/02*
U.S. Cl. 4—542 **11 Claims**



1. In a pool or spa water heating system having an electrical power supply and in which water is continually recirculated by an electrically controlled pump through a heater under conditions allowing conventional heating of the water by said pump, said system having a ground fault circuit interrupter operatively connected to the pump electrical control for deactivating the pump when said interrupter senses a ground fault condition, the improvement comprising means simulating a ground fault condition to said interrupter responsive to a sensed overtemperature condition in the recirculating water for electrically disconnecting said pump and blocking pump heating said water by activation of said fault interrupter in response to the simulated ground fault condition.

4,763,366

COMBINED DRAIN AND RETURN LINE AND VALVE THEREFOR

Gerald W. Moreland, Garden Grove, Calif., assignor to Honiton Investments, N.V., Netherlands Antilles

Filed Feb. 18, 1986, Ser. No. 831,366
Int. Cl.[4] E03C *1/02;* **A61H** *33/02*
U.S. Cl. 4—541 **23 Claims**

1. A hydrotherapeutic apparatus, comprising:

a tub having upright walls and a bottom wall, said bottom wall having a drain outlet and at least one of said upright walls having an overflow outlet;

a drain pipe connected to said drain outlet;

an overflow pipe connected to said overflow outlet;

a pump having an intake and a discharge;

means for conducting water from said pump discharge to said tub and for agitating the water therein when said apparatus is in use for hydrotherapy;

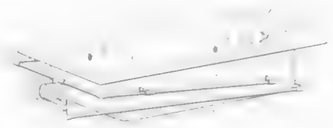
a conduit for conducting water from said tub to said pump intake;

a junction joining said drain pipe, overflow pipe and said conduit together and having walls defining an internal chamber;

a waste pipe connected to said junction;

a fluid passage through said junction for establishing fluid communication between said drain pipe and said conduit when said apparatus is in use;

a valve in said chamber which is movable from a first position, in which said drain pipe is in fluid communication with said conduit and said drain pipe and said conduit are closed to said waste pipe, to a second position in which





said drain pipe and said conduit are open to said waste pipe;

said conduit terminating at said valve; and

said junction having an overflow passage therethrough so that said overflow pipe is in fluid communication with said waste pipe, irrespective of the position of said valve.

4,763,367

HYDROTHERAPY MASSAGE METHOD AND APPARATUS

Melvyn L. Henkin, 5011 Donna Ave., Tarzana, Calif. 91356, and Jordan M. Laby, 3038 Bayshore, Ventura, Calif. 93001

Division of Ser. No. 38,780, Apr. 15, 1987, which is a continuation-in-part of Ser. No. 796,987, Nov. 12, 1985, Pat. No. 4,692,950. This application Oct. 1, 1987, Ser. No. 103,520
Int. Cl.[4] A61H *33/02;* **E03C** *1/02*
U.S. Cl. 4—542 **3 Claims**

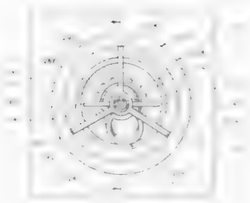
1. A method for discharging a water stream beneath the surface of a water pool while concurrently translating the stream along a path describing an area, said method including the steps of:

providing an elongated rigid conduit having a supply orifice at a first end and a discharge orifice at a second end and wherein said conduit is formed so that the axes of said supply and discharge orifices are misaligned;

supporting said conduit first end for rotation around the axis of said supply orifice;







discharging a water supply stream into said conduit supply orifice substantially along the axis thereof thus (1) discharging a stream from said discharge orifice to produce a thrust for rotating said conduit around said supply orifice axis and (2) creating suction in a cavity adjacent to said supply orifice; and

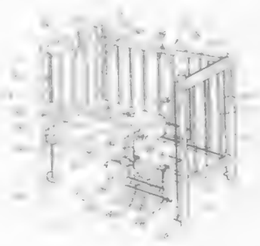
drawing water from said pool into said cavity for mixing with said water supply stream.

4,763,368

APPARATUS TO CONVERT A CRIB TO A BED

Jay M. Lucero, 2453 Ridgewood #4, West Covina, Calif. 91723

Filed Jul. 9, 1987, Ser. No. 71,869
Int. Cl.[4] A47D *7/02;* **A47B** *23/02*
U.S. Cl. 5—93 R **6 Claims**



1. Apparatus to convert a crib to a bed, and in combination with the crib, the crib having walls one of which is removable vertically relative to a supporting vertical guide rod proximate one end corner of the crib, the crib also having a horizontal pad and a supporting horizontal frame including a frame member extending beneath a side of the pad, said apparatus comprising

(a) first arm means in the form of a rigid arm having a first section that extends in supported relation with said upright rod, and a second section that extends generally horizontally above the level of said side of the pad,

(b) said arm means also having an associated third section extending downwardly from said second section and in spaced relation to an opposite end corner of the crib, said third section connected to said frame member,

(c) and a step at least partly supported by said arm means third section, the step downwardly offset relative to an upper surface defined by the pad,

(d) said first, second and third sections extending as a single length of said rigid arm,

(e) said first section of the arm retained by said rod, the rod extending adjacent the arm proximate a turn defined by the first arm means.

4,763,369

TRANSFORMABLE PILLOW

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Continuation-in-part of Ser. No. 876,415, Jun. 20, 1986, Pat. No. 4,670,924. This application Feb. 18, 1987, Ser. No. 16,124
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.[4] A47C *20/02*
U.S. Cl. 5—434 **7 Claims**



1. A dual function pillow comprising:

(A) an inner bag having a compressible filler therein;

VOL 1093 ISS 3 AG 16 1988 UMI

(B) a removable outer case for covering the bag, said case having a character drawn in two dimensions printed on its face; and

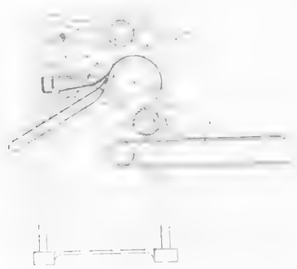
(C) means engaging the outer case to constrict the pillow along transverse lines displaced from opposite ends of the case, the placement of the lines relative to the character being such as to contour the pillow to transform the two-dimensional character into a three-dimensional figure whose form is generally that of the character, the pillow being usable as a conventional head rest or for any other conventional purpose in its non-constricted state.

4,763,370

APPARATUS AND METHOD FOR DYEING SHEET ARTICLES

Darko Mance, 208 Voltaire Crescent, Mississauga, Ontario, Canada L5A 2A4 , and Vitomir Mance, 279 Main St. North, Rockwood, Ontario, Canada N0B 2K0

Filed May 30, 1986, Ser. No. 868,502
Int. Cl.[4] D06P *7/00*; D06B *1/14*
U.S. Cl. 8—150.5 26 Claims



1. An apparatus for dyeing sheet articles, the apparatus comprising: input means for supplying articles to the apparatus; an application roller means mounted for rotation about a generally horizontal axis and including recess means in the surface therof; dye supply means for supplying dye to the surface of the application roller including a container for dye below the application roller means; a backup means mounted adjacent the application roller means, and below the axis thereof, to define an inclined gap below the axis of the application roller means and between the application roller means and the backup means, the gap being arranged to receive, in use, sheet articles from the input means, whereby the recess means of the application roller means carries dye onto an upper side of sheet articles passing through the gap, the apparatus not including a doctor blade means for removing excess dye from the application roller means prior to contact with sheet articles.

19. A method of dyeing a sheet article, the method comprising: supplying dye to an application roller means having a generally horizontal axis and including recess means in its surface to fill the recess means with dye which supply includes immersion of the application roller means in a container of dye, providing a backup means adjacent and below the application roller means to define an inclined gap for sheet articles beneath the axis of the application roller means between the application roller mans and the back up means, rotating the application roller means about the generally a horizontal axis so that dye picked up by the application roller is carried towards the backup means, and supplying sheet articles between the application roller means and the backup means so that dye carried by the recess means of the application roller meansis applied to an upper side of the sheet article, without removing excess dye from the application roller by a doctor blade means prior to contact with sheet articles.

4,763,371

COLORATION PROCESS FOR APPLYING A COLORED POLYMER CONTAINING UNITS DERIVED FROM AN ORGANIC DYE

Brian Parton, Bury, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

Filed Jun. 4, 1986, Ser. No. 870,544
Claims priority, application United Kingdom, Jun. 12, 1985, 8514905
Int. Cl.[4] C09B *69/10*
U.S. Cl. 8—647 10 Claims

1. A method for the coloration of cotton or polyester/cotton blend textile materials which comprises applying thereto by a printing or continuous dyeing technique a colored polymer containing repeat units derived from at least one organic dye which is free from water-solubilizing groups and contains two or more polymerizable olefinically unsaturated groups and from at least one uncolored polymerizable olefin.

4,763,372

OSCILLATABLE TOOTHBRUSH

Robert J. Gougeon, C.P. 346, Matapédia, Québec, Canada G0J 1V0

Filed May 1, 1987, Ser. No. 44,714
Int. Cl.[4] A46B *13/08*
U.S. Cl. 15—22 R 5 Claims



1. An oscillatable toothbrush handle comprising an elongated tubular casing enclosing a shaft for supporting a toothbrush, said casing having a perforated front and rear wall for supporting said shaft and adapted to allow rotation of said shaft about its longitudinal axis, resilient means extending between said casing and said shaft for maintaining said shaft and a predetermined rotational orientation, plunger means hingely fixed to said shaft and extending outside said casing for rotating said shaft around its longitudinal axis about a quarter of a turn, said resilient means biassing said shaft back in said predetermined orientation when said plunger means is released.

4,763,373

FLUID DRIVEN ROTARY SCRUB BRUSH HAVING ROTARY BRUSH MOUNTING ADAPTOR

George Sanchez, Chatsworth, Calif., assignor to Clyde Industries Limited, Sydney, Australia

Filed Aug. 21, 1986, Ser. No. 899,340
Int. Cl.[4] A46B *13/06*
U.S. Cl. 15—29 31 Claims



1. A fluid driven rotary scrub brush comprising a fluid receiving inlet, a rotatably mounted waterwheel rotated by the received fluid, a rotary brush and a rotatably mounted brush mounting adaptor rotated by the waterwheel around an axis, the brush and the adaptor comprising interlocking means actuable to a locked condition, for locking the brush and adaptor together, responsive to movement of the brush toward the adaptor, the interlocking means comprising means exposed for user deactuation of the interlocking means to allow removal of the brush from the adaptor, the brush comprising:

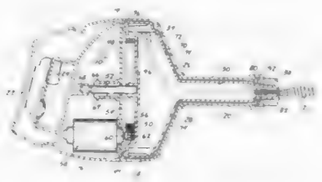
a substantially cylindrical base having a bottom substantially transverse to the axis and the adaptor comprising a ring shaped recess providing a support for the bottom of the cylindrical base and for centering the brush base around the axis, the interlocking means comprising first and second drive members extending from the adaptor through separate apertures in the brush base substantially symmetrically on opposite sides of the axis for driving the brush with the adaptor.

4,763,374

POWERED DRAIN CLEANER

Paul S. Kaye, Racine, Wis., assignor to Lewisan Products, Inc., Racine, Wis.

Filed Dec. 7, 1987, Ser. No. 130,206
Int. Cl.[4] B08B *9/02*
U.S. Cl. 15—104.33 20 Claims



1. In a drain-cleaning implement of the type with a snake rotatable about its axis and extendable for drain insertion and a motor to rotate the snake, the improvement comprising:

a housing having a rear portion to which the motor is secured and a front portion terminating forwardly in a collar;

a snake container rotatably supported within the housing, the container having a wide back portion and a forwardly-extending tubular portion which extends through the collar and terminates in a distal opening through which the snake exits the container;

means adjacent to the distal opening to clamp the snake in selected axial positions with respect to the tubular member;

a ring gear secured to the back portion of the container; and

a pinion gear secured to the motor and engaging the ring gear for high-torque rotation of the container and snake.

4,763,375

TOOTHBRUSH

Michael J. Vieten, 81 Eighth Ave., Brooklyn, N.Y. 11215

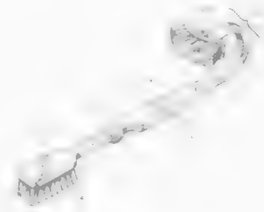
Filed Aug. 8, 1986, Ser. No. 894,789
Int. Cl.[4] A46B *9/04*
U.S. Cl. 15—106 7 Claims

7. An improved toothbrush for effective cleansing of the inside surface of an individual's teeth, comprising:

a handle having a relatively straight section and a "C"-shaped section on one end thereof, the "C"-shaped section being provided at its terminus with hinge-like means for pivoting engagement of a support for a crescent-shaped toothbrush;

a crescent-shaped toothbrush having a bristle bearing surface and a support means, said support means having hinge-like means for pivoting attachment with the engagement means at the terminus of the "C"-shaped handle; and

means for limiting the degree of pivoting rotation of the crescent-shaped toothbursh relative to its hinge-like attachment on the terminus of the "C"-shaped handle,



whereby the crescent shaped toothbrush can articulate laterally on the terminus of the "C" shaped handle and yet be maintained in a cleaning relationship relative to the front lingual arch.

4,763,376

MAINTENANCE INSPECTION SUBMERSIBLE TRANSPORT APPARATUS

Edwin C. Spurlock, Jr., Boynton Beach, and William M. O'Neill, Lighthouse Point, both of Fla., assignors to Pene-Tech, Inc., West Palm Beach, Fla.

Filed May 27, 1986, Ser. No. 867,086
Int. Cl.[4] B08B *9/04*
U.S. Cl. 15—104.31 9 Claims



1. Apparatus for cleaning the interior of conduits comprising;

(a) a frame;

(b) support means mounted to said frame for engaging the inner surface of a conduit and positioning said frame coaxially within a conduit;

(c) a cutter head assembly rotatably mounted on said frame for cleaning the inner surface of a conduit and forming debris;

(d) wheel means mounted on said support means for advancing said frame through the conduit;

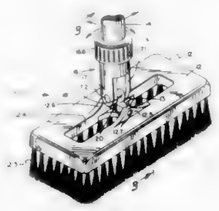
(e) means for rotating said cutter head assembly;

(f) means for removing debris from the interior of the conduit;

said means for removing debris comprising a hydrolift body suspended from the bottom of said frame, and said hydrolift body including a forward end and outlet end, said forward end having a forward edge for scooping up debris from the bottom of a conduit.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,377
SWIVELING SCRUB BRUSH
Everett Madsen, Fridley, Minn., assignor to Flo-Pac Corporation, Minneapolis, Minn.
Filed Oct. 21, 1986, Ser. No. 921,912
Int. Cl.[4] B25G *3/20*; F16D *3/28*
U.S. Cl. 15—144 A 8 Claims



8. A swiveling, position-maintaining scrubbing brush comprising a brush block having a bristle-bearing lower surface and an upper surface, the handle connector having means for receiving an elongated handle, and pivot means pivotally attached to the brush block and handle connector to form a pivotal attachment therewith, said pivotal attachment comprising a pair of bosses and a pair of pivot members pivotally engaging the bosses to allow pivoting about an axis against a resistance, and adjustment for adjusting the resistance comprising a cut extending between the pivot members, and a wedge-shaped insert received within the cut and operable, when forced into the cut, to spread apart the pivot members.

4,763,378
PUSH BROOM HEAD OF THE CHANNEL-MOUNTED BRISTLE TYPE
Arthur E. Drumm, 14808 Hillview Rd., Marysville, Ohio 43040
Filed Nov. 27, 1987, Ser. No. 126,246
Int. Cl.[4] A46B *3/08*
U.S. Cl. 15--146 15 Claims



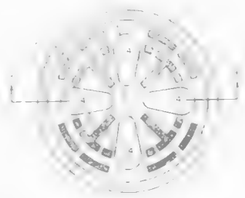
1. A push broom comprising a brush head formed with opposed substantially parallel bristle strip sections joined at curved opposite ends of the head, said bristle strip sections being composed of a downwardly opening channel which receives and retains the U-shaped upper ends of depending bristles, and end clips of channel form complemental to that of the bristle strip sections fitting downwardly over the sections at the curved ends.

4,763,379
CLEANING DEVICE
James M. Hanna, 78 Squire Hill Rd., New Milford, Conn. 06776
Filed Mar. 20, 1987, Ser. No. 28,653
Int. Cl.[4] A46B *15/00*
U.S. Cl. 15—160 9 Claims



1. A cleaning tool for household use in cleaning the surface of walls, ceilings, floors and the like, comprising a non-conical nose piece said nose piece having inner and outer surfaces and a nose end, cleaning means attached to said outer surface for attaching and holding debris removed from the surface during cleaning, at least one semi-circular, non-deformable protuberance being attached on said outer surface of said nose piece at a location spaced from said nose end, said proturberance (s) extending above said cleaning means to prevent any contact of the cleaning means with the surface to be cleaned.

4,763,380
CAN CLEANING DEVICE
Warren J. Sandvick, Rt. 11, Box 125 A-38, Lubbock, Tex. 79407
Filed Sep. 16, 1987, Ser. No. 97,151
Int. Cl.[4] A46B *9/02*
U.S. Cl. 15—160 1 Claim



1. A new and improved can cleaning device, comprising:
a circular plate having a diameter slightly larger than a can to be cleaned;
a downwardly extending cylindrical sidewall formed on said circular plate;
four radially extending openings symmetrically formed through said circular plate;
each of said openings tapering in width from a narrow radially inner end adjacent a central portion of said circular plate to a wider radially outer end adjacent an outer edge portion of said circular plate;
each of said openings having opposed radiused inner and outer end walls;
a plurality of bristles extending downwardly from a bottom surface of said circular plate;
said cylindrical sidewall surrounding said bristles and a circular bottom edge of said cylindrical sidewall extending downwardly beyond the extent of said bristles;
said bristles forming a first generally circular radially outer brush portion composed of circumferentially spaced discrete arcuate segments dimensioned for engagement in a gutter formed on a top surface of a first standard size beverage can and a second, radially spaced, generally circular radially inner brush portion composed of circumferentially spaced discrete arcuate segments dimensioned for engagement in a gutter formed on a top surface of a second standard size beverage can; and
said bristles also forming four radially extending circumferentially spaced brush portions symmetrically disposed between said four radially extending openings.

4,763,381
ACCESSORY USED TO KEEP OUTSIDE REAR VIEW MIRRORS OF VEHICLES CLEAR OF WATER, SNOW, ICE AND DIRT
George A. Williams, 2900 Canyon Rd., #45, Ellensburg, Wash. VN9 2E
Filed May 28, 1986, Ser. No. 868,773
Int. Cl.[4] B60S *1/48*
U.S. Cl. 15—250.01 3 Claims



1. A vehicle outside rear view mirror accessory adapted to be installed and to be used to keep left or right outside rear view mirrors of vehicles clear of water, snow, ice and dirt with two such said accessories generally being used, one for each mirror, located on the respective left and right side of the vehicle comprising:
(a) a weatherproof housing adapted to be secured to the supports, provided by the vehicle manufacturer, to support rectangular outside rear view mirror, provided by the vehicle manufacturer, without changing locations of fasteners, as determined by the vehicle manufacturer;
(b) an electric wiper motor secured inside said weatherproof housing;
(c) a mirror surface wiper assembly pivotally secured to the electric wiper motor, after passing through the weatherproof housing, comprising in turn:
(i) a first pivotal wiper arm directly driven by the electric wiper motor;
(ii) a second pivotal wiper arm, not directly driven by the electric wiper motor, and horizontally spaced, where pivotally secured, apart from the pivotal securement place of the driven first pivotal wiper arm;
(iii) a lower horizontal cross link pivotally secured to these repective first and second pivotal wiper arms, having a horizontal length matching the horizontal space located above between the securement places of the respective first and second pivotal wiper arms; and
(iv) a vertically positioned wiper blade secured to the lower horizontal cross link to be moved back and forth horizontally across a rectangular mirror surface of a rectangular outside rear view mirror of a vehicle, provided by the vehicle manufacturer;
(d) an electrical heating assembly adapted to be positioned adjacent to a rectangular outside rear view mirror of a vehicle, provided by the vehicle manufacturer, to heat a mirror surface;
(e) a washing liquid nozzle assembly adapted to be positioned adjacent a rectangular outside rear view mirror of a vehicle, provided by the vehicle manufacturer, having a nozzle to spray washing liquid on a mirror surface;
(f) an electrical circuit assembly adapted to be interconnected with an electrical circuit of a vehicle to distribute electrical energy to the electric wiper motor and to the electrical heating assembly, and having selectable switches adapted to be positioned on a vehicle within the reach of a seated driver of a vehicle, to turn on and off the distribution of electrical energy, repectively, to respective left and right electrical wiper motors, and respective left and right electrical heating assemblies, adapted to be located at respective left and right outside rear view mirrors of a vehicle, provided by the vehicle manufacturer;
(g) a washing liquid conduit assembly adapted to be interconnected with a washing liquid conduit assembly of a vehicle, provided by the vehicle manufacturer, to distribute washing liquid to respective washing liquid nozzle assemblies, and having selectable valves, adapted to be positioned on a vehicle within the reach of a seated driver of a vehicle, to turn on and off the distribution of washing fluid to respective left and right liquid conduit assemblies, located at respective left and right vehicle outside rear view mirrors, provided by the vehicle manufacturer; and
(h) a washing liquid tank and a liquid pump secured within the weatherproof housing, and interconnected with the washing liquid conduit assembly, to supplement the storage and distribution of the washing liquid to respective outside rear view mirrors, provided by the vehicle manufacturer.

4,763,382
VACUUM CLEANER HANGING ARRANGEMENT
William R. Sumerau, Easley, S.C., assignor to The Singer Company, Stamford, Conn.
Filed Jan. 26, 1988, Ser. No. 148,522
Int. Cl.[4] A47L *9/00*
U.S. Cl. 15—323 10 Claims



1. A vacuum cleaner having a head portion incorporating a vacuum nozzle; a body portion incorporating a collecting bag, said body portion being operatively and pivotably associated with said head portion, and upon selected pivoting thereof further defining together with said head portion a generally planar lower surface; cord storage means, received on said generally planar lower surface, for storing a coiled power cord for said vacuum cleaner in a storage plane generally parallel to and immediately adjacent to said generally planar lower surface; and vacuum cleaner hanging means, substantially facing said planar lower surface, and adapted for supporting said vacuum cleaner on an external support member mounted on a

VOL 1093 ISS 3 AG 16 1988 UMI

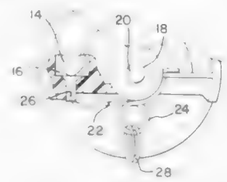
wall or similar planar support surface, with the vacuum cleaner planar lower surface substantially facing towards such planar support surface, and with the vacuum cleaner power cord stored on said cord storage means so as not to interfere with operation of said hanging means.

4,763,383

ELECTRICALLY CONDUCTIVE CASTER HAVING LOOP DEPENDING RINGS

Michael H. Estkowski, St. Joseph; Christopher G. Estkowski, Coloma, and Robert M. Shane, Berrien Springs, all of Mich., assignors to Shepherd Products U.S., Inc., St. Joseph, Mich.

Filed Jan. 8, 1987, Ser. No. 1,812
Int. Cl.⁴ B60B *33/00*
U.S. Cl. 16—18 R **2 Claims**



1. A dual wheel conductive caster which provides an electrically conductive path between the article it supports and the surface on which it is supported including a housing, an electrically conductive pintle associated with said housing with one end adapted to be inserted into a socket in the article to be supported, an axle disposed in said housing, a pair of caster wheels, one caster wheel supported on each end of said axle, an electrically conductive support element consisting of a metallic wire member disposed between said wheels and electrically connected at one end to said pintle and at the other end to said housing, said support element disposed above the surface on which said caster wheels are supported, said support element defining a loop between its ends and toward the center thereof and a plurality of annular conductive contact elements concentrically arranged adjacent each other and suspended from said loop and electrically connected to said support element in parallel and biased into engagement with said support surface whereby an electrically conductive path is defined between said pintle and said support surface through said support element and said contact elements thereby ensuring that said article supported by said caster and said support surface are at the same level of electric charge.

4,763,384

DOOR CLOSER AND CHECK

Takaji Watabe, Hirakata, Japan, assignor to Santo Industries Co., Ltd., Osaka, Japan

Filed Oct. 7, 1986, Ser. No. 916,318
Claims priority, application Japan, Apr. 30, 1986, 61-66310[U]
Int. Cl.⁴ E05F *3/10*
U.S. Cl. 16—53 **7 Claims**

1. A door closer comprising a door closer body adapted to be attached to the upper portion of the pivoted side of a door, a vertical shaft rotatably supported by the door closer body, said shaft having an upper end projecting upwardly of the door closer body and fixed to one end of an arm means, the other end of the arm means being adapted to be rotatably supported by the door frame, two cams installed on said shaft in the door closer body, said cams being adapted to rotate together with the shaft, a slide case horizontally slidably housed in the door closer body for movement transverse to the axis of said shaft, said slide case having one inner end surface operably associated with the cam surface of one of the cams, means for urging said slide case toward the cam surface of said one of the cams to rotate the door in a closing direction, said slide case encasing a majority of said one of the cams and said means for urging said slide case, and a cylinder device housed in the door closer body and having a piston rod adapted to abut at the free end



thereof against the cam surface of the other of the cams whereby during door closing operation the piston rod is pushed by the cam surface of the other of said cams to apply a brake.

4,763,385

DOOR CLOSURE TRANSMISSION UTILIZING AN ECCENTRIC PINION

Gerhard Furch, Sindelfingen; Georg Scheck, Tiefenbronn; Fritz Feucht, Renningen, and Ralf Storandt, Leonberg, all of Fed. Rep. of Germany, assignors to GEZE GmbH, Fed. Rep. of Germany

Filed Apr. 24, 1987, Ser. No. 42,381
Claims priority, application European Pat. Off., Apr. 28, 1986, 86105855.0; Fed. Rep. of Germany, Nov. 10, 1986, 3638353
Int. Cl.⁴ E05F *3/22*
U.S. Cl. 16—58 **16 Claims**



1. A door closer comprising a housing; a bore in said housing; a piston guided in said bore for linear movement therein; spring means disposed in said bore for resiliently biasing said piston into an end position, said piston having first and second opposite ends with said first end coacting with said spring means; a closer axle; an eccentric toothed pinion disposed in said housing and drivingly connected to said closer axle; said eccentric toothed pinion having a first pitch curve and a plurality of pinioned teeth disposed along said first pitch curve; a toothed rack formed on said piston between said first and second opposite ends and meshing with said eccentric toothed pinion, said toothed rack having a second pitch curve matched to said first pitch curve and having a plurality of rack teeth disposed along said second pitch curve; wherein said eccentric toothed pinion and said toothed rack cooperate to provide a lever arm of variable length, said lower arm having a maximum value in a first relative position of said eccentric toothed pinion and said toothed rack corresponding to a door closed position and reducing from said maximum value to a minimum value in a second relative position of said eccentric toothed pinion and said toothed rack corresponding to a door open position; wherein said pinion teeth have a profile offset

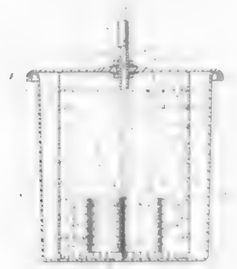
which varies along said pitch curve and has a positive value for teeth which engage said rack teeth when said lever arm has said minimum value, and wherein said rack teeth have a corresponding but opposite profile offset such that rack teeth which engage with said pinion teeth when said lever arm has said minimum value have a negative profile offset.

4,763,386

FISH SCALING APPARATUS

Herman A. Wissbroecker, Star Rte., Box 135, Pearson, Wis. 54462

Filed Aug. 6, 1987, Ser. No. 82,819
Int. Cl.⁴ A22C *25/02*
U.S. Cl. 17—64 **12 Claims**



1. A fish scaling apparatus, comprising:
a container having a bottom and a closed upstanding side wall extending therefrom and adapted to receive a quantity of water therein;
an insert adapted for placement within said container, said insert being adapted for placement on the bottom of said container and having a closed upstanding side wall which, when placed within said container, defines a fish-holding cavity for holding a plurality of fish therein, said insert having a transverse dimension less than that of said container so that a gap is formed between said upstanding side wall of said insert and said upstanding side wall of said container, said insert including passage means for allowing water within said container to pass into said fish-holding cavity;
agitating means disposed within said fish-holding cavity for agitating fish contained within said fish-holding cavity and causing said fish to come into contact with said upstanding side wall of said insert; and
scaling means comprising a plurality of projections formed on the upstanding side wall of said insert and extending inwardly into said fish-holding cavity for removing scales from fish as said fish contact said upstanding side wall of said insert during agitation by said agitating means.

4,763,387

STRIP FEEDER BETWEEN ENTRANCE AND CALENDERING ROLLS OF A TEXTILE MACHINE

Jakob Bothner, Göppingen-Jebenhausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Apr. 6, 1987, Ser. No. 34,756
Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612133
Int. Cl.⁴ D01H *5/72, 13/04, 5/28*
U.S. Cl. 19—288 **16 Claims**

1. In a fiber strip feeder provided with a fiber strip feed duct between the entrance rolls and the calendering rolls in a spinning-preparation machine, particularly in a set of drafting rolls of said spinning-preparation machine, having a tangential housing air duct opening into said fiber strip feed duct, the improvement wherein a fiber strip funnel is located downstream of said



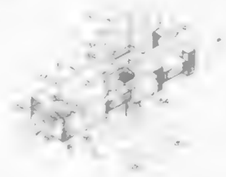
fiber strip feed duct toward whose constricted inner space a high pressure passage is directed whose working direction crosses the axis of said fiber strip funnel for fiber strip feed.

4,763,388

MANUALLY OPERATED BAG CLOSURE DEVICE

Edward J. Kemble, 1181 NW. 5 Ct., Pompano Beach, Fla. 33060

Filed Jul. 9, 1987, Ser. No. 71,403
Int. Cl.⁴ A44B *13/02;* **B65D** *77/10*
U.S. Cl. 24—30.5 R **10 Claims**

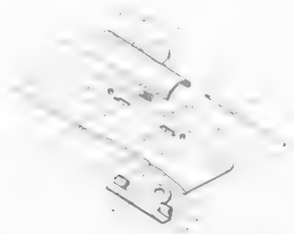


1. A manually operated bag closure device for closing the opened end of a bag made compliant material and comprising:
a housing having a longitudfinal axis and a cavity extending thereinto from one longitudinal end thereof;
a plunger compatibly configured with said housing cavity and disposed therein for reciprocal movement along said longitudinal axis, said plunger having a portion thereof extending from said housing cavity for controlling said movement thereinto;
cooperative means on said housing and said plunger for gathering material disposed circumferentially at the neck of the bag opening symmetrically about the access axis into the bag, said gathering means having a bag insertion position at the end of said reciprocal movement where said plunger reaches maximum travel into said housing cavity and a bag closure position at the end of said reciprocal movement where said plunger reaches maximum travel out of said housing cavity;
means disposed through said device for accessing the neck of the bag opening therethrough into said gathering means at said bag insertion position thereof, with the bag passing thereinto in a direction perpendicularly across the bag access axis;
bias means for forcing said gathering means on said plunger to said bag closure position; and
means for retaining said plunger within said housing cavity against the force of said bias means,
said device being manipulable with one hand to overcome the force of said bias means in locating said gathering means at said bag insertio position while dangling the bag along the access axis thereof with the other hand, and the neck of the bag then being insertable through said access means into said gathering means with said bias means being releasable to move said gathering means into said bag closure position at which the bag opening is closed

VOL
1093
ISS
3
AG
16
1988
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with the neck thereof tightly gathered symmetrically about the access axis thereinto.

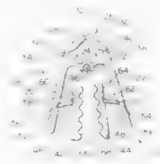
4,763,389
CLIPBOARD STRUCTURE
Shih-Ho Chang, No. 2-12, Chang Lu Road, Chang Hwa City, Taiwan
Filed Oct. 14, 1987, Ser. No. 108,387
Int. Cl.[4] B42F *1/00*
U.S. Cl. 24—67.11 1 Claim



1. A kind of renovated structure of clipboard comprising:
a board of which one end is provided with two transverse groove slots, of which extension of outer an edge of said board is provided with smaller grooves and outer sides provided with a convex post respectively;
a supporting base of which both sides are bent upward and a rear end of said base is rolled up into tube-shaped element of which fin-shaped shoulder is provided at outer side edges; the tube-shaped element penetrates through the two transverse groove slots to make a fin-shaped shoulder insert into the smaller grooves at the outer edges of said groove slots so that the supporting base can firmly attach and adhere to the bottom face of the board and the tube-shaped element protrude through the board surface to preset height;
a clamping element on an integral element is concavely bent into an appropriate arc of which a extension of a rear central portion is provided with a pressing part and both sides are rolled up into a tube-shaped element similar to that of the supporting base while the front end contacts with said board;
a spring and a pivotal axle;
whereby the penetration of said pivotal axle through the tube-shaped element of the clamping element and supporting base and the spring, the clipboard is quickly combined and assembled without usage of rivets.

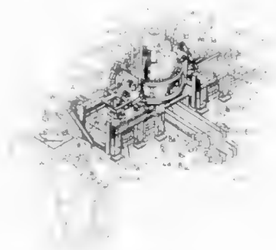
4,763,390
ONE PIECE PLASTIC GARMENT CLAMP HAVING LIVE HINGE TOGGLE JOINT
William B. Rooz, 1060 Carolan, Burlingame, Calif. 94010
Filed May 11, 1987, Ser. No. 48,243
Int. Cl.[4] E05D *7/00*
U.S. Cl. 24—487 7 Claims

1. A one piece plastic clamp having a generally U-shaped outer structure including two outside legs and a thinned and downwardly curved upper bridging region from which the legs integrally depend, the clamp further including:
live hinge toggle joint means for spanning the upper outside ends of the legs, the toggle joint means having a release position peaking freely above the upper bridging region as the legs move relatively together and apart in the release position, and having a stable snap lock position directly adjacent to the upper bridging region thereby forcing the outer legs together in a clamped position;
two oppositely facing inner clamping jaws relatively moveable freely with respect to each other and to the outer structure in the release position for clamping an article between directly opposed jaw faces when the clamp is in the snap lock position,
two live hinge beams for joining the jaws to opposite inside walls of the outer legs, each jaw having a leg live hinge means at a fulcrum location at a midregion of the inside wall of its corresponding leg and having a jaw live hinge means at a midregion of an outside wall of its corresponding jaw, the two live hinge beams extending upwardly from their fulcrum locations so that downward force



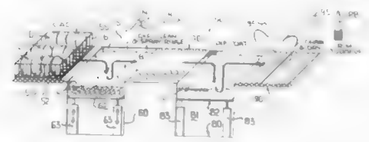
caused by the weight of an article clamped between the jaws increases the clamping force of the clamp in the clamped position by the resistance of the legs to being spread while in the clamped position,
whereby compressive force applied to urge the lower open ends of the outer legs together causes the legs to bend about the fulcrum points, thereby spreading apart the thinned and downwardly curved upper bridging region which causes the live hinge toggle means to snap release to its release position, thereupon releasing the jaws from clamping of the article.

4,763,391
AUTOMATIC ASSEMBLING APPARATUS
Teruo Yoshioka, Yutaka Sato; Yuzo Abe, and Shoji Nakano, all of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 25, 1987, Ser. No. 89,108
Claims priority, application Japan, Aug. 27, 1986, 61-199014
Int. Cl.[4] B23P *21/00*
U.S. Cl. 29—33 P 5 Claims



1. An automatic assembling apparatus for assembling, in sequence, at least a first component and a second component to an article at an assembling station, said assembling apparatus comprising a first assembling jig for said first component and a second assembling jig for said second component; an annular rail means wherein said first and second assembling jigs are mounted on and circumferentially movable on said annular rail means; said annular rail means having an annular movable rail portion positioned opposite said assembling station which is movable to advance toward and retract from said assembling station; at least one supplying station positioned with respect to the circumference of said annular rail means for supplying components to said assembling jigs at said supplying station; wherein each of said assembling jigs and a corresponding component are positioned in sequence on said movable rail portion and, wherein the advance movement of the movable rail portion moves said assembling jigs to an assembling position at said assembling station for sequentially carrying out the assembly of each component to the article.

4,763,392
METHOD OF MANUFACTURING A TOTALLY COATED TIRE RIM
Robert D. Fogal, Chambersburg, Pa., and Albert A. Taber, Richmond, Mo., assignors to International Marketing Inc., Chambersburg, Pa.
Filed Apr. 10, 1987, Ser. No. 36,659
Int. Cl.[4] B21H *1/10*
U.S. Cl. 29—159.1 47 Claims



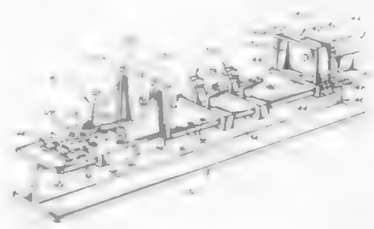
37. A method of refinishing a rim/wheel comprising the steps of conveying a rim/wheel along a generally first path of travel in a first direction between a starting position and finishing position, conveying the rim/wheel along a second generally reciprocal path of travel in a second direction generally transverse to the first path to and from a cleaning station, maintaining the axis of the rim/wheel in a generally horizontal plane while the rim/wheel is at the cleaning station, performing a hot liquid cleaning operation upon the rim/wheel while the rim/wheel is at the cleaning station, after performing the hot liquid cleaning operation continuing the conveyance of the rim/wheel generally along the first path of travel to a coating station, applying a coating of protective material upon at least selected surfaces of the rim/wheel while the rim/wheel is at the coating station, and removing the rim/wheel from the second station.

4,763,393
HEATING DUCT ASSEMBLY TOOL
Elmer M. Gee, Box 54 River Isle, Bradenton, Fla. 34208
Filed May 13, 1987, Ser. No. 49,093
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—238 19 Claims



1. A duct assembly tool comprising:
an elongated frame member;
a pivot member pivotally secured to said frame member; and
a pair of wheels for enabling motion of the duct assembly tool along duct work, one of said wheels is rotatably secured to said frame member and the other of said wheels is rotatably secured to said pivot member wherein said wheels are positioned on adjacent duct work flanges when said frame member is in a first position with respect to said pivot member, in said first position said wheels and frame member are substantially aligned, said frame member is pivoted with respect to said pivot member to a second position wherein said wheels roll along said duct flanges to clamp together said duct flanges to enable positioning of a cleat over said flanges to secure two duct together, in said second position said wheels are aligned on a line that is substantially transverse to said frame member.

4,763,394
PUSH PULL PRESS FOR ASSEMBLY AND DISASSEMBLY OF DRIVE SHAFTS
Raymond L. Decato, P.O. Box 579, Grantham, N.H. 03753; Rodney R. Decato, 258 Mechanic St., Lebanon, N.H. 03766, and Ronald R. Decato, General Delivery, Grantham, N.H. 03753
Filed Jan. 6, 1988, Ser. No. 141,143
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—252 8 Claims



1. A push pull press machine for use in the assembly and disassembly of three component drive shaft, such machine comprising:
a support track;
at least one tube shaft support fixture positioned on said support track;
a tube yoke fixture slideably mounted on said support track, said tube yoke fixture having a center cavity and being provided with a tube yoke tie down pin and a pair of tube yoke spacers;
a stub shaft assembly slideably mounted on said support track, said stub shaft assembly being comprised of a slip stub shaft fixture slideably engaging and a slip yoke fixture;
means for rigidly affixing said stub shaft assembly to said support track; and
means for moving the tube yoke fixture relative to the stub shaft assembly.

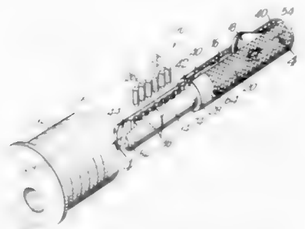
4,763,395
LOCK CYLINDER LOADING TOOL AND METHOD OF USE
Jose Fontaine, P.O. Box 396, Quakertown, Pa. 18951
Filed May 7, 1987, Ser. No. 46,642
Int. Cl.[4] B23P *11/00*
U.S. Cl. 29—436 7 Claims

1. A lock cylinder loading tool for hand held use without reference to an external vise in loading pins and springs into a pin tumbler lock cylinder, said pin tumbler lock including pins and springs, a plug with two ends, a key end and a protruding back end, and a cylinder with an axial bore and a plurality of axially aligned radial pin holes spaced apart along an axial length and intersecting said axial bore, said loading tool comprising:
(a) a first rod loading section of a predetermined length and circumference to allow said rod loading section to be slidably received in said cylinder's bore and to align with

VOL 1093 ISS 3 AG 16 1988 UMI

said cylinder pin holes, said rod loading section including a proximal and a distal end, said rod loading section including, along its entire length, a longitudinal groove of a predetermined depth and width, said groove including a plurality of aligned radial pin holes perpendicular to said groove and extending from said groove to said rod loading section's circumference, said groove terminating at said proximal rod end in a groove sized to mate with said plug's protruding back end;

(b) a second rod handle section having a circumference greater than said cylinder's bore and a proximal end abut-



ting said distal end of said rod loading section to form a shoulder stop therewith, said rod handle section including, along its entire length, a longitudinal groove of sufficient depth to be contiguous with said rod loading section's groove; and

(c) an elongated blade including a proximal tapered end and a distal rearward end, said blade being of a length at least equal to the length of said rod loading section and slidably mounted longitudinally in said handle section groove so that, in use, said proximal blade end slides forward and operates to lift said pins from said rod's pin holes during engagement therewith.

4,763,396

METHOD AND DEVICE FOR PREVENTING CORROSION OF AN EXPANDABLE MOUNTING ELEMENT ANCHORED IN A MOUNTING HOLE

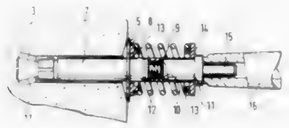
Artur Fischer, Weinhalde 34, 7244 Waldachtal 3/Tumlingen, Fed. Rep. of Germany

Filed Oct. 30, 1986, Ser. No. 926,404

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1985, 3538995

Int. Cl.[4] **B23P** *25/00*; **E21D** *20/02*

U.S. Cl. 29—458 **22 Claims**



1. A method of preventing corrosion of an expandable mounting element anchored in a mounting hole of a support structure, the hole having a base, the method comprising:

introducing a sealing composition into the mounting hole of the support structure;

mounting a disc on an expansion sleeve of an expandable mounting element, the expandable mounting element also having a mounting member around which is the expansion sleeve member, and an expander cone member with an end face, the expander cone member extending longitudinally forward of the mounting member and being arranged so that said expansion sleeve member is drivable thereon;

inserting the expandable mounting element into the sealing composition from the end face to the disc so that the disc can rest on a surface of the support structure, the disc being mounted on the expansion sleeve member so that the expandable mounting element is drivable relative to the disc; and

preventing corrosion of the expandable mounting element and including compacting the introduced sealing composition by first driving the expandable mounting element, including the expander cone member and the expansion sleeve member, further into the introduced sealing composition and thereby further into the hole and relative to the disc so that the sealing composition displaces by the end face of the expander cone member first against the base of the hole and then up along the expandable mounting element until reaching the disc against which the sealing composition compacts and an excess of the sealing composition emerges from the hole by squeezing out between the disc and the surface of the support structure.

11. An arrangement for preventing corrosion of an expandable mounting element anchored in a mounting heel of a support structure, the arrangement comprising:

an expandable mounting element having a mounting member, an expansion sleeve member around said mounting member, and an expander cone member arranged so that said expansion sleeve member is drivable thereon, said expander cone extending longitudinally forward of said mounting member and having an end face insertable first into the hole, said expansion sleeve member having an end facing outward away from said end face of said expander cone member;

means for preventing corrosion of said expandable mounting element and including a disc mounted on said expansion sleeve member so that said expandable mounting element is drivable relative to said disc, said expandable mounting element being insertable in a sealing composition from said end face of said expander cone up to said disc so that said disc can rest on a surface of the supporting structure, said disc being formed so that when the sealing composition displaces to said disc, said sealing composition compacts against said disc and thereby prevents corrosion of said expandable mounting element; and

means for driving said expandable mounting element, including said expander cone member and said expansion sleeve member, further into the sealing composition and relative to said disc so as to displace the sealing composition first by said end face of said expander cone member and then along said expandable mounting element until reaching said disc against which the sealing composition compacts and an excess of the sealing composition emerges by squeezing between said disc and the surface of the support structure.

4,763,397

DEPRESSION STAKING PROCESS

Robert H. Tsukayama, Southfield, and Roger E. Abitz, Northville, both of Mich., assignors to Douglas & Lomason Company, Farmington Hills, Mich.

Filed Dec. 17, 1986, Ser. No. 943,121

Int. Cl.[4] **B21D** *39/00*; **B23P** *11/00*

U.S. Cl. 29—509 **8 Claim**

1. A method of attaching a first article to a second thermoplastic article comprising the steps of:

forming a channel having a restricted opening in said first article;

forming portions of raised material on said second article locations where said first article is to be attached;

placing said first article onto said second article so that said raised portions of said second article are received within the restricted opening of said channel in said first article;

plasticizing said raised portions of said second article;

positioning a stake having a wedge shape over a back side said raised portions of said second article;

displacing said plasticized material into the enlarged area of said channel by pressing said stake into said channel; and



permitting said plasticized material to return to a rigid state so that said displaced material cannot be extracted through said restricted opening.

4,763,398

METHOD OF MANUFACTURING A LIGHT CONDUCTOR AND HOLLOW METAL LIGHT CONDUCTOR MANUFACTURED ACCORDING TO THE METHOD

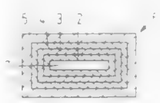
Albert Huizing, Eindhoven; Willy J. B. Felder, Bocholtz, and Antonius W. Tijssen, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1986, Ser. No. 905,227

Claims priority, application Netherlands, Sep. 11, 1985, 8502477

Int. Cl.[4] **G02B** *6/20*

U.S. Cl. 29—527.1 **8 Claims**



1. A method of manufacturing a light conductor comprising the steps of

providing a core of a synthetic resin material,

forming at least one metal layer on said core,

elongating said core to reduce the cross-section of said core, and

removing said core from said at least one metal layer to form a metal tube, wherein said metal tube has an inside surface being a reflecting metal surface.

7. A hollow metal light conductor comprising a hollow metal tube having an inner reflecting metal surface, said metal tube having a rectangular internal cross-section, said inner reflecting metal surface being an aluminum layer wherein said metal tube includes a supporting layer of copper.

4,763,399

METHOD OF BOLT HOLE STRENGTHENING IN A FIBROUS COMPOSITE LAMINATE

Richard D. Roe, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 839,590, Mar. 14, 1986, Pat. No. 4,724,598. This application Aug. 13, 1987, Ser. No. 84,802

Int. Cl.[4] **G21B** *1/46*

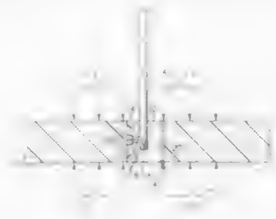
U.S. Cl. 29—527.2 **4 Claims**

1. A method of forming a strengthened bolt hole in a structural component formed of fibrous composite laminate sheet, the method comprising the steps of:

applying a compression load to the opposed sides of said sheet adjacent the desired location of said bolt hole, said load being sufficient to resist delamination and creation of voids during drilling of said bolt hole;

drilling said bolt hole in said laminate sheet;

applying a metal layer to the peripheral wall of said bolt hole, the metal being selected to enhance bearing strength



of said bolt hole and to resist galvanic corrosive reaction with the intended fastener.

4,763,400

MACHINE FOR THE SELECTIVE INSERTION OF ELECTRICAL CONTACT PINS INTO A PRINTED CIRCUIT PLATE

Willy Deckers, Aarschot, Belgium, assignor to Burndy Corporation, Norwalk, Conn.

Filed Nov. 20, 1986, Ser. No. 932,937

Claims priority, application Belgium, Nov. 29, 1985, 0/215930

Int. Cl.[4] **H05K** *3/30*

U.S. Cl. 29—564.6 **14 Claims**



1. Machine for automatic and selective insertion of electrical contact pins of different kinds or coating in previously programmed places into a printed circuit plate with the characteristic that this machine is equipped with:

a programmable X-Y table (10) on which the printed circuit plate (12) is fixed;

an intermittently rotatable distribution head (20) fixed on this table (10) equipped with a mechanism comprising at least two arms, each of said arms having means for picking up a contact pin (14) from a feeding device (30) and for insertion of this pin into a printed circuit plate fixed on the X-Y table;

a lever mechanism (103, 105) for simultaneously acting on said at least two arms (24*a*, 24*b*) in a pin pick-up position and a pin insertion position, respectively:

a feeding device (30) which is movable in lateral direction with respect to the distribution head (20) for the automatic and selective feeding of at least two different types of pins and equipped with a mechanism for the separate cutting from the feeding strip of a pin and for the orientation and alignment of this pin; and

an anvil mechanism (80) attached under the X-Y table (10) to

VOL
1093
ISS
3
AG
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1988
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stop the pin at the bottom side of the printed circuit plate (12).

4,763,401

AUTOMATIC TOOL-CHANGING DEVICE FOR INDUSTRIAL ROBOTS

Giorgio Marinoni, and Pietro Araudo, both of Turin, Italy, assignors to Comau S.p.A., Turin, Italy

Filed Jul. 8, 1987, Ser. No. 71,114
Claims priority, application Italy, Jul. 16, 1986, 67574 A/86
Int. Cl.[4] B23Q *3/155;* B25J *15/04*
U.S. Cl. 29—568 13 Claims



1. An automatic tool-changing device for industrial robots provided with a tool-carrying arm, wherein it comprises:

a cylindrical holder member supported by the tool-carrying arm,

a coupling flange which has a shape substantially complementary to that of the holder member and to which a tool is fixed,

movable engagement means associated with the holder member and comprising a plurality of movable engagement teeth disposed radially with respect to the holder member and slidable relative thereto,

catch means associated with the flange and complementary to the movable engagement means, and

actuator means carried by the holder member and associated with the movable engagement means to clamp the flange to or release it from the member, the actuator means comprising a double-acting piston having a rod and operated by pressurized fluid, a cylindrical seat within the holder member, in which the piston is housed, and a plurality of cranked levers articulated to the holder member, each lever being connected at one end to the rod of the piston and at its other end to the corresponding engagement tooth.

4,763,402

METHOD FOR MANUFACTURING AN ANNULAR COMPONENT IN THE FORM OF WOUND FERROMAGNETIC TAPE PROVIDED WITH SLOTS AT AN END FACE FOR USE IN AN ELECTRICAL AXIAL-FIELD MACHINE

Siegfried Powilleit, Rosstal, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 15, 1986, Ser. No. 919,195
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1985, 3543482
Int. Cl.[4] H02K *15/04, 15/14*
U.S. Cl. 29—596 6 Claims

1. A method for manufacturing a ring-shaped component with slots in an end face for use in an electrical axial-field machine, said method comprising the steps of:

winding ferromagnetic tape into the shape of a ring;

applying hardenable synthetic resin material to said tape;

holding said tape to maintain the shape of said ring;

hardening said sythetic resin material while maintaining the shape of said ring; and



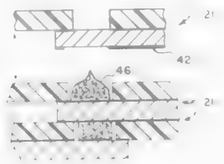
electro-eroding slots in an end face of said ring upon the completion of said step of hardening.

4,763,403

METHOD OF MAKING AN ELECTRONIC COMPONENT

Gerald W. Klein, Pittsford, and Dennis R. Zander, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 16, 1986, Ser. No. 942,122
Int. Cl.[4] H02K *15/04;* H05K *3/36*
U.S. Cl. 29—598 10 Claims



1. A method of making an electronic component, said method comprising the steps of:

forming a first laminate having a conductive material adhered to a dielectric substrate, said substrate having openings therein which extend to said conductive material;

forming a second laminate having a conductive material adhered to a dielectric substrate, said substrate of said second laminate having openings which extend to the conductive material of said second laminate;

applying a pliable conductive paste to the conductive material of one of said laminates through the openings in the substrate thereof, said paste being applied in a quantity sufficient to extend out of the openings; and

superposing said laminates such that said paste is confined in said openings and is shaped by said laminates to form a solid, electrical connection having low electrical resistance between the conductive material in said laminates.

4,763,404

LOW CURRENT SUPERCONDUCTING MAGNET WITH QUENCH DAMAGE PROTECTION

David M. Coffey, Knox County; Robert W. McGhee, Campbell County, and David L. Coffey, Anderson County, all of Tenn., assignors to Cryomagnetics, Inc., Oak Ridge, Tenn.

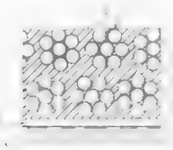
Filed Mar. 9, 1987, Ser. No. 23,839
Int. Cl.[4] H01L *39/24;* H01B *17/14*
U.S. Cl. 29—599 13 Claims

1. A method of producing a low current superconducting magnet having protection against quench damage, which comprises:

twisting a plurality of substantial equal length superconductor wires of a size to carry said low current into a cable, said wires being electrically insulated from each other;

winding said cable into a selected configuration to produce a superconductor magnet winding;

simultaneously with said winding of said cable, fully filling intertices between said cable windings with a settable potting mixture;



joining ends of said wires in said cable in series whereby each wire forms one winding segment of said magnet winding; and

connecting a voltage limiting device across each said winding segment of said magnet winding.

4,763,405

CHIP-PLACEMENT MACHINE WITH TEST FUNCTION

Koichi Morita; Susumu Takaichi; Muneyoshi Fujiwara; Makito Seno, and Yoshihiko Misawa, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 17, 1987, Ser. No. 85,819
Claims priority, application Japan, Aug. 21, 1986, 61-196165; Nov. 20, 1986, 61-277264
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—740 7 Claims



1. An electronic chip placement machine with test function, comprising:

(a) first means for forwarding an electronic chip to a holding position;

(b) suction means for holding an electronic chip using vacuum, said suction means including a suction nozzle arranged to be reciprocally moved, a tip of said suction nozzle being nonconductive;

(c) driving means for shifting said suction nozzle so that said suction nozzle is placed at positions including said holding position, a test position, a placement position, and an ejecting position;

(d) second means for clamping and ejecting said chip, said second means having,

(i) a first pair of clamping members for clamping said chip at portions having no electrode thereby regulating the attitude of said chip, and

(ii) a second pair of clamping members for clamping said chip at said electrodes, said second pair of clamping members having probes for establishing electrical connection with said electrodes;

(e) third means connected to said probes for testing electrical characteristics of said chip and for determining whether a tested chip is acceptable or not at said test position;

(f) fourth means for shifting a member on which said chip is to be placed so that said chip is placed at a desired position on said member when said chip is at said placement position; and

(g) fifth means for controlling said driving means and said first to fourth means so that said chip is placed at a given position on said member or ejected after testing.

4,763,406

WIRING TOOL TO BE EMPLOYED IN THE CUTTER-TERMINAL TECHNIQUE FOR WIRING MULTIPOLE ELECTRIC CONNECTORS, CONTACT STRIPS, AND SIMILAR STRUCTURES INVOLVING

Reiner Rommel, Stadtallendorf, and Horst Beetz, Wuppertal, both of Fed. Rep. of Germany, assignors to Wezag GmbH, Stadtallendorf, Fed. Rep. of Germany

Filed Apr. 2, 1986, Ser. No. 847,280
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1985, 3512157
Int. Cl.[4] H01R *43/042*
U.S. Cl. 29—759 10 Claims



1. A wiring tool arrangement using a cutter-terminal technique for wiring multipole electric connectors, contact strips and similar structures carrying conductors to be connected, comprising: a support; a retainer for the connector, said support and said retainer being displaceable parallel relative to one another; said support and retainer comprising an interchangeable head that can be mounted on and dismounted from transmission means operable by a manual hand tool and a motor-driven tool; a handle with a pistol grip; an elbow-lever drive means resting against said pistol grip and comprising levers mounted on pivots resting on an end of a tappet member slidable back and forth longitudinally; a pivot connecting said elbow levers; a tension spring engaging said end of said tappet member and forcing said tappet member into a rest position when said pistol grip is released; stop means, one of said elbow levers having a toothed section operation in conjunction with said stop means to prevent said tappet member from returning to said rest position until one complete operating stroke has been carried out; a housing have a front side with a neck in which said tappet member slides back and forth, individual interchangeable heads being slidable on a guide in said housing and being removable from said guide and said housing; a resil-

VOL 1093 ISS 3 AG 16 1988 UMI

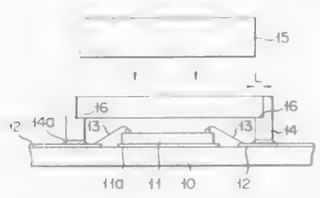
ient snap-in means for preventing a head from being removed unintentionally.

4,763,407

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Takemi Abe, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 573,653, Jan. 25, 1984, abandoned. This application May 21, 1987, Ser. No. 52,224
Claims priority, application Japan, Jan. 28, 1983, 58-12522
Int. Cl.⁴ H05K *3/34*
U.S. Cl. 29—840 6 Claims



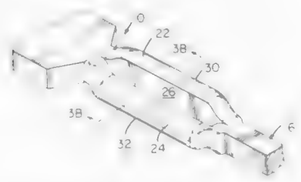
1. A method of manufacturing a semiconductor device, comprising the steps of:
mounting a semiconductor element on a circuit board having a wiring pattern;
connecting bonding wires between said semiconductor element and said wiring pattern;
positioning a frame to extend upward from said circuit board to surround said bonding wires, said wiring pattern, and said semiconductor element, said frame having an inner wall and a stopper portion supported by said inner wall, said stopper portion being at a level more distant than a furthest portion of said semiconductor element and said bonding wires relative to said circuit board;
placing a sealing solid resin block onto said stopper portion to hold said resin block in a position spaced from said semiconductor element and said bonding wires; and
melting said sealing solid resin block to seal said semiconductor element, said bonding wires, and said wiring pattern within said frame.

4,763,408

METHOD OF MAKING A COMPLIANT RETENTION SECTION ON AN ELECTRICAL TERMINAL

Jay M. Heisey, Elizabethtown; Jon F. Kautz, Camp Hill, and Charles S. Pickles, Hummelstown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 677,705, Dec. 4, 1984, abandoned. This application Aug. 25, 1986, Ser. No. 899,709
Int. Cl.⁴ H01R *43/16*
U.S. Cl. 29—874 2 Claims



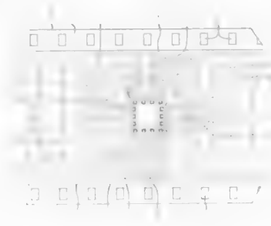
1. A method of making a compliant section on an electrical terminal with said compliant section having a resilient leg member on each side of shear plane, said method comprising the steps of:
forming an elongated, generally oblong section along a length of the terminal intermediate the ends thereof;
shearing said oblong section along a shear line extending for the length of said oblong section while simultaneouly displacing sheared portions on each side of said shear line in opposite directions normal to said oblong section; and
reforming the ends of said oblong section by displacement thereof to approximately their original position, thereby providing, within said oblong section, a compliant section having resilient leg members displaced outwardly in opposite directions relative to each other and with a shear plane therebetween extending beyond the ends thereof.

4,763,409

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Kouichi Takekawa, and Manabu Bonkohara, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Aug. 25, 1986, Ser. No. 899,896
Claims priority, application Japan, Aug. 23, 1985, 60-186061; Dec. 20, 1985, 60-288786
Int. Cl.⁴ H01R *43/00*
U.S. Cl. 29—827 14 Claims



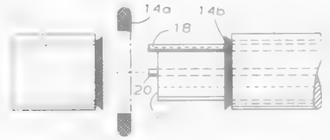
1. A method of manufacturing a semiconductor device comprising the steps of
preparing a film carrier tape, said film carrier tape including a plastic tape and a plurality of leads formed on and fixed to the surface of said plastic tape, said plastic tape having a plurality of holes, each of said leads being extended to a corresponding hole at one of its ends and electrically connected in common to the other leads at its other end,
placing a semiconductor element having a plurality of bonding pads thereon in one of said holes of said plastic tape, bonding said one end of each of said leads to said bonding pads of said semiconductor element,
cutting said leads at said hole, removing said semiconductor element with the cut leads coupled thereto from said hole of said plastic tape,
preparing a testing substrate, said substrate including an insulator body having a device setting portion, a plurality of terminals provided at a periphery of said device setting portion and on the upper surface of said insulator body, and a plurality of test pads electrically connected to respective ones of said terminals,
setting said semiconductor element in said device setting portion of said testing substate, electrically connecting said leads coupled to said semiconductor element to said terminals, respectively, by solder, conducting an electrical test by contacting test probes of a test apparatus to said test pads of said testing substrate, and delivering to a customer said semiconductor element with said testing substrate to which said semiconduct element is fixed.

4,763,410

METHOD FOR BRAIDED COAXIAL CABLE PREPARATION

Benjamin Schwartzman, Hagerstown, Md., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 20, 1987, Ser. No. 75,459
Int. Cl.⁴ H01B *13/20*
U.S. Cl. 29—828 4 Claims



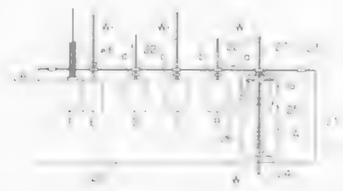
1. In a method for preparing for termination, a coaxial cable of the type having construction which includes a central signal conductor surrounded by a dielectric sheath, in turn surrounded by a flexible conductive sleeve and an outer protective insulating jacket, the steps comprising:
a. slitting the said jacket to completely sever said jacket and form a first segment thereof spaced from the end of the said cable,
b. displacing said first segment axially over the end of said cable in a first direction,
c. clamping said first segment to frictionally engage the material thereof with said conductive sleeve and axially displacing said first segment in an opposite direction to cause said conductive sleeve to be displaced radially outward,
d. severing said conductive sleeve as so displaced radially outwardly and removing said cable end and said severed sleeve portion from said cable.

4,763,411

PROCESS FOR PRODUCING A WIRE STRAND WITH A TERMINAL

Kazutoshi Takeshita, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Feb. 27, 1987, Ser. No. 19,844
Int. Cl.⁴ H01R *43/04*
U.S. Cl. 29—863 1 Claim



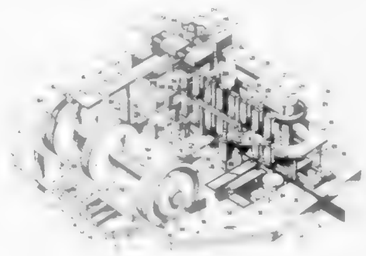
1. The process of producing a wire string, which comprises:
(a) affixing to a wire coming from a source of supply, predetermined data concerning the wire string to be made therefrom;
(b) cutting the wire according to the data;
(c) conveying the cut wire in accordance with its one end through a plurality of successive stations in a line; and
(d) sequentially sensing and processing said wire at the one end according to the selected data thereon, read out by a sensor provided at each successive station to provide a finished wire string ready for subsequent use.

4,763,412

METHOD AND APPARATUS FOR INSERTING PINS IN A SUBSTRATE

Nagesh R. Basavanhally, Hamilton Township, Mercer County; Herbert A. Pohl, Raritan Township, Hunterdon County, and Willard E. Rapp, Franklin Township, Somerset County, all of N.J., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Jun. 26, 1986, Ser. No. 878,903
Int. Cl.⁴ H01R *9/09*
U.S. Cl. 29—845 18 Claims



1. A method for inserting a pin into an aperture in a substrate comprising the steps of:
separating at least one pin from a continuous strip of pins;
engaging the pin by pin-engaging means;
imparting a relative motion between the pin-engaging means and the substrate to align a pin with an aperture in the substrate;
displacing the pin-engaging means to displace the pin towards the aperture to achieve insertion therein;
simultaneously engaging the pin with guidance means that travel therewith during the displacement of the pin-engaging means for guiding the pin during insertion thereof into the aperture; and
disengaging the guidance means from the pin after the pin has entered the aperture.

17. Apparatus for automated insertion of pins into a substrate comprising:
a frame;
an endless chain rotatably journaled to said frame;
a plurality of pin holding means each slidably mounted to said chain in spaced, parallel relationship;
pin separating means carried by said frame in registration with one of the pin holding means mounted to said chain, said pin separating means separating a predetermined number of pins from a continuous pin strip;
actuating means carried by said frame for reciprocating the pin holding means in registration with the pin separating means so that said pin holding means moves to and from the pin separating means to engage the pins separated from the strip;
pin inserting means carried by said frame in spaced relationship with said pin separating means along the orbit of the chain for reciprocating a pin-carrying one of said pin holding means to and from the substrate to insert the pins into corresponding apertures therein;
pin guiding means operatively connected to said pin inserting means for engaging the pins so as to travel therewith to guide the engaged pins into the apertures in the substrate upon the reciprocation of the pin holding means and for disengaging the pins when insertion thereof has been substantially completed; and
means for indexing the chain to index each of the pin holding means into said pin separating means and said pin inserting means.

VOL
1093
ISS
3
AG
16
1988
UMI

4,763,413
CHAIN TUBE CUTTER
Günter Rothenberger, Landgraf-Friedrich-Strasse 21, D-6380 Bad Homburg, Fed. Rep. of Germany
Continuation of Ser. No. 191,228, Sep. 26, 1980, abandoned. This application Mar. 4, 1987, Ser. No. 22,495
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1980, 7928923
Int. Cl.[4] B23D *21/06*
U.S. Cl. 30—94 5 Claims



1. A chain tube cutter with a cutting chain having links, cutting rolls and link pins and a pair of plier levers for cutting a tube diameter by surrounding the tube diameter with the tube cutter and notching a link pin into place to preadjust the cutter about the tube diameter and to operate the cutter in a single-handed operation to cleanly separate tube parts before the plier levers close together, the tube cutter comprising:

(a) a cutting chain having links, cutting rollers, and link pins axially extending from the cutting rollers and rotatably extending into oppositely-disposed pairs of the links to assemble the links into the cutting chain with the cutting rollers rotatably supported therein; and

(b) a pair of plier levers, each lever having a hand grip at one end and a chain-engaging arm at the other end, one of the chain-engaging arms being connected to the cutting chain and the other having means for notching onto a selected one of the link pins to encircle the tube to be cut with the chain links between the arms, one of the plier levers having a pivot pin projecting therefrom and the other plier lever having a slot means for pivotally receiving the pivot pin in spaced positions on the plier lever, whereby the pin pin is first positioned in the slot for adjusting the cutting chain about the tube to be cut and the plier levers are then pivoted for the same, the combination of the positioning and pivoting of the plier levers with the pivot pin and slot providing greater adjustment to the cutter, and said pivot pin having a transverse adjustment in the slot means corresponding to half the spacing of the link pins to preadjust the chain tube cutter about the tube diameter without spreading the plier levers widely apart and to operate the cutter in a single-handed operation providing a clean separation of tube parts before the plier levers close together and without further adjustment by a user's second hand.

4,763,414
DEVICE AND METHOD FOR CORING AND CUTTING OF FRUITS AND VEGETABLES FOR SUBSEQUENT FILLING WITH COMPLEMENTARY FOODS
Charles R. McNeill, II, 1684 Kramer St. N.E., Washington, D.C. [illegible]
Filed Oct. 16, 1986, Ser. No. 919,709
Int. Cl.[4] A47J *23/00, 25/00*
U.S. Cl. 30—113.1 7 Claims



1. A device for the coring of arcuately formed fruits and vegetables and meats comprising a handle portion, a first coring assembly securedly extending at an angle from one end of said handle portion and a second coring assembly securedly extending from the opposite end of said handle portion, the angular extension of each of said coring assemblies lying in the horizontal axial plane of said handle portion, the angular extension of each of said coring assemblies being identical but reversed 180 degrees with reference to the longitudinal axis of said handle whereby one assembly is angularly disposed to one side of said handle assembly and the other of said coring assemblies is angularly disposed in the opposite direction, said first and second coring assembly each comprising a thin continuous angular coring band of stainless steel of a known geometrical form having a knife-edge thinness abutting and secured to a flat knife-like blade having a zig-zag vertical configuration portion extending outwardly from a shaft secured to each of said ends of said handle portion, said zig-zag configuration having a knife-edge thinness substantially identical to the knife-edge thinness of said angular coring band.

4,763,415
COMBINED SCISSORS AND PENCIL SHARPENER
Andrew Y. Huang, 3rd Fl., No. 10-1, Tien-Mou N. Road, Shih-Lin District, Taipei, Taiwan
Filed Mar. 12, 1987, Ser. No. 24,816
Claims priority, application Taiwan, Dec. 3, 1986, 75211487
Int. Cl.[4] B26B *13/22*
U.S. Cl. 30—123 8 Claims

1. A combined scissors and sharpener comprising:

a first elongated planar member having a first elongated cutting blade at the forward portion of said first planar member and a first looped handle at the rear portion of said first planar member;

a second elongated planar member having a second elongated cutting blade at the forward portion of said second planar member and a second looped handle at the rear portion of said second elongated planar member;

one of said first and second looped handles having a thick portion with a conical bore opening at the rear side of said looped handle for receiving one end of a pencil, and a blade mounting face adjacent to the bore and integral with an edge of said one looped handle, the mounting face having an elongated aperture communicated with the



bore, and a shaving blade mounted on the blade mounting face.

4,763,416
FIELD DRESSING ATTACHMENT FOR HUNTING KNIFE
W. Duane Copeland, Rte. 8, Goodwin Rd., Durham, N.C. 27712
Filed May 26, 1987, Ser. No. 54,834
Int. Cl.[4] A22B *5/16*
U.S. Cl. 30—294 7 Claims



1. A device attachable to a hunting knife to adapt same for skinning and field dressing operation, comprising:

a guard member adapted to fit over only a tip portion of the blade of said knife, with a passage in said guard member receiving the tip portion of the blade, so that the guard member when attached leaves exposed a major portion of the blade cutting surface of the knife, while occluding the tip portion of the blade from cutting exposure;

said guard member having a vertical rear face of rectangular shape and greater height than width, flat side surfaces substantially parallel to one another, flat top and bottom rear surfaces substantially parallel to one another, and top and bottom frontal surfaces extending convergingly forwardly with respect to one another to a rounded frontal extremity, said guard member thereby comprising a smooth continuous and generally bullet-shaped frontal contour;

said passage being open to insertion of a knife tip portion at said rear face, and open at said flat bottom rear face for protrusion of the knife blade cutting surface therefrom, said passage extending upwardly from the rear bottom surface partially into the guard member; and

a hole in a rear upper portion of the guard member, extending therethrough between said flat side surfaces, said hole being above and in vertically spaced relationship to said passage, whereby a stand element may be passed through said hole and manually grasped at corresponding portions of its length remote from said guard member, to manually retain said guard member in position at said tip portion of the knife blade.

4,763,417
MULTI-COORDINATE PROBE
Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH
Filed Mar. 2, 1987, Ser. No. 20,553
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1987, 3706767
Int. Cl.[4] G01B *7/28*
U.S. Cl. 33—169 R 10 Claims



1. Multi-coordinate probe with at least one stylus deflectible into several coordinate directions, which is urged by a restoring force into a bearing arrangement determining its defined zero positions, said bearing arrangement being formed by the coaction of surface regions of several bearing members with surface regions of a corresponding number of countermembers, wherein the bearing members and the associated countermembers are arranged as much as possible concentrically around the probe axis and are at least one of radially and axially adjustable, characterized in that each countermember (17, 174, 175) comprises a support surface (18, 184, 185) for respectively one bearing member (14, 144, 145), wherein the support surfaces (18, 184, 185) extend obliquely to the axis of the stylus (2, 24, 25) and are oriented respectively one of radially inward and radially outward, so that each bearing member (14, 144, 145) is in tangential contact with one of a radially inwardly and radially outwardly extending support surface (18, 184, 185)

4,763,418
AUTOMATIC SEXTANT
John A. Decker, Jr., Wailuku, Hi., assignor to Kuau Technology, Ltd., Puunene, Hi.
Continuation of Ser. No. 590,473, Mar. 16, 1984, abandoned. This application Dec. 18, 1986, Ser. No. 943,607
Int. Cl.[4] G01C *1/08*
U.S. Cl. 33—268 12 Claims



1. In a sextant comprising an assembly having a frame and an arm interconnected at a pivot point to permit rotation of said

VOL 1093 ISS 3 AG 16 1988 UMI

arm relative to said frame around said pivot point to change the angular position of said arm relative to said frame,

said arm being movable relative to said frame for coarse adjustment of angle,

a fine adjustment mechanism connected to said assembly and having a movable element motion of which causes a predetermined corresponding amount of fine adjustment of said angular position of said arm, the improvement comprising

a coarse adjustment encoder connected to said assembly and arranged to detect and provide signals corresponding to the coarse unit value of a final angular position of said arm relative to said frame, and

a fine adjustment encoder connected to said assembly and arranged to detect and provide signals corresponding to the fine unit value of said final angular position, and

means connected to said encoders for deriving from said coarse and fine unit values an indication of an altitude angle of a celestial body.

said coarse adjustment encoder having a resolution by itself insufficient to produce an indication of said altitude angle useful in conventional navigation.

4,763,419

OPTICAL VIEWING SYSTEM

Hobart A. Whitman, III, 149 Westwood Rd., Asheville, N.C. 28804

Filed Oct. 16, 1986, Ser. No. 919,661
Int. Cl.[4] G01C *23/00*
U.S. Cl. 33—272 8 Claims



1. An optical viewing system comprising:

a beam splitter having at least first, second, and third facets; said first facet receiving light from an object;

a first screen receiving light from said second facet where an image of said object is projected thereon;

a second screen receiving light from said third facet where an image of said object is projected thereon;

at least one of said screens having indicia thereon to reference the position of the object;

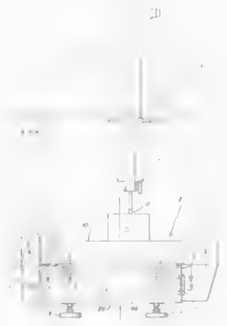
means for viewing the images of said object on said screens; said object images being superimposed on one another whereby the position of said object may be determined without parallax; said beam splitter having a reflective/refractive point; the distance between said reflective/refractive point and each of said screens being substantially equal; said system is a compass; said first screen forming a part of said compass and having a portion thereof magnetized; said first screen adapted to rotate with the magnetic portion facing substantially North.

4,763,420

BASE ASSEMBLY FOR COORDINATE MEASURING MACHINE

William J. McCabe, North Kingstown, and Vitaly I. Pesikov, Providence, both of R.I., assignors to Brown & Sharpe Manufacturing Company, North Kingstown, R.I.

Filed Oct. 6, 1987, Ser. No. 106,614
Int. Cl.[4] G01B *5/03;* B23B *35/00*
U.S. Cl. 33—503 20 Claims



1. A base assembly for a machine tool comprising:

a first base element for support of a workpiece, said first base element having a first temperature coefficient of expansion;

a second base element for support of said first base element and for support of the remainder of said machine tool, said second base element having a second temperature coefficient of expansion different from said first temperature coefficient; and

isolating support means for coupling between said first base element and said second base element and including

guide means attached to one of said base elements and defining three linear tracks, each having a longitudinal axis, the axes of said linear tracks intersecting or nearly intersecting a predetermined axis of said base assembly, and

means defining projections attached to the other of said base elements and positioned for engagement with and movement along each of said three linear tracks during deformation due to workpiece weight and differential thermal expansion and contraction of said first and second base elements.

4,763,421

MULTI-COORDINATE PROBE

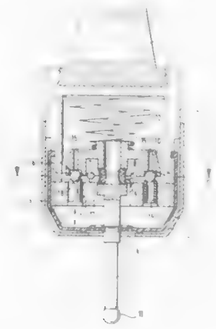
Kurt Feichtinger, Palling, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Continuation of Ser. No. 836,842, Mar. 6, 1986, abandoned. This application Jun. 11, 1987, Ser. No. 62,354
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1985, 3508396
Int. Cl.[4] G01B *7/00*
U.S. Cl. 33—561 12 Claims

1. In a multi-coordinate probe with a casing and at least one stylus (2), wherein said stylus (2) has a mounting location defining its zero position and wherein said stylus is deflectable from said zero position in several coordinate directions and is urged by a restoring force bach into its zero position, said mounting location of the stylus (2) being formed by the cooperation of the surfaces of a plurality of ball bodies (14) with associated surface areas of a plurality of support members (17) and wherein the ball bodies (14) and their associated support members (17) are centrally arranged about the axis of the probe, the improvement which comprises:

(a) a mounting member (10) to which said stylus is secured, said surface areas of said ball bodies (14) being secured to said mounting member (10) so as to have a fixed position relative thereto,

(b) a support structure (13) for said support members (17), each of said support members, during assembly of the probe, being mounted in a bore of said support structure so as to be rotatable about their own axes and axially movable independently of their so as to adapt themselves to said surface areas of the ball bodies to provide a precision fit between the surface areas of the ball bodies and the surface areas of the support memb®rs, said support members, after such adaption, being immovably secured to said support structure (13), and



(c) the number of said ball bodies with the associated support members being in excess of three and more than three of said support members having essentially the same surface shape in the area of said precision fit with the associated ball bodies, said surface shape for each support member (17) including a groove extending transversely to the axis of the probe so that rotation and axial movement of each support member before it is secured to said support structure (13) causes a respective ball body (14) to be adapted into a deepest possible position in the groove of a respective support member.

4,763,422

DEVICE FOR PRESETTING THE TOOLS IN A PLATEN PRESS

Jean B. De Dompierre, Echandens, Switzerland, assignor to Bobst SA, Switzerland

Filed Apr. 23, 1987, Ser. No. 41,445
Claims priority, application Switzerland, Apr. 30, 1986, 1760/86
Int. Cl.[4] B23Q *7/04*
U.S. Cl. 33—569 7 Claims

1. A device for presetting tools which are to be used in a platen press, said device including a base, a column, first means for mounting the column on the base on a first axis and for rotating the column on said first axis, a carriage, second means for mounting the carriage on the column and for shifting the carriage along the length of the column, a cradle for receiving the tools, and turret means for mounting the cradle on the carriage and for rotating the cradle on a second axis extending approximately at right angles to the first axis, said turret means including a guiding disk secured to the cradle and having a first group of rollers circumferentially spaced on the circumference of the disk, a ring member being secured to the carriage and having a circular groove for receiving the first group of rollers, a second group of rollers mounted on said guiding disk to extend parallel to the second axis, said second group of rollers being received on a second roller track formed on a frame of



the carriage, said guiding disk having an inner toothed track, a pinion gear mounted on an output shaft of a motor and gear reduction unit secured on the carriage with the toothed pinion engaging said tooth track.

4,763,423

METHOD FOR DRYING FINE METAL POWDERS

Preston B. Kemp, Jr., Athens, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jul. 6, 1987, Ser. No. 70,289
Int. Cl.[4] F26B *3/00*
U.S. Cl. 34—9 16 Claims

1. A method for drying fine metal powders, said method comprising:

(a) contacting said metal powder, having water on at least some of the surfaces of its particles with a solution of a fluorocarbon solvent and a hydrophobic surfactant, with the amounts of said surfactant in said solution being sufficient to form at least a monolayer adsorbed onto said surfaces, and with the amount of said solution being sufficient to at least fill the void volume of said particles to displace essentially all of the water which is in contact with said powder;

(b) physically removing essentially all of the displaced water and the major portion of the solution which is not in direct contact with said particles, from the resulting surfactant-treated powder; and

(c) drying said surfactant-treated powder at a temperature above the vaporization temperature of said fluorocarbon at the operating pressure of the drying equipment to remove the remainder of said fluorocarbon from said metal powder without removing significant amounts of any surfactant remaining on said powder, to produce the dried metal powder.

VOL
1093
ISS
3
AG
16
1988
UMI

4,763,424

APPARATUS AND METHOD FOR THE CONTROL OF WEB OR WEB-PRODUCTION MACHINE COMPONENT SURFACE TEMPERATURE OR FOR APPLYNG A LAYER OF MOISTURE TO WEB

Bruce F. Taylor, Auburn, Mass., and Kenneth G. Hagen, Cape Elizabeth, Me., assignors to Thermo Electron-Web Systems, Inc., Auburn, Mass.

Continuation-in-part of Ser. No. 834,755, Feb. 28, 1986, Pat. No. 4,689,895, and Ser. No. 909,968, Sep. 22, 1986, abandoned. This application Apr. 27, 1987, Ser. No. 42,910

Int. Cl.[4] F26B *7/00*

U.S. Cl. 34—20 18 Claims



1. An apparatus for use in the non-contact cooling of a web or for applying a layer of moisture to a web, said apparatus being positioned adjacent said web or component to be cooled, said apparatus comprising:

means for creating fog within said apparatus, said fog having a temperature lower than the temperature of said web or component to be cooled;

means for directing said created fog in a stream from said apparatus to the web;

means for directing an air stream toward said fog stream to confine the impingement of said fog stream on the web to a uniform selected region on the web.

4,763,425

AUTOMATIC CLOTHES DRYER

Richard L. Grennan, Green Lake, Wis., assignor to Speed Queen Company, Ripon, Wis.

Filed Jun. 25, 1987, Ser. No. 66,378

Int. Cl.[4] F26B *21/06*

U.S. Cl. 34—48 7 Claims

1. The method of drying a load of clothes irrespective of the load size in a clothes dryer, comprising the steps of:

determining a cycling temperature for said dryer in accordance with the fabric type of said load and the desired final dryness;

measuring irrespective of said load size the time to raise a thermal sensor of said dryer to said cycling temperature while applying heat to said load of clothes;

determining the remaining number of on and off temperature regulating cycles in accordance with said measured time and the fabric type of said clothes; and



cycling said dryer on and off for said remaining number of cycles.

4,763,426

SPORT SHOE WITH PNEUMATIC INFLATING DEVICE

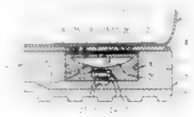
Michael Polus, Welser Str. 65, and Hans Besendorfer, Friedrichstr. 16, both of 8500 Nürnberg, Fed. Rep. of Germany

Filed Mar. 25, 1987, Ser. No. 29,815

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613153

Int. Cl.[4] A43B *21/28, 13/20, 7/06*

U.S. Cl. 36—29 7 Claims





1. Sports shoe with a sole which is provided with air chambers serving to accept air at a positive pressure and a foot-operated pneumatic inflating device connected thereto and arranged under an area under a part of the sole to be loaded by a convex region of the foot and with a chamber body as well as a chamber roof associated with the sole parts of the shoe delimits a compression chamber which is connected via an inlet opening as well as an inlet valve to the outside atmosphere and via an outlet opening as well as an outlet valve to said chambers, characterized in that the inflating device is an integral unit which includes the chamber body, the chamber roof, the inlet valve and the outlet valve, the unit being inserted in a cut-out in the sole of the shoe, further characterized in that the compression chamber is formed as a dished bowl conformed to fit the convex contour of the region of the foot loading it and in that the inlet opening as well as the outlet opening are arranged in the central region of the chamber, the oulet valve having a valve body formed as a thin flexible disc positioned under the outlet opening, the disc being received in a cavity in said unit with an underlying spring block, and the inlet valve comprising a valve lamella which rests against and covers the inlet opening.

4,763,427

GREETING CARD

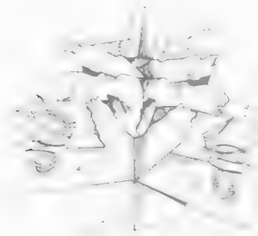
Rodney Schrager, London, England, assignor to Second Nature Limited, London, England

Filed Jan. 30, 1986, Ser. No. 824,058

Claims priority, application United Kingdom, Jan. 30, 1985, 8502256

Int. Cl.[4] G09F *1/00*

U.S. Cl. 40—124.1 13 Claims



1. A greeting card comprising a lamina having portions which are foldable with respect to each other; resilient means for urging said portions of such a folded lamina from a first relative position in which said portions are contiguously disposed in adjacent planes into a second relative position in which said portions are disposed in mutually transverse planes and a first array of said portions defines a display surmounting, and extending three-dimensionally from, a second array of said portions which defines a plinth for said first array; and a second lamina having portions which are foldable with respect to each other, said second lamina being secured to said first-mentioned lamina so that, in said first relative position of said portions of said first-mentioned lamina, said portions of said second lamina are folded so that said last-mentioned portions are disposed in a first relative position in which they are contiguously disposed in adjacent planes and, in said second relative position of the portions of said first-mentioned lamina, said portions of said second lamina are urged by said resilient means, directly or via at least one portion of said first-mentioned lamina into a second relative position in which said portions of said second lamina define a second display which extends three-dimensionally from the display defined by said array of said portions of said first-mentioned lamina.

4,763,428

LOCKABLE SECURITY PICTURE FRAME

Joey G. Fischer, 5747 Parkmor Rd., Calabasas, Calif. 91302

Filed Nov. 6, 1985, Ser. No. 795,450

Int. Cl.[4] A47G *1/06*

U.S. Cl. 40—152 2 Claims

1. A lockable frame for mounting a picture therein, which picture is adapted to be slipped into the frame, which frame enables insertion, removal, locking, and unlocking of the selected picture therein, comprising:

(a) an integral frame, comprised of a plurality of sides, all of which are joined together, having a slot formed in one side thereof adapted to enable the selected picture to be slipped therethrough into and out of the frame and further including a hole, formed in the frame at a location in or contiguous with, and opening into, the slot;

(b) means for blocking at least a portion of the picture-receiving slot in the frame, adapted to be mounted in the frame comprising a lock, for enabling the selected picture to be securely mounted in the frame so as to prevent unauthorized removal thereof, adapted to be mounted in the hole in the frame, to be lockable to and unlockable



from the frame, and to block a portion of the slot to prevent removal of the picture; and

(c) slidable enabling means for enabling the picture to be slidable automatically out of the frame upon unlocking and removal of the lock from the frame.

4,763,429

DEVICE FOR THE CYCLIC REARRANGEMENT OF A PILE OF RECTANGULAR OR SQUARE SHEETS

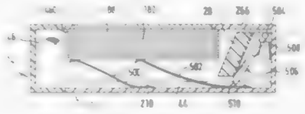
Peter Ackeret, Kusnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

PCT No. PCT/EP85/00617, § 371 Date Jul. 11, 1986, § 102(e) Date Jul. 11, 1986, PCT Pub. No. WO86/03031, PCT Pub. Date May 22, 1986

PCT Filed Nov. 12, 1985, Ser. No. 901,532

Int. Cl.[4] G09F *11/30*

U.S. Cl. 40—511 20 Claims



1. Device for the cyclic rearrangement of a pile of rectangular or square sheets, especially a pile of photographic prints, with a first and a second frame part which may be moved relative to one another and parallel to the main plane of the pile, and with means which on movement of the frame parts backwards and forwards, remove an individual sheet at one end of the pile and add it to the other end of the pile again, these means comprising:

(a) a separating means to separate the individual sheet from the pile,

(b) a feeding means to feed sheets to the separating means,

(c) retaining means to hold the individual sheet in the first frame part and the remainder of the pile in the other frame part, and

(d) a guide means to guide the separated individual sheet for the purpose of returning it to the other end of the remainder of the pile, wherein as the feeding means there is provided a transporter (22, 404, 420) engaging the sheet to be separated at its rear edge in the direction of transport, whereas as the retaining means for the separated sheet there is provided at least one additional element (26/28, 32/80, 506/520, 300/306, 278, 32/288, 274).

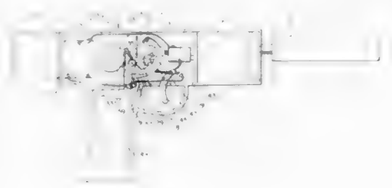
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,430

BATTERY OPERATED CAP GUN

Bruce M. D'Andrade, 3 Ten Eyck Rd., Whitehouse Station, N.J. 08888

Filed Oct. 6, 1986, Ser. No. 915,419
Int. Cl.[4] F41C *3/08;* A63H *33/26*
U.S. Cl. 42—57 10 Claims



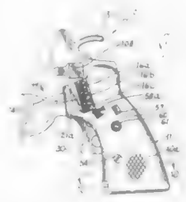
1. A toy cap gun, which comprises:
(a) a housing having the external appearance of a gun which includes a barrel and a handle;
(b) a cap roll compartment located within said housing;
(c) a battery operated cap advancing-repeat firing system located in said housing, which includes:
(i) a drive motor;
(ii) a gear system connected at one end to said drive motor and at the other end to a drive shaft;
(iii) a drive shaft being drivable from and movably connected to said gear system at one end and connected to a cam at its opposite end;
(iv) a trifunctional cam connected to said drive shaft and being drivable thereby and being movably connected to a spring-loaded hammer arm said cam being a stepfunction drop off cam operable to repeatedly open said hammer arm and releasing said hammer arm in a stepfunction drop off fashion such that spring action will drive said hammer arm against a strike plate to repeatedly fire caps, being operable to open and close a cap roll lock by being biased towards a spring-loaded cap feeder roller, and having cap advance means as a integral part thereof;
(v) a spring-loaded hammer arm pivotably attached to said housing at one end, movably connected to said cam and openable thereby and directed to a strike plate at its opposite end;
(vi) a main spring attached to said hammer arm and having adequate tension upon opening and release to drive said hammer arm against a strike plate to fire caps;
(vii) a stationary strike plate attached to said housing and strikably located at one end of said hammer arm; and,
(viii) a cap roll lock and cap roll advance means which includes a cap feeder slide, a lock brace and a spring-loaded cap feeder roller which is movably spring biased against the lock brace and is movable away from the lock brace by cam action;
(d) a battery chamber located within said housing;
(e) electrical circuitry connected to said drive motor and to said battery chamber and including an open circuit/closed circuit switch;
(f) a trigger movably connected to said housing and further connected to said open circuit/ closed circuit switch;
such that when a cap roll is loaded in said compartment and fed to said cap advance means, batteries are placed within said battery chamber and the trigger is pulled, the electrical circuitry is completed within the battery, the aforesaid motor is operated, the motor drives said gears and driveshaft, said cam is rotated and cycled so as to repeatedly open and release said hammer arm so as to repeatedly strike said strike plate to fire caps and said cap roll lock and cap roll advance means is driven to repeatedly lock and unlock and repeatedly advance a cap roll to effect said repeated cap firing.

4,763,431

HANDGUN LOCKING AND UNLOCKING APPARATUS

Robert E. Allan, and Robert M. Allan, both of 1731 Colgate Cir., La Jolla, Calif. 92037

Filed Sep. 25, 1986, Ser. No. 911,349
Int. Cl.[4] F41C *17/08*
U.S. Cl. 42—70.11 93 Claims



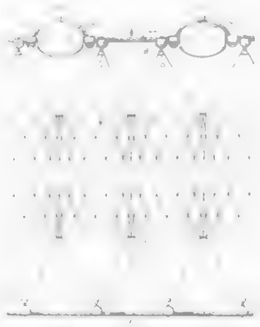
20. In a gun having handle, barrel and action including a hammer and trigger, the combination comprising:
(a) first means carried by the gun for selectively disabling or enabling said action,
(b) second means carried by the gun for controlling said first means and including coding means having at least two members which are independently actuable by the gun user's finger or fingers,
(c) said second means including a grip bar operatively connected in disabling to enabling relation between said coding means and said gun action, and actuable between two states characterized as:
(i) a first position in which the coding has been automatically cleared, and the gun action is normally disabled, and
(ii) a second position in which the gun action is enabled after predetermined finger actuation of said coding means,
(d) said second means including a multicombination mechanical lock means associated with said coding means, said lock means also having a clearing or scrambling means being operatively connected to said grip bar.

4,763,432

FISHNET HANGING SYSTEM

Robert W. Barclay, 4710 University Way N.E. #712 Seattle, Wash. 98105

Filed Aug. 2, 1985, Ser. No. 762,003
Int. Cl.[4] A01K *93/00*
U.S. Cl. 43—7 5 Claims



1. In mechanism for coupling a fishnet to a line, such fishnet being carried by a hanging cord, the improvement comprising the combination of an anchor block having a through bore and an arcuate cutout for receiving the line, strap means passing through said block for securing said block to the line, and means for attaching the hanging cord to said anchor block, said attaching means including a connector having a first portion fitted in said bore and an arm portion projecting from said bore, said arm portion of said connector having an eye, and said attaching means further including a clip for clamping the hanging line, said clip having a pin fittable in said eye for connecting said clip and the hanging line to said connector.

4,763,433

METAL LIGHTED LURE

Walter Kulak, 98 Oakdale Village, North Brunswick, N.J. 08902

Continuation of Ser. No. 436,314, Dec. 30, 1982, abandoned.
This application Aug. 11, 1987, Ser. No. 85,326
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—17.6 10 Claims



1. A lighted fishing lure comprising a metal main body having one or more holes therethrough to form one or more unobstructed passageways in said body whereby to allow water to enter the main body when the lure is placed in water;
a channel in said main body, said channel directly communicating with said passageways;
a light emitting diode disposed in said channel such that the light from said diode directly communicates with said passageways, said diode having a first electrical lead and a second electrical lead, said first lead connects to said main body to form an electrical connection and to position the diode so as to form a space adjacent the diode to allow water entering the main body to pass by the diode; and
one or more batteries disposed in said channel, said batteries having two terminals, said batteries positioned such that one of said terminals is electrically connectable to said second lead of said diode and the other of said terminals is electrically connectable to said main body, said diode and said one or more batteries being disposed in such channel so as to allow water entering said main body to pass through said space and to come into contact with said diode and said one or more batteries.

4,763,434

FISHING POLE WITH LIQUID FISH SCENT PUMP

Robert Horneff, 8040 Smokewood Dr., Santee, Calif. 92071

Filed Sep. 11, 1986, Ser. No. 906,021
Int. Cl.[4] A01K *87/00*
U.S. Cl. 43—18.1 6 Claims

1. A fishing pole comprising:
a tubular rod having a predetermined length, said tubular rod having a forward end and a rearward end, a plurality of eyelets are attached to said tubular rod at predetermined locations along the length of said tubular rod and eye-tip is attached to the forward end of said tubular rod, said eye-tip having a ring portion that is positioned immediately beneath the forward end of said tubular rod;
an elongated handgrip is attached to the rearward end of said tubular rod, said elongated handgrip extends longitudinally from the rearward end of said tubular rod;
means for storing liquid fish scent in said longitudinally extending handgrip;
a pump assembly mounted in said elongated handgrip having an inlet port and an outlet port, said inlet port being connected to said means for storing liquid fish scent; and
an output tube having a predetermined length, said output tube having its one end connected to the outlet port of said pump assembly, said output tube being threaded through the interior of said tubular rod from its rearward end to its forward end so that when said pump assembly is actuated, the liquid fish scent will be dispensed from the forward end of said tubular rod onto a fishing line threaded through the ring portion of the eye-tip of said tubular rod.
6. A fishing pole comprising:
a tubular rod having a predetermined length, said tubular rod having a forward end and a rearward end, a plurality of eyelets are attached to said tubular rod at predetermined locations along the length of said tubular rod;
a handgrip is attached to the rearward end of said tubular rod;
means for storing liquid fish scent;
a pump assembly having an inlet port and an outlet port, said inlet port being connected to said means for storing liquid fish scent;
an output tube having a predetermined length, said output tube having its one end connected to the outlet port of said pump assembly, said output tube being threaded through the interior of said tubular rod so that when said pump assembly is actuated, the liquid fish scent will be dispensed onto a fishing line threaded through the eyelets of said tubular rod; and
means for applying liquid fish scent to a fishing line comprising a brush attached to said tubular rod adjacent its forward end, said brush extending into the path of a fishing line threaded through the eyelets so that by applying the liquid fresh scent to said brush it will result in the fish scent being transferred to a fishing line therethrough.

4,763,435

FISHING ROD HOLDER

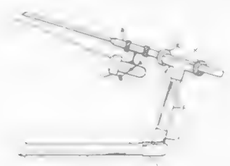
Richard H. Deering, P.O. Box 765, Eagle, Colo. 81631

Filed Apr. 30, 1987, Ser. No. 44,157
Int. Cl.[4] A01K *97/10*
U.S. Cl. 43—21.2 2 Claims

1. a fishing rod and reel holder with means to easily attach and detach from a fishing rod that has a butt end, wherein said means remains attached to said rod during all fishing activities, said holder having means to support said rod and reel up off environmental surfaces, said holder having means to adjust said rod and reel to a variety of angles relative to the water being fished and the environmental surface, and wherein said

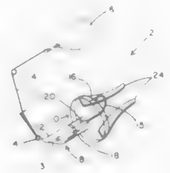
VOL 1093 ISS 3 AG 16 1988 UMI

means to attach to and from said rod has a base which supports said butt end of said rod, and has a "VELCRO" strap which



encircles and snugly holds together said base and said butt of said rod.

4,763,436
LURE DRESSING WITH HOOK GUARD
James P. Lindmeyer, 705 N. Main St., Hutchinson, Minn. 55350
Filed Jun. 5, 1987, Ser. No. 58,571
Int. Cl.[4] A01K *83/00*
U.S. Cl. 43—42.1 8 Claims



5. Fishing lure apparatus comprising:
(a) a single barbed fish hook having a weighted member secured to a hook shank rearward of a line attaching eye; and
(b) a molded, disposable dressing member formed from a resilient water-impermeable soft plastic of a density permitting its threaded mounting over said hook barb in abutment to said weighted member, said dressing member having an elongated fore-end extending rearward to a solid collar portion radiating outward therefrom beyond the barb of said hook which barb is impaled in a trailing surface of said collar portion and from which trailing surface at least one integral vibratory, filamentary portions extend.

4,763,437
FISHING APPARATUS
Ross F. Cuda, P.O. Box 5693, Missoula, Mont. 59803
Filed Oct. 5, 1987, Ser. No. 104,660
Int. Cl.[4] A01K *91/00, 97/12*
U.S. Cl. 43—43.13 13 Claims



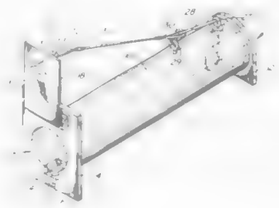
1. A fishing apparatus comprising a first buoyant hull having a downwardly depending side plane attached thereto; a second buoyant hull having a downwardly depending side plane attached thereto; a rigid bridge means attached between said first hull and said second hull; and a fishing line release means attached to said bridge.

4,763,438
PORTABLE LIVE BAIT CONTAINER
George P. Saliaris, 1847 Arlington Ave., Columbus, Ohio 43212
Filed Dec. 22, 1986, Ser. No. 944,767
Int. Cl.[4] A01K *97/04*
U.S. Cl. 43—56 3 Claims



1. An improved portable live bait container of the type having an outer shell provided with bottom and side walls impervious to liquid and an inner shell vertically and removably nested within said outer shell and including aperatures to permit the ingress and egress of water from said inner shell to facilitate access and removal of said live bait from said container, the improvement comprising, in combination, said inner shell having side walls impervious to liquid and aperatures formed in at least a portion of a bottom wall for the ingress and egress of liquid present in said container directly from said bottom wall, said bottom wall including a bowl-shaped centrally disposed recess impervious to liquid and extending below the vertical plane of the bottom wall portion provided with said aperatures.

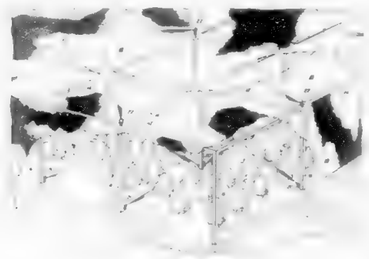
4,763,439
ANIMAL TRAP
James Smith, 330 Bay Street, Thunder Bay, Ontario, Canada, assignor to James Smith and Joseph Eugene Belisle, both of, Canada
Filed Jun. 19, 1986, Ser. No. 876,005
Claims priority, application Canada, Jun. 24, 1985, 484936
Int. Cl.[4] A01M *23/16*
U.S. Cl. 43—61 3 Claims



1. An animal trap comprising, in combination:
(a) a housing made from air impermeable material and adapted to receive within the interior thereof an animal to be trapped;
(b) a swing-gate closure means hinged at the entrance to the housing, said closure means being made of air impermeable material and being adapted to close said entrance opening in a generally air-tight fashion;

(c) spring means adapted to resiliently urge the closure means to a closed position at which the closure means is operative in preventing the trapped animal from escaping from said housing;
(d) closure trigger means operatively associated with a section of the interior or said housing to release said closure from a cocked, open position to thus allow said spring means to bring the closure to the closed position to close the housing in an air-tight fashion;
(e) an anesthetic release device operatively associated with said housing and with said closure means to expose the said interior of the housing to anesthetic virtually simultaneously with the closing of said closure means comprising a protrusion member fixedly secured to and protruding from a normally inner surface of said gate to a free end portion of the gate, said member being adapted to enter, upon closing of the gate, an anesthetic holder means fixedly arranged with respect to the housing, so as to break, on slamming the gate shut, an anesthetic containing pellet disposed in said holder means.

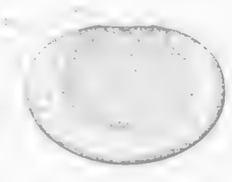
4,763,440
SYSTEM AND METHOD FOR PROTECTING PLANTS FROM FREEZE DAMAGE
Gregory S. James, 116 W. New York Ave., DeLand, Fla. 32720
Filed Jul. 1, 1983, Ser. No. 509,919
Int. Cl.[4] A01G *13/00;* A47G *7/08*
U.S. Cl. 47—2 9 Claims



1. A method for protecting a ground plot of plants from freezing, said method comprising the steps of:
(a) providing ground-level sprinklers throughout said plot;
(b) covering said plot and said ground-level sprinklers with a covering of the type having openings therein;
(c) providing elevated sprinklers above said covering;
(d) sprinkling said plot with water through said sprinklers; and
(e) sprinkling said covering with water through said elevated sprinklers as the ambient temperature drops to about 32° F., whereby the water from said elevated sprinklers freezes in the openings of said covering and holds heat released during operation of said ground-level sprinklers under said covering.

4,763,441
PROCESS FOR FORMING SUBSTANTIALLY UNIFORM SEED ASSEMBLAGES CAPABLE OF GROWING F_1 HYBRID AND RESTORER SOYBEAN PLANTS
William H. Davis, Plainview, Tex., assignor to Ring Around Products, Inc., Prattville, Ala.
Filed May 27, 1987, Ser. No. 54,767
Int. Cl.[4] A01H *1/02*
U.S. Cl. 47—58 56 Claims

1. An improved process for the efficient production of substantially uniform assemblages of seeds capable of growing male fertile F_1 hybrid *Glycine max* plants and seeds capable of growing restorer plants for use in the production of the same comprising:
(a) growing in a planting area a substantially random population of (i) cytoplasmically male sterile soybean plants which form seeds possessing maternally-derived homozygous dominant light-colored seedcoats attributable to the presence of homozygous dominant genes, and (ii) male fertile restorer soybean plants which form seeds possessing maternally-derived seedcoats which are dark-colored over at least a portion of their surfaces attributable to the presence of homozygous recessive genes and when crossed with said cytoplasmically male sterile soybean plants enable the formation of seeds on said cytoplasmically male sterile soybean plants which are capable of growing male fertile F_1 hybrid soybean plants which upon self-pollination form seeds which substantially uniformly exhibit maternally-derived light-colored seedcoats,
(b) forming pollen on said male fertile restorer soybean plants (ii) which is substantially non-aerodynamic and substantially incapable of being airborne,
(c) crossing said cytoplasmically male sterile soybean plants (i) and said male fertile restorer plants (ii) with the aid of



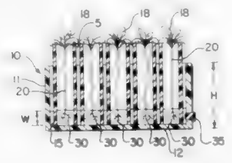
pollen-carrying bees wherein seeds are formed on said soybean plants (i) having maternally-derived light-colored seedcoats and seeds are formed on said soybean plants (ii) as a result of self-pollination having maternally-derived seedcoats which are dark-colored over at least a portion of their surfaces,
(d) harvesting in bulk the seeds formed on said plants (i) and (ii) of said planting area, and
(e) separating the seeds obtained in said harvesting step (d) on the basis of seedcoat color so as to obtain a substantially uniform assemblage of seeds derived from soybean plants (i) which possess light-colored seedcoats, and are capable of forming F_1 hybrid soybean plants which upon self-pollination form F_2 seeds which substantially uniformly exhibit maternally-derived light-colored seedcoats thereby enabling the grower to produce a substantially uniform soybean harvest with respect to seedcoat coloration, and to obtain as a result of said separation a substantially uniform assemblage of seeds derived from soybean plants (ii) which are capable of growing male fertile restorer soybean plants suitable for use in step (a) if said process is repeated.

4,763,442
PLANT PROPAGATOR
Edwin A. Saeger, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.
Filed Mar. 17, 1982, Ser. No. 359,210
Int. Cl.[4] H01G *31/00*
U.S. Cl. 47—63 3 Claims

1. A method of rooting plant cuttings comprising the steps of:
placing a plurality of tubes into a container,
supporting an end of said tubes by the base of said container,
maintaining said supported ends of said tubes substantially fully open to permit free entry of water into same from said container and withdrawal of water from said tubes into said container.

VOL 1093 ISS 3 AG 16 1988 UMI

at least partially filling said container with water,
placing a plant cutting into at least some of said tubes with a portion of the plant's stem submerged in said water and at least some of said plant's leaves projecting above the upper end of said tubes,
waiting until said plant cuttings develop roots,
removing water from said container and tubes after said plant cutting has developed the desired roots,



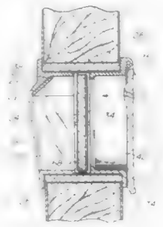
filling a portion of said tubes with a growing medium,
holding the plants in said tubes until transplanting is desired, and
removing each plant along with its roots and growing medium from each of said tubes for transplanting, whereby undesired root entanglement is resisted regardless of the density of packing of said tubes in said containers.

4,763,443
CELL CHAINS
Geoffrey A. Williames, Warragul, Australia, assignor to Williames Hi-Tech International Pty. Ltd., Warragul, Australia
Filed Mar. 18, 1986, Ser. No. 840,842
Claims priority, application Australia, Mar. 19, 1985, PG9818; Nov. 6, 1985, PH3301
Int. Cl.[4] A01G 9/10
U.S. Cl. 47—86 33 Claims



1. Apparatus for use in the propagation of plants comprising a plurality of rigid groups of open top, individual cells joined to one another in an elongate row, each of said groups having opposite ends, said groups being arranged in such manner that one end of each group confronts an end of another of said groups; and pivot hinge means pivotally coupling the confronting ends of adjacent groups.

4,763,444
VIEWING AND ORAL COMMUNICATIONS ASSEMBLY FOR DOORS
Ruben R. Ritchie, Tregenna, Kingston Hill, Surrey KT2 7LK, United Kingdom
Filed Jun. 30, 1987, Ser. No. 68,258
Int. Cl.[4] E06B 7/28
U.S. Cl. 49—171 14 Claims



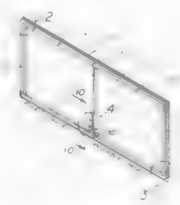
1. A viewing assembly for a door comprising a piece of glass captured between inner and outer bezels and at least one mirror on the outer bezel for reflecting images through the glass from positions on the outer bezel side of the assembly.

4,763,445
COMBINED SLIDE GUIDE AND PIVOT PIN FOR SASH WINDOW
Arthur Silverman, Florham Park, N.J., assignor to Silver Line Building Products Corporation, Middlesex, N.J.
Filed Dec. 3, 1986, Ser. No. 937,373
Int. Cl.[4] E05D 15/22
U.S. Cl. 49—176 10 Claims



1. A window assembly comprising:
a channel-shaped guide rail having opposed inwardly directed flanges defining an opening therebetween;
a sash balance assembly disposed within said guide rail;
a window sash assembly disposed adjacent said guide rail, said window sash assembly comprising a vertical stile including a passage at a bottom corner thereof aligned with said guider rail opening; and
a corner assembly comprising a corner member and a combination slide guide and pivot pin member constructed to cooperate with said corner member, said corner assembly being constructed to be installed in said bottom corner of said window sash assembly, said corner member comprising a unitary body having a bottom end and a passageway through said bottom end opening toward an upper end of said body, and at least one ledge spaced above said bottom end;
said unitary body having a longitudinal opening communicating with said at least one ledge and adapted to receive said combination slide guide and pivot pin member therethrough so that said combination slide guide and pivot pin member is supported on said at least one ledge, said combination slide guide and pivot pin member being elongated and comprising
a first end;
a second end, disposed opposite and first end, engaging said sash balance assembly and functioning as a pivot pin; and
slide guide means, disposed between said first and second ends, for engaging said flanges to retain said window sash assembly and said guide rail in substantially parallel relationship during sliding movement of said window sash assembly relative to said guide rail, said slide guide means comprising a first arm disposed on a first side of said combination slide guide and pivot pin member and a second arm, aligned with said first arm, disposed on a second side of said combination slide guide and pivot pin member, said first and second arms forming a cross-bar;
and wherein said corner assembly, when installed in said bottom corner of said window sash assembly, at least partially forms said bottom corner and facilitates sliding of said window sash assembly within said guide rail and pivoting of said window sash assembly about said sash balance assembly.

4,763,446
LOW SOUND, THERMAL AND AIR PENETRATION SLIDING WINDOW
Donald V. Kelly, 15903 Condor Ridge Rd., Canyon Country, Calif. 91351
Filed Sep. 5, 1986, Ser. No. 904,174
Int. Cl.[4] E05D 15/14
U.S. Cl. 49—407 3 Claims





1. A sliding window assembly providing improved air and sound infiltration resistance comprising:
a frame including a sill member, a header member and a pair of jamb members defining a generally rectangular frame including a pair of side by side recesses, one outer and one inner, and a pair of framed window panels retained in said frame:
the improvement which comprises a pair of slot openings in said sill and header members said opening being perpendicular to the long dimensions of said sill and header members;
a mullion member generally bisecting said generally rectangular frame and having sufficient rigidity to prevent bowing of said framed panels within said window assembly, said mullion member including integral end tabs extending through said slot openings in said sill and header members thereby defining one edge of said outer recess and securing one of said framed window panels in fixed position; and
said framed window panels each including substantially continuous flexible seals on at least one face of the frame thereof which engages the surfaces of said frame and mullion to provide substantially air and water tight relationship between the framed window panels and said rectangular frame when closed.

4,763,447
TORQUE ACTUATED BRAKE MECHANISM FOR SPRING BALANCED WINDOW SASH
Garry P. Haltof, Rochester, N.Y., and Earl L. Dodson, Elliston, Va., assignors to American Balance Corporation, Roanoke, Va.
Filed May 21, 1987, Ser. No. 52,430
Int. Cl.[4] E05F 3/00
U.S. Cl. 49—429 13 Claims



1. A brake mechanism for applying sliding friction to retard movement of a spring balanced window sash running in a vertical sash run provided with a vertically extending braking surface, said mechanism comprising:
a brake component having a brake shoe portion adapted for movement along said surface as the sash moves vertically in the run, said component being rotatable in a direction for moving said brake shoe portion into frictional engagement with said braking surface; and
force couple means operably coupled with said brake component and adapted to be operably connected between a balance spring and said window sash for converting the tension of the spring acting upwardly and the weight of the window acting downwardly into a torque acting on said brake component for rotating the latter in said direction.

4,763,448
CENTERLESS GRINDING MACHINE
Junichi Yoshioka, 6-115 Makuhari-cho, Chiba-City, Chiba-pref.; Masakazu Miyashita, 1-13-5 Higashimotomachi, Kokubunji-City, Tokyo, and Michimasa Daito, c/o Nissin Machine Works Limited, 300 Aritamanishimachi, Hamamatsu-city, Shizuoka-pref., all of Japan
Filed May 11, 1987, Ser. No. 48,610
Int. Cl.[4] B24B 5/18
U.S. Cl. 51—165.8 15 Claims
1. A centerless grinding machine comprising:
a machine bed;
a workpiece supporting blade mounted on said bed;

VOL 1093 ISS 3 AG 16 1988 UMI

a grinding wheel table and regulating wheel table each slidably mounted on said bed on opposite sides of said supporting blade;

a grinding wheel spindle and regulating wheel spindle each having opposite ends fixedly mounted on said grinding wheel table and regulating wheel table, respectively, at said ends;

a grinding wheel support sleeve and regulating wheel support sleeve each rotatably mounted on a respective one of said spindles, each wheel support sleeve having opposite ends;

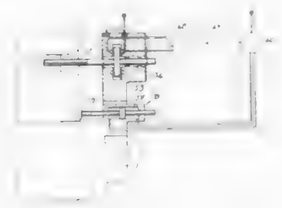
a grinding wheel and a regulating wheel each mounted on a respective one of said wheel support sleeves;

hydrostatic radial bearing means between each spindle and a respective one of said wheel support sleeves;

hydrostatic thrust bearing means between each spindle and a respective one of said wheel support sleeves;

driving means operatively engageable with one end of each of said wheel support sleeves for driving said wheel support sleeves rotatably;

guideway hydrostatic bearing means between each wheel table and said bed providing hydrodynamic sliding guideway means for slidably supporting said wheel table on said bed;



a means for applying a uniform pre-loading to at least one of said sliding guideway means through the respective guideway hydrostatic bearing means; and

a feed mechanism for positioning said grinding wheel table comprising,

a feed screw shaft rotatably mounted on said bed and operatively engaging said grinding wheel table so that rotation of said feed screw shaft moves said wheel table along the grinding wheel sliding guideway means relative to said bed,

means for rotating said feed screw shaft,

a hydrostatic thrust bearing on said feed screw shaft having axially opposite sides,

pressure sensing means for sensing pressure on said axially opposite sides produced by frictional forces generated at said grinding wheel sliding guideway means,

a compensating fluid cylinder and piston means operatively engaging between said bed and said grinding wheel table for moving said grinding wheel table by fluid pressure applied to said cylinder,

and

servo means operatively connected to said pressure sensing means and to said cylinder for operating said cylinder in response to said pressure sensing means for compensating for said frictional forces.

4,763,449

MANHOLE COVER SEALING AND LOCKING ARRANGEMENT

Pierre Vigneron, Pont-A-Mousson, and Jean-Claude Hauer, Saulxures Les Nancy, both of France, assignors to Pont-A-Mousson S.A., Nancy, France

Continuation of Ser. No. 854,957, Apr. 22, 1986, abandoned. This application Oct. 20, 1987, Ser. No. 110,623
Claims priority, application France, Apr. 29, 1985, 85 07052
Int. Cl.[4] E02D *29/14*
U.S. Cl. 52—20 9 Claims



1. A manhole assembly comprising, in combination:

(a) a centrally apertured frame member (1) upstanding from a base plate (8) and defining a radially inwardly extending support flange (11),

(b) a cover member (2) seated on said support flange for closing said aperture,

(c) a compressible sealing ring (G1; G3) interposed between the frame member and the cover member,

(d) a plurality of independent and individual clamping flanges (4) separate and distinct from the frame member and evenly distributed around a periphery thereof, each clamping flange having a generally central aperture, a clamping edge (10) extending radially outwardly from said aperture a first distance and adapted to overhang the frame member support flange and bear directly against the cover member when the clamping flange is in a first position, and a flattened edge angularly displaced from the clamping edge, extending radially outwardly from the aperture a second distance shorter than the first distance, and adapted to lie clear of the cover member when the clamping flange is in a second position, and

(e) an equal plurality of fixing means (3) separate and distinct from the frame member for individually securing the clamping flanges to the frame member via the apertures such that the clamping flanges may be locked in said first position whereat they bear vertically downwardly against the cover member to urge the cover member against the support flange and thereby prevent any vertical movement of the cover member upon the passage of vehicles over the manhole assembly, and wherein the fixing means may be loosened to unlock the clamping flanges and enable their rotation to said second position whereat the cover member is removable from the frame member without necessitating the removal of the fixing means and the clamping flanges.

4,763,450

ICE DAM PREVENTER

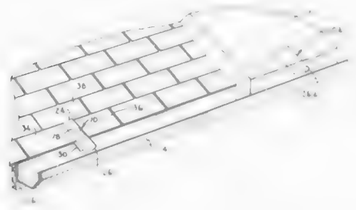
Gordon S. Daniel, 5614 NW. 87th Ter., Apt. 251, Kansas City, Mo. 64154

Filed Apr. 13, 1987, Ser. No. 37,714
Int. Cl.[4] E04D *13/00*; F24J *3/02*
U.S. Cl. 52—24 6 Claims

1. A device for providing a drainage channel through an ice dam that may form along the margin of an inclined roof, said device comprising:

an elongated, relatively thin, heat-collecting plate of conductive material having a lower longitudinal edge and presenting a pair of opposed major surfaces lying substantially in a common plane,

means on said lower edge for mounting said plate on said margin of the roof in an operative position in which the plane of said opposed surfaces is upright and said plate extends longitudinally in a downward direction substantially along the slope of the roof with a lower end portion of the plate projecing from said margin clear of the roof, whereby heating of the plate causes the drainage channel to form along said said surfaces, and



said mounting means including a flat mounting strip extending along said lower edge, projecting laterally therefrom in substantially orthogonal relationship to said upright plane, and joined to said lower edge to provide the plate and strip with an inverted T-shaped, transverse configuration adapting the strip to be inserted beneath an adjacent pair of shingles of said roof with the plate extending upwardly therebetween, whereby the device may be held in place by friction of the shingles against the strip.

4,763,451

MODULAR BUILDING UNITS

Gary J. Butcher, No. 4, Shady Vista Rd., Rolling Hills Estate, Calif. 90274

Filed Jun. 24, 1986, Ser. No. 877,860
Int. Cl.[4] E04H *1/00*
U.S. Cl. 52—79.1 8 Claims



1. A construction for modular building units comprising:

first and second modular one-story units each having a front wall, a rear wall, and opposing sidewalls, with one of said sidewalls having a generally planar wall portion, said first and second units being positionable on a parcel with said front walls in general alignment and with said generally planar wall portions in opposing generally parallel spaced relation and configured for attachment of said first and second units with said planar wall portions in spaced relationship;

roof means of generally identical appearance on at least the front of the contiguous portions of each of said modular units whereby the interconnecting of said units provides the appearance of a single one-story structure having continuous appearing roof lines;

first and second auxiliary structures configured for attachment in contiguous relation interconnecting at said planar wall portions, with each of said generally parallel wall portions forming a sidewall of said auxiliary structures;

said auxiliary structures are in abutting relation one to the other with the fronts thereof in general alignment and share a common separating wall; and

said roof means is of generally identical appearance on at least the front of the contiguous portions of each of said modular units and each of said auxiliary structures for interconnecting said units and said auxiliary structures to provide the appearance of a single one-story structure.

4,763,452

ROOF SEALING AND INSULATING SYSTEM

Albert S. Harvey, 267 Bombay Ave., Lauderdale By The Sea, Fla. 33308

Filed Apr. 1, 1987, Ser. No. 32,533
Int. Cl.[4] E04D *13/00*
U.S. Cl. 52—96 19 Claims



1. A system for waterproofing and insulating a roof of a structure with inexpensive web materials not requiring special skills, comprising sealing strip means for water-tight sealing of said web materials, said sealing strip means including:

(a) strip securing means for attaching said strip means to the upper exterior walls of said structure;

(b) first web-receiving channel means positioned below said strip securing means;

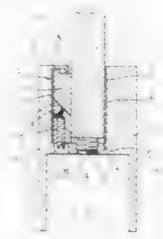
(c) second web-receiving channel means positioned below said first channel means;

(d) third web-receiving channel means positioned below said second channel means;

(e) each of said web-receiving channel means including means securing said web material in continuous water-tight connection to said strip means and said channel means so arranged in relation to one another that a water-tight connection is made between said webs, wherein said first channel means and said third channel means receive waterproof membrane means and said second channel means receives web means holding thermal insulation providing a roof covering of thermal insulation completely enclosed by waterproof membranes.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,453
DOOR SHOE ASSEMBLY
William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.
Division of Ser. No. 862,994, May 14, 1986, Pat. No. 4,680,903.
This application Jun. 29, 1987, Ser. No. 67,484
The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.
Int. Cl.[4] E04C *2/38*
U.S. Cl. 52—127.8 18 Claims



1. A metal frame assembly for use in the metal frame and glass panel structure, said metal frame assembly comprising:
(a) a metal shoe having a channel therein, said channel having at least one smooth side surface and an opposite side surface spaced apart from said smooth side surface;
(b) said channel being adapted to receive a glass panel therein, wherein upon receipt of a glass panel within said channel and against said smooth side surface thereof, said opposite side surface of said channel is in spaced-relation to the glass panel; and
(c) a plurality of independent expandable pressure units disposed within said channel, said pressure units comprising means for securing a glass panel within said channel when a glass panel is positioned therein, wherein each of said pressure units comprises:
(1) a pressure block disposed within said channel adjacent said opposite side surface thereof; and
(2) adjustable pressure generating means within said block for laterally expanding said pressure unit to simultaneously create pressure on said opposite side surface and an even pressure against a glass panel when a glass panel is positioned within said channel.

4,763,454
PROTECTIVE DEVICE FOR WINDOW PANES
Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to ED. Scharwächter GmbH & Co. KG., Fed. Rep. of Germany
Filed Sep. 21, 1987, Ser. No. 99,065
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1986, 3632148
Int. Cl.[4] E06B *3/26*
U.S. Cl. 52—202 16 Claims



1. A protective device for window panes which are susceptible to scratching, such as rear window panes in folding convertible tops, the pane being at its circumference welded to an envelope of covering material forming a window frame, the covering material being sewed together with the window pane, a protective cover placed on the window plane, the protective cover being of a material which is mechanically weak but soft and neutral relative to the pane material and of a foil having a high mechanical strength, wherein the improvement comprises that the protective has at its edges projecting portions, and that the projection portions are sewed together with the pane and the window pane frame.

4,763,455
INTERIOR CORNER DRYWALL BEAD
Joseph W. Schneller, Williamsville, N.Y., assignor to National Gypsum Company, Dallas, Tex.
Filed Jun. 16, 1983, Ser. No. 505,369
Int. Cl.[4] E04B *1/41*
U.S. Cl. 52—255 10 Claims

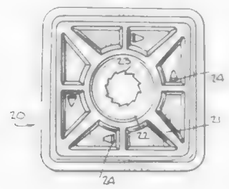


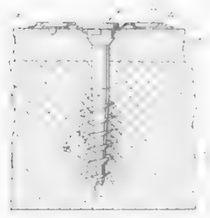
1. An interior corner bead for drywall 90° interior corners comprising a thin elongate strip with five lengthwise-extending parallel folds formed in alternating directions, said strip having a cross-section including two flanges extending at 90° one to the other and forming, at the junction of said flanges a 90° corner, said flanges each having an inner portion which forms said 90° corner with said other inner portion, a narrow web extending outwardly from the outer edge of said inner portion, and an outer portion which extends away from said junction in a plane parallel to said inner portion.

4,763,456
ROOF ANCHOR AND STRESS PLATE ASSEMBLY
Louis N. Giannuzzi, 59 Dingletown Rd., Greenwich, Conn. 06830
Filed Aug. 3, 1987, Ser. No. 81,016
Int. Cl.[4] E04B *5/00*
U.S. Cl. 52—410 12 Claims

1. An anchor and bearing plate assembly adapted to secure a layer of insulation or other relatively light-weight, non-metallic material to a deck of a roof or other substrate having an undersurface without fully penetrating the deck which is formed either of relatively soft or hard decking material, said layer and said deck having a combined thickness, said assembly comprising:
(a) an anchor whose length is shorter than the combined thickness of the layer and the deck, the anchor being provided with a head of a predetermined cross-sectional area having at least one pawl projecting therefrom and a shank whose leading section is constituted by an auger screw terminating in a tip; and
(b) a generally planar bearing plate of a substantially greater cross-sectional area having a central opening to receive the shank of the anchor and provided with a series of ratchet teeth in cooperative relation to said pawl, and lugs projecting below the plate, whereby when the plate is placed over said layer and the anchor is fully turned into the decking material, the tip of the auger screw is then

above the undersurface of the deck while the head thereof then lies on the plate to force the lugs to penetrate the





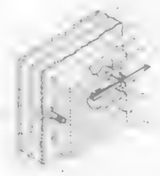
layer to prevent rotation of the plate, the pawl then engaging the ratchet teeth of the plate to resist turning out of the anchor and loosening of the assembly.

4,763,457
SHOCK ATTENUATING BARRIER
Marc S. Caspe, 1649 Oakwood Dr., San Mateo, Calif. 94403
Filed Jul. 2, 1986, Ser. No. 881,154
Int. Cl.[4] E04B *5/48*
U.S. Cl. 52—504 22 Claims



1. A shock attenuating barrier, comprising:
a plurality of cells, said cells shaped to be stackable adjacent to one another to form a barrier, wherein each of the cells comprises
a tubular block having a longitudinal axis, a continuous peripheral wall, a uniform rectangular cross-section, and open ends; and
at least one bulkhead panel, disposed within the interior of said block, arranged perpendicular to said longitudinal axis, said panel spaced apart from each open end of said block; and
means for linking said cells, wherein said linking means rigidly connects said cells in a normal position occupied by said cells under normal circumstances, and wherein said linking means permits relative sliding movement between adjacent cells upon application of a threshold force.

4,763,458
INSULATION SYSTEM AND METHOD AND APPARATUS FOR RETAINING SAME
Harold C. Wilkinson, Medford; Charles C. Pease, Vincentown, and Kevin Wall, Medford Lakes, all of N.J., assignors to KSM Fastening Systems, Inc., Moorestown, N.J.
Division of Ser. No. 379,312, May 18, 1982, Pat. No. 4,478,022.
This application Oct. 18, 1984, Ser. No. 662,268
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—509 7 Claims



1. In insulation systems for insulating structures such as furnaces, kilns and the like wherein modular insulation blocks having top and bottom faces and side walls are secured in side by side relationship with one face against the metallic walls of the structure by insulation block retaining means, the improvements in the insulation block retaining means comprising:
an elongate end weldable stud adapted to be welded to the metallic walls of the structure to be insulated and projecting therefrom adjacent a side wall of a given insulation block;
an elongate block retaining pin; and
interlocking means permitting the retaining pin the interlock with the stud while engaging and retaining the block.

4,763,459
COLLET LOCK JOINT FOR SPACE STATION TRUSS
Clarence J. Wesselski, Alvin, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Apr. 1, 1987, Ser. No. 32,818
Int. Cl.[4] E04H *12/18*
U.S. Cl. 52—646 26 Claims



1. A lock joint for a truss having a plurality of struts joined together in a predetermined configuration by node point fittings having inserts having a bore therein comprising an elongated housing having a first end and a second end, said second end adapted to be connected to one of said struts, a split-fingered collet means mounted within said housing adjacent said first end, said collet being mounted for movement reciprocably within the housing and along the axis thereof, means mounted on said housing and interconnected to said collet in order to move said collet along the axis of the housing in a reciprocating fashion from within the housing to within the bore of the insert, said moving means being capable of movement between an open position and a closed position, said moving means further causing said collet to expand when moved from said open position to said closed position thereof, including a guide

VOL 1093 ISS 3 AG 16 1988 UMI

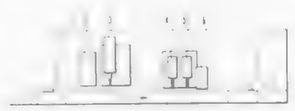
plate located within said housing and attached to said collet for guiding said collet along a path generally coincident with the axis of the housing, and a follower plate within said housing and movable with respect to said guide plate and independently thereof.

4,763,460

SEALING FOIL BREAKER FOR ANALYZER TEST CUPS

Yuji Higo, Nagoya, and Hidechika Hayashi, Yokohama, both of Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed May 21, 1987, Ser. No. 52,333
Claims priority, application Japan, May 21, 1986, 61-117112
Int. Cl.[4] B67B *7/52*; B26F *1/18*
U.S. Cl. 53—381 R 3 Claims



1. An apparatus for breaking a sealing foil (**8***d*) secured to an upper lid of an analyzer test cup (**8**) and closing an otherwise open top (**8***c*) of the cup, said cup containing a reaction generating substance, comprising:

(a) stationary mounting means (**20**),

(b) transport means (**1**, **7**) for retaining and conveying said sealed test cup past and below said mounting means, and

(c) a sealing foil breaker (**2**) secured to the mounting means and comprising:

(1) at least one downwardly depending, vertically oriented, cylindrical, reciprocable shaft (**21**) having a pointed lower tip defined by a plurality of less than seven flat side faces converging in the shape of a pyramid, the diameter of a root portion of said shaft just above the tip being slightly less than the diameter of the top of the cup, and

(2) actuator means (**22**) disposed in engagement with said shaft for selectively driving said shaft downwardly a predetermined distance sufficient for the tip of the shaft to centrally pierce the sealing foil of a test cup axially aligned with and disposed below the shaft such that the foil is divided into said plurality of generally triangular, tongue-like segments and said segments are individually pressed against the inner wall of the cup by the root portion, with a clearance remaining between the tip of the shaft and the reaction generating substance in the cup.

4,763,461

METHOD AND APPARATUS FOR STRETCH WRAPPING

Ladislav S. Karpisek, 86 Woodfield Boulevarde, Caringbah, New South Wales 2229, Australia

PCT No. PCT/AU86/00075, § 371 Date Dec. 10, 1986, § 102(e) Date Dec. 10, 1986, PCT Pub. No. WO86/05761, PCT Pub. Date Oct. 9, 1986
PCT Filed Mar. 21, 1986, Ser. No. 3,408
Claims priority, application Australia, Mar. 21, 1985, 55033/86; Mar. 27, 1985, PG9920
Int. Cl.[4] B65B *9/13*, *13/02*
U.S. Cl. 53—399 8 Claims

1. A method of forming a tight wrapping around an upstanding assembly of articles hereinafter called a load by the steps of:

(a) providing a wrapping device comprised of a load positioning station, a wrapping material storage station above the load positioning station, a wrap tensioning means and a heat sealing means,

(b) providing a roll of elastically stretchable plastic film material in tube form mounted at the material storage station the tube having an internal unstretched circumferential dimension when open which is sufficiently large to allow the tube to be passed vertically down over the load to be wrapped and over an upstanding movable pressure applying mast means spaced from the load means forming part of the wrap tensioning means,

(c) providing a loose wrap for the load by passing the tube down over the load and the mast means so they both lie within the tube,

(d) severing the wrap from the roll of film material,



(e) gripping the wrap with the mast means and moving the mast means relative to the load to induce initial circumferential tension in the wrap and form a pair of tensioned panels of material that extend between the load and the mast means and which converge from the load to the mast means,

(f) applying forces to both panels to cause them both to move arcuately into engagement closely adjacent the load to induce further circumferential tension in said wrap, and

(g) sealing the panels together adjacent said load.

4,763,462

METHOD FOR INSERTING PARTITIONS

A. David Johnson, Jr., and Joseph L. Bachman, Jr., both of Wayne, Pa., assignors to Wayne Automation Corp., Norristown, Pa.

Filed Oct. 24, 1986, Ser. No. 923,100
Int. Cl.[4] B65B *35/44*
U.S. Cl. 53—448 6 Claims



1. The method of inserting partition means between containers successively brought into a position for such insertion comprising the steps of:

providing a supply of partition means;

providing a supply of containers aligned in lanes and aligned in transverse rows;

providing conveyor means for supporting the containers and having frictional engagement with the bottoms of containers for moving the same and the conveyor means being movable along a horizontal axis;

providing a plurality of spaced apart sets of restraining means to be inserted between adjacent rows of containers, the restraining means being movable along said axis and functioning to restrain the containers from being moved along said axis by said conveyor means and said frictional engagement with said containers providing for slippage when the containers are restrained by said restraining means whereby the conveyor means moves relative to the containers;

successively inserting a plurality of sets of restraining means between adjacent rows of containers including at least a leading set and a lagging set of spaced apart restraining means respectively between adjacent rows of containers, the leading and lagging sets conditioning the containers therebetween for the inserting of a partition and the lagging set preventing the supply containers from exerting pressure on the containers between the sets;

each time the leading and lagging sets are so inserted, moving the restraining means from zero velocity to a maximum velocity and thence to zero velocity so that the containers between the leading and lagging sets partake of the same motion and the containers rearward of the lagging set being driven by the conveyor means and restrained by the lagging set also partake of the same motion;

each time the containers between the leading and lagging sets are at zero velocity inserting a partition therebetween; and

during the time the restraining means moves from zero velocity:

(a) the leading set disengaging from and releasing the containers and partition therebetween so the same are moved by said conveyor means for delivery to an operation wherein the containers and partition means are placed in shipping medium;

(b) the said lagging set assumes said function of first said leading set; and

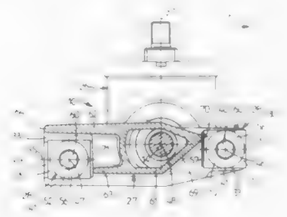
(c) another set of restraining means is inserted between adjacent rows of containers and assumes said function of first said lagging set.

4,763,463

ROTARY MOWER IN WHICH THE ROTARY CUTTING ELEMENTS ARE DRIVEN BY TRANSMISSION MEANS LOCATED UNDER THE ROTARY CUTTING ELEMENTS

Rino Ermacora, and Horst Neuerburg, both of Saverne, France, assignors to Kuhn, S.A., Saverne, France

Filed Feb. 27, 1987, Ser. No. 19,672
Claims priority, application France, Feb. 27, 1985, 86 02899
Int. Cl.[4] A01D *34/66*
U.S. Cl. 56—13.6 16 Claims



1. A mower comprising:

(a) a plurality of rotary cutting elements each one of which is provided with at least one cutting tool;

(b) at least one of said plurality of rotary cutting elements being driven by transmission means housed in a housing located under said plurality of rotary cutting elements;

(c) said housing comprises a plurality of modules each one of which is composed of a case in which a rotary cutting element is guided in rotation and a brace formed on a part at least of its length by a tubular section at the back part of which are connected two stiffening wings directed crosswise to the working direction;

(d) said two stiffening wings being connected by at least one rib; and

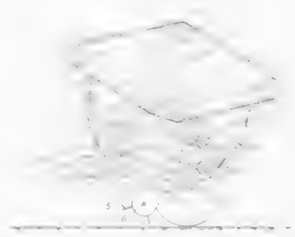
(e) said at least one rib being directed crosswise to the longitudinal axis of said housing.

4,763,464

PROCESS AND DEVICE FOR PRODUCING CYLINDRICAL BALES OF AN AGRICULTURAL PRODUCT IN A PICKUP BALER

Patrick Mouret, Mardie, France, assignor to Rivierre Casalis, Fleury les Aubrais, France

Filed Dec. 5, 1986, Ser. No. 938,514
Claims priority, application France, Dec. 20, 1985, 85 18945
Int. Cl.[4] A01D *39/00*
U.S. Cl. 56—341 3 Claims



1. A cylindrical bale baler, comprising:

a frame having ground wheels;

a rear part pivotally mounted on said frame;

a pair of baling means respectively pivotally mounted by spaced pivot means on said frame and said rear part, said baling means comprising:

(a) a pair of arms pivotally mounted on said pivot means;

(b) first rollers rotatably mounted on said pivot means,

(c) a plurality of second rollers rotatably mounted on said arms, at least one of said second rollers being mounted at an end of each of said arms opposite said pivot means, and

(d) means for rotatably driving said first and second rollers, whereby said baling means define a baling chamber therebetween;

belt means extending between said one of said second rollers of both of said arms;

means for tensioning said belt means; and

means for delivering hay between said pivot means and into said baling chamber for baling,

whereby a bale pressing on said belt means tensions said belt means and said baling means to compress the bale.

4,763,465

BRAKING DEVICE FOR A ROTOR SHAFT OF A ROTOR SPINNING MACHINE

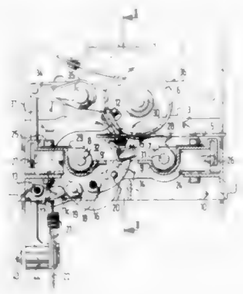
Hans Raasch, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Sep. 4, 1987, Ser. No. 93,571
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1986, 3630256
Int. Cl.[4] D01H *1/243*
U.S. Cl. 57—88 8 Claims

1. A braking device for a rotor shaft of a rotor spinning machine in which the rotor shaft is supported by the nips of two spaced pairs of rotatable disc bearings, said braking device comprising a brake shoe movably mounted between said disc pairs and below said rotor shaft for moving into braking en-

VOL
1093
ISS
3
AG
16
1988
UMI

gagement with said rotor shaft, a pair of holddown elements mounted above said disc pairs and movable against said rotor



shaft to hold said rotor shaft against said disc pairs upon braking engagement of said brake shoe with said rotor shaft.

4,763,466

STEEL CORD FOR RADIAL TIRE

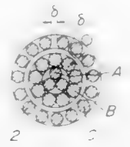
Hideo Abe; Takaaki Hira; Toru Sasaki; Keiji Kumagai; Kunihiko Katsuoka, and Takashi Sasaki, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe and Kawatetsu Wire Products Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 674,857, Nov. 26, 1984, abandoned. This application Sep. 5, 1986, Ser. No. 904,772

Claims priority, application Japan, Dec. 29, 1984, 58-250309

Int. Cl.[4] D02G *3/48;* D07B *1/06*

U.S. Cl. 57—213 1 Claim



1. A radial tire twisted-steel cord of circular cross-section comprising at least ten metal filaments which are multi-layered and in a soft twist configuration, comprising an outer layer of said filaments being arranged with a clearance of between 0.009 and 0.015 mm between adjacent filaments in said outer layer and between the outer layer and the adjacent inner layer, the cord having a load-elongation characteristic which lies between:

a curve I defined by the relationship $y=815.47x^2+18.09x+0.05$ and

a curve II defined by the relationship $y=368.57x^2-6.59x+0.05$,

where x represents the elongation (%) of a cord and y represents the load (kgf) applied to the cord, and lying within the range of 0.05–4.00 kgf, and said steel cord having an elongation of 0.015–0.045% under a load of 0.5 kgf, an elongation of 0.025–0.060% under a load of 1 kgf, and an elongation of 0.060–0.114% under a load of 4 kgf, when the elongation under a load of 0.05 kgf is 0%.

4,763,467

METHOD AND MEANS OF CONTROLLING THE STOP OF THE FEED OF ROVING IN A SPINNING MACHINE

Helmut Nickolay, Goppingen; Wolfgang Igel, Ebersbach/Fils; Werner Meissner, Hattenhofen, and Richard Schollhammer, Goppingen, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany

Filed Oct. 16, 1986, Ser. No. 920,032

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1985, 3536913

Int. Cl.[4] D01H *13/18, 15/00*

U.S. Cl. 57—261 20 Claims



1. A method of controlling the stop of the feed of roving in a spinning machine in which a stop motion means is actuated to stop the feed of roving to drafting rolls in response to detecting means detecting a yarn break and is subsequently deactuated to permit roving feed during operation of yarn break repair means, said method comprising, following said detecting means detecting a yarn break and actuating said stop motion means for stopping roving feed, deactivating the response of said stop motion means to said yarn break detecting means to thereby deactuate said stop motion means permitting roving feed to resume in advance of yarn break repair, then operating said yarn break repair means to perform a yarn break repair operation while said stop motion means is deactuated, maintaining said deactivating until said detecting means has detected that spinning has been resumed for a predetermined length of time sufficient to indicate that the yarn break has been repaired, with the deactivating continuing uninterrupted in the event a yarn break has not been successfully repaired.

4,763,468

PROCESS FOR MANUFACTURING A HIGH STRENGTH CORD FROM OPTIMALLY DRAWN YARN

Donald L. Brown, Hudson; James T. Weissert, Akron; Roop S. Bhakuni, Copley, all of Ohio, and Gregory S. Rogowski, Arlington, Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 802,895, Nov. 29, 1985, Pat. No. 4,654,253. This application Nov. 3, 1986, Ser. No. 925,940

Int. Cl.[4] D02J *1/22;* D02G *3/28, 3/48*

U.S. Cl. 57—310 4 Claims

1. A process for manufacturing a high strength cord which comprises:

(a) twisting at least two optimally drawn polymeric yarns into a greige cord, wherein said optimally drawn polymeric yarns were drawn at a draw ratio that is 90 to 97% of the draw ratio that would fully draw the yarn; and

(b) stretching and relaxing said greige cords under conditions sufficient to reduce the denier of the cords by 1% to 10% to an average denier of from about 990 to about 1,010.

4,763,469

OPEN-END ROTOR SPINNING ARRANGEMENT

Fritz Stahlecker, Josef-Neidhart-Strasse, 7347 Bad Überkingen, and Hans Stahlecker, Hadlenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Filed Jun. 30, 1987, Ser. No. 67,873

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622523

Int. Cl.[4] D01H *1/135, 1/241, 7/08*

U.S. Cl. 57—407 22 Claims



1. Apparatus for open-end rotor spinning comprising:

a spinning rotor assembly including a rotor shaft and a spinning rotor on one end of the rotor shaft;

at least one pair of supporting disks in between which said rotor shaft is disposed;

at least one shaft on which each said supporting disk of said at least one pair of supporting disks is supported;

a bearing block on which said supporting disk shafts are disposed;

step bearing means for supporting said rotor shaft in axial direction on an end opposite said rotor; and

rotor housing means for surrounding said rotor, said rotor housing means and said step bearing means being held and centered with respect to one another and said rotor shaft directly on said bearing block.

4,763,470

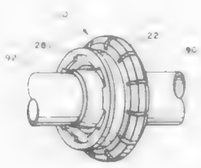
SPRING COLLAR COUPLING

Jeffrey K. Brown, Moorpark, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 30, 1987, Ser. No. 8,988

Int. Cl.[4] F02K *9/42, 9/60*

U.S. Cl. 60—257 4 Claims



3. A rocket engine having a fuel inlet, oxidizer inlet, fuel conduit, oxidizer conduit and spring collar coupling, said coupling joining said fuel inlet to said fuel conduit and said oxidizer inlet to said oxidizer conduit, and which coupling comprises in combination:

a circular spring collar including a plurality of axially-spaced spring collar arms and an annular collar recess formed within said collar;

a plurality of spring collar slots formed within the end outset collar in opposing relationship to the collar arm and a passageway defined by the circular spring collar;

a first hollow tubular-shaped flange member including a raised annular section at one end thereof, a seal gland formed within the raised annular section, retaining pin slots formed axially within a surface portion of the first flange member and retaining pins retainable within the slot;

a second hollow tubular-shaped flange member including a raised annular collar and an annular recess formed in the annular collar; and

means for locking and securing the flange members in a sealed, mating relationship with the spring collar.

4,763,471

EXHAUST PLENUM CHAMBER

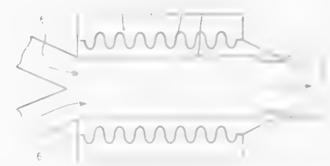
Jakob Keller, Dottikon, Switzerland, assignor to BBC Brown, Boveri & Company Limited, Baden, Switzerland

Continuation of Ser. No. 723,279, Apr. 15, 1985, abandoned. This application Feb. 2, 1987, Ser. No. 11,347

Claims priority, application Switzerland, Apr. 19, 1984, 1986/84

Int. Cl.[4] F01N *7/08*

U.S. Cl. 60—312 3 Claims



1. An internal combustion engine supercharged with a gas-dynamic pressure-wave machine having an exhaust collector comprising;

an outer sound shield closed against the atmosphere and rigidly connected at one end to a plurality of inflow ducts from cylinders of the engine and at the other end to an outflow duct leading to the pressure-wave machine;

an inner mechanical spring arranged inside said sound shield;

a dead volume formed between said sound shield and said spring; and

a flow chamber formed within said spring;

wherein the volume of the flow chamber is varied by the action of said spring.

4,763,472

POWER TRANSFER UNIT

Peter T. McGowan, Tempe, Ariz., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Filed Feb. 25, 1987, Ser. No. 18,882

Int. Cl.[4] F04B *1/16, 17/00*

U.S. Cl. 60—403 25 Claims

1. Power transfer apparatus comprising:

a first reversible fluid motor-pump unit of selectively variable displacement having a respective high-pressure inlet/outlet port, a respective low-pressure inlet/outlet port, and a respective rotational input/output shaft for receiving and delivering mechanical power;

a second reversible fluid motor-pump unit of fixed displacement having a respective high-pressure inlet/outlet port, a

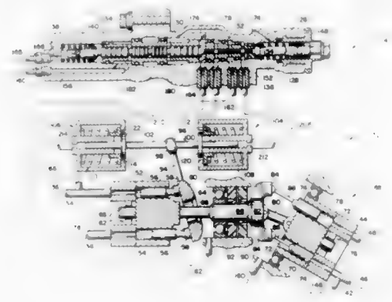
VOL 1093 ISS 3 AG 16 1988 UMI

respective low-pressure inlet/outlet port, and a respective, rotational input/output shaft for receiving and delivering mechanical power;

said first input/output shaft and said second input/output shaft coupling in opposing torque relationship for rotational power transfer between said first motor-pump unit and said second motor-pump unit with rotational direction of said coupled input/output shafts being dependent upon which unit is driven by the other;

first pressure fluid source means communicating with said first motor-pump unit for delivering and receiving comparatively higher pressure fluid at said first high-pressure inlet/outlet port while respectively receiving and supplying lower pressure fluid at said first low-pressure inlet/-outlet port;

second pressure fluid source means communicating with said second motor-pump unit for delivering and receiving relatively higher pressure fluid at said second high-pressure inlet/outlet port while receiving and supplying lower pressure fluid at said second low-pressure inlet/outlet port;



means sealingly separating said first and said second fluid source means from one another to prevent pressure fluid communication therebetween;

fluid pressure responsive control means communicating with both said first high-pressure inlet/outlet port and with said second high-pressure inlet/outlet port and responding to fluid pressure differentials therebetween for selectively varying the effective displacement per rotation of said first input/output shaft of said first motor-pump unit;

whereby, a selected fluid pressure relationship is maintained between said first pressure fluid source and said second pressure fluid source by operating one of said first and said second motor-pump units as a pump and the other as a motor to transfer fluid power between said pressure fluid sources without exchange of pressure fluid therebetween.

4,763,473

ARRANGEMENT FOR OPERATING A DIESEL HYDRAULIC DRIVE

Herbert Ziplies, Kamen, and Heinrich Luckenberg, Selm, both of Fed. Rep. of Germany, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Apr. 7, 1987, Ser. No. 35,546

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1986, 3611553

Int. Cl.[4] F16D *31/02*

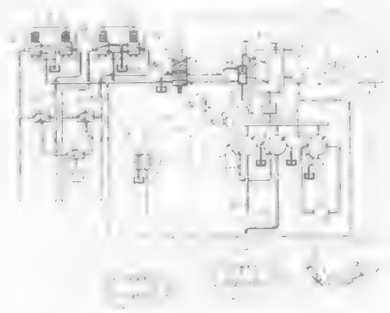
U.S. Cl. 60—431 **13 Claims**

1. In an arrangement for operating a diesel-hydraulic drive on a construction machine in limit-load control with a microprocessor controller wherein installed hydraulic power is greater than the rated output of a diesel engine of the construction machine, the improvement comprising:

hydraulic displacement pump drivingly connected to the engine for providing the hydraulic power;

first means for reducing the hydraulic power upon thermal and/or diesel-engine overload;

second means for switching the diesel engine to idling speed of rotation and for operating the hydraulic displacement



pumps with minimum delivery quantity of hydraulic liquid upon non-output loading of said displacement pumps for at least a selectably predetermined time; and

third means for adjusting said hydraulic displacement pumps in accordance with selectably predeterminable output functions.

4,763,474

CONTROL SYSTEM FOR A VARIABLE INLET AREA TURBOCHARGER TURBINE

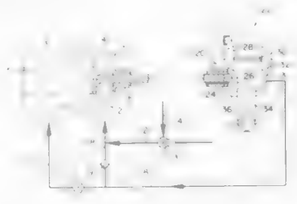
Philip C. Franklin, Huddersfield, England, assignor to Holset Engineering Company Limited, Turnbridge, England

Filed Jun. 19, 1986, Ser. No. 875,950

Claims priority, application United Kingdom, Jun. 19, 1985, 8515502

Int. Cl.[4] F02B *37/12*

U.S. Cl. 60—602 **5 Claims**



1. A control system for a variable effective inlet area means of a turbocharger turbine having a compressor driven by the turbine to pressurize air for delivery through the compressor outlet to an internal combustion engine, the exhaust of which drives the turbine, said control system comprising:

pressure responsive actuating means for the variaable effective inlet area means of the turbine, said actuating means being responsive to a control signal to increase the effective inlet area as a direct function of the control signal, said actuating means comprising a variable volume chamber formed in part by a movable wall means and connected to said pressure signals, a shaft connected to said movable wall means and to the variable effective inlet area means so that expansion of said variable volume chamber increases such effective inlet area, and means for yieldably urging said movable wall toward a position of minumum volume whereby said movable wall is displaced in response to said pressure signals, and

means for selectively applying to said actuating means the higher of a signal proportional to compressor outlet pressure and a signal proportional to turbine inlet pressure, said selective application means comprising:

means for connecting the compressor outlet pressure and turbine inlet pressure signals in parallel to said variable volume chamber, said connecting means comprising a conduit, and a passageway means comprising means forming a sleeve through which said shaft extends with a clearance therebetween, one end of said sleeve means open to said variable volume chamber and the other end of said sleeve being open to the turbine inlet pressure, whereby the sleeve means and shaft form an annular passage, and valve means comprising a non return valve in said conduit, for applying the higher of the two pressure signals to said actuating means,

whereby turbine inlet throttling losses are minimized during certain engine operating conditions.

4,763,475

CONTROL APPARATUS FOR A WASTE GATE VALVE OF A TURBOCHARGER IN AN INTERNAL COMBUSTION ENGINE

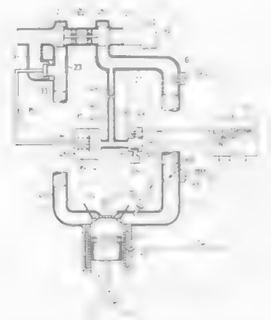
Ishii Toshio, Mito, and Yasunori Mouri, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1987, Ser. No. 94,605

Claims priority, application Japan, Sep. 10, 1986, 61-211638

Int. Cl.[4] F02B *37/12*

U.S. Cl. 60—602 **6 Claims**



1. A control apparatus for a waste gate valve of a supercharger in an internal combustion engine, having

a waste gate valve provided in a path for making a part of exhaust gas from the engine by-pass a turbine of the supercharger, by which the amount of the exhaust gas supplied for the turbine is changed;

an actuator for adjusting the opening of said waste gate valve in response to a control signal supplied therefor; and

an electronic control unit for receiving various signals of parameters indicative of the operational condition of the engine, including at least the opening of a throttle valve and the number of revolutions of the engine, to produce the control signal for said actuator in response to the received signals,

characterized in that

there is further provided an airflow sensor for detecting a mass flow rate of intake air into the engine, and

said electronic control unit produces the control signal for said actuator by generating a basic amount thereof on the basis of the opening of the throttle valve and the number of revolutions of the engine and then correcting the basic amount in accordance with the relation between an actual value of a signal depending on the mass flow rate of the intake air and a desired value thereof which is determined by the opening of the throttle valve and the number of revolutions of the engine.

4,763,476

CONTROLLER FOR VARIABLE GEOMETRY TYPE TURBOCHARGER

Yuji Hirabayashi, Zushi, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 706,623, Feb. 28, 1985, abandoned. This application Jul. 8, 1987, Ser. No. 73,375

Claims priority, application Japan, Feb. 29, 1984, 59-36103; Feb. 29, 1984, 59-36104

Int. Cl.[4] F02B *37/12*

U.S. Cl. 60—602 **1 Claim**



1. A controller for a variable geometry type turbocharger having a turbine and a compressor connected to said turbine, said turbine being rotated by the force of exhaust gas discharged from an engine and thus driving said compressor to supercharge air supplied to the engine, said controller comprising:

variable geometry means for varying a cross sectional area of an inlet to said turbine to vary a flow velocity of exhaust gas introduced into the turbine;

bypass means including a bypass path and a bypass valve, said bypass path being opened and closed by said bypass valve and, when opened, guiding the exhaust gas to bypass the turbine to reduce the amount of exhaust gas introduced into the turbine;

first drive means for driving said variable geometry means;

second drive means for driving said bypass valve;

an airflow meter for measuring the quantity of air supplied to the engine;

a throttle valve sensor for sensing an opening of a throttle valve which is disposed in an intake pipe connecting said compressor to said engine;

a speed sensor for sensing a rotational speed of the engine;

a control unit for receiving signals from said air flow meter, throttle valve and speed sensor, respectively, and generating control signals in response to said received signals; and

control means receiving said control signals from said con trol unit and controlling said first and second drive means in response to said control signals

wherein said control unit and said control means cause said bypass means to be completely closed at low engine speed and low intake quantity conditions and remain closed until an intermediate speed, intermediate intake quantity condition, cause said variable geometry means to increase said cross-sectional area from a minimum cross-sectional area at a said low engine speed, low intake quantity condition to a maximum cross-sectional area at an intermediate engine speed and intermediate intake quantity condition and remain at said maximum cross-sectional area at conditions above said intermediate speed, intermediate intake quantity condition, and cause said bypass means to progressively open from a closed position at

VOL 1093 ISS 3 AG 16 1988 UMI

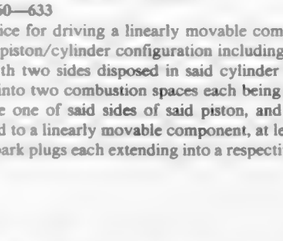
said intermediate speed, intermediate intake quantity condition to a fully open condition at a high speed, high intake quantity condition.

4,763,477

METHOD OF CONTROLLING SUPERCHARGE PRESSURE AND APPARATUS FOR REALIZING THE SAME

Kenichi Sasaki, Yokohama, and Yoshio Iwasa, Nagareyama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 23, 1985, Ser. No. 812,368
Claims priority, application Japan, Dec. 27, 1984, 59-277971
Int. Cl.[4] F02D *23/00*
U.S. Cl. 60—602 2 Claims



1. A method of controlling supercharge pressure for a turbocharger of an engine on a vehicle which comprises the steps of:
(a) detecting actual supercharge pressure P;
(b) comparing the actual supercharge pressure thus detected, with a preset supercharge pressure P_o;
(c) controlling the degree of opening of a control valve for controlling the flow of exhaust gas flowing into an exhaust gas turbine of said turbocharger through a first electromagnetic valve in accordance with the results of the first comparison;
(d) detecting whether said vehicle is operating in a condition wherein vehicle speed is less than a predetermined value; and
(e) compulsorily opening said control valve to a predetermined opened condition through a second electromagnetic valve when said vehicle speed is less than said predetermined value.

4,763,478

METHOD AND DEVICE FOR DRIVING A LINEARLY MOVABLE COMPONENT, ESPECIALLY THE MOVABLE SWITCH CONTACT OF AN ELECTRIC HIGH-VOLTAGE CIRCUIT BREAKER

Karl Liemert, Wiesloch; Franz J. Rohr, Abtsteinach, and Kuno Hug, Heidelberg, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Jun. 19, 1987, Ser. No. 65,019
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1986, 3621186
Int. Cl.[4] F01B *7/00*
U.S. Cl. 60—633 5 Claims

1. Device for driving a linearly movable component, comprising a piston/cylinder configuration including a cylinder, a piston with two sides disposed in said cylinder dividing said cylinder into two combustion spaces each being disposed at a respective one of said sides of said piston, and a piston rod connected to a linearly movable component, at least two high-energy spark plugs each extending into a respective one of said combustion spaces, means for feeding oxygen to said cylinder, and means for injecting fuel through at least one opening



formed in said cylinder and for spraying at least part of the fuel directly past at least one of said spark plugs.

4,763,479

METHOD FOR THE PRODUCTION OF USEABLE STEAM AND NON-TOXIC SOLIDS FROM GEOTHERMAL BRINE

Daniel P. Hoyer, Palm Desert; John L. Featherstone, El Centro, and Morton M. Wong, Placentia, all of Calif., assignors to Union Oil Co. of California, Los Angeles, Calif.

Filed Dec. 29, 1986, Ser. No. 947,040
Int. Cl.[4] F03G *7/00*
U.S. Cl. 60—641.5 16 Claims



1. A method of producing steam from geothermal brine comprising dissolved toxic elements without significant precipitation of toxic solids, said method comprising:
removing geothermal brine comprising water, non-condensable gases and toxic elements from an extraction well drilled into an underground aquifer;
removing non-condensable gases from the geothermal brine to produce non-condensable gas-free brine and maintaining the non-condensable gases separate from the non-condensable gas-free brine to prevent reaction therebetween with dissolved solids in the non-condensable gas-free brine;
flashing the non-condensable gas-free brine to produce steam and flashed brine; and
introducing the flashed brine into an air-free handling system to prevent contact of air with the flashed brine.

4,763,480

METHOD AND APPARATUS FOR IMPLEMENTING A THERMODYNAMIC CYCLE WITH RECUPERATIVE PREHEATING

Alexander I. Kalina, 12214 Clear Fork, Houston, Tex. 77077

Filed Oct. 17, 1986, Ser. No. 920,281
Int. Cl.[4] F01K *25/06*
U.S. Cl. 60—649 7 Claims



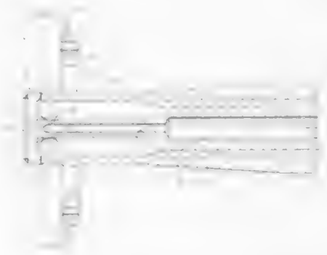
1. A method for implementing a thermodynamic cycle comprising the steps of:
expanding a gaseous working fluid including at least two components having different boiling points to transform its energy into useable form;
splitting said expanded gaseous working fluid into first and second streams;
expanding said first stream to a spent low pressure level to transform its energy into useable form;
subjecting at least a portion of said first stream having an initial composition of higher and lower boiling components to distillation at an intermediate pressure in a distillation system to distill or evaporate part of the stream and thus generate an enriched vapor fraction which is enriched with a lower boiling component relatively to both a rich working fluid fraction and a lean working fluid fraction;
mixing the enriched vapor fraction with part of the first stream and absorbing it therein to produce at least one rich working fluid fraction which is enriched relatively to a composite working fluid with a lower boiling component;
generating at least one lean working fluid fraction from part of the first stream, the lean working fluid fraction being impoverished relatively to such a composite working fluid with a lower boiling component;
using a remaining part of the first stream as a condensation stream;
condensing vapor contained in the rich and lean working fluid fractions to the extent that it is present;
increasing the pressures of the rich and lean working fluid fractions in liquid form to a charged high pressure level;
mixing the lean and rich working fluid fractions to generate a composite working fluid;
condensing the composite working fluid in a absorption stage by cooling and absorbing it in the condensation stream at a pressure lower than the intermediate pressure to regenerate the first stream;
mixing the second stream into the said first stream after preheating at least a portion of said mixed stream with the second stream; and
evaporating said mixed stream to form the gaseous working fluid.

4,763,481

COMBUSTOR FOR GAS TURBINE ENGINE

Michael F. Cannon, Lincoln, England, assignor to Ruston Gas Turbines Limited, England

Filed Jun. 4, 1986, Ser. No. 870,388
Claims priority, application United Kingdom, Jun. 7, 1985, 8514388; Jun. 20, 1985, 8515658
Int. Cl.[4] F02C *1/00*
U.S. Cl. 60—737 15 Claims



1. A combustor for a gas turbine engine, said combustor comprising:
(A) a flame tube for containing a burning fuel/air mixture, said flame tube having a flame tube axis and including:
(i) outer and inner walls,
(ii) an annular space between said walls,
(iii) multiple holes in said outer wall of a size to permit impingement cooling of said inner wall,
(iv) multiple holes in said inner wall of a size to permit effusion cooling of said inner wall, and
(v) said holes in said inner wall being out of alignment with and more numerous than said holes in said outer wall;
(B) a plurality of fuel injectors mounted for discharging fuel into said flame tube, each of said fuel injectors having a fuel injector axis substantially parallel to said flame tube axis and each fuel injector including:
(i) a fuel injector body having a plurality of fuel discharge orifices each having an orifice axis directed outwardly from said fuel injector axis,
(ii) flame stabilization means including a cup-shaped baffle plate comprising a plate mounted and disposed upstream of said fuel discharge orifices and a peripheral lip providing the cup-shape, said fuel injector body projecting through said baffle plate and said baffle plate having a ring of atomization holes surrounding said fuel injector body, each, of said atomization holes having a flow axis parallel to said fuel injector axis, and said flow axis intersecting a respective said orifice axis,
(iii) said cup-shaped baffle plate opening toward a downstream end of the flame tube and forming a containment wall for a flame stabilization region;
(C) the baffle plates lying in a common plane transverse to said flame tube axis and separated by combustion air apertures; and
(D) means for supplying air to the combustor, including:
(i) means for supplying compressed cooling air along a first path into said flame tube, said first path passing through said outer wall, through said inner wall and into said flame tube,
(ii) means for supplying compressed air along second path into said flame tube, said second path passing through said apertures between said baffle plates and axially through said atomization holes to intercept said orifice axes, and
(iii) said first and second paths having resistances to the flow of air, which resistances are in a relation such that between 70% and 90% of the total air supplied to the combustor takes said second path and the remaining proportion takes said first path.

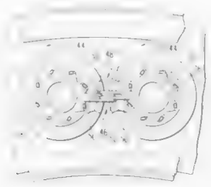
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,482

SWIRLER ARRANGEMENT FOR COMBUSTOR OF GAS TURBINE ENGINE

Edward J. Wehner, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 2, 1987, Ser. No. 4
Int. Cl.[4] F02C *3/14*; F23R *3/14*
U.S. Cl. 60—746 4 Claims



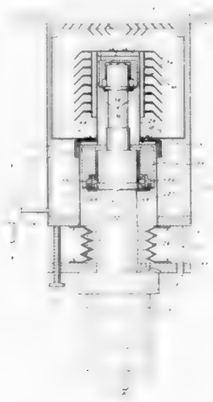
1. Combustion apparatus for a gas turbine engine comprising:
(a) an annular combustor structure including a plurality of annularly displaced combustion zones;
(b) a fuel nozzle extending into each of said combustion zones for supplying fuel to said combustion zones;
(c) a swirler supported on each fuel nozzle, each of said swirlers including a plurality of angularly-directed passages for directing combustion air to provide effective mixing of the air with the fuel, the air flowing through said passages tending to rotate each of said swirlers in the same rotational direction;
(d) said swirlers being arranged in adjacent pairs; and
(e) means on each of said swirlers for engaging said means on the adjacent swirler to limit rotation of said swirlers.

4,763,483

CRYOPUMP AND METHOD OF STARTING THE CRYOPUMP

Donald A. Olsen, Millis, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

Filed Jul. 17, 1986, Ser. No. 887,369
Int. Cl.[4] B01D *8/00*
U.S. Cl. 62—55.5 27 Claims



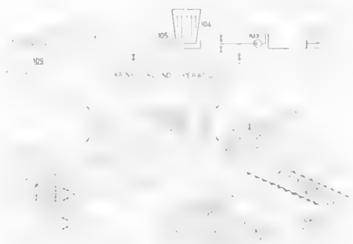
1. A method of starting a cryopump comprising:
providing a first stage cryopanel and a second stage cryopanel in a pumping volume, providing a close cycle refrigerator having a first stage and a second, colder stage in an insulating volume, and thermally isolating the refrigerator from the cryopanels and from the pumping volume by means of a vacuum in the insulating volume;
operating the refrigerator to cool it to cryopumping temperatures;
thereafter providing a thermal coupling between the refrigerator first stage and the first stage cryopanel to cool the first stage cryopanel and thereby condense gases thereon from the pumping volume; and
thereafter providing a thermal coupling between the refrigerator second stage and the second stage cryopanel to cool the second stage cryopanel and thereby condense additional gases thereon from the pumping volume.

4,763,484

METHOD OF AND APPARATUS FOR THE COOLING OF UNDERGROUND MINE SHAFTS AND/OR MACHINERY INSTALLED THEREIN

Kurt A. Osenberg, Wilnsdorf, and Michael Kortenbusch, Unna, both of Fed. Rep. of Germany, assignors to SMS-Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed May 21, 1987, Ser. No. 53,095
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1986, 3619216
Int. Cl.[4] F25D *23/12*
U.S. Cl. 62—99 11 Claims



1. A method of cooling a mine shaft having a plurality of levels, comprising the steps of:
(a) providing at each of said levels, a respective tube chamber, a respective low-pressure circulation path for supplying a cooling liquid to equipment to be cooled and carrying away liquid heated at said equipment, and respective means connecting said low-pressure circulation path with the respective tube chamber;
(b) feeding from ground level respective quantities of said cooling liquid at high pressure to the respective tube chambers and regulating the quantities fed to the respective tube chambers in accordance with cooling requirements of the respective levels; and
(c) displacing cooling liquid from said tube chambers at the respective levels to said equipment at the respective level at least in part by said liquid heated at said equipment by connecting each of said low-pressure circulation paths to the respective tube chamber to force out therefrom the cooling liquid with said liquid heated at the equipment of the respective level.

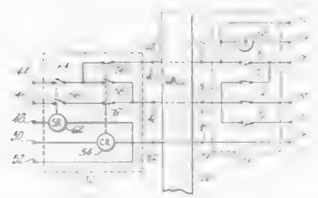
4,763,485

HEAT PUMP CONTROLLER

Robert L. Sparks, 4033 Middlesex Pl., Sarasota, Fla. 34241

Filed May 29, 1987, Ser. No. 55,369
Int. Cl.[4] F25B *13/00*; F25D *19/00*
U.S. Cl. 62—160 11 Claims

1. In a heat pump system having a plurality of electrically controlled inside components on one side of a wall and a plurality of electrically controlled outside components on the other side of the wall requiring the transmission of different electrical control currents between the inside components and the outside components during different heat pump system operations, retrofit apparatus for providing connections between the required electrically controlled inside components and the required electrically controlled outside components over two existing conductors passing through the wall comprising:
inside and outside electrical adaptors;
said adaptors each having terminals for the two conductors;



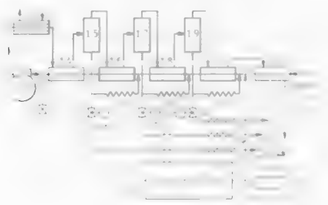
said inside adaptor having terminals for the control conductors of the inside components;
said outside adaptor having terminals for the control conductors of the outside components;
said inside and outside adaptors having connecting means for connecting the controls of said inside and outside components for heating operation;
said connecting means also operable to connect the controls of said inside and outside components for cooling operation.

4,763,486

CONDENSATE DIVERSION IN A REFRIGERATION SYSTEM

Scott M. Forrest, San Rafael, and Michael R. St. Pierre, Rohnert Park, both of Calif., assignors to Marin Tek, Inc., San Rafael, Calif.

Filed May 6, 1987, Ser. No. 46,408
Int. Cl.[4] F25B *5/00*
U.S. Cl. 62—175 14 Claims



1. A refrigeration system comprising:
(a) a closed loop refrigeration circuit having, in serially connected relation, a compressor, a plurality of cascaded heat exchangers and an evaporator, and a vapor/liquid refrigerant passing in said closed loop from said compressor to said heat exchanger and then to said evaporator and then back to said compressor;
(b) control valve means for diverting liquid refrigerant passing between an adjacent pair of said heat exchangers to said evaporator; and
(c) control means responsive to a predetermined variable condition of said system to control operation of said control valve means in a predetermined manner.

4,763,487

GATE CONTROL APPARATUS FOR REFRIGERATED CARGO CONTAINER

Robert G. Wicks, Clay, N.Y., assignor to Ralph W. Earl Company, Inc., Syracuse, N.Y.

Filed May 4, 1987, Ser. No. 45,534
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—239 8 Claims



1. Apparatus for controlling rear and side gates of a mobile cargo container that includes
a refrigeration unit for cooling the container that has a prime mover for driving a refrigeration unit compressor,
a hydraulic control circuit that includes a plurality of electrically actuated control valves for selectively raising and lowering platforms associated with each of said gates,
a primary pump system that includes a primary pump driven by said prime mover of the refrigeration unit, and a first normally closed electrically actuated gate valve for connecting the primary pump to the control circuit,
a secondary system that includes a secondary pump, an electric motor for driving said secondary pump, a second normally closed electrically actuated gate valve for connecting the secondary pump to the control circuit,
electrical means for applying current to the secondary pump when the second gate valve is opened, and switching means for selectively opening one of said gate valves when one of the control valves is electrically activated.

4,763,488

PLATE HEAT EXCHANGER FOR SEPARATING VAPOR AND LIQUID PHASES

Anthony M. Johnston, Woollahra, Australia, assignor to University of Sydney, Sydney, Australia

Continuation of Ser. No. 262,847, May 12, 1981, abandoned.
This application Jul. 20, 1987, Ser. No. 76,989
Claims priority, application Australia, May 26, 1980, PE3717
Int. Cl.[4] F25B *33/00*
U.S. Cl. 62—497 19 Claims



1. In a heat exchange system wherein a fluid is subjected to heat sufficient to cause separation of more and less volatile components of the fluid into a substantially pure vapor phase

VOL 1093 ISS 3 AG 16 1988 UMI

and a liquid phase and wherein the vapor phase of the fluid is rectified; a heat exchange device, first delivery means for delivering the fluid within the system to the heat exchange device and second and third delivery means for returning the vapor and liquid phases of the fluid to the system from the heat exchange device; the heat exchange device comprising:

(a) a plurality of flat heat conductive metal plates stacked as lamination in face-to-face heat conductive relationship and bonded one to another;

(b) a chamber formed by superpositioning apertures within the plates, the chamber defining a zone which receives the fluid and the zone having a configuration permitting separation of the liquid and vapor phases of the fluid under the influence of gravitational forces;

(c) at least one first fluid channel means formed in at least one of the plates and defining first passage means for delivering the fluid to the chamber;

(d) at least one second fluid channel means formed in at least one of the plates, the second fluid channel means communicating directly with the chamber, extending upwardly from the chamber, defining second passage means for conveying the vapor phase of the fluid upwardly from the chamber and providing for rectification of the fluid therein, and the second passage means being located adjacent the first fluid channel means and being adapted to accommodate liquid condensate which results from condensation of the vapor phase during rectification and the to permit draining of the condensate back into the chamber;

(e) at least one third fluid channel means formed in at least one of the plates, being located adjacent the first fluid channel means and defining third passage means for removing the liquid phase of the fluid from the chamber; and

(f) a plurality of ports extending into the stack of plates for directing the fluid to the first channel means from the first delivery means and for directing the vapor and liquid phases of the fluid into the second and third delivery means from the second and third channel means respectively, the first, second and third fluid channel means being orientated in a direction parallel to one another whereby the vapor and liquid phases of the fluid in the second and third fluid channel means flow counter to the fluid in the first fluid channel means and the fluid in the first fluid channel means receives heat by counter current thermal contact with the vapor and liquid phases of the fluid in the second and third fluid channel means, and the fluid channel means in each plate being formed within the thickness of the plate by removing a portion of the metal from the plate in a manner such that some metal is left within each channel means for the full thickness of the plate and adjacent plates are bonded in face-to-face contact at points over a major portion of the surface area of the plates.

4,763,489

MODULAR JEWELRY

Llyn Strong, 16 Sunset Dr., Greenville, S.C. 29605

Filed Jun. 19, 1986, Ser. No. 876,222
Int. Cl.[4] A44C *5/00*
U.S. Cl. 63—4 16 Claims



1. An apparatus for modular jewelry including a plurality of modular elements, said elements comprising:

a main annular member, having respective top and bottom edges, and providing a first opening adapted for receipt and securement of a jewelry piece by an interference fit in said first opening, such jewelry piece directed within said main annular member first opening;

an eyelet integrally associated with an outside peripheral surface of said main annular member; and

a capture hook integrally associated with a diametrically opposite peripheral surface of said main annular member from said eyelet, and defining an enlarged capture area relatively adjacent the base of said capture hook for removable receipt and capture of an eyelet associated with an adjacent modular element without bending of said capture hook or such eyelet, and further defining a capture path generally along the length of said capture hook leading to said enlarged capture area thereof and along which an eyelet may be freely advanced towards said capture area, said capture path having an entrance thereto disposed inwardly of said main annular member bottom edge and adjacent said jewelry piece bottom side and freely accessible by an eyelet for traveling along said path, said path further including a relatively narrow tolerance restriction point therealong formed adjacent said enlarged capture area by said capture hook base and said main annular member bottom edge;

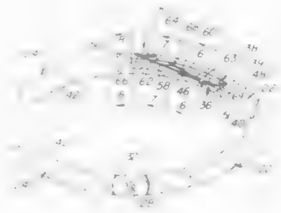
wherein an eyelet may be captured in said enlarged capture area in conjunction with said restriction point adjacent thereto so as to have substantial freedom of movement relative the modular element with which such capture area is associated, and with improved ease in engaging such eyelet with said capture path entrance and advancing same along such path down to said restriction point thereof, without view of said capture path entrance from said jewelry piece top side.

4,763,490

OPENABLE RING WITH SAFETY LOCKING MEANS

Mates A. Bruner, 14 Barbara La., Havertown, Pa. 19083

Filed Aug. 22, 1986, Ser. No. 899,280
Int. Cl.[4] A44C *9/00*
U.S. Cl. 63—15.7 16 Claims



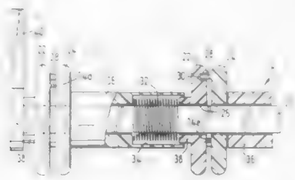
1. A ring to be worn as an article of jewelry by a person, said ring comprising a first arcuate section having an outer peripheral surface and a recess spaced inwardly from said outer peripheral surface, an aperture located adjacent the free end of said recess and communicating with said recess and with said outer peripheral surface and a wall portion adjacent said aperture; a second arcuate section pivotably connected to said first arcuate section and having a rigid, arcuate extending member projecting therefrom and adapted to move through said recess from a partially open position, wherein said extending member is located partially within said recess, to a closed position, wherein said extending member is located fully within said recess; a first resilient member connected to said rigid, arcuate extending member for providing a first spring means connected thereto and having a first locking portion, and second locking means connected to said extending member and having a second locking portion; said first locking portion being adapted to engage the wall portion of said first section without any portion of said first resilient member extending through said aperture beyond said outer peripheral surface when said extending member is fully disposed within said recess to thereby lock said first section to said second section, said second locking means being adapted to engage a portion of said first section when said extending member is partially disposed within said recess, said aperture in said first section providing access to said first spring means to enable its locking portion to be moved out of engagement with said wall portion to enable said first section to be pivoted from said second section so that said ring can assume said partially open position.

4,763,491

ACCESSORY FOR A DOMESTIC KNITTING MACHINE

Trevor E. Wilson, and Joan A. M. Wilson, both of "Bargate", Parsonage Hill, Somerton, Somerset TA11 7PF, England

PCT No. PCT/GB86/00193, § 371 Date Dec. 10, 1986, § 102(e) Date Dec. 10, 1986, PCT Pub. No. WO86/06113, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 4, 1986, Ser. No. 2,711
Claims priority, application United Kingdom, Apr. 10, 1985, 8509214; Feb. 21, 1986, 8604323
Int. Cl.[4] D04B *15/44*
U.S. Cl. 66—146 8 Claims



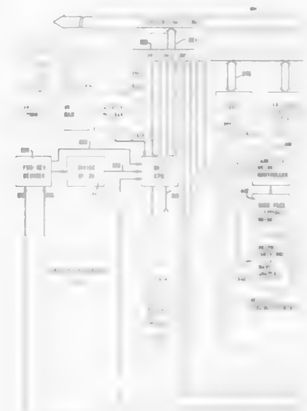
1. The method of knitting a plurality of yarns at the same time on a domestic knitting machine wherein each yarn is fed from a source thereof to a plurality of conventional latch needles reciprocable in parallel grooves in a linear needle bed under the control of a carriage traversible along the bed comprising

interposing in the path of each yarn from its source to the needles an array of spring-loaded yarn-restraining units having adjacent discs adapted to frictionally engage the yarn during the knitting operation;

mounting all of said yarn-restraining units coaxially end-to-end on a common rigid rectilinear support for axial movement along said support without rotation thereon;

positioning loading springs on said support between adjacent units to apply resilient biassing pressure in said units to frictionally engage the yarn traveling therepast and whereby the tensions in all said springs in said array are automatically equalized, and

locating said common rectilinear support in a plane parallel to that of the needle bed so that all said yarn-restraining units are located at a common distance from the needles.





4,763,492

CIRCULAR WEFT KNITTING MACHINE

E. C. Tibbals, Jr., 2216 Guilford College Rd., Jamestown, N.C. 27282

Continuation-in-part of Ser. No. 398,303, Jan. 12, 1984, Pat. No. 4,608,839. This application Aug. 28, 1986, Ser. No. 901,298
Int. Cl.[4] D04B *15/00, 15/66*
U.S. Cl. 66—232 3 Claims

1. In the operational control of a circular weft knitting machine that includes a rotatable knitting needle support cylinder having a multiplicity of stitch forming elements mounted thereon to knit an article of particular character, the steps of:

(a) introducing digital data at separated intervals indicative of a monotonically increasing schedule of instruction steps for fabrication of said particular article on to a special communication bus;

(b) continuously introducing digital data indicative of the current position and velocity of the knitting needle support cylinder on to said special communication bus;

(c) controlling the operation of said stitch forming elements to knit, tuck of float in accord with a first set of locally generated selective commands responsive to the composite digital data of said special communication bus and a first set of stored instructions uniquely relating to the fabrication of said particular article;

(d) controlling the engagement of yarns by said stitch forming elements in accord with a second set of locally generated selective commands responsive to the composite digital data on said special communication bus and a second set of stored instructions uniquely relating to the fabrication of said particular article;

(e) controlling the displacement and velocity of said knitting needle support cylinder in accord with a third set of locally generated selective commands responsive to said instruction step digital data present on said special communication bus and a third set of stored instructions uniquely relating to the fabrication of said particular article;

(f) selectively releasing the individual steps of said monoton-

VOL 1093 ISS 3 AG 16 1988 UMI

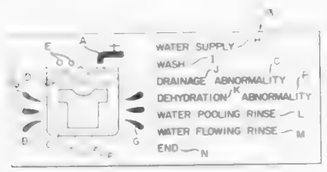
ically increasing schedule of instruction steps in response to the presence of said knitting cylinder position information on said special communication bus and a fourth set of stored instructions uniquely relating to the fabrication of said particular article.

4,763,493

ELECTRONIC DRIVING-TYPE DISPLAY APPARATUS FOR AN ELECTRIC WASHING MACHINE

Yoshitoyo Nishite, Yokohama; Fumio Torita, Nagoya, and Naotaka Ikeda, Kasugai, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 10, 1986, Ser. No. 940,078
Claims priority, application Japan, Dec. 18, 1985, 60-285192
Int. Cl.[4] D06F *33/02*
U.S. Cl. 68—12 R 5 Claims



1. An electronic driving-type display apparatus for an electric washing machine comprising:

display control means for sequentially outputting first display data, during a washing operation by a washing machine main body, for dividing the washing operation into a predetermined number of process cycles and displaying them, and for outputting second display data when an abnormality occurs during said washing operation by the washing machine main body, for displaying said abnormality in correspondence with the process cycles; and

display means, which has an electronic driving-type display including a predetermined number of patterns of display having character and figure display patterns for selectively displaying the predetermined number of process cycles and abnormality and for receiving said first and second display data from said display control means and driving the patterns of said display corresponding to said received first and second display data.

4,763,494

LIQUID DISPENSING SYSTEM

Wilhelmus K. der Kinderen, Wilnis, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 659,148, Oct. 9, 1984, abandoned. This application Jan. 27, 1987, Ser. No. 9,077
Claims priority, application United Kingdom, Oct. 13, 1983, 8327418
Int. Cl.[4] D06F *39/02*
U.S. Cl. 68—17 R 5 Claims



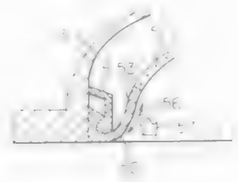
1. A modular liquid dispensing system consisting essentially of one or more dosing pump modules and an electrical control system module, wherein the pump module and the control system module are each in a respective separate housing, and the dispensing system further comprises, a support provided with an electrical cabling system wired to positions on the support, each position being capable of detachably receiving any one of said modules, multi-pin socket/plug electrical connectors being provided for interconnecting said modules via the cabling system when the modules are received at respective said positions, the connectors being wired such that each module can operate in accordance with its designated function, independently of the position at which it is received on the support.

4,763,495

COMPRESSION MEMBRANE

Shoichi Hayashi; Norio Sakai, and Hidetoshi Ishihara, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1986, Ser. No. 868,102
Claims priority, application Japan, May 31, 1985, 60-118371; May 31, 1985, 60-118372; Sep. 4, 1985, 60-195518; Apr. 21, 1986, 61-91578; Apr. 21, 1986, 61-91579; Apr. 23, 1986, 61-94095; Apr. 23, 1986, 61-94096
Int. Cl.[4] D06F *47/06*
U.S. Cl. 68—19.1 5 Claims



1. A compression membrane constructed for wringing liquid out of a textile product, said membrane having a membrane body with a center, a radius, a marginal peripheral portion in a radial direction from said center, and a remaining portion, wherein said marginal peripheral portion has a width in said radial direction of 15–35% of said radius, and said marginal peripheral portion has a higher degree of rubber hardness, and therefore a smaller degree of stretchability, than that of said remaining portion, and a portion of said marginal peripheral portion adjacent to said remaining portion has substantially the same thickness as said remaining portion, said membrane being constructed such that during the wringing said marginal peripheral portion will contact the textile product to a substantial extent without exerting tensile force on the textile product.

4,763,496

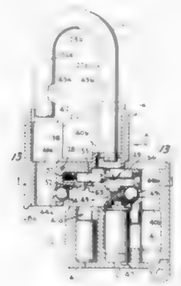
HIGH SECURITY CHANGEABLE KEY CYLINDER TYPE SHACKLE PADLOCK
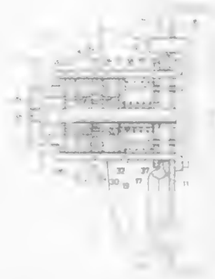
Walter R. Evans, Lancaster, and Gregory C. Lainhart, Nicholasville, both of Ky., assignors to Sargent & Greenleaf, Inc., Nicholasville, Ky.

Filed May 27, 1987, Ser. No. 57,261
Int. Cl.[4] E05B *67/22*
U.S. Cl. 70—38 A 20 Claims

1. An exposed shackle changeable key lock type padlock comprising a padlock body forming a casing removably housing a key lock plug and formed as an upper body section and a lower body section defining a pair of companion relatively displaceable body sections having correspondingly shaped outer peripheries in cross-section forming continuations of each other in aligned registered relation, the padlock casing having laterally spaced sockets disposed partially in both companion body sections opening through the upper portion of the padlock body adjacent opposite ends of the casing for receiving legs of a shackle and accommodating axial reciprocative movement of the shackle between a lower locking position and an upper release position, a U-shaped shackle including a

curved intermediate portion and longer and shorter shackle legs each having locking notches therein, said padlock casing having a central substantially cylindrical plug cavity therein located between said sockets, a key lock plug having a rotatable cylinder removably received in said plug cavity having a lower key passage adjacent a bottom wall portion of the lower casing section for insertion of a key, the lower padlock body section having an elongated slideway cavity communicating with said plug cavity and extending along an axis paralleling a center plane through the center axis of said sockets from the zone overlying said plug cavity through one end of the lower padlock body section, the slideway cavity defining an upper slideway portion bounded laterally by alternating tongue and groove formations, said upper body section having an integral downwardly extending slide formation at the bottom thereof conforming substantially to the shape of said slideway cavity and bounded laterally by alternating tongue and groove formations positioned to interfit with the tongue and groove formations laterally bounding said slideway cavity and having at least one cylindrical opening therethrough forming part of the





socket for at least one of said shackle legs, a rotatable adaptor cam in an upper portion of said plug cavity intercoupled with the cylinder of said key lock plug for rotation therewith between a locking position and first and second diametrically opposite shackle release positions responsive to insertion and rotation of an operator key and a control key respectively, said adaptor cam accommodating movement of a locking formations out of said locking notches for release of the shackle when in said first or second release positions, and said adaptor cam having formations receiving a projection from said slide formation therein shaped to restrain said slide formation and upper body section against movement from aligned registry with the lower body section when the adaptor cam occupies said locking position and said first release position and for releasing the slide formation and upper body section for sliding displacement relative to the lower body section when the adaptor cam occupies said second release position for removal of the upper body section from assembled relation with the lower body section and exposure of the plug cavity for removal of the adaptor cam and key lock plug from the plug cavity for replacement or servicing.

4,763,497

LOCK DEVICE FOR DOUBLE SLIDING DOORS

Hatsuo Nakai, Toyonaka, Japan, assignor to Clover Co., Ltd., Osaka, Japan

Filed Dec. 5, 1986, Ser. No. 938,684
Claims priority, application Japan, Sep. 3, 1986, 61-135827[U]; Sep. 13, 1986, 61-140847[U]
Int. Cl.[4] E05B *65/08*
U.S. Cl. 70—95 8 Claims

1. In a lock device for double sliding doors comprising a base means adapted to be mounted on one of said double sliding doors, a stationary hook means adapted to be mounted on the other of said double sliding doors, said base means comprising a base portion and a cylindrical portion extending from said base portion, a rotary hook means rotatably mounted on said base means between a locked position in which said rotary hook means engages said stationary hook means and an unlocked position in which said rotary hook means is disengaged from said stationary hook means, said rotary hook means being rotatable about an axis which is coincident with the longitudinal axis of said cylindrical portion, movable stopper means mounted on said base means and movable between a locked position in which a part of the stopper means is disposed within the rotational path of movement of said rotary hook means and an unlocked position in which said part of said stopper means is disposed outside the rotational path of movement of said rotary hook means, said movable stopper means having a second part disposed in said cylindrical portion, said second part being movable longitudinally in said cylindrical portion as said stopper means moves between its locked and unlocked positions, said stopper means further comprising biasing means in said cylindrical portion and engaging said second part to bias said stopper means in its locked position, combination lock means mounted on said base means, said combination lock means having a plurality of rotary wheels which are manually rotatable to a preset combination code-open position, said combination lock means also having a code-lock position when said rotary wheels are in a position other than said preset combination code-open position, said combination lock means when in said code-lock position retaining said stopper means in said locked position and when in said preset combination code-open position releasing said stopper means to an unlocked position, whereby said combination lock means controls the locking and unlocking of the lock device, and manually engageable push button means on said cylindrical portion, said push button means engaging at least a section of said combination lock means when the combination lock means is in said code-open position to move said section longitudinally to engage and overcome the bias of said biasing means and thereby move said movable stopper means from its locked to its unlocked position.

4,763,498

OPERATING DEVICE FOR A CENTRAL LOCKING INSTALLATION

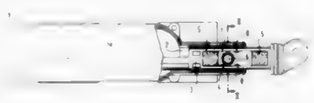
Rainer Fey, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 807,261, Dec. 10, 1985, abandoned. This application Aug. 18, 1987, Ser. No. 88,032
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1984, 3445595
Int. Cl.[4] E05B *65/36*
U.S. Cl. 70—264 4 Claims

1. An operating device for a central locking installation, comprising

VOL 1093 ISS 3 AG 16 1988 UMI

(a) a housing (1)
(b) an elongated push rod (3) guided by the housing (1) for displacement in the elongated direction of said push rod between a first "door open" position and a second "door closed" position, said push rod has an opening (4) therethrough elongated in the elongated direction of said push rod,
(c) a drive device (3a) driving the push rod between the first position and the second position, and
(d) an inhibitor device (6, 7, 8) located in the path of movement of the push rod between the first and second positions for increasing a displacement force to be exerted upon the push rod during its displacement along its path of movement between the first and second positions so that further movement of said push rod can not be effected



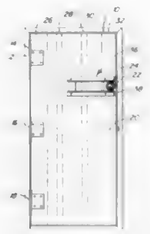
until said inhibitor device is overcome said inhibitor device (6, 7, 8) comprises a pin (6) secured in a stationary position on said housing (1) and extending through said opening (4) transversely of the elongated direction of said opening, and at least one detent device (8) on said push rod projecting from a side of the opening extending in the elongated direction of said push rod into the opening, said detent device (8) moves with said push rod and is locatable opposite said pin (6) during the movement of said push rod between the first and second positions, a resilient bush (7) laterally encircling said pin and engageable with said detent device (8) when said detent device is opposite the pin for increasing the displacement force required for moving the push rod between the first and second positions.

4,763,499

DOOR SECURITY SYSTEM

John J. Boyle, 5895 SW. 35 St., Miami, Fla. 33155

Filed Apr. 7, 1987, Ser. No. 35,591
Int. Cl.[4] E05B *63/00*
U.S. Cl. 70—417 24 Claims



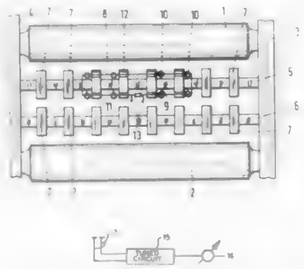
1. A door security system to protect a lock on a door comprising:
a wraparound cover plate adapted to cover exterior and interior door surfaces adjacent the exterior and interior portions of said lock and covering a portion of the lock-side door surface around a bolt plate of said lock;
two pair of elongated angle iron-shaped members, one pair for the exterior and the other pair for the interior of said door, a longitudinal end of each member attached to a respective surface section of said cover plate and each pair forming upper and lower arms extending from said cover plate along the surface of said door with upper and lower protruding member segments facing each other;
a cylindrical collar circumferentially surrounding said exterior portion of said lock intermediate the corresponding upper and lower protruding member segments; and,
means for mounting said cover plate and the attached arms to said door.

4,763,500

ROLLER TRACK MONITORING IN ROLLING MILLS

Martin Schoen, Hueaxe; Horst Wuellenweber, Oberhausen, and Herbert Specht, Taunusstein, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 24, 1986, Ser. No. 889,414
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1985, 3526916
Int. Cl.[4] B21B *37/00*
U.S. Cl. 72—14 3 Claims



1. In a roller track being a part of a flat stock rolling mill facility and including rollers mounted and journalled in a frame, there being transversely oriented stiffening traverses extending essentially in axis parallel relation to the rollers, a sensing device for ascertaining absence and presence of rolled stock on the roller track, comprising:
at least one open metallic loop mounted on at least one of said traverses in-between two rollers of the track, in a plane extending parallel to a plane of conveying and transport but being situated below said plane and being electrically insulated from said traverse; there being no loop above the plane of transport; and
an electric circuit connected to said loop such that the loop constitutes an impedance determining component of said circuit so that different impedance conditions are indicative of absence and presence of rolling stock in and on said roller track.

4,763,501

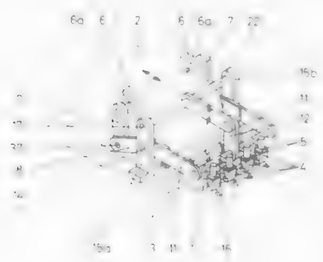
PUNCH-PROBING DEVICE ON A CROSS TRANSFER PRESS

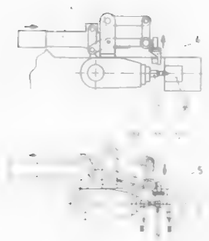
Maffeo Massariolo, Therwil, Switzerland, assignor to Hatebur Umformmaschinen AG, Reinach, Switzerland

Filed Jun. 16, 1986, Ser. No. 874,492
Claims priority, application Switzerland, Jun. 24, 1985, 2681/85
Int. Cl.[4] B21D *55/00*
U.S. Cl. 72—26 10 Claims

1. A punch probing device for monitoring the condition of a punch and detecting the presence of foreign matter in a punching operation, wherein said punch probing device includes a press frame, a press slide having a leading edge and being displaceable on said press frame between an advanced position and a retracted position, at least one punch carried by said press slide and projecting forwardly from said leading edge thereof, at least one punch feeler associated one with each said punch, a feeler holding device supporting each feeler, means for displacing each said feeler holding device in a plane substantially perpendicular to the plane of movement of said

punch slide between a probing position in which the feeler carried thereby cooperates with the associated punch and a withdrawn position in which said feeler is lifted substantially perpendicularly out of cooperating probing association with said associated punch, said displacing means incorporating a plurality of links and supports therefor interconnected to form a linkage parallelogram, and switch means engagable by the feeler holding device proximate said withdrawn position to arrest operation of the press.





4,763,502

METHOD AND A DEVICE FOR PRETREATING NONFERROUS METAL FOR PLASTIC DEFORMATION

Hendricus P. M. Backus, Eysden, Netherlands, assignor to AMF - Alusteam Metal Forming GmbH, Mayen, Fed. Rep. of Germany

Continuation of Ser. No. 416,313, Sep. 9, 1982, abandoned. This application Jul. 14, 1986, Ser. No. 885,323
Int. Cl.[4] B21C *43/00, 23/00*
U.S. Cl. 72—39 12 Claims

1. Apparatus for forming an article from an aluminum or aluminum alloy metal body, the entire surface of said metal body being exposed to air, comprising conveying means for continuously moving said metal body to a Conforming extrusion means for deforming said metal body, wherein the metal body to be deformed is not subjected to lubrication during deformation and wherein said surface does not substantially form a surface of said article, spraying means for continuously spraying said surface exposed to air of said metal body with a chemical deoxidation and cleaning agent during said moving, and drying means for continuously drying said metal body after said spraying, wherein said drying means is located immediately adjacent said Conforming extrusion means such that



said metal body is subjected to deformation immediately after said drying such that substantially no new oxide layer is formed before said deformation.

4,763,503

APPARATUS FOR MAKING A CAM SHAFT

Robert W. Hughes, 2155 Fourteen Mile Rd., Sterling Heights, Mich. 48077; Robert H. Brisson, 28078 Alger, and Glenn R. Brisson, 31632 Meadows, both of Madison Heights, Mich. 48071

Division of Ser. No. 815,250, Dec. 31, 1985, Pat. No. 4,693,138. This application Jun. 22, 1987, Ser. No. 64,663
Int. Cl.[4] B21D *22/10*
U.S. Cl. 72—57 14 Claims



1. An apparatus (24) for making a cam shaft (10) from lobes (14) having irregularly shaped apertures (16) spaced along the longitudinal axis of a hollow tubular shaft (12); said apparatus (24) including a restraining means for surrounding the hollow shaft and the lobes (14); a plug means (44) for sealing engagement with the first end (20) of the hollow tubular shaft; a sealing means (46) for sealing engagement with the second end (22) of the hollow tubular shaft (12); and characterized by a ram rod (54) of smaller diameter than the interior of the hollow tubular shaft (12) located within the sealing means (46) and extendible from said sealing means (46) immediately into the interior of the hollow tubular shaft (12) for applying hydraulic pressure to liquid within said hollow tubular shaft (12) for expanding the tubular shaft (12) into engagement with the interior of the apertures and into engagement with said restraining means.

4,763,504

STRAIGHTENING MACHINES AND METHODS

Einar W. Nilsson, 705 Curtin St., Bellefonte, Pa. 16823

Division of Ser. No. 659,087, Oct. 10, 1984, Pat. No. 4,711,112, which is a continuation-in-part of Ser. No. 280,372, Jul. 6, 1981, Pat. No. 4,494,394. This application Jul. 23, 1987, Ser. No. 76,791
Int. Cl.[4] B21D *3/04*
U.S. Cl. 72—98 20 Claims

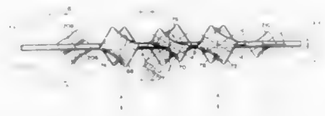
1. A pair of opposed cross-rolls in a machine for straightening round stock uniformly by feeding it forward in rotary motion and flexing it in a curved pass between the pair of cross-rolls, said pair having their longitudinal axes oppositely

VOL 1093 ISS 3 AG 16 1988 UMI

inclined by substantially equal angles to a plane through a centerline of the flexed stock and a common transverse axis of the rolls, comprising:

a female concave roll as one of the pair of cross-rolls, its contour being symmetrical about the common transverse axis of the rolls;

a male roll as the other of the pair of cross-rolls having a central section, symmetrical about its transverse axis, that flexes an intermediate stock size to a desired substantially constant minimum radius of curvature over a length of stock at least equal to one helix of said stock's forward



surface travel and symmetrical about the transverse axis, the sinus of the helix angle being about equal to the cosine of the angle of inclination of the male roll longitudinal axis to the plane through the stock's axis and the transverse axis of the roll pair, the angle being a selected angle for the intermediate size stock, at which angle the male roll contacts the flexed stock, throughout the length of the pass, and the female roll contacts the opposite side of the intermediate stock size at another selected angle of the longitudinal axis of the female roll to said plane; the selected angles being nearly equal.

4,763,505

ROLLING MILL STAND WITH ROLL REPLACEABILITY

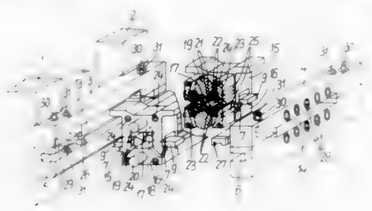
Friedrich Klute, Kreuztal; Franz Schydlo, St. Ingbert, and Hans D. Weitermann, Essen, all of Fed. Rep. of Germany, assignors to Fried. Krupp GmbH, Essen, Fed. Rep. of Germany

Filed Mar. 2, 1987, Ser. No. 20,379

Claims priority, application European Pat. Off., Mar. 4, 1986, 86102836.3

Int. Cl.[4] B21B *31/10, 31/16, 39/14*

U.S. Cl. 72—238 5 Claims



1. A rolling-mill stand, comprising:

a pair of stand uprights at opposite sides of the stand and formed with respective windows;

respective lower-roll journaling insert bodies received in said windows;

respective upper-roll journaling insert bodies received in said window above each lower-roll journaling insert body, each upper-roll journaling insert and the respective lower-roll journaling body being so formed as to lock together against relative motion along a roll axis, said insert bodies in each window being relatively raisable and lowerable therein;

a lower roll journaled in said lower-roll journaling insert bodies and an upper roll journaled in said upper-roll journaling insert bodies for rolling a workpiece between said rolls, said rolls and said bodies being jointly removable from said stand in an axial direction by locking of said upper and lower bodies together; and

supporting beams bridging said uprights across a path of said workpiece through said stand and received in said windows on opposite sides of said bodies in each window, each of said supporting beams having guides extending substantially the lengths of said beams, said insert bodies having feet receivable by said guides for displacement of said rolls and said bodies jointly relative to said beams upon removal from said stand in said axial direction, said supporting beams being formed with mutually aligned openings permitting passage of said workpiece therethrough as said workpiece passes between said rolls.

4,763,506

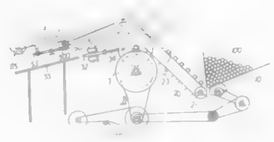
AUTOMATIC TUBE BENDING MACHINE

Jun-Lang Zeng, No. 72-7, Jaw An Li, Pai Her Chen, Tainan Hsien, Taiwan

Filed Mar. 13, 1987, Ser. No. 25,725

Int. Cl.[4] B21D *7/04, 43/02*

U.S. Cl. 72—306 7 Claims



1. An automatic tube bending machine for bending tube pieces comprising;

a machine frame;

a tube storage rack having a hopper-shaped top opening and a material feeding bottom opening;

a pair of symmetrical fan-shaped cams located beneath said tube storage rack;

a feeding device provided at both sides of said tube storage rack, symmetrical on both sides, inclinedly disposed, and feeding the tube pieces upwardly from said material feeding bottom opening;

an outward bending molding device located under a top end of said feeding device including

two symmetrically located L-shaped outward bending molds,

axle bearings for each of said bending molds fixed to said machine frame,

axles in each said axle bearing rotatably secured to said respective axle bearing and securing said bending molds to said machine frame,

a gear mounted on each of said axles,

splines guided in respective guiding seats engaging with said gears,

a first crank shaft having a rotating wheel at one end, and a sprocket, and a connecting gear means at an opposite end,

a pushing rod connected to and driven by said crank shaft,

a connecting board connecting said pushing rod to said splines to move them in their respective guiding seats with said splines in turn rotating their respectively engaged gear mounted on each of said axles;

an inward bending molding device located in a position opposite to said outward bending molding device including

a fixed guiding seat,

sliding seats provided on two sides of said fixed guiding seat,

axle rods having a spocket and an eccentric pushing cam with a protruded peripheral edge on each said axle rod with said axle rods fixing said eccentric pushing cams to said sliding seats,

said eccentric pushing cams having semicircular clamping troughs on their respective protruded peripheral edges,

spockets fixed on said machine frame and having chains connecting said spockets fixed on said machine frame with said sprockets on said axle rods,

fixing clips for fixing an outer side of said chain between said spockets,

a second crank shaft having a connecting gear connected to said connecting gear means of said first crank shaft and symmetrical cam means on said second crank shaft to push said sliding seats;

a finished product rejection rack provided below said inward bending molding device and disposed at an inclination angle for gravitational rejection guiding;

a speed reduction system including

a motor driving means and belt-connected pulley means,

a flywheel connected to said belt-connected pulley means,

said belt-connected pulley means connected to said pair of symmetrical fan-shaped cams located beneath said tube storage rack,

said flywheel drivingly connected to said rotating wheel,

an intermittent feeding device including

a chain connected to said sprocket on said first crank shaft,

a rotating disk connected to be driven by said chain of said intermittent feeding device,

a driven disk intermittently advanced in rotation by said rotating disk,

chain means connecting said driven disk to said feeding device,

whereby said fan shaped cams are driven by said motor through said belt-connected pulley means, said flywheel drives said rotating wheel and said intermittent feeding device is driven so that said inward bending molding device, said outward bending molding device and said feeding device move synchroneously in such a manner that each tube piece is bent into the required shape, and the advantages of a continuous automatic tube bending are achieved thereby.

4,763,507

ADJUSTABLE BALL BAR GAUGE FOR COORDINATE MEASURING MACHINE

Joseph M. Zofchak, Mt. Morris, Mich., assignor to Bobier Tool Supply, Inc., Flint, Mich.

Filed May 11, 1987, Ser. No. 48,340

Int. Cl.[4] G01L *25/00*

U.S. Cl. 73—1 J 14 Claims



1. An adjustable ball bar gauge for testing the accuracy of shape and size data produced by a coordinate measuring machine having an article support and a surrounding measuring envelope within which an article to be measured is located upon the support, and having at least one probe that is movable within the envelope to contact points on the article surface for providing signals which may be fed through a computer programmed to produce desired measurement data of the article from such signals, comprising:

an elongated bar having opposite probe contact ends;

a bar support means for positioning upon the machine article support within the measuring envelope in place of an article;

said bar support means including a plate means upon which the bar is mounted and a base means having a releasable connector fastening the plate means upon the base means;

said releasable connector being vertically adjustable and said plate means being angularly adjustable relative to the vertical and horizontal directions for varying the height of the bar above the machine article support and for varying the three dimensional angularity and positions of the bar within the machine measuring envelope;

whereby the positions of the two contact ends remain constant relative to each other, but may be infinitely varied within the envelope and relative to the machine article support, so that the probe may contact ends when the bar is repositioned and held in numerous positions within the measuring envelope to produce measurement data for use in testing the accuracy of the usual data produced by contacting the probe against an article surface at different locations within the measuring envelope.

4,763,508

METHOD FOR DETERMINING THE FRICTION TORQUE OF A TEST BEARING

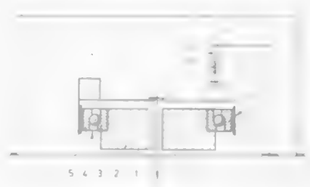
Volker Buck, Hattingen, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Oct. 6, 1986, Ser. No. 915,530

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 3536474

Int. Cl.[4] G01N *19/02*

U.S. Cl. 73—9 2 Claims



1. A method for determining the friction torque of a test bearing wherein a first race member of the test bearing is rotated at a constant rotational speed, while a second race member bearing a measuring head is connected to a force pickup spring, wherein the motion of the system comprising said force pickup spring and said second race member bearing said measuring head is damped as little as possible, wherein the improvement comprises:

A. calibrating signal generation of said measuring head and said force pickup by

(i) replacing said test bearing with an air bearing and striking said second race member bearing said measuring head to initiate a free oscillation of said measuring head,

(ii) generating a first signal A proportional to the deformation of said pickup spring,

(iii) generating a second signal B proportional to the acceleration of said measuring head during said free oscillation,

(iv) forming a first composite signal $A + c \times B$ of said first and second signals, A and B respectively, by adding the first signal A and the second signal B multiplied by a factor c, and

(v) adjusting said factor c to a setting such that said first composite signal becomes zero; and

B. measurement signal generation by

(i) replacing said air bearing with said test bearing and rotating said first race member at a constant rotational speed,

VOL 1093 ISS 3 AG 16 1988 UMI

(ii) generating a third signal A' proportional to the deformation of said pickup spring,
(iii) generating a fourth signal B' proportional to the acceleration of said measuring head during said constant rotation of the first race member,
(iv) forming a second composite signal A'+c×B' with the setting of said factor c remaining unaltered, whereby said second composite signal provides said measurement signal to measure the friction torque of said test bearing.

4,763,509

DEVICE FOR DETERMINING THE CONCENTRATION OF SUBSTANCES HAVING PARAMAGNETIC PROPERTIES

Scato Albarda, Gross Schenkenberg, and Alfred Eder, Wulfertshausen, both of Fed. Rep. of Germany, assignors to Drägerwerk AG, Fed. Rep. of Germany

Filed Dec. 17, 1986, Ser. No. 943,541
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3544966
Int. Cl.[4] G01R *33/12*
U.S. Cl. 73—27 A 6 Claims



1. In a device for determining the concentration of a substance with paramagnetic properties, comprising a rotatable hollow container having an axis of rotation and having a partition dividing it into an assembly of a plurality of cells, means for providing a gas to be tested in at least one of said cells and a control gas in at least one of said cells, a coil assembly for producing a magnetic induction and for picking up the magnetic induction produced by a substance with paramagnetic properties surrounding said assembly of cells and being spaced from the axis of rotation, the improvement comprising a first compartment extending around said hollow cylinder at a spaced location from the axis thereof and having a coil for producing magnetic induction, and a second compartment extending around said hollow cylinder having a coil for detecting the paramagnetic properties of the gas being tested and being spaced from the axis of rotation.

4,763,510

PLUG MEMBER USED IN HYDRAULIC TESTING OF PLUMBING SYSTEM

Dennis D. Palmer, 1542 Owenwood Cir., Sandy, Utah 84092

Filed Oct. 16, 1986, Ser. No. 920,044
Int. Cl.[4] G01M *3/28*
U.S. Cl. 73—40.5 R 3 Claims

1. A method of hydraulically testing a drain, vent, waste plumbing system comprising the steps of
(a) installing a shallow, cup-shaped, sealing element, comprising a circular disc, an upstanding, cylindrical sidewall extending upwardly from the perimeter of the disc and an angled flange extending outwardly and upwardly from the upper end of said cylindrical sidewall, in the upstream end of the straight through barrel of a plastic tee, such that the cylindrical sidewall of said cup-shaped, sealing element is coaxially received in the barrel of the plastic tee and the flange on said cup-shaped, sealing element mates with and lies flatwise against the bevel in the barrel of the plastic tee;
(b) installing the plastic tee of step (a) into the draing, vent, waste plumbing system;
(c) filling the drain, vent, waste plumbing system upstream of the plastic tee which contains the sealing element to hydraulically test the drain, vent, waste plumbing system;
(d) breaking a hole in the bottom of the sealing element to release the water in the drain, vent, waste plumbing system;
(e) breaking the disc from the cylindrical sidewall of the sealing element and removing the disc from the side entry of said plastic tee; and
(f) prying the remaining cylindrical sidewall and flange of said sealing element from the barrel of said plastic tee and removing said cylindrical sidewall and flange from the side entry of said plastic tee.



4,763,511

PIPE JOINT SEALING AND TESTING APPARATUS

Allen D. Mathison, Richfield, and Dale K. Nelson, Minneapolis, both of Minn., assignors to Cherne Industries, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 785,155, Oct. 7, 1985, abandoned. This application Nov. 21, 1986, Ser. No. 935,071
Int. Cl.[4] G01M *3/04*
U.S. Cl. 73—49.1 20 Claims



1. A separable and lightweight inflatable pipe joint sealing and testing apparatus comprising:
(a) a plurality of separate, unitary, lightweight and connectable arched channel support structure members having a circular segment configuration and having three parallelly disposed channeled members extending outwardly therefrom, said channeled members being outer channels having the same predetermined height and having a centrally disposed testing channel therebetween,
(b) connecting means being disposed at each end of said arched channel support structure members for mating connection to adjacent arched members to form a separable circular structure,
(c) a unitary inner sleeve member for covering and sealing the centrally disposed testing channel member and extending into said outer channels,
(d) a pair of inflatable sealing rings for placement and expansion in the outer channel members, said sealing rings having an interior trapezoidal configuration having bottom interior corners with acute angles, said sealing rings further having air ingress means,
(e) compressed air source means in communication with the air ingress means of said pair of inflatable sealing rings,
(f) test fluid ingress means, and
(g) a removable test panel member mountable to the interior of said channel support member structure having compressed air and test fluid control means, air pressure and fluid pressure indicating means mounted thereto and being in communication with said compressed air source means and said test fluid ingress means.

4,763,512

RHEOMETER

James C. Taylor, Gregge Street, Heywood, Lancashire, England 0L10 2ED

Filed Oct. 14, 1986, Ser. No. 923,317
Claims priority, application United Kingdom, Oct. 14, 1985, 8525255
Int. Cl.[4] G01N *11/00*
U.S. Cl. 73—54 4 Claims



1. A rheometer comprising a tube for holding a sample of a fluid to be investigated, the tube having an axis; drive means for imparting oscillatory movement to the tube in the direction of its axis; means for adjusting the frequency of the drive means over a frequency range; detector means for detecting the position of the sample during the oscillatory movement; and an analyzer for receiving inputs from the detector means and from the drive means to relate the movement of the sample to the amplitude and frequency of the movement of the tube and thereby derive viscosity characteristics for the fluid over said frequency range.

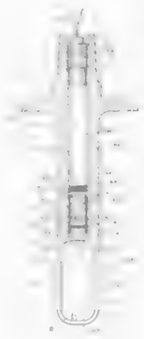
4,763,513

SONIC TRANSDUCER

Ellis M. Zacharias, Tulsa, Okla., assignor to Nusonics, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 702,349, Feb. 15, 1985, Pat. No. 4,649,754, which is a continuation-in-part of Ser. No. 464,416, Feb. 7, 1983, Pat. No. 4,505,160. This application Dec. 29, 1986, Ser. No. 947,434
Int. Cl.[4] G01N *29/02*; H04R *17/10*
U.S. Cl. 73—61 R 25 Claims

12. An improved transducer for transmitting and/or receiving sonic energy comprising:
a housing having a cylindrical opening and having a forward end and a rearward end;
a cylindrical transducer crystal element having a forward planar face and an opposed rearward face, the crystal element having a natural frequency of deformation when electrically stimulated;
a sonic window member sealably closing the forward end of said housing cylindrical opening;
means in said cylindrical opening rearwardly of said crystal transducer for applying force against said transducer element rearward face to cause intimate contact of said crystal element forward face and said sonic window rearward face;



spring means between said means of applying force and said crystal element;
a thrust transmitting sphere in the path of said applied force serving to ensure uniform load of force of said crystal element against said window; and
means of providing separate electrical paths between said crystal element forward and rearward faces.

4,763,514

MONITORING EQUIPMENT FOR DISSOLVED GAS IN INSULATING OIL

Sadao Naito; Katsumi Shiono; Hideo Shinohara; Yoshihiro Makino, and Toshitsugu Ishii, all of Ako, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 14, 1986, Ser. No. 862,967
Int. Cl.[4] G01N *1/00*
U.S. Cl. 73—19 18 Claims



1. A monitor for gas dissolved in an electrically insulating oil in which an electrical apparatus is immersed in a tank, said monitor comprising:
sampling means connected to the tank for sampling a portion of the insulating oil from the electrical apparatus;
extracting means connected to said sampling means for extracting a volume of dissolved gas from said portion of the insulating oil in said sampling means;

VOL 1093 ISS 3 AG 16 1988 UMI

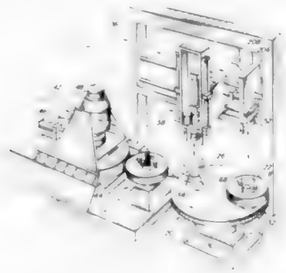
measuring means for measuring components of the dissolved gas;
means for delivering substantially all of the volume of dissolved gas to said measuring means;
means for exhausting from the monitor all of the volume of dissolved gas delivered to said measuring means; and
means for returning said portion of the insulating oil in said extracting means to the electrical apparatus.

4,763,515

TIRE UNIFORMITY MACHINE AND METHOD

Martin Pielach, Mt. Clemens, and Seymour A. Lippman, Huntington Woods, both of Mich., assignors to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed Jan. 14, 1987, Ser. No. 12,915
Int. Cl.[4] G01M *17/02*
U.S. Cl. 73—146 **20 Claims**



1. A machine for testing the uniformity of test tires comprising in combination:
a test spindle rotatable about its axis and configured to receive a rim supporting a test tire;
an index table rotatable about an axis parallel with, but offset from, the axis of said test spindle, said index table having a pair of spaced, upwardly extending index spindles;
indexing means to rotate said index table about its axis whereby said index spindles may move between an operator loading station remote from said test spindle and an index station in proximity to said test spindle;
a loader robot adapted to move between a first position at said test spindle and a second position at said index spindle at said index station for transporting therebetween a rim supporting a test tire;
a roadwheel rotatable about an axis parallel with, but offset from, said axis of said test spindle, means to move said roadwheel between a retracted position out of contact with a test tire supported by said test spindle and an advanced position wherein said roadwheel is in driving contact with a test tire supported by said test spindle;
motor means to rotate said roadwheel while in its advanced position; and
transducer means coupled to said test spindle to determine vibrations of the test tire when rotated by said roadwheel as caused by non-uniformities within the test tire.

4,763,516

AUTOMATIC TIRE PRESSURE GAUGE

Peter D. Greenspan, Rte. 7, Box 595, Chapel Hill, N.C. 27514

Filed Nov. 26, 1986, Ser. No. 935,521
Int. Cl.[4] B60C *23/02*; **G01L** *7/04*
U.S. Cl. 73—146.8 **19 Claims**

15. A tire pressure gauge device which comprises:
(a) an airtight linear air flow tube having a central bore, an inflation end and a tire connector end;
(b) a dial gauge comprised of a pressure-indicating dial that may be rotated into either a first position or a second position, a cursor and cursor stops on the pressure-indicating dial, said dial gauge partially recessed into the central bore of the air flow tube and placed between the inflation end and the tire connector end;
(c) a coiled pressure tube connected to the cursor and extending into the central bore; and



(d) a hermetic spool assembly attached to the dial gauge and surrounding the portion of the pressure tube that extends into the central bore, rotation of the dial gauge into the first position causing the coiled pressure tube to open to the central bore, and rotation of the pressure-indicating dial into the second position causing the coiled pressure tube to not be open to the central bore.

4,763,517

VALVE CAP PRESSURE INDICATOR

Andrew S. Feinberg, P.O. Box 9858, El Paso, Tex. 79989

Filed Jun. 16, 1987, Ser. No. 62,657
Int. Cl.[4] G01C *23/02*
U.S. Cl. 73—146.8 **6 Claims**



1. A valve stem-mounted system for measuring and displaying the pressure of air within a pneumatic tire comprising:
(a) a housing, a portion of which is threaded for mounting onto a tire valve stem;
(b) a pressure transducer mounted within said housing;
(c) a signal processing unit mounted within said housing, said processing unit being operationally connected to said transducer for converting signals received from said transducer;
(d) display means mounted within said housing and electrically connected to said signal processing unit for displaying tire air pressure;
(e) an electric battery power source mounted within said housing and connected through switch means to furnish power to operate said signal processing unit and said display means;
(f) means for manually operating said switch to power said processing unit and said display means; and
(g) means for bringing said pressure transducer into fluid communication with the interior of said tire;
wherein said display means comprises a plurality of display chips.

4,763,518

METHOD FOR MEASURING NET INTERNAL VOLUME OF A RECEPTACLE CONTAINING AN UNKNOWN VOLUME OF RESIDUAL LIQUID

Jean-Michel Daviaud; Pascal Herbert, both of Nantes, and Patrick Loison, Bouaye, all of France, assignors to Frigo France, France

Filed Mar. 23, 1987, Ser. No. 28,796
Int. Cl.[4] G01F *17/00*
U.S. Cl. 73—149 **7 Claims**



1. A method of determining the net internal volume of each of a series of test piece receptacles each containing a variable but unknown volume of liquid, the volume of which is to be subtracted from the dry internal volume of said receptacles to arrive at said net internal volume, to thereby enable calculation of the volume of liquid to be added to bring the level of liquid in each piece test piece receptacle to a predetermined level, comprising the steps of:
pressurizing a reference vessel having an interior space of known volume with a gas and thereafter preliminarily sensing the pressure level in said pressurized reference vessel;
placing said pressurized vessel in communication with the interior space of a selected one of said receptacles by means of fluid passages of known volume so as to allow expansion of said gas in said reference vessel thereinto;
initially sensing the gas pressure in a system comprising said connected reference vessel, said fluid passages and said selected receptacle shortly after placing the reference vessel in communication with the selected receptacle but substantially before said pressure stabilizes therein;
subsequently sensing the gas pressure in said system again after said gas pressure has substantially stabilized therein;
determining the difference between said initially and subsequently sensed gas pressures;
calculating the net internal volume of said selected receptacle from the proportion of the preliminarily sensed pressure level in said reference vessel to the subsequently sensed pressure level in said system and the value of said dry internal volume of said receptacle;
correcting the calculated value of said net internal volume of the selected receptacle by reducing said calculated value by a correction function inversely related to the difference between said initially and subsequently sensed pressure levels;
repeating each of said steps for each successive test piece receptacle.

4,763,519

PRESSURE ACTUATOR SWITCH

Laurier J. (Larry) Comeau, Edmonton, Canada, assignor to NL Sperry-Sun of Canada, Ltd., Edmonton, Canada

Filed Jul. 25, 1986, Ser. No. 890,595
Claims priority, application Canada, Jul. 31, 1985, 487866
Int. Cl.[4] E21B *44/00*
U.S. Cl. 73—151 **9 Claims**

1. An apparatus for use in activating a down hole device at a pre-selected pressure comprising:
a housing;
an inlet port in said housing for communicating any pressure at said port to the interior of said housing;
piston means in said housing communicating with said port for receiving any pressure which may be present in said port;
plunger means in said housing connected to said piston means for receiving forces exerted by said piston means;
at least one shear pin transversely situated in said plunger



means for physically securing said plunger means within said housing until said pre-selected pressure has been exceeded; and
contact means spaced from said plunger means, said contact means being electrically insulated from said housing means when said plunger means is held in place by said shear pin, and being electrically connected with said housing when said shear pin is caused to be sheared by said preselected pressure being exerted on said piston.

4,763,520

METHOD AND MEANS FOR OBTAINING DATA REPRESENTING A PARAMETER OF FLUID FLOWING THROUGH A DOWN HOLE SIDE OF AN OIL OR GAS WELL BORE

Paul F. Titchener, Menlo Park, and Michael J. M. Walsh, Kentwood, both of Calif., assignors to Comdisco Resources, Inc., San Francisco, Calif.

PCT No. PCT/US86/00261, § 371 Date Oct. 9, 1986, § 102(e) Date Oct. 9, 1986, PCT Pub. No. WO86/04635, PCT Pub. Date Aug. 14, 1986
Continuation-in-part of Ser. No. 700,352, Feb. 11, 1985, abandoned. This PCT application Feb. 7, 1986, Ser. No. 918,252
Int. Cl.[4] E21B *47/06*
U.S. Cl. 73—155 **98 Claims**

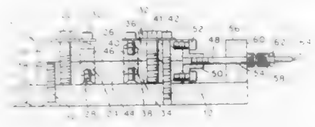


1. A method for recovery of data in an oil or gas well having a well bore for passing fluid, transversely across a side of the well bore at a down hole location of the well bore and longitudinally in the well bore, between a geological formation located at the down hole location and a top portion of the well bore, the method comprising the steps of:
(a) sensing with a sensor substantially at the down hole

VOL 1093 ISS 3 AG 16 1988 UMI

location, while the fluid is flowing across the side, a parameter of the fluid;
(b) transmitting into the well bore with a transmitter, data signals which represent the sensed parameter;
(c) lowering in the well bore separate from the sensor and transmitter, a receiver and a flexible line while the receiver is suspended from the flexible line;
(d) receiving the data signals with the receiver; and
(e) passing data signals which represent the parameter which is represented by the data signals, received by the receiver, over the flexible line to the top portion of the well bore.

4,763,521
METHOD AND APPARATUS FOR DETERMINING WELDABILITY OF THIN SHEET METAL
Gene M. Goodwin, Lenoir City, and Joseph D. Hudson, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 31, 1986, Ser. No. 846,529
Int. Cl.[4] B21D 7/04; B23K 20/08
U.S. Cl. 73—159 12 Claims



5. Apparatus for evaluating the hot-cracking sensitivity of a sheet of metal during welding thereof by changes in a preselected stress applied on the sheet of metal prior to said welding to determine weldability of the metal, comprising a base, a first jaw support means secured to a planar surface on said base, second jaw support means supported on said planar surface of said base and movable thereon with respect to said first jaw support means, grip means carried by said first and second jaw support means for securing a sheet of metal to be autogenously welded thereacross between the first and second jaw means along a plane coplanar with said planar surface, load inducing means coupled to said second jaw support means for urging said second jaw support means away from said first jaw support means to stress said sheet of metal in a direction transverse to the direction of welding of said sheet of metal, adjusting means associated with said load inducing means for applying a preselected stress on said sheet of metal prior to welding, and load cell means coupled to said load inducing means for providing a signal indicative of changes in said preselected stress during welding of said sheet of metal.

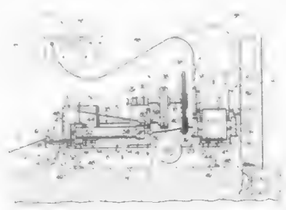
4,763,522
RADIATION DETECTOR PSYCHROMETER
Francesco Pompei, Wayland, Mass., assignor to Exergen Corporation, Natick, Mass.
Filed Oct. 31, 1986, Ser. No. 926,356
Int. Cl.[4] G01N 25/62
U.S. Cl. 73—338 21 Claims

1. A psychrometer comprising:
water film means in which a water film provides sufficient opaqueness such that a wet bulb temperature can be obtained from the water film after said water film reaches equilibrium temperature to be measured;
a radiation detector for providing an indication of the wet bulb temperature from the water film means after the water film reaches equilibrium temperature; and



dry means from which the radiation detector senses a dry bulb temperature and provides an indication of the dry bulb temperature.

4,763,523
ROLLER BEARING TESTING DEVICE
Coy G. Womble, 2502 Jefferson St., Paducah, Ky. 42001, and John P. Watkins, Rte. 2, Box 339A, Vienna, Ill. 62995
Filed Aug. 26, 1987, Ser. No. 89,748
Int. Cl.[4] G01N 29/04
U.S. Cl. 73—587 20 Claims



11. A mobile device for rotating an axle-mounted roller bearing of a railcar for monitoring shock pulses of energy which are emitted by the rotating bearing to determine possible defects in said bearing; said device including:
(a) first means for contacting and rotating said roller bearing;
(b) a motor for driving the first means to rotate the roller bearing;
(c) a base movably supporting the first means and the motor; and
(d) second means mounted on the base for moving the first means into and out of contact with the bearing.

4,763,524
AUTOMATIC UNDERWATER ACOUSTIC APPARATUS
Jerome Goodman, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Bethesda, Md.
Continuation-in-part of Ser. No. 728,889, Apr. 30, 1985, Pat. No. 4,648,275. This application Dec. 19, 1986, Ser. No. 943,413
The portion of the term of this patent subsequent to Mar. 10, 2004, has been disclaimed.
Int. Cl.[4] G01N 29/00
U.S. Cl. 73—589 3 Claims

1. An automated underwater acoustic impedance measuring apparatus comprising:
(a) a first transducer means positioned within said apparatus for producing and transmitting a plane wave,
(b) a second transducer means positioned within said apparatus for sensing incident signals and reflected signals of a sample material placed within the apparatus for reflection factor computation,

(c) a third transducer means positioned within said apparatus on the face of the sample material selected from the group consisting of a thin flat film polymer and a flat flexible ceramic means for sensing combined incident waves and reflected waves for phase angle computation,



(d) computer means positioned and interfaced with said second transducer means and said third transducer means for automatically computing real time acoustic impedance in accordance with formula:

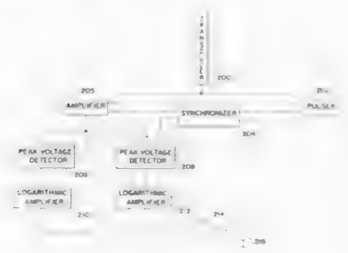
$$R = \left(\frac{Pr}{Pi}\right)$$

and

$$Pi(1+2R\ \mathrm{Cos}\ \theta+R^2)^{\frac{1}{2}}$$

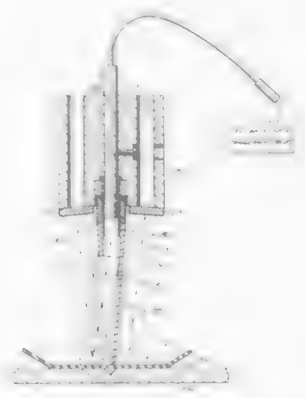
wherein:
R=reflection factor
Pr=reflected sound pressure
Pi=incident sound pressure
θ=phase angle of the acoustic impedance
obtained from the reflection factor derived from the second transducer means and obtained from the phase angle derived from the third transducer means, and
(e) indicating means for indicating said acoustic impedance.

4,763,525
APPARATUS AND METHOD FOR DETERMINING THE QUANTITY OF GAS BUBBLES IN A LIQUID
Wesley N. Cobb, University Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio
Filed Apr. 16, 1986, Ser. No. 852,608
Int. Cl.[4] G01N 29/00
U.S. Cl. 73—599 23 Claims



1. An apparatus for quantitatively measuring the gas bubble content of a liquid containing gas bubbles, said apparatus comprising:
ultrasonic means for launching, during a first time period, longitudinal waves in a liquid containing gas bubbles;
a ultrasonic means for detecting, during second and third time periods, longitudinal waves reflected from said gas bubbles and for generating electrical signals in response to detection of longitudinal waves, said first, second and third time periods occurring sequentially without overlap;
first and second peak signal detectors for sensing the peak amplitudes of electrical signals produced by said second transducer in response to reflected waves detected during said second and third time periods, respectively, and for generating first and second magnitude signals, respectively indicative of the relative peak amplitudes of longitudinal waves detected during said second and third time periods;
first and second logarithmic amplifiers connected to said first and second peak signal detectors, respectively, for receiving said first and second magnitude signals and for producing first and second logarithmic signals proportional to the logarithms of the amplitudes of said first and second magnitude signals; and
means receiving said first and second logarithmic signals for comparing said first and second logarithmic signals to each other to determine the gas bubble content in said liquid.

4,763,526
ULTRASONIC WHEEL PROBE WITH IMPROVED ACOUSTIC BARRIER
Dominick A. Pagano, 10 Sasqua Trail, Weston, Conn. 06883
Filed Jul. 29, 1987, Ser. No. 79,102
Int. Cl.[4] G01N 29/04
U.S. Cl. 73—639 7 Claims



1. An ultrasonic inspection apparatus of the type having a container with a substantially annular outer surface for rotation about an axis of rotation and rolling on a workpiece to be tested, the container having a yoke arranged at least partly on the axis of rotation and being filled with a coupling fluid for propagating ultrasonic acoustic energy, the ultrasonic inspection apparatus comprising:
first transducer means for transmitting ultrasonic energy through the coupling fluid, the substantially angular outer surface of the container, and into the workpiece to be tested, and second transducer means for receiving echoes of said transmitted ultrasonic acoustic energy;
monitor transducer means fixedly mounted to said yoke for

VOL 1093 ISS 3 AG 16 1988 UMI

receiving echoes of said transmitted ultrasonic acoustic energy reflected from a first surface of said workpiece;

acoustic barrier means interposed between said first and second transducer means and immersed in the coupling fluid for acoustically isolating said first transducer means from said second transducer means, said acoustic barrier including waveguide means for conducting said first surface echoes of said transmitted ultrasonic acoustic energy to said monitor transducer; and

wherein there is further provided mounting means for securing said acoustic barrier means to said yoke, said acoustic barrier means extending substantially to an annular inner surface of the container, said annular inner surface being in communication with the coupling fluid.

4,763,527

TEMPERATURE-RESISTANT ISOLATION FLUID PRESSURE DETECTOR

Spiros G. Raftis, Pittsburgh, Pa., assignor to Red Valve Co., Inc., Carnegie, Pa.

Filed Jan. 23, 1987, Ser. No. 6,125
Int. Cl.[4] G01L *7/02*
U.S. Cl. 73—730 **4 Claims**



1. A temperature-resistant arrangement for detecting the pressure of a fluid at an elevated temperature, comprising:

(A) a tubular metal housing having an internal circumferential surface bounding an elongated cylindrical bore centered on a longitudinal axis, said bore having opposite internal axial end regions and an internal predetermined diameter;

(B) a tubular metal sleeve mounted in the bore and bounding an axially-extending internal passage through which a pressurized fluid at an elevated temperature flows in a temperature-impervious relationship,

(i) said metal sleeve extending axially along the entire length of the bore and having two annular welding end collars and a flexible, intermediate cylindrical sleeve portion between and integral with the welding end collars,

(ii) said flexible sleeve portion having an outside diameter less than said internal predetermined diameter of the bore and bounding therewith a circumferential space,

(iii) said flexible sleeve portion being constructed of a thin, resilient metallic material capable of flexing and returning to an unflexed state,

(iv) each welding end collar having an outer diameter substantially equal to said internal predetermined diameter of the bore and having an axial dimension sufficient to enable a respective welding end collar to be welded to a respective internal end region of the bore, thereby sealing the space from the passage, and

(v) each collar having a generally planar outer axial end face and a tapered inner face;

(C) a port in the housing and extending from, and being in fluid communication with, the space, and leading to the exterior of the housing;

(D) a pressure gauge having a mounting portion in the port, and a pressure-detecting mechanism in fluid communication with the space through the port; and

(E) a quantity of pressure-transmitting fluid filling the space, the port and the pressure gauge to transmit to the pressure-detecting mechanism the pressure of the fluid present in the passage as applied to the pressure-transmitting fluid through the flexible sleeve portion with attendant flexing thereof.

4,763,528

NON-DESTRUCTIVE METHOD FOR DETERMINING AT LEAST ONE POINT OF A CRACK FRONT IN A PART AND AN APPARATUS FOR THE IMPLEMENTATION OF THE METHOD

Driss Bouami, Chatenay Malabry, and Daniel De Vadder, Verrieres Le Buisson, both of France, assignors to Ecole Centrale Des Arts Et Manufactures, Chatenay Malabry Cedex, France

PCT No. PCT/FR86/00124, § 371 Date Dec. 5, 1986, § 102(e) Date Dec. 5, 1986, PCT Pub. No. WO86/06169, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 15, 1986, Ser. No. 2,758
Claims priority, application France, Apr. 16, 1985, 85 05696
Int. Cl.[4] G01N *19/08*
U.S. Cl. 73—799 **19 Claims**



1. A method for detecting the position of at least one point of a crack front within a part having one of a crack formation and a ductile rupture substantially in a given plane P on either side of a median plane P_o extending perpendicular to said given plane, the method comprising the steps of directing onto the given plane P an incident ultrasonic beam having an axis A, registering the intensity of the echo resulting from diffraction from the given plane P with a receiver device to deduce an evaluation of the position of the tip of the crack or rupture and including the steps of:

measuring the transit time of the ultrasonic wave diffracted by the given plane P to determine the location of the plane P;

subsequently, focusing an incident ultrasonic beam in such a way that the plane P intersects the beam and forms an angle alpha of between approximately 10° and 80° with the axis A of the beam;

orienting the beam so that a plane Q, which is normal to the plane P, passes through the axis A and is substantially perpendicular to the crack front; and

displacing the axis A of the beam towards the crack front parallel to the plane P until a maximum echo intensity is registered, the point at which the maximum echo intensity is registered being a point S which is the intersection of the axis A and the plane P and corresponds to the tip of the crack in the plane Q.

4,763,529

IN-SITU BETA ALUMINA STRESS SIMULATOR

John F. Leonard, Beavercreek, and Douglas M. Allen, Brookville, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 18, 1987, Ser. No. 87,857
Int. Cl.[4] G01N *3/20*
U.S. Cl. 73—852 **9 Claims**



1. Apparatus for static fatigue testing of ceramic plate material comprising:

(a) a liquid sodium bath;

(b) means for supporting a ceramic plate at opposite ends thereof within said sodium bath;

(c) a loading head defining at least two projections for contacting said ceramic plate within said sodium bath intermediate said opposite ends;

(d) a furnace surrounding said sodium bath, ceramic plate and loading head for controllably heating said sodium bath and ceramic plate;

(e) an enclosure for said sodium bath and ceramic plate containing a gaseous atmosphere substantially inert to reaction with liquid sodium;

(f) means operatively connected to said loading head for controllably applying loads to said ceramic plate; and

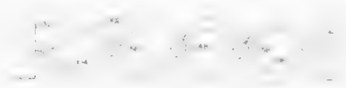
(g) measurement means operatively connected to said loading head for measuring displacements of said loading head corresponding to applied said loads and providing an output signal characteristic of said displacements.

4,763,530

APPARATUS AND METHOD FOR CONTINUOUSLY MEASURING MASS FLOW

Dennis S. Mizerak, Brunswick, Ohio, assignor to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 10, 1986, Ser. No. 917,631
Int. Cl.[4] G01F *1/88*
U.S. Cl. 73—861.38 **4 Claims**



1. An apparatus for measuring mass flow of a fluid flow, comprising:

a pair of straight parallel conduits each having opposite ends, as well as an axis and a mid-point between said opposite ends;

support means connected to said conduits for holding said opposite ends at substantially fixed positions;

connector means connected to said support means for supplying a fluid flow whose mass flow rate is to be measured to said pair of parallel conduits, each conduit receiving about one half of the fluid flow at one end of said support means and recombining said fluid flow at the other end of said support means;

drive means associated with said conduits for oscillating said conduits towards and away from each other at a selected frequency in a direction transverse to their respective axis and substantially at their respective midpoint;

at least one sensor for sensing motion of said conduits at a sensing point spaced from each mid-point and from said opposite ends for sensing any phase difference of the selected frequency between said parallel conduits; and

wherein each of said support means includes flexible conduits each being formed in an approximate S configuration for conducting fluid flow into and out of each of said straight parallel conduits to absorb thermal stress whereby the deformation or rupture of said straight parallel conduits due to temperature changes or temperature gradients is inhibited.

4,763,531

FORCE-TORQUE SENSOR

Johannes Dietrich, and Jörg Schott, both of Gilching, Fed. Rep. of Germany, assignors to Deutsche Forschungs-und Versuchsanstalt fur Luft und Raumfahrt e.V., Bonn, Fed. Rep. of Germany

Filed Apr. 1, 1987, Ser. No. 33,511
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1986, 3611336
Int. Cl.[4] G01L *5/16, 1/22*
U.S. Cl. 73—862.04 **8 Claims**



1. A force-torque sensor for measuring six force and torque components in the Cartesian coordinate system by means of strain gauges, said sensor comprising:

two identically designed integral spoke wheels, each said wheel consisting of a rigid cylindrically shaped outer ring and a rigid central hub interconnected by at least three spokes disposed in the X-Y plane, each of said hubs having a greater height than the cylindrical outer ring in the direction of the central axis or Z coordinate, said hubs being rigidly and solidly connected with each other so that the corresponding spokes are arranged in alignment with each other; and

wire strain gauges mounted proximate to said hubs in pairs on all opposed spoke surfaces disposed in the X-Y plane extending parallel with each other perpendicular to the central axis of the sensor, and on opposed surfaces of a diagonal pair of spokes of one of said two wheels, said latter surfaces extending perpendicular to the former.

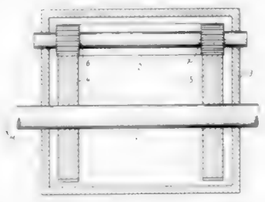
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,532

OVERLOAD PROTECTION IN TRANSDUCERS FOR MEASURING TORQUE

Jan O. Nordvall, and Christer Aminder, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jan. 28, 1987, Ser. No. 7,457
Int. Cl.[4] G01L *3/04*
U.S. Cl. 73—862.32 1 Claim



1. A torque transducer which is constructed such that it is protected from an overload, said torque transducer comprising a housing,

a first axle for measuring torque up to a certain maximum value which extends through said housing, the portion of said measuring axle extending within said housing defining a measuring distance,

first and second gear wheels located in spaced apart fashion and without backlash on said first axle near opposite ends of said measuring distance,

a second axle rotatably journalled within said housing in parallel with said first axle, and

third and fourth gear wheels located in spaced apart fashion and without backlash on said second axle and in engagement with said first and second gear wheels, respectively, said third gear wheel having a smaller diameter than said first gear wheel and engaging said first gear wheel with a certain backlash and said fourth gear wheel having a smaller diameter than said second gear wheel and engaging said second gear wheel with said certain backlash, such that when torque in excess of said certain maximum value is applied to said first axle, thus causing the portion of the first axle housing to become sufficiently twisted, the backlash between the first and second gear wheels and the third and fourth gear wheel, respectively, will be eliminated and the excessive torque on the first axle will become relieved.

4,763,533

METHOD AND DEVICE FOR MEASURING THE DEFORMATION OF A ROTATING SHAFT

Rombartus W. Uitermarkt, No. 68 Dacostastraat, NL-2951 XB Alblasserdam, Netherlands

Division of Ser. No. 752,188, Jul. 1, 1985, Pat. No. 4,656,875.
This application Dec. 17, 1986, Ser. No. 942,848
Int. Cl.[4] G01L *3/10, 25/00*
U.S. Cl. 73—862.35 10 Claims

1. The method of measuring the torsional deformation of a rotating shaft connecting power input means to power-consuming output means, which comprises the steps of:

generating a first signal whose value represents the uncalibrated torsional deformation of the shaft;

generating a pair of further signals whose values differ from each other and one of whose values substantially represents the value which the first signal should have in the absence of torsional deformation of the shaft;

sequentially measuring said first and said further signals to produce a train of signals having values corresponding to the values of said further signals and the value of said first signal;

calculating the calibrated value of the first signal from said train of signals and generating a signal representing such calibrated value of the first signal; and



controlling the power supplied by the power input means in accord with the generated signal representing the calibrated value of the first signal.

4,763,534

PRESSURE SENSING DEVICE

Robert J. Hager, Phoenix, Ariz., assignor to Robert G. Fulks, Bedford, Mass.

Filed Jan. 31, 1985, Ser. No. 696,695
Int. Cl.[4] G01L *1/18;* H01C *10/12*
U.S. Cl. 73—862.68 6 Claims



3. The method of sensing pressure comprising the steps of:

depositing a resistive region on insulating material;

coupling conducting electrodes to said resistive region;

providing a conducting region overlying said resistive region;

separating said resistive region from said conducting region by a region of force transducer ink; and

measuring a change in resistive value between said conducting electrodes when pressure is applied to said regions.

4,763,535

PIPETTE MECHANISM

Kenneth Rainin, Piedmont; Haakon T. Magnussen, Jr., Pinole, and Roy P. Moeller, Hayward, all of Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.

Continuation of Ser. No. 795,822, Nov. 7, 1985, abandoned, which is a continuation of Ser. No. 583,900, Feb. 27, 1984, abandoned. This application Jan. 20, 1987, Ser. No. 4,864
Int. Cl.[4] B01L *3/02;* G01N *1/14*
U.S. Cl. 73—864.18 7 Claims

1. In a pipette including a housing containing a pipette piston mounted in a cylinder for axial movement in one direction to compress a piston return spring and dispense fluid from an opening in the cylinder and axial return movement in response to the compressed return spring for drawing fluid into the pipette, the improvement comprising:

a dashpot in the housing for regulating the return movement of the piston, the dashpot comprising:

a closed chamber in the housing,

a dashpot piston mounted for axial movement in the chamber, and

a shaft coupled to the dashpot piston within and extending axially through the chamber for coupling at one end to



the pipette piston and at an opposite end to a pipette actuator for imparting axial movement to the shaft.

4,763,536

FURNACE TUBE

Joseph E. Beshoory, 10926 Sagebluff, Houston, Tex. 77089

Filed Mar. 19, 1986, Ser. No. 841,431
Int. Cl.[4] G01N *25/00*
U.S. Cl. 73—865.6 4 Claims



1. A furnace tube assembly, comprising:

an inner tube and an outer tube;

said inner tube being open at one end and including means comprising at least one passageway means through its other end for permitting a first fluid to pass therethrough into said outer tube;

said outer tube comprising a second fluid inlet, a combined fluid outlet, second fluid diffuser means, and means for causing said second fluid to follow a tortuous path intermediate said second fluid inlet and said diffuser; and

connector means for securing together said inner and outer tubes,

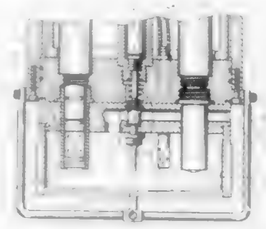
said connector means comprises a nut fabricated of material resistant to corrosion, and further comprises at leat one adjustable fastener means fabricated of material less resistant to corrosion than said material comprising said nut, said assembly further including means to prevent exposure of said fastener means to said second fluid.

4,763,537

PROCESS FOR PROTECTING ELECTROCHEMICAL SENSORS FROM BIOFOULING IN AN AQUATIC ENVIRONMENT

Jonathan R. Scott, College Station, and Fredric A. Godshall, Bryan, both of Tex., assignors to The Texas A&M University System, College Station, Tex.

Filed Dec. 15, 1986, Ser. No. 941,774
Int. Cl.[4] G01N *33/18*
U.S. Cl. 73—170 A 9 Claims



6. A process for sensing a parameter characteristic of a body of water which comprises:

(a) immersing in said body of water a sensor capable of generating an electrical signal representative of the value of said parameter;

(b) detecting an electrical signal generated by said sensor;

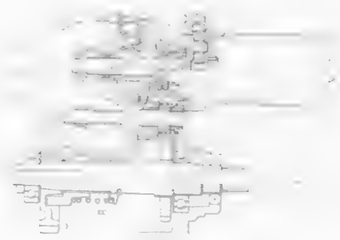
(c) displacing said water from around said sensor, while continuing to immerse said sensor in said body of water with a gaseous antibiofulant in a quantity and for a time sufficient to reduce any biological fouling of said sensor; and thereafter displacing said gas from around said sensor with water from said body of water.

4,763,538

REVERSE DRIVE FOR SMALL VEHICLES

Haruyasu Fujita, Tokyo; Yoshiaki Hirosawa, and Toshifumi Ito, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1986, Ser. No. 938,211
Claims priority, application Japan, Dec. 4, 1985, 60-272893; Dec. 4, 1985, 60-272894; Dec. 4, 1985, 60-272892; Jan. 31, 1986, 61-019747; Jan. 31, 1986, 61-019749; Jan. 31, 1986, 61-019750
Int. Cl.[4] F02N *15/02*
U.S. Cl. 74—6 18 Claims



1. A reverse drive for small vehicles characterize in that an output shaft of a motor independently of a driving internal combustion engine can be coupled to a power transmission system leading from said internal combustion engine to a rear wheel in such a way that the rear wheel is driven in the reverse direction through a reverse clutch for transmitting the power from said motor to said power transmission system only in the

VOL 1093 ISS 3 AG 16 1988 UMI

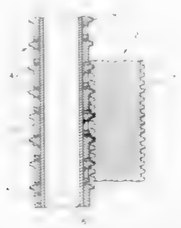
reverse direction, and said reverse clutch comprises a slide clutch mechanism which is switched by an operating means which in turn is manually operated by a driver.

4,763,539

MECHANICAL CONVERTER FROM ROTATIONAL TO LINEAR MOVEMENT

Takeshi Kume, 3-10-1 Tsukaguchi-honmachi, Amagasaki 661, Japan

Filed Jan. 31, 1986, Ser. No. 825,064
Claims priority, application Japan, Feb. 2, 1985, 60-018828; Mar. 14, 1985, 60-037363[U]; Jun. 7, 1985, 60-086437[U]
Int. Cl.[4] F16H *29/02*
U.S. Cl. 74—89.15 2 Claims



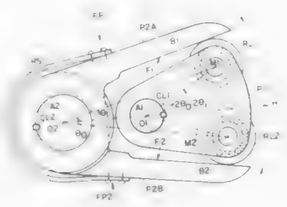
1. Apparatus for converting rotation drive into linear thrust, comprising cylindrical roller means, a plurality of annular peripheral flanges on the outer periphery of said roller means at axially spaced locations, said flanges having a substantially constant pitch therebetween, and screw means extending in parallel with said roller means and adapted to be rotatably driven, said screw means including an outer thread having a pitch for engagement with said flanges and said thread engaging at least some of said flanges, said roller means being adapted to be journaled on a fixed body and to extend vertically, said roller means comprising two radially spaced parallel roller units, said screw means being adapted to be journaled on a movable body and comprising two radially spaced parallel screws, each of said screws engaging both of said units, and at least one of said screws being adapted to be driven.

4,763,540

MECHANICAL COUPLING DEVICE FOR TWO PARALLEL SHAFTS ALLOWING ROTATION THEREOF IN A 2/1 RATIO

Charles Hubert, Meudon La Foret, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 9, 1987, Ser. No. 23,260
Claims priority, application France, Mar. 14, 1986, 86 03650
Int. Cl.[4] F16H *21/44, 53/00*
U.S. Cl. 74—96 9 Claims



1. A device for mechanically coupling two parallel shafts together so as to allow a double rotation of one with respect to the other, comprising:

a first piece integral with a first shaft rotating about a first axis of rotation;

a second piece integral with a second shaft rotating about a second axis of rotation, one of said pieces being a cam and the other a following member;

the first piece including first and second guide elements each situated at a distance from the first axis equal to that between said axes, the second piece being provided with a guide means having two flat surfaces forming a constant dihedral angle therebetween for guiding said first and second guide elements respectively therealong so as to produce a double angular rotation of the first shaft with respect to the second shaft and vice versa, said first guide element bearing on a first one of said flat surfaces and said second guide element bearing on the second flat surface, one of the pieces being made in two parts, the first part being integral with the associated shaft and the second part being freely mounted on the associated shaft; and

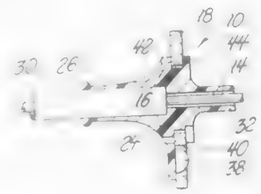
spring device for acting between said two parts so as to maintain said guide elements continuously in bearing relation with the respective flat surfaces.

4,763,541

REMOTE CONTROL ASSEMBLY INCLUDING SIDE SNAP IN

Arthur L. Spease, Livonia, Mich., assignor to Teleflex Incorporated, Limerick, Pa.

Continuation-in-part of Ser. No. 796,408, Nov. 8, 1985, abandoned. This application Aug. 11, 1986, Ser. No. 895,155
Int. Cl.[4] F16C *1/10*
U.S. Cl. 74—501 R 17 Claims



1. A motion transmitting remote control assembly (**10**) of the type for transmitting forces along a curved path by a motion transmitting core element (**30**) and being supported in a U-shaped seat in a bulkhead, said assembly (**10**) comprising: guide means (**12**) having first and second ends and an opening (**14, 14'**) therethrough defining a first axis for extending through a substantially U-shaped seat (**16**) in a support structure (**18**); a core element (**30**) movably supported by said guide means (**12**) for transmitting motion between said ends of said guide means (**12**); abutment means for positioning said guide means (**12**) in the substantial U-shaped seat (**16**) on the support structure (**18**), an arm (**36**) extending laterally from said guide means (**12**) and said abutment means, gripping means (**38**) disposed on said arm (**36**) for gripping engagement with the support structure (**18**) and preventing said guide means (**12**) from moving laterally out of the U-shaped seat (**16**), said arm being flexible, said gripping means (**38**) having a neutral condition and a deflected condition, said arm (**36**) biasing said gripping means (**38**) towards said neutral condition from said deflected condition, said arm (**36**) having top and bottom surfaces defining an L-shape and disposed in spaced planes parallel to said abutment means (**42, 44**) and transverse to said core element (**30**) so as to extend laterally and then along and spaced from said guide means (**12**) to a distal end spaced laterally relative to said guide means (**12**), said gripping means (**38**) being disposed on said distal end.

4,763,542

SIDE YOKE FOR VEHICLE DIFFERENTIAL

James Darin, 20345 Swansea Rd., Baltimore, Md. 21239

Filed Aug. 7, 1985, Ser. No. 763,217
Int. Cl.[4] F16H *1/40*
U.S. Cl. 74—713 5 Claims



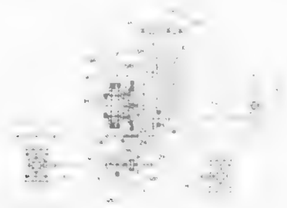
4. A method of reconditioning an inboard end of a vehicle differential side yoke worn by knocking against a pinion shaft in a differential case, the method comprising removing the worn end of the yoke by grinding or the like, forming a blind bore in the end of the yoke, providing a hardened steel wear button having a disc-like splined body portion and a reduced-diameter shank portion for fitting into the blind bore in the end of the side yoke, fitting the shank portion of the button into the blind bore and securing the shank portion in the bore to retain same in the end of the yoke.

4,763,543

TRANSMISSION FOR A WORKING VEHICLE

Denzaburo Harada, and Masaharu Noguchi, both of Osaka, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 11, 1986, Ser. No. 895,614
Claims priority, application Japan, Sep. 30, 1985, 60-149437[U]; Sep. 30, 1985, 60-149435[U]; Sep. 30, 1985, 60-149438[U]; Sep. 30, 1986, 60-149436[U]
Int. Cl.[4] F16H *37/00*
U.S. Cl. 74—740 7 Claims



1. A transmission for a body flexion type working vehicle comprising;

a front frame including front wheels,

a rear frame including rear wheels and connected to the front frame to be pivotable relative thereto on a substantially vertical axis,

an engine and a transmission mounted on the rear frame, the transmission being disposed forwardly of the engine,

a casing housing the transmission, the casing including an upper case housing a change speed portion of the transmission and a lower case housing an output portion of the transmission,

An input shaft supported by the upper case and operatively connected to the engine,

an output shaft supported by the lower case and including a coupling device at a forward end thereof for conection to a propeller shaft for driving the front wheels, and

a planetary gear type change speed mechanism for changing power from the input shaft into plural speeds in forward and reverse rotations, respectively, for transmission to the output shaft, the planetary gear type change speed mechanism including;

a first, a second and a third planetary gear type change speed devices formed integrally and having sun gears disposed forwardly of the input shaft, respectively,

the first and second planetary gear type change speed devices having carriers, respectively, which are interlocked to be rotatable in unison, and having a gear arrangement for the change speed,

the third planetary gear type change speed device having a ring gear connected to the carrier of the first planetary gear type change speed device to be rotatable in unison, and having a gear arrangement for the change speed in reverse rotation,

brake means for effecting change speed switching, and

clutch means for switching between forward and reverse rotations, and

an output gear for outputting power changed by the planetary gear type change speed mechanism, the output gear being disposed rearwardly of the input shaft and operatively connected to the output shaft,

wherein the lower case includes a front wall positioned rearwardly of a front wall of the upper case, and the coupling device is positioned flush with or rearwardly of the front wall of the upper case.

4,763,544

INFINITELY VARIABLE POSITIVE MECHANICAL TRANSMISSION

John H. Blakemore, 11213 S. Taylor St., Oak Park, Ill. 60304

Continuation-in-part of Ser. No. 171,706, Jul. 24, 1980, abandoned. This application May 11, 1984, Ser. No. 609,235
Int. Cl.[4] F16H *3/74*
U.S. Cl. 74—752 E 18 Claims



1. A one-way brake comprising:

(a) a brake housing;

(b) first shaft means mounted in said housing for rotatably supporting a first helical gear thereon;

(c) second shaft means mounted in said housing substantially parallel to said first shaft means;

(d) carrier cage means mounted on said second shaft means for pivotal movement thereon;

(e) third shaft means mounted on said carrier cage means substantially normal to said first and second shaft means;

(f) a second helical gear rotatably mounted on said third shaft means and engaging the periphery of said first helical gear; and

(g) actuating means attached to said carrier cage means for controllably pivoting said carrier cage means about said second shaft means whereby when said carrier cage means is pivoted to a position wherein the teeth of said helical gears are substantially aligned with one another, said first helical gear is free to rotate in either direction and, further, when said carrier cage means is pivoted to a position wherein the teeth of said helical gears are misaligned with respect to one another, said first helical gear is constrained to rotate in one direction only.

VOL
1093
ISS
3
AG
16
1988
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4,763,545
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Takashi Shibayama, Isehara, and Kazuhiko Sugano, Yokohama, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 3, 1986, Ser. No. 915,079
Claims priority, application Japan, Oct. 5, 1985, 60-222433
Int. Cl.[4] B60K *41/02*
U.S. Cl. 74—868 18 Claims



1. An automatic transmission comprising:
a hydraulically operated friction element;
a source of a first hydraulic fluid pressure;
a shift valve having an inlet port communicating with said source of said first hydraulic fluid pressure and an outlet port;
said shift valve having a position where said outlet port thereof communicates with said inlet port thereof to allow said first hydraulic fluid pressure to communicate with said outlet port thereof;
a source of a second hydraulic fluid pressure having a constant pressure level;
a control valve fluidly disposed between said outlet port of said shift valve and said friction element, said control valve including a pressure responsive spool means movable between a first position in which said first hydraulic fluid is supplied to said friction element from said outlet port of said shift valve and a second position in which said first hydraulic fluid pressure is blocked from said friction element and fluid discharge from said friction element is allowed, said control valve having a pressure chamber for receiving a hydraulic fluid pressure, said pressure responsive spool means having a land on which the hydraulic fluid pressure within said pressure chamber acts;
a control unit generating an electrical control signal;
means for defining a hydraulic fluid pressure passage having one end communicating with said source of second hydraulic fluid pressure and an opposite end communicating with said pressure chamber of said control valve; and
a solenoid valve means disposed in said hydraulic fluid pressure passage for controlling the hydraulic fluid pressure within said pressure chamber of said control valve in response to said control signal.

4,763,546
SIMPLE TUBELESS TIRE PATCHER

Feng-Hsun Yeh, 501, Sec. 2, Ta Hsi Rd., Kuang Pin Li, Hsi Hu Chen, and Sien-Shigong Lai, 235, Sec. 3, Yuan Lu Rd., Hsi Hu Chen,, both of Chung Hwa Hsien, Taiwan

Filed Aug. 31, 1987, Ser. No. 90,881
Int. Cl.[4] B60C *25/16*
U.S. Cl. 81—15.7 1 Claim

1. A simple tubeless tire patcher comprising a T-handle consisting of an awl base and two ridges beside the base, and an awl consisting of a thread at the front end, a notch in the middle and two flat surfaces on opposite sides, and constructed in such way that the flat surfaces will reduce friction of the stick patch and the top of the base will prop aside the ends of the stick patch and prevent them from being pulled out when



the awl is pulled out of the tire with the two flat surfaces facing forward and backward.

4,763,547
SHINGLE REMOVING APPARATUS

John H. Dike, Jr., Stoneham, Mass., assignor to Dike Equipment Co., Stoneham, Mass.

Filed Jul. 21, 1987, Ser. No. 76,130
Int. Cl.[4] B25B *33/00*
U.S. Cl. 81—45 11 Claims



1. Apparatus for stripping fastened shingles comprising:
a frame member;
a power head attached to one end of said frame member;
a hand grip on the frame member distal to said power head;
said power head comprising:
(a) a lift plate mounted for articulating movement about an axis on a pivot connected to said frame member;
(b) a support structure connected to said frame member, disposed below said lift plate, and having a top mounting surface;
(c) pneumatically powered drive means mounted on said mounting surface on said support structure beneath said lift plate and having a drive shaft operative to be pneumatically powered substantially normal to and away from said mounting surface to force said lift plate about said axis away from said mounting surface and to return toward said mounting surface upon release of pneumatic power to permit said lift plate to pivot about said axis back toward said mounting surface;
means for receiving remotely generated pneumatic power deliverable to said drive means for powering said drive shaft away from said mounting surface; and
switch means for actuating delivery of and for releasing pneumatic power delivered to said drive means.

4,763,548
SCREWDRIVER, PARTICULARLY FOR SURGICAL PURPOSES

Karl Leibinger, Tuttlingen-Mohringen, and Franz Leibinger, Mühlheim-Stetten, both of Fed. Rep. of Germany, assignors to Oswald Leibinger GmbH, Mühleim-Stetten, Fed. Rep. of Germany

Filed Oct. 15, 1986, Ser. No. 919,245
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1985, 3539502
Int. Cl.[4] B25B *23/10*
U.S. Cl. 81—453 10 Claims



1. A screwdriver comprising:
(A) a handle,
(B) a shaft extending from said handle and having a free end with a screw-engaging blade,
(C) means for connecting said shaft to said handle, and
(D) screw clamping means comprising:
(i) clamping jaws of elastic material urged to open position away from said shaft by the elasticity thereof, and
(ii) operating means for said clamping jaws comprising:
(a) a longitudinally movable actuator movable only outward and away from said handle,
(b) means for causing said jaws to be first opened and then retracted towards said handle upon longitudinal retraction movement of said actuator toward said handle, and
(c) means for causing said clamping jaws to advance away from said handle and then to be closed upon longitudinal advancing movement of said actuator away from said handle comprising a projection on said shaft, a sleeve connected to said clamping jaws and having a pair of axially spaced stops engageable by said projection in different axial positions thereof, an external shoulder on said clamping jaw sleeve, and a clamping sleeve connected to said actuator for engaging said clamping jaws and having a stop shoulder thereon engageable with said external shoulder of said clamping jaw sleeve;
whereby, said clamping jaws may be sequentially opened, retracted, advanced and closed by only longitudinal movement of said actuator.

4,763,549
MACHINE TOOLS, PREFERABLY LATHES

Yoshikuni Hata, and Tomio Ushigoe, both of Ueda, Japan, assignors to Kabushiki Kaisha Miyano, Ueda, Japan

Filed Jan. 27, 1987, Ser. No. 7,322
Claims priority, application Japan, Feb. 10, 1986, 61-27098
Int. Cl.[4] B23B *7/04, 19/02*
U.S. Cl. 82—2.5 2 Claims

1. A machine tool for machining successively a number of short-length workpieces, comprising, in combination:
a first spindle stock;
a first spindle rotatably mounted on said first spindle stock;
a first chuck unit mounted on one end of the first spindle,
a second spindle stock;
a second spindle rotatably mounted on said second spindle stock and disposed close to, and in parallel relation to said first spindle, said second spindle being a hollow spindle having one end thereof disposed adjacent to said first chuck unit;
a second chuck unit mounted on the other end of the second spindle, the inside wall surface of the second chuck unit and that of said second spindle providing jointly a smooth and continuous guide surface;
a first tool head provided in the proximity of said first chuck and said one end of the second spindle;
a first turret mounted on the first tool head and supporting first machining tools, a first workpiece holder and pusher means;
first tool slide means for shifting the first tool head in a first direction parallel to said spindles and in a second direction perpendicular thereto, thereby to cause said first machining tools to carry out a primary machining operation on a



workpiece held by said first chuck, to cause said first workpiece holder to hold and transfer the workpiece which has been subjected to the primary machining operation and released by said first chuck to a position adjacent to said one end of the second spindle, and then to cause said pusher means to push the workpiece into the hollow interior of the second spindle to convey the workpiece into said second chuck unit along said continuous guide surface;
a second tool head provided in the proximity of said second chuck unit and the other end of the first spindle;
a second turret mounted on the second tool head and supporting second machining tools and a second workpiece holder; and
second tool slide means for shifting the second tool head in said first and second directions, thereby to cause said second machining tools to carry out a secondary machining operation on the workpiece held by said second chuck unit and then to cause said second workpiece holder to remove from the second chuck unit the workpiece which has been subjected to the secondary machining operation.

4,763,550
SELF EQUALIZING PIERCING MACHINE

Edward J. Waltonen, Southfield, and Robert E. Obrecht, Bloomfield Hills, both of Mich., assignors to Lamb Robo, Bloomfield Hills, Mich.

Continuation in-part of Ser. No. 427,048, Sep. 29, 1982, Pat. No. 4,716,803. This application May 2, 1986, Ser. No. 859,016
Int. Cl.[4] B21D *5/12*
U.S. Cl. 83—191 13 Claims

1. Apparatus for performing work operations on a workpiece in an equalized force mode so as to prevent distortion of the workpiece during the work operations, said apparatus comprising:
(A) a base;
(B) a yoke member mounted for bi-directional movement on said base along a first axis;

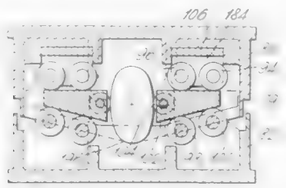
VOL 1093 ISS 3 AG 16 1988 UMI

(C) a ram member mounted for bi-directional movement on said yoke along a second axis parallel to said first axis;
(D) first and second fabricating tools mounted in spaced relation on one of said members;
(E) a third fabricating tool mounted on the other of said members in a position between but spaced from said first and second tools and respectively coactable with said first and second tools to perform respective first and second work operations on the workpiece; and



(F) means operative to move said ram on said yoke and said yoke on said base in complimental converging directions effective to bring said third tool into coaction with said first tool whereby to perform the first work operation on the workpiece, and thereafter operative to move said ram on said yoke and said yoke on said base in complimental converging directions effective to bring said third tool into coaction with said second tool, whereby to perform the second work operation on the workpiece.

4,763,551
PUNCHING DEVICES
Albert Halff, Jüchen, and Manfred Vossen, Niederkrüchten, both of Fed. Rep. of Germany, assignors to Bobst S.A., Switzerland
Division of Ser. No. 609,004, May 10, 1984, abandoned, which is a division of Ser. No. 322,541, Nov. 18, 1981, Pat. No. 4,485,708. This application Nov. 26, 1986, Ser. No. 935,408
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044083
Int. Cl.[4] B26D 7/06; B26F 1/40
U.S. Cl. 83—277 5 Claims



1. A punching device for automatic punching machines for the punching of sheet material, comprising a bottom shoe and a top shoe, wherein one shoe supports punch knives and the other shoe supports a counter punch, said bottom shoe being stationary and said top shoe being movable to and fro normal to the plane of the counter punch, drive means for moving said top shoe comprising a wedge-forming transmission activated by a rotating elliptical cam plate, said drive means located between said top shoe and a yoke which is connected with said bottom shoe through prestressed tie rods, and a gripper bar arrangement for intermittent forwarding of said sheet material between said bottom and top shoes for punching

4,763,552
PUNCH PIN CONFIGURATION
Willard E. Wagner, Arlington Heights, Ill., assignor to Acco World Corporation, Wheeling, Ill.
Filed Apr. 20, 1987, Ser. No. 40,230
Int. Cl.[4] B26F 1/14
U.S. Cl. 83—689 3 Claims



1. An improved punch pin comprising:
a stem, said stem having a longitudinal axis and a generally circular cross section adjacent one end, and
a concavity formed in said one end defining a cutting edge surrounding said concavity, said cutting edge having a contour with two crests as points of initial entry into an article to be punched, and generally following the shape of a portion of the surface of an imaginary torus having a center and an axis of rotation perpendicular to a plane through said stem longitudinal axis, with the center of said torus being co-planar with said plane and spaced from said longitudinal axis, said torus having a diameter greater than a maximum diameter of said one stem end, said cutting edge being defined by the intersection of said imaginary torus surface and said one stem end and having a leading edge and a following edge, said leading edge engaging a workpiece before said following edge in use of said punch pin, with said crests being located on opposite sides of said cutting edge and about half-way between said leading and following edges.

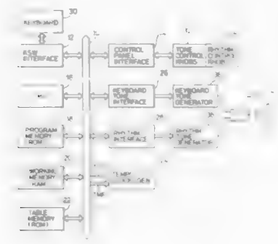
4,763,553
ELECTRONIC MUSICAL INSTRUMENT
Yohei Nagai, and Shimaji Okamoto, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Continuation of Ser. No. 507,948, Jun. 24, 1983, which is a continuation of Ser. No. 303,174, Sep. 17, 1981, abandoned, which is a continuation of Ser. No. 64,917, Aug. 8, 1979, Pat. No. 4,383,462, which is a continuation of Ser. No. 784,941, Apr. 5, 1977, abandoned. This application Oct. 2, 1985, Ser. No. 783,092
Claims priority, application Japan, Apr. 6, 1976, 51-38466
The portion of the term of this patent subsequent to May 17, 2000, has been disclaimed.
Int. Cl.[4] G10H 1/00
U.S. Cl. 84—1.01 7 Claims

1. An electronic musical instrument of a waveshape memory reading type comprising:
keyboard means comprising a plurality of keys for producing key depression signals in response to an operation of each key, each said key designating a musical sound;
means for sensing depression state values for each said key, said depression state values being parameters from the group consisting of key depression speed and key depression pressure;
a plurality of waveshape memories of a random access addressed type, each for storing amplitude sample values for a waveshape at respective addresses of the memory, the waveshapes stored in said memories being different from one memory to others;
an addresser, connected to said waveshapes memories and to said keyboard means, for addressing said waveshape memories at a speed determined in response to said key depression signals to produce a tone signal representing a designated musical sound; and



means for selecting different predetermined ones of said waveshape memories based on a detected value of said depression state value, thereby producing musical sounds which vary in response to said depression state value.

4,763,554
AUTOMATIC RHYTHM PERFORMING APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT
Koichi Kozuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamtsu, Japan
Filed Dec. 23, 1986, Ser. No. 946,384
Claims priority, application Japan, Dec. 30, 1985, 60-298772
Int. Cl.[4] G10H 1/42, 7/00
U.S. Cl. 84—1.03 5 Claims



1. An automatic rhythm performing apparatus for an electronic musical instrument, comprising:
(a) rhythm pattern memory means storing data constituting a plurality of rhythm patterns indicating timings for rhythm instrument tones, said rhythm patterns being provided for plural rhythms, each of said rhythms being composed with plural instrument tones, plural rhythm patterns being provided for each of said plural instrument tones;
(b) instrument family memory means storing data designating families to which respective ones of said instrument tones belong, thus dividing said plural instrument tones into a smaller number of instrument families;
(c) rhythm pattern selecting means, respectively provided for said instrument families, for selecting a desired rhythm pattern from among said plurality of rhythm patterns for each of said instrument tones with respect to each individual instrument family wherein respective rhythm patterns are gang-operatedly selected for respective instrument tones, one pattern for one instrument, with respect to all instrument tones included in one instrument family to which the rhythm pattern selecting means is assigned;
(d) driving data forming means for forming tone generator driving data indicating which one or ones of said instrument tones is or are to be driven at an individual rhythm timing, based on the rhythm pattern data of the rhythm patterns selected by said rhythm pattern selecting means and designated by the data designating any one or ones of said families; and
(e) tone generator means for generating respective rhythm instrument tones by being selectively driven in accordance with said tone generator driving data.

4,763,555
TREMOLO UNIT MECHANISM FOR ELECTRIC GUITAR
Kiyoshi Minakuchi, and Junji Tomita, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan
Filed Apr. 24, 1987, Ser. No. 42,271
Claims priority, application Japan, Apr. 25, 1986, 61-61726[U]; Jul. 9, 1986, 61-104285[U]
Int. Cl.[4] G10D 3/04
U.S. Cl. 84—313 7 Claims



1. A tremolo unit mechanism for an electric guitar, comprising:
a bridge base vertically disposed pivotally about a support point on a body;
balancing springs causing a balance moment along a direction opposite to a moment due to a tension of strings to act on said bridge base;
bridge main bodies, disposed on said bridge base, for holding one end of each of the strings;
octave adjusting screws, threadably engaged with said bridge base, for moving said bridge main bodies along a front-to-rear direction;
a tremolo arm, mounted on said bridge base, for moving said bridge base vertically; and
a stopper mechanism for preventing pivotal movement of said bridge base toward said body,
wherein said stopper mechanism is constituted by a height adjusting screw rotatably disposed with respect to said body and a control member threadably engaged with said height adjusting screw to move up and down and having an abutment portion to abut against a lower surface of said bridge base.

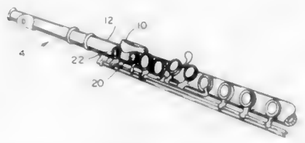
4,763,556
FLUTE INSTRUMENT DIGIT REST AND SPACER
Boleslaw J. Peplowski, Hacienda Underwood #5, Espanola, N. Mex. 87532
Filed Jan. 29, 1987, Ser. No. 8,543
Int. Cl.[4] G10D 9/00
U.S. Cl. 84—384 21 Claims

1. A flute attachment for metal flutes having a round tubular flute body formed with tone holes and finger keys, comprising: resilient elastic clamp or clip means comprising an oepn

VOL 1093 ISS 3 AG 16 1988 UMI

circular arc greater than a half circle, constructed and arranged for cliping onto the round tubular flute body between the upper C tone hole and the upper C finger key for resilient elastic retention to the flute body where the side of the left index finger of a flute player normally rests against the flute body for multiple functions of the left index finger as a pivot point, pressure point and operating finger for the upper C finger key, said clip means being adjustable and moveable along and around the tubular body to accommodate differing individual hand characteristics and requirements;

said resilient clip means comprising a finger rest surface for the side of the left index finger of a flute player and spacer



means spacing the finger rest surface in the radial direction of the tubular flute body away from the flute body thereby effectively and substantially increasing the outer diameter of the tubular flute body at the finger rest surface;

said spacer means comprising a thickness to offset the left index finger of a flute player in the radial direction of the tubular flute body outwardly an away from the flute body a sufficient radial distance for minimizing cramping or fatigue of the left index finger and left wrist of a flute player while permitting the left index finger to perform the multiple functions as a pivot point, pressure point, and operating finger.

4,763,557

ONE-PIECE HOLLOW DRUMSTICK AND METHOD OF MAKING

David G. Donohoe, Rte. 2, Box 276, Springville, Calif. 93265

Filed Jan. 12, 1987, Ser. No. 2,125
Int. Cl.[4] G10D *13/00*
U.S. Cl. 84—422 S 6 Claims



1. A one-piece drumstick consisting of:

(a) relatively long cylindrical handle section of relatively uniform external diameter,

(b) an integrally formed, relatively short shank section which tapers uniformly from the forward end of said handle section to a smaller diameter neck section,

(c) an integrally formed substantially shorter enlarged tip section joined to the forward end of said shank section and,
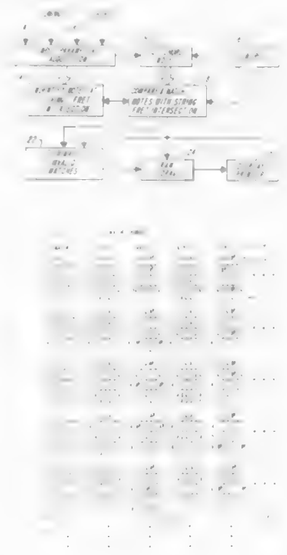
(d) an integrally formed central coaxial tunnel extending the entire length of said drumstick, that portion of said tunnel underlying said handle portion and said shank portion of said drumstick having a substantially uniformly smaller diameter than the overlying exterior surface of said drumstick, thereby resulting in a substantially uniform wall thickness of said handle and shank portions , said tunnel having a diameter which decreases monotonically from the rear portion of said drumstick to the front portion thereof.

4,763,558

METHOD AND APPARATUS FOR GENERATING AND REPRESENTING CHORD NOTE POSITIONS OF A STRINGED INSTRUMENT

Jesse W. Johnson, Jr., Rte. 2, Box 212, Archer, Fla. 32618

Filed Aug. 20, 1986, Ser. No. 898,319
Int. Cl.[4] G10B *15/00*
U.S. Cl. 84—485 R 16 Claims



1. A method for exhaustively determining the chord note positions for selected chord types for a stringed instrument comprising the steps of

designating the number of strings for the instrument,

designating the tuning of the instrument strings,

designating the chord types for which playable chord note positions will be determined,

designating the allowable fret positions for playing the chords on the instrument,

determining, for each chord type and each allowable combination of at least three fret positions, all allowable combinations of chord note positions for playing said each chord type, and

graphically outputting, for each chord type and each allowable combination of at least three fret positions, said allowable combinations of chord note positions.

8. A method for exhaustively determining the chord note positions for selected chord types for a stringed instrument comprising the steps of

inputting the number of strings for the instrument,

inputting the tuning of the instrument strings,

inputting the chord types for which the playable chord note positions will be determined,

inputting the allowable fret positions for playing chords on the instrument,

determining a note corresponding to each combination of a string and allowable fret positions for said instrument,

comparing each note of an input chord type with the notes of said at least three fret positions for each said string,

storing for each chord note which matches the note of a string-fret position intersection a representation of the location of the match,

checking that each note of a chord occurs in at least one match,

removing for each chord note for which there is exactly one match, all other matched string-fret notes on the same string,

removing for each chord note for which there are exactly two matches, both occurring on the same string, all other matched string-fret notes on that same string,

removing, for each chord note pair, each note of said pair occurring exactly twice and one match from each note of the pair occurring on each of two different strings whereby the notes have a mutual interdependency, all other matched string-fret notes on said two different strings,

repeating at least once said checking and all removing steps in editing of the found matches when at least one match is found to be invalid, and

graphically outputting on a single grid, a representation of each said allowable combination of chord note positions.

15. A graphical display means for displaying an exhaustive representation of positions for playing selected chord types on a stringed instrument comprising

a regular array of grid elements, each grid element representing along a first axis the strings of said instrument and along a second axis the fret locations on the instrument, and

said grid elements of said array being arranged in a first axial direction corresponding to each chord type and in a second axial direction corresponding to selected groupings of at least three fret locations.

4,763,559

DEVICE FOR FEEDING AND LOADING A WEAPON WITH AMMUNITIONS IN ANY DIRECTION AND ANY ELEVATION

Jean Bouillon, Coyelaforet, France, assignor to Creusot-Loire Industrie, Paris, France

Continuation-in-part of Ser. No. 752,337, Jun. 21, 1985, abandoned. This application Jun. 15, 1987, Ser. No. 61,622
Claims priority, application France, Oct. 21, 1983, 83 16759
Int. Cl.[4] F41F *9/10*
U.S. Cl. 89—33.04 6 Claims



1. A device for feeding and loading in any elevation and any direction ammunitions in a weapon carried by a turret which is orientable in direction about a vertical axis, said weapon being itself orientable in elevation about an axis perpendicular to the axis of turret, said device comprising:

(a) at least one vertical rotatable magazine which is formed by an endless cylinder comprising tubular receptacles for storing ammunitions;

(b) means connected to the weapon for taking up and transferring the ammunitions between the rotatable magazine and the weapon, said tubular receptacles being disposed laterally of a breech of the weapon and being displaceable about a support frame consisting of an upper half-cone and a lower half-cone connected laterally by two conical portions, apices of said half-cones and of said conical portions all converging toward the same common point, said half-cones and conical portions jointly forming a developable surface in the form of a circular sector so that the axes of the tubular receptacles all converge toward a point located on the vertical axis of said weapon; and

(c) a system controlling the position of the tubular receptacles as a function of the angular position in elevation of the weapon and of the type of ammunitions.

4,763,560

METHOD AND APPARATUS FOR CONTROLLING AND POSITIONING FLUID ACTUATOR

Katsumi Sasaki, Aichi, Japan, assignor to Tokyo Precision Instruments Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 735,823, May 17, 1985, abandoned. This application Jul. 8, 1987, Ser. No. 71,529
Claims priority, application Japan, May 25, 1984, 59-107150; May 25, 1984, 59-107151
Int. Cl.[4] F15B *13/16*
U.S. Cl. 91—364 8 Claims



1. An apparatus for controlling and positioning a fluid actuator including left- and right-hand actuating chambers, said apparatus being characterized by control valve means for selectively supplying pressurized fluid to the left- and right-hand actuating chambers of said actuator and for selectively opening the left- and right-hand actuating chambers to atmosphere, a means for sensing a present position of said actuator and for generating a signal indicative of said present position, a means for setting a target position of said actuator, a control means for receiving said signals indicative of the present position of said actuator and said target position of said actuator and effective to provide an initial high-speed driving force to said actuator by supplying one of said actuating chambers with a source of pressurized fluid while opening the other actuating chamber and to provide a low-speed driving force to said actuator by applying the source of pressurized fluid to said actuator while partially closing the other actuating chamber near the target position, said partial closing of the other actuating chamber being accomplished by intermittently closing said other actuating chamber for variable time periods, the intermittent closing of the other actuating chamber being pulse width modulated and the variable time period (t) is calculated by the formula:

$$\Delta t = \beta_1 - (\beta_2 - |V_n|)$$

wherein β_1 and β_2 are constants and V_n is the velocity of the actuator.

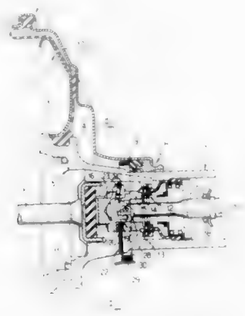
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,561

BRAKE BOOSTER

Jean-Pierre Gautier, Aulnay Sous Bois, France, assignor to Bendix France, Drancy, France

Filed Apr. 7, 1987, Ser. No. 34,701
Claims priority, application France, Apr. 8, 1986, 86 04976
Int. Cl.[4] F15B 9/10
U.S. Cl. 91—369.4 7 Claims



1. A brake booster comprising a housing, a movable wall dividing the housing into two chambers and displaceable axially in the housing under the control of distribution valve means arranged in a valve body integral with the movable wall and actuable by means of an input member, and at least one valve means positioning member supported by the valve body and displaceable relative to the valve body from a rest position, when the booster is in a rest position, in which the positioning member interacts with the valve means to put the valve means in a corresponding rest position relative to the valve body, characterized in that the booster has a retractable elastic member of low elasticity having one end associated with the positioning member and deformable between a relaxed configuration and a retracted configuration, in the rest position of the booster, in which the one end is located in a fixed reference position relative to the housing to determine the rest position of the positioning member, and in the rest position of the booster the elastic member bearing on a stationary surface connected to the housing and the elastic member having a specific contracted thickness, the elastic member comprising a spiral spring with an axis parallel to an axis of movement of the movable wall.

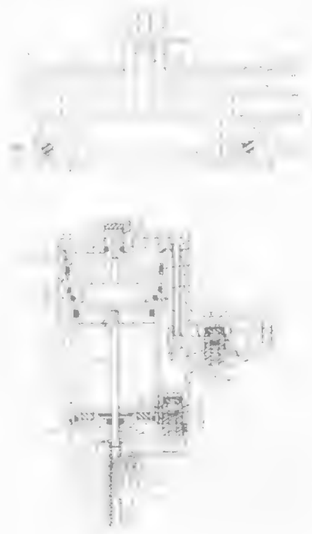
4,763,562

POPPET VALVE WITH IMPROVED SEAL FOR PNEUMATIC FASTENER DRIVING APPARATUS

Harry M. Haytayan, 32 Indian Rock Rd., Nashua, N.H. 03063

Filed Oct. 20, 1986, Ser. No. 920,709
Int. Cl.[4] F15B 13/042; F16K 1/46
U.S. Cl. 91—461 13 Claims

1. A poppet valve member comprising:
a unitary cylindrical block having a cylindrical peripheral surface, first and second ends, and a bore extending from said first end to said second end·
said peripheral surface comprising a plurality of portions of different diameters axially displaced from one another, a first one of said peripheral surface portions being adjacent said second end and having a circumfernetial groove formed entirely therein, and a second one of said peripheral surface portions being positioned adjacent said first peripheral surface portion, said second periperhal surface portion having a greater diameter than said first peripheral surface portion;
said groove comprising in cross-section a flat bottom section, a flat top section that intersects said second peripheral surface portion, and a circularly curved intermediate section extending between and continuous with said flat top and bottom sections;
a resilient O-ring having a circular cross-section, said O-ring being disposed in said groove so that the inner side of said O-ring contacts said circularly curved section;



said second peripheral surface portion having a diameter greater than the outer diameter of said O-ring, and said first peripheral surface portion having an outer diameter that is less than the outer diameter of said O-ring and a radius that is greater than the radial distance between the longitudinal axis of said block and the cross-sectional midpoint of said O-ring.

4,763,563

SWASH PLATE UTILIZED FOR SWASH PLATE TYPE COMPRESSOR

Hayato Ikeda; Masayuki Kurahashi, and Fukuo Gomi, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Nov. 18, 1987, Ser. No. 122,257
Claims priority, application Japan, Nov. 26, 1986, 61-182684[U]
Int. Cl.[4] F01B 3/00; F04B 1/12, 27/03; F16H 23/00
U.S. Cl. 92—71 4 Claims

1. In a swash plate type compressor comprising a drive shaft axially and rotatably secured in the center of a cylinder block, a swash plate inserted and fixed onto the drive shaft, a plurality of pistons made of aluminum material, each being slidably inserted in the respective bore provided through the cylinder block, a plurality of pairs of shoes made of iron, each pair of shoes being arranged in recesses provided in the respective piston so as to nip the swash plate on the front and rear surfaces thereof with a predetermined shoe clearance, wherein the swash plate comprises a boss formed of a light weight material such as aluminum material or synthetic resin and fixedly secured on the drive shaft, and a swash plate assembly extending obliquely from the boss, which assembly comprises a pair of front and rear contact plates made of iron and in contact with

the respective shoe of the pair of shoes, a connecting member made of iron rigidly connecting the pair of contact plates, and



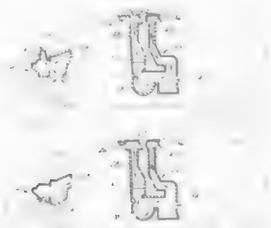
a filler made of the light weight material which completely fills the internal space formed between the contact plates.

4,763,564

MULTIPLE UNIT AUTOMOTIVE CLIMATE CONTROL SYSTEM

John A. Czarnecki, Rockwood, and Darrell D. Youngquest, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 17, 1987, Ser. No. 39,419
Int. Cl.[4] B60H 1/32
U.S. Cl. 98—2.11 14 Claims



1. A climate control system for an automotive vehicle having a passenger compartment with a roof, comprising:
a first air conditioning unit operable in both fresh and recirculating modes;
a second air conditioning unit comprising means for filtering air passing through said unit, with said unit being operable in both fresh and recirculating modes; and
control means for independently operating said air conditioning units in said fresh mode and said recirculating mode.

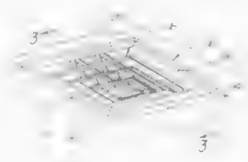
4,763,565

CONVERTIBLE AIR DIFFUSER

Douglas S. Brown, Knoxville, Tenn., assignor to American Metal Products Company, LaFollette, Tenn.

Filed Apr. 17, 1987, Ser. No. 39,517
Int. Cl.[4] F24F 13/062
U.S. Cl. 98—40.13 10 Claims

1. In an air diffuser for distributing air flow from a ventilation duct and including a rectangular frame adapted to be mounted to the outlet of the ventilation duct, the improvement comprising:
a rectangular fin core detachably mounted within said frame, said fin core including at least one mounting bracket detachably engaging opposite sides of the frame and a plurality of coaxially disposed fin elements secured to said at least one mounting bracket wherein said fin elements may be secured to a substantially planar mounting bracket and a stepped mounting bracket to selectively convert the diffuser between a flush-faced diffuser and a



drop-down diffuser, respectively, said planar mounting bracket and said stepped mounting bracket being interchangeable within the frame.

4,763,566

MANUALLY OPERATED COFFEE-MAKING MACHINE

Luciano Paoletti, Florence, Italy, assignor to SPIDEM S.r.l., Milan, Italy

Filed Jan. 22, 1987, Ser. No. 5,938
Claims priority, application Italy, Jan. 22, 1986, 19142 A/86
Int. Cl.[4] A47J 31/36
U.S. Cl. 99—302 P 8 Claims



1. A manually operated coffee-making machine comprising:
a water storage reservoir;
a hand-operated pump element extending from a position exterior of said reservoir into said reservoir, said pump element being actuatable from the exterior of said reservoir;
an infusion chamber assembly connected to a delivery side of said pump element by a conduit, said infusion chamber assembly housing a coffee powder, said infusion chamber assembly being housed at least partway in said reservoir;
a control tap for permitting communication between said infusion chamber and the exterior of said reservoir; and
a pressurized hydraulic accumulator blanching off the conduit connecting the delivery side of said pump element to said infusion chamber.

4,763,567

STOVETOP CORN POPPER

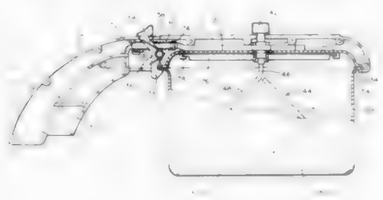
H. David Dalquist, III; Douglas C. Jacobsen, both of Minnetonka; Jorgen A. Jorgensen, Bloomington; Douglas J. Kluge, Golden Valley, and John N. Taylor, St. Louis Park, all of Minn., assignors to Northland Aluminum Products, Inc., Minneapolis, Minn.

Filed Jan. 11, 1988, Ser. No. 142,714
Int. Cl.[4] A23L 1/18
U.S. Cl. 99—323.5 14 Claims

1. An apparatus for preparing food, including:
a vessel for containing food items, said vessel having a bottom and a generally cylindrical side wall extended gener-

VOL 1093 ISS 3 AG 16 1988 UMI

ally upwardly from the periphery of the bottom and open at the top thereof;
a cover and means for removably and integrally fastening the cover to the vessel to close the vessel;
a stirring member mounted rotatably with respect to said cover and positioned in said vessel for rotation about a substantially vertical axis when the cover is fastened to the vessel;
a handle integral with said cover and including a first section extended from the cover and configured to facilitate a gripping of said handle by hand closure about the first section;



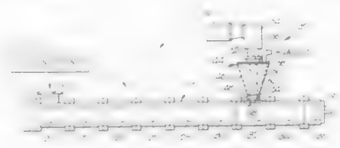
a trigger member mounted along said first section to reciprocate with respect to said handle between forward and rearward trigger positions, and a biasing means between said handle and said trigger member for urging said trigger member forwardly, said trigger member movable rearwardly against the force of said biasing means responsive to said hand closure; and
a ratcheted drive means for drivably engaging said trigger member and said stirring member to rotate said stirring member responsive to rearward movement of the trigger member, and for disengaging the trigger from the stirring member when the trigger returns to the forward trigger position under the force of the biasing means.

4,763,568
POPCORN POPPER
Casimir R. Kiczek, 27109 Kingswood Dr., Dearborn, Mich. 48127
Filed Sep. 30, 1985, Ser. No. 782,035
Int. Cl.[4] A23L *1/18*
U.S. Cl. 99—323.5 **3 Claims**



1. A popcorn popper utilizing oil and kernels of unpopped corn to form popcorn, said popcorn popper comprising:
a popping vessel having a top end, a bottom end opposite said top end and portions defining a passageway between said top end and said bottom end, said top end being larger than said bottom end, said top end of said passageway further being open, said bottom end of said passageway being closed;
a pair of heating elements mounted adjacent to said popping vessel, one of said pair of heating elements adjacent to said bottom end of said popping vessel, the other of said pair of heating elements adjacent to said passageway in said popping vessel;
means, connected to said pair of heating elements, for sequentially operating the first of said pair of heating elements for a predetermined period of time before the second of said pair of heating elements so as to heat the oil and the kernels of unpopped corn to the popping temperature; and
a deflector member mounted a predetermined distance above said top of said popping vessel.

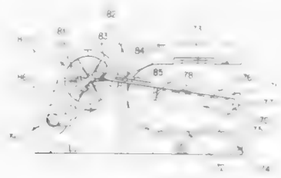
4,763,569
LOW TEMPERATURE EXTRUSION PROCESS FOR QUICK COOKING PASTA PRODUCTS
Marc L. Wenger, and Gordon R. Huber, both of Sabetha, Kans., assignors to Wenger Manufacturing, Inc., Sabetha, Kans.
Division of Ser. No. 930,155, Nov. 12, 1986. This application Oct. 22, 1987, Ser. No. 111,196
Int. Cl.[4] A23L *1/16*
U.S. Cl. 99—348 **5 Claims**



1. In an extruder for processing a material such as flour or the like mixed with water to form an extruded product, said extruder having an elongated barrel with a material inlet and a restricted orifice extrusion outlet adjacent opposed ends thereof, an elongated, axially rotatable, flighted extrusion screw within said barrel for moving said material from said inlet towards and through said outlet, and a vent opening through the barrel and separate from said inlet and outlet openings and located therebetween, the improvement which comprises:
structure for increasing the temperature of said material to the maximum temperature it will reach in said barrel prior to reaching said vent opening, in order to increase the vapor pressure of the water within said material;
a venting assembly operably coupled with said vent opening for removing moisture from said material and lowering the temperature thereof, said assembly including
an enclosed housing secured to said barrel with the interior of the housing in communication with said vent opening;
means for creating reduced pressure conditions within said housing interior for assisting in the removal of moisture from said material; and
shiftable means for preventing significant accumulation of material within said housing interior.

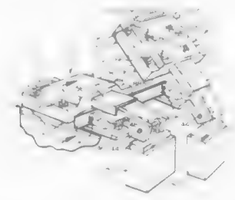
4,763,570
PASTA PREPARATION APPARATUS
Guido Bellanca, 220 E. 54th St., New York, N.Y. 10022
Continuation-in-part of Ser. No. 763,247, Aug. 7, 1985, Pat. No. 4,656,934. This application Jul. 7, 1986, Ser. No. 882,518
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.[4] A47J *37/12;* **B01F** *15/06*
U.S. Cl. 99—348 **11 Claims**

1. A device for simultaneously agitating and applying heat to foods; comprising a frame, elongated beam means mounted on said frame, a container suspended from said beam means comprising a receptacle and a removable cover, said container being adapted to hold food; variable speed rotary drive means, said beam means being connected to said rotary drive means by bracket means; support means positioned on said frame between said container and said rotary drive means, said beam means being moveably mounted on said support means for



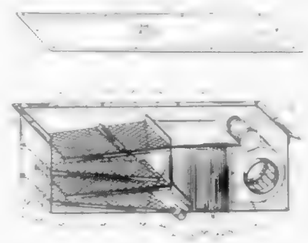
pivotal and reciprocal movement and means disposed above and below said container for controllably applying heat to said container.

4,763,571
APPARATUS FOR TWO-SIDED COOKING
Craig L. Bergling, Chicago; Henry T. Ewald, Schaumburg; Douglas J. Horton, Lombard; James L. Hoverman, Glen Ellyn, and Berthold L. Weller, Deerfield, all of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.
Filed Oct. 2, 1985, Ser. No. 782,963
Int. Cl.[4] A47J *37/06*
U.S. Cl. 99—349 **54 Claims**



1. An apparatus for effecting two-sided cooking of food products, comprising:
a housing;
a lower cooking platen mounted on said housing and defining a substantially horizontal lower cooking surface;
a support arm mounted on said housing for movement between raised inactive and lowered active positions;
an upper cooking platen carried by said support arm for movement therewith between said upper and lower positions, said upper platen defining a generally downwardly facing and substantially flat upper cooking surface;
means mounting said upper platen on said support arm for limited relative vertical movement with respect thereto when said support arm is in said lowered, active position, said mounting means being configured to permit said upper cooking surface to be positioned in substantially parallel relation to said lower cooking surface as said upper platen moves relative to said support arm for effecting two-sided cooking of food products positioned between said cooking surfaces;
means operatively connected to said support arm for moving said support arm from said lowered position to said raised position;
retaining means operatively associated with said support arm for releasably retaining said support arm and said upper platen in said lowered position against the action of said moving means;
control means for selectively operating said retaining means for automatically effecting release of said retaining means whereby said upper platen and said support arm are moved from said lowered position to said upper position by the action of said moving means; and
means for maintaining a predetermined minimum spacing between said upper cooking platen and said lower cooking platen when said support arm and said upper platen are in said lowered position, including spacing mechanisms which engage said lower platen to maintain said minimum spacing.

4,763,572
APPARATUS FOR REMOVING MOISTURE FROM HONEY
Lawrence J. Kuehl, Loup City, Nebr. 68853
Filed Apr. 13, 1987, Ser. No. 37,933
Int. Cl.[4] A23C *1/00*
U.S. Cl. 99—476 **8 Claims**



1. An apparatus for reducing the moisture content of liquid honey, comprising:
an enclosed housing means having inlet and outlet port means;
means for supplying liquid honey to said inlet port means;
inclined tray means mounted within said housing for carrying a flow of honey from its upper end to its lower end;
expanded screen means extending across the upper surface of said tray means to cause lateral spreading and an undulating surface in honey flowing thereacross;
said inlet port means being in operative fluid communication with the upper end of said tray means;
said inlet port means being in opeative fluid communication with the upper end of said tray means;
said outlet port means being in operative fluid communication with the lower end of said tray means;
means for contacting drying air to honey flowing through said housing means and across said tray means from the inlet port means to the outlet port means;
means for recirculating said air within said housing; and
means for drying said air after contacting said honey.

4,763,573

Patent Not Issued For This Number

4,763,574
RECOMPRESSED HAY BALE SHEAR
Gene Ast, 231 Midway, San Jacinto, Calif. 92383
Filed Sep. 21, 1987, Ser. No. 98,938
Int. Cl.[4] B65B *13/20;* **B30B** *15/08*
U.S. Cl. 100—98 R **1 Claim**

1. In an apparatus for recompressing bales of fibrous material having a recompression chamber having at least three of a combination of top, bottom and two side walls, and a fixed end wall and one unenclosed wall, a recompression ram having a platen slidably positioned within said chamber, entry means for introduing a bale of fibrous material into said chamber, a decompression chamber attached to and open to the unenclosed wall of the recompression chamber adapted in size to receive the recompressed bales under compression from the recompression chamber, transfer means for transferring recompressed bales under compression, from the recompression

VOL 1093 ISS 3 AG 16 1988 UMI

chamber to the decompression chamber, wherein the improvement comprises a bale shear disposed within the discharge end



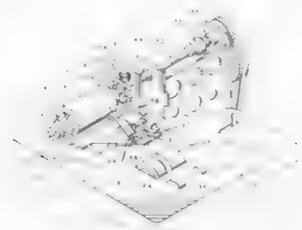
of said decompression chamber for shearing said recompressed bales, under compression, into two halves.

4,763,575

ENVELOPE PRESSURE PLATE FOR MAILING MACHINE

Joseph F. Miciukiewicz, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 6, 1987, Ser. No. 35,553
Int. Cl.[4] B91F *13/20*
U.S. Cl. 101—91 7 Claims



1. A mailing machine for conveying envelopes seriatim along a feed path toward a postage meter operatively connected to said mailing machine, comprising:

a housing frame;

a deck secured to said frame for supporting said envelopes, said deck having a longitudinal slot therein;

a lower, driven, feed roller rotatably mounted on said frame;

an electro-mechanical tripper mounted on said frame for actuating said postage meter, said tripper projecting upwardly through the deck slot adjacent and downstream of said lower feed roller;

a first shaft rotatably mounted on said frame perpendicular to said feed path;

a second, pivotable shaft flexibly coupled at one end to an end of the first shaft;

an upper feed roller rotatably mounted at the end portion of the second shaft remote from the first shaft;

means for biasing said upper feed roller against said lower feed roller;

a pair of slotted, translatable bushings, each of said bushings having an elongated slot extending substantially perpendicular to the deck, said slots slidingly engaging said second shaft;

a pressure plate having a pair of extensions on the upstream side secured to said translatable bushings and an aperture for receiving said electro-mechanical tripper, whereby said pressure plate may translate vertically and pivot laterally and longitudinally independently of the movement of said upper feed roller to thereby assure consistent actuation of said tripper for each envelope being conveyed to said postage meter regardless of the thickness or weight of the envelope.

4,763,576

DETONATING ENERGY TRANSMITTAL DEVICE

Robert E. Kass, Mt. Prospect; Robert J. Frederick, Barrington, and Louis L. Hallock, Lake Zurich, all of Ill., assignors to Angus Chemical Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 709,749, Mar. 8, 1985, abandoned. This application Apr. 21, 1986, Ser. No. 861,489
Int. Cl.[4] F42B *3/00;* C06B *25/36;* B32B *3/26*
U.S. Cl. 102—321 21 Claims





1. A DET device which comprises, in combination, a plurality of layers of superposed foam material, frangible articles adhesively carried on at least one surface of said foam material layers and forming thereon a substantially continuous layer, and a substantially centrally oriented cavity capable of snugly accommodating a blasting cap, the dimensions and number of said foam and frangible article layers being coordinated such that said DET device, when combined with a blasting cap of lower power than that of a No. 6 cap, is capable of detonating liquid nitromethane.

4,763,577

CARTRIDGE AMMUNITION WITH AT LEAST A PARTIALLY COMBUSTIBLE PROPELLANT CHARGE CARTRIDGE CASING

Rudolf Romer, Kaarst; Juergen Winkelmann, Meerbusch, and Horst Sabinski, Kaarst, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 242,911, Mar. 11, 1981, abandoned, which is a continuation-in-part of Ser. No. 54,152, Jun. 25, 1979, Pat. No. 4,444,115. This application Mar. 25, 1986, Ser. No. 843,709
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009342
The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
Int. Cl.[4] F42B *5/16*
U.S. Cl. 102—431 4 Claims

1. Improved cartridge ammunition comprising a projectile having a tail section with flight stabilizing means and a propellant charge shell casing made of a combustible material, said casing having a neck and a rear portion for receiving said tail section, a metallic stump forming a bottom for said casing; said projectile is connected to the shell casing at said neck by means of first connection means and by means of second connection means between the tail section of the projectile and the metallic stump of the shell casing, said second connection means including a support element, the improvement comprising, a support region for said second connection means disposed inside said metallic stump of said shell casing and being axially spaced from the bottom of the said shell casing and from the bottom of the metallic stump, said support element coaxially extending between said tail section and the support region of said metallic stump of said shell casing and connecting said tail section to said metallic stump at said support region, said support element being made of a combustible material and providing a form-locking axially extending connection between said projectile and said metallic stump which inhibits a

loosening of said projectile on loading, unloading, and reloading said ammunition unit, and assuring that a predetermined



axial tensional force occurs in said support element between said tail section and said metallic stump due to gas pressure build-up at firing of the ammunition.

4,763,578

METHOD FOR CONTROLLING A MAGNETIC SUSPENSION VEHICLE

Günter Steinmetz, Haren, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 26, 1986, Ser. No. 833,720
Claims priority, application Japan, Mar. 2, 1985, 60-3507442
Int. Cl.[4] B60L *13/06*
U.S. Cl. 104—284 4 Claims

1. A method for controlling a magnetic suspension vehicle which is guided by a plurality of levitation and guidance magnet means along a track, individual magnet control means being provided for each magnet means responsive to a plurality of control signals, the method comprising the step of stochastically falsifying at least one of the control signals or at least a portion of one of the control signals for each of the individual magnet control means independently of the control signals for others of the individual magnet control means during suspension of the magnetic suspension vehicle at standstill or at low travel velocities.

4,763,579

MODULAR SHELVING SYSTEM

Albert A. Cibulak, 4165 Fieldgate Drive, Unit 98, Mississauga, Ontario L4W 2M9, Canada

Filed Jan. 29, 1987, Ser. No. 7,996
Claims priority, application Canada, Jun. 19, 1986, 511922
Int. Cl.[4] A47B *47/00*
U.S. Cl. 108—48 7 Claims

1. A shelving system suitable for use in the corner of a locker wherein the locker has a generally rectangular configuration with a back wall, a pair of parallel side walls and a front wall having means for gaining access to the locker, the system comprising a vertical columnar member extending upwardly from a base of the storage compartment along a wall thereof, at least a pair of storage shelves, each of said storage shelves being engaged by and vertically supported by said vertical columnar member, a pair of horizontally extending members associated with a least one of said storage shelves, a first one of said pair of horizontally extending members extending along a side wall with a first end thereof being in abutting relationship with the front wall and a portion adjacent the opposed end being in a locking relationship with a vertical member or shelf,



a second one of said pair of horizontally extending members extending along the back wall with a first end thereof abutting a side wall and a portion at the second end being in a locking relationship with a vertical member or shelf, each of said horizontally extending members being in a state of compression to thereby provide a horizontal stability to the vertical member and shelf supported thereby.

4,763,580

SUPPORTING

Thomas A. Garland, 76 Reservoir Cir., Jamestown, R.I. 02835

Filed Dec. 29, 1986, Ser. No. 947,049
Int. Cl.[4] A47C *13/00;* A47B *7/00*
U.S. Cl. 108—91 24 Claims



1. A support structure comprising,

a normally horizontal top panel having a pair of opposed long edges extending along its length and a pair of opposed narrow edges extending along its width,

end panels secured to respective ones of said narrow edges and separated by said top panel long edges normally forming a small angle with the vertical,

said end panels being formed with leg portions extending outside the horizontal projection of said top panel so that the separation between one of said leg portions and the other of said leg portions is greater than the top panel length and the distance spanned by each leg portion is greater than the top panel width.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,581

MULTI-STATION CARREL UNIT

Benjamin H. Weese, Chicago, Ill., assignor to Midland Manufacturing Corp., Skokie, Ill.

Filed Dec. 15, 1986, Ser. No. 941,638
Int. Cl.[4] A47B *57/00*
U.S. Cl. 108—92 7 Claims



1. A self-supporting multiple-station carrel unit comprising a plurality of substantially coextensive spaced side walls and having upper and lower edges with said lower edges defining a generally coplanar lower support surface, each side wall having substantially vertical front and rear edges and a top edge interconnecting said front and rear edges, generally horizontal deck means spaced from said upper and lower edges positioned between an adjacent pair of side walls and defining a lower work station and an upper work station, said deck means including a substantially continuous panel extending between said front and rear edges and defining a floor for said upper station and a ceiling for said lower station, a first working surface in said lower work station between and secured to said adjacent pair of side walls and extending generally parallel and below said deck means with a rear edge thereof generally aligned with said rear edges of said adjacent pair of side walls and a front edge spaced from said front edges of said side walls and a seating area between said working surface and said front edges of said side walls, said seating area being totally within the confines of said side walls with first seat means in said seating area, and a second working surface spaced above said deck means and below said upper edge, said second working surface extending between and secured to said adjacent pair of side walls and having a front edge generally aligned with said front edges of said side walls and a rear edge spaced from said rear edges of said side walls, a second seating area on said deck means and located above said first working surface with second seat means above said deck means in said second seating area, and ladder means extending from said lower edges to said deck means.

4,763,582

MULTIPURPOSE FURNITURE ASSEMBLY

Joseph C. Rigsby, 10995 SW. 173rd Ter., Miami, Fla. 33157

Filed Jan. 8, 1987, Ser. No. 1,391
Int. Cl.[4] A47B *11/00*
U.S. Cl. 108—103 8 Claims

1. A multipurpose furniture assembly designed to provide a plurality of selectively positionable horizontal surfaces capable of a plurality of varied, functional uses, said assembly comprising:

(a) a base and a plurality of elongated stanchions, each stanchion fixedly secured at one end thereof to said base and extending outwardly thereform in spaced relation to one another,

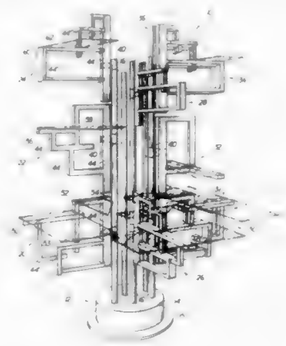
(b) at least a majority of said plurality of stanchions each including a support platform rotatably secured about a longitudinal axis of said respective stanchion and extendably transverely outward therefrom,

(c) each of said support platforms comprising at least one support arm fixedly secured to said respective support platform and movable relative to said respective stanchion with a remainder of said respective support platform,

(d) a panel member fixedly mounted on and extending transversely outward in a substantially horizontal orientation from said one support arm of each support platform and movable therewith relative to said respective stanchion,

(e) brace means mounted on each of said support platforms for support and interconnection of said one support arm and the remainder of a respective one of each support platforms,

(f) said support platforms comprising at least a first and a second support platform each mounted on separate sub-



stantially adjacently positioned ones of said majority of stanchions, said first and said second support platforms disposed at substantially a common height and each including a panel member mounted thereon and being disposed in coplanar relation to one another, and

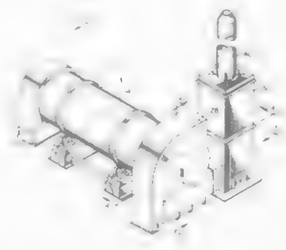
(g) said first and second support platform rotatably about its respective stanchion into and out of an aligned, cooperative position, said aligned cooperative position further defined by end-to-end engaged and coplanar disposition of said respective ones of said panel members mounted on said first and second support platforms so as to define an expanded support surface.

4,763,583

SELF-SUSTAINING WET WASTE INCINERATOR

Zygmunt J. Przewalski, Granby, Conn., assignor to M & S Engineering & Manufacturing Co., Inc., Broad Brook, Conn.

Filed Jan. 9, 1987, Ser. No. 1,666
Int. Cl.[4] A47J *36/00, 36/24*
U.S. Cl. 110—246 3 Claims



1. Apparatus for combusting wet waste or the like comprising:

ignition means including a substantially horizontally disposed ignition chamber having an inlet passageway extending therefrom for introducing said waste, an ignition burner for heating said waste to form non-combustible solids and at least partially combustible flue gases, a first outlet for said flue gases in the wall of said inlet passageway, and a second outlet for said solids;

combustion means for substantially combusting said flue gases including a combustion passageway from said ignition chamber first outlet to a combustion chamber, said combustion passageway being disposed adjacent to and wrapped around a portion of said ignition chamber inlet; and

combustion burner in said combustion passageway adjacent to said first outlet for aspriating and heating said flue gases;

heat recuperating means for transferring heat from the substantially combusted flue gases to preheat an oxygen-containing gas; and

passageway means for transferring the preheated oxygen-containing gas from said recuperator to said ignition burner and said combustion burner.

4,763,585

METHOD FOR THE COMBUSTION OF SPENT POTLININGS FROM THE MANUFACTURE OF ALUMINUM

William S. Rickman, Leucadia; James L. Kaae, Solana Beach, both of Calif., and Bernard W. Gamson, Potomac, Md., assignors to Ogden Environmental Services, San Diego, Calif.

Filed Sep. 8, 1987, Ser. No. 93,919
Int. Cl.[4] F23G *5/00*
U.S. Cl. 110—346 31 Claims

1. A process for the combustion of potlinings used in aluminum production, the process comprising:

grinding the potlinings to a particle size of not greater than about 2 inches in any dimension;

mixing with the ground potlinings from about 1 to about 20 weight percent, based upon the weight of the potlinings, of a powdered additive having a median particle size of not greater than 10 micrometers, and

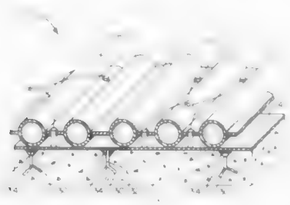
burning the ground potlinings in a combustor at a temperature in the range of from 1400° F. to about 2200° F., the additive coating the ground potlinings and preventing their agglomeration in the combustion zone therein.

4,763,584

MEANS OF ATTACHING REFRACTORY TO A FURNACE WALL

Marten L. Zieren, Stittsville, Canada, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 2, 1987, Ser. No. 20,812
Int. Cl.[4] F23M *9/00*
U.S. Cl. 110—323 3 Claims



1. In a furnace having a wall which includes a metal structural member and a cast refractory body separating said metal structural member from heated gasses, the improvement comprising:

(a) elongated metal anchors secured to said structural member at spaced locations and projecting from said structural member in the direction of said heated gasses, said elongated metal anchors each having a shank portion; and

(b) means for shielding said location from said cast refractory material thereby providing voids in said cast refractory material at said spaced locations where said elongated metal anchors are secured to said metal structural member, said means for shielding being connected to said elongated metal anchors, said means for shielding being a conical chamber washer mounted on said elongated metal anchor by being welded to said shank portion thereof.

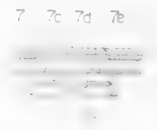
4,763,586

DEVICE FOR DETECTING KINDS OF EMBROIDERING FRAMES

Hideaki Takenoya, and Yoshiaki Ozaki, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Mar. 30, 1987, Ser. No. 33,033
Claims priority, application Japan, Apr. 4, 1986, 61-49833[U]
Int. Cl.[4] D05C *9/04*; D05B *21/00*
U.S. Cl. 112—103 2 Claims





1. A device for detecting types of embroidering frames in combination with a sewing machine having a bed for supporting a fabric to be sewn, stitching instrumentalities including a vertically reciprocable needle and a needle thread loop taker cooperating with the needle to form stitches on the fabric, a base positioned adjacent to the machine bed and fixed thereto, a holder for holding the fabric to be sewn on the machine bed, a movable member to which the fabric holder is detachably-attached, the base containing therein a drive mechanism for

VOL 1093 ISS 3 AG 16 1988 UMI

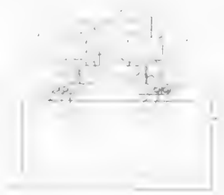
driving the movable member on the base in the direction of X coordinate and in the direction of Y coordinate transversely of the X coordinate direction, control means for controlling the movement of the drive mechanism to set the movable member to a predetermined position, said detecting device comprising sensor means provided on said fixed base, and response means provided on said fabric holder, said response means being brought to said sensor means and cooperating with said sensor means to indicate the type of the fabric holder when said control means sets said movable member to a predetermined position which is defined by an initial point of said X and Y coordinate directions, where sewing is started.

4,763,587

WORK HOLDER FOR SEWING MACHINES

Ricky J. Frye, 1516 Rosina Dr., Miamisburg, Ohio 45342

Filed Jun. 30, 1987, Ser. No. 68,256
Int. Cl.[4] D05B *3/00, 21/00*
U.S. Cl. 112—121.12 10 Claims



1. In a sewing machine comprising a sewing surface on which workpieces are to be placed, one after another, a needle reciprocatingly movable in a fixed path to form stitches in each workpiece, a work holder comprising clamp frame support means and a clamp frame supported by the support means to be moved toward and away from the sewing surface to hold and release each workpiece, and positioning means connected to the work holder to move it about on the sewing surface relative to the path of the needle according to the stitch pattern, the invention comprising:

(a) first and second interconnectable attachment means attached separately to spaced-apart regions of the support means;

(b) joining bracket means rigidly attached to the first and second attachment means;

(c) at least a third interconnectable attachment means attached to the clamp frame to interconnect securely but releasably with the first and second interconnectable attachment means to attach the clamp frame firmly but releasably to the support means, whereby the clamp frame and the support means move as a rigidly joined unit while they are so attached.

4. In a sewing machine comprising a sewing surface on which workpieces are to be placed, one after another, a needle reciprocatingly movable in a fixed path to form stitches in each workpiece, a work holder comprising clamp frame support means and a clamp frame supported by the support means to be moved toward and away from the sewing surface and having edges defining an open area within which a stitch pattern is to be formed, and positioning means connected to the work holder to move it about on the sewing surface according to the stitch pattern, the invention comprising:

(a) first interconnectable means on the support means, and

(b) second interconnectable means on the clamp frame to interconnect securely but releasably with the first interconnectable means to attach the clamp frame firmly but releasably to the support means, whereby the clamp frame and the support means move as a rigidly joined unit while they are so attached.

8. In a sewing machine comprising a sewing surface on which workpieces are to be placed, one after another, and a needle reciprocatingly movable in a fixed path to form a preprogrammed stitch pattern in each workpiece, means to hold each workpiece and to move it about on the sewing surface relative to the path of the needle to form the stitch pattern, said means comprising:

(a) a first interconnectable structure comprising a clamp frame that has edges defining an open area within which the stitch pattern is to be formed;

(b) a second interconnectable structure comprising clamp foot means to support the clamp frame;

(c) interlocking detent means on the interconnectable structures to attach the clamp frame firmly to the clamp foot means, whereby the clamp frame and the clamp foot means move as a unit while they are so attached;

(d) an arm to support the clamp foot means for movement toward and away from the sewing surface;

(e) means to move the clamp foot means and the clamp frame toward the sewing surface to press the clamp frame firmly upon a workpiece to hold it during formation of the stitch pattern therein, and to move the clamp foot means and the clamp frame away from the sewing surface to release the workpiece after the stitch pattern has been formed therein; and

(f) means to move the arm and, thereby, the clamp foot means and the clamp frame about on the sewing surface according to the preprogrammed stitch pattern

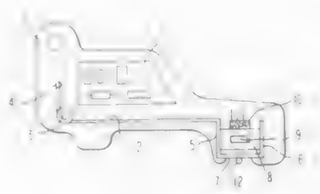
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4,763,588

APPARATUS FOR THREAD MONITORING IN A SEWING MACHINE

Sten A. Rydborn, Klöxhultsvägen 21, S-343 00 Elmhult, Sweden

PCT No. PCT/SE85/00491, § 371 Date Jul. 17, 1986, § 102(e) Date Jul. 17, 1986, PCT Pub. No. WO86/03233, PCT Pub. Date Jun. 5, 1986
PCT Filed Nov. 27, 1985, Ser. No. 891,185
Claims priority, application Sweden, Nov. 28, 1985, 8406005
Int. Cl.[4] D05B *69/36*
U.S. Cl. 112—273 3 Claims



1. An apparatus for detecting the condition of a thread in a sewing machine comprising:

a signal emitter responsive to a magnetic field for generating an electrical signal indicative of the strength of the magnetic field;

a magnet;

a spring arm having a first end supporting said magnet and a second end;

anchoring means adapted to anchor said signal emitter and said spring arm second end on a sewing machine to position said spring arm first end and said magnet in a predetermined position with respect to said signal emitter, said spring arm normally biasing said first end and said magnet away from said signal emitter, with said spring arm adapted to be normally restrained by a tensioned thread of the sewing machine to retain said first end and said magnet in the predetermined position, whereby when said spring arm is restrained by the thread in the predetermined position, said signal emitter emits a first signal indicative of a normal thread condition and when said spring arm moves from the predetermined position said signal emitter emits a signal indicative of an abnormal thread condition; and

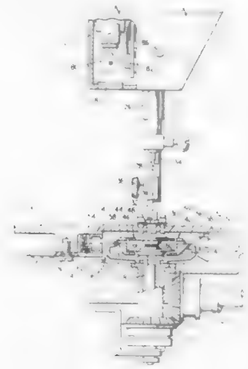
a signal evaluation circuit connected to said signal emitter for indicating the signal from said signal emitter.

4,763,589

SOLAR POWERED INDICATING DEVICE FOR SEWING MACHINES

Manfred R. Laidig, Whippany, and Stephen A. Garron, Elizabeth, both of N.J., assignors to SSMC Inc., Stamford, Conn.

Filed Oct. 13, 1987, Ser. No. 107,190
Int. Cl.[4] D05B *79/00, 45/00*
U.S. Cl. 112—278 1 Claim



1. In a sewing machine having stitch forming instrumentalities, a lighting device on said sewing machine, and means on said sewing machine for detecting and indicating a condition incident to the operation of said stitch forming instrumentalities, said detecting and indicating means including electronic elements requiring low voltage D. C. power supply, and a solar cell positioned on said sewing machine for response to illumination from said lighting device for generating the power supply required by said electronic elements of said detecting and indicating means, in which switch means are provided between said solar cell generated power supply and said detecting and indicating means, and in which means driven by said sewing machine are provided for alternately opening and closing said switch means to provide for intermittent operation of said detecting and indicating means.

4,763,590

RESIDUAL THREAD CHAIN BACK TACKING DEVICE FOR OVERLOCK STITCH MACHINES

Toshihiko Kojima, Hyogo, and Toshiaki Kajio, Minoo, both of Japan, assignors to Yamato Mishin Seizo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 1, 1987, Ser. No. 32,589
Claims priority, application Japan, Sep. 22, 1986, 61-224099
Int. Cl.[4] D05B *65/06*
U.S. Cl. 112—287 1 Claim

1. In an overlock stitch machine having a thread chain presser, a residual thread chain back tacking device for allowing stitching of a residual thread chain in the proper position of a succeeding sewn cloth material, comprising:

a thread chain cutting device;

a Venturi tube connected to said thread chain cutting device for exerting suction thereon;

an air blow back valve connected to said Venturi tube downstream thereof for intercepting the air flow path from said Venturi tube and to blow back air to said thread chain cutting device;

an air blow back solenoid connected to said air blow back valve for opening and closing it;

a counter device for regulating the length of thread chain to be stitched in;

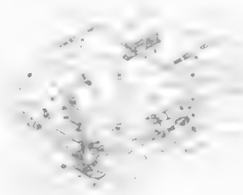
a guide part and a press paw for guiding a thread chain to the sewing position and stabilizing it;

cutter means adjacent said guide part and press paw;

a rear air nozzle for blowing a thread chain from said thread chain cutting device only in the back tacking direction and horizontally;

a front air nozzle for blowing on a thread chain from above so that the thread chain does not swing back and forth and is guided to the proper position to be stitched in and blowing the thread chain against said cutting means to determine the length of thread chain to be stitched in;

a thread chain suction pipe mounted for movement of the suction end of said thread chain suction pipe toward and away from the stitching position and having suction means connected thereto for exerting suction on said thread chain suction pipe, and means for moving said thread chain suction pipe in said movement;



a thread chain press cylinder having a thread chain presser operatively associated with said thread chain suction pipe; and

control means connected to said thread chain suction pipe moving means and said thread chain press cylinder for moving said thread chain suction pipe toward said stitching position upon finishing of stitching for picking up the thread chain from said thread chain cutting device and moving said thread chain suction pipe away from said stitching position when the thread chain has been picked up in said thread chain suction pipe and for operating said thread chain press cylinder for pressing the thread chain in said thread chain suction pipe and releasing it in timed sequence to the operation of said device for enabling said further Venturi tube to suck away the cut off end of the thread chain.

4,763,591

ADJUSTABLE HARNESS LINE FOR SAILBOARDING

David Taylor, 3169 Seabury St., Carlsbad, Calif. 92008

Filed Dec. 21, 1987, Ser. No. 136,194
Int. Cl.[4] B63B *35/00*
U.S. Cl. 114—39.2 5 Claims

1. An adjustable harness line for sailboarding comprising:

a predetermined length of plastic tubing having a first end and a second end;

a first predetermined length of cord that is formed into a closed loop with its ends being firmly attached to said first end of said plastic tubing;

a second predetermined length of cord that is formed into a closed loop with its ends being firmly attached to said second end of said plastic tubing;

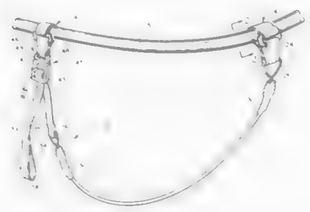
a first strap assembly formed of a predetermined length of strap and having two closed loops formed adjacent its one end, said first length of cord threaded through one of said

VOL 1093 ISS 3 AG 16 1988 UMI

closed loops and a plastic loop buckle being captured in said second closed loop;

a buckle assembly having a male portion and female portion, a slot is formed adjacent the end of said male portion;

a second strap assembly formed of a predetermined length of strap and having two closed loops formed adjacent its one end, a plastic loop buckle being captured in one of said closed loops, the second closed loop passing through the slot in the male portion of said buckle assembly;



a pull down power strap having a predetermined length, a hand loop is formed in one end of said pull down power strap and the other end of said power strap has a closed loop through which said second predetermined length of cord is threaded; and

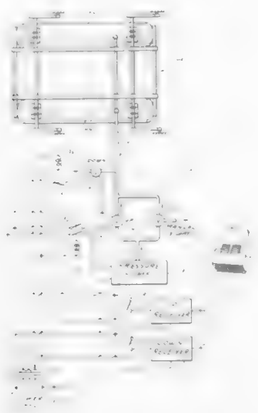
said female portion of said buckle assembly having a pair of slots oriented parallel to each other through which said pull down power strap is threaded for lengthening or shortening said adjustable harness line.

4,763,592

RADIO CONTROLLED BOAT LIFT

Larry Russ, 8686 D Kingsbridge, University City, Mo. 63132

Filed Mar. 19, 1987, Ser. No. 27,689
Int. Cl.[4] B63C *1/02*
U.S. Cl. 114—45 11 Claims



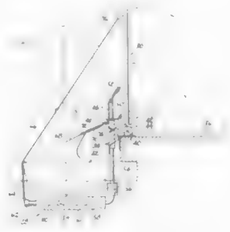
1. In a boat lift for selectively raising and lowering a boat out of and into the water, the boat lift comprising at least one inflatable pontoon, a framework attached to and supported by said pontoon, valve means to control flow of air into and out of said pontoon for inflating and deflating same, and means to generate a supply of pressurized air for inflating said pontoon, the improvement comprising means to remotely actuate said valve means and pressurized air generation means to selectively inflate or deflate the pontoon from on board the boat, and thereby selectively, remotely, raise or lower the boat lift.

4,763,593

SMALL BOAT DRY DOCK

George A. Lasko, 59 Antigua Ct., Coronado, Calif. 92118

Filed Oct. 31, 1986, Ser. No. 925,791
Int. Cl.[4] B63C *9/22*
U.S. Cl. 114—44 7 Claims



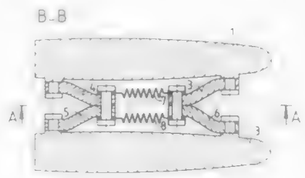
1. A device for lifting, storing and launching small boats into and out of the water alongside a conventional dock or pier comprising: A base member suitable for being secured to a conventional dry dock; tiltable inverted U-shaped lever means carrying an adjustable L-shaped davit means on each leg of said lever means for supporting a boat pivotally mounted on said base member, and an integrated carrier member operatively connected to the lever means and the davit means whereby force on the lever means will cuse a boat supported by the davit means to be lifted from the water and be retained on its side in a vertical position out of the water above and at the edge of the dock.

4,763,594

MULTIHULL SHIP WITH SPRINGS

Gustav A. Zickermann, Cancelos de Penaferim, 2710 Sintra, Portugal

Continuation-in-part of Ser. No. 749,935, Jun. 27, 1985, abandoned. This application Apr. 1, 1987, Ser. No. 33,227
Claims priority, application Portugal, Jun. 28, 1984, 78809
Int. Cl.[4] B63B *1/14, 1/28*
U.S. Cl. 114—61 2 Claims



1. A multihull ship comprising, in combination:

(a) a plurality of elongated hulls;

(b) pivoting arm assemblies respectively between said hulls;

(c) at least one spring between said assemblies, each assembly comprising at least two pivoting arms, one end of one said pivoting arm being connected to one of said hulls and one end of the other said pivoting arm being connected to another of said hulls in such a way that said pivoting arms can rotate vertically, the axes of said rotation of said pivoting arms being basically horizontal and at right angles to the lengths of said hulls, the opposite ends of said pivoting arms being interconnected by a pivoting joint having an axis of rotation generally parallel to, but not coincident with the axes of said rotation of said pivoting arms, said pivoting arms being held in equilibrium about said pivoting joint by said spring, whereby the pivoting arms are able to move up and down easily and the sum of the pivoting movements enable relative movements of the hulls in heave and pitch, said spring holding said pivoting arms, when in equilibrium, in a substantially horizontal position.

4,763,595

LINE FASTENING UNIT

Lorn O. Shaffner, 12383 Arrowhead Ct., Eastport, Mich. 49627

Continuation-in-part of Ser. No. 749,659, Jun. 28, 1985, Pat. No. 4,683,831. This application May 6, 1987, Ser. No. 46,566
Int. Cl.[4] F16B *39/02*
U.S. Cl. 114—218 4 Claims



1. A line fastening unit comprising:

a mounting base;

a neck portion connected to said base and rising therefrom with a gradually up-flaring taper; and

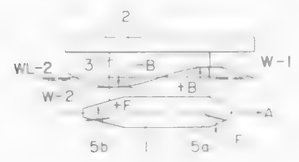
a knob-like cap structure surmounting said neck portion and forming at the intersection of cap and neck an overhang and angled groove, said cap and neck portions forming plural upstanding pedestals from said base and each of said pedestals separated from the next adjacent of said pedestals by at least one wedge-shaped downward tapering channel opening passing through the principal axis of said cap and neck and extending to said base.

4,763,596

SEMISUBMERGED WATER SURFACE NAVIGATION SHIP

Toshio Yoshida, 1-2-23, Rikyumae-Machi, Suma-Ku, Kobe-Shi, Hyogo-Ken, Japan

Filed Oct. 9, 1986, Ser. No. 917,369
Claims priority, application Japan, Oct. 9, 1985, 60-223812; May 28, 1986, 61-120986
Int. Cl.[4] B63B *1/12*
U.S. Cl. 114—256 17 Claims



1. A semisubmerged water surface ocean navigation ship comprising:

at least two parallel lower hulls which are submerged below the water surface in the cruising state of the ship, each of said lower hulls having controllable horizontal planes provided fore and aft thereof, respectively, to control lifting and diving thereof, said lower hulls also having rudder means for steering said lower hulls, water ballast tank means therein and means for propelling the ship;

water breaker means fixed to the lower hulls and extending upward therefrom;

an upper hull fixedly supported on the upper ends of said water breaker means, said upper hull having means for navigation;

said water ballast tank means causing the water surface to be always between said lower hulls and said upper hull and at a level of an intermediate part of the height of said water breaker means in the cruising state; and

said water breaker means having a sufficiently small water plane area and therefore a small reserve buoyancy such that the ship does not have a self-stabilizing ability both longitudinally and transversely thereof and the size of said horizontal planes being such that changes in buoyancy acting on the water breaker means are less than the absolute value of the force of lifting or diving of said horizontal planes, said horizontal planes causing the ship to assume an even draft in the semisubmerged water surface state when the lower hulls are fully submerged and said water breaker means are partly submerged.

4,763,597

FOLDING ANCHOR

John S. Stupakis, Arcadia, Calif., assignor to JSS Scientific Corporation, Arcadia, Calif.

Filed Apr. 20, 1987, Ser. No. 40,023
Int. Cl.[4] B63B *21/44*
U.S. Cl. 114—297 23 Claims



1. An anchor comprising:

shank means;

first and second fluke assemblies;

retainer means pivotally coupled to said shank means for relative pivoting about a first axis, said retainer means being coupled to each of said fluke assemblies for relative pivoting of said luke assemblies about generally parallel second and third axes extending in directions generally perpendicular to said first axis; and

means in engagement with said retaining means for enabling pivoting and securing of said first and second fluke assemblies into one of a first folded position with said fluke assemblies in proximate facing relation and a second unfolded position with said fluke assemblies in general alignment, said means in engagement with said retaining means including wall means for defining passage means for slidably receiving said retaining means therein

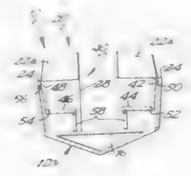
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,598

MULTI-PURPOSE DECK PANELS

William P. Spencer, 14031 81st Ave. N., Maple Grove, Minn. 55369

Filed Oct. 1, 1986, Ser. No. 914,153
Int. Cl.[4] B63B *17/00*
U.S. Cl. 114—361 2 Claims



1. In combination with an open bow boat,

a convertible structure for attachment to the boat and being shiftable between a deck forming position and a seat forming position, said convertible structure including two pairs of generally rectangular-shaped substantially flat panels having longitudinal edges, the panels comprising each pair being hingedly connected along adjacent longitudinal edges,

said convertible structure, when in the deck forming position, having one panel of each pair being secured to the gunwale of the boat adjacent the bow area, the other respective panels of said pairs being secured together, whereby said panels are arranged in extended horizontal relation to define a deck,

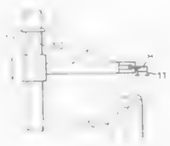
said convertible structure, when in the seat forming position, having each panel of one pair being connected to the gunwale adjacent the bow area and extending substantially vertically downwardly therefrom, the other panel of each pair extending in right angular horizontal relation with respect to the associated one panel so that the panels of each pair define a seat, and latch means engaging the horizontal panel of each pair for supporting the latter in the seat forming position and similar latch means for supporting each panel in the deck forming position.

4,763,599

SOLDERING APPARATUS

Michael Tombs, and Alexander J. Ciniglio, both of Essex, Great Britain, assignors to Pillarhouse International Limited, Great Britain

Filed Feb. 25, 1987, Ser. No. 18,518
Claims priority, application United Kingdom, Feb. 25, 1986, 8604559; Aug. 22, 1986, 8620442
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—57 10 Claims



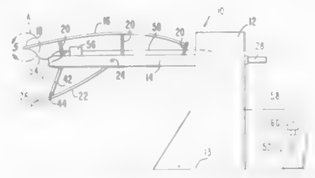
1. A soldering apparatus for soldering one or more tags or leads of a component by immersion thereof into moulten solder, the apparatus having a component holder mountable above a solder bath, means for moving the holder towards and away from the bath to immerse the tags or leads into the moulten solder in use, including a device to rapidly decelerate the component holder when the component holder has moved away from the bath and so cause spreading of the solder tears formed during removal of the tags or leads from the moulten solder.

4,763,600

APPARATUS FOR PERMANENTLY SETTING CREASES IN PANTS

Eugene M. Saunders, 4 Lake Forest Ct., Greensboro, N.C. 27408; Nicholas S. Hood, 4205 Belvoir Dr., Greensboro, N.C. 27406; John R. Sanko, 1205 S. 8th St., Altoona, Pa. 16602, and Virgil J. Johnson, 504 Blend St., Bay City, Mich. 48706

Filed Aug. 5, 1986, Ser. No. 893,233
Int. Cl.[4] B05C *11/10, 3/18, 3/20*
U.S. Cl. 118—684 7 Claims



1. An apparatus for permanently setting pre-formed creases of a pair of pants, comprising:

a. a stanchion member;

b. a pair of spaced-apart substantially parallel support members each having one end fixed to said stanchion member and a free end extending substantially horizontally from said stanchion member;

c. a pair of substantially horizontal first crease blades each aligned with and positioned above an individual one of said support members and fixed to said individual support member, each of said first crease blades having a free end extending away from said stanchion member, and said free end of each of said first crease blades including an upper applicator nozzle directed substantially upward;

d. a pair of second crease blades each aligned with an individual one of said support members, each of said second crease blades having one end pivotally connected to said individual support member and a free end extending away from said stanchion member, and said free end of each of said second crease blades including a lower applicator nozzle directed substantially downward;

e. means for pivoting said free ends of said second crease blades away from said free ends of said first crease blades; and

f. means for supplying a flowable, curable setting material to said upper and lower applicator nozzles.

4,763,601

CONTINUOUS COMPOSITE COATING APPARATUS FOR COATING STRIP

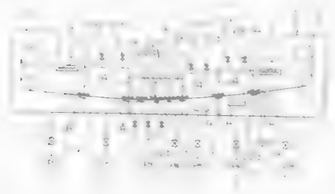
Seishiro Saida; Isao Ito, both of Hikari; Satoshi Ito, Kawasaki, and Naotake Okubo, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 2, 1987, Ser. No. 92,219
Int. Cl.[4] C23C *14/56, 16/54*
U.S. Cl. 118—718 14 Claims

1. A continuous composite coating apparatus having a pair of strip supply/take-up devices and at least two of an ion plating coating zone, a sputtering coating zone and a plasma CVD coating zone arranged in series in the direction of run of a strip between said strip supply/take-up devices,

wherein said at least two of said coating zones are so arranged as to effect coating only on the underside of said strip passing through these zones; and

a partition wall is disposed between adjacent coating zones and between each of said strip supply/take-up devices and an adjacent coating zone, the partition walls being provided with slits adapted to allow said strip to pass therethrough and to maintain a desired vacuum level in each zone, each slit having upper and lower edges which are spaced apart from the adjacent surfaces of said strip so as not to interfere with said strip, each partition wall further having a pair of guide rollers provided in the vicinity of



said upper edge of said slit, the guide rollers of each pair being spaced from each other in the direction of run of said strip;

the arrangement being such that said strip is made to run in a tensed state from one of said strip supply/take-up devices to the other through said coating zones along a path which is slightly convex downwards and said guide rollers contact only the upper side of said strip.

4,763,602

THIN FILM DEPOSITION APPARATUS INCLUDING A VACUUM TRANSPORT MECHANISM

Arun Madan, Golden, and Bolko Von Roedern, Wheat Ridge, both of Colo., assignors to Glasstech Solar, Inc., Perrysburg, Ohio

Filed Feb. 25, 1987, Ser. No. 18,617
Int. Cl.[4] C23C *14/00, 16/00*
U.S. Cl. 118—719 18 Claims



18. An apparatus for depositing thin films on a substrate, comprising:

a first deposition module capable of maintaining an ultra high vacuum for a glow discharge deposition of P-type amorphous silicon material by the decomposition of at least one gas contained therein on the surface of the substrate;

a second deposition module capable of maintaining an ultra high vacuum for a glow discharge deposition of intrinsic amorphous silicon material from the decomposition of at least one gas contained therein on the surface of a substrate;

a third deposition module capable of maintaining an ultra high vacuum for a glow discharge deposition of N-type amorphous silicon material from the decomposition of at least one gas on the surface of the substrate;

a central load lock module capable of maintaining an ultra high vacuum, said load lock connected to said first, second and third deposition modules;

a first gate valve connected to and located between said first deposition module and the central load lock module to minimize cross-contamination;

a second gate valve connected to and located between the second deposition module and the central load lock to minimize cross-contamination;

a third gate valve connected to and located between the third deposition module and the central load lock module to minimize cross-contamination;

a first bellows-sealed, manually operated transportation mechanism for moving the substrate between the central load lock and the first deposition module, said first transportion mechanism being adapted to operate within ultra high vacuum conditions and extending outwardly from the first deposition module on the side of the deposition module opposite the central load lock whereby the transportation shaft located therein reaches through the first deposition module into the central load lock to pull the substrate back into the deposition module;

a second bellows-sealed, manually operated transportation mechanism for moving the substrate between the central load lock and the second deposition module, said second transportation mechanism being adapted to operate within ultra high vacuum conditions and extending outwardly from the second deposition module on the side of the deposition module opposite the central load lock whereby the transportation shaft located therein reaches through the second deposition module into the central load lock to pull the substrate back into the deposition module; and

a third bellows-sealed, manually operated transportation mechanism for moving the substrate between the central load lock and the third deposition module, said third transportation mechanism being adapted to operate within ultra high vacuum conditions and extending outwardly from the third deposition module on the side of the deposition module opposite the central load lock whereby the transportation shaft located therein reaches through the third deposition module into the central load lock to pull the substrate back into the deposition module.

4,763,603

DISPOSABLE CONTAINER FOR CAT LITTER AND THE LIKE

Cecil Coes, 6830 Elwynn Dr., Cincinnati, Ohio 45236

Filed Jan. 29, 1987, Ser. No. 8,483
Int. Cl.[4] A01K *45/00*
U.S. Cl. 119—1 20 Claims



1. A disposable container for cat litter and the like, said container comprising:

(a) a bottom wall;

(b) a pair of oppositely disposed inside end walls and a pair of oppositely disposed inside side walls, said inside end

VOL 1093 ISS 3 AG 16 1988 UMI

and side walls forming an upstanding, substantially continuous inner enclosure wall about the periphery of said bottom wall;

(c) a pair of oppositely disposed outside end walls and a pair of oppositely disposed outside side walls, said outside end and side walls corresponding to said inside end and side walls, and forming an upstanding substantially continuous outer enclosure wall about the outer periphery of said inner enclosure wall, said inner and outer enclosure walls forming a substantially open-top, box-like structure with said bottom wall;

(d) a bag-like moisture proof structure having an open upper edge, a closed lower end, and flexible side walls, said closed lower end covering said bottom wall within said substantially open top box-like structure, and said flexible side walls and open upper edge being substantially enclosed between said inner and outer enclosure walls about the periphery of said closed lower end covering said bottom wall; and

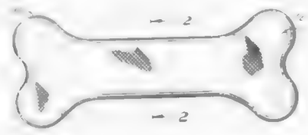
(e) access means for opening said outer enclosure wall, whereby said open upper edge and upper portions of said flexible side walls of said bag-like structure may be withdrawn about the periphery of said open top to provide a moisture proof enclosure of said container and its contents.

4,763,604

HERB-STUFFED PET ACCESSORY FOR NATURALLY REPELLING FLEAS AND TICKS

Victoria Meekins, 222 East 51st Street, New York, N.Y. 10022

Filed Feb. 2, 1987, Ser. No. 9,767
Int. Cl.[4] A01K *45/00*
U.S. Cl. 119—1 3 Claims



1. A flea-repellant pet pillow, comprising:

(a) a soft, porous fabric cover including a pair of juxtaposed, generally bone-shaped, fabric sheets having circumferentially-complete peripheral edges stitched together to bound an interior space, said cover having an elongated central portion of generally constant cross-section, and opposite end portions of enlarged cross-section compared to that of the central portion, each end portion having a pair of projections diverging away from each other in an outward direction away from the central portion;

(b) a stuffing in particulate form filling the interior space of the cover and outwardly plumping the juxtaposed sheets to form a three-dimentional, soft, sculptured, stuffed cover generally resembling a bone, said stuffing including a particulate inert filler, particulate pennyroyal and particulate rue together including an aromatic mixture whose scent is emitted through the porous cover to naturally repel fleas from the vicinity of the pillow;

(c) a soft, porous fabric,outer jacket bounding an interior and having an elongated intermediate region of generally constant cross-section larger than that of the central portion of the cover, and opposite end regions of enlarged cross-section larger than those of the end portions of the cover, said jacket having an aperture through which the stuffed cover is inserted to stuff the interior of the jacket and to outwardly plump the jacket to form a three-dimensional, soft, sculpured, stuffed jacket generally resembling a bone against which a pet can nestle, said jacket having pores through which the scent of the aromatic mixture passes to repel fleas from the vicinity of the pillow; and

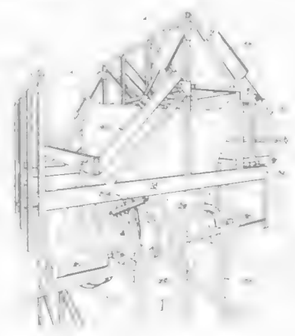
(d) means for opening the aperture to permit removal of the stuffed cover from the outer jacket to permit replacement of the sutffed cover as well as cleaning of the jacket.

4,763,605

MILKING SYSTEM

William H. Braum, Box 1100, Tuttle, Okla. 73089

Filed Dec. 3, 1986, Ser. No. 937,661
Int. Cl.[4] A01J *5/00*
U.S. Cl. 119—14.03 12 Claims



1. A cow milking system, comprising:

an upper floor having an elongated opening therein;

door means hinged to the upper floor for opening and closing the elongated opening;

a framework on the upper floor forming a plurality of side by side milking stalls traversing the elongated opening for holding a plurality of cows with their front feet on one side of the elongated opening and their back feet on the other side of the elongated opening;

spray means carried by the framework for spraying the udder and teats of a cow positioned in each stall;

milking means including teat cups at each stall location;

a lower floor beneath the elongated opening;

an operator's cart movably supported on the lower floor for movement along the elongated opening successively beneath the stalls; and

means for opening and closing the door means, whereby after a cow is in a stall and after the udder and teats have been sprayed, an operator on the cart can install the teat cups for a milking operation, the door means may be closed and the cow removed from the stall.

4,763,606

MODULAR ANIMAL CAGE

Vladimir J. Ondrasik, II, 17044 Westbury Dr., Granada Hills, Calif. 91344

Filed Nov. 24, 1986, Ser. No. 934,355
Int. Cl.[4] A01K *31/00*
U.S. Cl. 119—17 14 Claims



1. An animal cage, comprising:

an outer frame defining the peripheral edges of a box like enclosure having opposite open side, end and upper and lower faces;

a series of wall panels for mounting in the open faces of the frame to form the opposite side, end, and upper and lower walls of the cage;

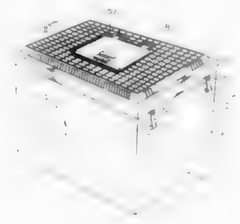
hinge latch means for releasably securing each panel adjacent two opposite edges to the surrounding frame at a respective cage face; each latch means comprising means for hingeably securing the respective edge of the panel to the frame and for allowing the panel to pivot about the hinge latch means when the opposite edge latch means is released, the frame surrounding each wall opening having aligned latch openings for slidably receiving respective panel latch means.

4,763,607

DEVICE FOR PREVENTING THE PET ANIMAL KEPT IN THE CAGE FROM ESCAPING THEREFROM

Kazutoshi Tominaga, Higashi Osaka, Japan, assignor to Kabushiki Kaisha Tominaga Jyushikogyosho, Higashi Osakashi, Japan

Filed Jul. 3, 1986, Ser. No. 881,844
Int. Cl.[4] A01K *1/02*
U.S. Cl. 119—17 1 Claim



1. A pet animal cage for household use, the case comprising:

a body forming a lower part of the cage and having an open top;

a removable lid covering the open top of the body of the cage;

at least two hook means oppositely disposed on said lid; and

means for securing the lid to the body comprising in association with each respective hook means a suction cup and a connecting arm integrally connected therewith formed of an elastic material from the group consisting of rubber and deformable plastic, the suction cup being adapted for attachment to the body and the connecting arm being connected to the suction cup at one end and provided with a hole at the other end so that the hook means on said lid is engageable in said hole,

whereby the suction cup can be so positioned on said body that the elasticity of said connecting arm when the hole thereof is engaged with said hook means tightly secures said lid to cover the open top of said body.

4,763,608

PIG HOLDER

David Chang, No. 120, Ta She Rd., Chia Cheng Tsun, Ta She Hsiang, Kaohsiung Hsien, Taiwan

Filed Mar. 27, 1987, Ser. No. 30,512
Int. Cl.[4] A61D *3/00*
U.S. Cl. 119—98 7 Claims

1. A pig holder which comprises an upper, middle and lower sections,

the upper section having a U-shaped support for holding a pig, the U-shaped support having its legs extending in a forward direction, only two support rods each extending downwardly from a forwardmost portion of each leg of the U-shaped support,

the middle section having a cross bar, a column located at a central portion of the cross bar and extending downwardly, and two side bars respectively located at ends of the cross bar and extending in an upward direction, each side bar having a track for receiving the support rods of the upper section, the support rods have screw holes and



the side bars having corresponding screw holes, the screw holes and corresponding screw holes cooperating with screw means to fasten the support rods within the side bars at different heights along the side bars,

the lower section having a base frame for firmly placing the pig holder on a flat surface, a stand located at a central portion of the base frame and extending upward, the stand having a hole at an uppermost portion thereof for rotatably receiving the column of the middle section.

4,763,609

ANIMAL LEASH

Bruce Kulik, 104 Fuhrman Ave., Ramsey, N.J. 07446

Filed Nov. 20, 1986, Ser. No. 932,525
Int. Cl.[4] A01K *1/00*
U.S. Cl. 119—109 4 Claims



1. An animal leash comprising:

a middle section;

a first end section; and

a second end section;

said first end section and said second end section being composed of a flexible material;

said middle section having a first end loop portion with first and second rings connected thereto and having a second end loop portion with third and fourth rings connected thereto;

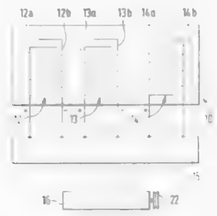
said first end section having a third end loop portion looped through a manually operated connector and having a fourth loop portion looped through the first ring, and

said second end section having a fifth end loop portion looped through a manually operated connector and having a sixth end loop portion looped through the third ring,

whereby either connector can be connected to the second ring or connected to the fourth ring.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,610
GAS GENERATOR
Iorwerth Thomas, 37 Medway Road, Brownhills, West Midlands, WS8 7JY, United Kingdom
PCT No. PCT/GB85/00604, § 371 Date Aug. 29, 1986, § 102(e) Date Aug. 29, 1986, PCT Pub. No. WO86/04117, PCT Pub. Date Jul. 17, 1986
PCT Filed Dec. 30, 1985, Ser. No. 917,088
Claims priority, application United Kingdom, Jan. 3, 1985, [illegible]
Int. Cl.[4] F02B *43/08*
U.S. Cl. 123—3 16 Claims



1. An engine assembly comprising an engine, a fuel container for the engine, an electrolysis unit, an electrical supply for the electrolysis unit, and a mixing chamber in which gas generated by the electrolysis unit can be mixed with fuel from the fuel container prior to combustion in the engine, the electrolysis unit having an electrolytic chamber, and first and second sets of electrodes in said electrolytic chamber, each set comprising a cathode and an anode, and means connecting said sets separately to said electrical supply.

4,763,611
ELECTRONICALLY CONTROLLED FUEL INJECTION PUMP
Tadashi Kobayashi, and Shinya Nozaki, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Oct. 28, 1986, Ser. No. 928,298
Claims priority, application Japan, Nov. 22, 1985, 60-180268[U]
Int. Cl.[4] F01P *1/06*
U.S. Cl. 123—41.31 2 Claims



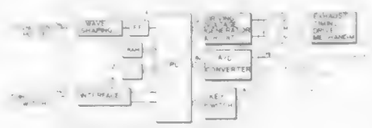
1. In an electronically controlled fuel injection pump having a pump body, a control unit mounted on the pump body and including a circuit board having electronic components, and an internal cooling passage through which fuel oil flows for cooling the electronic components, the improvement comprising:
at least one heat transfer plate interposed between the circuit board and the cooling passage for transferring heat generated by the electronic components to the fuel oil flowing through the cooling passage, the circuit board mounted to one side surface of the heat transfer plate and part of the cooling passage defined by the other side surface of the heat transfer plate opposite said one side surface, and the heat transfer plate having a plurality of parallel elongate ribs extending on said other side surface thereof, said ribs disposed in a staggered relation for establishing a zig-zag path over which the fuel oil flows in said part of the cooling passage.

4,763,612
INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE
Takeshi Iwanami, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 6, 1987, Ser. No. 22,397
Claims priority, application Japan, Mar. 10, 1986, 61-50444
Int. Cl.[4] F02B *75/18*
U.S. Cl. 123—52 MV 14 Claims



1. An induction system for an internal combustion engine comprising at least one variable volume chamber having at least one intake port for delivering a charge thereto, a plenum chamber, at least one intake passage extending from said plenum chamber to said intake port, a first inlet passage extending into said plenum chamber, a second inlet passage extending into said plenum chamber, said first and said second inlet passages merging into a common atmospheric air inlet, a first throttle valve in said common atmospheric air inlet for controlling the flow through both of said first and said second inlet passages, and a second throttle valve positioned in said first inlet passage for controlling the flow therethrough.

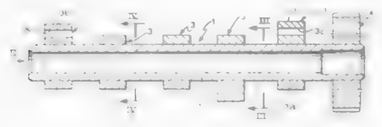
4,763,613
EXHAUST TIMING CONTROL SYSTEM FOR A TWO CYCLE ENGINE
Yoshitaka Arahata, and Masayuki Toriyama, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 29, 1987, Ser. No. 8,712
Claims priority, application Japan, May 14, 1986, 61-111636
Int. Cl.[4] F02B *75/02*
U.S. Cl. 123—65 PE 6 Claims



1. An exhaust timing controller for controlling an exhaust timing member in a two cycle engine, comprising

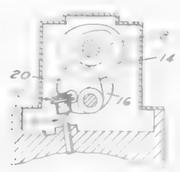
a control circuit having means for generating a working control signal as a function of engine condition, means for generating a self-cleaning cycle having a fully open control signal and a fully closed control signal sequentially and independently of engine condition, and means for initiating said self-cleaning cycle when the engine is running at or greater than a selected engine speed; and
means for driving the exhaust timing member operatively connected to said control circuit.

4,763,614
COMPOSITE CAMSHAFT FOR INTERNAL COMBUSTION ENGINES AND A METHOD FOR ITS MANUFACTURE
Antonio Burgio di Aragona, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Turin, Italy
Filed Feb. 10, 1987, Ser. No. 13,098
Claims priority, application Italy, Feb. 14, 1986, 67108 A/86
Int. Cl.[4] F01L *1/04*
U.S. Cl. 123—90.6 1 Claim



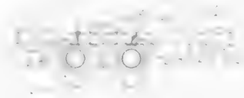
1. Composite camshaft for internal combustion engines, comprising a support shaft, a series of sintered cam members each secured to said shaft by an interference fit and having an annular part for coupling to the shaft from which projects a lobe part defining the cam profile, wherein a through-hole is formed in the lobe part of each cam member and is disposed at a distance from the support shaft corresponding substantially to the outer radius of the annular coupling part of the cam member, said through-hole having a profile geometrically similar to that of the lobe part and having a radially inner curved edge with a radius of curvature corresponding substantially to the outer radius of the annular coupling part whereby the cam member is provided with a substantially uniform radial thickness around said support shaft.

4,763,615
DESMODROMIC VALVE SYSTEM
Derek Frost, Leigh-On-Sea, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 4, 1986, Ser. No. 937,754
Claims priority, application United Kingdom, Dec. 7, 1985, 8530218
Int. Cl.[4] F01L *1/30*
U.S. Cl. 123—90.25 2 Claims



1. A desmodromic system for the stem of a reciprocable valve arranged to be opened and closed by a pair of opening and closing cams each engaging a rocker arm for alternately actuating the valve stem, including a compliance device between the rocker arms and the valve stem, the compliance device comprising two members, means connecting the members for a limited axial movement of at least one of the members relative to the other, resilient means providing a clearance at times between the members by urging the members apart from one another, the opening and closing cams being shaped such that during the valve opening event the valve stem is captured between the members without clearance therebetween by the opening cam and rocker arm fully compressing the compliance device to provide positive unitary movement of the two members, the rocker arms being shaped to provide said clearance to accommodate valve recession and thermal expansion when the valve is closed by expansion of the resilient means.

4,763,616
VALVE LEVER WITH BALL BEARING PIVOT
James J. Grinsteiner, Roselle, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.
Filed Jun. 23, 1987, Ser. No. 65,814
Int. Cl.[4] F01L *1/18*
U.S. Cl. 123—90.42 9 Claims



1. A valve operating mechanism for an internal combustion engine comprising, a rocker arm adapted for operation by a push rod and operating a valve, fulcrum means on said rocker arm including a ball bearing disposed in fixed position thereon, support post means carrying the ball bearing in fixed position and having a lateral surface closely adjacent to the side of said rocker arm to form a bearing interface therewith and causing said rocker arm to pivot in a plane lying within said rocker arm, said rocker arm defining a narrow width and a substantial depth to provide stiffness for transmission of an operating force from said push rod to said valve.

4,763,617
SEALED-TYPE HYDRAULIC LASH ADJUSTER
Shoichi Honda, Tokyo; Masayasu Sakata, and Yoichi Ishida, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1986, Ser. No. 942,337
Claims priority, application Japan, Dec. 17, 1985, 60-283642
Int. Cl.[4] F01L *1/24*
U.S. Cl. 123—90.58 6 Claims



1. A sealed-type hydraulic lash adjuster for use in an apparatus wherein the lash adjuster comes into contact with a lubricating oil, comprising:
a reservoir chamber containing a hydraulic working oil and generally sealed by an elastomeric diaphragm in direct

VOL 1093 ISS 3 AG 16 1988 UMI

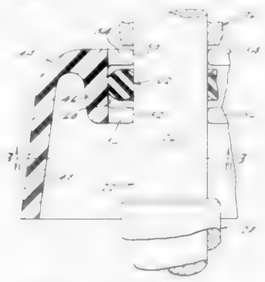
contact with the lubricating oil, wherein said hydraulic working oil has a molecular weight distribution which is substantially equal to that of said lubricating oil.

4,763,618

VALVE STEM OIL DEFLECTOR

Bernard G. Stritzke, Hanover Park, Ill., assignor to Microdot Inc., Darien, Conn.

Filed Apr. 3, 1987, Ser. No. 33,786
Int. Cl.[4] F01L *3/24*
U.S. Cl. 123—188 P 1 Claim



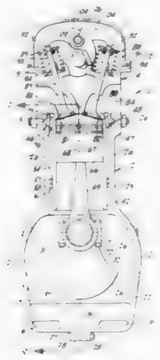
1. An oil deflector for attachment to a valve stem of an internal combustion engine or the like comprising a molded plastic cup having a generally cylindrical wall section and an enlarged transversely extending end wall defining a neck portion, having an opening for receiving a valve stem, a radially inwardly opening annular groove on an inner face of said opening in said neck portion, an O-ring in said groove, a plurality of circumferentially spaced teeth on opposite sides of said groove each of which is engageable with a valve stem extending through the neck portion of said deflector to preclude tipping of said deflector relative to the valve stem.

4,763,619

MULTICYLINDER INTERNAL COMBUSTION ENGINE UTILIZING SPLIT BLOCK WITH UNITIZED CYLINDER HEAD AND LINER

Jay M. Eitel, 130 Selby La., Atherton, Calif. 94025

Filed Apr. 2, 1987, Ser. No. 34,220
Int. Cl.[4] F02F *1/00*
U.S. Cl. 123—193 CH 9 Claims



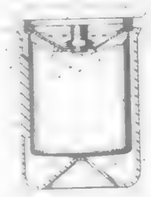
1. In an internal combustion engine of the type having at least one cylinder and a crankshaft, an assembly comprised of first and second mating half sections joined in a common plane which passes through and along the axis of the crankshaft, each of said half sections providing crankcase, crankshaft bearing support, and cylinder water jacket portions, a unitized cylinder head and sleeve construction having a combustion chamber with a top surface therein and cooperative securing and sealing means for securing the unitized cylinder head and sleeve construction to the assembly in a location immediately adjacent the top surface of the combustion chamber, said cooperative securing and sealing means encircling each cylinder head and including tie bolts extending through the cylinder water jacket portions.

4,763,620

FLUID RETENTION CUP

Ronald M. Zastocki, Old Bridge, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed Dec. 2, 1987, Ser. No. 127,889
Int. Cl.[4] F01M *1/00*
U.S. Cl. 123—196 A 15 Claims



1. For an internal combustion engine having a fluid filter, a fluid retention cup disposed around said filter and extending beneath the interface of said filter and said engine to catch fluid spills when said filter is loosened and removed from said engine.

4,763,621

AUTOMATICALLY FUNCTIONING EMERGENCY FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

Walter J. Stevens, 52 Orange Tree Cir., W., Winter Garden, Fla. 32787

Filed Jul. 1, 1986, Ser. No. 881,058
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—198 D 14 Claims



1. An emergency fuel system for supplying fuel under adverse conditions to an internal combustion engine utilizing a carburetor, which may include a temporary or a permanent problem with the primary source of fuel for the engine, comprising:

a. means for providing an alternate source of fuel for the engine, separate from the primary fuel source,

b. communication means for providing communication for fuel from said alternate source of fuel to the carburetor of the engine,

c. pump means for delivering a predictable quantity of fuel from said alternate source of fuel along said communication means to said carburetor of the engine, and

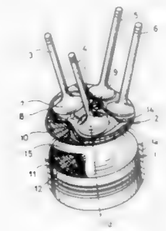
d. pump energizing means activated by a low fuel supply at said carburetor, for automatically bringing about operation of said pump means, thus to cause it to supply fuel from said alternate source to enable engine operation on the occasion of an insufficient fuel supply from the primary source of fuel for the engine.

4,763,622

INTERNAL COMBUSTION ENGINE OF THE SPARK IGNITION TYPE

Friedrich Indra, Zwingenberg, and Manfred Tholl, Mainz, both of Fed. Rep. of Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 16, 1987, Ser. No. 3,725
Claims priority, application United Kingdom, Jan. 20, 1986, [illegible]
Int. Cl.[4] F02B *23/08*
U.S. Cl. 123—308 13 Claims



1. A spark ignition internal combustion engine having a cylinder head with an inner surface defining one end of a cylinder containing a piston reciprocable therein and having a common axis,

said inner surface having in part the form of a gable roof with a ridge line between opposite sides, a spark plug extending through the inner surface along the ridge line and a pair of intake valves and a pair of exhaust valves respectively seatable on the inner surface on opposite sides of and outwardly from the ridge line, the valves being spaced closely around the spark plug, wherein

the ridge line of the roof portion, the spark plug and the associated valves are offset relative to the axis toward one side of the cylinder in the direction of the exhaust valves to provide an enlarged portion of the inner surface lying between the intake valves and the side of the cylinder outward thereof relative to the ridge line, a squish surface being formed on said enlarged portion of the inner surface and sloping upward toward the spark plug from an edge of the cylinder to an area adjacent the intake valves, and

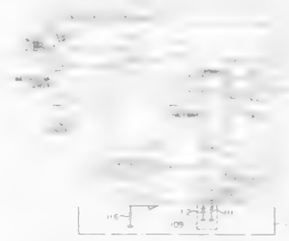
the piston opposes the cylinder head inner surface and includes a raised portion having a squish surface opposing and being substantially coextensive with the cylinder head squish surface and having a similar slope upwardly from an outer edge of the piston, the piston squish surface being positioned to closely approach the cylinder head squish surface during engine operation to momentarily create a small volume squish zone from which part of each cylinder charge is forced rapidly inward toward the spark plug to create combustion assisting turbulence.

4,763,623

DEVICE FOR CONTROLLING THE IDLING OPERATION OF AN INTERNAL COMBUSTION ENGINE

Takeo Sasaki, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 11, 1987, Ser. No. 48,606
Claims priority, application Japan, May 12, 1986, 61-108108; May 12, 1986, 61-108109
Int. Cl.[4] F02D *9/02*
U.S. Cl. 123—339 3 Claims



1. A device for controlling idling operation of an internal combustion engine comprising:

an engine RPM sensor which senses rotational speed in RPMs of an engine and generates an output signal representative thereof;

a water temperature sensor which senses temperature of cooling water for the engine and generates an output signal representative thereof;

a throttle valve in an intake passage of the engine which controls flow rate of intake air sucked into the engine;

an actuator means operatively connected to said throttle valve for controlling the opening degree of said throttle valve during the idling operation of the engine;

an actuator position sensor which senses an operating position of said actuator means and generates an output signal representative thereof;

a first control means connected to receive output signals from said engine RPM sensor, said water temperature sensor, and said actuator position sensor and calling for operation of said actuator means such that the opening degree of said throttle valve is adjusted to maintain the RPMs of the engine during idling at a predetermined value corresponding to the sensed temperature of the cooling water; and

a second control means operable independently of said first control means to control the operation of said actuator means in accordance with the operating position of said actuator means and the temperature of the cooling water so as to limit the operating position of said actuator means and thereby limit the RPMs of the engine to the predetermined value corresponding to the sensed temperature of the cooling water notwithstanding a higher value of RPMs being called for by said first control means.

4,763,624

COMBUSTION ENGINE

Roger J. H. Deckers, Someren, Netherlands, assignor to Volvo Car B.V., Helmond, Netherlands

Filed Jun. 9, 1987, Ser. No. 59,900
Claims priority, application Netherlands, Jun. 9, 1986, [illegible]
Int. Cl.[4] F02B *15/00*
U.S. Cl. 123—432 1 Claim

1. A four-stroke internal combustion engine, comprising one or more pistons, a cylinder block having formed therein a like number of cylinders in which said pistons can move, a cylinder

VOL 1093 ISS 3 AG 16 1988 UMI

head, and like numbers of intake valves, spark plugs and fuel injectors;

said pistons approaching said head closely and having combustion chambers formed therein;

main air intake passages and parallel air intake passages being formed in said cylinder head and communicating at inlet ports with said cylinders, said ports being opened and closed by said intake valves;

said parallel intake passages being at least partially separated from the main intake passages and having outlet ends opening into said main intake passages upstream of said intake valves;



said fuel injectors being mounted in said main intake passage and said spark plugs being mounted in said cylinder head such that the spark gaps defined by said spark plugs are in said combustion chamber;

wherein said parallel intake passages are arranged such that air flowing out of said outlet ends of said parallel intake passages is directed essentially at the corresponding spark gaps, and said fuel injectors are arranged such that fuel flowing from said injectors is directed essentially at the head of the intake valve.

4,763,625

COLD START FUEL ENRICHMENT CIRCUIT

Richard E. Staerzl; Norman H. Radtke, both of Fond du Lac, and Leonard S. Hummel, Vandyne, all of Wis., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jun. 9, 1987, Ser. No. 60,078
Int. Cl.[4] F02D *41/06, 41/14*
U.S. Cl. 123—435 5 Claims



1. A cold start and knock prevention circuit having an output node providing a fuel enrichment signal for an internal combustion engine, comprising in combination:

transducer means sensing audio signals indicative of engine combustion and occurring within a combustion chamber of the engine and converting said audio signals into an electrical output voltage including a portion representing background noise and a portion representing detonation;

means for adjusting the amplitude of said transducer output voltage;

means sampling said portion of said transducer output voltage representing background noise and controlling said adjusting means to decrease the amplitude of said transducer output voltage for increased sensed background noise and to increase the amplitude of said transducer output voltage for decreased sensed background noise;

detonation threshold means responsive to a predetermined increase in the amplitude of said portion of said transducer output voltage representing detonation above the amplitude of said portion of said transducer output voltage representing background noise, and outputting a fuel enrichment signal to said output node;

a thermistor connected to said output node and sensing engine temperature;

a voltage source biasing said thermistor such that the voltage across said thermistor varies with engine temperature and provides an output fuel enrichment signal at said output node;

first isolation means isolating said fuel enrichment signal of said detonation threshold means from said thermistor and said voltage source;

second isolation means isolating said fuel enrichment signal of said thermistor and said voltage source from said detonation threshold means.

4,763,626

FEEDBACK FUEL METERING CONTROL SYSTEM

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation-in-part of Ser. No. 25,270, Mar. 12, 1987. This application Sep. 10, 1987, Ser. No. 95,356
Int. Cl.[4] F02M *7/00;* F02B *33/04*
U.S. Cl. 123—438 25 Claims



1. A feedback fuel metering control system for an internal combustion engine having air intake means supplying combustion air to said engine, and fuel supply means including a fuel pump supplying fuel to said engine, comprising:

means sensing the amount of combustion air supplied to said engine;

means sensing the flow velocity of fuel supplied to said engine comprising means between said fuel supply means and said engine and producing a fuel pressure drop indicating fuel flow velocity;

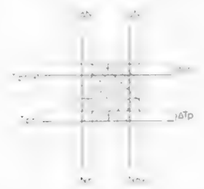
means between said fuel supply means and said engine and responsive to said means sensing said amount of of combustion air and said means sensing said flow velocity of fuel and controlling fuel flow without a carburetor, to control the amount of fuel supplied to said engine according to said combustion air and said fuel flow velocity.

4,763,627

LEARNING AND CONTROL APPARATUS FOR ELECTRONICALLY CONTROLLED INTERNAL COMBUSTION ENGINE

Naoki Tomisawa, Takasaki, Japan, assignor to Japan Electronic Control Systems, Co., Ltd., Japan

Filed Jun. 30, 1986, Ser. No. 880,556
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—440 13 Claims



1. A learning and control apparatus for an electronically controlled internal combustion engine, comprising:

means for detecting an actual value of a parameter of an object within the engine to provide a detected object parameter, said parameter to be controlled in accordance with a control value;

means for detecting an engine driving state;

basic control quantity setting means for setting a basic control quantity corresponding to a desired control value of the object;

memory means for storing lattice axes driving the engine driving state detected by said detecting means into a plurality of regions in accordance with a parameter of the engine driving state and storing correction quantities for correcting said basic control quantity for each respective region defined by said lattice axes;

learning correction quantity retrieving means for retrieving the stored correction quantity of each said corresponding region from said memory means based on the detected engine driving state of the engine;

feedback correction quantity setting means for comparing said desired control value with the detected actual value of the detected object parameter and setting a feedback correction value by increasing or decreasing a feedback correction quantity by a predetermined quantity so that the actual value is brought close to the desired control value;

control quantity computing means for computing a control quantity from (a) the basic control quantity set by said basic control quantity setting means, (b) the stored correction quantity retrieved by said learning correction quantity retrieving means and (c) the feedback correction quantity set by said feedback correction quantity setting means;

control means responsive to said control quantity for controlling the object to be controlled;

learning correction quantity correcting means for storing any deviation of the feedback correction quantity from a standard value and for correcting and rewriting the stored correction quantity corresponding to each region of the engine driving state in a direction to reduce the deviation;

driving state change direction judging means for judging a direction of change of the parameter of the engine driving state; and

driving region judging means for determining a driving region in which the stored correction quantity retrieved from the memory means by said learning correction quantity retrieving means is stored with a quantity of hysteresis such that at least one of the lattice axes defining said driving region is shifted by a predetermined value according to the direction of change of the parameter of the engine driving state.

4,763,628

METHOD OF COMPENSATING OUTPUT FROM OXYGEN CONCENTRATION SENSOR OF INTERNAL COMBUSTION ENGINE

Toshiyuki Mieno; Toyohei Nakajima; Yasushi Okada, and Nobuyuki Oono, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1987, Ser. No. 21,035
Claims priority, application Japan, Mar. 3, 1986, 61-46967
Int. Cl.[4] F02B *3/00*
U.S. Cl. 123—440 2 Claims



1. A method of compensating the level of an output signal from an oxygen concentration sensor which comprises a portion of an internal combustion engine air/fuel ratio control system, said oxygen concentration sensor being disposed within the exhaust system of the internal combustion engine for producing an output signal varying in proportion to the concentration of oxygen in exhaust gas from said engine, the method comprising the steps of sensing an operating temperature of said engine, executing compensation of a level of said oxygen concentration sensor output signal in accordance with a result of said temperature sensing step, and utilizing the output level produced by said compensating step as the detected value of oxygen concentration that is employed in controlling the air/fuel ratio of the mixture to be supplied to said engine.

4,763,629

AIR-FUEL RADIO CONTROL SYSTEM FOR ENGINE

Katsumi Okazaki; Katsuhiko Yokooku; Tomomi Watanabe; Tadataka Nakazumi, and Kiyotaka Mamiya, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

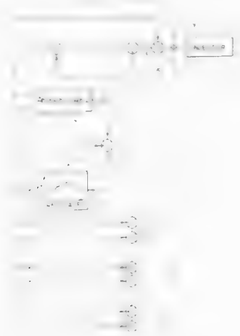
Filed Feb. 12, 1987, Ser. No. 14,266
Claims priority, application Japan, Feb. 14, 1986, 61-30196; Feb. 17, 1986, 61-32590
Int. Cl.[4] F02M *17/00*
U.S. Cl. 123—489 8 Claims



1. An air-fuel ratio control system for an engine in which a fuel injection amount is calculated according to the engine

VOL 1093 ISS 3 AUG 16 1988 UMI

operating conditions of at least engine load and speed and is adjusted according to the output of an air-fuel ratio sensor, comprising means for measuring the intake air amount, a base fuel injection amount calculating means responsive to said means for measuring the intake air amount for calculating a base fuel injection amount corresponding to the stoichiometric air-fuel ratio, a target air-fuel ratio calculating means for calculating a target air-fuel ratio according to said engine operating conditions, a reference value calculating means responsive to the output of the target air-fuel ratio calculating means for calculating a reference value which is a function of the target air fuel ratio, comparision means for comparing the output of



the air-fuel ratio sensor and the reference value, a feedback correction coefficient calculating means for calculating a feedback coefficient according to any deviation of the output of the air-fuel ratio sensor from the reference value as determined by the comparision means, and a final fuel injection amount calculating means responsive to the outputs of the base fuel injection amount calculating means, the target air-fuel ratio calculating means, and the feedback correction coefficient calculating means to adjust the base fuel-injection amount where the latter adjustment is a function of (a) the ratio of the stoichiometric air-fuel ratio to the target air-fuel ratio and (b) the feedback coefficient to thus obtain a final fuel injection amount.

4,763,630

METHOD OF AND SYSTEM FOR CONTROLLING INJECTION TIMING IN DIESEL ENGINE

Masaomi Nagase; Fumiaki Kobayashi, and Yoshiyasu Ito, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 4, 1986, Ser. No. 836,078
Claims priority, application Japan, Mar. 4, 1985, 60-42141
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—501 8 Claims

1. A method of controlling injection timing in a diesel engine, wherein said injection timing is feedback controlled in accordance with a deviation between a target ignition timing determined on the basis of at least an engine load and an engine speed, and an actual ignition timing detected by use of an ignition timing sensor, said method comprising the steps of:

(a) detecting the presence of operating conditions indicating when combustion is instable and detection of an ignition signal is difficult;

(b) effecting an open-loop control based on the engine load and the engine speed when said operating conditions are present;

(c) effecting said feedback control in response to the ignition



signal when said ignition signal is detected, and said operating conditions are not present; and

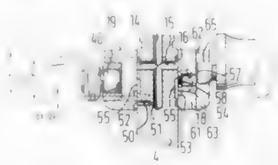
(d) effecting said open-loop control and detecting a malfunction of said ignition timing sensor when no ignition signal is detected, and said operating conditions are not present.

4,763,631

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Wolfgang Fehlmann, Stuttgart; Gerald Hofer, Bad Aibling; Dieter Junger, and Gerhard Stumpp, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 17, 1987, Ser. No. 134,113
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1986, 3644147
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—503 21 Claims



1. A fuel injection pump for internal combustion engines, having a pump housing, a fuel relief chamber in said housing, a pump cylinder in said housing, a pump piston (4) driven for simultaneous reciprocation and rotation in said pump cylinder (3) which serves as a distributor of the pumped fuel seccessively to a plurality of injection locations, said pump piston defines with said pump cylinder a pump work chamber (6), a relief conduit extending from said work chamber to a first outlet opening (16) on the pump piston circumference leading to said relief chamber (7), an annular slide (18) that is axially displaceable on the pump piston (4) inside the relief chamber by a fuel injection quantity regulator (25) which varies control of a fuel injection quantity, said annular slide includes a first control edge (19), which is located in a radial plane to the pump piston axis, by way of which said first outlet opening (16) is controllable by said first control edge after a variable compression stroke of the pump piston, a radial conduit (50) which

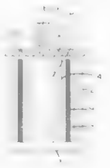
leads from the relief conduit (14) to a second outlet opening (52) on the pump piston circumference, in the vicinity of said annular slide (18), said annular slide (18) including a conduit (57) which communicates with said relief chamber for controlling the second control opening which discharges at its inner jacket face, an annular groove (54, 154) and longitudinal conduits (55, 155) formed and defined between the pump piston circumference and the inner jacket face of the annular slide, said conduits (55, 155) communicating with said annular groove (54, 154) and, beyond an initial stroke (sx) of the pump piston (4) corresponding to a load-dependent axial position of said annular slide (18) communicating with said second outlet opening (52) and, during a rotational angle defined by a duration of coincidence of one of said longitudinal conduits (55) with a control opening (58; 62), connecting said radial conduit (50) with said conduit (57) to establish a communication via a limiting throttle between the pump piston work chamber (6) and the relief chamber (7).

4,763,632

FUEL COLLECTOR

Jan Andreasson, Mullsjö , Sweden, assignor to Scandmec AB, Mullsjö , Sweden

Filed Jun. 10, 1986, Ser. No. 872,286
Claims priority, application Sweden, Jun. 10, 1985, 8502845; Jun. 10, 1985, 8502846
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—510 6 Claims



1. A fuel collector for a combustion engine disposed within a primary fuel supply tank for said engine comprising,

a collector body generally freely movable within said primary fuel supply tank and wherein at least a substantial portion of said collector body is formed of a dimensionally stable porous material for absorbing and retaining fuel provided by fuel in the primary fuel supply tnak, means defining at least on fuel chamber within said body for receiving retained fuel absorbed by and filtered by said porous material, means defining an outlet for said chamber through which fuel may be delivered to said engine, a vent communicating with the interior of said chamber to vent air from within said chamber and assist in refilling said collector, a weight in said chamber for maintaining said collector body in contact with the fuel within said primary fuel supply tank, the pore size of pores of said porous material be selected so as to act as a self-priming filter for a given fuel in said primary fuel tank, and wherein said chamber and said porous material provide a running fuel reserve of about 30 seconds for a combustion engine.

4,763,633

FUEL SUPPLY FOR A SMALL BOAT

Ichiro Nakanishi, Kakogawa, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Chuo, Japan

Filed Jun. 9, 1986, Ser. No. 872,207
Claims priority, application Japan, Jun. 19, 1985, 60-92740[U]
Int. Cl.[4] F02M *39/00*
U.S. Cl. 123—514 8 Claims

1. A fuel supply system for a small craft including a fuel tank and a pump for pumping fuel from said tank to a carburetor, comprising a suction pipe adapted to be connected to the carburetor and having an inlet opening adapted to be in said tank, said inlet opening of said pipe being at a location which is adjacent the bottom of said tank, and fuel retention means mounted on pipe at said inlet opening for retaining fuel therein when said inlet is above the fuel level in the tank for a short time, said fuel retention means comprising a container mounted



around said inlet opening of said pipe, said container being formed by a wall which is imperforate except for flow openings therein at a location where fuel adjacent the bottom of said tank may flow directly from said tank into said container, and means across said flow openings and forming a plurality of small size flow holes.

4,763,634

AIR-FUEL RATIO CONTROL SYSTEM FOR AUTOMOTIVE ENGINES

Takuro Morozumi, Mitaka, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1986, Ser. No. 938,009
Claims priority, application Japan, Dec. 11, 1985, 60-280112
Int. Cl.[4] F02M *25/08*
U.S. Cl. 123—520 4 Claims



1. In an air-fuel ratio control system for an automotive engine, the engine having a canister for purging fuel vapor to an intake passage of the engine through a purge valve which has a vacuum operated valve device, and the system having an O_2-sensor producing an output voltage relative to oxygen concentration of exhaust gases of the engine, a feedback control system having integrating means for integrating an error signal dependent on the output voltage of the O_2-sensor for producing an integration signal and means responsive to the integration signal for controlling air-fuel ratio of mixture supplied to the engine, the improvement comprising:

a solenoid operated valve having a solenoid and provided in a passage communicating the vacuum operated valve device with the intake passage,

the solenoid operated valve having ports for selectively communicating the vacuum operated valve device with an intake manifold of the engine and with the atmosphere;

VOL 1093 ISS 3 AUG 16 1988 UMI

detecting means for detecting operating conditions of the engine and for producing an engine operation signal when the operating conditions reach a predetermined state;

control means responsive to the engine operation signal for operating the solenoid to communicate the vacuum operated valve device with the intake manifold to open the purge valve; and

means responsive to the engine operation signal for increasing a constant of the integrating means for a predetermined time.

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DISCHARGE SYSTEM FOR INTRODUCING VOLATILIZED FUEL INTO AN INTERNAL COMBUSTION ENGINE

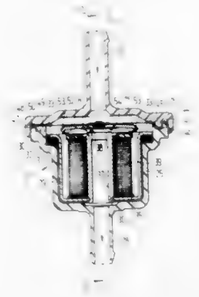
Lutz Ballhause, Waiblingen; Siegfried Fehrenbach, Markgröningen; Kurt Herbst, Burgstetten; Erwin Krimmer, Plüderhausen, and Wolfgang Schulz, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 12, 1986, Ser. No. 828,473

Claims priority, application Fed. Rep. of Germany, May 30, 1985, 3519292

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—520 10 Claims



1. A discharge system for introducing volatilized fuel via an absorber element, a discharge regulation valve having a bottom portion and an outflow line, into an intake tube of an internal combustion engine downstream of a throttle device, said discharge regulation valve being disposed in the outflow line downstream of said absorber element, said discharge regulation valve further including a valve seat that is closable by a valve closing body counter to a spring, said discharge regulation valve having an electromagnetic coil arranged to encircle a hollow core, said hollow core adapted to communicate at one end with said outflow line and at the other end said hollow core terminates at a valve seat, an armature provided with a valve closing body in proximity to said electromagnetic coil and said valve seat, wherein atmospheric pressure prevails on both sides of said armature and in a current-free state of said electromagnetic coil as well as when said internal combustion engine is not in operation, said valve closing body is retained by said spring at a stroke spacing with respect to said valve seat, while when said internal combustion engine is operational the spacing between said valve closing body and said valve seat can be reduced counter to said spring in accordance with the pressure difference upstream and downstream of said valve seat in such a manner that the spacing between said valve seat body and said valve seat is virtually as large as the stroke spacing at full load of said internal combustion engine and is virtually zero during idling of said internal combustion engine.

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MECHANICAL SUPERCHARGER

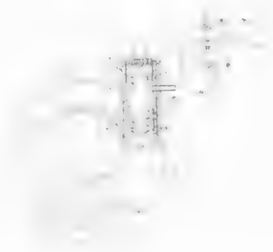
Toru Tamura, Obu; Toshio Takeda, Nagoya, and Shinji Kouno, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 30, 1986, Ser. No. 913,367

Claims priority, application Japan, Sep. 30, 1985, 60-149678

Int. Cl.[4] F02D *23/00*

U.S. Cl. 123—564 5 Claims



1. A mechanical supercharger for compressing the precombustion intake mixture for an internal combustion engine comprising:

a housing having an inlet port and an outlet port;

compression means in said housing for compressing the precombustion intake mixture provided through said inlet port and discharging the compressed precombustion mixture to said outlet port;

a bypass passage disposed in said housing for bypassing said compression means to directly connect said inlet port with said outlet port;

relief valve means disposed in said bypass passage for releasing outlet port pressure to said inlet port in response to a predetermined pressure differential between said inlet port and said outlet port;

said relief valve means comprising an insert member fixed in an elongated cavity in said housing, said insert member having an opening for communicating said bypass passage and inlet port with said output port, a slide valve slidably disposed in said insert member for opening and closing said insert member opening, and a spring for exerting a biasing force to said slide valve to close said insert member opening, said spring force being adjustable to selectively adjust said predetermined pressure differential; and

a chamber formed in said insert member, said insert member having an air relief hole through which said bypass passage and said chamber are connected with each other.

4,763,637

STONE SAW

Wolfgang Mayer, 102 Nonntalerhauptstrasse, A-5020 Salzburg, Austria

PCT No. PCT/AT86/00046, § 371 Date Feb. 5, 1987, § 102(e) Date Feb. 5, 1987, PCT Pub. No. WO86/07560, PCT Pub. Date Dec. 31, 1986

PCT Filed Jun. 20, 1986, Ser. No. 22,803

Claims priority, application Austria, Jun. 20, 1985, 1831/85; Jun. 20, 1985, 1832/85

Int. Cl.[4] B28D *1/08*

U.S. Cl. 125—21 12 Claims

1. A stone saw comprising

(a) a revolving sawing rope having an axis,

(b) at least one backing roller supporting the revolving sawing rope at each end of a sawing portion on one side of the sawing rope axis against cutting pressure exerted upon the sawing rope, the cutting pressure causing radial wear on the backing rollers,

(c) a feed drive for feeding the sawing rope in a revolving direction over the backing rollers,

(d) housings supporting the backing rollers and pivotally adjustable about the sawing rope axis in dependence on the revolving direction of the sawing rope,

(1) the backing rollers being mounted in the housings transversely adjustably to the axes thereof and to the sawing rope axis,

(e) a clearance sensor associated with, and radially spaced from, at least one of the backing rollers for detecting the



clearance between the sensor and the one backing roller, said distance varying with the radial wear of the one backing roller,

(1) the clearance sensor emitting a control signal corresponding to the detected clearance,

(f) an adjustment drive for displacing the one backing roller towards the sawing rope axis, and

(g) a controller receiving the control signal and controlling the adjustment drive in response thereto for displacing the one backing roller in dependence on the radial wear thereof.

4,763,638

GAS SELF-CLEAN DOUBLE WALL OVEN

James E. Hurley, Allentown, and Robert H. Stettler, Reading, both of Pa., assignors to Raytheon Company, Lexington, Mass.

Filed May 14, 1987, Ser. No. 49,492

Int. Cl.[4] A21B *1/00*

U.S. Cl. 126—31 A 12 Claims



1. A gas self-clean double wall oven, comprising:

a first oven compartment comprising a top, bottom, side and back walls, and a door;

a first burner for providing combustion products to said first oven compartment;

a second oven compartment positioned below said first oven compartment and comprising a top, bottom, side and back walls, and a door;

a second burner for providing combustion products to said second oven compartment;

a first flue pipe for exhausting said combustion products from said first oven;

a second flue pipe for exhausting said combustion products from said second oven compartment; and

a combustion product manifold positioned above said first oven compartment, said manifold comprising a first entrance port for receiving said combustion products from said first flue pipe and a second entrance port for receiving said combustion products from said second flue, said second entrance port being located above said first port, said manifold further comprising means for directing said received combustion products out the top front of said double wall oven.

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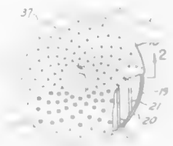
DISPOSABLE COVER FOR AN OUTDOOR BARBECUE GRILL

Kenneth M. Goldsworthy, Drayton Plains, Mich., assignor to Alex Rhodes, Southfield, Mich.

Continuation of Ser. No. 710,321, Mar. 11, 1985, abandoned. This application Aug. 27, 1986, Ser. No. 902,097

Int. Cl.[4] A47J *37/00*

U.S. Cl. 126—25 R 5 Claims



1. A disposable cover for covering the cooking surface of an outdoor charcoal fueled barbecue grill comprising an aromatic coating substantially covering one side of said cover, said coating having particles of an aromatic substance and a bonding agent for adhering said particles to the cover.

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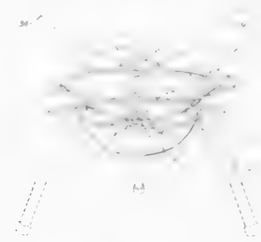
BARBECUE GRILL ASH COLLECTOR

J. Jay Schnack, 32 Las Vegas Rd., Orinda, Calif. 94563, and Mark D. Wilson, 2745 Acacia Rd., Walnut Creek, Calif. 94595

Filed Jul. 29, 1987, Ser. No. 79,739

Int. Cl.[4] F23J *1/00*

U.S. Cl. 126—243 1 Claim



1. A removable ash collector, for a barbecue grill of the type

VOL 1093 ISS 3 AG 16 1988 UMI

supported by at least three legs and having a lower ash discharge opening, comprising:
a support ring having a central opening and an outer perimeter;
the support ring including means for attaching the support ring to the legs so the support ring is spaced-apart from the barbecue grill with the central opening beneath the barbecue grill;
a catch basin;
means for removably mounting the catch basin to the support ring so the catch basin is spaced apart from the support ring beneath the central opening so that ashes discharged from the barbecue gril! through the ash discharge opening pass through the central opening in the support ring and into the catch basin; and
the removably mounting means including means for removing the catch basin from the support ring by lifting and twisting the catch basin relative to the support ring.

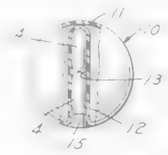
4,763,641
SOLAR ENERGY ABSORBER
William F. Smith, 454 DeSoto Dr., New Smyrna Beach, Fla. 32069
Continuation-in-part of Ser. No. 867,943, May 29, 1986, abandoned. This application Nov. 6, 1987, Ser. No. 117,504
Int. Cl.[4] F24J *3/02*
U.S. Cl. 126—444 10 Claims



1. A solar energy absorber module comprising a molded substantially rigid top sheet of translucent plastic material and a molded substantially rigid bottom sheet of solar energy absorbing substantially opaque plastic material bonded together by circular bond indentations formed in each of said top sheet and said bottom sheet, said circular bond indentation on each sheet spaced from each other a distance equal to the diameter of the circular bond thereby forming a plurality of convex lens-like elliptical sites located between adjacent circular bond indentations for augmentation of solar energy, said circular bond indentations being formed in plural successive offset rows to define a plurality of longitudinal tortuous sinusoidal channels in communication with a header at each end of the module for passage of working fluid therethrough.

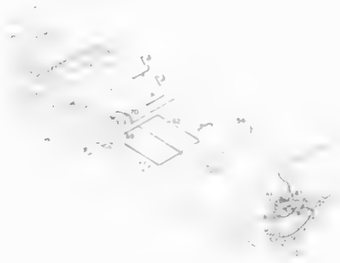
4,763,642
INTRACAVITATIONAL BRACHYTHERAPY
Bruce S. Horowitz, 33822 Yorkridge, Farmington Hills, Mich. [illegible]
Filed Apr. 7, 1986, Ser. No. 849,204
Int. Cl.[4] A61K *9/22*
U.S. Cl. 128—1.2 10 Claims

1. A delivery system for intracavitational brachytherapy comprising:
a body of a material which is absorbable in animal tissue,
said body having a completely closed geometrical shape conforming generally with a cavity which is to be treated after removal of a tumor,



and a plurality of radioactive seeds that are non-absorbable within the body, said body becoming flexible due to absorption as the half-life of the radioactive sources is exceeded and diminishing in size with said cavity.

4,763,643
ARC CHANGING APPARATUS FOR A THERAPEUTIC OSCILLATING BED
John H. Vrzalik, San Antonio, Tex., assignor to Kinetic Concepts, Inc., San Antonio, Tex.
Division of Ser. No. 821,207, Jan. 22, 1986, Pat. No. 4,638,516, which is a continuation of Ser. No. 567,224, Dec. 30, 1983, abandoned, which is a division of Ser. No. 226,118, Jan. 19, 1981, Pat. No. 4,432,353. This application Sep. 23, 1986, Ser. No. 910,485
Int. Cl.[4] A61H *23/02*; A61G *7/00, 7/06*
U.S. Cl. 128—49 13 Claims



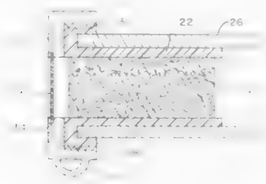
1. A therapeutic bed apparatus having an oscillatory patient support platform mounted thereto for rotation about the longitudinally extending axis thereof comprising:
reciprocating drive means for controlled oscillation of the patient support platform about the longitudinally extending axis thereof;
first pivot means spaced from the longitudinally extending axis of said patient support platform and connected with said reciprocating drive means for oscillating said patient support platform;
said first pivot means having means for selectively changing the position at which said reciprocating drive means is connected to said patient support platform relative to the longitudinally extending axis thereof to vary the arc of oscillation of said patient support platform; and
second pivot means eccentrically mounted upon said first pivot means for pivotally engaging said reciprocating drive means.

4,763,644
SPINAL FIXATION
Peter J. Webb, 134 Harley St., London W1, United Kingdom
Filed Mar. 25, 1986, Ser. No. 843,561
Int. Cl.[4] A61B *17/56*
U.S. Cl. 128—69 2 Claims



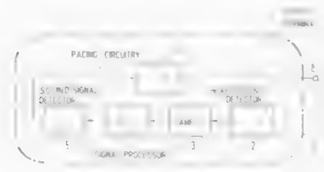
1. A device for use in spinal fixation, comprising:
an elongate member, anchoring means for securing said device to a vertebra, and fixing means whereby said device is readily releasably fixed to said elongate member, said fixing means comprising first and second clamping elements which bear against respective transversely opposite sides of said elongate member and thereby clamp the elongate member between them, and readily releasable means which urges the clamping elements towards each other, said first clamping element being formed with a channel-shaped slot for receiving said elongate member, said slot having a mouth, said second clamping element projecting slightly out of the mouth of the slot in an assembled condition of the device, and said readily releasable means comprising a nut screwed onto said first clamping element to press said second clamping element against said elongate member.

4,763,645
TRACHEAL TUBE FILTER
Michael J. Kapp, 7 Fulton St., Freehold, N.J. 07728
Filed Aug. 25, 1987, Ser. No. 89,165
Int. Cl.[4] A62B *7/10, 23/02*
U.S. Cl. 128—205.29 8 Claims



1. A new and improved tracheal tube filter comprising:
tubular filter holding means adapted to be inserted into an outer end portion of a tracheal tube;
said tubular filter holding means having inner and outer ends;
said tubular filter holding means formed from a resilient plastic material;
filter means received in said tubular filter holding means;
screen means disposed over said filter means;
a lip formed at said outer end of said tubular filter holding means, said lip adapted to be received over the outer end portion of a tracheal tube;
said lip forming an annular recess adapted to be received in frictional engagement over the outer end of a tracheal tube;
said lip having an outwardly extending cylindrical surface provided with threads;
and
end cap means having a circular recess provided with cooperating threads for engaging said threads of said tubular filter holder lip.

4,763,646
HEART PACEMAKER
Anders Lekholm, Bromma, Sweden, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Continuation of Ser. No. 913,269, Sep. 30, 1986, abandoned. This application Dec. 9, 1987, Ser. No. 131,269
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1985, 3535504
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG 10 Claims



1. A heart pacemaker comprising:
a housing having a size adapted for implantation in a patient;
pulse generator means in said housing for generating pulses for supply to heart tissue of said patient;
acoustic detector means disposed relative to said heart for detecting heart sounds and for generating electrical signals corresponding thereto, said acoustic detector means having a size adapted for implantation in said patient with said housing; and
means in said housing connected to said acoustic detector means and to said pulse generator means for controlling said pulse generator based on said electrical signals.

4,763,647
DUAL COIL STEERABLE GUIDEWIRE
Richard A. Gambale, Tyngsboro, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.
Filed Jan. 6, 1987, Ser. No. 847
Int. Cl.[4] A61B *6/00*
U.S. Cl. 128—657 10 Claims



1. A guidewire comprising:
a main wire having a proximal end and a distal end and a distal tapered region;
a first outer helical coil mounted about the tapered region of the main wire and being connected to the main wire at the proximal end of the coil, the distal end of the coil extending distally beyond the distal end of the main wire;

VOL 1093 ISS 3 AG 16 1988 UMI

a second, inner, helical coil having a smaller diameter than the first coil and being disposed within the first coil, the second coil being connected at its proximal end to the distal region of the main wire and at its distal end to the distal end of the outer coil;

the second, inner, coil defining a safety means to maintain connection between the main wire and a distal portion of the first coil in the event of breakage of the first coil, said second coil comprising the sole safety means connecting the distal end of the outer coil with the main wire;

the outer and second coils being wound in the same direction.

4,763,648

METHOD AND APPARATUS FOR ARTERIAL AND VENOUS BLOOD SAMPLING

Philip Wyatt, La Canada, Calif., assignor to Migada, Inc., Burbank, Calif.

Filed Sep. 12, 1986, Ser. No. 907,118
Int. Cl.[4] A61B *5/02, 5/14*
U.S. Cl. 128—673 **19 Claims**



1. An apparatus for use in conjunction with an arterial or venous pressure monitoring system which is interconnected invasively to a patient for obtaining a blood sample from the patient, said monitoring system being characterized by having a catheter adapted to be inserted into a vein or artery of the patient, a remote fluid supply means for administering fluid to the patient via a fluid conduit interconnecting the catheter and the fluid supply and a valve disposed within the fluid conduit intermediate the fluid supply means and the catheter for controlling the flow of fluid through the fluid conduit, said apparatus comprising first and second spaced apart, operably interconnected, fluid sampling devices, each of said fluid sampling devices being independently accessible to withdraw fluid from within the system and each comprising a body having an upper and lower chamber, said lower chamber having first and second fluid ports; and sealing means carried by said upper chamber for sealing said lower chamber relative to atmosphere, said sealing means being penetrable by a needle of a syringe to gain access to said lower chamber; said first sampling device including first connector means for interconnecting said first fluid port of said body of said first fluid sampling device with the valve of the pressure monitoring system; and said second fluid sampling device including second connector means for interconnecting said second fluid port of said body of said second fluid sampling device with the catheter of the pressure monitoring system, whereby said valve can be closed to block fluid flow toward the catheter, said lower chamber of said first fluid sampling device can be accessed by a first syringe to withdraw from the apparatus all fluid contained between the catheter and the lower chamber of the first sampling device and to withdraw blood from the patient in a quantity sufficient to draw blood past said lower chamber of said second fluid sampling device and then said lower chamber of said second fluid sampling device can be accessed by a second syringe to withdraw therefrom the undiluted blood contained therewithin.

4,763,649

TECHNIQUE FOR CREATING A ZERO REFERENCE FOR AN EXTERNAL PRESSURE TRANSDUCER

Edwin B. Merrick, Stow, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 802,502, Nov. 27, 1985, abandoned. This application Apr. 27, 1987, Ser. No. 48,485
Int. Cl.[4] A61B *5/02*
U.S. Cl. 128—673 **8 Claims**



1. Apparatus for measuring the blood pressure of a patient, comprising

a catheter,

a first transducer mounted in an end portion of said catheter so as to produce at an output thereof means including a signal corresponding to blood pressure variation thereat,

a lumen contained within said catheter,

means defining an opening in said lumen at a point near said first transducer so that the blood pressure at said opening is the same as the blood pressure applied to said first transducer,

means coupled to said first transducer for deriving a first signal component in which the low frequency components of the signal provided by said first transducer are de-emphasized,

means for coupling a second transducer coupled to said lumen at a point remote from said opening for deriving a second signal component in which the high frequency components of the blood pressure variations at said opening are de-emphasized, and

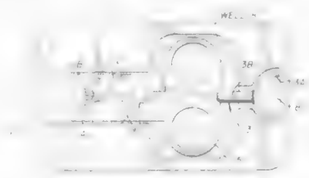
means for combining said signal components.

4,763,650

INSTRUMENT FOR INSERTING A DEFORMABLE LENS INTO THE EYE

Stephen G. Hauser, 24009 Ventura Blvd., Suite 200, Calabasas, Calif. 91302

Filed Jan. 20, 1987, Ser. No. 5,105
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—303 R **4 Claims**



1. An instrument for inserting a deformable intraocular lens through a small incision into the eye, the incision having a reduced diameter with respect to the diameter of the lens, and the lens being inserted through the incision in a deformed

configuration, said instrument including: a tube; a plunger positioned coaxially within said tube for axial movement with respect to said tube; clamping means attached to the distal end of said plunger in axial relationship therewith, said clamping means comprising a pair of normally open jaws which are closed against one another as said clamping means is moved into said tube by said plunger; said clamping means being moved axially in and out of said tube upon reciprocal movement of said plunger and said tube; and an undeformed deformable intraocular lens positioned in said clamping means to be deformed thereby as said clamping means is moved into said tube by said plunger.

4,763,651

TREPHINE AND METHOD

Herbert E. Kaufman, and Marguerite B. McDonald, both of New Orleans, La., assignors to Allergan, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 670,396, Nov. 8, 1984. This application Jan. 14, 1986, Ser. No. 818,737
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—310 **18 Claims**



1. A trephine for cutting a groove in the cornea of an eye, said trephine comprising:

a fixation member including a bearing and means cooperable with the eye for fixing the fixation member to the eye;

a shaft having an axis, a peripheral wall, an end wall, and a driving portion for use in rotating the shaft;

first and second blades;

means for mounting the first and second blades on the shaft with the blades projecting fixed distances beyond the end wall of the shaft;

said shaft being rotatable in said bearing relative to the fixation member with the end wall engaging the cornea; and

said first blade having a first orientation with respect to the axis of the shaft and the second blade having a second orientation with respect to the axis of the shaft, said first and second orientations being arranged so that the cuts formed by the blades tend to enable a segment to be severed from the cornea to form the groove.

4,763,652

AIMING SYSTEM FOR KIDNEY STONE DISINTEGRATOR

Alfred G. Brisson, Kildeer; Christopher Nowacki, Arlington Heights, both of Ill.; William R. Shene, Plattsburgh, N.Y.; Thomas H. Burdick, Deerfield, and Exequiel Dela-Cruz, Arlington Heights, both of Ill., assignors to Northgate Research, Inc., Arlington Heights, Ill.

Filed Apr. 16, 1986, Ser. No. 852,835
Int. Cl.[4] A61B *17/22*
U.S. Cl. 128—328 **6 Claims**



1. A disintetgrating system for calculi such as kidney stones comprising a reflector, a fluid medium in said reflector coupling said reflector to a living body having calculus therein, means providing a spark gap in said reflector, electrical energy means connected to said spark gap means for generating a spark in said gap means to generate a shock wave in said fluid medium, motor means connected to said reflector for moving said reflector to focus said shock wave on said calculus, ultrasound transducer means, movable support means for said transducer means permitting manual movement of said transducer means for ultrasonically locating said calculus, electric signal means connected to said transducer means for indicating the position thereof, computer means, means electrically connecting said signal means to said computer means, means electrically connecting said computer means to said motor means to position said reflectior in accordance with the position of said transducer means to effect focusing of said shock wave on said calculus, and means for operating said electrical energy means to generate a spark in said spark gap means to produce a shock wave focused on said calculus, to disintegrate said calculus, and further including means connected to said body to develop a pneumogram thereof, and means electrically connecting said penumogram means to said computer to effect movement of said reflector to focus said shock wave on said calculus continuously with the breathing of said body.

4,763,653

MEDICAL SLEEVE

Arthur G. Rockey, 3438 Sharon Rd., Charlotte, N.C. 28211

Continuation-in-part of Ser. No. 702,828, Feb. 19, 1985, Pat. No. 4,641,653, which is a continuation-in-part of Ser. No. 216,989, Dec. 16, 1980, Pat. No. 4,501,264, which is a continuation of Ser. No. 912,010, Jun. 2, 1978, abandoned. This application Feb. 5, 1987, Ser. No. 11,335
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 **6 Claims**

1. An intravascular method of treating a ruptured artery comprising the steps of locating the area of the rupture, isolating the area of hemorrhage by sealing proximal and distal sites in the area, suctioning clotted blood hemorrhaged from the rupture into the artery through one of the sealed sites, implanting an artificial sleeve in the artery by introducing it intravascularly in a configuration of sufficiently small size to pass freely within the artery from a site remote from the rupture, permanently expanding the sleeve in the artery at the area of

VOL 1093 ISS 3 AG 16 1988 UMI

the ruptured artery wall, and allowing the expanded sleeve to remain in the artery indefinitely to conduct blood flowing



through the artery and prevent loss of such blood flow through the ruptured wall area.

4,763,654
TANDEM INDEPENDENTLY INFLATABLE/DEFLATABLE MULTIPLE DIAMETER BALLOON ANGIOPLASTY CATHETER SYSTEMS AND METHOD OF USE
G. David Jang, 636 Golden West Dr., Redlands, Calif. 92373
Filed Sep. 10, 1986, Ser. No. 905,840
Int. Cl.[4] A61M *29/02*
U.S. Cl. 128—344 41 Claims



1. A catheter for performing balloon angioplasty, comprising:
an elongate, flexible catheter shaft having at least two lumens therein;
at least two relatively inelastic angioplasty balloons on said shaft, wherein said balloons are connected to separate lumens for independent inflation and deflation thereof, and each of said balloons has a proximal end, a distal end, and an inflatable portion, has a predetermined maximum inflated diameter, and is adapted to dilate a stenosis when inflated;
said balloons comprising:
a first balloon; and
a second balloon disposed at least in part proximally of said first balloon; and
an attachment site on said catheter shaft to which the proximal end of said first balloon or the distal end of said second balloon or both are attached, wherein one of said balloons is attached to permanently dispose a part of the inflatable portion thereof over said attachment site.

4,763,655
FREQUENCY-CONTROLLED HEART PACEMAKER
Alexander Wirtzfeld, Ingolstadt/Friedrichshofen; Karl Stangl, and Roland Heinze, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jun. 16, 1987, Ser. No. 62,707
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1986, 3620278
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG 8 Claims



1. A frequency-controlled pacemaker for stimulating the heart of a patient comprising:
means for generating stimulation pulses to the heart at a stimulation frequency;
means for controlling the stimulation frequency of said means for generating stimulation pulses;
means for obtaining a signal corresponding to the blood oxygen level of said patient which has lower values when said patient is under load;
means for obtaining a signal corresponding to the blood temperature of said patient which has higher values when said patient is under load;
means for combining said signal corresponding to the blood oxygen level and said signal corresponding to the temperature, such that said signal corresponding to the blood oxygen level is decreased in ranges of said signal corresponding to the blood temperature having higher values; and
means for supplying the combined signal to said means for controlling the frequency.

4,763,656
TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION DEVICE AND METHOD
Edward A. Nauman, Signal Hill, Calif., assignor to Beatrice T. Kester, Beverly Hills, Calif.
Continuation-in-part of Ser. No. 744,248, Jun. 13, 1985, abandoned. This application Dec. 17, 1987, Ser. No. 134,195
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—421 7 Claims



1. A transcutaneous nerve stimulation device including:
generating means for generating a train of electrical pulses of fixed time-axis width and having decay-tubes;
modulating means coupled to said generating means for modulating the decay-times of said electrical pulses of fixed time-axis width within said train;
means electrically coupled to said generating and modulation means for providing electrical operating power thereto; and,
electrical pulse output terminals electrically coupled to said generating means for applying decay-time-modulated electrical pulses of fixed time-axis width therefrom to a patient.

4,763,657
THERMALLY-TREATED ELECTRONIC ACUPUNCTURER
Chen-Wei Chen, and Jenny Lin, both of P. O. Box 10160, Taipei, Taiwan
Filed Apr. 6, 1987, Ser. No. 34,531
Int. Cl.[4] A61N *1/00*
U.S. Cl. 128—422 4 Claims



1. A thermally-treated electronic acupuncture device comprising:
a casing including a handle portion and a head portion having two holes formed in said head portion;
a first acupuncturing conductor electrically connected to a positive polarity of a low-frequency current device and a second acupuncturing conductor electrically connected to a negative polarity of the current device, each said conductor including a flange fixed in each of said hole of said head portion, a hemi-spherical portion extending outwardly from each said flange, a plurality of beads formed on each said hemispherical portion, and a plurality of through-holes formed through each said conductor an electric heater and a reflector positioned behind said heater and fixed inside said head portion by a bracket, said reflector concaved downwardly for outwardly reflecting heat produced from said heater;
a metallic substrate plate having a plurality of holes formed thereineach hole formed among its neighboring beads and communicated with said inner cavity, each said conductor fixed on an outer side of said metallic substrate plate;
said electric heater to the positive and negative polarities of said current device; and
said low-frequency current device including a power source having the positive and negative polarities, a transistor, a transformer and plural capacitors in functional operation and fixed in said handle portion for forming oscillating low-frequency current waves, and an adjusting switch fixed on said handle portion, having an on-off switch and a variable resistor for adjusting an output of said current device through said positive and negative polarities.

4,763,658
DIALYSIS SYSTEM AND METHOD
Jeffrey S. Jones, Salem, Va., assignor to Solutech, Inc., Roanoke, Va.
Division of Ser. No. 870,407, Jun. 4, 1986, Pat. No. 4,726,381. This application Jul. 29, 1987, Ser. No. 79,293
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—635 10 Claims



1. An apparatus for equilibrating dialyzable components in a complex fluid which includes a reference fluid and higher molecular weight components, comprising:
(1) a body portion including a flexible, elongated tubular semi-permeable dialyzing membrane having a closed distal end and a proximal end, said body portion further including a single first lumen within said dialyzing membrane;
(2) means within said first lumen for analyzing said dialyzable components; and
(3) fluid communication means adapted to pass a membrane solution to and from said body portion, wherein the dialyzing membrane is freely permeable to the reference fluid and the membrane solution and substantially impermeable to the higher molecular weight components.

4,763,659
DRY ELECTRODE SYSTEM FOR DETECTION OF BIOPOTENTIALS
W. J. Ross Dunseath, Jr., Durham, N.C., assignor to Spring Creek Institute, Inc., Durham, N.C.
Continuation-in-part of Ser. No. 767,963, Aug. 21, 1985, Pat. No. 4,669,479. This application Aug. 20, 1986, Ser. No. 898,235
Int. Cl.[4] A61B *5/04*
U.S. Cl. 128—640 74 Claims



1. A dry electrode system for the detection of biopotentials existing on the surface of the skin of a living body, comprising:
a conductive dry electrode pad having opposed sides, one of which is adapted to contact said skin, comprising a resilient conductive pad having opposed sides, and adhesive means comprising first and second conductive adhesive layers applied to opposed sides of said conductive pad said first adhesive layer adapted to adhere said conductive pad to said skin; and
an amplifying circuit connected to the other side of said dry electrode pad by means of said second adhesive layer for

VOL 1093 ISS 3 AG 16 1988 UMI

amplifying a biopotential transmitted via said dry electrode pad to said amplifying circuit.

4,763,660

FLEXIBLE AND DISPOSABLE ELECTRODE BELT DEVICE

Mark W. Kroll, Rogers; Mark R. Pommrehn, Bloomington, and Dan Hanson, Minneapolis, all of Minn., assignors to Cherne Industries, Inc., Minneapolis, Minn.

Continuation of Ser. No. 807,346, Dec. 10, 1985, abandoned. This application Mar. 13, 1987, Ser. No. 24,919

Int. Cl.⁴ A61B *5/04*

U.S. Cl. 128—640 **26 Claims**



1. A unitary, disposable and flexible belt device for the releasable securement to the body of a patient and for receiving and transmitting electric current and voltage, said device having a composite and layered body structure with a terminal end and being connectable for use with a cable set of medical therapeutic and diagnostic apparatus, said composite and layered body structure further comprising:

a. a flexible non-conductive base structure layer for supporting and insulating the remaining elements of said composite and layered body structure,

b. a flexible conduction network affixed to said non-conductive base layer having a plurality of predetermined contact areas for receiving and transmitting electrical signals and a signal distribution system extending from said contact areas to the terminal end of the device, said signal distribution system and said contact areas of said flexible conduction network being comprised of a flexibly planar homogeneous layer of conductive material deposited on said base structure by a printing process,

c. a flexible inner non-conductive insulation layer affixed and coextensively disposed to said non-conductive base layer for insulating said signal distribution system from the body of a patient, said inner non-conductive layer further having a plurality of predetermined apertures exposing said conduction network contact areas, and having a void area at said terminal end exposing said signal distribution system, and

d. flexible conductive adhesive members affixed and coextensively disposed at each said plurality of predetermined apertures of said inner insulation layer for contact with said contact areas and the body of a patient to transfer electrical signals therebetween and for holding said device to the patient.

4,763,661

FILTERED ULTRASONIC WAVE METHOD AND APPARATUS FOR DETECTING DISEASED TISSUE

F. Graham Sommer, Stanford, and Roger A. Stern, Palo Alto, both of Calif., assignors to Stanford University, Stanford, Calif.

Filed Feb. 11, 1986, Ser. No. 828,954

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **9 Claims**

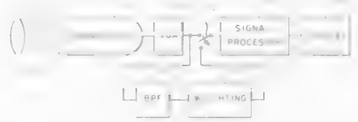
6. Apparatus for use in diagnosing disease in a region of tissue in a body using tissue backscattering characteristics, said body having tissue layers overlying said region comprising

means for applying an ultrasound waves to tissue, said ultrasound waves having a first frequency spectrum and a center frequency,

means for receiving ultrasound waves backscattered from said tissue and generating electrical signals therefrom,

means for amplifying said electrical signals to a standardized dynamic amplitude range to compensate for attenuation of said tissue layers,

at least one bandpass filter means for receiving and filtering said amplified electrical signals to provide enhancement of



backscattering characteristics of said tissue region when diseased, said bandpass filter means having a narrow pass band relative to said first frequency spectrum, said bandpass filter means having a center frequency within the bounds of said first frequency spectrum,

means for determining amplitude distributions of the filtered electrical signals from said bandpass filter means,

means for determining at least one statistical parameter of said amplitude distributions, said at least one parameter being indicative of said tissue backscattering characteristics, and

means for analyzing said at least one parameter to diagnose the presence of disease in said tissue region.

4,763,662

ULTRASONIC BIOPSY ENDOSCOPE WITH EXTENSIBLE GUIDE SHEATH

Takeshi Yokoi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 27, 1986, Ser. No. 868,304

Claims priority, application Japan, Jun. 7, 1985, 60-123598; Sep. 28, 1985, 60-216049

Int. Cl.⁴ A61B *10/00*

U.S. Cl. 128—660 **16 Claims**



1. An ultrasonic diagnostic apparatus, comprising:

an operation section;

a flexible insertion section extending from said operation section and adapted to be inserted into the body cavity of a human being, said insertion section including an insertion channel which extends through the insertion section and has one end open to a distal end of the insertion section and the other end communicating with said operation section, said insertion section having a longitudinal axis at said distal end;

an ultrasonic scanner having an ultrasonic wave oscillation means and attached to a side of the distal end of said insertion section for emitting ultrasonic waves toward, and receiving said waves from, a region of interest within the body for observation thereof, said ultrasonic wave oscillation means being oriented to emit said waves in a scan plane extending laterally with respect to said longitudinal axis, said ultrasonic scanner having a back side oriented towards said longitudinal axis;

a guide sheath slidably inserted into said insertion channel and having a distal end portion adapted for sliding between housed and extended positions; and

a support means for pivotally supporting the distal end portion of said guide sheath on the distal end portion of said insertion section and for moving the distal end portion of said guide sheath, during withdrawal of said guide sheath back into said insertion section, to said housed position where it is located at the back side of the ultrasonic scanner in the distal end portion of the insertion section and exposed to the outside of the distal end portion of the insertion section and, during the pushing out of the guide sheath from said insertion section to said extended position, for moving the distal end portion of said guide sheath in a pivotal operation around the support means to change its direction;

wherein the distal end portion of the guide sheath, in its extended position, has a distal end face oriented such that a direction line normal to said end face intersects said scan plane.

4,763,663

ESOPHAGEAL STETHOSCOPE AND VITAL SIGNS MONITOR SYSTEM

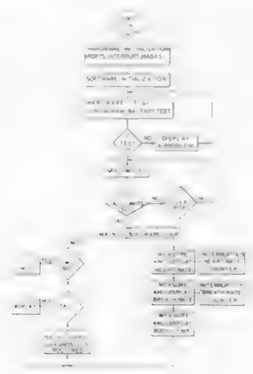
James D. Uphold, Canoga Park, and Robert L. Pfohl, Anaheim Hills, both of Calif., assignors to Vitacomm, Ltd., Anaheim, Calif.

Continuation of Ser. No. 522,640, Aug. 11, 1983, Pat. No. 4,619,268. This application Oct. 28, 1986, Ser. No. 924,047

The portion of the term of this patent subsequent to Oct. 28, 2003, has been disclaimed.

Int. Cl.⁴ A61B *5/02*

U.S. Cl. 128—671 **20 Claims**



1. A patient vital signs monitoring system comprising:

an elongated esophageal catheter having a near end and a closed distal end for placement in a patient's esophagus;

temperature sensing means in the said catheter for sensing temperature and generating a first electrical signal corresponding thereto;

sound sensing means mounted in the said catheter for generating a second electrical signal corresponding to both heart sounds and breathing sounds;

amplifying means in said catheter for amplifying said second electrical signal;

conductor means connected to said temperature sensing means and said sound sensing means for conducting said signals away from the patient's body;

a remotely located monitoring unit connected to said conductor means for receiving said first and second signals and processing said first and second signals, including separating said seond signal into heart sound signals and breathing sound signals;

said monitoring unit comprising wireless IR transmitting means for transmitting said heart sound signals and said breathing sound signals; and

a remote portable IR receiving means worn on an opeator's body for receiving and reproducing said sound signals for enabling remote monitoring of said heart sounds and said breathing sounds.

4,763,664

GAS COLLECTOR UNIT FOR MEASURING THE METABOLIC VARIABLES OF SELF-RESPIRING PATIENTS

Pekka Meriläinen, Helsinki, Finland, assignor to Instrumentarium Corp., Finland

Filed Mar. 13, 1987, Ser. No. 25,381

Claims priority, application Finland, Mar. 26, 1986, 861289

Int. Cl.⁴ A61B *5/08*

U.S. Cl. 128—718 **5 Claims**

1. A gas collector unit to be fitted over the head of a patient for measuring oxygen consumption, carbon dioxide output and respiratory quotient, said unit comprising a clear, substantially half-ellipsoidal plastic canopy (1), a cylinder of plastic sheeting (8), which is seamed airtightly to its edges and whose mouth (10) can be sealed airtightly around the neck of a patient, as well as hose couplings (2) and (3) and flow diffusers (6) and (7) associated therewith, characterized in that the free volume of a canopy with a patient's head therein is less than a third of the amount of air flowing through the canopy per minute and that the free cross-sectional area of said canopy perpendicular to flow is dimensioned in a manner that the average speed of air flow over the face is higher than 4 cm/s and the CO_2-content of inhalation air is less than 0.2%.

4,763,665

SHIELDED THERMISTOR FOR MICROWAVE ENVIRONMENT

Frank Mascuch, Watchung; Arthur Winter, Short Hills, and Satish Laroia, Edison, all of N.J., assignors to Victory Engineering Company, Springfield, N.J.

Filed Jun. 17, 1987, Ser. No. 63,093

Int. Cl.⁴ A61B *5/00*

U.S. Cl. 128—736 **7 Claims**

1. A thermistor assembly comprising:

a thermistor;

said thermistor including a first insulating coating thereon;

electrical conductors connected to said thermistor;

a second insulating coating on said electrical conductors;

VOL 1093 ISS 3 AG 16 1988 UMI

said first and second insulating coating forming a continuous insulation;

an interface metallic layer on said second insulating coating;



an electrically conductive foil wrapped upon said thermistor and in overlapping electrical contact with a portion of said interface metallic layer; and

a surface metallic layer on said interface metallic layer and said electrically conductive foil.

4,763,666

METHOD AND APPARATUS FOR DETERMINING THE THERMAL SENSITIVITY OF THE HUMAN PERIPHERAL NERVOUS SYSTEM

Friedrich Strian, Graefelfing; Rupert Hoelzl, Munich; Günther Galfe, Munich; Stefan Lauterbacher, Munich, and Wilhelm Lehmann, Munich, all of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Göttingen, Fed. Rep. of Germany

Filed Apr. 22, 1986, Ser. No. 854,694
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—742 16 Claims



1. An apparatus for testing the temperature sensitivity of a portion of the skin of a subject, said apparatus comprising:

applicator means (**30**) having a contact surface (**32**) for directly applying, when energized, a thermal stimulus of controlled temperature to said skin portion;

energizing means (**38**) connected to said applicator means for energizing said applicator means;

controlling means (**46**, **52**) connected to said energizing means for controlling said energizing means to establish a predetermined temperature of said contact surface of said applicator means;

actuating means (**71**) for supplying an actuator signal; and

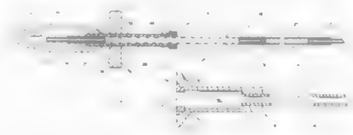
maintaining means (**76**, **102**) connected to said controlling means and being responsive to said actuating signal for maintaining essentially constant the temperature of said contact surface of said applicator means at a temperature value established by said controlling means at the time of actuation of said actuating means for a predetermined period of time after actuation of said actuating means (**71**).

4,763,667

TISSUE-PENETRATING CATHETER DEVICE

Michael P. Manzo, Upton, Mass., assignor to Microvasive, Inc., Milford, Mass.

Filed Sep. 19, 1986, Ser. No. 909,624
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—750 8 Claims



1. A tissue-penetrating catheter device for use within the body, comprising:

an outer catheter assembly comprising an outer elongated, flexible outer catheter having a distal end and a proximal end, and a terminal member joined to the proximal end of said outer catheter,

said terminal member having the form of a sleeve and terminating proximally in an enlarged surface adapted to rest between fingers of a physician to stabilize said outer catheter assembly from distal axial motion,

an inner catheter assembly comprising an elongated, flexible inner catheter extending within said outer catheter and having a distal end and a proximal end, and defining a flexible conduit therethrough, a fluid connector means at the proximal end of said inner catheter for connecting said conduit to means for producing fluid flow, said fluid connector means comprising an elongated distal shaft sized and constructed to telescope into the sleeve-form terminal member, and tissue-penetrating means at the distal end of said elongated, flexible inner catheter sized to enter the distal end of said elongated, flexible outer catheter,

means for moving said inner catheter axially with respect to said outer catheter in a manner to move said tissue-penetrating means axially between a protected position in which said tissue-penetrating means is disposed within said outer catheter and a projected position in which said tissue-penetrating means projects beyond said outer catheter, exposed to enter tissue,

a pair of cooperating stop surfaces associated with respective portions of said inner and outer catheter assemblies for limiting the distance of distal axial movement of said inner catheter relative to said outer catheter, the proximal end of said terminal member forming a relatively stationary, first of said stop surfaces, and a second of said stop surfaces being carried by a presettable, axially adjustable member capable of being selectably positioned along said shaft to enable the physician to preselect the amount of projection of said tissue-penetrating means from said outer catheter when said inner catheter assembly is moved to said projected position, said shaft defining a range of selectable positions for said presettable, axially adjustable member.

4,763,668

PARTIBLE FORCEPS INSTRUMENT FOR ENDOSCOPY

Andrew M. Macek; Mark W. Kozak, both of Euclid, and Edward J. Smith, Hinckley, all of Ohio, assignors to Mill Rose Laboratories, Mentor, Ohio

Filed Oct. 28, 1985, Ser. No. 792,093
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—751 26 Claims

24. A flexible biopsy instrument comprising:

a cable sheath having a proximal and a distal end;

a cable operator attached to the proximal end of the sheath;

a forceps unit having as connected parts, a body, forceps-pincers pivotably connected to the body and a cable connected to the forceps-pincers;

means on the forceps unit and the distal end of the cable sheath cooperable to demountably attach the forceps unit to the sheath; and



means on the cable operator for releasably securing the forceps unit whereby the forceps unit can be removed from the sheath and cable operator without disassembly of the unit parts.

4,763,669

SURGICAL INSTRUMENT WITH ADJUSTABLE ANGLE OF OPERATION

John C. Jaeger, 3584 Batavia-Elba TLR, Oakfield, N.Y. 13125

Continuation-in-part of Ser. No. 817,290, Jan. 9, 1986, abandoned. This application Sep. 4, 1987, Ser. No. 93,009
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—751 17 Claims



1. A medical instrument for performing surgical procedures, comprising:

a longitudinal instrument frame;

an instrument head connected to a first end of said frame, said head including two jaw members connected to said frame for relative movement toward and away from each other;

a handle means connected to a second end of said frame for holding said instrument frame and connected to said head for moving at least one of said jaw members;

means connected to said frame and said head for adjusting the angular position of said head relative to said frame in a fixed plane, said relative movement of said jaws occurring in said fixed plane; and

said adjusting means including said handle means.

4,763,670

MICROBIOLOGICAL SPECIMEN SAMPLING DEVICE

Michael P. Manzo, Upton, Mass., assignor to Microvasive, Inc., Milford, Mass.

Filed Sep. 19, 1986, Ser. No. 909,850
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—756 5 Claims

1. A microbiological specimen sampling device capable of operation by one hand for exposure of a sample collector and for obtaining contamination-free specimens, comprising

a catheter assembly comprising:

an outer catheter having a distal end and a proximal end, and an inner catheter having a distal end and a proximal end,

a sample collector disposed generally within said inner catheter,

a removable, water soluble plug engaging and sealing a portion of said outer catheter in a position between the distal end of said outer catheter and the distal end of said inner catheter, and

means operable by one hand for moving said outer catheter axially with respect to said inner catheter and for extending said sample collector beyond the distal ends of said catheters to obtain a sample, comprising:

a first handle member at the proximal end of said outer catheter,



a second handle member at the proximal end of said inner catheter and located proximally of said first handle member, and

operating means for said sample collector,

said handle members defining respective surfaces adapted and arranged for operating engagement by different digits of one hand of an operator to be drawn together to cause relative axial movement of said inner and outer catheters to dislodge said plug from said outer catheter by pushing-out motion of said inner catheter, and

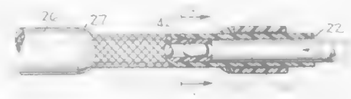
said operating means of said sample collector adapted to be operated by a digit of the same hand while the hand grasps the proximal end of said catheter assembly.

4,763,671

METHOD OF TREATING TUMORS USING SELECTIVE APPLICATION OF HEAT AND RADIATION

Don R. Goffinet, Stanford, Calif., assignor to Stanford University, Stanford, Calif.

Continuation of Ser. No. 565,505, Dec. 27, 1983, abandoned. This application Apr. 25, 1986, Ser. No. 858,891
Int. Cl.[4] A61N *1/06*
U.S. Cl. 128—786 5 Claims



1. A method of treating a tumor in an animal, such as a human, comprising the steps of inserting a plurality of flexible catheters each containing an external electrode into a volume of the body of the patient in which the tumor is located, passing an electrical current from one catheter electrode to another electrode and defining an electrical current path through the tumor to thereby create selective heating of the tumor, inserting radioactive material in at least one of said catheters while said catheter remains in the body of the patient with the material being inserted at a location adjacent said tumor, and maintaining said current and said radioactive material in place for sufficient times to cause necrosis of said tumor without significantly affecting the adjacent healthy tissue of said body.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,672

APPARATUS FOR INJECTING LIQUID-TYPE MATERIAL IN THE CHIMNEY OF A CIGARETTE MAKER

Joseph L. Gregory, III, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 16, 1986, Ser. No. 942,411
Int. Cl.[4] A24B *15/28*; A24C *15/18*; A24D *1/00, 1/18*
U.S. Cl. 131—79 29 Claims



1. Apparatus for injecting liquid-type material into cigarette filler in the chimney of a cigarette making machine, said chimney being open at the bottom thereof to a supply of cigarette filler and having at the top thereof a perforated suction tape, suction being applied from above said suction tape, said suction tape riding horizontally in one direction on a pair of spaced-apart wear-resistant rails from a first side of said chimney to a second side thereof, said spaced-apart rails forming a channel therebetween, whereby said filler accumulates in said channel by virtue of said suction and is carried horizontally by said suction tape to subsequent sections of said cigarette making machine for formation into a cigarette rod, wherein:

said channel comprises a first portion beginning at said first side of said chimney and extending to a first point between said first and second sides and a second portion extending from said first point to said second side and having a centerline, said first portion being narrower than said second portion; said apparatus further comprising:

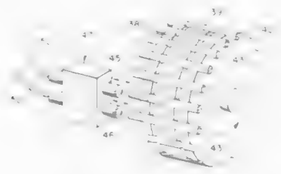
means for injecting said liquid-type material into said accumulated filler in said second portion of said channel at a second point adjacent said first point.

4,763,673

METHOD AND APPARATUS FOR EJECTING TOBACCO FROM FILTER CIGARETTES

Vernon B. Barnes, Winston-Salem; Donald R. Wilkinson, Clemmons; John W. Shore, Hamptonville, and Ronnie G. Huff, Kernersville, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Feb. 4, 1985, Ser. No. 698,024
Int. Cl.[4] A24C *5/36*
U.S. Cl. 131—96 30 Claims



1. Apparatus for ejecting cut tobacco from filter cigarettes by applying pressurized air to the filter end of each cigarette comprising

(a) transport means for moving a succession of filter cigarettes in spaced relationship along a predetermined path,

(b) means for supplying a succession of filter cigarettes to said transport means,

(c) means for advancing the transport means in an indexing manner with a brief pause between indexed movements,

(d) reciprocating mouthpiece means for temporarily engaging the filter end of each filter cigarette at a point in the predetermined path along which the filter cigarettes move, said mouthpiece means being provided with a passageway through which pressurized air is applied to the filter end of each engaged filter cigarette,

(e) restraining means adjacent to the point at which the reciprocating mouthpiece means engages the filter end of each filter cigarette, said restraining means being designed to contact and to restrict longitudinal movement of each engaged filter cigarette,

(f) means for supplying pressurized air to said mouthpiece means while said reciprocating mouthpiece means engages the filter end of each filter cigarette and

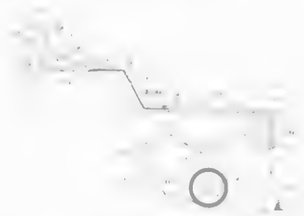
(g) means for coordinating the indexing advancement of the transport means with the movement of the reciprocating mouthpiece means and said means for supplying pressurized air to said mouthpiece means so that the reciprocating mouthpiece means engages the filter end of each filter cigarette and applies pressurized air to each engaged filter end during said brief pause between indexed movements of the transport means to eject the cut tobacco from said filter cigarettes.

4,763,674

METHOD AND DEVICE FOR CONTROLLING HYDROGEN CYANIDE AND NITRIC OXIDE CONCENTRATIONS IN CIGARETTE SMOKE

Michael D. Lelah, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 16, 1986, Ser. No. 852,482
Int. Cl.[4] A24D *3/16*
U.S. Cl. 131—342 18 Claims



1. A method for selectively removing or controlling toxic gas components within cigarette smoke, comprising utilizing, as a filter element, the product of a filter rod-making apparatus using at least one polyolefin fiber- or film-containing garniture feed treated with an effective amount of at least one active modifier component of the group sodium carbonate, potassium permanganate and manganese dioxide; said active modifier component being dissolved or dispersed in a non-ionic spin solution and glycerol triacetate.

4,762,675

FINE TOOTH COMB

Amedio DeFelice, 251 Florence St., Leominster, Mass. 01453

Filed Jun. 5, 1987, Ser. No. 58,383
Int. Cl.[4] A45D *24/04*
U.S. Cl. 132—137 1 Claim

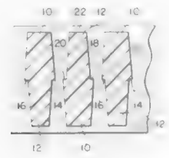
1. A fine tooth comb having a narrow elongated back and a row of generally co-planar parallel closely spaced teeth formed integrally with said back and extending in substantially the same direction away from said back,

said comb having a pair of opposite faces, one on each side of a central longitudinal plane through said comb,

each of said teeth having an end remote from said back and being substantially uniformly longitudinally tapered from said back to a point adjacent said end,

each of said teeth further being of substantially identical size and shape and each having a wider longitudinal half portion and a narrower longitudinal half portion extending from the comb back to adjacent said remote end,

said wider longitudinal half portion and said narrower longitudinal half portion of each tooth being uniformly tapered outwardly and oppositely from said central longitudinal plane by corresponding distances,



said teeth being alternately inverted so that said wider longitudinal half portions alternate with said narrower longitudinal half portions at both faces of the comb,

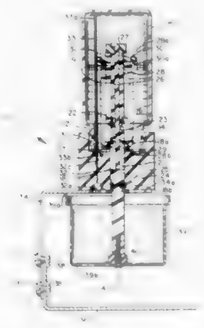
each wider longitudinal half portion including shoulders forming a pair of ledges where the wider longitudinal half portion joins said narrower longitudinal half portion at such central plane, the ledges of each tooth facing the narrower longitudinal half portion of the same tooth and being side by side with the shoulders of adjacent teeth, the shoulder ledges on adjacent teeth facing in opposite directions and forming a narrow jog in the passages between teeth, the shoulder ledges extending in general the length of the teeth.

4,763,676

LIQUID DISPENSER

William G. Mizuno, Saint Paul, Minn., assignor to Ecolab Inc., St. Paul, Minn.

Continuation of Ser. No. 679,318, Dec. 7, 1984, abandoned. This application Jan. 9, 1987, Ser. No. 4,840
Int. Cl.[4] B08B *13/00*
U.S. Cl. 134—100 21 Claims



1. A liquid dispenser for dispensing a measured quantity of liquid from a reservoir to a dispensing location, said dispenser comprising:

(a) a dispenser head member adapted for engaging the reservoir, said head member having a bore having a first opening and a second opening, said first opening proximate the reservoir and said second opening proximate the dispensing location;

(b) a stem member slideably mounted in said bore of said head member;

(c) means for moving said stem member between a filling position and a dispensing position said moving means having movement depending on a rise and fall of a level of water;

(d) said stem member having a measuring cavity, said measuring cavity in fluid communication with the reservoir when in said filling position wherein the liquid enters said measuring cavity, and said measuring cavity having a constant volume during dispensing and dispensing a given volume of the liquid from said measuring cavity when in said dispensing position and when in a position intermediate said dispensing and filling positions said measuring cavity is enclosed by said head member and when in said dispensing position a portion of said measuring cavity exits said head member and retains a constant volume, shape, and configuration;

(e) a first umbrella seal cooperatively connected to said stem member and positioned above said measuring cavity; and

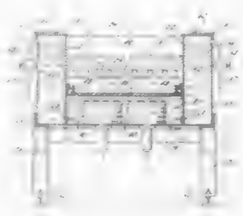
(f) a second umbrella seal cooperatively connected to said stem member and positioned below said measuring cavity, whereby said first umbrella seal is engaged when said stem member is at its lowest position and said second umbrella seal is engaged when said stem member is in its uppermost position.

4,763,677

SONIC TREATMENT APPARATUS

George R. Miller, McHenry, Ill., assignor to Techalloy Illinois, Inc., Union, Ill.

Filed Nov. 26, 1986, Ser. No. 935,345
Int. Cl.[4] B08B *3/121*
U.S. Cl. 134—105 8 Claims



1. Sonic apparatus for treating material and comprising a tank having a bottom wall and upright side wall means, partition means dividing at least a portion of said tank into upper and lower compartments, a treating liquid in said upper compartment, electrically energizable transducer means in said lower compartment and operable when energized to produce sonic energy which coacts with said treating liquid to treat material in said upper compartment, a cooling liquid in said lower compartment, said cooling liquid being different from said treating liquid, being inert with respect to said transducer means and serving to cool said transducer means when the latter are energized, said partition means including a generally horizontal wall for isolating said treating liquid from said cooling liquid and said transducer means and made of a material enabling sonic energy to be transmitted through said wall from said transducer means to said treating liquid and to said material in said upper compartment, said tank further including a chamber containing cooling liquid and communicating with said lower compartment, the level of cooling liquid in said chamber being higher than the level of treating liquid in said upper compartment whereby the cooling liquid in said chamber keeps said lower compartment full and creates a pressure head preventing treating liquid in said upper compartment from leaking into said lower compartment.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,678

CLEANING APPARATUS FOR ELONGATED ENCLOSED CHANNEL DEVICES

Beverly J. Ott, Stewartville, Minn., assignor to Mayo Medical Resources, Rochester, Minn.

Filed Dec. 30, 1986, Ser. No. 947,769
Int. Cl.[4] B08B 3/04
U.S. Cl. 134—171 21 Claims



1. A cleaning system for cleaning at least that portion of a flexible, elongated object having at least one internal passageway therein extending along its length which passageway terminates at a corresponding terminal orifice at an orifice end of said object portion and at a corresponding access orifice at that end remaining of said object portion which occurs at an access location along said object, said system comprising:

an insertion tank capable of storing a fluid and having an object insertion opening through which it is capable of receiving therein said orifice end of said object portion, said insertion tank further having therein an open container means rotatably mounted in said insertion tank at a support side of said open container means opposite a reception opening to said container means such that said object portion, if its orifice end is entered in said object insertion opening, can continue into said open container means through said reception opening therein and flexibly bend to have its orifice end and selected other parts thereof contained in said open container means with said object having its remainder extending through said object insertion opening and outside of said insertion tank including said access orifice;

a first fluid control valve means to selectively allow fluids to pass therethrough;

a fluid transfer means connected to said first fluid control valve means to permit transfers of fluids passing through said first fluid control valve means; and

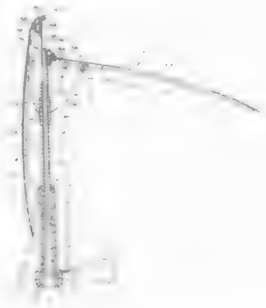
an object access connection means adapted for connection to said access orifice of said object to permit fluid transfers thereto, said first fluid control valve means and said fluid transfer means, connected together as aforesaid, being between said object access means and a first connection means adapted for connection to a source of a first fluid such that said object access connection can accept any of said first fluid permitted to pass by said first fluid control valve means.

4,763,679

TOY UMBRELLA

Karl D. Lerch, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 8, 1987, Ser. No. 71,015
Int. Cl.[4] A45B 25/14
U.S. Cl. 135—20 M 8 Claims



1. A toy umbrella movable between open and closed positions comprising:

an elongated hollow handle member;

a hollow stem mounted for rotation within the handle member;

a rod slidably mounted within the handle member and stem;

gear means coupling the handle member to the rod for reciprocally moving the rod between inner and outer positions upon rotation of the stem;

an umbrella cover of fabric material having a center portion secured to the outer end of the rod;

rigid stave members secured to the cover in a radially extending pattern from the center portion thereof; and

flexible support means coupling the handle member to the stave members whereby movement of the rod to its inner position moves the umbrella cover to its open position, and movement of the rod to its outer position moves the umbrella cover to its closed position.

4,763,680

ADJUSTABLE CRUTCH WITH S-CURVE

Adam Acosta, Sr., 68 Connoley Cir., Chula Vista, Calif. 92011

Filed Nov. 16, 1987, Ser. No. 121,067
Int. Cl.[4] A61H 3/02
U.S. Cl. 135—68 3 Claims



1. A crutch having:

(a) an upper portion;

(b) a lower portion extended from said upper portion;

and,

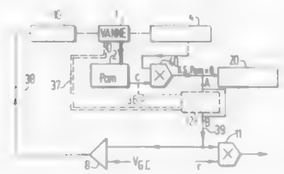
(c) said upper portion being comprised of a pair of spaced substantially parallel tubular support members with an underarm support passing across and between the tops thereof, said support members together extending down from said underarm support, each defining a first portion which is generally vertical in use, and each of said support members continuing downward from said first portion into a second portion which is deflected outwardly to clear the hip of the user, and continuing downwardly therefrom into a third portion which deflects back toward the user and is substantially vertical in use, parallel to said first portion.

4,763,681

PROCESS FOR CONTROLLING THE FLOW OF A FLUID IN A VALVE AND APPARATUS FOR CARRYING OUT SAID PROCESS

Francis Cuny, Mezy-sur-Seine; Hugues Vermeille, Meylan, and Jean Arnault, Saint-Nazaire-les-Eymes, all of France, assignors to L'Air Liquide, Paris, France

Filed Feb. 12, 1987, Ser. No. 13,652
Claims priority, application France, Feb. 14, 1986, 86 02012
Int. Cl.[4] G05D 7/06
U.S. Cl. 137—8 5 Claims



1. A process for controlling the flow at a sonic and subsonic rate of a fluid through a valve of given section having a movable valve member, said process comprising

initially calculating a plurality of correction coefficients in dependence on corresponding selected values of a ratio of the pressure of the fluid upstream of the valve $P_{upstream}$ and downstream of the valve $P_{downstream}$, each of the coefficients being indicative of a flow $Q_{real\ of}$ the fluid for the respective ratio, the selected values of the ratio corresponding to respective subsonic rates of the flow Q_{real}, and initially storing the plurality of correction coefficients in a memory having a plurality of memory locations having respective addresses, respective ones of said correction coefficients being stored in respective ones of said memory locations,

measuring the upstream pressure $P_{upstream}$ and the downstream pressure $P_{downstream}$ and the position d of the valve member, calculating the flow Q_{real} of the fluid and comparing it with a set value Q_O, the difference signal $Q_{real}-Q_O$ commanding the displacement of the valve member in the desired direction, the flow Q_{real} being calculated by first of all effecting the product $Q_{sonic}=k\times P_{upstream}\times d$ representing the real flow of the fluid when the flow rate of the fluid is sonic, k representing a constant which is a function of the temperature of the fluid and of the section of the valve, then comparing the upstream pressure $P_{upstream}$ with the downstream pressure $P_{downstream}$ so as to determine whether the flow of the fluid is at a sonic or subsonic rate, the flow Q_{sonic} representing the real flow Q_{real} when the flow rate is sonic,

accessing the memory when the flow rate is subsonic to read out therefrom the correction coefficient corresponding to a ratio of the measured upstream pressure $P_{upstream}$ and the measured downstream pressure $P_{downstream}$, and multiplying the value Q_{sonic} by the read-out correction coefficient only when the flow rate is subsonic so as to obtain the value Q_{real} of the real flow, and

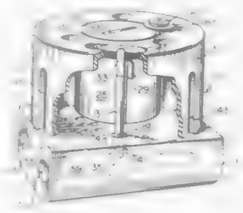
controlling said valve in response to the value Q_{real} of the real flow for both sonic and subsonic flow.

4,763,682

THERMALLY RESPONSIVE VALVE ACTIVATING ASSEMBLY

James B. Gardner, and Warren A. Dale, II, both of Fairplay, Colo., assignors to Drain Brain, Inc., Fairplay, Colo.

Filed Jan. 12, 1988, Ser. No. 143,458
Int. Cl.[4] E03B 7/12
U.S. Cl. 137—62 20 Claims



1. In a fluid valve system including in combination, a valve housing defining a conduit having a fluid inlet opening and a fluid outlet opening; a control valve located in said conduit for controlling the flow of fluid through said conduit, said valve including activating means for opening and for closing said valve in response to the presence or absence of mechanical pressure on said activating means, and an opening into said conduit in the vicinity of said activating means, said opening being defined by said housing and having an inner circumferential surface, wherein the improvement comprises:

means for substantially sealing fluid flow through said opening into said conduit, said sealing means having an outer circumferential surface and also defining an inner opening, said outer circumferential surface of said sealing means being in substantially fluid tight contact with said inner circumferential surface of said opening into said conduit, and with said inner opening of said fluid sealing means defining an opening therethrough;

a lever having a first end, a second end, and a outer circumferential surface, said lever extending through said inner opening defined by said fluid sealing means with a portion of the circumferential outer surface of said lever in substantially fluid tight contact with said inner circumferential surface of said fluid sealing means to thereby seal said opening into said conduit, said first end of said lever being juxtaposed to said valve activating means for contact with and separation from said valve activating means in response to the pivotal rotation of said lever around said fluid sealing means, whereby said fluid sealing means serves as a fulcrum for said lever; and

a thermally responsive element juxtaposed to said valve housing and maintained in fluid isolation from said conduit by the combination of said fluid sealing means and said lever which seal the opening through the housing into said conduit, said thermally responsive mechanical element including means which are caused to undergo mechanical movement in response to changes in temperature, said mechanically moving means being juxtaposed to said second end of said lever to make contact with said second end of said lever and to end contact with said second end of said lever in response to predetermined temperature conditions; whereby, at a predetermined temperature said thermally responsive element causes said mechanical moving means to make contact with a portion of said second end of said lever and thereby pivotally rotate said lever at its connection to said fluid sealing means so that said first end of said lever exerts pressure on or releases

VOL 1093 ISS 3 AUG 16 1988 UMI

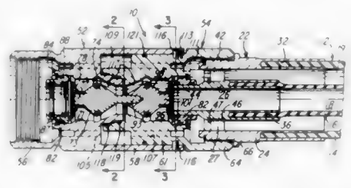
pressure from said valve activating means to open or close said valve activating means.

4,763,683

BREAKAWAY COUPLING FOR A COAXIAL FUEL SUPPLY HOSE

Paul D. Carmack, Tipp City, Ohio, assignor to Catlow, Inc., Tipp City, Ohio

Filed Sep. 21, 1987, Ser. No. 98,080
Int. Cl.[4] F16L *37/28*
U.S. Cl. 137—68.1 4 Claims



1. A breakaway coupling device adapted for use with a flexbile coaxial fuel supply hose defining a liquid fuel supply passage and a surrounding annular fuel vapor return passage in coaxial relation, said device comprising a first valve body and a second valve body disposed with a common center axis, each of said valve bodies defining an axially extending inner liquid fuel passage and a plurality of axially extending vapor passages spaced outwardly from said fuel passage, each of said vapor passages within each of said valve bodies extending in an arcuate circumferential direction around a portion of the corresponding said liquid fuel passage, each of said valve bodies having a frusto-conical valve seat defining a portion of said fuel passage, each of said valve bodies having a threaded annular end portion for releasably connecting said valve body to a coaxial fuel supply and vapor fitting, a corresponding valve closure member disposed within each of said fuel passages for axial movement between a closed position engaging the corresponding said valve seat and a retracted open position, a compression spring within each of said fuel passages for supporting the corresponding said valve member centrally within said fuel passage and for urging said valve member towards said closed position, a tubular member on one of said valve bodies and receiving the other said valve body, means for releasably connecting said tubular member to the other said valve body in a coupling position and providing for separating said valve bodies in response to a predetermined axial pulling force on said valve bodies, said tubular member defining an annular vapor chamber interconnecting all of said arcuate vapor passages in both of said valve bodies when said valve bodies are in said coupling position, means for sealing said vapor passages and vapor chamber from said fuel passages when said valve bodies are in said coupling position, and means for sealing said vapor passages within each said valve body and the threadably connected fitting from the corresponding said fuel passages.

4,763,684

GAS SEPARATION VALVE ASSEMBLY FOR A DIESEL MOTOR SYSTEM EQUIPPED FOR MEASURING FUEL CONSUMPTION

Heinz Kelch, Koenigsfeld, Fed. Rep. of Germany, assignor to Mannesmann Kienzle GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 847,207, Apr. 2, 1986, Pat. No. 4,724,860. This application Apr. 14, 1987, Ser. No. 38,146
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1985, 3512191
Int. Cl.[4] F16K *31/20*
U.S. Cl. 137—196 10 Claims

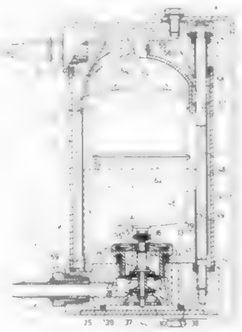
1. A gas separation valve assembly for the operational system of a diesel motor equipped for fuel comsumption measurement and including an injection pump comprising:

a tank having an outer wall and including an aperture for receiving excess fuel flowing back to said tank from said injection pump;

float means located within an interior space defined within said tank;

valve means responsive to said float means for controlling fluid flow through said interior space;

a duel sleeve assembly arranged essentially concentrically with a central axis of said tank surrounding said interior space, said sleeve assembly including an inner sleeve having a lower end in fluid-tight connection with said tank,



and an outer sleeve arranged to define an annular space between itself and the outer wall of said tank and an intermediate space between itself and said inner sleeve;

a baffle cupola retained over an upper end of said outer sleeve;

said excess fuel receiving aperture being arranged to deliver fuel flowing therethrough onto said baffle cupola and therefrom into said annular space; and

means effecting a lower fluid connection between said annular space and said intermediate space;

said duel sleeve assembly being configured to establish an upper fluid flow connection between said intermediate space and said interior space at an elevation higher than said lower fluid flow connection.

4,763,685

DISPERSAL MEMBER

Lloyd H. King, Sr., 5222 Green Farms Rd., Edina, Minn. 55436

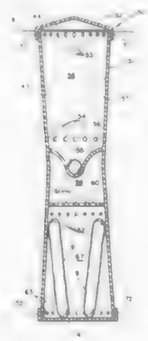
Division of Ser. No. 830,673, Feb. 18, 1986, Pat. No. 4,702,270, and a continuation-in-part of Ser. No. 798,184, Nov. 18, 1985, abandoned. This application Jul. 23, 1987, Ser. No. 76,911
Int. Cl.[4] B01D *11/00*
U.S. Cl. 137—268 7 Claims

1. A floating dispersal member comprising:

a container having a dispersant compartment for holding a material to be dispersed into a fluid;

means in said compartment to permit fluid to contact the material to be dispersed into the fluid;

flotation means to support said dispersal member in a floating condition in the fluid, said flotation means including a flotation compartment having a first end, said flotation compartment operable to provide flotation to said dispersal member, a weight located in said flotating dispersal member, said weight free to move in said floating member



to thereby tip said floating dispersal member as the dispersant dissolves in said dispersant compartment; and

means to permit fluid to enter said flotation compartment.

4,763,686

HYDRANT AND COMPONENTS THEREOF

David F. Laurel, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 22, 1988, Ser. No. 146,995
Int. Cl.[4] F16K *35/06, 3/36, 35/10*
U.S. Cl. 137—272 16 Claims



1. A hydrant, comprising:

a hydrant head including a water outlet port defined therein and including a top in which a fluidreceiving channel is defined and further including an outer surface in which a recess is defined;

means for connecting said hydrant head to a water line, said means including a standpipe section;

a valve disposed in said means for connecting, said valve including a valve stem;

a hydrant bonnet sealingly connected to said top of said hydrant head so that an excess reservoir volume is defined by said hydrant bonnet contiguous with said fluid-receiving channel of said hydrant head;

an operating nut connected to said hydrant bonnet and to said valve stem, said operating nut having defined therein a chamber receiving an end of said valve stem and communicating with said fluid-receiving channel of said hydrant head;

a nozzle including an inlet portion;

retainer means for holding said nozzle in said water outlet port of said hydrant head in response to said retainer means engaging said inlet portion of said nozzle from within said hydrant head;

a collar including a first inner circumferential engagement surface and a second inner circumferential engagement surface, said collar further including an outer surface through which an opening is defined, said opening intersecting said first inner circumferential engagement surface;

a retainer bar including an end disposed through said hole of said collar into said recess of said hydrant head, said retainer bar bent around said hydrant head in response to rotation of said collar relative to said hydrant head so that said retainer bar engages said hydrant head and said first inner circumferential engagement surface of said collar; and

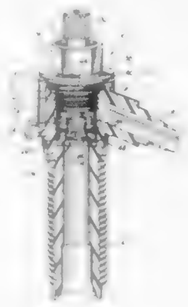
a retainer ring mounted on said standpipe section so that said retainer ring extends therefrom and engages said second inner circumferential engagement surface of said collar.

4,763,687

FAUCET VALVE

Michael J. Arth, 21398 Stratford Ave., Rocky River, Ohio 44116, and Raymond M. Arth, 3882 Savoy Dr., Fairview Park, Ohio 44126

Continuation of Ser. No. 902,583, Sep. 2, 1986, abandoned. This application Oct. 14, 1987, Ser. No. 110,086
Int. Cl.[4] F16K *47/02*
U.S. Cl. 137—454.5 13 Claims



1. A valve assembly, comprising:

(a) a bonnet including:

(i) structure defining an axial passage therethrough, a portion of said passage defining an outlet for discharging fluid;

(ii) said bonnet further defining an inlet spaced from said outlet through which fluid is received;

(b) a valving member for controlling fluid flow between said inlet and said outlet, said member including a sealing element engageable with a substantially cylindrical sealing surface defined by said passage, located near said inlet;

(c) said bonnet further defining a skirt at said inlet including a plurality of flutes on the inside of said skirt, said flutes gradually tapering towards said sealing surface and having their inner ends terminating and merging with said substantially cylindrical sealing surface such that as said sealing element of said valving member moves past said flutes, said fluid flow toward said outlet is gradually terminated whereby closure noise caused by turbulence at said inlet is inhibited.

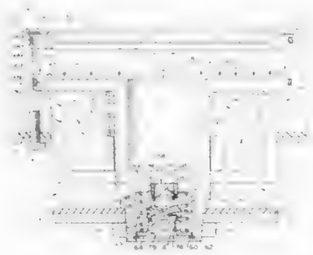
VOL 1093 ISS 3 AUG 16 1988 UMI

4,763,688

RELIEVING VALVE WITH SURGE CONTROL FOR FLUID STORAGE TANK

Carrol V. Morris, Cosby, Mo., assignor to KCCB, Inc., Kansas City, Mo.

Continuation of Ser. No. 867,784, May 27, 1986, abandoned.
This application Mar. 24, 1987, Ser. No. 29,714
Int. Cl.[4] F16K *31/12*
U.S. Cl. 137—509 12 Claims



1. A valve for relieving pressure from within a tank at a predetemrined tank pressure comprising, a housing retained on the tank and having an internal portion disposed within the tank and an external portion disposed outside of the tank in atmosphere and a plurality of vent openings in said portions, a closed expansion chamber in the valve and a pilot piston movable in the expansion chamber between a first position in which the valve is closed and a second position in which the valve is open, a poppet affixed to an end of the piston adjacent the internal portion of the housing operating to close the valve seat when the piston is in said first position and operating to open the valve seat when the piston is in said second position, said piston including a snubber valve chamber opening between said closed expansion chamber and the tank, said chamber having a fluid path separate from the fluid paths between said tank and said vent openings, a separate snubber surge valve assembly for controlling only rapid pressure increases within said tank, said snubber valve being movably retained within said snubber valve chamber, said snubber valve assembly being capable of movement independent of said pilot piston only upon occurrence of a surge or rapid pressure increase and having a plurality of openings therein to permit passage of the contents of the tank therethrough into said closed expansion chamber to cause movement of said piston from said first to said second position following a predetermined time delay after a rapid pressure increase within said tank above said predetermined tank pressure, to vent said tank only through said vent openings and including means for moving said piston from said second to said first position when said tank pressure falls below said predetermined tank pressure.

4,763,689

VACUUM CHECK VALVE

Donald L. Heffner, Miamisburg, and Donald L. Parker, Middletown, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 909,738, Sep. 19, 1986, Pat. No. 4,724,867.
This application Jul. 21, 1987, Ser. No. 76,201
Int. Cl.[4] F16K *15/06*
U.S. Cl. 137—514 2 Claims

1. A vacuum check valve assembly for controlling vacuum fluid pressure in a container, said check valve assembly comprising:

a housing, a valve chamber in said housing defined by opposed end walls and a side wall formed as a part of said housing, an inlet port and an outlet port formed in said housing and respectively opening through different ones of said walls so as to be in fluid communication with said valve chamber, said inlet port being adapted to be connected to a container in which vacuum fluid pressure is to be normally retained and said outlet port being adapted to be connected to a source of vacuum fluid pressure, an annular valve seat formed as a part of one of said housing end walls about said inlet port, a valve member movably mounted in said valve chamber and having a disc-like valve section in radially inwardly spaced relation to said chamber side wall, said valve member further having valve stem means extending axially from said disc-like valve section, said housing having valve stem-receiving guide means formed in said opposed end walls limiting the movements of said valve member to movements axially of said valve stem means and said disc-like valve section and toward and away from said annular valve seat to close said inlet port in one position and to open said inlet port and permit fluid flow around said disc-like valve section through said valve chamber and into said outlet port, a valve spring axially biasing said valve member toward said annular valve seat, and a spring element operatively



resiliently and laterally engaging said valve member and said housing and continuously biasing said valve member laterally, one of said chamber end walls including a boss in which one of said valve stem-receiving guide means is formed, said boss having groove means formed therein from the outer side surface thereof in a plane intersecting the axis of said one valve stem-receiving guide means, said groove means arcuately intersecting said one valve stem-receiving guide means at at least one arcuate location, said spring element being a resiliently and radially inwardly biased closed-loop spring received in said boss groove means and engaging the valve stem means received in said one valve stem-receiving guide means at said at least one arcuate location and exerting a resilient biasing force laterally on that valve stem means causing said valve stem means to drag and resist movements of said valve member and thus preventing undesired valve member pulsing movements and consequent valve member-generated noises during pulse-like changes of fluid pressure at at least one of said inlet and outlet ports.

4,763,690

LEAK-PROOF VALVE FOR GAS CYLINDERS

Richard L. Martin, Hesperia, Calif., assignor to Harsco Corporation, Camp Hill, Pa.

Continuation-in-part of Ser. No. 890,316, Jul. 29, 1986, abandoned. This application Jun. 11, 1987, Ser. No. 61,900
Int. Cl.[4] F16K *31/122*
U.S. Cl. 137—613 9 Claims

8. A cylinder valve for use with a cylinder of gas under pressure, such cylinder having a gas outlet, said cylinder valve including:

a hollow body portion having a gas inlet adapted to being connected to said gas outlet in said cylinder and having a system-gas outlet;

a hollow operator portion having a first end and a second end, said first end being aligned with said hollow body portion and communicating pneumatically therewith;

a cap closing said second end of said hollow operator portion;

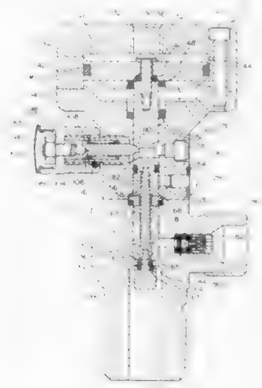
a normally-closed reverse-seat poppet valve coupled, pneumatically, between said gas inlet and said system-gas outlet of said hollow body portion of said valve;

said reverse-seat poppet valve, including a poppet having a face and coupled to a first shaft extending from said face, said poppet face having a groove herein for receiving and capturing a face seal;

a face seal carried by said groove in said face;

said body portion having a concentric planar shoulder facing and parallel to said face of said poppet for engaging said face seal;

said cap having a cylindrical inner-wall surface, an inner-top surface and an outer-top surface;



a bellows assembly mechanically coupled between said first shaft of said poppet valve and said body portion of said cylinder valve;

a piston snugly engaging said cylindrical inner-wall surface of said cap for forming a movable gas seal therewith, said piston having a coaxial linking shaft aligned with said first shaft and mechanically coupled thereto for movement in concert therewith;

spring means urging said piston along the axis of said linking shaft towards said flat, inner-top surface of said cap and urging said reverse-seat poppet valve into a closed state;

pneumatic-control inlet means communicating, pneumatically, between said inner-top top and outer-top surfaces of said cap; and,

manual means selectively couplable to said linking shaft for fixing said linking shaft in the closed position of said reverse-seat poppet valve.

4,763,691

HYDRAULIC CONTROL VALVE

Wolfgang Hahmann, Kempen, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

Filed Sep. 3, 1986, Ser. No. 903,270
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1986, 3531354
Int. Cl.[4] F15B *11/00*
U.S. Cl. 137—596.14 17 Claims

1. A hydraulic control valve adapted for controlling a plurality of consumer lines, and comprising

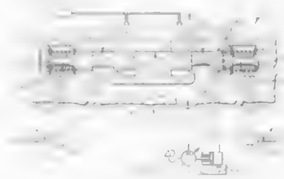
a housing having a bore therein,

first and second axially spaced apart consumer lines communicating with said bore,

a tank line communicating with said bore and positioned between said first and second consumer lines,

first and second hydraulic inlet lines communicating with said bore, with each inlet line being disposed adjacent a respective one of said first and second consumer lines, and on the side thereof opposite said tank line,

first and second slide valves slideably mounted in said bore on respective opposite sides of said tank line, with each of



said slide valves including a cylindrical control shoulder which is administered so as to be adapted to close the associated consumer line when the slide valve is positioned at a predetermined first axial position in said bore,

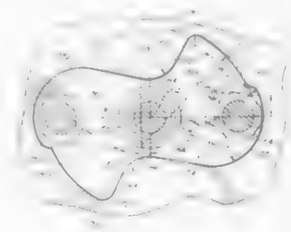
slide valve position means for selectively and independently moving each of said first and second slide valves between three positions, which include said predetermined first axial position, a second axial position establishing communication between the associated consumer and inlet lines, and a third axial position establishing communication between the associated consumer line and said tank line.

4,763,692

ROTARY VALVE STRUCTURE

Wesley J. Bachman, Auburn, and Edmund J. Gorsek, Springfield, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Filed Apr. 20, 1987, Ser. No. 40,595
Int. Cl.[4] F16K *3/02*
U.S. Cl. 137—625.3 20 Claims



1. A valve comprising a valve body and a valve seat defining an orifice, said valve body being rotatable relative to said valve seat for selectively seating and unseating relative thereto and movable through a continuous range of intermediate positions between a valve closed position wherein the orifice is fully covered by the valve body and a valve fully open position wherein the orifice is substantially entirely free of the valve body; wherein said valve body comprises a substantially solid body defining a surface of complementary form for engaging said valve seat, and having a pivot axis about which said valve body is rotatably mounted relative to said valve orifice, a periphery of said valve surface defining at least first and second curvilinear surfaces having axes of curvature which extend

VOL 1093 ISS 3 AG 16 1988 UMI

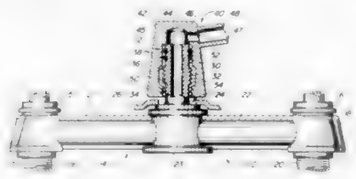
substantially parallel with each other and with the pivot axis of the valve body; the axis of curvature of a first of said curvilinear surfaces being disposed inwardly of the said first surface and within the periphery of the valve body; and the axis of curvature of the second of said curvilinear surfaces being disposed on the opposite side of the said second curvilinear surface and outside of the periphery of the valve body, and a remaining portion of said valve body surface defining a cross-sectional area at least as great as the cross-sectional area of the valve orifice for fully covering the same when in the valve closed position; said first and second curvilinear surfaces following sequentially from said remaining surface, and being oriented such that during rotation of the valve body about its pivot axis, the first surface will initially come into registry with said valve orifice for initially relatively slowly opening the valve, and thereafter said second surface will come into registry with said valve orifice for thereafter relatively rapidly opening said valve.

4,763,693

FAUCET WITH IMPROVED SWIVEL SPOUT

Harold J. Valley, 23462 Coso, Mission Viejo, Calif. 92692

Filed Mar. 5, 1987, Ser. No. 22,026
Int. Cl.[4] E03C *1/04*
U.S. Cl. 137—801 12 Claims



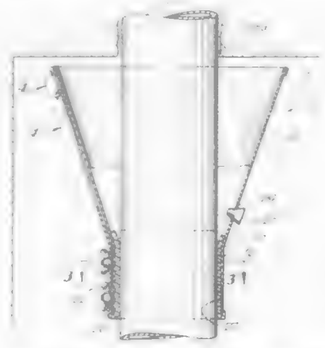
1. A water faucet with swivel spout comprising:
(a) a faucet for receiving water from at least one source;
(b) a nipple on said faucet and extending therefrom and having proximal and distal ends, said nipple defining a bore for the output of water from said faucet;
(c) a swivel spout structure for receiving water from said nipple and directing it to a point of delivery, said spout structure including a shroud body defining an axial bore in which said nipple is coaxially disposed, said shroud body defining a closed and an open end of its axial bore;
(d) said shroud body having internal threads circumscribing a portion of the axial bore defined thereby, said threads being limited to the portion which is proximate the open end of the axial bore of said shroud body;
(e) said shroud body having an annular groove which circumscribes a portion of the axial bore defined thereby with said annular groove being axially juxtaposed relative to the threaded portion of said shroud body; and
(f) said nipple having an externally threaded portion intermediate its distal and proximate ends and having an annular relief portion between its threaded portion and the proximal end thereof;
whereby assembly of said swivel spout structure on said nipple is accomplished by moving the threads of said shroud body into meshing engagement with the threads of said nipple and rotating said spout structure until the threads of said shroud body and said nipple move out of meshing engagement with each other to place the threads of said nipple in the annular groove of said shroud body and to place the threads of said shroud body in the annular relief area of said nipple to allow swivel movement of said spout structure with the out of meshing engagement of said threads of said shroud body and said nipple preventing the unintentional removal of said spout structure.

4,763,694

PARTICLE RETAINER CUP FOR RISER PIPES

Lillie M. Henderson, 347 W. 55th St., New York, N.Y. 10019

Filed Aug. 28, 1987, Ser. No. 90,607
Int. Cl.[4] F16L *55/07, 55/24*
U.S. Cl. 138—103 10 Claims



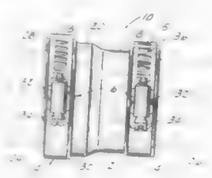
1. A retainer cup adapted for attachment around a continuous substantially vertical structure for retaining accumulated particulate material, the cup comprising:
a cylindrical shaped sleeve adapted for being attached around a continuous substantially vertical structure, said sleeve having a resilient material layer attached to its inner surface;
a conical-shaped casing having an enlarged diameter at its upper end and being joined at its lower end to said sleeve, said sleeve and casing having a single longitudinal joint having opposite mating edges thereof, said casing having a closable opening located at its lower end near said sleeve providing a means to drain the particulate material; and
fastening means for attaching together said opposite mating edges of the sleeve and casing, so as to provide an unitary cup for retaining particulate material within the casing.

4,763,695

COUPLING HOSE ASSEMBLY

Richard L. Dooley, Marion County, Mo., assignor to Buckhorn Rubber Products, Inc., Hannibal, Mo.

Continuation of Ser. No. 877,435, Jun. 20, 1986, abandoned.
This application Jul. 22, 1987, Ser. No. 76,269
Int. Cl.[4] F16L *21/06*
U.S. Cl. 138—109 8 Claims



1. A hose and clamp assembly for quick assembly of the hose with two spaced rigid tubular members, such as an automobile radiator inlet and an automobile engine outlet, said hose comprising an elastomeric material having a pair of circular clamps thereon, one adjacent each of its ends, one end of the hose being applicable to one of said tubular members and the other end of the hose being applicable to the other with the clamp on said one end of the hose surrounding said one tubular member and the clamp on the other end of the hose surrounding the other tubular member, each clamp comprising a flexible band extending circumferentially around the hose disposed in direct

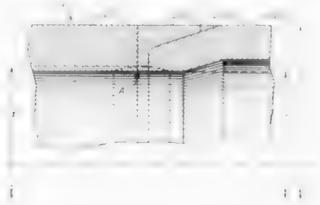
engagement with an elastomeric exterior surface of the hose, means on each of the band for pulling it around the hose so as to cause the band to squeeze the hose for sealing engagement of the interior surface of the hose with the respective tubular member, each band being secured to the hose by directly bonding the inner surface of the band to the elastomeric exterior surface of the hose over a limited minor area of the band and having a major portion of its length extending from said area of securement free of the hose and disposed for direct engagement with the exterior surface of the hose, each band being adapted to be pulled around the hose by the respective pulling means independently of the other band to effect squeezing of the hose within the band without imparting any squeeze to the hose within the other band, the hose being free to flex between the bands.

4,763,696

WELD JOINT FOR SOOT BLOWER LANCE TUBE

Andre T. Abromaitis, Erie, Pa., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Feb. 24, 1987, Ser. No. 17,893
Int. Cl.[4] F16L *13/04*
U.S. Cl. 138—155 4 Claims



1. In a soot blower lance tube comprising at least an inner and an outer, hollow tubular section, each of equal outer diameter and welded to one another end-to-end, the inner one of said sections having a wall thickness which is greater than the wall thickness of the outer one of said sections, the improvement characterized by:
(a) the inner end extremity of said outer section being deformed radially inwardly in a convergent taper, whereby the inside diameter of said outer section, at its innermost end extremity, substantially matches the inside diameter of said inner section at its outermost extremity,
(b) said sections being coaxially aligned in closely spaced, non-overlapped relation, and
(c) weld material joining said sections,
(d) said weld material extending between said sections over substantially the full wall thickness of said inner section and extending axially outward along the convergent external surfaces of the inner end extremity of said outer section,
(e) said sections being joined exclusively by said weld material.

4,763,697

MECHANISM TO CONTROL THE OSCILLATIONS OF THE HEALD FRAME CONNECTING RODS IN A ROTARY DOBBY

Giuseppe Serturini, Bergamo, Italy, assignor to Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A., Ponte Nossa, Italy

Filed Jan. 29, 1987, Ser. No. 9,047
Claims priority, application Italy, Jan. 31, 1986, 19248 A/86
Int. Cl.[4] D03C *1/00*
U.S. Cl. 139—76 11 Claims

1. Mechanism to control the oscillations of connecting rods operating the heald frames in a rotary dobby—of the type wherein, for each frame and connecting rod, said rod is mounted on a drive shaft by way of an eccentric interposed between said shaft and a small end of the connecting rod, and wherein said eccentric can be controlled for rotation, alternatively with the connecting rod or with the shaft, by means of a radial key, mechanical means adapted to shift said key to an outer position of engagement with the connecting rod small end, spring means adapted to return said key to an inner position of engagement with the shaft, electromagnetic means to hold, when energized, said key in said outer position of engagement with the connecting rod small end, said electromagnetic means comprising a pair of magnets, positioned oppositely externally to the connecting rod small end and adapted to be



alternatively energized, and a permanent magnet associated with one of said magnets, said permanent magnet having a field equal and opposite in sign to that produced by said one magnet when said one magnet is energized.

4,763,698

CAM UNIT INCORPORATING BATTEN FOR CONTROLLING THE REED OF WEAVING LOOMS

Jose A. Gea Aizpurua, Guipuzcoa, Spain, assignor to D. Joaquin Aperribay Elosua, San Sebastian, Spain

Filed Dec. 16, 1986, Ser. No. 942,378
Claims priority, application France, Dec. 16, 1985, 85 18814
Int. Cl.[4] D03D *49/60*
U.S. Cl. 139—190 3 Claims



1. A loom batten drive comprising, a cam unit for controlling the rotary oscillating movement of a first shaft by a second rotatable shaft extending parallel to the first shaft, said cam unit including first and second lever means which are adapted to be driven by engagement with first and second elements of a double cam, said first and second layer means being carried by said first oscillating shaft and said double cam being carried by said second rotatable shaft, a housing having first and second sections and opposite end walls, two pair of opposing openings formed in said end walls of said housing through which said first and second shafts are extended, said first and second lever means being supported on a first generally cylindrical bushing which is selectively mounted to said first oscillating shaft so as to be substantially enclosed within said housing, said double cam being supported on a second generally cylindrical bushing

VOL 1093 ISS 3 AG 16 1988 UMI

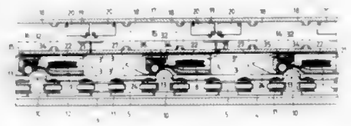
which is selectively mounted to said second rotatable shaft so as to be substantially enclosed within said housing, each of said first and second bushings having opposite outer end end portions which extend outwardly through said pairs of opposing openings in said end walls, and clamping means for urging said outer end portions of said first and second bushings into secured engagement with said first and second shafts.

4,763,699

SYSTEM OF DETECTION OF SHED CLOSED TO SHUTTLE PASSAGE IN MULTI-STEP TEXTILE LOOMS

Luciano Corain; Gianni Maitan, both of Vicenza, and Giulio Bortoli, Schio, all of Italy, assignors to Nuovo Pignone Industrie Meccaniche e Fonderia S.p.A., Florence, Italy

Filed Jul. 24, 1987, Ser. No. 77,223
Claims priority, application Italy, Jul. 30, 1986, 21311 A/86
Int. Cl.[4] D03D *47/26*
U.S. Cl. 139—436 6 Claims



1. A system for the detection of a shed closed by a persistent entanglement to passage of a shuttle in multiphase weaving type textile looms comprising:

(a) a plurality of shuttles, each shuttle being provided in its bottom portion with a roller;

(b) the roller of each shuttle cooperates with a corresponding thrust roller of a dragging chain;

(c) a plurality of control bars that guide said shuttles on their upper portion, said control bars and shuttles being elastically moveable along a vertical direction;

(d) two adjoining control blades, an inward rotatable blade and a shorter rigid and stationary outward blade, both located on a divergent side wall of each shuttle on a rotary reed-facing side thereof, wherein said inward control blade is maintained against the outward control blade by a spring;

(e) a rotatable lever pin held in a retracted position within each shuttle such that movement of the inward control blade upon engagement of a persistent entanglement frees the rotation of said lever pin, whereupon the lever pin protrudes from the shuttle, thereby pushing a corresponding control bar upwards; and

(f) means operatively connected to the loom for converting the upward movement of said control bars into a loom stop signal.

4,763,700

BINDING TOOL

Tomoharu Hidaka, Higashimurayama, and Yuji Sirakawa, Musashimurayama, both of Japan, assignors to Nirei Industry Co., Ltd., Mitaka, Japan

Filed Aug. 18, 1987, Ser. No. 86,756
Int. Cl.[4] B21F *9/02*
U.S. Cl. 140—93.2 17 Claims

1. A binding tool comprising:

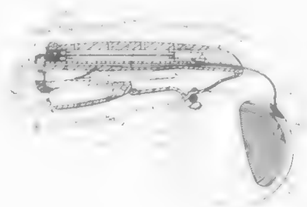
a tool body; and

a band case capable of containing a binding band in roll form;

wherein the tool body has formed therein in parallel a band passage through which the band can be passed and a fastener feed path in which a plurality of fasteners can be loaded seriatim thereinto from the rear open end thereof in alignment;

wherein a working head is slidably mounted on the front face of the tool body and is formed with a lower release opening of a size large enough to permit the passage therethrough of the fasteners and an upper fastener holding portion communicating with the opening;

wherein the working head is movable between a first position where the fastener holding portion is aligned with the front open end of the fastener feed path and the working head is capable of holding in the fastener holding portion a fastener fed out of the front end portion of the fastener feed path and a second position where the fastener holding portion is aligned with the front open end of the band



passage such that a band passing out from the front end of said passage can be inserted through any fastener held in the fastener holding portion;

wherein a cutter is disposed in the vicinity of the working head, the cutter being movable across the front open end of the band passage in association with the working head when the latter moves from the second position to the first position; and

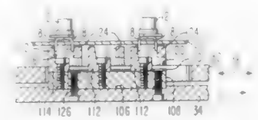
wherein a lug is positioned just below said band passage so as to secure a fastener in said fastener holding portion of said head when the latter is in said second position.

4,763,701

COMPONENT LEAD BENDING DEVICE

George J. Whitley, Philadelphia, Pa., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 27, 1987, Ser. No. 43,122
Int. Cl.[4] B21F *45/00*
U.S. Cl. 140—105 13 Claims



1. A component lead bending apparatus for bending leads of an array of components on a substrate comprising:

a support;

first and second actuating means secured to the support, each actuating means for displacement in given opposite directions relative to said support;

a first member moveably secured to the support and coupled to the first actuating means for displacement in said given directions in a first set of opposite senses;

a second member moveably secured to the support between the support and first member and coupled to the second actuating means for displacement in said given directions in a second set of opposite senses opposite the first set;

a first array of lead bending jaws secured to the first member;

a second array of lead bending jaws secured to the second member, each jaw of the first array corresponding to and facing a jaw of the second array for bending the leads of a component between said jaws; and

control means for operating said actuating means to displace said members in said first and second sets of senses.

4,763,702

PORTABLE FEED MATERIAL TRANSFERRING AND BAGGING APPARATUS

Samuel E. High, Jr., Lititz, and Aquila D. Mast, Lancaster, both of Pa., assignors to Feedmobile, Inc., Lititz, Pa.

Filed Feb. 26, 1987, Ser. No. 19,457
Int. Cl.[4] B65B *9/00, 25/02*
U.S. Cl. 141—114 25 Claims



1. In a portable feed material transferring and bagging apparatus, the combination comprising:

(a) a mobile frame adapted to stand on a support surface;

(b) an elongated feed material transfer conveyor having opposite feed material inlet and discharge ends and being operable for receiving feed material at its inlet end and transferring feed material to, and discharging feed material at, its discharge end;

(c) a feed material bagging unit having opposite inlet and discharge ends and being operable to receive at its inlet end feed material being discharged from said conveyor at said discharge end thereof and to fill bags therewith;

(d) an upright structure mounted on said frame and pivotally supporting said conveyor adjacent its discharge end and thereby disposing said conveyor discharge end at an elevation within a range thereof above the surface supporting said mobile frame so as to adapt said discharge end of said conveyor to discharge feed material at locations below which said bagging unit can fit;

(e) an adjustment mechanism on said frame connected to said conveyor adjacent its inlet end and being operable for changing and setting the elevation of said inlet end of said conveyor within a range thereof above the surface supporting said mobile frame so as to adapt said inlet end of said conveyor to receive feed material at locations below which said bagging unit would not fit, said changing of the elevation of said inlet end of said conveyor by said adjustment mechanism also causing pivoting of said discharge end of said conveyor relative to said upright structure and thereby changing of the elevation of said conveyor discharge end; and

(f) a transverse structure mounted on said upright structure and supporting said bagging unit with its inlet end below said discharge end of said conveyor, said transverse structure being adjustable along said upright structure, independently of operation of said adjustment mechanism, for changing and setting the elevation of said bagging unit within a range thereof without affecting the changing and setting of said elevations of said inlet and discharge ends of said conveyor by operation of said adjustment mechanism, whereby the elevation of said bagging unit can be adjusted independently of adjustment of the elevations of said conveyor inlet and discharge ends for accommodating the filling of different sizes of bags;

(g) said upright structure including at least one upstanding channel member fixed on said frame, said channel member pivotally supporting said conveyor adjacent its discharge end and having a plurality of vertically spaced adjustment holes defined therein;

(h) said transverse structure including a support member connected at one end to said bagging unit and having a sleeve connected to its other end, said sleeve being slidable along said channel member and having at least one hole alignable with at least one of said adjustment holes in said channel, said transverse structure also including fastening means insertable through said aligned holes of said sleeve and channel for attaching said sleeve thereto at a desired elevation therealong.

4,763,703

APPARATUS FOR CUTTING MITERS ON TRIM MEMBERS

Ferdinand Fromm, Eadersbacher Str. 16B, D-7000 Stuttgart 50, Fed. Rep. of Germany

Filed Feb. 26, 1987, Ser. No. 19,106
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1986, 3606995
Int. Cl.[4] B27G *5/00*
U.S. Cl. 144—216 20 Claims



1. Apparatus for cutting miters on adjacent side and head trim members, comprising first supporting means for supporting two mutually inclined side trim members in a first plane; at least one first abutment provided on said supporting means and engageable with one of said side rim members; at least one mobile second abutment engageable with the other of the side trim members; means for moving said second abutment relative to the first abutment along a predetermined path so as to engage a selected portion of the other side trim member; second supporting means for supporting a head trim member in a second plane parallel to and disposed at a level other than said first plane with the head trim member extending across the ends of the side trim members and at predetermined angles thereto, including a plurality of adjustable means for locating the head trim member in a predetermined orientation relative to the side trim members on said first supporting means; first and second sawing machines having mutually inclined plane cutting tools disposed at selected angles to the trim members on said supporting means; conveyor means for moving said machines substantially at right angles to said planes so that each of said tools severs the head trim member and one of the side trim members; and means for adjusting at least one of said machines with reference to said supporting means.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,704
COMBINED VENEER TRIMMER AND ADHESIVE SPREADER MACHINE
Enrico Provenzi, Via Fanin, 20061 Carugate, Milano, Italy
Filed May 15, 1987, Ser. No. 50,759
Claims priority, application Italy, May 22, 1986, 20522 A/86
Int. Cl.[4] B27C 9/00; B27F 7/00
U.S. Cl. 144—3 R 6 Claims



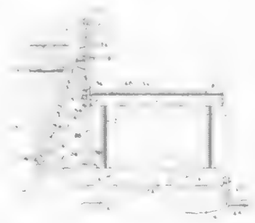
1. A combined veneer trimmer and adhesive spreader machine for the treatment of stacks of veneers, said machine comprising:
a lower bed for supporting a stack of veneers to be treated,
a lower reciprocable conveyor belt overlying said lower bed and carrying said stack of veneers,
an upper press above said lower bed,
an upper reciprocable conveyor belt passing over the face of said upper press facing towards said lower bed,
first and second parallel longitudinally extending blades, said first longitudinally extending blade lying on one side of the position occupied by said stack of veneers on said lower conveyor belt and said second longitudinally extending blade lying on the other side of the position occupied by said stack of veneers on said lower conveyor belt,
a plurality of adhesive spreader rollers having respective axes of rotation which are substantially perpendicular to the general plane of the individual sheets of veneer on said stack thereof, said adhesive spreader rollers being located downstream of said lower and upper reciprocable conveyor belts and being operable to spread a layer of adhesive onto opposite edges of said veneers.

4,763,705
TREE FELLING APPARATUS
Calvin S. Johnson, Union Grove, N.C., assignor to CTR Manufacturing, Inc., Union Grove, N.C.
Filed Apr. 14, 1987, Ser. No. 38,331
Int. Cl.[4] A01G 23/08
U.S. Cl. 144—34 R 22 Claims



1. Apparatus for felling trees, comprising generally U-shaped base means having a pair of laterally spaced arm portions defining therebetween an open cutting area for receiving a trunk portion of a tree to be felled and saw means pivotably mounted to said base means generally intermediate said arm portions for tree cutting movement through said cutting area transversely with respect to said arm portions, said saw means having a distal support portion radially outwardly from the pivot mounting location of said saw means, said distal portion extending substantially parallel to the direction of said transverse tree cutting movement of said saw means and being of a greater transverse dimension than the corresponding transverse dimension between said arm portions, said base means having means on each said arm portion for supporting transversely opposite sides of said distal support portion upon cutting movement thereof to occupy the full transverse extent of said cutting area between said arm portions to stabilize said saw means against reactive forces exerted by a tree being cut.

4,763,706
ROUTER MOUNTING TABLE
Verle L. Rice, 700 S. Halsey, Harrisonville, Mo. 64701, and Steve H. Wall, Mayodan, N.C., assignors to Verle L. Rice, Harrisonville, Mo.
Filed Apr. 13, 1987, Ser. No. 37,549
Int. Cl.[4] B27C 5/02
U.S. Cl. 144—136 R 18 Claims

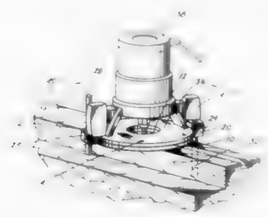


1. A mounting arrangement for a router having a power driven router bit, said mounting arrangement comprising:
a frame;
a table presenting a substantially flat work surface;
a plurality of generally vertical screws each having a top end coupled with said table at a location below said work surface;
a drive member for each screw, said drive members being mounted on the frame for rotation and having threaded connections with the respective screws to effect up and down movement of the table when the drive members are rotated in opposite directions;
means for rotating said drive members in unison to effect vertical adjustment of the table;
a router mounting plate having a substantially flat guide surface;
means for mounting said plate on said frame at a location adjacent said table wherein said work surface and guide surface cooperate to permit sliding of a workpiece along said work surface and guide surface; and
means for rigidly mounting the router on said mounting plate with the router bit projecting from said guide surface.

4,763,707
SELF-CENTERING ROUTER MORTISE BASE
Kenneth L. Hounshell, 6950 Eric La., Wheatland, Calif. 95962
Filed Oct. 20, 1987, Ser. No. 110,518
Int. Cl.[4] B27C 5/10
U.S. Cl. 144—136 C 3 Claims

1. An automatic self-centering cutting guide assembly base for electric routers, comprising:
a base plate having a centrally located aperture for passage of a cutting bit;
a pair of rectangular guide post flanges attached radially to said base plate, each containing a smooth vertical bore and a threaded horizontal bore;
mounting means for temporarily attaching said base plate to the working surface of an electric router with said cutting bit extending through said central aperture, and;
a pair of substantially cylindrical guide posts vertically adjustable within said guide post flanges through said smooth vertical bores and being retainably engaged

therein by manually turned screws acting as adjustable retaining means utilizing said threaded horizontal bores and having internal communication through said smooth



vertical bores to said guide posts; said guide posts being of sufficient length to have adjustable retention above and below either end of said smooth vertical bores.

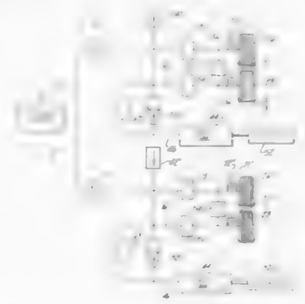
4,763,708
PNEUMATIC TIRE
Fumio Takahashi, Kodaira, and Nobuya Yoshimura, Tokorozawa, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Continuation of Ser. No. 828,127, Feb. 11, 1986, abandoned.
This application Feb. 11, 1987, Ser. No. 14,186
Claims priority, application Japan, Feb. 20, 1985, 60-30217
Int. Cl.[4] B60C 3/06
U.S. Cl. 152—209 A 4 Claims



1. A pneumatic radial tire wherein with respect to a central plane of the tire in a transversely sectional plane containing a rotary axis of the tire, a carcass and a reinforcing belt layer have respective symmetrical contour profiles and a tread has an asymmetrical contour profile, and the contour profile of the tread within the transverse sectional plane satisfies the following relations:
the maximum outer diameter point is positioned at a place axially apart from the central plane of the tire and a distance between the maximum outer diameter point and the central plane of the tire is not less than 1/10 times the maximum width of the tire;
when contours of portions of the trread located on opposite sides of the maximum outer diameter point are approximated by two arches composed of an axially narrower tread section and a wider tread section, the radius of curvature, R_2, of the narrower tread section is larger than the radius of curvature, R_3, of the wider tread section; and
the following relation exists among the radii of the curvatures, R_2 and R_3 and the maximum outer diameter D,

$0 \leq R_2 - R_3 \leq D/5$.

4,763,709
TIRE INFLATION SYSTEM
Richard A. Scholer, Hoagland, Ind., assignor to Teledyne Industries Inc., Los Angeles, Calif.
Filed Jul. 3, 1986, Ser. No. 881,592
Int. Cl.[4] B60C 23/10, 29/00
U.S. Cl. 152—416 12 Claims



1. For use with a vehicle having at least two tires, a system for varying the pressure in said tires to obtain a user selected tire deflection comprising:
a source of fluid pressure,
means for fluidly connecting said pressure source to the tires comprising a fluid conduit means and a first valve means connected in series in said fluid conduit means between said pressure source and said tire which, upon actuation, fluidly connects said fluid source to the tires,
a second valve means connected to said conduit means which, upon actuation, exhausts fluid pressure from the tires,
first means for measuring a parameter representative of tire load,
second means for measuring a pressure representative of the tire pressure,
means for selecting between at least two different tire deflection levels,
means responsive to said first and second measuring means and said selecting means for selectively actuating said first or second valve means to obtain the selected tire deflection level.

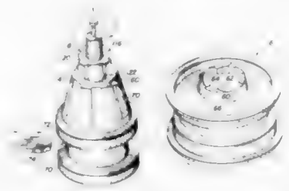
4,763,710
RIM AND SPINDLE FOR TIRE UNIFORMITY MACHINES
Martin Pielach, Mt. Clemens, Mich., assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio
Filed Jan. 14, 1987, Ser. No. 12,913
Int. Cl.[4] B60C 25/00
U.S. Cl. 157—14 8 Claims

1. In combination, a rim asembly and a spindle assembly including means for releasably coupling said rim assembly and said spindle assembly for concurrent rotation:
said rim assembly having an exterior peripheral flange adapted to support a tire thereon, said rim assembly also having an interior axial opening for receiving said spindle assembly to which it is to be coupled, said rim assembly also having a plurality of locking ramps extending radially inwardly into said opening, said locking ramps having inclined surfaces on one face thereof;
said spindle assembly having a taper body with an exterior face of a size and shape to be received within said opening of said rim assembly, said spindle assembly also having a locking rotor coupled to said taper body, said locking

VOL 1093 ISS 3 AG 16 1988 UMI

rotor having locking ramps extending radially outwardly therefrom, said locking ramps having inclined surfaces on one face thereof couplable with said inclined surfaces of said rim assembly upon the rotation of said locking rotor; and

locking means to lock said locking rotor in a first angular



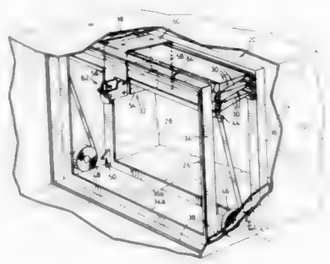
orientation with respect to said taper body when said inclined surfaces of said locking rotor are out of contact with said inclined surfaces of said rim assembly and to lock said locking rotor in a second angular orientation with respect to said taper body when said inclined surfaces of said locking rotor are in contact with said inclined surfaces of said rim assembly.

4,763,711

FIRE DAMPER

Andrew J. Hart, Downsview, and Michael T. Nailor, Toronto, both of Canada, assignors to Nailor-Hart Industries Inc., Toronto, Canada

Filed Jun. 4, 1986, Ser. No. 870,559
Int. Cl.[4] E05F *15/20*
U.S. Cl. 160—1 16 Claims



1. A fire damper comprising:

a rectangular frame for installation in an air duct and having four sides surrounding a central opening;

a series of blades carried by the frame and pivotally coupled to one another for movement between a folded configuration at a side of the frame permitting normal air flow through said opening, and an extended configuration in which the blades close said opening;

means biassing the blades towards and for holding the blades in said extended configuration; and,

a temperature-sensitive link assembly carried by said frame and arranged to normally maintain the blades in said folded configuration, but adapted to release the blades for movement to said extended configuration in response to a predetermined elevated temperature, said assembly including: a link extending through said frame opening across the folded blades for holding the blades against movement towards said extended configuration; first and second brackets extending outwardly from the frame for co-operation with respective end portions of said link; and respective coupling means between each said bracket and the associated end portion of the link, each said coupling means comprising a latch member pivotally coupled to the relevant one of said first and second brackets, and a pivot pin on said link, said bracket including an open-ended slot receiving said pivot pin and said latch member defining a seat for retaining the pivot pin in said slot, the latch member being movable between a latched position in which the pivot pin is held within the slot, and an unlatched position in which the pivot pin is released, permitting the link to swing clear of the blades.

4,763,712

PLIABLE PARTITION

Willem T. J. van der Klaauw, Weert, Netherlands, assignor to Pella B.V., Panningen, Netherlands

Continuation of Ser. No. 829,866, Feb. 18, 1986, abandoned, which is a continuation of Ser. No. 559,702, Dec. 9, 1983, abandoned. This application Apr. 30, 1987, Ser. No. 45,217
Claims priority, application Netherlands, Dec. 10, 1982, 8204797
Int. Cl.[4] E06B *3/96*
U.S. Cl. 160—84.1 12 Claims



1. A folding partition comprising modules,

each of said modules having first and second sides which are disposed opposite to ech other and including a first pair of hingedly connected panels on said first side of the module and a second pair of hingedly connected panels aligned with said first pair of panels, said second pair of panels being located on said second side of the module,

each of said panels having an unhinged edge,

each of said panels having an exterior side and an interior side facing an opposite module side,

said unhinged edge of each of said panels having a coupling member extending therealong on said interior side of said each panel,

said coupling members having a T shaped web part formed of a base part and a cross part,

a thickened part extending at a right angle from said web cross part and having a longitudinal slot formed therein,

a flange also extending at a right angle from said web cross part and being spaced from said thickened part,

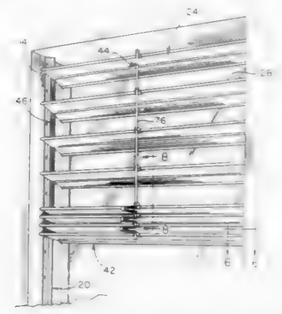
a bridge piece extending between coupling members located on facing interior sides and entering into said longitudinal slots of said coupling members, and connecting means spaced from said bridge piece for connecting said flanges of adjacent ones of said coupling members.

4,763,713

MULTI-PURPOSE WINDOW SHADE

Robert J. Kraus, 155 Minot St., Boston, Mass. 02122

Filed Aug. 29, 1986, Ser. No. 901,935
Int. Cl.[4] E06B *9/327*
U.S. Cl. 160—172 2 Claims



1. In a window shade assembly formed by a plurality of shutter slats having coiled edge formations, actuator means for simultaneously rotating the slats in the same direction, comprising an elongated flexible tape, a pair of flexible straps interleaved with one of the edge formations of each of the slats, means for securing each pair of the straps to the tape in a cross-sectionally curved condition and a hinge connection established between each pair of the straps and the coiled edge formation interleaved therewith along a hinge axis, said straps having quarter-turn twists maintaining the tape cross-sectionally curved in a plane generally parallel to the hinge axis.

4,763,714

DUAL WALL PARTITION

Charles E. Williams, Delavan, Wis., assignor to Hough Manufacturing Corporation, Janesville, Wis.

Continuation of Ser. No. 756,077, Jul. 17, 1985, abandoned. This application Mar. 2, 1987, Ser. No. 21,586
Int. Cl.[4] E05D *15/06*
U.S. Cl. 160—200 17 Claims



1. A dual wall partition comprising, in combination,

a track having a logitudinal axis,

first and second generally planar panels,

means for supporting said panels from said track for movement along said track in the direction of the longitudinal axis, and

connecting means extending between said panels for supporting said panels in generally parallel, opposed, facing relationship and in generally parallel relationship to the longitudinal axis, said connecting means also connecting said panels for movement of said panels relative to each other while maintaining the generally parallel, generally opposed relationship therebetween and relative to the track while varying the spacing therebetween from a maximum to selected spacings which are less than said maximum so that said panels separate areas on opposite sides of said partition and said separation is maintained throughout the range of relative movement of said panels

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4,763,715

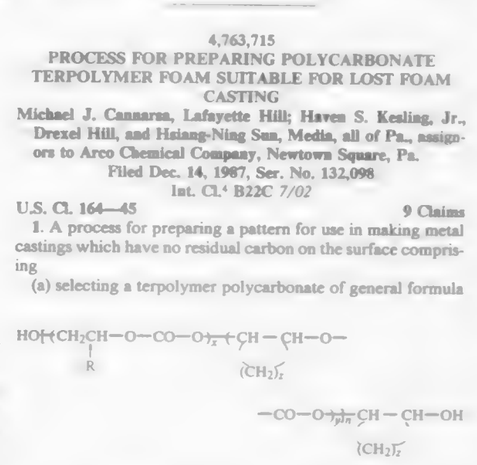
PROCESS FOR PREPARING POLYCARBONATE TERPOLYMER FOAM SUITABLE FOR LOST FOAM CASTING

Michael J. Cannarsa, Lafayette Hill; Haven S. Kesling, Jr., Drexel Hill, and Haiang-Ning Sun, Media, all of Pa., assignors to Arco Chemical Company, Newtown Square, Pa.

Filed Dec. 14, 1987, Ser. No. 132,098
Int. Cl.[4] B22C *7/02*
U.S. Cl. 164—45 9 Claims

1. A process for preparing a pattern for use in making metal castings which have no residual carbon on the surface comprising

(a) selecting a terpolymer polycarbonate of general formula



where the ratio of x to y is between 1:9 and 2:1, z is 3 or 4, n is an integer between 50 and 400, the number average molecular weight is in the range 15,000 to 100,000, and the polycarbonate has only a single glass transition temperature in the range 80°–120° C.,

(b) forming said terpolymer into particles having a bead size between 100 and 1000 microns in diameter,

(c) suspending said particles in water using a suitable suspending agent system,

(d) adding a suitable blowing agent to the suspension and heating to impregnate the particles,

(e) separating the impregnated beads from the aqueous suspension, washing and drying the beads,

(f) pre-expanding the beads by subjecting to atmospheric steam to obtain a density of about 1 to about 4 pounds per cubic foot,

(g) aging the beads. and

(h) molding the beads into the desired pattern having a density of about 3.0 pcf or less.

4,763,716

APPARATUS AND METHOD FOR USE IN CASTING ARTICLES

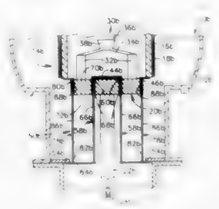
Lawrence D. Graham, Chagrin Falls; Daniel G. Fetsko, Lyndhurst; Thomas George, Euclid; Mark A. Crakovic, Mentor; William D. James, Eastlake, and Walter E. Merz, Richmond Heights, all of Ohio, assignors to PCC Airfoils, Inc., Cleveland, Ohio

Filed Feb. 11, 1987, Ser. No. 13,469
Int. Cl.[4] B22D *27/04*
U.S. Cl. 164—122.1 135 Claims

1. An apparatus for use in casting a plurality of articles in a mold structure having a plurality of article molds disposed in an array with an open central portion and having a gating system extending across an upper end of the open central portion of the array of article molds, said apparatus comprising furnace means for transmitting heat to the mold structure, movable chill plate means for receiving heat during casting of the articles and for supporting the mold structure, baffle plate means disposed in the central portion of the array of article molds for retarding the transfer of heat from the article molds to said chill plate means, motor means for lowering said chill plate means relative to said furnace means from a first position

VOL 1093 ISS 3 AUG 16 1988 UMI

in which the mold structure is disposed in said furnace means to a second position and for lowering said chill plate means from the second position to a third position in which the mold structure is withdrawn from said furnace means, said baffle plate means being disposed adjacent to said chill plate means and lower end portions of the article molds when said chill plate means is in the first position to retard the transfer of heat from the article molds through the open central portion of the array of article molds to said chill plate means, said baffle plate means being spaced from said chill plate means and disposed adjacent to the gating system and upper end portions of the article molds when said chill plate means is in the second position to facilitate the transfer of heat from the article molds through the open central portion of the array of article molds



to said chill plate means, said baffle plate means being disposed in open central portion of the array of article molds when said chill plate means is in the third position, support means extending through said chill plate means for supporting said baffle plate means, and retainer means for holding said support means and baffle plate means against movement relative to said furnace means with said chill plate means during movement of said chill plate means to the second position and for enabling said support means and baffle plate means to move relative to said furnace means with said chill plate means during movement of said chill plate means from the second position to the third position, said motor means being operable to lower said support means and baffle plate means with said chill plate means during movement of said chill plate means from the second position to the third position.

4,763,717

CENTRIFUGAL METHOD AND APPARATUS FOR MELTING AND CASTING OF METAL ALLOYS

Pierre Lajoye, 40 rue Charles de Gaulle, Montigny Les Metz (Moselle), France

Continuation of Ser. No. 645,976, Jan. 2, 1976, abandoned. This application Apr. 18, 1983, Ser. No. 484,355

Claims priority, application France, Jan. 2, 1975, 75 00604

Int. Cl.[4] B22D *13/04, 18/06*

U.S. Cl. 164—258 **2 Claims**

1. An apparatus for the centrifugal casting of a metal, said apparatus comprising:

rotatable mold means having a central axis, said central axis being vertically disposed, said rotatable mold means further having an upper end and a lower end;

hollow shaft means formed at said lower end of said rotatable mold means and extending downwardly therefrom along said central axis;

a mold cavity formed in said rotatable mold means, said mold cavity being sealed;

a central passage formed in said hollow shaft means, said central passage having an upper end communicating with said mold cavity and a lower end remote from said upper end, said central passage extending downwardly along said central axis from said upper end to said lower end;

mold rotation means for selectively rotating said rotatable mold means about said central axis;

oven housing means disposed below said rotatable mold means for melting a quantity of metal introduced therein;

intermediate housing means disposed between said rotatable mold means and said oven housing means;

an oven cavity formed in said oven housing means, said oven cavity being sealed;

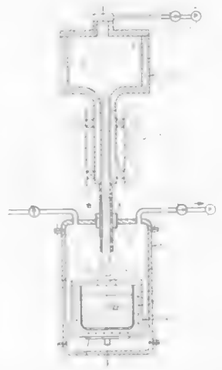
crucible means disposed within said oven cavity, such that a quantity of said metal to be melted may be placed in said crucible means, said crucible means being in communication with said oven cavity;

heating means, for heating said crucible means to thereby melt said quantity of metal to form molten metal;

first aperture means in said oven housing means, said first aperture means extending from said oven cavity to a location external of said oven housing means;

tube means interposed said hollow shaft means of said rotatable mold means and said oven housing means, said tube means having an upper end, a lower end opposite said upper end, and a channel means extending from said upper end to said lower end, said upper end of said tube means being interconnected with said hollow shaft means such that said channel means is in communication with said central passage, said lower end of said tube means being passed through said first aperture means in said oven housing means into said oven cavity, said lower end of said tube being disposed above said crucible means;

first rotatable sealing coupling means interposed said lower



end of said tube means and said oven housing means, said first rotatable sealing coupling means forming a seal between said lower end of said tube means and said oven housing means to close said first aperture means, said first rotatable sealing coupling means further permitting said tube means to rotate relative to said oven housing means about said central axis when said mold rotation means is actuated to rotate said rotatable mold means;

a sealed chamber formed between said intermediate housing means and said oven housing means such that said sealed chamber surrounds a portion of said lower end of said tube means, said sealed chamber further surrounding said first rotatable sealing coupling means;

second aperture means in said intermediate housing means, said lower end of said tube means being passed progressively through said second aperture means, said sealed chamber, and said first aperture means into said oven cavity;

second rotatable sealing coupling means interposed said lower end of said tube means and said intermediate housing means, said second rotatable sealing coupling means forming a seal between said lower end of said tube means and said intermediate housing means to close said second aperture means, said second rotatable sealing coupling means further permitting said tube means to rotate relative to said intermediate housing means about said central axis

when said mold rotation means is actuated to rotate said rotatable mold means;

displacement means selectively operable for relatively moving along said central axis, said lower end of said tube means and said crucible means, such as to enable selectively submerging said lower end of said tube means in said molten metal disposed in such crucible means as well as to enable selectively removing said lower end of said tube means for contact with said molten metal, said channel means being thereby selectively placeable in communication with said molten metal in said crucible means, said molten metal forming a liquid seal between said oven cavity and said channel means when said lower end of said tube means is submerged in said molten metal;

first pump means for selectively creating a first predetermined pressure level in each of said mold cavity, said central passage, said channel means and said oven cavity during the heating of said crucible means and prior to submerging said lower end of said tube means into said molten metal such that said mold cavity, said central passage, said channel means and said oven cavity are continuously maintained at said first predetermined pressure level until after said tube means has become submerged in said molten metal, said first predetermined pressure level being a vacuum pressure level, said first pump means being interconnected with said upper end of said rotatable mold means at a location adjacent said central axis such that said first pump means maintains said first predetermined pressure level in each of said mold cavity, said central passage and said channel means after said tube means has become submerged in said molten metal, thereby reducing the amount of vaporized metal in said mold cavity; and

second pump means for controllably introducing a quantity of a chemically inert pressurized gas into said oven cavity after said lower end of said tube means is submerged into said molten metal in said crucible means, said chemically inert pressurized gas being pressurized to a second predetermined pressure level, said second predetermined pressure level being greater than said first predetermined pressure level such that a pressure differential exists between said oven cavity and said mold cavity, said molten metal being advanced from said crucible means to said mold cavity along said channel means and said central passage by said pressure differential, said mold rotation means thereafter being actuated to disperse said molten metal centrifugally in said mold cavity such that said molten metal is forced under pressure into said mold cavity while said rotatable mold means is rotated to thereby form a centrifugal casting in said mold cavity;

said chemically inert gas being disposed in said oven cavity such that the quantity of ambient air passing through an leaks developed in said first rotatable sealing coupling means at the point whereat said tube means extends into said oven housing means, is minimized.

4,763,718

METHOD OF AND APPARATUS FOR CASTING AN ELONGATED METAL PRODUCT

Robert E. Maringer, Worthington, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Mar. 20, 1986, Ser. No. 841,973

Int. Cl.[4] B22D *11/06, 11/10*

U.S. Cl. 164—463 **27 Claims**

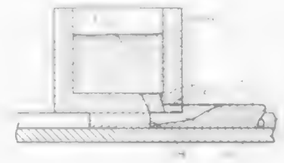
1. A method for casting elongated, uniform metal products comprising

metering molten metal from a source thereof to overfill an elongated casting channel in a chill body

by delivering the molten metal under positive pressure from the source through a flow-restricting orifice comprised of the casting channel and a complementary volume-control channel and by adjusting the smallest cross-sectional area of the orifice to be not substantially larger than the cross-sectional area of a desired elongated metal product and

providing for relative motion between the casting channel and the molten metal source such that the molten metal is partially solidified within, and completely solidified after leaving the flow-restricting orifice.

18. Apparatus for casting elongated, uniform metal products comprising an elongated casting channel in a chill body, means for cooling the casting channel, a source of molten metal, means for providing relative motion between the source of molten metal and the casting channel, and metering means for delivering the molten metal from the source thereof to the



casting channel in which an elongated metal product is solidified, wherein

the metering means includes a flow-restricting orifice comprised of a portion of the casting channel and a complementary volume-control channel of such size that the flow-restricting orifice has a minimum cross-sectional area which is not substantially larger than the cross-sectional area of the elongated metal product, and wherein

the means for cooling the casting channel is such that the molten metal is partially solidified within and completely solidified after leaving the flow-restricting orifice.

4,763,719

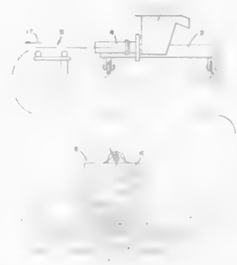
APPARATUS FOR DISCONTINUOUS WITHDRAWING OF A CAST STRAND

Heinz Müller, Darien, Conn., and Thomas J. Nugent, New York, N.Y., assignors to Voest-Alpine International Corporation, New York, N.Y.

Filed Feb. 7, 1984, Ser. No. 577,789

Int. Cl.[4] B22D *11/04, 11/12*

U.S. Cl. 164—478 **21 Claims**



1. An apparatus for discontinuous withdrawing of a cast strand from a continuous casting mold comprising

a continuous casting mold;

a spacially fixed pedestal;

a drive roller frame swivelably disposed on the fixed pedestal;

at least two drive rollers rotatably supported by the drive roller frame and disposed to press against the strand from opposite sides;

a drive connected to the drive rollers for driving the drive rollers; and

VOL 1093 ISS 3 AG 16 1988 UMI

a reciprocating drive connected to the drive roller frame for providing an oscillating pendulum motion to the drive roller frame around an axis supported by the pedestal.

4,763,720

MICROWAVE PROCESS FOR THE FABRICATION OF CORES FOR USE IN FOUNDRY CASTING

Toshio Sakamoto; Kanichi Sato, and Yoshiyuki Takemura, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 878,512, Jun. 23, 1986, abandoned, which is a continuation of Ser. No. 636,957, Aug. 2, 1984, abandoned. This application Aug. 17, 1987, Ser. No. 86,192

Int. Cl.[4] B22C *1/18, 1/20*

U.S. Cl. 164—525 2 Claims

1. A process for making a core for use in metal casting, which comprises:

(a) providing a mixture consisting essentially of refractory particles, 0.5 to 1.0% by weight of a first binder consisting of an inorganic substance, 0.5 to 1.0% by weight of a second binder consisting of a starch, and 0 to 2.0% by weight of water, the mentioned proportions of the first and second binders and water being all with respect to the refractory particles;

(b) intimately intermingling the listed ingredients;

(c) charging the mixture into a core box having a cylindrical cavity configuration with a diameter of 50 mm and a length of 50 mm and designed for effective exposure of the charged mixture to microwave energy; and

(d) curing the mixture by exposing the core box containing the mixture to microwave energy at 30 kw for 3 minutes and 18 seconds, thereby providing a core having a compressive strength of 22 kg/cm^2.

4,763,721

PROCESS FOR THE COOLING OR HEATING OF A GAS

Hans Becker, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 31, 1985, Ser. No. 760,866

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1984, 3428220

Int. Cl.[4] B01D *53/18, 53/34;* F28D *15/00*

U.S. Cl. 165—1 23 Claims



1. A process for subjecting a gas to heat exchange, said process comprising directly contacting said as continuously with a first heat transfer liquid in a first direct contact heat exchange zone, thereby resulting in a change of enthalpy in both said gas and said first heat transfer liquid and in a change of the temperature of the gas to a desired temperature level;

passing resultant gas at the desired temperature level to a processing step wherein said resultant gas is contacted with a solvent to desulfurize said resultant gas; and

passing resultant processed gas to a second direct contact heat exchange zone and directly contacting said processed gas therein continuously with a second heat transfer liquid, the latter having an enthalpy level at least partially transferred thereto from the enthalpy change of the gas in the first direct contact heat exchange zone, said second heat transfer liquid being in a separate cycle from said first heat transfer liquid, and wherein the transfer of said enthalpy change is performed by indirect heat exchange between said first heat transfer liquid and said second heat transfer liquid.

4,763,722

MODULAR ELEMENT HEAT EXCHANGER, PARTICULARLY FOR EXTRUSION CYLINDERS, INJECTION MOLDING MACHINES, DRAWING MACHINES AND THE LIKE PLASTICS PROCESSING MACHINES

Gaetano Piazzola, Via Borri, 148, 21100 Varese, Italy

Filed Apr. 20, 1987, Ser. No. 40,350

Claims priority, application Italy, Apr. 18, 1986, 20144 A/86

Int. Cl.[4] F25B *29/00*

U.S. Cl. 165—64 8 Claims



1. A modular element heat exchanger, particularly designed for plastics material extrusion cylinders, injection molding machines, drawing machines and the like machines for processing plastics material, comprising a plurality of semicylindrical segments coupled to one another for substantially providing a circular sleeve, to be applied about the body to be thermally controlled, said segments being provided along their outer periphery with radially extending fins including throughgoing openings and said segments being provided along their inner periphery with recesses, the two opposed lateral faces of said segments having recesses for housing an electric resistance, said heat exchanger further comprising a holding casing defining, in cooperation with said segments and the body to be thermally controlled, an air path extending successively on the outer periphery and inner periphery of said segments.

4,763,723

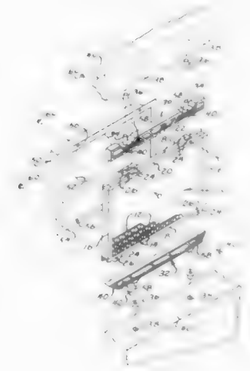
MOUNTING BRACKET CONSTRUCTION FOR VEHICULAR RADIATORS

Dennis C. Granetzke, Racine, Wis., assignor to Modine Manufacturing Company, Racine, Wis.

Filed Apr. 8, 1987, Ser. No. 35,768

Int. Cl.[4] F28F *9/00;* F28D *1/00*

U.S. Cl. 165—67 10 Claims



5. A radiator and shroud assembly comprising:

a generally planar radiator core having a plurality of generally parallel tubes interconnected by fins, said core having opposed ends joined by spaced sides which are generally parallel to said tubes;

a tank on each of said ends;

a side piece on each of said sides, each having at least one fastener receiving aperture opening transverse to said core;

a mounting bracket abutting each side piece along the length thereof, each said mounting bracket being an integral plastic piece with a truss-like configuration defined by spaced, parallel chords interconnected by a plurality of spaced diagonal braces and at least one transverse brace, the spaces between said chords and said braces being closed by an integral, thin web, each said mounting bracket having at least one first aperture aligned with the aperture in the adjacent side piece and mounting means integral with and extending from one of said chords;

fasteners extending through said core apertures and the aligned first apertures to secure said brackets to said core;

a fan shroud having a generally planar peripheral edge complementary in size and shape to that of said core with said brackets secured thereto;

a plurality of fastener receiving apertures at spaced location in said edge, at least one for each said bracket;

at least one second aperture in each said bracket and aligned with a corresponding one of said edge apertures; and

fasteners in aligned ones of said edge apertures and said second apertures securing said shroud to said and bringing said edge into a nominal sealed relation with said bracket, said core, or said tanks.

4,763,724

PLASTIC RADIATOR FOR TRANSVERSE-FLOW COOLING SYSTEMS OF INTERNAL COMBUSTION ENGINES

Axel Temmesfeld, Bad Feilnbach, and Karl Tauber, Munich, both of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Munich, Fed. Rep. of Germany

PCT No. PCT/EP85/00665, § 371 Date Apr. 17, 1987, § 102(e) Date Apr. 17, 1987, PCT Pub. No. WO86/03554, PCT Pub. Date Jun. 19, 1986

PCT Filed Dec. 4, 1985, Ser. No. 46,878

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444273

Int. Cl.[4] F01P *11/02*

U.S. Cl. 165—71 20 Claims



1. A plastic water chamber means of a transverse-flow radiator for internal combustion engines, having a molded-on balancing chamber means (10) with a filler neck (17) and a filling lid means (18) containing pressure control valves, comprising: a venting line means (14) connects a high point (8″) of the water chamber means (8) and a lower-disposed junction means (15) into the balancing chamber means (10); a connection means (27), molded to a bottom area of the balancing chamber (10) for an ancillary-flow return line means (28) that is separate from a radiator return flow line means (6) and which separate return line means leads to the suction side of a coolant pump (5); the venting line means being (14) molded integrally to the water chamber means and extending to a lower molded-out discharge opening means (21) into which are located molded-on discharge connections (25 and 26) respectively leading from the water chamber means (8) and from the balancing chamber means (10); and wherein the molded-out and discharge opening means (21) contains a discharge valve means (22) that connects the venting line means (14) and the discharge connections (25 and 26) and a discharge outlet with one another in an open position of the discharge valve means or seals them off with respect to one another in a closed position of the discharge valve means.

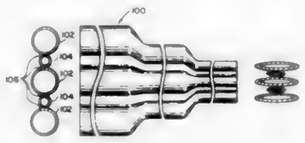
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,725

PARALLEL WRAPPED TUBE HEAT EXCHANGER

Ralph C. Longworth, 2521 Green Acres Dr., Allentown, Pa. 18103, and William A. Steyert, R.D. 1, Box 99, Center Valley, Pa. 18034

Division of Ser. No. 818,832, Jan. 14, 1986, Pat. No. 4,697,635, and a continuation-in-part of Ser. No. 627,958, Jul. 5, 1984, Pat. No. 4,567,943. This application Jul. 16, 1987, Ser. No. 74,302
Int. Cl.[4] F28F *13/08*
U.S. Cl. 165—147 7 Claims



1. A heat exchanger of the type having a first confined path for conducting high pressure fluid from an inlet to a point wherein said high pressure fluid is expanded to a lower pressure and a second confined path for returning the expanded fluid from the point of expansion comprising in combination:

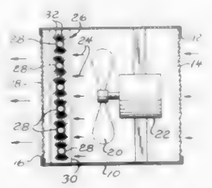
at least one low pressure tube and at least one high pressure tube disposed alternately in a stacked or parallel bundle array, said array containing high and low tubes progressively flattened from said inlet to said point of expansion of said fluid.

4,763,726

HEAT EXCHANGER CORE AND HEAT EXCHANGER EMPLOYING THE SAME

Robert P. Failing, St. Joseph, Ind., assignor to Sunstrand Heat Transfer, Inc., Dowagiac, Mich.

Filed Aug. 16, 1984, Ser. No. 641,474
Int. Cl.[4] F28F *13/00, 1/20*
U.S. Cl. 165—146 9 Claims



1. For disposition in the air flow path of a forced air exchange system, a core comprising:

an elongated generally circular cross section conducting tube through which a fluid to be subjected to a heat exchange operation is adapted to pass, said tube adapted to be disposed in the air flow path of a forced air heat exchange system generally transversely to the direction of air flow in said path and having a front surface facing the direction of air flow, a rear surface facing away from the direction of air flow, and opposed side surfaces interconnecting said front and rear surfaces; and

a heat conductive tape wrapped about said tube and having a plurality of spines of heat conductive material mounted in heat transfer relation on each of said opposed surfaces along the length thereof and extending radially outwardly from said tube to be disposed in the air flow path of the system in which said core may be used;

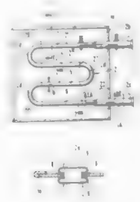
said front and rear surfaces being free of said spines.

4,763,727

PANEL HEAT EXCHANGER

Walter Kreuzer, Leonberg; Kurt Bubeck, Rutesheim, and Karl H. Staffa, Stuttgart, all of Fed. Rep. of Germany, assignors to Süddeutsche Kühlerfabrik Julius Fr. Behr GmbH & Co. KG, Fed. Rep. of Germany

Filed Dec. 10, 1986, Ser. No. 940,083
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1985, 3543541
Int. Cl.[4] F28F *1/32*
U.S. Cl. 165—171 11 Claims



1. A panel heat exchanger comprising:

heat conducting plate means having slot means therein which extend between oppositely facing planar surface sections of the plate means; and

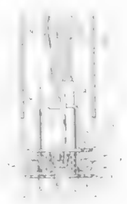
pipe means for carrying heat exchange medium, said pipe means including tubular wall means disposed in the slot means with tubular wall portions extending outwardly of the slot means beyond both planar surface sections of the plate means, said pipe means being secured to the plate means by deformation of the tubular wall means clampingly engaging the plate means at the slot means.

4,763,728

JET-TYPE WELL SCREEN CLEANER

James J. Lacey, P.O. Box 796, Trent, S. Dak. 57065

Filed Jul. 16, 1987, Ser. No. 74,156
Int. Cl.[4] E21B *33/124*
U.S. Cl. 166—191 2 Claims



1. A device for flushing a screen on a well casing comprising a housing means, stem pipe means attached to said housing means by which said housing means can be lowered into said casing, seal means engaged with said housing means and adapted to engage said screen, said seal means including spaced apart members to define a limited area of said screen, nozzle means mounted on said housing between said spaced apart members and adapted to direct a stream of water toward said area of the screen and exhaust means including a perforated portion of said housing within said limited area, pump means connected to said housing adapted to withdraw said water and pipe means engaged with said pump means adapted to carry said water away from said housing.

4,763,729

METHOD FOR INHIBITING CORROSION OF IRON-CONTAINING ALLOY ARTICLES IN SULFUR-CONTAINING MEDIA

Trikur A. Ramanarayanan, Somerset, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed May 11, 1987, Ser. No. 48,562
Int. Cl.[4] E21B *41/02*
U.S. Cl. 166—244.1 15 Claims



10. A method for inhibiting corrosion of an iron-containing tubular article situated in a well and through which gas or oil is extracted from the well and said tubular article having an interior portion in contact with a sulfur compound-containing corrosive medium containing hydrogen sulfide, said method comprising forming on said article a corrosion resistant sulfide layer containing atoms of a refractory metal of Group IV B or Group V B of the periodic system by introducing into said corrosive medium an amount sufficient to form said layers of an oxysalt of said refractory metal.

4,763,730

MISCIBLE GAS ENHANCED OIL RECOVERY METHOD USING OIL-BRINE COMPATIBLE PRE-FORMED FOAM

Shigeto Suzuki, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 895,664, Aug. 11, 1986, abandoned. This application Aug. 5, 1987, Ser. No. 81,976
Int. Cl.[4] E21B *43/22*
U.S. Cl. 166—273 20 Claims



1. A method of enhancing recovery of petroleum from an oil bearing formation during injection of a non-condensible gas having at least partial miscibility in the oil which comprises at least periodically injecting a preformed foam composition formed of alpha olefin sulfonate (AOS) and brine or water, into said oil bearing formation,

said pre-formed foam being a mixture of said gas, brine or water and an effective foam forming amount of an AOS, said AOS having from 8 to 24 carbon atoms, the number of carbon atoms being selected in accordance with the salt content of brine in said formation so that at higher salt concentrations said AOS has on average less than about 12 carbon atoms and at lower salt concentrations said AOS has on average at least about 12 carbon atoms.

4,763,731

FIRE SUPPRESSION SYSTEM FOR AIRCRAFT

Robert E. Adams, Mercer Island; A. Fredric Grenich, Kent, and Frederick F. Tolle, Issaquah, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 536,690, Sep. 28, 1983, abandoned. This application Aug. 20, 1985, Ser. No. 767,653
Int. Cl.[4] A62C *3/08*
U.S. Cl. 169—46 2 Claims



1. A method of providing a compartment of an aircraft with fire protection and of minimizing the effect of fire suppression apparatus on maintenance and repair of the compartment, said compartment being bounded by wall means that define a normally dry interior space in which a dry combustible material is located or into which a combustible fluid could leak as a result of damage to the aircraft or equipment failure, and to which routine quick and easy access is required in order to carry out routine maintenance activity, said method comprising:

filling a plurality of discrete small containers with a fire extinguishant and sealing the extinguishant inside the containers;

filling said interior space with the extinguishant-filled containers, including allowing the discrete containers to form a body of containers that substantially conforms to the shape of such interior space; each of said containers being openable by an increase in temperature to a predetermined level to release the fire extinguishant into said interior space of said compartment in response to said increase, and each of said containers being openable by an impact force of a predetermined magnitude to release the fire extinguishant into said interior space of said compartment in response to said force; and

removing said containers from said space to permit routine maintenance activity, and refilling said space with said containers when such activity is completed.

4,763,732

CABINET STRUCTURE FOR FIRE EXTINGUISHERS OR THE LIKE

Thomas C. Neal, P.O. Box 5563, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 815,389, Dec. 31, 1985, abandoned. This application Jan. 6, 1987, Ser. No. 825
Int. Cl.[4] A62C *25/00*
U.S. Cl. 169—51 20 Claims

13. A cabinet structure adapted for storing a fire extinguisher

VOL 1093 ISS 3 AG 16 1988 UMI

or other like stored articles, said cabinet structure comprising a housing having an opening therethrough and defining a containment area accessible through said opening for receiving a stored article, a cover adapted for mounting over said opening of said housing for enclosing said containment area, mating hinge means on said housing at one side of said opening and on said cover at one corresponding side thereof for pivotal interengagement when said cover is mounted on said housing, gripping means on said cover proximal said mating hinge means, said hinge means being of a sufficient frangibility in response to the application of a predetermined force to said gripping means away from said opening to permit ready removal of said cover in emergency situations, said hinge means being adapted to permit pivotal opening and closing movement of said cover about said one side of said opening toward and away from the opposite side of said opening and adapted for disengagement for removal of said cover from said housing by such pivotal movement of said cover away from said opposite side of said opening, and securing means on said housing at the opposite side of said opening from said one side and on the corresponding side of said cover opposite said one side thereof, for securing said cover in mounted disposition on said housing to prevent pivotal movement of said cover away from said opposite side of said opening.





4,763,733

HAMMER DRILL WITH ROTATIONAL LOCK

Anton Neumaier, Fürstenfeldbruck, Fed. Rep. of Germany, assignor to Hilti Aktiengesellschaft, Liechtenstein

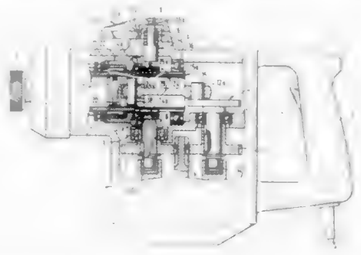
Filed Oct. 20, 1986, Ser. No. 921,957

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1985, 3538166

Int. Cl.[4] B25D *11/04*

U.S. Cl. 173—48 6 Claims

1. A hammer drill comprising a housing with a drilling axis, an electropneumatic impact mechanism including a hollow guide cylinder located within said housing and having an axis parallel with the drilling axis, said guide cylinder having an axially extending inside surface and outside surface, means within said housing for driving said impact mechanism, an annular gear wheel mounted on the outside surface of said guide cylinder so as to be rotatable relative to said guide cylinder and to be secured against axial displacement relative to said guide cylinder, a drive wheel in permanent meshed engagement with said gear wheel for rotating said gear wheel, a coupling sleeve mounted on the outside surface of said guide cylinder and being rotatable with and axially displaceable relative to said guide cylinder, a switching device located on said housing and engageable with said coupling sleeve for moving said coupling sleeve axially between a first position in meshed engagement with said gear wheel and a second position out of meshed engagement with said gear wheel, wherein the improvement comprises that said switching device includes an axially extending control cam with the axis thereof disposed substantially perpendicularly to the drilling axis, said control cam being axially displaceable when moving said coupling sleeve between the first and second positions, said coupling sleeve having at least one detent opening therein alignable with said control cam so that said control can be inserted into the detent opening when said coupling sleeve is in the second position affording a locking action, said switching device being rotatable about an axis disposed perpendicularly to the direction of displacement of said coupling sleeve, and said control cam comprises a lug disposed eccentrically relative to the rotational axis of said switching device.



4,763,734

EARTH DRILLING METHOD AND APPARATUS USING MULTIPLE HYDRAULIC FORCES

Ben W. O. Dickinson, 2125 Broderick St., San Francisco, Calif. 94115; Robert W. Dickinson, Marin County, and David T. Rabb, Alameda County, both of Calif., assignors to Ben W. O. Dickinson, San Francisco, Calif.

Filed Dec. 23, 1985, Ser. No. 811,577

Int. Cl.[4] E21B *7/08*

U.S. Cl. 175—61 15 Claims



1. Earth well drilling apparatus comprising a structure adapted to be positioned within the well adjacent an underground formation, said apparatus comprising means defining a drilling fluid chamber, means defining a driving fluid chamber, a drill string with an interior fluid passageway and extending from said driving fluid chamber through said drilling fluid chamber, drillhead means of the hydraulic jet type attached to the forward end of said drill string in communication with said interior passageway, first sliding seal means disposed between said driving fluid chamber means and said drill string, second sliding seal means disposed between said drilling fluid chamber means and said drill string, said drill string interior passageway being substantially sealed from said driving fluid chamber, port means in said drill string disposed between said first and second seal means to provide fluid communication between said drilling fluid chamber and the interior fluid passageway, whereby when pressurized fluid is supplied to the driving fluid chamber means, it drives the drill string forward through the first and second seals and when pressurized fluid is supplied to the drilling fluid chamber means it flows from the drilling fluid chamber means through said port means and the interior passageway to apply pressure against the drillhead, thereby causing the drill string to move forward into the formation and causing the pressurized fluid to be directed against the formation.

8. A method for forming a bore hole in an underground formation using a drilling system comprising a drilling fluid chamber sealed from a driving fluid chamber, and a drill string with an interior passageway in communication with a drillhead of the hydraulic jet type at its forward end and sealed from said driving fluid chamber, said method comprising the steps of:

(a) disposing said drill string with its upstream end in said driving fluid chamber with said interior passageway sealed therefrom, said drill string extending through a first sliding seal in said driving fluid chamber and then through a second sliding seal in said drilling fluid chamber with said drillhead is downstream of both seals, said interior passageway communicating with fluid in said drilling fluid chamber but not with fluid in said driving fluid chamber,

(b) directing fluid into said driving fluid chamber upstream of said first seal to push said drill string downstream, and

(c) simultaneously directing fluid into said drilling fluid chamber through ports in said drill string into said interior passageway to apply pressure against said drillhead to move said drillhead into the formation and to cause pressurized fluid to be applied against the formation.

4,763,735

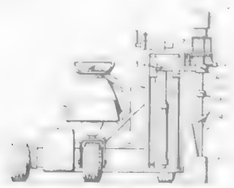
MOBILE MACHINE FOR MAKING HOLES IN PUTTING GREENS

Ernest Gay, 1204 Sparta St., McMinnville, Tenn. 37110

Filed Sep. 18, 1987, Ser. No. 98,311

Int. Cl.[4] A01B *45/00*; E21B *19/08, 12/06*

U.S. Cl. 175—161 13 Claims



1. A mobile machine for making holes in putting greens comprising, a motor driven vehicle, a frame assembly connected to said vehicle, carriage means slidably mounted on said frame assembly, power means mounted between said frame assembly and said carriage means for moving the carriage means in a vertical plane relative to the ground, cutter means mounted on said carriage means and depending therefrom, pivot means connecting said cutter means to said carriage means, whereby the cutter means is freely pivoted to the carriage means about orthogonal axis, and releasable lock means operatively connected to said pivot means for holding said cutter means in a vertical orientation.

4,763,736

ASYMMETRICAL ROTARY CONE BIT

Daniel W. Varel, Sr., Dallas, Tex., assignor to Varel Manufacturing Company, Dallas, Tex.

Filed Jul. 8, 1987, Ser. No. 71,157

Int. Cl.[4] E21B *10/16*

U.S. Cl. 175—341 8 Claims



1. An asymmetrical rotary cone bit, comprising: a substantially cylindrical bit body having a shank formed by a vertical axis for connection to a drill string and including three journal pins extending from the end of the body opposite from the shank, each journal pin having a rotational axis passing through the vertical axis of the bit body with the rotational axis of the first and second journal pins passing through the vertical axis of the bit body at substantially the same location along the vertical axis, with the axis of the third journal pin passing through the vertical axis at a location further displaced from the bit body than the location of the axis for the first and second journal pins, and with the rotational axis of the first and second of the journal pins circumferentially displaced more than 120 degrees and less than 180 degrees and the axis of the third journal pin circumferentially displaced equidistant from the axis of the other two journal pins;

first and second roller cutter cones of substantially the same base diameter and journaled to rotate on the first and second journal pins, respectively, each of said cutter cones having cutting teeth extending from the surface thereof and including gage row cutting teeth; and

a gage roller cone having a smaller base diameter than the first and second roller cones and journaled on the third journal pin, said gage roller cone having cutting teeth only along a gage row.

4,763,737

DOWNHOLE CUTTER

Dieter Hellnick, P.O. Box 681446, Houston, Tex. 77268-1446

Filed Aug. 11, 1986, Ser. No. 895,125

Int. Cl.[4] E21B *10/58, 10/60*

U.S. Cl. 175—393 14 Claims

1. A downhole drill bit for use in well casings comprising:

(a) a substantially cylindrical main body having proximal and distal ends;

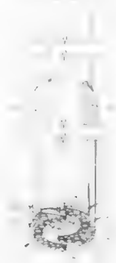
(b) a plurality of cutters mounted in said distal end of said main body having cutting edges extending beyond said distal end, said cutters being mounted in a substantially co-planar, arc-like pattern of decreasing radius;

(c) a plurality of channels in the perimeter of said main body running substantially longitudinally along said main body for allowing fluid to pass downward about the outside of said main body;

(d) a central bore through said main body along the cylindrical axis of said main body, said central bore receiving the fluid delivered through said plurality of channels along

VOL
1093
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with any cuttings and debris flushed from said cutters and said distal end of said main body, the fluid, cuttings and



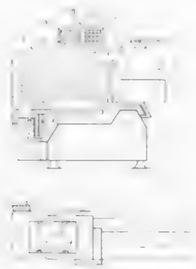
debris conducted out of the well through said central bore.

4,763,738

SLICING MACHINE FOR COLD CUTS

Fritz Kuchler, Klagenfurt, Austria, assignor to Brain Dust Patents Establishment, Vaduz, Liechtenstein

Filed Sep. 25, 1985, Ser. No. 911,960
Claims priority, application Austria, Sep. 25, 1985, 2796/85
Int. Cl.[4] G01G *19/52, 13/02, 23/10;* **B26D** *7/06*
U.S. Cl. 177—50 **8 Claims**



1. In a slicing machine for a foodstuff, comprising a carriage for the foodstuff to be sliced, an arresting plate against which said foodstuff on said carriage can be pressed, a blade for severing a slice from the foodstuff on said carriage pressed against said arresting plate and a depositing tray provided with a tray carrier which is shiftable relative to said blade to determine a pattern of slice deposition on said depositing tray, the improvement which comprises:

a load cell interposed between said carrier and said tray, offset to one side of said tray, travelling with said tray and constituting the sole support of said tray on said carrier whereby said load cell has an output representing weight of slices deposited on said tray;

an evaluation circuit connected to said load cell and responsive to said output for generating an electrical signal indicating said weight; and

an indicator connected to said evaluation circuit and responsive thereto for displaying said weight.

4,763,739

ENERGY EFFICIENT SCALE

Harvey A. Kasinoff, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio

Filed Nov. 9, 1987, Ser. No. 118,379
Int. Cl.[4] G01G *3/14, 13/00;* **G01L** *1/22*
U.S. Cl. 177—210 R **9 Claims**

1. A load cell scale comprising:

a load cell for sensing the weight of an object supported thereby and generating a weight indicating signal corresponding thereto,

current supply means for supplying electrical current to said load cell, said current supply means being switchable between a first state in which it supplies a normal operating current to said load cell and a second state in which it supplies to said load cell an energy saving current, lower than said operating current but high enough for enabling said load cell to detect the presence of said object and generate a load detection signal,



control means connected to said current supply means to control the switching thereof between said first and second states, said control means being operative in the absence of said object to cause said current supply means to switch to said second state and responsive to said load detection signal to cause said current supply means to switch to said first state, and

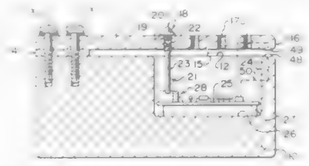
indicating means for creating an indication of the weight represented by said weight indicating signal.

4,763,740

LOAD CELL

George Pattern, 499 Seaton Street, Winnipeg, Manitoba, Canada R3K 1M3

Filed Apr. 27, 1987, Ser. No. 42,678
Int. Cl.[4] G01G *3/14, 3/08*
U.S. Cl. 177—210 R **19 Claims**



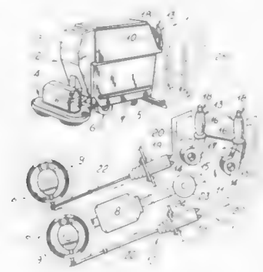
1. A load cell for providing an electrical output proportional to a value of an applied force comprising a first member, a second member, means interconnecting the first member and the second member, means provided on one of said members for receiving a force applied to said one of said members and arranged with said interconnecting means such that said force causes a relative movement between said members proportional to the value of the applied force, and means for sensing the amount of said relative movement comprising an optical switch means having a light source consisting of a light emitting diode and a light detecting means consisting of a single photo transistor, means mounting said diode and said single transistor in closely paced relationship and defining a space there between such that light emitted by the diode passes across the space and impinges on said single transistor, means mounting the optical switch means on said second member, a shield member mounted on said first member and projecting therefrom to a position closely adjacent the optical switch means and arranged such that said relative movement causes said shield member to move relative to said space to alter an amount of said emitted light blocked by said shield and thus to alter the intensity of said light impinging on said single transistor and a detector circuit for generating an electrical signal in response to said intensity of light, said detector circuit comprising means for generating a voltage across said single transistor and means for detecting variations in current flowing in said transistor caused by said variation in intensity.

4,763,741

STEERING DEVICE FOR PAVED SURFACE CLEANERS

Nello Torta, Felegara di Medesano, Italy, assignor to Idroplina S.r.l., Sanguinaro di Fontanellato, Italy

Filed Apr. 7, 1987, Ser. No. 40,833
Claims priority, application Italy, Apr. 8, 1986, 21460/86[U]
Int. Cl.[4] B62D *11/08*
U.S. Cl. 180—6.2 **5 Claims**



1. A steering device for paved surface cleaners, comprising two manually seizable handle levers (13) for oscillation in an angular direction;

an electric motor (8) controlled by oscillation of said handle levers (13);

two traction wheels (6) driven by said electric motor (8);

each said traction wheel (6) being controllable by a respective brake (9);

and a second steering control assembly (12) acting selectively on said respective brakes (9) of each said traction wheel (6);

said steering control assembly (12) including: manually actuatable electric contact controls (18) located on said handle levers (13) for applying said brakes (9), two electromagnets (19) connected electrically to said electric contact controls (18), and at least two rigid tie rods (22) extending between said electromagnets (19) and said brakes (9), each said electromagnet (19) being connected at one end to one said electric contact control (18) and at the other end to one said brake (9).

4,763,742

TREE FELLER-BUNCHER

Frederic E. Langford, Redmond, Wash., assignor to Allied Systems Company, Sherwood, Oreg.

Filed Feb. 5, 1987, Ser. No. 11,518
Int. Cl.[4] B62D *55/08*
U.S. Cl. 180—9.1 **35 Claims**

1. A four track vehicle especially adapted for logging on steep slopes comprising:

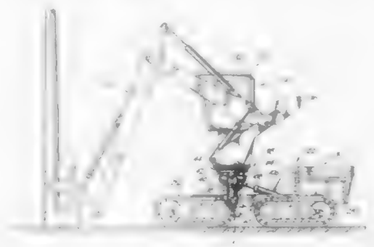
a frame having a longitudinal dimension and a transverse dimension;

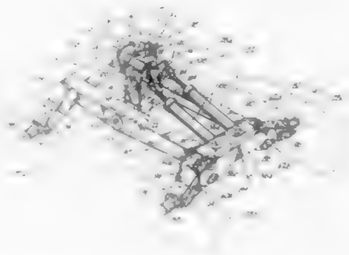
a first rigid arm extending transversely outwardly from and rigidly affixed to said frame adjacent one end thereof;

a second rigid arm extending transversely outwardly from and rigidly affixed to the opposite side of said frame adjacent said one end;

a first pivot arm extending transversely outwardly from said frame adjacent the opposite end of said frame, and means for pivotally connecting said first arm to said frame for swinging movement about a first longitudinal axis offset from the longitudinal center line of said frame;

a second pivot arm extending transversely outwardly from the opposite side of said frame adjacent the opposite end of said frame, and means for pivotally connecting said second pivot arm to said frame for swinging movement about a second longitudinal axis offset from the longitudinal centerline of said frame;





first and second pods carrying endless tracks connected to the respective outer ends of said first and second rigid arms and third and fourth pods carrying endless tracks connected to the respective outer ends of said first and second pivot arms; and

a link coupling said first and second pivot arms, the ends of said link being pivotally coupled to said respective pivot arms at locations vertically offset from the pivotal connections of said pivot arms to said frame.

4,763,743

IMPLEMENT HITCH

David M. Ridgway, West Des Moines, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jun. 1, 1987, Ser. No. 56,151
Int. Cl.[4] B60K *25/00*
U.S. Cl. 180—53.3 **26 Claims**



1. A hitch device for connecting an implement to a tractor, said tractor having a power take-off, a three point hitch, and a

VOL 1093 ISS 3 AG 16 1988 UMI

primary hydraulic system, said implement having a drive shaft and a secondary hydraulic system, said device comprising:

a male plug operatively connected to the three point hitch of said tractor and having a forward end, rearward end, an exterior side wall with a first portion extending rearwardly from said forward end and a second portion tapering to said rearward end from said first portion and such that the rearward end has a smaller cross-sectional area than said forward end, and a longitudinal axis;

a female shell operatively connected to said implement and having an open forward end, a rearward end, an internal sidewall with a first portion extending rearward from said forward end and a second portion tapering to said rearward end from said first portion, and a longitudinal axis;

the sidewalls of the male plug and female shell cooperating to automatically align the axes thereof when the rearward end of said male plug enters the open forward end of said female shell upon rearward movement of said tractor toward said implement, whereby said male plug is matingly received within said female shell;

latch means for automatically locking said male plug and said female shell together when moved into mating engagement with one another; and

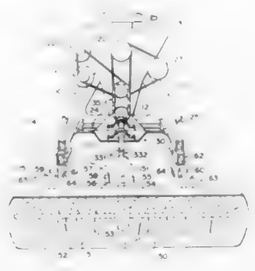
means for automatically deactuating said latch means so as to unlock said male plug and said female shell for uncoupling.

4,763,744

POWER TAKEOFF SHAFT ARRANGEMENT FOR A ROAD VEHICLE

John A. McVicar, Box 26, Arnaud, Manitoba, Canada R0A 0B0, and Cameron C. McVicar, 1-611 St. Annes Road, Winnipeg, Manitoba, Canada R2M 5K3

Filed Jan. 2, 1987, Ser. No. 35
Int. Cl.[4] B60K *25/00*
U.S. Cl. 180—53.7 19 Claims



(1). In a motor vehicle of the type including a vehicle body having chassis frame members, road wheels attached to the body for supporting the body in movement along a road, an engine mounted in the body adjacent a front end thereof, transmission means for communicating drive from the engine to the wheels, a bumper across said front end of the body, a plurality of engine accessories including an electrical generator and a pulley mounted on a forward end of the engine for communicating drive via at least one belt from a crank shaft of the engine to said engine accessories, an improvement by the provision of a kit of parts comprising a base member having means thereon for releasable attachment of the base member, power takeoff shaft means carried in said bearing means and arranged relative to said base member so as to extend, with the base member attached to the frame members, parallel to and beneath the crank shaft and arranged such that a forward end thereof extends to an accessible position at said front of the vehicle body beneath said bumper, releasable coupling means on said shaft means at said forward end thereof and drive coupling means for communicating drive from the crank shaft to the power takeoff shaft means including a flexible loop coupling member, a first drive member attached to the crank shaft at the pulley for driving the coupling member and a second drive member mounted on the power takeoff shaft for communicating drive from the coupling member to the shaft and a pair of bracket members each attached to respective one of said frame members at said front end of said body for removably mounting at said front end an implement for driving by said shaft means.

4,763,745

MOTOR VEHICLE WITH DRIVING STATUS DETECTION DEVICE

Kunihiko Eto, Toyota; Yutaka Mori, Okazaki; Akihiro Oono, Okazaki, and Kazumasa Kodama, Okazaki, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed May 21, 1986, Ser. No. 865,337
Claims priority, application Japan, May 24, 1985, 60-112905
Int. Cl.[4] B62D *6/02*; G05D *16/00*
U.S. Cl. 180—143 10 Claims



2. A motor vehicle having a driving status detection device comprising:

a speed signal detector for detecting a parameter signal proportional to the vehicle speed;

acceleration calculation means operable at a plurality of predetermined intervals for calculating a differentiated value of said parameter signal for each interval detected by said speed signal detector with respect to time representing the acceleration of said vehicle;

wherein said differentiated value calculated by said acceleration calculation means represents an acceleration of said motor vehicle; and

driving status calculation means for calculating an integrated value of a plurality of said differentiated values successively calculated by said acceleration calculation means, said integrated value representing the sum of accelerations given to said vehicle which is indicative of the driving status of said vehicle, including:

converting means for obtaining an absolute value of said acceleration calculated by said acceleration calculation means; and

integrating means for calculating an integrated value based on a plurality of said absolute values each obtained by said converting means.

9. A motor vehicle having a power steering system of the type wherein an electromagnetic actuator controls the assisting power generated by a power cylinder in response to an electric current applied thereto, driving status detection means for detecting the driving status of said motor vehicle so as to output a driving status index representing the driving status, and electric current calculation means for calculating the electric current applied to said electromagnetic actuator based upon said driving status index and a parameter signal relating to the vehicle speed, said driving status detection means comprising:

a speed signal detector for detecting said parameter signal proportional to the vehicle speed;

acceleration calculation means operable at a plurality of predetermined intervals for calculating a differentiated value of said parameter for signal for each interval detected by said speed signal detector with respect to time; and

driving status calculation means for calculating an integrated value of a plurality of said differentiated values each calculated by said acceleration calculation means, said integrated value representing the sum of accelerations given to said motor vehicle.

4,763,746

VEHICLE SPEED CONTROL SYSTEM

Takeshi Ochiai, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Dec. 19, 1986, Ser. No. 943,487
Claims priority, application Japan, Dec. 24, 1985, 60-289356; Dec. 24, 1985, 60-289357
Int. Cl.[4] B60K *31/04*
U.S. Cl. 180—179 15 Claims

1. An apparatus for controlling the traveling speed of an automotive vehicle driven by an internal combustion engine controlled by a throttle valve, comprising:

an ignition switch;

control switches for controlling a speed of the vehicle;

a power supply circuit connected to said ignition switch for generating power only when one of said control switches is turned ON, said power supply circuit comprising:

a relay having a coil connected to ground, a first switch connected to said ground, and a second switch connected between said ignition switch and said logic circuit, said first and second switches being turned ON when current flows in said coil;

a transistor having a collector connected to said coil and an emitter connected to said ignition switch;

two serially-connected resistors, a connection point of which is connected to a base of said transistor, one end of said transistor being connected to said ignition switch; and another end of said transistor being connected to said first switch;

a diode having an anode connected to said first switch and a cathode connected to said one of said control switches;

a logic circuit connected to said power supply circuit and one of said control switches for generating and transmitting a set signal to a control means when said one of said control switches is twice operated after said ignition switch is turned ON; and

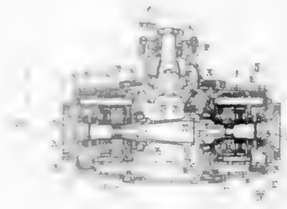
a control means connected to an output of said logic circuit for controlling said throttle valve according to signals from said control switches, said control means being set by an output of said logic circuit.

4,763,747

ALL WHEEL DRIVE FOR A MOTOR VEHICLE

Robert Müller, Mönsheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 7,364
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1986, 3602930
Int. Cl.[4] B60K *17/34*
U.S. Cl. 180—244 9 Claims



1. In an all-wheel drive for a motor vehicle, having a first axle that can be driven continuously by the vehicle engine or its gear shift transmission, an automatically operating limited slip differential system for bringing two vehicle wheels of a second axle into driving connection with said first axle, said limited slip differential system having a planetary transmission formed of sun gear wheels, planetary wheels and a planetary carrier, and having a through drive ratio which only slightly deviates from 1:1, and a braking device that is applied to the planetary transmission at a high ratio,

wherein two limited slip differential systems are arranged at the second axle, one limited slip differential system being assigned to the right vehicle wheel, and one limited slip differential system being assigned to the left vehicle wheel, and

wherein the planetary transmission of each limited slip differential system includes:

an inlet sun gear wheel;

an outlet sun gear wheel having a slightly smaller number of teeth than said inlet sun gear wheel;

said outlet sun gear wheel being disposed coaxial and adjacent to said inlet sun gear wheel and connected with the vehicle wheel to be driven;

planetary wheels of a planetary carrier each engaging with the two sun gear wheels.

a braking device functioning between each planetary transmission and a fixed housing.

4,763,748

FOUR-WHEEL DRIVE VEHICLE

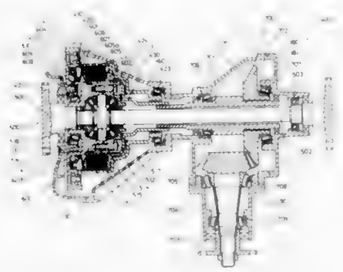
Masakatsu Miura, Kariya; Tatsuya Iwatsuki, Okazaki, and Seitoku Kubo, Toyota, all of Japan, assignors to Aisin-Warner Limited, Anjo and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 18, 1985, Ser. No. 810,381
Claims priority, application Japan, Dec. 19, 1984, 59-267784
Int. Cl.[4] B60K *17/34*
U.S. Cl. 180—248 3 Claims

3. A four-wheel drive vehicle comprising a front wheel side having a front wheel set and a rear wheel side having a rear wheel set, an engine having an output shaft extending in a transverse direction of a vehicular body, a transmission having an input shaft connected to said output shaft of said engine and

VOL 1093 ISS 3 AG 16 1988 UMI

an output shaft connected through a transmission mechanism to said input shaft such as to extend in a transverse direction of said vehicular body, a rotating member connected to said output shaft of said transmission, a first output member connected to said rotating member for transmitting a power to one of said wheel sides, said rotating member being a differential



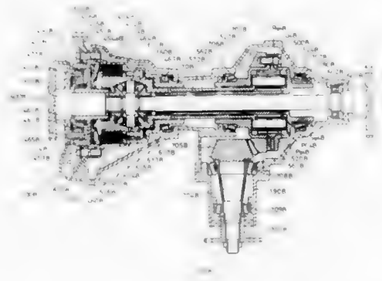
gear case incorporating a differential gear for one of said wheel sets, and a hydraulic friction clutch for effecting engagement and disenegagement between said rotating member and a second output member for transmitting a power to one of said wheel sides; said hydraulic friction clutch being arranged in an inner circumferential position of said differential gear case.

4,763,749

FOUR-WHEEL DRIVE VEHICLE

Masakatsu Miura, Kariya; Tatsuya Iwatsuki, Okazaki, and Seitoku Kubo, Toyota, all of Japan, assignors to Aisin-Warner Limited, Anjo and Toyota Kidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Dec. 24, 1985, Ser. No. 813,003
Claims priority, application Japan, Dec. 27, 1984, 59-275825
Int. Cl.[4] B60K *17/35*
U.S. Cl. 180—249 3 Claims



1. A four-wheel drive vehicle comprising:
an engine having an output shaft extending in a transverse direction of a vehicular body;
a transmission having an input shaft connected to the output shaft of the engine and an output shaft connected through a transmission mechanism to the input shaft in parallel with the output shaft;
a drive gear meshed with an output gear connected to the output shaft of the transmission;
a front wheel side power transmitting mechanism;
a rear wheel side power transmitting mechanism;
a center differential mechanism arranged coaxially with the drive gear and having an input member connected to the drive gear, a first output member connected to the front wheel side power transmitting mechanism, and a second output member connected to the rear wheel side power transmitting mechanism to dividedly transmit power to the front wheel side power transmitting mechanism and the rear wheel side power transmitting mechanism; said input member being a front differential gear case housing rotatably supported by a transfer case through a bearing;
a front differential gear arranged coaxially with the center differential mechanism and connected to the first output member of the center differential mechanism to transmit power to the front wheel side power transmitting mechanism; said front differential gear having a front differential gear case connected to the first output member of the center differential mechanism;
a power converting gear mechanism for converting a rotation about a first axis to a rotation about a second axis being perpendicular to the first axis to transmit power to the rear side power transmitting mechanism, having an input gear provided coaxially with the center differential mechanism and connected to the second output member of the center differential mechanism and an output gear meshed with the input gear to be connected to the rear wheel side power transmitting mechanism; and
a hydraulic friction clutch mechanism arranged coaxially with the center differential mechanism and connected between the input member and the first output member to selectively lock the center differential mechanism; said hydraulic friction clutch mechanism being provided between the front differential gear case and the front differential gear case housing.

4,763,750

SEATBELT ASSEMBLY

Noritada Yoshitsugu, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Apr. 21, 1987, Ser. No. 41,044
Claims priority, application Japan, May 27, 1986, 61-79768[U]
Int. Cl.[4] B60R *21/00*
U.S. Cl. 180—268 20 Claims



1. A seatbelt assembly for automatically releasing a vehicle seat occupant from a restrained condition comprising:
a first restraining webbing means for automatically fastening an occupant to a vehicle seat, said first restraining webbing means being positioned at one of first and second positions, said first restraining webbing means restraining a first portion of an occupant of the seat when said first restraining webbing means is in the first position, and said first restraining webbing means releasing the first portion of the occupant of the seat when said first restraining webbing means moves to the second position,;
a first actuator means for actuating said first restraining webbing means to move between the first and second positions;

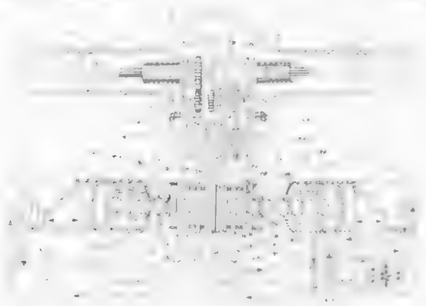
a second restraining webbing means for manually fastening a second portion of an occupant to said vehicle seat;
a buckle means being located at a first side of the seat, said second restraining webbing means selectively engaging said buckle means;
said buckle means including a locking means for locking said second restraining webbing means into engagement with said buckle means, and a second actuator means for releasing said second restraining webbing means from said locking means;
a retracting means for winding said second restraining webbing means into a retracted position, said retracting means being located at a second side of the seat, said second restraining webbing means restraining the second portion of an occupant of the seat when said second restraining webbing means is engaged with said buckle means, said second restraining webbing means releasing the second portion of the occupant of the seat when the second restraining webbing means is disengaged from said buckle means; and
a first detecting means for detecting when the occupant is getting out of the vehicle, said first detecting means outputting a first signal to said first and second actuator means, said first and second actuator means actuating simultaneously and respectively said first and second restraining webbing means upon receipt of the first signal from said first detecting means, said first actuator means actuating said first restraining webbing means so as to move said first restraining webbing means to the second position upon receipt of the first signal, said second actuator means disengaging said second restraining webbing means from said locking means on the receipt of the first signal to simultaneously release the first and second restraining webbing means respectively from the first and second portions of the occupant.

4,763,751

ELECTROHYDRAULIC MOTOR TRANSMISSION VEHICLE DRIVE SYSTEM

Elmer W. Gardner, Jr., P.O. Box 39463, Cincinnati, Ohio 45239

Filed Mar. 19, 1987, Ser. No. 27,838
Int. Cl.[4] B60K *9/04*
U.S. Cl. 180—305 3 Claims



1. An electrically operated vehicle, including means for generating electricity, wherein said improvement comprises:
a vehicle having an axle housing containing at least two axles and two wheels
at least two hydraulic cylinder motors operatively connected to a mechanical transmission for providing power to an output shaft
each of said hydraulic cylinder motors having at least one cylinder each having at least one chamber for receiving pressurized fluid
each said chamber having an inlet and an outlet for the input and output of working fluid
each said cylinder containing at least one operable piston therein having one end in working relationship to said pressure chamber and the other end operably connected to one end of a worm screw gear
said worm screw gear operatively connected to operable elements between each said piston and cylinder for providing reciprocatable movement through a hollow output shaft when said piston in said cylinder is loaded
a second hollow shaft slidably extending through said hollow output shaft and having bearings at each end connected to a rotatable clutch
said rotatable clutch operably connected to a clutch plate having a rectangular gear at its center
said rectangular gear operatively arranged to be driven by said worm screw
a counter balanced flywheel connected to each end of said output shaft and operatively arranged for rotational engagement by said clutch when said worm screw gear is operatively engaged to said rectangular gear providing a one direction of rotation to said output shaft
said output shaft operably connected to a clutchable jackshaft having at least two variable pulleys for operative connection to said axles and to said wheels for driving said vehicle
an electric motor coupled to a pump for pressurizing hydraulic fluid
a series of storage batteries providing energy for driving said electric motor
electrical control means for providing electric energy to said electric motor
means for regulating and controlling the flow of generated electricity for storage
means for generating electricity including means for operatively connecting an alternator to the output shaft to said hydraulic cylinder motor transmission
a closed circuit circulating system having controlled means for the flow of hydraulic fluid, including means for accumulating and storing hydraulic fluid
valve means for controlling the flow of hydraulic fluid in said closed circuit circulating system

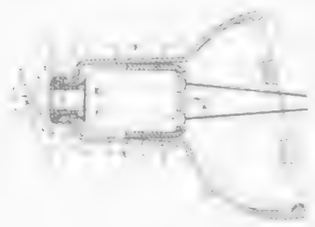
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4,763,752

MOUNT FOR A SOUND TRANSDUCER, PARTICULARLY AN EARPHONE

Christof Haertl, Neunkirchen, and Peter Nassler, Eckental, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 12, 1987, Ser. No. 48,893
Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616546
Int. Cl.[4] H04R *25/00*
U.S. Cl. 181—130 9 Claims



1. A mount for a sound transducer, particularly an earphone, having a sound connector in a housing of a hearing aid having a sound opening, particularly an in-the-ear hearing aid, close to the sound opening, whereby the sound transducer is buttoned into the sound opening by means of an elastic hose part seated on the sound connector and is also at least partially provided with an elastic support, comprising the improvement wherein

VOL 1093 ISS 3 AG 16 1988 UMI

the elastic hose part is slightly elastically stretched in longitudinal direction such that it pulls the sound transducer in the direction of the sound opening and the sound transducer is provided with the elastic support as an elastic tension abutment.

4,763,753

INSERT EARPHONES FOR AUDIOMETRY

Mead C. Killion, Elk Grove Village, Ill., assignor to Etymotic Research, Inc., Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 628,009, Jul. 5, 1984, Pat. No. 4,677,679. This application Oct. 4, 1985, Ser. No. 784,285

Int. Cl.[4] H04R *25/04, 1/10, 1/28*

U.S. Cl. 181—130 13 Claims



1. Earphone apparatus for delivering acoustic stimuli to the eardrum of an ear including electrically energized transducer means positioned at a distance from the ear, and sound transmission means defining a main sound transmission path extending from said transducer means to the eardrum, said main sound transmission path having resonance characteristics such as to produce a relatively high amplitude resonant peak response at a certain peak response frequency determined primarily by the length of said main sound transmission path, and resonance cancellation means including a first chamber and first coupling path means in communication between said main transmission path and said first chamber, said first coupling path means including at least one elongated passage having a cross-sectional size and a volume which are small in relation to those of said first chamber to provide an acoustic element having a relatively high acoustic inertance while said first chamber provides an acoustic element having a relatively high acoustic compliance, the acoustical inertance of said first coupling path and said relatively high acoustical compliance of said acoustic element provided by said first chamber being such as to provide a minimum impedance at said certain peak response frequency to reduce the response in said main transmission path at said certain peak response frequency.

4,763,754

HYDRAULIC CLATTER DAMPING DEVICE AND ITS APPLICATION TO VALVES AND THE LIKE

Pierre Coppolani, Paris; Jean-Marc Henry, Courbevoie; Pierre Savary, Strasbourg, and Jean Eisele, Schiltigheim, all of France, assignors to Framatome, Courbevoie, France

Filed Mar. 11, 1987, Ser. No. 24,440

Claims priority, application France, Mar. 11, 1986, 86 03548

Int. Cl.[4] F16K *47/02*

U.S. Cl. 181—237 9 Claims

1. Hydraulic clatter damping device comprising a piston (18) mechanically connected to a valve spindle and slidable within a closed chamber (20) consisting of two sub-chambers, one on either side of the piston, said sub-chambers including a large sub-chamber (23) in an upper part and a compression chamber (24) in a lower part, both sub-chambers being filled with the same hydraulic fluid under pressure, the piston being provided with a hollow deformable body rigidly connected to a free face thereof in the large sub-chamber, the hollow deformable body being filled with a gaseous fluid and being contracted during rest by pressure prevailing in the sub-chambers, said sub-chambers communicating by means of an hydraulic damping connection (25) with a thin-walled nozzle (26), said compression



chamber (24) comprising a visual communication means which permits an upper face of the hollow body to be observed.

4,763,755

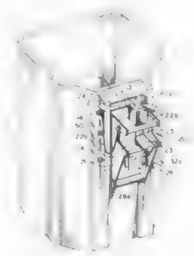
BUCKET RELEASE ASSEMBLY FOR AERIAL DEVICE

Robert J. Murray, Toronto, Canada, assignor to Pitman Manufacturing Co., Inc., Markham, Canada

Filed Jun. 3, 1987, Ser. No. 57,775

Int. Cl.[4] B66F *11/04*

U.S. Cl. 182—2 6 Claims



1. In a bucket assembly for an aerial device including a worker's bucket member supported on a boom by a mounting member, wherein the worker's bucket member is pivotally mounted to rotate relative to the mounting member from an upright orientation to a dumping orientation, a bucket release assembly comprising:

(a) protruding means on one of said members;

(b) rotatable latch means on the other of said members for retentively engaging said protruding means when said worker's bucket is in its upright orientation; and

(c) means for rotating said latch means relative to the protruding means to selectively engage and disengage the retentive engagement of said protruding means by said latch means.

4,763,756

MULTI-PURPOSE WORK UNIT

Gerald P. Horan, Markham, Canada, assignor to Chart Industries Ltd., Pickering, Canada

Filed May 1, 1987, Ser. No. 44,774

Claims priority, application Canada, May 7, 1986, 508653

Int. Cl.[4] A47C *9/00, 13/00*

U.S. Cl. 182—20 22 Claims



1. A multi-purpose work unit comprising a platform having; a top side, and bottom side, carrying on the platform top an anti-slip surface, and a padding on the bottom side; a plurality of support members of alternative cross-section having a top section extending from the bottom side of the platform at its extremities parallel to the platform top and abutting the interior surfaces of the platform and fastened thereto, said support members continuing from the platform extremities in a downward angle away from the platform and arcing at the extremities of the support remote the platform defining a support member bottom, continuing therefrom in complimentary circumscription returning to its origin at the underside of the platform; wherein ratios exist dimensionally amongst the length, width and height and surface areas of the work unit at both its base and its platform wherein the overall sizing of the base is related to the height of the work unit and the overall sizing of the platform is related to the height of the work unit.

4,763,757

SAW HORSE

Kirk S. Cheney, 236 Havelock Street, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 24,760, Mar. 11, 1987, abandoned. This application Sep. 16, 1987, Ser. No. 97,145

Int. Cl.[4] B27B *21/00*

U.S. Cl. 182—21 11 Claims



1. A collapsible portable support device comprising:

two end members, having lower and upper ends;

two spacer members having first and second surfaces, and outer and inner ends;

outer hinge means located between said end members and said outer ends of said spacer members;

intermediate hinge means connecting said spacer members at said inner ends whereby said spacer members are swingable between extended and stored positions;

two transverse support panels having upper and lower surfaces and outer and inner ends;

outer hinge means between said end members and said outer ends of said support panels; and,

intermediate hinge means connecting said inner ends of said support panels, said support panels being swingable between an upwardly stored position, and a downwardly extended position in which they lie in a common transverse plane, and wherein said common plane is adjacent said upper edges of said spacer members, with said lower surfaces of said support panels resting on said upper edges of said spacer members.

4,763,758

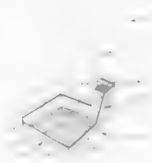
SCUFF PAD WITH STEP

Richard D. Moody, New Boston, N.H., assignor to Plastic Techniques, Inc., Goffstown, N.H.

Filed Dec. 22, 1986, Ser. No. 944,583

Int. Cl.[4] B66F *11/04*

U.S. Cl. 182—46 1 Claim



1. Scuff pad with step for preventing scuffing of the inside bottom of aerial lift bucket apparatus and for facilitating a workman's climbing out of said aerial lift bucket apparatus, said aerial lift bucket apparatus having an interior or bottom portion comprising:

a body of predetermined material generally complementary in configuration to said interior bottom portion of said lift bucket apparatus and for residing interiorly of said aerial lift bucket apparatus at the bottom portion thereof, said body having a base portion and an upwardly extending portion extending upwardly of said base portion a predetermined distance;

said base portion being of generally rectangular configuration including at least one corner and having a top surface for being engaged by the shoes of said workman upon standing in said aerial lift bucket apparatus to prevent said scuffing; and

said upwardly extending portion being formed integrally with said base portion and extending upwardly and inwardly thereof at said corner and having a top surface providing a step for facilitating said climbing out of said aerial lift bucket apparatus by said workman.

4,763,759

APPARATUS FOR LUBRICATING WHEEL FLANGES OF A RAILROAD VEHICLE

Ennio Federico, Sao Paulo, Brazil, assignor to Eximport Industria E Comercio Ltda., Sao Paulo, Brazil

Filed May 4, 1987, Ser. No. 46,669

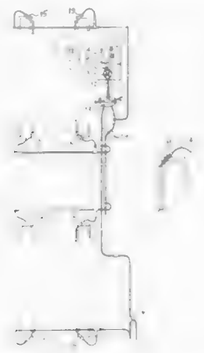
Int. Cl.[4] B61K *3/02*

U.S. Cl. 184—3.2 1 Claim

1. An apparatus for lubricating moving wheel flanges of a railroad vehicle, comprising: an oil reservoir, a source of compressed air, generator means connected to said reservoir and said source for generating a high-density air-oil mixture, nozzles in the vincinity of said wheel flanges respectively, and tubing extending from said generator means to said nozzles, each nozzle being tubular with a narrow axial conduit having one end communicating with said tubing and another end for emitting oil onto the respective wheel flange, said another end

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being defined by opposite chamfers forming a wedge with an edge such that said conduit has a V-shaped recess emitting a



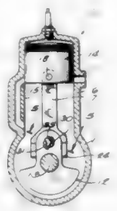
concentrated jet of circular cross section of high velocity atomized oil particles onto the respective wheel flange, unaffected by air turbulence caused by the moving wheel flanges.

4,763,760

AUTOMATICALLY FORCED FLUID SUPPLY SYSTEM

David F. Haman, Waukegan, and Allan F. Miller, Lindenhurst, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 2, 1986, Ser. No. 902,571
Int. Cl.[4] F01M *1/04*
U.S. Cl. 184—6.5 18 Claims



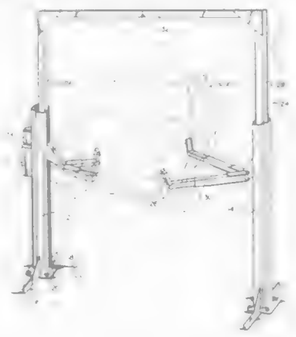
1. An automatically forced fluid supply system for lubricating a crankpin in an internal combustion engine of the type wherein lubricant is suspended in a gaseous medium within the engine, said automatically forced fluid supply system comprising a crankpin including an end surface, an exterior bearing surface, and an interior passageway extending from said end surface and opening through said bearing surface, and a hood projecting axially outwardly adjacent said end surface, communicating with said interior passageway, and defining an opening located axially outwardly of said end surface and facing in the direction of rotary movement of said crankpin for intercepting lubricant located axially outwardly of said end surface in response to movement of said crankpin through the gaseous medium having therein the suspended lubricant and for conveying the intercepted lubricant to said interior passageway for distribution onto said bearing surface.

4,763,761

LIFTING DEVICE

Millard F. McKinsey; David L. Knoebel, both of R.R. 1, Maquoketa, Iowa 52060; Jesse A. Cram, R.R. 3, Bellevue, Iowa 52031, and Larry N. Kilburg, R.R. 2, Maquoketa, Iowa 52060

Filed Feb. 27, 1987, Ser. No. 19,710
Int. Cl.[4] B60S *13/00*
U.S. Cl. 187—8.41 4 Claims



1. A lifting device for lifting objects having even and uneven weight distributions comprising:

a pair of support columns having lifting columns vertically moveable relative thereto,

said lifting columns having load contact platforms at the lower ends thereof for lifting a load therebetween,

said lifting columns having an overhead horizontal spacer connecting the upper ends thereof and vertically moveable therewith,

said lifting columns, said contact platforms and said horizontal spacer comprising a lifting carriage that raises and lowers as a unit,

said lifting columns having a single source fluid pressure lifting mechanism supplying substantially equal lifting power to each lifting column through interconnecting fluid pressure conducting transmission lines,

equalizing cables connected at their ends to said support columns,

pulleys mounted on said lifting columns, said cables passing over said pulleys,

said cables applying an additional lifting force to the lifting column being subjected to an additional load of said object having an uneven weight distribution,

said pulleys comprising a pair of upper pulleys at each end of said spacer and a lower pulley near the lower end of each support column, said cables passing over said upper pulleys and under said lower pulleys.

4,763,762

PRELOADED BRAKE DISC

William C. Schneider; Kornel Nagy, both of Houston, and Clarence J. Wesselski, Alvin, all of Tex., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 10, 1987, Ser. No. 118,992
Int. Cl.[4] F16D *65/12*
U.S. Cl. 188—218 XL 8 Claims

3. A friction disc construction for use under dynamic braking conditions including

at least one annular disc brake member wherein said brake member has radially extending slots extending outwardly from the inner circumferential surface of the brake member, said slots being angularly disposed about the axis of said brake member,

wedge shaped brake lining pad members disposed on at least one outer surface of said brake member, said pad members respectively having radial edge surfaces disposed generally parallel to a slot and an outer circumferential surface disposed within the circumference of the outer surface of said brake member,

means for loosely attaching each lining pad member to the adjacent supporting surface of said brake member,

T shaped clip means disposed over a radially extending slot and engagable with the outer circumferential surfaces of adjacent brake lining pad members,



housing means attachable in the radial slot,

a first slidable element disposed in said housing means arranged for radial slidable movement,

second slidable element in the slot and arranged for radial slidable movement,

means for attaching said first and second slidable elements to the T Clip means,

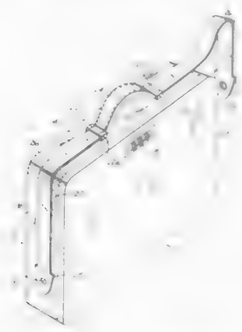
resilient force means disposed between one of said slidable elements and said housing means for spring loading said T Clip means and liner pad members radially toward the central axis of said disc member.

4,763,763

CONVERTIBLE CARRYING HANDLE AND SHOULDER STRAP FOR AN ATTACHE CASE

Bernard D. Sadow, Chappaqua, N.Y., assignor to B.D.S., Luggage Corporation, New York, N.Y.

Continuation of Ser. No. 857,151, Apr. 29, 1986, abandoned. This application Nov. 9, 1987, Ser. No. 118,728
Int. Cl.[4] A45C *13/76*
U.S. Cl. 190—115 3 Claims



1. In an attache case comprising a bottom tray-like portion hinged to a top cover portion, the bottom tray-like portion having a substantially rigid peripheral frame comprising a top wall, a bottom wall and two side walls, the improvement comprising;

a substantially rigid elongate carrying handle positioned centrally of the top wall of said frame and of lesser length than the length of said top wall having opposite ends;

straps of lesser thickness than the thickness of said handle attached to said handle and providing continuations of said respective opposite ends of said handle and arranged in axial alignment with said handle, said straps respectively terminating in free ends;

means attached to said free end of each of said straps, said means being of a dimension appreciably greater than the cross-section of said respective straps;

bails attached to said top wall of said peripheral frame and through which an associated one of said straps is slidable in longitudinal directions, said bails being spaced by a distance only slightly in excess of the distance between opposite ends of the handle and each providing a throat of dimensions approximating the cross-section of the associated strap, said means attached to said free end of each said strap being of greater dimensions than the dimensions of said throat; and

mutually cooperation pairs of separable and connectible fastener members, are fastener member of each said pair attached respectively to said free end of each said strap and the other said fastener member of each said pair being rigidly affixed one to each said side wall of said frame at a distance along said peripheral frame from the nearest bail approximating the length of the associated strap between its attachment to said handle and said means at the free end of said strap;

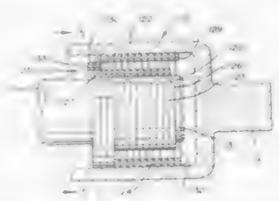
whereby, when said fastener members are engaged and said case is lifted by said handle, said straps are held tensioned against the top and side walls of said peripheral frame and hold said handle in a position closely adjacent said top wall and centrally thereof with said bails abutting the respective opposite ends of the handle, and, when said fastener memebers are separated from each other, said straps can be drawn axially through said bails to engage said means with said bails and provide a shoulder strap for carrying said case.

4,763,764

WRAPPED SPRING, OVERRUNNING CLUTCH ASSEMBLY

Richard H. Smith, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 12, 1987, Ser. No. 61,422
Int. Cl.[4] F16D *13/08, 41/20*
U.S. Cl. 192—41 S 1 Claim



1. A clutch to interconnect drive and driven rotating members, said clutch comprising: a cylindrical clutch element operatively connected to one of the rotating members; a sleeve-like clutch element operatively connected to at least one other of the rotating members; said sleeve-like clutch element disposed radially outwardly of said cylindrical clutch element in spaced, concentric relation with respect thereto; first and second helical spring means each having opposed energizing and trailing ends; said first spring means disposed concentrically about said cylindrical clutch element and frictionally engaging the same when clutch is at rest; the hand of said first spring means being selected to enhance the frictional engagement of said spring means with said cylindrical clutch element in response to

VOL 1093 ISS 3 AG 16 1988 UMI

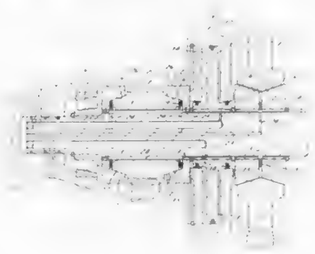
rotation thereof in one direction, and conversely, to decrease the frictional engagement in response to counter-rotation thereof; said second spring means disposed in spaced, concentric relation about said first spring means and also concentrically within said sleeve-like element frictionally to engage the sleeve-like clutch element; said second spring means being of the same hand as said first spring means; the energizing end of the spring means which frictionally engages that clutch element secured to the driven member being disposed in substantially radial alignment with, and being secured to, the trailing end of the first spring means which frictionally engages that clutch element secured to the drive member; and, at least one said spring means being selected to effect overrunning of the rotating clutch element engaged thereby in response to an angular velocity in excess of a preselected angular velocity.

4,763,765

CONE CLUTCH TRANSMISSION

James B. Black, Roscoe, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Apr. 20, 1987, Ser. No. 40,021
Int. Cl.[4] F16D *13/28, 25/10*
U.S. Cl. 192—48.91 **4 Claims**



1. Torque transmitting apparatus comprising a shaft confined to rotation, a pair of rotatable drive members, and clutch means for providing a rotation transmitting connection between the shaft and either selected one of said drive members while leaving the other drive member free for rotation relative to the shaft, said apparatus being characterized by:

A. said clutch means comprising two pairs of clutch elements on said shaft, one pair for each of said drive members,
  (1) the clutch elements of each pair being axially spaced from one another and from the other pair of clutch elements and comprising
    (a) a proximal clutch element which is nearer to the other pair and
    (b) a distal clutch element which is farther from the other pair,
  (2) each said clutch element having a conical surface
    (a) which is concentric with the shaft and
    (b) which tapers in one axial direction,
    (c) said surfaces on the two clutch elements of each pair being tapered in opposite directions such that each faces obliquely toward the other;

B. cooperating means on said clutch elements and the shaft
  (1) constraining every clutch element to rotate with the shaft,
  (2) confining each distal clutch element against axial shifting relative to the shaft, and
  (3) providing for limited shifting of each proximal clutch element towards and from its paired distal clutch element;

C. each said drive member
  (1) being substantially annular,
  (2) having an inner periphery which is larger in diameter than the shaft, and
  (3) having a pair of concentric conical surfaces which face obliquely in axially opposite directions and each of which mates with the conical surface of one of the clutch elements of the pair for the drive member so that the clutch elements of that pair at all times support the drive member in radially spaced concentric relation to the shaft and confine the drive member against substantial axial shifting relative to the shaft;

D. clutch disengaging means for each pair of clutch elements, reacting between them to urge the proximal clutch element away from the distal one and to a disengaged position in which the drive member for the pair can rotate relative to the clutch elements; and

E. clutch engaging means on the shaft, between the proximal clutch elements, for alternately and selectably shifting each proximal clutch element toward its paired distal clutch element to an engaged position wherein the pair of clutch elements cooperate in rotatably connecting their drive member with the shaft, said clutch engaging means comprising
  (1) a concentric disc-like piston on the shaft, confined against axial shifting relative to the shaft,
  (2) a coaxial, axially shiftable cylinder on the shaft, surrounding and enclosing said piston in slidable sealed relation thereto, said cylinder having end walls at axially opposite sides of the piston that cooperate with it in defining a pair of pressure chambers, each of which
    (a) is expandable to shift the cylinder axially in one direction and
    (b) is communicated with a passage in the shaft through which pressure fluid can enter the chamber to expand it, and
  (3) abutment means on each said end wall, engageable against its adjacent proximal clutch element to translate shifting of the cylinder in each axial direction into shifting of a proximal clutch element to its engaged position.

4,763,766

CONTROL LINKAGE FOR COUPLING DEVICE

Hervé Focqueur, Francoville, and Bernard Jumel, Pierrefitte, both of France, assignors to Valeo, Paris, France

Filed Mar. 28, 1986, Ser. No. 845,619
Claims priority, application France, May 5, 1985, 85 05252
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.[4] F16D *13/75*
U.S. Cl. 192—99 S **16 Claims**



1. A control linkage for a coupling device such as a clutch, said control linkage being adapted to be coupled to operating

means for the coupling device and comprising an output lever having a pivot axis and being cooperable with a release device for the coupling device, a wear compensator and said output lever having a substantially common axial plane of symmetry normal to said pivot axis, said output lever extending beyond said wear compensator, said wear compensator including an actuator lever adapted to be coupled to the operating means and pivotally connected to said output lever, releasable detent means for constraining said output lever to pivot with said actuator lever, said releasable detent means being connected to said output lever through a demultiplier lever, said demultiplier lever being pivotally connected to said actuator lever, and a lost motion connection between said demultiplier lever and said output lever.

4,763,767

TORSIONAL DAMPER DEVICE

Ernesto Lanzarini, Moncalieri, and Renzo Franchi, Santena, both of Italy, assignors to Valeo, Paris, France

Filed Jun. 16, 1986, Ser. No. 875,237
Claims priority, application France, Jun. 14, 1985, 85 09017
Int. Cl.[4] F16D *3/14*
U.S. Cl. 192—106.2 **14 Claims**



1. Torsional damper device suitable for automobile vehicles, comprising at least one driving part, an intermediate part and a driven part disposed coaxially and rotatable relative to each other within predetermined limits of relative angular displacement, lost motion meshing means operatively disposed between said driving and intermediate parts and between said intermediate and driven parts for defining said predetermined limits of relative angular displacement, first and second circumferentially acting resilient means operably disposed between said driving, intermediate and driven parts to oppose relative angular displacement thereof for at least two ranges of relative angular displacement, said lost motion meshing means defining said ranges of relative angular displacement, said driven part comprising a hub plate disposed annularly of said hub, and said driving part comprising a friction disk, means for supporting and centering said friction disk, a guide ring axially spaced from said means for supporting and centering said friction disk, and means for constraining said means for supporting and centering said friction disk for rotation with said guide ring, said constraining means being radially spaced from said hub proximate to the outer periphery of said guide ring, an annular elastomer member defining at least in part said first circumferentially acting resilient means, said elastomer member having at least in part a trapezoidal cross section with a shorter parallel side of said trapezoidal cross section near the axis of the device and two opposed generally radially extending sides, means constraining one of said radially extending sides to rotate with said guide ring, and means constraining the other of said radially extending sides to rotate with said hub plate, said elastomer member having an outer peripheral portion with opposed parallel radial sides including axially extending recesses for receiving said constraining means, said guide ring being part frustoconical and having a portion complementary to that of said one opposed radially extending side of said elastomer member and a portion complementary to said outer peripheral portion of said elastomer member.

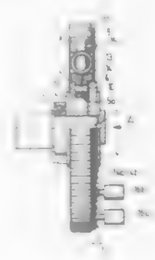
14. Torsional damper device suitable for automobile vehicles, comprising at least one driving part, an intermediate part and a driven part disposed coaxially and rotatable relative to each other within predetermined limits of relative angular displacement, lost motion meshing means operatively disposed between said driving, intermediate and driven parts for defining said predetermined limits of relative angular displacement, first and second circumferentially acting resilient means operably disposed between said driving, intermediate and driven parts to oppose relative angular displacement thereof for at least two ranges of relative angular displacement, said lost motion meshing means defining said ranges of relative angular displacement, said driving part comprising a friction disk, means for supporting and centering said friction disk, a guide ring axially spaced from said means for supporting and centering said friction disk, and means for constraining said means for supporting and centering said friction disk for rotation with said guide ring, an annular elastomer member defining at least in part said first circumferentially acting resilient means, said elastomer member having at least in part a trapezodial cross section with a shorter parallel side of said trapezoidal cross section near the axis of the device and two opposed generally radially extending sides, means contraining one of said radially extending sides to rotate with said guide ring, means constraining the other of said radially extending sides to rotate with said intermediate part said driven part being a hub and said intermediate part being a hub plate arranged annularly around said hub, said hub having a toothed radial projection adapted to mesh with clearance with said hub plate, said toothed radial projection and said hub plate comprising respective half-openings in face-to-face relationship, and said second circumferentially acting resilient means being disposed in said openings in a generally circumferential direction so as to be compressed between said hub plate and said hub, said second resilient means being formed in one piece with said annular elastomer member and comprising axial projections in the vicinity of the inner periphery of said elastomer member.

4,763,768

OVERLOAD PROTECTION

Heinz Flaig, Bochum, and Heinz Hasselmann, Hagen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 17, 1986, Ser. No. 887,066
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525666
Int. Cl.[4] F16P *3/00;* **F16H** *57/00*
U.S. Cl. 192—150 **6 Claims**



1. Bi-directionally effective overload protection device for a rotation machine part having a rotating shaft, comprising:

VOL 1093 ISS 3 AUG 16 1988 UMI

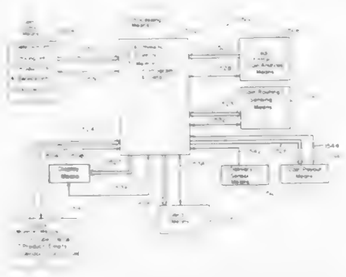
first and second, coaxially arranged, mutually juxtaposed ring discs being connected to the shaft;
a gear disc with outer gearing and inwardly directed flange means being arranged between said ring discs;
a plurality of springs holding said gear disc normally in particular position in relation to the ring discs, the springs permitting the gear disc to rotate relative to the ring discs upon occurrence of an overload in either directional rotation;
a switching ring having an inner ring portion and an outer ring portion and being connected to the second ring disc through resilient bar or leaf spring portions of the switching ring;
actuator ramp means on the outer and inner ring portions for cooperation with axially extending cam means on the gear disc so that either the inner or the outer ring is axially shifted on overload in one or the other direction; and
switch means arranged in relation to the inner ring portion and the outer ring portion, for being actuated by the respective particular one of the inner ring portion or of the outer ring portion which is being axially shifted on occurrence of an overload.

4,763,769

COIN ACCEPTANCE MEANS AND METHOD

Joseph L. Levasseur, Chesterfield, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Oct. 3, 1986, Ser. No. 914,876
Int. Cl.[4] G07F *5/16, 5/24*
U.S. Cl. 194—217 24 Claims



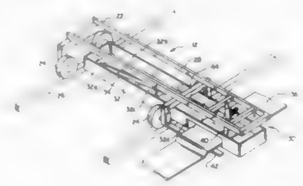
24. Coin acceptance means for a vending system wherein a vend price for a given vend operation is established prior to the deposit of coins or submission of credit with regard to such particular vend operation, which vending system includes coin validation means for detecting and validating deposited coins, controllable means for accepting and returning deposited coins, coin availability status means for determining coins available for payback, and vend control means for controlling a vend operation, the vend control means operable to accumulate credit upon the acceptance of a coin and to effect a vend when the amount of accumulated credit at least equals the established vend price, said coin acceptance means operatively connected to the coin validation means and to the coin availability status means and the vend control means, said coin acceptance means responsive to each detection of a validated coin to determine the acceptability thereof and to effect acceptance of such validated coin by the controllable means and the accumulation by the vend control means of credit corresponding to the value of such validated coin unless such acceptance and credit accumulation would result in a credit accumulation in excess of the established vend price the correct amount of which excess credit accumulation would be unavailable in coins available for payback, such determination of acceptability being dependent upon the vend price, the accumulated credit, the coin analysis data for the validated coin, and the coin availability status data.

4,763,770

TRAVELING VIBRATING DIVERTER FEED SYSTEM

Peter E. Zagorzycki, Lansdale, and Benicio I. Dussan V., Philadelphia, both of Pa., assignors to Proctor & Schwartz, Inc., Horsham, Pa.

PCT No. PCT/US86/00128, § 371 Date Sep. 5, 1986, § 102(e) Date Sep. 5, 1986, PCT Pub. No. WO86/04315, PCT Pub. Date Jul. 31, 1986
Continuation of Ser. No. 693,909, Jan. 23, 1985, abandoned. This PCT application Jan. 23, 1986, Ser. No. 919,179
Int. Cl.[4] B65G *37/00*
U.S. Cl. 198—364 18 Claims



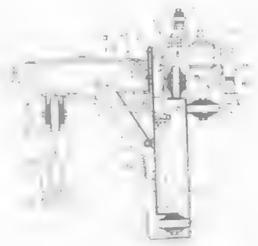
1. A vibrating diverter feed system comprising a transversely extending elongated vibrating conveyor having an upper product carrying surface and a discharge area;
means for vibrating said conveyor;
a feed belt including an upper longitudinally extending moveable product carrying surface;
a diverter blade positioned at an intermediate point of said longitudinally extending surface;
means to vibrate said feed belt in a defined area ahead of said blade, with regard to the oncoming product, to fluidize product on the belt product carrying surface in said area;
said belt and diverter blade being positioned with regard to the vibrating conveyor to transfer the fluidized product onto the vibrating conveyor at a point remote from the vibrating conveyor discharge area.

4,763,771

CONVEYOR INSTALLATION

Johannes G. C. Geerts, Zandvoorterweg 3, 2111 GN Aerdenhout, Netherlands

Filed Feb. 18, 1987, Ser. No. 16,096
Claims priority, application Netherlands, Feb. 20, 1986, [illegible]
Int. Cl.[4] B65G *47/46*
U.S. Cl. 198—365 7 Claims



1. A conveyor installation comprising at least one trolley travelling along a trajectory and comprising a forward travelling part and a vertically displaceable load carrier part for a load to be delivered into one of a series of delivery stations,

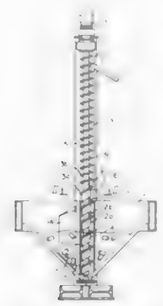
further comprising means to throw off the load at a pre-determined station, the load carrier part being formed by at least a first belt passing over at least two pulleys, the belt being subjected to a sideways displacement perpendicular to the direction of travel along the trajectory in order to throw of the load, means for driving at least one of the pulleys with power accumulated in the vertically displaceable carrier part through upward vertical displacement of the carrier part during the traversal of the trolley through a section of the trajectory preceding the delivery stations whereby said power accumulated in said carrier part is provided to said means for driving at least one of said pulleys during a vertical free fall of said displaceable carrier part.

4,763,772

APPARATUS FOR EXTRACTION AND FEEDING OF PIECE ARTICLES FROM A BULK

Vladimir T. Gradoboev, ulitsa Kropotkina, 120/1, kv. 86; Alexandr M. Klimenov, ulitsa Nevelskogo, 5, kv. 45, and Georgy A. Konyshev, ulitsa S. Shamshinykh, 83, kv. 27, all of Novosibirsk, U.S.S.R.

PCT No. PCT/SU84/00071, § 371 Date Jul. 25, 1986, § 102(e) Date Jul. 25, 1986, PCT Pub. No. WO86/03475, PCT Pub. Date Jun. 19, 1986
PCT Filed Dec. 6, 1984, Ser. No. 899,230
Int. Cl.[4] B65G *47/24, 33/24*
U.S. Cl. 198—398 3 Claims



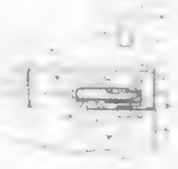
1. An apparatus for extraction and feeding of piece articles from a bulk to a delivery site, said apparatus comprising:
a hopper for retaining a plurality of randomly oriented piece articles;
a vertically disposed gripping screw at least partially received within said hopper, said gripping screw comprising at least one spiral gripping screw channel and having a gripping screw transporting surface formed by a portion of said spiral gripping screw channel;
a vertically disposed transporting screw having a lower end adjacent an upper end of said gripping screw and interconnected with said gripping screw by a shaft such that said gripping screw and said transporting screw have a common axis of rotation, said transporting screw comprising a spiral transporting screw channel and having a transporting screw transporting surface formed by a portion of said spiral transporting screw channel, said transporting screw transporting surface being connected to said gripping screw transporting surface such that a continuous transporting surface is formed which extends along said gripping screw and said transporting screw;
a plurality of holding members provided along said gripping screw and said transporting screw for holding said piece articles during transportation thereof, said holding members and said spiral gripping screw channel forming pockets along said gripping screw;
an orienting plate provided within said hopper adjacent a lower portion of said gripping screw, said orienting plate being positioned to control entry of said piece articles into said pockets; and
drive means for rotating said gripping screw and said transporting screw;
wherein, upon rotation of said gripping screw and said transporting screw by said drive means, piece articles are fed from said hopper to said pockets and transported along said gripping screw and said transporting screw on said continuous transporting surface to a delivery site above said hopper, said delivery site being located adjacent said transporting screw; and wherein piece articles delivered to said delivery site have a predetermined orientation.

4,763,773

DOFFED PACKAGE TRANSPORTING APPARATUS

Tsukasa Kawarabashi, Kyoto, and Shinji Takahashi, Joyo, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 535,715, Sep. 26, 1983, abandoned. This application Sep. 5, 1986, Ser. No. 904,767
Claims priority, application Japan, Sep. 27, 1982, 57-169132; Sep. 27, 1982, 57-146683
Int. Cl.[4] B65G *25/00*
U.S. Cl. 198—409 6 Claims



1. An apparatus for transporting and lifting doffed packages doffed on and discharged from a spinning frame, comprising:
a main conveyor for conveying packages doffed on and discharged from a spinning frame,
a sub conveyor onto which the packages conveyed by said main conveyor are transferred,
a following package sensor for detecting a following package conveyed by said main conveyor to stop the running of said main conveyor when a forwardmost package is present on the sub conveyor, located at a position spaced a prescribed distance from said hub conveyor over said main conveyor such that no two packages are present on the sub conveyor at the same time,
a sub conveyor package sensor, located over said sub conveyor, for detecting a forwardmost package,
a lifter, operable to raise the forwardmost package after detection of the forwardmost package by said second sensor, for lifting and transporting the forwardmost package on said sub conveyor, and
a lift completion sensor for monitoring operation of said lifter to detect completion of a lifting and transporting operation for the forwardmost package;
wherein said lifter comprises a lifting apparatus having at one end thereof a stand seat for receiving a package thereon and having at the opposite end thereof a direction changing device including a cam follower urged to be rotated in a horizontal direction, a driving device for driving said lifting apparatus to move up and down, and a direction changing guide disposed for contact with said cam follower during the up and down movements of said lifting apparatus to rotate said seat a predetermined angle; and
wherein said lifting apparatus includes a main shaft having at one end thereof the stand seat and having at the lower end thereof the direction changing device and two guide

VOL 1093 ISS 3 AG 16 1988 UMI

shafts arranged parallel to the main shaft, a sliding portion of said direction changing device being slidably supported on the guide shafts.

4,763,774

TRANSPORT DEVICE

Lars J. Johansson, Lerum, Sweden, assignor to AB SKF, Gothenburg, Sweden

Filed Mar. 20, 1987, Ser. No. 28,601
Claims priority, application Sweden, Apr. 22, 1986, 8601843
Int. Cl.[4] B65G *47/31*
U.S. Cl. 198—461 1 Claim



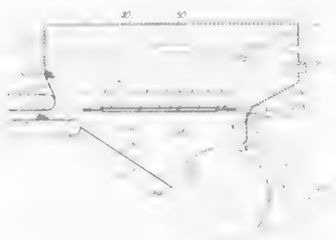
1. A transport system for carrying and conveying objects (1) comprising a first conveyor having a support trackway inclined in a predetermined direction and consisting of a series of mobile rollers (3) arranged in spaced apart rows, a second conveyor located adjacent one end of said trackway having an endless belt with an ascending section traversing the space between said mobile rollers (3), said belt consisting of a plurality of carrying plates articulatedly connected to one another, a plurality of rotatable rollers (16) supported on shafts extending between shanks on U-shaped supports (5) attached by the web points to the conveyor belt (4), said rollers (6) arranged a predetermined distance above the belt and adjacent rollers (6) spaced apart so that there is space for only one object (1).

4,763,775

CIGARETTE FILTER ROD FEED MECHANISM

Keith Jefferys, Richmond, Va.; Clifford R. Marritt, Winston Salem, N.C., and Albert D. Seim, II, Richmond, Va., assignors to Molins Machine Co., Inc., Richmond, Va.

Filed Aug. 18, 1986, Ser. No. 897,278
Claims priority, application United Kingdom, Aug. 17, 1985, [illegible]
Int. Cl.[4] B65G *47/19*
U.S. Cl. 198—533 18 Claims



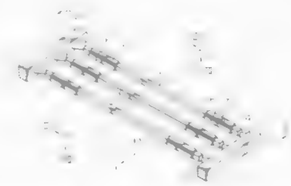
1. A filter rod feed for a filter attachment machine comprising a fluted drum, a hopper from which filter rods are arranged to be fed into the flutes of the drum, means for delivering filter rods into the hopper, an agitator comprising a substantially horizontal row of laterally spaced bars in the hopper, the bars being parallel to the filter rods and being at or above the level at which filter rods are delivered into the hopper, and the arrangement being such that movement of the bars promotes a substantially even flow of filter rods between the bars in both upward and downward directions.

4,763,776

METHOD AND APPARATUS FOR TRANSPORTING AN ARTICLE

Ichiro Okumura; Kazuhiro Izukawa; Takuo Okuno, all of Yokohama, and Takayuki Tsukimoto, Fujisawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 764,987, Aug. 12, 1985, abandoned. This application Dec. 10, 1986, Ser. No. 941,532
Claims priority, application Japan, Aug. 24, 1984, 59-175105
Int. Cl.[4] B65G *35/00*
U.S. Cl. 198—630 10 Claims



1. A method for transporting an article contacted by bar-like members in a predetermined direction, comprising steps of:
arranging a plurality of bar-like members at locations along said predetermined direction;
supporting said bar-like members near their ends;
periodically bending said bar-like members in at least two directions normal to a longitudinal direction of the bar-like members at locations between their supports to deform the bar-like members in a wave shape and periodically moving the wave-shape deformation of the bar-like members; and
bending the bar-like members such that their wave shape deformations take place in the same direction.

4,763,777

RECIPROCATING DISCHARGER

Anthony W. Hooper, Quebec, and André Martel, Fleurimont, both of Canada, assignors to Uniweld, Inc., Quebec, Canada

Filed Sep. 30, 1986, Ser. No. 913,472
Int. Cl.[4] B65G *25/08*
U.S. Cl. 198—747 11 Claims



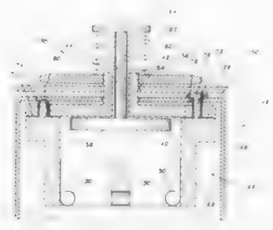
1. In a discharger assembly for discharging solid materials from the underside of a pile, a floor beneath the pile, a plurality of fixed floor angles on said floor, at least one stoker rod extending along the length of said floor beneath the pile, a thrust member frame disposed adjacent one end of the floor and being fixedly mounted on said floor, a stationary cylinder mounted on the outer face of said thrust member frame remote from said one of said floor, a cylinder rod reciprocating within said cylinder, said cylinder rod being in adjoining alignment with said stoker rod and having the inner end thereof directly connected to the end of said stoker rod, said thrust member frame having a width greater than the length of the stroke of the cylinder rod, said cylinder rod in the outermost position thereof extending only within said thrust member frame whereby the cylinder rod does not extend outside the thrust member frame during reciprocation thereof to prevent exposure of the cylinder rod to the discharging solid materials from the pile on said floor.

4,763,778

EASILY CHANGEABLE GRIPPING HEAD FOR BLOW-MOLDING PALLET ASSEMBLY

Frederick J. Feddersen, Londonderry, and Earl Snyder, Jr., Manchester, both of N.H., assignors to Fedders Machine and Tool Co., Inc., Londonderry, N.H.

Continuation-in-part of Ser. No. 879,535, Jun. 23, 1986, Pat. No. 4,684,012, which is a continuation of Ser. No. 628,449, Jul. 6, 1984, abandoned. This application Jul. 2, 1987, Ser. No. 69,327
Int. Cl.[4] B65G *29/00*
U.S. Cl. 198—803.01 23 Claims



1. In a movable pallet containing a plurality of stations for releasably gripping a plurality of workpieces as they are moved through a manufacturing process, the improvement for providing rapid reconfiguration of the stations to accept different sized workpieces wherein each station comprises:
(a) a mounting member, at each station, including a mounting place perpendicular to a shaft rotatable relative to and supported by the pallet;
(b) a locking member carried by said mounting member for rotation about said shaft; and,
(c) a collet member for releasably gripping a workpiece of a given size, said collet member including locking means for interacting with said locking member to releasably attach said collet member to said mounting plate to be moved in combination therewith whereby to reconfigure the pallet for different sized workpieces said collet members are replaced with ones of said collet members sized to grip said different sized workpieces; wherein
(d) said mounting plate has bores therethrough symmetrically disposed about said shaft;
(e) said collet member has collet pins projecting therefrom spaced to fit through said bores when said collet member is disposed against said plate; and,
(f) said locking member includes locking means for releasably gripping said collet pins to releasably hold said collet member against said plate.

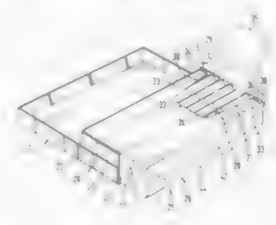
4,763,779

SHOULDER BOX FOR CIGARETTES OR THE LIKE

Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Aug. 1, 1984, Ser. No. 636,757
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329455
Int. Cl.[4] A24F *15/00*; B65D *85/00*
U.S. Cl. 206—268 16 Claims

1. A shoulder box with a box portion (20) and a hinged line (21) connected along an axis of articulation, said shoulder box for receiving a group of cigarettes (24) wrapped in a tin foil inner wrapping, said group of cigarettes to be aligned to lie flat in the box portion parallel to the axis of articulation, said inner wrapping comprising an upper wall (27) with an extraction orifice (28) extending up to a transverse edge (29) of said upper wall (27) and a closing flap (35) for covering said orifice, said closing flap (35) being at least the size of said extraction orifice (28), said closing flap (35) being connected to an end wall (39)



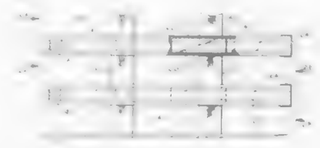
of said inner wrapping (25) at said transverse edge (29) of said upper wall.

4,763,780

PACKAGE AND APPARATUS FOR DISPENSING ELECTRICAL CONNECTORS

Raymond S. Zebley, York Haven, Pa.; James H. Nichols, Jr., Hockessin, and Bernard M. Closek, Jr., Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 24, 1987, Ser. No. 29,732
Int. Cl.[4] B65D *83/00*
U.S. Cl. 206—330 3 Claims



1. An elongated belt package for storing and dispensing identical electrical connectors, said package comprising at least one elongated, flexible tape which is a strip or web of fabric and a plurality of spaced, elongated, connector-containing tubes secured to and extending across said tape, the tape being spaced from the ends of the tubes and being sufficiently flexible that the belt package can be stored in a carton, pulled from the carton and trained over a pair of sprocket wheels supported on a shaft, and returned to another carton, the tubes having closures at each end for holding articles therein, at least one of said closures being openable to permit articles to be fed from the tube.

4,763,781

CONTAINER FOR PRINTED CIRCUIT BOARDS

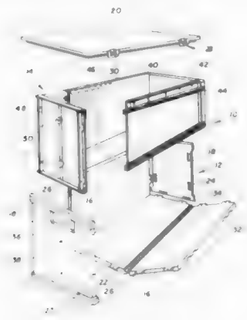
Dennis C. Donalson, and Robert R. Wilkie, both of Roanoke Rapids, N.C., assignors to W.R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Jun. 19, 1986, Ser. No. 875,858
Int. Cl.[4] B65D *85/00*, *73/02*
U.S. Cl. 206—334 9 Claims

1. A storage container for electrostatic discharge sensitive devices comprising:
(a) an electrically conductive enclosable outer shell;
(b) an injection-molded inner shell, smaller than the outer shell in each dimension;
(c) grooves disposed on opposite facing surfaces of said inner

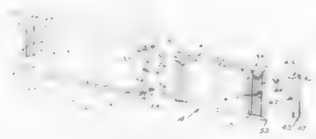
VOL 1093 ISS 3 AG 16 1988 UMI

shell for accommodating electrostatic discharge sensitive devices;



(d) a support bracket affixed to the exterior side of the grooved facing surfaces of the inner shell; and
(e) means for affixing the inner shell to the outer shell.

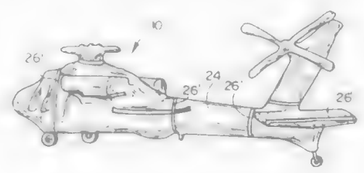
4,763,782
CIRCUIT BOARD HOLDER
John D. Sinchok, Oconomowoc, Wis., assignor to Menasha Corporation, Neenah, Wis.
Filed May 15, 1986, Ser. No. 863,313
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—334 7 Claims



1. A holder device for receiving the ends of circuit board members or the like in a container box having opposing slotted side walls comprising:
a holder member being of a dimension and having opposing extension portions for positioning in said opposing slotted side walls, said holder member including a slotted facing surface on both sides of said holder member;
said holder member being defined by a panel section for extension between said opposing slotted side walls with a pair of opposing track members extending between said extension portions of both sides of said panel section, said track members adapted to extend between said opposing slotted side walls and said slotted facing surface is defined by a circuit board holding member constructed and arranged to be positioned in said track members.

4,763,783
SHRINK FILM PACKAGING FOR AN ASSEMBLED AIRCRAFT OR PORTION THEREOF AND METHOD OF MAKING THE SAME
James E. Talbot, Wynnewood, Pa., assignor to Fana, Inc., Springfield, Pa.
Filed Aug. 19, 1987, Ser. No. 87,483
Int. Cl.[4] B65D *85/68*
U.S. Cl. 206—335 21 Claims

17. Shrunk-on film packaging for an assembled aircraft or portion thereof for transport, storage or the like, comprising:
a covering of foam material on exposed jagged or sharp edges and discontinuities, exposed irregularly shaped areas and exposed heat sensitive areas of the aircraft or portion thereof;
a plurality of separate sections of heat shrinkable polymer film wrapped around and heat shrunk on the aircraft or portion thereof with at least portions of adjoining film sections overlapping and fused together to provide a



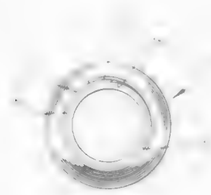
generally airtight covering which tightly conforms to the aircraft or portion thereof, portions of the film sections being fused to adjoining foam material; and
elongated strips of heat shrinkable material heat shrunk along seams formed by the fusing together of the overlapping film sections to seal and reinforce the seams.

4,763,784
DEVICES FOR PREVENTING UNAUTHORIZED USE OF VIDEO-CASSETTES
Terence J. Newell, Leicester, England, assignor to Video Cassette Lock (UK) Limited, Leicester, England
PCT No. PCT/GB85/00560, § 371 Date Sep. 4, 1986, § 102(e) Date Sep. 4, 1986, PCT Pub. No. WO86/04180, PCT Pub. Date Jul. 17, 1986
PCT Filed Dec. 9, 1985, Ser. No. 915,799
Claims priority, application United Kingdom, Jan. 7, 1985, 8500337
Int. Cl.[4] B65D *85/672*
U.S. Cl. 206—387 10 Claims



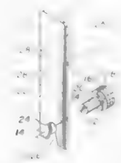
1. A device for preventing unauthorised use of a video-cassette comprising a cassette, an internally splined tape drive hole of said video-cassette, blanking off said drive hole of the video-cassette to prevent unauthorised use of the cassette, characterised in that a blanking body (12) shaped to fit the tape drive hole in said video-cassette is provided with at least one detent (15) mounted to pass between the tape transport reel of the cassette, and an underside of a protective housing (2) of the cassette on compression of the spool tensioning spring by the tape transport reel; and key-release means (16) for effecting retraction of the said at least one detent (15) to permit removal of the blanking body (12).

4,763,785
CENTER-PULL FIBER PACKAGE AND METHOD FOR PRODUCING THE PACKAGE
William A. Bradley; Pat J. Carbone, and Howell L. Peterson, all of Charlotte, N.C., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Oct. 9, 1987, Ser. No. 106,528
Int. Cl.[4] B65D *85/02*
U.S. Cl. 206—389 29 Claims



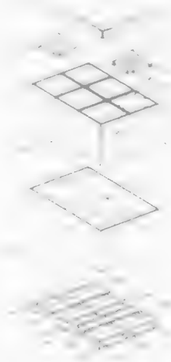
11. A center-pull package for dispensing a continuous length of a fibrous material comprising a core cylinder, a material release segment, and a winding of said fibrous material, said material release segment being wrapped around said core cylinder with a first end of said segment overlying a second end of said segment, and said winding of said fibrous material being applied around said material release segment.

4,763,786
LOCKING DEVICE FOR A ROLL
William F. Benz, 7-4465 Imperial Street, South Burnaby, British Columbia, Canada V5J 1B4
Filed Apr. 13, 1987, Ser. No. 37,424
Int. Cl.[4] B65D *85/671*
U.S. Cl. 206—408 4 Claims



1. In a box with a retaining device for retaining a roll of material therein, the roll having a hollow inner core and the box having side and end walls, an improved retaining device comprising:
retaining means comprising a base without attachment means to allow the base to be secured to the end wall of the box; a projection extending outwardly from the base and able to extend into the hollow core of the roll to allow the roll to rotate along its longitudinal axis but to prevent the core from being pulled out of the box, said projection being positioned to engage against the inner surface of the hollow core and having a narrowed section immediately adjacent said base to provide an area to be gripped by means for placing the retaining means; and
said means for placing the retaining means comprising an elongated member with a cavity at one end shaped to releasably hold said narrowed section of said projection.

4,763,787
PACKAGE ASSEMBLY
David G. Koenig, Reynoldsburg, Ohio, assignor to Owens-Illinois Television Products Inc., Toledo, Ohio
Filed Jun. 2, 1986, Ser. No. 869,639
Int. Cl.[4] B65D *85/42*
U.S. Cl. 206—420 20 Claims



1. A packaging element for supporting and separating layers of video glass funnel parts, wherein each glass part has a larger end for attachment of a face plate thereto and a smaller end for attachment of a neck tube and with contoured sides tapering from said larger end to said smaller end, comprising:
(a) an apex section,
(b) a base rim which is larger than and spaced from said apex section,
(c) a plurality of sloping ribs extending from said base rim to said apex section and defining a generally pyramidal form, each of said ribs having spaced innermost edges, and an outermost upper surface spaced from innermost edges,
(d) each of said ribs having a step formed in said upper surface thereof for receiving and supporting the edge of a larger end of a glass funnel part, all of said steps in said ribs being formed at the same distance from said base rim and being spaced from said innermost edges to provide shock absorbing for a funnel part supported thereon, and
(e) web means extending between said innermost edges of said ribs and connecting said ribs, said web means having lower surfaces configured to receive and mate with upper surfaces of contoured sides which connect a larger end to a smaller end of a glass funnel part,
(f) the rib steps and the lower mating surfaces of said webs of the packaging element enabling the stacking of a plurality of glass funnel parts by the use of the package elements therebetween to protect the glass funnel parts from shock and compression forces.

4,763,788
STERILE PACKAGE
Lars Jörnéus, Björkväktarens gata 27, S-415 16 Göteborg, and Bo Rangert, Klarbärsvägen 1, S-435 00 Mölnlycke, both of Sweden
Filed Dec. 9, 1986, Ser. No. 939,738
Claims priority, application Sweden, Dec. 12, 1985, 8505866
Int. Cl.[4] A61B *17/06, 19/02;* **B65D** *53/00, 81/00*
U.S. Cl. 206—438 7 Claims

1. A package for sterile and contamination-free storage and transport of artificial implants, comprising a hermetically sealed glass outer casing and an inner capsule to hold the

VOL 1093 ISS 3 AG 16 1988 UMI

implant made of the same material as the implant itself, characterized in that

the immer capsule comprises an open sleeve closed at one end by the implant itself so that the part of the implant which is intended for tissue integration is sealed by the sleeve,



the outer surface of the sleeve forms a seal by contact with the outer casing so that the other end of the sleeve is also closed, and

having spring means for urging the sleeve into a defined position in the outer casing.

4,763,789

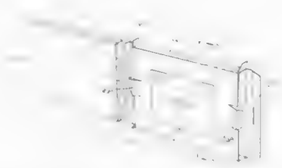
MAILER FOR INDICIA-CARRYING GLASS PLATE

Roger Questel, 136 E. 74th St., New York, N.Y. 10021, and Gene P. Seidman, 33 Riverside Dr., Apt. 9FA, New York, N.Y. 10023

Filed Oct. 5, 1987, Ser. No. 104,795

Int. Cl.[4] B65D *85/38*

U.S. Cl. 206—454 6 Claims



1. A shipping assembly and a box therefor comprising:

A. a transparent glass plate having printed or inscribed on its front face a text such as an invitation to a wedding or an image such as a baby foot print, said plate having rectangular dimensions and a thickness of less than a half inch appropriate to an invitation which renders the plate durable, all edges of the plate being bevelled to avoid sharp edges;

B. a rectangular block formed of relatively rigid foam plastic material having a well therein whose rectangular dimensions substantially match those of the plate, said plate being nested in the well with its printed face exposed, said well being so placed in the block as to create a rectangular frame bordering the plate;

C. a pad of the same material as the block and having the same rectangular dimensions as that of the block, said pad overlying the plate to define a protective enclosure therefor to complete the assembly; and

D. a cardboard box whose dimensions are such as to snugly receive the assembly, said box being formed by a rectangular sleeve provided with foldable end flaps and locking tabs to enclose the ends of the sleeve without adhesive, whereby a recipient can readily open the ends of the box to push out the assembly housed therein.

4,763,790

HEAT TREATABLE CONTAINERS

Robert McGeehins, Leeds, England, assignor to Waddingtons Cartons Limited, England

Filed Aug. 14, 1987, Ser. No. 86,399

Claims priority, application United Kingdom, Aug. 30, 1986, [illegible]

Int. Cl.[4] B65D *81/34*

U.S. Cl. 206—557 7 Claims



1. A package for use in microwave and/or grill cooking, comprising:

(i) a tray for containing foodstuff, said tray including a base, a peripheral wall and a top rim, at least said top rim being made of a material which can withstand microwave cooking but which cannot withstand heat from a heating grill; and

(ii) a heat protective component for use in conjunction with said tray, said protective component being separate from said tray, said protective component including a band of microwave reflective material having a portion placed around the entire tray peripheral wall outside of the tray and extending over a major portion of the depth of said wall and having a portion thereof crimped inwardly over the tray top rim without covering the foodstuff, to heat protect the top rim in the event that the tray and protective component are placed under the heating grill for the grilling of the foodstuff in the tray.

5. A package in combination with a food stuff and for use in microwave and/or grill cooking, comprising:

(i) a tray containing said foodstuff, said tray including a base, a peripheral wall and a top rim, at least said top rim being made of a material which can withstand microwave cooking but which cannot withstand heat from a heating grill; and

(ii) a casing in which the tray and foodstuff are held, said casing including an annular region of grill heat protective material, said casing being separate from the tray, said annular region overlying the tray trim but not the foodstuff wherein the foodstuff while in the tray can be grilled and said annular region will protect the tray rim from heat from the heating grill.

4,763,791

DENTAL IMPRESSION SUPPLY KIT

George E. Halverson, White Bear Lake, and Gerald A. Nelson, New Brighton, both of Minn., assignors to Excel Dental Studios, Inc., Minneapolis, Minn.

Continuation of Ser. No. 742,221, Jun. 6, 1985, abandoned. This application Nov. 3, 1987, Ser. No. 120,240

Int. Cl.[4] B65D *69/00;* A61B *19/02*

U.S. Cl. 206—570 11 Claims

1. A dental impression supply kit comprising:

a primary case having a base and a cover, said cover movable into and out of covering relationship to the base;

a support member located in and substantially filling the base and having an accessible upper surface when the cover is in position out of covering relationship to the base;

a first plurality of items appropriate to procedures for forming dental impressions;

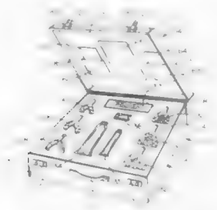
said support member having a corresponding plurality of upwardly open pockets for holding said first plurality of items, each pocket being individually shaped generally in conformance with the shape of an item to be held;

said first plurality of items including one each of a small size, a medium size, and large size disposable upper dental impression trays;

said pockets including a first row of three pockets having a first shape in conformance with the shape of an upper dental impression tray;

said upper dentral impression trays being located in said first row of pockets;

a first secondary case having a base and a cover movable into and out of covering relationship to the base, a support member located in and substantially filling the base, a plurality of upwardly open pockets having said first shape located in the support member, a plurality of disposable upper dental impression trays of small, medium and large sizes located in said pockets for replenishment of upper dental impression trays depleted from the primary case;



said first plurality of items also including one each of a small size, a medium size and large size lower disposable dental impression trays;

said pockets including a second row of three pockets having a second shape in conformance with the shape of a lower dental impression tray;

said lower dental impression trays being located in said second row of pockets;

a second secondary case having a base and a cover movable into and out of covering relationship to the base, a support member located in and substantially filling the base, a plurality of upwardly open pockets having said second shape located in the support member, a plurality of disposable lower dental impression trays of small, medium and large sizes located in said pockets for replacement of lower dental impression trays from the primary case;

others of said items being located in corresponding pockets of the support member of the primary case and including a depletable container of impression material base, a depletable container of impression material catalyst, and a depletable container of adhesive material for forming a dental impression using one of the upper dental impression trays and one of the lower dental impression trays from the primary case.

4,763,792

DEVICE FOR SORTING OUT METAL PARTICLES

Guntram Kind, Gummersbach, Fed. Rep. of Germany, assignor to Pulsotronic Merten GmbH & Co. KG, Gummersbach, Fed. Rep. of Germany

Filed Aug. 28, 1986, Ser. No. 901,561

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1985, 3533390

Int. Cl.[4] B07C *5/344, 5/36*

U.S. Cl. 209—570 21 Claims

1. A device for sorting out metal particles from a current of conveyed material such as grinding stock or granular material comprising:

a metal detector mounted in a conveyer line for scanning contactlessly the current of conveyed material in view of metal particles,

a sorting means provided downstream of the metal detector in feeding direction and being reversible between two end positions to open in one end position a conveyer tube and in the other end position an ejector tube of the system, and

an actuating system enabled by the metal detector to control the sorting means responsive to the signals of the metal detector so that, with the detection of a metal particle by



the metal detector, the current of conveyed material is directed temporarily through the ejector tube and, after the metal particle has been removed, is redirected into the conveyer tube,

a retardation means being provided in the current of conveyed material intermediate the metal detector and the sorting means,

wherein the retardation means includes a whirling chamber having an inlet and an outlet and being configured to direct said current of conveyed material in a substantially continuous, helical flow from said inlet to said outlet,

whereby the feeding time of the conveyed material is extended for a predetermined period of time.

4,763,793

INSTALLATION FOR SORTING ARTICLES BY WEIGHT AND SHAPE

Wolfgang Stehle, Schlier, and Dieter Fuchs, Waldburg, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Bezner GmbH & Co. KG, Ravensburg, Fed. Rep. of Germany

Continuation of Ser. No. 656,349, Oct. 1, 1984, abandoned. This application Dec. 11, 1985, Ser. No. 807,781

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1983, 3345496; Mar. 1, 1984, 3407611; Apr. 21, 1984, 3415090

Int. Cl.[4] B07C *1/02*

U.S. Cl. 209—616 12 Claims

1. A sorting installation for separating a first type of articles from a second type of articles fed mixed to the sorting installation; the first type of articles being relatively light and substantially two-dimensional and the second type of articles being relatively heavy and substantially three-dimensional; comprising

(a) a stationary article-supporting surface receiving the first and second type of articles in a generally mixed state; said article-supporting surface having a length dimension and a width dimension perpendicular to said length dimension; said article-supporting surface being inclined to the horizontal in a direction parallel to said width dimension for causing primarily said second type of articles to move by gravity downwardly on said article-supporting surface transversely to said length dimension and laterally off said article-supporting surface; and

(b) conveyor means travelling parallel and relative to said article-supporting surface in a travelling direction oriented at an angle to said width dimension for forwarding primarily said first type of articles on said article-supporting surface parallel to said travelling direction and transversely to said width dimension; said conveyor means

VOL 1093 ISS 3 AG 16 1988 UMI

being an elongated endless conveyor oriented in said travelling direction; said endless conveyor including holding means for causing articles of the first type to be entrained by said endless conveyor in said travelling direction; said holding means extending uninterruptedly along the article-supporting surface in said travelling direction, whereby substantially all articles received on said article-supporting surface are encountering said holding means.

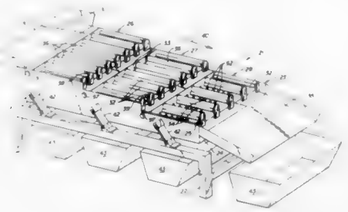


4,763,794

PRODUCE SORTING APPARATUS

Charles J. Billington, III, Modesto; Richard K. Oyama, Stockton; Kenneth H. Jepson, and Thomas R. Skeen, both of Modesto, all of Calif., assignors to Billington Welding and Mfg., Modesto, Calif.

Filed Jul. 30, 1986, Ser. No. 892,126
Int. Cl.[4] B07B *5/06*
U.S. Cl. 209—625 16 Claims



1. In a sorting apparatus for sorting produce by size having a main frame, produce sizing means movably mounted on said main frame and defining at least one sizing space dimensioned for passage of produce of a selected size therethrough, and drive means coupled to said sizing means for displacement of said produce relative to said sizing means to effect sorting, the improvement comprising:

dislodging means mounted for movement between a first position permitting passage of produce of said selected size through said sizing space and a second position urging produce lodged in said sizing space back out of said sizing space and onto said sizing means for further sizing, said dislodging means including a base mounted for vertical movement with respect to said main frame a carriage, and a plurality of fingers carried by said carriage, said dislodging means being sufficiently rigid to contact and positively force said produce lodged in said sizing space therefrom during movement from said first position to said second position; and

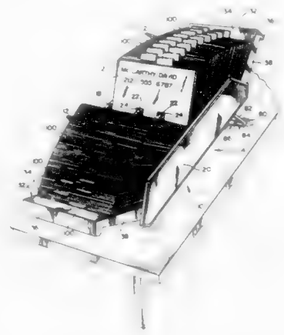
dislodgement drive means coupled to cycle said dislodging means between said first position and said second position.

4,763,795

DESK TOP CARD FILE SYSTEM

Louis G. Metzger, Closter, and Richard Davi, Glenwood, both of N.J., assignors to Insilco Corporation, Meriden, Conn.

Filed Aug. 13, 1986, Ser. No. 896,010
Int. Cl.[4] B42F *17/00*
U.S. Cl. 211—11 15 Claims



1. A desk top card file system for storage and access of data on a plurality of file cards, the system comprising a base, the base including means for carrying a plurality of file cards in a stack, means framing the stack of cards, the framing means including a pair of end plate means, each end plate means being adapted to engage one of the ends of the stack of cards, hinge means for rotatably mounting the end plate means to the base, the end plate means being rotatable about the hinge means from a fully open position wherein the cards may be separated to provide appropriate spacing for locating a file card having the desired data thereon and to provide a proper viewing angle for examining a selected file card and accessing stored data contained thereon to a closed position wherein the end plate means compact the stack of cards, the stack of cards exerting an outward force against the end plate means when compacted, and means for retaining the end plate means in their closed position whereby the card file system occupies but a minimum amount of space when not being used, said means for retaining the end plate means in their closed position further including a restraint friction pad, the hinge means including a first hinge portion which moves with the end plate means and a second hinge portion which is fixed with respect to the base, means fixing the restraint pad relative to one of the hinge portions, the restraint pad being engaged and compressed by the other hinge portion when the end plate means is in its closed position, the compressed restraint pad frictionally gripping the other hinge portion to retain both hinge portions in their relative positions thereby maintaining the stack of cards in a compressed state.

4,763,796

GRAVITY FEED DISPLAY SYSTEMS AND CONVERSION MEANS FOR OBTAINING SAME

Paul L. Flum, Ladue, Mo., assignor to Paul Flum Ideas, Inc., St. Louis, Mo.

Filed Mar. 20, 1987, Ser. No. 28,661
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—59.2 14 Claims



1. A modular display unit for vertically stackably arranging products in inclined gravity feed orientation comprising a plurality of substantially similar shelf members each having opposed side wall portions and a planar floor portion extending therebetween on which products are positioned cooperatively engageable means located at spaced locations on each of said shelf members adjacent said opposed side wall portions, each of said cooperatively engageable means having a locating surface oriented at the same acute angle relative to the plane of said floor portions, a plurality of elognated support members each having opposed end portions engageable at each opposite end thereof with a respective locating surface associated with the cooperatively engageable means on adjacent shelf members to connect said adjacent shelf members in spaced apart relationship, and means for supporting said connected shelf members on a horizontal surface with said support members oriented in a vertical direction, the cooperatively engageable means associated with one of the side wall portions of each of said shelf members being arranged in opposed relationship to the cooperatively engageable means associated with the other of the side wall portions of each of said shelf members, each opposed pair of cooperatively engageable means having an elongated transverse member extending therebetween, said transverse member extending across the underside portion of each of said shelf members between said opposed side wall portions.

4,763,797

SKI RACK

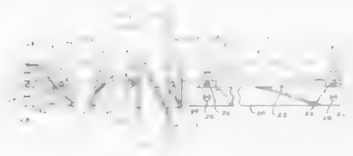
George E. Egan, 371 Yorkshire, Colgate, Wis. 53017

Filed Aug. 14, 1987, Ser. No. 86,557
Int. Cl.[4] A47F *5/08, 7/00*
U.S. Cl. 211—70.5 10 Claims

1. A rack for holding one or more skis or other elongated objects, each said elongated object having a pair of spaced edges which, along at least a portion of their length, extend in an upwardly divergent relation to one another, comprising:

a rack frame; and

retainer means comprising a pair of opposed blocks connected to said frame, each said block having a substantially flat face spaced from a like face provided on the opposed block, said opposed faces of said blocks adapted to engage the divergent edges of said elongated object, wherein said opposed blocks are connected to said frame



so as to be pivotable, so that said opposed blocks pivot in response to movement of said upwardly divergent edges of said elongated object therebetween and engagement of said upwardly divergent edges with said opposed faces of said blocks so that said opposed faces become aligned with and abut said divergent edges of said elongated object during said movement of said elongated object and, due to the engagement of said divergent edges between said opposed substantially flat faces of said blocks, said elongated object is retained on said rack.

4,763,798

STACKING, PIVOTING, WALL STORAGE UNIT

Michael D. Handler, Norwalk, Conn., assignor to Actief N.V., Curacao, Netherlands

Filed Aug. 5, 1986, Ser. No. 893,385
Int. Cl.[4] A47F *5/08*
U.S. Cl. 211—88 11 Claims



1. A stacking, pivoting, wall storage unit with easily removable storage containers and the like, comprising:

(a) a vertical mounting member;

(b) a vertical connecting member hingedly carried by said mounting member for pivoting about a vertical axis, said connecting member including a plurality of vertically disposed shear trap channels each having a resiliently rigid back portion interconnecting a pair of resiliently rigid opposed side members defining inward facing surfaces with one of first and second portions of a touch fastening system thereon, said touch fastening system comprising said first portion carrying one of hooks, mushrooms, balls on stems, and pigtails capable of engaging one of loops, hooks, mushrooms, balls on stems, and pigtails carried by said second portion to releasably fasten the two portions together; and,

(c) a plurality of stacking members each having a vertical rigid unitary planar fin member defining opposed outward facing surfaces extending therefrom and having the other of said first and second portions of the touch fastening

VOL 1093 ISS 3 AG 16 1988 UMI

system on the opposed outward facing surfaces whereby said stacking members can be releasably attached to said vertical connecting member when the touch fastening system engages in shear as said rigid unitary planar fin members are received between said inwardly facing surfaces of said shear trap channels, said back portion of each said channel member being of a width substantially equal to the thickness of the received fin member plus the other of said first and second portions of said touch fastening system such that said inwardly facing surfaces are substantially parallel to said outwardly facing surfaces and to each other upon in shear engagement of said touch fastening system, each shear trap channel having hinge means connecting at least one side member to said back portion and extending longitudinally along the length of the shear trap channel to permit said at least one side member to pivot outwardly in a manner to effect progressive disengagement of the touch fastening system when desired.

4,763,799

MODULAR UTILITY CART INCLUDING IMPROVED STRUCTURES FOR SECURING INTERMEDIATE AND TOP SHELVES TO CORNER POSTS

Robert J. Cohn, Dallas, Pa.; W. Stanley Rosania, Stockton; Jeffrey W. Rosania, Bloomsbury, both of N.J., and Michael J. Sudimak, Shavertown, Pa., assignors to InterMetro Industries Corporation, Wilkes-Barre, Pa.

Filed Sep. 17, 1987, Ser. No. 97,835
Int. Cl.[4] A47F 5/00
U.S. Cl. 211—187 17 Claims



1. A device for securing an element to a column, comprising:

means cooperating with said element and defining a collar for embracing said column, said collar having a cross-section substantially congruent to the cross-section of said column, an upper right tubular portion closely embracing said column, a lower tubular portion having downwardly outwardly inclined inner side surfaces, and a transition portion between said upper portion and said lower portion; and

a sleeve having an upper edge, a right tubular inner surface closely embracing said column and a downwardly outwardly inclined outer surface formed to mate with said lower tubular portion of said collar,

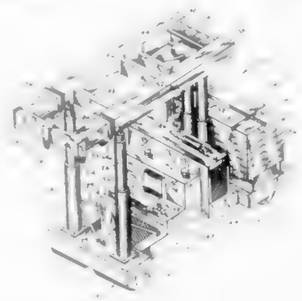
whereby downward movement of said collar about said sleeve on said column causes said respective inclined surfaces of said lower portion and said sleeve to mate and inwardly compress said sleeve toward said column, such downward movement being limited by abutment of said top edge of said sleeve with said transition portion of said collar.

4,763,800

MOBILE LIFTING APPARATUS

Edgar D. Engler, 1818 Hickory St., South Milwaukee, Wis. 53172; Gus J. Weber, Hinsdale, Ill.; Melvin G. Stapel, Brookfield, Wis.; John J. Miaker, and Leonard Hanson, both of Milwaukee, Wis., assignors to Edgar D. Engler, South Milwaukee, Wis.

Filed Mar. 19, 1986, Ser. No. 848,448
Int. Cl.[4] B66C 23/72
U.S. Cl. 212—195 39 Claims



1. A mobile load handling apparatus for lifting, lowering, or positioning a load comprising:

a chassis having driving wheel means for propelling said apparatus and steerable wheel means for steering said apparatus;

vertical mast means mounted on the front of said chassis, said vertical mast means comprising a pair of extendable means mounted at their bottoms on said chassis, said extendable means being horizontally spaced normal to the direction of travel of said apparatus;

jam stay means mounted on said chassis rearwardly of said vertical mast means, said jam means comprising vertically extendable means mounted at its bottom on said chassis;

boom means coupled to the tops of said vertical mast means and jam means, said boom means having a pair of extendable booms for increasing the length of said boom means beyond said chassis in a direction parallel to the direction of travel of the apparatus, said boom means having means for engaging the load to be handled beyond said chassis; and

power means for powering said driving wheel means and extending and retracting said vertical mast means, jam stay means, and booms,

said vertical mast means being extendable to raise said boom means and lift the load, said jam stay means being extendable coordinately with said vertical mast means to permit said boom means to be raised while exerting a downward force on said boom means opposing that of the load.

4,763,801

CHILD-RESISTANT, TAMPER EVIDENT DISPENSING CLOSURE

Joseph D. Nycz, Haskins, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio

Filed Oct. 8, 1987, Ser. No. 105,935
Int. Cl.[4] A61J 1/00; B65D 55/02
U.S. Cl. 215—203 22 Claims

1. A dispensing closure for a bottle that contains a flowable product, the bottle having an annular closure receiving finish, said closure comprising:

a body portion having an annular skirt with bottle finish engaging means, said annular skirt being adapted to surround and engage the finish of the bottle, said body portion further having generally horizontally extending top structure means positioned within an annulus defined by said annular skirt and a dispensing opening within said top structure means, said annular skirt having a portion which projects above said top structure means;

dispensing control means comprising a generally horizontally extending disc, said generally horizontally extending disc cooperating with said portion of said annular skirt and said top structure to define a space, said generally horizontally extending disc having slot means therein and being rotatable about a vertical axis with respect to said body portion; and

pivotable means, said pivotable means being pivotable about a horizontal axis with respect to said body portion between a first position in which said pivotable means closes said dispensing opening within said top structure means and does not extend above said space and a second position in which said pivotable means opens



said dispensing opening of said top structure to permit dispensing of the flowable product in the bottle through said closure, said pivotable means comprising a portion which extends above said space when said pivotable means is in said second position, said slot means of said disc being adapted to be in alignment with said pivotable means when said pivotable means is in said first position and said disc is in a first orientation with respect to said body portion whereby said pivotable means can be pivoted to said second position through said slot means, said disc being rotatable to a second orientation with respect to said body portion in which said slot means is not in alignment with said pivotable means, whereby said disc blocks the pivoting of said pivotable means from said first position to said second position when said disc is in said second orientation with respect to said body portion.

4,763,802

BOTTLE PUMP

Roy Johnston, 10th Floor, Richardson Building, One Lombard Place, Winnipeg, Manitoba, Canada R3B 3H1

Filed Mar. 24, 1987, Ser. No. 29,574
Claims priority, application Canada, Mar. 25, 1986, 505600
Int. Cl.[4] B65D 51/24
U.S. Cl. 215—228 5 Claims

1. A device for supplying air under pressure to the interior of a container for carbonated beverages to maintain carbonation therein, comprising:

i. a body defining a cylinder and adapted to be secured to a container opening and to seal tightly thereto;

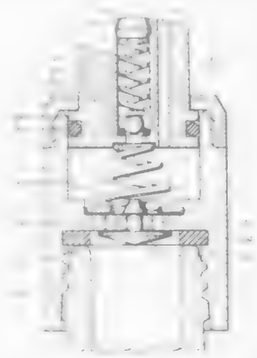
ii. one way valve means in the body for sealing the body against leakage of fluid from the container, said one way valve means being disposed between the cylinder and a downstream position of the body;

iii. pump means in said body upstream of the one-way valve means for supplying air, upon actuation, to the interior of the container, said pump means comprising a piston biased outwardly of said cylinder by spring means captively disposed therein;

iv. pressure relief valve means for limiting the pressure applied to the interior of the container; and

v. at least one through intake port in the piston adapted to be sealed by the palm of the hand of the user to seal the piston on its compression stroke;

whereby when the body is secured to the container, the piston may be actuated to create pressure in the cylinder, which pressure is communicated through the one-way valve means to increase pressure within the container to maintain pressure necessary for carbonation, the relief valve means preventing over-pressurization of the interior of the container.



4,763,803

STOPPER FOR A CONTAINER SUCH AS A BOTTLE, AND A PUMP CONNECTABLE THERETO FOR EXTRACTION OF GASEOUS MEDIUM FROM OR PUMPING IN THEREOF INTO THE CONTAINER

Bernardus J. J. A. Schneider, Churchilllaan 60, 2625 GW Delft, Netherlands

Filed Jan. 15, 1987, Ser. No. 3,784
Claims priority, application Netherlands, Jan. 20, 1986, 8600111
Int. Cl.[4] B65D 51/16
U.S. Cl. 215—260 22 Claims



1. The stopper for a bottle or similar type container adapted to have a pump device mounted thereon comprising a shaft having an axis for said stopper, said stopper adapted to fit in clamping and sealing relation inside the neck of a bottle, said shaft having a channel therethrough provided with a membrane type non-return valve, said stopper having a portion outside the neck of the bottle when positioned in the neck of the bottle which portion is adapted to receive in clamping relation a suction-pressure pump device, the improvement comprising:

said stopper and membrane valve are integral and made of the same elastic material,

said membrane valve having a slit with cooperating elastic parts on opposite sides thereof of the same material as said stopper, said membrane valve positioned to close said channel, and

said portion of said stopper adapted to receive the pump device having a radially extending circumferential flange

VOL 1093 ISS 3 AG 16 1988 UMI

extending outside the neck of the bottle when mounted thereon and being perpendicular to the axis of said stopper and adapted to rest upon the neck of a bottle, said portion of said stopper having a circumferential ridge concentric with said circumferential flange and having an outer diameter smaller than the outer diameter of said circumferential flange,

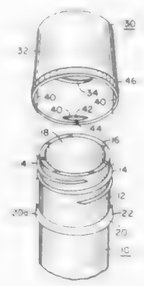
said ridge having an outer conical side face tapering away from said circumferential flange towards said axis of said stopper, said circumferential ridge surrounding said membrane valve which together with said circumferential flange may sealably receive a pump device.

4,763,804

AUTOCLAVABLE TISSUE CULTURE CONTAINER AND CLOSURE

Dennis M. O'Connell, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 14, 1987, Ser. No. 85,161
Int. Cl.[4] B65D *51/16*
U.S. Cl. 215—307 **10 Claims**



1. An improved closure and container assembly for positively and stably positioning the closure in a predetermined semi-open positionment on the container and for providing a sealing engagement between the closure and the container which comprises:

a container having a substantially cylindrical neck portion terminating in an upper open mouth portion;

first thread means formed on said neck portion below said open mouth portion;

rim means formed on said neck portion below said thread means at a predetermined distance from said open mouth portion and lying within a plane extending perpendicular to the cylindrical axis of said neck portion;

said neck portion having sealing surface portions thereon;

a closure having a downwardly extending skirt portion;

second thread means formed on said skirt portion cooperably engageable with said first thread means formed on said neck portion of said container;

projection means projecting from said skirt portion and cooperably engageable with said rim means formed on said neck portion for creating a binding action therebetween as said second thread means engage said first thread means when said closure is screwed downwardly on said container and for positively and stably positioning said closure in a predetermined semi-open positionment on the container;

sealing surface portions on said closure cooperably engageable with the sealing surface portions on said neck portion for sealably closing said container when said closure is screwed downwardly on said neck portion beyond the binding action produced by said projection means and said rim means;

said projection means including a plurality of concentric arcuately extending spaced-apart projections formed on an inner surface of said skirt portion which lie within a plane perpendicular to the axis of said skirt portion;

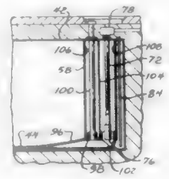
and said arcuately extending projections having a tapered lower surface which engages a tapered upper surface of said rim means for creating a binding action therebetween and positioning said closure in a predetermined semi-open postionment on the container.

4,763,805

UNDERGROUND TANK ASSEMBLY WITH INTERNAL BLADDER

Dennis J. Strock, Woodridge, Ill., assignor to Amoco Corporation, Chicago, Ill.

Division of Ser. No. 673,420, Nov. 20, 1984, Pat. No. 4,648,523.
This application Jan. 16, 1987, Ser. No. 3,718
Int. Cl.[4] B65D *25/18*
U.S. Cl. 220—85 A **13 Claims**



1. An underground tank assembly for storing motor fuels, chemicals, or other materials, comprising:

an underground secondary containment vessel for secondary containment of any leakage of motor fuels, chemicals, or other materials from a primary containment vessel, said underground secondary containment vessel comprising an external substantially rigid secondary tank having a ceiling, a floor, upright wall means extending between and connecting said ceiling and said floor, said upright wall means including end portions and a first intermediate upright protective barrier wall conected to said ceiling or said wall means between said end portions, said first intermediate upright protective barrier wall separating and partitioning said secondary tank into a bladder-containing compartment and at least one conduit-containing compartment, and said first intermediate upright protective barrier wall having a bladder-facing said bladder-containing compartment and a conduit-facing side facing said conduit-containing compartment;

an underground primary containment vessel comprising an internal expandable primary tank positioned within the bladder-containment compartment in the interior of said secondary containment tank for containing said motor fuels, chemicals, or other materials, said primary containment vessel being expandable from a substantially empty collapsed position in proximity to said floor to a substantially full expanded position expansively contacting and engaging said bladder-facing side of said first intermediate upright protective barrier wall;

an inlet conduit positioned in said conduit-containing compartment and connected to and communicating with said primary containment vessel for filling said primary tank with said motor fuels, chemicals, or other materials, said outlet conduit having an elongated upright portion facing said conduit-facing side of said first intermediate upright protective barrier; and

an outlet conduit connected to and communicating with said underground primary containment vessel for removing said motor fuels, chemicals or other materials from said primary tank, said outlet conduit being positioned in said conduit-containing compartment and having a generally upright portion; and

said first intermediate upright protective barrier wall having sufficient strength and integrity for resistively contacting

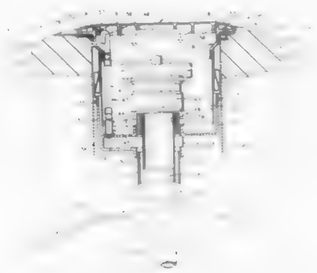
and supporting said expandable primary tank in said expanded position and providing a barrier for protecting said inlet conduit from being compressively engaged by said expanded primary tank.

4,763,806

CONTAINMENT MANHOLE

Alexander R. Podgers, Lake City, and Eric J. Butterfield, Fairview, both of Pa., assignors to Emco Wheaton, Inc., Conneaut, Ohio

Filed Feb. 24, 1987, Ser. No. 17,531
Int. Cl.[4] B67D *5/00*
U.S. Cl. 220—86 R **16 Claims**



1. A containment manhole for installation around a riser pipe, the manhole comprising:

a rim extending around the upper portion of the manhole;

an outer sleeve extending downwardly from the rim to protect the exterior sides of the manhole;

a sump portion forming the bottom of the manhole, the sump portion being rigid and having a central hole for rigid attachment to the riser pipe, the sump portion having a drain for directing liquid from the bottom of the manhole to the riser pipe, the drain extending from the bottom of the manhole to the central hole; and

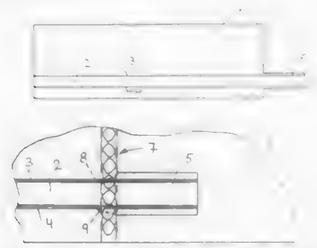
an expansion joint connecting the rim to the sump portion, the expansion joint located inwardly of the outer sleeve, the expansion joint being protected from exterior damage by the outer sleeve, the expansion joint being flexible and allowing substantial vertical movement and substantial horizontal movement of the sump portion relative to the rim.

4,763,807

SHEET METAL BLANK FOR PRODUCING THE BODY OF CANS

Peter Schreiber, Ipsach, and Gianni Padovan, Dombresson, both of Switzerland, assignors to Fael S.A., St. Blaise, Switzerland

Filed Oct. 31, 1986, Ser. No. 925,385
Claims priority, application Switzerland, Nov. 4, 1985, 4728/85; Nov. 4, 1985, 4729/85
Int. Cl.[4] B65D *17/36*
U.S. Cl. 220—274 **1 Claim**



1. A sheet metal can having a body with overlapping ends defining an overlapping portion at the opposing free edges of said body, said overlapping ends being interconnected by a continuous weldment extending completely between said edges at said overlapping portion, an outer one of said ends having a tongue extending outwardly of said free edge thereof, a tear strip extending from the other of said ends and into said tongue, said strip being delimited by a pair of spaced, rupturable lines, and the width of said tongue at said free edge of said outer end being greater than the spacing between said lines, whereby upon application of an external pulling force to said tongue initial rupturing of said body tends to occur between opposing side edges of said tongue and said lines at said weldment after which removal of said tear strip proceeds without premature breaking of said strip.

4,763,808

HOLDFAST AND SUPPORT SYSTEM FOR AN ELASTIC PLASTIC CONTAINER LINER

Jay R. Guhl, and Salena S. Guhl, both of 1695 Martinez St., San Leandro, Calif. 94577

Filed Jun. 3, 1987, Ser. No. 57,771
Int. Cl.[4] B65D *90/04*
U.S. Cl. 220—404 **9 Claims**



1. A holdfast for an elastic plastic container liner having an enclosed bottom and side walls joined thereto and forming an opening defined by upper side wall edges and being formed with handle openings adjacent said upper side wall edges; said elastic plastic container liner being placed in a receptacle having a pair of spaced upright side walls, each formed with an elongated substantially rigid portion having inner and outer faces and terminating in elongated top edges, said holdfast comprising;

a. a pair of holdfast means each including:

(1) a pair of generally V-shaped members each having an inside edge adapted for resting on said elongated top edge of said receptacle and each V-shaped member having first and second portions connected to said inside edges;

(2) a pair of inner leg members having proximate portions connected to said first portions of said V-shaped members and distal portions extending downwardly and inwardly from said elongated top edges of said receptacle;

(3) a pair of inner foot members respectively connected to said distal portions of said inner leg members extending downwardly and outwardly and terminating at end points for contact with said respective inner faces of said rigid portions of said side walls of said receptacle;

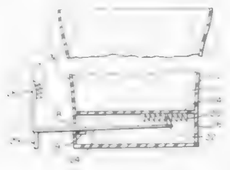
(4) a pair of outer leg members having proximate portions connected to said second portions of said V-shaped members and distal portions extending downwardly and outwardly from said elongated top edges of said receptacle;

(5) a pair of outer foot members respectively connected to said distal portions of said outer leg members extending downwardly and inwardly for contact with said outer faces of said rigid portions of said sidewalls of said receptacle;

VOL 1093 ISS 3 AG 16 1988 UMI

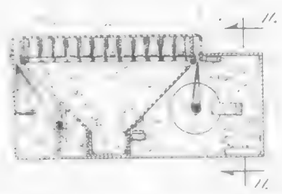
b. a pair of arm means respectively connected to said hold fast means and extending upwardly therefrom; and
c. a cross arm joining each of said arm means.

4,763,809
WASTE CONTAINER AND ADJUSTABLE BAG LINEAR PACKAGE HOLDER COMBINATION
David C. Miller, Ridgefield, and Thomas J. Pendleton, Danbury, both of Conn., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Jan. 2, 1987, Ser. No. 10
Int. Cl.[4] B65D *21/02, 67/02*
U.S. Cl. 220—407 4 Claims



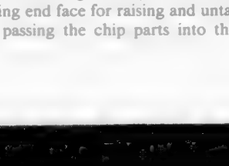
1. The combination comprising a rigid container having a bottom planar surface and a wall member, at least one rachet bar fixed in association with said planar surface, at least one pawl including a pawl escapement tooth and a pawl arm in association therewith; said container having a peripherally depending rigid skirt for offsetting the bottom of said container from a support surface, at least one orifice in said skirt functioning as a fulcrum for said pawl arm located so as to permit said pawl tooth to move into and out of engagement with the teeth of said rachet bar; an upright member fixed at the end of said pawl arm opposite to said pawl tooth and extending in the same direction as said pawl tooth, said pawl tooth and arm being slideable in relation to said rachet bar, fulcrum and wall member; said combination being adapted to receive a package, which is decreasible in size, between said upright member and said wall member, said upright member being structured so as to exert a spring-force against said package when said pawl escapement tooth is in locked engagement with said rachet bar.

4,763,810
MEDICATION DISPENSER
Lee T. Christiansen, 2245 Franklin Ave., Meeteetse, Wyo. 82433
Filed Dec. 19, 1986, Ser. No. 943,738
Int. Cl.[4] B65D *83/04*
U.S. Cl. 221—3 22 Claims



1. Apparatus for automatically dispensing medication comprising:
a housing;
a plurality of pill holding compartments each having an open bottom; wherein the plurality of pill holding compartments are arranged generally in side by side rows;
an elongated belt disposed under such pill holding compartments, said belt having at least one opening therein; wherein the elongated belt is disposed in said housing such that adjacent portions of the elongated belt are moving in opposite directions relative to one another and said side by side rows of pill holding compartments such that said at least one opening in the elongated belt will pass sequentially beneath the plurality of pill holding compartments in each row; and,
means for selectively advancing said belt so that said opening moves from beneath one compartment to a position beneath another compartment whereby when said opening moves below a particular compartment, pills contained in said particular compartment will drop down through said openings.

4,763,811
PARTS FEEDER
Takaharu Mae; Hiromi Kinoshita, both of Kofu; Yoshinobu Maeda, Osaka; Koji Fujiwara, Yamatokouriyama, and Hiroshi Nakagawa, Kofu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 31, 1986, Ser. No. 891,028
Claims priority, application Japan, Jul. 31, 1985, 60-169073
Int. Cl.[4] H05K *13/02*
U.S. Cl. 221—11 18 Claims

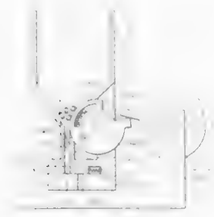


1. A parts feeder comprising:
a stock unit including a plurality of magazine units arranged side by side and each accommodating a stack of magnazines each storing an array of parts;
a supply unit including a plurality of devices arranged side by side and each having means for supporting a magazine removed from one of said magazine units and means for holding the array of parts discharged from said magazine, said supply unit being movable independently of said stock unit in a direction transverse to said array of parts; and
an escape unit movable independently of the stock and supply units and in the direction of movement of the supply unit relative to the stock unit for removing a magazine, one at a time, from said magazine units and transferring said magazine to the supporting means of said supply unit.

4,763,812
HOPPER STRUCTURE
Koichi Sekinoo, and Hiroshi Harada, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Jan. 7, 1987, Ser. No. 1,015
Claims priority, application Japan, Feb. 26, 1986, 61-27060[U]
Int. Cl.[4] B65H *3/60*
U.S. Cl. 221—203 5 Claims

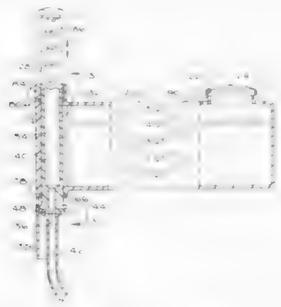
1. A hopper structure for supplying chip parts, comprising:
a hopper body for holding chip parts having a lower spout;
a lining-up block below the hopper having a lining-up hole communicating with the lower spout of the hopper body;
a swing roll rotatably mounted to the hopper body having one peripheral portion disposed inside the hopper body proximate the lower spout, and an arcuate mixing projection extending over an arcuate angle of a peripheral portion of the swing roll which is disposed in the lining-up hole of the lining-up block, said arcuate mixing projection having a peripheral groove defined therein for passing chip parts therethrough one by one into the lining-up hole and a leading end face for raising and untangling the chip parts and passing the chip parts into the groove upon

rotation of the the swing roll in one rotational direction; and



drive means for rotating the swing roll in the one rotational direction through an angle which is smaller than the arcuate angle of the mixing projection of the swing roll.

4,763,813
OIL METERING APPARATUS
Charles R. Ross, 711 Taladega St., W. Palm Beach, Fla. 33401
Filed Nov. 5, 1986, Ser. No. 927,800
Int. Cl.[4] B67D *5/22, 7/12, 5/06;* G01F *11/28*
U.S. Cl. 222—50 15 Claims



1. A fluid metering apparatus, comprising:
a fluid reservoir;
outlet structure comprising a conduit member having a first opening communicating with the interior of the reservoir and a second opening communicating with the exterior of the reservoir, the first opening being selectively positionable in the reservoir to dispense fluid through the second opening of the conduit member;
the conduit member being slidably mounted through the reservoir, a closed end of the conduit member extending through the top of the reservoir, and an open end defining the second opening extending below the reservoir.

4,763,814
FLUID FEEDING DEVICE
Kenzo Haruyama, Fujisawa; Kenichiro Tsuruga, and Tadashi Yoshikawa, both of Chiba, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Ishikawajima Yuki Kabushiki Kaisha, both of Tokyo, Japan
Filed Apr. 27, 1987, Ser. No. 43,026
Int. Cl.[4] B67D *5/64;* G01F *11/06*
U.S. Cl. 222—63 2 Claims

1. A device for dispensing a fluid, comprising:
a portable case provided with a battery, a DC motor, an electrical pump having a plunger adapted to be reciprocated by said DC motor, a container for a fluid detachably mounted to said casing, a pressure switch, a fluid passage from said container to a discharge port at said casing; and an electric circuit connecting said battery, said DC motor, said electrical pump and said pressure switch such that in response to a pressure drop in said passage said switch closes said circuit to thereby cause said battery to energize said motor to drive said pump to feed fluid from said container into said fluid passage;
a fluid dispensing gun;
and a hose leading from said discharge port to a fluid inlet at said dispensing gun;
said dispensing gun having a fluid dispensing nozzle, a metering piston and a pilot piston;
said metering piston being reciprocable in a metering cylinder and having a first end face and a second end face; a piston rod connected to said metering piston so as to define a second end face smaller than said first end face; an adjustable abutment engageable by said piston rod for adjusting the stroke of said piston and thereby the size of a metering chamber in said metering cylinder adjacent



said first end face; first passage means communicating said fluid inlet with said metering chamber; second passage means communicating said fluid inlet and said metering cylinder adjacent said second end face;
said pilot piston being positioned between said dispensing nozzle and said first and second passage means and moveable between a first position in which said pilot piston interrupts communication between said metering chamber and said dispensing nozzle and permits filling of said metering chamber with fluid from said chamber until said piston rod engages said abutment, and a second position in which said pilot piston opens communication between said metering chamber and said dispensing nozzle and permits fluid from said container to enter said metering cylinder adjacent said second face and move said metering piston to empty the metered amount of fluid in said metering chamber through said dispensing nozzle; and
a handle for displacing said pilot piston from said first to said second position and vice versa.

4,763,815
DISPENSER
Alfred Von Schuckmann, Kevelaer, and Herbert Mettenbrink, Lohne/Oldenburg, both of Fed. Rep. of Germany, assignors to Bramlage Gesellschaft mit beschrankter Haftung, Lohne/Oldenburg, Fed. Rep. of Germany
Filed Mar. 2, 1987, Ser. No. 20,518
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 3606711
Int. Cl.[4] B65D *35/30*
U.S. Cl. 222—96 5 Claims

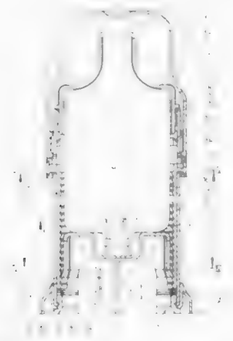
1. A dispenser for dispensing unit doses of a substance, such as tablets, pastes and the like, comprising:
a tubular shaped casing housing a bag therein containing the discharge substance and having a discharge opening at a first end;
a pressure bottom at a second end of said tubular casing opposite said first end for the displacement of the dis-

VOL 1093 ISS 3 AG 16 1988 UMI

charge substance in the direction of the discharge opening;

an actuating member positioned near the discharge opening;

a pair of oppositely arranged transport racks disposed along an inner wall of said casing operatively connected to said actuating member so as to be longitudinally displaceable, said racks including ratchet teeth which operatively engage the pressure bottom so as to move the pressure bottom stepwise in the direction of the discharge opening by the action of said actuating member;



a pair of support racks located along the inner wall of said tubular casing, said support racks incuding ratchet teeth for preventing backwards movement of said pressure bottom;

said support racks and said transport racks being disposed in alternating relationship circumferentially about said inner wall of said tubular casing and mounted on an insert piece which can be inserted into and fixed within said tubular casing; and

said pressure bottom directly engaging simultaneously the ratchet teeth of said transport racks and the ratchet teeth of said support racks.

4,763,816

MEASURING AND DISPENSING DEVICE

Sang W. Lee, 102 W. Pembrey Dr., Wilmington, Del. 19803

Continuation-in-part of Ser. No. 236, Jan. 2, 1987. This application Feb. 25, 1987, Ser. No. 18,694
Int. Cl.[4] B67D *37/00*
U.S. Cl. 222—207 15 Claims



1. A device for dispensing a measured quantity of material, comprising:

a container for receiving the material and having a flexible sidewall portion; and

an assembly for measuring a predetermined quantity of material and discharging the material when the flexible sidewall portion of the container is squeezed, the assembly being receivable within the container and including:

measuring means adapted to be positioned adjacent to the container bottom for measuring a predetermined quantity of the material and having an orifice for entry of the material from the container;

a chamber adapted to be positioned adjacent to the container top and having an outlet for discharging the measured quantity of material from the container;

a gravity-actuated opening in the chamber wall for fluid communication between the interior of the chamber and the interior of the container;

a valve associated with the opening and having an element movable relative to the opening to block and unblock the opening; and

a tube interconnecting and providing fluid communication between the measuring means and the chamber to permit delivery of the measured quantity of material from the measuring means to the chamber,

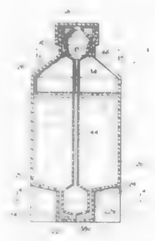
the valve element positionable against the opening in the chamber to block the opening and prevent air flow therethrough when the container is in an inverted attitude, and away from the opening to permit air flow therethrough when the container is in an upright attitude, the valve controlling air flow through the opening to permit refilling of the measuring means.

4,763,817

MEASURED QUANTITY DISPENSER

Sang W. Lee, 102 W. Pembrey Dr., Wilmington, Del. 19803

Filed Jan. 2, 1987, Ser. No. 236
Int. Cl.[4] B65D *37/00*
U.S. Cl. 222—207 17 Claims



1. An apparatus for dispensing a predetermined quantity of material, comprising:

a container having a flexible sidewall portion and a neck portion extending upwardly from the container and having an opening for receiving the material;

an assembly for measuring a predetermined quantity of material and discharging the material when the flexible sidewall portion of the container is squeezed, the assembly being receivable within the container and including:

measuring means for containing a predetermined quantity of material and having an orifice for entry of the material from the container;

a chamber having an outlet for discharging the predetermined quantity of material from the container;

at least one opening in the chamber for fluid communication between the interior of the chamber and the interior of the container; and

a tube interconnecting and providing fluid communication between the measuring means and the chamber to permit delivery of the predetermined quantity of material from the measuring means to the chamber;

means on the neck portion of the container selectively positionable against the opening the chamber to block the opening to prevent air flow through the opening, and away from the opening to permit air flow through the opening, the blocking and unblocking of the opening controlling air flow into the interior of the container to regulate refilling of the measuring means; and

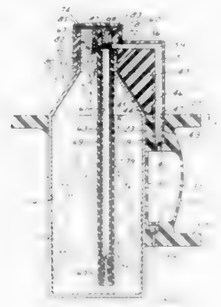
means for rotatably and removably supporting the assembly on the container neck portion.

4,763,818

REMOVABLE HYGIENIC HAND PUMP ADAPTER FOR DISPENSING LIQUIDS

Alfonso D. Stefano, 1413 Wayburn Rd., Grosse Pointe Park, Mich. 48230, and Gerald A. Farber, 23227 Clairwood, St. Clair Shores, Mich. 48080

Filed Feb. 6, 1987, Ser. No. 12,009
Int. Cl.[4] B65D *83/14*
U.S. Cl. 222—209 12 Claims



1. A removable hygienic and hand pump adapter mechanism including an inflatable bladder for dispensing liquids and semi-liquids from a container or bottle comprising a body having a bore and of a shape to surround the sidewalls of a container having a neck;

a hand pump on said body including a manually flexible outer wall defining with said body an air chamber;

a cover assembly upon said body including an apertured cap portion to be snugly positioned and secured over said neck and including a dispensing outlet for communicating with said neck;

an extension tube depending from said cap portion for extending axially into said container having an outlet to be spaced from the bottom of said container;

there being an air passage in said cover assembly at its ends communicating with said air chambers and said tube respectively; and

a flexible collapsed inflatable bladder mounted and sealed at its neck around said tube and extending along said tube adapted on application of air pressure from the pump to expand from the bottom of the container along the interior thereof to forcibly dispense all the liquids progressively through said outlet, said bladder preventing air contamination of said liquids.

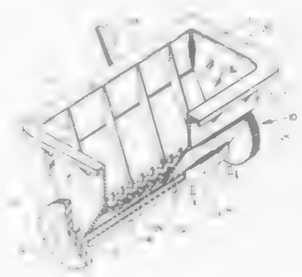
4,763,819

SPREAD HOPPER WITH MOISTURE GUARD

Robert A. Germain, Harrisburg, Pa., assignor to Emhart Industries Inc., Farmington, Conn.

Filed Oct. 21, 1986, Ser. No. 921,555
Int. Cl.[4] A01C *15/06*
U.S. Cl. 222—623 4 Claims

1. In a spreader for fluent material having a hopper, said hopper having front and rear downwardly converging walls, side walls joining said front and rear walls, and a generally arcuate bottom wall connected to said front, rear and side walls, means defining a plurality of discharge openings formed in the generally arcuate bottom wall and extending therethrough, said discharge openings having a leading end and a trailing end with respect to rotational movement of an agitator relative thereto, wherein said improvement comprises a guard member positioned adjacent to and forwardly of the leading end of each discharge opening and extending generally vertically downward from the outer surface of the bottom wall, said guard member being positioned within a range of 0°–15° relative to a line defining the vertical axis of the hopper, the



arcuate distance between the guard member and the leading end of each discharge opening when measured along the arcuate bottom wall is substantially less than the arcuate distance when measured along the arcuate bottom wall between the trailing end of each discharge opening and the junction of the bottom and rear walls.

4,763,820

MULTI-PURPOSE VEHICLE GARMENT HANGER

Charles Gardner, Jr., 4607 Burstone Ct., Owensboro, Ky. 42301

Filed Jun. 10, 1986, Ser. No. 872,597
Int. Cl.[4] B60R *7/00*
U.S. Cl. 224—42.46 A 2 Claims



1. A garment hanger for a vehicle having a window movable from an open position to a closed position bearing against a window seal comprising a flexible body member including an upper neck portion selectively overlying the edge of said window at said open positon, a rigid plate member affixed to said flexible body member and hanging within said vehicle at a use condition, a hooking member in the form of looped material extending through said upper neck portion of said flexible body member and knotted in a securing relationship, said hooking member also being disposed within said vehicle at a use condition, and a stop disposed on the undersurface of said upper neck portion of said flexible body member outside of said window serving to prevent withdrawal of said flexible body member when said window is bearing against said window seal at said closed position, where said stop is a strip laterally disposed with respect to the longitudinal axis of said upper neck portion.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,821
SECURITY WALLET
Mark S. Powell, 5052 Mt. Etna Dr., San Diego, Calif. 92117
Continuation of Ser. No. 925,748, Oct. 31, 1986, abandoned. This application Sep. 22, 1987, Ser. No. 99,636
Int. Cl.[4] A45F *5/00*
U.S. Cl. 224—267 10 Claims



1. A security wallet assembly comprising, in combination, a wallet including a substantially rectangular back panel of pliable material having top and bottom edges and opposite end edges, a front panel of pliable material secured to one side of said back panel to define an upwardly opening pocket therebetween for accommodating currency and the like, said front and back panels foldable together along a vertically extending center line centrally of said end edges into and out of an aligned overlapping relationship for positioning said wallet in either a closed or open condition respectively;
means including a flap on one edge of said back panel for releasably retaining said wallet in said closed condition;
a strap of pliable material having opposite ends;
means for releasably securing said strap opposite ends together;
a substantially rectangular panel of pliable material having top and bottom edges secured to said back panel on the side opposite the front panel forming the upper opening pocket along said top and bottom edges on the side of said center line adjacent said flap, said rectangular panel defining with said back panel a loop for slideably receiving said strap with said strap extending transversely to said center line to enable said strap to be secured to an appendage of a person, with said wallet supported on said strap and with said wallet pocket readily accessible to said wearer without removal of the wallet from the appendage; and
means within said loop and on said strap for releasably retaining said wallet from sliding movement on said strap.

4,763,822
PAPER TAIL NIP THREADER
Leif Mohrsen, Surrey, Canada, assignor to Fibron Machine Corporation, New Westminster, Canada
Filed Dec. 23, 1985, Ser. No. 812,909
Int. Cl.[4] B65H *20/14;* G03B *1/56*
U.S. Cl. 226—91 17 Claims



8. A paper tail threader for a paper processing machine, comprising the combination of:
(a) a roll having a surface over which paper is to be passed, and
(b) a paper tail guide, said guide including
(c) an incurved, external guide surface shaped to conform to one side of a portion of said roll surface; and
(d) air directing means for directing an airstream in a curve along said guide surface in a desired direction of movement of said paper to provide an airstream on only one side of said paper, and for moving said paper tail by said airstream along said guide surface and into engagement with the suface of said roll.

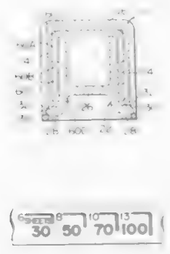
4,763,823
TAPE FEED APPARATUS
Erich Eder, Donaustrauf, and Horst Winter, Neutraubling, both of Fed. Rep. of Germany, assignors to Krones AG Hermann Kronseder Maschinenfabrik, Neutraubling, Fed. Rep. of Ger-
Filed May 19, 1987, Ser. No. 52,015
Claims priority, application Fed. Rep. of Germany, May 24, 1986, 3617583
Int. Cl.[4] B65C *9/18;* B65H *20/02*
U.S. Cl. 226—109 5 Claims



1. Apparatus for withdrawing tape or the like alternately from at least two rotatably mounted tape rolls and feeding said tape to a utilization device, said apparatus comprising:
a first rotatably mounted feed roller over which the tape withdrawn from one of the tape rolls runs and a second rotatably mounted feed roller over which the tape withdrawn alternately from the other of the tape rolls runs,
a reversible drive system,
first and second overrunning clutch means interposed between said drive system and said first and second feed rollers, respectively, one of said clutch means responding to said drive system running in one direction by coupling said drive system in driving relation with one of said feed rollers and the other of said clutch means responding to said drive system running in the opposite direction by coupling said drive system in driving relation with the other of said feed rollers.

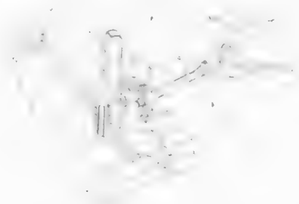
4,763,824
STAPLER CASSETTE
Yoshiyuki Ebihara, 25-18, Kamiogi 4-chome, Subinami-ku, Tokyo, Japan
Filed Mar. 23, 1987, Ser. No. 28,864
Claims priority, application Japan, Aug. 15, 1986, 61-191415
Int. Cl.[4] B25C *7/00*
U.S. Cl. 227—120 3 Claims

1. In a stapler having a base member, a cassette mounting member pivotally mounted on the base member and a handle pivotally mounted on the cassette mounting member, the handle having a staple driving blade disposed substantially at the forward end thereof, a cassette comprising, in combination:
(a) an elongated cassette body (112) of substantially U-shaped cross-section having spaced parallel side walls (114) and a top wall (116) connecting said side walls at their tops,
(b) said top wall having a forward end formed with a staple driving aperture (20) through which the driving blade of the handle can pass,
(c) said cassette body having at least one transparent side wall for visually exposing staples disposed within the cassette and/or document sheets disposed in a position to be bound by the staples,



(d) and visually observable indicia (FIG. 15) disposed on said transparent side wall for indicating the leg length of exposed staples disposed within the cassette and/or the number of said document sheets.

4,763,825
FRAMING TOOL
Stephen D. Albin, 797 Manor Way, Los Altos, Calif. 94022
Filed Aug. 11, 1987, Ser. No. 84,378
Int. Cl.[4] B25C *7/00*
U.S. Cl. 227—142 11 Claims



1. A framing tool for applying fasteners to the perimeter of a frame having opposing interior and exterior perimeters comprising:
driving means for pressing fasteners into a first perimeter of the frame;
storage means for holding a multiplicity of fasteners and sequentially delivering fasteners to the driving means after each fastener driving operation;
depth setting means for allowing an operator to selectively adjust the depth of fastener penetration, the depth setting means including a backing plate for engaging a second perimeter of said frame to limit the depth of fastener penetration, said second perimeter opposing said first perimeter;
triggering means for actuating said driving means to apply a fastener to the frame, the triggering means being hand operable and including a pair of opposed levers pivotally connected together whereby the driving means is actuated by pressing the pivotally mounted levers together.

4,763,826
AUTOMATIC WIRE FEED SYSTEM
Frederick W. Kulicke, Jr., Horsham; David A. Leonhardt, Norristown; Robert B. Newsome, Hatfield; Richard D. Sadler, Quakertown, and Gary S. Gillotti, Telford, all of Pa., assignors to Kulicke and Soffa Ind., Inc., Willow Grove, Pa.
Filed May 14, 1986, Ser. No. 862,988
Int. Cl.[4] B23K *37/00*
U.S. Cl. 228—4.5 17 Claims



1. An automatic wire feed system for supplying fine wire to a bonding tool of a wire bonder, comprising:
a wire feed drive motor coupled to a source of fine wire for supplying fine wire to said bonding tool when said drive motor is activated,
wire feed slack loop means mounted on said wire bonder between said bonding tool and said source of fine wire,
said wire feed slack loop means comprising a pair of sector plates closely spaced apart from each other to provide a narrow air space therebetween for receiving said fine wire and for forming a substantially uniform radius sector shaped slack loop in said fine wire,
gas supply means connected to said air space between said sector plates,
a separator shim between said pair of sector plates for directing said gas radially outward,
sensor means mounted on said wire feed slack loop means and extending across said air space between said sector plates, and
control means coupled to said gas supply means and to said wire feed drive motor for activating said wire feed drive motor to supply said fine wire to said wire feed slack loop means and for stopping said wire feed drive motor when said fine wire engages said sensor means.

4,763,827
MANUFACTURING METHOD
Kenji Watanabe, Kodaira; Isamu Yamazaki, Higashiyamato; Ryuichi Kyomasu, Kodaira; Nobuhiro Takasugi, Tokyo; Tsutomu Mimata, Akikawa, and Osamu Kakutani, Ohme, all of Japan, assignors to Hitachi, Ltd. and Hitachi Tokyo Electronics, both of Tokyo, Japan
Division of Ser. No. 772,823, Aug. 6, 1985, Pat. No. 4,674,670.
This application Apr. 16, 1987, Ser. No. 38,939
The portion of the term of this patent subsequent to Jun. 23, 2004, has been disclaimed.
Int. Cl.[4] B23K *31/00*
U.S. Cl. 228—102 21 Claims

1. A manufacturing method for a semiconductor device which includes a semiconductor pellet, a plurality of metal leads, and a plurality of bonding wires connecting therebetween, comprising the steps of:

VOL 1093 ISS 3 AG 16 1988 UMI

detecting the type of lead frame being processed;
generating an ouput signal indicative of the type of the lead frame detected;
controlling at least one bonding condition in response to the output signal so as to obtain an appropriate bonding be-



tween the pellet and the lead portions of the lead frame being processed irrespective of the type of lead frame being processed; and
performing wire bonding processes according to the controlled bonding condition.

4,763,828

METHOD FOR BONDING CERAMICS AND METALS

Yasuhiro Fukaya, and Shozo Hirai, both of Nishi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha

Continuation of Ser. No. 681,022, Dec. 13, 1984, abandoned.
This application Nov. 21, 1986, Ser. No. 935,067
Claims priority, application Japan, Dec. 20, 1983, 58-238818
Int. Cl.[4] B23K *1/04, 1/20, 20/16*
U.S. Cl. 228—124 4 Claims



1. A method for bonding oxide ceramics and metals which comprises the steps of depositing, on an oxide ceramic material, a composite insert material consisting of a mixture of at least one oxide selected from the group consisting of Cu_2O, NiO, SiO_2, FeO, AgO, Al_2O_3, MoO, TiO_2, ZnO, AuO, Cr_2O_3, CoO, ZrO_2, TaO, WO_2, NbO, MgO, CaO and Y_2O_3, and at least one metal selected from the group consisting of Cu, Ni, Si, Fe, Ag, Al, Mo, Ti, Zn, Au, Cr, Co, Zr, Ta, W, Nb and Mg by ion plating, bonding said composite insert material and said ceramic metallurgically by heating said composite insert material in an inert gas atmosphere or under vacuum at temperatures more than one-third of the melting point of said composite insert material and less than said melting point of said composite insert material, and subsequently diffusion-welding said ceramic and said composite insert material by heating while pressurizing the surface of said composite insert material and said bonding metal at less than 5 kg/mm^2 in an atmosphere of inert gas or under vacuum.

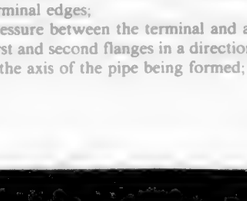
4. A method for bonding oxide ceramics and metals which comprises the steps of depositing, on an oxide ceramic material, a composite insert material consisting of a mixture of at least one oxide selected from the group consisting of Cu_2O, NiO, SiO_2, FeO, AgO, Al_2O_3, MoO, TiO_2, ZnO, AuO, Cr_2O_3, CoO, ZrO_2, TaO, WO_2, NbO, MgO, CaO and Y_2O_3, and at least one metal selected from the group consisting of Cu, Ni, Si, Fe, Ag, Al, Mo, Ti, Zn, Au, Cr, Co, Zr, Ta, W, Nb and Mb by spray coating, then bonding said composite insert material and said ceramic metallurgically by heating said composite insert material in an inert gas atmosphere or under vacuum at temperatures more than one-third of the melting point of said composite insert material and less than said melting point of said composite insert material, and subsequently brazing the surface of said composite insert material and said bonding metal.

4,763,829

SOLDERING OF ELECTRONIC COMPONENTS

William M. Sherry, Allentown, Pa., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 4, 1986, Ser. No. 870,712
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—124 13 Claims



1. A method of soldering together electronic components having bonding pads having an area less than 250,000 μm^2 formed on a major surface including depositing solder mounds on at least one of said components comprising the steps of:
covering the one of said components with a mask having a thickness of at least 10 μm so as to expose the bonding pads;
applying solder to the component while also applying ultrasonic energy to the solder so that the solder wets the surfaces of the exposed pads; and
removing the mask while leaving the solder in the form of mounds on the pads.

4,763,830

METHOD FOR WELDING RIBBED PIPE

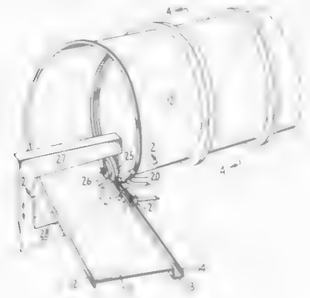
Paul K. Davis, Alameda, Calif., assignor to Pacific Roller Die Co., Inc., Hayward, Calif.

Filed Dec. 22, 1986, Ser. No. 944,522
Int. Cl.[4] B23K *31/06*
U.S. Cl. 228—145 12 Claims

1. A method for welding helically formed and ribbed pipe from strip having a pair of terminal side edges comprising the steps:
forming one side of strip to provide a first side flange having one of said pair of terminal side edges, forming the opposite side of the strip to provide a channel that includes a second side flange having the other one of said pair of terminal side edges;
coiling said strip material while moving the terminal edge of said first flange into substantially abutting contact with the terminal edge of said second flange;
contacting said first and second side flanges with a pair of welding electrodes in advance of abutting contact between terminal edges;
applying pressure between the terminal and abutting edges of said first and second flanges in a direction substantially radial to the axis of the pipe being formed;

and welding said first and second flanges together along abutting edges.

9. A helical ribbed pipe formed from strip having a pair of terminal side edges, said pipe having a spiral rib and a helical



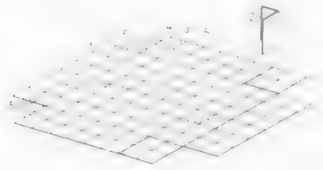
seam formed in the rib by butt welding the terminal side edges of strip, said rib comprising a first side flange and a channel that includes a second side flange said seam being located substantially midway between the inner circumference of the pipe and the outer circumference of the rib.

4,763,831

VARIABLE LENGTH/WIDTH PACKAGING BOX

Ming Y. Huang, No.63, Ta Hsing Street, and Mea Y. Huang, No.67, Ta Hsing Street, both of Tainan, Taiwan

Filed Jul. 21, 1987, Ser. No. 75,895
Int. Cl.[4] B65D *5/42*
U.S. Cl. 229—101 1 Claim



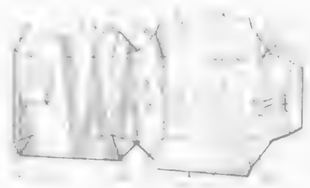
1. A variable length/width packaging box comprising:
(a) a substantially planar base plate defining four corners and having a plurality of longitudinal grooves and transverse grooves formed therein, said longitudinal and transverse grooves intersecting with each other to form a plurality of squares on said base plate, said base plate being severable along said longitudinal and transverse grooves to form a cutout section at respective corners of said base plate;
(b) four engagement elements which are engageable respectively at said corners of said base plate after said base plate is folded into a packaging box form, each of said engagement elements including a first portion, a second portion and a separation rib; said separation rib disposed at a junction of said first and second portions of each of said engagement elements; said engagement elements forming substantially continuous right angle bends;
(c) said first and second portions of each of said engagement elements being substantially identical in structure and symmetrical about said separation rib, each of said first and second portions having an outer plate and an inner plate in parallel each to the other; said outer and inner plates being supported and spaced apart by said separation rib;
(d) said outer and inner plates forming a hollow space therebetween in order to allow correspondent squares adjacent to cutout sections of said base plate to be inserted therein; and,
(e) each of said outer plates having a ridge edge matching said grooves and being receivable into said grooves of said base plate; said ridge edge projecting from a distal end of said outer plate towards an end of said inner plate.

4,763,832

CARTON WITH BOTTOM LOCK

Hampton E. Forbes, Jr., Newark, Del., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 21, 1988, Ser. No. 146,476
Int. Cl.[4] B65D *5/28, 5/42*
U.S. Cl. 229—114 8 Claims



1. In a carton comprising a tray and lid, said tray having a rectangular bottom wall and trapezoidal shaped, upstanding side walls, a front wall and a rear wall, all with upper edges, said lid having a trapezoidal shaped top wall and trapezoidal shaped, downwardly extending side walls, a rear wall and a front wall all with lower edges, said rear walls being foldably connected together along a common fold line, the front wall of said tray being shorter than its rear wall and the front wall of said lid being longer than its rear wall so that the lower edges of the side walls of said lid extend outwardly and over the upper edges of the side walls of said tray, the improvement comprising, an extension integral with the front wall of said lid which extends inside the front wall of said tray, a flap element foldably connected along a fold line to the front wall extension which is adapted to lie on the bottom wall of said tray when the carton is closed, and a locking means between the tray and lid, said locking means including a tab element cut from the material of the front wall extension and a locking slot of substantially rectangular shape cut from the material of the tray front wall.

4,763,833

TOTE CARRIER WITH INTEGRALLY FORMED HANDLE STRAPS

Mark S. Stoll, Deephaven, Minn., assignor to Liberty Diversified Industries, New Hope, Minn.

Filed Apr. 10, 1987, Ser. No. 37,246
Int. Cl.[4] B65D *5/46*
U.S. Cl. 229—52 B 16 Claims



1. A blank, said blank cut and scored from a generally planer

VOL 1093 ISS 3 AG 16 1988 UMI

sheet of material and foldable to form a generally upright carrier defining a receptacle region, said blank comprising:

a bottom panel defining a pair of opposing side edges and a pair of opposing end edges;

at least one side wall panel extending from and hingedly connected to one of said side edges of said bottom panel along a scored fold line, said side wall panel further defining a pair of opposing end edges and an outer side edge;

a pair of end wall panels, each said end wall panel extending from and hindgedly connected to one of said end edges of said bottom panel along scored fold lines;

at least a pair of end foldover panels, each said end foldover panel extending from and hingedly connected to one of said end edges of said side wall panel along scored fold lines; and

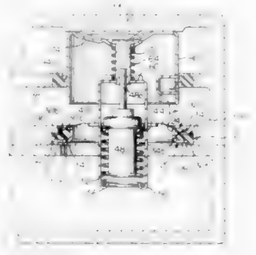
one or more handle straps, each said handle strap having a pair of opposing ends, each of said ends of said handle strap extending from and being hingedly connected to one of said end foldover panels, with said handle strap being defined by and separated from said end foldover panels and said side wall panel by at least one substantially continuous cut line extending entirely through said end foldover panels and said side wall panel.

4,763,834

VALVE SEAT STRUCTURE FOR AUTOMOTIVE THERMOSTATIC FLUID CONTROL VALVE DEVICE

Wayne R. Duprez, Waltham, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.

Filed Jun. 25, 1987, Ser. No. 66,235
Int. Cl.[4] F01P *7/02*
U.S. Cl. 236—345 **5 Claims**



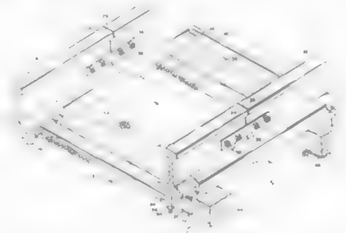
1. A thermostatic fluid control valve device adapted to be mounted in a fluid conduit system and being of the type provided with stationary valve structure having a rigid cylindrical wall forming a flow passage, an annular elastomeric sealing member snugly encompassing the cylindrical wall, the elastomeric sealing member including an abutment portion and a clamping portion, the abutment portion and the clamping portion being substantially at right angles, one with respect to the other, with a shoulder between the abutment portion and the clamping portion, the abutment portion having an abutment surface, the clamping portion having a clamping surface, the surfaces being somewhat parallel, a movable valve member engageable with the stationary valve structure and movable toward and away from the stationary valve structure, a thermally responsive actuator operably joined to the movable valve member for movement thereof, the improvement comprising a rigid annular clamping member encompassing the abutment portion of the elastomeric sealing member, the annular clamping member having a first portion and a second portion, the portions being substantially at right angles, one with respect to the other, the first portion of the annular clamping member having a surface in engagement with the clamping surface of the clamping portion of the sealing member to maintain the configuration of the clamping portion of the elastomeric sealing member, the first portion of the clamping member having an opposed surface adapted to be engaged by a part of the fluid conduit system for securing the stationary valve structure within the fluid conduit system for fluid flow through the flow passage formed by the rigid cylindrical wall, the abutment surface of the abutment portion of the annular elastomeric sealing member being engageable by the movable valve member to prevent fluid flow between the stationary valve structure and the movable valve member, the second portion of the annular clamping member being in engagement with the shoulder which separates the clamping portion and the abutment portion of the elastomeric sealing member, as the second portion of the annular clamping member maintains the configuration of the abutment portion of the elastomeric sealing member, the movable value member being engageable with the abutment portion of the elastomeric sealing member and movable with respect to the abutment surface to control fluid flow between the stationary valve structure and the movable valve member.

4,763,835

RAIL CONNECTING AND ALIGNMENT DEVICE

Joseph Knoll, Box 244, Gaylordsville, Conn. 06775

Filed Sep. 12, 1986, Ser. No. 906,506
Int. Cl.[4] E01B *11/56*
U.S. Cl. 238—205 **1 Claim**



1. A rail connecting and alignment device for a railway track, said track comprising a pair of spaced apart I-shaped rail members, each rail member formed from a plurality of aligned rail segments having abutting ends, said device for interconnecting said abutting ends of said I-shaped rail members, which constitute said track, said improvement comprising:

a. a plurality of spaced apart rail tie members, which lie upon a rail tie support bed, said tie members being arranged to support said railway track;

b. means for vertically supporting a series of said I-shaped rail members so that abutting ends of said rail members that are located over a span between said spaced apart rail tie members, are maintained in substantial axial alignment, regardless of weight being applied to said vertically supporting means, while said vertically supporting means is supported by said rail tie members; and,

c. means interconnecting pairs of said vertically supporting means so as to maintain a predetermined lateral spacing between said I-shaped rail members along a desired length of said railway track;

d. wherein said means for vertically supporting said I-shaped rail members further comprises:

an elongated member, having a cross section which fits closely over a lower portion of said I-shaped rail members, such that an inside, horizontally disposed surface of said elongated member lies directly beneath a lower, horizontally disposed surface of said I-shaped rail members; and,

a pair of spaced apart flanges, formed at opposing longitudinal ends of said elongated member, such that each of said flanges projects downwardly at a substantially right angle with respect to said lower surface of said rail members, to permit location of said elongated members

longitudinally against one substantially vertical side of a first and a second tie member of said tie members, said spaced apart flanges each further having an auxiliary flange formed therefrom having through holes, to enable engagement of said means for interconnecting at opposing longitudinal ends of said elongated members; and,

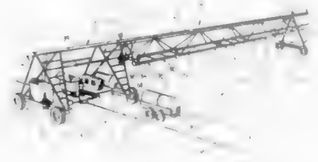
e. wherein said means for inconnecting consists of bar members, and extends beneath the lower, horizontally disposed surface of said I-shaped rail members; and, wherein each bar member has opposing threaded ends suited for bolting engagement with said auxiliary flanges at each opposing end of the elongated members.

4,763,836

IRRIGATION SYSTEM FOR PRECISE WATER AND CHEMICAL APPLICATION

William M. Lyle, Rt. 1, Box 235, Ralls, Tex. 79357, and James P. Bordovsky, 2004 W. 18th, Plainview, Tex. 79072

Continuation of Ser. No. 537,897, Sep. 30, 1983, abandoned. This application Nov. 7, 1986, Ser. No. 909,727
Int. Cl.[4] B05B *3/18*
U.S. Cl. 239—69 **27 Claims**



1. Apparatus for use in an irrigation system comprising:

three spaced towers on wheels operable to transport said towers through a field as a unit;

span structures connecting said towers in a preselected alignment;

an AC drive motor on each tower to drive a wheel of each tower;

a variable frequency AC motor controller operable to vary the speed of said motors in unison;

sensing means responsive to a variation in said alignment caused by one of said towers lagging behind or moving ahead of said other towers; and

a switch responsive to said sensing means operable to stop said motor of said tower if ahead or stop motors of adjacent towers if one said tower is behind, until said alignment is re-established, then an electronic circuit to stop all said tower motors momentarily, then restart in unison.

4,763,837

FROST FREE IRRIGATION SYSTEM AND VALVE THEREFOR

Zvi Livneh, 3290 Avondale Court, Windsor, Ontario, Canada N9E 1X6

Filed Jun. 18, 1987, Ser. No. 63,321
Int. Cl.[4] B05B *1/00, 15/00*
U.S. Cl. 239—111 **22 Claims**

1. As an article of manufacture, a water relief and drainage valve for an irrigation system, the valve comprising:

(a) a hollow housing partitioned to define,

(i) a first water holding plenum;

(ii) a second water discharge plenum including a discharge orifice whereby water in the second plenum is discharged therefrom;

(iii) a channel communicating between both plenums whereby to convey water from the first plenum to the second plenum and hence, to discharge the same from the system;

(b) a valve member disposed in said plenums and responsive to the ambient pressure of the water in said first plenum, the valve member including an upper flexible valve surface attached to the housing and extending through said first plenum to sealingly partition the said first plenum into an upper air accommodating subplenum, and a lower water accommodating subplenum;

(i) the housing further defining a water conveying orifice communicating to the water accommodating subplenum, whereby the water accommodating orifice is adapted to be connected to the subterranean irrigation system;

(ii) the housing further defining a second air venting orifice communicating with the upper air accommodating subplenum, whereby the air orifice is adapted to be continuously vented to the atmosphere;

(c) a stem, with lower distal end, depending from the flexible valve membrane and extending through the channel, the stem of a diameter slightly smaller than that of the channel, whereby water in said water accommodating subplenum may flow past the stem, through the channel, into the second plenum, a valve head carried by the stem at the lower distal end of the stem and positioned so as to make urging closing contact against the channel and to sealingly close the same when the flexible membrane is deformed as a result of a differential in pressure across the flexible membrane as when the pressure in said water accommodating subplenum is greater than that in said air accommodating subplenum.

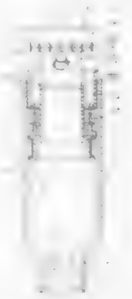


4,763,838

SPRINKLER WITH GUARD

Gregory B. Holcomb, Diamond Bar, Calif., assignor to The Toro Company, Minneapolis, Minn.

Filed Jan. 12, 1987, Ser. No. 3,345
Int. Cl.[4] B05B *15/10*
U.S. Cl. 239—205 **19 Claims**



1. An improved sprinkler having a body that can be buried in the ground and connected to a source of water, a nozzle that pops up out of the body when the water is turned on, the

VOL 1093 ISS 3 AG 16 1988 UMI

nozzle having an external shape which creates a gap between it and the body as it rises, means for retracting the nozzle within the body when the water is turned off, and a guard that rises from the body as the nozzle rises to seal the gap and prevent debris from entering the body, wherein the improvement relates to the guard and comprises:

(a) a guard which is separate from the nozzle;

(b) means for biasing the guard upwardly out of the body, wherein the biasing means comprises a spring extending between the guard and a fixed abutment in the body; and

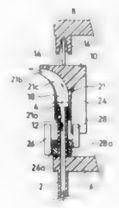
(c) means on the nozzle bearing against the guard for keeping the guard retracted in the body against the force of its biasing means when the nozzle is retracted, whereby the guard is pushed up out of the body by its biasing means as the nozzle rises.

4,763,839

WATER SPRINKLER

Ilan Greenberg, Haifa, Israel, assignor to Plastro Gvat, Kibbutz Gvat and Agroteam Consultants Ltd., Ramat Yishai, both of, Israel

Filed Jan. 27, 1987, Ser. No. 7,105
Claims priority, application Israel, Jan. 31, 1986, 77746
Int. Cl.[4] B05B 3/08
U.S. Cl. 239—222.17 15 Claims



1. A sprinkler, comprising:

a nozzle connectably to a water supply pipe and discharging the water therefrom in the form of a water jet along the nozzle axis;

a distributor head in the path of said water jet and mounted for rotary movement about said nozzle axis and for lateral movement laterally of said nozzle axis;

the side of said distributor head facing the nozzle being formed with a first curved groove including an axially-extending inlet end facing and normally aligned with said nozzle, a radially-extending outlet end, and a curved juncture between the two ends such that the curved groove defines a first passageway for receiving the water jet and for directing it outwardly of the distributor head with the water applying a force tending to rotate the distributor head in one direction, and with a second curved groove also including an axially-extending inlet end facing and alignable with said nozzle, a radially-extending outlet end, and a curved juncture between the two ends such that the curved groove defines a second passageway for receiving the water jet and for directing it outwardly of the distributor head with the water applying a force tending to rotate the distributor head in the opposite direction;

an abutment;

a first stop engageable by said abutment when the distributor head is rotated in said one direction by the flow of water through said first passageway, to move the distributor head laterally of the nozzle axis to align the inlet end of its second passageway with the nozzle;

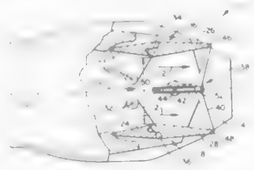
and a second stop engageable by said abutment when the distributor head is rotated in said opposite direction by the flow of water through said second passageway to move the distributor head laterally of the nozzle axis to align the inlet end of its first passageway with the nozzle.

4,763,840

THRUST VECTORING EXHAUST NOZZLE ARRANGEMENT

William M. Madden, Palm Springs, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 9, 1987, Ser. No. 36,540
Int. Cl.[4] B64C 9/38; F02K 1/00
U.S. Cl. 239—265.35 5 Claims



1. A two-dimensional thrust vectoring exhaust nozzle for a gas turbine engine, comprising:

first and second laterally spaced apart sidewalls for defining corresponding first and second lateral exhaust gas boundaries in the nozzle;

upper and lower movable flap assemblies, each assembly extending between the first and second sidewalls and defining respective upper and lower gas flow boundaries, each flap assembly further including

a forward flap, selectively pivotable about an axis extending between the first and second sidewalls and having a leading edge and a trailing edge,

an aftward flap, having a trailing edge and a leading edge pivotably secured to the trailing edge of the forward flap, and

means for selectively positioning the trailing edges of the aftward flaps of the upper and lower flap assemblies, including

first and second scissors linkages, each scissors linkage including elongated, equal length upper and lower drag links, one end of each drag link being pivotally secured proximate the span end of the trailing edge of the corresponding upper or lower aftward flap, and the other end of each upper drag link being pivotally secured to the other end of the respective lower drag link,

a first and a second linear drive track, each track secured to the respective first and second sidewalls and selectively pivotable in a plane substantially parallel thereto, and

first and second trucks, each truck cooperatively engaged with the respective first and second drive track and selectively positionable therealong, each truck being pivotally secured to the respective first and second scissors linkage at the pivotable joint between the other ends of the upper and lower drag links.

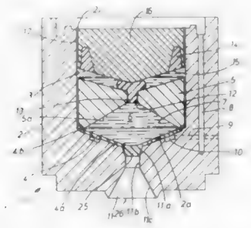
4,763,841

INJECTION NOZZLE FOR INJECTING FUEL INTO THE COMBUSTION CHAMBER OF AN AIR-COMPRESSING FUEL-INJECTION ENGINE

Günther Häfner, Berglen, and Ulrich Letsche, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 8, 1987, Ser. No. 35,856
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1986, 3614564
Int. Cl.[4] B05B 1/34; F02M 61/20
U.S. Cl. 239—464 14 Claims

1. An injection nozzle for injecting a variable amount of fuel into a combustion chamber of an air-compressing fuel-injection internal combustion engine, said nozzle having a diaphragm acting as a variable opening and closing valve means in a nozzle body to vary the amount of fuel injected into the combustion chamber, said diaphragm being liftable from a valve seat against a closing spring force as a function of injected-fuel pressure prevailing in a pressure chamber in said nozzle body to clear a spray hole leading towards said combustion chamber, wherein:



said diaphragm has a conical spray plug which is received in said spray hole when the diaphragm is in a closed position; and

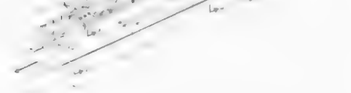
said nozzle includes enclosed fluid which is under pressure when said diaphragm is in said closed position for applying said closing spring force.

4,763,842

WATER DRIP DEVICE FOR IRRIGATION

David C. Dunn, Guthrie, Okla., assignor to Bill D. McCarthy, Oklahoma City, Okla.

Filed Feb. 4, 1987, Ser. No. 10,753
Int. Cl.[4] B05B 15/00, 1/20
U.S. Cl. 239—542 7 Claims



1. A watering device for watering row crops such as fruits, vegetables, plants and similar applications, the device adapted for connection to a water source, the device comprising:

an elongated supply channel formed in the lower portion of a folded plastic tape, the sides of the tape extending and joined together by first and second seal lines, the first seal line extending along the length of the supply channel and sealing the top of the channel;

water inlets disposed in the top of the supply channel, the inlets formed between the tape sides by equally spaced interruptions in the first seal line;

a plurality of pressure channels disposed on top of the supply channel and parallel thereto, the pressure channels formed between the first seal line and second seal line, one end of each pressure channel communicating with each water inlet;

a plurality of diffuser cavities disposed on top of the supply channel and formed between the first seal line and second seal line, one end of each diffuser cavity communicating with another end of the pressure channels; and

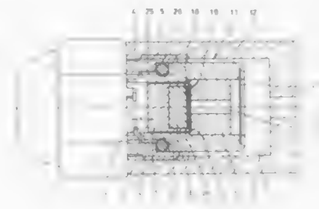
water outlets disposed in the top of the diffuser cavities formed in the top of the diffuser cavities and formed between the tape sides, the water outlets equally spaced along the length of the plastic tape.

4,763,843

FUEL CUTOFF FOR A BURNER ATOMIZER

Dieter Bombis; Ernst Becker, both of Vilters; Paul Wildhaber, Balzers; Franz Vogler, Madris-Vermol, and Peter Müller, Mühlehorn, all of Switzerland, assignors to Elco Oel-und GasbrennerwerkeAG, Switzerland

Filed Dec. 9, 1986, Ser. No. 940,482
Int. Cl.[4] B05B 1/30
U.S. Cl. 239—571 5 Claims



1. A fuel drip control for a liquid fuel oil burner, comprising a fuel supply conduit with an atomizer, a movable blocking element in the fuel supply conduit, means confining said blocking element from movement between a position in which it is disposed so as to block the flow of fuel through said conduit and through said atomizer to an open position in which it unblocks the flow, and a permanent magnet provided in at least a portion of one of: said conduit and said blocking element, acting to attract said blocking element to a position shutting off said conduit, the fuel flow moving the blocking element out of a blocking position overcoming the permanent magnet attracting force, a sleeve-shaped basic element connected into the fuel line adjacent said atomizer and means defining a connection between said basic element and the interior of said fuel supply conduit, said blocking element being arranged for movement within said sleeve-shaped basic element, an anchor in said basic element arranged in a fixed position therein and having a fuel flow passage therethrough, said blocking element having a permanent magnet portion which is attractable by said anchor to position the bocking element in a blocking position in which it blocks the fuel passage through said anchor, said blocking element comprising a U-shaped varying element having a face with a recess which contains a permanent magnet attractable to said anchor.

4,763,844

SPREADING MATERIAL ON A SURFACE

Cornelis van der Lely, Zug, Switzerland; Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. Van der Lely N. V., Maasland, Netherlands

PCT No. PCT/NL84/00015, § 371 Date Sep. 27, 1984, § 102(e) Date Sep. 27, 1984, PCT Pub. No. WO84/04868, PCT Pub. Date Dec. 20, 1984
PCT Filed May 30, 1984, Ser. No. 668,377
Claims priority, application Netherlands, Jun. 3, 1983, 8301973; Jul. 4, 1983, 8302365
Int. Cl.[4] A01C 19/00
U.S. Cl. 239—665 17 Claims

1. A spreader for spreading material over a surface, comprising:

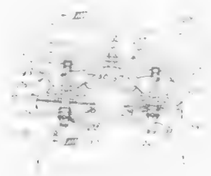
a frame;

spreading members which are movable about two respective upstanding axes to eject material to be spread in simultaneously broadcast arcuate patterns which coincide with each other substantially throughout; fastening means for mounting the spreader on a prime mover, said fastening means being adjustable upwardly and downwardly relative to said frame and further comprising a carrying arm which is pivotable with respect to said frame about a

VOL 1093 ISS 3 AG 16 1988 UMI

substantially horizontal pivotal axis, said carrying arm extending from said pivotal axis in the normal direction of operative travel of the spreader, said pivotal axis being substantially at right angles to said travel direction, said fastening means further comprising a coupling element which is situated in front of said pivotal axis with respect to said travel direction, said coupling element and said pivotal axis being on opposite sides of an upwardly extending member of said frame; and

adjustment means of said frame for modifying the spreader's lateral inclination relative to the underlying ground so



that the spreader can be disposed in a selected one of at least two laterally inclined operative conditions in which, on either lateral side of the spreader as selected, the material is broadcast simultaneously from said two spreading members substantially uniformly over up to about a fifty percent reduced spreading width on that lateral side and on the opposite side of the spreader material is broadcast simultaneously from said two spreading members substantially the same lateral distance as said material would have been broadcast from said spreader if said spreader was not inclined to any substantial extent in the lateral sense relative to the underlying ground.

4,763,845

MOBILE CRUSHER SYSTEM

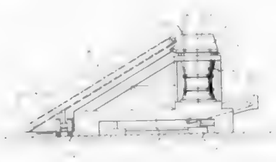
Kurt Guggenheimer, and Hermann Mecklenfeld, both of Enigerloh, Fed. Rep. of Germany, assignors to O&K Orenstein & Koppel Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Jan. 30, 1987, Ser. No. 9,185

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1986, 3608789

Int. Cl.[4] B02C *21/02*

U.S. Cl. 241—101.7 **9 Claims**



1. In a mobile crusher system for use in a stone quarry or in strip ore or coal mining having a supporting framework which holds at least one crusher, which system can be lifted and relocated in accordance with an advance in the removal of material by any one of a class of transport mechanisms, including a walking-leg system, an exendable track-laying system and a wheel undercarriage system; said crusher system further having at least one loading device which is associated with at least one crusher, a receiving hopper for loose material delivered by freely transporting loading machines such as wheel loaders or excavators, and a conveyor which feeds the loose material to the crusher by one of a class of transfer hoppers including a direct feed hopper and a hopper incorporating a screening system; the improvement wherein

said crusher system further comprises a vertical pivot, said loading device being rotatably mounted on the supporting framework by said vertical pivot to be swingable around a vertical axis;

a horizontal pivot located in the region of a dishcarge from said loading device, said loading device being mounted further to said framework by said horizontal pivot, and being swingable around a horizontal axis located in the region of discharge;

a locking device, and wherein said loading device can be fixed in a transport position on the supporting framework by means of said locking device;

said vertical pivot includes surface contact means affixed to said supporting framework for supporting said loading device during a swinging of said loading device; and

said surface contact means includes a rolling surface.

4,763,846

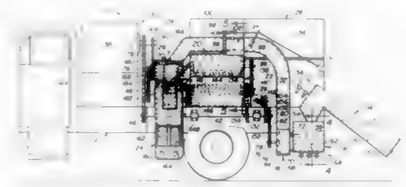
WHOLE EAR CORN CONVERSION APPARATUS AND METHOD

Samuel E. High, Jr., Lititz, and Aquila D. Mast, Lancaster, both of Pa., assignors to Fredmobile, Inc., Lititz, Pa.

Filed Apr. 11, 1984, Ser. No. 599,129

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—81 **16 Claims**



1. Apparatus for converting a livestock feed material, such as whole ears of corn, from a first condition having lower nutritional value into a second condition having higher nutritional value, comprising:

(a) means for receiving whole ears of corn, being in said first condition, and for breaking the same into smaller pieces;

(b) means for moving said smaller, broken corn ear pieces along a predetermined transfer path;

(c) means for separating said smaller, broken corn ear pieces moved along said transfer path into kernels and pieces of cobs;

(d) means for cracking said separated kernels into smaller pieces;

(e) means for grinding said separated pieces of cobs into fine particles of cobs; and

(f) means for recombining said smaller, cracked pieces of kernels and fine particles of cobs into a mixture of feed material being in said second condition.

4,763,847

IMPLEMENT FOR INNER INSPECTION AND DESTRUCTION OF PLASTIC SECURITY CONTAINERS

Gary A. Vosburgh, RD#1 Box 151 Birchwood Dr., Duanesburg, N.Y. 12056

Filed Sep. 29, 1986, Ser. No. 912,972

Int. Cl.[4] B02C *1/04*

U.S. Cl. 241—169 **1 Claim**

1. A hand operated apparatus for opening inspection windows of security containers and destroying the security containers, comprising:

a base plate;

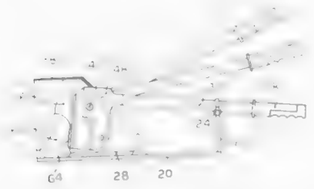
a first side plate connected to said base plate and extending upwardly therefrom;

a second side plate connected to said base plate and extending upwardly therefrom parallel to said first side plate;

a back support plate extending upwardly from said base plate and being connected to said base plate, said first side plate and said second side plate, so that a chamber is formed;

a front lever arm support plate connected to said base plate and extending upwardly therefrom;

a first centering rail located within said chamber;



a second centering rail located within said chamber and spaced from said first centering rail;

a lever arm having a hand grip at a first end thereof;

a hammer head connected to said lever arm at a second end thereof;

a pivot pin passing through and connecting said first side plate, said second side plate, and said hammer head;

a lever arm securing latch on said front lever arm support plate;

a cutter on a front end of said hammer head; and

a shatter guard covering said chamber.

4,763,848

WINDING SUPPORT FOR USE IN MANUFACTURING SADDLE-TYPE COILS

Wilfred Bernhard, Altbach, Fed. Rep. of Germany, assignor to Alcatel N.V., Netherlands

Filed Jun. 10, 1983, Ser. No. 502,896

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225289

Int. Cl.[4] B21F *3/00*

U.S. Cl. 242—1 **10 Claims**

1. A multisectional winding support for the winding of a saddle-type coil including at least one string of winding wires for use in a deflecting unit of a color picture tube comprising:

an inner form having steps on an outer surface thereof, said steps of said inner form are provided along an inside radius of said inner form which continuously increases along a main axis of said saddle-type coil for a fixed azimuth angle and in the case of a fixed position along said main axis said inside radius increases in a step-like manner as said azimuth angle increases up to 90° at which time said inside radius decreases in a step-like manner when said azimuth angle increases beyond 90°; and

an outer form surrounding at least a part said inner form, said outer form having a smooth surface adjacent said outer surface of said inner form determining in cooperation with said outer surface of said inner form the shape of said saddle-type coil.

4,763,849

YARN GUIDE DEVICE FOR WINDING CROSS-WOUND BOBBINS IN TEXTILE MACHINES

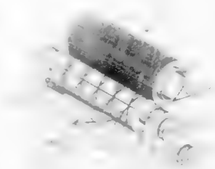
George E. Gilbos, Aalst, Belgium, assignor to Textielmachinefabriek Gilbos Naamloze Vennootschap, Belgium

Filed Apr. 15, 1987, Ser. No. 38,372

Claims priority, application Belgium, Sep. 22, 1986, 2/61055

Int. Cl.[4] B65H *54/28*

U.S. Cl. 242—43.2 **5 Claims**



1. Yarn guide device for the formation of cross-wound bobbins in textile machines, which device comprises:

(a) a rotating driven cylinder having over the entire length of its outer surface an uninterrupted helical groove for guiding the yarn in one direction of the transverse movement with respect to the direction of the run movement of the yarn and a helical groove running in the opposite direction to and interrupted by the first groove, for guiding the yarn in the other direction of the transverse movement of the yarn;

(b) a rotating driven rotor installed in a horizintal plane before and under said driven grooved cylinder, said rotor comprising means for lifting the yarn out of the uninterrupted groove on one end of said cylinder and for guiding to the other end of said cylinder the yarn during its transverse motion imposed by the interrupted grooved of said cylinder;

(c) means for driving the rotor with a speed having an unchanging relationship to the speed of rotation of the grooved cylinder; and

(d) a striker provided on one end and before the grooved cylinder for striking-off the yarn from the rotor and for laying the yarn in the uninterrupted groove of said cylinder.

4,763,850

EXPANDABLE WINDING MANDREL FOR RETAINING A SUBSTANTIALLY CYLINDRICAL YARN HOLDER OF A SPINNING OR TWISTING MACHINE

Gerhard Hausner, Albershausen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Fed. Rep. of Germany

Filed Jun. 4, 1987, Ser. No. 58,328

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1986, 3618918

Int. Cl.[4] B65H *54/54*

U.S. Cl. 242—46.4 **16 Claims**

1. An expandable yarn-winding mandrel for releasable internal engagement of a substantially cylindrical, thin-wall yarn holder of a spinning or twisting machine, comprising:

a support surrounding an axis of rotation and rotatable thereabout;

a plurality of elongated gripping members angularly spaced about said axis and each pivotally mounted at one end on said support for swinging movement about respective

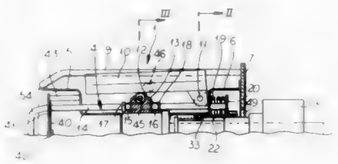
VOL 1093 ISS 3 AG 16 1988 UMI

pivot axes transverse to said axis of rotation between outer operative positions of said gripping members wherein said yarn holder is internally seized by said gripping members and inner operative positions wherein said yarn holder is freed to be withdrawn from said mandrel;

a plurality of axially shiftable pushing members each assigned to a respective one of said gripping members mounted on said support and disposed in an array coaxial with said axis of rotation and radially spaced therefrom;

respective links connecting each of said pushing members with a respective one of said gripping members and displaceable past respective deadcenter positions for shifting said gripping members between said operative positions thereof so that each link has positions to opposite sides of the respective deadcenter position corresponding to the said operative positions of the respective gripping member; and

a pushing device operatively connected to all of said pushing members for axially shifting said pushing members jointly to displace said pushing members and swing said gripping members about said pivot axes between said operative positions.

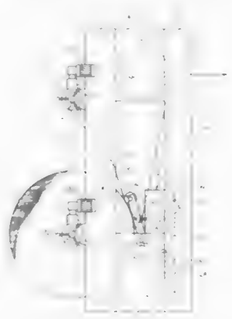


4,763,851

REEL UNWINDER

Daniel Flament, Igny, France, assignor to Materiels Equipements Graphiques, Lisses, France

Filed Sep. 29, 1986, Ser. No. 912,115
Claims priority, application France, Sep. 30, 1985, 85 14465
Int. Cl.[4] B65H *19/16*
U.S. Cl. 242—58.3 11 Claims



1. A reel unwinder for continuously supplying an endless web, comprising:

two spindles mounted on a stand for supporting two reels such that the reel on one of said spindles can be unwound, while the other spindle, after removal of a consumed reel, can receive a full reel;

means for maintaining a suitable web tension;

means, coupled to each spindle, for accelerating a full reel mounted thereon to a linear unwinding speed;

a strip of adhesive adjacent a free end of each full reel;

laying means for placing a web of a nearly consumed reel on one of said spindles onto a web of a full reel on the other spindle to bond the webs of such reels by the respective strip of adhesive, said laying means including two applicator elements mounted on a common movable assembly and at least one guide roller mounted between the applicator elements for permanently passing the endless web;

driving means, coupled to said common movable assembly, for moving said applicator elements selectively into active positions near the full reel;

knife means for cutting the web from each nearly consumed reel;

first control means, acting on the apllicator element located in an active position, for moving said applicator element in the active position into an approach position at a predetermined distance from a full reel surface independent of a diameter of such full reel; and

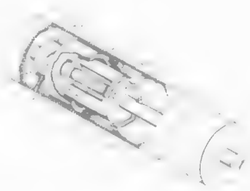
second control mean, acting on the applicator element in the approach position, for selectively moving the applicator element in the approach position into a contact position engaging a full reel to bond webs of the full reel and the nearly consumed reel.

4,763,852

OSCILLATING GUIDE ROLL

Donald L. Smith, Rt. 12, Sleepy Hollow Dr., Greenville, S.C. 29609

Continuation of Ser. No. 769,478, Aug. 26, 1985, abandoned.
This application Jun. 16, 1987, Ser. No. 65,696
Int. Cl.[4] B65H *17/08;* D03D *49/20*
U.S. Cl. 242—67.1 R 8 Claims



1. An oscillating guide roll assembly for use in winding cloth with thickened edge portions onto a takeup roll, comprising:

(a) a stationary non-rotating shaft;

(b) a hollow guide roll mounted on said stationary non-rotating shaft for rotation thereabout and for oscillating movement along the longitudinal axis of said shaft;

(c) oscillatory movement means, enclosed entirely within said hollow guide roll, mounted therein for rotation relative said stationary non-rotating shaft, and actuated solely by rotation of said guide roll about said stationary non-rotating shaft, for oscillating said guide roll along the longitudinal axis of said shaft as said guide roll is rotated by cloth passing thereover; and

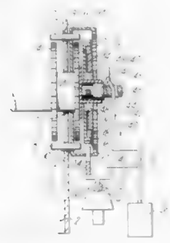
(d) means for transmitting the rotation of the guide roll to the oscillating movement means at a rotational speed different from that of the guide roll, whereby such cloth is wound onto the takeup roll to avoid registry of the thickened edge portions on such takeup roll without requiring actuation of said oscillatory movement means other than by rotation of said guide roll.

4,763,853

SEAT BELT RETRACTOR REEL

Tommy Andersson, Alingsas, Sweden, assignor to Autoliv Development AB, Vargarda, Sweden

Filed Aug. 26, 1986, Ser. No. 900,431
Claims priority, application United Kingdom, Aug. 28, 1985, 8521413
Int. Cl.[4] B60R *22/38, 22/40*
U.S. Cl. 242—107.4 A 11 Claims



1. A retractor reel for a vehicle safety belt arrangement, said reel comprising rotatable means (1) on to which part of a safety belt may be wound, locking means, (23,29,13,7,8,4 and 5) adapted to lock the rotatable means in position to prevent the withdrawal of the belt therefrom, sensor means adapted to actuate the locking means, said sensor means comprising at least a sensor element (19) comprising an inertia weight (19) mounted for rotation about the axis of said rotatable means (1) on to which part of the safety belt may be wound, and being biased to move with the rotatable means by a resilient means (24), said sensor being arranged to actuate said locking means (23,29,13,7,8,4 and 5) when a predetermined rotational movement between the inertia weight and the rotatable means is exceeded, responsive to the speed or acceleration of belt withdrawal,

means being provided which are selectively operable to retain the sensor element in an operative position, said selectively operable retaining means including a movable element (46, 47) mounted on the rotatable means (1) and movable to a position in which it engages and retains a portion of the locking means characterized in that said element (47) has means (48) to directly engage and retain a portion (20) of the inertia weight (19) thus ensuring that the inertia weight co-rotates with the rotatable means, thus retaining the inertia weight in a predetermined position relative to the rotatable means and thus preventing actuation of said locking means.

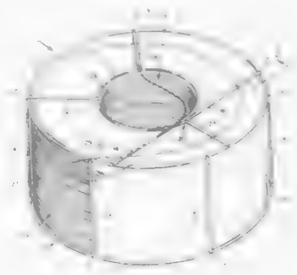
4,763,854

CONTAINER FOR CONTINUOUS SUPPLY OF WIRE

Robert A. Borowski, Lockport, Ill., assignor to A. Johnson Metals Corporation, Lionville-Exton, Pa.

Filed Feb. 23, 1988, Ser. No. 159,198
Int. Cl.[4] B65H *49/06*
U.S. Cl. 242—129 6 Claims

1. A container for a coil of wire comprising a support structure having two side portions spaced in the axial direction with respect to a coil to be held therein, the side portions being connected in spaced relation by a peripheral portion of the support structure, and means forming a continuously circular central opening in one of the side portions to supply wire from the center of a coil of wire held in the container, wherein the means forming the continuously circular central opening comprises bar means formed with a central circular portion and end portions projecting in generally opposed directions away from a common segment of the central opening, the circular portion and the end portions being disposed in axially adjacent relation at the common segment.



4,763,855

FLOSS BOBBIN HOLDING DEVICE

Maureen DiVincenzo, P.O. Box 588, Holden, Mass. 01520

Filed Feb. 5, 1987, Ser. No. 11,153
Int. Cl.[4] B65H *49/14, 75/06;* A47F *5/00*
U.S. Cl. 242—139 6 Claims



1. A device for holding a plurality of generally planar floss bobbins, each of which has a hook-shaped flange at one side edge, said holding device comprising:

(a) a supporting base having a top surface which has a circular depression,

(b) a carrier which is mounted on said base for rotation about a vertical axis, said carrier comprising:

(1) a peripheral wall having a top edge,

(2) an upper central circular post which extends upwardly from the carrier, said post having a top surface which is above said top edge and which has a circular depression, and

(3) a lower central circular post which extends downwardly from said carrier and which is rotatably and removably mounted in the circular depression of said supporting base or in the circular depression of a second identical carrier which is rotatably and removably mounted on said supporting base, and

(c) a plurality of floss bobbin mounting sites spatially arranged along said peripheral wall, each of said sites being adapted for receiving the flange of a floss bobbin for supporting the bobbin.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,856

FISHING REEL

Kyoichi Kaneko, Higashi-Kurume, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,906
Claims priority, application Japan, Apr. 9, 1986, 61-52958
Int. Cl.[4] A01K *89/02, 89/015*
U.S. Cl. 242—217 5 Claims



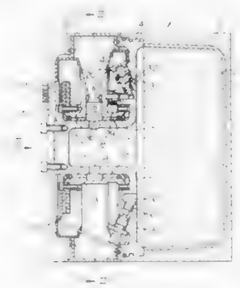
1. A fishing reel comprising a main body frame, a pair of opposed support plates provided on said frame, an outer plate provided spacedly from an adjacent one of said support plates, a spool shaft extending between said support plates, a fishing-line spool carried on said spool shaft, a handle shaft extending between said outer plate and said adjacent support plate, bearing means carried by said adjacent support plate and outer plate for journalling respective inner and outer ends of the handle shaft, motion transmission means for causing rotation of said spool shaft responsive to rotation of said handle shaft, a drag mechanism including a drag-force adjusting element rotatably engaging a portion of the handle shaft for either tightening or loosening movement, said inner end of the handle shaft having a retaining portion, and a locking member engageable with said handle shaft retaining portion for preventing said handle shaft from axial movement upon either tightening or loosening movement of said drag-force mechanism adjusting element.

4,763,857

GUIDANCE APPARATUS FOR PROJECTILES

Bryan Booth, Kidderminster, and William H. Nicolson, Bewdley, both of England, assignors to Imi Kynoch Limited, Witton, England

Filed Jul. 28, 1987, Ser. No. 78,849
Claims priority, application United Kingdom, Jul. 29, 1986, 8618510
Int. Cl.[4] F42B *15/033*
U.S. Cl. 244—3.22 9 Claims



1. Guidance apparatus adapted to be mounted on a projectile for guiding the projectile during flight, the apparatus comprising:

(a) source of pressurised gas;

(b) a nozzle rotatable about an axis and arranged to discharge gas produced, in use, from said source in a direction that is substantially perpendicular to said axis;

(c) first thrust vector control means adapted selectively to set up a disturbance, for example shock-waves, within the gas being discharged from the nozzle so as to produce a resultant thrust that causes the nozzle to rotate continuously in one direction about said axis and at an angular velocity sufficiently high that the normal ballistic trajectory of the projectile is substantially unaffected;

(d) second thrust vector control means adapted selectively to set up a disturbance, for example shock-waves, within the gas being discharged from the nozzle so as to produce a thrust that brakes said rotational motion of the nozzle until it adopts, for a predetermined period of time, a predetermined position whereupon the gas discharging therefrom exerts a thrust on the projectile thereby varying its trajectory as desired, and

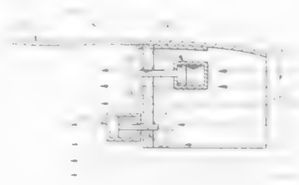
(e) control means responsive to control signals for controlling the operation of both said thrust vector control means and thus, inter alia, any desired variation of the trajectory of the projectile.

4,763,858

DEFLECTABLE JET ENGINE INLET

Joseph A. Belisle, West Babylon, and Marshall J. Corbett, E. Northport, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 5, 1986, Ser. No. 826,513
Int. Cl.[4] B64D *33/02*
U.S. Cl. 244—53 B 3 Claims



1. A system for ensuring continued power to the control surfaces of an aircraft during vertical descent of a horizontally oriented jet aircraft with a stalled engine, the system comprising:

a deflector having an internal transversely arcuate surface with respect to an axis of the jet engine inlet and normally positioned substantially coaxial with the jet engine inlet for allowing unobstructed airflow through the inlet when the aircraft has substantial horizontal velocity; and

means for pivotally displacing the arcuate deflector relative to the inlet when the aircraft undergoes vertical descent in a horizontal, stalled condition, thereby causing an interior surface of the deflector to reflect impinging vertical airflow only in a perpendicular direction, coaxial with the inlet for forcing sufficient airflow across the turbine blades of the engine to keep them rotating;

hydraulic means connected to a shaft of the turbine blades;

electric generating means connected to the shaft; and

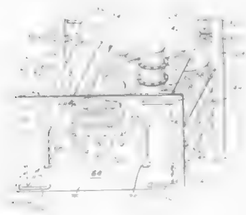
control means connected to the generating means and the hydraulic means for driving control surfaces of the aircraft sufficient to allow horizontal maneuvering of the stalled aircraft as the turbine blades and connected shaft are kept rotating by the reflected airflow.

4,763,859

QUICK REPLACEABLE THERMAL CONTROL SYSTEM

Guido Biagini, Cherry Valley, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jun. 23, 1986, Ser. No. 877,231
Int. Cl.[4] B64D *13/08*
U.S. Cl. 244—118.5 5 Claims



1. An environmental control system for affording quick attachment and disconnection of a thermal control unit with respect to an aircraft fuselage, comprising:

means defining a compartment in the aircraft fuselage communicating with the exterior of the aircraft for receiving the thermal control unit;

drawer-like support means positionable in the compartment for mounting and supporting the thermal control unit;

complementary interengaging guide means between the support means and the aircraft fuselage along the compartment for providing push-pull movement of the supported thermal control unit into and out of the compartment;

complementary fluid connections and electrical connections on the thermal control unit and the aircraft fuselage, the connections being located for interconnection automatically in response to pushing the thermal control unit into position in the fuselage compartment; and

means for automatically locating the thermal control unit in final position in the fuselage compartment in response to pushing the control unit fully into the compartment, including at least one guide pin and mating guide aperture of complementary cone-shapes and of a sufficient tight fit to prevent movement of the thermal control unit in all transverse directions when the control unit is fully positioned in the fuselage compartment.

4,763,860

COCKPIT PROVIDED WITH A LATERAL CONTROL STICK ADAPTED TO BE ACTUATED ONE-HANDED AND SEAT FOR SUCH A COCKPIT

Bernard Vauvelle, Leguevin, and Hubert Chancholle, Blagnac, both of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Continuation of Ser. No. 817,556, Jan. 10, 1986, abandoned. This application Jun. 10, 1987, Ser. No. 60,155
Claims priority, application France, Jan. 18, 1985, 85 00737
Int. Cl.[4] B64D *11/06*
U.S. Cl. 244—122 R 8 Claims

1. A cockpit having a seat with armrest, as well as a mechanical control member of the control stick type adapted to be actuated by one hand and disposed at least substantially in forward extension of an armrest of said seat, comprising:

(a) a rear part of an armrest having a first spindle threadably received in a first plug element mounted on a seat back, said first spindle having a first means for rotating the first spindle in and out of the first plug element, whereby said rear part is inclinable in relation to the seat back;

(b) a forward part of an armrest having a second spindle threadably received in a second plug element mounted on said rear part, said second spindle having a second means for rotating the second spindle in and out of the second plug element, whereby said forward part is inclinable in



relation to the rear part, and whereby an armrest is provided which is doubly adjustable with respect to a seat.

4,763,861

MICROWAVE RENDEZVOUS SYSTEM FOR AERIAL REFUELING

Frank J. Newman, Wichita, Kans., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 756,584, Jul. 19, 1985, abandoned. This application Mar. 5, 1987, Ser. No. 22,611
Int. Cl.[4] B64D *39/00*
U.S. Cl. 244—134 A 1 Claim



1. A system for guiding rendezvous between a tanker aircraft and receiver aircraft, the system comprising:

microwave transmitter means carried by said tanker aircraft for directionally generating aft of said tanker aircraft to a distance of at least about twenty miles predetermined diverging horizontal and vertical azimuth signals, said transmitter means including means for selectively changing the frequency of said signals, said signals being usable by standard microwave landing system equipment carried by said receiver aircraft to provide rendezvous guidance to said receiver aircraft; and

means carried by said tanker aircraft for directionally generating aft of said tanker aircraft a signal usable by standard precision distance measuring equipment carried by said receiver aircraft to provide range guidance to said receiver aircraft.

4,763,862

FLAP DRIVE SYSTEM FOR AIR FOILS

Hans-Juergen Steinhauer, and Walter Martens, both of Delmenhorst, Fed. Rep. of Germany, assignors to MBB GmbH, Bremen, Fed. Rep. of Germany

Filed Jun. 23, 1986, Ser. No. 877,106
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522448
Int. Cl.[4] B64C *9/06*
U.S. Cl. 244—215 10 Claims

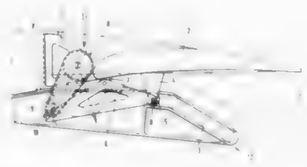
1. Drive and guiding system for a flap arranged on a wing of

VOL 1093 ISS 3 AG 16 1988 UMI

an aircraft for use as high lift flap during landing and take off and as camber control flap during cruising, there being a combined load carrying and guiding rail system provided, there being further provided a drive for obtaining protraction and retraction of the flap, the improvement comprising:

means for mounting and holding said flap in said rail system for movement in the rail system and for rotation in relation thereto;

a three point control lever of invariable geometry and having a first connect point being linked to said flap and a second connect point being linked to said holding means by means of which the flap is held in said rails;



a crank like turning lever connected for being rotated by said drive and having one end connected to a third point being a pivot point of said three point control lever at a point that is variable in relation to the turning axis of said turning lever and in its distance from an axis of the turning lever; and

a drive means other than the turning lever itself and the control lever and connected for obtaining the variation of the point on the control lever in relation to the turning axis

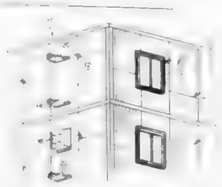
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4,763,863

SPACER BRACKETS FOR ELECTRICAL SUPPLY CONTAINER

Agenor Coté, 1456, 12e nord, Fleurimont, Quebec, Canada J1H 1H2

Filed Nov. 23, 1987, Ser. No. 124,169
Int. Cl.[4] F16L *3/08*
U.S. Cl. 248—74.1 8 Claims



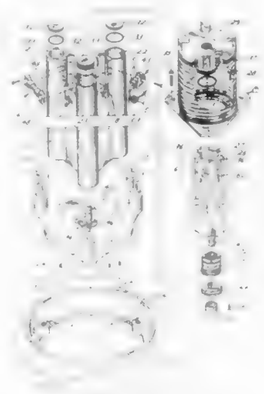
1. A spacer for mounting an electrical power supply container on an unfinished wall of a building comprising a box-shaped element having a generally flat top face and an opened bottom face adapted to sit on a flat surface, the said top face and bottom face being located at a predetermined distance from one another, the said box-shaped element having rigid sides made of a fire and corrosion resistant material, at least one flange extending outwardly along one edge of said bottom face, means on said flange for securing said box element to said unfinished wall, rigid insulating material completely filling said box-type element and firmly adhering to said box and anchor means on said top face for connecting an electrical container fixture thereto.

4,763,864

FLOATING COLUMN SUPPORT PEDESTAL

John T. Healy, Irvine, Calif., assignor to O'Connor Engineering Laboratories, Costa Mesa, Calif.

Filed Oct. 13, 1987, Ser. No. 109,837
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—123.1 5 Claims



1. An instrument support column comprising, in combination, a base, a vertical elongated housing mounted on said base, an elongated post slidably mounted in said housing for vertical movement, means defining a pair of interconnected pneumatic chambers, one having an effective surface urging said post up and the second having an effective surface urging said post down, said one chamber's effective surface being larger than said second chamber's effective surface, a reservoir vessel on said base pneumatically connected to said chambers, a high pressure vessel on said base, and valve means for selectively directing air from said high pressure vessel to said chambers and selectively venting air from said chambers so that said chambers can balance a given load on said post.

4,763,865

FOLDABLE KEYBOARD STAND

Robert W. Danner, 4225 Connie Dr., Sterling Heights, Mich. 48310

Filed Aug. 3, 1987, Ser. No. 80,814
Int. Cl.[4] G10G *5/00*; A47B *43/00*
U.S. Cl. 248—164 3 Claims



1. A foldable keyboard stand for supporting a keyboard at different heights for use in sitting and standing positions, comprising:

a pair of elongated, leg tubes pivotally connected together at their middles and normally arranged in an upright position

in an X-shape located in a roughly vertical plane for providing a forward user position side and a rear side on the opposite sides of the plane;

a horizontally arranged, elongated, upper, keyboard support tube secured to the upper ends of each leg tube, and a horizontally arranged, elongated, lower, foot tube secured to the lower ends of each foot tube;

the support tubes and the foot tubes all being substantially straight and parallel to each other and generally perpendicular to said plane with the opposite ends of the leg tubes being secured to the support tubes and the foot tubes by forming substantially flat end portions on the opposite ends of the leg tubes and providing correspondingly sized slots in the support tubes and the foot tubes for receiving said flat end portions, and fastening the flat end portions within the slots;

and the centers of the respective support tubes and foot tubes being laterally offset relative to the locations at which they are secured to the leg tubes so that the portions of the support tubes and leg tubes that extend forwardly, that is, towards said user position side, are roughly about twice the length of the portions that extend rearwardly;

a generally horizontally arranged, manually adjustable length brace interconnecting the legs at a point located at a distance from their pivot point about midway between said pivot point and the upper ends of each foot tube, said brace being formed of two, horizontally aligned, narrow, flat strips each having one of its pins pivotally connected to a leg tube and its opposite, free end extending toward and being overlapped by the corresponding free end of the other strip and one of said strips having a pin formed on its free end and the other of said strips having aligned, pin-receiving openings formed along its length for selectively receiving the pin in one of such openings for thereby adjusting the length of the brace by inserting and removing the pin from one opening to a preselected opening so that the angularity of the legs can be adjusted for raising or lowering the height of the support tubes whereby they may support a keyboard at a predetermined higher location for use in a standing position or at a predetermined lower location for use in a sitting position;

and a resilient, relatively rough surfaced sleeve, made of a resilient, foam plastic material for resiliently compressing under the pressure of the keyboard and having a relatively high frictional surfaces for frictionally holding the keyboard against movement, and having a support tube receiving bore, positioned upon each of the forward and rear portions of the support tube for substantially covering the lengths thereof;

and a resilient, foam plastic material, short length collar having a central support tube receiving bore, positioned upon the opposite end portions of the support tubes in endwise, axial alignment with their respective adjacent sleeves, with the collars being substantially higher than the upper surfaces of the sleeves, so that a keyboard may be rested upon the sleeves and held between the collars to restrain the keyboard against undesired movement relative to the support tubes.

4,763,866

FREE STANDING BASE

John D. Sinchok, Oconomowoc, Wis., assignor to Keystone Metal Products Company, Hebron, Ill.

Filed Feb. 19, 1988, Ser. No. 158,242
Int. Cl.[4] A47B *91/00*
U.S. Cl. 248—188.7 15 Claims

1. A support stand for use in supporting items on a pole or the like, comprisinkg an assembly of a first set and a second set of legs;

each of said legs extending from an inner end to an outer ground engaging end portion;

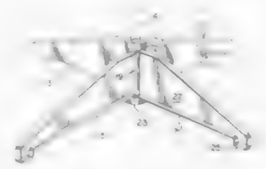
each leg of said first set of legs being opposite one another;

said inner end of each of said first set of legs forming an upright hollow cylindrical central portion connecting said opposing legs;

said inner end of each of said legs of said second set of legs forming, in combination, an upper collar and a lower collar about an upper end and a lower end respectively of said central portion;

an upper cap for attachment about said upper collar;

a lower cap for attachment about said lower collar;



said upper cap having an opening in a top wall thereof for the acceptance of said pole into said hollow central portion; and

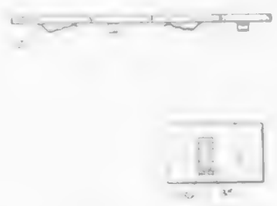
said upper and lower caps maintaining said support stand in assembled condition while permitting pivotal movement of said second set of legs about said central portion from a closed position to an open position.

4,763,867

BRACKET FOR HOLDING PIPE CLAMPS

Charles S. Hungerford, Jr., 6 Beechwood Ct., Woodbury, Conn. 06798

Filed Jun. 8, 1987, Ser. No. 59,494
Int. Cl.[4] F16L *3/08*
U.S. Cl. 248—544 16 Claims



1. A bracket for holding at least one clamp used to receive and support at least one tubular member comprising a substantially planar base portion and at least one spring element joined to said base portion and having a free end, said at least one spring element having a first notched portion for receiving a tool for assisting in moving said spring element relative to said base portion for receiving a clamp and a second corrugated portion for holding said clamp against said base portion.

4,763,868

LEVELLING COMBINATION WHEEL AND LEG ASSEMBLY FOR A REFUSE COMPACTOR

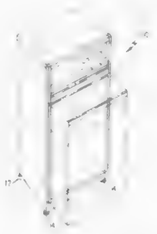
Daniel E. Teich, Boyle County, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Oct. 17, 1986, Ser. No. 920,333
Int. Cl.[4] A47B *91/00*
U.S. Cl. 248—558 31 Claims

1. For supporting an appliance cabinet on a horizontal surface by attachment to a baseplate extending from a lower portion of the cabinet, a combination levelling wheel and leg assembly, comprising:

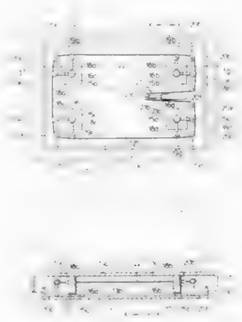
VOL 1093 ISS 3 AG 16 1988 UMI

a baseplate attachable to a lower portion of said cabinet and having a planar extendable therefrom;
a rotatable member mounted to a predetermined location on said planar portion of said baseplate;
means for pivoting said rotatable member on said planar portion of said baseplate between a first orientation having a horizontal axis of rotation for operation as a wheel,



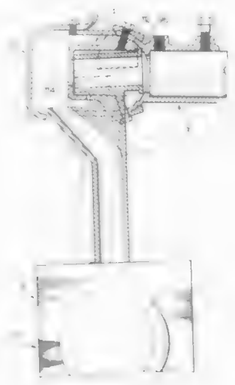
wherein the wheel intersects the plane of the planar portion, and a second orientation having a vertical axis of rotation for operation as a leg;
means for securing the rotatable member to said planar portion of said baseplate selectively in said first and second orientations; and
means for adjusting said predetermined location on said planar portion of said baseplate for levelling the cabinet.

4,763,869
VIBRATION ISOLATING APPARATUS
Ken Nakamura, Tokyo; Toshiaki Onoda, Yokohama, and Yoshihiro Gofuku, Fujisawa, all of Japan, assignors to Tokico Ltd., Kawasaki, Japan
Filed Mar. 19, 1986, Ser. No. 841,449
Claims priority, application Japan, Mar. 20, 1985, 60-40926[U]; May 20, 1985, 60-74495[U]; Oct. 17, 1985, 60-157871[U]; Nov. 5, 1985, 60-170184[U]
Int. Cl.⁴ F16M 9/00
U.S. Cl. 248—562 2 Claims



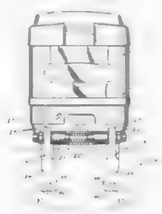
1. A vibration isolating apparatus comprising:
an upper bed which is placed with an object thereon;
a lower bed which directly receives an external vibration;
support means for supporting said upper bed so that said upper bed is relatively displaceable with respect to said lower bed in a horizontal direction with a small friction;
a plurality of guide members separated from each other and provided on said upper and lower beds;
a wire member provided around said guide members in a form of a loop;
spring means for absorbing a tension in said wire member depending on a deformation of a shape of the loop formed by said wire member due to a horizontal displacement of said lower bed with respect to said upper bed caused by the external vibration;
braking means provided on one of said upper and lower beds for braking the other of said upper and lower beds by friction so that said upper bed is not displaceable with respect to said lower bed in the horizontal direction; and
brake releasing means for detecting the external vibration and for releasing the braking by said braking means,
said braking means comprising a cylinder fixed to one of said upper and lower beds, a piston provided slideable upwardly and downwardly within said cylinder, a friction member provided on a tip end of a rod which is fixed to said piston, said friction member having a large coefficient of friction and making contact with the other of said upper and lower beds, and another spring means for urging said piston and said friction member in a direction towards the other of said upper and lower beds, said brake releasing means comprising a seismoscope for detecting an earthquake, means for releasing a gas sealed inside a gas cylinder depending on the earthquake detected by said seismoscope, and a pipe arrangement for supplying the gas released from the gas cylinder into said cylinder, said gas supplied into said cylinder displacing said piston against a force exerted by said other spring means so as to separate said friction member from the other of said upper and lower beds.

4,763,870
TRAFFIC SIGNAL HEAD
Harold M. Wodlinger, Toronto, Canada, assignor to Fortran Traffic Systems Limited
Filed Jun. 16, 1987, Ser. No. 64,202
Claims priority, application Canada, Feb. 11, 1987, 592478
Int. Cl.⁴ E01F 9/00
U.S. Cl. 248—611 12 Claims



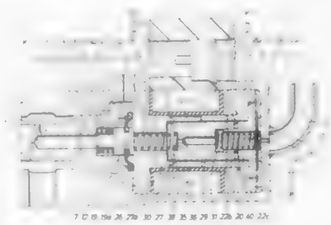
1. A traffic signal hanger comprising:
first means fixedly coupled to a support arm,
second means fixedly coupled to a traffic signal housing,
joint means coupling the first means and second means together for marginal pivoting of the second means with respect to the first means about a first axis,
said joint means comprising:
(a) a cavity about the axis defined by internal surfaces of one of the first and second means;
(b) an end portion on the other of the first and second means extending into the cavity, the end portion having a passageway-forming bore therethrough; and
(c) resiliently-deformable, elongate rods of elastomeric material in the cavity between external surfaces of the end portion and said internal surfaces,
the rods extending longitudinally with respect to the axis, between the internal surfaces and the external surfaces, supporting the end portion in the cavity with the first axis passing through said bore and spacing the end portion radially with respect to the first axis from the internal surfaces,
said end portion having a wall surrounding said bore and flange members extending radially outwardly from the wall with respect to the first axis longitudinally with respect to the first axis,
said rods located adjacent the flange members whereby pivoting of the end portion and said one of the first and second means relative to each other about the first axis from a neutral position compresses the rods between the flange members and the internal surfaces resisting pivoting and biasing a return toward the neutral position.

4,763,871
MOUNTING BRACKET FOR OUTBOARD MOTOR
Harry C. Probst, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.
Filed Apr. 29, 1987, Ser. No. 43,846
Int. Cl.⁴ F16M 1/00
U.S. Cl. 248—640 4 Claims



1. A bracket for mounting an outboard motor on a transom of a boat, comprising:
a one piece inverted U-shaped mounting member having an upper body portion and integral spaced inside and outside legs extending downwardly therefrom defining a transom-receiving opening therebetween; and
hand operated clamping means extending through the transom for releasably clamping the mounting member to the transom, said clamping means including a bolt member having a head portion for bearing engagement against said outside leg, a shank portion for extending through the outside leg and transom and a threaded forward end portion projecting forwardly from the transom, and a screw member having a handgrip portion and a shank portion connected thereto, said screw member shank portion including an internally threaded bore for engaging the threaded end of said bolt member and said screw member shank portion terminates in a shoulder for bearing engagement against the transom, without bearing against said inside leg, and without any other clamping means bearing against said inside leg.

4,763,872
OPERATING OIL INTRODUCTION TYPE ELECTROMAGNETIC VALVE
Koji Ichihashi, and Toshihiro Murayama, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan
Filed Jul. 8, 1987, Ser. No. 71,258
Claims priority, application Japan, Jul. 11, 1986, 61-105537; Jul. 23, 1986, 61-112097
Int. Cl.⁴ F16K 31/40; H01F 7/06
U.S. Cl. 251—30.01 13 Claims



1. An operating oil introduction type electromagnetic valve according to the present invention comprises a cap defining an electromagnetic valve external portion and formed with a small hole communicating with an oil source, an exciting coil, an inner housing and a stopper spacedly disposed inside said coil, a tubular slide guide with a bottom surface disposed inside said inner housing and stopper, a plug engaged with a flange portion of said inner housing and formed with a shaft sleeve portion projecting inside said slide guide and a communicating hole communicating with said small hole, a plunger chamber defined by the inner periphery of said slide guide, said plunger chamber being blocked one end thereof and containing operating oil therein, and a plunger slidably contained within said plunger chamber and actuated by electromagnetic force of said coil, said plunger being of an inner oil passing structure in which a depressed hole is formed in the end face thereof in order to slidably engage with the shaft sleeve portion of said plug.

4,763,873
FLUID CONTROL VALVES
Ronald Phillips, Northolt, England, assignor to Lucas Industries public limited company, Birmingham, England
Continuation of Ser. No. 712,643, Mar. 18, 1985, abandoned.
This application Mar. 24, 1987, Ser. No. 31,219
Claims priority, application United Kingdom, Apr. 6, 1984, [illegible]
Int. Cl.⁴ F16K 31/363, 31/40
U.S. Cl. 251—30.05 3 Claims



1. A fluid control valve comprising a body, a bore formed in the body and a first chamber formed in the body adjacent to one end of said bore, said first chamber having a side wall and

VOL 1093 ISS 3 AG 16 1988 UMI

an end wall which faces said one end of said bore, said first chamber in use receiving fluid under pressure, a seating located on said body about said one end of the bore, a valve member slidable in the bore and adapted to assume a closed position and an open position, a head formed on said valve member, the head being located in said first chamber and spaced from the side wall thereof, said head being shaped for co-operation with said seating and having a blind-ended bore defined axially thereof and an end face located adjacent to said blind-ended bore, said end face being engageable with said end wall in the open position of the valve member so that said blind-ended bore and said end wall define a space that is fluidly isolated from said first chamber, a second chamber defined by the bore and the valve member downstream of said seating, the head engaging with said seating to prevent flow of fluid from said first chamber to the second chamber, and means for controlling the pressure in said space with the pressure in said space being lower than the pressure in the first chamber when the valve member is in the open position, said means for controlling the pressure in said space including means fluidly connecting said first chamber to said space and conducting fluid from said first chamber to said space to increase pressure in said space sufficiently to move said end face away from contact with said first chamber end wall to fluidly connect said space with said first chamber to increase the pressure applied against said valve member in the area of said valve member adjacent to said space sufficiently to move the valve head into contact with the seating and to prevent the flow of fluid into the second chamber, said means for controlling pressure in said space further including a valve means which in a first position establishes fluid communication between said first chamber and said space and in a second position prevents such fluid communication, and a drain means fluidly connected to said valve means and which is in fluid communication with said space when said valve member is in the closed position, said valve means preventing fluid communication between said space and said drain means when said valve means is in said first position, and means for operating said valve means between said first and second positions.

4,763,874

CONTROL VALVE

Hiroshi Ogawa, Suita, Japan, assignor to Fujikin International, Inc., Osaka, Japan

Continuation of Ser. No. 846,483, Mar. 31, 1986, abandoned, which is a continuation of Ser. No. 572,774, Jan. 23, 1984, abandoned. This application May 26, 1987, Ser. No. 54,040
Claims priority, application Japan, Jan. 21, 1983, 58-7747[U]
Int. Cl.[4] F16K *47/00*
U.S. Cl. 251—122 **10 Claims**

1. An easily assembled and disassembled control valve comprising:

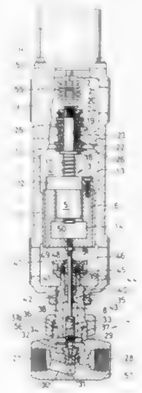
(a) a main bifurcated case including an upper case and a lower case, joined together;

(b) a device for converting angular motion into linear motion comprising a ball screw which includes a threaded shank and a nut associated therewith and disposed thereabout, which nut is fixedly secured to a sliding body mounted axially with respect to said threaded shank and nut in said lower case, such that said sliding body is movable longitudinally in said lower case but is prevented from rotating within said lower case, wherein said upper case has a bottom wall separating said upper case from said lower case and supports said threaded shank by way of an upper thrust bearing;

(c) a reversible electric pulse motor affixed to a free end of said upper case, having a rotating shaft extending into said upper case, and wherein said threaded shank of said ball screw extends into said upper case from a lower end of said upper case opposite said free end and adjoining said lower case, and wherein said rotating shaft and said threaded shank are joined together by a coupling in said upper case, wherein said upper and lower cases being joined together and said pulse motor being affixed to said upper case by a plurality of elongated bolts, each bolt extending through said pulse motor and upper case to be anchored in said lower case, such that said pulse motor and upper case are removable from said control valve by simply removing said elongated bolts;

(d) a valve stem removably attached to a lower end of said sliding body;

(e) a valve body having an inlet, an outlet and a channel, terminating in a seat, connecting said inlet and outlet, said valve body being removable connected to said lower case;



(f) a stuffing box separating said valve body from said lower case and through which said valve stem projects, said stuffing box being removably attached to said lower case by threads on a bottom wall of said lower case cooperating with threads on a circumferential outer surface of said stuffing box; and

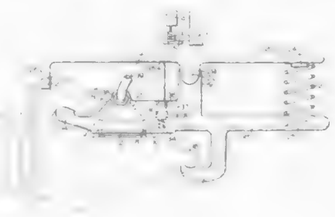
(g) a tapered needle plug affixed to the end of said valve stem projecting into said channel and sealable at said seat, wherein said nut, said sliding body, said valve stem and said tapered needle are also supported by said bottom wall of said upper case.

4,763,875

PNEUMATIC COUPLING HAVING A LATCHING MECHANISM AND A BLEED-OFF VALVE FOR ATTACHMENT TO AN AIR BRAKE HOSE

James P. Chew, Jeannette, Pa., assignor to American Standard Inc., North Hills, Pa.

Filed Aug. 6, 1987, Ser. No. 82,401
Int. Cl.[4] F16L *37/28*
U.S. Cl. 251—149.9 **10 Claims**



1. An improved brake hose coupling for connection to a conventional brake pipe hose coupling comprising, a body member having a cavity, said cavity having an opening for receiving a sealing gasket, a threaded opening for receiving an

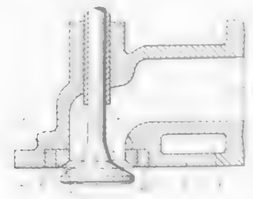
end of an air hose which supplies air pressure to telemetry equipment, said body member having a through passage leading from said cavity to atmosphere, a bleed-off valve interposed in said through passage, said body member having an elongated handle portion and an upstanding stanchion, a pivoted locking member carried by said upstanding stanchion of said body member and being spring biased toward a locked position in which said pivoted locking member is latched to the conventional brake pipe hose coupling, and said pivoted locking member adapted to cause said bleed-off valve to vent the air pressure to atmosphere when said pivoted locking member and said elongated handle portion are grasped and squeezed together so that said pivoted locking member is moved to an unlocked position.

4,763,876

VALVE SEAT INSERT AND CYLINDER HEAD WITH THE VALVE SEAT INSERT

Isao Oda, Nagoya, and Nobuo Tsuno, Kasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Nov. 4, 1986, Ser. No. 926,520
Claims priority, application Japan, Nov. 5, 1985, 60-246288
Int. Cl.[4] F01L *3/00*
U.S. Cl. 251—359 **8 Claims**



1. A valve seat insert for use in a cylinder head of a piston engine, comprising a ceramic member being sintered in a substantially cylindrical shape and having a slanted valve seat surface, said surface having a rounded edge portion with a radius of curvature of 0.2–1.0 mm, and a metallic member being integrally combined on a cylindrical outer peripheral wall of the ceramic member and being made of a metallic material having a coefficient of thermal expansion no less than that of the ceramic member and lower than that of the material of the cylinder head.

4,763,877

BUTTERFLY VALVE SEAL ARRANGEMENT

Paul G. Kennedy, Horseheads, N.Y., assignor to ITT Corporation, New York, N.Y.

Filed Sep. 29, 1987, Ser. No. 102,454
Int. Cl.[4] F16K *1/22*
U.S. Cl. 251—362 **18 Claims**



1. A valve seal arrangement comprising:

a valve body;

a disc rotatably mounted in said valve body, said disc having a disc ring mounted thereon to form a sealing surface;

an annular rubber seat with a sealing face inserted into said body and said sealing face positioned opposite said sealing surface;

a retaining ring pressed against said seat and positioned below said sealing face; and

at least three clip means inserted in a groove formed in said retaining ring, whereby said retaining ring maintains compression on said seat.

4,763,878

APPARATUS FOR JACKING BASEMENT WALLS

Robert S. Abraham, P.O. Box A1363, Wild Rose, Wis. 54984, and Dennis L. Koehler, Neenah, Wis., assignors to Robert S. Abraham, Wild Rose, Wis.

Continuation-in-part of Ser. No. 835,519, Mar. 3, 1986, Pat. No. 4,669,704. This application Jun. 2, 1987, Ser. No. 57,353
Int. Cl.[4] B66F *11/00*
U.S. Cl. 254—100 **5 Claims**



1. Apparatus for jacking a vertical wall having moved inward out of its proper position, said wall resting on a lower surface, said apparatus comprising:

a vertical wall brace having a top end and a bottom end, said bottom end being provided with means for attaching to said lower surface adjacent to said wall to be jacked in such a manner as to permit movement of the brace relative to said attaching means;

an upstanding beam including an upper and a lower end, including means for removably attaching each end of said upstanding beam to said lower surface a suitable distance from said wall to be jacked;

a jacking assembly having two top ends, one end slidably attached to said wall brace, the opposite end slidably attached to said upstanding beam, for moving said brace and in turn said wall outward back to its proper position; and

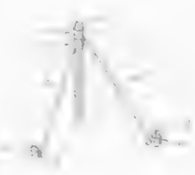
means for anchoring the top end of said brace such that when said wall has reached its proper position, said wall is thereby prevented from moving out of position again.

4,763,879

METAL FENCE POST CONNECTOR

Michael D. Wasicek, 815 Lake Vermillion Ct., Slidell, La. 70461, and Larry D. Wasicek, P.O. Box 309, Round Mountain, Nev. 89045

Filed Jun. 5, 1987, Ser. No. 58,580
Int. Cl.[4] B21F *27/00*
U.S. Cl. 256—36 **16 Claims**



1. A connector for attaching bracing to a metal post having spaced projections extending along one face thereof, said connector comprising

a collar of a dimension to be movable along said post over said projections, said collar having at least one opening of

VOL 1093 ISS 3 AG 16 1988 UMI

a size adapted to receive one projection in a selected positioning of the collar and

a wedge member adapted to be positioned between the post and an interior surface of the collar responsive to a driving force to effect an interlocking engagement of the collar and post,

said wedge member including a deformable wire-like means for engaging the collar to secure the wedge member against relative movement.

4,763,880

ROTARY HEARTH MULTI-CHAMBER, MULTI-PURPOSE FURNACE SYSTEM

John W. Smith, Northville, Mich., and Gary D. Keil, Elmwood, Ill., assignors to Holcroft/Loftus Inc., Livonia, Mich.

Filed Apr. 3, 1987, Ser. No. 33,971
Int. Cl.[4] C21D *9/00*
U.S. Cl. 266—87 16 Claims



1. A furnace system for heat-treating pars comprising:

a preheat furnace having an inlet for receiving parts, an outlet for discharging parts, wall means for defining a preheat furnace chamber, and means for providing a gaseous, non-scaling atmosphere to said preheat furnace chamber;

a rotary carburizing furnace connected to, and adapted to receive parts from, said preheat furnace, said carburizing furnace including a generally circular, rotatable hearth for supporting trays of parts, insulated inner and outer walls and a roof enclosing said hearth and forming an annular carburizing chamber, said outer wall having an inlet and an outlet therein and said inner wall defining a generally circular space radially inward thereof, means for providing a gaseous carburizing atmosphere to said carburizing chamber, means for maintaining said carburizing atmosphere at a selected temperature and carbon content, and means for rotating said hearth about said circular space;

a first pair of interconnecting doors between the outlet of said preheat furnace and the inlet of said carburizing furnace;

a preheat pusher operable to push a tray of parts through the outlet of said preheat furnace and into said carburizing chamber when said first pair of doors is open;

a rotary diffusion furnace connected to, and adapted to receive parts from, said carburizing furnace, said diffusion furnace including a generally circular, rotatable hearth for supporting trays of parts, insulated inner and outer walls and a roof enclosing said hearth and forming an annular diffusion chamber, said outer wall having an inlet and an outlet therein and said inner wall defining a generally circular space radially inward thereof, means for providing a controlled gaseous diffusion atmosphere to said diffusion chamber, means for maintaining said diffusion atmosphere at a selected temperature and carbon content, and means for rotating said hearth about said ciruclar space;

a second pair of interconnecting doors between the outlet of said carburizing furnace and the inlet of said diffusion furnace;

a carburizer pusher positioned within the circular space defined by the inner wall of said carburizing furnace and operable to push a tray of parts from said carburizing chamber to said diffusion chamber when said second pair of interconnecting doors is open;

a rotary equalizer connected to, and adapted to receive parts form, said diffusion furnace, said equalizer including a generally circular, rotatable hearth for supporting trays of parts, insulated inner and outer walls and a roof enclosing said hearth and forming an annular equalizing chamber, said outer wall defining a generally circular space radially inward thereof, means for providing a controlled gaseous equalizing atmosphere to said equallizing chamber, means for maintaining said equalizing atmosphere at a selected carbon content and a selected temperature below the temperature of said diffusion atmosphere, and means for rotating said hearth of the equalizer about said circular space;

a third pair of interconnecting doors between the outlet of said diffusion furnace and the inlet of said equalizer;

a diffusion pusher positioned within the circular space defined by the inner wall of said diffusion furnace and operable to push a tray of parts from said diffusion chamber to said equalizing chamber when said third pair of interconnecting doors is open;

quench apparatus connected to, and operable to receive parts from, said equalizer;

a door between the outlet of said equalizer and said quench apparatus and through which, when said door is open, trays of parts may be pushed from said equalizer to said quench apparatus; and

an equalizer pusher positioned within the circular space defined by the inner wall of said equalizer and operable to push a tray of parts from said equalizing chamber into said quench apparatus, said equalizer pusher including a chain, sprocket means for engaging said chain and moving the chain upon being driven, a motor for driving said sprocket means, and a chain holder having a generally vertical portion adjacent to the inner wall of said equalizer and a curved portion shaped to change the direction of travel of said chain from vertical to horizontal.

4,763,881

ARRANGEMENT FOR MOUNTING A REFRACTORY PLATE IN A FRAME

Otto Wenger, Zürich, Switzerland, assignor to Metacon Aktiengesellschaft, Zürich, Switzerland

Filed May 29, 1985, Ser. No. 739,305
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421205
Int. Cl.[4] B21D *39/00*
U.S. Cl. 266—287 24 Claims

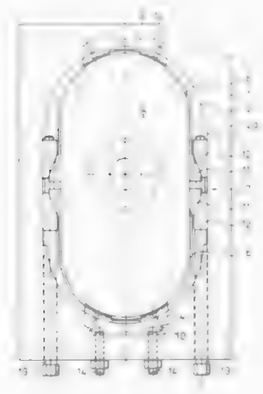
1. A refractory plate-frame assembly for use in a sliding closure unit for controlling the discharge of molten metal from a metallurgical vessel, said assembly comprising:

a frame having therein a recess;

a band mounted within said recess;

a refractory plate positioned within said recess and having a periphery surrounded by said band;

tightening means, mounted in said frame and selectively operable from the exterior thereof, for tightening said band about said periphery of said refractory plate and thereby securely mounting said refractory plate within said recess of said frame, and for loosening said band from said periphery of said refractory plate, whereby said refractory plate may be removed from said band and said frame; and



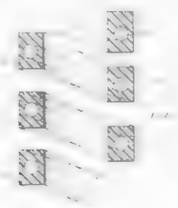
said band being mounted within said recess in said frame by means such that said band remains in position on said frame when said tightening means loosens said band and said plate is removed from said band.

4,763,882

COATED COIL SPRING

Masakazu Nishiyama; Chiharu Umetsu, both of Yokohama; Akira Kebukawa, Kawasaki, and Mituru Andoh, Yokohama, all of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Continuation-in-part of Ser. No. 733,530, May 13, 1985, abandoned. This application Nov. 20, 1986, Ser. No. 933,293
Claims priority, application Japan, May 21, 1984, 59-102048
Int. Cl.[4] F16F *1/10;* B60G *11/52*
U.S. Cl. 267—33 6 Claims



1. A coated coil spring for use in a vehicle suspension, comprising a coil spring wrapped in a coating member of soft synthetic resin foam to form a plurality of coated coil spring turns of which the foam is effective to absorb energy applied to the spring by an exciting force and to suppress surging thereof,

wherein a helical clearance is formed between adjacent turns of said coated coil spring turns located at least in an effective coil spring region, the width of said helical clearance is, when the coated coil spring is in an unloaded condition, defined as 0.15 to 0.50 times the distance between the respective coil spring turns, and adjacent turns of said coated coil spring being in contact with each other when the coated coil spring is operatively installed in said vehicle and is affected by the vehicle weight under a steady state condition;

whereby energy absorption by said foam due to spring compression occurs immediately upon a departure from said steady state condition.

4,763,883

AIRSPRING AND SLEEVE

Michael L. Crabtree, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Mar. 30, 1987, Ser. No. 32,212
Int. Cl.[4] F16F *9/04;* F16J *3/00;* B65M *81/00;* B29D *28/00*
U.S. Cl. 267—64.27 25 Claims



1. In an airspring of the type with a sleeve having (1) a chamber portion connected at an end to a closure member and (2) a rolling lobe portion connected at an end to a piston, the sleeve of the elastomeric type reinforced with successive layers of embedded cords disposed at opposite helical angles, the improvement comprising:

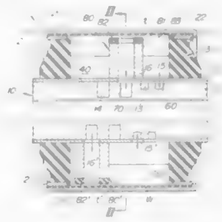
cords in each of the successive layers wound at inconstant helical angles in an annular band portion of one of the sleeve portions from first opposite helical angles to second opposite helical angles.

4,763,884

APPARATUS FOR SUPPORTING A VIBRATING OBJECT

Shinichi Matsui, Yokosuka, and Masaru Sugino, Fujisawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 17, 1986, Ser. No. 931,188
Claims priority, application Japan, Nov. 28, 1985, 60-183876[U]
Int. Cl.[4] F16F *3/00*
U.S. Cl. 267—140.1 15 Claims



1. An apparatus comprising:

(a) a first fluid chamber located on a vibrating source and having at least one elastic wall thereof;

(b) a second fluid chamber located on another object facing the vibrating source and having at least one elastic wall thereof;

(c) a partitioning member disposed between the first and second fluid chambers;

(d) a plurality of communication passages juxtaposed through the partitioning member for communicating the first and second chambers each of said passages containing a constant fixed volume; and

(e) means for opening and closing at least one of the commu-

VOL 1093 ISS 3 AG 16 1988 UMI

nication passages in response to a difference between vibration amplitudes of vibrations inputted thereto.

4,763,885
PLANAR SPRING
Mikhail N. Zamitter, Kiev, U.S.S.R., assignor to Kievsky Inzhenerno-Stroitelny Institut, Kiev, U.S.S.R.
PCT No. PCT/SU80/00155, § 371 Date Sep. 24, 1981, § 102(e) Date Sep. 24, 1981, PCT Pub. No. WO81/02141, PCT Pub. Date Aug. 6, 1981
PCT Filed Sep. 1, 1980, Ser. No. 306,614
Claims priority, application U.S.S.R., Jan. 25, 1980, 2873951
Int. Cl.[4] B60B *11/00*
U.S. Cl. 267—227 17 Claims



1. A spring constructed as a resilient U-shaped piece comprising: a middle portion, leg portions connected to and disposed in the same plane as the middle portion, bearing means disposed on one of the leg portions, means for taking an external load disposed on the other leg portion so that a line passing through the centers of the bearing means and of the means for taking an external load is parallel to the middle portion, said middle portion and said leg portions each having a rectangular cross section with a long axis and a short axis, the long axis of each of said portions lying in a single plane.

4,763,886
XY-POSITIONING TABLE
Seiji Takei, Yokohama, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan
Filed Jun. 24, 1987, Ser. No. 65,875
Claims priority, application Japan, Dec. 26, 1986, 61-308139
Int. Cl.[4] B23Q *1/04*
U.S. Cl. 269—73 7 Claims



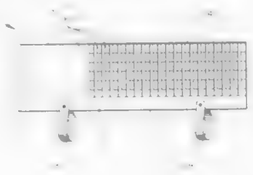
1. An XY-positioning table comprising
a bed (12),
an X-axis-movable table (14) mounted slidably on said bed (12),
a Y-axis-movable table (16) mounted slidably on said X-axis-movable table (14),
bearing means (30, 32) for effecting rectilinear motion provided both between said bed (12) and said X-axis-movable table (14) and between said X-axis-movable table (14) and said Y-axis-movable table (16), and
X-axis driving means (20) and Y-axis driving means (24), said XY-positioning table is characterized in that
said X-axis driving means (20) and said Y-axis driving means (24) each are attached to the bed (12) through support means (18, 22);
said X-axis-movable table (14) is provided with an X-axis nut (28) engaging, in a relatively movable fashion, with a threaded shaft (26) that in turn is connected to the rotation shaft of said X-axis driving means (20);
clearance-forming slots (42) are formed in the side walls (40) of said X-axis-movable table (14), and a Y-axis nut box (44) is provided in the interior cavity or space (38) of said X-axis-movable table (14), said Y-axis nut box containing Y-axis nut (48) adapted to engage, in a relatively movable fashion, with a threaded shaft (46) that is in turn connected to the rotation shaft of Y-axis driving means (24); and
auxiliary bearing means (50) for effecting X-axial rectilinear motion are provided between said Y-axis nut box (44) and said Y-axis-movable table (16).

4,763,887
ADJUSTABLE RANGE VISE
Tai-Her Yang, 5-1 Taipin St., Si-Hu Town, Dzan-Hwa, Taiwan
Filed Dec. 19, 1986, Ser. No. 943,774
Int. Cl.[4] B25B *1/10*
U.S. Cl. 269—247 2 Claims



1. An adjustable range vise, comprising:
a first clamping jaw;
a second clamping jaw;
a fixed vise body for supporting said first and second clamping jaws, said vise further having a first end and a second opposite end;
a substantially horizontal mortise formed in the first end of the vise and extending at least partially through said body;
a substantially horizontal slot formed in the second end of the vise and extending at least partially through said body;
the horizontal mortise and the horizontal slot being positioned on separate, substantially parallel planes, the plane on which the slot is positioned beng located above the mortise, said mortise and said slot being further positioned on the same, substantially vertical plane;
a first upwardly-extending lug having an internally threaded bore formed therethrough, said first lug being positioned in the slot;
a second upwardly-extending lug having an internally threaded bore formed therethrough, said second lug being positioned in the mortise;
a first horizontal slide including a first end received in the slot for sliding movement therein in a first direction into the slot and in a second, opposite direction out of the slot, the first slide including a second, opposite end having the first clamping jaw carried thereon for concomitant movement with the first slide;
a second horizontal slide including a first end received in the mortise for sliding movement therein in the said first direction out of the mortise and in the said second, opposite direction into the mortise, the second slide further including a second, opposite concomitant sliding movement with the second slide;
a first threaded screw rod rotatably journaled in the first slide, whereby the first slide is carried thereon, said first screw rod being externally threaded, such that the threads thereof engage and cooperate with the internal threads of the first lug, whereby rotational movement of the first screw rod in a first direction moves the first screw rod and the first slide in the first direction, and further whereby rotational movement of the first screw rod in a second opposite direction moves the first screw rod and the first slide in the second opposite direction;
a second threaded screw rod, rotatably journaled in the second slide, whereby the second slide is carried thereon, said second screw rod being externally threaded, such that the threads thereof engage and cooperate with the internal threads of the second lug, whereby rotational movement of the second screw rod in the first direction moves the second screw rod and the second slide thereon in the second direction, and further whereby rotational movement of the second screw rod in the second opposite direction moves the second screw rod and the second slide in the first direction; and
means for selectively securing one of the first or second slides and the respective clamping jaw carried thereon in a selectively adjustable stationary position prior to sliding movement of the other of the first or second slides and the respective clamping jaw carried thereon.

4,763,888
FLAT MAIL COLLATOR
Michael F. Consoli, 2508 Avalon Pl., Adelphi, Md. 20783-2745
Filed Jan. 20, 1987, Ser. No. 4,560
Int. Cl.[4] B65H *39/02*; B42F *17/00*
U.S. Cl. 270—58 3 Claims



1. A flat mail collator for sorting mail including magazines, newspapers and advertisement circulars or the like, comprising:
a flat base having a rectangular shape with an outer width and first and second length edges wherein first and second length edges are along the longer dimension of said flat support, said flat base having a margin along the first length edge;
handle means connected to said flat base along the margin;
a plurality of leaves having a rectangular shape with a leaves width less than the outer width of said flat base wherein the dimension of the leaves width plus the dimension of the margin approximately equals the dimension of the outer width of said flat support, said leaves being made of a flexible material and flexibly attached to said flat base for aiding in unloading said flat mail collator, and located within the outer width and having a leaves edge located approximately next to the second length edge of said flat base so that said plurality of leaves do not overlap into the margin, said plurality of leaves defining spaces between adjacent ones of said leaves and coded for a plurality of addresses for sorting mail by address by inserting individual pieces of mail between said leaves, and upon completion of the sorting operation, removing the mail from said leaves by lifting said flat base by said handle means and tilting said flat base along the second length edge of said flat base, wherein the flexibly attached leaves allow the sorted mail to slip from between said leaves and remain sorted, and
a narrow strip attached near the end of each of said leaves for elevating each of said leaves slightly for facilitating lifting each of said leaves during the lifting operation.

4,763,889
PAPER FEEDER
Katsuhito Dei, Kawasaki; Junichi Kimizuka, Yokohama, and Junji Ichikawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 405,613, Aug. 5, 1982, abandoned. This application Nov. 29, 1985, Ser. No. 802,627
Claims priority, application Japan, Aug. 13, 1981, 56-125948; Aug. 13, 1981, 56-125949
Int. Cl.[4] B65H *3/44, 5/26*
U.S. Cl. 271—9 15 Claims



1. A paper feeder comprising:
a plurality of storing members for storing sheets;
feeding means for feeding sheets from one of said storing members selected from among said plurality of storing members;
first detecting means for detecting the presence or absence of sheets in said plurality of storing members;
second detecting means for detecting the feeding direction of sheets in said plurality of storing members; and
controlling means for automatically changing said selected storing member in accordance with the output of said first and second detecting means, wherein said controlling means automatically changes back to a storing member that had been previously selected when said first detecting means detects the presence of sheets in said previously selected storing member after an automatic change therefrom to another said storing member.

4,763,890
SYSTEM FOR SEPARATING AND TRANSFERRING THE UPPERMOST FABRIC PLY FROM A STACK OF FABRIC PLIES
Roger W. Zimmerman, Liberty, and William S. Jones, Trinity, both of N.C., assignors to Blue Bell, Inc., Greensboro, N.C.
Filed Nov. 21, 1986, Ser. No. 933,469
Int. Cl.[4] B65H *3/08, 5/22, 5/08, 59/00*
U.S. Cl. 271—30.1 14 Claims

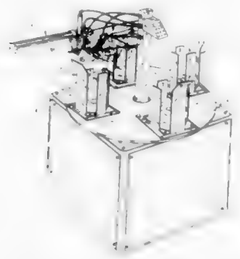
1. Apparatus for separating and lifting the uppermost ply of fabric from a stack of fabric plies to sequentially remove and transfer plies one at a time to a conveying means or work station comprising:
(a) a base frame;
(b) a rotatable carousel member mounted on said base frame

VOL
1093
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16
1988
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and having a plurality of fabric bins mounted thereon in spaced arrangement around the periphery thereof, said bins being sequentially arranged in an unloading position one at a time, motor means associated with said base frame for rotating said carousel to move a full fabric bin into said unloading position responsive to completion of the unloading of another said bins;

(c) elevator means associated with each of said fabric bins for incrementally raising said stack of fabric plies as the uppermost of said plies is removed, whereby the uppermost ply is positioned at a prescribed level in preparation for each removal operation therefrom;

(d) an aerodynamic lift means for generating a sheet of lifting air currents, said sheet extending across a substantial portion of the entire width of and adjacent to the upper surface of the uppermost fabric ply on either side of the longitudinal center line thereof and being directed toward a front edge thereof, said aerodynamic lift means comprising an air jet manifold adjacent the upper surface of said uppermost ply for directing a thin sheet of air currents between said upper surface and a curved air foil positioned in the path of said sheet of air, said air foil comprising a planar plate portion extending generally parallel to and spaced from the uppermost ply and an upwardly curved front end with said air jet manifold attached to and suspended form said planar plate portion, said plate portion serving to confine said sheet of air between the upper



fabric ply and said planar portion and force said sheet of air toward said upwardly curved front end, whereby the sheet of air tends to separate the front end of said upper ply and lift it into contact with said air foil;

(e) means for moving said aerodynamic lift means in an arcuate path from a pick-up position to a delivery position in which the front edge of said fabric ply is presented to a gripping means;

(f) said gripping means including a stationary support block having a planar face forming a first stationary clamping jaw and a second clamping jaw movable relative to said first jaw between an open receiving position and a closed clamping position in which one edge of at least one fabric ply is held therebetween;

(g) an electronic test means associated with said stationary jaw and generating a magnetic filed for determining the distance between said movable jaw and said stationary jaw in the gripping position responsive to the strength of said magnetic field, said magnetic field strength being indicative of the number of plies being held between said clamping jaws; and

(h) transfer means associated with said gripping means for moving said gripping means between a receiving position atop said unloading station and a discharge position adjacent said conveying means, whereupon said second clamping jaw is moved to said open position to release said fabric ply.

4,763,891

SHEET FEED DEVICE FOR ELECTRONIC COPIER, PRINTER, ETC.

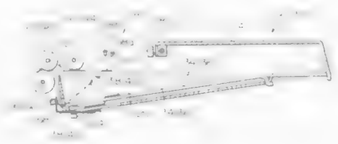
Yutaka Kodama, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 24, 1985, Ser. No. 791,065

Claims priority, application Japan, Oct. 30, 1984, 59-229517; Oct. 30, 1984, 59-229516

Int. Cl.[4] B65H *1/14*

U.S. Cl. 271—157 **14 Claims**



1. A sheet feed device for feeding sheets which are stacked on a movable bottom plate of a sheet feed tray one by one toward a predetermined position inside of an apparatus in which the tray is mounted, comprising:

a reversible motor selectively rotatable in opposite directions;

a raising and lowering member for selectively raising the bottom plate of the sheet feed tray to a first predetermined position and lowering the bottom plate to a second predetermined position;

a gearing continuously coupled to said motor for transmitting the reversible rotation of the motor to said raising and lowering member, including a first gear continuously operatively coupled to an output shaft of said motor and a second gear continuously coupled to said first gear, and coupling means for axially coupling said second gear to said raising and lowering means when said tray is positioned in said apparatus, said coupling means producing an axial movement of said second gear in response to positioning of said tray into said apparatus and said first gear producing a rotating movement of the second gear in response to rotation of a shaft of said motor, with the axial movement of said second gear effecting coupling of said second gear to said raising and lowering member so that the rotating movement of said second gear effects movement of said raising and lowering member;

a tray cover position sensor for sensing an open position and a closed position of a tray cover; and

control means for driving the motor in one direction responsive to an output of said tray cover position sensor which is indicative of the closed position of the tray cover and in the other direction responsive to an output of the tray cover position sensor which is indicative of the open position of the tray cover;

the raising and lowering member raising the bottom plate of the sheet feed tray responsive to the rotation of the motor in said one direction and lowering the bottom plate responsive to the rotation of the motor in said other direction.

4,763,892

MOVABLE TRAY SHEET SORTER

Hajime Tanaka, Zushi, and Tetsuya Okada, Machida, both of Japan, assignors to Clover Engineering Corporation, Kanagawa and Kyocera Corporation, Kyoto, both of, Japan

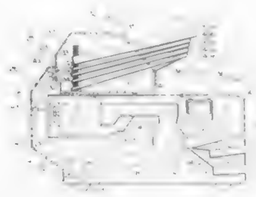
Filed Feb. 27, 1987, Ser. No. 20,095

Claims priority, application Japan, Mar. 11, 1986, 61-51512

Int. Cl.[4] B65H *39/10*

U.S. Cl. 271—293 **7 Claims**

1. A sorter for sequentially moving a plurality of vertically stacked storage sections having vertical walls to a sheet reception position by moving means which is moved upon reception of a rotational force of driving means and for automatically sorting sheets discharged from an image forming apparatus into said plurality of storage sections, wherein said moving means is disposed inside a wall surface in a widthwise direction of each storage section, the widthwise direction being perpendicular to a sheet travel direction, said driving means is disposed in a space below said storage sections, the space being away, along the sheet travel direction, from a front end of one of said plurality of storage sections which opposes a sheet reception position, said sorter further comprises a support frame having a wall surface and wherein said moving means comprises a link body including one link member pivotally



supported on the wall surface of the support frame extending along the wall surface in the widthwise direction of each storage section, said link body extends to any position backward from the front end of each storage section and is connected to an uppermost one of the storage sections, said sorter further comprising a plurality of regulating members, each regulating member for connecting a storage section including said uppermost storage section to an adjacent one of said storage sections and for regulating a distance between two adjacent storage sections, a connecting position of said regulating member is located near the front end of each storage section with respect to at least a support point for stacking and supporting said plurality of storage sections.

4,763,893

PUMPING UNIT FOR THERAPEUTIC HAND EXERCISER

Donald E. Barthlome, 313 Orange Plank Rd., Hampton, Va. 23669

Continuation-in-part of Ser. No. 697,385, Feb. 1, 1985, Pat. No. 4,671,258, which is a continuation-in-part of Ser. No. 570,091, Jan. 12, 1984, abandoned. This application Nov. 21, 1986, Ser. No. 933,154

Int. Cl.[4] A61H *1/00*

U.S. Cl. 128—24 R **36 Claims**

1. A pumping assembly adapted for use with a moveable and inflatable pouch on which the limb of a patient is adapted to be positioned, said pumping assembly comprising:

(a) diaphragm pump comprising means for providing pressurized air in a first line of said assembly and means for creating a vacuum in a second line of said assembly, said second line being attached to an opposite side of said pump from said first line;

(b) said first line being connected to a pressure side of said pump at one end and at a second end of said first line to a cycling valve;

(c) said second line being connected at a first end to a vacuum side of said pump and at a second end to said cycling valve;

(d) at least one third line which is fluidically connected to said cycling valve;

(e) a first metering valve for controlling the amount of air conducted through said at least one third line and a second metering valve which comprises means for controlling the intake of atmospheric air into said pumping assembly, said second metering valve being positioned along said vacuum side of said pump and being fluidically connected to said pump;

(f) means for fluidically connecting said at least one third line to said inflatable pouch; and



(g) first and second toggle valves which are fluidically connected to said pump for controlling, respectively, inflation and deflation of said pouch by bypassing said cycling valve.

4,763,894

SWING EXERCISER

Arthur J. Barrett, 1621 Raymond Hill Rd., South Pasadena, Calif. 91030

Filed Apr. 20, 1987, Ser. No. 40,375

Int. Cl.[4] A63B *23/04*

U.S. Cl. 272—70 **13 Claims**



1. A swing exerciser comprising:

a. a sling formed of a fabric band having its upper ends supported from

b. a rigid top frame thereby forming a U-shaped sling having a bottom with contiguous, integral and opposite sides; with

c. opposite leg apertures through said fabric band at bottom of said sling;

d. an arm aperture through said fabric band in each of said sides;

e. a back support band extending downwardly from said top

VOL 1093 ISS 3 AG 16 1988 UMI

frame and secured to the rear edges of said sides at the lower portion of said sling; and

f. front support means removably secured to said sides, whereby a user can be supported in said sling and secured therein with said sling enclosing the sides and back of the upper torso of the user and said front support means securely fastening said user in said sling.

4,763,895
SQUIRTING PLAYSEAT

Sidney Tepper, Milburn, N.J., assignor to Gerber Products Company, Fremont, Mich.

Filed Oct. 7, 1986, Ser. No. 916,245
Int. Cl.[4] A63G *17/00*
U.S. Cl. 272—52 9 Claims



1. A squirting playseat adapted to be partially submerged in a body of water, said playseat comprising;

a base;

a seat slidably mounted to said base for linear sliding motion with respect thereto;

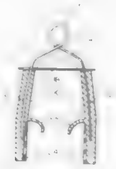
bellows located between said base and said seat;

means projecting from said base and said seat for retaining said bellows below the water level said means abutting said bellows to effect contraction and expansion of said bellows as the result of said seat sliding back and forth; means projecting from said bellows for squirting water from said playseat.

4,763,896
HAND EXERCISER

Fred Press, 242 Lantern Rd., Apt. 23, Revere, Mass. 02151

Continuation of Ser. No. 766,889, Aug. 16, 1985, abandoned.
This application Mar. 2, 1987, Ser. No. 21,623
Int. Cl.[4] A63B *21/30*
U.S. Cl. 272—68 21 Claims



1. A hand exerciser comprising:

a pair of substantially parallel handles;

spring means for pivotally connecting corresponding ends of the handles and for resiliently urging the handles pivotally together;

spacing means disposed between said spring means for spacing apart the urged together handles from each other

positioning means having at least one projection disposed on each of the handles, the projection on one handle being engaged with at least one finger of a hand and the projection on the other handle being engaged with the thumb of the hand to overcome the resilient urging of the handles together by the spring means and to pivot the handles apart upon abduction of the finger and thumb of one hand for exercising hand, wrist and arm muscles.

4,763,897
EXERCISE MACHINE WITH ADJUSTABLY POSITIONED BAR

Brian T. Yakata, 200 West 79th St., New York, N.Y. 10024

Filed Sep. 5, 1986, Ser. No. 904,690
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 9 Claims



1. A multi-function exercise machine having an adjustably positioned exercise bar comprising:

a platform supported in a longitudinal position;

a pivot support fixed to one side of the platform;

a pivot lever rotatably mounted to the pivot support and having an exercise bar mounted to an upper end thereof so as to extend transversely over the platform;

weight resistance means for setting a desired level of weight resistance to be applied to the exercise bar;

coupling means connected between the weight resistance means and a portion of the pivot lever for applying a selected weight resistance against pivotal movement of the exercise bar mounted on the upper end of the pivot lever;

first means for adjusting a first angular position of the pivot lever on the pivot support so as to define a start position at the beginning of an exercise stroke of the exercise bar above the platform;

second means for adjusting the coupling means between the pivot lever and the weight resistance means taking into account the angular position of the pivot lever set by the first adjusting means; and

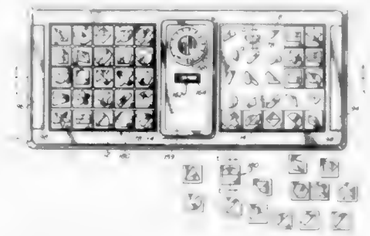
stop adjusting means for variably adjusting a second angular position of the pivot lever spaced angularly from the first position in order to define a stop position of the exercise bar at the end of the exercise stroke in one direction against the resistance of the weight resistance means, whereby a user of the exercise machine can selectively set different start and stop positions of the exercise stroke in one direction to vary an exercise performed by pulling or pushing against the exercise bar in the one direction to the stop position and then releasing the exercise bar on the return stroke back to the start position,

wherein said first means for adjusting the start position and said stop adjusting means for adjusting the stop position of the exercise stroke of said exercise bar includes said pivot support having a fixed circular plate provided with a plurality of holes formed circumferentially therein and spaced at predetermined angular intervals, wherein a range of angular movement of said exercise bar for a desired exercise stroke is adjustably set between a first selected hole at a first angular position and a second selected hole at a second angular position, a first pin retainer insertable in the first selected hole against which said pivot lever is abutted at the start position, and a second pin reatainer insertable in the second selected hole to which said exercise bar is moved at the stop position of the exercise stroke.

4,763,898
COMPETITIVE MANIPULATIVE SKILLS GAME

Ronald S. Hemmann, Newington, Conn., assignor to Coleco Industries, Inc., West Hartford, Conn.

Filed Jun. 29, 1987, Ser. No. 67,279
Int. Cl.[4] A63F *9/00*
U.S. Cl. 273—1 GF 20 Claims



1. A game assembly for competitive use, comprising:

a housing;

piece placement means in said housing adapted for the receipt of a multiplicity of loose pieces in predetermined positions in association therewith, and for the ejection of such pieces, said placement means comprising at least first and second ejection members that are movable, independently of one another, from lowered positions to elevated positions to effect the ejection of the associated pieces;

biasing means for urging said ejection members toward said elevated positions;

latch means operative to disengageably and separately secure said ejection members in said lowered positions against the force of said biasing means;

a manual actuator associated with each of said ejection members and operatively connected to said latch means for effecting the release of said associated member, each of said actuators including a component accessible on said housing for operation by a player; and

resettable timer means operatively connected to said latch means to effect the simultaneous release of both of said ejection members from said lowered positions, to be driven upwardly by said biasing means for dislodgement of the pieces associated therewith.

4,763,899
WARM-UP BAT

W. Maynard Hundley, 2614 36th St., SW., Grand Rapids, Mich. 49509

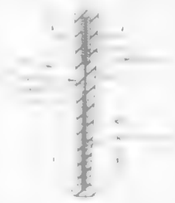
Filed Jan. 25, 1985, Ser. No. 694,701
Int. Cl.[4] A63B *69/40*
U.S. Cl. 273—26 B 15 Claims

1. A warm-up bat comprising:

an elongated body integrally molded from a resilient, moldable plastic resin, the bat including an elongated handle portion extending outwardly from an inner end of the bat towards an outer portion adjacent the outer end of the bat;

a weight integrally molded in the outer portion of the bat, the weight rendering the bat substantially heavier than a conventional bat;

an elongated stiffener integrally molded in the handle portion of the bat, the stiffener being an elongated shaft axially positioned in the handle portion and extending from an inner end adjacent the inner end of the bat to an outer end spaced apart form the weight by a predetermined distance, leaving an intermediate portion of the bat between the stiffener and the weight, the intermediate portion being resilient and flexible such that when the bat is swung, the bat resiliently bends and casues the weighted outer portion to gradually decelerate at the end of the swing, thus cushioning momentum and minimizing damaging muscle stress on the person swinging the weighted bat while still providing weight training and flexibility exercise; and



a flexible elongated connector integrally molded in the bat and interconnecting the stiffener and the weight, the connector providing tensile strength and restraining the weight from becoming separated from the handle portion, the connector being a cable attached to the weight at one end and attached to the shaft at the other end.

4,763,900
BASEBALL BAT AND BALL/BAT COMBINATION

Ian Carr, 220 E. Walton Pl., Apt. 3E, Chicago, Ill. 60611

Filed May 22, 1986, Ser. No. 865,843
Int. Cl.[4] A63B *69/00, 59/06, 37/14, 37/00*
U.S. Cl. 273—26 R 8 Claims



1. In combination, a bat and a spheriodal projectile for launching into ballistic flight by said bat,

a. the bat comprising an elongated shaft having a strike surface with a surface roughness formed therein which comprises a plurality of macroscopic intersecting grooves,

b. the projectile having a dense concentration of aerodynamic roughening elements per unit of surface area which protrude through the laminar sublayer of the fluid boundary layer flowing past the projectile in flight, said surface roughness and said aerodynamic roughening elements being substantially identical and said aerodynamic rough-

VOL 1093 ISS 3 AG 16 1988 UMI

ening being adapted to cause said projectile to experience asymmetric lateral drag forces which drive said projectile through a flight trajectory having a first curved flight direction followed by a second curved flight direction having a curve component opposite to said first curved flight direction, where the curved flight directions are related to the density of the aerodynamic roughening elements,

such that when the spheroidal projectile is struck by a glancing blow by the bat the tendency of the projectile to spin after being so struck is enhanced by interengagement of said surface roughness of said bat and said aerodynamic roughening elements of said projectile.

4,763,901

TENNIS ELBOW BRACE

Howard S. Richter, 26 Suzanne Rd., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 744,928, Jan. 14, 1985, abandoned. This application Jan. 13, 1986, Ser. No. 818,487
Int. Cl.[4] A63F *5/24*
U.S. Cl. 273—29 R 10 Claims



1. A surgico-athletic device to be worn by an athlete for preventing or reducing inflammation, further injury and the discomfort of tennis elbow comprising:

a. an upper and a lower inelastic armband of a length sufficient to encircle the arm above and below the elbow respectively, the encircling armbands each comprising a strip of inelastic, padded, woven fabric and each having an upper and a lower marginal edge;

b. means connecting the encircling armbands to adjustably control the distance between them to limit the arm from being fully extended;

c. a strip of contiguous hook and pile securing material joined to the exterior surface of each armband, the pile portion overlaying a portion of the armband and the hook portion extending from one end of the armband;

d. a fastening loop, secured to the end of the armband opposite to the end from which the securing material extends, through which loop the hook portion of the securing material is threaded to reverse direction and become adjustably engageable with the pile portion;

e. the connecting means comprising an inelastic strap secured to the lower armband transversely of and extending from the upper marginal edge, a loop secured to the upper armband proximate its lower marginal edge through which loop the strap is threaded to reverse direction, latching means secured to the inelastic strap at the lower armband and mating latching means adjustably positioned on the strap between its ends to adjust the effective length of the strap to control the distance between the armbands when the latching means are engaged.

4,763,902

FRAMEWORK OF RODS CONFIGURABLE INTO A VARIETY OF SHAPES

Ted A. Erikson, 1226 E. Madison Park, Chicago, Ill. 60615

Filed Apr. 3, 1987, Ser. No. 33,675
Int. Cl.[4] A63F *9/08*; A44C *7/00*; A47B *43/00, 97/04*
U.S. Cl. 273—155 4 Claims



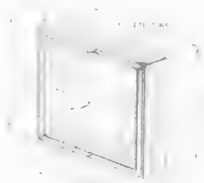
1. A variable framework comprising six rods and four flexible rings, each of said rods being provided at their extremities with knobs, each of said rings frictionally and slidably encircling a different subset of three of said rods, said knobs each having a diameter greater than the inside diameter of any of said rings, said rods being slidable and articulatable with respect to their associated rings into a plurality of configurations including that of a tetrahedron wherein a ring is disposed adjacent each apex in encircling relation to its associated subset of three rods.

4,763,903

TARGET SCORING AND DISPLAY SYSTEM AND METHOD

Max W. Goodwin, Salina Star Rte., Boulder, Colo. 80303, and Thomas T. Meisheimer, Longmont, Colo., assignors to Max W. Goodwin, Golden, Colo.

Filed Jan. 31, 1986, Ser. No. 824,626
Int. Cl.[4] G01P *3/68*
U.S. Cl. 273—371 45 Claims



1. A system for automatically determining the location of a relatively small size projectile, fired from a gun and travelling at relatively high velocity, relative to a target area and for scoring the proximity of the projectile to the center of the target, the system comprising:

a first rigid quadrilateral frame means having spaced parallel vertical side portions and spaced parallel upper and lower horizontal side portions for defining a polygonal open target area therebetween;

said frame means comprising a first pair of two first and two second transversely extending flat side wall plate members and a second pair of two third and two fourth transversely extending flat side wall plate members arranged in a generally polygonal configuration with opposite ones of each pair of said side wall plate members being located in spaced relationship on opposite sides of said target area and being parallel to one another with an inner peripheral side surface of one of said plate members of each pair of plate members facing inwardly toward the target area and an outer peripheral side surface of one of said side plate members of each pair of plate members facing outwardly away from the target area;

at least two transverse rows of a plurality of separate closely spaced light emitting means mounted on said frame means with a first row extending along a first one of said vertical side portions and a second row extending along a first one of said horizontal side portions along the periphery of the target area for providing a multiplicity of separate, individual, generally parallel light beams of non-visible limited wave length of substantially circular cross-section extending across the target area projected directly through the atmosphere without passage through any intervening separate device extending across the path of the light beam and substantially covering the entire target area and being arranged in an X-Y coordinate axis pattern;

target sheet mounting means mounting on said frame means for supporting and locating a target sheet with target indicia on said frame means with the target indicia located in predetermined relationship with said X-Y coordinate pattern of light beams;

at least two transverse rows of a plurality of separate closely spaced light detector means equal in number to the number of said light emitting means and being mounted on said frame means with one row extending along a second one of said vertical side portions and a second row extending along a second one of said horizontal side portions along the periphery of the target area opposite the light emitting means for normally directly receiving a generally cylindrical column of uninterrupted light directly through the atmosphere without passage through any intervening separate device extending across the path of the light beam from an associated one of the light emitting means in the absence of the presence of a projectile in the target area and for enabling each light detector means to generate a normal standard separate signal indicative of uninterrupted receipt of light from the associated light emitter means and to generate a separate interrupt signal upon passage of a projectile through the associated light beam in the target area;

said parallel light beams having a diameter of less than one-half the diameter of the projectile and said light emitting means and said light detector means in each row being mounted in closely spaced laterally adjacent relationship so that at least two of said parallel light beams are interrupted and at least two of said light detector means generate a separate interrupt signal during passage of a projectile through the target area;

means for receiving said interrupt signal from each of said light detector means and determining the location of each light beam interrupted by the passage of the projectile through the target area and for generating coordinate signals representative of the x coordinate and the Y coordinate of each interrupted light beam; and

means for receiving and correlating the coordinate signals with prior established coordinate reference information to establish the precise location of the passage of the projectile through the target area and to generate control signals representative of such locations.

14. The invention as defined in claim 1 and wherein:

each of said light emitting means comprises only a separate generally cylindrical infrared light emitting device having a generally circular cross-section and each of said light detector means comprising only a separate generally cylindrical infrared light responsive device; and

device mounting means for each row of said light emitting means and for each row of said light detector means comprising a plate member having a plurality of circular holes arranged in said pattern for receiving and supporting said light emitting and responsive devices in said pattern.

4,763,904

SEALING APPARATUS

Howard W. Martinie, Simpsonville, S.C., assignor to Reliance Electric Company, Greenville, S.C.

Filed Oct. 6, 1986, Ser. No. 915,503
Int. Cl.[4] F16J *15/32, 15/34, 15/447, 15/54*
U.S. Cl. 277—9 5 Claims



1. A sealing apparatus, comprising:

flexible seal means, generally circular and having respective inside and outside diameters, and defining at least one radial hole in the circumference thereof, and adapted for placement about a circular member for sealing same; and

restraining means, generally circular and defining at least one radial hole in the circumference thereof, disposed concentrically with said seal means about said circular member for securement of said seal means thereon; wherein

said seal means and said restraining means being disposed relative one another for registry of their respective holes;

said seal means includes an interiorly-defined annular groove defined between the inside diameter and outside diameter thereof for receipt of said restraining means;

said restraining means comprises a ring-like annular, metallic member embedded in said seal means groove therefor;

said flexible seal means includes two sealing faces of different types on opposing axial surfaces thereof; and

said flexible seal means is adapted to be reversed for selective orientation of said two different types of sealing faces relative a circular member.

4,763,905

SEAL RETENTION AND ANTI-ROTATION LOCKING ASSEMBLY

Robert F. Zvonar, Osceola, Ind., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Dec. 4, 1987, Ser. No. 129,034
Int. Cl.[4] F16J *15/32, 15/34*
U.S. Cl. 277—38 4 Claims



1. A seal retention and anti-rotation locking assembl*y*, comprising a wheel hub having an opening, the periphery of the

VOL 1093 ISS 3 AG 16 1988 UMI

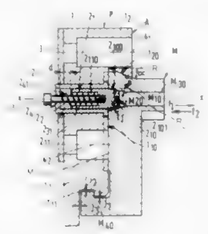
opening including a plurality of eccentric grooves disposed about the periphery of the opening, a plurality of retaining ring segments each disposed in a respective eccentric groove, sealing means disposed within the opening and extending radially between the periphery of said opening and a non-rotating axle member, the sealing means including a plurality of inserts each located circumferentially in alignment with a retaining ring segment, and fastening means extending between each retaining ring segment and the insert in order to retain the sealing means in engagement with the wheel hub.

4,763,906

SYSTEM FOR THE RAPID CHANGE OF CLAMPING JAWS ON A MACHINE TOOL

Jacques Barbieux, Louvres, France, assignor to Sandvik Tobler S.A., Louvres, France

Filed Jul. 11, 1986, Ser. No. 884,634
Claims priority, application France, Jul. 17, 1985, 85 10958
Int. Cl.[4] B23B *5/34*
U.S. Cl. 279—123 7 Claims



1. A quick clamping jaw change system for a machine tool, comprising:

a blocking element having a first abutment face, and a first bearing face forming a first acute angle relative to a first reference plane disposed perpendicular to said first abutment face,

a jaw mountable to said blocking element, said jaw comprising a second abutment face adapted to abut against said first abutment face, and a second bearing face adapted to bear against said first bearing face, said second bearing face angled correspondingly to said first bearing face, said jaw being movable in directions toward and away from said first abutment face and parallel to said first abutment face during insertion and removal of said jaw relative to the blocking element, said jaw including a reaction face forming a second acute angle relative to a second reference plane disposed parallel to said first reference plane, said second angle opening in the same direction as said first angle,

a pusher mounted on said blocking element and including a pushing face angled correspondingly to said reaction face, said pusher being movable in a first direction relative to said blocking element toward said jaw such that said pushing face engages said reaction face and urges said second bearing face against said first bearing face to displace said jaw against said first abutment face,

resisting means for resisting displacement of said pusher in a second direction opposite said first direction,

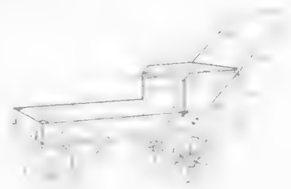
said first angle being greater than said second angle so that said jaw can be moved away from said first abutment face only after said pusher has been disposed in said second direction.

4,763,907

UTILITY WAGON

Richard O. Raymond, Ferrisburg, Vt., assignor to Country Home Products, Inc., Charlotte, Vt.

Filed Apr. 6, 1987, Ser. No. 34,941
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—47.35 10 Claims



1. A utility wagon, comprising:

a planar, substantially continuous and solid rectangular rigid base having a top surface, bottom surface, and four side and end edges;

two front wheels journalled together on a common axle for rotation;

means for mounting said front wheels on and below said base for supporting the front portion of said base above the wheels;

a pair of rear wheels being connected together for rotation about a common rear axis;

means for mounting said rear wheels on and beneath said base for supporting the rear portion of said base and together with said front wheels maintaining said base parallel to a planar wheel support surface;

a generally rectangular front end wall;

hinge means pivotally mounting said front end wall to the side edge of said base for pivotal movement between a vertical upwardly extending work position and a vertical downwardly extending storage position;

a pair of generally rectangular movable side walls;

hinge means pivotally mounting said movable side walls to the front portions of said base side edges for movement between a vertical upwardly extending work position and a vertical downwardly extending storage position;

latch means for securely interconnecting opposite corners of said front wall that are spaced from said hinge means respectively to adjacent corners of said side movable walls, when said front end wall and side movable walls are in their upwardly extending work position;

rear fixed side walls being generally coplanar and adjacent to respective movable side walls;

means rigidly connecting said rear fixed side walls to adjacent side edges of said base; and

a rear fixed end wall rigidly connected respectively to the end edge of said base and the adjacent edges of said rear fixed side walls, said rear fixed side and end walls extending upwardly from said base a distance substantially greater than said front movable side and front end walls.

4,763,908

SAFETY SKI BINDING

Jean-Pierre Dimier, Rumilly, France, assignor to Salomon S.A., Annecy Cedex, France

Filed Aug. 16, 1985, Ser. No. 766,201
Claims priority, application France, Aug. 17, 1984, 84 12909
Int. Cl.[4] A63C *9/08*
U.S. Cl. 280—628 5 Claims

1. A ski binding adapted to releasably hold a front of a ski boot on a ski, wherein said front of said boot comprises a front end, wherein said binding comprises:

(a) a jaw adapted to hold said front end of said boot and adapted to laterally pivot in response to lateral pivoting of said boot, wherein said jaw experiences a moment in response to lateral pressure from said boot against said jaw;

(b) a support mounted on said ski, wherein said support comprises two upwardly converging lines of support, wherein said jaw is adapted to laterally pivot around either of one of said upwardly converging lines of support; and



(c) means for preventing a substantial increase in said moment experienced by said jaw due to forward pressure of said front end of said boot on said jaw, wherein said upwardly converging lines of support define a common transverse plane with respect to said ski, wherein said upwardly converging lines of support converge at a convergence point, and wherein said preventing means comprises means for supporting said front end zone of said boot along a force line which substantially intersects said convergence point.

4,763,909

WHEEL OR SLIDE MOUNTING IN AN AMUSEMENT/EXERCISE FOOT MOUNTED DEVICE

Gaetan G. Bergeron, P.O. Box 1324, Assiniboia, Saskatchewan S0H 0B0, Canada

Filed Jun. 16, 1987, Ser. No. 62,593
Claims priority, application Canada, Jul. 15, 1986, 513799
Int. Cl.[4] A63C *17/04*
U.S. Cl. 280—11.25 14 Claims

1. An amusement occupant-propellable exercising device comprising

(a) a platform intended to be securable to the foot of the user of the device; and

(b) at least one glide set attached to said platform for travel along a surface, each said glide set comprising a crank arm unit having a central shaft pivotally attached to the platform for pivotal movement about an axis transverse to the direction of travel, a pair of oppositely directed arms spaced apart from one another along said axis and secured to respective opposite ends of said shaft with one arm extending forwardly in the direction of travel and the other extending rearwardly, a stub axle secured to and projecting outwardly from respective ones of said pair of arms and a surface traversing element mounted on respective ones of said stub axles.

4,763,910

RESILIENTLY MOUNTED, PIVOTABLE STEERING ROLL, ESPECIALLY FOR DRIVERLESS VEHICLES

Max Bränldi, and Hansueli Feldmann, both of Safnern, Switzerland, assignors to JD-Technologie AG, Zug, Switzerland

Filed Aug. 13, 1986, Ser. No. 895,941
Claims priority, application Switzerland, Aug. 23, 1985, 03634/85
Int. Cl.[4] B60B *33/04*
U.S. Cl. 280—29 9 Claims



1. A caster arrangement for resilient and pivotable mounting at the front and rear of a vehicle body of a vehicle, comprising:

a caster;

suspension means for resiliently supporting said caster at the vehicle body;

said suspension means defining a predetermined substantially vertical suspension travel;

a stop device associated with said suspension means and said vehicle body;

said vehicle travelling in a first range of travel directions and in a second range of travel directions and which second range of travel directions is substantially opposite to said first range of travel directions; and

said stop device being operatively associated with said suspension means and said vehicle body in order to limit said predetermined substantially vertical suspension travel of said suspension means under predetermined travelling conditions of said vehicle only in one of said first and second ranges of travel direction.

4,763,911

FOLDABLE BABY CARRIAGE

Albert W. Gebhard, Denver; William G. Au, Northglenn; James S. Gregg, and Robert M. Parker, both of Aurora, all of Colo., assignors to Gerico, Inc., Denver, Colo.

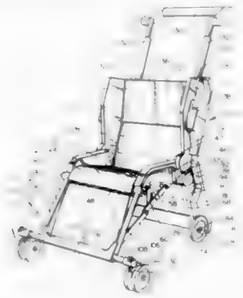
Filed Dec. 9, 1986, Ser. No. 940,556
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—37 14 Claims

1. A foldable, wheeled baby stroller which is operable as a baby stroller when in an unfolded configuration and which forms a substantially enclosing shell when folded, comprising:

at least four movably interconnected members consisting of a seat, a back having a width and height, a front wheel support and a rear wheel support, wherein when said four members are moved to a first folded configuration, said back, which includes a first portion of a shell, and one of said front wheel support and said rear wheel support, one of which includes a second portion of a shell, form opposing sides of a shell having a width, a height, and a thick-

VOL 1093 ISS 3 AG 16 1988 UMI

ness substantially enclosing said seat and the other one of said front and said rear wheel supports, and wherein when



said four members are moved to a second unfolded configuration, said back and said seat form a chair.

4,763,912

AUTOMOTIVE TRACTION CONTROL SYSTEM WITH FEATURE OF ADJUSTING WHEEL SLIPPAGE DETECTING THRESHOLD LEVEL DEPENDING UPON VEHICLE SPEED

Toshiro Matsuda, Sagamihara, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 14, 1986, Ser. No. 918,080
Claims priority, application Japan, Oct. 11, 1985, 60-224935
Int. Cl.[4] B60T *8/04*
U.S. Cl. 180—197 10 Claims



1. A traction control system for an automotive vehicle comprising:

first sensor means for monitoring wheel speed of a first vehicular wheel for producing a first wheel speed indicative signal;

a second sensor means for monitoring wheel speed of a second vehicular wheel for producing a second wheel speed indicative signal;

means for deriving an approximated vehicle speed representative value based on one of said first and second wheel speed indicative signal;

means for producing a reference signal to be compared with said first wheel speed indicative signal, said reference signal being indicative of a reference value variable depending upon a vehicle speed; and

means for comparing the first wheel speed indicative signal value with said reference value for producing a control signal to reduce driving torque to be distributed to said vehicular wheels when said first wheel speed indicative signal value becomes greater than said reference value.

4,763,913

BICYCLE/SCOOTER COMBINATION

William Ehrlich, Bethlehem, Pa., assignor to Bicycle Corporation of America, Bethlehem, Pa.

Filed Sep. 24, 1987, Ser. No. 100,550
Int. Cl.[4] B62K *19/00*; **B62N** *1/04*
U.S. Cl. 280—281 R 6 Claims



1. A bicycle/scooter combination comprising

(a) a head tube for carrying a front-wheel supporting fork and a steering assembly;

(b) a bracket shell for supporting a pedal assembly;

(c) a seat tube having a lower end secured to said bracket shell and being arranged for supporting a seat assembly;

(d) a support tube assembly including

(1) two lower support tubes each having a front terminus affixed to said head tube at a first location thereof; a downwardly extending front portion; a rearwardly extending horizontal portion adjoining said downwardly extending front portion; and an upwardly extending rear portion including a rear terminus of respective said lower support tubes; said rear terminus being affixed to said bracket shell and said upwardly extending rear portion being a continuation of said rearwardly extending horizontal portion;

(2) an upper support tube having an upper terminus affixed to said head tube at a second location thereof; said second location being at a distance above said first location; said upper support tube extending downwardly and having a lower terminus;

(3) connecting means for attaching said lower terminus of said upper support tube to said rearwardly extending horizontal portion of said lower support tubes;

(e) a horizontal platform supported by the rearwardly extending horizontal portions of said lower support tubes; and

(f) chain stays each having a front end affixed to the upwardly extending rear portions of the lower support tubes and a rear end carrying a rear-wheel supporting plate.

4,763,914

FOLDING MOTORCYCLE TRANSPORT TRAILER

Albert G. Lemmons, P.O. Box 41001, Nashville, Tenn. 37204

Filed Jun. 25, 1987, Ser. No. 66,330
Int. Cl.[4] B62D *53/04*
U.S. Cl. 280—401 8 Claims

1. A motorcycle trailer including a longitudinal main frame incorporating elongated, longitudinally extending end aligned front and rear frame sections with the rear end of said front section pivotally connected to the front end of said rear section for free relative angulation of said sections about a first horizontal transverse axis, said rear section including opposite side ground engaging wheels journalled therefrom for rotation about a second horizontal transverse axis disposed centrally intermediate the front and rear ends of said rear frame section, first motorcycle front wheel support and positioning means carried by said front frame section centrally intermediate the front and rear ends thereof for support of a motorcycle front wheel from said front frame section, motorcycle rear wheel support and positioning means carried by said rear section

rearward of said second horizontal axis and coupling means pivotally mounted from said front end of said front section for oscillation relative thereto about a third horizontal axis extending transversely of said front section, said coupling means including a mounting portion mountable relative to a towing vehicle for oscillation relative thereto about an upstanding axis



disposed generally normal to said third axis, inwardly swingably retractable laterally outwardly projecting opposite side anchor arms pivotally supported from opposite side longitudinal mid-portions of said front section for angular displacement relative thereto about upstanding axes and including outer ends to which anchor straps may be secured.

4,763,915

FOLDABLE IMPLEMENT CARRIER

Philip E. Risser, Woodridge, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 10, 1986, Ser. No. 905,551
Int. Cl.[4] A01B *73/06*
U.S. Cl. 280—413 13 Claims



8. A foldable implement carrier comprising:

a carriage having at least one ground-engaging support wheel;

first and second toolbar sections carried by said carriage;

first and second mounting means for pivotally mounting said first and second toolbar sections, respectively, to said carraige about first and second vertical pivot axes, respectively, for pivoting movement in a plane generally parallel to the ground between a generally transversely aligned end-to-end field configuration and a generally parallel transport configuration, said second pivot axis being located further forward on said carriage than said first pivot axis; and

first and second motor means for effecting said pivoting movement of said first and second toolbar sections, respectively, whereby, when said motor means are actuated to pivot said toolbar sections to said transport configuration, said second toolbar section is offset forwardly relative to said first toolbar section,

in which said carrier further comprises a longitudinally extending draft frame including support bracket means, each said toolbar section including support member means, each said toolbar section further including an extending gauge wheel pivotally mounted to a portion of said toolbar section, each said toolbar section including actuating means for raising and lowering said gauge wheel whereby, when said toolbar sections are aligned in the generally parallel transport configuration, each said toolbar section gauge wheel may be raised so taht each said toolbar section support member is lowered into engagement with said draft frame support bracket means.

4,763,916

HYDRAULIC JACKKNIFING-AFFECTING APPARATUS FOR ARTICULATED VEHICLES

István Ratskó ; Attila Madocsay; József Ivony; Béla Horváth, and Jeno Madi, all of Budapest, Hungary, assignors to Autoipari Kutato es Fejleszto Vallalat, Budapest, Hungary

Continuation of Ser. No. 703,825, Feb. 21, 1985, abandoned.
This application Jun. 24, 1987, Ser. No. 65,953
Claims priority, application Hungary, Feb. 24, 1985, 739/84
Int. Cl.[4] B62D *53/06*
U.S. Cl. 280—432 5 Claims





1. In an articulated motor vehicle apparatus of the type having a pair of vehicle units hingedly connected to each other

VOL 1093 ISS 3 AG 16 1988 UMI

and an anti-jackknifing means connected between said vehicle units for controlling the angle of articulation therebetween, said anti-jackknifing means including hydraulic cylinder means connecting said units and being extendable and retractable in accordance with articulations of said vehicle units, and respective sensor means for measuring the angle of steering of said motor vehicle and the angle of articulation of said vehicle units, the improvement which comprises

(a) a preprogrammed controller device, programmed with a predetermined desired angles of articulation for different angles of steering,

(b) a multiple position hydraulic valve means operated by said controller device and connected to opposite effective ends of said hydraulic cylinder means,

(c) said valve means having a first functional position in which hydraulic fluid flows in the absence of substantial resistance from one effective end to the other of said hydraulic cylinder means, in either direction,

(d) a hydraulic flow control loop selectively connected through said valve means to the opposite effective ends of said hydraulic cylinder means,

(e) said flow control loop including a check valve for substantially preventing flow of fluid in one direction and at least one flow resistance device for resisting fluid flow through said loop in the opposite direction,

(f) means actuated by said preprogrammed controller device for controllably changing the effectiveness of said resistance device,

(g) first and second inputs to said controller device comprising said respective steering and articulation sensor means,

(h) said controller device being operative to compare the respective angles of steering and articulation with a preprogrammed relationship of steering and articulation angles and for outputting a first signal indicating the existence of an angle of deviation of actual articulation angle from a desired articulation angle for the steering angle and the direction of such angle of deviation, and a second signal representative of the magnitude of such angle of deviation,

(i) said controller device being operative, in response to the existence of no significant angle of deviation from preprogrammed desired articulation angle, to cause said valve means to be set to said first functional position,

(j) said controller device being further operative, in response to the existence of predetermined minimum angle of deviation from desired articulation, to shift said valve means alternatively to a second or third functional position in which fluid flow from said hydraulic cylinder means, in a direction representing greater deviation in the direction of existing deviation, is blocked by said check valve and flow representing articulation in a direction returning toward desired deviation is controllably resisted by said resistance device,

(k) said preprogrammed controller device being operative to change the effectiveness of said resistance device as a function of the magnitude of the angle of deviation.

4,763,917

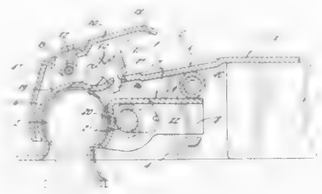
TRAILER COUPLER WITH IMPROVED BALL CLAMP HOLDING MEANS AND IMPROVED YOKE

James W. Chambers, Rockford, Ill., assignor to Atwood Industries, Inc., Rockford, Ill.

Filed Jun. 4, 1987, Ser. No. 58,256
Int. Cl.[4] B60D *1/06*
U.S. Cl. 280—507 6 Claims

1. A coupler for hitching a trailing vehicle to a towing vehicle having a ballhead thereon, said coupler comprising a body having forward and rear end portions, a downwardly opening socket at the forward end portion of said body for receiving said ballhead, said socket having an open rear side, a ball clamp supported on said body to slide back and forth between clamped and released positions, said ball clamp being operable when in said clamped position to close the rear side of said socket and lock said ballhead in said socket and being operable when in said released position to permit said socket to be pulled upwardly off of said ballhead, said body having an inclined upper wall which slopes upwardly upon progressing rearwardly, said ball clamp having a generally horizontally extending upper side spaced below said upper wall, and a transversely extending cylindrical member secured rigidly to said body and wedged between the inclined upper wall of said body and generally horizontal upper side of said clamp to hold said clamp in a predetermined angular orientation when said clamp is in said clamped position.

5. A coupler for hitching a trailing vehicle to a towing vehicle having a ballhead thereon, said coupler comprising a body having a top wall, having transversely spaced side walls depending from said top wall, and having forward and rear end portions, a downwardly opening socket at the forward end portion of said body for receiving said ballhead, said socket having an open rear side, a ball clamp supported on said body to slide back and forth between clamped and released positions, said ball clamp being operable when in said clamped



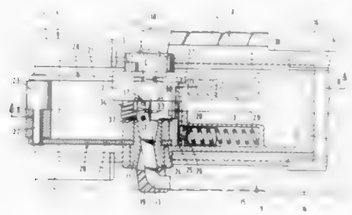
position to close the rear side of said socket and lock said ballhead in said socket and being operable when in said released position to permit said socket to be pulled upwardly off of said ballhead, a yoke mounted on said body to swing upwardly and downwardly between lowered and raised positions, said yoke being connected to said ball clamp and being operable when in said lowered position to engage the forward side of said socket and prevent said ball clamp from shifting rearwardly to said released position, said yoke releasing said socket upon being swung upwardly to said raised position thereby to permit said ball clamp to move rearwardly to said released position, a latch located above the top wall of said body and pivotally mounted on said yoke to turn about a transversely extending horizontal axis between latched and unlatched positions, said latch engaging said top wall when in said latched position and preventing said yoke from being swung upwardly to said raised position, said latch releasing said top wall when in said unlatched position and permitting said yoke to swing upwardly to said raised position, said yoke comprising a pair of transversely spaced arms straddling the side walls of said body and comprising a pair of transversely spaced ears located above said arms and straddling said latch, said ears being formed with alined transversely extending holes defining the pivot axis of said latch, and each ear having a lower margin which is integral with the upper margin of the respective arm from a point located at the front of the ear to a point located rearwardly of the hole in the ear.

4,763,918

SKI BRAKE

Gerhard Sedlmair, Farchant, Fed. Rep. of Germany, assignor to Marker Deutschland GmbH, Fed. Rep. of Germany

Filed Jun. 29, 1987, Ser. No. 67,693
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1986, 3621944
Int. Cl.[4] A63C *5/00*
U.S. Cl. 280—605 9 Claims



1. A ski brake integrated in the housing of a safety ski binding for impeding the movement of a ski down a slope when the ski is detached from a skier's boot, said ski brake comprising:

a pair of bushings aligned along a horizontal axis through a housing of a ski binding, each of said bushings being rotatable in said housing about said axis and including an axially aligned opening of predetermined configuration defining a noncylindrical guide surface;

ski boot engaging means connected to said bushings for rotation therewith between a first position wherein a ski boot is in said binding and second position wherein said boot is removed from said binding;

means for biasing said ski boot engaging means toward said second position;

a pair of brake members, each having a braking arm with a free end and a lever arm with a free end, said lever arm disposed within said opening in said bushing with its free end mounted for pivotal movement about an axis rotatable with said bushing, said lever arms in operative engagement with said guide surfaces of said openings in said bushings; and

means for biasing said brake members, said brake member biasing means being operable to move said lever arms along said guide surfaces when said bushings rotate in response to movement of said ski boot engaging means from said first position to said second position, wherein the free end of each of said braking arms moves from a retracted position above and toward the center of the ski to a braking position below and outward of said ski.

4,763,919

BABY CARRIAGE SERVING AS SHOPPING CART

Shinroku Nakao, Kanagawa; Yoshiyasu Ishii, Tokyo; Kenshun Ishii, Tokyo; Hiroaki Matsuda, Tokyo; Takashi Ishikura, Tokyo, and Yuuichi Arai, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1987, Ser. No. 58,731
Claims priority, application Japan, Jun. 5, 1986, 61-84805[U]; Jul. 4, 1986, 61-102011[U]
Int. Cl.[4] B62B *9/12, 7/08*
U.S. Cl. 280—644 11 Claims

1. A folding baby carriage and shopping cart, comprising:

a pair of opposite front leg bar;

a pair of opposite rear leg bars;

a handle bar disposed across said front leg bars and across said rear leg bars, wherein said front and rear leg bars and said handle bars are foldably coupled with each other so as to constitute a body of said baby carriage;

a seat including a backrest portion attached to said body of said baby carriage;

a U-shaped frame bar extending rearwardly of said seat and pivotally attached to said body of said baby carriage, wherein said U-shaped frame bar may be erected or folded;

an attachment part disposed on a back surface of said backrest portion;

a rectangular bottomed commodity receiving portion suspended under said seat by attaching an upper end opening



portion of said commodity receiving portion to both sides of said seat and said U-shaped frame; and

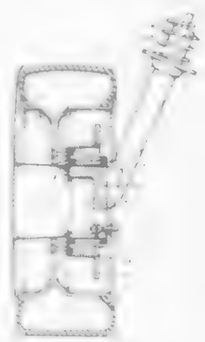
a folding operation portion foldable in two attached onto a back surface of said commodity receiving portion and removably attachable to said attachment part so that said commodity receiving portion can be folded independently of said front and rear leg bars.

4,763,920

SUSPENSION FOR A WHEEL

Louis Huidekoper, Paviljoensgracht 90, 2512 Br The Hague, Netherlands

Filed Jul. 8, 1987, Ser. No. 71,027
Claims priority, application Netherlands, Jul. 10, 1986, [illegible]
Int. Cl.[4] B60G *3/02*
U.S. Cl. 280—668 7 Claims



1. Suspension for a steering wheel which comprises: a frame or chassis; a support construction connected to said frame or chassis; a support plate connected to said support construction; wheelbearing means connected to said support plate, said wheelbearing means having an inner ring and an axis; wherein said support construction comprises an upper single support member rigidly connected to the support plate and pivotly connected to the frame or chassis at the side of the wheel, and a lower support member connected to said support plate through a pivot joint, extending substantially in the direction of the wheel axis and connected to the frame or chassis at the side of the wheel; and wherein the distance from the center of

VOL 1093 ISS 3 AG 16 1988 UMI

the pivot joint to the axis of the wheelbearing means is smaller than the distance from the inner wheelbearing ring to the axis of the wheelbearing means.

4,763,921

COMPOUND AXLE ASSEMBLY

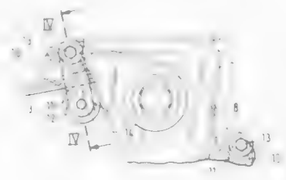
Helmut Steiner, Wiehl, Fed. Rep. of Germany, assignor to Bergische Achsenfabrik Fr. Kotz & Söhne, Wiehl, Fed. Rep. of Germany

Filed May 8, 1987, Ser. No. 48,007

Claims priority, application Fed. Rep. of Germany, May 10, 1986, 3615773

Int. Cl.[4] B60G *5/04*

U.S. Cl. 280—682 6 Claims



1. A compound axle assembly, having two or more wheel axles, for a trailer, the wheel axles of which are supported by longitudinal guide means and are spring-suspended by pairs of leaf type springs, the central portions of which are connected to the axle bodies; each of said leaf type springs has two ends, including an outer end, i.e. an end remote from the outer end of the leaf type spring of an adjacent wheel axle, with this outer end being slidingly supported in a first bracket, which is secured to the chassis of a vehicle, and also including an inner end, i.e. an end facing the inner end of the leaf type spring of an adjacent wheel axle, with this inner end being slidingly supported on a compensating arm that is pivotably mounted in a second bracket, which is also secured to said vehicle chassis; said axle assembly further comprises:

holder means provided on each first bracket and on said compensating arm to provide said support for said ends of said leaf type springs, with at said holder means of said compensating arm being pivotably mounted;

respective sliding elements disposed in each of said holder means to effect said sliding support of said ends of said leaf type springs; and

roller means arranged below ends of said leaf type springs and rotatably journaled as disposed at least on said holder means of said compensating arm for holding the pertaining ends of said leaf type springs prestressed always directly in contact against said sliding elements respectively under initial tension irrespective of any angular position occupied by said compensating arm that is pivotally mounted.

4,763,922

AXLE SUPPORTING ROD FOR MOTOR VEHICLE

Akihiko Nishikawa, Yokohama, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 757,661, Jul. 22, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 20,231

Claims priority, application Japan, Jul. 31, 1984, 59-159334; Aug. 30, 1984, 59-181041; Sep. 26, 1984, 59-201344

Int. Cl.[4] B60G *19/02;* B21D *39/04*

U.S. Cl. 280—689 12 Claims

1. An axle supporting rod for a motor vehicle, comprising:

a metallic rod body;

a metallic coupling member formed independently of and fixed to the end of the rod body;

a solid section formed either at the end of the rod body or at the end of the coupling member, and having a free end and an outer periphery, said free end having an end face, the solid section having indentations on its outer periphery an at least one axially extending groove open at the end face;

a tube section formed either at the end of the rod body or at the end of the coupling member, the tube section having an opening at an end portion thereof, said tube section being formed of a resistance-welded pipe having an axially extending bead weld formed on its inner surface;

a waterproof sealant provided on the inner surface of the tube section or on an outer surface of the solid section; and



wherein at least a portion of the free end of the solid section is inserted into the opening of the tube section, the length of said inserted portion being longer than said groove, the bead weld of said tube section is positioned in the axially extending groove, and the tube section is crimped so that part of the tube section and the bead weld protrude into the indentations and said groove to thereby link the tube section and the solid section together for integration, said waterproof sealant being flowable so as to fill up and seal gaps formed between said solid section and tube section, thereby preventing penetration of liquid.

4,763,923

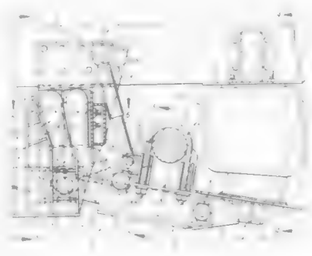
SUSPENSION ASSEMBLY WITH AIR SPRING AND SELF CONTAINED AIR LIFT SPRING

John E. Raidel, Rte. 1, Box 400-M, Springfield, Mo. 65804

Filed Mar. 2, 1987, Ser. No. 20,399

Int. Cl.[4] B60G *11/56*

U.S. Cl. 280—704 6 Claims



1. A suspension system system for a vehicle having a chassis and an axle, comprising a hanger assembly, means to connect the hanger assembly to the chassis, the hanger assembly having spaced lower plate portions with forward extensions thereon and a cross member connected between the forward extensions, a bushing assembly supported between the two plate portions, a torque beam assembly having a forward end journalled on the bushing assembly to allow the torque beam assembly to swing aabout the bushing assembly, means for connecting the torque beam assembly to the axle, an air spring connected between the torque beam assembly and the chassis, a generally vertical fixed wall supported by the hanger assembly above the lower plate portions, the fixed wall being wider than the span between the lower plate portions, two spaced plate sections above the lower plate portions, the space between the plate sections being greater than the space between the plate portions, the fixed wall being connected between the plate sections, means for connecting the plate sections to the respective plate portions, a movable wall supported by and extending upwardly from the torque beam assembly and movable between the plate sections relative to the fixed wall when the torque beam assembly swings about the bushing assembly, and a lift air spring mounted on a generally horizontal axis between the fixed and movable walls in the area between the plate sections.

4,763,924

SEAT MOVEMENT RESPONSIVE BELT TENSIONING ARM

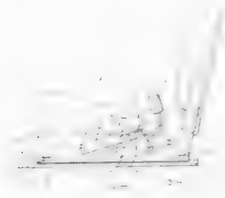
Mats A. Karlin, Vargarda, Sweden, and Per O. Weman, Heverlee, Belgium, assignors to Autoliv Development AB., Vargarda, Sweden

Filed Nov. 28, 1986, Ser. No. 935,988

Claims priority, application United Kingdom, Nov. 29, 1985, [illegible]

Int. Cl.[4] B60N *1/02;* B60R *22/32*

U.S. Cl. 280—806 20 Claims



1. A safety device in combination with a seat for a motor vehicle, wherein said seat includes a seat frame incorporated in said seat, said seat being slidably mounted for forward and backward movement; and retaining means for retaining said seat in a predetermined position and releasing said seat for forward movement when said seat is subjected to a deceleration force that exceeds a predetermined amount, said safety device comprising:

a seat belt associated with said seat;

a movable member engaging said seat belt; and

means for moving said movable member to apply a tension to said seat belt when said seat slides forward subsequent to the release of said retaining means.

4,763,925

AUTOMOBILE BODY PILLAR STRUCTURE HAVING A SAFETY BELT ANCHOR NUT PLATE

Yosiaki Onoe, Hiroshima, and Tokio Mikasa, Kure, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 16, 1985, Ser. No. 755,567

Claims priority, application Japan, Jul. 23, 1984, 59-111562[U]

Int. Cl.[4] B60R *21/10;* B62D *25/00*

U.S. Cl. 280—808 6 Claims

1. A pillar structure for automobile bodies comprising:

an outer panel having a front connecting flange and a rear connecting flange,

an inner panel having a front connecting flange and a rear connecting flange,

said front connecting flange of said inner panel being laid directly over said front connecting flange of said outer panel and connected thereto, said rear connecting flange of said inner panel being connected with said rear connecting flange of said outer panel to form a structure of closed cross-section,

an anchor nut plate having an anchor nut for installing an end of a safety belt being disposed in a space between said outer and inner panels, said anchor nut plate being provided at front and rear portions with means for locating the anchor nut plate in a fore and aft direction with respect to said outer panel, said outer panel being formed at a front portion with a stepped portion which is adapted to be covered by a side door of the automobile body, said outer panel having a main section contiguous with said stepped portion through a front inclined portion and contiguous with said rear connecting flange of said outer panel through a rear inclined portion, said anchor nut plate including a rear end portion which is held between said rear connecting flanges of said outer and inner panels,



a nut plate section located along said inner panel and carrying said anchor nut,

web means extending at an angle with respect to said nut plate section to cover a substantial part of said space between said outer and inner panels and terminating at a spacing from said main section of said outer panel,

locating means formed at a front portion of said anchor nut plate for a direct abutting engagement with said stepped portion of said outer panel for locating said anchor nut plate in a transverse direction of the automobile body, and

front and rear locating flanges of said anchor nut plate connected respectively with said front and rear inclined portions of said outer panel.

4,763,926

WEB-SENSITIVE RETRACTOR LOCK-OUT MECHANISM

Gerald A. Doty, Crown Point, Ind., assignor to Gateway Industries, Inc., Olympia Fields, Ill.

Continuation-in-part of Ser. No. 835,604, Mar. 3, 1986, Pat. No. 4,708,364. This application Jul. 8, 1986, Ser. No. 883,074

Int. Cl.[4] B60R *21/10*

U.S. Cl. 280—808 10 Claims



1. In a passive seat belt system, the combination comprising:

a door mounted seat belt retractor having a reel and ratchet wheels thereon, a locking bar on the retractor to lock the ratchet wheels against belt pay-out, electrically operated means for shifting the locking bar to the locking position, inertia sensing means on a vehicle chassis for sensing the change in velocity of the vehicle and for operating the electri-

VOL 1093 ISS 3 AG 16 1988 UMI

cally operated means with predetermined rate of change of the vehicle chassis' velocity, and a web sensitive inertia means mounted on the reel on the door and sensitive to reel unwinding velocity rate of change to shift the locking bar into locking engagement with the ratchet wheels; said web sensitive inertia means operating independently of said electrically operated means and serving as a fail safe for the electrically operated means if the latter should fail.

4,763,927

SECURITY DOCUMENT

Walter Schneider, Miesbach, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH., Fed. Rep. of Germany

Filed Jun. 7, 1985, Ser. No. 742,397
Int. Cl.[4] G09C *3/00, 5/00;* B42D *15/00;* B05D *7/00*
U.S. Cl. 283—70 11 Claims



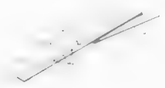
1. A security document including an embedded element which exhibits a mechanically testable physical property which is used to recognize the authenticity of the document, said element comprising a piece of film (3) comprising a polymer synthetic material having piezoelectric properties.

4,763,928

METHOD AND APPARATUS FOR THEFT IDENTIFICATION OF EQUIPMENT

Rickie F. Krietemeier; Jeffrey A. Strom, both of Englewood, and Richard A. Stonich, Denver, all of Colo., assignors to Equipment Identification Systems, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 779,080, Sep. 23, 1985, abandoned. This application Aug. 17, 1987, Ser. No. 86,286
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—70 10 Claims



1. The method for identifying the owner of an article in the event of loss of the article comprising the steps of:
(1) microprinting a series of images containing identifying coded data on one surface of a thin sheet of microfilm, said data identifying the owner of said article, said images being invisible to the naked eye when removed from said sheet and applied to the source of an article to be identified:
(2) applying an adhesive substance and backing member to a surface of said sheet;
(3) at least partially severing a portion of said sheet containing each said image from said sheet without severing said backing member so that each said portion severed remains intact with said sheet on said backing member;
(4) removing said backing member from each said portion and adhesively securing each said portion at different locations on said article by pressing the surface of each said portion having said adhesive substance into contact with said article; and
(5) recording the location of at least selected of said portions attached to said article.

9. Apparatus for identifying the owner of an article in the event of loss of the article, comprising:
a transparent sheet of microfilm having a series of images in the form of microsized disks, each disk having owner-identifying, coded data imprinted on one surface thereof in photographically reduced form discernible only by magnification of said disk, each said disk being at least partially severed from but in the plane of said sheet; and
securing means for removably securing each said disk to an article to be identified, said securing means defined by an adhesive on one surface of said sheet to be secured to said article.

4,763,929

ERASABLE MARKER SYSTEM

George Weil, "Southwinds", 69 Dennis Lane, Stanmore, Middlesex, United Kingdom

Filed Nov. 7, 1986, Ser. No. 928,815
Claims priority, application United Kingdom, May 21, 1986, 8612377
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—81 10 Claims



1. An elongated laminar marker device, which comprises:
an upper frame which carries a cover face and a paper foil layer, the cover face overlaying the paper foil layer, the cover face having a window through which indicia marked upon the device may be viewed;
a lower frame which carries a wax layer, the wax layer being cooperable with the paper foil layer;
means for releasably attaching the upper frame and the lower frame together, thereby enabling points of attachment to be generated between the paper foil layer and the wax layer which are visually distinctive and which constitute the indicia; and
means for separating the upper frame from the lower frame so as to release the points of attachment and thereby erase the indicia.

4,763,930

TRANSPARENT GUMMED LABEL HAVING SEE THROUGH INDICIA AND OPAQUE UNIVERSAL PRODUCT CODE BAR AND NUMERICAL INDICIA AT A SIDE THEREOF ON SMALL NAIL POLISH BOTTLES

Arthur Matney, 4014 First Ave., Brooklyn, N.Y. 11232

Continuation of Ser. No. 751,898, Jul. 5, 1985, abandoned. This application May 5, 1987, Ser. No. 47,571
Int. Cl.[4] B42D *15/00;* A44C *3/00;* G09F *19/00;* A61F *13/02*
U.S. Cl. 283—81 26 Claims

1. A transparent gummed label for small nail polish bottles made of glass fitted with a cap applicator comprising:
a precut rectangular transparent cellulose acetate sheet constituting the sole mechanical support of the label, said sheet having top, bottom, left and right edges, said sheet further comprising a major portion and a minor portion, said major portion including said left edge and said minor portion including said right edge, said portions being defined by an imaginary line running between said top and bottom edges, said sheet further comprising a top surface constituting the front surface of the label and an under surface constituting the back surface of the label;
first translucent indicia printed on the under surface of said sheet said first indicia comprising product identifying information and instructions, said first indicia being translucent and confined to the major portion of the under surface of said sheet, to permit seeing therethrough,



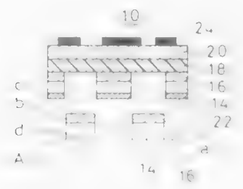
an opaque printing of substantial thickness, many times greater than the thickness of said first indicia, consisting of an opaque white background coating covering the entire minor portion of said top surface of said sheet, said white coating being overprinted with a bar code and number in dark color and
a continuous coating of pressure sensitive adhesive covering the entire under surface of said sheet and applied over said first indicia.

4,763,931

ADHESIVE MATERIAL FOR PREVENTING REUSE

Tadashi Matsuguchi, Suita, and Noboru Matsuguchi, Ashiya, both of Japan, assignors to Daimatsu Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 26, 1985, Ser. No. 780,286
Claims priority, application Japan, Oct. 1, 1984, 59-206768; Feb. 15, 1985, 60-028542; Feb. 15, 1985, 60-028543; Mar. 29, 1985, 60-067381
Int. Cl.[4] B42D *15/00*
U.S. Cl. 283—108 26 Claims



1. A label for preventing reuse comprising
a first layer,
a first adhesion layer formed on said first layer,
a second layer laminated on the adhesion layer tentatively bonded,
a second adhesive layer formed on either main surface of said second layer, and
an adhesive power reducing layer formed in a portion of either surface of said second adhesive layer which lowers the adhesive power of second adhesive layer and characterized in that, when the adhesive power of second adhesive layer where it is covered by the adhesive power reducing layer is represented by (a), the force required for breaking said second layer is represented by (b), the force required for peeling said second layer from said first layer is represented by (c) and the adhesive power of said second adhesive layer where it is not covered by the adhesive power reducing layer is represented by (d), the following formulae wherein:

$a<c,\ b<d$

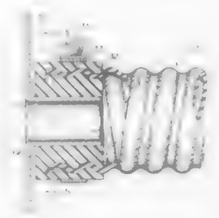
are satisfied.

4,763,932

HOSE COUPLING

Edward I. Matz, P.O. Box 5337, Daytona Beach, Fla. 32018, and Robert A. Costa, 4430 N. U.S. Highway 17, DeLand, Fla. 32720

Filed Jul. 27, 1987, Ser. No. 78,463
Int. Cl.[4] F16L *33/08*
U.S. Cl. 285—177 4 Claims



1. A flexible corrugated hose coupling for coupling a hose to a cylindrical neck comprising:
a resilient hollow cylindrical coupling member having two ends and a center bore therethrough and having an annular coaxial bore extending into one end thereof and shaped for threadedly receiving a corrugated hose of a predetermined size, said resilient hollow cylindrical coupling member annular coaxial bore extending into one end thereof and having internal and external threads therein matching the internal and external corrugations of a flexible corrugated hose coupling whereby said flexible coupling member can be threaded onto said flexible corrugated hose;
means to allow said resilient hollow cylindrical coupling member to have different size center bores for one corrugated hose of predetermined size whereby one size corrugated hose can be fitted to different size cylindrical necks; and
clamping means extending around said resilient hollow cylindrical coupling member for clamping said coupling member and hose threaded thereinto onto a coupling neck whereby flexible corrugated hose can be cut to any length and attached to a smooth or ridged neck with a clamp to achieve a fluid tight seal between the corrugated hose and neck.

4,763,933

LATCHING ARRANGEMENT

James F. Guardia, Yorba Linda, Calif., assignor to A-1 Aluminum Products, Inc., Gardena, Calif.

Filed Mar. 30, 1987, Ser. No. 31,926
Int. Cl.[4] E05C *19/06*
U.S. Cl. 292—13 16 Claims

1. An improved latching arrangement for selectively latching and locking together a pair of members to prevent relative movement there between in a reciprocal first direction and providing both a latched position and a locking condition as well as a latched position and unlocked condition for preventing the relative movement, and an unlatched and unlocked condition for allowing the relative movement and comprising, in combination:
a latch means having:
base means pivotally mounted on a preselected portion of

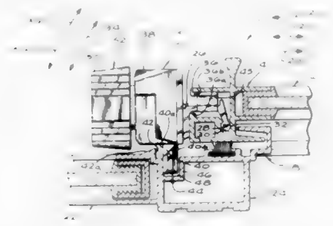
VOL 1093 ISS 3 AG 16 1988 UMI

a first of the pair of members adjacent a preselected portion of the second of the pair of members and pivotally movable between a latched position and an unlatched position;

first resilient means intermediate the first member and said base means for yieldingly biasing said base means towards the second member into said latched position thereof and resiliently resisting said pivotal movement of said base means away from the second member into said unlatched position;

housing means mounted on said base means for said pivotal movement therewith, said housing means having lip means extending a first preselected distance from said housing means towards the preselected portion of the second member, said housing means further having first walls defining a swivel cam receiving cavity;

a swivel cam rotatably mounted in said swivel cam receiving cavity of said housing means for rotary movement therein between a locking condition and an unlocked



condition, said swivel cam extending a second preselected distance from said housing means towards the preselected portion of the second member in said locking condition thereof, and said swivel cam free of engagement with the second member in said unlocked condition thereof;

second resilient means in said housing means for selectively resiliently resisting rotary movement of said swivel cam between said locking condition and said unlocked condition thereof;

the preselected portion of the second member having first shoulder means selectively engageable with said lip means of said housing means for said base means in said latching position and said lip means free of engagement with the second member in said unlatched position; and

the preselected portion of the second member further having second walls defining a channel therein for receiving said swivel cam in said locking condition thereof.

4,763,934

DOOR LATCH AND LOCK ASSEMBLY

John R. Kaveney, Jr., East Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Dec. 4, 1986, Ser. No. 938,107

Int. Cl.[4] E05B *55/04*

U.S. Cl. 292—21 3 Claims

1. A door latch and lock assembly adapted to be connected, in use, to a door to permit the door to be releasably latched to a frame having a striker thereon, the door latch and lock assembly comprising:

a support structure connectable to the door;

a catch mechanism connected to support structure and actuatable to a closed condition for latching engagement with the striker and an open condition for disengagement from the striker;

an inner actuator mounted on the support structure for pivotal movement about a central axis;

means for connecting the inner actuator to the catch mechanism;

an outer actuator mounted on the support structure for pivotal movement about the central axis;

means for causing simultaneous pivotal movement of the inner actuator when the outer actuator is pivoted and allowing pivotal movement of the inner actuator independent of the outer actuator, said pivotal means includes a lug on the outer actuator projecting laterally toward the



inner actuator and a lug on the inner actuator projecting laterally toward the outer actuator and being positioned for abutment with each other; and

a key lock assembly connectable to the door, said key lock assembly having a locking lever movable between a locked position for preventing pivotal movement of the outer actuator and an unlocked position allowing pivotal movement of the actuator, wherein said locking lever, when in the locked position, remains in the locked position during pivotal movement of the inner actuator.

4,763,935

DOOR OR PANEL FASTENER

Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Concordville, Pa.

Filed Mar. 25, 1987, Ser. No. 30,668

Int. Cl.[4] E05C *5/02*

U.S. Cl. 292—66 7 Claims



1. In a latch assembly adapted for developing a compressive force between two members, wherein the latch assembly comprises a sleeve adapted to project through an opening in one of the members, and to be secured non-rotatably therein; with said sleeve being provided with a head and fastening means adapted to engage the one member therebetween when the sleeve is in the opening; with a slide member in said sleeve, movable axially and rotatably therein, with one end of the said member in engagement with a handle and the other end in engagement with a pawl; with said handle, sleeve, and slide member being operatively connected for facilitating movement of said slide member axially between latched and unlatched positions as said handle is moved between latched and unlatched positions; with the pawl being adapted to engage the other member under compressive force when the handle is in the latched position; with said slide member being rotatably movable within said sleeve with rotatable movement of said handle in the unlatched position of said handle, for rotatable movement of said pawl through unlatched positions with said handle; and with said slide member and said handle being rotatably non-movable in the latched position of said handle; the improvement comprising means permitting movement of said handle to a latched position placing the pawl under compressive force only when the slide member is rotatably positioned such that the pawl carried thereby is in a latched position.

4,763,936

POWER OPERATED DOOR LATCH

Deno J. Rogakos; Joseph P. Licata, both of Dayton, Ohio, and John L. Sloan, Mt. Clemens, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 20, 1986, Ser. No. 920,651

Int. Cl.[4] E05C *3/26*

U.S. Cl. 292—201 6 Claims



1. In combination with a vehicle door swingable on a vehicle body between an open position and a closed position in a door opening in said body and a striker on said body projecting into said door opening,

a door latch comprising:

a latch bolt on said door rotatable between unlatched, ajar-latched and closed-latched positions,

said striker engaging said latch bolt during movement of said door to and from said closed position so that said latch bolt is always in said unlatched position when said door is open and in said ajar-latched position when said door is in said ajar position and in said closed-latched position when said door is in said closed position,

detent means on said door having a detenting position engaging said latch bolt and retaining said latch bolt in either of said ajar-latched and said closed-latched positions and a releasing position permitting unobstructed rotation of said latch bolt to said unlatched position,

spring means on said door biasing said detent means to said detenting position so that whenever said latch bolt achieves said closed-latched position said detent means achieves said detenting position whereby said door latch retains said door in said closed position in a manual-closed operating mode when said door is swung manually to said closed position,

manual release means on said door selectively operable to move said detent means from said detenting position to said releasing position whereby said door latch releases said door in a manual-open operating mode for opening movement from said closed position,

a non-reversible electric motor on said door,

automatic switch means on said latch responsive to the position of said latch bolt operative when said latch bolt achieves said ajar-latched position to switch on said motor for a predetermined door closing duration,

first clutch means between said motor and said latch bolt operative to power rotate said latch bolt to said closed-latched position when said motor is switched on for said door closing duration whereby said door is closed in a power-closed operating mode of said door latch,

manual switch means selectively operable to switch on said motor after said predetermined door closing duration,

said automatic switch means being operative to thereafter switch off said motor after a predetermined door opening duration, and

mechanical release means between said motor and said detent means operative to move said detent means to said releasing position during said door opening duration of motor operation whereby said door is opened in a power-open operating mode of said door latch,

said automatic switch means being further operative to permit random sequencing of each of said power-open and said power-closed operating modes and said manual-open and said manual-closed operating modes.

4,763,937

ELECTROMAGNETIC DOOR LOCK SYSTEM

Ralph A. Sittnick, Jr., 86 Bishop Ave., Southington, Conn. 06489, and Roy A. Mathers, 9 Cardinal Dr., Farmington, Conn. 06032

Filed Sep. 11, 1986, Ser. No. 906,168

Int. Cl.[4] E05C *17/56*

U.S. Cl. 292—251.5 28 Claims



1. A method for automatically controlling the operation of an electromagnetic lock which magnetically bonds with an armature for locking a door comprising:

(a) generating a detection beam from the vicinity of said lock and directing said beam toward a manually operable latch member of the door;

(b) receiving energy from the general vicinity of said latch member;

(c) forming a detection zone in the vicinity of said latch member;

(d) processing the received energy to detect the presence of a foreign object in the detection zone; and

(e) disabling the electromagnetic lock in the event of the detection of the presence of a foreign object in the detection zone.

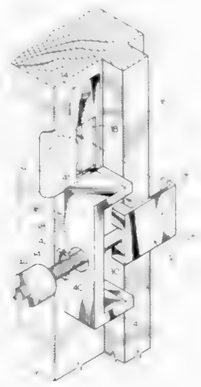
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,938

HETEROGENEOUS WIRE AND PANE PROVIDED WITH SUCH A WIRE

Albert Schlanger, Apartment 103, 725 Don Mills Road, Toronto, Ontario, Canada M3C 1S6

Filed Oct. 20, 1986, Ser. No. 924,243
Int. Cl.[4] E05C *19/18*
U.S. Cl. 292—290 2 Claims



1. A locked door assembly comprising a door frame, a latch plate secured to the door frame, said latch frame having an aperture and a tongue extending from a front edge of the aperture into a recess in the door frame, said tongue being spaced from the top and bottom of the aperture, a door in a closed position in the door frame, said door having a latch engaged in the aperture in the latch plate and in the recess in the door frame to retain the door in the closed positon, and a portable door lock,

said portable door lock comprising a retainer with a plate-like body portion positioned against the latch plate between the door and the door frame, said plate-like body portion having a pair of vertically spaced coplanar fingers extending from a rear end of the plate-like body portion substantially perpendicularly to the plate-like body portion into the latch plate aperture and engaging the front edge thereof above and below the latch plate tongue,

a retainer shaft extending forwardly from the retainer and having a screw-threaded portion,

a holding bracket having a medial portion slidably mounted on the shaft and having rearwardly projecting holding arms at opposite ends, and

a holding nut threadingly engaging the screw-threaded portion of the retainer shaft and engaging the bracket to hold the arms against the door frame and the door respectively and prevent the door from being opened.

4,763,939

PROTECTIVE ROLLER DEVICE FOR CAR

Xiaoyang Zhu, No. 22, Lane 376, Yan'an Xi Lu, Shanghai, China

Filed Dec. 31, 1986, Ser. No. 948,170
Claims priority, application China, Jan. 3, 1986, 86100084
Int. Cl.[4] B60R *19/00*
U.S. Cl. 293—17 6 Claims

1. A protective roller assembly for attachment to the sides of a car, slightly in front of the wheels comprising, a center shaft, an elastomeric sleeve which is sheathed externally around the said center shaft and is rotatable freely thereabout, said center shaft having one end mounted for vertical movement to said



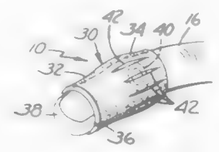
car, and roller means mounted for rotation on the other end of the same center shaft.

4,763,940

DOCUMENT HANDLING AID

Curtis N. Held, Rte. 1, Box 350, St. Joseph, Wis. 54082

Continuation of Ser. No. 840,331, Mar. 17, 1986, abandoned.
This application Jul. 20, 1987, Ser. No. 77,029
Int. Cl.[4] A41D *13/08;* A61F *13/10*
U.S. Cl. 294—25 2 Claims



1. A finger mounted document handling aid comprising a longitudinally extending, generally tubular and flexible body having first and second body sections, the flexible body being adapted to be longitudinally mounted upon a finger so that the first body section extends from a tip of the finger toward a first knuckle thereof and a second body section of size to envelope only said first knuckle, with a sufficient portion of the tip of the finger protruding out of a first end of the flexible body adjacent the first body section thereof to permit tactile sensing by the tip of the finger, the second body section extending from the first body section to a second end of the flexible body and having a plurality of fully internal, generally parallel longitudinal cuts therethrough to permit enhanced radial expansion and greater flexibility of the second body section adjacent the first knuckle, the end of each cut closest to the second end of the flexible body being spaced longitudinally from said second end.

4,763,941

AUTOMATIC VACUUM GRIPPER

Albert Sniderman, Wayne, Pa., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Jun. 11, 1987, Ser. No. 60,210
Int. Cl.[4] B66C *1/02;* B65H *3/08*
U.S. Cl. 294—64.1 4 Claims

1. A vacuum gripper for gripping a part to be lifted comprising

a cylinder having a coupling adapted to be coupled to a source of vacuum,

a piston slidably disposed in said cylinder,

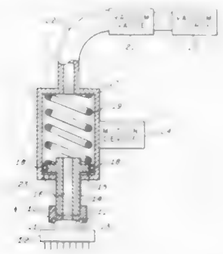
said cylinder having an opening to atmosphere on the side of said piston opposite said coupling,

a spring urging said piston in a predetermined direction to a predetermined maximum distance position, and

a gripper member coupled through a shaft to said piston, said grippper member having a gripping cavity,

said gripper member, said shaft and said piston having a passage therethrough coupling said cylinder to said gripping cavity for transmission of vacuum thereto,

said vacuum being transmitted from said coupling to said gripping cavity when said piston is and is not at said maximum distance position,



so that when said cylinder is coupled to said source of vacuum and said part is sealing said cavity said piston is moved within said cylinder by atmospheric pressure in a direction opposite said predetermined direction against said spring.

4,763,942

GAMBREL

Jesse J. Lyon, R.F.D. #1, Orleans, Utah 05860

Filed Feb. 2, 1987, Ser. No. 9,880
Int. Cl.[4] A22B *5/00*
U.S. Cl. 294—79 1 Claim



1. A gambrel, comprising:

a. tubular support means, said tubular support means comprising first and second axially alignable tubular members, said support means further comprising a threaded coupler means, said coupler means having a hollow cylindrical construction, said first and second tubular members being threadably attachable to said coupler means;

b. animal holding means comprising first and second loops formed from a flexible material, said first and second loops being adjustable in size to thus fixedly secure said animal thereto, said first and second loops extending downwardly from said tubular support means; and

c. gambrel support means whereby said tubular support means may be attached to an upwardly positioned support member, said gambrel support means comprising third and fourth loops formed from said flexible material and extending upwardly from said tubular support means, said gambrel support means further comprising a first and second chain, said first chain having a first end attached to said third loop, said first chain having a second end attached to said fourth loop, said second chain having a first end attached to a central portion of said first chain, said second chain having a second end attached to a hook, said second chain having sufficient length to allow a looping thereof around said upwardly positioned support member, said hook being engageable with a selected link of said second chain, thereby to provide for height adjustment of said tubular support means above a ground surface when said second chain is looped around said upwardly positioned support member.

4,763,943

CRANE HOOK

Edward Melvin, Goulds, Canada, assignor to MM & M Consultants Limited, Goulds, Canada

Filed Nov. 14, 1986, Ser. No. 930,563
Claims priority, application Canada, Nov. 21, 1985, 495842
Int. Cl.[4] B64D *17/38*
U.S. Cl. 294—82.13 7 Claims



1. A crane hook adapted to become engaged with a portion of an elongated member forming a load-secured eye, said hook comprising, when in a generally upright position:

(a) a stem integral with two opposed hook portions protruding from a lower end thereof such that the stem and both hook portions are generally coincident with a first reference plane;

(b) each hook portion including a concave, load supporting section of a generally semi-circular configuration at a merger of the respective hook portion with a straight, normally generally vertical side portion of the stem, a downwardly and inwardly sloping side section merging, at its lower end, with said load supporting section, and, at its upper end, with a downwardly and inwardly turned tip section;

(c) a pair of nose portions, each protruding from opposed sides of said stem in a direction towards the respective side section, each nose portion defining a downwardly open, concavely curved engagement surface disposed at an upper end of the respective side portion of the stem and facing the respective load supporting section;

(d) the shape and size of the load supporting section, of the engagement surface and of the tip section being complementary with the cross-sectional configuration of the respective elongate member forming a load-secured eye.

4,763,944

TAILGATE BARRIERS

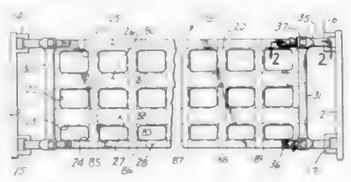
Steven A. Fry, 30052 Running Deer La., Laguna Niguel, Calif. 92677, and Rodney L. Stafford, 4900 E. Chapman #13, Orange, Calif. 92669

Filed Apr. 13, 1987, Ser. No. 37,315
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—50 22 Claims

1. A tailgate barrier to be suspended between the rear ends of sidewalls of an open bed of a truck comprising a flexible, substantially inelastic sheet having a top edge, a bottom edge

VOL 1093 ISS 3 AG 16 1988 UMI

and two side edges, said sheet having a plurality of apertures therethrough between its edges; stiffener means incorporated into each side edge reinforcing said respective side edges to prevent their sagging, and to apply tension force to said flexible sheet along most of the length of the respective side edge; and



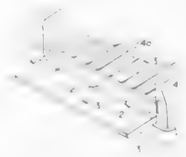
a pair of tensioning means attached to the barrier adjacent to its top and bottom and attachable to said sidewall to exert tension forces normal to said side edges whereby to draw the barrier tightly across the face of said open end.

4,763,945

TAILGATE TRACK MAT

Michael G. Murray, 9308 Warren St., Silver Spring, Md. 20910

Filed May 4, 1987, Ser. No. 45,471
Int. Cl.[4] B62D *33/02*
U.S. Cl. 296—57 R 6 Claims



1. A tailgate track mat for preventing sand, dirt, gravel and other granular material from accumulating in the gap between the end of a truck bed and its tailgate, comprising a strip of material extending over the gap and transversely of the truck bed and tailgate, means attaching one edge portion of the strip to the tailgate in proximity to the lower edge portion thereof, the opposite edge portion of the strip engaging the bed of the truck and magnetic means embedded in said strip on the bottom surface thereof adjacent said opposite edge portion for holding the strip against the bed of the truck.

4,763,946

VISOR

Craig Robbins, Grand Haven; Michael L. Lanser, Holland; Kim L. Van Order, Hamilton, and Joseph H. Weber, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.

Filed Jun. 8, 1987, Ser. No. 58,996
Int. Cl.[4] B60J *3/00*
U.S. Cl. 296—97 H 20 Claims



1. A visor comprising a molded polymeric visor core divided along a center line to define two halves, one core half having a plurality of alternately staggered pins and recesses extending along the peripheral edge thereof and aligned with alternately staggered recesses and pins respectively of the other core half such that when the core halves are brought together, an upholstery material is clamped in place by said pins and recesses of said visor core.

4,763,947

SUNSHIELD FOR MOTOR VEHICLE

Harold E. Gregg, Woodstock, Ill., assignor to Stone Container Corporation, Chicago, Ill.

Filed Jun. 25, 1987, Ser. No. 66,942
Int. Cl.[4] B60J *3/00*
U.S. Cl. 296—97 R 18 Claims



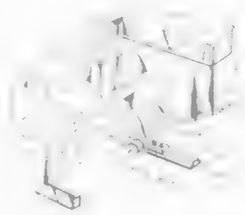
1. A foldable window shade for a motor vehicle comprising:
a generally rectangular integral sheet having upper, lower and side edges;
said sheet having an axial fold line extending between said upper and lower edges, and a plurality of radial fold lines emanating from the general intersection of said axial fold line and said lower edge and extending to said top and side edges, said sheet being collapsible along said fold lines to fold in fan-like fashion and including means for substantially preventing said window shade from folding when erected.

4,763,948

AUTOMOBILE FRONT BODY CONSTRUCTION

Hayatsugu Harasaki, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan

Filed Jul. 7, 1986, Ser. No. 882,242
Claims priority, application Japan, Jul. 16, 1985, 60-157779
Int. Cl.[4] B62D *25/08*
U.S. Cl. 296—194 4 Claims



1. An automobile front body structure having an engine compartment defined therein, and also having a pair of spaced first longitudinal frames extending beneath the engine compartment in a direction longitudinally of an automobile and connected at a rear end to a floor panel, which structure comprises:
suspension arm support members secured to front ends of the first longitudinal frames, respectively, for the support of left-hand and right hand suspension arms;

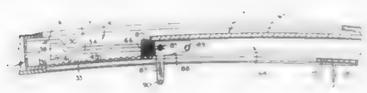
a transverse connecting member extending between the first longitudinal frames in a direction widthwise of the automobile and having its opposite ends connected to the respective support members; and
said support members being of a generally T-shaped configuration having a body, secured to the front end of the first longitudinal frames, respectively, and a transverse arm detachably connected with an adjacent end of the transverse connecting member.

4,763,949

SUNROOF CONTROLLER

Laurence B. Haig, Roseville, Mich., assignor to Cre-Del Limited Partnership, Muskegon, Mich.

Continuation-in-part of Ser. No. 551,472, Nov. 14, 1983, Pat. No. 4,609,223. This application Jul. 10, 1986, Ser. No. 884,216
The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.
Int. Cl.[4] B60J *7/053, 7/19*
U.S. Cl. 296—222 65 Claims



1. A sunroof comprising:
a frame defining an opening;
a retractable closure shaped to selectively close said opening;
means for slidingly supporting said closure in said frame for translation between a fully open position and a fully closed position;
means for adjustably retaining said closure in a partially open position, including:
at least one track operably connected with said frame, and extending generally along one side of said frame in the direction of closure translation; said track having first and second oppositely oriented faces between which a track groove is defined; said first track face including a plurality of recesses disposed therein, having base surfaces with peak surfaces on opposite sides thereof; said track groove having a longitudinal axis, and a peak height measured between said second track face and the peak surfaces of said recesses;
at least one cam mechanism operably connected with said closure at a side thereof disposed adjacent to said track; said cam mechanism including a drive shaft, and an eccentric operably connected with said drive shaft and rotating therewith; said eccentric being received in said track groove, and having a transverse axis with a width smaller than the peak height of said track groove, and a longitudinal axis with a length greater than the peak height of said track groove;
means for rotating said drive shaft axially between an unlocked position wherein the longitudinal axis of said eccentric is oriented substantially parallel with the longitudinal axis of said track groove to permit translation of said closure to a selected, partially open position, and a locked position wherein the longitudinal axis of said eccentric is oriented substantially perpendicular to the longitudinal axis of said track groove, and an associated portion of said eccentric is received in one of said recesses;
means for releasably locking said drive shaft against axial rotation in the locked position to positively retain said closure in the selected, partially open position.

4,763,950

TILTING CHAIR, ESPECIALLY OFFICE CHAIR

Peter Tobler, Rheineck, Switzerland, assignor to Provenda Marketing AG, Herisau, Switzerland

Filed Dec. 23, 1986, Ser. No. 946,192
Claims priority, application Switzerland, Jan. 7, 1986, 20/86
Int. Cl.[4] A47C *1/032*
U.S. Cl. 297—301 4 Claims



1. Tilting chair, especially office chair, having
a base support (13, 15);
a seat element (17, 19);
a back element (23, 25), the seat element and back element being coupled together and the back element being rearwardly tiltably movably supported on the base support;
back pivot means (21) coupling the seat element (17, 19) and the back (23, 25);
spring means (32) coupled to the base support (13, 15) and to the back (23, 25), positioned and arranged for biassing the back forwardly;
and a comfort position memory arrangement including a readily accessible manually adjustable positioning stop arrangement (37, 41) further including a stop element (41) secured to the seat element and coupling said seat element and said back element and permitting backward tilting of the back element against the force of said spring means while inhibiting forward tilting movement of the back element beyond a predetermined tilt position,
said comfort position memory arrangement comprising
a rotatable cam (37), rotatably secured to said back element and selectively engageable by the stop element (41);
a manual adjustment means (45) coupled to and rotating the cam for positioning said cam at selected angular positions which determine said predetermined tilt positions, including a wheel segment and end abutment stop projections (49) located at end portions of said segment and engageable with the back element (23) to define end positions of rotation of the cam,
said cam having a cam rotation axis spaced from and rearwardly of said tilt axis (35) and having a cam surface nonconcentric with said tilt axis and a cam curvature oriented to permit free rearward tilting movement of the back element (23, 25) by disengagement of the stop (41) from the cam surface, while inhibiting forward tilting movement beyond said predetermined position by engagement of the stop (41) with the cam surface of said cam;
wherein said back pivot means (21) is positioned close to a central region of said seat element; and
the back element (23, 25) is formed with an opening through which said manual adjustment wheel segment extends.

VOL 1093 ISS 3 AG 16 1988 UMI

4,763,951

THREADED LOCKING COUPLER

Michael W. Silverman, 414-½ Arlington St., Chicago, Ill. 60614, assignor to Michael W. Silverman

Continuation of Ser. No. 521,861, Aug. 19, 1983, abandoned. This application Jul. 14, 1986, Ser. No. 885,792

Int. Cl.[4] E04B *7/06*

U.S. Cl. 297—354 4 Claims



1. A quick disconnect coupler for coupling a first frame member to a second frame member, said quick disconnect coupler comprising:

a first generally cylindrical shaft having a proximal end portion coupled to the first frame member and a distal end portion, wherein the distal end portion of said first shaft is smaller in diameter than the proximal end portion thereof, said first shaft further having an outer annular recessed portion around the periphery thereof disposed between said proximal and distal end portions;

a second generally cylindrical shaft having a proximal end portion coupled to the second frame member and a distal end portion having an inner recessed portion adapted to receive in loose fitting engagement said first shaft's distal end portion, said inner recessed portion including a concave, semicircular flange which is positioned in cooperative alignment with the outer annular recessed portion of said first shaft when the distal end portion of said second shaft is positioned in abutting contact with the proximal end portion of said first shaft, and wherein said concave, semicircular flange is adapted for positioning within and engagement by the outer annular recessed portion of said first shaft when the first shaft's distal end portion is positioned within the second shaft's inner recessed portion, said second shaft further including an outer threaded portion along the entire length thereof; and

a generally cylindrical collar having an inner threaded portion defining an aperture within and extending along the entire length of said collar, said collar positioned on said second shaft and engaging the outer threaded portion thereof and movable along the length of said second shaft between the distal and proximal end portions thereof when said collar is rotationally displaced, with said collar engaging the first shaft's proximal end portion when positioned on the second shaft's distal end portion to securely maintain the first shaft's distal end within the second shaft's inner recessed portion, and with said collar disengaged from said first shaft's proximal end portion when positioned on the second shaft's proximal end portion to permit the first shaft's distal end portion to be withdrawn from the second shaft's inner recessed portion in allowing the first and second frames to be disconnected.

4,763,952

APPARATUS FOR WHEELCHAIR FITTINGS

Charles H. Gaudreau, Jr., 2736 Octavia St., New Orleans, La. 70115

Continuation of Ser. No. 916,887, Oct. 8, 1986, Pat. No. 4,728,150. This application Oct. 13, 1987, Ser. No. 107,553

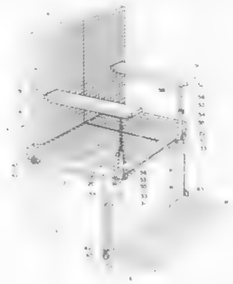
Int. Cl.[4] A47C *3/00*

U.S. Cl. 297—383 9 Claims

1. An adjustable chair for fitting a wheelchair to an individual, said adjustable chair comprising:

a seat section having an upper surface and a front edge;

a back section having a front surface which is disposed substantially perpendicularly to the upper surface of the seat section, and wherein said upper surface of the seat section and the front surface of the back section are provided with a network of uniformly spaced horizontal and



perpendicular lines to facilitate measuring of the individual; and

means for laterally adjusting distance from the front surface of the back section to the front edge of the seat section while retaining the substantially perpendicular relationship between the front surface of the back section and the upper surface of the seat section.

4,763,953

TRAILER DUMP STOP AND STABILIZER

Thomas N. Chalin, c/o Watson & Chalin Mfg., Inc., P.O. Box 1206, Rowlett, Tex. 75088

Filed Jan. 9, 1987, Ser. No. 1,681

Int. Cl.[4] B60G *11/00*; B60P *1/04*

U.S. Cl. 298—175 9 Claims



2. An air spring suspension dump trailer stabilizing device comprising:

(a) a support frame to which the trailer is mounted;

(b) a plurality of hangers connected to said support frame;

(c) an arm member pivotally connected to each of said hangers;

(d) an axle seat affixed to each of said arm members;

(e) air springs extending from said axle seats to said support frame;

(f) load transfer means affixed to a cantilever section of said arm members, said load transfer means serving to transfer load from said support frame to said arm members during dumping operations.

4,763,954

EXCAVATOR AND CONVEYOR OF AN UNDERGROUND PIPELINE JACKING APPARATUS

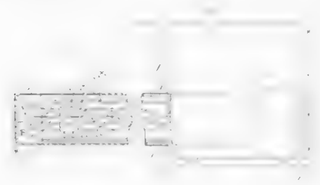
Gerd Soltau, Artlenburger Landstr. 15, 2120 Luneburg, Fed. Rep. of Germany

Filed Mar. 3, 1987, Ser. No. 21,080

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1986, 3607461; Jan. 23, 1987, 3701851

Int. Cl.[4] E21B *7/20*

U.S. Cl. 299—56 21 Claims



1. An excavator and conveyor for an underground jacking apparatus for pipelines having a perferably non-man-sized rated cross section, which is driven into the surrounding soil from a manhole comprising a digging head, provided with a rotatable digging disc means, follower means having a same diametrical dimension as said digging head and arranged to advance with digging head axially disposed linear shaft provide within said digging head, said shaft rotatably arranged within a conveyor tube and including a screw conveyor along its length, said conveyor tube being coaxial with said follower means and having a cylindrical wall radially spaced from said follower means, at least one sluice means associated with said conveyor tube disposed in an interrupted zone of said conveyor screw, said at least one sluice means including an annular expansible bellows operative within said conveyor tube, and means to introduce a flowable medium into said bellows whereby soil passage through the conveyor tube cross section may be closed gradually and to the extent desired.

4,763,955

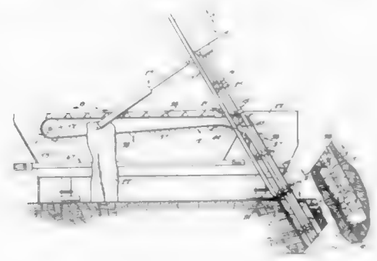
PITCH SEAM MINING

James C. Justice, Beckley, W. Va., assignor to Coaltex, Inc., Beckley, W. Va.

Filed Sep. 22, 1983, Ser. No. 534,651

Int. Cl.[4] E21C *35/20*

U.S. Cl. 299—56 18 Claims



1. A pitch seam miner comprising:

a powered cutting means;

a powered conveying means;

said conveying means powered separately and distinct from said cutting means;

means for introducing said cutting means into a seam to be mined, at substantially any angle of inclination of between about 15°–80° from horizontal; and

means for operatively interconnecting said cutting and conveying means so that said conveying means operatively follows said cutting means and conveys cut material from the interior of the seam to the mouth of the seam

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4,763,956

MINING TOOL RETAINER

Kenneth C. Emmerich, Lexington, Ky., assignor to Fansteel Inc., North Chicago, Ill.

Filed Jan. 16, 1987, Ser. No. 3,791

Int. Cl.[4] E21C *25/12*

U.S. Cl. 299—86 6 Claims



3. A retainer for mining or construction bits mounted in a mounting block having a receiving bore, the bits having a mounting shank received in the bore of the block and having an annular groove forming a neck portion on the end of the mounting shank extending from the bore, said retainer comprising:

(a) a generally circular, resilient body with an inner face and an outer face larger than said bore and having an annular first central recess to receive and be retained on the neck portion of the mounting shank, said body having a radial opening from said recess to permit installation of the body on the bit in a motion transverse to the bit axis to cause temporary widening of the opening due to the resilience of the body, and

(b) opposed chordal extensions on the inner face of said body on either side of said radial opening dimensioned to be received in said bore during the non-cutting phase of said bit to confine the body against dislodgment and to absorb shock of axial motion of said bit upon release from a cutting phase.

4,763,957

BICYCLE HUB CONSTRUCTIONS AND LUBRICATION THEREOF

Paul W. Poehlmann, Stinson Beach; Mark J. Slate; Stephen M. Potts, both of Mill Valley, and Charles B. Cunningham, Fairfax, all of Calif., assignors to Wilderness Bicycle, Inc., Corte Madera, Calif.

Filed Nov. 3, 1986, Ser. No. 926,340

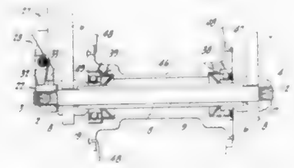
Int. Cl.[4] B60B *27/00*

U.S. Cl. 301—105 B 3 Claims

1. A bicycle hub construction and lubrication therefor especially for a bicycle having first and second spaced forks with openings therein comprising an axle adapted to extend through said openings and having threaded ends, a tube disposed

VOL 1093 ISS 3 AG 16 1988 UMI

around said axle and spaced from said forks, a pair of spaced-apart ball bearings each having an inner race engaging said tube and an outer race, a tubular housing surrounding said axle and having spoke-receiving end flanges, means on said housing adjacent said end flanges for engaging the outer races of said ball bearings, means on said housing providing a pair of end chambers each with a shoulder adjacent a respective one of said ball bearings, a pair of circular seals each having an annular band disposed between one of said shoulders and the outer race of one of said ball bearings and each having a conical portion integral with said band adjacent said one of said shoulders and extending into contact with said tube at spaced locations leaving a volume between said seals, means including passages through the wall of said tubular housing and overlain by said seals for admitting lubricant to said end chambers, a



pair of cups each having a shoulder disposed between a respective end of said tube and a respective one of said forks and having a cylindrical portion surrounding said respective end of said tube, a nut engaging one threaded end of said axle and near said first fork, a bearing washer around the other end of said axle and abutting said second fork, a nut block engaging the other threaded end of said axle, means defining transversely disposed bearing shoulders on opposite sides of said nut block, a yoke having a pair of fingers, a bearing pin on each of said fingers adapted to engage a respective one of said bearing shoulders, means on each of said fingers defining cams eccentric to said bearing pins and adapted to engage said bearing washer, a latch lever, means for pivoting said latch lever on said yoke between said fingers for movement of said latch lever into and out of engagement with said nut block, and means for urging said latch lever into engagement with said nut block.

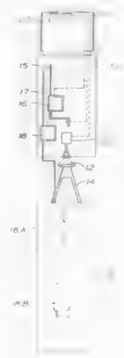
4,763,958

APPARATUS FOR MATCHING THE BRAKE PRESSURE OF VEHICLE COMBINATIONS TO THE ACTUAL LOAD

Stephan N. A. Öhrgard, Sibbhult, Sweden, assignor to VBG Produkter AB, Vanersborg, Sweden

PCT No. PCT/SE85/00401, § 371 Date Aug. 14, 1986, § 102(e) Date Aug. 14, 1986, PCT Pub. No. WO86/02323, PCT Pub. Date Apr. 24, 1986
PCT Filed Oct. 17, 1985, Ser. No. 889,940
Claims priority, application Sweden, Oct. 17, 1984, 8405181; May 9, 1985, 8502325
Int. Cl.[4] B60T *7/20*
U.S. Cl. 303—8 2 Claims

1. Vehicle combination comprising a tractor vehicle, a trailer vehicle, a coupling connecting said tractor vehicle to said trailer vehicle, air pressure brakes on said vehicles, air conduits for supplying pressurized air to said brakes, a transducer operatively connected to said coupling to provide a signal indicating pulling and pushing, respectively, of the coupling, a servo-regulator unit operatively connected to said air conduits for adjusting the pressure of pressurized air supplied to said brakes through said air conduits, and a central unit operatively connected to said servo-regulator unit and to said transducer for controlling said pressure in dependence on said



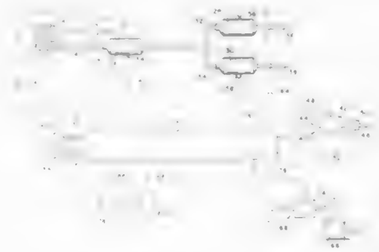
signal provided by said transducer when the air pressure brakes of the vehicles are being actuated.

4,763,959

ELECTRONIC CONTROL FOR FLUID PRESSURE BRAKING SYSTEM

Patrick J. Vandemotter, Westlake, Ohio, assignor to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 23, 1987, Ser. No. 111,905
Int. Cl.[4] B60T *13/68*
U.S. Cl. 303—9 20 Claims



1. Fluid pressure braking system comprising a compressor, reservoir means for storing fluid pressure generated by said fluid pressure source, conduit means for communicating with said fluid pressure source, pressure sensing means in said reservoir means for generating an electrical signal which varies a function of the pressure level in said reservoir means, compressor disabling mechanism communicating with the reservoir means for unloading the compressor, electrically operated valve means for controlling communication of a pressure signal between the reservoir means and the disabling mechanism, said electrically operated valve means being shiftable from a first condition communicating the disabling mechanism with said reservoir means to a second condition closing communication between said reservoir means and venting said disabling mechanism to atmosphere, and control means for comparing said electrical signal with a high and low pressure limit, said control means generating a control signal shifting said electrically operated valve means to actuate said disabling mechanism to unload said compressor when said pressure level in said reservoir means is above said high level and shifting said electrically operated valve means to cause said compressor to

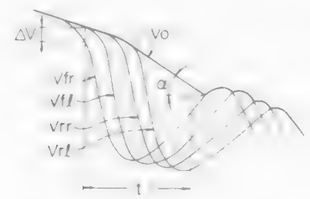
charge said reservoir when the pressure level in said reservoir means is below said low limit.

4,763,960

ANTISKID TYPE BRAKE SYSTEM FOR VEHICLES

Kiyoyuki Uchida, and Michio Akiyoshi, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 5, 1986, Ser. No. 927,108
Claims priority, application Japan, Nov. 25, 1985, 60-264174
Int. Cl.[4] B60T *8/74, 8/58, 8/68*
U.S. Cl. 303—97 3 Claims



1. An anti-skid type brake system for vehicles comprising:
a plurality of brakes each mounted to one of a plurality of wheels and actuated hydraulically;
a plurality of actuators each mounted to one of said brakes or a plurality of brakes for increasing and decreasing the fluid pressures of the brakes;
a plurality of rotation sensors at least one of which is mounted for each one of said plurality of actuators for monitoring the speed of rotation of each said wheel;
a plurality of fluid pressure sensors each monitoring a fluid pressure supplied from each said actuator to the respective brake and generating an electric signal changing at least in two stages in accordance with the level of the fluid pressure;
upper limit value setting means for setting an upper limit value of a wheel deceleration at a high level when the fluid pressure is high and at a low level when the fluid pressure is low, based on the fluid pressure sensed by the fluid pressure sensor associated with a wheel whose speed of rotation has been determined by the associated rotation sensor to be the highest of all the speeds of rotation of the wheels; and
a controller comprising means for normally assuming that the highest speed of rotation of all the speeds of rotation monitored by the rotation sensors represents the traveling speed of a vehicle and for estimating, after the deceleration of a wheel having the highest speed of rotation has exceeded the predetermined upper limit value, the traveling speed of the vehicle by fixing a deceleration of the traveling speed of the vehicle at the upper limit value while controlling each said actuator by estimating the slipping condition of each wheel based on the difference between the estimated traveling speed of the vehicle and the speed of rotation of each wheel, whereby the skidding of at least one of the wheels associated with the actuators is avoided.

4,763,961

DEBRIS REMOVAL APPARATUS FOR TRACK TYPE VEHICLES

John R. Parrott, Rte. 3, Sumner, Ill. 62466

Filed May 13, 1986, Ser. No. 862,709
Int. Cl.[4] B62D *55/00*
U.S. Cl. 305—12 11 Claims

1. A debris remover for a track type vehicle of the type which has a body and is adapted to move over the ground supported on an endless track which is entrained about the track drive sprocket and at least one idler which are mounted on a frame member, in which the track is supported between the track drive sprocket and the at least one idler by a roller carried by a roller support connected to the body, and in which the track, the sprocket, the body and the at least one idler and the frame member define a cavity above the frame member which is susceptible to collect debris therein, the debris remover comprising:
plate means in and conforming to the shape of the cavity; and
mounting means mounting said plate means in said cavity at a first position immediately adjacent the body, said mounting means including actuation means operated to move said plate means away from the body to a second location to push collected debris out of the cavity,
said roller support mounted on the body frame member and dividing the cavity into sections, and
said plate means comprising pocket means for receiving the roller support when said plate means is adjacent the vehicle body,
said plate means comprising a section extending downwardly and then outwardly over the frame member when said plate means is in the first position.

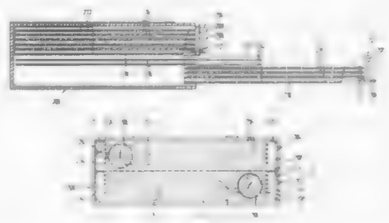


4,763,962

CONTAINER FOR STORING RECORDING MEDIA THAT ARE SUBSTANTIALLY PLATE-LIKE

Peter Ackeret, Kusnacht, Switzerland, assignor to IDN Invention and Development of Novelties AG, Chur, Switzerland

Continuation of Ser. No. 645,057, Aug. 28, 1984, Pat. No. 4,647,117. This application Jan. 5, 1987, Ser. No. 480
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1983, 8423125[U]; European Pat. Off., Aug. 3, 1984, [illegible]
Int. Cl.[4] A47F *1/04*
U.S. Cl. 312—16 21 Claims



1. Apparatus for use in the storage of recording media, the recording media having a plate-like form with a narrow width, said apparatus comprising:
housing means, said housing means defining a storage enclosure, said housing means having an enclosure access opening at one side thereof;
transporter means, said transporter means being supported from said housing means for movement relative thereto

VOL 1093 ISS 3 AG 16 1988 UMI

between an inserted position wherein said transporter means is located within said housing means and an ejected position wherein said transporter means in part extends through said housing means access opening and is partly located outside said housing means;

a plurality of holder means, said holder means receiving and supporting plate-like recording media, said holder means each being movable relative to said housing means between a storage position wherein the holder means is located within said housing means and a removal position wherein the holder means at least in part extends through said housing means access opening to enable removal of a plate-like recording media therefrom;

coupling means mounting on said transporter means for selectively coupling at least one of said holder means to said transporter means whereby the selected holder means will be caused to move with said transporter means, movement of said transporter means from the inserted to the ejected position causing a selected holder means to move from the storage position toward the removal position;

means for resiliently biasing said transporter means toward the exterior of said housing means; and

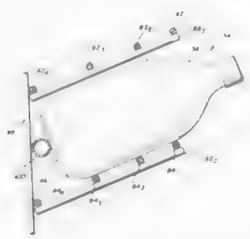
releasable locking means for holding said transporter means in the inserted position against the bias of said biasing means.

4,763,963

SKEWED SERPENTINE MULTI-PACKAGE PRODUCT STORAGE RACK

Scott C. Lauffer, Atlanta; Frank B. Golley, Decatur, and Don S. Summerville, Snellville, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Filed Jul. 25, 1986, Ser. No. 889,494
Int. Cl.[4] B65G *59/00*
U.S. Cl. 312—45 7 Claims



1. A storage rack assembly in combination with a vending machine comprising;

a plurality of storage rack units juxtaposed between side walls of said vending machine, each said storage rack unit extending between a front wall and a back wall of said vending machine and including,

(a) a plurality of side-by-side channel means for storing packages having substantially cylindrical sidewalls extending from a circular base, in a substantially vertical column and for guiding said packages in a serpentine path as the packages move from a top end of said column to a bottom end thereof; and

(b) support means for positioning said packages within said channel means, said support means including serpentine side members having inwardly facing and mutually opposing sidewall surfaces defining said serpentine path wherein said inwardly facing sidewall surfaces are skewed at a predetermined angle relative to the horizontal and are tilted downwardly from the open front of said channel means to a rear wall thereof so that the longitudinal axis of each package is parallel to the front wall of the machine and skewed at an angle with respect to the horizontal plane and the package is supported only on said cylindrical sidewalls and said circular base;

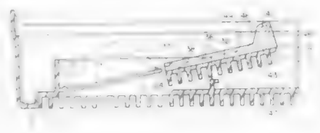
each said storage rack unit being mounted on an independently movable pull-out slide assembly, each slide assembly being movable between positions within the vending machine and positions outboard thereof to facilitate loading of packages into said unit outboard of said machine from bottom to top of each channel means.

4,763,964

SLIDING DOOR ASSEMBLY

Theodore S. Bolton, and James E. Napolitano, both of Liverpool, N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Jul. 7, 1986, Ser. No. 882,555
Int. Cl.[4] E05D *15/20*
U.S. Cl. 312—100 12 Claims



1. In an air conditioning apparatus of the type having a front grille structure with a control panel opening and an access door for convering the control panel, an improved control panel door and mounting assembly comprising:

a guide track attached to the grille structure at one edge of the control panel opening, said guide track having a track portion extending generally transversely across the control panel opening but at an angle of increasing distance therefrom, and a guide portion extending substantially normally from said track portion; and

a door for placement within the control panel opening, said door having a slot structure formed in the rear side thereof for mounting said door to said guide track, said slot structure having a slide portion extending transversely across and in substantially parallel relationship with said door, and a pivot portion extending further in the generally transverse direction but at an angle of increasing distance from said door, said slot being positioned and sized so as to allow said track guide portion to slideably transverse said slot pivot and slide portions as said door moves between the fully closed and fully opened positions.

4,763,965

PRINTER TABLE WITH A PAPER CARRIAGE

Paul Reppel, Rönsahl, Fed. Rep. of Germany, assignor to Reppel-Plastic GmbH, Kierspe, Fed. Rep. of Germany

Filed Jul. 15, 1986, Ser. No. 886,025
Claims priority, application Fed. Rep. of Germany, Aug. 31, 1985, 3531188
Int. Cl.[4] A47B *21/00*
U.S. Cl. 312—317 A 5 Claims

1. A printer table, comprising:

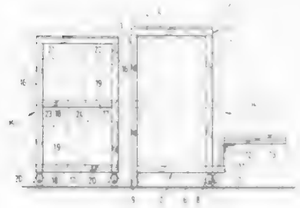
a paper carriage, adapted for bearing stacks of paper, which is capable of being inserted beneath said printer table, said printer table having at least one base plate with raised edges;

a bottom frame, having four corners and being open on a first wide side, includes at least one traverse bar located at a second wide side, said second wide side being positioned opposite said first wide side;

a traverse element being located at said second wide side;

vertical posts located at the four corners of said bottom frame so that the width of said paper carriage corresponds to a distance between two of said vertical posts which define the limits of the open, first wide side,

whereby, said traverse bar of said bottom frame projects beyond said vertical posts, said traverse bar being connected at an end by means of said traverse element, said tranverse element serving as a step for said paper carriage.



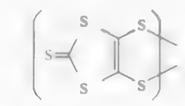
4,763,966

INFRARED ABSORBENT

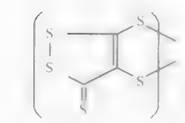
Yoshiaki Suzuki, and Gouichi Hayashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 15, 1985, Ser. No. 754,759
Claims priority, application Japan, Jul. 16, 1984, 59-147393; Aug. 4, 1984, 59-163980; Aug. 28, 1984, 59-177523; Sep. 13, 1984, 59-192412; Sep. 27, 1984, 59-202692
Int. Cl.[4] G02B *5/22*; F21V *9/04*; G03C *1/84*
U.S. Cl. 350—1.1 18 Claims

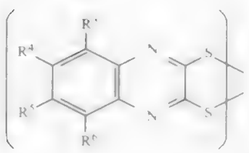
1. A metal complex compound useful as an infrared absorbent prepared by coordinating two bidentate ligands selected from the following groups to a center metal selected from the group consisting of nickel, copper, cobalt, palladium and platinum and neutralizing such a complex with a cation



(i)



(ii)



(iv)

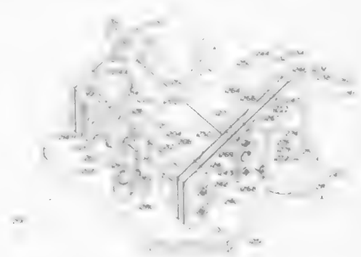
wherein, R^3 to R^6 each independently represents a hydrogen atom, halogen atom, cyano group, hydroxyl group, or a substituted or unsubstituted alkyl, aryl, cycloalkyl or heterocyclic group which may be bonded through a divalent connecting group to a benzene ring, or a group of nonmental atoms forming a substituted or unsubstituted five-membered or six membered ring by bonding of R^3 and R^4, R^4 and R^5, or R^5 and R^6; R^3 to R^6 may be the same or different.

4,763,967

TUNABLE RESONANT DEVICE

Mack J. Schermer, Cambridge, Mass., assignor to General Scanning, Inc., Watertown, Mass.

Filed Nov. 18, 1986, Ser. No. 932,654
Int. Cl.[4] G02B *26/10, 7/02*
U.S. Cl. 350—6.3 5 Claims



1. A resonant system comprising

a linearly movable element having a neutral position and a range of excursion centered on said neutral position, and

a spring-like element for urging said movable element toward said neutral position,

said resonant system having a natural resonant frequency dependent on the spring characteristics of said spring-like element,

said spring-like element having a temperature sensitive member that causes said spring characteristics to vary with temperature of said member.

4,763,968

SURGICAL MICROSCOPE

Kazuyuki Minami, Musashino; Takashi Nagano; Hiroshi Fujiwara, both of Hachiouji; Takashi Fukaya, Ina; Yutaka Takabayashi, Hachiouji, and Takayoshi Togino, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1987, Ser. No. 74,842
Claims priority, application Japan, Jul. 18, 1986, 61-169417
Int. Cl.[4] G02B *21/22, 27/26*
U.S. Cl. 350—516 15 Claims



1. A surgical microscope, comprising:

a common objective lens;

a pair of auxiliary optical systems for stereoscopic view observation, disposed, on the image side of said common

VOL 1093 ISS 3 AG 16 1988 UMI

objective lens, on a pair of operator's observational optical axes, respectively;

a pair of first polarizing direction selecting and transmitting semi-transmissive mirrors disposed, with an inclination relative to said operator's observational optical axes, respectively, on those portions, respectively, of said pair of operator's observational optical axes which are located between respective said pair of auxiliary optical systems and said common objective lens;

a pair of total reflection mirrors disposed at positions substantially symmetrical relative to an axial line which passes through the center of a segment of line connecting between said pair of operator's observational optical axes and which is parallel with said pair of operator's observational optical axes, for causing the light beams having been transmitted through said common objective lens along a pair of assistant's observational optical axes to be totally reflected, respectively, in such a way that the transmitted light beams incide onto said pair of first polarizing direction selecting and transmitting semi-transmissive mirrors, respectively, and are reflected thereat to advance toward said pair of auxiliary optical systems, respectively; and

a pair of second polarizing direction selecting and transmitting semi-transmissive mirrors disposed, with an inclination relative to said operator's observational optical axes, respectively, on said operator's observational optical axes, respectively, at locations lying either within said pair of auxiliary optical systems or on the image side thereof, respectively, and having polarizing directions either agreeing with those of said pair of first polarizing direction selecting and transmitting semi-transmissive mirrors, respectively, or crossing those of said mirrors at right angles, respectively.

4,763,969

ADJUSTABLE OPTICAL DEMULTIPLEXER

Giok D. Khoe, and Antonius J. A. Nicia, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,929

Claims priority, application Netherlands, Sep. 7, 1981, 8104121

Int. Cl.⁴ G02B *6/34;* **G02F** *1/13;* **H04B** *9/00*

U.S. Cl. 350—96.19 **3 Claims**



1. An optical demultiplexer comprising an optical input fiber for transporting a plurality of light signals of different wavelengths, an optical output member, a wavelength-selective member disposed in the path of the light emitted by said input fiber, said wavelength-selective member directing a portion of the light incident thereon which is within a given waveband onto said output member, the waveband of the light that is directed onto said output member being dependent on the orientation of said wavelength-selective member relative to the direction of light incident thereon, a lens arranged between said wavelength-selective member on the one hand and said input fiber and said output member on the other hand, and light deflecting means arranged between said lens and said wavelength-selective member for changing the direction of the light passing therebetween so as to selectively change the waveband of the light that is directed onto said output member.

4,763,970

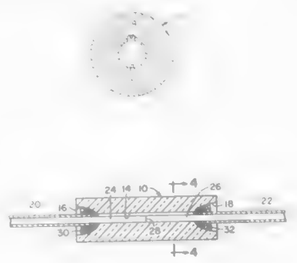
NON-PISTONING CAPILLARY SPLICE

George E. Berkey, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 7, 1987, Ser. No. 82,682

Int. Cl.⁴ G02B *6/38*

U.S. Cl. 350—96.21 **3 Claims**



1. An optical fiber splice comprising:

a hollow glass cylinder having first and second end surfaces and defining a longitudinal cylindrical aperture therein,

means adjacent said aperture defining a longitudinal groove parallel to said longitudinal aperture and in communicating relationship therewith,

a portion of said hollow cylinder adjacent said first end surface defining a tapered aperture extending inwardly from said first end surface and merging with said longitudinal cylindrical aperture and said longitudinal groove, and

a portion of said hollow cylinder adjacent its second end surface defining a tapered aperture extending inwardly from said second end surface and merging with said longitudinal bore and said longitudinal groove.

4,763,971

SOLAR RAYS RADIATION DEVICE FOR MEDICAL TREATMENT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Nov. 14, 1986, Ser. No. 931,460

Claims priority, application Japan, Dec. 10, 1985, 60-277768

Int. Cl.⁴ G02B *6/00, 6/04*

U.S. Cl. 350—96.1 **4 Claims**



1. A solar rays radiation device for effecting medical treatment of a person in a motor vehicle in which the motor vehicle has a motor vehicle body formed in part by a motor vehicle roof, comprising solar rays collecting means mounted on the top of said motor vehicle roof, said collecting means comprising a plurality of lenses, motor operated means mounted on said collecting means for moving said collecting means about two mutually perpendicular axes, a solar rays direction sensor mounted on said collecting means for detecting the direction of the solar rays and for controlling said motor operated means such that said motor operated means moves said collecting means about said two axes to continuously direct said lenses toward the sun, whereby said lenses continuously receive the direct rays of the sun as the motor vehicle travels about on land and as the position of the sun changes relative to earth as the time of day passes, said collecting means being operable to transmit solar rays corresponding to the visible light rays component of solar rays and excluding ultraviolet rays and infrared rays, an optical conductor cable means leading from said collecting means to the inside of said motor vehicle body and receiving said visible light rays component of solar rays from which ultraviolet rays and infrared rays have been excluded, said optical conductor means having a light emitting end portion, and a hood means in said motor vehicle body on which said light emitting end portion is mounted such that the visible light rays component emitted from said light emitting end portion pass through said hood means to be directed to a desired portion on a person who is riding inside of said motor vehicle body.

4,763,972

DIFFERENTIAL ABSORPTION POLARIZER, A METHOD OF FORMING SAME AND DEVICE IMPLEMENTING SAID METHOD

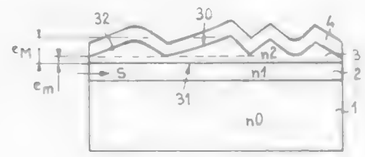
Michel Papuchon, Massy; Alain Enard, Montrouge; Sylvie Vatoux, St. Remy les Chevreuses, and Michel Werner, Gif sur Yvette, all of France, assignors to Thomson-CSF, Paris, France

Filed Sep. 24, 1986, Ser. No. 910,980

Claims priority, application France, Sep. 27, 1985, 85 14375

Int. Cl.⁴ G02B *6/12*

U.S. Cl. 350—96.11 **18 Claims**



1. A differential absorption polarizer constructed in integrated optics, comprising:

a substrate of a first index having on one face a first layer of a guide material of a second index, for guiding at least one transverse magnetic TM polarization of a wave S;

a second layer of a dielectric material of a third index whose face opposite the common face with the first guide material has several zones inclined with respect to the plane of the face, for each of said inclined zones,the value of the lowest thickness (em) of the dielectric material and the value of the highest thickness (eM) of the same dielectric material bracketing the value of the resonance thickness (er) of the dielectric material for said transverse magnetic TM polarization mode and wherein said inclined zones form an irregular surface;

a third layer of a metal material deposited on the face of the dielectric layer having inclined zones.

4,763,973

WAVEGUIDE-TYPE OPTICAL SENSOR

Nobuhisa Inoue, Kyoto; Masaharu Matano, Kyoto, and Tsukasa Yamashita, Nara, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 25, 1986, Ser. No. 832,732

Claims priority, application Japan, Feb. 27, 1985, 60-40133; Feb. 27, 1985, 60-40136

Int. Cl.⁴ G02B *6/10;* **H01J** *5/16;* **H01S** *3/17*

U.S. Cl. 350—96.13 **6 Claims**

1. A waveguide-type optical sensor for sensing a physical quantity capable of varying a refractive index of material, said sensor comprising:

a substrate having a refractive index that varies in dependence upon said physical quantity to be sensed;

diverging means for causing a light beam introduced onto said substrate to diverge into a plurality of light beams;

a plurality of modulating elements formed on said substrate for modulating the intensity of the diverged light beams based on the variation of said refractive index of said substrate in dependence upon an application to said substrate of said physical quantity to be sensed; and

optical parallel/serial conversion means formed on said substrate for converting, in a time sequence, a plurality of light beams outputted by respective ones of said modulating elements into a serial optical signal.

4,763,974

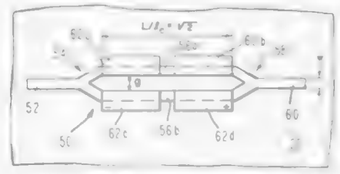
Δβ-PHASE REVERSAL COUPLED WAVEGUIDE INTERFEROMETER

Suwat Thaniyavarn, Bellevue, Wash., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 13, 1987, Ser. No. 84,722

Int. Cl.⁴ G01B *9/02*

U.S. Cl. 350—96.14 **19 Claims**



1. A coupled waveguide interferometer comprising a single optical input into a Y-branch forming two parallel optical paths, electrodes associated with each said optical path, and a Y-branch combining said optical paths into a single optical output, said electrodes comprising multiple sections of alternating voltage polarity and said parallel optical paths spaced close enough to induce evanescent coupling therebetween.

4,763,975

OPTICAL SYSTEM WITH BRIGHT LIGHT OUTPUT

Donald R. Scifres, and D. Philip Worland, both of San Jose, Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.

Filed Apr. 28, 1987, Ser. No. 43,612

Int. Cl.⁴ G02B *6/26*

U.S. Cl. 350—96.15 **23 Claims**

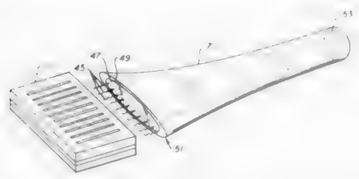
1. An optical system for producing a bright light output comprising,

a plurality of light sources, each of said light sources emitting light from a given emissive area with given lateral and transverse divergences,

a plurality of fiberoptic waveguides, each of said waveguides having an oblong input end and an output end, each oblong input end positioned relative to one of said light

VOL 1093 ISS 3 AG 16 1988 UMI

sources for accepting light therefrom, each oblong input end having core dimensions and lateral and transverse numerical apertures corresponding respectively to said emissive area and said lateral and transverse divergences



of said one of said light sources so as to guide most of said light emitted by said light source, said fiberoptic waveguides being arranged at said output ends to form a bundle

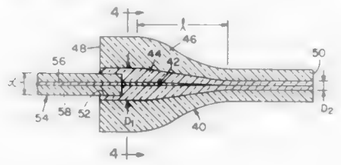
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4,763,976

CONNECTOR EMPLOYING MODE FIELD MODIFICATION

Daniel A. Nolan, Corning, and Carlton M. Truesdale, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 21, 1987, Ser. No. 52,281
Int. Cl.[4] G02B 6/26
U.S. Cl. 350—96.15 9 Claims



1. A mode field modifier for use with an optical fiber having a core and a cladding of outside diameter d, said modifier comprising

a modifier core having a refractive index n_1,

a first cladding layer surrounding said modifier core, said first cladding layer having a refractive index n_2 that is less than n_1,

a second cladding layer on the surface of said first cladding layer, the refractive index n_3 of said second cladding layer being less than n_2, said modifier being tapered intermediate its ends whereby it has a large diameter end and a small diameter end, the diameters of at least said core and said first cladding layer at said large diameter end are greater than the corresponding diameters at said small diameter end, whereby the mode field of an optical signal propagating in one end of said modifier is modified as said signal propagates through the tapered portion of said modifier, the diameter D_1 of said first cladding layer at said large diameter end being greater than d, and

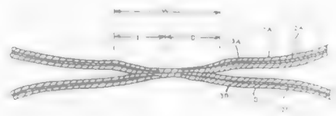
means for positioning a fiber at said large diameter end in light coupling relationship with said modifier core, said means for positioning comprising a hole in said large diameter end, said hole being concentric with said modifier core.

4,763,977

OPTICAL FIBER COUPLER WITH TUNABLE COUPLING RATIO AND METHOD OF MAKING

Brian S. Kawasaki, Kanata; Masao Kawachi, Nepean; Kenneth O. Hill, Kanata, and Derwyn C. Johnson, Nepean, all of Canada, assignors to Canadian Patents and Development Limited-Societe, Ottawa, Canada

Filed Jan. 9, 1985, Ser. No. 690,099
Int. Cl.[4] G02B 6/26, 6/42
U.S. Cl. 350—96.15 11 Claims



1. A unidirectional optical fiber coupler comprising a pair of virtually identical optical fibers each comprised of a core and cladding and being fused together at a narrow tapered waist, each fiber being tapered toward and away from the waist, means for translating an optical signal in single mode and carried by one fiber in the core at one side of the waist to multi-mode carried by the cladding at least adjacent the narrowest portion of the waist, and for translating the signal in multi-mode to single mode carried by the core of either said one or the other fiber or both fibers at the other side of the waist.

4,763,978

OPTICAL FIBER CONNECTOR

Jeofry S. Courtney-Pratt, Locust, and James R. McEowen, Holmdel, both of N.J., assignors to American Telephone and Telegraph Company and AT&T Information Systems Inc., both of Murray Hill, N.J.

Filed Oct. 3, 1986, Ser. No. 915,263
Int. Cl.[4] G02B 6/28, 7/26
U.S. Cl. 350—96.18 9 Claims

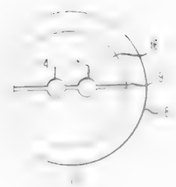
1. A connector comprising

a body of material having first and second ends, said first end being spherically shaped and coated with a reflective material to form a spherical mirror having a predetermined center of curvature, and

first and second holes formed in said second end for receiving respective signal conductors, the interior ends of said holes being collinear with said center of curvature, said second end being split to form a gap of a predetermined depth and an exterior portion of said body of material at said second end being tapered and threaded,

whereby when said signal conductors are inserted into respective ones of said first and second holes and a collar having interior threads is threaded onto said tapered threads said gap closes, thereby causing said split end to grip said conductors, and whereby light signals emitted by one of said signal conductors inserted in one of said holes impinge on said spherical mirror and are focused thereby







to the other one of said signal conductors inserted in the other one of said holes.

4,763,979

ARRANGEMENT FOR COUPLING A LASER DIODE TO A MONOMODE LIGHT WAVEGUIDE AND THE METHOD FOR FORMING THE ARRANGEMENT

Walter Heywang, Neukeferloh, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 23, 1986, Ser. No. 910,464
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1985, 3534017
Int. Cl.[4] G02B 6/36; H01S 3/00; H01J 5/16
U.S. Cl. 350—96.20 13 Claims

1. In a method for coupling a laser diode to an end of a monomode light waveguide wherein the laser beam emerging from the end face of the laser diode and the end of the light waveguide are adjusted to one another by means of a relative cross-displacement and pivoting, the improvements comprising the providing a laser diode, which is a gain guided laser diode, having a seating surface for the light waveguide extending parallel to a laser active layer of the diode and being rigidly fixed relative to a front of a reflecting end face of the diode at such an interval from the layer that the light entry face at the end of a light waveguide lying flat on the seating surface lies on the same level as the exit point of the laser beam; securing the light waveguide on the seating surface with the end having the light entry face being in contact with the laser active layer; and then displacing and pivoting the laser beam in the plane of the laser active layer by applying an external magnetic field to the diode to thereby adjust the beam position in said laser active layer relative to the light waveguide.

7. In an arrangement comprising a laser diode and a monomode light waveguide coupled thereto with the light entry face of the one end of the light waveguide lying opposite an



exit point of the laser beam emerging from an end face of the laser diode, said laser diode being aligned approximately in an axial direction of said light waveguide, the improvements comprising the laser diode being a gain guided laser diode having a laser active layer, reflective end face and a seating surface for said light waveguide being fixed relative to said end face and extending parallel to the laser active layer of said diode at an interval from the layer corresponding to the radius of the optical waveguide, the light waveguide being secured and lying flat on the seating surface with the light entry face of the core of the light waveguide laying at the same level as the exit point of the laser beam from the laser active layer, and means for generating an external magnetic field being applied to the diode for shifting and pivoting the laser beam in the plane of the laser active layer.

4,763,980

METHOD AND APPARATUS FOR CENTERING THE CORE OF A LIGHT GUIDE FIBER IN A LIGHT GUIDE END PORTION

Hans Gerber, Minusio, and Silvio Marazzi, Cavigliano, both of Switzerland, assignors to Diamond SA, Losone, Switzerland

Filed May 30, 1986, Ser. No. 868,708
Claims priority, application Switzerland, Jun. 20, 1985, 2611/85
Int. Cl.[4] G02B 6/36
U.S. Cl. 350—96.20 11 Claims



1. A method of accurately centering the core of a light guide

VOL 1093 ISS 3 AG 16 1988 UMI

fiber in a light guide end portion having a plastically deformable material surrounding said light guide fiber and presenting an end face transversely disposed with respect to said fiber with an end of said fiber substantially centrally disposed in said end face, the method comprising:

pressing an annular upsetting tool concentrically surrounding said end of said fiber against said end face to form an annular impression in said end face to fix and substantially center said fiber therein, thereby precentering said fiber relatively to a central axis of said light guide end portion;

clamping said light guide end portion with said fiber precentered therein into an adjusting device;

introducing light into said fiber from an end thereof remote from said end face;

detecting the relative position of the end of said fiber core at said end face with respect to said central axis of the light guide end portion by means of said light introduced into said fiber; and

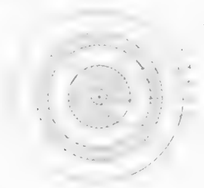
in the event of any deviation of said fiber core end at said end face with respect to said central axis, pressing a segment-shaped pressing tool into an arc of said annular impression selected by said adjusting device which subtends said deviation to locate said fiber core end on said central axis of said light guide end portion.

4,763,981

ULTIMATE LOW-LOSS ELECTRO-OPTICAL CABLE

George A. Wilkins, Kailua, Hi., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 2, 1981, Ser. No. 239,253
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 4 Claims



1. A deep ocean cable having essentially no voids therein for transmitting power and data comprising:

at least one optical fiber axially extending for optically transmitting control and data signals;

a tube-shaped solid conductor having a coaxial bore sized to encase, isolate and hermetically seal the at least one optical fiber for electrically transmitting d.c. power through the deep ocean cable;

a tube-like dielectric cylinder coaxially disposed about the tube-shaped solid conductor for encasing it and dielectrically insulating the tube-shaped solid conductor from the surrounding seawater;

means coaxially disposed about the tube-like dielectric cylinder for armoring the at least one optical fiber, the tube-shaped solid conductor, and the tube-like dielectric cylinder and for tensiley bearing the load imposed by the cable, the armoring and bearing means further guards the tube-like dielectric cylinder from abrasion and penetration; and means coaxially disposed about the armoring and bearing means for protecting it from the leaching action of seawater and to defocus externally originating concentrated forces, the tube-shaped solid conductor and the armoring and bearing means are selected from materials and dimensioned to provide a stress safety factor of about two in combination and, with the other means, to have a specific gravity of about one point five, the tube-shaped solid conductor and the armoring and bearing means are selected from materials that, when simultaneously strained a pretermined percent, share the load of the cable; further including means interposed in contact with the at least one optical fiber and within the tube-shaped solid conductor for buffering the at least one optical fiber to help isolate stress therefrom and the coaxial bore of the cylindrically-shaped solid conductor is sufficiently sized to receive the buffering means without any voids therein; the optically transmitting means is at least one optical fiber and the electrically transmitting means is a cylindrically-shaped solid conductor having a coaxial bore sized to receive the optically transmitting means and the buffering means to make a one-way d. c. path along the cable; the tube-like dielectric cylinder is a high density plyethylene; the armoring and bearing means is a multitude of aromatic polyamide filaments in an annular resin matrix; the tube-shaped solid conductor is fabricated from materials to share equally in the tensile load imposed by the cable when both the tube-shaped solid conductor and the aromatic polyamide filaments are strained to a one percent strain; the aromatic polyamide filaments are disposed in a contrahelix configuration with a relatively long lay length for torque balance; and the outer and inner diameters D_3 and D_2 of the tube-shaped solid conductor, the outer diameter of the tube-like dielctric cylinder D_4 and the outer diameter D_5 of the armoring and bearing means have the following relationship upon said one percent strain:

$$S_c(1\%) \cdot (\pi/4)(D_3^2 - D_2^2) + S_k(D_5^2 - D_4^2)$$

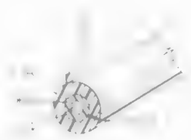
where S_c is the tube-shaped solid conductor ultimate tensile stress at 1% strain of 4500 KGF/CM^2 and S_k is the armor and bearing means tensile stress at 1% strain of 11250 KGF/CM^2.

4,763,982

OPTICAL CABLE MANUFACTURE

Johannes Greveling, Saskatoon, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 23, 1986, Ser. No. 877,064
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 5 Claims



1. Apparatus for making a core for an optical cable comprising:

a reservoir for coating a plurality of tensile glass filaments with a flowable and rigidly solidifiable material;

tube forming means to form coated filaments into a circumferentially rigid tube, the tube forming means disposed downstream along passline for the filaments from the reservoir and comprising a tubular guide means for optical fiber, the tube forming means also comprising a heating means which:

(a) surrounds and is spaced from an outer surface of the guide means to define a tubular space to be filled by coated filaments as they move along the passline; and

(b) is for heating the flowable material as the flowable material moves along the space to form the rigid tube;

means for holding the tensile filaments in laterally spaced relationship as the filaments pass through the reservoir, for causing convergence of the coated filaments towards an upstream inlet end of the tubular space and for bringing the coated filaments into close relationship to fill the tubular space with filaments and flowable material; and

the tubular guide means having an upstream inlet to a passage of the guide menas to enable at least one optical fiber to be passed along the passage and in the same direction as the filaments to cause the fiber, upon emergence from the guide means, to be enclosed within and loosely contained by the rigid tube.

4,763,983

OPTICAL TRANSMISSION CABLE WITH MESSENGER

P. Stephen Keith, Rougemont, N.C., assignor to Sumitomo Electric Research Triangle, Inc., Research Triangle Park, N.C.

Filed Dec. 31, 1986, Ser. No. 947,993
Int. Cl.[4] G02B *6/44;* H01B *3/00;* B65H *69/02*
U.S. Cl. 350—96.23 9 Claims



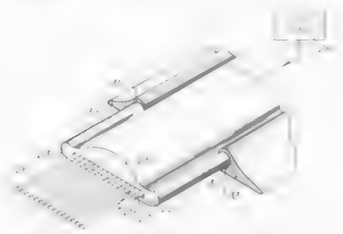
1. An optical transmission fiber cable of the type having at least one optical transmission fiber and a supporting messenger attached thereto, the improvement comprising a messenger having a fiber reinforced plastic rod, and a polyethylene jacket bonded to said fiber reinforced plastic rod with an adhesive layer of ethylene acrylic acid provided therebetween, thereby preventing relative movement between the messenger rod and polyethylene jacket.

4,763,984

LIGHTING APPARATUS AND METHOD

George K. Awai, 61186 Ikuwai, Haleiwa, Hi. 96712, and Michael D. Ernst, 4 Sheri Ct., Danville, Calif. 94526

Filed Jan. 2, 1987, Ser. No. 113
Int. Cl.[4] G02B *6/00, 6/04;* F21V *7/04*
U.S. Cl. 350—96.24 5 Claims



1. Lighting apparatus comprising:

an optical transmission channel including a plurality of optically-transmissive fibers, each having a core of radiation-transparent material having a selected index of refraction and having a radiation-transparent cladding material of different index of refraction than said selected index on the surface of said core at least along selected portions of the length thereof, each of said fibers having cross sectional dimension for supporting the propagation of radiation therethrough along an elongated axis in a mode including a component of radiation propagation that is laterally oriented with respect to the elongated dimension for emitting radiation through the radiation-transparent cladding material, and each of said fibers including radiation scattering means for dispersing radiation in the fibers in a direction having a lateral component for emerging from the transparent cladding material at least along said selected portions of the length thereof;

actinically-sensitive material disposed within at least one of said core and said cladding material of each fiber which includes anomalies from smooth with approximately 0.3 micron dimensions; and

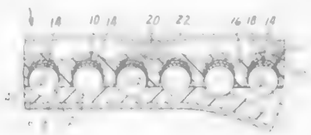
source means of radiation coupled to said channel for introducing radiation into said fibers to propagate therein in said mode for emitting said radiation through the transparent cladding material at least along said selected portions of the length thereof.

4,763,985

RETROREFLECTIVE SHEET WITH ENHANCER BRIGHTNESS

Wallace K. Bingham, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 1, 1986, Ser. No. 891,562
Int. Cl.[4] G02B *5/128, 5/13, 1/10, 5/28*
U.S. Cl. 350—105 18 Claims



1. A retroreflective sheet comprising:

(A) a monolayer of transparent microspheres having a refractive index n_2; and

(B) transparent specular reflectors associated with said microspheres in optical connection therewith, said specular reflectors comprising a transparent layer of refractive index n_1, the faces of said layer being in contact with materials of refractive index n_2 and n_3, wherein n_2 and n_3 are both at least 0.1 either higher or lower than n_1, said transparent layer having an optical thickness corresponding to an odd numbered multiple of about one quarter wavelength of light in the wavelength range of about 3,800 to 10,000 angstroms; partially embedded in

(C) a base layer comprising a substantially transparent binder material and reflective nacreous pigment flakes which are arranged about the embedded portion of said microspheres and said specular reflectors in approximately tangential orientation thereto.

4,763,986

ILLUMINATED JEWELER'S LOUPE

Marvin A. Sego, 1616 Indiana Ave., Salt Lake City, Utah 84104

Filed Nov. 24, 1986, Ser. No. 934,391
Int. Cl.[4] G02B *27/02;* G01N *21/00*
U.S. Cl. 350—235 2 Claims

2. An illuminated jeweler's loupe comprising

a housing having top and bottom covers;

a magnifying glass frame;

means pivotally connecting the magnifying glass frame between the top and bottom covers whereby the frame swings into the housing between the covers;

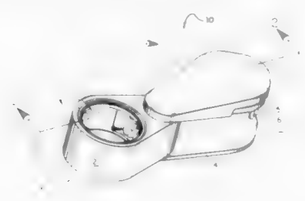
a magnifying glass having a top surface and a bottom surface carried by the magnifying glass frame;

a light bulb carried by the magnifying glass frame such that the light therefrom is directed into the frame at the bottom surface of the magnifying glass;

a battery carried by the housing; and

VOL 1093 ISS 3 AG 16 1988 UMI

means, including a switch, for electrically connecting the battery to the light bulb, said switch having a contact on the frame and a contact on the housing, said contacts



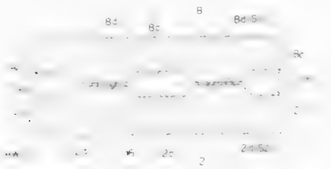
being engaged when the frame is pivoted to a location extending outwardly from the frame and disengaged when the frame is pivoted into the housing.

4,763,987

LENS BARREL

Makoto Ando, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Japan

Filed Nov. 19, 1986, Ser. No. 932,758
Claims priority, application Japan, Nov. 20, 1985, 60-179728[U]; Mar. 8, 1986, 61-33382[U]
Int. Cl.[4] G02B 7/04
U.S. Cl. 350—255 11 Claims



1. A lens barrel, comprising:
a lens barrel body;
a lens unit movable in said lens barrel body along an optical axis;
moving operational means for moving said lens unit; and
handling load change means provided between said moving operational means and said lens barrel body; including,
a first sliding contact portion and a second sliding contact portion being in a sliding contact with each other through a fluid lubricant, and
change operational means for changing the area of the sliding contact by relatively moving said sliding contact portions.

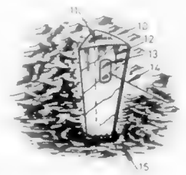
4,763,988

PERISCOPE APPARATUS COMPRISING A SINGLE INVERTED PYRAMID

James G. Hamilton, Glasgow, Scotland, assignor to Barr & Stroud Limited, Glasgow, Scotland

Filed Sep. 26, 1986, Ser. No. 913,054
Claims priority, application United Kingdom, Sep. 28, 1985, 8523974
Int. Cl.[4] G02B 23/08, 23/16
U.S. Cl. 350—319 7 Claims

1. A periscope head comprising:
a hollow structure in the form of a single inverted pyramid which is truncated in the vicinity of the apex thereof and is adapted thereat for connection to a conventional periscope mast,
the pyramidal structure having a single base facet and a plurality of side facets each of which facets is exteriorly highly reflective,



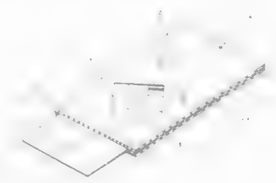
one of said facets incorporating within its peripheral confines a window for transmission of radiation to an optical device located within said hollow structure and forming part of the periscope.

4,763,989

VARIABLE IMAGING MASK FOR DELINEATING THE COMPOSITION OF A VISIBLE AREA

Gregory L. Christian, 349 Manila Dr., San Jose, Calif. 95119

Filed Mar. 27, 1987, Ser. No. 30,900
Int. Cl.[4] G02B 5/00; G03B 9/36, 27/28
U.S. Cl. 350—319 2 Claims



1. A variable imaging mask for delineating the composition of a visible area comprising in combination, a sheath composed of a mask face and mask back, secured in opposition by guide rails, said guide rails having shoulders projecting towards a longitudinal centerline of said sheath, said shoulders abutting against respective shoulders of a non-separable moveable slide projecting in the opposite direction of the former shoulders when said slide is at a rear end position located near said closed end, said guide rails being mounted to said mask face and mask back by a suitable adhesive, with said sheath having one open end and one closed end and containing a rectangular aperture of a specific ratio of side length to height of a convenient size passing through said sheath with diagonally opposite and equal angle corners located on said centerline, said sheath enveloping said slide, featuring a v-shaped cutout, interposed within said mask face and mask back capable of altering said aperture size from fully open, through an infinite number of intermediate positions, to fully closed, whereby proportional views of said visible area corresponding exactly to the view yielded by an optical, light amplifying or electro-magnetic imaging apparatus at the same viewer to subject distance may be continuously viewed.

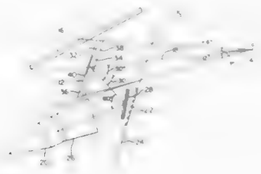
4,763,990

HEAD UP DISPLAY SYSTEM

Robert B. Wood, Hillsboro, Oreg., assignor to Flight Dynamics, Inc., Portland, Oreg.

Continuation of Ser. No. 576,724, Feb. 3, 1984, Pat. No. 4,669,810. This application Sep. 16, 1986, Ser. No. 908,042
Int. Cl.[4] G02B 5/32, 27/14
U.S. Cl. 350—320 4 Claims

1. A method of preventing a reduction in image contrast of a head up display for observation in combination with an observer's visual exterior view, comprising:
providing a visual information source from which emanates information-carrying light of predetermined wavelengths;
positioning a lens to direct in a predetermined direction the light emanating from the visual information source;
positioning a wavelength selective reflecting element out of the observer's direct exterior view to reflect light of the predetermined wavelengths received from the lens toward a wavelength selective combiner element constructed to reflect at least some of the predetermined wavelengths of information-carrying light, the reflecting element directing light toward the combiner element at on off-axis angle and having optical light-directing properties cooperating with those of the lens for correcting aberrations caused by the off-axis angle; and



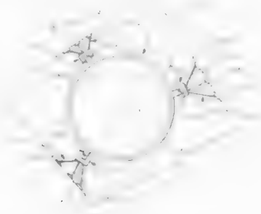
positioning the combiner element so that the observer can see the exterior view through it and so that at least some of the wavelengths of the predetermined information-carrying light reflected by the reflecting element reflect off the combiner element to provide an image for observation by the observer, the combiner element cooperating with the reflecting element to eliminate from the observer's view substantially all light carrying the exterior view propagating through the combiner element and striking the reflecting element, thereby to prevent a reduction in image contrast of the head up display by limiting the wavelengths of light reflected by the reflection element and seen by the observer substantially to those of the information-carrying light.

4,763,991

ADJUSTABLE SIX DEGREE OF FREEDOM MOUNT FOR OPTICAL COMPONENTS

Paul R. Klotz, Jr., Harvard, Mass., assignor to Litton Systems, Inc., Lexington, Mass.

Filed Aug. 10, 1987, Ser. No. 83,155
Int. Cl.[4] G02B 7/18
U.S. Cl. 350—321 11 Claims



1. An adjustable mount for optical components having an optical surface, said optical component having an optical axis substantially perpendicular to said optical surface and tip and tilt axes lying substantially within the plane of said optical surface, said optical component being mounted to two or more mounting brackets by said adjustable mounts, each of said adjustable mounts having a support shaft fastened to said mounting brackets, said support shafts having longitudinal axes along their lengths, said adjustable mount further including:
a. Support brackets radiating outwardly from said optical component and spaced a substantially equal angular distance around the circumference of said optical component, the number of said support brackets being equal to the number of mounting brackets supporting said optical component and aligned with said mounting brackets, each of said support brackets having a spherical aperture passing therethrough, each of said apertures receiving one of said support shafts therein;
b. adjustable means for axially translating the position of said optical component with respect to the axes of said support shafts;
c. means for angularly adjusting said optical component along said tip and tilt axes;
d. means for adjusting the position of said optical component in a direction parallel to said longitudinal axes of said support shafts; and
e. means for angularly adjusting said optical component about an axis parallel to the axes of said support shafts.

4,763,992

SMECTIC LIQUID CRYSTAL DEVICE WITH TEMPERATURE CONTROL SYSTEM

Yoshihiro Takada, Yokohama, and Nagao Hosono, Hachioji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,905, Nov. 13, 1984, abandoned. This application Apr. 28, 1987, Ser. No. 45,769
Claims priority, application Japan, Nov. 15, 1983, 58-215724
Int. Cl.[4] G02F 1/133
U.S. Cl. 350—331 T 10 Claims



1. A liquid crystal device comprising:
(a) a light source for emitting light rays;
(b) a light-path switching means disposed in the path of said light rays emitted from said light source; said light-path switching means comprising a shutter array including a plurality of shutter means; each shutter means comprising a pair of opposed electrodes and ferroelectric liquid crystal material sandwiched therebetween;
(c) a temperature sensor for detecting the temperature of the ferroelectric liquid crystal material and for generating an output response thereto;
(d) a temperature raising means for raising the temperature of the ferroelectric liquid crystal material, said temperature raising means comprising a resistance heater disposed in a thermally insulating body;
(e) a temperature controlling means which, during the operation of said shutter means, is for receiving said output from the temperature sensor, for comparing said detected temperature with a predetermined operational temperature range and a predetermined temperature above said operational temperature range, for restoring the temperature of the ferroelectric liquid crystal material when the detected temperature is outside said operational temperature range by causing the temperature raising means to raise the temperature of the ferroelectric crystal material

VOL 1093 ISS 3 AG 16 1988 UMI

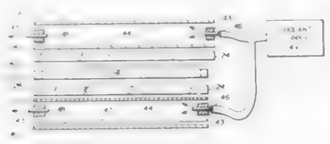
until said detected temperature is above said predetermined temperature above the operational temperature range and thereafter to allow the ferroelectric liquid crystal material to cool to a temperature within said operational temperature range, and for causing the temperature raising means to maintain the temperature of the ferroelectric liquid crystal material within said operational temperature range; said operational temperature range being the range wherein the ferroelectric liquid crystal material assumes a chiral smectic phase.

4,763,993

LIQUID CRYSTAL DISPLAY FOR PROJECTION SYSTEMS

James H. Vogeley, and Arthur W. Vogeley, both of Yorktown, Va., assignors to n-View Corporation, Yorktown, Va.

Filed Apr. 30, 1987, Ser. No. 44,332
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—331 T **18 Claims**



1. An apparatus for use in conjunction with a means for projecting a beam of light along an optical path onto a surface, said apparatus, responsive to a means for generating display images, for generating liquid crystal display images on a screen when inserted into said optical path, said means for projecting including a light source, said apparatus comprising:

control means, responsive to said generating means, for generating crystal means energizing signals;

twisted nematic crystal means for controlling polarization of light passing therethrough in response to localized energization and de-energization of said crystal means;

means, responsive to said control means signals, for locally energizing said crystal means;

back polarizing means, disposed in said beam and located between said crystal means and said light source, for polarizing light passing therethrough;

front analyzing means, located between said crystal means and said surface, for allowing light of a selected polarizing to pass therethrough and for blocking light not having said selected polarization; and

visible light transparent insulation means disposed in said beam and located between said light source and said crystal means.

4,763,994

METHOD AND APPARATUS FOR DRIVING FERROELECTRIC LIQUID CRYSTAL OPTICAL MODULATION DEVICE

Shuzo Kaneko, Tokyo, and Tsutomu Toyono, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1987, Ser. No. 76,178
Claims priority, application Japan, Jul. 23, 1986, 61-174045
Int. Cl.[4] G02F *1/13*
U.S. Cl. 350—336 **13 Claims**

1. A driving method for an optical modulation device comprising a plurality of pixels arranged in a plurality of lines, each pixel being electrically connected to an optical modulation material and capable of forming a potential gradient when supplied with a voltage; said driving method comprising:

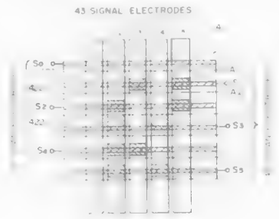
a first step of forming in a line of pixels a written state in a width exceeding a prescribed width, and

a second step of erasing an excess width to leave the written state in the prescribed width.

7. An optical modulation apparatus, comprising:

an optical modulation device comprising a resistive film having thereon a plurality of elongated low-resistivity electrodes electrically connected to the resistive film, a plurality of elongated opposite electrodes disposed opposite to and intersecting with the low-resistivity electrodes, and an optical modulation material disposed between the resistive film and the opposite electrodes and showing a first and a second orientation state depending on an electric field applied thereto; and

means for applying in an address period an address voltage signal to address a low-resistivity electrode thereby to



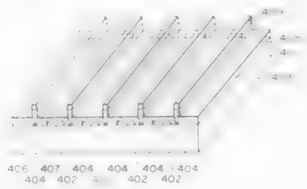
form a potential gradient along a portion of the resistive film between the addressed low-resistivity electrode and an n-th ($n \geqq 2$) low-resistivity electrode from the addressed lowresistivity electrode; and in the address period, applying to the opposite electrodes a voltage signal which in combination with the address voltage signal orients the optical modulation material to the first orientation state in a width perpendicular to the low-resistivity electrodes, and applying to a selected opposite electrode a voltage signal which in combination with the address voltage signal orients the optical modulation material to the second orientation state in said width.

4,763,995

SPACERS WITH ALIGNMENT EFFECT AND SUBSTRATES HAVING A WEAK ALIGNMENT EFFECT

Kazuharu Katagiri, Yokohama, and Shuzo Kaneko, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 602,965, Apr. 23, 1984. This application Dec. 11, 1986, Ser. No. 941,557
Claims priority, application Japan, Apr. 28, 1983, 58-75849; Jul. 30, 1983, 58-138708; Jul. 30, 1983, 58-138709
Int. Cl.[4] G02F *1/133*
U.S. Cl. 350—341 **21 Claims**



12. An optical modulation device comprising a chiral smectic liquid crystal between a pair of parallel base plates oppositely spaced from each other, wherein

said chiral smectic liquid crystal is in a non-spiral structure and forms a plurality of molecular layers substantially perpendicular to said pair of parallel base plates, the plurality of perpendicular molecular layers of the chiral smectic liquid crystal being arranged along one normal of said molecular layers; and

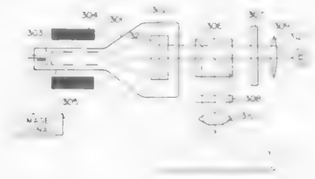
at least one of said pair of parallel base plates having a coating formed on the base plate and a plurality of ridges thereon arranged in stripe form with a pitch of from 10 microns to 2 mm so as to extend in one direction, said coating formed on the base plate having a higher hardness than that of said ridges, said ridges and said coating having a unidirectional orientation treatment provided by rubbing or vapor deposition.

4,763,996

SPATIAL LIGHT MODULATOR

Tsutomu Hara; Yoshiharu Ooi; Kazunori Shinoda, and Koji Ichie, all of Hamamatsu, Japan, assignors to Hamamatsu Photonics Kabushiki Kaisha, Hamamatsu, Japan

Filed Nov. 18, 1985, Ser. No. 798,932
Claims priority, application Japan, Nov. 20, 1984, 59-244754; Dec. 28, 1984, 59-278943; Dec. 28, 1984, 59-278944; Apr. 26, 1985, 60-90621
The portion of the term of this patent subsequent to Jul. 7, 2004, has been disclaimed.
Int. Cl.[4] G02F *1/03*
U.S. Cl. 350—387 **18 Claims**



1. A crystal structure arrangement for use in a spatial light modulator which includes an electron beam source formed within a vacuum envelope, comprising:

an electrooptic crystal structure having an optical property that changes in accordance with the electron charge image stored on the surface thereof when electrons emitted from the electron beam source are incident thereon, wherein said electrooptic crystal structure includes a first electrooptic crystal plate, a second electrooptical crystal plate that is thicker than the first plate, adhesive which fastens the first and second plates together face to face and which forms a transparent film arranged between the first and second plates, the first plate having a surface which faces the electron beam source, and a third electrooptic crystal plate which faces the second plate and which has a thickness the same as the second plate, the second and third plates having index ellipsoids which are symmetrical with respect to the optical axis.

4,763,997

VIEWFINDER OPTICAL SYSTEM OF INVERTED GALILEAN TYPE WITH GREAT MAGNIFICATION

Kazuo Kimura, and Taro Shibuya, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 2, 1986, Ser. No. 915,221
Claims priority, application Japan, Oct. 3, 1985, 60-151702[U]
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.[4] G02B *9/04, 3/02*
U.S. Cl. 350—410 **2 Claims**

1. A viewfinder optical system of inverted Galilean type, consisting of two lens units with one lens component for each, consisting of from the object side to the eye side;

an objective lens component having a negative refractive power; and

an eyepiece lens component having a positive refractive power, said eyepiece lens component having a convex surface at the eye side;

wherein the viewfinder optical system fulfills the following conditions;

$0.4L < d_3 < 0.85L$

$-1.4 < L/R_4 < -0.8$ $R_4 < 0$

$0.35 < |R_2/R_4| < 0.65$



wherein,

L: the total length of the whole viewfinder optical system,

d_3: the axial thickness of the eyepiece lens component,

R_2: the radius of curvature of the eye side surface of the objective lens component, and

R_4: the radius of curvature of the eye side surface of the eyepiece lens component.

4,763,998

COMPACT ZOOM LENS

Sadahiko Tsuji, Kanagawa; Muneharu Sugiura, Tokyo; Kazuo Tanaka, Tokyo, and Masatake Kato, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1986, Ser. No. 877,101
Claims priority, application Japan, Jun. 26, 1985, 60-139382; Jun. 26, 1985, 60-139383; Jun. 26, 1985, 60-139384; Jun. 26, 1985, 60-139385; Jun. 26, 1985, 60-139386
Int. Cl.[4] G02B *15/14, 9/64*
U.S. Cl. 350—427 **7 Claims**



1. A zoom lens comprising, from front to rear, a first lens unit of positive refractive power for focusing, a second lens unit of negative refractive power which, when zooming, moves monotonously, a third lens unit of positive refractive power which, when zooming, moves monotonously in the opposite direction to that of movement of said second lens unit, and a fixed fourth lens unit of positive refractive power having an image forming function, with a diaphragm for varying the F-number being fixedly positioned between said second lens unit and said third lens unit, said zoom lens satisfying the following condition:

$$0.4 < ls/lw < 0.75$$

where lw is the axial separation between said second and said third lens units in the wide angle end of the zooming range, and ls is the axial separation between said second lens unit and said diaphragm in the wide angle end of the zooming range.

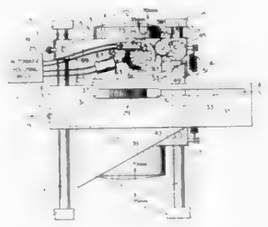
VOL 1093 ISS 3 AG 16 1988 UMI

4,763,999

ZOOM LENS ASSEMBLY

Joel S. Lawther, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 12, 1987, Ser. No. 2,540
Int. Cl.[4] G02B 7/11
U.S. Cl. 350—429 5 Claims



3. An improved zoom lens assembly wherein an objective lens is changed in focal length by moving first and second lens groups in different amounts along an optical axis and is focused by moving said first lens group relative to said second lens group along the optical axis, and wherein the improvement comprises;

spring means for urging said first and second lens groups to move in opposite directions along the optical axis;

zooming cam means having respective camming surfaces corresponding to said first and second lens groups, said camming surfaces being shaped to move the first and second lens groups in different amounts along the optical axis in opposition to said spring means to change the focal length of said objective lens when said zooming cam means is moved generally transverse to the optical axis;

means supporting said zooming cam means for movement generally transverse to the optical axis and for preventing movement of the zooming cam means generally parallel to the optical axis; and

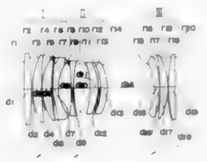
a focusing cam connected to said first lens group for rotation about an eccentric axis, said focusing cam operating off of said camming surface corresponding to the first lens group to move said first lens group relative to said second lens group along the optical axis to focus said objective lens.

4,764,000

TELEPHOTO LENS SYSTEM WITH THREE RELATIVELY SHIFTABLE LENS GROUPS

Hisashi Tokumaru, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1986, Ser. No. 864,814
Claims priority, application Japan, May 20, 1985, 60-107173; Sep. 27, 1985, 60-215629
Int. Cl.[4] G02B 13/02, 9/00, 9/14
U.S. Cl. 350—454 9 Claims



1. A telephoto lens system, comprising from the object side to the image side:

a first lens group of a positive refractive power;

a second lens group of a negative refractive power having a first air space formed between the first and second lens groups; and

a third lens group of a positive refractive power having a second air space formed between the second and third lens groups;

wherein all of the first to third lens groups are shiftable along the optical axis in a focusing operation while enlarging the first air space and decreasing the second air space when focusing is effected from infinity to a short distance;

and wherein the lens system fulfills the following conditions:

$$1.1 < f/f_1 < 1.7$$

$$0.15f < D_{23} < 0.4f$$

wherein:

f represents a focal length of the whole lens system in an infinity focusing condition;

f_1 represents a focal length of the first lens group;

and

D_{23} represents an axial distance of the second air space formed between the second and third lens group in an infinity focusing condition.

4,764,001

RETROFOCUS-TYPE OBJECTIVE FOR AN ENDOSCOPE

Akira Yokota, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 743,356, Jun. 10, 1985. This application Dec. 1, 1987, Ser. No. 127,256
Claims priority, application Japan, Jun. 13, 1984, 59-119936
Int. Cl.[4] G02B 9/60
U.S. Cl. 350—465 5 Claims



1. A retrofocus-type objective for an endoscope comprising a first lens component comprising a negative lens, a stop, a second lens component comprising a positive meniscus lens arranged to be concave toward the object side, a third lens component comprising a positive lens, a fourth lens component comprising a cemented doublet consisting of a positive lens and a negative lens, and a fifth lens component comprising a positive lens in the order from the object side, said retrofocus-type objective being arranged to be focused by advancing said third lens component and said fourth lens component and, moreover, to fulfill the conditions (1) and (2) shown below:

$$-0.9 < f_1/f_a \quad (1)$$

$$1.0 < f_2/f_a < 1.3 \quad (2)$$

where reference symbol f_1 represents the focal length of the first lens component, reference symbol f_2 represents the total focal length of the second through the fifth lens components, and reference symbol f_a represents the focal length of the lens system as a whole when focused on an object at a short distance,

said objective further satisfying the following conditions:

$$D/f_a < 0.7 \quad (3)$$

where reference symbol D represents the airspace between the first and second lens components,

and further fulfilling the conditions (4), (5) and (6) shown below:

$$1.0 < r_1/f_a < 4.0 \quad (4)$$

$$-1.5 < r_4/f_a < -1.0 \quad (5)$$

$$1.3 < R < 4.0 \quad (6)$$

$$1/R = 1/r_6 + 1/r_{10}$$

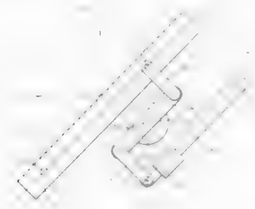
where reference symbol r_1 represents the radius of curvature of the surface on the object side of the first lens component, reference symbol r_4 represents the radius of curvature of the surface on the object side of the second lens component, reference symbol r_6 represents the radius of curvature of the surface of the object side of the third lens component, and reference symbol r_{10} represents the radius of curvature of the surface on the image side of the fourth lens component.

4,764,002

BALANCED OPTICAL SYSTEM

Andrew L. Wilson, Currie, Scotland, assignor to Ferranti, plc, Cheadle, England

Filed Oct. 14, 1987, Ser. No. 108,067
Claims priority, application United Kingdom, Oct. 23, 1986, 8625381
Int. Cl.[4] G02B 26/10
U.S. Cl. 350—486 4 Claims



1. A balanced optical system comprising an optical element pivoted for rotation through a limited angle about an element axis, actuator means including an actuator arm rotatable by an actuator about an actuator axis parallel to the element axis, a first link connecting a first point on the actuator arm on one side of the actuator axis to a point on the optical element spaced apart from the element axis, a balance arm carrying a balance mass and pivoted rotation about a balance arm axis parallel to the element axis, and a second link connecting a point on the balance arm spaced apart from the balance axis to a second point on the actuator arm on the opposite side of the actuator axis from the first point, the arrangement being such that the line joining the element axis to the point of connection of the first link to the optical element is parallel to the line joining the balance axis to the point of connection of the second link to the balance arm in all positions of the optical element such that the optical system is statically balanced.

4,764,003

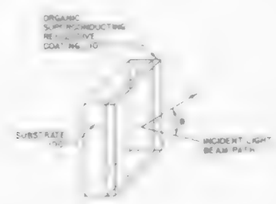
OPTICAL MIRROR COATED WITH ORGANIC SUPERCONDUCTING MATERIAL

John A. Lake, and William B. Heath, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 3, 1986, Ser. No. 925,959
Int. Cl.[4] G02B 5/08, 7/18, 1/04, 1/00
U.S. Cl. 350—610 8 Claims

1. In a combination having a refrigeration system which cools objects in its immediate proximity to cryogenic and superconductive temperatures, an optical mirror comprising:

a substrate which is fixed in proximity with and cooled by said refrigeration system; and



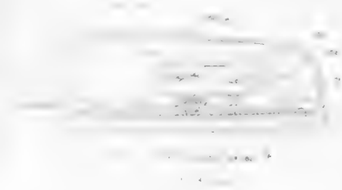
an organic superconductive reflective coating which is deposited upon said substrate to provide a reflective mirror surface, said organic superconductive reflective coating being cooled to cryogenic and superconductive temperatures by said refrigeration system to provide reduced thermal distortion to said optical mirror.

4,764,004

AUTOMOBILE OUTER MIRROR ASSEMBLY

Takashi Yamada; Masaki Fujita; Toshikazu Ichiso; Yoshio Tsujiuchi; Morihiko Ogasawara, and Yoshihiro Kawai, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Aug. 4, 1987, Ser. No. 81,157
Claims priority, application Japan, Aug. 4, 1986, 61-183916; Jun. 23, 1987, 62-155797
Int. Cl.[4] G02B 7/18, 5/08; B60R 1/06; F16C 11/06
U.S. Cl. 350—632 3 Claims



1. An automobile outer mirror assembly comprising:

a proturberant connnecting portion being generally centrally located in a mirror back supporting plate which supports a mirror body at a back side thereof, said protuberant connecting portion having a through-hole in a center portion thereof, and also having a semispherical outer periphery and a semispherical inner periphery; and

connecting means for rotatably connecting the protuberant connecting portion to a connecting portion of a mirror support member fixed in position in a mirror case, said connecting portion of the mirror support member projecting from a body portion of said mirror support member and having on an opposite side of said mirror back supporting plate a semispherical inner periphery for contact with the semispherical outer periphery of said protuberant connecting portion of said mirror back supporting plate, a through-hole opening at a center of said inner periphery to communicate with the through-hole of said protuberant connecting portion and extending through said mirror

VOL 1093 ISS 3 AUG 16 1988 UMI

support member, said connecting means further comprising,

a clutch member having a semispherical outer periphery slidably engageable with the semispherical inner periphery of said mirror back support plate, and a bottom portion extending through the through-hole of said protuberant connecting portion and engageable with said mirror support member rotatably about the axis of said through-hole but not about the center of the semispherical inner periphery of said member, said bottom portion having a through-hole which communicates with the through-hole of said mirror support member,

a connecting member having a connecting neck extending through the through-hole of the clutch member and through the through-hole of the mirror support member, and a first flange portion projecting radially from a first end of said connecting rod and adaptd to pass through said through-holes, said flange portion being rotatable about the axis of the connecting member for phase variation so that it is unreleasably locked around a rear face of the mirror back support member, and

a spring means being compressedly fitted between said clutch member and a second end of said connecting neck so as to press the clutch member against said mirror support member while pressing said first flange portion of said connecting member against a circumferential edge portion of the through-hole of said mirror support member, whereby the connecting portion of said mirror back supporting plate and the connecting portion of said mirror support member are connected to each other by said connecting member for rotatably holding said connecting portion between the inner periphery of said connecting portion and the semispherical outer periphery of said clutch member.

4,764,005

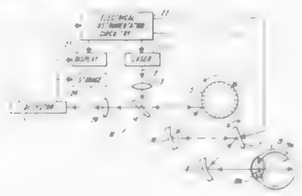
DOUBLE SCANNING OPTICAL APPARATUS

Robert H. Webb, Lincoln, and George W. Hughes, Brookline, both of Mass., assignors to Eye Research Institute of Retina Foundation, Boston, Mass.

Continuation-in-part of Ser. No. 777,406, Sep. 17, 1985. This application Jun. 19, 1986, Ser. No. 876,231

Int. Cl.[4] A61B *3/10*

U.S. Cl. 351—205 **6 Claims**



1. A scanning ophthalmoscope apparatus for providing a two-dimensional output representation of reflection characteristics of an eye fundus, said apparatus comprising

a laser source for generating a laser beam of defined cross sectional area which is small compared to an area of the fundus which is to be scanned,

an optical system for directing said laser beam through the pupil of the eye onto said fundus area, said optical system including a first scanning element comprising a rotating element having spaced facets for changing the direction of incident laser light and driving means for rotating said first scanning element to scan said laser beam along a first coordinate across an area of said fundus, said optical system including means for collecting light reflected from said scanned area and providing an exit aperture for the reflected light from said area and defined by the pupil of said eye, said optical system directing collected light back along the same optical path by which said laser beam was directed from said first scanning element onto said fundus, the cross sectional area of said collected light beam reflected from said fundus as it impinges upon said first scanning element being large compared to the dimension of facets of said first scanning element along the coordinate of scan, and

detector means positioned to receive said reflected light from said first scanning element to generate a signal varying in time with the amount of light reflected from said first scanning element onto said detector means,

display means for providing said two dimensional output representation of said eye fundus in response to said detector signal, and

means for sensing the position of successive facets of the first scanning element and providing a position signal indicating the time when each successive facet occupies the same position, said position signal being provided to the display means to control the timing of horizontal lines produced on said display means.

4,764,006

OPHTHALMIC MEASURING APPARATUS

Yoshimasa Hamano, and Takashi Masuda, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 10, 1986, Ser. No. 906,271

Claims priority, application Japan, Sep. 13, 1985, 60-203027; Sep. 13, 1985, 60-203028

Int. Cl.[4] A61B *3/10, 8/10*

U.S. Cl. 351—211 **15 Claims**



1. An ophthalmic measuring apparatus comprising:

an ultrasonic detector adapted to be positioned on the cornea of an eye to be examined for determining the length of a predetermined region of the eye to be examined by calculating the length of the predetermined region based on measuring the time required for the transmission and reception of an ultrasonic wave echo, wherein said ultrasonic detector comprises a vibrator;

an index means for projecting an index mark onto the cornea of the eye to be examined, wherein the center axis of said index means is coaxial with the center axis of said vibrator of said ultrasonic detector; and

an imaging optical system positioned coaxially with said index means, for forming the corneal reflection image of said index mark on a predetermined image plane to measure the shape of the cornea.

4,764,007

GLARE SUSCEPTIBILITY TESTER

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 24, 1986, Ser. No. 831,909

Int. Cl.[4] A61B *3/02*

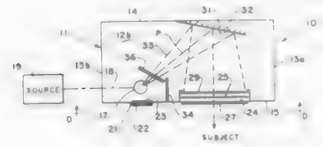
U.S. Cl. 351—243 **18 Claims**

1. An optical instrument for measuring glare susceptibility of a subject, comprising:

(a) a glare source of light of preselected intensity;

(b) an acuity target having a front surface and a back surface and defining first areas substantially opaque to light from said source and second areas translucent to light from said source, said first areas and said second areas defining a pattern of a plurality of recognizable indicia of various preselected sizes and preselected respective spacings for each of said various preselected sizes on said target;

(c) means for supporting said target adjacent said source with each of said plurality of recognizable indicia disposed a preselected radial distance from said source, corresponding to the respective spacing of said each of said plurality



of recognizable indicia on said target, for simultaneous viewing of said source and said plurality of recognizable indicia by said subject; and

(d) optical means for directing light along an optical axis from said source onto said back surface of said target and for substantially uniformly transilluminating said target.

4,764,008

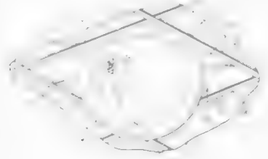
SURVEILLANCE HOUSING ASSEMBLY

Clifford T. Wren, 2036 Honeysuckle La., Jefferson City, Mo. 6[illegible]

Filed Nov. 19, 1987, Ser. No. 122,935

Int. Cl.[4] H04N *7/18;* **G03B** *29/00*

U.S. Cl. 354—81 **10 Claims**



1. In a surveillance camera housing assembly mounted as a suspended ceiling portion formed by cross-forming inverted T-shaped ceiling supporing members the improvement wherein the assembly includes a dome of preselected transparency with a base approximately the size of its said ceiling portion with one edge of said dome being provided with a horizantally extending edge for suspending the same between two parallel disposed spaced apart inverted T-shaped members as the dome is pivoted downwardly about the horziontal axis of the eared edge of the dome.

4,764,009

MEANS FOR EXTENDING SPECTRAL RESPONSE OF SPECTRAL ANALYZING DIRECTION INDICATING APPARATUS

Gordon A. Shifrin, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 6, 1987, Ser. No. 69,781

Int. Cl.[4] G01J *3/36;* **G01B** *11/26*

U.S. Cl. 356—73 **12 Claims**

10. A process for selecting from radiated energy incident on a combination of a non-dispersive optical element and a spectrally dispersive optical element the diffracted energy from said dispersive element and then determining whether the energy from said dispersive element includes both first and second order diffraction from the same incident illumination, comprising the steps of:

providing diffraction information from the dispersive optical element;

detecting the diffraction information and providing detector outputs indicative of the diffraction information;

determining for a selected detector output indicative of diffraction information from said dispersive optical element whether another detector output indicative of diffraction information from the same dispersive element occurred simultaneously with the selected detector output;

determining whether the wavelengths associated with the said simultaneous detector outputs are related by a factor of two; and

determining whether the amplitude ratio between the said simultaneous detector outputs is related to a prescribed value.

4,764,010

METHOD FOR ALIGNING THE AXIS OF A SECOND BRACKET RELATIVE TO THE AXIS OF A FIRST BRACKET ON A TESTING OR PROCESSING MACHINE

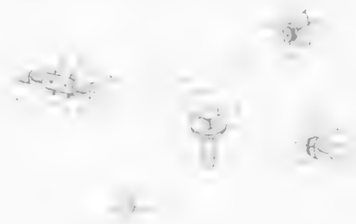
Volker Bachmann, St. Augustin, and Hubert Döker, Bonn, both of Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Aug. 26, 1986, Ser. No. 900,415

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1985, 3531156

Int. Cl.[4] G01B *11/26*

U.S. Cl. 356—153 **17 Claims**



1. A method for the alignment of the axis of a second bracket relative to the axis of a first bracket on a testing or processing machine, comprising the steps of:

mounting a light source for producing a sharply focused beam on the first bracket in such a way that its beam passes at right angles along the axis of the first bracket

VOL 1093 ISS 3 AG 16 1988 UMI

through a perforated disc likewise mounted on the first bracket,

mounting a disc on the second bracket in a plane running at right angles to the axis of said second bracket, said disc uncovering a small reflector surface on the axis of said second bracket,

moving the second bracket parallel to its axis until the beam strikes the reflector surface, and

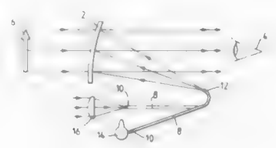
swivelling the second bracket about the reflector surface until the beam is reflected in itself and no longer produces a patch of light on the perforated disk.

4,764,011

SIGHTING DEVICE FOR DAY AND NIGHT USE

Pinchas Goldstein, Jerusalem, Israel, assignor to Mepro Kibbutz Hagoshrim, Kibbutz Hagoshrim, Israel

Filed Nov. 12, 1986, Ser. No. 929,627
Claims priority, application Israel, Nov. 15, 1985, 77065
Int. Cl.[4] G02B *23/10*
U.S. Cl. 356—251 11 Claims



1. A sighting device for day and night use, comprising, a first source of light being a self-energized source of artificial light; a second source of light being a means for admitting ambient light; a single optic fiber having a light-receiving end adapted to be exposed to at least said first source of light and also having a light-emitting end; a single aiming mark; and beam-splitting means; said light-emitting end of said single optic fiber constituting said single aiming mark; said single aiming mark, at least when exposed to said first source of light, being projected onto said beam-splitting means to produce an image of said aiming mark at infinity.

4,764,012

DEVICE FOR DETERMINING THE DISPLACEMENT OF A TOOTH BETWEEN TWO DIFFERENT EXAMINATIONS MADE ON SEPARATE OCCASIONS

Hans Ryden, Sturegatan 18, 11436 Stockholm, and Hans Bjelkhagen, Stockholm, both of Sweden, assignors to Hans Ryden, Stockholm, Sweden

Continuation of Ser. No. 287,582, Jul. 28, 1981, abandoned. This application Feb. 14, 1984, Ser. No. 579,284
Int. Cl.[4] G01B *9/021*
U.S. Cl. 356—347 10 Claims



1. A device for determining the displacement of a tooth between two different examinations made on separate occasions, comprising a first photographic image of the tooth containing location points near the tooth taken on the occasion of the first examination,

said first photographic image being in the form of a hologram,

said first photographic image being placed alongside a second representation of the tooth having location points near the tooth taken on the occasion of a second examination,

said location points on the first photographic image and the second representation being teeth adjacent said tooth,

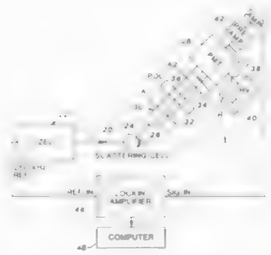
means for displacing the first photographic image relative to said second representation to move the location points on the first photographic image into correspondence with the location points on said second representation such that the displacement of the tooth is determined as the difference between the position of the tooth in the first photographic image and the position of the tooth in said second representation.

4,764,013

INTERFEROMETRIC APPARATUS AND METHOD FOR DETECTION AND CHARACTERIZATION OF PARTICLES USING LIGHT SCATTERED THEREFROM

Roger G. Johnston, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 23, 1987, Ser. No. 28,987
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—349 51 Claims



1. Apparatus for the indentification and characterization of particles in a sample by observing light scattered therefrom, comprising in combination:

means for producing a first radiation having a first wavelength and a first polarization;

means for producing a second radiation substantially collinear with said first radiation and having a second wavelength and a second polarization substantially orthogonal to said first polarization;

containment means containing said sample, for allowing said first and second radiations to scatter from collisions with said particles in said sample;

polarization means receiving scattered first and second radiations for resolving said scattered first and second radiations, said polarization means having an axis of transmission along which resolved scattered first and second radiations pass;

photodetector means receiving and detecting said resolved scattered first and second radiations for outputting a beat frequency resulting from interaction between said resolved scattered first and second radiations, said beat frequency having a relative phase and amplitude; and

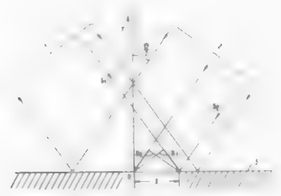
measurement means receiving said beat frequency for measuring and outputting said relative phase of said beat frequency, for use in identifying and characterizing said particles.

4,764,014

INTERFEROMETRIC MEASURING METHODS FOR SURFACES

Günter Makosch, Sindelfingen, and Franz J. Schedewie, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 908,951, Sep. 17, 1986, abandoned, which is a continuation of Ser. No. 563,714, Dec. 20, 1983, abandoned. This application Aug. 31, 1987, Ser. No. 91,315
Claims priority, application European Pat. Off., Dec. 20, 1982, 82111809.8
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—351 19 Claims



1. An interferometric measuring method for testing a surface to determine the distance of a stationary scattering element from an optical axis, comprising the steps of:

directing two light beams which are inclined to one another and which have mutually perpendicular directions of polarization onto said surface, there being substantially no relative movement between said two light beams and said surface, said two light beams being focussed onto said surface and being symmetrically arranged with respect to an optical axis and providing dark field illumination of said surface,

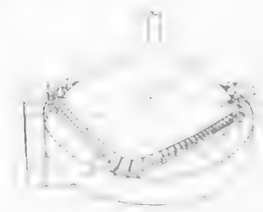
determining the static distance of said scattering element from said optical axis by detecting the phase difference of light waves scattered from said scattering element on said surface, said scattered light waves having mutually perpendicular directions of polarization, wherein said phase difference is proportional to the distance of said scattering element from said optical axis.

4,764,015

METHOD AND APPARATUS FOR NON-CONTACT SPATIAL MEASUREMENT

Robert J. Bieringer, Toledo, and James A. Ringlien, Maumee, both of Ohio, assignors to Owens-Illinois Television Products Inc., Toledo, Ohio

Filed Dec. 31, 1986, Ser. No. 948,365
Int. Cl.[4] G01B *11/00*
U.S. Cl. 356—372 71 Claims



1. Apparatus for measuring the separation of spaced elements across an optical axis comprising:

a source of uniform light;

a light detector;

means collimating light from said source along said optical axis;

a first lens centered on said optical axis to receive light from said means collimating light passed between said spaced elements;

a baffle at the back focal plane of said first lens having an aperture centered on the optical axis to limit the angular content of light from said source passed between said spaced elements to rays nearly parallel to the optical axis;

a second lens focusing the light incident on said first lens and passed by said aperture onto said detector;

said detector detecting the intensity and position of light in image portions incident thereon from said second lens;

said aperture having a width along the measurement direction to produce an image incident on said detector having a generally uniform maximum light intensity region between ramped light intensity terminal regions; and

means to sense the dimension of the image of the light passed between spaced elements and incident on said detector which has an intensity at least one-half the maximum light intensity.

4,764,016

INSTRUMENT FOR MEASURING THE TOPOGRAPHY OF A SURFACE

Gunnar Johansson, Mölndal, Sweden, assignor to Anders Bengtsson, Kungalv, Sweden, a part interest

PCT No. PCT/SE86/00287, § 371 Date Feb. 10, 1987, § 102(e) Date Feb. 10, 1987, PCT Pub. No. WO86/07444, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 13, 1986, Ser. No. 31,012
Claims priority, application Sweden, Jun. 14, 1985, 8502977.5
Int. Cl.[4] G01B *11/30*
U.S. Cl. 356—371 9 Claims



1. An instrument for measuring the topography of a surface, comprising a light transmitting device for transmitting a light beam onto the surface; a light receiving device for receiving light reflected by the surface; a detector for detecting the position of the received light relative to the optical axis of the light reeiving device; and means for producing relative movement between on one hand the light transmitting (**10**,L1,L2) and light receiving devices (L3,L4,**8**) and on the other hand the surface (**2**) to be measured, characterized in that the optical axis (**11**) of the light transmitting device is arranged to form a small angle (γ_1) with the normal of the median plane (**13**) of a workpiece surface (**2**) to be measured, said angle (γ_1) being smaller than about 15° in that the optical axis (**9**) of the light receiving device (L3,L4) forms substantially a right angle (δ) with the optical axis (**11**) of the light transmitting device; in that said detector (**8**) is positionresponsive; and in that an image magnifying lens (L4) is located in front of the detector (**8**), said image magnifying lens (L4) being a microscope lens of short focal length.

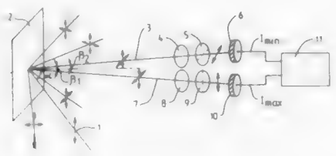
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,017

METHOD FOR IDENTIFYING TIMBER SURFACE PROPERTIES

Kullervo Hirvonen, Varkaus, Finland, assignor to Altim Control OY, Varkaus, Finland

Filed Jan. 20, 1987, Ser. No. 4,635
Claims priority, application Finland, Jan. 21, 1986, 860245
Int. Cl.⁴ G01N *21/21, 21/27*
U.S. Cl. 356—369 **14 Claims**



7. Apparatus for determining timber surface characteristics comprising:

means for directing electromagnetic radiation of at least two different wavelengths to the surface to be examined such that each wavelength component is linearly polarized with the polarization plane parallel or perpendicular to the normal growth direction of the wood fibers of the surface to be examined;

means for measuring separately for each wavelength component the intensity component I_{min} and I_{max} of the scattered radiation, the intensity components I_{min} and I_{max} having polarization planes of scattered radiation perpendicular to one another with the polarization plane of the component I_{max} being the same as the polarization plane of the incident radiation;

means for determining the degree of polarization for one of said wavelength components by using $P=(I_{max}-I_{min})/(I_{max}+I_{min})$; and

means for determining timber surface characteristics using information about the color tones of the components I_{min} and the degree of polarization P for one wavelength component.

4,764,018

APPARATUS FOR MEASURING WATER CONTENT

Hiroki Inoue, Mishima, Japan, assignor to EOS Corporation, Mishima, Japan

Filed May 18, 1987, Ser. No. 50,478
Int. Cl.⁴ G01J *3/51*
U.S. Cl. 356—418 **1 Claim**



1. An apparatus for measuring the water content of an object to be measured comprising in combination:

a pair of optical filters for obtaining from the same source light a reference light having a wavelength not easily absorbed in said object and a measuring light having a wavelength easily absorbable in said object;

an optical system for irradiating said object with said reference and measuring lights extracted through said optical filters;

an photoelectric converter for converting said reference and measuring lights incident from said object to electrical signals;

a temperature detector for detecting the temperature of said optical filters;

a humidity detector for detecting the humidity of optical paths for said reference and measuring lights, extending from said optical system to said object; and

water content-measuring circuit for finding the quantity of water contained in said object on the basis of output signals produced from said photoelectric converter, said temperature detector and said humidity detector,

said water content-measuring circuit including:

means for calculating a temperature correction factor from a linear equation involving as the variable a detected temperature given by the output signal from said temperature detector;

means for calculating a humidity correction factor from a linear equation involving as the variable a detected humidity given by the output signal form said humidity detector;

means for calculating the rate of the quantity of said measuring light absorbed in said object with respect to the quantity of said reference light absorbed in said object from a linear equation involving as the variable a value obtained by multiplying the ratio of the intensities of said reference and measuring lights indicated by the output signals from said photoelectric converter by said temperature and humidity correction factors;

means for calculating the quantity of water contained in said object from a linear equation involving as the variable the absorbance of the measuring light calculated; and

means for determining the equations for calculating said temperature and humidity correction factors, using the output signals from said temperature and humidity detectors which are obtained under the conditions where both the temperature of said optical filters and the humidity of said optical path are varied.

4,764,019

METHOD AND APPARATUS FOR MIXING DRY PARTICULATE MATERIAL WITH A LIQUID

Donald R. Kaminski, Magnolia, Tex., and Burnie Sims, Scott, La., assignors to Hughes Tool Company, Houston, Tex.

Filed Sep. 1, 1987, Ser. No. 91,797
Int. Cl.⁴ B28C *5/00, 7/00*
U.S. Cl. 366—15 **8 Claims**



1. A method for mixing dry particulate material with a liquid, comprising the steps of:

initially mixing the dry particulate material with a stream of liquid in a mixing bowl to form a slurry;

passing the slurry through a conduit to a primary tank for additional mixing;

recirculating a portion of the slurry contained in the primary tank through a recirculating loop to further mix the slurry in the primary tank;

passing a portion of the slurry from the primary tank to a larger capacity, secondary tank;

passing a portion of the slurry contained in the secondary tank out a discharge conduit;

recirculating a portion of the slurry contained in the secondary tank to the mixing bowl where it combines with the stream of liquid and dry particulate material entering the mixing bowl;

measuring the density of the slurry contained in the primary tank; and

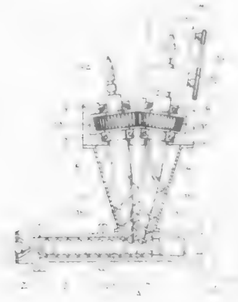
attaining the desired density in the slurry passing out the discharge conduit by continuing to recirculate slurry from the secondary tank to the mixing bowl while adjusting the entering flow of dry particulate material and liquid entering the mixing bowl based upon the density measurement taken from the primary tank.

4,764,020

APPARATUS FOR MIXING AND EXTRUDING VISCOUS LIQUIDS

Masao Moriyama, No. 508-13, Tendocho 17, Nishinomiya, Hyogo 663, Japan

Filed Dec. 12, 1986, Ser. No. 940,952
Int. Cl.⁴ B01F *7/08;* **B29B** *1/10;* **B29C** *31/04*
U.S. Cl. 366—76 **3 Claims**



1. A viscous liquids feeder for an extruding apparatus, the feeder comprising:

a first container including a pair of rotors housed axially thereof, each of the rotors being shaped like a cone, having spiral blades on its peripheral surface, and being rotative in different directions, the first container including a material intake section in its upstream portion;

a second container having a screw rotatably housed therein, the second container being provided horizontally with respect to the first container;

a junction section provided in the second container at which the first container is joined thereto in such a manner that the interior of the first container communicates with that of the second container so as to allow the mixed material therein to transfer from the first container to the second container;

wherein the axes of the pair of rotors form a given angle against the horizontal planes;

wherein the material intake section includes a port having a cross-sectional area of at least seven times as large as that of the second container, said port being located at the root portion of the first container and being opened so as to be equal to an entire width of the first container; and

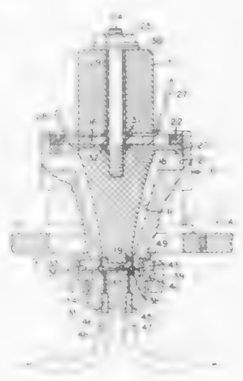
wherein the spiral blades have angles increasing up to 90° progressively from immediately under the intake port toward the second container.

4,764,021

APPARATUS FOR ULTRASONIC AGITATION OF LIQUIDS

William R. Eppes, Mansfield, Mass., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,164
Int. Cl.⁴ B01F *11/02*
U.S. Cl. 366—127 **10 Claims**



1. A fluid flow sonic energy reactor comprising

a sonic energy generator,

a tapered resonator having a first surface in contact with said generator and a longitudinally opposed second surface of smaller area than said first surface,

an anvil having a surface that is closely spaced from said second surface,

elastomeric means in contact with both the periphery of said second surface and the adjacent surface of said anvil, the space between said second surface and said anvil and within said elastomeric means defining a sealed chamber,

means for introducing fluid into said chamber,

means for removing fluid from said chamber, and

means for supporting said resonator.

4,764,022

KNEADER FOR PAPER PRODUCTS AND/OR SIMILAR WASTE PRODUCTS

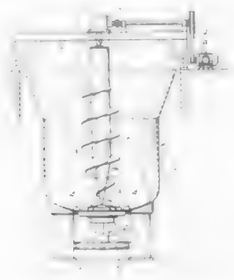
Angelo Di Vita, Buccinasco, Italy, assignor to I.C.A. S.p.A., Pesaro and A. Celli S.p.A., Lucca, both of, Italy

Filed Jan. 10, 1986, Ser. No. 817,887
Claims priority, application Italy, Jan. 14, 1985, 20484/85[U]
Int. Cl.⁴ B01F *7/16, 7/24, 15/02*
U.S. Cl. 366—157 **2 Claims**

1. A kneading device comprising in combination a stationary container, a bridge-like structure positioned over the top of said container, a drive mechanism, a joint means connected to the drive mechanism, a worm member with an axial shaft suspended at an end of said shaft by said joint means from said drive mechanism, said drive mechanism being mounted on said bridge-like structure and positioned substantially centrally above said container suspending said worm member dependently into said container and free for pendular motion; said drive mechanism being constructed to impart rotation to said worm member about the longitudinal axis of the latter, a rotary centrifugal impeller mounted at the bottom of said container, a driving mechanism coupled to said impeller for imparting rotary motion to said impeller, said container and bridge-like structure being oriented such that said worm member extends

VOL 1093 ISS 3 AG 16 1988 UMI

down from said joint means to a point closely spaced above said impeller, and motor means coupled to said drive mechanism for rotating said worm member in a direction to impart downward movement to any material engaged by said worm member thereby feeding said material toward said impeller, the arrangement enabling said worm member to swing about the joint means thereby permitting the unimpeded addition of bulk



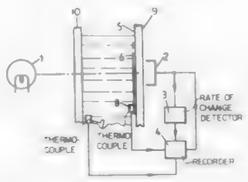
material to said container while being free to return to said vertical axis and to encounter any clumped material for effective fragmentation of the latter while downwardly moving said material toward said impeller, said shaft of said worm member at its end remote from said joint means being tapered toward a cone tip with said worm member thereabout decreasing in diameter in the axial direction toward said tip.

4,764,023

HEAT TRANSFER RATE MEASUREMENT USING THE OPTICAL PROPERTIES OF A DISSOLVING COATING

William J. White, Warrington, and Donald B. Utton, Cheshire, both of England, assignors to National Nuclear Corporation Limited, England

Filed Oct. 15, 1986, Ser. No. 919,227
Claims priority, application United Kingdom, Oct. 21, 1985, 8525906
Int. Cl.[4] G01K *17/00;* G01N *25/18*
U.S. Cl. 374—29 13 Claims



1. A method of determining the rate of heat transfer from a surface due to liquid convection, comprising the steps of:

(a) applying to said surface a coating of a material which dissolves in a convecting liquid, said material having optical properties which vary with the thickness of the coating when irradiated with radiation of a selected at least one wavelength;

(b) exposing said coating to said radiation, and to the convecting liquid; and

(c) detecting the change in the amount of radiation passing through the coating.

4,764,024

STEAM TRAP MONITOR

Michael J. Ryan, Plainfield, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1987, Ser. No. 45,960
Int. Cl.[4] G01K *11/00;* G01N *25/20*
U.S. Cl. 374—39 22 Claims



1. For use in a closed steam system, apparatus coupled to a stream trap by means of a pipe and located downstream therefrom for monitoring said steam trap, said apparatus comprising:

first sensing means in the pipe for determining the heat energy of a condensate flow in the pipe;

second sensing means in the pipe for determining the heat energy of the condensate flow and any flow steam in the pipe; and

means coupled to said first and second sensing means for determining the difference between the heat energy of the condensate flow and steam flow and the heat energy of just the condensate flow to detect the presence of any steam in the pipe in monitoring operation of the steam trap.

4,764,025

TURBINE BLADE TEMPERATURE DETECTING PYROMETER

Stephen C. Jensen, Edina, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Continuation of Ser. No. 763,909, Aug. 8, 1985, abandoned. This application Dec. 29, 1986, Ser. No. 948,403
Int. Cl.[4] G01K *1/14;* G01J *5/06, 5/60*
U.S. Cl. 374—144 2 Claims



1. A pyrometer for receiving radiation over a wavelength range from a member emitting radiation as a function of temperature of the member, the pyrometer further receiving undesired radiation from a flame adjacent to the member, the flame having arange of flame temperatures substantially higher than the temperature of the member, and the pyrometer also receiving radiation at least once from a reference source having a reference temperature in the range of the flame temperatures, comprising:

sensing means for receiving both the emitted and the undesired flame radiation and for providing first and second outputs, I_u and I_f, substantially proportional to the radiation received across different first and second segments respectively of the wavelength range;

comparator means for receiving the first and second outputs and for providing a comparator output which is substantially proportional to an adjusted weighted difference, $I_u - KI_f$, between the first and second outputs, the weighting factor K being adjusted such that the comparator output has a reduced dependence on the undesired flame radiation; and

output means for receiving the comparator output and for providing a pyrometer output indicative of the temperature as a nonlinear function of the comparator output; and

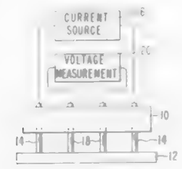
wherein the weighting factor K has been adjusted such that the comparator output has been substantially nulled when the pyrometer received radiation from the reference radiation source.

4,764,026

SEMICONDUCTOR WAFER TEMPERATURE MEASURING DEVICE AND METHOD

Ronald A. Powell, Redwood City, and Susan B. Felch, Los Altos, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Jul. 7, 1986, Ser. No. 882,798
Int. Cl.[4] G01K *7/00*
U.S. Cl. 374—178 8 Claims



1. Apparatus for measuring an elevated temperature of a semiconductor wafer in situ in a wafer processing machine comprising:

measurement means for measuring a sheet resistance of the wafer at temperatures in excess of a temperature corresponding to a maximum resistivity on a curve of resistivity versus temperature;

computer means for storing a measurement of a wafer thickness for said wafer;

data processing means for storing information from said measurement means in said computer means; and

said computer means including means for calculating resistivity from the sheet resistance and the wafer thickness, said computer means including means for computing said elevated temperature from the resistivity.

4,764,027

DISPLAY SEGMENT PATTERNS OF CLINICAL THERMOMETER

Yoshihiro Wada; Ryoichi Fujii, and Takashi Suzuki, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

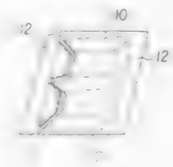
Filed Apr. 29, 1986, Ser. No. 857,101
Claims priority, application Japan, Sep. 27, 1985, 60-215697
Int. Cl.[4] G09F *9/46;* G01K *1/02*
U.S. Cl. 374—208 4 Claims

1. A clinical thermometer for displaying a predetermined range of Fahrenheit temperature values as decimal numbers, comprising:

display means with separate digit positions for at least displaying the hundreds, tens, units, and tenths positions of a decimal number representative of a human body temperature being measured, each of the separate digit positions including seven segment electrodes of a minus-in-square configuration superimposed on common electrode means;

electrical connection means for connecting the segment electrodes of the hundreds and tens positions into first and second groups of segment electrodes for each position, respectively;

electrical connection means for connecting the common electrode means confronting the hundreds and tens positions into first and second groups of common electrode means for each position, respectively; and



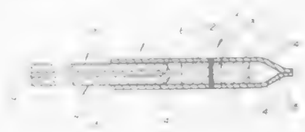
driver means for selectively driving the electrical connection means of the first and second groups of segment electrodes in combination with the electrical connection means of the first and second groups of common electrode means for each of said hundreds and tens positions, whereby a combination in the hundreds position displays a one or alternatively contains no display and the combination in the tens position displays a zero or alternatively a nine.

4,764,028

HANG BAGS HAVING HANGER PORTION OF REINFORCING MEMBER OF NON-SHRINK FILM LAMINATED BETWEEN TWO LAYERS OF SHRINK FILM

John C. Wood, Milton, and Krzystjan P. Sladowski, Mississauga, both of Canada, assignors to W. R. Grace & Co., Duncan, S.C.

Continuation-in-part of Ser. No. 734,375, May 15, 1985, abandoned. This application Dec. 24, 1986, Ser. No. 946,339
Int. Cl.[4] B65D *33/14*
U.S. Cl. 383—20 17 Claims



1. In a hang bag that comprises a body portion in which goods may be packaged and that is a side weld bag formed of shrinkable film that is folded at a fold to define face and rear panels that are sealed along each side and that can be sealed across the end distant the fold, the improvement comprising: a hanger portion that extends at said fold away from the body portion and that comprises a face layer of heat-shrinkable film that is joined by corona lamination to and extends from and over a portion of said face panel and the external surface of said face panel has been corona treated, a rear layer of heat-shrinkable film that is joined by corona lamination to and extends from and over a portion of said rear panel and the external surface of said rear panel has been corona treated, and a reinforcing member of non-shrink film that is joined by corona lamination to the two said layers between them and that includes perforation means by which the bag may be hung from a peg and wherein the entire inwardly facing surfaces of said face and rear layers have been corona treated and both surfaces of the non-shrinkable film have been corona treated to improve the lamination of facing surfaces.

11. In a method of making a hang bag comprising providing

VOL 1093 ISS 3 AG 16 1988 UMI

a flattened double-side weld bag having face and rear panels of shrinkable film and formed by folding the shrinkable material about a fold, the improvement comprising: corona treating the outer surfaces of the face and rear panels, providing a face layer of shrinkable film that is corona treated on its rear surface, providing a rear layer of shrinkable film that is corona treated on its face surface, providing a reinforcing non-shrinkable film that is corona treated on both surfaces, providing an assembly of the shrinkable film layers substantially coextensive with each other wherein at least one third of the length of the face and rear panels is covered by the face and rear layer and with the reinforcing film sandwiched between them at one end and with the side weld bag sandwiched between them at the other end with said fold of the side weld bag adjacent the reinforcing film; and joining by corona lamination the facing corona treated surfaces of the assembly.

4,764,029

DISPOSABLE AND COLLAPSIBLE TRASH RECEPTACLE

Donald R. Abblett, 172 W. Janss Cir., Thousand Oaks, Calif. 91360

Filed Jul. 2, 1987, Ser. No. 69,355
Int. Cl.[4] B65D *30/16*
U.S. Cl. 383—104 **20 Claims**



1. A freestanding disposable trash receptacle comprising;
a generally rectangular sheet having a top edge, a bottom edge and a pair of side edges;
said top edge comprising at least one pair of tie tabs for tieing off the top of said receptacle when said receptacle is full of refuse;
said sheet being longitudinally pleated;
said side edges being joined together to form a longitudinally pleated cylindrical sidewall when placed in an upright position;
a generally circular shaped, flexible bottom permanently joined at its circumference to said bottom rectangular edge for forming a bottom to said cylindrical sidewall;
whereby said bottom can be crimped and stuffed into said interior of said receptacle while said pleats are being folded together and compressed inwardly to form a collapsed elongate tube for transport and sale.

4,764,030

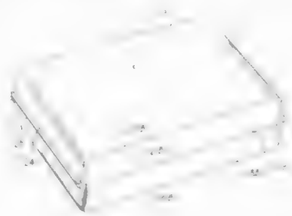
PART BOTTOM SEAL OF CHAIN OF GUSSETED BAGS AND MACHINE THEREFOR

Brian Humphrey, N. Ridgeville, Ohio, assignor to Basic Packaging Systems, Inc., Avon Lake, Ohio

Filed Mar. 3, 1986, Ser. No. 835,722
Int. Cl.[4] B65D *30/20;* **B31B** *23/64*
U.S. Cl. 383—120 **14 Claims**

1. A chain of bags each having first and second panels and first and second gusseted sides;
said first and second gusseted sides each being established by first and second gusset panels integrally joined to said first and second panels, respectively, and joined to each other; and
a transverse bottom seal sealing closed the bottom of each bag in the chain;
said bottom seal having a central portion with a transverse width less than and substantially centered on the total width of the flattened bag sealing together said first and second panels of the bag and also contiguous to the central portion sealing together four thicknesses including the first and second panels plus at least the inner portion of the width of said first and second side gusset panels;
said bottom seal further having outer portions sealing the outer portions of at least each second gusset panel to said second panel in only two thicknesses along a line substantially colinear to said bottom seal central portion, whereby the bottom of the bag is sealed completely closed and when filled with product opens said side gussets to become essentially a square bottom bag.

10. A bag making machine to make a chain of bags, comprising in combination:
means to form a flattened elongated tubular structure with first and second panels;



means to form side gussets each being established by first and second side gusset panels at each side of the tubular structure integrally joined to said first and second panels, respectively, and joined to each other;
means to form a bottom seal transversely of the flattened tubular structure which seals closed the bottom of the bag; and
means to prevent the sealing together of the outer portion of said gusset panels;
wherein said bottom seal means together with said preventing means establishes: (a) a sealing together of a central portion of said first and second panels on each bag; (b) contiguous to said central portion a sealing together of four thicknesses which include the first and second panels and at least the inner portions of said first and second side gusset panels; and (c) sealing the outer portion of at least said second side gusset panels together with said second panel in only two thicknesses colinearly with said seal at said central portion.

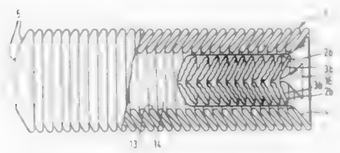
4,764,031

HOLLOW ROD COMPRISED OF A SHIRRED TUBULAR CASING AND CLOSURE ELEMENT

Elfriede Hutschenreuter, Bad Schwalbach; Max Bytzek, Wiesbaden; Klaus Andrae, Zornheim, and Alois Weinheimer, Alzey, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 881,488, Jul. 1, 1986, abandoned, which is a continuation of Ser. No. 567,185, Dec. 30, 1983, abandoned. This application Jan. 23, 1987, Ser. No. 8,115
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1982, 3248761
Int. Cl.[4] A22C *13/02;* **B65D** *30/20*
U.S. Cl. 383—120 **4 Claims**

1. A cylindrically-shaped hollow rod which has a first end, a second end and an inside wall that defines a cavity, said hollow rod comprising:
(A) a shirred tubular casing; and
(B) an integral, essentially cylindrically-shaped, plug-type closure element which is coaxially arranged in said cavity near one of said first and second ends and which comprises a first outer tubing portion and a central second tubing portion, said first outer tubing portion being comprised of lengthwise-deshirred casing material which is lengthwise drawn off said shirred tubular casing and pressed against said inside wall of said hollow rod such that there are substantially no gaps between said first outer tubing portion and said inside wall, wherein (i) said first outer tubing portion integrally changes into said shirred



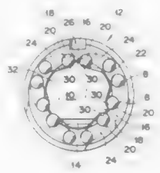
tubular casing and integrally changes into and surrounds said second tubing portion and (ii) said second tubing portion is comprised of casing material which is lengthwise compressed into irregular folds within said first outer tubing portion, such that said lengthwise-compressed casing material is less densely folded than said shirred tubular casing, to form said plug-type closure element, which closure element has a cross section that substantially corresponds to the cross section that substantially corresponds to the cross section of said cavity of said hollow rod.

4,764,032

BALL SPLINE BEARING PROVIDED WITH A DRIVING UNIT

Kazuhiko Tanaka, Fuchu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1987, Ser. No. 76,279
Claims priority, application Japan, Dec. 3, 1986, 61-286689
Int. Cl.[4] F16C *29/06*
U.S. Cl. 384—44 **6 Claims**



1. A shaft for a ball spline bearing comprising:
a rod having a generally cylindrical shape;
plural L-shaped grooves in the external surface of said rod extending axially and each having a long side and a short side, each said short side having an arcuate shape and each said long side being a straight line, when viewed in cross section.

3. A ball spline bearing provided with a driving unit comprising:
an external cylinder member (12) wherein first track grooves (20, 20) are formed in sets of two lanes, in several places (18) on the inside peripheral surface, and endless circulation passages including said first track grooves (20, 20) are formed inside;
plural balls (B) inserted in the endless circulation passages formed in the inside of said external cylinder member (12);
a spline shaft (10) having a nearly circular cross section, which is removably inserted and accommodated in said external cylinder member 12;
nearly L-type notches grooves (28) being formed in a plurality of places of said spline shaft (10) in such a manner that axially extending protrusions (16) may be formed, in several places in the circumferential direction, on the spline shaft (10);
second track grooves (30) having an arcuate shape in cross section being formed on said notched groove (28) by both sides of the protrusion (16), in opposition to respective said first track grooves (20) formed in said external cylinder member (12),
each of the remaining circumferential sections (32) on the spline shaft (10), except said notched grooves (28) and said protrusions (16), being comparatively long in the circumferential direction; and
rack teeth (14) formed in one of said remaining circumferential sections (32).

4,764,033

OIL FILM DAMPER

Mark D. Kohring, West Chester, and Edward J. Bailey, Cincinnati, both of Ohio, assignors to Cincinnati Milacron, Inc., Cincinnati, Ohio

Filed Feb. 11, 1987, Ser. No. 13,361
Int. Cl.[4] F16C *27/00*
U.S. Cl. 384—99 **10 Claims**



1. A rotator bearing shock and vibration dampener for a rotator bearing of a robotic manipulator comprising:
(a) a robotic manipulator base having a bearing race formed therein, and an oil damp well space having a relatively thin predetermined depth squared relative its surface area formed within said base adjacent said bearing race;
(b) a bearing being fitted within said bearing race;
(c) a robotic manipulator turntable mounted for rotation relative said base on said main bearing; and
(d) a predetermined volume of damping oil adjacent said bearing in said base and filling said oil damp well space, whereby said damping oil normally resides in said well space to provide an oil film therewithin, and said well space is formed with relatively limited inlets and outlets for said damping oil such that said oil film tends to resist compression and displacement, thereby damping vibrations, mechanical shocks and jolts encountered by said robotic manipulator in use and increasing the effective dynamic stiffness of said turntable relative said base.

4,764,034

SELF-PUMPING HYDRODYNAMIC RADIAL SLIDING BEARING

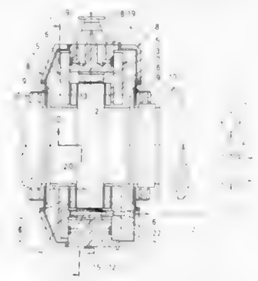
Armin Fust, Gebenstorf, and Mihailo Starcevic, Mellingen, both of Switzerland, assignors to BBC Brown Boveri AG, Baden, Switzerland

Filed Nov. 19, 1987, Ser. No. 122,456
Claims priority, application Switzerland, Nov. 27, 1986, 4746/86
Int. Cl.[4] F16C *32/06, 27/02;* **F16N** *13/20;* **F01D** *1/36*
U.S. Cl. 384—100 **3 Claims**

1. A self-pumping hydrodynamic radial sliding bearing (4) for a shaft (1), having a transport of a lubricating oil from an oil

VOL 1093 ISS 3 AG 16 1988 UMI

sump (54) induced by the hydrodynamic effect in gaps between the shaft sliding surface (3) and surfaces, parallel thereto, of at least one pump segment (24), a minor part of the lubricating oil thus transported serving to form a lubricating oil ring and the remaining major part of the lubricating oil being pumped under pressure into a lubricating oil circuit (23, 16, 17) or transported back directly into the oil sump (54), whilst the at least one pump segment (24) exhibits one pump pocket (28), one pump gap supply duct (25) through which the lubricating oil is drawn into the pump pocket (28), and one collecting duct



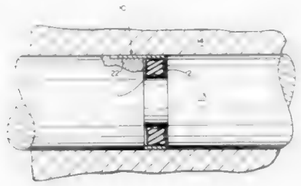
(22) through which the lubricating oil is discharged from the pump pocket (28), also having at least two radial sliding bearing segments (13) which are arranged in a bearing support ring (12) symmetrically to the vertical through the shaft axis and exhibit the sliding bearing surfaces for bracing the shaft (1), wherein the at least one pump segment (24) is provided in a pump block (11) which is mounted on resiliently yielding bracing elements (34 to 51) on the underside of the shaft (1) between two radial sliding bearing segments (13) arranged on either side of the vertical through the shaft axis.

4,764,035

MOLDED SELF-LUBRICATING SPLIT-RING BEARING ASSEMBLY

Richard M. Boyd, St. Louis Park, Minn., assignor to Quadion Corporation, Minneapolis, Minn.

Filed Nov. 6, 1987, Ser. No. 117,802
Int. Cl.[4] F16C *17/02*
U.S. Cl. 384—152 **35 Claims**



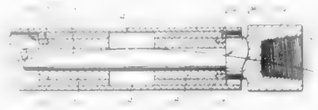
1. A self-adjusting, self-lubricating bearing assembly comprising:
(a) a shaft member constructed and arranged to be rotated at high speed about its longitudinal axis;
(b) a housing member surrounding said shaft and constructed and arranged to contain lubricating fluid in surrounding and lubricating relation to said shaft member as it rotates;
(c) said housing member and said shaft member being constructed and arranged to cooperatively define an annular groove therebetween;
(d) a molded, non-continuous, split-ring self-lubricating annular bearing formed of moldable self-lubricating material having a pressure velocity value at least equal to 1800 at 100 feet per minute surface speed;
(e) said bearing being disposed within said annular groove and have axial dimensions substantially equal to the axial dimensions of said groove and extending in encircling relation to said shaft member and having a portion thereof engaging one of said members in sealing relation;
(f) said bearing being of uniform cross-sectional configuration throughout substantially its entire circumference;
(g) a sealing ring made of a uniform resilient, flowable rubber-like material mounted within said groove axially opposite said portion of said bearing which engages one of said members in sealing relation and bearing thereagainst and cooperatively perfecting therewith a seal between said shaft member and said housing member;
(h) the axial dimensions of said sealing ring in its free form being less than the axial
dimensions of said groove; and
(i) the combined radial dimensions of the portion of said bearing which engages one of said members in sealing relation and of said sealing ring in its free form slightly exceeding the radial dimensions of said groove, whereby said sealing ring and said latter portion are maintained under slight radial compression within said groove, and a seal between said housing member and said shaft member is thereby perfected and maintained.

4,764,036

PCD ENHANCED RADIAL BEARING

James N. McPherson, Orange, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed May 14, 1987, Ser. No. 50,229
Int. Cl.[4] E21B *4/02;* **F16C** *33/24*
U.S. Cl. 384—276 **21 Claims**



1. A bearing structure, comprising:
a radial bearing having a cylindrical wear surface formed on a cylindrical radial bearing support surface, said wear surface extending less than the entire length of said bearing support surface, leaving a portion of said radial bearing support surface exposed; and
means on the exposed portion of said radial bearing support surface for arraying diamond faced bearing inserts for carrying radial bending loads.
18. Downhole drilling apparatus comprising:
a drive shaft;
upper and lower radial bearings mounted on said drive shaft, said upper radial bearing including an upper bearing ring at the upper end thereof, the lower radial bearing including a lower bearing ring at the lower end thereof, the upper and lower bearing rings each carrying polycrystalline diamond (PCD) faced bearing insert means disposed for carrying radial loads.

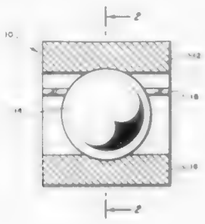
4,764,037

CAGE FOR BALL BEARING ASSEMBLY

Elden L. Hawkinson, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 10, 1987, Ser. No. 36,628
Int. Cl.[4] F16C *33/44*
U.S. Cl. 384—527 **6 Claims**

1. In a ball bearing assembly required to operate immersed in liquid oxygen at a pressure in excess of 1000 psi and at rotational speeds of at least 10,000 revolutions per minute, wherein the ball bearing assembly including an inner race, and outer race, a plurality of spherical ball bearings dispersed therebetween and a cage member for maintaining said ball bearings in a spaced apart relationship with respect to one another, the improvement in the cage member comprising;



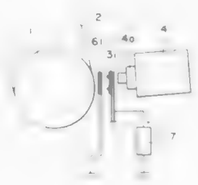
a liquid oxygen compatible, porous metal impregnated with a liquid oxygen compatible material for adding lubricity to the metal, said material comprising a polyhalogenated hydrocarbon.

4,764,038

IMPACT/ELECTROCONDUCTIVE THERMAL PRINTING APPARATUS

Hiroharu Nakajima, Kodaira, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1986, Ser. No. 911,417
Claims priority, application Japan, Oct. 2, 1985, 60-220589
Int. Cl.[4] B41J *3/20*
U.S. Cl. 400—120 **6 Claims**



1. A printing apparatus comprising:
an ink bearing member having an ink layer on a face thereof facing a recording medium and an electroconductible layer on the opposite face thereof;
printing means comprising a plurality of type face pojections to be brought into contact with the electroconductible layer of said ink bearing member, said type face projections being at least electroconductible at said projections and normally maintained at a position spaced from said ink bearing member;
means for applying an electric voltage to a first electrode which is the electroconductible layer of said ink bearing member and to a second electrode which is said type face projections; and
hammer means for selectively striking a desired one of said type face projections against said ink bearing member and applying an electric current in the pattern of the selected type face projections, thereby generating heat and thus transferring the ink of said ink bearing member in said pattern of said type face projections onto the recording medium with thermal energy and striking force corresponding to a pattern of the selected type face projection.

4,764,039

METHOD FOR CONTROLLING LINE PRINTERS COMPRISING A REVOLVING TYPE BAND AND A PRINT HAMMER BANK

Hermann R. Bublitz, Böblingen, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 8, 1986, Ser. No. 904,405
Claims priority, application European Pat. Off., Sep. 13, 1985, 85111565.9
Int. Cl.[4] B41J *1/20*
U.S. Cl. 400—146 **9 Claims**



1. Method for controlling line printers comprising a revolving type carrier which is moved past a row of print elements arranged in a bank and associated with the print positions of a print line,
for precalculating the actuation times Tf of the print elements for printing particular characters at particular print positions of a record carrier at said print line,
using a type carrier with equidistantly spaced scannable time marks and a reference mark, and
characterized in
that the spacing of the characters on the type carrier (400) relative to the reference mark (501) equals a coarse time raster value (ΔT) or an integral multiple thereof,
that the coarse time raster value is derived from the time mark pitch, with the time marks (402) having specific coarse time raster values,
that the pitch of the print elements in the bank differ and the spacing of a print position from a reference print posiiton (H1) equals a coarse time raster value (ΔT) or a multiple thereof and an additional fine time raster value ($^{\Delta}$t) or a multiple thereof,
the coarse and fine time raster values being defined as coarse and fine time raster values relative to the number of revolutions of the type carrier (400),
that the fine time raster values of the print elements are sorted according to the fine time raster values of their spacing from the reference print position and
their actutation times (Tf) are calculated in the order of the print elements resulting from that sort step,
and that the actuation time of a print element at the nth print position Hn (n=1, 2, 3, 4, . . .) for printing the pth character Cp (p=1, 2, 3, 4, . . .) on the type carrier with the characters being consecutively numbered relative to othe reference mark (501) and the print positions being consecutively numbered relative to the reference print position (H1)
is calculated according to the relation

$$Tf = TCp - THn$$

for a positive difference value TCF − THn

$$Tf = TC\ \text{Band} + (TCp - THn)$$

for a negative difference value TCp − THn
which is subtracted from TC Band,

VOL 1093 ISS 3 AG 16 1988 UMI

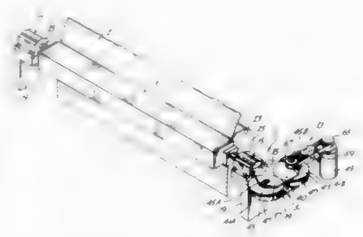
where TC band is the time required for one revolution of the band and TCp is the time that passes as the pth character moves from its respective momentary position to the reference print position (H1), and
where THn is the time that passes as the type band moves from the nth print position Hn to the reference print position (H1),
and where T Home is the time that passes as the reference mark (501) moves from its respective mommetary position to the reference print position (H1),
and that a first table FTAƎC (600) and a second table FTABF (700) are generated,
the first table (600) comprising a field for each possible coarse raster time value in an ascending order,
and the second table (700) comprising a row field (700 ΔT5) associated with each coarse raster time value of the first table (600) and consisting of several subfields (700 ΔT5-1, 700 ΔT5-2),
and that after calculation of the actuation time of a print element, an entry for the coarse time raster value of the calculated actuation time is made in the associated field of the table (600) for the print operation to be performed later on,
and for the fine time raster value of the calculated actuation time an entry on the print position number and the fine time raster value for the print operation to be performed later on is made in the next free subfield of the row field associated with the coarse time raster,
and that for printing a line, the fields of the first table (600) are addressed in the ascending order of the coarse time raster values,
and that in the event of a coarse time raster table field entry for a print operation to be performed a branch is taken to the row field of the second table (700) associated with that coarse time value, printing the print positions defined therein in the order of the fine time raster values at a time obtained by adding the coarse time raster value and the respective fine time raster value.

4,764,040

SHOCK STABILIZED, TWIN COUNTER WEIGHT SHUTTLE DRIVE FOR RECIPROCABLY MOUNTED CARRIAGES

C. Gordon Whitaker, Mercer Island, Wash., assignor to Mannesmann Tally Corporation, Kent, Wash.

Filed Dec. 15, 1986, Ser. No. 941,771
Int. Cl.[4] B41J *25/28, 3/10*
U.S. Cl. 400—320 32 Claims



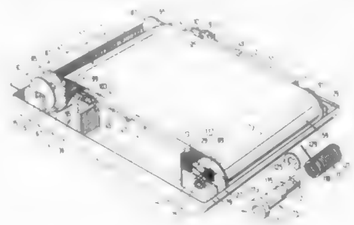
1. A shock stabilized, twin counterweight shuttle drive for reciprocating a carriage that is reciprocably mounted on a supporting structure comprising:
a pair of equally sized and configured unbalancing weights rotatably coupled together and secured to said carriage so as to be entirely supported by said carriage, said unbalancing weights being positioned such that the rotation of said unbalancing weights in opposite directions creates a drive force that reciprocably shuttles said carriage along a line of motion, said unbalancing weights also being positioned such that said drive force is aligned with the center of gravity of the carriage and such that the centers of rotation of the unbalancing weights lie along a line that is perpendicular to the line of shuttle motion;
rotation means coupled to said pair of equally sized and configured unbalancing weights for rotating said pair of equally sized and configured unbalancing weights in opposite directions; and,
shock stabilizing means for stabilizing the shuttle motion of said carriage by coupling at least one of said unbalancing weights to the supporting structure on which said carriage is reciprocably mounted, said shock stabilizing means comprising a coupling that couples a coupling point spaced from the axis of rotation of said at least one of said unbalancing weights by a predetermined distance and located along a line running between the axis of rotation of said at least one unbalancing weight and the center of gravity of said at least one unbalancing weight to said supporting structure such that said coupling point can move perpendicularly, but not parallel, to the line of shuttle motion as said at least one unbalancing weight is rotated.

4,764,041

MULTIFUNCTIONAL CASSETTE WITH WEB BRAKE FOR A PRINTER

Waltherus C. J. Bierhoff, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 780,549, Sep. 26, 1985, abandoned. This application Jan. 23, 1987, Ser. No. 8,110
Claims priority, application Netherlands, May 30, 1985, [illegible]
Int. Cl.[4] B41J *11/58*
U.S. Cl. 400—618 6 Claims



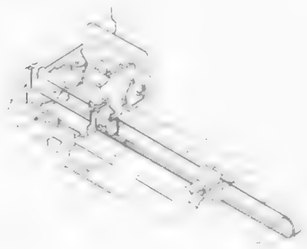
1. A multifunctional cassette for a printer comprising a first chamber in which a cylindrical take-up reel can be journalled for rotation on an axis and a second chamber in which a cylindrical supply reel can be journalled for rotation on an axis parallel to the axis of said take-up reel, said cassette including a window which is located between the first and the second chambers and extends from a first cassette side to an opposite second cassette side thereby forming an opening in the cassette which is accessible from outside said cassette on each of said two sides, said cassette also including a third chamber for storing a data strip with a flat surface and two side edges and a releasable brake means for said data strip, said brake means being accessible for release through said window, said brake means including an elongated pin located at each side edge of said data strip stored in said third chamber, each said pin having a frictional surface, each said pin for engaging with its frictional surface said data strip stored in said third chamber along a narrow border on the flat surface thereof along an associated side edge.

4,764,042

PRINTING APPARATUS

Hiroatsu Kondo, Zushi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 32,936, Apr. 1, 1987, abandoned, which is a continuation of Ser. No. 706,637, Feb. 28, 1985, abandoned.
This application Dec. 15, 1987, Ser. No. 134,534
Claims priority, application Japan, Mar. 6, 1984, 59-32394[U]
Int. Cl.[4] B41J *29/56*
U.S. Cl. 400—674 14 Claims



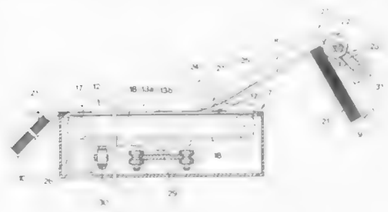
1. A printer comprising:
printing means;
a carriage on which said printing means is mounted;
two pulley means respectively disposed at opposite extremes of the travel of said carriage;
a belt for moving said carriage, said carriage being fixedly secured to said belt and said belt being applied onto said pulley means so that said belt includes two parallel parts extending between said two pulley means; and
fixing means for fixing said belt to prevent said carriage from moving when said printer is carried, said fixing means being removed from said printer when said printer is in operation.

4,764,043

DEVICE FOR MARKING SHEET-SHAPED OBJECTS

Walter Jaffe, Lidköping, Sweden, assignor to Fleximark AB, Goteborg, Sweden

PCT No. PCT/SE86/00178, § 371 Date Dec. 16, 1986, § 102(e) Date Dec. 16, 1986, PCT Pub. No. WO86/06329, PCT Pub. Date Nov. 6, 1986
PCT Filed Apr. 18, 1986, Ser. No. 12,129
Claims priority, application Sweden, Apr. 19, 1985, 8501917
Int. Cl.[4] B41J *13/12*
U.S. Cl. 400—629 4 Claims



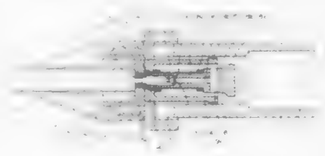
1. In a device for marking comparatively stiff, bendable sheets by means of a stationary write head: a guide assembly providing a longitudinal guide path for the sheets relative to the write head; a magazine for holding a supply of sheets; means for feeding sheets one at a time from the magazine; at least one guide member for cooperating with sheets fed to the guide path; drive means for moving said guide member along the guide path so as to advance a sheet along the guide path; a slide track having a discharge end arranged above the guide path, said slide track being inclined downwardly toward the guide path in the sheet-advancing direction and thereby having an upper, sheet-receiving end, said magazine being inclined in the opposite direction from said slide track and being located adjacent the upper end of said slide track, and said means for feeding sheets one at a time including a driven feeding wheel for engaging the uppermost sheet of a stack of sheets in said magazine; and a driving wheel located above the guide path, the driving wheel having a lower surface located below and downstream of said discharge end of said slide track for feeding the advance edge of a sheet along the guide path until the rear edge of the sheet leaves the slide track and is completely located on the guide path and in cooperation with said guide member.

4,764,044

LIQUID APPLICATOR WITH SLIDABLE PUMP MECHANISM

Yoshiomi Konose, Fujioka, Japan, assignor to Mitsubishi Pencil Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1986, Ser. No. 947,937
Claims priority, application Japan, Jan. 9, 1986, 61-2641
Int. Cl.[4] B43K *8/02;* A46B *11/02*
U.S. Cl. 401—150 8 Claims



1. In a writing instrument or an applicator comprising: a shaft sleeve inside which is disposed a reservoir for an application liquid; and an application member provided in a front end of said shaft sleeve to receive said application liquid supplied from said reservoir; the improvement comprising:
an ink conduit member provided with a large-diameter piston portion positioned at its rear end, a hollow rod portion projected forward from said large-diameter piston portion and being smaller than the same in diameter, and a communication-hole opening in both a front end and an outer peripheral surface of said hollow rod portion and containing a check valve unit therein;
a cup-like member for slidably receiving said ink conduit member therein, said cup-like member being slidably and hermetically received in said shaft sleeve and having a length enabling said ink conduit member to extend said piston portion thereof axially beyond said cup-like member when said cup-like member is positioned at its most forward position relative to said ink conduit member;
means for moving said cup-like member axially relative to said shaft sleeve;
means for biasing said cup-like member and said ink conduit member so as to be separated from each other; and
a holder for receiving said application member, said holder being connected to a front end portion of said ink conduit member projected from said cup-like member, to make it possible that an interior space of said holder communicates with said communication-hole of said ink conduit member.

VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,045

WRITING INSTRUMENT WITH RESERVOIR HAVING PERPENDICULAR FIBERS

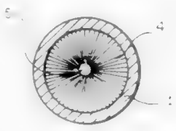
Antoaneta Tschawow, Hamburg, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsbury, N.J.

Filed Apr. 16, 1987, Ser. No. 39,136

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1986, 3612792

Int. Cl.[4] B43K *8/02*

U.S. Cl. 401—198 4 Claims



1. A writing instrument comprising a writing fluid reservoir, in the form of fibers which define capillary conduits, by their outer surfaces in the direction of the longitudinal extensions of each fiber, and having a housing to receive the reservoir and hold a writing tip in its front end, wherein a centrally disposed writing fluid conductor with a longitudinal axis extends coaxially within the reservoir and communicates in a fluid-conducting manner with the writing tip, characterized in that the writing fluid reservoir (**4**) comprises a plurality of individual fibers extending at right angles to, and radially with respect to, the longitudinal axis of the writing fluid conductor (**5**) so that said capillary conduits conduct writing fluid radially inward towards a fluid communication with said writing fluid conductor.

4,764,046

FLUID STORING MEMBER AND ITS FLUID OUTLET OPENING/CLOSING MECHANISM

Yukizo Kitamura, 1-24-16, Hanayashiki, Kawanishi-shi, Hyogo-ken, and Tetsuji Kousaka, Osaka, both of Japan, assignors to Yukizo Kitamura, Hyogo, Japan

Filed Mar. 26, 1987, Ser. No. 30,187

Claims priority, application Japan, Apr. 10, 1986, 61-83156

Int. Cl.[4] A46B *11/00*

U.S. Cl. 401—270 10 Claims



4. A fluid storing member, comprising:

a fluid storing portion;

a fluid outlet portion having an opening/closing mechanism; including,

a valve seat (**22**) having a portion formed of a magnetic material, housed in a fluid storing member (**1**) and adapted to be attached to said outlet portion (**1***a*) of said fluid storing member (**1**), said valve seat (**22**) including a stop portion (**2***b'*) and

a valve member (**3**), having a portion that may be formed of a magnetic material and disposed in a space surrounded by said stop portion (**2***b'*) and said valve seat (*a2*) adapted to be seated on said valve seat (**22**);

wherein at least either said magnetic portion (**22**) or said valve member (**3**), being constituted by a material capable of generating a magnetic field; and

a fluid applying portion extending from said fluid outlet portion; whereby said valve seat and valve member cooperatively define a normally closed position for said opening/closing mechanism to which said mechanism immediately returns from an opened position established by an inertial force applied to said fluid storing member by shaking.

4,764,047

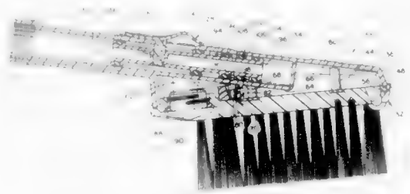
VEHICLE AND PATIO WASHING BRUSH

Damon A. Johnston, Aurora; Paul E. Papenhause, St. Charles; George L. Garcia, Naperville, and Thomas L. Drehobl, Lindenhurst, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed May 22, 1987, Ser. No. 53,089

Int. Cl.[4] F23D *13/38;* A46B *11/06*

U.S. Cl. 401—289 19 Claims



1. A washing, scrubbing and rinsing brush for home use such as washing cars and patios, said brush comprising:

a body having a plurality of dependent bristles, said body defining a first compartment for receiving soap and a second compartment for receiving rinse water, said first and second compartments being separated by a barrier wall, said body further including an elongate tube partially defining each of said compartments said first compartment having a first outlet means for providing soapy water to said bristles and said second compartment having a second outlet means for providing rinse water;

a conduit connected to said tube and adapted for connection to a garden hose;

a spool valve slidable back and forth in said tube, said valve having a substantially cylindrical wall defining an axial bore open to said conduit and an opening extending through said wall for communicating water to either of said compartments, said tube having a first aperture for providing water to said first compartment and a second aperture for providing water to said second compartment;

sealing means carried by said spool valve flanking said spool valve opening providing substantially watertight seals between said spool valve and said tube; and

means for reciprocating said spool valve along a substantially linear path among a soap position wherein said first aperture is flanked by said sealing means so that said liquid can flow from said valve to said first compartment through said opening and said first aperture, a rinse position wherein said second aperture is flanked by said sealing means so that liquid can flow from said valve to said second compartment through said opening and said second aperture, and an off position wherein neither of said apertures is in fluid communication with said valve whereby movement of said spool valve to said soap position causes soapy water to be provided to said bristles, movement of said spool valve to said rinse position results in clear water being provided by the second outlet means, and movement of said spool valve to said off position shuts off the supply of water to said compartments.

4,764,048

BALL-AND-SOCKET JOINT

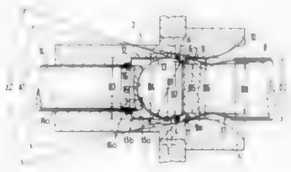
Georg Kehl, Stuttgart, and Ernst-Dieter Schafer, Pliezhausen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 29, 1986, Ser. No. 947,244

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1986, 3607150

Int. Cl.[4] B25G *3/00;* F16C *11/00*

U.S. Cl. 403—11 11 Claims



1. A ball-and-socket joint having a ball head (**3**) firmly joined to a rod (**8**), having a radially elastic CIRCLIP (**4**) which resets on the ball head in a region between the center of the ball head and the rod, an outer structural part (**5**) including a guide bore (**10**) that pivotably receives the ball head in the manner of a socket and has a support face (**11**) widening in substantially conical fashion in a direction of a center of the ball head, the CIRCLIP being supported on the support face in a securing state, said outer structural part having an inner surface having a flare angle (**A1**) of said support face (**11**), which surrounds the CIRCLIP (**4**), the flare angle is equal to at least twice the size of a friction angle between this support face (**11**) and the CIRCLIP (**4**), said CIRCLIP (**4**), in its relaxed position prior to installation in the outer structural part (**5**), has a diameter such that in the installed state it rests with radially outwardly acting bias on the support face (**11**), with an imaginary conical line of contact, which is at a tangent to the ball head (**3**) along a curved line of contact extending between the ball head (**3**) and the CIRCLIP (**4**), and has an included angle (**A2**) that is open toward the center of the ball head (**3**) in which the included angle is larger by twice the size of the friction angle than the flare angle (**A1**) of the support face (**11**), said guide bore of said outer structural part having a funnel like entrance end which extends to the support face (**11**), and a shoulder (**9**) is integrally formed on said rod (**8**), which functions as an insertion tool that is insertable through the guide bore (**10**) for the CIRCLIP (**4**) when the ball head (**3**) is inserted as far as the socket (**12, 13, 14**).

4,764,049

UNIVERSAL EQUIPMENT MOUNTING STRUCTURE

Robert G. Brown, Annapolis, and William J. Siegel, Silver Spring, both of Md., assignors to Pace Incorporated, Laurel, Md.

Filed Feb. 18, 1986, Ser. No. 830,193

Int. Cl.[4] F16B *7/10;* F04G *3/00*

U.S. Cl. 403—24 10 Claims

1. A mounting structure for selectively relative positioning and mounting together of a control console and a work table comprising in combination:

a control console;

a work table;

two pairs of spaced parallel rails;

said work table being mounted on said pairs of spaced rails,

a longitudinal slot separating each of said pair of spaced rails,

a portion depending from each rail portion of each of said pair of spaced rails and forming a partial trackway under each of said pair of spaced rails;

a channel-shaped slider having an aperture therein and in alignment with said slot, each of said partial trackways forming a complete trackway under each of said pair of spaced rails which receives said channel-shaped slider,

at least one third rail having a T-shaped longitudinal slot therein, said third rail orthogonally mounted on said pairs of rails, said third rail being positionable with respect to said pairs of spaced parallel rails in a first direction parallel



to the direction of the rails and in a second direction parallel to the third rail and orthogonal to the first direction,

said control console being secured to said third rail adjacent said work table, and

securing means in said T-shaped slot and said aperture for connecting said third rail to said two pairs of rails to form the mounting structure wherein the third rail may be positioned with respect the two pairs of rails at any position (a) along the length of said two pairs of rails and (b) transverse with respect to said two pairs of rails.

4,764,050

DEVICE FOR FASTENING PARTS ON BODYWALLS OF MOTOR VEHICLES

Ersin Kruger, Cologne, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 13, 1987, Ser. No. 37,474

Claims priority, application Fed. Rep. of Germany, May 20, 1986, 3613329

Int. Cl.[4] B25G *3/18;* F16B *21/00*

U.S. Cl. 403—322 2 Claims

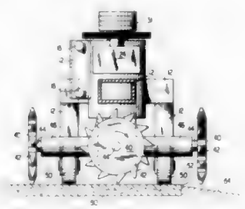


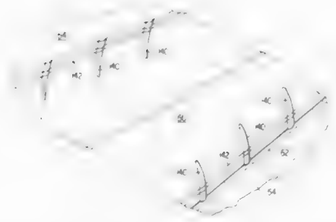
1. A device for mounting an object on a motor vehicle body panel having at least two bolts projecting therefrom each bolt being formed with a neck portion and a larger diameter head portion, the mounting device comprising a mounting plate, a locking element pivotable about the mounting plate, the locking element having keyhole slots for receiving the heads of the bolts projecting from the body panel and the mounting plate having resilient tongues for engaging the heads of the bolts passing through the keyhole slots, the tongues cooperating with detents projecting from the locking element to prevent

VOL 1093 ISS 3 AG 16 1988 UMI

rotation of the locking element relative to the mounting plate until all the resilient tongues have been engaged by respective bolts projecting through respective keyhole slots in the locking element.

4,764,051
ROAD HAVING CURVED GROOVES
James R. Whitney, 18332 Sharon Rd., Triangle, Va. 22172
Filed Jul. 20, 1987, Ser. No. 75,399
Int. Cl.[4] E01C *23/16, 11/22*
U.S. Cl. 404—16 9 Claims

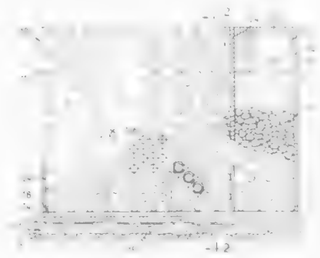




1. A road rumble strip construction including a road having a shoulder below an edge of the road, a plurality of grooves each of which intersects said road edge and each of which has portions which extend into the road surface, each of said grooves being arcuate in plan view of said road, each of said grooves being of continuously varying depth along its length, the deepest portion of each groove being located at an endge of the road, said grooves being parallel to each other and being at an angle to the longitudinal axis of the road, the end of each groove opposite its deepest portion terminating at and being coplanar with the surface of the road, the grooves being formed from the road and being integral with the road, the extent of the grooves at each edge of the road, relative to the road width, being less than one half of the width of the road.

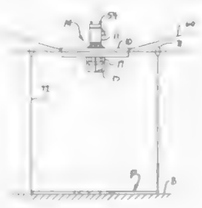
4,764,052
STABILITY OPTIMIZED PERFORATED BREAKWATERS
Gerard E. Jarlan, Versailles, France, assignor to Canadian Patents and Developments Limited/Societe Canadienne des Brevets et d'Exploitation Limitee, Ottawa, Canada
Filed May 8, 1987, Ser. No. 47,793
Claims priority, application Canada, May 9, 1986, 508830
Int. Cl.[4] E02B *3/06, 3/12*
U.S. Cl. 405—31 27 Claims

1. A breakwater comprising a line of caissons each having an upright front wall extensively perforated by regularly distributed transverse passages, and a second wall spaced from the front wall to form a chamber between the walls, and having a slab bottom, a base of pervious rubble piled on seabed and having a levelled upper surface, said slab bottom resting on said rubble pile and characterised in that, said upper surface is disposed at a depth below mean sea level substantially less than four times the amplitude of the largest predicted wave; in that the weight of the caisson itself is insufficient to anchor the caisson against sliding by friction of said slab bottom relative to said upper surface; in that the caisson carries a ballast mass disposed in said chamber extending upward from the slab



bottom to a height below the lowest height of the sea when the trough of said wave is at the front wall, said mass adding sufficient weight to ensure that the ratio of maximum horizontal thrust force of said wave to net downward vertical force including the weight of said mass is below 0.46; and in that said mass is pervious to seawater flowing through said front wall.

4,764,053
METHOD OF INSTALLING A FLOATABLE PUMP APPARATUS AND AN ANTI-EROSION PLATE IN A WATER TREATMENT BASIN
Steven A. Schupbach, Rockford, and James A. Knight, Pearl City, both of Ill., assignors to Aqua-Aerobic Systems, Inc., Rockford, Ill.
Filed Apr. 30, 1987, Ser. No. 44,223
Int. Cl.[4] B63B *35/00*
U.S. Cl. 405—209 6 Claims



1. A method of installing a floatable pump apparatus and an anti-erosion plate means at a selected location in a bounded water treatment basin having a bottom, the floatable pump apparatus including float means having upper and lower sides and a central opening therethrough, and motor-pump means adapted to be mounted on the float means for buoyant support thereby and having a drive motor and a propeller shaft drivingly connected to the drive motor and propeller means on the propeller shaft; the method comprising the steps of

(a) mounting a winch means on the upper side of the float means adjacent the central opening in the float means, and extending one end of a winch cable from the winch means downwardly through said central opening;

(b) attaching said one end of the winch cable means to the anti-erosion plate means;

(c) lifting the float means and winch means with the anti-erosion plate means suspended from the winch cable means below the float means and setting the anti-erosion plate means and float means in the basin at a location remote from said selected location;

(d) moving the float means with the anti-erosion plate buoyantly supported thereby to said selected location;

(e) operating the winch means to lower the anti-erosion plate means onto the bottom of the basin at said selected location, and disconnecting the winch cable means from the anti-erosion plate means;

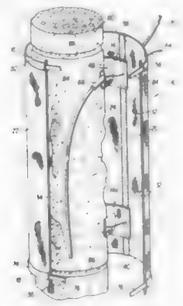
(f) moving the float means while buoyantly supported in the basin from the selected location to a location adjacent a boundary of the basin;

(g) removing the winch means from the float means and mounting the motor-pump means in the float means with the motor above the float means and the propeller shaft extending down through the central opening in the float means to provide a floatable pump apparatus;

(h) moving the floatable pump apparatus while buoyantly supported in the basin from a location adjacent the boundary of the basin to said preselected location in the basin; and

(i) anchoring the floatable pump apparatus at said preselected location in the basin.

4,764,054
PILING-JACKET SYSTEM AND METHOD
John S. Sutton, 7460 Tidewater Dr., Norfolk, Va. 23505
Filed Apr. 7, 1987, Ser. No. 35,411
Int. Cl.[4] E02D *5/60*
U.S. Cl. 405—216 19 Claims

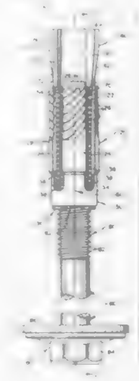


1. A piling-jacket system including an elongated, hollow, piling jacket of flexible material having a top end and a bottom end for receiving grout therein and retaining said grout during the curing thereof for forming a concrete column therewith, said piling-jacket system comprising:

a filling-port means located on the side of said piling jacket intermediate said top and bottom ends thereof, said filling-port means including an open port in said flexible-material jacket, a flap of flexible material mounted adjacent said open port on an interior surface of said piling jacket, and a flexible flap cord attached to said flap at an outer end portion thereof and extending through a cord hole defined by said flexible piling jacket to the exterior thereof;

whereby a concrete-supply hose can be inserted through said open port thereby holding said flap away from said open port through which wet concrete can be pumped into the interior of said piling jacket and thereafter, once a top surface of said wet concrete is above said open port, said flexible concrete-supply hose can be pulled out of said open port so as to allow said flap to close said open port, and said flap cord can be pulled outwardly to positively pull said flap over said open port and thereby preventing wet concrete on the interior of said piling jacket from passing through said open port to the exterior thereof.

4,764,055
RESIN REINFORCED EXPANSION ANCHOR SYSTEM
Carl A. Clark, Liverpool, and Raymond L. Wright, Syracuse, both of N.Y., assignors to Birmingham Bolt Company, Inc., Birmingham, Ala.
Continuation of Ser. No. 915,158, Oct. 2, 1986, abandoned. This application Sep. 23, 1987, Ser. No. 102,795
Int. Cl.[4] E21D *20/02*
U.S. Cl. 405—261 11 Claims



4. An expansion anchor assembly in combination with a dual compartment resin and cartridge inserted into a mine roof opening, the anchor assembly including

(a) an elongated bolt having a head at one end and threaded for a portion of its length at the other end;

(b) an expansion member engaged with the threaded end of said bolt;

(c) said expansion member including an expansion shell having a plurality of leaf segments;

(d) a first means for engaging said expansion shell with said elongated bolt;

(e) a wedge threaded on said elongated bolt for engagement with said expansion shell to urge the latter into gripping engagement with the mine roof;

(f) a first resin passageway means on the outer surface of said wedge for permitting resin to gravitate therethrough;

(g) the leaf segments of said expansion shell being separated to form a second resin passageway means aligned with said first resin passageway means, whereby resin may gravitate downwardly through substantially the entire length of said assembly, and

(h) a second means within said first passageway and engageable with one of said leaf segments to prevent relative rotation of said wedge member with respect to said expansion shell;

(i) said resin being mixed upon rotation of said bolt and expansion member and gravitating downwardly through the first and second passageway means into engagement with that portion of the mine roof defining the mine roof opening.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,056

METERING APPARATUS FOR INTRODUCING FREE-FLOWING, POWDERED SUBSTANCES IN A CONTROLLABLE MANNER INTO SPACES UNDER PRESSURE

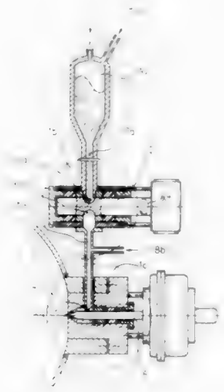
Ernst Zentgraf, Limburgerhof; Heinz Vogt, Ludwigshafen, and Franz Brandstetter, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ladwigshafen, Fed. Rep. of Germany

Filed Dec. 19, 1986, Ser. No. 943,486

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1985, 3544915

Int. Cl.[4] B65G *53/46*

U.S. Cl. 406—68 1 Claim



1. Metering apparatus for introducing a free-flowing, powdered substance in a controlled manner into a space under pressure, which comprises

housing means,

a storing unit,

a proportioning unit consisting of a shaft which can be rotated alternately through 180° in each case and is provided with two depressions opposite one another, for accepting and discharging the substance respectively,

an end unit consisting of a cylindrical cavity, which has a nozzle-like shape toward the space under pressure, sealing rings and glands being provided for sealing said proportioning unit and said end unit in said housing means, and a spindle which is arranged concentrically with respect to the cavity, is capable of making to and fro stroke-like movements and, at its tip, has a slope the same as that of the nozzle-like feed, the end unit being arranged flush with the wall of the space,

a connecting line between the storing unit and the accepting depression within the proportioning unit,

a connecting line between the discharging depression within the proportioning unit and the cavity of the end unit, and

two connections for inert gas which communicate with said storing unit and the last-mentioned one of said connecting lines, respectively.

4,764,057

DEVICE FOR PRODUCING A SOLID AEROSOL

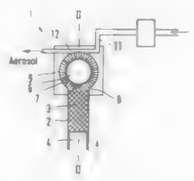
Leander Mölter, Eggenstein-Leopoldshafen; Wolfgang Mölter, and Friedrich Munzinger, both of Karlsruhe, all of Fed. Rep. of Germany, assignors to Palas GmbH Partikel-und Lasermesstechnik, Karlsruhe, Fed. Rep. of Germany

Filed May 30, 1986, Ser. No. 868,437

Claims priority, application Fed. Rep. of Germany, May 30, 1985, 8515780

Int. Cl.[4] B65G *53/48*

U.S. Cl. 406—69 18 Claims



1. An apparatus for producing a solid aerosol from a heap or bed, with a container means for accommodating a solid material, a feed piston, a rotary brush, an air intake and an outlet passage having a predetermined length, characterized in that the outlet passage has a predetermined depth, increasing over the predetermined length and a predetermined width, and in that the outlet passage has a cross section with said predetermined depth and said predetermined width, said predetermined width being non-increasing along said predetermined length so that said cross-section is non-increasing in area over said predetermined length.

4,764,058

DUAL SUCTION UNIT AND METHOD

Christopher R. Jones, Greensboro, and L. Shannon Jones, Jamestown, both of N.C., assignors to Templex, Inc., High Point, N.C.

Filed May 9, 1986, Ser. No. 861,428

Int. Cl.[4] B65G *53/40*

U.S. Cl. 406—117 6 Claims



1. A method of removing waste from two sources of waste on a sewing machine, said method comprising the steps of:

(a) providing a dual suction unit having

(1) a main tube with an inlet at one end and an outlet at its opposite end and

(2) a branch tube with an inlet at one end and and outlet juncture at its other end communicating with the main tube at a point between the inlet and outlet ends of the main tube;

(b) providing a Venturi assembly in the inlet of the main tube;

(c) providing a straight length of the main tube extending form the venturi assembly through the outlet juncture of the branch tube,

(d) providing first and second delivery tubes;

(e) connecting the first delivery tube to one source of waste on the sewing machine and to the Venturi assembly in the main tube of the dual suction unit and connecting the second delivery tube to the second source of waste on the sweing machine and the the inlet of the branch tube of the dual suction unit;

(f) providing a source of compressed air; and

(g) connecting the Venturi assembly to said source of compressed air, whereby suction is induced through the inlet of the main tube and through the inlet of the branch tube to deliver waste from the two sources of waste on the sewing machine to the outlet of the main tube.

4,764,059

CONTOURED TOOL BLADES

Dennis H. Wale, Old Dalby, England, assignor to Marwin Cutting Tools, Limited, Rothley, England

Filed Oct. 29, 1986, Ser. No. 924,287

Claims priority, application United Kingdom, Oct. 30, 1985, [redacted]

Int. Cl.[4] B26D *1/12*

U.S. Cl. 407—42 7 Claims



1. A rotary tool comprising a tool body including at least one helical seating channel adapted to receive a cutting blade therein, and a blade secured in said channel, wherein the blade comprises a helical strip of cutting material having a leading edge adapted to contact and cut a work-piece, and a leading face adapted to extend generally radially from the tool body channel, said radially extending leading face being at least partly provided with a plurality of wave-form grooves extending substantially transversely thereof to the leading edge so that said edge is provided with an undulating or serrated configuration, an end wall being provided across each groove, said blade being adapted to form a non-continuous cutting edge for cutting chips of material such that said chips break upon contact with said end wall.

4,764,060

QUICK-CHANGE ADJUSTABLE CLOCKING NOSEPIECE

Sudershan K. Khurana, Marietta, Ga., assignor to Lockheed Corporation, Calabasas, Calif.

Filed Apr. 16, 1987, Ser. No. 39,563

Int. Cl.[4] B23B *45/14*

U.S. Cl. 408—14 14 Claims

1. A quick change nosepiece for a power drill having a drill motor, a drill spindle and a drill bit attached to the drill spindle, comprising:

(a) a first housing having a proximate end and a distal end for enclosing the drill bit and the drill spindle;

(b) a second housing having a distal end for attachment to said proximate end of said first housing, and a proximate end;

(c) attachment means for attaching said proximate end of said second housing to the drill motor;

(d) clocking means for varying both the linear and the rotational relationships between said second housing and the drill bit;

(e) bushing means having a proximate end for attachment to said distal end of said first housing and a distal end for attachment to a drill jig such that the drill bit passes through said bushing means to contact a workpiece;

(f) engagement means for attaching said proximate end of said first housing and said distal end of said second housing, said engagement means including:

(i) an alignment means for aligning said first housing and said second housing in a predetermined locking position; said alignment means having:

(a) at least one alignment pin disposed on one of said housings:

(b) at least one corresponding alignment slot disposed on the other of said housings, said at least one alignment slot having an open end and a closed end and being adapted to receive at least one alignment pin and to guide said housings into said predetermined locking position; and

(ii) a locking means for releasably locking said first and second housings together in said pedetermined locking position, said locking means having:

(a) at least one locking pin disposed on one of said housings; and

(b) at least one corresponding cavity disposed on the other of said housings being adapted to receive said at least one locking pin when said housings are in said predetermined locking position.

4,764,061

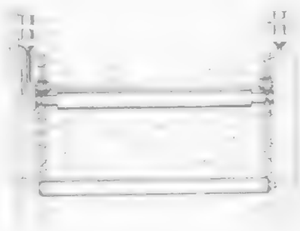
CLAMPING MECHANISM FOR AN AUTOMOBILE DRILLING MACHINE

Lawrence C. Memniel, Mequon, Wis., assignor to Super Tool and Mfg. Corporation, Brookfield, Wis.

Filed Mar. 20, 1986, Ser. No. 841,885

Int. Cl.[4] B23B *47/00*

U.S. Cl. 408—69 3 Claims



1. A clamping mechanism for clamping a metal beam as it is moved through a drilling machine, said beam having a pair of vertical flanges connected by a horizontal web, comprising a lower roller conveyor means to support and convey the beam in a direction of movement, said lower roller conveyor means

VOL 1093 ISS 3 AG 16 1988 UMI

having a pair of sides and including a plurality of generally parallel lower rollers extending between said sides, one of said flanges being disposed along a predetermined datum line at one of said sides and the other of said flanges being spaced from the other of said sides, upper roller means disposed above said lower roller means and including at least one upper roller to engage the upper edges of said flanges, said upper roller being elongated and disposed generally parallel to said lower rollers and extending continuously across said lower conveyor means from one side to the other side, a slide disposed at each side of said lower conveyor means, guide means for guiding each slide in vertical movement, journalling means for journalling the ends of said upper roller in the respective slides, power operated means connected to each slide for moving each slide vertically in said guide means, a shaft interconnecting the slides, a pair of fixed rack members, a pair of pinion members mounted on said shaft and engaged with the respective rack members, movement of said slides through operation of said power operated means causing movement of said pinion members on said rack members to maintain the ends of said upper roller in parallel alignment with said lower rollers as said upper roller is moved downwardly into clamping engagement with the upper edges of the flanges of said beam.

4,764,062

COOLANT SUPPLY SHANK FOR A ROTATING CUTTING TOOL

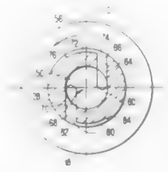
Carl E. Hunt, Milford, Mich., assignor to GTE Valeron Corporation, Troy, Mich.

Filed Jun. 26, 1985, Ser. No. 748,814

The portion of the term of this patent subsequent to Jan. 13, 2004, has been disclaimed.

Int. Cl.[4] B23B *27/10, 51/06*

U.S. Cl. 409—136 4 Claims



1. A rotatable cylindrical coolant supply shank for a cutting tool for cutting a workpiece wherein there is relative cutting motion about an axis of rotation between a cutting member mounted upon said shank, and a workpiece, and wherein a coolant is supplied from a coolant supply means through a ring bore of a coolant supply ring rotatably mounted upon said shank, and through a bore in said shank to said cutting member, said shank comprising a longitudinal axis and including a first end for rotating engagement with said cutting tool; a second end for coupling to said cutting member; a coolant inlet means, for alignment with said ring bore, extending inwardly from the peripheral surface of said shank, for positively pulling said coolant towards said axis when said shank is coupled to said tool and rotated while coolant is being supplied to said inlet means from said ring bore, said coolant inlet means comprising at least two inlet bores each defined by an inlet bore wall extending from said peripheral surface to said longitudinal bore and being positioned relative to a centerline, defining a shank diameter, such that said at least two inlet bores are spaced from said centerline with respect to the direction of intended rotation of said shank, and are equally spaced circumferentially at said peripheral surface; a coolant outlet at said second end for supplying coolant to said cutting member; a longitudinal bore defined by a longitudinal bore wall extending from said inlet means to said outlet and about said longitudinal axis; and, means adjacent said inlet bores at said peripheral surface for exerting a positive scooping effect to move coolant along said surface towards said inlet bores so that coolant is drawn from said surface through said inlet bores and towards said longitudinal axis, said exerting means formed such that each of said at least two inlet bores includes a channel partially extending circumferentially about said peripheral surface and having a first end which merges into the respective of said at least two of said inlet bores and a second end spaced from said first end in the direction of intended rotation of said shank, each channel being scooplike in configuration and having a leading edge which forms said second end.

4,764,063

PROCESS AND APPARATUS FOR MACHINING THE RIM OF A HEAD

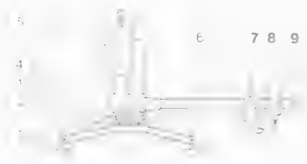
Gerd Rabe, Meinerzhagen, and Gerd Pollak, Gummersbach, both of Fed. Rep. of Germany, assignors to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Filed Mar. 14, 1986, Ser. No. 840,110

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509151

Int. Cl.[4] B23C *1/20*

U.S. Cl. 409—179 6 Claims



1. A process for machining the rim of a flanged, flat, dished, or semi-ellipsoidal head in preparation specifically for a welding seam connection with a tubular member to produce a circular cylindrical reaction vessel; said process includes the steps of:

disposing a portable apparatus in the upwardly open head coaxial to an axis of the latter, said portable apparatus having an arm extending perpendicular to said axis and being rotatable about said axis;

providing on said rotating arm of said apparatus an adjustment mechanism and a copying device;

coupling a machining element with said copying device;

while uniformly rotating said rotating arm about the axis of said head, machining the rim of the latter with said machining element, whereby said machining element, during each rotation of said rotating arm, experiences feed movements not only in the direction toward the axis of said head and relative to said adjustment mechanism, but also parallel to the axis of said head in the direction toward the rim of the latter; and

adjusting the position of said copying device in conformity with the geometry of the rim of said head.

4,764,064

TOOL CHANGER

Lyle C. Grienke, Rice, Minn., assignor to Komo Machine Incorporated, St. Cloud, Minn.

Filed Sep. 25, 1987, Ser. No. 101,373

Int. Cl.[4] B23C *5/26;* B23B *31/10*

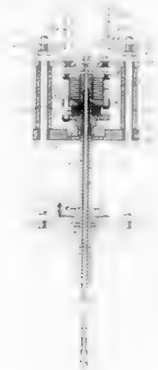
U.S. Cl. 409—233 6 Claims

1. A tool changer for use with a rotary driver having a spindle means mounted in a frame means, said spindle means being capable with respect to said frame means of both being selectively rotated about an axis thereof and selectively translated in either direction along that axis, said spindle means having a spindle passageway therein extending along said spindle axis between first and second ends thereof, said tool changer comprising:

a collet cylinder means positioned at least partly within said spindle passageway, said collet cylinder means having a passageway therein between first and second ends thereof which is substantially parallel to said spindle passageway such that a collet cylinder means wall occurs about said spindle passageway with there being locking extensions formed at said collet cylinder means second end each having a locking lip extending therefrom away from said collet cylinder passageway;

a flared locking cylinder means positioned at least partly within said collet cylinder passageway and having first and second ends between which a contained portion thereof has dimensions such that it can pass through said collet cylinder passageway, said flared locking cylinder means second end and said contained portion having a flared portion therebetween of such shape and dimension as to prevent it from passing along said collet cylinder passageway, said flared locking cylinder means second end being located nearer said collet cylinder means second end than said collet cylinder means first end; and

an actuator means in which said spindle means, said collet cylinder means and said flared locking cylinder means first ends are affixed such that said collet cylinder means first end can be moved in a direction parallel to said spindle axis with respect to said spindle means first end, and such that said flared locking cylinder means first end can be moved in a direction parallel to said spindle axis with respect to both said spindle means and said collet cylinder means first ends.



4,764,065

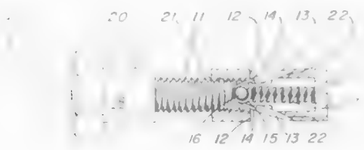
WALL ANCHOR

Carl D. Johnson, 8773 Chase Dr., #201, Arvada, Colo. 80003

Filed May 6, 1987, Ser. No. 47,189

Int. Cl.[4] F16B *13/04*

U.S. Cl. 411—21 7 Claims



1. An anchor for securing objects alternatively to panel or to solid walls comprising a hollow cylindrical member having internal threads near one end, said member having a pair of oppositely disposed openings in its side wall, a pair of wing members extending outwardly through respective ones of said openings and movably secured together at their inner ends within said cylindrical member and foldable against said cylindrical member in the direction toward the end remote from said threads, means biasing the inner ends of said wing members toward said one end and the outer ends of said wing members toward said remote end, a drive member threaded in said threads for movement toward and away from said inner ends of said wing members, said drive member engaging said inner ends for moving said ends against said biasing means for urging the outer ends of said wings laterally outwardly whereby said wings may be selectively extended on the inner side of a wall panel to prevent withdrawal of said cylindrical member or may be driven between said cylindrical member and a solid wall when inserted in a hole therein closely fitting said cylindrical member to retain it in position in said solid wall.

4,764,066

LIGHT GAUGE SELF-TAPPING SHEET METAL SCREW

Ollney B. Terrell, Jamestown, and Larry J. Arnold, Statesville, both of N.C., assignors to Farley Metals, Inc., Chicago, Ill.

Filed Apr. 22, 1985, Ser. No. 725,656

Int. Cl.[4] F16B *39/282*

U.S. Cl. 411—187 11 Claims



1. A screw for fastening two adjacent light gauge metal sheets together through aligned apertures in said sheets comprising:

(A) a cylindrical shank with self-cutting helical threads therealong, and

(B) a head with an annular peripheral flange extending concentric to the axis of said shank to form a recessed portion under said head, whereby said threads crimp said sheets into said recessed portion,

the improvement comprising:

(C) a plurality of identical tetrahedral reaming ribs extending only partly around said shank and the rest of said shank is unobstructed, said ribs extending from a point along said shank away from said head angularly and radially outwardly from said shank to the recessed portion under said head for about half the diameter of said recessed portion of said head, said ribs bridging the right angle between said shank and said recessed portion of said head whereby a sharp outer edge of said ribs extends radially outwardly from said shank diagonally across said right angle to said recessed portion of said head for partly reaming the aperture in the metal sheet adjacent said head

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4,764,067

SCREW WITH GROOVE FOR SELF-LOCK AND METHOD AND ROLLING FLAT DIE FOR MANUFACTURING THE SAME

Masao Kawashima, Funabashi, Japan, assignor to JSM Screw Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,399
Claims priority, application Japan, Nov. 22, 1985, 60-263223; Jun. 25, 1986, 61-146797
Int. Cl.⁴ F16B *39/30*
U.S. Cl. 411—310 10 Claims



1. A self-locking screw having a longitudinal axis and comprising a thread having an inner radial portion and an outer radial portion, said inner radial portion having a pair of opposite first side faces defining a flank angle of said screw, said first side faces each being disposed at an acute angle relative to said axis, said outer radial portion having a pair of opposite second side faces extending from said first side faces, said outer radial portion also having first and second outer radial faces extending respectively from said pair of opposite second side faces, said pair of second side faces being generally planar surfaces which are parallel to one another and which are perpendicular to said axis, said pair of second side faces having outer radial terminating ends, said first and second outer radial faces extending from said terminating ends and being disposed generally parallel to said axis, said thread having a central groove means defined by a radially inwardly extending buffer groove having two groove side walls and a bottom juncture means joining said two groove side walls at the innermost radial end of said two groove side walls, said two groove side walls each having an outer radial terminating end joined respectively to said first and second outer radial faces such that said two groove side walls extend generally radially inwardly from said first and second outer radial faces, said two groove side walls along with said second side faces and said first and second outer radial faces defining two axially spaced elastically deformable thread portions which are elastically deformable such that as said thread is threaded onto a counterpart threaded member, said elastically deformable thread portions are engaged by said counterpart threaded member and elastically deformed as said thread portions axially approach one another and reduce said axial spacing between said thread portions, said inner radial portion of said thread being rigid to retain its initial configuration after having been threaded onto said threaded counterpart, whereby said outer and inner radial portions provide the elasticity and rigidity to obtain a high tightening force while resisting loosening thereof.

4,764,068

KNURLED CUP-POINT SET SCREW

Corey Crispell, Warminster, Pa., assignor to SPS Technologies, Inc., Newtown, Pa.

Filed Mar. 6, 1987, Ser. No. 22,667
Int. Cl.⁴ F16B *35/00*
U.S. Cl. 411—393 6 Claims

1. A set screw comprising:

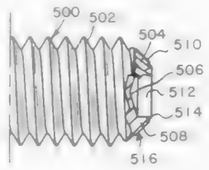
a shank having a longitudinal axis and having exterior threads along most of its length, said shank further comprising:

a frustoconical portion formed with and defining one end of said shank, said frustoconical portion having the same longitudinal axis as said shank and a larger diameter equal to the diameter of, and coterminous with, the threaded portion of said shank;

a cavity formed within said frustoconical portion in the end of said shank, said cavity being defined by a first portion immediately interior to the outermost portion of said frustoconical portion and comprising a generally cylindrical wall concentric with the longitudinal axis of said shank,

said cavity cooperating with said frustoconical portion to define therebetween an annular wedge concentric with the longitudinal axis of said shank and terminating in a circular edge, said circular edge defining a plane normal to the longitudinal axis of said shank; and

circumferential knurling, in the form of a plurality of teeth comprising circumferentially alternating spaced crests and roots, said teeth being on the outer surface of said frustoconical point and extending from that portion of the outer surface of said frustoconical portion furthest from the circular edge, towards, but not extending to, said circular edge.

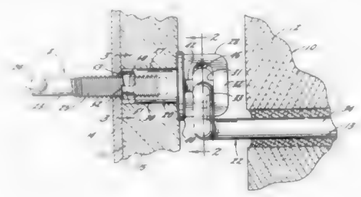


4,764,069

ANCHOR FOR MASONRY VENEER WALLS

Ernest W. Reinwall, McHenry, and Robert A. Hagan, Roscoe, both of Ill., assignors to Elco Industries, Inc., Rockford, Ill.

Filed Mar. 16, 1987, Ser. No. 26,021
Int. Cl.⁴ C04B *5/00*
U.S. Cl. 411—397 14 Claims



1. A masonry veneer anchor comprising a generally cylindrical barrel having first and second ends, cutting elements formed integrally with the first end of said barrel and adapted to drill a hole in material when said barrel is driven by being rotated and advanced endwise, an opening formed in the first end of said barrel and extending axially of the barrel, said opening being threaded and being adapted to receive one end portion of a threaded stud, a substantially circular flange formed integrally with and extending radially from the second end of said barrel, the diameter of said flange being significantly greater than the diameter of said barrel, a flat driving tongue formed integrally with and projecting axially from said flange, said tongue being shaped to coact with a rotatable socket for driving the barrel, said flange being engageable with the socket to stabilize the barrel during driving of the barrel and being engageable with the material to seal the hole therein when the barrel is fully driven, said tongue having an eye therethrough for receiving a wire, said eye being generally oblong in shape and being located such that its long edges are inner and outer edges which extend generally parallel to the free end of said tongue while its short edges extend transversely relative to the free end of the tongue, each side of said tongue being relieved adjacent each of the short edges of said eye so as to form a pocket for receiving a portion of the wire.

4,764,070

CAPPED WHEEL NUT ASSEMBLY

William L. Baltzell, Riverview, and David J. Draeger, Woodhaven, both of Mich., assignors to Horizons Unlimited, Inc., Romulus, Mich.

Filed Feb. 17, 1987, Ser. No. 15,427
Int. Cl.⁴ F16B *37/14*
U.S. Cl. 411—430 4 Claims



1. A capped wheel nut assembly comprising a metal nut and a metal cap, said nut having an elongated internally threaded body provided with a polygonal side wall extending from one end thereof toward the opposite end, said cap having an elongated annular side wall of substantially the same polygonal form as the side wall of said nut body, said cap having an end wall closing one end thereof and being open at the opposite end, said cap being sleeved over said nut body with its side wall surrounding the side wall of said nut body and with its end wall overlying said one end of said nut body, said nut body having a circular enlargement adjacent to but spaced from the end opposite said one end thereof, the side wall of said cap having an outwardly flared marginal portion at its open end crimped over said enlargement, and an adhesive bonding said nut and cap together, said adhesive being capable of retaining its adhesive character over a wide range of temperatures, said adhesive completely covering the confronting surfaces of said nut and cap in the bonded area to thereby provide a barrier separating and insulating such confronting surfaces from each other to resist corrosion.

4,764,071

QUICK-ACTION FASTENERS

Ventura A. Lawrence, and Ventura J. Lawrence, both of 1903 Navy Dr., Stockton, Calif. 95206

Continuation-in-part of Ser. No. 830,295, Feb. 14, 1986, abandoned. This application Jun. 23, 1986, Ser. No. 877,657
Int. Cl.⁴ F16B *37/08;* B25G *3/00*
U.S. Cl. 411—433 8 Claims

1. A quick action end-to-end fastener for coupling a pair of reinforcing rods end-to-end, the fastener comprising:

a housing defining, along a bore axis, a throughgoing bore, the bore including a pair of generally frustoconical tapered sections and a pair of cylindrical explansion sections, each cylindrical section being adjacent a corresponding tapered section, the tapered sections being generally located at opposing ends of the bore;

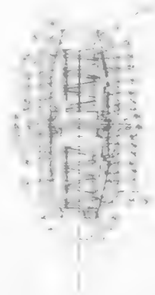
a pair of pluralities of arcuate nut segments, each plurality of nut segments being mounted in the bore, adjacent an end thereof, to be disposed about an end section of one of the reinforcing rods, each nut segment having an interior and an exterior segment surface,

the interior segment surface being formed to define a textured surface matingly engageable to a corresponding portion of the reinforcing rod, and

the exterior segment surface including a tapered portion formed to have a shape congruent with a corresponding portion of the tapered sections and an upper portion;

limit means for limiting the movement of each plurality of nut segments along the bore axis in the direction of the corresponding expansion section;

wherein each plurality of nut segments is movable between



a locking position in which the tapered portions engage the corresponding tapered section and the textured surfaces are engageable, over substantially the whole thereof, to the end section of the corresponding reinforcing rod to substantially prevent movement of the fastener relative to the corresponding reinforcing rod, and a second position in which the tapered portions are disengaged from the corresponding tapered section and the textured surfaces are disengageable from the end section of the corresponding reinforcing rod to allow movement of the fastener relative to the corresponding reinforcing rod.

4,764,072

FASTENNG DEVICE

Frank Atack, P.O. Box 1013, Tauranga, New Zealand

Filed Mar. 4, 1986, Ser. No. 836,145
Claims priority, application New Zealand, Mar. 4, 1985, 211302
Int. Cl.⁴ F16B *15/06*
U.S. Cl. 411—456 11 Claims



1. A fasteneing device, comprising an elongated sheet metal plate having a lengthwise stiffening rib, wherein one end of the plate being pointed; and fastening means being provided in the plate adjacent the other end, wherein the tip of the pointed end lies at an angle to the general plane of the plate and includes a joggled barb substantially coplanar with the tip of the pointed end, wherein the pointed end penetrates a member for coupling thereto and wherein the fastening means is bendable for attaching to another member.

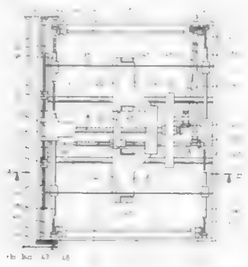
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,073

BOOK CASE MAGAZINE FOR BOOK CASING MACHINES

Siemen Garlichs, Espelkamp; Helmut Kolkhorst, and Gerhard Franke, both of Rahden, all of Fed. Rep. of Germany, assignors to Kolbus GmbH & Co. KG, Rahden, Fed. Rep. of Germany

Filed Apr. 21, 1987, Ser. No. 40,940
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1986, 3614216
Int. Cl.[4] B42C *7/00*
U.S. Cl. 412—9 23 Claims



1. A book case magazine for a book casing machine, said magazine comprising:

a frame having opposed side frame members and opposed front and rear frame members;

first lower support means extending in the direction from the front frame member toward the rear frame member, for supporting the bottom of a vertical stack of book cases lying flat on top of one another, each book case having a central portion and a pair of covers on either side of the central portion, the covers defining a width in the direction between the side members and a height in the direction between the front and rear members, and a vertical thickness, said support means extending along the central portion of the lowermost book case;

second lower support means associated with the front frame member, on either side of the lower support means, aligned for supporting the mid regions of the respective covers;

vertically extending front support means associated with the front frame member for defining a front stop limit for the stack of book cases;

a rear wall intermediate the front support means and the rear frame member, cooperating with the front support means for supporting the stack of book cases along the direction of their height;

a pair of side walls intermediate the frame side members, for supporting the stack of book cases along the direction of their width;

means for adjusting the second lower support means vertically relative to the front support means, to create a through passage for a single book case to be transported out of the frame front member;

means for adjusting the second lower support means in the cover width direction, to maintain said alignment for supporting the mid regions of the respective covers;

means for adjusting the distance between said side walls;

means for adjusting the distance between said rear wall and said front support means;

means for conjointly actuating said means for adjusting the second lower support means and said means for adjusting the distance between said side walls; and

a transport mechanism, including:

(a) a feeder member extending parallel to the rear wall a distance at least as far as the distance between the mid regions of the covers, corresponding to the largest book format to be accommodated by the magazine,

(b) a cross member mounted for controlled cyclical movement frontward and rearward within the frame, said feeder member being mounted on said cross member,

(c) means for adjusting the feeder member commensurate with the book case height,

(d) means for vertically adjusting the feeder member relative to the cross member commensurate with the thickness of the book case,

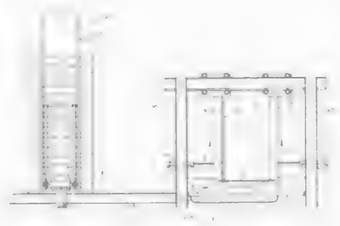
(e) means for cyclicly driving the cross member forward and backward whereby said feeder member expels the lowermost book case through said passage.

4,764,074

PALLET LOADING APPARATUS

Joseph Postigo, 878 Place Sardaigne, Brossard, Quebec, Canada J4X 1L7

Filed Mar. 2, 1987, Ser. No. 20,514
Int. Cl.[4] B65G *57/30*
U.S. Cl. 414—95 12 Claims



1. An apparatus for placing a load of stacked articles onto a pallet, comprising:

(a) a roller conveyor having a series of rotary parallel rollers, spaced from one another, for moving said load in a first direction extending transversely of said rollers;

(b) an elevator bridge comprising a pair of runway beams spaced from one another along said first direction and extending across said conveyor above the ends thereof;

(c) two like cooperating load-lifting structures depending from said runway beams, each lifting structure comprising:

two vertical guides spaced from one another along said first direction and means mounting the upper ends of said guides on said runway beams for movement of said guides across said conveyor;

a load lifting frame comprising:

vertical ram wall between said vertical guides and means mounting said ram wall on said vertical guides for movement along said guides;

power means for displacing said ram wall along said vertical guides;

a tine carrier comprising a plurality of horizontal load-gripping tines spaced horizontally from one another for insertion in spaces between said spaced rollers of said conveyor;

an operating base, solid with and at the lower end of said ram wall, and means mounting said tine carriers on said operating base for movement of said carrier and tines transversely of said roller conveyor;

power means on said operating base and on said tine carrier for displacing said tine carrier for moving said tines in said spaces between said conveyor rollers and for retracting said tines from said spaces;

(d) power means for displacing said load lifting structures across said roller conveyor to move said ram walls toward and away from one another, and

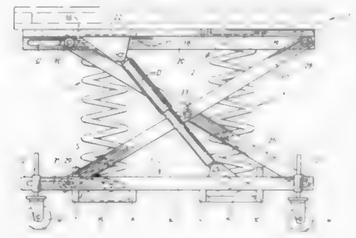
(e) pallet feed means, provided laterally of and on one side of said conveyor, for moving a pallet on said conveyor when said lifting frames and tines thereof are in raised position above said conveyor.

4,764,075

LOAD ELEVATOR

Bruce N. Cox, Yinnar South, and Lindsay Wakefield, Toorak, both of Australia, assignors to Safetech Pty. Ltd., Victoria, Australia

Continuation-in-part of Ser. No. 854,526, Apr. 22, 1986, abandoned. This application Mar. 5, 1987, Ser. No. 22,218
Int. Cl.[4] A47F *1/00*
U.S. Cl. 414—99 7 Claims



4. A set of springs having a spring capacity C in kilograms for a load elevator in which the load has a predetermined weight W in kilograms and a predetermined height H in millimeters is to be maintained at a substantially predetermined height during unloading and loading, said springs being selected according to the relationship:

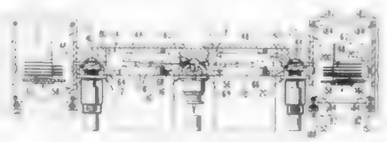
$$C = W \times \frac{1}{1 + \left(\frac{H - 900}{500}\right)}$$

4,764,076

VALVE INCORPORATING WAFER HANDLING ARM

Frederick P. Layman, Fremont; Phillip M. Hobson, Los Altos, and Paul H. Dick, San Jose, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 17, 1986, Ser. No. 853,276
Int. Cl.[4] B65G *25/00*
U.S. Cl. 414—217 12 Claims



1. An apparatus for moving a workpiece from a first chamber to a second chamber and for controlling gas flow between chambers, comprising:

a substantially airtight valve housing having input port means for sealing to a first chamber and output port means for sealing to a second chamber, said valve housing having a wedge-shaped inner surface;

a valve wedge having surfaces sealing to said wedge-shaped inner surface, said valve wedge sealing surfaces being sloped relative to each other, said valve wedge having a storage notch between said sealing surfaces;

wedge driving means for sliding said valve wedge within said housing from a sealing position to an open position so that said valve wedge is clear of a line sight through said input port means and output port means, said wedge driving means including a linear actuator; and

a workpiece handling arm including multiple pieces and hinge means for making said arm capable of being stored in a folded position in said storage notch when said valve is closed.

4,764,077

ASSEMBLY FOR PERFORMING WORK FUNCTIONS ON A WORKPIECE

Kenneth J. Susnjara, Santa Claus, Ind., assignor to Thermwood Corporation, Dale, Ind.

Filed Apr. 18, 1986, Ser. No. 853,668
Int. Cl.[4] B05B *13/04*; B05C *13/00*; B25J *11/00*
U.S. Cl. 414—222 18 Claims



12. An assembly for performing a work function on a workpiece comprising a stationary support means, workpiece support means mounted on said stationary support means for pivotal movement about a first axis, at least one workpiece holding means mounted on said workpiece support means, means for pivoting said workpiece support means about said first axis to position said workpiece holding means at a first station at which a work function may be performed on a workpiece disposed thereon and at a second station at which a workpiece may be loaded thereon and unloaded therefrom, and a robot mounted on said stationary support means for performing a work function on a workpiece positioned at said work station, said robot including a base member rotatable relative to said stationary support means about said first axis.

4,764,078

AUTOMATED SYSTEM FOR FEEDING PRODUCTION AND/OR PACKING MATERIAL FROM A STORE ONTO MANUFACTURING LINES

Armando Neri, Bologna, Italy, assignor to G. D. Societa' per Azioni, Bologna, Italy

Filed May 6, 1986, Ser. No. 860,079
Claims priority, application Italy, May 10, 1985, 3431 A/85
Int. Cl.[4] B65G *65/00*
U.S. Cl. 414—273 10 Claims

1. An automated system for supplying a plurality of types of different materials to at least one manufacturing line, said system comprising:

means for storing a plurality of homogeneous units of said plurality of types of different materials in a storage area having a plurality of compartments;

a central processing unit for controlling the operation of said automated system;

at least one first electrically powered mobile truck having first means for supplying electricity;

means for selectively retrieving at least one unit of said plurality of homogeneous units from said means for storing and for loading said at least one unit on said at least

VOL 1093 ISS 3 AG 16 1988 UMI

one first mobile truck, said means for selectively retrieving responsive to commands from said central processing unit;

at least one second electrically powered mobile truck having second means for supplying electricity;

means for unloading said at least one unit of said plurality of homogeneous units from said at least one first mobile truck to one of a plurality of pallets to form a provision area, said means for unloading having an operating-arm device for loading and unloading, said operating-arm device having means for electrically connecting with said first and second means for supplying electricity of said first and second mobile trucks to receive electricity for powering said operating-arm device; said means for unloading being operable to assemble a heterogeneous group of materials on each of said at least one second mobile truck from said plurality of pallets in rsponse to commands from said central processing unit;

means for guiding said at least one first mobile truck between said storage area and said provision area;

means for guiding and controlling said at least one second mobile truck between said provision area and said at least one manufacturing line; and

means for offloading at least one predetermined unit of material from said heterogeneous group of materials from each of said at least one second mobile truck to said at least one manufacturing line, said means for offloading being operable in response to commands from said central processing unit.



4,764,079

METHOD AND APPARATUS FOR HANDLING DIP DEVICES

Frank Linker, Sr.; Frank Linker, Jr., both of Broomall, and Edward T. Claffey, Aston, all of Pa., assignors to American Tech Manufacturing, Inc., Glenolden, Pa.

Filed Jun. 27, 1986, Ser. No. 879,611
Int. Cl.[4] B65B *69/00*
U.S. Cl. 414—411 20 Claims



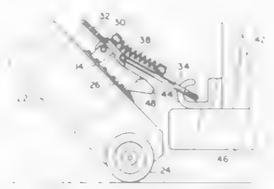
1. In a system for handling dual-in-line devices packaged in elongated tubes having releasable closure means normally closing at least one end of the tubes to retain dual-in-line devices therein, a head assembly for transferring tubes from an accumulator station to a dual-in-line processing apparatus comprising a housing having an inlet and a discharge trackway section, a pair of drive rollers rotatably mounted adjacent the inlet end of the housing, said rollers being mounted for floating movement relative to one another in a direction generally transverse to the movement of tubes through the housing, closure removal and re-application mechanism mounted in the housing downstream of said drive rollers, means in the housing for aligning the tube to ensure flow of dual-in-line devices from the tube to the discharge trackway and tube position sensor means operable to activate a mechanism associated with the housing for positioning the head assembly so that the discharge trackway section aligns with an inlet trackway of dual-in-line processing apparatus.

4,764,080

COUPLING FOR DROP BOX SYSTEM

Frederick R. Wyss, Newberg, Oreg., assignor to Force Northwest Distributors, Inc., McMinnville, Oreg.

Filed Jun. 13, 1986, Ser. No. 874,213
Int. Cl.[4] B60P *1/78*
U.S. Cl. 414—499 4 Claims



1. A drop box loading system comprising:

(a) a drop box having a hook at its front end which can be engaged only from above;

(b) an elongate hoist frame having an upper portion with a track defined therein;

(c) an endless chain which is rotatably mounted on said frame;

(d) means for moving said chain in either direction along the elongate axis of said frame;

(e) a carriage which is attached to said chain;

(f) said carriage including means for moving it along said track as said chain is moved;

(g) a bail attached to said carriage, having a tip which extends toward one extremity of said frame;

(h) a stop, located on said frame, which prevents movement of said carriage past a certain point towards one extremity of said frame; and

(i) said carriage including lifting means for raising said tip above said hook whenever said chain continues to urge said carriage towards said one extremity of said frame after said carriage has engaged said stop and for lowering said tip into said hook when said carriage is pulled free from said stop, wherein said lifting means comprises:

(i) a pivot plate which is rotatably attached to said carriage about a first axis;

(ii) means for attaching the portion of said chain which extends toward one extremity of the frame to said pivot plate at a location above said first axis, and for attaching the portion of said chain which extends in the other direction to said pivot plate at a location below said first axis;

(iii) wherein said bail is attached to said pivot plate.

4,764,081

BOAT LIFT

Leonard J. Peterson, P.O. Box 301, Schofield, Wis. 54476

Filed Aug. 24, 1983, Ser. No. 526,347
Int. Cl.[4] B63C *3/00*
U.S. Cl. 414—678 7 Claims



1. A boat lift comprising:

a pair of horizontally spaced upright standards;

a horizontal shaft mounted for rotation on the standards; and

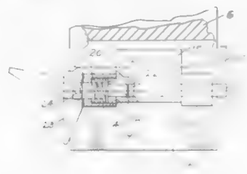
a pair of straps each attached at one end to a respective standard at a point intermediate the height of the standard and below the shaft, and each strap having its other end secured about the shaft so that rotation of the shaft will change the length of the straps, said pair of straps adapted to pass beneath and cradle a boat and said straps being of a length sufficient when unwound from about said shaft that the distance from the point of attachment at said standards to the top of the boat is greater than the width of the boat so that the boat may be totally overturned when said straps are wound about said shaft.

4,764,082

BOTTOM HOOK CONSTRUCTION FOR FORK LIFT TRUCKS

Russell C. Quinn, Twinsburg, Ohio, assignor to Jos. Dyson & Sons, Inc., Painesville, Ohio

Continuation-in-part of Ser. No. 783,486, Oct. 3, 1985, abandoned. This application Feb. 26, 1987, Ser. No. 19,503
Int. Cl.[4] B65G *7/12*
U.S. Cl. 414—785 1 Claim



1. A removable fork for a fork lift truck comprising a blade, a shank connected integrally thereto by a heel, said shank having a top hook for engaging the upper side of a carriage mounted on such truck and bottom hook means including mounting parts therefor extending rearwardly adjacent the heel of the fork, a hook lock element fixed to an axle and movably mounted on said mounting parts to engage a bottom side of the carriage; latch means comprising a plunger member normally biased to a position to maintain the hook lock element in a locked and carriage engaging positon and having a pivoted camming lever at its free end to withdraw the plunger against the bias into an unlocked and a carriage disengaging position so that the hook lock element gravitationally disengages from the carriage to facilitate removal of the fork from the truck; and an operating lever being connected to the axle to move the lock element into the locked position and being oprated by engagement by the downward movement of the carriage thereagainst.

4,764,083

DISCHARGE RING SUPPORTING STRUCTURE OF ADJUSTABLE-BLADE AXIAL-FLOW TURBINE

Jyuichiro Kawai, Hitachi, and Isao Yanagida, Jyunoo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1986, Ser. No. 895,738
Claims priority, application Japan, Aug. 19, 1985, 60-181510
Int. Cl.[4] F04D *29/60*
U.S. Cl. 415—201 10 Claims



1. In a discharge ring supporting structure of an adjustable-blade axial-flow turbine having a bulb containing a generator and a main shaft therein and disposed along a water flow, a runner mounted on an end of said bulb on the downstream side and having a plurality of blades, and a discharge ring surrounding said blades of said runner so as to form a throat portion, the diameter of which is smaller than the maximum diameter of a circle formed by the rotation of said blades around the axis thereof, said discharge ring supporting structure being connected to said discharge ring and a fixed floor, characterized in that said discharge ring supporting structure comprises a plurality of supporting members vertically integrated, and at least one of said supporting members being detachably mounted to the lower half of said discharge ring which is divided by a horizontal plane into upper and lower halves, and to the other supporting member, whereby the height of said discharge ring supporting structure is adjustable.

4,764,084

INLET FLOW GUIDE FOR A LOW PRESSURE TURBINE

David M. Parker, Oviedo, and John C. Groenendaal, Jr., Winter Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 23, 1987, Ser. No. 124,301
Int. Cl.[4] F01D *3/02*
U.S. Cl. 415—101 21 Claims

1. An inlet flow guide for a low pressure turbine that includes a generally cylindrical housing, and an opposed pair of annular arrays of blades having a pair of confronting stationary blades disposed within the housing; said inlet flow guide comprising:

a generally cylindrical shroud plate, said shroud plate being in a plurality of confronting cylindrical sections, each of said confronting cylindrical sections being in a plurality of arc cylindrical sections, said shroud plate being adapted to

VOL
1093
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be attached to said pair of confronting stationary blades of a said low pressure turbine, and having a plurality of tapped bores therethrough;

a generally cylindrical bridge piece, said bridge piece being in a plurality of semi cylindrical sections and having a plurality of bores therethrough, which are capable of alignment with said bores of said shroud plate, said bores being of a predetermined size to accommodate expected thermal, mechanical and pressure movement or displacement during the operation of said turbine;

a plurality of elongated attachment members disposed within said bores of said bridge piece and shroud plate to



secure said bridge piece to said shroud plate, said elongated attachment members having enlarged heads and shoulders;

a plurality of biasing means disposed between said enlarged heads of said elongated attachment members and said bridge piece for applying a predetermined load to said bridge piece as said elongated attachment members are tightened; and

a plurality of sealing means disposed between each of said biasing means and said bridge piece to block the flow of low pressure steam through said bores in said bridge piece and to provide a seat for biasing means.

4,764,085

BLOWER FOR CIRCULATING LARGER GAS VOLUMES, IN PARTICULAR FOR HIGH-POWER LASER SYSTEMS OPERATING ACCORDING TO THE GAS-TRANSPORTATION PRINCIPLE

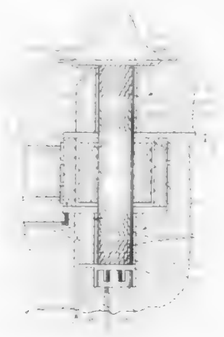
Richard Jesinger, Esslingen, Fed. Rep. of Germany, assignor to Fortuna-Werke Maschinenfabrik GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 24, 1986, Ser. No. 946,513

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1986, 3600124

Int. Cl.[4] F04D *29/10*

U.S. Cl. 415—112 5 Claims



1. A blower for circulating large gas volumes, in particular for high-power laser systems of the gas-transportation type, comprising:

gas transportation means having a first and a second gas duct for receiving and guiding said gas under circulation, said gas ducts being interconnected by a connection duct;

a radial compressor being rotatable about a vertical axis and having an upper compressor element extending into said connection duct to blow said gas from said first to said second gas duct and having further a flat lower surface, said surface being provided with spiral grooves;

a pressure-tight housing block arranged below said gas transportation means and having a flat upper surface opposite said flat lower surface and being surrounded by an atmosphere;

a cavity arranged in said housing block;

a vertical bore extending from said flat upper surface through said cavity and ending in a lower blind bore, said blind bore being terminated by a bottom;

a vertical drive shaft rigidly connected with said radial compressor and said flat lower surface to rotate therewith, said shaft being received in said bore and having a lower end extending into said blind bore and having a predetermined distance from said bottom;

a first gas chamber being formed between said flat lower surface and said flat upper surface under the action of said spiral grooves when said compressor is rotated, thus serving as an axial spiral flute bearing;

a first air-type radial bearing arranged in said bore adjacent said flat upper surface to tightly and radially bear said shaft between said flat upper surface and said cavity;

a second air-type radial bearing arranged in said blind bore adjacent said cavity to tightly and radially bear said shaft between said cavity and said lower end, thus defining a second gas chamber between said first and second radial bearings and further defining a third gas chamber between said second bearing and said bottom;

drive elements arranged in said cavity to rotatably drive said shaft;

axial supporting means arranged in said third gas chamber to axially support said shaft;

a first channel connecting said first gas chamber with said second gas chamber;

a second channel connecting said second gas chamber with said third gas chamber;

a throttle arranged in said second channel;

a pressure-gas pump connected to said second channel between said throttle and said third gas chamber;

a discharge channel connecting said second gas chamber to said atmosphere; and

an adjustable throttle being arranged in said discharge channel.

4,764,086

BLOWER FOR CIRCULATING LARGER GAS VOLUMES, IN PARTICULAR FOR HIGH-POWER LASER SYSTEMS

Richard Jesinger, Esslingen, Fed. Rep. of Germany, assignor to Fortuna-Werke Maschinenfabrik GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 24, 1986, Ser. No. 946,588

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1986, 3600126

Int. Cl.[4] F04D *29/10*

U.S. Cl. 415—112 13 Claims

1. A blower for circulating large gas volumes, in particular for high-power laser systems of the gas transportation type, comprising:

gas transportation means having a first and a second gas duct for receiving and guiding said gas under circulation, said gas ducts being interconnected by a connection duct;

a radial compressor being rotatable about a vertical axis and having an upper compressor element extending into said connection duct to blow said gas from said first to said second gas duct and having further a flat lower surface, said surface being provided with spiral grooves;

a pressure-tight housing block arranged below said gas transportation means and having a flat upper surface opposite said flat lower surface and being surrounded by an atmosphere;

a vertical bore extending from said flat upper surface;

a vertical drive shaft rigidly connected with said radial compressor and said flat lower surface to rotate therewith, said shaft being received in said bore;

a first high-pressure gas chamber being formed between said flat lower surface and said flat upper surface under the action of said spiral grooves when said compressor is rotated, thus serving as an axial spiral flute bearing, said high-pressure gas chamber communicating with said second gas duct;

a first axial sealing member arranged in said bore adjacent said flat upper surface to axially seal said shaft in said bore;

a second axial sealing member arranged in said bore at a distance below said first axial sealing member to further axially seal said shaft in said bore, thus defining a lock chamber between said first and second axial sealing mem-

4,764,087

CHANNEL FOR FEEDING WATER TO A VERTICAL-AXIS KAPLAN WATER TURBINE

Ngo Pham-Phu, Vizille, France, assignor to Société Neyrpic, Grenoble, France

Filed May 29, 1986, Ser. No. 868,078

Claims priority, application France, Jun. 3, 1985, 85 08506

Int. Cl.[4] F04D *29/66*

U.S. Cl. 415—142 1 Claim





bers and, further, defining a drive chamber below said second axial sealing member, said second axial sealing member comprising an axial upper sliding ring resting elastically on a lower thrust ring, and being connected about one circumference with one end of a bellows whose other end rests against one circumference of said housing, said thrust ring being seated on said shaft and comprising a lubricating-oil channel, connected to an axial lubricating oil supply duct in said drive shaft and having an upper bore connecting said channel with an opening in a sliding surface between said sliding ring and said thrust ring;

radial bearing means arranged in said bore at a distance below said second axial sealing member, a lower bore in said thrust ring connecting said channel to an opening in a lower surface thereof directed towards said radial bearing means;

a first fluid line connected to said lock chamber;

a second fluid line connected to said drive chamber;

a vacuum pump being connected to said first line to establish a pressure in said lock chamber that is below a pressure prevailing in said first high-pressure gas chamber; and

a lubricating-oil pump being connected to said second fluid line.

1. In a channel for supplying water to a vertical axis Kaplan water turbine wherein the turbine is supported between sidewalls of the channel by a vertical shaft which extends through the channel and wherein the sidewalls of the channel extend from the upstream side to the downstream side of the vertical shaft and wherein guide vanes are provided which are positioned above the turbine and extend outwardly from the vertical shaft a distance defined by a first diameter, the improvement comprising, said channel having an end wall of arcuate configuration located downstream of the vertical shaft, said sidewalls of said channel converging toward one another adjacent the vertical shaft and downstream thereof toward said end wall, said end wall having an arcuate contour which is defined by a diameter which is greater than the first diameter of the guide vanes, and flow diverting means provided along the downstream side of the vertical shaft for preventing the development of suction eddies downstream of the vertical shaft from which the turbine is supported, said flow diverting means including a vertical sleeve disposed about said vertical shaft, said vertical sleeve having a transverse section of generally ovoidal configuration so as to extend downstream of the vertical shaft, and mask wall means inclined downwardly from adjacent said sleeve means to said end wall downstream of said vertical sleeve.

4,764,088

INLET GUIDE VANE ASSEMBLY

Davorin D. Kapich, 3111 Serrand Dr., Carlsbad, Calif. 92009

Filed Apr. 21, 1987, Ser. No. 40,858

Int. Cl.[4] F04D *29/36*

U.S. Cl. 415—150 10 Claims

1. An inlet guide vane assembly for a pump or a compressor having rotary blades comprising:

a housing means defining an passageway for providing

a fluid passageway to said rotary blades,

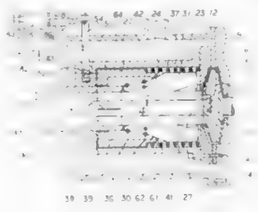
a plurality of guide vanes,

each of said guide vanes being pivotably disposed in said housing means so that by pivoting said vane about a pivot axis said guide vane may be inserted into or removed from said passageway, the extent of such insertion being determined by the degree of pivot of said vane about said axis,

a control means to control the degree of pivot of said guide vanes wherein the passageway defined by said housing is an annular passageway, wherein said control means com-

VOL 1093 ISS 3 AG 16 1988 UMI

prises an annular piston disposed in said housing means so that axial movement of said piston will apply a force on said plurality of guide vanes causing pivotal movement of said plurality of guide vanes, wherein said control means further comprises a pressure means for applying a pressure differential across said annular piston to cause said piston to move axially, wherein said control means further comprises a counteracting force means to apply forces counteracting forces exerted by said pressure means, wherein said pressure means further comprises a fluid flow pas-



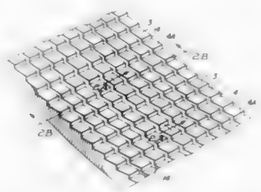
sageway means permitting fluid passage from the discharge of said pump or a compressor to said annular piston such that the pressure of said discharge is utilized to apply the pressure differential across said piston, wherein said pressure means further comprises a control valve disposed in said fluid fow passage means and the configuration of said piston in said housing means is such as to permit fluid leakage past such piston so that the pressure on said piston can be controlled by adjustments of said control valve.

4,764,089

ABRADABLE STRAIN-TOLERANT CERAMIC COATED TURBINE SHROUD

Thomas E. Strangman, Phoenix, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Aug. 7, 1986, Ser. No. 894,409
Int. Cl.[4] F01D *11/08*
U.S. Cl. 415—174 25 Claims



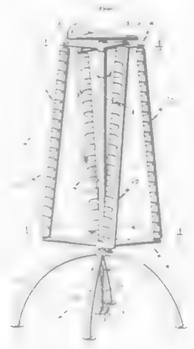
1. An abradable turbine shroud comprising in combination:
(a) a shroud substrate having an inner surface;
(b) an array of steps on the inner surface, each step including a first face having a relatively small slope and a second face adjoining the first face at a corner and having an approximately vertical slope;
(c) an array of grooves in the inner surface, which separate the respective steps into rows;
(d) a layer of ceramic attached to the first faces of the steps; and
(e) a plurality of shadow gaps in the ceramic layer, each shadow gap extending a substantial portion of the way through the ceramic layer from an edge of a step.

4,764,090

VERTICAL WIND TURBINE

David P. Danson, Phoenix, Ariz., assignor to Wind Feather, United Science ASC, Phoenix, Ariz.

Filed Jan. 9, 1984, Ser. No. 569,567
Int. Cl.[4] F03D *7/06*
U.S. Cl. 416—17 14 Claims



1. A wind driven turbine of the vertical axis type comprising:
(a) a support base;
(b) a generally vertical column rotatably mounted to the support base;
(c) upper and lower support means respectively mounted on said column for rotation therewith;
(d) a plurality of wind driven blades connected between the upper and lower support means for rotation about said column and each blade being individually rotatable about a blade axis extending longitudinally through the blade to vary a blade angle of attack thereof relative to wind velocity during rotation about the column; and
(e) control means for variably adjusting angles of attack of each blade to incident wind, said control means including a connecting rod means having drive means for rotating each blade about the associated blade axis in response to radial movement of the connecting rod means and control shaft pivotally mounted within said column and having a first shaft portion connected to the connecting rod means and a second shaft portion radially offset from the first shaft portion and pivotally connected to radially displace the first portion and thereby the connecting rod means to vary the blade angles of attack during rotation about said column, wherein said upper support means includes four substantially identical spokes extending substantially horizontally radially from said column said connecting rod means including a connecting rod extending through each upper spoke for connection of said drive means to a driven means mounted on a portion of a shaft passing through each blade, wherein said control means further includes a plate to which three of said connecting rods are pivotally affixed by sperical bearing means respectively spaced 90° from each other and a center spherical bearing mounted in said plate to receive the first shaft portion therein the fourth connecting rod being nonrotatably affixed to the plate periphery enabling radial displacement of said plate and connecting rods in a generally horizontal plane, wherein said control means further includes a cylindrical bearing member rotatably mounted within said column on races with said offset second shaft portion being pivotally mounted within said cylindrical bearing by means of a pivot pin affixed to an inner surface of the bearing mounted cylinder.

4,764,091

PISTON TYPE COMPRESSOR FOR AIR CONDITIONING UNIT WITH ASYMMETRIC VALVE MECHANISMS

Hayato Ikeda; Hiroshi Onomura, and Satoshi Kitahama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Continuation-in-part of Ser. No. 937,340, Dec. 3, 1986. This application Jan. 9, 1987, Ser. No. 2,307
Claims priority, application Japan, Dec. 5, 1985, 60-274108; Dec. 27, 1985, 60-299265; Jan. 13, 1986, 60-4661
Int. Cl.[4] F04B *27/08, 39/10;* F16K *15/16*
U.S. Cl. 417—269 5 Claims



1. A piston type compressor comprising:
a cylinder block having therein a plurality of axial cylinder bores formed as compression chambers for permitting therein pistons to be reciprocated to compress a refrigerant gas;
at least a housing closing an axial end of the cylinder block for forming a suction chamber receiving therein a refrigerant gas to be compressed and a discharge chamber for receiving a compressed refrigerant gas;
a valve plate having an inlet port for introducing the refrigerant gas to be compressed from an outer air-conditioning circuit into the suction chamber, suction ports for fluidly communicating between the suction chamber and the compression chambers, an outlet port for discharging the compressed refrigerant gas from the discharging chamber toward the outer air-conditioning circuit, and discharge ports for fluidly communicating between the discharge chamber and the compression chambers;
suction valve means arranged on one end face of the valve plate and having a base support plate in fixed close contact with said one end face of the valve plate and a plurality of suction reed valves formed integrally with the base support plate and adapted to perform an oscillatory movement with respect to two bearing points on the base support plate between a closing position in contact with the valve plate for closing a corresponding one of said suction ports and an opening position spaced from the valve plate for opening the corresponding suction port in response to a reciprocating motion of the pistons, each suction reed valve having a substantial length to define a first and second planar portions on both sides of a lengthwise central axis thereof extending so as to pass through a point located at a middle position of said two bearing points and a center of said corresponding one of said suction ports;
discharge valve means arranged on the other end face of the valve plate and having a base support plate in fixed close contact with said other end face of the valve plate and a plurality of discharge reed valves formed integrally with the base support plate and adapted to perform an oscillatory movement with regard to two bearing points on the base support plate between a closing position in contact with the valve plate for closing a corresponding one of said discharge ports and an opening position spaced from the valve plate for opening the corresponding discharge port in response to a reciprocating motion of the pistons, each discharge reed valve having a substantial length to define a first and second planar portions on both sides of a lengthwise central axis thereof extending so as to pass through a point located at a middle position of said two bearing points and a center of said corresponding one of said discharge ports; and,
wherein said lengthwise central axis of said each suction reed valve is arranged away from a bisector perpendicular to a line connecting said two bearing points on said base support plate of said suction valve means so as to form a first means for subjecting a predetermined one of said first and second planar portions of each of said plurality of suction reed valves to a larger displacement from said closing position in contact with said valve plate upon each movement toward said opening position.

4,764,092

LIQUID FUEL INJECTION PUMP

Ian R. Thornthwaite, Gillingham, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Apr. 30, 1987, Ser. No. 44,516
Claims priority, application United Kingdom, May 13, 1986, 8611687
Int. Cl.[4] F04B *29/00;* F02M *41/14*
U.S. Cl. 417—462 3 Claims



1. A liquid fuel injection pump comprising a body part, a rotary distributor member mounted in the body part and axially movable therein, a bore formed in the distributor member and a pumping plunger therein, cam means for imparting inward movement to the pumping plunger as the distributor member rotates, a delivery groove communicating with said bore, said delivery groove being formed in the periphery of the distributor member and being arranged to register in turn with outlet ports formed in the body part during successive delivery strokes of the pumping plunger, means for feeding fuel to said bore to effect outward movement of the pumping plunger, stop means for limiting the outward movement of the pumping plunger, said stop means being arranged so that the extent of outward movement of the pumping plunger depends upon the axial setting of the distributor member, means for displacing the distributor member axially to a position in which an excess of fuel will be supplied by the pump for engine starting purposes and at least one vent port formed in the body part and opening onto the periphery of the distributor member at a position to register with said delivery groove when the pumping plunger is allowed to move outwardly by the cam means.

4,764,093

OIL PUMP FOR CHAIN SAW

Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Apr. 27, 1987, Ser. No. 42,886
Claims priority, application Japan, Apr. 30, 1986, 61-65775[U]
Int. Cl.[4] F04B *49/00*
U.S. Cl. 417—500 10 Claims

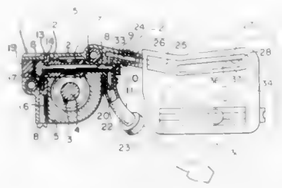
1. An oil pump for supplying lubricating oil to a saw chain of a chain saw, said oil pump comprising
a pumping plunger formed of a cylindrical shaft having a

VOL 1093 ISS 3 AG 16 1988 UMI

cylindrical surface, with a portion removed from said cylindrical surface at a first end of said shaft,

gear and cam portions formed as separate pieces from said shaft, and fitted and connected to said shaft so as to move as one integral piece for rotation and reciprocation of said plunger, and

a guide pin and an eccentric pin supported near said second



end of said shaft and on opposite sides of said shaft, and a cam groove formed in said cam portion to extend around said shaft, wherein said guide pin and eccentric pin extend into said cam groove, and said cam groove is shaped so that said reciprocation results from said rotation, with a range of said reciprocation limited by the positions of said guide pin and eccentric pin and the shape of said cam groove.

4,764,094

SCREW MACHINE HAVING A PLURALITY OF SYMMETRICALLY ARRANGED ROTORS

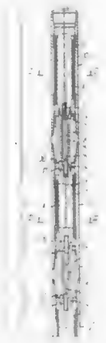
Dmitry F. Baldenko; Jury V. Vadetsky; Moisei T. Gusman; Valery I. Semenets, and Valentina A. Khabetskaya, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Tekhniki, Moscow, U.S.S.R.

PCT No. PCT/SU85/00061, § 371 Date Mar. 20, 1987, § 102(e) Date Mar. 20, 1987, PCT Pub. No. WO87/00571, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 22, 1985, Ser. No. 35,731

Int. Cl.[4] F01C *1/107, 11/00;* F03C *2/08*

U.S. Cl. 418—5 3 Claims



1. A screw machine which comprises consecutively mounted screw mechanisms comprising a plurality of coaxially arranged stators and rotors disposed therein, the axis of the rotor is offset relative to the axis of the stator within which it is disposed, by the amount of eccentricity, "e", of the screw mechanism, wherein all of the stators have a common axis and wherein the screw mechanisms are grouped into modules each comprising at least two mechanisms and the modules are grouped into blocks each comprising at least two modules, the axes of the rotors of the screw mechanisms forming the modules and axes of the rotors of the screw mechanisms of the modules forming the blocks are arranged symmetrically with respect to the common axis about a circumference of radius "e" from said common axis, and the distance between axes of the rotors in adjacent screw mechanisms in each module are the same.

4,764,095

ROTARY SLIDE COMPRESSOR WITH THIN-WALLED, DEFORMABLE SLEEVE

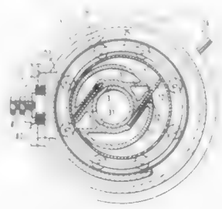
Kurt G. Fickelscher, Herderstrasse 19, D-6710 Frankenthal, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 938,208

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542776

Int. Cl.[4] F04C *5/00, 18/348, 29/10*

U.S. Cl. 418—31 29 Claims



1. An apparatus for compressing and conveying fluids, comprising a rotor which rotates about an axis, a thin-walled, deformable rotary sleeve which is rotatably arranged eccentrically to the rotor axis in surface to surface engagement with the circumferential surface of the rotor throughout a predetermined angular range ϕ, and at least one separator slide defining working chambers which vary in volume when said rotary sleeve is rotated, wherein said rotary sleeve is supported by at least one bearing in a bearing support and is pressed by said bearing support against the circumferential surface of said rotor so that said rotor is partially embraced cylindrically by said sleeve in said predetermined angular range ϕ, wherein said rotor rotates around a control tube and contacts the inner surface of said rotary sleeve throughout said predetermined angular range ϕ, and wherein said rotary sleeve is drivable by said rotor through frictional engagement.

4,764,096

SCROLL COMPRESSOR WITH CLEARANCE BETWEEN SCROLL WRAPS

Kiyoshi Sawai; Michio Yamamura, both of Kusatsu; Shuuichi Yamamoto, Kyoto, and Hiroshi Morokoshi, Shiga, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 28, 1987, Ser. No. 59,223

Claims priority, application Japan, May 30, 1986, 61-126058

Int. Cl.[4] F04C *18/04*

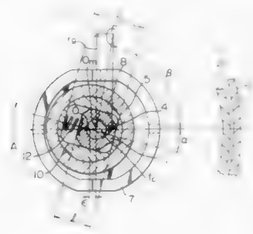
U.S. Cl. 418—55 8 Claims

1. A scroll compressor having an orbiting scroll member and a stationary scroll member each having an end plate and a psiral scroll wrap formed on one side of said end plate, said orbiting and stationary scroll members being assembled together such that said wraps mesh with each other, a crankshaft for eccentrically driving said orbiting scroll member, a bearing member for supporting said crankshaft member, and a member for preventing said orbiting scroll member from rotating about its own axis, said scroll compressor comprising:

an elongated hole formed in the end surface of said crankshaft adjacent to said orbiting scroll member and having an outer end surface and two longer side surfaces, wherein both said longer side surfaces are parallel to the axis of said crankshaft;

an eccentric bearing having a bore rotatably receiving a

drive shaft of said orbiting scroll member and slidable in the longitudinal direction of said elongated hole, said elongated hole and said eccentric bearing being so sized that, when said eccentric bearing is positioned at the outer end of its sliding stroke within said elongated hole, the



closest portions of said scroll wraps do not contact with each other; and

a resilient member disposed in the space of said elongated hole adjacent to the axis of said crankshaft and adapted to resiliently urge said eccentric bearing into contact with said outer end surface of said elongated hole.

4,764,097

TWO-CYLINDER TYPE ROTARY COMPRESSOR

Takuho Hirahara, Shizuoka; Susumu Kawaguchi, Fujieda; Sei Ueda, Shimizu, and Kazuhiro Nakane, Shizuoka, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 792,839, Oct. 30, 1985, abandoned.

This application Mar. 23, 1987, Ser. No. 27,056

Claims priority, application Japan, Nov. 22, 1984, 59-247725

Int. Cl.[4] F04C *23/00;* F04B *11/00*

U.S. Cl. 418—60 1 Claim



1. A two-cylinder type rotary compressor comprising:

a hermetic casing;

first and second cylinders disposed in said casing, each said cylinder having an outer wall and an inner wall defining a central opening, there being an intake conduit formed in each said cylinder and extending substantially radially therein between openings in said outer and inner walls, said intake conduits extending in substantially the same directions and having substantially parallel and linear axial center lines;

movable means disposed in said central openings of said cylinders and cooperating with said inner walls to define compression chambers;

an intermediate partition plate disposed between said cylinders and substantially parallel to said intake conduits of said cylinders, said partition plate being a substantially solid and substantially annular body of material having first and second surfaces respectively in contact with said first and second cylinders and having a thickness as measured in an axial direction of said cylinders that is substantially less than a thickness of either of said cylinders as measured in said axial direction;

first and second intake tubes, said intake tubes passing through said casing and extending respectively at least to said outer walls of said cylinders, said intake tubes respectively comprising a direct fluid passage from first ends of said tubes into said intake conduits of said cylinders, portions of said intake tubes proximate said first ends thereof having substantially parallel axial center lines in respective alignment with said axial center lines of said intake conduits; and

a common accumulator, second ends of said intake tubes being disposed in said common accumulator, said intake tubes extending to said common accumulator along substantially parallel paths, said common accumulator having a common intake pipe in fluid communication with said second ends of both said first and second intake tubes, said common intake pipe and said second ends of said intake tubes being disposed externally of said casing.

4,764,098

ROOTS TYPE PUMP WITH PIN CONNECTION FOR PLASTIC COATED ROTOR

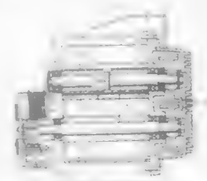
Takahiro Iwase, Anjo; Hiroyuki Mochizuki, Aichi; Shigenori Tamaki; Nobuo Kobayashi, both of Toyota; Naofumi Masuda, Nagoya, and Katsuro Harada, Tajimi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Jun. 26, 1986, Ser. No. 878,704

Claims priority, application Japan, Jul. 26, 1985, 60-113688[U]

Int. Cl.[4] F04C *18/18, 29/00;* B23P *11/00;* F16D *1/06*

U.S. Cl. 418—152 5 Claims



1. A roots type pump, comprising:

a housing;

a pair of mating lobed rotors rotatably inserted in said housing, the outer surface of each said rotor including a lobed long diameter portion along the major axis of the rotor profile and a narrow short diameter portion along the minor axis perpendicular to said major axis;

a rotor shaft respectively supporting each said rotor;

means defining a transverse through hole in each of said rotors and the corresponding rotor shaft, said transverse through hole extending through said narrow short diameter portion of said respective rotor;

a coating layer of plastic material on the outer surface of each of said rotors;

end openings in each said coating layer at respective ends of said through hole, said end openings extending through said coating layer and extending through the outer surface of the respective rotor;

a pin forcibly inserted in each said through hole for fixing each rotor to its respective shaft;

wherein each said end opening has a cross-sectional dimension at said coating layer greater than that of said through hole, and a cross-sectional dimension at said rotor outer surface sufficient to substantially absorb bulges and deformations in the rotor caused by forcible insertion of the pin

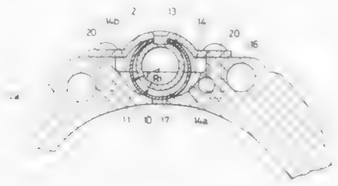
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,099

COMPRESSOR HAVING DISCHARGE VALVE MEANS ADAPTED TO ENHANCE THE COEFFICIENT OF PERFORMANCE OF THE COMPRESSOR

Nobuyuki Nakajima; Kenichi Inomata, and Shigeru Okada, all of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Shibuya, Japan

Filed Jun. 11, 1987, Ser. No. 62,441
Claims priority, application Japan, Jun. 18, 1986, 61-141849
Int. Cl.[4] F04C *2/344;* F16K *15/14;* B23P *15/00*
U.S. Cl. 418—270 8 Claims



1. In a compressor including:

a cylinder having an inner surface and an outer peripheral surface, the inner surface including a circumferentially curved inner peripheral surface serving as a camming surface;

fluid pressurizing means movably arranged within said cylinder, said fluid pressurizing means cooperating with said inner surface of said cylinder to define at least one pump working chamber which performs at least one of suction of compression fluid and compression of same;

at least one valve seating surface-forming portion forming part of said cylinder and having an outer surface;

at least one recess formed in said outer surface of said at least one valve seating surface-forming portion, said at least one recess having a bottom surface serving as at least one valve seating surface;

at least one outlet hole formed in said at least one valve seating surface-forming portion, said at least one outlet hole having one end opening in a corresponding one of said at least one valve seating surface and another end opening in said inner surface of said cylinder and facing a corresponding one of said at least one pump working chamber on a compression stroke;

at least one discharge valve arranged on said outer surface of said at least one valve seating surface-forming portion for closing and opening said at least one outlet hole, said at least one discharge valve being formed of an elastic sheet material having an arcuate cross section, said at least one discharge valve having at least one valve body having an outer peripheral surface disposed at least in part in direct contact with a corresponding one of said at least one valve seating surface and a pair of supporting portions each formed integrally with said at least one valve body at a side remote from a corresponding one of said at least one valve seating surface and extending axially;

stopper means for preventing excessive movement of said at least one valve body of said at least one discharge valve, said stopper means having stopper portions corresponding in number to the number of said at least one valve body of said discharge valve, said stopper portions each being arranged within a corresponding one of said at least one valve body in spaced relation thereto, and a connecting portion formed integrally with said stopper portions at a side remote from said at least one valve seating surface and extending axially; and

holder means mounting said discharge valve on said outer surface of said at least one valve seating surface-forming portion, said holder means having an engaging portion facing toward said at least one valve seating surface, said supporting portions of said at least one discharge valve engaging with said engaging portion, said connecting portion of said stopper means being joined to said engaging portion;

the improvement wherein said at least one valve seating surface comprises: a first arcuately concavely curved surface having said one end of the at least one outlet hole formed therein and extending for a substantial circumferential length on both sides thereof with a radius of curvature, r, equal to a radius of curvature of a corresponding one of said at least one valve body, and second and third arcuately concavely curved surfaces extending, respectively, on opposite sides of and away from said outlet hole beyond ends of said first arcuately concavely curved surface remote from said outlet hole, said second and third arcuately concavely curved surfaces having a radius of curvature greater than r; and

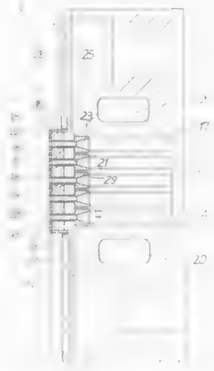
wherein the length of said at least one valve seating surface is longer than a diameter of said at least one valve body.

4,764,100

PERFORATED PLATE FOR THE UNDERWATER GRANULATING OF EXTRUDED STRANDS OF THERMOPLASTIC MATERIAL

Friedrich Lambertus, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 5, 1986, Ser. No. 904,689
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1985, 3532937
Int. Cl.[4] B28B *11/14*
U.S. Cl. 425—67 13 Claims



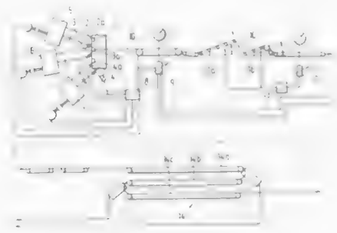
1. In a perforated plate construction for underwater granulating of plastic strands comprising a base member having a melt distributor channel for molten plastic material and a plurality of inlet channels connected to said distributor channel, a cutting plate having outlets for discharge of the plastic material as strands therefrom, extruder nozzles connecting said inlet channels and said outlets for discharge of the plastic material as strands therefrom, extruder nozzles connecting said inlet channels and said outlets, said extruder nozzles including conically tapered portions, heating means in said base member in the region of the inlet channels, and an insulating means between said base member and said cutting plate and through which said extruder nozzles pass, the improvement wherein said insulating means is constructed as an insulating air gap which adjoins the cutting plate and extends substantially entirely thereacross and a plurality of separate support members extend through said gap and support said cutting plate on said base plate in spaced relation therewith so as to form said air gap between the base plate and cutting plate to be of substantially constant, uniform depth such that said cutting plate can undergo free thermal deflection relative to said base plate, each of said support members comprising a tubular insert member having a conical portion communicating with a respective inlet channel, said tubular insert member being fitted in said base member and in said cutting plate.

4,764,101

APPARATUS FOR MONITORING THE PRODUCTION OF ELONGATE PROFILES

Gerd Capelle, Langenhagen, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 770,274, Aug. 28, 1985, Pat. No. 4,719,071. This application Sep. 8, 1987, Ser. No. 94,298
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1984, 3434904
Int. Cl.[4] B29C *47/92*
U.S. Cl. 425—133.5 3 Claims



1. An apparatus for monitoring the production of elongate profiles composed of two or more mixtures of rubber which are separately extruded and thereafter combined to form such profile, comprising:

(a) at least two extrusion devices each of which extrudes a separate mixture of rubber or thermoplastic materials;

(b) adjustable drive means for each of said extrusion devices;

(c) an extrusion head receiving said extruded mixtures from said extrusion devices and producing a profile therefrom;

(d) weighing means for determining the weight per unit length of said profile produced by said extrusion head disposed adjacent the outlet of said extrusion head;

(e) control means operatively connected to said adjustable drive means and to said weighing means for comparing said determined weight per unit length with a desired weight per unit length;

(f) cooling zone means disposed downstream of said weighing means, said cooling zone means comprising a plurality of vertically spaced conveyor belt means traversed sequentially by said profile, said sequential traversal of said belts causing curvature of said profile as it passes from one said belt to the next lower belt, and

(g) curvature measuring means for measuring curvature of said profile resulting from longitudinal shrinkage of said profile in said cooling zone means, said curvature measuring means being operatively connected to said control means,

whereby said control means compares said curvature measurement values with a desired curvature value and, in dependence upon said comparison, sets a corrected desired weight per unit length for said weighing means, said control means adjusting said drive means to cause said extruded profile to have said corrected desired weight per unit length.

4,764,102

CONTINUOUS ELONGATE CERAMIC ARTICLE MANUFACTURING SYSTEM

Ryuichi Takahashi, Yamagata, Japan, assignor to IG-Technical Research Inc., Japan

Filed Jan. 16, 1987, Ser. No. 4,054
Claims priority, application Japan, Apr. 22, 1986, 61-94227; Sep. 10, 1986, 61-214961; Sep. 11, 1986, 61-215073; Sep. 20, 1986, 61-222303
Int. Cl.[4] B28B *21/52*
U.S. Cl. 425—466 16 Claims



1. A continuous elongate ceramic article manufacturing system comprising a sequential linear arrangement of:

an extruder having a nozzle which continuously extrudes a material clay containing clays as principal components;

a drying machine for drying a continuous strip extruded by the extruder;

a moving cutter for cutting the continuous strip delivered from the drying machine into dry elongate plates having a predetermined length;

a conveying machine for conveying the dry elongate plates;

a firing furnace which continuously preheats, fires and cools the dry elongate plates; and

a delivering machine which delivers the fired elongate plates delivered from the firing furnace to the next process,

characterized in that the nozzle of the extruder is provided with a hollow lattice core for forming hollows within the continuous strip, and one or a plurality of pipes corresponding to the number of legs of the lattice of the lattice core are attached to the front or rear part of the lattice core to circulate gaseous fluid through the hollows of the continuous strip in the direction of movement of the extruded continuous strip.

4,764,103

INJECTION MOLD

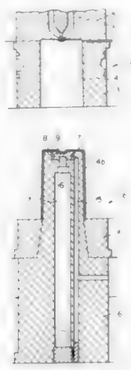
Hiroshi Mitake, Odawara, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Sep. 12, 1986, Ser. No. 906,208
Claims priority, application Japan, Sep. 12, 1985, 60-202146
Int. Cl.[4] B29C *45/43*
U.S. Cl. 425—577 6 Claims

1. An injection mold with means for injecting molten resin for molding a tubular article having a closed end comprising a stationary mold half including a cavity plate having at least one cavity impression and a movable mold half which is movable toward and away from the stationary mold half between a closed position and an open position and is provided with at least one core portion for defining a cavity together with the cavity impression when the movable mold half is moved to the closed position, characterized in that a recess is formed in the top face of the core portion, a telescopic mold piece is fitted into the recess in such a manner that a narrow space is formed and is always present therebetween, and an air chamber having a relatively large volume permanently positioned in the vicinity of the top face of the core portion so that said narrow space is relatively short, the air chamber being communicated with the portion of the cavity over the top face of the core portion by way of said narrow space between the mold piece and the

VOL 1093 ISS 3 AG 16 1988 UMI

recess, and with the atmosphere by way of a communicating passage formed in the core portion, said narrow space between



the recess and the mold piece having such a width that substantially no molten resin can enter said narrow space.

4,764,104

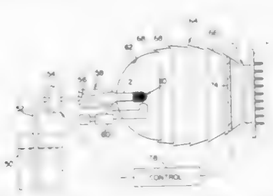
NARROW BAND THERMAL EMITTER

Robert E. Nelson, Weston, Mass., assignor to TPV Energy Systems, Inc., Waitham, Mass.

Division of Ser. No. 634,379, Jul. 31, 1984, Pat. No. 4,584,426, which is a continuation-in-part of Ser. No. 529,016, Sep. 2, 1983, abandoned. This application Jan. 3, 1986, Ser. No. 815,888

Int. Cl.[4] F21H *1/02*

U.S. Cl. 431—100 **13 Claims**



1. A narrow band thermal emitter device comprising, a rare earth metal oxide radiator, and means for thermally exciting said radiator to cause it to emit radiation, said radiator, when heated to 1700° C., emitting radiation in a spectral irradiance profile that has a narrow radiated flux peak, said flux peak having a full width at half maximum of less than four hundred nanometers and said relative spectral irradiance profile of said radiator also having suppressed skirt characteristics such that, at wavelengths five hundred nanometers above and below said flux peak, the radiated flux levels of said skirts are less than ten percent of the radiated flux at said peak.

4,764,105

WASTE COMBUSTION SYSTEM

James G. McElroy, Houston, Tex., assignor to Kirox, Inc., Houston, Tex.

Filed Dec. 4, 1986, Ser. No. 937,948

Int. Cl.[4] F23M *9/00*

U.S. Cl. 431—115 **15 Claims**

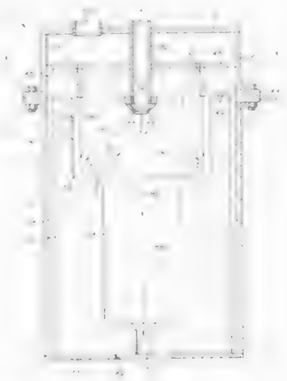
1. A combustion system for burning fluid waste with a gaseous oxidizer, comprising:

a generally cylindrical primary combustion chamber having an outer peripheral wall;

a burner mounted coaxially on one end of said primary combustion chamber;

a generally cylindrical second combustion chamber having an inner diameter smaller than the inner diameter of said primary combustion chamber disposed on the other end of said primary combustion chamber, said chambers forming a shoulder facing said burner;

said burner having oxidizer supply means and waste supply means for supplying a gaseous oxidizer and waste to said primary combustion chamber;



said burner directing the flow of the gaseous oxidizer through jets disposed generally parallel to said outer peripheral wall and the flow of the waste into said primary combustion chamber whereby the gaseous oxidizer and waste mix within the primary combustion chamber adjacent said outer peripheral wall and said shoulder for a first burn; and

said shoulder directing the resulting product of the first burn toward the center of said primary combustion chamber for a second burn.

4,764,106

BURNER FOR USE IN A ROTARY DRUM OF A COMBUSTION FURNACE

Hans Rüegg, Wohlen, and Walter Tschantré , Zurich, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed Oct. 30, 1985, Ser. No. 792,914

Claims priority, application Switzerland, Nov. 5, 1984, 5297/84

Int. Cl.[4] F23D *11/36*

U.S. Cl. 431—160 **11 Claims**



1. A burner, particularly for use in a rotary drum of a combustion furnace or incinerator for flowable, pump-deliverable waste materials which comprises a lance for introducing fuel having an end, a nozzle positioned at said end, a first non-water cooled lining surrounding said lance, said first lining comprising two tubular and coaxial jacket parts for guiding burner air to the nozzle, said two parts including an outer jacket part and an inner jacket part, a second water-cooled lining surrounding the first lining, the second lining essentially comprising an outer tubular jacket part and an inner jacket part, and said inner jacket part of said second lining forming together with the outer jacket part of the first lining a gap for guiding combustion air to the combustion furnace.

4,764,107

SHAFT ARRANGEMENT FOR THERMAL AND/OR MATERIAL TRANSFER PROCESSES BETWEEN A GAS AND BULK MATERIAL

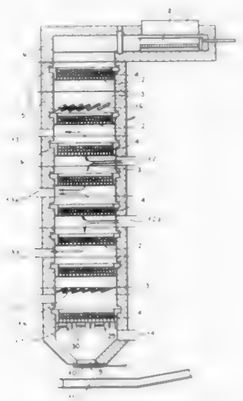
Erich Sundermann; Hanno Lauries; Wolfgang Vahlbrauk, all of Braunschweig, and Hans Reye, Neustadt, all of Fed. Rep. of Germany, assignors to Perfluktiv-Consult AG, Basel, Switzerland

Continuation of Ser. No. 810,283, filed as PCT EP85/00114, Mar. 16, 1985, published as WO85/04469, Oct. 10, 1985, abandoned. This application Jun. 11, 1987, Ser. No. 62,346

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1984, 3410894

Int. Cl.[4] F27D *1/08*

U.S. Cl. 432—96 **11 Claims**



1. An apparatus for heat exchange between a gas and a flowable solid having a given minimum particle size of at least about 6 mm, the apparatus comprising:

a shaft having walls;

a plurality of grates vetically spaced in said shaft and defining with the walls of said shaft respective chambers above each grate and delimited by the next higher grate, each of said grates including:

an array of mutually parallel horizontal fixed grate bars defining a respective grate plane,

a plurality of mutually parallel horizontal jointly movable grate bars interleaved between the respective fixed grate bars,

means supporting said movable grate bars to enable them to be shifted vertically and jointly out of the respective plane, each bar of each grate being spaced by at most the minimum particle size from the immediately adjacent bars when in the plane, and

control means connected to said movable grate bars for shifting them vertically out of said plane and thereby leaving the bars in the respective plane spaced by more than the minimum particle size to permit uniform cascade of said flowable solid over the cross section of said shaft and onto a next lower grate, and back into said plane to receive a cascade of said flowable solid from a grate thereabove and form a new layer of the solid on the bars of the grate in the respective plane;

metering means communicating with the shaft at the top thereof for depositing a quantity of said flowable solid on an uppermost one of said grates which is sufficient to form said layers upon transfer of said quantity from grate to grate downward along said shaft but which is insufficient to fill said chambers, whereby a free space remains above each layer and the next higher grate in each chamber;

means forming inlets opening into respective ones of said free spaces for delivering said gas through said walls of at least some of said chambers; and

means forming outlets communicating with respective others of said free spaces through said walls of others of said chambers between the chambers to which said gas is delivered for discharging gas so that said gas vertically traverses said layers and said grates carrying same in passing from the chambers to which said gas is delivered into chambers from which said gas is discharged, at least some of the movable grate bars of each grate being connected together at their ends to form a coplanar unit shiftable out of the respective grate plane by the respective control means, said coplanar units each being constructed and arranged to be lifted from the respective grate plane by the respective control means and returned to the respective grate plane.

4,764,108

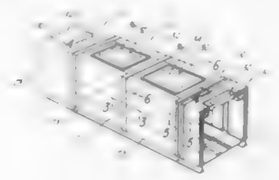
MODULAR OVEN

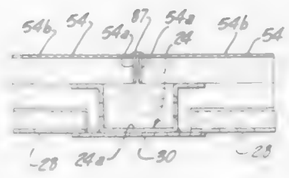
Maximilian K. Carthew, Rochester Hills, and Joseph D. Donahue, Troy, both of Mich., assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

Continuation of Ser. No. 832,007, Feb. 24, 1986, abandoned. This application Apr. 3, 1987, Ser. No. 34,799

Int. Cl.[4] F27B *9/02*

U.S. Cl. 432—128 **3 Claims**





1. An oven comprising:

a plurality of longitudinally extending oven modules positioned in end-to-end relation;

each of said modules having an outer shell and an inner shell and insulating material disposed between said shells;

at least one of said modules having a roof panel including self-releasing connector means for joining said panel to said one module;

said connector means including inner connecting elements

VOL 1093 ISS 3 AG 16 1988 UMI

adapted to engage inner fastening elements disposed on the inner shell of said one module and outer connecting elements adapted to engage outer fastening elements disposed on the outer shell of said one module;

said respective connecting elements and fastening elements having a configuration to permit self-releasing disengagement upon a sudden increase in pressure within said oven and to thereby allow separation of said panel from said one module without substantial damage to said one module;

said connector means also including a seal between said panel and said one module; and

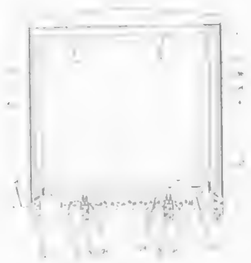
said connecting elements and fastening elements forming movable joints to permit relative movement between said panel and said one module due to thermal expansion and contraction.

4,764,109

HEAT TREATING, CURING OR STRESS RELIEVING FURNACE

Arnold G. Meyers, Waterloo, Canada, assignor to Clemmer Industries (1964) Limited, Waterloo, Canada

Continuation-in-part of Ser. No. 835,724, Mar. 3, 1986, abandoned. This application Jun. 22, 1987, Ser. No. 64,692
Claims priority, application Canada, Oct. 16, 1985, 493083
Int. Cl.[4] F27B *9/08*
U.S. Cl. 432—153 23 Claims



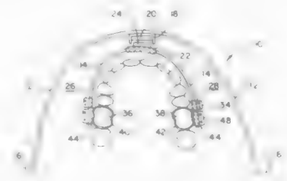
1. An oven for curing, heat treating, stress relieving or otherwise treating or processing objects, said oven being mounted on a supporting surface and comprising two side walls, two end walls, a floor and a top, each being insulated, one of said end walls being a door that can be opened and closed, with means for affixing said side walls to said top, said side walls being movable laterally relative to said floor, with actuators to rapidly move a lower portion of said side walls laterally into and out of a sealing relationship with said floor, said floor having support means so that the floor is readily removable from and replaceable in said oven, said actuators remaining stationary as said floor is removed with said side walls being totally disengaged from said floor, a lower portion of said side walls being movable so that, when said floor is placed in said oven, the lower portion of said side walls can be moved and held in tight contact with adjacent side edges of said floor and said door can be closed so that an interior of said oven is insulated from an exterior and, when said floor is desired to be removed from said oven, the door can be opened and the lower portion of said side walls can be moved out of contact with the adjacent side edges of said floor and said floor can then be removed from said oven, said oven having a heat source with means to circulate heat within said oven.

4,764,110

ORTHODONTIC FACE BOW

Harry L. Dougherty, 14434 Hamlin St., Suite 1, Van Nuys, Calif. 91401

Filed Jul. 1, 1987, Ser. No. 68,495
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—5 14 Claims



1. An orthodontic face bow including:

inner bow means;

outer bow means; and,

magnetic coupling means including first magnetic means rigidly coupled to said outer bow means and second magnetic means rigidly coupled to said inner bow means;

said first and second magnetic means being positioned, in the course of the use of said orthodontic face bow, contiguous with each other with a pole of a first polarity in said first magnetic means in conjunction with a pole of the opposite polarity in said second magnetic means, whereby said outer bow means is separable from said inner bow means when force is applied to said outer bow means in a direction outwardly from the wearer of said orthodontic face bow.

4,764,111

REMINDER AND ENFORCER APPARATUS

Rupert W. Knierim, 6106 Top 'O Knox Dr., Knoxville, Tenn. 37918

Filed Nov. 21, 1985, Ser. No. 800,607
Int. Cl.[4] A61C *3/00*
U.S. Cl. 433—5 14 Claims



12. An apparatus for reminding a person to perform a desired activity and for enforcing the performance of the activity, comprising:

a magnet mounted on a support means;

a main housing;

means for attaching said main housing to a person;

magnetic switch means mounted within said main housing for switching and generating a detection signal in response to the presence of the magnet in near proximity to said magnetic switch means;

a power source mounted within said housing;

clock means mounted within said main housing and powered by said power source for generating clock pulses;

logic means responsive to the clock pulses and the detection signal for selectively generating an electric alarm signal, said logic means being operable, in response to the clock pulses and independently of the detection signal, to distinguish between at least two distinct time periods defined as an active time period and a dormant time period, said dormant time period being of a sufficient duration, on the order of hours, that a user may forget to perform the desired activity, said logic means being operable only during the active time period to begin generating an electric alarm signal at predetermined times and to continue generating said electric alarm signal until at least one detection signal is generated by said magnetic switch means and being operable only during the dormant time period not to generate the electric alarm signal regardless of the absence of the detection signal; and

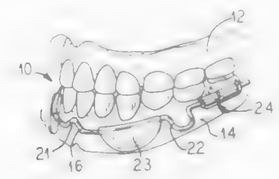
alarm means responsive to said electric alarm signal to produce an alarm perceivable by the person whereby an alarm will be generated at selected times and will continue until said magnet is placed in near proximity to said magnetic switch means.

4,764,112

MOLDED DISTAL STOP AND ATTACHMENT TO FIX ORTHODONTIC APPLIANCE INTO MOUTH

Earl O. Bergersen, 950 Green Bay Rd., Winnetka, Ill. 60093

Filed Oct. 13, 1987, Ser. No. 107,167
Int. Cl.[4] A61C *7/00*
U.S. Cl. 433—22 8 Claims



1. An attachment means for an orthodontic appliance wherein the appliance includes an arch-wire having a generally U-shaped configuration with two free posterior ends each to be inserted through an opening in a mesial end of a separate buccal tube comprising:

a covering formed on each lateral side of said wire having a posterior end positioned anterior to said posterior end of said wire to abut against said mesial end of said tube and an anterior end including an integrally formed resilient tab, said tab including an opening therethrough sized to receive said posterior wire end.

4,764,113

SEMI-ADJUSTABLE DENTAL ARTICULATOR

Kenji Hiranuma, Nagoya, Japan, assignor to Noburu Onuki, Japan

Filed Jul. 18, 1986, Ser. No. 887,994
Int. Cl.[4] A61C *11/00*
U.S. Cl. 433—56 5 Claims

1. A semi-adjustable dental articulator comprising an articulator body, an upper bow, a lower bow and an incisal guide pin adjustably attached to said upper bow, said upper bow being pivotably mounted to said articulator body by a pair of condyle balls attached to lateral sides of said articulator body and by condylar boxes rotatably attached to lateral sides of said upper bow, respectively, and adjustment guide plates each having an axis and rotatably attached to said condylar boxes, respectively, an improvement wherein:

said articulator further comprises:

a slot formed through an upper wall of each of said condylar boxes to have an arcuate shape concentric with the axis of the associated said adjustment guide plate;

balancing side lateral condylar path angle graduations formed on the upper wall of said condylar box adjacent to said slot; a screw rod extending outwardly from an upper surface of said adjustment guide plate and inserted through said slot; a washer fitted around said screw rod for movement only longitudinally of said screw rod and having, at an upper face, an indicator marking cooperating



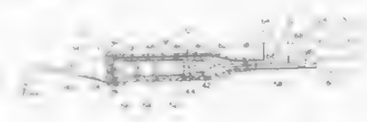
with said condylar path angle graduations; and a knob threadably mounted on said screw rod for functioning cooperatively with said washer, when loosened, as an adjusting member for said adjustment guide plate, and also functioning cooperatively with said washer, when tightened, as a clamping member for said adjustment guide plate, said articulator body is provided with a pair of laterally spaced upright frame portions each having a back surface and an outer side surface intersecting and forming an upright corner line, and said corner line having an indication notch aligned with an occlusion plane in height and another indication notch aligned with an ear point in height.

4,764,114

ANALYSIS SYSTEM

Robert L. Jeffcoat, Bedford; Khushroo M. Captain, Cambridge, and Brian J. Doherty, Marblehead, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Filed Jan. 13, 1986, Ser. No. 818,484
Int. Cl.[4] A61C *19/04*
U.S. Cl. 433—72 30 Claims



1. Periodontal analysis apparatus comprising a handle component, a tip unit detachable from said handle component and defining a guide channel with a region of contra angle configuration, a probe member having a tip for insertion into a periodontal pocket of a patient, said probe member being disposed in said guide channel for reciprocating movement with the tip of said probe member extending outwardly from said channel, said probe member having flexibility such that said probe member may be reciprocated through said contra angle region and over a distance of about one centimeter in a probe insertion—retraction cycle of less than one second duration,

force applying means in said handle component for producing reciprocating motion of said probe member along said channel, and

transducer means in said handle component for monitoring

VOL 1093 ISS 3 AUG 16 1988 UMI

probe motion perturbations and providing output signals indicative of probe member acceleration.

4,764,115

PARTIAL DENTURE WITH INTEGRALLY FORMED ELASTIC RETAINER STRIP

William G. Willits, and Thomas T. Schmitt, both of Norfolk, Va., assignors to Denture Clinic, Inc., Norfolk, Va.

Filed Jan. 28, 1987, Ser. No. 7,768
Int. Cl.[4] A01C *13/22*
U.S. Cl. 433—177 13 Claims



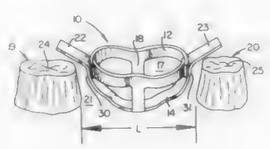
1. A partial denture comprising: a denture base including buccal and lingual flanges molded of a relatively hard material and shaped to form a ridge for supporting a selective number of artificial teeth; an opening formed in the ridge with the opening being at least large enough to receive a plurality of successive existing teeth of the subject; and elastic material surrounding the opening for receiving existing including an elastic retainer strip forming a part of the denture base and extending along one side of said elongated teeth opening for engaging the subject's gum area adjacent the subject's existing teeth extending upwardly through the teeth opening and for securing the partial denture within the subject's mouth due to the engagment of the elastic retainer strip with that gum area, whereby the elastic material tends to form a cushion around the existing teeth and the elastic retainer strip acts to secure and hold the partial denture in the subject's mouth.

4,764,116

PREFABRICATED PONTIC FOR A DENTAL BRIDGE

Itzhak Shoher, 50 Shlomo-Hamelech St., Tel-Aviv, Israel (64386), and Aharon E. Whiteman, 13 J. L. Perez St., Petach-Tikvah, Israel (49206)

Filed Sep. 8, 1987, Ser. No. 93,771
Int. Cl.[4] A61C *13/22*
U.S. Cl. 433—180 7 Claims



1. A prefabricated pontic having an adjustable framework adapted to fill the edentulous space between abutment teeth in the construction of a bridge comprising: a plurality of pliable metal members which interconnect in an arrangement to form an open skeleton framework including at least one elongated central member extending lengthwise from the mesial to the distal and at least two members having open ends which overlap said central member at the mesial and distal ends with said open ends being separable from each other and from said central member for adjusting said framework to fill the space between said abutment teeth.

4,764,117

RESTORATIVE DENTAL MATERIAL AND METHOD OF RESTORING TEETH USING SAME

Atsushi Yamashita; Toshiaki Yamami; Yasuhiro Kondo; Hiroyuki Nakai, and Kazuomi Suzuki, all of Okayama, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

PCT No. PCT/JP86/00030, § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05677, PCT Pub. Date Oct. 9, 1986
PCT Filed Jan. 24, 1986, Ser. No. 948,360
Claims priority, application Japan, Apr. 3, 1985, 60-71477; Sep. 30, 1985, 60-218765
Int. Cl.[4] A61C *13/00*
U.S. Cl. 433—215 5 Claims

1. A method of restoring teeth, which comprises:
subjecting a bonding surface of a metal casting for dental use to electroplating in a plating bath containing stannous ions and polymer particles dispersed therein, so as to produce a tin layer which contains polymer particles therein on said metal casting,
applying an adhesive containing a polymerizable monomer having an acid group to the tin layer electroplated on said metal casting to produce an adhesive-coated surface of said metal casting, and then
bonding said adhesive-coated surface of said metal casting to a tooth or a prosthetic dental applicance.

4,764,118

FIXATION OF RIGID PIECES SUCH AS A DENTAL PROSTHESIS

Bernard Touati, 11, Place du Général Catroux, 75017 Paris, and Marc Werly, 16 rue d'Odessa, 75014 Paris, both of France

PCT No. PCT/FR86/00065, § 371 Date Nov. 12, 1986, § 102(e) Date Nov. 12, 1986, PCT Pub. No. WO86/05085, PCT Pub. Date Sep. 12, 1986
PCT Filed Feb. 27, 1986, Ser. No. 925,805
Claims priority, application France, Feb. 28, 1985, 85 02920
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—226 8 Claims



1. Process for connecting by gluing a piece constituted by a rigid block on a support to stop a cavity in said support, such as a prosthesis intended to fill a tooth cavity, said process comprising the following steps of:
casting a hollow impression of said cavity;
forming, by casting in said hollow impression, a first layer of a resin to constitute an inner region of said piece;
forming a second layer of resin laden with pigmentary particles which is cast in said hollow impression and over said first layer to shape the outer part of the said piece;

interposing on the wall of said cavity or on the wall of said piece a gluing interface constituted by a polymerizable resin in the liquid state;
inserting said piece in said receiving cavity, the polymerizable resin constituting an interface between the walls of said receiving cavity and of said piece;
adjusting said piece in said receiving cavity so as to ensure correct positioning thereof and removing the excess of polymerizable liquid resin likely to protrude outside of said piece and support;
wherein
(a) said first layer is made from a translucent resin,
(b) said second layer is cast as to leave a passage inside said second layer which passage opens on one side in said first layer of translucent resin and opens on the other side on the outside of said second layer,
(c) the resin in the liquid state forming the gluing interface between the walls of said receiving cavity and said piece is photopolymerizable,
(d) after the stage of enduring the correct positioning of the piece an insolation is directed from an external source through said passage, said insolation being of wave length specific of said photopolymerizable resin and adapted to initiate the reaction of polymerization, so that the irradiation is guided from the outside source up to said first layer of translucent resin which is thus able to spread said radiation onto said interface of photopolymerizable resin.

4,764,119

LEARNING DEVICE AND METHOD OF USING SAME

Lucinda J. Miraglia, 4901 E. Tomahawk Trail, Paradise Valley, Ariz. 85253

Filed May 4, 1987, Ser. No. 45,575
Int. Cl.[4] G09B *19/00*
U.S. Cl. 434—260 3 Claims



1. A teaching device for a pre-school and kindergarten aged child comprising a thin elongated body portion, said body having a first end segment, a second end segment and an intermediate segment integrally interposed between said first and said second end segment, said first and said second end segments being readily discernable by feel one from the other to enable said child to rapidly perceive which segment to manipulate in response to directions therefore and create a bow knot therewith, said first end segment being formed from a smooth-feeling fabric and said second end segment being formed from a rough-feeling fabric.

4,764,120

STUDENT RESPONSE SYSTEM

Bruce J. Griffin, Barrington, and Roger Kopanski, Elmhurst, both of Ill., assignors to McDonald's Corporation, Oak Brook, Ill.

Filed May 27, 1986, Ser. No. 867,479
Int. Cl.[4] G09B *7/00*
U.S. Cl. 434—336 16 Claims

1. A student response system for centrally processing student responses obtained from a plurality of classrooms comprising:
a plurality of student input means in each classroom, each input means being operable by a student for providing student response data;
a plurality of student data control means associated with each classroom, each student data control means being coupled to a group of student input means and being responsive to a control command for accumulating, in a particular manner, student response data from the group of student input means to which said student data control means is coupled;
a plurality of instructor input means each associated with a



particular classroom and operable by an instructor for providing control data; and
a main control means coupled to each instructor input means and each student data control means for processing data therefrom, said main control means being responsive to control data from an instructor input means for providing a control command to each of the student data control means associated with the classroom with which said instructor input means is associated to control the manner in which each of said student data control means accumulates student data.

4,764,121

ROTARY ELECTRICAL CONNECTOR

Albert Ditzig, Hoffman Estates, Ill., assignor to Telephone Products, Inc., Wheeling, Ill.

Continuation-in-part of Ser. No. 809,217, Dec. 16, 1985, Pat. No. 4,673,228. This application Mar. 5, 1987, Ser. No. 22,379
Int. Cl.[4] H01R *39/02*
U.S. Cl. 439—21 34 Claims



1. A spindle assembly for a rotatable electrical connector, said spindle assembly comprising:
a spindle body composed of electrical insulating material and having an axis and an outer surface;
a plurality of peripheral grooves on said outer surface;
a plurality of electrical conducting elements each having a first portion extending through said spindle body in a direction substantially parallel to said axis, a second portion extending transversely from said first portion through the outer surface of said spindle and a ring portion integral with said second portion and received in a respective peripheral groove;
each ring portion having a terminal end part;
each groove having a bottom and a pair of side walls;

VOL 1093 ISS 3 AG 16 1988 UMI

a notch in a side wall of each groove adjacent the bottom of the groove;

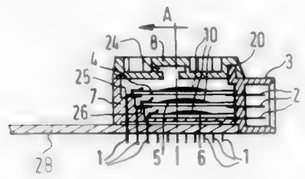
said notch comprising means for receiving and engaging said terminal end part of the ring portion received in that groove to retain the terminal end part adjacent the bottom of the groove.

4,764,122

DATA BUS CONNECTOR

Alain Sorel, Evreux, and Francis Vernet, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1987, Ser. No. 13,318
Claims priority, application France, Feb. 14, 1986, 86 02027
Int. Cl.[4] H01R 9/09
U.S. Cl. 439—66 7 Claims



1. A connector comprising a first series of pin means which are arranged in a plurality of rows and which are for connection to an electrical printed circuit, and also comprising a second series of pin means which are also arranged in a plurality of rows and which are for connection to an external connector, wherein the pin means of one series extend substantially perpendicularly with respect to those of the other series, and wherein a plurality of substrates are arranged at a plurality of mutually substantially parallel horizontal levels, one side edge of each substrate being vertically aligned with respect to the corresponding side edges of the other substrates, each substrate being provided along said side edge with a row of the second series of pin means, active components being mounted on the substrates and being connected between the two series of pin means, at least one side edge of one of the substrates other than said aligned side edge horizontally overlapping and extending past the corresponding side edge of one of the neighboring substrates, whereby a passage is provided for a connection of a row of the first series of pin means secured perpendicularly to said at least one side edge of said at least one substrate which row of the first series extends downwardly past the side edge of the one neighboring substrate for connection to the printed circuit.

4,764,123

ELECTRICAL CONNECTORS

Ronald Shaw, Sunderland; Leonard Jackson, Cullercoats, and Anthony Headley, Whickham, all of England, assignors to Northern Engineering Industries plc, Newcastle upon Tyne, England

Filed Mar. 6, 1987, Ser. No. 22,793
Claims priority, application United Kingdom, Mar. 15, 1986, 8606432
Int. Cl.[4] H01R 13/44
U.S. Cl. 439—148 9 Claims

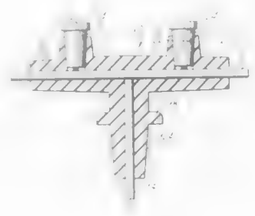
1. An electrical connector for at least one phase of electrical current comprising:

a body of insulating material having for each phase at least one socket portion leading therein for receiving, in use, a complementary-shaped closure means,

conductor means embedded in said insulating body,

at least two locations at said insulating body,

said conductor means extending to and being exposed to the interior of said socket portion and extending between said two locations and providing a continuous current path through said insulating body between said two locations, said conductor means terminating at each of said locations, and



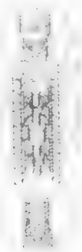
connecting means at each of said two locations for connecting said conductor means to other electrical equipment.

4,764,124

SELF STRIPPING CONNECTION DEVICE

Guy Simon, La Grosse Roche, F-44680 Sainte Pazanne, France

Filed Apr. 20, 1987, Ser. No. 40,063
Int. Cl.[4] H01R 4/24
U.S. Cl. 439—391 9 Claims



1. An apparatus for use with a wire having a conductor and an insulating cover over the conductor, said apparatus electrically connecting to the conductor by stripping away a part of the insulating cover and directly contacting the conductor, said apparatus comprising:

a housing having an axial opening therein defining an inner surface;

first means for stripping the insulating cover and for connecting to the conductor, said first means being attached to the inner surface of the housing;

second means for stripping the insulating cover and for connecting to the conductor, said second means being centrally located in the axial opening of the housing and opposing the first means;

third means for supporting the wire between the first means and the second means and for moving the wire with respect to the first means and the second means

wherein said housing comprises a tubular member having a curved inner surface;

wherein said first means comprises an outer annular projection located on the curved inner surface of the tubular member;

wherein said second means comprises an axle having an inner annular projection, said axle being concentrically located within the tubular member such that the inner annular projection opposes the outer annular projection; and

wherein said third means comprises a cylinder having an aperture for receiving the wire, said cylinder being concentrically located with the tubular member such that the aperture is in registry with the opening formed between the inner and outer annular projections,

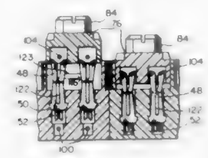
whereby the first means cooperates with the second means to strip the insulating cover as the wire is moved by the third means, thereby establishing an electrical contact between the conductor and the first means.

4,764,125

CABLE TERMINAL CONNECTORS

George Debortoli, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 6, 1987, Ser. No. 22,694
Claims priority, application United Kingdom, Mar. 12, 1986, 8606039
Int. Cl.[4] H01R 11/20
U.S. Cl. 439—403 12 Claims



1. A cable terminal connector comprising an insulating housing formed with apertures for receiving conductors of a first cable into a plurality of first terminal positions for the first cable within the housing;

a plurality of elongate insulation displacement contact members each having an insulation displacement terminal at one end and also having another terminal at the other end, the contact members located in detent positions within guide channels defined by the housing, the guide channels extending lengthwise of the contact members, and the insulation displacement terminals being directed in the lengthwise direction of the contact members towards and being spaced from the first terminal positions;

a closure member having an insulating closure body and providing second terminal positions for conductors of a second cable to be received through apertures formed in the closure member, the closure member received upon the housing in a retracted position;

means for moving the closure member in a lengthwise direction of the contact members from the retracted position to a fully retained position firmly secured to the housing and in which the terminal at said other end of each contaact member extends into a corresponding second terminal position; and

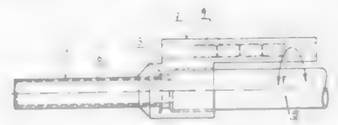
means cooperable between the closure member and each contact member for urging each contact member in said lengthwise direction from its detent position into an operating position during movement of the closure member into its fully retained position, said urging means comprising a thrust surface provided on each contact member in a position in said lengthwise direction, intermediate the terminals and against which a load is applied during movement of the closure member into its fully retained position to move the contact member into its operating position, each contact member in the operating position having its insulation displacement terminal at said one end extending into one of the first terminal positions and being spaced at the one end, in the lengthwise direction of the contact members, from an adjacent end of the associated guide channel.

4,764,126

CABLE TERMINAL WITH ROTATABLE MARKER

Ivana Piana, and Silvano Piana, both of Genoa, Italy, assignors to Grafoplast S.p.A., Italy

Filed Jun. 22, 1987, Ser. No. 64,525
Claims priority, application Italy, Jul. 2, 1986, 12505 A/86
Int. Cl.[4] H02G 15/02
U.S. Cl. 439—491 4 Claims



1. An electrical cable terminal assembly, comprising:

(A) an elongated, hollow, electrically-conducting plug having an internal socket extending along a longitudinal axis, said socket being dimensioned for electrically receiving an electrical conductor of an electrical cable inserted into the plug through one end thereof;

(B) a soft, flexible, transparent material, electrically-insulating body mounted at said one end for rotation in either circumferential direction about said longitudinal axis, said body including

(i) a bore coaxial with the socket, said bore being dimensioned for receiving the electrical cable during insertion of the conductor into the socket,

(ii) an elongated hollow holder having transparent walls bounding an internal recess extending along a radially offset axis which is generally parallel to said longitudinal axis, said recess being dimensioned for interiorly receiving cable marking elements arranged lengthwise along the offset axis, said cable marking elements bearing indicia for identifying the cable,

(a) said holder being integral with, and of the same transparent material as, the body to enable the indicia to be visible through, and protected by, said transparent walls, and

(b) said holder being mounted for joint rotation with the body to enable the indicia to be rotated about said longitudinal axis to a desired position to facilitate viewing of the marking elements; and

(C) means at said one end of the plug for preventing relative movement along said longitudinal axis between the body and the plug while allowing said rotation to the desired position.

4,764,127

ELECTRICAL CONNECTOR FOR HIGH-LEVEL AUDIO SIGNALS

Edison A. Price, New York, N.Y., assignor to Edison Price Incorporated, New York, N.Y.

Filed May 28, 1987, Ser. No. 55,236
Int. Cl.[4] H01R 13/74
U.S. Cl. 439—551 13 Claims

1. An electrical connector for an audio product which comprises a rod-shaped body and a clamping sleeve;

the rod-shaped body having a rear portion, a front portion and an intermediate portion;

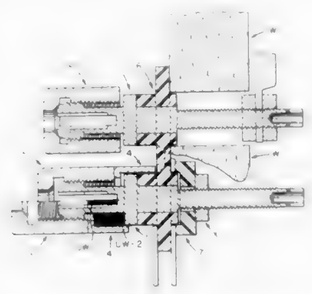
the rear portion having an axial hole at its end, a segment of the end being ground away from the side to form a solder lug, and having male threads between the end and the intermediate portion;

the intermediate portion having a flange and a knurled segment between the flange and the male threads of the rear portion;

the front portion having a slot across its diameter and an axial hole in the slot, both of which extend from its end substantially to the flange, and having a cylindrical segment adjacent the flange and having a wider segment with male threads and a tapered end;

VOL 1093 ISS 3 AG 16 1988 UMI

the clamping sleeve having female threads engageable with the male threads of the front portion of the rod-shaped



body and having an internal tapered end adjacent the female threads and engageable with the tapered end of the front portion of the rod-shaped body.

4,764,128

DISTRIBUTION HANGER FOR DECORATIVE LIGHT STRING

Sam Cheng, No. 11, Lane 207, Hsimen Street, Hsin-Cho, Taiwan

Filed Oct. 20, 1986, Ser. No. 921,356
Int. Cl.[4] H01R *21/00*
U.S. Cl. 439—652 7 Claims



1. A distribution hanger for decorative light strips, comprising a box made of insulation material having a power inlet extending into said box, wire connections extending through said inlet into the interior of said box, a plurality of outlets, a hanger extending out of said box, a pair of posts adjacent said inlet, said outlets comprising individual electrical sockets extending through the wall of said box at a plurality of locations and having respective socket portions opening outwardly of said box, said wire connections extending from said inlet around respective ones of said post and being connected to said electrical sockets, said box being hangable at an elevated location so that a plurality of light strings may be distributed therefrom.

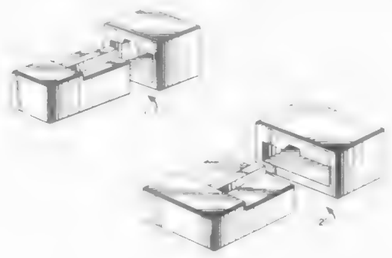
4,764,129

ELECTRICAL CONNECTOR ASSEMBLIES

Brian Jones, and Graeme S. Allan, both of Solihull, England, assignors to British Telecommunications plc, United Kingdom

Filed Oct. 8, 1985, Ser. No. 785,557
Claims priority, application United Kingdom, Oct. 9, 1984, 8424947
Int. Cl.[4] H01R *13/69*
U.S. Cl. 439—677 8 Claims

1. A series of electrical connector assemblies, each assembly comprising a socket and a corresponding plug, one member of each assembly having a single coding key, the other member of said assembly having a single keyway which is complementary to said single coding key; each plug having an engageable portion for engaging in a predetermined direction within a recess formed in said corresponding socket with said single coding key in mating engagement with said single keyway, said engageable portion comprising a first pair of opposed plug sidewalls and a second pair of opposed plug sidewalls disposed transversely to said first pair of plug sidewalls, said first pair and said second pair of sidewalls extending in said predetermined direction, said recess comprising a first pair of opposed recess sidewalls and a second pair of opposed recess sidewalls disposed transversely to said first pair of recess sidewalls, the



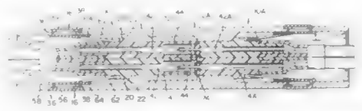
width of said engageable portions and said corresponding recesses, as measured between said first pairs of sidewalls, being different for each of the assemblies of the series, wherein the heights of said engageable portions and recesses as measured between said second sidewalls are dimensioned to prevent insertion of a given plug of the series into any socket of the series having a recess width as measured between said first pair of recess sidewalls which is greater than the width between said first plug sidewalls of said given plug, the height of said engageable portion of said given plug being greater than the height of said any socket having such greater width, whereby inadvertent incorrect connection of plug and socket terminals is precluded by preventing mismatches between non-corresponding plugs and sockets in the series.

4,764,130

ELECTRICAL CONNECTOR HAVING TERMINAL HOUSING RETAINING MEMBER

Thomas J. DiClemente, Hersbey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 7, 1983, Ser. No. 464,460
Int. Cl.[4] H01R *13/508*
U.S. Cl. 439—686 11 Claims



1. An electrical connector of the type comprising a connector housing having a passageway extending therethrough and defining an inside surface of said connector housing, a terminal housing having electrical terminals disposed therein positioned in said passageway against a stop surface in the passageway, said connector housing having an aperture in communication with the passageway and including a seat area, a retaining member having a transverse section disposed in said aperture in engagement with the seat area, and retaining leg members extending outwardly from the transverse section forwardly toward a front end of the passageway, and inwardly toward a

longitudinal axis of the passageway in engagement with a transverse rib on the terminal housing, characterized in that

said transverse section having spring legs extending outwardly from said transverse section in a first direction and in engagement with first portions of said inside surface of the connector housing adjacent the aperture and projections extending outwardly from said transverse section in a second opposition direction and in engagement with second portions of said inside surface of the connector housing adjacent the aperture, whereby the combination of said spring legs and said projections retain the retaining member in position in the aperture.

4,764,131

ELECTRICAL CONNECTOR

Ernest L. Beinhaur, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 13, 1987, Ser. No. 72,815
Int. Cl.[4] H01R *4/44*
U.S. Cl. 439—781 13 Claims



1. An electrical connector for electrically connecting two cables, comprising:

body means having space means opening outwardly and groove means located on each side of said space means;

cap means for being assembled to said body means, said cap means having spaced-apart legs joined at one end to define a section adapted to be slidingly disposed in said space means and a pair of independent arm means each attached to a respective free end of said legs to laterally extend over said groove means to cooperate therewith to confine cables therebetween; and

securing means for securing said body and cap means together.

4,764,132

PACEMAKER CONNECTOR BLOCK FOR PROXIMAL RING ELECTRODE

William H. Stutz, Jr., Burbank, Calif., assignor to Siemens-Pacesetter, Inc., Sylmar, Calif.

Continuation of Ser. No. 845,288, Mar. 28, 1986, abandoned.
This application Jun. 3, 1987, Ser. No. 58,684
Int. Cl.[4] H01R *4/36*
U.S. Cl. 439—810 5 Claims

1. A pacemaker connector block assembly for use with an implantable pacemaker and an implantable bipolar pacemaker lead; said bipolar pacemaker lead having a proximal end that includes at least two spaced-apart electrodes, a first of which is substantially non-deformable when subjected to a holding force, and a second of which is easily deformable when subjected to a holding force of the same magnitude as that applied to the first electrode, said pacemaker having electrical circuits therein to which the first and second proximal electrodes are to be electrically connected, said connector block assembly comprising:

a receiving channel for receiving the proximal end of said bipolar pacemaker lead, including said first and second spaced-apart electrodes;

first contact means within said receiving channel for applying a first holding force to said first electrode and for maintaining electrical contact therewith;

second contact means within said receiving channel for applying a second holding force to said second electrode and for maintaining electrical contact therewith, said second contact means including force limiting means internal to said connector block assembly for limiting the



amount of the second holding force that can be applied to said second electrode to a value that prevents deformation of said second electrode;

means for electrically connecting said first and second contact means with the electrical circuits within said pacemaker; and

sealing means for preventing body fluids from contacting said first and second contact means when the proximal end of said bipolar pacemaker lead is inserted into said receiving channel;

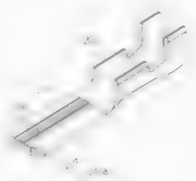
whereby the proximal end of said bipolar pacing lead may be removably and sealably inserted into said connector block assembly.

4,764,133

MALE TERMINAL FOR ELECTRICAL CONNECTION

Tomohisa Kaneko, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Feb. 19, 1987, Ser. No. 16,328
Claims priority, application Japan, Feb. 19, 1986, 61-21555[U]
Int. Cl.[4] H01R *13/02*
U.S. Cl. 439—889 8 Claims



1. A male terminal for electrical connection adapted to fit a female terminal for electrical connection, said female terminal having a tab receptacle which includes a base plate portion and two protruding contact surfaces formed by bending both sides of the base plate portion inwardly and semicircularly, comprising:

a wire connection section; and

an electrical contacting section connected to said wire connection section, said electrical contacting section having at least a longitudinally extending tab to be fitted to the tab receptacle of the female terminal, the tab having a thickness which is larger than the width of the tab receptacle which is measured between each of the protruding contacting surfaces and the base plate portion, and said tab having an upper side and two parallel recesses being

VOL 1093 ISS 3 AG 16 1988 UMI

formed thereon, and said recesses extending from a tip of the tab toward the direction of the insertion of the tab into the female terminal and being adapted to engage with said protruding contact surfaces of the tab receptacle, respectively, when fitted, whereby said tab is tightly fitted to the tab receptacle by adjusting the depth of each recess so as to fit the thickness of the tab at the recess to the width of the tab receptacle.

4,764,134

TRIMMING DEVICE FOR MARINE PROPULSION UNIT

Eifu Watanabe, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Dec. 23, 1986, Ser. No. 945,663
Claims priority, application Japan, Dec. 27, 1985, 60-294872
Int. Cl.⁴ B63H *21/26*
U.S. Cl. 440—53 **22 Claims**



1. In a trim arrangement for a marine outboard drive member mounted for pivotal movement through a plurality of trim adjusted positions relative to a transom of an associated watercraft, a trim motor fixed relative to the transom and having a reciprocating thrust member adapted to bear against said outboard drive member for effecting pivotal movement of said outboard drive member relative to the transom upon reciprocation of said thrust member, the improvement comprising anti-friction means interposed between said thrust member and said outboard drive member for reducing friction upon reciprocation of said thrust member, said anti-friction means comprising roller means carried by said outboard drive member for transmitting forces between said outboard drive member and said thrust member, said roller means being rotatably journaled relative to said outboard drive member.

4,764,135

MARINE STERN DRIVE OIL COOLING AND CIRCULATING AS WELL AS PUMPING SYSTEM

Daniel F. McCormick, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jun. 17, 1987, Ser. No. 64,197
Int. Cl.⁴ B63H *21/10*
U.S. Cl. 440—83 **7 Claims**

1. A marine stern drive unit (1) for connection to a marine engine (4) having an output and with said unit comprising, in combination:

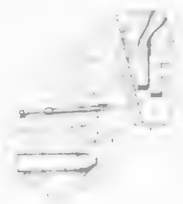
(a) a generally vertical stern drive housing (6) forming an upper gear case (7), a lower gear case (8), and a propeller housing (9) mounting a propeller (10),

(b) a vertically extending elongated water chamber (33) disposed in said stern drive housing and with said water chamber having lower water means (34) in said lower gear case, and having upper water discharge means (35) in said upper gear case for providing cooling water to the engine,

(c) lubrication-requiring drive elements (5, 11-19) disposed within said stern drive housing for connecting a said engine output with said propeller,

(d) and an oil containing closed loop extending between the upper and lower portions of said stern drive housing and with said loop communicating with said drive elements, said loop including:

(1) first passage means (21, 23, 24) extending upwardly within said stern drive housing and communicating between said propeller housing and said upper gear case,



(2) and return passage means (27, 28) extending downwardly within and surrounded by said water chamber and communicating from said upper gear case and through said lower gear case to said propeller housing to thereby form a heat exchanger means between the water in said water chamber and the oil in said return passage means to cool the said oil,

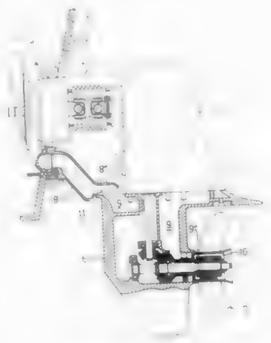
(e) and pump means (36-38) disposed in said closed loop to provide circulation of oil through said return passage means (27, 28).

4,764,136

MARINE DRIVE MEANS

Donald Johansson, Fagelvägen 10, S-138 00 Älta, Sweden

Filed Feb. 4, 1987, Ser. No. 10,853
Int. Cl.⁴ B63H *21/32*
U.S. Cl. 440—89 **7 Claims**



1. Marine drive means comprising a water-cooled internal combustion engine mounted in a boat, a shield mounted on the transom stern of the boat and supporting a universal joint housing and a pinion box connected to said universal joint housing and comprising a propeller arranged to be immersible in water, an exhaust outlet arranged in the propeller, an exhaust piping connected between the engine and the exhaust outlet and carrying off exhaust and cooling water from the engine, said exhaust piping comprising a first part passing from the engine through the shield and associated with a second part passing through the pinion box and ending at the exhaust

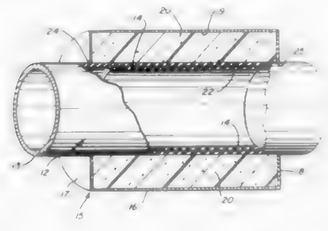
outlet, the connection between the first and the second part of the exhaust piping being open at least partly in order to unload the pressure in the piping and to let out cooling water, the size of the opening between the first and the second part of the exhaust piping being such that substantially all cooling water leaves the exhaust piping through the opening, and the connection between the first and the second part of the exhaust piping being formed in that the first part of the exhaust piping terminates in a substantially horizontal pipe section where at least one part of the lower wall portion of this pipe section is removed and that the second part of the exhaust piping at the connection to the first part is formed as a pipe section which is substantially upwardly open towards the remaining upper part of the first horizontal pipe section.

4,764,137

FLOATABLE DREDGE HOSE

Frank Schulte, Box 26, Mayo, Fla. 32066

Filed Nov. 13, 1986, Ser. No. 929,824
Int. Cl.⁴ B63B *21/52;* **F16L** *55/00*
U.S. Cl. 441—133 **16 Claims**



1. A floatable hose comprising a generally cylindrical material conveying conduit having a generally pliable side wall, said conduit including a series of alternating spaced flexible and rigid sections, generally annular reinforcing means positioned at each of said rigid sections, each of said rigid sections being formed by a plurality of float means mounted in spaced relationship with respect to one another along said conduit, said spaced relationship being sufficient to permit the hose to be deployed in relatively compact arcuate configurations while simultaneously insuring said flexible sections of said conduit are open to permit material to flow therethrough, each of said float means being in fixed relationship to said conduit in surrouding and generally coextensive relationship with said reinforcing means, each of said float means having first and second ends and a generally cylindrical passageway therethrough between said first and second ends, said passageways having a diameter substantially equal to the diameter of said conduit whereby said conduit is reinforced and rigidly supported at said spaced sections and is relatively flexible therebetween.

4,764,138

METHOD OF MANUFACTURING A COLOR TELEVISION DISPLAY TUBE AND COLOR TELEVISION DISPLAY TUBE MANUFACTURED ACCORDING TO THE METHOD

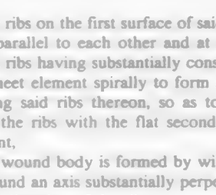
Gijsbertus Bakker, Eindhoven, Netherlands, assignor to U.S. PHilips Corporation, New York, N.Y.

Continuation of Ser. No. 94,609, Nov. 15, 1979, abandoned. This application Apr. 12, 1982, Ser. No. 367,536
Claims priority, application Netherlands, Dec. 27, 1978, 7812543
Int. Cl.⁴ H01J *9/26*
U.S. Cl. 445—3 **1 Claim**

1. A method for establishing the relative positions of a funnel and at least one other component of a color television display tube during assembly of the components, each including a centrally located axis which must pass through a deflection center defined by a deflection device mounted on the tube after assembly of the components, said method comprising the steps of:

(a) attaching a centering device to the funnel at the location where the deflection device will be subsequently mounted,

said centering device being suspended in a frame for determining the location of a reference point coinciding with



the deflection center and being suspended in the frame so as to be rotatable about at least one axis passing through the reference point, said frame including means for receiving another one of the components for determining the location of the centrally located axis of said other component; and

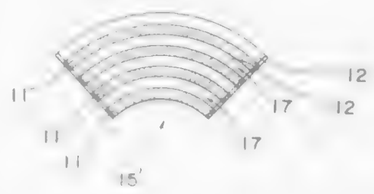
(b) positioning another one of the components relative to the funnel such that the centrally located axis thereof passes through the reference point.

4,764,139

PRODUCTION METHOD FOR CHANNEL PLATE

Michihiro Murata, and Hiroshi Yamamoto, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Oct. 9, 1986, Ser. No. 916,826
Claims priority, application Japan, Oct. 11, 1985, 60-227095
Int. Cl.⁴ H01J *9/12*
U.S. Cl. 445—49 **2 Claims**



1. A production method for a channel plate comprising the following steps:

forming a sheet element having first and second surfaces using a material having a secondary electron emission yield,

forming linear ribs on the first surface of said sheet element which are parallel to each other and at an equal pitch, each of said ribs having substantially constant width,

at least one sheet element spirally to form a wound body, after forming said ribs thereon, so as to contact outer surfaces of the ribs with the flat second surface of the sheet element,

in which said wound body is formed by winding the sheet element around an axis substantially perpendicular to the longitudinal direction of the ribs;

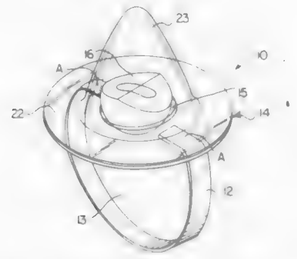
burning or heating the wound body thus formed so as to adhere said outer surfaces of the ribs on the sheet element to the flat second surface thereof, and

forming electrodes on both end surfaces of a block formed

VOL 1093 ISS 3 AG 16 1988 UMI

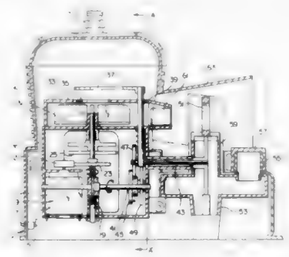
from at least a part of the wound body including end surfaces of each linear rib.

4,764,140
MEXICAN JUMPING BEAN TOY
Nelson Wood, 20 Dean Rd., Brookline, Mass. 02146
Filed Nov. 26, 1986, Ser. No. 935,008
Int. Cl.[4] A44C *9/00*
U.S. Cl. 446—14 8 Claims



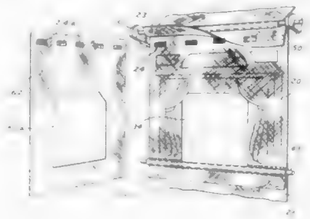
1. A Mexican jumping bean ring comprising:
a main finger engaging band;
a container affixed to said main finger engaging band having an area cut out from the base of said container facing the finger of the wearer; and
a Mexican jumping bean within said container.

4,764,141
TOY BUBBLE BLOWING MACHINE
Bruce M. D'Andrade, 3 Ten Eyck Road, Whitehouse Sta., N.J. [illegible]
Filed Dec. 28, 1987, Ser. No. 138,921
Int. Cl.[4] A63H *33/28*
U.S. Cl. 446—16 26 Claims



1. A toy bubble blowing machine having a housing which forms at least part of a toy, which comprises:
(a) a drive axle;
(b) a motive power source connected to and capable of driving said drive axle;
(c) a bubble wand having a plurality of wand heads with bubble forming orifices and having a central hub, said wand heads being arranged symmetrically and concentrically about said hub;
(d) a hub axle extending from said hub;
(e) a Geneva gear mechanism, having a first gear which is continuously rotatable, and a second gear which is a step gear and is rotatable through an arc intermittently, said first gear and second gear being interconnected and said first gear being driven by said drive axle and said second gear being located on said hub axle so as to permit said motive power source to drive said bubble wand intermittently and to sequentially rotate each of said wand heads through a bubble liquid source position and through a bubble blowing position;
(f) a bubble liquid source located below said hub to permit rotation of said wand heads through it;
(g) an impeller capable of blowing adequate air through one of said wand heads to create bubbles, said impeller being drivably connected to and driven by said motive power source;
(h) a shutter device having a first position to block said air movement created by said impeller from impinging on said wand beads while said wand is in motion, and a second position to permit said air movement to impinge upon said wand head to make bubbles while said wand is not in motion.

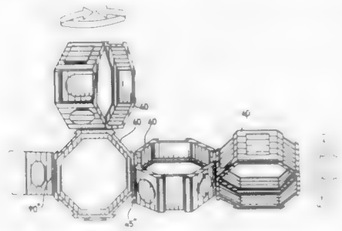
4,764,142
PORTABLE STAGE STRUCTURE AND KIT
Marlene J. Griffith, 6019 Creek Ridge Ct., Minnetonka, Minn. 55345, and Mary E. Heinlein, 721 W. 96th St., Chaska, Minn. 55318
Filed Jun. 8, 1987, Ser. No. 59,747
Int. Cl.[4] A63J *19/00, 1/02;* A63H *33/00;* E04H *15/04*
U.S. Cl. 446—82 4 Claims



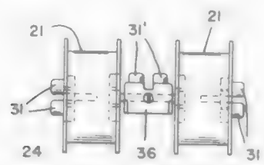
1. A portable stage structure, having in combination
an elongated sheet member having top and bottom edge portions,
an uppermost portion of said sheet member forming a canopy,
an intermediate portion of said sheet member forming a stage front,
transverse stiffening members disposed respectively across the top and bottom edge portions of said sheet member and across the top of said intermediate portion,
holding means spaced across said sheet member adjacent the top of said intermediate portion,
a panel forming a stage front overlying said intermediate portion of said sheet member depicting a stage front scene, and
means removably securing said panel to said holding means.

4,764,143
ASSEMBLY TOYS FOR JOINING CYLINDRICAL OBJECTS
Asher Gat, Givat Shmuel, and Daniel Low, Moliver 24, Rishon LeZion, both of Israel, assignors to Daniel Low, Rishon LeZion, Israel
Filed Mar. 14, 1986, Ser. No. 839,624
Claims priority, application Israel, Sep. 19, 1985, 76426
Int. Cl.[4] A63H *33/12, 33/06, 33/08*
U.S. Cl. 446—102 7 Claims

1. An assembly toy comprising:
a plurality of devices for removably connecting a plurality of cylindrical objects, each device including means for coupling to a cylindrical object, each cylindrical object having a longitudinal axis, and means for removably coupling each device to another such device and wherein said means for removably coupling comprises a first engagement element and second and third engagement elements, said second engagement element being arranged for rotatable locking engagement with a first engagement element on another such device, said rotatable locking being with respect to a rotation axis which is perpendicular to the longitudinal axes of adjacent cylindrical objects, and said third engagement element being arranged for non-rotatable locking engagement with a first engagement element on another such device in any one of a plurality of predetermined angular relationships with respect to adjacent longitudinal axes.



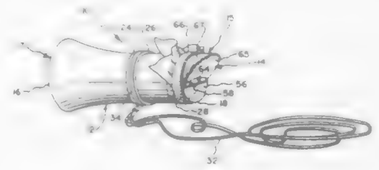
4,764,144
ROTATABLE ASSEMBLIES FOR INTERCONNECTING BUILDING BLOCKS
Ronald L. Lyman, Rancho Cordova, Calif., assignor to Fantasy Toys, Inc., Fair Oaks, Calif.
Filed Aug. 4, 1986, Ser. No. 892,277
Int. Cl.[4] A63H *33/04*
U.S. Cl. 446—128 19 Claims



1. A rotatable assembly for building blocks, including a wheel having a peripheral annular cylindrical surface and opposed end faces, a pivot shaft extending fixedly from one end face of said wheel and disposed coaxially with said cylindrical surface, and a bore extending into the other, opposed end face and dimensioned to receive a pivo shaft of another, like-formed wheel, said bore being disposed coaxially with said pivot shaft ,and interconnection means disposed about said bore in said other end face for joining said other end face to a corresponding end face of a like-formed wheel in rotationally fixed fashion with the pivot shafts of the joined wheels extending outward in opposed, coaxial fashion.

4,764,145
WILDLIFE CALL
Richard C. Kirby, 6426 W. Quaker Rd., Orchard Park, N.Y. 14127
Filed Jul. 3, 1986, Ser. No. 881,616
Int. Cl.[4] A63H *33/40, 5/00;* G01D *7/00*
U.S. Cl. 446—208 23 Claims

20. In a wildlife call including a unitary elongated hollow body in the form of a tube having a longitudinal axis, a sound-escape end and an open mouthpiece defining a mouthpiece opening directed out of the end of the tube opposite the sound-escape end, said tube being open throughout from said mouthpiece to said sound-escape end and a resonating membrane associated with the mouthpiece, the improvement characterized in that:
the mouthpiece of the call body includes means defining an arcuate tipped head portion protruding generally axially of the mouthpiece so as to be a linear extension of the wall of said tube and so that a tip of said head portion is directed generally opposite the sound-escape end, said head portion-defining means including a boundary edge which generally bounds a substantial portion of the arcuate tipped head portion of the mouthpiece when the mouthpiece is viewed endwise and theretoward; and
the resonating membrane operatively covers only a portion of and extends across the boundary edge so as to span a major section of the arcuate tipped head portion bounded by the boundary edge, to define a free edge of the membrane extending across the mouthpiece and to be generally arranged in an acute angular relationship with the longitudinal axis of the tube, said free edge of the membrane cooperating with the portion of the boundary edge left uncovered by the membrane to define opposing sides of said mouthpiece opening, said membrane being arranged in a relationship with said tube of the call so that the free edge of the membrane is directed generally opposite the tip of said head portion and so that when the tipped head portion is operatively positioned within the mouth of a caller for use with the head portion being overlain by a lip of the caller and the resonating membrane being controllable by the other lip of the caller, the free edge of the membrane is directed generally away from the caller's mouth and the caller is free to manipulate the position of his lip in relation to the resonating membrane during use of the call.



4,764,146
TOY PUPPY PICKUP TRUCK HAVING DOG HOUSE
Robert T. Auer, East Stroudsburg, Pa., and Richard L. Keats, Sands Point, N.Y., assignors to Buddy L Corporation, New York, N.Y.
Filed Apr. 27, 1987, Ser. No. 43,481
Int. Cl.[4] A63H *13/00, 17/06, 17/26;* A45C *13/10*
U.S. Cl. 446—279 7 Claims



1. A toy vehicle comprising:

VOL 1093 ISS 3 AG 16 1988 UMI

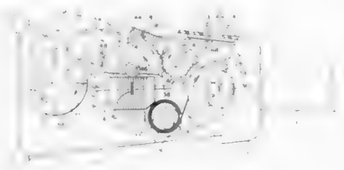
A. a chassis supporting a front set of wheels, a rear set of wheels and a rear flat bed;
B. at least one miniature dog house mounted on the flat bed, said dog house having parallel side walls at right angles to a longitudinal axis of the vehicle, a back wall parallel to this axis, and a roof hinged to the back wall and having a front wall depending from a front end of the roof whereby when the roof is swung open, the front wall is raised therewith, said front wall having an arched opening therein defining the apparent entry to the dog house:
C. a miniature toy puppy occupying the dog house, the puppy having a head projecting from said entry, the puppy having a body so proportioned that it cannot pass thorough the entry, whereby to remove the puppy from the dog house one must first lift the roof; and
D. temporary protective means to discourage an unauthorized person from lifting the roof to remove the puppy, said protective means being constituted by a latching lug depending from the roof and having a slot therein in alignment with holes in said side walls, and a pin which is insertable into the holes and passes through the slot, the tip end of the pin going into the hole in its related side wall, the other end of the pin terminating in a stop which engages the exterior of the rear side wall and is joined to a knob.

4,764,147

TOY FRYING PAN

David G. Baker, Elma, and Craig McElhaney, East Aurora, both of N.Y., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Oct. 17, 1986, Ser. No. 920,859
Int. Cl.[4] A63H *33/00, 5/00*
U.S. Cl. 446—397 3 Claims



1. A toy frying pan for simulating a real frying pan in the process of frying bacon of the like comprising:
a support member;
motor means mounted on the support member;
a driven gear coupled to the motor means and mounted for movement on the support member; and
a noise making means comprising a base layer secured to the driven gear having a multiplicity of outwardly extending flexible filaments and a plurality of upstanding flexible filaments mounted on the support member with the free ends thereof in rubbing engagement with the flexible filaments on the driven gear for making a noise simulating frying bacon when the driven gear is driven by the motor means.

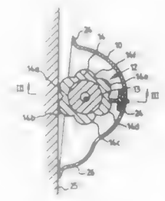
4,764,148

TOY ADAPTED TO CRAWL DOWN A VERTICAL SURFACE

Tak-ko Wong, Hong Kong, Hong Kong, assignor to T. K. Wong & Associates Limited, Hong Kong

Filed May 1, 1987, Ser. No. 45,619
Claims priority, application United Kingdom, Oct. 13, 1986, 8624494
Int. Cl.[4] A63H *17/00, 11/04*
U.S. Cl. 446—431 25 Claims

1. A toy comprising a shell and at least one wheel having a circumferential surface and supported to rotate relative to the shell, and a plurality of lobes angularly spaced and circumferentially and circularly extending around the wheel and projecting axially therefrom, each of the lobes having an arcuate surface with a curvature noticeably greater than that of a



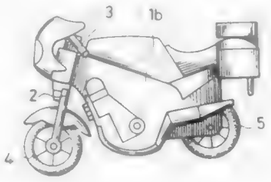
national circle enclosing the lobes, each of the lobes being constituted of a body formed of resilient material and the surfaces of the lobes comprising a sticky material.

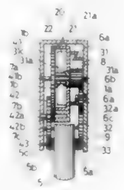
4,764,149

SPRING DRIVEN TWO-WHEEL TOY VEHICLE

Hitoshi Yoneyama, Saitama, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 921,317, Oct. 21, 1986, abandoned. This application Sep. 15, 1987, Ser. No. 97,663
Claims priority, application Japan, Oct. 28, 1985, 60-241012[U]; Oct. 28, 1985, 60-165433; Oct. 28, 1985, 60-165434
Int. Cl.[4] A63H *17/21, 29/24*
U.S. Cl. 446—440 5 Claims





1. A toy vehicle comprising:
a frame having a longitudinal plane therethrough;
a drive axle rotatably mounted on the frame, perpendicular to the longitudinal plane;
a drive wheel, affixed to the axle, disposed within the longitudinal plane;
a drive unit centrally disposed along the longitudinal plane;
a drive shaft extending through both sides of the drive unit perpendicular to the longitudinal plane and parallel to the drive axle;
a first gear mechanism disposed on one side of the longitudinal plane to transmit power from the drive to the drive axle;
a second gear mechanism disposed on the other side of the longitudinal, plane to transmit power from the drive axle to the drive; and

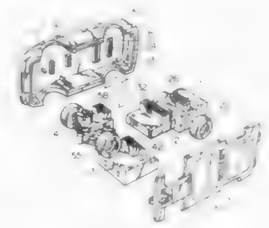
a steered wheel rotatably affixed to the frame.

4,764,150

RUNNING TOY

Shigeo Uchino, Tokyo, Japan, assignor to Kabushiki Kaisha Uchino Shoten, Tokyo, Japan

Filed Apr. 30, 1987, Ser. No. 44,980
Int. Cl.[4] A63H *30/04, 17/00*
U.S. Cl. 446—456 9 Claims



1. A self-running toy, comprising:
electronic control unit means;
drive unit means responsive to said electronic control unit means for driving the toy;
steering unit means responsive to said electronic control unit means for steering the toy;
power supply housing unit means formed to accomodate a power supply for powering the toy;
a chassis detachably supporting all of said unit means;
means for protecting all of said unit means and including a body housing all of said unit means on said chassis; and
connecting means for detachably connecting each of said unit means to said body, each of said unit means being formed as a separate block, said connecting means including a plurality of interengaging pairs of mechanical members and of electrical members, said interengaging pairs being arranged between each of said unit means and said body, said mechanical members detachably mating with each other, said electrical members electrically connecting with each other when said mechanical members detachably mate with each other.

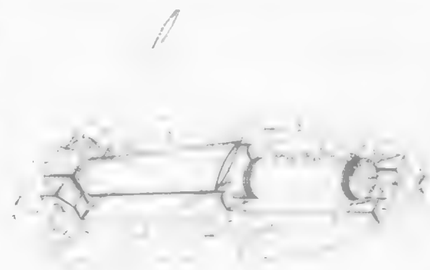
4,764,151

PIVOTABLE COIN LOADING APPARATUS

Douglas E. Sandhage, 9 Sandhage Dr., Pearl River, N.Y. 10965

Filed Sep. 18, 1986, Ser. No. 908,751
Int. Cl.[4] G07D *9/00*
U.S. Cl. 453—59 10 Claims

1. A coin loader for laoding a stack of coins into a coin wrapper comprising;
a base having a mounting end and a stacking end,
stacking means disposed in the base for receiving a stack of coins at the stacking end thereof, including an inclined trough, so that the mounting end is elevated with respect to the stacking end, said trough having a diameter slightly larger than the coin to be loaded;
two receiving walls, said receiving walls being secured to the side walls of the trough, one at each side of the trough at the elevated end of the trough, spaced apart a distance less than the diameter of the wrapper, said receiving walls keeping said wrapper open when said wrapper is in a loading position;
a stop wall affixed at the stacking end; and
pivotable mounting means for receiving said coin wrapper at the mounting end of the base pivotably mounted with respect to said base including a first upright and a second upright, said first and second uprights being secured to said base in facing relationship to each other, a pin, said pin passing through said first upright and second upright, a block pivotably supported about the pin and a plug mounted on said block, said plug extending into said coin



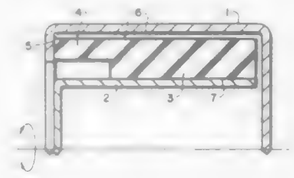
wrapper and positioning the coins in the wrapper so that a space is left at each end of said wrapper sufficient to allow crimping of said wrapper.

4,764,152

RUBBER COUPLING

Benno M. Jörg, Weinheim; Klaus Kurr, Weinheim-Hohensachsen, and Heinz Seifert, Landenbach, all of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim/-Bergstr., Fed. Rep. of Germany

Continuation of Ser. No. 864,744, May 13, 1986, abandoned, which is a continuation of Ser. No. 651,875, Sep. 18, 1984, abandoned. This application Jun. 25, 1987, Ser. No. 67,403
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1983, 3334881
Int. Cl.[4] F16D *3/76;* F16C *27/00*
U.S. Cl. 464—89 18 Claims



1. A guiding, resilient coupling comprising, in combination:
(a) two machine parts arranged in adjacent relationship and having respective, adjacent, facing, spaced apart surfaces defining a gap therebetween, said machine parts being movable relative to eaoh other in at least two orthogonal directions, one of which is substantially transverse to the average longitudinal direction of said gap; and
(b) means for coupling said machine parts together comprising:
(1) a resilient body arranged in said gap and having a profile substantially matching the cross-sectional shape of, and substantially filling at least a portion of, said gap, thereby defining external surfaces which face at least a portion of the gap-facing surfaces of said machine parts;
(2) at least one resilient projection integral with said resilient body and jutting out from said profile of said resilient body;
(3) adhesive joining means comprising adhesive on a surface of each of said resilient body and said resilient projection, adhesively joining each such surface to a respective one of said machine parts;

VOL 1093 ISS 3 AG 16 1988 UMI

(4) the facing surface of said resilient body which is not joined to a respective one of said machine parts being non-integrally, intimately adjacent to the gap-facing surface of such machine part, thereby providing guidance in at least one of said orthogonal directions;

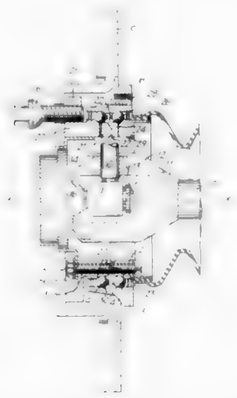
whereby the external surfaces of said resilient body within said gap which are not joined to a respective, facing surface of a machine part by said adhesive joining means form guiding sufaces for such machine part and wherein said resilient body serves as a buffer against relative movement of said two machine parts in said one direction without the imposition of any substantial stress due to relative movement of said machine parts in another, orthogonal direction.

4,764,153

BEARING ASSEMBLY FOR THE DRIVEN WHEELS OF A MOTOR VEHICLE HAVING A SPLIT INNER BEARING RING

Werner Jacob, Briandring 28, 6000 Frankfurt/M. 70, Fed. Rep. of Germany

Filed Mar. 16, 1987, Ser. No. 25,877
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1986, 3608728
Int. Cl.[4] B60B *27/02*; F16C *33/58*
U.S. Cl. 464—111 8 Claims



1. A bearing assembly for the driven wheels of a motor vehicle comprising:

wheel bearing arrangement including an inner bearing ring, an outer bearing ring and dual-row ball bearings interposed therebetween;

a constant velocity universal joint in torque transmitting engagement with said wheel bearing arrangement;

said inner bearing ring being formed with two races in two parts, each respectively defining one of said races for one of the rows of said dual-row ball bearings, one of said inner bearing ring parts being formed with flange means for connection thereto of a motor vehicle wheel;

said inner bearing ring consisting essentially of a member initially fabricated in one piece with dimensions so as to be ready for installation in said bearing assembly and having been subsequently ruptured to form a split by the application of pressure, thereby to form said inner bearing ring into said two parts with said split being arranged between said two races; and

recess means formed between said two parts of said inner bearing ring for engaging therein a part of said universal joint to effect said torque transmitting engagement;

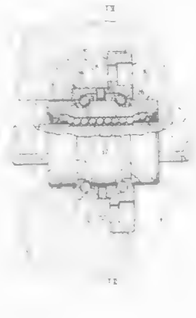
said two parts of said inner bearing ring being clamped together in an assembled state by clamping means, with said split therebetween extending through said recess means.

4,764,154

UNLIMITED SLIDING BALL SPLINE ASSEMBLY HAVING A SUPPORT BEARING

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-Chome, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 721,124, Apr. 8, 1985, Pat. No. 4,620,351, which is a continuation of Ser. No. 465,926, Feb. 14, 1983, abandoned. This application Jul. 24, 1986, Ser. No. 888,898
Claims priority, application Japan, Feb. 13, 1982, 57-20660; Feb. 13, 1982, 57-20659; Feb. 16, 1982, 57-22032
Int. Cl.[4] F16D *3/06*
U.S. Cl. 464—168 5 Claims



1. An unlimited sliding ball spline having a spline bearing, comprising:

an outer cylinder;

a ball retainer provided on an inner side of said outer cylinder;

a plurality of balls held by said ball retainer in a plurality of unlimited passages formed on the inner side of said outer cylinder, such that said balls can be rolled in said passages;

a spline shaft supported on said plurality of balls in said spline bearing, said spline shaft and said outer cylinder being linearly movable relative to one another in the axial direction and not movable relative to one another in the rotational direction, such that torque is transmitted from one to the other in rotational movement; and

a circumferential support bearing disposed coaxially around said outer cylinder, said support bearing including,

a pair of angular contact bearings, each contact bearing having an inner ball-rolling groove disposed on an inner peripheral surface thereof opposite a corresponding outer ball-rolling groove disposed on an outer peripheral surface of said outer cylinder, said ball-rolling grooves extending in the circumferential direction, and a plurality of balls disposed between said inner and outer ball-rolling grooves for rolling therebetween, and

a pre-pressure regulating spacer interposed between said angular contact bearings for regulating a predetermined level of pre-pressure applied thereto, and

wherein one of said angular contact bearings has a flange portion on an outer race thereof for mounting said support bearing of said ball spline on a house.

4,764,155

METHOD OF CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION

Haruyoshi Kumura, Yokohama; Sigeaki Yamamuro, Zushi; Hiroyuki Hirano, Yokohama; Keiju Abo, Yokosuka, and Masaki Nakano, Kawasaki, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 4, 1985, Ser. No. 804,510
Claims priority, application Japan, Dec. 6, 1984, 59-256565
Int. Cl.[4] F16H *11/06*
U.S. Cl. 474—12 7 Claims



1. A method of controlling a continuously variable transmission for a motor vehicle having an engine that operates subject to a varying load, the continuously variable transmission having an input shaft drivingly connected to the engine, the method comprising the steps of:

detecting the load and generating a load indicative signal indicative of the load detected;

comparing said load indicative signal to a predetermined value;

determining an actual value of a parameter which is related to the actual reduction ratio of the continuously variable transmission and generating an actual value indicative signal;

generating a first target value indicative signal indicative of a target value of said parameter, said first target value being variable in a first pattern in correspondence with said load indicative signal;

controlling a shift in reduction ratio in the continuously variable transmission in such a manner as to bring said actual value indicative signal into correspondence with said first target value indicative signal when said load indicative signal is below said predetermined value;

generating a second target value indicative signal indicative of a second target value of said parameter; and

keeping said actual reduction ratio of the continuously variable transmission substantially at a predetermined constant reduction ratio when the load indicative signal is greater than said predetermined value by controlling the reduction ratio so as to bring said actual value indicative signal into correspondence with said second target value.

4,764,156

SYSTEM FOR CONTROLLING TRANSMISSION RATIO OF A CONTINUOUSLY VARIABLE TRANSMISSION FOR A MOTOR VEHICLE

Hiroya Ohkumo, Koganei, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1986, Ser. No. 944,244
Claims priority, application Japan, Dec. 19, 1985, 60-286625
Int. Cl.[4] F16H *11/02*
U.S. Cl. 474—28 17 Claims



1. A control system for a continuously variable transmission for transmitting the power of an internal combustion engine to driving wheels of a motor vehicle through a clutch, having a drive pulley including a hydraulically shiftable disc and a first hydraulic cylinder for shifting the disc, a driven pulley including a hydraulically shiftable disc and a second hydraulic cylinder for operating the disc of the driven pulley, a belt engaged with both pulleys, a transmission ratio control valve having ports and a spool, a hydraulic circuit having a pump for supplying oil to the first hydraulic cylinder through the transmission ratio control valve, the system comprising:

first means for shifting the spool of the transmission ratio control valve in dependency on operating conditions of the engine so as to provide a transmission ratio;

a drive pulley speed sensor for producing a drive pulley speed signal dependent on the speed of the drive pulley;

a driven pulley speed sensor for producing a driven pulley speed signal dependent on the speed of the driven pulley;

first abnormality detecting means for producing a first abnormality signal when the drive pulley speed signal represents an abnormal value compared with the value of the drive pulley speed signal;

second abnormality detecting means for producing a second abnormality signal when the driven pulley speed signal represents an abnormal value compared with the value of the drive pulley speed signal;

second means responsive to the first abnormality signal for producing a fail-safe transmission ratio signal;

said first means being responsive to the fail-safe transmission ratio signal for controlling the transmission ratio dependent on the fail-safe transmission ratio signal;

third means responsive to the second abnormality signal for producing a fail-safe signal;

said first means being responsive to the fail-safe signal for controlling the transmission ratio dependent on the fail-safe signal.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,157

TENSIONING DEVICE FOR DRIVE BELT ASSEMBLIES

Manfred Brandenstein, Eussenheim; Ludwig Edelmann, Sulzthal; Wolfgang Friedrich, Schweinfurt; Roland Haas, Hofheim; Gerhard Herrmann, Schweinfurt, and Rudiger Hans, Niederwerrn, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Apr. 9, 1987, Ser. No. 36,349

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1986, 3612064

Int. Cl.[4] F16H 7/12

U.S. Cl. 474—135 9 Claims





1. Tensioning mechanism for drive belts, consisting of a support arm (1), a rotating tensioning roll (2) mounted on the arm, a pivot bearing (8) on the support arm (1) a certain distance away from said tensioning roll and which is attached, together with a mounting plate (4) by means of a fastener (9) to a machine block (10), biasing means (6) operable to urge the tensioning roll (2) away from the mounting plate (4) and toward the drive belt (3), wherein, in the area of the pivot bearing (8), the mounting plate (4) has, in an axial direction of the bearing, a fork-shaped cross section with shank sections (17,19) which support the pivot bearing (8) on both siees, radially and axially, by way of the fastener (9).

4,764,158

POWER TRANSMISSION CHAIN

Shoichi Honda, Tokyo; Masahiro Nagae, and Hiroshi Fukumoto, both of Kaga, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Daido Kogyo Co., Ltd., Kaga, both of, Japan

Filed Nov. 19, 1986, Ser. No. 932,319

Claims priority, application Japan, Nov. 27, 1985, 60-266809; Dec. 25, 1985, 60-290693

Int. Cl.[4] F16G 13/04

U.S. Cl. 474—212 12 Claims

1. A chain to be lapped around a rotational drive member and a driven member for power transmission, said chain consisting of endlessly connected link plate groups each containing a plural number of link plates with a pair of pin-receiving holes and successively connected with adjacent link plate groups, with the respective link plates intermeshed alternately with the link plates of adjacent groups and with a shift of one pitch from the latter, by means of paired rocker pins inserted in said pin-receiving holes in back-to-back relation with each other, wherein:



said paired rocker pins inserted in the pin-receiving holes in the intermeshed link plates are formed in an arcuate shape and spaced from each other by a predetermined distance when the centers of said pin-receiving holes are aligned with each other for permitting inverse flexing movement of said link plate groups.

4,764,159

DOCUMENT FILE

Masuhiro Mitsuyama, 1071, Kinugasa, Wake-cho, Wake-gun, Okayama, Japan

Continuation of Ser. No. 873,773, Jun. 11, 1986, abandoned.

This application Apr. 9, 1987, Ser. No. 37,101

Int. Cl.[4] B31B 41/64, 11/64

U.S. Cl. 493—189 1 Claim



1. A method of manufacturing a document file having a pair

of covers and a plurality of bag-like file elements extending between said pair of covers, said method comprising:

providing each of said covers with a respective auxiliary sheet attached thereto;

stacking one of said pair of covers, a plurality of said bag-like file elements, and the other of said covers one upon another with each of said respective auxiliary sheets disposed adjacent an outermost one of said bag-like file elements;

inserting a mold into respective ones of said file elements and between each of said covers and the auxiliary sheet attached thereto to form a stacked assembly in which each adjacent pair of molds has a pair of opposed surfaces, several of the molds having a said surface thereof comprising a raised portion, and prearranging the molds inserted in the stacked file elements and disposed between said covers and the auxiliary sheets attached thereto such that for every pair of said opposed surfaces one of said pair of opposed surfaces is a said surface comprising a raised portion;

positioning an electric insulator between at least one said adjacent pair of molds;

placing the stacked assembly comprising the one of said covers and the auxiliary sheet attached thereto, the plurality of file elements, the molds inserted and prearranged in the file elements, the other of said covers and the auxiliary sheet attached thereto, and the molds disposed between each of said covers and the auxiliary sheets attached thereto, and the electric insulator positioned between at least one said adjacent pair of molds between a conducting plate and a base plate means and pressing the assembly together; and

applying voltage between the conducting plate and the base plate means for hot sealing said auxiliary sheet attached to said one of the covers, said plurality of file elements, and said auxiliary sheet attached to said other of the covers together along only the raised portions of said several molds.

4,764,160

CUTTING APPARATUS FOR A MACHINE USED FOR MAKING BAGS, POUCHES AND THE LIKE FROM THERMOPLASTIC MATERIAL

Georges Lagain, Enghien-les-Bains, France, assignor to FMC Corporation, Chicago, Ill.

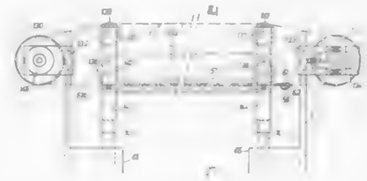
Filed Apr. 16, 1987, Ser. No. 39,043

Claims priority, application France, Apr. 18, 1986, 86 05658

Int. Cl.[4] B31B 1/64

U.S. Cl. 493—194 14 Claims

1. A cutting apparatus for cutting a sheath of thermoplastic material crosswise comprising a frame (1,1) having laterally spaced sides, a pair of timing pulleys (130, 131) journally mounted to the sides with the axes of rotation lying on a fixed horizontal plane vertically spaced from an intermittent trajectory path of the sheath moving intermittently into the cutting apparatus, an endless timing belt (61) looped over the timing pulleys, a cutter blade (56) fixed to an external side of the timing belt, two pairs of laterally spaced upper and lower guide pulleys (135, 136 and 137, 138) engaging the timing belt on opposite internal sides of the timing belt and journally mounted to a pair of laterally spaced vertically movable upright beam members (143, 144) supported on the frame, the guide pulley axes (139, 140 and 141, 142) of the two pairs of upper and lower guide pulleys lying on fixed parallel vertical planes passing through the upright beam members, the horizontal distance between the vertical planes of the guide pulley axes defining a lateral horizontal cutting run for the cutter blade passing across the width of the sheath, the guide pulley axes of the two pairs of upper and lower guide pulleys further lying on vertically spaced parallel horizontal planes having a fixed vertical distance greater than two horizontal parallel planes passing tangent to the timing pulleys, means (134) for laterally moving one of the timing pulleys along the horizontal plane of the axes of rotation for adjusting the tension of the timing belt looped around the timing and guide pulleys, means (146, 145, 147, 148) for intermittently driving one of the timing pulleys in timed relation with the intermittent movement of the sheath for effecting the lateral horizontal cutting run of the cutter blade, means (45, 74) for vertically moving the upright beam members in timed relation with the intermittent movement of the sheath from one vertical position to a second





position for positioning that portion of the timing belt extending along the horizontal cutting run for the cutter blade into the intermittent trajectory path of the sheath, and means for energizing the driving means in timed relation with the intermittent movement of the sheath for moving the cutter blade on the timing belt into a grooved counter-blade (55, 54a) supported on the frame for severing the sheath crosswise therebetween.

4,764,161

GREENHOUSE FILM FOLDING APPARATUS

James H. Davidson, deceased, late of Terre Haute, Ind. (by Ruby E. Davidson, legal representative), and John F. Pollock, Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Filed Dec. 2, 1983, Ser. No. 557,532

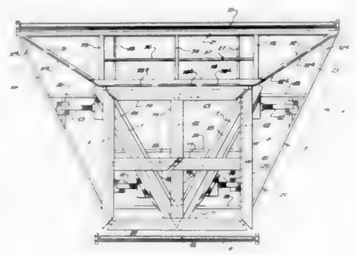
Int. Cl.[4] B31B 1/36

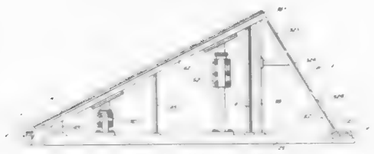
U.S. Cl. 493—248 11 Claims

1. An apparatus for continually folding large sheets of thermoplastic film comprising a trapezoidal former means for receiving a sheet of film to be folded thereover, which former means is relatively wide at one end and which tapers to a relatively narrow width about one-half the width of the relatively wide width and which extends downwardly across a flat plane of a width about the same as the narrower width, a V-shaped member or tucker bar mounted on the trapezoidal former means for receiving and inwardly folding the edges of

VOL 1093 ISS 3 AG 16 1988 UMI

the film to be folded, and a top plane mounted on the trapezoidal former means just above and substantially parallel to the tucker bar for receiving and guiding the central portion of the film which is unfolded thereover.



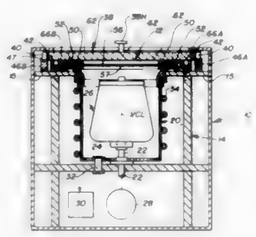


4,764,162

REMOVABLE DOOR SEAL ASSEMBLY FOR A CENTRIFUGE

William A. Romanauskas, Southbury, Conn., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 3, 1986, Ser. No. 926,180
Int. Cl.[4] B04B *7/02*
U.S. Cl. 494—38 9 Claims



1. In a centrifuge instrument of the type having a frame with a top plate having an access opening therein, a door movable with respect to the top plate from a first, open, position to a second, closed, position, with the door in the closed position covering the access opening in the top plate, wherein the improvement comprises:

a pair of guides each having a groove therein, the groove having an upper and a lower guide surface thereon;

a seal support receivable within the groove on each of the guides; and

a seal member mounted to the support, the seal support and the seal thereon being removable from the guides as a unit.

4,764,163

DECANTER PLATE DAM ASSEMBLY WITH POND ADJUSTMENT

John W. Caldwell, Glenside, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Jul. 3, 1986, Ser. No. 864,045
Int. Cl.[4] B04B *3/04, 11/00*
U.S. Cl. 494—6 11 Claims



1. In decanter apparatus for separating liquids from solids from feed comprising a liquids-solids mixture fed into a bowl of said decanter mounted for rotation and including screw means for conveying said solids out a rear portion of said bowl and said liquid out a front portion of said bowl through a plurality of spaced openings in a hub rotating with said bowl, the improvement including a plate dam assembly mounted to said hub over each of said spaced openings, each assembly comprising

an annular retainer having an outer surface, and an inner surface facing said hub,

a circular recess eccentrically disposed in inner surface of said retainer,

a circular plate dam received within said eccentric recess, said dam having at least one weir surface for controlling pond level of said liquid in said rotating bowl,

means for maintaining said weir surface in operable position while said hub is rotating,

means for rotating said retainer around said positioned dam and weir surface to move said weir surface radially inwardly and outwardly while said weir surface remains operably positioned, and

other means for mounting said retainer and plate dam to said hub over said opening.

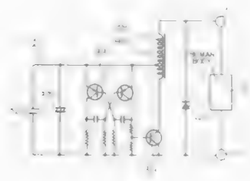
4,764,164

IONTOPHORESIS DEVICE

Minoru Sasaki, Yokohama, Japan, assignor to Kabushiki Kaisya Advance Kaihatsu Kenkyujo, Tokyo, Japan

Continuation of Ser. No. 646,116, Aug. 31, 1984, abandoned. This application Oct. 30, 1985, Ser. No. 792,245
Claims priority, application Japan, Sep. 1, 1983, 58-159076; Mar. 6, 1984, 59-41440; Jul. 23, 1984, 59-151310
Int. Cl.[4] A61M *1/30*
U.S. Cl. 604—20 8 Claims

1. In an iontophoresis device including an electric power source, a working electrode and a counter electrode, the improvement which comprises: said device having a pulse generator means which is driven by said electric power source for producing a therapeutic pulse voltage of high frequency between said working and counter electrode and a shortcircuiting means for shortcircuiting said working and counter electrodes in an intermission period of said therapeutic pulse voltage for a selected duration to depolarize polarized potentials therebetween to a predetermined low level close to a base line, thereby producing iontophoresis by high frequency pulse current without skin irritations.



4,764,165

OPHTHALMIC ASPIRATOR-IRRIGATOR WITH VALVE

Harry G. Reimels, Braintree; David A. Walsh, Waltham, and Michael J. Arsenault, Brant Rock, all of Mass., assignors to Mentor O & O, Inc., Norwell, Mass.

Continuation-in-part of Ser. No. 886,371, Jul. 17, 1986, Pat. No. 4,705,500. This application Jun. 25, 1987, Ser. No. 66,347
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—35 11 Claims



1. An ophthalmic aspirator-irrigator comprising:

(a) a hand-held device;

(b) said device including a cannula having an axial channel and a surrounding annular channel, pressure-differential creating means connected to said axial channel via an aspiration tubing, and drive means operatively connected to said last means for driving the same;

(c) a source of fluid connected via a flexible tube to said annular channel;

(d) foot-operable control means for controlling the operation of said drive means and provided with a pedal, a power source, a circuit connected to said source, and a socket coupled to said circuit;

(e) a flexible power cord having a plug designed to be connected to said socket for coupling power from said power source to said drive means;

(f) a container for enclosing said cannula and said pressure-differential creating means; and

(g) a pressure-differential limiting valve assembly operatively connected between said cannula and said pressure-differential creating means by being spliced into said aspiration tubing, said valve assembly comprising a solid member having a hole in fluid communication with said aspiration tubing and a soft member releasably mated thereto and provided with a plug to seal said hole.

4,764,166

ULTRASONIC AIR-IN-LINE DETECTOR

Wayne Spani, San Diego, Calif., assignor to Fisher Scientific Company, Pittsburgh, Pa.

Filed Aug. 17, 1987, Ser. No. 86,063
Int. Cl.[4] A61M *5/14*
U.S. Cl. 604—65 16 Claims



1. An ultrasonic air-in-line detector for use with fluid tubing which comprises:

a base formed with a cavity;

a transmitter having a convex lens mounted on said base with said lens protruding into said cavity to contact and indent said tube; and

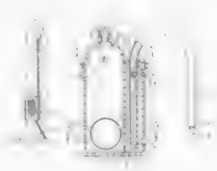
a receiver having a convex lens mounted on said base with said lens protruding into said cavity to contact and indent said tube to pinchingly engage said tube between said transmitter and said receiver.

4,764,167

SAFETY NEWBORN MUCOUS SUCTION DEVICE

Ho C. Tu, 241 NE. 199th La., North Miami Beach, Fla. 33179

Continuation-in-part of Ser. No. 3,269, Jan. 14, 1987, abandoned. This application Jan. 7, 1988, Ser. No. 140,970
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—73 21 Claims



1. A safety suction device for catheter aspiration of mucous from the nose, mouth and throat of a newborn by suction applied by the mouth of the user, comprising:

a. mucous collecting chamber means for trapping said mucous in the form of liquid, foam, bubbles and droplets as it is removed from said newborn;

b. catheter means providing a conduit therethrough and having a first end constructed for insertion into the nose

VOL 1093 ISS 3 AG 16 1988 UMI

and mouth of said newborn and a second end connected to said chamber means, said conduit being in communication with said chamber means to transmit said suction from said chamber to said first end and to transmit said mucous from said first end into said chamber means under the force of said suction while preventing disease contamination of said user from said mucous;

c. suction tube means providing a channel therethrough and having a first end terminating in mouthpiece means for insertion into the mouth of said user for the application of said suction and having a second end connected to and in channel communication with said chamber means at a vacuum port having a lower extremity to transmit said suction from said user to said chamber means for aspirating mucous through said catheter means; and

d. check valve means in said chamber means for closing off said channel of said suction tube means when the level of said mucous collected in said chamber means reaches a predetermined level at which there is a danger of said mucous entering said mouth of said user said check valve means including a bouyant valve member, and a unitary valve housing sealably connected to said lower extremity and open only at its lower end, said housing thereby forming a substantially vertical channel for free vertical movement of said valve member and restraining lateral movement of said valve member, said check valve means providing a fluid-tight chamber above said valve member with the sole passage for fluid therethrough limited to exit at said lower extremity and entrance at a narrow perimeter space between said valve member and the interior walls of said channel to inhibit the passage of fluid in liquid, foam, bubble and droplet form to said mouth.

4,764,168

TYMPANIC MEMBRANE IMPLANT

Ku W. Suh, 3906 Ardleigh Dr., Greenville Manor, Wilmington, Del. 19807

Filed Aug. 28, 1987, Ser. No. 90,840
Int. Cl.[4] A61M *5/325*
U.S. Cl. 604—264 6 Claims



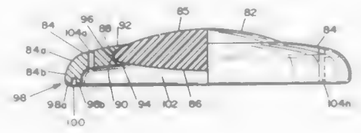
1. A Tympanic Membrane Implant which comprises a rigid tubular body, the cross sectional area of which is at most 2.1 square mm and no less than 1.4 mm square mm, and from about 2.0 to 3.5 mm in length and is rigid; at one end, the insertion end, of said tubular body are affixed at least two flanges which are soft and the same end has a tapered protruding edge for ease of insertion; said flanges are at an angle to the tubular body of from 90 degrees to about 110 degrees.

4,764,169

INTRAOCULAR LENS

Dennis T. Grendahl, Excelsior Bay Gables, Excelsior, Minn. 55331

Filed Dec. 4, 1986, Ser. No. 938,071
Int. Cl.[4] A61F *2/16*
U.S. Cl. 623—6 6 Claims



1. Intraocular lens, free of haptic loops, comprising:

a. hard bi-convex lens optic of high refractive index material; and,

b. channeled soft skirt surrounding the edge of said lens optic and of a foldable material, and angulated skirt edge means extending downwardly therefrom an upper surface of said skirt and forming a barrier ridge and forming two concentric rings which act as a dual barrier ridge.

4,764,170

APPARATUS FOR PLUGGING AN INTRAOCULAR LENS HOLE

Robert C. Drews, 211 N. Meramac Ave., Clayton, Mo. 63105

Filed Jan. 12, 1987, Ser. No. 2,381
Int. Cl.[4] A61F *2/16*; A61B *17/00*
U.S. Cl. 623—6 6 Claims



1. Intraocular lens hole plug comprising:

a. a shaft of a predetermined length and predetermined width, and having a configured bottom;

b. a head secured to said shaft and rounded about a top surface and skirt means affixed about said head; and,

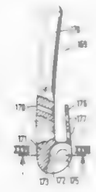
c. said shaft and said head composed of a material which is compatible to the intraocular lens material, as well as biocompatible to the eye.

4,764,171

BONE PROSTHESIS ASSEMBLY FOR A KNEE JOINT

Hans E. Harder, Probsteierhagen; Klaus Behrens, Rickling, both of Fed. Rep. of Germany, and Rainer Kotz, Vienna, Austria, assignors to Howmedica International Inc., Kiel, Fed. Rep. of Germany

Division of Ser. No. 381,607, May 24, 1982, Pat. No. 4,578,081.
This application Mar. 19, 1986, Ser. No. 841,410
Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205577
Int. Cl.[4] A61F *2/38, 2/36*
U.S. Cl. 623—20 3 Claims



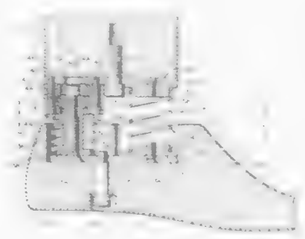
1. A bone prosthesis assembly for replacement of the knee joint of a patient comprising a set of tibial components each including a body portion having anterior and posterior faces, a shank portion extending from one end of the body portion adapted to be connected to the tibia of the patient, the shank portions of said tibial components being of different lengths, and a joint portion extending from the other end of the body portion; and a femoral component including a joint portion adapted to be linked for mutual articulation with the joint portion of each of said tibial components, a shank portion extending from said joint portion adapted to be connected to the femur of the patient, and a tongue portion extending from said joint portion in parallel with and spaced apart distally from said shank portion, with a plurality of through holes being provided in said femoral tongue portion in alignment with a plurality of through holes provided in said femoral shank portion, said holes in said femoral tongue and femoral shank portions being angulated obliquely with respect to said femoral tongue and femoral shank portions, respectively.

4,764,172

ARTICULATED ANKLE

Allen J. McCoy, 18790 McCoy Rd., Livingston, La.

Filed Nov. 28, 1986, Ser. No. 935,714
Int. Cl.[4] A61F *2/66*
U.S. Cl. 623—49 4 Claims



1. An articulated ankle joint comprising a foot plate for attachment to a foot prosthesis, a leg plate for attachment to a leg prosthesis, a stem assembly connected between the plates for location over a heel portion of the foot prosthesis, the stem assembly including a spherical bearing for providing relative up and down and swivelling movements of the plates and relative rotational movements of the plates about an axis of the stem assembly, a first coil spring encircling the stem assembly, at least in part, for reacting between the plates and providing a degree of resistance to said swivelling movements, and a resistance assembly including a second coil spring connected between the plates forwardly of the stem assembly for providing resistance to both said swivelling and rotational movements of the plates.

VOL
1093

ISS
3

AG
16

1988

UMI

4,764,173

PROCESS FOR RESUSCITATING ANIMAL FIBERS

Tadao Inshiki, Tokyo, Japan, assignor to Rakkasan Company Ltd., Tokyo, Japan

Filed Dec. 11, 1984, Ser. No. 680,445
Claims priority, application Japan, Dec. 12, 1983, 58-234649; Feb. 1, 1984, 59-17869
Int. Cl.[4] D06M *1/20*
U.S. Cl. 8—115.52 12 Claims

1. A process for reducing animal fibers which comprises charging with only negative ions by the use of a negative ion generator of the type described in the specification animal fibers not in contact with said negative ion generator and being selected from the group consisting of feather, wool, mohair, alpaca, cashmere, camel and vicugna containing keratin as a main ingredient, said process being carried out a temperature between 20° C. and 35° C. and at a humidity of between 60% and 90%, with the output of the generator being sufficient to resuscitate said fibers under said conditions of temperature and humidity.

4,764,174

NITROPHENYLENEDIAMINE DYE COMPOSITION HAVING IMPROVED DEPOSITION ON HUMAN HAIR AND WOOL

Myra A. Hoshowski, Addison, Ill., assignor to Helene Curtis, Inc., Chicago, Ill.

Filed Jan. 30, 1986, Ser. No. 824,244
Int. Cl.[4] A61K *7/13, 7/075;* C11D *1/94, 3/40*
U.S. Cl. 8—415 46 Claims

1. A semi-permanent hair dye-shampoo composition comprising a tinctorially effective amount of a nitrophenylenediamine semi-permanent dye; a non-ethoxylated water-soluble anionic alkyl sulfate detergent having a formula $C_nH_{2n+1}OSO_3^-M^+$, wherein n a mixture of=8 to 18 and M is any suitable cation; and a sultaine surfactant wherein the weight ratios of alkyl sulfate/sultaine is 5.5:1 to 9.8:1 in a suitable carrier.

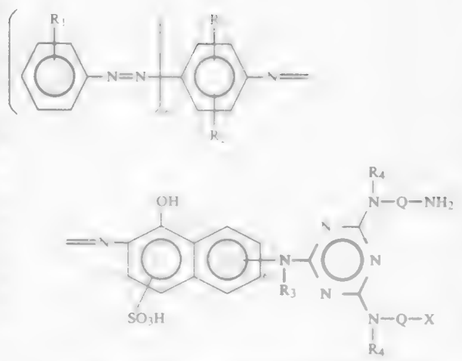
4,764,175

METAL-FREE MONOAZO AND DISAZO COMPOUNDS HAVING A 1-HYDROXY-5,6-, 7- OR 8- SUBSTITUTED 1,3,5-TRIAZINYLAMINO-3- OR 4 SULFONIC ACID COUPLING COMPONENT RADICAL AND 1:1 COPPER COMPLEXES

Jacky Doré, Basle, and Reinhard Pedrazzi, Allschwil, both of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

Filed Aug. 15, 1986, Ser. No. 897,445
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1985, 3529661
Int. Cl.[4] C09B *29/30, 31/08;* D06P *1/06, 3/32*
U.S. Cl. 8—437 20 Claims

1. A metal-free compound of the formula



or a 1:1 copper complex of a metallizable metal-free compound of said formula or an internal or external salt of a metal-free compound of said formula or of a 1:1 copper complex of a metallizable metal-free compound of said formula, wherein

each Q is independently linear or branched C_{2-6}alkylene; linear or branched C_{2-6}alkylene interrupted by —O—, —S— or —NR_4—; linear or branched C_{3-6}alkylene monosubstituted or disubstituted by hydroxy or —*NH-CO—CH_2—, wherein the * denotes the atom attached to the —NR_4— radical,

each R_1 is independently hydrogen, halo, nitro, C_{1-4}-alkyl, C_{1-4}alkoxy, (C_{1-4}alkyl)carbonylamino, —$SO_2NR_3R_4$, —$CONR_4$—C_6H_5 or benzamido,

R_2 is hydrogen, hydroxy, halo, nitro, C_{1-4}alkyl, C_{1-4}alkoxy, (C_{1-4}alkyl)carbonylamino or —$NHCONR_3R_4$,

X is —NR_5R_6 or —$N^{\oplus}R_7R_8R_9$ $An^{\ominus}$,

wherein each of R_5 and R_6 is independently hydrogen; C_{1-6}alkyl; C_{2-6}alkyl monosubstituted by hydroxy or cyano; phenyl; phenyl substituted by 1 to 3 substituents selected from chloro, C_{1-4}alkyl and C_{1-4}alkoxy; phenyl(C_{1-4}alkyl); phenyl(C_{1-4}alkyl) the phenyl group of which is substituted by 1 to 3 substituents selected from chloro, C_{1-4}alkyl and C_{1-4}-alkoxy; C_{5-6}cycloalkyl or C_{5-6}-cycloalkyl substituted by 1 to 3 C_{1-4}alkyl groups, or

—NR_5R_6 is an unsubstituted 5- or 6-membered saturated or unsaturated ring containing a total of 1 to 3 hetero atoms or a 5- or 6-membered saturated or unsaturated ring containing a total of 1 to 3 hetero atoms which ring is substituted by 1 to 3 substituents selected from C_{1-4}alkyl, C_{2-4}alkyl monosubstituted by hydroxy and C_{2-4}-alkyl monosubstituted by amino,

each of R_7 and R_8 is independently C_{1-6}alkyl; C_{2-6}alkyl monosubstituted by hydroxy or cyano; phenyl; phenyl substituted by 1 to 3 substituents selected from chloro, C_{1-4}alkyl and C_{1-4}-alkoxy; phenyl(C_{1-4}alkyl); phenyl(C_{1-4}alkyl) the phenyl group of which is substituted by 1 to 3 substituents selected from chloro, C_{1-4}alkyl and C_{1-4}-alkoxy; C_{5-6}cycloalkyl or C_{5-6}-cycloalkyl substituted by 1 to 3 C_{1-4}alkyl groups, or

—$N^{\oplus}R_7R_8$— is an unsubstituted 5- or 6-membered saturated or unsaturated ring containing a total of 1 to 3 hetero atoms or a 5- or 6-membered saturated or unsaturated ring containing a total of 1 to 3 hetero atoms which ring is substituted by 1 to 3 substituents selected from C_{1-4}alkyl, C_{2-4}alkyl monosubstituted by hydroxy and C_{2-4}-alkyl monosubstituted by amino,

R_9 is C_{1-4}alkyl or benzyl, or

—$N^{\oplus}R_7R_8R_9$ is pyridinium or pyridinium monosubstituted or disubstituted by methyl, and

$An^{\ominus}$ is a non-chromophoric anion, and n is 0 or 1,

wherein

VOL 1093 ISS 3 AG 16 1988 UMI

each R_3 is independently hydrogen, C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by hydroxy, halo, cyano or C_{1-4}alkoxy, and

each R_4 is independently hydrogen or C_{1-4}alkyl, where each halo is independently fluoro, chloro or bromo, with the provisos that (i) each hydroxy substituent of each hydroxy-substituted alkyl group and linear or branched alkylene radical attached to a nitrogen atom is in other than the 1-position, (ii) each alkoxy substituent of each alkoxy-substituted alkyl group attached to a nitrogen atom is in other than the 1-position, and (iii) the hydroxy groups of each linear or branched alkylene radical disubstituted by hydroxy are attached to different carbon atoms.

4,764,176

METHOD FOR PREVENTING THE BRIGHTENING EFFECT OF OPTICAL BRIGHTENING AGENTS ON TEXTILES

Toshinobu Sakamoto, Osaka, Japan, assignor to Sandoz Ltd., Basle, Switzerland

Filed Jul. 16, 1986, Ser. No. 886,131

Claims priority, application United Kingdom, Jul. 22, 1985, [illegible]

Int. Cl.[4] D06L *3/12;* D06M *13/36, 15/42*

U.S. Cl. 8—442 **27 Claims**

1. A method for preventing the brightening effect of a subsequently applied anionic optical brightening agent on a textile substrate which comprises cellulosic fibers, said method comprising applying on such a textile substrate a water-soluble, cationic, optical brightener quencher and a resin precursor useful for the finishing of a cellulosic textile substrate, either simultaneously or in the sequence of quencher followed by precursor, and submitting the treated substrate to a heat treatment.

4,764,177

METHOD OF TRANSFER PRINTING PLASTIC MOLDED ARTICLES HAVING PATTERNS OF CHARACTERS AND/OR SYMBOLS ON THEIR TOP FACES AND FRONT SIDE FACES AND PATTERN IMPARTING MACHINE

Takao Sumi, Kyoto; Yoshihide Inako, Nishinomiya, and Masahiro Nishida, Ibaraki, all of Japan, assignors to Nissha Printing Co., Ltd., Kyoto, Japan

PCT No. PCT/JP86/00092, § 371 Date Oct. 27, 1986, § 102(e) Date Oct. 27, 1986, PCT Pub. No. WO86/05145, PCT Pub. Date Sep. 12, 1986

PCT Filed Feb. 26, 1986, Ser. No. 931,724

Claims priority, application Japan, Feb. 28, 1985, 60-40696

Int. Cl.[4] B41F *16/00, 1/28;* B44C *1/16*

U.S. Cl. 8—471 **10 Claims**



1. A method of making a plastic molded article having a pattern of characters and/or symbols on its top face and its front side face, comprising:

positioning, under tension and above the plastic molded article, a transfer sheet in which a top face pattern and a front side face pattern are formed in paired fashion by the use of a thermally diffusable dye and in which sheet a line of fracture is provided around a portion of the front side face pattern, said portion excluding an area sufficient to maintain a connection between the portion of the transfer sheet containing the top face pattern and the portion of the transfer sheet containing the front side face pattern,

pressing a top pad onto the transfer sheet so as to tightly apply the portion of the transfer sheet having the top face pattern to the top face of the plastic molded article,

pressing a side pad onto the transfer sheet so as to tightly apply the portion of the transfer sheet having the front side face pattern to the front side face of the plastic molded article to cause the transfer sheet to bend at an area between the top face pattern and the front side face pattern,

heating the transfer sheet to so as cause the thermally diffusable dyes of the transfer sheet to thermally diffuse to the top face and the front side face of the plastic molded article, and

removing the transfer sheet from the plastic molded article.

4,764,178

THERMAL TRANSFER PRINTING: HETERO-AROMATIC AZO DYE

Peter Gregory, Bolton, and Raymond L. White, Radcliffe, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 13, 1986, Ser. No. 896,000

Claims priority, application United Kingdom, Aug. 27, 1985, 8521327

Int. Cl.[4] B41M *5/26;* C09B *29/03;* C09D *11/02*

U.S. Cl. 8—471 **5 Claims**

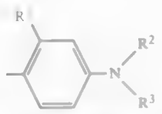
1. A thermal transfer printing sheet comprising a substrate having a coating comprising at least one azo dye of the formula:

A—N=N—E I

wherein:

A is the residue of a diazotisable heteroaromatic amine, $A—NH_2$, in which A is selected from imidazolyl, pyrazolyl, isothiazolyl, pyridoisothiazolyl and thienyl, substituted by groups selected only from cyano, thiocyano, nitro, halogen, C_{1-4}-alkoxy, formyl, cyano-C_{1-4}-alkyl, C_{1-4}-alkylsulphonyl, trifluoromethyl, fluorosulphonyl, C_{1-4}-alkylcarbonyl and C_{1-4}-alkoxycarbonyl;

and E is a group of the formula:



II

wherein R^1 is selected from H, chloro, C_{1-4}-alkyl and C_{1-4}-alkylcarbonylamino; and R^2 and R^3 are selected from H, C_{1-4}-alkyl and C_{1-4}-alkyl, substituted by a group selected from phenyl chloro, cyano, C_{1-4}-alkoxy, C_{1-4}-alkoxycarbonyl and C_{1-4}-alkycarbonyloxy.

4,764,179

AUTOMATIC TENSION SPRING MOUNTING DEVICE

Yutaka Yajima, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

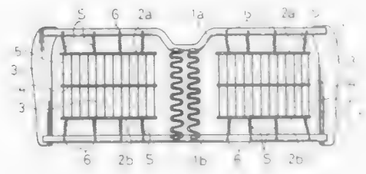
Filed Jan. 16, 1987, Ser. No. 4,034

Int. Cl.[4] B23P *19/04*

U.S. Cl. 29—33 K **7 Claims**

1. An automatic tension spring mounting device in which a plurality of tension springs having a hook at each end thereof are caught simultaneously by a transfer device and said hooks are then mounted to engagement portions formed in a seat frame, respectively, said automatic tension spring mounting device comprising:

a positioning/guiding mechanism disposed in a front portion of a mounting bed to which said seat frame is to be fixedly mounted, and an identical positioning/guiding mechanism disposed in a rear portion of said mounting bed, for holding said seat frame and for guiding said tension springs; and,



identical pad receive member spread mechanism respectively interposed between said positioning/guiding mechanisms on said mounting bed,

wherein each of said positioning/guiding mechanisms includes two clamp members for holding said seat frame, and a plurality of guide means for guiding said tension springs to said seat frame.

4,764,180

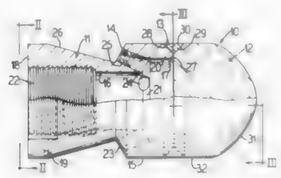
METHOD OF MANUFACTURING JET NOZZLES

Roland E. Shaddock, 315 South Bloomington Street, Streator, Ill. 61364

Filed Jan. 22, 1987, Ser. No. 5,946

Int. Cl.[4] B21D *53/24*

U.S. Cl. 29—157 C **16 Claims**



1. The method of manufacturing high pressure water jet nozzles comprising the steps of providing a tubular elongated first member having a body of substantial wall thickness and leading and trailing ends, machining an inclined angle interior ledge face on an inner diameter thereof inboard from the leading end, the ledge face inclined at an angle to the radial, machining an inclined exterior ledge face on the outer diameter thereof, the exterior ledge face having an angle substantially parallel to the angle of the interior ledge face with the exterior ledge face positioned axially trailing the interior ledge face, forming a plurality of nozzle bores between the interior ledge face and the exterior ledge face opening the interior to the exterior, said bores having a diameter reducing tapered inner diameter section with a smaller diameter adjacent the exterior ledge face and a larger diameter adjacent the interior ledge face, providing a plurality of wear resistant nozzle inserts having outer diameter portions with substantially mating outer diameter surfaces tapered to the tapered inner diameter section of the bores and inner diameter axial bores forming nozzles, securing said inserts in said bores with said tapered surface and section substantially seated against one another, providing an end cap for said first member with a rearward end, and welding said end cap onto the leading end of said first member.

4,764,181

PROCESS FOR PRODUCING AN ELECTROLYTIC CAPACITOR

Tsunetomo Nakano; Kohei Nakajima; Kazuaki Nishio, all of Ichihara; Toshio Maruyama, Nagai; Hiroshi Shimada, Nagai; Kiyoshi Sakamoto, Nagai, and Kumiko Narisawa, Nagai, all of Japan, assignors to Ube Industries Ltd.; Marcon Electronics Corp. Ltd. and High Man Parts Corp. Ltd., Yamaguchi & Yamagata, Japan

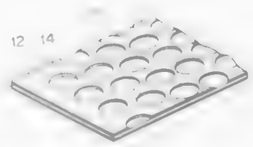
Filed Jan. 22, 1986, Ser. No. 821,416

Claims priority, application Japan, Jan. 24, 1985, 60-012205; Sep. 30, 1985, 60-216771

Int. Cl.[4] H01G *9/00*

U.S. Cl. 29—570.1 **14 Claims**





1. A process for producing an electrolytic capacitor comprising the steps:

coating at least two of the surfaces of an anode valve action metal foil and a cathode metal foil with a solution of a photosensitive polymer resin;

drying the resultant coated photosensitive polymer resin solution layers;

masking each of the resultant photosensitive polymer resin coatings with a negative or positive masking film having a predetermined pattern;

irradiating each of the masked photosensitive polymer resin coatings with actinic radiation, to partly harden the photosensitive polymer resin coatings in accordance with the masking film pattern;

removing the masking film from each partly hardened photosensitive polymer resin coating;

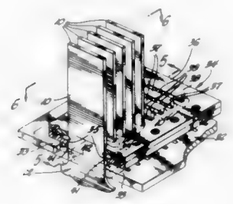
developing the irradiated photosensitive polymer resin coatings with a developing liquid to remove nonhardened portions of the photosensitive polymer resin coatings and to provide spacer layers consisting of the hardened portions of the photosensitive polymer resin coatings;

superposing the anode and cathode metal foils having the spacer layers on each other in such a manner that at least one spacer layer comes between the superposed anode and cathode metal foils and at least one other spacer layer comes on at least one of the outside surfaces of the super-

VOL 1093 ISS 3 AG 16 1988 UMI

posed anode and cathode metal foils, to provide a laminate;
winding the laminate to provide a capacitor element; and
impregnating the capacitor element with an electrolyte.

4,764,182
ELECTRIC STORAGE BATTERY
James R. Bish, Anderson, and Charles P. McCartney, Yorktown, both of Ind., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 935,650, Dec. 3, 1986. This application Nov. 13, 1987, Ser. No. 120,515
Int. Cl.[4] H01M 2/00
U.S. Cl. 29—623.1 1 Claim

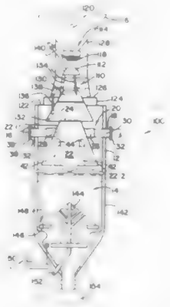


1. In the method of assembling a cell element for an electric storage battery including the principal steps of alternately interleaving a plurality of lug-bearing positive and negative polarity plates one with the other such that the lugs of like polarity plates are aligned in sets along one side of the element the improvement comprising:
positioning a comb-like mold about the roots of the lugs of at least one of said sets proximate their associated plates, said mold having a plurality of fingers interdigitating with said lugs and defining a thin, narrow cavity about said roots for receiving and shaping a hardenable, fluid, insulating material;
injecting said material into said cavity;
allowing said injected material to harden into a ribbon of insulating material intimately engaging said roots; and
thereafter, removing said mold;
whereby said ribbon firmly secures the aligned lugs of said one set together in fixed relation one to the other in said element and serves as a shield against electrical shorting between opposite polarity plates within the element in the region of the lugs.

4,764,183
REACTION PRODUCTS OF FORMIC ACID AND DIALKYLENETRIAMINES AND FUEL COMPOSITIONS CONTAINING SAME
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 841,652, Mar. 20, 1986, Pat. No. 4,686,055, which is a division of Ser. No. 729,708, May 2, 1985, Pat. No. 4,581,037, which is a division of Ser. No. 541,814, Oct. 13, 1983, Pat. No. 4,551,257. This application Jun. 24, 1987, Ser. No. 66,806
Int. Cl.[4] C10L 1/18
U.S. Cl. 44—53 9 Claims

1. A liquid fuel composition comprising a major proportion of a liquid fuel and an anti-friction amount of the reaction product of obtained by reacting at an elevated temperature for a time sufficient to remove water formed during the reaction of a triamine having alkylene substituents of greater than about 12 carbon atoms each and formic acid in a molar ratio of triamine to formic acid of between about 1:1 and about 1:2 respectively.

4,764,184
APPARATUS FOR THE GASIFICATION OF COAL
Philippus J. Meyer, Secunda, South Africa, assignor to Sasol Operations (Proprietary) Limited, Johannesburg, South Africa
Filed Jan. 6, 1987, Ser. No. 1,007
Claims priority, application South Africa, Jan. 10, 1986, 86/0281
Int. Cl.[4] C10J 3/30, 3/32, 3/82
U.S. Cl. 48—77 8 Claims

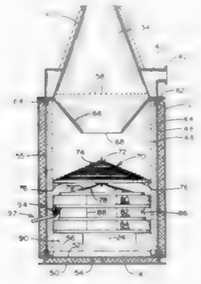


1. A fixed-bed coal gasifier which includes
an upright cylindrical wall providing a fixed-bed coal gasification chamber for gasifying coal to produce synthesis gas, with an end-piece closing off the upper end of the cylindrical wall;
a coal inlet opening in the end-piece;
a gas outlet opening in the chamber wall at a high level;
a gas collection housing defining a skirt having a gas inlet opening at a low level, within the gasification chamber below the coal inlet opening, the housing providing a central gas collection zone, with the outer periphery of the housing being spaced with clearance from the cylindrical wall and being constructed so that coal can pass through the gap between the housing and the cylindrical wall, and with the housing constructed to distribute coal radially outwardly from a region located centrally in the chamber above the housing;
a gas conduit leading from the gas collection zone at a level above the gas inlet opening, to the gas outlet opening, for withdrawing gas from the center of the gas collection zone, wherein the gas conduit has a gas inlet opening within the skirt, and the skirt being secured sealingly to the conduit to prevent passage of gases at joints between the skirt and the conduit; and
a plurality of horizontally spaced coal conduits, providing coal passageways, depending downwardly within the housing, for distributing coal from an upper zone above the housing, into a lower zone within the vertical projection of the outer housing periphery.

4,764,185
GASIFIER APPARATUS
Edward F. Mayer, 355 Countryclub Boulevard, Winnipeg, Manitoba, Canada R3K 1X4
Filed Oct. 28, 1987, Ser. No. 117,090
Int. Cl.[4] C10J 3/26
U.S. Cl. 48—76 14 Claims

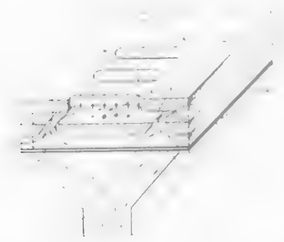
1. A gasification apparatus for producing combustible gases from solid organic materials comprising:

(a) a base member;
(b) a generally tubular body member mounted vertically on said base and having an open top;
(c) a feed hopper having downwardly and outwardly sloping sides secured to said open top for receiving said organic materials to be gasified;
(d) an inverted truncated cone disposed within said body member directly beneath said feed hopper for funneling the flow of said organic materials deposited into said feed hopper to a throat area;
(e) means for uniformly introducing combustion air through said feed hopper and said inverted truncated cone to a combustion zone;



(f) grate means disposed beneath said throat area for supporting said organic materials in said combustion zone;
(g) baffle means disposed beneath said grate means in said body member for increasing the dwell time of combustion gases in the high temperature zone of said body member and correspondingly increasing the velocity of gases being drawn through said apparatus;
(h) a gas exit port disposed proximate said base; and
(i) blower means coupled to said gas exit port for drawing air through said means for introducing combustion air and through said combustible material supported on said grate means for supporting combustion thereof.

4,764,186
PARTICLE IMPACTOR ASSEMBLY FOR SIZE SELECTIVE HIGH VOLUME AIR SAMPLER
Gerhard Langer, Boulder, Colo., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Mar. 23, 1987, Ser. No. 28,981
Int. Cl.[4] B01D 57/00
U.S. Cl. 55—17 20 Claims



1. A particle impactor assembly, for use in a high volume air sampler apparatus for collecting and separating by size, entrained particles from sampled air, comprising:
a. an inlet element formed to have a horizontal and substantially flat upper portion with a plurality of similar elongate parallel through impactor slots, each having a length V and a width U, said upper portion having:
(1) a downwardly depending peripheral rim of height H, having inner vertical surfaces, and
(2) a distance R between each impactor slot end and the nearest rim portion normal to said impactor slot end, such that the separation between the inner vertical surfaces of said rim portion extending parallel to said length V equals at least (V+2R);
b. an impactor plate having an upper surface sealingly affixable to a lowermost part of said rim of said inlet element, the impactor plate being formed to have two similar elongate parallel through exhaust apertures symmetrically oriented normal to the impactor slots thereabove, said exhaust apertures being separated by a distance of at least (V+2U) and each said exhaust aperture at the upper surface having a width S and a length extending past the corresponding last adjacent impactor slot by a distance of at least 2U, for impaction thereon of at least the larger particles entrained in the air flow, whereby the velocity distribution in the air flow through said impactor slots is non-uniform and has low velocities near a central portion of said impactor slots for promoting the impaction of larger particles only and the collection of both larger and smaller particles on said impactor surface below said impactor slots, where air flows through said apertures; and
c. means for affixing said inlet element to said impactor plate.

4,764,187
REGENERATING DYNAMIC ADSORBER SYSTEM AND METHOD FOR CONTAMINANT REMOVAL
Richard F. Abrams, Westboro, Mass., assignor to RAd Systems, Inc., Westboro, Mass.
Filed Feb. 9, 1987, Ser. No. 12,300
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—20 40 Claims



1. A method of dynamic adsorption for removing a contaminant from a fluid comprising:
feeding contaminated fluid to be cleansed from a first volume to an adsorption bed having a capacity for the contaminant based substantially on the flow of the contaminated fluid and returning cleansed fluid to the first volume; and
subsequently regenerating that bed by providing clean fluid relatively free of the contaminant from a second volume to the bed to flush it with the clean fluid, and returning the fluid to the second volume.
14. A dynamic adsorber system for removing a contaminant from fluid, comprising:
first and second adsorption beds each having a capacity for the contaminant based substantially on the flow of the contaminated fluid;
means for feeding from a first volume contaminated fluid to

VOL 1093 ISS 3 AG 16 1988 UMI

be cleansed to one of said beds and for issuing cleansed fluid to the first volume;

means for providing from a second volume clean fluid relatively free of the contaminant to the other of said beds to flush it with the clean fluid and for issuing the fluid to the second volume, said means for providing supplying the clean fluid at a greater flow than that of the contaminated fluid at least when the temperature of the clean fluid is lower then that of the contaminated fluid; and

control means for connecting said means for feeding alternately to said first and second beds to remove the contaminant from the fluid, and for connecting said means for providing to the bed not connected to said means for feeding to regenerate that bed before it is reconnected to said means for feeding.

4,764,188

ELECTROSTATIC PRECIPITATOR

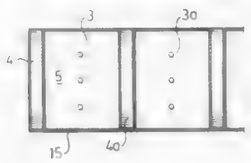
Erik Porle, and Anders Persson, both of Väkjö, Sweden, assignors to Fläkt AB, Nacka, Sweden

Filed Mar. 18, 1987, Ser. No. 27,394

Claims priority, application Sweden, Mar. 19, 1986, 86 01289

Int. Cl.[4] B03C *3/47*

U.S. Cl. 55—130 6 Claims



1. An electrostatic precipitator comprising discharge electrodes and collecting electrodes arranged in mutually adjacent and spaced relationship, and a voltage source for supplying a high-voltage d.c. current to the electrodes so as to generate in a space therebetween an electrostatic field operative in electrically charging at least one of gasborne solid particles and liquid droplets entering said space, the charged particles and being attracted primarily to the collecting electrodes, wherein at least two of the collecting electrodes each include a self-supporting electrode structure which is flexurily rigid in all directions; and each of said flexurily rigid collecting electrodes form a flexurily rigid wall-section which together with two further wall-sections define a space for accommodating one or more discharge electrodes, each of the flexurily rigid electrodes comprising an internal, flexurily rigid frame construction having attached thereto thin, flexible flat plates made of an electrically conductive material.

4,764,189

AIR DRYER APPARATUS FOR USE WITH PNEUMATIC OPERATIVE DEVICE

Ichiro Yanagawa, and Yuzi Wachi, both of Higashimatsuyama, Japan, assignors to Jidosha Kiki Co., Ltd., Japan

Filed Oct. 15, 1987, Ser. No. 109,463

Claims priority, application Japan, Oct. 24, 1986, 61-253191; Dec. 16, 1986, 61-193585

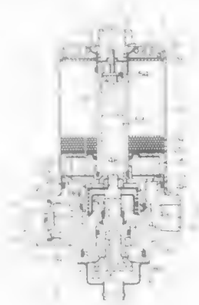
Int. Cl.[4] B01D *53/04*

U.S. Cl. 55—163 6 Claims

1. In an air dryer apparatus use with pneumatic operative devices wherein compressed air delivered from an air compressor is stored in an air tank through a first check valve after passing through the air dryer apparatus having a purge valve on the inlet side thereof, and thus-stored compressed air within said air tank is then supplied to said pneumatic devices, and wherein the current pressure within said air tank is detected having reached either a preset upper limit level or a preset lower limit level by way of a fluid pressure governor so that the air compressor and the purge valve can be controlled on the basis of thus-detected results; an improvement

(a) wherein said air dryer apparatus and said pneumatic devices are provided in communication with each other at the outlet opening of said air dryer apparatus and at the exhaust ports of said pneumatic devices by way of purging passage means;

(b) wherein there are provided second check valve means on the way of said purging passage means in such a manner that the forward working direction thereof may be headed towards the outlet opening of said air dryer apparatus; and



(c) exhaust valve means having an exhaust valve body formed integrally with the valve body of said purge valve, and adapted to operate in such a manner that said exhaust valve body is opened when said purge valve body is in a closed position, while said exhaust valve body is closed when said purge valve body reaches a preset degree of opening; and

(d) wherein said second check valve means has its upstream side connected operatively to the upstream side of said exhaust valve means.

4,764,190

HIGH TEMPERATURE, HIGH PRESSURE GAS FILTER SYSTEM

Gordon A. Israelson; Thomas E. Lippert, both of Murrysville; Edward S. Olczak, Pittsburgh, and David F. Ciliberti, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 10, 1987, Ser. No. 13,300

Int. Cl.[4] B01D *46/00*

U.S. Cl. 55—269 19 Claims

1. A filtering apparatus for the separation of particulates from a high temperature gas stream comprising:

a generally circular vessel having a top wall section, comprising a closed upper wall and a peripheral side wall extending downwardly therefrom, said side wall terminating in a first outwardly extending flange portion;

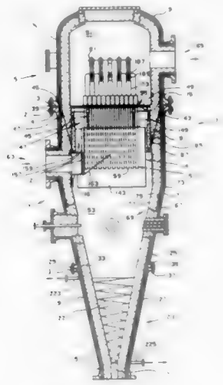
a bottom wall section, comprising a bottom wall having a solids outlet thereon, and a peripheral side wall terminating in a second outwardly extending flange portion;

at least one of said first and second outwardly extending flange portions having a recess about the inner region thereof forming a support groove about the inner wall of the vessel;

a tubesheet extending across said vessel dividing the same into upper and lower chambers having a support plate with a plurality of apertures therethrough;

said tubesheet having a flexible support means about the periphery thereof which terminates in an outwardly extending support rim, said flexible support means comprising a cylindrical wall section depending from the periphery of the support plate of said tubesheet and truncated conical wall section depending from said support rim, said cylindrical section and conical section forming a v-shaped hollow therebetween and being secured together by securement means at a location below said support plate;

the outwardly extending support rim of said flexible support means resting within said support groove;



hollow filter elements having open tops disposed in the apertures of said support plate extending into said lower chamber;

means for charging a hot gas stream containing particulates into the lower chamber of said vessel;

means for discharging a filtered hot gas stream from the upper chamber of said vessel; and

means for cleaning said filter elements by reverse flow of a gas therethrough.

4,764,191

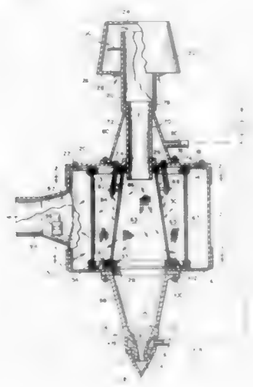
AIR FILTER

Aldo Morelli, 25 Rockwood Terr., Jamaica Plain, Mass. 02134

Filed Oct. 5, 1987, Ser. No. 104,275

Int. Cl.[4] B01D *46/04*

U.S. Cl. 55—302 11 Claims



1. An air filter for a combustion engine comprising a cylindrical housing having circular end walls, concentric openings comprising an inlet opening and discharge opening in said end walls, an inlet conductor disposed in the opening in one end wall through which media to be filtered can enter the housing, a conductor disposed about said discharge opening in the other end wall through which filtrate can be discharged from the housing, filter elements disposed in the housing in concentric relation to the openings in the end walls and to each other comprising a first filter element of conical configuration disposed with its smaller end concentric with the inlet opening and its larger end concentric with the outlet opening, said first filter element defining an inner chamber, a second filter element of cylindrical configuration disposed about the first filter element such as to define therewith a first annular chamber disposed about the inner chamber, said second filter element being of smaller diameter than the housing such as to define a second annular chamber disposed about the first annular chamber and an outlet opening in the wall of the housing in communication with said second annular chamber and wherein each of said filter elements comprises a metal cage within which is disposed a porous fabric sleeve.

4,764,192

SULFUR CONDENSER AND DEGASSER UNIT

Michael Heisel, Pullach; Reiner Lohmueller, Munich, and Freimut Marold, Neubiberg, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 25, 1986, Ser. No. 889,565

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1985, 3526680

Int. Cl.[4] B01D *53/26*

U.S. Cl. 55—269 11 Claims



1. In a sulfur condenser and degasser apparatus, the improvement wherein the condenser comprises a column incorporating a cross-countercurrent heat exchanger, conduit means (6) for introducing liquid sulfur into the top portion of the column and means for draining liquid sulfur (5, 13) connected to the column, said conduit means (6) being in fluid communication with the liquid sulfur draining means (5, 13) whereby liquid sulfur is withdrawn from the column by said draining means (5, 13) and introduced to the column as reflux via conduit means (6).

4,764,193

THERMOELECTRIC FROST COLLECTOR FOR FREEZERS

Lawrence G. Clawson, Dover, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 7, 1987, Ser. No. 105,778

Int. Cl.[4] F25B *21/02*

U.S. Cl. 62—3 14 Claims

1. A refrigeration device comprising:

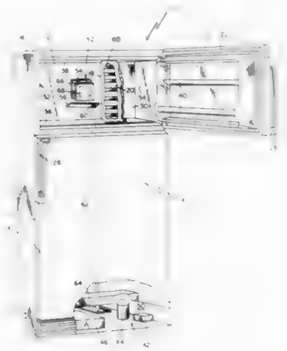
(a) a thermally insulated compartment;

(b) means for cooling said compartment, said cooling means comprising a cooling surface having a predetermined temperature; and

(c) means for collecting frost in said compartment, said frost collecting means comprising a first surface in thermal

VOL 1093 ISS 3 AG 16 1988 UMI

communication with said cooling surface and a second surface for collecting frost, said second surface having a



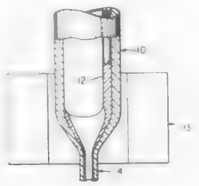
temperature colder than said predetermined temperature and said first surface.

4,764,194

METHOD OF MANUFACTURING HOLLOW CORE OPTICAL FIBERS

Mokhtar S. Maklad, Milford, Conn., assignor to EOTec Corporation, New Haven, Conn.

Filed Jun. 19, 1986, Ser. No. 876,272
Int. Cl.[4] C03C 25/02; C03B 24/04, 37/02
U.S. Cl. 65—3.11 10 Claims



1. A process for manufacturing hollow core optical fibers comprising continuously feeding a glass rod of the desired cladding composition and a glass tube into a furnace, with the rod in line contact with the inner wall of the glass tube, the glass transition temperature of said rod being substantially lower than the glass transition temperature of said substrate tube, applying heat to said tube and rod at a temperature which causes the rod to soften and spread over the tube inner wall and cover said inner wall entirely, passing the coated glass tube through the furnace hot zone peak and drawing said coated glass tube, the feeding rate of said glass rod and said glass tube, the drawing temperature of said glass rod and glass tube, and the drawing rate of said coated glass tube being selected to yield a hollow optical fiber, with preselected interior and exterior diameters.

4,764,195

METHOD OF FORMING REINFORCED GLASS COMPOSITES

Roger A. Allaire; William F. Pardue, Jr., both of Big Flats, and Edwin J. Simonson, Bath, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed May 20, 1987, Ser. No. 52,019
Int. Cl.[4] C03B 19/09
U.S. Cl. 65—18.4 16 Claims

1. A method for converting, through presure-assisted thermal sintering, a glass-impregnated composite preform having ceramic fibers and/or whiskers incorporated therein into a reinforced integral body having a glass matrix comprising the steps of:

(a) forming a glass-impregnated preform having ceramic fibers and/or whiskers incorporated therein;

(b) heating said preform to a temperature above the softening point of the glass;

(c) applying a pressing force to said preform in a mold to consolidate said preform into an integral body;

(d) cooling said mold to a temperature below the softening point of said glass; and thereafter

(e) annealing said integral body; the improvement comprising consolidating said preform by exposing said preform, when the viscosity of the glass is not less than about 10^2 poises and not more than about 10^4 poises, to a temperature of about the annealing point of the glass and applying pressure thereto for no more than a few minutes, and thereafter delaying the cooling of said consolidated integral body to a temperature below the softening point of the glass by contacting said preform during said pressing with members prepared from a material exhibiting significant impedance to heat flow, said members exhibiting low thermal conductivity and thermal diffusivity.

4,764,196

CURVING OF GLASS SHEETS

Philippe Boutier, Thourotte, and Luc Vanaschen, Eupen Belgique, both of France, assignors to Saint-Gobain Vitrage, Paris, France

Filed Jul. 16, 1987, Ser. No. 74,227
Claims priority, application France, Jul. 16, 1986, 86 10330
Int. Cl.[4] C03B 23/023
U.S. Cl. 65—106 13 Claims



1. A method for bending a sheet of glass, comprising advancing a sheet of glass brought to its softening temperature available in a horizontal or approximately horizontal position on a support, to lie beneath an upper convex curving form surrounded by a suction box whose lateral walls surround said upper form by providing a space between them and the upper form in order to enable suction to be exerted at the periphery of the glass sheet when it is in contact with the upper form, applying suction to said glass sheet by way of the suction box to cuase said glass sheet to be taken up by and contact said upper form while experiencing a suction exerted at the periphery of said glass sheet, and,

after the sheet of glass has been taken up by the upper form, applying pressure upon selected areas of the sheet of glass by initiating the flow of a vertical ascending current of heated gas, directed upon said glass sheet under the glass sheet,

to improve the application against the upper form of areas of the sheet of glass which are susceptible to detachment from the upper form.

10. A device for bending a glass sheet comprising in a curving station provided with a upper convex curving form associated with a suction box whose lateral walls surround said curving form are at a certain distance so as to provide a space to allow formation of suction intended to apply the sheet of glass against the upper curving form and hold it there, a chamber for hot gas under pressure capable of blowing said gas vertically under the sheet of glass after it has been taken up and applied against the upper curving form, said chamber containing within it paddles and vertical deflectors serving as means for differentiating the blowing and regualting the discharge of the gas for impinging upon different selected areas of the sheet of glass.

4,764,197

SUPPORT FOR AN OPERATIVE MEMBER OF A GLASSWARE FORMING MACHINE

Thomas V. Foster, Doncaster, United Kingdom, assignor to Emhart Industries, Inc., Farmington, Conn.

Filed May 5, 1987, Ser. No. 47,074
Claims priority, application United Kingdom, May 23, 1986, 8612712
Int. Cl.[4] C03B 9/40
U.S. Cl. 65—260 2 Claims



1. An operative member assembly for an individual section type glassware forming machine comprising:

a horizontally disposed arm for supporting operative members such as funnels or the like,

means for elevating said arm from a lowered position to alternate upper positions including

a first vertical piston rod adapted to be vertically displaced from a down position to an up position,

a vertically oriented cylinder having a second vertical piston rod adapted to be vertically displaced from a lower position to an upper position,

said first piston rod being telescopically received by said second piston rod,

means for securing said cylinder to said arm, and

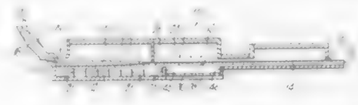
means for securing said second piston rod to said first piston rod whereby said arm can be elevated to a first position by advancing said first piston rod from said down position to said up position or to a second position by advancing said first piston rod from said down position to said up position and by raising said second piston from said lower position to said upper position.

4,764,198

GLASS MELTING TANKS AND REFRACTORY MATERIAL THEREFOR

Stanley Lythgoe, Newburgh, England, assignor to Pilkington Brothers PLC, St. Helens, England

Continuation of Ser. No. 802,384, Nov. 27, 1985, abandoned.
This application Oct. 29, 1987, Ser. No. 115,561
Claims priority, application United Kingdom, Nov. 30, 1984, 8430117
Int. Cl.[4] C03B 5/225
U.S. Cl. 65—339 16 Claims



1. A glass melting tank having a melting zone for melting batch material to form molten glass and a shallow refining zone for refining the molten glass, the refining zone providing a shallow glass flow path wherein the major portion of the glass flow is forwards away from the melting zone, wherein said refining zone has a base with a fusion cast refractory material in contact with the molten glass, said fusion cast refractory material comprising alumina, silica and between 31% and 43% by weight of zirconia and being conditioned by oxidation at a temperature of at least 1450° C. for a period of at least 24 hours whereby the conditioned, fusion cast refractory may be used in contact with molten glass in said shallow refining zone at a temperature of 1450° C. with reduced bubble formation from interaction between the molten glass and the fused refractory.

4,764,199

METHOD OF PREPARING MUSHROOM GROWING SUPPLEMENTS FROM CORN GLUTEN MEAL

George W. Pratt, Cedar Rapids; Dennis W. Caton, Marion, and Duane O. Tackaberry, Cedar Rapids, all of Iowa, assignors to Penford Products, Cedar Rapids, Iowa

Filed Aug. 13, 1986, Ser. No. 896,394
Int. Cl.[4] C05F 5/00
U.S. Cl. 71—5 8 Claims

1. The method of preparing a mushroom growing supplement, comprising:

(a) obtaining a corn gluten meal containing by weight less than 15% moisture and from 50 to 75% protein (dry basis), said meal being in particulate free-flowing condition and having an pH within the range from 20. to 5.5;

(b) mixing and reacting said meal proportionately with a 20 to 50% by weight concentration of aqueous formaldehyde added and reacted as a liquid solution, the selected proportions of formaldehyde solution to meal providing from 0.05 to 1.0% by weight formaldehyde based on the meal (starting wet basis), said mixing being effective to distribute said aqueous formaldehyde solution throughout the meal, the amount of water thereby added to said meal being less than an amount increasing the water content of the meal above 16.0%, said meal remaining in a free-flowing condition throughout the mixing, the reaction of the meal with the formaldehyde solution being carried out under ambient room conditions and being completed in less than 60 minutes after the addition of the formaldehyde solution; and

(c) without heating or drying the reacted meal packaging it in containers for shipment to mushroom growers.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,200

APPLICATION OF FINELY DIVIDED DICYANODIAMIDE ONTO AMMONIUM-CONTAINING AND SULFATE-CONTAINING FERTILIZERS

Otto Meiss, Ludwigshafen, and Robert E. Nitzschmann, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 22, 1987, Ser. No. 5,937

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1986, 3601805

Int. Cl.[4] C05C *1/02, 9/00*

U.S. Cl. 71—28 5 Claims

1. A process for applying finely divided dicyanodiamide onto the surface of an ammonium-containing and sulfate-containing fertilizer which comprises: mixing the powdered dicyanodiamide with the fertilizer which is at a temperature of from 60° to 130° C., and at the same time or directly thereafter adding an aqueous solution containing calcium nitrate to the fertilizer with further mixing.

4,764,201

PLANT GROWTH REGULATION

Yasuo Iino, and Yoshinori Saito, both of Iwaki, Japan, assignors to Tomoe Kagaku Kogyo Kabushiki Kaisha, Fukushima, Japan

Filed Mar. 18, 1985, Ser. No. 712,751

Int. Cl.[4] H01N *31/08, 33/06, 43/40, 43/16*

U.S. Cl. 71—77 9 Claims

1. A method for accelerating the growth of plants which comprises applying to the foliage, roots, stems, and seeds of the plants and/or to the soil or other medium in which the plants are grown an effective plant growth accelerating amount of at least one water-soluble derivative of a vitamin K compound selected from the group consisting of

(1) a menadione bisulfite selected from menadione sodium bisulfite and menadione dimethylpyrimidinol bisulfite,

(2) a menadiol inorganic acid ester salt selected from menadiol tetrasodium diphosphate and menadiol disodium disulfate,

(3) menadiol dinicotinate dihydrochloride,

(4) menadiol bis(glucoside tetraacetate),

(5) 4-amino-2-methyl-1-naphthol hydrochloride,

(6) 4-amino-3-methyl-1-naphthol hydrochloride, and

(7) 1,4-diamino-2-methylnaphthalene dihydrochloride.

4,764,202

5-DICHLOROACETAMIDO-4-NITRO-1-ARYL-PYRAZOLES, COMPOSITION CONTAINING THEM, AND HERBICIDAL AND PLANT GROWTH REGULATING METHOD OF USING THEM

Reinhold Gehring, Wuppertal; Otto Schallner, Monheim; Jörg Stetter, Wuppertal; Albrecht Marhold; Hans-Joachim Santel, both of Leverkusen; Robert R. Schmidt, and Klaus Lürssen, both of Bergisch-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

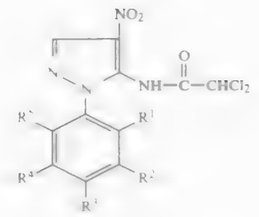
Filed Nov. 24, 1986, Ser. No. 934,067

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1985, 3543033; May 28, 1986, 3617977

Int. Cl.[4] A01N *43/56;* C07D *231/40*

U.S. Cl. 71—92 12 Claims

1. A 5-dichloroacetamido-4-nitro-1-aryl-pyrazole of the formula



in which

R^1 represents hydrogen, fluorine, chlorine or bromine,

R^2 represents hydrogen, fluorine or chlorine,

R^3 represents fluorine, chlorine, bromine or halogenoalkyl, halogenoalkoxy, halogenoalkylthio or halogenoalkylsulphonyl, each of which is straight-chain or branched and each of which has 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms,

R^4 represents hydrogen, fluorine, or chlorine, and

R^5 represents fluorine, chlorine, or bromine, but in the case in which R^1 and R^5 simultaneously represent chlorine and in addition R^2 and R^4 simultaneously represent hydrogen, R^3 does not represent chlorine or trifluoromethyl.

9. A method of combatting unwanted vegetation which comprises applying to such vegetation or to a locus from which such vegetation is to be excluded a herbicidally effective amount of a compound according to claim 1.

11. The method of regulating the growth of plants which comprises applying to such plants or to a locus in which such plants are growing or to be grown a plant growth-regulating effective amount of a compound according to claim 1.

4,764,203

HERBICIDAL SULFONYLUREAS

Werner Töpfl, Dornach; Willy Meyer, Riehen, both of Switzerland, and Hans-Dieter Schneider, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

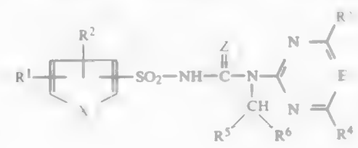
Division of Ser. No. 699,388, Feb. 7, 1985, Pat. No. 4,685,961. This application May 26, 1987, Ser. No. 53,912

Claims priority, application Switzerland, Feb. 14, 1984, 720/84; Apr. 12, 1984, 1841/84

Int. Cl.[4] A01N *43/66;* C07D *251/70, 251/18, 251/46*

U.S. Cl. 71—93 14 Claims

1. An N-sulfonyl-N'-triazinylurea of the formula



wherein

E is nitrogen,

X is —CH=CH—,

Z is oxygen or sulfur,

R^1 is halogen, nitro, C_1–C_4alkoxy, C_1–C_4haloalkoxy, C_2–C_4alkenyloxy, C_2–C_4haloalkenyloxy, $NR^{10}R^{11}$, —O-SO_2R^8, —COR^8 or —$SO_2NR^{10}R^{11}$,

R^2 is hydrogen, halogen or C_1–C_4alkyl,

R^3 and R^4, each independently of the other, are halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkyl, C_1–C_4haloalkoxy, C_2–C_4alkoxyalkyl, C_2–C_4alkoxyalkoxy, cyclopropyl, NH_2, C_1–C_4alkylamino or di(C_1–C_4)alkylamino,

R^5 is hydrogen, or phenyl or furyl, which is unsubstituted or substituted by halogen, or C_1–C_4alkyl,

R^6 is an —$S(O)_mR^9$ radical or a heterocyclic group selected from among, 1,2,4-triazinyl, imidazolyl, indolyl, benzimidazolyl and benzotriazolyl, which is bound via the nitrogen atom, wherein the benzene ring is unsubstituted or substituted by one or more identical or different members selected from the groups consisting of nitro, halogen or C_1–C_4alkyl,

R^8 is C_1–C_4alkoxy, C_1–C_4alkyl, C_1–C_4haloalkyl, C_4–C_7cycloalkyl, C_2–C_4alkoxyalkyl, C_2–C_4alkenyl, C_2–C_4haloalkenyl, C_5–C_6cycloalkenyl, C_3–C_4alkynyl, C_1–C_4cyanoalkyl, C_1–C_4alkyl—NR^9R^{10}, benzyl or benzyl which is substituted by halogen,

R^9 is C_1–C_4alkyl which is unsubstituted or substituted by halogen, C_1–C_4alkoxy, carboxyl, C_1–C_4alkoxycarbonyl or R^9 is —$CONR^{10}R^{11}$, or is phenyl, benzyl or napthyl, each of which is unsubstituted or substituted by one or more identical or different members selected from the group consisting of halogen, nitro, carboxyl, C_1–C_4alkyl, C_1–C_4haloalkyl, C_1–C_4alkoxy or C_1–C_4haloalkoxy, and in an —SR^9 radical, or R^9 can also be a radical selected from —CZ—C_1–C_4alkyl, —CZO—C_1–C_4alkyl, —$CZNR^{10}R^{11}$, —CZ-phenyl, CZ-benzyl or CZ-naphthyl, wherein the phenyl rings are unsubstituted or substituted as indicated above,

R^{10} and R^{11} each independently of the other are hydrogen, C_1–C_4alkyl, C_3–C_4alkenyl, C_3–C_4alkynyl, C_1–C_4cyanoalkyl or one of R^{10} and R^{11} is C_1–C_4alkoxy or C_2–C_4alkoxyalkyl, phenyl or benzyl, wherein the phenyl ring is unsubstituted or substituted by halogen, nitro, C_1–C_4alkoxy or C_1–C_4haloalkyl or

R^{10} and R^{11} together with the nitrogen atom to which they are attached form the pyrrolidino or piperidino or ring, m is 0, 1 or 2.

12. A method of controlling undesired plant growth, which comprises application of a herbicidally effective amount of a compound of claim 1, or of a composition containing such a compound to the undesired plants or the locus thereof.

4,764,204

HERBICIDAL SULFONAMIDES

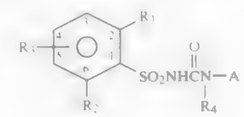
Mary A. Hanagan, Blue Bell, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 841,109, Mar. 18, 1986, Pat. No. 4,705,556, which is a division of Ser. No. 628,259, Aug. 12, 1984, Pat. No. 4,604,131, which is a continuation-in-part of Ser. No. 520,801, Aug. 5, 1983, abandoned. This application Jul. 27, 1987, Ser. No. 78,154

Int. Cl.[4] C07D *251/20, 251/22, 401/12;* A01N *43/66*

U.S. Cl. 71—93 18 Claims

1. A compound of the formula:



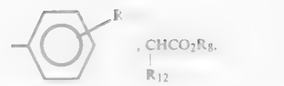
wherein

R_1 is $S(O)_nR_5$, NR_6R_7, CO_2R_8, $SO_2NR_9R_{10}$,



OSO_2R_{13}, CH_2OR_{14} or Q;

R_2 is $S(O)_mR_5$, NR_6R_7, CO_2R_8, $SO_2NR_9R_{10}$,



OSO_2R_{13}, CH_2OR_{14} or Q;

R_3 is H, Cl, F, Br, CH_3, OCH_3 or CF_3;

R_4 is H or CH_3;

R_5 is C_1–C_3 alkyl;

R_6 and R_7 are independently CH_3 or CH_2CH_3;

R_8 is C_1–C_3 alkyl, $CH_2CH{=}CH_2$, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

R_9 is CH_3 or OCH_3;

R_{10} is C_1–C_3 alkyl;

R_{11} is H, Cl, Br, F, CH_3 or OCH_3;

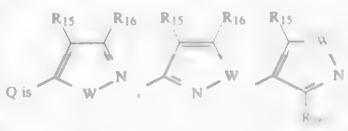
R_{12} is H or CH_3;

R_{13} is C_1–C_3 alkyl or CF_3;

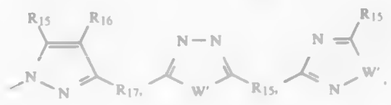
R_{14} is C_1–C_3 alkyl or CF_2H;

n is 0, 1 or 2;

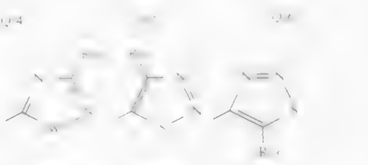
m is 0 or 1;



Q-1 Q-2 Q-3



Q-4



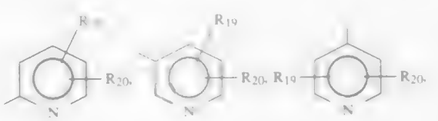
Q-10 Q-11 Q-12

W is O, S, or NR_{18};

W' is O or S;

R_{15}, R_{16}, R_{17} and R_{18} are independently H or CH_3;

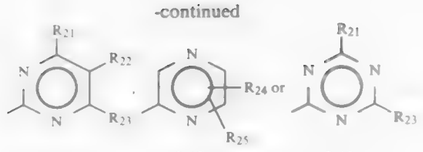
Q is also



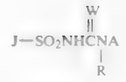
Q-13 Q-14 Q-15

VOL 1093 ISS 3 AG 16 1988 UMI

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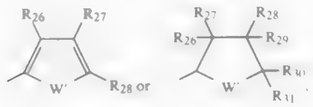


Q-16 Q-17 Q-18

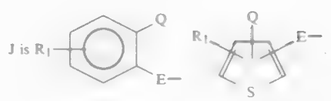


wherein

R_{19}, R_{20}, R_{22}, R_{24} and R_{25} are independently H or CH_3;
R_{21} and R_{23} are independently H, CH_3 or OCH_3;
Q is also

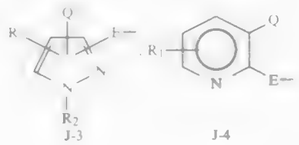


Q-19 Q-20

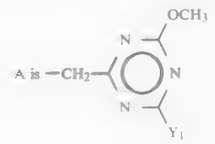


J-1 J-2

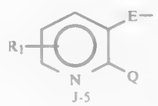
R_{26}, R_{27}, R_{28} R_{29}, R_{30} and R_{31} are independently H or CH_3;



J-3 J-4



A-5



J-5

Y_1 is CH_3 or OCH_3;
and agriculturally suitable salts thereof; provided that
(a) R_1 and R_2 are not simultaneously CO_2R_8;
(b) when either one of R_1 or R_2 is $SO_2NR_9R_{10}$, then the other must not be $S(O)_nR_5$, $S(O)_mR_5$, CH_2OR_{14} or NR_6R_7;
(c) when R_9 is OCH_3, then R_{10} is CH_3;
(d) when either one of R_1 or R_2 is CO_2R_8, then the other must not be $S(O)_nR_5$, $S(O)_mR_5$ or NR_6R_7;
(e) the total number of carbon atoms in R_{26} to R_{31} combined, is equal to or less than four.

13. A method for controlling the growth of undesired vegetation which comprises applying to the locus to be protected postemergence or preemergence an effective amount of a compound of claim 1.

4,764,205

HERBICIDAL SULFONAMIDES

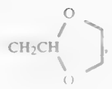
Morris P. Rorer, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 842,791, Mar. 27, 1986, Pat. No. 4,699,647, which is a continuation-in-part of Ser. No. 739,215, May 30, 1985, abandoned. This application Jun. 19, 1987, Ser. No. 67,725
Int. Cl.[4] C07D *401/14, 403/14, 409/14;* A01N *43/66*
U.S. Cl. 71—93 41 Claims

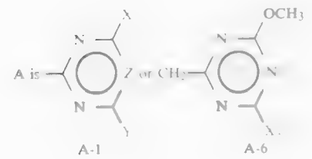
1. A compound of the formula:

wherein

W is O or S;
R is H or CH_3;
E is a single bond, CH_2 or O;
Q is a saturated 5- or 6-membered heterocyclic ring, bonded through carbon or nitrogen, containing a carbonyl group and 2–3 heteroatoms selected from the group consisting of 0–2 oxygen, 0–2 sulfur or 0–2 nitrogen; a 5-membered heterocyclic ring, bonded through carbon or nitrogen, containing a carbonyl group and 2–3 heteroatoms selected from the group consisting of 0–2 oxygen, 0–2 sulfur or 1–3 nitrogen and containing one endocyclic double bond; a 6-membered heterocyclic ring, bonded through carbon or nitrogen, containing a carbonyl group and 2–3 heteroatoms selected from the group consisting of 0–2 oxygen, 0–2 sulfur or 1–3 nitrogen and containing one or two endocyclic double bonds; or a 5-membered heterocyclic ring, bonded through carbon or nitrogen, containing two adjacent carbonyl groups and 2 heteroatoms selected from the group consisting of 0–1 oxygen, 0–1 sulfur, or 1–2 nitrogen and containing onr endocyclic double bond, said Q value may be substituted or unsubstituted wherein the substituent groups are selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_3–C_4 alkenyl, C_3–C_4 haloalkenyl, C_3–C_4 alkynyl, C_3–C_4 haloalkynyl, C_1–C_3 cyanoalkyl, C_2–C_4 alkoxyalkyl, C_2–C_4 alkylthioalkyl, C_2–C_4 alkylcarbonyl, C_3–C_4 alkylcarbonylalkyl, C_1–C_4 alkyl substituted with OH or NH_2, C_2–C_4 alkylaminoalkyl, C_3–C_4 dialkylaminoalkyl, $CH_2CH(OCH_3)_2$,

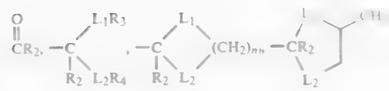


$C(O)N(CH_3)_2$, $P(O)(OC_1$–C_2 alkyl)$_2$, $P(S)(OC_1$–C_2 alkyl)$_2$ or C_1–C_2 alkyl substituted with C_1–C_2 alkoxycarbonyl;
R_1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, nitro, C_1–C_3 alkoxy, $SO_2NR_aR_b$, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CH_2CN, CN, CO_2R_c, C_1–C_3 haloalkoxy, C_1–C_3 haloalkylthio, C_2–C_4 alkoxyalkyl, C_2–C_4 alkylthioalkyl, CH_2N_3 or NR_dR_e;
R_a is H, C_1–C_4 alkyl, C_2–C_3 cyanoalkyl, methoxy or ethoxy;
R_b is H, C_1–C_4 alkyl or C_3–C_4 alkenyl; or
R_a and R_b may be taken together as —$(CH_2)_3$—, —$(CH_2)_4$—, —$(CH_2)_5$— or —$CH_2CH_2OCH_2CH_2$—;
R_c is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 haloalkyl, C_2–C_3 cyanoalkyl, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl or C_2–C_4 alkoxyalkyl;
R_d and R_e are independently H or C_1–C_2 alkyl;



A-1 A-6

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino or C_3–C_5 cycloalkyl;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_2–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3 alkyl)amino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylthioalkyl, C_1–C_4 haloalkyl, C_2–C_4 alkynyl, azido, cyano, C_2–C_5 alkylsulfinylalkyl, C_2–C_5 alkylsulfonylalkyl,



or $N(OCH_3)CH_3$;
m is 2 or 3;
L_1 and L_2 are independently O or S;
R_2 is H or C_1–C_3 alkyl;
R_3 and R_4 are independently C_1–C_3 alkyl;
Z is N; and
X_3 is CH_3 or OCH_3;
and their agriculturally suitable salts; provided that
(a) when Q contains 2 heteroatoms selected from 0–2 oxygen and 0–2 sulfur, said heteroatoms are not bonded directly to one another, and when Q contains 3 nitrogen heteroatoms, only two of these may be bonded directly together;
(b) when J is J-2 or J-3, the substituent Q and the sulfonylurea bridge are on adjacent carbon atoms;
(c) when E is O, then J is J-1 and W is O;
(d) when W is S, then R is H, A is A-1, and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH{=}CH_2$, $OCH_2C{\equiv}CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or 1,3-dioxolan-2-yl;
(e) when the total number of carbons of X and Y is greater than four, then the number of carbons of R_1 must be less than or equal to two, and the number of carbons of the substituents on Q must be less than or equal to two; and
(f) when Q is bound through nitrogen and contains 2-heteroatoms and one carbonyl group, and said heteroatoms are bound through the carbonyl, then J is other than J-1.

4,764,206

CONTRADEGLUTITIOUS SOLID HERBICIDAL COMPOSITION

Kazuhiro Yamashita, and Mamoru Yoshida, both of Tokyo, Japan, assignors to S D S Bioteck K.K., Tokyo, Japan

Continuation-in-part of Ser. No. 786,025, Oct. 10, 1985, abandoned. This application Feb. 13, 1986, Ser. No. 829,037
Int. Cl.[4] A01N *25/32*
U.S. Cl. 71—94 7 Claims

1. A method for making a lethal amount of a 1,1′-dimethyl-4,4′-bipyridylium salt (i.e., a paraquat salt), non-swallowable by formulating a composition comprising the paraquat salt in a substantially solid state and a thickening agent incorporated thereinto, the amount of said thickening agent being such that the composition becomes a non-swallowable high viscous liquid or gel upon the addition of water to the composition in such a relationship that the composition becomes a non-swallowable liquid or gel when the composition is diluted with a four-tenths amount of water, based on the amount of the composition, in the case of a paraquat concentration in the composition of 3% by weight, to 4 times the amount of water, based on the amount of the composition, in the case of a paraquat concentration in the composition of 30% by weight and that the composition becomes an easily sprayable low viscosity liquid upon the addition of water to the composition in such a relationship that the composition becomes an easily sprayable liquid when the composition is diluted with 50 times the amount of water, based on the amount of the composition, in the case of a paraquat concentration in the composition of 3% by weight, to 500 times the amount of water, based on the amount of the composition, in the case of a paraquat concentration in the composition of 30% by weight.

4,764,207

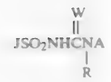
HERBICIDAL SULFONAMIDES

Joel R. Christensen; Paul H. Liang, and Mark E. Thompson, all of Wilmington, Del., assignors to E. I. DuPont De Nemours And Company, Wilmington, Del.

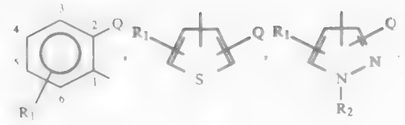
Division of Ser. No. 842,792, Mar. 27, 1986, Pat. No. 4,685,955, which is a continuation-in-part of Ser. No. 740,894, Jun. 3, 1985, abandoned. This application Apr. 27, 1987, Ser. No. 43,128
Int. Cl.[4] C07D *407/12, 409/12, 403/12;* A01N *47/36*
U.S. Cl. 71—93 58 Claims

1. A compound of the formula

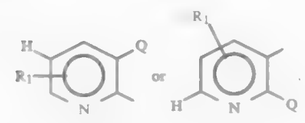
VOL 1093 ISS 3 AG 16 1988 UMI



wherein
J is

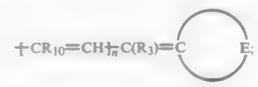


J-1 J-2 J-3

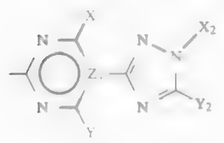


J-4 J-5

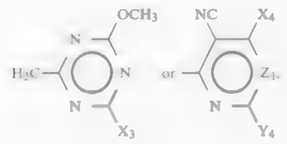
R is H or CH_3;
W is O or S;
R_1 is H, C_1–C_3 alkyl, C_1–C_3 haloalkyl, halogen, nitro, C_1–C_3 alkoxy, $SO_2NR_aR_b$, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, CO_2R_c, amino, C_1–C_3 alkylamino, di(C_1–C_3)alkylamino, CH_2OCH_3, CH_2SCH_3 or CH_2CN;
R_a is H, C_1–C_4 alkyl, C_2–C_3 cyanoalkyl, OCH_3 or OC_2H_5;
R_b is H, C_1–C_4 alkyl or C_3–C_4 alkenyl; or
R_a and R_b may be taken together as $(CH_2)_3$, $(CH_2)_4$, $(CH_2)_5$ or $—CH_2CH_2OCH_2CH_2—$;
R_c is C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, C_2–C_4 haloalkyl, C_2–C_3 cyanoalkyl, C_5–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl or C_2–C_4 alkoxyalkyl;
R_2 is H, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_3–C_4 alkynyl, phenyl, phenyl substituted with Cl, NO_2, CH_3 or OCH_3, C_1–C_3 alkoxycarbonyl, C_1–C_3 alkylsulfonyl or di(C_1–C_2)alkylamino sulfamoyl;
Q is



n is 0, 1 or 2;
R_3 is H, C_1–C_4 alkyl, Cl or Br;
R_{10} is H or C_1–C_4 alkyl;
E is a bridge of 4 or 5 atoms, which may be substituted or unsubstituted, containing 0–2 heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen, and also containing 2–5 carbon atoms, said bridge together with one carbon attachment site forming a partially saturated or a fully unsaturated, nonaromatic 5- or 6-membered carbocyclic or heterocyclic ring, with the proviso that when E contains two atoms of oxygen or sulfur, they must be separated by at least one atom of carbon, and that oxygen and sulfur are only linked to each other if the sulfur is in the form SO or SO_2; in the bridging group E, sulfur may take the form of S, SO or SO_2 and one or two of the carbon atoms may be a carbonyl, thiocarbonyl or the cyclic 5- and 6-membered ketals thereof; when one of the bridging atoms is a substituted carbon, the substituent on said carbon is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen or C_1–C_4 haloalkoxy; when the bridging atom is a nitrogen, the substituent on said nitrogen is H, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 alkoxyalkyl, C_2–C_4 cyanoalkyl, C_3–C_4 alkenyl or C_3–C_4 alkynyl;
A is

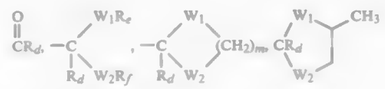


A-1 A-5



A-6 A-7

X is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino or di(C_1–C_3)alkylamino;
Y is H, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, C_1–C_4 haloalkylthio, C_1–C_4 alkylthio, C_2–C_5 alkoxyalkyl, C_2–C_5 alkoxyalkoxy, amino, C_1–C_3 alkylamino, di(C_1–C_3)alkylamino, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, C_2–C_5 alkylsulfinylalkyl, C_1–C_4 haloalkyl, C_2–C_5 alkylsulfonylalkyl, C_3–C_5 cycloalkyl, C_2–C_4 alkynyl, C_2–C_5 alkylthioalkyl,



or $N(OCH_3)CH_3$;
W_1 and W_2 are independently O or S;
m is 2 or 3;
R_d is H or CH_3;
R_e is C_1–C_2 alkyl;
R_f is C_1–C_2 alkyl;
Z is N;
Z_1 is CH;
X_2 is CH_3, C_2H_5 or CH_2CF_3;
Y_2 is OCH_3, OC_2H_5, SCH_3, SC_2H_5, OCF_2H, SCF_2H, CH_3 or CH_2CH_3;
X_3 is CH_3 or OCH_3;
X_4 is CH_3, OCH_3, OC_2H_5, CH_2OCH_3 or Cl; and
Y_4 is CH_3, OCH_3, OC_2H_5 or Cl;
and their agriculturally suitable salts; provided that
(a) when W is S, then R is H, A is A-1, and Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, C_2H_5, CF_3, SCH_3, $OCH_2CH=CH_2$, $OCH_2C\equiv CH$, $OCH_2CH_2OCH_3$, $CH(OCH_3)_2$ or



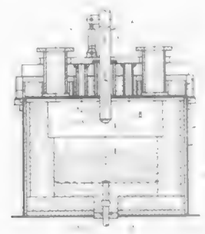
(b) X and/or Y are other than C_1 haloalkoxy;
(c) when the bridging group E contains a thiocarbonyl substituent, said thiocarbonyl carbon must be bonded to a nitrogen atom;
(d) when J is J-2 or J-3, the substituent Q and the sulfonylurea bridge are on adjacent carbon atoms;
(e) when the total number of carbon atoms in X and Y is greater than 4, then the total number of carbon atoms in R_1, R_2 and Q is less than or equal to 10; and
(f) X_4 and Y_4 are not simultaneously Cl.

4,764,208

METHOD OF IGNITING A PLASMA ARC AS WELL AS AN ARRANGEMENT FOR CARRYING OUT THE METHOD

Heinz Müller, Neuhofen; Reinhard Buzzi, Stainach, and Gerhard Scheiblhofer, Linz, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Nov. 25, 1987, Ser. No. 125,466
Claims priority, application Austria, Dec. 1, 1986, 3194/86
Int. Cl.[4] C22B *4/00*; H05B *7/18*
U.S. Cl. 75—10.19 **10 Claims**



1. In a method of igniting a plasma arc fed by a main circuit, of a plasma burner including an electrode and a burner jacket surrounding said electrode, said plasma burner being provided in a metallurgical furnace vessel into which a melting stock has been charged, by means of an auxiliary plasma arc fed by an auxiliary circuit, the improvement comprising

applying said electrode of said plasma burner and said melting stock in said furnace vessel to said auxiliary circuit, with said main circuit being switched off,

igniting said auxiliary plamsa arc between said plasma burner and said melting stock, thereupon moving back said plasma burner from said melting stock, thereby lengthening said auxiliary plasma arc, and

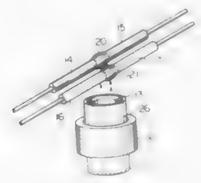
subsequently applying said main circuit to said plasma burner and to said melting stock and igniting said plasma arc.

4,764,209

METHOD FOR MANUFACTURING ALLOY

Kentaro Mori; Hideaki Mizukami; Hirotaka Nakagawa; Akichika Ozeki, and Takaho Kawawa, all of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 3, 1987, Ser. No. 92,679
Claims priority, application Japan, Sep. 9, 1986, 61-210731
Int. Cl.[4] C22B *4/00*; C21C *5/52*
U.S. Cl. 75—10.26 **15 Claims**



1. A method for manufacturing an alloy, comprising:

providing a first pair of spaced apart consumable electrodes, each electrode of said first pair consisting essentially of a same first single metal element, the spaced apart electrodes of said first pair having adjacent ends which are spaced apart from each other;

providing a second pair of spaced apart consumable electrodes, each electrode of said second pair consisting essentially of a same second single metal element, the spaced apart electrodes of said second pair having adjacent ends which are spaced apart from each other;

said single metal elements of said first and second pairs being different from each other;

melting said consumable electrodes by generating a respective arc between said spaced apart adjacent ends of said consumable electrodes of each pair of electrodes in a non-oxidizing atmosphere, to cause the consumable electrodes of each pair to be melted at the respective spaced apart adjacent ends of each pair of consumable electrodes; and

collecting molten drops of said different single metal elements, produced by said melting, in a mold to form a molten metal in the mold, the molten metal collected in said mold being cast into an alloy consisting essentially of said different single metal elements.

4,764,210

PRODUCTION OF LIQUID IRON

Cecil P. Bates, and Terrence W. Shannon, both of Auckland, New Zealand, assignors to New Zealand Steel Limited, Glenbrook, New Zealand

Division of Ser. No. 806,138, Dec. 10, 1985, Pat. No. 4,661,150, which is a continuation of Ser. No. 721,499, Apr. 10, 1985, abandoned, which is a continuation of Ser. No. 609,653, May 14, 1984, abandoned, which is a continuation of Ser. No. 532,054, Sep. 14, 1983, abandoned. This application Jan. 13, 1987, Ser. No. 3,047
The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.
Int. Cl.[4] C22B *4/00*
U.S. Cl. 75—10.66 **7 Claims**



1. A method of producing liquid iron in an electric melter having one or more electrodes therein, comprising transferring sponge iron having a degree of metallization in excess of 60%, together with residual carbon, in hot state, to said melter, substantially in the absence of oxygen; operating said one or more electrodes in said melter in a low resistance mode below about 5.1 mOhms, controlling (a) resistance of said one or more electrodes by resistance control means, and (b) passage of said sponge iron with the residual carbon into said melter by feed control means; so that carbon content of the resultant liquid iron and temperature in the melter are continuously monitored and controlled, while forming substantial liquid iron pools about and adjacent to said one or more electrodes in said melter.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,211

FINE-GRAINED AGENT FOR DESULFURIZING MOLTEN IRON

Walter Meichsner, Krefeld; Werner Gmohling, Hufschlag; Manfred Tutte, Moers, and Karl-Heinz Peters, Dinslaken, all of Fed. Rep. of Germany, assignors to Thyssen Stahl AG, Duisburg and SKW Trostberg AG, Trostberg, both of, Fed. Rep. of Germany

Filed Dec. 16, 1986, Ser. No. 942,469

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1985, 3544563; Dec. 17, 1985, 3544562

Int. Cl.[4] C21C *7/02*

U.S. Cl. 75—58 **22 Claims**

1. A fine-grain agent for the desulfurization of molten iron, which is based on calcium carbide and which is injected in fluidized form into an iron melt by means of a gas, the agent consisting essentially of industrial calcium carbide and a dried coal which contains at least 15% by weight of volatile components and which evolves a gas volume of at least 80 standard liters of gas/kg of coal at the temperature of the iron melt.

4,764,212

THERMOELECTRIC MATERIAL FOR LOW TEMPERATURE USE AND METHOD OF MANUFACTURING THE SAME

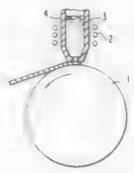
Takuji Okumura, Hiratsuka, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Feb. 19, 1987, Ser. No. 16,265

Claims priority, application Japan, Feb. 21, 1986, 61-035337; Jul. 30, 1986, 61-177662

Int. Cl.[4] B22F *1/00*

U.S. Cl. 75—228 **21 Claims**



10. A metastable thermoelectric Bi—Sb series alloy having a composition comprising:

$$\{(Bi_{100-x}Sb_x)_{100-y}E^{II}y\}_{100-z}E^{I}{}_z$$

where Ei represents a group III or group IV element, E^{II} represents a group IV or group VI element, x represents a number of 5–20, y represents an integer of 0–20 and z represents a number of 0.05–10, respectively.

4,764,213

LITHOGRAPHIC FOUNTAIN SOLUTION CONTAINING MIXED COLLOIDS

Henry Gventer, Florham Park, and Raymond Hamilton, Piscataway, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Jun. 16, 1986, Ser. No. 874,942

Int. Cl.[4] C09K *3/00*

U.S. Cl. 106—2 **10 Claims**

1. In an offset printing process, the improvement which comprises dampening a printing plate with a fountain solution comprising a mixture of the following non-aqueous components:

(a) from about 0.1 to about 1.5 percent by weight of a water soluble film forming hydrophilic gum;

(b) from about 0.75 to about 8.5 percent by weight of polyvinyl pyrrolidone;

(c) from about 5 to about 30 percent by weight of an acid etchant;

(d) from about 20 to about 50 percent by weight of a water soluble or water miscible glycol; and

(e) from about 0.01 to about 1.25 percent by weight of a phosphate/phosphoric acid buffer system;

said mixture being mixed with sufficient water such that the amount of non-aqueous components present in the solution is in the range of about 0.1 to about 0.9 percent by weight.

4,764,214

WOOD PRESERVATIVES CONTAINING 2-IODOBENZANILIDE

Hans-Norbert Marx, Buehl-Weitenung; Reimer Goettsche, Baden-Baden, and Werner Klein, Birkenheide, all of Fed. Rep. of Germany, assignors to Wolman GmbH, Sinzheim, Fed. Rep. of Germany

Filed Apr. 9, 1987, Ser. No. 36,457

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1986, 3613253

Int. Cl.[4] C09D *5/16;* **B05D** *1/18*

U.S. Cl. 106—18.32 **20 Claims**

1. A wood preservative composition comprising 2-iodobenzanilide and a quaternary ammonium compound, wherein:

(1) said 2-iodobenzanilide and said quaternary ammonium compounds are present in a weight ratio of from 2:1 to 1:20; and

(2) said quaternary ammonium compound is a compound of the formula $(R^1R^2R^3R^4N)^+X^-$, wherein R_1 is a C_{8-20} alkyl, benzyl, or benzyl substituted by C_{1-20} alkyl or halogen, R_2 is C_1–C_6-alkyl or C_3–C_9-alkoxyalkyl, R^3 is C_1–C_6-alkyl or C_{1-4} alkoxy, R^4 is C_{1-20} alkyl, or wherein any two of radicals R^1 to R^4, together with the nitrogen atom, form a heterocyclic radical containing 4 or 5 carbon atoms, 1 or 2 nitrogen atoms, and 1, 2 or 3 double bonds, or wherein any two of radicals R_1 to R_4, together with the nitrogen atom, form a heterocyclic radical containing 4 or 5 carbon atoms, 1 or 2 nitrogen atoms, and 1, 2 or 3 double bonds, said carbon atoms being substituted by C_{1-4} alkyl or halogen, and Z is an acid radical.

4,764,215

DRYING OIL SOAP FOR INTAGLIO INKS

Arthur Rudolph, Allendale, N.J., assignor to BASF Corporation, Clifton, N.J.

Division of Ser. No. 907,544, Sep. 15, 1986, abandoned. This application May 27, 1987, Ser. No. 35,957

Int. Cl.[4] C09D *11/06*

U.S. Cl. 106—28 **4 Claims**

1. A printed substrate printed with an intaglio printing ink, wherein the printing ink comprises

about 40.0 wt. % to about 70.0 wt. % pigment;

about 0.0 wt. % to about 0.4 wt. % of a drier; and,

about 15.0 wt. % to about 40.0 wt. % of the combination of about 0.8 wt. % to about 2.6 wt. % of a metal hydroxide, about 11.0 wt. % to about 38.0 wt. % of a hydroxy amine and about 59.4 wt. % to about 88.2 wt. % of a drying oil, reacted to provide a clear drying oil soap, the ink when used in an intaglio printing process has improved water wiping and the printed sustrate has improved flexibility and resistance to water, and eliminates or minimizes the need for volatile organic solvents.

4,764,216

METHOD OF CONVERTING PARTICLES LIBERATED IN CHEMICAL OR PHYSICAL PROCESSES INTO A HARMLESS FORM BY MIXING WITH A MOLTEN SILICATE-CONTAINING MATERIAL

Hooykaas, Carel W. J., Rotterdam, Netherlands, assignor to Pelt & Hooykaas B.V., Netherlands

Filed Nov. 15, 1985, Ser. No. 798,489

Claims priority, application Netherlands, Nov. 15, 1984, 8403501

Int. Cl.[4] C04B *05/00*

U.S. Cl. 106—117 **9 Claims**

1. A method of converting high volumes of powdery porous particulate material liberated in chemical or physical processes into a harmless form, said method comprising the steps of:

first, pre-heating the porous particulate material to a temperature above about 600° C., thereby increasing the temperature of the particulate material to a softening point of the particulate material;

second, mixing the heated particulate material with a molten slag material; and then

allowing the resulting mixture to solidify into a harmless form.

4,764,217

NOVEL COMPOSITIONS BASED ON ISOINDOLINE PIGMENTS

Jost von der Crone, Arconciel; Bernhard Medinger, Giffers, and Philippe Bugnon, Essert, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 7, 1987, Ser. No. 129,577

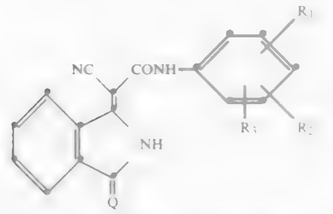
Claims priority, application Switzerland, Dec. 17, 1986, 5055/86

Int. Cl.[4] C09B *57/04;* **C07D** *209/44*

U.S. Cl. 106—494 **9 Claims**

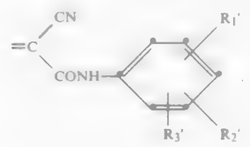
1. A composition containing

(a) an isoindoline pigment of the formula I

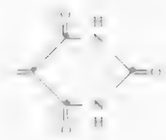


(I)

in which R_1 is hydrogen, halogen, methyl, C_1–C_4-carbamoyl, C_1–C_4-alkanoylamino, unsubstituted or halogen-, methylmethoxy-, trifluoromethyl- or acetylamino-ring-substituted benzoylamino or phenylcarbamoyl or unsubstituted or chlorine-substituted phthalimide, R_2 and R_3 are independently of each other hydrogen, halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy, or R_1 and R_2, together with the phenyl radical to which they are bonded, form a benzimidazolone, quinazolone, dihydroxyquinazoline, phenmorpholone, quinolone or 4-methylquinolone radical, and Q is a group of the formula

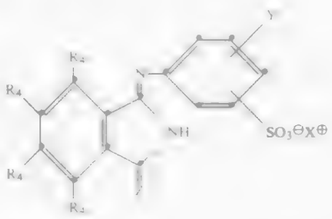


in which R_1', R_2' and R_3' are defined in the same way as R_1, R_2 and R_3 above, or is a group of the formula



and

(b) a compound of the formula II

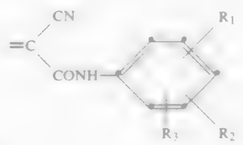


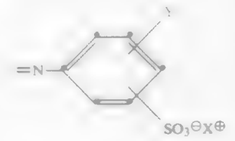
(II)

in which R_4 is hydrogen or chlorine, $X^{\oplus}$ is $H^{\ominus}$ or a group of the formulae

$$\frac{M^{n\oplus}}{n} \text{ or } N^{\oplus}(R_5)(R_6)(R_7)(R_8)$$

$M^{n\oplus}$ is an n-valent metal cation, n is 1, 2 or 3, R_5, R_6, R_7 and R_8 are independently of one another hydrogen, C_1–C_{18}-alkyl, C_5–C_6-cycloalkyl, unsubstituted or C_1–C_{18}-alkyl-substituted phenyl or R_7 and R_8, together with the N atom form a pyrrolidine, imidazolidine, piperidine, piperazine or morpholine radical, or R_6, R_7 and R_8, together with the N atom, form a pyrrole, pyridine, picoline, pyrazine, quinoline or isoquinoline radical, Y is hydrogen, halogen, methyl or amino and Z is one of the groups of the formulae





in which R_1, R_2, R_3, $X^{\oplus}$ and Y are as defined above or Z, if R_4 is chlorine, is oxygen.

4,764,218

PROCESS FOR THE PREPARATION OF MICRO INORGANIC FOAMED GRANULES

Waichi Kobayashi; Kouji Usui, and Kinzi Uehori, all of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Jul. 7, 1986, Ser. No. 882,591

Claims priority, application Japan, Jul. 9, 1985, 60-151146

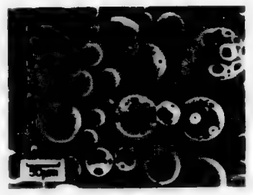
Int. Cl.[4] C04B *20/06*

U.S. Cl. 106—409 **7 Claims**

1. A process for the preparation of spherical micro inorganic

VOL 1093 ISS 3 AUG 16 1988 UMI

foamed granules having a mean particle size of not larger than 200 μm wherein amorphous particles having a particle size of not greater than 150 μm recovered from particles of an amor-



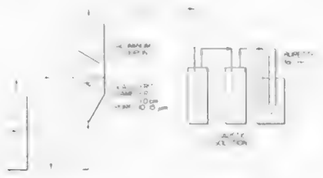
phous residue produced by partial oxidation of a coal are heated by introducing the same into a flame or gas at a temperature of not lower than 900° C. for 1/1,000 to 1 second.

4,764,219

CLEAN UP AND PASSIVATION OF MERCURY IN GAS LIQUEFACTION PLANTS

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 27, 1986, Ser. No. 923,245
Int. Cl.[4] B01D *53/34*; C09K *3/00*
U.S. Cl. 134—2 12 Claims



1. A process for passivating mercury present as a contaminant on gas processing equipment comprising contacting said mercury with a liquid solvent containing at least in part sulfur or a sulfur-containing compound selected from the group consisting of free elemental sulfur, colloidal sulfur, hydrogen sulfide, monosulfides, polysulfides and alkyl thiols said liquid solvent being selected from the group consisting of benzene, toluene, methanol, butane, propane, gas condensate, ethane, ethanol, propanol, carbon disulfide and mixtures thereof.

4,764,220

METHOD AND APPARATUS FOR CLEANING A POWDER COATING BOOTH

Bernard Dinkel, and Silvano Gelain, both of St. Gall, Switzerland, assignors to Ransburg-Gema AG, Switzerland

Filed Mar. 29, 1985, Ser. No. 717,187
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1984, 3412275
Int. Cl.[4] B08B *7/00*
U.S. Cl. 134—6 12 Claims

1. A powder coating booth and a scraper mechanism therefor, comprising:

a booth chamber having a surface to be scraped, an opening in the surface, and a powder collecting container below the opening, the surface further having first and second end regions and the opening being disposed about midway between the end regions;

a first movable scraper having a first starting position at the first end region and a second movable scraper having a second starting position at the second end region;

a scraper transport device movable along a path extending between the first and second end regions in the booth chamber, the first and second scrapers being spaced from one another, being coupled to the scraper transport device, and being movable in synchronism by the transport device, the first and second scrapers being spaced from one another when the first scraper is at the first starting position the second scraper is at the opening in the surface and when the second scraper is in the second starting position the first scraper is at the opening;

the scraper transport device including:

a linearly displaceable carriage for supporting the first and second scrapers;

guide rails for slidably supporting the carriage thereon, the carriage resting on the guide rails and being removable, hindrance free, by being lifted off the guide rails whereby replacement of the carriage and the first and second scrapers attached thereto is facilitated; and

flights for engaging cooperating surfaces on the first and second scrapers, the flights being effective for selectively moving the first and second scraper to disengage from the



surface to be scraped, in dependence on the direction of movement of the scraper transport device.

11. A method for cleaning collected powder from a powder booth chamber having a surface to be scraped, an opening in the surface, and a powder collection container below the opening, the surface further having first and second end regions, and the opening being disposed midway between the end regions, said method comprising the steps:

providing a first scraper having a first starting position at the first end region and a second scraper having a second starting position at the second end region;

transporting the first and second scrapers in synchronism along a path located between the first and second end regions by utilizing a scraper transport device; said device moving the first scraper towards said first starting position, and simultaneously the second scraper away from the second starting position, and toward the opening and alternatingly moving the first scraper from the first starting position toward the opening.

4,764,221

SILO CLEANING PROCESS

Wesley D. Hartwigsen; Alan D. Johnson; Jeffrey C. Beckham, and Kenneth L. White, all of Gillette, Wyo., assignors to Shell Mining Company, Houston, Tex.

Filed Nov. 7, 1986, Ser. No. 928,090
Int. Cl.[4] B08B *1/00*
U.S. Cl. 134—8 6 Claims

1. A process for removing cohesive masses of particles from the interior walls of a silo, comprising:

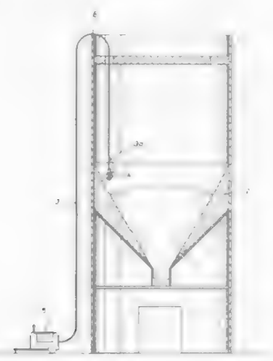
selecting a mace which has a density exceeding that of the cohesive masses of particles in the silo;

connecting at least one flexible hose between the mace and a source of relatively highly pressurized gas, which gas is inert to the cohesive masses of particles in the silo and can be supplied at a relatively high rate;

extending the flexible hose downward from an upper portion of the silo so that the flexible hose supports the mace at a depth at least near the cohesive masses of particles in the silo;

injecting the gas through the hose and out of the mace at a

pressure and rate such that the mace is driven into a random swinging and writhing motion and into and out of contact with the cohesive masses of particles encountered within the interior of the silo; and



operating the mace such that substantially all of the cohesive masses of particles are disintegrated and converted to free flowing particles.

4,764,222

N-METHYL-2-PYRROLIDONE COMPOSITIONS

George T. Colegrove, San Diego, Calif., assignor to Merck & Co. Inc., Rahway, N.J.

Filed Apr. 13, 1987, Ser. No. 37,655
Int. Cl.[4] C11D *7/50*
U.S. Cl. 134—38 1 Claim

1. A process for removing dried paint from a surface which comprises applying to said surface an effective amount of a composition comprising by weight 0.25–2% rhamsan gum, 40–90% N-methyl-2-pyrrolidone, 0.5 to 2% ethoxylated nonionic surfactant, and water to 100%, allowing said dried paint to soften, and then removing said softened paint from said surface.

4,764,223

PROCESS FOR THE MANUFACTURE OF A ROUGH-SHAPED, COLD-ROLLED CLADDING TUBE OF ZIRCONIUM ALLOY

Daniel Charquet; Yvon Millet, both of Albertville; Marc Dall-'Agnol, Mercury, and Réne Robin, Gilly/sur/Isere, all of France, assignors to Pechiney, Cedex, France

Filed Aug. 13, 1985, Ser. No. 765,102
Claims priority, application France, Jun. 27, 1985, 85 10373
Int. Cl.[4] C22F *1/18*
U.S. Cl. 148—11.5 F 4 Claims

1. A process for the manufacture of a rough-shaped, cold-rolled cladding tube of zirconium alloy, Zircaloy 2 or Zircaloy 4, said process comprising:

(a) transforming an ingot of the said zirconium alloy to the form of a bar by hot-working; cutting the worked bar obtained into billets; piercing a hole substantially coaxially in one of the said billets; and machining this billet;

(b) quenching in water, from the β range, either the worked-bar before it is cut into billets or at least one of the said billets before or after piercing;

(c) extruding in the α range at least one of the said perforated and quenched billets in the form of an extruded rough-shaped; and

(d) cold-rolling and heat-treating at least one of the said extruded rough-shape to produce a cold-rolled, rough-shaped cladding tube;

wherein the said process is characterized in that the said hot-working is first carried out in the β range at a temperature of from 960° to 1050° C. with a cross-sectional reduction ratio of from 1.5 to 3, and then in the α range at a temperature from 740° to 790° C. with a cross-sectional reduction ratio of at least 3.

4,764,224

BAKED FLUX FOR SUBMERGED ARC WELDING

Naoki Okuda, Kamakura; Yutaka Nishikawa, Fujisawa, and Takakiyo Aoki, Fukuchiyama, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jul. 1, 1987, Ser. No. 68,277
Claims priority, application Japan, Jul. 2, 1986, 61-155655
Int. Cl.[4] B23K *35/34*
U.S. Cl. 148—26 3 Claims

1. A baked flux for submerged arc welding, consisting essentially of:

2–10 wt. % CO_2 equivalent of a metal carbonate, 12–24 wt. % CaF_2, 8–20 wt. % Al_2O_3, 20–40 wt. % MgO, 10–30 wt. % CaO, 7–27 wt. % SiO_2, 1–7 wt. % of at least one member selected from the group consisting of Na_2O, K_2O and Li_2O, 0.03 wt. % or less P, 0.05 wt. % or less S, and 0.3 wt. % or less 1000° C. water, wherein the bulk specific gravity of said baked flux is between 0.8–1.3 g/cm^3 and wherein $1.5 \leqq MgO/Al_2O_3$ ratio $\leqq 2.5$.

4,764,225

ALLOYS FOR HIGH TEMPERATURE APPLICATIONS

Srinivasan Shankar, and Louis E. Dardi, both of Muskegon, Mich., assignors to Howmet Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 67,097, Aug. 16, 1979, which is a continuation-in-part of Ser. No. 43,146, May 29, 1979. This application May 13, 1980, Ser. No. 149,499
Int. Cl.[4] C22C *19/05*
U.S. Cl. 148—404 18 Claims

1. A single crystal nickel-based alloy consisting essentially of, by weight, 5 to 40% chromium, 0.5 to 12% manganese, 3 to 10% aluminum, 0 to 10% titanium, at least 5% aluminum plus titanium, up to about 15% cobalt, up to about 30%, in combination, of a member from the group consisting of tantalum, tungsten, molybdenum, columbium, rhenium, or vanadium, up to about 2% silicon, up to about 5% hafnium, and balance nickel;

in which the ratio of aluminum:titanium exceeds 1, said alloy forming protective aluminum-rich surface oxides and being resistant to oxidation and corrosion.

4,764,226

Ni_3Al ALLOY OF IMPROVED DUCTILITY BASED ON IRON AND NIOBIUM SUBSTITUENT

Shyh-Chin Huang, Latham; Keh-Minn Chang, and Alan I. Taub, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

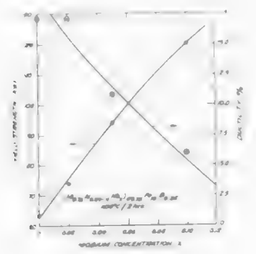
Filed Oct. 3, 1985, Ser. No. 783,722
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.[4] C22C *19/03*
U.S. Cl. 148—429 7 Claims

7. As a composition of matter, a rapidly solidified single

VOL 1093 ISS 3 AG 16 1988 UMI

phase γ' trinickel aluminide base alloy of the following composition, the ingredients of which are given in atomic percent:

$$(Ni_{1-u}Al_{u-x}Nb_x)_{90-y-z}Fe_yB_z$$



where u is 0.23 to 0.245; y is 5 to 15; z is 0.1 to 2.0; and x is 0.02 to 0.10.

4,764,227

SINTERED ELECTRICAL CONTACT MATERIAL FOR LOW VOLTAGE POWER SWITCHING

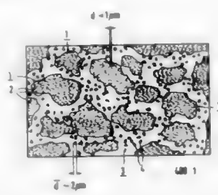
Bernhard Rothkegel, Nuremberg, and Wolfgang Haufe, Hessdorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 744,165, Jun. 12, 1985, abandoned. This application Nov. 12, 1986, Ser. No. 930,958

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1984, 3421758

Int. Cl.[4] C22C 5/06

U.S. Cl. 148—431 2 Claims



1. A sintered contact material made by compacting and sintering a mixture comprising:

a composite $AgSnO_2Bi_2O_3CuO$ powder; and a Bi_2O_3 powder, wherein the SnO_2 content by weight is in the range of 4% to 8%, the weight percentage ratio of SnO_2 to CuO is in the range between 8 to 1 and 12 to and the total metal oxide content between 10% and 25% by volume I, the sintered contact material including, $AgSnO_2$ Bi_2O_3CuO distributions and Bi_2O_3 distributions, the concentration of Bi_2O_3 being lower within the $AgSnO_2Bi_2O_3CuO$ distribution than outside the $AgSnO_2Bi_2O_3$ CuO distribution $AgSnO_2Bi_2O_3$, and the Bi_2O_3 material having a lower Bi_2O_3 concentration in the $AgSnO_2Bi_2O_3$ grains and a higher Bi_2O_3 concentration located outside of the $AgSnO_2Bi_2O_3$ grains and present between the grains.

4,764,228

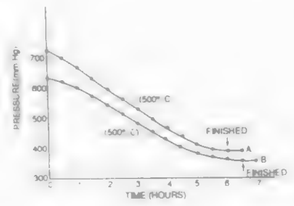
METHOD FOR PREPARING HYDRIDE CONFIGURATIONS AND REACTIVE METAL SURFACES

Gary L. Silver, Centerville, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 28, 1986, Ser. No. 935,981

Int. Cl.[4] C23C 22/00; A61N 5/12; G21C 19/34

U.S. Cl. 148—6.14 R 15 Claims



1. A method for preparing hydrogen-reactive surfaces on a metallic body, comprising:

(a) forming an adherent hydrogen-bearing coating on selected surfaces of said body;

(b) heating said body in a vacuum or in an inert atmosphere at a temperature sufficient to decompose said coating; and

(c) cooling said metal body to room temperature under said conditions.

2. The method of claim 1, wherein the hydrogen-bearing coating is formed by immersing the metallic body surfaces in a non-oxidizing acid.

4,764,229

SENSITIZATION OF INORGANIC OXIDIZER EXPLOSIVES

Fred Miekka, and Jim Miekka, both of 199 Goodman's Hill Rd., Sudbury, Mass. 01776

Filed Jul. 20, 1987, Ser. No. 75,545

Int. Cl.[4] C06S 45/02

U.S. Cl. 149—21 20 Claims

1. An explosive mixture consisting of an inorganic oxidizer sensitized by a liquid hydrocarbon, metallic powder and a liquid non-reducing organic nitrate;

said liquid hydrocarbon and said liquid non-reducing nitrate being present in an amount completely absorbed by the other ingredients in order to reduce sweating by said explosive mixture.

4,764,230

EXPLOSIVE COMPOSITION

Andrew Bates, West Melton; Stuart Dack, Graham Roads Rosanna, and David Yates, East Brunswick, all of Australia, assignors to ICI Australia Operations Proprietary Ltd., Victoria, Australia

Filed Aug. 26, 1987, Ser. No. 89,394

Claims priority, application Australia, Aug. 26, 1986, PH7651

Int. Cl.[4] C06B 45/02

U.S. Cl. 149—21 37 Claims

1. A water-in-oil emulsion explosive composition comprising: a discontinuous aqueous oxidizer-phase comprising dissolved therein an oxygen releasing salt component comprising ammonium nitrate; a continuous organic-phase comprising an organic fuel; and an emulsifying agent and characterised in that the oxygen-releasing salt component comprises at least one modifier selected from compounds of elements selected from the group consisting of aluminium, iron and silicon and wherein the oxidizer-phase comprises dissolved therein at least one polycarboxylate compound selected from polycarboxylic acids and salts thereof.

4,764,231

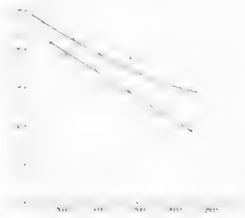
WELL STIMULATION PROCESS AND LOW VELOCITY EXPLOSIVE FORMULATION

Frank E. Slawinski, Carl Junction, Mo., and William L. Frantz, New Ringgold, Pa., assignors to Atlas Powder Company, Dallas, Tex.

Filed Sep. 16, 1987, Ser. No. 97,530

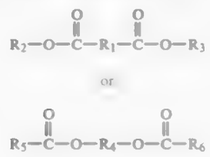
Int. Cl.[4] C06B 25/14

U.S. Cl. 149—104 35 Claims



1. In the fracturing of a subterranean formation penetrated by a well, the method comprising:

(a) introducing into said well and into proximity to said subterranean formation a liquid explosive composition comprising a nitrate ester explosive component selected from the group consisting of nitroglycerine, ethylene glycol dinitrate, propylene glycol dinitrate, diethylene glycol dinitrate and trimethyl ethylethane trinitrate and mixtures thereof and a phlegmatizer component soluble in said liquid explosive component and having the formula:



wherein

R_1 is a C_4–C_9 alkyl group,

R_2 and R_3 are each independently alkyl or alkoxyalkyl groups containing from 3–11 carbon atoms,

R_4 is a group, preferably ethyleneglycoxy or polyethyleneglycoxy, containing from 2–6 carbon atoms, and

R_5 and R_6 are each independently alkyl or alkoxyalkyl groups containing from 3–11 carbon atoms,

(b) detonating said explosive mixture to fracture said subterranean formation adjacent said well.

4,764,232

METHOD OF PROTECTING A CABLE SPLICE WITH A SPLICE CLOSURE HAVING PRESSURE MEASURING MEANS

Thomas A. Hunter, Cary, N.C., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Sep. 26, 1986, Ser. No. 912,441

Int. Cl.[4] H02G 1/14, 15/18

U.S. Cl. 156—48 3 Claims

1. A method of protecting a cable splice, which comprises:

(a) providing a cable splice between two cables;

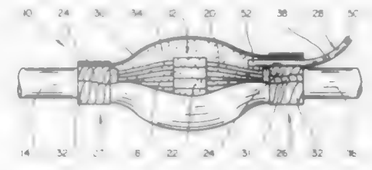
(b) wrapping a tape around each cable at a position adjacent the splice to form first and second tape wraps;

(c) placing a pressure measuring tube across the first tape wrap such that it has one end adjacent the splice and an opposite end further away from the splice than said first tape wrap;

said pressuring measuring tube being sealed at said opposite end, and having a transparent or translucent wall;

(d) positioning a flexible reservoir around the splice and around the first and second tape wraps and around the pressure measuring tube such that said one end of the tube lies within the reservoir and said opposite end lies outside the reservoir;

(e) then introducing a curable sealant into the reservoir via an opening therein;



(f) then closing the opening to seal the reservoir;

(g) then compression wrapping a tape around the reservoir thereby subjecting the curable sealant to compression;

(h) observing through the wall of the pressure measuring tube the extent to which curable sealant is displaced into the tube and thereby the pressure to which the sealant is subjected;

(i) then curing the curable sealant while the sealant is thus observable.

4,764,233

PROCESS FOR PRODUCING A CERAMIC MULTI-LAYER CIRCUIT BOARD

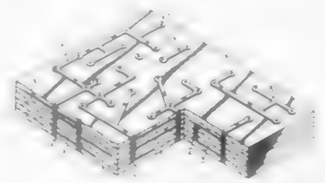
Satoru Ogihara, and Nobuyuki Ushifusa, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 511,903, Jul. 8, 1983, abandoned. This application May 12, 1986, Ser. No. 862,169

Claims priority, application Japan, Jul. 12, 1982, 57-119811

Int. Cl.[4] B32B 18/00, 31/04

U.S. Cl. 156—89 13 Claims



1. A process for producing a ceramic multi-layer circuit board, wherein a plurality of ceramic layers each having a conductor pattern on an upper surface are piled, which comprises making a mixture of (1) 20 to 80% by weight of single silica, said single silica being at least two kinds of single silica, the at least two kinds of single silica being different from each other in crystal form, each of the at least two kinds of single silica having an average particle size of not more than 10 μm, the at least two kinds of single silica different from each other in crystal form being selected from the group consisting of critobolite, tridymite, quarta glass and quartz, and (2) 80 to 20% by weight of at least one kind of low melting point glass having a lower softening point than that of a metal forming said conductor pattern and having an average particle size of not more than 10 μm, said at least one kind of low melting point glass being selected from the group consisting of borosilicate glass, barium borosilicate glass, magnesium borosilicate

VOL 1093 ISS 3 AUG 16 1988 UMI

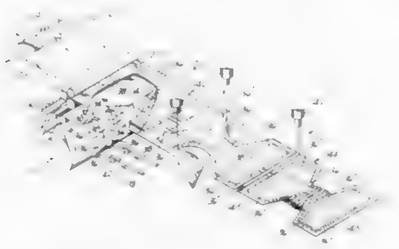
glass, aluminum phosphate glass and lead oxide-containing low softening point glass; forming said mixture into a slurry together with an organic synthetic resin-based binder and a solvent; forming a sheet from the slurry on a flexible film; removing the solvent therefrom, thereby obtaining a green sheet; depositing a circuit conductor of a metal selected from the group consisting of gold, silver, copper or their alloys, on the green sheet, in a desired pattern form; piling a plurality of the green sheets to form a laminate thereof; and firing the piled green sheets at a temperature lower than the melting point of the circuit conductor metal, thereby obtaining a fired ceramic where the single silica is evenly distributed in the matrix of the low melting point glass.

4,764,234

METHOD OF APPLYING ADHESIVE

Donald M. Smits; Patrick J. Daley, both of Green Bay, Wis., and Mary E. Buckley, Wheeling, Ill., assignors to The Kendall Company, Boston, Mass.

Filed Dec. 18, 1986, Ser. No. 943,990
Int. Cl.[4] B31F *1/22*
U.S. Cl. 156—164 5 Claims



1. The method of manufacturing an absorbant pad by applying a plurality of non-linear continuous bands of adhesive to a continuous moving web by an adhesive applying machine, comprising the steps of:

passing the web around a rotatable drum;

identifying the amount of web going by the adhesive applying machine;

ejecting adhesive from a nozzle arrangement onto a web moving therepast;

moving said nozzle arrangement from a first location to a second location during motion of a web therepast and during said ejection of adhesive thereon;

returing said nozzle arrangement from said second location to its first location as a web moves therepast;

continuing said cyclical movement of said nozzle arrangement based upon the movement of a web therepast;

directing the transverse movement of each nozzle in the nozzle arrangement to mo··e in opposite directions synchronously; and

applying elastic bands continuously against said web, the bands adhering only to portions of said continuous adhesive bands.

4,764,235

PROCESS AND APPARATUS FOR SEALING SEMICONDUCTOR PACKAGES

Keiji Hazama, Oyama; Shin'ichi Ota; Mituo Yamada, both of Shimodate, and Toshiyuki Arai, Tochigi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Jul. 30, 1986, Ser. No. 890,515
Claims priority, application Japan, Aug. 1, 1985, 60-118722
Int. Cl.[4] B32B *31/04, 31/20*
U.S. Cl. 156—228 3 Claims

1. A process for producing a semiconductor package comprising two flat moldings made from a thermoplastic resin, at least one of the flat moldings having a cavity for holding a body of a semiconductive material, and a lead frame, characterized by positioning the lead frame vertically while holding the two flat moldings in an initial horizontal position, said flat moldings being individually held in the cavities of two mold parts which are positioned symmetrically and adjacent to the lead frame and capable of being rotated through 90° from said initial position wherein the flat moldings have sealing surfaces directed upwardly and to another position wherein the sealing surfaces are directed towards the lead frame; heating the lead frame and the flat moldings in the initial position, thereafter rotating the mold parts through 90° and positioning the flat moldings against the lead frame and, pressing the flat moldings against the lead frame to join the flat moldings integrally to each other and to the lead frame.

2. An apparatus for producing semiconductor packages by sealing two flat moldings made from a thermoplastic resin around a semiconductor body mounted on a lead frame which comprises means for holding a lead frame on which a body of a semiconductor is mounted in a vertical position along a center axis of the apparatus; a pair of lead frame heaters for



heating the lead frame, each of said lead frame heaters being movable vertically from an inoperable position spaced away from the lead frame to an operative position adjacent to the lead frame; a pair of mold parts positioned symmetrically with respect to the center axis and with respect to the lead frame, each mold part having a cavity for housing a flat molding made from a thermoplastic resin, each cavity being arranged in an initial position wherein the flat molding is arranged perpendicular to the lead frame with a sealing surface directed upwardly and being rotatable 90° to a second position wherein the flat molding is arranged parallel to the lead frame with its sealing surface directed towards the lead frame, said mold parts being movable laterally to place the flat moldings against the lead frame and thereby sandwich the lead frame between the flat moldings; and a pair of hot-air heaters for heating sealing surfaces of the flat moldings arranged in a horizontal position in the initial position of said mold parts, each of said hot-air heaters being able to be moved vertically towards and away from the mold parts containing the flat moldings; said hot-air heaters being moved upwardly away from the mold parts during rotation of the mold parts through 90°.

4,764,236

CORRUGATING MACHINE GLUE APPLICATOR

Willem A. Nikkel, Covington, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Jun. 22, 1987, Ser. No. 64,506
Int. Cl.[4] B32B *31/12*
U.S. Cl. 156—210 8 Claims

1. In combination with an apparatus for continuously applying a second facing web to an exposed face plane of corrugated flute tips on a continuously produced line of single-faced corrugated paperboard, a glue station having an adhesive applicator roll for applying adhesive to said exposed, corrugated flute tips, said glue station including backing force means for exerting a force bias on said single-faced production line to press said exposed flute tips substantially radially against the length

of said adhesive applicator roll, said backing force means comprising air manifold means secured in a position proximate of said glue station to extend substantially parallel with a rotational axis of said roll, the improvement comprising a plurality of air bearing shoes aligned along the length of said applicator roll to apply said force bias against said single-faced production line, independent resilient positioning means respective to each air bearing shoe for laterally and longitudinally confining the location of each shoe and conduit means respective to each of said shoes for applying pressurized air thereto from said air manifold means.

8. A method of applying a second liner web to a moving web of single-faced corrugated paperboard having an exposed,



corrugated surface and a smooth surface, said method comprising the steps of:

(a) routing flute tip elements of said corrugated surface into a line contact with an adhesive coated surface of a rotating glue applicator roll;

(b) positioning a plurality of air bearing shoe elements proximately of said smooth surface along said line of contact;

(c) resiliently biasing each of said shoe elements, independently of other said shoe elements, toward said smooth surface; and,

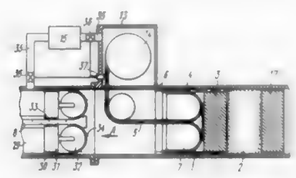
(d) providing a sufficient air flow between each of said shoe elements and said smooth surface to support said shoe elements from normal contact with said smooth surface against the force of said resilient bias.

4,764,237

METHOD OF COATING THE INTERNAL SURFACE OF A PIPELINE WITH A CEMENT-SAND MORTAR AND A DEVICE FOR EFFECTING SAME

Viktor V. Shishkin; Nikolai F. Kryazhevskikh, both of Krasnodar; Viktor N. Oleinik, Moscow; Boris I. Shiatganer, and Vladimir L. Medunitsa, both of Severo-Kazakhstanskaya, all of U.S.S.R., assignors to Trest "Juzhvodoprovod" , Krasnodar, U.S.S.R.

PCT No. PCT/SU85/00091, § 371 Date Jun. 9, 1986, § 102(e) Date Jun. 9, 1986, PCT Pub. No. WO86/02428, PCT Pub. Date Apr. 24, 1986
PCT Filed Oct. 16, 1985, Ser. No. 882,891
Claims priority, application U.S.S.R., Oct. 17, 1984, 3797407; Oct. 17, 1984, 3797423; Oct. 17, 1984, 3797422; Oct. 17, 1984, 3797408; Oct. 17, 1984, 3797908
Int. Cl.[4] B32B *31/00;* B05D *7/22;* B05C *3/02*
U.S. Cl. 156—294 13 Claims



1. Method of coating the internal surface of a pipeline with a cement-sand mortar, comprising the steps of forming a layer (4) of the cement-sand mortar (2) on the internal surface of a pipeline (1); pressing a flexible hose (5) having two ends against said mortar layer (4); connecting a turned out end of said hose to the pipeline (1); compressing a flowing medium in the turned out portion of the hose (5); under pressure of the flowing medium the flexible hose, turning out, moving along the pipeline, and pressing against said layer of the cement-sand mortar formed on the pipeline surface; disposing the piston (3) in the pipeline (1) ahead of the turned out portion of the hose (5) with an annular clearance (12) with respect to the pipeline (1); feeding cement-sand mortar (2) is through the annular clearance (12) between the internal surface of the pipeline (1) and the piston (3) thus forming said mortar layer (4) on the surface of the pipeline, the turned out portion of the flexible hose being permanently maintained in contact with the piston (3) to move it under the action of the flowing medium.

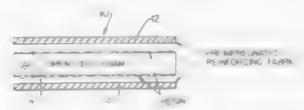
10. A device for coating the internal surface of a pipeline with a cement-sand mortar, comprising a system (11) for feeding the cement-sand mortar into the pipeline; a chamber (13) with a flexible hose (5), having two ends, disposed therein, one end of said flexible hose being provided with an arrangement for attachment to the pipeline and being preliminary turned out; a system (15) for feeding the flowing medium which communicates with a space formed by the turned out hose; a piston (3) disposed in the pipeline ahead of said turned out portion of said hose in permanent contact with said turned out portion of said hose, said piston (3) having a diameter less than the inner diameter of the pipeline and being provided with projections (21) contacting with the internal surface of the pipeline and maintaining a preset annular clearance (12) between said piston and the pipeline surface, said flexible hose (5) and the flowing medium forming means moving the piston along the pipeline so that the cement-sand mortar is pressed out through said annular clearance (12) between said piston and the pipeline thereby forming a cement-sand layer on the surface of the pipeline, which layer is then supported by the turned-out portion of said flexible hose (5).

4,764,238

ENERGY ABSORBING FOAM-FABRIC LAMINATE

Samuel J. Dastin, Hicksville; Carlos M. Cacho-Negrete, Rock Point; John Mahon, Huntington; Leonard M. Poveromo, Northport; Nicholas Corvelli, Smithtown, and Arnold London, Sayville, all of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 768,589, Aug. 23, 1985, abandoned.
This application Mar. 16, 1987, Ser. No. 27,118
Int. Cl.[4] C09J *5/02, 7/00;* B32B *5/12, 5/18*
U.S. Cl. 156—245 2 Claims



1. A method for forming a lightweight laminated structure comprising the steps:

impregnating opposite surfaces of a layer of open cellular material with a charge of thermosetting resin;

stacking a first plurality of fabric sheets, preimpregnated with bonding material, against a first surface of the cellular layer; wherein each sheet has an altered preselected orientation relative to an adjacently stacked sheet;

stacking a second plurality of fabric sheets, preimpregnated with bonding material, against an opposite surface of the cellular layer; wherein each sheet of the second plurality of sheets has an altered preselected orientation relative to an adjacently stacked sheet, but an identical orientation to a corresponding sheet in the first plurality of fabric sheets;

subjecting all the sheets and the layer to pressure from die members which bond them together while molding the structure to a predetermined finished contour; and

VOL 1093 ISS 3 AG 16 1988 UMI

applying heat and the pressure simultaneously for single curing the resin and impregnated material, while molding occurs, to form an impact-resistant structure.

4,764,239

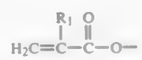
SUBSTITUTED SACCHARIN COMPOUNDS AND CURABLE COMPOSITIONS CONTAINING SAME

Anthony F. Jacobine, Meriden, and David M. Glaser, New Britain, both of Conn., assignors to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 758,635, Jul. 23, 1985, abandoned. This application Aug. 4, 1986, Ser. No. 899,377
Int. Cl.[4] C09J 5/02
U.S. Cl. 156—307.3 12 Claims

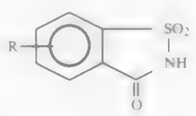
1. A composition of improved 82° C. stability to gellation, which is stable in the presence of oxygen and curable when deprived of oxygen, comprising:

(a) a monomer having at least one curable acrylic functionality of the formula



wherein R_1 is H or alkyl;

(b) a saccharin derivative accelerator compound having higher solubility than saccharin in said monomer, of the formula

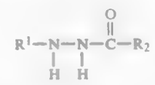


wherein R is cyclohexyl or t-butyl;

(c) a co-accelerator selected form the group consisting of:

(i) tertiary aromatic amines;

(ii) compounds of the formula



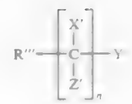
wherein R^1 is phenyl substituted with C_1–C_{14} alkyl group and R^2 is selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, aryl, alkoxy, aryloxy, carbonyl, amino, and the following groups:



wherein R^{10} is selected from the group consisting of alkyl groups containing one to about 10 carbon atoms, alkenyl groups containing two to about 10 carbon atoms, and aryl groups containing up to about 10 carbon atoms; and

(iii) an organic compound containing a ferrocene moiety; and

(d) a free radical initiator selected from hydroperoxides, peroxyesters, peroxycarbamates, and halogen containing compounds defined by the formula



wherein X' is selected from H, CH_3, Cl, and Br; Y' and Z' are each selected independently from the group consisting of Cl and Br; R''' is selected from the group consisting of aromatic and heteroaromatic residues; and n' is an integer from 1 to 3 inclusive.

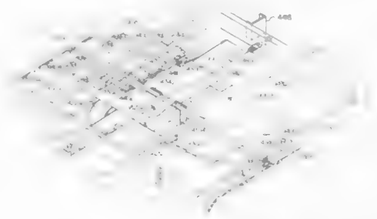
12. A method of adhesive bonding of substrates to one another, by applying to at least one of said substrates a composition according to claim 1, placing said substrates in bonding relationship to one another, and curing said composition in the substantial absence of oxygen.

4,764,240

APPARATUS AND METHOD FOR AUTOMATICALLY FORMING UNITARY BONDED BOARD STRUTURES

Joseph M. Simeone, Sr., 24542 Quintana Dr., Mission Viejo, Calif. 92691, and Joseph M. Simeone, Jr., 466 N. Earlham St., Orange, Calif. 92669

Continuation-in-part of Ser. No. 887,742, Jul. 18, 1986, abandoned. This application May 11, 1987, Ser. No. 48,674
Int. Cl.[4] B32B 31/00
U.S. Cl. 156—303 26 Claims



1. A machine for automatically forming unitary bonded board structures from pairs of boards and a tape source comprising:

conveying means for automatically advancing board pairs placed thereon, approximately along a first plane in a straight line first direction such that, when said machine is in use,

(i) at least one set of corresponding traverse edges of a board pair while being automatically advanced by said conveying means, lie approximately along a traverse edge straight line perpendicular to said first direction, and

(ii) the first board of such board pair is automatically spaced apart from the second board of such board pair in a direction perpendicular to said first direction a predetermined traverse separation distance thereby forming and maintaining a traverse gap between such first and second boards as such boards are automatically advanced approximately along said first plane in said first direction by said conveying means;

tape feeding means for automatically feeding, when said machine is in use, a tape from a tape source, proximate the under surface of such board pair and proximate said traverse gap such that the vertical projection of such thusly fed tape spans such traverse gap and overlies the first board of such board pair a first predetermined traverse overlap distance traversely spaced from the longitudinal edge of the first board which forms such traverse gap and overlies the second board of such board pair a second predetermined traverse overlap distance traversely spaced from the longitudinal edge of the second board which forms such traverse gap;

first bonding means for automatically bonding, when said machine is in use, such tape to the under surface of the first and second boards of such board pair over said first and second predetermined traverse overlap distances respectively as such board pair is automatically advanced by said conveying means approximately along said first plane in said first direction;

tape cutting means for automatically cutting, when said machine is in use, such tape at a predetermined lead distance from the leading edge of such board pair as such board pair is automatically advanced by said conveying means approximately along said first plane in said first direction thereby forming a tape leader for such board pair immediately upstream of said tape

cutting means, and also simultaneously forming a tape trailer for the preceding board pair immediately downstream of said tape cutting means;

second bonding means for automatically bonding, when said machine is in use, such tape leader to the upper surface of the first and second boards of such board pair to which such tape leader is attached, over said first and second predetermined traverse overlay distances respectively thereby covering a portion of the leading edge of such board pair, and also for automatically bonding such tape leader to a portion of such tape

which spans such traverse gap from the under surface of such board pair, as the leading edge of such board pair is automatically advanced by said conveying means approximately along said first plane in said first direction away from said cutting means; and

third bonding means for automatically bonding, when said machine is is use, such tape trailer to the upper surface of the first and second boards of such board pair to which such tape trailer is attached approximately over said first and second predetermined traverse overlay distances respectively thereby covering a portion of the trailing edge of such boards, and for automatically bonding such tape trailer to a portion of such tape which spans such traverse gap from the under surface of such board pair longitudinally from the trailing edge thereof, thereby forming an unitary bonded board structure as such board pair is approximately in said first plane of said conveying means.

20. A method for continuously forming unitary bonded board structures from a source of boards and a single continuous piece of tape from a tape source comprising:

(a) continuously feeding tape from a single continuous source of tape at a predetermined speed along a horizontal plane;

(b) continuously feeding board pairs at a predetermined cycle and in a predetermined orientation at said predetermined speed approximately along said horizontal plane;

(c) automatically bonding said tape to the under surface of said board pair while said tape and said board pair is being continuously conveyed at said predetermined speed approximately along said horizontal plane;

(d) after bonding said tape to the under surface of said board pair in step (c), automatically cutting said tape at a predetermined distance from the leading edge of the board pair while said board pair is being continuously conveyed at said predetermined speed approximately along said horizontal plane thereby forming a tape leader for one board pair and a tape trailer for the board pair fed along said horizontal plane in the cycle immediately preceding said former mentioned board pair;

(e) automatically pulling said tape leader over the leading edge of the board pair to which said tape leader is attached while said board pair is being continuously conveyed at said predetermined speed approximately along said horizontal plane;

(f) automatically bonding said tape leader pulled over the leading edge of said board pair in step (e) to the upper surface of said board pair while said board pair is being continuously conveyed at said predetermined speed approximately along said horizontal plane;

(g) after bonding said tape leader to the upper surface of said board pair, automatically stopping the conveying of said board pair and rigidly holding said board pair in a fixed position approximately in said horizontal plane for a predetermined length of time;

(h) during said predetermined length of time mentioned in step (g), automatically pulling the tape trailer attached to said board pair rigidly held in said fixed position over the trailing edge of said board pair;

(i) after pulling said tape trailer over the trailing edge of said board pair in step (h) and during said predetermined length of time while said board pair is being held in said fixed position, automatically bonding said tape trailer to the upper surface of said board pair thereby forming an unitary bonded board structure;

(j) after said predetermined length of time mentioned in step (g), automatically conveying said unitary bonded board structure formed in step (i) from said fixed position; and

(k) repeating steps (b) through (j) of said method thereby continuously forming unitary bonded board structures.

4,764,241

APPARATUS FOR MANUFACTURING A SEAT

Hiroyuki Makino, Akishima, Japan, assignor to Tachi-S Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1987, Ser. No. 30,230
Int. Cl.[4] B32B 31/20
U.S. Cl. 156—382 9 Claims



1. An apparatus for manufacturing a seat comprising:

a turntable rotatable 360 degrees in a circular direction, said turntable being so arranged that it is rotatable intermittently at 90-degree intervals;

a plurality of lower dies arranged on said turntable such that they are disposed in 90-degree interval relationship with each other and are rotatable together with said turntable; and

a plurality of elements so arranged that they are disposed in 90-degree interval relationship with each other on a path where said plurality of lower dies are travelled, said elements including:

a station for supplying top cover members to be affixed to said plurality of lower dies, and for unloading assembled seats;

a heating mechanism for applying a heat to said top cover member affixed to said lower dies;

a forming mechanism for press forming said top cover member on said lower dies by means of upper dies into a predetermined shape; and

a pressure bonding mechanism for bonding a foam cushion member to said top cover member.

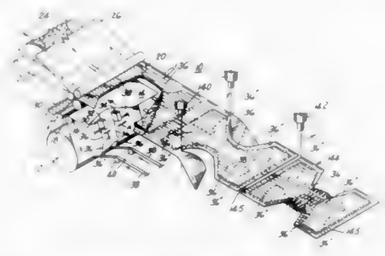
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,242

ADHESIVE APPLYING APPARATUS

Joseph A. Gresnick, DePere, and Randall B. Korth, Green, both of Wis., assignors to The Kendall Company, Boston, Mass.

Filed Dec. 18, 1986, Ser. No. 944,054
Int. Cl.[4] B31F 1/22
U.S. Cl. 156—494 13 Claims



7. A machine for the continuous application of a plurality of bands of adhesive onto a moving web, onto which a plurality of elastic bands will be partially attached, for partial gathering of the webs where said elastic bands are attached in an absorbent pad construction, said machine comprising:

a pair of adhesive applicators movably supported on a support plate for applying adhesive onto a moving web for an absorbent pad;

an intermediate support;

a pair of manually adjustable means for locating said support plate on said intermediate support;

a mounting plate supported on a frame for carrying said intermediate support;

a first moving means for moving said intermediate support with respect to said mounting plate on said frame.

12. A machine for the application of a continuous band of adhesive onto a movable web for an absorbent pad construction, comprising:

a frame for support a pair of adhesive ejecting nozzles;

a means for moving each of said nozzles sideways while it ejects adhesive onto a web, causing bands of adhesive being applied to said web to be non-linear;

a means for moving said nozzles away from its operational location adjacent a web;

a means for securing a continuous elastic band to only portions of said bands of adhesive on a web for permitting the partial gathering of a web upon subsequently cutting of said web and elastic bands in an absorbent pad construction.

4,764,243

TAPE SPLICING APPARATUS

Shigeo Shioiri, Chiba, and Yuzo Otomine, Kanagawa, both of Japan, assignors to Somar Corporation, Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 917,647
Claims priority, application Japan, Oct. 12, 1985, 60-227296; Nov. 26, 1985, 60-182325[U]
Int. Cl.[4] B31F 5/06; G03D 15/04
U.S. Cl. 156—505 9 Claims

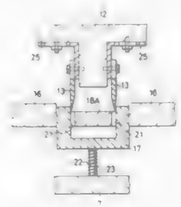
1. A splicing apparatus for splicing information recording tapes to each other, comprising:

a stationary member having a plate into which an information recording tape guide groove is formed, said groove having a bottom surface;

a movable member movably provided with respect to said stationary member;

information recording tape guide means disposed at a splicing section of said stationary member for guiding the information recording tapes when the information recording tapes are fed along said information recording tape guide groove in a first direction;

a first cutter means provided on said movable member above said guide means for cutting an adhesive tape in a predetermined length, said first cutter means having a pair of spaced blades parallel to said information recording tape guide groove, each of said cutting blades having first and second sides and having a cutting edge which is tapered on both of said first and second sides, the cutting edge of one of said cutting blades being inclined upwardly along said first direction while the cutting edge of the other of



said cutting blades is inclined downwardly along said first direction;

spring means for urging said information tape guide means upwardly to a predetermined position; and

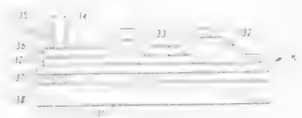
the bottom surface of said groove being narrower in at least a portion of said splicing section than outside of said splicing section to thereby form a pair of slits between said information recording tape guide means and said bottom portion of said information recording tape guide groove, said slits being wide enough to permit insertion therein of said cutting blades to a depth where said tapered cutting edges are entirely below said bottom surface.

4,764,244

RESONANT SENSOR AND METHOD OF MAKING SAME

Gordon W. Chitty, Norfolk; Richard H. Morrison, Jr., Taunton; Everett O. Olsen, Wrentham; John G. Panagou, Attleboro, and Paul M. Zavracky, Norwood, all of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Jun. 11, 1985, Ser. No. 743,255
Int. Cl.[4] H01L 21/306; B44C 1/22; C03C 15/00; C23F 1/02
U.S. Cl. 156—630 22 Claims



1. A method of fabricating a laminar resonant structure, comprising the steps of:

(a) preparing a substrate workpiece;

(b) securing a laminar material to said substrate;

(c) cleaning the exposed laminar material surface;

(d) patterning a first resist on the laminar material surface;

(e) descumming the resist;

(f) etching the workpiece to form a resonant structure on the substrate;

(g) cleaning and baking the workpiece;

(h) depositing a piezoelectric layer on the workpiece surface;

(i) patterning and etching the piezoelectric layer to form a piezoelectric slab:

(j) cleaning and rinsing the workpiece;

(k) applying an insulation layer on the workpiece surface and patterning same;

(l) depositing a conductive metallization layer on the workpiece surface and patterning and etching same;

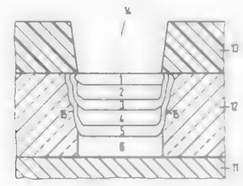
(m) removing the resonant structure from the substrate.

4,764,245

METHOD FOR GENERATING CONTACT HOLES WITH BEVELED SIDEWALLS IN INTERMEDIATE OXIDE LAYERS

Virinder Grewal, Ebersberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 26, 1987, Ser. No. 19,367
Claims priority, application Fed. Rep. of Germany, May 7, 1986, 3615519
Int. Cl.[4] B44C 1/22
U.S. Cl. 156—643 6 Claims



1. A method for generating contact holes having sloped walls in a silica-containing insulating layer which comprises:

dry plasma etching a silica-containing insulating layer in a reactor using an electrode generated plasma, said plasma including a fluorine-containing etchant, said dry plasma etching being carried out in a plurality of isotropic and anisotropic etching steps, the first etching step being carried out isotropically in an atmosphere containing free fluorine atoms and subsequent etching steps being initially carried out with retention of the isotropic etching components in an atmosphere also containing free CF_3 radicals and ions,

adjusting the content of fluorine atoms in the atomsphere as etching proceeds in the direction favoring formation of CF_3 radicals and ions, and

reducing the electrode spacing in the plasma as etching proceeds to thereby form contact holes having sloped walls.

4,764,246

BURIED UNDERCUT MESA-LIKE WAVEGUIDE AND METHOD OF MAKING SAME

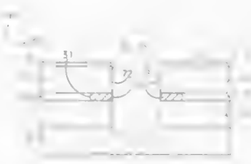
Thomas J. Bridges, Holmdel; Ernest G. Burkhardt, Wall, both of N.J.; Larry A. Coldren, Santa Barbara, Calif., and Thomas L. Koch, Middletown, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 762,968, Aug. 6, 1985, Pat. No. 4,725,112. This application Aug. 20, 1987, Ser. No. 87,550
Int. Cl.[4] H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 11 Claims

1. A method of fabricating a device comprising a buried undercut region comprising the steps of:

growing a semiconductor heterostructure, said heterostructure comprising at least two layers of which at least one is a buried layer;

using a material selective etchant to remove a portion of said at least one buried layer thereby forming an undercut region under at least one layer of said heterostructure; and



regrowing said undercut region by a vapor phase epitaxial growth technique.

4,764,247

SILICON CONTAINING RESISTS

Carina T. Leveriza, Milpitas, Calif., and Russell A. Morgan, Eindhoven, Netherlands, assignors to Syn Labs, Inc., Sunnyvale, Calif.

Filed Mar. 18, 1987, Ser. No. 27,422
Int. Cl.[4] B44C 1/22; B29C 37/00; C03C 15/00, 25/06
U.S. Cl. 156—643 18 Claims

4. A lithographic process for preparing a pattern resist on a suitable substrate, which process comprises:

(1) applying a layer of resist material onto a substrate, said polymer being selected from the group consisting of allylsilyl-containing styrene copolymers with halogenated methylstyrene,

(2) irradiating said resist copolymer layer to form a negative pattern image therein; and

(3) developing said image by:

(i) dissolving away unexposed polymer with a suitable developer solvent, and

(ii) rinsing said wet developed resist with suitable solvent to maintain well-defined developed resist pattern image; and

(4) etching the resist material in a suitable plasma.

4,764,248

RAPID THERMAL NITRIDIZED OXIDE LOCOS PROCESS

Arya Bhattacherjee, Newark; William Koutny, Santa Clara; Ritu Shrivastava, Fremont, and Thurman J. Rodgers, Woodside, all of Calif., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Apr. 13, 1987, Ser. No. 37,334
Int. Cl.[4] H01L 21/00; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 8 Claims

1. In the fabrication of MOS semiconductor devices in a silicon substrate, the process for forming a localized field oxide comprising:

forming a pad oxide on said silicon substrate, said pad oxide comprising silicon dioxide;

nitridizing said pad oxide in the presence of a nitrogen source for a short period of time, said period of time being less than 10 minutes, said nitridizing step producing a nitridized pad oxide;

forming a layer of silicon nitride over said nitridized pad oxide;

opening up windows in said silicon nitride layer in areas intended for field oxide growth thereby exposing regions of said nitridized pad oxide;

etching the exposed regions of said nitridized pad oxide to expose portions of said substrate;

VOL 1093 ISS 3 AG 16 1988 UMI

forming field oxide regions on said exposed portions of said silicon substrate, whereby the growth of field oxide is



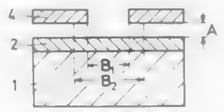
localized with minimal lateral encroachment of the field oxide under said silicon nitride.

4,764,249

METHOD FOR PRODUCING A COATING LAYER FOR SEMICONDUCTOR TECHNOLOGY AND ALSO USE OF THE COATING LAYER

Jens Gobrecht, Gebenstorf, and Jan Voboril, Nussbaumen, both of Switzerland, assignors to BBC Brown, Boveri Ltd., Baden, Switzerland

Filed Mar. 16, 1987, Ser. No. 26,481
Claims priority, application Switzerland, Mar. 18, 1986, 1091/86
Int. Cl.[4] B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 11 Claims



1. A method of producing a coating layer with apertures on a semiconductor substrate, whereby said apertures have wedge-shaped edges, said method comprising the steps of:
covering said semiconductor substrate with a uniform coating layer;
fabricating a mask with apertures which corresponds to said apertures to be produced in said coating layer;
disposing said mask at a mask distance of between 1 and 10 mm above said coating layer; and
etching said coating layer apertures through said mask apertures by means of a predominantly anisotropical dry etching method.

4,764,250

VACUUM EVAPORATOR

Günther Riehl, Am Kohlenschacht 22 b, D-8403 Bad Abbach, and Günther Vollgold, Veit-Stoss-Strasse 10, D-8540 Schwabach, both of Fed. Rep. of Germany

PCT No. PCT/EP85/00639, § 371 Date Oct. 8, 1986, § 102(e) Date Oct. 8, 1986, PCT Pub. No. WO86/03684, PCT Pub. Date Jul. 3, 1986
PCT Filed Nov. 22, 1985, Ser. No. 912,240
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447433; Dec. 24, 1984, 3447435
Int. Cl.[4] B01D *3/10, 3/42*
U.S. Cl. 159—6.1 9 Claims



1. In a vacuum evaporator connected to the casing of a driving motor for rotating an evaporator piston, said motor being vertically adjustably mounted on a pedestal, the improvement comprising:
(a) a vertically arranged bolt fixedly mounted on said pedestal;
(b) a supporting sleeve movably mounted on said bolt and supporting said driving motor;
(c) a lever arm supporting said supporting sleeve and connected to said pedestal by an articulated structure; and
(d) a thread drive coupled to said lever arm by means of a coupling sleeve arranged on the lever arm, said lever arm being pivotally movable by said thread drive, and said thread drive being adjustably driven by a geared motor.

4,764,251

METHOD FOR THE IMPREGNATION AND COOKING OF LIGNOCELLULOSIC MATERIAL BY A BATCH COOKING USING SPENT IMPREGNATION LIQUOR FROM A PREVIOUS BATCH

Per Hakan Östman, Jorvas, Finland, assignor to Ekono Oy, Espoo, Finland

Filed Jul. 30, 1985, Ser. No. 763,840
Claims priority, application Finland, Nov. 30, 1983, 834380
Int. Cl.[4] D21C *1/00, 11/00*
U.S. Cl. 162—39 16 Claims



1. A method for the production of cellulose with a high content of alpha- and hemicellulose by the batch cooking process, the method comprising:

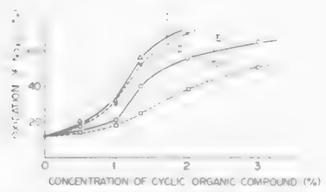
forming a batch by substantially filling the space in a digester with lignocellulosic containing material;
impregnating the lignocellulosic containing material by filling the remaining space in the digester with an alkaline impregnation liquor, the active-chemicals content of which is substantially higher than required for cooking of the batch, the impregnation liquor being formed by combining a liquid containing fresh active chemicals and unabsorbed impregnation liquor recovered from the impregnating stage of a previous batch, only a portion of the active chemicals of this unabsorbed impregnation liquor having been spent during the impregnating stage of the previous batch;
preheating a replacement liquor using heat from a portion of hot spent cooking liquor received from a previous batch, which portion is not used for replacing the excess content of active-chemicals, the replacement liquor having an active-chemicals content less than that of the impregnation liquor, the replacement liquor being selected from the group consisting of fresh liquors which contain active chemicals and recovered liquors, the active chemicals of which have been spent only in part during use in a previous batch;
after impregnating, removing the excess active-chemicals content of liquid in the digester by displacing the unabsorbed impregnation liquor by the preheated replacement liquor; and
after removing the excess active-chemicals content, cooking the batch at an elevated temperature and at over-pressure in order to obtain in the digester a delignified cellulose pulp and hot spent cooking liquor.

4,764,252

PROCESS FOR PULPING LIGNOCELLULOSIC MATERIAL WITH A PREOXIDIZED ALKALINE SULFIDE PULPING LIQUOR CONTAINING A CYCLIC ORGANIC COMPOUND

Yoichi Shin, Yachiyo; Isao Wada, Tokyo; Junichiro Kido, Tokyo, and Shigeru Eimaeda, Tokyo, all of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 556,525, Nov. 30, 1983, abandoned, which is a continuation of Ser. No. 132,530, Mar. 21, 1980, abandoned. This application Nov. 19, 1985, Ser. No. 799,208
Claims priority, application Japan, Mar. 23, 1979, 54-33359
Int. Cl.[4] D21C *3/02, 3/20*
U.S. Cl. 162—72 12 Claims



1. A process for pulping lignocellulosic material comprising the steps of:
(A) bringing a molecular oxygen-containing gas into contact, at a temperature of from 20° to 200° C., with an alkaline sulfide solution containing (a) sodium sulfide in an amount corresponding to a sulfidity of from 5 to 50%, (b) sodium hydroxide and (c) at least one cyclic organic compound selected from the group consisting of quinone compounds, hydroquinone compounds, 9,10-diketohydroanthracene compounds and 9,10-dihydroxyhydroanthracene compounds and being in an amount of from 0.1 to 50% based on the weight of sodium sulfide in said alkaline sulfide solution, to an extent that at least 5% by weight of the original amount of said sodium sulfide are oxidized into Na_2SO_3 in a major amount and $Na_2S_2O_3$ in a minor amount;
(B) preparing an alkaline sulfide delignifying liquor from a solution selected from at least one of the following, the oxidized alkaline sulfide solution and the oxidized solution mixed with an additional amount of a non-oxidized white alkaline sulfide solution, while controlling the composition of the resultant alkaline sulfide delignifying liquor to have an effective alkali content of from 5% to 30% and a sulfidity of from 2% to 40%;
(C) delignifying at a temperature of from 140° to 190° C., a lignocellulosic material with the alkaline sulfide delignifying liquor to produce a pulp; and (D) separating the resultant delignified material from the delignifying mixture.

4,764,253

METHOD FOR CONTROLLING FEED OF FOAMED FIBER SLURRIES

James O. Cheshire; Bruce W. Janda, both of Neenah, and Robert S. Thut, Green Bay, all of Wis., assignors to James River-Norwalk, Inc., Norwalk, Conn.

Filed Jan. 6, 1986, Ser. No. 816,339
Int. Cl.[4] D21C *1/06*
U.S. Cl. 162—198 8 Claims



1. A method of continuously discharging a flow of foamed gas-liquid-fiber slurry through a headbox slice opening onto a continuously moving foraminous support to establish thereon a continuous web of fibers, while controlling the flow of the slurry through the headbox, comprising:
(a) controllably advancing a flow of the foamed gas-liquid-fiber slurry along a defined path into the headbox for impelling the slurry through the slice opening onto the foraminous support, while
(b) with a magnetic flowmeter, sensing, and producing a first signal representative of, the volume flow rate M of the slurry at a given point in the path, and while
(c) sensing, and producing a second signal representative of, the density D of the slurry in the path, and while
(d) sensing, and producing a third signal representative of, the pressure P of the slurry in the path, and while
(e) combining the first, second, and third signals with each other and with values representative of a reference pressure P_1 to determine the value F of a flow condition of the slurry, in accordance with the relation

$$F=MD+M(1-D)(T_1/T)(P/P_1)$$

wherein T_1 is a reference temperature and T is the temperature of the slurry,
(f) when T differs from T_1 sensing, and producing a fourth signal representative of, the temperature T of the slurry in the path, wherein in this case the combining step further includes combining the fourth signal with a value representative of the reference temperature T_1 to determine the value of T_1/T, and
(g) controlling the advance of the slurry flow along the path, in response to departure of F from a desired value F_o, for changing the value of F toward F_o.

VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,254

FALLING FILM LIQUOR HEATER HAVING A SCREEN TO PREVENT CLOGGING OF A LIQUID DISTRIBUTING TRAY

Axel E. Rosenblad, Seabright, N.J., assignor to Rosenblad Corporation, Princeton, N.J.

Filed May 21, 1987, Ser. No. 52,398
Int. Cl.[4] D21C *7/10*; F28F *19/00*
U.S. Cl. 162—249 8 Claims



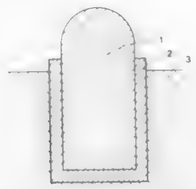
1. In a falling film heat exchanger of the type having a heated surface for the indirect exchange of heat beetween a vapor and a liquid which flows as a falling film down said heating surface, and having a liquid distributor with openings for distributing liquid to be heated to the heating surface, a screen between a liquid inlet and said liquid distributor for preventing passage to the distributor of solid particles which could plug the openings of said liquid distributor said screen having sides which slope downwardly and outwardly from an apex positioned beneath said liquid inlet for deflecting such solid particles.

4,764,255

CEMENTED CARBIDE TOOL

Udo K. Fischer, Vallingby; Erik T. Hartzell, Alvsjo, and Mats G. Waldenstrom, Bromma, all of Sweden, assignors to Sandvik AB, Sandviken, Sweden

Filed Mar. 13, 1987, Ser. No. 25,629
Int. Cl.[4] E21B *10/46*
U.S. Cl. 175—329 4 Claims



1. Cemented carbide tool or wear part comprising a cast iron or cast steel body carrying a plurality of cast-in inserts, each said insert comprising:

a cutting or wearing element of cemented carbide including an embedded portion extending into said body and a projecting portion extending beyond said body, and

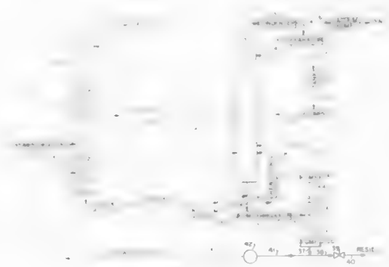
an enclosure cast-in with respect to said body and completely surrounding said embedded portion, said enclosure comprising a material having a higher melting point than said body and connected by a metallurgical bond to said body and by a shrink fit to said element.

4,764,256

REMOVAL OF POLYCHLORINATED BIPHENYLS BY SOLVENT EXTRACTION

Peter F. Way, Boxford, Mass., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation of Ser. No. 20,237, Feb. 27, 1987, abandoned, which is a continuation of Ser. No. 559,191, Dec. 7, 1983, abandoned. This application Dec. 16, 1987, Ser. No. 133,263
The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.
Int. Cl.[4] C10G *21/28*, *21/12*
U.S. Cl. 203—46 9 Claims



1. A method for continuously removing polychlorinated biphenyl compounds from oil contaminated therewith, comprising the steps of:

(a) in a multiple stage extraction zone having a stripping section and an enriching section, continuously extracting polychlorinated biphenyl compounds from contaminated oil fed into said stripping section with a solvent selective for polychlorinated biphenyl compounds;

(b) partially separating said solvent from extract produced in said extraction zone by partially distilling said extract in a distillation zone to produce residue containing about 20 to 80% of said solvent;

(c) separating said solvent from said bottom residue by cooling said bottom residue to produce a solvent phase and an oil/polychlorinated biphenyl phase and then separating said solvent phase from said oil/polychlorinated biphenyl phase;

(d) continuously recycling a major portion of said oil/polychlorinated biphenyl phase from step (c) to said enriching section of said extraction zone to extract polychlorinated biphenyl compounds from said recycled portion with solvent exiting said stripping section of said extraction zone to increase the polychlorinated biphenyl content of said extract exiting said extraction zone and to minimize oil loss;

(e) withdrawing a minor portion of said oil/polychlorinated biphenyl phase from step (c) as a disposable polychlorinated biphenyl residue;

(f) recycling said separated solvent phase from step (c) to said distillation zone of step (b); and

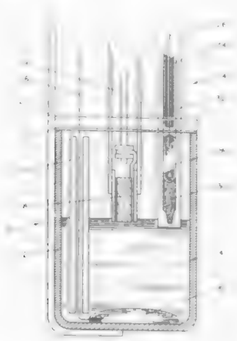
(g) recycling said separated solvent phase from step (b) to said extraction zone of step (a).

4,764,257

ALUMINUM REFERENCE ELECTRODE

Donald R. Sadoway, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 3, 1985, Ser. No. 783,776
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—1 T 18 Claims



1. A reference electrode for measuring or controlling the electrical potential of an electrochemical reaction in a cell comprising:

an electrochemically active molten metal pool, wherein the electrical potential is established by the equilibrium of the metal with ions of said metal produced by the electrochemical reaction,

a barrier permeable to the metal ions produced in the cell,

a reference solution comprising a molten salt solution and the metal ions, and

conductive means electrically connecting the metal pool to means for measuring electrical potential,

wherein the permeable barrier surrounds and contains the reference solution and metal pool, and

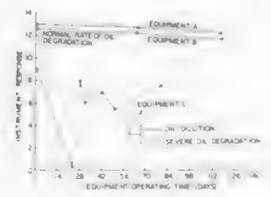
wherein the density of the reference solution is more than the density of the metal so as to lie below the molten metal pool at the operating temperature of the cell and the metal pool contacts the electrically conductive means from above to the exclusion of the reference solution.

4,764,258

METHOD FOR EVALUATING THE REMAINING USEFUL LIFE OF A HYDROCARBON OIL

Robert E. Kauffman, Kettering, Ohio, assignor to University of Dayton, Dayton, Ohio

Filed Dec. 23, 1986, Ser. No. 945,603
Int. Cl.[4] G01N *27/52*
U.S. Cl. 201—1 T 32 Claims



1. A method for measuring the remaining useful life of a hydrocarbon oil containing an oil basestock and at least one additive species, comprising the steps of:

mixing an oil sample with a solvent and a solid substrate to produce an analysis sample wherein said basestock coats said substrate;

permitting said substrate and said basestock coated thereon to settle from said analysis sample;

placing said analysis sample into an electrolytic cell;

applying an electric potential of a first value to said analysis sample to produce an electric current therethrough;

varying said potential from said first value to a second value to produce an oxidation reaction of said additive species within said cell; and

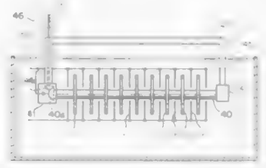
measuring and recording said current during said oxidation reaction.

4,764,259

METHOD FOR PRODUCING A MAGNETIC RECORDING MEDIUM

Katsumi Itou, and Atsushi Toyoda, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Mar. 24, 1987, Ser. No. 29,627
Claims priority, application Japan, Mar. 27, 1986, 61-069078; Apr. 7, 1986, 61-051824
Int. Cl.[4] C25D *7/04*
U.S. Cl. 204—25 9 Claims



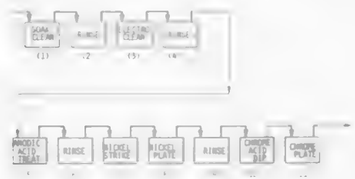
1. A method for producing a magnetic recording medium comprising a magnetic substance electrolytically precipitated onto a substrate comprising providing a shaft including a conductive core having an outer surface and a plurality of insulating sections spaced along said outer surface of said conductive core, mounting a plurality of said substrates in predetermined spaced locations along said conductive core whereby said plurality of insulating sections alternate with said plurality of substrates therealong, connecting said conductive core to a power source, arranging said shaft with said plurality of substrates in an electrolytic bath, and providing counter plates corresponding to said substrates in said electrolytic bath.

4,764,260

PROCESS FOR ELECTROPLATING NICKEL OVER STAINLESS STEEL

Ronald N. Gay, 6431 E. Palmer, Detroit, Mich. 48211, and Wayne K. Raymond, 29700 Bristol La., Birmingham, Mich. 48011

Filed Apr. 15, 1987, Ser. No. 38,733
Int. Cl.[4] C25D *5/26*
U.S. Cl. 204—34 9 Claims



1. A process for electroplating a stainless steel part comprising essentially the steps of:

(a) cleaning the surface of the part;

VOL 1093 ISS 3 AG 16 1988 UMI

(b) treating the surface of the part by immersing it in an electrolytic bath, sid electrolytic bath consisting of sulfuric acid, the concentration of said sulfuric acid being about 10% by volume, with the part connected to be anodic, such that DC current flows from the part through the bath to a separate cathode in the electrolytic bath;

(c) rinsing the sulfuric acid off the part;

(d) electroplating nickel upon the surface of the part by immersing it in an electrolytic, nickel solution;

whereby the nickel plating will strongly adhere to the surface of the part without destroying the red rust resistance of the stainless steel part.

4,764,261

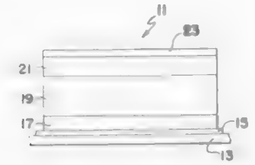
METHOD OF MAKING IMPROVED PHOTOVOLTAIC HETEROJUNCTION STRUCTURES

Miroslav Ondris, Chagrin Falls, and Marty A. Hichler, Parma, both of Ohio, assignors to Stemcor Corporation, Cleveland, Ohio

Division of Ser. No. 926,283, Oct. 31, 1986. This application Nov. 23, 1987, Ser. No. 123,821

Int. Cl.[4] C25D *5/50, 9/04;* H01L *31/18*

U.S. Cl. 204—37.1 7 Claims



1. A method of preparing an improved photovoltaic structure comprising:

depositing a layer of cadmium sulfide on an electrically conducting substrate;

electrodepositing a layer of $Cd_xHg_{1-x}Te$ on said layer of cadmium sulfide, wherein x ranges from greater than zero to less than one; and

electrodepositing a layer of one of cadmium telluride and $Cd_zHg_{1-z}Te$ on said layer of $Cd_xHg_{1-x}Te$, where z is greater than x when $Cd_zHg_{1-z}Te$ is deposited.

4,764,262

HIGH QUALITY, BRIGHT NICKEL PLATING

Kenneth W. Lemke, Burlington, Canada, assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 687,499, Jan. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 74,953, Sep. 13, 1979, abandoned. This application Aug. 19, 1987, Ser. No. 87,011

Int. Cl.[4] C25D *3/14*

U.S. Cl. 204—49 2 Claims

1. A process for the preparation of a bright nickel electrodeposit onto a substrate substantially free of black streaking from a bright nickel electroplating bath containing about 20 to about 250 ppm of zinc ions as impurities comprising passing current from an anode to a cathode through an aqueous acidic nickel plating bath consisting essentially of about 0.2 g/l to about 10 g/l of saccharin and about 0.01 g/l to about 1.0 g/l of propyne sulfonic acid, or salt thereof, thereby to produce a bright, well leveled deposit of nickel on said substrate despite the presence of said zinc ion impurities in said bath.

4,764,263

ELECTROCHEMICAL SYNTHESIS OF SUBSTITUTED AROMATIC AMINES IN BASIC MEDIA

Thomas D. Gregory, and Kenneth J. Stutts, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 18, 1987, Ser. No. 50,666

Int. Cl.[4] C25G *3/00*

U.S. Cl. 204—74 17 Claims

1. A process for preparing a substituted aromatic amine comprising electrolytically reducing a substituted nitro aromatic compound in an alkaline medium at a temperature less than about 60° C. and a current density of at least about 50 milliamps/square centimeter to yield at least about 50 percent of the amine.

4,764,264

PRINTING METHOD BY ELECTROLYTIC COLLOID COAGULATION

Adrien Castegnier, 36 Beloeil St., Outremont, Quebec, Canada H2V 2Z2

Continuation-in-part of Ser. No. 727,259, Apr. 24, 1985, abandoned, and a continuation-in-part of Ser. No. 609,555, May 11, 1984, abandoned. This application Oct. 15, 1987, Ser. No. 108,694

Int. Cl.[4] C25D *13/06*

U.S. Cl. 204—180.9 11 Claims

1. A method of recording an image and forming a printing plate and then printing the image on an end-use paper support, comprising the steps of interposing a thin layer in substantially liquid-state, containing water, an electrolyte and an electrolytically-coagulable colloid between and in contact with a plurality of negative electrodes disposed side by side and a single positive, electrolytically-inert electrode, successively and selectively electrically, negatively biasing said negative electrodes relative to said positive electrode with direct current for a short period of time, to thereby cause point-by-point selective coagulation and adherence of the resulting coagulated colloid dots onto said positive electrode, removing the non-coagulated colloid, whereby the coagulated dots are representative of a desired image, said positive electrode with the coagulated dots adhering thereto, forming said printing plate, impregnating said dots with an impregnating water solution of a coagulated colloid swelling agent and of a water soluble dye to cause swelling of and dye absorption by said dots, wetting an end-use paper sheet with a paper wetting agent which is a solvent for the swelling agent, pressing said printing plate against said wetted end-use paper support to transfer the dyed image onto the latter, and drying said paper support, the colloid being selected from the group consisting of water dispersable synthetic linear colloid polymers of molecular weight between 100,000 and 600,000, said swelling agent being selected from the group consisting of glycerol, ethylene glycol, sorbitol, formamide and N-methyl pyrrolidone.

4,764,265

PROCESS FOR THE MANUFACTURE OF LUBRICATING BASE OILS

Henricus M. J. Bijwaard, The Hague, Netherlands, and Martinus M. P. Janssen, Grand-Couronne, France, assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 14, 1986, Ser. No. 884,945

Claims priority, application United Kingdom, Jul. 26, 1985, [illegible]

Int. Cl.[4] C10G *71/00*

U.S. Cl. 208—18 13 Claims

1. A process for the preparation of dewaxed lubricating base oils from nitrogen-containing distillates or deasphalted oils by solvent extracting said distillates or oils in the presence of a first extraction solvent to produce a first extract stream low in nitrogen content comprising between 30% and 60% of said distillate or oils and a first raffinate stream obtained in a yield

of at least 35% and high in nitrogen content, recovering said first raffinate and said first extract stream and subjecting said first raffinate stream to a second solvent extraction in the presence of a second extraction solvent to produce a second extract stream low in nitrogen content and a second raffinate stream high in nitrogen content, recovering said second raffinate and said second extract stream, subjecting said second raffinate stream to catalystic hydrotreatment at a temperature in the range of from 290° to 425° C., a hydrogen pressure of from 80 to 200 bar, and a space velocity of from about 0.5 to about 1.5 $tlm^3.h.$ to produce a hydrotreated raffinate stream, recovering said first extract stream low in nitrogen content and subjecting said first extract stream to mild hydrotreating at a temperature of from 200° C. to 350° C. and a hydrogen partial pressure of between 40 and 125 bar, and dewaxing, at dewaxing conditions, said hydrotreated second raffinate stream and said mild hydrotreated first extract stream to produce said dewaxed lubricating base oils.

4,764,266

INTEGRATED HYDROPROCESSING SCHEME FOR PRODUCTION OF PREMIUM QUALITY DISTILLATES AND LUBRICANTS

Nai Y. Chen, Titusville; Rene B. LaPierre, Medford; Randall D. Partridge, Trenton, and Stephen S. Wong, Medford, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 26, 1987, Ser. No. 19,983

Int. Cl.[4] C10G *65/12, 69/02*

U.S. Cl. 208—58 7 Claims

1. An integrated hydroprocessing method for upgrading a gas oil hydrocarbon feedstock having an initial boiling point of at least 315° C. into a naphtha product, a distillate product boiling above the naphtha and a lubricant product with reduced hydrogen consumption, which method comprises

(i) hydrocracking the hydrocarbon feedstock over an aromatic-selective hydrocracking catalyst having acidic functionality and hydrogenation-dehydrogenation functionality, under hydrocracking conditions at a hydrogen partial pressure of less than 10,000 kPa and at less than 50 volume percent conversion to lower boiling products, to form a naphtha product a distillate product, and a bottoms fraction enriched in paraffinic components,

(ii) separating the naphtha product, the distillate product, and the bottoms fraction,

(iii) hydroprocessing the separated bottoms fraction over a hydroprocessing catalyst comprising zeolite beta as an acidic component and a hydrogenation-dehydrogenation component, to produce an isoparaffinic product, and

(iv) separating the isoparaffinic product from (iii) into a lubricant fraction and a fraction boiling below the lubricant boiling range.

4,764,267

MULTI-STAGE CATALYTIC REFORMING WITH HIGH RHENIUM CONTENT CATALYST

Hong C. Chen; Cliff M. Detz, both of San Rafael, and Paul W. Tamm, Oakland, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 29, 1987, Ser. No. 115,792

Int. Cl.[4] C10G *35/06*

U.S. Cl. 208—65 8 Claims

1. A catalytic reforming process comprising:

(a) contacting a naphtha feed with a first catalyst comprising rhenium and platinum, and having a rhenium to platinum weight ratio of at least 1.7, under catalytic reforming conditions in one or more forward reforming stages of a reforming unit to obtain an intermediate reformate; and

(b) contacting the intermediate reformate, under catalytic reforming conditions in a last stage of the reforming unit, with a last stage catalyst comprising 0.2 to 2.0 weight percent platinum, and sufficient rhenium so that the last stage catalyst has at least 0.5 weight percent rhenium



beyond that necessary to attain a 1.7 weight ratio of rhenium to platinum.

4,764,268

FLUID CATALYTIC CRACKING OF VACUUM GAS OIL WITH A REFRACTORY FLUID QUENCH

Philip A. Lane, Port Arthur, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1987, Ser. No. 43,076

The portion of the term of this patent subsequent to Nov. 25, 2003, has been disclaimed.

Int. Cl.[4] C10G *11/18*

U.S. Cl. 208—113 11 Claims

1. In a fluid catalytic cracking process wherein said process takes placed in an apparatus comprising a riser cracking zone at a first temperature for maximum conversion of a vacuum gas oil to debutanized naphtha, a catalyst separation zone and a catalyst regeneration zone, wherein the improvement comprises:

a. contacting said vacuum gas oil with a regenerated fluidized cracking catalyst to form a first suspension in an initial portion of said riser cracking zone for a contacting time of about 1.5 to 5.0 seconds at a second temperature at least 5° F. above said first temperature;

b. quenching the first suspension in a downstream portion of the riser cracking zone with a refractory fluid prior to said suspension entering said separation zone, said refractory fluid selected from the group consisting of liquid water and steam, to form a second suspension at a third temperature at least 10° F. below said first temperature for a contacting time of about 0.5 seconds or less;

c. separating cracking catalyst with deposited contaminants of hydrocarbon cracking from hydrocarbon cracking products of said vacuum gas oil in said catalyst separation zone;

d. regenerating separated cracking catalyst with deposited contaminants of hydrocarbon cracking in said catalyst regeneration zone wherein said catalyst is raised to a temperature of about 1100° to 1400° F. to yield a regenerated cracking catalyst wherein deposited contaminants are reduced to about 0.1 wt % or less.

4,764,269

CRACKING CATALYST

Grant C. Edwards, Silver Spring; Jean-Pierre Gilson, Columbia, and Carl V. McDaniel, Laurel, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 754,781, Jul. 15, 1985, Pat. No. 4,681,864. This application Feb. 12, 1987, Ser. No. 13,993

Int. Cl.[4] C10G *11/02*

U.S. Cl. 208—120 4 Claims

1. A method for the catalytic cracking of hydrocarbons which comprises reacting a hydrocarbon feedstock with a catalyst composition comprising SAPO-37 molecular sieve having the chemical composition expressed in terms of ranges of mol oxide ratios: 1.0 Al_2O_3: 0.4 to 8 P_2O_5:0.2 to 2 SiO_2:0 to

VOL 1093 ISS 3 AG 16 1988 UMI

3.0 H_2O and 5 to 40% by weight of an organic template composition selected from the group consisting of TPA, TMA and mixtures thereof and characterized by the X-ray powder diffraction pattern set forth in Table A dispersed in an inorganic oxide matrix under catalytic cracking conditions wherein said catalyst is activated by removal of the organic template compound from the pore structure of said molecular sieve in a catalytic conversion zone at a temperature of 400° to 600° C. and/or catalytic regeneration zone at a temperature of 600° to 850° C.

4,764,270

SIMULTANEOUS UPGRADING OF TAR SAND BITUMEN AND COAL BY COREFINING

C. Richard Hsieh, San Rafael, and William I. Donaldson, Orinda, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Mar. 18, 1986, Ser. No. 840,858
Int. Cl.[4] C10G *1/00, 1/06, 45/00, 17/00*
U.S. Cl. 208—390 14 Claims

1. A continuous process for simultaneously corefining a mixture of comminuted coal and tar sand bitumen to form a liquid refinery feed stock, having improved hydrocarbon content and viscosity and reduced organo-metallic and metal components, which process comprises:

(a) combining bitumen substantially separated from tar sands with comminuted raw coal at a coal to liquid weight ratio of from about 1:2 to about 1 to 50 to form a slury mixture;

(b) subjecting the slurry mixture resulting from step (a) to hydrocracking conditions in the absence of added catalyst to produce off-gases and a mixture of co-refined bitumen and coal liquid and coal ash residues; and

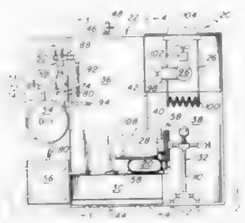
(c) recovering the corefined improve coal-bitumen liquid as a refinery feedstock.

4,764,271

WATER TREATMENT APPARATUS

William A. Acosta, 4101 Laurel Dr., Lafayette Hill, Pa. 19444

Filed Feb. 13, 1987, Ser. No. 14,895
Int. Cl.[4] C02F *9/00*
U.S. Cl. 210—86 52 Claims



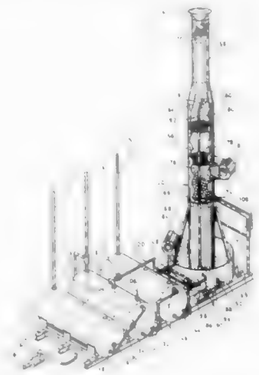
38. A water treatment device for filtering water to remove suspended solids having a size greater than a predetermined value therefrom and for selectably adjusting the ion content of the water filtered thereby, said device comprising a common housing, filter medium means disposed within said housing and defining an interior space, deionizing means disposed within said interior space, and selectable means for enabling at least a portion of water flowing through said filter medium means to be directed through said deionizing means, or directly to an outlet of said device without passing through said deionizing means, depending upon the setting thereof, said outlet also being coupled to said deionizing means downstream thereof so that and water flowing through said deionizing means also flows to said outlet.

4,764,272

APPARATUS FOR RECOVERY OF HYDROCARBONS FROM HYDROCARBON/WATER MIXTURES

James R. Fox, Sr., 8015 W. Cliff Dr., Knoxville, Tenn. 37909

Filed Jul. 31, 1987, Ser. No. 80,296
Int. Cl.[4] B01D *21/24*
U.S. Cl. 210—104 11 Claims



1. A transportable system for the restoration of hydrocarbon-contaminated water whereby the hydrocarbon is recovered for reuse and the water can be disposed of without environmental hazard, which comprises:

a support means adapted to be transportable to a site of said contaminated water;

a first tank means mounted on said support means, said first tank means provided with an inlet line to receive said contaminated water upon demand, said first tank means also being provided with a first outlet proximate an upper portion and a second outlet proximate a lower portion;

a second tank means mounted on said support means proximate said first tank means, said second tank means being at substantially the same elevation as said first tank means, said second tank means being provided with an inlet proximate an upper portion and with an outlet proximate a lower portion;

a first fluid transfer line communicating between said second outlet of said first tank means and said inlet of said second tank means;

a second fluid transfer line having a first end communicating with said first outlet of said first tank means, and a further end, said second fluid transfer line being provided with a flow control means therein;

a vertically oriented air stripping tower means mounted on said support means, said air stripping tower means adapted to countercurrently contact water and air therein, said tower means provided with a water collection pan and a first pumping means to move water from said pan into said tower means;

a third fluid transfer line communicating between said outlet of said second tank means and said collection pan of said tower means;

fluid level detection means mounted within said first tank means, said detection means providing for the establishment of selected upper and lower water levels within said first tank means;

further pump means connected to said inlet line of said first tank means to transfer said contaminated water into said first tank means for gravimetric separation of said hydrocarbon from said water when said fluid level detection means establishes said upper water level and to cease transfer of said contaminated water into said first tank means when said fluid level detection means establishes said lower water level; and

control means connected between said level detection means and said flow control means in said second transfer line to open said flow control means when said separated hydrocarbon displaces said water to said lower level and to close said flow control means when said separated hydrocarbon is substantially removed from said first tank means, said control means further connected to said first pumping means whereby a portion of water pumped thereby is recycled to said first tank means to re-establish said upper water level when said flow control means is closed.

4,764,273

FILTER PRESS GUIDE DEVICE

Hans J. Heinrich, Ennepetal; Max Oelbermann, Remscheid, and Ernst-Gerhard Hohmann, Wuppertal, all of Fed. Rep. of Germany, assignors to Rittershaus & Blecher GmbH, Wuppertal, Fed. Rep. of Germany

Filed Feb. 27, 1987, Ser. No. 19,698
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1986, 3606301
Int. Cl.[4] B01D *25/15*
U.S. Cl. 210—225 10 Claims



1. Filter press comprising filter plates and an end plate, two parallel double T-shaped guide members having inner flanges from which the end plate and filter plates are centrally suspended, support pillar means supporting the guide members, two rollers mounted on a yoke piece attached to a top of the filter plates, said rollers being staggered in an opposite direction relative to a plane of the filter plate, a guide device for preventing a swinging of the filter plates, the guide device including at least one guide rod extending along said guide members, said at least one guide rod being elastically flexible to a limited degree, said yoke piece being provided with at least one guide element extending around the guide rod, and wherein a bar means is provided on which the yoke piece and supporting rollers are mounted, said bar means being secured substantially centrally of an upper edge of the filter plate.

4,764,274

WATER FILTER UNIT AND DISPENSER

Bernard Miller, 11 Fig Tree Rd., Rancho Palos Verdes, Calif. 90274

Filed Nov. 19, 1985, Ser. No. 799,590
Int. Cl.[4] B01D *27/08, 35/02*
U.S. Cl. 210—232 7 Claims

1. In combination with a water container and dispenser having an outlet, a water filter unit for use in filtering water as it is dispensed from said water container and dispenser comprising:

a housing having a side wall and a pair of opposing apertured end walls, one of said end walls being integrally formed with said housing, the other of said end walls being removably attached to said side wall, said other end wall having a grooved rim which snaps onto a bottom edge of said side wall,

a pair of similar fibrous filter pads, said pads each having opposite broad surfaces and side edges,

a bed of charcoal particles,

said filter pads being mounted in said housing with one of the broad surfaces of one of said pads abutting against one of the apertured end walls of the housing, one of the broad surfaces of the other of said pads abutting against the other of said apertured end walls of the housing, and the side



edges of said pads abutting tightly against the side wall of said housing, the bed of charcoal particles being sandwiched between said pads, and

said housing being installed in said container and dispenser with one of the apertured end walls facing the interior of said container and dispenser and the other of said apertured end walls facing the outlet of said container and dispenser.

4,764,275

FLUID FILTER AND METHOD FOR ATTACHING SAME IN SEALING RELATION TO A FILTER MOUNT

Arthur W. Robichaud, 85 Ridge Rd., Rumson, N.J. 07760

Filed Oct. 25, 1985, Ser. No. 791,353
Int. Cl.[4] B01D *27/08*
U.S. Cl. 210—232 16 Claims



1. A fluid filter for attachment to a filter mount of an engine, comprising:

(a) a filter media;

(b) a housing, for the filter media consisting essentially of a substantially cylindrical side wall, a closed first end and an open second end;

(c) complementary interengageable locking means formed radially on the open second end of the filter housing and the filter mount for engaging the filter housing and the filter mount, including a plurality of first members formed

VOL 1093 ISS 3 AUG 16 1988 UMI

on the inside of the filter housing and a plurality of second members formed on the filter mount,

wherein the plurality of first members includes a first set of circumferentially spaced flanges fixedly attached to the inside of the cylindrical side wall of the filter housing,

wherein the plurality of second members includes a second set of circumferentially spaced flanges formed on the filter mount, and

wherein each of the plurality of first members combines with a corresponding one of the plurality of second members to removably engage the filter housing relative to the filter mount; and

(d) sealing means positioned circumferentially between the cylindrical side wall of the filter housing at the second, open end and the filter mount for creating a fluid seal therebetween.

(e) a plurality of collection ports arranged in a substantially circular configuration about said central axis;

(f) second conduit means providing fluid communication independently between each of said chambers and said collection ports;

(g) a plurality of stationary discharge ports arranged in a substantially circular configuration about said axis, said stationary discharge ports being in fluid communicating relation with said collection ports when the respective ports are aligned; and

(h) means for rotating in unison said distribution ports, said chambers, and said collection ports at a predetermined speed.

4,764,276

DEVICE FOR CONTINUOUS CONTACTING OF FLUIDS AND SOLIDS

W. Wes Berry, Lakeland, Fla.; Rae A. Schmeda, Littleton, and Holly S. Kibler, Boulder, both of Colo., assignors to Advanced Separation Technologies Incorporated, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 635,837, Jul. 30, 1984, Pat. No. 4,522,726. This application Mar. 19, 1985, Ser. No. 713,492

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] B01D *15/02*

U.S. Cl. 210—264 14 Claims



1. A continuous contacting device comprising:

(a) a plurality of stationary feed ports arranged in a substantially circular configuration about a central axis;

(b) a plurality of distribution ports arranged in a substantially circular configuration about said central axis, said distribution ports being in fluid communicating relation with said stationary feed ports when the respective ports are aligned;

(c) means mounting a plurality of chambers for rotation about said central axis in unison with said distribution ports, said chambers being adapted to receive ion exchange resins or other solid particulate materials;

(d) first conduit means providing fluid communication independently between each of said chambers and said distribution ports;

4,764,277

SCREEN PLATE

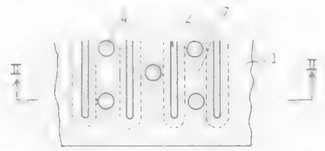
Hideo Yoshida, Matsudo, Japan, assignor to Ishikawajima-Harima Jukogyo Kabushiki Kaisha and Ishikawajima Sangyo Kikai Kabushiki Kaisha, both of, Japan

Filed Apr. 3, 1987, Ser. No. 33,804

Claims priority, application Japan, Apr. 8, 1986, 61-79175

Int. Cl.[4] B01D *39/10*

U.S. Cl. 210—498 1 Claim



1. A pulp slurry screen plate having a plurality of parallel slots thereon, wherein clogging of the slots is eliminated by a scraper blade moving along a surface of said screen plate, comprising a plurality of discontinuous dents being formed on land portions between the slots of an inlet side surface of said screen plate, said dents being in the form of a circle.

4,764,278

PROCESS FOR REDUCING THE CONCENTRATION OF HALOORGANIC COMPOUNDS IN WATER

Charles C. Chou, and Joseph J. Gentempo, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 20, 1986, Ser. No. 932,823

Int. Cl.[4] B01D *11/04*

U.S. Cl. 210—634 13 Claims

1. A process for reducing the concentration of haloorganic compounds in water containing-haloorganics selected from the group consists of chlorocyclodiene hydrocarbons, chloroaliphatic hydrocarbons and synthetic pyrethroids which process comprises:

(a) extracting said water in an extraction zone at a temperature from about 1° C. to about 50° C. with a hydrocarbon solvent consisting essentially of C_{12} to C_{20} alkane hydrocarbons, at least 60% of which are C_{14} and above, said hydrocarbon solvent having a solubility in water of less than about 5 ppbw at the extraction temperature to obtain (1) a fat solvent extract containing said haloorganics, and (2) water having reduced concentration of said haloorganics,



(b) subjecting said fat solvent extract to ultraviolet radiation in a photodegradation zone in amount of ultraviolet radiation in the range from about 5 to about 50 kilowatts per gram of haloorganic present in the hydrocarbon solvent to photodegrade said haloorganics, resulting in a lean solvent having reduced concentration of haloorganics,

(c) recycling said lean solvent to the extraction zone of step (a), and

(d) withdrawing water having reduced concentration of haloorganics from said extraction zone.

4,764,279

PROCESS FOR PREPARING THE PRINCIPAL PROTEINS OF HEMOLYZED BLOOD IN THE NON-DENATURED FORM

Jean Louis Tayot, La Tour De Salvagny; Paule A. Gattel, Caluire, and Michel A. Tardy, Lyon, all of France, assignors to Institut Merieux, Lyon, France

Continuation of Ser. No. 628,284, Jul. 6, 1984, abandoned. This application Jun. 13, 1986, Ser. No. 874,788

Claims priority, application France, Jul. 7, 1983, 83 11323

Int. Cl.[4] B01D *15/08, 21/00*

U.S. Cl. 210—656 10 Claims

1. A process for separating hemoglobin, γ-globulins and albumin from hemolyzed blood, comprising subjecting said hemolyzed blood to a clarification step comprising contacting said hemolyzed blood at a pH of between 4 and 6 with alcohol at a concentration that does not exceed 15% and eliminating the precipitate which is obtained, then effecting an anion exchange chromatography of the clarified hemolyzed blood containing hemoglobin, γ-globulin and albumin in a chromatographic column on an anion exchanging chromatographic support at a pH higher than 4.8 and lower than 6.8, thereafter separately recovering hemoglobin including γ-globulins issuing from the chromatographic column as filtrate and albumin by elution.

4,764,280

WATER SOFTENING APPARATUS

Keith E. Brown, Solon; Kenneth C. Seufer, Jr., and Jimmy D. Buth, both of Chardon, all of Ohio, assignors to Kinetico, Inc., Newbury, Ohio

Continuation-in-part of Ser. No. 646,953, Sep. 4, 1984, Pat. No. 4,693,814. This application Feb. 11, 1986, Ser. No. 828,390

Int. Cl.[4] B01J *49/00*

U.S. Cl. 210—662 13 Claims



3. A method of treating problem water, comprising the steps of:

(a) providing a pair of treatment tanks, each tank defining a resin compartment containing water treatment materials;

(b) providing a control unit for controlling which of said pair of treatment tanks is on-line and which of said tanks is off-line;

(c) passing water through an on-line treatment tank;

(d) providing a reservoir of regeneration solution for regenerating the off-line tank;

(e) partially regenerating an off-line tank by:

(i) conveying regeneration solution from said reservoir to said tank and passing said solution through said resin compartment;

(ii) terminating said flow of regeneration solution from said reservoir and passing water through said resin compartment to slowly rinse said resin compartment of said regeneration solution;

(iii) terminating said flow of water prior to completely flushing said resin compartment of said regeneration solution whereby a diluted regeneration solution is left in said resin compartment;

(f) sensing when the on-line tank is about to be taken off-line and prior to taking said on-line tank off-line, backwashing said partially regenerated off-line tank to substantially flush said resin compartment of said diluted regeneration solution prior to placing said regenerated tank on-line.

4,764,281

METHOD OF REMOVING RADIOACTIVE ISOTOPES OF HEAVY METALS

Geraldine S. Elfline, Morrison, Ill., assignor to Iso-Clear Systems Corporation, Oak Ridge, Tenn.

Filed Apr. 7, 1986, Ser. No. 849,152

Int. Cl.[4] G21F *9/10*

U.S. Cl. 210—668 16 Claims

1. A method of treating a heavy metal radioisotope-bearing

VOL 1093 ISS 3 AG 16 1988 UMI

liquid to remove a substantial portion of the metal radioisotope metals therefrom without substantial sludge formation comprising:

contacting said liquid with a water-insoluble carboxylated cellulose in an amount sufficient to cause precipitation of a substantial portion of the heavy metal radioisotope in the liquid.

4,764,282

DISPOSAL OF TOXIC AND POLYMERIC WASTES

Robert H. Snyder, Grosse Point Park, Mich., assignor to The Uniroyal Goodrich Tire Company, Akron, Ohio

Filed Sep. 26, 1986, Ser. No. 911,831
Int. Cl.[4] C02F *1/28*
U.S. Cl. 210—690 10 Claims

1. A process for the disposal of toxic organic waste compounds comprising contacting the particulate scrap vulcanized rubber in the size range from 100 mesh to about ¼" by ¼" particles reinforced with carbon black, with a liquid halogenated hydrocarbon with or without heteroatoms, and absorbing said liquid into said particles in a quantity sufficient to provide structurally stable particles which are suitable for incineration at a temperature in the range from 1500° C. to 2000° C.

6. A solid fuel of scrap vulcanized rubber particles suitable for incineration, said fuel produced by contacting said particles in the size range from 100 mesh to about ¼" by ¼" particles reinforced with carbon black, with a liquid halogenated hydrocarbon with or without heteroatoms, in a quantity sufficient to produce structurally stable particles for incineration which are suitable for incineration at a temperature in the range from 1500° C. to 2000° C.

4,764,283

METHOD AND APPARATUS FOR TREATING COOLING TOWER WATER

Clifford L. Ashbrook, Rte. 2, Box 439, Spicewood, Tex. 78669, and Douglas B. Scarborough, Rte. 17, Box 124-A3, San Antonio, Tex. 78238

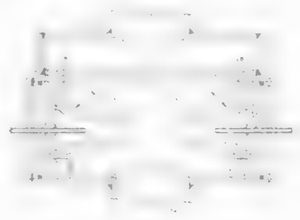
Continuation-in-part of Ser. No. 726,429, Apr. 24, 1985, Pat. No. 4,645,606. This application Feb. 24, 1987, Ser. No. 18,049
The portion of the term of this patent subsequent to Feb. 24, 2004, has been disclaimed.
Int. Cl.[4] C02F *1/48, 1/78, 5/00*
U.S. Cl. 210—695 2 Claims

1. A method for treating water in cooling towers comprising the steps of:

pumping the water through a first vortex nozzle;

simultaneously pumping the water through a second vortex nozzle;

agitating the water by spraying the water exiting the first vortex nozzle against the water exiting the second vortex nozzle; and



simultaneously magnetically affecting the water by a magnetic affecting means mounted in close proximity to the nozzles.

4,764,284

PROCESS FOR REMOVING OF HEAVY METAL FROM WATER IN PARTICULAR FROM WASTE WATER

Cornelis W. Jansen, Amersfoort, Netherlands, assignor to DHV Raadgevend Ingenieursbureau B.V., Ex Amersfoort, Netherlands

Filed May 8, 1986, Ser. No. 860,063
Int. Cl.[4] C02F *1/52*
U.S. Cl. 210—715 8 Claims



1. A process for the removal of metals selected from the group consisting of heavy metals and Sr from a metal containing water, thoroughly mixing the metal containing water with an effective amount of an aqueous solution of a carbonate selected from the group consisting of alkali metal carbonate, and alkali metal hydrogen carbonate in a reactor with a fluidized bed of a suitable bed material, upon which material the metal crystallizes exclusively in the form of metal carbonate or metal hydroxy carbonate crystals built into the crystal lattice of the bed material and said crystals grow in substantially pure

form on the bed material to form granules having a water content of 0.5% or less, separating a purified water from said reactor, and recovering said granules from said bed.

4,764,285

OIL SPILL MICROEMULSION DISPERSANTS

Max L. Robbins, South Orange; Gerard P. Canevari, Cranford, and Jan Bock, Bridgewater, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 839,547, Mar. 15, 1986, abandoned, which is a continuation of Ser. No. 613,716, May 24, 1984, abandoned. This application Jan. 2, 1987, Ser. No. 50
Int. Cl.[4] E02B *15/04*
U.S. Cl. 210—749 16 Claims

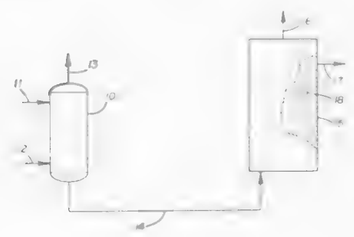
1. A method for dispersing an oil spill on sea water which method comprises applying to the oil spill surface an effective amount of: (i) a blend of one or more hydrophilic and one or more lipophilic surfactants so balanced that they will form microemulsions with the sea water and the oil to be dispersed, (ii) a solvent which is miscible with the oil to be dispersed and in which the blend of surfactants is substantially soluble, and (iii) from 0 to about 10 wt.% water, wherein the blend of surfactants is such that it lowers the interfacial tension between the oil to be dispersed and the sea water to less than about 250 mdynes/cm when the blend is used at a treat rate of less than about 1 to 100 by weight, based on the oil to be dispersed.

4,764,286

CATALYTIC DECOMPOSITION OF SODIUM HYPOCHLORITE IN HIGHLY ALKALINE SOLUTIONS

Charles K. Bon, Concord, and Vera M. Knowles, Martinez, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 26, 1986, Ser. No. 878,733
Int. Cl.[4] C02F *1/70, 1/72*
U.S. Cl. 210—757 20 Claims



1. In a process of catalytically decomposing aqueous hypochlorite into oxygen and chloride, in a solution having a pH value larger than 13, which process comprises contacting the aqueous hypochlorite solution with hypochlorite decomposition catalyst, the improvement wherein the catalyst is a plurality of solid pellets comprising an active catalyst and an inorganic support which is stable at a pH value greater than 13 wherein, the active catalyst is selected from nickel oxide, cobalt oxide or mixtures thereof which is deposited on an inorganic support selected from magnesium oxide, titanium oxide or mixtures thereof and the process is conducted between 35° and 45° C.

4,764,287

CYCLONE SEPARATOR

Derek A. Colman, Fleet, and Martin T. Thew, South Hampton, both of United Kingdom, assignors to B.W.N. Vortoil Rights Co. Pty. Ltd., Victoria, Australia

PCT No. PCT/AU85/00181, § 371 Date May 14, 1986, § 102(e) Date May 14, 1986, PCT Pub. No. WO86/01130, PCT Pub. Date Feb. 27, 1986
PCT Filed Aug. 2, 1985, Ser. No. 852,964
Claims priority, application United Kingdom, Aug. 2, 1984, 8419771
Int. Cl.[4] B01D *17/038*
U.S. Cl. 210—788 21 Claims



1. A cyclone separator for the separation of a mixture including multiphase liquids, the separator comprising a primary portion having generally the form of a volume of revolution and having a first end and a second end, the diameter d_2 at said second end being less than the diameter d_1 at said first end, a single inlet with at least a tangential component at said first end of said primary portion for introducing the mutiphase mixture to be separated into the cyclone separator and at least two outlets; characterized in that the following relationship applied: where d_1 is the diameter of the cyclone in the inlet portion where flow enters (but neglecting any feed channel), d_i is twice the radius at which flow enters the cyclone (i.e. twice the minimum distance of the tangential component of the inlet center line from the axis), d_o is the diameter of said overflow outlet, A_i is the cross-sectional area of the inlet at entry to the cyclone in a plane parallel to the axis of the cyclone and perpendicular to the component of the inlet center line not parallel to the cyclone axis, d_2 is the diameter of the primary portion at said second end and is measured at a point z_2 where the condition first applies that:

VOL 1093 ISS 3 AG 16 1988 UMI

$$\tan^{-1}\left(\frac{d_2 - d}{2(z - z_2)}\right) < 2^\circ$$

for all z greater than z_2 where z is the distance along the cyclone separator axis downstream of the plane containing the inlet and d is the diameter of the cyclone at z, then

$$\pi \frac{d_2 \times d_1}{4 A_1}$$

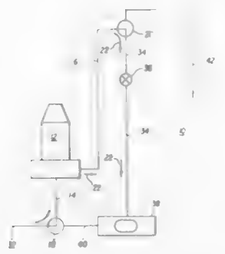
is from 3 to 12.

4,764,288

METHOD AND SYSTEM FOR CLEANSING A FILTER BED

Kenneth A. Walker, Lutherville; Richard A. Adie, Sykesville, and Arthur J. Shapiro, Baltimore, all of Md., assignors to Environmental Elements Corp., Baltimore, Md.

Continuation-in-part of Ser. No. 760,258, Jul., 1985, Pat. No. 4,617,131. This application Sep. 30, 1986, Ser. No. 913,338
The portion of the term of this patent subsequent to Oct. 14, 2003, has been disclaimed.
Int. Cl.[4] B01D *23/24*
U.S. Cl. 210—793 16 Claims



1. A method of cleansing a filter bed and improving the quality of its filtrate, having a backwash pump including an inlet line and an outlet line comprising the steps of:

(a) backwashing said filter bed for initially removing contaminants from said filter bed, said backwash pump drawing liquid from an effluent channel and operating at a predetermined pressure head, said backwashing step further including the step of inserting a first diverter valve between said backwash pump inlet line and said effluent channel for drawing said liquid into said backwash pump;

(b) controlling said predetermined pressure head of said backwash pump during said step of backwashing said filter bed; and,

(c) purging said filter bed subsequent to said step of backwashing for removal of further contaminants from said filter bed using said backwash pump, said step of purging including the steps of further controlling said backwashing pump pressure head by recirculating a first purging portion of liquid pumped by said backwash pump on said backwash pump outlet line through a backwash shoe for return along with a portion of said filtrate to said backwash pump through said backwash pump inlet line, and passing a second purging portion of said liquid pumped by said backwash pump through an egress line to waste.

4,764,289

ARTICLES AND METHODS FOR TREATING FABRICS IN CLOTHES DRYER

Toan Trinh, Maileville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 5, 1987, Ser. No. 105,760
Int. Cl.[4] D06M *13/30*
U.S. Cl. 252—8.6 22 Claims

1. An article of manufacture adapted for use to provide fabric soil release benefits and to soften fabrics in an automatic laundry dryer comprising:

I. fabric treatment composition comprising:

(a) at least an effective amount of fabric conditioning agent selected from the group consisting of cationic fabric softening agents, nonionic fabric softening agents, and mixtures thereof; and

(b) at least an effective amount of at least one solid, high-melting anionic polymeric soil release agent having at least one hydrophobic moiety and at least one hydrophilic anionic moiety, said polymeric soil release agent being at least partially coated with at least an effective amount of nitrogenous polymeric coating agent which reduces or inhibits interaction between (a) and (b); and

II. dispensing means which provides for release of an effective amount of said fabric conditioning agent (a) and anionic polymeric soil release agent (b) to fabrics in an automatic laundry dryer at operating temperatures, said agents (a) and (b) being, in admixture as they appear in the article of manufacture, substantially solid under storage conditions and being mobilized under dryer conditions.

4,764,290

IDENTIFICATION MARKING OF OILS

William C. Currey, Houston, Tex., assignor to National Identification Laboratories, Inc., Baton Rouge, La.

Filed Feb. 2, 1987, Ser. No. 9,662
Int. Cl.[4] C10M *171/06*
U.S. Cl. 252—11 17 Claims

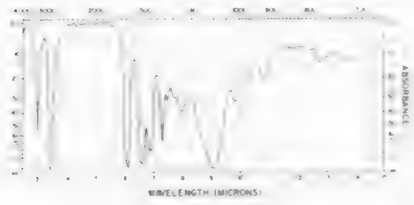
1. The method of providing identification to oil, which comprises: adding to said oil a hydrophilic dye in a manner and concentration such that the dye is dispersed in the oil in the form of polymolecular particles less than 1 mm. in diameter and the color of the oil is substantially unchanged, said concentration being sufficient whereby a sample of said oil may be exposed to a polar solvent for said dye particles, to cause said dye particles to dissolve in said polar solvent to exhibit a perceptible, intensified color, when compared with the same particles in the oil.

4,764,291

PROCESS FOR TREATING LAUNDRY WITH MULTIAMIDE ANTISTATIC AGENTS

Robert J. Steltenkamp, Somerset, and Michael A. Camara, Jackson, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Division of Ser. No. 883,193, Jul. 8, 1986, Pat. No. 4,714,559, which is a continuation of Ser. No. 734,508, May 16, 1985, Pat. No. 4,619,775. This application Nov. 19, 1987, Ser. No. 122,975
Int. Cl.[4] D06M *3/30*
U.S. Cl. 252—8.8 12 Claims



1. A process for washing laundry and simultaneously lowering its capacity to generate and/or hold an electrostatic charge, which comprises washing the laundry in an aqueous medium containing a detersive proportion and an antistatic proportion of a detergent composition comprising a detersive proportion of a synthetic organic detergent and a proportion, which is antistatic characteristic imparting to laundry during washing, of polyamide(s) of trialkylacetic acid(s) and polyamine(s), which is/are useful as antistatic agent(s) for filamentary and fibrous materials, wherein each of the alkyls of each of the trialkylacetic acid moiety/moieties is/are of 1 to 10 carbon atoms and the ployamine moiety/moieties contain(s) from 2 to 5 amino groups.

4,764,292

FABRIC-SOFTENING PARTICLES

Ralph R. Sepulveda, Suffern, N.Y., and John A. Hockey, Ridgewood, N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 851,026, Apr. 11, 1986, abandoned. This application Oct. 5, 1987, Ser. No. 105,969
Int. Cl.[4] D06M *11/00*
U.S. Cl. 252—8.8 15 Claims

1. A fabric softening particle comprising:

(i) a clay having an ion-exchange capacity of at least about 50 meq/100 grams, in which clay from about 5 to 100 molar percent of the exchangeable cations are water insoluble quaternary ammonium ions of the formula $[R_1R_2R_3R_4N]^+$ wherein R_1, R_2, R_3 and R_4 are organic radicals selected from the group consisting of C_1–C_{22} alkyl, benzyl, C_{10}–C_{16} alkyl benzyl, C_{10}–C_{16} alkyl phenyl, C_2–C_4 hydroxyalkyl, cyclic structures in which nitrogen forms part of a ring, and mixtures thereof; and

(ii) a water-insoluble quaternary ammonium salt of the formula $[R_1R_2R_3R_4N]^+{}_nX^{n-}$ wherein R_1, R_2, R_3 and R_4 are organic radicals as defined above; X can be any salt forming anion; n is an integer from 1 to 3; and the ratio of (i) to (ii) is 3:1 to 1:3.

4,764,293

LUBRICANT COMPOSITIONS

Jon C. Root, Leawood; John F. Barnes, Olathe, and Ray D. Lawson, Shawnee, all of Kans., assignors to Witco Corporation, New York, N.Y.

Filed Aug. 28, 1987, Ser. No. 90,599
Int. Cl.[4] C10M *133/56*
U.S. Cl. 252—12.4 7 Claims

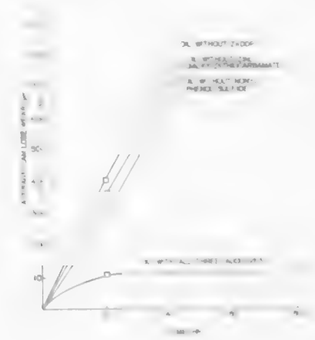
1. A fibrous lubricant composition for use in heay duty or high stress environments, consisting essentially of: a major proportion of a lubricating grease, and a minor proportion of an organic fibrous substance formed of a wholly aromatic polyamide, said organic fibrous substance being characterized in that it has a melting point in excess of 600° F., and being present in an amount sufficient to impart a fibrous texture to the lubricant composition.

4,764,294

LUBRICATING OIL (PNE-500)

Jacob J. Habeeb, and William H. Stover, both of Sarnia, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 832,021, Feb. 24, 1986, abandoned. This application Jan. 26, 1987, Ser. No. 66,608
Int. Cl.[4] C10M *137/14, 135/18, 135/24*
U.S. Cl. 252—32.7 E 15 Claims



1. A lube oil having improved antiwear properties comprising:

A. a basestock;

B. a metal phosphate;

C. a metal carbamate; and

D. a para alkyl hydroxy-aryl sulfide.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,295

NON-FOAMING DETERGENT-DISPERSANT ADDITIVES FOR LUBRICATING OILS AND PROCESS FOR MAKING SUCH ADDITIVES

Jean-Louis Le Coent, Le Havre, France, assignor to Orogil, France

Filed May 20, 1985, Ser. No. 735,788
Claims priority, application France, May 25, 1984, 8408208
Int. Cl.[4] C10M *129/00, 135/00*
U.S. Cl. 252—33.2 27 Claims

1. A detergent-dispersant additive for lubricating oils made by a process comprising the following steps:
(a) reacting in a diluent oil an alkylarylsulfonic acid with an alkaline earth base, the amounts of reactants used being such that the molar ratio of the alkaline earth base to the alkyl aryl sulfonic acid in the reaction medium is between about 0.51 and about 1.8;
(b) contacting the materials specified in step (a), or their reaction product, with one or more linear or branched aliphatic monohydric alcohols having from 4 to 10 carbon atoms in the presence of water and chloride ions, with the molar ratios of the constituents being:
(i) for the chloride ion to the alkylarylsulfonic acid, between about 0.005 and about 0.2;
(ii) for the alcohol to the alkylarylsulfonic acid, greater than or equal to about 0.1; and
(iii) for the water to the alkylarylsulfonic acid, between about 0.2 and about 5;
(c) removing water and alcohol from the product obtained in step (b); and
(d) removing solid substances from the product obtained in step (c).

15. A process for making a detergent-dispersant additive comprising the steps of:
(a) reacting in a diluent oil an alkylarylsulfonic acid with an alkaline earth base, the amounts of reactants used being such that the molar ratio of the alkaline earth base to the alkyl aryl sulfonic acid in the reaction medium is between about 0.51 and about 1.8;
(b) contacting the materials specified in step (a), or their reaction product, with one or more linear or branched aliphatic monohydric alcohols having from 4 to 10 carbon atoms in the presence of water and chloride ions, with the molar ratios of the constituents being:
(i) for the chloride ion to the alkylarylsulfonic acid, between about 0.005 and about 0.2;
(ii) for the alcohol to the alkylarylsulfonic acid, greater than or equal to about 0.1; and
(iii) for the water to the alkylarylsulfonic acid, between about 0.2 and about 5;
(c) removing water and alcohol from the product obtained in step (b); and
(d) removing solid substances from the product obtained in step (c).

4,764,296

RAILWAY LUBRICATING OIL

Steven Kennedy, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 834,605, Feb. 28, 1986, Pat. No. 4,734,211. This application Nov. 25, 1986, Ser. No. 934,747
The portion of the term of this patent subsequent to Mar. 29, 2005, has been disclaimed.
Int. Cl.[4] C10M *135/10*
U.S. Cl. 252—334 28 Claims

1. A marine and railway diesel engine lubricating oil composition of TBN of at least 5 containing an additive amount, sufficient to provide silver wear inhibition in marine and railway diesel engines having silver bearings, of a polyhydroxy compound having at least two hydroxyl groups selected from the group consisting of C_8 to C_{22} fatty acid esters of alcohols of from 1 to 12 carbon atoms having at least two unesterified hydroxyl groups and mixtures thereof of said esters.

4,764,297

PROTIC SOLVENT IN A DEHYDROHALOGENATION PROCESS, THE PRODUCT OBTAINED THEREFROM AND LUBRICANT COMPOSITIONS CONTAINING SAME

Roger L. Sowerby, Mentor, and Stephen A. DiBiase, Euclid, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Mar. 20, 1987, Ser. No. 28,515
Int. Cl.[4] C10M *135/04*
U.S. Cl. 252—45 21 Claims

1. A process for producing a sulfurized olefin comprising the steps of:
dehydrohalogenating an olefin/sulfur halide complex by contacting the complex with a protic solvent in the absence of any metal ions at a temperature in the range of 60° C. to 160° C. and thereby removing halogens from the sulfurized complex and providing a dehalogenated sulfurized olefin; and
isolating the sulfurized olefin.

4,764,298

LUBRICATION ANTI-WEAR ADDITIVE

Michael C. Croudace, Huntington Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 832,968, Feb. 25, 1986, abandoned. This application Nov. 20, 1987, Ser. No. 123,134
Int. Cl.[4] C10M *135/36*
U.S. Cl. 252—47 30 Claims

1. A method for enhancing the extreme pressure anti-wear characteristics of a lubricating composition comprising an oleaginous material, which method comprises admixing into said lubricating composition an extreme pressure enhancing amount of an anti-wear additive, said additive being the reaction product of (1) 2-mercaptobenzothiozole, (2) a carbonyl-containing compound selected from the group consisting of aliphatic, aromatic or alicyclic aldehydes and ketones having between 2 and 20 carbon atoms, and (3) a nitrogen-containing compound selected from the group consisting of primary and secondary amines having between 8 and 40 carbon atoms, said reaction product being soluble in said oleaginous material at a concentration of at least 2.25 percent.

4,764,299

ANTI-OXIDANT COMPOSITIONS

Mary F. Salomon, Cleveland Heights, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 9, 1987, Ser. No. 60,183
Int. Cl.[4] C10M *135/22*
U.S. Cl. 252—48.2 13 Claims

1. A composition which is the reaction product of at least two equivalents of a mercaptan containing at least 5 carbon atoms and at least two equivalents of a beta-thiodialkanol.

4,764,300

PREPARATION OF FINELY DIVIDED AND ACICULAR HEXAGONAL FERRITES AND THEIR USE FOR THE PRODUCTION OF MAGNETIC RECORDING MEDIA AND PLASTOFERRITES

Hartmut Hibst, Ludwigshafen; Peter Rudolf, Maxdorf, and Helmut Jakusch, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 20, 1986, Ser. No. 865,121
Claims priority, application Fed. Rep. of Germany, May 23, 1985, 3518481
Int. Cl.[4] C04B *35/26*
U.S. Cl. 252—62.58 6 Claims

1. A process for the preparation of finely divided and acicular hexagonal ferrite of the formula $AMe_xFe_{12-x}O_{19}$ where x is from 0.024 to 4, A is barium, strontrium or mixture thereof and Me is indium or equimolar amount of zinc or cobalt and titanium comprising:
adding an aqueous ACl_2 solution, an aqueous Me chloride solution and an aqueous sodium carbonate solution to an aqueous dispersion of acicular iron(III) oxide hydroxide to form a mixture,
heating the resulting mixture to form a dispersion containing a solid phase and an aqueous phase,
separating off the solid phase and thoroughly washing it,
drying and comminuting the washed solid to form a powder,
heating the resulting powder at from 800° to 1070° C. to obtain a finely divided and acicular hexagonal ferrite of the formula $AMe_xFe_{12-x}O_{19}$ where x, A and Me are as defined above, the ferrite having the crystal shape of the acicular iron(III) oxide hydroxide in said dispersion and a lower difficulty of dispersion DH than said ferrite prepared as above absent Me.

4,764,301

PHOSPHOR

Kenzo Awazu, deceased, late of Nishinomiya (by Setsuko Awazu, legal representative); Kazu Matsunaga, and Noritsuna Hashimoto, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 25, 1987, Ser. No. 18,442
Claims priority, application Japan, Feb. 25, 1986, 61-39604
Int. Cl.[4] C09K *11/81*
U.S. Cl. 252—301.4 P 2 Claims

1. A phosphor having the following formula:

$$(La_{1-x-y}Ce_xTb_y)mBO_3.nPO_4$$

wherein $0.15 \leqq x \leqq 0.45$; $0.1 \leqq y \leqq 0.2$; m is from 0.01 to 0.045; n is from 0.955 to 0.985 and $0.01 \leqq m/(m+n) \leqq 0.045$ and exhibiting a higher luminance at 250° C. than said phosphor where m is less than 0.01 or greater than 0.045.

4,764,302

THICKENING SYSTEM FOR INCORPORATING FLUORESCENT WHITENING AGENTS

Gregory M. Baker, Pittsburg; James P. Farr, Pleasanton, and Daniel T. Carty, Danville, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Oct. 21, 1986, Ser. No. 921,281
Int. Cl.[4] C09K *11/06;* C11D *3/39, 9/42, 3/42*
U.S. Cl. 252—301.23 22 Claims

1. A thickening system for cleaning and bleaching compositions comprising, in aqueous solution
(a) a surfactant, present in an FWA-stabilizing amount and selected from the group consisting of nonionics, betaines, alkyl aryl sulfonates and mixtures thereof;
(b) an acid-insoluble fluorescent whitening agent, selected from the group consisting of stilbene disulfonic acid FWA's substituted with a protonizable group, substituted biphenyl diazo dyes, and mixtures thereof, and having a molecular weight of between about 500–1500, a potential for zwitterionic charge distribution in an acid medium and which is an insoluble colloidal sized particle in an acid medium, the fluorescent whitening agent being present in an amount of between about 0.1 and 10.0 weight percent whereby the composition viscosity is at least about 50 cP; and
(c) a pH adjusting agent in an amount sufficient to precipitate the fluorescent whitening agent as a colloidal particle and whereby a homogeneous composition results.

7. The thickening system of claim 1 and further including about 0.05 to 5.0 weight percent of a C_{6-18} fatty acid soap.

4,764,303

AMINOMETHYLENEPHOSPHONATE COMPOSITIONS

Brigitte M. J. Vandenbulcke, Chaumont-Gistoux, and Bronislav H. May, Overijse, both of Belgium, assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 24, 1986, Ser. No. 933,835
Claims priority, application United Kingdom, Nov. 29, 1985, [illegible]
Int. Cl.[4] C09K *3/00*
U.S. Cl. 252—385 9 Claims

1. A composition in mobile granular or powder form consisting essentially of diethylenetriaminepenta(methylenephosphonic acid) and/or a salt of diethylenetriaminepenta(methylene phosphonic acid) in admixture with sodium sulphate and/or bisulphate in an amount, expressed as the equivalent amount of anhydrous sodium sulphate, of from 60% to 200% of the dry weight of the diethylenetriaminepenta(methylenephosphonic acid) and/or its salt said composition when in aqueous solution at a concentration of 10% by weight exhibiting a pH of less than 7.

4,764,304

HYDROCARBON COMPOSITIONS CONTAINING POLYOLEFIN GRAFT POLYMERS

Maria M. Kapuscinski, Carmel; Christopher S. Liu, Poughkeepsie, both of N.Y., and William P. Hart, Freehold, N.J., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 25, 1986, Ser. No. 911,612
Int. Cl.[4] C10M *149/00*
U.S. Cl. 252—51.5 A 11 Claims

1. A lubricating oil composition comprising a major portion of lubricating oil and a minor effective viscosity index improving portion of a substantially linear graft polymer containing a carbon-carbon backbone which comprises a substantially linear carbon-carbon backbone polymer and graft polymerized thereon, under graft polymerization reaction conditions in the presence of graft polymerization catalyst, graft monomer containing an ethylenically unsaturated carbon-carbon double bond and an isocyanate group said isocyanate group, after graft polymerization has been effected, having been amidized by reaction with an amine containing a non-tertiary amino nitrogen atom.

4,764,305

PROCESS FOR THE CONDITIONING OF RADIOACTIVE OR TOXIC WASTE IN EPOXY RESINS AND POLYMERIZABLE MIXTURE WITH TWO LIQUID CONSTITUENTS USABLE IN THIS PROCESS

Christian de Tassigny, Sassenage, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 29, 1986, Ser. No. 827,278
Claims priority, application France, Feb. 14, 1985, 85 02113
Int. Cl.[4] G21F *9/16;* C08F *8/32;* C08L *95/00*
U.S. Cl. 252—628 15 Claims



1. A process for the conditioning of radioactive or toxic waste, which comprises incorporating said waste into a polymerizable mixture consisting essentially of 30 to 45% by wt. epoxy resin, 30 to 50% by wt. pitch and 20 to 25% epoxy resin hardener, and allowing the mixture to harden to obtain a solid

VOL 1093 ISS 3 AG 16 1988 UMI

block, said polymerizable mixture being filler-free and miscible with organic liquids.

4,764,306

PROCESS FOR THE MANUFACTURE OF BIS-QUATERNARY AMMONIUM COMPOUNDS

Robert B. Login, Oakland, N.J., assignor to PPG Industries, Inc., Pittsburgh, Pa.

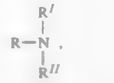
Continuation-in-part of Ser. No. 677,738, Dec. 3, 1984, abandoned, which is a continuation-in-part of Ser. No. 519,129, Aug. 1, 1983, abandoned. This application Aug. 22, 1986, Ser. No. 899,335

Int. Cl.[4] C09F *5/00*; C07C *103/34, 87/30, 85/00*

U.S. Cl. 260—404.5 22 Claims

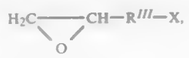
1. A process for preparing bis-quaternary ammonium compounds comprising:

(a) Contacting a tertiary amine represented by the following graphic formula:

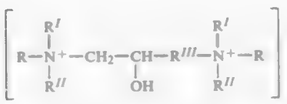


wherein R, R^I and R^{II} are defined hereinafter, with an amount of neutralizing acid sufficient to neutralize about half of the tertiary amine in a solvent selected from the group consisting of water, a semi-polar liquid and a mixture of water and a semi-polar liquid, thereby producing a reaction mixture with approximately equimolar concentration of tertiary amine and tertiary amine salt; and

(b) Contacting the reaction mixture of step (a) with an approximately equimolar amount of an epoxide represented by the following graphic formula:



wherein R^{III} and X are defined hereinafter, such that approximately equimolar amounts of tertiary amine, tertiary amine salt and epoxide are used, at temperatures in the range of from about 50° C. to 100° C., whereby to produce as the principal product a bis-quaternary ammonium compound represented by the following graphic formula:



wherein R, R^I, R^{II} and R^{III} are each selected from the group consisting of alkyl, alkylamidoalkyl, aryl, alkoxy, alkenyl, arylalkyl, hydroxyalkyl and carboxyalkyl having from 1 to 28 carbon atoms and wherein X is a negative radical or radicals obtained from the group consisting of the neutralizing acid and epoxide.

4,764,307

PREPARATION OF SURFACTANTS

Nevin J. Stewart, Guildford, England, assignor to The British Petroleum Company p.l.c., London, England

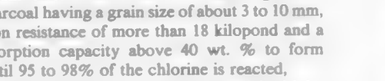
Filed Jun. 6, 1986, Ser. No. 871,478

Claims priority, application United Kingdom, Jun. 15, 1985, 8515115

Int. Cl.[4] C07C *143/11, 143/38*

U.S. Cl. 260—512 R 10 Claims

1. A process for the preparation of an alkyl-, aryl- or alkylaryl-alkoxy ethane sulphonate of general formula:



wherein

R is an alkyl group containing 1 to 24 carbon atoms or a phenyl group substituted with at least one alkyl group containing 1 to 24 carbon atoms,

M is a potassium or ammonium cation,

m is a number in the range 0 to 5,

n is a number in the range 1 to 50, and the sum of m+n is a number in the range 1 to 50,

which process comprises reacting an alkoxy ethane halide of general formula:

wherein R, m and n are as hereinbefore defined and X is a halide atom, with potassium or ammonium sulphite in the presence of water wherein the water is present in amount less than 50% by weight of the alkoxy ethane halide.

4,764,308

PROCESS FOR THE PRODUCTION OF PHOSGENE WITH SIMULTANEOUS GENERATION OF STEAM

Heinz Sauer, Odenthal, Fed. Rep. of Germany; Helmut F. Porkert, Baytown, Tex., and Dietrich Liebach, Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 630,548, Jul. 13, 1984. This application Sep. 30, 1987, Ser. No. 103,561

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 3327274

Int. Cl.[4] C07C *51/58*

U.S. Cl. 260—544 K 8 Claims

1. A process for the production of phosgene having a residual chlorine content of less than 50 ppm comprising

(a) reacting chlorine with an excess of carbon monoxide at a temperature above 250° C. in a first tubular reactor in which the tubes have an internal diameter no greater than 50 mm and are made of a material selected from nickel, high alloyed chromium/nickel steel and chromium/nickel/molybdenum steel which reactor contains granular activated charcoal having a grain size of about 3 to 10 mm, a compression resistance of more than 18 kilopond and a benzene absorption capacity above 40 wt. % to form phosgene until 95 to 98% of the chlorine is reacted,

(b) removing heat generated in the reactor used in (a) by means of a heat carrier which is removed from the reactor,

(c) condensing and/or cooling the heat carrier while generating steam,

(d) removing the phosgene-containing gas from the first tubular reactor,

(e) cooling the gas of (d) to a temperature of from 50° to 120° C.,

(f) transferring the cooled gas of (e) to a second reactor containing granular activated charcoal which second reactor is maintained at a temperature of from 50° to 100° C. and

(g) completing the phosgene-forming reaction until the phosgene has a residual chlorine content of less than 50 ppm (volume).

4,764,309

PREPARATION OF CHLOROCARBOXYLIC ACID CHLORIDES

Martin Decker, Ludwigshafen, and Franz Neumayr, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

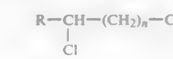
Filed Jun. 29, 1987, Ser. No. 68,147

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624258

Int. Cl.[4] C07C *53/46*

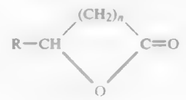
U.S. Cl. 260—544 K 12 Claims

1. In a process for the preparation of a chlorocarboxylic acid chloride of the formula



I

where R is H or alkyl and n is an integer from 2 to 4, by reacting a lactone of the formula



II

with phosgene at elevated temperatures, the improvement which comprises:

carrying out the reaction in the presence of a quaternary ammonium salt.

4,764,310

PROCESS FOR THE PREPARATION OF AROMATIC CARBOXYLIC ACID CHLORIDES

Hans-Josef Buysch, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 22, 1986, Ser. No. 911,925

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1985, 3535984

Int. Cl.[4] C07C *63/00*

U.S. Cl. 260—544 K 8 Claims

1. A process for the preparation of an aromatic carboxylic acid chloride, wherein the alkyl ester of the aromatic carboxylic acid is treated with phosgene at 130°-270° C. in the presence of an organophosphorus compound.

4,764,311

APPARATUS FOR MIXING GASEOUS MIXTURES INTO THE WATER OF A PROTEIN SKIMMER

Benedikt J. Klaes, Bonner Str. 63, 5483 Gimmingen, Fed. Rep. of Germany

Filed Jul. 15, 1986, Ser. No. 885,716

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1985, 3525861

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—28 17 Claims

1. An apparatus for introducing a gaseous mixture into a liquid in the contact tube of a protein skimmer, said apparatus comprising:

a centrifugal pump having a drive motor and an hydraulic part, said hydraulic part including an impeller and an outlet on the pressure side of the impeller, said impeller having a central suction port on its suction side and being substantially closed radially outside of the outer periphery of said suction port;

means for mounting said pump on the wall of said contact tube with the drive motor outside the tube and the hydraulic part inside the tube, said impeller being mounted for rotation by said drive motor and said rotation of said impeller causing suction for sucking a portion of said liquid into said suction port; and,

gas injector means for introducing said gaseous mixture into said liquid portion sucked into said suction port, said gas



injector means including a gas injection connection having a free end, means for coaxially mounting said free end so as to introduce said gaseous mixture inside said suction port, and means for supplying said gaseous mixture to said gas injection connection through the wall of said contact tube, rotation of said impeller causing said gaseous mixture to be mixed with said sucked liquid portion to form gas bubbles in a gas and liquid mixture and said gas and liquid mixture to be discharged from said outlet into said contact tube.

4,764,312

ROOM HUMIDIFICATION SYSTEM

Harry J. Scharres, LaGrange; W. Samuel Grist, and John A. Yarish, both of Chicago, all of Ill., assignors to Louis A. Weiss Memorial Hospital, Chicago, Ill.

Filed Oct. 2, 1986, Ser. No. 915,040

Int. Cl.[4] B01F *3/04*

U.S. Cl. 261—30 4 Claims



1. A room humidification system comprising a wall mounted gas inlet, means for supplying pressurized oxygen gas from a source outside said room to said wall mounted inlet,

means for containing a quantity of water in a condition sealed from the environment of said room,

an atomizing nozzle formed with a liquid passageway and a gas passageway,

first coupling means for connecting said liquid passageway to said water containing means,

second coupling means including an adapter engagable in said wall mounted gas inlet for selectively connecting the gas passageway of said atomizing nozzle to said wall mounted gas inlet such that a pressurized flow of gas may be directed from said outside source through said gas passageway,

means supporting said nozzle on said adapter so that said

VOL 1093 ISS 3 AG 16 1988 UMI

nozzle is mountable on the wall as an incident to engaging said adapter in said gas inlet, and

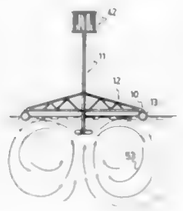
said nozzle being operable for causing the pressurized gas flow discharging from said gas passageway to break the flow of liquid discharging from said liquid passageway into fine liquid particles and to directly dispense such particles into the atmosphere of the room in the form of a fine mist and in a manner which increases the humidity of the atmosphere in said room.

4,764,313

AIR DRIVEN WATER CIRCULATION MILL

Douglas Cameron, and Lorraine Cameron, both of Assiniboia, Canada, assignors to Sunset Solar Systems Ltd., Assiniboia, Canada

Filed Nov. 3, 1986, Ser. No. 926,324
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—35 13 Claims



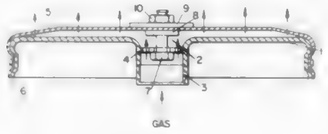
1. An air driven water mill for bodies of water such as dugouts, ponds, dams, lakes and the like; comprising in combination a flotation platform, including a flotation ring comprising a segmented tube, and means to detachably secure said segments together to form the ring, each said segment including an outer cover, internal bracing within said cover and flotation material within said cover, a mast assembly including a vertically situated tubular center section, a tubular mast slidable within said center section, and means for selectively moving said mast vertically within said center section, means to support said mast assembly center section upon said flotation platform, a drive shaft journalled for rotation within said tubular mast, air driven means secured to the upper end of said shaft and a propeller secured to the lower end of said shaft and situated below the water surface when installed upon the associated body of water.

4,764,314

DIFFUSER FOR AERATION BASIN

Norbert Schneider, Holbeinstrasse 13, D-5657 Haan, Fed. Rep. of Germany

Continuation of Ser. No. 714,658, Mar. 21, 1985, abandoned. This application Feb. 10, 1987, Ser. No. 13,158
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1984, 3410267
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—62 6 Claims



1. Diffuser means for use in an aeration basin for introducing gas in the form of bubbles into liquid held in the basin, said diffuser means comprising:

a body member having a backing surface and passaging in the body member extending from a gas inlet adapted to receive gas under pressure from a source thereof to an outlet at the backing surface for delivery of the gas under pressure thereto;

a flexible, gas permeable membrane covering the backing surfce and secured generally along the periphery of the membrane to the body member in sealing relation, the membrane being adapted to distend and move away from the backing surface upon the delivery of gas under pressure to the diffuser, with the gas flowing through the distended portion of the membrane and into the liquid in the form of relatively small gas bubbles, and being adapted to collapse into engagement with the backing member when gas under pressure is not delivered to the diffuser;

and check valve means comprising a movable valve member on and movable with the membrane and a valve seat on the body member at said outlet, the movable valve member being moved away from the valve seat along with the membrane when gas under pressure is delivered to the diffuser to open the check valve for allowing the gas to enter the space between the member and the backing surface, and the movable valve member being moved into sealing relationship with the valve seat to close the check valve when gas under pressure is no longer delivered, for blocking flow of liquid into the passaging in the diffuser means; and

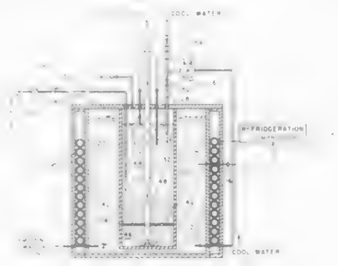
stop means comprising interengageable means on the body member and secured to the membrane generally at a central portion thereof for limiting movement of said central portion of the membrane away from the backing surface to a predetermined position spaced apart from yet being generally adjacent to the backing surface, whereby when gas under pressure is delivered to the diffuser means, the membrane distends and moves away from the backing surface but with the stop means holding the member spaced generally adjacent to the backing surface for flow of gas through the distended portion of the membrane.

4,764,315

WATER COOLER AND CARBONATOR

Paolo E. Brusa, Milan, Italy, assignor to Ionics, Incorporated, Watertown, Mass.

Filed Aug. 12, 1987, Ser. No. 84,353
Int. Cl.[4] B01F *3/04*
U.S. Cl. 261—140.1 2 Claims



1. A carbonation chamber for carbonating water disposed therein comprising in combination:

a. a cylindrical tank, said tank having a first inlet at the top for supplying water and a second inlet at the top for supplying carbon dioxide to said tank;

b. a baffle disposed within and at the bottom of said tank, said baffle dividing the tank into upper and lower chambers, said baffle having at least one port allowing the passage of water from the upper to the lower chamber;

c. a first tube for withdrawing carbonated water disposed within said tank extending through said baffle and into said lower chamber and further extending through the top of said tank;

d. a first water level sensor disposed within said tank;

e. a second water level sensor disposed within said tank, said first and second sensors defining upper and lower water levels; and

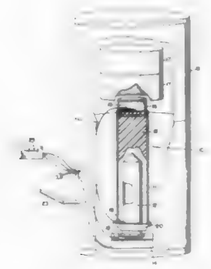
f. a second tube disposed within said tank's upper chamber through said second inlet, said second tube extending to and terminating below said first and second water level sensors for injecting carbon dioxide gas into water disposed in said tank.

4,764,316

PROCESS FOR PREPARING SOLID PROPELLANT GRAINS USING THERMOPLASTIC BINDERS AND PRODUCT THEREOF

Ernie D. Brown, Pleasant View; Karl M. Nelson, and Gary L. Smith, both of Ogden, all of Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Sep. 2, 1986, Ser. No. 903,003
Int. Cl.[4] C06B *21/00, 45/10;* C06D *1/08;* F42B *3/00*
U.S. Cl. 264—3.1 4 Claims



1. A process for fabricating a propellant grain comprising

providing energetic particulates, particulates of a thermoplastic elastomer and additional components of a propellant grain formulation, said high-energy particulates and said thermoplastic elastomer particulates being together selected of a size distribution to enable a dry blend packing of at least about 90% of theoretical density to be achieved,

mixing said particulates and said additional components below the melting temperature of said thermoplastic elastomer to produce a dry blend in which said components are homogeneously distributed,

packing said dry blend into a casing or mold,

fusing said dry blend in place within said casing or mold by heating said dry blend to above the melting temperature of said thermoplastic elastomer but at a temperature sufficiently low to ensure stability of energetic components of said blend, said packed dry blend being heated from the bottom upward to fuse said packed dry blend from the bottom upward, whereby said homogeneous distribution is maintained throughout fusion and solidification, said packed blend being subjected to vacuum during fusion to draw gases from interstices of said packed blend, mechanical compaction force being applied to said packed blend during fusion, and

cooling said fused blend to solidify the same.

4,764,317

MICROENCAPSULATION PROCESS AND APPARATUS

Eugene L. Anderson; William W. Harlowe, Jr.; Leon M. Adams, and Mary C. Marshall, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Feb. 9, 1984, Ser. No. 578,653
Int. Cl.[4] B29B *9/10*
U.S. Cl. 264—4 16 Claims



1. A continuous process for production and collection of microcapsules containing a liquid fill comprising the steps of:

(a) maintaining a rotating substantially uniform defined layer of a cushioning powder between a capsule forming zone and a capsule collecting zone;

(b) expelling the formed capsules from said capsule forming zone to impact said uniform layer of cushioning powder;

(c) moving said capsules radially along said powder layer onto a moving surface in said capsule collecting zone.

14. Apparatus for continuously collecting capsules expelled from an encapsulation head comprising:

(a) a rotatable platform located below said encapsulation head for receiving said expelled capsules thereon; and
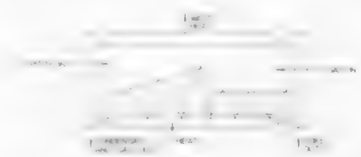
(b) means for maintaining a substantially uniform layer of a cushioning powder on said rotatable platform for cushioning the impact of said expelled capsules as they are received.

4,764,318

PROCESS FOR THE CONTINUOUS COKING OF PITCHES AND UTILIZATION OF THE COKE OBTAINED THEREBY

Manfred Morgenstern, and Claus Bertrand, both of Castrop-Rauxel, Fed. Rep. of Germany, assignors to Ruetgerswerke Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 23,052
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1986, 3609348
Int. Cl.[4] B29C *71/02*
U.S. Cl. 264—29.5 12 Claims



1. A process for the continuous coking of pitches, comprising subjecting a hard pitch which has a softening point (Kraemer-Sarnow) of at last 130° C. and a coking residue (Brockmann-Muck) of at least 45% by weight, to coking temperature in a rotary heating zone, said rotating heating zone being a rotary kiln or rotary pipe furnance fitted with a device that moves material through the furnace, which is a worn conveyor device conically shaped with its smaller diameter in the direc-

VOL 1093 ISS 3 AG 16 1988 UMI

tion of the starting material feed inlet located at the front part of the furnace, wherein the inclination of the device is greater than the inclination of the furnace, said zone being heatable from the outside such that the temperatures of the heating zone are between about 500° and about 800° C., and said pitch being in said zone for a dwell time of 0.5 to 1.5 hours, whereby the gases and vapors formed at the coking temperature are guided in countercurrent flow to the pitch that is being coked, said hard pitch being moved through said zone at an even rate to the discharge end to recover a coked pitch which is anisotropic and has an evenly mosaic-like appearance or structure.

7. A process for making a reactor electrode comprising

subjecting a hard pitch which has a softening point (Kraemer-Sarnow) of at least 130° C. and a coking residue (Brockmann-Muck) of at least 45% by weight, to coking temperature in a rotary heating zone, said rotary heating zone being a rotary kiln or rotary pipe furnace fitted with a device that moves mateial through the furnace, which is a worm conveyor device conically shaped with its smaller diameter in the direction of the starting material feed inlet located at the front part of the furnaace, wherein the inclination of the device is greater than the inclination of the furnace, said zone being heatable from the outside such that the temperature of the heating zone is between about 500° C. and 800° C.,

said pitch being in said zone for a dwell time of 0.5 to 1.5 hours,

guiding the gases and vapors formed in said heating zones in countercurrent flow to the pitch,

said pitch being moved through said zone at an even rate to the discharge end of said zone to recover a coked pitch,

grinding the coked pitch to finely divided particulates

mixing said coked pitch particulates with a suitable binder and shaping into the desired shape,

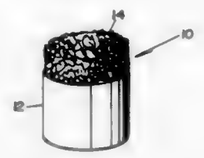
calcining said shape at elevated temperature to obtain an electrode and graphitizing said electrode which has a mosaic-like structure and a low anisotropic coefficient.

4,764,319

HIGH SOLIDS RATIO SOLID ROCKET MOTOR PROPELLANT GRAINS AND METHOD OF CONSTRUCTION THEREOF

James O. Hightower, Jr.; Tomio Sato; James W. Hamner, all of Huntsville, and Rector, Carl M., Brownsboro, all of Ala., assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Sep. 18, 1986, Ser. No. 908,761
Int. Cl.[4] C06B *21/00*
U.S. Cl. 264—3.4 11 Claims



1. A method of constructing a rocket motor with the propellant grain thereof including a reticulated structure embedded therein comprises the steps of:

a. forming a reticulated structure to have a predetermined propellant grain shape;

b. inserting the formed reticulated structure in a motor case;

c. preparing a propellant material which includes a highly plasticized binder such that the grain has a solids ratio equal to at least about 95 percent;

d. at least partially filling the case including voids in the reticulated structure with the propellant material; and

e. casting the propellant material in the case.

4,764,320

METHOD FOR PREPARING SEMIPERMEABLE MEMBRANE COMPOSITIONS

Chieh-Chun Chau, and Lu H. Tung, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 12, 1987, Ser. No. 60,871
Int. Cl.[4] B29C *55/12;* C08J *9/36*
U.S. Cl. 264—41 8 Claims



1. A method for preparing semipermeable membrane compositions comprising the steps of

(a) contacting a glassy polymer in the form of a hollow fiber or film with a solvent in which the polymer swells at conditions to permit the swelling solvent to diffuse into the glassy polymer and cause the polymer to increase in at least one dimension by 5 percent; and then

(b) stretching the swollen polymer in at least one major direction in an amount sufficient to cause visible stress whitening.

4,764,321

HIGH THERMAL CONDUCTIVITY CERAMIC BODY

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1986, Ser. No. 845,894
The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.
Int. Cl.[4] C04B *35/58;* F27D *7/06*
U.S. Cl. 264—65 26 Claims

1. A process for producing a liquid phase sintered polycrystalline aluminum nitride ceramic body having a composition defined and encompassed by polygon ABCDEFGH excluding line DE of FIG. 2, a porosity of less than about 10% by volume of said body and a thermal conductivity greater than 0.70 W/cm·K at 25° C. which consists essentially of the steps:

(a) forming a mixture consisting essentially of an oxygen-containing aluminum nitride powder, a lanthanide oxide selected from the group consisting of erbium oxide, holmium oxide, a mixture and solid solution thereof, and free carbon, shaping said mixture into a compact, said mixture and said compact having a composition wherein the equivalent % of said lanthanide and aluminum ranges from point A up to point E of FIG. 2, said lanthanide ranging from greater than about 0.25 equivalent % to about 8.0 equivalent %, said aluminum ranging from less than about 99.75 equivalent % to about 92.0 equivalent %, said mixture and said compact having an equivalent % composition of Ln, Al, O and N outside the composition defined and encompassed by polygon ABCDEFGH of FIG. 2,

(b) heating said compact in a nitrogen-containing nonoxidizing atmosphere at a temperature ranging from about 1350° C. to a temperature sufficient to deoxidize the compact but below its pore closing temperature reacting said free carbon with oxygen contained in said aluminum nitride producing a deoxidized compact, said deoxidized compact having a composition wherein the equivalent % of Al, Ln, O and N is defined and encompassed by polygon ABCDEFGH excluding line DE of FIG. 2, said free carbon being in an amount which produces said deoxidized compact, and

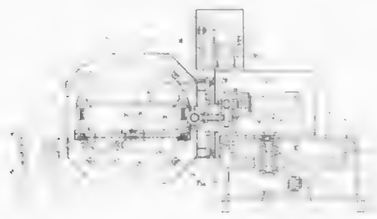
(c) sintering said deoxidized compact in a nitrogen-containing nonoxidizing atmosphere at a minimum temperature of about 1840° C. producing said polycrystalline body.

4,764,322

PROCESS FOR MANUFACTURING HOLLOW PLASTICS ARTICLES

Michel Pitavy, Vaucresson, France; Mario Chiappino, and Luigi Aghemo, both of Turin, Italy, assignors to Luchaire S.A., Paris, France and AG International S.p.A., Nichelino, Italy

Filed Dec. 2, 1986, Ser. No. 936,829
Claims priority, application France, Dec. 2, 1985, 85 17782
Int. Cl.[4] B29C *41/04*
U.S. Cl. 264—71 5 Claims



1. A process for producing a hollow plastics article, which comprises introducing a polymerisable composition in the hot state into a sealed hot mould, immediately setting the mould in motion by simultaneously imparting to the mould an orbital movement about a first axis with a first angular speed, said orbital movement having in a horizontal plane two components in directions perpendicular to each other, a rotational movement about a second axis with a second angular speed and an oscillatory rotational movement with a third angular speed about a third axis which is perpendicular to the second axis, said first angular speed being higher than at least one of the second and third angular speeds.

4,764,323

METHOD OF TREATING HOLLOW ARTICLES, IN PARTICULAR POLYETHYLENE TEREPHTHALATE PREFORMS

Hussain A. Al Ghatta, Fiuggi, Italy, assignor to Cobarr S.p.A., Anagni, Italy

Filed Nov. 12, 1986, Ser. No. 929,428
Claims priority, application Italy, Nov. 19, 1985, 22898 A/85
Int. Cl.[4] B29C *71/00;* C08J *7/12, 7/02*
U.S. Cl. 264—85 10 Claims



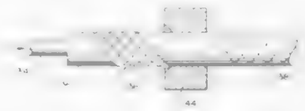
1. A method of reducing the acetaldehyde content and the gas permeability of the walls of polyethylene terephthalate and polyethylene terephthalate copolymer hollow articles, comprising treating said hollow articles in an autoclave containing a carbon-dioxide atmosphere at a partial pressure exceeding 50 bars and at a temperature above 31° C. for a time sufficient to obtain a substantial reduction in the acetaldehyde content and the permeability of the walls of said hollow articles.

4,764,324

METHOD OF MAKING A CATHETER

Warren Burnham, 9964 Gansevoort Rd., R.D. #2, Fort Edward, N.Y. 12828

Continuation of Ser. No. 743,890, Jun. 13, 1985, abandoned, which is a continuation of Ser. No. 560,526, Dec. 12, 1983, abandoned. This application Mar. 31, 1986, Ser. No. 845,492
Int. Cl.[4] B29C *47/06, 59/02*
U.S. Cl. 264—103 35 Claims



1. A continuous method of making a finished reinforced catheter made from a polymeric material exhibiting a range of apparent viscosity proportional to temperature and having an inner diameter and an outer diameter with reinforcement completely embedded within the wall of said catheter between said inner diameter and said outer diameter with a single extrusion step and without internal application of external pressure, comprising the steps of:

providing as an interim structure an extruded, mandrelized polymeric catheter body having an outer diameter about equal to the outer diameter of the finished catheter;

providing said mandrelized catheter body in a condition heated to a state sufficient to permit a reinforcing member under tension to be submerged completely beneath an outer surface of the heated tubular structure;

applying said reinforcing member at the outer surface of said heated interim mandrelized catheter body under sufficient tension to cause said reinforcing member to travel inwardly through said polymeric outer surface to a predetermined extent to deform said outer surface relative to the reinforcing member by a volume about equal to the volume of said reinforcing material added to said tubular structure and to locate the reinforcing member accurately in the wall of said body thus defining wall portions which lie radially outwardly and inwardly of the former outer diameter of the catheter body, a combination of the temperature and said polymeric material of said interim catheter and tension on said reinforcing member controlling said predetermined extent, the location of said reinforcing member within the finished product being defined by the location of said reinforcing member when applied to said interim catheter body; and

smoothing said deformed outer surface to form said catheter with the reinforcement member precisely located within the wall of the catheter without further extruding a plastic material thereon to form said finished, catheter reinforced.

4,764,325

APPARATUS FOR AND METHODS OF FORMING AIRLAID FIBROUS WEBS HAVING A MULTIPLICITY OF COMPONENTS

John J. Angstadt, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 28, 1986, Ser. No. 868,219
Int. Cl.[4] D04H *1/16*
U.S. Cl. 264—113 24 Claims

1. An apparatus for forming airlaid fibrous webs having a multiplicity of components each formed from a portion of a column of fibers, said apparatus comprising:

a splitter chute comprising:

a base;

VOL 1093 ISS 3 AG 16 1988 UMI

four side walls extending from said base defined by a first side wall, a second side wall opposed to said first side wall, and an opposed pair of lateral side walls;

a curvilinear top wall positioned on said side walls and having a plurality of ports disposed in and along the surface of said top wall and comprising:

a first port, and

a second port,

wherein a column of fibers is directed along the surface of said top wall to said ports;

a first conduit duct for directing a column of air past said first port so as to cause a portion of the column of fibers to split off and be drawn into said first conduit duct to form a first fiber stream, and for entraining the first fiber stream in the air to direct the first fiber stream downstream, said first conduit duct having an inlet and a discharge outlet, said first conduit duct being in communication with said first port; and

a second conduit duct for directing a column of air past said second port so as to cause a portion of the column of fibers to split off and be drawn into said second conduit duct to form a second fiber stream, and for entraining the second fiber stream in the air to direct the second fiber stream downstream, said second conduit duct having an inlet and a discharge outlet, said second conduit duct being in communication with said second port;



first airlaying means having a first foraminous forming element for forming a first web component;

first deposition means for directing a first stream of air-entrained fibers formed from a portion of the column of fibers from said splitter chute to said first foraminous forming element of said first airlaying means and for depositing the fibers on said first foraminous forming element;

second airlaying means having a second foraminous forming element for forming a second web component;

second deposition means for directing a second stream of air-entrained fibers formed from a portion of the column of fibers from said splitter chute to said second foraminous forming element of said second airlaying means and for depositing the fibers on said second foraminous forming element; and

uniting means for uniting said first web component and said second web component so as to form an airlaid fibrous web.

4,764,326

EXTRUSION PROCESSING AID COMPOSITION AND POLYOLEFIN CONTAINING SAME

John Hakim, Tulsa, Okla., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 501,473, Jun. 6, 1983, Pat. No. 4,701,487. This application Jun. 22, 1987, Ser. No. 64,438

Int. Cl.[4] B29C *47/00*; D01F *1/10*

U.S. Cl. 264—211 **8 Claims**

1. In the process for extruding a polyolefin, the improvement which comprises blending said polyolefin prior to extruding same with an amount, effective to enhance processing, of an extrusion processing aid comprising an acid amide or an alkylene bis-amide of a saturated or unsaturated mono- or di-carboxylic acid, an aliphatic hydrocarbon or mixture of aliphatic hydrocarbons having a number average molecular weight of from about 400 to about 50,000 and an oxygen-containing, high density ethylene polymer having an average vapor pressure osmometer molecular weight of from about 1,000 to about 3,000.

4,764,327

PROCESS OF PRODUCING PLASTIC-MOLDED PRINTED CIRCUIT BOARDS

Mitsuru Nozaki, and Hirokatsu Nakamura, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jan. 14, 1987, Ser. No. 3,344

Claims priority, application Japan, Jan. 14, 1986, 61-4212; Jun. 5, 1986, 61-129303; Sep. 5, 1986, 61-207819

Int. Cl.[4] B29C *33/40*

U.S. Cl. 264—225 **9 Claims**

1. A process of producing plastic-molded printed circuit boards by injection-molding a heat resistant plastic to form a plastic molding having many perforations and forming a conductive layer on the molding, which comprises molding the heat resistant plastic using a mold for injection-molding obtained by preparing a die set for injection molding composed of a fixed size metal platen having at least an inlet for molten resin and forming a space for installing mold part(s), a stripper metal platen forming a space for installing mold part(s), and a movable side metal platen forming a space for installing mold part(s); and assembling a pair of molds composed of a mold I having a concaved portion for cavity and a mold II having perforations for passing hard pins for forming holes, said molds being formed by a cured resin composition, a composite of a metal and a cured resin composition or a metal, and a hard pin mold III having hard pins for forming holes fixed thereto in such a manner that

the mold I is fixed to the fixed side metal platen, the mold II is fixed to the stripper metal platen, and the hard pin mold III is fixed to the movable side metal platen in this order.

4,764,328

METHOD OF FUSION BONDING LOW DENSITY THERMOPLASTIC BODIES

Bruno Matz, Milford, and Dolores C. Kearney, Inkster, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 23, 1987, Ser. No. 28,815

Int. Cl.[4] B32B *31/20*; B29C *65/00, 43/00*; B29D *7/00*

U.S. Cl. 264—248 **18 Claims**



1. A method of making a thermally welded, leakproof joint between compressible thermoplastic members having a density in the range of 0.75–2.5 lbs/ft^3, comprising:

(a) fluidizing only a surface film on opposed mateable margins of said thermoplastic members without radiation destruction of such members remote from the margins said fluidizing being carried out by precompressing surface portions of the margins against a transversely stationary heated platen located therebetween, and continuing such contact to promote such fluidization of the precompressed surface portions by thermal conductivity and to make heat softened a limited, predetermined, nonmelted subsurface layer of said mateable margins; and

(b) in rapid succession within a time period during which said films remain fluid, providing a narrow air gap between said margins and platen, withdrawing said platen from between said opposed margins and quickly bringing said mating margins together with sufficient force to merge said fluid films and compress said heat softened subsurface layers to achieve a predetermined moulded dimension.

4,764,329

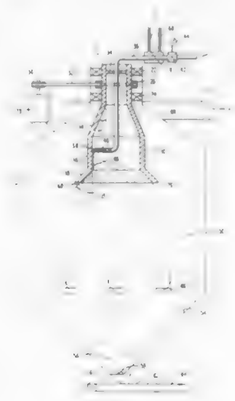
PRODUCING EXPLOSIVE MATERIAL IN GRANULAR FORM

Russell E. Lerman, Jefferson, N.J., assignor to The United States of American as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 12, 1987, Ser. No. 66,589

Int. Cl.[4] C06B *21/00*

U.S. Cl. 264—3.5 **6 Claims**



1. In an improved method of producing explosive material in granular form, the improvement consisting essentially of:

a. directing a fluidized explosive in a thin continuous stream against a rotating gas bell-shaped vertically symmetrical element having a top and bottom inner surface,

b. moving said fluidized explosive by gravity downwardly from said top to bottom inner surface,

c. flinging said fluidized explosive in the form of droplets into air by means of centrifugal force from said bottom surface,

d. forming solid granules of said fluidized explosive by free fall through said air, and

e. continuously collecting said solid granules.

4,764,330

PROCESS FOR THE PRODUCTION OF ORGANIC POLYISOCYANATE-BASED MOLDED POLYMERS

Fred A. Stuber, and George H. Tenume, both of North Haven, Conn., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 478,128, Mar. 23, 1983, Pat. No. 4,570,010. This application Nov. 4, 1985, Ser. No. 794,989

Int. Cl.[4] B29C *45/00*

U.S. Cl. 264—300 **16 Claims**

1. In a process for the production of an organic polyisocyanate based polymer in a closed mold which process comprises polymerizing a reaction mixture comprising at least one organic polyisocyanate with at least one organic polyol the improvement which comprises employing in said process an internal release agent which provides for a high number of molding cycles before requiring any mold surface treatment said release agent comprising an amino-polysiloxane having at least one group of the formula

RNH—alkylene—O—

bonded to a silicon atom of a polysiloxane, wherein R is selected from the group consisting of hydrogen, lower-alkyl, cycloalkyl, and ECHR''CHR'-wherein E is an electron withdrawing group and R' and R'' are independently selected from the group consisting of hydrogen and methyl, said aminopolysiloxane being substantially free of any acid salt thereof.

4,764,331

LARGE DIAMETER OPTICAL DISK SUBSTRATE MADE OF POLYCARBONATE

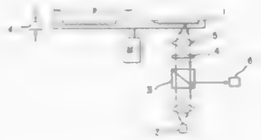
Shinji Tokuhara, Kobe; Yoshio Onizawa, Hyogo, and Shuzo Iyoshi, Himeji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 692,159, Jan. 17, 1985. This application Apr. 27, 1987, Ser. No. 42,901

Claims priority, application Japan, Jan. 26, 1984, 59-12565

Int. Cl.[4] B29F *1/08*

U.S. Cl. 264—328.16 **2 Claims**



1. A method for injection molding a polycarbonate disk substrate for a high-density information recording medium, said substrate having thickness (d) of 1.0 to 2.0 mm and a radius (R) of 65 to 175 mm, consisting of injecting a molten polycarbonate resin having an average molecular weight of 14,000 to 22,000 into a flat annular cavity in a mold heated at a temperature between 80° and 130° C. from an injection cylinder having a temperature (T) selected from a range between 330° and 400° C. through the center of the mold, wherein the residence time (t minutes) of the polycarbonate resin in the injection cylinder is adjusted to

$$t \leq 14 - \frac{1}{10}(T - 300)$$

wherein T is the temperature (°C.) of the injection cylinder, and in that a gate located at the center of the flat annular cavity has a sectional area (S mm^2) which satisfies following inequality:

$$\frac{1}{10}\frac{R}{d} + 10 < S < \frac{2}{10}\frac{R}{d} + 35$$

wherein R is the radius (mm) of the disk and d is the thickness (mm) of the disk.

4,764,332

SEALING ELEMENT AND METHOD FOR HYDROTESTING OF NUCLEAR REACTOR TUBULAR ELEMENTS

Milan M. Guina, Brussels, Belgium, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1986, Ser. No. 891,026

Int. Cl.[4] G21C *13/00*

U.S. Cl. 376—203 **17 Claims**

1. A method for the hydrotesting of an open-end pipe having

VOL 1093 ISS 3 AG 16 1988 UMI

an end wall, situated within a nuclear reactor pressure vessel, comprising:

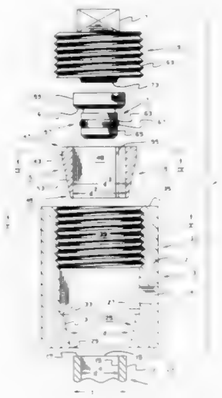
providing a pipe end sealing element having;

a hollow tubular member, adapted to encircle the open end of the pipe, having an inwardly directed flange at one end thereof, said flange having an inner bevelled surface, and a threaded portion of the inner face of said hollow tubular member at the other end thereof adjacent the end of the pipe;

a hollow conical bushing having an inner surface engageable with the outer surface of the pipe spaced from the open end thereof, said inner surface having an interior diameter and said bushing having means for varying said interior diameter, and said bushing having an outer bevelled surface complementary to the bevel of the bevelled surface of the flange of the hollow tubular member;

a sealing plug insertable into the open end of said pipe with a portion thereof resting on the end wall of said pipe; and

a threaded bolt threadably engageable with the threaded portion of the hollow tubular member;



placing the hollow tubular member over the open end of the pipe, with the threaded portion thereof adjacent and beyond the open end thereof;

inserting said hollow conical bushing into said hollow tubular member such that the same surrounds the outer wall of the pipe, with the bevelled surface of the conical bushing in sliding relationship to the bevelled surface on the flange of the hollow tubular member;

placing said sealing plug on the open end of the pipe;

engaging said threaded bolt with the threads of the hollow tubular member;

advancing said threaded bolt towards said sealing plug to contact the same, while preventing rotation of the hollow tubular member, such that the hollow conical bushing is decreased in its interior diameter to grip the outer wall of the pipe, by axial sliding movement of the bevelled surface of the hollow tubular member, and finally hold the sealing plug in sealing contact with the end wall of the pipe; and

injecting a fluid into said pipe from a location spaced from the end having the sealing element thereof to a predetermined pressure to determine the fluid resistant capability of the wall of said pipe.

4,764,333

END CLOSURES FOR CONTAINERS

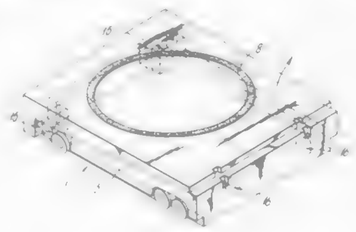
David Minshall, and Roy Randle, both of Warrington, England, assignors to British Nuclear Fuels plc, Warrington, England

Filed Nov. 4, 1986, Ser. No. 926,560

Claims priority, application United Kingdom, May 22, 1985, [redacted]

Int. Cl.[4] G21F *5/00*

U.S. Cl. 376—203 5 Claims



1. An end closure for a container, in particular an end closure for a nuclear fuel transport flask, comprising means defining an end opening for a container, a gate movable laterally across said end opening between open and closed positions, the gate having first and second portions and means continuously urging said portions apart, a door, means releasably mounting the door on the gate, the door including means sealingly engageable with said opening, the door having upper and lower cooperable wedge-shaped members releasably mounted on the first and second gate portions respectively for movement therewith between the open and closed positions, the assembly including means arranged such that a lateral displacement of the gate into or out of its fully closed position effects movement of the second gate portion only and corresponding movement of the associated lower wedge-shaped door member, with the first gate portion and its associated upper wedge-shaped door member remaining laterally stationary whereby to effect a vertical displacement of the upper wedge-shaped door member into or out of sealing engagement with said opening.

4,764,334

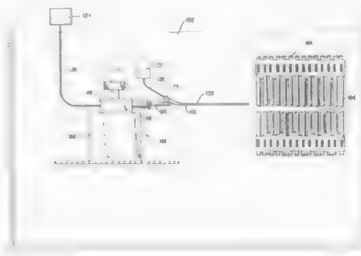
VISUAL INSPECTION SYSTEM FOR RADIOACTIVE FUEL ASSEMBLIES USING FIBEROPTICS

William E. King, Plum Boro, Pa., and Lawrence G. Healy, Horseheads, N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1983, Ser. No. 542,612

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—248 25 Claims



1. A system for the visual inspection of a radioactive assembly of tubes in an underwater environment, comprising an elongated fiberoptic image guide for remotely transmitting an image of said tubes to be visually inspected, a light source for emitting light, an elongated fiberoptic light guide for transmitting said light emitted from said light source to said tubes, the distal end of the image guide being parallel and adjacent to one side of the light guide so that the distal ends of the image guide and light guide present an elongated cross section that facilitates the insertion of said distal ends in the spaces between the tubes, a first receiving means for remotely displaying the image conducted by said image guide, a second receiving means for remotely displaying the location of the distal ends of said adjacent image and light guides to facilitate the positioning thereof within said assembly, a positioning means for remotely positioning said distal ends of said image and light guide, and means for mechanically linking said second receiving means with said positioning means so that when said image and light guides are moved, said second receiving means is moved the same amount,

wherein the image guide is formed from silicon dioxide of a purity sufficient to allow said image guide to withstand a radiation flux of greater than about 10^4 rads per hour so that said guide retains greater than about 50% light transmission.

4,764,335

METHOD AND APPARATUS FOR DIAGNOSING BREACHED FUEL ELEMENTS

Kenny C. Gross, Lemont; John D. B. Lambert, Wheaton, both of Ill., and Shigeo Nomura, Mito, Japan, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 2, 1987, Ser. No. 20,997

Int. Cl.[4] G21C *17/06*

U.S. Cl. 376—253 18 Claims



1. In a nuclear reactor having a core of a plurality of fuel elements, said elements having a cladding, and said reactor having a cover gas and a cover-gas clean up system for removing fission gas activity from said cover-gas said cover-gas clean up system comprising an argon gas purging system, an on-line breached fuel element diagnostic system comprising:

(a) detector means responsive to fission gas isotope activity in said cover-gas;

(b) means for measuring the argon purge rate of said argon gas purging system;

(c) processing means responsive to the outputs of said detector and said argon purge rate measuring means and operable to calculate the corrected gas activity, C°_{j+1}, and the derivative thereof from the solution of the equations:

$$P_j = dc/dt + C_j(X_i + X_L + X_p)$$

$$dC^{\circ}/dt = P_j - C^{\circ}_j(X_i + X_L)$$

$$C^{\circ}_{j+1} = \{P_j - C^{\circ}_j(X_i + X_L)\}dt + C^{\circ}_j$$

where

dt=Time interval between t_i and T_{j+1};

dc=Activity difference of fission gas isotope i at the interval $dt = C_j + 1$;

C_j=Activity at t_g;

X_i=decay constant of fission gas isotope i;

X_L=Cover-gas-leak-rate constant;

X_p=Cover-gas-purge-rate constant;

dC°=Activity different at dt without cover gas clean up system operation $= C^{\circ}_{j+1} - C^{\circ}_j$;

C°_j=Activity at t_j; and;

(d) display means responsive to the output of said data acquisition and processing means for displaying the curves of said corrected gas activity and said derivative of said corrected gas activity as a function of time, said derivative curve representing a curve of the instantaneous release rate of fission-gas from a breached fuel element.

4,764,336

BASIN, IN PARTICULAR A DE-ACTIVATION POOL OF A NUCLEAR STATION

Francois Aubert, and Jean Dussart, both of Marseille, France, assignors to Electricite de France-Service National, Paris, France

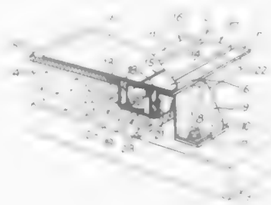
PCT No. PCT/FR86/00016, § 371 Date Sep. 22, 1986, § 102(e) Date Sep. 22, 1986, PCT Pub. No. WO86/04448, PCT Pub. Date Jul. 31, 1986

PCT Filed Jan. 21, 1986, Ser. No. 917,941

Claims priority, application France, Jan. 21, 1985, 85 00792

Int. Cl.[4] G21C *19/06, 17/00, 13/08*

U.S. Cl. 376—272 11 Claims



1. A de-activation pool of a nuclear station, whose walls are provided with a fluid-tight covering of exterior metal sheets welded together by their edges by means of weld beads and supported under each weld bead by a beam in the region of a planar bearing surface of the beam, each beam being fixed in a corresponding wall of the pool; each beam being hollow and, each beam comprising a first section element having roughly the shape of a U in cross-section, the planar bearing surface extending longitudinally in facing relation to at least a part of the bottom of the first section element; and a member disposed inside the first section element and defining, with said first section element, said planar bearing surface and at least two longitudinal channels in the inner volume of the beam, said member having a first segment and a second substantially horizontal segment vertically spaced from said bottom of said first section element and forming part of said planar bearing surface, only one of said channels forming a weld-inspection channel, and at least one of said channels having an open cross-section and forming a draining channel, said channels being located so that said planar being surface is facing and opposite to said channels inside the beam.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,337

CORROSION INHIBITING MEDIA FOR PRESSURIZED WATER REACTOR STEAM GENERATORS

Armand J. Pansos, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 12, 1986, Ser. No. 906,723
Int. Cl.[4] G21C *19/00*
U.S. Cl. 376—306 25 Claims

18. A method for inhibiting carbon steel corrosion in the secondary system of a nuclear steam generator comprising:

providing a corrosion inhibiting quantity of boric acid in the secondary system water; and

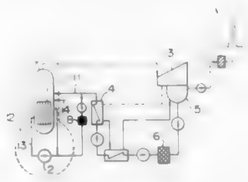
incorporating in the boric acid containing secondary system water, an activating amount of a polyhydric compound sufficient to increase the acid strength of the boric acid and improve the corrosion inhibiting characteristics thereof.

4,764,338

METHOD FOR OPERATING BOILING WATER-TYPE ATOMIC POWER PLANT

Shunsuke Uchida, and Katsumi Ohsumi, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,695
Claims priority, application Japan, Mar. 1, 1984, 59-39296
Int. Cl.[4] G21C *19/30*
U.S. Cl. 376—313 9 Claims



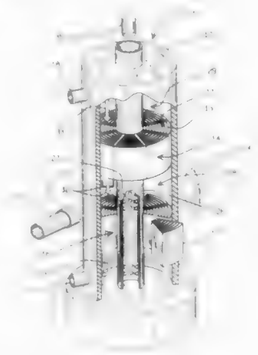
1. In the method of controlling the dissolution of radioactive corrosion products deposited on the surface of fuel rods into the core water of a boiling water-type atomic power plant including a nuclear reactor having a recycling system with a reactor water-purifying unit, a turbine generator driven by steam generated in the nuclear reactor, a condensor, a condensed water-purifying unit, and a water heater positioned in the recycling system; wherein the improvement comprises, passing the reactor water of the recycling system through the reactor water-purifying unit containing a cation exchange resin, wherein a portion of said cation exchange resin had been previously replaced with an alkali metal-form cation exchange resin, and passing the condensed water of the recycling system through a condensed water-purifying unit containing a cation exchange resin, wherein a portion of said cation exchange resin had been previously replaced with an alkali metal-form cation exchange resin, so as to cause the pH of the reactor water and condensed water to be adjusted to a pH of between about 7.0 and 8.5 through the ion exchange reaction of the alkali metal-form cation exchange resins with the cations contained in the reactor water and the condensor water of the recycling system whereby the dissolution of radioactive corrosion products deposited on the surface of the fuel rods into the core water of a boiling water-type atomic power plant is controlled.

4,764,339

HIGH FLUX REACTOR

James A. Lake; Russell L. Heath; John L. Liebenthal, all of Idaho Falls, Id.; Desionde R. DeBoisblanc, Summit, N.J.; Carl F. Leyse, Idaho Falls; Kent Parsons, Idaho Falls; John M. Ryskamp, Idaho Falls; Robert P. Wadkins, Idaho Falls; Yale D. Harker, Idaho Falls; Gary N. Fillmore, Idaho Falls, and Chang H. Oh, Idaho Falls, all of Id., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 16, 1986, Ser. No. 942,102
Int. Cl.[4] G21C *23/00, 15/00*
U.S. Cl. 376—353 12 Claims



1. A high flux nuclear reactor comprising:

(a) a pressure vessel including reactor coolant inlet means at the first end thereof and reactor coolant outlet means at the second end thereof;

(b) a reactor coolant;

(c) a first core segment housed within said pressure vessel, said first core segment including a plurality of concentric, circumferential fuel plates, the spacing between said concentric fuel plates forming coolant flow channels, each said fuel plate being thin relative to said spacing between said fuel plates;

(d) means for stationarily supporting said first core segment from said pressure vessel;

(e) a second core segment housed within said pressure vessel and spaced axially apart from said first core segment such that a coolant mixing plenum is formed therebetween, said second core segment including a plurality of concentric, circumferential fuel plates, the spacing between said concentric fuel plates forming coolant flow channels, each said fuel plate being thin relative to said spacing between said fuel plates;

(f) means for stationarily supporting said second core segment from said pressure vessel; and

(g) first core coolant bypass means for channeling a volume of said coolant between said inlet means and said coolant mixing plenum such that said coolant volume bypasses said first core segment.

4,764,340

FUEL ASSEMBLY STRESS RELIEVING FASTENER

Chun K. Lui, Monroeville, and Leonard T. Gesinski, North Huntingdon, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 31, 1986, Ser. No. 925,766
Int. Cl.[4] G21C *3/32*
U.S. Cl. 376—434 31 Claims

1. A nuclear fuel assembly comprising:

(a) a first material first nozzle having a bearing surface disposed thereon;

(b) a second material channel having said first nozzle disposed thereon;

(c) a second material attachment device connected to the channel; and



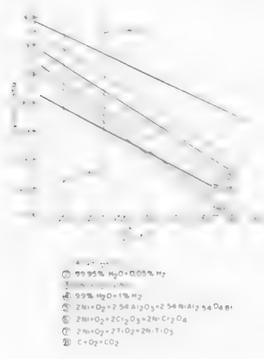
(d) a stress relieving fastener disposed on the attachment device for attaching the attachment device to the first nozzle and for relieving thermally induced stresses developed in the attachment device.

4,764,341

BONDING OF PURE METAL FILMS TO CERAMICS

Philip L. Flaitz, Poughkeepsie; Raj N. Master; Paul H. Palmateer, both of Wappingers Falls, and Srinivasa S. N. Reddy, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1987, Ser. No. 42,756
Int. Cl.[4] B22F *7/00*
U.S. Cl. 419—9 16 Claims



1. A method of bonding metal to a first oxide comprising:

forming a ternary oxide comprising said metal at the interface of said metal and said first oxide.

4,764,342

REAGENT HANDLING

Norman G. Kelln, and Thomas O. Tiffany, both of Spokane, Wash., assignors to Fisher Scientific Company, Pittsburgh, Pa.

Filed Feb. 27, 1985, Ser. No. 706,074
The portion of the term of this patent subsequent to Aug. 2, 2005, has been disclaimed.
Int. Cl.[4] G01N *35/02*
U.S. Cl. 422—72 10 Claims

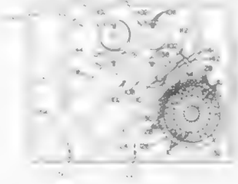
7. A reagent handling system for use with a clinical analysis system comprising:

a cuvette loading station and sample and reagent supply stations disposed along a straight line path;

transfer structure that includes two spaced apart liquid handling probes fixedly mounted thereon and aligned with said straight line path, means for moving said transfer structure along said straight line path between a first transfer location in said cuvette loading station, a second transfer location in said sample supply station and a third transfer location in said reagent supply station;

a centrifugal analyzer rotor positioned and arranged in said cuvette loading station and having a plurality of analysis cuvettes arranged in annular array therein, each said analysis cuvette having two loading ports spaced a distance corresponding to the spacing of the two probes of said transfer structure, and indexing mechanism at said cuvette loading station positioned and arranged for rotating the analyzer rotor to sequentially position said cuvettes at said first transfer location in the cuvette loading station for loading sample and reagent material from said sample and reagent supply stations, respectively, into said cuvettes under instructions from a system controller;

said sample station including sample container turntable means for selectively positioning a sequence of sample containers in said second transfer location; said reagent station including reagent container turntable means coaxial with said sample container turntable means for selectively positioning a sequence of reagent containers in said third transfer location; means sfor separately driving said sample container turntable means and said reagent container turntable means for independently positioning different sample and reagent containers in said second transfer location and said third transfer location, respectively, said reagent container turntable means including a support surface with container coupling means, and



a plurality of reagent containers on said reagent container turntable mechanism,

each said reagent container having a body portion with length and width dimensions each greater than the height dimension of the container, the body portion of each said container having generally vertical sidewall portions extending between a top wall and a bottom wall, said sidewall portions being disposed in converging relation and joining at a nose portion, an end wall being disposed at an end of said container opposite said nose portion and extending between said sidewall portions and said top and bottom walls, a port-defining neck portion formed in said top wall of said body portion and upstanding from the top wall of each said reagent container, said port-defining neck portion being asymmetrically located adjacent that reagent container sidewall which is remote from said nose portion and the bottom wall of each said reagent container including a coupling structure that interengages said container coupling means of said support surface of said reagent container turntable means for secure positioning on said reagent container turntable means, the body portion of each said container having structure defining a through-channel spaced from said port-defining neck portion a distance corresponding to the spacing of said probes, said through-channel defining structure being open at its top and at it bottom and being sealed to and extending between the top and bottom walls of said body portion,

VOL 1093 ISS 3 AG 16 1988 UMI

said plurality of reagent containers being compactly arranged in a circumferential array on said support surface of reagent container turntable means for indexing relative to said third transfer location of said reagent loading station, said sample container turntable means holding a series of sample containers in a ring coaxial with said reagent container turntable means,

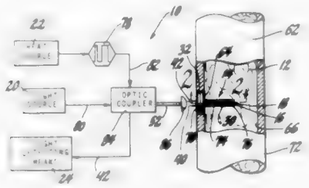
said transfer structure including a drive means for concurrently inserting tips of said two liquid handling probes into sample and reagent containers located at said second and third transfer locations, respectively, and concurrently withdrawing sample and reagent material therefrom for transfer to an analysis cuvette at said first transfer location in said cuvette loading station.

4,764,343

OXYGEN SENSOR BASED ON OPTICAL DETECTION

Glen A. Nyberg, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 14, 1986, Ser. No. 930,517
Int. Cl.[4] G01N *21/78*
U.S. Cl. 422—83 10 Claims



1. An optical sensing apparatus, for repeatedly sensing the partial pressure of a selected gaseous component in a gas mixture, comprising:

a film of heat responsive sensing material having a light reflective surface which reversibly reacts with a sensed gas in accordance with a temperature-sensed gas partial pressure relationship to cause a predictable change in reflectivity of the light reflective surface;

temperature sensing means for detecting the temperature of the light reflective surface at two or more distinct locations on the light reflective surface;

light source means for irradiating the light reflective surface, with a light beam from said light source means perpendicular to the light reflective surface;

heat source means for providing a thermal gradient on the light reflective surface by means of a light beam transmitted from said heat source means perpendicular to the light reflective surface; and

light detecting means for sensing reflection of the light irradiated on the light reflective surface from the light source means, said sensed reflection being transmitted perpendicular from the light reflective surface.

4,764,344

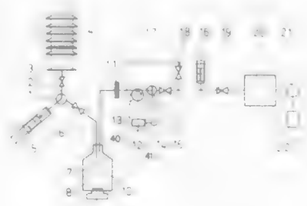
DEVICE FOR THE DETERMINATION OF THE QUANTITATIVE COMPOSITION OF GASES

Hans-Josef Knab, Zürich, Switzerland, assignor to BBC Brown, Boveri & Company Ltd., Baden, Switzerland

Filed Sep. 30, 1985, Ser. No. 781,705
Claims priority, application Switzerland, Oct. 25, 1984, 5100/84
Int. Cl.[4] G01N *7/00*
U.S. Cl. 422—89 18 Claims

1. In an apparatus for the determination of the quantitative composition of gases which are dissolved in insulating oil of an oil-insulated electrical apparatus, including a device for removing insulating oil samples from an oil-insulated electrical apparatus, a gas collecting vessel, a gas extraction section constructed and arranged for extraction of gases from the insulating oil samples supplied by the removing device by means of reduced pressure and for conveying extracted gases to the gas collecting vessel, and a gas chromatograph positioned and arranged for analysis of gases from the gas collecting vessel, the improvement comprising:

a peristaltic pump whose inlet is connected via the gas extraction section to the removing device;



means for selectively connecting an outlet of the peristaltic pump to either a vent to outside air or to an inlet of the gas collecting vessel; and

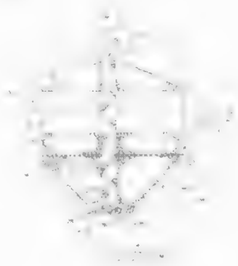
a bypass pipe connected between the inlet of the pump and the inlet of the gas collecting vessel, said bypass pipe including a shut off valve.

4,764,345

APPARATUS FOR THE DESULFURIZATION AND DETOXIFICATION OF FLUE GASES

Christian Koch, Muhlweg 13, 8570 Pegnitz, Fed. Rep. of Germany

Filed Feb. 7, 1986, Ser. No. 827,411
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1985, 3504123
Int. Cl.[4] F01N *3/10*
U.S. Cl. 422—146 4 Claims



1. An apparatus for purifying exhaust flue gases comprising:

a reaction vessel having a top and bottom, said reaction vessel comprising:

a lower inlet for crude flue gases;

an outlet at the bottom of said vessel for reacted desulfurizing agent;

an upper outlet for purified flue gas;

a reaction chamber, fillable with solid bodies capable of carrying a desulfurizing agent, disposed between said lower flue gas inlet and said upper purified flue gas outlet;

means for introducing lime into said reaction vessel through the top thereof;

a screw conveyor passing through said reaction chamber, said conveyor having a lower inlet end below said reaction chamber and an upper outlet end above said reaction chamber for circulating solid bodies in said reaction chamber;

a means for introducing water into said screw conveyor for cleaning solid bodies in said reaction chamber;

a means for discharging reacted desulfurizing agent cleaned from solid bodies in said reaction chamber from said bottom vessel outlet of said reaction vessel; and

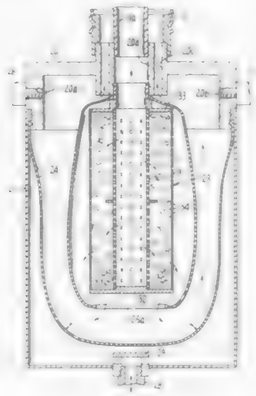
a heat exchanger arranged in the reaction vessel above said lower inlet for crude flue gases and below the upper outlet end of said screw conveyor, said heat exchanger having a first side thereof for receiving said crude flue gases prior to entry of said crude flue gases into said lower inlet of said reaction vessel, said heat exchanger having a second side thereof capable of drying and heating washed, moist solid bodies exiting from the outlet of said screw conveyor.

4,764,346

DISPOSABLE REBREATHING CANISTER

Ralph H. Lewis, Lakeport, and Barnum B. Lambert, San Jose, both of Calif., assignors to Pioneer Medical Systems, Inc., San Francisco, Calif.

Filed Dec. 9, 1986, Ser. No. 939,743
Int. Cl.[4] B01D *53/04*
U.S. Cl. 422—120 7 Claims



1. A canister for use with rebreathing apparatus and administering oxygen and anesthesia to a patient comprising:

means for housing a scrubber including a manifold plate and a rigid container having an interior, said manifold plate having an intake port, an exhaust port and a pair of inner and outer coaxial passages;

a flexible liner disposed within said rigid container and forming an imperforate barrier between the interior of said rigid container and the intake port, the exhaust port and the coaxial passages of said manifold plate;

a scrubber having a cylindrical core passage connected to the inner one of said coaxial passages, and an exterior surface in fluid communication with said outer one of said coaxial passages and said intake and exhaust ports;

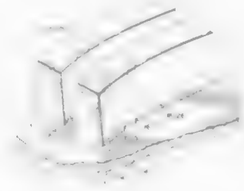
and means for pressurizing the space between the interior of said rigid container and said flexible liner.

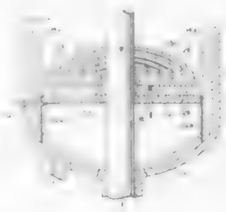
4,764,347

GRID PLATE ASSEMBLY FOR EBULLATED BED REACTOR

John D. Milligan, 650 Prospect Ave., Little Silver, N.J. 07739

Filed Apr. 5, 1983, Ser. No. 482,342
Int. Cl.[4] B01J *8/20*
U.S. Cl. 422—113 12 Claims





1. An improved grid plate assembly for an ebullated bed reactor for providing uniform fluid flow upwardly into the ebullated bed for performing reactions between gas, liquid and particulate solids material therein, comprising:

(a) a reactor vessel having a lower end with a grid plate supported within said reactor vessel and sealably attached to an inner wall of the reactor vessel near the reactor lower end;

(b) multiple flow distributor tubes passing substantially vertically through said grid plate, each said tube being generally cylindrical shaped and having a ball check located in an upper portion of the tube to prevent backflow of particulate solids to below the grid plate; and

(c) a plurality of caps with each cap covering the upper end of at least two adjacent said tubes, each said cap being rigidly attached to and spaced outwardly from the tube upper end and above the grid plate and having side walls tapered at an angle from about 5° to about 45° with its vertical axis, so as to permit flow of fluid uniformly upwardly through the distributor tubes and then outwardly from under the lower edges of the cap into the ebullated bed of particulate solids.

4,764,348

EMISSION CONTROL APPARATUS

Dale A. Furlong, Vinton, Va., assignor to ETS, Inc., Roanoke, Va.

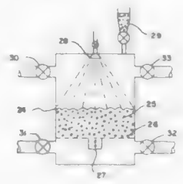
Division of Ser. No. 614,542, May 29, 1984, Pat. No. 4,663,136. This application Nov. 24, 1986, Ser. No. 933,862
Int. Cl.[4] B01D *53/34*
U.S. Cl. 422—178 11 Claims

1. An apparatus for removing acid gas and fly ash from hot flue gas comprising a housing; a perforated plate within the housing and extending thereacross for holding a bed of particulate scrubbing material; a first pair of valved conduits for passing hot flue gas through the scrubbing material, one valved conduit being located above the perforated plate, and the other

VOL 1093 ISS 3 AG 16 1988 UMI

valved conduit being located below the perforated plate; a second pair of valved conduits for passing hot gas through the scrubbing particles, one of which is located above the perforated plate, and the other of which is located below the perforated plate; a third pair of valved conduits for passing cool air through the scrubbing material, one of which is located above the perforated plate and the other of which is located below the perforated plate; and means for agitating the scrubbing particles on the perforated surface.

3. An apparatus for removing acid gas and fly ash from hot flue gas comprising a housing; a perforated surface within the



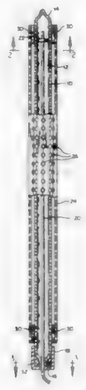
housing and extending thereacross for holding a bed of particulate scrubbing material; a first pair of valved conduits for passing hot flue gas through the scrubbing material, one valved conduit being located above the perforated surface and the other valved conduit being located below the perforated surface; a second pair of valved conduits for passing hot gas free of acid gas through the scrubbing particles, one valved conduit being located above the perforated surface and the other valved conduit being located below the perforated surface; means for spraying water onto the bed of particulate scrubbing material; and means for agitating the bed of scrubbing material.

4,764,349

OZONE GENERATOR

John H. Arff, Portland, Oreg., and Kenneth W. Mouw, Yreka, Calif., assignors to Ozotech, Inc., Yreka, Calif.

Continuation-in-part of Ser. No. 861,495, May 9, 1986, abandoned. This application Jul. 23, 1987, Ser. No. 76,894
Int. Cl.[4] C01B *13/11*
U.S. Cl. 422—186.18 3 Claims



1. An ozone generator comprising

a sealed glass tube having forward and rearward ends and also having a gaseous filling which when subjected to high voltage produces a radiation of energy through the wall of the tube,

an elongated electrical conductor disposed lengthwise in said tube and having forward and rearward ends,

said forward end of said conductor projecting in sealed relation from the forward end of said tube and arranged for connection to a source of high voltage,

said conductor extending axially in said tube whereby to subject said gaseous filling to high voltage and provide electrical communication to the exterior of the tube,

support means in said tube spaced rearwardly from said forward end slidably supporting the rearward end of said conductor to allow for expansion and contraction of said conductor,

an encircling perforated grid surrounding said tube and being arranged to form a shield for energy radiating from said tube to produce ozone,

said grid comprising a metal member larger in diameter than said tube whereby the inner diameter thereof is larger than the outer diameter of said tube to form a space therebetween,

said grid being fluted, having alternate ridges and valleys extending fully from end to end of said metal member,

and inserts secured in said valleys adjacent opposite ends and interiorly of said grid,

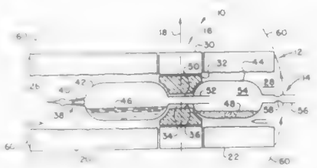
said inserts having a thickness greater than the depth of said valleys to hold said tube in concentric spaced relation from said grid.

4,764,350

METHOD AND APPARATUS FOR SYNTHESIZING A SINGLE CRYSTAL OF INDIUM PHOSPHIDE

Joseph A. Adamski, Framingham, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 8, 1986, Ser. No. 916,963
Int. Cl.[4] C30B *35/00*
U.S. Cl. 422—245 2 Claims



1. A crystal growth apparatus, said apparatus comprising:

a furnace, said furnace having a first furnace section and a second furnace section, said first and said second furnace sections being independently heatable and having a longitudinal cavity therethrough, said furnace having a first heating zone and second heating zone in said cavity, said first heating zone being within said first furnace section and said second heating zone being within said second heating section,

an insulating section, said insulating section having a fixed insulating section and a moveable insulating section, said fixed insulating section having a longitudinal cavity therethrough and being in between said heating sections, said moveable insulating section fitting closely within said longitudinal cavities of said furnace sections and said fixed insulating section and having an ampoule cavity therethrough, said ampoule cavity being centered in said furnace;

an ampoule, said ampoule having a longitudinal length greater than its width, said ampoule having a capillary section, a melt section, a vapor phase section and a connecting tube between said melt section and said vapor phase section; a neck, said neck attached to said connecting tube and inserted into said vapor phase section; and a port tube; said capillary section being attached to a longitudinal end of said melt section opposite to said connecting tube; said capillary section having no melt therein when said ampoule is horizontally positioned, said capillary section being the location where nucleation of a single crystal starts, said connecting tube providing a communicating channel between said melt section and said vapor phase section, said connecting tube being closely held within said ampoule cavity of said moveable insulating section, said neck extending into said vapor phase section for preventing the flow of non-vapor material into said melt section when said ampoule is positioned in a vertical position, said neck having a length greater than the depth of said non-vapor material surrounding said neck when said ampoule is in said vertical position, said port tube having a sealable section therein to seal a vacuum in said ampoule, said port tube being attached to a longitudinal end of said vapor section and opposite said neck, said port tube being connected to a vacuum source before sealing;

means for rotating said ampoule to said vertical position while within said furnace;

means for translating said ampoule within said furnace to control the growth of said single crystal therein; means for measuring temperature within said heating zones; and

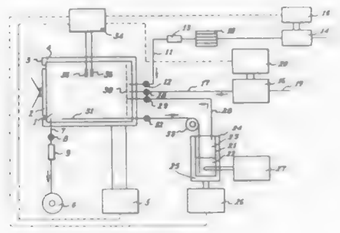
means for providing electrical power to said furnace.

4,764,351

STERILIZATION METHOD AND APPARATUS USING A GASEOUS AGENT

Pierre Heanebert, Bruxelles; Jean Gillard, Tourinnes-La-Grosse, and Michel Roland, Bruxelles, all of Belgium, assignors to Universite Catholique De Louvain and Manufacture Belge De Gemblous S.A., Belgium

Division of Ser. No. 571,765, Jan. 18, 1984, Pat. No. 4,637,916. This application Nov. 27, 1984, Ser. No. 675,169
Claims priority, application Belgium,
Int. Cl.[4] A61L *2/20*
U.S. Cl. 422—292 9 Claims



1. An apparatus for sterilizing materials or articles by placing them in contact with a gaseous phase of sterilizing formaldehyde from an equilibrium formaldehyde solution having at least a liquid phase and the gaseous phase, said gaseous phase being produced by evaporating the liquid phase of a liquid aqueous formaldehyde solution, said apparatus, in combination, comprising:

a fluid-tight treatment chamber with means providing constant temperature control of the chamber, said chamber equipped with at least one door designed for loading materials or articles into the chamber and withdrawing them therefrom, and a sterilizing gas inlet and a recovering conduit spaced from the gas inlet,

a sterilizing agent generator having a reservoir containing the equilibrium aqueous solution of formaldehyde having the liquid phase thereof in equilibrium with the gaseous phase thereof, the reservoir including means defining a lower portion wherein the liquid phase is disposed and means defining an upper portion located above the liquid phase, such that the liquid and gaseous phases are held in equilibrium contact with one another,

means of temperature control of the reservoir for controlled evaporating of the liquid phase of the aqueous equilibrium solution at a predetermined constant temperature,

a distribution conduit positioned between the gas inlet and the upper portion of the reservoir for gaseous communication therebetween,

the recovering conduit being positioned between a portion of the chamber spaced from the gas inlet and the lower portion of the reservoir of the generator for gaseous communication therebetween,

a pump connected to the recovering conduit for, simultaneously, drawing the gaseous phase produced in the reservoir of the sterilizing agent generator into the chamber via the distribution conduit and said gas inlet, circulating the gaseous phase present in the chamber, recovering and withdrawing the gaseous phase from the chamber via the recovering conduit, bringing said gaseous phase in the recovering conduit continuously back into the lower portion of the reservoir for contact with the liquid phase of the solution present in the lower portion of the sterilizing agent generator, and for bubbling said gaseous phase into said solution, wherein continuous recovery and recycling of the gaseous phase is provided,

a vacuum source connected to the chamber,

a circuit for admitting a carrier gas, said circuit having a carrier gas conduit connected to the chamber, said circuit being further provided with means for sterilizing said carrier gas and means for heading said carrier gas at a constant temperature,

a steam generator which is connected at one end to the chamber at a position being spaced from the vacuum source and connected at another end to a water supply, and means for controlling the temperature, pressure or both temperature and pressure, and

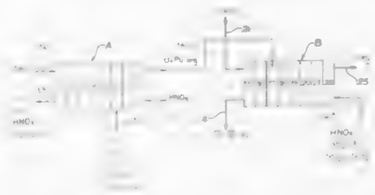
programmable control means for variously, alternatively and selectively connecting and disconnecting the gas inlet and the recovering conduit of the sterilizing agent generator, the vacuum source, the admission circuit for carrier gas and the steam generator to the chamber, said programmable control means further selectively controlling the means of providing constant temperature control of the chamber, the means of temperature control of the reservoir of the generator, the means for heating the carrier gas, and the means for controlling the temperature and pressure of the steam.

4,764,352

PROCESS FOR PREVENTING THE EXTRACTION OF TECHNETIUM AND/OR RHENIUM, PARTICULARLY DURING THE EXTRACTION OF URANIUM AND/OR PLUTONIUM BY AN ORGANIC SOLVENT

André Bathellier, Sceaux; Jean-Yves Pasquiou, Gif sur Yvette, and Etienne Vialard, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 25, 1986, Ser. No. 878,131
Claims priority, application France, Jun. 26, 1985, 85 09712
Int. Cl.[4] B01D *11/00*; G21C *19/46, 19/50*; G21F *9/04*
U.S. Cl. 423—10 13 Claims



1. A process for the extraction of at least one first element selected from the group consisting of actinides and present in an aqueous solution containing both said first element, at least

VOL 1093 ISS 3 AG 16 1988 UMI

one second element selected from the group consisting of rhenium and technetium and at least one third element selected from the group consisting of hafnium and zirconium, said process comprising the steps of bringing the aqueous solution into contact with an organic solvent comprising a phosphorous compound having only one electron donor oxygen atom and able to extract said first element, in order to prevent the extraction of the second element with the said first element, adding to the aqueous solution a complexing agent of the third element in a quantity adequate for completely complexing said third element, said agent being soluble in the aqueous solution.

4,764,353

LEACHING OF URANIUM ORE

Juraj Babjak, and Eberhard Krause, both of Mississauga, Canada, assignors to Inco Limited, Canada

Filed May 20, 1982, Ser. No. 380,075
Int. Cl.[4] C01G *43/01*
U.S. Cl. 423—20 8 Claims

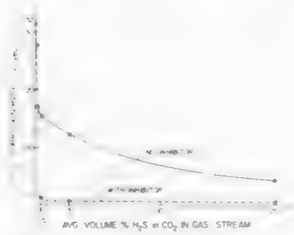
1. A process for treating uranium ores containing uranium in oxide form and iron to solubilize uranium therein as UO_2++ and recover uranium therefrom which comprises slurrying particulate uranium ore containing uranium in oxide form in water, treating said slurry with sulfur dioxide and air at a ratio of about 9 to 1 to 5000 to 1 air to sulfur dioxide until a final pH at least as acid as pH2 is reached to leach the uranium from said ore particles and thereafter separating the uranium-containing solution from the essentially barren solids.

4,764,354

ALKANOLAMINE GAS TREATING PROCESS FOR A FEEDSTREAM CONTAINING HYDROGEN SULFIDE

Daniel J. Kubek, Greenburgh; John G. McCullough, Hawthorne; Kenneth J. Barr, Yonkers, and Alexander J. Kosseim, Rye, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 4, 1987, Ser. No. 10,819
Int. Cl.[4] C01B *17/16;* C23F *11/04*
U.S. Cl. 423—228 7 Claims



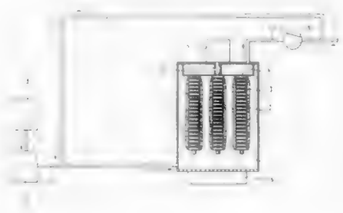
1. In an improved alkanolamine acid gas treating process for removing acid gas from a feedstream in which hydrogen sulfide is present comprising the steps of contacting the feedstream with an aqueous alkanolamine solution in an absorption column to form an alkanolamine solution rich in acid gas containing hydrogen sulfide, regenerating an alkanolamine solution lean in acid gas from said rich solution for recycling through said absorption column and introducing a vanadium compound into said alkanolamine solution for inhibiting corrosion wherein the improvement comprises:
(a) maintaining a minimum solution concentration of H_2S within a range of between about 0.003 to 0.02% by weight in said lean alkanolamine solution; and
(b) introducing a source of oxygen into said lean alkanolamine solution in a sufficient amount to maintain a minimum solution concentration within a range of between about 30 to 70 PPM vanadium in its plus five valence state throughout said acid gas treating operation.

4,764,355

PROCESS FOR REMOVAL OF SOLID AND GASEOUS NOXIOUS MATTER FROM HOT GASES

Ingo Romey, Hünxe; Erwin Ahland; Reinhard Pass, both of Essen, and Franz Verfuss, Recklinghausen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

PCT No. PCT/EP86/00447, § 371 Date May 15, 1987, § 102(e) Date May 15, 1987, PCT Pub. No. WO87/01050, PCT Pub. Date Feb. 26, 1987
PCT Filed Jul. 29, 1986, Ser. No. 42,947
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1985, 3529272
Int. Cl.[4] B01J *8/00*
U.S. Cl. 423—244 5 Claims



1. A method of removing sulfur oxides from a hot gas stream, comprising the steps of:
(a) providing a plurality of metallic candle filters in an upright orientation with a filter-gap width between 0.05 and 0.15 mm and suspended from a common support in a filter chamber;
(b) feeding a hot gas stream containing sulfur oxides to said filter chamber;
(c) treating said hot gas stream with at least one particulate additive selected from the group which consists of calcium hydroxide, calcium carbonate, ferric hydroxide, activated carbon, activated coke, silicon oxide, aluminum oxide and aluminum silicate and of a particle size between 0.05 and 0.3 mm to cause sorption of said sulfur oxides on particles of said additive;
(d) depositing said particles in filter cakes on said candle filters and, upon the formation of said filter cakes, permitting said hot gas stream to flow through said filter cakes so that sulfur oxides in said gas stream react in a sorption reaction with the particles forming the filter cake; and
(e) intermittently rapping said candle filters to remove filter cake therefrom and discharging from said chamber material from filter cake removed from said candle filters.

4,764,356

PROCESS FOR SYNTHESIZING A ZEOLITE CATALYST ON A PH CONTROLLED BASIS TO IMPROVE CATALYST LIFE

Arie Bortinger, Ridgewood; Robert A. Maggio, Long Valley, and Wim J. M. Pieters, Morristown, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1984, Ser. No. 685,153
Int. Cl.[4] C01B *33/28*
U.S. Cl. 423—329 18 Claims

1. A process for producing a crystalline alumino-silicate zeolite which comprises:
(1) admixing to form a reaction mixture in the absence of a buffer:
(a) at least one tetraalkyl ammonium hydroxide in an amount sufficient to impart a pH to the reaction mixture in the initial absence of said acid of (f) of not less than 13 when measured at room temperature;
(b) at lest one sodium cation source;
(c) at least one silica source;

(d) at lest one alumina source;
(e) water; and
(f) at least one organic acid in a manner and under such conditions that the reaction mixture prior to acid addition has a composition within the following molar ratio ranges:

$(TAA)_2O/SiO_2$	0.01 to 5
SiO_2/Al_2O_3	80 to 2200
H_2O/SiO_2	10 to 200
Na_2O/SiO_2	0.05 to 5

wherein TAA is the sum of the tetraalkyl ammonium cations; the initial pH of the reaction mixture, when measured at room temperature, being adjusted with said acid to be from about 11.3 to about 11.7;
(2) heating the reaction mixture until crystals of said zeolite form; and
(3) separating said crystals from the reaction mixture.

11. A process for producing a crystalline aluminosilicate ZSM-5 zeolite which comprises:
(A) providing in the absence of a buffer, a reaction mixture comprising tetrapropylammonium hydroxide, a silica source, an alumina source, a sodium cation source, and water, said reaction mixture components being present in amounts sufficient to impart: (i) an initial pH to the reaction mixture of not less than about 13; and (ii) a composition to the reaction mixture expressed in terms of mole ratios comprising:

$(TPA)_2O/SiO_2$	0.05 to 1
SiO_2/Al_2O_3	220 to 800
H_2O/SiO_2	20 to 140
OH^-/SiO_2	0.2 to 5
H_2O/OH^-	10 to 200
Na_2O/SiO_2	0.1 to 4

wherein TPA signifies tetrapropylammonium;
(B) adjusting the initial pH of the reaction mixture to between about 11.3 and about 11.7 when measured at room temperature, by the addition of nitric acid;
(C) heating the pH adjusted reaction mixture in a manner and under conditions sufficient to cause crystals of said zeolite to form; and
(D) separating said crystals from the reaction mixture.

4,764,357

PROCESS FOR PRODUCING FINELY DIVIDED POWDERY METAL OXIDE COMPOSITIONS

Fawzy G. Sherif, Stony Point, and Francis A. Via, Yorktown Heights, both of N.Y., assignors to Akzo America Inc., New York, N.Y.

Continuation-in-part of Ser. No. 23,581, Mar. 9, 1987, abandoned. This application May 8, 1987, Ser. No. 47,096
Int. Cl.[4] C01B *33/12*
U.S. Cl. 423—338 13 Claims
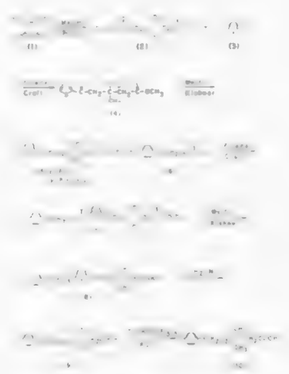
1. A process for producing a finely divided powdery metal oxide composition which comprises heating a particulate, sol-gel derived metal oxide composition, which contains agglomerates, and to which has been added an effective amount of a composition which decomposes at the temperature to which the metal oxide composition is heated to form a gas to break at least a portion of said agglomerates and to thereby yield said finely divided powdery composition.

4,764,358

RADIOLABELED DIMETHYL BRANCHED LONG CHAIN FATTY ACID FOR HEART IMAGING

Furn F. Knapp, Jr., Oak Ridge; Mark M. Goodman, Knoxville, both of Tenn., and Gilbert Kirsch, Woippy, France, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 728,975, Apr. 30, 1985, abandoned. This application May 30, 1986, Ser. No. 868,480
Int. Cl.[4] A61K *49/02, 43/00;* C11C *3/00*
U.S. Cl. 424—1.1 2 Claims



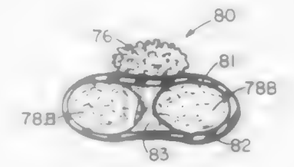
2. A myocardial imaging agent comprising:
15-(p-radioiodophenyl)-3,3-dimethyl-pentadecanoic acid and a physiologically compatible carrier medium which is suitable for intravenous injection.

4,764,359

DRUG COMPOSITIONS AND THEIR USE IN TREATING HUMAN OR OTHER MAMMALIAN PATIENTS

Jerome H. Lemelson, 48 Parkside Dr., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 631,605, Jul. 17, 1984, Pat. No. 4,674,480, and Ser. No. 614,038, May 25, 1984, Pat. No. 4,665,897, and Ser. No. 614,021, May 25, 1984, Pat. No. 4,671,256. This application Dec. 16, 1985, Ser. No. 809,207
The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.
Int. Cl.[4] A61K *49/00, 39/00, 9/22*
U.S. Cl. 424—1.1 20 Claims



17. A method of treating a tumor, such as malignancy, existing in a living being comprising:
(a) forming a drug composition of a multitude of drug units, which drug units are composed of a biological element targeted to an intracellular marker substance, produced by or associated with a tumor to be treated, and at least one killer cell, such as a phage contained by said drug unit and carried thereby,
(b) administering a dose of said drug composition to a living being having a tumor to which said antibody is targetable

VOL 1093 ISS 3 AG 16 1988 UMI

and permitting drug units of said dose to target to respective portions of said tumor by permitting the antibodies thereof to attach to respective cells of said tumor,

(c) after said drug units become targeted adjacent the tumor, releasing the killer cells thereof from the drug units and permitting said killer cells to attack respective cells of the tumor and to destroy the cells they attack,

(d) providing a sufficient number of said drug units administered to the body of said living being to effect the destruction of said tumor under the action of killer cells.

4,764,360

COMPOSITION FOR OPHTHALMOLOGICAL USE

Tomas Mårtson, Uppsala, Sweden, assignor to Pharmacia AB, Uppsala, Sweden

PCT No. PCT/SE85/00410, § 371 Date Apr. 30, 1986, § 102(e) Date Apr. 30, 1986, PCT Pub. No. WO86/02548, PCT Pub. Date May 9, 1986
PCT Filed Oct. 23, 1985, Ser. No. 878,832
Claims priority, application Sweden, Nov. 1, 1984, 8405464
Int. Cl.⁴ A61K *9/08, 47/00, 49/00*
U.S. Cl. 424—2 4 Claims

1. A composition to be used in ophthalmology and containing an aqueous solution of a high molecular polymer, said composition containing additionally at least one dissolved polymeric dye which has a molecular weight exceeding 10,000 and is present in an amount such that the composition when applied in the eye is visually observable while at the same time still permitting visual observation of tissue lying underneath.

4,764,361

PHARMACEUTICAL COMPOSITIONS

Andrew J. T. Bilski, Congleton; Ralph Howe, Macclesfield; Balbir Rao, and David S. Thomson, both of Holmes Chapel, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Mar. 11, 1987, Ser. No. 24,568
Int. Cl.⁴ A61K *31/00*
U.S. Cl. 424—45 10 Claims

1. A pharmaceutical composition adapted for topical administration which comprises as active ingredient the compound N-(2-[2-hydroxy-3-phenoxypropyl]aminoethyl)isobutyramide in racemic (R,S) or laevorotatory optically active (S) form or a pharmaceutically acceptable acid-addition salt thereof together with a dermatologically suitable diluent or carrier.

4,764,362

NAIL-CONDITIONING EMERY BOARDS AND PROCESS FOR MAKING THEM

Myron Barchas, Montclair, N.J., assignor to The Cook Bates Company, Venice, Fla.

Filed Oct. 22, 1986, Ser. No. 921,960
Int. Cl.⁴ A61K *7/04*
U.S. Cl. 424—61 12 Claims

1. A nail- and cuticle-conditioning emery board comprising:

a thin solid support strip having at least one abrasive surface adhesively attached onto said support, said abrasive surface comprising a substrate layer and abrasive particles adhesively fixed on said substrate and

a nail-conditioning composition on said abrasive surface, said composition being selected from the group consisting of:

(a) a uniform film comprising a lubricant polyethylene glycol having a molecular weight between about 1000 and about 13,750 and a humectant polyethylene glycol having a molecular weight between about 150 and about 600, said film being sufficiently thin so as not to impart a greasy feeling to the touch and not to interfere with the abrasive action of said emery board; and

(b) a layer of absorbent polymeric powder particles fixed on said abrasive surface having an emollient entrapped therein, said emollient being suitable for conditioning nails and being releasable from said polymeric powder upon the application of such pressure on said particles as is normally applied during filing fingernails.

4,764,363

HAIR STYLING MOUSSE

Raymond E. Bolich, Jr., Maineville, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 848,415, Apr. 4, 1986, abandoned. This application Jan. 13, 1986, Ser. No. 874,266
Int. Cl.⁴ A61K *7/00*
U.S. Cl. 424—47 18 Claims

1. An aerosol hair styling mousse comprising:

(a) from about 0.1% to about 5% of a anionically stabilized hydroxylated polyorganosiloxane emulsion capable of forming an elastomer;

(b) from about 3% to about 30% of an aerosol propellant; and

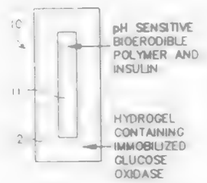
(c) water.

4,764,364

METHOD OF PREPARING BIOERODIBLE POLYMERS HAVING PH SENSITIVITY IN THE ACID RANGE AND RESULTING PRODUCT

Jorge Heller, Woodside; Donald W. H. Penhale, Menlo Park, and Steve Y. Ng, San Francisco, all of Calif., assignors to S R I International, Menlo Park, Calif.

Filed Feb. 25, 1986, Ser. No. 833,215
Int. Cl.⁴ A61K *9/22, 31/765;* C08G *65/28*
U.S. Cl. 424—78 23 Claims



1. Bioerodible polymers capable of functioning as carriers of biologically active substances and release thereof by erosion of the polymer when brought into contact with an aqueous environment, said polymers containing in at least a substantial proportion of the polymer molecules an amine functionality such that the rate of erosion of the polymer in an acidic aqueous environment will increase as the pH of the environment diminishes.

4,764,365

PERSONAL SKIN CARE PRODUCTS CONTAINING DIMETHYL DIALLYL AMMONIUM CHLORIDE/ACRYLIC ACID-TYPE POLYMERS

Jerry E. Boothe, Coraopolis; Lewis D. Morse, Pittsburgh, both of Pa., and William L. Klein, Nutley, N.J., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1986, Ser. No. 923,529
Int. Cl.⁴ A61K *7/00, 7/15, 7/50, 7/32*
U.S. Cl. 424—81 8 Claims

1. A method for improving feel imparted to skin by a personal skin care product comprising adding to said product an effective amount of a polymer comprising:

a. about 60 to about 99%, by weight of said polymer, of a quaternary diallyl dialkyl ammonium monomer, wherein alkyl groups are independently selected from alkyl groups of 1 to 18 carbon atoms and wherein said quarternary diallyl dialkyl ammonium monomer's counterion is selected from the group consisting of bases of acids having an ionization constant greater than 10^{-13}

b. about 1 to about 40%, by weight of said polymer, of an anionic monomer selected from the group consisting of acrylic acid and methacrylic acid; wherein the weight average molecular weight of said polymer ranges from about 50,000 to 10,000,000, as determined by gel permeation chromatography.

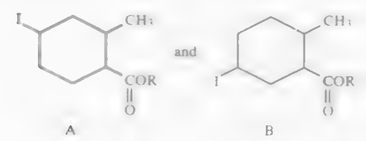
4,764,366

PERSISTENT ATTRACTANTS FOR THE MEDITERANEAN FRUIT FLY, THE METHOD OF PREPARATION AND METHOD OF USE

Terrence P. McGovern, Bowie, Md., and Roy T. Cunningham, Hilo, Hi., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 27, 1987, Ser. No. 42,920
Int. Cl.⁴ A01N *25/00;* C07C *69/74, 61/08, 101/02*
U.S. Cl. 424—84 12 Claims

1. An attractant useful to attract the Mediterranean Fruit Fly for prolonged periods of time wherein said attractant comprises an isomeric mixture of compounds having the formulae



A B

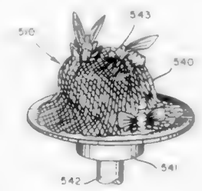
wherein A consists of from 35% to 75% of the mixture and B consists of from 25% to 65% of the mixture; wherein —CH_3 and —COOR are in the trans-configuration and —I is in both the equatorial and axial conformation; and wherein R is an aliphatic radical selected from the group consisting of ethyl and 2,2,2-trifluoroethyl, said R in each of formulae A and B being identical.

4,764,367

USE OF C_8-T-ALKANOLS AND C_5–C_{11}-OMEGA-ALKEN-1-OLS IN ATTRACTING INSECTS

Richard A. Wilson, Westfield; Braja D. Mookherjee, Holmdel, both of N.J.; Jerry F. Butler, Gainesville, Fla.; Donald A. Withycombe, deceased, late of Lincroft, N.J. (by Janet L. Withycombe, executrix); Ira Katz, West Long Branch, N.J., and Kenneth R. Schrankel, Tinton Falls, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y. and The University of Florida, Gainesville, Fla.

Continuation-in-part of Ser. No. 2,023, Jan. 9, 1987, which is a continuation-in-part of Ser. No. 879,426, Jun. 27, 1986, Pat. No. 4,693,890. This application Aug. 19, 1987, Ser. No. 86,907
Int. Cl.⁴ A01N *25/00, 25/10*
U.S. Cl. 424—84 13 Claims



1. A method of attracting *Musca domestica L.* (Diptera:Muscidae) comprising exposing a 3 dimensional space to a *Musca domestica L.* (Diptera:Muscidae)-attracting concentration and quantity of a composition of matter selected from the group consisting of:

(i) C_8-t-alkanols; and

(ii) C_5–C_{11}-Omega-alken-1-ols.

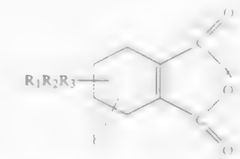
4,764,368

ACID-CLEAVABLE COMPOUND

Walter A. Blattler, and John M. Lambert, both of Brookline, Mass., assignors to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Continuation-in-part of Ser. No. 733,479, May 13, 1985, Pat. No. 4,618,492, which is a division of Ser. No. 645,614, Aug. 29, 1984, Pat. No. 4,542,225. This application Sep. 17, 1986, Ser. No. 908,388
Int. Cl.⁴ C07D *519/00, 521/00*
U.S. Cl. 424—85 20 Claims

1. A compound having the formula:



where X is an amino-group containing substance whose amino nitrogen forms an amide link with the carbonyl group of the cyclohexene-1, 2,dicarboxylic acid function; R_1, R_2, and R_3 are independently selected from hydrogen, alkyl, or phenyl groups; and F comprises an organic macromolecule function from which the amino-group containing substance is to be released.

4,764,369

UNDENATURED VIRUS-FREE BIOLOGICALLY ACTIVE PROTEIN DERIVATIVES

Alexander R. Neurath, New York, and Bernard Horowitz, New Rochelle, both of N.Y., assignors to New York Blood Center Inc., New York, N.Y.

Division of Ser. No. 514,375, Jul. 14, 1983, Pat. No. 4,540,573. This application Jul. 17, 1984, Ser. No. 631,675
Int. Cl.⁴ A61K *39/18, 39/29*
U.S. Cl. 424—89 16 Claims

1. A labile protein-containing composition having once been lipid coated virus infected and thereafter treated so as to have an extent of inactivation of lipid coated-containing virus greater than 4 logs of said virus and wherein the amount of active non-virus labile protein relative to total non-virus labile protein is at least 80%.

4,764,370

VACCINE UTILIZING AN AVIRULENT STRAIN OF *SALMONELLA TYPHIMURIUM*

Patricia I. Fields, Cardiff; Constantine G. Haidaris, San Diego, and Frederick L. Heffron, Cardiff, all of Calif., assignors to Scripps Clinic and Research Foundation, La Jolla, Calif.

Filed Sep. 12, 1984, Ser. No. 650,282
Int. Cl.⁴ C12N *15/00, 1/20, 1/00;* A61K *37/00*
U.S. Cl. 424—93 4 Claims

1. A method of immunizing a warm blooded animal against a microbial pathogen comprising the steps of:

(a) selecting at least one live, immunogenic but prototrophic and avirulent mutant strain selected from the group consisting of *S. typhimurium* strains ATCC 39847, ATCC 39848 and ATCC 39849, and a physiologically tolerable carrier therefor; and

(b) administering an amount of the selected avirulent mutant strain to the animal sufficient to induce immunity in said animal.

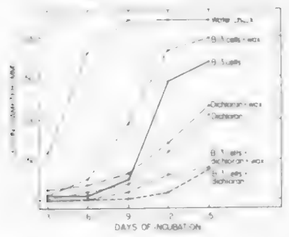
VOL
1093
ISS
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16
1988
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4,764,371

POSTHARVEST BIOLOGICAL CONTROL OF STONE FRUIT BROWN ROT BY *BACILLUS SUBTILIS*

Paul L. Pusey, Warner Robins, Ga., and Charles L. Wilson, Shepherstown, W. Va., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 606,069, May 1, 1984, abandoned. This application Nov. 13, 1985, Ser. No. 797,538
Int. Cl.[4] A61K *39/07*; A01N *63/00*; A23B *7/00*
U.S. Cl. 424—93 10 Claims



1. A method for biologically controlling or inhibiting brown rot on postharvest stone fruit comprising: coating the postharvest stone fruit with an effective amount of *Bacillus subtilis* B-3 bacteria to prevent or control brown rot of the fruit.

4,764,372

COMPOSITIONS CONTAINING BACILLUS THURINGIENSIS TOXIN TOXIC TO BEETLES OF THE ORDER COLEOPTERA, AND USES THEREOF

Coriana Herrnstadt, and George G. Soares, Jr., both of San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Filed Mar. 22, 1985, Ser. No. 714,790
Int. Cl.[4] C12R *1/07*; A61K *37/02*; A01N *63/00, 25/12*
U.S. Cl. 424—93 7 Claims

1. A process for controlling the insect pests *Diabrotica undecimpunctata* or *Tenebrio molitor* which comprises contacting said insect pests with an insect-controlling effective amount of B. thuringiensis M-7, having the identifying characteristics of NRRL B-15939.

4,764,373

METHOD OF INCREASING THE ECONOMIC VALUE OF BREEDING STOCK SEMEN

Ronald J. Ericson, Ranch in Crook County, Wyo., assignor to Gametrics Limited, Alzada, Mont.

Filed Nov. 29, 1985, Ser. No. 802,889
Int. Cl.[4] A61K *35/52*; A01N *1/02*
U.S. Cl. 424—105 15 Claims

1. A method of artificially inseminating a plurality of animals with aliquots of semen from a breeding stock individual of the species, each of which contains a population of motile sperm large enough to ensure successful artificial insemination therewith, which comprises the steps of:

(a) fractionating the collected semen into a first fraction from which the immotile sperm and non-sperm components have been separated, containing from about 10% to about 80% of the motile sperm of the semen, suspended in a liquid vehicle which is physiologically acceptable to the sperm and for artificial insemination, and into a second fraction, containing the remainder of the motile sperm thereof, also suspended in a liquid vehicle which is physiologically acceptable to the sperm and for artificial insemination by the steps of (i) maintaining at least the sperm portion of progressively motile sperm-containing semen, either as such or suspended in an aqueous suspending vehicle physiologically acceptable to the sperm, as an upper layer in vertical interfacial contact, at a temperature at which the motile sperm are motile, with a lower discrete layer of a first aqueous contacting medium physiologically acceptable to the sperm in that the motile sperm migrate downwardly at a slower rate than in the upper layer, until a portion only of the motile sperm of the semen having migrated downwardly into the contacting medium, thereby producing a contacting medium containing a higher proportion of Y to X sperm than in the starting sperm, thereby producing in said upper laer a first portion of the second fraction of sperm and (ii) repeating the step at least once, employing in the upper layer the motile sperm which have migrated to the first aqueous contacting medium and as the lower layer a second aqueous contacting medium physiologically acceptable to the sperm and in which the motile sperm migrate downwardly at a slower rate than in the first contacting medium, thereby producing in the lower layer the first fraction of sperm, and in the upper layer a second portion of the second fraction of sperm;

(b) dividing the first fraction of sperm into a plurality of aliquots, each of which contain a population of motile sperm largel enough to ensure a pregnancy when used for an artificial insemination;

(c) dividing the second fractions of sperm into a plurality of aliquots, each of which contain a population of motile sperm large enough to ensure a pregnancy when used for an artificial insemination;

(d) artificially inseminating a plurality of individuals of that species in which a predominance of male off-spring is desired with the aliquots of the first fraction of sperm; and

(e) artificially inseminating a plurality of individuals of that species in which a predominance of male off-spring is not a desired objective with the aliquots of the second fraction of sperm.

4,764,374

PHARMACEUTICAL COMPOSITION BASED ON GUAR GUM AND OTHER ANTACIDS FOR PROTECTION OF THE OESOGASTRODUODENAL MUCOUS MEMBRANE

Georges S. Grimberg, 123 rue de l'Université, 75007 Paris, France

Filed Mar. 5, 1986, Ser. No. 836,475
Claims priority, application France, Mar. 6, 1985, 85 03306
Int. Cl.[4] A61K *33/42, 33/06, 33/08, 31/715*
U.S. Cl. 424—128 6 Claims

1. A therapeutic method of treating excess gastrointestinal acidity and meteorism, comprising the step of administering a pharmaceutical composition comprising a therapeutically effective amount of guar gum to a patient in need of said therapy.

4,764,375

SACHET DRUG DELIVERY SYSTEM

George N. Paradissis, St. Louis, Mo., assignor to KV Pharmaceutical Company, St. Louis, Mo.

Filed Sep. 11, 1985, Ser. No. 775,419
Int. Cl.[4] A61K *33/20, 47/00, 9/28*
U.S. Cl. 424—153 12 Claims

1. A drug delivery system for administering a drug in a liquid form comprising a hydrophillic solid active agent which is taste masked when in a liquid and whose density approximates that of a carrier liquid in which it is suspended.

7. The drug delivery system of claim 1 wherein said active agent comprises potassium chloride.

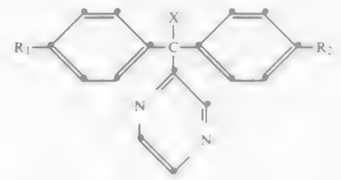
4,764,376

METHOD OF INHIBITING AROMATASE

Kenneth S. Hirsch, New Palestine, and Harold M. Taylor, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,415
Int. Cl.[4] A61K *31/495*
U.S. Cl. 514—255 15 Claims

1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula



wherein

R_1 and R_2 are independently halo or trifluoromethyl; and

X is hydrogen, hydroxy, methyl, or halo,

or a pharmaceutically acceptable salt thereof.

4,764,377

INTRA-POCKET DRUG DELIVERY DEVICES FOR TREATMENT OF PERIODONTAL DISEASES

J. Max Goodson, Cambridge, Mass., assignor to The Forsyth Dental Infirmary for Children, Boston, Mass.

Continuation-in-part of Ser. No. 539,823, Oct. 7, 1983, abandoned. This application Feb. 13, 1987, Ser. No. 15,521
Int. Cl.[4] A01N *18/00*
U.S. Cl. 424—435 5 Claims



1. A therapeutic agent delivery device suitable for continuously delivering a pharmacologically-effective level of therapeutic agent to the site of a periodontal infection within a periodontal pocket, comprising a therapeutic agent selected from the group consisting of immune-suppressive agents, immune-stimulatory agents, dentinal desensitizers, odor masking agents, immune reagents, antiinflammatory agents, antibacterials, anesthetics, nutritional agents, antioxidants, lipopolysaccharide complexing agents and peroxides; and a biocompatible polymeric material having a glass transition temperature of less than 37° C., said polymeric material containing said therapeutic material impregnated therein and being permeable to said therapeutic material, the combination of said therapeutic agent and said polymeric material being in the form of a fiber having a diameter of about 0.1 to 1 mm, and the polymeric material is a polymer selected from the group consisting of collagen, glycolic acid polymers, methacrylate polymers, and polylactides.

4,764,378

BUCCAL DRUG DOSAGE FORM

Alec D. Keith, Boalsburg, and Wallace C. Snipes, Pine Grove Mills, both of Pa., assignors to Zetachron, Inc., State College, Pa.

Filed Feb. 10, 1986, Ser. No. 827,615
Int. Cl.[4] A61K *9/20, 9/26, 31/74, 31/79*
U.S. Cl. 424—435 45 Claims

1. An injection molded, cast, or otherwise solidified buccal or transmucosal oral mucosa adherent dosage form having dimensions which fit into the buccal cavity or under the tongue of a user thereof comprising a pharmaceutical ingredient selected from a pharmaceutical compound, a pharmaceutically acceptable salt, and derivatives thereof adapted to be dispensed typically over a period of 10–30 minutes through transmucosal absorption directly into the bloodstream, said pharmaceutical ingredient being dispersed in a non-crystalline, solidified polymeric matrix which adheres to oral mucosa after being activated by water or saliva comprising,

from about 20 to about 75 percent by weight of a polyethylene glycol component having a low molecular weight of from about 100–4000,

from about 2 to about 54 percent by weight of a polyethylene glycol component having a medium to high molecular weight of from about 6000–20,000, and

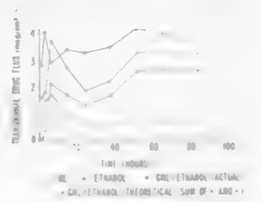
from about 1 to about 40 percent by weight of polyethylene oxide having a high molecular weight of from about 100,000 to 5,000,000.

4,764,379

TRANSDERMAL DRUG DELIVERY DEVICE WITH DUAL PERMEATION ENHANCERS

Harold F. Sanders, San Jose; Yu-Ling Cheng, Cupertino; David J. Enscore, Sunnyvale, and Shari B. Libicki, Palo Alto, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Aug. 24, 1987, Ser. No. 88,767
Int. Cl.[4] A61F *13/00*
U.S. Cl. 424—449 25 Claims



1. A unit dosage form for transdermally coadministering a drug, ethanol and glycerol monolaurate, to a predetermined area of unbroken skin of a patient for a predetermined time period, the dosage form comprising a body:

having a basal surface of area at least about equal to the area of skin, that is adapted to contact the area of skin over said time period, and via which the drug, and the permeation enhancers ethanol and glycerol monolaurate, are presented to the area of skin for absorption thereby;

containing a supply of the drug that communicates with the basal surface to provide drug at the basal surface over said time period;

containing a supply of ethanol that communicates with the basal surface over said time period; and

containing a supply of glycerol monolaurate that communicates with the basal surface over said time period.

VOL
1093
ISS
3
AG
16
1988
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4,764,380

DRUG DELIVERY SYSTEM COMPRISING A VOLUME INCREASING MATRIX CONTAINING A PLURALITY OF TINY PILLS

John Urquhart, Palo Alto, and Felix Theeuwes, Los Altos, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 571,299, Jan. 16, 1984, Pat. No. 4,649,043, which is a continuation of Ser. No. 360,477, Mar. 22, 1982, Pat. No. 4,434,153. This application Feb. 13, 1987, Ser. No. 14,944

Int. Cl.[4] A61K 9/22, 9/26, 9/52

U.S. Cl. 424—465 1 Claim

1. A tablet dosage form for the controlled delivery of an orally administrable beneficial drug to the gastrointestinal tract for executing a therapeutic program over a prolonged period of time, the tablet dosage form comprising:

(1) a tablet matrix hydrogel which absorbs and imbibes water, and swells and expands and increases in size or volume, and, in the expanded state, acts as a means for stomach retention for an extended period of time comprising a pharmaceutically acceptable starch fraft copolymer composition; and,

(2) a plurality of tiny pills housed throughout the tablet matrix, the tiny pills comprising:

(a) a dosage amount of an orally administrable beneficial drug; and,

(b) a wall surrounding the drug, the wall comprising a cellulose composition selected from the group consisting of cellulose acylate, cellulose diacylate, cellulose triacylate and ethyl cellulose.

4,764,381

PERCUTANEOUS PENETRATION ENHANCER OF OLEIC ACID AND 2-ETHYL-1, 3-HEXANEDIOL

Nicholas Bodor, Gainesville, Fla., and Thorsteinn Loftsson, Reykjavik, Iceland, assignors to Key Pharmaceuticals, Inc., Kenilworth, N.J.

Filed Dec. 6, 1985, Ser. No. 806,257

Int. Cl.[4] A61L 15/03; A61F 13/00; A61K 9/06, 31/21

U.S. Cl. 424—449 1 Claim

1. A transdermal delivery system, consisting essentially of:

nitroglycerine; and

a carrier which consists of 1 to 10% by weight of oleic acid based on the weight of the carrier.

4,764,382

DEVICE FOR CONTROLLED RELEASE DRUG DELIVERY

Agis F. Kydonieus, Kendall Park, N.J., and Bret Berner, Ardsley-on-Hudson, N.Y., assignors to Hercon Laboratories Corporation, South Plainfield, N.J.

Continuation-in-part of Ser. No. 671,850, Nov. 15, 1984, abandoned. This application Apr. 9, 1986, Ser. No. 849,670

Int. Cl.[4] A61K 9/00; A61L 15/03

U.S. Cl. 424—449 28 Claims

1. A device for the controlled release and delivery of a pharmacologically active agent, comprising a gelled vinyl plastisol layer and a pharmacologically active agent uniformly dispersed in the layer in a pharmacologically effective amount, said vinyl layer comprising an emulsion polymerized polyvinyl chloride resin, a primary plasticizer for the polyvinyl chloride resin, and an organic, nonvolatile gel forming additive in an amount sufficient to form a gel.

4,764,383

SOFT HOMOGENOUS FISH BAIT

Sherwin R. Brown, Kingsville, Canada, and Michael Drebot, 13 Wardour Street, Bedford, Nova Scotia, Canada B4A 2H5, assignors to Michael Drebot; Nova Scotia Department of Fisheries, both of, Canada and R. P. Scherer Corportion, Del.

Continuation of Ser. No. 789,504, Oct. 21, 1985, abandoned. This application Apr. 9, 1987, Ser. No. 36,077

Int. Cl.[4] A23K 1/00

U.S. Cl. 426—1 21 Claims

1. A process for preparing a homogenous fish bait for a fresh-water aquatic animal, said fish bait having a soft consistency, positive grab and tension for hooking and sufficient matrix resiliency for rehooking, said process consisting essentially of stirring and heating a mixture of water, a proteinaceous material and a plasticizer; adding thereto fish oil, fish silage or a mixture of fish oil and fish silage to form a fish bait composition; and forming the composition into a pre-selected shape.

4,764,384

METHOD OF FILTERING SPENT COOKING OIL

John Gynan, Darien, Ill., assignor to GyCor International Ltd., Bridgeview, Ill.

Filed Apr. 3, 1986, Ser. No. 847,644

Int. Cl.[4] A23D 5/02

U.S. Cl. 426—417 4 Claims

1. The method of rejuvenating spent cooking oil containing contaminants from a cooker comprising the steps of retaining the cooking oil in the cooker, admixing with the cooking oil a filtering media comprising synthetic amorphous silica provided with moisture, synthetic amorphous magnesium silicate, and diatomaceous earth, to form a slurry of cooking oil, contaminants and filtering media, thereafter maintaining the temperature of the slurry above 100° F. for a period of about five minutes to transfer a portion of the contaminants from the cooking oil to the filtering media, and thereafter draining the slurry from the cooker through a filter to remove the filtering media with contaminants from the cooking oil.

4,764,385

PROCESS FOR PRESERVING FRESH FRUIT AND VEGETABLES

Peter Butland, P.O. Box 210, Caledon, Ontario, L0N 1C0, Canada

Filed Feb. 10, 1987, Ser. No. 13,064

Int. Cl.[4] A23L 3/10

U.S. Cl. 426—241 3 Claims



1. A process for preserving the freshness, flavour and texture of fresh fruits or vegetable products comprising the steps of:

(a) heating the fruit or vegetable product rapidly and uniformly by means of a microwave heating system to an enzyme deactivating temperature and retaining the product at the enzyme deactivating temperature for a dwell time sufficient to deactivate all of the natural enzymes which are present in the product without cooking the product, and immediately thereafter,

(b) cooling said product rapidly to a sufficient extent to remove the enzyme deactivating heat before any cooking of the product can occur, and to cool the product to a temperature which will inhibit deterioration of the freshness, flavour and texture thereof and shortly thereafter, while the product remains in said cold condition,

(c) packaging and hermetically sealing the cooled product in a container which contains an inert gas,

(d) irradiating the packaged product, to sterilize the product and prevent the formation of degenerative gas in the product, without damaging the product to thereby provide an enzyme-free, sterile and hermetically packaged fruit or vegetable product which has its fresh flavour and texture characteristics substantially unaltered and which can be stored without deterioration of freshness, flavour or texture for a long time.

4,764,386

PROCESS FOR PREPARING STORAGE STABLE, READILY RECONSTITUTED FROZEN COMESTIBLES

Donald B. Bernacchi; Robert J. Loewe, both of Chicago, and Doana L. Immel, Downers Grove, all of Ill., assignors to Griffith Laboratories U.S.A., Inc., Alsip, Ill.

Continuation of Ser. No. 779,657, Sep. 24, 1985. This application Dec. 15, 1986, Ser. No. 941,690

Int. Cl.[4] A23P 1/08

U.S. Cl. 426—293 18 Claims

1. A method for preparing storage stable, coated frozen comestibles which, when reconstituted by microwave cooking or by baking, have a texture and appearance organoleptically equivalent or superior to that of fat fried coated comestibles, comprising the steps of:

enrobing a comestible with a first coating comprising wheat flour and shortening blended with sufficient water to yield a batter or a dough of a consistency suitable for enrobing the comestible, and placing the enrobed comestible in a water bath maintained at from about 100° to 125° C. at a pressure range of about 0 to 15 psi for up to about 60 seconds;

frying said comestible to set up said first coating without undercooking or overcooking said first coating;

applying to said comestible a second coating chosen from the group consisting of a chemically leavened batter and a combination of a batter and a supplemental breading capable of yielding a crisp, porous coating upon reconstitution and frying a second time; and

freezing the twice coated, twice fried product.

4,764,387

ALBUMEN COLLECTION METHOD

Charles H. Willsey, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Jan. 30, 1987, Ser. No. 9,192

Int. Cl.[4] A23J 1/09

U.S. Cl. 426—299 6 Claims



1. A method of collecting albumen from eggs, which comprises the steps of:

(a) depositing an egg on a conveyor-mounted egg breaking and separating unit movable along a path;

(b) cracking the shell of said egg;

(c) separating said eggshell into two parts with albumen drippings suspended from at least one of said eggshell parts;

(d) depositing most of the albumen and yolk contents of said egg into a yolk cup;

(e) straining said albumen and yolk contents whereby said yolk is retained in said yolk cup and most of said albumen overflows into an albumen cup;

(f) providing a vacuum pickup head including an inlet opening in the path of said breaking and separating unit;

(g) moving said braking and separating unit past said vacuum pickup head whereby said eggshell parts pass over said vacuum pickup head and said yolk cup passes thereunder;

(h) creating a partial vacuum within an albumen collection container connected to said pickup head; and

(i) drawing air and albumen drippings into said pickup head opening and then into said container.

4,764,388

METHOD FOR MAKING VITAMIN ENRICHED CEREAL

Spencer W. Sullivan, Wyckoff, and Marsha K. Verrico, Fair Lawn, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jan. 25, 1985, Ser. No. 695,061

Int. Cl.[4] A23L 1/29

U.S. Cl. 426—311 16 Claims

1. A method for multi-vitamin enriching a milled cereal, comprising:

(a) cooking a cereal grain at temperatures and humidities which hydrate and gelatinize cereal grain internal structure to form a gelatinized, wet cereal grain mass and subsequently;

(b) adding a dry multi-vitamin premix into said cooked cereal grain mass with sufficient simultaneous mixing to form a homogeneous multi-vitamin premix and cereal grain composition and then;

(c) milling said multi-vitamin premix and cereal grain composition, wherein milled cereal pieces are formed; and

(d) baking said milled cereal pieces.

4,764,389

METHOD OF ACCELERATING FRUIT RESPIRATION

Louis P. LaBarge, Vista, Calif., assignor to LaBarge Universal Ripener, Inc., Norfolk, Va.

Continuation of Ser. No. 855,372, Apr. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 434,586, Oct. 15, 1982, abandoned. This application Oct. 5, 1987, Ser. No. 105,477

Int. Cl.[4] A23B 7/152

U.S. Cl. 426—312 16 Claims

1. The method of accelerating the respiration of fruit, which comprises the steps of:

(a) placing the fruit in a substantially closed ripening chamber for exposure therein to a mixture of ethylene gas and air for a given exposure time,

(b) positively controlling the temperature of said chamber during said exposure time to within the range of approximately 72°–77° F. which is effective to increase the rate of fruit respiration,

(c) substantially continuously during said exposure time introducing air only from outside chamber into said chamber,

(d) introducing ethylene gas only from a gas source containing gas which has not been circulated through said chamber into said chamber during said exposure time at a controlled rate that will establish and maintain an air/ethylene gas mixture within the range of approximately 135–750 parts per million of ethylene gas in said chamber during said exposure time that will increase the rate of fruit respiration during said exposure time,

(e) substantially continuously during said exposure time exhausting the air/ethylene gas mixture from said chamber to which the fruit had been exposed for substantially complete exchange of the air/ethylene gas mixture within

VOL 1093 ISS 3 AUG 16 1988 UMI

an exchange period of time, said exchange period of time being less than said exposure time, and

(f) simultaneously with step (e) substantially continuously during said exposure time exhausting from said chamber carbon dioxide that is a product of respiration of the fruit during the ripening process whereby the concentration of carbon dioxide allowed to build up within said chamber during said exposure time is insufficient to materially retard absorption of ethylene gas by said fruit.

4,764,390

PROCESS FOR MAKING MICROWAVABLE SHAPED RICE PRODUCTS

Harold W. Zukerman, and Rachel B. Zukerman, both of 4125 Yorkshire, Northbrook, Ill. 60062

Filed Apr. 30, 1986, Ser. No. 857,495
Int. Cl.[4] A23L *1/01*; A23P *1/00*
U.S. Cl. 426—438 14 Claims

1. A process for making a microwavable shaped rice product, said process comprising the steps of:

(a) partially cooking 100 lbs. of raw, hard, whole or broken grain dry rice with 100 lbs. to 350 lbs. of water at 170° F. to 212° F.;

(b) combining one or more of a plurality of flavors with the partially cooked rice;

(c) removing the partially cooked rice from the hot water prior to the center of the rice becoming fully cooked;

(d) conveying the partially cooked rice on a horizontal belt through an enclosed environment at a temperature above 160° F. whereby the rice and flavor continue to cook, leaving the center of the rice grains not fully cooked and not fully hydrated;

(e) shaping the cooked rice with low-shear, multiple-deposit, multiple-extrusion and multiple-cutting devices to form a shaped rice product;

(f) forming a crust on the shaped rice product surface by floating the shaped rice product in a fat fryer; the floating of the product being related to its density; and

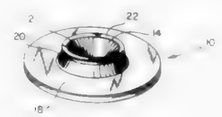
(g) freezing the rice product.

4,764,391

PROCESS FOR PREPARING AND STORING BREWED BEVERAGES

Gerald S. Wasserman, East Brunswick; Karl C. Kramer, Dunellen, and Slawko Yadlowsky, Manville, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 849,651, Apr. 9, 1986, abandoned. This application Nov. 12, 1987, Ser. No. 120,676
Int. Cl.[4] A23F *5/26*
U.S. Cl. 426—433 4 Claims



1. In a process for preparing brewed coffee and storing the coffee brew in an essentially straight-walled vessel wherein a buoyant lid is placed within the vessel prior to introducing the coffee brew into the vessel, said coffee brew having a soluble solids concentration profile such that the initial portion of brew which is received within the vessel has a higher concentration than the brew which is later received, and wherein the buoyant lid is sized to cover substantially the entire surface of the coffee brew contained in the vessel, the improvement comprising utilizing a buoyant lid which has an aperture located at or near its center which aperture is surrounded by upwardly extending walls, said walls forming a chamber of sufficient size to assure that the coffee brew introduced to said vessel will be directed to said aperture, and introducing coffee brew into the buoyant lid-containing vessel such that the brew enters the chamber and forms a hydrostatic head above the aperture which head is at least 0.25 inches high and which head is effective to increase turbulence below the lid to a level which will result in the coffee brew in the vessel having a uniform consistency.

4,764,392

MARGARINE CONTAINING FISH OIL

Kenjiro Yasufuku; Hiroshi Okafuji, both of Fuchu; Mineo Hasegawa, Hachiohji, and Noriyuki Haga, Fuchu, all of Japan, assignors to Q.P. Corporation, Japan

Filed Apr. 1, 1987, Ser. No. 33,580
Int. Cl.[4] A23D *3/00*
U.S. Cl. 426—603 4 Claims

1. A good tasting margarine with a high content of highly unsaturated fatty acids comprising a refined fish oil produced by subjecting a mixture of a polyhydric alcohol, a monoglyceride and a fish oil to a preliminary molecular distillation to remove volatile components and deodorize the fish oil, and recovering vaporized components as said refined fish oil; wherein the deodorized fish oil is subjected to a three-stage molecular distillation in which the deodorized fish oil is subjected to a first distillation at a film temperature of 100°–260° C. and under a vacuum of 5–30 mm Torr, the residue obtained from said first distillation is subjected to a second distillation at a film temperature of 150°–300° C., and under a vacuum of 0.1–50 mm Torr, and the residue obtained from the second distillation is subjected to a third distillation at a film temperature of 200°–300° C. and under a vacuum of 0.1–30 mm Torr.

4,764,393

METHOD FOR MONITORING THE OPERATION OF AN ELECTROSTATIC COATING INSTALLATION

Peter Henger, Schiessmauerstrasse 11, D-7123 Sachsenheim, and Fred Luderer, Schillerstrasse 30, D-7057 Leutenbach 2, both of Fed. Rep. of Germany

Filed Dec. 13, 1985, Ser. No. 808,848
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1984, 3445946
Int. Cl.[4] B05D *1/06*
U.S. Cl. 427—8 3 Claims



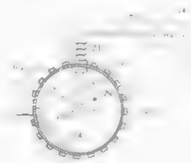
1. A method for monitoring the operation of an electrostatic coating installation operated by a selectably variable high voltage for large workpieces, said method comprising the steps of predetermining the normal operating current of the high voltage source and a higher current threshold value, switching off the high voltage automatically when the current threshold is reached, characterized by measuring prior to coating the normal current values for the respective voltage values, determining the threshold values on the basis of the normal values, storing jointly the normal current values and the threshold values, measuring the operating current during the coating operation, comparing the operating current with the stored value automatically selected according to the voltage selected, determining an intermediate threshold based upon the stored values and as a function of the selected voltage values, automatically adjusting the intermediate threshold value between the normal value and the current threshold value, and producing a warning signal when the intermediate threshold value is exceeded.

4,764,394

METHOD AND APPARATUS FOR PLASMA SOURCE ION IMPLANTATION

John R. Conrad, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Jan. 20, 1987, Ser. No. 5,457
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—38 37 Claims



20. A method of implanting ions in a target object comprising the steps of:

(a) providing an enclosing chamber having walls of electrically conductive material;

(b) suspending a target object within the chamber spaced away from the walls of the chamber;

(c) evacuating the interior of the chamber to a very low base pressure;

(d) forming a plasma of ions in the chamber around the target object;

(e) applying repetitive pulses of high voltage between the chamber walls and the target object independently of the forming of the plasma to draw ions in the plasma to the target object at a voltage sufficient to implant ions from the plasma into the target object, the width of the pulses being selected such that the plasma sheath surrounding the target object does not expand to contact the enclosure walls during the pulse.

4,764,395

PROCESS FOR FINISHING A TEXTILE FABRIC WITH A RADIATION CROSSLINKABLE COMPOUND

Bruno Felder, Pfeffingen, and Jean-Pierre Feron, Movelier, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 30, 1986, Ser. No. 925,016
Claims priority, application Switzerland, Nov. 6, 1985, 4760/85
Int. Cl.[4] B05D *3/06*; B32B *27/00*
U.S. Cl. 427—54.1 20 Claims

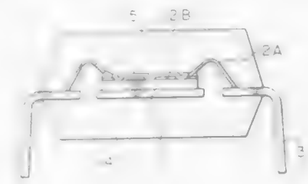
1. A process for finishing a textile fabric, which process comprises coating in a thin layer on the face of textile fabrics at least one compound which is crosslinkable by reaction-initiating radiation, then exposing the back of said fabric to reaction-initiating radiation to induce crosslinking of said compound exposed through the fabric web, and removing the non-crosslinked compound.

4,764,396

METHOD FOR PREVENTING ALUMINUM CORROSION IN ELECTRONIC PARTS

Hideki Kato, Kuwana, and Noriyuki Yamamoto, Okazaki, both of Japan, assignors to Toagosei Chemical Industry Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1987, Ser. No. 100,592
Claims priority, application Japan, Oct. 3, 1986, 61-234487
Int. Cl.[4] B05D *5/06*; H01G *9/00*; C23F *11/00*
U.S. Cl. 427—69 6 Claims



1. A method for preventing aluminum corrosion in electronic parts, which comprises adding lead hydroxy apatite and/or cadmium hydroxy apatite to constituents of the electronic parts.

4,764,397

FIBER-REINFORCED MATERIALS

Juergen Fischer, Ludwigshafen; Hartmut Zeiner, Plankstadt; Dietmar Nissen, Heidelberg, and Gerhard Heinz, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 30, 1985, Ser. No. 814,917
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1985, 3500705
Int. Cl.[4] B05D *7/02*; C08J *3/24*; C08L *81/00*
U.S. Cl. 428—269 19 Claims

1. A process for the production of moldings from a heat-stable plastic reinforced with oriented fibers comprising the steps of:

(a) applying a heat-stable plastic material onto said reinforcing oriented fibers such that the volume ratio of plastic to fiber is in the range of from 70:30 to 15:85, and wherein said plastic material comprises a crosslinkable, thermoplastic, aromatic polyether characterized by the presence of reactive sulfur bridges, a degree of polymerization of at least 5, a glass transition temperature above 80° C. and a content of insoluble constituents not exceeding 10% by weight, and thereafter,

(b) shaping the resulting product to obtain a molding whereby the plastic matrix of said molding becomes crosslinked so that its content of soluble material, determined by extraction in boiling dichloromethane for one day, is decreased to less than 60% although the glass transition temperature of the molding increases by less than 20° C.

18. A fiber-reinforced molding constructed from a material having a plastic matrix consisting of a heat stable crosslinkable, thermoplastic, aromatic polyether with reactive sulfur bridges and which contains from 30 to 50% by volume of oriented fibers having a glass transition temperature above 100° C., said oriented fibers being individual rovings, parallel laid webs or woven fabrics, and wherein the plastic matrix is crosslinked via the reactive groups so that its content of soluble material is from 3 to 60%, determined by extraction with boiling dichloromethane for one day.

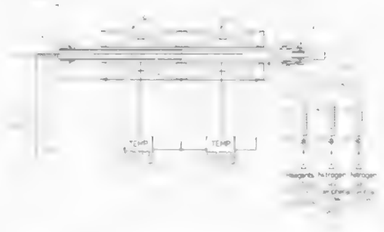
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,398

METHOD OF DEPOSITING COATINGS ON THE INNER SURFACE OF A TUBE BY CHEMICAL VAPOR DEPOSITION

Natan Croitoru, Kfar Saba; Guy Deutscher, Herzliya Pituach, and Enrique Gruenbaum, Kfar Saba, all of Israel, assignors to Ramot University Authority for Applied Research and Industrial Development Ltd., Tel Aviv, Israel

Filed Apr. 2, 1986, Ser. No. 847,248
Claims priority, application Israel, Apr. 2, 1985, 74787
Int. Cl.[4] C23C *16/30, 16/40*
U.S. Cl. 427—237 11 Claims



1. A method of depositing by chemical vapor deposition a coating of a material onto the inner surface of a tube comprising:

introducing said tube into a furnace having a first temperature zone and a second temperature zone downstream of said first zone, said tube being introduced into said second temperature zone;

injecting into said first temperature zone a mixture of chemical materials capable of reacting at a predetermined high temperature to form said coating material, said mixture being injected into said first zone towards said second zone in the form of a first high-velocity jet substantially parallel to the surface of the tube to be coated therewith in said second zone;

simultaneously injecting into said first zone towards said second zone a plurality of jets of a carrier gas defining an annular array of jets around said first jet and substantially parallel thereto, and a further jet of a carrier gas also substantially parallel to said first jet but spaced closer thereto than those of said annular array;

controlling the temperature of said first zone so as to be sufficiently high to effect therein vaporization of the mixture in said first jet;

and controlling the temperature of said second zone so as to be above said predetermined high temperature to effect the chemical reaction of the vaporized materials of said mixture at the surface of said tube in said second zone to form said coating material as a deposit on the surface of the tube.

4,764,399

METHOD OF PRINTING THERMOPLASTIC ARTICLES WITH THERMOPLASTIC INK

Peter Harrison, Ossett, England, assignor to Plastona (John Waddington) Limited, Yorkshire, England

Filed Aug. 6, 1986, Ser. No. 893,722
Claims priority, application United Kingdom, May 29, 1986, 8613056
Int. Cl.[4] B05D *3/08*
U.S. Cl. 427—275 15 Claims

1. A method of printing a shaped article of ovenable plastics material having a surface, comprising the steps of:

(a) providing an ink containing a pigment and a thermoplastic resin binder;

(b) applying the ink to the article only in at least one selected location which is less than the entire surface of said article;

(c) applying heat from a heat source to the article only in each location to which the ink has been applied to a sufficient temperature to cause the thermoplastic resin binder of the ink to melt and fuse to the plastics material of the article while avoiding damage to the plastics material of the article, and

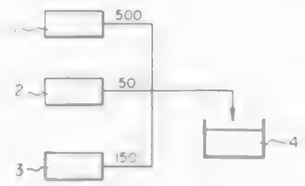
(d) cooling the article.

4,764,400

WOODEN PATTERN APPLYING METHOD

Kunio Yamada, 4-5-14 Hibarigaoka Kita Hoya cho, Tokyo, and Susumu Maeide, 134-5 Nishi Katsuragicho Yamanaka cho, Numagoorigun, Ishikawa ken, Japan

Filed Sep. 3, 1986, Ser. No. 903,358
Int. Cl.[4] B05D *5/00*
U.S. Cl. 427—280 5 Claims



1. A method of treating a body to produce a wooden pattern appearance comprising;

preparing a plurality of mixtures consisting of a urethane, a curing agent and distilled water;

curing said plurality of mixtures by aging them for varying periods of from 5 days to 1 day;

preparing a combined mixture of said plurality of mixtures of at least one mixture aged a short time with at least one mixture aged a longer time of up to 5 days;

flowing water through an elongate vessel;

positioning a container having nozzles and said combined mixture in the path of said water flowing through said elongate vessel to create a stream of said combined mixture;

immersing a body to be treated in the path of said stream;

removing and drying said body whereby a wooden appearing pattern is created on said body.

4,764,401

PROCESS FOR ACTIVATING SUBSTRATE SURFACES FOR ELECTROLESS METALLIZATION

Kirkor Sirinyan, Leverkusen; Henning Giesecke, Cologne; Gerhard D. Wolf, Dormagen; Harold Ebneth, and Rudolf Merten, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 779,192, Sep. 23, 1985, abandoned, which is a continuation of Ser. No. 444,927, Nov. 26, 1982, abandoned. This application Jan. 28, 1987, Ser. No. 7,706
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148280
Int. Cl.[4] B05D *3/04, 3/10, 1/18*
U.S. Cl. 427—304 17 Claims

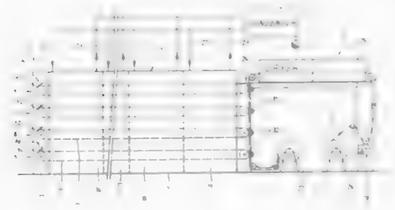
1. A process for the activation of substate surfaces for the purpose of currentless metallization, consisting essentially of the steps in which the surface to be metallized is treated with an activator compound homogeneously distributed in a solvent, the solvent is removed and the activator compound adhering to the surface to be metallized is reduced by use of a reducing agent contained in the metallization bath wherein the treating of the substrate surface with activator compound and solvent removal are effected at 0° to 80° C. and the activator compound is a palladium dichloride complex which exhibits at least one ligand containing a group with C—C or C—N double or triple bond or a group capable of chelate formation selected from OH, SH, CO, CS, or COOH for binding the metal therein and at least one ligand containing a carboxylic acid group, carboxylic acid halide group, carboxylic acid anhydride group, carboxylic acid ester group, carboamide group, carbonimide group, aldehyde group, ketone group, ether group, sulphoamide group, sulphonic acid group, sulphonate group, sulphonic acid halide group, sulphonic acid ester group, halogen-containing heterocyclic group, activated double bond, amino group, hydroxyl group, isocyanate group, olefin group, acetylene group, mercapto group or epoxide group for fixing the activator compound to the substrate surface.

4,764,402

METHOD OF AND APPARATUS FOR APPLYING COATING MATERIAL TO A RUNNING WEB

Ralph Pagendarm, Halstenbek, and Albert Hebels, Hamburg, both of Fed. Rep. of Germany, assignors to Pagendarm Beschichtungstechnik GmbH, Hamburg, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 103,421
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633106
Int. Cl.[4] B05D *1/28, 3/12;* B05C *1/00, 1/14*
U.S. Cl. 427—355 20 Claims



1. A method of coating a first running web by means of a second running web, comprising the steps of establishing for the first and second webs first and second paths having first portions in which the first and second webs are adjacent each other; advancing the webs along the respective paths; sealing a second portion of the second path from the surrounding atmosphere upstream of the respective first portion; applying a solvent-containing coating material to successive increments of the second web in the second portion of the second path; expelling at least some of the solvent from the applied coating material in the second portion of said second path; and transferring the at least partially desolventized coating material from the second web onto the first web in the first portions of said paths.

4,764,403

MULTILAYER BIAXIALLY ORIENTED HEAT SET ARTICLES

Prakash R. Ajmera, Toledo, Ohio, assignor to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Filed Nov. 10, 1986, Ser. No. 929,047
Int. Cl.[4] B65D *1/00, 23/00;* B32B *27/08*
U.S. Cl. 428—35 9 Claims

1. A multilayer biaxially oriented heatset article comprising

an outer layer comprising poly(ethylene terephthalate),

an inner layer comprising poly(ethylene terephthalate),

at least one intermediate layer of olefin-vinyl alcohol copolymer,

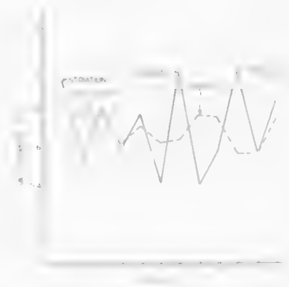
an adhesive layer laminating the outer layer and the intermediate layer, and

an adhesive layer laminating the inner layer and the intermediate layer,

the thickness of said intermediate layer comprising less than 20% of the total thickness,

said intermediate olefin-vinyl alcohol copolymer layer having greater uniformity in the heat set portions than the olefin-vinyl alcohol copolymer layer of an identical non-heatset multilayer article,

the peel strength of the heat set multilayer article in the heat set portions being greater than the peel strength of an identical non-heatset multilayer article.

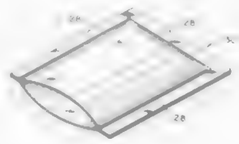


4,764,404

FILMS HAVING A POLYPROPYLENE BLEND LAYER

Roger P. Genske, and Yong J. Kim, both of Neenah, Wis., assignors to American National Can Company, Chicago, Ill.

Filed Nov. 29, 1985, Ser. No. 802,910
Int. Cl.[4] B65D *75/00;* B32B *27/08*
U.S. Cl. 428—35 19 Claims



1. A mulitple layer sheet structure, comprising:

(a) a first layer of metal foil having two opposing surfaces on opposing sides of said foil layer;

(b) a second layer of an abuse resistant polymer adhered to one said surface on one said side of said foil; and

(c) a third layer adhered to said sheet structure on the other said side of said foil layer, the composition of said third layer being a blend of (i) as a first component, a polypropylene polymer, (ii) as a second component, a polymeric composition providing elastomeric properties, and chosen from the group consisting of ethylene butene-1 copolymer and ethylene propylene copolymer, and (iii) as a third component, a third polymeric composition providing elastomeric properties and selected from the group consisting of ethylene butene-1 copolymer, ethylene propylene copolymer, polybutylene, polyisobutylene, ethylene propylene diene monomer terpolymer, styrene butadiene styrene copolymer, styrene ethylene butylene styrene copolymer, styrene isoprene styrene copolymer, polybutene-1, and isobutylene isoprene copolymer.

VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,405

METHOD FOR INCREASING BARRIER PROPERTIES OF THERMOPLASTIC SUBSTRATES

Bernard D. Bauman, Coopersburg; Rajendra K. Mehta, Trexlertown, and Mark A. Williams, Souderton, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 22, 1987, Ser. No. 76,457
Int. Cl.[4] B29C *49/46;* B05D *3/00;* B65D *23/02*
U.S. Cl. 428—35 17 Claims

1. A method of increasing the barrier properties of a thermoplastic substrate selected from the group consisting essentially of polyethylene, polypropylene, polyethylene terephthalate, polyethylene terephthalate glycol, polycarbonates, polystyrene, polyamides, polybutylene terephthalate, polymethyl pentene, polyvinyl chloride and copolymers thereof, said method comprising the steps of:

(a) contacting at least one major surface of the thermoplastic substrate with a gaseous reactant stream having an F_2 concentration greater than or equivalent to 0.0001 atmosphere partial pressure of F_2 per atmosphere total pressure, oxygen in sufficient concentration such that the F_2/O_2 volumetric ratio is less than 100, with the balance being additional reactive and/or non-reactive components;

(b) applying to said major surface of the thermoplastic substrate, a barrier coating selected from the group consisting essentially of polyvinylidene chlorides, ethylene vinyl alcohols, epoxies, polyurethanes, acrylics, polyvinyl chloride, ureaformaldehyde, silicones and fluorocarbons; and

(c) curing said barrier coating.

4,764,406

SMOKABLE SYNTHETIC FOOD-PACKAGING FILM

Nobuyuki Hisazumi, Tsuchiura; Shinichiro Funabashi, Iwaki, and Yoshihiko Tomioka, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1986, Ser. No. 892,916
Claims priority, application Japan, Aug. 6, 1985, 60-172643
Int. Cl.[4] B65D *81/34;* B32B *27/08;* C08L *29/04*
U.S. Cl. 428—35 10 Claims



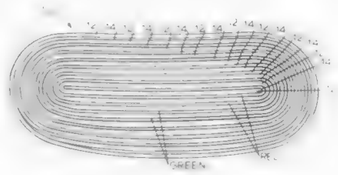
1. A smokable food-packaging film, comprising: at least one layer of a mixture of 45 to 85 wt % nylon, 10 to 45 wt % copolymer of olefin and vinyl alcohol, and 5 to 30 wt % polyolefin, in which the mixture falls in the pentagonal range defined in FIG. 1 by linear lines connecting the points A, B, C, D and E, respectively, said layer having the properties of a permeability to 50% concentration of methanol of not less than 200 g/m^2.day.atm at a temperature of 60° C. and a relative humidity of 0%, an oxygen gas-permeability of not more than 50 cc/m^2.day.atm at a temperature of 30° C. and a relative humidity of 60 %, and a water vapor-transmission rate of not more than 70 g/m^2.day at a temperature of 40° C. and a relative humidity of 90%.

4,764,407

BRAIDED RUG CONSTRUCTION

Walter L. Hinshaw, 3200 Alamance Rd., Burlington, N.C. 27215

Filed May 12, 1987, Ser. No. 48,885
Int. Cl.[4] B32B *3/06*
U.S. Cl. 428—37 10 Claims



1. A braided rug, comprising:

(a) a strand of braid coiled to form a rug of selected shape and size;

(b) a first auxiliary strand of substantially smaller size than said braid having one end stitched to said braid and coiled such that said auxiliary strand in relation to said braid lies immediately outside, between, adjacent and parallel to adjoining strands of said braid and exposed to view; and

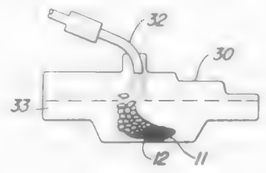
(c) stitched threads operative to secure said braid and auxiliary strand together in said relation throughout the length of said auxiliary strand.

4,764,408

FOAM PLASTIC BAFFLE FOR FLUID CONTAINERS

Donald R. Stedman, and Robert M. Frankowiak, both of Auburn Hills, Mich., assignors to Foamade Industries, Inc., Auburn Hills, Mich.

Filed Jan. 19, 1988, Ser. No. 144,980
Int. Cl.[4] B23K *1/02;* B65D *85/84;* B32B *1/00, 3/10*
U.S. Cl. 428—71 17 Claims



13. A baffling filler for a container for holding liquids, comprising:

said filler being formed of resilient, cellular plastic material which is characterized by being resiliently compressible and expandable, and having interconnected cells which also open to the exterior of the material, and with the volume of the solid plastic defining the cells being a minor portion of the overall volume of the material;

said material being tightly compressed and being substantially encased within a thin casing formed of a sheet of material which is substantially soluble in said liquid;

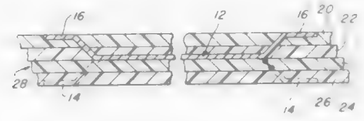
and said compressed casing-surrounded material being insertable in a container and being resiliently expandable, to substantially fill the container, when the casing is dissolved by the liquid to permit the compressed filler material to resiliently expand within the container.

4,764,409

METALLIC REINFORCEMENTS FOR USE IN FIBER STRUCTURES

Richard B. Freeman, Wilmington, Del., assignor to The Budd Company, Troy, Mich.

Filed Dec. 24, 1986, Ser. No. 946,477
Int. Cl.[4] B32B *3/06*
U.S. Cl. 428—98 5 Claims



1. A fiber reinforced structure formed by a resin injection molding process comprising:

a. a plurality of layers of fibrous material impregnated with resin;

b. a flat metal reinforcement element having a flat central surface area with bent portions around the edges thereof disposed between and bonded to oppositely disposed layers of fibrous material;

c. said metal element including a plurality of bent portions formed in the edges of said metal element extending in opposite directions through said oppositely disposed layers and into additional layers of fibrous material on both sides of said reinforcement element, and

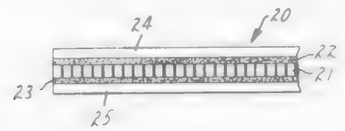
d. whereby said bent portions of said metal element bridge the inner plane surfaces of said layers of fibrous material to minimize stress concentration at the edges of said metal reinforcement element.

4,764,410

LOUVERED PLASTIC FILM AND METHOD OF MAKING THE SAME

Robert F. Grzywinski, Oakdale, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 717,820, Mar. 29, 1985, abandoned.
This application Sep. 18, 1986, Ser. No. 908,900
Int. Cl.[4] B05D *3/06*
U.S. Cl. 428—120 17 Claims



1. A method for supporting a louvered plastic film, which method comprises the steps of:

(1) coating at least one major surface of a louvered plastic film skived from a billet with a solvent-free composition in a fluid state which polymerizes upon exposure to ultraviolet radiation to form an optical surface; then

(2) bringing an ultraviolet transparent plastic film in surface contact with said coating of solvent-free composition in said fluid state to form a composite and to isolate said composition from the ambient atmosphere; and then

(3) exposing said composite to sufficient ultraviolet radiation to polymerize said coating of solvent-free composition.

10. A composite louvered film product comprising:

a sheet of louvered plastic film having two major surfaces;

a layer of an ultraviolet radiation polymerized optically clear composition on at least one of said major surfaces; and

an ultraviolet transparent plastic film adhered to said layer.

4,764,411

PROCESS FOR THE PRODUCTION OF COVERINGS EXHIBITING A CRACKED APPEARANCE AND THE PRODUCT OBTAINED THEREFROM

Jean-Francois Courtoy, 49 Rue des Charretiers, Wiltz; Daniel Marchal, 17 rue Jean meisen, 9142 Burden, both of Luxembourg; Rene DuForest, 11 rue de Bois Joli, 08000 Montcy Notre Dame, France, and Albert Roussel, 45 rue des Charretiers, Wiltz, Luxembourg

Filed Jul. 21, 1986, Ser. No. 887,271
Claims priority, application Luxembourg, Jul. 22, 1985, 86014; Sep. 23, 1985, 86088
Int. Cl.[4] B05D *3/02, 5/00*
U.S. Cl. 428—155 36 Claims



1. A process for the production of surface coverings exhibiting a cracked appearance including the steps of:

depositing a plastisol coating composition on a substrate, said coating composition containing a gel prepared from a mixture, the mixture being comprised of effective amounts of a solid sorbent agent and a solvent which causes swelling by absorption of said solvent in and on the sorbent agent; and

thermally treating said deposited coating, said thermal treatment being carried out at a sufficient temperature whereby an irreversible process of preliminary gelling of the coating and shrinkage of the gel by desorption of the solvent from the sorbent agent simultaneously occurs.

20. A surface covering exhibiting a cracked appearance made from the process of claim 1.

4,764,412

HIGHLY PLASTICIZED LAMINATED VINYL FABRIC

Alan W. Burns, Oaklyn, N.J.; Robert D. Scarth; John V. Mascaro, both of Philadelphia, Pa.; J. W. Hegenbodes, Conshohocken, Pa., and Moses Green, Jr., Philadelphia, Pa., assignors to Pioneer-Leimel Fabrics, Inc., Philadelphia, Pa.

Filed Apr. 4, 1985, Ser. No. 719,756
Int. Cl.[4] B32B *3/00*
U.S. Cl. 428—172 6 Claims

1. A laminated vinyl fabric having excellent suppleness, leather-like hand and drape characteristics comprising:

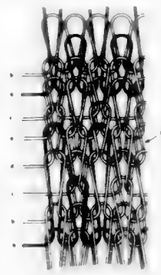
(a) an extruded sheet comprising a vinyl resin and a plasticizer therefor present in substantially equal proportions, said sheet being of a thickness sufficient to made said sheet self-supporting and having a first surface thereof embossed prior to lamination,

(b) An aqueous adhesive on the opposite surface of said vinyl sheet, and

(c) A knitted backing fabric having one surface adhered to said adhesive on said opposite surface at a maximum temperature of about 220° F., said fabric having a structure such that only superficial portions of said one surface of said backing fabric contact said adhesive, said superficial

VOL 1093 ISS 3 AG 16 1988 UMI

portions substantially not penetrating into said opposite surface;



(d) said knitting backing fabric being a double knit construction.

4,764,413

METAL-BASED ORGANIC FILM SUBSTRATE

Takashi Nukii; Shigeo Nakabu, both of Nara; Masaru Iwasaki, Izumisano, and Katunobu Awane, Ikoma, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 13, 1984, Ser. No. 649,924

Int. Cl.[4] B32B *23/02, 15/08*

U.S. Cl. 428—192 20 Claims



1. A substrate for wiring an electrical component with an external circuit, comprising:

a metal base plate for accommodating said electrical component therein;

an insulation layer made of an organic material formed on the base plate;

electrically conductive wiring means of metal or metal alloy, formed on the insulation layer, for connecting said external circuit with the electrical component;

the metal base plate, the insulation layer, and the electrically conductive wiring means being bent at the marginal edges thereof, with portions of the electrically conductive wiring means on the bent portions being made of a material having a low temperature of recrystallization.

4,764,414

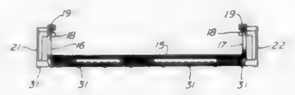
DEVICE FOR THE MOUNTING OF HYBRID CIRCUIT SUBSTRATES ON PRINTED CIRCUIT BOARD

Roger A. Beun, Dunrobin, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 3, 1986, Ser. No. 915,843

Int. Cl.[4] B32B *3/00*

U.S. Cl. 428—195 9 Claims



1. A device for mounting a thick film hybrid circuit on a printed circuit board comprising, a frame of plastic material into which the hybrid circuit may be mounted and a pair of wing frames each one secured to a respective edge of the mounting frame and projecting therefrom in the same direction, the wing frames being shaped to prop the mounting frame at a predetermined angle from 0 to 90 degrees in relation to the printed circuit board.

4,764,415

ELECTRIC ELEMENT USING OXIDATION-REDUCTION SUBSTANCES

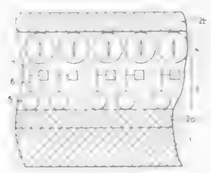
Satoru Isoda; Shigetoshi Nara; Satoshi Ueyama; Hiroaki Kawakubo, and Akemi Ogura, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1987, Ser. No. 68,297

Claims priority, application Japan, Jul. 1, 1986, 61-155450; Jul. 1, 1986, 61-155446; Jul. 11, 1986, 61-164187; Jul. 11, 1986, 61-164199

Int. Cl.[4] B32B *9/04, 15/04*

U.S. Cl. 428—212 20 Claims



1. A redox electric element comprising:

a first oxidation-reduction substance film prepared by a first oxidation-reduction substance having a first redox potential;

a second oxidation-reduction substance film prepared by a second oxidation-reduction substance having a second redox potential different from said first potential, said second oxidation-reduction substance film being accumulatedly stuck and joined on said first oxidation-reduction substance;

first and second electrodes electrically connected to said first and second oxidation-reduction substance films respectively;

one of said first and second oxidation-reduction substance films being composed of one of biogenic redox protein and organic non-biogenic substance, the other being composed of organic non-biogenic substance;

a difference between said first and second redox potentials being utilized to provide rectifying characteristics.

4,764,416

ELECTRIC ELEMENT CIRCUIT USING OXIDATION-REDUCTION SUBSTANCES

Satoshi Ueyama; Satoru Isoda; Osamu Tomisawa; Akemi Ogura, and Hiroaki Kawakubo, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

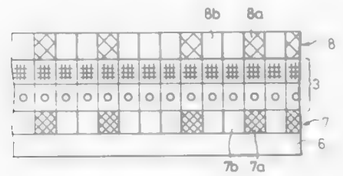
Filed Jul. 1, 1987, Ser. No. 68,298

Claims priority, application Japan, Jul. 1, 1986, 61-155454; Jul. 11, 1986, 61-164184; Jul. 11, 1986, 61-164185

Int. Cl.[4] B32B *9/04, 15/04*

U.S. Cl. 428—212 16 Claims

1. A redox electric element circuit comprising: a plurality of redox electric elements formed by using oxidation-reduction substance; a plurality of electrodes connected to said electric elements; wirings arranged in at least one of places between said electric elements and between said electric elements and said electrodes, said wirings being formed of oxidation-reduction substances; and insulating matters arranged in at least one of places between said electric elements, between said electric elements and said wirings and between said wirings,



said insulation matters being formed of oxidation-reduction substance inactivated by irradiation of an energy beam.

4,764,417

PIN SEAMED PAPERMAKERS FELT HAVING A REINFORCED BATT FLAP

Thomas G. Gulya, Appleton, Wis., assignor to Appleton Mills, Appleton, Wis.

Filed Jun. 8, 1987, Ser. No. 59,421

Int. Cl.[4] D03D *13/00*

U.S. Cl. 428—222 11 Claims



6. A papermakers felt comprising, a woven base fabric with the ends of the base fabric having interdigitated loops, a pin disposed in the loops to form a pin seamed joint, a plurality of machine direction yarns disposed on a face of said fabric and extending continuously across said joint, a batt of fibrous material needled into said base fabric and into said machine direction yarns, said batt and said yarns being slit transversely at a location spaced from said joint, the portion of the batt extending between said slit and said joint constituting a separable flap, a portion of said machine direction yarns being integrally attached to said flap and separable from said base fabric with said flap, and means for adhering the flap to said base fabric.

4,764,418

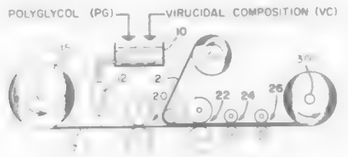
VIRUCIDAL TISSUE PRODUCTS CONTAINING WATER-SOLUBLE HUMECTANTS

Cary K. Kuenn, Appleton, and Daniel S. Westbrook, Green Bay, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 28, 1986, Ser. No. 835,017

Int. Cl.[4] B32B *27/00*

U.S. Cl. 428—284 14 Claims



1. A tissue product comprising at least one air dry cellulosic web containing a water-soluble humectant and one or more carboxylic acids.

4,764,419

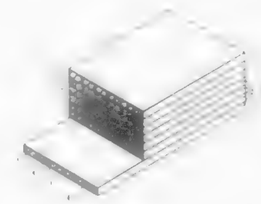
CONDUCTIVE HIGH STRENGTH COMPOSITES

Rajender K. Sadhir, Plum Boro, and Karl F. Schoch, Jr., Wilkins Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 17, 1985, Ser. No. 809,706

Int. Cl.[4] B32B *27/00*

U.S. Cl. 428—290 16 Claims



1. A method of making a semiconducting polyacetylene coating on fibers comprising:

(1) immersing said fibers into a solution of a catalyst for the polymerization of acetylene;

(2) removing said fibers from said solution;

(3) exposing said fibers to a gas selected from the group consisting of acetylene, substituted acetylene, and mixtures thereof; and

(4) contacting polyacetylene formed on said fibers with a dopant.

4,764,420

FOAM INSULATION BOARD FACED WITH POLYMER-FIBROUS SHEET COMPOSITE

David G. Glack, St. Petersburg, and Wayne E. Laughlin, Gulfport, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation-in-part of Ser. No. 883,806, Jul. 9, 1986. This application Jan. 25, 1988, Ser. No. 148,393

Int. Cl.[4] B32B *3/26, 17/10, 23/08, 31/14*

U.S. Cl. 428—317.7 44 Claims



1. A thermally insulating structural laminate comprising a core of rigid plastic foam having two major surfaces, at least one of the major surfaces of the foam being attached to a facer comprising a fibrous sheet having at least one polymeric layer comprising a vinylidene chloride copolymer disposed on the inner surface thereof and interposed between the fibrous sheet and the foam, the oxygen transmission of the facer being a value of less than about 1 cc/100 in^2-24 hrs-atm sufficient to make the facer substantially impervious to the passage of air and water vapor, and the foam being formed in contact with the polymeric layer.

VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,421

MASKING MEMBER

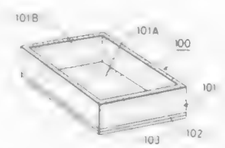
Seinosuke Horiki, and Reiji Makino, both of Nagoya, Japan, assignors to Nagoya Oilchemical Co., Ltd., Japan

Filed Jun. 12, 1987, Ser. No. 61,700

Claims priority, application Japan, Jun. 13, 1986, 61-090802[U]; Feb. 20, 1987, 62-024316[U]; Feb. 20, 1987, 62-024318[U]

Int. Cl.[4] B32B *1/00, 3/26*

U.S. Cl. 428—35 10 Claims



1. A new masking member comprising a body having a vessel form consisting of a bottom and wall(s) which extend(s) upwards from the perimeter of said bottom, with said body made of a thermoplastic foam, and an adhesive layer formed on the under side of said bottom of said body.

4,764,422

ELECTRICALLY CONDUCTIVE COMPOSITE MATERIAL

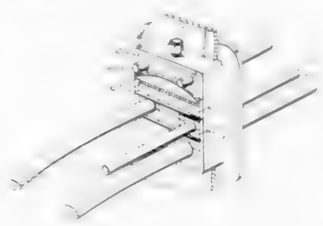
Frederick W. L. Hill, Lechlade; Nigel R. Bates, and Leo G. Svendsen, both of Swindon, all of England, assignors to Raychem Limited, London, England

Filed Nov. 21, 1986, Ser. No. 933,459

Claims priority, application United Kingdom, Nov. 22, 1985, [illegible]

Int. Cl.[4] B32B *5/14, 5/18*

U.S. Cl. 428—309.9 13 Claims



1. An electrically conductive composite material comprising:

(a) an open-celled cellular structure of polymeric material having electrically conductive material on at least its interior surface defining the cellular free space, and

(b) substantially solid electrically non-conductive filling material substantially filling the cellular free space.

4,764,423

ABRASIVE TAPE

Nobutaka Yamaguchi, and Eiichi Tadokoro, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 17, 1986, Ser. No. 920,267

Claims priority, application Japan, Oct. 18, 1985, 60-232502

Int. Cl.[4] G11B *5/71*

U.S. Cl. 428—323 2 Claims

1. An abrasive tape comprising a flexible non-magnetic substrate, and an abrasive coating film having a thickness not larger than 50 μm applied onto said flexible non-magnetic substrate and formed by kneading an abrasive material having a Mohs hardness of 6 or more, a binder, and a lubricant essentially consisting of a fatty acid, a fatty acid ester, a silicone oil, and a surface active agent, wherein said lubricant essentially consists of said fatty acid in a ratio within the range of 20% to 70% by weight with respect to the total weight of said lubricant, said fatty acid ester in a ratio within the range of 5% to 30% by weight with respect to the total weight of said lubricant, said silicone oil in a ratio within the range of 0.5% to 20% by weight with respect to the total weight of said lubricant, and surface active agent in a ratio within the range of 5% to 40% by weight with respect to the total weight of said lubricant.



4,764,424

POLYAMIDE-COATED PARTICLES AND PROCESS FOR THEIR PREPARATION

Roland Ganga, Joinville Le Pont; Jacques Grossoleil, and Jean-Paul Merval, both of Brioane, all of France, assignors to Atochem, Paris, France

Filed Mar. 31, 1986, Ser. No. 846,256

Claims priority, application France, Mar. 29, 1985, 85 04739

Int. Cl.[4] B05D *7/00;* B32B *5/16*

U.S. Cl. 428—327 20 Claims

1. A process for the preparation of polyamide-coated particles which comprises the steps of

(a) suspending uncoated particles in a medium containing (i) at least oen lactam, (ii) a solvent in which the lactam is soluble and (iii) an anionic polymerization catalyst capable of polymerizing said lactam,

(b) contacting said medium with an activator to initiate polymerization,

(c) heating said medium with stirring to a temperature and for a period of time to effect polymerization of said lactam; and

(d) recovering said polyamide-coated particles.

17. Solid particles having a uniform coating of polyamide and prepared by the process of claim 1.

20. A reinforced composite material containing as a reinforcing member, the solid particles of claim 17.

4,764,425

ORIENTED, HEAT SEALABLE MULTI-LAYERED FILM

Riccardo Balloni, Fairport; Jay Keung; David A. Liestman, both of Macedon, and Michael Nahmias, Victor, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 2, 1987, Ser. No. 12

Int. Cl.[4] B32B *5/16, 27/08*

U.S. Cl. 428—331 25 Claims

1. A multi-layer film structure comprising coextruded, oriented heat sealable film comprising:

(a) at least one heat sealable layer consisting of a random copolymer and/or a terpolymer compounded with an effective amount of a finely divided anti-blocking agent comprising particulate inorganic materials having mean particle sizes from about 0.5 to about 5 microns present in amounts from about 0.05% to about 0.5% by weight of the heat sealable layer but substantially devoid of silicone oil, the exposed suface of which is thereafter treated with a coefficient of friction reducing amount of silicone oil transferred thereto through contact of said exposed surface with a silicone oil containing heat scalable layer;

(b) a core layer derived from isotactic polypropylene containing an effective amount of an anti-static agent comprising a suitable tertiary amine and/or a glyceride selected from the group consisting glyercol monostearate and/or a mixture of said amine and said glyercide and /or;

(c) at least one heat sealable layer derived from a group consisting of random copolymers and/or terpolymers, said polymers being compounded with an effective amount of said anti-blocking agent and an amount of silicone oil sufficient to maintain a low coefficient of friction on layer (c) and also on the exposed surface of layer (a) following mutual contact of said surfaces whereby said film possesses a low coefficient of friction, excellent anti-static behavior and good optical clarity in comparison to film structures not having the described heat sealable layers in combination with the described additive materials.

4,764,426

POLYESTER FIBER AND PRODUCTION THEREOF

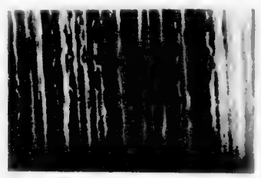
Ryoji Nakamura, and Masakatsu Ohguchi, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed May 27, 1987, Ser. No. 54,955

Claims priority, application Japan, May 27, 1986, 61-121971

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—400 5 Claims



1. A polyester synthetic fiber containing polyoxyalkylene glycol or a derivative thereof in a quantity of 0.5–5 weight %, and internally grown particles generated from a phosphorus compound and a zirconium compound in a quantity of 80–2500 ppm calculated in terms of a zirconium atom; characterized by ridged microgrooves formed on the whole surface of the fiber wherein the length of a microgroove is at least 80 microns and which microgrooves extend substantially continuously in the axial direction of the fiber and are arranged nearly regularly, the distance between the respective substantially longitudinal center lines of adjacent microgrooves being 0.3–0.9 micron as measured as a flat distance along the circumferential direction at right angles to the fiber axis, the microgrooves existing 7–30 in number per 10 microns of the plane distance along the circumference at right angles to the fiber axis, there being distributed microcraters on the ridges and microgrooves, said microcraters having a width of 0.05–0.4 micron.

4,764,427

FIBER HAVING THERMOPLASTIC RESIN COATING

Shigeyoshi Hara; Hiroo Inata, and Shunichi Matsumura, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 21, 1986, Ser. No. 898,607

Claims priority, application Japan, Aug. 22, 1985, 60-182946

Int. Cl.[4] D02G *3/00*

U.S. Cl. 428—400 14 Claims

1. A bundle comprising a plurality of fibers, wherein at least a part of the surface of each fiber is coated with a coating of a thermoplastic resin, which is

(A) different from the material forming said fiber,

(B) present in a proportion of 5 to 100% by weight on an average based on said fiber and

(C) porous such that a group of micropores having a pore diameter in the range of 0.1 to 1 micrometer are present in a volume of 100 to 500 mm^3/g on an average, said fibers being bonded to one another through the thermoplastic resin porous coating having at least a part of the porous coating in common.

4,764,428

FREE-FLOWING, NON-DUSTING ANTISTATIC AGENT COMPOSITION PELLETS AND METHOD OF FORMING SAME

Stewart E. Gloyer, Germantown, Tenn., assignor to Witco Chemical Corporation, New York, N.Y.

Filed May 29, 1987, Ser. No. 56,391

Int. Cl.[4] B32B *5/16;* C09K *3/00;* L08J *5/29;* C08K *5/04*

U.S. Cl. 428—402 16 Claims

1. An antistatic agent composition in pellet form for addition to polymeric materials, the antistatic agent pellet composition consisting essentially of an ethoxylated alkyl primary amine component and a metal salt of a fatty acid component combined together into a plurality of pellets containing said components, wherein said amine component and said fatty acid metal salt component are present in the pellets at a weight ratio of between 5 and 10 to 5, respectively, plus or minus at least approximately 5 weight percent variation of each such component.

4,764,429

FINELY, DIVIDED, SPHERICAL, TWO-LAYER SOLID PARTICLES

Gunther Mair, Mannheim, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 103,207

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1986, 3633130

Int. Cl.[4] C01G *49/06*

U.S. Cl. 428—403 1 Claim

1. Finely divided, spherical, two-layer solid particles F_1 having a diameter of from 5 to 100 nm and consisting of

(A) from 60 to 70% by weight of a core of spherical, rhombohedral α-Fe_2O_3 having a purity greater than 98% and

(B) from 30 to 40% by weight of a shell of a basic metal hydroxide sulfate which has an alkali metal ion content of less than 500 ppm and is of the formula I

$$M_vMn_wZn_x(OH)_y(SO_4)_z \qquad I$$

wherein M is Mg, Co, Ni, Cd, divalent Fe and/or divalent Cu, v is from 0 to 0.8, w is from 0.1 to 0.9, x is from 0.1 to 0.9, y is from 1.01 to 1.99, z is from 0.005 to 0.505, $v+w+x=1$ and $0.5\ y+z=1$.

4,764,430

CROSSLINKABLE COMPOSITIONS CONTAINING POLYEPOXIDES AND POLYACID CURING AGENTS

William P. Blackburn, Evans City, and Debra L. Singer, Pittsburgh, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 837,118, Mar. 7, 1986, Pat. No. 4,681,811, which is a continuation-in-part of Ser. No. 767,020, Aug. 19, 1985, Pat. No. 4,650,718, and a continuation-in-part of Ser. No. 767,019, Aug. 19, 1985, Pat. No. 4,703,101. This application Jan. 8, 1987, Ser. No. 1,304

Int. Cl.[4] B05D *1/36, 7/00;* B32B *27/38;* C08G *59/40*

U.S. Cl. 428—413 26 Claims

1. A curable, liquid coating composition containing components which volatilize at or release volatiles at curing temperature comprising:

VOL 1093 ISS 3 AUG 16 1988 UMI

(A) 30 to 60 percent by weight of a polyepoxide,
(B) 20 to 50 percent by weight of a polyacid crosslinking agent, and
(C) 0.1 to 15 percent by weight of a monocarboxylic acid containing at least 6 carbon atoms; the percentage by weight based on weight of resin solids and the equivalent ratio of (A) to (B)+(C) is 0.75–1.5 to 1 and the equivalent ratio of (B) to (C) is 5–20 to 1.

20. A process for applying a composite coating to a substrate which comprises applying to the substrate a colored film-forming composition to form a base coat and applying to said base coat a clear film-forming composition to form a transparent top coat over the base coat characterized in that the clear film-forming composition comprises the curable composition of claim 1.

25. A substrate coated in accordance with the process of claim 20

4,764,431

PROCESS FOR PROTECTING AND CONSOLIDATING STONE MATERIALS

Franco Piacenti, Florence; Adolfo Pasetti, Milan; Carlo Manganelli Del Fa, Castiglione Della Pescaia, and Giovanni Moggi, Milan, all of Italy, assignors to Ausimont S.p.A., Milan, Italy

Filed Feb. 21, 1986, Ser. No. 831,588
Claims priority, application Italy, Feb. 22, 1985, 19630 A/85
Int. Cl.[4] B32B *27/00;* **B05D** *3/02*
U.S. Cl. 428—421 **11 Claims**

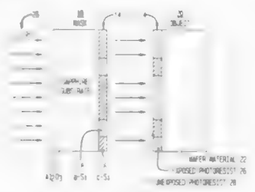
3. Articles and structures manufactured from stone materials, marble, sandstone, tiles, and cement mixes provided with a coat consisting of an uncured polymer or copolymer comprising from about 55 to about 100% by moles of vinylidene fluoride, from 0 to about 45% by moles of hexafluoropropene and from 0 to about 30% by moles of tetrafluoroethylene.

4,764,432

PHOTO-MASK WITH REGIONS HAVING A DIFFERING OPTICAL TRANSMISSIVITIES

Siegfried Kalbitzer, Heidelberg, Fed. Rep. of Germany, assignor to Max Planck-Gesellschaft zur Förderung der Wissenschaften e.V., Gottingen, Fed. Rep. of Germany

Filed Jul. 1, 1986, Ser. No. 880,800
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1985, 3524176
Int. Cl.[4] B05D *3/06;* **B32B** *9/04;* **G03F** *9/00*
U.S. Cl. 428—446 **9 Claims**



1. A photomask including a layer which comprises regions (16, 18) of different optical transmissivity for optical radiation within a predetermined spectral range, on a substrate (12) which is transparent to the optical radiation with which the photomask is used, characterized in that

said layer comprises a semiconductor material which has a crystalline and an amorphous phase, said crytalline phase having a substantially greater optical transmissivity in said predetermined spectral range than said amorphous phase has,

said regions each extend far enough through the thickness of said layer that portions (18) of said layer containing more amorphous phase material have absorption coefficients, for optical radiation within said predetermined spectral range, at least a factor of 2 greater than the absorption coefficients of other portions (16) of said layer predominantly containing crystalline material, and that

said regions comprise different proportions of said crystalline and amorphous phases of said semiconductor material.

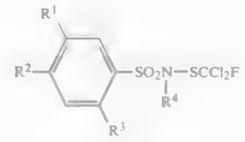
4,764,433

AGENT FOR THE PROTECTION OF MATERIALS

Engelbert Kühle, Bergisch-Gladbach; Wilfried Paulus, Krefeld; Michael Fischler, Krefeld, and Hans-Georg Schmitt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 15, 1986, Ser. No. 897,001
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1985, 3531363
Int. Cl.[4] B32B *9/04;* **C09D** *5/16*
U.S. Cl. 428—541 **13 Claims**

1. A method of protecting industrial materials against microbial attack comprising contacting an industrial material susceptible to microbial attack with an effective amount of an agent so as to prevent microbial attack, said agent comprising an N-sulphenylated benzenesulphonamide of the formula



wherein

R^1, R^2 and R^3 independently of one another represent hydrogen, halogen, nitro, alkyl or halogenoalkyl and

R^4 denotes an unsubstituted or substituted saturated or unsaturated, aliphatic or cycloaliphatic radical, the aliphatic radicals being uninterrupted by hetero-atoms or being interrupted by one or more hetero-atoms, said industrial material being selected from the group consisting of adhesives, glues, paper, cardboard, textiles, leather, timber, plants, silicone rubbers and plastic articles.

4,764,434

DIAMOND TOOLS FOR ROCK DRILLING AND MACHINING

Sven B. Aronsson, Stocksund, and Mats G. Waldenstrom, Bromma, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jun. 26, 1987, Ser. No. 66,475
Int. Cl.[4] B22F *7/04*
U.S. Cl. 428—565 **7 Claims**



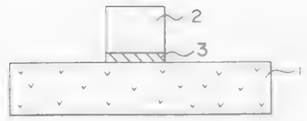
1. A polycrystalline diamond tool comprising a layer of more than 50% by volume of diamond compact bonded to a support body by means of a thin, more than 3 μm continuous, metal diffusion-blocking, intermediate bonding layer of a refractory material applied by PVD or CVD technique, the coated surface of said support body having a non-plane geometry.

4,764,435

METALIZING OR BONDING COMPOSITION FOR NON-OXIDE CERAMICS

Hiroki Hoshaki, Anjo; Hirofumi Suzuki, and Terutaka Kageyama, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 16, 1986, Ser. No. 874,996
Claims priority, application Japan, Jun. 17, 1985, 60-131190
Int. Cl.[4] B32B *15/00, 18/00*
U.S. Cl. 428—621 **17 Claims**



1. A bonded structure, comprising:

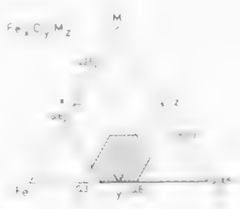
a non-oxide ceramic member bonded by brazing to a metal or another non-oxide ceramic member by a metal brazing composition consisting of at least one or more metals selected from a first group of transition metals consisting of Pt, Pd, Rh, Ir, Ru and Os; and one or more metals selected from a second group of transition metals consisting of Cr, Mn, Fe, Co, Ni and Cu, the content of said metal or metals selected from said first group of transition metals ranging between 2 mol % and 70 mol %, while the content of said metal or metals selected from said second group of transition metals ranging between 30 and 98 mol %.

4,764,436

IRON-OXYGEN BASED PERPENDICULAR MAGNETIZED ANISOTROPIC THIN FILM

Nakao Akutsu; Masako Akimitsu, and Tadashi Mizoguchi, all of Tokyo, Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan, a part interest

Filed May 16, 1986, Ser. No. 863,909
Claims priority, application Japan, May 20, 1985, 60-107591; Mar. 13, 1986, 61-55484
Int. Cl.[4] H01F *10/00, 10/18*
U.S. Cl. 428—694 **4 Claims**



1. A magnetic thin film, wherein said film has a magnetic anisotropy in the perpendicular direction to the surface thereof, and said film consists of an iron-oxygen system of the following composition:

$$Fe_xO_yM_z$$

wherein M represents one or both of tin or germanium, and
$0.25 \leqq x \leqq 0.6$,
$0.3 \leqq y \leqq 0.6$, and
$0.005 \leqq z \leqq 0.3$.

3. A magnetic thin film, wherein said film has a magnetic anisotropy in the perpendicular direction to the surface thereof, and said film consists of an iron-oxygen system of the following composition:

$$Fe_xO_yAl_z$$

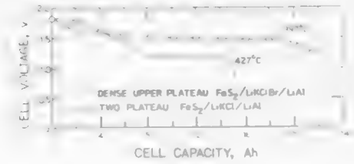
wherein:
$0.4 \leqq x \leqq 0.6$,
$0.3 \leqq y \leqq 0.52$, and
$0 \leqq z \leqq 0.11$.

4,764,437

LITHIUM DISULFIDE BATTERY

Thomas D. Kaun, New Lenox, Ill., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed May 29, 1986, Ser. No. 868,388
Int. Cl.[4] H01M *10/44*
U.S. Cl. 429—50 **6 Claims**



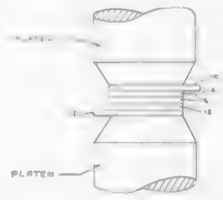
1. A secondary electrochemical cell having an FeS_2 positive electrode having about 15 mole percent CoS_2, a Li alloy negative electrode and a suitable lithium-containing electrolyte, said cell being negative electrode limited and having only an endothermic discharge reaction of the positive electrode, wherein the cell operating temperatures are in the range of from about 340° to about 400° C., the electrolyte is about 25 mole percent LiCl and about 38 mole percent LiBr and about 37 mole percent KBr, the negative electrode has Li present in the range of from about 48 atom percent to about 53 atom percent.

4,764,438

SOLID STATE TETRACHLOROALUMINATE STORAGE BATTERY HAVING A TRANSITION METAL CHLORIDE CATHODE

Robert L. Vaughn, Grand Forks, N. Dak.; Ronald A. Carpio, and Lowell A. King, both of Colorado Springs, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 556,874, Dec. 1, 1983, abandoned. This application Jun. 5, 1985, Ser. No. 741,516
Int. Cl.[4] H01M *10/44, 6/36*
U.S. Cl. 429—52 **1 Claim**

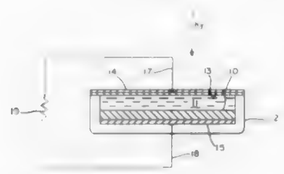


1. A method for producing a low power, high energy source of electric current which comprises the steps of:

VOL 1093 ISS 3 AG 16 1988 UMI

A. providing a solid state electrochemical primary cell containing as essential components:
(a) a solid anode composed of an alloy selected from the group consisting of lithium-silicon and lithium-aluminum alloys,
(b) a solid cathode of a mixture having a ratio of (1) from about one to five parts by weight of ferric chloride and (2) about one part by weight of graphite, and
(c) a solid electrolyte consisting of lithium tetrachloroaluminate salt, said electrolyte positioned between, and, in contact with said anode and said cathode; and
B. heating said electrochemical cell to a temperature in a range of from 85° C. to about 105° C. to draw an electric current therefrom while simultaneously maintaining said electrochemical cell in its solid state at a temperature below the melting points of its individual components.

4,764,439
PHOTOELECTROCHEMICAL CELL
James F. Gibbons, Palo Alto; George W. Cogan, Menlo Park; Christian M. Gronet, Stanford, and Nathan S. Lewis, Palo Alto, all of Calif., assignors to Sera Solar Corporation, Santa Clara, Calif.
Continuation-in-part of Ser. No. 451,336, Dec. 20, 1982, Pat. No. 4,459,343. This application Jul. 5, 1984, Ser. No. 627,877
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.[4] H01M 6/36
U.S. Cl. 429—111 28 Claims



23. A photoelectrochemical cell having improved solar to electrical energy efficiency in the range of 10% and above, comprising a semiconductor photoactive electrode, a nonaqueous solvent and an electrolyte dissolved therein forming a ionically conductive solution, a counterelectrode providing an electrical connection from said solution to said photoactive electrode; and a redox couple dissolved in said solvent suitable to accept and donate electrons from and to said electrodes upon incidence upon said cell by an external source of light, said redox couple present in an amount sufficient to sustain a predetermined current; wherein the concentrations of said electrolyte and said redox couple in said solution are selected to provide no greater than a predetermined small voltage drop in comparison to the output voltage of said cell during conversion in said cell of said light to electricity, and wherein said solvent comprises a mixture of alkylene carbonate and an alcohol of 1–10 carbon atoms and said redox couple is a ferrocene-ferrocenium salt or derivative thereof.

4,764,440
LOW TEMPERATURE MOLTEN COMPOSITIONS
Steven D. Jones, Brook Park, and George E. Blomgren, Lakewood, both of Ohio, assignors to Eveready Battery Company, St. Louis, Mo.
Filed May 5, 1987, Ser. No. 46,010
Int. Cl.[4] H01M 6/16, 10/39, 10/40
U.S. Cl. 429—198 30 Claims

1. A low temperature molten composition comprising a mixture of a metal halide and a hydrocarbyl-saturated onium salt, wherein at least one of the hydrocarbyl groups is an aromatic hydrocarbyl group.

4,764,441
PHOTO-MASK FOR PRODUCTION OF SUBSTRATE FOR OPTICAL MEMORY ELEMENT
Kenji Ohta; Junji Hirokane; Tetsuya Inui; Akira Takahashi, and Hiroyuki Katayama, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Japan
Filed Nov. 12, 1986, Ser. No. 930,157
Claims priority, application Japan, Nov. 22, 1985, 60-263316; Nov. 22, 1985, 60-263317
Int. Cl.[4] G03F 9/00
U.S. Cl. 430—5 13 Claims



1. A photo-mask comprising
a mask substrate,
an ultraviolet non-transmissive film formed on said mask substrate, and
a reflective film formed on said ultraviolet non-transmissive film.

4,764,442
DUAL LAYER ELECTRODE USED WITH ELECTROPHOTOGRAPHIC PHOTOCONDUCTOR
Satoshi Otomura, Chiba, and Hideki Akiyoshi, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Nov. 25, 1986, Ser. No. 934,800
Claims priority, application Japan, Nov. 28, 1985, 60-266059
Int. Cl.[4] G03G 5/06, 5/14
U.S. Cl. 430—63 6 Claims

1. An electrophotographic photoconductor comprising:
a non-metal substrate,
a double-layered electrode formed on said substrate, consisting of a non-aluminum metal layer overlaid on said substrate, and an aluminum layer formed on said non-aluminum metal layer, and
an organic photoconductive layer comprising a charge generating material and a charge transporting material,
wherein said double-layered electrode and said substrate are both transparent at least in an ultraviolet region, in a visible light region or in an infrared region.

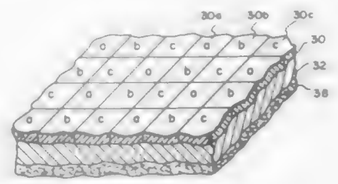
4,764,443
METHOD OF IMAGE REVERSAL IN COLOR ELECTROPHOTOGRAPHY
Josef Matkan, Malvern, Australia, assignor to Stork Research B.V., Boxmeer, Netherlands
Filed Oct. 17, 1986, Ser. No. 920,715
Claims priority, application Australia, Oct. 31, 1985, PH03150
Int. Cl.[4] G03G 13/01, 13/22
U.S. Cl. 430—45 10 Claims

1. A method of electrostatographic image reversal wherein a positive print comprising a receptor sheet having image-free areas and image area formed by colored toner deposits is produced from a negative film having opaque areas corresponding to said image-free areas on said print and transparent areas corresponding to said image areas on said print, said method comprising the steps of:
A. electrostatically charging a photoconductor to deposit thereon uniformly charges of first polarity;
B. exposing said photoconductor to light through a negative film to thereby discharge said photoconductor in the areas corresponding to said transparent areas of said negative film while retaining said charges thereon in areas corresponding to said opaque areas of said negative film;
C. applying conductive toner material of second polarity to said photoconductor to form conductive toner deposits by attraction to said charges of first polarity retained thereon;
D. transferring said conductive toner deposits onto a dielectric member, said dielectric member provided with an insulative surface layer located on a relatively conductive support;
E. affixing said conductive toner deposits to said dielectric member insulative layer, wherein the conductivity of said affixed toner deposits is adapted to be adequate to prevent



substantial charge acceptance by said conductive toner deposits;
F. electrostatically charging said dielectric member to uniformly deposit charges of a polarity substantially only in the areas free of said conductive toner deposits thereon;
G. applying to said dielectric member colored toner material of opposite polarity to that of said charges on said dielectric member to form colored toner deposites by attraction to said charges to areas free of said conductive toner deposits thereon;
H. transferring said colored toner deposits onto a receptor sheet; and
I. affixing said color toner deposits to said receptor sheet.

4,764,444
TRANSFER ELEMENT WITH MOSAIC PATTERN OF HEAT TRANSFERABLE DYES
Michael J. Simons, Harrow, England; Roland G. Willis, and Donald M. Harvey, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 16, 1986, Ser. No. 919,511
Int. Cl.[4] G03C 5/54, 7/00; G03G 5/12, 13/01
U.S. Cl. 430—47 13 Claims



1. A color transfer imaging element comprising a support having thereon an imaging layer comprising a thermographic, photothermographic, or electrographic material capable of forming an image that absorbs or scatters light or infrared radiation and a heat-transferable dye layer from which a dye image can be transferred to a dye image receiver when said imaging element is overall exposed to light or infrared radiation that is absorbed or scattered as a function of the image areas of said imaging layer, thereby causing selective heating of said dye of the element, said dye layer comprising a mosaic dye pattern of at least two colors of dyes transferable by heat alone having mosaic spots small enough to provide image resolution of a full color image in a single image transfer step and being positioned relative to the other layers so as to allow imagewise transfer of said dye to said image receiver.

4,764,445
ELECTROGRAPHIC MAGNETIC CARRIER PARTICLES
Edward T. Miskinis, and Bijay S. Saha, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 15, 1987, Ser. No. 62,023
Int. Cl.[4] G03G 9/14
U.S. Cl. 430—108 24 Claims

1. Carrier particles for use in the development of electrostatic latent images which comprise hard magnetic ferrite material having a single phase hexagonal crystal structure, exhibiting a coercivity of at least 300 Oersteds when magnetically saturated, and an induced magnetic moment of at least 20 EMU/gm of carrier in an applied field of 1000 Oersteds and containing from about 1 to about 5 percent by weight of lanthanum, where said particles are coated with a discontinuous resin layer.

4,764,446
LIQUID DEVELOPER COMPOSITIONS WITH HIGH TRANSFER EFFICIENCY
Melvin D. Croucher, Oakville; George R. Pravato, York; John R. C. Fuller, Oakville, and James M. Duff, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.
Filed Feb. 12, 1987, Ser. No. 14,571
Int. Cl.[4] G03G 9/12
U.S. Cl. 430—115 27 Claims

1. A liquid developer composition comprised of an oil base selected from the group consisting of Magiesol, Witsol, Paraflex, Shellflex, Parabase, and Isopar, pigment particles, a stabilizer in an amount of from about 1 percent to about 40 percent by weight, and a surfactant in an amount of from about 0.5 percent to about 5 percent by weight that enables flocculation of the developer components, and efficient wetting of a photoreceptor surface.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,447

NON-AQUEOUS TYPE RESIN DISPERSION AND ELECTROPHOTOGRAPHIC DEVELOPER CONTAINING SAID RESIN

Kazuo Tsubuko; Shinichi Kuramoto; Kayoko Nagai, all of Numazu; Makoto Okawara, Tokyo, and Hajime Takanashi, Numazu, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1986, Ser. No. 883,182

Claims priority, application Japan, Jul. 17, 1985, 60-157912; Jul. 17, 1985, 60-157913

Int. Cl.[4] G03G *9/12*; C08L *35/02*

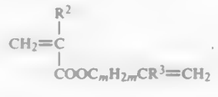
U.S. Cl. 430—115 14 Claims

1. A liquid developer for electrophotography characterized by containing a colorant and a non-aqueous type resin dispersion obtained by polymerizing a system containing at least monomer A which has the formula (I),



(I)

wherein R^1 is —H or —CH_3, X is —$COOC_nH_{2n+1}$ or —O-COC_nH_{2n+1}, and n is an integer of 6–20; monomer B which has the formula (II),



(II)

wherein R^2 and R^3 are —H or —CH_3 and m is an integer of 1–20, and monomer C which has a carboxyl group or a glycidyl group, in the presence of a polymerization initiator in an aliphatic hydrocarbon solvent, wherein the weight ratio of monomer A:monomer B:monomer C is 50–95:1–25:1–25.

5. The liquid developer as claimed in claim 1, wherein said non-aqueous type resin dispersion further contains at least one member selected from the group consisting of powdery silica, wax and polyolefin.

4,764,448

AMORPHOUS SILICON HYDRIDE PHOTORECEPTORS FOR ELECTROPHOTOGRAPHY, PROCESS FOR THE PREPARATION THEREOF, AND METHOD OF USE

Toshihiko Yoshitomi, Yokohama; Hiromi Horiuchi, Tokyo; Yukio Yamaguchi, Kawasaki; Yasuo Kamoshita, Yokohama, and Kiyoshi Sekihara, Tsukui, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Apr. 2, 1986, Ser. No. 847,409

Claims priority, application Japan, Apr. 5, 1985, 60-72355; Apr. 5, 1985, 60-72356; Nov. 21, 1985, 60-261879; Nov. 22, 1985, 60-263292; Nov. 22, 1985, 60-263293; Nov. 22, 1985, 60-263294; Nov. 25, 1985, 60-264546; Nov. 25, 1985, 60-264547

Int. Cl.[4] G03G *9/08*, *21/00*

U.S. Cl. 430—120 17 Claims

11. In the method of electrophotography utilizing amorphous silicon hydride photoreceptors, the improvement comprising using a developer containing at least one soft abrasive additive selected from the group consisting of carbonates and sulfates of, alkaline earth metals, rare earth metals and transition metals, said abrasive having a hardness having a hardness which is lower than the hardness of the amorphous silicon hydride.

4,764,449

ADHERENT SANDBLAST PHOTORESIST LAMINATE

Lawrence C. Vanlseghem, Duluth, Minn., assignor to The Chromaline Corporation, Duluth, Minn.

Filed Nov. 1, 1985, Ser. No. 794,083

Int. Cl.[4] G03C *11/12*; G03F *7/26*; B24C *1/04*; B44C *1/22*

U.S. Cl. 430—162 7 Claims



1. A resist laminate for adherent application to the surface of an object, for exposure and development to reveal an image transferable to the surface by particulate etching, which consists essentially of:

(a) a photoresist composition layer that is developable with aqueous media, the photoresist composition consisting essentially of:

(i) about 0.1 to 75% by weight of a water soluble, photo sensitive vinyl polymer having pendent hydroxyl groups and being capable of photo-generated insolubility;

(ii) about 20 to 75 wt-% of a polymeric film-forming binder;

(iii) an effective amount of a plasticizer sufficient to provide resiliency, flake resistance, delamination resistance, and shock resistance;

(iv) about 0.01 to 5% by weight of a photo crosslinking initiator composition effective to crosslink polymers having pendent hydroxyl groups; and

(v) about 0 to 1% by weight of a surfactant;

(b) a nonelastomeric support membrane; and

(c) an adhesive layer;

wherein each layer is held in substantially coextensive contact.

2. The laminate of claim 1 wherein the resist composition consists essentially of:

(a) about 5 to 35 wt-% of a polyvinyl alcohol polymer having an extent of hydrolysis of 85 to 90%;

(b) about 25 to 75 wt-% of a polyvinyl acetate polymer;

(c) about 5 to 25 wt-% of a dialkyl phthalate plasticizer;

(d) about 0.01 to 2% by weight of a diazonium salt photo initiator; and

(e) about 1% by weight of a surfactant.

4,764,450

POSITIVE-WORKING RADIATION-SENSITIVE COATING SOLUTION AND POSITIVE PHOTORESIST MATERIAL WITH MONOMETHYL ETHER OF 1,2-PROPANEDIOL AS SOLVENT

Hans Ruckert, and Ralf Ohlenmacher, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 742,063, Jun. 6, 1985, abandoned. This application Dec. 29, 1986, Ser. No. 946,621

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1984, 3421160; Mar. 21, 1985, 3510220

Int. Cl.[4] G03C *1/60*, *1/74*

U.S. Cl. 430—191 13 Claims

1. A positive-working radiation-sensitive coating solution suitable as a photoresist, consisting essentially of, in admixture, (i) at least one polymeric binder which is soluble or swellable in alkaline media and soluble in monomethyl ether of 1,2 propanediol said binder being present in an amount between about 30 and 90 percent by weight, relative to the total solids of said coating solution; (ii) a sufficient amount of at least one radiation-sensitive compound to impart radiation sensitivity to said coating solution; and (iii) an organic solvent present in an amount sufficient to solubilize said binder, which organic solvent consists essentially of a monomethyl ether of 1,2 propanediol in an amount of between about 80% and 100% by weight of said organic solvent.

9. A photoresist material, comprising a support and a light-sensitive layer provided on said support, said layer being the product of a process comprising the step of coating said support with a positive-working radiation-sensitive coating solution which is suitable as a photoresist and which consists essentially of, in admixture, (i) at least one polymeric binder which is soluble or swellable in alkaline media and soluble in monomethyl ether of 1,2 propanediol said binder being present in an amount between about 30 and 90 percent by weight, relative to the total solids of said coating solution; (ii) a sufficient amount of at least one radiation-sensitive compound to impart radiation sensitivity to said coating solution; and (iii) an organic solvent present in an amount sufficient to solubilize said binder, which organic solvent consists essentially of a monomethyl ether of 1,2 propanediol in an amount of between about 80% and 100% by weight of said organic solvent, such that said light-sensitive layer contains, after drying, about 1% of said organic solvent.

4,764,451

IMAGE-FORMING METHOD EMPLOYING LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT, POLYMERIZABLE COMPOUND AND A PHOTOPOLYMERIZATION INITIATOR

Shunichi Ishikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 12, 1987, Ser. No. 2,331

Claims priority, application Japan, Jan. 10, 1986, 61-3025

Int. Cl.[4] G03C *1/72*

U.S. Cl. 430—138 27 Claims

1. An image-forming method which comprises:

imagewise exposing a light-sensitive layer provided on a support wherein the light-sensitive layer contains silver halide, a reducing agent, a polymerizable compound and a photopolymerization initiator, said reducing agent and said photopolymerization initiator being different from each other;

simultaneously or thereafter developing the light-sensitive material to polymerize the polymerizable compound within the area where the latent image of the silver halide has been formed;

pressing the light-sensitive material on an image-receiving material to transfer unpolymerized polymerizable compound and the photopolymerization initiator to the image-receiving material; and

irradiating the image-receiving material with a light.

4,764,452

PHOTOSENSITIVE RESIN COMPOSITIONS

Takao Ohno, Iruma, Japan, assignor to Tamura Kaken Co., Ltd., Saitama, Japan

Continuation-in-part of Ser. No. 795,010, Nov. 4, 1985, abandoned. This application Jun. 19, 1987, Ser. No. 64,160

Int. Cl.[4] G03C *1/68*

U.S. Cl. 430—288 10 Claims

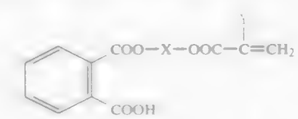
1. A photosensitive resin composition, comprising:

(a) 10–60 wt.% of styrene—maleic acid copolymer or its partially esterified product having a molecular weight of 1,000–30,000 and an acid value of 50–500;

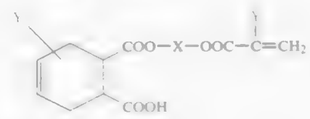
(b) 1–30 wt.% of acrylate or methacrylate having a tetrahydrofurfuryl group or a hydroxyl group;

(c) 1–30 wt.% of diacrylate or dimethacrylate of polyethylene glycol or polypropylene glycol;

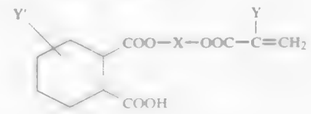
(d) 1–40 wt.% of a compound represented by the following general formula (I), (II), (III), (IV) or (V):



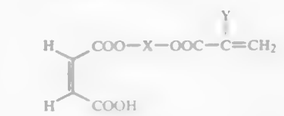
(I)



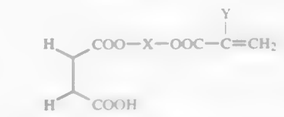
(II)



(III)



(IV)



(V)

wherein, X stands for a divalent organic group; Y stands for hydrogen atoms or a methyl group; and Y' stands for hydrogen atoms or an alkyl group having carbon atoms of 1–4; and

(e) 0.5–10 wt.% of a photosensitizer.

4,764,453

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Shigeharu Koboshi, Sagamihara, and Masayuki Kurematsu, Hachioji, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 656,953, Oct. 2, 1984, abandoned. This application Jun. 12, 1986, Ser. No. 874,815

Claims priority, application Japan, Dec. 26, 1983, 58-244268

Int. Cl.[4] G03C *7/16*, *7/40*

U.S. Cl. 430—351 18 Claims

1. A method of processing a silver halide color photographic material which comprises imagewise exposing said photographic material to light, developing said photographic material, removing the residual image-forming silver, treating the

VOL 1093 ISS 3 AG 16 1988 UMI

material in substantially the final stage of color processing with an aqueous solution containing a compound which releases ammonium ions in the solution, said compound being selected from the group consisting of an aqueous solution of ammonia, ammonium hydroxide, ammonium carbonate, ammonium hydrogencarbonate, ammonium sulfate, ammonium hydrogensulfate, ammonium nitrate, ammonium sulfate, ammonium benzoate, ammonium hydroxyethyliminodiacetate, ammonium transcyclohexanediamintetraacetate, ammonium nitrilotrimethylenephosphonate, ammonium ethylenediamine-tetramethylenephosphonate, ammonium 1-hydroxyethylidene-1,1 -diphosphonate, ammonium 2-phosphonbutane-1,2,4-tricarbonxylate and ammonium cerium (IV) sulfate, thereafter drying the material at a temperature not lower than 30° C., wherein said treatment with said aqueous solution and said drying adjusts the pH of the surface of the dried emulsion layer to between 3.0 and 6.8.

4,764,454

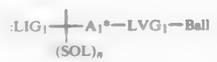
COLOR PHOTOGRAPHIC MATERIAL WITH COLOR FORMING LIGAND COMPOUNDS AND A METHOD OF PROCESSING

Seiji Ichijima, and Kei Sakanoue, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

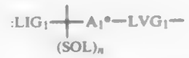
Filed Dec. 18, 1986, Ser. No. 943,127
Claims priority, application Japan, Dec. 20, 1985, 60-287064
Int. Cl.[4] G03C *7/26, 7/32, 7/18, 7/40*
U.S. Cl. 430—361 **19 Claims**

1. A silver halide color photographic material comprising a support having provided thereon at least one layer containing a compound represented by the general formula (II):

(II)



wherein LIG_1 represents a group which reacts with metal ions at the ":" side to form a complex compound so that it colors; $A_1°$ represents a coupling group or an oxidation reduction group; when $A_1°$ is a coupling group, ° represents a coupling position whereas when $A_1°$ represents an oxidation reduction group, the position at which $A_1°$ undergoes a nucleophilic addition by a nucleophilic species present during development upon crossoxidation is represented by °; LVG_1 represents a coupling-off group which is linked to ° of A_1; Ball represents an organic group for making the molecule of the compound large enough to be rendered diffusion resistant; SOL represents a dissociating group or a quaternary ammonium salt for rendering the molecule of the compound water-soluble after a $A_1°—LVG_1$ bond cleavage so that it effuses from the light-sensitive material; SOL links to any position of $:LIG_1—A_1°—$; and n represents an integer of 0 to 3, with the proviso that Ball may contain a



group wherein the compound of the general formula (II) is a bis compound or a polymer compound.

15. A method of processing said silver halide color photographic material of claim 1, which comprises:

(i) image-wise exposing said color photographic material to light,

(ii) developing said color photographic material, and

(iii) processing said color photographic material through a bath having bleaching capacity and which contains an aminopolycarboxylic acid-iron (III) complex salt, wherein the potential of the bath is 150 mV or less.

4,764,455

COLOR IMAGE-FORMING PROCESS

Jun Arakawa; Masahiro Okada, and Takatoshi Ishikawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

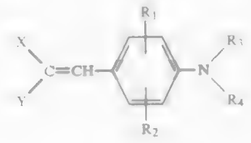
Filed Aug. 6, 1986, Ser. No. 893,746
Claims priority, application Japan, Aug. 6, 1985, 60-172968
Int. Cl.[4] G03C *7/00, 5/38, 1/46, 1/02*
U.S. Cl. 430—393 **8 Claims**

1. A color image-forming process for a silver halide color photographic material comprising a support having provided thereon at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer, and at least one blue-sensitive silver halide emulsion layer, which process comprises

dispersing in a light-insensitive hydrophilic colloid layer provided at a position nearer to the support than a blue-sensitive layer and more distant from the support than a green-sensitive layer and a red-sensitive layer in the photographic material a yellow dye represented by formula (I) and

processing the photographic material using a bleach-fixing solution containing a ferric complex of aminopolycarboxylic acid and a thiosulfate, said formula (I) being represented by

(I)



wherein

R_1 and R_2 each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a hydroxy group, a carboxy group, a substituted amino group, a carbamoyl group, a sulfamoyl group, a nitro group, or an alkoxycarbonyl group,

R_3 and R_4 each represents a hydrogen atom, an unsubstituted or substituted alkyl group, an unsubstituted or substituted alkenyl group, an unsubstituted or substituted aryl group, an acyl group or a sulfonyl group, or R_3 and R_4 may be taken together to form a 5- or 6-membered ring,

X represents a cyano group, and

Y represents an acyl group or a sulfonyl group.

4,764,456

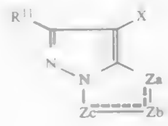
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Toshiyuki Watanabe, and Naoyasu Deguchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 28, 1986, Ser. No. 901,224
Claims priority, application Japan, Aug. 28, 1985, 60-189291
Int. Cl.[4] G03C *7/26, 7/38*
U.S. Cl. 430—550 **13 Claims**

1. A silver halide color photographic material comprising at least one red-sensitive silver halide emulsion layer, at least one green-sensitive silver halide emulsion layer and at least one blue-sensitive silver halide emulsion layer on a support, wherein at least one coupler represented by general formula (I) is contained in at least said green-sensitive emulsion layer:

(I)



wherein R^{11} represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group releasable upon coupling with an oxidation product of an aromatic primary amine developing agent; Za, Zb and Zc each represents a methine group, a substituted methine group, =N— or —NH—; either one of the Za—Zb bond or the Zb—Zc bond is a double bond with the other being a single bond; when the Zb—Zc bond is a carbon-carbon double bond, it may form an aromatic ring; when any one of R^{11}, X and the substituted methine group as represented by Za, Zb or Zc is a divalent or polyvalent group, it may form a dimer or a polymer; and the wavelength at which said red-sensitive emulsion layer shows the maximum spectral sensitivity is in the range of about 620 to about 640 nm, in the short wavelength side of spectral sensitivity as to said red-sensitive emulsion layer, the wavelength corresponding to 80% of the maximum sensitivity is in the range of about 605 to about 630 nm, the wavelength corresponding to 50% of the maximum sensitivity is in the range of about 591 to about 622 nm, the wavelength corresponding to 40% of the maximum sensitivity is in the range of about 586 to about 618 nm, the wavelength corresponding to 20% of the maximum sensitivity is in the range of about 575 to about 600 nm, and the wavelength corresponding to 10% of the maximum sensitivity is in the range of about 567 to about 586 nm, and in the long wavelength side of spectral sensitivity as to said red-sensitive emulsion layer, the wavelength corresponding to 80% of the maximum sensitivity is in the range of about 631 to about 651 nm, the wavelength corresponding to 50% of the maximum sensitivity is in the range of abot 640 to about 658 nm, the wavelength corresponding to 40% of the maximum sensitivity is in the range of about 643 to about 660 nm, the wavelength corresponding to 20% of the maximum sensitivity is in the range of about 650 to about 666 nm and the wavelength corresponding to 10% of the maximum sensitivity is in the range of about 655 to about 670 nm.

4,764,457

SILVER HALIDE PHOTOGRAPHIC EMULSION

Yuji Hotta, Hachioji; Syoji Matsuzaka, Hino, and Masanobu Miyoshi, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 052,125, May 15, 1987, abandoned, which is a continuation of Ser. No. 857,403, Apr. 21, 1986, abandoned, which is a continuation of Ser. No. 677,203, Dec. 3, 1984, abandoned. This application Oct. 15, 1987, Ser. No. 111,127
Claims priority, application Japan, Aug. 17, 1981, 56-129254
Int. Cl.[4] G03C *1/02, 1/06*
U.S. Cl. 430—569 **11 Claims**

1. A silver halide photographic emulsion having silver halide grains consisting essentially of silver chlorobromide which have been sulfur-sensitized in the presence of a silver halide solvent selected from the group consisting of potassium thiocyanate, sodium thiocyanate, and ammonium thiocyanate, wherein said silver halide solvent is present in an amount of from about 1×10^{-4} to about 1×10^{-2} mole per mole of silver chlorobromide and said sulfur-sensitization is accomplished in the absence of a gold sensitizing compound.

4,764,458

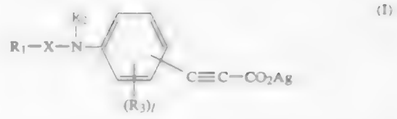
HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIAL

Hiroyuki Hirai; Hiroshi Hara, and Ken Kawata, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

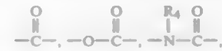
Filed Apr. 4, 1986, Ser. No. 848,364
Claims priority, application Japan, Apr. 5, 1985, 60-72187
Int. Cl.[4] G03C *1/02*
U.S. Cl. 430—620 **13 Claims**

1. A heat developable light-sensitive material comprising a support having provided thereon at least a light-sensitive silver halide, a reducing agent, a binder and an organic silver salt represented by the formula (I):

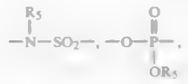
(I)



wherein R_1 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted alkynyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted heterocyclic group; R_2 represents a hydrogen atom or a substituted or unsubstituted alkyl group; R_3 represents a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted amino group, a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl group, a substituted or unsubstituted carbamoyl group, a substituted or unsubstituted sulfamoyl group, a substituted or unsubstituted alkoxycarbonyl group or a cyano group; X represents a divalent group selected from



wherein R_4 represents a hydrogen atom or a substituted or unsubstituted alkyl group, —SO_2—,



wherein R_5 represents a substituted or unsubstituted alkyl group, and



and l represents 0 or an integer of from 1 to 3; when l is 2 or 3, groups represented by R_3 may be the same or different.

4,764,459

ENZYME-LINKED IMMUNOSORBENT ASSAY (ELISA) FOR DETERMINING ANTI-BODIES AGAINST HERPES SIMPLEX VIRUS (HSV) TYPES 1 AND 2 IN HUMAN SERA

Berge Hampar, Middletown; Stephen D. Showalter, Gaithersburg, and Martin Zweig, Walkersville, all of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Dec. 28, 1984, Ser. No. 687,370
Int. Cl.[4] C12Q *1/70;* **G01N** *33/571, 33/577*
U.S. Cl. 435—5 **9 Claims**

1. An immunoassay method for determining the presence of antiboides directed against HSV-1 in a biological fluid comprising:

(a) absorbing said biological fluid with an extract from HSV-2 infected cell culture under conditions wherein intertypic cross-reactive antibodies are removed;

(b) reacting the biological fluid of step "a" with a target antigen, wherein said target antigen is a purified glycoprotein encoded by HSV-1, and wherein said target antigen specifically binds to antibodies contained in said biological fluid; and

VOL 1093 ISS 3 AUG 16 1988 UMI

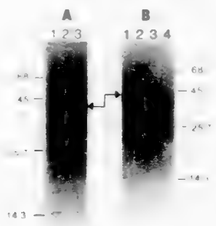
(c) measuring the amount of antibody bound to said target antigen.

4,764,460

RECOMBINANT SIGMA NS PROTEIN

Yasuhiro Furuichi, Kamakura, and Michael A. Richardson, Yokohama, both of Japan, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 8, 1985, Ser. No. 796,372
Int. Cl.[4] C12Q *1/68;* G01N *33/566;* C12N *15/00*
U.S. Cl. 435—6 12 Claims



5. A method for carrying out a hybridization probe assay for a specific (ss) RNA, which method comprises:

(a) treating a test sample solution with σ_{NS} protein to bind (ss) RNA contained in the test sample non-specifically to the σ_{NS} protein to produce a (ss)RNA-σ_{NS} complex;

(b) separating the (ss) RNA-σ_{NS} complex from the remainder of the test sample to concentrate the bound (ss) RNA;

(c) treating the separated (ss) RNA-σ_{NS} complex with a hybridization probe reagent containing a detectable signal ligand, which reagent comprises an RNA or DNA segment complementary to the sequence of the specific (ss) RNA to be assayed;

(d) separating unbound hybridization reagent; and

(e) testing the (ss) RNA-σ_{NS} complex for the presence of detectable label, which label indicates the presence of specific (ss) RNA.

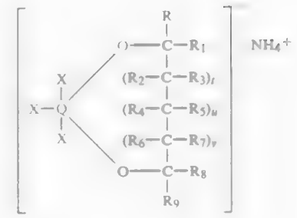
4,764,461

TELLURIUM AND SELENIUM COMPOUNDS FOR THE INDUCTION OF IN VIVO AND IN VITRO PRODUCTION OF CYTOKINES

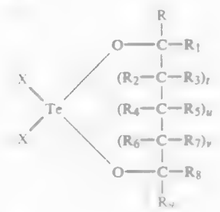
Michael Albeck, Ramat Gan, and Benjamin Sredni, Bnei Brak, both of Israel, assignors to Bar-Ilan University, Ramat-Gan, Israel

Division of Ser. No. 782,129, Sep. 30, 1985, which is a continuation-in-part of Ser. No. 712,549, Mar. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 599,511, Apr. 12, 1984, abandoned. This application Jun. 3, 1987, Ser. No. 57,800
Int. Cl.[4] C12P *21/00;* C12N *5/02*
U.S. Cl. 435—68 7 Claims

1. A method for stimulating cells to produce lymphokines, said method comprising contacting lymphokine producing cells with an amount of a compound of the formula:



or



or

TeO_2

or

$PhTeCl_3$

wherein Q is Te or Se; t is 1 or 0; u is 1 or 0; v is 1 or 0; R, R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are the same or different and are independently selected from the group consisting of hydrogen, hydroxyalkyl of 1 to 5 carbons, hydroxy, alkyl of from 1 to 5 carbon atoms, halogen, haloalkyl of 1 to 5 carbon atoms, carboxy, alkylcarbonylalkyl of 2 to 10 carbons, alkanoyloxy of 1 to 5 carbon atoms, carboxyalkyl of 1 to 5 carbon atoms, acyl, amido, cyano, amidoalkyl of 1 to 5 carbons, N-monoalkylamidoalkyl of 2 to 10 carbons, N,N-dialkylamidoalkyl of 4 to 10 carbons, cyanoalkyl of 1 to 5 carbons, alkoxy of 1 to 5 carbon atoms, alkoxyalkyl of 2 to 10 carbon atoms and —COR_{10} wherein R_{10} is alkyl of from 1 to 5 carbons; which will stimulate said lymphokine producing cells to produce increased quantities of lymphokines.

4,764,462

DETECTABLY LABELED CEPHALOSPORIN ASSAY FOR BETA-LACTAMASE

Reinhard Bredehorst, Washington, D.C.; Abdolhossen Talebian, Arlington, Va.; Charles F. Hammer, and Carl-Wilhelm Vogel, both of Washington, D.C., assignors to Georgetown University, Washington, D.C.

Filed Aug. 23, 1985, Ser. No. 768,832
Int. Cl.[4] C12Q *1/34, 1/02, 1/04, 1/06, 1/10;* C12N *9/96*
U.S. Cl. 435—18 26 Claims

1. A cephalosporin immobilized on a solid phase support at the 7-position of said cephalosporin with a beta-lactamase releasable, detectably labeled substituent at the 3-position of said immobilized cephalosporin.

4,764,463

PLATELET CYROPRESERVATION

James M. Mason, and David D. Pifer, both of Memphis, Tenn., assignors to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Oct. 30, 1986, Ser. No. 924,964
Int. Cl.[4] A61K *35/14;* A01N *1/02*
U.S. Cl. 424—101 14 Claims

1. A method for platelet cryopreservation comprising freezing platelets in contact with an aqueous saline cryoprotectant solution containing between about 4% and about 7% by weight glycerol and between about 2% and about 6% by weight glucose and containing sufficient prostacyclin to substantially completely inhibit platelet function throughout the freezing process, said cryoprotectant solution having a pH of between about 7.2 and about 7.6.

4,764,464

SEMISYNTHETIC ENZYMES: APOPROTEINS FROM HEME PROTEINS AS HYDROLASES

Haya Zemel, Des Plaines, Ill., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Mar. 20, 1986, Ser. No. 842,086
Int. Cl.[4] C12P *7/02, 7/06, 7/16, 7/40, 7/54, 7/52;* C12N *9/18;* C07K *13/00*
U.S. Cl. 435—136 6 Claims

1. A method of hydrolyzing a carboxylic ester comprising reacting a solution of said ester with water in the presence of an apoprotein whose parent is a heme protein which is myoglobin or hemoglobin in an amount effective to catalyze the hydrolysis of the ester.

4,764,465

HUMAN MONOCLONAL ANTIBODY AGAINST GROUP A RED BLOOD CELLS

Steven K. H. Foung, San Francisco; Andrew R. Raubitschek, Palo Alto; Edgar G. Engleman, Atherton; F. Carl Grumet, Stanford, and James W. Larrick, Woodside, all of Calif., assignors to Cetus Corporation and The Board of Trustees of the Leland Stanford Junior University, both of Stanford, Calif.

Continuation of Ser. No. 604,069, Apr. 26, 1984, abandoned. This application Sep. 30, 1986, Ser. No. 913,638
Int. Cl.[4] G01N *33/53;* G12N *15/00*
U.S. Cl. 435—172.2 7 Claims

1. A trioma cell line capable of secreting a human monoclonal antibody specific against A red blood cell antigen, said cell line comprising

a fusion partner produced by fusing mouse myeloma cells and non-malignant human B-lymphocytes, selecting fusion products which show stable immunoglobulin secretion and HLA surface antigen production in culture, treating the selected fusion products with a mutagen, and selecting mutagenized fusion products which retain the ability to produce HLA surface antigen, show no immunoglobulin secretion, and are unable to survive in a growth medium which allows growth of a successful fusion product formed by fusing the fusion partner with a human immunoglobulin-secreting B-lymphoid cell, and

fused with a fusion partner, an B-lymphoid cell which is derived from a blood type O human donor, activated with Epstein-Barr virus, and selected for secretion of anti-A red blood cell antibody.

4,764,466

METHOD FOR STABILIZING AN IMMOBILIZED FIBRINOLYTIC ENZYME

Katsuhiko Suyama, Kyoto; Yasunori Yabushita, Nara; Masanao Koyama, and Kunihiko Takagi, both of Kyoto, all of Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Nov. 18, 1985, Ser. No. 799,239
Claims priority, application Japan, Nov. 16, 1984, 59-242706
Int. Cl.[4] C12N *11/00, 9/96*
U.S. Cl. 435—174 16 Claims

1. A method for stabilizing an immobilized fibrinolytic enzyme, comprising contacting the surface of a carrier containing said enzyme immobilized thereon, with a basic amino acid selected from the group consisting of histidine, arginine and lysine.

4,764,467

PREPARATION OF AN INSOLUBLE BIOCATALYST

Hans-Helmut Goertz; Stefan Marcinowski, both of Ludwigshafen, and Axel Sanner, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengeselschaft,, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 504,606, Jun. 15, 1983, abandoned. This application Apr. 28, 1987, Ser. No. 45,759
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1982, 3222912
Int. Cl.[4] C12N *11/04, 11/08;* C07K *17/08*
U.S. Cl. 435—182 4 Claims

1. A process for the preparation of an insoluble biocatalyst which consists essentially of:

(1) mixing together the following components in aqueous solution or suspension:

a. biologically active enzyme, cells or cell fragments,

b. one or more water-soluble compounds possessing two or more acrylamide or meth-acrylamide groups, and

c. one or more water-soluble amines possessing two or more hydrogen atoms bonded to an amine nitrogen, said amines being selected from the group consisting of ammonia, primary aliphatic monoamines, lower aliphatic polyamines, straight chain and branched chain polyethyleneimines and polyvinylamine with the provision that the sum of the average number of acrylamide or methacrylamide groups of component B and the average number of hydrogen atoms bonded to the amine nitrogen of component C, in each case per molecule, is greater than 4,

(2) maintaining the mixture of a, b and c at a temperature of from 15 C to the highest temperature at which the biologically active enzyme, cells or cell fragments remains thermally stable, until a gel is formed over a period of from one hour to four days, and

(3) comminuting the gel.

4,764,468

PROCESS FOR STABILIZING THE ACTIVITY OF PEROXIDASE IN SOLUTION

Rainer Wehner, Gauting; Johann Mattersberger, Munich; Dagmar Klenner, Tutzing, and Gerlinde Deutsch-Weyer, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Mar. 4, 1986, Ser. No. 835,895
Claims priority, application Fed. Rep. of Germany, Mar. 14, 1985, 3509238
Int. Cl.[4] C12N *9/96, 9/08;* C12Q *1/28*
U.S. Cl. 435—188 13 Claims

8. A stabilized peroxidase enzyme preparation comprising peroxidase and 0.0005 to 2% by weight of phenol or phenol substituted with one or more substituents selected from the group consisting of C_1–C_3 lower alkyl, chlorine and bromine, wherein the peroxidase is conjugated with an immunologically active substance.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,469

STREPTOKINASE-CODING RECOMBINANT VECTORS

Joseph J. Ferretti, and Horst Malke, both of Oklahoma City, Okla., assignors to Board of Regents for the University of Oklahoma, Norman, Okla.

Filed Mar. 2, 1984, Ser. No. 585,417
Int. Cl.[4] C12N *1/20, 7/00, 9/70, 15/00;* C07H *15/12;* C12P *21/00, 21/02*
U.S. Cl. 435—216 40 Claims



1. A recombinant vector adapted for transformation of a suitable bacterial host to produce streptokinase, said recombinant vector comprising a vector into which a polydeoxyribonucleotide fragment which codes for capable of operating to cause the synthesis and secretion of streptokinase has been inserted.

26. A process for preparing a streptokinase-producing microorganism which comprises transforming into a suitable bacterial microorganism host a recombinant vector comprising a rector into which a polydeoxyribonucleotide fragment which codes for capable of operating to cause the synthesis and secretion of streptokinase has been inserted.

4,764,470

ALKALINE PROTEASE PRODUCED BY A BACILLUS

Donald R. Durham, Gaithersburg; Edmund J. Stellwag, Damascus, and Clyde G. McNamee, Gaithersburg, all of Md., assignors to Genex Corporation, Gaithersburg, Md.

Filed Feb. 5, 1986, Ser. No. 826,378
Int. Cl.[4] C12N *9/54, 1/20;* C12R *1/07*
U.S. Cl. 435—221 11 Claims

1. A process for the preparation of an enzyme having high proteolytic activity in alkaline media and exhibiting high alkaline stability which comprises cultivating Bacillus strain GX6644 or an alkaline protease producing mutant or variant thereof in a fermentation medium and recovering therefrom the enzyme produced by said Bacillus strain.

4,764,471

CONTINUOUS BIOREACTOR AND PROCESS

Michael S. Ripka, Huntingron, Conn., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jan. 4, 1984, Ser. No. 568,084
The portion of the term of this patent subsequent to Apr. 12, 2000, has been disclaimed.
Int. Cl.[4] C12N *1/16, 1/18;* C12M *1/12;* B01D *13/00*
U.S. Cl. 435—255 4 Claims

1. A process for continuously propagating yeast in a purified nutrient medium comprising molasses, comprising the steps of:

(a) continuously flowing a liquid nutrient medium comprising molasses under positive pressure through the length of a cylindrical, spirally-wound ultrafiltration membrane having a cylindrical outer surface and a cylindrical inner surface concentric therewith and which is separated from said outer surface by concentric layers of said spirally-wound ultrafiltration membrane, said inner surface defining an interior cylindrical space throughout the length of said cylindrical spirally-wound ultrafiltration membrane, whereby there is established a substantially radial flow of said nutrient medium into said interior cylindrical space, said radial flow of nutrient medium having removed therefrom solids having a molecular weight above about 30,000 daltons;

(b) establishing a continuous flow of yeast through the hollow cylindrical interior of a tubular membrane material, said tubular membrane material being arranged within the interior cylindrical space of said spirally-wound ultrafiltration membrane so as to be substantially concentric therewith and such that the inner surface of the spirally-wound ultrafiltration membrane and the outer surface of said tubular membrane are spaced apart and define an annular chamber, whereby at least a portion of the nutrient medium obtained from said spirally-wound ultrafiltration membrane passes through the outer surface of said tubular membrane for contact with the yeast within the hollow cylindrical interior of said tubular membrane, said tubular membrane having an average pore diameter of from about 0.2 to 1.2 microns;

(c) flowing an oxygen-containing gas either through said annular chamber for mixing with nutrient medium from said spirally-wound ultrafiltration membrane and/or through the hollow cylindrical interior of said tubular membrane;

(d) maintaining conditions within said hollow cylindrical interior of said tubular membrane effective to propagate said yeast in said nutrient medium therein; and

(e) continuously removing from said hollow cylindrical interior of said tubular membrane propagated yeast and nutrient medium.

4,764,472

REHYDRATABLE INSTANT ACTIVE DRIED YEAST

Seymour Pomper, Stamford; Gary Cole, Ridgefield, both of Conn., and Saul Scheinbach, Bronx, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 609,485, May 11, 1984, abandoned.
This application May 13, 1986, Ser. No. 865,909
Int. Cl.[4] C12N *1/18;* A23L *1/28*
U.S. Cl. 435—256 12 Claims

1. An instant active dry yeast containing from about 0.1 to about 2.0% by weight, dry matter basis, of a material selected from the group consisting of locust bean gum, gum ghatti and mixtures thereof, said instant active dry yeast having a moisture content of about 10% or less by weight, a leavening activity of at least about 1000 cc of evolved CO2 when measured in tests wherein said yeast is added directly to flour and other dough or batter ingredients without prior rehydration of the yeast, and a leavening activity, when measured in tests in which said yeast is separately rehydrated in 70° F. and 110° F. water prior to admixture with flour and other dough or batter ingredients, of at least about 88% of the leavening activity of said yeast when measured in tests wherein said yeast is directly added to flour and other dough or batter ingredients without prior yeast rehydration, said leavening activities herein having reference to leavening activity, in cc of evolved CO2 as determined by an EVM Straight Dough Procedure.

4,764,473

CHAMBER FOR THE TREATMENT OF CELLS IN AN ELECTRICAL FIELD

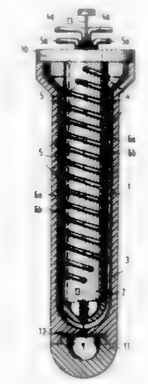
Christain Matschke, Alsdorf; William M. Arnold; Karl-Heinz Büchner, both of Jülich, and Ulrich Zimmerman, Hürtgenwald-Gey, all of Fed. Rep. of Germany, assignors to Kerforshungsaniage Julich, Fed. Rep. of Germany

Continuation of Ser. No. 609,274, May 11, 1984, abandoned.
This application Nov. 4, 1986, Ser. No. 926,861
Claims priority, application Fed. Rep. of Germany, May 13, 1983, 3317415
Int. Cl.[4] C12M *1/00, 1/24, 1/02;* C12N *13/00*
U.S. Cl. 435—287 14 Claims

1. Chamber for the treatment of cells in an electrical field, comprising:

a cylindrical internal member having non-conducting walls and an outer cover having non-conducting walls and a cylindrical inner surface which surrounds said internal member, said internal member's cylindrical outer surface having a shape matching said outer cover's cylindrical inner surface, said internal member and said outer cover having dimensions sufficient to form a space therebetween to hold a suspension containing the cells, said space being bound laterally by said internal member and said outer cover, said internal member and said outer cover having a common central longitudinal axis, said outer cover surrounding said internal member at a uniform distance from said central axis, said outer cover having an open end and a closed end, said open end being covered with a seal to enclose said space and said closed end having a second opening, said inner surface of said outer cover being a continuous surface to allow the suspension to flow unimpeded along said inner surface over a straight path from said open end to said closed end;

at least two electrodes which extend into said space in such



a way that a region bounded by said electrodes is formed between said electrodes, said electrodes developing an electrical field to which said cells are exposed, said electrodes extending into the space and surrounding the internal member by being wound around said internal member as a double helix with each of said wound electrodes having a constant pitch so that the region bounded by the electrodes forms a region in which the cells may be treated;

an accessory vessel having an opening through which fused cells can pass, said vessel being removably connected to and contiguous with a bottom surface of the outer cover so that the opening of said vessel communicates with said second opening.

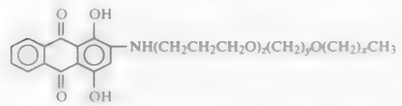
4,764,474

METHOD FOR DETECTING A TAGGING COMPOUND

Richard B. Orelup, Upper Saddle River, N.J., assignor to Morton Thiokol, Inc., Chicago, Ill.

Division of Ser. No. 920,902, Oct. 16, 1986, which is a continuation of Ser. No. 562,331, Dec. 16, 1983, abandoned. This application Jul. 24, 1987, Ser. No. 77,350
Int. Cl.[4] G01N *33/22*
U.S. Cl. 436—111 2 Claims

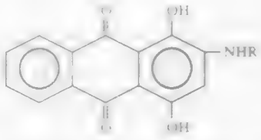
1. A method for detecting a tagging compound having a structure selected from the group consisting of:



wherein x is an integer between 0 and 3 inclusive, y is an integer between 1 and 3 inclusive, and z is 0 or 1, and



wherein x is an integer between 0 and 3 inclusive, y is an integer between 1 and 3 inclusive, and z is 0 or 1 and



wherein R is selected from linear or branched hydrocarbons having from 1 to about 5 carbon atoms, and mixtures thereof, comprising the steps of:

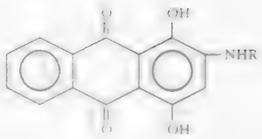
A. providing a sample of an organic liquid suspected to contain said tagging compound;

B. passing said sample through an activated alumina chromatographic column;

C. washing said organic liquid from said column with a solvent therefor;

D. washing the natural colors of said organic liquid from said column with a solvent therefor; and

E. determining whether a substantially purple zone is formed in said column, thereby indicating the presence of said tagging compounds.



wherein R is selected from linear or branched hydrocarbons having from 1 to about 5 carbon atoms, comprising the steps of:

A. providing a sample suspected to contain said tagging compound;

B. contacting said sample with a reagent comprising:

i. from about 20 weight percent to about 60 weight percent glycerine;

ii. from about 20 weight percent to about 40 weight percent water; and

iii. from about 10 weight percent to about 50 weight percent of an organic primary amine to form an admixture therewith;

C. allowing the admixture to form a sample phase and a reagent phase; and

D. determining whether said reagent phase develops a substantially bluish red or red color, thereby indicating the presence of said tagging compounds.

2. A method for detecting a tagging oompound having a structure selected from a group consisting of:

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,475

PANCREAS DEPENDANT IMMUNOASSAY FOR DETERMINING SUBPOPULATIONS OF MONOCLONAL ANTIBODIES TO SOMATOSTATIN

John C. Brown, Vancouver, Canada, assignor to The University of British Columbia, Vancouver, Canada

Filed Dec. 1, 1986, Ser. No. 936,460
Int. Cl.[4] G01N *33/567, 33/577;* A61K *37/04*
U.S. Cl. 436—548 6 Claims

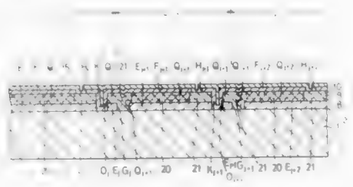
1. A method to identify a monoclonal antibody preparation which is effective in stimulating growth hormone release in a vertebrate, which method comprises assaying a candidate monoclonal antibody preparation that is immunoreactive with somatostatin by testing its ability to restore gastric inhibitory peptide (GIP)-stimulated insulin release from the pancreas in the presence of otherwise inhibiting amounts of somatostatin.

4,764,476

METHOD OF MAKING PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Division of Ser. No. 770,555, Aug. 29, 1985. This application May 19, 1987, Ser. No. 51,287
Claims priority, application Japan, Aug. 29, 1984, 59-181096; Aug. 29, 1984, 59-181097
Int. Cl.[4] H01L *31/04*
U.S. Cl. 437—4 1 Claim



1. A method of making a photoelectric conversion device in which a plurality n (where n is an integer layer than 2) of semiconductor elements U_1 to U_n are sequentially formed side by side on a substrate having an insulating surface and connected in series one after another, the semiconductor element U_i (i=1, 2, . . . n) comprising a first electrode E_i on the substrate, a non-single-crystal semiconductor laminate member Q_i on the first electrode E_i and a second electrode F_i on the non-single-crystal semiconductor laminate member Q_i, the second electrode F_{j+1} of the semiconductor element U_{j+1} (j=1, 2, . . . (n−1)) being connected via coupling portion K_j to the first electrode E_j, comprising the steps of:

forming on the substrate a first conductive layer;

forming (n−1) sequentially arranged first grooves G_1 to G_{n-1} in the first conductive layer by using a first laser beam to form therein n sequentially arranged first electrodes E_1 to E_n separated by the first grooves G_1 to G_{n-1}, respectively;

forming on the substrate a non-single-crystal semiconductor laminate layer to cover the first grooves G_1 to G_{n-1} and the first electrodes E_1 to E_n, the non-single-crystal semiconductor laminate layer having at least a first non-single-crystal semiconductor layer having a P or N conductivity type, a second non-single-crystal semiconductor layer having I conductivity and a third non-single-crystal semiconductor layer having opposite conductivity type to the first non-single-crystal semiconductor layer;

forming (n−1) sequentially arranged grooves O_1 to O_{n-1} in the non-single-crystal semiconductor laminate layer by using a second laser beam to form n sequentially arranged non-single-crystal semiconductor laminate member Q_1 to Q_n extending on the first electrode E_1 to E_n, respectively and to expose the first electrode E_1 to E_{n-1} to the outside through the grooves O_1 to O_{n-1}, respectively;

forming a second conductive layer comprising a conductive metal oxide layer and which continuously extends on the non-single-crystal semiconductor laminate members Q_1 to Q_n and extends into the grooves O_1 to O_{n-1} to provide coupling portions K_1 to K_{n-1} which are connected to the first electrodes E_1 to E_{n-1} through the grooves O_1 to O_{n-1}, respectively; and

forming (n−1) sequentially arranged isolating portions H_1 to H_{n-1} in at least the second conductive layer to form n sequentially arranged second electrodes F_1 to F_n separated by the isolating portions H_1 to H_{n-1} and opposing the first electrode electrode E_1 to E_{n-1} through the isolating portion H_1 to H_{n-1}, respectively, the second electrode F_{j+1} being connected to the first electrode E_j through the coupling portion K_j by the contact between the conductive metal oxide layer of the coupling portion K_j and the first conductive layer of the first electrode E_j; and

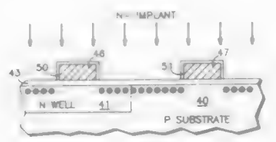
before or after the formation of the isolating portions H_1 to H_{n-1} selectively for annealing by light having a wavelength greater than 500 nm to the region between the first electrode E_i and the second electrode F_i of the non-single-crystal semiconductor laminate member Q_i.

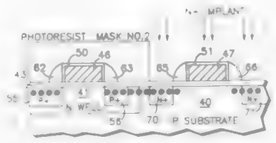
4,764,477

CMOS PROCESS FLOW WITH SMALL GATE GEOMETRY LDO N-CHANNEL TRANSISTORS

Kuang-Yeh Chang, Austin, and Charles F. Hart, Pflugerville, both of Tex., assignors to Motorola, Inc., Del.

Filed Apr. 6, 1987, Ser. No. 34,197
Int. Cl.[4] H01L *27/02, 29/78*
U.S. Cl. 437—29 3 Claims





1. A process for forming a lightly doped drain (LDD) in a complementary MOS circuit, comprising the sequential steps of:

forming a first gate for a first MOS device on a first area of first conductivity type of an integrated circuit substrate, and forming a second gate for a second MOS device on a second area of second conductivity type of the substrate;

selectively forming a barrier material over the first and second gates;

implanting a lightly doped material of the first conductivity type into an upper surface of the first and second areas of the substrate adjacent to but not beneath the first and second gates;

forming a first disposable barrier material over selected areas

of the substrate including the second gate and excluding the first gate;

implanting heavily doped source/drain regions along side edges of the first gate while the second gate is protected by the first disposable barrier material;

removing the first disposable barrier material from over the selected areas of the substrate; forming oxide sidewall spacers along side edges of the first and second gates;

forming a second disposable barrier material over selected areas of the substrate including the first gate and excluding the second gate;

implanting heavily doped source/drain regions along oxide sidewall spacer edges of the second gate; and

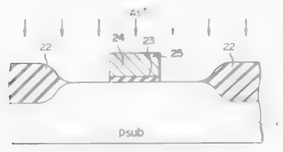
removing the second disposable barrier material from over the selected areas of the substrate.

4,764,478

METHOD OF MANUFACTURING MOS TRANSISTOR BY DUAL SPECIES IMPLANTATION AND RAPID ANNEALING

Yoichi Hiruta, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 20, 1986, Ser. No. 932,523
Claims priority, application Japan, Dec. 2, 1985, 60-270897
Int. Cl.[4] H01L *21/265*
U.S. Cl. 437—29 17 Claims





1. A method for manufacturing a semiconductor device comprising the steps of:

depositing an insulation layer on a surface of a semiconductor substrate;

mounting a polycrystalline silicon layer on said insulation layer;

ion-implanting boron at a region in the proximity of the surface of said polycrystalline silicon layer; and

after said ion-implanting of boron, ion-implanting arsenic at said region at a dose smaller than that of said boron to effect a uniform redistribution of said boron in said polycrystalline silicon layer.

4,764,479

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE AND METHOD OF MANUFACTURING THE SAME

Yasunobu Koea, and Kazuhiro Komori, both of Kodaira, Japan, assignors to Hitachi, Limited, Tokyo, Japan

Division of Ser. No. 668,675, Nov. 5, 1984, abandoned, which is a division of Ser. No. 428,954, Sep. 30, 1982, abandoned, which is a division of Ser. No. 186,739, Sep. 12, 1980, Pat. No. 4,373,249. This application Aug. 15, 1986, Ser. No. 897,391
Claims priority, application Japan, Feb. 20, 1980, 55-18983
Int. Cl.[4] H01L *29/78*
U.S. Cl. 437—49 8 Claims



1. a method of fabricating a semiconductor memory device, including: a memory array portion formed on a semiconductor substrate at a first location of one main surface thereof and including a plurality of MIS memory transistors, said MIS memory transistors being respectively formed at first areas of said first location and each having a floating gate electrode and a control gate electrode overlying said floating gate electrode; and a peripheral circuit portion formed at a second location of said semiconductor substrate different from said first location in association with said memory array portion and including a plurality of MIS transistors and wiring lines, said MIS transistors being respectively formed at second areas of said second location and each having a gate electrode, comprising the steps of:

forming a first insulating film on said semiconductor substrate at said first location and said second location;

forming a first layer of conductive material on said first insulating film at said first location and said second location;

patterning said first layer of conductive material on said first insulating film at said second location so as to form at least some of said gate electrodes;

forming a second insulating film on said first layer of conductive material;

forming a second layer of conductive material on said second insulating film at said first location and at said second location;

patterning said second layer of conductive material, said second insulating film, said first layer of conductive material and said first insulating film at said first location using a photoresist film as a mask so as to form said control gate electrode and said floating gate electrode of said memory array portion; and

patterning said second layer of conductive material at said second location.

4,764,480

PROCESS FOR MAKING HIGH PERFORMANCE CMOS AND BIPOLAR INTEGRATED DEVICES ON ONE SUBSTRATE WITH REDUCED CELL SIZE

Madhukar B. Vora, Los Gatos, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 946,108, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 718,392, Apr. 1, 1985, abandoned. This application Oct. 23, 1987, Ser. No. 113,417
Int. Cl.[4] H01L *21/22, 21/225*
U.S. Cl. 437—054 9 Claims

1. A process for forming MOS and bipolar devices on the same integrated circuit substrate in which there have been formed in selected locations buried layers, an epitaxial silicon layer and isolation regions in said epitaxial layer surrounded by field oxide to isolate a bipolar transistor active areas for base regions, bipolar transistor collector contact regions and active

VOL 1093 ISS 3 AG 16 1988 UMI

regions for NMOS devices and active regions for PMOS devices comprising the steps of:

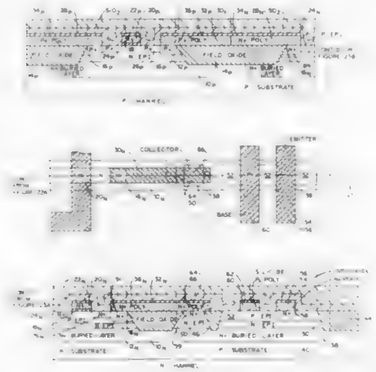
(1) doping the base regions and predetermined MOS active regions with impurities of a conductivity type selected to create the desired conductivity for a base region for a selected type of bipolar transistor and for a channel region for a selected type of MOS transistor;

(2) forming a gate oxide layer over all MOS channel regions while preventing oxidation of the isolation regions for all bipolar devices;

(3) depositing a layer of polysilicon over the surface of said substrate;

(4) doping selected areas of said polysilicon with N type impurities and selected areas with P type impurities;

(5) etching the doped polysilicon areas using a mask so as to



form source and drain contacts and gate contacts for MOS devices and emitter, base and collector contacts for bipolar devices and interconnects between transistor contacts and other nodes in the circuit to form a user defined circuit and wherein each of said contacts has an area over its associated transistor active area which is smaller than the area needed to form the smallest possible contact window using the process used to make the transistors plus the associated alignment tolerances on all sides of said contact window;

(6) doping regions in said epitaxial layer adjacent the gate electrodes of a first selected group of MOS devices with P type impurities and a second selected group of MOS devices with N type impurities;

(7) heating the structure to drive impurities from said doped polysilicon contacts into the underlying epitaxial layer.

4,764,481

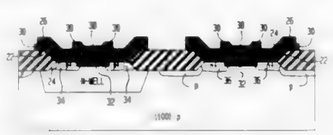
GROWN SIDE-WALL SILICIDED SOURCE/DRAIN SELF-ALIGN CMOS FABRICATION PROCESS

Nadeem S. Alvi, and Paul E. Stevenson, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 24, 1987, Ser. No. 88,238

Int. Cl.[4] H01L *21/225*

U.S. Cl. 437—56 8 Claims



1. A process for making CMOS devices comprising the steps of:

preparing a wafer which includes at its front surface p-type silicon and n-type silicon regions spaced apart by field-oxide regions;

depositing over the front surface a first refractory silicidable layer;

implanting donor ions and acceptor ions selectively into the portions of the first layer overlying p-type regions and n-type regions, respectively;

depositing a masking layer over the first layer;

patterning the masking layer and the first layer to leave corresponding openings in the masking layer and the first layer for exposing portions of the p-type regions and n-type regions to serve as channels of the CMOS device;

heating the wafer in an oxidizing atmosphere to form a layer of gate oxide over the exposed portions of the n-type and p-type regions, to form oxide spacers along the side walls of the openings in the first layer, and to diffuse the implanted ions out of the first layer into the underlying portions of the n-type and p-type regions to form source/-drain regions of the CMOS devices with the overlying portions of the first layer serving as source/drain electrodes to such regions;

depositing a polycrystalline silicon layer over the front surface of the wafer; and

patterning the polycrystalline silicon layer to form gate electrodes which overlie and contact the gate oxide layer but which are electrically isolated from first layer portions by the oxide spacers and by portions of the masking layer.

4,764,482

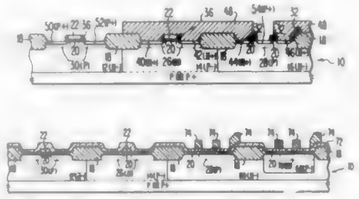
METHOD OF FABRICATING AN INTEGRATED CIRCUIT CONTAINING BIPOLAR AND MOS TRANSISTORS

Sheng T. Hsu, West Windsor Township, Mercer County, N.J., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 933,559, Nov. 21, 1986, abandoned. This application Nov. 23, 1987, Ser. No. 124,129

Int. Cl.[4] H01L *21/425*

U.S. Cl. 437—57 7 Claims



1. A method of fabricating an integrated circuit including at least one complementary metal-oxide-semiconductor device and at least one bipolar transistor in the same semiconductor substrate of a first conductivity type, comprising the steps of:

(a) forming a plurality of spaced regions of a second conductivity type adjacent a surface of the semiconductor substrate, thereby defining at least one region of a first conductivity type therebetween;

(b) simultaneously forming pocket regions in the region of a first conductivity type, for receiving device regions where a metal-oxide-semiconductor device having a channel region of a first conductivity type is to be located, and a base region in the region of a second conductivity type where a bipolar transistor is to be located, said base region being of a first conductivity type;

(c) forming pocket regions in a region of a second conductivity type, for receiving device regions where a metal-oxide-semiconductor device having a channel region of a second conductivity type is to be located;

(d) simultaneously forming source and drain device regions for the metal-oxide-semiconductor device having a channel region of a first conductivity type and an emitter region and a collector contact doped region for the bipolar transistor to be located in the region of a second conductivity type; and

(e) simultaneously forming source and drain device regions for the metal-oxide-semiconductor device having a channel region of the second conductivity type and a base contact region for the bipolar transistor located in the region of a second conductivity type.

4,764,483

METHOD FOR BURYING A STEP IN A SEMICONDUCTOR SUBSTRATE

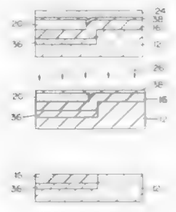
Genshu Fuse, Hirakata; Kenji Tateiwa, Neyagawa; Ichiro Nakao, Kadoma, and Hideaki Shimoda, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 6, 1987, Ser. No. 82,313

Claims priority, application Japan, Sep. 19, 1986, 61-223058

Int. Cl.[4] H01L *21/76*

U.S. Cl. 437—67 8 Claims



1. A method for burying a step in a semiconductor substrate comprising:

forming a first film on a lower part and upper part of said step;

forming a photoresist layer with substantially equal thickness to the height of said step on said first film at a portion corresponding to said lower part of said step;

forming a second film on said photoresist layer and said first film;

forming a third film substantially flatly on said second film;

removing said third and second films by etching; and

removing said first film and photoresist layer.

4,764,484

METHOD FOR FABRICATING SELF-ALIGNED, CONFORMAL METALLIZATION OF SEMICONDUCTOR WAFER

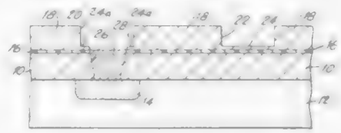
Roy Mo, Flushing, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Oct. 8, 1987, Ser. No. 107,572

Int. Cl.[4] H01L *21/88, 21/302*

U.S. Cl. 437—203 11 Claims

1. A process for fabricating an integrated circuit comprising the steps of providing a substrate; forming in sequence a first dielectric layer, a thin silicon layer, and a second dielectric layer over an upper surface of said substrate; forming at least one trench in said second dielectric leaving a remaining thin layer of said second dielectric layer overlying said thin silicon layer at the bottom of the trench so formed; etching through a portion of said remaining thin layer, said underlying thin silicon layer and said underlying first dielectric layer, thereby to form a contact hole extending to the upper surface of said substrate, a portion of said thin dielectric layer remaining over a portion of said thin silicon layer at the upper part of said contact hole; thereafter, utilizing said remaining portion of said thin dielectric layer as a mask, selectively depositing a metal into said contact hole; thereafter removing said remaining portion of said thin dielectric layer leaving said portion of said thin silicon layer exposed; and thereafter selectively depositing a second metal onto said exposed part of said thin silicon layer





and the upper surface of said metal-filled contact hole, thereby to fill said trench with said second metal.

4,764,485

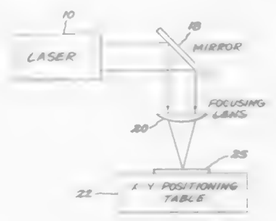
METHOD FOR PRODUCING VIA HOLES IN POLYMER DIELECTRICS

James A. Loughran, Scotia; James G. McMullen, Pattersonville, and Alexander J. Yerman, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 5, 1987, Ser. No. 617

Int. Cl.[4] C23F *1/02;* **B44C** *1/22*

U.S. Cl. 437—225 11 Claims



1. A method for producing via holes in a polymer film without employment of a mask, said method comprising the steps of:

coating said film with a thin conductive layer;

successively irradiating single spots at desired locations on said layer, directly above where said via holes are desired, with a burst of electromagnetic energy, each said burst of energy being focussed on a selected one of said spots at a time and being of a level sufficient to evaporate portions of said layer thereat and thereby create openings in said layer; and

plasma etching said film so as to create said via holes therein directly below said openings.

VOL 1093 ISS 3 AG 16 1988 UMI

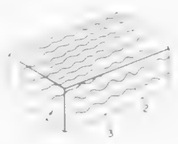
4,764,486
SINTERED GLASS-POWDER PRODUCT
Masayuki Ishihara, Neyagawa, and Keizo Makio, Shijonawate, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jan. 16, 1987, Ser. No. 4,198
Claims priority, application Japan, Jan. 23, 1986, 61-13357; Mar. 15, 1986, 61-57341
Int. Cl.[4] C03C *10/00*
U.S. Cl. 501—9 7 Claims

1. A sintered glass-ceramic body consisting essentially of 48 to 63 wt % of SiO_2, 10 to 25 wt % of Al_2O_3, 10 to 25 wt % or MgO and 4 to less than 10 wt % of B_2O_3, wherein said material melts at a temperature below 1450° C. and is sinterable at a temperature below 900° C. where said glass ceramic body has a microstructure that includes a primary crystalline phase alpha-cordierite and a secondary crystalline phase magnesium aluminum silicate ($MgO.Al_2O_3.4SiO_2$) which are homogeneously dispersed in said glass ceramic body.

4,764,487
HIGH IRON GLASS COMPOSITION
Albert Lewis, Covina, Calif., assignor to Glass Incorporated International, Chino, Calif.
Filed Aug. 5, 1985, Ser. No. 762,411
Int. Cl.[4] C03C *3/087*
U.S. Cl. 501—70 3 Claims

1. A batch blend to produce a glass composition useful for forming glass fibers comprising:
basalt in an amount ranging from about 55 to about 95 weight percent;
sand in an amount ranging from about 5 to about 22 weight percent;
soda ash in an amount ranging from about 5 to about 22 weight percent;
limestone in an amount ranging from about 5 to about 10 percent;
pot ash in an amount less than about 9 weight percent; and
zirconia in an amount less than about 10 weight percent.

4,764,488
HIGH TOUGHNESS CERAMIC COMPOSITES CONSISTING OF CERAMIC BODY REINFORCED WITH METAL FIBER
Makoto Saito, and Takao Mizoguchi, both of Hyogo, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan
Filed Sep. 24, 1986, Ser. No. 911,213
Claims priority, application Japan, Sep. 24, 1985, 60-211250
Int. Cl.[4] C04B *35/02*
U.S. Cl. 501—95 6 Claims



1. A high toughness ceramic composite of the fiber reinforced type, comprising:
metal fiber integrally and substantially undirectionally anchored in a ceramic matrix and having a shape of triangular waves forming bent portions alternately on the opposite sides thereof with an angle θ of said bent portions in a range between 60° and 165°, a ratio of d/H (a ratio of the amplitude H of said waves to the diameter d of said fiber) in a range between 0.025 and 0.6, and a ratio of ρ/d (a ratio of the radius of curvature ρ at the apex of said bent portion to the fiber diameter d) greater than 1, inclusive.

4,764,489
PREPARATION OF MIXED BORON AND ALUMINUM NITRIDES
John D. Bolt, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 10, 1987, Ser. No. 131,380
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—96 15 Claims

1. A process for preparing a ceramic composition comprising intimately mixed aluminum nitride and boron nitride, said process comprising
(i) reacting a boron nitrogen compound which contain the elements boron, nitrogen, hydrogen and, optionally, carbon and silicon, with an organoaluminum compound which contain the elements aluminum, carbon, hydrogen and, optionally, nitrogen to form an intermediate; and
(ii) heating said intermediate by raising the temperature from about 250° C. up to about 1400° to 2000° C. to form said ceramic composition.

13. A process for making a ceramic composition comprising shaping the intermediate produced by reacting a boron nitrogen compound which contains the elements boron, nitrogen, hydrogen and, optionally, carbon and silicon, with an organoaluminum compound which contains the elements aluminum, carbon, hydrogen and optionally, nitrogen, in a solvent for the reactants, pyrolyzing said shaped intermediate by heating at a rate not exceeding 50°/min to a temperature of at least about 250°, and heating the pyrolyzate at a temperature of about 1400° to 2000° to form said ceramic composition.

4,764,490
PROCESS FOR PREPARATION OF SINTERED SILICON NITRIDE
Akira Yamakawa; Masaya Miyake, and Takao Nishioka, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Apr. 8, 1986, Ser. No. 849,330
Claims priority, application Japan, Apr. 8, 1985, 60-73898
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—97 39 Claims

1. A process for preparing a sintered silicon nitride comprising the steps of:
providing a powder of a sintering agent as a powder mixture, prepared by co-precipitation, consisting of an oxide and/or hydroxide of at least two kinds of metals selected from the group consisting of Mg, Al, Si, Sc, T, lanthanide, Ti, Zr and Hf;
mixing a powder of silicon nitride with the powder of the sintering agent;
compacting the obtained mixture; and
sintering the compacted mixture in a non-oxidizing atmosphere.

4,764,491
LOW TEMPERATURE SINTERING OF YTTRIA STABILIZED ZIRCONIA WITH LANTHANA BORATE ADDITIONS
Tariq Quadir, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 11, 1987, Ser. No. 48,561
Int. Cl.[4] C04B *35/48*
U.S. Cl. 501—103 8 Claims

1. A method of sintering powdered yttria stabilized zirconia ceramic material, comprising the steps of:
combining powdered yttria stabilized zirconia material with additions of powdered lanthana borate material to produce a powder mixture comprising yttria stabilized zirconia and lanthana borate, said additions of powdered lanthana borate range between about two weight percent to about ten weight percent of said powder mixture;
forming said powder mixture into a green form suitable for sintering; and
heating said green form to a temperature between about 1385° C. and about 1425° C. for a duration of about two hours;
effective to produce a sintered yttria stabilized zirconia ceramic material characterized by a fine microstructure having an average grain size between about 0.1 to about 0.35 microns and good low temperature stability.

4,764,492
LEAD CALCIUM TITANATE PIEZOELECTRIC CERAMIC ELEMENT
Kiyoshi Takeuchi; Dragan Damjanovic, and Sei-Joo Jang, all of State College, Pa., assignors to North American Philips Corporation, New York, N.Y.
Filed Jun. 10, 1986, Ser. No. 872,776
Int. Cl.[4] C04B *35/46*
U.S. Cl. 501—136 5 Claims



1. A method of producing a sintered piezoelectric body having a composition of the formula $Pb_{1-x}Ca_xTi_{1-y}(Co_{\frac{1}{4}}W_{\frac{1}{4}})_yO_3+0.005-0.02(A)$ wherein A is a member selected from the group consisting of MnO, MnO_2, NiO and Nb_2O_3 and mixtures thereof, wherein $x=0.3-0.4$ and $0.04<y\leqq0.06$
said piezoelectric body having a high thickness coupling factor k_t, a low planar coupling factor k_p, a high dielectric constant K, a high piezoelectric constant d_{33} and a low dissipation factor D, said method comprising:
(a) calcining a ground mixture of the oxides PbO, CaO, TiO, $Co(OH)_2$, WO_3 and at least one of MnO or MnO_2 or of the precursors of said oxides in amounts adapted to form said composition and sintering the resultant calcined mixture in an atmosphere consisting essentially of 10–20% of oxygen and 90–80% of nitrogen at a temperature of 1000° C.–1200° C. for a period of 5 hours–30 hours.

4,764,493
METHOD FOR THE PRODUCTION OF MONO-SIZE POWDERS OF BARIUM TITANATE
Edward Lilley, Ithaca, and Raja R. Wusirika, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jun. 16, 1986, Ser. No. 874,460
Int. Cl.[4] C04B *35/46*; C01G *23/00*
U.S. Cl. 501—137 8 Claims

1. A method of producing $BaTiO_3$ powders comprising reacting barium hydroxide with titania having a particle size not greater than 0.1 micron, said reaction being conducted in a protic solvent at a temperature of at least 100° C. for a period of at least 48 hours to produce $BaTiO_3$ having a density of at least 5.7 g/cc.

5. A method of producing $BaTiO_3$ powder comprising reacting barium hydroxide with a titanium alkoxide in a protic solvent at a temperature of about the normal boiling temperature of the alcohol corresponding to the alkoxide for a period of at least about 240 hours to produce $BaTiO_3$ having a density of at least 5.7 g/cc.

4,764,494
DIELECTRIC CERAMIC COMPOSITIONS AND PROCESS FOR PRODUCING THE SAME
Ken-ichi Sakabe, Yokohama; Shingo Kimura, Ebina, and Kageyasu Akashi, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 855,345, Apr. 24, 1986, abandoned. This application Jan. 11, 1987, Ser. No. 59,190
Claims priority, application Japan, Apr. 26, 1985, 60-88909; Sep. 18, 1985, 60-204378; Sep. 25, 1985, 60-210311
Int. Cl.[4] C04B *35/46*, *35/49*
U.S. Cl. 501—138 28 Claims

1. A dielectric ceramic composition consisting essentially of 87.5 to 99.6 mole % of barium titanate as a first component, 0.2 to 7.0 mole % of copper oxide as a second component, and 0.2 to 5.5 mole % of at least one third component selected from the group consisting of lithium oxide, zinc oxide, cadmium oxide and iron oxide, with the proviso that the amounts of said first and second components are 89.0 mole % or more and 5.5 mole % or less respectively when said at least one third component is lithium oxide, and 90.0 mole % or more and 5.0 mole % or less respectively when said at least one third component is iron oxide.

4,764,495
PROCESS FOR SURFACE TREATING LAYERED LATTICE SILICATES AND RESULTANT PRODUCTS
Camilla A. Rice, Sandersville, Ga., assignor to E.C.C. America Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 699,120, Feb. 8, 1985, abandoned. This application Nov. 12, 1986, Ser. No. 930,278
Int. Cl.[4] B01J *29/06*
U.S. Cl. 502—62 10 Claims

1. A method for surface treating a layered lattice silicate clay mineral which comprises the steps of:
pretreating said layered lattice silicate in dry, particulate form with a hydrogen-containing gas to activate the surface thereof for reaction with functional group-containing organic compounds, maintaining the so treated silicate in a sufficiently dry state to avoid loss of activity, until further reacted; and
reacting the so treated silicate with a functional group-containing organic compound, said group being a polymerizable organic moiety, to functionalize the same and form a surface-modified product.

4,764,496
THERMAL TRANSFER RECORDING MEDIUM HAVING AN IMPROVED HOT-STICKING RESISTANCE
Hiroshi Narui, Uji; Terumi Shinohara, Joyo; Denichiro Gotoh, and Shinya Yamamoto, both of Kyoto, all of Japan, assignors to Oike Industrial Co., Ltd., Kyoto, Japan
Filed Nov. 19, 1986, Ser. No. 932,420
Claims priority, application Japan, Nov. 20, 1985, 60-260774
Int. Cl.[4] B41M *5/035*, *5/26*
U.S. Cl. 503—227 14 Claims

8. A method for producing print images by using a thermal transfer recording medium which comprises the steps of:
(a) using as a recording medium a thermal transfer recording medium consisting essentially of a thermoplastic resin film as a substrate, a thermally transferable ink layer consisting of an inorganic substance having a melting temperature or decomposition temperature not less than 300° C. and provided directly on a second surface of the film which is to be brought into contact with a thermal head, said inorganic substance being a member selected from the group

VOL 1093 ISS 3 AG 16 1988 UMI

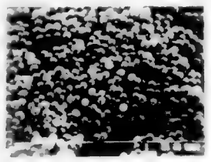
consisting of oxides, nitrides, carbides and carbon and provided at a thickness of 60 to 1000 Å;
(b) bringing said thermally transferable ink layer of the recording medium into contact with a receiving medium; and
(c) heating localized areas of said thermally transferable ink layer by means of said thermal head which is brought into contact with said deposition layer of the recording medium, thereby forming print images on said receiving medium.

4,764,497

AMORPHOUS, SPHERICAL INORGANIC COMPOUND AND PROCESS FOR PREPARATION THEREOF

Shigeki Yuasa; Minahiro Okabayashi, both of Fujisawa; Hideki Ohno; Katsumi Suzuki, both of Sagamihara, and Koshi Kusumoto, Yokohama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Division of Ser. No. 452,735, Dec. 23, 1982, Pat. No. 4,567,030. This application Dec. 3, 1985, Ser. No. 804,181
Claims priority, application Japan, Dec. 23, 1981, 56-206862
Int. Cl.[4] C01B *33/20*
U.S. Cl. 502—235 21 Claims



1. Spherical particles comprising an amorphous composition composed of (1) silica, (2) an oxide of a metal from Group IV of the Periodic Table and (3) at least one oxide of a metal selected from the group consisting of metals of Group I, Group II and Group III of the Periodic Table, and containing 0.01 to 20 mole %, based on silica (1), of said components (2) and (3), said components (1), (2) and (3) being present in the chemically bonded state and being inseparable from one another, said particles having a particle size of 0.1 to 1.0 μm and a narrow particle size distribution having a standard deviation value smaller than 1.30.

4,764,498

SILICA-CONTAINING SHAPED ARTICLES AND A PROCESS FOR THEIR PREPARATION

Adolf Wissner; Josef Haydn, both of Leverkusen, and Udo Birkenstock, Ratingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 453,027, Dec. 27, 1982. This application Oct. 28, 1985, Ser. No. 791,890
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1982, 3200483
Int. Cl.[4] B01J *20/10, 21/14*
U.S. Cl. 502—251 26 Claims

7. A silica-containing shaped article comprising a base material surrounded by a firmly adhering layer consisting essentially of porous silica and a catalytically active substance or precursor thereof, said base layer having an absorbency less than 10 g of water per 100 g, a BET surface area below 5 m^2/g and a thickness of 10 to 3,000 μm.

9. A silica-containing shaped article according to claim 7, which further comprises a second layer disposed between the base material and said first layer.

21. A silica-containing shaped article produced by a process comprising applying a mass selected from the group consisting of silica sol, a mixture containing water, silica sol and waterglass, a mixture containing water and waterglass and a mixture containing water and silica sol, said silica sol containing finely pulverulent water-insoluble silica having a primary particle size in a range of 1 to 200 nm and an agglomerate size withing a range of 0.5 to 100 μm, to a base material having an absorbency of less than 10 g of water per 100 g and a BET surface area of less than 5 m^2/g, while the temperature of the base material is, at the start of the application of the silica sol or the mixtures, below the softening point of the base material and, as the application of the silica sol or of the mixtures proceed, above the boiling temperature of water, and adding the silica sol or the mixtures in such a way that the water evaporates rapidly and the water content of the base material is always less than 5% by weight.

4,764,499

METHOD FOR PRODUCING DUAL COLLOID CATALYST COMPOSITION

Thomas H. Vanderspurt, East Amwell Township, Hunterdon County; Michael A. Richard, Fanwood, and Tessie M. Che, Westfield, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 10, 1984, Ser. No. 639,438
Int. Cl.[4] B01J *21/08, 31/00, 27/22, 27/24*
U.S. Cl. 502—258 13 Claims

1. A method for preparing catalyst compositions which method comprises:
(a) forming a gel or suspension by admixing (i) one or more transition metal cyano-containing anionic-complex solutions wherein at least one solution contains one or more reducible transition metals selected from the Groups IB, IIB, VIB, VIIB, and VII of the Periodic Table of the Elements, wherein the cations accompanying the anionic complexes contain one or more alkali metal ions, with (ii) one or more solutions containing metal cations wherein at least one of the metals is a nonreducible metal selected from the group consisting of Cr, Al, Th, U, the lanthanides, and elements of Group IIA of the Periodic Table of the Elements;
(b) heating the resulting gel, or suspension, under reflux conditions, to a temperature of about 90° C. to about 150° C. for an effective amount of time to allow hydrolysis and polymerization to occur;
(c) separating the resulting solid;
(d) modifying the resulting solid by ion-exchanging cations of one or more alkali and alkaline-earth metals with cations of one or more metals selected from Groups IA, IIA, IB, IIB, IIB, IVB, and VIII of the Periodic Table of the Elements; NH_4^+ or quarternary ammonium cations;
(e) drying the ion-exchanged resulting solid; and
(f) heating it at less than 1° C./minute to between about 315° C. and 500° C. in a hydrogen-containing atmosphere and holding it at that temperature for an effective amount of time, thereby resulting in an active catalyst characterized as comprising:
(A) from about 15 to about 85 wt.% of crystallites selected from the group consisting of (i) crystallites of one or more transition metals and (ii) crystallites of reducible transition metal carbides, nitrides, and oxides, and mixtures thereof, said transition metal being selected from those reducible metals from Groups IB, IIB, VIB, VIIB, and VIII of the Periodic Table of the Elements, wherein at least 80% of the crystallites have a diameter, d, between about 25 Å and 500 Å with the proviso that the crystallite size distribution of at least about 80% of these be expressed by the relationship $0.5D<d<2D$ where D is the median of the diameters of this 80%; and
(B) from about 15 to about 85 wt.% of an amorphous nonreducible promoter phase interspersed with the metal crystallites, and containing compounds of at least one element selected from the group consisting of Cr, Al, Si, Th, U, the lanthanides and Group IA, IIA, IIB, IVB, and VB of the Periodic Table of the Elements, wherein the promoter phase is comprised of particles of which at least about 80% have a diameter between about 15 Å and 1500 Å wherein the median diameter (D) of the metal crystallites and the median diameter of the 80% of the promoter particles do not differ by more than a factor of about 20.

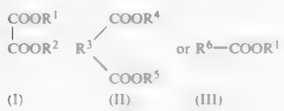
4,764,500

THERMOSENSITIVE RECORDING SHEET

Shingo Araki, Settsu; Ryugo Maeda, Kobe; Masaji Inagaki, Shiya; Teijiro Kitso, Tondabayashi, and Shigeki Ueno, Nishinomiya, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed May 13, 1987, Ser. No. 49,327
Claims priority, application Japan, May 16, 1986, 61-110693; Sep. 19, 1986, 61-219134; Nov. 27, 1986, 61-280658; Apr. 6, 1987, 62-82942; Apr. 6, 1987, 62-82943
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—208 16 Claims

1. A thermosensitive recording sheet having a coated film containing a color-forming lactone compound, an acidic substance and a sensitizer, said sensitizer being at least one aliphatic carboxylic acid ester represented by the formula



(I) (II) (III)

wherein R^1 and R^2 are identical or different and each represents an alkyl group having 1 to 20 carbon atoms, a cycloalkyl group, an aryl group, a group of the formula $—C_nH_{2n}—Ar$ in which n is an integer of 1 to 8 and Ar is an aryl group, or a group of the formula $—C_nH_{2n}—CO—Ar$ in which n and Ar are as defined; R^3 represents a group of the formula $—C_nH_{2n}—$ in which n is as defined; R^4 and R^5 are identical or different and each represents an alkyl group having 1 to 20 carbon atoms, a cycloalkyl group, a group of the formula $—C_nH_{2n}—Ar$ in which n and Ar are as defined, or a group of the formula $—C_nH_{2n}—CO—Ar$ in which n and Ar are as defined; and R^6 represents an alkyl group having 2 to 6 carbon atoms and substituted by a halogen atom selected from chlorine, bromine and iodine atoms; with the proviso that the alkyl group having 1 to 20 carbon atoms for R^1, R^2, R^4 and R^5 may be substituted by a halogen atom, and the cycloalkyl group, the aryl group and Ar in $—C_nH_{2n}—Ar$ and $—C_nH_{2n}—CO—Ar$ may be substituted by an alkyl, cycloalkyl, aryl, aralkyl, phenacyl, alkyloxy, aryloxy, aralkyloxy, arylcarbonyl, arylsulfonyl, nitro or ammoniumsulfonic acid group or a halogen atom.

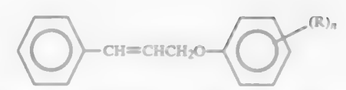
4,764,501

HEAT-SENSITIVE RECORDING MATERIAL

Haruhiko Ikeda; Masahiro Higuchi, and Shigetoshi Hiraishi, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

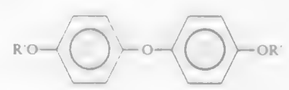
Filed Jul. 14, 1987, Ser. No. 73,288
Claims priority, application Japan, Jul. 14, 1986, 61-166498; Oct. 11, 1986, 61-241790
Int. Cl.[4] B41M *5/18*
U.S. Cl. 503—209 7 Claims

1. In a heat-sensitive recording material comprising a support and formed on the support a heat-sensitive recording layer comprising a colorless or light-colored dye precursor, a color developer capable of developing a color of said dye precursor with heating, and a sensitizer, the improvement wherein said sensitizer is at least one member selected from the group consisting of a compound of the formula:



(I)

wherein R is a halogen atom, a lower alkoxy group, or a lower alkyl group; and n is zero or an integer of 1 to 3, and a compound of the formula:



(II)

wherein R' is a lower alkyl group.

4,764,502

INTRAGONADAL REGULATORY PROTEIN

Gere S. diZerega, Pasadena, Calif., assignor to University of Southern California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 475,416, Mar. 15, 1983, abandoned, and Ser. No. 661,002, Oct. 11, 1984, abandoned. This application Sep. 25, 1986, Ser. No. 912,445
Int. Cl.[4] A61K *37/00*
U.S. Cl. 514—2 10 Claims

1. A process for the inhibitation of fertility in a mammal, comprising administering to said mammal a substantially purified protein having the biological effect of inhibiting aromatase activity in a mammalian biological system, as defined by the extent of the conversion of androgens to estrogens in the essential absence of the inhibition of the level of FSH in the biological system.

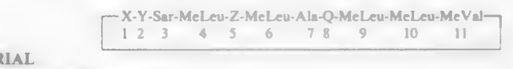
4,764,503

NOVEL CYCLOSPORINS

Roland Wenger, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

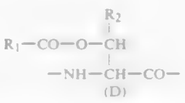
Continuation of Ser. No. 932,760, Nov. 19, 1986, abandoned, which is a continuation of Ser. No. 713,259, Mar. 19, 1985, abandoned. This application May 13, 1987, Ser. No. 49,746
Int. Cl.[4] A61K *37/02;* C07K *5/12*
U.S. Cl. 514—11 6 Claims

1. A cyclosporin of formula I



(I)

wherein
X is —MeBmt— or —dihydro—MeBmt—,
Y is —αAbu—, —Ala—, —Thr—, —Val— or —Nva—,
Z is —Val— or —Nva—, and
Q is a residue of formula II



(II)

wherein R_1 is hydrogen, C_{1-4}alkyl or phenyl and R_2 is hydrogen or methyl.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,504
ATRIAL NATRIURETIC/VASODILATOR POLYPEPTIDES

Lorin K. Johnson, Castro Valley, Calif.; Steven A. Atlas, New York, N.Y.; Brian J. McCarthy, Los Altos Hills, Calif.; John H. Laragh, New York, N.Y., and John A. Lewicki, Sunnyvale, Calif., assignors to Biotechnology Research Associates J.V., Mountain View, Calif.

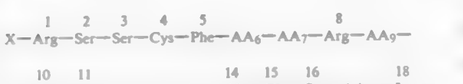
PCT No. PCT/US85/00658, § 371 Date May 8, 1985, § 102(e) Date May 8, 1985, PCT Pub. No. WO85/04870, PCT Pub. Date Nov. 7, 1985

Continuation-in-part of Ser. No. 602,117, Apr. 19, 1984, Pat. No. 4,618,600, and a continuation-in-part of Ser. No. 616,488, Jun. 1, 1984. This PCT application Apr. 16, 1985, Ser. No. 766,030

Int. Cl.[4] A61K *37/02*; C07K *7/10*

U.S. Cl. 514—12 4 Claims

1. A polypeptide compound useful as a natriuretic, diuretic, and/or vasodilator in mammals, said polypeptide compound having the formula:



wherein

X is hydrogen, amido, acetyl, or an oligopeptide of up to 125 amino acid residues from the naturally occurring N-terminal Atrial Peptide Sequence, including the N-acetyl derivatives thereof;

Y is hydroxyl, amido, Asn-OH, Asn-Ser-OH, Asn-Ser-Phe-OH, Asn-Ser-Phe-Arg-OH, Asn-Ser-Phe-Arg-Tyr-OH, or the C-terminal amide derivatives thereof; or an oligopeptide extension of up to 20 amino acid residues from the C-terminus of any of the foregoing, including the C-terminal amide derivatives thereof;

each of AA_6, AA_7, AA_{13}, and AA_{17} is independently selected from the group consisting of Gly and Ala; AA_9 is selected from Ile, Met, and Val; and AA_{12} is selected from Ile and Val,

wherein 0, 1 or 2 are by the D-isomer thereof, and including such compound containing a disulfide bridge joining the cysteine residues and the pharmacologically acceptable salts thereof,

with the proviso that when AA_6, AA_7, AA_{13}, and AA_{17} are Gly, AA_9 is Ile or Met, AA_{12} is Ile, and Y is AsnOH, Asn-Ser-OH, Asn-Ser-Phe-OH, Asn-Ser-Phe-Arg-OH or Asn-Ser-Phe-Arg-Try-OH or the C-terminal amide derivatives thereof, and X is H or contains Arg as its C-terminal amino acid, at least one of the residues must be replaced by the D-isomer thereof.

4,764,505
SKIN TREATMENT COMPOSITION

Yoshimori Fujinuma; Tomohisa Asahara, both of Yokohama; Satoru Akiu, Sagamihara; Yumiko Suzuki, Yokohama; Hideyuki Ichikawa, Yokohama, and Yoshio Katsumura, Yokohama, all of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

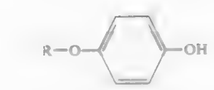
Filed Mar. 20, 1985, Ser. No. 713,961

Claims priority, application Japan, Feb. 28, 1985, 60-37655

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—35 6 Claims

5. A method of depigmenting a patient's skin comprising applying thereto a composition containing an effective amount of a UV absorber, 0.1% to 30% by weight of a glycoside of hydroquinone having the formula:



(I)

wherein

R represents a pentose residue, a hexose residue, an amino sugar residue, or an uronic acid residue, or the methylated product thereof,

0 to 35% by weight of an alcohol, 0.01% to 5% by weight of a surfactant, 0 to 10% by weight of oil, 0.05% to 10% by weight of the UV absorber, and water or wax.

4,764,506
N^6-(BENZOTHIEN-3-YL)ETHYL ADENOSINE; N^6-(BENZOTHIEN-3-YL)ETHYL ADENOSINE, S-OXIDE; AND N^6-(BENZOTHIEN-3-YL)ETHYL S,S-DIOXIDE ADENOSINE

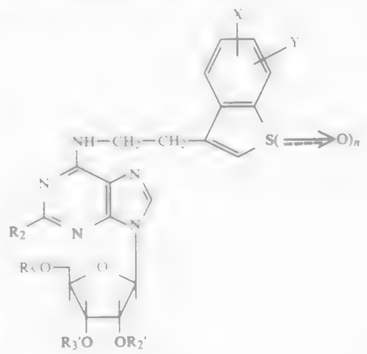
William Patt, Chelsea, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 695,022, Jan. 25, 1985, Pat. No. 4,600,707. This application Apr. 18, 1986, Ser. No. 853,536

Int. Cl.[4] A61K *31/70*

U.S. Cl. 514—46 12 Claims

1. A method of treating immunoinflammation in a mammal suffering therefrom, which comprises administering to such mammals a compound of the formula



(I)

wherein ═══ is ——— or ═══, n is 0–2, inclusive, X and Y are each independently H, hydroxy, lower alkoxy, lower alkyl, amino, mono-lower alkylamino, di-lower, alkylamino, nitro, or halogen; R_2 is H, halogen, or amino; R_2', R_3', and R_5' are independently H, lower alkanoyl, benzoyl, or benzoyl substituted by lower alkyl, lower alkoxy, halogen, or when taken together, R_2' and R_3' may be 2',3'-lower alkylidene; or pharmaceutically acceptable acid addition salts thereof in unit dosage form.

4,764,507
POLYSACCHARIDE RDP SUBSTANCE

Suguru Takeo, Yokohama; Hisao Kado, Tokyo; Nobuhiro Watanabe, Kishi; Kiichi Uchida, Fujisawa, and Yoshitada Mori, Tokyo, all of Japan, assignors to Sapporo Breweries Limited, Tokyo; Daicel Chemical Industries, Ltd., Sakai and Etsuo Ito, Urasoe, all of, Japan

Filed Mar. 5, 1984, Ser. No. 586,073

Claims priority, application Japan, Mar. 18, 1983, 58-44316

Int. Cl.[4] A61K *31/73*; C08B *37/00*

U.S. Cl. 514—54 2 Claims

2. A pharmaceutical composition effective in inhibiting the growth of transplantable tumors, having immunomodulating activity and in potentiating the host defense ability of mice against infectious microorganisms comprising an effective amount of a polysaccharide RDP substance and a pharmaceutically acceptable vehicle, said polysaccharide RDP substance (1) having the following properties:

it does not pass a dialysis membrane;

it is insoluble in alcohol, acetone, hexane, benzene, ethyl acetate, dimethylsulfoxide, ligroin, carbon tetrachloride, chloroform, and ether, and is soluble in water;

a 1% aqueous solution is neutral;

it contains minerals in an amount not more than 5%;

it reacts positively in the following reactions: the Molisch reaction, antrhone-sulfuric acid reaction, tryptophansulfuric acid reaction, cystein-sulfuric acid reaction, chromotropesulfuric acid reaction, phenol-sulfuric acid reaction, and carbazole-sulfuric acid reaction; and negatively in biuret reaction, ninhydrin reaction, the Lowry-Folin reaction, the Elson-Morgan reaction, and starch-iodine reaction;

it has an ultraviolet absorption spectrum as shown in FIG. 1, an infrared absorption spectrum as shown in FIG. 2, and a $13_{C\text{-}NMR}$ spectrum as shown in FIG. 3; and

(2) said polysaccharide RDP substance is substantially protein free and consists essentially of glucose as the sole sugar component with α-1,6-glucoside bonds as the main chain and it also contains a much smaller amount of α-1,4-glucoside bonds.

4,764,508
COMPLEXES OF FLAVANOLIGNANS WITH PHOSPHOLIPIDS, PREPARATION THEREOF AND ASSOCIATED PHARMACEUTICAL COMPOSITIONS

Bruno Gabetta; Ezio Bombardelli, and Giorgio Pifferi, all of Milan, Italy, assignors to Inverni Della Beffa S.p.A., Milan, Italy

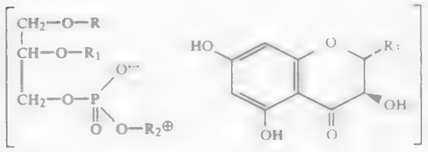
Filed Jul. 7, 1986, Ser. No. 882,608

Claims priority, application Italy, Jul. 17, 1985, 21602 A/85

Int. Cl.[4] A61K *31/685*; C07D *311/32, 311/00, 319/20*

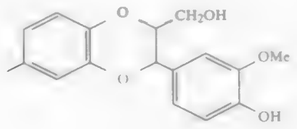
U.S. Cl. 514—78 8 Claims

1. A complex of one or more flavanolignans with one or more phospholipids having the formula I



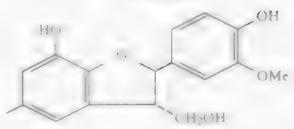
(I)

wherein R and R_1, are the same or different, and each is the acyl residue of palmitic, stearic, oleic, linoleic or linolenic acid; $R_2\oplus$ is one of the residues $\oplus$—CH_2—CH_2—$N\oplus(CH_3)_3$, —CH_2CH_2—$N\oplus H_3$, or —$CH_2CH(COOH)$—$N\oplus H_3$; and R_3 represents one of the radicals a, b or c:

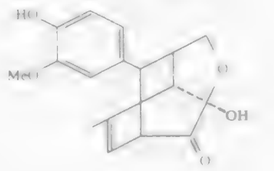


(a)

-continued



(b)



(c)

the molar ratio between the flavanolignan and phospholipids is between 1:0.3 and 1:2.

4,764,509
PHARMACEUTICAL COMPOSITIONS CONTAINING DI-GOLD PHOSPHINE

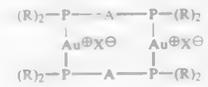
David T. Hill, North Wales, and Randall K. Johnson, Ardmore, both of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Continuation of Ser. No. 832,105, Feb. 21, 1986, abandoned, which is a continuation of Ser. No. 736,018, May 20, 1985, abandoned. This application Aug. 17, 1987, Ser. No. 86,208

Int. Cl.[4] A61K *31/66*

U.S. Cl. 514—102 17 Claims

8. A method of inhibiting the growth of animal tumor cells sensitive to a compound of the formula:



wherein

R is the same and is phenyl or ethyl;

A is the same and is a straight or branched alkanediyl chain of from one to six carbon atoms; and

X is the same and is halo; which comprises parenterally administering to an animal afflicted with said tumor cells, an effective, tumor cell growth-inhibiting amount of said compound.

4,764,510
ANTIBIOTIC A42125 AND PROCESS FOR ITS PRODUCTION

Robert L. Hamill, Greenwood, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 11, 1986, Ser. No. 850,786

Int. Cl.[4] A61K *35/74*; C12P *1/04*

U.S. Cl. 424—120 7 Claims

1. Antibiotic A42125, which has the following characteristics:

State: White crystals (from water)

m.p.: 149°–150° C.

UV: No absorption

IR (Kbr): Shown in the accompanying drawing;

Titration (80% aqueous dimethylformamide): pKa's 5.2, 8.7 and 10.5

Molecular weight: 2032 (field desorption mass spectrometry)

Empirical formula: $C_{101}H_{184}N_2O_{38}$

Amino acids: None found

VOL 1093 ISS 3 AG 16 1988 UMI

Solubility: Soluble in water or an alkali-metal, alkaline-earth metal, amine or acid addition salt of A42125.

4,764,511

LARVICIDAL COMPOSITIONS EMPLOYING DIFLUBENZURON

Irving Klothen, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 731,578, May 9, 1985, abandoned. This application Apr. 23, 1986, Ser. No. 853,442

Int. Cl.[4] A01N *47/28*

U.S. Cl. 514—594 8 Claims

1. A compacted granular larvicidal feed premix composition for animal feedstuff or a feed supplement comprising, on a weight basis: about 0.5% to 84.0% diflubenzuron; about 0% to 10% whole dried whey; about 0% to 2% water; and the remainder a compactible, insoluble carrier to total said composition to 100%; wherein said carrier is $CaSO_4$ dihydrate and wherein said composition is compacted.

4,764,512

BENZODIAZINONE-PYRIDONE COMPOUNDS, CARDIOTONIC COMPOSITIONS INCLUDING THE SAME, AND THEIR USES

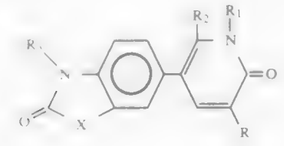
Bruce F. Molino; Henry F. Campbell, both of Lansdale; Donald E. Kuhla, Doylestown, and William L. Studt, Harleysville, all of Pa., assignors to Rorer Pharmaceutical Corporation, Ft. Washington, Pa.

Filed Aug. 27, 1986, Ser. No. 900,868

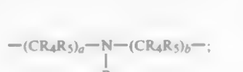
Int. Cl.[4] A61K *31/395;* **C07D** *401/10*

U.S. Cl. 514—183 21 Claims

1. A compound of the formula:



where
R is
hydrogen
alkyl having 1 to 6 carbon atoms
alkoxyalkyl wherein alkoxy has 1 to 6 carbon atoms and alkyl has 1 to 6 carbon atoms
hydroxyalkyl having 1 to 6 carbon atoms
halo
cyano
carbamoyl
alkyl carbamoyl wherein alkyl has 1 to 6 carbon atoms
formyl
alkyleneamino having 1 to 6 carbon atoms or
amino;
X is



R_1, R_2, R_3, and R_5 are
hydrogen or
alkyl having 1 to 6 carbon atoms;
R_4 and R_6 are
hydrogen
alkyl having 1 to 6 carbon atoms or
benzyl or phenethyl
a and b are 0, 1 or 2 and a+b=0, 1 or 2;
R_4 or R_5 groups on vicinal carbon atoms may together form a carbon-carbon double bond; and geminal R_4 and R_5 groups may together form a spiro substituent, $-(CH_2)_d-$, where d is 2 to 5; or a pharmaceutically acceptable salt thereof.

20. A method for increasing cardiotonic contractility in a patient requiring such treatment which comprises administering to such patient an effective amount of a compound according to claim 1.

4,764,513

ANTIGESTAGENS FOR SHIFTING THE ENDOMETRIAL MATURATION

Henn.. ž M. Beier, Aachen, and Walter Elger, Berlin, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 15, 1986, Ser. No. 907,261

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1985, 3533175

Int. Cl.[4] A61K *31/56*

U.S. Cl. 514—179 8 Claims

1. In a method of fertilizing an egg comprising removing an egg from an ovary, fertilizing it in vitro and then implanting it in a uterus of a female, the improvement comprising administering to the female an amount of an antigestagen effective to synchronize the maturation of the endometrium with the implantation of the egg.

4,764,514

OXOTHIAZOLIDINE COMPOUND AND COMPOSITION CONTAINING SAME

Ikuo Ueda, Uenohigashi, and Yousuke Katsura, Uenonishi, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

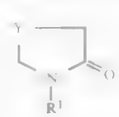
Filed Apr. 24, 1986, Ser. No. 855,904

Claims priority, application United Kingdom, May 14, 1985, 8512163

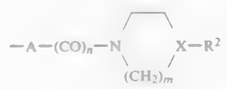
Int. Cl.[4] A61K *31/495;* **C07D** *277/14, 417/06, 417/12*

U.S. Cl. 514—252 9 Claims

1. Oxothiazolidine compound of the formula:



wherein
R^1 is benzoyl which may have one or two substituent(s) selected from lower alkyl, lower alkoxy, halogen and trihalomethyl;
benzenesulfonyl which may have lower alkoxy;
pyridylcarbonyl;
furoyl;
thenoyl;
di(lower)alkylamino-(lower)alkylcarbamoyl-(lower)alkyl;
phenylcarbamoyl(lower) alkyl;
xylylcarbamoyl(lower)alkyl;
phenyl(lower)alkyl-carbamoyl(lower)alkyl;
pyridylcarbamoyl(lower) alkyl;
furyl(lower)alkylcarbamoyl-(lower)alkyl;
thiazolidinylcarbonyl(lower)alkyl;
morpholinylcarbonyl(lower)alkyl or a group of the formula:



in which
A is lower alkylene;
n is an integer of 1;

m is an integer of 2 or 3;
x is —N—,



or —CH— and
R^2 is hydroxy;
lower alkyl which may have hydroxy;
mono(or di)phenyl(lower)alkyl which may have halogen;
phenylthio which may have halogen;
benzoyl;
benzenesulfonyl which may have halogen; or
indolyl and Y is —S—,



or pharmaceutically acceptable salts thereof.

9. A pharmaceutical composition useful in treating patients suffering from senility, lost or impaired memory, or amnesia comprising, an effective amount of one or more oxothiazolidine compound of claim 1 or pharmaceutically acceptable salt thereof and pharmaceutically accepted carrier.

4,764,515

ANTITUSSIVE AND CENTRAL SEDATIVE COMPOSITION OF D-ISOMER OF 3-(4-PHENYL-1-PIPERAZINYL)-1,2-PROPANEDIOL

Massimiliano Borsa; Giancarlo Tonon, and Salvatore Malandrino, all of Milan, Italy, assignors to Dompe' Farmaceutici S.p.A., Milan, Italy

Division of Ser. No. 906,698, Sep. 11, 1986, Pat. No. 4,699,911, which is a continuation of Ser. No. 686,709, Dec. 27, 1984, abandoned. This application Jul. 2, 1987, Ser. No. 69,242

Claims priority, application Italy, Dec. 29, 1983, 24430 A/83

Int. Cl.[4] A61K *31/495;* **C07D** *295/08*

U.S. Cl. 514—255 2 Claims

1. A pharmaceutical composition having central sedative activity consisting essentially of an effective amount of the d-isomer of 3-(4-phenyl-1-piperazinyl)-1,2-propanediol isolated from a racemic mixture of the l- and d-isomers, together with a pharmaceutically acceptable carrier, said composition exhibiting, when administered to a patient, an essentially equivalent central sedative activity but a substantially lower antitussive activity, than a composition containing a like amount of the racemic mixture.

4,764,516

MIXTURES OF OPTICALLY ACTIVE NITRODIHYDROPYRIDINES ACTIVE ON THE CIRCULATORY SYSTEM

Gerhard Franckowiak, Wuppertal; Rolf Grosser, Leverkusen; Günter Thomas, Wuppertal; Matthias Schramm, Cologne, and Rainer Gross, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

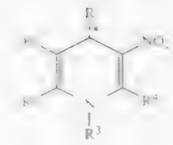
Filed Dec. 6, 1985, Ser. No. 806,071

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1984, 3447169

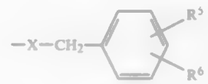
Int. Cl.[4] A61K *31/455, 31/505*

U.S. Cl. 514—256 7 Claims

1. A mixture of (a) pure enantiomer and (b) 0.01 to 1000 times the weight of (a) of another pure enantiomer or physiologically acceptable salts thereof, except for racemates and diastereomers, of a 5-nitrodihydropyridine of the formula



in which
R represents pyridyl or pyrimidyl, or represents phenyl which is optionally monosubstituted or disubstituted, identically or differently, by fluorine, chlorine, nitro or cyano or by C_1–C_4-alkyl or C_1–C_4-alkoxy which is optionally substituted by one or more fluorine atoms, or by the group



wherein
X represents oxygen or sulphur and
R^5 and R^6 are identical or different and represent hydrogen, nitro, cyano or C_1–C_2-alkyl, C_1–C_2-alkoxy, C_1–C_2-alkylthio, halogeno-C_1–C_2-alkyl and halogeno-C_1–C_2-alkoxy,
R^1 represents hydrogen or the group CO_2R^8,
wherein
R^8 represents hydrogen or linear or branched C_1–C_8-alkyl which can be interrupted in the chain by an oxygen and-/or sulphur atom and which can optionally be substituted by phenyl, nitro, or one or more fluorine, chlorine, bromine, hydroxyl, cyano, —SO_2-alkyl having up to 2 C-atoms, C_1–C_2-alkoxycarbonyl or pyridyl groups or by an amino group, it being possible for this amino group to be substituted by one or two substituents from the series C_1–C_3-alkyl, phenyl or benzyl,
R_2 and R_4 represent methyl or ethyl which is optionally substituted by hydroxyl or one or more fluorine groups and
R^3 represents hydrogen or methyl or ethyl,
one of the enantiomers having a high vasodilative action and a low negative inotropic activity on heart muscle, the other enantiomer having a low vasoconstrictive action and a high positive inotropic activity on heart muscle, the mixture being high in vasodilative activity and in positive inotropic activity on heart muscle.

4,764,517

8α-(N,N-DIETHYLSULFAMOYLAMINO)-6-N-PROPYL ERGOLINE USEFUL AS A PROLACTIN SECRETION INHIBITOR, ANTI-PARKINSON, ANTI-DEPRESSANT AGENT

Peter Gull, Pfeffingen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 856,602, Apr. 25, 1986, abandoned, which is a continuation of Ser. No. 787,220, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 604,992, Apr. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 349,503, Feb. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 286,417, Jul. 24, 1981, abandoned. This application Aug. 25, 1987, Ser. No. 89,299

Claims priority, application Switzerland, Jul. 25, 1980, 5723/80; Jul. 25, 1980, 5724/80; Oct. 2, 1980, 7359/80; Oct. 2, 1980, 7358/80; Oct. 2, 1980, 7360/80

Int. Cl.[4] A61K *31/48;* **C07D** *457/12*

U.S. Cl. 514—288 6 Claims

1. 8α-(N,N-diethylsulfamoylamino)-6-n-propylergoline in free base form or in pharmaceutically acceptable acid addition salt form.

VOL 1093 ISS 3 AG 16 1988 UMI

3. A method of inhibiting prolactin secretion in a subject in need of said treatment which comprises administering a therapeutically effective amount of a compound of claim 1 to a subject in need of such treatment.

4. A method of treating Morbus Parkinson in a subject in need of said treatment which comprises administering a therapeutically effective amount of a compound of claim 1 to a subject in need of such treatment.

5. A method of treating depression in a subject in need of said treatment which comprises administering a therapeutically effective amount of a compound of claim 1 to a subject in need of such treatment.

4,764,518

ANTIBACTERIAL AGENTS CONTAINING OXO-4-PYRIDINE CARBOXYLIC ACID DERIVATIVES

Claude Laruelle, Villeneuve-Loubet; Marcel Lepant, Nice, and Bernard Raynier, Cagnes, all of France, assignors to Panmedica, Carros, France

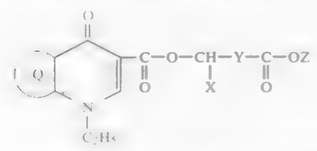
Filed Jun. 13, 1986, Ser. No. 874,232

Claims priority, application France, Jun. 20, 1985, 85 09371

Int. Cl.[4] **A61K** *31/335, 31/47, 31/50, 31/505;* **C07D** *491/056, 491/147, 239/00, 237/00*

U.S. Cl. 514—291 **9 Claims**

1. A compound according to the formula:



and their addition salts formed from pharmaceutically acceptable acids and bases, in which:

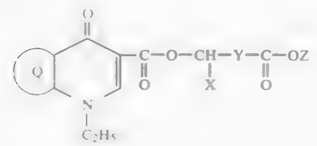
Q is selected from the class consisting of aromatic rings optionally substituted by fluoro, piperazinyl, pyridinyl, methyl or methylenedioxy and six member heterocyclic rings optionally substituted by flouro, piperazinyl, pyridinyl, methyl or mehtylenedioxy havjng 1 to 2 nitrogen atoms, wherein at least one of said nitrogen atoms is in an ortho position with regard to the condensed linkage between pyridone and the heterocyclic ring and defines with the pyridone ring the class consisting of optionally substituted quinolines, optionally substituted naphthyridines and optionally substituted piromidic derivatives;

Z is selected from the class consisting of (a) hydrogen, (b) linear or branched alkyl groups comprising from 1 to 9 carbon atoms, (c) cyclohexylmethyl, and (d) benzyl;

X is selected from the class consisting of hydrogen, linear or branched alkyl groups having from 1 to 6 carbon atoms, and phenyl; and

Y is a direct linkage or is a linear or branched alkylene group having from 1 to 10 carbon atoms.

8. An antibacterial agent consisting essentially of a compound in an amount effective to control a bacterial infection in a human or animal subject in a pure state or in association with one or several pharmaceutically acceptable adjuvants or diluents, said compound comprising a compound according to the formula:



and their addition salts formed from pharmaceutically acceptable acids and bases, in which:

Q is selected from the class consisting of aromatic rings optionally substituted by flouro, piperazinyl, pyridinyl, methyl or mehtylenedioxy, and heterocylic rings optionally substituted by flouro, piperazinyl, pyridinyl, methyl or mehtylenedioxy having from 1 to 2 nitrogen atoms;

Z is selected from the class consisting of (a) hydrogen, (b) linear or branched alkyl groups having from 1 to 9 carbon atoms, (c) cyclohexylmethyl, and (d) benzyl;

X is selected from the class consisting of hydrogen, linear or branched alkyl groups having from 1 to 6 carbon atoms, and phenyl; and

Y is a direct linkage or is a linear or branched alkylene group having from 1 to 10 carbon atoms.

4,764,519

3-HYDROXYPYRIDINES

David G. Cooper, Letchworth; Peter D. Miles, Lower Stondon, and Rodney C. Young, Hertford, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed May 1, 1987, Ser. No. 45,106

Claims priority, application United Kingdom, May 2, 1986, 8610567

Int. Cl.[4] **C07D** *401/14;* **A61K** *31/44*

U.S. Cl. 514—335 **10 Claims**

1. A compound of formula (1):

(1)

or a pharmaceutically acceptable acid addition salt thereof in which

R^1 is hydrogen;

R^3 is hydrogen, C_{1-4}alkyl, halogen, or amino;

R^4 is hydroxy or a phosphate group which is a group of the formula:

and q is 1 to 3;

R^5 is hydrogen, C_{1-4}alkyl, halogen, or amino, provided that R^3 and R^5 are not both hydrogen;

m is 2, 3 or 4; and

R is a 2, 3, or 4-pyridyl or pyridyl N-oxide or N-C_1–C_4alkyl-pyridone group optionally substituted by one or two groups selected from C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy and hydroxymethyl.

4,764,520

AGENTS FOR THE TREATMENT OF LEUKEMIA

Herschel S. Zackheim, 133 Arch St., Redwood City, Calif. 94062, and Davide R. Grassetti, 26 Northgate Ave., Berkeley, Calif. 94708

Filed Apr. 24, 1987, Ser. No. 42,480

Int. Cl.[4] **A61K** *31/44*

U.S. Cl. 514—350 **3 Claims**

1. The method of treating mammals affected with leukemia so as to delay or arrest the course of the disease, which comprises administering to said mammals an amount of 6-mercaptonicotinic acid, or an alkali metal salt thereof, effective to bring about this delay or arrest of leukemia.

4,764,521

LEUKOTRIENE ANTAGONISTS AND A METHOD OF USE THERE AS

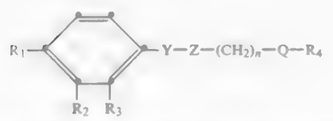
David K. Herron, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 514,394, Jul. 18, 1983, abandoned. This application May 7, 1986, Ser. No. 860,723

Int. Cl.[4] **A61K** *31/41, 31/19;* **C07D** *257/04, 257/06;* **C07C** *65/21*

U.S. Cl. 514—381 **18 Claims**

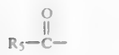
1. A compound of the formula



I

and pharmaceutically acceptable salts thereof, wherein:

R_1 is



or halo;

R_2 is halo or hydroxy;

R_3 is C_1–C_{12} alkyl, hydroxy-substituted C_1–C_{12} alkyl, or C_2–C_6 alkenyl;

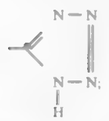
Y is —O—

Z is —CR_8R_9—

Q is —O—, —NR—,



or a bond; R_4 is —COR_{10} *or*



where

R is hydrogen or C_1–C_3 alkyl;

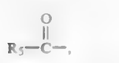
R_5 is C_1–C_6 alkyl, C_3–C_8 cycloalkyl, or phenyl optionally substituted with a group selected from halo, C_1–C_4 alkyl, or C_1–C_4 alkoxy; is independently hydrogen, C_1–C_{10} alkyl, phenyl, or benzyl;

R_{10} is hydroxy; and

p is 0, 1, or 2;

with the provisions that:

(a) when R_1 is



R_2 may not be hydroxy; and

(b) when R_4 is —COR_{10}, Q may only be a bond.

14. A method of treating a mammal suffering from or susceptible to any condition characterized by an excessive release of leukotrienes, which comprises administering to said mammal a leukotriene antagonizing amount of a compound of claim 1.

4,764,522

ETHYLENEDIAMINE MONOAMIDES

René Imhof, Gipf-Oberfrick, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 16, 1985, Ser. No. 766,364

Claims priority, application Switzerland, Aug. 29, 1984, 4132/84; Jun. 5, 1985, 2404/85

Int. Cl.[4] **A61K** *31/44;* **C07D** *213/81, 261/18, 277/56*

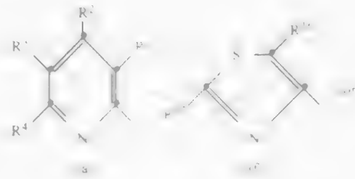
U.S. Cl. 514—354 **17 Claims**

1. A compound of the formula



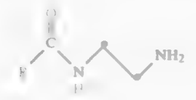
Ia

wherein R′ is



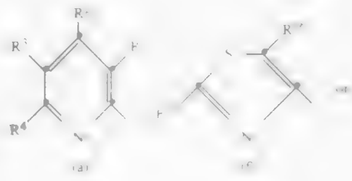
in which at least two of the substituents $R^{1'}$, $R^{2'}$, $R^{3'}$ and $R^{4'}$ are hydrogen and the remaining two each independently are hydrogen, halogen, nitro, amino, hydroxy, lower-alkoxy, lower-alkyl, phenyloxy, phenylmethyloxy, phenyloxy or phenylmethyloxy substituted by one or more substituents selected from the group consisting of halogen, lower-alkyl, lower-alkoxy, nitro and hydroxy with the proviso that $R^{1'}$, $R^{2'}$, $R^{3'}$ and $R^{4'}$ are not simultaneously hydrogen, or a pharmaceutical usable acid addition salt thereof.

14. A composition comprising an amount effective for MAO inhibition of a compound of the formula



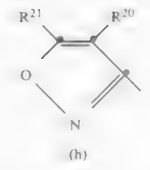
I

wherein R is

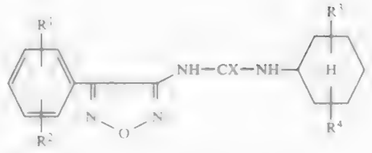


VOL 1093 ISS 3 AG 16 1988 UMI

-continued



(h)



in which at least two of the substituents R^1, R^2, R^3 and R^4 are hydrogen and the remaining two each independently are hydrogen, halogen, nitro, amino, hydroxy, lower-alkoxy, lower-alkyl phenyloxy, phenylmethyloxy, phenyloxy or phenylmethyloxy substituted by one or more substituents selected from the group consisting of halogen, lower-alkyl, lower-alkoxy, nitro and hydroxy R^{16}, is hydrogen, halogen or lower-alkyl, and R^{17} is hydrogen or halogen or a pharmaceutical usable acid addition salt thereof.

4,764,523

NOVEL CARBONIC ACID ESTERS

Peter Heinrich, Binningen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

PCT No. PCT/CH85/00175, § 371 Date Aug. 11, 1986, § 102(e) Date Aug. 11, 1986, PCT Pub. No. WO86/03747, PCT Pub. Date Jul. 3, 1986

PCT Filed Dec. 13, 1985, Ser. No. 905,379

Claims priority, application Switzerland, Dec. 19, 1984, 6015/84; Feb. 1, 1985, 454/85

Int. Cl.[4] A61K *37/02; C07K 7/02*

U.S. Cl. 514—18 **17 Claims**

1. An acylate of desferrioxamine B of the formula



(I)



wherein at least one of the radicals AA^1, AA^2, AA^3 and B is tert.-butyloxycarbonyl, allyloxycarbonyl, 2-(trimethylsilyl)-ethoxycarbonyl or a radical of the formula lower alkyl-$(—O—CH_2—CH_2—)_n O—CO—$ wherein n represents 1 to 4, and each of the remaining radicals AA^1, AA^2, AA^3 and B, independently of the others, represents alkanoyl having up to 20 carbon atoms, benzoyl or hydrogen, or a salt of said acylate having salt-forming properties.

4,764,524

NOVEL SUBSTITUTED FURAZANE

Wilhelm Sirrenberg, Sprockhoevel; Rudolph Braden, Odenthal; Heinz Ziemann, Leichlingen; Gerhard Zoebelein, Leverkusen, and Wolfgang Pflüger, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

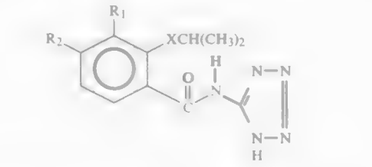
Filed Jan. 8, 1986, Ser. No. 816,933

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1985, 3501723

Int. Cl.[4] C07D *271/08;* **A01N** *47/36*

U.S. Cl. 514—364 **11 Claims**

1. A substituted furazane of the formula



in which

R^1 and R^2 each independently is hydrogen, halogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio, halogeno-C_1–C_6-alkyl, halogeno-C_1–C_6-alkoxy or halogeno-C_1–C_6-alkylthio, or is aryloxy which has 6 to 10 carbon atoms in the aryl part and is optionally substituted by halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-alkylthio, halogeno-C_1–C_4-alkyl, halogeno-C_1–C_4-alkoxy and/or halogeno-C_1–C_4-alkylthio, or

R^1 and R^2 together are a C_1–C_3-alkylene radical which is interrupted by 1 or 2 oxygen atoms and is optionally substituted by halogen and/or C_1–C_2-alkyl, and

R^3 and R^4 each independently is hydrogen, C_1–C_6-alkyl, C_1–C_6-alkoxy, halogeno-C_1–C_6-alkyl or halogeno C_1–C_4-alkoxy, and

X is oxygen or sulphur.

4,764,525

N-1H-TETRAZOL-5-YLBENZAMIDES HAVING USE AS ANTIALLERGY AND ANTIINFLAMMATORY AGENTS

David T. Connor, Ann Arbor, and Michael D. Mullican, Ypsilanti, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 25, 1987, Ser. No. 18,680

Int. Cl.[4] A61K *31/41;* **C07D** *257/04*

U.S. Cl. 514—381 **8 Claims**

1. A compound of the formula (I)

(I)

or pharmaceutically acceptable salts thereof; wherein

X is oxygen or sulfur;

R_1 is hydrogen, bromo, chloro, fluoro, or iodo and R_2 is alkoxy.

6. A compound which is 5-bromo-4-methoxy-2-(isopropoxy)-N-1H-tetrazol-5-ylbenzamide.

8. A method of treating allergies in mammals which comprises administering to such mammal in need thereof an effective amount of a pharmaceutical compound according to claim 1.

4,764,526

AZOLYLVINYL ETHERS AND PESTICIDAL USE

Klaus Böckmann, Cologne; Gerhard Jäger, Leverkusen; Wilhelm Brandes, Leichlingen; Gerd Hänssler; Paul Reinecke, both of Leverkusen, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

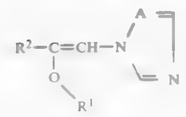
Continuation of Ser. No. 727,962, Apr. 26, 1985, abandoned. This application Mar. 13, 1987, Ser. No. 27,105

Claims priority, application Fed. Rep. of Germany, May 11, 1984, 3417468

Int. Cl.[4] A01N *43/50, 43/653;* **C07D** *233/58, 241/12*

U.S. Cl. 514—383 **9 Claims**

1. An azolylvinyl ether of the formula



in which

A represents a nitrogen atom or the CH group,

R^1 represents phenoxyalkyl with 1 or 2 carbon atoms in the alkyl part, or phenoxyalkoxyalkyl with 1 or 2 carbon atoms in each alkyl part and mono-, di- or tri-substituted by identical or different substituents on the phenyl part by substituents selected from fluorine, chlorine, straight-chain or branched alkyl with 1 to 4 carbon atoms, nitro, phenyl, phenylalkyl with 1 to 3 carbon atoms in the alkyl part, and cyclohexyl; or represents cylcohexylmethyl, or represents naphthoxyalkyl with 1 to 2 carbon atoms in the alkyl part;

R^2 represents straight-chain or branched alkyl with 1 to 6 carbon atoms, or represents fluorotert.-butyl, or the grouping $R^3—C(CH_3)_2—$, or represents cyclohexyl, or methylcyclohexyl; or furthermore also represents phenyl which is optionally mono, di- or tri-substituted by identical or different substituents as already mentioned for R^1 if R^1 represents optionally substituted phenoxyalkyl or optionally substituted phenoxyalkoxyalkyl and A represents a nitrogen atom; and

R^3 represents phenoxyalkyl with 1 or 2 carbon atoms in the alkyl part, optionally mono-, di- or tri-substituted on the phenyl part by identical or different substituents as mentioned for R^1,

or an addition product thereof with an acid or metal salt.

8. A method of combating fungi or ectoparasites which comprises applying to such fungi, ectoparasites or a habitat thereof a fungicidally or ectoparasiticidally effective amount of a compound or addition product according to claim 1.

4,764,527

HYDROXYPYRAZOLE DERIVATIVES, COMPOSITION CONTAINING THEM AND THEIR USE AGAINST MICROORGANISMS

Klaus Wagner, Neustadt; Norbert Rieber, Mannheim, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

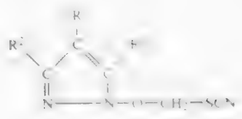
Filed May 29, 1987, Ser. No. 55,353

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1986, 3620579

Int. Cl.[4] A01N *43/56;* **C07D** *231/16, 231/12*

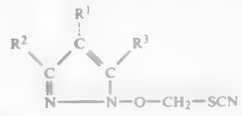
U.S. Cl. 514—407 **21 Claims**

1. A 1-hydroxypyrazole derivative of the formula:



wherein R^1, R^2 and R^3 are each independently a hydrogen atom or a halogen atom.

19. A method for protecting a microorganism, an article, or a liquid from fungi, bacteria or algae, comprising treating said microorganism, article or liquid with a microbicidally effective amount of a 1-hydroxypyrazole derivative of the formula:



wherein R^1, R^2 and R^3 are each independently a hydrogen atom or a halogen atom.

4,764,528

2,4-PENTADIENOIC ACID DERIVATIVES AND PLATELET AGGREGATION INHIBITORS CONTAINING THE SAME

Keiko Chiba, Tsuchiura; Makoto Takai, Hachioji, and Toshio Wakabayashi, Tama, all of Japan, assignors to Terumo Kabushiki Kaisha t/a Terumo Corporation, Tokyo, Japan

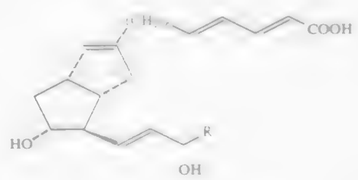
Filed Mar. 10, 1987, Ser. No. 26,993

Claims priority, application Japan, Mar. 17, 1986, 61-57084

Int. Cl.[4] *C07C 59/46;* **A61K** *31/19*

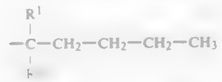
U.S. Cl. 514—510 **5 Claims**

1. A 2,4-pentadienoic acid derivative represented by the formula (I)



(I)

wherein R is a group having the formula

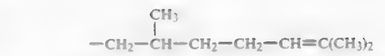


in which R^1 and R^2 may be the same or different and represent a hydrogen atom or a lower alkyl group, a group having the formula



in which m represents 1 or 2 or a group having the formula

VOL 1093 ISS 3 AG 16 1988 UMI



and n represents an integer from 0 to 3 or a lower alkyl, lower alkoxymethyl, lower aliphatic acyloxymethyl or benzyl ester thereof or a pharmacologically acceptable salt thereof.

5. A method for treating arterial thrombosis of the extremities or cerebral thrombosis, said method comprising administering to a mammary animal in need of such treatment an effective amount to inhibit platelet aggregation of a 2,4-pentadienoic acid derivative or ester or pharmaceutically acceptable salt thereof according to claim 1.

4,764,529

PESTICIDAL POUR-ON FORMULATIONS PARTICULARLY EFFECTIVE AGAINST ACARINES AND INSECTS

Arundev H. Naik, Leverkusen; Wilhelm Stendel, Wuppertal, and Herbert Voege, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 470,022, Feb. 25, 1983, abandoned. This application Sep. 17, 1985, Ser. No. 776,949

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1982, 3208334

The portion of the term of this patent subsequent to Mar. 15, 2005, has been disclaimed.

Int. Cl.[4] A61K *31/215*

U.S. Cl. 514—531 4 Claims

1. A method of combating pests and parasites of warm-blooded animals which comprises applying to said animals a pesticide- or parasite-combating effective amount of a pesticide pour-on formulation consisting essentially of 0.5–5 parts by weight of a pyrethroid selected from the group consisting of α-cyano-4-fluoro-3-phenoxy-benzyl-3-(2-(4-chlorphenyl)-2-chlorvinyl)-2,2-dimethyl-cyclopropane carboxylate, pentaflurorphenyl-methyl-3-(2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanecarboxylate, α-cyano(4-fluoro-3-phenoxy-phenyl)-methyl-3-(2,2-dichloroethenyl)-2,2-dichloroethenyl)-2,2-dimethyl-cyclopropanecarboxylate, 3–20 parts by weight of a alkylaryl-polyglycolether surfactant, 0–73 parts by weight of a water-miscible solvent selected from the group consisting of isopropanol, polyethyleneglycol, ethyleneglycol-monomethyl-ether, 0–2.5 parts by weight of auxiliaries selected from the group consisting of xanthan gum and benzyl-alcohol and the rest being water, said water being at least 5 parts by weight, said formulation prepared by dissolving the pyrethroid in the surfactant, the solvent and the auxiliaries and then adding the water.

4,764,530

PHARMACEUTICAL COMPOSITIONS AND THEIR USE AS MYDRIATICS

Angelo Careanzi, Via Rossini, 9, 21051 Busto Arsizio; Oreste Cerri, Viale Campania, 21, 20133 Milano; Franco Pozzi, Via Jacopo Rezia, 11, 22100 Como; Cesare Casagrande, Via Campo Gallo, 21/67, 20020 Arese; Giovanna Miragoli, Corso Italia, 1, 20122 Milano, and Michele Virno, Via Papiniano, 29, 00137 Rome, all of Italy

PCT No. PCT/EP85/00744, § 371 Date Aug. 20, 1986, § 102(e) Date Aug. 20, 1986, PCT Pub. No. WO86/03970, PCT Pub. Date Jul. 17, 1986

PCT Filed Dec. 24, 1985, Ser. No. 909,119

Claims priority, application Italy, Dec. 27, 1984, 24266 A/84

Int. Cl.[4] A61K *31/225*

U.S. Cl. 514—548 2 Claims

1. A method for inducing a mydriatic effect in a subject in need of such effect, said method comprising administering to one or both eyes of said subject a mydriatically effective amount of an ophthalmic collyrium containing from 0.01 to 10% (w/v) of ibopamine or a pharmaceutically acceptable acid addition salt thereof.

4,764,531

METHOD OF FEEDING KETOISOCAPROATE TO LAYING CHICKENS

Steven L. Nissen, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Mar. 11, 1986, Ser. No. 838,355

Int. Cl.[4] A61K *31/195*

U.S. Cl. 514—557 5 Claims

1. The method of feeding laying chickens to increase egg production and/or reduce yolk cholesterol, comprising admixing alpha-ketoisocaproate (KIC) with the protein-containing feed ration for the laying chickens, said admixed ration containing 0.05 to 0.5 weight percent of KIC based on sodium KIC and the dry weight of the feed, said feed containing not over 12% leucine based on the dry weight of the total protein and feeding said admixed ration to said laying hens as substantially their entire diet.

4,764,532

TREATMENT OF HORSES

Lourdes Corman, and Ian Mayhew, both of Gainesville, Fla., assignors to Efamol Limited, Surrey, England

Filed Jul. 8, 1986, Ser. No. 883,316

Claims priority, application United Kingdom, Jul. 10, 1985, 8517436

Int. Cl.[4] A61K *31/20*

U.S. Cl. 514—560 3 Claims

1. A method of treating anhidrosis in horses wherein the animals are given gamma-linolenic acid and/or dihomo-gamma linolenic acid, restoring sweating abilities, wherein the amount of the or each said acid given is 10 mg to 100 g/day.

4,764,533

ERYTHRO-1,2-1-PENTANONES

Helmut Schickaneder, Eckental-Eckenhaid, and Roland Loser, Feldafing, both of Fed. Rep. of Germany, assignors to Klinge Pharma GmbH, Munich, Fed. Rep. of Germany

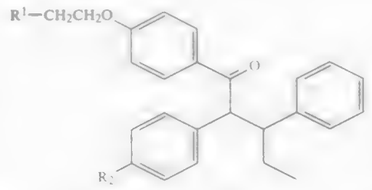
Continuation of Ser. No. 376,942, May 10, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,589

Claims priority, application Fed. Rep. of Germany, May 27, 1981, 3121175

Int. Cl.[4] C07C *93/06;* A61K *35/135*

U.S. Cl. 514—651 9 Claims

1. An erythro-1,2,3-triphenyl-1-pentanone compound having the formula:



wherein R^1 is a dimethylamino group, and R^2 is a hydroxy group, and its pharmacologically acceptable salts.

9. A method of inhibiting hormone-dependent tumors which comprises the step of administering a tumor-inhibiting effective amount of a compound as claimed in claim 1.

4,764,534

ANTICOCCIDIAL NAPHTHALENAMINES AND COMBINATIONS THEREOF

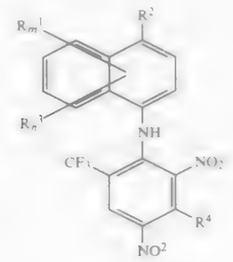
Albert J. Clinton, deceased, late of Indianapolis (American Fletcher National Bank and Trust Company, administrator), and George O. P. O'Doherty, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 374,801, May 4, 1982, abandoned. This application Jul. 17, 1984, Ser. No. 631,665

Int. Cl.[4] A61K *31/135*

U.S. Cl. 514—657 26 Claims

1. A compound of the formula



wherein:
R^2 is halogen;
R^4 is hydrogen;
m is 0; and
n is 0.

4,764,535

THERMALLY APPLIED SEALANTS AND PROCESS

Larry F. Leicht, Keller, Tex., assignor to Q'SO, Inc., Saginaw, Tex.

Filed Aug. 6, 1984, Ser. No. 637,718

Int. Cl.[4] C08J *9/34*

U.S. Cl. 521—51 14 Claims

1. In an elastomer composition, the mixture comprising:
(a) a first thermoplastic rubber compound which is more elastomeric than the second compound recited in paragraph (b);
(b) a second thermoplastic rubber compound having a vinyl aromatic component, said second thermoplastic rubber compound having a high aromaticity relative to said first thermoplastic rubber compound;
(c) a nucleating agent for enhancing the neutrophilic structure of said elastomer composition upon the entrainment of gas therein;
(d) an unstable detackifying resin, and
(e) said composition containing a closed cell void volume of at least 10 volume %.

4,764,536

PROCESS AND APPARATUS FOR THE PREPARATION OF A FREE-FLOWING MIXTURE MADE OF FREE-FLOWING COMPONENTS WHICH REACTS TO FORM FOAM

Ferdinand Proksa, Leverkusen; Ferdinand Althausen, Neunkirchen; Gottfried Bücher, Troisdorf; Reiner Raffel, Siegburg, and Hans-Michael Sulzbach, Koenigswinter, all of Fed. Rep. of Germany, assignors to Maschinenfabrik Hennecke GmbH, Birlinghoven, Fed. Rep. of Germany

Filed Jan. 15, 1987, Ser. No. 3,447

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1986, 3602024

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—50 5 Claims

1. A process for introducing a gas into one of at least two free-flowing components which are subsequently mixed to provide a foam-forming, free-flowing mixture which comprises
(a) introducing said one free-flowing component into a supply container,
(b) maintaining a gas cushion in said supply container above the level of said one free-flowing component,
(c) pumping said one free-flowing component from said supply container to a gas loading area comprising a container having gas dispersing means,
(d) dispersing gas in said one free-flowing component via said gas dispersing means,
(e) pumping said one free-flowing component from said gas loading area to said supply container,
(f) transporting gas for said gas dispersing means from said gas cushion to said gas loading area and
(g) compressing said gas during said transporting of step (f) to a higher pressure than the pressure in said gas loading area

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,537

INTERNAL MOLD RELEASE AGENTS, THEIR USE FOR PREPARING MOLDED ARTICLES USING POLYISOCYANATE-ADDITION POLYMERIZATION, AND A PROCESS FOR PREPARING MOLDED ARTICLES

Peter Horn, Hedelberg, and Hans U. Schmidt, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 15, 1987, Ser. No. 96,957

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1986, 3631842

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—51 17 Claims

1. An internal mold release agent for the preparation of molded articles using polyisocyanate addition polymerization comprising; and

(A) at least one ketimine, aldimine, enamine, cyclic Schiff base or a mixture of at least two of said compounds; and

(B) at least one metal salt of an organic carboxylic acid having from 8 to 24 carbon atoms; and

(C) optionally including at least one organic carboxylic acid, organic sulfonic acid, mineral acid or amidosulfonic acid.

4,764,538

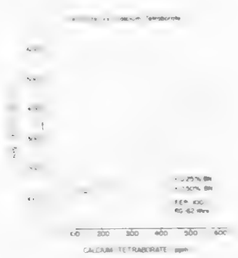
FOAM NUCLEATION SYSTEM FOR FLUOROPOLYMERS

Marlin D. Buckmaster, Vienna, W. Va., and Stuart K. Randa, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 16, 1987, Ser. No. 134,164

Int. Cl.[4] C08J *9/04*

U.S. Cl. 521—85 6 Claims



1. A foamable composition comprising a melt-processible fluoropolymer containing a nucleating amount of boron nitride and a synergistic amount of at least one inorganic salt that is thermally stable at the fluoropolymer extrusion temperature, and consists of a metal cation and a polyatomic anion, and satisfies the relationship.

$$0.36\times[14-pKa]-0.52\geq[r-0.2$$
$$q]2\geq 0.11\times[14-pKa]-0.28$$

where

r=crystal ionic radius of the cation, in Angstroms

q=valence of the cation

pKa=−log of Ka for the following reaction

$$HA^{-(n-1)} \underset{}{\overset{Ka}{\rightleftharpoons}} H^+ + A^{-n}$$

where A is the salt anion, H is hydrogen, and n=the absolute value of the valence of the anion.

4,764,539

FLAME RESISTANT POLYMERS

Michel Ladang, Herve, Belgium, assignor to Norton Company, Worcester, Mass.

Filed Nov. 24, 1987, Ser. No. 125,036

Int. Cl.[4] C08L *1/18;* C08J *9/00*

U.S. Cl. 106—122 3 Claims

1. A foamed organic polymer including a flame retarding system for said foamed polymer and said foamed polymer's gaseous by-products, said flame retarding system comprising 20 to 120 parts by weight of an organo phosphate plasticizer 1 to 15 parts by weight of antimony trioxide, 5 to 60 parts by weight of aluminum hydroxide or hydrated alumina, 1 to 15 parts by weight of a borate, and 1 to 20 parts by weight of a brominated hydrocarbon, all per 100 parts by weight of said polymer.

4,764,540

RIM POLYURETHANE OR POLYUREA COMPOSITIONS CONTAINING INTERNAL MOLD RELEASE AGENTS

John E. Dewhurst, Oakdale; Stephen J. Harasin, Bethel Park; Mark C. Cekoric, North Versailles, all of Pa., and Saad M. Abouzahr, Highland, Mich., assignors to Mobay Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 6,529, Jan. 23, 1987. This application Nov. 4, 1987, Ser. No. 114,262

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—110 19 Claims

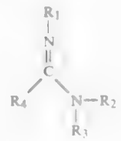
1. A process for the production of an optionally cellular, polyurethane or polyurea elastomer or an optionally cellular, rigid structural polyurethane or polyurea by reacting a reaction mixture comprising

(i) a polyisocyanate,

(ii) a high molecular weight polymer having at least two isocyanate-reactive groups and a molecular weight of 400 to about 10,000,

(iii) about 5 to 50% by weight, based on the weight of component (ii) of a chain extender having at least two isocyanate-reactive groups and

(iv) about 0.05 to 10% by weight, based on the weight of components (ii) and (iii), of a salt based on a carboxy functional siloxane and an amidine group-containing compound of the formula



(I)

wherein

R_1, R_2 and R_3 are straight or branched, saturated or unsaturated hydrocarbon chains having up to 30 carbon atoms which may optionally be substituted by ether groups, ester groups, amide groups or amidine groups and may also optionally be terminated by isocyanate-reactive groups,

R_4 corresponds to the definition of R_1, R_2 and R_3, but may additionally represent an aromatic substituent having 6 to 15 carbon atoms or may represent the group $—NR_2R_3$ and

R_1, R_2, R_3 and R_4 may, with one or both of the amidine nitrogens, also form a heterocyclic ring.

4,764,541

PROCESS FOR PREPARING POLYURETHANE FOAMS IN THE PRESENCE OF A POLYETHER ACID

Robert D. Brasington, Chemin de la Noyelle, France, and Werner A. Lidy, Collonge-Bellerive, Switzerland, assignors to BP Chemicals Limited, London, England

Filed Jan. 21, 1988, Ser. No. 146,695

Claims priority, application United Kingdom, Jan. 29, 1987, #701993

Int. Cl.[4] C08J *9/16*

U.S. Cl. 521—114 5 Claims

1. A process for preparing a flexible polyurethane foam which process comprises

(1) preparing a polyurethane foam formulation by mixing a polyisocyanate, a polyfunctional active hydrogen containing compound, an amine catalyst, a blowing agent and a polyether acid at ambient temperature; and

(2) thereafter foaming the polyurethane foam formulation in a mould at a temperature in the range 40° to 60° C.

4,764,542

SEMI-ORGANIC FOAMS

Thomas J. Miranda, Clay Township, St. Joseph County, Ind., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 948,116, Dec. 31, 1986, Pat. No. 4,708,970. This application Oct. 26, 1987, Ser. No. 112,547

Int. Cl.[4] C08J *9/14*

U.S. Cl. 521—149 17 Claims

1. A foam prepared by a process comprising the step of: reacting a composition comprising a first adduct having the structure

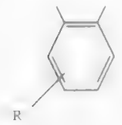
$$CH_2=CR—COO—R'—O—CO—Z—COOH$$

where,

R=H, CH_3, CN, C_6H_{11}(CYCLOHEXYL), X (X=F, Cl, Br)

R′=$—CH_2—CH_2—$, —CXR—CXR—, $—(CH_2—CH_2—)$ where n=1, 2, . . . 8, and

Z=—CH=CH—, phthalic, trimellitic, naphthoic, β-naphthoic, substituted phthalic anydrides of the structure



wherein

R″=Cl, F, Br, I, CH_3, CN, CH_3, C_nH_{2n+2};

a fluorocarbon blowing agent; and

an initiator.

4,764,543

MICROCELLULAR FOAMED OR REACTION INJECTION MOLDED POLYURETHANE/POLYUREAS EMPLOYING AMINE TERMINATED POLYMERS AND DIAMINE CHAIN EXTENDERS

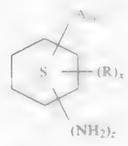
Michael R. Savina, Auburn, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 3, 1987, Ser. No. 81,078

Int. Cl.[4] C08G *18/14*

U.S. Cl. 521—160 16 Claims

1. A reaction injection molded or a microcellular foamed polyurethane/urea elastomer comprising the reaction product of a primary or secondary amine terminated, active hydrogen containing polymer of at least 1500 molecular weight having greater than 50% of the active hydrogen in the form of amine hydrogen, an aliphatically bound polyisocyanate, and a chain extender consisting essentially of at least one of a compound represented by the formula:



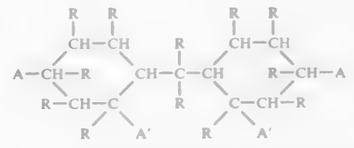
(I)

wherein

A is represented by the group



each R, R_1 and R_2 are independently hydrogen or an alkyl group having 1 to about 4 carbon atoms, x has a value of zero to about 4; y has a value of 1 or 2; z has a value of zero or 1, and when y is 2, z is zero and the sum of y and z is 2, or a compound represented by the formula:



(II)

wherein R is H or alkyl of 1 to 4 carbon atoms and A and A′ are NH_2 or H with the provisos that in each ring either A or A′ is NH_2, not both and when A or A′ is NH_2 then the R attached to that carbon atom is H.

4,764,544

FILLER AND POLYMER COMPOSITION CONTAINING FILLER

John G. Carey, Warrington; Roger N. Rothon, Chester, and Martin Bottrill, Slough, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Aug. 19, 1985, Ser. No. 766,781

Claims priority, application United Kingdom, Aug. 22, 1984, 8421[illegible]

Int. Cl.[4] C08K *9/04*

U.S. Cl. 523—205 28 Claims

1. A coated particulate filler, wherein the filler is selected from alkaline earth metal oxides, hydrated oxides, hydroxides, carbonates and basic carbonates, to the surface of which filler is bound an acid group-containing organic polymer wherein the acid group is selected from the group consisting of a carboxylic acid group, a sulfonic acid group and a phosphonic acid group, and wherein the organic polymer also comprises an amine group capable of reacting with an organic polymer material and formed by reaction of an amide group-containing organic polymer with alkali metal hypochlorite.

VOL 1093 ISS 3 AG 16 1988 UMI

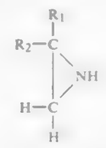
4,764,545

PROCESS FOR PREPARING α-CYANOACRYLATE TYPE COMPOUNDS AND ADHESIVE COMPOSITION COMPRISING α-CYANOACRYLATE TYPE COMPOUND OBTAINED BY THE PROCESS AS ITS MAIN COMPONENT

Ethno Yosida, Kameoka, Japan, assignor to Ohara Paragium Chemical, Co., Ltd., Kyoto, Japan

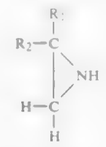
Filed Jan. 8, 1987, Ser. No. 1,476
Claims priority, application Japan, Jan. 10, 1986, 61-4036
Int. Cl.[4] C08K 3/36; C07C 121/413
U.S. Cl. 523—212 4 Claims

1. A process for preparing an α-cyanoacrylate compound characterized by the steps of thermally depolymerizing a condensation product obtained from a cyanoacetic acid ester and formaldehyde or a polymer thereof, using as a catalyst a polymerizable imine represented by the formula



wherein R_1 and R_2 are the same or different and are each CH_3 or H to obtain a crude monomer, and rectifying the crude monomer.

3. An adhesive composition comprising as its main component an α-cyanoacrylate compound prepared by thermally depolymerizing a condensation product obtained from a cyanoacetic acid ester and formaldehyde or a polymer thereof, using as a catalyst a polymerizable imine represented by the formula



wherein R_1 and R are the same or different and are each CH_3 or H to obtain a crude monomer, and rectifying the crude monomer using a distillation column packed with a plurality of containers each filled with a mixture of phosphorus pentoxide and hydroquinone, said containers being adapted to permit the mixture to contact the monomer.

4,764,546

FILLER-CONTAINING POLYPROPYLENE RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Tatsuyuki Mitsuno; Hideo Shinonaga, and Akio Daimon, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Apr. 23, 1987, Ser. No. 41,514
Claims priority, application Japan, Apr. 25, 1986, 61-97593; May 14, 1986, 61-111283
Int. Cl.[4] C08K 3/34, 9/06; C08L 35/00
U.S. Cl. 523—213 6 Claims

1. A filler-containing polypropylene resin composition comprising:
(a) from 27 to 87% by weight of a polypropylene resin,
(b) from 3 to 15% by weight of a modified polypropylene resin containing from 0.1 to 3 mol % of an unsaturated dicarboxylic acid anhydride repeating unit,
(c) from 5 to 30% by weight of an ethylene copolymer composed of from 82 to 98.7 mol % of an ethylene repeating unit, from 1 to 15 mol % of an ester repeating unit selected from alkyl acrylates and alkyl methacrylates having from 1 to 8 carbon atoms in the alkyl moiety thereof, and from 0.3 to 3 mol % of an unsaturated dicarboxylic acid anhydride repeating unit, and
(d) from 5 to 40% by weight of a filler.

4,764,547

RUBBER COMPOSITION COMPRISING SURFACE-TREATED CARBON BLACK

Takashi Hatanaka, and Michitaka Takeshita, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 23, 1987, Ser. No. 29,102
Claims priority, application Japan, Apr. 23, 1986, 61-92360
Int. Cl.[4] C08K 9/04
U.S. Cl. 523—215 5 Claims

1. A rubber composition for pneumatic tires comprising:
(A) 100 parts by weight of at least one member selected from the group consisting of natural rubber and synthetic diene rubber, and
(B) 30–140 parts by weight of carbon black, wherein said carbon black has a specific surface area of more than 130 m^2/g as measured by the nitrogen adsorption method, and wherein the surface of said carbon black is treated with about 0.5 to about 5.0 parts by weight of at least one compound selected from the group consisting of an amine compound and a quinoline compound based on 100 parts by weight of said carbon black, wherein the amine compound is at least one compound selected from the group consisting of a naphthylamine derivative, the reaction product of an amine and a ketone, p-isopropoxy.diphenylamine, bis(phenyl.iso-propylidene)-4,4'diphenylamine, p,p'-toluene.sulfonylamino-diphenylamine, 4,4'-(α,α-dimethyl.benzyl)diphenylamine, a mixture of di-aryl-p-phenylenediamine, N,N'-diphenyl.ethylenediamine, N,N'-diphenyl.propylenediamine, the reaction product of diphenylamine and diisobutylene, octylated diphenylamine, nonylated diphenylamine, displaced diphenylamine, a mixture of alkylated diphenylamine, a blend of a mixture of diphenylamine and petroleum wax, N,N'-diphenyl-p-phenylenediamine, N,N'-di-2-naphthyl-p-phenylenediamine, N,N'-bis(1-methylheptyl)-p-phenylenediamine, N,N'-bis(1,4-dimethylpentyl)-p-phenylenediamine, N,N'-bis(1-ethyl-3-methylpentyl)-p-phenylenediamine, N,N'-diaryl-p-phenylenediamine, N-isopropyl-N'-phenyl-p-phenylenediamine, N-cyclohexyl-N'-phenyl-p-phenylenediamine, N-alkyl-N'-phenyl-p-phenylenediamine, N-alkyl-N'-aryl-p-phenylenediamine, N-4-methyl-2-pentyl-N'-phenyl-p-phenylenediamine, N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine, N-(1-methylheptyl)-N'-phenyl-p-phenylenediamine, N-phenyl-N'-(3-methacryloyloxy-2-hydroxypropyl)-p-phenylenediamine, hindered.diaryl-p-phenylenediamine, phenylhexyl-p-phenylenediamine and phenyloctyl-p-phenylenediamine.

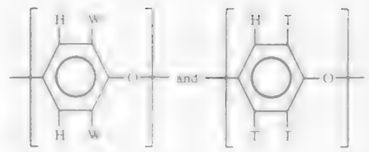
4,764,548

TILE ADHESIVE BASED ON WATER-DILUTABLE, CELLULOSE-CONTAINING PASTES

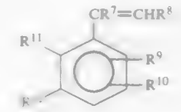
Lutz Hoppe, Walsrode; Erhard Lühmann, Bomlitz; Frank Höhl, Neuenkirchen, and Eugen Reinhardt, Walsrode, all of Fed. Rep. of Germany, assignors to Wolff Walsrode Aktiengesellschaft, Walsrode, Fed. Rep. of Germany

Continuation of Ser. No. 893,127, Aug. 1, 1986, abandoned. This application Nov. 6, 1987, Ser. No. 118,369
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1985, 3528266
Int. Cl.[4] C09D 3/12; C08L 1/00
U.S. Cl. 524—31 15 Claims

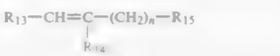
1. In a method for tiling comprising bringing tiles in contact with a tile adhesive dispersion, wherein the improvement comprises said adhesive dispersion comprising
(1) 10 to 95% by weight of a water-dilutable, cellulose nitrate-containing paste or mixture with a weight ratio of solids to solvent ≧1,
(2) 0.1 to 50% by weight of an adhesive resin dispersion or an adhesive resin which can be emulsified in water,
(3) a tile adhesive filler,
(4) 0 to 75% by weight of water, and
(5) 0 to 10% by weight of a thickener,
in which the sum of (1) to (5) is 100% by weight, said dispersion being essentially free of cement.



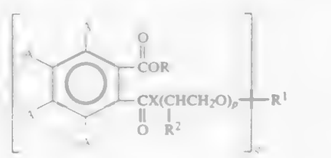
wherein W may be methyl, Cl, Br, or I; and T, T' and T'' may independently be alkyl of 1 to 3 carbons or aryl, alkaryl, haloaryl, arylalkyl of 6 to 12 carbons; or
(3) blends of (1) or (2) with
(a) vinyl aromatic resins wherein at least 10% by weight of the blend is derived from a vinyl aromatic monomer of the compound having the formula:



wherein R^7 and R^8 are independently selected from the group consisting of lower alkyl or alkenyl groups of from 1 to 6 carbon atoms and hydrogen; R^9 and R^{10} are independently selected from the group consisting of chloro, bromo, hydrogen, and lower alkyl of from 1 to 6 carbon atoms; R^{11} and R^{12} are independently selected from the group consisting of hydrogen and a lower alkyl or alkenyl group of 1 to 6 carbon atoms or R^{11} and R^{12} may be concatenated together with hydrocarbyl groups to form a naphthyl group; or
(b) copolymers of the vinyl aromatic monomer of (i)(3)(a) above with materials having the general formula:



wherein R_{13} and R_{14} represent a substituent independently selected from the group consisting of hydrogen, halogen, an alkyl group of 1 to 4 carbon atoms, carboalkoxy or R_7 and R_8 taken together represent an anhydride linkage of the structure—COOOC— and R_{15} is hydrogen, vinyl, an alkyl or alkenyl group having 1 to 12 carbon atoms, cycloalkyl, carboalkoxy, alkoxyalkyl, alkyl carboxy, ketoxy, halogen, carboxy, cyano or pyridyl and n is a whole number within the range of 0 to 9; and
(ii) a flame retarding effective amount of a tetrahalophthalate ester flame retardant processing aid of the formula:



wherein:
(a) R is selected from the group consisting of hydrogen, an alkyl or substituted alkyl of 1 to 30 carbons, hydroxyalkyl of 2 to 20 carbons, polyhydroxyalkyl of 3 to 10 carbons, and

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4,764,549

LOW TEMPERATURE CURING OF ELASTOMER

Milton S. Greenhalgh, Fairfield, and Joseph E. Vostovich, Bridgeport, both of Conn., assignors to Vulkor, Incorporated, Lowell, Mass.

Continuation of Ser. No. 648,405, Sep. 7, 1984, abandoned. This application Sep. 9, 1986, Ser. No. 906,578
Int. Cl.[4] C08K 3/34, 3/04; B05D 5/12
U.S. Cl. 427—118 4 Claims

1. A process for low temperature curing of an external cable jacket of a compounded polychloroprene rubber on the exterior of a composite cable that includes thermoplastic materials, said process comprising adding to polychloroprene rubber an amount of a curing system which comprises a vulcanizing agent selected from the group consisting of magnesium oxide-zinc oxide and lead oxide with a 90:10 to 10:90 parts by weight mixture of N,N'-diethylthiourea and the di-ortho-tolylguanadine salt of dicatechol borate and thereafter heating said rubber composition at a temperature of from 200°–300° F. for from 0.1 to 5 minutes at a pressure of from 3–10 atmospheres to effect the cure.

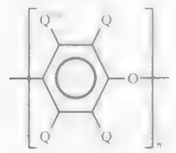
4,764,550

TETRAHALOPHTHALATE ESTERS AS FLAME RETARDANTS FOR POLYPHENYLENE ETHER RESINS

Ronald F. Lovenguth, Doylestown, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 777,043, Sep. 17, 1985, abandoned. This application Aug. 15, 1986, Ser. No. 896,896
Int. Cl.[4] C08K 5/12, 5/20
U.S. Cl. 524—217 9 Claims

1. A flame retardant composition comprising
(i) a polyphenylene ether resin selected from the group comprising
(1) a homopolymer having repeated structural units of the formula:



where Q, Q', Q'', and Q''' are independently selected from the group consisting of hydrogen, hydrocarbon radicals, halohydrocarbon radicals having at least two carbon atoms between the halogen atom and phenyl nucleus, and Q', Q'', and Q''' in addition may be halogen; and n represents the total number of monomer units and is an integer of at least 10;
(2) a copolymer with repeating units

VOL 1093 ISS 3 AUG 16 1988 UMI

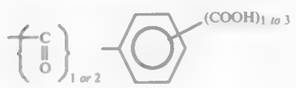


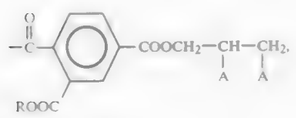
where R^8 is an alkyl or substituted alkyl of 1 to 18 carbons, and b is 1 to 50;

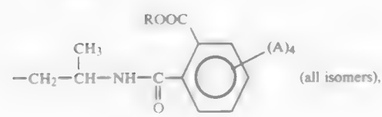
(b) R^1 is selected from the group consisting of hydrogen, an alkyl or substituted alkyl of 1 to 30 carbons, alkenyl or substituted alkenyl of 2 to 22 carbons,

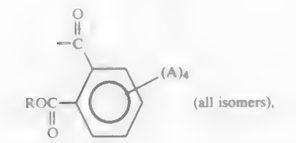


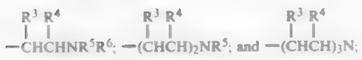
where R^7 is an alkyl of 1 to 18 carbons; a polyhydroxyalkyl of 3 to 12 carbons;











with the proviso that the valence of R^1 is equal to q;

(c) R^2 is independently selected from the group consisting of H and CH_3;

(d) R^3, R^4, R^5, and R^6 are independently selected from the group consisting of H and an alkyl of 1 to 18 carbons;

(e) p is an integer of 0 to 50;

(f) q is an integer of 1 to 6;

(g) X is selected from the group consisting of O or NH; and

(h) A is selected from the group consisting of Cl or Br; and

(i) provided further that when p is zero and X is oxygen that R and R^1 are other than a neopentyl group.

4,764,551

DYEABLE POLY-ALPHA-OLEFIN COMPOSITION

Tadayuki Ohmae; Kentaro Mashita; Noboru Yamaguchi, and Kouichiro Asao, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 5, 1987, Ser. No. 116,817

Claims priority, application Japan, Nov. 5, 1986, 61-263463

Int. Cl.[4] C08K *5/04*

U.S. Cl. 524—394 4 Claims

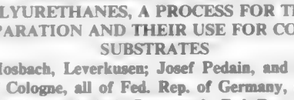
1. A dyeable poly-α-olefin composition having improved dyeablity and comprising a melt kneaded mixture of

(A) 100 parts by weight of a poly-α-olefin;

(B) from 1 to 20 parts by weight of an ethylene copolymer having a melt index as defined in JIS K-6760 at 190° C. in the range of from 1 to 1,000 g/10 min, which is composed of

(a) from 40 to 95% by weight of ethylene and

(b) from 5 to 60% by weight of at least one dialkylaminoalkyl acrylamides comonomer represented by the formula:



wherein R_1 represents hydrogen or a methyl group; R_2 and R_3 each represents hydrogen or an alkyl group having from 1 to 4 carbon atoms; and n represents an integer of from 2 to 4; and

(C) from 0 to 3 parts by weight of at least one alkali metal salt of an organic carboxylic acid having from 7 to 24 carbon atoms.

4,764,552

GRAFTED NITRILE RUBBER—PLASTICIZED PVC BLENDS AS THERMOPLASTIC ELASTOMERS

John C. Falk, Northbrook, Ill., and Leland B. Kliever, Randolph, Ohio, assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation-in-part of Ser. No. 585,078, Mar. 1, 1984, abandoned. This application Nov. 24, 1986, Ser. No. 933,956

Int. Cl.[4] C08L *51/00*

U.S. Cl. 524—504 3 Claims

1. A composition consisting of:

(a) 100 parts by weight of a PVC resin;

(b) from 40 to 250 parts by weight of a nitrile rubber graft copolymer, said graft copolymer including from about 40 to 20 wt. % graft phase and from about 60 to 80 wt. % rubber substrate such that:

(i) said graft phase is derived from a monomer mixture consisting of vinyl aromatic monomers and vinyl nitrile monomers; and

(ii) said rubber substrate is a nitrile rubber;

and

(c) from 80 to 120 parts by weight of a plasticizer for PVC resins;

such that said composition is a thermoplastic elastomer.

4,764,553

WATER SOLUBLE OR DISPERSIBLE POLYURETHANES, A PROCESS FOR THEIR PREPARATION AND THEIR USE FOR COATING SUBSTRATES

Jürgen Mosbach, Leverkusen; Josef Pedain, and Klaus Noll, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

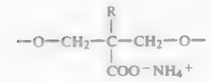
Filed Dec. 1, 1987, Ser. No. 127,340

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1986, 3641494

Int. Cl.[4] C08G *18/48*

U.S. Cl. 524—591 9 Claims

1. A water-soluble or dispersible polyurethane containing about 0.5 to 30% by weight, based on the weight of the polyurethane, of chemically incorporated, hydrophilic ethylene oxide units arranged in lateral and/or terminal polyether chains to said polyurethane. and about 0.1 to 120 milliequivalents, per 100 g of solids content, of chemically incorporated carboxylate groups corresponding to the formula



wherein R denotes an alkyl group with 1 to 4 carbon atoms and said hydrophilic ethylene oxide units and said carboxylate groups are present in an amount sufficient to ensure the solubility or dispersibility of said polyurethane in water.

4,764,554

THICKENERS FOR EMULSION PAINTS

Christopher J. Tonge, Darwen, England, assignor to Crown Decorative Products Limited, Darwen, England

Filed Jun. 1, 1987, Ser. No. 55,839

Claims priority, application United Kingdom, Jun. 3, 1986, 8613408

Int. Cl.[4] C08F *120/26, 20/26;* C08L *31/06, 33/02*

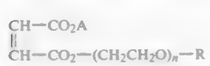
U.S. Cl. 524—558 8 Claims

1. A thickener comprising a polymer prepared from the following components:

(a) 25–45% of methacrylic acid, acrylic acid or a mixture thereof;

(b) 25–65% of alkyl acrylate, alkyl methacrylate, or a mixture thereof;

(c) 1–40% of an ester of composition;



in which R is a C_{12}–C_{25} alkyl group,

n = at least 10; m = at least 5

A = H, $-(CH_2CH_2O)_n-R$, C_1–C_{20} alkyl, $-(CH_2CH_2O)_m-H$ or $-(CH_2CH_2O)_m-CH_3$

(d) 0–1% of a polyethylenically unsaturated monomer effective for chain branching or crosslinking,

the total of components (a), (b), (c) and (d) being in substance 100%.

4,764,555

THERMOPLASTIC RESIN COMPOSITION

Hideyuki Shigemitsu; Masafumi Hongo, and Yutaka Toyooka, all of Ohtake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Oct. 7, 1987, Ser. No. 105,728

Claims priority, application Japan, Oct. 29, 1986, 61-257708

Int. Cl.[4] C08L *69/00*

U.S. Cl. 525—67 4 Claims

1. A thermoplastic resin composition comprising:

(A) from 15 to 90 parts by weight of a polycarbonate resin;

(B) from 10 to 85 parts by weight of a multi-stage graft copolymer obtained by graft polymerizing from 2 to 50 parts by weight of an acrylate monomer (b) as a monomer for the first stage graft polymerization, in the presence of from 15 to 80 parts by weight of a rubbery polymer (a) of which at least 50% by weight is constituted by butadiene units and then graft polymerizing from 18 to 83 parts by weight of vinyl monomers (c) comprising from 25 to 85% by weight of an aromatic vinyl monomer (i), from 15 to 40% by weight of a vinyl cyanide monomer (ii) and from 0 to 35% by weight of another vinyl monomer (iii) copolymerizable with these monomers, as monomers for the second stage or subsequent graft polymerization, the total amount of the monomers (i) to (iii) being 100% by weight, and the total amount of components (a) to (c) being 100 parts by weight; and

(C) from 0 to 60 parts by weight of a polymer obtained by polymerizing at least one member selected from the group consisting of an aromatic vinyl monomer, a vinyl cyanide monomer and a methacrylate monomer;

the total amount of components (A), (B) and (C) being 100 parts by weight.

4,764,556

THERMOPLASTIC MOLDING MATERIALS OF POLYESTER AND POLYCARBONATE

Dietrich Lausberg, Ludwigshafen; Christof Taubitz, and Manfred Knoll, both of Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed May 8, 1987, Ser. No. 47,132

Claims priority, application Fed. Rep. of Germany, May 21, 1986, 3617070

Int. Cl.[4] C08L *69/00*

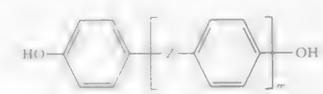
U.S. Cl. 525—67 39 Claims

1. A thermoplastic molding material, comprising:

(A) from 10 to 89% by weight of a blend of

(A_1) from 20 to 98% by weight, based on (A_1)+(A_2), of a polyester of an aromatic dicarboxylic acid and an aliphatic dihydroxy compound and

(A_2) from 2 to 80% by weight, based on (A_1)+(A_2), of a polyester of an aromatic dicarboxylic acid and an aromatic dihydroxy compound of the formula I



(I)

or its C_1–C_6-alkyl or halogen derivative substituted in the nucleus, where Z is an alkylene or cycloalkylene group of not more than 8 carbon atoms, an arylene group of not more than 12 carbon atoms, —O—, —S—,



or a chemical bond and m is 0 or 1,

(B) from 10 to 89% by weight of polycarbonate and

(C) from 1 to 30% by weight of a rubber toughener having a glass transition temperature of less than −30° C.

4,764,557

MOULDING COMPOSITIONS OF UNIFORM PARTICLE SIZE AND IMPROVED THERMAL STABILITY

Herbert Eichenauer, Dormagen; Alfred Pischtschan, Kuerten, and Karl-Heinz Ott, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 10, 1986, Ser. No. 827,639

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1985, 3505748

Int. Cl.[4] C08L *39/04, 51/04*

U.S. Cl. 525—72 5 Claims

1. An improved elastic-thermoplastic and thermoplastic powder-form moulding composition mixture prepared by the process which comprises mixing (i) a latex of a polymeric moulding composition with (ii) from 0.75 to 10 parts by weight, based on 100 parts by weight of latex solids, of a thio containing thermoplastic vinyl polymer in emulsion form, said vinyl polymer in emulsion form, said vinyl polymer having a Vicat A/120 softening temperature of from 30° to 95° C. and a content of thioalkyl groups of from 0.5 to 5.0% by weight, and precipitating the moulding composition mixture by addition of coagulating reagents at from 75° to 120° C. and recovering the polymer mixture.

VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,558

ALKYL VINYL ETHER/N-ARYLMALEIMIDE COPOLYMER CONTAINING POLYMER ALLOY

Bi Le-Khac, West Chester, Pa., assignor to Arco Chemical Company, Newtown Square, Pa.

Filed Mar. 20, 1987, Ser. No. 28,363
Int. Cl.[4] C08L *25/12, 35/08, 51/04, 55/02*
U.S. Cl. 525—73 16 Claims

1. A polymer composition comprising (A) a copolymer having from about 40 to about 60 mole % of at least one C_1 to C_{18} alkyl vinyl ether and from about 60 to about 40 mole % of at least one N-aryl substituted maleimide, said component (A) having a peak molecular weight of from about 50,000 to about 500,000 and (B) a polymer selected from the group consisting of (1) a copolymer matrix of from about 65 to about 85% by weight of a vinyl aromatic monomer selected from the group consisting of styrene and α-methylstyrene and from about 15 to about 35% by weight acrylonitrile, and (2) a rubber grafted with a copolymer matrix of from about 65 to about 85% by weight of a vinyl aromatic monomer selected from the group consisting of styrene and α-methylstyrene, and from about 15 to about 35% by weight acrylonitrile wherein the weight ratio of component (A) to the copolymer matrix of component (B) is from 99:1 to 1:99; wherein if component (B) (2) is employed, the rubber will be present in an amount of from about 1 to about 40 parts per each 100 parts of the copolymer matrix; and wherein component (A) and the copolymer matrix of (B) are thermodynamically miscible with one another such that the polymer composition exhibits a single glass transition temperature value.

4,764,559

POLYPHENYLENE ETHER-POLYPROPYLENE RESIN COMPOSITION

Shin-ichi Yamauchi; Yusuke Arashiro, and Kenyu Ohno, all of Mie, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1987, Ser. No. 120,838
Claims priority, application Japan, Nov. 18, 1986, 61-274340
Int. Cl.[4] C08L *71/04*
U.S. Cl. 525—92 27 Claims

1. A resin composition comprising (a) from 20 to 80% by weight of a polyphenylene ether resin having an intrinsic viscosity of less than 0.4 dl/g in chloroform at 30° C. or a mixture of such a polyphenylene ether resin and a styrene resin, (b) from 10 to 80% by weight of a polyolefin resin selected from the group consisting of a propylene homopolymer, a propylene copolymer consisting mainly of propylene, and a mixture of such a propylene homo- or copolymer with other α-olefin polymer, and (c) from 2 to 40% by weight of a block copolymer comprising a styrene polymer block and a conjugated diene polymer block or a hydrogenation product thereof in which the conjugated diene polymer block is hydrogenated.

4,764,560

INTERPENETRATING POLYMERIC NETWORK COMPRISING POLYTETRAFLUOROETHYLENE AND POLYSILOXANE

Tyrone D. Mitchell, Albany, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 797,575, Nov. 13, 1985, abandoned.
This application Aug. 10, 1987, Ser. No. 83,885
Int. Cl.[4] C08L *27/18, 83/06;* C08K *3/36, 5/01*
U.S. Cl. 524—506 21 Claims

1. A composition having a porous microstructure of interpenetrating matrices, comprising:
(a) a polytetrafluoroethylene polymer network characterized by nodes interconnected by fibrils, and
(b) a second polymer network consisting essentially of diorganosiloxy units
wherein the weight ratio of component (b) to component (a) is from 1:100 to about 20:80.

4,764,561

MELAMINE-FORMALDEHYDE/STYRENE-ACRYLATE PAINT DETACKIFICATION COMPOSITION

Charles R. Kiss, Ashtabula, Ohio, and Shu-Jen W. Huang, Schaumburg, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Jun. 12, 1987, Ser. No. 62,526
Int. Cl.[4] B01D *47/00;* C08F *82/80;* C08L *31/00, 33/00*
U.S. Cl. 525—163 1 Claim

1. A method for detackifying paint in a paint booth comprising steps of dosing a paint spray booth collection system with at least 25 ppm of a melamine-formaldehyde and styrene-acrylate mixture, said melamine-formaldehyde being in relation to said styrene-acrylate in a mole ratio falling in the range of 2:1 to 4:1.

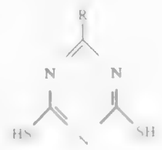
4,764,562

CHLORINATED RUBBER

Tetsuo Tojo; Takashi Nakahara; Yasuhiko Otawa, all of Ichihara, and Katsuo Okamoto, Funabashi, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 30, 1986, Ser. No. 924,869
Claims priority, application Japan, Oct. 31, 1985, 60-242716
Int. Cl.[4] C08F *271/02*
U.S. Cl. 525—281 3 Claims

1. A vulcanizable chlorinated rubber composition comprising
(A) a chlorinated rubber having a chlorine content of 10 to 45% by weight and a Mooney viscosity, ML_{1+4}(121° C.), of 10 to 190, said chlorinated rubber being obtained by chlorinating a ethylene/alpha-olefin/vinylnorbornene copolymer rubber containing ethylene units and units of an alpha-olefin having 3 to 14 carbon atoms in a mole ratio of from 50:50 to 95:5 and 3 to 30 millimoles, per 100 g of the ethylene units and the alpha-olefin units combined, of 5-vinyl-2-norbornene units, and
(B) a triazine compound represented by the following general formula



wherein R is R^1R^2N—, R^1O—, R^1S or



in which R^1 and R^2 each represents a hydrogen atom, a C_1–C_{20} alkyl group, a C_6–C_{20} aryl group, a substituted C_1–C_{20} alkyl group or a substituted C_6–C_{20} aryl group.

4,764,563

CLEAR IMPACT MODIFIER FOR PVC

Frank L. Meredith, Parkersburg, and Lewis E. Ferguson, Vienna, both of W. Va., assignors to Borg-Warner Chemicals, Inc., Parkersburg, W. Va.

Continuation-in-part of Ser. No. 794,362, Nov. 4, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 20,283
Int. Cl.[4] C08F *279/02, 279/04, 291/00;* C08L *55/02*
U.S. Cl. 525—316 6 Claims

1. An impact modifier for transparent poly(vinyl choride) prepared by grafting:

A. a rubbery, butadiene based substrate containing:
(i) 78–95 wt% butadiene,
(ii) 22–5 wt% styrene,
(iii) 0–15 wt of at least one of acrylonitrile and an alkyl acrylate containing four or more carbon atoms, and
(iv) 0–2 wt% of a copolymerizable crosslinking agent, with;
B. a monomer mixture containing:
(i) one or more monovinyl aromatic compounds,
(ii) an ethylenically unsaturated nitrile, the ratio of B(i) to B(ii) being from 3/1 to 5/1,
(iii) 0–2 wt% of a copolymerizable crosslinking agent,
(iv) 0–2 wt% of a chain transfer agent, and
(v) 0–2 wt% of a graft enhancing agent
said substrate being 100 parts by weight in the presence of from 40 to 70 parts by weight of said monomer mixture.

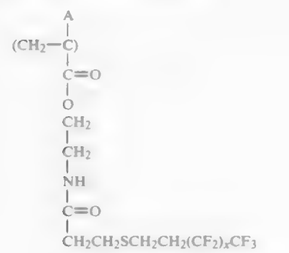
4,764,564

PERFLUOROCARBON BASED POLYMERIC COATINGS HAVING LOW CRITICAL SURFACE TENSIONS

Donald L. Schmidt, and Demetrius Urchick, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 609,180, May 11, 1984, Pat. No. 4,606,973. This application Jun. 23, 1986, Ser. No. 877,594
Int. Cl.[4] C08F *8/34*
U.S. Cl. 525—328.2 5 Claims

1. A polymer composition comprising pendant amine-functional portions linked to a perfluorocarbon moiety having a perfluoroalkyl group through a carboxy group and having repeating units of the formula:



wherein A is hydrogen or methyl, and x is from about 3 to about 18.

4,764,565

RUBBER WITH NICKEL DITHIOCARBATES

Tadanobu Iwasa; Katsumasa Takeuchi, and Toshikatsu Kanehara, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Feb. 22, 1985, Ser. No. 704,402
Claims priority, application Japan, Feb. 25, 1984, 59-35001
Int. Cl.[4] C08F *8/00*
U.S. Cl. 525—352 5 Claims



1. A method of improving the adhesiveness of a halogenated butyl rubber to a metal surface comprising blending into said butyl rubber from 5 to 20 weight parts of nickel dithiocarbamate per 100 weight parts of rubber.

4,764,566

PENDANT BIPHENYLENE AS A CROSS-LINKING SITE IN AROMATIC THERMOPLASTIC POLYMERS

Raymond J. Swedo, Mt. Prospect, Ill., assignor to Allied-Signal Inc., Morristown, N.J.

Filed May 7, 1987, Ser. No. 46,813
Int. Cl.[4] C08L *71/04*
U.S. Cl. 525—390 14 Claims

1. A method of cross-linking a thermally stable polymer containing aromatic nuclei selected from the group consisting of poly(phenylene oxides), polyaryl ether-ketones, polyaryl ether-ketone-sulfones, and polycarbonates, said cross-linking unaccompanied by the production of gaseous void-producing byproducts, comprising reacting the polymer with a monofunctional biphenylene monomer to afford a reaction product having a plurality of biphenylene moieties pendant to the polymer backbone, and curing the product at a temperature in excess of about 300° C. for a time sufficient to cross-link said polymer.

4,764,567

PROCESS FOR THE PREPARATION OF POLYOXYALKYLENE BLOCK POLYETHERS HAVING ENHANCED PROPERTIES

Roger A. Ott, Wachenheim, Fed. Rep. of Germany, assignor to BASF Corporation, Parsippany, N.J.

Filed Nov. 20, 1986, Ser. No. 932,575
Int. Cl.[4] C08L *71/02*
U.S. Cl. 525—403 19 Claims



1. A process for the preparation of polyoxyalkylene block polyethers containing one or more polyoxyethylene moieties and one or more polyoxy(higher alkylene) moieties, comprising catalyzing at least the formation of said polyoxyethylene moiety from ethylene oxide with a basic cesium-containing catalyst.

4,764,568

CROSSLINKABLE POLYETHER RESINS HAVING ARALKOXY

Sameer H. Eldin, Fribourg, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 14, 1986, Ser. No. 885,612
Claims priority, application Switzerland, Jul. 26, 1985, 3242/85
Int. Cl.[4] C08G *65/42*
U.S. Cl. 525—417 12 Claims

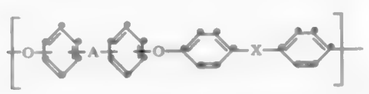
1. A polyether resin having a specific viscosity of 0.1 to 2.5, measured at 30° C. in a 2% solution in dimethylformamide, which resin contains aralkoxy end groups of formula I

—O—R—Ar (I)

and, based on the total amount of structural units present in the

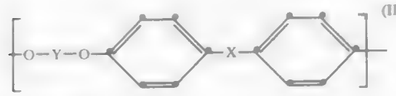
VOL 1093 ISS 3 AG 16 1988 UMI

polyether resin, 100 to 10 mol% of the repeating structural unit of formula II



(II)

and 90 to 0 mol% of the repeating structural unit of formula III



(III)

in which formulae

R is a C_1–C_{10}alkylene group,

Ar is a phenyl, naphthyl or anthryl group, each unsubstituted or substituted by C_1–C_4alkyl,

A is a radical of the formula

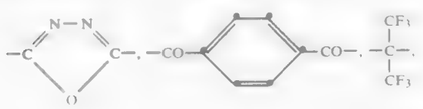


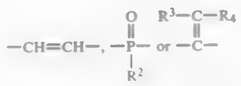
(IV)

wherein, when R^1 is a hydrogen atom, p is a value from 1 to 20, or, when R^1 is an aryl or aralkyl group, each of which contains 6 or 10 carbon atoms in the ring or ring system and up to 10 carbon atoms in the alkylene moiety and is unsubstituted or substituted at the nucleus by C_1–C_4alkyl, p is 1,

X is a member selected from the group consisting of

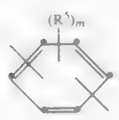
$-SO_2-$, $-CO-$, $-SO-$, $-N{=}N-$, $-CF_2-CF_2-$,





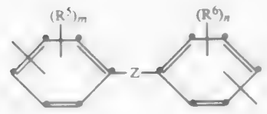
in which formulae R^2 is a C_1–C_8alkyl group, and each of R^3 and R^4 is a hydrogen or halogen atom,

Y is a radical of formula V or VI



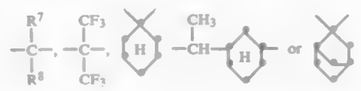
(V)

or



(VI)

in which formulae each of m and n is 0 or a value from 1 to 4, R^5 and R^6 are the same or different and each is a halogen atom, or a C_1–C_4alkyl or C_1–C_4alkoxy group, each unsubstituted or substituted by phenyl, and when each of m and n is 1 or 2, each of R^5 and R^6 is also an allyl group, and Z is a direct bond or a radical selected from the group consisting of —O—, —SO—, SO_2—, —S—, —S—S—,



in which formulae each of R^7 and R^8 independently of the other is a C_1–C_4alkyl or phenyl group.

4,764,569

COATING COMPOSITION HAVING IMPROVED WEATHERING RESISTANCE AND RECOATING PROPERTY RESINOUS COMPOSITION TO BE USED THEREIN

Hirotoshi Umemoto; Hisaki Tanabe, both of Kyoto, and Yutaka Takeuchi, Kanagawa, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation of Ser. No. 671,077, Nov. 13, 1984, abandoned. This application Dec. 24, 1986, Ser. No. 945,163

Claims priority, application Japan, Nov. 12, 1983, 58-212799; Nov. 12, 1983, 58-212800; Nov. 19, 1983, 58-218126

Int. Cl.[4] **C08G** *63/46*

U.S. Cl. 525—446 **4 Claims**

1. A resinous composition for coating use obtained by the reaction of a base resin having both hydroxyl and carboxyl groups which is selected from the group consisting of a polyester resin and an alkyd resin, with an organopolysiloxane resin of the formula:



wherein R is a monovalent organic group attached to Si through C—Si bonding; R′ is hydrogen, a C_1 to C_{20} alkyl or an aryl group; and n and m each represents a real number of 4 or less, providing that the sum of n and m is 4 or less, and having a number average molecular weight of about 500 to 2000, and with an alkylenimine compound having at least one C_2 to C_3 alkylenimine ring.

4,764,570

SULPHONAMIDE DERIVATIVES AND THEIR PREPARATION AND USE

Steffen Piesch, Oberursel, and Peter Dörries, Frankfurt, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

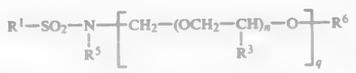
Filed Apr. 6, 1987, Ser. No. 34,601

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1985, 3505766

Int. Cl.[4] **C08G** *12/32, 12/40*

U.S. Cl. 525—513 **4 Claims**

1. Modified melamine-formaldehyde resins which comprise a melamine-formaldehyde resin and 1 to 20% by weight, based on resin solids content, of sulphonamide compounds of the formula



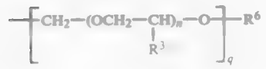
wherein

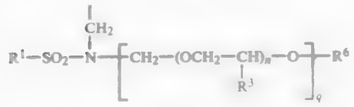
R^1 is phenyl, phenyl substituted phenyl, or alkyl substituted phenyl having 1 to 4 alkyl carbon atoms,

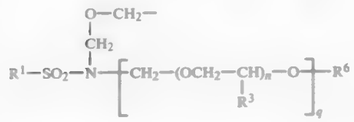
R^3 is hydrogen or alkyl having 1 to 4 carbon atoms,

R^4 is hydrogen or alkyl having 1 to 18 carbon atoms,

R^5 is hydrogen, alkyl having 1 to 4 carbon atoms, hydroxymethyl,







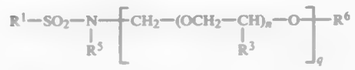
R^6 is hydrogen, alkyl having 1 to 18 carbon atoms or



n is a number from 2 to 19,

q is 1, 2 or 3.

4. A process for preparation of a modified melamine-formaldehyde resin which comprises reacting melamine and formaldehyde in a molar ratio of from 1:1.4 to 1:1.65 in the presence of from 1 to 20% by weight of sulphonamide compounds of the formula



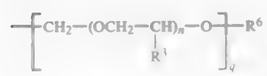
wherein

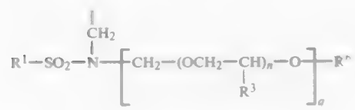
R^1 is phenyl, phenyl substituted phenyl, or alkyl substituted phenyl having 1 to 4 alkyl carbon atoms,

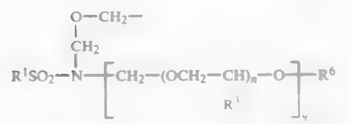
R^3 is hydrogen or alkyl having 1 to 4 carbon atoms,

R^4 is hydrogen or alkyl having 1 to 18 carbon atoms,

R^5 is hydrogen, alkyl having 1 to 4 carbon atoms, hydroxymethyl,

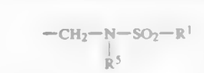






-continued

R^6 is hydrogen, alkyl having 1 to 18 carbon atoms or



n is a number from 2 to 19,

q is 1, 2 or 3.

4,764,571

EPOXY RESINS FROM DICYCLOPENTADIENE-PHENOL ADDUCTS AND A METHOD OF PREPARING THE SAME

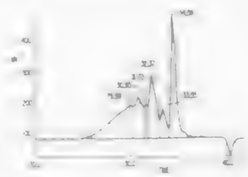
Hiroaki Namba, and Minoru Hishinuma, both of Iwakuni, Japan, assignors to Sanyo-Kokusaku Pulp Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 767,434, Aug. 20, 1985, abandoned. This application Jan. 30, 1987, Ser. No. 9,262

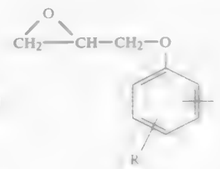
Claims priority, application Japan, Nov. 20, 1984, 59-245795

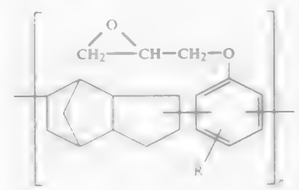
Int. Cl.[4] **C08G** *59/06*

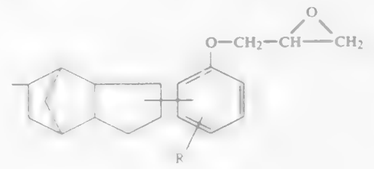
U.S. Cl. 525—534 **9 Claims**



1. An epoxy resin having the formula:







wherein R is a hydrogen atom or a methyl group, and n is an

VOL 1093 ISS 3 AUG 16 1988 UMI

integer of from 0 to 15, and wherein said resin has an epoxy equivalent in the range of 260–345 g/eq.

4,764,572

ANIONIC POLYMERIZATION PROCESS

Arthur R. Bean, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jul. 23, 1985, Ser. No. 758,182
Int. Cl.[4] C08F 4/48, 36/06, 36/08
U.S. Cl. 526—87 5 Claims

1. In an anionic polymerization process for the preparation of block copolymers which comprises steps for

(a) contacting and reacting in a batch mode and at a temperature of at least about 50° C. a charge of a first monomer selected from the group consisting of butadiene, isoprene, styrene, and mixtures thereof and a charge of anionic polymerization initiator, and

(b) subsequently contacting and reacting in a continuous or semi-continuous mode the product of step (a) with a charge of a second monomer selected from the group consisting of butadiene, isoprene, styrene, and mixtures thereof, said second monomer being a different monomer than the said first monomer, to continue the anionic polymerization reaction,

the improvement which comprises commencing continuous or semi-continuous step (b) by addition of the second monomer to the product of batch step (a) when the first monomer conversion in step (a) reaches a level between about 99 and 99.9 percent, and while the molar ratio of the unreacted first monomer in step (a) to the initiator charge to step (a) remains at least about 1:1.

4,764,573

ELECTRICALLY CONDUCTIVE PYRROLE POLYMERS

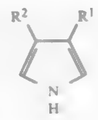
Ronald E. Myers, Strongsville, Ohio, assignor to The B F Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 618,701, Jun. 8, 1984, abandoned. This application Aug. 2, 1985, Ser. No. 761,711
Int. Cl.[4] C08F 4/06, 4/40
U.S. Cl. 526—90 18 Claims

1. A process for preparing an electrically conductive pyrrole polymer ("PP")/substituted pyrrole polymer ("subs PP"), comprising,

(a) dispersing a finely divided anhydrous polymerization initiator selected from the group consisting of halides of a Group VIII metal selected from iron, cobalt and nickel in an anhydrous inert liquid reaction medium so as to form a dispersion of said initiator in said medium, and,

(b) adding anhydrous essentially pure liquid pyrrole/substituted pyrrole monomer which is soluble in said reaction medium, to said dispersion at a temperature in the range from above the freezing point of said inert liquid to below its boiling point, so as to form said polymer which contains an ion selected from the group consisting of said Group VIII metal, halogen, and combinations thereof, as charged species, said monomer having the structure



wherein,

R^1 is selected from the group consisting of hydrogen, alkyl having from 1 to about 6 carbon atoms, cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted, alkoxyalkyl having from 3 to about 24 carbon atoms, benzyl, and benzyl which is ring-substituted with halogen or lower alkyl having from 1 to about 6 carbon atoms;

R^2 is selected from the group consisting of hydrogen, hydroxyphenyl, hydroxyphenyl which is ring-substituted, and an acyclic ether selected from the group consisting of (i) alkoxy represented by $—OR^3$, wherein R^3 represents alkyl having from 1 to about 12 carbon atoms, alkoxyalkyl having from 2 to about 24 carbon atoms, phenyl or substituted phenyl, benzyl or substituted benzyl, heteroaryl or substituted heteroaryl; (ii) polyalkoxy represented by the structure $CH_3—OCH_2CH_2—_{n'}$, wherein n' is an integer in the range from 1 to about 20; and (iii) $R^4—O—R^5$ wherein either R^4 or R^5 is a linking group selected from phenyl and benzyl, each of which may be substituted, alkyl having from 1 to about 24 carbon atoms, and cycloalkyl having from 3 to about 7 ring carbon atoms one or more of which may be substituted; and,

R^1 may be substituted with R^2, and if so substituted, each R^2 substituent may be the same or different;

whereby said PP/subs PP formed has a conductivity in the range from about 10^{-3} to about 150 $ohm^{-1}cm^{-1}$ ("S/cm").

4,764,574

INVERSE EMULSION POLYMERIZATION WITH SORBITAN FATTY ACID ESTERS AND ETHOXYLATED ALCOHOL

Earl Clark, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 9, 1986, Ser. No. 939,641
Int. Cl.[4] C08F 2/32
U.S. Cl. 526—207 17 Claims

1. A water-in-oil emulsion polymerization process for making a water-soluble polymer from a monomer system comprising at least one of an N-vinyl lactam and a vinyl-containing sulfonate or the corresponding acid, comprising:

combining an aqueous component, a hydrocarbon component, said monomer system, an initiator, and a surfactant system, wherein said surfactant system comprises

(1) a first surfactant composition consisting essentially of a blend of a sorbitan fatty acid ester and a polyethoxylated sorbitan fatty acid ester, said first surfactant composition having an HLB within the range of about 7 to about 9;

(2) a second surfactant composition consisting essentially of an ethoxylated alcohol of the formula

$$R^2(OCH_2CH_2)_4OH$$

where R^2 is a straight chain hydrocarbon group having 16 to 18 carbon atoms, said second surfactant composition having an HLB within the range of about 7 to about 9;

agitating the resulting inverse emulsion and maintaining said inverse emulsion under polymerization conditions for a time sufficient to form said polymer.

4,764,575

HYDROPHILIC MATERIALS

Donald J. Highgate, The Wilderness, Holmbury Hill Road, Dorking, Surrey, and John D. Frankland, 89 Redhill Wood, New Ash Green, Dartford, Kent, both of England

Filed Nov. 25, 1986, Ser. No. 934,703
Claims priority, application United Kingdom, Nov. 25, 1985, [illegible]
Int. Cl.[4] C08F 26/08
U.S. Cl. 526—264 1 Claim

1. A cross-linked copolymer derived from monomers which comprise a mixture consisting of 40 to 60% by volume acrylonitrile or methacrylonitrile and 60 to 40% by volume 1-vinyl-2-pyrrolidinone, and up to 10% by volume, based on the volume of said mixture, of a cross-linking agent.

4,764,576

SILICONE-BASED COATING COMPOSITION FOR SURFACE-RELEASING FILM

Masahiko Ogawa, and Yasuaki Hara, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Chiyoda, Japan

Filed Aug. 25, 1987, Ser. No. 89,232
Claims priority, application Japan, Aug. 26, 1986, 61-199423
Int. Cl.[4] C08K 5/24
U.S. Cl. 524—265 8 Claims

1. A silicone-based surface-releasing coating composition which comprises, as uniformly mixed together:

(a) 100 parts by weight of an organopolysiloxane of which from 0.1 to 5% in number of the organic groups bonded to the silicon atoms are alkenyl groups, the remainder of the organic groups being monovalent hydrocarbon groups free from aliphatic unsaturation;

(b) from 0.1 to 10 parts by weight of an organohydrogenpolysiloxane having, in a molecule, at least three hydrogen atoms directly bonded to the silicon atoms;

(c) from 0.1 to 1.0 part by weight of a salt of a metal selected from the class consisting of metals belonging to the First, Second and Eighth Groups in the Periodic Table;

(d) from 0.1 to 10 parts by weight of an organopolysiloxane represented by the general formula

$$R^1_aR^2_{3-a}Si\text{-}(O—SiR^1R^2)_p\text{-}(O—SiR^2_2)_q\text{-}O—SiR^1_bR^2_{3-b},$$

in which R^2 is a monovalent hydrocarbon group, the subscripts a and b are each zero, 1, 2 or 3, the subscripts p and q are each zero or a positive integer not exceeding 100, the total of p+q being not exceeding 100, with the proviso that a+b+p is at least 1, and R^1 is a group represented by the formula

$$HO(CH_2CH_2O)_nCH_2CH_2CH_2—,$$

n being a positive integer not exceeding 9; and

(e) a catalytic amount of a platinum compound.

4,764,577

CURABLE POLYMERIC COMPOSITION

Yoshio Inoue, and Masatoshi Arai, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 29, 1987, Ser. No. 79,063
Claims priority, application Japan, Jul. 30, 1986, 61-179573
Int. Cl.[4] C08G 65/32
U.S. Cl. 525—409 9 Claims

1. A curable polymeric composition which comprises: (A) an organic polymer having at least two alkenyloxysilyl groups; (B) an organosilicon compound having at least two hydrosilyl groups; and (C) a catalytic amount of a platinum compound, wherein (B) is present in a curable amount of up to 5 times by weight of component (A).

4,764,578

COMPOSITIONS OF POLYARYLOXYPYRIDINE OLIGOMERS WITH PHTHALONITRILE END GROUPS, THEIR PREPARATION AND USE FOR MANUFACTURING POLYARYLOXYPYRIDINE CO-PHTHALOCYANINE LATTICES

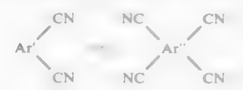
Jean Malinge, Givors; Guy Rabilloud, Grenoble, and Bernard Sillion, Lyons, all of France, assignors to Centre d'Etude des Materiaux Organiques pour Technologies Avancees, Vernaison, France

Filed Sep. 16, 1986, Ser. No. 907,905
Claims priority, application France, Sep. 16, 1985, 85 13793
Int. Cl.[4] C08G 83/00, 73/00
U.S. Cl. 528—27 15 Claims

1. A polyaryloxypyridine oligomers with phthalonitrile end groups, obtained by a process comprising (a) reacting at least one alkali diphenolate with at least one dihalogenopyridine to form a polyaryloxypyridine oligomer having alkali phenolate end groups; and (b) reacting said polyaryloxypyridine oligomer with 4-nitrophthalonitrile to form at least one polyaryloxypyridine oligomer having phthalonitrile end groups.

9. A method for manufacturing polyaryloxypyridine co-polyphthalocyanine lattices, wherein a composition of polyaryloxypyridine oligomers with phthalonitrile end groups according to claim 1

is subjected to polymerization conditions in the presence of at least one co-reactant derived from benzhydrol and complying with the formula:



wherein Ar' is a divalent aromatic radical formed of several fused or interlinked rings, at least two rings being linked through a —CHOH — group, the two valences of said radical being on separate carbon atoms in ortho-position of a same ring, and Ar'' is a tetravalent aromatic radical formed of several fused or interlinked rings, at least two rings being linked through a —CHOH— group, the four valences of said radical being on separate carbon atoms placed two by two in ortho position of a same ring, said co-reactant being used in a proportion corresponding to 10–50% of —CHOH — groups with respect to the total number of orthodinitrile groups.

4,764,579

PACKAGED ADHESIVE

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Division of Ser. No. 753,525, Jul. 15, 1985, Pat. No. 4,686,272.
This application Jul. 7, 1987, Ser. No. 70,393
The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.
Int. Cl.[4] F16B 39/00
U.S. Cl. 528—87 4 Claims



1. The method of forming a self-curing adhesive mixture which comprises making a multiplicity of substantially discrete deposits of a fluid curable resin and a fluid curing agent, retaining the deposits in deposited form until interaction between the resin and curing agent forms very thin barrier films between adjacent deposits of resin and curing agent, and chilling the deposits to control the thickness of the barrier formation, the deposits being made by simultaneously ejecting the resin and curing agent into contiguous deposits.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,580

HIGH FUNCTIONALITY, LOW MELT VISCOSITY, FLAKABLE SOLID EPOXY RESIN WITH GOOD HEAT RESISTANCE

Patrick H. Martin, Danville; Theodore L. Parker, Lafayette, and Paul G. Schrader, Antioch, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 22, 1984, Ser. No. 663,295
Int. Cl.[4] C08G *59/14*
U.S. Cl. 528—98 20 Claims

1. The method of advancing an about 1.8 to about 2.2 functional polyepoxide having an EEW of about 300 or less with a polyphenol which comprises:

heating 100 parts by weight of said polyepoxide with from about 10 to about 30 parts of a polyphenol consisting of one or more 1,1,1-tri(hydroxyphenyl)alkanes or alkenes in which each alkane or alkene moiety—independently—contains from 1 to 11 carbons, until the polyepoxide and triphenol constitute a homogeneous melt,

initiating stirring of the melt and adding an advancement catalyst in a catalytically effective amount,

heating the stirring mixture to a temperature at least sufficient to initiate an exotherm, allowing or causing the temperature to reach a preselected peak value and allowing the reaction mixture to cool to a preselected lower temperature.

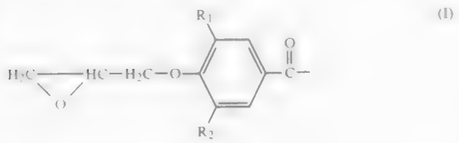
4,764,581

LIQUID-CRYSTALLINE DIGLYCIDYL COMPOUNDS, THE PREPARATION OF THESE, AND THE USE OF THESE IN CURABLE EPOXIDE MIXTURES

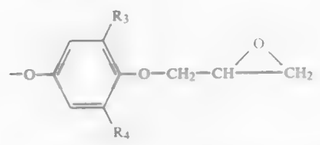
Hanns P. Müller, Odenthal; Roland Gipp, Cologne, and Heinrich Heine, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 22, 1987, Ser. No. 64,745
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1986, 3622610
Int. Cl.[4] C08G *59/24;* C07D *303/16*
U.S. Cl. 528—100 5 Claims

1. Liquid-crystalline diglycidyl compounds of the formula (I)



(I)



in which R_1, R_2, R_3 and R_4, independently of one another, denote hydrogen, halogen or alkyl having 1 to 6 C atoms.

4. Curable mixtures, containing diglycidyl compounds of the formula (I) according to claim 1, optionally blended with di-, tri-, and tetraglycidyl compounds and a curing agent for epoxy resins.

4,764,582

WHOLLY AROMATIC THERMOTROPIC POLYESTERS

Bernd Hisgen, Limburgerhof; Hans-Jakob Kock, Ludwigshafen; Michael Portugall, Wachenheim; Erhard Seiler, Ludwigshafen, and Gerd Blinne, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Akjtiengesellschaft, Rheinland-Pflaz, Fed. Rep. of Germany

Filed Aug. 11, 1987, Ser. No. 84,165
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629209
Int. Cl.[4] C08G *63/54, 63/60, 63/44*
U.S. Cl. 528—183 8 Claims

1. A wholly aromatic thermotropic polyester based on

(A) from 25 to 60 mol % of a mixture of

(A_1) 4-hydroxybenzoic acid and

(A_2) 3-hydroxybenzoic acid, 4-aminobenzoic acid and/or 3-aminobenzoic acid or their chlorine, bromine, C_1–C_8-alkyl or C_1–C_8-alkoxy derivatives, substituted in the nucleus,

the molar ratio A_1 to A_2 being from 5:1 to 41:1,

(B) from 20 to 37.5 mol % of a mixture of

(B_1) terephthalic acid and

(B_2) isophthalic acid,

the molar ratio of B_1 to B_2 being from 1.04:1 to 19:1, and

(C) from 20 to 37.5 mol % of a mixture of

(C_1) hydroquinone and

(C_2) 4,4'-dihydroxydiphenyl,

the molar ratio of C_1 to C_2 being from 0.1:1 to 2.67:1 and the molar ratio of B to C being from 0.9:1 to 1.1:1.

4,764,583

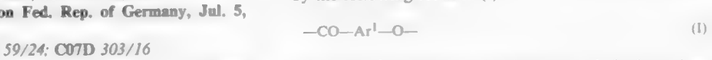
MELT-MOLDABLE WHOLLY AROMATIC POLYESTER

Kunisuke Fukui, Hiroshima, and Masanori Motooka, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Mar. 10, 1987, Ser. No. 24,087
Claims priority, application Japan, Mar. 14, 1986, 61-54680; Nov. 4, 1986, 61-260767
Int. Cl.[4] C08G *63/60, 63/66*
U.S. Cl. 528—193 22 Claims

1. A melt-moldable wholly aromatic polyester comprising

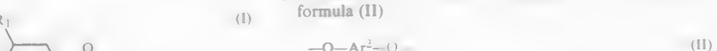
(A) aromatic hydroxycarboxylic acid residues represented by the following formula (I)



(I)

wherein Ar^1 represents a divalent aromatic hydrocarbon group at least 60 mole % of which consists of a p-phenylene group,

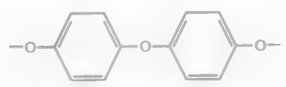
(B) aromatic diol residues represented by the following formula (II)



(II)

wherein Ar^2 represents at least one divalent aromatic group selected from p-phenylene and 4,4'-diphenylene groups,

(C) 4,4'-dihydroxydiphenyl ether residues represented by the following formula (III)



(III)

and (D) aromatic dicarboxylic acid residues represented by the following formula (IV)



(IV)

wherein Ar^3 represents a divalent aromatic group at least 60 mole % of which consists of a p-phenylene group, and

(E) the proportions of the residues (A), (B), (C) and (D) being 30–80 mole %, 1–20 mole %, 1–32 mole % and 10–35 mole %, respectively, based on the total moles of the residues (A), (B), (C) and (D), provided that the sum of the moles of the residues (B) and (C) is substantially equal to the moles of the residues (D).

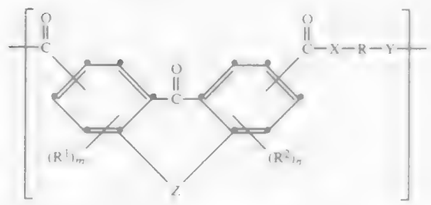
4,764,584

RADIATION-SENSITIVE POLYCONDENSATES, THEIR PREPARATION, MATERIAL COATED THEREWITH AND THE USE THEREOF

Josef Pfeifer, Therwil, and Rudolf Duthaler, Zurich, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

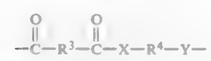
Division of Ser. No. 845,084, Mar. 27, 1986, Pat. No. 4,714,669. This application Sep. 11, 1987, Ser. No. 99,373
Claims priority, application Switzerland, Apr. 11, 1985, 1552/85
Int. Cl.[4] C08G *4/00, 12/00*
U.S. Cl. 528—220 22 Claims

1. A radiation-sensitive linear saturated homo- or polycondensate selected from the group of polyesters, polyamides and polyester amides and containing at least one recurring structural unit of formula I



(I)

and, in the case of a copolycondensate, also recurring structural units of formula II



(II)

wherein

m and n are each independently of the other an integer from 0 to 3,

X and Y are each independently of the other —S—, —O— or —NR^5—,

Z is a direct bond, —CH_2—, —O—, —S—, —SO—, —SO_2—, —CO—, —NR^6— or —CR^6R^7, where R^6 is a hydrogen atom, C_1–C_{10}alkyl, phenyl, naphthyl or phenyl(C_aH_{2a}), where a is 2 to 4, and R^7 has the same meaning as R^6 but is not a hydrogen atom,

R^1 and R^2 are each independently of the other C_1–C_{10}alkyl, halogen, —CN, —NO_2, C_1–C_{12}alkoxy, phenoxy, naphthoxy or phenyl(C_aH_{2a}), wherein a is 1 to 4,

R is an unsubstituted or substituted divalent aliphatic, cycloaliphatic, araliphatic or aromatic radical, and, if X and Y are the —NR^5— group, R and one of R^5, when taken together, are C_5–C_7alkylene to which the second —NR^5— group is attached, or R is methylene, ethylene or propylene, and both radicals R^5 of the —NR_5— group, when taken together, are ethylene or propylene or, if one of X or Y is —S— or —O— and the other is —NR^5—, R and R^5 together are C_5–C_7-alkylene,

R^4 has independently the same meaning as R,

R^3 is a divalent saturated aliphatic or aromatic radical, and

R^5 is a hydrogen atom, alkyl, cycloalkyl, aryl, aralkyl or alkaralkyl,

said copolycondensate containing at least 10 mol.% of the structural units of formula I, based on the copolycondensate.

4,764,585

CATIONIC POLYCONDENSATES USEFUL FOR IMPROVING THE FASTNESS OF DYEINGS ON TEXTILES

Jürg Heller, Oberwil; Bruno Kissling, Hagendorf; Curt Muller, Binningen; Tibor Robinson, Basel, and Salvatore Valenti, Binningen, all of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation of Ser. No. 919,279, Oct. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 754,737, Jul. 15, 1985, abandoned. This application Sep. 15, 1987, Ser. No. 96,662
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1984, 3426927; Jul. 21, 1984, 3426928; Nov. 22, 1984, 3442482; Jan. 19, 1985, 3501645; Apr. 1, 1985, 3511857
Int. Cl.[4] C08G *12/02*
U.S. Cl. 528—233 20 Claims

1. A cationic polycondensate which is

(A) the product of reacting

(a) a monofunctional or polyfunctional amine having one or more primary and/or secondary and/or tertiary amino groups and containing at least one reactive —NH—or —NH_2— group with

(b) cyanamide, dicyandiamide, guanidine or bisguanidine, in which up to 50 mole percent of the cyanamide, dicyandiamide, guanidine or bisguanidine may be replaced by a dicarboxylic acid or a mono- or di-ester thereof, in the presence of a catalyst (K) selected from metals, metal salts and heterocyclic nitrogen-containing organic bases, provided that when (K) is a metal salt it is used in an amount of 0.2 to 0.48% by weight, based on the total weight of (a) and (b), said product (A) containing at least one free hydrogen atom linked to a nitrogen atom; or

(B) the product of reacting (A) with:

(c) an N-methylol derivative of a urea, melamine, guanamine, triazine, urone, urethane or acid amide, or

(d) an epihalohydrin or a precursor thereof, or

(e) formaldehyde or a compound which releases formaldehyde; or

(C) the product of reacting (A) with (d) and (c) with (e) and (c).

4,764,586

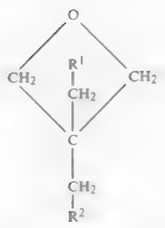
INTERNALLY-PLASTICIZED POLYETHERS FROM SUBSTITUTED OXETANES

Gerald E. Manser, Folsom, Calif.; Graham C. Shaw, and Graham C. Shaw, III, both of Garland, Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Oct. 29, 1986, Ser. No. 925,659
Int. Cl.[4] C08G *65/22;* C06B *45/10*
U.S. Cl. 528—362 17 Claims

1. A curable polyether comprising between about 10 and about 85 molar percent tetrahydrofuran mer units, between about 10 and about 80 molar percent of a first oxetane mer unit of mixture of oxetane mer units, and between about 5 and about 70 molar percent of a second oxetane mer unit or mixture of oxetane mer units, said first and second oxetane mer units in unpolymerized from each have the formula:

VOL 1093 ISS 3 AUG 16 1988 UMI



wherein in said first oxetane mer unit or mixture of mer units R^1 and/or R^2 is or contains moieties selected from the group consisting of cyano, azido, nitro, nitrato, nitramine and hydroxyl, and in said second oxetane mer unit or mixture of oxetane mer units R^1 plus R^2 contain between about 6 and about 12 carbon atoms.

4,764,587

CROSS-LINKED RESIN FROM BIS-(2-OXAZOLINE), DICARBOXYLIC ACID ANHYDRIDE AND HYDROXY CARBOXYLIC ACID WITH P CATALYST

Yasuo Sano, Minoo; Yasuhiro Morisue, Kawabe; Kiyoshi Komiya, Mishima, and Yoshimasa Nakamura, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 29, 1985, Ser. No. 799,951

Claims priority, application PCT Int'l Appl., Nov. 8, 1984, PCT/JP84/00537

The portion of the term of this patent subsequent to Jul. 15, 2003, has been disclaimed.

Int. Cl.[4] C08G *83/00, 69/44*

U.S. Cl. 528—363 14 Claims

1. A cross-linked resin produced by the reaction of a (1) bis(2-oxazoline) compound with a (2) dicarboxylic acid anhydride having no active hydrogen in the molecule in a molar ratio of the dicarboxylic acid anhydride to the bis(2-oxazoline) compound of not more than about 2 and (3) at least one hydroxy carboxylic acid, in the presence of at least one catalyst selected from the group consisting of an organic phosphorous acid ester, an organic phosphonous acid ester and an inorganic salt at an elevated temperature.

4,764,588

INSOLUBLE VINYL LACTAM CLARIFIERS

Terry E. Smith, Morristown; Ian W. Cottrell, Kinnelon, and John D. Pelesko, Roselle, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Mar. 9, 1987, Ser. No. 23,318

Int. Cl.[4] C08F *6/00, 6/24, 26/10;* B01D *37/02*

U.S. Cl. 528—481 20 Claims

1. The process of subjecting a normally solid, water insoluble vinyl lactam polymer having an FRI less than 100 containing not more than a minor amount of non-cross- linked and/or unsaturated sites to a temperature of from about 50° C. to about 250° C. in the presence of from about 1 wt. % and about 20 wt. % moisture under a pressure of from about 1 psig. to about 250 psig. for a period sufficient to increase the FRI above 95.

4,764,589

[N-ALPHA-ACYL,8-GLYCINE, DES-19-LEUCINE]-CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Rorer Pharmaceutical Corporation, Ft. Washington, Pa.

Filed May 26, 1987, Ser. No. 54,451

Int. Cl.[4] C07K *7/36*

U.S. Cl. 530—307 6 Claims

1. [N-alpha-propionyl, 8-Glycine, des-19-leucine] Calcitonin

4,764,590

DES-19-LEUCINE, 20-GLUTAMINE, 21-THREONINE-CALCITONIN

Ronald C. Orlowski, Frankfurt, and Jay K. Seyler, Bourbonnais, both of Ill., assignors to Rorer Pharmaceutical Corporation, Ft. Washington, Pa.

Filed Apr. 21, 1987, Ser. No. 40,963

Int. Cl.[4] C07K *7/36*

U.S. Cl. 530—307 9 Claims

1. des-19-leucine, 20-glutamine, 21-threonine-Calcitonin.

4,764,591

DES-19-LEUCINE, 20-GLUTAMINE, 21-THREONINE, 22-TYROSINE-CALCITONIN

Ronald C. Orlowski, Frankfurt; Jay K. Seyler, Bourbonnais, and Everett Flanigan, Kankakee, all of Ill., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Filed Apr. 21, 1987, Ser. No. 40,966

Int. Cl.[4] C07K *7/36*

U.S. Cl. 530—307 9 Claims

1. des-19-leucine, 20-glutamine, 21-threonine, 22-tyrosine-Calcitonin.

4,764,592

CRYSTALLINE HUMAN PROINSULIN AND PROCESS FOR ITS PRODUCTION

Eddie H. Massey, and Richard L. Jackson, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 23, 1987, Ser. No. 41,498

Int. Cl.[4] C07K *7/42, 7/40*

U.S. Cl. 530—305 15 Claims

1. A process for producing crystalline human proinsulin, which comprises

(a) preparing an aqueous mixture containing from about 5 to about 50 mg/ml human proinsulin, from about 0.1 to about 5 mg/ml of a phenolic substance, from about 0.03 to about 0.6 milliequivalents/ml of a salt of a cation selected from the group consisting of lithium, calcium, sodium, potassium, ammonium, magnesium, and barium, and from about 0.2 to about 5 milliequivalents of Zn^{+2} cation;

(b) adjusting the aqueous mixture to a pH in the range of from about 5.4 to about 6.5;

(c) allowing crystal formation to occur; and

(d) recovering crystalline human proinsulin from the mixture.

4,764,593

MANUFACTURE AND EXPRESSION OF GENES FOR UROGASTRONE AND POLYPEPTIDE ANALOGS THEREOF

Allen R. Banks, and David L. Hare, both of Boulder, Colo., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 486,091, Apr. 25, 1983, abandoned, which is a continuation-in-part of Ser. No. 375,500, May 6, 1982, abandoned. This application May 7, 1985, Ser. No. 731,751

Int. Cl.[4] C07K *7/00*

U.S. Cl. 530—324 2 Claims

1. A non-naturally-occurring polypeptide analog of urogastrone characterized by the presence of one or more of the following alterations in the amino acid sequence of naturally-occurring urogastrone:

(a) Ala^{25} to Asp^{25};

(b) Leu^{52} to Pro^{52};

(c) Arg^{53} to Pro^{53};

(d) Met^{21} to Val^{21};

(e) addition of Met^{-1}; and

(f) addition of all or part of the sequence NH_2-Met^{-8}-Lys^{-7}-Lys^{-6}-Tyr^{-5}-Trp^{-4}-Ile^{-3}-Gln^{-2}-Met^{-1}.

4,764,594

RESIN SUPPORT FOR SOLID PHASE PEPTIDE SYNTHESIS

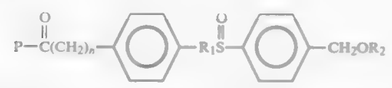
Daniel P. Getman, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 30, 1987, Ser. No. 31,823

Int. Cl.[4] A61K *37/02;* C08K *283/00*

U.S. Cl. 530—334 4 Claims

1. A resin for solid phase peptide synthesis comprising the structure



where R_1 is an alkyl having from 1 to 20 carbons, R_2 is hydrogen, acyl or carboxyl terminal N-blocked amino acid, n is from 0 to 20 and P is a polymer support.

4,764,595

RESIN SUPPORT FOR SOLID PHASE PEPTIDE SYNTHESIS

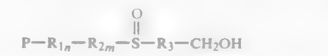
Daniel P. Getman, St. Louis, and Robert M. Heintz, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 24, 1986, Ser. No. 946,558

Int. Cl.[4] A61K *37/02;* C08K *283/00*

U.S. Cl. 530—334 6 Claims

1. A resin for solid phase peptide synthesis comprising the structure



where P is the polymer support, R_1 is a substituted or unsubstituted aromatic, R_2 is an alkyl having from 1 to 20 carbon atoms, R_3 is substituted or unsubstituted phenyl, and n and m independently equal 0 or 1.

4,764,596

RECOVERY OF LIGNIN

Jairo H. Lora, Media, Pa.; Raphael Katzen, Cincinnati, Ohio; Malcolm Cronlund, Chester Springs, and Chih F. Wu, King of Prussia, both of Pa., assignors to Repap Technologies Inc., Valley Forge, Pa.

Continuation-in-part of Ser. No. 795,069, Nov. 5, 1985, abandoned. This application Dec. 11, 1986, Ser. No. 940,460

Int. Cl.[4] C07G *1/00;* D21C *3/20*

U.S. Cl. 530—507 61 Claims

1. Process for precipitating lignin from a solution of lignin in a water miscible organic solvent, comprising the step of diluting the lignin-containing solution with water and an acid to form a diluted aqueous solution with: a pH of less than about 3, an organic solvent content of less than about 30% by volume and a temperature of less than about 75° C.

4,764,597

METHOD FOR METHYLOLATION OF LIGNIN MATERIALS

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 15, 1987, Ser. No. 61,460

Int. Cl.[4] C07G *1/00*

U.S. Cl. 530—501 6 Claims

1. An improved method of producing methylolated lignins from the black liquor residue of a kraft wood-pulping process comprising the steps of:

(a) oxidizing the black liquor residue of a kraft wood-pulping process containing lignin, inorganic salts, and organic salts therein;

(b) methylolating the lignin present in the black liquor residue;

(c) lowering the pH of the black liquor residue to precipitate the methylolated lignin therefrom; and

(d) isolating and recovering the precipitated methylolated lignin from the black liquor residue.

4,764,598

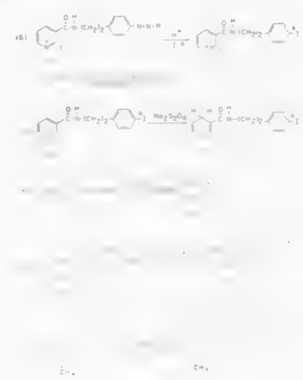
PRECURSORS TO RADIOPHARMACEUTICAL AGENTS FOR TISSUE IMAGING

Prem C. Srivastava, and Furn F. Knapp, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Division of Ser. No. 768,385, Aug. 22, 1985. This application Mar. 13, 1987, Ser. No. 25,703

Int. Cl.[4] C07C *115/00;* C09B *56/20*

U.S. Cl. 534—551 6 Claims



1. A compound comprising:

a heterocyclic moiety wherein the hetero member of said heterocyclic moiety is nitrogen;

said heterocyclic moiety being quaternary and capable of being reduced to a dihydrogenated form;

said heterocyclic moiety having a carbonyl group attached to a carbon of the ring of said heterocyclic moiety;

said heterocyclic moiety being coupled at the carbonyl carbon with the amino nitrogen of an aromatic or aromatic alkyl amine;

said aromatic or aromatic alkyl amine having attached to a carbon of the aromatic ring a moiety that is readily replaced by a radiohalide selected from the group a substituted triazene, mercuric acetate and a boron moiety.

VOL 1093 ISS 3 AG 16 1988 UMI

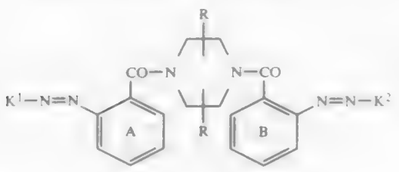
4,764,599

DISAZO COMPOUNDS CONTAINING AN N,N-BIS(2-AMINO-BENZOYL)PIPERAZINE DERIVATIVE AS THE DIAZO COMPONENT

Horst Colberg, Schifferstadt, and Erwin Hahn, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Sep. 30, 1986, Ser. No. 913,376
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1985, 3536196
Int. Cl.[4] C09B *31/11, 31/14, 33/12, 35/34*
U.S. Cl. 534—740 3 Claims

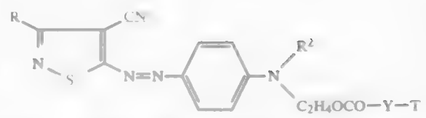
1. A sulfo-free compound of the formula



where

R is hydrogen or C_1–C_4-alkyl and

K^1 and K^2 independently of one another are a radical of a coupling component, and the rings A and B are unsubstituted, or are monosubstituted or polysubstituted by fluorine, chlorine, bromine, nitro, methyl, trifluoromethyl, ethyl, acetyl, benzoyl, $COOCH_3$, $COOC_2H_5$, $COOC_3H_7$, $COOCH(CH_3)_2$, $COOC_4H_9$, $COOC_6H_5$, $COOC_6H_{13}$, $COOC_8H_{17}$, $COOC_2H_4OCH_3$, $COOC_2H_4OC_2H_5$, $COOCH_2C_6H_5$, $CONH_2$, $CONHCH_3$, $CONHC_2H_5$, $CONHC_3H_7$, $CONHC_4H_9$, $CONHCH(CH_3)_2$, $CONHCH_2C_6H_5$, $CONHC_6H_5$, $CONHC_6H_4Cl$, $CONHC_6H_3Cl_2$, $CONHC_6H_2Cl_3$, $CONHC_6H_4Br$, $CONHC_6HL_4OCH_3$, $CONHC_6H_4CH_3$, $CONHC_6H_4OC_2H_5$, $CONHC_6H_3Cl(OCH_3)$, $CONHC_6H_4NHCOCH_3$, $CONHC_6H_4NHCOC_6H_5$, $CONHNHCOC_6H_5$, $CONHNHCOC_6H_4Cl$, $CONHNHCOC_6H_4CH_3$, SO_2NH_2, SO_2NHCH_3, $SO_2NHC_2H_5$, $SO_2NHC_3H_7$, $SO_2NHC_4H_9$, $SO_2NHCH(CH_3)_2$, $SO_2NHCH_2C_6H_5$, $SO_2NHC_6H_5$, $SO_2NHC_6H_4Cl$, $SO_2NHC_6H_3Cl_2$, $SO_2NHC_6H_2Cl_3$, $SO_2NHC_6H_4Br$, $SO_2NHC_6H_4OCH_3$, $SO_2NHC_6H_4CH_3$, $SO_2NHC_6H_4OC_2H_5$, $SO_2NHC_6H_3Cl(OCH_3)$, $SO_2NHC_6H_4NHCOCH_3$, $SO_2NHC_6H_4NHCOC_6H_5$, $SO_2NHNHCOC_6H_5$, $SO_2NHNHCOC_6H_4Cl$, $SO_2NHNHCOC_6H_4CH_3$, $SO_2OC_6H_5$, $SO_2OC_6H_4CH_3$, $SO_2OC_6H_4Cl$, $SO_2OC_6H_4Br$, $SO_2OC_6H_4OCH_3$, $SO_2OC_6H_4NHCOCH_3$, $SO_2OC_6H_3Cl_2$, $SO_2C_6H_5$, $SO_2C_6H_4Cl$, $NHCOCH_3$, $NHCOC_2H_5$, $NHCOC_6H_5$, $NHCONH_2$, $NHCON(CH_3)_2$, $NHCONHC_6H_5$, C_1–C_4-alkylsulfonyl or cyano.



wherein R is methyl, ethyl or isopropyl, or is phenyl which is unsubstituted or substituted by methyl, methoxy or chlorine, R^2 is a straight-chain or branched C_1–C_4 alkyl or benzyl, X is hydrogen or methyl, Y is —O— or —NH— and T is C_1–C_4 alkyl, phenyl or chlorophenyl.

4,764,601

COMPOSITION FOR ASSAYING CARDIAC GLYCOSIDES FROM SERUM OR PLASMA

Richard H. Reuning; James Hui, both of Columbus, Ohio; Theresa A. Shepard, Shillington, England, and Richard A. Sams, Columbus, Ohio, assignors to The Ohio State University Research Foundation, Columbus, Ohio

Filed Oct. 18, 1985, Ser. No. 788,822
Int. Cl.[4] A61K *31/70;* C07J *19/00*
U.S. Cl. 536—5 6 Claims

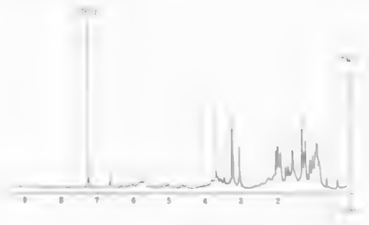
1. A composition consisting essentially of: (i) a first fluorescent compound which includes a moiety of a cardiac glycoside from one of serum and plasma derivatized by a naphthoyl moiety from a naphthoyl chloride purified by fractional distillation; (ii) a second and different flourescent compound which includes a moiety of a known cardiac glycoside derivatized by a naphthoyl moiety from said naphthoyl chloride purified by fractional distillation; and (iii) a liquid mobile phase for said first and second compounds.

4,764,602

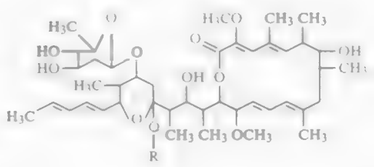
ANTIBIOTICS, AND THEIR PRODUCTION

Kazuo Kumagai, Toyonaka; Kiyoshi Taya, Nishinomiya; Shin Tanaka, Ibaraki; Koichi Moriguchi, Otsu; Masatomo Fukasawa, Nishinomiya, and Akio Fukui, Ashiya, all of Japan, assignors to Sumitomo Chemical Company and Sumitomo Pharmaceuticals Company, Limited, both of Osaka, Japan

Filed Dec. 19, 1986, Ser. No. 943,906
Int. Cl.[4] C07H *17/08*
U.S. Cl. 536—7.1 9 Claims



1. An antibiotic of the formula:



(I)

4,764,600

ISOTHIAZOLYLAZO DYES HAVING AMINOPHENYL AN AMINONAPTHYL COMPONENTS

Udo Bergmann, Darmstadt; Johannes P. Dix, Neuhofen; Guenter Hansen; Ernst Schefczik, both of Ludwigshafen, and Guenther Seybold, Neuhofen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jan. 25, 1983, Ser. No. 460,793
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205435
Int. Cl.[4] C09B *29/042, 29/09;* D06P *1/18, 3/54*
U.S. Cl. 534—792 1 Claim

1. An isothiazolylazo dye of the formula:

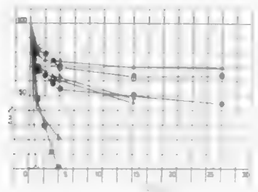
wherein R is a hydrogen atom or a methyl group.

4,764,603

STABLE SALTS OF S-ADENOSYL-L-METHIONINE WITH POLYANIONS

Vincenzo Zappia, and Mario De Rosa, both of Naples, Italy, assignors to Gibipharma S.p.A., Pero, Italy

Filed Aug. 9, 1985, Ser. No. 764,240
Claims priority, application Italy, Feb. 14, 1985, 19512 A/85
Int. Cl.[4] A61K *31/70;* C07H *19/167*
U.S. Cl. 536—26 12 Claims



1. A salt of S-adenosyl-L-methionine and a water-soluble polyanionic substance selected from the group consisting of a polyphosphate, metaphosphate, polystyrene sulfonate, polyvinyl sulfonate, polyvinyl sulfate, polyvinyl phosphate, and polyacrylate wherein the stoichiometric ratio of mols of S-adenosyl-L-methionine to gram-equivalent of the polyanionic substance is from 0.1:1 to 0.5:1.

4,764,604

DERIVATIVES OF GAMMA-CYCLODEXTRIN

Bernd W. W. Müller, Flintbek, Fed. Rep. of Germany, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Filed Feb. 27, 1986, Ser. No. 833,622
Claims priority, application United Kingdom, Mar. 15, 1985, 8506791
Int. Cl.[4] C08B *37/16*
U.S. Cl. 536—103 17 Claims

1. A γ-cyclodextrin ether or mixed ether wherein the ether substituents are C_1–C_6 alkyl, hydroxy C_1–C_6 alkyl, carboxy C_1–C_6-alkyl or (C_1–C_6 alkyloxycarbonyl) C_1–C_6 alkyl; provided that hydroxypropyl is not a sole substituent.

4,764,605

PROCESS FOR SELECTIVELY DEACETYLATING ACETYL DERIVATIVES OF SACCHARIDES

Stephen Hanessian, Quebec, Canada, and Masahiro Kagotani, Hyogo, Japan, assignors to Daicel Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 17, 1985, Ser. No. 809,970
Int. Cl.[4] C07G *3/00, 17/00;* C07H *15/00, 1/00*
U.S. Cl. 536—124 20 Claims

1. A process for selectively deacetylating an acetyl derivative of a monosaccharide or oligosaccharide, comprising treating an acetyl derivative of a monosaccharide or oligosaccharide with a mixture of an aqueous solution of alkali metal hydroxide/aqueous hydrogen peroxide/organic solvent to selectively hydrolyze acetate bonds at specific positions in the molecule, and thereby obtain a partially hydrolyzed acetyl derivative of a monosaccharide or oligosaccharide.

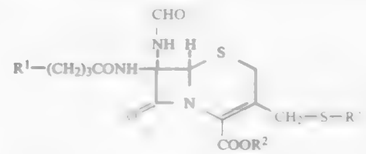
4,764,606

7-FORMYLAMINOCEPHALOSPORIN COMPOUNDS

Harumitsu Imai, Kanagawa; Ken-ichi Suzuki, Saitama; Koji Nagai, Tokyo; Shigeru Miyazaki, Saitama; Kenji Abe, Saitama; Isao Takahashi, Saitama; Shigenobu Kadota, and Koichi Tanaka, both of Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

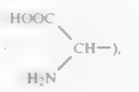
Filed Jul. 28, 1986, Ser. No. 890,906
Claims priority, application Japan, Aug. 1, 1985, 60-170408
Int. Cl.[4] C07D *501/36;* A61K *31/545*
U.S. Cl. 540—221 5 Claims

1. A 7-formylaminocephalosporin compound represented by formula (I):



wherein

R^1 represents a carboxy group or an aminocarboxymethyl group



R^2 represents a hydrogen atom or a protective group for a carboxy group, and

R^3 represents a 5- or 6-membered heterocyclic group which may be substituted and has 1 to 4 hetero atoms selected from the group consisting of an oxygen atom, a sulfur atom and a nitrogen atom;

or a pharmaceutically acceptable salt thereof.

4,764,607

METHOD FOR RECOVERING CAPROLACTAM

Laszlo J. Balint, Chester, and Julius Greenburg, Richmond, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 22, 1986, Ser. No. 945,117
Int. Cl.[4] C07D *201/16*
U.S. Cl. 540—540 18 Claims

1. A method of recovering a volatile organic material from a liquid mixture comprising the steps of:

a. mixing the liquid mixture with superheated steam for 0.005 to 1.0 second to vaporize a large portion of the volatile organic material without degrading the organic materials;

b. separating the vaporized organic material and the steam from the liquid mixture remaining;

c. separating the vaporized organic material from the steam; and

d. condensing the vaporized organic material.

2. The method of claim 1 wherein the volatile organic material is caprolactam.

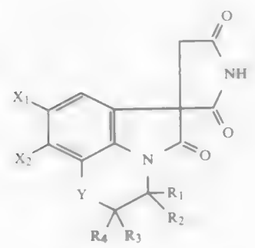
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,608
PROCESS FOR THE MANUFACTURE OF SPIRO-LINKED PYRROLIDINE-2,5-DIONE DERIVATIVES

Kuniyoshi Masuzawa, Koga; Kyuya Okamura, Ohmiya; Kazunori Kasuga, Urawa; Shizuyoshi Fujimori, Tochigi; Susumu Kinoshita, and Hiroshi Matsukubo, both of Okaya, all of Japan, assignors to Kyorin Pharmaceutical Co., Ltd., Tokyo, Japan

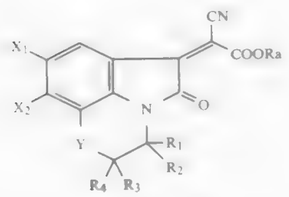
Filed Jul. 10, 1987, Ser. No. 72,050
Claims priority, application Japan, Jul. 11, 1986, 61-161790
Int. Cl.[4] C07D *279/10, 273/01, 221/00*
U.S. Cl. 544—6 2 Claims

1. A process for the synthesis of a spiro-linked pyrrolidine-2,5-dione of the formula:



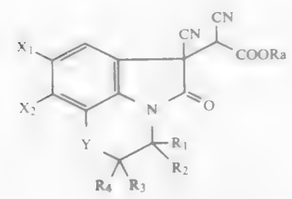
wherein X_1 and X_2 each independently represent a hydrogen atom, a halogen atom, a lower alkyl group or an alkoxy group; Y is a methylene group, an oxygen atom or a sulfur atom; R_1, R_2, R_3 and R_4 each independently represent a hydrogen atom, a lower alkyl group or the carbon atoms of which groups together form a benzene ring, comprising:

reacting acetone cyanohydrin with a compound of the formula:



wherein Ra is a lower alkyl group and X_1, X_2, Y and R_1–R_4 each have the above-stated meanings; and

heating, in the presence of an acid, the product obtained from the acetone cyanohydrin addition step of the formula:

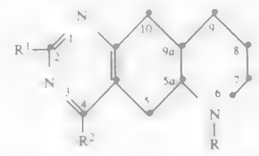


4,764,609
SYNTHESIS OF 2-AMINOPYRIMIDO[4,5-G]QUINOLINES

Leland O. Weigel, Indianapolis, and Gilbert S. Staten, Camby, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

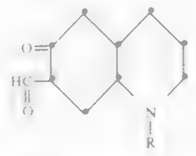
Filed Mar. 31, 1986, Ser. No. 845,916
Int. Cl.[4] C07D *471/04*
U.S. Cl. 544—250 10 Claims

1. A process for preparing the trans-(±)-racemate of a compound of the formula



I

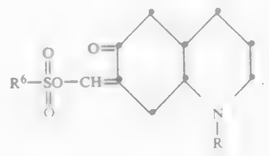
wherein R is hydrogen, cyano, C_1–C_3 alkyl or allyl; R^1 is amino, —NHR^3 or —NR^4R^5; R^2 is hydrogen or methyl; R^3 is methyl, ethyl, n-propyl, C_1–C_3 alkyl-CO, phenyl-CO or substituted phenyl-CO, wherein said substituents are 1 or 2 members selected from the group consisting of chloro, fluoro, bromo, methyl, ethyl, methoxy, ethoxy and trifluoromethyl; and R^4 and R^5 are individually methyl, ethyl or n-propyl, which comprises reacting the trans-(±)-racemate of a compound of the formula



with a sulfonate derivative of the formula



wherein R^6 is C_1–C_3 alkyl, phenyl, 4-chlorophenyl, 4-bromophenyl, or 4-methylphenyl and X is halogen, in a suitable polar, aprotic solvent to provide a compound of the formula



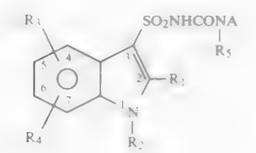
which is reacted with guanidine carbonate.

4,764,610
HERBICIDAL INDOLE SULFONAMIDES

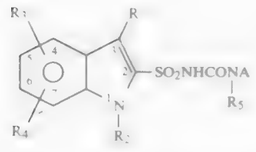
Donna F. Zimmerman, Landenberg, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 671,071, Nov. 13, 1984, abandoned, which is a continuation of Ser. No. 382,876, Jun. 1, 1982, abandoned, which is a continuation-in-part of Ser. No. 283,928, Jul. 16, 1981, abandoned. This application Sep. 25, 1986, Ser. No. 911,420
Int. Cl.[4] C07D *403/12;* A01N *47/36*
U.S. Cl. 71—92 42 Claims

1. A compound selected from



I



II

where

R is H, C_1–C_4 alkyl, $(CH_2)_mCO_2R_9$, $CH_2OC_2H_5$, SO_2R_{10}, CHO, $SO_2NR_{11}R_{12}$, $CH_2N(CH_3)_2$ or CH_2OCH_3;

R_1 is H, C_1–C_4 alkyl, CO_2R_6, $C(O)NR_7R_8$, $C(O)R_{10}$, SO_2R_{10}, or $SO_2NR_{11}R_{12}$;

R_2 is H, C_1–C_3 alkyl or $SO_2C_6H_5$;

R_3 is H, F, Cl, Br, C_1–C_3 alkyl, C_1–C_3 alkoxy or NO_2;

R_4 is H, Cl or Br;

R_5 is H or CH_3;

R_6 is C_1–C_4 alkyl, C_3–C_4 alkenyl, CH_2CH_2Cl or $CH_2CH_2OCH_3$;

R_7 and R_8 are independently H or C_1–C_4 alkyl, provided that the total number of carbon atoms is less than or equal to 4;

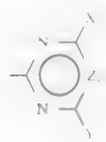
R_9 is H or C_1–C_3 alkyl

R_{10} is C_1–C_3 alkyl;

R_{11} and R_{12} are independently C_1–C_3 alkyl, provided that the total number of carbon atoms is less than or equal to 4;

m is 0, 1 or 2;

A is



X is CH_3 or OCH_3;

Y is CH_3, OCH_3, OC_2H_5, CH_2OCH_3, Cl, H, C_2H_5 or $N(CH_3)_2$; and

Z is CH;

provided that

(1) when R_2 is $SO_2C_6H_5$, then R_1 and R are H or C_1–C_3 alkyl; and and

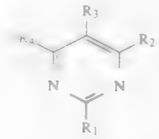
(2) when m is 0, then R_9 is C_1–C_3 alkyl.

4,764,611
PROCESS FOR THE SELECTIVE HYDROGENATION OF CHLORINE-CONTAINING PYRIMIDINES AND NEW PYRIMIDINES

Bernd Baasner, Leverkusen; Erich Klauke, Odenthal, and Karl-Heinz Schündehütte, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 22, 1985, Ser. No. 693,077
Claims priority, application Fed. Rep. of Germany, Jan. 24, 1984, 3402194
Int. Cl.[4] C07D *239/30*
U.S. Cl. 544—334 9 Claims

1. A process for the selective hydrogenation of a chlorine-containing pyrimidine which comprises contacting a chloropyrimidine of the formula



in which

R_1, R_2, R_3 and R_4 are identical or different and represent fluorine, chlorine, hydrogen or C_1 to C_4-alkyl groups with some of all of the hydrogen atoms of the alkyl group or groups being optionally replaceable with fluorine and/or chlorine, at least one of the radicals R_2 and R_4 representing only chlorine and at least one of R_1, R_2, R_3 or R_4 is fluorine,

with hydrogen in the presence of a hydrogen chloride acceptor and a hydrogenation catalyst.

4,764,612
3-[3-[1-PIPERIDINYLMETHYL]PHENOXY]PROPANAMINE

John W. Clitherow; John Bradshaw, both of Ware; John W. M. Mackinnon, Royston; Barry J. Price, Hertford; Michael Martin-Smith, Near Ware, and Duncan B. Judd, Ware, all of England, assignors to Glaxo Group Limited, United Kingdom

Continuation of Ser. No. 517,509, Jul. 26, 1983, abandoned, which is a division of Ser. No. 324,400, Nov. 24, 1981, Pat. No. 4,442,110, which is a division of Ser. No. 33,508, Apr. 26, 1979, Pat. No. 4,318,913. This application Feb. 6, 1986, Ser. No. 826,832
Claims priority, application United Kingdom, Apr. 26, 1978, 16468/78; Dec. 8, 1978, 47689/78; Mar. 2, 1979, 7907422
Int. Cl.[4] C07D *295/12*
U.S. Cl. 546—232 1 Claim

1. The compound 3-[3-[1-Piperidinylmethyl]phenoxy]-propanamine.

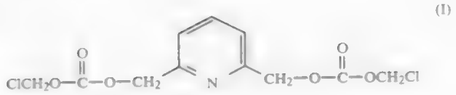
4,764,613
2,6-BIS(CHLOROMETHYLOXY-CARBONYLOXYMETHYL)PYRIDINE AND A PROCESS FOR PREPARING SAME

József Tóth, Budapest; Máté Kovatsits, Leányfalu; László Csutorás, Budapest; Gábor Szabo, Budapest; Sándor Görög, Budapest; Ferenc Trischler, Budapest; Sándor Holly, Budapest; Erzsébet Francsics, Budapest; Béla Losonczi, Budapest, and Gábor Havasi, Dorog, all of Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Filed Aug. 24, 1987, Ser. No. 88,875
Claims priority, application Hungary, Aug. 22, 1986, 3654/86
Int. Cl.[4] C07D *213/55*
U.S. Cl. 546—341 1 Claim

1. 2,6-bis(chloromethyloxy-carbonyloxy-methyl)pyridine of the formula (I)

VOL 1093 ISS 3 AG 16 1988 UMI



(I)

4,764,614

PROCESS FOR PREPARING (S)(+)-4,4'(METHYL-1,2-ETHANEDIYL)-BIS(2,6-PIPERAZINEDIONE)

William D. Miller, Kettering, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Filed Mar. 23, 1987, Ser. No. 29,038
Int. Cl.[4] A61K *31/50*; C07D *403/08*
U.S. Cl. 544—357 2 Claims

1. A process for the preparation of (S)(+)-4,4'-(1-methyl-1,2-ethanediyl)-bis(2,6-piperazinedione) which comprises:

treating propylenediamine tetraacetic tetraamide in a dipolar aprotic solvent with an alkali metal derivative of dimethyl sulfoxide to form a dialkali metal salt of (S)(+)-4,4'-(1-methyl-1,2-ethanediyl)bis(2,6-piperazinedione); and

neutralizing the dialkali metal salt.

4,764,615

PROCESS FOR THE PREPARATION OF CODEINE FROM MORPHINE

Nagaraj R. Ayyangar; Anil R. Choudhary; Uttam R. Kalkote, and Vasant K. Sharma, all of Maharashtra, India, assignors to Council of Scientific & Industrial Research, New Delhi, India

Filed Dec. 10, 1986, Ser. No. 940,517
Int. Cl.[4] C07D *489/02*
U.S. Cl. 546—44 7 Claims

1. An improved process for the preparation of codeine which comprises reacting morphine with trimethyl phenyl ammonium chloride in the presence of an alkali metal carbonate and a hydrocarbon solvent at a temperature of from 45° to 120° C. and recovering codeine from the reaction mixture.

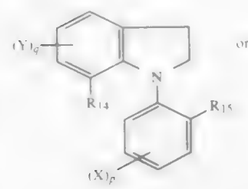
4,764,616

BENZOPYRROLOBENZODIAZEPINES AND QUINOBENZODIAZEPINES

Edward J. Glamkowski, Warren, and Yulin Chiang, Convent Station, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

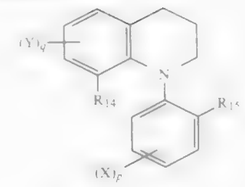
Division of Ser. No. 770,046, Aug. 28, 1985, Pat. No. 4,663,453, which is a continuation-in-part of Ser. No. 639,569, Aug. 10, 1984, abandoned, which is a continuation-in-part of Ser. No. 495,569, May 18, 1983, abandoned. This application Nov. 12, 1986, Ser. No. 929,696
Int. Cl.[4] C07D *215/00*
U.S. Cl. 546—152 15 Claims

1. A compound of the formula



or

-continued



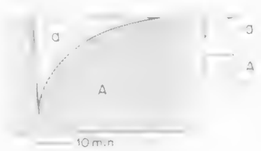
wherein X and Y may be the same or different and each is hydrogen, halogen, CF_3, lower alkkyl, lower alkoxy, lower alkylthio or lower alkylsulfonyl, p and q are are independently 1 or 2; R_{14} is hydrogen, nitro or amino; and R_{15} is cyano, carboxy, methoxycarbonyl or aminocarbonyl.

4,764,617

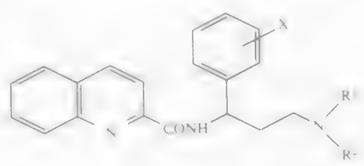
QUINALDINAMIDE DERIVATIVES

Mitsuo Masaki, Chiba; Haruhiko Shinozaki, Oomiya; Masaru Satoh, Koshigaya; Naoya Moritoh, Kuki; Koichi Hashimoto, Tokyo, and Toshiro Kamishiro, Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Japan

Filed Aug. 13, 1986, Ser. No. 895,938
Int. Cl.[4] C07D *215/48*, *401/06*
U.S. Cl. 546—169 8 Claims



1. A quinaldinamide derivative having the formula (I):



(I)

wherein

each of R^1 and R^2 independently represents a lower alkyl group or R^1 and R^2 are an alkylene which combined together with the adjacent nitrogen atom to form a 5–7 membered ring; and

X represents the hydrogen atom, a lower alkyl group or a lower alkoxy group.

and its pharmaceutically acceptable acid-addition salt.

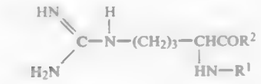
4,764,618

ARGININE DERIVATIVES AND PHARMACEUTICALLY ACCEPTABLE ACID ADDITION SALTS THEREOF

Ryoji Kikumoto; Yoshikuni Tamao, both of Tokyo; Shinji Tonomura; Akira Maruyama, both of Yokohama; Shosuke Okamoto, and Akiko Okunomiya, both of Kobe, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

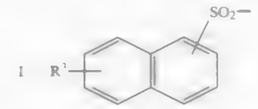
Continuation of Ser. No. 696,532, Jan. 30, 1985, abandoned. This application Jan. 19, 1987, Ser. No. 65,156
Claims priority, application Japan, Feb. 6, 1984, 59-19800
Int. Cl.[4] C07D *405/12*
U.S. Cl. 546—196 4 Claims

1. An arginine compound of formula (I):

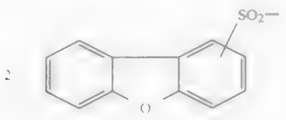


(I)

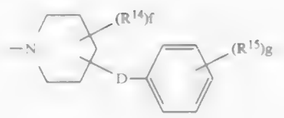
wherein R^1 stands for



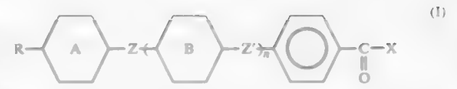
wherein R^3 stands for CH_3O—, C_2H_5O— or CH_3—.



and R^2 stands for

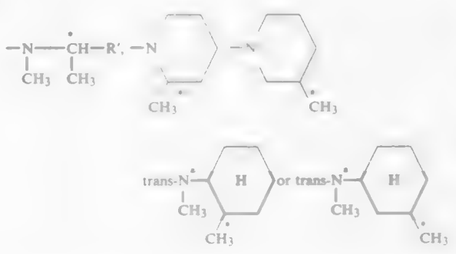


wherein R_{14} stands for cyano group, and R_{15} stands for hydroxyl group, cyano group halogen atom, C_{16} alkyl group, C_{16} alkoxyl group, C_{2-6} acyl group, halogen-substituted C_{1-6} alkyl group, carboxyl group or C_{2-6} alkoxycarbonyl group, f is an integer of 0~4, g is an integer of 0~3, and D stands for —O—, —S—, —CONH— or $-(CH_2)_h-$, wherein h is an integer of 0~4, and pharmaceutically acceptable acid addition salts thereof.



(I)

wherein each of Z and Z' is a single bond, —COO—, —OCO—, $-CH_2CH_2-$, OCH_2— or $-CH_2O-$, R is an alkyl group having from 1 to 12 carbon atoms, an alkoxy group having from 1 to 12 carbon atoms, a cyano group or a halogen atom, each of rings A and B is a 1,4-di-substituted phenylene group or a trans-1,4-di-substituted cyclohexylene group, n is 0 or 1, X is



wherein * indicates an optical center, and R' is an alkyl group having from 2 to 12 carbon atoms or



where R'' is a hydrogen atom, an alkyl or alkoxy group having from 1 to 12 carbon atoms.

4,764,619

OPTICALLY ACTIVE COMPOUNDS, SMECTIC LIQUID CRYSTAL COMPOSITIONS CONTAINING THEM AND SMECTIC LIQUID CRYSTAL DISPLAY DEVICES

Tomoki Gunjima, Yokohama; Ryutaro Takei, Tokyo, and Eriko Aoyama, Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Mar. 21, 1986, Ser. No. 842,265
Claims priority, application Japan, Mar. 26, 1985, 60-59593; Apr. 12, 1985, 60-76693
Int. Cl.[4] C09K *19/34*, *19/30*, *19/06*, *19/20*
U.S. Cl. 546—226 15 Claims

1. An optically active compound having the formula:

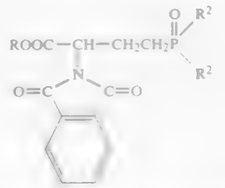
4,764,620

4-PHOSPHORUS-2-PHTHALIMIDOBUTYRATE INTERMEDIATES

Eugene W. Logusch, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 922,928, Oct. 24, 1986. This application Jun. 11, 1987, Ser. No. 60,692
Int. Cl.[4] C07F *9/65*
U.S. Cl. 548—113 3 Claims

1. A compound represented by the formula:



wherein R is selected from the group consisting of alkyl having one to six carbon atoms and aryl, and R^2 is selected from the group consisting of alkoxy having from one to six carbon atoms, aryloxy, and trialkylsilyloxy groups having from one to twelve carbon atoms.

VOL 1093 ISS 3 AG 16 1988 UMI

4,764,621

PREPARATION OF 2-CHLOROBENZTHIAZOLE

Guido Steffan, Odenthal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 26, 1983, Ser. No. 526,932
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234530
Int. Cl.[4] C07D *277/62*
U.S. Cl. 548—152 6 Claims

1. In the preparation of 2-chlorobenzthiazole by reacting benzthiazole with elementary chlorine in an inert solvent in the presence of a catalyst at elevated temperature, the improvement wherein the solvent is phosphorus oxychloride or chlorobenzene and is maintained in boiling condition during the reaction.

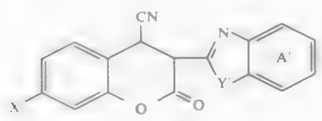
4,764,622

LIGHT-COLLECTING COUMARIN DERIVATIVES

Uwe Claussen, Leverkusen, and Horst Harnisch, Much, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 738,151, May 24, 1985, abandoned, which is a division of Ser. No. 500,795, Jun. 6, 1983, Pat. No. 4,544,496, which is a continuation of Ser. No. 406,622, Aug. 9, 1982, abandoned, which is a continuation of Ser. No. 176,383, Aug. 8, 1980, abandoned. This application Oct. 17, 1986, Ser. No. 920,482
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1979, 2934541; Dec. 22, 1979, 2952228
Int. Cl.[4] C07D *235/18, 263/56, 277/66, 309/34*
U.S. Cl. 548—159 2 Claims

1. A coumarin derivative of the formula



in which
X′ signifies



or —OR_2‴ in which
R_2″ represents hydrogen or C_1–C_4-alkyl;
R_3′ represents C_1–C_4-alkylsulphonyl or phenylsulphonyl;
R_2‴ represents C_1–C_4-alkyl;
Y′ signifies O, NR_5′ or S and
R_5′ signifies C_1–C_4-alkyl or phenyl and in which the ring A′ is unsubstituted or substituted by C_1–C_4-alkyl, C_1–C_4-alkoxy, halogen, C_1–C_4-alkylsulphonyl or sulphamoyl.

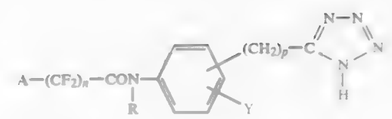
4,764,623

N-(1H-TETRAZOL-5-YL-ALKYLPHENYL)POLY-FLUOROALKANAMIDES

Kenneth L. Kees, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jun. 15, 1987, Ser. No. 62,270
Int. Cl.[4] C07D *257/04*
U.S. Cl. 548—253 17 Claims

1. A compound of the formula:



in which
R is hydrogen or A—$(CF_2)_m$—CH_2—;
A is —F or —H;
n is an integer from 1 to 10, inclusive;
m is an integer from 0 to 9, inclusive;
P is an integer from 0 to 4, inclusive; and
Y is hydrogen, halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms or hydroxy;
or a pharmaceutically acceptable salt thereof.

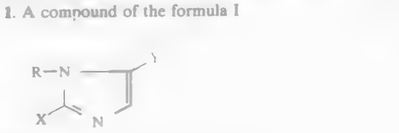
4,764,624

1,2,5-SUBSTITUTED IMIDAZOLE COMPOUNDS AND THEIR USE AS GROWTH REGULATORS

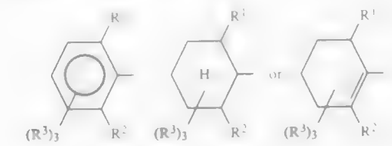
Roland Schmierer, Todtenweis; Hilmar Mildenberger, Kelkheim; Reinhard Handte, Gablingen, and Helmut Bürstell, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 16, 1986, Ser. No. 919,881
Claims priority, application Fed. Rep. of Germany, Oct. 19, 1985, 3537290
Int. Cl.[4] A01N *43/50*; C07D *233/90*
U.S. Cl. 71—92 8 Claims

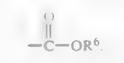
1. A compound of the formula I



wherein
R denotes a radical of the formulae



X denotes a radical of the formula —SH,
Y denotes a radical of the formula



R^1 and R^2 independently of one another denote (C_1–C_4)-alkyl, and
the radicals R^3 independently of one another denote hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-alkoxy, or halogen,
or a salt or a quaternization product thereof which is acceptable for agricultural purposes.

4. A method for regulating plant growth, wherein an effective amount of a compound of the formula (I) of claim 1 is applied to the plants or the cultivated area.

4,764,625

PROCESS FOR PREPARING ARYLAMINES

S. Richard Turner, Pittsford; John F. Yanus, and Dale S. Reafer, both of Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 215,610, Dec. 10, 1980, abandoned, which is a continuation-in-part of Ser. No. 118,147, Feb. 4, 1980, abandoned. This application Aug. 9, 1984, Ser. No. 639,032
Int. Cl.[4] C07C *87/64, 87/58, 87/56, 87/54*
U.S. Cl. 548—442 2 Claims

1. In the reaction process of preparing a tertiary amine by the condensation of an amine selected from the group consisting of a mono- and a di-secondary amine and an aryl compound selected from the group consisting of a mono-iodoaryl compound and a di-iodoaryl compound, the improvement comprising conducting the condensation in the presence of potassium hydroxide, a copper catalyst, and with an inert saturated hydrocarbon solvent mixture of C_{13}–C_{15} aliphatic hydrocarbons having an initial boiling point of at least about 170° C., in an inert atmosphere, at a temperature between about 120° C. to about 190° C. for a period of time sufficient to at least substantially complete the reaction.

4,764,626

METHOD FOR PRODUCING 1,4-DIOXANE

Albert J. Heuvelsland, Heikant, Netherlands, assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 12, 1985, Ser. No. 722,544
Int. Cl.[4] C07D *319/12*
U.S. Cl. 549—377 9 Claims

1. A method for continuously producing 1,4-dioxane which comprises subjecting a one-phase liquid reaction mixture of at least one glycol compound of the general formula:

$$RO—(CH_2CH_2O)_n—R \quad (I)$$

where n is an integer from 1 to 6 and each R is individually a hydrogen atom or an alkyl group containing 1 to 5 carbon atoms and a dehydration catalyst selected from the group consisting of p-toluene sulfonic acid, phosphoric acid and sulfuric acid and which is miscible with the glycol compound to a subatmospheric pressure and an elevated temperature sufficient to prepare 1,4-dioxane, which is removed as an overhead product, provided that said method substantially reduces foaming and the formation of tars compared to an otherwise identical process conducted at a pressure of 760 mm Hg, thereby substantially increasing productivity and eliminating the discoloration of the 1,4-dioxane product.

4,764,627

PROCESS FOR PRODUCING FURAN FROM FURFURAL ALDEHYDE

James P. Diebold, and Robert J. Evans, both of Lakewood, Colo., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1987, Ser. No. 34,358
Int. Cl.[4] C07D *307/06*
U.S. Cl. 549—505 28 Claims

1. A process for producing furans and derivatives thereof comprising generating furfural vapors, passing said vapors over a zeolite catalyst at a WHSV ratio of about 18–38 in an acidic environment, and at a temperature and for a residence time effective to decarbonylate said furfural to said furans and derivatives thereof, and separating the resultant furan and furan derivative vapors.

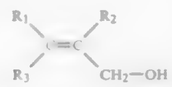
4,764,628

ASYMMETRIC EPOXIDATION OF ALLYLIC ALCOHOLS

Wilfred P. Shum, Swarthmore, Pa., assignor to ARCO Chemical Company, Newtown Square, Pa.

Filed Sep. 14, 1987, Ser. No. 95,973
Int. Cl.[4] C07D *301/19*
U.S. Cl. 549—529 2 Claims

1. In a process for the asymmetric epoxidation of allylic alcohols of the general formula:



where R_1, R_2, and R_3 may be the same or different selected from H, C_1–C_{10} linear or branched alkyl, phenyl, and substituted phenyl, comprising reacting in an organic solvent said allylic alcohol with from 4 to 15 parts of ethylbenzene hydroperoxide, and from 0.013 to 0.026 parts of a catalyst made from essentially equimolar mixtures of titanium tetraisopropoxide and L-(+)-diisopropyl tartrate, the improvement comprising treating the hydroperoxide with a carboxylic acid selected from the group consisting of formic acid, acetic acid, benzoic acid, and p-nitrobenzoic acid in a ratio of titanium:acid of between 1:0.2 and 1:2.5 whereby the epoxide product has an enantiomeric excess of the (R)-glycidol isomer.

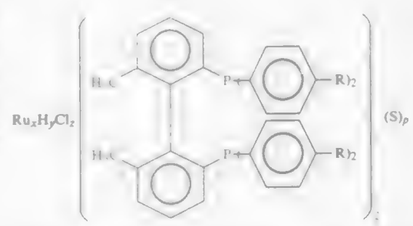
4,764,629

RUTHENIUM-PHOSPHINE COMPLEX

Noboru Sayo, Kanagawa; Takanao Taketomi, Chiba; Hidenori Kumobayashi, and Susumu Akutagawa, both of Kanagawa, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Nov. 25, 1987, Ser. No. 125,280
Claims priority, application Japan, Nov. 27, 1986, 61-282968
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—23 3 Claims

1. A ruthenium-phosphine complex represented by formula (I):



(I)

wherein R represents a hydrogen atom, a methyl group, or a methoxy group; S represents a tertiary amine; when y is 0, then x is 2, z is 4, and p is 1; and when y is 1, then x is 1, z is 1, and p is 0.

4,764,630

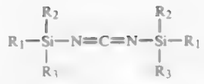
PREPARATION OF N,N-BIS-TRIALKYLSILYL CARBODIIMIDE

Khuong H. X. Mai, Waukegan, and Ghanshyam Patil, Vernon Hills, both of Ill., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 2, 1987, Ser. No. 127,764
Int. Cl.[4] C07F *7/10*
U.S. Cl. 556—410 4 Claims

1. A process for preparing a N,N′-bis-trialkylsilyl carbodiimide of the formula

VOL 1093 ISS 3 AG 16 1988 UMI



wherein R_1, R_2 and R_3 are each independently hydrogen, C_1–C_{20} alkyl, C_3–C_{12} cycloalkyl, C_7–C_{15} aralkyl, unsubstituted or substituted aryl or heteroaryl or alternatively, R_1 and R_2 together with the silicon atom form a 3 to 12 member heterocyclic group, optionally including oxygen, sulfur, or phosphorus as a second heteroatom, which process comprises: mixing in a single reaction vessel a selected trialkylsilyl cyanide and cyanamide together to produce the desired N,N'-bis-trialkylsilyl carbodiimide.

4,764,631

PREPARATION OF CYCLOPOLYDIORGANOSILOXANES VIA VAPOR PHASE REARRANGEMENT

Roland L. Halm, Madison, Ind.; Sidney A. Hansen, Beaverton, and Charles E. Neal, Jr., Midland, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 15, 1988, Ser. No. 144,287
Int. Cl.[4] C07F *7/08*
U.S. Cl. 556—460 **16 Claims**

1. A process for preparing a product cyclopolydiorganosiloxane,

$(R_2SiO)_c$,

wherein each R is independently selected from a group consisting of alkyl groups, alkenyl groups, aryl groups, and alkaryl groups; and c has a value of 3, 4, 5, 6, 7, 8, or 9,

said process comprising

(A) vaporizing a feed material consisting of a cyclopolydiorganosiloxane having the formula,

$(R_2SiO)_x$

wherein each R is defined above; and x is 3, 4, 5, 6, 7, 8, or 9, or a mixture of said cyclopolydiorganosiloxanes,

(B) passing vapors of the feed material through a heated bed of a solid catalyst, said catalyst comprising an alkali metal compound;

(C) controlling pressure and temperature in the heated catalyst bed to favor formation of $(R_2SiO)_c$ in an equilibrating mixture with other cyclopolydiorganosiloxanes; and

(D) recovering an amount of the product cyclopolydiorganosiloxane, $(R_2SiO)_c$, which is substantially increased from the amount present in the feed material.

4,764,632

MULTIFUNCTIONAL AMINO ZIRCONIUM ALUMINUM METALLO ORGANIC COMPLEXES USEFUL AS ADHESION PROMOTER

Lawrence B. Cohen, Sharon, Mass., assignor to Cavedon Chemical Company, Inc., Woonsocket, R.I.

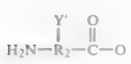
Filed Jan. 7, 1986, Ser. No. 816,814
Int. Cl.[4] C07F *5/06, 7/00*
U.S. Cl. 556—27 **21 Claims**

1. A composition of matter comprising the reaction product of a chelated aluminum moiety, an organofunctional ligand, and a zirconium oxyhalide, the organofunctional ligand being complexed with and chemically bound to the chelated aluminum moiety and the zirconium moiety, the aluminum moiety having the formula:

$Al_2(OR_1O)_aA_bB_c$

wherein A and B are selected from the group consisting of hydroxy and halogen and a, b, and c are numerical values such that $2a+b+c=6$, and (OR_1O) is an alpha, beta or alpha, gamma glycol group in which R_1 is an alkyl group having from 1 to 6 carbon atoms;

and wherein the organofunctional ligand is a multifunctional amino acid residue having the formula:



wherein R_2 is (1) an alkyl, aryl, or aralkyl group having from 1 to 8 carbon atoms, or (2) a bicyclic N-heterocyclic aryl group having from 7 to 11 carbon atoms; Y' is an amino, hydroxy, carboxy, mercapto, methylmercapto, or sulfide group, and wherein the amine group(s) may be bound to primary or secondary carbon atoms;

and wherein the zirconium oxyhalide moiety which may be used as either an aqueous solution or dry powder has the formula:

ZrA_dB_e

wherein A, B are as above defined and d and e are numerical values such that $d+e=4$; the molar ratio of chelated aluminum moiety to zirconium oxyhalide moiety being from about 1.5 to 10.0, and the molar ratio of organofunctional ligand to metal being from about 0.05 to 2;

said composition being prepared in a solvent which chelates with the metals, substantially preventing the polymerization thereof.

4. The composition of claim 1 wherein the reaction product corresponds to the empirical formula:

$(Al_2(OR_1O)_aA_bB_c)_X[OC[R_2(Y')NH_2]O]_Y(ZrA_dB_e)_Z$

wherein X, Y, Z are at least 1, R_2 is an alkyl, aryl, aralkyl, or bicyclic N-heterocyclic aryl having from 7 to 11 carbon atoms, Y' is an amino, hydroxy, carboxy, mercapto, methyl mercapto, or sulfide group and wherein the amino group(s) may be bound to primary or secondary carbon atoms, and the ratio of X:Z is from about 1.5:1 to 5:1.

4,764,633

FERRIC ION CATALYZED COMPLEXATION OF ZINC AND/OR MANGANESE WITH ALPHA AMINO ACIDS

Michael D. Anderson, and Dean R. Anderson, both of Deephaven, Minn., assignors to Zinpro Corporation, Chaska, Minn.

Filed Aug. 31, 1987, Ser. No. 91,391
Int. Cl.[4] C07F *3/06, 13/00*
U.S. Cl. 556—50 **19 Claims**

1. A method of making a 1:1 complex salt of an alpha amino acid and a metal ion selected from the group consisting of zinc and manganese, said method comprising:

reacting a water soluble metal salt selected from the group consisting of zinc salts and manganese salts which are at least partially water dissolved, with an alpha amino acid selected from the group consisting of arginine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine, theronine, tryptophane, valine and glycine,

said reaction occurring in the presence of a 1:1 complexing catalytically effective amount of ferric ion.

4,764,634

PREPARATION OF ORGANIC PHOSPHINITES

Jeffrey E. Telschow, Tarrytown, N.Y., assignor to Akzo America Inc., New York, N.Y.

Continuation-in-part of Ser. No. 816,538, Jan. 6, 1986. This application Aug. 27, 1986, Ser. No. 900,948
Int. Cl.[4] C07F *9/46*
U.S. Cl. 558—96 **7 Claims**

1. A process for preparing phosphinites of the formula $R^1R^2POR^3$, wherein R^1, R^2, and R^3 are the same or different and can be alkyl, aryl, alkaryl, or aralkyl containing from 1 to 30 carbon atoms and wherein the reaction consists essentially of reacting a disubstituted halophosphine with an alcohol or phenol in the presence of a tertiary amine base and wherein the reaction is conducted at from about ambient temperature to about 60° C.

4,764,635

AROMATIZATION PROCESS

Venkataraman Ramachandran, and David M. Mohr, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Aug. 14, 1986, Ser. No. 896,461
Int. Cl.[4] C07C *121/62*
U.S. Cl. 558—423 **5 Claims**

1. A process which comprises heating a 6-alkoxy-1-cyano-3,4-dihydronaphthalene at about 100°–300° C. in the presence of a hydrogen acceptor so as to aromatize the dihydronaphthalene.

4,764,636

OPTICALLY ACTIVE BENZOIC ESTER DERIVATIVES

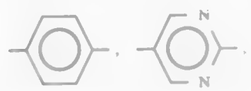
Makoto Sasaki, Urawa; Kiyohumi Takeuchi, Tokyo, and Haruyoshi Takatsu, Kodaira, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Oct. 31, 1986, Ser. No. 926,706
Claims priority, application Japan, Nov. 1, 1985, 60-245766
Int. Cl.[4] C07C *69/76*
U.S. Cl. 560—102 **5 Claims**

1. An optically active benzoic ester derivative represented by the general formula:



wherein R represents a straight chain alkyl group having from 1 to 20 carbon atoms; R' represents a straight chain alkyl group having from 2 to 8 carbon atoms; rings A and B each represents



or a trans-1,4-cyclohexane ring; n represents 0 or 1; and C represents an asymmetric carbon atom.

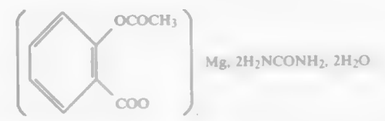
4,764,637

HYDRATED MAGNESIUM ACETYLSALICYLATE/UREA COMPLEX PREPARATION

Claude Bertrand, Saint Germain les Corbeil, and Gérard Wolff, Thiais, both of France, assignors to Rhone-Poulenc Sante, Courbevoie, France

Filed Apr. 18, 1986, Ser. No. 853,434
Claims priority, application France, Apr. 19, 1985, 85 05962
Int. Cl.[4] C07C *67/00*
U.S. Cl. 560—143 **3 Claims**

1. A process for preparing a hydrated complex of magnesium acetylsalicylate and urea of the formula:



which comprises forming a urea-containing supersaturated aqueous solution of magnesium acetylsalicylate by the reaction of acetylsalicylic acid with magnesium carbonate in an aqueous medium containg at least the stoichiometric amount of urea, and crystallizing the said complex from said solution.

4,764,638

METHOD FOR THE PREPARATION OF 2,6-NAPHTHALENE DICARBOXYLIC ACID

Marcel Feld, Cologne, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Aug. 12, 1986, Ser. No. 896,116
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1985, 3529381; Dec. 12, 1985, 3543879
Int. Cl.[4] C07C *51/255*
U.S. Cl. 562—416 **22 Claims**

1. A method for the preparation of 2,6-naphthalenedicarboxylic acid comprising: oxidizing a 2-acyl-6-alkyl naphthalene in liquid phase with oxygen or a gas containing oxygen, in the presence of a soluble manganese compound as catalyst, in an aliphatic carboxylic acid as solvent, or in a solvent mixture containing an aliphatic carboxylic acid, at temperatures of 80° to 180° C., to form as oxidation product a 6-alkyl-2-naphthoic acid; and oxidizing the 6-alkyl-2-naphthoic acid in the presence of a soluble cobalt compound and a component supplying bromine ions as catalysts, in an aliphatic carboxylic acid as solvent, or in a solvent mixture containing an aliphatic carboxylic acid, at a reaction temperature of 150° to 250° C. with oxygen or a gas containing oxygen.

4,764,639

PROCESS FOR THE PRODUCTION OF TRIMELLITIC ACID

Wayne P. Schammel, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 734,570, May 15, 1985, abandoned. This application Nov. 25, 1985, Ser. No. 801,564
The portion of the term of this patent subsequent to Jul. 5, 2005, has been disclaimed.
Int. Cl.[4] C07C *51/265*
U.S. Cl. 562—416 **2 Claims**

1. A process for the liquid-phase oxidation in a solvent of pseudocumene with molecular oxygen to trimellitic acid, under a sufficient pressure to maintain 70–80% of the solvent and pseudocumene in the liquid-phase in the presence of a source of cobalt, a source of manganses plus a source of bormine with or without a source of zirconium wherein the amount of cobalt present is about 0.06 to about 0.19 weight percent based on pseudocumene feedstock, at a temperature in the range of about 100° C. to about 250° C., which process comprises conducting the oxidation in a two-step process

VOL 1093 ISS 3 AG 16 1988 UMI

wherein the first oxidation is a semi-continuous oxidation conducted at a temperature of about 100° C. to about 200° C. so that only about one to about two methyl groups on the average on each benzene ring are converted to carboxylic acid groups thus avoiding poisoning the catalyst and completing the oxidation of partially oxidized pseudocumene to trimellitic acid, in a batch oxidation process at a temperature of from about 100° C. to about 250° C. the improvement in combination therewith comprising conducting the staged addition of the bromine component in two stages wherein 10 to about 35 percent by weight of the total bromine is added in the first stage of bromine addition and the remainder is added in the last stage of bromine addition.

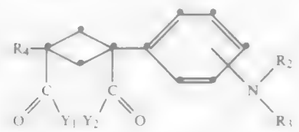
4,764,640

SUBSTITUTED AZABICYCLOHEPTANES, THE USE THEREOF, PHARMACEUTICAL PREPARATIONS THAT CONTAIN THESE COMPOUNDS, AND PROCESSES FOR THE MANUFACTURE OF THESE COMPOUNDS

Alex Alder, Basel; Jaroslaw Stanek, Birsfelden, and Daniel Bellus, Rieben, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 746,814, Jun. 20, 1985, Pat. No. 4,677,129.
This application Apr. 1, 1987, Ser. No. 32,656
Claims priority, application Switzerland, Jun. 20, 1984, 2987/84
Int. Cl.[4] C07C *101/447*
U.S. Cl. 562—457 5 Claims

1. A compound of the formula



(III)

In which R_2 represents hydrogen, lower alkyl, lower alkanoyl or lower alkanesulphonyl, R_3 represents hydrogen or lower alkyl; R_4 represents hydrogen, lower alkyl, phenyl or phenyl substituted by $—N(R_2)(R_3)$; and Y_1 and Y_2 represent, independently of the other, hydroxy, halogen, lower alkoxy, tri-lower alkylsilyloxy, lower alkanesulphonyloxy, benzenesulphonyloxy or p-toluenesulphonyloxy; or Y_1 and Y_2 together represent —O—; or a salt thereof.

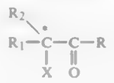
4,764,641

PROCESS FOR PREPARING OPTICALLY ACTIVE CARBONYL COMPOUNDS

Graziano Castaldi, Briona; Silvia Cavicchioli, Costermano; Claudio Giordano, Vicenza, and Carlo Restelli, Gerenzano, all of Italy, assignors to Zambon Spa., Vicenza, Italy

Filed Oct. 6, 1986, Ser. No. 915,518
Claims priority, application Italy, Oct. 4, 1985, 22357 A/85
Int. Cl.[4] C07C *45/55*
U.S. Cl. 568—319 19 Claims

1. A process for preparing optically active alpha-halogenated carbonyl compounds of formula



(IV)

in which

R represents a hydrogen atom, a possibly substituted alkyl, a possibly substituted cycloalkyl, or a possibly substituted arylalkyl;

R_1 represents a possibly substituted alkyl, a possibly substituted cycloalkyl, or a possibly substituted aryl;

R_2 represents a hydrogen atom or, together with R_1, constitutes a substituted pentamethylenic chain which, together with the carbon atom to which R_1 and R_2 are bonded, forms a cyclohexyl which is substituted or is orthocondensed with an aromatic group which can itself be substituted;

X represents a chlorine, bromine or iodine atom,

or R and R_1 together constitute a possibly substituted methylenic chain; provided that when r represents a possibly substituted aryl, R_1 is other than a non-substituted C_1–C_4 alkyl;

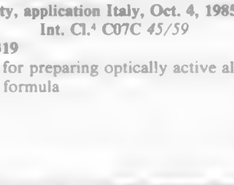
said process being characterised by comprising the following steps:

(A) acetalating with L(+) of D(−)-tartaric acid or their derivatives a carbonyl compound of formula



(I)

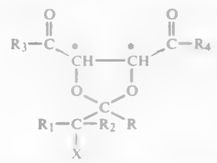
in which R and R_1 have the aforesiad meanings, to obtain a compound of formula:



in which R, R_1 and R_2 have the aforesaid meanings, R_3 and R_4 independently represent a hydroxyl, an alkoxy, a possibly mono or di-substituted amino group, or a $O—M^+$ group where M^+ represents the cation of an alkaline metal;

the carbon atoms marked with an asterisk having both R and S configuration;

(B) halogenating a compound of formula II to diastereoselectively obtain a compound of formula:



(III)

in which R, R_1, R_2, R_3 and R_4 have the aforesaid meanings and X represents a chlorine, bromine or iodine atom, and in which the carbon atom carrying the substituent X has prevalently S or R configuration;

(C) reacting compound III with a substantially anhydrous strong acid at a temperature of between 0° C. and ambient temperature.

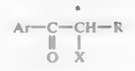
4,764,642

PROCESS FOR PREPARING OPTICALLY ACTIVE ALPHA-HALOALKYL-ARYL-KETONES

Graziano Castaldi, Briona; Silvia Cavicchioli, Costermano, and Claudio Giordano, Vicenza, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

Filed Oct. 6, 1986, Ser. No. 915,573
Claims priority, application Italy, Oct. 4, 1985, 22356 A/85
Int. Cl.[4] C07C *45/59*
U.S. Cl. 568—319 5 Claims

1. A process for preparing optically active alpha-haloalkyl-aryl-ketones of formula



(II)

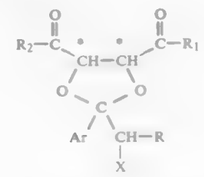
in which

Ar represents an aryl, possibly substituted;

R represents a C_1–C_4 alkyl; and

X represents a chlorine, bromine or iodine atom,

comprising reacting with a substantially anhydrous strong acid a compound of formula



(I)

in which

Ar, R and X have the meanings given for formula II;

R_1 and R_2, which can be the same or different, represent a hydroxyl, an alkoxy, an amino group possibly mono- or di-substituted, or a O^-M^+ group where M^+ represents the cation of an alkaline metal; the carbon atoms marked with an asterisk both having R or S configuration; the carbon atom carrying the substituent X having mainly S or R configuration.

4,764,643

ROUTE TO HYBRID RICE PRODUCTION

Alfonso G. Calub, East Bernard, Tex., assignor to Ring Around Products, Inc., Prattville, Ala.

Filed Jan. 6, 1987, Ser. No. 1,227
Int. Cl.[4] A01G *1/00*
U.S. Cl. 800—1 46 Claims

1. An improved process for the efficient production of seeds capable of growing male fertile F_1 hybrid *Oryza sativa* plants comprising:

(a) growing in a planting area a population of (i) female fertile cytoplasmically male sterile rice plants having substantially fully exserted stigmas, panicles which are substantially fully exserted in the absence of the application of growth hormone, flag leaves which in the absence of cutting generally extend upwardly to a lesser maximum height than the tips of said panicles whereby said panicles are well disposed to receive pollen from nearby plants and the disposition of said flag leaves below the tips of said panicles is attributable to recessive genes, and the ability to form seeds which are associated with a dominantly inherited genetic marker, and (ii) female fertile male fertile rice plants which are capable of restoring male fertility to the progeny of said cytoplasmically male sterile rice plants having generally long erect flag leaves attributable to dominant genes which generally extend upwardly to a greater maximum height than the tips of the panicles, and the ability to form seeds when self-pollinated which are associated with a recessively inherited genetic marker,



(b) pollinating said population of rice plants whereby seeds are formed on said female fertile cytoplasmically male sterile rice plants (i) which are capable of growing male fertile F_1 hybrid rice plants having long flag leaves which generally extend upwardly to a greater maximum height than the tips of the panicles whereby efficient photosynthesis can be accomplished, and seeds are formed on said female fertile male fertile rice plants (ii) as a result of self-pollination,

(c) recovering seeds which have formed on said rice plants growing in said planting area, and

(d) substantially separating on the basis of said genetic marker the seeds capable of growing male fertile F_1 hybrid rice plants formed on said (i) plants from the seeds formed on said (ii) plants as a result of self-pollination.

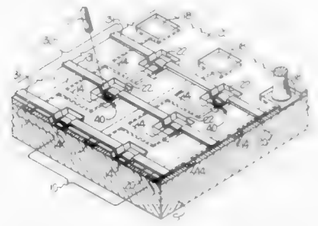
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4,764,644

MICROELECTRONICS APPARATUS

Arnold Reisman, Raleigh, and Carlton M. Osburn, Cary, both of N.C., assignors to Microelectronics Center of North Carolina, Research Triangle Park, N.C.

Division of Ser. No. 781,982, Sep. 30, 1985, Pat. No. 4,667,404.
This application Feb. 24, 1987, Ser. No. 17,628
Int. Cl.[4] H05K 1/00
U.S. Cl. 174—68.5 9 Claims



1. A customizable microelectronics apparatus comprising:

a first wiring plane at a first, lower level, said wiring plane having multiple electrical conductors and interconnection links disposed at predetermined locations along each of the conductors and generally coplanar therewith and in electrical circuit therewith;

an insulating layer that overlies and insulates the conductors and interconnection links of said first wiring plane and defines openings therein at selected locations to expose portions of the interconnection links of the underlying first wiring plane to accommodate electrical connections therewith and provide access thereto for selective breaking of the interconnection links;

a second wiring plane at a second, upper level generally above the first, lower level and having multiple electrical conductors, each conductor in said second wiring plane having a conducting portion extending across the upper surface of said insulating layer and at least one integral interconnecting portion formed as a continuation of the conducting portion, wherein each said continuous interconnecting portion of said second wiring plane extends down from the second level into one of said openings in said insulating layer to said lower level, makes direct physical and electrical contact at said predetermined locations at said lower level with selected interconnection links of said first wiring plane, and continues up from said first level to the second, upper level to continue as a conducting portion, so that customized electrical connections may be made by extending said conductors of said second wiring plane down into said openings and circuits may be customized by breaking selected ones of the interconnection links in said first wiring plane.

4,764,645

PROCESS FOR MANUFACTURING HORIZONTAL AND VERTICAL TYPE SWITCH DEVICES AND PRODUCTS THEREOF USING COMMON TERMINAL PARTS

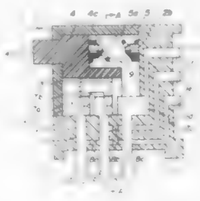
Kazuhiro Takasawa, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Dec. 11, 1986, Ser. No. 940,287
Claims priority, application Japan, Jan. 25, 1986, 61-12988
Int. Cl.[4] H01H 15/02
U.S. Cl. 200—16 F 3 Claims

3. A switch device of a desired horizontal or vertical type comprising:

a slide carrying a movable contact element;

a molded unit formed by a metallic, electrically conductive strip with predetermined patterns therein defining a set of common fixed contact elements, a first group of terminals extending from the fixed contact elements in a first direction, and a second group of terminals extending in a second direction perpendicular to the first direction, said second group of terminals being electrically connected to respective ones of said first group of terminals and said first group of terminals being electrically connected to respective ones of said fixed common contacts through interconnecting sites, said strip being molded in an insulating synthetic resin so that said two groups of terminals have their respective ends projecting from respective sides thereof in said first and second directions, wherein





selected ones of said interconnecting sites are cut so that one desired group of terminals remains electrically connected to the respective ones of said fixed contact elements, and wherein the projecting ends of the other group of terminals not electrically connected to said fixed contact elements are cut off at said molded unit; and

a frame in which said slide and said molded unit are installed such that said slide and movable contact element are positioned for operative sliding contact movement relative to said fixed contact elements so as to form the desired switch device.

4,764,646

DISTRIBUTOR CAP WITH ADJUSTABLE CONTACTS

H. Chris Hanning, 2029 Terracina Cir., Spring Valley, Calif. 92077, and Gary J. Anderson, P.O. Box 1805, La Mesa, Calif. 92044

Filed Sep. 14, 1987, Ser. No. 95,644
Int. Cl.[4] H01H 9/00, 19/00
U.S. Cl. 200—19 DC 7 Claims

1. In a distributor cap for internal combustion engines, wherein at least one terminal is positioned to intermittently establish a flow of ignition current with an arm passing in close proximity of the terminal, said terminal extending from inside said cap through a bore into the roof of said cap beyond its undersurface and making electrical contact with a cup formed above said roof, said cup being shaped and dimensioned to receive the end of a sparkplug wire; the improvement which comprises:

said terminal having a contact section shaped to form a plurality of contact surfaces;

said surface being symmetrically disposed about an axis passing through the center of said terminal;

VOL 1093 ISS 3 AG 16 1988 UMI

a socket in electrical contact with said cup; and
a prong in electrical contact with said section, said prong being shaped and dimensioned to engage said socket and



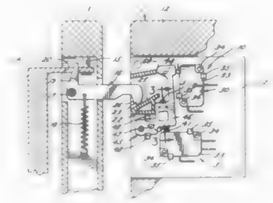
to rotate axially therein in a plurality of selectable orientations which successively orient each one of said contact surfaces towards said arm.

4,764,647
MECHANICAL BRAIN
Dulin L. Annas, Sr., Hickory, and Richard M. Teague, Taylorsville, both of N.C., assignors to Anteg, Inc., Hickory, N.C.
Filed Apr. 15, 1987, Ser. No. 38,786
Int. Cl.[4] H01H *43/00*
U.S. Cl. 200—38 CA 7 Claims



1. A mechanical brain comprising:
(a) a rotatable disc having first and second surfaces and an outer peripheral surface;
(b) a plurality of plate members, each plate member (i) having two major surfaces and disposed so that each major surface of each plate is in sliding contact with a major surface of another plate member and (ii) having first, second, third, and fourth edges, said first edge in sliding contact with the outer peripheral surface of said rotatable disc;
(c) a containing member, circumscribing said plates, in sliding contact with said second edges of said plates, said containing member mechanically securing the plates to said outer peripheral surface of said rotatable disc so that said plates may move relative to one another, the outer peripheral surface of the rotatable disc and the containing member; and,
(d) first outer member disposed in face-to-face relationship with said first surface of said rotatable disc, a first striker including a first striker member disposed on said first outer member in confronting relationship to the third edges of said plate members for moving a first number of said plates from a first to a second position and a first shim member disposed on said first outer member so that said shim comes in contact with a second number of plates in their second position and moves them from their second to their first position upon rotation of the rotatable disc.

4,764,648
SWITCH ASSEMBLY WITH ACTUATOR FOR SEQUENTIALLY ACTIVATING TWO SAFETY SWITCHES
John Resh, Valparaiso, Ind., assignor to McGill Manufacturing Co., Inc., Valparaiso, Ind.
Filed Aug. 28, 1987, Ser. No. 90,662
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 A 7 Claims

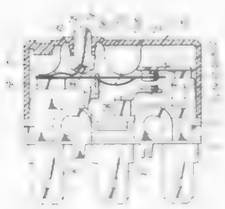


1. A switch assembly for use with a movable probe, said switch assembly comprising a mounting member, first and second electrical switches supported on said mounting member and each having an operator adapted to be shifted to a triggered position changing the state of the switch, and an actuator for shifting said switch operators to said triggered positions in response to movement of said probe, said actuator comprising a first actuating element supported on said mounting member to move between active and inactive positions, means biasing said first actuating element toward said inactive position, said first actuating element being disposed in the path of movement of said probe said, said first actuating element being moved to said active position when said probe is moved in a first direction and being operable when moved to said active position to shift the operator of said first switch to its triggered position, said actuator further comprising a second actuating element supported by said first actuating element to move with said first actuating element and also to move relative to said first actuating element between active and inactive positions, means biasing said second actuating element toward its inactive position, said second actuating element also being disposed in the path of movement of said probe, said second actuating element being moved to its active position when said probe is moved in a second direction and being operable when moved to its active position to shift the operator of said second switch to its triggered position.

4,764,649
SNAP SWITCH WITH A SEPARATE LEAF SPRING BIASING MEMBER
Masatoshi Sakai, Tsu, and Takeshi Nishii, Matsuzaka, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Oct. 30, 1986, Ser. No. 924,757
Claims priority, application Japan, Dec. 13, 1985, 60-192420[U]
Int. Cl.[4] H01H *13/38*
U.S. Cl. 200—67 D 9 Claims

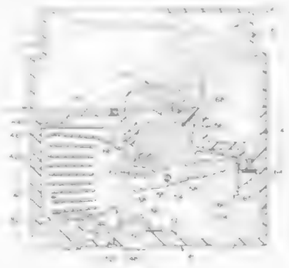
1. An electrical switch comprising:
a housing,
first and second stationary terminals including first and second stationary terminal parts, respectively, disposed in said housing,

a normally-closed stationary contact and a normally-open stationary contact disposed in said housing and fixed to said first and second terminal parts, respectively,
a third terminal including a third stationary terminal part disposed in said housing,
a movable contactor disposed in said housing and including a base end and a free end, said base end being fixed to said third terminal part, said free end carrying movable contact means, said movable contactor being rockable to move said movable contact means alternately into engagement with said normally-closed and normally-open contacts,
said movable contactor including an integral tongue having a free end engageable with a portion of said housing so as to normally urge said movable contactor into a normal position engaging said movable contact means with said normally-closed contact,
a push-button movably mounted on said housing and including outer and inner ends, said outer end being accessible from outside of said housing so as to be manually depressible for causing said inner end of said button to be moved inwardly, said inner end of said button positioned to face said movable contactor, and including a notch opening toward said movable contactor, and
a spring disposed in said housing for yieldably biasing said



button in its non-depressed position such that a clearance is normally maintained between said inner end of said button and said movable contactor, said spring including a base end connected to said third terminal part and lying flush against said base end of said movable contactor, said spring disposed in superimposed relation to said movable contactor, and including a biasing section comprising:
a first portion extending from said base part in spaced relation to said movable contactor,
a second portion extending toward said movable contactor and comprising a bent abutment portion normally spaced from said movable contactor by a distance less than said clearance and arranged to engage said movable contactor prior to engagement of said movable contactor by said inner end of said button when said button is depressed, whereby upon depression of said button said spring initially deforms about its base end and opposes depression of said button by a first force prior to engagement of said abutment portion with said movable contactor and thereafter said free end deforms about said abutment portion to oppose depression of said button by a second, larger force, and
a third portion extending away from said movable contactor and terminating in a free end of said spring, said free end being received in said notch of said button for sliding movement along a surface thereof.

4,764,650
MOLDED CASE CIRCUIT BREAKER WITH REMOVABLE ARC CHUTES AND DISENGAGEABLE TRANSMISSION SYSTEM BETWEEN THE OPERATING MECHANISM AND THE POLES
Marc Bur, Grenoble, and Jean-Pierre Nebon, St. Martin Le Vinoux, both of France, assignors to Merlin Gerin, Grenoble, France
Filed Oct. 16, 1986, Ser. No. 919,434
Claims priority, application France, Oct. 31, 1985, 85 16345; Oct. 31, 1985, 85 16346
Int. Cl.[4] H01H *33/04, 3/46*
U.S. Cl. 200—153 G 10 Claims



1. A multipole electrical circuit breaker comprising:
a molded insulating case including an inner partition wall of insulating material, said case enclosing:
an operating mechanism for activating said circuit breaker between open and closed positions;
a plurality of poles located side-by-side with interposed insulating separation walls;
each pole having a pair of separable contacts comprising a stationary contact cooperating in the closed position of the circuit breaker with a plurality of elementary movable contact fingers;
a transverse rotatable switching bar common to all the poles and coupled to said operating mechanism for driving simultaneously the movable contact fingers of each pole between the open and closed positions;
an arc chute for extinguishing an arc drawn in each pole between said movable contact fingers and the stationary contact in the open position;
an insulating cage for supporting the movable contact fingers of each pole;
a pair of first and second connection pads electrically connected respectively to the stationary contact and to the movable contact fingers of each pole;
said cage and the second connection pad forming a sub-assembly which is securedly united to said partition wall of the case;
a fixing device associated to said second connection pad for attachment of said sub-assembly to the partition wall; and
a mechanical transmission link interconnecting the insulating cage with said switching bar by means of a disengageable coupling device which can be operated between a first retracted position for disengaging said link, and a second retaining position for establishing said link between the bar and the cage.

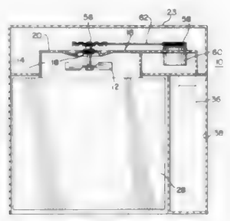
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,651

GROUNDING OF STIRRER BUSHING IN A MICROWAVE OVEN

Anton J. Schwartz, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 23, 1987, Ser. No. 100,015
Int. Cl.[4] H05B 6/74
U.S. Cl. 219—10.55 F 17 Claims



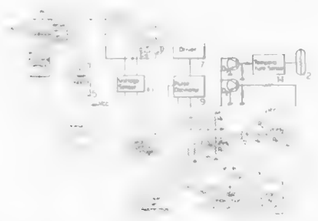
1. A microwave oven comprising:
a waveguide duct extending between a source of microwave energy and a cooking cavity,
a mechanical stirrer within said waveguide duct for distributing said microwave energy,
driving means disposed externally of said waveguide duct and connected to a drive shaft of said stirrer for rotating said stirrer,
a stirrer bushing formed of electrically conductive material and having a stem portion in which said stirrer drive shaft is rotatably journaled and a head portion, said head portion having serrations,
retaining means for securing said stirrer bushing to a wall of said waveguide duct and
ridges on said wall projecting into said waveguide duct and disposed in abrading physical contact with said serrations.

4,764,652

POWER CONTROL DEVICE FOR HIGH-FREQUENCY INDUCED HEATING COOKER

Min K. Lee, Changwon, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 22, 1987, Ser. No. 41,351
Claims priority, application Rep. of Korea, Apr. 23, 1986, 5557/1986
Int. Cl.[4] H05B 6/06
U.S. Cl. 219—10.77 4 Claims



1. A power control device for a high-frequency induced heating cooker having a work coil driven by inverter means comprising:
rectifier means for rectifying AC power supplied to the inverter means;
input current sensor means for detecting the input current from the AC power supplied to said rectifier means;
first comparator means for comparing the detected input current of the input current sensor means with a manually selectable reference voltage;
pulse oscillator means for generating a rectangular pulse signal;
driver means for applying the rectangular pulse signal to said inverter means to turn said inverter means ON to thereby apply a high frequency current through said work coil;
voltage sensor means for detecting the voltages on both the input and output sides of the work coil;
second comparator means for comparing both detected voltages of the voltage sensor means and determining whether the output of said first comparator means will drive said pulse oscillator means;
means for substracting the voltage detected at the voltage sensor means on the input side of the work coil from the manually selected reference voltage;
third comparator means for comparing the detected voltage of the input current sensor means with a reference voltage which would be generated by the presence of a normal sized cooking vessel on the work coil;
semiconductor switch means for cutting OFF a high potential output signal of the third comparator means;
search control voltage means for generating an oscillating signal during a predetermined period;
starting circuit means for generating an oscillating signal during the predetermined period; and
transistor means turned ON and OFF by the oscillating signal of the starting circuit means for cutting OFF the supply of the search control voltage to said pulse oscillator means at a predetermined time.

4,764,653

PROCESS AND APPARATUS EMPLOYING ELECTROEROSION

Ernst Bühler, Losone, Switzerland, assignor to AG fur industrielle Elektronik AGIE Losone bei Locarno, Losone, Switzerland

Filed Sep. 11, 1986, Ser. No. 906,420
Claims priority, application Fed. Rep. of Germany, Sep. 16, 1985, 3533002
Int. Cl.[4] B23H 7/00, 7/22
U.S. Cl. 219—69 E 13 Claims



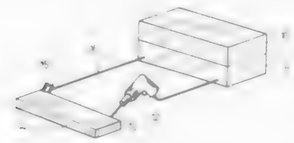
1. An electroerosion machine comprising:
a supporting table disposed in an xy plane;
first means to move the table in the x direction in said xy plane;
second means to move the table in the y direction in said xy plane;
a spindle sleeve disposed along a z axis at right angles to the xy plane and disposed above the xy plane, said sleeve having a device for detachably holding an electrode, the device including a removable mandrel having a free end with a permanent magnet secured thereto, and further includes heating means connected to the device for melting soft solder applied in the vicinity thereof;
a container adapted to be filled with a dielectric fluid and secured to said table, said container having a partition dividing same into first and second working zones;
wire cutting means having a cutting wire and disposed in the first zone, said cutting means being tiltable to tilt the wire with respect to the xy plane;
at least one magazine which is secured to the container and is movable therewith; and
at least one table-side mandrel supported by a tool table, the table-side mandrel and table being disposed in the second zone, each table-size mandrel carrying electrical heating means and having a free top end having a coating which can be soft soldered.

4,764,654

PROCESS AND APPARATUS FOR TREATING ELECTRICALLY CONDUCTIVE MATRICES AND PRODUCTS PRODUCED BY THE PROCESS

Joseph Ady, Islington, Canada, assignor to Metafuse Limited, Ontario, Canada

Continuation of Ser. No. 319,678, Nov. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 224,762, Jan. 13, 1981, abandoned. This application Jan. 25, 1985, Ser. No. 694,750
Int. Cl.[4] B23P 17/00
U.S. Cl. 219—76.13 7 Claims



1. A process for the fusion, at an ambient temperature, of at least one second conductive chemical element into a matrix of a first conductive chemical element which comprises:
placing said second conductive element in contact with an adjacent surface of said first conductive chemical element; and
applying an interrupted electrical signal of a predetermined frequency to said first and second chemical elements, whereby said second chemical element is fused with said first chemical element, said signal being a pulsing signal in the range of 2.5 microseconds to 28.6 nanoseconds with an amplitude in the range of 3 amps per 0.3 square mm. for a predetermined period, said second conductive element being moved over said matrix at a rate sufficient to cause a substantially continuous area of fusion of said second conductive chemical element with said first chemical element and the rate of movement of said second conductive chemical element being substantially proportional to half the frequency of said electrical signal.

4,764,655

REAL-TIME LASER BEAM DIAMETER DETERMINATION IN A LASER-MATERIALS PROCESSING SYSTEM

Angel L. Ortiz, Jr., Scotia, and Tushar S. Chande, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 31, 1987, Ser. No. 91,478
Int. Cl.[4] B23K 26/02
U.S. Cl. 219—121.83 15 Claims

1. Apparatus, for use in a laser-materials processing system, for determining the diameter of a laser beam at a point of laser beam-material interaction on a workpiece, said beam diameter determination apparatus comprising:
means for providing an image of the laser beam-material interaction point; and



means for processing said image to determine the diameter of said laser beam at the laser beam-material interaction point.

4,764,656

TRANSFERRED-ARC PLASMA APPARATUS AND PROCESS WITH GAS HEATING IN EXCESS OF ANODE HEATING AT THE WORKPIECE

James A. Browning, P.O. Box 6, Hanover, N.H. 03755

Filed May 15, 1987, Ser. No. 49,910
Int. Cl.[4] B23K 9/00
U.S. Cl. 219—121.44 4 Claims



1. In a transferred-arc plasma metal cutting process comprising the step of setting up a transferred arc column between a cathode electrode aligned with a primary plasma gas discharge nozzle of a transferred-arc plasma torch body and an underlying metal workpiece to be cut with a primary gas flow exiting through said primary gas discharge nozzle, the improvement comprising the step of adding at least one additional nozzle length to said torch, discharging a secondary gas flow at high velocity through said at least one additional nozzle length, said nozzle length being axially aligned with the primary nozzle and positioned downstream thereof, applying a sufficiently high voltage between said transferred-arc plasma torch body and said underlying metal workpiece to produce a transferred-arc operating at a sufficiently high amperage, with the combined nozzle length having L/D ratios in the neighborhood of 8, wherein L is the nozzle length and D is the nozzle diameter, such that a level of gas heated within the torch body creates an exit gas velocity which is supersonic, resulting in an extended transferred-arc capable of cutting a good kerf completed

VOL 1093 ISS 3 AUG 16 1988 UMI

through thick metal workpieces reducing the tendency to double arc through the at least one secondary nozzle, and wherein the gas heating is in excess of the anode heating at the workpiece being cut.

4,764,657

AUTOMATIC TAB PLATE WELDING APPARATUS

Yoshitsugu Fukukawa; Atsushi Nishida, both of Chiba; Katsuhiko Nishioka, and Hiroaki Tsunori, both of Hyogo, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Osaka Fujikogyo Co., Ltd., Hyogo, both of, Japan

Filed Mar. 9, 1987, Ser. No. 23,819
Claims priority, application Japan, Mar. 31, 1986, 61-74664
Int. Cl.[4] B23K *9/02, 37/04*
U.S. Cl. 219—125.1 8 Claims



1. An automatic tab plate welding apparatus disposed on each of both lateral sides of a pass line of a first plate for welding a tab plate to a predetermined corner or said first plate, said first plate having a top surface and a bottom surface, said apparatus comprising:

a first truck disposed above said first plate and movable in a direction perpendicular to said pass line;

a basic truck disposed below said first plate and movable in a direction perpendicular to said pass line;

tab plate store boxes mounted on said first truck for holding therein a number of tab plates laid flat on top of one another;

a tab plate feeding device mounted on said first truck for taking out one tab plate at a time from one of said tab plate store boxes and feeding the tab plate to said basic truck;

an urging device mounted on said first truck for holding down a predetermined corner of the first plate;

a torch driving device mounted on said first truck for moving a welding torch pointed at the top surface of the first plate to and along a predetermined welding line;

a tab plate table mounted on said basic truck so as to be movable horizontally in the direction of the pass line and vertically in a direction perpendicular to the bottom surface of the first plate and swingable in an angular direction inclined to the bottom surface of the first plate for receiving the tab plate from said tab plate feeding device;

tab plate table positioning means mounted on said basic truck for determining the positional relationship between a predetermined position of an end face of the first plate and an end face of the tab plate on said tab plate table;

a welding torch positioning means mounted on said basic truck for positioning said welding torch along the welding line in operative association with the horizontal movement of said tab plate table; and

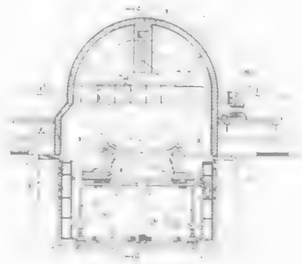
a sequence device for controlling the order of operation of at least some of the aforementioned devices and means.

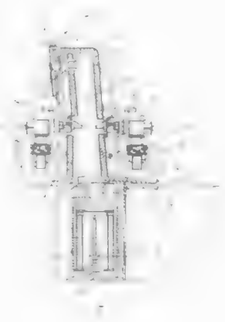
4,764,658

PROCESS AND APPARATUS FOR WELDING STEAM TURBINE DIAPHRAGMS

Cesare Panzeri, Macherio, Italy, assignor to Ansaldo Componenti S.p.A., Genoa, Italy

Filed Jul. 31, 1986, Ser. No. 891,325
Claims priority, application Italy, Sep. 20, 1985, 22225 A/85
Int. Cl.[4] B23K *9/225*
U.S. Cl. 219—137 R 4 Claims





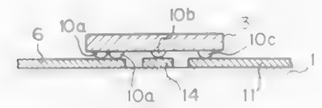
1. A process for welding steam turbine diaphragms, comprising temporarily assembling two semi-diaphragms into an assembly to be welded, holding the assembly in a substantially vertical position with one of the main axes of one of said semi-diaphragms at a predetermined height, rotating said assembly at a constant speed while simultaneously carrying out welding on both opposite faces of said assembly, heating each said face continuously so as to cause substantially even heating on both said assembly faces in the areas to be welded, carrying out said welding by means of self-instructing welding torches simultaneously on two different diameters for each said face, one of said diameters being disposed between a body and a semi-distributor of the turbine diaphragm to be welded, and the other diameter being disposed between said semi-distributor and a ring of the steam turbine diaphragm to be welded.

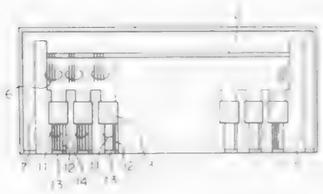
4,764,659

THERMAL HEAD

Keijiro Minami, Hayato, and Yasuo Nishiguchi, Kokubu, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jan. 23, 1986, Ser. No. 821,682
Claims priority, application Japan, Jan. 26, 1985, 60-13157; Apr. 23, 1985, 60-87998
Int. Cl.[4] H05B *1/00*
U.S. Cl. 219—216 3 Claims





1. A thermal head comprising:

a substrate;

a number of heat generators arranged on one side of the substrate;

terminals for external connection on the other side of the substrate, said terminals including a driving power source terminal and control terminals;

flip chips, each of which comprises a driving integrated circuit element;

positions for loading the flip chips arranged in the intermediate portion of the substrate;

a common driving line for connecting the head generators to a driving power source terminal of the external connection terminals;

output terminal pads, control terminal pads and driving power source terminal pads located in the flip chip-loading positions;

individual driving lines for connecting the heat generators to the output terminal pads; and

lines for connecting the control terminal pads and the driving power source terminal pads to corresponding external connection terminals, respectively;

wherein each of the flip chips has solder electrode bumps as terminals on the bottom face thereof;

each of the pads is formed of metallic aluminum and has a nickel covering;

the solder electrode bumps of each of the flip chips includes output electrode bumps on one side of the chip, control electrode bumps on the other side thereof and power source electrode bumps in the intermediate portion thereof;

each of the flip chips and each of the flip chip-loading positions are arranged so that the output electrode bumps, the control electrode bumps and the power source electrode bumps correspond to the output terminal pads, the control terminal pads and the driving power source pads, respectively, and that the output electrode bumps and the output terminal pads confront the heat generators; and

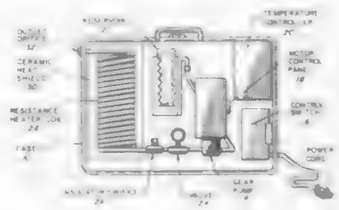
each of the bumps and the corresponding pads are bonded by soldering.

4,764,660

ELECTRIC SMOKE GENERATOR

Edmund Swiatosz, Maitland, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 22, 1985, Ser. No. 790,028
Int. Cl.[4] H05B *1/02, 3/42;* B01J *13/00;* F22B *1/28*
U.S. Cl. 219—272 5 Claims



1. Apparatus for generating smoke from a preselected fluid by feeding the fluid to a tubular conduit in which the fluid is heated to a temperature sufficient to convert the fluid to vapor, wherein the conduit is maintained at a constant preselected temperature correlated to the resistivity of the conduit that is thereafter sensed to regulate current flow throught the conduit, comprising:

a tubular conduit defining a resistance heater coil functional in said apparatus as said conduit for conveying a smoke generation fluid and for heating the fluid, said coil having an electrical resistivity that varies with temperature and having a first open end defining an input orifice and a second open end defining an output orifice;

a beryllium oxide ceramic disk attached in heat exchange relationship to said coil;

a thermocouple attached to said disk in heat exchange relationship thereto and arranged to sense the temperature of said coil for calibration purposes;

said disk electrically insulating said thermocouple from said coil and thermally conducting the temperature of said coil to said thermocouple;

electrical circuit means connected to the ends of said coil for supplying electrical current thereto for heating said coil to a temperature sufficient to superheat said coil, said circuit means including an adjustable temperature controller including means for sensing the resistivity of the coil and regulating means responsive to the sensed resistivity of the coil for regulating the current supplied to the coil to thereby maintain the coil at a preselected temperature; and,

means for storing the fluid, and for providing the fluid to said first open end of the coil, including a fluid reservoir, a conduit coupling said reservoir to said first open end of said coil, and a pump in said conduit and a normally closed valve downstream said pump;

such that said circuit means maintains a temperature at said output orifice of said coil that is optimal for superheating the fluid to vapor.

4,764,661

AIR HUMIDIFIER

Kauko Rautio, Kolmihaarantie, 52700 Mäntyharju, Finland

Continuation of Ser. No. 726,235, Apr. 23, 1985, abandoned.
This application Feb. 24, 1987, Ser. No. 18,824
Claims priority, application Finland, May 4, 1984, 841797
Int. Cl.[4] F22B *1/28*
U.S. Cl. 219—272 2 Claims

1. An air humidifier comprising:

a pipe connecting the humidifier to a source of water;

a valve for controlling the flow of water to the humidifier into a vaporizer;

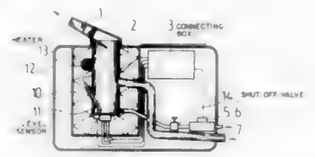
VOL 1093 ISS 3 AG 16 1988 UMI

said vaporizer provided near the bottom thereof with at least one level sensor to sense the water level in the vaporizer, said at least one level sensor controlling the opening or closing of said valve;

said humidifier provided with at least one humidity sensor to measure the humidity in the environs of the humidifier;

an electric resistance heater placed outside the vaporizer for vaporizing water;

said electric resistance heater including a heating element



adapted to burn off impurities from an inside surface of said vaporizer;

said electric resistance heater evaporating water remaining in the vaporizer after the humidity sensor has determined that the humidity of the environs has reached a predetermined level;

an output nozzle for conducting water vapor out of the humidifier;

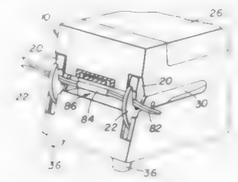
wherein the electric resistance heater is located outside of the vaporizer in close proximity to the vaporizer.

4,764,662

AUTOMATIC HEATING DEVICE

George L. Andersen, Newtown Sq., and Claude A. Pezzopane, Honeybrook, both of Pa., assignors to Sonobond Ultrasonics, Inc., West Chester, Pa.

Filed Nov. 12, 1987, Ser. No. 119,794
Int. Cl.[4] H05B 3/62
U.S. Cl. 219—391 20 Claims



1. An apparatus for heating a heat shrinkable tube telescoped over a wire splice comprising:

(a) a frame;

(b) an oven having opposed, upstanding sidewalls, a bottom, front and back walls defining the oven chamber, said bottom wall being attached to one end of said frame to position said oven thereon, said oven having a slotted opening extending through the front wall and said opposed side walls toward said back wall to a location within said chamber;

(c) a pair of clamps located at each side of the oven;

(d) means for sensing the presence of a wire in said clamps;

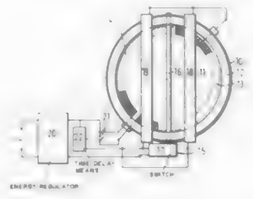
(e) a means actuated by said sensing means for moving said clamps from a position outside of said oven to a position past the slotted opening in the front wall of said oven and back so that a wire engaged in said clamps will enter and be retrieved from said oven.

4,764,663

ELECTRIC RADIATION HEATER ASSEMBLIES

Richard C. Scott, Stourport-on-Severn, United Kingdom, assignor to Micropore International Limited, Droitwich, United Kingdom

Filed Jan. 27, 1987, Ser. No. 7,397
Claims priority, application United Kingdom, Feb. 1, 1986, 8602367
Int. Cl.[4] H05B 3/68
U.S. Cl. 219—448 21 Claims



1. An electric radiation heater assembly comprising:

at least one heating element having a substantial positive temperature coefficient of resistance;

a resistive assembly electrically connected in series with said at least one heating element for suppressing surge of electric current due to said at least one heating element, said resistive assembly comprising two resistive elements electrically connected in parallel;

means for supplying electric power to said at least one heating element and to said resistive assembly; and

switch means operable a time interval of at least thirty milliseconds after a supply of electric power to said at least one heating element and to said resistive assembly is energised such that one of said resistive elements is electrically open-circuit until said time interval has expired and is thereafter electrically connected in parallel with the other of said resistive elements so as to reduce the combined electrical resistance of said at least one heating element and of said resistive assembly.

4,764,664

ELECTRICAL DEVICES COMPRISING CONDUCTIVE POLYMER COMPOSITIONS

Hundi P. Kamath, Foster City, and Jeffrey C. Leder, Redwood City, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 545,723, Oct. 26, 1983, abandoned, which is a division of Ser. No. 251,910, Mar. 27, 1979, Pat. No. 4,426,339, which is a continuation of Ser. No. 24,369, Mar. 27, 1979, abandoned, which is a continuation of Ser. No. 750,149, Dec. 13, 1976, abandoned. This application Nov. 20, 1985, Ser. No. 799,291
Int. Cl.[4] H05B 3/10
U.S. Cl. 219—548 13 Claims

1. A self-regulating strip heater comprising

(1) an elongate core of a melt-extruded electrically conductive polymer composition which

(a) has a resistivity at 70° F. of 100 to 50,000 ohm.cm,

(b) comprises an organic thermoplastic polymer and conductive carbon black dispersed therein, and

(c) exhibits PTC characteristics;

(2) two longitudinally extending electrodes which are embedded in and surrounded by said elongate core parallel to each other, and which are in direct physical and electrical contact with the conductive polymer composition; and

(3) an elongate layer of a protective and insulating composition which surrounds said elongate core and electrodes and is in direct physical contact with said elongate core;

the average linearity ratio between the electrodes being at most 1.2; and the heater having been prepared by a process which comprises

(i) melt-extruding a molten thermoplastic electrically conductive polymer composition over and into direct physical and electrical contact with the electrodes, thus forming an elongate core of the melt-extruded conductive polymer composition having two longitudinally extending electrodes embedded therein parallel to each other; the conductive polymer composition comprising an organic thermoplastic polymer and conductive carbon black dispersed therein, and being such that when it is melt-extruded in this way, it does not need a subsequent annealing treatment at a temperature above the crystalline melting point of the polymer in order to have a resistivity at 70° F. of less than 50,000 ohm.cm; and

(ii) cooling the whole of the melt-extruded conductive polymer composition to a temperature below its melting point, the cooled composition having a resistivity at 70° F. of 100 to 500,000 ohm.cm and exhibiting PTC characteristics; and

(iii) forming the elongate layer around and in direct physical contact with the elongate core;

without subjecting the heater, at any stage after the whole of the melt-extruded conductive polymer composition has cooled to a temperature below its melting point, to a heat treatment in which substantially all of the cooled conductive polymer composition is reheated above the crystalline melting point of the organic polymer.

4,764,665

ELECTRICALLY HEATED GLOVES

Ralph F. Orban, and Clifford Lewis, both of Columbus, Ohio, assignors to Material Concepts, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 750,960, Jul. 2, 1985, abandoned. This application Mar. 9, 1987, Ser. No. 20,306
Int. Cl.[4] H05B 3/34
U.S. Cl. 219—549 2 Claims



1. A heated glove including a heating element comprising a flexible electrically conducting fabric shaped as a front and back of a hand including finger portions, said front and back being electrically connected together at tips of the finger portions only and being provided with electrical insulation connecting said front and back at all other points where the heating elements are formed together in the shape of a hand.

4,764,666

ON-LINE WAGERING SYSTEM WITH PROGRAMMABLE GAME ENTRY CARDS

Daniel R. Bergeron, Pawtucket, R.I., assignor to GTECH Corporation, Providence, R.I.

Filed Sep. 18, 1987, Ser. No. 98,544
Int. Cl.[4] G06K 5/00
U.S. Cl. 235—380 21 Claims

1. An on-line wagering system, comprising:

a central data processor having a central data memory;

a plurality of agent terminals in data communication with the central data processor, the agent terminals being operable to receive player entry data from players and to transmit the player entry data to the central data processor, the central data processor being operable to validate play entries upon receipt of the player entry data and to transmit a validation code to the agent terminals, the player entry data relating to an entry of an individual player in at least one game, the agent terminals having inputs for receiving the player entry data and input/output means for transmitting to the central data processor at least a portion of the player entry data and for receiving the validation data therefrom; and,



a player card issued to the player, the player card being connectable in data communication with at least one of the agent terminals, said at least one of the agent terminals having alternate inputs for receiving at least a portion of the player entry data directly from the card, the alternate inputs being adapted to interface with the player card, the player card having an on-card memory operable to store data unique to said individual player and also to store at least one of the player entry data and the validation code.

4,764,667

BAR-CODE LABEL APPLICABLE FOR BAR-CODE CONTROLLED MANUFACTURING INCLUDING PAINTING PROCESS AND PRODUCTION METHOD THEREFOR

Kazuyoshi Abe, Hoya, and Kazuhiko Yazaki, Musashimurayama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1983, Ser. No. 564,672
Claims priority, application Japan, Dec. 28, 1982, 57-232972
Int. Cl.[4] G06K 7/10
U.S. Cl. 235—462 9 Claims



1. A bar-code label for identifying components to be assembled into an assembly to be manufactured and for controlling manufacturing operations which includes painting process for painting of said manufactured assembly, comprising:

a blank label in a form of a thin metal sheet and adapted to be attached to a selected one of said components;

a plurality of identical first slots formed in said label;

a plurality of identical second slots formed in said label, said second slots being larger than said first slots; and

said first and second slots being so arranged in combination as to be indicative of said components and required manufacturing operations.

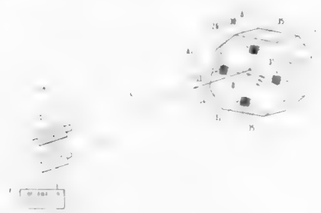
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,668

SYSTEM FOR LOCATING AN OBJECT PROVIDED WITH AT LEAST ONE PASSIVE TARGET PATTERN

Michel Hayard, Toulouse, France, assignor to Alcatel Espace, Courbevoie, France

Filed Nov. 25, 1986, Ser. No. 934,878
Claims priority, application France, Nov. 27, 1985, 85 17521
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—470 18 Claims



1. A system for locating an object provided with passive target patterns, said system comprising an approach sensor including a source for emitting light towards each pattern, a receiver for receiving light reflected from said object, and a processor member connected to said source and to said receiver, said locating system being a system for locating an object with reference to three dimensions, said passive patterns being constituted by at least four patterns disposed on two of said dimensions, each passive pattern being situated on a surface of said object and comprising a series of optically-readable elongate symbols disposed relative to one another in such a manner as to constitute a code, and said approach sensor being capable of performing narrow beam scanning of said surface along two of said dimensions, said patterns being disposed in pairs on respective axes Δ1 and Δ2 which are inclined relative to one another and which pass through a common point 0.

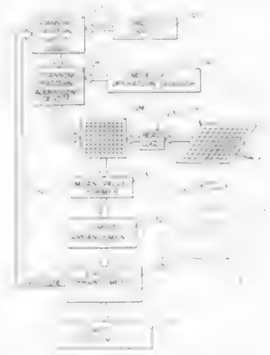
4,764,669

PHOTOELECTRIC APPARATUS FOR TRACING A SCANNING HEAD ALONG A PATTERN TRACK WITH SELECTABLE SAMPLING

Klaus Decker, Rosbach, and Ivan Polacek, Hanau, both of Fed. Rep. of Germany, assignors to ESAB - HANCOCK GmbH, Fed. Rep. of Germany

Filed Feb. 6, 1986, Ser. No. 826,934
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1985, 3505525
Int. Cl.[4] G05B *1/00*
U.S. Cl. 250—202 12 Claims

1. In photoelectric apparatus for tracing a scanning head along a pattern track in a pattern plane a section of which is imaged onto a constant array of tightly spaced light-sensitive elements, which form a scanning pattern to be sampled by means of an addressing device, including an evaluation device by which control signals are generated from the exposure status signals of said sampled light-sensitive elements controlling the tracing movement of said scanning head in two movement directions particularly rectangularly oriented relative to each other, the improvement comprising that the shape and/or position of said scanning pattern in said scanning head scanning the pattern track is variable by selectable sampling of particular ones of said light-sensitive elements from a larger number of said light-sensitive elements in the constant array.



4,764,670

COLOR FILTER ARRAYS

Laurel J. Pace, and Jeffrey C. Blood, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 876,510, Jun. 20, 1986, abandoned. This application Sep. 1, 1987, Ser. No. 91,802
Int. Cl.[4] G01J *3/50*
U.S. Cl. 250—226 27 Claims



9. A light sensing semiconductor device including an array of light sensing pixels each less than 1×10^{-8} m^2 in area comprised of

a semiconductive substrate including a light sensing portion in each pixel area and

a filter array for directing light to said semiconductive substrate comprised of interlaid sets of laterally displaced first, second, and third additive primary filters, each filter overlying one pixel,

characterized in that

said sets of filters are comprised of two discrete bottom layers, one bottom layer containing a first subtractive primary dye forming a bottom layer of said first and second filters and a second bottom layer containing a second subtractive primary dye forming a bottom layer of said third filters and

said filters are comprised of two discrete overlying layers, one overlying layer containing said second subtractive primary dye forming an overlying layer of said first filters and a second overlying layer containing a third subtractive primary dye forming an overlying layer of said second and third filters,

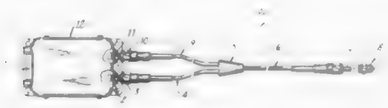
at least one of said bottom and overlying layers being of controlled thickness and containing a single subtractive primary dye.

4,764,671

FIBER OPTIC FLUID SENSOR USING COATED SENSOR TIP

Eric D. Park, Blacksburg, Va., assignor to Kollmorgen Corporation, Simsbury, Conn.

Filed Oct. 3, 1986, Ser. No. 915,159
Int. Cl.[4] G01N *15/06*
U.S. Cl. 250—227 15 Claims



1. An optical fluid sensor comprising:

a light emitter;

a sensing tip element having at least one sensing surface;

a sensing tip coating disposed over said sensing surface between said sensing tip element and the fluid to be sensed, such that the outer surface of said coating away from said tip element contacts the fluid when present, said coating being impermeable to the fluid and resistant to formation of residual fluid deposits;

first optical fiber means connected to said light emitter and to said sensing tip element for transmitting light from said light emitter to said sensing tip;

second optical fiber means connected to said sensing tip and to a photodetector, such that light emitted from said emitter is conveyed by said first optical fiber means to said sensing tip element, said light being substantially totally internally reflected in a first fluid condition and conveyed by said second optical fiber means to said photodetector for detection, said light being substantially completely refracted through said sensing surface and said coating in a second fluid condition; and

electronic processing means for processing and displaying information from said photodetector.

4,764,672

STRUCTURE OF HIGH-RESOLUTION POLYGON LASER SCANNER

Jiag Shown Wu, 10-3, Lane 85, Kee Lung Rd., Sec. 3, Taipei, and Ming Her Chu, 2F, 10, Alley 22, Lane 9, Kuang Cheng St., Panchiao, both of Taiwan

Filed Dec. 16, 1986, Ser. No. 942,293
Int. Cl.[4] H01J *3/14*
U.S. Cl. 250—236 1 Claim



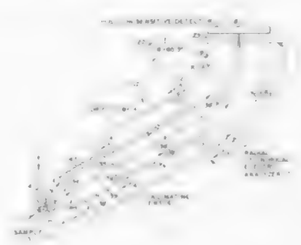
1. A high-resolution laser scanner comprising a laser beam source, an acousto-optic modulator, at least one beam splitter for separating a modulated light beam transmitted from said acousto-optic modulator into at least two separated light beams, a rotating multi-faceted polygon mirror, at least one vertically and horizontally adjustable reflector for non-simultaneously reflecting each of said separated light beams onto the center of the same mirror facet of said polygon mirror wherefrom said separated light beams are scanned by the said mirror facet of said polygon mirror onto a cylindrical lens which focuses said scanning light beams on a rotating photo-conductive drum, said polygon mirror rotating at a fixed speed, said scanner further comprising a vertical position sensitive photodetector for detecting vertical positions of said separate scanning light beams, the tilt angle of said adjustable reflectors being adjusted in accordance with detection of said scanning light beams for maintaining a predetermined gap interval between said separate scanning light beams.

4,764,673

ELECTRIC ELECTRON ENERGY ANALYZER

Charles E. Bryson, III, Palo Alto, and Michael A. Kelly, Portola Valley, both of Calif., assignors to Kevex Corporation, Foster City, Calif.

Filed Apr. 30, 1987, Ser. No. 44,227
Int. Cl.[4] H01J *47/00*
U.S. Cl. 250—305 14 Claims



1. In a method for analyzing the energy of electrons of differing energies emanating from an electron source, the steps of:

gathering and collimating electrons emanating from the source into a collimated stream of electrons of differing energies;

inducting the collimated stream of electrons into a radially directed electric field of an energy analyzer established between generally coaxial cylindrical equipotentials with the collimated beam of electrons entering the radial electric field with a velocity in a direction generally orthogonal to the direction of the radial electric field and generally tangential to the cylindrical equipotentials;

interacting the beam of inducted electrons with the radial electric field over an arcuate sector subtending a number of degrees such as to focus the inducted collimated stream of electrons of differing energies into radially separated lines of the same energy with said lines extending generally transverse to the radial electric field and generally parallel to one of the equipotentials at the electron beam exit of the sector of radial electric field; and

detecting at least one of the radially separated focused lines of electrons to obtain an output indicative of the energy of the electrons emanating from the source.

4,764,674

HIGH TIME RESOLUTION ELECTRON MICROSCOPE

Katsuyuki Kinoshita, Shizuoka, Japan, assignor to Hamamatsu Photonics Kabushiki Kaisha, Shizuoka, Japan

Filed Dec. 15, 1986, Ser. No. 941,434
Int. Cl.[4] H01J *37/285*
U.S. Cl. 250—306 11 Claims

1. A high time resolution electron microscope unit comprising:

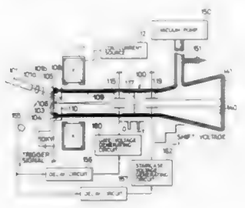
beam source means for generating an exciting beam;

microscope means for exposing the surface of a specimen to be observed to the exciting beam for emitting electrons from the surface;

image formation means for receiving the emitted electrons

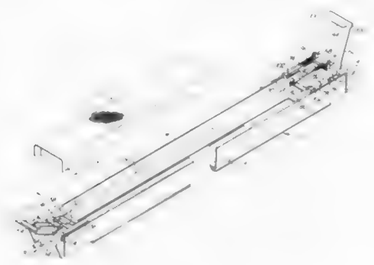
VOL 1093 ISS 3 AG 16 1988 UMI

and for displaying an image representative of variations in the surface of the specimen;
gate means for controlling the flow of emitted electrons from the specimen toward the image formation means;
deflecting means including a deflecting plate for deflecting the emitted electrons from the gate means successively



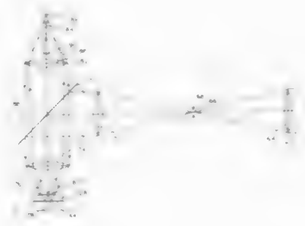
onto the image formation means to detect high speed variations; and
drive means for synchronizing the operation of the gate means, the deflecting means and the beam source means to obtain a plurality of images on the image formation means in frame form.

4,764,675
SELF-TENSIONING CORONODE STRUCTURE
Gail J. Levy, Fairport, and Gerald M. Fletcher, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 22, 1987, Ser. No. 111,383
Int. Cl.[4] H01T *19/04*
U.S. Cl. 250—324 9 Claims



1. A charging device for applying a charge to a surface in an electrostatographic device having a wire coronode; first and second end blocks for supporting the coronode in charging position with respect to a surface to be charged, at least one of the end blocks adaptable for electrically connecting the coronode to a high voltage power supply; and means for fastening the coronode between the insulating end blocks with a preselected tension, said fastening means including:
coronode connectors provided at either end of the coronode;
a coronode support member supported on the first end block for supporting the coronode at the first end block; and
coronode tensioning means, supported on the second end block, for applying tension to the coronode, and including a tensioning member mounted for pivoting movement between first and second positions, said first position relatively closer to said coronode support member on the first end block than said second position with respect to the length of the coronode, said tensioning member supporting a coronode connector anchor, for receiving at least one of said coronode connectors, said first position of said pivoting movement allowing connection of the coronode connector to the coronode connector anchor with the coronode in a substantially untensioned condition, and said second position of said movement applying a preselected tension to said coronode.

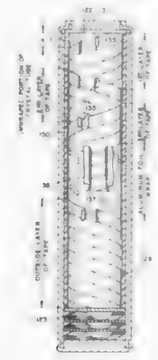
4,764,676
APPARATUS FOR SPECTRAL ANALYSIS OF CHROMATOGRAPHIC FRACTIONS
Walter M. Doyle, Laguna Beach, Calif., assignor to Laser Precision Corporation, Irvine, Calif.
Filed Oct. 20, 1986, Ser. No. 921,212
Int. Cl.[4] G01J *3/42*
U.S. Cl. 250—353 11 Claims



1. An optical apparatus for spectral analysis of samples in the transmission mode, comprising:
a transparent substrate having a front sample-supporting surface;
a radiation source which supplies sample-illuminating radiation;
means for focusing sample-illuminating radiation at the sample, said means being positioned in front of the sample;
a reflecting surface at the back of the substrate which reflects the sample-illuminating radiation either before or after it passes through the sample;
means for collecting such reflected radiation after it has passed through the sample, said means being positioned in front of the sample; and
a detector which receives the radiation after illumination of the sample;
the radiation path from the radiation source through the sample to the detector being so directed that an image of the sample is formed at the detector by radiation which has been focused at the sample once and only once and has been reflected at the back of the substrate once and only once, in order to minimize the sample-reflected radiation which reaches the detector.

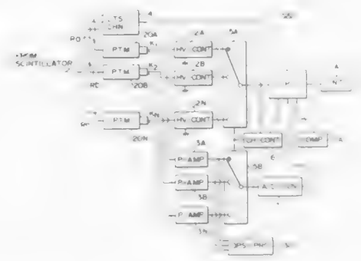
4,764,677
WELL LOGGING DETECTOR
Richard W. Spurney, Hudson, Ohio, assignor to Bicron Corporation, Newbury, Ohio
Filed Nov. 21, 1986, Ser. No. 933,479
Int. Cl.[4] G01T *1/20*
U.S. Cl. 250—361 R 19 Claims

1. A scintillation detector comprising:
a scintillation member capable of converting the energy of an ionizing particle to light energy;
a housing encapsulating the scintillation member, the housing including light transmitting means which is optically coupled to the scintillation member
sealing means which hermetically seals the housing; and



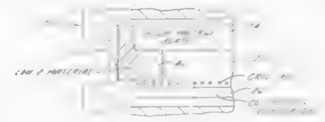
an atmosphere which is substantially non-reactive with the scintillation member within said housing.

4,764,678
SCINTILLATION CAMERA APPARATUS INCLUDING AUTOTUNING
Tsutomu Yamakawa, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Apr. 16, 1986, Ser. No. 852,651
Claims priority, application Japan, Apr. 17, 1985, 60-80239
Int. Cl.[4] G01T *1/20*
U.S. Cl. 250—369 12 Claims



1. A scintillation camera apparatus comprising:
a plurality of scintillation detection units, each having a light input surface, for detecting radiation containing radiation information of an object under medical examination to derive a plurality of radiation energy signals;
comparison means for comparing the peak pulse height of each of the radiation energy signals with a reference value to derive a deviation signal; and
a plurality of voltage control means, operatively connected between said plurality of scintillation detecting means and said comparison means, for independently controlling the voltages applied to each of said plurality of scintillation detecting means in accordance with said deviation signals, said voltage control means including: first, second and third resistor groups, each of said groups being comprised of a plurality of resistors, each of said plurality of resistors having the same resistance value, first second and third analog switches series-connected to each other via said first, second and third resistor groups, said first, second and third analog switches and resistor groups being connected to form a series circuit having a predetermined total resistance, and an up/down counter, operatively connected to said first, second and third analog switches, for controlling said first, second and third analog switches, to change the total resistance of the series-connected first, second and third resistor groups.

4,764,679
KINESTATIC CHARGE DETECTOR
David L. McDaniel, Dousman; Paul R. Granfors, Milwaukee, and David M. Hoffman, New Berlin, all of Wis., assignors to General Electric Company, Milwaukee, Wis.
Filed Aug. 12, 1986, Ser. No. 895,725
Int. Cl.[4] G01T *1/185*; H01J *47/00*
U.S. Cl. 250—374 19 Claims



1. In a kinestatic charge detector having first and second electrodes and a medium disposed in a detection volume for generating charge carriers in response to incident radiation, said detection volume being defined by inner surfaces of a closed chamber, non-random motion of said charge carriers being affected by an electric field between said electrodes, apparatus for improving quantum detection efficiency and spatial resolution comprising a radiation transmissive device positioned in said detector volume adjacent an inner surface of said chamber and transverse to the direction of said incident radiation, said device displacing said medium in at least a portion of said detection volume in which said field is distorted and preventing creation of charge carriers in said distorted field portion.

4,764,680
METHOD OF AND ARRANGEMENT FOR TESTING CYLINDRICAL OBJECTS FOR SHAPE DEVIATIONS
Joseph M. Geary, Jupiter, Fla., assignor to United Technologies Corporation, Hartford, Conn.
Filed Apr. 14, 1987, Ser. No. 38,076
Int. Cl.[4] G01V *9/04*
U.S. Cl. 250—560 18 Claims



1. An arrangement for testing an optical cylindrical optical element, which is capable of focusing collimated light toward a focal line situated in a focal plane, for deviations of its actual shape from its ideal cylindrical shape, comprising:
means for directing a collimated beam of laser light against the optical element for focusing thereby toward an elongated waist region extending along the focal line and having a predetermined width at the focal plane;
an elongated cylindrical filament including at least a longitudinal portion coextensive with said waist region, and having a reflective surface for reflecting a portion of the laser light reaching the same with a substantially cylindrical wave front back to the optical element being tested for recollimation thereby and travel back towards said direct-

VOL 1093 ISS 3 AG 16 1988 UMI

ing means as a substantially collimated return beam of light having a wave front indicative of the actual shape of the mirror; and

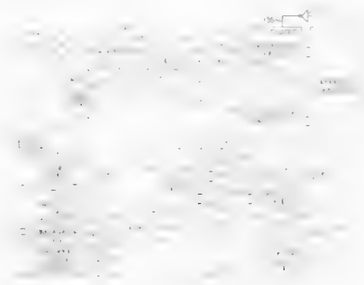
means for forming an interference pattern between said beams of light for evaluating the influence of the deviations on said wave front of said return light beam.

4,764,681

METHOD OF AND APPARATUS FOR ELECTROOPTICAL INSPECTION OF ARTICLES

Thomas F. Michalski, Maumee, Ohio, and David J. Bauer, Southfield, Mich., assignors to Owens-Illinois Televison Products Inc., Toledo, Ohio

Filed Jun. 4, 1987, Ser. No. 58,208
Int. Cl.[4] G01N *21/88*
U.S. Cl. 250—563 **38 Claims**



1. An electrooptical inspection system comprising:

a line scan camera having a linear array of photoelectric cells;

a mount for maintaining a workpiece to be inspected in the field of vision of said line scan camera whereby each of a plurality of the photoelectric cells of said camera issues an electrical signal which is a function of the light emanating from a discrete area of the workpiece;

means to detect deviations in the magnitude of individual photoelectric cell signals from a base signal which is a weighted average magnitude of a plurality of photoelectric cell signals developed during a camera scan;

means to repetitively scan the linear array;

means to initialize said means to detect deviations to at least a base signal of a given magnitude essentially the weighted average magnitude at the beginning of each scan of said photoelectric cells during a portion of the scan of the linear array.

4,764,682

PHOTOSENSITIVE PIXEL SIZED AND SHAPED TO OPTIMIZE PACKING DENSITY AND ELIMINATE OPTICAL CROSS-TALK

Louis D. Swartz, Holly, Mich., assignor to Ovonic Imaging Systems, Inc., Troy, Mich.

Filed Sep. 16, 1986, Ser. No. 917,094
Int. Cl.[4] H01L *27/14;* **H04N** *1/028*
U.S. Cl. 250—578 **26 Claims**

1. A photosensitive pixel adapted for use in an array, said pixel including a photogenerative element and a current blocking element, said elements being electrically interconnected for providing a detectable signal corresponding to the quantity of radiation incident thereupon, the improvement comprising, in combination:

said photogenerative element having a first size and shape;

said blocking element having a second size and shape, the second size being different than the first size:

the first and second sizes and shapes cooperating to define an overall pixel configuration which (1) optimizes the geometrical packing density of pixels in an array and (2) allows the photogenerative element and the blocking



element to be operatively disposed in close relationship to one another so as to sense substantially the same incident radiation, thereby eliminating cross-talk.

4,764,683

WIND POWERED ELECTRIC GENERATOR

Donald E. Coombes, Baker, Oreg., assignor to Lloyd A. Smith, Baker, Oreg., a part interest

Filed Aug. 3, 1987, Ser. No. 80,920
Int. Cl.[4] F03D *7/00, 9/00*
U.S. Cl. 290—55 **10 Claims**



1. Apparatus for driving an electric generator in response to fluid currents such as wind, water, and the like, comprising

(a) a fixed base;

(b) a vertical housing rotatably connected with said base, said housing including tapered front and rear portions with said front portion facing the fluid current and terminating in a vertical edge having a pointed horizontal cross-sectional configuration, aid side portions containing vertical openings extending the length of said housing and defined between said front and rear portions;

(c) vertical rotor means arranged within said housing openings and rotatably connected with said housing, said rotor means including at least one helical vane protruding partially exteriorly of said housing, whereby fluid current passing said housing strikes the vanes to rotate said rotor means; and

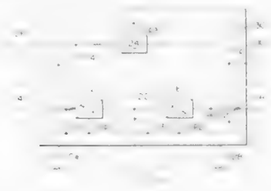
(d) means for coupling said rotor means with at least one generator, whereby rotary movement of said rotor means drives the generator to produce electricity.

4,764,684

STATIC CONVERTER COMPRISING A PROTECTIVE FILTER AGAINST HIGH-FREQUENCY DISTURBANES

Jean-Noël Fiorina, Grenoble, and Hervé Denis, Echirolles, both of France, assignors to Merlin Gerin, France

Filed Oct. 28, 1987, Ser. No. 113,503
Claims priority, application France, Nov. 5, 1986, 86 15620
Int. Cl.[4] H02J *9/00*
U.S. Cl. 307—66 **3 Claims**



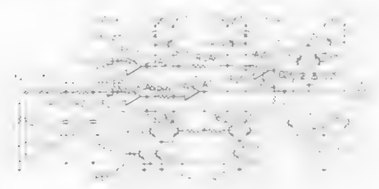
1. A static converter comprising an external housing earthed by a protective conductor, input cables connected respectively to the mains and to a battery bank, an output cable connected to a user device, and a filter protecting against high-frequency disturbances comprising an internal reference plane, electrically insulated from the housing and acting as a ground plane for all the internal converter elements, and filtering capacitors respectively connecting the input and output cables to said internal reference plane.

4,764,685

METHOD AND CIRCUIT CONFIGURATION FOR PROCESSING THE OUTPUT SIGNALS OF A ROTATIONAL SPEED SENSOR

Hans W. Bleckmann, Bad Nauheim; Heinz Loreck, Frankfurt am Main, and Michael Zydek, Langgoens/Cleeberg, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 2, 1986, Ser. No. 937,067
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1985, 3543058
Int. Cl.[4] G01P *3/42*
U.S. Cl. 307—106 **9 Claims**



1. A circuit configuration for processing the output signal of a rotational speed sensor which provides an alternating voltage signal comprising a low-pass filter input circuit for attenuating high-frequency interfering signals and comprising amplifying and pulse-generating circuits, wherein a smoothing filter (TP1, TP2, 5, 6) is inserted into the input circuit between the rotational speed sensor (2) and the amplifying and pulse-generating circuits, which smoothing filter contains a first low-pass filter (TP1) for attenuating the high-frequency interfering signals and forming a useful signal (I1), a second low-pass filter (TP2) for obtaining a reference signal, and wherein the signals obtained by means said low-pass filters, namely the useful signal and the reference signal, are fed to a comparator (7) whose output signal represents the processed sensor signal;

wherein the second low-pass filter (TP2) for the formation of said reference signal (12) has a limit frequency which is below the lowest useful frequency of the sensor signal;

wherein the first low-pass filter (TP1) for the attenuation of the high-frequency interfering signals has a limit frequency which is in the useful frequency range and is chosen such that the amplitudes of the useful signals (I1) are approximately the same above the limit frequency;

wherein the useful signal (I1) and the reference signal (12) are fed to the two inputs of the comparator (7);

wherein impedance transformers (5, 6) are respectively inserted between the low-pass filters and the comparator (7); and,

wherein a first resistor (RHY) is interposed in the signal lines between the impedance transformer (6) and the comparator (7), on which resistor a difference voltage can be generated by means of a first difference amplifier (8) controlled by the output signal of the comparator (7) and by means of a first current mirror circuitry (9), which difference voltage is opposed to the actuating signal of the comparator (7), that is the difference (I1, I2) between the useful signal and the reference signal, and thereby cause a switching hysteresis.

4,764,686

TRANSISTOR BASE CONTROL CIRCUIT FOR HIGH FREQUENCY OPERATION

Klaus Rischmuller, Aix en Provence, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 2, 1986, Ser. No. 847,317
Claims priority, application France, Apr. 2, 1985, 85 05010
Int. Cl.[4] H03K *17/60, 3/26, 3/33*
U.S. Cl. 307—254 **5 Claims**



1. A switching control circuit for a power transistor, which has a control input for receiving at least one of a turn-on control signal and a turn-off control signal, said control input being connected to a turn-on control circuit and to a turn-off control circuit, the turn-on control circuit selectively delivering a base current to a base of the power transistor depending on a signal on said control input, and the turn-off control circuit selectively delivering an initially non-zero reverse biased base current on reception of said turn-off control signal on said control input and then a zero base current, said turn-off control circuit comprising:

capacitor means for storing energy;

switch means, coupled to said capacitor means, for selectively altering a current path of said capacitor means, causing discharge of said capacitor means into said base of said power transistor as said non-zero reverse biased base current in a first state;

means for charging said capacitor means, said switch means enabling charging of said capacitor means in a second state; and

switch control means, connected to said switch means, for controlling said state of said switch means, said first state controlled upon reception of said turn-off control signal on the control input and during a short predetermined time after that, said predetermined time being of an order of magnitude of a time necessary for removing charges previously stored in the base of the power transistor when

VOL 1093 ISS 3 AUG 16 1988 UMI

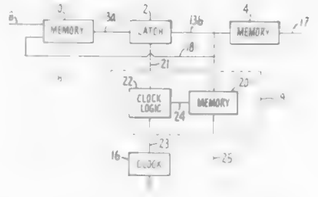
in the conductive state, and said second state being controlled at other times.

4,764,687

VARIABLE TIMING SEQUENCER

Stephen W. Hamilton, Los Gatos, and Philip C. Wong, San Mateo, both of Calif., assignors to Data General Corporation, Westboro, Mass.

Filed Jun. 30, 1987, Ser. No. 68,255
Int. Cl.[4] H03K 5/13, 17/00; G06M 3/00
U.S. Cl. 307—269 29 Claims



1. A variable timing sequencer for producing sets of data which correspond to different current states of the sequencer, wherein the interval of each such set of data corresponds to said current state and said current state is determined by a previous state and input data, comprising

first programmable memory means responsive to the input data and a current state signal representative of the current state for providing a a new state signal representative of a predetermined new state;

memory latch means for receiving the new state signal, for holding the current state signal and for supplying said current state signal as an output and for replacing the current state signal with the new state signal upon receipt of a clock timing signal;

means for supplying the current state signal to the input of the first programmable memory means;

second programmable memory means for receiving the current state signal from said memory latch means and for producing as an output a specified set of data corresponding to the current state; and

clock means responsive to the current state signal for generating the clock timing signal after a delay having a length determined by the current state signal, so that the first and second programmable memory means can operate at lower frequencies than the clock means.

4,764,688

OUTPUT CURRENT DARLINGTON TRANSISTOR DRIVER CIRCUIT

Ken Matsumura, Odawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 4, 1987, Ser. No. 21,700
Claims priority, application Japan, Apr. 25, 1986, 61-96387
Int. Cl.[4] H03K 3/26, 3/01
U.S. Cl. 307—270 11 Claims

1. An output current driver circuit formed in an integrated circuit comprising:

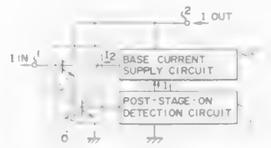
a current input terminal;

a current output terminal;

a predetermined potential terminal;

an output circuit for outputting a current, comprising darlington-connected first and second transistors of NPN type each having a base, an emitter, and a collector, said first transistor forming a pre-stage transistor and said second transistor forming a post-stage transistor, said base, said collector, and said emitter of said first transistor being coupled to said current input terminal, said current output terminal, and said predetermined potential terminal, respectively, said base, said collector, and said emitter of said second transistor being coupled to said emitter of said first transistor, said current output terminal, and said predetermined potential terminal, respectively;

a post-stage on-detection circuit for detecting when said second transistor is turned on and for generating an on-detection signal, said post-stage on-detection circuit comprising a third transistor of NPN type having a base, an emitter, and a collector, said base and said emitter of said third transistor being connected to said base of said second transistor and said predetermined potential terminal, respectively;



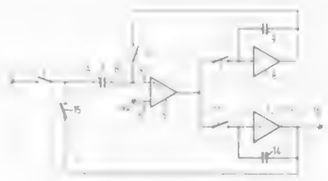
a base current supply circuit for suplying a current to said base of said first transistor upon receipt of said on-detection signal and comprising a fourth transitor of PNP type having a base, an emitter, and a collector, said base, said collector, and said emitter of said fourth transistor being coupled to said collector of said third transistor, said base of said first transistor, and said output current terminal, respectively.

4,764,689

SAMPLE-AND-HOLD CIRCUIT ARRANGEMENT

Werner F. Thommen, Staefa, Switzerland, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 861,161, May 9, 1986, Pat. No. 4,672,239. This application May 22, 1987, Ser. No. 53,770
Claims priority, application Netherlands, May 24, 1985, 8501492
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.[4] G11C 27/02
U.S. Cl. 307—353 13 Claims



1. A sample-and-hold circuit comprising: an input terminal, a differential amplifier, a second amplifier of an inverting type, said second amplifier having an input terminal connected to an output terminal of said differential amplifier, means connecting the input terminal of the circuit to an input of the differential amplifier via a first switch and a first capacitor connected in series, means connecting an output of the second amplifier to said input of the differential amplifier via a second switch, a third amplifier having an input terminal connected to the output terminal of the differential amplifier via a third switch, said third amplifier having an output terminal connected, via a fourth switch, to a junction point between the first capacitor and the first switch, the input terminal and the output terminal of the third amplifier being interconnected via a branch including a second capacitor.

4,764,690

ELECTRET TRANSDUCING

Preston V. Murphy, and Kurt Hübschi, both of Geneva, Switzerland, assignors to Lectret S.A., Geneva, Switzerland

Filed Jun. 18, 1986, Ser. No. 875,596
Int. Cl.[4] G11C 13/02; H04R 19/00
U.S. Cl. 307—400 16 Claims



1. A backplate assembly for an electret transducer comprising

a backplate,

an electret layer covering one surface of said backplate, and

a peripheral spacer on the same side of the backplate as said electret layer and around the entire periphery of said electret layer, said spacer being secured to said backplate by a thin layer of material of said electret layer located and compressed between said spacer and said backplate, said thin layer being substantially thinner than said electret layer.

4,764,691

CMOS PROGRAMMABLE LOGIC ARRAY USING NOR GATES FOR CLOCKING

Daniel R. Jochem, Pocatello, Idaho, assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 15, 1985, Ser. No. 787,234
Int. Cl.[4] H03K 19/177, 19/096
U.S. Cl. 307—468 7 Claims

1. A prechargeable NOR logic gate circuit comprising:

a source of electrical power including a point of reference potential;

a plurality of NOR gates having input lines;

a NOR gate output line;

means for providing a single phase clock signal coupled to said input lines of the NOR gates, said clock signal comprising two complementary half cycles;

precharge transistor means having a first current lead connected to said power source, a second current lead connected to said output line, and a control lead responsive to said clock signal means during a first one-half cycle of said clock signal to cause conduction between said current leads of said precharge transistor means for precharging said output line to the potential of said power source;

a plurality of discharge transistors coupled to said plurality of NOR gates, said discharge transistors being connected in parallel, each discharge transistor having a first current lead coupled to said output line, a second current lead coupled to said reference potential, and a control lead responsive to a TRUE value NOR input signal for causing conduction between said discharge transistor current leads to discharge said output line to the potential of said point of reference potential during the second half cycle of said clock signal; and



means coupled to said NOR gates for enabling said discharge transistor control leads to be driven by signals from said input lines in response to said single phase clock signal.

4,764,692

MOS POWER DEVICE USABLE BOTH AS AN N-CHANNEL MOS TRANSISTOR AND AS A P-CHANNEL MOS TRANSISTOR

Gianpietro Bellinvia, Milan, and Giuseppe Faini, Vimercate, both of Italy, assignors to SGS Microelettronica S.p.A., Catania, Italy

Filed Sep. 18, 1986, Ser. No. 908,691
Claims priority, application Italy, Oct. 7, 1985, 22380 A/85
Int. Cl.[4] H03K 19/094, 17/687
U.S. Cl. 307—451 7 Claims



1. MOS power device characterized in that it comprises an N-channel power switch with drain and source connected respectively to a positive supply lead and to a negative supply lead, two inverters in cascade connected for control of the gate of said power switch and two inputs for said inverters a first input being connected to a first control signal with positive voltage in relation to said negative lead and the second input being connected to a second control signal with negative voltage in relation to said positive lead and a capacitor connected between said first input and said negative lead and switching means connected between said positive supply lead and said capacitor and responsive to said second input to allow said second control signal to cause charging of said capacitor at a positive voltage in relation to said negative lead.

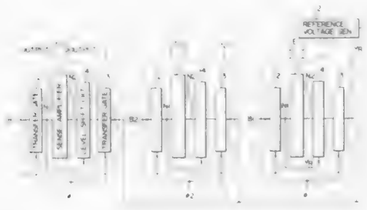
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,693

SEMICONDUCTOR SENSE CIRCUIT SUITABLE FOR BUFFER CIRCUIT IN SEMICONDUCTOR MEMORY CHIP

Yoshihisa Iwata, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 12, 1987, Ser. No. 48,813
Claims priority, application Japan, May 19, 1986, 61-114156
Int. Cl.[4] H03K *17/04, 17/687, 19/01, 3/356*
U.S. Cl. 307—530 8 Claims



1. A semiconductor sense circuit comprising:
a reference voltage generating circuit for providing a reference voltage of a predetermined level;
a sense amplifier, having first and second nodes, for amplifying a potential difference between signal voltages latched in said first and second nodes;
first and second transfer gates for transferring an input signal and a reference voltage from said reference voltage generating circuit to first and second nodes of said sense amplifier, respectively, so that the input signal and the reference voltage are latched in said first and second nodes of said sense amplifier, respectively; and
a level-shift circuit connected between said second node of said sense amplifier and said second transfer gate, and responsive to a voltage level of the input signal latched in said first node of said sense amplifier, for shifting the level of the reference voltage latched in said second node of said sense amplifier, said level-shift circuit shifting the level of the reference voltage latched in said second node of said sense amplifier to a level lower than the predetermined level when the input signal latched in said first node of said sense amplifier is high in voltage level, and to a level higher than the predetermined level when the input signal latched in said first node is low in voltage level.

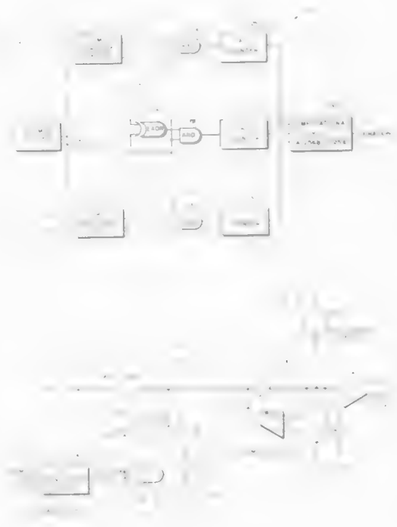
4,764,694

INTERPOLATING TIME-MEASUREMENT APPARATUS

Calvin S. Winroth, Acton, Mass., assignor to GenRad, Inc., Concord, Mass.

Filed Apr. 22, 1987, Ser. No. 41,855
Int. Cl.[4] H03K *5/26, 17/28*
U.S. Cl. 307—602 3 Claims

1. In an apparatus for measuring the time between first and second events represented by start and stop signals, which apparatus includes a clock for generating periodically occurring clock pulses, initial and final time-expansion circuits for generating initial- and final-segment signals that define initial and final expanded time intervals whose lengths are proportional to the time intervals between the start and stop signals, respectively, and subsequent clock pulses, count means for generating a coarse count by counting the number of clock pulses that occur during an interval whose beginning and end are determined by the start and stop signals, and duration-indication means for generating a signal that represents a length of time computed by combining the initial- and final-segment counts and the coarse count, the improvement wherein each of the initial and final time-expansion circuits includes:
A. a capacitor;
B. charge means connected to receive the clock pulses and adapted to receive a respective one of the start and stop signals for charging the capacitor at a fast rate from a first reference voltage between the occurrences of the one of the start and stop signals and a subsequent clock pulse;
C. discharge means for discharging the capacitor at a slow rate back to the reference voltage; and



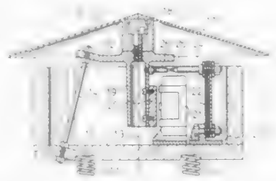
D. interval-signal means responsive to the capacitor voltage for generating a respective one of the initial- and final-segment signals that defines an interval that includes at least the time required for the capacitor to discharge back to the threshold voltage.

4,764,695

VIBRATOR

Shinichi Inoue, Kobe, and Yasushi Oshima, Akashi, both of Japan, assignors to Yamato Scale Company, Limited, Akashi, Japan

Filed Feb. 17, 1987, Ser. No. 15,732
Claims priority, application Japan, Apr. 25, 1986, 61-97409
Int. Cl.[4] H02K *35/00*
U.S. Cl. 310—20 8 Claims



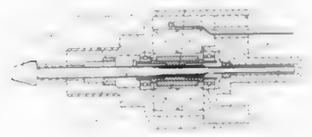
1. A vibrator comprising a stationary base, a vibrating member, support means supporting said vibrating member above said base for orbital movement of the member about a generally vertical axis without substantial rotational movement of the member, said support means comprising a plurality of leaf springs disposed between said base and said vibrating member at substantially equal angular intervals around and facing said vertical axis to form a vibration system having a substantially fixed spring constant in all directions in the plane of vibration of said vibrating member, at least three armatures attached to said vibrating member and disposed around said axis, and electromagnets confronting respective armatures and actuable by a multi-phase a.c. power supply to induce periodic driving forces having phase differences therebetween thereby to cause said orbital movement of said vibrating member without said substantial rotational movement.

4,764,696

STEP MOTOR

Katsuyoshi Fukaya, and Katsumi Mineyama, both of Obu, Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 16, 1986, Ser. No. 907,911
Claims priority, application Japan, Sep. 30, 1985, 60-149783[U]
Int. Cl.[4] H02K *37/00*
U.S. Cl. 310—49 R 2 Claims



1. A step motor comprising:
(a) a housing having a front end and a rear end;
(b) a stator coil fixed in the housing;
(c) a pair of rotor bearings arranged in the housing;
(d) a rotor rotatably arranged inside of the stator coil supported by said rotor bearings, said rotor being formed with a female screw thread on an inner circumferential surface;
(e) a front shaft bearing arranged on said front end of the housing, said front shaft bearing being provided on its inner circumferential portion with a slot through its entire length allowing a stopper pin to pass through;
(f) a rear shaft bearing arranged on said rear end of the housing;
(g) a shaft formed externally with a male screw thread engaged with the female screw thread on the inner circumferential surface of the rotor, said shaft being positioned in the rotor and movably supported for movement in the axial direction by the front shaft bearing and the rear shaft bearing, the shaft having a flat portion, forming a non-circular sectional portion, formed along the axial direction on a front end portion of the shaft, and the inner hole of the front shaft bearing being formed in a shape corresponding to the non-circular portion of the shaft so as to prevent rotation of said shaft therein; and
(h) a single stopper pin projecting from an outer circumferential portion of the shaft and positioned on the front side of the rotor so as to pass through said slot in said front shaft bearing upon movement of the shaft in the forward direction and to abut on the rotor when the shaft is moved in the rearward direction, such that movement of the shaft in both the forward and rearward directions is not limited by the positions of the front and rear shaft bearings.

4,764,697

FLAT HYBRID STEPPER OR SYNCHRONOUS MOTOR

Alois E. Christiaens, Liedekerke, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 816,971, Dec. 30, 1985, abandoned, which is a continuation of Ser. No. 672,021, Nov. 16, 1984, abandoned. This application Sep. 23, 1986, Ser. No. 910,815
Claims priority, application Netherlands, Aug. 20, 1984, [illegible]
Int. Cl.[4] H02K *37/14*
U.S. Cl. 310—49 R 8 Claims



1. A synchronous motor comprising a stator and a rotor, which rotor comprises two coaxial rotor sections which are each provided with rotor teeth at the outer circumference, which teeth are arranged along a circle and which are axially spaced by an interposed axially magnetized permanent magnet, the stator comprising two coaxial stator sections which are interconnected in a magnetically conductive fashion and which are each provided with at least one coaxial annular coil which is enclosed by a magnetically conductive circuit which comprises a rotor section and the stator section which surrounds the relevant annular coil, each stator section terminating in two sets of coaxially arranged stator teeth which cooperate with the rotor teeth via air gaps, one of said sets of stator teeth being oriented towards the cooperating rotor teeth and the other sets of stator teeth being offset from the cooperating rotor teeth by substantially ¼, ¾ and ¾ tooth pitch in such a way that a difference in offset of ¼ tooth pitch is obtained between the stator sections, characterized in that for each rotor section there is provided only one set of circularly arranged teeth and for each set of stator teeth the teeth are arranged in at least two sectors which alternately comprise teeth and do not comprise teeth, which sectors for each stator section are so positioned relative to each other that the sectors of teeth of one set are interposed between the sectors of teeth of the other set of said stator section, the teeth being so arranged that for each stator section the teeth of both sets cooperate with the same set of teeth of the associated rotor section.

4,764,698

A.C. ELECTRIC MOTORS HAVING A STATOR FORMING ORTHOGONAL MAGNETIC PATHS

Koichi Murakami, Sendai, Japan, assignor to Tohoku Metal Industries, Ltd., Miyagi, Japan

Division of Ser. No. 461,103, Jan. 26, 1983. This application Mar. 24, 1986, Ser. No. 818,822
Int. Cl.[4] H02K *1/12, 3/00*
U.S. Cl. 310—72 5 Claims

1. A method of developing AC motor output comprising;

VOL 1093 ISS 3 AG 16 1988 UMI

forming a continuous annular flux by a stationary continuous magnetic ring;

rotating a rotor within said magnetic ring under the effect of parametric oscillation caused by interaction of two further induced fluxes in said ring which form a resultant rotating annular flux; and

producing said parametric oscillation by applying AC voltage to a primary winding wound on a first U-shaped magnetic member connected to said ring and extending axially therefrom in one direction, said U-shaped member and continuous magnetic ring forming a first continuous



magnetic circuit, inducing one of said further fluxes in said magnetic circuit upon application of said AC voltage to said primary winding and inducing the other of said further fluxes in said ring through a second U-shaped magnetic circuit formed by a second U-shaped magnetic member connected to said ring and extending axially therefrom opposite said one direction and a secondary winding wound on the second U-shaped magnetic member and connected to a capacitor to cause voltage induced in the secondary winding to be out of phase with the applied A.C. voltage.

4,764,699

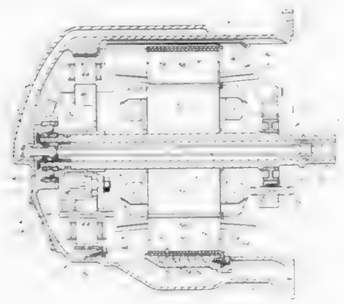
GENERATOR STATOR RETENTION SYSTEM

Robert D. Nold, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 22, 1986, Ser. No. 945,649

Int. Cl.[4] H02K *5/00*

U.S. Cl. 310—89 5 Claims



1. In an oil-cooled generator having a housing with a gas-filled interior and a rotor therein, means for supporting a stator association with the rotor comprising:

a sleeve surrounding said stator;

pins extending through said sleeve and into said stator;

a bolt secured in a bore in said housing and fixing said sleeve thereto, said bore opening only to the housing interior; and

a ring surrounding said sleeve and adapted to seal oil passages in said housing, said ring having an interference fit with both the housing and the sleeve.

4,764,700

ARMATURE INCLUDING INTEGRAL COOLING MEANS

Georg Strobl, Repulse Bay, Hong Kong, assignor to Johnson Electric Industrial Manufactory Ltd., Chaiwan, Hong Kong

Continuation-in-part of Ser. No. 837,301, Mar. 7, 1986, Pat. No. 4,656,380, which is a continuation-in-part of Ser. No. 690,761, Jan. 11, 1985, Pat. No. 4,584,498, which is a continuation-in-part of Ser. No. 526,152, Aug. 24, 1983, abandoned. This application Dec. 11, 1986, Ser. No. 940,374

Claims priority, application United Kingdom, Oct. 11, 1982,

The portion of the term of this patent subsequent to Apr. 22, 2003, has been disclaimed.

Int. Cl.[4] H02K *13/04*

U.S. Cl. 310—236 18 Claims



1. An armature comprising winding means having a plurality of connector portions coated with insulation, a body having a commutator segment support and a housing section, and three or more commutator segments seated on said segment support and respectively connected to connector portions of said winding means, in which:

said housing section includes three or more housings which are respectively formed with housing recesses for said commutator segments and with means for positioning said connector portions of said winding relative to said housing recess;

each said commutator segment comprising an integral terminal disposed within one of said housing recesses and being in electrical contact with the connector portion therein;

said commutator segment support, said housing recess, said connector portions, and said terminals are arranged so that said each commutator segment can be positioned on said body with a single translational movement in which said commutator segment is moved relative to said segment support and, at the same time the integral terminal makes electrical contact with the connector portion positioned in said housing recess;

maintaining means for maintaining each of said commutator segments in intimate contact with said commutator segment support; and

each housing defining radially extending surfaces which for at least one direction of rotation centrifuge air radially outwardly to cause air to be drawn over and cool the commutator segments.

4,764,701

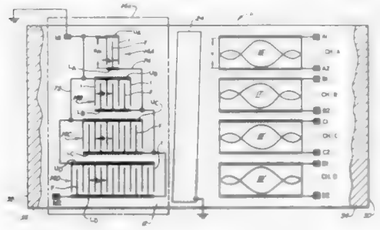
MULTICHANNEL SURFACE ACOUSTIC WAVE ENCODER/DECODER

Michael J. Garbacz, Norridge, and Kai Hansen, Arlington Heights, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Dec. 30, 1986, Ser. No. 947,655

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—313 R 19 Claims



1. A multichannel SAW device comprising:

a common SAW input transducer means;

a plurality of SAW output transducers, each acoustically coupled to said input transducer means and having a preselected electrical output impedance;

and transmission means acoustically coupling said input transducer means to each of said output transducers, and having substantially equal acoustic losses with respect to each of said output transducers;

each of said output transducers cooperating with said common input transducer means to form a respective SAW channel;

and said input transducer means being so arranged that it delivers a stronger acoustic signal to one of said output transducers than to another, whereby the insertion losses of said channels are not in the same proportion to each other as the output impedances of their output transducers are to each other.

4,764,702

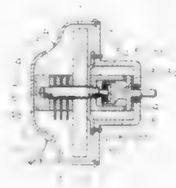
ULTRASONIC MOTOR DEVICE

Sholji Mishiro, Kanagawa, Japan, assignor to Taga Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 814,927, Dec. 30, 1985, abandoned. This application Mar. 2, 1987, Ser. No. 21,544

Int. Cl.[4] H01L *41/08*

U.S. Cl. 310—323 6 Claims



1. An ultrasonic motor comprising:

a vibrator comprising a torsional vibration member provided with an electrostrictive element for exciting a torsional vibration of said vibrator, a diametrical or longitudinal resonator located at a node portion of said torsional vibration member at right angles to an axis and having a resonance frequency identical with a torsional resonance frequency of said vibrator, and a second electrostrictive element for exciting a longitudinal vibration of said diametrical or longitudinal resonator;

a rotor arranged in press contact opposite to an output end of said vibrator;

first driving means coupled to said first electrostrictive element for producing a vibration therein;

second driving means coupled to said second electrostrictive element for producing a vibration therein; and

wherein said first and second driving means generate torsional and longitudinal vibrations, respectively.

4,764,703

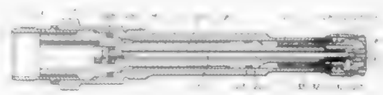
IGNITER PLUG WITH VIBRATION DAMPING MEANS

Helmut P. Meyer, West Jacksonville, Fla., assignor to Allied-Signal Inc., Morristown, N.J.

Filed Aug. 19, 1987, Ser. No. 87,130

Int. Cl.[4] H01T *13/24*; F23Q *3/00*

U.S. Cl. 313—126 2 Claims



1. In an igniter plug having a tubular metal shell, one end of which is adapted to mate with a connector on an ignition cable for supplying electrical energy to said plug and the other end of which is formed with a circumferential shoulder serving as a first electrode for spark discharge of electrical energy supplied to said plug;

a core insulator extending axially through said shell, said core insulator being formed in first and second parts,

said first core part having an axial bore therein extending the length thereof and aligned with the axis of said shell; said first core part extending substantially from said one end of said shell and terminating at the forward end short of and spaced from said other end of said shell, the diameter thereof along a length adjacent the terminating portion thereof being reduced,

said second core part having a central bore adapted to receive and telescope over said reduced diameter portion of said first core part,

said second core part extending forwardly beyond the forward end of said first core part and abutting against said shoulder at said other end of said shell;

a central conductor extending through said bore of said first core part with the forward portion of said conductor projecting beyond the forward end of said first core part and terminating within said bore of said second core part, said center conductor being rigidly sealed within said bore of said first core part at a single point located in the vicinity of said one end of aid shell; and

a second discharge electrode fixed to the end of said forward portion of said central conductor and extending through said bore of said second core part and terminating substantially coplanarly with said other end of said shell:

improved means for damping vibrations of said central conductor and said second discharge electrode, wherein the improvement comprises:

a helical spring fitted coaxially over said forward portion of said central conductor with one end of said spring bearing against the forward end of said first core part and the other end of said spring bearing against said second discharge electrode so as to apply axially directed forces to said first core part and to said second discharge electrode.

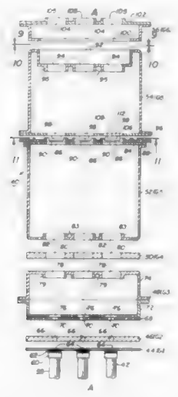
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,704

COLOR CATHODE-RAY TUBE HAVING A THREE-LENS ELECTRON GUN

David A. New, and Loren L. Maninger, both of Lancaster, Pa., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Dec. 4, 1987, Ser. No. 128,951
Claims priority, application United Kingdom, Jan. 14, 1987, 8700792; Jan. 14, 1987, 8700793
Int. Cl.[4] H01J *29/62*
U.S. Cl. 313—414 11 Claims



1. In a color cathode-ray tube including an envelope having therein an inline electron gun for generating and directing three inline electron beams along initially coplanar paths towards a screen on an interior portion of said envelope, said gun including a plurality of spaced electrodes which provide a first lens, a second lens and a third lens for focusing said electron beams, said first lens including a beam-forming region for providing substantially symmetrical beams to said second lens, the improvement comprising

said second lens including beam refraction means for refracting said electron beams, emerging off said axes from said first lens, toward said axes, and asymmetric beam-focusing means for providing asymmetrically-shaped beams to said third lens, and

said third lens being a low aberration main focusing lens for providing asymmetrically-shaped beams of substantially constant current density to said screen.

4,764,705

PICTURE TUBE WITH DEFLECTION YOKE

Heinz Lehner, Oberschneiding, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz, A.G., Fed. Rep. of Germany

Filed Jun. 22, 1987, Ser. No. 65,354
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1986, 3621373
Int. Cl.[4] H01J *29/70*
U.S. Cl. 313—440 18 Claims

1. An assembly, comprising:

a picture tube having a neck;

a deflection yoke, having a coil form, disposed about the neck of the picture tube;

a ring of thermoplastic material attached to the tube neck; and

a tubular extension of thermoplastic material formed on said deflection yoke and being permanently joined to said ring,



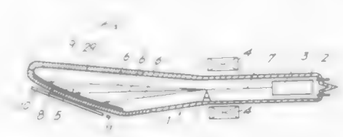
whereby the deflection yoke may be fixedly positioned relative to the tube at an optimum position.

4,764,706

FLAT CATHODE-RAY TUBE AND METHOD OF FABRICATING SAME

Katsuhiro Hinotani, Shijyonawate; Hajime Hayama, Nara; Shunichi Kishimoto, Kaizuka; Takashi Miwa, Higashiosaka; Yasuo Funazo, Toyonaka, and Kazuhiro Kouno, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 776,268, Sep. 16, 1985, abandoned. This application Apr. 8, 1987, Ser. No. 36,177
Claims priority, application Japan, Sep. 17, 1984, 59-194127; Sep. 28, 1984, 59-147415[U]
Int. Cl.[4] H01J *29/86, 9/24*
U.S. Cl. 313—422 10 Claims



1. A flat CRT comprising:

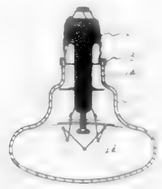
a phosphor screen inclined with respect to a center axis of an electron beam and formed by applying phosphors to an inner surface of a tube wall serving as a base of the phosphor screen, the tube wall having the inner surface defined by a curved surface, the curved surface being represented by a plurality of logarithmic spiral curved lines which lie in an x-y plane of a polar coordinate system and which are represented according to the polar coordinate system by $r=a_i e^{k\theta}$, the polar coordinate system having a deflection center of the electron beam as an origin, an x-axis being a center axis through the origin, a y-axis extending through the origin and intersecting the x-axis in a direction of vertical deflection at right angles with the x-axis, each of the logarithmic spiral curves lines extending from the origin and passing through a point on the x-axis at a distance a_i from the origin, the distance a_i being a parameter and having a relation of $a_{i+1}>a_i(i=0, 1, 2, \ldots)$, and $k=1/\tan\phi$ where ϕ is the angle of incidence, the curved surface having a shape obtained by rotating each of the logarithmic spiral curved lines about the y-axis through an angle α_i having the relation of $\alpha_{i+1}>\alpha_i$ where $\alpha_0=0$ so that the electron beam is made incident at a constant angle at any point on the phosphor screen, a raster of the electron beam being produced in a substantially trapezoidal shape free from vertical deflection when the phosphor screen is scanned with the electron beam.

4,764,707

LIGHT BULB

Hsu Cheng Wei, No. 58, Cheng Chan St., Shih-Lin, Cheng, Taipei Hsien, Taiwan

Filed Jul. 6, 1987, Ser. No. 71,768
Int. Cl.[4] H01K *1/28, 1/36*
U.S. Cl. 313—580 10 Claims



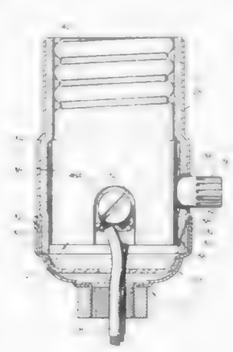
1. A light bulb comprising a molded bulb body of transparent or translucent synthetic plastic material having an opening, a stem assembly having incandescent lamp filaments and a base, and an annular hoop for securing the bulb body to said stem assembly; said stem assembly being sealed to and passing within the bulb opening to hermetically confine said lamp filaments within the bulb body whereby no hermetic envelope is provided between the lamp filaments and said synthetic plastic bulb body.

4,764,708

TOUCH CONTROL LAMP SOCKET INTERIOR

Charles A. Roudeski, 97 Willow Wood Cir., Urbana, Ohio 43078

Filed Dec. 8, 1986, Ser. No. 938,827
Int. Cl.[4] H01J *7/44, 19/28, 29/96, 17/34*
U.S. Cl. 315—51 18 Claims



1. A touch control light socket for use in converting a lamp to touch-sensitive operation, said touch control socket comprising:

a nonconductive circuit housing;

a conductive light bulb insertion socket mounted on said circuit housing in overlying relation thereto;

said circuit housing and insertion socket together being adapted for installation within a standard light socket shell of a lamp in place of a standard light socket;

a touch sensing electrical circuit disposed in said circuit housing and having conductive terminal means being exposed at the exterior of said circuit housing and adapted for electrical connection to the a.c. supply conductors of the lamp, said circuit being adapted to control the intensity of a light bulb inserted into said insertion socket upon receipt of a touch-responsive electrical input signal; and

conductive contact means electrically connected to said circuit and being electrically coupled to a conductive exterior portion of the lamp when said circuit housing and insertion socket are installed within a standard light socket shell such that said contact means is adapted to convey to said circuit the touch-responsive electrical input signal generated when a person touches the conductive exterior portion of the lamp.

4,764,709

TOP/BOTTOM PINCUSHION CORRECTION CIRCUIT WITH AUTOMATIC PICTURE TRACKING

Kirk Oliver, Forest Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 26, 1987, Ser. No. 67,574
Int. Cl.[4] H01J *29/56*
U.S. Cl. 315—370 3 Claims

1. A top/bottom pincushion correction circuit comprising:

a horizontal deflection means for developing a horizontal deflection signal;

a source of B+ voltage supplying said horizontal deflection means;

a vertical deflection means for developing a vertical deflection signal;

a top/bottom pincushion development means coupled to said horizontal deflection circuit for developing a top/bottom pincushion correction signal;

a multiplier including a modulating input, a carrier input and a gain control input;

means coupling said top/bottom pincushion correction signal and said vertical deflection means to said carrier input and said modulating input of said multiplier;

deflection means coupled to the output of said multiplier; and

means coupled to said horizontal deflection means and to said gain control input of said multiplier for varying the magnitude of the output of said multiplier to follow the magnitude of said horizontal deflection signal, said means for varying the magnitude of the output of said multiplier including a source of reference voltage and comparison means for comparing the voltage from said source of B+ voltage with said reference voltage.

4,764,710

HIGH-EFFICIENCY BROAD-BAND KLYSTRON

Fred I. Friedlander, Saratoga, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Nov. 19, 1986, Ser. No. 932,806
Int. Cl.[4] H01J *25/10*
U.S. Cl. 315—5.43 6 Claims

1. A klystron amplifier tube with a beam-interaction structure comprising:

an input cavity adapted to couple to an external signal source,

an output cavity adapted to couple to an external load, and

VOL 1093 ISS 3 AUG 16 1988 UMI

a number of floating cavities between said input and output cavities,

the improvement wherein, a consecutive sequence of at least



three of said floating cavities having progressively higher resonant frequencies, and interaction gaps separated from the interaction gap of the immediately preceding cavity by progressively shorter drift spaces.

4,764,712

METHOD AND APPARATUS FOR OPERATING A FIELD-ORIENTED ROTATING-FIELD MACHINE SUPPLIED BY A CONTROLLED CONVERTER

Felix Blaschke, and Leonhard Reng, both of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 5, 1987, Ser. No. 82,038

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1986, 3627930

Int. Cl.[4] H02P *5/40*

U.S. Cl. 318—778 7 Claims



4,764,711

BACK EMF LOOP CLOSURE

Robert W. Deller, Bountiful, Utah, assignor to E-Systems, Inc., Dallas, Tex.

Filed Sep. 4, 1987, Ser. No. 93,030

Int. Cl.[4] H02P *5/06*; G05B *5/01*

U.S. Cl. 318—619 18 Claims



1. A control system for back emf position loop closure for a DC motor, comprising:

a back emf sensor responsive to signals representing applied motor voltage, measured motor inductance, and continuously corrected motor-resistance for generating a computed back emf voltage;

adaptive motor-resistance means coupled to the back emf sensor for utilizing the computed back emf voltage to generate the continuously corrected motor-resistance to said back emf sensor; and

position integrator means responsive to the computed back emf voltage and an approximate motor position signal to generate an output signal varying with the relative motor position.

1. A method for operating a field-oriented rotating-field machine supplied by a converter, said converter being controlled by stator-oriented control variables and said stator-oriented control variables being derived by angular transformation of a control vector, wherein:

(a) during a first time period, with the machine in a stand still state,

a starting angle to define a model coordinate system and starting control variables to define said control vector parallel to one axis of said model coordinate system are generated,

said starting control variables are transformed into said stator-oriented control variables by use of a transformation angle corresponding to said starting angle, and

the converter is released to excite said rotating-field machine,

(b) during a second time periode, with the machine essentially still in the stand still state,

a calculated field angle is generated by calculating from measured electrical quantities of the machine a flux vector angle value and compensating the deviation between said starting angle and said calculated flux vector angle, and

said starting control variables are transformed into said stator-oriented control variables by use of said calculated field angle,

the converter already being controlled by said stator-oriented control variables, and

(c) during a third time period, determination of said control vector is switched from said starting control variables defining the control vector parallel to said model coordinate system to operation control variables defining the components of the current vector of the machine in a coordinate system oriented to the calculated field angle, in order to starting up the machine.

4,764,713

METHOD FOR STARTING A VARIABLE VOLTAGE INVERTER WITH A PRE-SPINNING LOAD MOTOR

John D. D'Atre, and William P. Glewont, both of Earlysville, Va., assignors to General Electric Company, Charlottesville, Va.

Filed Dec. 19, 1986, Ser. No. 943,744

Int. Cl.[4] H02K *1/30*

U.S. Cl. 318—778 4 Claims



1. A method for catching a spinning motor with a volts per Hertz motor control system, the method providing a smooth transition to powered operation, the system being responsive to an externally generated speed command for establishing a volt-second set point for the motor, the method comprising the steps of:

(a) initiating a volt-second set point at less than 15% of the motor's nominal set point;

(b) commanding an initial excitation voltage which is less than 15% of the rated motor voltage;

(c) applying the initial voltage to the motor at a relatively high frequency determined from the low volt-second set point;

(d) incrementally increasing the volt-second set point up to the motor's nominal set point at a rate which causes the excitation frequency to decrease as the excitation voltage increases; and

(e) determining when the volt-second set point reaches its nominal value and thereafter increasing the excitation voltage in correspondence with the speed command.

4,764,714

ELECTRONIC STARTING CIRCUIT FOR AN ALTERNATING CURRENT MOTOR

Robert P. Alley, Clifton Park; William P. Kornrumpf, Albany, and John D. Harnden, Jr., Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1987, Ser. No. 138,733

Int. Cl.[4] H02P *1/44*

U.S. Cl. 318—786 11 Claims

1. A starting control circuit for an alternating current motor, the motor including a stator having at least one pole and a rotor mounted on a rotatable shaft exhibiting a circumference, said motor further including a start winding and being adapted to be coupled to a line voltage source, said circuit comprising:

shaft pulse generating means for generating a first shaft pulse each time the shaft turns an amount equal to 360 degrees divided by the number of poles;

line pulse generating means for generating a first line pulse at a fixed proportional rate relative to the line voltage frequency;

first multiplying means, coupled to said shaft pulse generating means, for multiplying each first shaft pulse by a first constant, M, to generate M second shaft pulses for each first shaft pulse provided thereto;

second multiplying means, coupled to said line pulse generating means, for multiplying each line pulse by a second constant, N, to generate N second line pulses for each first line pulse provided thereto;



up/down counter means, coupled to said first and second multiplying means, for counting up said second line pulses and counting down said second shaft pulses, said counter means exhibiting overflow when more second line pulses are counted than second shaft pulses, said counter means exhibiting underflow when more second shaft pulses are counted than second line pulses; and

coupling means, responsive to said counter means, for coupling the start winding to the line voltage source when said counter overflows and for decoupling said start winding from said line voltage source when said counter underflows.

4,764,715

ELECTRONIC SERVICE TIMER FOR AN APPLIANCE

Rolf E. Kowalewski, Palatine, and Charles J. Schmitz, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1987, Ser. No. 62,528

Int. Cl.[4] H02J *7/00*

U.S. Cl. 320—13 7 Claims



1. A circuit for timing the intermittent use of a device having a usage signal for indicating that the device is in use, comprising:

a power cell

first means, coupled to the power cell, for draining power from the power cell such that the power level thereof decreases to a threshold level over a selected timing interval;

second means, responsive to the usage signal, for selectively enabling the first means;

VOL 1093 ISS 3 AUG 16 1988 UMI

third means, responsive to the power cell reaching the threshold level, for indicating that the timing interval has lapsed; and

discharge means, responsive to said second means, for draining power from the power cell to prevent the power cell from recovering.

4,764,716

STABILIZING CIRCUIT FOR A MICROCOMPUTER

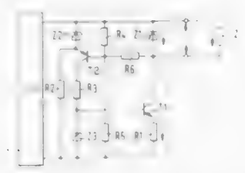
Wilhelm Sturzl, Winkelhaid, Fed. Rep. of Germany, assignor to Diehl GmbH & Co., Nurnberg, Fed. Rep. of Germany

Filed Mar. 19, 1987, Ser. No. 27,864

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1986, 3612323

Int. Cl.[4] G05F *1/613*

U.S. Cl. 323—231 5 Claims



1. In a stabilizing circuit for an operating voltage of a microcomputer, wherein an input of the circuit is connected to a power supply and an output of the circuit to an operating voltage input of the microcomputer; the improvement comprising: a first zener diode being connected in parallel with the operating voltage input; a first transistor having an emitter, a collector and a base, the collector and emitter of the first transistor being connected in series with said zener diode, said series circuit being connected in parallel with the circuit input; a circuit portion for delivering a base current to said first transistor for rendering said first transistor transmissive only in response to the power supply being energized which causes a voltage to be built up at the input of said circuit which leads to a rapid rise in the operating voltage in comparison with a rise in the output voltage of the power supply, and wherein an emitter-collector current of said first transistor is a constant current which divides itself between the microcomputer and the first zener diode, wherein the first zener diode presently conveys the portion of the constant current which is not employed by the microcomputer in conformance with its present load condition.

4,764,717

TOUCH-SENSITIVE POTENTIOMETER FOR OPERATOR CONTROL PANEL

Terry L. Tucker, Boca Raton, and Michael L. Orsburn, Cooper City, both of Fla., assignors to Utah Scientific Advanced Development Center, Inc., Ft. Lauderdale, Fla.

Filed Oct. 27, 1986, Ser. No. 923,326

Int. Cl.[4] H03H *1/00*

U.S. Cl. 323—364 8 Claims

1. Apparatus for providing a control voltage corresponding to a point along a linear strip touched by an operator, comprising:

a longitudinally extending polymeric resistor strip formed on a substrate and exposed for touching by the operator; and

touch responsive means connected to said resistor responsive to the operator's touch for providing a touch position signal voltage corresponding to the point on the resistor touched by the operator, said touch responsive means comprising an AC-excited bridge circuit for providing a touch received signal when said resistor is touched and a synchronous demodulator responsive to said bridge becoming unbalanced for removing AC components from



said touch received signal to provide said touch position signal.

4,764,718

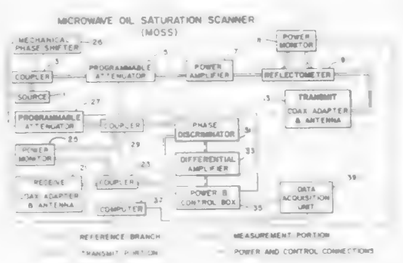
MICROWAVE OIL SATURATION SCANNER

David E. Revus, Yorba Linda, and Russell E. Boyer, Fullerton, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Apr. 23, 1986, Ser. No. 855,539

Int. Cl.[4] G01N *22/00*

U.S. Cl. 324—58.5 A 6 Claims



1. An apparatus for measuring relative concentrations of oil and water, comprising:

I. a transmit portion, which comprises:

(a) a microwave source;

(b) a first coupler attached to the microwave source to split a microwave signal into a lower strength branch signal and a higher strength transmit signal;

(c) a first programmable attenuator attached to the first coupler to control a strength of the transmit signal;

(d) a power amplifier attached to the programmable attenuator to increase the signal strength of the transmit signal to a specific level;

(e) a microwave transmitting antenna to transmit the transmit signal through a sample;

(f) a reflectometer and a power monitor attached to the power amplifier and to the microwave transmitting antenna to measure the strength of the transmit signal that is transmitted;

II. a reception portion, which comprises:

(a) a microwave receiving antenna to receive the transmit signal after it has passed through the sample;

(b) a second coupler attached to the receiving antenna to split the received signal into a comparison received signal and a measurement received signal, the comparison received signal weaker and a known fraction of the measurement received signal;

(c) a power monitor attached to the coupler of Step II(b) to measure and monitor the strength of the total received signal by measuring the comparison received signal and back calculating, this measurement is made so that the strength of the measurement received signal may be regulated;

III. a reference portion, which comprises:

(a) a mechanical phase shifter attached to the first coupler of Step I(b) to null out an unwanted phase angle difference caused by unequal electrical lengths in the reference and transmit circuitry;

(b) a second programmable attenuator attached to the mechanical phase shifter to control the strength of the branch signal generated (of Step I(b));

(c) a third coupler attached to the second programmable attenuator (of Step III(b)) to split the signal into a comparison branch and a measurement branch signal, the comparison branch signal is sent to the power monitor (of Step II(c)) for the purpose of calculating the total strength of the branch signal from the second programmable attenuator (of Step III(b)) and to compare the strength of the branch signal to the received signal (of Step II(b));

IV. a calculation portion, which comprises:

(a) a phase discriminator attached to the third coupler (of Step III(c)) and the second coupler (of Step II(b)) to compare and calculate the difference in the phase shift between the measurement branch signal (of Step III(c)) and the measurement received signal (of Step II(b));

(b) means to determine the signal attenuation by comparing the strength of the transmit signal that is transmitted (as measured by the reflectometer and power monitor of Step I(f)) to the strength of the received signal (as measured by the power monitor of Step II(c));

(c) a differential amplifier attached to the phase discriminator to amplify the difference in the branch signal and the received signal; and

(d) a power, control, and display means.

4,764,719

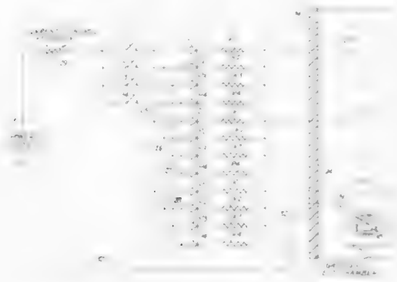
ELECTRO-LUMINESCENT AUTOMATIC TESTING APPARATUS AND METHOD FOR CERAMIC SUBSTRATES, PRINTED CIRCUIT BOARDS AND LIKE ITEMS WITH BACKGROUND ILLUMINATION SUPPRESSION

Robert M. Zeh, East Berne, N.Y., assignor to Testamatic Corporation, Scotia, N.Y.

Filed Aug. 29, 1986, Ser. No. 901,595

Int. Cl.[4] G01R *31/02*

U.S. Cl. 324—73 PC 7 Claims



1. An electro-optical testing apparatus employing gaseous discharge within a sealable substantially gastight chamber for the testing of items such as printed circuit boards, ceramic substrates and other like items for electrical continuity, said chamber having a readily opened and closed access opening for placement of items under test therein, means for introducing a gaseous atmosphere capable of electro-luminescence at low pressures into the sealable chamber with an item to be tested in place, movable probe means disposed within the sealable chamber for coupling one terminal of a source of electric potential to desired test points located on the surface of an item under test, a unipotential array of parallel conductive wires lying in the same plane within the sealable chamber over the item under test and spaced apart therefrom, and means for coupling a remaining opposite polarity potential terminal of said source of electric potential to the unipotential array of conductive wires wherein each individual conductive wire is suitably connected with a plurality of different value voltage limiting resistors each of which are selectively placed in operating series electrical circuit relationship with the respective conductive wire by a respective selector switch connected between each respective voltage limiting resistor and the remaining opposite polarity terminal of said source of electric potential, whereby any particular desired value voltage limiting resistor may be selectively connected in series circuit relationship with the respective electrical conductive wire by selective operation of the respective selector switch, whereby electro-luminescence is produced in the gaseous atmosphere within the sealable chamber around test points contacted by asid probe means and around all conductive points on the item under test having electrical continuity therewith which are exposed to the gaseous atmosphere with a minimum background noise light illumination.

4,764,720

APPARATUS AND METHOD FOR MEASURING VARIABLE FREQUENCY POWER

Robert W. Nystrom, Oxford, Mass., assignor to Load Controls Incorporated, Sturbridge, Mass.

Continuation of Ser. No. 805,356, Dec. 5, 1985. This application Jul. 22, 1987, Ser. No. 77,009

Int. Cl.[4] G01R *21/08, 21/14*

U.S. Cl. 324—107 3 Claims

1. A power sensor for sensing power through a wide bandwidth of frequencies, continuously and automatically, at any moment in time in a three-phase AC machine to produce a resulting signal, said resulting signal representing sensed variable power being a continuous analog function, said power sensor producing said signal within milliseconds, said sensor comprising:

means for measuring power in each phase of said threephase AC machine, said means for measuring power being capable of measuring a sinusoidal wave shape, wave shapes other than sinusoidal and distorted waveshapes while maintaining sensitivity at high and low frequencies, said means for measuring power including:

means for detecting a phase current from said phase of

VOL 1093 ISS 3 AG 16 1988 UMI

said three-phase AC machine to obtain a phase current signal;

means for detecting a phase voltage from said phase of said three-phase AC machine to obtain a phase voltage signal;

means for amplifying said phase voltage signal, said means for amplifying said phase voltage signal also acting to convert said phase voltage signal into a control current proportional to the phase voltage signal in amplitude and phase, said control current temperature compensatable by a temperature compensating resistor; and

a Hall generator driven by said control current for sensing a magnetic field generated by said phase current signal, said Hall generator providing an output signal indicative of instantaneous power drawn by said phase of said three-phase AC machine;

said three-phase AC machine providing a summed output signal, said summed output signal being composed of a DC component and an AC component; and

means for filtering said AC component from said summed output signal of said three-phase AC machine providing a filtered linear DC output signal, said means for filtering including at least four consecutive stages of filters, each of said stages of filters including an RC filter, said means for filtering capable of maintaining a ripple of about 1%.

4,764,721

LOCKING SCALES TO WAVEFORM DISPLAYS

Keith R. Slavin, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 24, 1987, Ser. No. 30,760

Int. Cl.⁴ G01R *13/20, 15/08*

U.S. Cl. 324—121 R **4 Claims**



1. A method for locking scales to a displayed waveform comprising the steps of:

determining initial starting scale points from the characteristics of the displayed waveform;

calculating a scale display based upon the initial starting scale points; and

applying a gain factor to the scales which is a function of the gain factor applied to the waveform so that changes in waveform gain along either axis are reflected in changes in the scales.

4,764,722

COAXIAL PROBE

Charles P. Coughlin, Chelsea; Robert H. Cadwallader, Poughkeepsie, and Robert J. Celestino, Newburgh, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1985, Ser. No. 792,335

Int. Cl.⁴ G01R *1/067*

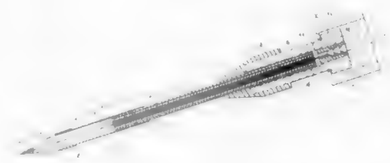
U.S. Cl. 324—158 P **5 Claims**

1. An electrical test probe comprising:

an outer conductive sheath;

a flexible inner conductor positioned coaxially within the outer sheath, said inner conductor having an insulating outer coating and an exposed inner conductive portion at one end, the other end being fixed said exposed inner conductive portion having a tip protruding through one end of said outer conductive sheath; and

a hollow zone inside said outer conductive sheath having sufficient radial separation to permit lateral deflection of



said inner conductor when an axial force is applied to said protruding tip without contacting an inner wall of said outer conductive sheath whereby the contact force exerted by said tip is entirely limited by the lateral deflection of said inner conductor.

4,764,723

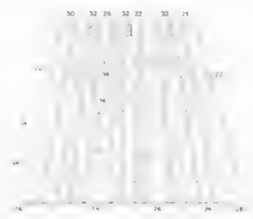
WAFER PROBE

Eric W. Strid, Portland, Oreg., assignor to Cascade Microtech, Inc., Beaverton, Oreg.

Filed Nov. 10, 1986, Ser. No. 928,987

Int. Cl.⁴ G01R *1/06;* **H01P** *3/08*

U.S. Cl. 324—158 P **17 Claims**



1. A probe having a connector end and a probe tip end and adapted for connecting electrical test equipment to selected points on a semiconductor wafer, said probe comprising:

a support carrying a plurality of mutually insulated conductive paths in multiple layers, including plural first pairs of said conductive paths forming plural first transmission lines of predetermined impedance between said connector end and said probe tip end, and

plural second conductive paths forming plural second transmission lines with ones of said first pairs of paths, said second transmission lines also extending between said connector end and said probe tip end and having substantially lower impedance than said predetermined impedance.

4,764,724

MEASURING HEAD FOR INDUCTIVE MEASUREMENT OF THE THICKNESS OF AN INSULATING LAYER ON AN ELECTRIC CONDUCTOR

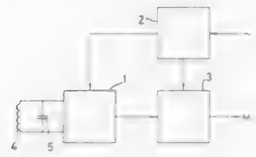
Leo Marugg, Gams, Switzerland, assignor to Zellweger Uster Ltd., Uster, Switzerland

Filed May 28, 1986, Ser. No. 867,506

Claims priority, application Switzerland, May 28, 1985, [illegible]

Int. Cl.⁴ G01B *7/10;* **G01R** *33/12*

U.S. Cl. 324—230 **20 Claims**



14. A measuring head for the inductive measurement of the thickness of an insulating sheath on an electric cable, comprising:

a coil which produces a magnetic field having a shape such that the loci of points of equal field strengths form respective concentric circles; and

a contact part having an end face which comes in contact with the insulating sheath on the cable, said end face having a contour which conforms to one of the concentric circles.

4,764,725

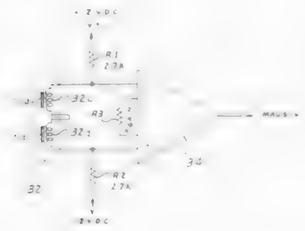
APPARATUS FOR DETECTING COUNTERFEIT CURRENCY USING TWO COILS TO PRODUCE A SATURATING MAGNETIC FIELD

David R. Bryce, Morrisville, Pa., assignor to Brandt, Inc., Bensalem, Pa.

Filed Sep. 12, 1986, Ser. No. 906,397

Int. Cl.⁴ G01N *27/72;* **G01R** *33/12;* **G06K** *7/06;* **B07C** *5/342*

U.S. Cl. 324—234 **11 Claims**



1. Apparatus for detecting the presence of a genuine bill of paper currency containing magnetic material comprising:

magnetic sensor means including first and second pole pieces each having a gap;

first and second coils each respectively magnetically coupled to an associated one of said pole pieces;

first ones of the terminals of said first and second coils being connected in common;

second terminals of said first and second coils being connected at respective junction points to first and second resistance means to form a series connection, said resistance means having substantially equal resistance values;

a DC voltage source coupled across the series connection of the first and second coils and the first and second resistance means; and

operational amplifier means having inverting and non-inverting inputs and an output;

the junction points between the said second terminals and resistance means being respectively coupled to said inverting and non-inverting inputs;

the value of said DC voltage and said resistance values being selected to provide currents for said coils sufficient to drive the magnetic material on said paper currency close to the saturation point to enhance the sensing of suspect currency.

4,764,726

LOW DISTORTION RF SWITCHING CIRCUIT WITHOUT DC BIAS

George J. Misic, Novelty, and Paul T. Orlando, Euclid, both of Ohio, assignors to Picker International, Inc., Highland Hts., Ohio

Continuation-in-part of Ser. No. 762,306, Aug. 5, 1985. This application Sep. 5, 1986, Ser. No. 903,983

Int. Cl.⁴ G01R *33/20*

U.S. Cl. 324—322 **27 Claims**



1. A magnetic resonance imaging apparatus for reconstructing man-readable images of an internal region of a sample, the apparatus comprising:

a magnetic field means for selectively establishing a magnetic field and magnetic field gradients thereacross in an imaging region;

a radio frequency transmitter for supplying an AC bias signal during a transmit portion of each of a plurality of transmit/receive cycles, for selectively supplying radio frequency signals during the transmit cycle portion, and for supplying neither radio frequency nor bias signals during a receive cycle portion, the radio frequency and bias signals being at different frequencies;

a first isolation means for selectively passing and blocking the passage of at least radio frequency signals from the transmitter means to a probe, the first isolation means being responsive thereto and for blocking the passage of radio frequency signals in the absence thereof;

a first filter means for selectively passing the RF signals and blocking the bias signal, the first filter means being operativaly connected with the first isolation means at a junction and with the isolation probe;

a second isolation means for selectively passing and blocking the passage of at least radio frequency signals therethrough, the second isolation means being operatively connected between the junction and a receiver, the second isolation means passing radio frequency signals from the antenna port to the receiver and blocking the passage of

VOL 1093 ISS 3 AG 16 1988 UMI

radio frequency signals from the RF transmitter means to the receiver; and,

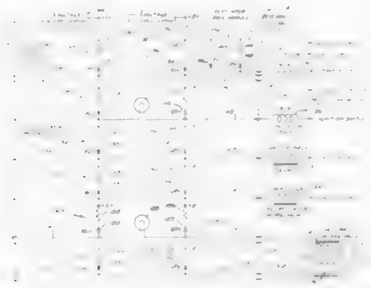
an image reconstruction means operatively connected with the receiver for reconstructing an electronic representation of an image of an interior region of a sample in the imaging region.

4,764,727

CIRCUIT CONTINUITY AND VOLTAGE TESTER

Noel P. McCoachie, Sr., 6875 Hitchcock Rd., Milford, Mich. 48042

Filed Oct. 14, 1986, Ser. No. 918,269
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—503 2 Claims



1. A diagnostic test circuit for monitoring the magnitude of electrical parameters existing between an electrical driver and an electrical load comprising, in combination:

(a) visual indicator means connected to a point adjacent the electrical driver, said indicator means providing a visual signal when the voltage at the point of connection lies within a predetermined range, with respect to electrical ground,

(b) additional visual indicator means, separate from the first, connected to a point adjacent the electrical load, said additional indicator means providing a visual signal when the voltage at its point of connection lies within a predetermined range, with respect to electrical ground, and

(c) a third visual indicator means, connected between said electrical driver and said electrical load, said third indicator means providing a visual signal in response to current flowing between said driver and said load,

(d) said third visual indicator means having a positive temperature coefficient of impedance whereby it presents a relatively low electrical impedance when experiencing relatively low current flow, and a higher impedance upon experiencing increased current flow,

(e) said first-mentioned, additional, and third visual indicator means forming a pi-network.

4,764,728

APPARATUS FOR DETECTING POSITION OF FAULTY LIGHT EMITTING ELEMENT IN LARGE SCREEN DISPLAY SYSTEM

Yasuhiro Sato, and Katsuya Tsuji, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1986, Ser. No. 901,418
Claims priority, application Japan, Aug. 29, 1985, 60-190421; Aug. 29, 1985, 60-190422
Int. Cl.[4] G01R *31/26*
U.S. Cl. 324—512 13 Claims

1. An apparatus for detecting the position of a faulty light emitting element in a large screen display system equipped with at least a character processor and a motion image processor as control means, said apparatus comprising:

an input means connected to said character processor and receiving a predetermined position code of turn-on and turn-off realtive to an arbitrary group of light emitting elements arrayed vertically and horizontally in a multiplicity of columns and rows on the large screen;

a display means connected to both said character processor and said input means and serving to display said position code of the group of light emitting elements inputted from said input means;

and a drive control means incorporated in said motion image processor and individually controlling the light emitting



elements to be turned on or off in accordance with said position code of the element group inputted from said input means and displayed on said display means;

said drive control means being so formed as to turn off said element group within a prescribed area extending vertically and horizontally on said large display screen, while turning on the entire light emitting elements elements on said large display screen with the exception of said element group, and placing the faulty light emitting element in a blank pattern to detect the fault position;

said input means and said display means functioning respectively to designate the position code of the light emitting element in said blank pattern and to display the blank portion of said element group.

4,764,729

METHOD OF DETECTING ABNORMALITY IN ELECTROMAGNETIC VALVE CURRENT CONTROLLER

Masahiko Yakuwa, and Takashi Satoh, both of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Feb. 11, 1987, Ser. No. 13,329
Claims priority, application Japan, Feb. 14, 1986, 61-030111
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—546 5 Claims



1. A method of detecting an abnormality in an electromagnetic valve current controller of the type in which a power supply, a proportional control-type electromagnetic valve, a current control element for controlling current flowing into said electromagnetic valve in dependence upon a control signal supplied to said current control element by control means to thereby regulate the opening of said electromagnetic valve, and a current sensing element for sensing an actual value of said current flowing into said electromagnetic valve are connected in series to ground, and said control signal supplied to said current control element is controlled in a feedback manner responsive to the actual value of said current flowing into said electromagnetic valve sensed by said current sensing element, in a manner such that the actual value of said current flowing into said electromagnetic valve approaches a target value of said current that flows into said electromagnetic valve, the method comprising the steps of:

(a) determining whether said control signal and the actual value of said current flowing into said electromagnetic valve exhibit a predetermined correlation;

(b) comparing a value of current flowing into said current sensing element with a predetermined value when it is determined that said control signal and the actual value of said current flowing into said electromagnetic valve do not exhibit said predetermined correlation; and

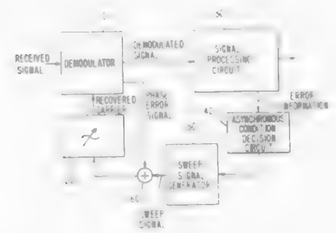
(c) determining whether said current controller is open or short circuited based on whether the value of said current flowing into said current sensing element is greater than said predetermined value.

4,764,730

RADIO RECEIVER DEMODULATION SYSTEM

Tokihiro Miyo, Kawasaki, and Toshio Kawasaki, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 20, 1987, Ser. No. 16,774
Claims priority, application Japan, Feb. 20, 1986, 61-33965
Int. Cl.[4] H04L *21/20*
U.S. Cl. 329—50 6 Claims



1. A radio receiver demodulation system for receiving a digital phase-modulated radio signal for providing a digital signal by demodulating said received signal, comprising;

demodulation means for demodulating said received signal in accordance with a recovered carrier, for outputting the demodulated received signal and for outputting a phase error signal varying in response to a phase difference between the recovered carrier and the received signal;

signal processing means, operatively connected to said demodulation means, for generating and outputting error information of said demodulated signal;

asynchronous condition decision means, operatively connected to said signal processing means, for deciding, based on said error information, if the recovered carrier is not synchronized to the received signal;

sweep signal generating means, operatively connected to said asynchronous condition decision means, for outputting a sweep signal when said asynchronous condition decision means decides that the recovered carrier is not synchronized to the recieved signal;

adding means for adding the sweep signal to the phase error signal and for providing an added signal having a frequency varying in accordance with the addition of the sweep signal and the phase error signal; and

carrier recovery means, operatively connected to said adding means, for providing the recovered carrier having a frequency corresponding to a frequency of said added signal provided by said adding means.

4,764,731

LIGHT-INDUCED UNIDIRECTIONAL LIGHT AMPLIFIER

Michael M. Salour, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 310,938, Oct. 13, 1981. This application Sep. 8, 1987, Ser. No. 94,201
Int. Cl.[4] H01S *3/00, 3/10*
U.S. Cl. 330—4.3 10 Claims



1. A light-induced unidirectional light amplifier system which comprises:

a gaseous medium having multiple excited atomic states;

a first laser means to be used as a pump laser for obtaining population inversion between a first and a second preselected states, the first state being higher than the second state, of said multiple excited atomic states so as to create one of the conditions for anisotropic amplified spontaneous emission from the first preselected state to the second preselected state of said multiple excited atomic states and thus providing an amplifying medium; and

a second laser means to be used as a compensating laser for exciting atoms of said gaseous medium from the second preselected state to a third preselected state of said multiple excited atomic states to compensate for Doppler broadening of the transition from the first preselected state to the second preselected state and thus obtaining anisotropy in the amplified spontaneous emission from the first preselected state to the second preselected state of said multiple atomic excitable states of said gaseous medium to form the light-induced unidirectional light amplifier system.

4,764,732

SWITCHABLE MODE AMPLIFIER FOR WIDE DYNAMIC RANGE

Bruno Dion, St-Eustache, Canada, assignor to General Electric Company, Fairfield, Conn.

Filed Oct. 20, 1987, Ser. No. 110,279
Claims priority, application United Kingdom, Oct. 23, 1986, [illegible]
Int. Cl.[4] H03F *3/08*
U.S. Cl. 330—59 16 Claims

1. An amplifier, switchable between a broad bandwidth transimpedance mode and an improved dynamic range follower mode, for amplifying wave energy signals received and converted to electrical signals by a transducer comprising:

first amplifier means having an input coupled to a junction between the transducer, a first transducer load impedance means and a second transducer load impedance means, the

VOL 1093 ISS 3 AG 16 1988 UMI

second load impedance being less than the first load impedance;

second amplifier means coupled to the output of the first amplifier means and having its output coupled to the first load impedance means, said second amplifier means being operable in first and second modes respectively to provide voltage feedback to the input of the first amplifier through the first impedance means and to effectively reduce the voltage feedback to the input of the first amplifier means;



switch means connected to said second load impedance means to switch said second load impedance means in and out of circuit with said transducer to effectively change the load impedance of said transducer and to respectively operate the second amplifier means in its first and second modes which respecitvely switches the amplifier between its transimpedance and follower modes of operation; and,

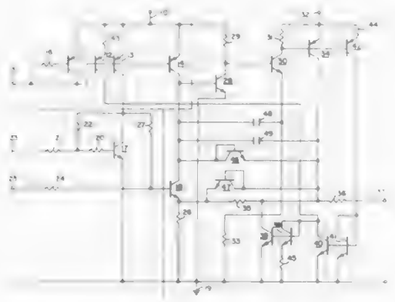
output means coupled to the output of the first amplifier means to provide an output signal in response to the receipt of the wave energy signals by the transducer.

4,764,733

ASYMMETRICAL DUAL INPUT AMPLIFIER

William A. Johnson, Minneapolis, Minn., assignor to Cross Technology, Inc., Eden Prairie, Minn.

Filed Apr. 10, 1987, Ser. No. 36,584
Int. Cl.[4] H03F *3/68*
U.S. Cl. 330—84 19 Claims



1. An amplifier having an output and first and second inputs, said amplifier comprising:

a primary amplification means having an output electrically connected to said amplifier output and having an input electrically connected to said amplifier first input, said primary amplification means being capable of providing signals at said primary amplification means output which are substantially similar to signals provided at said primary amplification means input but of a larger magnitude, said primary amplification means comprising an input device having first and second terminating regions and having a control region therein by which said primary amplification means input device is capable of being directed, through electrical energization thereof, to effectively provide a conductive path of a selected conductivity between said primary amplification means input device first and second terminating regions, said primary amplification means input device control region being electrically connected to said primary amplification means input; and

an inverting means comprising:

an inverting device having first and second terminating regions and having a control region therein by which said inverting device is capable of being directed, through electrical energization thereof, to effectively provide a conductive path of a selected conductivity between said inverting device first and second terminating regions; and

first, second and third inverting impedance means each having first and second terminating regions between which each exhibits electrical impedance, said first inverting impedance means first terminating region being electrically connected to said amplifier second input, said first inverting impedance means second terminating region and said second inverting impedance means second terminating region being electrically connected together and electrically connected to said inverting device control region, said second inverting impedance means first terminating region and said third inverting impedance means first terminating region being electrically connected together and electrically connected to said inverting device first terminating region, and said third inverting impedance means second terminating region being electrically connected to said primary amplification means input device control region, said second inverting impedance means having an impedance value substantially greater than that of said first inverting impedance means to thereby provide a substantial gain through said inverting means.

4,764,734

CLASS SM POWER AMPLIFIER

Donald L. Schilling, Sands Port, and David Manela, Kew Garden, both of N.Y., assignors to SCS Telecom, Inc., Port Washington, N.Y.

Continuation of Ser. No. 4,423, Jan. 20, 1987, abandoned. This application Dec. 18, 1987, Ser. No. 134,565
Int. Cl.[4] H03F *3/38, 3/16*
U.S. Cl. 330—251 30 Claims



1. A class SM amplifier comprising:

a load;

an input source having an input signal with a bandwidth B and a center frequency f_o;

threshold means having first, second, third and fourth threshold levels, and coupled to said input source and responsive to the voltage amplitude of the input signal crossing first, second, third and fourth threshold levels, for generating first, second, third, and fourth threshold signals, respectively;

voltage means for supplying a first voltage level, V, a second voltage level, aV, a third voltage level, −aV, and a fourth voltage level, −V, wherein first voltage level is adjusted to approximate the voltage amplitude of the input signal when the voltage amplitude of the input signal crosses the first threshold level, second voltage level is adjusted to approximate the voltage amplitude of the input signal when the voltage amplitude of the input signal crosses the second threshold level, third voltage level is adjusted to approximate the voltage amplitude of the input signal when the voltage amplitude of the input signal crosses the third threshold level, and fourth voltage level is adjusted to approximate the voltage amplitude of the input signal when the voltage amplitude of the input signal crosses the fourth threshold level;

first switching means coupled to said load, said threshold means and the first voltage level of said voltage means, and responsive to the first threshold signal from said threshold means for switching the first voltage level across said load;

second switching means coupled to said load, said threshold means and the second voltage level of said voltage means, and responsive to the second threshold signal from said threshold means for switching the second voltage level across said load;

third switching means coupled to said load, said threshold means and the third voltage level of said voltage means, and responsive to the third threshold signal from said threshold means for switching the third voltage level across said load; and

fourth switching means coupled to said load, said threshold means and the fourth voltage level of said voltage means, and responsive to the fourth threshold signal from said threshold means for switching the fourth voltage level across said load.

4,764,735

PUSH-PULL TRANSFORMER FEED-BACK AMPLIFIER

Lee J. Jones, Sunrise, Fla., assignor to Sunair Electronics, Inc., Ft. Lauderdale, Fla.

Filed Sep. 15, 1986, Ser. No. 907,465
Int. Cl.[4] H03F *3/26*
U.S. Cl. 330—271 15 Claims



1. Amplifier for radio frequencies, comprising:

first and second common-base-connected transistors in push-pull coupling;

an input transformer including two substantially identical input windings each in series connection with the emitter of the respective first and second transistors and two sides of an input signal;

an output transformer having a primary winding divided by a centertap into two substantially identical halfwindings and having a start and an end terminal respectively connected to the collector of said first and second transistors, a supply potential being connected to said centertap, and a reference potential being connected to the base of said first and second transistors, a secondary winding connected to a load, and identical first and second feedback windings each having a start and an end terminal, each feedback winding being connected in series with the emitter of a respective transistor, each feedback winding being such oriented that a fraction of the output signal is being inserted in the input signal in opposite phase thereto for providing negative feedback.

4,764,736

AMPLIFIER FOR HIGH FREQUENCY SIGNAL

Akira Usui, Takatsuki; Tadashi Yamada; Kazuhiko Kubo, both of Mishima, and Hiroyuki Nagai, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP85/00541, § 371 Date May 23, 1986, § 102(e) Date May 23, 1986, PCT Pub. No. WO86/02214, PCT Pub. Date Apr. 10, 1986
PCT Filed Sep. 30, 1985, Ser. No. 878,874
Claims priority, application Japan, Oct. 1, 1984, 59-205816; Feb. 20, 1985, 60-32002
Int. Cl.[4] H03F *1/34*
U.S. Cl. 330—294 3 Claims



1. An amplifier for a high frequency signal in which an integrated circuit including at least two stages of DC coupled ground-emitter type amplifiers is configured, an emitter resistor is connected between an emitter of a grounded-emitter amplifier in a subsequent stage and a ground, a terminal is disposed outside the integrated circuit so as to be connected via a bonding wire to said emitter of the grounded-emitter type amplifier in said subsequent stage, and a first filter circuit including an inductance of the bonding wire and developing a low impedance for a particular frequency is disposed between said terminal and an external ground, said at least two grounded-emitter type amplifiers are supplied with a constant voltage via an emitter-follower transistor, a second filter circuit allowing a particular frequency to pass therethrough is inserted between a collector output of said grounded-emitter type amplifier in said subsequent stage and a base of said emitter-follower transistor, an input signal is amplified by said grounded-emitter type amplifiers and said emitter follower transistor, and the amplified signal is outputted from a collector of said emitter-follower transistor.

4,764,737

FREQUENCY SYNTHESIZER HAVING DIGITAL PHASE DETECTOR WITH OPTIMAL STEERING AND LEVEL-TYPE LOCK INDICATION

Gary F. Kaatz, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 20, 1987, Ser. No. 123,415
Int. Cl.[4] H03L *7/06;* H03D *3/02;* H03K *9/06*
U.S. Cl. 331—1 A 12 Claims

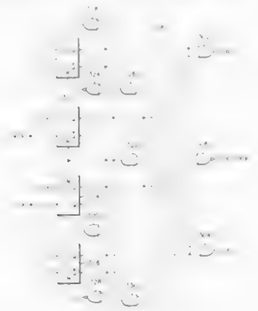
1. A digital phase detector for indicating the phase error between first and second digital frequency signals, comprising:

phase detection means, responsive to the first and second digital frequency signals, for detecting a phase error between the first and second frequency signals and for providing corresponding up and down steering signals;

frequency detection means, responsive to the phase detec-

VOL 1093 ISS 3 AG 16 1988 UMI

tion means, for detecting a difference in frequency between the first and second digital frequency signals; and



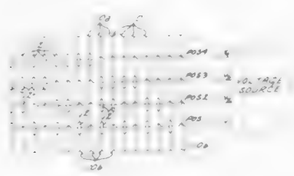
level-type indicating means, responsive to the frequency detection means, for indicating when the first and second digital frequency signals are phase locked.

4,764,738

AGILE BEAM CONTROL OF OPTICAL PHASED ARRAY

David L. Fried, Placentia, Calif., assignor to D. L. Fried Associates, Inc., Placentia, Calif.

Filed Mar. 26, 1987, Ser. No. 31,525
Int. Cl.[4] G02B *5/174;* H01S *3/02*
U.S. Cl. 332—7.51 8 Claims



1. A control for optical phased array having a plurality of substantially identical waveguides each of which includes a multiplicity, i.e., first, second, third, . . . etc. of pairs of electrodes located in corresponding first, second, third, . . . etc. electrode-pair positions along the length thereof, comprising in combination,

wiring means interconnecting the pairs of electrodes in the first electrode-pair position of said waveguides in such a manner that opposite polarity voltage may be applied to adjacent first pairs of electrodes each of said first pairs of electrodes thereby constituting a block,

further wiring means interconnecting said pairs of electrodes in each remaining electrode-pair position (i.e., second, third, . . . etc., positions) of said waveguides, in blocks of pairs of electrodes on adjacent waveguides at the respective electrode-pair position, wherein each block comprises twice the number of pairs of electrodes as are in each block of pairs of electrodes in the electrode-pair position to which this block's position is the successor position (e.g., fifth electrode-pair position is the successor position to the fourth electrode-pair position), with the pairs of electrodes in each block interconnected so that all pairs of electrodes in the respective block will have applied to them the same voltage polarity, said further wiring means also interconnecting said blocks so that the pairs of electrodes in adjacent blocks will have the opposite voltage polarity, and

a source of electrical energy to energize the pairs of electrodes of the respective blocks of electrodes.

4,764,739

LIGHT-INDUCED UNIDIRECTIONAL LIGHT SWITCH

Michael M. Salour, Cambridge, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 310,939, Oct. 13, 1981, abandoned.
This application Sep. 8, 1987, Ser. No. 96,249
Int. Cl.[4] H01S *3/00, 3/113;* H03K *23/78*
U.S. Cl. 332—751 6 Claims



1. A light-induced switch which comprises:

a gaseous medium having a multiple excited atomic states;

a first laser means to be used as a pump laser for obtaining population inversion between a first preselected excited state and a lower second preselected excited state of said multiple excited atomic states of said gaseous medium to create amplified spontaneous emission (ASE) from the first preselected excited state to the second preselected state;

a second laser means for compensating Doppler broadening of the transition between the second preselected excited state and the first preselected excited state of said multiple excited states, thus creating anisotropy in said amplified spontaneous emission; and

means for switching on and off said second laser means to turn on and off anisotropic amplified spontaneous emission in said gaseous medium and thus generate a light-induced unidirectional switch.

4,764,740

PHASE SHIFTER

Maurice A. Meyer, Natick, Mass., assignor to Micronav Ltd., Sydney, Canada

Filed Aug. 10, 1987, Ser. No. 83,247
Int. Cl.[4] H01P *1/185*
U.S. Cl. 333—164 3 Claims



1. In a hybrid coupler phase shifter having an input port, an output port, first and second side ports, and first and second means for coupling first and second diodes to said first and second side ports respectively, the improvement comprising,

first and second resistive means coupled to said first and second means for coupling respectively for reducing unbalance in the impedances coupled to said first and second side ports when said diodes shift between conducting and nonconducting states to significantly reduce the amplitude modulation on a signal at said output terminal wherein

said first and second means for coupling each comprise a transmission line having a standing wave thereon characterized by a low point thereon at which said standing wave ratio is a minimum,

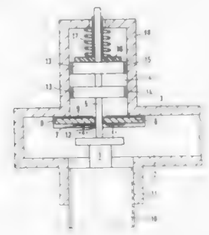
and means for connecting the first and second resistive means to said low points on said first and second transmission lines, respectively.

4,764,741

VOLTAGE AND HIGH FREQUENCY SIGNAL SUPPLY FOR A DIODE MOUNTED IN A WAVEGUIDE

Klaus Junger, Allmersbach im Tal, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Aug. 23, 1985, Ser. No. 768,852
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1984, 3431160
Int. Cl.[4] H01P *5/12*
U.S. Cl. 333—250 12 Claims



1. Circuit device comprising: a waveguide for transmitting electromagnetic waves with an electric field extending in a selected direction; a diode mounted in said waveguide; and means connected for supplying a DC voltage and at least one high frequency signal to said diode, said means comprising a coaxial line connected for supplying the DC voltage to said diode, and a planar line for supplying the at least one high frequency signal, said planar line extending perpendicular to the direction of the electric field of said waveguide and projecting into said waveguide, said planar line being disposed at a distance from said diode for establishing a capacitive coupling with said diode, and said waveguide having an output to deliver a resulting high frequency signal, wherein said planar line is provided with an aperture and said coaxial line includes an inner conductor which passes through said aperture and via which said coaxial line is connected to said diode.
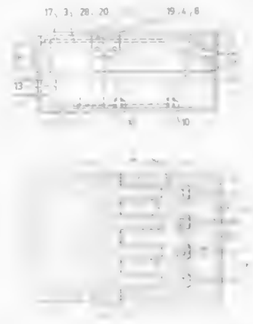
4,764,742

RELAY

Wilgot Aha, Koppom, Sweden, assignor to Tocksfors Verkstads AB, Tocksfors, Sweden

Filed Nov. 8, 1985, Ser. No. 796,435
Claims priority, application Sweden, Nov. 13, 1984, 8405691
Int. Cl.[4] H01H *51/29*
U.S. Cl. 335—142 9 Claims

1. Electric relay comprising one or more relay tongues each having a contact point located at a free end of the respective tongue, a relay contact cooperating with the contact point of each respective tongue and an electromagnet actuating the respective tongue, characterized by a relay tongue unit forming the relay tongue or tongues, the relay tongue unit being integral with at least one relay tongue which has in one part an area reducing cross sectional dimension and which at its end opposite to the free end is formed with a material cut portion serving as a fuse, that the surface of the relay contact cooperating with the contact point of the relay tongue is movable to a limited extent relative to this, that the electromagnet actuating the relay tongue includes a coil and two composite iron plates electrically insulated from each other, which have been insulated from each other an electric connection integral with the iron plate, the coil of the electromagnet fed by operating current being connected with one of its conducting ends to one iron plate and with its other end to the other iron plate, and that the relay is sealed by means of a dust and moisture-proof cover means having a portion consisting of an elastic material which portion extends close to the respective relay tongue, and



a carrier means external of the cover means substantially stationary relative to the relay, which carrier means includes at least one part which is plastically deformable towards the portion consisting of an elastic material so as to deform the elastic material and to move said tongue such that the respective contact point engages the respective relay contact and to maintain such contact.

4,764,743

PERMANENT MAGNET STRUCTURES FOR THE PRODUCTION OF TRANSVERSE HELICAL FIELDS

Herbert A. Leupold, Eatontown, and Ernest Potenziani, II, Ocean, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1987, Ser. No. 113,293
Int. Cl.[4] H01F *7/02*
U.S. Cl. 335—306 8 Claims



1. A permanent magnet apparatus to produce a helically oriented magnetic field comprising, in combinations;

a multiplicity of polygonal similarly magnetized magnet segments, each having a generally centrally disposed hole therethrough, arranged concentrically on an elongate axis with said holes in substantial registration along said axis to define an elongate axial passage extending through said apparatus;

each respective said similarly magnetized magnet segment displaced radially on said elongate axis from its respective adjacent segment.

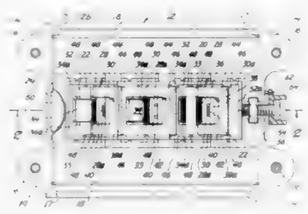
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,744

OVERLOAD RELAY HAVING ADJUSTABLY GAPPED CURRENT TRANSFORMERS

Robert P. Alley, Clifton Park, and Fred G. Turnbull, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 17, 1987, Ser. No. 134,267
Int. Cl.[4] H01F 21/06
U.S. Cl. 336—131 12 Claims



1. A circuit protective device comprising,

A. a plurality of current sensing transformer cores, each said core including first and second core pieces disposed in a closed loop magnetic circuit relation about a core window and including at least one air gap;

B. first means commonly mounting said first core pieces in fixed positional relation to each other;

C. second means commonly mounting said second core pieces in fixed positional relation to each other;

D. a separate, respective secondary winding wound about each said core, respectively;

E. a separate, respective busbar extending through said core window of each said core, respectively; and

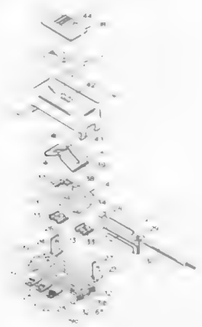
F. adjusting means for adjusting the relative positions of said first and second means to concurrently, uniformly vary the widths of said air gaps in said magnetic loop circuits of said cores.

4,764,745

SLIDE SWITCH WITH EXTERNALLY MOUNTED PROTECTIVE CIRCUIT BREAKER

Tatsuo Aoi, Ibaragi; Yasuhrio Kiyono, Nagaokakyo; Sueaki Honda, Kurayoshi, and Hauro Atsumi, Shizuoka, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 28, 1986, Ser. No. 936,081
Int. Cl.[4] H01H 15/00, 37/00
U.S. Cl. 337—2 3 Claims



1. A switch and circuit breaker construction, comprising:

a pair of fixed common contact members disposed within a casing;

a plurality of fixed contact members disposed within said casing between said pair of fixed common contact members;

a plurality of lead terminals, one of said lead terminals being electrically connected to each of said plurality of fixed contact members, said lead terminals being insert molded in said casing and protruding outside said casing;

a pair of support members insert molded in said casing and protruding outside said casing, one of said support members being electrically connected to said pair of fixed common contact members;

circuit breaker means located outside said casing, said circuit breaker means having two ends, each end of said circuit breaker means being supported by one of said support members, said circuit breaker means being operably connected to a motor of an electrical tool; and

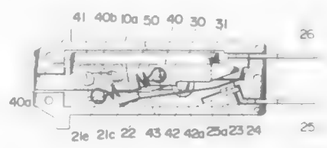
at least two movable contact members slidably disposed in said casing, said movable contact members being slidable in synchronization with each other so that one of said movable contact members connects one of said pair of fixed common contact members to one of said plurality of fixed contact members, while the other of said movable contact members connects two of said plurality of fixed contact members together.

4,764,746

CIRCUIT BREAKER

Kunimitsu Nakano, Taishibashi; Takeyasu Katou, Seto, and Mitsuaki Sakakibara, Aichi, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed May 22, 1987, Ser. No. 52,943
Claims priority, application Japan, May 26, 1986, 61-120648; Sep. 25, 1986, 61-226959
Int. Cl.[4] H01H 71/16
U.S. Cl. 337—66 8 Claims



1. A circuit braker comprising:

a housing having a longitudinal axis;

contact means mounted within said housing;

an elongate contact spring member mounted within said housing with one end of said contact spring member being fixed and the other end defining a contactor end for driving said contact means, said contact spring member extending in an inclined relationship with respect to said longitudinal axis of said housing and self-biased to move said contactor end in a direction of opening said contact means;

an actuator slidably received in said housing for movement along said longitudinal axis between an outward position and an inward position, said actuator having at one end an operator which abuts on said contact spring member to flex said contact spring member against the bias thereof in a direction of closing said contact means when said actuator is moved to said inward position, said actuator being pivotally supported adjacent the other end so as to be driven counterclockwise by said bias of said contact spring member for pivotal movement about a pivot axis into a set position while keeping said contact means closed;

return spring means for biasing said actuator toward said outward position;

latch means including a latch pin for latching said actuator in said set position against said bias of said contact spring member and said return spring means; and

fault current responsive trip means operatively connected to said latch means and including a bimetallic spring fixed at one end and disposed normal to said pivot axis of said actuator, said latch pin being secured to and extending perpendicularly at the other end of said bimetallic strip; said latch pin transferring the force resulting from said bias of said contact spring member substantially in a widthwise direction of said bimetallic strip,

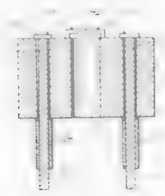
whereby, in response to a fault current flow through said closed contact means, said fault current responsive trip means will cause said latch means to unlatch said actuator and permit said actuator to pivot about said pivot axis under said bias of said contact spring member in said direction for opening said contact means to a tripped position where said contact spring member is relaxed and said actuator is permitted to move to said outward position under the bias of said return spring.

4,764,747

GLASS HEADER STRUCTURE FOR A SEMICONDUCTOR PRESSURE TRANSDUCER

Anthony D. Kurtz, Teaneck; Joseph R. Mallon, Franklin Lakes, and Timothy A. Nunn, Ridgewood, all of N.J., assignors to Kulite Semiconductor Products, Inc., Leonia, N.J.

Continuation of Ser. No. 746,332, Jun. 19, 1985, abandoned. This application Nov. 23, 1987, Ser. No. 124,089
Int. Cl.[4] G01L 1/22
U.S. Cl. 338—2 20 Claims



1. A pressure responsive diaphragm transducer assembly comprising:

a cylindrical member fabricated from glass insulative material and having a central aperture extending from the top to bottom surface, said member further having a plurality of peripheral apertures coaxial with said central aperture and parallel thereto and extending from said top to said bottom surface, a plurality of elongated terminal pins each having a flat top nail head portion of a greater diameter than said peripheral apertures disposed in respective ones of said plurality of said peripheral apertures, each of said plurality of elongated terminal pins being positioned on said top surface of said cylindrical member with said flat top nail head portion completely overlying and sealing an associated peripheral aperture and said elongated pin extending through said associated aperture and from said bottom surface, a semiconductor diaphragm transducer member positioned on said top surface of said cylindrical member and covering said central aperture, and said transducer member having fine leads extending therefrom over said top surface and bonded to said flat top nail head portions of selected ones of said plurality of elongated terminals pins with said terminal pins serving to pressure seal each peripheral aperture due to said flat top nail head portion said pins further serving to thermally insulate said transducer member from heat generated in bonding said fine leads to said nail head portions.

4,764,748

ANALOG-TO-DIGITAL CONVERSION APPARATUS WITH DITHER SIGNAL

John A. Geen, and Brian Johnson, both of Bracknell, England, assignors to British Aerospace Public Limited Company, London, England

Continuation of Ser. No. 752,723, Jul. 8, 1985, abandoned. This application Oct. 8, 1986, Ser. No. 917,265
Claims priority, application United Kingdom, Jul. 6, 1984, 8417324
Int. Cl.[4] H03M 1/20
U.S. Cl. 340—347 AD 6 Claims



1. Analog to digital signal conversion apparatus comprising:

input signal receiving means for receiving an analog input signal to be digitized by the apparatus;

summing means connected to said receiving means and operable for receiving a dither signal and for supplying at an output of the summing means the sum of said dither signal and said analog input signal;

an analog to digital converter connected to the summing means and operable for supplying a digital output signal comprising a plurality of bits of which the most significant takes one or the other of the two bit values in dependence upon whether said sum is within one or the other half of a peak to peak digitization range associated with the converter;

averaging means connected to the converter for forming a digital signal representative of the time average of the converter output signal; and

dither signal supply means connected to the summing means for supplying a dither signal which varies step-wise through a dither rangé substantially equal to one-half of said peak to peak digitization range of the converter and which, on average, has a substantially uniform occupancy of all the dither range step levels.

4,764,749

CMOS ENCODER CIRCUIT

Toshiaki Machida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 18, 1986, Ser. No. 943,012
Claims priority, application Japan, Dec. 20, 1985, 60-288762
Int. Cl.[4] H03M 7/00
U.S. Cl. 340—347 DD 8 Claims

1. An encoder circuit for supplying an encoded signal, comprising

(a) a plurality of input lines on each of which is to appear a logic "1" or "0" signal, the input lines consisting of a first set of input lines and a second set of input lines respectively connected to the first set of input lines,

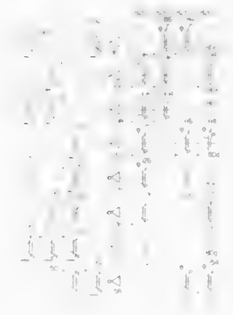
(b) a plurality of output lines,

(c) a first set of transistors of a first conductivity type, each of the first set of transistors having a control terminal connected to one of said first set of input lines and having a current path connected between one of said output lines and a supply voltage source,

(d) a second set of transistors of a second conductivity type

VOL 1093 ISS 3 AG 16 1988 UMI

opposite to said first conductivity type, each of the second set of transistors having a control terminal connected to one of said second set of input lines and having a current path connected between one of said output lines and a reference voltage source, and



(e) a plurality of logic inverter devices each connected between one of said first set of input lines and one of the second set of input lines,

whereby the encoded signal is supplied to said output lines in response to the logic signal on said input lines.

4,764,750

ANALOG-TO-DIGITAL CONVERTER

Shigeru Kawada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 19, 1987, Ser. No. 63,896
Claims priority, application Japan, Jun. 19, 1986, 61-144364
Int. Cl.[4] H03M *1/12*
U.S. Cl. 340—347 AD 9 Claims



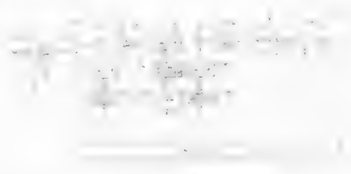
1. An analog-to-digital converter which includes a plurality of digital-to-analog converting circuits, a control circuit connected to the digital-to-analog converting circuits to control the condition of the respective digital-to-analog converting circuits, a comparator having a first input connected commonly to outputs of the digital-to-analog converting circuits and a second input connected to receive a reference voltage, and a successive approximation register connected to an output of the comparator and adapted to control the control circuit, characterized in that the control circuit is adapted to generate control signals to the respective digital-to-analog converting circuits in one-to-one relation so that the output potentials of the digital-to-analog converting circuits are successively incremented one after one by a potential corresponding to one bit.

4,764,751

METHOD OF NONLINEAR A/D CONVERSION

Hideaki Kimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 9, 1987, Ser. No. 12,406
Claims priority, application Japan, Feb. 7, 1986, 61-25552
Int. Cl.[4] H03M *1/58*
U.S. Cl. 340—347 AD 8 Claims



1. A method for A/D conversion comprising the steps of:

subjecting a varying level analog signal to a non-linear analog-to-digital conversion in a converter to produce a provisional digital signal;

measuring conversion characteristic data of said converter for a plurality of analog input signals of known values;

compensating said conversion characteristic data according to predetermined reference data corresponding to said plurality of analog input signals;

storing said compensated conversion characteristic data in a look-up table memory; and

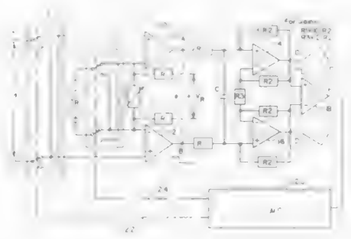
accessing said look-up table memory according to said provisional digital signal.

4,764,752

ANALOG TO DIGITAL CONVERTER HAVING NO ZERO OR SPAN DRIFT

Alfred N. Ormond, 4010 Hermitage Dr., Hacienda Heights, Calif. 91745

Filed Jun. 15, 1987, Ser. No. 61,730
Int. Cl.[4] H03M *1/06*
U.S. Cl. 340—347 NT 13 Claims



7. A system for converting an analog signal numerical digital count directly proportional to said analog signal without zero drift, including in combination:

(a) a differential operational amplifier means including two operational amplifiers having positive and negative input terminals,

(b) a source of reference voltage connected across said differential operational amplifier means at said negative input terminals,

(c) a first reversing switch connected to reverse the polarity of said source of reference voltage to said negative input terminals of said operational amplifier means,

(d) a second reversing switch connected to pass said analog signal to said positive input terminals of said differential operational amplifier means, such that the analog signal is added to the reference voltage when said switch is in the first position and subtracted when in the second,

(e) a positive differential integrator employing two operational amplifiers having a capacitor connected across their positive input terminals and a resistor across their negative input terminals and having resistors connected from the positive terminal of each amplifier to the output, and from the negative terminal of each amplifier to the output, the outputs of the differential integrator being connected to a crossover detector, and the output of the summing amplifier being connected through resistors to the two positive terminals of the positive differential integrator,

(f) an oscillator for generating a series of clock pulses,

(g) means for affecting a first conversion including a counter means for said clock pulses connected to said crossover detector and to said first reversing switch and arranged to receive said first start and stop signals from said crossover detector for providing a first numerical count of N_0 pulses over a fixed time period when said first reversing switch is in a first position, and said reference voltage being subtracted from said analog voltage when said first reversing switch is in a second position for providing two second start and stop signals from said crossover detector when the output voltage of the positive differential integrator crosses over, said second start and stop signals starting and stopping said counter to provide a second numerical count of N_2 pulses, and

(h) means for dividing a count difference N_2-N_0 by a sum of counts N_2+N_0 to obtain a signal proportional to said analog voltage and having no span drift.

4,764,753

ANALOG TO DIGITAL CONVERTER

Akira Yukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 23, 1985, Ser. No. 757,989
Claims priority, application Japan, Jul. 23, 1984, 59-152269; Dec. 28, 1984, 59-277482
Int. Cl.[4] H03M *1/46*
U.S. Cl. 340—347 AD 6 Claims



1. An analog to digital converter, comprising; a balanced type integrator having a first input terminal, a second input terminal, a first output terminal and a second output terminal; a comparator having first and second input terminals connected to said first and second output terminals of said integrator; first and second sample capacitors having first ends respectively connected to said first and second input terminals of said integrator; means for applying a difference in an analog input signal between second ends of said first and second sample capacitors in a balanced manner; a counter; first control means responsive to the output of said comparator for controlling said counter, a first internal digital to analog converter responsive to the output of said counter for generating a first internal analog signal; first means for subtracting said first internal analog signal from the charge of said first sample capacitor; a second internal digital to analog converter responsive to the output of said counter for generating a second internal analog signal; second means for subtracting said second internal analog signal from the charge of said second sample capacitor; and third means responsive to the output of said comparator for controlling said counter so as to make the output of said comparator equal to zero.

4,764,754

FAIL-SAFE ALARM CIRCUIT

Daniel G. Prysby, Elk Grove Village, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 1, 1986, Ser. No. 880,625
Int. Cl.[4] G08B *29/00*
U.S. Cl. 340—513 12 Claims



1. An alarm circuit including:

first and second electrical circuit loops; first

connecting means for electrically connecting said first and second electrical circuit loops, said first connecting means including annunciator means and including first unidirectional conducting means for insuring that electrical current pass through said first connecting means only from said second loop to said first loop; and

second connecting means for electrically connecting said first and second electrical circuit loop, said second connecting means including second unidirectional conducting means for insuring that supervisory electrical current flows through said second connecting means only from said first electrical loop to said second electrical circuit loop such that if said first and second electrical circuit loops are miswired supervisory electrical current will not flow and the miswiring will be detected.

4,764,755

INTRUDER DETECTION SYSTEM WITH FALSE-ALARM-MINIMIZING CIRCUITRY

Daniel F. Pedtke, Fairport, and George E. Behlke, Farmington, both of N.Y., assignors to Detection Systems, Inc., Fairport, N.Y.

Filed Jul. 27, 1987, Ser. No. 77,904
Int. Cl.[4] G08B *13/21*
U.S. Cl. 340—541 4 Claims



1. An intruder detection system comprising:

(a) sensing means for sensing the presence of an intruder in a region under surveillance, said sensing means being adapted to produce a first output signal which changes in

VOL 1093 ISS 3 AG 16 1988 UMI

level in response to the presence of an intruder in such region;

(b) pulse generating means for producing pulses of current each time said first output signal exceeds or falls below a preset threshold level;

(c) integrating means, operatively coupled to said pulse generating means, for integrating said current pulses and for providing a second output signal representative of the integrated value of such pulses;

(d) threshold sensing means for producing an alarm signal in the event said second output signal exceeds a predetermined level; and

(e) timing circuit means for discharging said integrating means in the event said second output signal fails to exceed said predetermined level within a preselected time interval, said time interval being reset (i.e. re-established) each time said first output signal exceeds or falls below said preset threshold level.

4,764,756

INTRUSION DETECTOR USING A VIBRATION-RESPONSIVE CABLE

Hendrik M. V. L. Van Thematt, Pretoria, South Africa, assignor to Sekerheid en Elektronika Laboratoria (Eiendoms) Beperk, Pretoria, South Africa

Filed Sep. 16, 1986, Ser. No. 907,884

Claims priority, application South Africa, Sep. 17, 1985, 85/7130

Int. Cl.[4] G08B *13/22*

U.S. Cl. 340—566 21 Claims



1. In a protective installation comprising a barrier and a co-axial cable extending along the barrier, the cable having an inner and an outer conductor, and being capable of sensing vibrations, converting these vibrations into electrical signals and transmitting the electrical signals, a method of identifying an alarm condition, which includes

allowing, on a section of the cable being subjected to vibrations, electrical signals to be transmitted along the cable;

normalizing these signals; and

comparing the normalized signals with previously normalized known signals thereby to identify the source of the signals transmitted along the cable, and hence an alarm/non-alarm condition.

4,764,757

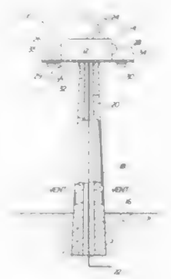
SECURITY DETECTION AND LOCATION SYSTEM WITH INDEPENDENT LOCAL ALARM AND COMMUNICATIONS CIRCUITS

Frank G. DeMarco, 11171 NW. 36th Ct., Coral Springs, Fla. 33065, and Dennis D. DeMarco, 1905 NW. 78th Ave., Margate, Fla. 33063

Filed Mar. 12, 1987, Ser. No. 25,051

Int. Cl.[4] G08B *25/00*

U.S. Cl. 340—574 9 Claims



1. A security detection and location system comprising:

a portable control means for transmitting a distress signal;

a plurality of stationary monitoring means disposed in spaced relation to one another along a monitored area for monitoring the transmission of a detection signal, each monitoring means including:

a self contained power source, a receiver means coupled to said power source for receiving said distress signal and for generating an activation command signal and means for issuing a detection signal in the presence of said activation command signal;

a local alarm generating means for generating a recognizable alarm approximate a respective one of said pluraltiy of monitoring means in the present of said activation command signal; each of said monitoring means including relay means for independently coupling said power source to said detection signal issuing mean and said local alarm generating means such that a failure of either one thereof does not affect the other one thereof; the detection signal issuing means an the local alarm generating means being independent of each other;

a central response unit remote from said plurality of monitoring means and including recognizing means for recognizing the detection signal from any one of said plurality of monitoring means and wherein said detection signal is indicative of a location of said portable control means, and each of said plurality of monitoring means having a unique detection signal and wherein one or more of said plurality of monitoring means may concurrently communicate with said central processing unit when said distress signal from said portable control means is recieved by one or more of said monitoring means.

4,764,758

INCIPIENT FIRE DETECTOR II

George F. Skala, Voorheesville, N.Y., assignor to Environment-/One Corporation, Schenectady, N.Y.

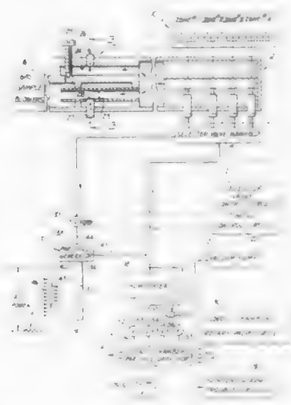
Filed Jul. 1, 1987, Ser. No. 68,530

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—627 28 Claims

1. A new and improved incipient fire detector having sample gas selector valve and conduit system means for selectively sampling the gaseous atmospheres in a multiplicity of different volumetric spaces automatically and sequentially supplying the sampled gases to a centrally located small particle detector,

said gaseous atmosphere sampling conduit system including an improved gas sample flow rate deviation detector which operates in a stable manner over a wide range of temperatures to detect any variation in flow rate of the sampled gases through the sampling conduct system from a preset norm, and wherein said gas flow rate deviation detector comprises a pair of self-heating thermistors each having the same resistance value at a known reference temperature but which have different free air dissipation constants, the thermistor with the smaller free air dissipation constant being physically mounted in the gaseous atmosphere sampling conduit system for monitoring the flow rate therethrough and the remaining thermistor being physically mounted in a region that is at the same temperature as the gaseous atmosphere being sampled but is not in a flowing stream of sampled gas, and both thermistors being electrically interconnected in a measurement circuit for deriving an output signal indicative of any deviation in the sampling flow rate of



the sampled gaseous atmospheres from a preset norm, and an improved system operating condition checking sub-system comprised by particle generator means connected to the automatically operated sample gas selector valve and conduit system means for selectively injecting small particles into the samples of gaseous atmospheres supplied to the centrally located particle detector that periodically operates to sequentially sample and test the sample gases from the respective zones for the presence of particles, timing and control means coupled to the particle generator means and synchronized with the operation of the respective zone sampling periods for activating the particle generator means for a short time interval relative to the sampling period of each respective zone at the end thereof for injecting into the sample conduit system for delivering a burst of small particles to the centrally located particle detector whereby continued normal operation of the system can be indicated in low particle background environments.

4,764,759

OPEN CIRCUIT DETECTOR FOR DIFFERENTIAL ENCODER FEEDBACK

James W. Braun, and John A. Hubert, both of Cincinnati, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 7, 1986, Ser. No. 916,261

Int. Cl.[4] G08B *21/00*

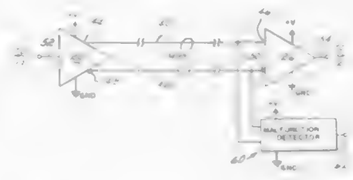
U.S. Cl. 340—653 4 Claims

1. A digital communication circuit with malfunction self-monitoring, the circuit comprising:

(a) a differential driver responsive to a digital input signal for producing first output signals and second output signals, the first and second output signals being simultaneously in opposite states;

(b) a differential receiver responsive to the first and second output signals for producing a digital output signal;

(c) a pair of conductors for conducting the first and second output signals from the differential driver to the differential receiver: and



(d) a malfunction detector connected to the pair conductors adjacent to the differential receiver and including an optical coupler having a pair of back-to-back light emitting diodes adapted so that one or the other emits light so long as the first and second output signals transmitted to the diodes are in opposite states, and having a photo transistor optically coupled to the pair of diodes and adapted to produce a malfunction signal in response to absence of light from the pair of diodes indicative of a malfunction.

4,764,760

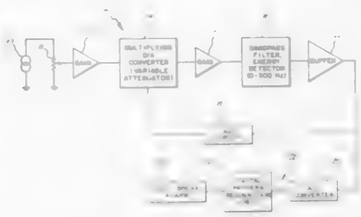
AUTOMATIC GAIN CONTROL FOR MACHINE TOOL MONITOR

James F. Bedard, Schenectady, and Walter Whipple, III, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1986, Ser. No. 943,397

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—680 14 Claims



1. In a tool break detection system having a vibration sensor that generates a signal whose amplitude varies with the strength of the vibration caused by a cutting process, an analog channel to condition the sensor signal to a dc output voltage in a restricted frequency range and which has a variable attenuator to control gain, means to sample and digitize said output voltage, and means to detect a rapid change in signal level that is sustained for a given confirmation period and is indicative of a cutting tool break, the improvement comprising:

automatic gain control means to dynamically control the gain of said variable attenuator and adjust said dc output voltage to a designated signal level within a window in such manner that the time rate at which gain changes is constant and independent of gain and there is no significant change in signal level during said confirmation period to detect a tool break.

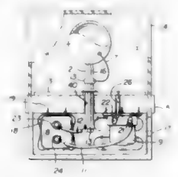
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,761

EARTHQUAKE ALARM

John N. Maguire, III, 1500 N. Ocean Blvd., Apt. #1003, Pompano Beach, Fla. 33063

Filed Oct. 7, 1987, Ser. No. 105,308
Int. Cl.[4] G08B *21/00*; H01H *35/02*
U.S. Cl. 340—690 10 Claims



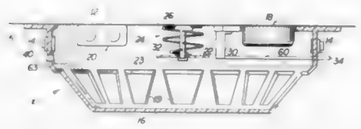
1. An earthquake sensing device comprising a ball having a metallic surface; an upstanding perch having an upper narrow top base for supporting the ball; a metallic contact plate below the top base for intercepting the ball when it is off the top base; and an electric circuit including a power supply, an electric sounder, said perch, said ball and said base, which is closed to activate the sounder when the ball is touching the contact plate; said electric circuit further including a flexible wire connection between said ball and said perch.

4,764,762

EARTHQUAKE ALARM ASSEMBLY

Ralph Almour, 6936 Huntington La., #404, Delray Beach, Fla. 33446

Filed Sep. 2, 1986, Ser. No. 902,642
Int. Cl.[4] G08B *21/00*
U.S. Cl. 340—690 5 Claims



1. An earthquake alarm assembly primarily designed for the warning of occupants in a building of earth tremors, said assembly comprising:

(a) a housing including a base portion structured for fixed mounting in depending relation on a horizontal support surface within the building.

(b) an activating member movably secured to and in spaced relation below said base portion and a support device comprising a coil spring with a vertical axis attached to said base portion and to said activating member in interconnecting relation therebetween,

(c) said activating member comprising a conductive material member,

(d) said coil spring being structured and configured to permit a predetermined range of movement of said activating member,

(e) said activating member and support device cooperatively dimensioned and configured for displacement of said activating member throughout a predetermined range of movement relative to said base,

(f) an indicator structure mounted on said base portion and a circuit means associated therewith mounted on said base portion and comprising a switch assembly and a power source electrically interconnected to one another for selectively activating said indicator structure,

(g) said switch assembly structured for maintenance in a normally circuit open position and disposed in spaced relation to said actuating member and within said predetermined range of movement and in interruptive position relative to said activating member when said activating member is displaced relative to said base portion within said predetermined range of movement,

(h) said activating member comprising structure to define a switch closing member and displaceable within said predetermined range of movement into engagement with said switch assembly means, said switch assembly means being disposed and structured to assume a circuit closed position when engaged by said activating member, said circuit closed position defining current flow from said power supply to said indicator structure causing activation thereof,

(i) whereby earth tremors caused by an earthquake cause a bouncing and jiggling randomized movement of displacement of said activating member throughout said predetermined range of movement and into activating engagement with said switch assembly means, and

(j) said switch assembly means including a first and a second switch, each of said switches being disposed in spaced relation to said activating member and within said predetermined range of movement, each of said switches being structured to independently assume a circuit closed position and being operable to activate said indicator structure upon engagement with said activating member,

(k) said activating member and said switches having operating portions normally in substantial coplanar relation with one another and said switches being angularly displaced with respect to one another.

4,764,763

ELECTRONIC SKETCHING DEVICE

James C. Wickstead, Mendham, and Gerald P. Selden, Blairstown, both of N.J., assignors to The Ohio Art Company, Bryan, Ohio

Filed Dec. 13, 1985, Ser. No. 808,919
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—709 14 Claims



1. A dedicated portable electronic sketching and animation toy, comprising:

a display device for displaying sketches and animation on a display area;

manually actuatable movement means for moving a cursor on the display area;

storage means selectively coupleable to the display device for storing a plurality of sketches;

sketch control means coupled to the manually actuatable movement means and storage means for selectively storing and erasing the placements of the cursor in the storage means to create and modify a sketch visible in the display area and stored in the storage means;

manually actuatable sketch selection means coupled to the storage means for selecting a stored sketch for display on the display area and modification by the sketch control means and for selecting a stored sketch for addition to a stored sequence of sketches;

manually actuatable sketch copying means for copying a selected stored sketch without erasing said selected sketch from the storage means, for display in the display area and modification by the sketch control means;

animation means for creating and storing a sequence of selected stored sketches coupled to the storage means to enable the display of said sequence of sketches on the display area, the animation means including manually actuatable addition means for adding a sketch selected by the manually actuatable sketch selection means to the stored sequence of sketches, and a manually actuatable means for initiating the sequential display of the stored sequence of sketches on the display means;

power means for receiving a source of electrical energy for powering the toy; and

a compact, lightweight housing for supporting the display device, movement means, storage means, sketch selection means, sketch copying means, animation means and power means and adapted to make the toy portable and hand-held;

whereby a dedicated sketching and animation device which functions as a completely portable toy is provided.

4,764,764

WRITE-PROTECT APPARATUS FOR BIT MAPPED MEMORY

Joseph Mulkern, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 27, 1984, Ser. No. 675,112
Int. Cl.[4] G09G *1/00*
U.S. Cl. 340—724 6 Claims



1. An apparatus having a memory unit arranged in accordance with a defined coordinate system for enabling data entry at selected coordinate locations within a boundary, established in the memory, which defines a data entry window comprising:

means for generating address coordinate signals representative of points in said coordinate system whereat data are to be entered;

means for approximating said window by a multiplicity of overlapping planar geometrical figures each having a predetermined boundary in said memory and for providing boundary signals representative of locations of said boundaries;

position means coupled to receive said boundary signals and said address coordinate signals for providing position signals representative of locations of said address coordinates relative to said boundary of each of said planar geometrical figures, thereby providing a multiplicity of position signals each representative of an address coordinate location relative to a boundary segment of one of said geometrical figures;

location means coupled to receive said position signals for providing window signals representative of said locations of said address coordinates relative to said window, said window signals indicating that a data point is within said window when said position signals indicate that said data point is within at least one of said geometric figures; and

means coupled to receive said window signals for providing a data entry enabling control signal to said memory unit when a window signal indicates that a point at which data is to be entered is in said window.

4,764,765

BINARY DISPLAY DEVICE TO AID SWITCH SETTING

Victor Shiff, Naugatuck, Conn., assignor to Timex Corporation, Middlebury, Conn.

Filed Dec. 10, 1986, Ser. No. 940,123
Int. Cl.[4] G09G *3/04*
U.S. Cl. 340—756 21 Claims



1. In a device of the type having a display with selectively actuatable segments adapted to present a line of at least two segmented patterns of said segments being arranged to display at least two numeric decimal digits, each pattern comprising at least 7 segments and having first decoding and driver means for selectively actuating said segments to display said decimal digits,

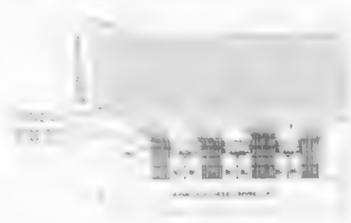
the improvement comprising second decoding and driving means selectively actuating segments in paired sets of said segments to display a line representing binary numbers, said binary numbers being arranged to provide a visual aid to facilitate setting a plurality of two-position switches.

4,764,766

METHOD FOR DRIVING AND LIQUID CRYSTAL DISPLAY DEVICE INCLUDING DOT MATRIX DISPLAY PART AND FIXED PATTERN DISPLAY PORT

Naofumi Aoyama, Mobara; Kiyoshige Kinugawa; Yoshihiro Nozaki, both of Chiba, and Hiroshi Sakurada, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 3, 1986, Ser. No. 825,604
Claims priority, application Japan, Feb. 4, 1985, 60-18576
Int. Cl.[4] G09G *3/36*
U.S. Cl. 340—784 4 Claims



1. A method for driving a liquid crystal display device which, in a liquid crystal panel, is provided with a dot matrix display part composed of a plurality of picture elements which are constituted as a dot matrix by intersections of scanning electrodes arranged in a striped pattern and signal electrodes also arranged in a striped pattern and opposed to said scanning electrodes, and a fixed pattern display part composed of at least one electrode arranged in a pattern that represents information and at least one electrode opposed to said electrode arranged in said pattern or a segment display part composed of a plurality of segment electrodes constituting said pattern and at least one

VOL 1093 ISS 3 AG 16 1988 UMI

electrode opposed to said segment electrodes, said method comprising the steps of:

sequentially selecting said scanning electrodes of said dot matrix display part, and applying a selected signal electrode voltage or a predetermined signal electrode voltage insufficient for selection to said signal electrodes of said dot matrix display part in accordance with information to be displayed, so that said dot matrix display part is driven in a time-multiplexed fashion; and

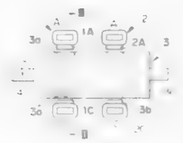
constantly applying said predetermined signal electrode voltage to one electrode of an opposed pair of electrodes which constitute said fixed pattern display part or said segment display part, and applying said selected or predetermined signal electrode voltages to the other electrode of said opposed pair of electrodes which constitute said fixed pattern display part or said segment display part in accordance with the information to be displayed, so that said fixed pattern display part or said segment display part is driven in a static fashion.

4,764,767

ABSOLUTE ROTATIONAL POSITION DETECTION DEVICE

Wataru Ichikawa, Tokyo, and Yuji Matsuki, Sayama, both of Japan, assignors to Kabushiki Kaisha SG, Tokyo, Japan

Filed Aug. 22, 1986, Ser. No. 899,517
Claims priority, application Japan, Aug. 27, 1985, 60-187901
Int. Cl.[4] G08C 19/06
U.S. Cl. 340—870.31 10 Claims



1. An absolute rotational position detection device comprising:

a rotor section having a single cylindrical member having a first pattern, disposed along the circumference of the cylindrical member, which repeats change in the circumferential direction with a predetermined pitch, and a second pattern, disposed along the circumference of the cylindrical member parallel to the first pattern, which has a change of one cycle with respect to one circumference, said first and second patterns being formed with a predetermined material, said first and second patterns being independent of each other;

a detection head section provided in proximity to said rotor section, whose position relative to the rotor section changes along the circumferential direction of the first and second patterns and which, as a result of changing relative position of the rotor section with respect to the detection head section, produces first and second cyclic output signals representing electrical phase change whose respective cycles are constituted of one pitch of the respective patterns; and

means for obtaining first absolute position data whose cycle corresponds to one pitch of the first pattern by measuring electrical phase difference between the first output signal and a predetermined reference AC signal and obtaining second absolute position data whose cycle corresponds to one pitch of the second pattern by measuring electrical phase difference between the second output signal and the reference AC signal and thereby providing, responsive to said first and second absolute position data, data specifying absolute rotational position of said rotor section with respect to said detection head section.

4,764,768

SIGNAL DISPLAY ELEMENT FOR THE DISPLAY OF MORE, THAN TWO INFORMATIONS FOR SIGNAL DISPLAYS WITH ELECTRO-MAGNETICALLY EXCITED MAGNETIC TILTING PLATES

László Jáki; Sándor Jodál; László Jagicza; József Mandzsu; Endre Pap, and János Szebeni, all of Budapest, Hungary, assignors to Finommechanikai es Elektronikus Muszergyarto Szovetkezet, Hungary

Filed Nov. 19, 1986, Ser. No. 932,703
Claims priority, application Hungary, Nov. 19, 1985, 4388/85
Int. Cl.[4] G01D 5/20; G08B 5/24
U.S. Cl. 340—815.05 7 Claims



1. A signal display element for displaying more than two informations comprising electromagnetically excitable magnetic tilting plates, a base plate, said tilting plates being supported in bearings on the base plate for rotation about an axis of rotation, said tilting plates containing parts including magnets being offset with respect to magnets of an adjacent plate in the direction of the axis of rotation, wherein the magnetic axes of the magnets run substantially normal to the plane of the associated tilting plate, bipolarly excitable field coils coupled to the tilting plates for the rotational control thereof, the parts of the tilting plates containing the magnets are thicker than the non-magnetic parts of the tilting plates, the distance between the outer surfaces of the two outermost lying tilting plates when the tilting plates are stacked and laid on each other on one side of the axis of rotation is equal to the total thickness of the non-magnetic parts of the tilting plates less by one than the number of all the tilting plates, and of the thickness of a magnet having maximal thickness and arranged on a tilting plate taken together with that tilting plate.

4,764,769

POSITION CODED PULSE COMMUNICATION SYSTEM

Robert G. Hayworth; Ray E. Russell, Jr.; Robert F. Fleming, III, and James G. Hwang, all of Vienna, Va., assignors to Vega Precision Laboratories, Inc., Vienna, Va.

Filed Oct. 19, 1983, Ser. No. 543,522
Int. Cl.[4] G01S 13/86
U.S. Cl. 342—50 6 Claims



1. A communication system for transmitting a channel of data in a position-coded pulse train to a selected one of a plurality of addressees over a communication channel subject to synchronous interference, said communication system comprising:

encoder means for providing the position-coded pulse train, said encoder means including means for positioning a first pair of pulses at a first interpulse interval representing a binary number indicative of the selected addressee, positioning a second pair of pulses at a second interpulse interval representing a binary number indicative of a channel, positioning a third pair of pulses at a third interpulse interval representing a binary number indicative of the data, positioning a fourth pair of pulses at a fourth interpulse interval representing a binary number indicative of the selected addressee, and positioning a fifth pair of pulses at a fifth interpulse interval representing a binary number indicative of the channel;

means for transmitting the position-coded pulse train to the communication channel, said transmission means including means for modulating a carrier signal with the position-coded pulse train;

means for receiving the position-coded pulse train modulated carrier signal from the communication channel, said receiving means including means for demodulating the carrier signal to provide a demodulated pulse train; and

decoder means for removing any synchronous interfering pulses from the demodulated pulse train, and, responsive to calculation of first and second and fourth and fifth interpulse intervals for determining, from the positions of the remaining pulses, the third interpulse interval.

4,764,770

STABILIZED MOLDED RUBBER KEYBOARDS

Roy L. Church, Santa Rosa, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 11, 1986, Ser. No. 873,236
Int. Cl.[4] H01H 3/14
U.S. Cl. 340—365 R 18 Claims



1. In a keyboard assembly having a PC board providing a series of switches and a molded rubber keyboard providing a rubber base sheet overlying said PC board and having a series of rubber keys integral with said base sheet, each said key having contact means on its bottom surface for closing each said switch when its key is depressed, said keyboard having sufficient inherent elasticity to restore any depressed key back to its original position when the key is released, the combination therewith of

stabilizing membrane means for preventing said keys from wobbling or binding, said membrane means having a first surface disposed on an opposite side of said rubber base sheet from said PC board and a second surface separated from said first surface by the height of said membrane means, said keys extending through said membrane means such that each said key extends from beneath said first surface to above said second surface so that each said key can be depressed by direct contact by a finger of a user, said membrane means being substantially continuous around the periphery of each said key for snugly engaging each said key around substantially its entire periphery, said membrane means being flexible along its Z axis, but sufficiently still along its X and Y axes, to remain in contact with substantially the entire periphery of each said key and to limit the movement of said keys to a strictly linear movement toward and away from their respective PC board switches, the flexibility of said membrane means along its Z axis enabling said membrane means to follow each said key up and down without binding it.

4,764,771

ANTENNA FEED NETWORK EMPLOYING OVER-COUPLED BRANCH LINE COUPLERS

William G. Sterns, Canoga Park, Calif., assignor to ITT Gilfillan, a division of ITT Corporation, Van Nuys, Calif.

Filed Aug. 4, 1986, Ser. No. 892,235
Int. Cl.[4] H01Q 3/22, 3/24, 3/26
U.S. Cl. 342—373 6 Claims



1. A transverse electro-magnetic mode power dividing/combining antenna feed network having a common port and a plurality of output ports each for connection discretely to a corresponding element of a multi-element antenna array comprising:

a plurality of four port directional coupler circuits implemented in stripline and operated in transverse electromagnetic mode, said directional coupler circuits each including first and second sections of transmission line, each of said first transmission line sections being connectable at one end to a source of RF excitation via said common port for providing a first directional coupler port, said first port of a first of said directional coupler circuits being connectable to said common port, and each of said second transmission line sections being connectable at one end to a characteristic impedance termination, said one end of said second transmission line providing a fourth directional coupler port, said first and second transmission line sections being substantially parallel conductive traces of said stripline;

first means within each of said directional coupler circuits comprising a plurality of quarter-wave conductive cross-over traces of transmission line tapped into said first and second transmission line sections and spaced one quarter-wave length along both of said lines, said quarter-wave conductive cross-over traces being substantially perpendicular to said first and second transmission line sections and being conductive on a dielectric sheet between spaced parallel ground planes;

second means within each of said directional coupler circuits comprising second and third directional coupler ports with said second directional coupler port being along said first transmission line section and said third directional coupler port being along said second transmission line section and being the diagonal port with respect to said first port, said second port providing said output port for connection to said corresponding element of said antenna array; and

third means for connecting said third port of each directional coupler circuit to said first port of the succeeding directional coupler to provide successive RF excitation, extended transmission line traces being folded back parallel to said parallel conductive traces to connect between the third port of each directional coupler circuit and the first port of the next succeeding directional coupler circuit.

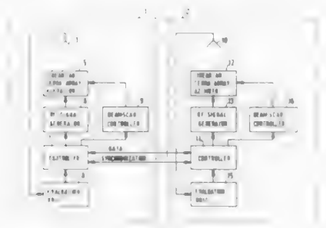
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,772

SCANNING-BEAM MICROWAVE LANDING SYSTEM

Klaus Becker, Stuttgart, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz AG, Stuttgart, Fed. Rep. of Germany

Filed May 28, 1987, Ser. No. 55,457
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1986, 3618628
Int. Cl.[4] G01S *1/16;* H01Q *3/00*
U.S. Cl. 342—408 7 Claims



1. A scanning-beam microwave navigational system comprising

first and second stations selected from the group consisting of:

an azimuth station,

an elevation station,

a flare station, and

a back azimuth station

said first and second stations each having

a beam scanning antenna for radiating navigational signals,

an evaluation unit, and

near-field monitoring means for monitoring in the near field the navigational signals radiated by said beam-scanning antenna of said each station, said near-field monitoring means comprising

a near-field monitoring antenna,

wherein:

said first station further comprises

far-field monitoring means for monitoring in the far field the navigational signals radiated by said beam scanning antenna of said second station, and

said near-field and said far-field monitoring means of said first station function alternately on a time-division multiplex basis.

4,764,773

MOBILE ANTENNA AND THROUGH-THE-GLASS IMPEDANCE MATCHED FEED SYSTEM

L. James Larsen, and David M. Phemister, both of Vancouver, Wash., assignors to Larsen Electronics, Inc., Vancouver, Wash.

Filed Jul. 30, 1985, Ser. No. 760,405
Int. Cl.[4] H01Q *1/32;* H03H *7/38*
U.S. Cl. 343—713 25 Claims

21. A feed system for driving an antenna through an insulator comprising:

means for coupling both conductors of a two conductor transmission line from a location on one side of the insulator to an antenna on the other side; and

matching means, connected to said transmission line between said location and the antenna, for presenting to said transmission line an impedance which is substantially purely resistive and which substantially matches the characteristic impedance of said transmission line at a desired frequency of interest.

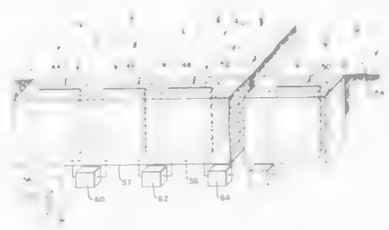


4,764,774

ERODIBLE BURIED RADIO FREQUENCY TRANSMITTING AND RECEIVING ANTENNA

Verne E. Hildebrand, 1133 Savoy St., San Diego, Calif. 92107, and Elwin W. Seeley, 5047 Randall St., San Diego, Calif. 92109

Filed Oct. 8, 1986, Ser. No. 916,953
Int. Cl.[4] H01Q *1/04*
U.S. Cl. 343—719 15 Claims



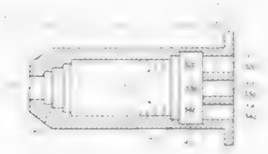
1. A fast-wave radio frequency antenna comprising a plurality of upright plates arranged generally in a plane so that said antenna has a top and a bottom and has a height extending from said top to said bottom of said antenna, said top and said bottom of said antenna each being configured to be efficiently interactive with radio frequency energy, the height of said antenna from said top to said bottom being sufficient so that when said antenna is buried in the ground with said top adjacent the soil surface, said bottom is sufficiently below the level surface so that a majority thereof can be eroded away by blast and the remaining portion of said plates remain an efficient radiator, said plates being frangible means for breaking into pieces smaller than the spacing between said plates when subject to erosion due to blast.

4,764,775

MULTI-MODE FEED HORN

Tyson S. Craven, Fort Lauderdale, Fla., assignor to Hercules Defense Electronics Systems, Inc., Clearwater, Fla.

Filed Apr. 1, 1985, Ser. No. 719,619
Int. Cl.[4] H01Q *13/02*
U.S. Cl. 343—786 5 Claims



1. A multimode feed horn comprising:

flange means having a plurality of waveguide sections each having first and second ports, said first ports positioned to be coplanar in a first waveguide end plane and said second ports positioned to be coplanar in a second waveguide end plane for propagating one mode of wave energy in each waveguide section between said first and second ports;

mode conversion means having receiving locations in a first end plane coupled respectively to said second ports for converting a mode received at a receiving location into component modes capable of propagating in said mode conversion means, said component modes being determined by said receiving locations in said first end plane;

phase matching means coupled to said mode conversion means constructed to propagate said component modes, and having a mode suppressor therein to suppress at least one of said component modes, for phase matching at least two of said component modes, thereby providing at least two phase matched modes at an output plane of said phase matching means; and

combining means coupled to receive said at least two phase matched modes and having regions in a second end plane each uniquely corresponding to a receiving location in said first end plane, for combining said at least two modes and providing a mode at a region in said second end plane corresponding to said mode at said corresponding receiving location.

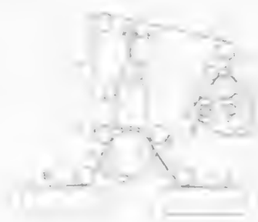
4,764,776

THERMO TRANSFER PRINTER

Hubert Mugrauer, Poering, and Guenther Haass, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 71,973
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623450
Int. Cl.[4] G01D *15/10;* B41J *3/20, 3/10*
U.S. Cl. 346—76 R 14 Claims

1. In a thermo transfer printer having a printing head having a plurality of switch cells arranged in a two-dimensional field and controlled by the printing information, means for directing energy from energy sources via the switch elements onto respective matrix dots arranged in a grid which lie in a plane of an ink layer of a band-shaped carrier to locally melt due to energy absorption specific portions of the ink layer for transfer to a print medium pressed thereagainst, the improvements comprising the carrier being coated with a thermo plastic ink and being constructed as a circulating endless band, a heated inking means for regenerating a layer of ink on the band, the printing head in combination with a high energy radiation source being constructed as an optical character generator in which every switch cell comprises an optical switch element composed of a transparent ferro-electric ceramic substrate composed of lead zirconate titanate doped with lanthanum and has transparent surface electrodes for applying a pulse-shaped control voltage, each cell including a first optical element and a second optical element, said first optical element being positioned in the beam path preceding the optical switch element to couple a part of the energy output by a radiation source into the switch element as a parallel, expanded beam and the second optical element being arranged in the beam path following the optical switch element and at a predetermined distance from the carrier so that the second element focuses a received part of the beam into the allocated matrix dot.

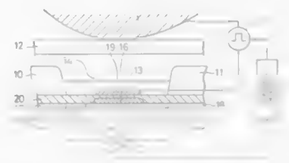


4,764,777

THERMAL-ELECTROSTATIC INK JET RECORDING APPARATUS

Koichi Saito; Yoshihiko Fujimura, and Nanao Inoue, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1987, Ser. No. 30,161
Claims priority, application Japan, Mar. 27, 1986, 61-67307
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 8 Claims



1. An image recording apparatus adapted to apply both electric and thermal energies to a liquid coloring agent to jet droplets of a liquid coloring agent toward a backing electrode adapted to support a recording medium comprising:

means for containing the liquid coloring agent, said containing means including a base member;

electric energy applying means including an electric field forming electrode arranged in said containing means;

a first power supply means for establishing a voltage drop between the electric field forming electrode and the backing electrode to produce the electric field having a level less than the level required to jet liquid coloring agent toward the backing electrode;

thermal energy applying means including a plurality of heating elements arranged on said base member and lead electrodes adapted to supply current to said heating elements;

a heat resistant insulating layer over said heating elements and said electric field forming electrode being positioned on said insulating layer; and

second power supply means for selectively energizing said heating elements to raise the temperature of the liquid

VOL 1093 ISS 3 AG 16 1988 UMI

coloring agent in the area of said energizing heating elements to jet droplets of said liquid coloring agent under the influence of said electric field;

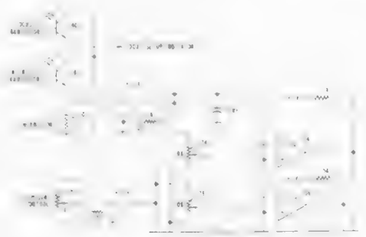
wherein said containing means includes at least one dam-like member on said base member for containing the liquid coloring agent above said electric field forming electrode and said heating elements.

4,764,778

INTENSITY CONTROLLER FOR AN APERTURE CARD PLOTTER

Semyon Spektor, San Francisco, and Michael H. Ranger, San Jose, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Apr. 24, 1987, Ser. No. 42,406
Int. Cl.[4] G01D *15/00*
U.S. Cl. 346—160 15 Claims



1. An intensity controller for a high resolution, laser plotter comprising:

a laser light source emitting a light beam having a randomly varying polarization direction at any time;

acousto-optical modulator means for modulating said light beam into a modulated beam;

isotropic beam-splitter means for splitting said modulated beam into a wire beam and a reference beam;

said beam-splitter means having an inherent polarization sensitivity responsive to said randomly varying polarization;

light sensing means, for generating a signal proportional to the reference beam intensity, mounted in the path of the reference beam;

a hold circuit connected to and tracking said reference beam intensity signal; and

a driver circuit means, having an input connected to said hold circuit and an output connected to said acousto-optical modulator means for driving said acousto-optical modulator means to provide said modulated beam with a controlled intensity.

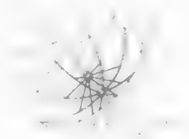
4,764,779

ELECTROCONDUCTIVE FIBROUS MATERIAL

Seizo Sato, Otsu, and Yasuhiro Shikama, Mino, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 19, 1986, Ser. No. 909,278
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—897 17 Claims

1. An electroconductive fibrous material comprising a composite yarn comprising a core yarn composed of at least one kind of fiber selected from the group consisting of organic fibers and inorganic fibers and a covering layer composed of a ribbon-shaped metal fiber spirally wound around the core



yarn, the coverage of the ribbon-shaped metal fiber to the core yarn being at least 50%.

4,764,780

INK EJECTION RECORDING APPARATUS HAVING MEANS FOR EQUALIZING THE STATIC INK PRESSURES OF A PLURALITY OF INK NOZZLES ARRANGED AT DIFFERENT HEIGHTS

Kiyoshi Yamamori, Yokohama; Shigeyoshi Hasegawa; Yuuji Mogi, both of Tsukui; Tamotsu Kojima, Sashima, and Sadashi Higuchi, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 22, 1986, Ser. No. 944,005
Claims priority, application Japan, Dec. 25, 1985, 60-295210; Dec. 25, 1985, 60-200160
Int. Cl.[4] G01D *15/16*
U.S. Cl. 346—140 R 11 Claims



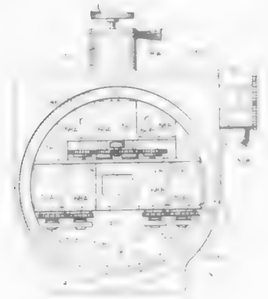
1. An ink ejection recording apparatus comprising an ink tank; a plurality of ink ejection heads receiving ink from said ink tank and arranged a different heights with respect to said ink tank; each of said ink ejection heads comprising an ink nozzle through which minute ink droplets are discharged in accordance with an electric signal, and an air nozzle opposing to said ink nozzle and adapted for forming an air stream which accelerates said ink droplets towards a recording medium so as to record an image on said recording medium by means of said droplets; means for applying pneumatic pressure to said ink ejection heads and said ink tank; means for establishing different levels of balance pressure for said ink ejection heads so that the levels of ink pressure acting on said ink nozzles of said ink ejection heads are equalized in the operating state of said apparatus; means for applying pneumatic pressure to each of said ink ejection heads and said ink tank, means for relieving pneumatic pressure applied to said ink ejection heads, means for relieving the pneumatic pressure applied to said ink tank, and relief controlling means for controlling pressure relief such that the relief of the pneumatic pressure from said ink ejection heads is conducted before the relief of pneumatic pressure from said ink tank.

4,764,781

UNIVERSAL TRANSLATIONAL AND ROTATIONAL FILM DRIVE MECHANISM

Kenneth G. Leib, Wantagh, and Suey Jue, deceased, late of Hicksville, both of N.Y. (by Catharine Jue, executrix), assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Feb. 26, 1987, Ser. No. 19,264
Int. Cl.[4] G03B *39/04*
U.S. Cl. 354—65 14 Claims



1. Apparatus for driving a continuous strip linearly and rotatively, comprising:

a housing having an opening;

a platform movably set within the housing;

a strip driving means fixedly mounted to the platform, the driving means including:

(a) a first support plate;

(b) a second support plate;

(c) a third plate having an aperture concentrically aligned with the opening interposed transversely between the first and second plates;

(d) means for holding and guiding the strip movably mated to the first and second plates, a portion of the strip being superimposed on the aperture;

(e) bi-directional positioning means engaged to the holding and guiding means for translating the strip to a particular frame across the aperture;

first actuating means secured to the housing for driving the bi-directional positioning means, thereby moving the strip across the aperture;

second actuating means secured to the housing for rotatably moving the platform, thereby rotating the strip;

whereby the strip is translated and rotated for correlating symbols on each frame of the film at any orientation with predefined symbols.

4,764,782

CAMERA DIFFUSER FOR TAKING COMPOSITE PHOTOGRAPHS

Alton D. Wheeler, 3940 Fox Meadow La., Pasadena, Tex. 77504

Filed Dec. 3, 1987, Ser. No. 128,280
Int. Cl.[4] G03B *15/03, 17/24*
U.S. Cl. 354—109 19 Claims

1. A camera accessory adapted to be removably mounted on a standard camera having a substantially planar front face, a deck extending forwardly from said front face along one side thereof, a rearwardly facing surface along the edge of said deck adjacent to said front face, and a projection providing a downwardly facing surface adjacent the opposite side of said front face substantially adjacent to the plane of said front face, said accessory comprising a body providing a rearward surface adapted to be positioned against said front face of said camera, a forwardly facing surface adapted to engage said rearwardly facing surface of said camera, a forward surface adapted to engage said deck at a location substantially spaced forwardly from said front face of said camera, and an upwardly facing surface adapted to engage said downwardly facing surface of said camera, said forward surface cooperating with said upwardly facing surface to maintain said forwardly facing surface



in engagement with said rearwardly facing surface of said camera when said accessory is mounted on said camera, said accessory being removably mountable on said camera without modifying the structure of said camera.

4,764,783

LENS FOCUSING POSITION ADJUSTING MECHANISM

Hitoshi Tanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1987, Ser. No. 113,952
Claims priority, application Japan, Oct. 29, 1986, 61-165959[U]
Int. Cl.[4] G02B *7/04*; G03B *3/00*
U.S. Cl. 354—195.1 2 Claims



1. In a lens focusing position adjusting mechanism in which a focusing position is adjusted by changing the relative coupling position, in a circumferential direction, of a focusing ring and a drive ring fitted in said focusing lens and moved together with said focusing lens to drive a lens system, the improvement wherein:

a circumferential groove is formed in an engaging surface of one of said drive ring and said focusing ring;

an adjusting belt is inserted in said groove; and

said adjusting belt is fixedly positioned with respect to said focusing ring and tightened to the outer wall of said drive

VOL 1093 ISS 3 AG 16 1988 UMI

ring to combine said drive ring and said focusing ring into one unit.

4,764,784

CAMERA WITH A BUILT-IN ZOOM LENS

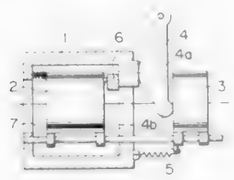
Yuichi Torikoshi, Kanagawa; Hitoshi Shirai, Sagamihara; Kazuyuki Iwasa, Mitaka; Hiroaki Miyazaki, Kanagawa, and Yasuo Yamazaki, Hino, all of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed Oct. 30, 1987, Ser. No. 115,250

Claims priority, application Japan, Nov. 21, 1986, 61-279242; Dec. 3, 1986, 61-288122

Int. Cl.[4] G02B *7/10;* G03B *3/00*

U.S. Cl. 354—195.12 16 Claims



1. A camera with a built-in zoom lens including at least first and second lens groups for effecting a zooming operation by moving the lens groups along their optical axis, comprising:

a zoom frame which moves long the optical axis during the zooming operation;

a first lens holding frame which moves integrally with said zoom frame during the zooming operation to allow said first lens group to move along the optical axis;

a second lens holding frame for carrying said second lens group;

a rocking arm having a first abutment which bears against said zoom frame and a second abutment which bears against said second lens holding frame and rockingly supported on a camera body; and

means for urging said second lens holding frame through said rocking arm towards said zoom frame.

4,764,785

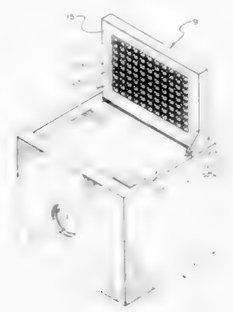
VIEWFINDER

William L. Burnham, Leroy, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 13, 1988, Ser. No. 143,421

Int. Cl.[4] G03B *13/02*

U.S. Cl. 354—219 12 Claims



1. A viewfinder for indicating substantially how much of a subject an objective lens projects on to the film in a camera, wherein said viewfinder comprises a frame for viewing the portion of the subject to be recorded on the film and is characterized in that:

said frame includes a lattice like arrangement of spaced light baffles defining relatively small viewing openings between said baffles for viewing the subject through said openings;

said light baffles having a length sufficient with respect to the optical axis of the objective lens to block from view ambient light reflected to said viewing openings from outside the portion of the subject the lens projects on to the film, whereby when an eye is relatively close to said lattice like arrangement the view through said openings will be substantially coincident with the portion of the subject recorded on the film.

4,764,786

DISTANCE MEASURING DEVICE FOR CAMERA

Shuichi Tamura, Kanagawa, and Yoshihiro Harunari, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 866,600, May 23, 1986, abandoned. This application Oct. 22, 1987, Ser. No. 113,340

Claims priority, application Japan, May 27, 1985, 60-113908; Jul. 12, 1985, 60-152296; Jul. 12, 1985, 60-152297; Jul. 12, 1985, 60-152298

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—403 16 Claims



1. A device for forming a focal adjustment information for a camera, comprising:

(A) first distance measuring means for measuring a distance of a roughly central portion of a scene to be photographed;

(B) second distance measuring means for measuring a distance of a roughly peripheral portion of the scene or the distance of the roughly central portion and the roughly peripheral portion of the scene; and

(C) control means for forming the focal adjustment information by preferentially using the distance measurement obtained by said first distance measuring means when the distance measurement by said first distance measuring means and the distance measurement by the second distance measuring means are not in a range coverable by a field depth.

4,764,787

AUTOMATIC FOCUS ADJUSTING DEVICE

Masataka Hamada, Minamikawachi, and Tokuji Ishida, Daito, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 21, 1987, Ser. No. 5,674

Claims priority, application Japan, Jan. 21, 1986, 61-11538

Int. Cl.[4] G03B *3/00*

U.S. Cl. 354—408 15 Claims



1. An automatic focus adjusting device comprising:

an objective lens;

photo-receiving means of a charge integration type for receiving light from an object that has passed through the objective lens and outputting integrated charges;

focus condition detecting means for detecting a defocus amount of the objective lens from an in-focus position thereof on the basis of the outputs of the photo-receiving means;

lens driving amount calculating means for calculating the amount of movement of the objective lens to the in-focus position on the basis of the defocus amount detected by the focus condition detecting means;

lens driving means for driving the objective lens to the in-focus position in accordance with the amount of movement calculated by the lens driving amount calculating means;

lens driven amount detecting means for detecting the amount of movement driven by the lens driving means; and

control means for controlling the photo-receiving means, the focus condition detecting means, the lens driving amount calculating means, and the lens driving means,

so that the lens driving means drives the objective lens at a high speed while the photo-receiving means, the focus condition detecting means, and the lens driving amount calculating means are operated when the amount of movement calculated by the lens driving amount calculating means is out of a predetermined range,

and that the lens driving means drives the objective lens at a lower speed when the amount of movement calculated by the lens driving amount calculating means falls in the predetermined range,

and further that the operation of the lens driving means is stopped when an amount of movement detected by the lens driven amount detecting means, summed with an amount of any movement which has been detected by the lens driven amount detecting means just before the amount of movement falls in the predetermined range during a time period from a specific timing of the integration by the photo-receiving means to a completion timing of the focus condition detecting operation by the focus condition detecting means, corresponds to the amount of movement of the objective lens to the in-focus position calculated by the lens driving amount calculating means.

4,764,788

COPYING MACHINE EQUIPPED WITH A MOVABLE ORIGINAL HOLDER

Masahiro Watashi, Nara; Yasunori Ueno, Osaka; Hirohisa Endo, Kyoto; Tooru Nakamaru; Kazuhiro Mizade, both of Osaka, and Keiichi Kishimoto, Nara, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 10, 1987, Ser. No. 72,073

Claims priority, application Japan, Jul. 15, 1986, 61-166258; Jul. 15, 1986, 61-166259; Jul. 15, 1986, 61-166260

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—3 R 5 Claims



1. A copying machine equipped with a movable original holder comprising:

an original holder movably provided on the top of the main body of copying machine and having a receiving part at a predetermined position thereof for engaging and disengaging a lock lever,

a original cover openably provided on the top of said original holder,

a locking mechanism provided in the main body of copying machine having a projectable lock lever for engaging and disengaging said receiving part so as to restrict and release the movement of said original holder when said original holder is located at the predetermined position, and means for driving said lock lever,

means provided in the main body for detecting the original size and a switch for driving said detecting means, and

an ON-OFF detection mechanism for elevating said lock lever to a predetermined amount in accordance with the opening and shutting movement of said original cover when said original holder is located at the predetermined position and actuating said switch.

4,764,789

APPARATUS FOR INPUTTING IMAGE FORMING CONDITION

Hiroshi Iwaki; Kiyoshi Sakamoto; Akira Inada, and Shinichi Kikkawa, all of Hyogo, Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jul. 15, 1987, Ser. No. 73,817

Claims priority, application Japan, Jul. 28, 1986, 61-178437; Aug. 20, 1986, 61-194728

Int. Cl.[4] G03G *15/00*

U.S. Cl. 355—14 R 24 Claims

1. An apparatus for inputting image forming condition, comprising:

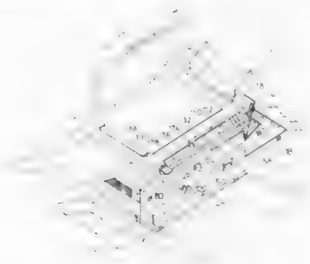
a display having an item displaying portion in which a plurality of items of image forming condition for controlling image forming process are respectively displayed for each item and a cursor displaying portion in which a plurality of cursors are formed correspondingly to the respective items of said item displaying portion,

cursor selecting means for selectively displaying a desired one of said plurality of cursors included in said cursor displaying portion,

operating means which is operated to change said image forming condition, and

VOL 1093 ISS 3 AG 16 1988 UMI

display changing means for changing content of display of the item of said item displaying portion corresponding to



the cursor selectively displayed at a time when said operating means is operated, the content lastly changed being inputted as the image forming condition of that item.

4,764,790

METHOD FOR CLEANING PHOTORECEPTOR OF IMAGE FORMING APPARATUS

Masahiro Watashi, Nara, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1987, Ser. No. 53,167
Claims priority, application Japan, May 30, 1986, 61-126962
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 **13 Claims**



1. A method of cleaning a photoreceptor when replacing one developing unit having toner of one color with another developing unit having toner of another color in an image forming apparatus of the type having a cleaning means for cleaning said rotatable photoreceptor, said developing units being of the type having a sealing means to provide a seal between the photoreceptor and said developing units, comprising the steps of replacing a first developing unit having toner of one color with a second developing unit having toner of another color, starting rotation of said photoreceptor, starting charging of a first area of said rotating photoreceptor, said charging starting after a first period of time has elapsed after having started rotation of said photoreceptor, continuing rotation of said photoreceptor to carry said first charged area to the sealing means of said second developing unit, transferring residual toner of said one color which has adhered to the sealing means of said second developing unit to said first charged area, said residual toner having been transferred to said sealing means of said second developing unit during initial rotation of said photoreceptor, continuing rotation of said photoreceptor to carry said residual toner on said photoreceptor to said cleaning means, effecting removal of said residual toner from said photoreceptor utilizing said cleaning means, and continuing rotation of said photoreceptor to produce a copied image, whereby mixing of colors on the copied image is prevented.

4,764,791

WORK ALIGNMENT APPARATUS FOR DOUBLE-SIDED EXPOSURE OF A WORK

Tadao Omata, and Naoshi Koza, both of Tokyo, Japan, assignors to ORC Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1987, Ser. No. 84,872
Claims priority, application Japan, Aug. 13, 1986, 61-190341
Int. Cl.[4] G03B *27/32, 27/52*
U.S. Cl. 355—26 **1 Claim**



1. A work alignment apparatus for double-sided exposure of a work which serves to convey to and locate said work in an exposing position such that said work is exposed on either side thereof between printing frames each holding an image mask on each corresponding side of said work, comprising:

means for detecting and calculating an amount of misalignment between said work in said exposing position and each said image mask;

an alignment stage disposed outside said printing frames and adapted to determine a mounting position of said work in an alignment coordinate system in accordance with said amount of misalignment; and

means for conveying said work, in said mounting position determined in said alignment coordinate system, to said exposing position.

4,764,792

COPYING MACHINE WITH MODULAR ORIGINAL DOCUMENT LIGHT-IMAGE FORMING DEVICE

Michel Ducos, Escalqueus, France; Olivier Gherardi, Valleyfield, Canada; Jocelyn Demers, Côteau-Du-Lac, Canada, and Gilles Demers, Grande-Ile, Canada, assignors to Duo Machinerie Corporation, Quebec, Canada

Filed Aug. 26, 1987, Ser. No. 89,405
Claims priority, application Canada, Aug. 29, 1986, 517239
Int. Cl.[4] G03B *27/32, 27/52*
U.S. Cl. 355—27 **27 Claims**



1. A copying machine for photographic reproduction, comprising:

a central unit provided with photographic paper supply means, means for positioning said photographic paper from said paper supply means in an exposure position, means for developing said photographic paper after exposure thereof, means for drying said developed, photographic paper, and means for collecting said developed and dried paper, including means for transporting said photographic paper from said exposure position through said developing and drying means toward said paper collecting means; and

a removable module for forming a light image of an original document to be copied;

wherein said central unit further comprises means for supporting and positioning said removable, light image forming module, and means for exposing said photographic paper in said exposure position to the light image formed in said removable module.

4,764,793

PHOTOGRAPHIC PRINTER

Edward P. Goll, Wayland, and John F. Carson, West Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 12, 1987, Ser. No. 62,306
Int. Cl.[4] G03B *27/72, 27/80*
U.S. Cl. 355—38 **54 Claims**



1. A photographic printer including integral densitometry apparatus comprising:

a single light sensor disposed integrally with said photographic printer;

first densitometer means disposed integrally with said printer for measuring the scanned transmissive density of said negative using said light sensor;

second densitometer means disposed integrally with said printer for measuring the large area transmissive density of said negative using said light sensor; and

third densitometer means responsive to the introduction of a reflective patch into said printer for using said light sensor to measure the reflective density of said reflective patch.

4,764,794

ORIGINAL FILM DISCHARGE MECHANISM IN AN INCLINED-TYPE EXPOSING APPARATUS

Koichi Fujii, Uji, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Sep. 15, 1987, Ser. No. 96,497
Claims priority, application Japan, Sep. 16, 1986, 61-142315[U]
Int. Cl.[4] G03B *27/20*
U.S. Cl. 355—87 **3 Claims**

1. In an original film discharge mechanism in an inclined-type exposing appartus comprising means having a rearwardly inclined surface for holding thereon photosensitive material and means for holdingly carrying an original film along said surface of said holding means, said original film discharge mechanism comprising means having a surface rearwardly inclined at substantially the same angle as that of said surface of said holding means with respect to the horizontal for receiving thereon said original film discharged from said carrying means, and a supporting member provided on said receiving means for supporting said original film removed from said carrying means, the improvement comprises:

means provided on said receiving means for suction-holding said original film being discharged onto said receiving means from said carrying means, said suction-holding means being positioned upward of and remote from said supporting member along said surface of said receiving means at a distance larger than longitudinal size of said original film: and



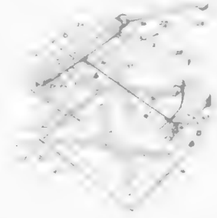
said carrying means and suction-holding means being adapted for relative movement in the direction away from each other to release said original film from said carrying means so as to permit said original film so released to be supported by said supporting member.

4,764,795

PREPRESS GRAPHIC REGISTRATION SYSTEM

Mark J. Burbey, 10945 E. Evening Creek Dr., San Diego, Calif. 92128

Filed Apr. 27, 1987, Ser. No. 42,847
Int. Cl.[4] G03B *27/28*
U.S. Cl. 355—125 **11 Claims**



1. A five-stage system of pre-press printing-plate preparation and special accoutrements thereto, serving to provide precise registration accuracy, rapid set-up time, and minimal press-spoilage; comprising the steps of:

(I) initial mounting of a guide-sheet upon a substantially standard printers camera-table, said sheet having prescribed primary/reference-grid indica for easy superimposition alignment over secondary/ref.line indica prescribed upon said table surface, including tertiary overlay of the actual artwork upon the secondary guide-sheet as indicated;

(II) photographically transfering the resulting step-I matrix format image directly upon a standard photosensitive printing-plate;

(III) optionally applying an anti-elongation mounting-reinforcement directly upon the back of the upper/transverse-end region of the unpunched plate;

(IV) precision trimming of the excess plate and said strip material extending above the special lateral primary/ref.-cutting-line imaged from the said guide-sheet;

(V) insertion of the precision trimmed printing-plate into a special punch-platen having a floating sighting-wire device for exact lateral axis positioning of the said plate, and a header-bar with an integral transverse alignment-rail set parallel to a plurality of punch-pins stationed within the said header-bar, thereby positioning the said plate against

VOL 1093 ISS 3 AG 16 1988 UMI

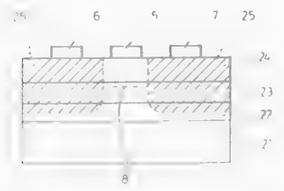
the said rail and along the exact central longitudinal-axis via two ref.tick-marks imaged upon the plate from the said guide-sheet indica, whereupon the operator sequences the simultaneous punching of the standard press/mounting-hole plurality thereby locking-in the essential registration alignment for subsequent transfer to press.

4,764,796

HETEROJUNCTION FIELD EFFECT TRANSISTOR WITH TWO-DIMENSIONAL ELECTRON LAYER

Goro Sasaki, and Hideki Hayashi, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Dec. 9, 1986, Ser. No. 939,716
Claims priority, application Japan, Dec. 19, 1985, 60-286747; Jan. 28, 1986, 61-17571
Int. Cl.[4] H01L 27/12, 29/161, 29/80
U.S. Cl. 357—16 12 Claims



1. A field effect transistor utilizing semiconductor hetero junction, comprising a semi-insulating substrate (21); an indium phosphide In P layer (22) disposed on said semi-insulating substrate (21); an gallium indium arsenide Ga In As mixed crystal semiconductor layer (23) formed on said indium phosphide In P layer (22), said mixed crystal semiconductor layer (23) having a current path formed therein; a single outer layer (24) formed on and contacting said Ga In As mixed crystal semiconductor layer (23), said single outer layer including at least an aluminum indium arsenide Al In As mixed crystal semiconductor layer (24); said indium phosphide In P layer (22) being disposed between said Ga In As mixed crystal semiconductor layer (23) and said semi-insulating substrate (21); a gate electrode (5) formed in a predetermined region on the outer surface of said single outer layer (24) of said Al In As mixed crystal semiconductor, a source electrode (6) and a drain electrode (7) provided opposed to each other on respective sides of said gate electrode (5), and an ion-implanted layer (25) formed by implanting impurity ions at least into a region between said gate electrode (5) and said source electrode (6) and between said gate electrode (5) and said drain electrode (7), said ion-implanted layer being formed to a depth reaching at least said In P layer (22) for reducing the source resistance of said field effect transistor.

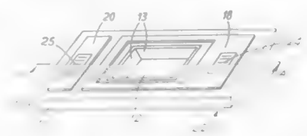
4,764,797

CHEMICAL-SENSITIVE SEMICONDUCTOR DEVICE

John E. A. Shaw, West Drayton, and Alastair Sibbald, Maidenhead, both of England, assignors to Thorn Emi plc, London, England

Filed Jul. 8, 1986, Ser. No. 883,158
Claims priority, application United Kingdom, Sep. 14, 1985, 8522785
Int. Cl.[4] H01L 29/66
U.S. Cl. 357—25 12 Claims

1. A chemical-sensitive semiconductor device comprising a substrate of a semiconductor material, a passageway interconnecting major surfaces of the substrate along which a sample under test may pass and a chemical-sensitive gate region



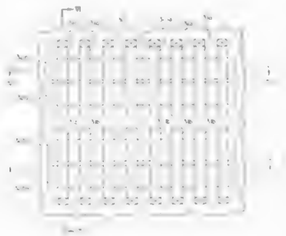
formed on a wall of the passageway and wherein said passageway is tapered.

4,764,798

MASTER SLICE IC HAVING N AND P CHANNEL TRANSISTORS

Keiji Kawabata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 9, 1986, Ser. No. 817,237
Claims priority, application Japan, Feb. 7, 1985, 60-23264
Int. Cl.[4] H01L 29/72, 27/10, 27/02
U.S. Cl. 357—45 3 Claims



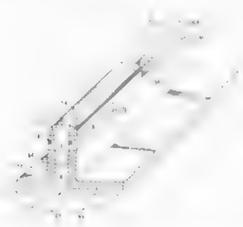
1. A semiconductor integrated circuit device comprising:
a plurality of first gate electrodes formed in a main surface of a semiconductor substrate and arranged parallel to one another, a plurality of first p type regions formed in said main surface of said semiconductor substrate below and orthogonal to said first gate electrodes, said first p type regions and said first gate electrodes forming a plurality of first p channel MOS transistors,
a plurality of second p type regions formed in said main surface of said semiconductor substrate below and orthogonal to said first gate electrodes, said second p type regions being parallel to and separated from said first p type regions and forming, together with said first gate electrodes, a plurality of second p channel MOS transistors, said first gate electrodes covering and bridging said first and second p type regions,
a plurality of second gate electrodes formed in said main surface of said semiconductor substrate and arranged parallel to one another and to said first gate electrodes,
a plurality of first n type regions formed in said main surface of said semiconductor substrate below and orthogonal to said second gate electrodes, said first n type regions and said second gate electrodes forming a plurality of a first n channel MOS transistors, and
a plurality of second n type regions formed parallel to and separate from said first n type regions in said main surface of said semiconductor substrate below and orthogonal to said second gate electrodes, said second n type regions forming, together with said second gate electrodes, a plurality of second n channel MOS transistors, said second gate electrodes covering and bridging said first and second n type regions.

4,764,799

STUD-DEFINED INTEGRATED CIRCUIT STRUCTURE

Shashi D. Malaviya, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 737,745, May 28, 1985, Pat. No. 4,648,173.
This application Oct. 27, 1986, Ser. No. 904,430
Int. Cl.[4] H01L 27/12
U.S. Cl. 357—49 18 Claims



1. A free-standing integrated semiconductor structure comprising:
a semiconductor body;
a submicron-wide protrusion of moncrystalline semiconductor material extending upwardly from and integral with said body said material including a semiconductor device, said protrusion having a lower section of a first conductivity type and an upper section of a second conductivity type, said upper section including top and bottom portions of a similar first width and a middle portion of a second width larger than said first width, said lower section having a width comparable to said first width;
insulator sidewalls of dissimilar thickness provided on said upper and lower sections of said protrusion, the thickness of said insulator on said top and bottom portions and said lower section being of an equal first thickness and the thickness of said insulator on said middle portion being of a second thickness smaller than the first thickness, said insulator of second thickness having openings exposing localized regions of said middle portion, whereby said protrusion has substantially vertical walls; and
electrical contacts made to said localized regions.

4,764,800

SEAL STRUCTURE FOR AN INTEGRATED CIRCUIT

Craig S. Sander, Capertino, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 7, 1986, Ser. No. 860,597
Int. Cl.[4] H01L 27/04, 23/48
U.S. Cl. 357—51 13 Claims

1. A seal structure for a semiconductor integrated circuit device having a plurality of circuit components in and upon a major surface thereof, said integrated circuit device is formed in a semiconductor material having a first conductivity type, comprising:
enclosing means at said major surface, for forming an enclosed region of said surface having at least one of said components within said enclosed region, said enclosing means including a material, which is impermeable to ions which are mobile in oxides of semiconductor materials, forming a continuous region in said major surface having said first conductivity type, wherein said enclosing means further comprises a continuous, metallic layer superposing said continuous region;
at least one conductive region within said surface which passes beneath said enclosing means such as to extend from outside said enclosed region to inside said enclosed region, said conductive region further comprising a well region having a conductivity of a second conductivity type; and
a layer of material, comprising a material which is impermeable to ions which are mobile in oxides of semiconductor





material, superposing and encapsulating at least said enclosing means and said enclosed region.

4,764,801

POLY-SIDEWALL CONTACT TRANSISTORS

Kevin L. McLaughlin, Chandler, and Thomas P. Busbey, Phoenix, both of Ariz., assignors to Motorola Inc., Schaumburg, Ill.

Continuation of Ser. No. 785,415, Oct. 8, 1985, abandoned. This application Jan. 3, 1987, Ser. No. 58,637
Int. Cl.[4] H01L 29/04, 29/72, 27/12, 23/48
U.S. Cl. 357—59 7 Claims



1. A semiconductor device having sidewall contacts comprising:
a single crystal substrate;
a pillar of single crystal semiconductor material having a lower surface epitaxially contacting said substrate, an upper surface away from said substrate, and a sidewall therebetween, and having at least first and second device regions extending laterally through said single crystal pillar to said sidewall;
a first substantially horizontal polycrystalline conductor region, electrically isolated from said substrate, for contacting said first device region of said single crystal pillar at said sidewall and having a polycrystalline conductor pillar extending to an upper surfaces of said device;
a second substantially horizontally polycrystalline conductor region, electrically isolated from said substrate and from said first polycrystalline conductor region, for contacting said second device region of said single crystal pillar at said sidewall;
substantially horizontal first dielectric layer between said substrate and said first polycrystalline conductor region, second dielectric layer between said first and second polycrystalline conductor regions, and third dielectric layer above said second polycrystalline conductor region wherein said first dielectric layer has an upper surface in contact with a lower surface of said first polycrystalline conductor region, said second dielectric layer has a lower

VOL 1093 ISS 3 AG 16 1988 UMI

surface in contact with an upper surface of said first polycrystalline conductor region, said second dielectric layer has an upper surface in contact with a lower surface of said second polycrystalline conductor region, and said third dielectric layer has a lower surface in contact with an upper surface of said second polycrystalline conductor region; and

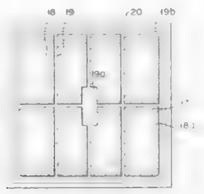
wherein said sidewall of said single crystal pillar has first and second lateral extensions where it meets said first and second polycrystalline conductor regions, said first lateral extension providing a first single crystal region protruding outwardly underneath said second dielectric layer a first distance in contact with said upper surface of said first dielectric layer and a second distance in contact with said lower surface of said second dielectric layer, and said second lateral extension providing a second single crystal region protruding outwardly underneath said third dielectric layer a third distance in contact with said upper surface of said second dielectric layer and a fourth in contact with said lower surface of said third dielectric layer.

4,764,802

SEMICONDUCTOR DEVICES

Masashi Kuwahara, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1987, Ser. No. 13,792
Claims priority, application Japan, Mar. 19, 1986, 61-61120
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—68 **5 Claims**



1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type forming a drain region;

a plurality of base regions of a second conductivity type, formed in a first main surface portion of said semiconductor substrate;

insulating layers, each of which is formed on the surface of said drain region between two adjacent base regions so as to partially cover the adjacent two base regions;

gate electrodes, each formed on said insulating layer;

source regions of the first conductivity type formed in said base region; and

a source electrode formed on said source regions,

wherein a metal gate electrode wiring is provided which includes a plurality of closed loop wiring portions electrically contacting said gate electrodes at those positions situated along said closed loop wiring portions, and said source electrode is electrically divided into a plurality of branch sections, each corresponding to said closed loop wiring portion.

4,764,803

THIN SEMICONDUCTOR CARD

Tetsuya Ueda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 17, 1987, Ser. No. 26,873
Claims priority, application Japan, Mar. 17, 1986, 61-60251
Int. Cl.[4] H01L *23/18, 23/30, 23/04, 23/10*
U.S. Cl. 357—72 **8 Claims**



1. A thin semiconductor card comprising:

a card main body and a semiconductor module mounted therein,

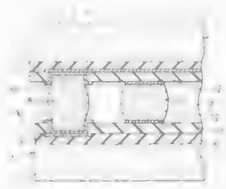
wherein said card main body is provided with strip-shaped portions, extending across said card main body and intersecting each other, which can absorb stresses resulting from external forces applied to the card.

4,764,804

SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING THE SAME

Kunizo Sahara, Tokyo; Kanji Otsuka, and Hisashi Ishida, both of Higashiyamato, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 17, 1987, Ser. No. 15,019
Claims priority, application Japan, Feb. 21, 1986, 61-35105
Int. Cl.[4] H01L *23/26*
U.S. Cl. 357—81 **5 Claims**



1. A semiconductor device comprising:

a semiconductor substrate having a semiconductor element formed in a semiconductor active region;

a multilayer wiring structure comprised of an insulator film and an electrically conductive electric wiring which are stacked one upon the other on the surface of said semiconductor substrate;

a bump electrode for transferring an electric signal which is electrically connected to said electric wiring in said multilayer wiring structure; and

a bump electrode for heat dissipation formed on the surface of said multilayer wiring structure through a thin diamond film as a ground layer.

4,764,805

IMAGE TRANSMISSION SYSTEM WITH LINE AVERAGING PREVIEW MODE USING TWO-PASS BLOCK-EDGE INTERPOLATION

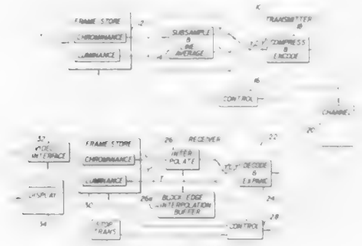
Mojgan Rabbani, and Rocco J. Porcellio, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1987, Ser. No. 57,596
Int. Cl.[4] H04N *1/46, 1/415*
U.S. Cl. 358—13 **9 Claims**

1. A still image communication system of the type having

means at the transmitter for performing a block cosine transformation on a plurality of image blocks in an image for bandwidth compression, means at the receiver for displaying a low resolution preview image during transmission of a full resolution image, and means at the receiver for terminating transmission of the image, characterized by:

means at the transmitter for subsampling and line-averaging a full resolution image to produce the low resolution preview image, and for compressing and transmitting block-by-block the low resolution preview image, followed by the full resolution image; and



means at the receiver for interpolating and displaying the low resolution image, and replacing the low resolution image bock-by-block with the full resolution image as the full resolution image is received, wherein said subsampling and line-averaging means:

(a) sample ever n^{th} pixel in each video line of each block;

(b) sample every m^{th} video line in each block and average between adjacent ones of the sampled lines;

and wherein said interpolating and displaying means interpolates between adjacent ones of said sampled pixels and interpolates between adjacent ones of said sampled lines.

4,764,806

APLANATIC IMAGE COMBINER FOR USE IN PROJECTION TELEVISION SYSTEMS WITH REDUCED SPHERICAL AND COMA ABERRATION

Richard M. Altman, Woodland Hills, Calif., assignor to TDS Patent Management, Inc., Scarsdale, N.Y.

Filed Oct. 27, 1986, Ser. No. 923,292
Int. Cl.[4] H04N *9/31, 5/74, 9/16;* **G02B** *9/12*
U.S. Cl. 358—60 **14 Claims**



1. An aplanatic image combiner comprising:

at least two image generating cathode ray tubes, said tubes having concave phosphor image generating surfaces for generating images on curved surfaces;

means for combining said images into a single image having a curved image surface; and

a lens positioned to transmit said combined image to an image magnification system, said lens having a curved surface forming an exit aperture which has substantially the same radius of curvature as said concave image generating surfaces, whereby an image is transmitted to said image magnification system.

7. An aplanatic image combiner comprising:

first, second, and third primary color image generating cathode ray tubes, each of said tubes having a concave image generating surface, said tubes facing in the same direction and having parallel longitudinal projection axes in a common plane;

a pair of color selective crossed dichroic mirrors which intersect along the axis of said second cathode ray tube;

first and second mirrors facing at an angle to the remaining first and third cathode ray tube projection axes, and facing at an angle to direct images from said first and third cathode ray tubes along an axis perpendicular to said second cathode ray tube axis, said mirrors cooperating to combine the images from said first and third cathode ray tubes with an image from said second cathode ray tube, and to direct the combined image in the direction of the second cathode ray tube axis; and

a lens having a central projection axis coincident with said second cathode ray tube axis, having a convex surface with a curvature substantially the same as said cathode ray tube image generating surfaces and forming exit aperture therewith whereby an image is transmitted along said second cathode ray tube axis.

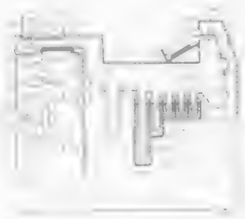
13. In a system for generating a composite curved image of two or more curved image surfaces, a single magnification lens comprising a multiplicity of optical lens elements positioned to receive on an entrance surface said composite curved image, said optical lens elements magnifying said composite curved image without requiring correction for chromatism and radial distortion.

4,764,807

CRT IMAGE PRINTING APPARATUS

Tsutomu Kimura; Yuji Oshikoshi, both of Tokyo, and Kiichiro Sakamoto, Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 16, 1987, Ser. No. 62,643
Int. Cl.[4] H04N *1/46*
U.S. Cl. 358—75 **15 Claims**



12. A CRT image printing apparatus which comprising a black-and-white CRT for sequentially displaying black-and-white images color image to be printed; and three color filters of red, green, and blue for converting correspondingly said black-and-white images to three color monochromatic images to which a color photographic paper is exposed sequentially to make a color print, said apparatus comprising:

a camera unit with a color photographic film loaded therein;

a reflection mirror removably disposed between said black-and-white CRT and said color photographic paper for directing said black-and-white images toward said camera unit;

filter means disposed between said reflection mirror and said color photographic film for reducing a red color component of light passing therethrough; and

means for changing said black-and-white images displayed

VOL 1093 ISS 3 AG 16 1988 UMI

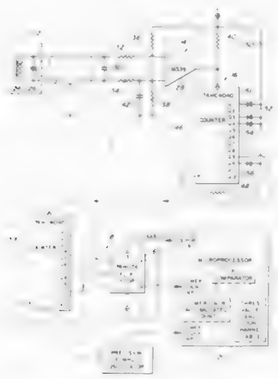
on said black-and-white CRT negative to positive when said reflection mirror is placed between said black-and-white CRT and said color photographic paper and positive to negative when removed therebetween.

4,764,808

MONITORING SYSTEM AND METHOD FOR DETERMINING CHANNEL RECEPTION OF VIDEO RECEIVERS

Carl M. Solar, Largo, Fla., assignor to A. C. Nielsen Company, Northbrook, Ill.

Filed May 5, 1987, Ser. No. 46,118
Int. Cl.[4] H04N *17/04*; H04H *9/00*
U.S. Cl. 358—84 12 Claims



1. A method for determining the broadcast signal source of a plurality of predetermined broadcast signal sources of a signal being displayed by a monitored receiver comprising the steps of:

detecting a horizontal sweep signal of the monitored receiver;

determining the frequency of said detected horizontal sweep signal; and

comparing said determined frequency with a plurality of stored characteristic frequencies to identify the broadcast signal source.

4,764,809

APPARATUS AND METHOD FOR PRODUCING A VARIETY OF VIDEO WIPE BORDERS

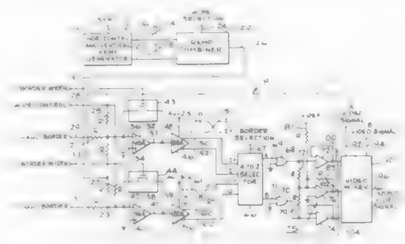
David A. Haycock, Lakewood, and Jay L. Flora, Boulder, both of Colo., assignors to Ampex Corporation, Redwood City, Calif.

PCT No. PCT/US86/00513, § 371 Date Nov. 12, 1986, § 102(e) Date Nov. 12, 1986, PCT Pub. No. WO86/05645, PCT Pub. Date Sep. 25, 1986
Continuation-in-part of Ser. No. 712,494, Mar. 15, 1985, abandoned. This PCT application Mar. 14, 1986, Ser. No. 933,725
Int. Cl.[4] H04N *5/272*
U.S. Cl. 358—183 9 Claims

9. Apparatus for producing an output video signal from at least two input video signals, comprising:

control signal generating means for producing a composite waveform signal;

border generator means for producing at least two video control signals of respective magnitudes and a border control signal in response to said composite waveform signal, wherein said border control signal corresponds to a difference between said respective magnitudes of said video control signals; and



video signal mixer means for producing said output video signal from said input video signals in response to said video control signals and said border control signal.

4,764,810

HORIZONTAL PHASE LOCKED LOOP SYSTEM

Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Feb. 9, 1987, Ser. No. 12,228
Int. Cl.[4] H04N *5/04*
U.S. Cl. 358—148 2 Claims



2. A horizontal phase locked loop comprising:

a horizontal phase detector having two inputs and an output;

means supplying a composite sync signal to one of said two inputs;

a low pass filter and a horizontal oscillator coupled to said output;

means supplying a signal related to the frequency of said horizontal oscillator to the other of said two inputs of said horizontal phase detector;

a transistor in said horizontal phase detector establishing the gain thereof during vertical blanking;

a pair of resistors coupled to the input of said transistor; and

means comprising a switch transistor connected across one of the resistors in said pair and driven non-conductive in response to a vertical blanking signal for increasing the gain of said horizontal phase detector during vertical blanking.

4,764,811

PICTURE SIGNAL PROCESSING CIRCUIT

Eduard A. Bastiaans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 15, 1986, Ser. No. 907,708
Claims priority, application Netherlands, Sep. 19, 1985, 8502564
Int. Cl.[4] H04N *5/14*
U.S. Cl. 358—160 8 Claims



1. A picture signal processing circuit for processing a picture signal occuring with picture information components at different signal levels, said circuit being formed with an amplifier circuit having two parallel, first and second signal channels connected between an input and an output and a change-over circuit via which only one at a time of the two parallel signal channels of the amplifier circuit processes the picture signal, the signal channels of the amplifier circuit being formed with respective amplifiers each having a different transmission characteristic, characterized in that the change-over circuit is formed with a single voltage comparison circuit for comparing a constant direct voltage to a voltage applied to an input thereof and originating from the output of only one of the amplifiers, while dependent on the comparison result the first or the second signal channel processes the picture signal.

4,764,812

SELECTION OF VIDEO SOURCES

Nigel C. Hamley, Esher, England, assignor to Transimage International Limited, Hounslow, England

Continuation of Ser. No. 670,821, Nov. 13, 1984, abandoned. This application Jan. 14, 1987, Ser. No. 6,316
Claims priority, application United Kingdom, Nov. 14, 1983, 8330379
Int. Cl.[4] H04N *5/222, 5/262*
U.S. Cl. 358—181 4 Claims

1. An apparatus for selecting any one of a plurality of horizontally unsynchronised video input signals from a plurality of horizontally unsynchronised video signal sources, said apparatus comprising: selection means for supplying a selection signal indicative of any one of the horizontally unsynchronised video input signals to be selected; switching means having a plurality of inputs for receiving the plurality of horizontally unsynchronised video input signals, respectively, and an output, said switching means being connected to said selection means so as to receive said selection signal and being arranged, in response to said selection signal, to supply at said output a selected one of said horizontally unsynchronised video input signals; time base correction means having an input connected to said output of said switching means, a reference input for receiving an external synchronisation reference signal, and an output, said time base correction means being arranged to supply at said output a video output signal comprising the selected one of the horizontally unsynchronised video input signals horizontally synchronised to the external synchronisation reference signal; and advance synchronisation signal supplying means for supplying an advance synchronisation signal, which is advanced with respect to the external synchronisation reference signal,



to the plurality of horizontally unsynchronised video signal sources for vertically synchronising the plurality of horizontally unsynchronised video signal sources.

4,764,813

VARIABLE ORDER AND PERIOD SOLID STATE IMAGE PICKUP DEVICE

Jin Murayama; Ryuji Kondo, and Yoshimitsu Kudoh, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 22, 1986, Ser. No. 909,542
Claims priority, application Japan, Sep. 20, 1985, 60-206256; Sep. 27, 1985, 60-212660
Int. Cl.[4] H04N *5/335, 9/07*
U.S. Cl. 358—213.11 7 Claims



1. A solid state image pickup device comprising a plurality of photoelectric conversion elements arranged in a matrix form, vertical switches provided for said photoelectric conversion elements, horizontal switches provided for said photoelectric conversion elements, a vertical shift register comprising shift register units, for controlling said horizontal switches, coupled to at least one of said vertical shift register and said horizontal shift register, for altering the sequence of outputs from the shift register units to thereby selectively determine the order of energizing said photoelectric conversion elements, whereby the sequence of the output signals from said photoelectric conversion elements can be selectively varied by altering the output sequence from said shift register units.

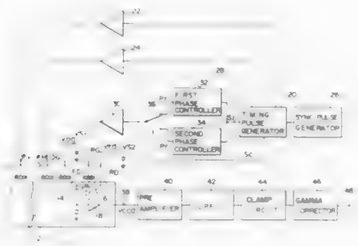
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,814

SOLID-STATE IMAGING DEVICE WITH RESET PULSE SELECTOR

Yukio Endo, Yokohama; Yoshitaka Egawa, Tokyo, and Nozomu Harada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 24, 1987, Ser. No. 65,766
Claims priority, application Japan, Jun. 30, 1986, 61-151591
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213.18 15 Claims



11. A solid-state imaging device comprising:

(a) a charge coupled element having,

a photosensitive cell section for generating a signal charge upon radiation of light,

a shift register section for transferring the signal charge,

a detection section, coupled to said shift register section, for receiving the signal charge transferred from said photosensitive cell section, and for generating a corresponding image voltage signal, said detection section including a floating semiconductor diffusion layer for temporarily storing the signal charge, and

a reset section having a reset drain layer located adjacent to said diffusion layer and a reset gate for controlling a flow of charges from said diffusion layer to said reset drain layer;

(b) driving means, connected to said shift register section, for generating a charge transfer drive pulse signal, a potential of which changes in a pulse-like manner between a first potential and a second potential higher than the first potential, the drive pulse signal being supplied to said shift register section, and said shift register section shifting the signal charge therein and transferring it to said floating diffusion layer in response to the drive pulse signal; and

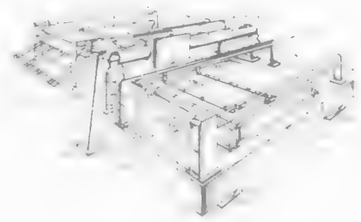
(c) reset controlling means, connected to said reset gate, for applying a normal reset pulse signal to said reset gate in a vertical effective period of said image sensor means, and for applying an inverted reset pulse having a phase opposite to that of the normal reset pulse signal to said reset gate in a vertical blanking period of said image sensor means, wherein the normal reset pulse signal has a pulse component, generated every time the charge transfer drive pulse signal changes from the first to second potential level, thereby opening said reset gate, and the inverted reset pulse signal has a pulse component, generated every time the charge transfer drive pulse signal changes from the second to first potential level, thereby opening said reset gate, so that in the vertical blanking period, the packet of the signal charge flows into said diffusion layer and is simultaneously swept into said reset drain layer because said reset gate is opened.

4,764,815

ARRAY SCANNING SYSTEM WITH MOVABLE PLATEN

Robert M. Landsman, Huntington Station, N.Y., assignor to Powers Chemco, Glen Cove, N.Y.

Filed Jun. 24, 1985, Ser. No. 748,320
Int. Cl.[4] H04N *1/12, 1/04, 1/10*
U.S. Cl. 358—293 37 Claims



1. In an apparatus for scanning the surface of a scanning area containing information to be read or in which information is to be recorded and having a scanner controllably movable in a series of transverse scanning movements across the scanning area in proximity thereto:

a primary platen movable relative to the scanner in a longitudinal direction, said primary platen being adapted to carry therewith a medium to be transversely scanned;

a reference element incrementally movable longitudinally in the same direction as said primary platen and independently thereof to successive positions corresponding to successive transverse scans traced by the scanner; and

means for advancing said primary platen into contact with said reference element during one segment of a transverse scan of said scanner.

26. Apparatus for scanning the surface of a record medium, comprising:

an elongated shuttle guide;

a scanning shuttle slidably mounted on the shuttle guide for reciprocating transverse movement thereon;

motor means for imparting linear motion to the shuttle along the shuttle guide;

spring reaction means supported independently of the shuttle guide and located adjacent each of the ends of the shuttle guide;

spring means disposed between said shuttle and each of said spring reaction means such that each of said spring means is resiliently deformed between said shuttle and the corresponding one of said spring reaction means as said shuttle nears the corresponding end of its travel so as to decelerate said shuttle and to absorb shock resulting from a reversal in the direction of travel of said shuttle at the corresponding end of its travel;

a platen adapted to carry a record medium to be scanned and movably mounted for longitudinal movement relative to said shuttle; and

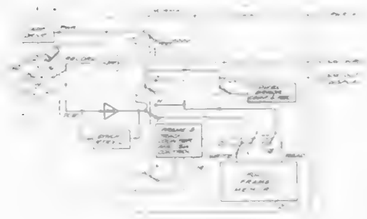
means for periodically advancing said platen in synchronism with the reversal in the direction of travel of said shuttle.

4,764,816

METHOD FOR OPTIMIZING A MAGNETIC TAPE DEVICE FOR STORING DIGITALLY CODED COLOR TELEVISION SIGNALS

Jürgen Heitmann, Arisbach-Hähnlein, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 21, 1986, Ser. No. 899,072
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1985, 3530142
Int. Cl.[4] H04N *9/80;* G11B *27/36*
U.S. Cl. 358—327 5 Claims



1. Method of optimizing the operation of a magnetic tape machine in the recording of sand reproduction from digitally coded color television signals, said machine having a plurality of magnetic heads mounted on a revolving head-wheel for obliquely crossing the surface of a tape being advanced lengthwise, means being provided for reducing the tape advance speed to a value which is a small fraction of normal tape-advance speed, and likewise means for selecting a particular head on said head-wheel for the optimization method and means for switching said selected head from recording to reproduction operation after recording an oblique track of signals across the tape and before the next pass of said head across the tape, and memory means for storing the reproduced signals and for evaluating the signals stored, comprising the steps of:

reducing the speed of tape advance to said small fraction of normal tape advance speed;

recording a one-track picture signal segment with a selected magnetic head followed by reproducing, by the same head on its next pass across the tape, the signal of the track most recently recorded by said selected head;

storing in memory the signals so reproduced;

repeating the foregoing steps of recording, reproducing and storing successively for different picture segments of different picture frames, advancing cyclically from one segment to the next over a succession of picture frames;

evaluating each stored segment for number of pixel errors per segment in an interval between the storing of a reproduced segment and the storing of the next following reproduced segment;

varying, at different times, during the above set forth repetitions of recording, reproducing and storing steps, the recording current, the pre-emphasis characteristic and the de-emphasis characteristic of circuits connected to said selected head, and, finally,

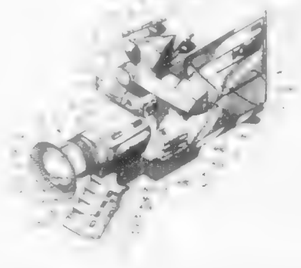
adjusting said recording current, pre-emphasis characteristic, and de-emphasis characteristic of said circuits to the values thereof observed to correspond to the lowest number of pixel errors per second revealed by said evaluation steps.

4,764,817

VIDEO RECORDING CAMERA

Blazek John M., and John R. Tipton, Jr., both of Baltimore, Md., assignors to Leonard Bloom, Towson, Md., a part interest

Filed Jun. 10, 1987, Ser. No. 60,250
Int. Cl.[4] H04N *5/76*
U.S. Cl. 358—341 43 Claims



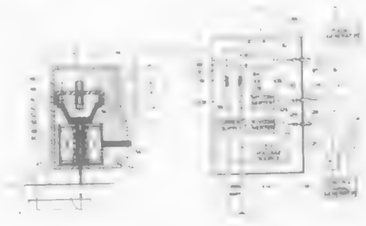
1. In a hand-held video recording camera having a lens, an image pickup means operatively arranged to receive image information from the lens for converting the image information into an electric image data output signal, microphonic means operatively arranged to receive sound from a subject or subjects within view of the lens for producing audio signals corresponding to the sound received and means for recording signals representing the image data and audio signals, an improvement comprising a source within the hand-held camera of further audio signals; audio mixing means within the hand-held camera for mixing the audio signals corresponding to the sound received by said microphone means and to the further audio signals, said audio mixing means having its output coupled to said means for recording signals representing the image data and the audio signals; and reproducing means carried by the hand-held recording camera and responsive to the further audio signals from said source of further audio signals within the hand-held camera for projecting sound corresponding to the further audio signals toward a subject or subjects to be recorded.

4,764,818

ELECTRON BEAM MEMORY SYSTEM WITH IMPROVED HIGH RATE DIGITAL BEAM PULSING SYSTEM

Albert V. Crew, Palos Park, Ill., assignor to Electron Beam Memories, Palo Alto, Calif.

Filed Feb. 3, 1986, Ser. No. 825,649
Int. Cl.[4] G11B *9/00*
U.S. Cl. 358—347 7 Claims



1. An electron beam memory system comprising:

VOL 1093 ISS 3 AG 16 1988 UMI
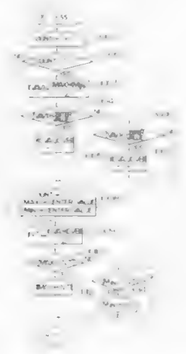
a substrate mounted for rotation and supporting an information storage medium;
means for rotating said substrate;
an electron gun and means for effecting relative movement between said gun and said substrate, said electron gun comprising:
a field emission cathode having an emitting tip,
anode means,
means for developing and applying between said tip and said anode means a predetermined accelerating potential for forming a high brightness electron source at said tip and for causing an electron beam to be formed through said anode means, and
focus lens means for receiving said beam and for forming a very small yet intense electron beam probe at a predetermined first focal distance therefrom; and
a high rate digital beam pulsing system comprising:
voltage pulse generating means for developing a series of voltage pulses of predetermined magnitude and duration, and
means for applying said pulses to said gun such that said pulses add to or subtract from said accelerating potential to thereby cause said focus lens means to focus said beam at a predetermined second focal distance different from said first focal distance, said gun being positioned relative to said recording medium such that one of said first and second focal distances corresponds to the distance between said focus lens means and said recording medium.

4,764,819

METHOD AND APPARATUS FOR HELICAL SCAN TYPE MAGNETIC RECORDING AND REPRODUCING WITH A ROTARY MAGNETIC HEAD

Kanji Kubo, and Yoshiaki Doyama, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 15, 1986, Ser. No. 885,661
Claims priority, application Japan, Jul. 18, 1985, 60-158996; Aug. 2, 1985, 60-171551; Aug. 7, 1985, 60-173630
Int. Cl.[4] G11B *15/467, 5/45*
U.S. Cl. 360—10.2 12 Claims



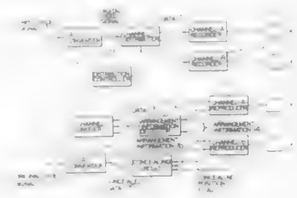
1. A magnetic recording and reproducing apparatus with a movable head comprising an electro-mechanical converter element, a rotary magnetic head mounted on said electro-mechanical converter element, a cylinder including the rotary magnetic head, a magnetic tape wound diagonally on said cylinder, means for recording an information signal on said magnetic tape as a group of non-continuous recording tracks, means for feeding the magnetic tape at a speed different from the recording speed at the time of reproduction, means for supplying said electro-mechanical converter element with a preset voltage corresponding to the amount of displacement between the recording track and the scanning magnetic head that is caused in accordance with different feed rates, means for producing a weighted average of the center level of the preset voltage for each field over the period at least equal to the cycle in which said center level changes from a maximum to the next maximum, means for changing said center level in order that said weighted average may approach a predetermined value, and means for making compensation so that the average DC voltage of said preset voltage is reduced to zero.

4,764,820

PICTURE ELEMENT ARRANGING METHOD IN VIDEO DATA RECORDING-REPRODUCING SYSTEM

Kazuyuki Takeshita, Hachioji, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1986, Ser. No. 825,601
Claims priority, application Japan, Feb. 4, 1985, 60-18569
Int. Cl.[4] G11B *5/02;* H04N *5/78*
U.S. Cl. 360—22 4 Claims



1. A method of recording and reproducing video data comprising the steps of sampling video data, digitizing the sampled data, dividing the digitized data into a plurality of channels, recording the channels in parallel, and thereafter reproducing the channels, wherein the method further comprises the steps of generating recording and reproducing arrangement information identifying a field for N kinds of correspondence between picture element arrangements and channels for each field together with the video data and being different for each consecutive field, and generating information indicative of the correspondence between the picture element arrangements and channels in a period of N field, where N is a natural number larger than or equal to two.

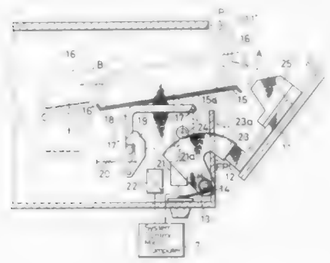
4,764,821

CASSETTE TYPE RECORDING APPARATUS

Reiko Aoki; Yoshie Noborimoto; Yoko Funatsu, all of Tokyo, and Shinichi Konno, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,817
Claims priority, application Japan, Dec. 27, 1985, 60-201047[U]
Int. Cl.[4] H04N *5/782*
U.S. Cl. 360—33.1 4 Claims

1. A cassette type recording apparatus in which a tape cassette is inserted into a cassette compartment and a cassette compartment lid is closed to wrap a magnetic tape drawn from said tape cassette around a tape guide drum thus a recording and/or reproducing becomes possible comprising:
(a) lock lever means for locking said cassette compartment lid at said closed position;
(b) timer programming means for programming various kinds of timer-activated contents such as activated day, hour, channels and so on;
(c) system control circuit means supplied with a first signal indicative of carrying out a timer-activated recording from said timer programming means;
(d) means for detecting that said tape cassette is inserted into said tape cassette compartment and for supplying a second signal to said system control circuit means; and
(e) means for generating a third signal which releases a locking state of said lock lever means for said cassette compartment lid by said system control circuit means if said second signal is absent when said first signal is supplied to said system control circuit means whereby said cassette comportment lid is automatically opened if said tape cassette is not inserted into said cassette compartment.

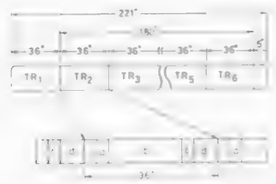


4,764,822

METHOD FOR RECORDING CUE SIGNAL

Hiroshi Taniguchi, Hirakata; Mitsunobu Furumoto, Yao, and Kanji Kubo, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Mar. 21, 1986, Ser. No. 842,174
Int. Cl.[4] G11B *5/09, 15/18*
U.S. Cl. 360—48 2 Claims



1. A method for recording a cue signal, comprising the steps of:
recording a time-compressed PCM audio signal on multi-audio tracks, said tracks being formed by dividing a magnetic tape in a widthwise direction, using a rotary head rotating along a helical scanning path; and
recording cue signals on a desired audio track of said multi-audio tracks at a desired lengthwise position of the recorded magnetic tape, said cue signals being recorded in at least one of an after-recording-margin area and a track-guard area which is immediately after a PCM data area, a recording timing of said cue signal being produced on the basis of a detection pulse which is phase-shifted by a predetermined phase amount from a signal indicating the rotation phase of the rotary head.

4,764,823

SOFT ERASE PROTECTION FOR VIDEO CASSETTES

Hans-Peter Baumeister, Churchville, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 12, 1986, Ser. No. 940,896
Int. Cl.[4] G11B *15/04, 15/18*
U.S. Cl. 360—60 3 Claims



1. In a recorder adapted to receive a magnetic tape housed in a cassette having external mechanical means mounted thereon for indicating whether material previously recorded on said tape is to be protected against erasure, said recorder having tape transport means and means including magnetic heads for recording signals onto, and playing back signals from, said video tape, an intelligent erase-protection system, comprising:
anti-erase detection means for generating a signal representative of the state of said indicating means whenever said cassette is received by said recorder; and
processing means adapted, whenever said detection means senses that said indicating means is in an activated state, for:
(a) sensing the output of said heads,
(b) commanding said tape transport means to fast wind said tape as long as said heads detect at lease an indicia of the presence of a previously recorded signal on said tape; and
(c) issuing a command to said transport means to stop fast winding whenever said heads cease detecting said signal presence, whereby said recorder may begin recording on said tape even though said indicating means remains activated, without accidentally erasing any prerecorded information on said cassette tape, and whereby said unused portions of said tape are automatically located by said processing means during each subsequent recording step.

4,764,824

DUAL SERVO SYSTEM FOR ROTATING TAPE HEAD CONTROL

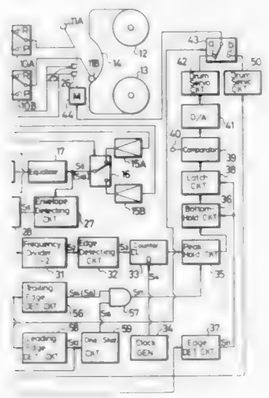
Toshiyuki Tani, Kanagawa; Yoshizumi Inazawa, Tokyo; Toshihiko Takahashi, Chiba, and Shigeyuki Satomura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1986, Ser. No. 841,620
Claims priority, application Japan, Mar. 25, 1985, 60-060108
Int. Cl.[4] G11B *5/52, 21/04*
U.S. Cl. 360—70 6 Claims

1. Apparatus for reproducing a digital signal comprising:
transport means for moving a tape;
rotary head means for reproducing a digital signal recorded on the tape, said digital signal having information encoded therein by successive multiple transitions having respective transition intervals;

VOL 1093 ISS 3 AG 16 1988 UMI

a motor for driving said rotary head means;
detecting means for detecting said transitions from the moving tape;
counting means for accumulating a count proportional to the transition intervals of said detected transitions; and
control means for controlling the rotation of said rotary head means in response to said count and including first holding means for holding a maximum value of said count during a first predetermined period, second holding means



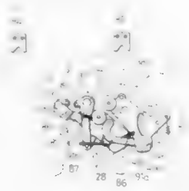
connected to said first holding means for holding a minimum vlaue of said maximum value during a second predetermined period longer than said first predetermined period and producing an output corresponding thereto, and comparing means for comparing said output with a reference value and generating a compared output that is employed to control the speed of said motor, so that the relative speed between said rotary head means and said moving tape is made constant.

4,764,825

TAPE LOADING APPARATUS FOR A TAPE RECORDER

Shoji Suzuki, Iwaki, Japan, assignor to Alpine Electronic Inc., Japan

Filed Apr. 11, 1986, Ser. No. 850,723
Claims priority, application Japan, Apr. 11, 1985, 60-54538[U]
Int. Cl.⁴ G11B *15/665*
U.S. Cl. 360—85 **2 Claims**



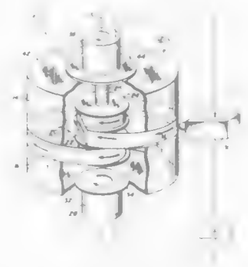
1. A tape loading apparatus in a tape recorder unit for loading a tape from a cassette inserted in the tape recorder unit around a head member mounted in the tape recorder unit spaced apart from the position of the inserted cassette, comprising:
a chassis in the tape recorder unit having a pair of guide slots each extending from an unloaded position on a side of the tape facing away from the head member in the interior of the cassette for drawing the tape out of the cassette to a loaded position in which respective ends of said slots are located on opposite sides of the head member from each other;
a pair of loading set members engaging the tape in the inserted cassette and each being movable along a respective one of said pair of guide slots for drawing the tape from the unloaded position to the loaded position around the head member and for returning the tape back to the unloaded position;
a loading arm connected to a drive source in the tape recorder unit and rotatable by the drive source for moving said loading set members to load the tape from the cassette to the loaded position around the head member and to return the tape from the head member back to the unloaded position;
a pair of connection plates each having two ends, one end of each connection plate being pivotally connected to said loading arm, and the respective other ends of said connection plates being connected individually to a respective one of said loading set members;
wherein said one ends of said connection plates pivotally connected to said loading arm each have a connection shaft fixed thereon, and said loading arm has a pair of holes through which said connection shafts are inserted and a winding shaft between said holes; and
a single torsional coil spring having its center mounted on said winding shaft of said loading arm, said coil spring having two ends each placed in contact with a respective one of said connection shafts of said connection plates, wherein, relative to a reference line connecting the two connection shafts, the center of the coil spring is located on one side of said reference line when said loading arm is rotated by said drive source to bring the tape to the loaded position, so that said single coil spring biases said connection plates to move said loading set members to the loaded position, and the center of the coil spring is located on the other side of said reference line when said loading arm is rotated to bring the tape to the unloaded position, so that said single coil spring biases said connection plates to move said loading set members to the unloaded position.

4,764,826

TAPE CASSETTE AND COOPERATING APPARATUS

Marvin F. Estes, Oakfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1985, Ser. No. 809,700
Int. Cl.⁴ G11B *5/008, 15/00, 17/00*
U.S. Cl. 360—93 **40 Claims**



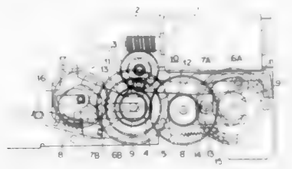
27. A system for recording, storing, and reading information signals on an elongate flexible web, said system comprising:
a cylinder having an outer wall with an opening therein, said cylinder being adatped for rotation about a central axis;
web storage means disposed inside said cylinder and including a spool centrally mounted in said cylinder for rotation relative thereto, said web extending from said storage means through said opening, around said outer wall, and back inside said cylinder;
a signal-communicating head disposed outside said cylinder and aligned with a portion of said web extending around said outer wall;
rotary drive means couplable with said cylinder for rotating said cylinder and said storage means together so as to move both said outer wall and said web extending thereabout relative to said head; and
web advancing means couplable with said storage means for separately rotating said storage means spool relative to said cylinder so as to move said web extending around said outer wall relative to both said wall and said head.

4,764,827

INTERMITTENT GEAR MECHANISM

Takao Kanai; Katsumi Yamaguchi; Shigeo Kinoshita; Kikuo Yoshikawa, and Syouichiro Yokoi, all of Tokyo, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 70,951
Claims priority, application Japan, Jul. 15, 1986, 61-166058; Jul. 15, 1986, 61-166057
Int. Cl.⁴ G11B *15/66, 15/67, 15/665;* **F16H** *37/06*
U.S. Cl. 360—96.5 **2 Claims**



1. An intermittent gear mechanism comprising:
a driving motor;
a driving gear linked to said driving motor;
first and second intermittent gears opposed at opposite sides of said driving gear;
holding members using resilient force to hold said intermittent gears at their inactivated positions disengaged from said driving gear respectively;
an initial driving link including two pivotal members pivotably mounted on shafts of said intermittent gears and an elongated member extending between said intermittent gears and having opposite ends pivotably connected to respective ends of said pivotal members; and
engaging portions each provided on each said intermittent gear to engage said initial driving link and be urged thereby toward an initial driven position of the intermittent gear for engagement with said driving gear when the intermittent gear is located near said inactivated position.

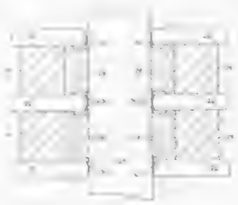
4,764,828

DISC AND HUB CENTERING DEVICE FOR USE IN MAGNETIC DISC DRIVES

Lawrence W. Gollbach, Felton, Calif., assignor to Priam Corporation, San Jose, Calif.

Filed Mar. 26, 1987, Ser. No. 31,306
Int. Cl.⁴ G11B *17/02*
U.S. Cl. 360—98 **7 Claims**

1. For use with a disc spacer in mounting a magnetic disc on a rotating hub in a disc drive, an insert for the spacer comprising
a body portion having a height equal to the height of the spacer, and
a plurality of finger portions extending above the height of the body portion less than one-half the thickness of a disc, said finger portions separating a disc from the hub and



permitting movement of a disc relative to the hub during temperature cycling.

4,764,829

MAGNETIC HEAD ASSEMBLY CAPABLE OF EFFECTIVELY CORRECTING POSITION ERROR OF A HEAD

Toshihiko Makino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 29, 1986, Ser. No. 912,285
Claims priority, application Japan, Sep. 27, 1985, 60-215342
Int. Cl.⁴ G11B *5/55, 21/08, 5/56, 21/24*
U.S. Cl. 360—106 **7 Claims**



1. A magnetic head assembly for use in combination with a recording medium member, said assembly having a predetermined reference plane and comprising:
a magnetic head member movable along said predetermined reference plane;
a mounting member having a shaft which is extended along an axis held in a substantially perpendicular relation to said predetermined reference plane;
an arm member having a first end mechanically coupled to said magnetic head member and a second end pivotally associated with said shaft;
actuating means coupled to said arm member for pivotally actuating said arm member around said axis; and
angle adjusting means couple to said mounting member for adjusting an angle between said axis and said predetermined reference plane within said substantially perpendicular relation, said angle adjusting means comprising an electromechanical transducing element mechanically coupled to said shaft for inclining said shaft within said substantially perpendicular relation when it is driven.

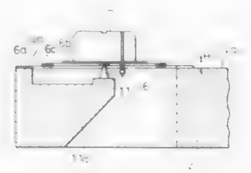
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,830

MAGNETIC HEAD ASSEMBLY IN FLOPPY DISK DRIVE

Kazuo Kobayashi; Masao Kumagai; Atsushi Takahashi, all of Furukawa, and Kenji Abe, Minamikata, all of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Nov. 10, 1986, Ser. No. 929,384
Claims priority, application Japan, Nov. 9, 1985, 60-249971
Int. Cl.[4] G11B *5/48*
U.S. Cl. 360—104 3 Claims



1. In a magnetic head assembly comprising a carriage movable horizontally and carrying a first magnetic head on one end thereof for recording on and reproducing information from a magnetic disk, and a holding case pivotably mounted by a leaf spring on said carriage and carrying a second magnetic head on one end thereof which is pivotable toward said one end of said carriage so as to bring said second magnetic head facing opposite said first magnetic head with the magnetic disk interposed therebetween,

wherein the improvement comprises:

said first magnetic head being carried on said one end of said carriage by a gimbal spring having an outer edge portion mounted on said carriage so as to be lie in a horizontal plane, a head supporting portion disposed centrally within said outer edge portion and supporting said first magnetic head on an upper side thereof, and a spring frame connecting said head supporting portion to said outer edge portion so to be flexible on a horizontal axis of said gimbal spring, and by a nonelastic member provided on said carriage having a pivot thereon which bears against a lower side of said head supporting portion so as to project it vertically under spring tension of said spring frame by a small height above the horizontal plane of said outer edge portion.

4,764,831

APPARATUS AND METHOD FOR RETAINING A HEAD ARM OF A DISK DRIVE ASSEMBLY

Shailesh Patel, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 7, 1985, Ser. No. 763,933
Int. Cl.[4] G11B *5/54, 21/22*
U.S. Cl. 360—105 19 Claims



1. In a disk drive assembly having a driver arm including read/write heads mounted at one end thereof, positioning means for moving said driver arm, and a power source for providing power to said positioning means;

a parking brake assembly for restraining said driver arm of said disk drive in a predetermined position when said power is removed from said disk drive comprising:

an extended member pivotally mounted on said disk drive, biasing means for biasing said member against said driver arm thereby causing said driver arm to be urged by said member towards said predetermined position, said member restraining said driver arm in said predetermined position;

holding means and a means for providing power to said holding means for holding said member apart from said driver arm while said power is provided to said disk drive and said holding means such that said holding means does not move said member from said predetermined position and releasing said member when said power is removed from said disk drive and said holding means;

said positioning means moving said driver arm when said power is provided to said disk drive, thereby causing said driver arm to urge said member adjacent to said holding means, said holding means holding said member after said driver arm has moved said member adjacent to said holding means.

4,764,832

MAGNETIC TRANSDUCING HEAD HAVING CLAD CORE FACES

Ulrich E. Enz; Cornelis W. M. P. Sillen, and Jacobus J. M. Ruigrok, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 924,232, Oct. 28, 1986, abandoned, and a continuation-in-part of Ser. No. 18,686, Feb. 25, 1987, abandoned. This application May 21, 1987, Ser. No. 53,163
Claims priority, application Netherlands, May 21, 1986, 8601277; Jul. 3, 1986, 8601732
Int. Cl.[4] G11B *5/235*
U.S. Cl. 360—120 8 Claims



1. A magnetic transducing head comprising

a magnetic core having two core limbs formed from a ferrite, which core limbs have two respective core faces facing each other, at least one of said core faces being provided with a cladding consisting of a layer of an Fe—Si—Al-based alloy,

a non-magnetizable transducing gap extending between the core faces and

a winding aperture with an electric coil passing therethrough, said coil being provided around a core limb,

characterized in that the cladding provided on the core face also comprises an intermediate layer of an Ni—Fe-based alloy, the layer of an Ni—Fe-based alloy being provided on the core face and the layer of an Fe—Si—Si—Al-based alloy being provided on the layer of an Ni—Fe-based alloy.

4,764,833

PERPENDICULAR MAGNETIC HEAD

Tatsuo Imamura, and Hiroyuki Yamamoto, both of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

PCT No. PCT/JP85/00136, § 371 Date Dec. 23, 1985, § 102(e) Date Dec. 23, 1985, PCT Pub. No. WO85/04278, PCT Pub. Date Sep. 26, 1985
PCT Filed Mar. 20, 1985, Ser. No. 788,337
Claims priority, application Japan, Mar. 20, 1984, 59-53262
Int. Cl.[4] G11B *5/12*
U.S. Cl. 360—126 24 Claims



1. A perpendicular magnetic head comprising:

at least first and second joined blocks which are formed of non-magnetic material;

a main pole film formed of a magnetically soft material having a high permeability and which is held sandwiched between the first and the second joined blocks;

at least one of the blocks carrying a multi-layer film disposed in abutting relationship with the main pole film, the multi-layer film comprising alternate layers of a magnetically soft material having a high permeability and a non-magnetic material.

4,764,834

THIN FILM MAGNETIC TRANSDUCER HAVING A SEPARATE MAGNETICALLY CONDUCTIVE LAYER

Thomas A. Roscamp, Santa Barbara; Paul D. Frank, Goleta; Gary E. Roberts, Lompoc, and Allan F. Rice, Santa Barbara, all of Calif., assignors to Applied Magnetics Corporation, Goleta, Calif.

Continuation of Ser. No. 715,070, Mar. 22, 1985, abandoned, which is a continuation of Ser. No. 117,872, Feb. 4, 1980, abandoned. This application Jan. 29, 1987, Ser. No. 9,588
Int. Cl.[4] G11B *5/147*
U.S. Cl. 365—126 6 Claims



1. A thin film magnetic transducer comprising

a substrate;

a first layer defining a first pole piece formed of a magnetic material having a known magnetic saturation flux density and being positioned on said substrate and having one edge at one end thereof which defines one side of magnetic gap;

an electrically conductive coil positioned on and insulated from said first pole piece layer, said coil being adapted to have an electrical current flow therethrough;

a second layer defining a second pole piece formed of a magnetic material having a known magnetic saturation flux density and being positioned on said coil, said second pole piece layer being adapted to have one edge at one end thereof spaced a predetermined distance from said one edge of said first pole piece layer to form a magnetic gap therebetween having a selected gap width; and

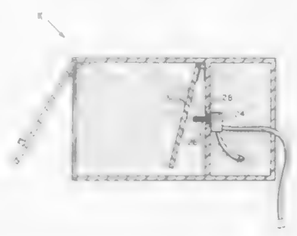
a first laminated, thin film matched pair of spaced parallel magnetically conductive layers having alternating magnetization formed of a material having selected chemical, magnetic and physical properties and a known magnetic saturation flux density and adapted to inhibit domain formation and Barkhausen noise within each magnetically conductive layer positioned in a spaced predetermined location relative to one or the other of the first pole piece and second pole piece and rearward of the gap, each of said magnetically conductive layers conducting magnetic flux in parallel with each other and with said first pole piece and said second pole piece to increase the magnetic flux density at the edges of the first pole piece and second pole piece defining said gap by concentrating said magnetic flux at said gap.

4,764,835

SAFETY APPARATUS

Ben Bowman, Rt. 1, Box 33A, Quemado, Tex. 78877

Filed Feb. 25, 1987, Ser. No. 18,511
Int. Cl.[4] H02H *5/12*
U.S. Cl. 361—1 2 Claims



1. A new and improved safety apparatus comprising:

housing means for use in combination with safety equipment for securing therein said safety equipment which should be used during operation of certain machinery;

electric power supply means mounted to said housing means, certain machinery being operated by said electric power supply means; and

switch means mounted in said housing means and being operable to control a supplying of electric power to said machinery by selectively opening and closing an electric circuit forming a part of said electric power supply means, switch means being operably controlled by a positioning of safety equipment within said housing means;

said safety equipment is abuttable against a pivotal hinged door cooperative with said switch means to effect said opening of said electric circuit, said closing of said electric circuit being accomplished by a removal of said safety equipment from said housing means, and

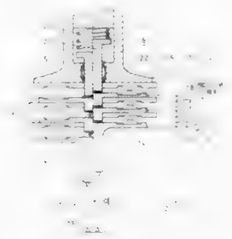
said switch means is mounted in an interior wall portion of said housing means adjacent said pivotal hinged door, said interior wall portion forming a sidewall of an interior compartment into which said safety equipment is positioned, and

said switch means is of a spring biased construction and includes a switch button, said switch button selectively opening said electric circuit during a depression thereof as caused by an abutment with said pivotal hinged door when said safety equipment is positioned within said interior compartment, and

wherein said switch button extends through an aperture formed in said interior wall portion.

VOL 1093 ISS 3 AG 16 - 1988 UMI

4,764,836
CIRCUIT BREAKER
Gerhard Mauthe, Birmenstorf; Lutz Niemeyer, Birr; Friedrich Pinnekamp, Siggenthal-Station, and Norbert Wiegart, Baden, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland
Filed Jan. 6, 1987, Ser. No. 844
Claims priority, application Switzerland, Jan. 31, 1986, 369/86
Int. Cl.[4] H02H *3/00*
U.S. Cl. 361—5 6 Claims



1. A circuit breaker comprising:
a commutation device, said commutation device containing at least one commutation switching point,
a semiconductor valve arrangement connected in parallel with said commutation device, said semiconductor valve arrangement containing at the most one of one semiconductor valve and a series circuit of several semiconductor valves with the same direction of conduction,
an isolating switching point connected in series with said semiconductor valve arrangement,
wherein said at least one commutation switching point and said isolating switching point are actuated by mechanically driven switching members and controlled in such a manner that said isolating switching point opens after a stroke, performed in a predetermined time delay, of the switching members of the at least one commutation switching point,
wherein the at least one commutation switching point and said one isolating point are formed by at least three said switching members, a first one of said switching members being connected to a first power terminal and to a first connection of said semiconductor valve arrangement, a second of said switching members being connected to a second connection of said semiconductor valve arrangement and a third said switching members being connected to a second power terminal, and wherein said first switching member and said third switching member are in contact with each other in the switched-on position, and wherein said second switching member and said third switching member are temporarily in contact with each other after the opening of said at least one commutation switching point, with said third switching member moving from said first switching member to said second switching member, and
a control circuit which detects the polarity of the current to be disconnected, detects a switching-off command for said circuit breaker, emits a response command acting on said commutation device when the detected current flows in the direction of conduction of said semiconductor valve arrangement, and emits a release command acting on said isolating switching point when the current to be disconnected is interrupted in said semiconductor valve arrangement after said commutation device has responded to said response command through the opening of said at least one commutation switching point,
wherein said commutation device and said isolating switching point are controlled by mechanical coupling in such a manner that said isolating switching point opens at a time at which a depletion current, flowing through the semiconductor valve arrangement after a zero transition of the current to be disconnected, has decayed.

4,764,837
SUPERCONDUCTIVE CIRCUIT FOR CONTROLLING QUENCH EVENTS
Donald W. Jones, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Nov. 16, 1987, Ser. No. 120,910
Int. Cl.[4] H02H *9/00*
U.S. Cl. 361—19 3 Claims



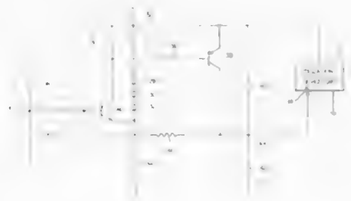
1. A circuit comprising:
a plurality of series connected superconductive coils;
a plurality of series connected shunt resistors, each of said shunt resistors connected in parallel with at least one corresponding series connected superconductive coil; and
a superconductive switch including a length of superconductive wire connected in parallel with said series connected superconductive coils, and first and second heater means thermally coupled to said superconductive wire, said first heater means connectable to an external power supply, said second heater means having a plurality of different sections, each of said shunt resistors connected in parallel to one of said sections, so that a quench in any of the superconductive coils causes a section of said second heater means to warm and drive said superconductive switch normal.

4,764,838
REGULATED ALTERNATOR WITH POSITIVE FAULT RELATED SHUT DOWN APPARATUS
Alistair A. MacFarlane, East Kilbride, Scotland, assignor to Marathon Electric Manufacturing Corp., Wausau, Wis.
Filed Aug. 15, 1986, Ser. No. 897,135
Int. Cl.[4] H02H *7/06*
U.S. Cl. 361—21 20 Claims



1. A protective circuit having a fuse means connected in circuit with a supply means of a regulator means for controlling the operation of an alternator, comprising sensing means to sense the state of the alternator operation and to sense the related demand for alternator operation, control means connected in series with said fuse means to actuate said fuse means to protect said alternator operation, said alternator including an excitation control means for controlling the output of the alternator and establishing a demand for excitation current, said sensing means sensing the demand for excitation current and sensing the acutal presence of excitation current, an excitation power supply connected in series with said fuse means, and said control means includes logic means coupled to said sensing means and operable in response to the presence of excitation current with said demand for excitation current essentially zero, a switch means operable to connect said fuse means directly across said power supply to thereby open said power supply connection to said excitation means and said logic means connected to actuate said switch means.

4,764,839
LOW VOLTAGE RESET CIRCUIT
Timothy G. Land, Mundelein, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Jan. 8, 1987, Ser. No. 1,932
Int. Cl.[4] H02H *3/24*
U.S. Cl. 361—92 4 Claims



4. A reset circuit comprising:
a voltage source;
microprocessor means connected across said voltage source and including a reset terminal;
resistive voltage divider means connected across said voltage source and having a junction;
a series circuit comprising diode means and resistor means connected across said voltage source;
a first transistor having a base connected to said junction of said resistive voltage divider means, an emitter connected between said diode means and said resistor means and a collector;
a second transistor coupled to said collector of said first transistor and being driven conductive responsive to conduction of said first transistor for applying a reset signal to said reset terminal; and
a feedback resistor connected from said reset terminal to said base of said first transistor, whereby said reset signal is established when the voltage from said voltage source falls to a trigger voltage level and is maintained until the voltage from said voltage source rises above said trigger voltage level.

4,764,840
DUAL LIMIT SOLENOID DRIVER CONTROL CIRCUIT
Adelore F. Petrie, Arlington Heights; Thomas F. Karlmann, Schaumburg; Steven G. Parmelee, Algonquin, and Arthur J. Edwards, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 26, 1986, Ser. No. 911,946
Int. Cl.[4] H01H *47/32*; F02D *41/30*
U.S. Cl. 361—154 15 Claims

1. A solenoid driver control circuit comprising:
a control signal input terminal for receiving a control signal;
current sense means for providing a current sense signal indicative of current flowing through a solenoid;
solenoid driver means having a first operable state such that current can flow through said solenoid from a power source and a second operable state such that current effectively cannot flow from said power source through said solenoid;
two separate threshold comparator means, each coupled to said current sense means for comparing at least one received reference threshold input signal with said current sense signal and each for providing an output signal in response thereto to control said solenoid driver means;
means coupling said output signals of said two comparator means to said solenoid driver means for, in response to said output signals of said comparator means, controlling the operable states of said driver means;
pull-in current means coupled between said control input terminal and said comparator means for responding to said control signal by initially providing, for a predetermined pull-in period of time independent of said current sense signal, a pair of predetermined maximum and minimum first reference threshold signals, each of said separate threshold comparator means receiving an associated one of said pair of maximum and minimum first threshold signals, said pair of first threshold signals causing said comparator means, via its output signals, said coupling means, said current sense means and said solenoid driver means, to implement pull-in maximum and minimum current limits for said solenoid current during said predetermined pull-in period of time; and
holding current means coupled between said control input terminal and said comparator means for providing, for a hold time after said predetermined pull-in period of time, a pair of predetermined maximum and minimum second reference threshold signals, each of said separate threshold comparator means receiving an associated one of said second threshold signals during said hold time rather than said first threshold signals, wherein during said hold time said pair of second threshold signals define hold cycle maximum and minimum current limits for said solenoid current during said hold time.

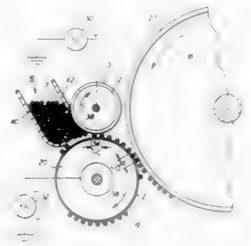


4,764,841
TONER CHARGING APPARATUS WITH COATED TONER TRANSPORT MEMBERS
Grace T. Brewington; Dan A. Hays, both of Fairport, and William H. Wayman, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 14, 1984, Ser. No. 681,750
Int. Cl.[4] G03G *15/06*
U.S. Cl. 361—226 16 Claims

1. An apparatus for charging insulating toner particles comprised, in operative relationship, of a means for charging insulating toner particles and a means for transporting insulating toner particles, said means for charging and said means for transporting biased to a predetermined potential wherein the transporting means contains thereover a coating comprised of silicone resins with conductive particulate particles therein,

VOL 1093 ISS 3 AG 16 1988 UMI

and wherein the means for charging contains thereover a triboelectrically active coating selected from the group consisting of copolymers of chlorotrifluoroethylene and vinyl



chloride, halogenated polymers, polyvinylpyridines, terpolymers of methacrylate, silane terpolymers, and polycaprolactum

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4,764,842

PROCESS FOR THE ELECTROSTATIC CHARGING OF RECORDING MATERIALS AND APPARATUS FOR IMPLEMENTATION OF THE PROCESS

Georg Cranskens, Wedel, and Erich Blume, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 5, 1987, Ser. No. 22,228

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1986, 3607472

Int. Cl.[4] H01T *19/00;* **G03G** *15/00*

U.S. Cl. 361—225 13 Claims



1. Apparatus for the electrostatic charging of recording materials, said apparatus comprising:

(a) transport means for transporting the recording materials to be charged in the direction of a charging means;

(b) plane support means for supporting the recording materials during transport;

(c) deflection means for deflecting down the recording materials to a horizontal surface of the plane support means located underneath the charging means and imparting a bending stress in the direction of transport on the recording materials to bring about flat contact of the recording materials on the plane support means; and

(d) said charging means for electrostatically charging the recording materials as they are passed flatly over the horizontal surface of said plane support means located underneath said charging means;

wherein the transport means comprises transport rollers arranged in front of and behind the support means such that their nips for the recording material lie above the support means, the deflection means comprises deflection rollers between the transport rollers and the support means for deflecting the recording materials down to the support means at a first angle and lifting off the recording materials from the support means at a second angle, and the charging means comprises a spray corona.

4,764,843

VARIABLE ELECTRONIC COMPONENT

Martin A. Mittler, Lake Hiawatha, N.J., assignor to Voltronics Corporation, East Hanover, N.J.

Filed Oct. 27, 1986, Ser. No. 923,677

Int. Cl.[4] H01G *5/04*

U.S. Cl. 361—294 22 Claims



1. A variable electronic component comprising a housing including an internally threaded portion and a first impedance varying portion, a piston having a longitudinal axis arranged rotatable thereabout and movable axially therealong within said housing, said piston including an externally threaded end engaging said threaded portion of said housing and a second impedance varying portion received within said first impedance varying portion of said housing, said externally threaded end having a slot extending along the longitudinal axis of said piston, and drive means rotatably received within one end of said housing adjacent said threaded portion, said drive means having a tab extending into said slot of said piston, whereby rotation of said drive means causes said piston within said housing to rotate about said longitudinal axis and to move axially therealong so as to vary the extent of conjoining of the first and second impedance varying portions to provide a desired range of impedance characteristics to said component, the axial movement of said piston within said housing varying the extent of engagement of said tab of said drive means within said slot of said piston.

4,764,844

ELECTRONIC COMPONENT WITH TERMINAL CAPS

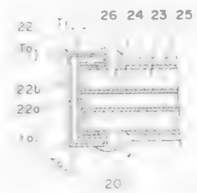
Toshikazu Kato, and Kouichi Nitta, both of Yokaichi, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed Jun. 3, 1987, Ser. No. 57,495

Claims priority, application Japan, Jun. 13, 1986, 61-138475

Int. Cl.[4] H01G *1/13*

U.S. Cl. 361—308 5 Claims



1. An electronic component comprising a generally cylindrical body having a pair of terminal caps mounted on respective opposite ends of the body, each of said terminal caps having layers of solder material formed on inner and outer surface areas thereof, said inner surfaces of said terminal caps being conductively bonded to such component by said solder material,

wherein the thickness of the layer of solder material, on the outer surface area of each of the terminal caps, is made smaller than that on the inner surface area of the same terminal cap, for providing sufficient solder on said inner surfaces for said bonding, while preventing substantial formation of excess solder drops or solder blow-off, when said outer surfaces are soldered or when leads are attached thereto.

4,764,845

COOLED COMPONENT ASSEMBLY

Raymonde G. C. Artus, The Cedars, 95 Crescent Road, Reading, Berkshire, England

Filed Mar. 24, 1987, Ser. No. 29,599

Claims priority, application United Kingdom, Mar. 26, 1986, 8607526

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—387 9 Claims



1. A component assembly comprising a housing, first electrical connector means extending through said housing to the exterior thereof, a substrate mounted in said housing, a plurality of apertures or recesses in said substrate which receive and locate electrical components, a retaining plate retaining said electrical components in said apertures or recesses, second electrical connector means electrically connecting said electrical components to one another and to said first electrical connector means and a heat sink material filling said housing, said retaining plate having apertures therein through which said heat sink material directly contacts said electrical components.

4,764,846

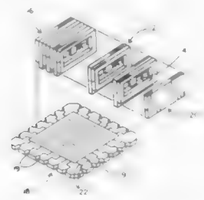
HIGH DENSITY ELECTRONIC PACKAGE COMPRISING STACKED SUB-MODULES

Tiong C. Go, El Toro, Calif., assignor to Irvine Sensors Corporation, Costa Mesa, Calif.

Filed Jan. 5, 1987, Ser. No. 562

Int. Cl.[4] H05K *7/00*

U.S. Cl. 361—388 18 Claims



1. A method of forming a high-density electronic package comprising:

forming a chip-carrying substrate which (a) has a metallization pattern thereon to provide electrical conductors extending to at least one conductor-providing edge of the substrate, and (b) provides a heat-conducting path to said edge of the substrate;

securing at least one IC chip to the chip-carrying substrate, such IC chip having electrical terminals thereon;

connecting the electrical terminals of the IC chip to the conductors on the chip-carrying substrate;

forming a spacer having a frame surrounding an open center portion;

securing the spacer to the chip-carrying substrate with the IC chip inside the open center portion;

the chip-carrying substrate, IC chip and spacer being a sub-module assembly;

securing together several of such sub-module assemblies to provide an integrated stack, containing several IC chips;

forming a stack-carrying substrate which (a) has a metallization pattern thereon to provide electrical conductors, and (b) provides a heat-conducting path;

integrating the stack of sub-module assemblies with the stack-carrying substrate by securing the conductor-providing edges of the chip-carrying substrates to the stack-carrying substrate in such a way as to (a) connect the conductors on the chip-carrying substrates to the conductors on the stack-carrying substrate, and (b) provide direct heat conduction from the edges of the chip-carrying substrates to the stack-carrying substrate.

4,764,847

SUPPORT PLATE FOR ELECTRONIC COMPONENTS

Axel Eisenblätter, Mainz; Gerhard Sonnack, Wachtberg, and Günter Hörning, Kelkheim, all of Fed. Rep. of Germany, assignors to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 26, 1986, Ser. No. 936,476

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1985, 3542914; Oct. 3, 1986, 3633625

Int. Cl.[4] H05K *7/20*

U.S. Cl. 361—388 18 Claims



1. A support plate formed of metal for support of a plurality of electronic components, particularly IC's, each of said components having a metallic base, said plate comprising

holding parts adapted for engagement with bases of electronic components, the bases of the electronic components being detachably held on the support plate by said holding parts which engage in part over the bases; and

depressions for receiving said electronic components, the bases of the electronic components being insertable in the receiving depressions in the support plate; and wherein

the holding parts comprise webs each having at least one bend, the webs extending out of a plane of the support plate to grip by at least one of said bends partly over the bases.

4,764,848

SURFACE MOUNTED ARRAY STRAIN RELIEF DEVICE

John P. Simpson, Apalachin, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1986, Ser. No. 934,297

Int. Cl.[4] H05K *1/18*

U.S. Cl. 361—408 24 Claims

1. An electrical assembly comprising:

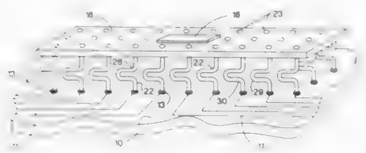
(a) a printed circuit board having at least one major surface having predetermined locations thereon which are adapted to receive electrical conductors;

(b) a substantially planar integrated circuit package having a

VOL 1093 ISS 3 AG 16 1988 UMI

plurality of electrical conductors fixed thereto and extending therefrom so as to form mechanical and electrical connections between said printed circuit board and said integrated circuit package, said integrated circuit package having a central area and a periphery surrounding said central area, some of said plurality of electrical conductors being fixed to said central area; and

(c) each of said electrical conductors located within said integrated circuit package and extending therefrom and having a root at one end, a curved knee portion, and a tip at the other end thereof, each of said conductors being



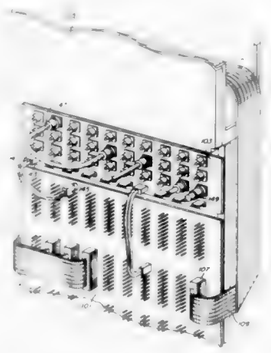
attached at said root to said integrated circuit package and at said tip to said printed circuit board to form said fixed electrical and mechanical connection, said root and said tip of each of said electrical conductors lying along the same axis perpendicular to the plane formed by said integrated circuit package, each of said electrical connectors providing strain relief between said printed circuit board and said integrated circuit package components of said electrical assembly to accommodate for forces applied to said components in at least three directions while maintaining said mechanical and electrical connections.

4,764,849

DATA BUS DISTRIBUTION APPARATUS

Safina J. Khan, Wheaton, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 19, 1986, Ser. No. 944,642
Int. Cl.[4] H02B *1/20*
U.S. Cl. 361—428 8 Claims



1. A coaxial data bus distribution apparatus providing distributive loading to the bus from a variable number of peripheral device circuit interconnections at essentially equal electrical distances between interconnections, comprising:

a first circuit board with a plurality of connectors mounted thereon;

a second circuit board having mounted thereon at least: (a) a plurality of coaxial connectors, each said coaxial connector electrically coupled via said second circuit board to one other coaxial connector whereby a coaxial connector pair having an input and an output coaxial connector is identified for each said connector of said first circuit board, and (b) a plurality of non-coaxial connectors, each said non-coaxial connector electrically coupled to a respective one of said coaxial connector pairs;

a plurality of coaxial cables of predetermined length, each coaxial cable connected between a selected output of one of said coaxial connector pairs and a selected input of another of said coaxial connector pairs, whereby said plurality of coaxial connector pairs may be series coupled; and

a plurality of wires of predetermined length and terminating at each end with a non-coaxial connector, each of said plurality of wires connected between a selected one of said second circuit board non-coaxial connectors and a selected one of said first circuit board connectors.

4,764,850

SOLAR-POWERED DISPLAY DEVICE

Philip Albanese, 135 Pheasant Run, Louisville, Colo. 80027

Filed Jun. 1, 1987, Ser. No. 55,917
Int. Cl.[4] F21V *21/30*
U.S. Cl. 362—35 7 Claims



1. A crystal glass display device comprising:

support means including a drive shaft;

motor drive means associated with said support means for rotating said drive shaft;

a light refracting, multi-faceted crystal including means operatively connecting said crystal to said drive shaft for rotating therewith; and

solar energy means operative to generate a voltage in the presence of sunlight to energize said motor drive for rotation of said drive shaft thereby causing said crystal to rotate and refract the sunlight which causes said solar energy means to generate the voltage into different colored light patterns, said energy means including a panel associated with said support means in contiguous relation to said crystal, speed reduction means between said motor drive means and said drive shaft, said shaft disposed in upstanding relation to said support housing and having an adaptor at its upper end to support said crystal.

4,764,851

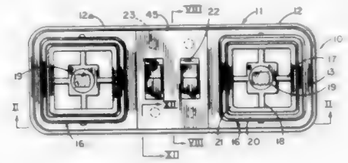
LIGHT FIXTURE

Richard Hartmann, Holland, Mich., assignor to ITC, Incorporated, Zeeland, Mich.

Filed Feb. 11, 1987, Ser. No. 13,538
Int. Cl.[4] B60Q *3/00*
U.S. Cl. 362—74 8 Claims

1. A frame for a lighting fixture, said frame having a body forming a jacket of generally rectangular shape adapted to support a source of illumination, one end of said body forming a compartment of generally rectangular cross-section, one face of said body being in a single plane and serving as a base to be seated against a supporting surface, a wall at the end of said compartment forming the end of said body, said wall being perpendicular to the lengthwise axis of said body; a second body identical to said first body and having an end wall, said

first and second bodies being arranged with their exterior surfaces in alignment lengthwise of said fixture and the wall of said second body being in abutment with the wall of said first body; connector means engaging said walls and clamping said



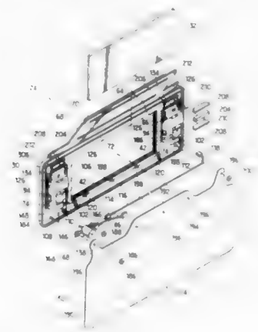
walls together with the jackets of said first and second bodies seated against each other in aligned relationship to form a lighting fixture frame symmetrical about the plane of abutment of said bodies.

4,764,852

POWER CIRCUIT ARRANGEMENT FOR ILLUMINATING A VANITY MIRROR BUILT INTO A VISOR

Toranosuke Sakuma, Shimizu, Japan, assignor to Koito Seisakusho Co., Ltd., Tokyo, Japan

Filed Jul. 28, 1987, Ser. No. 79,231
Claims priority, application Japan, Jul. 28, 1986, 61-176894
Int. Cl.[4] B60J *3/00*; B60Q *1/00*; F21V *33/00*
U.S. Cl. 362—135 14 Claims



1. A visor assembly for use on a motor vehicle or the like, comprising:

(a) a visor having frame means of electrically conducting material to be held at ground potential;

(b) a vanity mirror mounted to the visor;

(c) a pair of lamps disposed on opposite sides of the vanity mirror and each having first and second terminals;

(d) power conductor means coupled, both mechanically and electrically, to the first terminals of the lamps for conducting current thereto; and

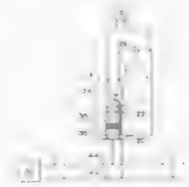
(e) ground conductor means coupled, both mechanically and electrically, to the second terminals of the lamps and further coupled to the frame means of the visor for grounding the second terminals of the lamps, the ground conductor means further coacting with the power conductor means for supporting the lamps in place on the visor.

4,764,853

RECHARGEABLE BATTERY CAFE TABLE LAMP

Stephen E. Thomas, 38840 Godfrey Pl., Fremont, Calif. 94536, and Mark S. Thomas, 1235 Wildwood Ave., Sunnyvale, Calif. 94089

Filed Jun. 9, 1987, Ser. No. 60,028
Int. Cl.[4] F21L *7/00*
U.S. Cl. 362—183 9 Claims



1. A battery operated table lighting fixture including:

a candle shaped housing having top and bottom end surfaces;

a lamp extending from the top end surface of said housing;

a phone jack positioned in the bottom end surface of said housing,

said jack having an electrically conductive body element, a resilient tip element, and third element normally in electrical contact with said tip element, said tip element and said third element being recessed from said bottom end surface;

a battery within said housing;

first series circuitry including said lamp, said battery, and said jack for electrically energizing said lamp from said battery; and

second series circuitry including said battery and said jack for opening said first series circuitry to said lamp upon the insertion of a phone plug into said phone jack.

4,764,854

MOUNTING DEVICE FOR REPLACEABLE LAMP ASSEMBLY ON REFLECTOR ENCLOSURE

Fusakiyo Matsune; Hidehiko Nagasawa, and Hidekaru Mochizuki, all of Shizuoka, Japan, assignors to Koito Seisakusho Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1986, Ser. No. 923,589
Claims priority, application Japan, Nov. 1, 1985, 60-246055; Sep. 24, 1986, 61-225315
Int. Cl.[4] H01R *33/00*
U.S. Cl. 362—226 10 Claims



1. A mounting device for mounting a replaceable lamp assembly on a reflector enclosure, comprising: a mounting tube

VOL 1093 ISS 3 AG 16 1988 UMI

integrally formed on the rear end of the reflector enclosure for receiving a flanged plug portion of said replaceable lamp assembly therein, said mounting tube having on the rear portion of the outer circumference thereof a plurality of circumferentially spaced and radially outwardly extending independent projecting portions formed by machining; and a retaining ring having a generally cylindrical configuration and cooperating with the mounting tube for retaining the lamp assembly being inserted into the mounting tube from the rear end thereof, said retaining ring having a radially inwardly extending retaining rim, and a plurality of radially inwardly projecting and circumferentially extending engaging rims; said engaging rims being adapted to engage with said projecting portions respectively when the retaining ring is fitted on the mounting tube with the flange portion of said lamp assembly being clamped by the retaining rim of said retaining ring.

4,764,855

GLOBE SECUREMENT MEANS

John A. Fretz, III, Huntingdon Valley, and Robert T. Gallagher, Philadelphia, both of Pa., assignors to Kidde Consumer Durables Corp., Bala Cynwyd, Pa.

Filed May 6, 1987, Ser. No. 47,366
Int. Cl.[4] F21V *17/00*
U.S. Cl. 362—433 5 Claims



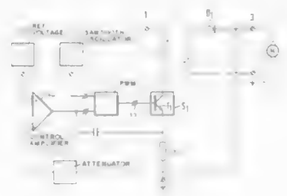
1. An assembly for mounting a globe of the type having a beaded or recess neck portion, comprising:
a receptacle including an annular skirt portin having an aperture therein;
a separate arcuate band adapted to be resiliently seated within the skirt portion, said band having circumferentially spaced projecting lugs and an aperture therein spaced from said lugs, said band aperture being constructed for alignment with the aperture in said holders; and
securement means adapted to extend through said aligned apertures which in conjunction with said lugs will retain said globe securely within said holder.

4,764,856

POWER-SUPPLY ARRANGEMENT

Frederik Rausch, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 28, 1987, Ser. No. 55,658
Claims priority, application Netherlands, Jan. 23, 1987, 8700161
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 16 Claims



1. A power-supply arrangement comprising:
a series arrangement of at least a primary winding of a transformer, a transistor switch and a first resistor connected between a first and a second input terminal for receiving an input voltage,
a series arrangement of at least a secondary winding of the transformer and a diode, coupled between a first and a second output terminal for connection to a load,
a pulse-width modulator for supplying control pulses to the transistor switch,
an oscillator for supplying a sawtooth signal to a first input of the pulse-width modulator, and
a control amplifier for supplying to a second input of the pulse-width modulator a first feedback signal which is a measure of the difference between a reference signal and a signal which is proportional to an output signal of the power-supply arrangement, and means for applying to the second input of the pulse-width modulator a second feedback signal which is a measure of the voltage across the first resistor.

4,764,857

POWER SUPPLY START-UP CIRCUIT WITH HIGH FREQUENCY TRANSFORMER

John G. Konopka, Ingleside, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 6, 1987, Ser. No. 47,353
Int. Cl.[4] H02P *13/18*
U.S. Cl. 363—49 6 Claims

1. A start-up circuit for a switch mode power supply including a pulse width modulator having an input and an output comprising:

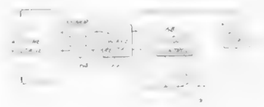
a pulse transformer having a primary winding and a secondary winding;
a source of DC voltage;
relaxation oscillator means including said source of DC voltage and said primary winding;
means for charging a capacitor coupled to said secondary winding; and
trigger means responsive to the charge on said capacitor reaching a predetermined potential for supplying the input of said pulse width modulator with starting current.

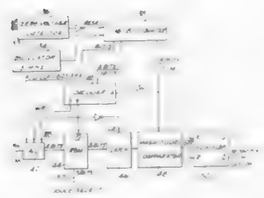
4,764,858

ENERGY CONTROLLER

Leo Valenti, East Greenwich, R.I., assignor to Gulton Industries, Inc., East Greenwich, R.I.

Filed Oct. 19, 1987, Ser. No. 110,112
Int. Cl.[4] G01D *15/10*; H02P *13/24*
U.S. Cl. 363—89 9 Claims





1. Electrical control apparatus for controlling application of a line voltage source to an electrical load having a predetermined resistance, comprising:
first detection means connected to the line voltage source for determining a first reference time at which the line voltage source is at a predetermined first level;
second detection means connected to the line voltage source for determining a second level of the line voltage source at a predetermined second reference time;
memory means responsive to the first and second reference times and the second level of the line voltage source, the memory means containing data representative of an accumulating amount of delivered energy as a time interval after the first reference time increases; and
comparator means responsive to the memory means and to a predetermined amount of delivered energy for stopping application of the line voltage source to the electrical load after a pulse interval at which time the accumulated amount of delivered energy substantially equals the predetermined amount of delivered energy.

4,764,859

METHOD AND APPARATUS FOR CONTROLLING CIRCULATING-CURRENT TYPE CYCLOCONVERTER

Takayuki Matsui, Hitachi, and Toshiaki Okuyama, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1987, Ser. No. 68,068
Claims priority, application Japan, Jun. 30, 1986, 61-153453
Int. Cl.[4] H02M *5/257*
U.S. Cl. 363—161 4 Claims

1. A method of controlling a circulating-current type cycloconverter in which a positive converter and a negative converter are connected in anti-parallel with each other through a DC converter for supplying an AC power of a predetermined frequency to a load, comprising the steps of holding a circulating current circulating through said positive converter and said negative converter at a minimum required level when a load current flowing to said load is lower than a predetermined value, and causing a circulating current for canceling a voltage drop produced across said DC reactor to flow when said load current exceeds said predetermined value.

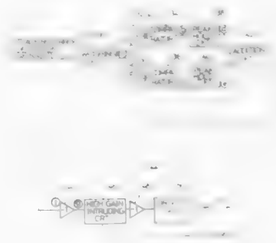


4,764,860

SERVO CIRCUIT FOR AN INFORMATION RECORDING AND/OR REPRODUCING APPARATUS

Hajime Takao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 3, 1986, Ser. No. 870,074
Claims priority, application Japan, Jun. 26, 1985, 60-139798; Jan. 20, 1986, 61-5034[U]
Int. Cl.[4] G11B *7/08, 21/10*
U.S. Cl. 369—43 14 Claims



5. A servo circuit for positioning a pickup head in the body of a recording and/or reproducing apparatus to keep the pickup head in tracking relationship to tracks on a recording medium, comprising:
position error detecting means, coupled to the pickup head, for producing a tracking error signal representing an error in the position of the pickup head relative to a track;
vibrational component extracting means, coupled to the position error detection means, for extracting a time variant component of the tracking error signal having a predetermined frequency for indicating that the pickup head may be out of position relative to the track as a result of an external mechanical vibration applied to the body of the recording and/or reproducing apparatus; and
servo loop gain control means, coupled to the extracting means and responsive to the extracted time variant component of the tracking error signal, for setting a servo loop gain of the servo circuit to a first gain when the extracted component is less than or equal to a predetermined threshold value and to a second gain, higher than the first gain, when the extracted component exceeds the predetermined threshold level.

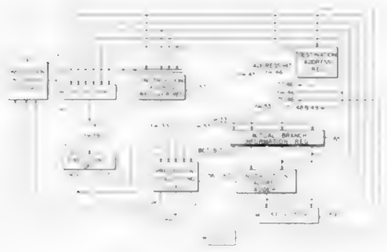
VOL 1093 ISS 3 AG 16 1988 UMI

4,764,861

INSTRUCTION FPEFETCHING DEVICE WITH PREDICTION OF A BRANCH DESTINATION FOR EACH BRANCH COUNT INSTRUCTION

Toshiteru Shibuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 7, 1985, Ser. No. 699,328
Claims priority, application Japan, Feb. 8, 1984, 59-21114; Feb. 21, 1984, 59-30672
Int. Cl.[4] G06F 9/00
U.S. Cl. 364—200 16 Claims





1. An instruction prefetching device for use in carrying out prefetch of an instruction sequence in a data processing system which includes an executing unit, said instruction prefetching device comprising:

a branch history table for storing a plurality of entry pairs, each entry pair comprising a first entry specifying an instruction address of a branch instruction executed by said executing unit prior to said prefetch and a corresponding second entry specifying branch information which comprises a predicted branch destination address obtained by previous execution of said branch instruction;

retrieving means connected to said branch history table for retrieving said corresponding second entry from said branch history table in response to a current instruction address of a current instruction being prefetched when said current instruction address specifies one of said first entries;

discriminating means connected to said executing unit for discriminating whether said branch instruction executed by said executing unit is a branch count instruction or a general branch instruction and providing a result of discrimination; and

prefetching means responsive to said corresponding second entry retrieved by said retrieving means and responsive to said result of discrimination for carrying out said prefetch, wherein said prefetching means comprises:

prediction evaluating means, connected to receive said corresponding second entry, said result of discrimination, and a resulting address of execution based on said current instruction, for evaluating said corresponding second entry to produce a predicted direction evaluation signal and a predicted address evaluation signal,

said predicted direction evaluation signal existing in one of:

(1) a first state, wherein at least one more execution of a program loop is required, and

(2) a second state, wherein said program loop is to be exited,

said predicted address evaluation signal existing in one of:

(1) a first state, wherein said predicted branch destination address of said corresponding second entry coincides with said resulting address of execution, and

(2) a second state, wherein said predicted branch destination address of said corresponding second entry does not coincide with said resulting address of execution;

controlling means, connected to receive said corresponding second entry, said predicted direction evaluation signal and said predicted address evaluation signal, for continuing said prefetch when said predicted direction evaluation signal is in said first state; and

wherein said prefetching means further comprises:

renewing means responsive to the result of the discrimination being a branch on count instruction so as not to update said branch history table when the actual branch address direction shows a NO GO, the predicted direction evaluation signal is in said second state and the predicted address evaluation signal is in said first state; and

means responsive to said updated corresponding second entry for carrying out said prefetch.

4,764,862

RESILIENT BUS SYSTEM

George J. Barlow, Tewksbury, Mass., and James W. Keeley, Hudson, N.H., assignors to Honeywell Bull Inc., Waltham, Mass.

Continuation-in-part of Ser. No. 623,264, Jun. 21, 1984. This application Mar. 28, 1985, Ser. No. 717,201
Int. Cl.[4] G06F 13/14, 13/42
U.S. Cl. 364—200 24 Claims

1. A system including a plurality of units coupled in common to a system bus for transferring requests between said plurality of units during different bus cycles of operation, each request being transferred during a number of allocated bus cycles of operation, said system further including:

means included in at least one of said plurality of units for generating requests on said bus, each request containing a number of different parts, said parts each containing a number of integrity bits for verifying when different parts of said request are validly received by another unit of said plurality of units designated by request during each of said number of allocated bus cycles of operation and at least one of said parts being coded to specify an operation to be performed by said another unit;

checking means included in said another unit, said checking means being coupled to said bus for receiving and for verifying during each allocated bus cycle of operation that only those parts of said number of different parts of said each request designated by said one of said plurality of units received by said checking means of said another unit are valid;

response means included in said another unit, said response means being coupled to said checking means and to said bus, said response means being inhibited by said checking means from generating any response on said bus to said one unit during each allocated bus cycle of operation which signals the acceptance of said request when said checking means verifies that less than all of said designated parts of said received request are valid; and,

means for accepting said request, said means for accepting being coupled to said bus and to said response means, said means for accepting being enabled to accept said request from said bus during each of said allocated bus cycles of operation upon said response means signalling said acceptance of said request and said means for accepting, rejecting said request applied to said bus during each of said allocated bus cycles of operation when said response means is inhibited from generating any response on said bus thereby ensuring that said another unit does not attempt to perform any operation specified by an invalid request.





4,764,863

HARDWARE INTERPRETER FOR FINITE STATE AUTOMATA

Lee J. Silverthorn, III, Paradise Valley, Ariz.; Philip A. Gandette, Washington, D.C.; Arthur W. Holt, Annapolis, Md.; George G. Nacht, Columbia, Md., and Robert B. J. Warnar, Germantown, Md., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed May 9, 1985, Ser. No. 732,327
Int. Cl.[4] G06F 11/30
U.S. Cl. 364—200 13 Claims

1. A method for automatically interpreting data signals and control signals transmitted on a high speed bus, wherein the possible combinations of different data and control signals form a finite plurality of different states, the method comprising:

monitoring data and control signals being transmitted on the bus;

selectively storing said monitored data and control signals in a memory;

generating a hash key from the stored signals;

selecting data at substantially the same time from two distinct look-up tables respectively stored in a first reference memory and a second reference memory which are connected in parallel, said data of one of said look-up tables being selected by using the generated hash key to produce an entry address into said one look-up table;

interpreting the state of the signals and choosing one of the two selected table data based on predetermined criteria; and

using said selected table data to provide current state information.

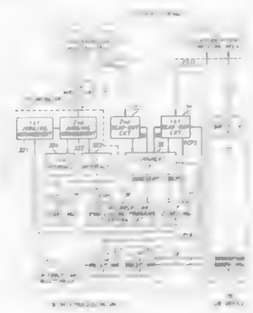


4,764,864

CIRCUIT ARRANGEMENT CAPABLE OF IMPROVING OVERHEAD OF A CONTROL PROGRAM ON INTERRUPTING INTO A VIRTUAL MACHINE

Hisao Takane, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 4, 1986, Ser. No. 848,159
Claims priority, application Japan, Apr. 4, 1985, 60-69954; Apr. 23, 1985, 60-85332
Int. Cl.[4] G06F 9/46
U.S. Cl. 364—200 2 Claims



1. An interruption informing circuit arrangement for use in informing a virtual machine of an interruption request and interruption information accompanied by said interruption request, said virtual machine being operable in accordance with a plurality of operating systems which include interruption processing programs, respectively, and which are controlled by a control program to be selectively operable as an active operating system one at a time, said circuit arrangement comprising:

VOL 1093 ISS 3 AG 16 1988 UMI

first interruption holding means for holding said interruption information, said interruption information specifying a particular operating system;

overall judging means for judging whether or not said interruption request can be received by said active operating system;

first judging means operatively coupled to said overall judging means and coupled for receiving the interruption information held in said first interruption holding means for judging under control of said control program that said particular operating system should be interrupted as a judged operating system by said interruption request;

second judging means coupled to said first judging means for judging under control of said control program whether or not said interruption request can be received by said judged operating system;

first starting means coupled to said second judging means for starting the interruption processing program of said judged operating system under control of said control program when said interruption request can be received by said judged operating system;

second interruption holding means coupled to said second judging means for holding under control of said control program the interruption information held in said first interruption holding means when said interruption request can not be received by said judged operating system said second interruption holding means receiving said interruption information from said first judging means;

second starting means coupled to said second judging means for restarting said judged operating system when said interruption request can not be received by said judged operating system so that said judged operating system may ultimately receive said interruption request, said second starting means producing a pseudo interruption request under control of said control program;

third judging means coupled to said second starting means for judging whether or not said pseudo interruption request can be received by said judged operating system; and

third starting means coupled to said first and said second interruption holding means and to said third judging means for restarting said control program: (1) when said interruption information is held in said first interruption holding means, and furthermore, (2) when said pseudo interruption request can be received by said judged operating system, said third starting means starting the interruption processing program of said judged operating system when said interruption information is not held in said first interruption holding means but in said second interruption holding means and furthermore when said pseudo interruption request can be received by said judged operating system.

4,764,865

CIRCUIT FOR ALLOCATING MEMORY CYCLES TO TWO PROCESSORS THAT SHARE MEMORY

Joseph L. Temple, III, Kingston, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 21, 1982, Ser. No. 390,428

Int. Cl.⁴ G06F *3/00, 13/00*

U.S. Cl. 364—200 **7 Claims**

1. In a multiprocessor system having two processors and a shared memory in which each processor has means for requesting access to the shared memory and means such as a control memory for controlling the processor through a plurality of operations, some operations requiring access to the shared memory and some not requiring access to the shared memory, the operations not requiring access to the shared memory being classifiable as not requiring access for a longer time for a shorter time, improved apparatus for allocating memory cycles between the two processors, comprising, for each processor,

means for signalling a request for memory access that has been made by the other processor,

means in said controlling means for providing a first signal for said operations not requiring memory access for a shorter time or a second signal for said operations not requiring memory access for a longer time,

means responsive to the coincidence of a request signal from the other processor and said first signal from said control-



ling means for releasing access to said shared memory to the other processor with an accompanying request for access to memory and responsive to the coincidence of a request signal and said second signal for releasing memory to the second processor without an accompanying request for access to memory.

4,764,866

DATA PROCESSING SYSTEM WITH PRE-DECODING OF OP CODES

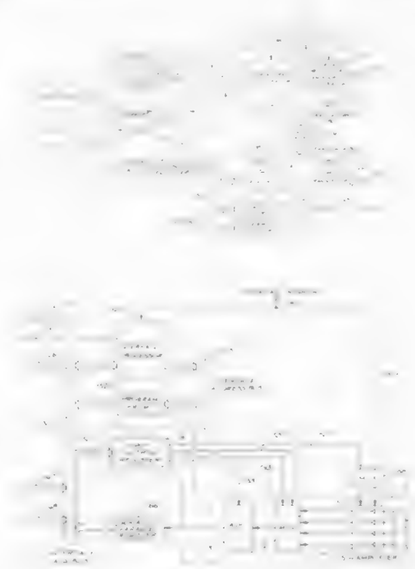
Philip A. Downey, West Lothian, Scotland, assignor to Burr-Brown Limited, United Kingdom

Filed Aug. 7, 1986, Ser. No. 894,070

Claims priority, application United Kingdom, Apr. 5, 1986, 8608369

Int. Cl.⁴ G06F *9/00*

U.S. Cl. 364—200 **6 Claims**



5. Data processing apparatus including a memory for storing

information including instructions, said instructions including an op code which is pre-decoded, said apparatus comprising:

a first processor, said first processor including first op code decoding logic means and means for generating at least one memory access signal in response to said op code;

a data bus coupling said first processor to said memory;

a second processor coupled to said data bus and requiring access to said memory;

a second op code decoding logic means coupled to said data bus and responsive to the presence of said op code on said data bus for pre-decoding of said op code and generating at least one control signal, said second op code decoding logic means being provided as an auxiliary op code decoding circuit to said first op code decoding logic means;

a memory arbitration logic responsive to said at least one control signal for coupling said first processor to said memory in response to informational content relating to said first processor in said at least one control signal, said memory arbitration logic also being responsive to said at least one control signal for coupling said second processor to said memory in response to informational content relating to said second processor in said at least one control signal;

a first memory address generating means for generating memory addresses for said first processor upon being enabled by said memory arbitration logic depending upon the informational content of said at least one control signal, said first memory address generating means being enabled prior to the generation of said at least one memory access signal, said first memory address generating means also initiating said at least one memory access signal prior to said first op code decoding logic means decoding said op code; and

a second memory address generating means for generating memory addresses for said second processor upon being enabled by said memory arbitration logic depending upon the informational content of said control signal, said second memory address generating means being disabled from generating memory addresses in response to said at least one control signal prior to the generation of said least one memory access signal.

4,764,867

DISPLAY SYSTEM AND METHOD FOR CONSTRUCTING AND EDITING A HIERARCHICAL ARRANGEMENT OF INFORMATION

Kenneth L. Hess, Fremont, Calif., assignor to Banner Blue Software Incorporated, Newark, Calif.

Filed Jun. 3, 1986, Ser. No. 870,179

Int. Cl.⁴ G06F *3/14*

U.S. Cl. 364—200 **21 Claims**



1. In a user-controlled interactive computer display system for constructing a hierarchy which has a single topmost node and a number of subordinate nodes such that each node has information in an associated data entry field stored about it, and each subordinate node has only one superior node, an improved method of assembling the nodes in the hierarchy comprising the steps performed in selected sequence of:

determining if a topmost node exists;

creating a topmost node if the topmost node is determined not to exist;

displaying in one selected location on said user-controlled interactive computer display system a selected portion of the information stored about one node to identify such node to the user as a current superior node;

displaying in another selected location a list of the subordinate nodes to said current superior node comprising a selected portion of the information stored about each subordinate node and at least one data entry field not associated with a node;

selectively changing said information stored about the nodes;

creating a new subordinate node to said current superior node in response to the user entering information in said one data entry field; and

selecting for display another node as said current superior node.

4,764,868

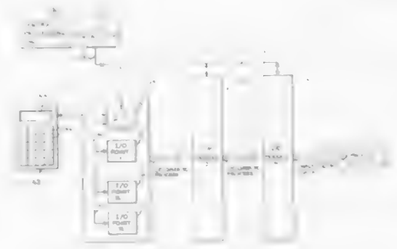
DISTRIBUTED INPUT/OUTPUT SYSTEM

William J. Ketelhut, Charlottesville, and Charles E. Konrad, Roanoke, both of Va., assignors to General Electric Co., Charlottesville, Va.

Continuation of Ser. No. 617,096, Jun. 4, 1984, abandoned. This application Nov. 17, 1986, Ser. No. 931,005

Int. Cl.⁴ G06F *03/05, 15/46*

U.S. Cl. 364—200 **11 Claims**



1. In an industrial process control system of the type having a central processing unit (CPU) which operates in accordance with a program sotred in a memory associated with the CPU to accept various signals indicative of the status of the process and to provide signals to effect control of the process in accordance with the program and the status of said process, an intelligent input/output system comprising:

(a) an input/output controller for controlling the exchange of signals with the CPU;

(b) at least one input/output module for location near the process being controlled, for accepting input signals indicative of process parameters, and for providing output signals to controlled elements of the process, said input/output module including:

(i) a plurality of input/output (I/O) points, each of which includes means for selecting operation of the I/O point either as an input point for accepting an input signal at a first power level or as an output point for providing an output signal at a second power level different from the first;

(ii) means for terminating conductors conveying said input and output signals between said I/O points and the process;

(iii) an operations control unit which operates in accordance with a set of instructions stored in said control unit, for

providing an orderly exchange of signals with said I/O controller and for controlling and testing the operability of said plurality of I/O points;

(iv) means for connecting the plurality of I/O points to the operations control unit; and

(c) a communications link interconnecting said input/output controller and said at least one input/output module for conveying signals therebetween.

4,764,869

METHOD AND APPARATUS FOR CONTROLLING INTERRUPTION IN THE COURSE OF INSTRUCTION EXECUTION IN A PROCESSOR

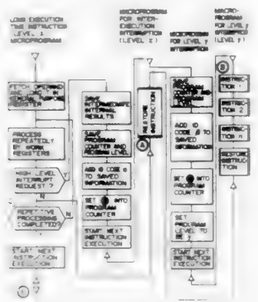
Yoshihiro Miyazaki; Soichi Takaya; Masayuki Tanji, all of Hitachi; Atsuhiko Nishikawa, Mito, and Shinichiro Yamaguchi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 27, 1986, Ser. No. 900,987

Claims priority, application Japan, Aug. 30, 1985, 60-189637

Int. Cl.⁴ G06F *9/46*

U.S. Cl. 364—300 **10 Claims**



1. A method for controlling interruption of a processor for processing interruption in accordance with an interrupt level, comprising the steps of:

(a) determining an interrupt level in a course of execution of a predetermined instruction;

(b) saving internal information of said processor;

(c) setting an address for restore processing for the saving into a program counter as an instruction to be next executed and terminating execution of said predetermined instruction;

(d) not carrying out the restore processing but carrying out interrupt processing in response to termination of execution of said predetermined instruction; and

(e) returning to an interrupted point of said predetermined instruction by the restore processing executed from an address set in said program counter after termination of interrupt processing and resuming processing from a return point.

4,764,870

SYSTEM AND METHOD FOR REMOTE PRESENTATION OF DIAGNOSTIC IMAGE INFORMATION

Marvin E. Haskin, Philadelphia, Pa., assignor to R.A.P.I.D., Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 36,264, Apr. 9, 1987, abandoned. This application Aug. 11, 1987, Ser. No. 84,333

Int. Cl.⁴ G06F *15/42*

U.S. Cl. 364—415 **15 Claims**

1. A system for providing remote viewing of diagnostic images, comprising:

electronic diagnostic equipment which produces within it first analog video signals representing said images in a first analog format,

means responsive to said first analog video signals for producing stored digital signals representing said images;

a remote terminal adapted to receive analog video signals in a standard commercial television format, differing from said first format, and to reproduce the image represented by the received signals;

means for accessing said stored digital signals and for producing therefrom corresponding signals representing said images;



means for transmitting said corresponding signals to said remote terminal for reproduction of said images at said terminal; and

format conversion means for converting said first analog video signals to said differing standard format at a point in said system ahead of said signal transmitting means without thereby converting said first analog video signals to a visually-observable image.

4,764,871

METHOD FOR CONVERTING A ROTATIONAL SPEED TRANSDUCER OUTPUT SIGNAL INTO A LOW-DISTORTION SIGNAL

Anton van Zanten, Ditzingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP84/00404, § 371 Date Aug. 16, 1985, § 102(e) Date Aug. 16, 1985, PCT Pub. No. WO85/02591, PCT Pub. Date Jun. 20, 1985

PCT Filed Dec. 15, 1984, Ser. No. 768,095

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1983, 3345547

Int. Cl.⁴ G01P *3/00*

U.S. Cl. 364—426 **6 Claims**



1. A method using a Kalman filter for converting a sinusoidal output signal of a rotational speed transducer, which in its frequency and amplitude is subject to distortion and is dependent on a varying rotational speed that is to be ascertained, into a low-distortion signal which signal is directed to an anti-skid-anti-lock system to prevent wheel slippage, which includes the steps of

(a) forming at predetermined time intervals, a difference between an output signal ($z(k+1)$) of the speed transducer and a simulation value ($z(k+1)$) ascertained in the Kalman filter based on a previous measurement;

(b) converting this difference ($z(k+1)$) by multiplication with a Kalman amplification factor K, which represents a vector, into a difference vector $x(k+1/k)$;

(c) forming a sum $x(k+1/k+1)$ of this difference vector $x(k+1/k)$ and a simulation vector $x(k+2)/k+1)$ and directing the sum $x(k+1/k+1)$ to the anti-skid system to prevent wheel slippage;

(d) storing this summed vector $x(k+2/k+1)$, which contains the desired low-distortion signal, in a memory, after multiplication by a transition matrix Φ, as a simualtion vector $x(k+2/k+1)$ for the following sum formation;

(e) and storing the simulation vector $x(k+2/k+1)$, after multiplication by a measurement vector H, in memory as a simulation value $_z(k+2)$ for the following cycle,

wherein the terms in parentheses $(k+m)$ or $(k+m/k+n)$ indicate that the corresponding variable is used in the evaluation cycle $(k+m)$ and was obtained in the evaluation cycle $(k+n)$.

4,764,872

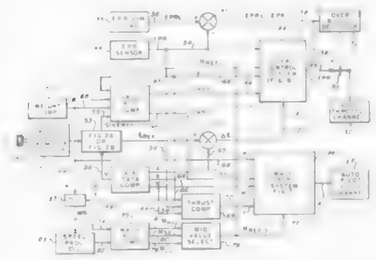
VERTICAL FLIGHT PATH AND AIRSPEED CONTROL SYSTEM FOR AIRCRAFT

Harry Miller, Scottsdale, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 16, 1986, Ser. No. 886,127

Int. Cl.⁴ B64C *13/00*

U.S. Cl. 364—433 **13 Claims**



1. Vertical flight path and air speed control apparatus for aircraft having an automatic throttle control system for controlling the thrust imparted to said aircraft by the aircraft engines and an automatic flight control system for controlling the aircraft pitch attitude, said apparatus comprising

first reference means for providing a first reference signal representative of a reference vertical flight path parameter,

second reference means for providing a second reference signal representative of a reference airspeed,

thrust reference computer means responsive to said first and second reference signals for providing a thrust reference signal representative of the approximate thrust required by said aircraft to maintain said reference vertical flight path parameter at said reference airspeed,

means for providing a first actual value signal representative of the actual value of a vertical flight path parameter,

means responsive to said first reference signal and said first actual value signal for providing a vertical flight path parameter error signal proportional to the difference therebetween, and

combining means responsive to said thrust reference signal and to said vertical flight path parameter error signal for providing a required thrust signal proportional to the thrust required by said aircraft to maintain said vertical flight path parameter, thereby providing a first command signal to said automatic throttle control system for controlling the thrust imparted to said aircraft in accordance with said first reference signal, and means responsive to said

second reference signal for providing a second command signal to said automatic flight control system for controlling the aircraft pitch attitude in accordance with said second reference signal.

4,764,873

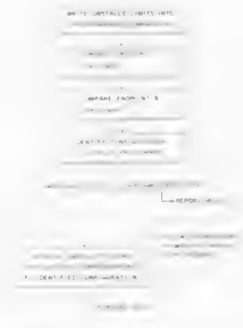
PATH BLOCKAGE DETERMINATION SYSTEM AND METHOD

Vibeke Libby, San Mateo, Calif., assignor to Dalmo Victor, Inc., Div. of The Singer Company, Belmont, Calif.

Filed Feb. 13, 1987, Ser. No. 14,368

Int. Cl.⁴ G06F *15/46, 15/50*

U.S. Cl. 364—461 **7 Claims**



1. A path analyzer, comprising

programmable comparator means for simultaneously comparing each of the coordinates of a specified point in N dimensional space, where N is the number of coordinates used to define the location of each said point, with two coordinate ranges:

(1) the range of values within the range defined by the minimum and maximum values of said coordinate for a specified obstacle, and

(2) the range of values of said coordinate which are outside and on one side of said obstacle;

said programmable comparator generating a map signal, having 2N bits, denoting for each of said N coordinates whether the specified point is within each of said two ranges;

path denoting means for simultaneously presenting to said programmable comparator N coordinates of a specified starting point of a specified path in N-dimensional space so that said programmable comparator generates a starting point map signal, and for simultaneously presenting to said programmable comparator N coordinates of the end point of said specified path in N-dimensional space so that said programmable comparator generates an end point map signal; and

decoder means for decoding said starting point map signal and end point map signal and generating a path analysis signal which specifies one of three path conditions selected from the group comprising: blocked (said specified path is blocked by said specified obstacle), unblocked (said specified path is not blocked by said specified obstacle), and may-be-blocked (said specified path may be blocked by said specified obstacle).

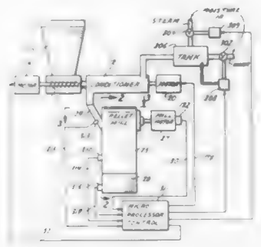
VOL 1093 ISS 3 AG 16 1988 UMI

VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,874
METHOD AND APPARATUS FOR A MICROPROCESSOR PELLET MILL CONTROLLER WITH DIE TEMPERATURE CONTROL

Joseph A. Volk, Jr., Creve Coeur, Mo., assignor to Beta Raven Inc., Earth City, Mo.

Continuation-in-part of Ser. No. 813,244, Dec. 24, 1985, which is a continuation-in-part of Ser. No. 810,060, Dec. 17, 1985, Pat. No. 4,725,958. This application Sep. 15, 1986, Ser. No. 907,232
The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—468 73 Claims



1. An automatic control system for a pelleting apparatus, the pelleting apparatus including a pellet producing means, and means for feeding a supply of a plurality of ingredients to the producing means, one of the ingredients being material and at least one other ingredient having a significant lubricating content, the pellet producing means including a rotating die contained within a chamber, the die having a plurality of holes through which a mixture of said ingredients is passed to form pellets, the control system including at least one temperature sensing means, said temperature sensing means being mounted to the pellet producing means to sense the temperature of the die, and means to control the ingredient feeding means in response to said temperature sensing means.

4,764,875
POSITIVE YARN FEED

Frederick H. Carrotte, 9 Barry Drive, Kirby Muxloe, Leicestershire, England; John R. Stewart, 241 South Water St., Unit 9, East Windsor, United Kingdom, and Kurt Jacobsson, Stenasgatan 11, S-52300, Ulricehamn, Sweden

PCT No. PCT/GB85/00181, § 371 Date Dec. 24, 1985, § 102(e) Date Dec. 24, 1985, PCT Pub. No. WO85/04909, PCT Pub. Date Nov. 7, 1985
PCT Filed Apr. 26, 1985, Ser. No. 822,309
Claims priority, application United Kingdom, Apr. 26, 1984, 8410640
Int. Cl.[4] G06F *15/46*; D04B *15/48*
U.S. Cl. 364—470 14 Claims

1. A system for applying positive yarn feed to a circular knitting machine, comprising:
- a positive yarn feed device for feeding yarn to the circular knitting machine;
- a variable-speed electric motor drive for said positive yarn feed device, said motor drive being independent of the drive of said knitting machine;
- first speed sensing means for sensing the speed of a knitting cylinder of the circular knitting machine and supplying a first electrical signal representative of the speed of said knitting cylinder;
- second speed sensing means for supplying a second electrical signal representative of the speed of said positive yarn feed device;
- programmable storage means for storing a preselected speed ratio signal representative of a desired ratio of the speeds of said positive yarn feed device and said knitting cylinder; and
- control means for comparing said first and second signals to

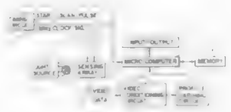


produce an actual speed ratio signal, comparing said actual speed ratio signal with said preselected speed ratio signal and controlling the speed of said positive yarn feed device in dependence on said comparison.

4,764,876
PROFILE ANALYZER FOR FILAMENTARY MATERIALS

Charles G. Whitener, Jr., 1465C Howell Mill Rd., and Gary Hibbard, 1465C Howell Mill Rd., both of Atlanta, Ga. 30318

Filed Oct. 27, 1986, Ser. No. 923,188
Int. Cl.[4] G06F *15/46*; G08B *21/00*; G01N *21/89*
U.S. Cl. 364—470 9 Claims

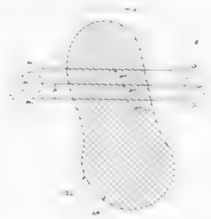


7. Profile analyzing apparatus for analyzing a length of filamentary material including a sensing array having a plurality of sensing points, radiation means for directing radiation towards said sensing array, said length of filamentary material being receivable between said radiation means and said sensing array and movable longitudinaly therethrough, means for producing a clock signal for determining the scanning rate for scanning said sensing means, means for producing a start-scan pulse for starting a scan of said plurality of points of said sensing array, and scanning means for scanning said sensing array and for producing an electrical output from said sensing array representing one width of said filamentary material, said means for producing a start-scan pulse being timed such that said sensing array will be scanned before the subsequent start-scan pulse is provided, the arrangement being such that some of said plurality of sensing points of said sensing array will be blocked by said filamentary material and not receive said radiation to vary said electrical output in accordance with said width of said filamentary material, output storage means for storing said electrical output, computer means having storage means, said output storage means being electrically connected to said sensing array for receiving said electrical output, said output storage means being electrically connected to said computer means for transfer of said electrical, output to said storage means fof said computer means, the arrangement being such that successive electrical outputs representing successive widths of said length of filamentary material are stored and represent a profile of said filamentary material, means for defining width limits for said successive widths, and means for comparing said successive widths with said width limits for said successive widths.

4,764,877
SURFACE CUTTING METHOD

Kunio Tanaka, and Yasushi Onishi, both of Tokyo, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP86/00381, § 371 Date Mar. 17, 1987, § 102(e) Date Mar. 17, 1987, PCT Pub. No. WO87/00475, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 21, 1986, Ser. No. 43,349
Claims priority, application Japan, Jul. 20, 1985, 60-160893
Int. Cl.[4] B23Q *15/00*; G05B *19/00*
U.S. Cl. 364—474 4 Claims



1. A surface cutting method for cutting a surface within an area bounded by a predetermined closed curve by moving a tool along a cutting path in a predetermined direction to cut the surface within the area, thenceforth moving the tool along an adjacent cutting path obtained by a shift of a predetermined amount to cut the surface, and repeating these surface cutting operations, said method characterized by including:
- a first step of obtaining an offset curve offset by a predetermined amount to the outer side of said closed curve;
- a second step of obtaining width W, in a shift direction, of the area bounded by the offset curve;
- a third step of finding, from among lengths of line segments obtained by dividing said width W into n equal parts (where n is an integer), a length closest to a predetermined maximum cut-in amount without exceeding the same, and adopting said length as an actual cut-in amount P; and
- a fourth step of performing surface cutting by shifting the tool by the cut-in amount P in said shift direction after the end of surface cutting along one cutting path PT_i and thereafter moving the tool along an adjacent cutting path PT_{i+1}.

4,764,878
SURFACE CUTTING METHOD

Kunio Tanaka, and Yasushi Onishi, both of Tokyo, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP86/00380, § 371 Date Mar. 17, 1987, § 102(e) Date Mar. 17, 1987, PCT Pub. No. WO87/00474, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 21, 1986, Ser. No. 43,350
Claims priority, application Japan, Jul. 20, 1985, 60-160892
Int. Cl.[4] G05B *19/00*
U.S. Cl. 364—474 3 Claims



1. A surface cutting method for cutting a surface within an area bounded by a predetermined closed curve by moving a tool along a cutting path PT_i in a predetermined direction to cut the surface within the area, thenceforth moving the tool along an adjacent cutting path PT_{i+1}, obtained by a shift of a predetermined amount, in a direction opposite said predetermined direction to cut the surface, and repeating this back-and-forth cutting, said method characterized by including:
- a first step of obtaining points of intersection P_i, Q_i between said cutting path PT_i and an offset curve offset by (T+C+R) to the outer side of said closed curve, as well as points of intersection P_{i+1}, Q_{i+1} between said offset curve and cutting path PT_{i+1}, where T, C and R represent excess thickness, amount of clearance and tool radius, respectively;
- a second step of obtaining a coordinate value, in the cutting path direction, of an outermost point R_i on the offset curve between the points of intersection Q_i, Q_{i+1}, where Q_i is a point of intersection on a cutting end point side of the cutting path PT_i and Q_{i+1} is a point of intersection on a cutting starting point side of the cutting path PT_{i+1};
- a third step of performing surface cutting by moving the tool along the cutting path PT_i until a coordinate value of the position of the tool in the cutting path direction coincides with the coordinate value of said point R_i in the cutting path direction; and
- a fourth step of moving the tool at a cutting velocity to the next cutting path PT_{i+1} in a shift direction.

4,764,879
FAST/ACCURATE CALIBRATION FOR A PHYSICAL PROPERTY SENSOR

James M. Campbell, Yellow Springs, Ohio, assignor to The Yellow Springs Instrument Company, Inc., Yellow Springs, Ohio

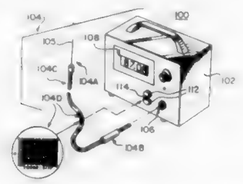
Filed Jun. 25, 1987, Ser. No. 67,338
Int. Cl.[4] G01R *27/00*
U.S. Cl. 364—482 10 Claims

1. Apparatus for sensing a physical property comprising:
- a sensing transducer for generating signals representative of the physical property, said sensing transducer having unique signal generating characteristics;
- a signal conditioner for receiving said signals from said

VOL 1093 ISS 3 AG 16 1988 UMI

sensing transducer and processing said signals in accordance with said unique signal generating characteristics to generate a usable signal identifiably reflecting said physical property;

reader means associated with said signal conditioner for reading encoded data; and



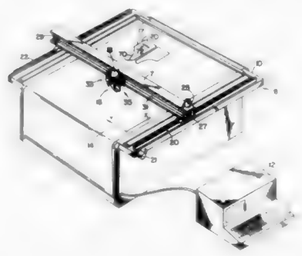
data means for encoding said unique signal generating characteristics of said sensing transducer, said data means being integrally incorporated into said sensing transducer whereby said signal conditioner can be quickly and accurately adapted to operate with a given sensing transducer by having said reader means read said data means for said given sensing transducer.

4,764,880

COMPOUND PLOTTING APPARATUS AND RELATED METHOD OF OPERATION

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Jan. 9, 1986, Ser. No. 817,432
Int. Cl.[4] G01D *9/40, 9/30*
U.S. Cl. 364—519 21 Claims



1. A compound plotting apparatus for rapidly producing an annotated design on a worksheet, said apparatus comprising:

means defining a support surface for supporting a worksheet,

annotation means for providing said worksheet with an annotation containing symbols printed with a visible marking substance,

said annotation means being rotatable about an axis perpendicular to said support surface for placing the annotation at selectively different angles relative to the support surface,

line drawing means separate from said annotation means for drawing design lines on said worksheet with a visible marking substance, and

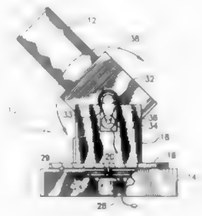
means supporting said annotation means and said line drawing means for automatically moving said annotation means and said support surface relative to one another to position said annotation means to provide said worksheet with said annotation and for automatically moving said line drawing means and said support surface relative to one another to maneuver said line drawing means to draw said design lines on said worksheet.

4,764,881

COMPUTER CONTROLLED ALTAZIMUTH TELESCOPE MOUNT

Gilbert H. Gagnon, San Marcos, Calif., assignor to James R. Cook, San Marcos, Calif., a part interest

Filed Feb. 10, 1986, Ser. No. 827,407
Int. Cl.[4] G05B *19/40*
U.S. Cl. 364—559 1 Claim



1. An automatically pointing earth-based telescope system, comprising:

a telescope;

means for supporting the telescope for independent rotation about substantially orthogonal first and second axes;

first motor means for rotating the telescope about the first axis;

second motor means for rotating the telescope about the second axis;

a processor;

memory means connected to the processor for storing an operation program and data representing a star table;

means connecting the processor to the first and second motor means for actuating the same;

means connected to the processor for manually inputting thereto the coordinates of a first known star when the telescope is pointed at the same and the coordinates of a second known star when the telescope is pointed at the same;

means connected to the processor for providing the processor with a set of angular data representing first and second angles of travel of the telescope about the first and second axes, respectively, between the pointings of the telescope at the first and second known stars;

means connected to the processor for providing the processor with a set of time data representing an amount of elapsed time between the pointings of the telescope at the first and second known stars;

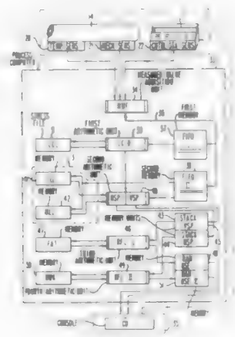
the processor being capable of executing the operation program and using the data representing the star table to calculate the coordinates of a zenith location from the coordinates of the first and second known stars, the first and second angles and the elapsed time, and for thereafter automatically causing the telescope to point at a third star upon manual input of its coordinates, and for thereafter causing the telescope to automatically track the third star to compensate for the earth's rotation.

4,764,882

METHOD OF MONITORING FATIGUE OF STRUCTURAL COMPONENT PARTS, FOR EXAMPLE, IN NUCLEAR POWER PLANTS

Reinhold Brueckel, Stuttgart; Manfred Mikesch, Erlangen, and Rolf Schiffler, Hagenau, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany

Filed Apr. 18, 1984, Ser. No. 601,643
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 33141819
Int. Cl.[4] G01M *7/00;* G06F *15/52;* G21C *17/00*
U.S. Cl. 364—508 19 Claims



1. Method for monitoring fatigue of thermally and/or mechanically stressed structural components having sensors connected to a process computer, comprising:

(a) feeding values measured by the sensors during a given timing cycle to the process computer;

(b) computing weighting factors in a first arithmetic unit from the measured values and stress data obtained from mechanical unit load cases or specific load case comparative stress data stored in a stress file;

(c) computing in a second arithmetic unit comparative values by weighting the measured values obtained through an acquisition unit with the weighting factors obtained from the first arithmetic unit, stored in the working memory after dissolving the measured values into corresponding weighted unit values obtained from two unit load-case libraries and weighted and stored in synchronism as stress data in a second memory;

(d) steering the second memory by means of a third arithmetic unit for forming a stress distribution curve and obtaining from the stress distribution curve partial usage factors developed during said timing cycle; and

(e) storing cumulatively the partial usage factors in a further working memory being added to the previously stored partial usage factors, obtaining therefrom an overall load factor.

4,764,883

INDUSTRIAL ROBOT HAVING SELECTIVE TEACHING MODES

Tohru Nakagawa; Hitoshi Kubota, and Masao Matsumoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

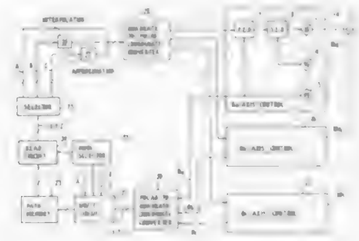
Filed May 29, 1986, Ser. No. 868,656
Claims priority, application Japan, May 30, 1985, 60-116914; May 30, 1985, 60-116925
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—513 9 Claims

1. A method for operating an industrial robot having an arm driven by a motor, comprising:

(a) selectively generating first, second and third flags respectively indicating first, second and third teaching modes;

(b) generating a signal representative of the path to be traced by said arm;

(c) sampling said path representative signal at a higher sampling rare in response to said first flag to produce a first train of samples and sampling said path representative signal at a lower sampling rate in response to either of said second and third flags to produce a second train of samples;



(d) interpolating a sample between successive samples of said second train in the presence of said second flag and combining the interpolated sample with the samples of said second train to derive a third train of samples and approximating samples from successive samples of said second train in the presence of said third flag to dereive a fourth train of samples; and

(e) controlling said motor in response to said first, third and fourth trains of samples.

4,764,884

FAILURE DETECTING APPARATUS OF A CONTROL UNIT FOR A VEHICLE

Takahiro Noyori, Hamamatsu, Japan, assignor to Suzuki Jidosha Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed May 2, 1986, Ser. No. 859,118
Claims priority, application Japan, May 14, 1985, 60-102460
Int. Cl.[4] G06F *15/20;* G01R *31/02*
U.S. Cl. 364—552 8 Claims



1. A failure detecting apparatus of a control unit for a vehicle, said apparatus detecting failures of solenoids used to control various functions of the vehicle, comprising:

a solenoid driving circuit which selectively supplies currents to said solenoids;

an input circuit for receiving an output signal as a return signal from each of the solenoids which is in a normal operating state;

an ignition switch which outputs an engine start signal when it is turned on;

control circuit means for outputting to said solenoid driving circuit command signals which cause said solenoid driving circuit to supply currents to the solenoids in a prede-

VOL 1093 ISS 3 AUG 16 1988 UMI

termined sequence when said start signal is inputted from said ignition switch to said control circuit means, for receiving through said input circuit the return signals from said solenoids supplied with the currents, for determining that any said solenoid which fails to output a return signal in response to the application of current thereto is defective, and for outputting an alarm signal when a defective solenoid is detected; and

alarm indicating means for indicating the solenoid which is defective in response to said alarm signal from said control circuit.

4,764,885

MINIMUM PARALLAX STYLUS DETECTION SUBSYSTEM FOR A DISPLAY DEVICE

Evon C. Greanias, Chevy Chase; Karl F. Schroeder, Gaithersburg, and Louis V. Ruffino, Potomac, all of Md., assignors to International Business Machines Corporaton, Armonk, N.Y.

Filed Apr. 25, 1986, Ser. No. 856,627
Int. Cl.[4] G08C *21/00*
U.S. Cl. 364—571 4 Claims



1. In a data processing system inclusing a display subsystem having a video buffer which stores a data representation of an image to be displayed, an image generator connected to the video buffer to convert the stored representation of the image into video signals and a display device connected to the image generator having a transparent viewing plate of finite thickness with a visual manifestation of the video signals being formed on one side of the plate for viewing through the plate, a stylus detection subsystem used in cooperation with the display subsystem, which minimizes the parallax between the apparent position of a stylus and the detected position thereof, data processing system comprising:

an array of horizontal and vertical signal wires disposed on said viewing plate, for radiating a signal from a radiative signal source for receipt by said stylus;

a decoder connected to said signal wires and said radiative signal source, for connecting selected ones of said signal wires to said signal source;

a counter having an output connected to said decoder, for cyclically outputting coordinate values to said decoder for energizing selected ones of said signal wires with a radiated signal;

a maximum signal detector having an input connected to said stylus, for outputting a triggering signal when a maximum value is detected in the strength of the radiated signal received by said stylus;

a cursor image generator having an input connected to said counter, an input connected to said minimum signal detector and an output connected to said display subsystem, for generating cursor image signals for display on said viewing plate at a location corresponding to coordinate values output from said counter when said signal strength is a maximum;

a low level signal detector, having an input connected to said stylus, a first output connected to said decoder and a second output connected to said cursor image generator, for outputting a first enabling signal to said decoder when said stylus is farther than a first distance from said viewing plate, said decoder in response thereto connecting selected ones of said wires to said signal source to radiate in a quiescent state pattern;

said low level detector terminating said first enabling signal when said stylus is closer to said viewing plate than said first distance but farther than a second distance, and outputting a second enabling signal to said cursor image generator, said cursor image generator in response thereto outputting cursor image signals for display on said viewing plate at a location corresponding to said coordinate values output from said counter;

a stylus trace generator having an imput connected to said counter and said maximum signal detector and an output connected to said display subsystem, for generating stylus trace signals for display on said viewing plate at a location corresponding to said coordinate values output from said counter when said radiated signal strength is a maximum;

a high level signal detector, having an input connected to said stylus and an output connected to said stylus trace generator, for outputting an enabling signal to said stylus trace generator when said stylus is closer to said viewing plate than said second distance, said stylus trace generator in response thereto outputting stylus trace signals for display on said viewing plate at a location corresponding to said coordinate values output from said counter;

whereby the operator can focus attention on the displayed location of said cursor instead of the stylus, to identify the location of the stylus as it is perceived by the stylus detection subsystem.

4,764,886

BIT SLICE - TYPE ARITHMETIC ADDER CIRCUIT USING EXCLUSIVE-OR LOGIC FOR USE WITH A LOOK-AHEAD CIRCUIT

Seiken Yano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 7, 1985, Ser. No. 763,117
Claims priority, application Japan, Aug. 7, 1984, 59-165263
Int. Cl.[4] G06F *7/50*
U.S. Cl. 364—787 22 Claims



1. An adder circuit for connection to a source of input signals and a source of external carry signals comprising:

first circuit means connected to receive first and second binary input signals A and B from said source of input signals, each of said signals corresponding to a certain bit length (M+1) of binary data, for producing parallel output signals;

second circuit means connected to receive the output signals from said first circuit means and an external carry signal from the source of external carry signals for producing internal carry signals;

third circuit means coupled to receive the parallel output signals from said first circuit means and the internal carry signals from said second circuit means for producing the result of the addition of said first and second binary input signals taking account of said external carry signal for each bit position thereof; and

said adder circuit being characterized in that

(a) said first circuit means comprises a plurality of arithmetic and logical circuits each receiving two pairs of the input bit signals (A_{2n+1}, A_{2n}, B_{2n+1}, B_{2n}) which correspond to the contents of the two adjacent bits of said input binary signals and producing output signals G_{2n+1}, P_{2n+1}, X_{2n+1}, X_{2n} and Y_{2n} in accordance with the following logical formula:

$$G_{2n+1}=A_{2n+1}B_{2n+1}+(A_{2n+1}\oplus B_{2n+1})\cdot A_{2n}B_{2n}$$

$$P_{2n+1}=(A_{2n+1}\oplus B_{2n+1})\cdot(A_{2n}\oplus B_{2n})$$

$$X_{2n+1}=A_{2n+1}\oplus B_{2n+1}$$

$$X_{2n}=A_{2n}\oplus B_{2n}$$

$$Y_{2n}=A_{2n}\cdot B_{2n}$$

Wherein 2n=0, 2, 4, . . . , (M−1) and 2n+1, 3, . . . , M

and

(b) said third circuit means includes an Exclusive-OR circuit which receives one corresponding output X_i from said first circuit means and the internal carry signal C_i from a corresponding unit of said second circuit means so as to produce the sum signal S_i for the addition of said first and second binary signals for the ith bit position thereof, said sum signal S_i being expressed by the following logical formula:

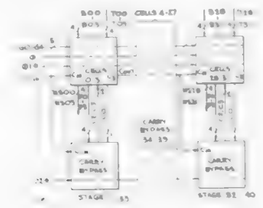
$$S_i=X_i\oplus C_i$$

4,764,887

CARRY-BYPASS ARITHMETIC LOGIC UNIT

Chingwei S. Lai, San Jose, and Florence S. Lee, Sunnyvale, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 2, 1985, Ser. No. 762,581
Int. Cl.[4] G06F *7/50*
U.S. Cl. 364—787 16 Claims



13. An arithmetic logic unit comprising:

a plurality of sets of cells wherein each of said sets comprises a first, a second, a third and a fourth one of said cells and each of said cells comprises:

first circuit means responsive to a predetermined bit in a first operand T, a predetermined bit in a second operand B, a plurality of code bits (G0–G3) and a clock signal Ø1 for providing a propagate bit P; and

second circuit means responsive to said propagate bit P, a code bit G4 and a carry-in bit C_{in} for providing a sum bit NS, wherein $NS=P\oplus G4\cdot C_{in}$, G4=0 and NS=P when said arithmetic logic unit is performing a logical operation and G4=1 and $NS=P\oplus C_{in}$ when said arithmetic logic unit is performing an arithmetic operation; and

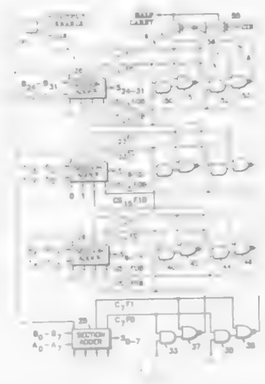
a bypass circuit coupled to each of said sets wherein each of said bypass circuits comprises means responsive to said propagate bit P from predetermined one of said first, said second, said third and said fourth cell in each of said sets, said carry-in bit applied to a predetermined one of said first, said second, said third and said fourth cells in each of said sets, and a clock signal Ø2* for providing said carry-out bit C_{out} from a predetermined one of said first, said second, said third and said fourth cell in each of said sets.

4,764,888

N-BIT CARRY SELECT ADDER CIRCUIT WITH DOUBLE CARRY SELECT GENERATION

Kirk N. Holden, and Ashok H. Someshwar, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 3, 1986, Ser. No. 835,135
Int. Cl.[4] G06F *7/50*
U.S. Cl. 364—788 7 Claims



1. An n-bit adder circuit, where n is an integer, for simultaneously adding n bits of a first and a second operand with an input carry bit and simultaneously outputting n sum bits and an output carry bit, comprising:

a rank ordered plurality of parallel connected section adders divided into first and second groups, each of said section adders of each group providing a predetermined portion of said n sum bits and comprising:

a rank ordered plurality of full adder circuits, each full adder circuit having a first sum input for receiving a predetermined bit of said first operand, a second sum input for receiving a predetermined bit of said second operand, and first and second carry-in inputs, said first carry-in input of all full adder circuits except a lowest ranked full adder circuit receiving a carry-out bit from a full adder circuit of immediately lower rank resulting from a forced carry-in of logic zero to the first carry-in input of the full adder circuit of lowest rank of each group and said second carry-in input of all full adder circuits except the lowest ranked receiving a carry-out bit from a full adder circuit of immediately lower rank resulting from a forced carry-in of logic one to the second carry-in input of the full adder circuit of lowest rank of each group, a first sum output for providing a first sum bit of predetermined rank resulting from a forced carry-in of logic zero to the lowest ranked adder, a second sum output for providing a second sum bit of the same predetermined rank resulting from a forced carry-in of logic one to the lowest ranked adder, and

VOL 1093 ISS 3 AG 16 1988 UMI

first and second carry-out bits resulting from a forced carry-in bit of logic one and logic zero to the lowest ranked adder, respectively; and

a ranked ordered plurality of first multiplexor means coupled to the first and second sum outputs of each of said full adder circuits, each multiplexor means selecting one of the first or second sum bits provided by each full adder circuit in response to the input carry bit and to first and second carry select signals of predetermined rank, said selected output sum bits representing the output sum;

a first plurality of rank ordered carry select logic means, each carry select logic means coupled to a predetermined section of full adder circuits of each group of section adders and operating substantially simultaneously, the lowest ranked carry select logic means of each group receiving a force carry-in bit of logic one and first and second carry-out bits from the section of full adder circuits of corresponding rank and providing the first carry selected signal of predetermined rank, the remaining carry select logic means of the first plurality in each group receiving the first carry select signal of immediately lower rank and first and second carry-out bits from the section of full adder circuits of corresponding rank and providing the first carry select signal of predetermined rank, said highest ranked carry select logic means providing a first carry output bit resulting from a carry input bit of logic one;

a second plurality of rank ordered carry select logic means, each carry select logic means coupled to a predetermined section of full adder circuits of each group of section adders and operating substantially simultaneously, the lowest ranked carry select logic means of each group receiving a forced carry-in bit of logic zero and first and second carry-out bits from the section of full adder circuits of corresponding rank and providing the second carry select signal of predetermined rank, the remaining carry select logic means of the second plurality in each portion receiving the second carry select signal of immediately lower rank and first and second carry-out bits from the section of full adder circuits of corresponding rank and providing the second carry select signal of predetermined rank, said highest ranked carry select logic means providing a second carry output bit resulting from a carry input bit of logic zero; and

second multiplexing means having a single select circuit coupled to the first and second pluralities of carry select logic means of each the first and second portions of section adders, the single select circuit of the first group providing an intermediate carry bit for the second group of section adders and the single select circuit of the second group of section adders providing one of the first or second carry output bits as the output carry bit.

4,764,889

OPTICAL LOGIC ARRANGEMENT WITH SELF ELECTRO-OPTIC EFFECT DEVICES

Harvard S. Hinton, Naperville, Ill., and David A. B. Miller, Fairhaven, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 19, 1984, Ser. No. 683,711

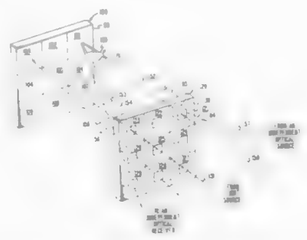
Int. Cl.[4] G06G *9/00*

U.S. Cl. 364—807 **29 Claims**

1. An optical logic arrangement comprising:

a first self electro-optic effect device responsive to a first control light beam for emitting a first output light beam;

a second self electro-optic effect device responsive to a second control light beam for emitting a second output light beam, said first and second output beams being a nonlinear gain function of said first and second control beams, respectively; and



a reflection hologram responsive to said first output light beam for originating said second control light beam to said second self electro-optic effect device.

4,764,890

OPTICAL LOGIC ARRANGEMENT

Harvard S. Hinton, Naperville, Ill., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 19, 1984, Ser. No. 683,713

Int. Cl.[4] G06G *9/00*

U.S. Cl. 364—807 **28 Claims**



1. An optical logic arrangement comprising:

a first optically nonlinear optical device responsive to a first control light beam for emitting a first output light beam;

a second optically nonlinear optical device responsive to a second control light beam for emitting a second output light beam, said first and second output beams being a nonlinear gain function of said first and second control beams, respectively; and

a reflection hologram responsive to said first output light beam for originating said second control light beam to said second optically nonlinear optical device.

4,764,891

PROGRAMMABLE METHODS OF PERFORMING COMPLEX OPTICAL COMPUTATIONS USING DATA PROCESSING SYSTEM

Jan Grinberg, Los Angeles, Calif.; Graham R. Nudd, Broadway, England, and Bernard H. Soffer, Pacific Palisades, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

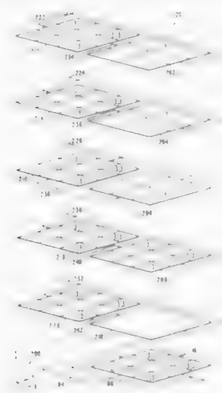
Continuation of Ser. No. 713,063, Mar. 18, 1985, abandoned. This application Nov. 12, 1987, Ser. No. 120,735

Int. Cl.[4] G06G *9/00*

U.S. Cl. 364—807 **16 Claims**

1. A method of programmably performing optical computation using a plurality of spatial light modulators to impress images corresponding to data onto a data beam, said method comprising the steps of:

(a) programmably selectively performing a desired optical computation from a plurality of performable optical computations including Fourier transform, correlation, convolution and ambiguity function calculations;



(b) applying respective data to a selected subset of said modulators to impress corresponding data images onto said beam; and

(c) applying uniform data to the remaining ones of said modulators so as to impress corresponding uniform data images onto said beam such that said selected subset of said modulators is determined by the programmably selected optical computation.

4,764,892

FOUR QUADRANT MULTIPLIER

Vincent P. Thomas, Eastleigh, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1985, Ser. No. 741,519

Claims priority, application European Pat. Off., Jun. 25, 1984, 84304307.7

Int. Cl.[4] G06G *7/16*

U.S. Cl. 364—841 **8 Claims**



1. In a multiple circuit in which the multiplication of two signal values is achieved by means of a pair of differentially connected transistors having respective control electrodes to which a differential voltage representative of a first electrical value to be multiplied is applied, and having a tail connection connected to one of two differential outputs of a differential amplifier, to the inputs of which a differential voltage representing a second electrical value to be multiplied is applied, the improvement comprising current supply means connected to said one output of said differential amplifier to supply current thereto, the magnitude of which is such that with zero differential voltage applied as input to the differential amplifier, the standing current of said amplifier is supplied solely from said current supply means and no current flows through the tail connection of said differentially connected pair of transistors, said magnitude constituting a finite non-zero value equal to the standing current of said differential amplifier into said one output thereof.

4,764,893

NOISE-IMMUNE INTERRUPT LEVEL SHARING

Chris Karabetsos, Kingston, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1985, Ser. No. 727,653

Int. Cl.[4] G06F *9/46, 11/30*

U.S. Cl. 364—900 **11 Claims**



1. In an interrupt system having an interrupt handler interconnection for receiving an interrupt request signal and being responsive to said interrupt request signal on said interconnection having a duration greater than a first predetermined minimum time, said interconnection being subject to possible exposure to noise pulses, an interrupt interface circuit interposed between said interconnection and a peripheral device for receiving a request for an interrupt from said peripheral device and furnishing a said interrupt request signal to said interconnection, said interface circuit comprising:

signal generating means responsive to said device when said device requests an interrupt for impressing upon said interconnection an interrupt request signal having a duration greater than said first minimum time;

first inhibiting means connected to said interconnection and responsive to any signal applied to said interconnection when and only if said any signal has a duration greater than a second predetermined minimum time for inhibiting said signal generating means until receipt of a reset signal, said second minimum time being greater than the duration of substantially all noise pulses on said interconnection and less than said first minimum time; and

means for receiving said reset signal and then restoring said first inhibiting means to its initial state.

4,764,894

MULTIPLE FIFO NMR ACQUISITION SYSTEM

Robert S. Codrington, Los Altos Hills, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 691,783, Jan. 16, 1985, abandoned. This application Dec. 28, 1987, Ser. No. 136,499

Int. Cl.[4] G11C *19/00;* **G06F** *3/00;* **G01R** *33/08*

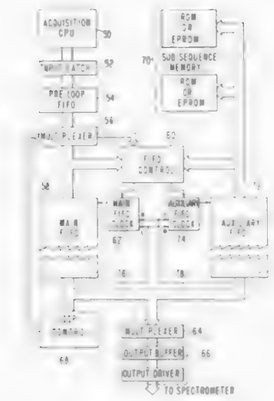
U.S. Cl. 364—900 **2 Claims**

1. The method of controlling operational status of a synchronous device comprising:

Storing a main sequence of a first plurality of digital control words in a sequence of adjacent memory registers comprising initial and final memory registers and at least one intermediate memory register disposed therebetween, said

VOL 1093 ISS 3 AUG 16 1988 UMI

registers adapted for serial transfer of the contents thereof from said initial memory register through said intermediate memory register to said final memory register, each said digital control word comprising at least a first and second portion thereof, storing in addressable storage space at least one auxiliary sequence comprising a second plurality of digital control words, each said digital control word of said auxiliary sequence comprising at least a first and second portion thereof, propagating said first sequence of digital control words through said sequence of said plurality of adjacent memory registers, said step of propagating occurring in incremental intervals of time, determining the duration of each said incremental interval



of time from the content of said first portion of each said control word,

detecting a preselected one of said control words and in response thereto, retrieving said auxiliary sequence of digital control words from said addressable storage space and inserting said auxiliary sequence of digital control words into an auxiliary sequence of adjacent memory registers, said auxiliary sequence and said main sequence of digital control words operating to form a composite sequence of digital control words, and

controlling the state of said synchronous device in accord with said second portion of said digital control word of said composite sequence of digital control words.

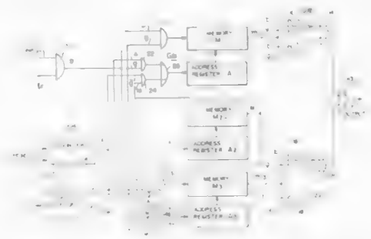
4,764,895

DATA PROCESSOR FOR CHANGING THE SEQUENTIAL FORMAT OF INPUTTED RECORDS

Philip N. Armstrong , 18 Elk Run, Monterely, Calif. 93940

Filed May 12, 1986, Ser. No. 862,142
Int. Cl.[4] G06F *12/02*
U.S. Cl. 364—900 6 Claims

1. A data processing system for producing a series of output data words in response to a series of input data words, with the output data words having a different sequential format as compared with the sequential format of the data input words, said system comprising: a first memory for storing the input data words; a first address register connected to said first memory; a second memory for storing instruction words relating to the retrieval of the data words from said first memory; a second address register connected to said second memory; address generating circuitry connected to said second address register for generating successive address words and for sequentially introducing said successive address words to said second address register; first logic circuitry connected to said address generating circuitry for causing said successive address words to be sequentially introduced to said first address register during an input operational mode of said first memory; second logic circuitry connected to said first memory to pass the input data words sequentially to said first memory during said input operational mode; third logic circuitry for disabling said first logic circuitry and for causing instruction words to be sequentially introduced to said first address register from said second memory during an output operational mode to retrieve



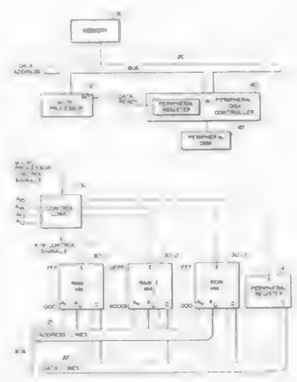
data words from said first memory in a sequence determined by said instruction words; and fourth logic circuitry connected to said first memory for causing data words retrieved from said first memory by said instruction words to pass out of the system as said output data words during said output operational mode.

4,764,896

MICROPROCESSOR ASSISTED MEMORY TO MEMORY MOVE APPARATUS

Ronald J. Freimark, Scottsdale, and Steven A. Rose, Mesa, both of Ariz., assignors to Honeywell Inc., Phoenix, Ariz.

Filed Jul. 1, 1985, Ser. No. 750,797
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—900 5 Claims



1. In a data processing system including a peripheral controller for controlling data movement between a peripheral register and memory means using an address and data bus, and a microprocessor operatively connected to the data and address bus, to the peripheral controller and the memory means, wherein the improvements comprise:

said memory means including a plurality of memory segments with each memory segment including a plurality of memory modules and each memory module having a plurality of addressable locations for storing data;

a first memory segment being utilized for moving data from a RAM module of the first memory segment to a peripheral register at an addressable location of a buffer module of the first memory segment;

a second memory segment, said second memory segment being utilized for moving data from a peripheral register of a buffer module of the second segment to a RAM module of the second segment, the size and location of corresponding memory modules of the first and second segments being the same;

said peripheral controller means producing a first control signal when data stored in peripheral register of the second segment is to be moved to the addressable memory location of a RAM module of the second memory segment and a second control signal when data is to be moved from a RAM module of the first segment to a peripheral register in the buffer module of the first segment;

said processor means performing an interrupt routine through a pseudo operation in response to the peripheral controller producing a first or second control signal, said processor means producing address signals of an addressable location of a RAM module of one of the two segments used for such data moves and read/write control signals; and

logic means operatively connected to said memory means, to said processor means, and to the said peripheral controller for generating logic control signals in response to selected address signal and read/write control signal produced by the microprocessor, said logic control signals causing predetermined data movement to occur between a given memory location of a RAM module and a given peripheral register of a memory segment of said memory means, thereby enabling a desired data move to occur in one of the two segments and preventing other data movement from occuring at the same time.

4,764,897

SEMICONDUCTOR MEMORY DEVICE EMPLOYING NORMALLY-ON TYPE GAAS-MESFET TRANSFER GATES

Atushi Kameyama, Kanagawa; Yasuo Ikawa, Tokyo, and Katsue Kawakyu, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 12, 1986, Ser. No. 906,250
Claims priority, application Japan, Sep. 30, 1985, 60-216434
Int. Cl.[4] G11C *11/00*
U.S. Cl. 365—154 8 Claims



1. A semiconductor memory device wherein a plurality of memory cells are connected in a matrix form by employing a plurality of bit lines and a plurality of word lines under a single power supply having one polarity terminal and a ground line, and a plurality of word lines drivers are connected to said memory cells via said word lines and operable under said single power supply, each of said memory cells comprising:

a flip-flop including normally-on type gallium arsenide (GaAs) metal-semiconductor field effect transistors (MESFET's) as load MESfet's and normally-off type gallium arsenide (GaAs) metal-semiconductor field effect transistors (MESFET's) as driver MESFET's, drains of said load MESFET's being commonly connected to said one polarity terminal of the single power supply, sources of said driver MESFET's being commonly coupled to said ground line, and sources of said load MESFET's and drains of said driver MESFET's being mutually connected to form nodes of the flip-flop;

transfer gates having normally-on type gallium arsenide (GaAs) metal-semiconductor field effect transistors (MESFET's), a source-to-drain current path of each of said transfer gate MESFET's being connected between the corresponding one of said nodes and the corresponding one of said bit line, and a gate electrode thereof being connected via the corresponding one of said word line to the corresponding one of said word line drivers; and

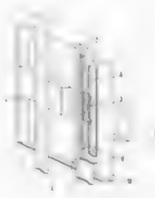
a parallel circuit including a diode and a switching gallium arsenide (GaAs) metal-semiconductor field effect transistor (MESFET), said parallel circuit being connected in parallel between said sources of said driver MESFET's and said ground line in such a manner that a gate electrode of said switching GaAs-MESFET is connected via said corresponding word line to said corresponding word line driver, and a potential of said sources of the driver MESFET's is equal to a forward voltage drop of said diode when said switching GaAs-MESFET is turned off while being driven by said corresponding word line driver via said corresponding word line.

4,764,898

VORTEX MEMORY DEVICE

Kazunori Miyahara; Masashi Mukaida, and Koji Hokawa, all of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Dec. 12, 1985, Ser. No. 808,424
Claims priority, application Japan, Dec. 13, 1984, 59-261789; Jan. 30, 1985, 60-16159; Jan. 30, 1985, 60-16160; Nov. 15, 1985, 60-255136; Nov. 18, 1985, 60-258316; Nov. 18, 1985, 60-259312; Nov. 18, 1985, 60-259313; Nov. 19, 1985, 60-257678; Nov. 25, 1985, 60-262513; Nov. 25, 1985, 60-262514; Nov. 25, 1985, 60-262515
Int. Cl.[4] G11C *11/44*
U.S. Cl. 365—162 29 Claims



1. A superconducting memory device comprising:

vortex storage means constituted by a thin type-II superconductor film and for storing an Abrikosov vortex;

write control means for generating the vortex in said vortex storage means; and

vortex detecting means for detecting a polarity of the vortex stored in said vortex storage means,

said vortex detecting means including a Josephson junction and a read control current line,

said Josephson junction comprising a base electrode, a counter electrode and a tunnel barrier region sandwiched between said base electrode and said counter electrode,

wherein by utilizing a fact that a shift direction of the threshold characteristics of said vortex detecting means corresponds to the polarity of said vortex stored in said vortex storage means, a flux crossing said tunnel barrier region of said Josephson junction due to said stored vortex is detected by said read control line.

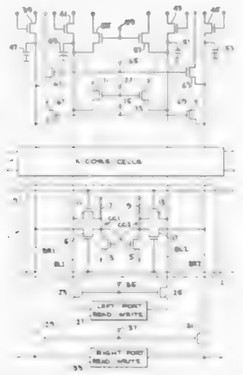
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,899

WRITING SPEED IN MULTI-PORT STATIC RAMS

Kent D. Lewallen, Cupertino, and Steven J. Schumann, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 7, 1986, Ser. No. 827,994
Int. Cl.[4] G11C 7/00
U.S. Cl. 365—189 19 Claims



1. In a matrix-array read-write memory device of the type having a plurality of individually addressable discrete memory cells, having a plurality of discrete ports for accessing individual memory cells for writing or reading data in said memory cells, a memory cell accessible from a first and a second port, and including a bi-stable core cell having a first state representing a logic 1 bit and a second state representing a logic 0 bit and having a complementary pair of input-output terminals CC1 and CC2, a first-port word-select line and a second-port word-select line each coupled to said terminals CC1 and CC2, a first port column select input and a second port column select input each coupled to said terminals CC1 and CC2, a first-port bit-line BL1 and a second-port bit-line BR1 each coupled to said terminal CC1, a first-port bit-line BL2 and a second-port bit-line BR2 each coupled to said terminal CC2, and write circuit means coupled to the bit-lines of one of said ports and selectively operable to write data into said core cell by applying a logic 1 signal to one of said bit-lines and a logic 0 signal to the other of said bit-lines, said device further comprising:

gated write-bias means operating in cooperation with said write circuit means and coupled to one of said bit-lines to apply a write bias thereto, including a plurality of write-bias gates, one of said write-bias gates being provided for and associated with each of said plurality of ports, and wherein each of said write-bias gates is coupled between the bit-lines of its associated port and a source of logic-signal voltage, and further including means to cause each said gate to pass said logic-signal voltage to the bit-lines of its associated port in response to a write operation on another port, and to not pass said logic-signal voltage to the bit-lines of its associated port in the absence of a write operation on another port.

4,764,900

HIGH SPEED WRITE TECHNIQUE FOR A MEMORY

Mark Bader, and Karl L. Wang, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 24, 1986, Ser. No. 843,460
Int. Cl.[4] G11C 7/00
U.S. Cl. 365—189 7 Claims

1. A memory having a write mode in which data is written into a selected memory cell via a selected bit line pair, and a read mode in which data is read from a selected memory cell via a selected bit line pair, comprising:

a plurality of memory cells coupled to word lines and bit line pairs at intersections thereof, each memory cell receiving data from or providing data to the bit line pair to which it is coupled when the word line to which it is coupled is enabled;

a row decoder, coupled to the word lines, for enabling a selected word line as determined by a row address;

a column decoder for coupling a data line pair to a selected bit line pair as determined by a column address;

a first power supply terminal for receiving a first power supply voltage of a first magnitude;

a second power supply terminal for receiving a second power supply voltage of a second magnitude;

write driver means, coupled between the first power supply terminal and the second power supply terminal, for providing, in response to the memory switching to the write



mode, a first write signal at a voltage of the first magnitude and a second write signal at a voltage of the second magnitude in response to a data input signal being in a first logic state; coupling means coupled between the write driver means and the data lines, for providing a voltage of the first magnitude to a first data line of the data line pair and providing a voltage of the second magnitude to a second data line of the data line pair and coupling means comprising:

a first transmission gate having a coupling input for receiving the first signal, first and second control inputs for receiving first and second complementary write control signals, and a coupling output coupled to the first data line; and

a second transmission gate having a coupling input for receiving the second signal, first and second control inputs for receiving the first and second complementary write control signals, and a coupling output coupled to the second data line.

4,764,901

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF BEING ACCESSED BEFORE COMPLETION OF DATA OUTPUT

Takayasu Sakurai, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 2, 1985, Ser. No. 761,709
Claims priority, application Japan, Aug. 3, 1984, 59-163508; Jun. 19, 1985, 60-133420
Int. Cl.[4] G11C 7/00, 8/00
U.S. Cl. 365—189 9 Claims

1. A semiconductor memory device receiving address signals and comprising:

a plurality of memory cells for storing data;

selecting means for accessing a selected one of said plurality of memory cells identified by said address signals;

sensing means, coupled to said memory cells, for sensing the data stored in said selected memory cell to generate and transfer an output signal representing said stored data in said selected memory cell;

latching means, coupled to said sensing means, for latching said output signal transferred from said sensing means;

output means, coupled to said latching means, for generating output data in response to said latched output signal; and



transfer control means, coupled to said sensing means and to said latching means, for temporarily preventing the transfer of said output signal from said sensing means to said latching means after said latching means has latched said output signal,

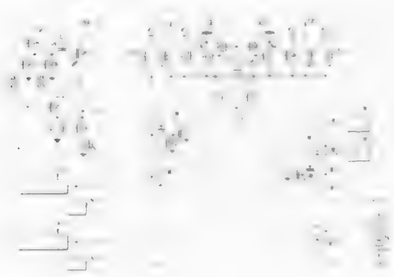
and for permitting said sensing means to sense data from another one of said plurality of memory cells while said output circuit generates said output data from said latched output signal.

4,764,902

MEMORY CIRCUIT WITH IMPROVED WORD LINE NOISE PREVENTING CIRCUITS

Yasukazu Morita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 1, 1986, Ser. No. 880,969
Claims priority, application Japan, Jul. 1, 1985, 60-145033
Int. Cl.[4] G11C 11/40, 13/00
U.S. Cl. 365—206 7 Claims



1. A memory circuit comprising a pair of digit lines, a plurality of word lines intersecting with said pair of digit lines, a plurality of memory cells coupled to said digit lines and said word lines, a word line selection circuit for selecting one of said word lines, a sense amplifier provided for said pair of digit lines, said sense amplifier operatively discharging one of said pair of digit lines, a pull up circuit provided for said pair of digit lines, said pull up circuit operatively raising a potential of the other of said digit line to a power voltage after the discharge of said one of said digit lines, a plurality of word line noise preventing circuits each coupled to each one of said word lines, each of said noise preventing circuits operatively clamping the associated word line in the case where said associated word line is not selected, and control means for controlling said noise preventing circuits in such manner that said noise preventing circuits are disenabled when said sense amplifier discharges one of said digit lines and enabled when said pull up circuit raises a potential of the other of said digit lines.

4,764,903

METHOD AND APPARATUS TO DETERMINE PERMEABILITY OF ROCK FORMATIONS ADJACENT A BOREHOLE

Robert M. Siebert, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Mar. 28, 1984, Ser. No. 594,194
Int. Cl.[4] G01V 1/00
U.S. Cl. 367—29 4 Claims



1. Apparatus for determining permeability of earth formations adjacent a borehole, comprising:

pulse generator means for generating a drive frequency pulse having a frequency in the range of 0.1 MHz to 10 MHz and having a bandwidth limited to about 2 MHz;

first transducer means coupled to said pulse generator firmly engaged with the borehole wall to transmit high frequency acoustic energy directly into the borehole wall in the frequency range of 0.1 MHz to 10 MHz and having a bandwidth limited to about 2 MHz;

second and third transducer means responsive to energy in the frequency range of 0.1 MHz to 10 MHz and being firmly engaged with the borehole wall and disposed at known spacing in alignment with said first transducer means, and directly receiving said transmitted acoustic energy to produce first and second outputs indicating attenuation of the acoustic energy between the second and third transducer means;

first and second discriminator means receiving said first and second outputs and producing first and second amplitude limited outputs and first and second gate outputs, said first and second discriminator means being enabled when said first transducer means transmits acoustic energy;

VOL 1093 ISS 3 AG 16 1988 UMI

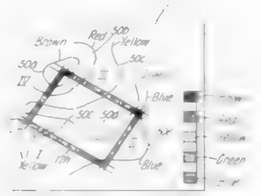
first and second peak detector means receiving said first and second amplitude limited outputs to generate respective first and second enabling outputs;
first and second sample and hold means receiving said first and second amplitude limited outputs and enabled by said first and second enabling outputs to output first and second peak signal outputs;
differential amplifier means receiving input of said first and second peak signal outputs to generate a different signal;
third sample and hold means sampling said difference signal when enabled to produce a sampled output;
third discriminator means receiving said difference signal and generating a logic enable signal;
logic gate means enabling said third sample and hold means upon coincident input of said enable signal, said first and second enabling outputs and said first and second gate outputs;
smoothing means receiving said sampled output to produce sampled and smoothed signal outputs; and
means displaying said successive sampled and smoothed signal outputs as an indication of formation permeability along said borehole.

4,764,904

INTERACTIVE CONTOURING OF SEISMIC DATA

Per Salomonsen, Sandnes, and Lars Sonneland, Tananger, both of Norway, assignors to Geophysical Company of Norway AS, Hovik, Norway

Filed Sep. 17, 1985, Ser. No. 776,382
Claims priority, application Norway, Sep. 17, 1984, 843698
Int. Cl.[4] G01V *1/00*
U.S. Cl. 367—70 19 Claims



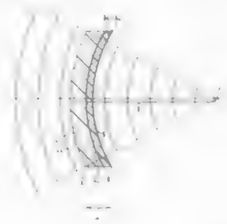
1. A method for interactive contouring of seismic data for producing a three-dimensional reproduction of various structural layers within an area defined by heading lines along which a seismic vessel is moving during seismic operations, comprising:
selecting seismic data representing a plurality of individual structural layers referred to a fixed reference line;
pre-selecting color values on a color scale to indicate various depths of said seismic data relative to said fixed reference line;
producing each of said individual structural layers on a graphic data screen as a separate color coded echo line, the depth along each echo line being indicated by said pre-selected colors;
inserting on the graphic data screen between various points on each echo line having the same color value interpreted contour lines indicating elevations to produce a mapping on said graphic data screen having surface adaptations given in various color values; and
printing out on a color value printer the graphic display on said screen to produce a three-dimensional map.

4,764,905

ULTRASONIC TRANSDUCER FOR THE DETERMINATION OF THE ACOUSTIC POWER OF A FOCUSED ULTRASONIC FIELD

Bernd Granz, Oberasbach; Peter Krämmer, and Bertram Sachs, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 12, 1986, Ser. No. 940,843
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545381
Int. Cl.[4] H04B *17/00*
U.S. Cl. 367—140 3 Claims



1. An ultrasonic transducer (2) for measuring the acoustic power of a spherical ultrasonic field (1) focused at a focal point F, comprising a plastic support structure (4) that has a shape of a spherical cup with a geometric center, and two opposed spherical surfaces; and a piezoelectric polymer foil arranged at least indirectly on one of said spherical surfaces, the piezoelectric polymer foil having two conductive layers.

4,764,906

PLASMA JET UNDERWATER ACOUSTIC SOURCE

Reginald M. Clements; Philip L. Pitt; John D. Ridley, all of Victoria, Canada; Robert Smith, Paradise, Calif., and David Topham, Victoria, Canada, assignors to University of Victoria, Victoria, Canada

Filed Sep. 17, 1987, Ser. No. 99,344
Claims priority, application Canada, Feb. 20, 1987, 530288
Int. Cl.[4] G01V *1/06*
U.S. Cl. 367—142 19 Claims



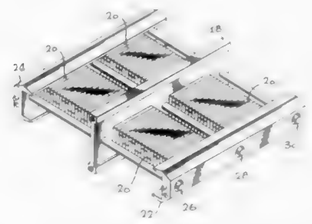
1. A plasma jet source for a plasma jet underwater acoustic source, said plasma jet source comprising:
(a) a central electrode;
(b) a concentric insulator having a longitudinal bore to accomodate said central electrode, said bore being spaced from said central electrode by a longitudinally-extending annular chamber;
(c) a plasma cavity bounded at its upper end by said central electrode, said plasma cavity being in communication with said annular chamber;
(d) an outer housing of electrically-conductive material surrounding said insulator and terminating in a centrally-apertured end plate whose central aperture provides an extension to said plasma cavity, said end plate being adapted to be grounded;
(e) means for connecting said annular chamber to a source of gas; and
(f) means for connecting said central electrode to a source of low energy and high voltage to create an electrical discharge across the gas within said cavity and then for connecting said electrode to electrical energy of comparatively low voltage in the range of hundreds of volts.

4,764,907

UNDERWATER TRANSDUCER

David K. Dahlstrom, Los Angeles; Merrill E. Fife, Canyon Country, and Charles R. Judy, Newhall, all of Calif., assignors to Allied Corporation, Morristown, N.J.

Filed Apr. 30, 1986, Ser. No. 860,361
Int. Cl.[4] H04R *17/00*
U.S. Cl. 367—163 10 Claims



1. An underwater flextensional sonar transducer including a hollow shell of elliptic cross section and a stack of piezo-electric transducer elements placed in said shell such that, when energized, they tend to vibrate along the major axis of said shell,
characterized in that said transducer comprises a rigid end beam at each end of said stack with bolts connected between said end beams and tightened to produce a desired amount of compressive presetress in said stack, a pair of arcuate radiating elements, each having one edge fastened to one of said end beams and another edge fastened to the other of said end beams such that expansion and contraction of said stack when energized is transformed into large motions of said arcuate radiating elements, cap members extending between the ends of said end beams, and a jacket of elastomeric material covering said cap members, said end beams and said radiating elements.

4,764,908

MAGNETOHYDRODYNAMIC FLUID TRANSDUCER

Sedley J. Greer, Jr., Ste. 211, 4618 J. F. Kennedy Blvd., North Little Rock, Ark. 72116

Continuation-in-part of Ser. No. 444,988, Nov. 29, 1982, Pat. No. 4,583,207. This application Apr. 11, 1986, Ser. No. 850,520
The portion of the term of this patent subsequent to Apr. 15, 2003, has been disclaimed.
Int. Cl.[4] G01V *1/18*
U.S. Cl. 367—178 12 Claims

1. A magnetohydrodynamic fluid transducer for use within a motion sensor, displacement meter, velocity meter, accelerometer, and a servo-accelerometer, for sensing perturbations, said transducer comprising:
a magnetohydrodynamic fluid generator
means defining a circular fluid flow channel containing an electrically conductive fluid, said channel occupying a plane;
magnetic means for establishing a magnetic field through said channel perpendicular to said plane; and,
means for sensing perturbations in the electric field normal to said magnetic field for monitoring motion disturbances, said means for sensing perturbations comprising electrode means oriented transversely with respect to said magnetic



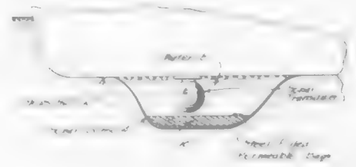
field for sensing said electrical field and high gain amplifier means for greatly amplifying said perturbations.

4,764,909

HYDROGEN GENERATOR

Charles L. Darner, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 7, 1969, Ser. No. 851,141
Int. Cl.[4] H04R *1/44*
U.S. Cl. 367—171 6 Claims



1. In a sonar apparatus, the improvement comprising:
a sonar dome, a quantity of water within said dome, a sonar transducer, said transducer being immersed in said water whereby the output energy of said transducer is transmitted through said water and said dome, strengthening means for strengthening said water to retard the onset of cavitation in said water at high output power levels of said transducer, said strengthening means comprising means for increasing the hydrogen content of said water whereby the onset of cavitation is retarded.

4,764,910

ELECTRONIC TIMEPIECE

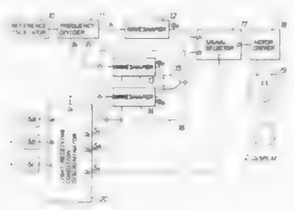
Shingo Ichikawa, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1986, Ser. No. 836,355
Claims priority, application Japan, Mar. 8, 1985, 60-46103; Jul. 2, 1985, 60-145112; Sep. 27, 1985, 60-214113
Int. Cl.[4] G04C *17/00*
U.S. Cl. 368—69 12 Claims

1. An electronic timepiece comprising a housing devoid of control members extending through the housing from an interior to an exterior thereof, a plurality of at least three light-receiving elements arranged to receive external light, a light-receiving condition discriminator for discriminating that a light-receiving condition of a centrally positioned one of the light-receiving elements is different from the light-receiving condition of the other light-receiving elements and thereupon

VOL 1093 ISS 3 AG 16 1988 UMI

generates the output signal, and a circuit to be controlled in response to the output signal from said light-receiving condi-





tion discriminator, the light-receiving elements, the discriminator and the circuit being disposed interiorly of the housing.

4,764,911

OPTICAL LENS VIBRATION CONTROL FOR OPTICAL INFORMATION RECORDING AND/OR REPRODUCING APPARATUS

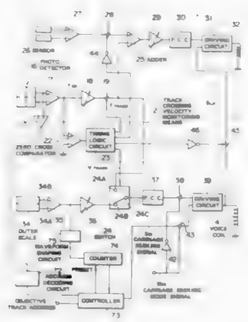
Makie Morota, Hino, and Shoji Yoshikawa, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 10, 1986, Ser. No. 872,788

Claims priority, application Japan, Jun. 12, 1985, 60-127575

Int. Cl.[4] G11B *7/085, 21/08, 21/10*

U.S. Cl. 369—32 **10 Claims**



1. An optical information recording and/or reproducing apparatus comprising:

an optical head including

an optical means of converging and radiating a light beam onto an optical information recording medium,

a finely moving means, said finely moving means controlling a movement of the optical means in a direction intersecting tracks of the recording medium so that a position of a spot light radiated onto the recording is made finely movable, and

an optical system leading the light beam from a light source generating light beams to the optical means and leading the light returning from the recording medium to a photodetector;

a coarsely moving means making the optical head movable in the direction intersecting the tracks of the recording medium;

starting means for starting a coarse access;

control means responsive to the starting means and a sensing means, said control means for controlling the coarsely moving means;

said sensing means for sensing until the optical head is located close to a desired track;

a clamping means for clamping said optical means when the coarse access of the optical head is made close to an objective track by the coarsely moving means, the clamping means clamping the optical means until a clamping releasing signal is input thereto from a track crossing velocity monitoring means, the clamping of the optical means the being released; and

said track crossing velocity monitoring means for detecting whether or not the track crossing velocity, at which the spot light radiated on to the recording medium crosses the tracks of the recording medium, is below a predetermined value so that, when the track crossing velocity is below the predetermined the coarsely moving means, the optical means clamping releasing signal will be output to the clamping means.

4,764,912

OPTICAL FOCUSING IN MAGNETO-OPTIC DISK SYSTEM

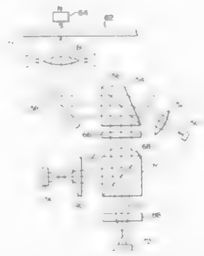
Hideo Ando, Kawasaki, and Akihiko Doi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 6, 1986, Ser. No. 915,529

Claims priority, application Japan, Oct. 8, 1985, 60-222649

Int. Cl.[4] G11B *7/00*

U.S. Cl. 369—45 **15 Claims**



1. A system which records information on an information recording medium, and retrieves and erases the recorded information from the medium, comprising:

means for emitting a light beam;

an objective lens for focusing the light beam emitted from said emitting means, on the information recording medium;

means for applying a magnetic field to the information recording medium, in erasing or recording the information;

means for splitting the light beam, reflected from the information recording medium and transmitted through the objective lens, into first and second light beams which are polarized on different polarization planes, respectively;

a first photodetector having a plurality of photosensitive regions on which the first light beam is incident, whereby the first light beam is detected, said photosensitive regions delivering detection signals;

a second photodetector having a plurality of photosensitive regions on which the second light beam is incident, whereby the second light beam is detected, said photosensitive regions delivering detection signals;

means for processing the detection signals from the photosensitive regions of the first and second photodetectors, and delivering a focusing error signal and an information signal; and

means for moving the objective lens along the optical axis thereof, in response to the focusing signal, thereby keeping the objective lens in a focusing state such that the light beam is focused on the information recording medium by the lens.

4,764,913

SIGNAL PROCESSING APPARATUS FOR DISC MEMORY DEVICES

Hiroshi Sasaki, Hitachi; Tomio Chiba, Katsuta; Mitsuyasu Kido, Hitachi; Yoshio Sato, Hitachi, and Atsumi Watanabe, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,713

Claims priority, application Japan, Dec. 20, 1985, 60-287269; Jan. 24, 1986, 61-11915

Int. Cl.[4] G11B *20/10*

U.S. Cl. 369—49 **6 Claims**



1. A signal processing apparatus for a disc memory device which includes a disc with a plurality of pits arranged at equal intervals along tracks defined on the surface of the disc, at which pits digital signals are recorded bit by bit and a pickup tracking a predetermined one of the tracks to record signals at the pits or read out recorded signals from the pits, comprising;

recording means for processing a source signal to be recorded to change the source signal into the form suited for the recording, and

reproducing means for processing a digital signal read out from the disc to generate a reproduced signal,

characterized in that

there is further provided means for detecting the linear velocity of a track, which is at present followed by the pickup, the linear velocities of the tracks being varied in accordance with the position of the pickup relative to the disc which is rotated at the constant angular velocity,

said recording means has an analog-to-digital converter for sampling the source signal at predetermined sampling frequencies and converting a sampled signal into a digital signal, the sampling frequencies being varied in accordance with the linear velocity detected by said detecting means and a low pass filter for filtering the source signal supplied for the analog-to-digital converter, the cut-off frequency of which is varied in response to the present sampling frequency, and

said reproducing means has a digital-to-analog converter for converting a digital signal read out into an analog signal and a low pass filter for filtering the analog signal converted by the digital-to-analog converter, the digital-to-analog conversion and the cut-off frequency of the filter being controlled in accordance with the linear velocity detected by said detecting means.

4,764,914

LEAST SQUARES METHOD AND APPARATUS FOR DETERMINING TRACK ECCENTRICITY OF A DISK

Marvin F. Estes, Elba, and Gerald J. Smart, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 11, 1987, Ser. No. 95,185

Int. Cl.[4] G11B *21/10*

U.S. Cl. 369—58 **7 Claims**



1. A method of determining eccentricity of a rotatable disk preformatted with individually identifiable indicia spaced along concentric record tracks encircling the center of the disk, said method comprising:

(a) rotating the disk and reading each identifiable indicium accessible to a transducer head which is held at a fixed radial position as the disk is rotated;

(b) coordinating the actual radius of each indicium read with the angular position of the disk at the time the indicium is read; and

(c) transforming the array of coordinated pairs of radius and angular position information into a sinusoidal track eccentricity compensating signal the amplitude and the phase of which are constants computed from a least squares algorithm, the amplitude corresponding to the distance between the center of the disk and its rotational axis, the phase corresponding to the angle the center of the disk is from a predetermined angular position of the disk.

4,764,915

METHOD AND APPARATUS FOR RECORDING A MULTIPLEXED SIGNAL ON A RECORD MEDIUM

Edward Efron, Irvine; James O. McPherson, Newport Beach, and Young B. Kim, Long Beach, all of Calif., assignors to Discovision Associates, Costa Mesa, Calif.

Division of Ser. No. 339,011, Jan. 12, 1982, Pat. No. 4,746,991.

This application Jun. 27, 1984, Ser. No. 625,261

Int. Cl.[4] G11B *27/30, 27/36*

U.S. Cl. 369—58 **1 Claim**

1. An audio channel test signal multiplexer for combining in a prescribed sequence a plurality of audio channel test signals and recording said test signals onto an information storage member via a recording device, comprising:

(a) a plurality of audio channel test signal sources each having a test signal output that is unique as compared with other test signal outputs;

(b) control means for enabling each of sais test signal sources in sequential order;

(c) combining means for combining the outputs of said sources to produce a serial sequence of audio channel test signals;

(d) a select-position register for storing the position addresses of first and second reference positions on said storage member;

VOL 1093 ISS 3 AG 16 1988 UMI

(e) a comparator having first and second inputs and a compare output;

(f) recording means for reading program location information contained on said storage member and for recording said serial sequence of audio channel test signals onto said information storage member; and

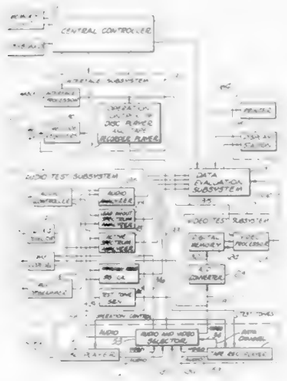
(g) a present position detector means connected to the output of said recording means for reading said program location information and outputting a present position address; and wherein:

(i) said combining means includes means for serially outputting said sequence of audio channel test signals such that the beginning of each said plurality of test signals is spaced from the beginning of an adjacent test signal by a fixed interval;

(ii) said control means is coupled to said combining means for initiating said serial sequence of audio channel test signals at first and second predetermined start positions on said storage member;

(iii) said recording means includes means for reading program location information contained on said storage member;

(iv) said comparator first input is connected to the output of said present position detector means;



(v) said comparator second input is connected to said select-position register;

(vi) said compare output is coupled to said control means for establishing said predetermined first and second start positions with respect to coincidence of said present position address with first and second reference position addresses;

(vii) said storage member contains a lead-in portion, a program information portion following said lead-in portion, and a lead-out portion following said program information portion;

(viii) said control means comprises means for establishing said first predetermined start position in said lead-in portion by subtracting a fixed position increment from said present position address at coincidence of said present position address as with said first reference position address; and

(ix) said control means comprises means for establishing said second predetermined start position in said lead-out portion by adding a fixed position increment to said present positon address at coincidence of said present position address with said reference position address.

4,764,916

READING CIRCUIT FOR AN OPTICAL DISK APPARATUS

Kunitaka Mori, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Mar. 5, 1986, Ser. No. 836,399
Claims priority, application Japan, Mar. 5, 1985, 60-43489
Int. Cl.[4] G11B *7/00, 5/09*
U.S. Cl. 369—59 20 Claims



1. A reading circuit for an optical disk drive having a phototransducer which optically reads recorded information on a optical disk in the form of a pattern of pits by detecting the presence of such pits, said phototransducer transforming the optically read information into an electrical read-out signal representative of the detected presence of such pits, said reading circuit comprising:

first differentiation means for differentiating said read-out signal to generate a first differentiated signal;

zero-level detector means for generating a first rectangular signal in response to whether said first differentiated signal is positive or negative;

pit detecting means for generating a pit detecting signal in response to said read-out signal, which indicates the period of the presence of pits in said read-out signal;

combining means to generate an AND signal by combining the inverse of said first rectangular signal and said pit detecting signal; and

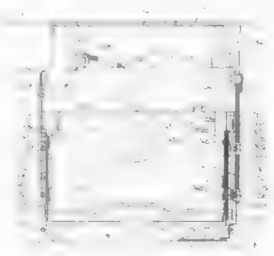
encoder means for generating a rectangular encoded signal representative of said recorded information in response to said AND signal.

4,764,917

AUTO LOADING DISK PLAYER

Masanori Sugihara; Kazuo Kobayashi; Akihiko Okamoto; Atsushi Kurosawa, and Hideki Okii, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 25, 1986, Ser. No. 878,155
Claims priority, application Japan, Jun. 26, 1985, 60-98093[U]
Int. Cl.[4] G11B *1/00, 17/04*
U.S. Cl. 369—77.1 2 Claims



1. In a front loading disk player comprising a housing provided with a slot into which a disk to be played is inserted, playback means installed in said housing, a disk carrier mechanism for carrying said disk to a playback position, said disk carrier mechanism including a disk loader; said playback means comprising a carriage for supporting optical pickup means, a driving mechanism for driving said carriage, a turntable, a support member for supporting said carriage, said driving mechanism and said turntable, a vibration-damping mechanism securing said support member to said housing, the improvement comprising locking means for locking said support member to said housing when the disk is not being played, said locking means including at least one lock pin mounted on opposite sides of said support member and operatively engaging said housing to prevent inclination of said support member upon release of said locking means, and wherein said housing further includes a chassis, moving plates mounted on opposite sides for movement longitudinally towards and away from said slot, and for raising and lowering said support member, said locking pins comprise two locking pins fixedly mounted on one side of said support member and one locking pin fixedly mounted on the opposite side of said support member, said locking pins projecting transversely from said opposite sides of said support member, one of said moving plates including an elongated horizontal opening therein, said horizontal opening including a narrow, straight portion at one end and a radially enlarged portion at the other end, said one locking pin having a projecting portion received within said horizontal opening and movable relative therewith, such that said support member is locked via said one pin when said projecting portion thereof is in the narrow portion of said opening, and said support member is unlocked when said moving plate is shifted relative to said support member such that said projecting portion of said one locking pin enters said radially enlarged portion of said opening.

4,764,918

TELECOMMUNICATION SWITCHING SYSTEM

Derek B. Waters, Chelmsford, Great Britain, assignor to STC PLC, London, England

Filed Sep. 8, 1986, Ser. No. 904,640
Claims priority, application United Kingdom, Sep. 24, 1985, [illegible]
Int. Cl.[4] H04J *1/16*
U.S. Cl. 370—14 5 Claims



1. An automatic telecommunications switching arrangement in which:

electronic switching means is provided via which inlets to and outlets from the arrangement are interconnected;

coding means is associated with the inlets to and outlets from the network such that intelligence in digital form is handled within the switching arrangement using a redundant line code whose characterics are such that spare code combinations are available, which spare combinations are used to provide auxiliary data channels usable to transmit data through the switching means;

control means associated with the inlets to the system is provided which inserts into a said auxiliary data channel the inlet port number for a said inlet involved in a connection to be set up from that inlet;

comparison means associated with each said outlet from the arrangement is provided which receives from an inlet involved in a connection to the said outlet the appropriate inlet port number, said comparision means then comparing the received inlet port number with the expected outlet port number; and

means responsive to the result of said comparision to indicate the correct or incorrect operation of the switching means, whereby the operation of the arrangement is checked while the arrangement is handling traffic.

4,764,919

VIRTUAL PBX CALL PROCESSING METHOD

Paul D. Hunter; William W. Parker, both of Naperville, and Benjamin C. Widrevitz, Downers Grove, all of Ill., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 5, 1986, Ser. No. 904,885
Int. Cl.[4] H04J *3/02*
U.S. Cl. 370—60 17 Claims



1. A method of establishing a call from a first one of a group of user stations, where each pair of user stations of said group is interconnected by a different one of a plurality of virtual circuits of a packet switching arrangement serving a plurality of user stations including said group, said method comprising

said first user station, in response to call address information for said call, determining whether the user station defined by said call address information is part of said group,

upon determining that said defined user station is part of said group, said first user station determining the one of said virtual circuits interconnecting said first user station and said defined user station, and

said first user station transmitting a setup packet via said determined virtual circuit to said defined user station to initiate the establishment of said call.

4,764,920

PACKET TRANSMISSION SYSTEM

Yukitsuna Furuya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 3, 1985, Ser. No. 719,530
Claims priority, application Japan, Apr. 4, 1984, 59-67112; Apr. 4, 1984, 59-67113
Int. Cl.[4] H04J *3/02*
U.S. Cl. 370—94 6 Claims

1. In a packet transmission system having a plurality of nodes to be used in a packet communication system of a multiaccess type wherein bursty traffic and periodical traffic coexist and are carried by bursty packets and periodical packets respectively along a transmission path, a node circuit comprising:

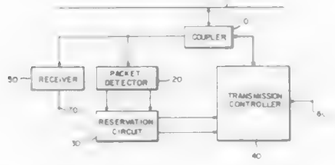
a transceiver means connected to said transmission path, and having a transmitter means for transmitting said bursty and periodical packets and a receiving means for receiving said bursty and periodical packets;

a packet detection means connected to said transceiver

VOL 1093 ISS 3 AG 16 1988 UMI

means for detecting a first periodical packet which carries said periodical traffic on said transmission path;

means connected to said transceiver means for predicting the arrival time of the next periodical packet in response to the detection of the first periodical packet by said



packet detection means and for making a reservation at the predicted time for the next periodical packet; and

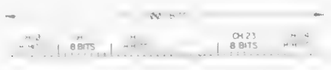
said transmitting means transmitting bursty packets only when the transmission path is not reserved, whereby collision between bursty and periodical packets may be avoided.

4,764,921

METHOD OF MULTIPLEXING DIGITAL SIGNALS

Alan F. Graves; Paul A. Littlewood, and Johannes S. Weiss, all of Alberta, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 12, 1985, Ser. No. 797,264
Int. Cl.[4] H04J *3/06*
U.S. Cl. 370—100 26 Claims



1. A method of multiplexing digital signals comprising the steps of:

providing t.d.m. frames each consisting of mn time slots each for one bit, where m and n are plural integers, said frames comprising n consecutive time slots for each of m channels; and, in each frame:

in a predetermined one of the n time slots for one of the m channels, providing a bit indicating that the channel is a frame synchronizing channel, whereby this frame synchronizing channel is distinguishable from information channels constituted by the other m−1 channels; and

providing digital signals in the other n−1 time slots of the m−1 information channels.

4,764,922

DATA TERMINAL INTERFACE CIRCUIT TO A TELEPHONE TRANSMISSION LINE

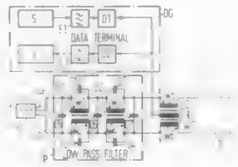
Georg Dieter, Egling, and Johann Hieninger, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 18, 1986, Ser. No. 897,435
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529939
Int. Cl.[4] H04B *1/50*
U.S. Cl. 370—123 6 Claims

1. A circuit arrangement for connecting a data terminal for sending and/or receiving data signals to a transmission line connected to telephone equipment, via which line, telephone signals are transmitted in a first frequency range and data signals in a second higher frequency range, and to which the telephone equipment and the data terminal are connected via a filter arrangement, which includes a lowpass filter lying in the transmission,

the transmission line having a first, relatively high characteristic impedance for the transmission of the telephone signals and a lower, second characteristic impedance for the transmission of the data signals,

the lowpass filter being designed so that on the side connected with the transmission line which is opposite the side connected with the telephone equipment, there is provided a capacitive termination and, in the transmission



line, a line transformer which comprises at least one transformer winding for coupling with the data terminal as a coupling winding,

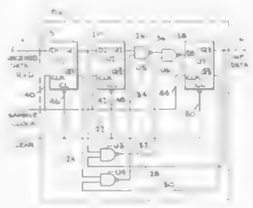
characterized in that the line transformer (U3) is connected by its respective coupling winding (w7) directly with the data terminal (DG), and the capacitive termination (C7) of the lowpass filter (TP) is rated so that its a-c resistance in said second frequency range is at most in the order of magnitude of the characteristic impedance of the transmission line for that frequency range but is preferably lower than this characteristic impedance.

4,764,923

DIGITAL RECEIVE FILTER CIRCUIT

Leslie Forth, and Raymond S. Duley, both of Austin, Tex., assignors to Advance Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 3, 1987, Ser. No. 21,291
Int. Cl.[4] H03M *13/00*
U.S. Cl. 371—6 15 Claims



13. A digital filter circuit comprising:

shift register means having an input node and an output node and being formed of first, second and third stages for receiving digital data input signals at the input node, each of said first, second and third stages having a high or low logic state;

clock means connected to said shift register means for sampling of said data input signals to provide a filtered data signal at the output node; and

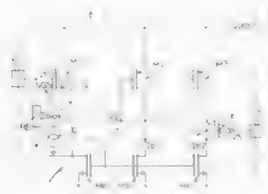
logic and gate means connected to said shift register means for correcting the logic state of said third stage upon the next sampling to be at the same logic state as the previous logic state of the first and third stages only when the logic state of the previous second stage is different from both the previous logic states of the first and third stages.

4,764,924

TEST INTERFACE FOR AN MOS TECHNOLOGY INTEGRATED CIRCUIT

Jean-Luc Mate, Toulouse, France, assignor to Bendix Electronics S.A., Toulouse, France

Filed Oct. 10, 1986, Ser. No. 918,168
Claims priority, application France, Oct. 16, 1985, 85 15340
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—15 6 Claims



1. A test interface for an MOS type integrated circuit including at least one function command input terminal, a test command input terminal and a test output terminal, characterized in that the interface comprises:

a parallel circuit with head-to-tail connection of the source-drain paths of first and second MOS transistors of opposite types of conductivity, said parallel circuit being connected between a power supply voltage line of the integrated circuit and a potential point (V_2), the gate of said first transistor being connected to the test command input terminal and the gate of said second transistor being connected to said potential point;

a third transistor (M5) having its drain-source path between said potential point and ground;

a constant current source connected to the gate of said third transistor for supplying current to said second transistor when said first transistor is not conducting;

detection means including a series cicruit between said power supply voltage and ground of the drain-source paths of a fourth transistor (M3) and a fifth transistor (M4) having opposite types of conductivity, whose common connection point is connected to the test output terminal,

said fourth and fifth transistors forming a mirror-image current with said second (M2) and third (M5) transistors respectively, the gate of said fourth transistor being connected to said potential point for responding to the conduction of said parallel circuit, the gate of said fifth transistor being connected to the gate of said third transistor for receiving current from said constant current source;

said series circuit responding to a voltage at the test input terminal higher than the power supply voltage, for providing a logic transition on the test output terminal when said first transistor is conducting.

4,764,925

METHOD AND APPARATUS FOR TESTING INTEGRATED CIRCUITS

Scott D. Grimes, Titusville; Lary J. Beaulieu, Cocoa, and Douglas A. Reed, Titusville, all of Fla., assignors to Fairchild Camera & Instrument, N.Y.

Filed Jun. 14, 1984, Ser. No. 620,736
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—20 18 Claims

1. An apparatus for testing a circuit device, said circuit device having a plurality of terminal pins through which said device is adapted to be operated in accordance with its intended circuit function, comprising:

first means for generating a sequence of test control signals in accordance with which a circuit device is tested;

a plurality of second means, each of which second means is associated with a respective one of said terminal pins and stores a plurality of electrical stimulas-representative signals for causing the selective application of electrical stimulas signals to said associated respective one of said terminal pins in response to a test control signal generated by said first means, and sensor means, adapted to be cou-



pled to said associated respective one of said terminal pins, for monitoring a prescribed electrical parameter thereat; and control means for selectively altering said sequence of test control signals in response to an electrical parameter monitored by one of said sensor means.

4,764,926

INTEGRATED CIRCUITS

William L. Knight, Hampshire; Mark Paraskeva, Soton, and David F. Barrows, Hampshire, all of United Kingdom, assignors to Plessey Overseas Limited, Ilford, England

Filed Dec. 11, 1985, Ser. No. 807,913
Claims priority, application United Kingdom, Dec. 21, 1984, [illegible]
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—25 17 Claims



5. An integrated circuit having a built-in self test design, the integrated circuit comprising a plurality of sub-circuits each of which comprises at least one combinatorial logic circuit coupled to at least one functional element, wherein the improvement lies in that an input of at least one of the combinatorial logic circuits is connected to outputs of two or more of the functional elements and an output of at least one of the functional elements is connected to inputs of two or more of the combinatorial logic circuits, and the functional elements are responsive to signals for selectively controlling simultaneously two of more of the functional elements into different functional modes to effect a test phase to part of the integrated circuit, means being provided for effecting sequentially a plurality of such test phases to parts of the integrated circuit to provide test data representative of functional characteristics of substantially all the combinatorial logic circuits and functional elements in the integrated circuit, said menas comprising feedback means provided between two or more of the functional elements and data selecting means for selectively connecting the input of at

VOL 1093 ISS 3 AG 16 1988 UMI

least one of the functional elements to the feedback means or to another of the functional elements.

4,764,927

CODE ERROR CORRECTING METHOD

Morishi Izumita, Inagi; Seiichi Mita, Kanagawa; Nobukazu Doi, Hachioji; Fuyuki Inui; Akira Saito, both of Katsuta, and Mamoru Kaneko, Hachioji, all of Japan, assignors to Hitachi, Ltd. and Hitachi Video Eng. Inc., both of Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,336
Claims priority, application Japan, Sep. 30, 1985, 60-214720
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—39 5 Claims



1. A code error method for correcting errors in first and second error detection and/or error correction code words, said first error detection and/or error correction code words comprising a plurality of digital symbols in a first arrangement state and first parity symbols thereof and said second error detection and/or error correction code words including a plurality of digital symbols in a second arrangement state including symbols of said first error detection and/or error correction code words and second parity symbols thereof, comprising the steps of:

effecting an error detection or an error correction by use of said second parity symbols; and

determining thereafter by use of said first parity symbols whether or not errors included in said first error detection and/or correction code words occur successively and changing over, based on the outcome of the determination, to a first one of at least two types of error correcting systems if errors in said first error detection and/or error correction code words were determined to occur successively or to a second of said at least two types of error correcting systems if errors in said first error detecting and/or error correction code words were determined not to occur successively.

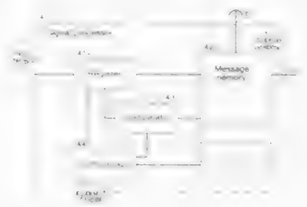
4,764,928

METHOD AND APPARATUS IN RADIO RECEPTION FOR AVOIDING STORING A MESSAGE MORE THAN ONCE

Dag E. Akerberg, Järfälla, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE85/00518, § 371 Date Jun. 30, 1986, § 102(e) Date Jun. 30, 1986, PCT Pub. No. WO86/03318, PCT Pub. Date Jun. 5, 1986
PCT Filed Nov. 18, 1985, Ser. No. 885,578
Claims priority, application Sweden, Nov. 26, 1984, 8405959
Int. Cl.[4] G06F *11/08*
U.S. Cl. 371—69 8 Claims

5. A receiver adapted for receiving messages characterized by an address and in the form of coded characters including respective identity codes comprising a receiver aerial (1), radio means (2) for receiving radio signals and provided with a demodulator for feeding out received characters, a decoder (3) connected to the radio means and adpated for detecting the receiver's address in the received characters, and a signal processor (4, 4A) connected to the decoder (3) and including a message memory (42) with space for more than one message, the signal processor (4, 4A) including a register (41) for storing



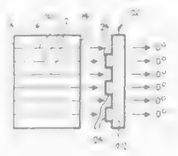
messages received from the decoder, and a comparator (43) adapted for comparing an identity code in a message in the register (41) with the identity codes in the messages in the message memory (42), and on agreement to store information thereon, and on conformity between the identity codes preventing storage in the message memory (42) of the message in the register (41).

4,764,929

SEMICONDUCTOR LASER ARRAY APPARATUS WITH ADJUSTABLE PHASE PLATE

Suwat Thaniyavarn, Pasadena, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Oct. 30, 1986, Ser. No. 924,956
Int. Cl.[4] H01S *3/098*
U.S. Cl. 372—18 5 Claims



1. Semiconductor laser array apparatus comprising:

an array of semiconductor lasers having an emitting facet, the array having a simple geometry favoring oscillation in the antisymmetric array mode;

a phase plate having a plurality of elements of which the spacing matches alternate laser elements in the array, wherein the phase plate includes a plurality of parallel ribs of tapering thickness, whereby the array can be conveniently adjusted by moving the phase plate in a direction parallel to the ribs until the far-field pattern is optimized; and

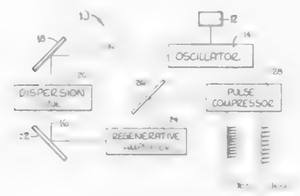
means for securing the phase plate in close proximity to the emitting facet, in registration with the laser elements, to provide a phase shift of 180 degrees to alternate elemental outputs from the array of lasers, whereby the far-field pattern of the array assumes the predominantly single-lobed configuration associated with in-phase laser arrays.

4,764,930

MULTIWAVELENGTH LASER SOURCE

Josef F. Bille, Solana Beach, and Stuart I. Brown, La Jolla, both of Calif., assignors to Intelligent Surgical Lasers, La Jolla, Calif.

Filed Jan. 27, 1988, Ser. No. 148,866
Int. Cl.[4] H01S *3/10*
U.S. Cl. 372—23 22 Claims



1. A laser apparatus which comprises:

an oscillator optically pumped by a laser diode for establishing a beam comprising a plurality of pulses of monochromatic light;

a dispersion line for spreading wavelengths in said pulses and being optically connected to said oscillator to receive said pulses;

a regenerative amplifier for amplifying said pulses and being optically connected to said dispersion line; and

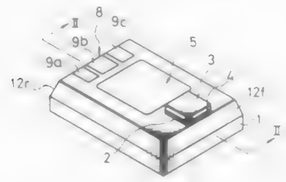
a pulse compressor optically connected to said regenerative amplifier for establishing a pulse duration for said beam.

4,764,931

SEMICONDUCTOR DEVICE

Osamu Matsuda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1986, Ser. No. 841,797
Claims priority, application Japan, Mar. 23, 1985, 60-42245[U]
Int. Cl.[4] H01S *3/13, 3/19;* H01L *31/12*
U.S. Cl. 372—29 7 Claims



1. A semiconductor device comprising:

(a) a first photodetector constructed on one major surface of a semiconductor substrate;

(b) a semiconductor laser chip mounted on said major surface at a position proximate to and on one side of said first photodetector; and

(c) a second photodetector constructed on said major surface at a position proximate to said first photodetector, said second photodetector being constructed of said first photodetector opposite said semiconductor laser chip.

4,764,932

ION LASER HAVING DIRECT LIQUID COOLING OF SEGMENTED DISCHARGE TUBE

Royal D. Peterson, Alpharetta, Ga., and Ronald E. Jones, Cupertino, Calif., assignors to Continental Laser Corporation, Mountain View, Calif.

Filed Dec. 13, 1985, Ser. No. 808,862
Int. Cl.[4] H01S *3/04*
U.S. Cl. 372—35 22 Claims



1. An ion laser comprising,

a tube having a longitudinal discharge bore therethrough, said tube being formed of a plurality of segments, said segments being adjoined at exteriorly conductive regions, said tube containing a gas capable of ionic lasing action,

at least one elongated sleeve of thermally conducting, electrically insulating material covering the outer peripheral edges of said conductive regions of said tube, in a fluid-excluding fit,

means for passing coolant in direct contact with the outer surface of said sleeve,

cathode and anode means at opposite ends of said tube for sustaining an ionic discharge in said tube, and

a resonant optical cavity aligned with said tube.

4,764,933

DIODE PUMPED LOW DOPED ND 3+ GLASS LASER

William J. Kozlovsky, Los Altos; Tso Yee, and Robert L. Byer, both of Stanford, all of Calif., assignors to Stanford University, Stanford, Calif.

Continuation-in-part of Ser. No. 896,865, Aug. 15, 1986, Pat. No. 4,739,507, which is a continuation-in-part of Ser. No. 674,948, Nov. 26, 1984, abandoned. This application Oct. 30, 1986, Ser. No. 924,881
Int. Cl.[4] H01S *3/17*
U.S. Cl. 372—40 16 Claims



1. In a method for obtaining laser radiation, the steps of:

optically pumping Nd^{3+} lasant ions of a laser gain medium with the output optical radiation of a light emitting semiconductive diode;

said gain medium comprises a glass member doped with the Nd^{3+} lasant ions to a density of less than 10×10^{20} cm^{-3} such that the laser gain medium has an optical loss at the wavelength of the lasant transition of less than 0.2 per meter and has a gain cross-section less than 8×10^{-20} cm^2;

resonating coherent lasant optical readiation emitted by a lasant transition of said optically pumped lasant Nd^{3+} ions of said gain medium within an optical resonator containing said optically pumped gain medium and having at least one concave reflector to obtain output laser radiation; and

focusing the resonant lasant radiation within said optical resonator and within said gain medium such that the predominant focusing mechanism for focusing the resonant radiation within said gain medium is focusing from a

VOL 1093 ISS 3 AG 16 1988 UMI

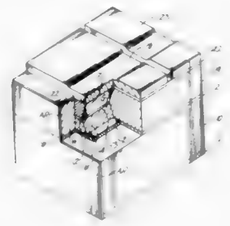
concave optical focusing element disposed on the optical axis of the optical resonator.

4,764,934

SUPERLUMINESCENT DIODE AND SINGLE MODE LASER

Sze-Keung Kwong, Long Beach; Kam Y. Lau, Glendale; Nadav Bar-Chaim, South Pasadena, and Israel Ury, Los Angeles, all of Calif., assignors to Ortel Corporation, Alhambra, Calif.

Filed Jul. 27, 1987, Ser. No. 78,367
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—46 25 Claims



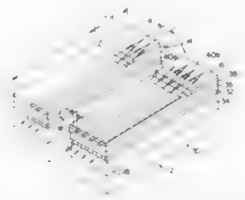
1. A buried heterostructure superluminescent diode comprising:
- an elongated active gain layer having an output end and a non-output end;
- a first n-type cladding layer on one face of the gain layer and a second p-type cladding layer on the other face of the gain layer for pumping the active gain layer, the cladding layer having a lower index of refraction than the active gain layer;
- a blocking layer having a lower index of refraction than the active gain layer along each longiudinal edge of the active gain layer;
- a transparent window at the output end of the active gain layer;
- an antireflective coating on the window layer; and
- a light absorbing medium at the non-output end of the active gain layer.

4,764,935

CONTROLLED FAR-FIELD PATTERN SELECTION IN DIFFRACTION-COUPLED SEMICONDUCTOR LASER ARRAYS

Jaroslava Z. Wilcox; Michael Jansen, both of Los Angeles; Arnold H. Silver, Rancho Palos Verdes; Jane J. J. Yang, Los Angeles, and William W. Simmons, Rancho Palos Verdes, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Apr. 6, 1987, Ser. No. 35,108
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—50 8 Claims



1. A diffraction-coupled semiconductor laser array capable of being switched between essentially in-phase and essentially out-of-phase supermodes of operation, the array comprising:
- a waveguide section having an array of semiconductor lasers coupled together by evanescent coupling, and having one at least partially reflective optical emission element;
- a diffraction section connected to the waveguide section, and having an at least partially reflective optical emission element that cooperates with the optical emission element in the waveguide section, to produce lasing of the array;

wherein the dimensions of the waveguide section and the diffraction section are selected to encourage in-phase lasing of the array;

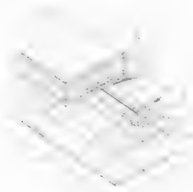
and wherein the diffraction section and the waveguide section have electrically isolated contact layers to switch the array, by independent current injection, between two different operating states, one of which promotes lasing in the in-phase supermode and the other of which promotes lasing in the out-of-phase supermode.

4,764,936

SEMICONDUCTOR LASER ARRAY DEVICE

Mototaka Taneya, Nara; Mitsuhiro Matsumoto, Tenri; Hidenori Kawanishi, Higashiosaki, and Sadayoshi Matsui, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 28, 1986, Ser. No. 901,759
Claims priority, application Japan, Sep. 6, 1985, 60-197937
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—50 3 Claims



1. In a semiconductor laser array device comprising an oscillation operating area provided with a plurality of first index-waveguides in a parallel manner: a non-oscillation operating area provided with a plurality of second index-waveguides in a parallel manner connected or coupled to said oscillation operating area, where each second index-waveguides differs in length from adjacent parallel second index-waveguides, said oscillation operating area and said non-oscillation operating area being formed monolithically and arranged such that laser beams are guided through said first index-waveguides from said oscillation operating area to the end facets of said second index-waveguides, where the other facets of said second index-wveguides function not as cavity facets of the laser but as the light-emitting facets of the device.

4,764,937

SEMICONDUCTOR LASER ARRAY DEVICE

Mitsuhiro Matsumoto; Sadayoshi Matsui, both of Tenri; Mototaka Taneya, Nara, and Hidenori Kawanishi, Higashiosaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 5, 1986, Ser. No. 893,226
Claims priority, application Japan, Aug. 9, 1985, 60-176183
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—50 3 Claims

1. In a semiconductor laser array device comprising two or more array portions, the improvement exists in that said array portions are composed of a plurality of main parallel waveguides with an optical phase coupling therebetween, and one or more branching portions, each of which is positioned between said array portions and which are composed of two branching waveguides branching symmetrically with regard to the main waveguide direction from each of the main parallel waveguides of said array portions, each of the two branching waveguides positioned at the outer sides of each of the branching portions being disconnected with the adjacent branching waveguides and the other branching waveguides from the main parallel waveguides of one of said array portions being optically connected with the corresponding branching waveguides from the main parallel waveguides of the adjacent array portion.



4,764,938

CIRCUIT AND METHOD FOR CORRECTING DISTORTION IN A DIGITAL AUDIO SYSTEM

John D. Meyer, Albany, Calif., assignor to Meyer Sound Laboratories, Inc., Berkeley, Calif.

Filed Oct. 25, 1982, Ser. No. 436,195
Int. Cl.[4] H03H *7/30*
U.S. Cl. 375—14 21 Claims



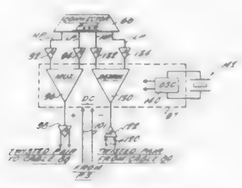
1. A method for correcting phase distortion in a digital audio system comprised of the steps of adding time delay to the digital audio system at low and mid-band frequencies within the operating range of the system, and, at high frequency ranges, adding decreasing amounts of time delay such that total time delay for the system is increased but where said total time delay is relatively constant within the digital audio system's operating frequency range.

4,764,939

CABLE SYSTEM FOR DIGITAL INFORMATION

William P. Rogers, Collingswood, N.J., assignor to Telesex Corporation, Collingswood, N.J.

Continuation of Ser. No. 803,894, Dec. 2, 1985, abandoned. This application Aug. 19, 1987, Ser. No. 88,476
Int. Cl.[4] H04L *27/00*
U.S. Cl. 375—37 9 Claims



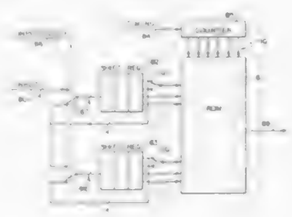
1. In a cable system for transferring information contained in a group of original separate parallel signals in the RS232 type of format from a first set of connector elements of a first RS232 type of interface to a second set of connector elements of a second RS232 type of interface in the same format, said group comprising data signals and a plurality of other associated timing and control signals on different ones of said first set of connector elements of siad first RS232 type of interface, said system comprising a first quick-disconnect connector plug assembly including a third set of connector elements carried thereby and matable with said first set of connector elements in quick-disconnect fashion; a second quick-disconnect connector plug assembly including a fourth set of connector elements carried thereby and matable with said second set of connector elements in quick-disconnect fashion; and a signal transmission cable interconnecting said first and second plug assemblies, the improvement wherein:
- (a) said first quick-disconnect plug assembly contains parallel-to-serial converter means responsive to said group of original separate parallel signals on said third set of connector elements when mated with said first set of connector elements for sampling them successively to convert them to a serial signal and for applying said serial signal to one end of said cable for transmission to said second plug assembly; and
- (b) said second quick-disconnect plug assembly contains serial-to-parallel converter means responsive to said serial signal at the other end of said cable for converting it to reconstituted separate parallel signals substantially identical to said original separate parallel signals and for applying said reconstituted parallel signals separately to respective ones of said connector elements of said fourth set in said RS232 format.

4,764,940

MODEM FOR RF SUBSCRIBER TELEPHONE SYSTEM

Eric Paneth; David N. Critchlow, both of San Diego, Calif., and Moshe Yehushua, Kiriat Yam, Israel, assignors to International Mobile Machines Corporation, Philadelphia, Pa.

Continuation of Ser. No. 713,923, Mar. 20, 1985, Pat. No. 4,644,561. This application Nov. 24, 1986, Ser. No. 920,230
The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.
Int. Cl.[4] H04L *27/20*
U.S. Cl. 375—67 4 Claims



1. A multiple phase modulator for converting an input constituting a digitized bit stream, wherein each given number of successive bits defines a symbol, into a phase modulated signal, comprising
- means for grouping a plurality of successive bits into symbols;
- a digitally implemented filter for shaping and generating a phase representative signal from each of said symbols in accordance with the specification of the frequency channel over which each of said symbols is transmitted, each of said phase representative signals comprising the combined time shared, digital in-phase (I) and quadrature phase (Q) components of the symbols to be transmitted;

VOL 1093 ISS 3 AG 16 1988 UMI

a digital-to-analog converter for converting each of said signals to be transmitted to an analog signal; and

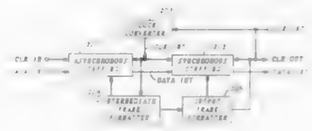
means for transmitting said analog signals.

4,764,941

DIGITAL FRAME SYNCHRONIZER

DooWhan Choi, Salem, N.H., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed May 22, 1987, Ser. No. 53,284
Int. Cl.[4] H04L *7/00*
U.S. Cl. 375—112 20 Claims



1. A synchronizer in which digital signals at a first transmission bit rate are synchronized by use of bit stuffing to a second higher transmission bit rate for transmission in an output frame format, comprising,

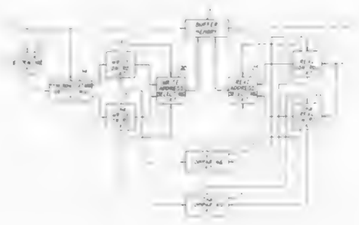
means for obtaining a predetermined fractional stuffing ratio for output frames from said synchronizer, said means for obtaining including means for controllably varying in a prescribed manner intervals during which data bits are being inputted into said synchronizer, wherein a fractional stuffing ratio is obtained.

4,764,942

SLIP CONTROL IN A PLESIOCHRONOUS BUFFER CIRCUIT TO REDUCE DISTORTION OF TWO KINDS OF DATA SIGNALS

Seiichiro Shigaki; Minoru Matsuoka, and Osamu Ookoshi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 14, 1986, Ser. No. 884,919
Claims priority, application Japan, Jul. 12, 1985, 60-152541
Int. Cl.[4] H04L *7/00*
U.S. Cl. 375—118 3 Claims



1. A plesiochronous buffer circuit for use in an earth station in coupling a domestic digital network and a satellite network, said domestic digital network being operable in synchronism with a series of station clocks having a first clock frequency, said satellite network being operable in synchronism with a series of satellite clocks having a second clock frequency, said buffer circuit comprising a buffer memory for compensating for a clock frequency difference between said first and said second clock frequencies when said buffer circuit receives a PCM signal through one of said domestic digital and said satellite networks and transmits said PCM signal to the other of said domestic and said satellite networks in synchronism with transmission clocks, said PCM signal being received by said buffer circuit in synchronism with reception clocks extracted from the PCM signal and comprising a plurality of multiframes each of which comprises a first and a second part, the first part of a predetermined one of the frames of each multiframe comprising a multiframe synchronization signal, the first part of each of the other frames of each multiframe comprising a first digital signal, said second part comprising a second data signal, said reception clocks being substantially equal in frequency to one of said station clocks and said satellite clocks that is received through said one of the domestic digital network and the satellite network while said transmission clocks substantially are equal in frequency to the other clocks of said station clocks and said satellite clocks that are transmitted through the other of said domestic digital and said satellite networks,

said buffer circuit comprising:

means responsive to said PCM signal for individually detecting said first and said second parts of the PCM signal with reference to the reception clocks;

first partial write controlling means for controlling a write-in operation of said first part of the PCM signal in accordance with said reception clocks;

second partial write controlling means for controlling a write-in operation of said second part of the PCM signal in accordance with said reception clocks;

means coupled to said first and said second partial write controlling means and said buffer memory for individually sending said first and said second parts of the PCM signal to said buffer memory;

first partial read controlling means responsive to said transmission clocks for controlling a readout operation of said first part in accordance with said transmission clocks;

second partial read controlling means for controlling a readout operation of said second part in accordance with said transmission clocks; and

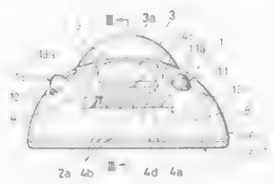
means coupled to said first and said second partial read controlling means and said buffer means for carrying out a readout operation of said buffer memory to selectively read said first and said second parts out of said buffer memory, respectively.

4,764,943

KNITTING COUNTER

Hidekazu Okada, Ashiya, Japan, assignor to Clover Manufacturing Co., Ltd., Osaka, Japan

Filed Oct. 23, 1986, Ser. No. 922,412
Claims priority, application Japan, Apr. 7, 1986, 61-52655[U]
Int. Cl.[4] G06M *1/02, 1/08, 1/22*
U.S. Cl. 377—6 8 Claims



1. A knitting counter for counting stitches or rows of stitches incremented or decremented solely through human stroking, comprising:

a counter casing having a flat bottom surface to be placed on a substantially horizontal flat support surface and formed with a window opening as well as with a reception opening at the top of said casing and defined by a downwardly extending inturned annular guide wall;

a movable operating member for human stroking including a domed touch portion projecting out through said reception opening, a downwardly extending lower edge slidably fitted in said annular guide wall, and a pusher portion extending downwardly within said casing;

a digital display device disposed at said window opening;

an electrical control circuit including a counter arranged within said casing and connected to said display device for controlling thereof;

said control circuit incorporating a normally biased-open input switch connected to said counter which, when closed each time, functions to increment said counter and change a numerical indication of said display device one by one;

said pusher portion having a lower end in permanent engagement with said normally open input switch so as to close said input switch even in response to a slight human stroke on said touch portion; and

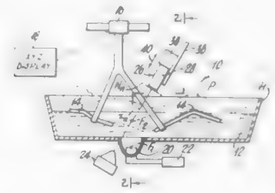
said counter casing shaped to be stable and prevented from toppling even upon vigorous stroking of said touch portion and without a need to look.

4,764,944

METHODS FOR POSITIONING AN INTERNAL PORTION OF A BODY RELATIVE TO AN EXTRACORPOREAL REFERENT

Birdwell Finlayson, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

Filed Jun. 18, 1986, Ser. No. 875,474
Int. Cl.[4] A61B *6/08*
U.S. Cl. 378—20 9 Claims



1. A method of positioning a small internal portion of a body at a predetermined point relative to an extracorporeal referent, said body portion being detectable by penetrating radiation and said body being initially so disposed that the body portion is generally adjacent said predetermined point, said method comprising

(a) viewing said body with penetrating radiation along two convergent viewing axes intersecting at said predetermined point for producing two images of the interior of the body as viewed by said penetrating radiation respectively along said two viewing axes, each of said images including a portion representing said body portion;

(b) determining, from said two images, two-dimensional coordinates of the projections of the imaged body portion by the pentrating radiation on two notional planes respectively perpendicular to the viewing axes of the images, thereby to establish two sets of two-dimensional body portion coordinates, one for each image;

(c) from said two sets of two-dimensional coordinates, deriving for each image spatial coordinates of the imaged body portion in a coordinate system having as one axis the viewing axis of the image, thereby to establish two sets of three-dimensional body portion coordinates, one for each image;

(d) transforming said two sets of three-dimensional coordinates into a single set of three-dimensional coordinates in a common coordinate system in which the coordinates of said predetermined point are known, said single set of three-dimensional coordinates representing the location of said body portion in said last-mentioned system, thereby to determine the magnitude and direction of movement of said body required to position said body portion at said predetermined point; and

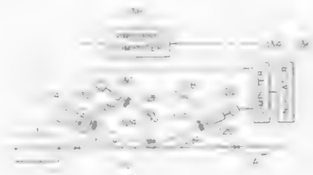
(e) displacing said body with a resultant motion having said magnitude and direction.

4,764,945

METHOD OF MEASURING LAYER THICKNESS AND COMPOSITION OF ALLOY PLATING

Abe Tadahiro, Chiba, Japan, assignor to Kawasaki Steel Corp., Hyogo, Japan

PCT No. PCT/JP85/00551, § 371 Date Apr. 24, 1986, § 102(e) Date Apr. 24, 1986, PCT Pub. No. WO86/02164, PCT Pub. Date Apr. 10, 1986
PCT Filed Oct. 3, 1985, Ser. No. 860,190
Claims priority, application Japan, Oct. 5, 1984, 59-209097; Oct. 5, 1984, 59-209098
Int. Cl.[4] G01B *15/02*; G01N *23/223*
U.S. Cl. 378—50 12 Claims



1. A method of measuring the thickness and the composition of a one layer alloy plating including a metal identical with a substrate metal, said method comprising the steps of:

irradiating an object to be measured with characteristic X-rays and white X-rays;

detecting a diffraction angle of diffracted X-rays of said characteristic X-rays which are diffracted by an intermetallic compound of said alloy plating;

measuring the amount of the composition of said alloy plating from said diffraction angle;

detecting an intensity of fluoreseent X-rays from a metal different from said substrate metal in said alloy plating, the fluorescent X-rays being generated by the white X-rays; and

measuring the thickness of said alloy plating from the intensity of the fluorescent X-rays and the amount of the composition of said alloy plating.

4,764,946

METHOD AND MODIFYING BODY FOR INFLUENCING THE EFFECT OF X-RAY OR GAMMA RADIATION ON A TARGET SENSITIVE TO THE RADIATION

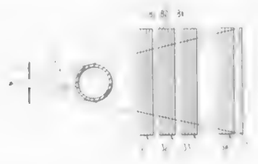
Peter Teleki, Bocskai, Hungary, assignor to Innofinance Altalanos Innovacios Penzwtezet, Budapest, Hungary

PCT No. PCT/HU85/00061, § 371 Date Jul. 7, 1986, § 102(e) Date Jul. 7, 1986, PCT Pub. No. WO86/03032, PCT Pub. Date May 22, 1986
PCT Filed Nov. 5, 1985, Ser. No. 890,021
Claims priority, application Hungary, Nov. 5, 1984, 4087/84
Int. Cl.[4] G01N *23/04*
U.S. Cl. 378—62 27 Claims

1. A method for influencing the effect of X-ray or gamma radiation on a target sensitive to the radiation, the method comprising the steps of: irradiating the target with an X-ray or gamma radiation beam and disposing a modifying body in front of and adjacent to the target in the path of the radiation beam, wherein a transmission direction is defined along the path from the modifying body to the target, and wherein said modifying body comprises at least two contiguously disposed layer groups, each of said layer groups (e.g., 32) comprising a plurality of superposed metallic layers and separating layers therebetween, said metallic layers being provided for emitting a secondary radiation under the influence of the X-ray or gamma

VOL 1093 ISS 3 AG 16 1988 UMI

radiation, or the secondary radiation of the metallic layers in a previous layer group (e.g., **31**) with respect to the transmission direction, respectively, the energy of the secondary radiation emitted by said metallic layers being above the absorption



energy level defined by the electron shell K of an element being present in the subsequent layer group (e.g., **33**) with respect to the transmission direction, or in the target, respectively.

4,764,947

CATHODE FOCUSING ARRANGEMENT

Leonard Lesensky, Stamford, Conn., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

Filed Dec. 4, 1985, Ser. No. 804,428
Int. Cl.[4] H05J *35/14, 35/06*
U.S. Cl. 378—138 **21 Claims**



4. A cathode assembly comprising:

(a) filament;

(b) a means for applying a first electrical potential to said filament;

(c) an electrically conductive cathode body comprising:

(i) a first region having a first opening disposed therein and supporting the filament within the first opening; and

(ii) a second region, disposed within the first opening and substantially enclosed by the first region and electrically insulated from the first region, said second region comprising a second opening having portions of the filament disposed within the second opening;

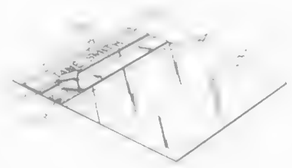
(d) means for biasing said first region to a second electrical potential with respect to the first electrical potential and means for biasing said second region to a third electrical potential with respect to the first electrical poential, the third electrical potential being negative with respect to the first electrical potential.

4,764,948

DATA MARKING SYSTEM FOR MEDICAL X-RAYS, PARTICULARLY MAMMOGRAMS

Robert Hurwitz, Newport Beach, Calif., assignor to Paula Hurwitz, Newport Beach, Calif.

Filed Mar. 9, 1987, Ser. No. 23,717
Int. Cl.[4] G03B *17/26*
U.S. Cl. 378—165 **31 Claims**



1. A data marking system for medical mammography comprising:

a substrate which is transparent to x-rays and suitable for manipulation within a typewriter;

a layer of resilient material, which material is transparent to x-rays disposed upon an area of the card;

a layer of blocker material, which blocker material is opaque to x-rays disposed upon the layer of resilient material, which, when temporarily compressed by a force resultant from normal typewriting, is locally fractured to permit x-rays to pass through the blocker material in the locally fractured area.

4,764,949

SUBSCRIBER/CRAFTSPERSON RINGBACK APPARATUS

Richard W. Faith, Oxnard, Calif., and Les Curtin, Houston, Tex., assignors to Harris Corp., Melbourne, Fla.

Filed May 28, 1987, Ser. No. 55,121
Int. Cl.[4] H04B *3/46;* **H04M** *3/24*
U.S. Cl. 379—9 **32 Claims**



1. For use with a central office facility having communication equipment through which the identification of a telephone employed by a telephone system user for accessing said office may be provided, an apparatus, connectable via a telephone link with said central office, for enabling a telephone system user to effect a ringback of the telephone from which the telephone system user is calling comprising:

first means, responsive to a prescribed code signal generated via the telephone of said telephone system user, for causing said communication equipment to transmit a message representative of the number of the telephone from which the user is calling;

second means, coupled with said first means, for receiving and storing said telephone number representative message;

third means, responsive to the operation of said second means, for transmitting a message to said user in response to which said user returns said telephone to its idle condition; and

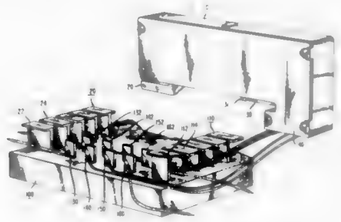
fourth means, responsive to said telephone having been returned to its idle condition, for transmitting dialing signals containing the number of said telephone and causing the ringing of said telephone.

4,764,950

SNAP-ON NETWORK INTERFACE UNIT

Larry W. Dickey, Hackettstown, and Philip Hughes, Randolph, both of N.J., assignors to American Telephone & Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 945,215, Dec. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,259, Oct. 17, 1985, abandoned. This application Nov. 4, 1987, Ser. No. 119,217
Int. Cl.[4] H04M *1/24*
U.S. Cl. 379—29 **20 Claims**



8. A snap-on network interface unit comprising:

means responsive to a test signal generated to locate a fault;

means for supporting the test signal responsive means, the support means including means adapted to engage a fanning strip on a connector block, the engaging means being configured to cooperate with the fanning strip to secure the support means to the connector block.

4,764,951

AUTO DIALER FOR USE WITH TELECOPIERS OR THE LIKE

Matahira Kotani, Nara; Motohiko Hayashi, Ikoma; Shigeari Yasuda, Yamatokoriyama, and Yuzoh Oi, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1984, Ser. No. 666,774
Claims priority, application Japan, Oct. 31, 1983, 58-206519
Int. Cl.[4] H04M *11/00;* **H04N** *1/00*
U.S. Cl. 379—100 **3 Claims**

1. A facsimile machine for transmitting data over a public telephone line comprising:

means for reading a document original to be transmitted and for developing data representative of the pattern present thereon;

line memory means for temporarily storing said data in a line by line fashion;

data interface means for supplying said data to said public telephone line, said data interface means further receiving data provided from a remote facsimile machine on said public telephone line;

said line memory means further temporarily storing said data received from said public telephone line in a line by line fashion;

data recording means for printing an image recovered from said data received from said public telephone line;

a central processing unit, operatively connected to said means for reading, said line memory means, said data interface means and said data recording means, for controlling the transfer of said data between line memory means and said data interface means and between said line memory means and said means for reading and data recording means in accordance with a control program;

permanent memory means, operatively connected to said central processing unit for storing said control program;

dialing means operatively connecting between said central processor unit and said public telephone line, for establishing connections with a said remote facsimile machine;

operation panel means including a keyboard for entering commands to said facsimile machine including telephone numbers to be dialed, said operator panel means being operatively connected to said central processing unit;

random access memory means, operatively connected to said central processing unit, for storing telephone numbers of said remote facsimile machine, said random access memory means having a plurality of memory areas, selected ones of said telephone numbers being stored in locations within an abbreviated dial conversion table in one of said memory areas of said random access memory means, said selected ones of said telephone numbers are defined by abbreviated code numbers, said code numbers and said telephone numbers being provided to said random access memory means from said operation panel means, other ones of said telephone numbers stored in a directed number area in a second one of said plurality of memory areas in said random access memory means, said random access memory means further storing a dial repeat count number and a dial repeat interval time, said selected ones of said telephone numbers being accessed by operation of abbreviation code keys in said operation panel means and said other ones of said telephone numbers being accessed by operation of a direct number key on said operation panel means;



said dialing means, in cooperation with said central processing unit, detecting a busy signal at said remote facsimile machine and being responsive to said dial repeat count and dial repeat interval time stored in said random access memory means to automatically redial the said telephone number of said remote facsimile machine up to a maximum number of times specified by said dial repeat count number at intervals specified by said dial repeat interval time, said dialing means determining when said remote facsimile machine answers and enabling transmitting of data by said data interface means in response thereto, operation of said dialing means being initiated by one of an operation of a transmission key upon said operation panel means and an operation of said direct number key, transmission being automatically initiated once one of said telephone numbers is accessed and dialed and said remote terminal has answered.

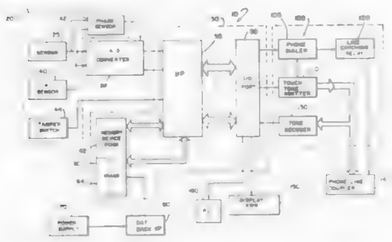
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,952

TELECOMMUNICATIONS DEVICE FOR READING POWER METERS

Horace G. Felin, 1708 Ferdinand, Coral Gables, Fla. 33134

Filed Mar. 18, 1987, Ser. No. 27,534
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—107 **1 Claim**



1. A device for reading and transmitting through the user's telephone lines the electrical energy consumption, at predetermined time intervals, comprising:

A. means for sensing the current intensity and voltage being delivered to a user;

B. analog to digital converter means connected to the output of said current and voltage sensing means so that digital outputs are produced for the magnitude said voltage and said current intensity;

C. microprocessor means having inputs connected to said digital outputs and including sufficient software means to maintain a real time clock and a program for computing the energy comsumption from said digital outputs over said intervals;

D. memory means for storing the necessary parameters for making said computations;

E. automatic modem means for dialing the central office's telephone number in response to a signal from said microprocessor means and said modem means adapted to transmit data from said microprocessor means after the connection with the central office telephone is established;

F. display means connected to said microprocess or means to continuously monitor the energy consumption by the user;

G. means for sensing tampering with said device and connected to said microprocessor means so that a tampering signal is transmitted to the central office; and

H. phase sensor means for measuring the phase angle between said current intensity and voltage and having an output that is connected to said analog to digital converter means so that another input is provided to said microprocessor means to compute the apparent power.

4,764,953

METHOD AND APPARATUS FOR REMOTE DOORBELL ANSWERING

Lih-Ju Chern, 5403 SW. 149th Pl., Miami, Fla. 33185; Angela W. Kao, and Ming-Luh Kao, both of 10545 SW. 129th Ct., Miami, Fla. 33186

Filed May 22, 1987, Ser. No. 53,085
Int. Cl.[4] H04M *1/26*
U.S. Cl. 379—355 **18 Claims**

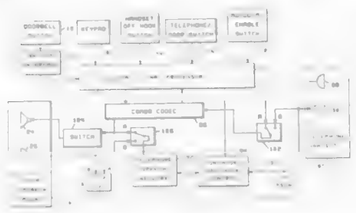
6. An apparatus for providing remote answering of a dwelling's doorbell, comprising in combination;

detecting means for detecting actuation of a doorbell switch;

means for waiting for a predetermined time period after detecting actuation of said doorbell switch;

means for determining if said doorbell switch actuation has been responded to within said predetermined time period;

dialing means for autodialing a predetermined telephone number associated with a remote telephone located somewhere other than inside said dwelling if said determining



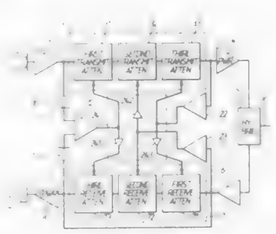
means indicates that said doorbell has not been responded to within said predetermined time period.

4,764,954

AUTOMATIC GAIN CONTROL IN A LOUDSPEAKER TELEPHONE SET

Masayuki Tsuruzaki; Yasuji Sato; Takeshi Horiuchi, all of Tokyo; Hisashi Yamada, Kanagawa; Minoru Tanaka, and Akira Maekawa, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Japan

Filed Feb. 28, 1986, Ser. No. 834,412
Claims priority, application Japan, Feb. 28, 1985, 60-39429
Int. Cl.[4] H04M *9/08*
U.S. Cl. 379—390 **1 Claim**



1. A loudspeaker telephone set comprising:

a microphone to develop an outgoing signal;

transmitter amplifier means for amplifying the outgoing signal;

first transmitting attenuator means for attenuating the outgoing signal in accordance with a transmit switch control signal;

second transmitting attenuator means coupled to said first transmitting attenuator means for attenuating the outgoing signal in accordance with a first transmit gain control signal;

third transmitting attenuator means coupled to said first and second transmitting attenuator means for attenuating the outgoing signal in accordance with a second transmit gain control signal;

a hybrid circuit to deliver the outgoing signal to a telephone line and to recover an incoming signal from the telephone line;

receiver amplifier means for amplifying the incoming signal;

first receiving attenuator means for attenuating the incoming signal in accordance with a receive switch control signal;

second receiving attenuator means coupled to said first receiving attenuator means for attenuating the incoming signal in accordance with a first receive gain control signal;

third receiving attenuator means coupled to said first and second receiving attenuator means for attenuating the incoming signal in accordance with a second receive gain control signal;

a loudspeaker to convert the incoming signal to sound;

a switching control circuit responsive to the outgoing signal and to the incoming signal to generate the transmit and receive switch control signals;

first gain control means responsive to the incoming signal for generating the first transmit and receive gain control signals to decrease the attenuation of said second transmitting attenuator means and to increase the attenuation of said second receiving attenuator means when the level of the incoming signal is higher than a first reference level, said first gain control means responsive to the incoming signal after said signal has been attenuated by said first, second and third receiving attenuator means; and

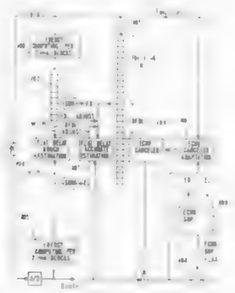
second gain control means responsive to the outgoing signal for generating the second transmit and receive gain control signals to increase the attenuation of said third transmitting attenuator means and to decrease the attenuation of said third receiving attenuator means when the level of the outgoing signal is higher than a second reference level, said second gain control means responsive to the outgoing signal after said signal has been attenuated by said first, second and third transmitting attenuator means.

4,764,955

PROCESS FOR DETERMINING AN ECHO PATH FLAT DELAY AND ECHO CANCELER USING SAID PROCESS

Claude Galand, Cagnes sur Mer, France, and Guy Platel, Durham, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 16, 1986, Ser. No. 919,724
Claims priority, application European Pat. Off., Oct. 30, 1985, [illegible]
Int. Cl.[4] H04B *3/23*
U.S. Cl. 379—411 **6 Claims**



1. In a communication system having first and second one way transmission paths connected to a two way communication path by a hybrid transformer, a method for cancelling echo signals of signals on said first one way transmission path which are transmitted through the said hybrid transformer to said second one way transmission path comprising the steps of:

measuring in sequence the signal energy present in the said first path over sequential finite time periods;

measuring in sequence the signal energy present in the said second path over sequential finite time periods;

correlating the energy measurements made in the said second path with energy measurements made in the said first path and determining a rough flat delay value;

delaying a replica of the signal in the said first path as a function of the rough flat delay value;

correlating samples of the delayed replica during a predetermined period thereof with samples of the signal on the said second path to determine a delta delay value and further delaying the delayed replica of the signal on the first path as a function of the delta delay value; and

applying the said further delayed replica of the signal in the said first path to an echo canceller connected in the said second path.

4,764,956

ACTIVE IMPEDANCE LINE FEED CIRCUIT

Reinhard Roech, Richmond; Stanley D. Rosenbaum, Ottawa; Calvin Plett, Ottawa, and Zdenek Holy, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 1, 1987, Ser. No. 68,686
Claims priority, application Canada, Dec. 24, 1986, 526332
Int. Cl.[4] H04M *1/76, 19/00*
U.S. Cl. 379—413 **4 Claims**



1. An active impedance line feed circuit including tip and ring amplifiers being responsive to a control signal being proportional to currents in tip and ring feed resistors for supplying energizing current and a.c. information signals to a two wire communication line via tip and ring terminals connected to outputs of the tip and ring amplifiers by the tip and ring feed resistors respectively, tip and ring voltage dividers including tip and ring voltage taps respectively, a control circuit including a control amplifier for generating the control signal, the control amplifier having a differential input connected across the tip and ring voltage taps, and a d.c. amplifier being responsive to signals at the tip and ring terminals for attenuating longitudinal signals at the tip and ring voltage taps and for reducing fault current conduction during an occurrence of a ground fault condition on the two wire communication line, the active impedance line feed circuit being characterized in that:

an inverting input of the d.c. amplifier is connected to the tip and ring voltage taps by a first pair of resistive elements being of similar ohmic values, and an output of the d.c. amplifier is also connected to the tip and ring voltage taps by a second pair of resistive elements being of similar ohmic values, whereby in operation the d.c. amplifier is subjected to attenuated electrical potential as compared with potentials at the tip and ring terminals, whereby the d.c. amplifier is conveniently manufacturable in integrated circuit technology along with the other amplifiers in the active impedance line feed circuit.

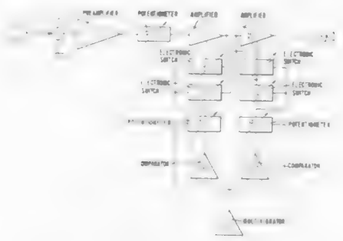
VOL 1093 ISS 3 AUG 16 1988 UMI

4,764,957

EARPIECE, TELEPHONE HANDSET AND HEADPHONE INTENDED TO CORRECT INDIVIDUAL HEARING DEFICIENCIES

Theophile M. Angelini; Georges Canévet; Marc S. Foti, and Francois C. Santon, all of Marseille, France, assignors to Centre National de la Recherche Scientifique-C.N.R.S., Paris, France

Filed Aug. 20, 1985, Ser. No. 767,418
Claims priority, application France, Sep. 7, 1984, 84 13891
Int. Cl.[4] H04R *1/03, 1/22, 25/00;* H03G *5/02*
U.S. Cl. 379—433 9 Claims



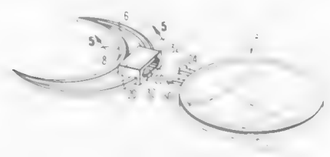
1. An earpiece of the type comprising electronic filter means to adapt the frequency response curve of said earpiece to a user's hearing deficiencies, said filter means comprising an adjustable pass-band filter, the pass-band of which has a central frequency and a width, and electronic switches, each electronic switch having a control electrode and a resistance which depends on a cyclic ratio of a train of rectangular pulses applied on said control electrode, said filter means further comprising means for producing trains of rectangular pulses at constant frequency which are connected to said control electrode and means for varying the cyclic ratio of each train of rectangular pulses in order to vary the resistance of said electronic switches so that said central frequency and said width are adjustable independently of each other by a user adapted the band-pass of the filter to his acoustic deficiencies.

4,764,958

TELEPHONE MAGNIFIER ATTACHMENT

Alan H. Grant, 3208 Woodhollow Dr., Chevy Chase, Md. 20815

Filed Feb. 17, 1987, Ser. No. 15,065
Int. Cl.[4] H04R *1/21;* G02B *7/02*
U.S. Cl. 379—450 20 Claims



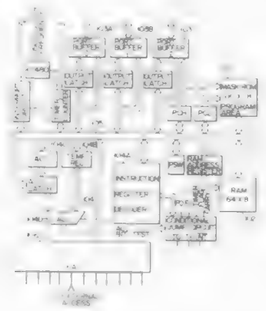
1. An attachment for a telephone handset comprising engagement means for engaging said handset and socket means for holding an article, wherein said engagement means comprises an elongate wedge forming an arc, said socket means comprises an element forming a polygonal opening for holding said article in at least two orientations with respect to said engagement means, and said article comprises two flexible projections received in said opening.

4,764,959

SINGLE-CHIP MICROCOMPUTER WITH ENCRYPTABLE FUNCTION ON PROGRAM MEMORY

Masafumi Watanabe, Kawasaki; Toshitune Ozaki, Ayase, and Jiro Hirahara, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 31, 1984, Ser. No. 646,114
Claims priority, application Japan, Oct. 14, 1983, 58-191915; Oct. 14, 1983, 58-191916
Int. Cl.[4] H04L *9/04*
U.S. Cl. 380—4 10 Claims



5. A single-chip microcomputer with an encryptable function, comprising:

a read-only memory for storing a bit representation of a program in a plurality of fixed areas;

encrypting data providing means, manufactured on the single-chip in the same process as that for storing said program in said read-only memory, for providing encryption data;

a central processing unit for executing said program read out from said read-only memory and, responsive to a request for access to said program from a source external to the microcomputer, for executing a predetermined logic operation on said encrypting data from said encrypting data providing means and said program output from said read-only memory, in order to verify whether or not the program stored in said read-only memory is correctly written therein; and

an output port coupled to said central processing unit, for outputting the result of said logic operation in response to the request for access to said program from said source external to the microcomputer.

4,764,960

STEREO REPRODUCTION SYSTEM

Shigeaki Aoki, Yokohama, and Nobuo Koizumi, Yokosuka, both of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 70,994
Claims priority, application Japan, Jul. 18, 1986, 61-169613; Jul. 18, 1986, 61-169614
Int. Cl.[4] H04R *5/02*
U.S. Cl. 381—24 13 Claims

1. A stereo reproduction system comprising:

a first right channel loudspeaker supplied with a right channel signal and having a main axis of directivity toward a right listening area defined in front thereof;

a first left channel loudspeaker supplied with a left channel signal and having a main axis of directivity toward a left listening area defined in front thereof;

a second right channel loudspeaker supplied with a right channel signal and having a main axis of directivity toward said left listening area;

a second left channel loudspeaker supplied with said left channel signal and having a main axis of directivity toward said right listening area;

first signal adjusting means for adjusting the relative amplitude and time difference of signals to be supplied to said first right channel loudspeaker and said second left channel loudspeaker such that the sound heard in said right listening area is stably localized; and



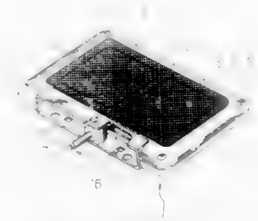
second signal adjusting means for adjusting the relative amplitude and time difference of signals supplied to said first left channel loudspeaker and second right channel loudspeaker such that the sound heard in said left listening area is stably localized.

4,764,961

CASSETTE TYPE STEREO SPEAKER SYSTEM

Cheng H. Hung, 7Fl., No. 5-1, Nan King West Rd., Taipei City, China

Filed Nov. 6, 1986, Ser. No. 927,927
Int. Cl.[4] H04R *5/02*
U.S. Cl. 381—24 1 Claim



1. A stereo speaker system comprising a body case, a plug to receive audio signals, a driving element system connected to receive signals from said plug, and a magnetic path system, said driving element and magnetic path system cooperating to form a stereo speaker means, further characterized in that said body case has the size and shape of a standard audio cassette, and said plug can be tucked away inside said body case when not in use, whereby said stereo speaker system can be inserted into a standard cassette tape recorder for storage.

4,764,962

STEREO SPEAKER SYSTEM FOR WALKMAN-TYPE RADIO AND/OR CASSETTE PLAYER

Joseph A. Ekman, 959 Sladky Ave., Mountain View, Calif. 94040, and Ronald C. Ball, 125 Northridge La., Woodside, Calif. 94062

Continuation of Ser. No. 685,827, Dec. 24, 1984, abandoned.
This application Feb. 8, 1987, Ser. No. 11,451
Int. Cl.[4] H04R *5/02*
U.S. Cl. 381—24 1 Claim

1. A stereo speaker system for a radio and or cassette/player device comprising:

a pair of suspenders comprising a pair of straps adapted to extend over the shoulders of a user, said straps having shoulder portions, each strap having a pair of ends, each end of each strap having a fastener means for release coupling to a garment worn by the user;

a pair of stereo speakers, each speaker having an electrical lead coupled thereto and adapted to be coupled to the device; and



quick release attaching means removably mounting the speakers on respective shoulder portions, said straps crossing each other at a crossover location, there being a pouch attached to the straps at said location for holding said device.

4,764,963

SPEECH PATTERN COMPRESSION ARRANGEMENT UTILIZING SPEECH EVENT IDENTIFICATION

Bishnu S. Atal, New Providence, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 484,231, Apr. 12, 1983, abandoned.
This application Jan. 12, 1987, Ser. No. 4,804
Int. Cl.[4] G10L *5/00*
U.S. Cl. 381—36 11 Claims



1. A method for compressing speech patterns including the steps of:

analyzing a speech pattern to derive a set of signals ($y_i(n)$) representative of acoustic features of the speech pattern at a first rate, and generating a sequence of coded signals representative of said speech pattern in response to said set of acoustic feature signals at a second rate less than said first rate, characterized in that the generating step includes:

generating a sequence of signals ($\phi_k(n)$) each representative of an individual sound of said speech pattern, each being a linear combination of said acoustic feature signals; determining the time frames of the speech pattern at which the centroids of individual sounds occur in response to said set of acoustic feature signals; generating a sequence of individual sound feature signals ($\phi_{L(n)}(n)$) jointly responsive to said acoustic feature signals and said centroid time frame determination; generating a set of individual sound representative signal combining coefficients (a_{ik}) jointly

VOL 1093 ISS 3 AG 16 1988 UMI

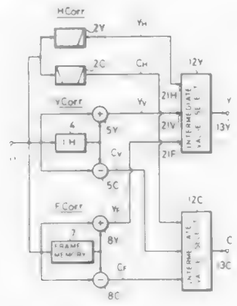
responsive to said individual sound representative signals and said acoustic feature signals; and forming said coded signals responsive to said sequence of individual sound feature signals and said combining coefficients.

4,764,964

SIGNAL PROCESSING APPARATUS

Yutaka Tanaka, and Osamu Matsunaga, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 19, 1987, Ser. No. 51,911
Claims priority, application Japan, May 20, 1986, 61-115032
Int. Cl.[4] H04N *9/78*
U.S. Cl. 358—31 **9 Claims**



1. A circuit for separating the luminance and chrominance signals from a video signal which is changing with time in one or more ways relative to a picture displayed from the video signal, the circuit comprising:

a plurality of luminance and chrominance signal separating means for separating said luminance and chrominance signals from said video signal using correlations in a plurality of said ways; and

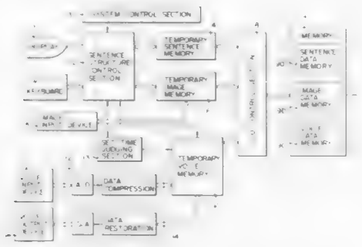
intermediate value selecting means for selecting the luminance and chrominance signals having intermediate values among the separated signals.

4,764,965

APPARATUS FOR PROCESSING DOCUMENT DATA INCLUDING VOICE DATA

Susumu Yoshimura, and Isamu Iwai, both of Kawasaki, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 540,869, Oct. 11, 1983, abandoned. This application Mar. 13, 1987, Ser. No. 27,115
Claims priority, application Japan, Oct. 14, 1982, 57-180279
Int. Cl.[4] G06F *9/00*
U.S. Cl. 381—43 **7 Claims**



1. An apparatus for forming and editing of a document having sentences associated with voice information, wherein when sentences are rearranged in the document during editing of the document, the voice information retains its association with respective of the sentences, comprising:

first memory means for storing document data which have been input and edited, said document data including a plurality of document blocks each including an address pointer which is indicative of a structure of data, said address pointer relating each document block with the others when document blocks are edited;

display means connected to said first memory means, for displaying document data read out from said first memory means;

designating means for designating, by a cursor, a desired document block from among the displayed document data;

means for associating the document block designated by said designating means, with voice data corresponding to said document block, by means of the address pointer, and

second memory means connected between said designating means and voice data input means, for storing the input voice data in correspondence to said designated document block by means of said address pointer, said designated document block being read out together with the voice data associated therewith when forming a document.

4,764,966

METHOD AND APPARATUS FOR VOICE DETECTION HAVING ADAPTIVE SENSITIVITY

Mark A. Einkauf, and Lynn P. West, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 11, 1985, Ser. No. 786,972
Int. Cl.[4] G01L *5/00*
U.S. Cl. 381—46 **7 Claims**



3. A system for detecting voice energy and for distinguishing said voice energy from voice and telephone ringback signals, comprising:

means for measuring a minimum energy level of an input signal for a predetermined time period in order to determine whether said input signal is a valid signal;

means responsive to said measuring means for detecting a requency crossing of said valid input signal over a predetermined frequency boundary subsequent to the expiration of said predetermined time period; and,

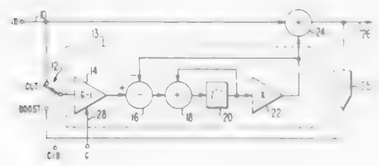
means for detecting when the number of frequency crossing exceeds a predetermined threshold value, thereby characterizing said valid input signal as voice.

4,764,967

TONE CONTROL SYSTEM FOR SAMPLED DATA SIGNALS

Todd J. Christopher, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Continuation-in-part of Ser. No. 923,416, Oct. 27, 1986, abandoned. This application Jul. 13, 1987, Ser. No. 73,338
Int. Cl.[4] H03G *5/00*
U.S. Cl. 381—98 **10 Claims**



1. Tone control apparatus comprising:

a system input terminal and a system output terminal;

signal combining means having a first input terminal and an output terminal respectively coupled to said system input and said system output terminals, and having a second input terminal;

a gain element having input, control and output terminals for multiplying signal applied to its input terminal by a factor (G−1) responsive to control signals applied to said control terminal, where G is a variable gain factor;

means for selectively coupling said system input terminal or said system output terminal to the input terminal of said gain element;

circuitry, having a transfer function T given by $T=K/[Z-1+K]$, coupled between said gain element and the second input terminal of said signal combining means, where K is a scaler constant and Z is the conventional Z-transform variable

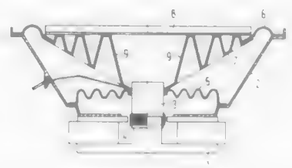
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4,764,968

DISK DIAPHRAGM FOR A LOUDSPEAKER

Leonhard Kreitmeier, Gunzenhausen, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 4, 1986, Ser. No. 836,026
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1985, 3507726
Int. Cl.[4] H04R *7/02, 1/24;* **G10K** *13/00*
U.S. Cl. 381—204 **9 Claims**



1. A disk diaphragm for a loudspeaker comprising a disklike radiating layer having a disklike radiation surface and an intermediate layer situated so as to be disposed between the surface of said disklike radiating layer opposite said radiation surface and a voice coil of a loudspeaker, and wherein the intermediate layer comprises an essentially conical plastic film provided with a plurality of discrete spatially limited supporting members, with each said member extending from the inner surface of said essentially conical plastic film up to said opposite surface of the disklike radiating layer, and being connected to said inner surface.

4,764,969

APPARATUS FOR INSPECTING THE SURFACE OF A MATERIAL

Ko Ohtombe, Kanagawa, and Masamitu Nishikawa, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jan. 27, 1987, Ser. No. 7,092
Claims priority, application Japan, Jan. 28, 1986, 61-14701
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—8 **9 Claims**



1. An apparatus for detecting defects in the surface of a material, comprising:

macro inspection means for automatically producing a macro image of at least a portion of the surface of the material at a first resolution and for automatically detecting information identifying the location of the surface defects on the portion;

control means connected to the macro inspection means for storing the location information detected by the macro inspection means; and

micro insepction means responsive to said control means for automatically producing a micro-image of that part of the surface of the material identified by said macro inspection means as containing surface defect at a second resolution higher than the first resolution.

4,764,970

METHOD AND APPARATUS FOR DETECTING CRACKS

Makoto Hayashi; Masahiro Otaka; Tasuku Shimizu, all of Hitachi, and Shinji Sakata, Kathuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1986, Ser. No. 852,313
Claims priority, application Japan, Apr. 15, 1985, 60-78304; Apr. 17, 1985, 60-80104
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—8 **3 Claims**



1. A method of detecting the shape of a crack using a scan-

VOL 1093 ISS 3 AG 16 1988 UMI

ning measurement terminal means for measuring a potential difference distribution generated between power feed terminal pairs which apply a d.c. current to a surface of a structural member, a control means for driving said scanning measurement terminal means and electric field analysis means for analyzing an electric field, said method comprising the steps of:

storing various aspect ratios of semi-elliptical shapes in a memory circuit of said electric field analysis means;

calculating potential distributions for various crack depths and storing said potential distributions in said memory circuit;

measuring a potential difference distribution of a crack in said surface of said structural member;

selecting an aspect ratio of a calculated potential distribution which is most analogous to said measured potential difference distribution;

altering said selected aspect ratio by moving nodal elements of said selected aspect ratio based on a ratio of said measured potential difference distribution to said calculated potential distribution and obtaining an analyzed potential difference distribution;

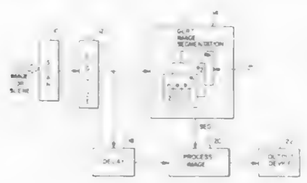
repeating the above steps until said analyzed potential difference distribution is equal to said measured potential difference distribution, such that when said analyzed potential difference distribution is equal to said measured potential difference distribution, the shape of the crack is represented by the corresponding altered aspect ratio.

4,764,971

IMAGE PROCESSING METHOD INCLUDING IMAGE SEGMENTATION

James R. Sullivan, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 25, 1985, Ser. No. 802,113
Int. Cl.[4] G06K *9/34, 9/36;* **H04N** *7/12*
U.S. Cl. 382—9 4 Claims



1. An image processing method comprising the steps of:

a. scanning an image to produce an image signal;

b. digitizing the image signal to produce a digital image having pixel amplitude values;

c. forming an image difference signal by taking differences between successive pixel amplitude values in the digital image;

d. segmenting in segmenting means the digital image into segments of pixel amplitude values having constant variance by applying a generalized likelihood ratio test (GLRT) to the image difference signal, to identify image segments, the GLRT testing for the hypothesis H_ϕ that a first set of image amplitude difference values from a Laplacian distribution having a variance σ are statistically similar to a second set of image amplitude difference values having a variance σ_0 to within a confidence level α, where α is an operator input value, the GLRT employing a generalized likelihood ratio (GLR) that is the ratio of maximum likelihood (ML) estimators for the variance σ of a distribution having a Laplacian probability density function (pdf);

e. supplying said segments to image processing means;

f. processing in said image processing means the digital image employing said identified image segments to produce a processed digital image; and

g. supplying said processed digital image to an output device

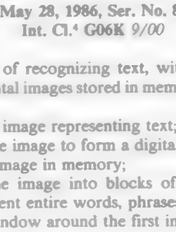
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4,764,972

CONTINUOUS CHARACTERS RECOGNITION SYSTEM

Kazunaga Yoshida; Hiroshi Shimizu, and Masao Watari, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 23, 1986, Ser. No. 866,524
Claims priority, application Japan, May 23, 1985, 60-110743; Aug. 6, 1985, 60-173421; Feb. 27, 1986, 61-42148; Mar. 11, 1986, 61-53397
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—13 7 Claims



1. A continuous characters recognition system comprising:

an input unit for transforming script writing of characters to produce an input pattern without segmenting said script writing;

an isolated character patterns memory for storing a plurality of isolated character patterns, each of said plurality of isolated character patterns representing a pattern from a start point to an end point of a corresponding one of a plurality of reference characters;

a continuous character patterns memory for storing a plurality of continuous character patterns, each of said plurality of continuous character patterns representing a pattern from a start point of each said reference character to a start point of a succeeding one of said reference characters; and

a recognition unit for recognizing said input pattern by producing a reference pattern based on a finite-state automaton and by comparing said input pattern with said reference pattern, said reference pattern including a combination of at least one of said continuous character patterns and one of said isolated character patterns, said one of said isolated character patterns being connected after said at least one of said continuous character patterns, said finite-state automaton providing an instruction path for combining ones of said continuous character patterns and said isolated character patterns to produce said reference pattern, comparison of said input pattern with said reference pattern being carried out without segmenting said input pattern.

4,764,973

WHOLE WORD, PHRASE OR NUMBER READING

Mark A. O'Hair, Shalimar, Fla., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 28, 1986, Ser. No. 867,642
Int. Cl.[4] G06K *9/00*
U.S. Cl. 382—14 2 Claims

1. The method of recognizing text, with a system having representative digital images stored in memory, comprising the steps:

(a) inputting an image representing text;

(b) digitizing the image to form a digital picture thereof;

(c) storing the image in memory;

(d) breaking the image into blocks of data, wherein the blocks represent entire words, phrases, or numbers;

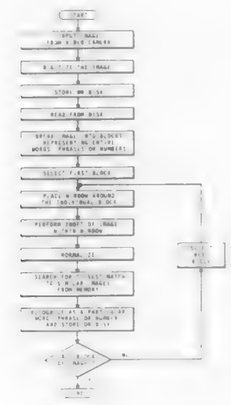
(e) placing a window around the first individual block;

(f) performing a two-dimensional discrete Fourier Transform (2DDFT) of the image within the window;

(g) filtering to the first three harmonics, with both real and imaginary components, these components then making up a total of 49 unique vectors which define a 49 orthogonal vector space;

(h) energy normalizing to unity the 49 unique vectors, which will eliminate the effects due to image brightness;

(i) searching a library of known 49 orthogonal vectors and finding the closest match by euclidian distance;



(j) after finding a closest match, recognizing the image within the window as a particular word, phrase, or number, and storing the result in memory;

(k) placing a window around the next individual block and repeating steps (f) through (j) until all blocks within the image are recognized; and

(l) outputting the resulting phrases, words, or numbers as text;

and wherein symmetry properties are used so that the image for each block is recognized similar to a person having dyslexia.

4,764,974

APPARATUS AND METHOD FOR PROCESSING AN IMAGE

Richard E. Woods, Knoxville, Tenn., assignor to Perceptics Corporation, Knoxville, Tenn.

Filed Sep. 22, 1986, Ser. No. 910,077
Int. Cl.[4] G06K *9/36;* **G06F** *15/332*
U.S. Cl. 382—43 23 Claims

1. An image processor for processing data representing an image, comprising:

a first memory for storing the data as an array of numbers in a format having rows and columns of data positions;

a second memory for storing the data as an array of numbers in a format having rows and columns of data positions;

means for scrolling the data in each row of the second memory with respect to the first memory by at least one data position;

a data processor;

means for outputting the scrolled data of the second memory and the data of the first memory to the data processor; and

said data processor being operable to combine every other group of at least one number of each row of the scrolled data with a corresponding every other group of at least one number of each row of the data from the first memory



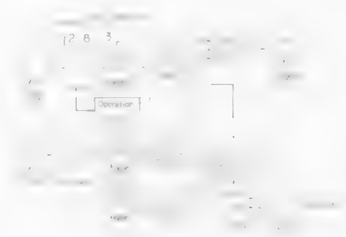
and for passing the data from the first memory for the remaining data positions to produce a new array of data.

4,764,975

METHOD OF AND APPARATUS FOR COMPRESSING IMAGE DATA

Toshifumi Inoue, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

PCT No. PCT/JP85/00671, § 371 Date Aug. 5, 1986, § 102(e) Date Aug. 5, 1986, PCT Pub. No. WO86/03610, PCT Pub. Date Jun. 19, 1986
PCT Filed Dec. 6, 1985, Ser. No. 897,760
Claims priority, application Japan, Dec. 6, 1984, 59-258743
Int. Cl.[4] G06K *9/36*
U.S. Cl. 382—47 5 Claims



1. An apparatus for compressing image data comprising:

compression data input means for inputting image compression data including both the number of pixels of an original image and the number of pixels of a desired compressed image;

first processing means for assigning the pixels of the original image to a same number of blocks as the pixels of the desired compressed image, based on said image compression data, which is adapted for a desired image compression;

original image data storing means for storing pixel data of the original image therein; and

second processing means for receiving said pixel data of the original image sequentially outputted from said original image data storing means and averaging said pixel data received theretofore every time respective pixel data are received, thereby outputting an average value of pixels forming respective blocks assigned by said first processing means wherein said first processing means comprises:

an adder having an input terminal to which the number of pixels of the desired compressed image is inputted;

VOL 1093 ISS 3 AG 16 1988 UMI

a subtractor having an input terminal to which is connected an output terminal of said adder;
a register connected to an output terminal of said subtractor, an output terminal of said register being connected to another input terminal of said adder so as to form a positive feedback, said register latching an output from said subtractor thereinto synchronously with an input clock of the pixel data of the original image;
a comparator having an input terminal to which is connected the output terminal of said register, the number of pixels of the original image being inputted to the other terminal thereof; and
a selector for selectively inputting either a zero signal or the number of pixels of the original image, the input terminal of said selector being connected to an output terminal of said comparator, an output terminal of said selector being in turn connected to another terminal of said subtractor, whereby said comparator compares the output from the first register with the number of pixels of the original image, so that said selector selects the zero signal when the output of said register is smaller than the number of pixels of the original image, whereas said selector selects the number of pixels of the original image when the output of the register is larger than the number of pixels of the original image, and simultaneously said comparator outputs an assignment signal for assigning a predetermined number of pixels to a block.

4,764,976
DOCUMENT READER MODULE
Fredrik L. N. Kallin, Kitchener; Marek W. Czesnik, Waterloo, and Mark M. Mach, Kitchener, all of Canada, assignors to NCR Corporation, Dayton, Ohio
Filed Jun. 26, 1986, Ser. No. 878,726
Int. Cl.[4] G06K *9/44*
U.S. Cl. 382—65 22 Claims



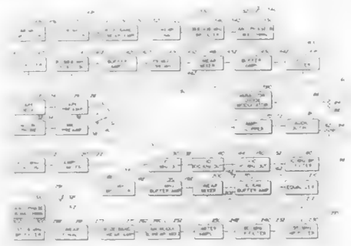
1. A document reader comprising:
a frame member having a first section having a first planar surface thereon and also having a second section having a second planar surface thereon, said first and second sections being in spaced parallel relationship to each other and said first and second planar surfaces being in spaced parallel relationship with each other; said frame member also having a guide surface which is upstanding from said frame member and perpendicular to said first planar surface;
transporting means for moving documents on their lower edges along a line which is parallel to said first planar surface and also for moving said documents in a plane which is parallel to said guide surface;
a read head;
support means for supporting said read head for movement in a direction which is perpendicular to said first planar surface and parallel to said guide surface; and
adjusting means for adjustably fixing said read head at a predetermined distance from said first planar surface;
said adjusting means including an indicator which is coupled to said read head to move therewith; said read head when moved to align said indicator with a line of data on a said document positioned on said second planar surface being effective to position said read head at said predetermined reading distance from said first planar surface.

4,764,977
RECLOSABLE PLASTIC CONTAINER
Kevin J. Wagers, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 753,100, Jul. 9, 1985. This application Feb. 19, 1987, Ser. No. 16,657
Int. Cl.[4] A65D *33/25*
U.S. Cl. 383—63 5 Claims



1. A reclosable flexible plastic container comprising, a bag body having flexible walls of a plastic film and having an opening therein, releasably interlocking rib and groove fastener elements secured to opposite facing inner surfaces of said walls of said bag body, said rib element having a tip and a generally flat tail, said tip and said tail being connected together by an upstanding stem, the ratio of the overall height of said fastener element to the length of said tail being approximately 1:1, said groove element having a generally flat base with a pair of generally upstanding neck elements disposed on opposite ends of said base, said base not extending beyond said neck elements, each of said neck elements having respective inwardly facing hook portions adapted to mate with said tip of said rib element to effect a seal.

4,764,978
EMERGENCY VEHICLE RADIO TRANSMISSION SYSTEM
Eckert H. Argo, 7680 Elk Clr., Prescott Valley, Ariz. 85319, and Ralph A. Baglino, 4834 W. Banff La., Glendale, Ariz. 85306
Filed Aug. 20, 1987, Ser. No. 87,674
Int. Cl.[4] H04K *3/00*
U.S. Cl. 455—1 15 Claims



1. Emergency vehicle radio transmission system, comprising, in combination:

audio source means for providing an audio output to be broadcast;
audio processor means for processing the output of the audio source means for broadcasting on AM frequencies and on FM frequencies;
AM band comb frequency generator means for generating AM band frequencies;
AM modulator means for modulating the amplitude of the processed audio output on the AM band frequencies;
first amplifier means for amplifying the modulated audio output on the AM band frequencies;
first antenna means for transmitting the amplified audio output on the AM band frequencies;
FM band comb frequency generator means for generating FM band frequencies;
FM modulator means for modulating the processed audio output on the generated FM band frequencies to provide a modulated FM output signal;
second amplifier means for amplifying the FM output signal on the FM frequency band; and
second antenna means for transmitting the amplifier FM output signal on the FM frequency band substantially simultaneously with the transmission on the AM band frequencies.

4,764,979
DIRECT RELAY EQUIPMENT
Yoshifumi Noguchi, Tokyo; Kouichi Ono, and Hiroyuki Endoh, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 900,247, Aug. 25, 1986, abandoned, which is a continuation of Ser. No. 577,790, Feb. 7, 1984, abandoned. This application Jun. 3, 1987, Ser. No. 57,746
Claims priority, application Japan, Feb. 10, 1983, 58-20876
Int. Cl.[4] H04B *7/14*
U.S. Cl. 455—22 5 Claims



1. Direct relay equipment comprising:
first antenna means for receiving a first signal having a first frequency and transmitting a fourth signal having a second frequency;
a first circulator having a first port, operativley connected to said first antenna means, for receiving and transmitting the first signal, having a second port for outputting the first signal and having a third port, said first circulator rotating in a direction in which the first signal is received or transmitted;
a first band-pass filter, operatively connected to the second port of said first circulator, having a center frequency equal to the first frequency, for passing signals having the first frequency;
a second circulator having a first port directly connected to said first band-pass filter for receiving signals having the first frequency from said first band-pass filter and having a second port and a third port, the first port transmitting the signals having the first frequency to the second port, the second port transmitting the signals having the first frequency from the first port to the third port, and the third port transmitting the signals having the first frequency to the first port;
a second band-pass filter, operatively connected to the second port of said second circulator, and having a center frequency equal to the second frequency, for reflecting signals having the first frequency back to the second port of said second circulator and being operatively connected to receive signals having the second frequency;
a first amplifier, operativley connected to the third port of said second circulator, for amplifying signals received from said second circulator;
a third circulator having a first port operatively connected to said first amplifier and having a second port and a third port;
a third band-pass filter, operatively connected to the second port of said third circulator and having a center frequency equal to the first frequency, for passing signals having the first frequency and reflecting signals having frequencies other than the first frequency back to said third circulator;
a first mixer, operatively connected to said third band-pass filter, for converting signals having the first frequency into a second signal having the second frequency, and applying the second signal to said first amplifier via said second band-pass filter and said second circulator;
a fourth band-pass filter, operatively connected to the third port of said third circulator, for passing signals having the second frequency received from said first amplifier via said third circulator;
a fourth circulator, having a first port operatively connected to said fourth band-pass filter, for receiving and transmitting signals having the second frequency from said fourth band-pass filter, and having a second port and a third port, said fourth circulator rotating in a direction in which the signals having the second frequency are received or transmitted;
second antenna means, operatively connected to the second port of said fourth circulator, for transmitting signals having the second frequency received from said fourth band-pass filter via said fourth circulator, and for receiving a third signal having the first frequency;
a fifth band-pass filter, operatively connected to the third port of said fourth circulator, having a center frequency equal to the first frequency, for receiving the third signal having the first frequency;
a fifth circulator having a first port directly connected to said fifth band-pass filter, for receiving signals having the first frequency from said fifth band-pass filter, and having a second port and a third port, the first port transmitting the signals having the first frequency to the second port, the second port transmitting the signals having the first frequency from the first port to the third port, and the third port transmitting the signals having the first frequency to the first port;
a sixth band-pass filter, operatively connected to the second port of said fifth circulator, having a center frequency equal to the second frequency, for passing signals having the second frequency and reflecting signals having frequencies other than the second frequency back to said fifth circulator;
a second amplifier, operativley connected to the third port of said fifth circulator, for amplifying signals received from said fifth circulator;
a sixth circulator having a first port operatively connected to said second amplifier and having a second port and a third port;
a seventh band-pass filter, operatively connected to the second port of said sixth circulator, having a center frequency equal to the first frequency, for passing signals having the first frequency and reflecting signals having frequencies other than the first frequency back to said sixth circulator;
a second mixer, operatively connected to said seventh band-pass filter, for converting signals having the first frequency into the fourth signal having the second frequency, and applying the fourth signal, via said sixth

VOL 1093 ISS 3 AG 16 1988 UMI

band-pass filter and said fifth circulator, to said second amplifier; and

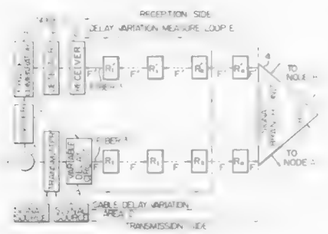
an eighth band-pass filter, operatively connected to the third port of said sixth circulator and to the third port of said first circulator, for passing the fourth signal having the second frequency to said first antenna via said first circulator.

4,764,980

SYSTEM FOR MEASURING DELAY TIME VARIATION IN OPTICAL FIBER DIGITAL COMMUNICATION SYSTEM

Haruo Sakaguchi; Norio Seki; Shu Yamamoto, all of Tokyo, and Yoshinao Iwamoto, Saitama, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1986, Ser. No. 820,348
Claims priority, application Japan, Jan. 22, 1985, 60-8466
Int. Cl.[4] H04B 9/00; H04J 1/16
U.S. Cl. 455—601 7 Claims



1. In an optical fiber digital communication system which includes optical regenerative repeaters, optical fiber transmission lines and at least one terminal end, a system for on-line measuring signal delay time variation of a transmission line at said one terminal end which has reference clock signal, said system comprising:

means for generating a monitor signal in an optical repeater by dividing a repetition frequency of said reference clock signal that is extracted from an information signal transmitted from said one terminal end;

return means for transmitting said monitor signal to said one terminal end;

said one terminal end having phase comparison means for comparing said monitor signal with a second reference signal that is obtained by dividing the repetition frequency of said reference clock signal at said one terminal end.

4,764,981

REMOTE CONTROL CIRCUIT

Yoshinori Miyahara, and Kazuo Hasegawa, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed May 29, 1986, Ser. No. 868,792
Claims priority, application Japan, May 29, 1985, 60-116288; Jun. 20, 1985, 60-132979
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—603 6 Claims

1. A remote control system comprising:

a remote control device including:

(a) a control input unit for providing a control signal;

(b) a first memory circuit for storing said control signal;

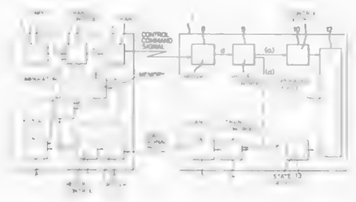
(c) a first transmitter circuit for combining a custom code with a data code corresponding to said control signal to form a first command signal, and transmitting the first command signal to a main device controlled by said remote control device, and for transmitting a second command signal, including said custom code, to said main device in response to a feedback signal provided by a command control circuit in said remote control device;

(d) a second receiver circuit for receiving a return signal transmitted from the main device and providing said return signal to a comparator circuit;

(e) said comparator circuit in said command control circuit for comparing said return signal with said control signal stored in said first memory circuit, and for providing said feedback signal to said first transmitter circuit if said return and stored control signals correspond to each other; and

said main device including:

(f) a first receiver circuit for receiving said first and second command signals from said remote control device, for decoding the custom code from said command signals and



comparing the decoded custom code with a predetermined value, and if said decoded custom code matches said predetermined value, for providing the return signal in response to said first command signal, and for providing an operating command signal in response to said second command signal;

(g) a second transmitter circuit for transmitting said return signal to said remote control device if said return signal is provided by said first receiver circuit; and

(h) an operated device for performing a desired operation of said main device if said operating command signal is provided by said first receiver circuit.

4,764,982

SECURE COMMUNICATION SYSTEM

Charles E. Pfund, 16 Balcarres Rd., West Newton, Mass. 02165

Division of Ser. No. 248,518, Mar. 21, 1981, Pat. No. 4,664,518, which is a division of Ser. No. 206,766, Jul. 2, 1962, Pat. No. 4,279,036. This application May 7, 1987, Ser. No. 47,629
The portion of the term of this patent subsequent to Jul. 14, 1998, has been disclaimed.
Int. Cl.[4] G02F 1/00; G01B 11/26; G01J 1/20
U.S. Cl. 455—606 14 Claims



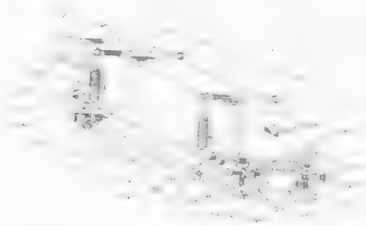
1. The method of communicating with a mobile vehicle comprising the steps of transmitting a laser beam toward a relay station high above the surface of the earth from a vehicle within the portion of the earth's surface beneath said relay station, detecting said laser beam received at said relay station to determine the angular orientation of said vehicle from said relay station, utilizing the angular orientation data so obtained to establish a narrow beam communication link from said relay station to said vehicle, and communicating with said vehicle from a remote point via said relay station and said narrow beam communication link.

4,764,983

COMMUNICATION LASER ALIGNMENT ASSEMBLY

Richard K. Walter, Manheim, Pa., assignor to Laser Communications, Inc., Lancaster, Pa.

Filed Jun. 15, 1987, Ser. No. 61,553
Int. Cl.[4] H04B 9/00; H01S 3/03, 3/08
U.S. Cl. 455—609 7 Claims



1. A mounting and alignment assembly for a communication laser station comprising:

a cabinet for a communication laser station;

a base plate whose horizontal dimensions are at least as large as those of the plan view of the cabinet and oriented approximately parallel to the cabinet and under the cabinet;

an alignment block attached near one edge of the base plate and including at least two vertical planes;

a pivot means attached to the base plate near the edge of the base plate opposite from the edge near which the alignment block is attached;

a socket means which mates with the pivot means, attached to the bottom surface of the cabinet near the front cabinet surface through which a laser beam passes;

a first fixture attached to the cabinet near one side of the rear surface of the cabinet which is most remote from the cabinet end to which the socket means is attached and including an essentially vertical through threaded hole and an essentially horizontal through threaded hole;

a second fixture attached to the cabinet near the other side of the rear surface of the cabinet which is most remote from the cabinet end to which the socket means is attached and including an essentially vertical through threaded hole and an essentially horizontal through threaded hole;

a first vertical adjustment screw threaded through the vertical threaded hole of the first fixture, and supporting one point of the fixture from the base plate;

a second vertical adjustment screw threaded through the vertical threaded hole of the second fixture and supporting one point of the fixture from the base plate;

a first horizontal adjustment screw threaded through the horizontal threaded hole of the first fixture, contacting a first vertical surface of the alignment block and creating a horizontal force acting against the first fixture;

a second horizontal adjustment screw threaded through the horizontal threaded hole of the second fixture, contacting a second vertical surface of the alignment block and creating a horizontal force acting against the second fixture which is opposite to the horizontal force acting against the first fixture;

at least one essentially linear structure lying on the top of the cabinet and oriented to cross the two vertical sides of the cabinet which join the front surface and rear surface of the cabinet;

a first spring with one end anchored at the base plate and the other end attached to a first end of the essentially linear structure, pulling that end of the essentially linear structure and also the cabinet toward the base plate; and

a second spring with one end anchored at the base plate and the other end attached to the second end of the essentially linear structure, pulling that end of the essentially linear structure and also the cabinet toward the base plate.

4,764,984

FLUORESCENT SENSORS FOR INFRARED FREE-SPACE LINKS IN DATA COMMUNICATION SYSTEMS

Hilmar Franke, Bramsche, Fed. Rep. of Germany, and Fritz R. Gfeller, Ossining, N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 18, 1986, Ser. No. 897,443
Int. Cl.[4] H04B 9/00
U.S. Cl. 455—619 20 Claims



1. A fluorescent-activated light detector for detection of time modulated IR signals of preselected wavelength comprising:

an IR-light collecting member, said member comprising a solid transparent core material with a fluorescent light absorbing dye molecularly dispersed therein;

photosensing means operatively associated with said member for detecting fluorescent light emitted by said member upon exposure to incident IR radiation of said preselected wavelength;

wherein said light collecting member has a surface area A1, said photosensing means has an active area A2 and wherein A1 is much greater than A2.

VOL
1093

ISS
3

AG
16

1988

UMI

DESIGN PATENTS

GRANTED AUG. 16, 1988

ERRATA

For CLASS	See PATENT NO.
D10-121	 297,270

VOL
1093

ISS
3

AG
16

1988

UMI

297,180
TOE WARMER
Robert L. Milner, 3212 Longfellow Ave., Mounds View, Minn. 55407, and Barbara L. Mann, Minneapolis, Minn., assignors to Robert L. Milner, Minneapolis, Minn.
Filed Oct. 23, 1985, Ser. No. 790,466
Term of patent 14 years
U.S. Cl. D2—277



297,181
SHOE UPPER
Lawrence Selbiger, Portland; John Lademann, West Linn, both of Oreg., and Robert L. Peterson, Taichung, Taiwan, assignors to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 17, 1988, Ser. No. 156,643
Term of patent 14 years
U.S. Cl. D2—314



297,182
ATHLETIC SHOE UPPER
Paul D. Brown, Hingham, and Juan A. Diaz, Weymouth, both of Mass., assignors to Reebok International Ltd., Canton, Mass.
Filed Feb. 6, 1987, Ser. No. 11,702
Term of patent 14 years
U.S. Cl. D2—314





297,183
SHOE UPPER
Lawrence Selbiger, Portland, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Division of Ser. No. 8,424, Jan. 29, 1987, Pat. No. Des. 296,381.
This application Jul. 2, 1987, Ser. No. 69,596
Term of patent 14 years
U.S. Cl. D2—314



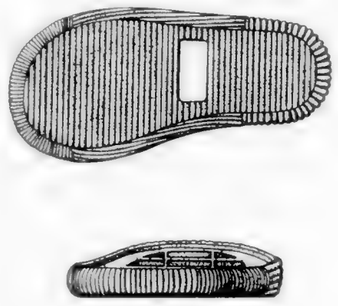
297,184
SHOE UPPER
James K. Tong, Beaverton, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Division of Ser. No. 8,421, Jan. 29, 1987, Pat. No. Des. 295,230.
This application Jul. 2, 1987, Ser. No. 69,597
Term of patent 14 years
U.S. Cl. D2—314



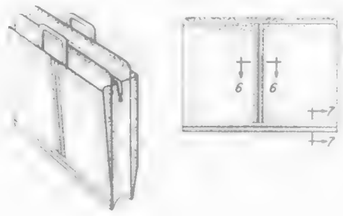


VOL
1093
ISS
3
AG
16
1988
UMI

297,185
SHOE SOLE
Jonathan B. Berzak, Irvine, Calif., assignor to Berlane International Inc., Tustin, Calif.
Filed Feb. 3, 1986, Ser. No. 825,439
Term of patent 14 years
U.S. Cl. D2—320



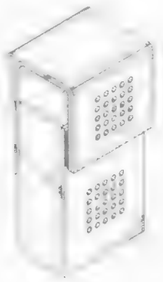
297,187
PORTFOLIO
Alfred Kaczmarek, Spotswood, N.J., assignor to E. C. Leather Goods, Inc., Cranbury, N.J.
Filed Apr. 5, 1985, Ser. No. 720,463
Term of patent 14 years
U.S. Cl. D3—72



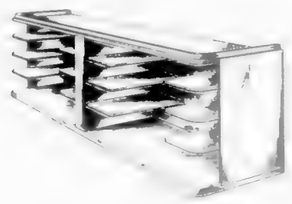
297,186
SHOE SOLE
Joan Swett, Lake Oswego, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 16, 1988, Ser. No. 155,687
Term of patent 14 years
U.S. Cl. D2—320



297,188
CORDLESS TELEPHONE POUCH
James T. R. Powell, c/o Alfieri, 6124 NW. 18th Ct., Margate, Fla. 33064
Filed Oct. 15, 1985, Ser. No. 787,479
Term of patent 14 years
U.S. Cl. D3—106



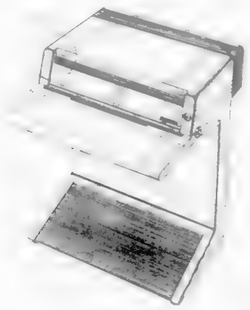
297,189
CASSETTE STORAGE RACK
David M. Stravitz, 16 Park Ave., Ste. 14A, New York, N.Y. 10016
Continuation-in-part of Ser. No. 741,156, Jun. 4, 1985, Pat. No. Des. 294,206 which is a continuation-in-part of Ser. No. 603,107, Apr. 23, 1984, Pat. No. Des. 289,833. This application May 14, 1986, Ser. No. 863,405
Term of patent 14 years
U.S. Cl. D6—407



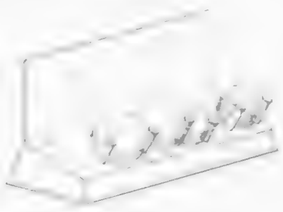
297,191
MERCHANDISE DISPLAY STAND
Fred Frieden, Jr., Lombard, Ill., assignor to Dupli-Color Products Company, Cleveland, Ohio
Filed Oct. 12, 1984, Ser. No. 659,977
Term of patent 14 years
U.S. Cl. D6—461



297,190
COMPUTER WORK STATION
John Arnott, Toronto, Canada, assignor to Amnicon Corporation, Dowsview, Canada
Filed Jan. 28, 1986, Ser. No. 823,282
Claims priority, application Canada, Nov. 8, 1985, 08-11-85-11
Term of patent 14 years
U.S. Cl. D6—429

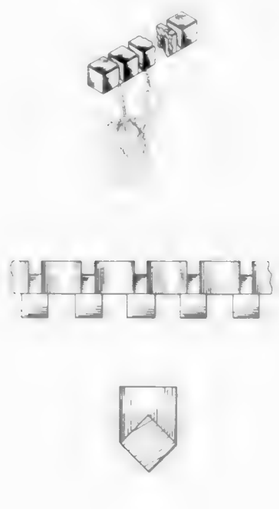


297,192
DISPLAY STAND FOR DISHWARE
William H. Mixon, Fort Deposit, and Thomas L. Hollingsworth, Montgomery, both of Ala., assignors to Benco Industries, Inc., Fort Deposit, Ala.
Filed Mar. 18, 1986, Ser. No. 845,054
Term of patent 14 years
U.S. Cl. D6—467



VOL 1093 ISS 3 AG 16 1988 UMI

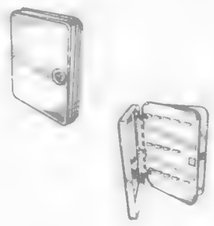
297,193
SUPPORT BAR FOR FISHING LURES AND JIGS
John W. Weant, R.R. 1, Oak Park Estates, Moberly, Mo. 65270
Filed Mar. 14, 1986, Ser. No. 844,737
Term of patent 14 years
U.S. Cl. D6—491



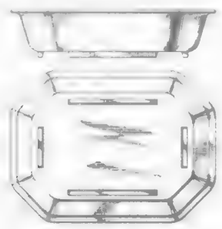
297,194
TOWEL RING
Mary J. Reid, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 9, 1986, Ser. No. 817,348
Term of patent 14 years
U.S. Cl. D6—546



297,195
WALL MOUNTED SECURITY CONTAINER
Clive W. Warwicker, Cookley, England, assignor to Helix Limited, West Midlands, England
Filed May 20, 1985, Ser. No. 735,746
Claims priority, application United Kingdom, Nov. 21, 1984, 16334/84
Term of patent 14 years
U.S. Cl. D6—559



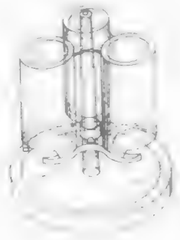
297,196
DISH
Joost R. Ritman, Bloemgracht 15-19, 1016 KB Amsterdam, Netherlands
Filed Nov. 23, 1984, Ser. No. 674,271
The portion of the term of this patent subsequent to Sep. 8, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—1



297,197
DRINKING VESSEL WITH A PAIR OF HANDLES
Herbert S. Greenberg, 21 Via Marina #2, Marina del Rey, Calif. 90290
Filed Dec. 30, 1985, Ser. No. 814,890
Term of patent 14 years
U.S. Cl. D7—10



297,198
CAROUSEL CREAMER
Forest F. Liebe, and Gordon H. Sayler, both of Coeur d'Alene, Id., assignors to Z-Tek International Inc., Post Falls, Id.
Filed Sep. 29, 1986, Ser. No. 912,620
Term of patent 14 years
U.S. Cl. D7—52



297,199
PEPPER MILL
Knut Hagberg, and Marianne Hagberg, both of Stora Södergatan, Sweden, assignors to Ikea of Sweden AB, Almhult, Sweden
Filed Jun. 25, 1985, Ser. No. 748,605
Claims priority, application Sweden, Mar. 12, 1985, 85-0626
Term of patent 14 years
U.S. Cl. D7—53



297,200
BUTTER DISH
Ronald DeVito, 394 Somerville Pl., Yonkers, N.Y. 10703
Filed Aug. 29, 1985, Ser. No. 770,546
The portion of the term of this patent subsequent to May 10, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—84



297,201
FOIL CUTTER FOR WINE BOTTLES
Herbert Allen, Houston, Tex., assignor to Hallen Company, Houston, Tex.
Filed Oct. 22, 1985, Ser. No. 790,262
Term of patent 14 years
U.S. Cl. D7—99



297,202
OLIVE SCOOP
Harold Zumwalt, 36000 Fremont Blvd. #40, Fremont, Calif. 94538
Filed Oct. 24, 1985, Ser. No. 793,320
Term of patent 14 years
U.S. Cl. D7—104



297,203
FOUR WAY OPENER
Rick Chouinard, 325 - 13th Ave. NE, Jamestown, N. Dak. 58401
Filed Oct. 28, 1985, Ser. No. 791,708
Term of patent 14 years
U.S. Cl. D8—33



VOL 1093 ISS 3 AG 16 1988 UMI

297,204
POP TOP CAN OPENER
Henry Duerst, Jr., Star Route South, Box 895A, Alamogordo, N. Mex. 88310
Filed Sep. 20, 1985, Ser. No. 778,423
Term of patent 14 years
U.S. Cl. D8—40



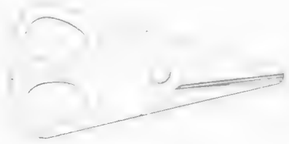
297,205
STAPLING GUN
Sheng Wang, No. 2-3, Lane 350, Chung Ho Road, Chung Ho City, Taipei Hsien, Taiwan
Filed Sep. 20, 1985, Ser. No. 778,218
Term of patent 14 years
U.S. Cl. D8—49



297,206
SCISSORS
Yoru Hayashi, 21, Tsujiido-cho, Seki-shi, Gifu-ken, Japan
Filed Oct. 25, 1985, Ser. No. 791,245
Claims priority, application Japan, Jul. 22, 1985, 60-31363
Term of patent 14 years
U.S. Cl. D8—57



297,207
SCISSORS
Toru Hayashi, 21 Tsujiido-cho, Seki-shi, Gifu-ken, Japan
Filed Oct. 25, 1985, Ser. No. 791,244
Claims priority, application Japan, Jul. 22, 1985, 60-31362
Term of patent 14 years
U.S. Cl. D8—57



297,208
SCROLLER JIG SAW
Robert I. Somers, Raleigh, N.C., assignor to Black & Decker, Inc., Newark, Del.
Filed Aug. 8, 1985, Ser. No. 763,906
Term of patent 14 years
U.S. Cl. D8—64



297,209
FISH HOOK SHARPENER
Morton Cohen, 60 Otis St., West Babylon, N.Y. 11704
Filed Dec. 5, 1985, Ser. No. 804,905
Term of patent 14 years
U.S. Cl. D8—91



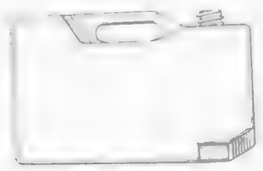
297,210
CABLE INSULATION STRIPPER
Barry P. Liversidge, 9 Heather Close, Layer-de-la-Haye, Colchester, Essex, England
Filed Aug. 6, 1985, Ser. No. 763,013
Claims priority, application United Kingdom, Feb. 12, 1985, 1,024,955
Term of patent 14 years
U.S. Cl. D8—98



297,211
KNOB
Nolan K. Rhoades, Beloit, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed May 27, 1986, Ser. No. 867,306
Term of patent 14 years
U.S. Cl. D8—310



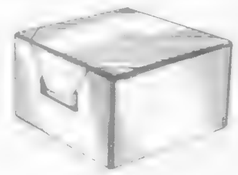
297,212
REAGENT CONTAINER OR SIMILAR ARTICLE
Leonard J. Stavish, New City, N.Y., assignor to Fisher Scientific Company, Pittsburgh, Pa.
Filed Nov. 4, 1985, Ser. No. 803,764
Term of patent 14 years
U.S. Cl. D9—376



297,213
BOTTLE
John R. Holmquist, San Gabriel; Scott M. Dever, Norwalk; Robert L. Trott, Placentia; Fred W. Thatcher, Newhall, and Edward Malkowicz, Fullerton, all of Calif., assignors to Purex Corporation, Phoenix, Ariz.
Filed Jun. 28, 1985, Ser. No. 749,927
Term of patent 14 years
U.S. Cl. D9—378



297,214
PAPERBOARD CARTON
Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Nov. 15, 1984, Ser. No. 671,515
Term of patent 14 years
U.S. Cl. D9—416



297,215
CLIP-ON WATCH
Mica Pavlovic, Kowloon, Hong Kong, assignor to Linea Design Limited, Kowloon, Hong Kong
Filed Oct. 21, 1985, Ser. No. 789,721
Claims priority, application United Kingdom, Sep. 5, 1985, [illegible]
Term of patent 14 years
U.S. Cl. D10—32



VOL 1093 ISS 3 AG 16 1988 UMI

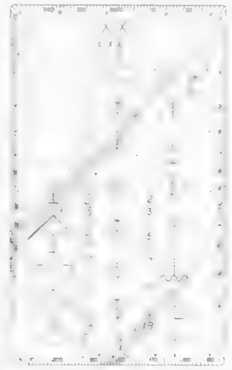
297,216
WRISTWATCH
Jean-Claude Beuchat, Courtetelle, Switzerland, assignor to Piquerez-Bourquard S.A., Bassecourt, Switzerland
Filed Aug. 7, 1985, Ser. No. 763,533
Claims priority, application Hague, Feb. 20, 1985, DM/004813
Term of patent 14 years
U.S. Cl. D10—33



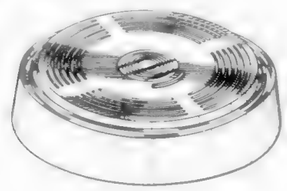
297,217
TEMPERATURE AND HUMIDITY INDICATOR
Stephen H. Wolff, 222 E. 35th St., New York, N.Y. 10016
Filed Aug. 12, 1985, Ser. No. 764,337
Term of patent 14 years
U.S. Cl. D10—53



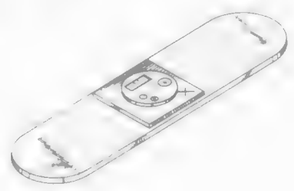
297,218
AVIATION SYMBOLS TEMPLATE
Michael H. Deering, 114 London La., Jacksonville, N.C. 28540
Filed May 30, 1985, Ser. No. 739,115
Term of patent 14 years
U.S. Cl. D10—62



297,219
SMOKE DETECTOR COVER WITH LIGHT
Stephen C. Taylor, Etobicoke, Canada, assignor to Dicon Systems Limited, Toronto, Canada
Filed Aug. 6, 1986, Ser. No. 893,717
Term of patent 14 years
U.S. Cl. D10—106



297,220
TRANSMITTER FOR MISSING PERSON LOCATION
Thomas A. Dutcher, 1510 Tormey St., Red Oak, Iowa 51566
Filed Aug. 30, 1985, Ser. No. 771,112
Term of patent 14 years
U.S. Cl. D10—104



297,221
WALK-THROUGH METAL DETECTOR
Robert J. Podhrasky, Dallas, Tex., assignor to Garrett Electronics, Inc., Garland, Tex.
Filed Oct. 28, 1985, Ser. No. 792,295
Term of patent 14 years
U.S. Cl. D10—106



297,222
SMOKE AND FIRE ALARM
Howard L. Rauch, Old Saybrook, Conn.
Filed Dec. 20, 1985, Ser. No. 811,563
Term of patent 14 years
U.S. Cl. D10—106



297,223
THREE-WHEELED MOTORCYCLE
Kiyoshi Oono, Tokyo, and Hiroshi Shimoyama, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1985, Ser. No. 716,823
Claims priority, application Japan, Oct. 4, 1984, 59-41306
Term of patent 14 years
U.S. Cl. D12—110



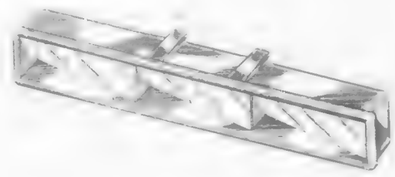
297,224
WINDSHIELD WIPER HOLDER
Robert A. M. Kock, Budel, Netherlands, assignor to Volvo B.V., Netherlands
Filed Oct. 29, 1985, Ser. No. 792,489
Claims priority, application Hague, Apr. 30, 1985, DMA/00375
Term of patent 14 years
U.S. Cl. D12—155



297,225
VAN TOP
William P. Johnson, Syracuse, and Charles B. Bonifield, Warsaw, both of Ind., assignors to Coachmen Industries, Inc., Middlebury, Ind.
Filed Feb. 7, 1986, Ser. No. 827,909
Term of patent 14 years
U.S. Cl. D12—156



297,226
VEHICLE MIRROR
Robert T. Stewart, Woodinville, Wash., assignor to Wink Corporation, Lynwood, Wash.
Filed Feb. 7, 1985, Ser. No. 699,344
Term of patent 14 years
U.S. Cl. D12—187



VOL 1093 ISS 3 AG 16 1988 UMI

297,227
VEHICLE SUN VISOR ATTACHMENT
Leonard P. Zick, Scottsdale, Ariz., assignor to Visor-Roll, Inc., Scottsdale, Ariz.
Filed Nov. 25, 1985, Ser. No. 806,331
Term of patent 14 years
U.S. Cl. D12—191



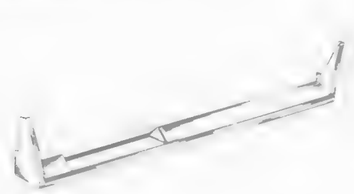
297,228
SUNSHIELD FOR MOTOR VEHICLE WINDSCREEN
Jonathan Harpaz, 602 Groenkloof Gardens, 61 Totius Street, Groenkloof, Pretoria, Transvaal, and Reuben Psek, 83 Bessemer Street, Wendywood, Sandton, Transvaal Province, both of South Africa
Filed Aug. 11, 1986, Ser. No. 895,187
Claims priority, application South Africa, Jun. 5, 1986, 86/0479; Jun. 5, 1986, 86/0480
Term of patent 14 years
U.S. Cl. D12—191



297,229
COVER FOR THE UNDERCARRIAGE OF AN AUTOMOBILE
James C. Sermersheim, 3122 Wimberg Ave., Evansville, Ind. 47712
Continuation-in-part of Ser. No. 718,994, Apr. 1, 1985, abandoned. This application Jan. 24, 1986, Ser. No. 822,317
Term of patent 14 years
U.S. Cl. D12—190



297,230
COMBINED VEHICLE SIDE RAIL, STEP AND SPLASH GUARD
Rick Huff, c/o Future Fiberglass, Box E, Lapaz, Ind. 46537
Filed Dec. 29, 1986, Ser. No. 947,559
Term of patent 14 years
U.S. Cl. D12—203



297,231
CABLE ASSEMBLY
William F. Rasnake, 20830 28th Ave. SE., Bothell, Wash. 98021; Jeffrey C. Brown, 522 NE. 91st St., and Heiman Wong, 1548 NE. 165th St., both of Seattle, Wash. 98155
Filed Sep. 24, 1985, Ser. No. 779,438
Term of patent 14 years
U.S. Cl. D13—24



297,232
TELEPHONE CONNECTOR BLOCK
John Gazzo, Commack, N.Y., assignor to Porta System Corp., Syosset, N.Y.
Filed Jul. 11, 1985, Ser. No. 753,939
Term of patent 14 years
U.S. Cl. D13—24

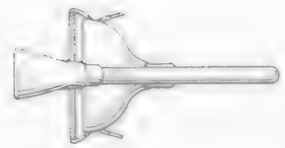


297,233
LOUDSPEAKER CABINET
John R. Livigni, 10 W. Bay State, Alhambra, Calif. 91801
Filed Apr. 25, 1985, Ser. No. 727,235
Term of patent 14 years
U.S. Cl. D14—34



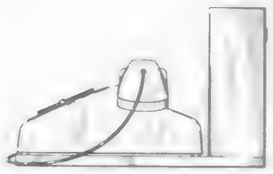
297,234
FETAL COMMUNICATION DEVICE
Janet D. Hodson, Ventura, and Fredrika M. Strandfeldt, Santa Barbara, both of Calif., assignors to Pregaphone Inc., Ventura, Calif.
Filed Oct. 20, 1986, Ser. No. 920,952
Term of patent 14 years
U.S. Cl. D14—52

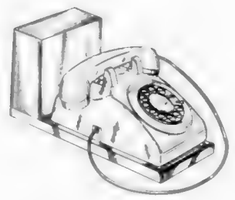




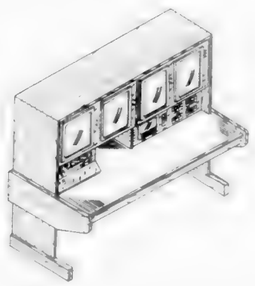
VOL
1093
ISS
3
AG
16
1988
UMI

297,235
COMBINED TELEPHONE, COIN BOX AND SUPPORT THEREFOR
Robert V. Albertson, Wayzata, Minn., assignor to Burd, Bartz & Gutenkauf, Minneapolis, Minn.
Filed Apr. 23, 1984, Ser. No. 602,899
Term of patent 14 years
U.S. Cl. D14—55

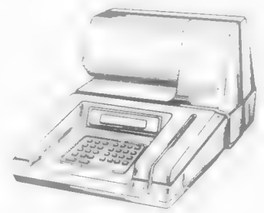




297,236
RECEIVER CONSOLE
Patrick L. Tiffin, San Luis Obispo, Calif., assignor to Ray-Vue Corp., San Luis Obispo, Calif.
Filed Nov. 25, 1985, Ser. No. 806,333
Term of patent 14 years
U.S. Cl. D14—79



297,237
COMBINED POINT OF SALE TERMINAL AND PRINTER THEREFOR
Douglas G. Long, North Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio
Filed Sep. 18, 1985, Ser. No. 783,480
Term of patent 14 years
U.S. Cl. D14—105

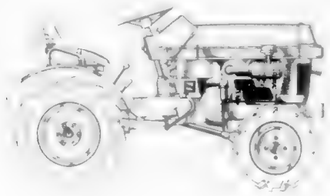


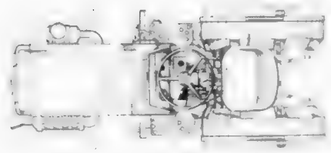
297,238
POWER TILLER
Tokio Horikawa, and Arinobu Ishida, both of Sakai, Japan, assignors to Kubota, Ltd., Osaka, Japan
Filed Mar. 24, 1986, Ser. No. 845,744
Claims priority, application Japan, Sep. 30, 1985, 60-41156
Term of patent 14 years
U.S. Cl. D15—11





297,239
AGRICULTURAL TRACTOR
Genichi Funabashi, Sennan, and Kenzo Ushiro, Sakai, both of Japan, assignors to Kubota, Ltd., Osaka, Japan
Filed Feb. 27, 1986, Ser. No. 838,045
Claims priority, application Japan, Aug. 27, 1985, 60-36125
Term of patent 14 years
U.S. Cl. D15—23



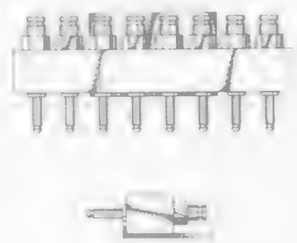


297,240
CUTTER DISK FOR PAPER SHREDDING MACHINE
Takefumi Hatanaka, No. 1-4-13, Midori-cho, Koganei-shi, Tokyo, Japan
Filed Feb. 7, 1985, Ser. No. 698,985
Term of patent 14 years
U.S. Cl. D15—139





297,241
CENTRAL LUBRICATION UNIT
Cecil J. Connors, 716 E. Spencer St., Riverton, Wyo. 82501
Filed Aug. 30, 1985, Ser. No. 771,109
Term of patent 14 years
U.S. Cl. D15—150

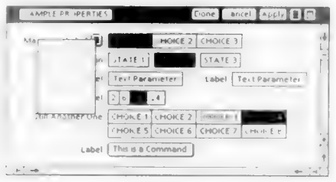


297,242
TELESCOPE
Toshimasa Yamanaka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Filed Apr. 23, 1986, Ser. No. 857,593
Claims priority, application Japan, Jan. 20, 1986, 61-1540
Term of patent 14 years
U.S. Cl. D16—132

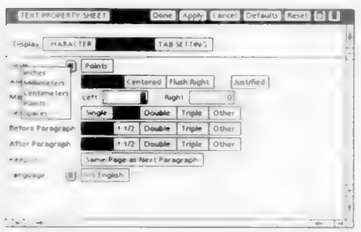


VOL 1093 ISS 3 AG 16 1988 UMI

297,243
ICON FOR A PROPERTY SHEET OR THE LIKE
Doris E. Wells-Papanek; William L. Verplank, both of Menlo Park, and Norman L. Cox, Mountain View, all of Calif., assignors to Xerox Corporation, Stamford, Conn.
Filed Oct. 28, 1985, Ser. No. 791,651
Term of patent 14 years
U.S. Cl. D18—27

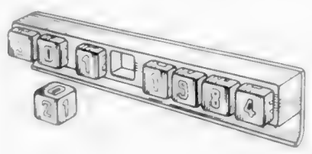








297,244
PERPETUAL CALENDAR
George P. Kennedy, 37 Queen St., Sandy Bay, Tasmania 7005, Australia
Filed Sep. 27, 1984, Ser. No. 655,077
Claims priority, application Australia, Mar. 27, 1984, 6969/84
Term of patent 14 years
U.S. Cl. D19—25



297,245
DIRECTIONAL TEMPLATE
Michael H. Deering, 114 London La., Jacksonville, N.C. 28540
Filed May 30, 1985, Ser. No. 739,116
Term of patent 14 years
U.S. Cl. D19—37



297,246
VENDING MACHINE
Don S. Summerville, Snellville; Phillip J. Snoke; Lionel D. Gillespie, both of Atlanta, and Frank B. Golley, Decatur, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 24, 1985, Ser. No. 747,707
Term of patent 14 years
U.S. Cl. D20—5



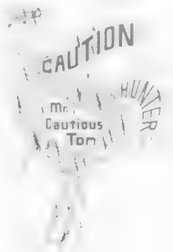
297,247
IDENTIFICATION BAND FOR USE ON LUGGAGE AND GARMENT BAGS
Victor M. Barr, 24001 Muirlands Blvd., #338, El Toro, Calif. 92630
Filed Sep. 17, 1987, Ser. No. 97,928
Term of patent 14 years
U.S. Cl. D20—27



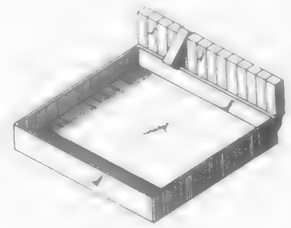
297,248
IDENTIFICATION BAND FOR USE ON LUGGAGE AND GARMENT BAGS
Victor M. Barr, 24001 Muirlands Blvd., #338, El Toro, Calif. 92630
Filed Sep. 17, 1987, Ser. No. 97,927
Term of patent 14 years
U.S. Cl. D20—27



297,249
TURKEY HUNTER'S SAFETY PLACARD
Roy D. Williams, 1675 #30 Manzanita Ave., Chico, Calif. 95926
Filed Jul. 20, 1987, Ser. No. 75,751
Term of patent 14 years
U.S. Cl. D20—30



297,250
DICE GAME BOX
Laurent Gouin, and Travis Mimms, both of P.O. Box 417, Windsor, Colo. 80550
Filed Nov. 27, 1985, Ser. No. 806,938
Term of patent 14 years
U.S. Cl. D21—41

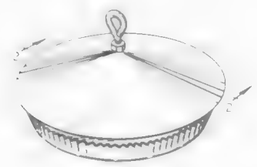


297,251
DOLL
Geminiano Gamazo-Canella, 240 Dolores, Apt. 229, San Francisco, Calif. 94103
Filed Dec. 23, 1985, Ser. No. 812,733
Term of patent 14 years
U.S. Cl. D21—155



VOL
1093
ISS
3
AG
16
1988
UMI

297,252
INSECT TRAP
E. Claire Pressnall, 21890 Hwg. 99-E No. 42, Canby, Oreg. 97013
Filed Sep. 26, 1985, Ser. No. 780,630
Term of patent 14 years
U.S. Cl. D22—122



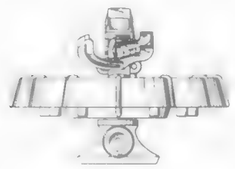
297,253
DOUBLE-ACTION FISHING HOOK
Denbigh Pride, 3400 Shagbark Rd., Apartment 13, Louisville, Ky. 40216
Filed Oct. 28, 1985, Ser. No. 791,838
Term of patent 14 years
U.S. Cl. D22—144

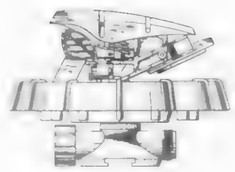


297,254
BALL VALVE
Masayoshi Odate, and Mitsuharu Hashimoto, both of Saitama, Japan, assignors to Sekisui Kagaku Kogyo K.K., Osaka, Japan
Filed Jun. 28, 1985, Ser. No. 749,892
Claims priority, application Japan, Jan. 29, 1985, 60-2901
Term of patent 14 years
U.S. Cl. D23—248

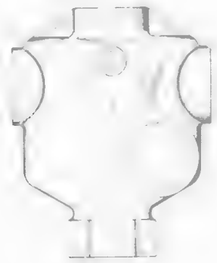


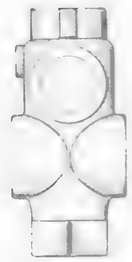
297,255
SPRINKLER HEAD
Thomas Henken, Dayton, Ohio, assignor to Gilmour Manufacturing Co., Louisville, Ky.
Filed Oct. 4, 1985, Ser. No. 784,263
Term of patent 14 years
U.S. Cl. D23—214



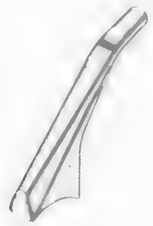


297,256
ALARM TEST VALVE BODY
Philip R. Schwarz, Easton, Pa., assignor to Victaulic Company of America, Easton, Pa.
Filed Sep. 4, 1985, Ser. No. 772,992
Term of patent 14 years
U.S. Cl. D23—233





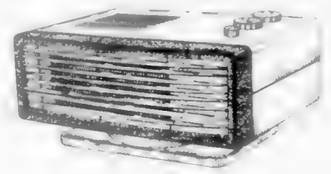
297,257
LEVER HANDLE
Herbert V. Kohler, Jr., Kohler, Wis., and Paul P. Kolada, Bexley, Ohio, assignors to Kohler Co., Kohler, Wis.
Filed Jan. 16, 1986, Ser. No. 819,878
Term of patent 14 years
U.S. Cl. D23—252



297,258
INFANT POTTY SEAT
Sandra D. Sells, and Anthony R. Sells, both of 1005 Braffetsville St., New Paris, Ohio 45347
Filed Jun. 21, 1985, Ser. No. 747,311
Term of patent 14 years
U.S. Cl. D23—296

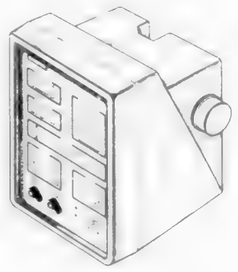


297,259
FAN HEATER
Lee Wen-Tun, No. 182 Yung Fu Road, Sec. 2, Tainan, Taiwan
Filed Apr. 3, 1986, Ser. No. 847,820
Term of patent 14 years
U.S. Cl. D23—337

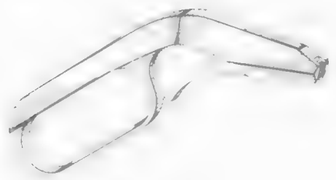


VOL 1093 ISS 3 AG 16 1988 UMI

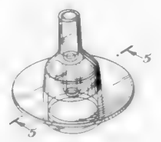
297,260
PORTABLE ELECTRONIC BLOOD PRESSURE MONITOR
Richard Avoy, Dunedin; Daryl L. Bordon, Temple Terrace; Gregory J. Gruzdowich; Rush W. Hood, both of Tampa, all of Fla., and L. Arthur Burton, Califon, N.J., assignors to Critikon, Inc., Tampa, Fla.
Filed Feb. 3, 1986, Ser. No. 825,170
Term of patent 14 years
U.S. Cl. D24—21



297,261
SURGICAL STAPLER
Joseph W. Blake, III, 88 Main St., New Canaan, Conn. 06840, and Paul DiCesare, New Canaan, Conn., assignors to Joseph W. Blake, III, New Canaan, Conn.
Filed Nov. 7, 1985, Ser. No. 803,936
Term of patent 14 years
U.S. Cl. D24—27



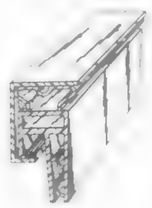
297,262
COMBINED SPIKE AND DROP FORMER HOUSING FOR ENTERIC SET
Thomas R. Sternweiler, San Diego, Calif., assignor to Ivac Corporation, San Diego, Calif.
Filed Aug. 23, 1984, Ser. No. 643,861
Term of patent 14 years
U.S. Cl. D24—52



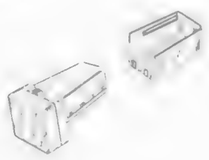
297,263
COMBINED SIDING GUARD, WORK TOP AND TOOL REST FOR LADDER TOPS
Arduino Paci, Box 360, R.D. #1, Rices Landing, Pa. 15357
Filed Jan. 6, 1986, Ser. No. 816,222
Term of patent 14 years
U.S. Cl. D25—68



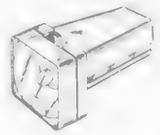
297,264
COMBINED EXTRUDED PANEL HOLDING AND SEALING STRIP AND SUPPORTING CLIP THEREFOR FOR IN-JAMB INSULATING WINDOW
Albert Dickerson, Columbus, Ohio, assignor to Plaskolite, Inc., Columbus, Ohio
Filed Sep. 12, 1985, Ser. No. 775,515
Term of patent 14 years
U.S. Cl. D25—119



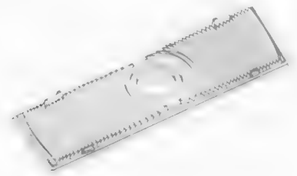
297,265
COMBINED RECHARGEABLE FLASHLIGHT AND CHARGER THEREFOR
Billy S. Ingram, II, Jamestown, N.C., assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 28, 1985, Ser. No. 750,480
Term of patent 14 years
U.S. Cl. D26—38



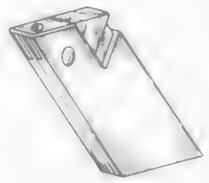
297,266
FLASHLIGHT
Billy S. Ingram, II, Jamestown, N.C., assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 28, 1985, Ser. No. 750,402
Term of patent 14 years
U.S. Cl. D26—46



297,267
AUTOMOTIVE SAFETY LAMP LENS
Kenneth J. Scowen, Roselle, N.J., assignor to Redondo Investment Limited, Monrovia, Liberia
Filed Nov. 25, 1985, Ser. No. 806,881
Term of patent 14 years
U.S. Cl. D26—122



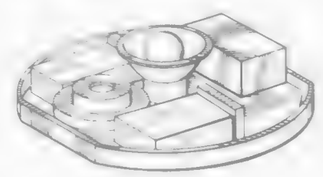
297,268
LIGHTER
Franz A. Stützer, Offenbach am Main, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany
Filed Dec. 17, 1985, Ser. No. 810,083
Claims priority, application Fed. Rep. of Germany, Jun. 19, 1985, 5MR10610
Term of patent 14 years
U.S. Cl. D27—154



297,269
LIGHTER
Sadao Yoshinaga, Ichikawa, Japan, assignor to Yoshinaga Prince Co., Ltd., Japan
Filed Sep. 16, 1986, Ser. No. 909,098
Claims priority, application Japan, Mar. 20, 1986, 61-10124
Term of patent 14 years
U.S. Cl. D27—148



297,270
SMOKE DETECTOR BASE
Stephen C. Taylor, Etobicoke, Canada, assignor to Dicon Systems Limited, Toronto, Canada
Filed Aug. 6, 1986, Ser. No. 893,720
Term of patent 14 years
U.S. Cl. D10—121



297,271
BIRDFEEDER
James E. Tucker, Batavia, and John Beecher, III, Carpentersville, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Apr. 3, 1986, Ser. No. 847,849
Term of patent 14 years
U.S. Cl. D30—126

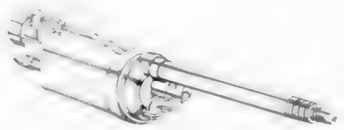


VOL 1093 ISS 3 AG 16 1988 UMI

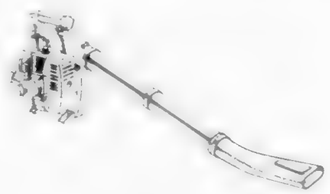
297,272
HANGING BIRDFEEDER
James E. Tucker, Batavia, and John Beecher, III, Carpentersville, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.
Filed Apr. 3, 1986, Ser. No. 847,847
Term of patent 14 years
U.S. Cl. D30—126



297,273
HOSE-ATTACHED PRESSURE SPRAY WASHER OR THE LIKE
Rudy R. Proctor, Costa Mesa, and Fred M. Reinstein, Encino, both of Calif., assignors to Turbo Tek Enterprises, Inc., Los Angeles, Calif.
Filed Dec. 17, 1986, Ser. No. 942,855
Term of patent 14 years
U.S. Cl. D32—1



297,274
LEAF BLOWER
Masayuki Komiya, and Toshikazu Kurihara, both of Numazu, Japan, assignors to Fuji Robin Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 16, 1985, Ser. No. 788,182
Claims priority, application Japan, Jul. 26, 1985, 60-031964
Term of patent 14 years
U.S. Cl. D32—15



297,275
MOP
Leslie G. Cook, Earlsfield, United Kingdom, assignor to Vitopan Limited, London, England
Filed Oct. 28, 1985, Ser. No. 792,317
Claims priority, application United Kingdom, May 1, 1985, 1026550
Term of patent 14 years
U.S. Cl. D32—44



297,276
GOGGLE WIPER
Lawrence L. "Buzz" Siler, Jr., Lake Oswego, and Richard A. "Rick" Siler, Hillsboro, both of Oreg., assignors to Sandra L. Siler, Oswego and Sally Jo Siler, Hillsboro, both of, Oreg., part interest to each
Filed Jun. 6, 1986, Ser. No. 871,572
Term of patent 14 years
U.S. Cl. D32—46



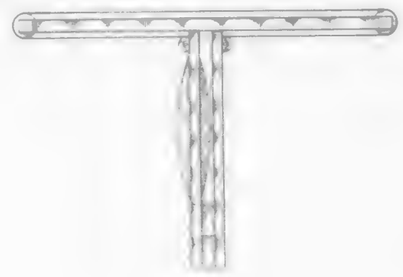
297,277
PAIR OF SKI BOOT SCRAPERS
David L. Vennett, 9001 Shannon Ave., Oklahoma City, Okla. 73132
Filed Aug. 8, 1986, Ser. No. 894,787
Term of patent 14 years
U.S. Cl. D32—47



297,278
CONVEYOR LINE PARTS HANGER
Alvia F. Franks, deceased, late of Ballville Township, Sandusky County, Ohio (by Nancy V. Franks, executor), and Timothy E. Cox, Ballville Township, Sandusky County, Ohio, assignors to Franks Machining, Inc., Fremont, Ohio
Filed Dec. 18, 1986, Ser. No. 943,153
Term of patent 14 years
U.S. Cl. D34—29



297,279
CONVEYOR BELT ASSEMBLY, OR SIMILAR ARTICLE
Robert A. Riley, P.O. Box 1665, Crestline, Calif. 92325
Filed Nov. 6, 1986, Ser. No. 927,691
Term of patent 14 years
U.S. Cl. D34—29





VOL
1093
ISS
3
AG
16
1988
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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF AUGUST, 1988

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. C. Nielsen Company: *See—*
Solar, Carl M., 4,764,808, Cl. 358-84.000.

A. Celli S.p.A.: *See—*
Di Vita, Angelo, 4,764,022, Cl. 366-157.000.

A. Johnson Metals Corporation: *See—*
Borowski, Robert A., 4,763,854, Cl. 242-129.000.

A-l Aluminum Products, Inc.: *See—*
Guardia, James F., 4,763,933, Cl. 292-13.000.

AB SKF: *See—*
Johansson, Lars J., 4,763,774, Cl. 198-461.000.

Abblett, Donald R. Disposable and collapsible trash receptacle. 4,764,029, Cl. 383-104.000.

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Abe, Kenji: *See—*
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru; Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000.
Kobayashi, Kazuo; Kumagai, Masao; Takahashi, Atsushi; and Abe, Kenji, 4,764,830, Cl. 360-104.000.

Abe, Takemi, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a semiconductor device. 4,763,407, Cl. 29-840.000

Abe, Yuzo: *See—*
Yoshioka, Teruo; Abe, Yuzo; and Nakano, Shoji, 4,763,391, Cl. 29-33.00P.

Abitz, Roger E.: *See—*
Tsukayama, Robert H.; and Abitz, Roger E., 4,763,397, Cl 29-509.000

Abo, Keiju: *See—*
Kumura, Haruyoshi; Yamamuro, Sigeaki; Hirano, Hiroyuki; Abo, Keiju; and Nakano, Masaki, 4,764,155, Cl. 474-12.000.

Abouzahr, Saad M.: *See—*
Dewhurst, John E.; Harasin, Stephen J.; Cekoric, Mark C.; and Abouzahr, Saad M., 4,764,540, Cl. 521-110.000

Abraham, Robert S.; and Koehler, Dennis L., to Abraham, Robert S. Apparatus for jacking basement walls. 4,763,878, Cl. 254-100.000.

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Wagner, Willard E., 4,763,552, Cl. 83-689.000.

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Actief N.V.: *See—*
Handler, Michael D., 4,763,798, Cl. 211-88.000

Adams, Leon M.: *See—*
Anderson, Eugene L.; Harlowe, William W., Jr.; Adams, Leon M.; and Marshall, Mary C., 4,764,317, Cl. 264-4.000.

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Adie, Richard A.: *See—*
Walker, Kenneth A.; Adie, Richard A.; and Shapiro, Arthur J., 4,764,288, Cl. 210-793.000.

Advance Micro Devices, Inc.: *See—*
Forth, Leslie; and Duley, Raymond S., 4,764,923, Cl. 371-6.000.

Advanced Micro Devices, Inc.: *See—*
Lai, Chingwei S.; and Lee, Florence S., 4,764,887, Cl. 364-787.000.
Lewallen, Kent D.; and Schumann, Steven J., 4,764,899, Cl. 365-189.000
Sander, Craig S., 4,764,800, Cl. 357-51.000.

Advanced Separation Technologies Incorporated: *See—*
Berry, W. Wes; Schmeda, Rae A.; and Kibler, Holly S., 4,764,276, Cl. 210-264.000

Ady, Joseph, to Metafuse Limited. Process and apparatus for treating electrically conductive matrices and products produced by the process. 4,764,654, Cl. 219-76.130.

AG fur industrielle Elektronik AGIE Losone bei Locarno: *See—*
Buhler, Ernst, 4,764,653, Cl. 219-69.00E.

AG International S.p.A.: *See—*
Pitavy, Michel; Chiappino, Mario; and Aghemo, Luigi, 4,764,322, Cl. 264-71.000

Aghemo, Luigi: *See—*
Pitavy, Michel; Chiappino, Mario; and Aghemo, Luigi, 4,764,322, Cl. 264-71.000.

Agroteam Consultants Ltd.: *See—*
Greenberg, Ilan, 4,763,839, Cl. 239-222.170.

Ahland, Erwin: *See—*
Romey, Ingo; Ahland, Erwin; Pass, Reinhard; and Verfuss, Franz, 4,764,355, Cl. 423-244.000.

Ahs, Wilgot, to Tocksfors Verkstads AB. Relay. 4,764,742, Cl 335-142.000

Air Products and Chemicals, Inc.: *See—*
Bauman, Bernard D.; Mehta, Rajendra K.; and Williams, Mark A 4,764,405, Cl. 428-35.000

Aisan Kogyo Kabushiki Kaisha: *See—*
Fukaya, Katsuyoshi; and Mineyama, Katsumi, 4,764,696, Cl. 310-49.00R.

Aisin Seiki Kabushiki Kaisha: *See—*
Tamura, Toru; Takeda, Toshio; and Kouno, Shinji, 4,763,636, Cl 123-564.000

Aisin-Warner Limited: *See—*
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,748, Cl. 180-248.000.
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,749, Cl. 180-249.000.

Ajmera, Prakash R., to Owens-Illinois Plastic Products Inc. Multilayer biaxially oriented heat set articles. 4,764,403, Cl. 428-35.000

Akashi, Kageyasu: *See—*
Sakabe, Ken-ichi; Kimura, Shingo; and Akashi, Kageyasu, 4,764,494, Cl. 501-138.000

Akerberg, Dag E., to Telefonaktiebolaget LM Ericsson. Method and apparatus in radio reception for avoiding storing a message more than once. 4,764,928, Cl. 371-69.000

Akimitsu, Masako: *See—*
Akutsu, Nakao; Akimitsu, Masako; and Mizoguchi, Tadashi, 4,764,436, Cl. 428-694.000

Akiu, Satoru: *See—*
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, 4,764,505, Cl. 514-35.000.

Akiyoshi, Hideki: *See—*
Otomura, Satoshi; and Akiyoshi, Hideki, 4,764,442, Cl. 430-63.000

Akiyoshi, Michio: *See—*
Uchida, Kiyoyuki; and Akiyoshi, Michio, 4,763,960, Cl. 303-97.000

Akutagawa, Susumu: *See—*
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,764,629, Cl. 556-23.000.

Akutsu, Nakao; Akimitsu, Masako; and Mizoguchi, Tadashi, to Research Development Corporation of Japan, a part interest. Iron-oxygen based perpendicular magnetized anisotropic thin film. 4,764,436, Cl. 428-694.000

Akzo America Inc.: *See—*
Sherif, Fawzy G.; and Via, Francis A., 4,764,357, Cl. 423-338.000
Telschow, Jeffrey E., 4,764,634, Cl. 558-96.000

Al Ghatta, Hussain A., to Cobarr S.p.A. Method of treating hollow articles, in particular polyethylene terephthalate preforms. 4,764,323, Cl. 264-85.000

Albanese, Philip. Solar-powered display device. 4,764,850, Cl. 362-35.000

Albarda, Scato; and Eder, Alfred, to Dragerwerk AG. Device for determining the concentration of substances having paramagnetic properties. 4,763,509, Cl. 73-27.00A

Albeck, Michael; and Sredni, Benjamin, to Bar-Ilan University. Tellurium and selenium compounds for the induction of in vivo and in vitro production of cytokines. 4,764,461, Cl. 435-68.000.

Albin, Stephen D. Framing tool. 4,763,825, Cl. 227-142.000

Alcatel Espace: *See—*
Hayard, Michel, 4,764,668, Cl. 235-470.000.

Alcatel N.V.: *See—*
Bernhard, Wilfred, 4,763,848, Cl. 242-1.000.

Alder, Alex; Stanek, Jaroslaw; and Bellus, Daniel, to Ciba-Geigy Corporation. Substituted azabicycloheptanes, the use thereof, pharmaceutical preparations that contain these compounds, and processes for the manufacture of these compounds. 4,764,640, Cl. 562-457.000.

VOL 1093 ISS 3 AG 16 1988 UMI

Alfred Teves GmbH: *See—*
Bleckmann, Hans W.; Loreck, Heinz; and Zydek, Michael, 4,764,685, Cl. 307-106.000.
Allaire, Roger A.; Pardue, William F., Jr.; and Simonson, Edwin J., to Corning Glass Works. Method of forming reinforced glass composites. 4,764,195, Cl. 65-18.400.
Allan, Graeme S.: *See—*
Jones, Brian; and Allan, Graeme S., 4,764,129, Cl. 439-677.000
Allan, Robert E.; and Allan, Robert M. Handgun locking and unlocking apparatus. 4,763,431, Cl. 42-70.110.
Allan, Robert M.: *See—*
Allan, Robert E.; and Allan, Robert M., 4,763,431, Cl. 42-70.110.
Allen, Douglas M.: *See—*
Leonard, John F.; and Allen, Douglas M., 4,763,529, Cl. 73-852.000
Allergan, Inc.: *See—*
Kaufman, Herbert E.; and McDonald, Marguerite B., 4,763,651, Cl. 128-310.000
Alley, Robert P.; Kornrumpf, William P.; and Harnden, John D., Jr., to General Electric Company. Electronic starting circuit for an alternating current motor. 4,764,714, Cl. 318-786.000.
Alley, Robert P.; and Turnbull, Fred G., to General Electric Company. Overload relay having adjustably gapped current transformers. 4,764,744, Cl. 336-131.000.
Allied Corporation: *See—*
Balint, Laszlo J.; and Greenburg, Julius, 4,764,607, Cl. 540-540.000.
Dahlstrom, David K.; Fife, Merrill E.; and Judy, Charles R., 4,764,907, Cl. 367-163.000.
Allied Signal Inc.: *See—*
McGowan, Peter T., 4,763,472, Cl. 60-403.000.
Meyer, Helmut P., 4,764,703, Cl. 313-126.000.
Strangman, Thomas E., 4,764,089, Cl. 415-174.000.
Swedo, Raymond J., 4,764,566, Cl. 525-390.000.
Vandemotter, Patrick J., 4,763,959, Cl. 303-9.000.
Zemel, Haya, 4,764,464, Cl. 435-136.000.
Zvonar, Robert F., 4,763,905, Cl. 277-38.000.
Allied Systems Company: *See—*
Langford, Frederic E., 4,763,742, Cl. 180-9.100.
Almour, Ralph. Earthquake alarm assembly. 4,764,762, Cl. 340-690.000.
Alpine Electronic Inc.: *See—*
Suzuki, Shoji, 4,764,825, Cl. 360-85.000
Alps Electric Co., Ltd.: *See—*
Kobayashi, Kazuo; Kumagai, Masao; Takahashi, Atsushi; and Abe, Kenji, 4,764,830, Cl. 360-104.000.
Miyahara, Yoshinori; and Hasegawa, Kazuo, 4,764,981, Cl. 455-603.000
Sekinoo, Koichi; and Harada, Hiroshi, 4,763,812, Cl. 221-203.000.
Takasawa, Kazuhiro, 4,764,645, Cl. 200-16.00F.
Althausen, Ferdinand: *See—*
Proksa, Ferdinand; Althausen, Ferdinand; Bucher, Gottfried; Raffel, Reiner; and Sulzbach, Hans-Michael, 4,764,536, Cl 521-50.000.
Altim Control OY: *See—*
Hirvonen, Kullervo, 4,764,017, Cl. 356-369.000.
Altman, Richard M., to TDS Patent Management, Inc. Aplanatic image combiner for use in projection television systems with reduced spherical and coma aberration. 4,764,806, Cl. 358-60.000.
Alvi, Nadeem S.; and Stevenson, Paul E., to Delco Electronics Corporation. Grown side-wall silicided source/drain self-align CMOS fabrication process. 4,764,481, Cl. 437-56.000.
Alza Corporation: *See—*
Sanders, Harold F.; Cheng, Yu-Ling; Enscore, David J.; and Libicki, Shari B., 4,764,379, Cl. 424-449.000.
Urquhart, John; and Theeuews, Felix, 4,764,380, Cl. 424-465.000.
American Balance Corporation: *See—*
Haltof, Garry P.; and Dodson, Earl L., 4,763,447, Cl. 49-429.000
American Cyanamid Company: *See—*
Klothen, Irving, 4,764,511, Cl. 514-594.000
American Fletcher National Bank and Trust Company, administrator: *See—*
Clinton, Albert J., deceased; and O'Doherty, George O. P., 4,764,534, Cl. 514-657.000.
American Home Products Corporation: *See—*
Kees, Kenneth L., 4,764,623, Cl. 548-253.000
American Metal Products Company: *See—*
Brown, Douglas S., 4,763,565, Cl. 98-40.130.
American Microsystems, Inc.: *See—*
Jochem, Daniel R., 4,764,691, Cl. 307-468.000.
American National Can Company: *See—*
Genske, Roger P.; and Kim, Yong J., 4,764,404, Cl. 428-35.000
American Standard Inc.: *See—*
Chew, James P., 4,763,875, Cl. 251-149.900.
American Tech Manufacturing, Inc.: *See—*
Linker, Frank, Sr.; Linker, Frank, Jr.; and Claffey, Edward T., 4,764,079, Cl. 414-411.000.
American Telephone and Telegraph Company: *See—*
Basavanhally, Nagesh R.; Pohl, Herbert A.; and Rapp, Willard E., 4,763,412, Cl. 29-845.000.
Courtney-Pratt, Jeofry S.; and McEowen, James R., 4,763,978, Cl. 350-96.180
American Telephone and Telegraph Company, AT&T Bell Laboratories: *See—*
Atal, Bishnu S., 4,764,963, Cl. 381-36.000.
Bridges, Thomas J.; Burkhardt, Ernest G.; Coldren, Larry A.; and Koch, Thomas L., 4,764,246, Cl. 156-643.000.
Choi, DooWahn, 4,764,941, Cl. 375-112.000.
Dickey, Larry W.; and Hughes, Philip, 4,764,950, Cl. 379-29.000.
Hinton, Harvard S.; and Miller, David A. B., 4,764,889, Cl. 364-807.000
Hinton, Harvard S., 4,764,890, Cl. 364-807.000.
Hunter, Paul D.; Parker, William W.; and Widrevitz, Benjamin C., 4,764,919, Cl. 370-60.000.
Sherry, William M., 4,763,829, Cl. 228-124.000.
AMF - Aluteam Metal Forming GmbH: *See—*
Backus, Hendricus P. M., 4,763,502, Cl. 72-39.000
Amgen Inc.: *See—*
Banks, Allen R.; and Hare, David L., 4,764,593, Cl. 530-324.000
Aminder, Christer: *See—*
Nordvall, Jan O.; and Aminder, Christer, 4,763,532, Cl. 73-862.320.
Amoco Corporation: *See—*
Kennedy, Steven, 4,764,296, Cl. 252-334.000.
Schammel, Wayne P., 4,764,639, Cl. 562-416.000.
Strock, Dennis J., 4,763,805, Cl. 220-85.00A.
AMP Incorporated: *See—*
Beinhaur, Ernest L., 4,764,131, Cl. 439-781.000.
DiClemente, Thomas J., 4,764,130, Cl. 439-686.000
Heisey, Jay M.; Kautz, Jon F.; and Pickles, Charles S., 4,763,408, Cl. 29-874.000.
Schwartzman, Benjamin, 4,763,410, Cl. 29-828.000.
Ampex Corporation: *See—*
Haycock, David A.; and Flora, Jay L., 4,764,809, Cl. 358-183.000.
Andersen, George L.; and Pezzopane, Claude A., to Sonobond Ultrasonics, Inc. Automatic heating device. 4,764,662, Cl. 219-391.000.
Anderson, Dean R.: *See—*
Anderson, Michael D.; and Anderson, Dean R., 4,764,633, Cl. 556-50.000
Anderson, Eugene L.; Harlowe, William W., Jr.; Adams, Leon M.; and Marshall, Mary C., to Southwest Research Institute. Microencapsulation process and apparatus. 4,764,317, Cl. 264-4.000.
Anderson, Gary J.: *See—*
Hanning, H. Chris; and Anderson, Gary J., 4,764,646, Cl. 200-19.0DC
Anderson, Michael D.; and Anderson, Dean R., to Zinpro Corporation. Ferric ion catalyzed complexation of zinc and/or manganese with alpha amino acids. 4,764,633, Cl. 556-50.000.
Andersson, Tommy, to Autoliv Development AB. Seat belt retractor reel. 4,763,853, Cl. 242-107.40A.
Ando, Hideo; and Doi, Akihiko, to Kabushiki Kaisha Toshiba. Optical focusing in magneto-optic disk system. 4,764,912, Cl. 369-45.000.
Ando, Makoto, to Minolta Camera Kabushiki Kaisha. Lens barrel. 4,763,987, Cl. 350-255.000.
Andoh, Mituru: *See—*
Nishiyama, Masakazu; Umetsu, Chiharu; Kebukawa, Akira; and Andoh, Mituru, 4,763,882, Cl. 267-33.000.
Andrae, Klaus: *See—*
Hutschenreuter, Elfriede; Bytzek, Max; Andrae, Klaus; and Weinheimer, Alois, 4,764,031, Cl. 383-120.000.
Andreasson, Jan, to Scandmec AB. Fuel collector. 4,763,632, Cl. 123-510.000.
Angelini, Theophile M.; Canevet, Georges; Foti, Marc S.; and Santon, Francois C., to Centre National de la Recherche Scientifique-C.N.R.S. Earpiece, telephone handset and headphone intended to correct individual hearing deficiencies. 4,764,957, Cl. 379-433.000.
Angstadt, John J., to Procter & Gamble Company, The. Apparatus for and methods of forming airlaid fibrous webs having a multiplicity of components. 4,764,325, Cl. 264-113.000.
Angus Chemical Company: *See—*
Kass, Robert E.; Frederick, Robert J.; and Hallock, Louis L., 4,763,576, Cl. 102-321.000.
Annas, Dulin L., Sr.; and Teague, Richard M., to Anteg, Inc. Mechanical brain. 4,764,647, Cl. 200-38.0CA.
Ansaldo Componenti S.p.A.: *See—*
Panzeri, Cesare, 4,764,658, Cl. 219-137.00R.
ANT Nachrichtentechnik GmbH: *See—*
Junger, Klaus, 4,764,741, Cl. 333-250.000.
Anteg, Inc.: *See—*
Annas, Dulin L., Sr.; and Teague, Richard M., 4,764,647, Cl. 200-38.0CA.
Aoi, Tatsuo; Kiyono, Yasuhrio; Honda, Sueaki; and Atsumi, Hauro, to Omron Tateisi Electronics Co. Slide switch with externally mounted protective circuit breaker. 4,764,745, Cl. 337-2.000
Aoki, Reiko; Noborimoto, Yoshie; Funatsu, Yoko; and Konno, Shinichi, to Sony Corporation. Cassette type recording apparatus. 4,764,821, Cl. 360-33.100.
Aoki, Shigeaki; and Koizumi, Nobuo, to Nippon Telegraph and Telephone Corporation. Stereo reproduction system. 4,764,960, Cl. 381-24.000
Aoki, Takakiyo: *See—*
Okuda, Naoki; Nishikawa, Yutaka; and Aoki, Takakiyo, 4,764,224, Cl. 148-26.000
Aoyama, Eriko: *See—*
Gunjima, Tomoki; Takei, Ryutaro; and Aoyama, Eriko, 4,764,619, Cl. 546-226.000.
Aoyama, Naofumi; Kinugawa, Kiyoshige; Nozaki, Yoshihiro; and Sakurada, Hiroshi, to Hitachi, Ltd. Method for driving and liquid crystal display device including dot matrix display part and fixed pattern display port. 4,764,766, Cl. 340-784.000.
Apple Computer, Inc.: *See—*
Patel, Shailesh, 4,764,831, Cl. 360-105.000.
Appleton Mills: *See—*
Gulya, Thomas G., 4,764,417, Cl. 428-222.000.

Applied Magnetics Corporation: *See—*
Roscamp, Thomas A.; Frank, Paul D.; Roberts, Gary E.; and Rice, Allan F., 4,764,834, Cl. 365-126.000.
Aqua-Aerobic Systems, Inc.: *See—*
Schupbach, Steven A.; and Knight, James A., 4,764,053, Cl. 405-209.000.
Arahata, Yoshitaka; and Toriyama, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Exhaust timing control system for a two cycle engine. 4,763,613, Cl. 123-65.0PE.
Arai, Masatoshi: *See—*
Inoue, Yoshio; and Arai, Masatoshi, 4,764,577, Cl. 525-409.000.
Arai, Toshiyuki: *See—*
Hazama, Keiji; Ota, Shin'ichi; Yamada, Mituo; and Arai, Toshiyuki, 4,764,235, Cl. 156-228.000.
Arai, Yuuichi: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, 4,763,919, Cl. 280-644.000.
Arakawa, Jun; Okada, Masahiro; and Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Color image-forming process. 4,764,455, Cl. 430-393.000
Araki, Shingo; Maeda, Ryugo; Inagaki, Masaji; Kitao, Teijiro; and Ueno, Shigeki, to Dainippon Ink and Chemicals, Inc. Thermosensitive recording sheet. 4,764,500, Cl. 503-208.000.
Arashiro, Yusuke: *See—*
Yamauchi, Shin-ichi; Arashiro, Yusuke; and Ohno, Kenyu, 4,764,559, Cl. 525-92.000
Arco Chemical Company: *See—*
Cannarsa, Michael J.; Kesling, Haven S., Jr.; and Sun, Hsiang-Ning, 4,763,715, Cl. 164-45.000.
Le-Khac, Bi, 4,764,558, Cl. 525-73.000
Shum, Wilfred P., 4,764,628, Cl. 549-529.000.
Arff, John H.; and Mouw, Kenneth W., to Ozotech, Inc. Ozone generator. 4,764,349, Cl. 422-186.180.
Argo, Eckert H.; and Baglino, Ralph A. Emergency vehicle radio transmission system. 4,764,978, Cl. 455-1.000.
Armstrong , Philip N. Data processor for changing the sequential format of inputted records. 4,764,895, Cl. 364-900.000.
Arnault, Jean: *See—*
Cuny, Francis; Vermeille, Hugues; and Arnault, Jean, 4,763,681, Cl. 137-8.000
Arnold, Larry J.: *See—*
Terrell, Ollney B.; and Arnold, Larry J., 4,764,066, Cl. 411-187.000.
Arnold, William M.: *See—*
Matschke, Christain; Arnold, William M.; Buchner, Karl-Heinz; and Zimmerman, Ulrich, 4,764,473, Cl. 435-287.000.
Aronsson, Sven B.; and Waldenstrom, Mats G., to Sandvik Aktiebolag. Diamond tools for rock drilling and machining. 4,764,434, Cl. 428-565.000
Arsenault, Michael J.: *See—*
Reimels, Harry G.; Walsh, David A.; and Arsenault, Michael J., 4,764,165, Cl. 604-35.000
Arth, Michael J.; and Arth, Raymond M. Faucet valve. 4,763,687, Cl. 137-454.500.
Arth, Raymond M.: *See—*
Arth, Michael J.; and Arth, Raymond M., 4,763,687, Cl 137-454.500
Artus, Raymonde G. C. Cooled component assembly. 4,764,845, Cl 361-387.000.
Asahara, Tomohisa: *See—*
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, 4,764,505, Cl. 514-35.000.
Asahi Glass Company Ltd.: *See—*
Gunjima, Tomoki; Takei, Ryutaro; and Aoyama, Eriko, 4,764,619, Cl. 546-226.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Sakabe, Ken-ichi; Kimura, Shingo; and Akashi, Kageyasu, 4,764,494, Cl. 501-138.000.
Sato, Seizo; and Shikama, Yasuhiro, 4,764,779, Cl. 343-897.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Tanaka, Hitoshi, 4,764,783, Cl. 354-195.100.
Asao, Kouichiro: *See—*
Ohmae, Tadayuki; Mashita, Kentaro; Yamaguchi, Noboru; and Asao, Kouichiro, 4,764,551, Cl. 524-394.000
ASEA Aktiebolag: *See—*
Nordvall, Jan O.; and Aminder, Christer, 4,763,532, Cl. 73-862.320.
Ashbrook, Clifford L.; and Scarborough, Douglas B. Method and apparatus for treating cooling tower water. 4,764,283, Cl 210-695.000.
Ast, Gene. Recompressed hay bale shear. 4,763,574, Cl. 100-98.00R
AT&T Information Systems Inc.: *See—*
Courtney-Pratt, Jeofry S.; and McEowen, James R., 4,763,978, Cl. 350-96.180.
Atack, Frank. Fastenng device. 4,764,072, Cl. 411-456.000.
Atal, Bishnu S., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Speech pattern compression arrangement utilizing speech event identification. 4,764,963, Cl. 381-36.000.
Atlas Powder Company: *See—*
Slawinski, Frank E.; and Frantz, William L., 4,764,231, Cl. 149-104.000
Atlas, Steven A.: *See—*
Johnson, Lorin K.; Atlas, Steven A.; McCarthy, Brian J.; Laragh, John H.; and Lewicki, John A., 4,764,504, Cl. 514-12.000
Atochem: *See—*
Ganga, Roland; Grossoleil, Jacques; and Merval, Jean-Paul, 4,764,424, Cl. 428-327.000
Atsumi, Hauro: *See—*
Aoi, Tatsuo; Kiyono, Yasuhrio; Honda, Sueaki; and Atsumi, Hauro, 4,764,745, Cl. 337-2.000
Atwood Industries, Inc.: *See—*
Chambers, James W., 4,763,917, Cl. 280-507.000
Au, William G.: *See—*
Gebhard, Albert W.; Au, William G.; Gregg, James S.; and Parker, Robert M., 4,763,911, Cl. 280-37.000
Aubert, Francois; and Dussart, Jean, to Electricite de France-Service National. Basin, in particular a de-activation pool of a nuclear station 4,764,336, Cl. 376-272.000
Auer, Robert T.; and Keats, Richard L., to Buddy L Corporation. Toy puppy pickup truck having dog house. 4,764,146, Cl. 446-279.000
Ausimont S.p.A.: *See—*
Piacenti, Franco; Pasetti, Adolfo; Manganelli Del Fa, Carlo; and Moggi, Giovanni, 4,764,431, Cl. 428-421.000
Autoipari Kutato es Fejleszto Vallalat: *See—*
Ratsko , Istvan; Madocsay, Attila; Ivony, Jozsef; Horvath, Bela; and Madi, Jeno, 4,763,916, Cl. 280-432.000.
Autoliv Development AB: *See—*
Andersson, Tommy, 4,763,853, Cl. 242-107.40A.
Karlin, Mats A.; and Weman, Per O., 4,763,924, Cl. 280-806.000
Awai, George K.; and Ernst, Michael D. Lighting apparatus and method. 4,763,984, Cl. 350-96.240
Awane, Katunobu: *See—*
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, 4,764,413, Cl. 428-192.000
Awazu, Kenzo, deceased (by Awazu, Setsuko, legal representative); Matsunaga, Kazu; and Hashimoto, Noritsuna, to Mitsubshi Denki Kabushiki Kaisha. Phosphor. 4,764,301, Cl. 252-301.40P.
Awazu, Setsuko, legal representative: *See—*
Awazu, Kenzo, deceased; Matsunaga, Kazu; and Hashimoto, Noritsuna, 4,764,301, Cl. 252-301.40P
Ayyangar, Nagaraj R.; Choudhary, Anil R.; Kalkote, Uttam R.; and Sharma, Vasant K., to Council of Scientific & Industrial Research. Process for the preparation of codeine from morphine. 4,764,615, Cl 546-44.000
B.D.S., Luggage Corporation: *See—*
Sadow, Bernard D., 4,763,763, Cl. 190-115.000
B.W.N. Vortoil Rights Co. Pty. Ltd.: *See—*
Colman, Derek A.; and Thew, Martin T., 4,764,287, Cl. 210-788.000
Bassner, Bernd; Klauke, Erich; and Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Process for the selective hydrogenation of chlorine-containing pyrimidines and new pyrimidines. 4,764,611, Cl. 544-334.000
Babcock & Wilcox Company, The: *See—*
Mizerak, Dennis S., 4,763,530, Cl. 73-861.380.
Babjak, Juraj; and Krause, Eberhard, to Inco Limited. Leaching of uranium ore. 4,764,353, Cl. 423-20.000
Bachman, Joseph L., Jr.: *See—*
Johnson, A. David, Jr.; and Bachman, Joseph L., Jr., 4,763,462, Cl. 53-448.000
Bachman, Wesley J.; and Gorsek, Edmund J., to Dickey-john Corporation. Rotary valve structure. 4,763,692, Cl. 137-625.300.
Bachmann, Volker; and Doker, Hubert, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method for aligning the axis of a second bracket relative to the axis of a first bracket on a testing or processing machine. 4,764,010, Cl. 356-153.000
Backus, Hendricus P. M., to AMF - Aluteam Metal Forming GmbH. Method and a device for pretreating nonferrous metal for plastic deformation. 4,763,502, Cl. 72-39.000.
Bader, Mark; and Wang, Karl L., to Motorola, Inc. High speed write technique for a memory. 4,764,900, Cl. 365-189.000.
Baglino, Ralph A.: *See—*
Argo, Eckert H.; and Baglino, Ralph A., 4,764,978, Cl. 455-1.000
Bailey, Edward J.: *See—*
Kohring, Mark D.; and Bailey, Edward J., 4,764,033, Cl 384-99.000
Baker, David G.; and McElhaney, Craig, to Quaker Oats Company, The. Toy frying pan. 4,764,147, Cl. 446-397.000.
Baker, Gregory M.; Farr, James P.; and Carty, Daniel T., to Clorox Company, The. Thickening system for incorporating fluorescent whitening agents. 4,764,302, Cl. 252-301.230
Bakker, Gijsbertus, to U.S. PHilips Corporation. Method of manufacturing a color television display tube and color television display tube manufactured according to the method. 4,764,138, Cl. 445-3.000.
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Semenets, Valery I.; and Khabetskaya, Valentina A., to Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Tekhniki. Screw machine having a plurality of symmetrically arranged rotors. 4,764,094, Cl. 418-5.000
Balint, Laszlo J.; and Greenburg, Julius, to Allied Corporation. Method for recovering caprolactam. 4,764,607, Cl. 540-540.000
Ball, Ronald C.: *See—*
Ekman, Joseph A.; and Ball, Ronald C., 4,764,962, Cl. 381-24.000
Ballhause, Lutz; Fehrenbach, Siegfried; Herbst, Kurt; Krimmer, Erwin; and Schulz, Wolfgang, to Robert Bosch GmbH. Discharge system for introducing volatilized fuel into an internal combustion engine 4,763,635, Cl. 123-520.000
Balloni, Riccardo; Keung, Jay; Liestman, David A.; and Nahmias, Michael, to Mobil Oil Corporation. Oriented, heat sealable multi-layered film. 4,764,425, Cl. 428-331.000

VOL 1093 ISS 3 AG 16 1988 UMI

Baltzell, William L.; and Draeger, David J., to Horizons Unlimited, Inc. Capped wheel nut assembly. 4,764,070, Cl. 411-430.000.
Banks, Allen R.; and Hare, David L., to Amgen Inc. Manufacture and expression of genes for urogastrone and polypeptide analogs thereof. 4,764,593, Cl. 530-324.000.
Banner Blue Software Incorporated: *See—*
Hess, Kenneth L., 4,764,867, Cl. 364-200.000
Bar-Chaim, Nadav: *See—*
Kwong, Sze-Keung; Lau, Kam Y.; Bar-Chaim, Nadav; and Ury, Israel, 4,764,934, Cl. 372-46.000.
Bar-Ilan University: *See—*
Albeck, Michael; and Sredni, Benjamin, 4,764,461, Cl. 435-68.000
Barbieux, Jacques, to Sandvik Tobler S.A. System for the rapid change of clamping jaws on a machine tool. 4,763,906, Cl. 279-123.000
Barchas, Myron, to Cook Bates Company, The. Nail-conditioning emery boards and process for making them. 4,764,362, Cl. 424-61.000
Barclay, Robert W. Fishnet hanging system. 4,763,432, Cl. 43-7.000.
Barlow, George J.; and Keeley, James W., to Honeywell Bull Inc. Resilient bus system. 4,764,862, Cl. 364-200.000
Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Hahmann, Wolfgang, 4,763,691, Cl. 137-596.140.
Barnes, John F.: *See—*
Root, Jon C.; Barnes, John F.; and Lawson, Ray D., 4,764,293, Cl 252-12.400
Barnes, Vernon B.; Wilkinson, Donald R.; Shore, John W.; and Huff, Ronnie G., to R. J. Reynolds Tobacco Company. Method and apparatus for ejecting tobacco from filter cigarettes. 4,763,673, Cl. 131-96.000.
Barr, Kenneth J.: *See—*
Kubek, Daniel J.; McCullough, John G.; Barr, Kenneth J.; and Kosseim, Alexander J., 4,764,354, Cl. 423-228.000.
Barr & Stroud Limited: *See—*
Hamilton, James G., 4,763,988, Cl. 350-319.000
Barrett, Arthur J. Swing exerciser. 4,763,894, Cl. 272-70.000.
Barthlome, Donald E. Pumping unit for therapeutic hand exerciser. 4,763,893, Cl. 128-24.00R.
Basavanhally, Nagesh R.; Pohl, Herbert A.; and Rapp, Willard E., to American Telephone and Telegraph Company. Method and apparatus for inserting pins in a substrate. 4,763,412, Cl. 29-845.000.
BASF Akjtiengesellschaft: *See—*
Hisgen, Bernd; Kock, Hans-Jakob; Portugall, Michael; Seiler, Erhard; and Blinne, Gerd, 4,764,582, Cl. 528-183.000
BASF Aktiengesellschaft: *See—*
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; Schefczik, Ernst; and Seybold, Guenther, 4,764,600, Cl. 534-792.000.
Bradley, William A.; Carbone, Pat J.; and Peterson, Howell L., 4,763,785, Cl. 206-389.000.
Colberg, Horst; and Hahn, Erwin, 4,764,599, Cl. 534-740.000.
Decker, Martin; and Neumayr, Franz, 4,764,309, Cl. 260-544.00K.
Fischer, Juergen; Zeiner, Hartmut; Nissen, Dietmar; and Heinz, Gerhard, 4,764,397, Cl. 428-269.000.
Hibst, Hartmut; Rudolf, Peter; and Jakusch, Helmut, 4,764,300, Cl. 252-62.580
Horn, Peter; and Schmidt, Hans U., 4,764,537, Cl. 521-51.000.
Lausberg, Dietrich; Taubitz, Christof; and Knoll, Manfred, 4,764,556, Cl. 525-67.000.
Mair, Gunther, 4,764,429, Cl. 428-403.000
Meiss, Otto; and Nitzschmann, Robert E., 4,764,200, Cl. 71-28.000.
Wagner, Klaus; Rieber, Norbert; and Pommer, Ernst-Heinrich, 4,764,527, Cl. 514-407.000
Zentgraf, Ernst; Vogt, Heinz; and Brandstetter, Franz, 4,764,056, Cl. 406-68.000
BASF Aktiengeselschaft,: *See—*
Goertz, Hans-Helmut; Marcinowski, Stefan; and Sanner, Axel, 4,764,467, Cl. 435-182.000.
BASF Corporation: *See—*
Ott, Roger A., 4,764,567, Cl. 525-403.000.
Rudolph, Arthur, 4,764,215, Cl. 106-28.000.
Basic Packaging Systems, Inc.: *See—*
Humphrey, Brian, 4,764,030, Cl. 383-120.000.
Bastiaans, Eduard A., to U.S. Philips Corporation. Picture signal processing circuit. 4,764,811, Cl. 358-160.000.
Bates, Andrew; Dack, Stuart; and Yates, David, to ICI Australia Operations Proprietary Ltd. Explosive composition. 4,764,230, Cl. 149-21.000.
Bates, Cecil P.; and Shannon, Terrence W., to New Zealand Steel Limited. Production of liquid iron. 4,764,210, Cl. 75-10.660.
Bates, Nigel R.: *See—*
Hill, Frederick W. L.; Bates, Nigel R.; and Svendsen, Leo G., 4,764,422, Cl. 428-309.900.
Bathellier, Andre ; Pasquiou, Jean-Yves; and Vialard, Etienne, to Commissariat a l'Energie Atomique. Process for preventing the extraction of technetium and/or rhenium, particularly during the extraction of uranium and/or plutonium by an organic solvent. 4,764,352, Cl. 423-10.000
Battelle Development Corporation: *See—*
Maringer, Robert E., 4,763,718, Cl. 164-463.000
Bauer, David J.: *See—*
Michalski, Thomas F.; and Bauer, David J., 4,764,681, Cl 250-563.000
Bauman, Bernard D.; Mehta, Rajendra K.; and Williams, Mark A., to Air Products and Chemicals, Inc. Method for increasing barrier properties of thermoplastic substrates. 4,764,405, Cl. 428-35.000.
Baumeister, Hans-Peter, to Eastman Kodak Company. Soft erase protection for video cassettes. 4,764,823, Cl. 360-60.000.
Bayer Aktiengesellschaft: *See—*
Baasner, Bernd; Klauke, Erich; and Schundehutte, Karl-Heinz, 4,764,611, Cl. 544-334.000.
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, 4,764,526, Cl. 514-383.000
Buysch, Hans-Josef, 4,764,310, Cl. 260-544.00K.
Claussen, Uwe; and Harnisch, Horst, 4,764,622, Cl. 548-159.000
Eichenauer, Herbert; Pischtschan, Alfred; and Ott, Karl-Heinz, 4,764,557, Cl. 525-72.000.
Franckowiak, Gerhard; Grosser, Rolf; Thomas, Gunter; Schramm, Matthias; and Gross, Rainer, 4,764,516, Cl. 514-256.000.
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000.
Kuhle, Engelbert; Paulus, Wilfried; Fischler, Michael; and Schmitt, Hans-Georg, 4,764,433, Cl. 428-541.000.
Mosbach, Jurgen; Pedain, Josef; and Noll, Klaus, 4,764,553, Cl. 524-591.000
Muller, Hanns P.; Gipp, Roland; and Heine, Heinrich, 4,764,581, Cl. 528-100.000.
Naik, Arundev H.; Stendel, Wilhelm; and Voege, Herbert, 4,764,529, Cl. 514-531.000.
Sauer, Heinz; Porkert, Helmut F.; and Liebsch, Dietrich, 4,764,308, Cl. 260-544.00K.
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,764,401, Cl. 427-304.000.
Sirrenberg, Wilhelm; Braden, Rudolph; Ziemann, Heinz; Zobebelein, Gerhard; and Pfluger, Wolfgang, 4,764,524, Cl. 514-364.000.
Steffan, Guido, 4,764,621, Cl. 548-152.000
Wissner, Adolf; Haydn, Josef; and Birkenstock, Udo, 4,764,498, Cl. 502-251.000
Bayerische Motoren Werke Aktiengesellschaft: *See—*
Temmesfeld, Axel; and Tauber, Karl, 4,763,724, Cl. 165-71.000.
BBC Brown Boveri AG: *See—*
Fust, Armin; and Starcevic, Mihailo, 4,764,034, Cl. 384-100.000.
BBC Brown, Boveri & Company Limited: *See—*
Keller, Jakob, 4,763,471, Cl. 60-312.000
Knab, Hans-Josef, 4,764,344, Cl. 422-89.000.
Mauthe, Gerhard; Niemeyer, Lutz; Pinnekamp, Friedrich; and Wiegart, Norbert, 4,764,836, Cl. 361-5.000.
BBC Brown, Boveri Ltd.: *See—*
Gobrecht, Jens; and Voboril, Jan, 4,764,249, Cl. 156-643.000.
Bean, Arthur R., Jr., to Shell Oil Company. Anionic polymerization process. 4,764,572, Cl. 526-87.000.
Beaulieu, Lary J.: *See—*
Grimes, Scott D.; Beaulieu, Lary J.; and Reed, Douglas A., 4,764,925, Cl. 371-20.000
Becker, Ernst: *See—*
Bombis, Dieter; Becker, Ernst; Wildhaber, Paul; Vogler, Franz; and Muller, Peter, 4,763,843, Cl. 239-571.000
Becker, Hans, to Linde Aktiengesellschaft. Process for the cooling or heating of a gas. 4,763,721, Cl. 165-1.000.
Becker, Klaus, to Standard Elektrik Lorenz AG. Scanning-beam microwave landing system. 4,764,772, Cl. 342-408.000.
Beckham, Jeffrey C.: *See—*
Hartwigsen, Wesley D.; Johnson, Alan D.; Beckham, Jeffrey C.; and White, Kenneth L., 4,764,221, Cl. 134-8.000.
Bedard, James F.; and Whipple, Walter, III, to General Electric Company. Automatic gain control for machine tool monitor. 4,764,760, Cl. 340-680.000
Beetz, Horst: *See—*
Rommel, Reiner; and Beetz, Horst, 4,763,406, Cl. 29-759.000.
Behlke, George E.: *See—*
Pedtke, Daniel F.; and Behlke, George E., 4,764,755, Cl. 340-541.000
Behrens, Klaus: *See—*
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, 4,764,171, Cl 623-20.000
Beier, Henning M.; and Elger, Walter, to Schering Aktiengesellschaft. Antigestagens for shifting the endometrial maturation. 4,764,513, Cl 514-179.000
Beinhaur, Ernest L., to AMP Incorporated. Electrical connector. 4,764,131, Cl. 439-781.000
Belisle, Joseph A.; and Corbett, Marshall J., to Grumman Aerospace Corporation. Deflectable jet engine inlet. 4,763,858, Cl. 244-53.00B.
Belisle, Joseph Eugene: *See—*
Smith, James, 4,763,439, Cl. 43-61.000.
Bellanca, Guido. Pasta preparation apparatus. 4,763,570, Cl. 99-348.000.
Bellinvia, Gianpietro; and Faini, Giuseppe, to SGS Microelettronica S.p.A. MOS power device usable both as an N-channel MOS transistor and as a P-channel MOS transistor. 4,764,692, Cl. 307-451.000.
Bellus, Daniel: *See—*
Alder, Alex; Stanek, Jarcslaw; and Bellus, Daniel, 4,764,640, Cl. 562-457.000
Bendix Electronics S.A.: *See—*
Mate, Jean-Luc, 4,764,924, Cl. 371-15.000.
Bendix France: *See—*
Gautier, Jean-Pierre, 4,763,561, Cl. 91-369.400
Bengtsson, Anders: *See—*
Johansson, Gunnar, 4,764,016, Cl. 356-371.000.
Benz, William F. Locking device for a roll. 4,763,786, Cl. 206-408.000.
Bergeron, Daniel R., to GTECH Corporation. On-line wagering system with programmable game entry cards. 4,764,666, Cl. 235-380.000.

Bergeron, Gaetan G. Wheel or slide mounting in an amusement/exercise foot mounted device. 4,763,909, Cl. 280-11.250
Bergersen, Earl O. Molded distal stop and attachment to fix orthodontic appliance into mouth. 4,764,112, Cl. 433-22.000.
Bergische Achsenfabrik Fr. Kotz & Sohne: *See—*
Stemer, Helmut, 4,763,921, Cl. 280-682.000
Bergling, Craig L.; Ewald, Henry T.; Horton, Douglas J.; Hoverman, James L.; and Weller, Berthold L., to Restaurant Technology, Inc. Apparatus for two-sided cooking. 4,763,571, Cl. 99-349.000.
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; Schefczik, Ernst; and Seybold, Guenther, to BASF Aktiengesellschaft. Isothiazolylazo dyes having aminophenyl an aminonapthyl components. 4,764,600, Cl. 534-792.000.
Bergwerksverband GmbH: *See—*
Romey, Ingo; Ahland, Erwin; Pass, Reinhard; and Verfuss, Franz, 4,764,355, Cl. 423-244.000.
Berkey, George E., to Corning Glass Works. Non-pistoning capillary splice. 4,763,970, Cl. 350-96.210.
Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., to Griffith Laboratories U.S.A., Inc. Process for preparing storage stable, readily reconstituted frozen comestibles. 4,764,386, Cl 426-293.000.
Berner, Bret: *See—*
Kydonieus, Agis F.; and Berner, Bret, 4,764,382, Cl. 424-449.000.
Bernhard, Wilfred, to Alcatel N.V. Winding support for use in manufacturing saddle-type coils. 4,763,848, Cl. 242-1.000.
Berry, W. Wes; Schmeda, Rae A.; and Kibler, Holly S., to Advanced Separation Technologies Incorporated. Device for continuous contacting of fluids and solids. 4,764,276, Cl. 210-264.000.
Bertrand, Claude; and Wolff, Gerard, to Rhone-Poulenc Sante. Hydrated magnesium acetylsalicylate/urea complex preparation 4,764,637, Cl. 560-143.000
Bertrand, Claus: *See—*
Morgenstern, Manfred; and Bertrand, Claus, 4,764,318, Cl. 264-29.500.
Besendorfer, Hans: *See—*
Polus, Michael; and Besendorfer, Hans, 4,763,426, Cl. 36-29.000
Beshoory, Joseph E. Furnace tube. 4,763,536, Cl. 73-865.600.
Beta Raven Inc.: *See—*
Volk, Joseph A., Jr., 4,764,874, Cl. 364-468.000.
Beun, Roger A., to Northern Telecom Limited. Device for the mounting of hybrid circuit substrates on printed circuit board. 4,764,414, Cl. 428-195.000
BFGoodrich Company, The: *See—*
Myers, Ronald E., 4,764,573, Cl. 526-90.000.
Bhakuni, Roop S.: *See—*
Brown, Donald L.; Weissert, James T.; Bhakuni, Roop S.; and Rogowski, Gregory S., 4,763,468, Cl. 57-310.000
Bhattacherjee, Arya; Koutny, William; Shrivastava, Ritu; and Rodgers, Thurman J., to Cypress Semiconductor Corporation. Rapid thermal nitridized oxide locos process. 4,764,248, Cl. 156-643.000.
Biagini, Guido, to Sundstrand Corporation. Quick replaceable thermal control system. 4,763,859, Cl. 244-118.500.
Bicron Corporation: *See—*
Spurney, Richard W., 4,764,677, Cl. 250-361.00R.
Bicycle Corporation of America: *See—*
Ehrlich, William, 4,763,913, Cl. 280-281.00R.
Bierhoff, Waltherus C. J., to U.S. Philips Corporation. Multifunctional cassette with web brake for a printer. 4,764,041, Cl. 400-618.000
Bieringer, Robert J.; and Ringlien, James A., to Owens-Illinois Television Products Inc. Method and apparatus for non-contact spatial measurement. 4,764,015, Cl. 356-372.000.
Bijwaard, Henricus M. J.; and Janssen, Martinus M. P., to Shell Oil Company. Process for the manufacture of lubricating base oils. 4,764,265, Cl. 208-18.000.
Bille, Josef F.; and Brown, Stuart I., to Intelligent Surgical Lasers. Multiwavelength laser source. 4,764,930, Cl. 372-23.000.
Billington, Charles J., III; Oyama, Richard K.; Jepson, Kenneth H.; and Skeen, Thomas R., to Billington Welding and Mfg. Produce sorting apparatus. 4,763,794, Cl. 209-625.000.
Billington Welding and Mfg.: *See—*
Billington, Charles J., III; Oyama, Richard K.; Jepson, Kenneth H.; and Skeen, Thomas R., 4,763,794, Cl. 209-625.000.
Bilski, Andrew J. T.; Howe, Ralph; Rao, Balbir; and Thomson, David S., to Imperial Chemical Industries PLC. Pharmaceutical compositions. 4,764,361, Cl. 424-45.000
Bingham, Wallace K., to Minnesota Mining and Manufacturing Company. Retroreflective sheet with enhancer brightness. 4,763,985, Cl. 350-105.000
Biotechnology Research Associates J.V.: *See—*
Johnson, Lorin K.; Atlas, Steven A.; McCarthy, Brian J.; Laragh, John H.; and Lewicki, John A., 4,764,504, Cl. 514-12.000
Birkenstock, Udo: *See—*
Wissner, Adolf; Haydn, Josef; and Birkenstock, Udo, 4,764,498, Cl 502-251.000.
Birmingham Bolt Company, Inc.: *See—*
Clark, Carl A.; and Wright, Raymond L., 4,764,055, Cl. 405-261.000
Bisbing, Robert H., to Southco, Inc. Door or panel fastener. 4,763,935, Cl. 292-66.000.
Bish, James R.; and McCartney, Charles P., to General Motors Corporation. Electric storage battery. 4,764,182, Cl. 29-623.100.
Bjelkhagen, Hans: *See—*
Ryden, Hans; and Bjelkhagen, Hans, 4,764,012, Cl. 356-347.000.
Black, James B., to Twin Disc, Incorporated. Cone clutch transmission. 4,763,765, Cl. 192-48.910.
Blackburn, William P.; and Singer, Debra L., to PPG Industries, Inc Crosslinkable compositions containing polyepoxides and polyacid curing agents. 4,764,430, Cl. 428-413.000.
Blakemore, John H. Infinitely variable positive mechanical transmission. 4,763,544, Cl. 74-752.00E.
Blaschke, Felix; and Reng, Leonhard, to Siemens Aktiengesellschaft Method and apparatus for operating a field-oriented rotating-field machine supplied by a controlled converter. 4,764,712, Cl 318-778.000
Blattler, Walter A.; and Lambert, John M., to Dana-Farber Cancer Institute, Inc. Acid-cleavable compound. 4,764,368, Cl. 424-85.000
Blazek John M.; and Tipton, John R., Jr., to Bloom, Leonard, a part interest. Video recording camera. 4,764,817, Cl. 358-341.000
Bleckmann, Hans W.; Loreck, Heinz; and Zydek, Michael, to Alfred Teves GmbH. Method and circuit configuration for processing the output signals of a rotational speed sensor. 4,764,685, Cl. 307-106.000
Blinne, Gerd: *See—*
Hisgen, Bernd; Kock, Hans-Jakob; Portugall, Michael; Seiler, Erhard; and Blinne, Gerd, 4,764,582, Cl. 528-183.000
Blomgren, George E.: *See—*
Jones, Steven D.; and Blomgren, George E., 4,764,440, Cl 429-198.000
Blood, Jeffrey C.: *See—*
Pace, Laurel J.; and Blood, Jeffrey C., 4,764,670, Cl. 250-226.000
Bloom, Leonard: *See—*
Blazek John M.; and Tipton, John R., Jr., 4,764,817, Cl 358-341.000
Blue Bell, Inc.: *See—*
Zimmerman, Roger W.; and Jones, William S., 4,763,890, Cl. 271-30.100
Blumcraft of Pittsburgh: *See—*
Horgan, William J., Jr., 4,763,453, Cl. 52-127.800
Blume, Erich: *See—*
Cranskens, Georg; and Blume, Erich, 4,764,842, Cl. 361-225.000
Bobier Tool Supply, Inc.: *See—*
Zofchak, Joseph M., 4,763,507, Cl. 73-1.00J
Bobik, Carl F.: *See—*
Huseby, Irvin C.; and Bobik, Carl F., 4,764,321, Cl. 264-65.000
Bobst SA: *See—*
De Dompierre, Jean B., 4,763,422, Cl. 33-569.000.
Bobst S.A.: *See—*
Halff, Albert; and Vossen, Manfred, 4,763,551, Cl. 83-277.000
Bock, Jan: *See—*
Robbins, Max L.; Canevari, Gerard P.; and Bock, Jan, 4,764,285, Cl. 210-749.000
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Azolylvinyl ethers and pesticidal use. 4,764,526, Cl. 514-383.000
Bodor, Nicholas; and Loftsson, Thorsteinn, to Key Pharmaceuticals, Inc. Percutaneous penetration enhancer of oleic acid and 2-ethyl-1, 3-hexanediol. 4,764,381, Cl. 424-449.000
Boehringer Mannheim GmbH: *See—*
Wehner, Rainer; Mattersberger, Johann; Klenner, Dagmar; and Deutsch-Weyer, Gerlinde, 4,764,468, Cl. 435-188.000.
Boeing Company, The: *See—*
Adams, Robert E.; Grenich, A. Fredric; and Tolle, Frederick F., 4,763,731, Cl. 169-46.000.
Newman, Frank J., 4,763,861, Cl. 244-134.00A.
Roe, Richard D., 4,763,399, Cl. 29-527.200
Bolich, Raymond E., Jr., to Procter & Gamble Company, The. Hair styling mousse. 4,764,363, Cl. 424-47.000
Bolt, John D., to Du Pont de Nemours, E. I., and Company. Preparation of mixed boron and aluminum nitrides. 4,764,489, Cl 501-96.000
Bolton, Theodore S.; and Napolitano, James E., to Carrier Corporation. Sliding door assembly. 4,763,964, Cl. 312-100.000.
Bom, Cornelis J. G.: *See—*
van der Lely, Cornelis; van der Lely, Ary; and Bom, Cornelis J. G., 4,763,844, Cl. 239-665.000.
Bombardelli, Ezio: *See—*
Gabetta, Bruno; Bombardelli, Ezio; and Piffen, Giorgio, 4,764,508, Cl. 514-78.000
Bombis, Dieter; Becker, Ernst; Wildhaber, Paul; Vogler, Franz; and Muller, Peter, to Elco Oel-und GasbrennerwerkeAG. Fuel cutoff for a burner atomizer. 4,763,843, Cl. 239-571.000
Bon, Charles K.; and Knowles, Vera M., to Dow Chemical Company, The. Catalytic decomposition of sodium hypochlorite in highly alkaline solutions. 4,764,286, Cl. 210-757.000
Bonkohara, Manabu: *See—*
Takekawa, Kouichi; and Bonkohara, Manabu, 4,763,409, Cl 29-827.000
Booth, Bryan; and Nicolson, William H., to Imi Kynoch Limited Guidance apparatus for projectiles. 4,763,857, Cl. 244-3.220.
Boothe, Jerry E.; Morse, Lewis D.; and Klein, William L., to Calgon Corporation. Personal skin care products containing dimethyl diallyl ammonium chloride/acrylic acid-type polymers. 4,764,365, Cl 424-81.000
Bordovsky, James P.: *See—*
Lyle, William M.; and Bordovsky, James P., 4,763,836, Cl 239-69.000
Borg-Warner Chemicals, Inc.: *See—*
Falk, John C.; and Kliever, Leland B., 4,764,552, Cl. 524-504.000
Meredith, Frank L.; and Ferguson, Lewis E., 4,764,563, Cl 525-316.000
Borowski, Robert A., to A. Johnson Metals Corporation. Container for continuous supply of wire. 4,763,854, Cl. 242-129.000

VOL 1093 ISS 3 AG 16 1988 UMI

Borsa, Massimiliano; Tonon, Giancarlo; and Malandrino, Salvatore, to Dompe' Farmaceutici S.p.A. Antitussive and central sedative composition of d-isomer of 3-(4-phenyl-1-piperazinyl)-1,2-propanediol. 4,764,515, Cl. 514-255.000.

Bortinger, Arie; Maggio, Robert A.; and Pieters, Wim J. M., to Exxon Research & Engineering Co. Process for synthesizing a zeolite catalyst on a pH controlled basis to improve catalyst life. 4,764,356, Cl 423-329.000.

Bortoli, Giulio: *See—*
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, 4,763,699, Cl. 139-436.000.

Bothner, Jakob, to Zinser Textilmaschinen GmbH. Strip feeder between entrance and calendering rolls of a textile machine. 4,763,387, Cl. 19-288.000.

Bottrill, Martin: *See—*
Carey, John G.; Rothon, Roger N.; and Bottrill, Martin, 4,764,544, Cl. 523-205.000.

Bouami, Driss; and De Vadder, Daniel, to Ecole Centrale Des Arts Et Manufactures. Non-destructive method for determining at least one point of a crack front in a part and an apparatus for the implementation of the method. 4,763,528, Cl. 73-799.000.

Bouillon, Jean, to Creusot-Loire Industrie. Device for feeding and loading a weapon with ammunitions in any direction and any elevation. 4,763,559, Cl. 89-33.040.

Boutier, Philippe; and Vanaschen, Luc, to Saint-Gobain Vitrage. Curving of glass sheets. 4,764,196, Cl. 65-106.000.

Bowman, Ben. Safety apparatus. 4,764,835, Cl. 361-1.000

Boyd, Richard M., to Quadion Corporation. Molded self-lubricating split-ring bearing assembly. 4,764,035, Cl. 384-152.000.

Boyer, Russell E.: *See—*
Revus, David E.; and Boyer, Russell E., 4,764,718, Cl. 324-58.50A

Boyle, John J. Door security system. 4,763,499, Cl. 70-417.000.

BP Chemicals Limited: *See—*
Brasington, Robert D.; and Lidy, Werner A., 4,764,541, Cl. 521-114.000.

Braden, Rudolph: *See—*
Sirrenberg, Wilhelm; Braden, Rudolph; Ziemann, Heinz; Zobebelein, Gerhard; and Pfluger, Wolfgang, 4,764,524, Cl. 514-364.000.

Bradley, William A.; Carbone, Pat J.; and Peterson, Howell L., to BASF Aktiengesellschaft. Center-pull fiber package and method for producing the package. 4,763,785, Cl. 206-389.000.

Bradshaw, John: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,764,612, Cl. 546-232.000.

Brain Dust Patents Establishment: *See—*
Kuchler, Fritz, 4,763,738, Cl. 177-50.000.

Bramlage Gesellschaft mit beschrankter Haftung: *See—*
Von Schuckmann, Alfred; and Mettenbrink, Herbert, 4,763,815, Cl. 222-96.000

Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Hass, Roland; Herrmann, Gerhard; and Hans, Rudiger, to SKF GmbH. Tensioning device for drive belt assemblies. 4,764,157, Cl. 474-135.000.

Brandes, Wilhelm: *See—*
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, 4,764,526, Cl. 514-383.000.

Brandli, Max; and Feldmann, Hansueli, to JD-Technologie AG. Resiliently mounted, pivotable steering roll, especially for driverless vehicles. 4,763,910, Cl. 280-29.000.

Brandstetter, Franz: *See—*
Zentgraf, Ernst; Vogt, Heinz; and Brandstetter, Franz, 4,764,056, Cl. 406-68.000.

Brandt, Inc.: *See—*
Bryce, David R., 4,764,725, Cl. 324-234.000.

Braschel, Reinhold; Miksch, Manfred; and Schiffer, Rolf, to Kraftwerk Union Aktiengesellschaft. Method of monitoring fatigue of structural component parts, for example, in nuclear power plants. 4,764,882, Cl. 364-508.000.

Brasington, Robert D.; and Lidy, Werner A., to BP Chemicals Limited Process for preparing polyurethane foams in the presence of a polyether acid. 4,764,541, Cl. 521-114.000.

Braum, William H. Milking system. 4,763,605, Cl. 119-14.030

Braun, James W.; and Hubert, John A., to Cincinnati Milacron Inc Open circuit detector for differential encoder feedback. 4,764,759, Cl. 340-653.000.

Bredehorst, Reinhard; Talebian, Abdolhossen; Hammer, Charles F.; and Vogel, Carl-Wilhelm, to Georgetown University. Detectably labeled cephalosporin assay for beta-lactamase. 4,764,462, Cl 435-18.000

Brewington, Grace T.; Hays, Dan A.; and Wayman, William H., to Xerox Corporation. Toner charging apparatus with coated toner transport members. 4,764,841, Cl. 361-226.000.

Bridges, Thomas J.; Burkhardt, Ernest G.; Coldren, Larry A.; and Koch, Thomas L., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Buried undercut mesa-like waveguide and method of making same. 4,764,246, Cl. 156-643.000.

Bridgestone Corporation: *See—*
Hatanaka, Takashi; and Takeshita, Michitaka, 4,764,547, Cl. 523-215.000.
Takahashi, Fumio; and Yoshimura, Nobuya, 4,763,708, Cl. 152-209.00A.

Brisson, Alfred G.; Nowacki, Christopher; Shene, William R.; Burdick, Thomas H.; and Dela-Cruz, Exequiel, to Northgate Research, Inc. Aiming system for kidney stone disintegrator. 4,763,652, Cl. 128-328.000

Brisson, Glenn R.: *See—*
Hughes, Robert W.; Brisson, Robert H.; and Brisson, Glenn R., 4,763,503, Cl. 72-57.000

Brisson, Robert H.: *See—*
Hughes, Robert W.; Brisson, Robert H.; and Brisson, Glenn R., 4,763,503, Cl. 72-57.000.

British Aerospace Public Limited Company: *See—*
Geen, John A.; and Johnson, Brian, 4,764,748, Cl. 340-347.0AD.

British Nuclear Fuels plc: *See—*
Minshall, David; and Randle, Roy, 4,764,333, Cl. 376-203.000.

British Petroleum Company p.l.c., The: *See—*
Stewart, Nevin J., 4,764,307, Cl. 260-512.00R.

British Telecommunications plc: *See—*
Jones, Brian; and Allan, Graeme S., 4,764,129, Cl. 439-677.000

Brockhaus, Ernst, to ED. Scharwachter GmbH & Co. KG. Protective device for window panes. 4,763,454, Cl. 52-202.000.

Brown, Boveri & Cie AG: *See—*
Liemert, Karl; Rohr, Franz J.; and Hug, Kuno, 4,763,478, Cl. 60-633.000

Brown, Donald L.; Weissert, James T.; Bhakuni, Roop S.; and Rogowski, Gregory S., to Goodyear Tire & Rubber Company, The. Process for manufacturing a high strength cord from optimally drawn yarn. 4,763,468, Cl. 57-310.000.

Brown, Douglas S., to American Metal Products Company. Convertible air diffuser. 4,763,565, Cl. 98-40.130.

Brown, Ernie D.; Nelson, Karl M.; and Smith, Gary L., to Morton Thiokol, Inc. Process for preparing solid propellant grains using thermoplastic binders and product thereof. 4,764,316, Cl. 264-3.100.

Brown, Jeffrey K., to Rockwell International Corporation. Spring collar coupling. 4,763,470, Cl. 60-257.000.

Brown, John C., to University of British Columbia, The. Pancreas dependant immunoassay for determining subpopulations of monoclonal antibodies to somatostatin. 4,764,475, Cl. 436-548.000.

Brown, Keith E.; Seufer, Kenneth C., Jr.; and Buth, Jimmy D., to Kinetico, Inc. Water softening apparatus. 4,764,280, Cl. 210-662.000.

Brown, Robert G.; and Siegel, William J., to Pace Incorporated. Universal equipment mounting structure. 4,764,049, Cl. 403-24.000.

Brown & Sharpe Manufacturing Company: *See—*
McCabe, William J.; and Pesikov, Vitaly I., 4,763,420, Cl. 33-503.000.

Brown, Sherwin R.; and Drebot, Michael, to Drebot, Michael; Nova Scotia Department of Fisheries; and R. P. Scherer Corportion. Soft homogenous fish bait. 4,764,383, Cl. 426-1.000.

Brown, Stuart I.: *See—*
Bille, Josef F.; and Brown, Stuart I., 4,764,930, Cl. 372-23.000.

Browning, James A. Transferred-arc plasma apparatus and process with gas heating in excess of anode heating at the workpiece. 4,764,656, Cl. 219-121.440.

Bruner, Mates A. Openable ring with safety locking means. 4,763,490, Cl. 63-15.700

Brunswick Corporation: *See—*
McCormick, Daniel F., 4,764,135, Cl. 440-83.000
Probst, Harry C., 4,763,871, Cl. 248-640.000.
Staerzl, Richard E.; Radtke, Norman H.; and Hummel, Leonard S., 4,763,625, Cl. 123-435.000.
Staerzl, Richard E., 4,763,626, Cl. 123-438.000.
Zastocki, Ronald M., 4,763,620, Cl. 123-196.00A.

Brusa, Paolo E., to Ionics, Incorporated. Water cooler and carbonator. 4,764,315, Cl. 261-140.100.

Bryce, David R., to Brandt, Inc. Apparatus for detecting counterfeit currency using two coils to produce a saturating magnetic field. 4,764,725, Cl. 324-234.000.

Bryson, Charles E., III; and Kelly, Michael A., to Kevex Corporation. Electric electron energy analyzer. 4,764,673, Cl. 250-305.000.

Bubeck, Kurt: *See—*
Kreuzer, Walter; Bubeck, Kurt; and Staffa, Karl H., 4,763,727, Cl. 165-171.000

Bublitz, Hermann R., to International Business Machines Corporation. Method for controlling line printers comprising a revolving type band and a print hammer bank. 4,764,039, Cl. 400-146.000.

Bucher, Gottfried: *See—*
Proksa, Ferdinand; Althausen, Ferdinand; Bucher, Gottfried; Raffel, Reiner; and Sulzbach, Hans-Michael, 4,764,536, Cl. 521-50.000

Buchner, Karl-Heinz: *See—*
Matschke, Christain; Arnold, William M.; Buchner, Karl-Heinz; and Zimmerman, Ulrich, 4,764,473, Cl. 435-287.000.

Buck, Volker, to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Method for determining the friction torque of a test bearing. 4,763,508, Cl. 73-9.000.

Buckhorn Rubber Products, Inc.: *See—*
Dooley, Richard L., 4,763,695, Cl. 138-109.000.

Buckley, Mary E.: *See—*
Smits, Donald M.; Daley, Patrick J.; and Buckley, Mary E., 4,764,234, Cl. 156-164.000.

Buckmaster, Marlin D.; and Randa, Stuart K., to Du Pont de Nemours, E. I., and Company. Foam nucleation system for fluoropolymers. 4,764,538, Cl. 521-85.000.

Budd Company, The: *See—*
Freeman, Richard B., 4,764,409, Cl. 428-98.000

Buddy L Corporation: *See—*
Auer, Robert T.; and Keats, Richard L., 4,764,146, Cl. 446-279.000

Bugnon, Philippe: *See—*
von der Crone, Jost; Medinger, Bernhard; and Bugnon, Philippe, 4,764,217, Cl. 106-494.000

Buhler, Ernst, to AG fur industrielle Elektronik AGIE Losone bei Locarno. Process and apparatus employing electroerosion. 4,764,653, Cl. 219-69.00E.

Bur, Marc; and Nebon, Jean-Pierre, to Merlin Gerin. Molded case circuit breaker with removable arc chutes and disengageable transmission system between the operating mechanism and the poles 4,764,650, Cl. 200-153.00G.

Burbey, Mark J. Prepress graphic registration system. 4,764,795, Cl. 355-125.000.

Burdick, Thomas H.: *See—*
Brisson, Alfred G.; Nowacki, Christopher; Shene, William R.; Burdick, Thomas H.; and Dela-Cruz, Exequiel, 4,763,652, Cl. 128-328.000.

Burgio di Aragona, Antonio, to Fiat Auto S.p.A. Composite camshaft for internal combustion engines and a method for its manufacture 4,763,614, Cl. 123-90.600.

Burkhardt, Ernest G.: *See—*
Bridges, Thomas J.; Burkhardt, Ernest G.; Coldren, Larry A.; and Koch, Thomas L., 4,764,246, Cl. 156-643.000.

Burndy Corporation: *See—*
Deckers, Willy, 4,763,400, Cl. 29-564.600.

Burnham, Warren. Method of making a catheter. 4,764,324, Cl 264-103.000.

Burnham, William L., to Eastman Kodak Company. Viewfinder 4,764,785, Cl. 354-219.000.

Burns, Alan W.; Scarth, Robert D.; Mascaro, John V.; Hegenboden, J. W.; and Green, Moses, Jr., to Pioneer-Leimel Fabrics, Inc. Highly plasticized laminated vinyl fabric. 4,764,412, Cl. 428-172.000

Burr-Brown Limited: *See—*
Downey, Philip A., 4,764,866, Cl. 364-200.000

Burrows, David F.: *See—*
Knight, William L.; Paraskeva, Mark; and Burrows, David F., 4,764,926, Cl. 371-25.000.

Burstell, Helmut: *See—*
Schmierer, Roland; Mildenberger, Hilmar; Handte, Reinhard; and Burstell, Helmut, 4,764,624, Cl. 71-92.000.

Bushey, Thomas P.: *See—*
McLaughlin, Kevin L.; and Bushey, Thomas P., 4,764,801, Cl. 357-59.000

Butcher, Gary J. Modular building units. 4,763,451, Cl. 52-79.100

Buth, Jimmy D.: *See—*
Brown, Keith E.; Seufer, Kenneth C., Jr.; and Buth, Jimmy D., 4,764,280, Cl. 210-662.000.

Butland, Peter. Process for preserving fresh fruit and vegetables. 4,764,385, Cl. 426-241.000.

Butler, Jerry F.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000.

Butterfield, Eric J.: *See—*
Podgers, Alexander R.; and Butterfield, Eric J., 4,763,806, Cl 220-86.00R.

Buysch, Hans-Josef, to Bayer Aktiengesellschaft. Process for the preparation of aromatic carboxylic acid chlorides. 4,764,310, Cl. 260-544.00K

Buzzi, Reinhard: *See—*
Muller, Heinz; Buzzi, Reinhard; and Scheiblhofer, Gerhard, 4,764,208, Cl. 75-10.190.

Byer, Robert L.: *See—*
Kozlovsky, William J.; Yee, Tso; and Byer, Robert L., 4,764,933, Cl. 372-40.000.

Bytzek, Max: *See—*
Hutschenreuter, Elfriede; Bytzek, Max; Andrae, Klaus; and Weinheimer, Alois, 4,764,031, Cl. 383-120.000.

C. R. Bard, Inc.: *See—*
Gambale, Richard A., 4,763,647, Cl. 128-657.000

C. Van der Lely N. V.: *See—*
van der Lely, Cornelis; van der Lely, Ary; and Bom, Cornelis J. G., 4,763,844, Cl. 239-665.000.

Cacho-Negrete, Carlos M.: *See—*
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John; Poveromo, Leonard M.; Corvelli, Nicholas; and London, Arnold, 4,764,238, Cl. 156-245.000.

Cadwallader, Robert H.: *See—*
Coughlin, Charles P.; Cadwallader, Robert H.; and Celestino, Robert J., 4,764,722, Cl. 324-158.00P.

Caldwell, John W., to Pennwalt Corporation. Decanter plate dam assembly with pond adjustment. 4,764,163, Cl. 494-6.000.

Calgon Corporation: *See—*
Boothe, Jerry E.; Morse, Lewis D.; and Klein, William L., 4,764,365, Cl. 424-81.000

Calub, Alfonso G., to Ring Around Products, Inc. Route to hybrid rice production. 4,764,643, Cl. 800-1.000.

Camara, Michael A.: *See—*
Steltenkamp, Robert J.; and Camara, Michael A., 4,764,291, Cl. 252-8.800.

Cameron, Lorraine: *See—*
Camerson, Douglas; and Cameron, Lorraine, 4,764,313, Cl. 261-35.000

Camerson, Douglas; and Cameron, Lorraine, to Sunset Solar Systems Ltd. Air driven water circulation mill. 4,764,313, Cl. 261-35.000.

Campbell, Henry F.: *See—*
Molino, Bruce F.; Campbell, Henry F.; Kuhla, Donald E.; and Studt, William L., 4,764,512, Cl. 514-183.000.

Campbell, James M., to Yellow Springs Instrument Company, Inc., The. Fast/accurate calibration for a physical property sensor 4,764,879, Cl. 364-482.000

Canadian Patents and Development Limited-Societe: *See—*
Kawasaki, Brian S.; Kawachi, Masao; Hill, Kenneth O.; and Johnson, Derwyn C., 4,763,977, Cl. 350-96.150

Canadian Patents and Developments Limited/Societe Canadienne des Brevets et d'Exploitation Limitee: *See—*
Jarlan, Gerard E., 4,764,052, Cl. 405-31.000

Canevari, Gerard P.: *See—*
Robbins, Max L.; Canevari, Gerard P.; and Bock, Jan, 4,764,285, Cl. 210-749.000

Canevet, Georges: *See—*
Angelini, Theophile M.; Canevet, Georges; Foti, Marc S.; and Santon, Francois C., 4,764,957, Cl. 379-433.000

Cannarsa, Michael J.; Kesling, Haven S., Jr.; and Sun, Hsiang-Ning, to Arco Chemical Company. Process for preparing polycarbonate terpolymer foam suitable for lost foam casting. 4,763,715, Cl 164-45.000

Cannon, Michael F., to Ruston Gas Turbines Limited. Combustor for gas turbine engine. 4,763,481, Cl. 60-737.000.

Canon Kabushiki Kaisha: *See—*
Dei, Katsuhito; Kimizuka, Junichi; and Ichikawa, Junji, 4,763,889, Cl. 271-9.000
Hamano, Yoshimasa; and Masuda, Takashi, 4,764,006, Cl. 351-211.000
Kaneko, Shuzo; and Toyono, Tsutomu, 4,763,994, Cl. 350-336.000
Katagiri, Kazuharu; and Kaneko, Shuzo, 4,763,995, Cl. 350-341.000
Kondo, Hiroatsu, 4,764,042, Cl. 400-674.000
Nakajima, Hiroharu, 4,764,038, Cl. 400-120.000
Okumura, Ichiro; Izukawa, Kazuhiro; Okuno, Takuo; and Tsukimoto, Takayuki, 4,763,776, Cl. 198-630.000
Takada, Yoshihiro; and Hosono, Nagao, 4,763,992, Cl. 350-331.00T
Tamura, Shuichi; and Harunari, Yoshihiro, 4,764,786, Cl 354-403.000
Tsuji, Sadahiko; Sugiura, Muneharu; Tanaka, Kazuo; and Kato, Masatake, 4,763,998, Cl. 350-427.000

Capelle, Gerd, to Hermann Berstorff Maschinenbau GmbH. Apparatus for monitoring the production of elongate profiles. 4,764,101, Cl. 425-133.500

Captain, Khushroo M.: *See—*
Jeffcoat, Robert L.; Captain, Khushroo M., and Doherty, Brian J., 4,764,114, Cl. 433-72.000

Carbone, Pat J.: *See—*
Bradley, William A.; Carbone, Pat J.; and Peterson, Howell L., 4,763,785, Cl. 206-389.000.

Carenzi, Angelo; Cerri, Oreste; Pozzi, Franco; Casagrande, Cesare; Miragoli, Giovanna; and Virno, Michele. Pharmaceutical compositions and their use as mydriatics. 4,764,530, Cl. 514-548.000

Carey, John G.; Rothon, Roger N.; and Bottrill, Martin, to Imperial Chemical Industries PLC. Filler and polymer composition containing filler. 4,764,544, Cl. 523-205.000.

Carl Freudenberg, Firma: *See—*
Jorg, Benno M.; Kurr, Klaus; and Seifert, Heinz, 4,764,152, Cl 464-89.000

Carmack, Paul D., to Catlow, Inc. Breakaway coupling for a coaxial fuel supply hose. 4,763,683, Cl. 137-68.100.

Carpio, Ronald A.: *See—*
Vaughn, Robert L.; Carpio, Ronald A.; and King, Lowell A., 4,764,438, Cl. 429-52.000

Carr, Ian. Baseball bat and ball/bat combination. 4,763,900, Cl. 273-26.00R.

Carrier Corporation: *See—*
Bolton, Theodore S.; and [illegible]politano, James E., 4,763,964, Cl. 312-100.000.

Carrotte, Frederick H.; Stewart, [illegible]; and Jacobsson, Kurt. Positive yarn feed. 4,764,875, Cl. 364-470.000.

Carson, John F.: *See—*
Goll, Edward P.; and Carson, John F., 4,764,793, Cl. 355-38.000

Carthew, Maximilian K.; and Donahue, Joseph D., to Haden Schweitzer Corporation. Modular oven. 4,764,108, Cl. 432-128.000

Carty, Daniel T.: *See—*
Baker, Gregory M.; Farr, James P.; and Carty, Daniel T., 4,764,302, Cl. 252-301.230

Casagrande, Cesare: *See—*
Carenzi, Angelo; Cerri, Oreste; Pozzi, Franco; Casagrande, Cesare; Miragoli, Giovanna; and Virno, Michele, 4,764,530, Cl. 514-548.000

Cascade Microtech, Inc.: *See—*
Strid, Eric W., 4,764,723, Cl. 324-158.00P

Caspe, Marc S. Shock attenuating barrier. 4,763,457, Cl. 52-504.000

Cassella Aktiengesellschaft: *See—*
Piesch, Steffen; and Dorries, Peter, 4,764,570, Cl. 525-513.000

Castaldi, Graziano; Cavicchioli, Silvia; Giordano, Claudio; and Restelli, Carlo, to Zambon Spa. Process for preparing optically active carbonyl compounds. 4,764,641, Cl. 568-319.000

Castaldi, Graziano; Cavicchioli, Silvia; and Giordano, Claudio, to Zambon S.p.A. Process for preparing optically active alpha-haloalkyl-aryl-ketones. 4,764,642, Cl. 568-319.000.

Castegnier, Adrien. Printing method by electrolytic colloid coagulation. 4,764,264, Cl. 204-180.900.

VOL 1093 ISS 3 AG 16 1988 UMI

Caterpillar Inc.: *See—*
Kaveney, John R., Jr., 4,763,934, Cl. 292-21.000.
Catlow, Inc.: *See—*
Carmack, Paul D., 4,763,683, Cl. 137-68.100.
Caton, Dennis W.: *See—*
Pratt, George W.; Caton, Dennis W.; and Tackaberry, Duane O., 4,764,199, Cl. 71-5.000.
Cavedon Chemical Company, Inc.: *See—*
Cohen, Lawrence B., 4,764,632, Cl. 556-27.000.
Cavicchioli, Silvia: *See—*
Castaldi, Graziano; Cavicchioli, Silvia; Giordano, Claudio; and Restelli, Carlo, 4,764,641, Cl. 568-319.000.
Castaldi, Graziano; Cavicchioli, Silvia; and Giordano, Claudio, 4,764,642, Cl. 568-319.000.
Cekoric, Mark C.: *See—*
Dewhurst, John E.; Harasin, Stephen J.; Cekoric, Mark C.; and Abouzahr, Saad M., 4,764,540, Cl. 521-110.000.
Celestino, Robert J.: *See—*
Coughlin, Charles P.; Cadwallader, Robert H.; and Celestino, Robert J., 4,764,722, Cl. 324-158.00P.
Celotex Corporation, The: *See—*
Gluck, David G.; and Laughlin, Wayne E., 4,764,420, Cl. 428-317.700.
Centre d'Etude des Materiaux Organiques pour Technologies Avancees: *See—*
Malinge, Jean; Rabilloud, Guy; and Sillion, Bernard, 4,764,578, Cl. 528-27.000.
Centre National de la Recherche Scientifique-C.N.R.S.: *See—*
Angelini, Theophile M.; Canevet, Georges; Foti, Marc S.; and Santon, Francois C., 4,764,957, Cl. 379-433.000.
Cerri, Oreste: *See—*
Carenzi, Angelo; Cerri, Oreste; Pozzi, Franco; Casagrande, Cesare; Miragoli, Giovanna; and Virno, Michele, 4,764,530, Cl. 514-548.000.
Cetus Corporation: *See—*
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., 4,764,465, Cl 435-172.200
Chalin, Thomas N. Trailer dump stop and stabilizer. 4,763,953, Cl. 298-175.000
Chambers, James W., to Atwood Industries, Inc. Trailer coupler with improved ball clamp holding means and improved yoke. 4,763,917, Cl. 280-507.000.
Chancholle, Hubert: *See—*
Vauvelle, Bernard; and Chancholle, Hubert, 4,763,860, Cl. 244-122.00R
Chande, Tushar S.: *See—*
Ortiz, Angel L., Jr.; and Chande, Tushar S., 4,764,655, Cl. 219-121.830.
Chang, David. Pig holder. 4,763,608, Cl. 119-98.000.
Chang, Keh-Minn: *See—*
Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., 4,764,226, Cl. 148-429.000
Chang, Kuang-Yeh; and Hart, Charles F., to Motorola, Inc. CMOS process flow with small gate geometry LDO N-channel transistors. 4,764,477, Cl. 437-29.000.
Chang, Shih-Ho. Clipboard structure. 4,763,389, Cl. 24-67.110.
Charquet, Daniel; Millet, Yvon; Dall'Agnol, Marc; and Robin, Rene, to Pechiney. Process for the manufacture of a rough-shaped, cold-rolled cladding tube of zirconium alloy. 4,764,223, Cl. 148-11.50F.
Chart Industries Ltd.: *See—*
Horan, Gerald P., 4,763,756, Cl. 182-20.000.
Chau, Chieh-Chun; and Tung, Lu H., to Dow Chemical Company, The. Method for preparing semipermeable membrane compositions. 4,764,320, Cl. 264-41.000.
Che, Tessie M.: *See—*
Vanderspurt, Thomas H.; Richard, Michael A.; and Che, Tessie M., 4,764,499, Cl. 502-258.000.
Chen, Chen-Wei; and Lin, Jenny. Thermally-treated electronic acupuncturer. 4,763,657, Cl. 128-422.000.
Chen, Hong C.; Detz, Cliff M.; and Tamm, Paul W., to Chevron Research Company. Multi-stage catalytic reforming with high rhenium content catalyst. 4,764,267, Cl. 208-65.000.
Chen, Nai Y.; LaPierre, Rene B.; Partridge, Randall D.; and Wong, Stephen S., to Mobil Oil Corporation. Integrated hydroprocessing scheme for production of premium quality distillates and lubricants. 4,764,266, Cl. 208-58.000.
Cheney, Kirk S. Saw horse. 4,763,757, Cl. 182-21.000
Cheng, Sam. Distribution hanger for decorative light string. 4,764,128, Cl. 439-652.000
Cheng Wei, Hsu. Light bulb. 4,764,707, Cl. 313-580.000.
Cheng, Yu-Ling: *See—*
Sanders, Harold F.; Cheng, Yu-Ling; Enscore, David J.; and Libicki, Shari B., 4,764,379, Cl. 424-449.000
Chern, Lih-Ju; Kao, Angela W.; and Kao, Ming-Luh. Method and apparatus for remote doorbell answering. 4,764,953, Cl. 379-355.000.
Cherne Industries, Inc.: *See—*
Kroll, Mark W.; Pommrehn, Mark R.; and Hanson, Dan, 4,763,660, Cl. 128-640.000
Mathison, Allen D.; and Nelson, Dale K., 4,763,511, Cl. 73-49.100.
Cheshire, James O.; Janda, Bruce W.; and Thut, Robert S., to James River-Norwalk, Inc. Method for controlling feed of foamed fiber slurries. 4,764,253, Cl. 162-198.000.
Chevron Research Company: *See—*
Chen, Hong C.; Detz, Cliff M.; and Tamm, Paul W., 4,764,267, Cl. 208-65.000
Hsieh, C. Richard; and Donaldson, William J., 4,764,270, Cl. 208-390.000
Revus, David E.; and Boyer, Russell E., 4,764,718, Cl. 324-58.50A.
Suzuki, Shigeto, 4,763,730, Cl. 166-273.000.
Chew, James P., to American Standard Inc. Pneumatic coupling having a latching mechanism and a bleed-off valve for attachment to an air brake hose. 4,763,875, Cl. 251-149.900.
Chiang, Yulin: *See—*
Glamkowski, Edward J.; and Chiang, Yulin, 4,764,616, Cl. 546-152.000
Chiappino, Mario: *See—*
Pitavy, Michel; Chiappino, Mario; and Aghemo, Luigi, 4,764,322, Cl. 264-71.000
Chiba, Keiko; Takai, Makoto; and Wakabayashi, Toshio, to Terumo Kabushiki Kaisha t/a Terumo Corporation. 2,4-pentadienoic acid derivatives and platelet aggregation inhibitors containing the same. 4,764,528, Cl. 514-510.000.
Chiba, Tomio: *See—*
Sasaki, Hiroshi; Chiba, Tomio; Kido, Mitsuyasu; Sato, Yoshio; and Watanabe, Atsumi, 4,764,913, Cl. 369-49.000.
Chitty, Gordon W.; Morrison, Richard H., Jr.; Olsen, Everett O.; Panagou, John G.; and Zavracky, Paul M., to Foxboro Company, The. Resonant sensor and method of making same. 4,764,244, Cl. 156-630.000.
Choi, DooWahn, to American Telephone and Telegraph Company, AT&T Bell Laboratories. Digital frame synchronizer. 4,764,941, Cl. 375-112.000.
Chou, Charles C.; and Gentempo, Joseph J., to Shell Oil Company. Process for reducing the concentration of haloorganic compounds in water. 4,764,278, Cl. 210-634.000.
Choudhary, Anil R.: *See—*
Ayyangar, Nagaraj R.; Choudhary, Anil R.; Kalkote, Uttam R.; and Sharma, Vasant K., 4,764,615, Cl. 546-44.000.
Christensen, Joel R.; Liang, Paul H.; and Thompson, Mark E., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,764,207, Cl. 71-93.000.
Christiaens, Alois E., to U.S. Philips Corporation. Flat hybrid stepper or synchronous motor. 4,764,697, Cl. 310-49.00R.
Christian, Gregory L. Variable imaging mask for delineating the composition of a visible area. 4,763,989, Cl. 350-319.000.
Christiansen, Lee T. Medication dispenser. 4,763,810, Cl. 221-3.000.
Christopher, Todd J., to RCA Licensing Corporation. Tone control system for sampled data signals. 4,764,967, Cl. 381-98.000.
Chromaline Corporation, The: *See—*
VanIseghem, Lawrence C., 4,764,449, Cl. 430-162.000.
Chu, Ming Her: *See—*
Wu, Jing Shown; and Chu, Ming Her, 4,764,672, Cl. 250-236.000.
Church, Roy L., to Hewlett-Packard Company. Stabilized molded rubber keyboards. 4,764,770, Cl. 340-365.00R.
Ciba-Geigy Corporation: *See—*
Alder, Alex; Stanek, Jaroslaw; and Bellus, Daniel, 4,764,640, Cl. 562-457.000
Eldin, Sameer H., 4,764,568, Cl. 525-417.000.
Felder, Bruno; and Feron, Jean-Pierre, 4,764,395, Cl. 427-54.100.
Heinrich, Peter, 4,764,523, Cl. 514-18.000.
Pfeifer, Josef; and Duthaler, Rudolf, 4,764,584, Cl. 528-220.000.
Topfl, Werner; Meyer, Willy; and Schneider, Hans-Dieter, 4,764,203, Cl. 71-93.000.
von der Crone, Jost; Medinger, Bernhard; and Bugnon, Philippe, 4,764,217, Cl. 106-494.000.
Cibulak, Albert A. Modular shelving system. 4,763,579, Cl. 108-48.000.
Ciliberti, David F.: *See—*
Israelson, Gordon A.; Lippert, Thomas E.; Olczak, Edward S.; and Ciliberti, David F., 4,764,190, Cl. 55-269.000.
Cincinnati Milacron Inc.: *See—*
Braun, James W.; and Hubert, John A., 4,764,759, Cl. 340-653.000
Kohring, Mark D.; and Bailey, Edward J., 4,764,033, Cl. 384-99.000
Ciniglio, Alexander J.: *See—*
Tombs, Michael; and Ciniglio, Alexander J., 4,763,599, Cl. 118-57.000
Ciosek, Bernard M., Jr.: *See—*
Zebley, Raymond S.; Nichols, James H., Jr.; and Ciosek, Bernard M., Jr., 4,763,780, Cl. 206-330.000.
Citizen Watch Co., Ltd.: *See—*
Ichikawa, Shingo, 4,764,910, Cl. 368-69.000.
Claffey, Edward T.: *See—*
Linker, Frank, Sr.; Linker, Frank, Jr.; and Claffey, Edward T., 4,764,079, Cl. 414-411.000
Clarion Co., Ltd.: *See—*
Kanai, Takao; Yamaguchi, Katsumi; Kinoshita, Shigeo; Yoshikawa, Kikuo; and Yokoi, Syouichiro, 4,764,827, Cl. 360-96.500
Clark, Carl A.; and Wright, Raymond L., to Birmingham Bolt Company, Inc. Resin reinforced expansion anchor system. 4,764,055, Cl. 405-261.000
Clark, Earl, Jr., to Phillips Petroleum Company. Inverse emulsion polymerization with sorbitan fatty acid esters and ethoxylated alcohol. 4,764,574, Cl. 526-207.000
Claussen, Uwe; and Harnisch, Horst, to Bayer Aktiengesellschaft. Light-collecting coumarin derivatives. 4,764,622, Cl. 548-159.000.
Clawson, Lawrence G., to Raytheon Company. Thermoelectric frost collector for freezers. 4,764,193, Cl. 62-3.000.
Clements, Reginald M.; Pitt, Philip L.; Ridley, John D.; Smith, Robert; and Topham, David, to University of Victoria. Plasma jet underwater acoustic source. 4,764,906, Cl. 367-142.000.

Clemmer Industries (1964) Limited: *See—*
Meyers, Arnold G., 4,764,109, Cl. 432-153.000.
Clinton, Albert J., deceased (American Fletcher National Bank and Trust Company, administrator); and O'Doherty, George O. P., to Eli Lilly and Company. Anticoccidial naphthalenamines and combinations thereof. 4,764,534, Cl. 514-657.000.
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., to Glaxo Group Limited. 3-[3-[1-piperidinylmethyl]phenoxy]propanamine. 4,764,612, Cl. 546-232.000.
Clorox Company, The: *See—*
Baker, Gregory M.; Farr, James P.; and Carty, Daniel T., 4,764,302, Cl. 252-301.230
Clover Co., Ltd.: *See—*
Nakai, Hatsuo, 4,763,497, Cl. 70-95.000.
Clover Engineering Corporation: *See—*
Tanaka, Hajime; and Okada, Tetsuya, 4,763,892, Cl. 271-293.000
Clover Manufacturing Co., Ltd.: *See—*
Okada, Hidekazu, 4,764,943, Cl. 377-6.000.
Clyde Industries Limited: *See—*
Sanchez, George, 4,763,373, Cl. 15-29.000.
Coaltex, Inc.: *See—*
Justice, James C., 4,763,955, Cl. 299-56.000.
Cobarr S.p.A.: *See—*
Al Ghatta, Hussain A., 4,764,323, Cl. 264-85.000.
Cobb, Wesley N., to Standard Oil Company, The. Apparatus and method for determining the quantity of gas bubbles in a liquid. 4,763,525, Cl. 73-599.000.
Coca-Cola Company, The: *See—*
Lauffer, Scott C.; Golley, Frank B.; and Summerville, Don S., 4,763,963, Cl. 312-45.000.
Codrington, Robert S., to Varian Associates, Inc. Multiple FIFO NMR acquisition system. 4,764,894, Cl. 364-900.000.
Coes, Cecil. Disposable container for cat litter and the like. 4,763,603, Cl. 119-1.000.
Coffey, David L.: *See—*
Coffey, David M.; McGhee, Robert W.; and Coffey, David L., 4,763,404, Cl. 29-599.000.
Coffey, David M.; McGhee, Robert W.; and Coffey, David L., to Cryomagnetics, Inc. Low current superconducting magnet with quench damage protection. 4,763,404, Cl. 29-599.000.
Cogan, George W.: *See—*
Gibbons, James F.; Cogan, George W.; Gronet, Christian M.; and Lewis, Nathan S., 4,764,439, Cl. 429-111.000.
Cohen, Lawrence B., to Cavedon Chemical Company, Inc. Multifunctional amino zirconium aluminum metallo organic complexes useful as adhesion promoter. 4,764,632, Cl. 556-27.000.
Cohn, Robert J.; Rosania, W. Stanley; Rosania, Jeffrey W.; and Sudimak, Michael J., to InterMetro Industries Corporation. Modular utility cart including improved structures for securing intermediate and top shelves to corner posts. 4,763,799, Cl. 211-187.000.
Coin Acceptors, Inc.: *See—*
Levasseur, Joseph L., 4,763,769, Cl. 194-217.000.
Colberg, Horst; and Hahn, Erwin, to BASF Aktiengesellschaft. Disazo compounds containing an N,N-bis(2-amino-benzoyl)piperazine derivative as the diazo component. 4,764,599, Cl. 534-740.000.
Coldren, Larry A.: *See—*
Bridges, Thomas J.; Burkhardt, Ernest G.; Coldren, Larry A.; and Koch, Thomas L., 4,764,246, Cl. 156-643.000.
Cole, Gary: *See—*
Pomper, Seymour; Cole, Gary; and Scheinbach, Saul, 4,764,472, Cl. 435-256.000.
Coleco Industries, Inc.: *See—*
Hemmann, Ronald S., 4,763,898, Cl. 273-1.0GF.
Colegrove, George T., to Merck & Co. Inc. N-methyl-2-pyrrolidone compositions. 4,764,222, Cl. 134-38.000.
Colgate-Palmolive Company: *See—*
Steltenkamp, Robert J.; and Camara, Michael A., 4,764,291, Cl. 252-8.800.
Colman, Derek A.; and Thew, Martin T., to B.W.N. Vortoil Rights Co Pty. Ltd. Cyclone separator. 4,764,287, Cl. 210-788.000.
Comau S.p.A.: *See—*
Marinoni, Giorgio; and Pietro, Araudo, 4,763,401, Cl. 29-568.000
Combi Co., Ltd.: *See—*
Nakao, Shinaroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, 4,763,919, Cl. 280-644.000
Combustion Engineering, Inc.: *See—*
Zieren, Marten L., 4,763,584, Cl. 110-323.000.
Comdisco Resources, Inc.: *See—*
Tichener, Paul F.; and Walsh, Michael J. M., 4,763,520, Cl. 73-155.000.
Comeau, Laurier J. (Larry), to NL Sperry-Sun of Canada, Ltd. Pressure actuator switch. 4,763,519, Cl. 73-151.000.
Commissariat a l'Energie Atomique: *See—*
Bathellier, Andre ; Pasquiou, Jean-Yves; and Vialard, Etienne, 4,764,352, Cl. 423-10.000.
de Tassigny, Christian, 4,764,305, Cl. 252-628.000.
Connor, David T.; and Mullican, Michael D., to Warner-Lambert Company. N-1H-tetrazol-5-ylbenzamides having use as antiallergy and antiinflammatory agents. 4,764,525, Cl. 514-381.000.
Conoco Inc.: *See—*
Siebert, Robert M., 4,764,903, Cl. 367-29.000.
Conrad, John R., to Wisconsin Alumni Research Foundation. Method and apparatus for plasma source ion implantation. 4,764,394, Cl. 427-38.000
Consoli, Michael F. Flat mail collator. 4,763,888, Cl. 270-58.000
Continental Laser Corporation: *See—*
Peterson, Royal D.; and Jones, Ronald E., 4,764,932, Cl 372-35.000
Cook Bates Company, The: *See—*
Barchas, Myron, 4,764,362, Cl. 424-61.000.
Cook, James R.: *See—*
Gagnon, Gilbert H., 4,764,881, Cl. 364-559.000.
Coombes, Donald E., to Lloyd A. Smith, a part interest. Wind powered electric generator. 4,764,683, Cl. 290-55.000.
Cooper, David G.; Miles, Peter D.; and Young, Rodney C., to Smith Kline & French Laboratories Limited. 3-hydroxypyridines 4,764,519, Cl. 514-335.000
Copeland, W. Duane. Field dressing attachment for hunting knife 4,763,416, Cl. 30-294.000
Coppolani, Pierre; Henry, Jean-Marc; Savary, Pierre; and Eisele, Jean, to Framatome. Hydraulic clatter damping device and its application to valves and the like. 4,763,754, Cl. 181-237.000
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, to Nuovo Pignone Industrie Meccaniche e Fonderia S.p.A. System of detection of shed closed to shuttle passage in multi-step textile looms. 4,763,699, Cl. 139-436.000
Corbett, Marshall J.: *See—*
Belisle, Joseph A.; and Corbett, Marshall J., 4,763,858, Cl. 244-53.00B
Corman, Lourdes; and Mayhew, Ian, to Efamol Limited. Treatment of horses. 4,764,532, Cl. 514-560.000
Corning Glass Works: *See—*
Allaire, Roger A.; Pardue, William F., Jr.; and Simonson, Edwin J., 4,764,195, Cl. 65-18.400
Berkey, George E., 4,763,970, Cl. 350-96.210.
Eppes, William R., 4,764,021, Cl. 366-127.000.
Lilley, Edward; and Wusirika, Raja R., 4,764,493, Cl. 501-137.000
Nolan, Daniel A.; and Truesdale, Carlton M., 4,763,976, Cl 350-96.150
O'Connell, Dennis M., 4,763,804, Cl. 215-307.000
Corvelli, Nicholas: *See—*
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John; Poveromo, Leonard M.; Corvelli, Nicholas; and London, Arnold, 4,764,238, Cl. 156-245.000
Costa, Robert A.: *See—*
Matz, Edward I.; and Costa, Robert A., 4,763,932, Cl. 285-177.000
Cote, Agenor. Spacer brackets for electrical supply container. 4,763,863, Cl. 248-74.100.
Cottrell, Ian W.: *See—*
Smith, Terry E.; Cottrell, Ian W.; and Pelesko, John D., 4,764,588, Cl. 528-481.000
Coughlin, Charles P.; Cadwallader, Robert H.; and Celestino, Robert J., to International Business Machines Corporation. Coaxial probe. 4,764,722, Cl. 324-158.00P
Council of Scientific & Industrial Research: *See—*
Ayyangar, Nagaraj R.; Choudhary, Anil R.; Kalkote, Uttam R.; and Sharma, Vasant K., 4,764,615, Cl. 546-44.000
Country Home Products, Inc.: *See—*
Raymond, Richard O., 4,763,907, Cl. 280-47.350.
Courtney-Pratt, Jeofry S.; and McEowen, James R., to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Optical fiber connector. 4,763,978, Cl. 350-96.180.
Courtoy, Jean-Francois; Marchal, Daniel; DuForest, Rene; and Roussel, Albert. Process for the production of coverings exhibiting a cracked appearance and the product obtained therefrom. 4,764,411, Cl. 428-155.000
Cox, Bruce N.; and Wakefield, Lindsay, to Safetech Pty. Ltd. Load elevator. 4,764,075, Cl. 414-99.000
Crabtree, Michael L., to Gates Rubber Company, The. Airspring and sleeve. 4,763,883, Cl. 267-64.270.
Cram, Jesse A.: *See—*
McKinsey, Millard F.; Knoebel, David L.; Cram, Jesse A.; and Kilburg, Larry N., 4,763,761, Cl. 187-8.410
Cranskens, Georg; and Blume, Erich, to Hoechst Aktiengesellschaft. Process for the electrostatic charging of recording materials and apparatus for implementation of the process. 4,764,842, Cl 361-225.000
Craven, Tyson S., to Hercules Defense Electronics Systems, Inc. Multimode feed horn. 4,764,775, Cl. 343-786.000
Cre-Del Limited Partnership: *See—*
Haig, Laurence B., 4,763,949, Cl. 296-222.000.
Creusot-Loire Industrie: *See—*
Bouillon, Jean, 4,763,559, Cl. 89-33.040
Crew, Albert V., to Electron Beam Memories. Electron beam memory system with improved high rate digital beam pulsing system 4,764,818, Cl. 358-347.000
Crispell, Corey, to SPS Technologies, Inc. Knurled cup-point set screw. 4,764,068, Cl. 411-393.000.
Critchlow, David N.: *See—*
Paneth, Eric; Critchlow, David N.; and Yehushua, Moshe, 4,764,940, Cl. 375-67.000
Crnkovic, Mark A.: *See—*
Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas; Crnkovic, Mark A.; James, William D.; and Merz, Walter E., 4,763,716, Cl. 164-122.100
Croitoru, Natan; Deutscher, Guy; and Gruenbaum, Enrique, to Ramot University Authority for Applied Research and Industrial Development Ltd. Method of depositing coatings on the inner surface of a tube by chemical vapor deposition. 4,764,398, Cl. 427-237.000

VOL 1093 ISS 3 AG 16 1988 UMI

Cronlund, Malcolm: *See—*
Lora, Jairo H.; Katzen, Raphael; Cronlund, Malcolm; and Wu, Chih F., 4,764,596, Cl. 530-507.000.
Cross Technology, Inc.: *See—*
Johnson, William A., 4,764,733, Cl. 330-84.000.
Croucher, Melvin D.; Pravato, George R.; Fuller, John R. C.; and Duff, James M., to Xerox Corporation. Liquid developer compositions with high transfer efficiency. 4,764,446, Cl. 430-115.000.
Croudace, Michael C., to Union Oil Company of California. Lubrication anti-wear additive. 4,764,298, Cl. 252-47.000.
Crown Decorative Products Limited: *See—*
Tonge, Christopher J., 4,764,554, Cl. 524-558.000.
Cryomagnetics, Inc.: *See—*
Coffey, David M.; McGhee, Robert W.; and Coffey, David L., 4,763,404, Cl. 29-599.000.
Csutoras, Laszlo : *See—*
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000.
CTR Manufacturing, Inc.: *See—*
Johnson, Calvin S., 4,763,705, Cl. 144-34.00R.
Cuda, Ross F. Fishing apparatus. 4,763,437, Cl. 43-43.130.
Cunningham, Charles B.: *See—*
Poehlmann, Paul W.; Slate, Mark J.; Potts, Stephen M.; and Cunningham, Charles B., 4,763,957, Cl. 301-105.00B.
Cunningham, Roy T.: *See—*
McGovern, Terrence P.; and Cunningham, Roy T., 4,764,366, Cl. 424-84.000.
Cuny, Francis; Vermeille, Hugues; and Arnault, Jean, to L'Air Liquide. Process for controlling the flow of a fluid in a valve and apparatus for carrying out said process. 4,763,681, Cl. 137-8.000
Currey, William C., to National Identification Laboratories, Inc. Identification marking of oils. 4,764,290, Cl. 252-11.000.
Curtin, Len: *See—*
Faith, Richard W.; and Curtin, Len, 4,764,949, Cl. 379-9.000
Cypress Semiconductor Corporation: *See—*
Bhattacherjee, Arya; Koutny, William; Shrivastava, Ritu; and Rodgers, Thurman J., 4,764,248, Cl. 156-643.000.
Czarnecki, John A.; and Youngquest, Darrell D., to Ford Motor Company. Multiple unit automotive climate control system. 4,763,564, Cl. 98-2.110.
Czesnik, Marek W.: *See—*
Kallin, Fredrik L. N.; Czesnik, Marek W.; and Mach, Mark M., 4,764,976, Cl. 382-65.000.
D. Joaquin Aperribay Elosua: *See—*
Gea Aizpurua, Jose A., 4,763,698, Cl. 139-190.000.
D. L. Fried Associates, Inc.: *See—*
Fried, David L., 4,764,738, Cl. 332-7.510.
Dack, Stuart: *See—*
Bates, Andrew; Dack, Stuart; and Yates, David, 4,764,230, Cl. 149-21.000
Dahlstrom, David K.; Fife, Merrill E.; and Judy, Charles R., to Allied Corporation. Underwater transducer. 4,764,907, Cl. 367-163.000.
Daicel Chemical Industries, Ltd.: *See—*
Hanessian, Stephen; and Kagotani, Masahiro, 4,764,605, Cl 536-124.000
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000.
Tokuhara, Shinji; Onizawa, Yoshio; and Iyoshi, Shuzo, 4,764,331, Cl. 264-328.160.
Daido Kogyo Co., Ltd.: *See—*
Honda, Shoichi; Nagae, Masahiro; and Fukumoto, Hiroshi, 4,764,158, Cl. 474-212.000.
Daimatsu Kagaku Kogyo Co., Ltd.: *See—*
Matsuguchi, Tadashi; and Matsuguchi, Noboru, 4,763,931, Cl. 283-108.000.
Daimler-Benz Aktuengesellschaft: *See—*
Hafner, Gunther; and Letsche, Ulrich, 4,763,841, Cl. 239-464.000
Daimon, Akio: *See—*
Mitsuno, Tatsuyuki; Shinonaga, Hideo; and Daimon, Akio, 4,764,546, Cl. 523-213.000
Dainippon Ink and Chemicals, Inc.: *See—*
Araki, Shingo; Maeda, Ryugo; Inagaki, Masaji; Kitao, Teijiro; and Ueno, Shigeki, 4,764,500, Cl. 503-208.000
Sasaki, Makoto; Takeuchi, Kiyohumi; and Takatsu, Haruyoshi, 4,764,636, Cl. 560-102.000
Dainippon Screen Mfg. Co., Ltd.: *See—*
Fuji, Koichi, 4,764,794, Cl. 355-87.000
Inoue, Toshifumi, 4,764,975, Cl. 382-47.000.
Daito, Michimasa: *See—*
Yoshioka, Junichi; Miyashita, Masakazu; and Daito, Michimasa, 4,763,448, Cl. 51-165.800
Daiwa Seiko, Inc.: *See—*
Kaneko, Kyoichi, 4,763,856, Cl. 242-217.000.
Dale, Warren A., II: *See—*
Gardner, James B.; and Dale, Warren A., II, 4,763,682, Cl 137-62.000
Daley, Patrick J.: *See—*
Smits, Donald M.; Daley, Patrick J.; and Buckley, Mary E., 4,764,234, Cl. 156-164.000.
Dall'Agnol, Marc: *See—*
Charquet, Daniel; Millet, Yvon; Dall'Agnol, Marc; and Robin, Rene, 4,764,223, Cl. 148-11.50F.
Dalmo Victor, Inc., Div. of The Singer Company: *See—*
Libby, Vibeke, 4,764,873, Cl. 364-461.000
Dalquist, H. David, III; Jacobsen, Douglas C.; Jorgensen, Jorgen A.; Kluge, Douglas J.; and Taylor, John N., to Northland Aluminum Products, Inc. Stovetop corn popper. 4,763,567, Cl. 99-323.500.
Damjanovic, Dragan: *See—*
Takeuchi, Kiyoshi; Damjanovic, Dragan; and Jang, Sei-Joo, 4,764,492, Cl. 501-136.000
Dana-Farber Cancer Institute, Inc.: *See—*
Blattler, Walter A.; and Lambert, John M., 4,764,368, Cl. 424-85.000.
D'Andrade, Bruce M. Battery operated cap gun. 4,763,430, Cl. 42-57.000.
D'Andrade, Bruce M. Toy bubble blowing machine. 4,764,141, Cl. 446-16.000
Daniel, Gordon S. Ice dam preventer. 4,763,450, Cl. 52-24.000.
Danner, Robert W. Foldable keyboard stand. 4,763,865, Cl. 248-164.000
Danson, David P., to Wind Feather, United Science ASC. Vertical wind turbine. 4,764,090, Cl. 416-17.000
Dardi, Louis E.: *See—*
Shankar, Srinivasan; and Dardi, Louis E., 4,764,225, Cl. 148-404.000
Darin, James. Side yoke for vehicle differential. 4,763,542, Cl. 74-713.000
Darner, Charles L., to United States of America, Navy. Hydrogen generator. 4,764,909, Cl. 367-171.000.
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John; Poveromo, Leonard M.; Corvelli, Nicholas; and Loadon, Arnold, to Grumman Aerospace Corporation. Energy absorbing foam-fabric laminate. 4,764,238, Cl. 156-245.000.
Data General Corporation: *See—*
Hamilton, Stephen W.; and Wong, Philip C., 4,764,687, Cl. 307-269.000
D'Atre, John D.; and Giewont, William P., to General Electric Company. Method for starting a variable voltage inverter with a pre-spinning load motor. 4,764,713, Cl. 318-778.000
Davi, Richard: *See—*
Metzger, Louis G.; and Davi, Richard, 4,763,795, Cl. 211-11.000.
Daviaud, Jean-Michel; Herbert, Pascal; and Loison, Patrick, to Frigo France. Method for measuring net internal volume of a receptacle containing an unknown volume of residual liquid. 4,763,518, Cl. 73-149.000
Davidson, James H., deceased (by Davidson, Ruby E., legal representative); and Pollock, John F., to Ethyl Corporation. Greenhouse film folding apparatus. 4,764,161, Cl. 493-248.000.
Davidson, Ruby E., legal representative: *See—*
Davidson, James H., deceased; and Pollock, John F., 4,764,161, Cl. 493-248.000
Davis, Paul K., to Pacific Roller Die Co., Inc. Method for welding ribbed pipe. 4,763,830, Cl. 228-145.000.
Davis, William H., to Ring Around Products, Inc. Process for forming substantially uniform seed assemblages capable of growing F_1 hybrid and restorer soybean plants. 4,763,441, Cl. 47-58.000.
DeBorsblanc, Desloade R.: *See—*
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBorsblanc, Desloade R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000.
Debortoli, George, to Northern Telecom Limited. Cable terminal connectors. 4,764,125, Cl. 439-403.000
Decato, Raymond L.; Decato, Rodney R.; and Decato, Ronald R. Push pull press for assembly and disassembly of drive shafts. 4,763,394, Cl. 29-252.000
Decato, Rodney R.: *See—*
Decato, Raymond L.; Decato, Rodney R.; and Decato, Ronald R., 4,763,394, Cl. 29-252.000
Decato, Ronald R.: *See—*
Decato, Raymond L.; Decato, Rodney R.; and Decato, Ronald R., 4,763,394, Cl. 29-252.000.
Decker, John A., Jr., to Kuau Technology, Ltd. Automatic sextant. 4,763,418, Cl. 33-268.000.
Decker, Klaus; and Polacek, Ivan, to ESAB - HANCOCK GmbH. Photoelectric apparatus for tracing a scanning head along a pattern track with selectable sampling. 4,764,669, Cl. 250-202.000.
Decker, Martin; and Neumayr, Franz, to BASF Aktiengesellschaft. Preparation of chlorocarboxylic acid chlorides. 4,764,309, Cl. 260-544.00K.
Deckers, Roger J. H., to Volvo Car B.V. Combustion engine. 4,763,624, Cl. 123-432.000
Deckers, Willy, to Burndy Corporation. Machine for the selective insertion of electrical contact pins into a printed circuit plate. 4,763,400, Cl. 29-564.600
De Dompierre, Jean B., to Bobst SA. Device for presetting the tools in a platen press. 4,763,422, Cl. 33-569.000
Deering, Richard H. Fishing rod holder. 4,763,435, Cl. 43-21.200.
DeFelice, Amedio. Fine tooth comb. 4,763,675, Cl. 132-137.000.
Deguchi, Naoyasu: *See—*
Watanabe, Toshiyuki; and Deguchi, Naoyasu, 4,764,456, Cl. 430-550.000
Dei, Katsuhito; Kimizuka, Junichi; and Ichikawa, Junji, to Canon Kabushiki Kaisha. Paper feeder. 4,763,889, Cl. 271-9.000.
Dela-Cruz, Exequiel: *See—*
Brisson, Alfred G.; Nowacki, Christopher; Shene, William R.; Burdick, Thomas H.; and Dela-Cruz, Exequiel, 4,763,652, Cl. 128-328.000
Delco Electronics Corporation: *See—*
Alvi, Nadeem S.; and Stevenson, Paul E., 4,764,481, Cl. 437-56.000

Deller, Robert W., to E-Systems, Inc. Back emf loop closure. 4,764,711, Cl. 318-619.000.
DeMarco, Dennis D.: *See—*
DeMarco, Frank G.; and DeMarco, Dennis D., 4,764,757, Cl. 340-574.000.
DeMarco, Frank G.; and DeMarco, Dennis D. Security detection and location system with independent local alarm and communications circuits. 4,764,757, Cl. 340-574.000.
Demers, Gilles: *See—*
Ducos, Michel; Gherardi, Olivier; Demers, Jocelyn; and Demers, Gilles, 4,764,792, Cl. 355-27.000.
Demers, Jocelyn: *See—*
Ducos, Michel; Gherardi, Olivier; Demers, Jocelyn; and Demers, Gilles, 4,764,792, Cl. 355-27.000.
Denis, Herve : *See—*
Fiorina, Jean-Noel; and Denis, Herve , 4,764,684, Cl. 307-66.000.
Denture Clinic, Inc.: *See—*
Willits, William G.; and Schmitt, Thomas T., 4,764,115, Cl. 433-177.000.
der Kinderen, Wilhelmus K., to Lever Brothers Company. Liquid dispensing system. 4,763,494, Cl. 68-17.00R.
De Rosa, Mario: *See—*
Zappia, Vincenzo; and De Rosa, Mario, 4,764,603, Cl. 536-26.000
de Tassigny, Christian, to Commissariat a l'Energie Atomique. Process for the conditioning of radioactive or toxic waste in epoxy resins and polymerizable mixture with two liquid constituents usable in this process. 4,764,305, Cl. 252-628.000.
Detection Systems, Inc.: *See—*
Pedtke, Daniel F.; and Behlke, George E., 4,764,755, Cl. 340-541.000.
Detz, Cliff M.: *See—*
Chen, Hong C.; Detz, Cliff M.; and Tamm, Paul W., 4,764,267, Cl. 208-65.000
Deutsch-Weyer, Gerlinde: *See—*
Wehner, Rainer; Mattersberger, Johann; Klenner, Dagmar; and Deutsch-Weyer, Gerlinde, 4,764,468, Cl. 435-188.000.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Bachmann, Volker; and Doker, Hubert, 4,764,010, Cl. 356-153.000
Buck, Volker, 4,763,508, Cl. 73-9.000.
Dietrich, Johannes; and Schott, Jorg, 4,763,531, Cl. 73-862.040.
Deutscher, Guy: *See—*
Croitoru, Natan; Deutscher, Guy; and Gruenbaum, Enrique, 4,764,398, Cl. 427-237.000.
De Vadder, Daniel: *See—*
Bouami, Driss; and De Vadder, Daniel, 4,763,528, Cl. 73-799.000.
Dewhurst, John E.; Harasin, Stephen J.; Cekoric, Mark C.; and Abouzahr, Saad M., to Mobay Corporation. Rim polyurethane or polyurea compositions containing internal mold release agents. 4,764,540, Cl. 521-110.000
DHV Raadgevend Ingenieursbureau B.V.: *See—*
Jansen, Cornelis W., 4,764,284, Cl. 210-715.000.
Diamond SA: *See—*
Gerber, Hans; and Marazzi, Silvio, 4,763,980, Cl. 350-96.200.
DiBiase, Stephen A.: *See—*
Sowerby, Roger L.; and DiBiase, Stephen A., 4,764,297, Cl. 252-45.000
Dick, Paul H.: *See—*
Layman, Frederick P.; Hobson, Phillip M.; and Dick, Paul H., 4,764,076, Cl. 414-217.000.
Dickey-john Corporation: *See—*
Bachman, Wesley J.; and Gorsek, Edmund J., 4,763,692, Cl. 137-625.300.
Dickey, Larry W.; and Hughes, Philip, to American Telephone & Telegraph Company, AT&T Bell Laboratories. Snap-on network interface unit. 4,764,950, Cl. 379-29.000.
Dickinson, Ben W. O.; Dickinson, Robert W.; and Rabb, David T., to Dickinson, Ben W. O. Earth drilling method and apparatus using multiple hydraulic forces. 4,763,734, Cl. 175-61.000.
Dickinson, Robert W.: *See—*
Dickinson, Ben W. O.; Dickinson, Robert W.; and Rabb, David T., 4,763,734, Cl. 175-61.000.
DiClemente, Thomas J., to AMP Incorporated. Electrical connector having terminal housing retaining member. 4,764,130, Cl 439-686.000
Diebold, James P.; and Evans, Robert J., to United States of America, Energy. Process for producing furan from furfural aldehyde. 4,764,627, Cl. 549-505.000.
Diehl GmbH & Co.: *See—*
Sturzl, Wilhelm, 4,764,716, Cl. 323-231.000
Diesel Kiki Co., Ltd.: *See—*
Ichihashi, Koji; and Murayama, Toshihiro, 4,763,872, Cl. 251-30.010.
Kobayashi, Tadashi; and Nozaki, Shinya, 4,763,611, Cl. 123-41.310.
Nakajima, Nobuyuki; Inomata, Kenichi; and Okada, Shigeru, 4,764,099, Cl. 418-270.000
Dieter, Georg; and Hieninger, Johann, to Siemens Aktiengesellschaft Data terminal interface circuit to a telephone transmission line 4,764,922, Cl. 370-123.000
Dietrich, Johannes; and Schott, Jorg, to Deutsche Forschungs-und Versuchsanstalt fur Luft und Raumfahrt e.V. Force-torque sensor 4,763,531, Cl. 73-862.040
Dike Equipment Co.: *See—*
Dike, John H., Jr., 4,763,547, Cl. 81-45.000
Dike, John H., Jr., to Dike Equipment Co. Shingle removing apparatus. 4,763,547, Cl. 81-45.000.
Dilling, Peter, to Westvaco Corporation. Method for methylolation of lignin materials. 4,764,597, Cl. 530-501.000.
Dimier, Jean-Pierre, to Salomon S.A. Safety ski binding. 4,763,908, Cl. 280-628.000
Dinkel, Bernard; and Gelain, Silvano, to Ransburg-Gema AG. Method and apparatus for cleaning a powder coating booth. 4,764,220, Cl 134-6.000
Dion, Bruno, to General Electric Company. Switchable mode amplifier for wide dynamic range. 4,764,732, Cl. 330-59.000.
Discovision Associates: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,764,915, Cl. 369-58.000
Ditzig, Albert, to Telephone Products, Inc. Rotary electrical connector. 4,764,121, Cl. 439-21.000.
DiVincenzo, Maureen. Floss bobbin holding device. 4,763,855, Cl. 242-139.000
Di Vita, Angelo, to I.C.A. S.p.A.; and A. Celli S.p.A. Kneader for paper products and/or similar waste products. 4,764,022, Cl 366-157.000
Dix, Johannes P.: *See—*
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter, Schefczik, Ernst; and Seybold, Guenther, 4,764,600, Cl. 534-792.000
diZerega, Gere S., to University of Southern California. Intragonadal regulatory protein. 4,764,502, Cl. 514-2.000
Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Muller, Robert, 4,763,747, Cl. 180-244.000
Dr. Johannes Heidenhain GmbH: *See—*
Ernst, Alfons, 4,763,417, Cl. 33-169.00R.
Feichtinger, Kurt, 4,763,421, Cl. 33-561.000
Dodson, Earl L.: *See—*
Haltof, Garry P.; and Dodson, Earl L., 4,763,447, Cl. 49-429.000
Doherty, Brian J.: *See—*
Jeffcoat, Robert L.; Captain, Khushroo M.; and Doherty, Brian J., 4,764,114, Cl. 433-72.000
Doi, Akihiko: *See—*
Ando, Hideo; and Doi, Akihiko, 4,764,912, Cl. 369-45.000
Doi, Nobukazu: *See—*
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000.
Doker, Hubert: *See—*
Bachmann, Volker; and Doker, Hubert, 4,764,010, Cl. 356-153.000.
Dompe' Farmaceutici S.p.A.: *See—*
Borsa, Massimiliano; Tonon, Giancarlo; and Malandrino, Salvatore, 4,764,515, Cl. 514-255.000
Donahue, Joseph D.: *See—*
Carthew, Maximilian K.; and Donahue, Joseph D., 4,764,108, Cl 432-128.000
Donaldson, William I.: *See—*
Hsieh, C. Richard; and Donaldson, William I., 4,764,270, Cl. 208-390.000.
Donalson, Dennis C.; and Wilkie, Robert R., to W.R. Grace & Co., Cryovac Div. Container for printed circuit boards. 4,763,781, Cl. 206-334.000
Donohoe, David G. One-piece hollow drumstick and method of making. 4,763,557, Cl. 84-422.00S
Dooley, Richard L., to Buckhorn Rubber Products, Inc. Coupling hose assembly. 4,763,695, Cl. 138-109.000.
Dore, Jacky; and Pedrazzi, Reinhard, to Sandoz Ltd. Metal-free monoazo and disazo compounds having a 1-hydroxy-5,6-, 7- or 8- substituted 1,3,5-triazinylamino-3- or 4 sulfonic acid coupling component radical and 1:1 copper complexes. 4,764,175, Cl. 8-437.000
Dorries, Peter: *See—*
Piesch, Steffen; and Dorries, Peter, 4,764,570, Cl. 525-513.000
Doty, Gerald A., to Gateway Industries, Inc. Web-sensitive retractor lock-out mechanism. 4,763,926, Cl. 280-808.000
Dougherty, Harry L. Orthodontic face bow. 4,764,110, Cl. 433-5.000.
Douglas & Lomason Company: *See—*
Tsukayama, Robert H.; and Abitz, Roger E., 4,763,397, Cl 29-509.000
Dow Chemical Company, The: *See—*
Bon, Charles K.; and Knowles, Vera M., 4,764,286, Cl. 210-757.000.
Chau, Chieh-Chun; and Tung, Lu H., 4,764,320, Cl. 264-41.000
Gregory, Thomas D.; and Stutts, Kenneth J., 4,764,263, Cl 204-74.000
Heuvelsland, Albert J., 4,764,626, Cl. 549-377.000
Martin, Patrick H.; Parker, Theodore L.; and Schrader, Paul G., 4,764,580, Cl. 528-98.000
Savina, Michael R., 4,764,543, Cl. 521-160.000.
Schmidt, Donald L.; and Urchick, Demetrius, 4,764,564, Cl. 525-328.200
Stuber, Fred A.; and Temme, George H., 4,764,330, Cl. 264-300.000
Wagers, Kevin J., 4,764,977, Cl. 383-63.000.
Dow Corning Corporation: *See—*
Halm, Roland L.; Hansen, Sidney A.; and Neal, Charles E., Jr., 4,764,631, Cl. 556-460.000
Downey, Philip A., to Burr-Brown Limited. Data processing system with pre-decoding of op codes. 4,764,866, Cl. 364-200.000
Doyama, Yoshiaki: *See—*
Kubo, Kanji; and Doyama, Yoshiaki, 4,764,819, Cl. 360-10.200
Doyle, Walter M., to Laser Precision Corporation. Apparatus for spectral analysis of chromatographic fractions. 4,764,676, Cl 250-353.000
Draeger, David J.: *See—*
Baltzell, William L.; and Draeger, David J., 4,764,070, Cl. 411-430.000

VOL 1093 ISS 3 AG 16 1988 UMI

Dragerwerk AG: *See—*
Albarda, Scato; and Eder, Alfred, 4,763,509, Cl. 73-27.00A.
Drain Brain, Inc.: *See—*
Gardner, James B.; and Dale, Warren A., II, 4,763,682, Cl. 137-62.000
Drebot, Michael: *See—*
Brown, Sherwin R.; and Drebot, Michael, 4,764,383, Cl. 426-1.000
Drehobl, Thomas L.: *See—*
Johnston, Damon A.; Papenhause, Paul E.; Garcia, George L.; and Drehobl, Thomas L., 4,764,047, Cl. 401-289.000
Drews, Robert C. Apparatus for plugging an intraocular lens hole. 4,764,170, Cl. 623-6.000.
Drumm, Arthur E. Push broom head of the channel-mounted bristle type. 4,763,378, Cl. 15-146.000.
Ducos, Michel; Gherardi, Olivier; Demers, Jocelyn; and Demers, Gilles, to Duo Machinerie Corporation. Copying machine with modular original document light-image forming device. 4,764,792, Cl. 355-27.000
Duff, James M.: *See—*
Croucher, Melvin D.; Pravato, George R.; Fuller, John R. C.; and Duff, James M., 4,764,446, Cl. 430-115.000
DuForest, Rene: *See—*
Courtoy, Jean-Francois; Marchal, Daniel; DuForest, Rene; and Roussel, Albert, 4,764,411, Cl. 428-155.000
Duley, Raymond S.: *See—*
Forth, Leslie; and Duley, Raymond S., 4,764,923, Cl. 371-6.000.
Dunn, David C., to McCarthy, Bill D. Water drip device for irrigation 4,763,842, Cl. 239-542.000
Dunseath, W. J. Ross, Jr., to Spring Creek Institute, Inc. Dry electrode system for detection of biopotentials. 4,763,659, Cl. 128-640.000.
Duo Machinerie Corporation: *See—*
Ducos, Michel; Gherardi, Olivier; Demers, Jocelyn; and Demers, Gilles, 4,764,792, Cl. 355-27.000
Du Pont de Nemours, E. I., and Company: *See—*
Bolt, John D., 4,764,489, Cl. 501-96.000
Buckmaster, Marlin D.; and Randa, Stuart K., 4,764,538, Cl. 521-85.000
Christensen, Joel R.; Liang, Paul H.; and Thompson, Mark E., 4,764,207, Cl. 71-93.000
Hanagan, Mary A., 4,764,204, Cl. 71-93.000.
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,764,630, Cl 556-410.000
Romanauskas, William A., 4,764,162, Cl. 494-38.000
Rorer, Morris P., 4,764,205, Cl. 71-93.000
Zebley, Raymond S.; Nichols, James H., Jr.; and Ciosek, Bernard M., Jr., 4,763,780, Cl. 206-330.000
Zimmerman, Donna F., 4,764,610, Cl. 71-92.000
Duprez, Wayne R., to Standard-Thomson Corporation. Valve seat structure for automotive thermostatic fluid control valve device. 4,763,834, Cl. 236-345.000
Durham, Donald R.; Stellwag, Edmund J.; and McNamee, Clyde G., to Genex Corporation. Alkaline protease produced by a bacillus. 4,764,470, Cl. 435-221.000
Dussan V., Benicio I.: *See—*
Zagorzycki, Peter E.; and Dussan V., Benicio I., 4,763,770, Cl. 198-364.000
Dussart, Jean: *See—*
Aubert, Francois; and Dussart, Jean, 4,764,336, Cl. 376-272.000
Duthaler, Rudolf: *See—*
Pfeifer, Josef; and Duthaler, Rudolf, 4,764,584, Cl. 528-220.000
Dynamit Nobel AG: *See—*
Feld, Marcel, 4,764,638, Cl. 562-416.000
E.C.C. America Inc.: *See—*
Rice, Camilla A., 4,764,495, Cl. 502-62.000
E-Systems, Inc.: *See—*
Deller, Robert W., 4,764,711, Cl. 318-619.000
Eastman Kodak Company: *See—*
Baumeister, Hans-Peter, 4,764,823, Cl. 360-60.000
Burnham, William L., 4,764,785, Cl. 354-219.000
Estes, Marvin F., 4,764,826, Cl. 360-93.000.
Estes, Marvin F.; and Smart, Gerald J., 4,764,914, Cl. 369-58.000
Goll, Edward P.; and Carson, John F., 4,764,793, Cl. 355-38.000.
Klein, Gerald W.; and Zander, Dennis R., 4,763,403, Cl. 29-598.000
Lawther, Joel S., 4,763,999, Cl. 350-429.000.
Miskinis, Edward T.; and Saha, Bijay S., 4,764,445, Cl. 430-108.000.
Pace, Laurel J.; and Blood, Jeffrey C., 4,764,670, Cl. 250-226.000.
Rabbani, Mojgan; and Porcellio, Rocco J., 4,764,805, Cl. 358-13.000
Simons, Michael J.; Willis, Roland G.; and Harvey, Donald M., 4,764,444, Cl. 430-47.000
Sullivan, James R., 4,764,971, Cl. 382-9.000.
Ebihara, Yoshiyuki. Stapler cassette. 4,763,824, Cl. 227-120.000.
Ebneth, Harold: *See—*
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,764,401, Cl. 427-304.000
Ecolab Inc.: *See—*
Mizuno, William G., 4,763,676, Cl. 134-100.000
Ecole Centrale Des Arts Et Manufactures: *See—*
Bouami, Driss; and De Vadder, Daniel, 4,763,528, Cl. 73-799.000
ED. Scharwachter GmbH & Co. KG.: *See—*
Brockhaus, Ernst, 4,763,454, Cl. 52-202.000
Edelmann, Ludwig: *See—*
Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,764,157, Cl. 474-135.000
Eder, Alfred: *See—*
Albarda, Scato; and Eder, Alfred, 4,763,509, Cl. 73-27.00A.
Eder, Erich; and Winter, Horst, to Krones AG Hermann Kronseder Maschinenfabrik. Tape feed apparatus. 4,763,823, Cl. 226-109.000.
Edison Price Incorporated: *See—*
Price, Edison A., 4,764,127, Cl. 439-551.000
Edwards, Arthur J.: *See—*
Petrie, Adelore F.; Karlmann, Thomas F.; Parmelee, Steven G.; and Edwards, Arthur J., 4,764,840, Cl. 361-154.000
Edwards, Grant C.; Gilson, Jean-Pierre; and McDaniel, Carl V., to W. R. Grace & Co. Cracking catalyst. 4,764,269, Cl. 208-120.000
Efamol Limited: *See—*
Corman, Lourdes; and Mayhew, Ian, 4,764,532, Cl. 514-560.000.
Efron, Edward; McPherson, James O.; and Kim, Young B., to Discovision Associates. Method and apparatus for recording a multiplexed signal on a record medium. 4,764,915, Cl. 369-58.000.
Egan, George E. Ski rack. 4,763,797, Cl. 211-70.500.
Egawa, Yoshitaka: *See—*
Endo, Yukio; Egawa, Yoshitaka; and Harada, Nozomu, 4,764,814, Cl. 358-213.180
Ehrlich, William, to Bicycle Corporation of America. Bicycle/scooter combination. 4,763,913, Cl. 280-281.00R
Eichenauer, Herbert; Pischtschan, Alfred; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Moulding compositions of uniform particle size and improved thermal stability. 4,764,557, Cl. 525-72.000.
Eimaeda, Shigeru: *See—*
Shin, Yoichi; Wada, Isao; Kido, Junichiro; and Eimaeda, Shigeru, 4,764,252, Cl. 162-72.000
Einkauf, Mark A.; and West, Lynn P., to International Business Machines Corporation. Method and apparatus for voice detection having adaptive sensitivity. 4,764,966, Cl. 381-46.000.
Eisele, Jean: *See—*
Coppolani, Pierre; Henry, Jean-Marc; Savary, Pierre; and Eisele, Jean, 4,763,754, Cl. 181-237.000
Eisenblatter, Axel; Sonnack, Gerhard; and Horning, Gunter, to VDO Adolf Schindling AG. Support plate for electronic components. 4,764,847, Cl. 361-388.000
Eitel, Jay M. Multicylinder internal combustion engine utilizing split block with unitized cylinder head and liner. 4,763,619, Cl. 123-193.0CH
Ekman, Joseph A.; and Ball, Ronald C. Stereo speaker system for walkman-type radio and/or cassette player. 4,764,962, Cl. 381-24.000
Ekono Oy: *See—*
Ostman, Per Hakan, 4,764,251, Cl. 162-39.000.
Elco Industries, Inc.: *See—*
Reinwall, Ernest W.; and Hagan, Robert A., 4,764,069, Cl. 411-397.000
Elco Oel-und Gasbrennerwerke AG: *See—*
Bombis, Dieter; Becker, Ernst; Wildhaber, Paul; Vogler, Franz; and Muller, Peter, 4,763,843, Cl. 239-571.000
Eldin, Sameer H., to Ciba-Geigy Corporation. Crosslinkable polyether resins having aralkoxy. 4,764,568, Cl. 525-417.000
Electric Power Research Institute, Inc.: *See—*
Way, Peter F., 4,764,256, Cl. 203-46.000.
Electricite de France-Service National: *See—*
Aubert, Francois; and Dussart, Jean, 4,764,336, Cl. 376-272.000
Electron Beam Memories: *See—*
Crew, Albert V., 4,764,818, Cl. 358-347.000
Elfline, Geraldine S., to Iso-Clear Systems Corporation. Method of removing radioactive isotopes of heavy metals. 4,764,281, Cl. 210-668.000
Elger, Walter: *See—*
Beier, Henning M.; and Elger, Walter, 4,764,513, Cl. 514-179.000.
Eli Lilly and Company: *See—*
Clinton, Albert J., deceased; and O'Doherty, George O. P., 4,764,534, Cl. 514-657.000.
Hamill, Robert L.; and Kastner, Ralph E., 4,764,510, Cl. 424-120.000
Herron, David K., 4,764,521, Cl. 514-381.000
Hirsch, Kenneth S.; and Taylor, Harold M., 4,764,376, Cl 514-255.000
Massey, Eddie H.; and Jackson, Richard L., 4,764,592, Cl. 530-305.000.
Weigel, Leland O.; and Staten, Gilbert S., 4,764,609, Cl 544-250.000
Emco Wheaton, Inc.: *See—*
Podgers, Alexander R.; and Butterfield, Eric J., 4,763,806, Cl. 220-86.00R
Emhart Industries, Inc.: *See—*
Foster, Thomas V., 4,764,197, Cl. 65-260.000
Germain, Robert A., 4,763,819, Cl. 222-623.000
Emmerich, Kenneth C., to Fansteel Inc. Mining tool retainer. 4,763,956, Cl. 299-86.000
Enard, Alain: *See—*
Papuchon, Michel; Enard, Alain; Vatoux, Sylvie; and Werner, Michel, 4,763,972, Cl. 350-96.110.
Endo, Hirohisa: *See—*
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, 4,764,788, Cl. 355-3.00R
Endo, Yukio; Egawa, Yoshitaka; and Harada, Nozomu, to Kabushiki Kaisha Toshiba. Solid-state imaging device with reset pulse selector 4,764,814, Cl. 358-213.180
Endoh, Hiroyuki: *See—*
Noguchi, Yoshifumi; Ono, Kouichi; and Endoh, Hiroyuki, 4,764,979, Cl. 455-22.000.

Engleman, Edgar G.: *See—*
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., 4,764,465, Cl 435-172.200.
Engler, Edgar D.; Weber, Gus J.; Stapel, Melvin G.; Mlaker, John J.; and Hanson, Leonard, to Engler, Edgar D. Mobile lifting apparatus 4,763,800, Cl. 212-195.000.
Enscore, David J.: *See—*
Sanders, Harold F.; Cheng, Yu-Ling; Enscore, David J.; and Libicki, Shari B., 4,764,379, Cl. 424-449.000.
Environment/One Corporation: *See—*
Skala, George F., 4,764,758, Cl. 340-627.000.
Environmental Elements Corp.: *See—*
Walker, Kenneth A.; Adie, Richard A.; and Shapiro, Arthur J., 4,764,288, Cl. 210-793.000.
Enz, Ulrich E.; Sillen, Cornelis W. M. P.; and Ruigrok, Jacobus J. M., to U.S. Philips Corporation. Magnetic transducing head having clad core faces. 4,764,832, Cl. 360-120.000.
EOS Corporation: *See—*
Inoue, Hiroki, 4,764,018, Cl. 356-418.000.
EOTec Corporation: *See—*
Maklad, Mokhtar S., 4,764,194, Cl. 65-3.110.
Eppes, William R., to Corning Glass Works. Apparatus for ultrasonic agitation of liquids. 4,764,021, Cl. 366-127.000.
Equipment Identification Systems, Inc.: *See—*
Krietemeier, Rickie F.; Strom, Jeffrey A.; and Stonich, Richard A., 4,763,928, Cl. 283-70.000.
Ericsson, Ronald J., to Gametrics Limited. Method of increasing the economic value of breeding stock semen. 4,764,373, Cl. 424-105.000
Erikson, Ted A. Framework of rods configurable into a variety of shapes. 4,763,902, Cl. 273-155.000.
Ermacora, Rino; and Neuerburg, Horst, to Kuhn, S.A. Rotary mower in which the rotary cutting elements are driven by transmission means located under the rotary cutting elements. 4,763,463, Cl. 56-13.600.
Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Multi-coordinate probe. 4,763,417, Cl. 33-169.00R.
Ernst, Michael D.: *See—*
Awai, George K.; and Ernst, Michael D., 4,763,984, Cl. 350-96.240
ESAB - HANCOCK GmbH: *See—*
Decker, Klaus; and Polacek, Ivan, 4,764,669, Cl. 250-202.000.
Estes, Marvin F., to Eastman Kodak Company. Tape cassette and cooperating apparatus. 4,764,826, Cl. 360-93.000.
Estes, Marvin F.; and Smart, Gerald J., to Eastman Kodak Company. Least squares method and apparatus for determining track eccentricity of a disk. 4,764,914, Cl. 369-58.000.
Estkowski, Christopher G.: *See—*
Estkowski, Michael H.; Estkowski, Christopher G.; and Shane, Robert M., 4,763,383, Cl. 16-18.00R.
Estkowski, Michael H.; Estkowski, Christopher G.; and Shane, Robert M., to Shepherd Products U.S., Inc. Electrically conductive caster having loop depending rings. 4,763,383, Cl. 16-18.00R.
Ethyl Corporation: *See—*
Davidson, James H., deceased; and Pollock, John F., 4,764,161, Cl. 493-248.000.
Ramachandran, Venkataraman; and Mohr, David M., 4,764,635, Cl. 558-423.000.
Eto, Kunihiko; Mori, Yutaka; Oono, Akihiro; and Kodama, Kazumasa, to Toyoda Koki Kabushiki Kaisha. Motor vehicle with driving status detection device. 4,763,745, Cl. 180-143.000.
ETS, Inc.: *See—*
Furlong, Dale A., 4,764,348, Cl. 422-178.000.
Etsuo Ito: *See—*
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000.
Etymotic Research, Inc.: *See—*
Killion, Mead C., 4,763,753, Cl. 181-130.000.
Eure, Lee B. Velcro latching device for a toilet seat. 4,763,362, Cl. 4-234.000
Evans, Robert J.: *See—*
Diebold, James P.; and Evans, Robert J., 4,764,627, Cl. 549-505.000.
Evans, Walter R.; and Lainhart, Gregory C., to Sargent & Greenleaf, Inc. High security changeable key cylinder type shackle padlock. 4,763,496, Cl. 70-38.00A.
Eveready Battery Company: *See—*
Jones, Steven D.; and Blomgren, George E., 4,764,440, Cl. 429-198.000
Ewald, Henry T.: *See—*
Bergling, Craig L.; Ewald, Henry T.; Horton, Douglas J.; Hoverman, James L.; and Weller, Berthold L., 4,763,571, Cl. 99-349.000
Excel Dental Studios, Inc.: *See—*
Halverson, George E.; and Nelson, Gerald A., 4,763,791, Cl. 206-570.000
Exergen Corporation: *See—*
Pompei, Francesco, 4,763,522, Cl. 73-338.000.
Eximport Industria E Comercio Ltda.: *See—*
Federico, Ennio, 4,763,759, Cl. 184-3.200.
Exxon Research & Engineering Co.: *See—*
Bortinger, Arie; Maggio, Robert A.; and Pieters, Wim J. M., 4,764,356, Cl. 423-329.000.
Habeeb, Jacob J.; and Stover, William H., 4,764,294, Cl. 252-32.70E
Ramanarayanan, Trikur A., 4,763,729, Cl. 166-244.100.
Robbins, Max L.; Canevari, Gerard P.; and Bock, Jan, 4,764,285, Cl. 210-749.000
Vanderspurt, Thomas H.; Richard, Michael A.; and Che, Tessie M., 4,764,499, Cl. 502-258.000
Eye Research Institute of Retina Foundation: *See—*
Webb, Robert H.; and Hughes, George W., 4,764,005, Cl 351-205.000
Fael S.A.: *See—*
Schreiber, Peter; and Padovan, Gianni, 4,763,807, Cl. 220-274.000
Failing, Robert P., to Sunstrand Heat Transfer, Inc. Heat exchanger core and heat exchanger employing the same. 4,763,726, Cl 165-146.000
Faini, Giuseppe: *See—*
Bellinvia, Gianpietro; and Faini, Giuseppe, 4,764,692, Cl. 307-451.000
Fairchild Camera & Instrument: *See—*
Grimes, Scott D.; Beaulieu, Lary J.; and Reed, Douglas A., 4,764,925, Cl. 371-20.000
Faith, Richard W.; and Curtin, Len, to Harris Corp. Subscriber/craftsperson ringback apparatus. 4,764,949, Cl. 379-9.000
Falk, John C.; and Kliever, Leland B., to Borg-Warner Chemicals, Inc. Grafted nitrile rubber—plasticized PVC blends as thermoplastic elastomers. 4,764,552, Cl. 524-504.000
Fana, Inc.: *See—*
Talbot, James E., 4,763,783, Cl. 206-335.000
Fansteel Inc.: *See—*
Emmerich, Kenneth C., 4,763,956, Cl. 299-86.000
Fantasy Toys, Inc.: *See—*
Lyman, Ronald L., 4,764,144, Cl. 446-128.000
Fanuc Ltd.: *See—*
Tanaka, Kunio; and Onishi, Yasushi, 4,764,877, Cl. 364-474.000.
Fanuc Ltd: *See—*
Tanaka, Kunio; and Onishi, Yasushi, 4,764,878, Cl. 364-474.000
Farber, Gerald A.: *See—*
Stefano, Alfonso D.; and Farber, Gerald A., 4,763,818, Cl. 222-209.000
Farley Metals, Inc.: *See—*
Terrell, Ollney B.; and Arnold, Larry J., 4,764,066, Cl. 411-187.000
Farr, James P.: *See—*
Baker, Gregory M.; Farr, James P.; and Carty, Daniel T., 4,764,302, Cl. 252-301.230.
Featherstone, John L.: *See—*
Hoyer, Daniel P.; Featherstone, John L.; and Wong, Morton M., 4,763,479, Cl. 60-641.500
Fedders Machine and Tool Co., Inc.: *See—*
Feddersen, Frederick J.; and Snyder, Earl, Jr., 4,763,778, Cl 198-803.010.
Feddersen, Frederick J.; and Snyder, Earl, Jr., to Fedders Machine and Tool Co., Inc. Easily changeable gripping head for blow-molding pallet assembly. 4,763,778, Cl. 198-803.010.
Federico, Ennio, to Eximport Industria E Comercio Ltda. Apparatus for lubricating wheel flanges of a railroad vehicle. 4,763,759, Cl 184-3.200
Feedmobile, Inc.: *See—*
High, Samuel E., Jr.; and Mast, Aquila D., 4,763,702, Cl. 141-114.000
Fehlmann, Wolfgang; Hofer, Gerald; Junger, Dieter; and Stumpp, Gerhard, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,763,631, Cl. 123-503.000
Fehrenbach, Siegfried: *See—*
Ballhause, Lutz; Fehrenbach, Siegfried; Herbst, Kurt; Krimmer, Erwin; and Schulz, Wolfgang, 4,763,635, Cl. 123-520.000.
Feichtinger, Kurt, to Dr. Johannes Heidenhain GmbH. Multi-coordinate probe. 4,763,421, Cl. 33-561.000.
Feinberg, Andrew S. Valve cap pressure indicator. 4,763,517, Cl. 73-146.800
Felch, Susan B.: *See—*
Powell, Ronald A.; and Felch, Susan B., 4,764,026, Cl. 374-178.000
Feld, Marcel, to Dynamit Nobel AG. Method for the preparation of 2,6-naphthalene dicarboxylic acid. 4,764,638, Cl. 562-416.000
Felder, Bruno; and Feron, Jean-Pierre, to Ciba-Geigy Corporation Process for finishing a textile fabric with a radiation crosslinkable compound. 4,764,395, Cl. 427-54.100
Felder, Willy J. B.: *See—*
Huizing, Albert; Felder, Willy J. B.; and Tijssen, Antonius W., 4,763,398, Cl. 29-527.100.
Feldmann, Hansueli: *See—*
Brandli, Max; and Feldmann, Hansueli, 4,763,910, Cl. 280-29.000
Feliu, Horace G. Telecommunications device for reading power meters. 4,764,952, Cl. 379-107.000
Ferguson, Lewis E.: *See—*
Meredith, Frank L.; and Ferguson, Lewis E., 4,764,563, Cl. 525-316.000
Feron, Jean-Pierre: *See—*
Felder, Bruno; and Feron, Jean-Pierre, 4,764,395, Cl. 427-54.100.
Ferranti, plc: *See—*
Wilson, Andrew L., 4,764,002, Cl. 350-486.000
Ferretti, Joseph J.; and Malke, Horst, to University of Oklahoma, Board of Regents for the. Streptokinase-coding recombinant vectors. 4,764,469, Cl. 435-216.000
Fetsko, Daniel G.: *See—*
Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas, Crnkovic, Mark A.; James, William D.; and Merz, Walter E., 4,763,716, Cl. 164-122.100
Feucht, Fritz: *See—*
Furch, Gerhard; Scheck, Georg; Feucht, Fritz; and Storandt, Ralf, 4,763,385, Cl. 16-58.000.

VOL 1093 ISS 3 AG 16 1988 UMI

Fey, Rainer, to Fichtel & Sachs AG. Operating device for a central locking installation. 4,763,498, Cl. 70-264.000.
Fiat Auto S.p.A.: *See*—
Burgio di Aragona, Antonio, 4,763,614, Cl. 123-90.600
Fibron Machine Corporation: *See*—
Mohrsen, Leif, 4,763,822, Cl. 226-91.000.
Fichtel & Sachs AG: *See*—
Fey, Rainer, 4,763,498, Cl. 70-264.000.
Fickelscher, Kurt G. Rotary slide compressor with thin-walled, deformable sleeve. 4,764,095, Cl. 418-31.000.
Fields, Patricia I.; Haidaris, Constantine G.; and Heffron, Frederick L., to Scripps Clinic and Research Foundation. Vaccine utilizing an avirulent strain of *Salmonella typhimurium*. 4,764,370, Cl. 424-93.000.
Fife, Merrill E.: *See*—
Dahlstrom, David K.; Fife, Merrill E.; and Judy, Charles R., 4,764,907, Cl. 367-163.000.
Fillmore, Gary N.: *See*—
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000.
Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A.: *See*—
Serturini, Giuseppe, 4,763,697, Cl. 139-76.000.
Finlayson, Birdwell, to University of Florida. Methods for positioning an internal portion of a body relative to an extracorporeal referent. 4,764,944, Cl. 378-20.000.
Finommechanikai es Elektronikus Muszergyarto Szovetkezet: *See*—
Jaki, Laszlo ; Jodal, Sandor; Jagicza, Laszlo ; Mandzsu, Jozsef; Pap, Endre; and Szebeni, Janos, 4,764,768, Cl. 340-815.050.
Fiorina, Jean-Noel; and Denis, Herve , to Merlin Gerin. Static converter comprising a protective filter against high-frequency disturbances. 4,764,684, Cl. 307-66.000.
Fischer, Artur. Method and device for preventing corrosion of an expandable mounting element anchored in a mounting hole. 4,763,396, Cl. 29-458.000.
Fischer, Joey G. Lockable security picture frame. 4,763,428, Cl. 40-152.000
Fischer, Juergen; Zeiner, Hartmut; Nissen, Dietmar; and Heinz, Gerhard, to BASF Aktiengesellschaft. Fiber-reinforced materials 4,764,397, Cl. 428-269.000.
Fischer, Udo K.; Hartzell, Erik T.; and Waldenstrom, Mats G., to Sandvik AB. Cemented carbide tool. 4,764,255, Cl. 175-329.000
Fischler, Michael: *See*—
Kuhle, Engelbert; Paulus, Wilfried; Fischler, Michael; and Schmitt, Hans-Georg, 4,764,433, Cl. 428-541.000.
Fisher Scientific Company: *See*—
Kelln, Norman G.; and Tiffany, Thomas O., 4,764,342, Cl. 422-72.000
Spani, Wayne, 4,764,166, Cl. 604-65.000.
Flaig, Heinz; and Hasselmann, Heinz, to Mannesmann Aktiengesellschaft. Overload protection. 4,763,768, Cl. 192-150.000.
Flaitz, Philip L.; Master, Raj N.; Palmateer, Paul H.; and Reddy, Srinivasa S. N., to International Business Machines Corporation. Bonding of pure metal films to ceramics. 4,764,341, Cl. 419-9.000
Flakt AB: *See*—
Porle, Erik; and Persson, Anders, 4,764,188, Cl. 55-130.000.
Flament, Daniel, to Materiels Equipements Graphiques. Reel unwinder. 4,763,851, Cl. 242-58.300.
Flanigan, Everett: *See*—
Orlowski, Ronald C.; Seyler, Jay K.; and Flanigan, Everett, 4,764,591, Cl. 530-307.000.
Fleming, Robert F., III: *See*—
Hayworth, Robert G.; Russell, Ray E., Jr.; Fleming, Robert F., III; and Hwang, James G., 4,764,769, Cl. 342-50.000.
Fletcher, Gerald M.: *See*—
Levy, Gail J.; and Fletcher, Gerald M., 4,764,675, Cl. 250-324.000
Fleximark AB: *See*—
Jaffe, Walter, 4,764,043, Cl. 400-629.000.
Flight Dynamics, Inc.: *See*—
Wood, Robert B., 4,763,990, Cl. 350-320.000.
Flo-Pac Corporation: *See*—
Madsen, Everett, 4,763,377, Cl. 15-144.00A.
Flora, Jay L.: *See*—
Haycock, David A.; and Flora, Jay L., 4,764,809, Cl. 358-183.000.
Flum, Paul L., to Paul Flum Ideas, Inc. Gravity feed display systems and conversion means for obtaining same. 4,763,796, Cl. 211-59.200
FMC Corporation: *See*—
Lagain, Georges, 4,764,160, Cl. 493-194.000.
Foamade Industries, Inc.: *See*—
Stedman, Donald R.; and Frankowiak, Robert M., 4,764,408, Cl. 428-71.000.
Focke & Co.: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,763,779, Cl. 206-268.000
Focke, Heinz; and Liedtke, Kurt, to Focke & Co. Shoulder box for cigarettes or the like. 4,763,779, Cl. 206-268.000.
Focqueur, Herve ; and Jumel, Bernard, to Valeo. Control linkage for coupling device. 4,763,766, Cl. 192-99.00S.
Fogal, Robert D.; and Taber, Albert A., to International Marketing Inc Method of manufacturing a totally coated tire rim. 4,763,392, Cl. 29-159.100.
Fontame, Jose. Lock cylinder loading tool and method of use 4,763,395, Cl. 29-436.000.
Forbes, Hampton E., Jr., to Westvaco Corporation. Carton with bottom lock. 4,763,832, Cl. 229-114.000.
Force Northwest Distributors, Inc.: *See*—
Wyss, Frederick R., 4,764,080, Cl. 414-499.000
Ford Motor Company: *See*—
Czarnecki, John A.; and Youngquest, Darrell D., 4,763,564, Cl. 98-2.110.
Frost, Derek, 4,763,615, Cl. 123-90.250.
Kruger, Ersin, 4,764,050, Cl. 403-322.000.
Matz, Bruno; and Kearney, Dolores C., 4,764,328, Cl. 264-248.000.
Forrest, Scott M.; and St. Pierre, Michael R., to Marin Tek, Inc. Condensate diversion in a refrigeration system. 4,763,486, Cl. 62-175.000
Forsyth Dental Infirmary for Children, The: *See*—
Goodson, J. Max, 4,764,377, Cl. 424-435.000.
Forth, Leslie; and Duley, Raymond S., to Advance Micro Devices, Inc. Digital receive filter circuit. 4,764,923, Cl. 371-6.000.
Fortran Traffic Systems Limited: *See*—
Wodlinger, Harold M., 4,763,870, Cl. 248-611.000.
Fortuna-Werke Maschinenfabrik GmbH: *See*—
Jesinger, Richard, 4,764,085, Cl. 415-112.000.
Jesinger, Richard, 4,764,086, Cl. 415-112.000.
Foster-Miller, Inc.: *See*—
Jeffcoat, Robert L.; Captain, Khushroo M.; and Doherty, Brian J., 4,764,114, Cl. 433-72.000.
Foster, Thomas V., to Emhart Industries, Inc. Support for an operative member of a glassware forming machine. 4,764,197, Cl. 65-260.000.
Foti, Marc S.: *See*—
Angelini, Theophile M.; Canevet, Georges; Foti, Marc S.; and Santon, Francois C., 4,764,957, Cl. 379-433.000
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., to Cetus Corporation; and Leland Stanford Junior University, The Board of Trustees of the. Human monoclonal antibody against group A red blood cells. 4,764,465, Cl. 435-172.200.
Fox, James R., Sr. Apparatus for recovery of hydrocarbons from hydrocarbon/water mixtures. 4,764,272, Cl. 210-104.000.
Foxboro Company, The: *See*—
Chitty, Gordon W.; Morrison, Richard H., Jr.; Olsen, Everett O.; Panagou, John G.; and Zavracky, Paul M., 4,764,244, Cl. 156-630.000
Framatome: *See*—
Coppolani, Pierre; Henry, Jean-Marc; Savary, Pierre; and Eisele, Jean, 4,763,754, Cl. 181-237.000.
Franchi, Renzo: *See*—
Lanzarini, Ernesto; and Franchi, Renzo, 4,763,767, Cl. 192-106.200.
Franckowiak, Gerhard; Grosser, Rolf; Thomas, Gunter; Schramm, Matthias; and Gross, Rainer, to Bayer Aktiengesellschaft. Mixtures of optically active nitrodihydropyridines active on the circulatory system. 4,764,516, Cl. 514-256.000.
Francsics, Erzsebet: *See*—
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000
Frank, Paul D.: *See*—
Roscamp, Thomas A.; Frank, Paul D.; Roberts, Gary E.; and Rice, Allan F., 4,764,834, Cl. 365-126.000.
Franke, Gerhard: *See*—
Garlichs, Siemen; Kolkhorst, Helmut; and Franke, Gerhard, 4,764,073, Cl. 412-9.000.
Franke, Hilmar; and Gfeller, Fritz R., to International Business Machines Corporation. Fluorescent sensors for infrared free-space links in data communication systems. 4,764,984, Cl. 455-619.000.
Frankland, John D.: *See*—
Highgate, Donald J.; and Frankland, John D., 4,764,575, Cl. 526-264.000
Franklin, Philip C., to Holset Engineering Company Limited. Control system for a variable inlet area turbocharger turbine. 4,763,474, Cl. 60-602.000
Frankowiak, Robert M.: *See*—
Stedman, Donald R.; and Frankowiak, Robert M., 4,764,408, Cl. 428-71.000.
Frantz, William L.: *See*—
Slawinski, Frank E.; and Frantz, William L., 4,764,231, Cl. 149-104.000
Frederick, Robert J.: *See*—
Kass, Robert E.; Frederick, Robert J.; and Hallock, Louis L., 4,763,576, Cl. 102-321.000
Fredmobile, Inc.: *See*—
High, Samuel E., Jr.; and Mast, Aquila D., 4,763,846, Cl. 241-81.000.
Freeman, Richard B., to Budd Company, The. Metallic reinforcements for use in fiber structures. 4,764,409, Cl. 428-98.000.
Freimark, Ronald J.; and Rose, Steven A., to Honeywell Inc. Microprocessor assisted memory to memory move apparatus. 4,764,896, Cl. 364-900.000.
Fretz, John A., III; and Gallagher, Robert T., to Kidde Consumer Durables Corp. Globe securement means. 4,764,855, Cl. 362-433.000.
Fried, David L., to D. L. Fried Associates, Inc. Agile beam control of optical phased array. 4,764,738, Cl. 332-7.510.
Fried. Krupp GmbH: *See*—
Klute, Friedrich; Schydlo, Franz; and Weitermann, Hans D., 4,763,505, Cl. 72-238.000
Friedlander, Fred I., to Varian Associates, Inc. High-efficiency broadband klystron. 4,764,710, Cl. 315-5.430.
Friedrich, Wolfgang: *See*—
Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,764,157, Cl. 474-135.000

Frigo France: *See*—
Davisud, Jean-Michel; Herbert, Pascal; and Loison, Patrick, 4,763,518, Cl. 73-149.000.
Fromm, Ferdinand. Apparatus for cutting miters on trim members. 4,763,703, Cl. 144-216.000.
Frost, Derek, to Ford Motor Company. Desmodromic valve system. 4,763,615, Cl. 123-90.250.
Fry, Steven A.; and Stafford, Rodney L. Tailgate barriers. 4,763,944, Cl. 296-50.000.
Frye, Ricky J. Work holder for sewing machines. 4,763,587, Cl. 112-121.120.
Fuchs, Dieter: *See*—
Stehle, Wolfgang; and Fuchs, Dieter, 4,763,793, Cl. 209-616.000
Fuji Jukogyo Kabushiki Kaisha: *See*—
Morozumi, Takuro, 4,763,634, Cl. 123-520.000.
Ohkumo, Hiroya, 4,764,156, Cl. 474-28.000.
Fuji Photo Film Co., Ltd.: *See*—
Arakawa, Jun; Okada, Masahiro; and Ishikawa, Takatoshi, 4,764,455, Cl. 430-393.000.
Hirai, Hiroyuki; Hara, Hiroshi; and Kawata, Ken, 4,764,458, Cl 430-620.000.
Ichijima, Seiji; and Sakanoue, Kei, 4,764,454, Cl. 430-361.000
Ishikawa, Shunichi, 4,764,451, Cl. 430-138.000.
Kimura, Hideaki, 4,764,751, Cl. 340-347.0AD.
Kimura, Tsutomu; Oshikoshi, Yuji; and Sakamoto, Kiichiro, 4,764,807, Cl. 358-75.000.
Mitake, Hiroshi, 4,764,103, Cl. 425-577.000.
Murayama, Jin; Kondo, Ryuji; and Kudoh, Yoshimitsu, 4,764,813, Cl. 358-213.110.
Suzuki, Yoshiaki; and Hayashi, Gouichi, 4,763,966, Cl. 350-1.100.
Watanabe, Toshiyuki; and Deguchi, Naoyasu, 4,764,456, Cl. 430-550.000.
Yamaguchi, Nobutaka; and Tadokoro, Eiichi, 4,764,423, Cl. 428-323.000.
Fuji Xerox Co., Ltd.: *See*—
Saito, Koichi; Fujimura, Yoshihiko; and Inoue, Nanao, 4,764,777, Cl. 346-140.00R
Fujii, Koichi, to Dainippon Screen Mfg. Co., Ltd. Original film discharge mechanism in an inclined-type exposing apparatus. 4,764,794, Cl. 355-87.000
Fujii, Ryoichi: *See*—
Wada, Yoshihiro; Fujii, Ryoichi; and Suzuki, Takashi, 4,764,027, Cl. 374-208.000
Fujikin International, Inc.: *See*—
Ogawa, Hiroshi, 4,763,874, Cl. 251-122.000.
Fujimori, Shizuyoshi: *See*—
Masuzawa, Kuniyoshi; Okamura, Kyuya; Kasuga, Kazunori; Fujimori, Shizuyoshi; Kinoshita, Susumu; and Matsukubo, Hiroshi, 4,764,608, Cl. 544-6.000.
Fujimura, Yoshihiko: *See*—
Saito, Koichi; Fujimura, Yoshihiko; and Inoue, Nanao, 4,764,777, Cl. 346-140.00R.
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, to Shiseido Company Ltd. Skin treatment composition. 4,764,505, Cl. 514-35.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Ueda, Ikuo; and Katsura, Yousuke, 4,764,514, Cl. 514-252.000.
Fujita, Haruyasu; Hirosawa, Yoshiaki; and Ito, Toshifumi, to Honda Giken Kogyo Kabushiki Kaisha. Reverse drive for small vehicles. 4,763,538, Cl. 74-6.000.
Fujita, Masaki: *See*—
Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, 4,764,004, Cl. 350-632.000.
Fujitsu Limited: *See*—
Miyo, Tokihiro; and Kawasaki, Toshio, 4,764,730, Cl. 329-50.000.
Noguchi, Yoshifumi; Ono, Kouichi; and Endoh, Hiroyuki, 4,764,979, Cl. 455-22.000
Fujiwara, Hiroshi: *See*—
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, 4,763,968, Cl. 350-516.000
Fujiwara, Koji: *See*—
Mae, Takaharu; Kinoshita, Hiromi; Maeda, Yoshinobu; Fujiwara, Koji; and Nakagawa, Hiroshi, 4,763,811, Cl. 221-11.000.
Fujiwara, Muneyoshi: *See*—
Morita, Koichi; Takaichi, Susumu; Fujiwara, Muneyoshi; Seno, Makito; and Misawa, Yoshihiko, 4,763,405, Cl. 29-740.000.
Fukasawa, Masatomo: *See*—
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100.
Fukaya, Katsuyoshi; and Mineyama, Katsumi, to Aisan Kogyo Kabushiki Kaisha. Step motor. 4,764,696, Cl. 310-49.00R.
Fukaya, Takashi: *See*—
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, 4,763,968, Cl. 350-516.000.
Fukaya, Yasuhiro; and Hirai, Shozo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for bonding ceramics and metals. 4,763,828, Cl. 228-124.000.
Fukui, Akio: *See*—
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100.
Fukui, Kunisuke; and Motooka, Masanori, to Mitsui Petrochemical Industries, Ltd. Melt-moldable wholly aromatic polyester. 4,764,583, Cl. 528-193.000
Fukukawa, Yoshitsugu; Nishida, Atsushi; Nishioka, Katsuhiko; and Tsunori, Hiroaki, to Sumitomo Metal Industries, Ltd.; and Osaka Fujikogyo Co., Ltd. Automatic tab plate welding apparatus. 4,764,657, Cl. 219-125.100.
Fukumoto, Hiroshi: *See*—
Honda, Shoichi; Nagae, Masahiro; and Fukumoto, Hiroshi, 4,764,158, Cl. 474-212.000
Fulks, Robert G.: *See*—
Hager, Robert J., 4,763,534, Cl. 73-862.680
Fuller, John R. C.: *See*—
Croucher, Melvin D.; Pravato, George R.; Fuller, John R. C.; and Duff, James M., 4,764,446, Cl. 430-115.000
Funabashi, Shinichiro: *See*—
Hisazumi, Nobuyuki; Funabashi, Shinichiro; and Tomioka, Yoshihiko, 4,764,406, Cl. 428-35.000.
Funatsu, Yoko: *See*—
Aoki, Reiko; Nobormoto, Yoshie; Funatsu, Yoko; and Konno, Shinichi, 4,764,821, Cl. 360-33.100
Funazo, Yasuo: *See*—
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, 4,764,706, Cl 313-422.000
Furch, Gerhard; Scheck, Georg; Feucht, Fritz; and Storandt, Ralf, to GEZE GmbH. Door closure transmission utilizing an eccentric pinion. 4,763,385, Cl. 16-58.000.
Furlong, Dale A., to ETS, Inc. Emission control apparatus. 4,764,348, Cl. 422-178.000
Furuichi, Yasuhiro; and Richardson, Michael A., to Hoffmann-La Roche Inc. Recombinant sigma NS protein. 4,764,460, Cl. 435-6.000
Furumoto, Mitsunobu: *See*—
Taniguchi, Hiroshi; Furumoto, Mitsunobu; and Kubo, Kanji, 4,764,822, Cl. 360-48.000
Furuya, Yukitsuna, to NEC Corporation. Packet transmission system 4,764,920, Cl. 370-94.000
Fuse, Genshu; Tateiwa, Kenji; Nakao, Ichiro; and Shimoda, Hideaki, to Matsushita Electric Industrial Co., Ltd. Method for burying a step in a semiconductor substrate. 4,764,483, Cl. 437-67.000
Fust, Armin; and Starcevic, Mihailo, to BBC Brown Boveri AG. Self-pumping hydrodynamic radial sliding bearing. 4,764,034, Cl. 384-100.000
G. D. Societa' per Azioni: *See*—
Neri, Armando, 4,764,078, Cl. 414-273.000.
Gabetta, Bruno; Bombardelli, Ezio; and Pifferi, Giorgio, to Inverni Della Beffa S.p.A. Complexes of flavanolignans with phospholipids, preparation thereof and associated pharmaceutical compositions. 4,764,508, Cl. 514-78.000.
GAF Corporation: *See*—
Smith, Terry E.; Cottrell, Ian W.; and Pelesko, John D., 4,764,588, Cl. 528-481.000
Gagnon, Gilbert H., to Cook, James R., a part interest. Computer controlled altazimuth telescope mount. 4,764,881, Cl. 364-559.000
Galand, Claude; and Platel, Guy, to International Business Machines Corp. Process for determining an echo path flat delay and echo canceler using said process. 4,764,955, Cl. 379-411.000
Galfe, Gunther: *See*—
Strian, Friedrich; Hoelzl, Rupert; Galfe, Gunther; Lauterbacher, Stefan; and Lehmann, Wilhelm, 4,763,666, Cl. 128-742.000
Gallagher, Robert T.: *See*—
Fretz, John A., III; and Gallagher, Robert T., 4,764,855, Cl 362-433.000.
Gambale, Richard A., to C. R. Bard, Inc. Dual coil steerable guidewire 4,763,647, Cl. 128-657.000
Gametrics Limited: *See*—
Ericsson, Ronald J., 4,764,373, Cl. 424-105.000.
Gamson, Bernard W.: *See*—
Rickman, William S.; Kase, James L.; and Gamson, Bernard W., 4,763,585, Cl. 110-346.000.
Ganga, Roland; Grossoleil, Jacques; and Merval, Jean-Paul, to Atochem. Polyamide-coated particles and process for their preparation. 4,764,424, Cl. 428-327.000
GAO Gesellschaft fur Automation und Organisation mbH.: *See*—
Schneider, Walter, 4,763,927, Cl. 283-70.000.
Garbacz, Michael J.; and Hansen, Kai, to Zenith Electronics Corporation. Multichannel surface acoustic wave encoder/decoder 4,764,701, Cl. 310-313.00R.
Garcia, George L.: *See*—
Johnston, Damon A.; Papenhause, Paul E.; Garcia, George L.; and Drehobl, Thomas L., 4,764,047, Cl. 401-289.000
Gardner, Charles, Jr. Multi-purpose vehicle garment hanger. 4,763,820, Cl. 224-42.46A
Gardner, Elmer W., Jr. Electrohydraulic motor transmission vehicle drive system. 4,763,751, Cl. 180-305.000.
Gardner, James B.; and Dale, Warren A., II, to Drain Brain, Inc Thermally responsive valve activating assembly. 4,763,682, Cl 137-62.000.
Garland, Thomas A. Supporting. 4,763,580, Cl. 108-91.000
Garlichs, Siemen; Kolkhorst, Helmut; and Franke, Gerhard, to Kolbus GmbH & Co. KG. Book case magazine for book casing machines. 4,764,073, Cl. 412-9.000
Garron, Stephen A.: *See*—
Laidig, Manfred R.; and Garron, Stephen A., 4,763,589, Cl 112-278.000
Gat, Asher; and Low, Daniel, to Low, Daniel. Assembly toys for joining cylindrical objects. 4,764,143, Cl. 446-102.000.
Gates Rubber Company, The: *See*—
Crabtree, Michael L., 4,763,883, Cl. 267-64.270.

VOL 1093 ISS 3 AG 16 1988 UMI

Gateway Industries, Inc.: *See—*
Doty, Gerald A., 4,763,926, Cl. 280-808.000

Gattel, Paule A.: *See—*
Tayot, Jean Louis; Gattel, Paule A.; and Tardy, Michel A., 4,764,279, Cl. 210-656.000.

Gaudette, Philip A.: *See—*
Silverthorn, Lee J., III; Gaudette, Philip A.; Holt, Arthur W.; Nacht, George G.; and Warnar, Robert B. J., 4,764,863, Cl. 364-200.000

Gaudreau, Charles H., Jr. Apparatus for wheelchair fittings. 4,763,952, Cl. 297-383.000.

Gautier, Jean-Pierre, to Bendix France. Brake booster. 4,763,561, Cl. 91-369.400.

Gay, Ernest. Mobile machine for making holes in putting greens. 4,763,735, Cl. 175-161.000.

Gay, Ronald N.; and Raymond, Wayne K. Process for electroplating nickel over stainless steel. 4,764,260, Cl. 204-34.000

Gea Aizpurua, Jose A., to D. Joaquin Aperribay Elosua. Cam unit incorporating batten for controlling the reed of weaving looms. 4,763,698, Cl. 139-190.000.

Geary, Joseph M., to United Technologies Corporation. Method of and arrangement for testing cylindrical objects for shape deviations. 4,764,680, Cl. 250-560.000.

Gebhard, Albert W.; Au, William G.; Gregg, James S.; and Parker, Robert M., to Gerico, Inc. Foldable baby carriage. 4,763,911, Cl. 280-37.000.

Gee, Elmer M. Heating duct assembly tool. 4,763,393, Cl. 29-238.000.

Geen, John A.; and Johnson, Brian, to British Aerospace Public Limited Company. Analog-to-digital conversion apparatus with dither signal. 4,764,748, Cl. 340-347.0AD.

Geerts, Johannes G. C. Conveyor installation. 4,763,771, Cl. 198-365.000

Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, to Bayer Aktiengesellschaft. 5-dichloroacetamido-4-nitro-1-arylpyrazoles, composition containing them, and herbicidal and plant growth regulating method of using them. 4,764,202, Cl. 71-92.000.

Gelain, Silvano: *See—*
Dinkel, Bernard; and Gelain, Silvano, 4,764,220, Cl. 134-6.000.

General Electric Company: *See—*
Alley, Robert P.; Kornrumpf, William P.; and Harnden, John D., Jr., 4,764,714, Cl. 318-786.000.
Alley, Robert P.; and Turnbull, Fred G., 4,764,744, Cl. 336-131.000
Bedard, James F.; and Whipple, Walter, III, 4,764,760, Cl. 340-680.000
D'Atre, John D.; and Giewont, William P., 4,764,713, Cl. 318-778.000
Dion, Bruno, 4,764,732, Cl. 330-59.000.
Hsu, Sheng T., 4,764,482, Cl. 437-57.000.
Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., 4,764,226, Cl. 148-429.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,764,321, Cl. 264-65.000.
Jones, Donald W., 4,764,837, Cl. 361-19.000.
Ketelhut, William J.; and Konrad, Charles E., 4,764,868, Cl. 364-200.000
Loughran, James A.; McMullen, James G.; and Yerman, Alexander J., 4,764,485, Cl. 437-225.000.
McDaniel, David L.; Granfors, Paul R.; and Hoffman, David M., 4,764,679, Cl. 250-374.000.
Mitchell, Tyrone D., 4,764,560, Cl. 524-506.000.
Ortiz, Angel L., Jr.; and Chande, Tushar S., 4,764,655, Cl. 219-121.830.
Wehner, Edward J., 4,763,482, Cl. 60-746.000
Whitley, George J., 4,763,701, Cl. 140-105.000.

General Foods Corporation: *See—*
Wasserman, Gerald S.; Kramer, Karl C.; and Yadlowsky, Slawko, 4,764,391, Cl. 426-433.000.

General Motors Corporation: *See—*
Bish, James R.; and McCartney, Charles P., 4,764,182, Cl. 29-623.100.
Heffner, Donald L.; and Parker, Donald L., 4,763,689, Cl. 137-514.000
Indra, Friedrich; and Tholl, Manfred, 4,763,622, Cl. 123-308.000
Nyberg, Glen A., 4,764,343, Cl. 422-83.000.
Quadir, Tariq, 4,764,491, Cl. 501-103.000.
Rogakos, Deno J.; Licata, Joseph P.; and Sloan, John L., 4,763,936, Cl. 292-201.000.
Smith, Richard H., 4,763,764, Cl. 192-41.00S.

General Scanning, Inc.: *See—*
Schermer, Mack J., 4,763,967, Cl. 350-6.300.

Genex Corporation: *See—*
Durham, Donald R.; Stellwag, Edmund J.; and McNamee, Clyde G., 4,764,470, Cl. 435-221.000.

GenRad, Inc.: *See—*
Winroth, Calvin S., 4,764,694, Cl. 307-602.000.

Genske, Roger P.; and Kim, Yong J., to American National Can Company. Films having a polypropylene blend layer. 4,764,404, Cl 428-35.000

Gentempo, Joseph J.: *See—*
Chou, Charles C.; and Gentempo, Joseph J., 4,764,278, Cl 210-634.000.

Geophysical Company of Norway AS: *See—*
Salomonsen, Per; and Sonneland, Lars, 4,764,904, Cl. 367-70.000

George, Thomas: *See—*
Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas; Crnkovic, Mark A.; James, William D.; and Merz, Walter E., 4,763,716, Cl. 164-122.100.

Georgetown University: *See—*
Bredehorst, Reinhard; Talebian, Abdolhossen; Hammer, Charles F.; and Vogel, Carl-Wilhelm, 4,764,462, Cl. 435-18.000.

Gerber Garment Technology, Inc.: *See—*
Pearl, David R., 4,764,880, Cl. 364-519.000.

Gerber, Hans; and Marazzi, Silvio, to Diamond SA. Method and apparatus for centering the core of a light guide fiber in a light guide end portion. 4,763,980, Cl. 350-96.200.

Gerber Products Company: *See—*
Tepper, Sidney, 4,763,895, Cl. 272-52.000.

Gerico, Inc.: *See—*
Gebhard, Albert W.; Au, William G.; Gregg, James S.; and Parker, Robert M., 4,763,911, Cl. 280-37.000.

Germain, Robert A., to Emhart Industries Inc. Spread hopper with moisture guard. 4,763,819, Cl. 222-623.000.

Gerondale, Joe; and Rainwater, Jack, to Tolo, Inc. Spa system having high temperature safety device. 4,763,365, Cl. 4-542.000.

Gesinski, Leonard T.: *See—*
Lui, Chun K.; and Gesinski, Leonard T., 4,764,340, Cl. 376-434.000

Getman, Daniel P., to Monsanto Company. Resin support for solid phase peptide synthesis. 4,764,594, Cl. 530-334.000.

Getman, Daniel P.; and Heintz, Robert M., to Monsanto Company. Resin support for solid phase peptide synthesis. 4,764,595, Cl 530-334.000

GEZE GmbH: *See—*
Furch, Gerhard; Scheck, Georg; Feucht, Fritz; and Storandt, Ralf, 4,763,385, Cl. 16-58.000.

Gfeller, Fritz R.: *See—*
Franke, Hilmar; and Gfeller, Fritz R., 4,764,984, Cl. 455-619.000.

Gherardi, Olivier: *See—*
Ducos, Michel; Gherardi, Olivier; Demers, Jocelyn; and Demers, Gilles, 4,764,792, Cl. 355-27.000.

Giannuzzi, Louis N. Roof anchor and stress plate assembly. 4,763,456, Cl. 52-410.000

Gibbons, James F.; Cogan, George W.; Gronet, Christian M.; and Lewis, Nathan S., to Sera Solar Corporation. Photoelectrochemical cell. 4,764,439, Cl. 429-111.000

Gibipharma S.p.A.: *See—*
Zappia, Vincenzo; and De Rosa, Mario, 4,764,603, Cl. 536-26.000.

Giesecke, Henning: *See—*
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,764,401, Cl. 427-304.000.

Giewont, William P.: *See—*
D'Atre, John D.; and Giewont, William P., 4,764,713, Cl. 318-778.000

Gilbos, George E., to Textielmachinefabriek Gilbos Naamloze Vennootschap. Yarn guide device for winding cross-wound bobbins in textile machines. 4,763,849, Cl. 242-43.200.

Gillard, Jean: *See—*
Hennebert, Pierre; Gillard, Jean; and Roland, Michel, 4,764,351, Cl. 422-292.000

Gillotti, Gary S.: *See—*
Kulicke, Frederick W., Jr.; Leonhardt, David A.; Newsome, Robert B.; Sadler, Richard D.; and Gillotti, Gary S., 4,763,826, Cl. 228-4.500.

Gilson, Jean-Pierre: *See—*
Edwards, Grant C.; Gilson, Jean-Pierre; and McDaniel, Carl V., 4,764,269, Cl. 208-120.000

Giordano, Claudio: *See—*
Castaldi, Graziano; Cavicchioli, Silvia; Giordano, Claudio; and Restelli, Carlo, 4,764,641, Cl. 568-319.000.
Castaldi, Graziano; Cavicchioli, Silvia; and Giordano, Claudio, 4,764,642, Cl. 568-319.000

Gipp, Roland: *See—*
Muller, Hanns P.; Gipp, Roland; and Heine, Heinrich, 4,764,581, Cl. 528-100.000

Glamkowski, Edward J.; and Chiang, Yulin, to Hoechst-Roussel Pharmaceuticals Inc. Benzopyrrolobenzodiazepines and quinobenzodiazepines. 4,764,616, Cl. 546-152.000.

Glaser, David M.: *See—*
Jacobine, Anthony F.; and Glaser, David M., 4,764,239, Cl. 156-307.300

Glass Incorporated International: *See—*
Lewis, Albert, 4,764,487, Cl. 501-70.000.

Glasstech Solar, Inc.: *See—*
Madan, Arun; and Von Roedern, Bolko, 4,763,602, Cl. 118-719.000.

Glaxo Group Limited: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,764,612, Cl. 546-232.000.

Gloyer, Stewart E., to Witco Chemical Corporation; and Witco Chemical Corporation. Free-flowing, non-dusting antistatic agent composition pellets and method of forming same. 4,764,428, Cl. 428-402.000.

Gluck, David G.; and Laughlin, Wayne E., to Celotex Corporation, The. Foam insulation board faced with polymer-fibrous sheet composite. 4,764,420, Cl. 428-317.700.

Gmohling, Werner: *See—*
Meichsner, Walter; Gmohling, Werner; Tutte, Manfred; and Peters, Karl-Heinz, 4,764,211, Cl. 75-58.000.

Go, Tiong C., to Irvine Sensors Corporation. High density electronic package comprising stacked sub-modules. 4,764,846, Cl. 361-388.000.

Gobrecht, Jens; and Voboril, Jan, to BBC Brown, Boveri Ltd. Method for producing a coating layer for semiconductor technology and also use of the coating layer. 4,764,249, Cl. 156-643.000.

Godshall, Fredric A.: *See—*
Scott, Jonathan R.; and Godshall, Fredric A., 4,763,537, Cl. 73-170.00A.

Goertz, Hans-Helmut; Marcinowski, Stefan; and Sanner, Axel, to BASF Aktiengeselschaft,. Preparation of an insoluble biocatalyst. 4,764,467, Cl. 435-182.000.

Goettsche, Reimer: *See—*
Marx, Hans-Norbert; Goettsche, Reimer; and Klein, Werner, 4,764,214, Cl. 106-18.320.

Goffinet, Don R., to Stanford University. Method of treating tumors using selective application of heat and radiation. 4,763,671, Cl. 128-786.000

Gofuku, Yoshihiro: *See—*
Nakamura, Ken; Onoda, Toshiaki; and Gofuku, Yoshihiro, 4,763,869, Cl. 248-562.000.

Gold Star Co., Ltd.: *See—*
Lee, Min K., 4,764,652, Cl. 219-10.770.

Goldstein, Pinchas, to Mepro Kibbutz Hagoshrim. Sighting device for day and night use. 4,764,011, Cl. 356-251.000.

Goldsworthy, Kenneth M., to Rhodes, Alex. Disposable cover for an outdoor barbecue grill. 4,763,639, Cl. 126-25.00R.

Goll, Edward P.; and Carson, John F., to Eastman Kodak Company. Photographic printer. 4,764,793, Cl. 355-38.000.

Gollbach, Lawrence W., to Priam Corporation. Disc and hub centering device for use in magnetic disc drives. 4,764,828, Cl. 360-98.000.

Golley, Frank B.: *See—*
Lauffer, Scott C.; Golley, Frank B.; and Summerville, Don S., 4,763,963, Cl. 312-45.000.

Gomi, Fukuo: *See—*
Ikeda, Hayato; Kurahashi, Masayuki; and Gomi, Fukuo, 4,763,563, Cl. 92-71.000

Goodman, Jerome, to United States of America, Navy. Automatic underwater acoustic apparatus. 4,763,524, Cl. 73-589.000.

Goodman, Mark M.: *See—*
Knapp, Furn F., Jr.; Goodman, Mark M.; and Kirsch, Gilbert, 4,764,358, Cl. 424-1.100.

Goodson, J. Max, to Forsyth Dental Infirmary for Children, The. Intra-pocket drug delivery devices for treatment of periodontal diseases. 4,764,377, Cl. 424-435.000.

Goodwin, Gene M.; and Hudson, Joseph D., to United States of America, Energy. Method and apparatus for determining weldability of thin sheet metal. 4,763,521, Cl. 73-159.000.

Goodwin, Max W.; and Melsheimer, Thomas T., to Goodwin, Max W. Target scoring and display system and method. 4,763,903, Cl. 273-371.000

Goodyear Tire & Rubber Company, The: *See—*
Brown, Donald L.; Weissert, James T.; Bhakuni, Roop S.; and Rogowski, Gregory S., 4,763,468, Cl. 57-310.000.

Gorog, Sandor: *See—*
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000.

Gorsek, Edmund J.: *See—*
Bachman, Wesley J.; and Gorsek, Edmund J., 4,763,692, Cl 137-625.300

Gotoh, Denichiro: *See—*
Narui, Hiroshi; Shinohara, Terumi; Gotoh, Denichiro; and Yamamoto, Shinya, 4,764,496, Cl. 503-227.000.

Gougeon, Robert J. Oscillatable toothbrush. 4,763,372, Cl. 15-22.00R.

Gradoboev, Vladimir T.; Klimenov, Alexandr M.; and Konyshev, Georgy A. Apparatus for extraction and feeding of piece articles from a bulk. 4,763,772, Cl. 198-398.000.

Grafoplast S.p.A.: *See—*
Piana, Ivana; and Piana, Silvano, 4,764,126, Cl. 439-491.000.

Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas; Crnkovic, Mark A.; James, William D.; and Merz, Walter E., to PCC Airfoils, Inc. Apparatus and method for use in casting articles. 4,763,716, Cl. 164-122.100.

Granetzke, Dennis C., to Modine Manufacturing Company. Mounting bracket construction for vehicular radiators. 4,763,723, Cl. 165-67.000

Granfors, Paul R.: *See—*
McDaniel, David L.; Granfors, Paul R.; and Hoffman, David M., 4,764,679, Cl. 250-374.000.

Grant, Alan H. Telephone magnifier attachment. 4,764,958, Cl. 379-450.000

Granz, Bernd; Krammer, Peter; and Sachs, Bertram, to Siemens Aktiengesellschaft. Ultrasonic transducer for the determination of the acoustic power of a focused ultrasonic field. 4,764,905, Cl. 367-140.000

Grassetti, Davide R.: *See—*
Zackheim, Herschel S.; and Grassetti, Davide R., 4,764,520, Cl. 514-350.000.

Graves, Alan F.; Littlewood, Paul A.; and Weiss, Johannes S., to Northern Telecom Limited. Method of multiplexing digital signals. 4,764,921, Cl. 370-100.000.

Greanias, Evon C.; Schroeder, Karl F.; and Ruffino, Louis V., to International Business Machines Corporaton. Minimum parallax stylus detection subsystem for a display device. 4,764,885, Cl. 364-571.000.

Green, Moses, Jr.: *See—*
Burns, Alan W.; Scarth, Robert D.; Mascaro, John V.; Hegenboden, J. W.; and Green, Moses, Jr., 4,764,412, Cl. 428-172.000

Greenberg, Ilan, to Plastro Gvat; and Agroteam Consultants Ltd. Water sprinkler. 4,763,839, Cl. 239-222.170.

Greenburg, Julius: *See—*
Balint, Laszlo J.; and Greenburg, Julius, 4,764,607, Cl. 540-540.000

Greenhalgh, Milton S.; and Vostovich, Joseph E., to Vulkor, Incorporated. Low temperature curing of elastomer. 4,764,549, Cl 427-118.000

Greenspan, Peter D. Automatic tire pressure gauge. 4,763,516, Cl. 73-146.800

Greer, Sedley J., Jr. Magnetohydrodynamic fluid transducer. 4,764,908, Cl. 367-178.000

Gregg, Harold E., to Stone Container Corporation. Sunshield for motor vehicle. 4,763,947, Cl. 296-97.00R.

Gregg, James S.: *See—*
Gebhard, Albert W.; Au, William G.; Gregg, James S.; and Parker, Robert M., 4,763,911, Cl. 280-37.000

Gregory, Joseph L., III, to Philip Morris Incorporated. Apparatus for injecting liquid-type material in the chimney of a cigarette maker 4,763,672, Cl. 131-79.000.

Gregory, Peter; and White, Raymond L., to Imperial Chemical Industries PLC. Thermal transfer printing: hetero-aromatic azo dye. 4,764,178, Cl. 8-471.000

Gregory, Thomas D.; and Stutts, Kenneth J., to Dow Chemical Company, The. Electrochemical synthesis of substituted aromatic amines in basic media. 4,764,263, Cl. 204-74.000

Grendahl, Dennis T. Intraocular lens. 4,764,169, Cl. 623-6.000

Grenich, A. Fredric: *See—*
Adams, Robert E.; Grenich, A. Fredric; and Tolle, Frederick F., 4,763,731, Cl. 169-46.000

Grennan, Richard L., to Speed Queen Company. Automatic clothes dryer. 4,763,425, Cl. 34-48.000.

Gressick, Joseph A.; and Korth, Randall B., to Kendall Company, The. Adhesive applying apparatus. 4,764,242, Cl. 156-494.000.

Greveling, Johannes, to Northern Telecom Limited. Optical cable manufacture. 4,763,982, Cl. 350-96.230.

Grewal, Virinder, to Siemens Aktiengesellschaft. Method for generating contact holes with beveled sidewalls in intermediate oxide layers 4,764,245, Cl. 156-643.000.

Grienke, Lyle C., to Komo Machine Incorporated. Tool changer 4,764,064, Cl. 409-233.000.

Griffin, Bruce J.; and Kopanski, Roger, to McDonald'S Corporation Student response system. 4,764,120, Cl. 434-336.000.

Griffith Laboratories U.S.A., Inc.: *See—*
Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., 4,764,386, Cl. 426-293.000.

Griffith, Marlene J.; and Heinlein, Mary E. Portable stage structure and kit. 4,764,142, Cl. 446-82.000.

Grimberg, Georges S. Pharmaceutical composition based on guar gum and other antacids for protection of the oesogastroduodenal mucous membrane. 4,764,374, Cl. 424-128.000

Grimes, Scott D.; Beaulieu, Lary J.; and Reed, Douglas A., to Fairchild Camera & Instrument. Method and apparatus for testing integrated circuits. 4,764,925, Cl. 371-20.000

Grinberg, Jan; Nudd, Graham R.; and Soffer, Bernard H., to Hughes Aircraft Company. Programmable methods of performing complex optical computations using data processing system. 4,764,891, Cl 364-807.000

Grinsteiner, James J., to Navistar International Transportation Corp Valve lever with ball bearing pivot. 4,763,616, Cl. 123-90.420

Grist, W. Samuel: *See—*
Scharres, Harry J.; Grist, W. Samuel; and Yarish, John A., 4,764,312, Cl. 261-30.000

Groenendaal, John C., Jr.: *See—*
Parker, David M.; and Groenendaal, John C., Jr., 4,764,084, Cl 415-101.000

Gronet, Christian M.: *See—*
Gibbons, James F.; Cogan, George W.; Gronet, Christian M.; and Lewis, Nathan S., 4,764,439, Cl. 429-111.000.

Gross, Kenny C.; Lambert, John D. B.; and Nomura, Shigeo, to United States of America, Energy. Method and apparatus for diagnosing breached fuel elements. 4,764,335, Cl. 376-253.000

Gross, Rainer: *See—*
Franckowiak, Gerhard; Grosser, Rolf; Thomas, Gunter; Schramm, Matthias; and Gross, Rainer, 4,764,516, Cl. 514-256.000

Grosser, Rolf: *See—*
Franckowiak, Gerhard; Grosser, Rolf; Thomas, Gunter; Schramm, Matthias; and Gross, Rainer, 4,764,516, Cl. 514-256.000.

Grossoleil, Jacques: *See—*
Ganga, Roland; Grossoleil, Jacques; and Merval, Jean-Paul, 4,764,424, Cl. 428-327.000

Gruenbaum, Enrique: *See—*
Croitoru, Natan; Deutscher, Guy; and Gruenbaum, Enrique, 4,764,398, Cl. 427-237.000

Grumet, F. Carl: *See—*
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., 4,764,465, Cl 435-172.200

Grumman Aerospace Corporation: *See—*
Belisle, Joseph A.; and Corbett, Marshall J., 4,763,858, Cl. 244-53.00B
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John; Poveromo, Leonard M.; Corvelli, Nicholas; and London, Arnold, 4,764,238, Cl. 156-245.000
Leib, Kenneth G.; and Jue, Suey, deceased, 4,764,781, Cl. 354-65.000

VOL 1093 ISS 3 AG 16 1988 UMI

Grzywinski, Robert F., to Minnesota Mining and Manufacturing Company. Louvered plastic film and method of making the same. 4,764,410, Cl. 428-120.000.
GTE Products Corporation: *See*—
Kemp, Preston B., Jr., 4,763,423, Cl. 34-9.000.
GTE Valeron Corporation: *See*—
Hunt, Carl E., 4,764,062, Cl. 409-136.000.
GTECH Corporation: *See*—
Bergeron, Daniel R., 4,764,666, Cl. 235-380.000.
Guardia, James F., to A-l Aluminum Products, Inc. Latching arrangement. 4,763,933, Cl. 292-13.000.
Guggenheimer, Kurt; and Mecklenfeld, Hermann, to O&K Orenstein & Koppel Aktiengesellschaft. Mobile crusher system. 4,763,845, Cl 241-101.700.
Guhl, Jay R.; and Guhl, Salena S. Holdfast and support system for an elastic plastic container liner. 4,763,808, Cl. 220-404.000.
Guhl, Salena S.: *See*—
Guhl, Jay R.; and Guhl, Salena S., 4,763,808, Cl. 220-404.000.
Guina, Milan M., to Westinghouse Electric Corp. Sealing element and method for hydrotesting of nuclear reactor tubular elements. 4,764,332, Cl. 376-203.000.
Gull, Peter, to Sandoz Ltd. 8α-(N,N-diethylsulfamoylamino)-6-n-propyl ergoline useful as a prolactin secretion inhibitor, anti-parkinson, anti-depressant agent. 4,764,517, Cl. 514-288.000.
Gulton Industries, Inc.: *See*—
Valenti, Leo, 4,764,858, Cl. 363-89.000.
Gulya, Thomas G., to Appleton Mills. Pin seamed papermakers felt having a reinforced batt flap. 4,764,417, Cl. 428-222.000
Gunjima, Tomoki; Takei, Ryutaro; and Aoyama, Eriko, to Asahi Glass Company Ltd. Optically active compounds, smectic liquid crystal compositions containing them and smectic liquid crystal display devices. 4,764,619, Cl. 546-226.000.
Gusman, Moisei T.: *See*—
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Semenets, Valery I.; and Khabetskaya, Valentina A., 4,764,094, Cl. 418-5.000.
Gventer, Henry; and Hamilton, Raymond, to Hoechst Celanese Corporation. Lithographic fountain solution containing mixed colloids. 4,764,213, Cl. 106-2.000.
Gyann, John, to GyCor International Ltd. Method of filtering spent cooking oil. 4,764,384, Cl. 426-417.000.
GyCor International Ltd.: *See*—
Gyann, John, 4,764,384, Cl. 426-417.000.
Haas, Roland: *See*—
Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,764,157, Cl. 474-135.000.
Haass, Guenther: *See*—
Mugrauer, Hubert; and Haass, Guenther, 4,764,776, Cl. 346-76.00R
Habeeb, Jacob J.; and Stover, William H., to Exxon Research and Engineering Company. Lubricating oil (PNE-500). 4,764,294, Cl 252-32.70E.
Haden Schweitzer Corporation: *See*—
Carthew, Maximilian K.; and Donahue, Joseph D., 4,764,108, Cl. 432-128.000
Haertl, Christof; and Nassler, Peter, to Siemens Aktiengesellschaft Mount for a sound transducer, particularly an earphone. 4,763,752, Cl. 181-130.000.
Hafner, Gunther; and Letsche, Ulrich, to Daimler-Benz Aktiengesellschaft. Injection nozzle for injecting fuel into the combustion chamber of an air-compressing fuel-injection engine. 4,763,841, Cl. 239-464.000
Haga, Noriyuki: *See*—
Yasufuku, Kenjiro; Okafuji, Hiroshi; Hasegawa, Mineo; and Haga, Noriyuki, 4,764,392, Cl. 426-603.000.
Hagan, Robert A.: *See*—
Reinwall, Ernest W.; and Hagan, Robert A., 4,764,069, Cl. 411-397.000.
Hagen, Kenneth G.: *See*—
Taylor, Bruce F.; and Hagen, Kenneth G., 4,763,424, Cl. 34-20.000.
Hager, Robert J., to Fulks, Robert G. Pressure sensing device. 4,763,534, Cl. 73-862.680
Hahmann, Wolfgang, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Hydraulic control valve. 4,763,691, Cl. 137-596.140.
Hahn, Erwin: *See*—
Colberg, Horst; and Hahn, Erwin, 4,764,599, Cl. 534-740.000.
Haidaris, Constantine G.: *See*—
Fields, Patricia I.; Haidaris, Constantine G.; and Heffron, Frederick L., 4,764,370, Cl. 424-93.000
Haig, Laurence B., to Cre-Del Limited Partnership. Sunroof controller. 4,763,949, Cl. 296-222.000.
Hakim, John, to Petrolite Corporation. Extrusion processing aid composition and polyolefin containing same. 4,764,326, Cl. 264-211.000.
Halff, Albert; and Vossen, Manfred, to Bobst S.A. Punching devices. 4,763,551, Cl. 83-277.000.
Halliburton Company: *See*—
Laurel, David F., 4,763,686, Cl. 137-272.000
Hallock, Louis L.: *See*—
Kass, Robert E.; Frederick, Robert J.; and Hallock, Louis L., 4,763,576, Cl. 102-321.000.
Halm, Roland L.; Hansen, Sidney A.; and Neal, Charles E., Jr., to Dow Corning Corporation. Preparation of cyclopolydiorganosiloxanes via vapor phase rearrangement. 4,764,631, Cl. 556-460.000
Haltof, Garry P.; and Dodson, Earl L., to American Balance Corporation. Torque actuated brake mechanism for spring balanced window sash. 4,763,447, Cl. 49-429.000.
Halverson, George E.; and Nelson, Gerald A., to Excel Dental Studios, Inc. Dental impression supply kit. 4,763,791, Cl. 206-570.000.
Hamada, Masataka; and Ishida, Tokuji, to Minolta Camera Kabushiki Kaisha. Automatic focus adjusting device. 4,764,787, Cl. 354-408.000.
Hamamatsu Photonics Kabushiki Kaisha: *See*—
Hara, Tsutomu; Ooi, Yoshiharu; Shinoda, Kazunori; and Ichie, Koji, 4,763,996, Cl. 350-387.000
Kinoshita, Katsuyuki, 4,764,674, Cl. 250-306.000.
Haman, David F.; and Miller, Allan F., to Outboard Marine Corporation. Automatically forced fluid supply system. 4,763,760, Cl. 184-6.500
Hamano, Yoshimasa; and Masuda, Takashi, to Canon Kabushiki Kaisha. Ophthalmic measuring apparatus. 4,764,006, Cl. 351-211.000.
Hamill, Robert L.; and Kastner, Ralph E., to Eli Lilly and Company. Antibiotic A42125 and process for its production. 4,764,510, Cl. 424-120.000
Hamilton, James G., to Barr & Stroud Limited. Periscope apparatus comprising a single inverted pyramid. 4,763,988, Cl. 350-319.000.
Hamilton, Raymond: *See*—
Gventer, Henry; and Hamilton, Raymond, 4,764,213, Cl. 106-2.000.
Hamilton, Stephen W.; and Wong, Philip C., to Data General Corporation. Variable timing sequencer. 4,764,687, Cl. 307-269.000.
Hamley, Nigel C., to Transimage International Limited. Selection of video sources. 4,764,812, Cl. 358-181.000.
Hammer, Charles F.: *See*—
Bredehorst, Reinhard; Talebian, Abdolhossen; Hammer, Charles F.; and Vogel, Carl-Wilhelm, 4,764,462, Cl. 435-18.000.
Hamner, James W.: *See*—
Hightower, James O., Jr.; Sato, Tomio; Hamner, James W.; and Rector, Carl M., 4,764,319, Cl. 264-3.400.
Hampar, Berge; Showalter, Stephen D.; and Zweig, Martin, to United States of America, Health and Human Services. Enzyme-linked immunosorbent assay (ELISA) for determining anti-bodies against herpes simplex virus (HSV) types 1 and 2 in human sera. 4,764,459, Cl. 435-5.000.
Hanagan, Mary A., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,764,204, Cl. 71-93.000.
Handler, Michael D., to Actief N.V. Stacking, pivoting, wall storage unit. 4,763,798, Cl. 211-88.000
Handte, Reinhard: *See*—
Schmierer, Roland; Mildenberger, Hilmar; Handte, Reinhard; and Burstell, Helmut, 4,764,624, Cl. 71-92.000
Hanessian, Stephen; and Kagotani, Masahiro, to Daicel Chemical Industries, Ltd. Process for selectively deacetylating acetyl derivatives of saccharides. 4,764,605, Cl. 536-124.000.
Hanna, James M. Cleaning device. 4,763,379, Cl. 15-160.000.
Hanning, H. Chris; and Anderson, Gary J. Distributor cap with adjustable contacts. 4,764,646, Cl. 200-19.0DC.
Hans, Rudiger: *See*—
Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,764,157, Cl. 474-135.000.
Hansen, Guenter: *See*—
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; Schefczik, Ernst; and Seybold, Guenther, 4,764,600, Cl. 534-792.000.
Hansen, Kai: *See*—
Garbacz, Michael J.; and Hansen, Kai, 4,764,701, Cl. 310-313.00R.
Hansen, Sidney A.: *See*—
Halm, Roland L.; Hansen, Sidney A.; and Neal, Charles E., Jr., 4,764,631, Cl. 556-460.000.
Hanson, Dan: *See*—
Kroll, Mark W.; Pommrehn, Mark R.; and Hanson, Dan, 4,763,660, Cl. 128-640.000.
Hanson, Leonard: *See*—
Engler, Edgar D.; Weber, Gus J.; Stapel, Melvin G.; Mlaker, John J.; and Hanson, Leonard, 4,763,800, Cl. 212-195.000.
Hanssler, Gerd: *See*—
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, 4,764,526, Cl. 514-383.000
Hara, Hiroshi: *See*—
Hirai, Hiroyuki; Hara, Hiroshi; and Kawata, Ken, 4,764,458, Cl. 430-620.000
Hara, Shigeyoshi; Inata, Hiroo; and Matsumura, Shunichi, to Teijin Limited. Fiber having thermoplastic resin coating. 4,764,427, Cl. 428-400.000
Hara, Tsutomu; Ooi, Yoshiharu; Shinoda, Kazunori; and Ichie, Koji, to Hamamatsu Photonics Kabushiki Kaisha. Spatial light modulator. 4,763,996, Cl. 350-387.000.
Hara, Yasuaki: *See*—
Ogawa, Masahiko; and Hara, Yasuaki, 4,764,576, Cl. 524-265.000.
Harada, Denzaburo; and Noguchi, Masaharu, to Kubota, Ltd. Transmission for a working vehicle. 4,763,543, Cl. 74-740.000.
Harada, Hiroshi: *See*—
Sekinoo, Koichi; and Harada, Hiroshi, 4,763,812, Cl. 221-203.000.
Harada, Katsuro: *See*—
Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori; Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, 4,764,098, Cl. 418-152.000
Harada, Nozomu: *See*—
Endo, Yukio; Egawa, Yoshitaka; and Harada, Nozomu, 4,764,814, Cl. 358-213.180.
Harasaki, Hayatsugu, to Mazda Motor Corporation. Automobile front body construction. 4,763,948, Cl. 296-194.000.

Harasin, Stephen J.: *See*—
Dewhurst, John E.; Harasin, Stephen J.; Cekoric, Mark C.; and Abouzahr, Saad M., 4,764,540, Cl. 521-110.000.
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, to Howmedica International Inc. Bone prosthesis assembly for a knee joint. 4,764,171, Cl. 623-20.000.
Hare, David L.: *See*—
Banks, Allen R.; and Hare, David L., 4,764,593, Cl. 530-324.000.
Harker, Yale D.: *See*—
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000.
Harlowe, William W., Jr.: *See*—
Anderson, Eugene L.; Harlowe, William W., Jr.; Adams, Leon M.; and Marshall, Mary C., 4,764,317, Cl. 264-4.000.
Harnden, John D., Jr.: *See*—
Alley, Robert P.; Kornrumpf, William P.; and Harnden, John D., Jr., 4,764,714, Cl. 318-786.000.
Harnisch, Horst: *See*—
Claussen, Uwe; and Harnisch, Horst, 4,764,622, Cl. 548-159.000.
Harris Corp.: *See*—
Faith, Richard W.; and Curtin, Len, 4,764,949, Cl. 379-9.000.
Harrison, Peter, to Plastona (John Waddington) Limited. Method of printing thermoplastic articles with thermoplastic ink. 4,764,399, Cl. 427-275.000
Harsco Corporation: *See*—
Martin, Richard L., 4,763,690, Cl. 137-613.000.
Hart, Andrew J.; and Nailor, Michael T., to Nailor-Hart Industries Inc Fire damper. 4,763,711, Cl. 160-1.000.
Hart, Charles F.: *See*—
Chang, Kuang-Yeh; and Hart, Charles F., 4,764,477, Cl. 437-29.000
Hart, William P.: *See*—
Kapuscinski, Maria M.; Liu, Christopher S.; and Hart, William P., 4,764,304, Cl. 252-51.50A
Hartmann, Richard, to ITC, Incorporated. Light fixture. 4,764,851, Cl. 362-74.000.
Hartwigsen, Wesley D.; Johnson, Alan D.; Beckham, Jeffrey C.; and White, Kenneth L., to Shell Mining Company. Silo cleaning process. 4,764,221, Cl. 134-8.000.
Hartzell, Erik T.: *See*—
Fischer, Udo K.; Hartzell, Erik T.; and Waldenstrom, Mats G., 4,764,255, Cl. 175-329.000
Harunari, Yoshihiro: *See*—
Tamura, Shuichi; and Harunari, Yoshihiro, 4,764,786, Cl. 354-403.000.
Haruyama, Kenzo; Tsuruga, Kenichiro; and Yoshikawa, Tadashi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha; and Ishikawajima Yuki Kabushiki Kaisha. Fluid feeding device. 4,763,814, Cl. 222-63.000.
Harvey, Albert S. Roof sealing and insulating system. 4,763,452, Cl. 52-96.000
Harvey, Donald M.: *See*—
Simons, Michael J.; Willis, Roland G.; and Harvey, Donald M., 4,764,444, Cl. 430-47.000.
Hasegawa, Kazuo: *See*—
Miyahara, Yoshinori; and Hasegawa, Kazuo, 4,764,981, Cl. 455-603.000.
Hasegawa, Mineo: *See*—
Yasufuku, Kenjiro; Okafuji, Hiroshi; Hasegawa, Mineo; and Haga, Noriyuki, 4,764,392, Cl. 426-603.000.
Hasegawa, Shigeyoshi: *See*—
Yamamori, Kiyoshi; Hasegawa, Shigeyoshi; Mogi, Yuuji; Kojima, Tamotsu; and Higuchi, Sadashi, 4,764,780, Cl. 346-140.00R.
Hashimoto, Koichi: *See*—
Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,764,617, Cl. 546-169.000
Hashimoto, Noritsuna: *See*—
Awazu, Kenzo, deceased; Matsunaga, Kazu; and Hashimoto, Noritsuna, 4,764,301, Cl. 252-301.40P.
Haskin, Marvin E., to R.A.P.I.D., Inc. System and method for remote presentation of diagnostic image information. 4,764,870, Cl 364-415.000
Hasselmann, Heinz: *See*—
Flaig, Heinz; and Hasselmann, Heinz, 4,763,768, Cl. 192-150.000.
Hata, Yoshikuni; and Ushigoe, Tomio, to Kabushiki Kaisha Miyano Machine tools, preferably lathes. 4,763,549, Cl. 82-2.500.
Hatanaka, Takashi; and Takeshita, Michitaka, to Bridgestone Corporation. Rubber composition comprising surface-treated carbon black. 4,764,547, Cl. 523-215.000
Hatebur Umformmaschinen AG: *See*—
Massariolo, Maffeo, 4,763,501, Cl. 72-26.000.
Hauer, Jean-Claude: *See*—
Vigneron, Pierre; and Hauer, Jean-Claude, 4,763,449, Cl. 52-20.000.
Haufe, Wolfgang: *See*—
Rothkegel, Bernhard; and Haufe, Wolfgang, 4,764,227, Cl. 148-431.000.
Hauser, Stephen G. Instrument for inserting a deformable lens into the eye. 4,763,650, Cl. 128-303.00R.
Hausner, Gerhard, to Zinser Textilmaschinen GmbH. Expandable winding mandrel for retaining a substantially cylindrical yarn holder of a spinning or twisting machine. 4,763,850, Cl. 242-46.400.
Havasi, Gabor: *See*—
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000
Hawkinson, Elden L., to Rockwell International Corporation. Cage for ball bearing assembly. 4,764,037, Cl. 384-527.000.
Hayama, Hajime: *See*—
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, 4,764,706, Cl. 313-422.000
Hayard, Michel, to Alcatel Espace. System for locating an object provided with at least one passive target pattern. 4,764,668, Cl. 235-470.000
Hayashi, Gouichi: *See*—
Suzuki, Yoshiaki; and Hayashi, Gouichi, 4,763,966, Cl. 350-1.100
Hayashi, Hidechika: *See*—
Higo, Yuji; and Hayashi, Hidechika, 4,763,460, Cl. 53-381.00R.
Hayashi, Hideki: *See*—
Sasaki, Goro; and Hayashi, Hideki, 4,764,796, Cl. 357-16.000
Hayashi, Makoto; Otaka, Masahiro; Shimizu, Tasuku; and Sakata, Shinji, to Hitachi, Ltd. Method and apparatus for detecting cracks 4,764,970, Cl. 382-8.000.
Hayashi, Motohiko: *See*—
Kotani, Matahira; Hayashi, Motohiko; Yasuda, Shigeari; and Oi, Yuzoh, 4,764,951, Cl. 379-100.000.
Hayashi, Shoichi; Sakai, Norio; and Ishihara, Hidetoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Compression membrane. 4,763,495, Cl. 68-19.100.
Haycock, David A.; and Flora, Jay L., to Ampex Corporation. Apparatus and method for producing a variety of video wipe borders 4,764,809, Cl. 358-183.000
Haydn, Josef: *See*—
Wissner, Adolf; Haydn, Josef; and Birkenstock, Udo, 4,764,498, Cl. 502-251.000
Hays, Dan A.: *See*—
Brewington, Grace T.; Hays, Dan A.; and Wayman, William H., 4,764,841, Cl. 361-226.000.
Haytayan, Harry M. Poppet valve with improved seal for pneumatic fastener driving apparatus. 4,763,562, Cl. 91-461.000.
Hayworth, Robert G.; Russell, Ray E., Jr.; Fleming, Robert F., III; and Hwang, James G., to Vega Precision Laboratories, Inc. Position coded pulse communication system. 4,764,769, Cl. 342-50.000.
Hazama, Keiji; Ota, Shin'ichi; Yamada, Mituo; and Arai, Toshiyuki, to Hitachi Chemical Company, Ltd. Process and apparatus for sealing semiconductor packages. 4,764,235, Cl. 156-228.000
Headley, Anthony: *See*—
Shaw, Ronald; Jackson, Leonard; and Headley, Anthony, 4,764,123, Cl. 439-148.000.
Healy, John T., to O'Connor Engineering Laboratories. Floating column support pedestal. 4,763,864, Cl. 248-123.100.
Healy, Lawrence G.: *See*—
King, William E.; and Healy, Lawrence G., 4,764,334, Cl 376-248.000
Heath, Russell L.: *See*—
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000
Heath, William B.: *See*—
Lake, John A.; and Heath, William B., 4,764,003, Cl. 350-610.000.
Hebels, Albert: *See*—
Pagendarm, Ralph; and Hebels, Albert, 4,764,402, Cl. 427-355.000.
Heffner, Donald L.; and Parker, Donald L., to General Motors Corporation. Vacuum check valve. 4,763,689, Cl. 137-514.000
Heffron, Frederick L.: *See*—
Fields, Patricia I.; Haidaris, Constantine G.; and Heffron, Frederick L., 4,764,370, Cl. 424-93.000
Hegenboden, J. W.: *See*—
Burns, Alan W.; Scarth, Robert D.; Mascaro, John V.; Hegenboden, J. W.; and Green, Moses, Jr., 4,764,412, Cl. 428-172.000
Heine, Heinrich: *See*—
Muller, Hanns P.; Gipp, Roland; and Heine, Heinrich, 4,764,581, Cl. 528-100.000
Heinlein, Mary E.: *See*—
Griffith, Marlene J.; and Heinlein, Mary E., 4,764,142, Cl. 446-82.000.
Heinrich, Hans J.; Oelbermann, Max; and Hohmann, Ernst-Gerhard, to Rittershaus & Blecher GmbH. Filter press guide device. 4,764,273, Cl. 210-225.000.
Heinrich, Peter, to Ciba-Geigy Corporation. Novel carbonic acid esters. 4,764,523, Cl. 514-18.000.
Heintz, Robert M.: *See*—
Getman, Daniel P.; and Heintz, Robert M., 4,764,595, Cl 530-334.000
Heinz, Gerhard: *See*—
Fischer, Juergen; Zeiner, Hartmut; Nissen, Dietmar; and Heinz, Gerhard, 4,764,397, Cl. 428-269.000
Heinze, Roland: *See*—
Wirtzfeld, Alexander; Stangl, Karl; and Heinze, Roland, 4,763,655, Cl. 128-419.0PG.
Heisel, Michael; Lohmueller, Reiner; and Marold, Freimut, to Linde Aktiengesellschaft. Sulfur condenser and degasser unit. 4,764,192, Cl 55-269.000.
Hersey, Jay M.; Kautz, Jon F.; and Pickles, Charles S., to AMP Incorporated. Method of making a compliant retention section on an electrical terminal. 4,763,408, Cl. 29-874.000

VOL 1093 ISS 3 AG 16 1988 UMI

Heitmann, Jurgen, to Robert Bosch GmbH. Method for optimizing a magnetic tape device for storing digitally coded color television signals. 4,764,816, Cl. 358-327.000.
Held, Curtis N. Document handling aid. 4,763,940, Cl. 294-25.000.
Helene Curtis, Inc.: *See*—
Hoshowski, Myra A., 4,764,174, Cl. 8-415.000.
Helix Technology Corporation: *See*—
Olsen, Donald A., 4,763,483, Cl. 62-55.500.
Heller, Jorge; Penhale, Donald W. H.; and Ng, Steve Y., to S R I International. Method of preparing bioerodible polymers having pH sensitivity in the acid range and resulting product. 4,764,364, Cl. 424-78.000.
Heller, Jurg; Kissling, Bruno; Muller, Curt; Robinson, Tibor; and Valenti, Salvatore, to Sandoz Ltd. Cationic polycondensates useful for improving the fastness of dyeings on textiles. 4,764,585, Cl 528-233.000.
Hellnick, Dieter. Downhole cutter. 4,763,737, Cl. 175-393.000.
Hemmann, Ronald S., to Coleco Industries, Inc. Competitive manipulative skills game. 4,763,898, Cl. 273-1.0GF.
Henderson, Lillie M. Particle retainer cup for riser pipes. 4,763,694, Cl. 138-103.000.
Henger, Peter; and Luderer, Fred. Method for monitoring the operation of an electrostatic coating installation. 4,764,393, Cl. 427-8.000.
Henkin, Melvyn L.; and Laby, Jordan M. Hydrotherapy massage method and apparatus. 4,763,367, Cl. 4-542.000.
Hennebert, Pierre; Gillard, Jean; and Roland, Michel, to Universite Catholique De Louvain and Manufacture Belge De Gemblous S.A. Sterilization method and apparatus using a gaseous agent. 4,764,351, Cl. 422-292.000.
Henry, Jean-Marc: *See*—
Coppolani, Pierre; Henry, Jean-Marc; Savary, Pierre; and Eisele, Jean, 4,763,754, Cl. 181-237.000.
Herbert, Pascal: *See*—
Daviaud, Jean-Michel; Herbert, Pascal; and Loison, Patrick, 4,763,518, Cl. 73-149.000.
Herbst, Kurt: *See*—
Ballhause, Lutz; Fehrenbach, Siegfried; Herbst, Kurt; Krimmer, Erwin; and Schulz, Wolfgang, 4,763,635, Cl. 123-520.000.
Hercon Laboratories Corporation: *See*—
Kydonieus, Agis F.; and Berner, Bret, 4,764,382, Cl. 424-449.000.
Hercules Defense Electronics Systems, Inc.: *See*—
Craven, Tyson S., 4,764,775, Cl. 343-786.000.
Hercules Incorporated: *See*—
Lelah, Michael D., 4,763,674, Cl. 131-342.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Capelle, Gerd, 4,764,101, Cl. 425-133.500.
Herrmann, Gerhard: *See*—
Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,764,157, Cl. 474-135.000.
Herrnstadt, Corinna; and Soares, George G., Jr., to Mycogen Corporation. Compositions containing bacillus thuringiensis toxin toxic to beetles of the order coleoptera, and uses thereof. 4,764,372, Cl. 424-93.000.
Herron, David K., to Eli Lilly and Company. Leukotriene antagonists and a method of use there as. 4,764,521, Cl. 514-381.000.
Hess, Kenneth L., to Banner Blue Software Incorporated. Display system and method for constructing and editing a hierarchical arrangement of information. 4,764,867, Cl. 364-200.000.
Heuvelsland, Albert J., to Dow Chemical Company, The. Method for producing 1,4-dioxane. 4,764,626, Cl. 549-377.000.
Hewlett-Packard Company: *See*—
Church, Roy L., 4,764,770, Cl. 340-365.00R.
Merrick, Edwin B., 4,763,649, Cl. 128-673.000.
Heywang, Walter, to Siemens Aktiengesellschaft. Arrangement for coupling a laser diode to a monomode light waveguide and the method for forming the arrangement. 4,763,979, Cl. 350-96.200.
Hibbard, Gary: *See*—
Whitener, Charles G., Jr.; and Hibbard, Gary, 4,764,876, Cl. 364-470.000.
Hibst, Hartmut; Rudolf, Peter; and Jakusch, Helmut, to BASF Aktiengesellschaft. Preparation of finely divided and acicular hexagonal ferrites and their use for the production of magnetic recording media and plastoferrites. 4,764,300, Cl. 252-62.580.
Hichler, Marty A.: *See*—
Ondris, Miroslav; and Hichler, Marty A., 4,764,261, Cl. 204-37.100.
Hidaka, Tomoharu; and Sirakawa, Yuji, to Nirei Industry Co., Ltd. Binding tool. 4,763,700, Cl. 140-93.200.
Hieninger, Johann: *See*—
Dieter, Georg; and Hieninger, Johann, 4,764,922, Cl. 370-123.000.
High Man Parts Corp. Ltd.: *See*—
Nakano, Tsunetomo; Nakajima, Kohei; Niihio, Kazuaki, Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100.
High, Samuel E., Jr.; and Mast, Aquila D., to Feedmobile, Inc. Portable feed material transferring and bagging apparatus. 4,763,702, Cl 141-114.000.
High, Samuel E., Jr.; and Mast, Aquila D., to Fredmobile, Inc. Whole ear corn conversion apparatus and method. 4,763,846, Cl. 241-81.000.
Highgate, Donald J.; and Frankland, John D. Hydrophilic materials 4,764,575, Cl. 526-264.000.
Hightower, James O., Jr.; Sato, Tomio; Hamner, James W.; and Rector, Carl M., to Morton Thiokol, Inc. High solids ratio solid rocket motor propellant grains and method of construction thereof. 4,764,319, Cl 264-3.400.
Higo, Yuji; and Hayashi, Hidechika, to Tosoh Corporation. Sealing foil breaker for analyzer test cups. 4,763,460, Cl. 53-381.00R.
Higuchi, Masahiro: *See*—
Ikeda, Haruhiko; Higuchi, Masahiro; and Hiraishi, Shigetoshi, 4,764,501, Cl. 503-209.000.
Higuchi, Sadashi: *See*—
Yamamori, Kiyoshi; Hasegawa, Shigeyoshi; Mogi, Yuuji; Kojima, Tamotsu; and Higuchi, Sadashi, 4,764,780, Cl. 346-140.00R.
Hildebrand, Verne E.; and Seeley, Elwin W. Erodible buried radio frequency transmitting and receiving antenna. 4,764,774, Cl. 343-719.000.
Hill, David T.; and Johnson, Randall K., to SmithKline Beckman Corporation. Pharmaceutical compositions containing di-gold phosphine. 4,764,509, Cl. 514-102.000.
Hill, Frederick W. L.; Bates, Nigel R.; and Svendsen, Leo G., to Raychem Limited. Electrically conductive composite material. 4,764,422, Cl. 428-309.900.
Hill, Kenneth O.: *See*—
Kawasaki, Brian S.; Kawachi, Masao; Hill, Kenneth O.; and Johnson, Derwyn C., 4,763,977, Cl. 350-96.150.
Hilti Aktiengesellschaft: *See*—
Neumaier, Anton, 4,763,733, Cl. 173-48.000.
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, to Sanyo Electric Co., Ltd. Flat cathode-ray tube and method of fabricating same. 4,764,706, Cl. 313-422.000.
Hinshaw, Walter L. Braided rug construction. 4,764,407, Cl. 428-37.000.
Hinton, Harvard S.; and Miller, David A. B., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Optical logic arrangement with self electro-optic effect devices. 4,764,889, Cl. 364-807.000.
Hinton, Harvard S., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Optical logic arrangement. 4,764,890, Cl. 364-807.000.
Hira, Takaaki: *See*—
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000.
Hirabayashi, Yuji, to Nissan Motor Co., Ltd. Controller for variable geometry type turbocharger. 4,763,476, Cl. 60-602.000.
Hirahara, Jiro: *See*—
Watanabe, Masafumi; Ozaki, Toshitune; and Hirahara, Jiro, 4,764,959, Cl. 380-4.000.
Hirahara, Takuho; Kawaguchi, Susumu; Ueda, Sei; and Nakane, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha. Two-cylinder type rotary compressor. 4,764,097, Cl. 418-60.000.
Hirai, Hiroyuki; Hara, Hiroshi; and Kawata, Ken, to Fuji Photo Film Co., Ltd. Heat developable light-sensitive material. 4,764,458, Cl. 430-620.000.
Hirai, Shozo: *See*—
Fukaya, Yasuhiro; and Hirai, Shozo, 4,763,828, Cl. 228-124.000.
Hiraishi, Shigetoshi: *See*—
Ikeda, Haruhiko; Higuchi, Masahiro; and Hiraishi, Shigetoshi, 4,764,501, Cl. 503-209.000.
Hirano, Hiroyuki: *See*—
Kumura, Haruyoshi; Yamamuro, Sigeaki; Hirano, Hiroyuki; Abo, Keiju; and Nakano, Masaki, 4,764,155, Cl. 474-12.000.
Hiranuma, Kenji, to Onuki, Noburu. Semi-adjustable dental articulator. 4,764,113, Cl. 433-56.000.
Hirokane, Junji: *See*—
Ohta, Kenji; Hirokane, Junji; Inui, Tetsuya; Takahashi, Akira; and Katayama, Hiroyuki, 4,764,441, Cl. 430-5.000.
Hirosawa, Yoshiaki: *See*—
Fujita, Haruyasu; Hirosawa, Yoshiaki; and Ito, Toshifumi, 4,763,538, Cl. 74-6.000.
Hirsch, Kenneth S.; and Taylor, Harold M., to Eli Lilly and Company. Method of inhibiting aromatase. 4,764,376, Cl. 514-255.000.
Hiruta, Yoichi, to Kabushiki Kaisha Toshiba. Method of manufacturing MOS transistor by dual species implantation and rapid annealing. 4,764,478, Cl. 437-29.000.
Hirvonen, Kullervo, to Altim Control OY. Method for identifying timber surface properties. 4,764,017, Cl. 356-369.000.
Hisazumi, Nobuyuki; Funabashi, Shinichiro; and Tomioka, Yoshihiko, to Kureha Kagaku Kogyo Kabushiki Kaisha. Smokable synthetic food-packaging film. 4,764,406, Cl. 428-35.000.
Hisgen, Bernd; Kock, Hans-Jakob; Portugall, Michael; Seiler, Erhard; and Blinne, Gerd, to BASF Akjtiengesellschaft. Wholly aromatic thermotropic polyesters. 4,764,582, Cl. 528-183.000.
Hishinuma, Minoru: *See*—
Namba, Hiroaki; and Hishinuma, Minoru, 4,764,571, Cl. 525-534.000.
Hitachi Chemical Company, Ltd.: *See*—
Hazama, Keiji; Ota, Shin'ichi; Yamada, Mituo; and Arai, Toshiyuki, 4,764,235, Cl. 156-228.000.
Hitachi Denshi Kabushiki Kaisha: *See*—
Takeshita, Kazuyuki, 4,764,820, Cl. 360-22.000.
Hitachi, Ltd.: *See*—
Aoyama, Naofumi; Kinugawa, Kiyoshige; Nozaki, Yoshihiro; and Sakurada, Hiroshi, 4,764,766, Cl. 340-784.000.
Hayashi, Makoto; Otaka, Masahiro; Shimizu, Tasuku; and Sakata, Shinji, 4,764,970, Cl. 382-8.000.
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000.
Kawai, Jyuichiro; and Yanagida, Isao, 4,764,083, Cl. 415-201.000.
Kosa, Yasunobu; and Komori, Kazuhiro, 4,764,479, Cl. 437-49.000.

Matsui, Takayuki; and Okuyama, Toshiaki, 4,764,859, Cl. 363-161.000.
Miyazaki, Yoshihiro; Takaya, Soichi; Tanji, Masayuki; Nishikawa, Atsuhiko; and Yamaguchi, Shinichiro, 4,764,869, Cl. 364-300.000.
Ogihara, Satoru; and Ushifusa, Nobuyuki, 4,764,233, Cl 156-89.000.
Sahara, Kunizo; Otsuka, Kanji; and Ishida, Hisashi, 4,764,804, Cl. 357-81.000.
Sasaki, Hiroshi; Chiba, Tomio; Kido, Mitsuyasu; Sato, Yoshio; and Watanabe, Atsumi, 4,764,913, Cl. 369-49.000.
Toshio, Ishii; and Mouri, Yasunori, 4,763,475, Cl. 60-602.000.
Uchida, Shunsuke; and Ohsumi, Katsumi, 4,764,338, Cl 376-313.000.
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000.
Hitachi Tokyo Electronics: *See*—
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000.
Hitachi Video Eng. Inc.: *See*—
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000.
Hobart Corporation: *See*—
Kasinoff, Harvey A., 4,763,739, Cl. 177-210.00R.
Hobson, Phillip M.: *See*—
Layman, Frederick P.; Hobson, Phillip M.; and Dick, Paul H., 4,764,076, Cl. 414-217.000.
Hockey, John A.: *See*—
Sepulveda, Ralph R.; and Hockey, John A., 4,764,292, Cl 252-8.800.
Hoechst Aktiengesellschaft: *See*—
Cranskens, Georg; and Blume, Erich, 4,764,842, Cl. 361-225.000.
Hutschenreuter, Elfriede; Bytzek, Max; Andrae, Klaus; and Weinheimer, Alois, 4,764,031, Cl. 383-120.000.
Ruckert, Hans; and Ohlenmacher, Ralf, 4,764,450, Cl. 430-191.000.
Schmierer, Roland; Mildenberger, Hilmar; Handte, Reinhard; and Burstell, Helmut, 4,764,624, Cl. 71-92.000.
Hoechst Celanese Corporation: *See*—
Gventer, Henry; and Hamilton, Raymond, 4,764,213, Cl. 106-2.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Glamkowski, Edward J.; and Chiang, Yulin, 4,764,616, Cl. 546-152.000.
Hoelzl, Rupert: *See*—
Strian, Friedrich; Hoelzl, Rupert; Galfe, Gunther; Lauterbacher, Stefan; and Lehmann, Wilhelm, 4,763,666, Cl. 128-742.000.
Hofer, Gerald: *See*—
Fehlmann, Wolfgang; Hofer, Gerald; Junger, Dieter; and Stumpp, Gerhard, 4,763,631, Cl. 123-503.000.
Hoffman, David M.: *See*—
McDaniel, David L.; Granfors, Paul R.; and Hoffman, David M., 4,764,679, Cl. 250-374.000.
Hoffmann-La Roche Inc.: *See*—
Furuichi, Yasuhiro; and Richardson, Michael A., 4,764,460, Cl 435-6.000.
Imhof, Rene; and Kyburz, Emilio, 4,764,522, Cl. 514-354.000.
Hohl, Frank: *See*—
Hoppe, Lutz; Luhmann, Erhard; Hohl, Frank; and Reinhardt, Eugen, 4,764,548, Cl. 524-31.000.
Hohmann, Ernst-Gerhard: *See*—
Heinrich, Hans J.; Oelbermann, Max; and Hohmann, Ernst-Gerhard, 4,764,273, Cl. 210-225.00.
Hokawa, Koji: *See*—
Miyahara, Kazunori; Mukaida, Masashi; and Hokawa, Koji, 4,764,898, Cl. 365-162.000.
Holcomb, Gregory B., to Toro Company, The. Sprinkler with guard 4,763,838, Cl. 239-205.000.
Holcroft/Loftus Inc.: *See*—
Smith, John W.; and Keil, Gary D., 4,763,880, Cl. 266-87.000.
Holden, Kirk N.; and Someshwar, Ashok H., to Motorola, Inc. N-bit carry select adder circuit with double carry select generation. 4,764,888, Cl. 364-788.000.
Holly, Sandor: *See*—
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl 546-341.000.
Holset Engineering Company Limited: *See*—
Franklin, Philip C., 4,763,474, Cl. 60-602.000.
Holt, Arthur W.: *See*—
Silverthorn, Lee J., III; Gaudette, Philip A.; Holt, Arthur W.; Nacht, George G.; and Warnar, Robert B. J., 4,764,863, Cl 364-200.000.
Holy, Zdenek: *See*—
Rosch, Reinhard; Rosenbaum, Stanley D.; Plett, Calvin; and Holy, Zdenek, 4,764,956, Cl. 379-413.000.
Honda Giken Kogyo K.K.: *See*—
Yakuwa, Masahiko; and Satoh, Takashi, 4,764,729, Cl. 324-546.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Arahata, Yoshitaka; and Toriyama, Masayuki, 4,763,613, Cl. 123-65.0PE.
Fujita, Haruyasu; Hirosawa, Yoshiaki; and Ito, Toshifumi, 4,763,538, Cl. 74-6.000.
Honda, Shoichi; Sakata, Masayasu; and Ishida, Yoichi, 4,763,617, Cl. 123-90.580.
Honda, Shoichi; Nagae, Masahiro; and Fukumoto, Hiroshi, 4,764,158, Cl. 474-212.000.
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,763,628, Cl. 123-440.000.
Yoshioka, Teruo; Abe, Yuzo; and Nakano, Shoji, 4,763,391, Cl 29-33.00P.
Honda, Shoichi; Sakata, Masayasu; and Ishida, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. Sealed-type hydraulic lash adjuster 4,763,617, Cl. 123-90.580.
Honda, Shoichi; Nagae, Masahiro; and Fukumoto, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha; and Daido Kogyo Co., Ltd. Power transmission chain. 4,764,158, Cl. 474-212.000.
Honda, Sueaki: *See*—
Aoi, Tatsuo; Kiyono, Yasuhrio; Honda, Sueaki; and Atsumi, Hauro, 4,764,745, Cl. 337-2.000.
Honeywell Bull Inc.: *See*—
Barlow, George J.; and Keeley, James W., 4,764,862, Cl 364-200.000.
Honeywell Inc.: *See*—
Freimark, Ronald J.; and Rose, Steven A., 4,764,896, Cl. 364-900.000.
Miller, Harry, 4,764,872, Cl. 364-433.000.
Mulkern, Joseph, 4,764,764, Cl. 340-724.000.
Prysby, Daniel G., 4,764,754, Cl. 340-513.000.
Hongo, Masafumi: *See*—
Shigemitsu, Hideyuki; Hongo, Masafumi; and Toyooka, Yutaka, 4,764,555, Cl. 525-67.000.
Honiton Investments, N.V.: *See*—
Moreland, Gerald W., 4,763,366, Cl. 4-541.000.
Hood, Nicholas S.: *See*—
Saunders, Eugene M.; Hood, Nicholas S.; Sanko, John R.; and Johnson, Virgil J., 4,763,600, Cl. 118-684.000.
Hooper, Anthony W.; and Martel, Andre , to Uniweld, Inc. Reciprocating discharger. 4,763,777, Cl. 198-747.000.
Hooykaas, Carel W. J., to Pelt & Hooykaas B.V. Method of converting particles liberated in chemical or physical processes into a harmless form by mixing with a molten silicate-containing material. 4,764,216, Cl. 106-117.000.
Hoppe, Lutz; Luhmann, Erhard; Hohl, Frank; and Reinhardt, Eugen, to Wolff Walsrode Aktiengesellschaft. Tile adhesive based on water-dilutable, cellulose-containing pastes. 4,764,548, Cl. 524-31.000.
Horan, Gerald P., to Chart Industries Ltd. Multi-purpose work unit 4,763,756, Cl. 182-20.000.
Horgan, William J., Jr., to Blumcraft of Pittsburgh. Door shoe assembly. 4,763,453, Cl. 52-127.800.
Horiki, Seinosuke; and Makino, Reiji, to Nagoya Oilchemical Co., Ltd. Masking member. 4,764,421, Cl. 428-35.000.
Horiuchi, Hiromi: *See*—
Yoshitomi, Toshihiko; Horiuchi, Hiromi; Yamaguchi, Yukio, Kamoshita, Yasuo; and Sekihara, Kiyoshi, 4,764,448, Cl. 430-120.000.
Horiuchi, Takeshi: *See*—
Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, 4,764,954, Cl 379-390.000.
Horizons Unlimited, Inc.: *See*—
Baltzell, William L.; and Draeger, David J., 4,764,070, Cl. 411-430.000.
Horn, Peter; and Schmidt, Hans U., to BASF Aktiengesellschaft. Internal mold release agents, their use for preparing molded articles using polyisocyanate-addition polymerization, and a process for preparing molded articles. 4,764,537, Cl. 521-51.000.
Horneff, Robert. Fishing pole with liquid fish scent pump. 4,763,434, Cl 43-18.100.
Horning, Gunter: *See*—
Eisenblatter, Axel; Sonnack, Gerhard; and Horning, Gunter, 4,764,847, Cl. 361-388.000.
Horodysky, Andrew G., to Mobil Oil Corporation. Reaction products of formic acid and dialkylenetriamines and fuel compositions containing same. 4,764,183, Cl. 44-53.000.
Horowitz, Bernard: *See*—
Neurath, Alexander R.; and Horowitz, Bernard, 4,764,369, Cl. 424-89.000.
Horowitz, Bruce S. Intracavitational brachytherapy. 4,763,642, Cl 128-1.200.
Horton, Douglas J.: *See*—
Bergling, Craig L.; Ewald, Henry T.; Horton, Douglas J.; Hoverman, James L.; and Weller, Berthold L., 4,763,571, Cl 99-349.000.
Horvath, Bela: *See*—
Ratsko , Istvan; Madocsay, Attila; Ivony, Jozsef; Horvath, Bela; and Madi, Jeno, 4,763,916, Cl. 280-432.000.
Hoshowski, Myra A., to Helene Curtis, Inc. Nitrophenylenediamine dye composition having improved deposition on human hair and wool. 4,764,174, Cl. 8-415.000.
Hosizaki, Hiroki; Suzuki, Hirofumi; and Kageyama, Terutaka, to Nippondenso Co., Ltd. Metalizing or bonding composition for non-oxide ceramics. 4,764,435, Cl. 428-621.000.
Hosono, Nagao: *See*—
Takada, Yoshihiro; and Hosono, Nagao, 4,763,992, Cl. 350-331.00T.
Hotta, Yuji; Matsuzaka, Syoji; and Miyoshi, Masanobu, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic emulsion 4,764,457, Cl. 430-569.000.
Hough Manufacturing Corporation: *See*—
Williams, Charles E., 4,763,714, Cl. 160-200.000.

VOL 1093 ISS 3 AG 16 1988 UMI

Hounshell, Kenneth L. Self-centering router mortise base. 4,763,707, Cl. 144-136.00C.

Hoverman, James L.: *See—*
Bergling, Craig L.; Ewald, Henry T.; Horton, Douglas J.; Hoverman, James L.; and Weller, Berthold L., 4,763,571, Cl. 99-349.000.

Howe, Ralph: *See—*
Bilski, Andrew J. T.; Howe, Ralph; Rao, Balbir; and Thomson, David S., 4,764,361, Cl. 424-45.000.

Howmedica International Inc.: *See—*
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, 4,764,171, Cl. 623-20.000.

Howmet Corporation: *See—*
Shankar, Srinivasan; and Dardi, Louis E., 4,764,225, Cl. 148-404.000.

Hoyer, Daniel P.; Featherstone, John L.; and Wong, Morton M., to Union Oil Co. of California. Method for the production of useable steam and non-toxic solids from geothermal brine. 4,763,479, Cl. 60-641.500.

Hsieh, C. Richard; and Donaldson, William I., to Chevron Research Company. Simultaneous upgrading of tar sand bitumen and coal by corefining. 4,764,270, Cl. 208-390.000.

Hsu, Sheng T., to General Electric Company. Method of fabricating an integrated circuit containing bipolar and MOS transistors. 4,764,482, Cl. 437-57.000.

Huang, Andrew Y. Combined scissors and pencil sharpener. 4,763,415, Cl. 30-123.000.

Huang, Men Y.: *See—*
Huang, Ming Y.; and Huang, Men Y., 4,763,831, Cl. 229-101.000.

Huang, Ming Y.; and Huang, Men Y. Variable length/width packaging box. 4,763,831, Cl. 229-101.000.

Huang, Shu-Jen W.: *See—*
Kiss, Charles R.; and Huang, Shu-Jen W., 4,764,561, Cl. 525-163.000.

Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., to General Electric Company. Ni_3Al alloy of improved ductility based on iron and niobium substituent. 4,764,226, Cl. 148-429.000.

Huber, Gordon R.: *See—*
Wenger, Marc L.; and Huber, Gordon R., 4,763,569, Cl. 99-348.000.

Hubert, Charles, to Thomson-CSF. Mechanical coupling device for two parallel shafts allowing rotation thereof in a 2/1 ratio. 4,763,540, Cl. 74-96.000.

Hubert, John A.: *See—*
Braun, James W.; and Hubert, John A., 4,764,759, Cl. 340-653.000.

Hubschi, Kurt: *See—*
Murphy, Preston V.; and Hubschi, Kurt, 4,764,690, Cl. 307-400.000.

Hudson, Joseph D.: *See—*
Goodwin, Gene M.; and Hudson, Joseph D., 4,763,521, Cl. 73-159.000.

Huff, Ronnie G.: *See—*
Barnes, Vernon B.; Wilkinson, Donald R.; Shore, John W.; and Huff, Ronnie G., 4,763,673, Cl. 131-96.000.

Hug, Kuno: *See—*
Liemert, Karl; Rohr, Franz J.; and Hug, Kuno, 4,763,478, Cl. 60-633.000.

Hughes Aircraft Company: *See—*
Grinberg, Jan; Nudd, Graham R.; and Soffer, Bernard H., 4,764,891, Cl. 364-807.000.
Shifrin, Gordon A., 4,764,009, Cl. 356-73.000.

Hughes, George W.: *See—*
Webb, Robert H.; and Hughes, George W., 4,764,005, Cl. 351-205.000.

Hughes, Philip: *See—*
Dickey, Larry W.; and Hughes, Philip, 4,764,950, Cl. 379-29.000.

Hughes, Robert W.; Brisson, Robert H.; and Brisson, Glenn R. Apparatus for making a cam shaft. 4,763,503, Cl. 72-57.000.

Hughes Tool Company: *See—*
Kaminski, Donald R.; and Sims, Burnie, 4,764,019, Cl. 366-15.000.

Hui, James: *See—*
Reuning, Richard H.; Hui, James; Shepard, Theresa A.; and Sams, Richard A., 4,764,601, Cl. 536-5.000.

Hundekoper, Louis. Suspension for a wheel. 4,763,920, Cl. 280-668.000.

Huizing, Albert; Felder, Willy J. B.; and Tijssen, Antonius W., to U.S. Philips Corporation. Method of manufacturing a light conductor and hollow metal light conductor manufactured according to the method. 4,763,398, Cl. 29-527.100.

Hummel, Leonard S.: *See—*
Staerzl, Richard E.; Radtke, Norman H.; and Hummel, Leonard S., 4,763,625, Cl. 123-435.000.

Humphrey, Brian, to Basic Packaging Systems, Inc. Part bottom seal of chain of gusseted bags and machine therefor. 4,764,030, Cl. 383-120.000.

Hundley, W. Maynard. Warm-up bat. 4,763,899, Cl. 273-26.00B.

Hung, Cheng H. Cassette type stereo speaker system. 4,764,961, Cl. 381-24.000.

Hungerford, Charles S., Jr. Bracket for holding pipe clamps. 4,763,867, Cl. 248-544.000.

Hunt, Carl E., to GTE Valeron Corporation. Coolant supply shank for a rotating cutting tool. 4,764,062, Cl. 409-136.000.

Hunter, Paul D.; Parker, William W.; and Widrevitz, Benjamin C., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Virtual PBX call processing method. 4,764,919, Cl. 370-60.000.

Hunter, Thomas A., to Raychem Corporation. Method of protecting a cable splice with a splice closure having pressure measuring means. 4,764,232, Cl. 156-48.000.

Hurley, James E.; and Stettler, Robert H., to Raytheon Company. Gas self-clean double wall oven. 4,763,638, Cl. 126-31.00A.

Hurwitz, Paula: *See—*
Hurwitz, Robert, 4,764,948, Cl. 378-165.000.

Hurwitz, Robert, to Hurwitz, Paula. Data marking system for medical x-rays, particularly mammograms. 4,764,948, Cl. 378-165.000.

Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. High thermal conductivity ceramic body. 4,764,321, Cl. 264-65.000.

Hutschenreuter, Elfriede; Bytzek, Max; Andrae, Klaus; and Weinheimer, Alois, to Hoechst Aktiengesellschaft. Hollow rod comprised of a shirred tubular casing and closure element. 4,764,031, Cl. 383-120.000.

Hwang, James G.: *See—*
Hayworth, Robert G.; Russell, Ray E., Jr.; Fleming, Robert F., III; and Hwang, James G., 4,764,769, Cl. 342-50.000.

I.C.A. S.p.A.: *See—*
Di Vita, Angelo, 4,764,022, Cl. 366-157.000.

Ichie, Koji: *See—*
Hara, Tsutomu; Ooi, Yoshiharu; Shinoda, Kazunori; and Ichie, Koji, 4,763,996, Cl. 350-387.000.

Ichihashi, Koji; and Murayama, Toshihiro, to Diesel Kiki Co., Ltd. Operating oil introduction type electromagnetic valve. 4,763,872, Cl. 251-30.010.

Ichijima, Seiji; and Sakanoue, Kei, to Fuji Photo Film Co., Ltd. Color photographic material with color forming ligand compounds and a method of processing. 4,764,454, Cl. 430-361.000.

Ichikawa, Hideyuki: *See—*
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, 4,764,505, Cl. 514-35.000.

Ichikawa, Junji: *See—*
Dei, Katsuhito; Kimizuka, Junichi; and Ichikawa, Junji, 4,763,889, Cl. 271-9.000.

Ichikawa, Shingo, to Citizen Watch Co., Ltd. Electronic timepiece. 4,764,910, Cl. 368-69.000.

Ichikawa, Wataru; and Matsuki, Yuji, to Kabushiki Kaisha SG. Absolute rotational position detection device. 4,764,767, Cl. 340-870.310.

Ichino, Toshikazu: *See—*
Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, 4,764,004, Cl. 350-632.000.

ICI Australia Operations Proprietary Ltd.: *See—*
Bates, Andrew; Dack, Stuart; and Yates, David, 4,764,230, Cl. 149-21.000.

IDN Invention and Development of Novelties AG: *See—*
Ackeret, Peter, 4,763,962, Cl. 312-16.000.

Idroplina S.r.l.: *See—*
Torta, Nello, 4,763,741, Cl. 180-6.200.

IG-Technical Research Inc.: *See—*
Takahashi, Ryuichi, 4,764,102, Cl. 425-466.000.

Igel, Wolfgang: *See—*
Nickolay, Helmut; Igel, Wolfgang; Meissner, Werner; and Schollhammer, Richard, 4,763,467, Cl. 57-261.000.

Iino, Yasuo; and Saito, Yoshinori, to Tomoe Kagaku Kogyo Kabushiki Kaisha. Plant growth regulation. 4,764,201, Cl. 71-77.000.

Ikawa, Yasuo: *See—*
Kameyama, Atushi; Ikawa, Yasuo; and Kawakyu, Katsue, 4,764,897, Cl. 365-154.000.

Ikeda, Haruhiko; Higuchi, Masahiro; and Hiraishi, Shigetoshi, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording material. 4,764,501, Cl. 503-209.000.

Ikeda, Hayato; Kurahashi, Masayuki; and Gomi, Fukuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate utilized for swash plate type compressor. 4,763,563, Cl. 92-71.000.

Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Piston type compressor for air conditioning unit with asymmetric valve mechanisms. 4,764,091, Cl. 417-269.000.

Ikeda, Naotaka: *See—*
Nishite, Yoshitoyo; Torita, Fumio; and Ikeda, Naotaka, 4,763,493, Cl. 68-12.00R.

Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru; Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, to Yamanouchi Pharmaceutical Co., Ltd. 7-formylaminocephalosporin compounds. 4,764,606, Cl. 540-221.000.

Imamura, Tatsuo; and Yamamoto, Hiroyuki, to Olympus Optical Company, Ltd. Perpendicular magnetic head. 4,764,833, Cl. 360-126.000.

Imhof, Rene; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Ethylenediamine monoamides. 4,764,522, Cl. 514-354.000.

Imi Kynoch Limited: *See—*
Booth, Bryan; and Nicolson, William H., 4,763,857, Cl. 244-3.220.

Immel, Donna L.: *See—*
Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., 4,764,386, Cl. 426-293.000.

Imperial Chemical Industries PLC: *See—*
Bilski, Andrew J. T.; Howe, Ralph; Rao, Balbir; and Thomson, David S., 4,764,361, Cl. 424-45.000.
Carey, John G.; Rothon, Roger N.; and Bottrill, Martin, 4,764,544, Cl. 523-205.000.
Gregory, Peter; and White, Raymond L., 4,764,178, Cl. 8-471.000.
Parton, Brian, 4,763,371, Cl. 8-647.000.

Inada, Akira: *See—*
Iwaki, Hiroshi; Sakamoto, Kiyoshi; Inada, Akira; and Kikkawa, Shinichi, 4,764,789, Cl. 355-14.00R.

Inagaki, Masaji: *See—*
Araki, Shingo; Maeda, Ryugo; Inagaki, Masaji; Kitao, Teijiro; and Ueno, Shigeki, 4,764,500, Cl. 503-208.000.

Inako, Yoshihide: *See—*
Sumi, Takao; Inako, Yoshihide; and Nishida, Masahiro, 4,764,177, Cl. 8-471.000.

Inata, Hiroo: *See—*
Hara, Shigeyoshi; Inata, Hiroo; and Matsumura, Shunichi, 4,764,427, Cl. 428-400.000.

Inazawa, Yoshizumi: *See—*
Tani, Toshiyuki; Inazawa, Yoshizumi; Takahashi, Toshihiko; and Satomura, Shigeyuki, 4,764,824, Cl. 360-70.000.

Inco Limited: *See—*
Babjak, Juraj; and Krause, Eberhard, 4,764,353, Cl. 423-20.000.

Indra, Friedrich; and Tholl, Manfred, to General Motors Corporation. Internal combustion engine of the spark ignition type. 4,763,622, Cl. 123-308.000.

Innofinance Altalanos Innovacios Penzwtezet: *See—*
Teleki, Peter, 4,764,946, Cl. 378-62.000.

Inomata, Kenichi: *See—*
Nakajima, Nobuyuki; Inomata, Kenichi; and Okada, Shigeru, 4,764,099, Cl. 418-270.000.

Inoue, Hiroki, to EOS Corporation. Apparatus for measuring water content. 4,764,018, Cl. 356-418.000.

Inoue, Nanao: *See—*
Saito, Koichi; Fujimura, Yoshihiko; and Inoue, Nanao, 4,764,777, Cl. 346-140.00R.

Inoue, Nobuhisa; Matano, Masaharu; and Yamashita, Tsukasa, to Omron Tateisi Electronics Co. Waveguide-type optical sensor. 4,763,973, Cl. 350-96.130.

Inoue, Shinichi; and Oshima, Yasushi, to Yamato Scale Company, Limited. Vibrator. 4,764,695, Cl. 310-20.000.

Inoue, Toshifumi, to Dainippon Screen Mfg. Co., Ltd. Method of and apparatus for compressing image data. 4,764,975, Cl. 382-47.000.

Inoue, Yoshio; and Arai, Masatoshi, to Shin-Etsu Chemical Co., Ltd. Curable polymeric composition. 4,764,577, Cl. 525-409.000.

Insilco Corporation: *See—*
Metzger, Louis G.; and Davi, Richard, 4,763,795, Cl. 211-11.000.

Institut Merieux: *See—*
Tayot, Jean Louis; Gattel, Paule A.; and Tardy, Michel A., 4,764,279, Cl. 210-656.000.

Instrumentarium Corp.: *See—*
Merilainen, Pekka, 4,763,664, Cl. 128-718.000.

Intelligent Surgical Lasers: *See—*
Bille, Josef F.; and Brown, Stuart I., 4,764,930, Cl. 372-23.000.

InterMetro Industries Corporation: *See—*
Cohn, Robert J.; Rosania, W. Stanley; Rosania, Jeffrey W.; and Sudimak, Michael J., 4,763,799, Cl. 211-187.000.

International Business Machines Corporation: *See—*
Bublitz, Hermann R., 4,764,039, Cl. 400-146.000.
Coughlin, Charles P.; Cadwallader, Robert H.; and Celestino, Robert J., 4,764,722, Cl. 324-158.00P.
Einkauf, Mark A.; and West, Lynn P., 4,764,966, Cl. 381-46.000.
Flaitz, Philip L.; Master, Raj N.; Palmateer, Paul H.; and Reddy, Srinivasa S. N., 4,764,341, Cl. 419-9.000.
Franke, Hilmar; and Gfeller, Fritz R., 4,764,984, Cl. 455-619.000.
Galand, Claude; and Platel, Guy, 4,764,955, Cl. 379-411.000.
Karabatsos, Chris, 4,764,893, Cl. 364-900.000.
Makosch, Gunter; and Schedewie, Franz J., 4,764,014, Cl. 356-351.000.
Malaviya, Shashi D., 4,764,799, Cl. 357-49.000.
Simpson, John P., 4,764,848, Cl. 361-408.000.
Temple, Joseph L., III, 4,764,865, Cl. 364-200.000.
Thomas, Vincent P., 4,764,892, Cl. 364-841.000.

International Business Machines Corporaton: *See—*
Greanias, Evon C.; Schroeder, Karl F.; and Ruffino, Louis V., 4,764,885, Cl. 364-571.000.

International Flavors & Fragrances Inc.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000.

International Marketing Inc.: *See—*
Fogal, Robert D.; and Taber, Albert A., 4,763,392, Cl. 29-159.100.

International Mobile Machines Corporation: *See—*
Paneth, Eric; Critchlow, David N.; and Yehushua, Moshe, 4,764,940, Cl. 375-67.000.

Inui, Fuyuki: *See—*
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000.

Inui, Tetsuya: *See—*
Ohta, Kenji; Hirokane, Junji; Inui, Tetsuya; Takahashi, Akira; and Katayama, Hiroyuki, 4,764,441, Cl. 430-5.000.

Inverni Della Beffa S.p.A.: *See—*
Gabetta, Bruno; Bombardelli, Ezio; and Pifferi, Giorgio, 4,764,508, Cl. 514-78.000.

Ionics, Incorporated: *See—*
Brusa, Paolo E., 4,764,315, Cl. 261-140.100.

Iowa State University Research Foundation, Inc.: *See—*
Nissen, Steven L., 4,764,531, Cl. 514-557.000.
Ridgway, David M., 4,763,743, Cl. 180-53.300.

Irvine Sensors Corporation: *See—*
Go, Tiong C., 4,764,846, Cl. 361-388.000.

Ishida, Hisashi: *See—*
Sahara, Kunizo; Otsuka, Kanji; and Ishida, Hisashi, 4,764,804, Cl. 357-81.000.

Ishida, Tokuji: *See—*
Hamada, Masataka; and Ishida, Tokuji, 4,764,787, Cl. 354-408.000.

Ishida, Yoichi: *See—*
Honda, Shoichi; Sakata, Masayasu; and Ishida, Yoichi, 4,763,617, Cl. 123-90.580.

Ishihara, Hidetoshi: *See—*
Hayashi, Shoichi; Sakai, Norio; and Ishihara, Hidetoshi, 4,763,495, Cl. 68-19.100.

Ishihara, Masayuki; and Makio, Keizo, to Matsushita Electric Works, Ltd. Sintered glass-powder product. 4,764,486, Cl. 501-9.000.

Ishii, Kenshun: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, 4,763,919, Cl. 280-644.000.

Ishii, Toshitsugu: *See—*
Naito, Sadao; Shiono, Katsumi; Shinohara, Hideo; Makino, Yoshihiro; and Ishii, Toshitsugu, 4,763,514, Cl. 73-19.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, 4,763,919, Cl. 280-644.000.

Ishikawa, Shunichi, to Fuji Photo Film Co., Ltd. Image-forming method employing light-sensitive material containing silver halide, reducing agent, polymerizable compound and a photopolymerization initiator. 4,764,451, Cl. 430-138.000.

Ishikawa, Takatoshi: *See—*
Arakawa, Jun; Okada, Masahiro; and Ishikawa, Takatoshi, 4,764,455, Cl. 430-393.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Haruyama, Kenzo; Tsuruga, Kenichiro; and Yoshikawa, Tadashi, 4,763,814, Cl. 222-63.000.
Yoshida, Hideo, 4,764,277, Cl. 210-498.000.

Ishikawajima Sangyo Kikai Kabushiki Kaisha: *See—*
Yoshida, Hideo, 4,764,277, Cl. 210-498.000.

Ishikawajima Yuki Kabushiki Kaisha: *See—*
Haruyama, Kenzo; Tsuruga, Kenichiro; and Yoshikawa, Tadashi, 4,763,814, Cl. 222-63.000.

Ishikura, Takashi: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, 4,763,919, Cl. 280-644.000.

Iso-Clear Systems Corporation: *See—*
Elfline, Geraldine S., 4,764,281, Cl. 210-668.000.

Isoda, Satoru; Nara, Shigetoshi; Ueyama, Satoshi; Kawakubo, Hiroaki; and Ogura, Akemi, to Mitsubishi Denki Kabushiki Kaisha. Electric element using oxidation-reduction substances. 4,764,415, Cl. 428-212.000.

Isoda, Satoru: *See—*
Ueyama, Satoshi; Isoda, Satoru; Tomisawa, Osamu; Ogura, Akemi; and Kawakubo, Hiroaki, 4,764,416, Cl. 428-212.000.

Israelson, Gordon A.; Lippert, Thomas E.; Olczak, Edward S.; and Ciliberti, David F., to Westinghouse Electric Corp. High temperature, high pressure gas filter system. 4,764,190, Cl. 55-269.000.

Isshiki, Tadao, to Rakkasan Company Ltd. Process for resuscitating animal fibers. 4,764,173, Cl. 8-115.520.

ITC, Incorporated: *See—*
Hartmann, Richard, 4,764,851, Cl. 362-74.000.

Ito, Isao: *See—*
Saida, Seishiro; Ito, Isao; Ito, Satoshi; and Okubo, Naotake, 4,763,601, Cl. 118-718.000.

Ito, Satoshi: *See—*
Saida, Seishiro; Ito, Isao; Ito, Satoshi; and Okubo, Naotake, 4,763,601, Cl. 118-718.000.

Ito, Toshifumi: *See—*
Fujita, Haruyasu; Hirosawa, Yoshiaki; and Ito, Toshifumi, 4,763,538, Cl. 74-6.000.

Ito, Yoshiyasu: *See—*
Nagase, Masaomi; Kobayashi, Fumiaki; and Ito, Yoshiyasu, 4,763,630, Cl. 123-501.000.

Itou, Katsumi; and Toyoda, Atsushi, to Nippon Gakki Seizo Kabushiki Kaisha. Method for producing a magnetic recording medium. 4,764,259, Cl. 204-25.000.

ITT Corporation: *See—*
Kennedy, Paul G., 4,763,877, Cl. 251-362.000.

ITT Gilfillan, a division of ITT Corporation: *See—*
Sterns, William G., 4,764,771, Cl. 342-373.000.

Ivony, Jozsef: *See—*
Ratsko , Istvan; Madocsay, Attila; Ivony, Jozsef; Horvath, Bela; and Madi, Jeno, 4,763,916, Cl. 280-432.000.

Iwai, Isamu: *See—*
Yoshimura, Susumu; and Iwai, Isamu, 4,764,965, Cl. 381-43.000.

Iwaki, Hiroshi; Sakamoto, Kiyoshi; Inada, Akira; and Kikkawa, Shinichi, to Sanyo Electric Co., Ltd. Apparatus for inputting image forming condition. 4,764,789, Cl. 355-14.00R.

Iwamoto, Yoshinao: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Iwamoto, Yoshinao, 4,764,980, Cl. 455-601.000.

Iwanami, Takeshi, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for internal combustion engine. 4,763,612, Cl. 123-52.0MV.

Iwasa, Kazuyuki: *See—*
Torikoshi, Yuichi; Shirai, Hitoshi; Iwasa, Kazuyuki; Miyazaki, Hiroaki; and Yamazaki, Yasuo, 4,764,784, Cl. 354-195.120.

Iwasa, Tadanobu; Takeuchi, Katsumasa; and Kanehara, Toshikatsu, to Toyoda Gosei Co., Ltd. Rubber with nickel dithiocarbates. 4,764,565, Cl. 525-352.000.

VOL 1093 ISS 3 AG 16 1988 UMI

Iwasa, Yoshio: *See—*
Sasaki, Kenichi; and Iwasa, Yoshio, 4,763,477, Cl. 60-602.000

Iwasaki, Masaru: *See—*
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, 4,764,413, Cl. 428-192.000.

Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori; Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, to Toyota Jidosha Kabushiki Kaisha. Roots type pump with pin connection for plastic coated rotor. 4,764,098, Cl. 418-152.000.

Iwata, Yoshihisa, to Kabushiki Kaisha Toshiba. Semiconductor sense circuit suitable for buffer circuit in semiconductor memory chip 4,764,693, Cl. 307-530.000.

Iwatsuki, Tatsuya: *See—*
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,748, Cl. 180-248.000
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,749, Cl. 180-249.000.

Iyoshi, Shuzo: *See—*
Tokuhara, Shinji; Onizawa, Yoshio; and Iyoshi, Shuzo, 4,764,331, Cl. 264-328.160

Izukawa, Kazuhiro: *See—*
Okumura, Ichiro; Izukawa, Kazuhiro; Okuno, Takuo; and Tsukimoto, Takayuki, 4,763,776, Cl. 198-630.000.

Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, to Hitachi, Ltd.; and Hitachi Video Eng. Inc. Code error correcting method. 4,764,927, Cl. 371-39.000.

J. I. Case Company: *See—*
Risser, Philip E., 4,763,915, Cl. 280-413.000.

Jackson, Leonard: *See—*
Shaw, Ronald; Jackson, Leonard; and Headley, Anthony, 4,764,123, Cl. 439-148.000.

Jackson, Richard L.: *See—*
Massey, Eddie H.; and Jackson, Richard L., 4,764,592, Cl 530-305.000.

Jacob, Werner. Bearing assembly for the driven wheels of a motor vehicle having a split inner bearing ring. 4,764,153, Cl. 464-111.000.

Jacobine, Anthony F.; and Glaser, David M., to Loctite Corporation. Substituted saccharin compounds and curable compositions containing same. 4,764,239, Cl. 156-307.300.

Jacobsen, Douglas C.: *See—*
Dalquist, H. David, III; Jacobsen, Douglas C.; Jorgensen, Jorgen A.; Kluge, Douglas J.; and Taylor, John N., 4,763,567, Cl. 99-323.500

Jacobsson, Kurt: *See—*
Carrotte, Frederick H.; Stewart, John R.; and Jacobsson, Kurt, 4,764,875, Cl. 364-470.000

Jaeger, John C. Surgical instrument with adjustable angle of operation. 4,763,669, Cl. 128-751.000

Jaffe, Walter, to Fleximark AB. Device for marking sheet-shaped objects. 4,764,043, Cl. 400-629.000.

Jager, Gerhard: *See—*
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, 4,764,526, Cl. 514-383.000

Jagicza, Laszlo : *See—*
Jaki, Laszlo ; Jodal, Sandor; Jagicza, Laszlo ; Mandzsu, Jozsef; Pap, Endre; and Szebeni, Janos, 4,764,768, Cl. 340-815.050

Jaki, Laszlo ; Jodal, Sandor; Jagicza, Laszlo ; Mandzsu, Jozsef; Pap, Endre; and Szebeni, Janos, to Finommechanikai es Elektronikus Muszergyarto Szovetkezet. Signal display element for the display of more, than two informations for signal displays with electro-magnetically excited magnetic tilting plates. 4,764,768, Cl. 340-815.050

Jakusch, Helmut: *See—*
Hibst, Hartmut; Rudolf, Peter; and Jakusch, Helmut, 4,764,300, Cl. 252-62.580

James, Gregory S. System and method for protecting plants from freeze damage. 4,763,440, Cl. 47-2.000.

James River-Norwalk, Inc.: *See—*
Cheshire, James O.; Janda, Bruce W.; and Thut, Robert S., 4,764,253, Cl. 162-198.000.

James, William D.: *See—*
Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas; Crnkovic, Mark A.; James, William D.; and Merz, Walter E., 4,763,716, Cl. 164-122.100

Janda, Bruce W.: *See—*
Cheshire, James O.; Janda, Bruce W.; and Thut, Robert S., 4,764,253, Cl. 162-198.000.

Jang, G. David. Tandem independently inflatable/deflatable multiple diameter balloon angioplasty catheter systems and method of use. 4,763,654, Cl. 128-344.000.

Jang, Sei-Joo: *See—*
Takeuchi, Kiyoshi; Damjanovic, Dragan; and Jang, Sei-Joo, 4,764,492, Cl. 501-136.000

Janome Sewing Machine Co. Ltd.: *See—*
Takenoya, Hideaki; and Ozaki, Yoshiaki, 4,763,586, Cl 112-103.000.

Jansen, Cornelis W., to DHV Raadgevend Ingenieursbureau B.V. Process for removing of heavy metal from water in particular from waste water. 4,764,284, Cl. 210-715.000.

Jansen, Michael: *See—*
Wilcox, Jaroslava Z.; Jansen, Michael; Silver, Arnold H.; Yang, Jane J. J.; and Simmons, William W., 4,764,935, Cl. 372-50.000.

Janssen, Martinus M. P.: *See—*
Bijwaard, Henricus M. J.; and Janssen, Martinus M. P., 4,764,265, Cl. 208-18.000

Janssen Pharmaceutica N.V.: *See—*
Muller, Bernd W. W., 4,764,604, Cl. 536-103.000

Japan Electronic Control Systems, Co., Ltd.: *See—*
Tomisawa, Naoki, 4,763,627, Cl. 123-440.000.

Jarlan, Gerard E., to Canadian Patents and Developments Limited/-Societe Canadienne des Brevets et d'Exploitation Limitee. Stability optimized perforated breakwaters. 4,764,052, Cl. 405-31.000.

JD-Technologie AG: *See—*
Brandli, Max; and Feldmann, Hansueli, 4,763,910, Cl. 280-29.000.

Jeffcoat, Robert L.; Captain, Khushroo M.; and Doherty, Brian J., to Foster-Miller, Inc. Analysis system. 4,764,114, Cl. 433-72.000.

Jefferys, Keith; Marritt, Clifford R.; and Seim, Albert D., II, to Molins Machine Co., Inc. Cigarette filter rod feed mechanism. 4,763,775, Cl. 198-533.000.

Jensen, Stephen C., to Rosemount Inc. Turbine blade temperature detecting pyrometer. 4,764,025, Cl. 374-144.000.

Jepson, Kenneth H.: *See—*
Billington, Charles J., III; Oyama, Richard K.; Jepson, Kenneth H.; and Skeen, Thomas R., 4,763,794, Cl. 209-625.000

Jesinger, Richard, to Fortuna-Werke Maschinenfabrik GmbH. Blower for circulating larger gas volumes, in particular for high-power laser systems operating according to the gas-transportation principle. 4,764,085, Cl. 415-112.000.

Jesinger, Richard, to Fortuna-Werke Maschinenfabrik GmbH. Blower for circulating larger gas volumes, in particular for high-power laser systems. 4,764,086, Cl. 415-112.000.

Jidosha Kiki Co., Ltd.: *See—*
Yanagawa, Ichiro; and Wachi, Yuzi, 4,764,189, Cl. 55-163.000.

Jochem, Daniel R., to American Microsystems, Inc. CMOS programmable logic array using NOR gates for clocking. 4,764,691, Cl. 307-468.000

Jodal, Sandor: *See—*
Jaki, Laszlo ; Jodal, Sandor; Jagicza, Laszlo ; Mandzsu, Jozsef; Pap, Endre; and Szebeni, Janos, 4,764,768, Cl. 340-815.050

Johansson, Donald. Marine drive means. 4,764,136, Cl. 440-89.000.

Johansson, Gunnar, to Bengtsson, Anders, a part interest. Instrument for measuring the topography of a surface. 4,764,016, Cl. 356-371.000.

Johansson, Lars J., to AB SKF. Transport device. 4,763,774, Cl. 198-461.000.

Johnson, A. David, Jr.; and Bachman, Joseph L., Jr., to Wayne Automation Corp. Method for inserting partitions. 4,763,462, Cl. 53-448.000

Johnson, Alan D.: *See—*
Hartwigsen, Wesley D.; Johnson, Alan D.; Beckham, Jeffrey C.; and White, Kenneth L., 4,764,221, Cl. 134-8.000.

Johnson, Brian: *See—*
Geen, John A.; and Johnson, Brian, 4,764,748, Cl. 340-347.0AD

Johnson, Calvin S., to CTR Manufacturing, Inc. Tree felling apparatus. 4,763,705, Cl. 144-34.00R

Johnson, Carl D. Wall anchor. 4,764,065, Cl. 411-21.000.

Johnson, Derwyn C.: *See—*
Kawasaki, Brian S.; Kawachi, Masao; Hill, Kenneth O.; and Johnson, Derwyn C., 4,763,977, Cl. 350-96.150.

Johnson Electric Industrial Manufactory Ltd.: *See—*
Strobl, Georg, 4,764,700, Cl. 310-236.000.

Johnson, Jesse W., Jr. Method and apparatus for generating and representing chord note positions of a stringed instrument. 4,763,558, Cl. 84-485.00R

Johnson, Lorin K.; Atlas, Steven A.; McCarthy, Brian J.; Laragh, John H.; and Lewicki, John A., to Biotechnology Research Associates J.V. Atrial natriuretic/vasodilator polypeptides. 4,764,504, Cl. 514-12.000.

Johnson, Randall K.: *See—*
Hill, David T.; and Johnson, Randall K., 4,764,509, Cl. 514-102.000.

Johnson, Virgil J.: *See—*
Saunders, Eugene M.; Hood, Nicholas S.; Sanko, John R.; and Johnson, Virgil J., 4,763,600, Cl. 118-684.000.

Johnson, William A., to Cross Technology, Inc. Asymmetrical dual input amplifier. 4,764,733, Cl. 330-84.000.

Johnston, Anthony M., to University of Sydney. Plate heat exchanger for separating vapor and liquid phases. 4,763,488, Cl. 62-497.000.

Johnston, Damon A.; Papenhause, Paul E.; Garcia, George L.; and Drehobl, Thomas L., to Suncast Corporation. Vehicle and patio washing brush. 4,764,047, Cl. 401-289.000.

Johnston, Roger G., to United States of America, Energy. Interferometric apparatus and method for detection and characterization of particles using light scattered therefrom. 4,764,013, Cl. 356-349.000

Johnston, Roy. Bottle pump. 4,763,802, Cl. 215-228.000.

Jones, Brian; and Allan, Graeme S., to British Telecommunications plc. Electrical connector assemblies. 4,764,129, Cl. 439-677.000.

Jones, Christopher R.; and Jones, L. Shannon, to Templex, Inc. Dual suction unit and method. 4,764,058, Cl. 406-117.000.

Jones, Donald W., to General Electric Company. Superconductive circuit for controlling quench events. 4,764,837, Cl. 361-19.000

Jones, Jeffrey S., to Solutech, Inc. Dialysis system 2nd method 4,763,658, Cl. 128-635.000.

Jones, L. Shannon: *See—*
Jones, Christopher R.; and Jones, L. Shannon, 4,764,058, Cl. 406-117.000

Jones, Lee J., to Sunair Electronics, Inc. Push-pull transformer feedback amplifier. 4,764,735, Cl. 330-271.000

Jones, Ronald E.: *See—*
Peterson, Royal D.; and Jones, Ronald E., 4,764,932, Cl. 372-35.000

Jones, Steven D.; and Blomgren, George E., to Eveready Battery Company. Low temperature molten compositions. 4,764,440, Cl. 429-198.000

Jones, William S.: *See—*
Zimmerman, Roger W.; and Jones, William S., 4,763,890, Cl 271-30.100.

Jorg, Benno M.; Kurr, Klaus; and Seifert, Heinz, to Carl Freudenberg, Firma. Rubber coupling. 4,764,152, Cl. 464-89.000.

Jorgensen, Jorgen A.: *See—*
Dalquist, H. David, III; Jacobsen, Douglas C.; Jorgensen, Jorgen A.; Kluge, Douglas J.; and Taylor, John N., 4,763,567, Cl. 99-323.500.

Jorneus, Lars; and Rangert, Bo. Sterile package. 4,763,788, Cl. 206-438.000

Jos. Dyson & Sons, Inc.: *See—*
Quinn, Russell C., 4,764,082, Cl. 414-785.000.

JSM Screw Co., Ltd.: *See—*
Kawashima, Masao, 4,764,067, Cl. 411-310.000

JSS Scientific Corporation: *See—*
Stupakis, John S., 4,763,597, Cl. 114-297.000.

Judd, Duncan B.: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,764,612, Cl. 546-232.000

Judy, Charles R.: *See—*
Dahlstrom, David K.; Fife, Merrill E.; and Judy, Charles R., 4,764,907, Cl. 367-163.000.

Jue, Catharine, executrix: *See—*
Leib, Kenneth G.; and Jue, Suey, deceased, 4,764,781, Cl 354-65.000

Jue, Suey, deceased: *See—*
Leib, Kenneth G.; and Jue, Suey, deceased, 4,764,781, Cl. 354-65.000

Jumel, Bernard: *See—*
Focqueur, Herve ; and Jumel, Bernard, 4,763,766, Cl. 192-99.00S

Junger, Dieter: *See—*
Fehlmann, Wolfgang; Hofer, Gerald; Junger, Dieter; and Stumpp, Gerhard, 4,763,631, Cl. 123-503.000

Junger, Klaus, to ANT Nachrichtentechnik GmbH. Voltage and high frequency signal supply for a diode mounted in a waveguide. 4,764,741, Cl. 333-250.000

Justice, James C., to Coaltex, Inc. Pitch seam mining. 4,763,955, Cl. 299-56.000.

Kaae, James L.: *See—*
Rickman, William S.; Kaae, James L.; and Gamson, Bernard W., 4,763,585, Cl. 110-346.000.

Kaatz, Gary F., to Motorola, Inc. Frequency synthesizer having digital phase detector with optimal steering and level-type lock indication 4,764,737, Cl. 331-1.00A

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Okuda, Naoki; Nishikawa, Yutaka; and Aoki, Takakiyo, 4,764,224, Cl. 148-26.000
Saito, Makoto; and Mizoguchi, Takao, 4,764,488, Cl. 501-95.000

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Okumura, Takuji, 4,764,212, Cl. 75-228.000.
Sakamoto, Toshio; Sato, Kanichi; and Takemura, Yoshiyuki, 4,763,720, Cl. 164-525.000

Kabushiki Kaisha Miyano: *See—*
Hata, Yoshikuni; and Ushigoe, Tomio, 4,763,549, Cl. 82-2.500.

Kabushiki Kaisha SG: *See—*
Ichikawa, Wataru; and Matsuki, Yuji, 4,764,767, Cl. 340-870.310.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, 4,764,004, Cl. 350-632.000.

Kabushiki Kaisha Tominaga Jyushikogyosho: *See—*
Tominaga, Kazutoshi, 4,763,607, Cl. 119-17.000

Kabushiki Kaisha Toshiba: *See—*
Ando, Hideo; and Doi, Akihiko, 4,764,912, Cl. 369-45.000
Endo, Yukio; Egawa, Yoshitaka; and Harada, Nozomu, 4,764,814, Cl. 358-213.180
Hiruta, Yoichi, 4,764,478, Cl. 437-29.000
Iwata, Yoshihisa, 4,764,693, Cl. 307-530.000
Kameyama, Atushi; Ikawa, Yasuo; and Kawakyu, Katsue, 4,764,897, Cl. 365-154.000
Kuwahara, Masashi, 4,764,802, Cl. 357-68.000
Matsumura, Ken, 4,764,688, Cl. 307-270.000
Nishite, Yoshitoyo; Torita, Fumio; and Ikeda, Naotaka, 4,763,493, Cl. 68-12.00R
Ohtombe, Ko; and Nishikawa, Masamitu, 4,764,969, Cl. 382-8.000.
Sakurai, Takayasu, 4,764,901, Cl. 365-189.000.
Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, 4,764,954, Cl 379-390.000
Watanabe, Masafumi; Ozaki, Toshitune; and Hirahara, Jiro, 4,764,959, Cl. 380-4.000
Yamakawa, Tsutomu, 4,764,678, Cl. 250-369.000

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Ikeda, Hayato; Kurahashi, Masayuki; and Gomi, Fukuo, 4,763,563, Cl. 92-71.000
Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, 4,764,091, Cl. 417-269.000.

Kabushiki Kaisha Uchino Shoten: *See—*
Uchino, Shigeo, 4,764,150, Cl. 446-456.000.

Kabushiki Kaisya Advance Kaihatsu Kenkyujo: *See—*
Sasaki, Minoru, 4,764,164, Cl. 604-20.000.

Kado, Hisao: *See—*
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kinchi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000

Kadota, Shigenobu: *See—*
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru, Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000

Kageyama, Terutaka: *See—*
Hosizaki, Hiroki; Suzuki, Hirofumi; and Kageyama, Terutaka, 4,764,435, Cl. 428-621.000

Kagotani, Masahiro: *See—*
Hanessian, Stephen; and Kagotani, Masahiro, 4,764,605, Cl 536-124.000

Kajio, Toshiaki: *See—*
Kojima, Toshihiko; and Kajio, Toshiaki, 4,763,590, Cl. 112-287.000

Kakutani, Osamu: *See—*
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000

Kalbitzer, Siegfried, to Max Planck-Gesellschaft zur Forderung der Wissenschaften e.V. Photo-mask with regions having a differing optical transmissivities. 4,764,432, Cl. 428-446.000

Kalina, Alexander I. Method and apparatus for implementing a thermodynamic cycle with recuperative preheating. 4,763,480, Cl 60-649.000

Kalkote, Uttam R.: *See—*
Ayyangar, Nagaraj R.; Choudhary, Anil R.; Kalkote, Uttam R.; and Sharma, Vasant K., 4,764,615, Cl. 546-44.000

Kallin, Fredrik L. N.; Czesnik, Marek W.; and Mach, Mark M., to NCR Corporation. Document reader module. 4,764,976, Cl. 382-65.000

Kamath, Hundi P.; and Leder, Jeffrey C., to Raychem Corporation Electrical devices comprising conductive polymer compositions. 4,764,664, Cl. 219-548.000

Kameyama, Atushi; Ikawa, Yasuo; and Kawakyu, Katsue, to Kabushiki Kaisha Toshiba. Semiconductor memory device employing normally-on type GaAs-MESFET transfer gates. 4,764,897, Cl. 365-154.000

Kaminski, Donald R.; and Sims, Burnie, to Hughes Tool Company Method and apparatus for mixing dry particulate material with a liquid. 4,764,019, Cl. 366-15.000

Kamishiro, Toshiro: *See—*
Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,764,617, Cl. 546-169.000

Kamoshita, Yasuo: *See—*
Yoshitomi, Toshihiko; Horiuchi, Hiromi; Yamaguchi, Yukio Kamoshita, Yasuo; and Sekihara, Kiyoshi, 4,764,448, Cl 430-120.000

Kanai, Takao; Yamaguchi, Katsumi; Kinoshita, Shigeo; Yoshikawa, Kikuo; and Yokoi, Syouichiro, to Clarion Co., Ltd. Intermittent gear mechanism. 4,764,827, Cl. 360-96.500

Kanehara, Toshikatsu: *See—*
Iwasa, Tadanobu; Takeuchi, Katsumasa; and Kanehara, Toshikatsu, 4,764,565, Cl. 525-352.000

Kaneko, Kyoichi, to Daiwa Seiko, Inc. Fishing reel. 4,763,856, Cl 242-217.000

Kaneko, Mamoru: *See—*
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki, Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000

Kaneko, Shuzo; and Toyono, Tsutomu, to Canon Kabushiki Kaisha Method and apparatus for driving ferroelectric liquid crystal optical modulation device. 4,763,994, Cl. 350-336.000

Kaneko, Shuzo: *See—*
Katagiri, Kazuharu; and Kaneko, Shuzo, 4,763,995, Cl 350-341.000

Kaneko, Tomohisa, to Yazaki Corporation. Male terminal for electrical connection. 4,764,133, Cl. 439-889.000

Kao, Angela W.: *See—*
Chern, Lih-Ju; Kao, Angela W.; and Kao, Ming-Luh, 4,764,953, Cl 379-355.000.

Kao, Ming-Luh: *See—*
Chern, Lih-Ju; Kao, Angela W.; and Kao, Ming-Luh, 4,764,953, Cl 379-355.000

Kapich, Davorin D. Inlet guide vane assembly. 4,764,088, Cl 415-150.000

Kapp, Michael J. Tracheal tube filter. 4,763,645, Cl. 128-205.290

Kapuscinski, Maria M.; Liu, Christopher S.; and Hart, William P., to Texaco Inc. Hydrocarbon compositions containing polyolefin graft polymers. 4,764,304, Cl. 252-51.50A.

Karabatsos, Chris, to International Business Machines Corporation Noise-immune interrupt level sharing. 4,764,893, Cl. 364-900.000

Karlin, Mats A.; and Weman, Per O., to Autoliv Development AB. Seat movement responsive belt tensioning arm. 4,763,924, Cl. 280-806.000

Karlmann, Thomas F.: *See—*
Petrie, Adelore F.; Karlmann, Thomas F.; Parmelee, Steven G and Edwards, Arthur J., 4,764,840, Cl. 361-154.000

Karpisek, Ladislav S. Method and apparatus for stretch wrapping 4,763,461, Cl. 53-399.000

Kasinoff, Harvey A., to Hobart Corporation. Energy efficient scale 4,763,739, Cl. 177-210.00R

Kass, Robert E.; Frederick, Robert J.; and Hallock, Louis L., to Angus Chemical Company. Detonating energy transmittal device 4,763,576, Cl. 102-321.000

Kastner, Ralph E.: *See—*
Hamill, Robert L.; and Kastner, Ralph E., 4,764,510, Cl 424-120.000

Kasuga, Kazunori: *See—*
Masuzawa, Kuniyoshi; Okamura, Kyuya, Kasuga, Kazunori, Fujimori, Shizuyoshi; Kinoshita, Susumu; and Matsukubo, Hiroshi, 4,764,608, Cl. 544-6.000

VOL 1093 ISS 3 AG 16 1988 UMI

Katagiri, Kazuharu; and Kaneko, Shuzo, to Canon Kabushiki Kaisha. Spacers with alignment effect and substrates having a weak alignment effect. 4,763,995, Cl. 350-341.000.

Kataoka, Kunihiko: *See—*
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000

Katayama, Hiroyuki: *See—*
Ohta, Kenji; Hirokane, Junji; Inui, Tetsuya; Takahashi, Akira; and Katayama, Hiroyuki, 4,764,441, Cl. 430-5.000.

Kato, Hideki; and Yamamoto, Noriyuki, to Toagosei Chemical Industry Co., Ltd. Method for preventing aluminum corrosion in electronic parts. 4,764,396, Cl. 427-69.000.

Kato, Masatake: *See—*
Tsuji, Sadahiko; Sugiura, Muneharu; Tanaka, Kazuo; and Kato, Masatake, 4,763,998, Cl. 350-427.000

Kato, Toshikazu; and Nitta, Kouichi, to Murata Manufacturing Co., Ltd. Electronic component with terminal caps. 4,764,844, Cl. 361-308.000.

Katou, Takeyasu: *See—*
Nakano, Kunimitsu; Katou, Takeyasu; and Sakakibara, Mitsuaki, 4,764,746, Cl. 337-66.000.

Katsumura, Yoshio: *See—*
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, 4,764,505, Cl. 514-35.000.

Katsura, Yousuke: *See—*
Ueda, Ikuo; and Katsura, Yousuke, 4,764,514, Cl. 514-252.000

Katz, Ira: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000.

Katzen, Raphael: *See—*
Lora, Jairo H.; Katzen, Raphael; Cronlund, Malcolm; and Wu, Chih F., 4,764,596, Cl. 530-507.000.

Kauffman, Robert E., to University of Dayton. Method for evaluating the remaining useful life of a hydrocarbon oil. 4,764,258, Cl. 201-1.00T

Kaufman, Herbert E.; and McDonald, Marguerite B., to Allergan, Inc. Trephine and method. 4,763,651, Cl. 128-310.000.

Kaun, Thomas D., to United States of America, Energy. Lithium disulfide battery. 4,764,437, Cl. 429-50.000.

Kautz, Jon F.: *See—*
Heisey, Jay M.; Kautz, Jon F.; and Pickles, Charles S., 4,763,408, Cl. 29-874.000

Kaveney, John R., Jr., to Caterpillar Inc. Door latch and lock assembly. 4,763,934, Cl. 292-21.000.

Kawabata, Keiji, to Mitsubishi Denki Kabushiki Kaisha. Master slice IC having n and p channel transistors. 4,764,798, Cl. 357-45.000.

Kawachi, Masao: *See—*
Kawasaki, Brian S.; Kawachi, Masao; Hill, Kenneth O.; and Johnson, Derwyn C., 4,763,977, Cl. 350-96.150

Kawada, Shigeru, to NEC Corporation. Analog-to-digital converter. 4,764,750, Cl. 340-347.0AD.

Kawaguchi, Susumu: *See—*
Hirahara, Takuho; Kawaguchi, Susumu; Ueda, Sei; and Nakane, Kazuhiro, 4,764,097, Cl. 418-60.000.

Kawai, Jyuichiro; and Yanagida, Isao, to Hitachi, Ltd. Discharge ring supporting structure of adjustable-blade axial-flow turbine. 4,764,083, Cl. 415-201.000

Kawai, Yoshihiro: *See—*
Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, 4,764,004, Cl. 350-632.000.

Kawakubo, Hiroaki: *See—*
Isoda, Satoru; Nara, Shigetoshi; Ueyama, Satoshi; Kawakubo, Hiroaki; and Ogura, Akemi, 4,764,415, Cl. 428-212.000.
Ueyama, Satoshi; Isoda, Satoru; Tomisawa, Osamu; Ogura, Akemi; and Kawakubo, Hiroaki, 4,764,416, Cl. 428-212.000.

Kawakyu, Katsue: *See—*
Kameyama, Atushi; Ikawa, Yasuo; and Kawakyu, Katsue, 4,764,897, Cl. 365-154.000.

Kawanishi, Hidenori: *See—*
Matsumoto, Mitsuhiro; Matsui, Sadayoshi; Taneya, Mototaka; and Kawanishi, Hidenori, 4,764,937, Cl. 372-50.000.
Taneya, Mototaka; Matsumoto, Mitsuhiro; Kawanishi, Hidenori; and Matsui, Sadayoshi, 4,764,936, Cl. 372-50.000.

Kawarabashi, Tsukasa; and Takahashi, Shinji, to Murata Kikai Kabushiki Kaisha. Doffed package transporting apparatus. 4,763,773, Cl. 198-409.000.

Kawasaki, Brian S.; Kawachi, Masao; Hill, Kenneth O.; and Johnson, Derwyn C., to Canadian Patents and Development Limited-Societe. Optical fiber coupler with tunable coupling ratio and method of making. 4,763,977, Cl. 350-96.150.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Nakanishi, Ichiro, 4,763,633, Cl. 123-514.000

Kawasaki Steel Corporation: *See—*
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000.
Tadahiro, Abe, 4,764,945, Cl. 378-50.000

Kawasaki, Toshio: *See—*
Miyo, Tokihiro; and Kawasaki, Toshio, 4,764,730, Cl. 329-50.000

Kawashima, Masao, to JSM Screw Co., Ltd. Screw with groove for self-lock and method and rolling flat die for manufacturing the same. 4,764,067, Cl. 411-310.000

Kawata, Ken: *See—*
Hirai, Hiroyuki; Hara, Hiroshi; and Kawata, Ken, 4,764,458, Cl. 430-620.000

Kawatetsu Wire Products Co., Ltd.: *See—*
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000.

Kawawa, Takaho: *See—*
Mori, Kentaro; Mizukami, Hideaki; Nakagawa, Hirotaka; Ozeki, Akichika; and Kawawa, Takaho, 4,764,209, Cl. 75-10.260.

Kaye, Paul S., to Lewisan Products, Inc. Powered drain cleaner. 4,763,374, Cl. 15-104.330.

KCCB, Inc.: *See—*
Morris, Carrol V., 4,763,688, Cl. 137-509.000.

Kearney, Dolores C.: *See—*
Matz, Bruno; and Kearney, Dolores C., 4,764,328, Cl. 264-248.000

Keats, Richard L.: *See—*
Auer, Robert T.; and Keats, Richard L., 4,764,146, Cl. 446-279.000.

Kebukawa, Akira: *See—*
Nishiyama, Masakazu; Umetsu, Chiharu; Kebukawa, Akira; and Andoh, Mituru, 4,763,882, Cl. 267-33.000

Keeley, James W.: *See—*
Barlow, George J.; and Keeley, James W., 4,763,862, Cl. 364-200.000

Kees, Kenneth L., to American Home Products Corporation. N-(1H-tetrazol-5-yl-alkylphenyl)polyfluoroalkanamides. 4,764,623, Cl. 548-253.000

Kehl, Georg; and Schafer, Ernst-Dieter, to Robert Bosch GmbH. Ball-and-socket joint. 4,764,048, Cl. 403-11.000.

Keil, Gary D.: *See—*
Smith, John W.; and Keil, Gary D., 4,763,880, Cl. 266-87.000.

Keith, Alec D.; and Snipes, Wallace C., to Zetachron, Inc. Buccal drug dosage form. 4,764,378, Cl. 424-435.000.

Keith, P. Stephen, to Sumitomo Electric Research Triangle, Inc. Optical transmission cable with messenger. 4,763,983, Cl. 350-96.230.

Kelch, Heinz, to Mannesmann Kienzle GmbH. Gas separation valve assembly for a diesel motor system equipped for measuring fuel consumption. 4,763,684, Cl. 137-196.000.

Keller, Jakob, to BBC Brown, Boveri & Company Limited. Exhaust plenum chamber. 4,763,471, Cl. 60-312.000

Kelln, Norman G.; and Tiffany, Thomas O., to Fisher Scientific Company. Reagent handling. 4,764,342, Cl. 422-72.000.

Kelly, Donald V. Low sound, thermal and air penetration sliding window. 4,763,446, Cl. 49-407.000

Kelly, Michael A.: *See—*
Bryson, Charles E., III; and Kelly, Michael A., 4,764,673, Cl. 250-305.000

Kemble, Edward J. Manually operated bag closure device. 4,763,388, Cl. 24-30.50R

Kemp, Preston B., Jr., to GTE Products Corporation. Method for drying fine metal powders. 4,763,423, Cl. 34-9.000.

Kendall Company, The: *See—*
Gressick, Joseph A.; and Korth, Randall B., 4,764,242, Cl. 156-494.000
Smits, Donald M.; Daley, Patrick J.; and Buckley, Mary E., 4,764,234, Cl. 156-164.000.

Kennedy, Paul G., to ITT Corporation. Butterfly valve seal arrangement. 4,763,877, Cl. 251-362.000

Kennedy, Steven, to Amoco Corporation. Railway lubricating oil. 4,764,296, Cl. 252-334.000.

Kerforshungsanlage Julich: *See—*
Matschke, Christain; Arnold, William M.; Buchner, Karl-Heinz; and Zimmerman, Ulrich, 4,764,473, Cl. 435-287.000.

Kesling, Haven S., Jr.: *See—*
Cannarsa, Michael J.; Kesling, Haven S., Jr.; and Sun, Hsiang-Ning, 4,763,715, Cl. 164-45.000

Kester, Beatrice T.: *See—*
Nauman, Edward A., 4,763,656, Cl. 128-421.000.

Ketelhut, William J.; and Konrad, Charles E., to General Electric Co. Distributed input/output system. 4,764,868, Cl. 364-200.000.

Keung, Jay: *See—*
Balloni, Riccardo; Keung, Jay; Liestman, David A.; and Nahmias, Michael, 4,764,425, Cl. 428-331.000

Kevex Corporation: *See—*
Bryson, Charles E., III; and Kelly, Michael A., 4,764,673, Cl. 250-305.000

Key Pharmaceuticals, Inc.: *See—*
Bodor, Nicholas; and Loftsson, Thorsteinn, 4,764,381, Cl. 424-449.000

Keystone Metal Products Company: *See—*
Sinchok, John D., 4,763,866, Cl. 248-188.700.

Khabetskaya, Valentina A.: *See—*
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Semenets, Valery I.; and Khabetskaya, Valentina A., 4,764,094, Cl. 418-5.000

Khan, Safina J., to Motorola, Inc. Data bus distribution apparatus. 4,764,849, Cl. 361-428.000

Khoe, Giok D.; and Nicia, Antonius J. A., to U.S. Philips Corporation Adjustable optical demultiplexer. 4,763,969, Cl. 350-96.190.

Khurana, Sudershan K., to Lockheed Corporation. Quick-change adjustable clocking nosepiece. 4,764,060, Cl. 408-14.000

Kibler, Holly S.: *See—*
Berry, W. Wes; Schmeda, Rae A.; and Kibler, Holly S., 4,764,276, Cl. 210-264.000

Kiczek, Casimir R. Popcorn popper. 4,763,568, Cl. 99-323.500.

Kidde Consumer Durables Corp.: *See—*
Fretz, John A., III; and Gallagher, Robert T., 4,764,855, Cl. 362-433.000

Kido, Junichiro: *See—*
Shin, Yoichi; Wada, Isao; Kido, Junichiro; and Eimaeda, Shigeru, 4,764,252, Cl. 162-72.000.

Kido, Mitsuyasu: *See—*
Sasaki, Hiroshi; Chiba, Tomio; Kido, Mitsuyasu; Sato, Yoshio; and Watanabe, Atsumi, 4,764,913, Cl. 369-49.000

Kievsky Inzhenerno-Stroitelny Institut: *See—*
Zamitter, Mikhail N., 4,763,885, Cl. 267-227.000

Kikkawa, Shinichi: *See—*
Iwaki, Hiroshi; Sakamoto, Kiyoshi; Inada, Akira; and Kikkawa, Shinichi, 4,764,789, Cl. 355-14.00R

Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, to Mitsubishi Chemical Industries Limited. Arginine derivatives and pharmaceutically acceptable acid addition salts thereof. 4,764,618, Cl 546-196.000

Kilburg, Larry N.: *See—*
McKinsey, Millard F.; Knoebel, David L.; Cram, Jesse A.; and Kilburg, Larry N., 4,763,761, Cl. 187-8.410.

Killion, Mead C., to Etymotic Research, Inc. Insert earphones for audiometry. 4,763,753, Cl. 181-130.000

Kim, Yong J.: *See—*
Genske, Roger P.; and Kim, Yong J., 4,764,404, Cl. 428-35.000.

Kim, Young B.: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,764,915, Cl. 369-58.000.

Kimberly-Clark Corporation: *See—*
Kuenn, Cary K.; and Westbrook, Daniel S., 4,764,418, Cl. 428-284.000.

Kimizuka, Junichi: *See—*
Dei, Katsuhito; Kimizuka, Junichi; and Ichikawa, Junji, 4,763,889, Cl. 271-9.000

Kimura, Hideaki, to Fuji Photo Film Co., Ltd. Method of nonlinear A/D conversion. 4,764,751, Cl. 340-347.0AD

Kimura, Kazuo; and Shibuya, Taro, to Minolta Camera Kabushiki Kaisha. Viewfinder optical system of inverted Galilean type with great magnification. 4,763,997, Cl. 350-410.000.

Kimura, Shingo: *See—*
Sakabe, Ken-ichi; Kimura, Shingo; and Akashi, Kageyasu, 4,764,494, Cl. 501-138.000.

Kimura, Tsutomu; Oshikoshi, Yuji; and Sakamoto, Kiichiro, to Fuji Photo Film Co., Ltd. CRT image printing apparatus. 4,764,807, Cl. 358-75.000

Kind, Guntram, to Pulsotronic Merten GmbH & Co. KG. Device for sorting out metal particles. 4,763,792, Cl. 209-570.000.

Kinetic Concepts, Inc.: *See—*
Vrzalik, John H., 4,763,643, Cl. 128-49.000.

Kinetico, Inc.: *See—*
Brown, Keith E.; Seufer, Kenneth C., Jr.; and Buth, Jimmy D., 4,764,280, Cl. 210-662.000.

King, Lloyd H., Sr. Dispersal member. 4,763,685, Cl. 137-268.000

King, Lowell A.: *See—*
Vaughn, Robert L.; Carpio, Ronald A.; and King, Lowell A., 4,764,438, Cl. 429-52.000.

King, William E.; and Healy, Lawrence G., to Westinghouse Electric Corp. Visual inspection system for radioactive fuel assemblies using fiberoptics. 4,764,334, Cl. 376-248.000.

Kinoshita, Hiromi: *See—*
Mae, Takaharu; Kinoshita, Hiromi; Maeda, Yoshinobu; Fujiwara, Koji; and Nakagawa, Hiroshi, 4,763,811, Cl. 221-11.000.

Kinoshita, Katsuyuki, to Hamamatsu Photonics Kabushiki Kaisha. High time resolution electron microscope. 4,764,674, Cl. 250-306.000

Kinoshita, Shigeo: *See—*
Kanai, Takao; Yamaguchi, Katsumi; Kinoshita, Shigeo; Yoshikawa, Kikuo; and Yokoi, Syouichiro, 4,764,827, Cl. 360-96.500

Kinoshita, Susumu: *See—*
Masuzawa, Kuniyoshi; Okamura, Kyuya; Kasuga, Kazunori; Fujimori, Shizuyoshi; Kinoshita, Susumu; and Matsukubo, Hiroshi, 4,764,608, Cl. 544-6.000

Kinugawa, Kiyoshige: *See—*
Aoyama, Naofumi; Kinugawa, Kiyoshige; Nozaki, Yoshihiro; and Sakurada, Hiroshi, 4,764,766, Cl. 340-784.000

Kioritz Corporation: *See—*
Nagashima, Akira, 4,764,093, Cl. 417-500.000.

Kirby, Richard C. Wildlife call. 4,764,145, Cl. 446-208.000.

Kirox, Inc.: *See—*
McElroy, James G., 4,764,105, Cl. 431-115.000.

Kirsch, Gilbert: *See—*
Knapp, Furn F., Jr.; Goodman, Mark M.; and Kirsch, Gilbert, 4,764,358, Cl. 424-1.100.

Kishimoto, Keiichi: *See—*
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, 4,764,788, Cl. 355-3.00R.

Kishimoto, Shunichi: *See—*
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, 4,764,706, Cl. 313-422.000

Kiss, Charles R.; and Huang, Shu-Jen W., to Nalco Chemical Company. Melamine-formaldehyde/styrene-acrylate paint detackification composition. 4,764,561, Cl. 525-163.000.

Kissling, Bruno: *See—*
Heller, Jurg; Kissling, Bruno; Muller, Curt; Robinson, Tibor; and Valenti, Salvatore, 4,764,585, Cl. 528-233.000

Kitahama, Satoshi: *See—*
Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, 4,764,091, Cl. 417-269.000

Kitamura, Yukizo; and Kousaka, Tetsuji, to Kitamura, Yukizo. Fluid storing member and its fluid outlet opening/closing mechanism 4,764,046, Cl. 401-270.000

Kitao, Teijiro: *See—*
Araki, Shingo; Maeda, Ryugo; Inagaki, Masaji; Kitao, Teijiro; and Ueno, Shigeki, 4,764,500, Cl. 503-208.000.

Kiyono, Yasuhrio: *See—*
Aoi, Tatsuo; Kiyono, Yasuhrio; Honda, Sueaki; and Atsumi, Hauro, 4,764,745, Cl. 337-2.000

Klaes, Benedikt J. Apparatus for mixing gaseous mixtures into the water of a protein skimmer. 4,764,311, Cl. 261-28.000.

Klauke, Erich: *See—*
Baasner, Bernd; Klauke, Erich; and Schundehutte, Karl-Heinz, 4,764,611, Cl. 544-334.000.

Klein, Gerald W.; and Zander, Dennis R., to Eastman Kodak Company Method of making an electronic component. 4,763,403, Cl 29-598.000

Klein, Werner: *See—*
Marx, Hans-Norbert; Goettsche, Reimer; and Klein, Werner, 4,764,214, Cl. 106-18.320

Klein, William L.: *See—*
Boothe, Jerry E.; Morse, Lewis D.; and Klein, William L 4,764,365, Cl. 424-81.000

Klenner, Dagmar: *See—*
Wehner, Rainer; Mattersberger, Johann; Klenner, Dagmar; and Deutsch-Weyer, Gerlinde, 4,764,468, Cl. 435-188.000

Kliever, Leland B.: *See—*
Falk, John C.; and Kliever, Leland B., 4,764,552, Cl. 524-504.000

Klimenov, Alexandr M.: *See—*
Gradoboev, Vladimir T.; Klimenov, Alexandr M.; and Konyshev, Georgy A., 4,763,772, Cl. 198-398.000

Klinge Pharma GmbH: *See—*
Schickaneder, Helmut; and Loser, Roland, 4,764,533, Cl 514-651.000

Klothen, Irving, to American Cyanamid Company. Larvicidal compositions employing diflubenzuron. 4,764,511, Cl. 514-594.000

Klotz, Paul R., Jr., to Litton Systems, Inc. Adjustable six degree of freedom mount for optical components. 4,763,991, Cl. 350-321.000

Kluge, Douglas J.: *See—*
Dalquist, H. David, III; Jacobsen, Douglas C.; Jorgensen, Jorgen A.; Kluge, Douglas J.; and Taylor, John N., 4,763,567, Cl 99-323.500

Klute, Friedrich; Schydlo, Franz; and Weitermann, Hans D., to Fried Krupp GmbH. Rolling mill stand with roll replaceability. 4,763,505, Cl. 72-238.000

Knab, Hans-Josef, to BBC Brown, Boveri & Company Ltd. Device for the determination of the quantitative composition of gases. 4,764,344, Cl. 422-89.000

Knapp, Furn F., Jr.; Goodman, Mark M.; and Kirsch, Gilbert, to United States of America, Energy. Radiolabeled dimethyl branched long chain fatty acid for heart imaging. 4,764,358, Cl. 424-1.100.

Knapp, Furn F., Jr.: *See—*
Srivastava, Prem C.; and Knapp, Furn F., Jr., 4,764,598, Cl. 534-551.000

Knierim, Rupert W. Reminder and enforcer apparatus. 4,764,111, Cl. 433-5.000

Knight, James A.: *See—*
Schupbach, Steven A.; and Knight, James A., 4,764,053, Cl. 405-209.000

Knight, William L.; Paraskeva, Mark; and Burrows, David F., to Plessey Overseas Limited. Integrated circuits. 4,764,926, Cl. 371-25.000

Knoebel, David L.: *See—*
McKinsey, Millard F.; Knoebel, David L.; Cram, Jesse A.; and Kilburg, Larry N., 4,763,761, Cl. 187-8.410.

Knoll, Joseph. Rail connecting and alignment device. 4,763,835, Cl. 238-205.000

Knoll, Manfred: *See—*
Lausberg, Dietrich; Taubitz, Christof; and Knoll, Manfred, 4,764,556, Cl. 525-67.000.

Knowles, Vera M.: *See—*
Bon, Charles K.; and Knowles, Vera M., 4,764,286, Cl. 210-757.000

Kobayashi, Fumiaki: *See—*
Nagase, Masaomi; Kobayashi, Fumiaki; and Ito, Yoshiyasu, 4,763,630, Cl. 123-501.000

Kobayashi, Kazuo; Kumagai, Masao; Takahashi, Atsushi; and Abe, Kenji, to Alps Electric Co., Ltd. Magnetic head assembly in floppy disk drive. 4,764,830, Cl. 360-104.000

Kobayashi, Kazuo: *See—*
Sugihara, Masanori; Kobayashi, Kazuo; Okamoto, Akihiko; Kurosawa, Atsushi; and Oku, Hideki, 4,764,917, Cl. 369-77.100.

Kobayashi, Nobuo: *See—*
Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori; Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, 4,764,098, Cl. 418-152.000

Kobayashi, Tadashi; and Nozaki, Shinya, to Diesel Kiki Co., Ltd. Electronically controlled fuel injection pump. 4,763,611, Cl 123-41.310

Kobayashi, Waichi; Usui, Kouji; and Uehori, Kinzi, to Ube Industries, Ltd. Process for the preparation of micro inorganic foamed granules 4,764,218, Cl. 106-409.000

VOL 1093 ISS 3 AG 16 1988 UMI

Koboshi, Shigeharu; and Kurematsu, Masayuki, to Konishiroku Photo Industry Co., Ltd. Method of processing silver halide color photographic material. 4,764,453, Cl. 430-351.000.

Koch, Christian. Apparatus for the desulfurization and detoxification of flue gases. 4,764,345, Cl. 422-146.000.

Koch, Thomas L.: *See*—
Bridges, Thomas J.; Burkhardt, Ernest G.; Coldren, Larry A.; and Koch, Thomas L., 4,764,246, Cl. 156-643.000.

Kock, Hans-Jakob: *See*—
Hisgen, Bernd; Kock, Hans-Jakob; Portugall, Michael; Seiler, Erhard; and Blinne, Gerd, 4,764,582, Cl. 528-183.000.

Kodama, Kazumasa: *See*—
Eto, Kunihiko; Mori, Yutaka; Oono, Akihiro; and Kodama, Kazumasa, 4,763,745, Cl. 180-143.000.

Kodama, Yutaka, to Ricoh Company, Ltd. Sheet feed device for electronic copier, printer, etc. 4,763,891, Cl. 271-157.000.

Koehler, Dennis L.: *See*—
Abraham, Robert S.; and Koehler, Dennis L., 4,763,878, Cl. 254-100.000

Koenig, David G., to Owens-Illinois Television Products Inc. Package assembly. 4,763,787, Cl. 206-420.000

Koh-I-Noor Rapidograph, Inc.: *See*—
Tschawow, Antoaneta, 4,764,045, Cl. 401-198.000.

Kohring, Mark D.; and Bailey, Edward J., to Cincinnati Milacron, Inc Oil film damper. 4,764,033, Cl. 384-99.000.

Koito Seisakusho Co., Ltd.: *See*—
Matsune, Fusakiyo; Nagasawa, Hidehiko; and Mochizuki, Hideharu, 4,764,854, Cl. 362-226.000.
Sakuma, Toranosuke, 4,764,852, Cl. 362-135.000.

Koizumi, Nobuo: *See*—
Aoki, Shigeaki; and Koizumi, Nobuo, 4,764,960, Cl. 381-24.000.

Kojima, Tamotsu: *See*—
Yamamori, Kiyoshi; Hasegawa, Shigeyoshi; Mogi, Yuuji; Kojima, Tamotsu; and Higuchi, Sadashi, 4,764,780, Cl. 346-140.00R.

Kojima, Toshihiko; and Kajio, Toshiaki, to Yamato Mishin Seizo Kabushiki Kaisha. Residual thread chain back tacking device for overlock stitch machines. 4,763,590, Cl. 112-287.000

Kokusai Denshin Denwa Co., Ltd.: *See*—
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Iwamoto, Yoshinao, 4,764,980, Cl. 455-601.000

Kolbus GmbH & Co. KG: *See*—
Garlichs, Siemen; Kolkhorst, Helmut; and Franke, Gerhard, 4,764,073, Cl. 412-9.000

Kolkhorst, Helmut: *See*—
Garlichs, Siemen; Kolkhorst, Helmut; and Franke, Gerhard, 4,764,073, Cl. 412-9.000

Kollmorgen Corporation: *See*—
Park, Eric D., 4,764,671, Cl. 250-227.000

Komiya, Kiyoshi: *See*—
Sano, Yasuo; Morisue, Yasuhiro; Komiya, Kiyoshi; and Nakamura, Yoshimasa, 4,764,587, Cl. 528-363.000

Komo Machine Incorporated: *See*—
Grienke, Lyle C., 4,764,064, Cl. 409-233.000.

Komori, Kazuhiro: *See*—
Kosa, Yasunobu; and Komori, Kazuhiro, 4,764,479, Cl. 437-49.000

Kondo, Hiroatsu, to Canon Kabushiki Kaisha. Printing apparatus. 4,764,042, Cl. 400-674.000.

Kondo, Ryuji: *See*—
Murayama, Jin; Kondo, Ryuji; and Kudoh, Yoshimitsu, 4,764,813, Cl. 358-213.110.

Kondo, Yasuhiro: *See*—
Yamashita, Atsushi; Yamami, Toshiaki; Kondo, Yasuhiro; Nakai, Hiroyuki; and Suzuki, Kazuomi, 4,764,117, Cl. 433-215.000

Konishiroku Photo Industry Co., Ltd.: *See*—
Hotta, Yuji; Matsuzaka, Syoji; and Miyoshi, Masanobu, 4,764,457, Cl. 430-569.000
Koboshi, Shigeharu; and Kurematsu, Masayuki, 4,764,453, Cl. 430-351.000

Konno, Shinichi: *See*—
Aoki, Reiko; Noborimoto, Yoshie; Funatsu, Yoko; and Konno, Shinichi, 4,764,821, Cl. 360-33.100.

Konopka, John G., to Zenith Electronics Corporation. Power supply start-up circuit with high frequency transformer. 4,764,857, Cl 363-49.000

Konose, Yoshiomi, to Mitsubishi Pencil Co., Ltd. Liquid applicator with slidable pump mechanism. 4,764,044, Cl. 401-150.000.

Konrad, Charles E.: *See*—
Ketelhut, William J.; and Konrad, Charles E., 4,764,868, Cl. 364-200.000

Konyshev, Georgy A.: *See*—
Gradoboev, Vladimir T.; Klimenov, Alexandr M.; and Konyshev, Georgy A., 4,763,772, Cl. 198-398.000

Kopanski, Roger: *See*—
Griffin, Bruce J.; and Kopanski, Roger, 4,764,120, Cl. 434-336.000.

Kornrumpf, William P.: *See*—
Alley, Robert P.; Kornrumpf, William P.; and Harnden, John D., Jr., 4,764,714, Cl. 318-786.000

Kortenbusch, Michael: *See*—
Osenberg, Kurt A.; and Kortenbusch, Michael, 4,763,484, Cl. 62-99.000

Korth, Randall B.: *See*—
Gressick, Joseph A.; and Korth, Randall B., 4,764,242, Cl. 156-494.000

Kosa, Yasunobu; and Komori, Kazuhiro, to Hitachi, Limited. Semiconductor integrated circuit device and method of manufacturing the same. 4,764,479, Cl. 437-49.000.

Kosseim, Alexander J.: *See*—
Kubek, Daniel J.; McCullough, John G.; Barr, Kenneth J.; and Kosseim, Alexander J., 4,764,354, Cl. 423-228.000.

Kotani, Matahira; Hayashi, Motohiko; Yasuda, Shigeari; and Oi, Yuzoh, to Sharp Kabushiki Kaisha. Auto dialer for use with telecopiers or the like. 4,764,951, Cl. 379-100.000.

Kotz, Rainer: *See*—
Harder, Hans E.; Behrens, Klaus; and Kotz, Rainer, 4,764,171, Cl. 623-20.000.

Kouno, Kazuhiro: *See*—
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, 4,764,706, Cl 313-422.000

Kouno, Shinji: *See*—
Tamura, Toru; Takeda, Toshio; and Kouno, Shinji, 4,763,636, Cl. 123-564.000

Kousaka, Tetsuji: *See*—
Kitamura, Yukizo; and Kousaka, Tetsuji, 4,764,046, Cl. 401-270.000

Koutny, William: *See*—
Bhattacherjee, Arya; Koutny, William; Shrivastava, Ritu; and Rodgers, Thurman J., 4,764,248, Cl. 156-643.000.

Kovatsits, Mate : *See*—
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000

Kowalewski, Rolf E.; and Schmitz, Charles J., to Motorola, Inc. Electronic service timer for an appliance. 4,764,715, Cl. 320-13.000.

Koyama, Masanao: *See*—
Suyama, Katsuhiko; Yabushita, Yasunori; Koyama, Masanao; and Takagi, Kunihiko, 4,764,466, Cl. 435-174.000.

Kozak, Mark W.: *See*—
Macek, Andrew M.; Kozak, Mark W.; and Smith, Edward J., 4,763,668, Cl. 128-751.000.

Kozlovsky, William J.; Yee, Tso; and Byer, Robert L., to Stanford University. Diode pumped low doped Nd $_{3+}$ glass laser. 4,764,933, Cl. 372-40.000

Kozu, Naoshi: *See*—
Omata, Tadao; and Kozu, Naoshi, 4,764,791, Cl. 355-26.000.

Kozuki, Koichi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic rhythm performing apparatus for electronic musical instrument 4,763,554, Cl. 84-1.030.

Kraftwerk Union Aktiengesellschaft: *See*—
Braschel, Reinhold; Miksch, Manfred; and Schiffer, Rolf, 4,764,882, Cl. 364-508.000.

Kramer, Karl C.: *See*—
Wasserman, Gerald S.; Kramer, Karl C.; and Yadlowsky, Slawko, 4,764,391, Cl. 426-433.000

Krammer, Peter: *See*—
Granz, Bernd; Krammer, Peter; and Sachs, Bertram, 4,764,905, Cl. 367-140.000

Kraus, Robert J. Multi-purpose window shade. 4,763,713, Cl. 160-172.000

Krause, Eberhard: *See*—
Babjak, Juraj; and Krause, Eberhard, 4,764,353, Cl. 423-20.000.

Kreitmeier, Leonhard, to Standard Elektrik Lorenz Aktiengesellschaft. Disk diaphragm for a loudspeaker. 4,764,968, Cl. 381-204.000.

Kreuzer, Walter; Bubeck, Kurt; and Staffa, Karl H., to Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG. Panel heat exchanger. 4,763,727, Cl. 165-171.000.

Krietemeier, Rickie F.; Strom, Jeffrey A.; and Stonich, Richard A., to Equipment Identification Systems, Inc. Method and apparatus for theft identification of equipment. 4,763,928, Cl. 283-70.000.

Krimmer, Erwin: *See*—
Ballhause, Lutz; Fehrenbach, Siegfried; Herbst, Kurt; Krimmer, Erwin; and Schulz, Wolfgang, 4,763,635, Cl. 123-520.000.

Kroll, Mark W.; Pommrehn, Mark R.; and Hanson, Dan, to Cherne Industries, Inc. Flexible and disposable electrode belt device. 4,763,660, Cl. 128-640.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See*—
Eder, Erich; and Winter, Horst, 4,763,823, Cl. 226-109.000.

Kruger, Ersin, to Ford Motor Company. Device for fastening parts on bodywalls of motor vehicles. 4,764,050, Cl. 403-322.000.

Kryazhevskikh, Nikolai F.: *See*—
Shishkin, Viktor V.; Kryazhevskikh, Nikolai F.; Oleinik, Viktor N.; Shlatgauer, Boris I.; and Medunitsa, Vladimir L., 4,764,237, Cl. 156-294.000

KSM Fastening Systems, Inc.: *See*—
Wilkinson, Harold C.; Pease, Charles C.; and Wall, Kevin, 4,763,458, Cl. 52-509.000.

Kuau Technology, Ltd.: *See*—
Decker, John A., Jr., 4,763,418, Cl. 33-268.000.

Kubek, Daniel J.; McCullough, John G.; Barr, Kenneth J.; and Kosseim, Alexander J., to Union Carbide Corporation. Alkanolamine gas treating process for a feedstream containing hydrogen sulfide. 4,764,354, Cl. 423-228.000.

Kubo, Kanji; and Doyama, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Method and apparatus for helical scan type magnetic recording and reproducing with a rotary magnetic head. 4,764,819, Cl. 360-10.200.

Kubo, Kanji: *See*—
Taniguchi, Hiroshi; Furumoto, Mitsunobu; and Kubo, Kanji, 4,764,822, Cl. 360-48.000

Kubo, Kazuhiko: *See*—
Usui, Akira; Yamada, Tadashi; Kubo, Kazuhiko; and Nagai, Hiroyuki, 4,764,736, Cl. 330-294.000.

Kubo, Seitoku: *See*—
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,748, Cl. 180-248.000
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,749, Cl. 180-249.000.

Kubota, Hitoshi: *See*—
Nakagawa, Tohru; Kubota, Hitoshi; and Matsumoto, Masuo, 4,764,883, Cl. 364-513.000.

Kubota, Ltd.: *See*—
Harada, Denzaburo; and Noguchi, Masaharu, 4,763,543, Cl. 74-740.000

Kuchler, Fritz, to Brain Dust Patents Establishment. Slicing machine for cold cuts. 4,763,738, Cl. 177-50.000

Kudoh, Yoshimitsu: *See*—
Murayama, Jin; Kondo, Ryuji; and Kudoh, Yoshimitsu, 4,764,813, Cl. 358-213.110.

Kuehl, Lawrence J. Apparatus for removing moisture from honey. 4,763,572, Cl. 99-476.000.

Kuenn, Cary K.; and Westbrook, Daniel S., to Kimberly-Clark Corporation. Virucidal tissue products containing water-soluble humectants. 4,764,418, Cl. 428-284.000.

Kuhla, Donald E.: *See*—
Molino, Bruce F.; Campbell, Henry F.; Kuhla, Donald E.; and Studt, William L., 4,764,512, Cl. 514-183.000.

Kuhle, Engelbert; Paulus, Wilfried; Fischler, Michael; and Schmitt, Hans-Georg, to Bayer Aktiengesellschaft. Agent for the protection of materials. 4,764,433, Cl. 428-541.000

Kuhn, S.A.: *See*—
Ermacora, Rino; and Neuerburg, Horst, 4,763,463, Cl. 56-13.600.

Kulak, Walter. Metal lighted lure. 4,763,433, Cl. 43-17.600.

Kulicke, Frederick W., Jr.; Leonhardt, David A.; Newsome, Robert B.; Sadler, Richard D.; and Gillotti, Gary S., to Kulicke and Soffa Ind., Inc. Automatic wire feed system. 4,763,826, Cl. 228-4.500.

Kulicke and Soffa Ind., Inc.: *See*—
Kulicke, Frederick W., Jr.; Leonhardt, David A.; Newsome, Robert B.; Sadler, Richard D.; and Gillotti, Gary S., 4,763,826, Cl. 228-4.500.

Kulik, Bruce. Animal leash. 4,763,609, Cl. 119-109.000

Kulite Semiconductor Products, Inc.: *See*—
Kurtz, Anthony D.; Mallon, Joseph R.; and Nunn, Timothy A., 4,764,747, Cl. 338-2.000.

Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, to Sumitomo Chemical Company; and Sumitomo Pharmaceuticals Company, Limited. Antibiotics, and their production. 4,764,602, Cl. 536-7.100.

Kumagai, Keiji: *See*—
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000

Kumagai, Masao: *See*—
Kobayashi, Kazuo; Kumagai, Masao; Takahashi, Atsushi; and Abe, Kenji, 4,764,830, Cl. 360-104.000.

Kume, Takeshi. Mechanical converter from rotational to linear movement. 4,763,539, Cl. 74-89.150.

Kumobayashi, Hidenori: *See*—
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,764,629, Cl. 556-23.000.

Kumura, Haruyoshi; Yamamuro, Sigeaki; Hirano, Hiroyuki; Abo, Keiju; and Nakano, Masaki, to Nissan Motor Co., Ltd. Method of controlling continuously variable transmission. 4,764,155, Cl. 474-12.000.

Kurahashi, Masayuki: *See*—
Ikeda, Hayato; Kurahashi, Masayuki; and Gomi, Fukuo, 4,763,563, Cl. 92-71.000

Kuramoto, Shinichi: *See*—
Tsubuko, Kazuo; Kuramoto, Shinichi; Nagai, Kayoko; Okawara, Makoto; and Takanashi, Hajime, 4,764,447, Cl. 430-115.000.

Kuraray Co., Ltd.: *See*—
Yamashita, Atsushi; Yamami, Toshiaki; Kondo, Yasuhiro; Nakai, Hiroyuki; and Suzuki, Kazuomi, 4,764,117, Cl. 433-215.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Hisazumi, Nobuyuki; Funabashi, Shinichiro; and Tomioka, Yoshihiko, 4,764,406, Cl. 428-35.000.

Kuramatsu, Masayuki: *See*—
Koboshi, Shigeharu; and Kurematsu, Masayuki, 4,764,453, Cl. 430-351.000

Kurosawa, Atsushi: *See*—
Sugihara, Masanori; Kobayashi, Kazuo; Okamoto, Akihiko; Kurosawa, Atsushi; and Oki, Hideki, 4,764,917, Cl. 369-77.100.

Kurr, Klaus: *See*—
Jorg, Benno M.; Kurr, Klaus; and Seifert, Heinz, 4,764,152, Cl. 464-89.000

Kurtz, Anthony D.; Mallon, Joseph R.; and Nunn, Timothy A., to Kulite Semiconductor Products, Inc. Glass header structure for a semiconductor pressure transducer. 4,764,747, Cl. 338-2.000.

Kusumoto, Koshi: *See*—
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,764,497, Cl. 502-235.000.

Kuwahara, Masashi, to Kabushiki Kaisha Toshiba. Semiconductor devices. 4,764,802, Cl. 357-68.000

KV Pharmaceutical Company: *See*—
Paradissis, George N., 4,764,375, Cl. 424-153.000.

Kwong, Sze-Keung; Lau, Kam Y.; Bar-Chaim, Nadav; and Ury, Israel, to Ortel Corporation. Superluminescent diode and single mode laser 4,764,934, Cl. 372-46.000

Kyburz, Emilio: *See*—
Imhof, Rene; and Kyburz, Emilio, 4,764,522, Cl. 514-354.000

Kydonieus, Agis F.; and Berner, Bret, to Hercon Laboratories Corporation. Device for controlled release drug delivery. 4,764,382, Cl. 424-449.000

Kyocera Corporation: *See*—
Minami, Keijiro; and Nishiguchi, Yasuo, 4,764,659, Cl. 219-216.000
Tanaka, Hajime; and Okada, Tetsuya, 4,763,892, Cl. 271-293.000

Kyomasu, Ryuichi: *See*—
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000

Kyorin Pharmaceutical Co., Ltd.: *See*—
Masuzawa, Kuniyoshi; Okamura, Kyuya; Kasuga, Kazunori; Fujimori, Shizuyoshi; Kinoshita, Susumu; and Matsukubo, Hiroshi, 4,764,608, Cl. 544-6.000

L. & C. Steinmuller GmbH: *See*—
Rabe, Gerd; and Pollak, Gerd, 4,764,063, Cl. 409-179.000

LaBarge, Louis P., to LaBarge Universal Ripener, Inc. Method of accelerating fruit respiration. 4,764,389, Cl. 426-312.000

LaBarge Universal Ripener, Inc.: *See*—
LaBarge, Louis P., 4,764,389, Cl. 426-312.000

Laby, Jordan M.: *See*—
Henkin, Melvyn L.; and Laby, Jordan M., 4,763,367, Cl. 4-542.000

Lacey, James J. Jet-type well screen cleaner. 4,763,728, Cl. 166-191.000

Lackenberg, Heinrich: *See*—
Ziplies, Herbert; and Lackenberg, Heinrich, 4,763,473, Cl 60-431.000

Ladang, Michel, to Norton Company. Flame resistant polymers. 4,764,539, Cl. 106-122.000

Lagain, Georges, to FMC Corporation. Cutting apparatus for a machine used for making bags, pouches and the like from thermoplastic material. 4,764,160, Cl. 493-194.000

Lai, Chingwei S.; and Lee, Florence S., to Advanced Micro Devices, Inc. Carry-bypass arithmetic logic unit. 4,764,887, Cl. 364-787.000

Lai, Sien-Shigong: *See*—
Yeh, Teng-Hsun; and Lai, Sien-Shigong, 4,763,546, Cl. 81-15.700

Laidig, Manfred R.; and Garron, Stephen A., to SSMC Inc. Solar powered indicating device for sewing machines. 4,763,589, Cl. 112-278.000

Lainhart, Gregory C.: *See*—
Evans, Walter R.; and Lainhart, Gregory C., 4,763,496, Cl. 70-38.00A.

L'Air Liquide: *See*—
Cuny, Francis; Vermeille, Hugues; and Arnault, Jean, 4,763,681, Cl. 137-8.000

Lajoye, Pierre. Centrifugal method and apparatus for melting and casting of metal alloys. 4,763,717, Cl. 164-258.000

Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., to United States of America, Energy. High flux reactor. 4,764,339, Cl. 376-353.000

Lake, John A.; and Heath, William B., to United States of America, Air Force. Optical mirror coated with organic superconducting material 4,764,003, Cl. 350-610.000

Lallemand, Albert A. Toilet locking apparatus. 4,763,363, Cl. 4-253.000

Lamb Robo. *See*—
Waltonen, Edward J.; and Obrecht, Robert E., 4,763,550, Cl 83-191.000

Lambert, Barnum B.: *See*—
Lewis, Ralph H.; and Lambert, Barnum B., 4,764,346, Cl 422-120.000

Lambert, John D. B.: *See*—
Gross, Kenny C.; Lambert, John D. B.; and Nomura, Shigeo, 4,764,335, Cl. 376-253.000

Lambert, John M.: *See*—
Blattler, Walter A.; and Lambert, John M., 4,764,368, Cl. 424-85.000

Lambertus, Friedrich, to Werner & Pfleiderer GmbH. Perforated plate for the underwater granulating of extruded strands of thermoplastic material. 4,764,100, Cl. 425-67.000

Landsman, Robert M., to Powers Chemco. Array scanning system with movable platen. 4,764,815, Cl. 358-293.000

Lane, Philip A., to Texaco Inc. Fluid catalytic cracking of vacuum gas oil with a refractory fluid quench. 4,764,268, Cl. 208-113.000

Langer, Gerhard, to United States of America, Energy. Particle impactor assembly for size selective high volume air sampler. 4,764,186, Cl 55-17.000

Langford, Frederic E., to Allied Systems Company. Tree feller-buncher. 4,763,742, Cl. 180-9.100

Lanser, Michael L.: *See*—
Robbins, Craig; Lanser, Michael L.; Van Order, Kim L.; and Weber, Joseph H., 4,763,946, Cl. 296-97.00H

Lanzarini, Ernesto; and Franchi, Renzo, to Valeo. Torsional damper device. 4,763,767, Cl. 192-106.200

LaPierre, Rene B.: *See*—
Chen, Nai Y.; LaPierre, Rene B.; Partridge, Randall D.; and Wong, Stephen S., 4,764,266, Cl. 208-58.000

Laragh, John H.: *See*—
Johnson, Lorin K.; Atlas, Steven A.; McCarthy, Brian J.; Laragh, John H.; and Lewicki, John A., 4,764,504, Cl. 514-12.000

VOL 1093 ISS 3 AG 16 1988 UMI

Laroia, Satish: *See—*
Mascuch, Frank; Winter, Arthur; and Laroia, Satish, 4,763,665, Cl. 128-736.000

Larrick, James W.: *See—*
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., 4,764,465, Cl 435-172.200.

Larsen Electronics, Inc.: *See—*
Larsen, L. James; and Phemister, David M., 4,764,773, Cl 343-713.000

Larsen, L. James; and Phemister, David M., to Larsen Electronics, Inc. Mobile antenna and through-the-glass impedance matched feed system. 4,764,773, Cl. 343-713.000.

Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, to Panmedica. Antibacterial agents containing oxo-4-pyridine carboxylic acid derivatives. 4,764,518, Cl. 514-291.000

Laser Communications, Inc.: *See—*
Walter, Richard K., 4,764,983, Cl. 455-609.000

Laser Precision Corporation: *See—*
Doyle, Walter M., 4,764,676, Cl. 250-353.000

Lasko, George A. Small boat dry dock. 4,763,593, Cl. 114-44.000

Lau, Kam Y.: *See—*
Kwong, Sze-Keung; Lau, Kam Y.; Bar-Chaim, Nadav; and Ury, Israel, 4,764,934, Cl. 372-46.000

Laud, Timothy G., to Zenith Electronics Corporation. Low voltage reset circuit. 4,764,839, Cl. 361-92.000.

Lauffer, Scott C.; Golley, Frank B.; and Summerville, Don S., to Coca-Cola Company, The. Skewed serpentine multi-package product storage rack. 4,763,963, Cl. 312-45.000

Laughlin, Wayne E.: *See—*
Gluck, David G.; and Laughlin, Wayne E., 4,764,420, Cl. 428-317.700

Laurel, David F., to Halliburton Company. Hydrant and components thereof. 4,763,686, Cl. 137-272.000

Laursen, Hanno: *See—*
Sundermann, Erich; Laursen, Hanno; Vahlbrauk, Wolfgang; and Reye, Hans, 4,764,107, Cl. 432-96.000

Lausberg, Dietrich; Taubitz, Christof; and Knoll, Manfred, to BASF Aktiengesellschaft. Thermoplastic molding materials of polyester and polycarbonate. 4,764,556, Cl. 525-67.000

Lauterbacher, Stefan: *See—*
Strian, Friedrich; Hoelzl, Rupert; Galfe, Gunther; Lauterbacher, Stefan; and Lehmann, Wilhelm, 4,763,666, Cl. 128-742.000

Lawrence, Ventura A.; and Lawrence, Ventura J. Quick-action fasteners. 4,764,071, Cl. 411-433.000

Lawrence, Ventura J.: *See—*
Lawrence, Ventura A.; and Lawrence, Ventura J., 4,764,071, Cl 411-433.000

Lawson, Ray D.: *See—*
Root, Jon C.; Barnes, John F.; and Lawson, Ray D., 4,764,293, Cl. 252-12.400

Lawther, Joel S., to Eastman Kodak Company. Zoom lens assembly. 4,763,999, Cl. 350-429.000

Layman, Frederick P.; Hobson, Phillip M.; and Dick, Paul H., to Varian Associates, Inc. Valve incorporating wafer handling arm. 4,764,076, Cl. 414-217.000

Le Coent, Jean-Louis, to Orogil. Non-foaming detergent-dispersant additives for lubricating oils and process for making such additives. 4,764,295, Cl. 252-33.200

Lectret S.A.: *See—*
Murphy, Preston V.; and Hubschi, Kurt, 4,764,690, Cl. 307-400.000

Leder, Jeffrey C.: *See—*
Kamath, Hundi P.; and Leder, Jeffrey C., 4,764,664, Cl 219-548.000

Lee, Florence S.: *See—*
Lai, Chingwei S.; and Lee, Florence S., 4,764,887, Cl. 364-787.000

Lee, Min K., to Gold Star Co., Ltd. Power control device for high-frequency induced heating cooker. 4,764,652, Cl. 219-10.770.

Lee, Sang W. Measuring and dispensing device. 4,763,816, Cl. 222-207.000

Lee, Sang W. Measured quantity dispenser. 4,763,817, Cl. 222-207.000

Lehmann, Wilhelm: *See—*
Strian, Friedrich; Hoelzl, Rupert; Galfe, Gunther; Lauterbacher, Stefan; and Lehmann, Wilhelm, 4,763,666, Cl. 128-742.000

Lehner, Heinz, to Standard Elektrik Lorenz, A.G. Picture tube with deflection yoke. 4,764,705, Cl. 313-440.000.

Leib, Kenneth G.; and Jue, Suey, deceased (by Jue, Catharine, executrix), to Grumman Aerospace Corporation. Universal translational and rotational film drive mechanism. 4,764,781, Cl. 354-65.000

Leibinger, Franz: *See—*
Leibinger, Karl; and Leibinger, Franz, 4,763,548, Cl. 81-453.000

Leibinger, Karl; and Leibinger, Franz, to Oswald Leibinger GmbH. Screwdriver, particularly for surgical purposes. 4,763,548, Cl. 81-453.000

Leicht, Larry F., to Q'SO, Inc. Thermally applied sealants and process. 4,764,535, Cl. 521-51.000

Le-Khac, Bi, to Arco Chemical Company. Alkyl vinyl ether/N-arylmaleimide copolymer containing polymer alloy. 4,764,558, Cl. 525-73.000

Lekholm, Anders, to Siemens Aktiengesellschaft. Heart pacemaker. 4,763,646, Cl. 128-419.0PG.

Lelah, Michael D., to Hercules Incorporated. Method and device for controlling hydrogen cyanide and nitric oxide concentrations in cigarette smoke. 4,763,674, Cl. 131-342.000

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., 4,764,465, Cl. 435-172.200

Lemelson, Jerome H. Drug compositions and their use in treating human or other mammalian patients. 4,764,359, Cl. 424-1.100.

Lemke, Kenneth W., to M&T Chemicals Inc. High quality, bright nickel plating. 4,764,262, Cl. 204-49.000.

Lemmons, Albert G. Folding motorcycle transport trailer. 4,763,914, Cl. 280-401.000

Leonard, John F.; and Allen, Douglas M., to United States of America, Air Force. In-situ beta alumina stress simulator. 4,763,529, Cl. 73-852.000

Leonhardt, David A.: *See—*
Kulicke, Frederick W., Jr.; Leonhardt, David A.; Newsome, Robert B.; Sadler, Richard D.; and Gillotti, Gary S., 4,763,826, Cl. 228-4.500

Lepant, Marcel: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,764,518, Cl. 514-291.000

Lerch, Karl D., to Quaker Oats Company, The. Toy umbrella. 4,763,679, Cl. 135-20.00M

Lerman, Russell E., to United States of America, Army. Producing explosive material in granular form. 4,764,329, Cl. 264-3.500.

Lesensky, Leonard, to Machlett Laboratories, Incorporated, The. Cathode focusing arrangement. 4,764,947, Cl. 378-138.000.

Letsche, Ulrich: *See—*
Hafner, Günther; and Letsche, Ulrich, 4,763,841, Cl. 239-464.000.

Leupold, Herbert A.; and Potenziani, Ernest, II, to United States of America, Army. Permanent magnet structures for the production of transverse helical fields. 4,764,743, Cl. 335-306.000

Levasseur, Joseph L., to Coin Acceptors, Inc. Coin acceptance means and method. 4,763,769, Cl. 194-217.000

Lever Brothers Company: *See—*
der Kinderen, Wilhelmus K., 4,763,494, Cl. 68-17.00R
Sepulveda, Ralph R.; and Hockey, John A., 4,764,292, Cl. 252-8.800

Leveriza, Carina T.; and Morgan, Russell A., to Syn Labs, Inc. Silicon containing resists. 4,764,247, Cl. 156-643.000.

Levy, Gail J.; and Fletcher, Gerald M., to Xerox Corporation. Self-tensioning coronode structure. 4,764,675, Cl. 250-324.000.

Lewallen, Kent D.; and Schumann, Steven J., to Advanced Micro Devices, Inc. Writing speed in multi-port static rams. 4,764,899, Cl. 365-189.000

Lewicki, John A.: *See—*
Johnson, Lorin K.; Atlas, Steven A.; McCarthy, Brian J.; Laragh, John H.; and Lewicki, John A., 4,764,504, Cl. 514-12.000.

Lewis, Albert, to Glass Incorporated International. High iron glass composition. 4,764,487, Cl. 501-70.000

Lewis, Clifford: *See—*
Orban, Ralph F.; and Lewis, Clifford, 4,764,665, Cl. 219-549.000

Lewis, Nathan S.: *See—*
Gibbons, James F.; Cogan, George W.; Gronet, Christian M.; and Lewis, Nathan S., 4,764,439, Cl. 429-111.000

Lewis, Ralph H.; and Lambert, Barnum B., to Pioneer Medical Systems, Inc. Disposable rebreathing canister. 4,764,346, Cl. 422-120.000

Lewisan Products, Inc.: *See—*
Kaye, Paul S., 4,763,374, Cl. 15-104.330.

Leyse, Carl F.: *See—*
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000

Liang, Paul H.: *See—*
Christensen, Joel R.; Liang, Paul H.; and Thompson, Mark E., 4,764,207, Cl. 71-93.000

Libby, Vibeke, to Dalmo Victor, Inc., Div. of The Singer Company. Path blockage determination system and method. 4,764,873, Cl. 364-461.000

Liberty Diversified Industries: *See—*
Stoll, Mark S., 4,763,833, Cl. 229-52.00B

Libicki, Shari B.: *See—*
Sanders, Harold F.; Cheng, Yu-Ling; Enscore, David J.; and Libicki, Shari B., 4,764,379, Cl. 424-449.000

Licata, Joseph P.: *See—*
Rogakos, Deno J.; Licata, Joseph P.; and Sloan, John L., 4,763,936, Cl. 292-201.000

Licinvest AG: *See—*
Ackeret, Peter, 4,763,429, Cl. 40-511.000

Lidy, Werner A.: *See—*
Brasington, Robert D.; and Lidy, Werner A., 4,764,541, Cl. 521-114.000

Liebenthal, John L.: *See—*
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000.

Liebsch, Dietrich: *See—*
Sauer, Heinz; Porkert, Helmut F.; and Liebsch, Dietrich, 4,764,308, Cl. 260-544.00K

Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,763,779, Cl. 206-268.000

Liemert, Karl; Rohr, Franz J.; and Hug, Kuno, to Brown, Boveri & Cie AG. Method and device for driving a linearly movable component, especially the movable switch contact of an electric high-voltage circuit breaker. 4,763,478, Cl. 60-633.000

Liestman, David A.: *See—*
Balloni, Riccardo; Keung, Jay; Liestman, David A.; and Nahmias, Michael, 4,764,425, Cl. 428-331.000

Lilley, Edward; and Wusirika, Raja R., to Corning Glass Works. Method for the production of mono-size powders of barium titanate. 4,764,493, Cl. 501-137.000

Lin, Jenny: *See—*
Chen, Chen-Wei; and Lin, Jenny, 4,763,657, Cl. 128-422.000

Linde Aktiengesellschaft: *See—*
Becker, Hans, 4,763,721, Cl. 165-1.000
Heisel, Michael; Lohmueller, Reiner; and Marold, Freimut, 4,764,192, Cl. 55-269.000

Lindmeyer, James P. Lure dressing with hook guard. 4,763,436, Cl 43-42.100

Linker, Frank, Jr.: *See—*
Linker, Frank, Sr.; Linker, Frank, Jr.; and Claffey, Edward T., 4,764,079, Cl. 414-411.000

Linker, Frank, Sr.; Linker, Frank, Jr.; and Claffey, Edward T., to American Tech Manufacturing, Inc. Method and apparatus for handling dip devices. 4,764,079, Cl. 414-411.000.

Lippert, Thomas E.: *See—*
Israelson, Gordon A.; Lippert, Thomas E.; Olczak, Edward S.; and Ciliberti, David F., 4,764,190, Cl. 55-269.000

Lippman, Seymour A.: *See—*
Pielach, Martin; and Lippman, Seymour A., 4,763,515, Cl 73-146.000

Littlewood, Paul A.: *See—*
Graves, Alan F.; Littlewood, Paul A.; and Weiss, Johannes S., 4,764,921, Cl. 370-100.000

Litton Systems, Inc.: *See—*
Klotz, Paul R., Jr., 4,763,991, Cl. 350-321.000

Liu, Christopher S.: *See—*
Kapuscinski, Maria M.; Liu, Christopher S.; and Hart, William P., 4,764,304, Cl. 252-51.50A.

Livneh, Zvi. Frost free irrigation system and valve therefor. 4,763,837, Cl. 239-111.000

Lloyd A. Smith: *See—*
Coombes, Donald E., 4,764,683, Cl. 290-55.000

Load Controls Incorporated: *See—*
Nystrom, Robert W., 4,764,720, Cl. 324-107.000

Lockheed Corporation: *See—*
Khurana, Sudershan K., 4,764,060, Cl. 408-14.000.

Loctite Corporation: *See—*
Jacobine, Anthony F.; and Glaser, David M., 4,764,239, Cl. 156-307.300

Loewe, Robert J.: *See—*
Bernacchi, Donald B.; Loewe, Robert J.; and Immel, Donna L., 4,764,386, Cl. 426-293.000

Loftsson, Thorsteinn: *See—*
Bodor, Nicholas; and Loftsson, Thorsteinn, 4,764,381, Cl. 424-449.000.

Login, Robert B., to PPG Industries, Inc. Process for the manufacture of bis-quaternary ammonium compounds. 4,764,306, Cl. 260-404.500.

Logusch, Eugene W., to Monsanto Company. 4-phosphorus-2-phthalimidobutyrate intermediates. 4,764,620, Cl. 548-113.000

Lohmueller, Reiner: *See—*
Heisel, Michael; Lohmueller, Reiner; and Marold, Freimut, 4,764,192, Cl. 55-269.000

Loison, Patrick: *See—*
Daviaud, Jean-Michel; Herbert, Pascal; and Loison, Patrick, 4,763,518, Cl. 73-149.000

London, Arnold: *See—*
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John; Poveromo, Leonard M.; Corvelli, Nicholas; and London, Arnold, 4,764,238, Cl. 156-245.000

Longsworth, Ralph C.; and Steyert, William A. Parallel wrapped tube heat exchanger. 4,763,725, Cl. 165-147.000

Lora, Jairo H.; Katzen, Raphael; Cronlund, Malcolm; and Wu, Chih F., to Repap Technologies Inc. Recovery of lignin. 4,764,596, Cl. 530-507.000

Loreck, Heinz: *See—*
Bleckmann, Hans W.; Loreck, Heinz; and Zydek, Michael, 4,764,685, Cl. 307-106.000

Loser, Roland: *See—*
Schickaneder, Helmut; and Loser, Roland, 4,764,533, Cl 514-651.000

Losonczi, Bela: *See—*
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl 546-341.000

Loughran, James A.; McMullen, James G.; and Yerman, Alexander J., to General Electric Company. Method for producing via holes in polymer dielectrics. 4,764,485, Cl. 437-225.000.

Louis A. Weiss Memorial Hospital: *See—*
Scharres, Harry J.; Grist, W. Samuel; and Yarish, John A., 4,764,312, Cl. 261-30.000

Lovenguth, Ronald F., to Pennwalt Corporation. Tetrahalophthalate esters as flame retardants for polyphenylene ether resins. 4,764,550, Cl. 524-217.000.

Low, Daniel: *See—*
Gat, Asher; and Low, Daniel, 4,764,143, Cl. 446-102.000

Lubrizol Corporation, The: *See—*
Salomon, Mary F., 4,764,299, Cl. 252-48.200
Sowerby, Roger L.; and DiBiase, Stephen A., 4,764,297, Cl. 252-45.000

Lucas Industries public limited company: *See—*
Phillips, Ronald, 4,763,873, Cl. 251-30.050
Thornthwaite, Ian R., 4,764,092, Cl. 417-462.000

Lucero, Jay M. Apparatus to convert a crib to a bed. 4,763,368, Cl 5-93.00R

Luchaire S.A.: *See—*
Pitavy, Michel; Chiappino, Mario; and Aghemo, Luigi, 4,764,322, Cl. 264-71.000

Luderer, Fred: *See—*
Henger, Peter; and Luderer, Fred, 4,764,393, Cl. 427-8.000

Luhmann, Erhard: *See—*
Hoppe, Lutz; Luhmann, Erhard; Hohl, Frank; and Reinhardt, Eugen, 4,764,548, Cl. 524-31.000

Lui, Chun K.; and Gesinski, Leonard T., to Westinghouse Electric Corp. Fuel assembly stress relieving fastener. 4,764,340, Cl. 376-434.000

Lurssen, Klaus: *See—*
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000

Lyle, William M.; and Bordovsky, James P. Irrigation system for precise water and chemical application. 4,763,836, Cl. 239-69.000

Lyman, Ronald L., to Fantasy Toys, Inc. Rotatable assemblies for interconnecting building blocks. 4,764,144, Cl. 446-128.000

Lyon, Jesse J. Gambrel. 4,763,942, Cl. 294-79.000

Lythgoe, Stanley, to Pilkington Brothers PLC. Glass melting tanks and refractory material therefor. 4,764,198, Cl. 65-339.000

M & S Engineering & Manufacturing Co., Inc.: *See—*
Przewalski, Zygmunt J., 4,763,583, Cl. 110-246.000

M&T Chemicals Inc.: *See—*
Lemke, Kenneth W., 4,764,262, Cl. 204-49.000

Macek, Andrew M.; Kozak, Mark W.; and Smith, Edward J., to Mill Rose Laboratories. Partible forceps instrument for endoscopy. 4,763,668, Cl. 128-751.000

MacFarlane, Alistair A., to Marathon Electric Manufacturing Corp Regulated alternator with positive fault related shut down apparatus. 4,764,838, Cl. 361-21.000

Mach, Mark M.: *See—*
Kallin, Fredrik L. N.; Czesnik, Marek W.; and Mach, Mark M., 4,764,976, Cl. 382-65.000

Machida, Toshiaki, to NEC Corporation. CMOS encoder circuit 4,764,749, Cl. 340-347.0DD

Machlett Laboratories, Incorporated, The: *See—*
Lesensky, Leonard, 4,764,947, Cl. 378-138.000.

Mackinnon, John W. M.: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M., Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,764,612, Cl. 546-232.000.

Madan, Arun; and Von Roedern, Bolko, to Glasstech Solar, Inc. Thin film deposition apparatus including a vacuum transport mechanism 4,763,602, Cl. 118-719.000

Madden, William M., to United Technologies Corporation. Thrust vectoring exhaust nozzle arrangement. 4,763,840, Cl. 239-265.350.

Madi, Jeno: *See—*
Ratsko , Istvan; Madocsay, Attila; Ivony, Jozsef; Horvath, Bela, and Madi, Jeno, 4,763,916, Cl. 280-432.000

Madocsay, Attila: *See—*
Ratsko , Istvan; Madocsay, Attila; Ivony, Jozsef; Horvath, Bela, and Madi, Jeno, 4,763,916, Cl. 280-432.000

Madsen, Everett, to Flo-Pac Corporation. Swiveling scrub brush 4,763,377, Cl. 15-144.00A.

Mae, Takaharu; Kinoshita, Hiromi; Maeda, Yoshinobu; Fujiwara, Koji; and Nakagawa, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Parts feeder. 4,763,811, Cl. 221-11.000

Maeda, Ryugo: *See—*
Araki, Shingo; Maeda, Ryugo; Inagaki, Masaji; Kitao, Teijiro; and Ueno, Shigeki, 4,764,500, Cl. 503-208.000

Maeda, Yoshinobu: *See—*
Mae, Takaharu; Kinoshita, Hiromi; Maeda, Yoshinobu; Fujiwara, Koji; and Nakagawa, Hiroshi, 4,763,811, Cl. 221-11.000

Maeide, Susumu: *See—*
Yamada, Kunio; and Maeide, Susumu, 4,764,400, Cl. 427-280.000

Maekawa, Akira: *See—*
Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, 4,764,954, Cl 379-390.000

Maggio, Robert A.: *See—*
Bortinger, Arie; Maggio, Robert A.; and Pieters, Wim J. M., 4,764,356, Cl. 423-329.000

Magnussen, Haakon T., Jr.: *See—*
Ramin, Kenneth; Magnussen, Haakon T., Jr.; and Moeller, Roy P., 4,763,535, Cl. 73-864.180.

Maguire, John N., III. Earthquake alarm. 4,764,761, Cl. 340-690.000

Mahon, John: *See—*
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John, Poveromo, Leonard M.; Corvelli, Nicholas; and London, Arnold, 4,764,238, Cl. 156-245.000

Mai, Khuong H. X.; and Patil, Ghanshyam, to Du Pont de Nemours, E. I., and Company. Preparation of N,N-bis-trialkylsilyl carbodiimide 4,764,630, Cl. 556-410.000

Mair, Gunther, to BASF Aktiengesellschaft. Finely, divided, spherical, two-layer solid particles. 4,764,429, Cl. 428-403.000

Maitan, Gianni: *See—*
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, 4,763,699, Cl. 139-436.000

VOL 1093 ISS 3 AG 16 1988 UMI

Makino, Hiroyuki, to Tachi-S Co., Ltd. Apparatus for manufacturing a seat. 4,764,241, Cl. 156-382.000.

Makino, Reiji: *See*—
Horiki, Seinosuke; and Makino, Reiji, 4,764,421, Cl. 428-35.000

Makino, Toshihiko, to NEC Corporation. Magnetic head assembly capable of effectively correcting position error of a head. 4,764,829, Cl. 360-106.000

Makino, Yoshihiro: *See*—
Naito, Sadao; Shiono, Katsumi; Shinohara, Hideo; Makino, Yoshihiro; and Ishii, Toshitsugu, 4,763,514, Cl. 73-19.000

Makio, Keizo: *See*—
Ishihara, Masayuki; and Makio, Keizo, 4,764,486, Cl. 501-9.000

Maklad, Mokhtar S., to EOTec Corporation. Method of manufacturing hollow core optical fibers. 4,764,194, Cl. 65-3.110

Makosch, Gunter; and Schedewie, Franz J., to International Business Machines Corporation. Interferometric measuring methods for surfaces. 4,764,014, Cl. 356-351.000.

Malandrino, Salvatore: *See*—
Borsa, Massimiliano; Tonon, Giancarlo; and Malandrino, Salvatore, 4,764,515, Cl. 514-255.000.

Malaviya, Shashi D., to International Business Machines Corporation Stud-defined integrated circuit structure. 4,764,799, Cl. 357-49.000

Malinge, Jean; Rabilloud, Guy; and Sillion, Bernard, to Centre d'Etude des Materiaux Organiques pour Technologies Avancees. Compositions of polyaryloxypyridine oligomers with phthalonitrile end groups, their preparation and use for manufacturing polyaryloxypyridine co-phthalocyanine lattices. 4,764,578, Cl. 528-27.000.

Malke, Horst: *See*—
Ferretti, Joseph J.; and Malke, Horst, 4,764,469, Cl. 435-216.000.

Mallon, Joseph R.: *See*—
Kurtz, Anthony D.; Mallon, Joseph R.; and Nunn, Timothy A., 4,764,747, Cl. 338-2.000

Malson, Tomas, to Pharmacia AB. Composition for ophthalmological use. 4,764,360, Cl. 424-2.000

Mamiya, Kiyotaka: *See*—
Okazaki, Katsumi; Yokooku, Katsuhiko; Watanabe, Tomomi; Nakazumi, Tadataka; and Mamiya, Kiyotaka, 4,763,629, Cl. 123-489.000

Mance, Darko; and Mance, Vitomir. Apparatus and method for dyeing sheet articles. 4,763,370, Cl. 8-150.500.

Mance, Vitomir: *See*—
Mance, Darko; and Mance, Vitomir, 4,763,370, Cl. 8-150.500

Mandzsu, Jozsef: *See*—
Jaki, Laszlo; Jodal, Sandor; Jagicza, Laszlo; Mandzsu, Jozsef; Pap, Endre; and Szebeni, Janos, 4,764,768, Cl. 340-815.050.

Manela, David: *See*—
Schilling, Donald L.; and Manela, David, 4,764,734, Cl. 330-251.000

Manganelli Del Fa, Carlo: *See*—
Piacenti, Franco; Pasetti, Adolfo; Manganelli Del Fa, Carlo; and Moggi, Giovanni, 4,764,431, Cl. 428-421.000

Maninger, Loren L.: *See*—
New, David A.; and Maninger, Loren L., 4,764,704, Cl. 313-414.000

Mannesmann AG: *See*—
Schoen, Martin; Wuellenweber, Horst; and Specht, Herbert, 4,763,500, Cl. 72-14.000

Mannesmann Aktiengesellschaft: *See*—
Flaig, Heinz; and Hasselmann, Heinz, 4,763,768, Cl. 192-150.000.

Mannesmann Kienzle GmbH: *See*—
Kelch, Heinz, 4,763,684, Cl. 137-196.000

Mannesmann Tally Corporation: *See*—
Whitaker, C. Gordon, 4,764,040, Cl. 400-320.000

Manser, Gerald E.; Shaw, Graham C.; and Shaw, Graham C., III, to Morton Thiokol, Inc. Internally-plasticized polyethers from substituted oxetanes. 4,764,586, Cl. 528-362.000

Manzo, Michael P., to Microvasive, Inc. Tissue-penetrating catheter device. 4,763,667, Cl. 128-750.000

Manzo, Michael P., to Microvasive, Inc. Microbiological specimen sampling device. 4,763,670, Cl. 128-756.000.

Marathon Electric Manufacturing Corp.: *See*—
MacFarlane, Alistair A., 4,764,838, Cl. 361-21.000

Marazzi, Silvio: *See*—
Gerber, Hans; and Marazzi, Silvio, 4,763,980, Cl. 350-96.200

Marchal, Daniel: *See*—
Courtoy, Jean-Francois; Marchal, Daniel; DuForest, Rene; and Roussel, Albert, 4,764,411, Cl. 428-155.000

Marcinowski, Stefan: *See*—
Goertz, Hans-Helmut; Marcinowski, Stefan; and Sanner, Axel, 4,764,467, Cl. 435-182.000

Marcon Electronics Corp. Ltd.: *See*—
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki, Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100.

Marhold, Albrecht: *See*—
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000

Marin Tek, Inc.: *See*—
Forrest, Scott M.; and St. Pierre, Michael R., 4,763,486, Cl. 62-175.000

Maringer, Robert E., to Battelle Development Corporation. Method of and apparatus for casting an elongated metal product. 4,763,718, Cl. 164-463.000

Marinoni, Giorgio; and Pietro, Araudo, to Comau S.p.A. Automatic tool-changing device for industrial robots. 4,763,401, Cl. 29-568.000.

Marker Deutschland GmbH. *See*—
Sedlmair, Gerhard, 4,763,918, Cl. 280-605.000

Marold, Freimut: *See*—
Heisel, Michael; Lohmueller, Reiner; and Marold, Freimut, 4,764,192, Cl. 55-269.000

Marritt, Clifford R.: *See*—
Jefferys, Keith; Marritt, Clifford R.; and Seim, Albert D., II, 4,763,775, Cl. 198-533.000

Marshall, Mary C.: *See*—
Anderson, Eugene L.; Harlowe, William W., Jr.; Adams, Leon M.; and Marshall, Mary C., 4,764,317, Cl. 264-4.000

Martel, Andre: *See*—
Hooper, Anthony W.; and Martel, Andre, 4,763,777, Cl. 198-747.000

Martens, Walter: *See*—
Steinhauer, Hans-Juergen; and Martens, Walter, 4,763,862, Cl. 244-215.000

Martin, Patrick H.; Parker, Theodore L.; and Schrader, Paul G., to Dow Chemical Company, The. High functionality, low melt viscosity, flakable solid epoxy resin with good heat resistance. 4,764,580, Cl. 528-98.000

Martin, Richard L., to Harsco Corporation. Leak-proof valve for gas cylinders. 4,763,690, Cl. 137-613.000

Martin-Smith, Michael: *See*—
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,764,612, Cl. 546-232.000

Martinie, Howard W., to Reliance Electric Company. Sealing apparatus. 4,763,904, Cl. 277-9.000.

Marugg, Leo, to Zellweger Uster Ltd. Measuring head for inductive measurement of the thickness of an insulating layer on an electric conductor. 4,764,724, Cl. 324-230.000

Maruyama, Akira: *See*—
Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, 4,764,618, Cl. 546-196.000

Maruyama, Toshio: *See*—
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki, Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100.

Marwin Cutting Tools, Limited: *See*—
Wale, Dennis H., 4,764,059, Cl. 407-42.000.

Marx, Hans-Norbert; Goettsche, Reimer; and Klein, Werner, to Wolman GmbH. Wood preservatives containing 2-iodobenzanilide. 4,764,214, Cl. 106-18.320.

Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, to Nippon Chemiphar Co., Ltd. Quinaldinamide derivatives. 4,764,617, Cl. 546-169.000.

Mascaro, John V.: *See*—
Burns, Alan W.; Scarth, Robert D.; Mascaro, John V.; Hegenboden, J. W.; and Green, Moses, Jr., 4,764,412, Cl. 428-172.000.

Maschinenfabrik Bezner GmbH & Co. KG: *See*—
Stehle, Wolfgang; and Fuchs, Dieter, 4,763,793, Cl. 209-616.000.

Maschinenfabrik Hennecke GmbH: *See*—
Proksa, Ferdinand; Althausen, Ferdinand; Bucher, Gottfried; Raffel, Reiner; and Sulzbach, Hans-Michael, 4,764,536, Cl. 521-50.000

Mascuch, Frank; Winter, Arthur; and Laroia, Satish, to Victory Engineering Company. Shielded thermistor for microwave environment. 4,763,665, Cl. 128-736.000

Mashita, Kentaro: *See*—
Ohmae, Tadayuki; Mashita, Kentaro; Yamaguchi, Noboru; and Asao, Kouichiro, 4,764,551, Cl. 524-394.000.

Mason, James M.; and Pifer, David D., to University of Tennessee Research Corporation, The. Platelet cyropreservation. 4,764,463, Cl. 424-101.000

Massachusetts Institute of Technology: *See*—
Sadoway, Donald R., 4,764,257, Cl. 204-1.00T.

Massariolo, Maffeo, to Hatebur Umformmaschinen AG. Punch-probing device on a cross transfer press. 4,763,501, Cl. 72-26.000

Massey, Eddie H.; and Jackson, Richard L., to Eli Lilly and Company. Crystalline human proinsulin and process for its production. 4,764,592, Cl. 530-305.000

Mast, Aquila D.: *See*—
High, Samuel E., Jr.; and Mast, Aquila D., 4,763,702, Cl. 141-114.000
High, Samuel E., Jr.; and Mast, Aquila D., 4,763,846, Cl. 241-81.000

Master, Raj N.: *See*—
Flaitz, Philip L.; Master, Raj N.; Palmateer, Paul H.; and Reddy, Srinivasa S. N., 4,764,341, Cl. 419-9.000.

Masuda, Naofumi: *See*—
Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori; Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, 4,764,098, Cl. 418-152.000

Masuda, Takashi: *See*—
Hamano, Yoshimasa; and Masuda, Takashi, 4,764,006, Cl. 351-211.000

Masuzawa, Kuniyoshi; Okamura, Kyuya; Kasuga, Kazunori; Fujimori, Shizuyoshi; Kinoshita, Susumu; and Matsukubo, Hiroshi, to Kyorin Pharmaceutical Co., Ltd. Process for the manufacture of spiro-linked pyrrolidine-2,5-dione derivatives. 4,764,608, Cl. 544-6.000.

Matano, Masaharu: *See*—
Inoue, Nobuhisa; Matano, Masaharu; and Yamashita, Tsukasa, 4,763,973, Cl. 350-96.130.

Mate, Jean-Luc, to Bendix Electronics S.A. Test interface for an MOS technology integrated circuit. 4,764,924, Cl. 371-15.000.

Material Concepts, Inc.: *See*—
Orban, Ralph F.; and Lewis, Clifford, 4,764,665, Cl. 219-549.000.

Materiels Equipements Graphiques: *See*—
Flament, Daniel, 4,763,851, Cl. 242-58.300.

Mathers, Roy A.: *See*—
Sittnick, Ralph A., Jr.; and Mathers, Roy A., 4,763,937, Cl. 292-251.500.

Mathison, Allen D.; and Nelson, Dale K., to Cherne Industries, Inc. Pipe joint sealing and testing apparatus. 4,763,511, Cl. 73-49.100

Matkan, Josef, to Stork Research B.V. Method of image reversal in color electrophotography. 4,764,443, Cl. 430-45.000.

Matney, Arthur. Transparent gummed label having see through indicia and opaque universal product code bar and numerical indicia at a side thereof on small nail polish bottles. 4,763,930, Cl. 283-81.000.

Matschke, Christain; Arnold, William M.; Buchner, Karl-Heinz; and Zimmerman, Ulrich, to Kerforshungsanlage Julich. Chamber for the treatment of cells in an electrical field. 4,764,473, Cl. 435-287.000

Matsuda, Hiroaki: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, 4,763,919, Cl. 280-644.000

Matsuda, Osamu, to Sony Corporation. Semiconductor device. 4,764,931, Cl. 372-29.000.

Matsuda, Toshiro, to Nissan Motor Company, Limited. Automotive traction control system with feature of adjusting wheel slippage detecting threshold level depending upon vehicle speed. 4,763,912, Cl. 180-197.000

Matsuguchi, Noboru: *See*—
Matsuguchi, Tadashi; and Matsuguchi, Noboru, 4,763,931, Cl. 283-108.000

Matsuguchi, Tadashi; and Matsuguchi, Noboru, to Daimatsu Kagaku Kogyo Co., Ltd. Adhesive material for preventing reuse. 4,763,931, Cl. 283-108.000

Matsui, Sadayoshi: *See*—
Matsumoto, Mitsuhiro; Matsui, Sadayoshi; Taneya, Mototaka; and Kawanishi, Hidenori, 4,764,937, Cl. 372-50.000.
Taneya, Mototaka; Matsumoto, Mitsuhiro; Kawanishi, Hidenori; and Matsui, Sadayoshi, 4,764,936, Cl. 372-50.000

Matsui, Shinichi; and Sugino, Masaru, to Nissan Motor Company, Limited. Apparatus for supporting a vibrating object. 4,763,884, Cl. 267-140.100

Matsui, Takayuki; and Okuyama, Toshiaki, to Hitachi, Ltd. Method and apparatus for controlling circulating-current type cycloconverter 4,764,859, Cl. 363-161.000

Matsuki, Yuji: *See*—
Ichikawa, Wataru; and Matsuki, Yuji, 4,764,767, Cl. 340-870.310

Matsukubo, Hiroshi: *See*—
Masuzawa, Kuniyoshi; Okamura, Kyuya; Kasuga, Kazunori; Fujimori, Shizuyoshi; Kinoshita, Susumu; and Matsukubo, Hiroshi, 4,764,608, Cl. 544-6.000

Matsumoto, Masuo: *See*—
Nakagawa, Tohru; Kubota, Hitoshi; and Matsumoto, Masuo, 4,764,883, Cl. 364-513.000.

Matsumoto, Mitsuhiro; Matsui, Sadayoshi; Taneya, Mototaka; and Kawanishi, Hidenori, to Sharp Kabushiki Kaisha. Semiconductor laser array device. 4,764,937, Cl. 372-50.000.

Matsumoto, Mitsuhiro: *See*—
Taneya, Mototaka; Matsumoto, Mitsuhiro; Kawanishi, Hidenori; and Matsui, Sadayoshi, 4,764,936, Cl. 372-50.000.

Matsumura, Ken, to Kabushiki Kaisha Toshiba. Output current darlington transistor driver circuit. 4,764,688, Cl. 307-270.000

Matsumura, Shunichi: *See*—
Hara, Shigeyoshi; Inata, Hiroo; and Matsumura, Shunichi, 4,764,427, Cl. 428-400.000

Matsunaga, Kazu: *See*—
Awazu, Kenzo, deceased; Matsunaga, Kazu; and Hashimoto, Noritsuna, 4,764,301, Cl. 252-301.40P.

Matsunaga, Osamu: *See*—
Tanaka, Yutaka; and Matsunaga, Osamu, 4,764,964, Cl. 358-31.000.

Matsune, Fusakiyo; Nagasawa, Hidehiko; and Mochizuki, Hideharu, to Koito Seisakusho Co., Ltd. Mounting device for replaceable lamp assembly on reflector enclosure. 4,764,854, Cl. 362-226.000

Matsuoka, Minoru: *See*—
Shigaki, Seiichiro; Matsuoka, Minoru; and Ookoshi, Osamu, 4,764,942, Cl. 375-118.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fuse, Genshu; Tateiwa, Kenji; Nakao, Ichiro; and Shimoda, Hideaki, 4,764,483, Cl. 437-67.000
Kubo, Kanji; and Doyama, Yoshiaki, 4,764,819, Cl. 360-10.200.
Mae, Takaharu; Kinoshita, Hiromi; Maeda, Yoshinobu; Fujiwara, Koji; and Nakagawa, Hiroshi, 4,763,811, Cl. 221-11.000
Morita, Koichi; Takaichi, Susumu; Fujiwara, Muneyoshi; Seno, Makito; and Misawa, Yoshihiko, 4,763,405, Cl. 29-740.000
Nakagawa, Tohru; Kubota, Hitoshi; and Matsumoto, Masuo, 4,764,883, Cl. 364-513.000
Sawai, Kiyoshi; Yamamura, Michio; Yamamoto, Shuuichi; and Morokoshi, Hiroshi, 4,764,096, Cl. 418-55.000
Taniguchi, Hiroshi; Furumoto, Mitsunobu; and Kubo, Kanji, 4,764,822, Cl. 360-48.000
Usui, Akira; Yamada, Tadashi; Kubo, Kazuhiko; and Nagai, Hiroyuki, 4,764,736, Cl. 330-294.000
Yamamori, Kiyoshi; Hasegawa, Shigeyoshi; Mogi, Yuuji; Kojima, Tamotsu; and Higuchi, Sadashi, 4,764,780, Cl. 346-140.00R

Matsushita Electric Works, Ltd.: *See*—
Ishihara, Masayuki; and Makio, Keizo, 4,764,486, Cl. 501-9.000
Nakano, Kunimitsu; Katou, Takeyasu; and Sakakibara, Mitsuaki, 4,764,746, Cl. 337-66.000
Sakai, Masatoshi; and Nishii, Takeshi, 4,764,649, Cl. 200-67.00D

Matsuzaka, Syoji: *See*—
Hotta, Yuji; Matsuzaka, Syoji; and Miyoshi, Masanobu, 4,764,457, Cl. 430-569.000

Mattersberger, Johann: *See*—
Wehner, Rainer; Mattersberger, Johann; Klenner, Dagmar; and Deutsch-Weyer, Gerlinde, 4,764,468, Cl. 435-188.000

Matz, Bruno; and Kearney, Dolores C., to Ford Motor Company Method of fusion bonding low density thermoplastic bodies 4,764,328, Cl. 264-248.000

Matz, Edward I.; and Costa, Robert A. Hose coupling. 4,763,932, Cl. 285-177.000

Mauthe, Gerhard; Niemeyer, Lutz; Pinnekamp, Friedrich; and Wiegart, Norbert, to BBC Brown, Boveri & Company, Ltd. Circuit breaker 4,764,836, Cl. 361-5.000

Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. *See*—
Strian, Friedrich; Hoelzl, Rupert; Galfe, Gunther; Lauterbacher, Stefan; and Lehmann, Wilhelm, 4,763,666, Cl. 128-742.000

Max Planck-Gesellschaft zur Forderung der Wissenschaften e.V.: *See*—
Kalbitzer, Siegfried, 4,764,432, Cl. 428-446.000

May, Bronislav H.: *See*—
Vandenbulcke, Brigitte M. J.; and May, Bronislav H., 4,764,303, Cl. 252-385.000

Mayer, Edward F. Gasifier apparatus. 4,764,185, Cl. 48-76.000

Mayer, Wolfgang. Stone saw. 4,763,637, Cl. 125-21.000

Mayhew, Ian: *See*—
Corman, Lourdes; and Mayhew, Ian, 4,764,532, Cl. 514-560.000

Mayo Medical Resources: *See*—
Ott, Beverly J., 4,763,678, Cl. 134-171.000

Mazda Motor Corporation: *See*—
Harasaki, Hayatsugu, 4,763,948, Cl. 296-194.000
Okazaki, Katsumi; Yokooku, Katsuhiko; Watanabe, Tomomi, Nakazumi, Tadataka; and Mamiya, Kiyotaka, 4,763,629, Cl. 123-489.000
Onoe, Yosuaki; and Mikasa, Tokio, 4,763,925, Cl. 280-808.000

MBB GmbH: *See*—
Steinhauer, Hans-Juergen; and Martens, Walter, 4,763,862, Cl. 244-215.000

McCabe, William J.; and Peskov, Vitaly I., to Brown & Sharpe Manufacturing Company. Base assembly for coordinate measuring machine. 4,763,420, Cl. 33-503.000

McCarthy, Bill D.: *See*—
Dunn, David C., 4,763,842, Cl. 239-542.000

McCarthy, Brian J.: *See*—
Johnson, Lorin K.; Atlas, Steven A.; McCarthy, Brian J.; Laragh, John H.; and Lewicki, John A., 4,764,504, Cl. 514-12.000

McCartney, Charles P.: *See*—
Bish, James R.; and McCartney, Charles P., 4,764,182, Cl. 29-623.100

McConchie, Noel P., Sr. Circuit continuity and voltage tester. 4,764,727, Cl. 324-503.000

McCormick, Daniel F., to Brunswick Corporation. Marine stern drive oil cooling and circulating as well as pumping system. 4,764,135, Cl. 440-83.000

McCoy, Allen J. Articulated ankle. 4,764,172, Cl. 623-49.000

McCullough, John G.: *See*—
Kubek, Daniel J.; McCullough, John G.; Barr, Kenneth J.; and Kosseim, Alexander J., 4,764,354, Cl. 423-228.000

McDaniel, Carl V.: *See*—
Edwards, Grant C.; Gilson, Jean-Pierre; and McDaniel, Carl V., 4,764,269, Cl. 208-120.000

McDaniel, David L.; Granfors, Paul R.; and Hoffman, David M., to General Electric Company. Kinestatic charge detector. 4,764,679, Cl. 250-374.000

McDonald, Marguerite B.: *See*—
Kaufman, Herbert E.; and McDonald, Marguerite B., 4,763,651, Cl. 128-310.000

McDonald'S Corporation: *See*—
Griffin, Bruce J.; and Kopanski, Roger, 4,764,120, Cl. 434-336.000

McElhaney, Craig: *See*—
Baker, David G.; and McElhaney, Craig, 4,764,147, Cl. 446-397.000

McElroy, James G., to Kirox, Inc. Waste combustion system. 4,764,105, Cl. 431-115.000

McEowen, James R.: *See*—
Courtney-Pratt, Jeofry S.; and McEowen, James R., 4,763,978, Cl. 350-96.180

McGeehins, Robert, to Waddingtons Cartons Limited. Heat treatable containers. 4,763,790, Cl. 206-557.000

McGhee, Robert W.: *See*—
Coffey, David M.; McGhee, Robert W.; and Coffey, David L. 4,763,404, Cl. 29-599.000

McGill Manufacturing Co., Inc.: *See*—
Resh, John, 4,764,648, Cl. 200-50.00A

McGovern, Terrence P.; and Cunningham, Roy T., to United States of America, Agriculture. Persistent attractants for the mediteranean fruit fly, the method of preparation and method of use. 4,764,366, Cl. 424-84.000

McGowan, Peter T., to Allied Signal Inc. Power transfer unit. 4,763,472, Cl. 60-403.000

VOL 1093 ISS 3 AG 16 1988 UMI

McKinsey, Millard F.; Knoebel, David L.; Cram, Jesse A.; and Kilburg, Larry N. Lifting device. 4,763,761, Cl. 187-8.410.
McLaughlin, Kevin L.; and Bushey, Thomas P., to Motorola Inc. Poly-sidewall contact transistors. 4,764,801, Cl. 357-59.000
McMullen, James G.: *See—*
Loughran, James A.; McMullen, James G.; and Yerman, Alexander J., 4,764,485, Cl. 437-225.000
McNamee, Clyde G.: *See—*
Durham, Donald R.; Stellwag, Edmund J.; and McNamee, Clyde G., 4,764,470, Cl. 435-221.000
McNeill, Charles R., II. Device and method for coring and cutting of fruits and vegetables for subsequent filling with complementary foods. 4,763,414, Cl. 30-113.100
McPherson, James N., to Smith International, Inc. PCD enhanced radial bearing. 4,764,036, Cl. 384-276.000.
McPherson, James O.: *See—*
Efron, Edward; McPherson, James O.; and Kim, Young B., 4,764,915, Cl. 369-58.000
McVicar, Cameron C.: *See—*
McVicar, John A.; and McVicar, Cameron C., 4,763,744, Cl. 180-53.700
McVicar, John A.; and McVicar, Cameron C. Power takeoff shaft arrangement for a road vehicle. 4,763,744, Cl. 180-53.700
Mecklenfeld, Hermann: *See—*
Guggenheimer, Kurt; and Mecklenfeld, Hermann, 4,763,845, Cl. 241-101.700
Medinger, Bernhard: *See—*
von der Crone, Jost; Medinger, Bernhard; and Bugnon, Philippe, 4,764,217, Cl. 106-494.000
Medunitsa, Vladimir L.: *See—*
Shishkin, Viktor V.; Kryazhevskikh, Nikolai F.; Oleinik, Viktor N.; Shlatgauer, Boris I.; and Medunitsa, Vladimir L., 4,764,237, Cl. 156-294.000
Meekins, Victoria. Herb-stuffed pet accessory for naturally repelling fleas and ticks. 4,763,604, Cl. 119-1.000.
Mehta, Rajendra K.: *See—*
Bauman, Bernard D.; Mehta, Rajendra K.; and Williams, Mark A., 4,764,405, Cl. 428-35.000
Meichsner, Walter; Gmohling, Werner; Tutte, Manfred; and Peters, Karl-Heinz, to Thyssen Stahl AG; and SKW Trostberg AG. Fine-grained agent for desulfurizing molten iron. 4,764,211, Cl. 75-58.000
Meiss, Otto; and Nitzschmann, Robert E., to BASF Aktiengesellschaft Application of finely divided dicyanodiamide onto ammonium-containing and sulfate-containing fertilizers. 4,764,200, Cl. 71-28.000.
Meissner, Werner: *See—*
Nickolay, Helmut; Igel, Wolfgang; Meissner, Werner; and Schollhammer, Richard, 4,763,467, Cl. 57-261.000
Melsheimer, Thomas T.: *See—*
Goodwin, Max W.; and Melsheimer, Thomas T., 4,763,903, Cl. 273-371.000
Melvin, Edward, to MM & M Consultants Limited. Crane hook 4,763,943, Cl. 294-82.130.
Memmel, Lawrence C., to Super Tool and Mfg. Corporation. Clamping mechanism for an automobile drilling machine. 4,764,061, Cl. 408-69.000
Menasha Corporation: *See—*
Sinchok, John D., 4,763,782, Cl. 206-334.000
Mentor O & O, Inc.: *See—*
Reimels, Harry G.; Walsh, David A.; and Arsenault, Michael J., 4,764,165, Cl. 604-35.000
Mepro Kibbutz Hagoshrim: *See—*
Goldstein, Pinchas, 4,764,011, Cl. 356-251.000
Merck & Co. Inc.: *See—*
Colegrove, George T., 4,764,222, Cl. 134-38.000.
Meredith, Frank L.; and Ferguson, Lewis E., to Borg-Warner Chemicals, Inc. Clear impact modifier for PVC. 4,764,563, Cl. 525-316.000
Merilainen, Pekka, to Instrumentarium Corp. Gas collector unit for measuring the metabolic variables of self-respiring patients. 4,763,664, Cl. 128-718.000
Merlin Gerin: *See—*
Bur, Marc; and Nebon, Jean-Pierre, 4,764,650, Cl. 200-153.00G.
Fiorina, Jean-Noel; and Denis, Herve , 4,764,684, Cl. 307-66.000
Merrick, Edwin B., to Hewlett-Packard Company. Technique for creating a zero reference for an external pressure transducer. 4,763,649, Cl. 128-673.000
Merten, Rudolf: *See—*
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,764,401, Cl. 427-304.000
Merval, Jean-Paul: *See—*
Ganga, Roland; Grossoleil, Jacques; and Merval, Jean-Paul, 4,764,424, Cl. 428-327.000
Merz, Walter E.: *See—*
Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas; Crnkovic, Mark A.; James, William D.; and Merz, Walter E., 4,763,716, Cl. 164-122.100
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Steinmetz, Gunter, 4,763,578, Cl. 104-284.000
Metacon Aktiengesellschaft: *See—*
Wenger, Otto, 4,763,881, Cl. 266-287.000.
Metafuse Limited: *See—*
Ady, Joseph, 4,764,654, Cl. 219-76.130.
Mettenbrink, Herbert: *See—*
Von Schuckmann, Alfred; and Mettenbrink, Herbert, 4,763,815, Cl. 222-96.000
Metzger, Louis G.; and Davi, Richard, to Insilco Corporation. Desk top card file system. 4,763,795, Cl. 211-11.000
Meyer, Helmut P., to Allied-Signal Inc. Igniter plug with vibration damping means. 4,764,703, Cl. 313-126.000
Meyer, John D., to Meyer Sound Laboratories, Inc. Circuit and method for correcting distortion in a digital audio system. 4,764,938, Cl. 375-14.000
Meyer, Maurice A., to Micronav Ltd. Phase shifter. 4,764,740, Cl. 333-164.000
Meyer, Philippus J., to Sasol Operations (Proprietary) Limited. Apparatus for the gasification of coal. 4,764,184, Cl. 48-77.000.
Meyer Sound Laboratories, Inc.: *See—*
Meyer, John D., 4,764,938, Cl. 375-14.000
Meyer, Willy: *See—*
Topfl, Werner; Meyer, Willy; and Schneider, Hans-Dieter, 4,764,203, Cl. 71-93.000
Meyers, Arnold G., to Clemmer Industries (1964) Limited. Heat treating, curing or stress relieving furnace. 4,764,109, Cl. 432-153.000.
Michalski, Thomas F.; and Bauer, David J., to Owens-Illinois Televison Products Inc. Method of and apparatus for electrooptical inspection of articles. 4,764,681, Cl. 250-563.000
Miciukiewicz, Joseph F., to Pitney Bowes Inc. Envelope pressure plate for mailing machine. 4,763,575, Cl. 101-91.000
Microdot Inc.: *See—*
Stritzke, Bernard G., 4,763,618, Cl. 123-188.00P
Microelectronics Center of North Carolina: *See—*
Reisman, Arnold; and Osburn, Carlton M., 4,764,644, Cl. 174-68.500
Micronav Ltd.: *See—*
Meyer, Maurice A., 4,764,740, Cl. 333-164.000
Micropore International Limited: *See—*
Scott, Richard C., 4,764,663, Cl. 219-448.000.
Microvasive, Inc.: *See—*
Manzo, Michael P., 4,763,667, Cl. 128-750.000
Manzo, Michael P., 4,763,670, Cl. 128-756.000
Midland Manufacturing Corp.: *See—*
Weese, Benjamin H., 4,763,581, Cl. 108-92.000
Miekka, Fred; and Miekka, Jim. Sensitization of inorganic oxidizer explosives. 4,764,229, Cl. 149-21.000.
Miekka, Jim: *See—*
Miekka, Fred; and Miekka, Jim, 4,764,229, Cl. 149-21.000
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method of compensating output from oxygen concentration sensor of internal combustion engine. 4,763,628, Cl. 123-440.000.
Migada, Inc.: *See—*
Wyatt, Philip, 4,763,648, Cl. 128-673.000
Mikasa, Tokio: *See—*
Onoe, Yosiaki; and Mikasa, Tokio, 4,763,925, Cl. 280-808.000
Miksch, Manfred: *See—*
Braschel, Reinhold; Miksch, Manfred; and Schiffer, Rolf, 4,764,882, Cl. 364-508.000
Mildenberger, Hilmar: *See—*
Schmierer, Roland; Mildenberger, Hilmar; Handte, Reinhard; and Burstell, Helmut, 4,764,624, Cl. 71-92.000
Miles, Peter D.: *See—*
Cooper, David G.; Miles, Peter D.; and Young, Rodney C., 4,764,519, Cl. 514-335.000
Mill Rose Laboratories: *See—*
Macek, Andrew M.; Kozak, Mark W.; and Smith, Edward J., 4,763,668, Cl. 128-751.000
Miller, Allan F.: *See—*
Haman, David F.; and Miller, Allan F., 4,763,760, Cl. 184-6.500
Miller, Bernard. Water filter unit and dispenser. 4,764,274, Cl. 210-232.000
Miller, David A. B.: *See—*
Hinton, Harvard S.; and Miller, David A. B., 4,764,889, Cl. 364-807.000
Miller, David C.; and Pendleton, Thomas J., to Mobil Oil Corporation. Waste container and adjustable bag linear package holder combination. 4,763,809, Cl. 220-407.000
Miller, George R., to Techalloy Illinois, Inc. Sonic treatment apparatus. 4,763,677, Cl. 134-105.000
Miller, Harry, to Honeywell Inc. Vertical flight path and airspeed control system for aircraft. 4,764,872, Cl. 364-433.000.
Miller, William D., to Monsanto Company. Process for preparing (S)(+)-4,4'(methyl-1,2-ethanediyl)-bis(2,6-piperazinedione) 4,764,614, Cl. 544-357.000
Millet, Yvon: *See—*
Charquet, Daniel; Millet, Yvon; Dall'Agnol, Marc; and Robin, Rene, 4,764,223, Cl. 148-11.50F.
Milligan, John D. Grid plate assembly for ebullated bed reactor. 4,764,347, Cl. 422-113.000
Mimata, Tsutomu: *See—*
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000
Minakuchi, Kiyoshi; and Tomita, Junji, to Nippon Gakki Seizo Kabushiki Kaisha. Tremolo unit mechanism for electric guitar. 4,763,555, Cl. 84-313.000
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, to Olympus Optical Co., Ltd. Surgical microscope. 4,763,968, Cl. 350-516.000.
Minami, Keijiro; and Nishiguchi, Yasuo, to Kyocera Corporation. Thermal head. 4,764,659, Cl. 219-216.000
Mineyama, Katsumi: *See—*
Fukaya, Katsuyoshi; and Mineyama, Katsumi, 4,764,696, Cl. 310-49.00R

Minnesota Mining and Manufacturing Company: *See—*
Bingham, Wallace K., 4,763,985, Cl. 350-105.000.
Grzywinski, Robert F., 4,764,410, Cl. 428-120.000.
Minolta Camera Kabushiki Kaisha: *See—*
Ando, Makoto, 4,763,987, Cl. 350-255.000.
Hamada, Masataka; and Ishida, Tokuji, 4,764,787, Cl. 354-408.000
Kimura, Kazuo; and Shibuya, Taro, 4,763,997, Cl. 350-410.000
Tokumaru, Hisashi, 4,764,000, Cl. 350-454.000
Minshall, David; and Randle, Roy, to British Nuclear Fuels plc. End closures for containers. 4,764,333, Cl. 376-203.000
Miraglia, Lucinda J. Learning device and method of using same 4,764,119, Cl. 434-260.000
Miragoli, Giovanna: *See—*
Carenzi, Angelo; Cerri, Oreste; Pozzi, Franco; Casagrande, Cesare; Miragoli, Giovanna; and Virno, Michele, 4,764,530, Cl. 514-548.000
Miranda, Thomas J., to Whirlpool Corporation. Semi-organic foams. 4,764,542, Cl. 521-149.000
Misawa, Yoshihiko: *See—*
Morita, Koichi; Takaichi, Susumu; Fujiwara, Muneyoshi; Seno, Makito; and Misawa, Yoshihiko, 4,763,405, Cl. 29-740.000
Mishiro, Shoiji, to Taga Electric Co., Ltd. Ultrasonic motor device. 4,764,702, Cl. 310-323.000.
Misic, George J.; and Orlando, Paul T., to Picker International, Inc. Low distortion RF switching circuit without DC bias. 4,764,726, Cl. 324-322.000.
Miskinis, Edward T.; and Saha, Bijay S., to Eastman Kodak Company. Electrographic magnetic carrier particles. 4,764,445, Cl. 430-108.000.
Mita Industrial Co., Ltd.: *See—*
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, 4,764,788, Cl. 355-3.00R.
Watashi, Masahiro, 4,764,790, Cl. 355-15.000
Mita, Seiichi: *See—*
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000
Mitake, Hiroshi, to Fuji Photo Film Co., Ltd. Injection mold. 4,764,103, Cl. 425-577.000
Mitchell, Tyrone D., to General Electric Company. Interpenetrating polymeric network comprising polytetrafluoroethylene and polysiloxane. 4,764,560, Cl. 524-506.000
Mitsubishi Chemical Industries Limited: *See—*
Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, 4,764,618, Cl. 546-196.000
Yoshitomi, Toshihiko; Horiuchi, Hiromi; Yamaguchi, Yukio; Kamoshita, Yasuo; and Sekihara, Kiyoshi, 4,764,448, Cl. 430-120.000
Mitsubishi Denki Kabushiki Kaisha: *See—*
Awazu, Kenzo, deceased; Matsunaga, Kazu; and Hashimoto, Noritsuna, 4,764,301, Cl. 252-301.40P
Hirahara, Takuho; Kawaguchi, Susumu; Ueda, Sei; and Nakane, Kazuhiro, 4,764,097, Cl. 418-60.000
Isoda, Satoru; Nara, Shigetoshi; Ueyama, Satoshi; Kawakubo, Hiroaki; and Ogura, Akemi, 4,764,415, Cl. 428-212.000
Kawabata, Keiji, 4,764,798, Cl. 357-45.000.
Naito, Sadao; Shiono, Katsumi; Shinohara, Hideo; Makino, Yoshihiro; and Ishii, Toshitsugu, 4,763,514, Cl. 73-19.000
Sasaki, Takeo, 4,763,623, Cl. 123-339.000
Sato, Yasuhiro; and Tsuji, Katsuya, 4,764,728, Cl. 324-512.000
Ueda, Tetsuya, 4,764,803, Cl. 357-72.000
Ueyama, Satoshi; Isoda, Satoru; Tomisawa, Osamu; Ogura, Akemi; and Kawakubo, Hiroaki, 4,764,416, Cl. 428-212.000
Mitsubishi Gas Chemical Company, Inc.: *See—*
Nozaki, Mitsuru; and Nakamura, Hirokatsu, 4,764,327, Cl. 264-225.000
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Fukaya, Yasuhiro; and Hirai, Shozo, 4,763,828, Cl. 228-124.000.
Hayashi, Shoichi; Sakai, Norio; and Ishihara, Hidetoshi, 4,763,495, Cl. 68-19.100
Mitsubishi Paper Mills, Ltd.: *See—*
Ikeda, Haruhiko; Higuchi, Masahiro; and Hiraishi, Shigetoshi, 4,764,501, Cl. 503-209.000
Mitsubishi Pencil Co., Ltd.: *See—*
Konose, Yoshiomi, 4,764,044, Cl. 401-150.000
Mitsubishi Petrochemical Co., Ltd.: *See—*
Yamauchi, Shin-ichi; Arashiro, Yusuke; and Ohno, Kenyu, 4,764,559, Cl. 525-92.000
Mitsubishi Rayon Company Limited: *See—*
Shigemitsu, Hideyuki; Hongo, Masafumi; and Toyooka, Yutaka, 4,764,555, Cl. 525-67.000.
Mitsui Petrochemical Industries, Ltd.: *See—*
Fukui, Kunisuke; and Motooka, Masanori, 4,764,583, Cl. 528-193.000
Tojo, Tetsuo; Nakahara, Takashi; Otawa, Yasuhiko; and Okamoto, Katsuo, 4,764,562, Cl. 525-281.000
Mitsuno, Tatsuyuki; Shinonaga, Hideo; and Daimon, Akio, to Sumitomo Chemical Co., Ltd. Filler-containing polypropylene resin composition and process for producing the same. 4,764,546, Cl. 523-213.000
Mitsuyama, Masuhiro. Document file. 4,764,159, Cl. 493-189.000
Mittler, Martin A., to Voltronics Corporation. Variable electronic component. 4,764,843, Cl. 361-294.000
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, to Aisin-Warner Limited; and Toyota Jidosha Kabushiki Kaisha. Four-wheel drive vehicle. 4,763,748, Cl. 180-248.000
Miura, Masakatsu; Iwatsuki, Tatsuya, and Kubo, Seitoku, to Aisin-Warner Limited; and Toyota Kidosha Kabushiki Kaisha. Four-wheel drive vehicle. 4,763,749, Cl. 180-249.000
Miwa, Takashi: *See—*
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, 4,764,706, Cl. 313-422.000
Miyahara, Kazunori; Mukaida, Masashi; and Hokawa, Koji, to Nippon Telegraph and Telephone Corporation. Vortex memory device. 4,764,898, Cl. 365-162.000
Miyahara, Yoshinori; and Hasegawa, Kazuo, to Alps Electric Co., Ltd. Remote control circuit. 4,764,981, Cl. 455-603.000
Miyake, Masaya: *See—*
Yamakawa, Akira; Miyake, Masaya; and Nishioka, Takao, 4,764,490, Cl. 501-97.000
Miyashita, Masakazu: *See—*
Yoshioka, Junichi; Miyashita, Masakazu, and Daito, Michimasa, 4,763,448, Cl. 51-165.800
Miyazaki, Hiroaki: *See—*
Torikoshi, Yuichi; Shirai, Hitoshi; Iwasa, Kazuyuki; Miyazaki, Hiroaki; and Yamazaki, Yasuo, 4,764,784, Cl. 354-195.120
Miyazaki, Shigeru: *See—*
Imai, Harumitsu; Suzuki, Kenichi; Nagai, Koji; Miyazaki, Shigeru, Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000
Miyazaki, Yoshihiro; Takaya, Soichi; Tanji, Masayuki; Nishikawa, Atsuhiko; and Yamaguchi, Shinichiro, to Hitachi, Ltd. Method and apparatus for controlling interruption in the course of instruction execution in a processor. 4,764,869, Cl. 364-300.000
Miyo, Tokihiro; and Kawasaki, Toshio, to Fujitsu Limited. Radio receiver demodulation system. 4,764,730, Cl. 329-50.000
Miyoshi, Masanobu: *See—*
Hotta, Yuji; Matsuzaka, Syoji; and Miyoshi, Masanobu, 4,764,457, Cl. 430-569.000
Mizerak, Dennis S., to Babcock & Wilcox Company, The. Apparatus and method for continuously measuring mass flow. 4,763,530, Cl. 73-861.380
Mizoguchi, Tadashi: *See—*
Akutsu, Nakao; Akimitsu, Masako; and Mizoguchi, Tadashi, 4,764,436, Cl. 428-694.000
Mizoguchi, Takao: *See—*
Saito, Makoto; and Mizoguchi, Takao, 4,764,488, Cl. 501-95.000
Mizude, Kazuhiro: *See—*
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, 4,764,788, Cl. 355-3.00R
Mizukami, Hideaki: *See—*
Mori, Kentaro; Mizukami, Hideaki; Nakagawa, Hirotaka; Ozeki, Akichika; and Kawawa, Takaho, 4,764,209, Cl. 75-10.260
Mizuno, William G., to Ecolab Inc. Liquid dispenser. 4,763,676, Cl. 134-100.000
Mlaker, John J.: *See—*
Engler, Edgar D.; Weber, Gus J.; Stapel, Melvin G.; Mlaker, John J.; and Hanson, Leonard, 4,763,800, Cl. 212-195.000
MM & M Consultants Limited: *See—*
Melvin, Edward, 4,763,943, Cl. 294-82.130
Mo, Roy, to Standard Microsystems Corporation. Method for fabricating self-aligned, conformal metallization of semiconductor wafer 4,764,484, Cl. 437-203.000
Mobay Corporation: *See—*
Dewhurst, John E.; Harasin, Stephen J.; Cekoric, Mark C.; and Abouzahr, Saad M., 4,764,540, Cl. 521-110.000
Mobil Oil Corporation: *See—*
Balloni, Riccardo; Keung, Jay; Liestman, David A.; and Nahmias, Michael, 4,764,425, Cl. 428-331.000
Chen, Nai Y.; LaPierre, Rene B.; Partridge, Randall D.; and Wong, Stephen S., 4,764,266, Cl. 208-58.000
Horodysky, Andrew G., 4,764,183, Cl. 44-53.000
Miller, David C.; and Pendleton, Thomas J., 4,763,809, Cl. 220-407.000.
Yan, Tsoung Y., 4,764,219, Cl. 134-2.000.
Mochizuki, Hideharu: *See—*
Matsune, Fusakiyo; Nagasawa, Hidehiko; and Mochizuki, Hideharu, 4,764,854, Cl. 362-226.000
Mochizuki, Hiroyuki: *See—*
Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori, Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, 4,764,098, Cl. 418-152.000
Modine Manufacturing Company: *See—*
Granetzke, Dennis C., 4,763,723, Cl. 165-67.000
Moeller, Roy P.: *See—*
Rainin, Kenneth; Magnussen, Haakon T., Jr.; and Moeller, Roy P., 4,763,535, Cl. 73-864.180
Moggi, Giovanni: *See—*
Piacenti, Franco; Pasetti, Adolfo; Manganelli Del Fa, Carlo, and Moggi, Giovanni, 4,764,431, Cl. 428-421.000
Mogi, Yuuji: *See—*
Yamamori, Kiyoshi; Hasegawa, Shigeyoshi; Mogi, Yuuji; Kojima, Tamotsu; and Higuchi, Sadashi, 4,764,780, Cl. 346-140.00R
Mohr, David M.: *See—*
Ramachandran, Venkataraman; and Mohr, David M., 4,764,635, Cl. 558-423.000
Mohrsen, Leif, to Fibron Machine Corporation. Paper tail nip threader 4,763,822, Cl. 226-91.000
Molino, Bruce F.; Campbell, Henry F.; Kuhla, Donald E.; and Studt, William L., to Rorer Pharmaceutical Corporation. Benzodiazinone-

VOL 1093 ISS 3 AG 16 1988 UMI

pyridone compounds, cardiotonic compositions including the same, and their uses. 4,764,512, Cl. 514-183.000

Molins Machine Co., Inc.: *See—*
Jefferys, Keith; Marritt, Clifford R.; and Seim, Albert D., II, 4,763,775, Cl. 198-533.000

Molter, Leander; Molter, Wolfgang; and Munzinger, Friedrich, to Palas GmbH Partikel-und Lasermesstechnik. Device for producing a solid aerosol. 4,764,057, Cl. 406-69.000

Molter, Wolfgang: *See—*
Molter, Leander; Molter, Wolfgang; and Munzinger, Friedrich, 4,764,057, Cl. 406-69.000

Monsanto Company: *See—*
Getman, Daniel P., 4,764,594, Cl. 530-334.000
Getman, Daniel P.; and Heintz, Robert M., 4,764,595, Cl. 530-334.000
Logusch, Eugene W., 4,764,620, Cl. 548-113.000
Miller, William D., 4,764,614, Cl. 544-357.000.
Vandenbulcke, Brigitte M. J.; and May, Bronislav H., 4,764,303, Cl. 252-385.000.

Moody, Richard D., to Plastic Techniques, Inc. Scuff pad with step. 4,763,758, Cl. 182-46.000.

Mookherjee, Braja D.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000.

Moreland, Gerald W., to Honiton Investments, N.V. Combined drain and return line and valve therefor. 4,763,366, Cl. 4-541.000.

Morelli, Aldo. Air filter. 4,764,191, Cl. 55-302.000

Morgan, Millie D. Shampoo bowl neck cushioning device. 4,763,364, Cl. 4-523.000

Morgan, Russell A.: *See—*
Leveriza, Carina T.; and Morgan, Russell A., 4,764,247, Cl 156-643.000

Morgenstern, Manfred; and Bertrand, Claus, to Ruetgerswerke Aktiengesellschaft. Process for the continuous coking of pitches and utilization of the coke obtained thereby. 4,764,318, Cl. 264-29.500

Mori, Kei. Solar rays radiation device for medical treatment. 4,763,971, Cl. 350-96.100

Mori, Kentaro; Mizukami, Hideaki; Nakagawa, Hirotaka; Ozeki, Akichika; and Kawawa, Takaho, to Nippon Kokan Kabushiki Kaisha. Method for manufacturing alloy. 4,764,209, Cl. 75-10.260.

Mori, Kunitaka, to NEC Corporation. Reading circuit for an optical disk apparatus. 4,764,916, Cl. 369-59.000.

Mori, Yoshitada: *See—*
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000

Mori, Yutaka: *See—*
Eto, Kunihiko; Mori, Yutaka; Oono, Akihiro; and Kodama, Kazumasa, 4,763,745, Cl. 180-143.000.

Moriguchi, Koichi: *See—*
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100.

Morisue, Yasuhiro: *See—*
Sano, Yasuo; Morisue, Yasuhiro; Komiya, Kiyoshi; and Nakamura, Yoshimasa, 4,764,587, Cl. 528-363.000

Morita, Koichi; Takaichi, Susumu; Fujiwara, Muneyoshi; Seno, Makito; and Misawa, Yoshihiko, to Matsushita Electric Industrial Co., Ltd. Chip-placement machine with test function. 4,763,405, Cl. 29-740.000

Morita, Yasukazu, to NEC Corporation. Memory circuit with improved word line noise preventing circuits. 4,764,902, Cl 365-206.000

Moritoh, Naoya: *See—*
Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,764,617, Cl. 546-169.000

Moriyama, Masao. Apparatus for mixing and extruding viscous liquids. 4,764,020, Cl. 366-76.000

Morokoshi, Hiroshi: *See—*
Sawai, Kiyoshi; Yamamura, Michio; Yamamoto, Shuuichi; and Morokoshi, Hiroshi, 4,764,096, Cl. 418-55.000

Morota, Makie; and Yoshikawa, Shoji, to Olympus Optical Co., Ltd. Optical lens vibration control for optical information recording and/or reproducing apparatus. 4,764,911, Cl. 369-32.000.

Morozumi, Takuro, to Fuji Jukogyo Kabushiki Kaisha. Air-fuel ratio control system for automotive engines. 4,763,634, Cl. 123-520.000.

Morris, Carrol V., to KCCB, Inc. Relieving valve with surge control for fluid storage tank. 4,763,688, Cl. 137-509.000.

Morrison, Richard H., Jr.: *See—*
Chitty, Gordon W.; Morrison, Richard H., Jr.; Olsen, Everett O.; Panagou, John G.; and Zavracky, Paul M., 4,764,244, Cl. 156-630.000.

Morse, Lewis D.: *See—*
Boothe, Jerry E.; Morse, Lewis D.; and Klein, William L., 4,764,365, Cl. 424-81.000

Morton Thiokol, Inc.: *See—*
Brown, Ernie D.; Nelson, Karl M.; and Smith, Gary L., 4,764,316, Cl. 264-3.100.
Hightower, James O., Jr.; Sato, Tomio; Hamner, James W.; and Rector, Carl M., 4,764,319, Cl. 264-3.400
Manser, Gerald E.; Shaw, Graham C.; and Shaw, Graham C., III, 4,764,586, Cl. 528-362.000.
Orelup, Richard B., 4,764,474, Cl. 436-111.000.

Mosbach, Jurgen; Pedain, Josef; and Noll, Klaus, to Bayer Aktiengesellschaft. Water soluble or dispersible polyurethanes, a process for their preparation and their use for coating substrates. 4,764,553, Cl 524-591.000

Motooka, Masanori: *See—*
Fukui, Kunisuke; and Motooka, Masanori, 4,764,583, Cl. 528-193.000

Motorola, Inc.: *See—*
Bader, Mark; and Wang, Karl L., 4,764,900, Cl. 365-189.000.
Chang, Kuang-Yeh; and Hart, Charles F., 4,764,477, Cl. 437-29.000
Holden, Kirk N.; and Someshwar, Ashok H., 4,764,888, Cl. 364-788.000
Kaatz, Gary F., 4,764,737, Cl. 331-1.00A.
Khan, Safina J., 4,764,849, Cl. 361-428.000
Kowalewski, Rolf E.; and Schmitz, Charles J., 4,764,715, Cl. 320-13.000
McLaughlin, Kevin L.; and Bushey, Thomas P., 4,764,801, Cl 357-59.000
Petrie, Adelore F.; Karlmann, Thomas F.; Parmelee, Steven G.; and Edwards, Arthur J., 4,764,840, Cl 361-154.000.

Mouret, Patrick, to Rivierre Casalis. Process and device for producing cylindrical bales of an agricultural product in a pickup baler. 4,763,464, Cl. 56-341.000.

Mouri, Yasunori: *See—*
Toshio, Ishii; and Mouri, Yasunori, 4,763,475, Cl. 60-602.000

Mouw, Kenneth W.: *See—*
Arff, John H.; and Mouw, Kenneth W., 4,764,349, Cl. 422-186.180.

Mugrauer, Hubert; and Haass, Guenther, to Siemens Aktiengesellschaft. Thermo transfer printer. 4,764,776, Cl. 346-76.00R.

Mukaida, Masashi: *See—*
Miyahara, Kazunori; Mukaida, Masashi; and Hokawa, Koji, 4,764,898, Cl. 365-162.000

Mulkern, Joseph, to Honeywell Inc. Write-protect apparatus for bit mapped memory. 4,764,764, Cl. 340-724.000

Muller, Bernd W. W., to Janssen Pharmaceutica N.V. Derivatives of gamma-cyclodextrin. 4,764,604, Cl. 536-103.000.

Muller, Curt: *See—*
Heller, Jurg; Kissling, Bruno; Muller, Curt; Robinson, Tibor; and Valenti, Salvatore, 4,764,585, Cl. 528-233.000.

Muller, Hanns P.; Gipp, Roland; and Heine, Heinrich, to Bayer Aktiengesellschaft. Liquid-crystalline diglycidyl compounds, the preparation of these, and the use of these in curable epoxide mixtures. 4,764,581, Cl. 528-100.000

Muller, Heinz; and Nugent, Thomas J., to Voest-Alpine International Corporation. Apparatus for discontinuous withdrawing of a cast strand. 4,763,719, Cl. 164-478.000

Muller, Heinz; Buzzi, Reinhard; and Scheiblhofer, Gerhard, to Voest-Alpine Aktiengesellschaft. Method of igniting a plasma arc as well as an arrangement for carrying out the method. 4,764,208, Cl. 75-10.190.

Muller, Peter: *See—*
Bombis, Dieter; Becker, Ernst; Wildhaber, Paul; Vogler, Franz; and Muller, Peter, 4,763,843, Cl. 239-571.000.

Muller, Robert, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. All wheel drive for a motor vehicle. 4,763,747, Cl. 180-244.000.

Mullican, Michael D.: *See—*
Connor, David T.; and Mullican, Michael D., 4,764,525, Cl 514-381.000

Munzinger, Friedrich: *See—*
Molter, Leander; Molter, Wolfgang; and Munzinger, Friedrich, 4,764,057, Cl. 406-69.000

Murakami, Koichi, to Tohoku Metal Industries, Ltd. A.C. electric motors having a stator forming orthogonal magnetic paths. 4,764,698, Cl. 310-72.000

Murata Kikai Kabushiki Kaisha: *See—*
Kawarabashi, Tsukasa; and Takahashi, Shinji, 4,763,773, Cl. 198-409.000

Murata Manufacturing Co., Ltd.: *See—*
Kato, Toshikazu; and Nitta, Kouichi, 4,764,844, Cl. 361-308.000.
Murata, Michihiro; and Yamamoto, Hiroshi, 4,764,139, Cl. 445-49.000

Murata, Michihiro; and Yamamoto, Hiroshi, to Murata Manufacturing Co., Ltd. Production method for channel plate. 4,764,139, Cl. 445-49.000

Murayama, Jin; Kondo, Ryuji; and Kudoh, Yoshimitsu, to Fuji Photo Film Co., Ltd. Variable order and period solid state image pickup device. 4,764,813, Cl. 358-213.110.

Murayama, Toshihiro: *See—*
Ichihashi, Koji; and Murayama, Toshihiro, 4,763,872, Cl. 251-30.010.

Murphy, Preston V.; and Hubschi, Kurt, to Lectret S.A. Electret transducing. 4,764,690, Cl. 307-400.000.

Murray, Michael G. Tailgate track mat. 4,763,945, Cl. 296-57.00R.

Murray, Robert J., to Pitman Manufacturing Co., Inc. Bucket release assembly for aerial device. 4,763,755, Cl. 182-2.000.

Mycogen Corporation: *See—*
Herrnstadt, Corinna; and Soares, George G., Jr., 4,764,372, Cl. 424-93.000

Myers, Ronald E., to BFGoodrich Company, The. Electrically conductive pyrrole polymers. 4,764,573, Cl. 526-90.000.

n-View Corporation: *See—*
Vogeley, James H.; and Vogeley, Arthur W., 4,763,993, Cl. 350-331.00T.

Nabisco Brands, Inc.: *See—*
Pomper, Seymour; Cole, Gary; and Scheinbach, Saul, 4,764,472, Cl. 435-256.000
Ripka, Michael S., 4,764,471, Cl. 435-255.000.
Sullivan, Spencer W.; and Verrico, Marsha K., 4,764,388, Cl. 426-311.000

Nacht, George G.: *See—*
Silverthorn, Lee J., III; Gaudette, Philip A.; Holt, Arthur W., Nacht, George G.; and Warnar, Robert B. J., 4,764,863, Cl 364-200.000

Nagae, Masahiro: *See—*
Honda, Shoichi; Nagae, Masahiro; and Fukumoto, Hiroshi, 4,764,158, Cl. 474-212.000.

Nagai, Hiroyuki: *See—*
Usui, Akira; Yamada, Tadashi; Kubo, Kazuhiko; and Nagai, Hiroyuki, 4,764,736, Cl. 330-294.000.

Nagai, Kayoko: *See—*
Tsubuko, Kazuo; Kuramoto, Shinichi; Nagai, Kayoko; Okawara, Makoto; and Takanashi, Hajime, 4,764,447, Cl. 430-115.000

Nagai, Koji: *See—*
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru; Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000

Nagai, Yohei; and Okamoto, Shimaji, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,763,553, Cl. 84-1.010

Nagano, Takashi: *See—*
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, 4,763,968, Cl. 350-516.000.

Nagasawa, Hidehiko: *See—*
Matsune, Fusakiyo; Nagasawa, Hidehiko; and Mochizuki, Hideharu, 4,764,854, Cl. 362-226.000.

Nagase, Masaomi; Kobayashi, Fumiaki; and Ito, Yoshiyasu, to Toyota Jidosha Kabushiki Kaisha. Method of and system for controlling injection timing in diesel engine. 4,763,630, Cl. 123-501.000.

Nagashima, Akira, to Kioritz Corporation. Oil pump for chain saw 4,764,093, Cl. 417-500.000

Nagoya Oilchemical Co., Ltd.: *See—*
Horiki, Seinosuke; and Makino, Reiji, 4,764,421, Cl. 428-35.000.

Nagy, Kornel: *See—*
Schneider, William C.; Nagy, Kornel; and Wesselski, Clarence J., 4,763,762, Cl. 188-218.0XL.

Nahmias, Michael: *See—*
Balloni, Riccardo; Keung, Jay; Liestman, David A.; and Nahmias, Michael, 4,764,425, Cl. 428-331.000.

Naik, Arundev H.; Stendel, Wilhelm; and Voege, Herbert, to Bayer Aktiengesellschaft. Pesticidal pour-on formulations particularly effective against acarines and insects. 4,764,529, Cl. 514-531.000.

Nailor-Hart Industries Inc.: *See—*
Hart, Andrew J.; and Nailor, Michael T., 4,763,711, Cl. 160-1.000.

Nailor, Michael T.: *See—*
Hart, Andrew J.; and Nailor, Michael T., 4,763,711, Cl. 160-1.000.

Naito, Sadao; Shiono, Katsumi; Shinohara, Hideo; Makino, Yoshihiro; and Ishii, Toshitsugu, to Mitsubishi Denki Kabushiki Kaisha. Monitoring equipment for dissolved gas in insulating oil. 4,763,514, Cl 73-19.000

Nakabu, Shigeo: *See—*
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, 4,764,413, Cl. 428-192.000

Nakagawa, Hiroshi: *See—*
Mae, Takaharu; Kinoshita, Hiromi; Maeda, Yoshinobu; Fujiwara, Koji; and Nakagawa, Hiroshi, 4,763,811, Cl. 221-11.000.

Nakagawa, Hirotaka: *See—*
Mori, Kentaro; Mizukami, Hideaki; Nakagawa, Hirotaka; Ozeki, Akichika; and Kawawa, Takaho, 4,764,209, Cl. 75-10.260.

Nakagawa, Tohru; Kubota, Hitoshi; and Matsumoto, Masuo, to Matsushita Electric Industrial Co., Ltd. Industrial robot having selective teaching modes. 4,764,883, Cl. 364-513.000.

Nakahara, Takashi: *See—*
Tojo, Tetsuo; Nakahara, Takashi; Otawa, Yasuhiko; and Okamoto, Katsuo, 4,764,562, Cl. 525-281.000.

Nakai, Hatsuo, to Clover Co., Ltd. Lock device for double sliding doors. 4,763,497, Cl. 70-95.000.

Nakai, Hiroyuki: *See—*
Yamashita, Atsushi; Yamami, Toshiaki; Kondo, Yasuhiro; Nakai, Hiroyuki; and Suzuki, Kazuomi, 4,764,117, Cl. 433-215.000.

Nakajima, Hiroharu, to Canon Kabushiki Kaisha. Impact/electroconductive thermal printing apparatus. 4,764,038, Cl. 400-120.000.

Nakajima, Kohei: *See—*
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki; Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100.

Nakajima, Nobuyuki; Inomata, Kenichi; and Okada, Shigeru, to Diesel Kiki Co., Ltd. Compressor having discharge valve means adapted to enhance the coefficient of performance of the compressor. 4,764,099, Cl. 418-270.000.

Nakajima, Toyohei: *See—*
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,763,628, Cl. 123-440.000.

Nakamaru, Tooru: *See—*
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, 4,764,788, Cl. 355-3.00R.

Nakamura, Hirokatsu: *See—*
Nozaki, Mitsuru; and Nakamura, Hirokatsu, 4,764,327, Cl. 264-225.000

Nakamura, Ken; Onoda, Toshiaki; and Gofuku, Yoshihiro, to Tokico Ltd. Vibration isolating apparatus. 4,763,869, Cl. 248-562.000.

Nakamura, Ryoji; and Ohguchi, Masakatsu, to Toyo Boseki Kabushiki Kaisha. Polyester fiber and production thereof. 4,764,426, Cl 428-400.000

Nakamura, Yoshimasa: *See—*
Sano, Yasuo; Morisue, Yasuhiro; Komiya, Kiyoshi; and Nakamura, Yoshimasa, 4,764,587, Cl. 528-363.000

Nakane, Kazuhiro: *See—*
Hirahara, Takuho; Kawaguchi, Susumu, Ueda, Sei; and Nakane, Kazuhiro, 4,764,097, Cl. 418-60.000

Nakanishi, Ichiro, to Kawasaki Jukogyo Kabushiki Kaisha. Fuel supply for a small boat. 4,763,633, Cl. 123-514.000

Nakano, Kunimitsu; Katou, Takeyasu; and Sakakibara, Mitsuaki, to Matsushita Electric Works, Ltd. Circuit breaker. 4,764,746, Cl 337-66.000

Nakano, Masaki: *See—*
Kumura, Haruyoshi; Yamamuro, Sigeaki, Hirano, Hiroyuki; Abo, Keiju; and Nakano, Masaki, 4,764,155, Cl. 474-12.000.

Nakano, Shoji: *See—*
Yoshioka, Teruo; Abe, Yuzo; and Nakano, Shoji, 4,763,391, Cl 29-33.00P

Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki; Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, to Ube Industries Ltd.; Marcon Electronics Corp. Ltd., and High Man Parts Corp. Ltd. Process for producing an electrolytic capacitor. 4,764,181, Cl. 29-570.100.

Nakao, Ichiro: *See—*
Fuse, Genshu; Tateiwa, Kenji; Nakao, Ichiro; and Shimoda, Hideaki, 4,764,483, Cl. 437-67.000

Nakao, Shinroku; Ishii, Yoshiyasu; Ishii, Kenshun; Matsuda, Hiroaki; Ishikura, Takashi; and Arai, Yuuichi, to Combi Co., Ltd. Baby carriage serving as shopping cart. 4,763,919, Cl. 280-644.000

Nakazumi, Tadataka: *See—*
Okazaki, Katsumi; Yokooku, Katsuhiko; Watanabe, Tomomi, Nakazumi, Tadataka; and Mamiya, Kiyotaka, 4,763,629, Cl 123-489.000

Nalco Chemical Company: *See—*
Kiss, Charles R.; and Huang, Shu-Jen W., 4,764,561, Cl 525-163.000

Namba, Hiroaki; and Hishinuma, Minoru, to Sanyo-Kokusaku Pulp Company Limited. Epoxy resins from dicyclopentadiene-phenol adducts and a method of preparing the same. 4,764,571, Cl. 525-534.000

Napolitano, James E.: *See—*
Bolton, Theodore S.; and Napolitano, James E., 4,763,964, Cl. 312-100.000

Nara, Shigetoshi: *See—*
Isoda, Satoru; Nara, Shigetoshi; Ueyama, Satoshi; Kawakubo, Hiroaki; and Ogura, Akemi, 4,764,415, Cl. 428-212.000

Narisawa, Kumiko: *See—*
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki; Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100

Narui, Hiroshi; Shinohara, Terumi; Gotoh, Denichiro; and Yamamoto, Shinya, to Oike Industrial Co., Ltd. Thermal transfer recording medium having an improved hot-sticking resistance. 4,764,496, Cl 503-227.000

Nassler, Peter: *See—*
Haertl, Christof; and Nassler, Peter, 4,763,752, Cl. 181-130.000

National Gypsum Company: *See—*
Schneller, Joseph W., 4,763,455, Cl. 52-255.000

National Identification Laboratories, Inc.: *See—*
Currey, William C., 4,764,290, Cl. 252-11.000.

National Nuclear Corporation Limited: *See—*
White, William J.; and Utton, Donald B., 4,764,023, Cl. 374-29.000

National Semiconductor Corporation: *See—*
Vora, Madhukar B., 4,764,480, Cl. 437-054.000

Nauman, Edward A., to Kester, Beatrice T. Transcutaneous electrical nerve stimulation device and method. 4,763,656, Cl. 128-421.000

Navistar International Transportation Corp.: *See—*
Grinsteiner, James J., 4,763,616, Cl. 123-90.420.

NCR Corporation: *See—*
Kallin, Fredrik L. N.; Czesnik, Marek W.; and Mach, Mark M., 4,764,976, Cl. 382-65.000
Spektor, Semyon; and Ranger, Michael H., 4,764,778, Cl 346-160.000

Neal, Charles E., Jr.: *See—*
Halm, Roland L.; Hansen, Sidney A., and Neal, Charles E., Jr., 4,764,631, Cl. 556-460.000

Neal, Thomas C. Cabinet structure for fire extinguishers or the like 4,763,732, Cl. 169-51.000

Nebon, Jean-Pierre: *See—*
Bur, Marc; and Nebon, Jean-Pierre, 4,764,650, Cl. 200-153.00G

NEC Corporation: *See—*
Furuya, Yukitsuna, 4,764,920, Cl. 370-94.000
Kawada, Shigeru, 4,764,750, Cl. 340-347.0AD
Machida, Toshiaki, 4,764,749, Cl. 340-347.0DD
Makino, Toshihiko, 4,764,829, Cl. 360-106.000
Mori, Kunitaka, 4,764,916, Cl. 369-59.000.
Morita, Yasukazu, 4,764,902, Cl. 365-206.000
Shibuya, Toshiteru, 4,764,861, Cl. 364-200.000
Shigaki, Seiichiro; Matsuoka, Minoru; and Ookoshi, Osamu, 4,764,942, Cl. 375-118.000.
Takane, Hisao, 4,764,864, Cl. 364-200.000.
Takekawa, Kouichi; and Bonkohara, Manabu, 4,763,409, Cl 29-827.000
Yano, Seiken, 4,764,886, Cl. 364-787.000
Yoshida, Kazunaga; Shimizu, Hiroshi; and Watari, Masao, 4,764,972, Cl. 382-13.000
Yukawa, Akira, 4,764,753, Cl. 340-347.0AD.

VOL 1093 ISS 3 AG 16 1988 UMI

Nelson, Dale K.: *See—*
Mathison, Allen D.; and Nelson, Dale K., 4,763,511, Cl. 73-49.100
Nelson, Gerald A.: *See—*
Halverson, George E.; and Nelson, Gerald A., 4,763,791, Cl 206-570.000
Nelson, Karl M.: *See—*
Brown, Ernie D.; Nelson, Karl M.; and Smith, Gary L., 4,764,316, Cl. 264-3.100
Nelson, Robert E., to TPV Energy Systems, Inc. Narrow band thermal emitter. 4,764,104, Cl. 431-100.000
Neri, Armando, to G. D. Societa' per Azioni. Automated system for feeding production and/or packing material from a store onto manufacturing lines. 4,764,078, Cl. 414-273.000.
Neuerburg, Horst: *See—*
Ermacora, Rino; and Neuerburg, Horst, 4,763,463, Cl. 56-13.600.
Neumaier, Anton, to Hilti Aktiengesellschaft. Hammer drill with rotational lock. 4,763,733, Cl. 173-48.000
Neumayr, Franz: *See—*
Decker, Martin; and Neumayr, Franz, 4,764,309, Cl. 260-544.00K.
Neurath, Alexander R.; and Horowitz, Bernard, to New York Blood Center Inc. Undenatured virus-free biologically active protein derivatives. 4,764,369, Cl. 424-89.000
New, David A.; and Maninger, Loren L., to RCA Licensing Corporation. Color cathode-ray tube having a three-lens electron gun 4,764,704, Cl. 313-414.000
New York Blood Center Inc.: *See—*
Neurath, Alexander R.; and Horowitz, Bernard, 4,764,369, Cl 424-89.000
New Zealand Steel Limited: *See—*
Bates, Cecil P.; and Shannon, Terrence W., 4,764,210, Cl 75-10.660
Newell, Terence J., to Video Cassette Lock (UK) Limited. Devices for preventing unauthorized use of video-cassettes. 4,763,784. Cl 206-387.000
Newman, Frank J., to Boeing Company, The. Microwave rendezvous system for aerial refueling. 4,763,861, Cl. 244-134.00A.
Newsome, Robert B.: *See—*
Kulicke, Frederick W., Jr.; Leonhardt, David A.; Newsome, Robert B.; Sadler, Richard D.; and Gillotti, Gary S., 4,763,826, Cl 228-4.500
Ng, Steve Y.: *See—*
Heller, Jorge; Penhale, Donald W. H.; and Ng, Steve Y., 4,764,364, Cl. 424-78.000.
NGK Insulators, Ltd.: *See—*
Oda, Isao; and Tsuno, Nobuo, 4,763,876, Cl. 251-359.000
NHK Spring Co., Ltd.: *See—*
Nishikawa, Akihiko, 4,763,922, Cl. 280-689.000
Nishiyama, Masakazu; Umetsu, Chiharu; Kebukawa, Akira; and Andoh, Mituru, 4,763,882, Cl. 267-33.000
Nichols, James H., Jr.: *See—*
Zebley, Raymond S.; Nichols, James H., Jr.; and Ciosek, Bernard M., Jr., 4,763,780, Cl. 206-330.000
Nicia, Antonius J. A.: *See—*
Khoe, Giok D.; and Nicia, Antonius J. A., 4,763,969, Cl 350-96.190
Nickolay, Helmut; Igel, Wolfgang; Meissner, Werner; and Schollhammer, Richard, to Zinser Textilmaschinen GmbH. Method and means of controlling the stop of the feed of roving in a spinning machine 4,763,467, Cl. 57-261.000
Nicolson, William H.: *See—*
Booth, Bryan; and Nicolson, William H., 4,763,857, Cl. 244-3.220
Niemeyer, Lutz: *See—*
Mauthe, Gerhard; Niemeyer, Lutz; Pinnekamp, Friedrich; and Wiegart, Norbert, 4,764,836, Cl. 361-5.000.
Nikkel, Willem A., to Westvaco Corporation. Corrugating machine glue applicator. 4,764,236, Cl. 156-210.000.
Nilsson, Einar W. Straightening machines and methods. 4,763,504, Cl. 72-98.000.
Nippon Chemiphar Co., Ltd.: *See—*
Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,764,617, Cl. 546-169.000
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Itou, Katsumi; and Toyoda, Atsushi, 4,764,259, Cl. 204-25.000
Kozuki, Koichi, 4,763,554, Cl. 84-1.030
Minakuchi, Kiyoshi; and Tomita, Junji, 4,763,555, Cl. 84-313.000
Nagai, Yohei; and Okamoto, Shimaji, 4,763,553, Cl. 84-1.010
Takao, Hajime, 4,764,860, Cl. 369-43.000
Nippon Kokan Kabushiki Kaisha: *See—*
Mori, Kentaro; Mizukami, Hideaki; Nakagawa, Hirotaka; Ozeki, Akichika; and Kawawa, Takaho, 4,764,209, Cl. 75-10.260
Nippon Paint Co., Ltd.: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; and Takeuchi, Yutaka, 4,764,569, Cl. 525-446.000
Nippon Steel Corporation: *See—*
Saida, Seishiro; Ito, Isao; Ito, Satoshi; and Okubo, Naotake, 4,763,601, Cl. 118-718.000
Nippon Telegraph and Telephone Corporation: *See—*
Aoki, Shigeaki; and Koizumi, Nobuo, 4,764,960, Cl. 381-24.000.
Miyahara, Kazunori; Mukaida, Masashi; and Hokawa, Koji, 4,764,898, Cl. 365-167.000.
Nippon Thompson Co., Ltd.: *See—*
Takei, Seiji, 4,763,886, Cl. 269-73.000
Tanaka, Kazuhiko, 4,764,032, Cl. 384-44.000
Nippondenso Co., Ltd.: *See—*
Hosizaki, Hiroki; Suzuki, Hirofumi; and Kageyama, Terutaka 4,764,435, Cl. 428-621.000
Nirei Industry Co., Ltd.: *See—*
Hidaka, Tomoharu; and Sirakawa, Yuji, 4,763,700, Cl. 140-93.200
Nishida, Atsushi: *See—*
Fukukawa, Yoshitsugu; Nishida, Atsushi; Nishioka, Katsuhiko; and Tsunori, Hiroaki, 4,764,657, Cl. 219-125.100.
Nishida, Masahiro: *See—*
Sumi, Takao; Inako, Yoshihide; and Nishida, Masahiro, 4,764,177 Cl. 8-471.000
Nishiguchi, Yasuo: *See—*
Minami, Keijiro; and Nishiguchi, Yasuo, 4,764,659, Cl. 219-216.000
Nishii, Takeshi: *See—*
Sakai, Masatoshi; and Nishii, Takeshi, 4,764,649, Cl. 200-67.00D.
Nishikawa, Akihiko, to NHK Spring Co., Ltd. Axle supporting rod for motor vehicle. 4,763,922, Cl. 280-689.000.
Nishikawa, Atsuhiko: *See—*
Miyazaki, Yoshihiro; Takaya, Soichi; Tanji, Masayuki; Nishikawa, Atsuhiko; and Yamaguchi, Shinichiro, 4,764,869, Cl. 364-300.000.
Nishikawa, Masamitu: *See—*
Ohtombe, Ko; and Nishikawa, Masamitu, 4,764,969, Cl. 382-8.000
Nishikawa, Yutaka: *See—*
Okuda, Naoki; Nishikawa, Yutaka; and Aoki, Takakiyo, 4,764,224, Cl. 148-26.000.
Nishio, Kazuaki: *See—*
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki; Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100.
Nishioka, Katsuhiko: *See—*
Fukukawa, Yoshitsugu; Nishida, Atsushi; Nishioka, Katsuhiko; and Tsunori, Hiroaki, 4,764,657, Cl. 219-125.100
Nishioka, Takao: *See—*
Yamakawa, Akira; Miyake, Masaya; and Nishioka, Takao 4,764,490, Cl. 501-97.000
Nishite, Yoshitoyo; Torita, Fumio; and Ikeda, Naotaka, to Kabushiki Kaisha Toshiba. Electronic driving-type display apparatus for an electric washing machine. 4,763,493, Cl. 68-12.00R.
Nishiyama, Masakazu; Umetsu, Chiharu; Kebukawa, Akira; and Andoh, Mituru, to NHK Spring Co., Ltd. Coated coil spring. 4,763,882, Cl. 267-33.000
Nissan Motor Company, Limited: *See—*
Abe, Kazuyoshi; and Yazaki, Kazuhiko, 4,764,667, Cl. 235-462.000
Hirabayashi, Yuji, 4,763,476, Cl. 60-602.000.
Kumura, Haruyoshi; Yamamuro, Sigeaki; Hirano, Hiroyuki; Abo Keiju; and Nakano, Masaki, 4,764,155, Cl. 474-12.000.
Matsuda, Toshiro, 4,763,912, Cl. 180-197.000.
Matsui, Shinichi; and Sugino, Masaru, 4,763,884, Cl. 267-140.100
Sasaki, Kenichi; and Iwasa, Yoshio, 4,763,477, Cl. 60-602.000.
Shibayama, Takashi; and Sugano, Kazuhiko, 4,763,545, Cl. 74-868.000.
Nissen, Dietmar: *See—*
Fischer, Juergen; Zeiner, Hartmut; Nissen, Dietmar; and Heinz Gerhard, 4,764,397, Cl. 428-269.000
Nissen, Steven L., to Iowa State University Research Foundation, Inc. Method of feeding ketoisocaproate to laying chickens. 4,764,531, Cl 514-557.000
Nissha Printing Co., Ltd.: *See—*
Sumi, Takao; Inako, Yoshihide; and Nishida, Masahiro, 4,764,177 Cl. 8-471.000
Nitta, Kouichi: *See—*
Kato, Toshikazu; and Nitta, Kouichi, 4,764,844, Cl. 361-308.000
Nitzschmann, Robert E.: *See—*
Meiss, Otto; and Nitzschmann, Robert E., 4,764,200, Cl. 71-28.000
NL Sperry-Sun of Canada, Ltd.: *See—*
Comeau, Laurier J. (Larry), 4,763,519, Cl. 73-151.000
Noborimoto, Yoshie: *See—*
Aoki, Reiko; Noborimoto, Yoshie; Funatsu, Yoko; and Konno Shinichi, 4,764,821, Cl. 360-33.100.
Noguchi, Masaharu: *See—*
Harada, Denzaburo; and Noguchi, Masaharu, 4,763,543, Cl 74-740.000
Noguchi, Yoshifumi; Ono, Kouichi; and Endoh, Hiroyuki, to Fujitsu Limited. Direct relay equipment. 4,764,979, Cl. 455-22.000.
Nolan, Daniel A.; and Truesdale, Carlton M., to Corning Glass Works. Connector employing mode field modification. 4,763,976, Cl. 350-96.150.
Nold, Robert D., to Sundstrand Corporation. Generator stator retention system. 4,764,699, Cl. 310-89.000
Noll, Klaus: *See—*
Mosbach, Jurgen; Pedain, Josef; and Noll, Klaus, 4,764,553, Cl 524-591.000
Nomura, Shigeo: *See—*
Gross, Kenny C.; Lambert, John D. B.; and Nomura, Shigeo 4,764,335, Cl. 376-253.000
Nordvall, Jan O.; and Aminder, Christer, to ASEA Aktiebolag. Overload protection in transduoers for measuring torque. 4,763,532, Cl. 73-862.320
North American Philips Corporation: *See—*
Takeuchi, Kiyoshi; Damjanovic, Dragan; and Jang, Sei-Joo 4,764,492, Cl. 501-136.000
Northern Engineering Industries plc: *See—*
Shaw, Ronald; Jackson, Leonard; and Headley, Anthony 4,764,123, Cl. 439-148.000
Northern Telecom Limited: *See—*
Beun, Roger A., 4,764,414, Cl. 428-195.000

Debortoli, George, 4,764,125, Cl. 439-403.000
Graves, Alan F.; Littlewood, Paul A.; and Weiss, Johannes S., 4,764,921, Cl. 370-100.000
Greveling, Johannes, 4,763,982, Cl. 350-96.230.
Rosch, Reinhard; Rosenbaum, Stanley D.; Plett, Calvin; and Holy, Zdenek, 4,764,956, Cl. 379-413.000.
Northgate Research, Inc.: *See—*
Brisson, Alfred G.; Nowacki, Christopher; Shene, William R.; Burdick, Thomas H.; and Dela-Cruz, Exequiel, 4,763,652, Cl 128-328.000.
Northland Aluminum Products, Inc.: *See—*
Dalquist, H. David, III; Jacobsen, Douglas C.; Jorgensen, Jorgen A.; Kluge, Douglas J.; and Taylor, John N., 4,763,567, Cl. 99-323.500
Norton Company: *See—*
Ladang, Michel, 4,764,539, Cl. 106-122.000.
Nova Scotia Department of Fisheries: *See—*
Brown, Sherwin R.; and Drebot, Michael, 4,764,383, Cl. 426-1.000.
Nowacki, Christopher: *See—*
Brisson, Alfred G.; Nowacki, Christopher; Shene, William R.; Burdick, Thomas H.; and Dela-Cruz, Exequiel, 4,763,652, Cl 128-328.000
Noyori, Takahiro, to Suzuki Jidosha Kogyo Kabushiki Kaisha. Failure detecting apparatus of a control unit for a vehicle. 4,764,884, Cl 364-552.000
Nozaki, Mitsuru; and Nakamura, Hirokatsu, to Mitsubishi Gas Chemical Company, Inc. Process of producing plastic-molded printed circuit boards. 4,764,327, Cl. 264-225.000
Nozaki, Shinya: *See—*
Kobayashi, Tadashi; and Nozaki, Shinya, 4,763,611, Cl. 123-41.310.
Nozaki, Yoshihiro: *See—*
Aoyama, Naofumi; Kinugawa, Kiyoshige; Nozaki, Yoshihiro; and Sakurada, Hiroshi, 4,764,766, Cl. 340-784.000
Nudd, Graham R.: *See—*
Grinberg, Jan; Nudd, Graham R.; and Soffer, Bernard H., 4,764,891, Cl. 364-807.000
Nugent, Thomas J.: *See—*
Muller, Heinz; and Nugent, Thomas J., 4,763,719, Cl. 164-478.000
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, to Sharp Kabushiki Kaisha. Metal-based organic film substrate. 4,764,413, Cl. 428-192.000.
Nunn, Timothy A.: *See—*
Kurtz, Anthony D.; Mallon, Joseph R.; and Nunn, Timothy A., 4,764,747, Cl. 338-2.000
Nuovo Pignone Industrie Meccaniche e Fonderia S.p.A.: *See—*
Corain, Luciano; Maitan, Gianni; and Bortoli, Giulio, 4,763,699, Cl. 139-436.000
Nusonics, Inc.: *See—*
Zacharias, Ellis M., 4,763,513, Cl. 73-61.00R.
Nyberg, Glen A., to General Motors Corporation. Oxygen sensor based on optical detection. 4,764,343, Cl. 422-83.000.
Nycz, Joseph D., to Owens-Illinois Closure Inc. Child-resistant, tamper evident dispensing closure. 4,763,801, Cl. 215-203.000
Nystrom, Robert W., to Load Controls Incorporated. Apparatus and method for measuring variable frequency power. 4,764,720, Cl. 324-107.000.
O&K Orenstein & Koppel Aktiengesellschaft: *See—*
Guggenheimer, Kurt; and Mecklenfeld, Hermann, 4,763,845, Cl. 241-101.700.
Ziplies, Herbert; and Lackenberg, Heinrich, 4,763,473, Cl. 60-431.000
Oakland Corporation, The: *See—*
Wallace, Richard B., 4,764,579, Cl. 528-87.000.
Obrecht, Robert E.: *See—*
Waltonen, Edward J.; and Obrecht, Robert E., 4,763,550, Cl. 83-191.000
Ochiai, Takeshi, to Toyota Jidosha Kabushiki Kaisha. Vehicle speed control system. 4,763,746, Cl. 180-179.000.
O'Connell, Dennis M., to Corning Glass Works. Autoclavable tissue culture container and closure. 4,763,804, Cl. 215-307.000
O'Connor Engineering Laboratories: *See—*
Healy, John T., 4,763,864, Cl. 248-123.100.
Oda, Isao; and Tsuno, Nobuo, to NGK Insulators, Ltd. Valve seat insert and cylinder head with the valve seat insert. 4,763,876, Cl 251-359.000
O'Doherty, George O. P.: *See—*
Clinton, Albert J., deceased; and O'Doherty, George O. P., 4,764,534, Cl. 514-657.000.
Oelbermann, Max: *See—*
Heinrich, Hans J.; Oelbermann, Max; and Hohmann, Ernst-Gerhard, 4,764,273, Cl. 210-225.000
Ogasawara, Morihiko: *See—*
Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, 4,764,004, Cl. 350-632.000
Ogawa, Hiroshi, to Fujikin International, Inc. Control valve. 4,763,874, Cl. 251-122.000.
Ogawa, Masahiko; and Hara, Yasuaki, to Shin-Etsu Chemical Co., Ltd. Silicone-based coating composition for surface-releasing film 4,764,576, Cl. 524-265.000.
Ogden Environmental Services: *See—*
Rickman, William S.; Kaae, James L.; and Gamson, Bernard W., 4,763,585, Cl. 110-346.000
Ogihara, Satoru; and Ushifusa, Nobuyuki, to Hitachi, Ltd. Process for producing a ceramic multi-layer circuit board. 4,764,233, Cl 156-89.000
Ogura, Akemi: *See—*
Isoda, Satoru; Nara, Shigetoshi; Ueyama, Satoshi; Kawakubo, Hiroaki; and Ogura, Akemi, 4,764,415, Cl. 428-212.000
Ueyama, Satoshi; Isoda, Satoru; Tomisawa, Osamu; Ogura, Akemi; and Kawakubo, Hiroaki, 4,764,416, Cl. 428-212.000
Oh, Chang H.: *See—*
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000
O'Hair, Mark A., to United States of America, Air Force. Whole word, phrase or number reading. 4,764,973, Cl. 382-14.000
Ohara Paragium Chemical, Co., Ltd.: *See—*
Yosida, Ethuo, 4,764,545, Cl. 523-212.000
Ohguchi, Masakatsu: *See—*
Nakamura, Ryoji; and Ohguchi, Masakatsu, 4,764,426, Cl 428-400.000
Ohio Art Company, The: *See—*
Wickstead, James C.; and Selden, Gerald P., 4,764,763, Cl 340-709.000
Ohio State University Research Foundation, The: *See—*
Reuning, Richard H.; Hui, James; Shepard, Theresa A.; and Sams, Richard A., 4,764,601, Cl. 536-5.000
Ohkumo, Hiroya, to Fuji Jukogyo Kabushiki Kaisha. System for controlling transmission ratio of a continuously variable transmission for a motor vehicle. 4,764,156, Cl. 474-28.000
Ohlenmacher, Ralf: *See—*
Ruckert, Hans; and Ohlenmacher, Ralf, 4,764,450, Cl. 430-191.000
Ohmae, Tadayuki; Mashita, Kentaro; Yamaguchi, Noboru; and Asao, Kouichiro, to Sumitomo Chemical Company, Limited. Dyeable poly-alpha-olefin composition. 4,764,551, Cl. 524-394.000
Ohno, Hideki: *See—*
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,764,497, Cl. 502-235.000
Ohno, Kenyu: *See—*
Yamauchi, Shin-ichi; Arashiro, Yusuke; and Ohno, Kenyu, 4,764,559, Cl. 525-92.000
Ohno, Takao, to Tamura Kaken Co., Ltd. Photosensitive resin compositions. 4,764,452, Cl. 430-288.000
Ohrgard, Stephan N. A., to VBG Produkter AB. Apparatus for matching the brake pressure of vehicle combinations to the actual load 4,763,958, Cl. 303-8.000
Ohsumi, Katsumi: *See—*
Uchida, Shunsuke; and Ohsumi, Katsumi, 4,764,338, Cl 376-313.000
Ohta, Kenji; Hirokane, Junji; Inui, Tetsuya; Takahashi, Akira; and Katayama, Hiroyuki, to Sharp Kabushiki Kaisha. Photo-mask for production of substrate for optical memory element. 4,764,441, Cl 430-5.000
Ohtombe, Ko; and Nishikawa, Masamitu, to Kabushiki Kaisha Toshiba. Apparatus for inspecting the surface of a material. 4,764,969, Cl. 382-8.000
Oi, Yuzoh: *See—*
Kotani, Matahira; Hayashi, Motohiko; Yasuda, Shigeari; and Oi, Yuzoh, 4,764,951, Cl. 379-100.000
Oike Industrial Co., Ltd.: *See—*
Narui, Hiroshi; Shinohara, Terumi; Gotoh, Denichiro; and Yamamoto, Shinya, 4,764,496, Cl. 503-227.000
Oji Paper Co., Ltd.: *See—*
Shin, Yoichi; Wada, Isao; Kido, Junichiro; and Eimaeda, Shigeru, 4,764,252, Cl. 162-72.000
Okabayashi, Minahiro: *See—*
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,764,497, Cl. 502-235.000
Okada, Hidekazu, to Clover Manufacturing Co., Ltd. Knitting counter 4,764,943, Cl. 377-6.000
Okada, Masahiro: *See—*
Arakawa, Jun; Okada, Masahiro; and Ishikawa, Takatoshi, 4,764,455, Cl. 430-393.000
Okada, Shigeru: *See—*
Nakajima, Nobuyuki; Inomata, Kenichi; and Okada, Shigeru, 4,764,099, Cl. 418-270.000
Okada, Tetsuya: *See—*
Tanaka, Hajime; and Okada, Tetsuya, 4,763,892, Cl. 271-293.000
Okada, Yasushi: *See—*
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,763,628, Cl. 123-440.000
Okafuji, Hiroshi: *See—*
Yasufuku, Kenjiro; Okafuji, Hiroshi; Hasegawa, Mineo; and Haga, Noriyuki, 4,764,392, Cl. 426-603.000
Okamoto, Akihiko: *See—*
Sugihara, Masanori; Kobayashi, Kazuo; Okamoto, Akihiko; Kurosawa, Atsushi; and Oku, Hideki, 4,764,917, Cl. 369-77.100.
Okamoto, Katsuo: *See—*
Tojo, Tetsuo; Nakahara, Takashi; Otawa, Yasuhiko; and Okamoto, Katsuo, 4,764,562, Cl. 525-281.000
Okamoto, Shimaji: *See—*
Nagai, Yohei; and Okamoto, Shimaji, 4,763,553, Cl. 84-1.010.
Okamoto, Shosuke: *See—*
Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, 4,764,618, Cl. 546-196.000
Okamura, Kyuya: *See—*
Masuzawa, Kuniyoshi; Okamura, Kyuya; Kasuga, Kazunori; Fujimori, Shizuy shi; Kinoshita, Susumu; and Matsukubo, Hiroshi, 4,764,608, Cl. 544-6.000

VOL 1093 ISS 3 AG 16 1988 UMI

Okawara, Makoto. *See*—
Tsubuko, Kazuo; Kuramoto, Shinichi; Nagai, Kayoko; Okawara, Makoto; and Takanashi, Hajime, 4,764,447, Cl. 430-115.000

Okazaki, Katsumi; Yokooku, Katsuhiko; Watanabe, Tomomi; Nakazumi, Tadataka; and Mamiya, Kiyotaka, to Mazda Motor Corporation. Air-fuel radio control system for engine. 4,763,629, Cl 123-489.000

Oku, Hideki: *See*—
Sugihara, Masanori; Kobayashi, Kazuo; Okamoto, Akihiko; Kurosawa, Atsushi; and Okii, Hideki, 4,764,917, Cl. 369-77.100.

Okubo, Naotake: *See*—
Saida, Seishiro; Ito, Isao; Ito, Satoshi; and Okubo, Naotake, 4,763,601, Cl. 118-718.000

Okuda, Naoki; Nishikawa, Yutaka; and Aoki, Takakiyo, to Kabushiki Kaisha Kobe Seiko Sho. Baked flux for submerged arc welding. 4,764,224, Cl. 148-26.000

Okumura, Ichiro; Izukawa, Kazuhiro; Okuno, Takuo; and Tsukimoto, Takayuki, to Canon Kabushiki Kaisha. Method and apparatus for transporting an article. 4,763,776, Cl. 198-630.000

Okumura, Takuji, to Kabushiki Kaisha Komatsu Seisakusho. Thermoelectric material for low temperature use and method of manufacturing the same. 4,764,212, Cl. 75-228.000.

Okuno, Takuo: *See*—
Okumura, Ichiro; Izukawa, Kazuhiro; Okuno, Takuo; and Tsukimoto, Takayuki, 4,763,776, Cl. 198-630.000

Okunomiya, Akiko: *See*—
Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, 4,764,618, Cl. 546-196.000

Okuyama, Toshiaki: *See*—
Matsui, Takayuki; and Okuyama, Toshiaki, 4,764,859, Cl. 363-161.000

Olczak, Edward S.: *See*—
Israelson, Gordon A.; Lippert, Thomas E.; Olczak, Edward S.; and Ciliberti, David F., 4,764,190, Cl. 55-269.000

Oleinik, Viktor N.: *See*—
Shishkin, Viktor V.; Kryazhevskikh, Nikolai F.; Oleinik, Viktor N.; Shlatgauer, Boris I.; and Medunitsa, Vladimir L., 4,764,237, Cl. 156-294.000

Oliver, Kirk, to Zenith Electronics Corporation. Top/bottom pincushion correction circuit with automatic picture tracking. 4,764,709, Cl 315-370.000

Olsen, Donald A., to Helix Technology Corporation. Cryopump and method of starting the cryopump. 4,763,483, Cl. 62-55.500.

Olsen, Everett O.: *See*—
Chitty, Gordon W.; Morrison, Richard H., Jr.; Olsen, Everett O.; Panagou, John G.; and Zavracky, Paul M., 4,764,244, Cl 156-630.000

Olympus Optical Company, Ltd.: *See*—
Imamura, Tatsuo; and Yamamoto, Hiroyuki, 4,764,833, Cl. 360-126.000
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, 4,763,968, Cl. 350-516.000
Morota, Makie; and Yoshikawa, Shoji, 4,764,911, Cl. 369-32.000
Torikoshi, Yuichi; Shirai, Hitoshi; Iwasa, Kazuyuki; Miyazaki, Hiroaki; and Yamazaki, Yasuo, 4,764,784, Cl. 354-195.120.
Yokoi, Takeshi, 4,763,662, Cl. 128-660.000
Yokota, Akira, 4,764,001, Cl. 350-465.000

Omata, Tadao; and Kozu, Naoshi, to ORC Manufacturing Co., Ltd Work alignment apparatus for double-sided exposure of a work. 4,764,791, Cl. 355-26.000

Omron Tateisi Electronics Co.: *See*—
Aoi, Tatsuo; Kiyono, Yasuhrio; Honda, Sueaki; and Atsumi, Hauro, 4,764,745, Cl. 337-2.000
Inoue, Nobuhisa; Matano, Masaharu; and Yamashita, Tsukasa, 4,763,973, Cl. 350-96.130

Ondrasik, Vladimir J., II. Modular animal cage. 4,763,606, Cl 119-17.000

Ondris, Miroslav; and Hichler, Marty A., to Stemcor Corporation. Method of making improved photovoltaic heterojunction structures. 4,764,261, Cl. 204-37.100

O'Neill, William M.: *See*—
Spurlock, Edwin C., Jr.; and O'Neill, William M., 4,763,376, Cl. 15-104.310

Onishi, Yasushi: *See*—
Tanaka, Kunio; and Onishi, Yasushi, 4,764,877, Cl. 364-474.000
Tanaka, Kunio; and Onishi, Yasushi, 4,764,878, Cl. 364-474.000

Onizawa, Yoshio: *See*—
Tokuhara, Shinji; Onizawa, Yoshio; and Iyoshi, Shuzo, 4,764,331, Cl. 264-328.160

Ono, Kouichi: *See*—
Noguchi, Yoshifumi; Ono, Kouichi; and Endoh, Hiroyuki, 4,764,979, Cl. 455-22.000

Onoda, Toshiaki: *See*—
Nakamura, Ken; Onoda, Toshiaki; and Gofuku, Yoshihiro, 4,763,869, Cl. 248-562.000

Onoe, Yosiaki; and Mikasa, Tokio, to Mazda Motor Corporation. Automobile body pillar structure having a safety belt anchor nut plate. 4,763,925, Cl. 280-808.000

Onomura, Hiroshi: *See*—
Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, 4,764,091, Cl. 417-269.000

Onuki, Noburu: *See*—
Hiranuma, Kenji, 4,764,113, Cl. 433-56.000

Ooi, Yoshiharu: *See*—
Hara, Tsutomu; Ooi, Yoshiharu; Shinoda, Kazunori; and Ichie, Koji, 4,763,996, Cl. 350-387.000.

Ookoshi, Osamu: *See*—
Shigaki, Seiichiro; Matsuoka, Minoru; and Ookoshi, Osamu, 4,764,942, Cl. 375-118.000

Oono, Akihiro: *See*—
Eto, Kunihiko; Mori, Yutaka; Oono, Akihiro; and Kodama, Kazumasa, 4,763,745, Cl. 180-143.000

Oono, Nobuyuki: *See*—
Mieno, Toshiyuki; Nakajima, Toyohei; Okada, Yasushi; and Oono, Nobuyuki, 4,763,628, Cl. 123-440.000

Orban, Ralph F.; and Lewis, Clifford, to Material Concepts, Inc. Electrically heated gloves. 4,764,665, Cl. 219-549.000.

ORC Manufacturing Co., Ltd.: *See*—
Omata, Tadao; and Kozu, Naoshi, 4,764,791, Cl. 355-26.000

Orelup, Richard B., to Morton Thiokol, Inc. Method for detecting a tagging compound. 4,764,474, Cl. 436-111.000.

Orlando, Paul T.: *See*—
Misic, George J.; and Orlando, Paul T., 4,764,726, Cl. 324-322.000.

Orlowski, Ronald C.; and Seyler, Jay K., to Rorer Pharmaceutical Corporation. [N-alpha-acyl,8-glycine, des-19-leucine]-calcitonin. 4,764,589, Cl. 530-307.000

Orlowski, Ronald C.; and Seyler, Jay K., to Rorer Pharmaceutical Corporation. Des-19-leucine, 20-glutamine, 21-threonine-calcitonin 4,764,590, Cl. 530-307.000

Orlowski, Ronald C.; Seyler, Jay K.; and Flanigan, Everett, to Rorer Pharmaceutical Corporation. Des-19-leucine, 20-glutamine, 21-threonine, 22-tyrosine-calcitonin. 4,764,591, Cl. 530-307.000.

Ormond, Alfred N. Analog to digital converter having no zero or span drift. 4,764,752, Cl. 340-347.0NT.

Orogil: *See*—
Le Coent, Jean-Louis, 4,764,295, Cl. 252-33.200

Orsburn, Michael L.: *See*—
Tucker, Terry L.; and Orsburn, Michael L., 4,764,717, Cl. 323-364.000

Ortel Corporation: *See*—
Kwong, Sze-Keung; Lau, Kam Y.; Bar-Chaim, Nadav; and Ury, Israel, 4,764,934, Cl. 372-46.000.

Ortiz, Angel L., Jr.; and Chande, Tushar S., to General Electric Company. Real-time laser beam diameter determination in a laser-materials processing system. 4,764,655, Cl. 219-121.830.

Osaka Fujikogyo Co., Ltd.: *See*—
Fukukawa, Yoshitsugu; Nishida, Atsushi; Nishioka, Katsuhiko; and Tsunori, Hiroaki, 4,764,657, Cl. 219-125.100.

Osburn, Carlton M.: *See*—
Reisman, Arnold; and Osburn, Carlton M., 4,764,644, Cl. 174-68.500

Osenberg, Kurt A.; and Kortenbusch, Michael, to SMS-Schloemann-Siemag Aktiengesellschaft. Method of and apparatus for the cooling of underground mine shafts and/or machinery installed therein 4,763,484, Cl. 62-99.000.

Oshikoshi, Yuji: *See*—
Kimura, Tsutomu; Oshikoshi, Yuji; and Sakamoto, Kiichiro, 4,764,807, Cl. 358-75.000

Oshima, Yasushi: *See*—
Inoue, Shinichi; and Oshima, Yasushi, 4,764,695, Cl. 310-20.000

Ostman, Per Hakan, to Ekono Oy. Method for the impregnation and cooking of lignocellulosic material by a batch cooking using spent impregnation liquor from a previous batch. 4,764,251, Cl. 162-39.000

Oswald Leibinger GmbH: *See*—
Leibinger, Karl; and Leibinger, Franz, 4,763,548, Cl. 81-453.000.

Ota, Shin'ichi: *See*—
Hazama, Keiji; Ota, Shin'ichi; Yamada, Mituo; and Arai, Toshiyuki, 4,764,235, Cl. 156-228.000.

Otaka, Masahiro: *See*—
Hayashi, Makoto; Otaka, Masahiro; Shimizu, Tasuku; and Sakata, Shinji, 4,764,970, Cl. 382-8.000.

Otawa, Yasuhiko: *See*—
Tojo, Tetsuo; Nakahara, Takashi; Otawa, Yasuhiko; and Okamoto, Katsuo, 4,764,562, Cl. 525-281.000

Otomine, Yuzo: *See*—
Shioiri, Shigeo; and Otomine, Yuzo, 4,764,243, Cl. 156-505.000.

Otomura, Satoshi; and Akiyoshi, Hideki, to Ricoh Company, Ltd. Dual layer electrode used with electrophotographic photoconductor 4,764,442, Cl. 430-63.000

Otsuka, Kanji: *See*—
Sahara, Kunizo; Otsuka, Kanji; and Ishida, Hisashi, 4,764,804, Cl. 357-81.000

Ott, Beverly J., to Mayo Medical Resources. Cleaning apparatus for elongated enclosed channel devices. 4,763,678, Cl. 134-171.000.

Ott, Karl-Heinz: *See*—
Eichenauer, Herbert; Pischtschan, Alfred; and Ott, Karl-Heinz, 4,764,557, Cl. 525-72.000.

Ott, Roger A., to BASF Corporation. Process for the preparation of polyoxyalkylene block polyethers having enhanced properties. 4,764,567, Cl. 525-403.000

Outboard Marine Corporation: *See*—
Haman, David F.; and Miller, Allan F., 4,763,760, Cl. 184-6.500

Ovonic Imaging Systems, Inc.: *See*—
Swartz, Louis D., 4,764,682, Cl. 250-578.000

Owens-Illinois Closure Inc.: *See*—
Nycz, Joseph D., 4,763,801, Cl. 215-203.000.

Owens-Illinois Plastic Products Inc.: *See*—
Ajmera, Prakash R., 4,764,403, Cl. 428-35.000

Owens-Illinois Television Products Inc.: *See*—
Bieringer, Robert J.; and Ringlien, James A., 4,764,015, Cl. 356-372.000
Koenig, David G., 4,763,787, Cl. 206-420.000.

Owens-Illinois Televison Products Inc.: *See*—
Michalski, Thomas F.; and Bauer, David J., 4,764,681, Cl. 250-563.000.

Oyama, Richard K.: *See*—
Billington, Charles J., III; Oyama, Richard K.; Jepson, Kenneth H.; and Skeen, Thomas R., 4,763,794, Cl. 209-625.000.

Ozaki, Toshitune: *See*—
Watanabe, Masafumi; Ozaki, Toshitune; and Hirahara, Jiro, 4,764,959, Cl. 380-4.000.

Ozaki, Yoshiaki: *See*—
Takenoya, Hideaki; and Ozaki, Yoshiaki, 4,763,586, Cl 112-103.000

Ozeki, Akichika: *See*—
Mori, Kentaro; Mizukami, Hideaki; Nakagawa, Hirotaka; Ozeki, Akichika; and Kawawa, Takaho, 4,764,209, Cl. 75-10.260.

Ozotech, Inc.: *See*—
Arff, John H.; and Mouw, Kenneth W., 4,764,349, Cl. 422-186.180.

Pace Incorporated: *See*—
Brown, Robert G.; and Siegel, William J., 4,764,049, Cl. 403-24.000

Pace, Laurel J.; and Blood, Jeffrey C., to Eastman Kodak Company. Color filter arrays. 4,764,670, Cl. 250-226.000.

Pacific Roller Die Co., Inc.: *See*—
Davis, Paul K., 4,763,830, Cl. 228-145.000.

Padovan, Gianni: *See*—
Schreiber, Peter; and Padovan, Gianni, 4,763,807, Cl. 220-274.000.

Pagano, Dominick A. Ultrasonic wheel probe with improved acoustic barrier. 4,763,526, Cl. 73-639.000.

Pagendarm Beschichtungstechnik GmbH: *See*—
Pagendarm, Ralph; and Hebels, Albert, 4,764,402, Cl. 427-355.000

Pagendarm, Ralph; and Hebels, Albert, to Pagendarm Beschichtungstechnik GmbH. Method of and apparatus for applying coating material to a running web. 4,764,402, Cl. 427-355.000.

Palas GmbH Partikel-und Lasermesstechnik: *See*—
Molter, Leander; Molter, Wolfgang; and Munzinger, Friedrich, 4,764,057, Cl. 406-69.000

Palmateer, Paul H.: *See*—
Flaitz, Philip L.; Master, Raj N.; Palmateer, Paul H.; and Reddy, Srinivasa S. N., 4,764,341, Cl. 419-9.000.

Palmer, Dennis D. Plug member used in hydraulic testing of plumbing system. 4,763,510, Cl. 73-40.50R.

Panagou, John G.: *See*—
Chitty, Gordon W.; Morrison, Richard H., Jr.; Olsen, Everett O.; Panagou, John G.; and Zavracky, Paul M., 4,764,244, Cl 156-630.000

Paneth, Eric; Critchlow, David N.; and Yehushua, Moshe, to International Mobile Machines Corporation. Modem for RF subscriber telephone system. 4,764,940, Cl. 375-67.000.

Panmedica: *See*—
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,764,518, Cl. 514-291.000

Panson, Armand J., to Westinghouse Electric Corp. Corrosion inhibiting media for pressurized water reactor steam generators. 4,764,337, Cl. 376-306.000.

Panzeri, Cesare, to Ansaldo Componenti S.p.A. Process and apparatus for welding steam turbine diaphragms. 4,764,658, Cl. 219-137.00R

Paoletti, Luciano, to SPIDEM S.r.l. Manually operated coffee-making machine. 4,763,566, Cl. 99-302.00P

Pap, Endre: *See*—
Jaki, Laszlo; Jodal, Sandor; Jagicza, Laszlo; Mandzsu, Jozsef; Pap, Endre; and Szebeni, Janos, 4,764,768, Cl. 340-815.050.

Papenhause, Paul E.: *See*—
Johnston, Damon A.; Papenhause, Paul E.; Garcia, George L.; and Drehobl, Thomas L., 4,764,047, Cl. 401-289.000.

Papuchon, Michel; Enard, Alain; Vatoux, Sylvie; and Werner, Michel, to Thomson-CSF. Differential absorption polarizer, a method of forming same and device implementing said method. 4,763,972, Cl. 350-96.110.

Paradissis, George N., to KV Pharmaceutical Company. Sachet drug delivery system. 4,764,375, Cl. 424-153.000.

Paraskeva, Mark: *See*—
Knight, William L.; Paraskeva, Mark; and Burrows, David F., 4,764,926, Cl. 371-25.000

Pardue, William F., Jr.: *See*—
Allaire, Roger A.; Pardue, William F., Jr.; and Simonson, Edwin J., 4,764,195, Cl. 65-18.400.

Park, Eric D., to Kollmorgen Corporation. Fiber optic fluid sensor using coated sensor tip. 4,764,671, Cl. 250-227.000.

Parker, David M.; and Groenendaal, John C., Jr., to Westinghouse Electric Corp. Inlet flow guide for a low pressure turbine. 4,764,084, Cl. 415-101.000.

Parker, Donald L.: *See*—
Heffner, Donald L.; and Parker, Donald L., 4,763,689, Cl. 137-514.000

Parker, Robert M.: *See*—
Gebhard, Albert W.; Au, William G.; Gregg, James S.; and Parker, Robert M., 4,763,911, Cl. 280-37.000

Parker, Theodore L.: *See*—
Martin, Patrick H.; Parker, Theodore L.; and Schrader, Paul G., 4,764,580, Cl. 528-98.000

Parker, William W.: *See*—
Hunter, Paul D.; Parker, William W.; and Widrevitz, Benjamin C., 4,764,919, Cl. 370-60.000.

Parmelee, Steven G.: *See*—
Petrie, Adelore F.; Karlmann, Thomas F.; Parmelee, Steven G.; and Edwards, Arthur J., 4,764,840, Cl. 361-154.000

Parrott, John R. Debris removal apparatus for track type vehicles 4,763,961, Cl. 305-12.000

Parsons, Kent: *See*—
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000

Parton, Brian, to Imperial Chemical Industries PLC. Coloration process for applying a colored polymer containing units derived from an organic dye. 4,763,371, Cl. 8-647.000.

Partridge, Randall D.: *See*—
Chen, Nai Y.; LaPierre, Rene B.; Partridge, Randall D.; and Wong, Stephen S., 4,764,266, Cl. 208-58.000.

Pasetti, Adolfo: *See*—
Piacenti, Franco; Pasetti, Adolfo; Manganelli Del Fa, Carlo; and Moggi, Giovanni, 4,764,431, Cl. 428-421.000

Pasquiou, Jean-Yves: *See*—
Bathellier, Andre; Pasquiou, Jean-Yves; and Vialard, Etienne, 4,764,352, Cl. 423-10.000

Pass, Reinhard: *See*—
Romey, Ingo; Ahland, Erwin; Pass, Reinhard; and Verfuss, Franz, 4,764,355, Cl. 423-244.000.

Patel, Shailesh, to Apple Computer, Inc. Apparatus and method for retaining a head arm of a disk drive assembly. 4,764,831, Cl 360-105.000

Patil, Ghanshyam: *See*—
Mai, Khuong H. X.; and Patil, Ghanshyam, 4,764,630, Cl 556-410.000.

Patt, William, to Warner-Lambert Company. N^6-(benzothien-3-yl)ethyl adenosine; N^6-(benzothien-3-yl)ethyl adenosine, S-oxide; and N^6-(benzothien-3-yl)ethyl S,S-dioxide adenosine. 4,764,506, Cl. 514-46.000

Pattern, George. Load cell. 4,763,740, Cl. 177-210.00R

Paul Flum Ideas, Inc.: *See*—
Flum, Paul L., 4,763,796, Cl. 211-59.200.

Paulus, Wilfried: *See*—
Kuhle, Engelbert; Paulus, Wilfried; Fischler, Michael; and Schmitt, Hans-Georg, 4,764,433, Cl. 428-541.000.

PCC Airfoils, Inc.: *See*—
Graham, Lawrence D.; Fetsko, Daniel G.; George, Thomas, Crnkovic, Mark A.; James, William D.; and Merz, Walter E., 4,763,716, Cl. 164-122.100.

Pearl, David R., to Gerber Garment Technology, Inc. Compound plotting apparatus and related method of operation. 4,764,880, Cl. 364-519.000

Pease, Charles C.: *See*—
Wilkinson, Harold C.; Pease, Charles C.; and Wall, Kevin, 4,763,458, Cl. 52-509.000

Pechiney: *See*—
Charquet, Daniel; Millet, Yvon; Dall'Agnol, Marc; and Robin, Rene, 4,764,223, Cl. 148-11.50F.

Pedain, Josef. *See*—
Mosbach, Jurgen; Pedain, Josef; and Noll, Klaus, 4,764,553, Cl 524-591.000

Pedrazzi, Reinhard: *See*—
Dore, Jacky; and Pedrazzi, Reinhard, 4,764,175, Cl. 8-437.000.

Pedtke, Daniel F.; and Behlke, George E., to Detection Systems, Inc Intruder detection system with false-alarm-minimizing circuitry. 4,764,755, Cl. 340-541.000

Pelesko, John D.: *See*—
Smith, Terry E.; Cottrell, Ian W.; and Pelesko, John D., 4,764,588, Cl. 528-481.000

Pella B.V.: *See*—
van der Klaauw, Willem T. J., 4,763,712, Cl. 160-84.100.

Pelt & Hooykaas B.V.: *See*—
Hooykaas, Carel W. J., 4,764,216, Cl. 106-117.000

Pendleton, Thomas J.: *See*—
Miller, David C.; and Pendleton, Thomas J., 4,763,809, Cl. 220-407.000

Pene-Tech, Inc.: *See*—
Spurlock, Edwin C., Jr.; and O'Neill, William M., 4,763,376, Cl 15-104.310.

Penford Products: *See*—
Pratt, George W.; Caton, Dennis W.; and Tackaberry, Duane O., 4,764,199, Cl. 71-5.000

Penhale, Donald W. H.: *See*—
Heller, Jorge; Penhale, Donald W. H.; and Ng, Steve Y., 4,764,364, Cl. 424-78.000

Pennwalt Corporation: *See*—
Caldwell, John W., 4,764,163, Cl. 494-6.000.
Lovenguth, Ronald F., 4,764,550, Cl. 524-217.000

Peplowski, Boleslaw J. Flute instrument digit rest and spacer. 4,763,556, Cl. 84-384.000

Perceptics Corporation: *See*—
Woods, Richard E., 4,764,974, Cl. 382-43.000

Perfluktiv-Consult AG: *See*—
Sundermann, Erich; Laursen, Hanno; Vahlbrauk, Wolfgang; and Reye, Hans, 4,764,107, Cl. 432-96.000.

Persson, Anders: *See*—
Porle, Erik; and Persson, Anders, 4,764,188, Cl. 55-130.000.

Pesikov, Vitaly I.: *See*—
McCabe, William J.; and Pesikov, Vitaly I., 4,763,420, Cl 33-503.000

VOL 1093 ISS 3 AG 16 1988 UMI

Peters, Karl-Heinz: *See—*
Meichsner, Walter; Gmohling, Werner; Tutte, Manfred; and Peters, Karl-Heinz, 4,764,211, Cl. 75-58.000

Peterson, Howell L.: *See—*
Bradley, William A.; Carbone, Pat J.; and Peterson, Howell L., 4,763,785, Cl. 206-389.000

Peterson, Leonard J. Boat lift. 4,764,081, Cl. 414-678.000

Peterson, Royal D.; and Jones, Ronald E., to Continental Laser Corporation. Ion laser having direct liquid cooling of segmented discharge tube. 4,764,932, Cl. 372-35.000.

Petrie, Adelore F.; Karlmann, Thomas F.; Parmelee, Steven G.; and Edwards, Arthur J., to Motorola, Inc. Dual limit solenoid driver control circuit. 4,764,840, Cl. 361-154.000

Petrolite Corporation: *See—*
Hakim, John, 4,764,326, Cl. 264-211.000

Pezzopane, Claude A.: *See—*
Andersen, George L.; and Pezzopane, Claude A., 4,764,662, Cl. 219-391.000

Pfeifer, Josef; and Duthaler, Rudolf, to Ciba-Geigy Corporation. Radiation-sensitive polycondensates, their preparation, material coated therewith and the use thereof. 4,764,584, Cl. 528-220.000

Pfluger, Wolfgang: *See—*
Sirrenberg, Wilhelm; Braden, Rudolph; Ziemann, Heinz; Zobebelein, Gerhard; and Pfluger, Wolfgang, 4,764,524, Cl. 514-364.000

Pfohl, Robert L.: *See—*
Uphold, James D.; and Pfohl, Robert L., 4,763,663, Cl. 128-671.000

Pfund, Charles E. Secure communication system. 4,764,982, Cl. 455-606.000

Pham-Phu, Ngo, to Societe Neyrpic. Channel for feeding water to a vertical-axis kaplan water turbine. 4,764,087, Cl. 415-142.000

Pharmacia AB: *See—*
Malson, Tomas, 4,764,360, Cl. 424-2.000

Phemister, David M.: *See—*
Larsen, L. James; and Phemister, David M., 4,764,773, Cl. 343-713.000

Philip Morris Incorporated: *See—*
Gregory, Joseph L., III, 4,763,672, Cl. 131-79.000

Phillips Petroleum Company: *See—*
Clark, Earl, Jr., 4,764,574, Cl. 526-207.000.

Phillips, Ronald, to Lucas Industries public limited company. Fluid control valves. 4,763,873, Cl. 251-30.050.

Piacenti, Franco; Pasetti, Adolfo; Manganelli Del Fa, Carlo; and Moggi, Giovanni, to Ausimont S.p.A. Process for protecting and consolidating stone materials. 4,764,431, Cl. 428-421.000

Piana, Ivana; and Piana, Silvano, to Grafoplast S.p.A. Cable terminal with rotatable marker. 4,764,126, Cl. 439-491.000

Piana, Silvano: *See—*
Piana, Ivana; and Piana, Silvano, 4,764,126, Cl. 439-491.000

Piazzola, Gaetano. Modular element heat exchanger, particularly for extrusion cylinders, injection molding machines, drawing machines and the like plastics processing machines. 4,763,722, Cl. 165-64.000.

Picker International, Inc.: *See—*
Misic, George J.; and Orlando, Paul T., 4,764,726, Cl. 324-322.000

Pickles, Charles S.: *See—*
Heisey, Jay M.; Kautz, Jon F.; and Pickles, Charles S., 4,763,408, Cl. 29-874.000

Pielach, Martin; and Lippman, Seymour A., to Uniroyal Goodrich Tire Company, The. Tire uniformity machine and method. 4,763,515, Cl. 73-146.000

Pielach, Martin, to Uniroyal Goodrich Tire Company, The. Rim and spindle for tire uniformity machines. 4,763,710, Cl. 157-14.000

Piesch, Steffen; and Dorries, Peter, to Cassella Aktiengesellschaft. Sulphonamide derivatives and their preparation and use. 4,764,570, Cl. 525-513.000

Pieters, Wim J. M.: *See—*
Bortinger, Arie; Maggio, Robert A.; and Pieters, Wim J. M., 4,764,356, Cl. 423-329.000

Pietro, Araudo: *See—*
Marinoni, Giorgio; and Pietro, Araudo, 4,763,401, Cl. 29-568.000

Pifer, David D.: *See—*
Mason, James M.; and Pifer, David D., 4,764,463, Cl. 424-101.000

Pifferi, Giorgio: *See—*
Gabetta, Bruno; Bombardelli, Ezio; and Pifferi, Giorgio, 4,764,508, Cl. 514-78.000

Pilkington Brothers PLC: *See—*
Lythgoe, Stanley, 4,764,198, Cl. 65-339.000

Pillarhouse International Limited: *See—*
Tombs, Michael; and Ciniglio, Alexander J., 4,763,599, Cl. 118-57.000

Pinnekamp, Friedrich: *See—*
Mauthe, Gerhard; Niemeyer, Lutz; Pinnekamp, Friedrich; and Wiegart, Norbert, 4,764,836, Cl. 361-5.000.

Pioneer Electronic Corporation: *See—*
Sugihara, Masanori; Kobayashi, Kazuo; Okamoto, Akihiko; Kurosawa, Atsushi; and Okii, Hideki, 4,764,917, Cl. 369-77.100.

Pioneer-Leimel Fabrics, Inc.: *See—*
Burns, Alan W.; Scarth, Robert D.; Mascaro, John V.; Hegenboden, J. W.; and Green, Moses, Jr., 4,764,412, Cl. 428-172.000.

Pioneer Medical Systems, Inc.: *See—*
Lewis, Ralph H.; and Lambert, Barnum B., 4,764,346, Cl. 422-120.000

Pischtschan, Alfred: *See—*
Eichenauer, Herbert; Pischtschan, Alfred; and Ott, Karl-Heinz, 4,764,557, Cl. 525-72.000

Pitavy, Michel; Chiappino, Mario; and Aghemo, Luigi, to Luchaire S.A.; and AG International S.p.A. Process for manufacturing hollow plastics articles. 4,764,322, Cl. 264-71.000

Pitman Manufacturing Co., Inc.: *See—*
Murray, Robert J., 4,763,755, Cl. 182-2.000

Pitney Bowes Inc.: *See—*
Miciukiewicz, Joseph F., 4,763,575, Cl. 101-91.000

Pitt, Philip L.: *See—*
Clements, Reginald M.; Pitt, Philip L.; Ridley, John D.; Smith, Robert; and Topham, David, 4,764,906, Cl. 367-142.000

Plastic Techniques, Inc.: *See—*
Moody, Richard D., 4,763,758, Cl. 182-46.000

Plastona (John Waddington) Limited: *See—*
Harrison, Peter, 4,764,399, Cl. 427-275.000

Plastro Gvat: *See—*
Greenberg, Ilan, 4,763,839, Cl. 239-222.170.

Platel, Guy: *See—*
Galand, Claude; and Platel, Guy, 4,764,955, Cl. 379-411.000

Plessey Overseas Limited: *See—*
Knight, William L.; Paraskeva, Mark; and Burrows, David F., 4,764,926, Cl. 371-25.000

Plett, Calvin: *See—*
Rosch, Reinhard; Rosenbaum, Stanley D.; Plett, Calvin; and Holy, Zdenek, 4,764,956, Cl. 379-413.000

Podgers, Alexander R.; and Butterfield, Eric J., to Emco Wheaton, Inc. Containment manhole. 4,763,806, Cl. 220-86.00R

Poehlmann, Paul W.; Slate, Mark J.; Potts, Stephen M.; and Cunningham, Charles B., to Wilderness Bicycle, Inc. Bicycle hub constructions and lubrication thereof. 4,763,957, Cl. 301-105.00B

Pohl, Herbert A.: *See—*
Basavanhally, Nagesh R.; Pohl, Herbert A.; and Rapp, Willard E., 4,763,412, Cl. 29-845.000

Polacek, Ivan: *See—*
Decker, Klaus; and Polacek, Ivan, 4,764,669, Cl. 250-202.000

Pollak, Gerd: *See—*
Rabe, Gerd; and Pollak, Gerd, 4,764,063, Cl. 409-179.000

Pollock, John F.: *See—*
Davidson, James H., deceased; and Pollock, John F., 4,764,161, Cl. 493-248.000

Polus, Michael; and Besendorfer, Hans. Sport shoe with pneumatic inflating device. 4,763,426, Cl. 36-29.000

Pommer, Ernst-Heinrich: *See—*
Wagner, Klaus; Rieber, Norbert; and Pommer, Ernst-Heinrich, 4,764,527, Cl. 514-407.000

Pommrehn, Mark R.: *See—*
Kroll, Mark W.; Pommrehn, Mark R.; and Hanson, Dan, 4,763,660, Cl. 128-640.000

Pompei, Francesco, to Exergen Corporation. Radiation detector psychrometer. 4,763,522, Cl. 73-338.000

Pomper, Seymour; Cole, Gary; and Scheinbach, Saul, to Nabisco Brands, Inc. Rehydratable instant active dried yeast. 4,764,472, Cl. 435-256.000

Pont-A-Mousson S.A.: *See—*
Vigneron, Pierre; and Hauer, Jean-Claude, 4,763,449, Cl. 52-20.000.

Porcellio, Rocco J.: *See—*
Rabbani, Mojgan; and Porcellio, Rocco J., 4,764,805, Cl. 358-13.000

Porkert, Helmut F.: *See—*
Sauer, Heinz; Porkert, Helmut F.; and Liebsch, Dietrich, 4,764,308, Cl. 260-544.00K.

Porle, Erik; and Persson, Anders, to Flakt AB. Electrostatic precipitator. 4,764,188, Cl. 55-130.000

Portugall, Michael: *See—*
Hisgen, Bernd; Kock, Hans-Jakob; Portugall, Michael; Seiler, Erhard; and Blinne, Gerd, 4,764,582, Cl. 528-183.000

Postigo, Joseph. Pallet loading apparatus. 4,764,074, Cl. 414-95.000

Potenziani, Ernest, II: *See—*
Leupold, Herbert A.; and Potenziani, Ernest, II, 4,764,743, Cl. 335-306.000

Potts, Stephen M.: *See—*
Poehlmann, Paul W.; Slate, Mark J.; Potts, Stephen M.; and Cunningham, Charles B., 4,763,957, Cl. 301-105.00B

Poveromo, Leonard M.: *See—*
Dastin, Samuel J.; Cacho-Negrete, Carlos M.; Mahon, John; Poveromo, Leonard M.; Corvelli, Nicholas; and London, Arnold, 4,764,238, Cl. 156-245.000

Powell, Mark S. Security wallet. 4,763,821, Cl. 224-267.000

Powell, Ronald A.; and Felch, Susan B., to Varian Associates, Inc. Semiconductor wafer temperature measuring device and method. 4,764,026, Cl. 374-178.000.

Powers Chemco: *See—*
Landsman, Robert M., 4,764,815, Cl. 358-293.000

Powilleit, Siegfried, to Siemens Aktiengesellschaft. Method for manufacturing an annular component in the form of wound ferromagnetic tape provided with slots at an end face for use in an electrical axial-field machine. 4,763,402, Cl. 29-596.000

Pozzi, Franco: *See—*
Carenzi, Angelo; Cerri, Oreste; Pozzi, Franco; Casagrande, Cesare; Miragoli, Giovanna; and Virno, Michele, 4,764,530, Cl. 514-548.000

PPG Industries, Inc.: *See—*
Blackburn, William P.; and Singer, Debra L., 4,764,430, Cl. 428-413.000
Login, Robert B., 4,764,306, Cl. 260-404.500

Pratt, George W.; Caton, Dennis W.; and Tackaberry, Duane O., to Penford Products. Method of preparing mushroom growing supplements from corn gluten meal. 4,764,199, Cl. 71-5.000

Pravato, George R.: *See—*
Croucher, Melvin D.; Pravato, George R.; Fuller, John R. C.; and Duff, James M., 4,764,446, Cl. 430-115.000

Press, Fred. Hand exerciser. 4,763,896, Cl. 272-68.000.

Priam Corporation: *See—*
Gollbach, Lawrence W., 4,764,828, Cl. 360-98.000.

Price, Barry J.: *See—*
Clitherow, John W.; Bradshaw, John; Mackinnon, John W. M.; Price, Barry J.; Martin-Smith, Michael; and Judd, Duncan B., 4,764,612, Cl. 546-232.000.

Price, Edison A., to Edison Price Incorporated. Electrical connector for high-level audio signals. 4,764,127, Cl. 439-551.000

Prince Corporation: *See—*
Robbins, Craig; Lanser, Michael L.; Van Order, Kim L.; and Weber, Joseph H., 4,763,946, Cl. 296-97.00H.

Probst, Harry C., to Brunswick Corporation. Mounting bracket for outboard motor. 4,763,871, Cl. 248-640.000

Procter & Gamble Company, The: *See—*
Angstadt, John J., 4,764,325, Cl. 264-113.000.
Bolich, Raymond E., Jr., 4,764,363, Cl. 424-47.000.
Trinh, Toan, 4,764,289, Cl. 252-8.600

Proctor & Schwartz, Inc.: *See—*
Zagorzycki, Peter E.; and Dussan V., Benicio I., 4,763,770, Cl. 198-364.000

Proksa, Ferdinand; Althausen, Ferdinand; Bucher, Gottfried; Raffel, Reiner; and Sulzbach, Hans-Michael, to Maschinenfabrik Hennecke GmbH. Process and apparatus for the preparation of a free-flowing mixture made of free-flowing components which reacts to form foam. 4,764,536, Cl. 521-50.000.

Provenda Marketing AG: *See—*
Tobler, Peter, 4,763,950, Cl. 297-301.000

Provenzi, Enrico. Combined veneer trimmer and adhesive spreader machine. 4,763,704, Cl. 144-3.00R.

Prysby, Daniel G., to Honeywell Inc. Fail-safe alarm circuit. 4,764,754, Cl. 340-513.000

Przewalski, Zygmunt J., to M & S Engineering & Manufacturing Co., Inc. Self-sustaining wet waste incinerator. 4,763,583, Cl. 110-246.000

Pulsotronic Merten GmbH & Co. KG: *See—*
Kind, Guntram, 4,763,792, Cl. 209-570.000

Pusey, Paul L.; and Wilson, Charles L., to United States of America, Agriculture. Postharvest biological control of stone fruit brown rot by *bacillus subtilis*. 4,764,371, Cl. 424-93.000.

Q.P. Corporation: *See—*
Yasufuku, Kenjiro; Okafuji, Hiroshi; Hasegawa, Mineo; and Haga, Noriyuki, 4,764,392, Cl. 426-603.000.

Q'SO, Inc.: *See—*
Leicht, Larry F., 4,764,535, Cl. 521-51.000

Quadion Corporation: *See—*
Boyd, Richard M., 4,764,035, Cl. 384-152.000

Quadir, Tariq, to General Motors Corporation. Low temperature sintering of yttria stabilized zirconia with lanthana borate additions. 4,764,491, Cl. 501-103.000.

Quaker Oats Company, The: *See—*
Baker, David G.; and McElhaney, Craig, 4,764,147, Cl. 446-397.000
Lerch, Karl D., 4,763,679, Cl. 135-20.00M.

Questel, Roger; and Seidman, Gene P. Mailer for indicia-carrying glass plate. 4,763,789, Cl. 206-454.000.

Quinn, Russell C., to Jos. Dyson & Sons, Inc. Bottom hook construction for fork lift trucks. 4,764,082, Cl. 414-785.000

R.A.P.I.D., Inc.: *See—*
Haskin, Marvin E., 4,764,870, Cl. 364-415.000.

R. J. Reynolds Tobacco Company: *See—*
Barnes, Vernon B.; Wilkinson, Donald R.; Shore, John W.; and Huff, Ronnie G., 4,763,673, Cl. 131-96.000.

R. P. Scherer Corportion: *See—*
Brown, Sherwin R.; and Drebot, Michael, 4,764,383, Cl. 426-1.000.

Raasch, Hans, to W. Schlafhorst & Co. Braking device for a rotor shaft of a rotor spinning machine. 4,763,465, Cl. 57-88.000.

Rabb, David T.: *See—*
Dickinson, Ben W. O.; Dickinson, Robert W.; and Rabb, David T., 4,763,734, Cl. 175-61.000.

Rabbani, Mojgan; and Porcellio, Rocco J., to Eastman Kodak Company. Image transmission system with line averaging preview mode using two-pass block-edge interpolation. 4,764,805, Cl. 358-13.000.

Rabe, Gerd; and Pollak, Gerd, to L. & C. Steinmuller GmbH. Process and apparatus for machining the bottom of a container. 4,764,063, Cl 409-179.000

Rabilloud, Guy: *See—*
Malinge, Jean; Rabilloud, Guy; and Sillion, Bernard, 4,764,578, Cl. 528-27.000

RAd Systems, Inc.: *See—*
Abrams, Richard F., 4,764,187, Cl. 55-20.000

Radtke, Norman H.: *See—*
Staerzl, Richard E.; Radtke, Norman H.; and Hummel, Leonard S., 4,763,625, Cl. 123-435.000.

Raffel, Reiner: *See—*
Proksa, Ferdinand; Althausen, Ferdinand; Bucher, Gottfried; Raffel, Reiner; and Sulzbach, Hans-Michael, 4,764,536, Cl. 521-50.000

Raftis, Spiros G., to Red Valve Co., Inc. Temperature-resistant isolation fluid pressure detector. 4,763,527, Cl. 73-730.000.

Raidel, John E. Suspension assembly with air spring and self contained air lift spring. 4,763,923, Cl. 280-704.000

Rainin Instrument Co., Inc.: *See—*
Rainin, Kenneth, Magnussen, Haakon T., Jr.; and Moeller, Roy P., 4,763,535, Cl. 73-864.180

Rainin, Kenneth; Magnussen, Haakon T., Jr.; and Moeller, Roy P., to Rainin Instrument Co., Inc. Pipette mechanism. 4,763,535, Cl. 73-864.180

Rainwater, Jack: *See—*
Gerondale, Joe; and Rainwater, Jack, 4,763,365, Cl. 4-542.000

Rakkasan Company Ltd.: *See—*
Isshiki, Tadao, 4,764,173, Cl. 8-115.520

Ralph W. Earl Company, Inc.: *See—*
Wicks, Robert G., 4,763,487, Cl. 62-239.000

Ramachandran, Venkataraman; and Mohr, David M., to Ethyl Corporation. Aromatization process. 4,764,635, Cl. 558-423.000

Ramanarayanan, Trikur A., to Exxon Research and Engineering Company. Method for inhibiting corrosion of iron-containing alloy articles in sulfur-containing media. 4,763,729, Cl. 166-244.100

Ramot University Authority for Applied Research and Industrial Development Ltd.: *See—*
Croitoru, Natan; Deutscher, Guy; and Gruenbaum, Enrique, 4,764,398, Cl. 427-237.000

Randa, Stuart K.: *See—*
Buckmaster, Marlin D.; and Randa, Stuart K., 4,764,538, Cl. 521-85.000

Randle, Roy: *See—*
Minshall, David; and Randle, Roy, 4,764,333, Cl. 376-203.000

Ranger, Michael H.: *See—*
Spektor, Semyon; and Ranger, Michael H., 4,764,778, Cl. 346-160.000

Rangert, Bo: *See—*
Jorneus, Lars; and Rangert, Bo, 4,763,788, Cl. 206-438.000

Ransburg-Gema AG: *See—*
Dinkel, Bernard; and Gelain, Silvano, 4,764,220, Cl. 134-6.000

Rao, Balbir: *See—*
Bilski, Andrew J. T.; Howe, Ralph; Rao, Balbir; and Thomson, David S., 4,764,361, Cl. 424-45.000

Rapp, Willard E.: *See—*
Basavanhally, Nagesh R.; Pohl, Herbert A.; and Rapp, Willard E., 4,763,412, Cl. 29-845.000

Ratsko , Istvan; Madocsay, Attila; Ivony, Jozsef; Horvath, Bela, and Madi, Jeno, to Autoipari Kutato es Fejleszto Vallalat. Hydraulic jackknifing-affecting apparatus for articulated vehicles. 4,763,916, Cl 280-432.000

Raubitschek, Andrew R.: *See—*
Foung, Steven K. H.; Raubitschek, Andrew R.; Engleman, Edgar G.; Grumet, F. Carl; and Larrick, James W., 4,764,465, Cl 435-172.200

Rausch, Frederik, to U.S. Philips Corporation. Power-supply arrangement. 4,764,856, Cl. 363-21.000

Rautio, Kauko. Air humidifier. 4,764,661, Cl. 219-272.000

Raychem Corporation: *See—*
Hunter, Thomas A., 4,764,232, Cl. 156-48.000
Kamath, Hundi P.; and Leder, Jeffrey C., 4,764,664, Cl 219-548.000

Raychem Limited: *See—*
Hill, Frederick W. L.; Bates, Nigel R.; and Svendsen, Leo G., 4,764,422, Cl. 428-309.900

Raymond, Richard O., to Country Home Products, Inc. Utility wagon. 4,763,907, Cl. 280-47.350

Raymond, Wayne K.: *See—*
Gay, Ronald N.; and Raymond, Wayne K., 4,764,260, Cl 204-34.000

Raynier, Bernard: *See—*
Laruelle, Claude; Lepant, Marcel; and Raynier, Bernard, 4,764,518, Cl. 514-291.000

Raytheon Company: *See—*
Clawson, Lawrence G., 4,764,193, Cl. 62-3.000
Hurley, James E.; and Stettler, Robert H., 4,763,638, Cl. 126-31.00A

RCA Licensing Corporation: *See—*
Christopher, Todd J., 4,764,967, Cl. 381-98.000
New, David A.; and Maninger, Loren L., 4,764,704, Cl. 313-414.000

Rector, Carl M.: *See—*
Hightower, James O., Jr.; Sato, Tomio; Hamner, James W.; and Rector, Carl M., 4,764,319, Cl. 264-3.400

Red Valve Co., Inc.: *See—*
Raftis, Spiros G., 4,763,527, Cl. 73-730.000

Reddy, Srinivasa S. N.: *See—*
Flaitz, Philip L.; Master, Raj N.; Palmateer, Paul H.; and Reddy, Srinivasa S. N., 4,764,341, Cl. 419-9.000

Reed, Douglas A.: *See—*
Grimes, Scott D.; Beaulieu, Lary J.; and Reed, Douglas A., 4,764,925, Cl. 371-20.000

Reimels, Harry G.; Walsh, David A.; and Arsenault, Michael J., to Mentor O & O, Inc. Ophthalmic aspirator-irrigator with valve 4,764,165, Cl. 604-35.000

Reinecke, Paul: *See—*
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm, Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, 4,764,526, Cl 514-383.000

Reinhardt, Eugen: *See—*
Hoppe, Lutz; Luhmann, Erhard; Hohl, Frank; and Reinhardt, Eugen, 4,764,548, Cl. 524-31.000

VOL 1093 ISS 3 AG 16 1988 UMI

Reinwall, Ernest W.; and Hagan, Robert A., to Elco Industries, Inc. Anchor for masonry veneer walls. 4,764,069, Cl. 411-397.000.

Reisman, Arnold; and Osburn, Carlton M., to Microelectronics Center of North Carolina. Microelectronics apparatus. 4,764,644, Cl. 174-68.500

Reliance Electric Company: *See—*
Martinie, Howard W., 4,763,904, Cl. 277-9.000.

Renfer, Dale S.: *See—*
Turner, S. Richard; Yanus, John F.; and Renfer, Dale S., 4,764,625, Cl. 548-442.000.

Reng, Leonhard: *See—*
Blaschke, Felix; and Reng, Leonhard, 4,764,712, Cl. 318-778.000.

Repap Technologies Inc.: *See—*
Lora, Jairo H.; Katzen, Raphael; Cronlund, Malcolm; and Wu, Chih F., 4,764,596, Cl. 530-507.000.

Reppel, Paul, to Reppel-Plastic GmbH. Printer table with a paper carriage. 4,763,965, Cl. 312-317.00A.

Reppel-Plastic GmbH: *See—*
Reppel, Paul, 4,763,965, Cl. 312-317.00A.

Research Development Corporation of Japan: *See—*
Akutsu, Nakao; Akimitsu, Masako; and Mizoguchi, Tadashi, 4,764,436, Cl. 428-694.000.

Resh, John, to McGill Manufacturing Co., Inc. Switch assembly with actuator for sequentially activating two safety switches. 4,764,648, Cl. 200-50.00A.

Restaurant Technology, Inc.: *See—*
Bergling, Craig L.; Ewald, Henry T.; Horton, Douglas J.; Hoverman, James L.; and Weller, Berthold L., 4,763,571, Cl. 99-349.000

Restelli, Carlo: *See—*
Castaldi, Graziano; Cavicchioli, Silvia; Giordano, Claudio; and Restelli, Carlo, 4,764,641, Cl. 568-319.000.

Reuning, Richard H.; Hui, James; Shepard, Theresa A.; and Sams, Richard A., to Ohio State University Research Foundation, The. Composition for assaying cardiac glycosides from serum or plasma. 4,764,601, Cl. 536-5.000.

Revus, David E.; and Boyer, Russell E., to Chevron Research Company. Microwave oil saturation scanner. 4,764,718, Cl. 324-58.50A.

Reye, Hans: *See—*
Sundermann, Erich; Laurien, Hanno; Vahlbrauk, Wolfgang; and Reye, Hans, 4,764,107, Cl. 432-96.000.

Rheinmetall GmbH: *See—*
Romer, Rudolf; Winkelmann, Juergen; and Sabinski, Horst, 4,763,577, Cl. 102-431.000.

Rhodes, Alex: *See—*
Goldsworthy, Kenneth M., 4,763,639, Cl. 126-25.00R.

Rhone-Poulenc Sante: *See—*
Bertrand, Claude; and Wolff, Gerard, 4,764,637, Cl. 560-143.000

Rice, Allan F.: *See—*
Roscamp, Thomas A.; Frank, Paul D.; Roberts, Gary E.; and Rice, Allan F., 4,764,834, Cl. 365-126.000

Rice, Camilla A., to E.C.C. America Inc. Process for surface treating layered lattice silicates and resultant products. 4,764,495, Cl. 502-62.000

Rice, Verle L.; and Wall, Steve H., to Verle L. Rice. Router mounting table. 4,763,706, Cl. 144-136.00R

Richard, Michael A.: *See—*
Vanderspurt, Thomas H.; Richard, Michael A.; and Che, Tessie M., 4,764,499, Cl. 502-258.000

Richardson, Michael A.: *See—*
Furuichi, Yasuhiro; and Richardson, Michael A., 4,764,460, Cl. 435-6.000

Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000

Richter, Howard S. Tennis elbow brace. 4,763,901, Cl. 273-29.00R.

Rickman, William S.; Kaae, James L.; and Gamson, Bernard W., to Ogden Environmental Services. Method for the combustion of spent potlinings from the manufacture of aluminum. 4,763,585, Cl. 110-346.000

Ricoh Company, Ltd.: *See—*
Kodama, Yutaka, 4,763,891, Cl. 271-157.000.
Otomura, Satoshi; and Akiyoshi, Hideki, 4,764,442, Cl. 430-63.000.
Tsubuko, Kazuo; Kuramoto, Shinichi; Nagai, Kayoko; Okawara, Makoto; and Takanashi, Hajime, 4,764,447, Cl. 430-115.000

Ridgway, David M., to Iowa State University Research Foundation, Inc. Implement Hitch. 4,763,743, Cl. 180-53.300.

Ridley, John D.: *See—*
Clements, Reginald M.; Pitt, Philip L.; Ridley, John D.; Smith, Robert; and Topham, David, 4,764,906, Cl. 367-142.000.

Rieber, Norbert: *See—*
Wagner, Klaus; Rieber, Norbert; and Pommer, Ernst-Heinrich, 4,764,527, Cl. 514-407.000

Riehl, Gunther; and Vollgold, Gunther. Vacuum evaporator. 4,764,250, Cl. 159-6.100

Rigsby, Joseph C. Multipurpose furniture assembly. 4,763,582, Cl. 108-103.000

Ring Around Products, Inc.: *See—*
Calub, Alfonso G., 4,764,643, Cl. 800-1.000
Davis, William H., 4,763,441, Cl. 47-58.000

Ringlien, James A.: *See—*
Bieringer, Robert J.; and Ringlien, James A., 4,764,015, Cl. 356-372.000

Ripka, Michael S., to Nabisco Brands, Inc. Continuous bioreactor and process. 4,764,471, Cl. 435-255.000.

Rischmuller, Klaus, to Thomson-CSF. Transistor base control circuit for high frequency operation. 4,764,686, Cl. 307-254.000.

Risser, Philip E., to J. I. Case Company. Foldable implement carrier. 4,763,915, Cl. 280-413.000.

Ritchie, Ruben R. Viewing and oral communications assembly for doors. 4,763,444, Cl. 49-171.000

Rittershaus & Blecher GmbH: *See—*
Heinrich, Hans J.; Oelbermann, Max; and Hohmann, Ernst-Gerhard, 4,764,273, Cl. 210-225.000

Riviere Casalis: *See—*
Mouret, Patrick, 4,763,464, Cl. 56-341.000

Robbins, Craig; Lanser, Michael L.; Van Order, Kim L.; and Weber, Joseph H., to Prince Corporation. Visor. 4,763,946, Cl. 296-97.00H.

Robbins, Max L.; Canevari, Gerard P.; and Bock, Jan, to Exxon Research and Engineering Company. Oil spill microemulsion dispersants. 4,764,285, Cl. 210-749.000

Robert Bosch GmbH: *See—*
Ballhause, Lutz; Fehrenbach, Siegfried; Herbst, Kurt; Krimmer, Erwin; and Schulz, Wolfgang, 4,763,635, Cl. 123-520.000
Fehlmann, Wolfgang; Hofer, Gerald; Junger, Dieter; and Stumpp, Gerhard, 4,763,631, Cl. 123-503.000.
Heitmann, Jurgen, 4,764,816, Cl. 358-327.000.
Kehl, Georg; and Schafer, Ernst-Dieter, 4,764,048, Cl. 403-11.000.
van Zanten, Anton, 4,764,871, Cl. 364-426.000.

Roberts, Gary E.: *See—*
Roscamp, Thomas A.; Frank, Paul D.; Roberts, Gary E.; and Rice, Allan F., 4,764,834, Cl. 365-126.000

Robichaud, Arthur W. Fluid filter and method for attaching same in sealing relation to a filter mount. 4,764,275, Cl. 210-232.000.

Robin, Rene: *See—*
Charquet, Daniel; Millet, Yvon; Dall'Agnol, Marc; and Robin, Rene, 4,764,223, Cl. 148-11.50F.

Robinson, Tibor: *See—*
Heller, Jurg; Kissling, Bruno; Muller, Curt; Robinson, Tibor; and Valenti, Salvatore, 4,764,585, Cl. 528-233.000.

Rockey, Arthur G. Medical sleeve. 4,763,653, Cl. 128-344.000

Rockwell International Corporation: *See—*
Brown, Jeffrey K., 4,763,470, Cl. 60-257.000
Hawkinson, Elden L., 4,764,037, Cl. 384-527.000

Rodgers, Thurman J.: *See—*
Bhattacherjee, Arya; Koutny, William; Shrivastava, Ritu; and Rodgers, Thurman J., 4,764,248, Cl. 156-643.000.

Roe, Richard D., to Boeing Company, The. Method of bolt hole strengthening in a fibrous composite laminate. 4,763,399, Cl. 29-527.200

Rogakos, Deno J.; Licata, Joseph P.; and Sloan, John L., to General Motors Corporation. Power operated door latch. 4,763,936, Cl. 292-201.000

Rogers, William P., to Telenex Corporation. Cable system for digital information. 4,764,939, Cl. 375-37.000.

Rogowski, Gregory S.: *See—*
Brown, Donald L.; Weissert, James T.; Bhakuni, Roop S.; and Rogowski, Gregory S., 4,763,468, Cl. 57-310.000.

Rohr, Franz J.: *See—*
Liemert, Karl; Rohr, Franz J.; and Hug, Kuno, 4,763,478, Cl. 60-633.000

Roland, Michel: *See—*
Hennebert, Pierre; Gillard, Jean; and Roland, Michel, 4,764,351, Cl. 422-292.000

Romanauskas, William A., to Du Pont de Nemours, E. I., and Company. Removable door seal assembly for a centrifuge. 4,764,162, Cl. 494-38.000

Romer, Rudolf; Winkelmann, Juergen; and Sabinski, Horst, to Rheinmetall GmbH. Cartridge ammunition with at least a partially combustible propellant charge cartridge casing. 4,763,577, Cl. 102-431.000

Romey, Ingo; Ahland, Erwin; Pass, Reinhard; and Verfuss, Franz, to Bergwerksverband GmbH. Process for removal of solid and gaseous noxious matter from hot gases. 4,764,355, Cl. 423-244.000.

Rommel, Reiner; and Beetz, Horst, to Wezag GmbH. Wiring tool to be employed in the cutter-terminal technique for wiring multipole electric connectors, contact strips, and similar structures involving. 4,763,406, Cl. 29-759.000

Root, Jon C.; Barnes, John F.; and Lawson, Ray D., to Witco Corporation. Lubricant compositions. 4,764,293, Cl. 252-12.400.

Rooz, William B. One piece plastic garment clamp having live hinge toggle joint. 4,763,390, Cl. 24-487.000.

Rorer, Morris P., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,764,205, Cl. 71-93.000.

Rorer Pharmaceutical Corporation: *See—*
Molino, Bruce F.; Campbell, Henry F.; Kuhla, Donald E.; and Studt, William L., 4,764,512, Cl. 514-183.000.
Orlowski, Ronald C.; and Seyler, Jay K., 4,764,589, Cl. 530-307.000
Orlowski, Ronald C.; and Seyler, Jay K., 4,764,590, Cl. 530-307.000
Orlowski, Ronald C.; Seyler, Jay K.; and Flanigan, Everett, 4,764,591, Cl. 530-307.000

Rosania, Jeffrey W.: *See—*
Cohn, Robert J.; Rosania, W. Stanley; Rosania, Jeffrey W.; and Sudimak, Michael J., 4,763,799, Cl. 211-187.000

Rosania, W. Stanley: *See—*
Cohn, Robert J.; Rosania, W. Stanley; Rosania, Jeffrey W., and Sudimak, Michael J., 4,763,799, Cl. 211-187.000

Roscamp, Thomas A.; Frank, Paul D.; Roberts, Gary E.; and Rice, Allan F., to Applied Magnetics Corporation. Thin film magnetic transducer having a separate magnetically conductive layer 4,764,834, Cl. 365-126.000.

Rosch, Reinhard; Rosenbaum, Stanley D.; Plett, Calvin; and Holy, Zdenek, to Northern Telecom Limited. Active impedance line feed circuit. 4,764,956, Cl. 379-413.000.

Rose, Steven A.: *See—*
Freimark, Ronald J.; and Rose, Steven A., 4,764,896, Cl 364-900.000

Rosemount Inc.: *See—*
Jensen, Stephen C., 4,764,025, Cl. 374-144.000

Rosenbaum, Stanley D.: *See—*
Rosch, Reinhard; Rosenbaum, Stanley D.; Plett, Calvin; and Holy, Zdenek, 4,764,956, Cl. 379-413.000.

Rosenblad, Axel E., to Rosenblad Corporation. Falling film liquor heater having a screen to prevent clogging of a liquid distributing tray. 4,764,254, Cl. 162-249.000

Rosenblad Corporation: *See—*
Rosenblad, Axel E., 4,764,254, Cl. 162-249.000

Ross, Charles R. Oil metering apparatus. 4,763,813, Cl. 222-50.000.

Rothenberger, Gunter. Chain tube cutter. 4,763,413, Cl. 30-94.000.

Rothkegel, Bernhard; and Haufe, Wolfgang, to Siemens Aktiengesellschaft. Sintered electrical contact material for low voltage power switching. 4,764,227, Cl. 148-431.000.

Rothon, Roger N.: *See—*
Carey, John G.; Rothon, Roger N.; and Bottrill, Martin, 4,764,544, Cl. 523-205.000

Roudeski, Charles A. Touch control lamp socket interior. 4,764,708, Cl. 315-51.000.

Roussel, Albert: *See—*
Courtoy, Jean-Francois; Marchal, Daniel; DuForest, Rene; and Roussel, Albert, 4,764,411, Cl. 428-155.000.

Ruckert, Hans; and Ohlenmacher, Ralf, to Hoechst Aktiengesellschaft. Positive-working radiation-sensitive coating solution and positive photoresist material with monomethyl ether of 1,2-propanediol as solvent. 4,764,450, Cl. 430-191.000.

Rudolf, Peter: *See—*
Hibst, Hartmut; Rudolf, Peter; and Jakusch, Helmut, 4,764,300, Cl. 252-62.580.

Rudolph, Arthur, to BASF Corporation. Drying oil soap for intaglio inks. 4,764,215, Cl. 106-28.000

Ruegg, Hans; and Tschantre , Walter, to Von Roll AG. Burner for use in a rotary drum of a combustion furnace. 4,764,106, Cl. 431-160.000

Ruetgerswerke Aktiengesellschaft: *See—*
Morgenstern, Manfred; and Bertrand, Claus, 4,764,318, Cl. 264-29.500

Ruffino, Louis V.: *See—*
Greanias, Evon C.; Schroeder, Karl F.; and Ruffino, Louis V., 4,764,885, Cl. 364-571.000.

Ruigrok, Jacobus J. M.: *See—*
Enz, Ulrich E.; Sillen, Cornelis W. M. P.; and Ruigrok, Jacobus J. M., 4,764,832, Cl. 360-120.000

Russ, Larry. Radio controlled boat lift. 4,763,592, Cl. 114-45.000.

Russell, Ray E., Jr.: *See—*
Hayworth, Robert G.; Russell, Ray E., Jr.; Fleming, Robert F., III; and Hwang, James G., 4,764,769, Cl. 342-50.000.

Ruston Gas Turbines Limited: *See—*
Cannon, Michael F., 4,763,481, Cl. 60-737.000.

Ryan, Michael J., to United States of America, Energy. Steam trap monitor. 4,764,024, Cl. 374-39.000.

Rydborn, Sten A. Apparatus for thread monitoring in a sewing machine. 4,763,588, Cl. 112-273.000.

Ryden, Hans; and Bjelkhagen, Hans, to Ryden, Hans. Device for determining the displacement of a tooth between two different examinations made on separate occasions. 4,764,012, Cl. 356-347.000.

Ryskamp, John M.: *See—*
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000.

S D S Bioteck K.K.: *See—*
Yamashita, Kazuhiro; and Yoshida, Mamoru, 4,764,206, Cl. 71-94.000

S R I International: *See—*
Heller, Jorge; Penhale, Donald W. H.; and Ng, Steve Y., 4,764,364, Cl. 424-78.000

Sabinski, Horst: *See—*
Romer, Rudolf; Winkelmann, Juergen; and Sabinski, Horst, 4,763,577, Cl. 102-431.000.

Sachs, Bertram: *See—*
Granz, Bernd; Krammer, Peter; and Sachs, Bertram, 4,764,905, Cl. 367-140.000

Sadhir, Rajender K.; and Schoch, Karl F., Jr., to Westinghouse Electric Corp. Conductive high strength composites. 4,764,419, Cl. 428-290.000

Sadler, Richard D.: *See—*
Kulicke, Frederick W., Jr.; Leonhardt, David A.; Newsome, Robert B.; Sadler, Richard D.; and Gillotti, Gary S., 4,763,826, Cl 228-4.500

Sadow, Bernard D., to B.D.S., Luggage Corporation. Convertible carrying handle and shoulder strap for an attache case. 4,763,763, Cl 190-115.000

Sadoway, Donald R., to Massachusetts Institute of Technology. Aluminum reference electrode. 4,764,257, Cl. 204-1.00T.

Saeger, Edwin A., to University of Pittsburgh. Plant propagator. 4,763,442, Cl. 47-63.000

Safetech Pty. Ltd.: *See—*
Cox, Bruce N.; and Wakefield, Lindsay, 4,764,075, Cl. 414-99.000

Saha, Bijay S.: *See—*
Miskinis, Edward T.; and Saha, Bijay S., 4,764,445, Cl. 430-108.000

Sahara, Kunizo; Otsuka, Kanji; and Ishida, Hisashi, to Hitachi, Ltd Semiconductor device and process for producing the same. 4,764,804, Cl. 357-81.000

Saida, Seishiro; Ito, Isao; Ito, Satoshi; and Okubo, Naotake, to Nippon Steel Corporation. Continuous composite coating apparatus for coating strip. 4,763,601, Cl. 118-718.000

Saint-Gobain Vitrage: *See—*
Boutier, Philippe; and Vanaschen, Luc, 4,764,196, Cl. 65-106.000

St. Pierre, Michael R.: *See—*
Forrest, Scott M.; and St. Pierre, Michael R., 4,763,486, Cl 62-175.000

Saito, Akira: *See—*
Izumita, Morishi; Mita, Seiichi; Doi, Nobukazu; Inui, Fuyuki; Saito, Akira; and Kaneko, Mamoru, 4,764,927, Cl. 371-39.000

Saito, Koichi; Fujimura, Yoshihiko; and Inoue, Nanao, to Fuji Xerox Co., Ltd. Thermal-electrostatic ink jet recording apparatus 4,764,777, Cl. 346-140.00R.

Saito, Makoto; and Mizoguchi, Takao, to Kabushiki Kaisha Kobe Seiko Sho. High toughness ceramic composites consisting of ceramic body reinforced with metal fiber. 4,764,488, Cl. 501-95.000

Saito, Yoshinori: *See—*
Iino, Yasuo; and Saito, Yoshinori, 4,764,201, Cl. 71-77.000

Sakabe, Ken-ichi; Kimura, Shingo; and Akashi, Kageyasu, to Asahi Kasei Kogyo Kabushiki Kaisha. Dielectric ceramic compositions and process for producing the same. 4,764,494, Cl. 501-138.000

Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Iwamoto, Yoshinao, to Kokusai Denshin Denwa Co., Ltd. System for measuring delay time variation in optical fiber digital communication system 4,764,980, Cl. 455-601.000

Sakai, Masatoshi; and Nishii, Takeshi, to Matsushita Electric Works, Ltd. Snap switch with a separate leaf spring biasing member 4,764,649, Cl. 200-67.00D

Sakai, Norio: *See—*
Hayashi, Shoichi; Sakai, Norio; and Ishihara, Hidetoshi, 4,763,495, Cl. 68-19.100

Sakakibara, Mitsuaki: *See—*
Nakano, Kunimitsu; Katou, Takeyasu; and Sakakibara, Mitsuaki, 4,764,746, Cl. 337-66.000

Sakamoto, Kiichiro: *See—*
Kimura, Tsutomu; Oshikoshi, Yuji; and Sakamoto, Kiichiro, 4,764,807, Cl. 358-75.000

Sakamoto, Kiyoshi: *See—*
Iwaki, Hiroshi; Sakamoto, Kiyoshi; Inada, Akira; and Kikkawa, Shinichi, 4,764,789, Cl. 355-14.00R
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki, Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100

Sakamoto, Toshinobu, to Sandoz Ltd. Method for preventing the brightening effect of optical brightening agents on textiles. 4,764,176, Cl. 8-442.000

Sakamoto, Toshio; Sato, Kanichi; and Takemura, Yoshiyuki, to Kabushiki Kaisha Komatsu Seisakusho. Microwave process for the fabrication of cores for use in foundry casting. 4,763,720, Cl. 164-525.000

Sakanoue, Kei: *See—*
Ichijima, Seiji; and Sakanoue, Kei, 4,764,454, Cl. 430-361.000

Sakata, Masayasu: *See—*
Honda, Shoichi; Sakata, Masayasu; and Ishida, Yoichi, 4,763,617, Cl. 123-90.580

Sakata, Shinji: *See—*
Hayashi, Makoto; Otaka, Masahiro; Shimizu, Tasuku; and Sakata, Shinji, 4,764,970, Cl. 382-8.000

Sakuma, Toranosuke, to Koito Seisakusho Co., Ltd. Power circuit arrangement for illuminating a vanity mirror built into a visor. 4,764,852, Cl. 362-135.000

Sakurada, Hiroshi: *See—*
Aoyama, Naofumi; Kinugawa, Kiyoshige; Nozaki, Yoshihiro; and Sakurada, Hiroshi, 4,764,766, Cl. 340-784.000

Sakurai, Takayasu, to Kabushiki Kaisha Toshiba. Semiconductor memory device capable of being accessed before completion of data output. 4,764,901, Cl. 365-189.000.

Saliaris, George P. Portable live bait container. 4,763,438, Cl. 43-56.000.

Salomon, Mary F., to Lubrizol Corporation, The. Anti-oxidant compositions. 4,764,299, Cl. 252-48.200

Salomon S.A.: *See—*
Dimier, Jean-Pierre, 4,763,908, Cl. 280-628.000

Salomonsen, Per; and Sonneland, Lars, to Geophysical Company of Norway AS. Interactive contouring of seismic data. 4,764,904, Cl 367-70.000

Salour, Michael M., to United States of America, Navy. Light-induced unidirectional light amplifier. 4,764,731, Cl. 330-4.300

Salour, Michael M., to United States of America, Navy. Light-induced unidirectional light switch. 4,764,739, Cl. 332-751.000.

Sams, Richard A.: *See—*
Reuning, Richard H.; Hui, James; Shepard, Theresa A.; and Sams, Richard A., 4,764,601, Cl. 536-5.000

Sanchez, George, to Clyde Industries Limited. Fluid driven rotary scrub brush having rotary brush mounting adaptor. 4,763,373, Cl 15-29.000

Sander, Craig S., to Advanced Micro Devices, Inc. Seal structure for an integrated circuit 4,764,800, Cl. 357-51.000

VOL 1093 ISS 3 AG 16 1988 UMI

Sanders, Harold F.; Cheng, Yu-Ling; Enscore, David J.; and Libicki, Shari B., to Alza Corporation. Transdermal drug delivery device with dual permeation enhancers. 4,764,379, Cl. 424-449.000

Sandhage, Douglas E. Pivotable coin loading apparatus. 4,764,151, Cl. 453-59.000

Sandoz Ltd.: *See—*
Dore, Jacky; and Pedrazzi, Reinhard, 4,764,175, Cl. 8-437.000.
Gull, Peter, 4,764,517, Cl. 514-288.000.
Heller, Jurg; Kissling, Bruno; Muller, Curt; Robinson, Tibor; and Valenti, Salvatore, 4,764,585, Cl. 528-233.000
Sakamoto, Toshinobu, 4,764,176, Cl. 8-442.000.
Wenger, Roland, 4,764,503, Cl. 514-11.000.

Sandvick, Warren J. Can cleaning device. 4,763,380, Cl. 15-160.000

Sandvik AB: *See—*
Fischer, Udo K.; Hartzell, Erik T.; and Waldenstrom, Mats G., 4,764,255, Cl. 175-329.000.

Sandvik Aktiebolag: *See—*
Aronsson, Sven B.; and Waldenstrom, Mats G., 4,764,434, Cl. 428-565.000.

Sandvik Tobler S.A.: *See—*
Barbieux, Jacques, 4,763,906, Cl. 279-123.000.

Sanko, John R.: *See—*
Saunders, Eugene M.; Hood, Nicholas S.; Sanko, John R.; and Johnson, Virgil J., 4,763,600, Cl. 118-684.000

Sanner, Axel: *See—*
Goertz, Hans-Helmut; Marcinowski, Stefan; and Sanner, Axel, 4,764,467, Cl. 435-182.000.

Sano, Yasuo; Morisue, Yasuhiro; Komiya, Kiyoshi; and Nakamura, Yoshimasa, to Takeda Chemical Industries, Ltd. Cross-linked resin from bis-(2-oxazoline), dicarboxylic acid anhydride and hydroxy carboxylic acid with p catalyst. 4,764,587, Cl. 528-363.000.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Watanabe, Eifu, 4,764,134, Cl. 440-53.000

Santel, Hans-Joachim: *See—*
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000

Santo Industries Co., Ltd.: *See—*
Watabe, Takaji, 4,763,384, Cl. 16-53.000

Santon, Francois C.: *See—*
Angelini, Theophile M.; Canevet, Georges; Foti, Marc S.; and Santon, Francois C., 4,764,957, Cl. 379-433.000.

Sanyo Electric Co., Ltd.: *See—*
Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Miwa, Takashi; Funazo, Yasuo; and Kouno, Kazuhiro, 4,764,706, Cl 313-422.000
Iwaki, Hiroshi; Sakamoto, Kiyoshi; Inada, Akira; and Kikkawa, Shinichi, 4,764,789, Cl. 355-14.00R.

Sanyo-Kokusaku Pulp Company Limited: *See—*
Namba, Hiroaki; and Hishinuma, Minoru, 4,764,571, Cl 525-534.000

Sapparo Breweries Limited: *See—*
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000

Sargent & Greenleaf, Inc.: *See—*
Evans, Walter R.; and Lainhart, Gregory C., 4,763,496, Cl. 70-38.00A.

Sasaki, Goro; and Hayashi, Hideki, to Sumitomo Electric Industries, Ltd. Heterojunction field effect transistor with two-dimensional electron layer. 4,764,796, Cl. 357-16.000.

Sasaki, Hiroshi; Chiba, Tomio; Kido, Mitsuyasu; Sato, Yoshio; and Watanabe, Atsumi, to Hitachi, Ltd. Signal processing apparatus for disc memory devices. 4,764,913, Cl. 369-49.000.

Sasaki, Katsumi, to Tokyo Precision Instruments Co., Ltd. Method and apparatus for controlling and positioning fluid actuator. 4,763,560, Cl 91-364.000

Sasaki, Kenichi; and Iwasa, Yoshio, to Nissan Motor Co., Ltd. Method of controlling supercharge pressure and apparatus for realizing the same. 4,763,477, Cl. 60-602.000.

Sasaki, Makoto; Takeuchi, Kiyohumi; and Takatsu, Haruyoshi, to Dainippon Ink and Chemicals, Inc. Optically active benzoic ester derivatives. 4,764,636, Cl. 560-102.000

Sasaki, Minoru, to Kabushiki Kaisya Advance Kaihatsu Kenkyujo. Iontophoresis device. 4,764,164, Cl. 604-20.000.

Sasaki, Takashi: *See—*
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000

Sasaki, Takeo, to Mitsubishi Denki Kabushiki Kaisha. Device for controlling the idling operation of an internal combustion engine. 4,763,623, Cl. 123-339.000.

Sasaki, Toru: *See—*
Abe, Hideo; Hira, Takaaki; Sasaki, Toru; Kumagai, Keiji; Kataoka, Kunihiko; and Sasaki, Takashi, 4,763,466, Cl. 57-213.000.

Sasol Operations (Proprietary) Limited: *See—*
Meyer, Philippus J., 4,764,184, Cl. 48-77.000.

Sato, Kanichi: *See—*
Sakamoto, Toshio; Sato, Kanichi; and Takemura, Yoshiyuki, 4,763,720, Cl. 164-525.000

Sato, Seizo; and Shikama, Yasuhiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Electroconductive fibrous material. 4,764,779, Cl 343-897.000

Sato, Tomio: *See—*
Hightower, James O., Jr.; Sato, Tomio; Hamner, James W.; and Rector, Carl M., 4,764,319, Cl. 264-3.400.

Sato, Yasuhiro; and Tsuji, Katsuya, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for detecting position of faulty light emitting element in large screen display system. 4,764,728, Cl. 324-512.000

Sato, Yasuji: *See—*
Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, 4,764,954, Cl. 379-390.000

Sato, Yoshio: *See—*
Sasaki, Hiroshi; Chiba, Tomio; Kido, Mitsuyasu; Sato, Yoshio; and Watanabe, Atsumi, 4,764,913, Cl. 369-49.000

Satoh, Masaru: *See—*
Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,764,617, Cl. 546-169.000

Satoh, Takashi: *See—*
Yakuwa, Masahiko; and Satoh, Takashi, 4,764,729, Cl. 324-546.000.

Satomura, Shigeyuki: *See—*
Tani, Toshiyuki; Inazawa, Yoshizumi; Takahashi, Toshihiko; and Satomura, Shigeyuki, 4,764,824, Cl. 360-70.000.

Sauer, Heinz; Porkert, Helmut F.; and Liebsch, Dietrich, to Bayer Aktiengesellschaft. Process for the production of phosgene with simultaneous generation of steam. 4,764,308, Cl. 260-544.00K.

Saunders, Eugene M.; Hood, Nicholas S.; Sanko, John R.; and Johnson, Virgil J. Apparatus for permanently setting creases in pants. 4,763,600, Cl. 118-684.000.

Savary, Pierre: *See—*
Coppolani, Pierre; Henry, Jean-Marc; Savary, Pierre; and Eisele, Jean, 4,763,754, Cl. 181-237.000

Savina, Michael R., to Dow Chemical Company, The. Microcellular foamed or reaction injection molded polyurethane/polyureas employing amine terminated polymers and diamine chain extenders. 4,764,543, Cl. 521-160.000

Sawai, Kiyoshi; Yamamura, Michio; Yamamoto, Shuuichi; and Morokoshi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Scroll compressor with clearance between scroll wraps. 4,764,096, Cl. 418-55.000

Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, to Takasago International Corporation. Ruthenium-phosphine complex. 4,764,629, Cl. 556-23.000.

Scandmec AB: *See—*
Andreasson, Jan, 4,763,632, Cl. 123-510.000

Scarborough, Douglas B.: *See—*
Ashbrook, Clifford L.; and Scarborough, Douglas B., 4,764,283, Cl. 210-695.000

Scarth, Robert D.: *See—*
Burns, Alan W.; Scarth, Robert D.; Mascaro, John V.; Hegenboden, J. W.; and Green, Moses, Jr., 4,764,412, Cl. 428-172.000.

Schafer, Ernst-Dieter: *See—*
Kehl, Georg; and Schafer, Ernst-Dieter, 4,764,048, Cl. 403-11.000.

Schallner, Otto: *See—*
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000.

Schammel, Wayne P., to Amoco Corporation. Process for the production of trimellitic acid. 4,764,639, Cl. 562-416.000.

Scharres, Harry J.; Grist, W. Samuel; and Yarish, John A., to Louis A. Weiss Memorial Hospital. Room humidification system. 4,764,312, Cl. 261-30.000.

Scheck, Georg: *See—*
Furch, Gerhard; Scheck, Georg; Feucht, Fritz; and Storandt, Ralf, 4,763,385, Cl. 16-58.000.

Schedewie, Franz J.: *See—*
Makosch, Gunter; and Schedewie, Franz J., 4,764,014, Cl. 356-351.000

Schefczik, Ernst: *See—*
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; Schefczik, Ernst; and Seybold, Guenther, 4,764,600, Cl. 534-792.000.

Scheiblhofer, Gerhard: *See—*
Muller, Heinz; Buzzi, Reinhard; and Scheiblhofer, Gerhard, 4,764,208, Cl. 75-10.190.

Scheinbach, Saul: *See—*
Pomper, Seymour; Cole, Gary; and Scheinbach, Saul, 4,764,472, Cl. 435-256.000

Schering Aktiengesellschaft: *See—*
Beier, Henning M.; and Elger, Walter, 4,764,513, Cl. 514-179.000.

Schermer, Mack J., to General Scanning, Inc. Tunable resonant device. 4,763,967, Cl. 350-6.300.

Schickaneder, Helmut; and Loser, Roland, to Klinge Pharma GmbH. Erythro-1,2-1-pentanones. 4,764,533, Cl. 514-651.000

Schiffer, Rolf: *See—*
Braschel, Reinhold; Miksch, Manfred; and Schiffer, Rolf, 4,764,882, Cl. 364-508.000.

Schilling, Donald L.; and Manela, David, to SCS Telecom, Inc. Class SM power amplifier. 4,764,734, Cl. 330-251.000.

Schlanger, Albert. Heterogeneous wire and pane provided with such a wire. 4,763,938, Cl. 292-290.000

Schmeda, Rae A.: *See—*
Berry, W. Wes; Schmeda, Rae A.; and Kibler, Holly S., 4,764,276, Cl. 210-264.000

Schmidt, Donald L.; and Urchick, Demetrius, to Dow Chemical Company, The. Perfluorocarbon based polymeric coatings having low critical surface tensions. 4,764,564, Cl. 525-328.200

Schmidt, Hans U.: *See—*
Horn, Peter; and Schmidt, Hans U., 4,764,537, Cl. 521-51.000

Schmidt, Robert R.: *See—*
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000

Schmierer, Roland; Mildenberger, Hilmar; Handte, Reinhard; and Burstell, Helmut, to Hoechst Aktiengesellschaft. 1,2,5-Substituted imidazole compounds and their use as growth regulators. 4,764,624, Cl. 71-92.000

Schmitt, Hans-Georg: *See—*
Kuhle, Engelbert; Paulus, Wilfried; Fischler, Michael; and Schmitt, Hans-Georg, 4,764,433, Cl. 428-541.000.

Schmitt, Thomas T.: *See—*
Willits, William G.; and Schmitt, Thomas T., 4,764,115, Cl. 433-177.000

Schmitz, Charles J.: *See—*
Kowalewski, Rolf E.; and Schmitz, Charles J., 4,764,715, Cl 320-13.000

Schnack, J. Jay; and Wilson, Mark D. Barbecue grill ash collector. 4,763,640, Cl. 126-243.000.

Schneider, Bernardus J. J. A. Stopper for a container such as a bottle, and a pump connectable thereto for extraction of gaseous medium from or pumping in thereof into the container. 4,763,803, Cl. 215-260.000

Schneider, Hans-Dieter: *See—*
Topfl, Werner; Meyer, Willy; and Schneider, Hans-Dieter, 4,764,203, Cl. 71-93.000.

Schneider, Norbert. Diffuser for aeration basin. 4,764,314, Cl. 261-62.000

Schneider, Walter, to GAO Gesellschaft fur Automation und Organisation mbH. Security document. 4,763,927, Cl. 283-70.000

Schneider, William C.; Nagy, Kornel; and Wesselski, Clarence J., to United States of America, National Aeronautics and Space Administration. Preloaded brake disc. 4,763,762, Cl. 188-218.0XL.

Schneller, Joseph W., to National Gypsum Company. Interior corner drywall bead. 4,763,455, Cl. 52-255.000

Schoch, Karl F., Jr.: *See—*
Sadhir, Rajender K.; and Schoch, Karl F., Jr., 4,764,419, Cl. 428-290.000.

Schoen, Martin; Wuellenweber, Horst; and Specht, Herbert, to Mannesmann AG. Roller track monitoring in rolling mills. 4,763,500, Cl 72-14.000

Scholer, Richard A., to Teledyne Industries Inc. Tire inflation system. 4,763,709, Cl. 152-416.000

Schollhammer, Richard: *See—*
Nickolay, Helmut; Igel, Wolfgang; Meissner, Werner; and Schollhammer, Richard, 4,763,467, Cl. 57-261.000

Schott, Jorg: *See—*
Dietrich, Johannes; and Schott, Jorg, 4,763,531, Cl. 73-862.040.

Schrader, Paul G.: *See—*
Martin, Patrick H.; Parker, Theodore L.; and Schrader, Paul G., 4,764,580, Cl. 528-98.000

Schrager, Rodney, to Second Nature Limited. Greeting card. 4,763,427, Cl. 40-124.100.

Schramm, Matthias: *See—*
Franckowiak, Gerhard; Grosser, Rolf; Thomas, Gunter; Schramm, Matthias; and Gross, Rainer, 4,764,516, Cl. 514-256.000

Schrankel, Kenneth R.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000

Schreiber, Peter; and Padovan, Gianni, to Fael S.A. Sheet metal blank for producing the body of cans. 4,763,807, Cl. 220-274.000.

Schroeder, Karl F.: *See—*
Greanias, Evon C.; Schroeder, Karl F.; and Ruffino, Louis V., 4,764,885, Cl. 364-571.000

Schulte, Frank. Floatable dredge hose. 4,764,137, Cl. 441-133.000

Schulz, Wolfgang: *See—*
Ballhause, Lutz; Fehrenbach, Siegfried; Herbst, Kurt; Krimmer, Erwin; and Schulz, Wolfgang, 4,763,635, Cl. 123-520.000.

Schumann, Steven J.: *See—*
Lewallen, Kent D.; and Schumann, Steven J., 4,764,899, Cl 365-189.000

Schundehutte, Karl-Heinz: *See—*
Baasner, Bernd; Klauke, Erich; and Schundehutte, Karl-Heinz, 4,764,611, Cl. 544-334.000.

Schupbach, Steven A.; and Knight, James A., to Aqua-Aerobic Systems, Inc. Method of installing a floatable pump apparatus and an anti-erosion plate in a water treatment basin. 4,764,053, Cl. 405-209.000

Schwartz, Anton J., to Whirlpool Corporation. Grounding of stirrer bushing in a microwave oven. 4,764,651, Cl. 219-10.55F

Schwartzman, Benjamin, to AMP Incorporated. Method for braided coaxial cable preparation. 4,763,410, Cl. 29-828.000.

Schydlo, Franz: *See—*
Klute, Friedrich; Schydlo, Franz; and Weitermann, Hans D., 4,763,505, Cl. 72-238.000.

Scifres, Donald R.; and Worland, D. Philip, to Spectra Diode Laboratories, Inc. Optical system with bright light output. 4,763,975, Cl. 350-96.150.

Scott, Jonathan R.; and Godshall, Fredric A., to Texas A&M University System, The. Process for protecting electrochemical sensors from biofouling in an aquatic environment. 4,763,537, Cl. 73-170.00A.

Scott, Richard C., to Micropore International Limited. Electric radiation heater assemblies. 4,764,663, Cl. 219-448.000

Scripps Clinic and Research Foundation: *See—*
Fields, Patricia I.; Haidaris, Constantine G.; and Heffron, Frederick L., 4,764,370, Cl. 424-93.000

SCS Telecom, Inc.: *See—*
Schilling, Donald L.; and Manela, David, 4,764,734, Cl 330-251.000

Second Nature Limited *See—*
Schrager, Rodney, 4,763,427, Cl. 40-124.100.

Sedlmair, Gerhard, to Marker Deutschland GmbH. Ski brake 4,763,918, Cl. 280-605.000

Seeley, Elwin W.: *See—*
Hildebrand, Verne E.; and Seeley, Elwin W., 4,764,774, Cl 343-719.000

Sego, Marvin A. Illuminated jeweler's loupe. 4,763,986, Cl 350-235.000

Seidman, Gene P.: *See—*
Questel, Roger; and Seidman, Gene P., 4,763,789, Cl. 206-454.000

Seifert, Heinz: *See—*
Jorg, Benno M.; Kurr, Klaus; and Seifert, Heinz, 4,764,152, Cl 464-89.000

Seiler, Erhard: *See—*
Hisgen, Bernd; Kock, Hans-Jakob; Portugall, Michael; Seiler, Erhard; and Blinne, Gerd, 4,764,582, Cl. 528-183.000

Seim, Albert D., II: *See—*
Jefferys, Keith; Marritt, Clifford R.; and Seim, Albert D., II, 4,763,775, Cl. 198-533.000

Sekerheid en Elektronika Laboratoria (Eiendoms) Beperk: *See—*
Van Themaat, Hendrik M. V. L., 4,764,756, Cl. 340-566.000

Seki, Norio: *See—*
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Iwamoto, Yoshinao, 4,764,980, Cl. 455-601.000

Sekihara, Kiyoshi: *See—*
Yoshitomi, Toshihiko; Horiuchi, Hiromi; Yamaguchi, Yukio, Kamoshita, Yasuo; and Sekihara, Kiyoshi, 4,764,448, Cl. 430-120.000

Sekinoo, Koichi; and Harada, Hiroshi, to Alps Electric Co., Ltd Hopper structure. 4,763,812, Cl. 221-203.000

Selden, Gerald P.: *See—*
Wickstead, James C.; and Selden, Gerald P., 4,764,763, Cl 340-709.000

Semenets, Valery I.: *See—*
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Semenets, Valery I.; and Khabetskaya, Valentina A., 4,764,094, Cl. 418-5.000

Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,764,476, Cl. 437-4.000

Seno, Makito: *See—*
Morita, Koichi; Takaichi, Susumu; Fujiwara, Muneyoshi; Seno, Makito; and Misawa, Yoshihiko, 4,763,405, Cl. 29-740.000

Sepulveda, Ralph R.; and Hockey, John A., to Lever Brothers Company. Fabric-softening particles. 4,764,292, Cl. 252-8.800.

Sera Solar Corporation: *See—*
Gibbons, James F.; Cogan, George W.; Gronet, Christian M., and Lewis, Nathan S., 4,764,439, Cl. 429-111.000

Serturini, Giuseppe, to Fimtessile Fabbrica Italiana Macchinario Tessile S.p.A. Mechanism to control the oscillations of the heald frame connecting rods in a rotary dobby. 4,763,697, Cl. 139-76.000

Seufer, Kenneth C., Jr.: *See—*
Brown, Keith E.; Seufer, Kenneth C., Jr.; and Buth, Jimmy D., 4,764,280, Cl. 210-662.000

Seybold, Guenther: *See—*
Bergmann, Udo; Dix, Johannes P.; Hansen, Guenter; Schefczik, Ernst; and Seybold, Guenther, 4,764,600, Cl. 534-792.000

Seyler, Jay K.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,764,589, Cl 530-307.000
Orlowski, Ronald C.; and Seyler, Jay K., 4,764,590, Cl 530-307.000
Orlowski, Ronald C.; Seyler, Jay K.; and Flanigan, Everett, 4,764,591, Cl. 530-307.000

Seymour Foods, Inc.: *See—*
Willsey, Charles H., 4,764,387, Cl. 426-299.000

SGS Microelettronica S.p.A.: *See—*
Bellinvia, Gianpietro; and Faini, Giuseppe, 4,764,692, Cl. 307-451.000

Shaddock, Roland E. Method of manufacturing jet nozzles. 4,764,180, Cl. 29-157.00C

Shaffner, Lorn O. Line fastening unit. 4,763,595, Cl. 114-218.000

Shane, Robert M.: *See—*
Estkowski, Michael H.; Estkowski, Christopher G.; and Shane, Robert M., 4,763,383, Cl. 16-18.00R

Shankar, Srinivasan; and Dardi, Louis E., to Howmet Corporation Alloys for high temperature applications. 4,764,225, Cl. 148-404.000.

Shannon, Terrence W.: *See—*
Bates, Cecil P.; and Shannon, Terrence W., 4,764,210, Cl 75-10.660

Shapiro, Arthur J.: *See—*
Walker, Kenneth A.; Adie, Richard A.; and Shapiro, Arthur J., 4,764,288, Cl. 210-793.000

Sharma, Vasant K.: *See—*
Ayyangar, Nagaraj R.; Choudhary, Anil R.; Kalkote, Uttam R and Sharma, Vasant K., 4,764,615, Cl. 546-44.000

Sharp Kabushiki Kaisha: *See—*
Kotani, Matahira; Hayashi, Motohiko; Yasuda, Shigeari; and Oi, Yuzoh, 4,764,951, Cl. 379-100.000

VOL 1093 ISS 3 AG 16 1988 UMI

Matsumoto, Mitsuhiro; Matsui, Sadayoshi; Taneya, Mototaka; and Kawanishi, Hidenori, 4,764,937, Cl. 372-50.000.
Nukii, Takashi; Nakabu, Shigeo; Iwasaki, Masaru; and Awane, Katunobu, 4,764,413, Cl. 428-192.000.
Ohta, Kenji; Hirokane, Junji; Inui, Tetsuya; Takahashi, Akira; and Katayama, Hiroyuki, 4,764,441, Cl. 430-5.000.
Taneya, Mototaka; Matsumoto, Mitsuhiro; Kawanishi, Hidenori; and Matsui, Sadayoshi, 4,764,936, Cl. 372-50.000.
Wada, Yoshihiro; Fujii, Ryoichi; and Suzuki, Takashi, 4,764,027, Cl. 374-208.000.

Shaw, Graham C.: *See*—
Manser, Gerald E.; Shaw, Graham C.; and Shaw, Graham C., III, 4,764,586, Cl. 528-362.000

Shaw, Graham C., III: *See*—
Manser, Gerald E.; Shaw, Graham C.; and Shaw, Graham C., III, 4,764,586, Cl. 528-362.000.

Shaw, John E. A.; and Sibbald, Alastair, to Thorn Emi plc. Chemical-sensitive semiconductor device. 4,764,797, Cl. 357-25.000

Shaw, Ronald; Jackson, Leonard; and Headley, Anthony, to Northern Engineering Industries plc. Electrical connectors. 4,764,123, Cl. 439-148.000

Shell Mining Company: *See*—
Hartwigsen, Wesley D.; Johnson, Alan D.; Beckham, Jeffrey C.; and White, Kenneth L., 4,764,221, Cl. 134-8.000.

Shell Oil Company: *See*—
Bean, Arthur R., Jr., 4,764,572, Cl. 526-87.000
Bijwaard, Henricus M. J.; and Janssen, Martinus M. P., 4,764,265, Cl. 208-18.000
Chou, Charles C.; and Gentempo, Joseph J., 4,764,278, Cl. 210-634.000.

Shene, William R.: *See*—
Brisson, Alfred G.; Nowacki, Christopher; Shene, William R.; Burdick, Thomas H.; and Dela-Cruz, Exequiel, 4,763,652, Cl. 128-328.000

Shepard, Theresa A.: *See*—
Reuning, Richard H.; Hui, James; Shepard, Theresa A.; and Sams, Richard A., 4,764,601, Cl. 536-5.000

Shepherd Products U.S., Inc.: *See*—
Estkowski, Michael H.; Estkowski, Christopher G.; and Shane, Robert M., 4,763,383, Cl. 16-18.00R

Sherif, Fawzy G.; and Via, Francis A., to Akzo America Inc. Process for producing finely divided powdery metal oxide compositions. 4,764,357, Cl. 423-338.000

Sherry, William M., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Soldering of electronic components 4,763,829, Cl. 228-124.000

Shibayama, Takashi; and Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Hydraulic control system for automatic transmission. 4,763,545, Cl 74-868.000

Shibuya, Taro: *See*—
Kimura, Kazuo; and Shibuya, Taro, 4,763,997, Cl. 350-410.000

Shibuya, Toshiteru, to NEC Corporation. Instruction fpefetching device with prediction of a branch destination for each branch count instruction. 4,764,861, Cl. 364-200.000

Shuff, Victor, to Timex Corporation. Binary display device to aid switch setting. 4,764,765, Cl. 340-756.000

Shifrin, Gordon A., to Hughes Aircraft Company. Means for extending spectral response of spectral analyzing direction indicating apparatus 4,764,009, Cl. 356-73.000.

Shigaki, Seiichiro; Matsuoka, Minoru; and Ookoshi, Osamu, to NEC Corporation. Slip control in a plesiochronous buffer circuit to reduce distortion of two kinds of data signals. 4,764,942, Cl. 375-118.000.

Shigemitsu, Hideyuki; Hongo, Masafumi; and Toyooka, Yutaka, to Mitsubishi Rayon Company Limited. Thermoplastic resin composition. 4,764,555, Cl. 525-67.000.

Shikama, Yasuhiro: *See*—
Sato, Seizo; and Shikama, Yasuhiro, 4,764,779, Cl. 343-897.000

Shimada, Hiroshi: *See*—
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki; Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100.

Shimizu, Hiroshi: *See*—
Yoshida, Kazunaga; Shimizu, Hiroshi; and Watari, Masao, 4,764,972, Cl. 382-13.000

Shimizu, Tasuku: *See*—
Hayashi, Makoto; Otaka, Masahiro; Shimizu, Tasuku; and Sakata, Shinji, 4,764,970, Cl. 382-8.000.

Shimoda, Hideaki: *See*—
Fuse, Genshu; Tateiwa, Kenji; Nakao, Ichiro; and Shimoda, Hideaki, 4,764,483, Cl. 437-67.000

Shin-Etsu Chemical Co., Ltd.: *See*—
Inoue, Yoshio; and Arai, Masatoshi, 4,764,577, Cl. 525-409.000.
Ogawa, Masahiko; and Hara, Yasuaki, 4,764,576, Cl. 524-265.000.

Shin, Yoichi; Wada, Isao; Kido, Junichiro; and Eimaeda, Shigeru, to Oji Paper Co., Ltd. Process for pulping lignocellulosic material with a preoxidized alkaline sulfide pulping liquor containing a cyclic organic compound. 4,764,252, Cl. 162-72.000.

Shinoda, Kazunori: *See*—
Hara, Tsutomu; Ooi, Yoshiharu; Shinoda, Kazunori; and Ichie, Koji, 4,763,996, Cl. 350-387.000

Shinohara, Hideo: *See*—
Naito, Sadao; Shiono, Katsumi; Shinohara, Hideo; Makino, Yoshihiro; and Ishii, Toshitsugu, 4,763,514, Cl. 73-19.000

Shinohara, Terumi: *See*—
Narui, Hiroshi; Shinohara, Terumi; Gotoh, Demichiro; and Yamamoto, Shinya, 4,764,496, Cl. 503-227.000.

Shinonaga, Hideo: *See*—
Mitsuno, Tatsuyuki; Shinonaga, Hideo; and Daimon, Akio, 4,764,546, Cl. 523-213.000

Shinozaki, Haruhiko: *See*—
Masaki, Mitsuo; Shinozaki, Haruhiko; Satoh, Masaru; Moritoh, Naoya; Hashimoto, Koichi; and Kamishiro, Toshiro, 4,764,617, Cl. 546-169.000

Shioiri, Shigeo; and Otomine, Yuzo, to Somar Corporation. Tape splicing apparatus. 4,764,243, Cl. 156-505.000.

Shiono, Katsumi: *See*—
Naito, Sadao; Shiono, Katsumi; Shinohara, Hideo; Makino, Yoshihiro; and Ishii, Toshitsugu, 4,763,514, Cl. 73-19.000.

Shirai, Hitoshi: *See*—
Torikoshi, Yuichi; Shirai, Hitoshi; Iwasa, Kazuyuki; Miyazaki, Hiroaki; and Yamazaki, Yasuo, 4,764,784, Cl. 354-195.120.

Shiseido Company Ltd.: *See*—
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, 4,764,505, Cl. 514-35.000

Shishkin, Viktor V.; Kryazhevskikh, Nikolai F.; Oleinik, Viktor N.; Shlatgauer, Boris I.; and Medunitsa, Vladimir L., to Trest "Juzhvodoprovod" . Method of coating the internal surface of a pipeline with a cement-sand mortar and a device for effecting same. 4,764,237, Cl. 156-294.000

Shlatgauer, Boris I.: *See*—
Shishkin, Viktor V.; Kryazhevskikh, Nikolai F.; Oleinik, Viktor N.; Shlatgauer, Boris I.; and Medunitsa, Vladimir L., 4,764,237, Cl. 156-294.000

Shoher, Itzhak; and Whiteman, Aharon E. Prefabricated pontic for a dental bridge. 4,764,116, Cl. 433-180.000.

Shore, John W.: *See*—
Barnes, Vernon B.; Wilkinson, Donald R.; Shore, John W.; and Huff, Ronnie G., 4,763,673, Cl. 131-96.000.

Showalter, Stephen D.: *See*—
Hampar, Berge; Showalter, Stephen D.; and Zweig, Martin, 4,764,459, Cl. 435-5.000

Shrivastava, Ritu: *See*—
Bhattacherjee, Arya; Koutny, William; Shrivastava, Ritu; and Rodgers, Thurman J., 4,764,248, Cl. 156-643.000.

Shum, Wilfred P., to ARCO Chemical Company. Asymmetric epoxidation of allylic alcohols. 4,764,628, Cl. 549-529.000

Sibbald, Alastair: *See*—
Shaw, John E. A.; and Sibbald, Alastair, 4,764,797, Cl. 357-25.000

Siebert, Robert M., to Conoco Inc. Method and apparatus to determine permeability of rock formations adjacent a borehole. 4,764,903, Cl. 367-29.000

Siegel, William J.: *See*—
Brown, Robert G.; and Siegel, William J., 4,764,049, Cl. 403-24.000.

Siemens Aktiengesellschaft: *See*—
Blaschke, Felix; and Reng, Leonhard, 4,764,712, Cl. 318-778.000.
Dieter, Georg; and Hieninger, Johann, 4,764,922, Cl. 370-123.000.
Granz, Bernd; Krammer, Peter; and Sachs, Bertram, 4,764,905, Cl. 367-140.000
Grewal, Virinder, 4,764,245, Cl. 156-643.000.
Haertl, Christof; and Nassler, Peter, 4,763,752, Cl. 181-130.000
Heywang, Walter, 4,763,979, Cl. 350-96.200.
Lekholm, Anders, 4,763,646, Cl. 128-419.0PG.
Mugrauer, Hubert; and Haass, Guenther, 4,764,776, Cl. 346-76.00R.
Powilleit, Siegfried, 4,763,402, Cl. 29-596.000.
Rothkegel, Bernhard; and Haufe, Wolfgang, 4,764,227, Cl. 148-431.000
Wirtzfeld, Alexander; Stangl, Karl; and Heinze, Roland, 4,763,655, Cl. 128-419.0PG.

Siemens-Pacesetter, Inc.: *See*—
Stutz, William H., Jr., 4,764,132, Cl. 439-810.000

Sillen, Cornelis W. M. P.: *See*—
Enz, Ulrich E.; Sillen, Cornelis W. M. P.; and Ruigrok, Jacobus J. M., 4,764,832, Cl. 360-120.000

Sillion, Bernard: *See*—
Malinge, Jean; Rabilloud, Guy; and Sillion, Bernard, 4,764,578, Cl. 528-27.000

Silver, Arnold H.: *See*—
Wilcox, Jaroslava Z.; Jansen, Michael; Silver, Arnold H.; Yang, Jane J. J.; and Simmons, William W., 4,764,935, Cl. 372-50.000

Silver, Gary L., to United States of America, Energy. Method for preparing hydride configurations and reactive metal surfaces. 4,764,228, Cl. 148-6.14R.

Silver Line Building Products Corporation: *See*—
Silverman, Arthur, 4,763,445, Cl. 49-176.000.

Silverman, Arthur, to Silver Line Building Products Corporation. Combined slide guide and pivot pin for sash window. 4,763,445, Cl. 49-176.000

Silverman, Michael W., to Silverman, Michael W. Threaded locking coupler. 4,763,951, Cl. 297-354.000.

Silverthorn, Lee J., III; Gaudette, Philip A.; Holt, Arthur W.; Nacht, George G.; and Warnar, Robert B. J., to United States of America, Commerce. Hardware interpreter for finite state automata. 4,764,863, Cl 364-200.000

Simeone, Joseph M., Jr.: *See*—
Simeone, Joseph M., Sr.; and Simeone, Joseph M., Jr., 4,764,240, Cl. 156-303.000.

Simeone, Joseph M., Sr.; and Simeone, Joseph M., Jr. Apparatus and method for automatically forming unitary bonded board strutures. 4,764,240, Cl. 156-303.000

Simmons, William W.: *See*—
Wilcox, Jaroslava Z.; Jansen, Michael; Silver, Arnold H.; Yang, Jane J. J.; and Simmons, William W., 4,764,935, Cl. 372-50.000

Simon, Guy. Self stripping connection device. 4,764,124, Cl. 439-391.000

Simons, Michael J.; Willis, Roland G.; and Harvey, Donald M., to Eastman Kodak Company. Transfer element with mosaic pattern of heat transferable dyes. 4,764,444, Cl. 430-47.000.

Simonson, Edwin J.: *See*—
Allaire, Roger A.; Pardue, William F., Jr.; and Simonson, Edwin J., 4,764,195, Cl. 65-18.400

Simpson, John P., to International Business Machines Corporation. Surface mounted array strain relief device. 4,764,848, Cl. 361-408.000

Sims, Burnie: *See*—
Kaminski, Donald R.; and Sims, Burnie, 4,764,019, Cl. 366-15.000

Sinchok, John D., to Menasha Corporation. Circuit board holder. 4,763,782, Cl. 206-334.000

Sinchok, John D., to Keystone Metal Products Company. Free standing base. 4,763,866, Cl. 248-188.700.

Singer Company, The: *See*—
Sumerau, William R., 4,763,382, Cl. 15-323.000

Singer, Debra L.: *See*—
Blackburn, William P.; and Singer, Debra L., 4,764,430, Cl 428-413.000

Sirakawa, Yuji: *See*—
Hidaka, Tomoharu; and Sirakawa, Yuji, 4,763,700, Cl. 140-93.200.

Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, to Bayer Aktiengesellschaft. Process for activating substrate surfaces for electroless metallization. 4,764,401, Cl. 427-304.000

Sirrenberg, Wilhelm; Braden, Rudolph; Ziemann, Heinz; Zoebelein, Gerhard; and Pfluger, Wolfgang, to Bayer Aktiengesellschaft. Novel substituted furazane. 4,764,524, Cl. 514-364.000

Sittnick, Ralph A., Jr.; and Mathers, Roy A. Electromagnetic door lock system. 4,763,937, Cl. 292-251.500.

Skala, George F., to Environment/One Corporation. Incipient fire detector II. 4,764,758, Cl. 340-627.000.

Skeen, Thomas R.: *See*—
Billington, Charles J., III; Oyama, Richard K.; Jepson, Kenneth H.; and Skeen, Thomas R., 4,763,794, Cl. 209-625.000

SKF GmbH: *See*—
Brandenstein, Manfred; Edelmann, Ludwig; Friedrich, Wolfgang; Haas, Roland; Herrmann, Gerhard; and Hans, Rudiger, 4,764,157, Cl. 474-135.000

SKW Trostberg AG: *See*—
Meichsner, Walter; Gmohling, Werner; Tutte, Manfred; and Peters, Karl-Heinz, 4,764,211, Cl. 75-58.000

Sladowski, Krzystjan P.: *See*—
Wood, John C.; and Sladowski, Krzystjan P., 4,764,028, Cl. 383-20.000

Slate, Mark J.: *See*—
Poehlmann, Paul W.; Slate, Mark J.; Potts, Stephen M.; and Cunningham, Charles B., 4,763,957, Cl. 301-105.00B

Slavin, Keith R., to Tektronix, Inc. Locking scales to waveform displays. 4,764,721, Cl. 324-121.00R

Slawinski, Frank E.; and Frantz, William L., to Atlas Powder Company. Well stimulation process and low velocity explosive formulation. 4,764,231, Cl. 149-104.000

Sloan, John L.: *See*—
Rogakos, Deno J.; Licata, Joseph P.; and Sloan, John L., 4,763,936, Cl. 292-201.000

Smart, Gerald J.: *See*—
Estes, Marvin F.; and Smart, Gerald J., 4,764,914, Cl. 369-58.000

Smith, Donald L. Oscillating guide roll. 4,763,852, Cl. 242-67.10R.

Smith, Edward J.: *See*—
Macek, Andrew M.; Kozak, Mark W.; and Smith, Edward J., 4,763,668, Cl. 128-751.000.

Smith, Gary L.: *See*—
Brown, Ernie D.; Nelson, Karl M.; and Smith, Gary L., 4,764,316, Cl. 264-3.100

Smith International, Inc.: *See*—
McPherson, James N., 4,764,036, Cl. 384-276.000

Smith, James, to Smith, James; and Belisle, Joseph Eugene. Animal trap. 4,763,439, Cl. 43-61.000.

Smith, John W.; and Keil, Gary D., to Holcroft/Loftus Inc. Rotary hearth multi-chamber, multi-purpose furnace system. 4,763,880, Cl 266-87.000

Smith Kline & French Laboratories Limited: *See*—
Cooper, David G.; Miles, Peter D.; and Young, Rodney C., 4,764,519, Cl. 514-335.000

Smith, Richard H., to General Motors Corporation. Wrapped spring, overrunning clutch assembly. 4,763,764, Cl. 192-41.00S.

Smith, Robert: *See*—
Clements, Reginald M.; Pitt, Philip L.; Ridley, John D.; Smith, Robert; and Topham, David, 4,764,906, Cl. 367-142.000

Smith, Terry E.; Cottrell, Ian W.; and Pelesko, John D., to GAF Corporation. Insoluble vinyl lactam clarifiers. 4,764,588, Cl. 528-481.000

Smith, William F. Solar energy absorber. 4,763,641, Cl. 126-444.000

SmithKline Beckman Corporation: *See*—
Hill, David T.; and Johnson, Randall K., 4,764,509, Cl. 514-102.000

Smits, Donald M.; Daley, Patrick J.; and Buckley, Mary E., to Kendall Company, The. Method of applying adhesive. 4,764,234, Cl. 156-164.000

SMS-Schloemann-Siemag Aktiengesellschaft *See*—
Osenberg, Kurt A.; and Kortenbusch, Michael, 4,763,484, Cl 62-99.000

Sniderman, Albert, to Unisys Corporation. Automatic vacuum gripper 4,763,941, Cl. 294-64.100

Snipes, Wallace C.: *See*—
Keith, Alec D.; and Snipes, Wallace C., 4,764,378, Cl. 424-435.000

Snyder, Earl, Jr.: *See*—
Feddersen, Frederick J.; and Snyder, Earl, Jr., 4,763,778, Cl 198-803.010

Snyder, Robert H., to Uniroyal Goodrich Tire Company, The Disposal of toxic and polymeric wastes. 4,764,282, Cl. 210-690.000

Soares, George G., Jr.: *See*—
Herrnstadt, Corinna; and Soares, George G., Jr., 4,764,372, Cl. 424-93.000

Societe Nationale Industrielle et Aerospatiale: *See*—
Vauvelle, Bernard; and Chancholle, Hubert, 4,763,860, Cl. 244-122.00R

Societe Nevrpic: *See*—
Pham-Phu, Ngo, 4,764,087, Cl. 415-142.000

Soffer, Bernard H.: *See*—
Grinberg, Jan; Nudd, Graham R.; and Soffer, Bernard H., 4,764,891, Cl. 364-807.000

Solar, Carl M., to A. C. Nielsen Company. Monitoring system and method for determining channel reception of video receivers 4,764,808, Cl. 358-84.000

Soltau, Gerd. Excavator and conveyor of an underground pipeline jacking apparatus. 4,763,954, Cl. 299-56.000

Solutech, Inc.: *See*—
Jones, Jeffrey S., 4,763,658, Cl. 128-635.000

Somar Corporation: *See*—
Shioiri, Shigeo; and Otomine, Yuzo, 4,764,243, Cl. 156-505.000

Someshwar, Ashok H.: *See*—
Holden, Kirk N.; and Someshwar, Ashok H., 4,764,888, Cl 364-788.000

Sommer, F. Graham; and Stern, Roger A., to Stanford University Filtered ultrasonic wave method and apparatus for detecting diseased tissue. 4,763,661, Cl. 128-660.000

Sonnack, Gerhard: *See*—
Eisenblatter, Axel; Sonnack, Gerhard; and Horning, Gunter, 4,764,847, Cl. 361-388.000

Sonneland, Lars: *See*—
Salomonsen, Per; and Sonneland, Lars, 4,764,904, Cl. 367-70.000

Sonobond Ultrasonics, Inc.: *See*—
Andersen, George L.; and Pezzopane, Claude A., 4,764,662, Cl. 219-391.000

Sony Corporation: *See*—
Aoki, Reiko; Nobonmoto, Yoshie; Funatsu, Yoko; and Konno, Shinichi, 4,764,821, Cl. 360-33.100
Matsuda, Osamu, 4,764,931, Cl. 372-29.000
Tanaka, Yutaka; and Matsunaga, Osamu, 4,764,964, Cl. 358-31.000
Tani, Toshiyuki; Inazawa, Yoshizumi; Takahashi, Toshihiko; and Satomura, Shigeyuki, 4,764,824, Cl. 360-70.000

Sorel, Alain; and Vernet, Francis, to U.S. Philips Corporation. Data bus connector. 4,764,122, Cl. 439-66.000

Southco, Inc.: *See*—
Bisbing, Robert H., 4,763,935, Cl. 292-66.000

Southwest Research Institute: *See*—
Anderson, Eugene L.; Harlowe, William W., Jr.; Adams, Leon M.; and Marshall, Mary C., 4,764,317, Cl. 264-4.000

Sowerby, Roger L.; and DiBiase, Stephen A., to Lubrizol Corporation, The. Protic solvent in a dehydrohalogenation process, the product obtained therefrom and lubricant compositions containing same 4,764,297, Cl. 252-45.000

Spani, Wayne, to Fisher Scientific Company. Ultrasonic air-in-line detector. 4,764,166, Cl. 604-65.000

Sparks, Robert L. Heat pump controller. 4,763,485, Cl. 62-160.000

Spease, Arthur L., to Teleflex Incorporated. Remote control assembly including side snap in. 4,763,541, Cl. 74-501.00R

Specht, Herbert: *See*—
Schoen, Martin; Wuellenweber, Horst; and Specht, Herbert, 4,763,500, Cl. 72-14.000

Spector, Donald. Transformable pillow. 4,763,369, Cl. 5-434.000

Spectra Diode Laboratories, Inc.: *See*—
Scifres, Donald R.; and Worland, D. Philip, 4,763,975, Cl 350-96.150

Speed Queen Company: *See*—
Grennan, Richard L., 4,763,425, Cl. 34-48.000

Spektor, Semyon; and Ranger, Michael H., to NCR Corporation Intensity controller for an aperture card plotter. 4,764,778, Cl 346-160.000

Spencer, William P. Multi-purpose deck panels. 4,763,598, Cl 114-361.000

SPIDEM S.r.l.: *See*—
Paoletti, Luciano, 4,763,566, Cl. 99-302.00P

Spring Creek Institute, Inc.: *See*—
Dunseath, W. J. Ross, Jr., 4,763,659, Cl. 128-640.000

SPS Technologies, Inc : *See*—
Crispell, Corey, 4,764,068, Cl. 411-393.000

Spurlock, Edwin C., Jr.; and O'Neill, William M., to Pene-Tech, Inc Maintenance inspection submersible transport apparatus. 4,763,376, Cl. 15-104.310

Spurney, Richard W., to Bicron Corporation Well logging detector 4,764,677, Cl. 250-361.00R

Sredni, Benjamin: *See*—
Albeck, Michael; and Sredni, Benjamin, 4,764,461, Cl. 435-68.000

VOL 1093 ISS 3 AG 16 1988 UMI

Srivastava, Gopal K., to Zenith Electronics Corporation. Horizontal phase locked loop system. 4,764,810, Cl. 358-148.000.
Srivastava, Prem C.; and Knapp, Furn F., Jr., to United States of America, Energy. Precursors to radiopharmaceutical agents for tissue imaging. 4,764,598, Cl. 534-551.000
SSMC Inc.: *See—*
Laidig, Manfred R.; and Garron, Stephen A., 4,763,589, Cl. 112-278.000
Staerzl, Richard E.; Radtke, Norman H.; and Hummel, Leonard S., to Brunswick Corporation. Cold start fuel enrichment circuit. 4,763,625, Cl. 123-435.000
Staerzl, Richard E., to Brunswick Corporation. Feedback fuel metering control system. 4,763,626, Cl. 123-438.000
Staffa, Karl H.: *See—*
Kreuzer, Walter; Bubeck, Kurt; and Staffa, Karl H., 4,763,727, Cl 165-171.000
Stafford, Rodney L.: *See—*
Fry, Steven A.; and Stafford, Rodney L., 4,763,944, Cl. 296-50.000.
Stahlecker, Fritz; and Stahlecker, Hans. Open-end rotor spinning arrangement. 4,763,469, Cl. 57-407.000.
Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, 4,763,469, Cl. 57-407.000.
Standard Elektrik Lorenz AG: *See—*
Becker, Klaus, 4,764,772, Cl. 342-408.000
Standard Elektrik Lorenz Aktiengesellschaft: *See—*
Kreitmeier, Leonhard, 4,764,968, Cl. 371-204.000
Lehner, Heinz, 4,764,705, Cl. 313-440.000
Standard Microsystems Corporation: *See—*
Mo, Roy, 4,764,484, Cl. 437-203.000
Standard Oil Company, The: *See—*
Cobb, Wesley N., 4,763,525, Cl. 73-599.000
Standard-Thomson Corporation: *See—*
Duprez, Wayne R., 4,763,834, Cl. 236-345.000
Stanek, Jaroslaw: *See—*
Alder, Alex; Stanek, Jaroslaw; and Bellus, Daniel, 4,764,640, Cl 562-457.000
Stanford University: *See—*
Goffinet, Don R., 4,763,671, Cl. 128-786.000
Kozlovsky, William J.; Yee, Tso; and Byer, Robert L., 4,764,933, Cl. 372-40.000
Sommer, F. Graham; and Stern, Roger A., 4,763,661, Cl. 128-660.000
Stangl, Karl: *See—*
Wirtzfeld, Alexander; Stangl, Karl; and Heinze, Roland, 4,763,655, Cl. 128-419.0PG
Stapel, Melvin G.: *See—*
Engler, Edgar D.; Weber, Gus J.; Stapel, Melvin G.; Mlaker, John J.; and Hanson, Leonard, 4,763,800, Cl. 212-195.000
Starcevic, Mihailo: *See—*
Fust, Armin; and Starcevic, Mihailo, 4,764,034, Cl. 384-100.000
Staten, Gilbert S.: *See—*
Weigel, Leland O.; and Staten, Gilbert S., 4,764,609, Cl 544-250.000
STC PLC: *See—*
Waters, Derek B., 4,764,918, Cl. 370-14.000.
Stedman, Donald R.; and Frankowiak, Robert M., to Foamade Industries, Inc. Foam plastic baffle for fluid containers. 4,764,408, Cl. 428-71.000
Stefano, Alfonso D.; and Farber, Gerald A. Removable hygienic hand pump adapter for dispensing liquids. 4,763,818, Cl. 222-209.000.
Steffan, Guido, to Bayer Aktiengesellschaft. Preparation of 2-chlorobenzthiazole. 4,764,621, Cl. 548-152.000
Stehle, Wolfgang; and Fuchs, Dieter, to Maschinenfabrik Bezner GmbH & Co. KG. Installation for sorting articles by weight and shape. 4,763,793, Cl. 209-616.000.
Steiner, Helmut, to Bergische Achsenfabrik Fr. Kotz & Sohne. Compound axle assembly. 4,763,921, Cl. 280-682.000
Steinhauer, Hans-Juergen; and Martens, Walter, to MBB GmbH. Flap drive system for air foils. 4,763,862, Cl. 244-215.000
Steinmetz, Gunter, to Messerschmitt-Bolkow-Blohm GmbH. Method for controlling a magnetic suspension vehicle. 4,763,578, Cl. 104-284.000
Stellwag, Edmund J.: *See—*
Durham, Donald R.; Stellwag, Edmund J.; and McNamee, Clyde G., 4,764,470, Cl. 435-221.000
Steltenkamp, Robert J.; and Camara, Michael A., to Colgate-Palmolive Company. Process for treating laundry with multiamide antistatic agents. 4,764,291, Cl. 252-8.800
Stemcor Corporation: *See—*
Ondris, Miroslav; and Hichler, Marty A., 4,764,261, Cl. 204-37.100
Stendel, Wilhelm: *See—*
Bockmann, Klaus; Jager, Gerhard; Brandes, Wilhelm; Hanssler, Gerd; Reinecke, Paul; and Stendel, Wilhelm, 4,764,526, Cl 514-383.000
Naik, Arundev H.; Stendel, Wilhelm; and Voege, Herbert, 4,764,529, Cl. 514-531.000
Stern, Roger A.: *See—*
Sommer, F. Graham; and Stern, Roger A., 4,763,661, Cl 128-660.000
Sterns, William G., to ITT Gilfillan, a division of ITT Corporation. Antenna feed network employing over-coupled branch line couplers. 4,764,771, Cl. 342-373.000
Stetter, Jorg: *See—*
Gehring, Reinhold; Schallner, Otto; Stetter, Jorg; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; and Lurssen, Klaus, 4,764,202, Cl. 71-92.000
Stettler, Robert H. *See—*
Hurley, James E.; and Stettler, Robert H., 4,763,638, Cl. 126-31.00A.
Stevens, Walter J. Automatically functioning emergency fuel supply system for internal combustion engine. 4,763,621, Cl. 123-198.00D.
Stevenson, Paul E.: *See—*
Alvi, Nadeem S.; and Stevenson, Paul E., 4,764,481, Cl. 437-56.000.
Stewart, John R.: *See—*
Carrotte, Frederick H.; Stewart, John R.; and Jacobsson, Kurt, 4,764,875, Cl. 364-470.000
Stewart, Nevin J., to British Petroleum Company p.l.c., The. Preparation of surfactants. 4,764,307, Cl. 260-512.00R.
Steyert, William A.: *See—*
Longsworth, Ralph C.; and Steyert, William A., 4,763,725, Cl. 165-147.000
Stoll, Mark S., to Liberty Diversified Industries. Tote carrier with integrally formed handle straps. 4,763,833, Cl. 229-52.00B.
Stone Container Corporation: *See—*
Gregg, Harold E., 4,763,947, Cl. 296-97.00R.
Stonich, Richard A.: *See—*
Krietemeier, Rickie F.; Strom, Jeffrey A.; and Stonich, Richard A., 4,763,928, Cl. 283-70.000.
Storandt, Ralf: *See—*
Furch, Gerhard; Scheck, Georg; Feucht, Fritz; and Storandt, Ralf, 4,763,385, Cl. 16-58.000
Stork Research B.V.: *See—*
Matkan, Josef, 4,764,443, Cl. 430-45.000
Stover, William H.: *See—*
Habeeb, Jacob J.; and Stover, William H., 4,764,294, Cl. 252-32.70E.
Strangman, Thomas E., to Allied-Signal Inc. Abradable strain-tolerant ceramic coated turbine shroud. 4,764,089, Cl. 415-174.000
Strian, Friedrich; Hoelzl, Rupert; Galfe, Gunther; Lauterbacher, Stefan; and Lehmann, Wilhelm, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Method and apparatus for determining the thermal sensitivity of the human peripheral nervous system. 4,763,666, Cl. 128-742.000
Strid, Eric W., to Cascade Microtech, Inc. Wafer probe. 4,764,723, Cl. 324-158.00P.
Stritzke, Bernard G., to Microdot Inc. Valve stem oil deflector. 4,763,618, Cl. 123-188.00P
Strobl, Georg, to Johnson Electric Industrial Manufactory Ltd. Armature including integral cooling means. 4,764,700, Cl. 310-236.000.
Strock, Dennis J., to Amoco Corporation. Underground tank assembly with internal bladder. 4,763,805, Cl. 220-85.00A.
Strom, Jeffrey A.: *See—*
Krietemeier, Rickie F.; Strom, Jeffrey A.; and Stonich, Richard A., 4,763,928, Cl. 283-70.000
Strong, Llyn. Modular jewelry. 4,763,489, Cl. 63-4.000.
Stuber, Fred A.; and Temme, George H., to Dow Chemical Company, The. Process for the production of organic polyisocyanate-based molded polymers. 4,764,330, Cl. 264-300.000.
Studt, William L.: *See—*
Molino, Bruce F.; Campbell, Henry F.; Kuhla, Donald E.; and Studt, William L., 4,764,512, Cl. 514-183.000.
Stumpp, Gerhard: *See—*
Fehlmann, Wolfgang; Hofer, Gerald; Junger, Dieter; and Stumpp, Gerhard, 4,763,631, Cl. 123-503.000
Stupakis, John S., to JSS Scientific Corporation. Folding anchor. 4,763,597, Cl. 114-297.000
Sturzl, Wilhelm, to Diehl GmbH & Co. Stabilizing circuit for a microcomputer. 4,764,716, Cl. 323-231.000.
Stutts, Kenneth J.: *See—*
Gregory, Thomas D.; and Stutts, Kenneth J., 4,764,263, Cl. 204-74.000
Stutz, William H., Jr., to Siemens-Pacesetter, Inc. Pacemaker connector block for proximal ring electrode. 4,764,132, Cl. 439-810.000.
Suddeutsche Kuhlerfabrik Julius Fr. Behr GmbH & Co. KG: *See—*
Kreuzer, Walter; Bubeck, Kurt; and Staffa, Karl H., 4,763,727, Cl. 165-171.000
Sudimak, Michael J.: *See—*
Cohn, Robert J.; Rosania, W. Stanley; Rosania, Jeffrey W.; and Sudimak, Michael J., 4,763,799, Cl. 211-187.000.
Sugano, Kazuhiko: *See—*
Shibayama, Takashi; and Sugano, Kazuhiko, 4,763,545, Cl. 74-868.000
Sugihara, Masanori; Kobayashi, Kazuo; Okamoto, Akihiko; Kurosawa, Atsushi; and Okii, Hideki, to Pioneer Electronic Corporation. Auto loading disk player. 4,764,917, Cl. 369-77.100.
Sugino, Masaru: *See—*
Matsui, Shinichi; and Sugino, Masaru, 4,763,884, Cl. 267-140.100.
Sugiura, Muneharu: *See—*
Tsuji, Sadahiko; Sugiura, Muneharu; Tanaka, Kazuo; and Kato, Masatake, 4,763,998, Cl. 350-427.000
Suh, Ku W. Tympanic membrane implant. 4,764,168, Cl. 604-264.000.
Sullivan, James R., to Eastman Kodak Company. Image processing method including image segmentation. 4,764,971, Cl. 382-9.000.
Sullivan, Spencer W.; and Verrico, Marsha K., to Nabisco Brands, Inc. Method for making vitamin enriched cereal. 4,764,388, Cl. 426-311.000
Sulzbach, Hans-Michael: *See—*
Proksa, Ferdinand; Althausen, Ferdinand; Bucher, Gottfried; Raffel, Reiner; and Sulzbach, Hans-Michael, 4,764,536, Cl. 521-50.000
Sumerau, William R., to Singer Company, The. Vacuum cleaner hanging arrangement. 4,763,382, Cl. 15-323.000

Sumi, Takao; Inako, Yoshihide; and Nishida, Masahiro, to Nissha Printing Co., Ltd. Method of transfer printing plastic molded articles having patterns of characters and/or symbols on their top faces and front side faces and pattern imparting machine. 4,764,177, Cl. 8-471.000
Sumitomo Chemical Company: *See—*
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100
Sumitomo Chemical Co., Ltd.: *See—*
Mitsuno, Tatsuyuki; Shinonaga, Hideo; and Daimon, Akio, 4,764,546, Cl. 523-213.000
Ohmae, Tadayuki; Mashita, Kentaro; Yamaguchi, Noboru; and Asao, Kouichiro, 4,764,551, Cl. 524-394.000
Sumitomo Electric Industries, Ltd.: *See—*
Sasaki, Goro; and Hayashi, Hideki, 4,764,796, Cl. 357-16.000
Yamakawa, Akira; Miyake, Masaya; and Nishioka, Takao, 4,764,490, Cl. 501-97.000
Sumitomo Electric Research Triangle, Inc.: *See—*
Keith, P. Stephen, 4,763,983, Cl. 350-96.230.
Sumitomo Metal Industries, Ltd.: *See—*
Fukukawa, Yoshitsugu; Nishida, Atsushi; Nishioka, Katsuhiko; and Tsunori, Hiroaki, 4,764,657, Cl 219-125.100
Sumitomo Pharmaceuticals Company, Limited: *See—*
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100
Summerville, Don S.: *See—*
Lauffer, Scott C.; Golley, Frank B.; and Summerville, Don S., 4,763,963, Cl. 312-45.000
Sun, Hsiang-Ning: *See—*
Cannarsa, Michael J.; Kesling, Haven S., Jr.; and Sun, Hsiang-Ning, 4,763,715, Cl. 164-45.000
Sunair Electronics, Inc.: *See—*
Jones, Lee J., 4,764,735, Cl. 330-271.000
Suncast Corporation: *See—*
Johnston, Damon A.; Papenhause, Paul E.; Garcia, George L.; and Drehobl, Thomas L., 4,764,047, Cl. 401-289.000
Sundermann, Erich; Laurien, Hanno; Vahlbrauk, Wolfgang; and Reye, Hans, to Perfluktiv-Consult AG. Shaft arrangement for thermal and/or material transfer processes between a gas and bulk material 4,764,107, Cl. 432-96.000
Sundstrand Corporation: *See—*
Biagini, Guido, 4,763,859, Cl. 244-118.500.
Nold, Robert D., 4,764,699, Cl. 310-89.000
Sunset Solar Systems Ltd.: *See—*
Cameron, Douglas; and Cameron, Lorraine, 4,764,313, Cl. 261-35.000
Sunstrand Heat Transfer, Inc.: *See—*
Farling, Robert P., 4,763,726, Cl. 165-146.000.
Super Tool and Mfg. Corporation: *See—*
Memmel, Lawrence C., 4,764,061, Cl. 408-69.000
Susnjara, Kenneth J., to Thermwood Corporation. Assembly for performing work functions on a workpiece. 4,764,077, Cl. 414-222.000.
Sutton, John S. Piling-jacket system and method. 4,764,054, Cl. 405-216.000
Suyama, Katsuhiko; Yabushita, Yasunori; Koyama, Masanao; and Takagi, Kunihiko, to Unitika Ltd. Method for stabilizing an immobilized fibrinolytic enzyme. 4,764,466, Cl. 435-174.000
Suzuki, Hirofumi: *See—*
Hosizaki, Hiroki; Suzuki, Hirofumi; and Kageyama, Terutaka, 4,764,435, Cl. 428-621.000
Suzuki Jidosha Kogyo Kabushiki Kaisha: *See—*
Noyori, Takahiro, 4,764,884, Cl. 364-552.000
Suzuki, Katsumi: *See—*
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,764,497, Cl. 502-235.000
Suzuki, Kazuomi: *See—*
Yamashita, Atsushi; Yamami, Toshiaki; Kondo, Yasuhiro; Nakai, Hiroyuki; and Suzuki, Kazuomi, 4,764,117, Cl. 433-215.000
Suzuki, Ken-ichi: *See—*
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru, Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000.
Suzuki, Shigeto, to Chevron Research Company. Miscible gas enhanced oil recovery method using oil-brine compatible pre-formed foam. 4,763,730, Cl. 166-273.000
Suzuki, Shoji, to Alpine Electronic Inc. Tape loading apparatus for a tape recorder. 4,764,825, Cl. 360-85.000.
Suzuki, Takashi: *See—*
Wada, Yoshihiro; Fujii, Ryoichi; and Suzuki, Takashi, 4,764,027, Cl. 374-208.000
Suzuki, Yoshiaki; and Hayashi, Gouichi, to Fuji Photo Film Co., Ltd. Infrared absorbent. 4,763,966, Cl. 350-1.100
Suzuki, Yumiko: *See—*
Fujinuma, Yoshimori; Asahara, Tomohisa; Akiu, Satoru; Suzuki, Yumiko; Ichikawa, Hideyuki; and Katsumura, Yoshio, 4,764,505, Cl. 514-35.000
Svendsen, Leo G.: *See—*
Hill, Frederick W. L.; Bates, Nigel R.; and Svendsen, Leo G., 4,764,422, Cl. 428-309.900
Swartz, Louis D., to Ovonic Imaging Systems, Inc. Photosensitive pixel sized and shaped to optimize packing density and eliminate optical cross-talk. 4,764,682, Cl. 250-578.000
Swedo, Raymond J., to Allied-Signal Inc. Pendant biphenylene as a cross-linking site in aromatic thermoplastic polymers. 4,764,566, Cl 525-390.000
Swiatosz, Edmund, to United States of America, Navy. Electric smoke generator. 4,764,660, Cl. 219-272.000
Syn Labs, Inc.: *See—*
Leveriza, Carina T.; and Morgan, Russell A., 4,764,247, Cl 156-643.000
Szabo, Gabor: *See—*
Toth, Jozsef, Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl 546-341.000
Szebeni, Janos: *See—*
Jaki, Laszlo ; Jodal, Sandor; Jagicza, Laszlo ; Mandzsu, Jozsef, Pap, Endre; and Szebeni, Janos, 4,764,768, Cl. 340-815.050
T. K. Wong & Associates Limited: *See—*
Wong, Tak-ko, 4,764,148, Cl. 446-431.000
Taber, Albert A.: *See—*
Fogal, Robert D.; and Taber, Albert A., 4,763,392, Cl 29-159.100
Tachi-S Co., Ltd.: *See—*
Makino, Hiroyuki, 4,764,241, Cl. 156-382.000
Yajima, Yutaka, 4,764,179, Cl. 29-33.00K
Tackaberry, Duane O.: *See—*
Pratt, George W.; Caton, Dennis W.; and Tackaberry, Duane O., 4,764,199, Cl. 71-5.000
Tadahiro, Abe, to Kawasaki Steel Corp. Method of measuring layer thickness and composition of alloy plating. 4,764,945, Cl. 378-50.000
Tadokoro, Eiichi: *See—*
Yamaguchi, Nobutaka; and Tadokoro, Eiichi, 4,764,423, Cl 428-323.000
Taga Electric Co., Ltd.: *See—*
Mishiro, Shoiji, 4,764,702, Cl. 310-323.000
Takabayashi, Yutaka: *See—*
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, 4,763,968, Cl. 350-516.000
Takada, Yoshihiro; and Hosono, Nagao, to Canon Kabushiki Kaisha. Smectic liquid crystal device with temperature control system 4,763,992, Cl. 350-331.00T
Takagi, Kunihiko: *See—*
Suyama, Katsuhiko; Yabushita, Yasunori; Koyama, Masanao; and Takagi, Kunihiko, 4,764,466, Cl. 435-174.000
Takahashi, Akira: *See—*
Ohta, Kenji; Hirokane, Junji; Inui, Tetsuya; Takahashi, Akira, and Katayama, Hiroyuki, 4,764,441, Cl. 430-5.000
Takahashi, Atsushi: *See—*
Kobayashi, Kazuo; Kumagai, Masao; Takahashi, Atsushi, and Abe, Kenji, 4,764,830, Cl. 360-104.000
Takahashi, Fumio; and Yoshimura, Nobuya, to Bridgestone Corporation. Pneumatic tire. 4,763,708, Cl. 152-209.00A
Takahashi, Isao: *See—*
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru, Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000
Takahashi, Ryuichi, to IG-Technical Research Inc. Continuous elongate ceramic article manufacturing system. 4,764,102, Cl 425-466.000
Takahashi, Shinji: *See—*
Kawarabashi, Tsukasa; and Takahashi, Shinji, 4,763,773, Cl 198-409.000
Takahashi, Toshihiko: *See—*
Tani, Toshiyuki; Inazawa, Yoshizumi; Takahashi, Toshihiko; and Satomura, Shigeyuki, 4,764,824, Cl. 360-70.000
Takai, Makoto: *See—*
Chiba, Keiko; Takai, Makoto; and Wakabayashi, Toshio, 4,764,528, Cl. 514-510.000
Takaichi, Susumu: *See—*
Morita, Koichi; Takaichi, Susumu, Fujiwara, Muneyoshi, Seno, Makito; and Misawa, Yoshihiko, 4,763,405, Cl. 29-740.000
Takanashi, Hajime: *See—*
Tsubuko, Kazuo; Kuramoto, Shinichi; Nagai, Kayoko; Okawara, Makoto; and Takanashi, Hajime, 4,764,447, Cl. 430-115.000
Takane, Hisao, to NEC Corporation. Circuit arrangement capable of improving overhead of a control program on interrupting into a virtual machine. 4,764,864, Cl. 364-200.000
Takao, Hajime, to Nippon Gakki Seizo Kabushiki Kaisha. Servo circuit for an information recording and/or reproducing apparatus 4,764,860, Cl. 369-43.000
Takara Co., Ltd.: *See—*
Yoneyama, Hitoshi, 4,764,149, Cl. 446-440.000
Takasago International Corporation: *See—*
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,764,629, Cl. 556-23.000
Takasawa, Kazuhiro, to Alps Electric Co., Ltd. Process for manufacturing horizontal and vertical type switch devices and products thereof using common terminal parts. 4,764,645, Cl. 200-16.00F
Takasugi, Nobuhiro: *See—*
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000
Takatsu, Haruyoshi: *See—*
Sasaki, Makoto; Takeuchi, Kiyohumi; and Takatsu, Haruyoshi, 4,764,636, Cl. 560-102.000
Takaya, Soichi: *See—*
Miyazaki, Yoshihiro, Takaya, Soichi; Tanji, Masayuki; Nishikawa, Atsuhiko; and Yamaguchi, Shinichiro, 4,764,869, Cl. 364-300.000

VOL 1093 ISS 3 AG 16 1988 UMI

Takeda Chemical Industries, Ltd.: *See—*
Sano, Yasuo; Morisue, Yasuhiro; Komiya, Kiyoshi; and Nakamura, Yoshimasa, 4,764,587, Cl. 528-363.000.

Takeda, Toshio: *See—*
Tamura, Toru; Takeda, Toshio; and Kouno, Shinji, 4,763,636, Cl. 123-564.000.

Takei, Ryutaro: *See—*
Gunjima, Tomoki; Takei, Ryutaro; and Aoyama, Eriko, 4,764,619, Cl. 546-226.000

Takei, Seiji, to Nippon Thompson Co., Ltd. XY-positioning table. 4,763,886, Cl. 269-73.000

Takekawa, Kouichi; and Bonkohara, Manabu, to NEC Corporation Method of manufacturing semiconductor device. 4,763,409, Cl. 29-827.000

Takemura, Yoshiyuki: *See—*
Sakamoto, Toshio; Sato, Kanichi; and Takemura, Yoshiyuki, 4,763,720, Cl. 164-525.000.

Takenoya, Hideaki; and Ozaki, Yoshiaki, to Janome Sewing Machine Co. Ltd. Device for detecting kinds of embroidering frames. 4,763,586, Cl. 112-103.000.

Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, to Sapparo Breweries Limited; Daicel Chemical Industries, Ltd.; and Etsuo Ito. Polysaccharide RDP substance 4,764,507, Cl. 514-54.000.

Takeshita, Kazutoshi, to Yazaki Corporation. Process for producing a wire strand with a terminal. 4,763,411, Cl. 29-863.000

Takeshita, Kazuyuki, to Hitachi Denshi Kabushiki Kaisha. Picture element arranging method in video data recording-reproducing system. 4,764,820, Cl. 360-22.000.

Takeshita, Michitaka: *See—*
Hatanaka, Takashi; and Takeshita, Michitaka, 4,764,547, Cl. 523-215.000

Taketomi, Takanao: *See—*
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,764,629, Cl. 556-23.000

Takeuchi, Katsumasa: *See—*
Iwasa, Tadanobu; Takeuchi, Katsumasa; and Kanehara, Toshikatsu, 4,764,565, Cl. 525-352.000

Takeuchi, Kiyohumi: *See—*
Sasaki, Makoto; Takeuchi, Kiyohumi; and Takatsu, Haruyoshi, 4,764,636, Cl. 560-102.000

Takeuchi, Kiyoshi; Damjanovic, Dragan; and Jang, Sei-Joo, to North American Philips Corporation. Lead calcium titanate piezoelectric ceramic element. 4,764,492, Cl. 501-136.000

Takeuchi, Yutaka: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; and Takeuchi, Yutaka, 4,764,569, Cl. 525-446.000.

Talbot, James E., to Fana, Inc. Shrink film packaging for an assembled aircraft or portion thereof and method of making the same. 4,763,783, Cl. 206-335.000

Talebian, Abdolhossen: *See—*
Bredehorst, Reinhard; Talebian, Abdolhossen; Hammer, Charles F.; and Vogel, Carl-Wilhelm, 4,764,462, Cl. 435-18.000.

Tamaki, Shigenori: *See—*
Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori; Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, 4,764,098, Cl. 418-152.000

Tamao, Yoshikuni: *See—*
Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, 4,764,618, Cl. 546-196.000

Tamm, Paul W.: *See—*
Chen, Hong C.; Detz, Cliff M.; and Tamm, Paul W., 4,764,267, Cl. 208-65.000

Tamura Kaken Co., Ltd.: *See—*
Ohno, Takao, 4,764,452, Cl. 430-288.000.

Tamura, Shuichi; and Harunari, Yoshihiro, to Canon Kabushiki Kaisha Distance measuring device for camera. 4,764,786, Cl. 354-403.000

Tamura, Toru; Takeda, Toshio; and Kouno, Shinji, to Aisin Seiki Kabushiki Kaisha. Mechanical supercharger. 4,763,636, Cl. 123-564.000

Tanabe, Hisaki: *See—*
Umemoto, Hirotoshi; Tanabe, Hisaki; and Takeuchi, Yutaka, 4,764,569, Cl. 525-446.000.

Tanaka, Hajime; and Okada, Tetsuya, to Clover Engineering Corporation; and Kyocera Corporation. Movable tray sheet sorter. 4,763,892, Cl. 271-293.000.

Tanaka, Hitoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Lens focusing position adjusting mechanism. 4,764,783, Cl. 354-195.100

Tanaka, Kazuhiko, to Nippon Thompson Co., Ltd. Ball spline bearing provided with a driving unit. 4,764,032, Cl. 384-44.000.

Tanaka, Kazuo: *See—*
Tsuji, Sadahiko; Sugiura, Muneharu; Tanaka, Kazuo; and Kato, Masatake, 4,763,998, Cl. 350-427.000

Tanaka, Kouchi: *See—*
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru; Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Kouchi, 4,764,606, Cl. 540-221.000.

Tanaka, Kunio; and Onishi, Yasushi, to Fanuc Ltd. Surface cutting method. 4,764,877, Cl. 364-474.000

Tanaka, Kunio; and Onishi, Yasushi, to Fanuc Ltd. Surface cutting method. 4,764,878, Cl. 364-474.000.

Tanaka, Minoru: *See—*
Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, 4,764,954, Cl. 379-390.000

Tanaka, Shin: *See—*
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100.

Tanaka, Yutaka; and Matsunaga, Osamu, to Sony Corporation. Signal processing apparatus. 4,764,964, Cl. 358-31.000.

Taneya, Mototaka; Matsumoto, Mitsuhiro; Kawanishi, Hidenori; and Matsui, Sadayoshi, to Sharp Kabushiki Kaisha. Semiconductor laser array device. 4,764,936, Cl. 372-50.000.

Taneya, Mototaka: *See—*
Matsumoto, Mitsuhiro; Matsui, Sadayoshi; Taneya, Mototaka; and Kawanishi, Hidenori, 4,764,937, Cl. 372-50.000.

Tani, Toshiyuki; Inazawa, Yoshizumi; Takahashi, Toshihiko; and Satomura, Shigeyuki, to Sony Corporation. Dual servo system for rotating tape head control. 4,764,824, Cl. 360-70.000.

Taniguchi, Hiroshi; Furumoto, Mitsunobu; and Kubo, Kanji, to Matsushita Electric Industrial Co., Ltd. Method for recording cue signal. 4,764,822, Cl. 360-48.000

Tanji, Masayuki: *See—*
Miyazaki, Yoshihiro; Takaya, Soichi; Tanji, Masayuki; Nishikawa, Atsuhiko; and Yamaguchi, Shinichiro, 4,764,869, Cl. 364-300.000.

Tardy, Michel A.: *See—*
Tayot, Jean Louis; Gattel, Paule A.; and Tardy, Michel A., 4,764,279, Cl. 210-656.000

Task, Harry L., to United States of America, Air Force. Glare susceptibility tester. 4,764,007, Cl. 351-243.000.

Tateiwa, Kenji: *See—*
Fuse, Genshu; Tateiwa, Kenji; Nakao, Ichiro; and Shimoda, Hideaki, 4,764,483, Cl. 437-67.000

Taub, Alan I.: *See—*
Huang, Shyh-Chin; Chang, Keh-Minn; and Taub, Alan I., 4,764,226, Cl. 148-429.000

Tauber, Karl: *See—*
Temmesfeld, Axel; and Tauber, Karl, 4,763,724, Cl. 165-71.000.

Taubitz, Christof: *See—*
Lausberg, Dietrich; Taubitz, Christof; and Knoll, Manfred, 4,764,556, Cl. 525-67.000

Taya, Kiyoshi: *See—*
Kumagai, Kazuo; Taya, Kiyoshi; Tanaka, Shin; Moriguchi, Koichi; Fukasawa, Masatomo; and Fukui, Akio, 4,764,602, Cl. 536-7.100.

Taylor, Bruce F.; and Hagen, Kenneth G., to Thermo Electron-Web Systems, Inc. Apparatus and method for the control of web or web-production machine component surface temperature or for applyng a layer of moisture to web. 4,763,424, Cl. 34-20.000.

Taylor, David. Adjustable harness line for sailboarding. 4,763,591, Cl. 114-39.200

Taylor, Harold M.: *See—*
Hirsch, Kenneth S.; and Taylor, Harold M., 4,764,376, Cl. 514-255.000

Taylor, James C. Rheometer. 4,763,512, Cl. 73-54.000.

Taylor, John N.: *See—*
Dalquist, H. David, III; Jacobsen, Douglas C.; Jorgensen, Jorgen A.; Kluge, Douglas J.; and Taylor, John N., 4,763,567, Cl. 99-323.500.

Tayot, Jean Louis; Gattel, Paule A.; and Tardy, Michel A., to Institut Merieux. Process for preparing the principal proteins of hemolyzed blood in the non-denatured form. 4,764,279, Cl. 210-656.000

TDS Patent Management, Inc.: *See—*
Altman, Richard M., 4,764,806, Cl. 358-60.000

Teague, Richard M.: *See—*
Annas, Dulin L., Sr.; and Teague, Richard M., 4,764,647, Cl. 200-38.0CA.

Techalloy Illinois, Inc.: *See—*
Miller, George R., 4,763,677, Cl. 134-105.000.

Teich, Daniel E., to Whirlpool Corporation. Levelling combination wheel and leg assembly for a refuse compactor. 4,763,868, Cl. 248-558.000

Teijin Limited: *See—*
Hara, Shigeyoshi; Inata, Hiroo; and Matsumura, Shunichi, 4,764,427, Cl. 428-400.000

Tektronix, Inc.: *See—*
Slavin, Keith R., 4,764,721, Cl. 324-121.00R.

Teledyne Industries Inc.: *See—*
Scholer, Richard A., 4,763,709, Cl. 152-416.000.

Teleflex Incorporated: *See—*
Spease, Arthur L., 4,763,541, Cl. 74-501.00R.

Telefonaktiebolaget LM Ericsson: *See—*
Akerberg, Dag E., 4,764,928, Cl. 371-69.000.

Teleki, Peter, to Innofinance Altalanos Innovacios Penzwtezet. Method and modifying body for influencing the effect of X-ray or gamma radiation on a target sensitive to the radiation. 4,764,946, Cl. 378-62.000.

Telenex Corporation: *See—*
Rogers, William P., 4,764,939, Cl. 375-37.000.

Telephone Products, Inc.: *See—*
Ditzig, Albert, 4,764,121, Cl. 439-21.000.

Telschow, Jeffrey E., to Akzo America Inc. Preparation of organic phosphinites. 4,764,634, Cl. 558-96.000.

Temme, George H.: *See—*
Stuber, Fred A.; and Temme, George H., 4,764,330, Cl. 264-300.000

Temmesfeld, Axel; and Tauber, Karl, to Bayerische Motoren Werke Aktiengesellschaft. Plastic radiator for transverse-flow cooling systems of internal combustion engines. 4,763,724, Cl. 165-71.000.

Temple, Joseph L., III, to International Business Machines Corp. Circuit for allocating memory cycles to two processors that share memory. 4,764,865, Cl. 364-200.000.

Templex, Inc.: *See—*
Jones, Christopher R.; and Jones, L. Shannon, 4,764,058, Cl. 406-117.000

Tepper, Sidney, to Gerber Products Company. Squirting playseat. 4,763,895, Cl. 272-52.000.

Teramachi, Hiroshi. Unlimited sliding ball spline assembly having a support bearing. 4,764,154, Cl. 464-168.000

Terrell, Olliney B.; and Arnold, Larry J., to Farley Metals, Inc. Light gauge self-tapping sheet metal screw. 4,764,066, Cl. 411-187.000.

Terumo Kabushiki Kaisha t/a Terumo Corporation: *See—*
Chiba, Keiko; Takai, Makoto; and Wakabayashi, Toshio, 4,764,528, Cl. 514-510.000

Testamatic Corporation: *See—*
Zeh, Robert M., 4,764,719, Cl. 324-73.0PC.

Texaco Inc.: *See—*
Kapuscinski, Maria M.; Liu, Christopher S.; and Hart, William P., 4,764,304, Cl. 252-51.50A.
Lane, Philip A., 4,764,268, Cl. 208-113.000

Texas A&M University System, The: *See—*
Scott, Jonathan R.; and Godshall, Fredric A., 4,763,537, Cl. 73-170.00A

Textielmachinefabriek Gilbos Naamloze Vennootschap: *See—*
Gilbos, George E., 4,763,849, Cl. 242-43.200.

Thaniyavarn, Suwat, to TRW Inc. $\Delta\beta$-Phase reversal coupled waveguide interferometer. 4,763,974, Cl. 350-96.140.

Thaniyavarn, Suwat, to TRW Inc. Semiconductor laser array apparatus with adjustable phase plate. 4,764,929, Cl. 372-18.000

Theeuews, Felix: *See—*
Urquhart, John; and Theeuews, Felix, 4,764,380, Cl. 424-465.000

Thermo Electron-Web Systems, Inc.: *See—*
Taylor, Bruce F.; and Hagen, Kenneth G., 4,763,424, Cl. 34-20.000.

Thermwood Corporation: *See—*
Susnjara, Kenneth J., 4,764,077, Cl. 414-222.000.

Thew, Martin T.: *See—*
Colman, Derek A.; and Thew, Martin T., 4,764,287, Cl. 210-788.000

Tholl, Manfred: *See—*
Indra, Friedrich; and Tholl, Manfred, 4,763,622, Cl. 123-308.000.

Thomas, Gunter: *See—*
Franckowiak, Gerhard; Grosser, Rolf; Thomas, Gunter; Schramm, Matthias; and Gross, Rainer, 4,764,516, Cl. 514-256.000

Thomas, Iorwerth. Gas generator. 4,763,610, Cl. 123-3.000.

Thomas, Mark S.: *See—*
Thomas, Stephen E.; and Thomas, Mark S., 4,764,853, Cl. 362-183.000

Thomas, Stephen E.; and Thomas, Mark S. Rechargeable battery cafe table lamp. 4,764,853, Cl. 362-183.000.

Thomas, Vincent P., to International Business Machines Corporation. Four quadrant multiplier. 4,764,892, Cl. 364-841.000.

Thommen, Werner F., to U.S. Philips Corporation. Sample-and-hold circuit arrangement. 4,764,689, Cl. 307-353.000

Thompson, Mark E.: *See—*
Christensen, Joel R.; Liang, Paul H.; and Thompson, Mark E., 4,764,207, Cl. 71-93.000

Thomson-CSF: *See—*
Hubert, Charles, 4,763,540, Cl. 74-96.000.
Papuchon, Michel; Enard, Alain; Vatoux, Sylvie; and Werner, Michel, 4,763,972, Cl. 350-96.110.
Rischmuller, Klaus, 4,764,686, Cl. 307-254.000.

Thomson, David S.: *See—*
Bilski, Andrew J. T.; Howe, Ralph; Rao, Balbir; and Thomson, David S., 4,764,361, Cl. 424-45.000.

Thorn Emi plc: *See—*
Shaw, John E. A.; and Sibbald, Alastair, 4,764,797, Cl. 357-25.000

Thornthwaite, Ian R., to Lucas Industries Public Limited Company. Liquid fuel injection pump. 4,764,092, Cl. 417-462.000.

Thut, Robert S.: *See—*
Cheshire, James O.; Janda, Bruce W.; and Thut, Robert S., 4,764,253, Cl. 162-198.000

Thyssen Stahl AG: *See—*
Meichsner, Walter; Gmohling, Werner; Tutte, Manfred; and Peters, Karl-Heinz, 4,764,211, Cl. 75-58.000

Tibbals, E. C., Jr. Circular weft knitting machine. 4,763,492, Cl. 66-232.000

Tichener, Paul F.; and Walsh, Michael J. M., to Comdisco Resources, Inc. Method and means for obtaining data representing a parameter of fluid flowing through a down hole side of an oil or gas well bore. 4,763,520, Cl. 73-155.000

Tiffany, Thomas O.: *See—*
Kelln, Norman G.; and Tiffany, Thomas O., 4,764,342, Cl. 422-72.000

Tijssen, Antonius W.: *See—*
Huizing, Albert; Felder, Willy J. B.; and Tijssen, Antonius W., 4,763,398, Cl. 29-527.100

Timex Corporation: *See—*
Shiff, Victor, 4,764,765, Cl. 340-756.000.

Tipton, John R., Jr.: *See—*
Blazek, John M.; and Tipton, John R., Jr., 4,764,817, Cl. 358-341.000

Toagosei Chemical Industry Co., Ltd.: *See—*
Kato, Hideki; and Yamamoto, Noriyuki, 4,764,396, Cl. 427-69.000

Tobler, Peter, to Provenda Marketing AG. Tilting chair, especially office chair. 4,763,950, Cl. 297-301.000.

Tocksfors Verkstads AB: *See—*
Ahs, Wilgot, 4,764,742, Cl. 335-142.000.

Togino, Takayoshi: *See—*
Minami, Kazuyuki; Nagano, Takashi; Fujiwara, Hiroshi; Fukaya, Takashi; Takabayashi, Yutaka; and Togino, Takayoshi, 4,763,968, Cl. 350-516.000

Tohoku Metal Industries, Ltd.: *See—*
Murakami, Koichi, 4,764,698, Cl. 310-72.000

Tojo, Tetsuo; Nakahara, Takashi; Otawa, Yasuhiko; and Okamoto, Katsuo, to Mitsui Petrochemical Industries, Ltd. Chlorinated rubber 4,764,562, Cl. 525-281.000

Tokico Ltd.: *See—*
Nakamura, Ken; Onoda, Toshiaki; and Gofuku, Yoshihiro, 4,763,869, Cl. 248-562.000

Tokuhara, Shinji; Onizawa, Yoshio; and Iyoshi, Shuzo, to Daicel Chemical Industries, Ltd. Large diameter optical disk substrate made of polycarbonate. 4,764,331, Cl. 264-328.160.

Tokumaru, Hisashi, to Minolta Camera Kabushiki Kaisha. Telephoto lens system with three relatively shiftable lens groups. 4,764,000, Cl 350-454.000

Tokuyama Soda Kabushiki Kaisha: *See—*
Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, 4,764,497, Cl. 502-235.000

Tokyo Precision Instruments Co., Ltd.: *See—*
Sasaki, Katsumi, 4,763,560, Cl. 91-364.000

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Abe, Takemi, 4,763,407, Cl. 29-840.000
Yoshimura, Susumu; and Iwai, Isamu, 4,764,965, Cl. 381-43.000

Tolle, Frederick F.: *See—*
Adams, Robert E.; Grenich, A. Fredric; and Tolle, Frederick F., 4,763,731, Cl. 169-46.000

Tolo, Inc.: *See—*
Gerondale, Joe; and Rainwater, Jack, 4,763,365, Cl. 4-542.000

Tombs, Michael; and Cinglio, Alexander J., to Pillarhouse International Limited. Soldering apparatus. 4,763,599, Cl. 118-57.000

Tominaga, Kazutoshi, to Kabushiki Kaisha Tominaga Jyushikogyosho. Device for preventing the pet animal kept in the cage from escaping therefrom. 4,763,607, Cl. 119-17.000

Tomioka, Yoshihiko: *See—*
Hisazumi, Nobuyuki; Funabashi, Shinichiro; and Tomioka, Yoshihiko, 4,764,406, Cl. 428-35.000

Tomisawa, Naoki, to Japan Electronic Control Systems, Co., Ltd. Learning and control apparatus for electronically controlled internal combustion engine. 4,763,627, Cl. 123-440.000

Tomisawa, Osamu: *See—*
Ueyama, Satoshi; Isoda, Satoru; Tomisawa, Osamu; Ogura, Akemi; and Kawakubo, Hiroaki, 4,764,416, Cl. 428-212.000

Tomita, Junji: *See—*
Minakuchi, Kiyoshi; and Tomita, Junji, 4,763,555, Cl. 84-313.000

Tomoe Kagaku Kogyo Kabushiki Kaisha: *See—*
Iino, Yasuo; and Saito, Yoshinori, 4,764,201, Cl. 71-77.000

Tonge, Christopher J., to Crown Decorative Products Limited. Thickeners for emulsion paints. 4,764,554, Cl. 524-558.000

Tonomura, Shinji: *See—*
Kikumoto, Ryoji; Tamao, Yoshikuni; Tonomura, Shinji; Maruyama, Akira; Okamoto, Shosuke; and Okunomiya, Akiko, 4,764,618, Cl. 546-196.000

Tonon, Giancarlo: *See—*
Borsa, Massimiliano; Tonon, Giancarlo; and Malandrino, Salvatore, 4,764,515, Cl. 514-255.000.

Topfl, Werner; Meyer, Willy; and Schneider, Hans-Dieter, to Ciba-Geigy Corporation. Herbicidal sulfonylureas. 4,764,203, Cl. 71-93.000

Topham, David: *See—*
Clements, Reginald M.; Pitt, Philip L.; Ridley, John D.; Smith, Robert; and Topham, David, 4,764,906, Cl. 367-142.000

Torikoshi, Yuichi; Shirai, Hitoshi; Iwasa, Kazuyuki; Miyazaki, Hiroaki, and Yamazaki, Yasuo, to Olympus Optical Company, Ltd. Camera with a built-in zoom lens. 4,764,784, Cl. 354-195.120.

Torita, Fumio: *See—*
Nishite, Yoshitoyo; Torita, Fumio; and Ikeda, Naotaka, 4,763,493, Cl. 68-12.00R

Toriyama, Masayuki: *See—*
Arahata, Yoshitaka; and Toriyama, Masayuki, 4,763,613, Cl. 123-65.0PE.

Toro Company, The: *See—*
Holcomb, Gregory B., 4,763,838, Cl. 239-205.000

Torta, Nello, to Idroplina S.r.l. Steering device for paved surface cleaners. 4,763,741, Cl. 180-6.200

Toshio, Ishii; and Mouri, Yasunori, to Hitachi, Ltd. Control apparatus for a waste gate valve of a turbocharger in an internal combustion engine. 4,763,475, Cl. 60-602.000

Tosoh Corporation: *See—*
Higo, Yuji; and Hayashi, Hidechika, 4,763,460, Cl. 53-381.00R

Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, to Richter Gedeon Vegyeszeti Gyar Rt. 2,6-Bis(chloromethyloxy-carbonyloxymethyl)pyridine and a process for preparing same. 4,764,613, Cl. 546-341.000

Touati, Bernard; and Werly, Marc. Fixation of rigid pieces such as a dental prosthesis. 4,764,118, Cl. 433-226.000

Toyo Boseki Kabushiki Kaisha: *See—*
Nakamura, Ryoji; and Ohguchi, Masakatsu, 4,764,426, Cl 428-400.000

Toyoda, Atsushi: *See—*
Itou, Katsumi; and Toyoda, Atsushi, 4,764,259, Cl. 204-25.000

VOL 1093 ISS 3 AG 16 1988 UMI

Toyoda Gosei Co., Ltd.: *See—*
Iwasa, Tadanobu; Takeuchi, Katsumasa; and Kanehara, Toshikatsu, 4,764,565, Cl. 525-352.000

Toyoda Koki Kabushiki Kaisha: *See—*
Eto, Kunihiko; Mori, Yutaka; Oono, Akihiro; and Kodama, Kazumasa, 4,763,745, Cl. 180-143.000

Toyono, Tsutomu: *See—*
Kaneko, Shuzo; and Toyono, Tsutomu, 4,763,994, Cl. 350-336.000

Toyooka, Yutaka: *See—*
Shigemitsu, Hideyuki; Hongo, Masafumi; and Toyooka, Yutaka, 4,764,555, Cl. 525-67.000

Toyota Jidosha Kabushiki Kaisha: *See—*
Iwase, Takahiro; Mochizuki, Hiroyuki; Tamaki, Shigenori; Kobayashi, Nobuo; Masuda, Naofumi; and Harada, Katsuro, 4,764,098, Cl. 418-152.000
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,748, Cl. 180-248.000
Nagase, Masaomi; Kobayashi, Fumiaki; and Ito, Yoshiyasu, 4,763,630, Cl. 123-501.000
Ochiai, Takeshi, 4,763,746, Cl. 180-179.000
Uchida, Kiyoyuki; and Akiyoshi, Michio, 4,763,960, Cl. 303-97.000.
Yoshitsugu, Noritada, 4,763,750, Cl. 180-268.000.

Toyota Kidosha Kabushiki Kaisha: *See—*
Miura, Masakatsu; Iwatsuki, Tatsuya; and Kubo, Seitoku, 4,763,749, Cl. 180-249.000

TPV Energy Systems, Inc.: *See—*
Nelson, Robert E., 4,764,104, Cl. 431-100.000

Transimage International Limited: *See—*
Hamley, Nigel C., 4,764,812, Cl. 358-181.000.

Trest "Juzhvodoprovod" : *See—*
Shishkin, Viktor V.; Kryazhevskikh, Nikolai F.; Oleinik, Viktor N.; Shlatgauer, Boris I.; and Medunitsa, Vladimir L., 4,764,237, Cl. 156-294.000

Trinh, Toan, to Procter & Gamble Company, The. Articles and methods for treating fabrics in clothes dryer. 4,764,289, Cl. 252-8.600.

Trischler, Ferenc: *See—*
Toth, Jozsef; Kovatsits, Mate ; Csutoras, Laszlo ; Szabo, Gabor; Gorog, Sandor; Trischler, Ferenc; Holly, Sandor; Francsics, Erzsebet; Losonczi, Bela; and Havasi, Gabor, 4,764,613, Cl. 546-341.000

Truesdale, Carlton M.: *See—*
Nolan, Daniel A.; and Truesdale, Carlton M., 4,763,976, Cl. 350-96.150

TRW Inc.: *See—*
Thaniyavarn, Suwat, 4,763,974, Cl. 350-96.140.
Thaniyavarn, Suwat, 4,764,929, Cl. 372-18.000.
Wilcox, Jaroslava Z.; Jansen, Michael; Silver, Arnold H.; Yang, Jane J. J.; and Simmons, William W., 4,764,935, Cl. 372-50.000.

Tschantre , Walter: *See—*
Ruegg, Hans; and Tschantre , Walter, 4,764,106, Cl. 431-160.000.

Tschawow, Antoaneta, to Koh-I-Noor Rapidograph, Inc. Writing instrument with reservoir having perpendicular fibers. 4,764,045, Cl 401-198.000

Tsubuko, Kazuo; Kuramoto, Shinichi; Nagai, Kayoko; Okawara, Makoto; and Takanashi, Hajime, to Ricoh Co., Ltd. Non-aqueous type resin dispersion and electrophotographic developer containing said resin. 4,764,447, Cl. 430-115.000.

Tsuji, Katsuya: *See—*
Sato, Yasuhiro; and Tsuji, Katsuya, 4,764,728, Cl. 324-512.000.

Tsuji, Sadahiko; Sugiura, Muneharu; Tanaka, Kazuo; and Kato, Masatake, to Canon Kabushiki Kaisha. Compact zoom lens. 4,763,998, Cl 350-427.000

Tsujiuchi, Yoshio: *See—*
Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, 4,764,004, Cl. 350-632.000

Tsukayama, Robert H.; and Abitz, Roger E., to Douglas & Lomason Company. Depression staking process. 4,763,397, Cl. 29-509.000

Tsukimoto, Takayuki: *See—*
Okumura, Ichiro; Izukawa, Kazuhiro; Okuno, Takuo; and Tsukimoto, Takayuki, 4,763,776, Cl. 198-630.000

Tsuno, Nobuo: *See—*
Oda, Isao; and Tsuno, Nobuo, 4,763,876, Cl. 251-359.000.

Tsunori, Hiroaki: *See—*
Fukukawa, Yoshitsugu; Nishida, Atsushi; Nishioka, Katsuhiko; and Tsunori, Hiroaki, 4,764,657, Cl. 219-125.100.

Tsuruga, Kenichiro: *See—*
Haruyama, Kenzo; Tsuruga, Kenichiro; and Yoshikawa, Tadashi, 4,763,814, Cl. 222-63.000

Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, to Kabushiki Kaisha Toshiba Automatic gain control in a loudspeaker telephone set. 4,764,954, Cl. 379-390.000

Tu, Ho C. Safety newborn mucous suction device. 4,764,167, Cl. 604-73.000

Tucker, Terry L.; and Orsburn, Michael L., to Utah Scientific Advanced Development Center, Inc. Touch-sensitive potentiometer for operator control panel. 4,764,717, Cl. 323-364.000

Tung, Lu H.: *See—*
Chau, Chieh-Chun; and Tung, Lu H., 4,764,320, Cl. 264-41.000.

Turnbull, Fred G.: *See—*
Alley, Robert P.; and Turnbull, Fred G., 4,764,744, Cl. 336-131.000

Turner, S. Richard; Yanus, John F.; and Renfer, Dale S., to Xerox Corporation. Process for preparing arylamines. 4,764,625, Cl. 548-442.000

Tutte, Manfred: *See—*
Meichsner, Walter; Gmohling, Werner; Tutte, Manfred; and Peters, Karl-Heinz, 4,764,211, Cl. 75-58.000

Twin Disc, Incorporated: *See—*
Black, James B., 4,763,765, Cl. 192-48.910.

Ube Industries, Ltd.: *See—*
Kobayashi, Waichi; Usui, Kouji; and Uehori, Kinzi, 4,764,218, Cl. 106-409.000
Nakano, Tsunetomo; Nakajima, Kohei; Nishio, Kazuaki; Maruyama, Toshio; Shimada, Hiroshi; Sakamoto, Kiyoshi; and Narisawa, Kumiko, 4,764,181, Cl. 29-570.100

Uchida, Kiichi: *See—*
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000.

Uchida, Kiyoyuki; and Akiyoshi, Michio, to Toyota Jidosha Kabushiki Kaisha. Antiskid type brake system for vehicles. 4,763,960, Cl. 303-97.000

Uchida, Shunsuke; and Ohsumi, Katsumi, to Hitachi, Ltd. Method for operating boiling water-type atomic power plant. 4,764,338, Cl. 376-313.000

Uchino, Shigeo, to Kabushiki Kaisha Uchino Shoten. Running toy. 4,764,150, Cl. 446-456.000.

Ueda, Ikuo; and Katsura, Yousuke, to Fujisawa Pharmaceutical Co., Ltd. Oxothiazolidine compound and composition containing same. 4,764,514, Cl. 514-252.000

Ueda, Sei: *See—*
Hirahara, Takuho; Kawaguchi, Susumu; Ueda, Sei; and Nakane, Kazuhiro, 4,764,097, Cl. 418-60.000

Ueda, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Thin semiconductor card. 4,764,803, Cl. 357-72.000

Uehori, Kinzi: *See—*
Kobayashi, Waichi; Usui, Kouji; and Uehori, Kinzi, 4,764,218, Cl. 106-409.000

Ueno, Shigeki: *See—*
Araki, Shingo; Maeda, Ryugo; Inagaki, Masaji; Kitao, Teijiro; and Ueno, Shigeki, 4,764,500, Cl. 503-208.000.

Ueno, Yasunori: *See—*
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, 4,764,788, Cl. 355-3.00R

Ueyama, Satoshi; Isoda, Satoru; Tomisawa, Osamu; Ogura, Akemi; and Kawakubo, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Electric element circuit using oxidation-reduction substances. 4,764,416, Cl. 428-212.000

Ueyama, Satoshi: *See—*
Isoda, Satoru; Nara, Shigetoshi; Ueyama, Satoshi; Kawakubo, Hiroaki; and Ogura, Akemi, 4,764,415, Cl. 428-212.000.

Uitermarkt, Rombartus W. Method and device for measuring the deformation of a rotating shaft. 4,763,533, Cl. 73-862.350

Umemoto, Hirotoshi; Tanabe, Hisaki; and Takeuchi, Yutaka, to Nippon Paint Co., Ltd. Coating composition having improved weathering resistance and recoating property resinous composition to be used therein. 4,764,569, Cl. 525-446.000

Umetsu, Chiharu: *See—*
Nishiyama, Masakazu; Umetsu, Chiharu; Kebukawa, Akira; and Andoh, Mituru, 4,763,882, Cl. 267-33.000

Union Carbide Corporation: *See—*
Kubek, Daniel J.; McCullough, John G.; Barr, Kenneth J.; and Kosseim, Alexander J., 4,764,354, Cl. 423-228.000.

Union Oil Company of California: *See—*
Croudace, Michael C., 4,764,298, Cl. 252-47.000.
Hoyer, Daniel P.; Featherstone, John L.; and Wong, Morton M., 4,763,479, Cl. 60-641.500

Uniroyal Goodrich Tire Company, The: *See—*
Pielach, Martin; and Lippman, Seymour A., 4,763,515, Cl. 73-146.000
Pielach, Martin, 4,763,710, Cl. 157-14.000.
Snyder, Robert H., 4,764,282, Cl. 210-690.000.

Unisys Corporation: *See—*
Sniderman, Albert, 4,763,941, Cl. 294-64.100

United States of America
Agriculture: *See—*
McGovern, Terrence P.; and Cunningham, Roy T., 4,764,366, Cl. 424-84.000
Pusey, Paul L.; and Wilson, Charles L., 4,764,371, Cl. 424-93.000.
Air Force: *See—*
Adamski, Joseph A., 4,764,350, Cl. 422-245.000.
Lake, John A.; and Heath, William B., 4,764,003, Cl. 350-610.000.
Leonard, John F.; and Allen, Douglas M., 4,763,529, Cl. 73-852.000
O'Hair, Mark A., 4,764,973, Cl. 382-14.000
Task, Harry L., 4,764,007, Cl. 351-243.000.
Vaughn, Robert L.; Carpio, Ronald A.; and King, Lowell A., 4,764,438, Cl. 429-52.000
Army: *See—*
Lerman, Russell E., 4,764,329, Cl. 264-3.500.
Leupold, Herbert A.; and Potenziani, Ernest, II, 4,764,743, Cl. 335-306.000
Commerce: *See—*
Silverthorn, Lee J., III; Gaudette, Philip A.; Holt, Arthur W.; Nacht, George G.; and Warnar, Robert B. J., 4,764,863, Cl. 364-200.000
Energy: *See—*
Diebold, James P.; and Evans, Robert J., 4,764,627, Cl. 549-505.000

Goodwin, Gene M.; and Hudson, Joseph D., 4,763,521, Cl. 73-159.000
Gross, Kenny C.; Lambert, John D. B.; and Nomura, Shigeo, 4,764,335, Cl. 376-253.000
Johnston, Roger G., 4,764,013, Cl. 356-349.000
Kaun, Thomas D., 4,764,437, Cl. 429-50.000
Knapp, Furn F., Jr.; Goodman, Mark M.; and Kirsch, Gilbert, 4,764,358, Cl. 424-1.100.
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000
Langer, Gerhard, 4,764,186, Cl. 55-17.000.
Ryan, Michael J., 4,764,024, Cl. 374-39.000.
Silver, Gary L., 4,764,228, Cl. 148-6.14R
Srivastava, Prem C.; and Knapp, Furn F., Jr., 4,764,598, Cl. 534-551.000

Health and Human Services: *See—*
Hampar, Berge; Showalter, Stephen D.; and Zweig, Martin, 4,764,459, Cl. 435-5.000.

National Aeronautics and Space Administration: *See—*
Schneider, William C.; Nagy, Kornel; and Wesselski, Clarence J., 4,763,762, Cl. 188-218.0XL
Wesselski, Clarence J., 4,763,459, Cl. 52-646.000

Navy: *See—*
Darner, Charles L., 4,764,909, Cl. 367-171.000
Goodman, Jerome, 4,763,524, Cl. 73-589.000
Salour, Michael M., 4,764,731, Cl. 330-4.300
Salour, Michael M., 4,764,739, Cl. 332-751.000
Swiatosz, Edmund, 4,764,660, Cl. 219-272.000
Wilkins, George A., 4,763,981, Cl. 350-96.230.

U.S. Philips Corporation: *See—*
Bakker, Gijsbertus, 4,764,138, Cl. 445-3.000.
Bastiaans, Eduard A., 4,764,811, Cl. 358-160.000
Bierhoff, Waltherus C. J., 4,764,041, Cl. 400-618.000
Christiaens, Alois E., 4,764,697, Cl. 310-49.00R
Enz, Ulrich E.; Sillen, Cornelis W. M. P.; and Ruigrok, Jacobus J. M., 4,764,832, Cl. 360-120.000
Huizing, Albert; Felder, Willy J. B.; and Tijssen, Antonius W., 4,763,398, Cl. 29-527.100.
Khoe, Giok D.; and Nicia, Antonius J. A., 4,763,969, Cl. 350-96.190.
Rausch, Frederik, 4,764,856, Cl. 363-21.000
Sorel, Alain; and Vernet, Francis, 4,764,122, Cl. 439-66.000
Thommen, Werner F., 4,764,689, Cl. 307-353.000

United Technologies Corporation: *See—*
Geary, Joseph M., 4,764,680, Cl. 250-560.000
Madden, William M., 4,763,840, Cl. 239-265.350.

Unitika Ltd.: *See—*
Suyama, Katsuhiko; Yabushita, Yasunori; Koyama, Masanao; and Takagi, Kunihiko, 4,764,466, Cl. 435-174.000

Universite Catholique De Louvain and Manufacture Belge De Gemblous S.A.: *See—*
Hennebert, Pierre; Gillard, Jean; and Roland, Michel, 4,764,351, Cl 422-292.000

University of British Columbia, The: *See—*
Brown, John C., 4,764,475, Cl. 436-548.000

University of Dayton: *See—*
Kauffman, Robert E., 4,764,258, Cl. 201-1.00T.

University of Florida: *See—*
Finlayson, Birdwell, 4,764,944, Cl. 378-20.000
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000

University of Oklahoma, Board of Regents for the: *See—*
Ferretti, Joseph J.; and Malke, Horst, 4,764,469, Cl. 435-216.000

University of Pittsburgh: *See—*
Saeger, Edwin A., 4,763,442, Cl. 47-63.000.

University of Southern California: *See—*
diZerega, Gere S., 4,764,502, Cl. 514-2.000

University of Sydney: *See—*
Johnston, Anthony M., 4,763,488, Cl. 62-497.000

University of Tennessee Research Corporation, The: *See—*
Mason, James M.; and Pifer, David D., 4,764,463, Cl. 424-101.000

University of Victoria: *See—*
Clements, Reginald M.; Pitt, Philip L.; Ridley, John D.; Smith, Robert; and Topham, David, 4,764,906, Cl. 367-142.000.

Uniweld, Inc.: *See—*
Hooper, Anthony W.; and Martel, Andre , 4,763,777, Cl. 198-747.000

Uphold, James D.; and Pfohl, Robert L., to Vitacomm, Ltd. Esophageal stethoscope and vital signs monitor system. 4,763,663, Cl. 128-671.000

Urchick, Demetrius: *See—*
Schmidt, Donald L.; and Urchick, Demetrius, 4,764,564, Cl. 525-328.200

Urquhart, John; and Theeuews, Felix, to ALZA Corporation. Drug delivery system comprising a volume increasing matrix containing a plurality of tiny pills. 4,764,380, Cl. 424-465.000.

Ury, Israel: *See—*
Kwong, Sze-Keung; Lau, Kam Y.; Bar-Chaim, Nadav; and Ury, Israel, 4,764,934, Cl. 372-46.000

Ushifusa, Nobuyuki: *See—*
Ogihara, Satoru; and Ushifusa, Nobuyuki, 4,764,233, Cl. 156-89.000

Ushigoe, Tomio. *See—*
Hata, Yoshikuni; and Ushigoe, Tomio, 4,763,549, Cl. 82-2.500

Usui, Akira; Yamada, Tadashi; Kubo, Kazuhiko; and Nagai, Hiroyuki, to Matsushita Electric Industrial Co., Ltd. Amplifier for high frequency signal. 4,764,736, Cl. 330-294.000

Usui, Kouji: *See—*
Kobayashi, Waichi; Usui, Kouji; and Uehori, Kinzi, 4,764,218, Cl 106-409.000

Utah Scientific Advanced Development Center, Inc.: *See—*
Tucker, Terry L.; and Orsburn, Michael L., 4,764,717, Cl 323-364.000

Utton, Donald B.: *See—*
White, William J.; and Utton, Donald B., 4,764,023, Cl. 374-29.000

Vadetsky, Jury V.: *See—*
Baldenko, Dmitry F.; Vadetsky, Jury V., Gusman, Moisei T.; Semenets, Valery I.; and Khabetskaya, Valentina A., 4,764,094, Cl. 418-5.000

Vahlbrauk, Wolfgang: *See—*
Sundermann, Erich; Laurien, Hanno; Vahlbrauk, Wolfgang; and Reye, Hans, 4,764,107, Cl. 432-96.000

Valenti, Leo, to Gulton Industries, Inc. Energy controller. 4,764,858, Cl. 363-89.000

Valenti, Salvatore: *See—*
Heller, Jurg; Kissling, Bruno; Muller, Curt; Robinson, Tibor; and Valenti, Salvatore, 4,764,585, Cl. 528-233.000

Valeo: *See—*
Focqueur, Herve ; and Jumel, Bernard, 4,763,766, Cl. 192-99.00S
Lanzarini, Ernesto; and Franchi, Renzo, 4,763,767, Cl. 192-106.200

Valley, Harold J. Faucet with improved swivel spout. 4,763,693, Cl 137-801.000

Vanaschen, Luc: *See—*
Boutier, Philippe; and Vanaschen, Luc, 4,764,196, Cl. 65-106.000

Vandemotter, Patrick J., to Allied-Signal Inc. Electronic control for fluid pressure braking system. 4,763,959, Cl. 303-9.000

Vandenbulcke, Brigitte M. J.; and May, Bronislav H., to Monsanto Company. Aminomethylenephosphonate compositions. 4,764,303, Cl. 252-385.000

van der Klaauw, Willem T. J., to Pella B.V. Pliable partition. 4,763,712, Cl. 160-84.100

van der Lely, Ary: *See—*
van der Lely, Cornelis; van der Lely, Ary; and Bom, Cornelis J. G., 4,763,844, Cl. 239-665.000

van der Lely, Cornelis; van der Lely, Ary; and Bom, Cornelis J. G., to C. Van der Lely N. V. Spreading material on a surface. 4,763,844, Cl 239-665.000

Vanderspurt, Thomas H.; Richard, Michael A.; and Che, Tessie M., to Exxon Research and Engineering Company. Method for producing dual colloid catalyst composition. 4,764,499, Cl. 502-258.000

VanIseghem, Lawrence C., to Chromaline Corporation, The. Adherent sandblast photoresist laminate. 4,764,449, Cl. 430-162.000

Van Order, Kim L.: *See—*
Robbins, Craig; Lanser, Michael L.; Van Order, Kim L.; and Weber, Joseph H., 4,763,946, Cl. 296-97.00H

Van Thematt, Hendrik M. V. L., to Sekerheid en Elektronika Laboratoria (Eiendoms) Beperk. Intrusion detector using a vibration-responsive cable. 4,764,756, Cl. 340-566.000

van Zanten, Anton, to Robert Bosch GmbH. Method for converting a rotational speed transducer output signal into a low-distortion signal 4,764,871, Cl. 364-426.000

Varel, Daniel W., Sr., to Varel Manufacturing Company. Asymmetrical rotary cone bit. 4,763,736, Cl. 175-341.000

Varel Manufacturing Company: *See—*
Varel, Daniel W., Sr., 4,763,736, Cl. 175-341.000

Varian Associates, Inc.: *See—*
Codrington, Robert S., 4,764,894, Cl. 364-900.000
Friedlander, Fred I., 4,764,710, Cl. 315-5.430.
Layman, Frederick P.; Hobson, Phillip M.; and Dick, Paul H., 4,764,076, Cl. 414-217.000
Powell, Ronald A.; and Felch, Susan B., 4,764,026, Cl. 374-178.000

Vatoux, Sylvie: *See—*
Papuchon, Michel; Enard, Alain; Vatoux, Sylvie; and Werner, Michel, 4,763,972, Cl. 350-96.110.

Vaughn, Robert L.; Carpio, Ronald A.; and King, Lowell A., to United States of America, Air Force. Solid state tetrachloroaluminate storage battery having a transition metal chloride cathode. 4,764,438, Cl 429-52.000

Vauvelle, Bernard; and Chancholle, Hubert, to Societe Nationale Industrielle et Aerospatiale. Cockpit provided with a lateral control stick adapted to be actuated one-handed and seat for such a cockpit 4,763,860, Cl. 244-122.00R

VBG Produkter AB. *See—*
Ohrgard, Stephan N. A., 4,763,958, Cl. 303-8.000

VDO Adolf Schindling AG: *See—*
Eisenblatter, Axel; Sonnack, Gerhard; and Horning, Gunter, 4,764,847, Cl. 361-388.000

Vega Precision Laboratories, Inc.: *See—*
Hayworth, Robert G.; Russell, Ray E., Jr.; Fleming, Robert F., III. and Hwang, James G., 4,764,769, Cl. 342-50.000

Verfuss, Franz: *See—*
Romey, Ingo; Ahland, Erwin; Pass, Reinhard; and Verfuss, Franz, 4,764,355, Cl. 423-244.000

Verle L. Rice: *See—*
Rice, Verle L.; and Wall, Steve H., 4,763,706, Cl 144-136.00R

Vermeille, Hugues: *See—*
Cuny, Francis; Vermeille, Hugues, and Arnault, Jean, 4,763,681, Cl. 137-8.000

VOL 1093 ISS 3 AG 16 1988 UMI

Vernet, Francis: *See—*
Sorel, Alain; and Vernet, Francis, 4,764,122, Cl. 439-66.000.
Verrico, Marsha K.: *See—*
Sullivan, Spencer W.; and Verrico, Marsha K., 4,764,388, Cl. 426-311.000
Via, Francis A.: *See—*
Sherif, Fawzy G.; and Via, Francis A., 4,764,357, Cl. 423-338.000.
Vialard, Etienne: *See—*
Bathellier, Andre ; Pasquiou, Jean-Yves; and Vialard, Etienne, 4,764,352, Cl. 423-10.000
Victory Engineering Company: *See—*
Mascuch, Frank; Winter, Arthur; and Laroia, Satish, 4,763,665, Cl. 128-736.000
Video Cassette Lock (UK) Limited: *See—*
Newell, Terence J., 4,763,784, Cl. 206-387.000.
Vieten, Michael J. Toothbrush. 4,763,375, Cl. 15-106.000
Vigneron, Pierre; and Hauer, Jean-Claude, to Pont-A-Mousson S.A. Manhole cover sealing and locking arrangement. 4,763,449, Cl. 52-20.000
Virno, Michele: *See—*
Carenzi, Angelo; Cerri, Oreste; Pozzi, Franco: Casagrande, Cesare; Miragoli, Giovanna; and Virno, Michele, 4,764,530, Cl. 514-548.000
Vitacomm, Ltd.: *See—*
Uphold, James D.; and Pfohl, Robert L., 4,763,663, Cl. 128-671.000.
Voboril, Jan: *See—*
Gobrecht, Jens; and Voboril, Jan, 4,764,249, Cl. 156-643.000.
Voege, Herbert: *See—*
Naik, Arundev H.; Stendel, Wilhelm; and Voege, Herbert, 4,764,529, Cl. 514-531.000
Voest-Alpine Aktiengesellschaft: *See—*
Muller, Heinz; Buzzi, Reinhard; and Scheiblhofer, Gerhard, 4,764,208, Cl. 75-10.190
Voest-Alpine International Corporation: *See—*
Muller, Heinz; and Nugent, Thomas J., 4,763,719, Cl. 164-478.000.
Vogel, Carl-Wilhelm: *See—*
Bredehorst, Reinhard; Talebian, Abdolhossen; Hammer, Charles F.; and Vogel, Carl-Wilhelm, 4,764,462, Cl. 435-18.000
Vogeley, Arthur W.: *See—*
Vogeley, James H.; and Vogeley, Arthur W., 4,763,993, Cl. 350-331.00T
Vogeley, James H.; and Vogeley, Arthur W., to n-View Corporation. Liquid crystal display for projection systems. 4,763,993, Cl. 350-331.00T
Vogler, Franz: *See—*
Bombis, Dieter; Becker, Ernst; Wildhaber, Paul; Vogler, Franz; and Muller, Peter, 4,763,843, Cl. 239-571.000
Vogt, Heinz: *See—*
Zentgraf, Ernst; Vogt, Heinz; and Brandstetter, Franz, 4,764,056, Cl. 406-68.000
Volk, Joseph A., Jr., to Beta Raven Inc. Method and apparatus for a microprocessor pellet mill controller with die temperature control 4,764,874, Cl. 364-468.000
Vollgold, Gunther: *See—*
Riehl, Gunther; and Vollgold, Gunther, 4,764,250, Cl. 159-6.100.
Voltronics Corporation: *See—*
Mittler, Martin A., 4,764,843, Cl. 361-294.000
Volvo Car B.V.: *See—*
Deckers, Roger J. H., 4,763,624, Cl. 123-432.000
Von Roll AG: *See—*
Ruegg, Hans; and Tschantre , Walter, 4,764,106, Cl. 431-160.000.
von der Crone, Jost; Medinger, Bernhard; and Bugnon, Philippe, to Ciba-Geigy Corporation. Novel compositions based on isoindoline pigments. 4,764,217, Cl. 106-494.000
Von Roedern, Bolko: *See—*
Madan, Arun; and Von Roedern, Bolko, 4,763,602, Cl. 118-719.000
Von Schuckmann, Alfred; and Mettenbrink, Herbert, to Bramlage Gesellschaft mit beschrankter Haftung. Dispenser. 4,763,815, Cl 222-96.000
Vora, Madhukar B., to National Semiconductor Corporation. Process for making high performance CMOS and bipolar integrated devices on one substrate with reduced cell size. 4,764,480, Cl. 437-054.000
Vosburgh, Gary A. Implement for inner inspection and destruction of plastic security containers. 4,763,847, Cl. 241-169.000
Vossen, Manfred: *See—*
Halff, Albert; and Vossen, Manfred, 4,763,551, Cl. 83-277.000
Vostovich, Joseph E.: *See—*
Greenhalgh, Milton S.; and Vostovich, Joseph E., 4,764,549, Cl. 427-118.000
Vrzalik, John H., to Kinetic Concepts, Inc. Arc changing apparatus for a therapeutic oscillating bed. 4,763,643, Cl. 128-49.000
Vsesojuzny Nauchno-Issledovatelsky Institut Burovoi Tekhniki: *See—*
Baldenko, Dmitry F.; Vadetsky, Jury V.; Gusman, Moisei T.; Semenets, Valery I.; and Khabetskaya, Valentina A., 4,764,094, Cl. 418-5.000
Vulkor, Incorporated: *See—*
Greenhalgh, Milton S.; and Vostovich, Joseph E., 4,764,549, Cl 427-118.000
W R. Grace & Co.: *See—*
Edwards, Grant C.; Gilson, Jean-Pierre; and McDaniel, Carl V., 4,764,269, Cl. 208-120.000
Wood, John C.; and Sladowski, Krzystjan P., 4,764,028, Cl. 383-20.000
W.R. Grace & Co., Cryovac Div.: *See—*
Donalson, Dennis C.; and Wilkie, Robert R., 4,763,781, Cl. 206-334.000
W. Schlafhorst & Co.: *See—*
Raasch, Hans, 4,763,465, Cl. 57-88.000
Wachi, Yuzi: *See—*
Yanagawa, Ichiro; and Wachi, Yuzi, 4,764,189, Cl. 55-163.000
Wada, Isao: *See—*
Shin, Yoichi; Wada, Isao; Kido, Junichiro; and Eimaeda, Shigeru, 4,764,252, Cl. 162-72.000
Wada, Yoshihiro; Fujii, Ryoichi; and Suzuki, Takashi, to Sharp Kabushiki Kaisha. Display segment patterns of clinical thermometer 4,764,027, Cl. 374-208.000.
Waddingtons Cartons Limited: *See—*
McGeehins, Robert, 4,763,790, Cl. 206-557.000.
Wadkins, Robert P.: *See—*
Lake, James A.; Heath, Russell L.; Liebenthal, John L.; DeBoisblanc, Deslonde R.; Leyse, Carl F.; Parsons, Kent; Ryskamp, John M.; Wadkins, Robert P.; Harker, Yale D.; Fillmore, Gary N.; and Oh, Chang H., 4,764,339, Cl. 376-353.000
Wagers, Kevin J., to Dow Chemical Company, The. Reclosable plastic container. 4,764,977, Cl. 383-63.000.
Wagner, Klaus; Rieber, Norbert; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Hydroxypyrazole derivatives, composition containing them and their use against microorganisms. 4,764,527, Cl. 514-407.000
Wagner, Willard E., to Acco World Corporation. Punch pin configuration. 4,763,552, Cl. 83-689.000
Wakabayashi, Toshio: *See—*
Chiba, Keiko; Takai, Makoto; and Wakabayashi, Toshio, 4,764,528, Cl. 514-510.000
Wakefield, Lindsay: *See—*
Cox, Bruce N.; and Wakefield, Lindsay, 4,764,075, Cl. 414-99.000.
Waldenstrom, Mats G.: *See—*
Aronsson, Sven B.; and Waldenstrom, Mats G., 4,764,434, Cl. 428-565.000
Fischer, Udo K.; Hartzell, Erik T.; and Waldenstrom, Mats G., 4,764,255, Cl. 175-329.000
Wale, Dennis H., to Marwin Cutting Tools, Limited. Contoured tool blades. 4,764,059, Cl. 407-42.000
Walker, Kenneth A.; Adie, Richard A.; and Shapiro, Arthur J., to Environmental Elements Corp. Method and system for cleansing a filter bed. 4,764,288, Cl. 210-793.000
Wall, Kevin: *See—*
Wilkinson, Harold C.; Pease, Charles C.; and Wall, Kevin, 4,763,458, Cl. 52-509.000
Wall, Steve H.: *See—*
Rice, Verle L.; and Wall, Steve H., 4,763,706, Cl. 144-136.00R
Wallace, Richard B., to Oakland Corporation, The. Packaged adhesive. 4,764,579, Cl. 528-87.000
Walsh, David A.: *See—*
Reimels, Harry G.; Walsh, David A.; and Arsenault, Michael J., 4,764,165, Cl. 604-35.000
Walsh, Michael J. M.: *See—*
Tichener, Paul F.; and Walsh, Michael J. M., 4,763,520, Cl. 73-155.000
Walter, Richard K., to Laser Communications, Inc. Communication laser alignment assembly. 4,764,983, Cl. 455-609.000
Waltonen, Edward J.; and Obrecht, Robert E., to Lamb Robo. Self equalizing piercing machine. 4,763,550, Cl. 83-191.000.
Wang, Karl L.: *See—*
Bader, Mark; and Wang, Karl L., 4,764,900, Cl. 365-189.000
Warnar, Robert B. J.: *See—*
Silverthorn, Lee J., III; Gaudette, Philip A.; Holt, Arthur W.; Nacht, George G.; and Warnar, Robert B. J., 4,764,863, Cl. 364-200.000
Warner-Lambert Company: *See—*
Connor, David T.; and Mullican, Michael D., 4,764,525, Cl. 514-381.000
Patt, William, 4,764,506, Cl. 514-46.000
Wasicek, Larry D.: *See—*
Wasicek, Michael D.; and Wasicek, Larry D., 4,763,879, Cl. 256-36.000
Wasicek, Michael D.; and Wasicek, Larry D. Metal fence post connector. 4,763,879, Cl. 256-36.000.
Wasserman, Gerald S.; Kramer, Karl C.; and Yadlowsky, Slawko, to General Foods Corporation. Process for preparing and storing brewed beverages. 4,764,391, Cl. 426-433.000
Watabe, Takaji, to Santo Industries Co., Ltd. Door closer and check 4,763,384, Cl. 16-53.000
Watanabe, Atsumi: *See—*
Sasaki, Hiroshi; Chiba, Tomio; Kido, Mitsuyasu; Sato, Yoshio; and Watanabe, Atsumi, 4,764,913, Cl. 369-49.000
Watanabe, Eifu, to Sanshin Kogyo Kabushiki Kaisha. Trimming device for marine propulsion unit. 4,764,134, Cl. 440-53.000.
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, to Hitachi, Ltd., and Hitachi Tokyo Electronics. Manufacturing method. 4,763,827, Cl. 228-102.000
Watanabe, Masafumi; Ozaki, Toshitune; and Hirahara, Jiro, to Kabushiki Kaisha Toshiba. Single-chip microcomputer with encryptable function on program memory. 4,764,959, Cl. 380-4.000.
Watanabe, Nobuhiro: *See—*
Takeo, Suguru; Kado, Hisao; Watanabe, Nobuhiro; Uchida, Kiichi; and Mori, Yoshitada, 4,764,507, Cl. 514-54.000
Watanabe, Tomomi: *See—*
Okazaki, Katsumi; Yokooku, Katsuhiko; Watanabe, Tomomi; Nakazumi, Tadataka; and Mamiya, Kiyotaka, 4,763,629, Cl. 123-489.000

Watanabe, Toshiyuki; and Deguchi, Naoyasu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 4,764,456, Cl 430-550.000.
Watari, Masao: *See—*
Yoshida, Kazunaga; Shimizu, Hiroshi; and Watari, Masao, 4,764,972, Cl. 382-13.000
Watashi, Masahiro; Ueno, Yasunori; Endo, Hirohisa; Nakamaru, Tooru; Mizude, Kazuhiro; and Kishimoto, Keiichi, to Mita Industrial Co., Ltd. Copying machine equipped with a movable original holder. 4,764,788, Cl. 355-3.00R.
Watashi, Masahiro, to Mita Industrial Co., Ltd. Method for cleaning photoreceptor of image forming apparatus. 4,764,790, Cl. 355-15.000
Waters, Derek B., to STC PLC. Telecommunication switching system. 4,764,918, Cl. 370-14.000.
Watkins, John P.: *See—*
Womble, Coy G.; and Watkins, John P., 4,763,523, Cl. 73-587.000
Way, Peter F., to Electric Power Research Institute, Inc. Removal of polychlorinated biphenyls by solvent extraction. 4,764,256, Cl. 203-46.000
Wayman, William H.: *See—*
Brewington, Grace T.; Hays, Dan A.; and Wayman, William H., 4,764,841, Cl. 361-226.000
Wayne Automation Corp.: *See—*
Johnson, A. David, Jr.; and Bachman, Joseph L., Jr., 4,763,462, Cl. 53-448.000
Webb, Peter J. Spinal fixation. 4,763,644, Cl. 128-69.000.
Webb, Robert H.; and Hughes, George W., to Eye Research Institute of Retina Foundation. Double scanning optical apparatus. 4,764,005, Cl. 351-205.000
Weber, Gus J.: *See—*
Engler, Edgar D.; Weber, Gus J.; Stapel, Melvin G.; Mlaker, John J.; and Hanson, Leonard, 4,763,800, Cl. 212-195.000.
Weber, Joseph H.: *See—*
Robbins, Craig; Lanser, Michael L.; Van Order, Kim L.; and Weber, Joseph H., 4,763,946, Cl. 296-97.00H.
Weese, Benjamin H., to Midland Manufacturing Corp. Multi-station carrel unit. 4,763,581, Cl. 108-92.000
Wehner, Edward J., to General Electric Company. Swirler arrangement for combustor of gas turbine engine. 4,763,482, Cl. 60-746.000.
Wehner, Rainer; Mattersberger, Johann; Klenner, Dagmar; and Deutsch-Weyer, Gerlinde, to Boehringer Mannheim GmbH. Process for stabilizing the activity of peroxidase in solution. 4,764,468, Cl 435-188.000
Weigel, Leland O.; and Staten, Gilbert S., to Eli Lilly and Company Synthesis of 2-aminopyrimido[4,5-g]quinolines. 4,764,609, Cl 544-250.000
Weil, George. Erasable marker system. 4,763,929, Cl. 283-81.000
Weinheimer, Alois: *See—*
Hutschenreuter, Elfriede; Bytzek, Max; Andrae, Klaus; and Weinheimer, Alois, 4,764,031, Cl. 383-120.000
Weiss, Johannes S.: *See—*
Graves, Alan F.; Littlewood, Paul A.; and Weiss, Johannes S., 4,764,921, Cl. 370-100.000
Weissert, James T.: *See—*
Brown, Donald L.; Weissert, James T.; Bhakuni, Roop S.; and Rogowski, Gregory S., 4,763,468, Cl. 57-310.000.
Weitermann, Hans D.: *See—*
Klute, Friedrich; Schydlo, Franz; and Weitermann, Hans D., 4,763,505, Cl. 72-238.000.
Weller, Berthold L.: *See—*
Bergling, Craig L.; Ewald, Henry T.; Horton, Douglas J.; Hoverman, James L.; and Weller, Berthold L., 4,763,571, Cl. 99-349.000
Weman, Per O.: *See—*
Karlin, Mats A.; and Weman, Per O., 4,763,924, Cl. 280-806.000
Wenger Manufacturing, Inc.: *See—*
Wenger, Marc L.; and Huber, Gordon R., 4,763,569, Cl. 99-348.000
Wenger, Marc L.; and Huber, Gordon R., to Wenger Manufacturing, Inc. Low temperature extrusion process for quick cooking pasta products. 4,763,569, Cl. 99-348.000.
Wenger, Otto, to Metacon Aktiengesellschaft. Arrangement for mounting a refractory plate in a frame. 4,763,881, Cl. 266-287.000
Wenger, Roland, to Sandoz Ltd. Novel cyclosporins. 4,764,503, Cl 514-11.000
Werly, Marc: *See—*
Touati, Bernard; and Werly, Marc, 4,764,118, Cl. 433-226.000
Werner, Michel: *See—*
Papuchon, Michel; Enard, Alain; Vatoux, Sylvie; and Werner, Michel, 4,763,972, Cl. 350-96.110.
Werner & Pfleiderer GmbH: *See—*
Lambertus, Friedrich, 4,764,100, Cl. 425-67.000
Wesselski, Clarence J., to United States of America, National Aeronautics and Space Administration. Collet lock joint for space station truss. 4,763,459, Cl. 52-646.000
Wesselski, Clarence J.: *See—*
Schneider, William C.; Nagy, Kornel; and Wesselski, Clarence J., 4,763,762, Cl. 188-218.0XL.
West, Lynn P.: *See—*
Einkauf, Mark A.; and West, Lynn P., 4,764,966, Cl. 381-46.000
Westbrook, Daniel S.: *See—*
Kuenn, Cary K.; and Westbrook, Daniel S., 4,764,418, Cl. 428-284.000
Westinghouse Electric Corp.: *See—*
Guina, Milan M., 4,764,332, Cl. 376-203.000
Israelson, Gordon A.; Lippert, Thomas E.; Olczak, Edward S.; and Ciliberti, David F., 4,764,190, Cl. 55-269.000
King, William E.; and Healy, Lawrence G., 4,764,334, Cl 376-248.000
Lui, Chun K.; and Gesinski, Leonard T., 4,764,340, Cl. 376-434.000
Panson, Armand J., 4,764,337, Cl. 376-306.000
Parker, David M.; and Groenendaal, John C., Jr., 4,764,084, Cl. 415-101.000
Sadhir, Rajender K.; and Schoch, Karl F., Jr., 4,764,419, Cl 428-290.000
Westvaco Corporation: *See—*
Dilling, Peter, 4,764,597, Cl. 530-501.000
Forbes, Hampton E., Jr., 4,763,832, Cl. 229-114.000
Nikkel, Willem A., 4,764,236, Cl. 156-210.000
Wezag GmbH: *See—*
Rommel, Reiner; and Beetz, Horst, 4,763,406, Cl. 29-759.000
Wheeler, Alton D. Camera diffuser for taking composite photographs 4,764,782, Cl. 354-109.000
Whipple, Walter, III: *See—*
Bedard, James F.; and Whipple, Walter, III, 4,764,760, Cl 340-680.000
Whirlpool Corporation: *See—*
Miranda, Thomas J., 4,764,542, Cl. 521-149.000
Schwartz, Anton J., 4,764,651, Cl. 219-10.55F
Teich, Daniel E., 4,763,868, Cl. 248-558.000
Whitaker, C. Gordon, to Mannesmann Tally Corporation. Shock stabilized, twin counter weight shuttle drive for reciprocably mounted carriages. 4,764,040, Cl. 400-320.000
White Consolidated Industries, Inc.: *See—*
Abromaitis, Andre T., 4,763,696, Cl. 138-155.000
White, Kenneth L.: *See—*
Hartwigsen, Wesley D.; Johnson, Alan D.; Beckham, Jeffrey C.; and White, Kenneth L., 4,764,221, Cl. 134-8.000
White, Raymond L.: *See—*
Gregory, Peter; and White, Raymond L., 4,764,178, Cl. 8-471.000
White, William J.; and Utton, Donald B., to National Nuclear Corporation Limited. Heat transfer rate measurement using the optical properties of a dissolving coating. 4,764,023, Cl. 374-29.000
Whiteman, Aharon E.: *See—*
Shoher, Itzhak; and Whiteman, Aharon E., 4,764,116, Cl 433-180.000
Whitener, Charles G., Jr.; and Hibbard, Gary. Profile analyzer for filamentary materials. 4,764,876, Cl. 364-470.000
Whitley, George J., to General Electric Company. Component lead bending device. 4,763,701, Cl. 140-105.000
Whitman, Hobart A., III. Optical viewing system. 4,763,419, Cl 33-272.000
Whitney, James R. Road having curved grooves. 4,764,051, Cl 404-16.000
Wicks, Robert G., to Ralph W. Earl Company, Inc. Gate control apparatus for refrigerated cargo container. 4,763,487, Cl. 62-239.000
Wickstead, James C.; and Selden, Gerald P., to Ohio Art Company, The. Electronic sketching device. 4,764,763, Cl. 340-709.000
Widrevitz, Benjamin C.: *See—*
Hunter, Paul D.; Parker, William W.; and Widrevitz, Benjamin C., 4,764,919, Cl. 370-60.000
Wiegart, Norbert: *See—*
Mauthe, Gerhard; Niemeyer, Lutz; Pinnekamp, Friedrich; and Wiegart, Norbert, 4,764,836, Cl. 361-5.000
Wilcox, Jaroslava Z.; Jansen, Michael; Silver, Arnold H.; Yang, Jane J J.; and Simmons, William W., to TRW Inc. Controlled far-field pattern selection in diffraction-coupled semiconductor laser arrays 4,764,935, Cl. 372-50.000
Wilderness Bicycle, Inc.: *See—*
Poehlmann, Paul W.; Slate, Mark J.; Potts, Stephen M.; and Cunningham, Charles B., 4,763,957, Cl. 301-105.00B
Wildhaber, Paul: *See—*
Bombis, Dieter; Becker, Ernst; Wildhaber, Paul; Vogler, Franz, and Muller, Peter, 4,763,843, Cl. 239-571.000
Wilkie, Robert R.: *See—*
Donalson, Dennis C.; and Wilkie, Robert R., 4,763,781, Cl 206-334.000
Wilkins, George A., to United States of America, Navy. Ultimate low-loss electro-optical cable. 4,763,981, Cl. 350-96.230
Wilkinson, Donald R.: *See—*
Barnes, Vernon B.; Wilkinson, Donald R.; Shore, John W., and Huff, Ronnie G., 4,763,673, Cl. 131-96.000
Wilkinson, Harold C.; Pease, Charles C.; and Wall, Kevin, to KSM Fastening Systems, Inc. Insulation system and method and apparatus for retaining same. 4,763,458, Cl. 52-509.000
Williames, Geoffrey A., to Williames Hi-Tech International Pty. Ltd Cell chains. 4,763,443, Cl. 47-86.000
Williames Hi-Tech International Pty. Ltd.: *See—*
Williames, Geoffrey A., 4,763,443, Cl. 47-86.000
Williams, Charles E., to Hough Manufacturing Corporation. Dual wall partition. 4,763,714, Cl. 160-200.000
Williams, George A. Accessory used to keep outside rear view mirrors of vehicles clear of water, snow, ice and dirt. 4,763,381, Cl 15-250.010.
Williams, Mark A.: *See—*
Bauman, Bernard D.; Mehta, Rajendra K.; and Williams, Mark A., 4,764,405, Cl. 428-35.000
Willis, Roland G.: *See—*
Simons, Michael J.; Willis, Roland G.; and Harvey, Donald M., 4,764,444, Cl. 430-47.000

VOL 1093 ISS 3 AG 16 1988 UMI

Willits, William G.; and Schmitt, Thomas T., to Denture Clinic, Inc. Partial denture with integrally formed elastic retainer strip. 4,764,115, Cl. 433-177.000

Willsey, Charles H., to Seymour Foods, Inc. Albumen collection method. 4,764,387, Cl. 426-299.000.

Wilson, Andrew L., to Ferranti, plc. Balanced optical system. 4,764,002, Cl. 350-486.000

Wilson, Charles L.: *See*—
Pusey, Paul L.; and Wilson, Charles L., 4,764,371, Cl. 424-93.000

Wilson, Joan A. M.: *See*—
Wilson, Trevor E.; and Wilson, Joan A. M., 4,763,491, Cl 66-146.000

Wilson, Mark D.: *See*—
Schnack, J. Jay; and Wilson, Mark D., 4,763,640, Cl. 126-243.000.

Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased (by Withycombe, Janet L., executrix); Katz, Ira; and Schrankel, Kenneth R., to International Flavors & Fragrances Inc.; and University of Florida, The. Use of C_8-t-alkanols and C_5–C_{11}-omega-alken-1-ols in attracting insects. 4,764,367, Cl. 424-84.000.

Wilson, Trevor E.; and Wilson, Joan A. M. Accessory for a domestic knitting machine. 4,763,491, Cl. 66-146.000.

Wind Feather, United Science ASC: *See*—
Danson, David P., 4,764,090, Cl. 416-17.000.

Winkelmann, Juergen: *See*—
Romer, Rudolf; Winkelmann, Juergen; and Sabinski, Horst, 4,763,577, Cl. 102-431.000

Winroth, Calvin S., to GenRad, Inc. Interpolating time-measurement apparatus. 4,764,694, Cl. 307-602.000.

Winter, Arthur: *See*—
Mascuch, Frank; Winter, Arthur; and Laroia, Satish, 4,763,665, Cl. 128-736.000

Winter, Horst: *See*—
Eder, Erich; and Winter, Horst, 4,763,823, Cl. 226-109.000.

Wirtzfeld, Alexander; Stangl, Karl; and Heinze, Roland, to Siemens Aktiengesellschaft. Frequency-controlled heart pacemaker. 4,763,655, Cl. 128-419.0PG.

Wisconsin Alumni Research Foundation: *See*—
Conrad, John R., 4,764,394, Cl. 427-38.000.

Wissbroecker, Herman A. Fish scaling apparatus. 4,763,386, Cl. 17-64.000

Wissner, Adolf; Haydn, Josef; and Birkenstock, Udo, to Bayer Aktiengesellschaft. Silica-containing shaped articles and a process for their preparation. 4,764,498, Cl. 502-251.000.

Witco Chemical Corporation: *See*—
Gloyer, Stewart E., 4,764,428, Cl. 428-402.000.
Gloyer, Stewart E., 4,764,428, Cl. 428-402.000.

Witco Corporation: *See*—
Root, Jon C.; Barnes, John F.; and Lawson, Ray D., 4,764,293, Cl 252-12.400

Withycombe, Donald A., deceased: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000

Withycombe, Janet L., executrix: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Butler, Jerry F.; Withycombe, Donald A., deceased; Katz, Ira; and Schrankel, Kenneth R., 4,764,367, Cl. 424-84.000

Wodlinger, Harold M., to Fortran Traffic Systems Limited. Traffic signal head. 4,763,870, Cl. 248-611.000

Wolf, Gerhard D.: *See*—
Sirinyan, Kirkor; Giesecke, Henning; Wolf, Gerhard D.; Ebneth, Harold; and Merten, Rudolf, 4,764,401, Cl. 427-304.000.

Wolff, Gerard: *See*—
Bertrand, Claude; and Wolff, Gerard, 4,764,637, Cl. 560-143.000

Wolff Walsrode Aktiengesellschaft: *See*—
Hoppe, Lutz; Luhmann, Erhard; Hohl, Frank; and Reinhardt, Eugen, 4,764,548, Cl. 524-31.000.

Wolman GmbH: *See*—
Marx, Hans-Norbert; Goettsche, Reimer; and Klein, Werner, 4,764,214, Cl. 106-18.320.

Womble, Coy G.; and Watkins, John P. Roller bearing testing device. 4,763,523, Cl. 73-587.000.

Wong, Morton M.: *See*—
Hoyer, Daniel P.; Featherstone, John L.; and Wong, Morton M., 4,763,479, Cl. 60-641.500.

Wong, Philip C.: *See*—
Hamilton, Stephen W.; and Wong, Philip C., 4,764,687, Cl. 307-269.000

Wong, Stephen S.: *See*—
Chen, Nai Y.; LaPierre, Rene B.; Partridge, Randall D.; and Wong, Stephen S., 4,764,266, Cl. 208-58.000

Wong, Tak-ko, to T. K. Wong & Associates Limited. Toy adapted to crawl down a vertical surface. 4,764,148, Cl. 446-431.000.

Wood, John C.; and Sladowski, Krzystjan P., to W. R. Grace & Co. Hang bags having hanger portion of reinforcing member of non-shrink film laminated between two layers of shrink film. 4,764,028, Cl. 383-20.000

Wood, Nelson. Mexican jumping bean toy. 4,764,140, Cl. 446-14.000.

Wood, Robert B., to Flight Dynamics, Inc. Head up display system. 4,763,990, Cl. 350-320.000

Woods, Richard E., to Perceptics Corporation. Apparatus and method for processing an image. 4,764,974, Cl. 382-43.000.

Worland, D. Philip: *See*—
Scifres, Donald R.; and Worland, D. Philip, 4,763,975, Cl. 350-96.150

Wren, Clifford T. Surveillance housing assembly. 4,764,008, Cl. 354-81.000

Wright, Raymond L.: *See*—
Clark, Carl A.; and Wright, Raymond L., 4,764,055, Cl. 405-261.000

Wu, Chih F.: *See*—
Lora, Jairo H.; Katzen, Raphael; Cronlund, Malcolm; and Wu, Chih F., 4,764,596, Cl. 530-507.000

Wu, Jing Shown; and Chu, Ming Her. Structure of high-resolution polygon laser scanner. 4,764,672, Cl. 250-236.000.

Wuellenweber, Horst: *See*—
Schoen, Martin; Wuellenweber, Horst; and Specht, Herbert, 4,763,500, Cl. 72-14.000

Wusirika, Raja R.: *See*—
Lilley, Edward; and Wusirika, Raja R., 4,764,493, Cl. 501-137.000.

Wyatt, Philip, to Migada, Inc. Method and apparatus for arterial and venous blood sampling. 4,763,648, Cl. 128-673.000

Wyss, Frederick R., to Force Northwest Distributors, Inc. Coupling for drop box system. 4,764,080, Cl. 414-499.000.

Xerox Corporation: *See*—
Brewington, Grace T.; Hays, Dan A.; and Wayman, William H., 4,764,841, Cl. 361-226.000.
Croucher, Melvin D.; Pravato, George R.; Fuller, John R. C.; and Duff, James M., 4,764,446, Cl. 430-115.000.
Levy, Gail J.; and Fletcher, Gerald M., 4,764,675, Cl. 250-324.000
Turner, S. Richard; Yanus, John F.; and Renfer, Dale S., 4,764,625, Cl. 548-442.000

Yabushita, Yasunori: *See*—
Suyama, Katsuhiko; Yabushita, Yasunori; Koyama, Masanao; and Takagi, Kunihiko, 4,764,466, Cl. 435-174.000.

Yadlowsky, Slawko: *See*—
Wasserman, Gerald S.; Kramer, Karl C.; and Yadlowsky, Slawko, 4,764,391, Cl. 426-433.000

Yajima, Yutaka, to Tachi-S Co., Ltd. Automatic tension spring mounting device. 4,764,179, Cl. 29-33.00K.

Yakata, Brian T. Exercise machine with adjustably positioned bar. 4,763,897, Cl. 272-118.000

Yakuwa, Masahiko; and Satoh, Takashi, to Honda Giken Kogyo K.K. Method of detecting abnormality in electromagnetic valve current controller. 4,764,729, Cl. 324-546.000

Yamada, Hisashi: *See*—
Tsurusaki, Masayuki; Sato, Yasuji; Horiuchi, Takeshi; Yamada, Hisashi; Tanaka, Minoru; and Maekawa, Akira, 4,764,954, Cl. 379-390.000

Yamada, Kunio; and Maeide, Susumu. Wooden pattern applying method. 4,764,400, Cl. 427-280.000.

Yamada, Mituo: *See*—
Hazama, Keiji; Ota, Shin'ichi; Yamada, Mituo; and Arai, Toshiyuki, 4,764,235, Cl. 156-228.000.

Yamada, Tadashi: *See*—
Usui, Akira; Yamada, Tadashi; Kubo, Kazuhiko; and Nagai, Hiroyuki, 4,764,736, Cl. 330-294.000.

Yamada, Takashi; Fujita, Masaki; Ichino, Toshikazu; Tsujiuchi, Yoshio; Ogasawara, Morihiko; and Kawai, Yoshihiro, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Automobile outer mirror assembly. 4,764,004, Cl. 350-632.000

Yamaguchi, Katsumi: *See*—
Kanai, Takao; Yamaguchi, Katsumi; Kinoshita, Shigeo; Yoshikawa, Kikuo; and Yokoi, Syouichiro, 4,764,827, Cl. 360-96.500

Yamaguchi, Noboru: *See*—
Ohmae, Tadayuki; Mashita, Kentaro; Yamaguchi, Noboru; and Asao, Kouichiro, 4,764,551, Cl. 524-394.000.

Yamaguchi, Nobutaka; and Tadokoro, Eiichi, to Fuji Photo Film Co., Ltd. Abrasive tape. 4,764,423, Cl. 428-323.000.

Yamaguchi, Shinichiro: *See*—
Miyazaki, Yoshihiro; Takaya, Soichi; Tanji, Masayuki; Nishikawa, Atsuhiko; and Yamaguchi, Shinichiro, 4,764,869, Cl. 364-300.000.

Yamaguchi, Yukio: *See*—
Yoshitomi, Toshihiko; Horiuchi, Hiromi; Yamaguchi, Yukio; Kamoshita, Yasuo; and Sekihara, Kiyoshi, 4,764,448, Cl. 430-120.000

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Iwanami, Takeshi, 4,763,612, Cl. 123-52.0MV.

Yamakawa, Akira; Miyake, Masaya; and Nishioka, Takao, to Sumitomo Electric Industries, Ltd. Process for preparation of sintered silicon nitride. 4,764,490, Cl. 501-97.000

Yamakawa, Tsutomu, to Kabushiki Kaisha Toshiba. Scintillation camera apparatus including autotuning. 4,764,678, Cl. 250-369.000.

Yamami, Toshiaki: *See*—
Yamashita, Atsushi; Yamami, Toshiaki; Kondo, Yasuhiro; Nakai, Hiroyuki; and Suzuki, Kazuomi, 4,764,117, Cl. 433-215.000.

Yamamori, Kiyoshi; Hasegawa, Shigeyoshi; Mogi, Yuuji; Kojima, Tamotsu; and Higuchi, Sadashi, to Matsushita Electric Industrial Co., Ltd. Ink ejection recording apparatus having means for equalizing the static ink pressures of a plurality of ink nozzles arranged at different heights. 4,764,780, Cl. 346-140.00R

Yamamoto, Hiroshi: *See*—
Murata, Michihiro; and Yamamoto, Hiroshi, 4,764,139, Cl. 445-49.000

Yamamoto, Hiroyuki: *See*—
Imamura, Tatsuo; and Yamamoto, Hiroyuki, 4,764,833, Cl. 360-126.000

Yamamoto, Noriyuki: *See*—
Kato, Hideki; and Yamamoto, Noriyuki, 4,764,396, Cl. 427-69.000.

Yamamoto, Shinya: *See*—
Narui, Hiroshi; Shinohara, Terumi; Gotoh, Denichiro, and Yamamoto, Shinya, 4,764,496, Cl. 503-227.000.

Yamamoto, Shu: *See*—
Sakaguchi, Haruo; Seki, Norio; Yamamoto, Shu; and Iwamoto, Yoshinao, 4,764,980, Cl. 455-601.000

Yamamoto, Shuuichi: *See*—
Sawai, Kiyoshi; Yamamura, Michio; Yamamoto, Shuuichi; and Morokoshi, Hiroshi, 4,764,096, Cl. 418-55.000

Yamamura, Michio: *See*—
Sawai, Kiyoshi; Yamamura, Michio; Yamamoto, Shuuichi; and Morokoshi, Hiroshi, 4,764,096, Cl. 418-55.000.

Yamamuro, Sigeaki: *See*—
Kumura, Haruyoshi; Yamamuro, Sigeaki; Hirano, Hiroyuki; Abo, Keiju; and Nakano, Masaki, 4,764,155, Cl. 474-12.000.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Imai, Harumitsu; Suzuki, Ken-ichi; Nagai, Koji; Miyazaki, Shigeru; Abe, Kenji; Takahashi, Isao; Kadota, Shigenobu; and Tanaka, Koichi, 4,764,606, Cl. 540-221.000

Yamashita, Atsushi; Yamami, Toshiaki; Kondo, Yasuhiro; Nakai, Hiroyuki; and Suzuki, Kazuomi, to Kuraray Co., Ltd. Restorative dental material and method of restoring teeth using same. 4,764,117, Cl. 433-215.000

Yamashita, Kazuhiro; and Yoshida, Mamoru, to S D S Bioteck K.K. Contradeglutitious solid herbicidal composition. 4,764,206, Cl. 71-94.000

Yamashita, Tsukasa: *See*—
Inoue, Nobuhisa; Matano, Masaharu; and Yamashita, Tsukasa, 4,763,973, Cl. 350-96.130

Yamato Mishin Seizo Kabushiki Kaisha: *See*—
Kojima, Toshihiko; and Kajio, Toshiaki, 4,763,590, Cl. 112-287.000.

Yamato Scale Company, Limited: *See*—
Inoue, Shinichi; and Oshima, Yasushi, 4,764,695, Cl. 310-20.000

Yamauchi, Shin-ichi; Arashiro, Yusuke; and Ohno, Kenyu, to Mitsubishi Petrochemical Co., Ltd. Polyphenylene ether-polypropylene resin composition. 4,764,559, Cl. 525-92.000.

Yamazaki, Isamu: *See*—
Watanabe, Kenji; Yamazaki, Isamu; Kyomasu, Ryuichi; Takasugi, Nobuhiro; Mimata, Tsutomu; and Kakutani, Osamu, 4,763,827, Cl. 228-102.000

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of making photoelectric conversion device. 4,764,476, Cl. 437-4.000

Yamazaki, Yasuo: *See*—
Torikoshi, Yuichi; Shirai, Hitoshi; Iwasa, Kazuyuki; Miyazaki, Hiroaki; and Yamazaki, Yasuo, 4,764,784, Cl. 354-195.120

Yan, Tsoung Y., to Mobil Oil Corporation. Clean up and passivation of mercury in gas liquefaction plants. 4,764,219, Cl. 134-2.000.

Yanagawa, Ichiro; and Wachi, Yuzi, to Jidosha Kiki Co., Ltd. Air dryer apparatus for use with pneumatic operative device. 4,764,189, Cl. 55-163.000

Yanagida, Isao: *See*—
Kawai, Jyuichiro; and Yanagida, Isao, 4,764,083, Cl. 415-201.000.

Yang, Jane J. J.: *See*—
Wilcox, Jaroslava Z.; Jansen, Michael; Silver, Arnold H.; Yang, Jane J. J.; and Simmons, William W., 4,764,935, Cl. 372-50.000

Yang, Tai-Her. Adjustable range vise. 4,763,887, Cl. 269-247.000.

Yano, Seiken, to NEC Corporation. Bit slice - type arithmetic adder circuit using exclusive-or logic for use with a look-ahead circuit 4,764,886, Cl. 364-787.000

Yanus, John F.: *See*—
Turner, S. Richard; Yanus, John F.; and Renfer, Dale S., 4,764,625, Cl. 548-442.000

Yarish, John A.: *See*—
Scharres, Harry J.; Grist, W. Samuel; and Yarish, John A., 4,764,312, Cl. 261-30.000

Yasuda, Shigeari: *See*—
Kotani, Matahira; Hayashi, Motohiko; Yasuda, Shigeari; and Oi, Yuzoh, 4,764,951, Cl. 379-100.000.

Yasufuku, Kenjiro; Okafuji, Hiroshi; Hasegawa, Mineo; and Haga, Noriyuki, to Q.P. Corporation. Margarine containing fish oil. 4,764,392, Cl. 426-603.000

Yates, David: *See*—
Bates, Andrew; Dack, Stuart; and Yates, David, 4,764,230, Cl. 149-21.000

Yazaki Corporation: *See*—
Kaneko, Tomohisa, 4,764,133, Cl. 439-889.000
Takeshita, Kazutoshi, 4,763,411, Cl. 29-863.000.

Yazaki, Kazuhiko: *See*—
Abe, Kazuyoshi; and Yazaki, Kazuhiko, 4,764,667, Cl. 235-462.000

Yee, Tso: *See*—
Kozlovsky, William J.; Yee, Tso; and Byer, Robert L., 4,764,933, Cl. 372-40.000

Yeh, Teng-Hsun; and Lai, Sien-Shigong. Simple tubeless tire patcher 4,763,546, Cl. 81-15.700

Yehushua, Moshe: *See*—
Paneth, Eric; Critchlow, David N.; and Yehushua, Moshe, 4,764,940, Cl. 375-67.000

Yellow Springs Instrument Company, Inc., The: *See*—
Campbell, James M., 4,764,879, Cl. 364-482.000.

Yerman, Alexander J.: *See*—
Loughran, James A.; McMullen, James G.; and Yerman, Alexander J., 4,764,485, Cl. 437-225.000

Yokoi, Syouichiro: *See*—
Kanai, Takao; Yamaguchi, Katsumi; Kinoshita, Shigeo; Yoshikawa, Kikuo; and Yokoi, Syouichiro, 4,764,827, Cl 360-96.500

Yokoi, Takeshi, to Olympus Optical Co., Ltd. Ultrasonic biopsy endoscope with extensible guide sheath. 4,763,662, Cl. 128-660.000

Yokooku, Katsuhiko: *See*—
Okazaki, Katsumi; Yokooku, Katsuhiko; Watanabe, Tomomi; Nakazumi, Tadataka; and Mamiya, Kiyotaka, 4,763,629, Cl 123-489.000

Yokota, Akira, to Olympus Optical Co., Ltd. Retrofocus-type objective for an endoscope. 4,764,001, Cl. 350-465.000

Yoneyama, Hitoshi, to Takara Co., Ltd. Spring driven two-wheel toy vehicle. 4,764,149, Cl. 446-440.000

Yoshida, Hideo, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, and Ishikawajima Sangyo Kikai Kabushiki Kaisha. Screen plate 4,764,277, Cl. 210-498.000

Yoshida, Kazunaga; Shimizu, Hiroshi; and Watari, Masao, to NEC Corporation. Continuous characters recognition system. 4,764,972, Cl. 382-13.000

Yoshida, Mamoru: *See*—
Yamashita, Kazuhiro; and Yoshida, Mamoru, 4,764,206, Cl 71-94.000

Yoshida, Toshio. Semisubmerged water surface navigation ship 4,763,596, Cl. 114-256.000

Yoshikawa, Kikuo: *See*—
Kanai, Takao; Yamaguchi, Katsumi; Kinoshita, Shigeo; Yoshikawa, Kikuo; and Yokoi, Syouichiro, 4,764,827, Cl 360-96.500

Yoshikawa, Shoji: *See*—
Morota, Makie; and Yoshikawa, Shoji, 4,764,911, Cl. 369-32.000

Yoshikawa, Tadashi: *See*—
Haruyama, Kenzo; Tsuruga, Kenichiro; and Yoshikawa, Tadashi, 4,763,814, Cl. 222-63.000

Yoshimura, Nobuya: *See*—
Takahashi, Fumio; and Yoshimura, Nobuya, 4,763,708, Cl. 152-209.00A.

Yoshimura, Susumu; and Iwai, Isamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for processing document data including voice data. 4,764,965, Cl. 381-43.000

Yoshioka, Junichi; Miyashita, Masakazu; and Daito, Michimasa. Centerless grinding machine. 4,763,448, Cl. 51-165.800.

Yoshioka, Teruo; Abe, Yuzo; and Nakano, Shoji, to Honda Giken Kogyo Kabushiki Kaisha. Automatic assembling apparatus 4,763,391, Cl. 29-33.00P

Yoshitomi, Toshihiko; Horiuchi, Hiromi; Yamaguchi, Yukio; Kamoshita, Yasuo; and Sekihara, Kiyoshi, to Mitsubishi Chemical Industries, Ltd. Amorphous silicon hydride photoreceptors for electrophotography, process for the preparation thereof, and method of use 4,764,448, Cl. 430-120.000

Yoshitsugu, Noritada, to Toyota Jidosha Kabushiki Kaisha. Seatbelt assembly. 4,763,750, Cl. 180-268.000

Yosida, Ethuo, to Ohara Paragium Chemical, Co., Ltd. Process for preparing α-cyanoacrylate type compounds and adhesive composition comprising α-cyanoacrylate type compound obtained by the process as its main component. 4,764,545, Cl. 523-212.000

Young, Rodney C.: *See*—
Cooper, David G.; Miles, Peter D.; and Young, Rodney C., 4,764,519, Cl. 514-335.000

Youngquest, Darrell D.: *See*—
Czarnecki, John A.; and Youngquest, Darrell D., 4,763,564, Cl 98-2.110.

Yuasa, Shigeki; Okabayashi, Minahiro; Ohno, Hideki; Suzuki, Katsumi; and Kusumoto, Koshi, to Tokuyama Soda Kabushiki Kaisha. Amorphous, spherical inorganic compound and process for preparation thereof. 4,764,497, Cl. 502-235.000

Yukawa, Akira, to NEC Corporation Analog to digital converter 4,764,753, Cl. 340-347.0AD

Zacharias, Ellis M., to Nusonics, Inc. Sonic transducer. 4,763,513, Cl 73-61.00R

Zackheim, Herschel S.; and Grassetti, Davide R. Agents for the treatment of leukemia. 4,764,520, Cl. 514-350.000

Zagorzycki, Peter E.; and Dussan V., Benicio I., to Proctor & Schwartz, Inc. Traveling vibrating diverter feed system. 4,763,770, Cl. 198-364.000

Zambon S.p.A.: *See*—
Castaldi, Graziano; Cavicchioli, Silvia; and Giordano, Claudio, 4,764,642, Cl. 568-319.000

Zambon Spa.: *See*—
Castaldi, Graziano; Cavicchioli, Silvia; Giordano, Claudio; and Restelli, Carlo, 4,764,641, Cl. 568-319.000

Zamitter, Mikhail N., to Kievsky Inzhenerno-Stroitelny Institut Planar spring. 4,763,885, Cl. 267-227.000

Zander, Dennis R.: *See*—
Klein, Gerald W.; and Zander, Dennis R., 4,763,403, Cl. 29-598.000

Zappia, Vincenzo; and De Rosa, Mario, to Gibipharma S.p.A. Stable salts of S-adenosyl-L-methionine with polyanions. 4,764,603, Cl 536-26.000

Zastocki, Ronald M., to Brunswick Corporation. Fluid retention cup 4,763,620, Cl. 123-196.00A

Zavracky, Paul M.: *See*—
Chitty, Gordon W.; Morrison, Richard H., Jr.; Olsen, Everett O.; Panagou, John G.; and Zavracky, Paul M., 4,764,244, Cl 156-630.000

Zebley, Raymond S.; Nichols, James H., Jr.; and Ciosek, Bernard M., Jr., to Du Pont de Nemours, E. I., and Company. Package and

VOL 1093 ISS 3 AG 16 1988 UMI

apparatus for dispensing electrical connectors. 4,763,780, Cl. 206-330.000.

Zeh, Robert M., to Testamatic Corporation. Electro-luminescent automatic testing apparatus and method for ceramic substrates, printed circuit boards and like items with background illumination suppression. 4,764,719, Cl. 324-73.0PC.

Zeiner, Hartmut: *See*—
Fischer, Juergen; Zeiner, Hartmut; Nissen, Dietmar; and Heinz, Gerhard, 4,764,397, Cl. 428-269.000.

Zellweger Uster Ltd.: *See*—
Marugg, Leo, 4,764,724, Cl. 324-230.000.

Zemel, Haya, to Allied-Signal Inc. Semisynthetic enzymes: apoproteins from heme proteins as hydrolases. 4,764,464, Cl. 435-136.000.

Zeng, Jun-Lang. Automatic tube bending machine. 4,763,506, Cl. 72-306.000.

Zenith Electronics Corporation: *See*—
Garbacz, Michael J.; and Hansen, Kai, 4,764,701, Cl. 310-313.00R.
Konopka, John G., 4,764,857, Cl. 363-49.000.
Laud, Timothy G., 4,764,839, Cl. 361-92.000.
Oliver, Kirk, 4,764,709, Cl. 315-370.000.
Srivastava, Gopal K., 4,764,810, Cl. 358-148.000.

Zentgraf, Ernst; Vogt, Heinz; and Brandstetter, Franz, to BASF Aktiengesellschaft. Metering apparatus for introducing free-flowing, powdered substances in a controllable manner into spaces under pressure. 4,764,056, Cl. 406-68.000.

Zetachron, Inc.: *See*—
Keith, Alec D.; and Snipes, Wallace C., 4,764,378, Cl. 424-435.000.

Zhu, Xiaoyang. Protective roller device for car. 4,763,939, Cl 293-17.000.

Zickermann, Gustav A. Multihull ship with springs. 4,763,594, Cl 114-61.000.

Ziemann, Heinz: *See*—
Sirrenberg, Wilhelm; Braden, Rudolph; Ziemann, Heinz; Zobebelein, Gerhard; and Pfluger, Wolfgang, 4,764,524, Cl. 514-364.000.

Zieren, Marten L., to Combustion Engineering, Inc. Means of attaching refractory to a furnace wall. 4,763,584, Cl. 110-323.000.

Zimmerman, Donna F., to Du Pont de Nemours, E. I., and Company. Herbicidal indole sulfonamides. 4,764,610, Cl. 71-92.000.

Zimmerman, Roger W.; and Jones, William S., to Blue Bell, Inc. System for separating and transferring the uppermost fabric ply from a stack of fabric plies. 4,763,890, Cl. 271-30.100.

Zimmerman, Ulrich: *See*—
Matschke, Christain; Arnold, William M.; Buchner, Karl-Heinz; and Zimmerman, Ulrich, 4,764,473, Cl. 435-287.000.

Zinpro Corporation: *See*—
Anderson, Michael D.; and Anderson, Dean R., 4,764,633, Cl. 556-50.000.

Zinser Textilmaschinen GmbH: *See*—
Bothner, Jakob, 4,763,387, Cl. 19-288.000.
Hausner, Gerhard, 4,763,850, Cl. 242-46.400.
Nickolay, Helmut; Igel, Wolfgang; Meissner, Werner; and Schollhammer, Richard, 4,763,467, Cl. 57-261.000.

Ziplies, Herbert; and Lackenberg, Heinrich, to O&K Orenstein & Koppel Aktiengesellschaft. Arrangement for operating a diesel hydraulic drive. 4,763,473, Cl. 60-431.000.

Zoebelein, Gerhard: *See*—
Sirrenberg, Wilhelm; Braden, Rudolph; Ziemann, Heinz; Zoebelein, Gerhard; and Pfluger, Wolfgang, 4,764,524, Cl. 514-364.000.

Zofchak, Joseph M., to Bobier Tool Supply, Inc. Adjustable ball bar gauge for coordinate measuring machine. 4,763,507, Cl. 73-1.00J.

Zukerman, Harold W.; and Zukerman, Rachel B. Process for making microwavable shaped rice products. 4,764,390, Cl. 426-438.000.

Zukerman, Rachel B.: *See*—
Zukerman, Harold W.; and Zukerman, Rachel B., 4,764,390, Cl. 426-438.000.

Zvonar, Robert F., to Allied-Signal Inc. Seal retention and anti-rotation locking assembly. 4,763,905, Cl. 277-38.000.

Zweig, Martin: *See*—
Hampar, Berge; Showalter, Stephen D.; and Zweig, Martin, 4,764,459, Cl. 435-5.000.

Zydek, Michael: *See*—
Bleckmann, Hans W.; Loreck, Heinz; and Zydek, Michael, 4,764,685, Cl. 307-106.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Babcock & Wilcox Company, The: *See*—
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., Re. 32,732, Cl. 228-140.000.

Critchfield, Frank E.: *See*—
Simroth, Donald W.; Critchfield, Frank E.; and Shook, Edgar G., Re. 32,733, Cl. 521-137.000.

Jennings, Roger L.; and Serrianne, Russell A., to R. Jennings Manufacturing Co., Inc. Silk screen printing onto the front panel of a cap. Re. 32,731, Cl. 101-35.000

Kendrick, Gary R.: *See*—
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., Re. 32,732, Cl. 228-140.000.

Mase, John R.: *See*—
Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., Re. 32,732, Cl. 228-140.000.

Outboard Marine Corporation: *See*—
Wick, Gerald H., Re. 32,730, Cl. 56-11.300

R. Jennings Manufacturing Co., Inc.: *See*—
Jennings, Roger L.; and Serrianne, Russell A., Re. 32,731, Cl 101-35.000

Sauder, Robert A.; Kendrick, Gary R.; and Mase, John R., to Babcock & Wilcox Company, The. Method for providing high temperature internal insulation. Re. 32,732, Cl. 228-140.000

Serrianne, Russell A.: *See*—
Jennings, Roger L.; and Serrianne, Russell A., Re. 32,731, Cl. 101-35.000

Shook, Edgar G.: *See*—
Simroth, Donald W.; Critchfield, Frank E.; and Shook, Edgar G., Re. 32,733, Cl. 521-137.000

Simroth, Donald W.; Critchfield, Frank E.; and Shook, Edgar G., to Union Carbide Corporation. Polymer/polyol compositions having improved combustion resistance. Re. 32,733, Cl. 521-137.000

Union Carbide Corporation: *See*—
Simroth, Donald W.; Critchfield, Frank E.; and Shook, Edgar G., Re. 32,733, Cl. 521-137.000.

Wick, Gerald H., to Outboard Marine Corporation. Lawn mower blade clutch and brake. Re. 32,730, Cl. 56-11.300

LIST OF DESIGN PATENTEES

Albertson, Robert V., to Burd, Bartz & Gutenkauf. Combined telephone, coin box and support therefor. 297,235, 8-16-88, Cl. D14-55.000.

Allen, Herbert, to Hallen Company. Foil cutter for wine bottles. 297,201, 8-16-88, Cl. D7-99.000.

Amerock Corporation: *See*—
Rhoades, Nolan K., 297,211, Cl. D8-310.000.

Amnicon Corporation: *See*—
Arnott, John, 297,190, Cl. D6-429.000.

Arnott, John, to Amnicon Corporation. Computer work station. 297,190, 8-16-88, Cl. D6-429.000.

Asahi Kogaku Kogyo K.K.: *See*—
Yamanaka, Toshimasa, 297,242, Cl. D16-132.000.

AVIA Group International, Inc.: *See*—
Selbiger, Lawrence; Ludemann, John; and Peterson, Robert L., 297,181, Cl. D2-314.000.
Selbiger, Lawrence, 297,183, Cl. D2-314.000.
Swett, Joan, 297,186, Cl. D2-320.000.
Tong, James K., 297,184, Cl. D2-314.000

Avoy, Richard; Bordon, Daryl L.; Gruzdowich, Gregory J.; Hood, Rush W.; and Burton, L. Arthur, to Critikon, Inc. Portable electronic blood pressure monitor. 297,260, 8-16-88, Cl. D24-21.000.

Barr, Victor M. Identification band for use on luggage and garment bags. 297,247, 8-16-88, Cl. D20-27.000

Barr, Victor M. Identification band for use on luggage and garment bags. 297,248, 8-16-88, Cl. D20-27.000.

Beecher, John, III: *See*—
Tucker, James E.; and Beecher, John, III, 297,271, Cl. D30-126.000
Tucker, James E.; and Beecher, John, III, 297,272, Cl. D30-126.000.

Benco Industries, Inc.: *See*—
Mixon, William H.; and Hollingsworth, Thomas L., 297,192, Cl. D6-467.000

Berlane International Inc.: *See*—
Berzak, Jonathan B., 297,185, Cl. D2-320.000.

Berzak, Jonathan B., to Berlane International Inc. Shoe sole. 297,185, 8-16-88, Cl. D2-320.000.

Beuchat, Jean-Claude, to Piquerez-Bourquard S.A. Wristwatch. 297,216, 8-16-88, Cl. D10-33.000

Black & Decker Inc.: *See*—
Ingram, Billy S., II, 297,265, Cl. D26-38.000.
Ingram, Billy S., II, 297,266, Cl. D26-46.000.
Somers, Robert I., 297,208, Cl. D8-64.000.

Blake, Joseph W., III; and DiCesare, Paul, to Blake, Joseph W., III. Surgical stapler. 297,261, 8-16-88, Cl. D24-27.000

Bonifield, Charles B.: *See*—
Johnson, William P.; and Bonifield, Charles B., 297,225, Cl. D12-156.000

Bordon, Daryl L.: *See*—
Avoy, Richard; Bordon, Daryl L.; Gruzdowich, Gregory J.; Hood, Rush W.; and Burton, L. Arthur, 297,260, Cl. D24-21.000.

Brown, Jeffrey C.: *See*—
Rasnake, William F.; Brown, Jeffrey C.; and Wong, Heiman, 297,231, Cl. D13-24.000

Brown, Paul D.; and Diaz, Juan A., to Reebok International Ltd Athletic shoe upper. 297,182, 8-16-88, Cl. D2-314.000

Burd, Bartz & Gutenkauf: *See*—
Albertson, Robert V., 297,235, Cl. D14-55.000.

Burton, L. Arthur: *See*—
Avoy, Richard; Bordon, Daryl L.; Gruzdowich, Gregory J.; Hood, Rush W.; and Burton, L. Arthur, 297,260, Cl. D24-21.000

Chouinard, Rick. Four way opener. 297,203, 8-16-88, Cl. D8-33.000

Coachmen Industries, Inc.: *See*—
Johnson, William P.; and Bonifield, Charles B., 297,225, Cl. D12-156.000

Coca-Cola Company, The: *See*—
Summerville, Don S.; Snoke, Phillip J.; Gillespie, Lionel D.; and Golley, Frank B., 297,246, Cl. D20-5.000

Cohen, Morton. Fish hook sharpener. 297,209, 8-16-88, Cl. D8-91.000

Connors, Cecil J. Central lubrication unit. 297,241, 8-16-88, Cl. D15-150.000.

Cook, Leslie G., to Vitopan Limited. Mop. 297,275, 8-16-88, Cl. D32-44.000

Cox, Norman L.: *See*—
Wells-Papanek, Doris E.; Verplank, William L.; and Cox, Norman L., 297,243, Cl. D18-27.000.

Cox, Timothy E.: *See*—
Franks, Alvin F., deceased; and Cox, Timothy E., 297,278, Cl D34-29.000

Critikon, Inc.: *See*—
Avoy, Richard; Bordon, Daryl L.; Gruzdowich, Gregory J.; Hood, Rush W.; and Burton, L. Arthur, 297,260, Cl. D24-21.000.

Deering, Michael H. Aviation symbols template. 297,218, 8-16-88, Cl. D10-62.000.

Deering, Michael H. Directional template. 297,245, 8-16-88, Cl. D19-37.000

Dever, Scott M.: *See*—
Holmquist, John R.; Dever, Scott M.; Trott, Robert L.; Thatcher, Fred W.; and Malkowicz, Edward, 297,213, Cl. D9-378.000

DeVito, Ronald. Butter dish. 297,200, 8-16-88, Cl. D7-84.000.

Diaz, Juan A.: *See*—
Brown, Paul D.; and Diaz, Juan A., 297,182, Cl. D2-314.000.

DiCesare, Paul: *See*—
Blake, Joseph W., III; and DiCesare, Paul, 297,261, Cl. D24-27.000

Dickerson, Albert, to Plaskolite, Inc. Combined extruded panel holding and sealing strip and supporting clip therefor for in-jamb insulating window. 297,264, 8-16-88, Cl. D25-119.000

Dicon Systems Limited: *See*—
Taylor, Stephen C., 297,219, Cl. D10-106.000
Taylor, Stephen C., 297,270, Cl. D10-121.000

Diebold, Incorporated: *See*—
Long, Douglas G., 297,237, Cl. D14-105.000.

Duerst, Henry, Jr. Pop top can opener. 297,204, 8-16-88, Cl. D8-40.000.

Dupli-Color Products Company: *See*—
Frieden, Fred, Jr., 297,191, Cl. D6-461.000

Dutcher, Thomas A. Transmitter for missing person location. 297,220, 8-16-88, Cl. D10-104.000

VOL 1093 ISS 3 AG 16 1988 UMI

E. C. Leather Goods, Inc.: *See—*
Kaczmarek, Alfred, 297,187, Cl. D3-72.000
Fisher Scientific Company: *See—*
Stavish, Leonard J., 297,212, Cl. D9-376.000
Forbes, Hampton E., Jr., to Westvaco Corporation. Paperboard carton. 297,214, 8-16-88, Cl. D9-416.000
Franks, Alvin F., deceased (by Franks, Nancy V., executor); and Cox, Timothy E., to Franks Machining, Inc. Conveyor line parts hanger 297,278, 8-16-88, Cl. D34-29.000
Franks Machining, Inc.: *See—*
Franks, Alvin F., deceased; and Cox, Timothy E., 297,278, Cl D34-29 000
Franks, Nancy V., executor: *See—*
Franks, Alvin F., deceased; and Cox, Timothy E., 297,278, Cl D34-29.000
Frieden, Fred, Jr., to Dupli-Color Products Company. Merchandise display stand. 297,191, 8-16-88, Cl. D6-461.000.
Fuji Robin Kabushiki Kaisha: *See—*
Komiya, Masayuki; and Kurihara, Toshikazu, 297,274, Cl. D32-15.000
Funabashi, Genichi; and Ushiro, Kenzo, to Kubota, Ltd. Agricultural tractor. 297,239, 8-16-88, Cl. D15-23.000
Gamazo-Canella, Geminiano. Doll. 297,251, 8-16-88, Cl. D21-155.000
Garrett Electronics, Inc.: *See—*
Podhrasky, Robert J., 297,221, Cl. D10-106.000
Gazzo, John, to Porta System Corp. Telephone connector block 297,232, 8-16-88, Cl. D13-24.000
Gillespie, Lionel D.: *See—*
Summerville, Don S.; Snoke, Phillip J.; Gillespie, Lionel D.; and Golley, Frank B., 297,246, Cl. D20-5.000
Gilmour Manufacturing Co.: *See—*
Henken, Thomas, 297,255, Cl. D23-214.000
Golley, Frank B.: *See—*
Summerville, Don S.; Snoke, Phillip J.; Gillespie, Lionel D.; and Golley, Frank B., 297,246, Cl. D20-5.000
Gouin, Laurent; and Mimms, Travis. Dice game box. 297,250, 8-16-88, Cl. D21-41.000
Greenberg, Herbert S. Drinking vessel with a pair of handles. 297,197, 8-16-88, Cl. D7-10.000
Gruzdowich, Gregory J.: *See—*
Avoy, Richard; Bordon, Daryl L.; Gruzdowich, Gregory J.; Hood, Rush W.; and Burton, L. Arthur, 297,260, Cl. D24-21.000
Hagberg, Knut; and Hagberg, Marianne, to Ikea of Sweden AB. Pepper mill. 297,199, 8-16-88, Cl. D7-53.000
Hagberg, Marianne: *See—*
Hagberg, Knut; and Hagberg, Marianne, 297,199, Cl. D7-53.000
Hallen Company: *See—*
Allen, Herbert, 297,201, Cl. D7-99.000
Harpaz, Jonathan; and Psek, Reuben. Sunshield for motor vehicle windscreen. 297,228, 8-16-88, Cl. D12-191.000
Hashimoto, Mitsuharu: *See—*
Odate, Masayoshi; and Hashimoto, Mitsuharu, 297,254, Cl. D23-248.000
Hatanaka, Takefumi. Cutter disk for paper shredding machine. 297,240, 8-16-88, Cl. D15-139.000
Hayashi, Toru. Scissors. 297,207, 8-16-88, Cl. D8-57.000
Hayashi, Yoru. Scissors. 297,206, 8-16-88, Cl. D8-57.000
Helix Limited: *See—*
Warwicker, Clive W., 297,195, Cl. D6-559.000
Henken, Thomas, to Gilmour Manufacturing Co. Sprinkler head. 297,255, 8-16-88, Cl. D23-214.000
Hodson, Janet D.; and Strandfeldt, Fredrika M., to Pregaphone Inc. Fetal communication device. 297,234, 8-16-88, Cl. D14-52.000
Hollingsworth, Thomas L.: *See—*
Mixon, William H.; and Hollingsworth, Thomas L., 297,192, Cl D6-467.000
Holmquist, John R.; Dever, Scott M.; Trott, Robert L.; Thatcher, Fred W.; and Malkowicz, Edward, to Purex Corporation. Bottle. 297,213, 8-16-88, Cl. D9-378.000
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Oono, Kiyoshi; and Shimoyama, Hiroshi, 297,223, Cl. D12-110.000
Hood, Rush W.: *See—*
Avoy, Richard; Bordon, Daryl L.; Gruzdowich, Gregory J.; Hood, Rush W.; and Burton, L. Arthur, 297,260, Cl. D24-21.000
Horikawa, Tokio; and Ishida, Arinobu, to Kubota, Ltd. Power tiller 297,238, 8-16-88, Cl. D15-11.000
Huff, Rick. Combined vehicle side rail, step and splash guard. 297,230, 8-16-88, Cl. D12-203.000
Ikea of Sweden AB: *See—*
Hagberg, Knut; and Hagberg, Marianne, 297,199, Cl. D7-53.000
Ingram, Billy S., II, to Black & Decker Inc. Combined rechargeable flashlight and charger therefor. 297,265, 8-16-88, Cl. D26-38.000
Ingram, Billy S., II, to Black & Decker Inc. Flashlight. 297,266, 8-16-88, Cl. D26-46.000
Ishida, Arinobu: *See—*
Horikawa, Tokio; and Ishida, Arinobu, 297,238, Cl. D15-11.000
Ivac Corporation: *See—*
Sternweiler, Thomas R., 297,262, Cl. D24-52.000
Johnson, William P.; and Bonifield, Charles B., to Coachmen Industries, Inc. Van top. 297,225, 8-16-88, Cl. D12-156.000
Kaczmarek, Alfred, to E. C. Leather Goods, Inc. Portfolio. 297,187, 8-16-88, Cl. D3-72.000.
Kennedy, George P. Perpetual calendar. 297,244, 8-16-88, Cl. D19-25.000
Kock, Robert A. M., to Volvo B.V. Windshield wiper holder. 297,224, 8-16-88, Cl. D12-155.000
Kohler Co.: *See—*
Kohler, Herbert V., Jr.; and Kolada, Paul P., 297,257, Cl. D23-252.000
Reid, Mary J., 297,194, Cl. D6-546.000
Kohler, Herbert V., Jr.; and Kolada, Paul P., to Kohler Co. Lever handle. 297,257, 8-16-88, Cl. D23-252.000
Kolada, Paul P.: *See—*
Kohler, Herbert V., Jr.; and Kolada, Paul P., 297,257, Cl. D23-252.000
Komiya, Masayuki; and Kurihara, Toshikazu, to Fuji Robin Kabushiki Kaisha. Leaf blower. 297,274, 8-16-88, Cl. D32-15.000
Kubota, Ltd.: *See—*
Funabashi, Genichi; and Ushiro, Kenzo, 297,239, Cl. D15-23.000
Horikawa, Tokio; and Ishida, Arinobu, 297,238, Cl. D15-11.000
Kurihara, Toshikazu: *See—*
Komiya, Masayuki; and Kurihara, Toshikazu, 297,274, Cl. D32-15.000
Liebe, Forest F.; and Sayler, Gordon H., to Z-Tek International Inc. Carousel creamer. 297,198, 8-16-88, Cl. D7-52.000
Linea Design Limited: *See—*
Pavlovic, Mica, 297,215, Cl. D10-32.000
Liversidge, Barry P. Cable insulation stripper. 297,210, 8-16-88, Cl. D8-98.000
Livigni, John R. Loudspeaker cabinet. 297,233, 8-16-88, Cl. D14-34.000
Long, Douglas G., to Diebold, Incorporated. Combined point of sale terminal and printer therefor. 297,237, 8-16-88, Cl. D14-105.000
Ludemann, John: *See—*
Selbiger, Lawrence; Ludemann, John; and Peterson, Robert L., 297,181, Cl. D2-314.000
Malkowicz, Edward: *See—*
Holmquist, John R.; Dever, Scott M.; Trott, Robert L.; Thatcher, Fred W.; and Malkowicz, Edward, 297,213, Cl. D9-378.000
Mann, Barbara L.: *See—*
Milner, Robert L.; and Mann, Barbara L., 297,180, Cl. D2-277.000
Milner, Robert L.; and Mann, Barbara L., to Milner, Robert L. Toe warmer. 297,180, 8-16-88, Cl. D2-277.000
Mimms, Travis: *See—*
Gouin, Laurent; and Mimms, Travis, 297,250, Cl. D21-41.000
Mixon, William H.; and Hollingsworth, Thomas L., to Benco Industries, Inc. Display stand for dishware. 297,192, 8-16-88, Cl. D6-467.000
Odate, Masayoshi; and Hashimoto, Mitsuharu, to Sekisui Kagaku Kogyo K.K. Ball valve. 297,254, 8-16-88, Cl. D23-248.000
Oono, Kiyoshi; and Shimoyama, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Three-wheeled motorcycle. 297,223, 8-16-88, Cl. D12-110.000
Paci, Arduino. Combined siding guard, work top and tool rest for ladder tops. 297,263, 8-16-88, Cl. D25-68.000
Pavlovic, Mica, to Linea Design Limited. Clip-on watch. 297,215, 8-16-88, Cl. D10-32.000
Peterson, Robert L.: *See—*
Selbiger, Lawrence; Ludemann, John; and Peterson, Robert L., 297,181, Cl. D2-314.000
Piquerez-Bourquard S.A.: *See—*
Beuchat, Jean-Claude, 297,216, Cl. D10-33.000
Plaskolite, Inc.: *See—*
Dickerson, Albert, 297,264, Cl. D25-119.000
Podhrasky, Robert J., to Garrett Electronics, Inc. Walk-through metal detector. 297,221, 8-16-88, Cl. D10-106.000
Porta System Corp.: *See—*
Gazzo, John, 297,232, Cl. D13-24.000
Powell, James T. R. Cordless telephone pouch. 297,188, 8-16-88, Cl. D3-106.000
Pregaphone Inc.: *See—*
Hodson, Janet D.; and Strandfeldt, Fredrika M., 297,234, Cl. D14-52.000
Pressnall, E. Claire. Insect trap. 297,252, 8-16-88, Cl. D22-122.000
Pride, Denbigh. Double-action fishing hook. 297,253, 8-16-88, Cl. D22-144.000
Proctor, Rudy R.; and Reinstein, Fred M., to Turbo Tek Enterprises, Inc. Hose-attached pressure spray washer or the like. 297,273, 8-16-88, Cl. D32-1.000
Psek, Reuben: *See—*
Harpaz, Jonathan; and Psek, Reuben, 297,228, Cl. D12-191.000
Purex Corporation: *See—*
Holmquist, John R.; Dever, Scott M.; Trott, Robert L.; Thatcher, Fred W.; and Malkowicz, Edward, 297,213, Cl. D9-378.000
Rasnake, William F.; Brown, Jeffrey C.; and Wong, Heiman. Cable assembly. 297,231, 8-16-88, Cl. D13-24.000
Rauch, Howard L. Smoke and fire alarm. 297,222, 8-16-88, Cl. D10-106.000
Ray-Vue Corp.: *See—*
Tiffin, Patrick L., 297,236, Cl. D14-79.000
Redondo Investment Limited: *See—*
Scowen, Kenneth J., 297,267, Cl. D26-122.000
Reebok International Ltd.: *See—*
Brown, Paul D.; and Diaz, Juan A., 297,182, Cl. D2-314.000
Reid, Mary J., to Kohler Co. Towel ring. 297,194, 8-16-88, Cl. D6-546.000
Reinstein, Fred M.: *See—*
Proctor, Rudy R.; and Reinstein, Fred M., 297,273, Cl. D32-1.000
Rhoades, Nolan K., to Amerock Corporation. Knob. 297,211, 8-16-88, Cl. D8-310.000
Riley, Robert A. Conveyor belt assembly, or similar article. 297,279, 8-16-88, Cl. D34-29.000
Ritman, Joost R. Dish. 297,196, 8-16-88, Cl. D7-1.000

Rowenta-Werke GmbH: *See—*
Stutzer, Franz A., 297,268, Cl. D27-154.000.
Sayler, Gordon H.: *See—*
Liebe, Forest F.; and Sayler, Gordon H., 297,198, Cl. D7-52.000.
Schwarz, Philip R., to Victaulic Company of America. Alarm test valve body. 297,256, 8-16-88, Cl. D23-233.000.
Scowen, Kenneth J., to Redondo Investment Limited. Automotive safety lamp lens. 297,267, 8-16-88, Cl. D26-122.000.
Seksui Kagaku Kogyo K.K.: *See—*
Odate, Masayoshi; and Hashimoto, Mitsuharu, 297,254, Cl. D23-248.000
Selbiger, Lawrence; Ludemann, John; and Peterson, Robert L., to AVIA Group International, Inc. Shoe upper. 297,181, 8-16-88, Cl. D2-314.000
Selbiger, Lawrence, to AVIA Group International, Inc. Shoe upper. 297,183, 8-16-88, Cl. D2-314.000.
Sells, Anthony R.: *See—*
Sells, Sandra D.; and Sells, Anthony R., 297,258, Cl. D23-296.000.
Sells, Sandra D.; and Sells, Anthony R. Infant potty seat. 297,258, 8-16-88, Cl. D23-296.000.
Sermersheim, James C. Cover for the undercarriage of an automobile. 297,229, 8-16-88, Cl. D12-190.000
Shimoyama, Hiroshi: *See—*
Oono, Kiyoshi; and Shimoyama, Hiroshi, 297,223, Cl. D12-110.000.
Siler, Lawrence L. "Buzz" Jr.; and Siler, Richard A. "Rick", to Siler, Sandra L.; and Siler, Sally Jo, part interest to each. Goggle wiper. 297,276, 8-16-88, Cl. D32-46.000.
Siler, Richard A. "Rick": *See—*
Siler, Lawrence L. "Buzz" Jr.; and Siler, Richard A. "Rick", 297,276, Cl. D32-46.000
Siler, Sally Jo: *See—*
Siler, Lawrence L. "Buzz" Jr.; and Siler, Richard A. "Rick", 297,276, Cl. D32-46.000.
Siler, Sandra L.: *See—*
Siler, Lawrence L. "Buzz" Jr.; and Siler, Richard A. "Rick", 297,276, Cl. D32-46.000
Snoke, Phillip J.: *See—*
Summerville, Don S.; Snoke, Phillip J.; Gillespie, Lionel D.; and Golley, Frank B., 297,246, Cl. D20-5.000.
Somers, Robert I., to Black & Decker, Inc. Scroller jig saw. 297,208, 8-16-88, Cl. D8-64.000.
Stavish, Leonard J., to Fisher Scientific Company. Reagent container or similar article. 297,212, 8-16-88, Cl. D9-376.000.
Sternweiler, Thomas R., to Ivac Corporation. Combined spike and drop former housing for enteric set. 297,262, 8-16-88, Cl. D24-52.000
Stewart, Robert T., to Wink Corporation. Vehicle mirror. 297,226, 8-16-88, Cl. D12-187.000
Strandfeldt, Fredrika M.: *See—*
Hodson, Janet D.; and Strandfeldt, Fredrika M., 297,234, Cl. D14-52.000
Stravitz, David M. Cassette storage rack. 297,189, 8-16-88, Cl. D6-407.000.
Stutzer, Franz A., to Rowenta-Werke GmbH. Lighter. 297,268, 8-16-88, Cl. D27-154.000
Summerville, Don S.; Snoke, Phillip J.; Gillespie, Lionel D.; and Golley, Frank B., to Coca-Cola Company, The. Vending machine. 297,246, 8-16-88, Cl. D20-5.000.
Swett, Joan, to AVIA Group International, Inc. Shoe sole. 297,186, 8-16-88, Cl. D2-320.000.
Taylor, Stephen C., to Dicon Systems Limited. Smoke detector cover with light. 297,219, 8-16-88, Cl. D10-106.000
Taylor, Stephen C., to Dicon Systems Limited. Smoke detector base. 297,270, 8-16-88, Cl. D10-121.000
Thatcher, Fred W. *See—*
Holmquist, John R.; Dever, Scott M.; Trott, Robert L.; Thatcher, Fred W.; and Malkowicz, Edward, 297,213, Cl. D9-378.000
Tiffin, Patrick L., to Ray-Vue Corp. Receiver console. 297,236, 8-16-88, Cl. D14-79.000
Tong, James K., to AVIA Group International, Inc. Shoe upper 297,184, 8-16-88, Cl. D2-314.000
Trott, Robert L.: *See—*
Holmquist, John R.; Dever, Scott M.; Trott, Robert L.; Thatcher, Fred W.; and Malkowicz, Edward, 297,213, Cl. D9-378.000
Tucker, James E.; and Beecher, John, III, to Weber-Stephen Products Co. Birdfeeder. 297,271, 8-16-88, Cl. D30-126.000
Tucker, James E.; and Beecher, John, III, to Weber-Stephen Products Co. Hanging birdfeeder. 297,272, 8-16-88, Cl. D30-126.000.
Turbo Tek Enterprises, Inc.: *See—*
Proctor, Rudy R.; and Reinstein, Fred M., 297,273, Cl. D32-1.000.
Ushiro, Kenzo: *See—*
Funabashi, Genichi; and Ushiro, Kenzo, 297,239, Cl. D15-23.000
Vannett, David L. Pair of ski boot scrapers. 297,277, 8-16-88, Cl. D32-47.000
Verplank, William L.: *See—*
Wells-Papanek, Doris E.; Verplank, William L.; and Cox, Norman L., 297,243, Cl. D18-27.000
Victaulic Company of America: *See—*
Schwarz, Philip R., 297,256, Cl. D23-233.000
Visor-Roll, Inc.: *See—*
Zick, Leonard P., 297,227, Cl. D12-191.000
Vitopan Limited: *See—*
Cook, Leslie G., 297,275, Cl. D32-44.000
Volvo B.V.: *See—*
Kock, Robert A. M., 297,224, Cl. D12-155.000
Wang, Sheng. Stapling gun. 297,205, 8-16-88, Cl. D8-49.000
Warwicker, Clive W., to Helix Limited. Wall mounted security container. 297,195, 8-16-88, Cl. D6-559.000
Weant, John W. Support bar for fishing lures and jigs. 297,193, 8-16-88, Cl. D6-491.000
Weber-Stephen Products Co.: *See—*
Tucker, James E.; and Beecher, John, III, 297,271, Cl. D30-126.000
Tucker, James E.; and Beecher, John, III, 297,272, Cl. D30-126.000
Wells-Papanek, Doris E.; Verplank, William L.; and Cox, Norman L., to Xerox Corporation. Icon for a property sheet or the like. 297,243, 8-16-88, Cl. D18-27.000
Wen-Tun, Lee. Fan heater. 297,259, 8-16-88, Cl. D23-337.000
Westvaco Corporation: *See—*
Forbes, Hampton E., Jr., 297,214, Cl. D9-416.000
Williams, Roy D. Turkey hunter's safety placard. 297,249, 8-16-88, Cl D20-30.000
Wink Corporation: *See—*
Stewart, Robert T., 297,226, Cl. D12-187.000.
Wolff, Stephen H. Temperature and humidity indicator. 297,217, 8-16-88, Cl. D10-53.000
Wong, Heiman: *See—*
Rasnake, William F.; Brown, Jeffrey C.; and Wong, Heiman, 297,231, Cl. D13-24.000
Xerox Corporation: *See—*
Wells-Papanek, Doris E.; Verplank, William L.; and Cox, Norman L., 297,243, Cl. D18-27.000
Yamanaka, Toshimasa, to Asahi Kogaku Kogyo K.K. Telescope. 297,242, 8-16-88, Cl. D16-132.000
Yoshinaga Prince Co., Ltd.: *See—*
Yoshinaga, Sadao, 297,269, Cl. D27-148.000
Yoshinaga, Sadao, to Yoshinaga Prince Co., Ltd. Lighter. 297,269, 8-16-88, Cl. D27-148.000
Z-Tek International Inc.: *See—*
Liebe, Forest F.; and Sayler, Gordon H., 297,198, Cl. D7-52.000
Zick, Leonard P., to Visor-Roll, Inc. Vehicle sun visor attachment. 297,227, 8-16-88, Cl. D12-191.000
Zumwalt, Harold. Olive scoop. 297,202, 8-16-88, Cl. D7-104.000

LIST OF PLANT PATENTEES

Craig, Richard, to Research Corporation. Geranium plant "Helen". 6,247, 8-16-88, Cl. 68.000.
Krause, Walter D. Nectarine tree "Olympia". 6,248, 8-16-88, Cl. 41.000.
Research Corporation: *See—*
Craig, Richard, 6,247, Cl. 68.000.
Yoshida, Eiichi. African violet named Arctic Princess. 6,249, 8-16-88, Cl. 69.000.
Yoshida, Eiichi. African violet named Arctic Star. 6,250, 8-16-88, Cl 69.000.
Yoshida, Eiichi. African violet named Arctic Frost. 6,251, 8-16-88, Cl. 69.000
Yoshida, Eiichi. African violet named Arctic Snow. 6,252, 8-16-88, Cl. 69.000
Yoshida, Eiichi. African violet named Arctic Maiden. 6,253, 8-16-88, Cl. 69.000

VOL
1093
ISS
3
AG
16
1988
UMI

CLASSIFICATION OF PATENTS

ISSUED AUGUST 16, 1988

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 4
234 4,763,362
253 4,763,363
523 4,763,364
541 4,763,366
542 4,763,365
4,763,367

CLASS 5
93 R 4,763,368
434 4,763,369

CLASS 8
115.52 4,764,173
150 5 4,763,370
415 4,764,174
437 4,764,175
442 4,764,176
471 4,764,177
4,764,178
647 4,763,371

CLASS 15
22 R 4,763,372
29 4,763,373
104 31 4,763,376
104 33 4,763,374
106 4,763,375
144 A 4,763,377
146 4,763,378
160 4,763,379
4,763,380
250 01 4,763,381
323 4,763,382

CLASS 16
18 R 4,763,383
53 4,763,384
58 4,763,385

CLASS 17
64 4,763,386

CLASS 19
288 4,763,387

CLASS 24
30 5 R 4,763,388
67 11 4,763,389
487 4,763,390

CLASS 29
33 K 4,764,179
33 P 4,763,391
157 C 4,764,180
159 1 4,763,392
238 4,763,393
252 4,763,394
436 4,763,395
458 4,763,396
509 4,763,397
527.1 4,763,398
527 2 4,763,399
564 6 4,763,400
568 4,763,401
570 1 4,764,181
596 4,763,402
598 4,763,403
599 4,763,404
623 1 4,764,182
740 4,763,405
759 4,763,406
827 4,763,409
828 4,763,410
840 4,763,407
845 4,763,412
863 4,763,411
874 4,763,408

CLASS 30
94 4,763,413
113 1 4,763,414
123 4,763,415
294 4,763,416

CLASS 33
169 R 4,763,417
268 4,763,418
272 4,763,419
503 4,763,420
561 4,763,421
569 4,763,422

CLASS 34
9 4,763,423
20 4,763,424
48 4,763,425

CLASS 36
29 4,763,426

CLASS 40
124 1 4,763,427
152 4,763,428
511 4,763,429

CLASS 42
57 4,763,430
70.11 4,763,431

CLASS 43
7 4,763,432
17 6 4,763,433
18 1 4,763,434
21.2 4,763,435
42 1 4,763,436
43 13 4,763,437
56 4,763,438
61 4,763,439

CLASS 44
53 4,764,183

CLASS 47
2 4,763,440
58 4,763,441
63 4,763,442
86 4,763,443

CLASS 48
76 4,764,185
77 4,764,184

CLASS 49
171 4,763,444
176 4,763,445
407 4,763,446
429 4,763,447

CLASS 51
165 8 4,763,448

CLASS 52
20 4,763,449
24 4,763,450
79 1 4,763,451
96 4,763,452
127 8 4,763,453
202 4,763,454
255 4,763,455
410 4,763,456
504 4,763,457
509 4,763,458
646 4,763,459

CLASS 53
381 R 4,763,460
399 4,763,461
448 4,763,462

CLASS 55
17 4,764,186
20 4,764,187
130 4,764,188
163 4,764,189
269 4,764,190
4,764,192
302 4,764,191

CLASS 56
11 3 Re 32,730
13 6 4,763,463
341 4,763,464

CLASS 57
88 4,763,465
213 4,763,466
261 4,763,467
310 4,763,468
407 4,763,469

CLASS 60
257 4,763,470
312 4,763,471
403 4,763,472
431 4,763,473
602 4,763,474
4,763,475
4,763,476
4,763,477
633 4,763,478
641.5 4,763,479
649 4,763,480
737 4,763,481
746 4,763,482

CLASS 62
3 4,764,193
55 5 4,763,483
99 4,763,484
160 4,763,485
175 4,763,486
239 4,763,487
497 4,763,488

CLASS 63
4 4,763,489
15 7 4,763,490

CLASS 65
3.11 4,764,194
18 4 4,764,195
106 4,764,196
260 4,764,197
339 4,764,198

CLASS 66
146 4,763,491
232 4,763,492

CLASS 68
12 R 4,763,493
17 R 4,763,494
19 1 4,763,495

CLASS 70
38 A 4,763,496
95 4,763,497
264 4,763,498
417 4,763,499

CLASS 71
5 4,764,199
28 4,764,200
77 4,764,201
92 4,764,202
4,764,610
4,764,624
93 4,764,203
4,764,204
4,764,205
4,764,207
94 4,764,206

CLASS 72
14 4,763,500
26 4,763,501
39 4,763,502
57 4,763,503
98 4,763,504
238 4,763,505
306 4,763,506

CLASS 73
1 J 4,763,507
9 4,763,508
19 4,763,514
27 A 4,763,509
40 5 R 4,763,510
49 1 4,763,511
54 4,763,512
61 R 4,763,513
146 4,763,515
146 8 4,763,516
4,763,517
149 4,763,518
151 4,763,519
155 4,763,520
159 4,763,521
170 A 4,763,537
338 4,753,522
587 4,763,523
589 4,763,524
599 4,763,525
639 4,763,526
730 4,763,527
799 4,763,528
852 4,763,529
861 38 4,763,530
862 04 4,763,531
862 32 4,763,532
862 35 4,763,533
862 68 4,763,534
864.18 4,763,535
865.6 4,763,536

CLASS 74
6 4,763,538
89.15 4,763,539
96 4,763,540
501 R 4,763,541
713 4,763,542
740 4,763,543
752 E 4,763,544
868 4,763,545

CLASS 75
10 19 4,764,208
10.26 4,764,209
10 66 4,764,210
58 4,764,211
228 4,764,212

CLASS 81
15 7 4,763,546
45 4,763,547
453 4,763,548

CLASS 82
2.5 4,763,549

CLASS 83
191 4,763,550
277 4,763,551
689 4,763,552

CLASS 84
1.01 4,763,553
1.03 4,763,554
313 4,763,555
384 4,763,556
422 S 4,763,557
485 R 4,763,558

CLASS 89
33 04 4,763,559

CLASS 91
364 4,763,560
369 4 4,763,561
461 4,763,562

CLASS 92
71 4,763,563

CLASS 98
2.11 4,763,564
40 13 4,763,565

CLASS 99
302 P 4,763,566
323 5 4,763,567
4,763,568
348 4,763,569
4,763,570
349 4,763,571
476 4,763,572

CLASS 100
98 R 4,763,574

CLASS 101
35 Re 32,731
91 4,763,575

CLASS 102
321 4,763,576
431 4,763,577

CLASS 104
284 4,763,578

CLASS 106
2 4,764,213
18.32 4,764,214
28 4,764,215
117 4,764,216
122 4,764,539
409 4,764,218
494 4,764,217

CLASS 108
48 4,763,579
91 4,763,580
92 4,763,581
103 4,763,582

CLASS 110
246 4,763,583
323 4,763,584
346 4,763,585

CLASS 112
103 4,763,586
121 12 4,763,587
273 4,763,588
278 4,763,589
287 4,763,590

CLASS 114
39 2 4,763,591
44 4,763,593
45 4,763,592
61 4,763,594
218 4,763,595
256 4,763,596
297 4,763,597
361 4,763,598

CLASS 118
57 4,763,599
684 4,763,600
718 4,763,601
719 4,763,602

CLASS 119
1 4,763,603
4,763,604
14 03 4,763,605
17 4,763,606
4,763,607
98 4,763,608
109 4,763,609

CLASS 123
3 4,763,610
41 31 4,763,611
52 MV 4,763,612
65 PE 4,763,613
90 25 4,763,615
90 42 4,763,616
90 58 4,763,617
90.6 4,763,614
188 P 4,763,618
193 CH 4,763,619
196 A 4,763,620
198 D 4,763,621
308 4,763,622
339 4,763,623
432 4,763,624
435 4,763,625
438 4,763,626
440 4,763,627
4,763,628
489 4,763,629
501 4,763,630
503 4,763,631
510 4,763,632
514 4,763,633
520 4,763,634
4,763,635
564 4,763,636

CLASS 125
21 4,763,637

CLASS 126
25 R 4,763,639
31 A 4,763,638
243 4,763,640
444 4,763,641

CLASS 128
1.2 4,763,642
24 R 4,763,893
49 4,763,643
69 4,763,644
205 29 4,763,645
303 R 4,763,650
310 4,763,651
328 4,763,652
344 4,763,653
4,763,654
419 PG 4,763,646
4,763,655
421 4,763,656
422 4,763,657
635 4,763,658
640 4,763,659
4,763,660
657 4,763,647
660 4,763,661
4,763,662
671 4,763,663
673 4,763,648
4,763,649
718 4,763,664
736 4,763,665
742 4,763,666
750 4,763,667
751 4,763,668
4,763,669
756 4,763,670
786 4,763,671

CLASS 131
79 4,763,672
96 4,763,673
342 4,763,674

CLASS 132
137 4,763,675

CLASS 134
2 4,764,219
6 4,764,220
8 4,764,221
38 4,764,222
100 4,763,676
105 4,763,677
171 4,763,678

CLASS 135
20 M 4,763,679
68 4,763,680

CLASS 137
8 4,763,681
62 4,763,682
68.1 4,763,683
196 4,763,684
268 4,763,685
272 4,763,686
454 5 4,763,687
509 4,763,688
514 4,763,689
596 14 4,763,691
613 4,763,690
625 3 4,763,692
801 4,763,693

CLASS 138
103 4,763,694
109 4,763,695
155 4,763,696

CLASS 139
76 4,763,697
190 4,763,698
436 4,763,699

CLASS 140
93 2 4,763,700
105 4,763,701

CLASS 141
114 4,763,702

CLASS 144
3 R 4,763,704
34 R 4,763,705
136 C 4,763,707
136 R 4,763,706
216 4,763,703

CLASS 148
6 14 R 4,764,228
11 5 F 4,764,223
26 4,764,224
404 4,764,225
429 4,764,226
431 4,764,227

CLASS 149
21 4,764,229
4,764,230
104 4,764,231

CLASS 152
209 A 4,763,708
416 4,763,709

CLASS 156
48 4,764,232
89 4,764,233
164 4,764,234
210 4,764,236

228 4,764,235
245 4,764,238
294 4,764,237
303 4,764,240
307 3 4,764,239
382 4,764,241
494 4,764,242
505 4,764,243
630 4,764,244
643 4,764,245
4,764,246
4,764,247
4,764,248
4,764,249

CLASS 157

14 4,763,710

CLASS 159

6 1 4,764,250

CLASS 160

1 4,763,711
84 1 4,763,712
172 4,763,713
200 4,763,714

CLASS 162

39 4,764,251
72 4,764,252
198 4,764,253
249 4,764,254

CLASS 164

45 4,763,715
122 1 4,763,716
258 4,763,717
463 4,763,718
478 4,763,719
525 4,763,720

CLASS 165

1 4,763,721
64 4,763,722
67 4,763,723
71 4,763,724
146 4,763,726
147 4,763,725
171 4,763,727

CLASS 166

191 4,763,728
244 1 4,763,729
273 4,763,730

CLASS 169

48 4,763,731
51 4,763,732

CLASS 173

48 4,763,733

CLASS 174

68 5 4,764,644

CLASS 175

61 4,763,734
161 4,763,735
329 4,764,255
341 4,763,736
393 4,763,737

CLASS 177

50 4,763,738
210 R 4,763,739
4,763,740

CLASS 180

6 2 4,763,741
9 1 4,763,742
53 3 4,763,743
53 7 4,763,744
143 4,763,745
179 4,763,746
197 4,763,912
244 4,763,747
248 4,763,748
249 4,763,749
268 4,763,750
305 4,763,751

CLASS 181

130 4,763,752
4,763,753
237 4,763,754

CLASS 182

2 4,763,755
20 4,763,756
21 4,763,757
46 4,763,758

CLASS 184

3 2 4,763,759
6 5 4,763,760

CLASS 187

8 41 4,763,761

CLASS 188

218 XL 4,763,762

CLASS 190

115 4,763,763

CLASS 192

41 S 4,763,764
48 91 4,763,765
99 S 4,763,766
106 2 4,763,767
150 4,763,768

CLASS 194

217 4,763,769

CLASS 198

364 4,763,770
365 4,763,771
398 4,763,772
409 4,763,773
461 4,763,774
533 4,763,775
630 4,763,776
747 4,763,777
803 01 4,763,778

CLASS 200

16 F 4,764,645
19 DC 4,764,646
38 CA 4,764,647
50 A 4,764,648
67 D 4,764,649
153 G 4,764,650

CLASS 201

1 T 4,764,258

CLASS 203

46 4,764,256

CLASS 204

1 T 4,764,257
25 4,764,259
34 4,764,260
37 1 4,764,261
49 4,764,262
74 4,764,263
180 9 4,764,264

CLASS 206

268 4,763,779
330 4,763,780
334 4,763,781
4,763,782
335 4,763,783
387 4,763,784
389 4,763,785
408 4,763,786
420 4,763,787
438 4,763,788
454 4,763,789
557 4,763,790
570 4,763,791

CLASS 208

18 4,764,265
58 4,764,266
65 4,764,267
113 4,764,268
120 4,764,269
390 4,764,270

CLASS 209

570 4,763,792
616 4,763,793
625 4,763,794

CLASS 210

86 4,764,271
104 4,764,272
225 4,764,273
232 4,764,274
4,764,275
264 4,764,276
498 4,764,277
634 4,764,278
656 4,764,279
662 4,764,280
668 4,764,281
690 4,764,282
695 4,764,283
715 4,764,284
749 4,764,285
757 4,764,286
788 4,764,287
793 4,764,288

CLASS 211

11 4,763,795
59.2 4,763,796
70.5 4,763,797
88 4,763,798
187 4,763,799

CLASS 212

195 4,763,800

CLASS 215

203 4,763,801
228 4,763,802
260 4,763,803
307 4,763,804

CLASS 219

10 55 F 4,764,651
10 77 4,764,652
69 E 4,764,653
76 13 4,764,654
121 44 4,764,656
121 83 4,764,655
125 1 4,764,657
137 R 4,764,658
216 4,764,659
272 4,764,660
4,764,661
391 4,764,662
448 4,764,663
548 4,764,664
549 4,764,665

CLASS 220

85 A 4,763,805
86 R 4,763,806
274 4,763,807
404 4,763,808
407 4,763,809

CLASS 221

3 4,763,810
11 4,763,811
203 4,763,812

CLASS 222

50 4,763,813
63 4,763,814
96 4,763,815
207 4,763,816
4,763,817
209 4,763,818
623 4,763,819

CLASS 224

42 46 A 4,763,820
267 4,763,821

CLASS 226

91 4,763,822
109 4,763,823

CLASS 227

120 4,763,824
142 4,763,825

CLASS 228

4 5 4,763,826
102 4,763,827
124 4,763,828
4,763,829
140 Re 32,732
145 4,763,830

CLASS 229

52 B 4,763,833
101 4,763,831
114 4,763,832

CLASS 235

380 4,763,666
462 4,764,667
470 4,764,668

CLASS 236

345 4,763,834

CLASS 238

205 4,763,835

CLASS 239

69 4,763,836
111 4,763,837
205 4,763,838
222 17 4,763,839
265 35 4,763,840
464 4,763,841
542 4,763,842
571 4,763,843
663 4,763,844

CLASS 241

81 4,763,846
101 7 4,763,845
169 4,763,847

CLASS 242

1 4,763,848
43 2 4,763,849
46 4 4,763,850
58 3 4,763,851
67 1 R 4,763,852
107 4 A 4,763,853
129 4,763,854
139 4,763,855
217 4,763,856

CLASS 244

3 22 4,763,857
53 B 4,763,858
118 5 4,763,859
122 R 4,763,860
134 A 4,763,861
215 4,763,862

CLASS 248

74 1 4,763,863
123 1 4,763,864
164 4,763,865
188 7 4,763,866
544 4,763,867
558 4,763,868
562 4,763,869
611 4,763,870
640 4,763,871

CLASS 250

202 4,764,669
226 4,764,670
227 4,764,671
236 4,764,672
305 4,764,673
306 4,764,674
324 4,764,675
353 4,764,676
361 R 4,764,677
369 4,764,678
374 4,764,679
560 4,764,680
563 4,764,681
578 4,764,682

CLASS 251

30 01 4,763,872
30 05 4,763,873
122 4,763,874
149 9 4,763,875
359 4,763,876
362 4,763,877

CLASS 252

8 6 4,764,289
8 8 4,764,291
4,764,292
11 4,764,290
12 4 4,764,293
32 7 E 4,764,294
33 2 4,764,295
45 4,764,297
47 4,764,298
48 2 4,764,299
51 5 A 4,764,304
62 58 4,764,300
301 23 4,764,302
301 4 P 4,764,301
334 4,764,296
385 4,764,303
628 4,764,305

CLASS 254

100 4,763,878

CLASS 256

36 4,763,879

CLASS 260

404 5 4,764,306
512 R 4,764,307
544 K 4,764,308
4,764,309
4,764,310

CLASS 261

28 4,764,311
30 4,764,312
35 4,764,313
62 4,764,314
140 1 4,764,315

CLASS 264

3 1 4,764,316
3 4 4,764,319
3 5 4,764,329
4 4,764,317
29 5 4,764,318
41 4,764,320
65 4,764,321
71 4,764,322
85 4,764,323
103 4,764,324
113 4,764,325
211 4,764,326
225 4,764,327
248 4,764,328
300 4,764,330
328 16 4,764,331

CLASS 266

87 4,763,880
287 4,763,881

CLASS 267

33 4,763,882
64 27 4,763,883
140 1 4,763,884
227 4,763,885

CLASS 269

73 4,763,886
247 4,763,887

CLASS 270

58 4,763,888

CLASS 271

9 4,763,889
30 1 4,763,890
157 4,763,891
293 4,763,892

CLASS 272

52 4,763,895
68 4,763,896
70 4,763,894
118 4,763,897

CLASS 273

1 GF 4,763,898
26 B 4,763,899
26 R 4,763,900
29 R 4,763,901
155 4,763,902
371 4,763,903

CLASS 277

9 4,763,904
38 4,763,905

CLASS 279

123 4,763,906

CLASS 280

11 25 4,763,909
29 4,763,910
37 4,763,911
47 35 4,763,907
281 R 4,763,913
401 4,763,914
413 4,763,915
432 4,763,916
507 4,763,917
605 4,763,918
628 4,763,908
644 4,763,919
668 4,763,920
682 4,763,921
689 4,763,922
704 4,763,923
806 4,763,924
[illegible] 4,763,925
4,763,926

CLASS 283

[illegible] 4,763,927
4,763,928
[illegible] 4,763,929
4,763,930
108 4,763,931

CLASS 285

177 4,763,932

CLASS 290

55 4,764,683

CLASS 292

13 4,763,933
21 4,763,934
66 4,763,935
201 4,763,936
251 5 4,763,937
290 4,763,938

CLASS 293

17 4,763,939

CLASS 294

25 4,763,940
64 1 4,763,941
79 4,763,942
82 13 4,763,943

CLASS 296

50 4,763,944
57 R 4,763,945
97 H 4,763,946
97 R 4,763,947
194 4,763,948
222 4,763,949

CLASS 297

301 4,763,950
354 4,763,951
383 4,763,952

CLASS 298

175 4,763,953

CLASS 299

56 4,763,954
4,763,955
86 4,763,956

CLASS 301

105 B 4,763,957

CLASS 303

8 4,763,958
9 4,763,959
97 4,763,960

CLASS 305

12 4,763,961

CLASS 307

66 4,764,684
106 4,764,685
254 4,764,686
269 4,764,687
270 4,764,688
353 4,764,689
400 4,764,690
451 4,764,692
468 4,764,691
530 4,764,693
602 4,764,694

CLASS 310

20 4,764,695
49 R 4,764,696
4,764,697
72 4,764,698
89 4,764,699
236 4,764,700
313 R 4,764,701
323 4,764,702

CLASS 312

16 4,763,962
45 4,763,963
100 4,763,964
317 A 4,763,965

CLASS 313

126 4,764,703
414 4,764,704
422 4,764,706
440 4,764,705
580 4,764,707

CLASS 315

5 43 4,764,710
51 4,764,708
370 4,764,709

CLASS 318

619 4,764,711
778 4,764,712
4,764,713
786 4,764,714

CLASS 320

13 4,764,715

CLASS 323

231 4,764,716
364 4,764,717

CLASS 324

58 5 A 4,764,718
73 PC 4,764,719
107 4,764,720
121 R 4,764,721
158 P 4,764,722
4,764,723
230 4,764,724
234 4,764,725
322 4,764,726
503 4,764,727
512 4,764,728
546 4,764,729

CLASS 329

50 4,764,730

CLASS 330

4 3 4,764,731
59 4,764,732
84 4,764,733
251 4,764,734
271 4,764,735
294 4,764,736

CLASS 331

1 A 4,764,737

CLASS 332

7 51 4,764,738
[illegible] 4,764,739

CLASS 333

164 4,764,740
250 4,764,741

CLASS 335

142 4,764,742
306 4,764,743

CLASS 336

[illegible] 4,764,744

CLASS 337

2 4,764,745
66 4,764,746

CLASS 338

2 4,764,747

CLASS 340

347 AD 4,764,748
4,764,750
4,764,751
4,764,753
347 DD 4,764,749
347 NT 4,764,752
365 R 4,764,770
513 4,764,754
541 4,764,755
566 4,764,756
574 4,764,757
627 4,764,758
653 4,764,759
680 4,764,760
690 4,764,761
4,764,762
709 4,764,763
724 4,764,764
756 4,764,765
784 4,764,766
815 05 4,764,768
870 31 4,764,767

CLASS 342

50 4,764,769
373 4,764,771
408 4,764,772

CLASS 343

713 4,764,773
719 4,764,774
786 4,764,775
897 4,764,779

CLASS 346

76 R 4,764,776
140 R 4,764,777
4,764,780
160 4,764,778

CLASS 350

1 1 4,763,966
6 3 4,763,967
96 1 4,763,971
96 11 4,763,972
96 13 4,763,973
96 14 4,763,974
96 15 4,763,975
4,763,976
4,763,977
96 18 4,763,978
96 19 4,763,969
96 20 4,763,979
4,763,980
96 21 4,763,970
96 23 4,763,981
4,763,982
4,763,983
96 24 4,763,984
105 4,763,985
235 4,763,986
255 4,763,987
319 4,763,988
4,763,989
320 4,763,990
321 4,763,991
331 T 4,763,992
4,763,993
336 4,763,994
341 4,763,995
387 4,763,996
410 4,763,997
427 4,763,998
429 4,763,999
454 4,764,000
465 4,764,001
486 4,764,002
516 4,763,968
610 4,764,003
632 4,764,004

CLASS 351

205 4,764,005
211 4,764,006
243 4,764,007

CLASS 354

65 4,764,781
81 4,764,008
109 4,764,782
195 1 4,764,783
195 12 4,764,784
219 4,764,785
403 4,764,786
408 4,764,787

CLASS 355

3 R 4,764,788
14 R 4,764,789
15 4,764,790
26 4,764,791
27 4,764,792
38 4,764,793
87 4,764,794
125 4,764,795

CLASS 356

73 4,764,009
153 4,764,010
251 4,764,011
347 4,764,012
349 4,764,013
351 4,764,014
369 4,764,017
371 4,764,016
372 4,764,015
418 4,764,018

CLASS 357

16 4,764,796
25 4,764,797
45 4,764,798
49 4,764,799
51 4,764,800
59 4,764,801
68 4,764,802
72 4,764,803
81 4,764,804

CLASS 358

13 4,764,805
31 4,764,964
60 4,764,806
75 4,764,807
84 4,764,808
148 4,764,810
160 4,764,811
181 4,764,812
183 4,764,809
213 11 4,764,813
213 18 4,764,814
293 4,764,815
327 4,764,816
341 4,764,817
347 4,764,818

CLASS 360

10 2 4,764,819
22 4,764,820
33 1 4,764,821
48 4,764,822
60 4,764,823
70 4,764,824
85 4,764,825
93 4,764,826
96 5 4,764,827
98 4,764,828
104 4,764,830
105 4,764,831
106 4,764,829
120 4,764,832
126 4,764,833

CLASS 361

1 4,764,835
5 4,764,836
19 4,764,837
21 4,764,838
92 4,764,839
154 4,764,840
225 4,764,842
226 4,764,841
294 4,764,843
308 4,764,844
387 4,764,845
388 4,764,846
4,764,847
408 4,764,848
428 4,764,849

CLASS 362

35 4,764,850
74 4,764,851
135 4,764,852
183 4,764,853
226 4,764,854
433 4,764,855

CLASS 363

21 4,764,856
49 4,764,857
89 4,764,858
161 4,764,859

CLASS 364

200 4,764,861
4,764,862
4,764,863
4,764,864
4,764,865
4,764,866
4,764,867
4,764,868
300 4,764,869
415 4,764,870
426 4,764,871
433 4,764,872
461 4,764,873
468 4,764,874
470 4,764,875
4,764,876
474 4,764,877
4,764,878
482 4,764,879
508 4,764,882
513 4,764,883
519 4,764,880
552 4,764,884
559 4,764,881
571 4,764,885
787 4,764,886
4,764,887
788 4,764,888
807 4,764,889
4,764,890
4,764,891
841 4,764,892
900 4,764,893
4,764,894
4,764,895
4,764,896

CLASS 365

126 4,764,834
154 4,764,897
162 4,764,898
189 4,764,899
4,764,900
206 4,764,901
4,764,902

CLASS 366

15 4,764,019
76 4,764,020
127 4,764,021
157 4,764,022

CLASS 367

29 4,764,903
70 4,764,904
140 4,764,905
142 4,764,906
163 4,764,907
171 4,764,909
178 4,764,908

CLASS 368

69 4,764,910

CLASS 369

32 4,764,911
43 4,764,860
45 4,764,912
49 4,764,913
58 4,764,914
4,764,915
59 4,764,916
77 1 4,764,917

CLASS 370

14 4,764,918
60 4,764,919
94 4,764,920
100 4,764,921
123 4,764,922

CLASS 371

6 4,764,923
15 4,764,924
20 4,764,925
25 4,764,926
39 4,764,927
69 4,764,928

CLASS 372

18 4,764,929
23 4,764,930
29 4,764,931
35 4,764,932
40 4,764,933
48 4,764,934
50 4,764,935
4,764,936
4,764,937

CLASS 374

29 4,764,023
39 4,764,024
144 4,764,025
178 4,764,026
208 4,764,027

CLASS 375

14 4,764,938
37 4,764,939
67 4,764,940
112 4,764,941
118 4,764,942

CLASS 376

203 4,764,332
4,764,333
248 4,764,334
253 4,764,335
272 4,764,336
306 4,764,337
313 4,764,338
353 4,764,339
434 4,764,340

CLASS 377

6 4,764,943

CLASS 378

20 4,764,944
50 4,764,945
62 4,764,946
138 4,764,947
165 4,764,948

CLASS 379

9 4,764,949
29 4,764,950
100 4,764,951
107 4,764,952
355 4,764,953
390 4,764,954
411 4,764,955
413 4,764,956
433 4,764,957
450 4,764,958

CLASS 380

4 4,764,959

CLASS 381

24 4,764,960
4,764,961
4,764,962
36 4,764,963
43 4,764,965
46 4,764,966
98 4,764,967
204 4,764,968

CLASS 382

8 4,764,969
4,764,970
9 4,764,971
13 4,764,972
14 4,764,973
43 4,764,974
47 4,764,975
65 4,764,976

CLASS 383

20 4,764,028
63 4,764,977
104 4,764,029
120 4,764,030
4,764,031

CLASS 384

44 4,764,032
90 4,764,033
100 4,764,034
152 4,764,035
276 4,764,036
527 4,764,037

CLASS 400

120 4,764,038
146 4,764,039
320 4,764,040
618 4,764,041
629 4,764,043
674 4,764,042

CLASS 401

150 4,764,044
198 4,764,045
270 4,764,046
289 4,764,047

CLASS 403

11 4,764,048
24 4,764,049
322 4,764,050

CLASS 404

16 4,764,051

CLASS 405

31 4,764,052
208 4,764,053
216 4,764,054
261 4,764,055

CLASS 406

68 4,764,056
69 4,764,057
117 4,764,058

CLASS 407

42 4,764,059

CLASS 408

14 4,764,060
69 4,764,061

CLASS 409

136 4,764,062
179 4,764,063
233 4,764,064

CLASS 411

21 4,764,065
187 4,764,066
310 4,764,067
393 4,764,068
395 4,764,069
430 4,764,070
433 4,764,071
456 4,764,072

CLASS 412

9 4,764,073

CLASS 414

95 4,764,074
99 4,764,075
217 4,764,076
222 4,764,077
273 4,764,078
411 4,764,079
499 4,764,080
678 4,764,081
785 4,764,082

CLASS 415

101 4,764,084
112 4,764,085
4,764,086
142 4,764,087
150 4,764,088
174 4,764,089
201 4,764,083

CLASS 416

17 4,764,090

CLASS 417

269 4,764,091
462 4,764,092
500 4,764,093

CLASS 418

4 4,764,094
31 4,764,095
55 4,764,096
60 4,764,097
152 4,764,098
270 4,764,099

CLASS 419

9 4,764,341

CLASS 422

72 4,764,342
83 4,764,343
89 4,764,344
113 4,764,347
120 4,764,346
146 4,764,345
178 4,764,348
186 18 4,764,349
245 4,764,350
292 4,764,351

CLASS 423

10 4,764,352
20 4,764,353
228 4,764,354
244 4,764,355
329 4,764,356
338 4,764,357

CLASS 424

1 4,764,358
4,764,359
2 4,764,360
45 4,764,361
47 4,764,363
61 4,764,362
78 4,764,364
81 4,764,365
84 4,764,366
4,764,367
85 4,764,368
89 4,764,369
93 4,764,370
4,764,371
4,764,372
101 4,764,463
105 4,764,373
120 4,764,510
128 4,764,374
153 4,764,375
435 4,764,377
4,764,378
449 4,764,379
4,764,381
4,764,382
465 4,764,380

CLASS 425

67 4,764,100
133 5 4,764,101
4,764,102
577 4,764,103

CLASS 426

1 4,764,383
241 4,764,385
293 4,764,386
299 4,764,387
311 4,764,388
312 4,764,389
417 4,764,384
433 4,764,391
438 4,764,390
603 4,764,392

CLASS 427

3 4,764,393
38 4,764,394
54 1 4,764,395
69 4,764,396
118 4,764,549
237 4,764,398
275 4,764,399
280 4,764,400
304 4,764,401
355 4,764,402

CLASS 428

35 4,764,403
4,764,404
4,764,405
4,764,406
4,764,421
37 4,764,407
71 4,764,408
98 4,764,409
120 4,764,410
155 4,764,411
172 4,764,412
192 4,764,413
195 4,764,414
212 4,764,415
4,764,416
4,764,417
222 4,764,397
269 4,764,418
284 4,764,419
290 4,764,420
309 9 4,764,422
317 7 4,764,420
323 4,764,423
327 4,764,424
331 4,764,425
400 4,764,426
4,764,427
402 4,764,428
403 4,764,429
413 4,764,430
421 4,764,431
446 4,764,432
541 4,764,433
565 4,764,434
621 4,764,435
694 4,764,436

CLASS 429

50 4,764,437
52 4,764,438
111 4,764,439
198 4,764,440

CLASS 430

5 4,764,441
45 4,764,443
47 4,764,444
63 4,764,442
108 4,764,445
115 4,764,446
4,764,447
120 4,764,448
138 4,764,451
162 4,764,449
191 4,764,450
288 4,764,452
351 4,764,453
361 4,764,454
393 4,764,455
550 4,764,456
569 4,764,457
620 4,764,458

CLASS 431

100 4,764,104
115 4,764,105
160 4,764,106

CLASS 432

96 4,764,107
128 4,764,108
153 4,764,109

CLASS 433

5 4,764,110
4,764,111
22 4,764,112
56 4,764,113
72 4,764,114
177 4,764,115
180 4,764,116
215 4,764,117

VOL 1093 ISS 3 AG 16 1988 UMI

VOL 1093 ISS 3 AG 16 1988 UMI

226 4,764,118

CLASS 434

260 4,764,119
336 4,764,120

CLASS 435

5 4,764,459
6 4,764,460
18 4,764,462
68 4,764,461
136 4,764,464
172.2 4,764,465
174 4,764,466
182 4,764,467
188 4,764,468
216 4,764,469
221 4,764,470
255 4,764,471
256 4,764,472
287 4,764,473

CLASS 436

111 4,764,474
548 4,764,475

CLASS 437

4 4,764,476
29 4,764,477
4,764,478
4,764,479
49 4,764,481
56 4,764,482
57 4,764,483
67 4,764,480
054 4,764,484
203 4,764,485
225

CLASS 439

21 4,764,121
66 4,764,122
148 4,764,123
391 4,764,124
403 4,764,125
491 4,764,126
551 4,764,127
652 4,764,128
677 4,764,129
686 4,764,130
781 4,764,131
810 4,764,132
889 4,764,133

CLASS 440

53 4,764,134
83 4,764,135
89 4,764,136

CLASS 441

133 4,764,137

CLASS 445

3 4,764,138
49 4,764,139

CLASS 446

14 4,764,140
16 4,764,141
82 4,764,142
102 4,764,143
128 4,764,144
208 4,764,145
279 4,764,146
397 4,764,147
431 4,764,148
440 4,764,149
456 4,764,150

CLASS 453

59 4,764,151

CLASS 455

1 4,764,978
22 4,764,979
601 4,764,980
603 4,764,981
606 4,764,982
609 4,764,983
619 4,764,984

CLASS 464

89 4,764,152
111 4,764,153
168 4,764,154

CLASS 474

12 4,764,155
28 4,764,156
135 4,764,157
212 4,764,158

CLASS 493

189 4,764,159
194 4,764,160
248 4,764,161

CLASS 494

6 4,764,163
38 4,764,162

CLASS 501

9 4,764,486
70 4,764,487
95 4,764,488
96 4,764,489
97 4,764,490
103 4,764,491
136 4,764,492
137 4,764,493
138 4,764,494

CLASS 502

62 4,764,495
235 4,764,497
251 4,764,498
258 4,764,499

CLASS 503

208 4,764,500
209 4,764,501
227 4,764,496

CLASS 514

2 4,764,502
11 4,764,503
12 4,764,504
18 4,764,523
35 4,764,505
46 4,764,506
54 4,764,507
78 4,764,508
102 4,764,509
179 4,764,513
183 4,764,512
252 4,764,514
255 4,764,376
256 4,764,515
288 4,764,516
291 4,764,517
335 4,764,518
350 4,764,519
354 4,764,520
364 4,764,522
381 4,764,524
383 4,764,521
407 4,764,526
510 4,764,527
531 4,764,528
548 4,764,529
557 4,764,530
560 4,764,531
4,764,532
594 4,764,511
651 4,764,533
657 4,764,534

CLASS 521

50 4,764,536
51 4,764,535
4,764,537
85 4,764,538
110 4,764,540
114 4,764,541
137 Re.32,733
149 4,764,542
160 4,764,543

CLASS 523

205 4,764,544
212 4,764,545
213 4,764,546
215 4,764,547

CLASS 524

31 4,764,548
217 4,764,550
265 4,764,576
394 4,764,551
504 4,764,552
506 4,764,560
558 4,764,554
591 4,764,553

CLASS 525

67 4,764,555
4,764,556
72 4,764,557
73 4,764,558
92 4,764,559
163 4,764,561
281 4,764,562
316 4,764,563
328.2 4,764,564
352 4,764,565
390 4,764,566
403 4,764,567
409 4,764,577
417 4,764,568
446 4,764,569
513 4,764,570
534 4,764,571

CLASS 526

87 4,764,572
90 4,764,573
207 4,764,574
264 4,764,575

CLASS 528

27 4,764,578
87 4,764,579
98 4,764,580
100 4,764,581
183 4,764,582
193 4,764,583
220 4,764,584
233 4,764,585
362 4,764,586
363 4,764,587
491 4,764,588

CLASS 530

305 4,764,592
307 4,764,589
4,764,590
4,764,591
324 4,764,593
334 4,764,594
4,764,595
501 4,764,597
507 4,764,596

CLASS 534

551 4,764,598
740 4,764,599
792 4,764,600

CLASS 536

4,764,601
7 4,764,602
26 4,764,603
103 4,764,604
124 4,764,605

CLASS 540

221 4,764,606
540 4,764,607

CLASS 544

6 4,764,608
250 4,764,609
334 4,764,611
357 4,764,614

CLASS 546

44 4,764,615
152 4,764,616
169 4,764,617
196 4,764,618
226 4,764,619
232 4,764,612
341 4,764,613

CLASS 548

113 4,764,620
152 4,764,621
159 4,764,622
253 4,764,623
442 4,764,625

CLASS 549

377 4,764,626
505 4,764,627
529 4,764,628

CLASS 556

23 4,764,629
27 4,764,632
50 4,764,633
410 4,764,630
460 4,764,631

CLASS 558

96 4,764,634
423 4,764,635

CLASS 560

102 4,764,636
143 4,764,637

CLASS 562

416 4,764,638
4,764,639
457 4,764,640

CLASS 568

319 4,764,641
4,764,642

CLASS 604

20 4,764,164
35 4,764,165
65 4,764,166
73 4,764,167
264 4,764,168

CLASS 623

6 4,764,169
4,764,170
20 4,764,171
49 4,764,172

CLASS 800

1 4,764,643

CLASSIFICATION OF DESIGNS

D2— 277 297,180
314 297,181
297,182
297,183
297,184
320 297,185
297,186
D3— 72 297,187
106 297,188
D6— 407 297,189
429 297,190
461 297,191
467 297,192
491 297,193
546 297,194
559 297,195
D7— 1 297,196
10 297,197
52 297,198
53 297,199
84 297,200
99 297,201
104 297,202
D8— 33 297,203
40 297,204
49 297,205
57 297,206
297,207
64 297,208
91 297,209
98 297,210
310 297,211
D9— 376 297,212
378 297,213
416 297,214
D10— 32 297,215
33 297,216
53 297,217
62 297,218
104 297,220
106 297,219
297,221
297,222
D15— 11 297,238
121 297,270
D12— 110 297,223
155 297,224
156 297,225
187 297,226
190 297,229
191 297,227
297,228
203 297,230
D13— 24 297,231
297,232
D14— 34 297,233
52 297,234
55 297,235
79 297,236
105 297,237
D16— 132 297,242
D18— 27 297,243
D19— 25 297,244
37 297,245
D20— 5 297,246
27 297,247
297,248
30 297,249
D21— 41 297,250
155 297,251
D22— 122 297,252
144 297,253
D23— 214 297,255
233 297,256
248 297,254
252 297,257
296 297,258
337 297,259
D24— 21 297,260
27 297,261
52 297,262
D25— 68 297,263
119 297,264
D26— 38 297,265
46 297,266
122 297,267
D27— 148 297,269
154 297,268
D30— 126 297,271
297,272
D32— 1 297,273
15 297,274
44 297,275
46 297,276
47 297,277
D34— 29 297,278
297,279

CLASSIFICATION OF PLANTS

P 41 6,248
68 6,247
69 6,249
6,250
6,252
6,253

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

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06 4,763,365
4,763,366
4,763,367
4,763,368
4,763,373
4,763,390
4,763,428
4,763,431
4,763,434
4,763,446
4,763,451
4,763,457
4,763,470
4,763,479
4,763,486
4,763,520
4,763,535
4,763,557
4,763,574
4,763,585
4,763,591
4,763,593
4,763,597
4,763,606
4,763,619
4,763,640
4,763,648
4,763,650
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4,763,656
4,763,661
4,763,663
4,763,671
4,763,680
4,763,690
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4,763,707
4,763,730
4,763,734
4,763,794
4,763,808
4,763,821
4,763,825
4,763,830
4,763,838
4,763,864
4,763,894
4,763,933
4,763,944
4,763,957
4,763,975
4,763,989
4,764,009
4,764,026
4,764,029
4,764,036
4,764,037
4,764,071
4,764,076
4,764,088
4,764,110
4,764,132
4,764,144
4,764,166
4,764,222
4,764,240
4,764,247
4,764,248
4,764,267
4,764,270
4,764,274
4,764,286
4,764,298
4,764,302
4,764,346
4,764,364
4,764,370
4,764,372
4,764,379
4,764,380
4,764,389
4,764,439
4,764,465
4,764,480
4,764,487
4,764,502
4,764,504
4,764,520
4,764,580
4,764,586
4,764,646
4,764,664
4,764,673
4,764,676
4,764,687
4,764,710
4,764,718
4,764,738
4,764,752
4,764,770
4,764,771
4,764,774
4,764,778
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4,764,800
4,764,806
4,764,828
4,764,831
4,764,834
4,764,846
4,764,853
4,764,867
4,764,873
4,764,881
4,764,887
4,764,891
4,764,894
4,764,895
4,764,899
4,764,907
4,764,915
4,764,929
4,764,930
4,764,933
4,764,934
4,764,935
4,764,938
4,764,940
4,764,948
4,764,949
4,764,962
08 4,763,435
4,763,602
4,763,682
4,763,883
4,763,903
4,763,911
4,763,928
4,764,065
4,764,186
4,764,593
4,764,627
4,764,809
4,764,850
10 4,763,379
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4,763,526
4,763,575
4,763,583
4,763,719
4,763,798
4,763,809
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4,763,867
4,763,898
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4,763,544
4,763,552
4,763,571
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4,763,616
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4,763,677
4,763,692
4,763,753
4,763,760
4,763,765
4,763,805
4,763,854
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4,763,900
4,763,902
4,763,915
4,763,917
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4,763,947
4,763,951
4,763,961
4,764,024
4,764,047
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4,764,069
4,764,112
4,764,717
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4,764,757
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4,764,952
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4,764,973
4,764,120
4,764,121
4,764,174
4,764,180
4,764,281
4,764,296
4,764,312
4,764,335
4,764,384
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4,764,390
4,764,437
4,764,464
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4,764,566
4,764,589
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4,764,630
4,764,639
4,764,699
4,764,701
4,764,709
4,764,715
4,764,737
4,764,754
4,764,810
4,764,818
4,764,839
4,764,840
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4,764,857
4,764,889
4,764,890
4,764,919
4,763,709
4,763,726
4,763,905
4,763,926
4,764,077
4,764,161
4,764,182
4,764,376
4,764,481
4,764,510
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4,764,534
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4,764,592
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27 : 4,763,377 4,763,436 4,763,511 4,763,567 4,763,598 4,763,660 4,763,676 4,763,678 4,763,685 4,763,791 4,763,833 4,763,985 4,764,025 4,764,035 4,764,064 4,764,142 4,764,169 4,764,410 4,764,449 4,764,633 4,764,733 4,764,764 29 : 4,763,450 4,763,592 4,763,688 4,763,695 4,763,706 4,763,769 4,763,796 4,763,923 4,764,008 4,764,170 4,764,231 4,764,375 4,764,594 4,764,595 4,764,620 4,764,874 30 : 4,763,437 31 : 4,763,572 32 : 4,763,732 33 : 4,763,394 4,763,562 4,763,758 4,763,778 4,764,656 4,764,941 34 : 4,763,369 4,763,412 4,763,430 4,763,433 4,763,445 4,763,458 4,763,589 4,763,609 4,763,620 4,763,645 4,763,665 4,763,729 4,763,795 4,763,895 4,763,978 4,764,141 4,764,183 4,764,213 4,764,215 4,764,246 4,764,254

4,763,899 4,763,946 4,763,949 4,764,062 4,764,070 4,764,108 4,764,225 4,764,260 4,764,263 4,764,282 4,764,320 4,764,328 4,764,343 4,764,408 4,764,491 4,764,506 4,764,525 4,764,543 4,764,564 4,764,579 4,764,682 4,764,727 4,764,851 4,764,977 4,764,843 4,764,939 4,764,950 4,764,963 35 4,763,556 4,764,003 4,764,013 36 Re 32,731 4,763,375 4,763,403 4,763,447 4,763,455 4,763,487 4,763,570 1,763,604 4,763,669 4,763,679 4,763,694 4,763,763 4,763,789 4,763,804 4,763,847 4,763,858 4,763,877 4,763,897 4,763,930 4,763,964 4,763,970 4,763,976 4,763,999 4,764,055 4,764,127 4,764,145 4,764,147 4,764,151 4,764,195 4,764,226 4,764,238 4,764,292 4,764,304 4,764,321 4,764,324 4,764,341 4,764,354 4,764,357 4,764,369 4,764,425 4,764,445 4,764,484 4,764,485 4,764,493 4,764,560 4,764,625 4,764,634 4,764,655 4,764,670 4,764,675 4,764,714 4,764,719 4,764,722 4,764,734 4,764,744 4,764,755 4,764,758 4,764,760 4,764,781 4,764,785 4,764,793

4,764,266 4,764,275 4,764,285 4,764,291 4,764,306 4,764,329 4,764,347 4,764,356 4,764,359 4,764,362 4,764,367 4,764,382 4,764,388 4,764,391 4,764,412 4,764,474 4,764,482 4,764,499 4,764,511 4,764,588 4,764,616 4,764,743 4,764,747 4,764,763 4,764,843 4,764,939 4,764,950 4,764,963 4,764,003 4,764,013 4,763,375 4,763,403 4,763,447 4,763,455 4,763,487 4,763,570 4,763,529 4,763,669 4,763,679 4,763,694 4,763,763 4,763,789 4,763,804 4,763,847 4,763,858 4,763,877 4,763,897 4,763,930 4,763,964 4,763,970 4,763,976 4,763,999 4,764,055 4,764,127 4,764,145 4,764,147 4,764,151 4,764,195 4,764,226 4,764,238 4,764,292 4,764,304 4,764,321 4,764,324 4,764,341 4,764,354 4,764,357 4,764,369 4,764,425 4,764,445 4,764,484 4,764,485 4,764,493 4,764,560 4,764,625 4,764,634 4,764,655 4,764,670 4,764,675 4,764,714 4,764,719 4,764,722 4,764,734 4,764,744 4,764,755 4,764,758 4,764,760 4,764,781 4,764,785 4,764,793

4,764,799 4,764,805 4,764,815 4,764,823 4,764,826 4,764,837 4,764,841 4,764,848 4,764,865 4,764,893 4,764,914 4,764,971 4,763,416 4,763,419 4,763,492 4,763,516 4,763,600 4,763,653 4,763,659 4,763,673 4,763,705 4,763,781 4,763,785 4,763,890 4,763,983 4,764,058 4,764,066 4,764,232 4,764,407 4,764,644 4,764,647 4,764,438 4,763,364 4,763,378 4,763,438 4,763,468 4,763,482 4,763,525 4,763,529 4,763,530 4,763,587 4,763,603 4,763,668 4,763,683 4,763,687 4,763,689 4,763,716 4,763,718 4,763,739 4,763,751 4,763,787 4,763,801 4,763,936 4,763,959 4,764,007 4,764,015 4,764,030 4,764,033 4,764,082 4,764,228 4,764,258 4,764,261 4,764,280 4,764,289 4,764,297 4,764,299 4,764,325 4,764,363 4,764,403 4,764,440 4,764,561 4,764,573 4,764,601 4,764,614 4,764,651 4,764,665 4,764,677 4,764,681 4,764,708 4,764,726 4,764,759 4,764,879 40 4,763,513 4,763,605 4,763,686 4,763,842 4,764,326 4,764,469 4,764,574 4,764,903 41 4,763,990 4,764,080

4,764,349 4,764,683 4,764,721 4,764,723 42 4,763,363 4,763,392 4,763,395 4,763,408 4,763,423 4,763,442 4,763,453 4,763,462 4,763,490 4,763,504 4,763,527 4,763,638 4,763,696 4,763,701 4,763,702 4,763,715 4,763,725 4,763,770 4,763,780 4,763,783 4,763,799 4,763,806 4,763,819 4,763,826 4,763,829 4,763,846 4,763,875 4,763,913 4,763,935 4,763,941 4,764,068 4,764,079 4,764,130 4,764,131 4,764,146 4,764,163 4,764,190 4,764,204 4,764,219 4,764,271 4,764,334 4,764,337 4,764,340 4,764,365 4,764,378 4,764,405 4,764,419 4,764,430 4,764,489 4,764,492 4,764,509 4,764,512 4,764,540 4,764,550 4,764,558 4,764,596 4,764,610 4,764,623 4,764,628 4,764,662 4,764,704 4,764,725 4,764,855 4,764,870 4,764,983 4,763,420 4,763,580 4,764,666 4,764,858 4,763,382 4,763,489 4,763,852 4,763,904 4,764,597 4,763,728 4,763,404 4,763,521 4,763,565 4,763,735 4,763,914 4,764,111 4,764,272 4,764,358 4,764,428 4,764,463 4,764,598 4,764,974 4,763,380

4,763,441 4,763,459 4,763,480 4,763,517 4,763,536 4,763,537 4,763,643 4,763,736 4,763,737 4,763,762 4,763,836 4,763,879 4,763,953 4,764,019 4,764,105 4,764,268 4,764,278 4,764,283 4,764,290 4,764,317 4,764,477 4,764,535 4,764,572 4,764,643 4,764,782 4,764,835 4,764,888 4,764,900 4,764,923 4,764,966 47 4,763,510 4,763,942 4,763,986 4,764,316 4,764,711 50 4,763,907 51 4,763,362 4,763,658 4,763,672 4,763,775 4,763,893 4,763,993 4,764,051 4,764,054 4,764,115 4,764,236 4,764,348 4,764,607 4,764,671 4,764,713 4,764,769 4,764,868 53 4,763,381 4,763,731 4,763,742 4,763,974 4,764,040 4,764,342 4,764,773 54 Re 32,733 4,763,955 4,764,538 4,764,563 55 4,763,374 4,763,386 4,763,425 4,763,625 4,763,626 4,763,714 4,763,723 4,763,782 4,763,797 4,763,800 4,763,866 4,763,871 4,763,878 4,763,940 4,764,061 4,764,081 4,764,135 4,764,234 4,764,242 4,764,253 4,764,394 4,764,404 4,764,417 4,764,418 4,764,679 56 4,763,810 4,764,221 4,764,373

01	297,192		297,251		297,271		297,267		297,266		297,252
04 :	297,227		297,262		297,272	35 :	297,204	38 :	297,203		297,276
06 :	297,185		297,273	18 :	297,225	36 :	297,189	39 :	297,237	42	297,256
	297,197		297,279		297,229		297,200		297,255		297,263
	297,202	08	297,250		297,230		297,209		297,258	48	297,201
	297,213	09 :	297,222	19 :	297,220		297,212		297,264		297,221
	297,233		297,261	21	297,253		297,217		297,278	53 :	297,226
	297,234	10	297,214	25	297,182		297,232	40 :	297,277		297,231
	297,236	12 :	297,188	27 :	297,180	37 :	297,208	41 :	297,181	55	297,194
	297,243		297,260		297,235		297,218		297,183		297,211
	297,247	13 :	297,246	29	297,193		297,245		297,184		297,257
	297,248	16	297,198	34 :	297,187		297,265		297,186	56	297,241
	297,249	17	297,191								

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06	6,248						
	6,249	6,250	6,251		6,253	42	6,247

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VOL
1093

ISS
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AG
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UMI

VOL
1093

ISS
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AG
16

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VOL
1093

ISS
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AG
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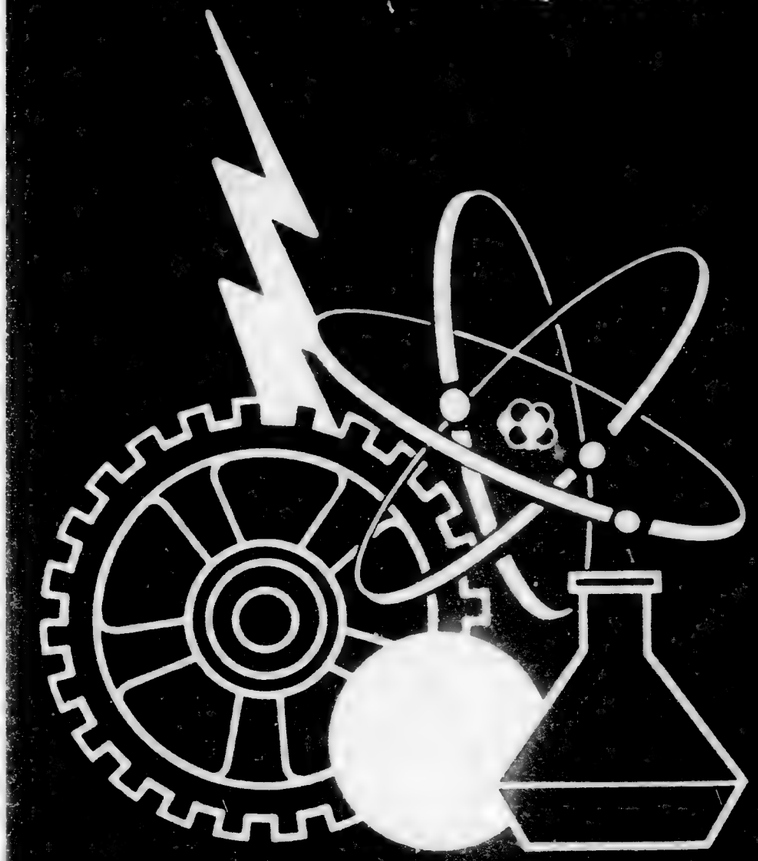
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VOL
1093

ISS
4

AG
23

1988

UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 23, 1988 Volume 1093 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1093 OG 36
Notice of Maintenance Fees Payable	1093 OG 36
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1093 OG 37
Notification of Acceptance of Delayed Payment of Maintenance Fees	1093 OG 38
Reissue Applications Filed	1093 OG 39
Requests for Reexaminations Filed	1093 OG 39
Erratum	1093 OG 39
Errata	1093 OG 39
Service by Publication	1093 OG 39
Application of Recordation of Trade Name: "J & J America, Inc."	1093 OG 40
Patent Certificates of Correction	1093 OG 41
Disclaimers	1093 OG 41
Disclaimer and Dedications	1093 OG 41
Special Boxes for Mail	1093 OG 42
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1093 OG 43
Condition of Patent Applications	1093 OG 44
Reexaminations	1551
Reissue Patents Granted (32,734)	1553
Plant Patents Granted (6,254)	1555
Patents Granted	
General and Mechanical (4,764,985)	1557
Chemical (4,765,796)	1837
Electrical (4,766,267)	1973
Design Patents Granted (297,280)	2095
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patentees	PI 62
Classification of	
Patents (Including Reissues and Reexaminations)	PI 67
Designs and Plant Applications	PI 70
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 71
Designs and Plant Applications	PI 73
Change of Address Form and Subscription Order Form	Back Page

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VOL
1093
ISS
4
AG
23
1988
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Mar. 15, 1988, and was announced in the *Official Gazette* at 1087 O.G. 24 on Feb. 16, 1988.

Domestic PCT Fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1300.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(1) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

DONALD J. QUIGG,
Mar. 21, 1988. *Assistant Secretary and Commissioner of Patents and Trademarks.*

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 20, 1985, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,535,477 through 4,536,888
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98-622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JUNE 5, 1988. DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,451,933	06/343,429	6/5/84
4,451,945	06/299,882	6/5/84
4,451,949	06/286,393	6/5/84
4,451,981	06/432,068	6/5/84
4,451,992	06/430,332	6/5/84
4,451,999	06/288,732	6/5/84
4,452,001	06/252,446	6/5/84
4,452,003	06/345,614	6/5/84
4,452,011	06/375,404	6/5/84
4,452,015	06/413,713	6/5/84
4,452,021	06/346,085	6/5/84
4,452,033	06/380,032	6/5/84
4,452,039	06/511,351	6/5/84
4,452,042	06/430,924	6/5/84
4,452,044	06/367,616	6/5/84
4,452,050	06/475,199	6/5/84
4,452,058	06/352,612	6/5/84
4,452,079	06/424,090	6/5/84
4,452,085	06/369,370	6/5/84
4,452,098	06/394,497	6/5/84
4,452,102	06/256,285	6/5/84
4,452,103	06/328,066	6/5/84
4,452,107	06/331,667	6/5/84
4,452,109	06/359,193	6/5/84
4,452,120	06/444,786	6/5/84
4,452,121	06/385,561	6/5/84
4,452,123	06/353,787	6/5/84
4,452,152	06/396,421	6/5/84
4,452,157	06/369,431	6/5/84
4,452,171	06/398,869	6/5/84
4,452,178	06/407,309	6/5/84
4,452,180	06/430,281	6/5/84
4,452,184	06/437,712	6/5/84
4,452,187	06/474,055	6/5/84
4,452,188	06/368,969	6/5/84
4,452,189	06/281,621	6/5/84
4,452,190	06/362,858	6/5/84
4,452,193	06/359,757	6/5/84
4,452,196	06/314,017	6/5/84
4,452,204	06/432,676	6/5/84
4,452,215	06/421,898	6/5/84
4,452,216	06/424,008	6/5/84
4,452,219	06/374,956	6/5/84
4,452,223	06/414,847	6/5/84
4,452,225	06/504,126	6/5/84
4,452,227	06/388,416	6/5/84
4,452,229	06/321,222	6/5/84
4,452,231	06/406,186	6/5/84
4,452,234	06/536,085	6/5/84
4,452,239	06/321,164	6/5/84
4,452,247	06/298,001	6/5/84
4,452,257	06/346,407	6/5/84
4,452,261	06/344,090	6/5/84
4,452,276	06/490,157	6/5/84
4,452,280	06/391,392	6/5/84
4,452,286	06/347,561	6/5/84
4,452,294	06/435,420	6/5/84
4,452,305	06/293,017	6/5/84
4,452,308	06/449,128	6/5/84
4,452,312	06/351,562	6/5/84
4,452,320	06/312,907	6/5/84
4,452,328	06/323,373	6/5/84
4,452,337	06/429,759	6/5/84
4,452,339	06/383,091	6/5/84
4,452,342	06/349,874	6/5/84
4,452,343	06/324,483	6/5/84

VOL
1093
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Patent Number	Serial Number	Issue Date
4,452,349	06/322,208	6/5/84
4,452,350	06/344,648	6/5/84
4,452,354	06/457,557	6/5/84
4,452,355	06/418,633	6/5/84
4,452,362	06/273,436	6/5/84
4,452,369	06/450,300	6/5/84
4,452,373	06/388,643	6/5/84
4,452,377	06/364,492	6/5/84
4,452,379	06/396,833	6/5/84
4,452,380	06/519,535	6/5/84
4,452,384	06/501,617	6/5/84
4,452,386	06/426,947	6/5/84
4,452,387	06/368,658	6/5/84
4,452,391	06/323,411	6/5/84
4,452,392	06/318,119	6/5/84
4,452,393	06/497,066	6/5/84
4,452,394	06/458,534	6/5/84
4,452,397	06/364,210	6/5/84
4,452,411	06/308,202	6/5/84
4,452,413	06/425,432	6/5/84
4,452,415	06/324,046	6/5/84
4,452,416	06/341,513	6/5/84
4,452,427	06/279,730	6/5/84
4,452,430	06/352,219	6/5/84
4,452,437	06/255,855	6/5/84
4,452,438	06/344,112	6/5/84
4,452,439	06/369,354	6/5/84
4,452,444	06/289,322	6/5/84
4,452,448	06/354,942	6/5/84
4,452,452	06/444,853	6/5/84
4,452,453	06/320,664	6/5/84
4,452,454	06/404,348	6/5/84
4,452,455	06/423,775	6/5/84
4,452,459	06/419,445	6/5/84
4,452,460	06/443,233	6/5/84
4,452,462	06/539,595	6/5/84
4,452,471	06/339,398	6/5/84
4,452,472	06/297,187	6/5/84
4,452,476	06/239,662	6/5/84
4,452,477	06/521,092	6/5/84
4,452,480	06/332,821	6/5/84
4,452,481	06/339,108	6/5/84
4,452,483	06/362,076	6/5/84
4,452,486	06/304,374	6/5/84
4,452,491	06/305,557	6/5/84
4,452,496	06/383,730	6/5/84
4,452,510	06/242,953	6/5/84
4,452,512	06/505,891	6/5/84
4,452,514	06/365,091	6/5/84
4,452,527	06/436,907	6/5/84
4,452,529	06/384,484	6/5/84
4,452,534	06/298,479	6/5/84
4,452,537	06/444,728	6/5/84
4,452,544	06/372,241	6/5/84
4,452,550	06/282,013	6/5/84
4,452,551	06/383,092	6/5/84
4,452,557	06/310,664	6/5/84
4,452,562	06/492,464	6/5/84
4,452,568	06/456,038	6/5/84
4,452,569	06/383,787	6/5/84
4,452,577	06/509,233	6/5/84
4,452,582	06/389,765	6/5/84
4,452,583	06/227,575	6/5/84
4,452,598	06/349,566	6/5/84
4,452,612	06/421,642	6/5/84
4,452,613	06/348,882	6/5/84
4,452,618	06/374,161	6/5/84
4,452,648	06/278,824	6/5/84
4,452,650	06/352,449	6/5/84
4,452,663	06/369,179	6/5/84
4,452,667	06/396,928	6/5/84
4,452,675	06/434,984	6/5/84
4,452,692	06/375,980	6/5/84
4,452,693	06/507,298	6/5/84
4,452,697	06/286,516	6/5/84
4,452,705	06/362,596	6/5/84
4,452,707	06/427,846	6/5/84
4,452,715	06/436,261	6/5/84
4,452,727	06/432,045	6/5/84
4,452,735	06/300,923	6/5/84
4,452,739	06/481,042	6/5/84
4,452,740	06/401,088	6/5/84
4,452,758	06/495,095	6/5/84
4,452,780	06/451,467	6/5/84
4,452,782	06/411,742	6/5/84
4,452,795	06/411,930	6/5/84
4,452,812	06/257,939	6/5/84
4,452,816	06/402,793	6/5/84
4,452,836	06/463,026	6/5/84
4,452,861	06/380,285	6/5/84
4,452,867	06/470,315	6/5/84
4,452,921	06/450,436	6/5/84
4,452,926	06/439,524	6/5/84
4,452,949	06/371,961	6/5/84
4,452,979	06/439,636	6/5/84
4,452,988	06/447,010	6/5/84
4,452,992	06/457,774	6/5/84
4,452,995	06/364,590	6/5/84
4,452,997	06/452,411	6/5/84
4,453,001	06/524,995	6/5/84
4,453,002	06/425,038	6/5/84
4,453,021	06/453,674	6/5/84
4,453,046	06/418,980	6/5/84
4,453,047	06/427,079	6/5/84
4,453,052	06/351,520	6/5/84
4,453,054	06/410,480	6/5/84
4,453,077	06/356,581	6/5/84
4,453,092	06/453,380	6/5/84
4,453,100	06/326,513	6/5/84
4,453,101	06/536,417	6/5/84
4,453,112	06/362,040	6/5/84
4,453,119	06/342,336	6/5/84
4,453,129	06/300,127	6/5/84
4,453,134	06/400,199	6/5/84
4,453,138	06/291,211	6/5/84
4,453,140	06/322,453	6/5/84
4,453,149	06/481,190	6/5/84
4,453,151	06/385,822	6/5/84
4,453,154	06/293,404	6/5/84
4,453,155	06/334,076	6/5/84
4,453,160	06/536,546	6/5/84
4,453,161	06/385,085	6/5/84
4,453,168	06/400,736	6/5/84
4,453,171	06/392,208	6/5/84
4,453,172	06/326,234	6/5/84
4,453,188	06/253,015	6/5/84
4,453,196	06/488,191	6/5/84
4,453,198	06/418,696	6/5/84
4,453,201	06/389,396	6/5/84
4,453,206	06/330,616	6/5/84
4,453,223	06/328,744	6/5/84
4,453,240	06/536,091	6/5/84
4,453,242	06/397,892	6/5/84
4,453,268	06/245,093	6/5/84

Notification of Acceptance of Delayed Payment of Maintenance Fee (35 U.S.C. 41(c); 37 CFR 1.378)

The patents listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,414,082	06/321,396	11/8/83	11/16/81	6/30/88
4,418,589	06/238,366	12/6/83	2/26/81	7/21/88
4,423,208	06/352,013	12/27/83	2/24/82	7/7/88
4,440,472	06/257,061	4/3/84	4/24/81	7/20/88
4,440,582	06/368,718	4/3/84	4/15/82	7/25/88

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,218,351, Re. S.N. 208,871, Filed June 20, 1988, Cl. 260/18, IMPACT, RESISTANT, THERMOPLASTIC POLYAMIDES, Gerald K. Rasmussen, Owner of Record: *Inventor,* Attorney or Agent: Donald M. Sell, Ex. Gp.: 155

4,595,958, Re. S.N. 209,049, Filed June 20, 1988, Cl. 358/296, MULTIFORMAT IMAGE RECORDATION, Walter F. Anderson, et al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.,* Attorney or Agent: Mark A. Litman, Ex. Gp.: 216

4,597,016, Re. S.N. 209,935, Filed June 22, 1988, Cl. 358/261, ENCODING/DECODING SYSTEM, Kozo Nakamura, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Donald R. Antonelli, Ex. Gp.: 262

4,613,786, Re. S.N. 166,479, Filed Mar. 10, 1988, Cl. 313/528, IMAGE INTENSIFIERS AND THE METHOD OF PRODUCING SAME, David G. Holland, et al., Owner of Record: *English Electric Valve Co. Ltd., Essex, England,* Attorney or Agent: George H. Spencer, Ex. Gp.: 266

4,665,851, Re. S.N. 212,325, Filed June 27, 1988, Cl. 122/262.1, METHOD OF ASSEMBLING TEXTILES, Paula J. Sweet, Owner of Record: *Inventor,* Attorney or Agent: Donald S. Dowden, Ex. Gp.: 247

4,666,314, Re. S.N. 209,954, Filed June 22, 1988, Cl. 445/73, METHOD AND APPARATUS FOR MEASURING TEMPERATURE IN THE HIGH PRESSURE FURNACE OF A HOT ISOSTATIC PRESSING, Shigeki Tojyo, et al., Owner of Record: *Kabushiki Kaisha Kobe Seiko, Sho Kobe, Japan,* Attorney or Agent: Norman F. Oblon, Ex. Gp.: 325

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,970,719, Reexam. No. 90/001,549, Requested: July 7, 1988, Cl. 525/247, PREPARATION OF BLOCK COPOLYMERS, James T. Edmonds, Jr., Owner of Record: *Phillips Petroleum Co., Bartlesville, Okla.,* Attorney or Agent: Neuman, Williams, et al., Ex. Gp.: 150, Requester: Pennie & Edmonds, New York, N.Y.

3,979,560, Reexam. No. 90/001,550, Requested: July 8, 1988, 379/82, TELEPHONE ANSWERING SYSTEM WITH RING DETECTOR, James R. Darwood, Owner of Record: *Fortel Inc., Los Angeles, Calif.,* Attorney or agent: K. D. Beecher, Ex. Gp.: 230, Requester: Hashimoto, Corp., Toyko, Japan

4,235,553, Reexam. No. 90/001,458, Requested: Mar. 4, 1988, Cl. 366/208, MATERIAL MIXER, John C. Gall, Owner of Record: *Sears Roebuck & Co., Chicago, Ill.,* Attorney or Agent: P. D. Ertel, Ex. Gp.: 240, Requester: Owner

4,617,931, Reexam. No. 90/001,548, Requested: July 5, 1988, Cl. 128/328, ULTRASONIC PULSE APPARATUS FOR DESTROYING CALCULUSES, Jacques Dory, Owner of Record: *Edap International Societe Anonyme, Paris, France,* Attorney or Agent: W. A. Drucker, Ex. Gp.: 330, Requester: Medical Instruments Corp., Rosemont, Ill.

Erratum

In the Request for Reexaminations Filed at 1089 OG 45 (Apr. 19, 1988) Pat. No. 4,235,553 should be 3,913,891.

Errata

"All reference to Patent No. 4,756,775 to John J. Croat of Mich. for 'HIGH ENERGY PRODUCT RARE EARTH-IRON MAGNET ALLOYS' appearing in the Official Gazette of July 12, 1988 should be deleted since no patent was granted."

"All reference to Patent No. 4,757,174 to Norman M. Scott et al. of Minn. for 'METHOD FOR MAKING SELECTIVELY METALLIZED MICROWAVE HEATING PACKAGE' appearing in the Official Gazette of July 12, 1988 should be deleted since no patent was granted."

"All reference to Patent No. 4,757,846 to John M. Morris et al. of Auburn, Wash. for 'VAPOR RECOVERY SYSTEMS' appearing in the Official Gazette of July 19, 1988 should be deleted since no patent was granted."

All reference to Patent No. 4,758,711 to Thomas R. Payne of Ky. for 'ELECTRONIC TRANSFORMER FOR ELECTRONIC COOKTOP APPLIANCE' appearing in the Official Gazette of July 19, 1988 should be deleted since no patent was granted."

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Just for Kicks, Inc. assignee of Minnesota Kicks, Inc., Prior Lake, Minn., Reg. No. 1,072,392, for the mark "KICKS" and design, Canc. No. 16,732.

Sea Selections, Inc., St. Petersburg, Fla., Reg. No. 1,286,579, for the mark "JOE & CHARLIE'S STONE CRAB GROTTO and design", Canc. No. 16,316.

VOL
1093
ISS
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1988
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Hempex Corp./Vemco, Inc., Miami, Fla., Reg. No. 1,262,081, for the mark "SAF-T-TIRE SEALANT STS BALANCER and design", Canc. No. 16,801.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Department of Treasury
United States Customs Service

Application for Recordation of Trade Name: "J & J America, Inc."

Action: Notice of Application for Recordation of Trade Name

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "J & J America, Inc.," used by J & J America, Inc., a corporation organized under the laws of the state of Fla. located at 11401 SW. 40th St., Miami, Fla. 33165.

The application states that the trade name is used in connection with textiles, textile products, fabrics, ladies handbags, luggage, audio/visual equipment, televisions, video camera recorders, electronic accessories, sporting goods, women's fashion accessories, and costume jewelry, manufactured in Korea.

Before final action is taken on the application, consideration will be given to any relevant data, views, or argument submitted in writing by any person in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before Sept. 19, 1988.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Value, Special Programs and Admissibility Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (Rm. 2104).

For Further Information Contact: Betty Coombs, Value, Special Programs and Admissibility Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

July 13, 1988.

MARVIN M. AMERNICK,
Chief, Value, Special
Programs & Admissibility Branch.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 23, 1988

PP. 6,153	4,689,930	4,720,087	4,733,109
D. 294,290	4,690,988	4,720,239	4,733,363
D. 294,431	4,692,752	4,720,854	4,733,430
D. 295,446	4,692,951	4,720,968	4,733,973
4,029,255	4,693,560	4,721,198	4,734,198
4,032,357	4,694,982	4,721,359	4,734,281
4,477,282	4,695,584	4,722,671	4,734,471
4,545,931	4,696,959	4,723,007	4,734,625
4,552,240	4,698,377	4,723,203	4,734,750
4,577,970	4,699,451	4,723,549	4,734,823
4,610,256	4,699,882	4,723,592	4,734,847
4,617,150	4,702,742	4,723,651	4,734,887
4,618,012	4,703,003	4,724,736	4,735,065
4,619,686	4,703,485	4,724,750	4,735,085
4,624,921	4,704,189	4,725,235	4,735,217
4,632,927	4,704,823	4,725,308	4,735,641
4,636,463	4,705,138	4,725,351	4,735,659
4,637,541	4,705,642	4,725,806	4,735,781
4,638,684	4,705,728	4,726,098	4,735,962
4,647,357	4,705,751	4,726,932	4,736,332
4,647,490	4,708,805	4,727,140	4,736,561
4,648,706	4,709,332	4,727,764	4,736,622
4,650,702	4,710,122	4,728,186	4,736,864
4,652,132	4,710,308	4,728,329	4,737,557
4,654,256	4,710,714	4,728,499	4,737,963
4,654,736	4,710,877	4,728,871	4,738,217
4,656,141	4,711,943	4,728,971	4,738,263
4,661,592	4,712,554	4,729,275	4,738,676
4,663,629	4,713,286	4,729,453	4,738,693
4,665,501	4,713,681	4,729,505	4,738,896
4,666,801	4,713,808	4,729,640	4,738,931
4,669,064	4,714,891	4,730,195	4,739,025
4,672,405	4,714,921	4,730,283	4,739,363
4,672,678	4,716,195	4,730,382	4,739,376
4,672,774	4,716,445	4,730,656	4,739,504
4,675,301	4,716,473	4,730,921	4,739,628
4,676,776	4,717,487	4,731,137	4,740,025
4,677,980	4,718,031	4,731,229	4,740,274
4,679,564	4,718,519	4,731,436	4,740,869
4,682,085	4,718,682	4,731,453	4,740,890
4,682,924	4,718,838	4,731,476	4,741,927
4,684,429	4,718,900	4,732,190	4,742,151
4,685,331	4,719,516	4,732,248	4,750,014
4,686,554	4,719,618	4,732,666	
4,688,474	4,720,033	4,732,858	

Disclaimers

4,347,932.—*Akira Furutu*, Tokyo, Japan. TAG PIN. Patent dated Sept. 7, 1982. Disclaimer filed June 17, 1988, by the assignee, *Clements Industries, Inc.*

Hereby enters this disclaimer to claim 5 of said patent.

4,620,340.—*Jan Bohacek*, Lower Kingswood, England. MOP-WRINGING DEVICES. Patent dated Nov. 4, 1986. Disclaimer filed June 27, 1988, by the assignee, *Jani-Jack Ltd.*

Hereby enters this disclaimer to claim 9 of said patent.

4,678,604.—*Roman Kaiser*, Uster, Switzerland. 2-(1'-HYDROXYIMINO-ETHYL)-1,3,3,4,4-PENTAMETHYLCYCLOPENTENE AND FRAGRANCE COMPOSITIONS CONTAINING SAME. Patent dated July 7, 1987. Disclaimer filed July 5, 1988, by the assignee, *Givaudan Corp.*

Hereby enters this disclaimer to claims 1 and 10 of said patent.

4,704,558.—*John L. Addis*, Beaverton; *David W. Morgan*, Gaston, both of Oreg. METHOD AND APPARATUS FOR AUTOMATIC OSCILLOSCOPE CALIBRATION. Patent dated Nov. 3, 1987. Disclaimer filed June 9, 1988, by the assignee, *Tektronix, Inc.*

Hereby enters this disclaimer to all claims of said patent.

4,731,743.—*Vito Blancato*, Coral Springs, Fla. METHOD AND APPARATUS FOR DISPLAYING HAIRSTYLES. Patent dated Mar. 15, 1988. Disclaimer filed May 11, 1988, by the assignee, Combputer Images, Inc.

Hereby enters this disclaimer to claims 30, 31 and 32 of said patent.

Disclaimer and Dedications

4,328,725.—*Rene Gschwend*, Reinach, Switzerland. METHOD OF AND APPARATUS FOR AUTOMATICALLY DISCARDING THE FRONT AND REAR ENDS OF BARS OF MATERIAL Patent dated May 11, 1982. Disclaimer and Dedication filed June 3, 1988, by the assignee, *Hatebur Umformmaschinen AG.*

Hereby disclaims and dedicates to the Public all claims of said patent.

4,460,733.—*Russell P. Carter, Jr.*, New Martinsville, W. Va.; *In C. Lim*, Pittsburgh; *Gerard E. Reinert*, McMurray, both of Pa. POLYCARBONATE COMPOSITIONS HAVING LOW GLOSS VALUES Patent dated July 17, 1984. Disclaimer and Dedication filed Oct. 5, 1987, by the assignee, *Mobay Corp.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

VOL
1093
ISS
4
AUG
23
1988
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VOL
1093
ISS
4
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23
1988
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner
JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 16, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	12-9-86
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	10-24-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-8-86
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-14-85
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-6-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M BLIX, Director	1-12-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-8-87
DESIGN, GROUP 290—K. L. CAGE, Director	8-8-85
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-13-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	8-26-86
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	4-9-86
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	3-2-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-1-87

Expiration of patents: The patents within the range of numbers indicated below expire during July 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,590,388 to 3,596,287, inclusive
Plant Patents ..... None

REEXAMINATIONS

AUGUST 23, 1988

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 3,333,198 (910th)

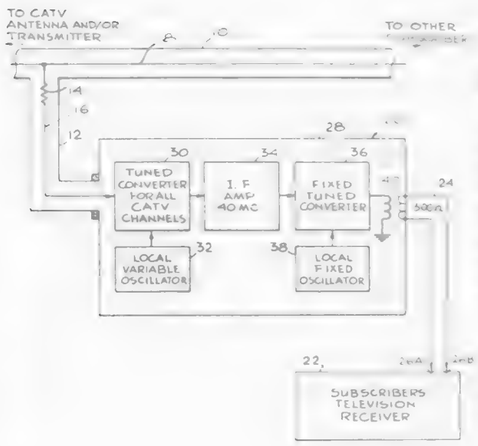
TELEVISION CONVERTER FOR CATV SYSTEM

Ronald C. Mandell, Los Angeles, and George Brownstein, Granada Hills, both of Calif., assignors to International Telemeter Corp., Los Angeles, Calif.

Reexamination Request No. 90/001,281, Jul. 6, 1987.
Reexamination Certificate for Patent No. 3,333,198, issued Jul. 25, 1967, Ser. No. 517,300, Dec. 29, 1965.

Int. Cl.[4] **H04H** *1/02;* **H04B** *1/10*

U.S. Cl. 455—6



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 1 is confirmed.

1. In a community antenna television system of the type wherein television programs are distributed to subscriber television receivers over a coaxial cable, the method of enabling a subscriber television receiver to receive over said coaxial cable a program using the same television channel as is used by a local transmitter, without interference by said local transmitter, said method comprising tuning said television receiver to a channel not used by said local transmitter, converting television signals received over said coaxial cable having the frequency of a locally transmitted television channel to signals having an intermediate frequency, converting said signals having an intermediate frequency to signals having the frequency to which said television receiver is tuned, preventing radiation from said local transmitter from interfering with said signals received over said coaxial cable, said signals having an intermediate frequency and with said signals having the frequency to which said television receiver is tuned, and applying said signals having the frequency to which said television receiver is tuned to said television receiver.

B1 3,963,842 (911th)

DEPOSITION OF COPPER

Christian Sivertz, London, Canada, and Anthony J. Basilone, Guilford, Conn., assignors to London Laboratories Limited Co., Woodbridge, Conn.

Reexamination Request No. 90/000,286, Nov. 10, 1982.
Reexamination Certificate for Patent No. 3,963,842, issued Jun. 15, 1976, Ser. No. 521,338, Nov. 6, 1974.
Continuation-in-part of Ser. No. 481,332, Jun. 20, 1974, [abandoned].

Int. Cl.[4] **C23C** *18/40*

U.S. Cl. 427—305

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–13** are cancelled.

New claims **14–30** are added and determined to be patentable.

14. In a process for the deposition of metallic copper on a catalytically activated surface by disproportionation of cuprous ions in an aqueous solution to effect deposition of metallic copper on said surface, the improvement which comprises rapidly reducing cupric tetraamino ions in aqueous solution substantially completely to cuprous diamino ions by using a hydroxyl ammonium salt, and thereafter effecting controlled disproportionation of the resultant cuprous ions by adding an activator-modifier, wherein said activator-modifier comprises a mineral acid activator used with a modifier selected from the group consisting of:

(a) suitable acids or salts thereof selected from the group consisting of sulfamic acid and hydroxy-carboxylic acids;

(b) chelating amines; and

(c) combinations of (a) and (b),

which activator-modifier brings about the deposition of metallic copper principally on said catalytically activated surface.

B1 4,303,531 (912th)

METHOD FOR ADSORBING AND RECOVERING PHENOLS

Nariyoshi Kawabata, Osaka, and Sinichi Yasuda, Otsu, both of Japan, assignors to Koei Chemical Co., Ltd., Osaka, Japan

Reexamination Request No. 90/001,146, Dec. 24, 1986.
Reexamination Certificate for Patent No. 4,303,531, issued Dec. 1, 1981, Ser. No. 97,674, Nov. 27, 1979.
Claims priority, application Japan, Nov. 28, 1978, 53-147624; Oct. 22, 1979, 54-136921

Int. Cl.[4] **B01D** *15/00*

U.S. Cl. 210—663

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–14** are cancelled.

[1. A process for absorbing and recovering phenols from an aqueous solution thereof, which process comprises:

(a) contacting said solution with a material having as its main component a tertiary-amine type, anion-exchange resin copolymer of (i) at least one monovinyl pyridine monomer and (ii) at least one vinyl comonomer, said comonomer having a number of ethylenically unsaturated groups, and acting as a crosslinking agent, thereby causing adsorption of phenols onto said material at a high rate, and;

(b) subsequently eluting said material with an eluting agent from which said phenols can be separated by distillation, thereby substantially recovering said phenols, and regenerating said resin.]

VOL
1093
ISS
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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,734

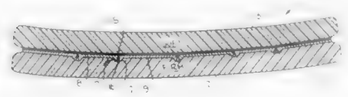
REVERSIBLE MATTRESS

Arlis D. McLeod, P.O. Box 249, Leakesville, Miss. 39451

Original No. 4,476,594, dated Oct. 16, 1984, Ser. No. 447,216, Dec. 6, 1982. Application for reissue Oct. 16, 1986, Ser. No. 920,227

Int. Cl.[4] A47C *27/15, 27/16*

U.S. Cl. 5—464 13 Claims



1. A cushion assembly which can be reversed in orientation to expose support cushions having different stiffnesses, said cushion assembly comprising

a stiffener member which includes (1) a plurality of section elements which are positioned in generally abutting side by side relationship to one another, each section element defining a first face, an oppositely directed second face, and side edges, each section member also including an abutment ridge which extends away from its second face adjacent each side edge thereof which is abuttable with the side edge of an adjacent section element, and (2) a hinge means connected between the first faces of adjacent section elements so as to flexibly connect said plurality of section elements together; said abutment ridges on said section elements being abuttable to prevent the movement of adjacent section elements such that their second faces pivot towards one another, and said hinge means connected between said section elements allowing adjacent section elements to move such that their first faces pivot toward one another,

a first support cushion connected to said hinge means, said first support cushion having a unitary structure and a predetermined stiffness, and

a second support cushion connected to the second faces of said plurality of section elements, said second support cushion having a unitary structure and a predetermined stiffness, the predetermined stiffness of said second support cushion being greater than the predetermined stiffness of said first support cushion.

13. A cushion assembly which can be reversed in orientation to expose support cushions having different stiffnesses, said cushion assembly comprising

a stiffener member which includes (1) a plurality of generally flat section elements which are positioned in generally abutting side-by-side relationship to one another, each section element defining a first face, an oppositely directed second face, and side edges, at least one of said side edges of each section element being adjacent a side edge of an adjacent section element, each section element also including an abutment ridge at each of said side edges thereof that are adjacent to a side edge of an adjacent section element, and (2) a hinge means connecting adjacent section elements such that, when the connected adjacent section elements are aligned in common plane, they can be pivoted towards one another in one direction but not in the opposite direction,

a first support cushion having a unitary structure and a predetermined thickness, said first support cushion being connected to said section elements over the faces thereof which will move together when said connected adjacent section elements are aligned in a common plane and then pivoted towards one another, and

a second support cushion having a unitary structure and a predetermined thickness connected to said section elements over the opposite faces thereof to which the first support cushion is connected, the predetermined stiffness of said second support cushion being greater than the predetermined stiffness of said first support cushion.

Re. 32,735

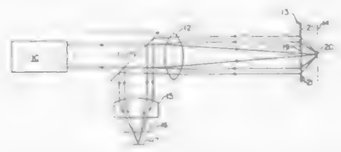
LINE SCAN READER/WRITER BY HOLOGRAPHIC COLLECTION

Burton R. Clay, Wayland, and William O. Thrailkill, Boston, both of Mass., assignors to Holographix Inc., Burlington, Mass.

Original No. 4,488,042, dated Dec. 11, 1984, Ser. No. 368,494, Apr. 15, 1982. Application for reissue Jul. 15, 1986, Ser. No. [illegible]

Int. Cl.[4] H01J *5/16*

U.S. Cl. 250—235 36 Claims



17. A reader apparatus for reading information on a surface by illuminating the surface and detecting the intensity of reflected light therefrom, such apparatus comprising

A. a light source for providing a light beam,

B. first focusing means for focusing the light beam onto a surface which bears information to be read,

C. collection means disposed between the first focusing means and the surface, and proximal to the surface, the collection means having a first portion through which the light beam is focused onto the surface and having a modulated second portion through which light reflected from the surface is collected and directed along an optical path,

D. detector means for developing a signal indicative of light intensity thereon, and

E. second focusing means for focusing onto the detector means the reflected light directed by the modulated portion.

Re. 32,736

ALIGNMENT SYSTEM FOR VEHICLE LOAD BED

Patrick A. Lovell, 245 S. Heber St., Beckley, W. Va. 25801

Original No. 4,568,094, dated Feb. 4, 1986, Ser. No. 602,545, Apr. 20, 1984. Application for reissue Jan. 23, 1987, Ser. No. 6,444

Int. Cl.[4] B60G *17/00;* B62D *33/08*

U.S. Cl. 280—6 R 18 Claims

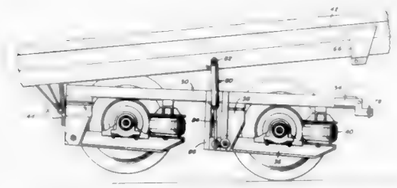
11. In a conventional load transporting vehicle including a load bed structure having at least one loading end, and a ground engaging wheel suspension system having a subframe underlying the vehicle load bed structure and a wheel assembly depending from the subframe, an alignment system for selectively elevating the loading end of the load bed structure while at least a portion of the wheel assembly is maintained in engagement with the ground, said alignment system comprising:

pivot means pivotably securing one end of the subframe to the load bed structure for vertical pivotal movement of the subframe and suspension system about said pivot means relative to the load bed structure;

VOL 1093 ISS 4 AG 23 1988 UMI

lock means locking a second end of the subframe to the load bed structure and fixing the subframe and suspension system against pivotal movement relative to the load bed structure about said pivot means;

release means for selectively releasing said lock means allowing free vertical swinging of said second end of the subframe about said pivot means and relative to the load bed structure; and



jack means mounted between the load bed structure and the subframe remote from said pivot means for effecting a selective pivotal movement of the suspension system, upon release of said lock means, relative to the load bed structure and in a manner effecting a vertical adjustment of the load bed structure.

Re. 32,737

CONTINUOUS HARMONIC SHROUDING

Ralph J. Ortoiano, Rancho Palos Verdes, Calif., assignor to Southern California Edison, Rosemead, Calif.

Original No. 4,386,887, dated Jun. 7, 1983, Ser. No. 164,318, Jun. 30, 1980. Application for reissue Oct. 18, 1984, Ser. No. 663,467

Int. Cl.[4] F01D *5/22*

U.S. Cl. 416—190 **37 Claims**

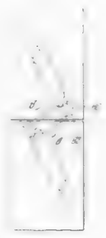
24. In a rotor structure for an axial flow elastic fluid utilizing machine, comprising:

(a) a rotor spindle;

(b) an annular row of radially-extending blades carried by the rotor spindle;

(c) an arcuate shroud ring structure attached to the radially outermost tips of the blades for rigidly connecting the blades to each other in first long arc groups which comprise more than 12 blades and include an end blade at each end of a group, the first long arc groups being of substantially equal central angular extent,

the blades being susceptible to vibrate in a tangential inphase mode having a resonant frequency at least that of the rated maximum running speed of the rotor,



the number of first long arc groups being equal to the blade resonant frequency divided by an integer multiple of the rotor running speed; and

the improvement comprising tie means flexibly connecting the adjacent end blades of a pair of adjacent first long arc groups for reducing axial-torsional vibration of the blades, said tie means being connected to the adjacent end blades at a location adjacent to the shroud ring structure.

PLANT PATENTS

GRANTED AUGUST 23, 1988

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,254

MINIATURE ROSE PLANT NAMED MORTORCH

Ralph S. Moore, Visalia, Calif., assignor to Sequoia Nursery, Visalia, Calif.

Filed Sep. 29, 1986, Ser. No. 913,089

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, rounded to upright, much branched habit, substantially as illustrated and described, characterized by buds and flowers of an orange red color which is modified by darker shading and lighter areas of near white and yellow; the bud and flower resembling the variety Sheri Anne (U.S. Plant Pat. No. 3,826) in form but with more petals; and further characterized by a plant of vigorous and compact growth habit, easy to propagate from cuttings or by budding, with an abundance of small to medium size semi-glossy to matt foliage and an abundance of flowers borne both singly and in loose clusters of 3 to 5 or more.

6,255

ROSE PLANT JACRIM

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sep. 16, 1986, Ser. No. 908,064

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous upright growth producing medium length stems bearing unusually colored off-white fringed with red flowers, its high degree of mildew resistance and its high quality foliage.

6,256

AFRICAN VIOLET NAMED ARCTIC WINTER

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540

Filed Sep. 24, 1986, Ser. No. 911,643

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,257

AFRICAN VIOLET NAMED ARCTIC ICE

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Sep. 24, 1986, Ser. No. 911,645

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,258

AFRICAN VIOLET NAMED ARCTIC GLACIER

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540-4836

Filed Sep. 24, 1986, Ser. No. 911,646

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,259

AFRICAN VIOLET NAMED ARCTIC OCEAN

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540

Filed Sep. 24, 1986, Ser. No. 911,647

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant as shown and described.

6,260

AFRICAN VIOLET NAMED ARCTIC CIRCLE

Eiichi Yoshida, P.O. Box 4836, Hayward, Calif. 94540

Filed Sep. 24, 1986, Ser. No. 911,648

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. An African violet plant, as shown and described.

VOL
1093

ISS
4

AG
23

1988

UMI

PATENTS

GRANTED AUG. 23, 1988

ERRATA

For CLASS	See PATENT NO.
033-379	4,765,061
440-038	4,765,075
198-311	4,765,461
209-577	4,765,484
270-055	4,765,502
223-078	4,765,519
424-450	4,766,046
514-012	4,766,106
522-046	4,766,160
428-395	4,766,181
530-412	4,766,224
560-117	4,766,246
355-007	4,766,404
355-257	4,766,405

VOL
1093
ISS
4
AG
23
1988
UMI

PATENTS

GRANTED AUGUST 23, 1988

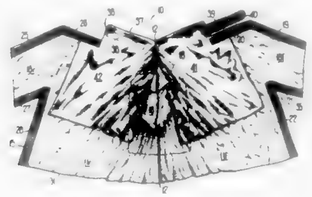
GENERAL AND MECHANICAL

4,764,985
GARMENT FOR A WHEELCHAIR OCCUPANT
Vicki J. Wade, 611 E. Washington St., Pittsfield, Ill. 62363
Filed May 12, 1987, Ser. No. 48,891
Int. Cl.[4] A41D *3/08*
U.S. Cl. 2—88 8 Claims



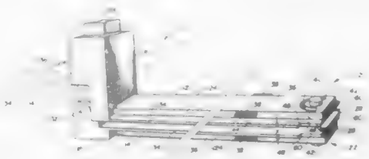
1. In a poncho for a wearer seated in a wheelchair, the poncho having a flat body with a longitudinal centerline longer than its transverse centerline and having a midsection terminating at the side edges of said body, the improvement comprising:
a head-receiving aperture through the midsection located on said longitudinal centerline and displaced from said transverse centerline toward one end edge of the body;
the body including a back panel and a front panel extending longitudinally from the midsection, with each panel having transversly spaced side edges;
the back panel terminating longitudinally at said one end edge of the body and the front panel terminating longitudinally at the opposite end edge of the body;
the dimension of the front panel between the spaced side edges thereof being less than the transverse dimension of the midsection between the side edges of the body; and,
the dimension of the back panel between the spaced side edges thereof being less than the dimension of the front panel between the spaced side edges thereof.

4,764,986
WATERPROOF GARMENT FOR PATIENT WITH THORACIC INCISION
Karen D. Stewart, 1361 Council Bluff Dr., NE., Atlanta, Ga. [M34]
Filed Jun. 26, 1987, Ser. No. 67,215
Int. Cl.[4] A41B *1/00*
U.S. Cl. 2—115 9 Claims



1. A water resistant garment comprising in combination:
a body portion;
a first sleeve and a second sleeve;
a neck opening;
a neckband disposed around the periphery of said neck opening comprising a neckband flap for overlapping a first end of said neckband;
means for selectively joining said neckband flap and said first end of said neckband;
a lower placket extending from a lower edge of said body portion to the armhole/sleeve area of said first sleeve and longitudinally along the entire length of said first sleeve to a first point at the distal end thereof; and
an upper placket extending from a second point at the distal end of said first sleeve to said neck opening;
whereby said body portion and said first sleeve may be completely open to allow said garment to be worn.

4,764,987
GARMENT PATTERN TRANSFER MARKING DEVICE AND METHOD
Clara B. Drei, 287 Cherry St., York, Pa. 17402
Filed Mar. 19, 1987, Ser. No. 28,192
Int. Cl.[4] D05B *97/00*
U.S. Cl. 2—243 R 12 Claims



1. A method of garment pattern transfer marking accomplished substantially without residual garment material blemish consequences, employed for effecting a temporary transfer of garment pattern reference and feature points from a typical garment pattern to a garment material and comprising the steps of preparing a punched out garment pattern by first punching out each garment pattern reference and feature point to provide an opening therefor in said garment pattern for each of said garment pattern reference and feature points to be transposed from said garment pattern to said garment material, assembling said punched out garment pattern to said garment material by use of pins or other suitable means, orienting and aligning a garment pattern transfer marking device embodying an adhesive tab die-cut punch means sequentially with each of said openings and thereupon die-cut punch applying therewith from a marking tape strip an adhesive tab of a lesser peripheral geometrically conformed dimension than that of said opening therethrough to said garment material in respectively accomplishing a temporary garment pattern transfer marking thereby upon said garment material, removing said punched out garment pattern from said garment material upon completion of sequential adhesive tab transfer of each garment pattern reference and feature point thereto, and thereafter sequentially accomplishing garment fabrication and tailoring operations with a corresponding sequential removal of said adhesive tabs from said garment material upon respective sequential completion thereof.

4. A garment pattern transfer marking device for accomplishing temporary transfer of garment pattern reference and feature points from a typical garment pattern to a garment material, comprising a pivotally connected set of parallelly spaced support arm means for holding in oppositely spaced aligned facing relationship a cooperative set of adhesive tab punch head assemblies, a detachable set of punch and anvil means removably connectable cooperatively to said adhesive tab punch head assemblies for punching out the garment pattern reference and feature points from said garment pattern, a

VOL 1093 ISS 4 AG 23 1988 UMI

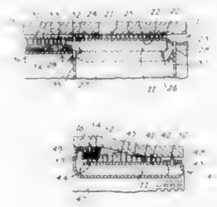
marking tape strip respectively supported within each of said pivotally connected set of parallelly spaced support arm means, a marking tape strip advance means for incrementally moving said marking tape strips a repeatably measured amount respectively within each of said pivotally connected set of parallelly spaced support arm means advancedly to each of said adhesive tab punch head assemblies respectively supported thereby, and a set of die-cut punch means supported within each of said adhesive tab punch head assemblies adapted to cooperatively die-cut sever respectively from each of said marking tape strips an adhesive tab of lesser geometrically conformed dimension than that of a punched out garment pattern reference or feature point opening previously made in said garment pattern with said detachable set of punch and anvil means and compressively apply in opposingly aligned relationship through said punched out opening sequentially said adhesive tab to opposite layered sides of said garment material when said garment pattern and said garment material are temporarily assembled one to the other for purposes of accomplishing garment pattern reference and feature point transfer.

4,764,988

DETACHABLE GARMENT FASTENER ATTACHMENT FOR BRASSIERE STRAP

Phyllis E. Reaver, 240 Lake Valley Rd., Hendersonville, Tenn. 37075

Continuation-in-part of Ser. No. 013,724, Feb. 9, 1987, Pat. No. 4,704,745. This application Nov. 9, 1987, Ser. No. 118,854
Int. Cl.[4] A41D 27/26
U.S. Cl. 2—268 10 Claims



1. A fastener device for securing a longitudinal shoulder strap of a foundation garment to the fibrous undersurface of an overlying fabric outer garment worn by the wearer, comprising:

(a) an elongated fastener strip having a top surface, a bottom surface, and first and second opposed elongated side edge portions,

(b) said top surface comprising a plurality of miniature filament hook elements adapted to catch fibers in the undersurface of a fabric outer garment,

(c) an elongated lower retainer strip having first and second opposed elongated side edge portions,

(d) first securing means connecting said first side edge portions together,

(e) second securing means detachably connecting said second elongated side edge portions together,

(f) said fastener strip and said lower retainer strip defining an elongated sleeve member when said second securing means connects said second opposed elongated side edge portions together for receiving a longitudinal shoulder strap of a foundation garment within said sleeve member so that said filament hook elements will catch the loose filaments in the undersurface of a fabric outer garment overlying said shoulder strap on the shoulder of the wearer of said foundation garment and said outer garment to conceal said shoulder strap beneath said outer garment,

(g) said second securing means being manually, quickly detachable for separating said opposed second side edge portions for insertion and removal of the shoulder strap between said fastener strip and retainer strip.

4,764,989

SAFETY GOGGLES RETAINER FOR HARD HAT

Roy M. Bourgeois, Baton Rouge, La., assignor to American Allsafe Company, Irving, Tex.

Filed May 20, 1987, Ser. No. 52,616
Int. Cl.[4] A42B 1/24; A61F 9/02
U.S. Cl. 2—422 7 Claims



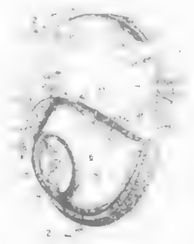
1. A retainer for engaging a goggles strap comprising a body member having first and second end portions, said body member having an open slot for receiving a goggles strap, said slot being formed in said body member intermediate the first and second end portions, thereby defining a hook on one of said end portions fore restraining the goggles strap, and said body member including attachment means projecting from said body member for securing said retainer to a safety helmet engaged by the goggles strap.

4,764,990

VENTILATED FACE SHIELD

Allan R. Markert, 138 E. Sims, St. Paul, Minn. 55117

Filed Dec. 31, 1986, Ser. No. 948,113
Int. Cl.[4] A61F 9/04
U.S. Cl. 2—429 9 Claims



1. A mask arrangement for protecting the face of a wearer; said mask arrangement comprising:

(a) a substantially rigid mask member having inner and outer surfaces, an outer periphery and defining a breathing region and a vision region;

(i) said breathing region being constructed and arranged to receive a nose and mouth of the wearer and including a nose bridge portion thereat;

(ii) said vision region being constructed and arranged to align with eyes of a wearer; said vision region defining an open vision port in said mask member;

(b) first seal means selectively sealing and insulating said breathing region from said vision region when said mask arrangement is worn;

(c) a head strap for retaining said mask over the face of a wearer;

(d) an eye shield mechanism including an eye shield and mounting means;

(i) said eye shield being constructed and arranged to substantially overlap said vision port; said eye shield having inner and outer surfaces, a top edge, and a bottom edge;

(ii) said mounting means mounting said eye shield on said mask member outer surface and spaced therefrom;

(e) an air flow directing means including first and second lateral concave members positioned on said mask member outer surface and extending along said mask member outer surface from opposite sides of said nose bridge portion;

(i) each of said concave members being aligned with said eye shield lower edge to direct air flow under said eye shield lower surface, upwardly across said eye shield inner surface and outwardly from said eye shield upper surface;

(f) whereby, in use, air flow directed against said mask arrangement may be partially deflected between said mask member and said eye shield to ventilate said vision port and help prevent fogging of said eye shield inner surface; and,

(g) whereby said breathing region is isolated from said vision region, so as not to be in substantial ventilation air flow engagement with said vision port.

4,764,991

FEMALE URINAL FOR SUPINE USE

Lola M. Saleme, 177 Bigelow St., Brighton, Mass. 02135

Filed May 21, 1987, Ser. No. 52,521
Int. Cl.[4] A47K 11/12
U.S. Cl. 4—144.1 1 Claim



1. A urinal for use by a female in a supine position consisting of:

a plastic flexible container formed from a segment of a right circular cylinder, said container having a closed bottom and having a top rim portion formed by a plane passing through said right circular cylinder at an angle other than perpendicular to said right circular cylinder thus forming an uppermost and a lowermost segment of said rim portion;

means disposed on said lowermost segment of said rim portion for contact with the body parts of a female person for causing urine flowing from such female person to flow into said container; wherein said means comprises a segment of said top rim portion comprising a special sealant section, comprising a short arcuate deformable lip portion formed on said lowermost segment of said rim portion of said flexible container wherein said special sealant section is a latex which is appreciably softer than the remainder of said top rim portion and has a modulus of elasticity substantially greater than the modulus of elasticity of said container for maintaining substantial contact between said special sealant section and a user's body when the remainder of said top rim portion is disposed in a generally horizontal disposition relative to the user's supine body leaving the said open top substantially unobstructed to permit wiping of the vaginal area of the user prior to the removal of the urinal from contact with the user's body;

a first conduit means attached to a bottom portion of said flexible container in fluid communication with the bottom portion of said container;

a bottle means for collecting and storing urine from said flexible container said bottle having an opening in the bottom thereof;

a second conduit means attached in fluid communication with the top of said bottle means;

flexible hose means attached in fluid communication, said first and second conduit means for causing urine in said flexible container to flow from said container to said bottle when said bottle is disposed below said container; and

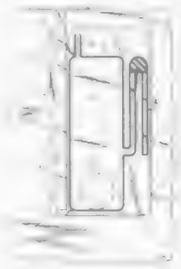
cap means for selectively slidably engaging said top rim of the container for selectively covering the top of said container.

4,764,992

DISPENSER HAVING AIR LOCK FORMING MEANS

Anthony D. Delia, West Redding, Conn., assignor to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 886,701, Jul. 18, 1986, abandoned. This application Jan. 25, 1988, Ser. No. 148,188
Int. Cl.[4] E03D 9/03
U.S. Cl. 4—228 2 Claims



1. A dispenser for the controlled-rate release of a substance into a toilet tank, said dispenser having

an inlet/outlet conduit means extending downwardly away from an inverted U-shaped portion for alternately receiving and discharging liquid into and form said dispenser, said dispenser having an air vent tube for communicating the interior of said dispenser to atmospheric pressure and

a porous member situated within and filling said U-shaped portion for limiting the flow of water therethrough.

4,764,993

TWO-POSITION LATCHABLE DRAIN VALVE

Robert A. Oropallo, San Marino, Calif., assignor to American Brass & Aluminum Foundry Co. Inc., Los Angeles, Calif.

Continuation of Ser. No. 710,312, Mar. 11, 1985, abandoned. This application May 19, 1986, Ser. No. 864,493
Int. Cl.[4] A47K 1/14
U.S. Cl. 4—295 3 Claims

1. In a drain valve, the combination comprising

(a) a drain body defining a flow port,

(b) a drain cover unit movable between a down-position in which the cover closes said port, and an up-position to open said port to drain flow, said cover having an integral downward projection movable up and down in said port, said projection containing an upwardly extending recess, which opens downwardly, the projection having a bore about the recess,

(c) a latching post carried by said drain body and extending downwardly in said recess so as not to be movable up and down with said cover,

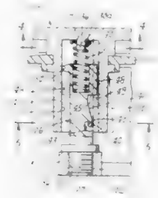
(d) a single upright coil spring means anchored to said cover

VOL 1093 ISS 4 AG 23 1988 UMI

unit to extend downwardly into cooperative relation with the post characterized in that the post and spring yieldably hold the cover unit in centered relation to said body, and the spring means also yieldably resists said movement of the cover unit to down position,

(e) and means for releasably latching said projection to the post in response to said movement of the cover unit to down position.

(f) one side of the recess and the post having a lengthwise extending tongue and groove interfit, which extends generally vertically, the spring means extending lengthwise of the post to exert force via the spring means upper end above the projection for laterally yieldably biasing the projection into a position to slidably maintain said interfit, the cover unit having a centering boss engaging and projecting downwardly into multiple coils at the upper end of the coil spring means so that the spring means upper end connects to and aligns with the boss and cover unit, the cover unit having shoulders that frictionally interfit and retain the spring means in an anchored position to yieldably retain the spring means extending longitudinally, the



spring means having its lower end retained by and in alignment with the post, and its uppermost end fixedly retained by and in fixed alignment with the cover unit, whereby the spring means tends to urge the groove, which is in said projection, toward the tongue, which is on the post, the post being freee of any sidewardly extending spring below the lower end level of said coil spring means,

(g) the post being yieldably retained eccentrically in said recess by said spring means, and proximate one side of the recess, the opposite side of the recess spaced from the post to be tiltable toward the post,

(h) said latching means including a pin carried by the projection and a downward and lateral cam shoulder on the post and defining a lip under which the pin snaps as the cover unit is moved to down position,

(i) the post consisting of molded plastic material, and including a fulcrum on the post upper end, laterally spaced from the spring, to engage the bore of the projection at the side thereof opposite and above the level of the pin, whereby tilting of the cover unit is controlled.

(j) the fulcrum being at the side of the post opposite the tongue.

4,764,994

PORTABLE TOILET

John M. Stewart, Ontario, Canada, assignor to Sanitation Equipment Limited, Concord, Canada

Filed Sep. 19, 1985, Ser. No. 777,650
Int. Cl.[4] E03D *1/00*
U.S. Cl. 4—321 5 Claims

1. A portable toilet including a bowl unit and a waste holding tank adapted to be detachably secured together with the bowl unit supported on the holding tank, wherein the holding tank has a closable outlet through which waste can be emptied from the holding tank after the tank has been detached from the bowl unit, and vent means operable to permit entry of air into the holding tank during emptying thereof;

wherein said vent means comprises a sleeve extending upwardly from the holding tank and defining a vent passageway extending between the interior of the holding tank and ambient air and a valve member slidably coupled to said sleeve for movement between a first position in which the vent passageway is closed and the valve member is in a depressed position with respect to the sleeve, and a second position in which the valve member is extended with respect to the sleeve and the said vent passageway is open, the valve member being manually movable between its said first and second positions and being retained in a position to which it has been moved, the valve member being arranged so that it is automatically moved to its said first position by contact with the bowl unit if the bowl unit is coupled to the holding tank when the valve member is in its second position said valve member comprising a cap retained on said sleeve for sliding movement in the axial direction thereof between its said first and second positions, the cap including an opening which provides communication between said vent passageway and ambient air in the second position of the valve member, and which is closed when the cap is in its said first position



wherein said cap has a top wall and a depending annular skirt slidably coupled to said sleeve, said opening being provided in said top wall of the cap and said sleeve being provided with a plug member within said cap for closing said opening, the plug member being coupled to the sleeve at a spacing from an upper end thereof so as to permit air to flow between the vent passageway and the interior of the cap and the plug member being arranged to engage in and seal the opening when the cap is in its said first position, the skirt of the cap sealingly engaging the sleeve so as to prevent leakage through the skirt in the closed position of the cap.

4,764,995

DUAL FLUSH MECHANISM

Donald E. Harney, 1113 Highway 99 North, Eugene, Oreg. 97402

Filed Jan. 27, 1988, Ser. No. 148,886
Int. Cl.[4] E03D *3/12*
U.S. Cl. 4—325 1 Claim

1. A dual flush mechanism, to provide a full-flush and a partial-flush capability for toilets with a tank, in combination with a single flush valve, which dual flush mechanism comprises:

a. a flush valve actuating arm, having a first end and a second end, attached near or at its second end to the flush valve by means of a flexible connecting member;

b. a first handle control means, to which the first end of the flush valve actuating arm is attached;

c. wherein the combination of first handle control means, flush valve actuating arm, flexible connecting member, and flush valve comprise the full flush capability;

d. a partial-flush control arm, having a first end and a second end, the partial-flush control arm extending essentially parallel to, and beneath, the flush valve actuating arm;

e. a second handle control means, to which the first end of the partial flush control arm is attached;

f. means for limiting upward rotational movement of the second end of the partial-flush control arm due to operation of the second handle control means, thereby also limiting resulting upwards rotational movement of the second end of the flush valve actuating arm due to the upward movement of the second end of the partial-flush control arm located beneath the flush valve actuating arm;

g. a partial-flush control plate, attached to said partial-flush control arm;

h. a partial-flush control lever, having a first end and a second end, pivotally supported interim said first and second ends at a pivot axis;

i. a partial-flush float, attached by a flexible connecting member to said first end of said partial-flush control lever;

j. a partial-flush counterweight attached to said second end of said partial-flush control lever;

k. a pinion gear attached to said partial-flush control lever at the location of pivotal support of the partial-flush control lever so as to rotate about said pivot axis;

l. a rack, toothed to gear with said pinion gear;

m. a rack extension attached to or formed as part of said rack so as to provide for engagement with said control plate;

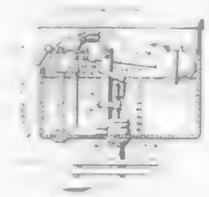
n. wherein movement of the second handle control means will pivot the second end of the partial-flush control arm upwards, to the extent permitted by the upward movement limiting means, thereby lifting the second end of the flush valve actuating arm a limited distance, and, through the flexible connecting member, lifting the flush valve a limited distance to permit egress of water from the tank; subsequent release of the second handle control means permitting the partial-flush control arm to rotate downwards until the lower edge of the control plate rests against the transversely extending rack extension, thereby also limiting the downward movement of the flush valve actuating lever and keeping the flush valve in a partially open position with associated continuing water egress; said water egress lowering the position of the partial-flush float, thereby pulling the first end of the partial-flush control lever downwards and rotating the partial-flush control lever about its pivot axis; thereby rotating said pinion gear about the pivot axis, the pinion gear rotation causing the rack, and the associated rack extension, to retract out from beneath the partial-flush control plate, said retraction freeing restraint on the partial-flush control arm, allowing further downward movement of the partial-flush control arm, with a corresponding downward movement of the flush valve actuating arm and the reseating of the flush valve to as to terminate the egress of water from the tank; with refilling water raising the water level of the tank, the partial-flush float correspondingly rising, the first end of the partial-flush control lever, assisted by the counterweight at its second end, being lifted so as move the lever about its pivot axis and so rotate the pinion gear so as to cause the rack, and the rack extension, to move outwards until in pressured engagement against the side of the partial-flush control plate of the partial flush control arm, thereby terminating the partial flush cycle by the dual flush mechanism.

4,764,996

WATER SAVING DEVICE FOR WATER CLOSET

Charles W. Pino, 7815 Jordon Park Blvd., Forestville, Md. [illegible]

Filed Jun. 3, 1987, Ser. No. 56,876
Int. Cl.[4] E03D *1/00*
U.S. Cl. 4—415 2 Claims



1. In a water closet including a toilet bowl, and a toilet tank for supplying flush water to the bowl wherein said tank has outlet means including a flexible tubular refill conduit for supplying water to the bowl after each flush, the improvement comprising: a plastic pinch clamp interposed on said refill conduit for controlling the amount of refill water supplied to said outlet means after each flush; a threaded fitment installed in said refill conduit and an "S" shaped wire secured in said fitment and affixed to the rim of an overflow tube.

4,764,997

SITZ BATH FOR USE WITH DOUCHE

Clifford M. Anderson, Yuba City; Brian D. Stearns, Roseville, and Hillard T. Witt, Penn Valley, all of Calif., assignors to Andermac, Yuba City, Calif.

Filed Mar. 19, 1987, Ser. No. 27,754
Int. Cl.[4] A47K *3/20*
U.S. Cl. 4—420.3 1 Claim



1. A sitz bath for mounting on a toilet bowl having a toilet bowl rim and for use with a hand held bidet nozzle placed across the sitz bath into the toilet bowl and under a user seated on the sitz bath comprising in combination:

a sitz bath having a water retaining bowl with a peripheral protruding rim;

said rim having a bottom surface for supporting said bath on the toilet bowl rim of said toilet bowl and having an upper surface for forming a seat for a patient seated upon said sitz bath;

at least one drain on the side walls of said water retaining

VOL 1093 ISS 4 AG 23 1988 UMI

bowl, said at least one drain being a predetermined distance below said rim whereby liquid retained within said bath is limited to the level of said drain;

a bidet channel defined across the front of said sitz bath rim at the forward portion of said sitz bath for receiving and permitting the manipulation of the hand held bidet nozzle, said channel being defined by a pair of raised protuberances extending upwardly from the plane of said upper surface defining said seat, said channel having a bottom surface spanning across said sitz bath rim and sloping downwardly toward the bowl, said bottom surface lying substantially in the same plane as the upper surface defining said seat, whereby said channel spans across said rim between the water retaining bowl and the exterior of said rim through and between the legs of said user seated on said rim;

said upwardly raised protuberances of said bidet channel further having means defining thigh spreading outside edges for the spreading of the flesh of the thighs of a seated patient to allow for the insertion of a hand held bidet nozzle between the thighs of a patient;

where the hand held bidet nozzle can be held in the channel between the spread thighs of said patient and under said patient into the interior of said bath.

4,764,998

RETRACTABLE COVER

Kevin N. Norris, Normanhurst; Vaughan Dobbyns, Lindfield; David A. Richards, Peakhurst; Stephen T. Garrood, The Rocks, and Neville L. Cousins, 70 Muston Street, Mosman, New South Wales 2088, all of Australia, assignors to Neville Lawrence Cousins, New South Wales, Australia and Santolina Securities Limited, London, England

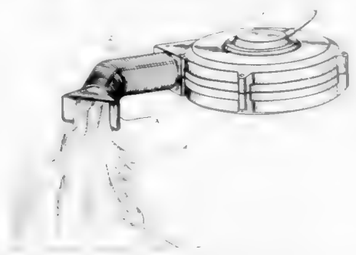
PCT No. PCT/AU86/00164, § 371 Date Feb. 13, 1987, § 102(e) Date Feb. 13, 1987, PCT Pub. No. WO87/00228, PCT Pub. Date Jan. 15, 1987

PCT Filed Jun. 4, 1986, Ser. No. 44,507

Claims priority, application Australia, Jun. 28, 1985, PH1249; Oct. 24, 1985, PH3079; Feb. 21, 1986, PH4726

Int. Cl.[4] E04H *3/19*; A63C *19/12*

U.S. Cl. 4—502 28 Claims



1. A retracting cover device for covering structures such as vehicles, swimming pools, boats, awnings etc., comprising a cover of wide flexible sheet material, a reel rotatably mounted on reel support means for winding on and winding off the cover, retracting mechanism for rotating the reel to wind up the cover thereon for storage, said reel being of very narrow width compared to the cover width and means for gathering the cover to enable winding onto the narrow reel.

4,764,999

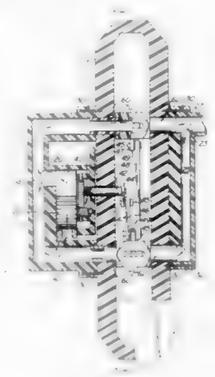
HYDROTHERAPEUTIC JET APPARATUS

Christopher Rushing, 3040 Carleen Dr., Castro Valley, Calif. [redacted]

Filed Feb. 24, 1987, Ser. No. 18,030

Int. Cl.[4] A61H *33/00*

U.S. Cl. 4—542 9 Claims



9. Hydrotherapeutic jet apparatus including: a frame having at least two pivots;

at least two fluid jets each having a fluid outlet, each jet connected to one pivot of the frame and free to rotate about that pivot;

means connected to the frame for rotating the at least two jets about the at least two pivots in a reciprocating arcuate fashion; and

the at least two jets connected by a follower link, whereby the rotating means causes the at least two jets to describe tandem reciprocating arcs in parallel.

4,765,000

BATHTUB ENCLOSURE

Gordon J. Currie, 46297 Prairie Central Road, Chilliwack, B.C., Canada V2P 6H3

Filed Oct. 15, 1986, Ser. No. 919,037

Int. Cl.[4] A42K *3/02*

U.S. Cl. 4—580 5 Claims



1. An enclosure for a bathtub, said bathtub being installed in

a recess having a pair of opposite end walls and a back wall, the end walls being separated a predetermined distance substantially equal to the length of the bathtub, the enclosure comprising

a. an elongated first panel having a length substantially equal to the distance between said end walls, having a width sufficient for spanning at least part of the bathtub, and having opposite side edges, said first panel being normally disposed in a generally horizontal orientation.

b. an elongated second panel having a length substantially equal to the length of the first panel, having a predetermined width, and having opposite side edges, said second panel being normally disposed in a generally vertical orientation with one side edge thereof for resting on the bathtub,

c. first means for hingedly securing one side edge of the first panel to the back wall and second means for hingedly securing the other side edge of the first panel to the other side edge of the second panel for forming a chamber above the bathtub in combination with the end walls and the back wall of the recess, said first means permitting free rotation of said first panel relative to the back wall and said second means permitting free rotation of said panels relative to one another,

d. latch means adopted to be mounted on said back wall above said horizontal first panel a distance substantially equal to the width of said first panel for securing said enclosure to said back wall with said panels folded against one another in a vertical orientation when the enclosure is not in use, and

e. a nonskid strip secured to said one side edge of said second panel and extending substantially the length of sid second panel to prevent slippage of said second panel on the bathtub when said second panel rests on said bathtub in a generally vertical orientation and said first panel extends between the back wall and said second panel in a generally horizontal orientation.

4,765,001

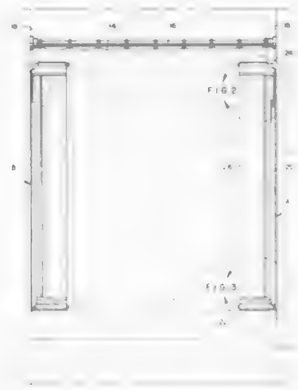
SPLASH GUARD FOR BATHTUB SHOWERS

William J. Smith, 7371 Far Hill Dr., Painesville, Ohio 44077

Filed Aug. 20, 1987, Ser. No. 87,467

Int. Cl.[4] A47K *3/14*

U.S. Cl. 4—609 13 Claims



1. A splash guard for a bathtub shower including a ledge, vertical enclosing walls, a shower curtain and a support rod therefor, comprising:

a first extruded plastic channel strip fastened to an enclosing vertical wall of the bathtub shower;

a second aborter plastic channel strip positioned on a front wall ledge of the shower tub;

two rod members received in the opening of each of said channel strips;

a horizontally mounted support rod resiliently attached to an upper end of one of said rod members; and,

a flexible strip of vinyl material forming the splash guard and having openings on three sides thereof for receiving the respective two rod members and horizontally mounted support rod wherein said rods and strip of vinyl material are mounted in the channel strips and said strip is taut held by the support rod.

4,765,002

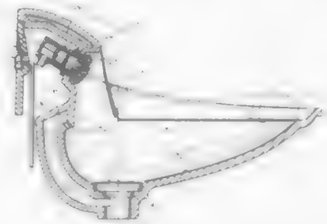
LAVATORY

Joseph W. Platner, Guilford, Conn., assignor to American Standard Inc., New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,051

Int. Cl.[4] A47K *1/04*

U.S. Cl. 4—619 1 Claim



1. A lavatory comprising, an elliptical basin having a drain that establishes an axis, a plane that is perpendicular to said axis, said plain defining the periphery of said basin, a deck extending from said basin in a direction away from said basin and said drain and forming an acute angle with said plane in order to provide a surface that slopes gently toward said basin, said deck varying continuously in breadth, the narrowest expanse of said deck being spaced furthest from said drain and at one end of the minor axis of said elliptical basin, a flange sloping away from said basin to extend higher than said deck in a gentle S-shaped curve, said flange sweeping around the lavatory to form the lavatory perimeter and increasing in height from a low point at said narrow deck expanse into a water discharge spout support that protrudes above said deck and is spaced from said drain axis in a direction away from said drain at the other end of the said minor elliptical axis wherein said basin portion immediately thereunder is reentrant with respect to said spout support to enable water to pour from said spout support into said basin without extending over the surface of the basin, and an overflow drain formed in said reentrant portion that is adjacent to said spout support and concealed thereunder.

4,765,003

PORTABLE HANDS-FREE WASH STAND

Chen-Hsiung Chang, 2nd Fl., 11, Sublane 4, Lane 95, Yu Chi Road, Yung Ho, Taipei Hsien, Taiwan

Filed Aug. 5, 1987, Ser. No. 81,676

Int. Cl.[4] A47K *1/02*

U.S. Cl. 4—624 1 Claim

1. A portable hand-free wash stand, characterized by hand-free operation of the water supply and the hot air drying means for washing and drying hands through the operation of foot pedal controls comprising:

a housing having a side wall, bottom pedestal and top, said housing having a chamber therein that is divided into a

VOL 1093 ISS 4 AG 23 1988 UMI

supply water storage tank having top, sides and bottom walls, and a waste water collection tank having top, sides and bottom walls, said supply tank having a water inlet filling port and a water egress emptying port,

said supply tank having a water outlet conduit that enters the tank through the water egress emptying port for supplying water from inside the supply tank to outside said tank for use of washing ones hands, said water exhaust conduit connected to a water pump to pump up supply water from the storage tank, said pump connected to a feed pipe that extends substantially vertically upwards and perpendicular to the housing top, and also defining a spout extending downwardly therefrom to supply water from the supply tank for the purpose of washing one's hands; heating means for heating said water from said supply tank through said feed pipe, warm and cool water control switch means for controlling said heating means to vary the temperature of the supply water through the feed pipe, said supply tank having mounted therein water gauge means for indicating predetermined high and low water levels inside the tank, said housing sidewall having a side port adjacent the inlet filling port of said supply tank and connected thereto for allowing water to be supplied to the



supply tank from the outside, said housing top defining a basin, the bottom of which terminates in an outlet, said waste water tank having an inlet port connected to said basin and an outlet waste water egress drain port in the side of the tank near the bottom to allow any water in the collection tank to drain out, said spout being directed into said basin, an electro-magnetic valve mounted in said drain port for opening and closing said drain port,

a drying, hot air heater for dyring one's hands mounted on the top of the housing,

said pedestal having a stepped cross-section to enable a child to step up to more conveniently reach the spout of the feed pipe, said pedestal having rolling wheels fixed onto the underside thereof for mobility, and said pedestal having two pairs of foot pedals, an upper pair of pedals mounted on an upper step of said pedestal and a lower pair of foot pedals mounted on a lower step of said pedestal, means connected between one pedal of each pair to operate said pump, and between the other pedal of each pair to operate the hot air heater, a mirror having a mirror housing mounted on said housing, said warm and cool water control switch means being mounted on said mirror housing including indicating lamps for indicating whether the water heating means is on or off.

4,765,004

FOLDING PORTABLE CRIB

Jason H. Kessel, Sharon, Mass., assignor to West End Hub Spring Company, Stoughton, Mass.

Filed Jun. 10, 1986, Ser. No. 872,698
Int. Cl.[4] A47C *29/00*, ; A47L *5/02*
U.S. Cl. 5—93 R 5 Claims



1. A folding crib, comprising:

two opposing crib ends, each crib end being bounded by a first and a second upright member;

two opposing sides, each of said sides being pivotally connected at each of its ends to an upright member of each of said opposing crib ends, each of said sides having an upper and a lower rail, each of said rails possessing a hinge at its midpoint, each of said hinges being constructed and installed in a respective side rail to bias said sides inwardly when the crib is in its open position, and to permit said sides to fold inwardly; and

a bottom, sized to fit between said opposing crib ends and said opposing sides;

each of said hinges further comprising:

first and second hinge members made of a resilient material; and

a linking pin; each of said hinge members further comprising:

a first hinge section constituting a base adapted for insertion into a hollow end of a confronting rail section, said first hinge section having a flat forward surface perpendicular to the longitudinal axis of said rail section when said first hinge section is incorporated into said rail section; and

a second hinge section constituting a block projecting perpendicularly from said forward surface of said first hinge section, said second hinge section having:

(a) a flat bearing surface disposed substantially at the mid-plane of said forward surface of said first hinge section,

(b) an extension beyond a side wall of said first hinge section, said extension having a hole sized to accommodate said linking pin and being disposed along an axis outward of said side wall, said hole being parallel to said side wall and perpendicular to said bearing surface, and terminating in said bearing surface, and

(c) a ramped front surface perpendicular to said bearing surface and angled outwardly from said extension relative to said forward surface of said first hinge section;

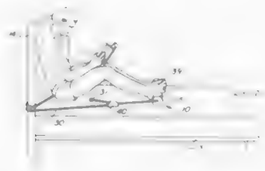
said first and second hinge members being joined via said linking pin, which is inserted through the aligned holes of the respective second hinge sections, such that said bearing surfaces of the respective second hinge sections are in sliding engagement and said forward surfaces of the respective first hinge sections can contact said ramped front surfaces of the respective second hinge sections, resulting in a slightly non-linear junction in which the axes of said first hinge sections can be forced into linearity by application of a bias directed against the hinge from the side opposite said linking pin and perpendicular to it.

4,765,005

SUPPORT DEVICE

George H. Hippel, P.O. Box 23515, Fort Lauderdale, Fla. 33307

Continuation-in-part of Ser. No. 835,174, Mar. 3, 1986, abandoned. This application Apr. 20, 1987, Ser. No. 40,294
Int. Cl.[4] A47C *20/02, 21/00*
U.S. Cl. 5—443 5 Claims



1. A foot contacting support system for use on a support surface for maintaining a person in a propped-up, sitting position in relation to a back support, said system comprising:

a rope means having two ends;

a foot support means of sufficient length and width for contact with at least one foot of the person, said foot support means having a long outer shape surrounding a through channel extending from a first end to a second end, said rope means adjustably connected through said channel of said foot support means, said foot support means movably freely over said rope means, said rope means positionable transversley across the support surface for use by the person sitting on the support surface to support by foot contact the person in a sitting position adjacent the back support;

said rope means connected around the back support, and

a fast acting releasable jam cleat fastener means fixed to one end of said rope means, said fast acting jam cleat fastener means including a generally V-shaped jam cleat means for receiving a portion of said rope means for adjusting and releasably connecting the effective length of said rope means,

said rope means for assisting in adjusting the location of said foot support means in relation to the back support;

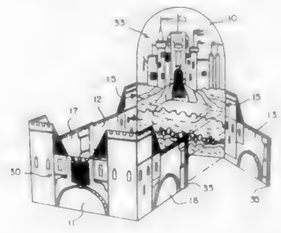
said fast acting jam cleat fastener means having a generally V-shaped rope connecting portion, V-shaped portion having a base below said V-shaped jam cleat means, said V-shaped jam cleat means having upper ends spread apart for recieving said rope means.

4,765,006

ENCLOSURE FOR CONVERTING A BED INTO A PLAY AREA

Randall D. Jackson, and Sue A. Jackson, both of 404 Dayton St., Yellow Springs, Ohio 45387

Filed Jan. 25, 1987, Ser. No. 66,389
Int. Cl.[4] A47C *21/00*; A47G *5/00*
U.S. Cl. 5—508 10 Claims



1. A free-standing structure for converting the appearance of a conventional bed of predetermined dimensions, such particularly as a child's bed, into a representation of a predetermined visual theme while providing normal access thereto, comprising

(a) a plurality of panels of stiff sheet material proportioned for assembly in end-to-end relation wherein said panels define a rectangular enclosure for surrounding the bed,

(b) one of said panels constituting the head wall of said enclosure and including a portion having opposite end edges spaced from each other by a dimension spanning the width of said bed,

(c) another of said panels constituting the foot wall of said enclosure and including a portion having opposite end edges spaced from each other by a dimension spanning the width of said bed,

(d) each of the others of said panels being hingedly connected to one of said end edges of said head and foot wall panels to constitute the side walls of a free-standing rectangular enclosure,

(e) said other panels being dimensioned to extend the length of said bed on each side thereof,

(f) at least some of said panels having two-dimensional graphics thereon representing said predetermined theme,

(g) the top edges of said panels being configured in corresponding relation with said theme, and

(h) certain of said side wall panels having one end thereof free to provide for hinged movement thereof with respect to the one of said head and foot wall panels hingedly connected thereto for opening said enclosure to provide ready access to a bed surrounded thereby.

4,765,007

LEAF CUTTER BEE NEST BLOCK

Grant R. McCarthy, 12150 160 Street, Edmonton, Alberta, Canada T5V 1H5

Filed Jan. 5, 1987, Ser. No. 459
Int. Cl.[4] A01K *47/00*
U.S. Cl. 6—1 3 Claims



1. A one piece molded nesting block for leaf cutting bees comprising

a mixture of polystyrene beads and 5% to 30% by weight of vermiculite; including a plurality of holes which pass through the entire thickness of said block and whereby when a backing sheet is applied to cover one side of said block in operation, said holes are accessible from one side only

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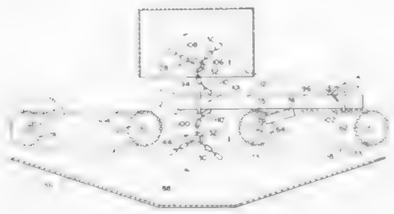
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,008

FLAIL-TYPE HONEYCOMB DECAPPER AND METHOD

Donald Gunness, P.O. Box 106, Abercrombie, N. Dak. 58001

Filed Aug. 26, 1987, Ser. No. 89,523
Int. Cl.[4] A01K *59/02*
U.S. Cl. 6—12 A 21 Claims



1. An apparatus suitable for uncapping wax from both sides of a honeycomb, said apparatus comprising:

first and second conveyor means for moving a honeycomb along a path, said first and second conveyor means being disposed to receive honeycombs laid with a longitudinal plane substantially parallel to at least one of said first and second conveyor means such that said honeycombs are supported with one longitudinal face against said at least one of the first and second conveyor means, said first and second conveyor means being located in succession along said path and spaced apart so as to define a gap between said first and second conveyor means along said path;

means at least partially disposed in said gap for uncapping both sides of a honeycomb as the honeycomb is moved across said gap.

4,765,009

MULTI-FUNCTIONAL BAR OF A MANUALLY OPERATED JACK

Michael Hung, 11th Fl., 624 Ming Chuan E. Rd., Taipei, Taiwan

Filed May 4, 1987, Ser. No. 46,032
Int. Cl.[4] B25F *1/00*
U.S. Cl. 7—100 2 Claims



1. A multi-functional bar for a jack comprising:

a pipe-like metallic jack connecting section, said connecting section having a first and second end, said first end for connecting to the operative portion of a jack, and said second end for connecting to a handle section;

a metallic rod-like handle section, said handle section having a first and second end, said first end of said handle section having an integrally attached screwdriver, and said second end of said handle section having an integrally attached socket wrench mount, said socket wrench mount having an opening for detachably receiving an adjustable socket wrench; and

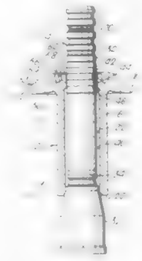
an adjustable socket wrench, said adjustable socket wrench having a first and second end, said first end having an integrally attached portion for being detachably received by said opening of said socket wrench mount, said second end including a center recess defining a substantially hexagonal enclosure having three pairs of spaced opposed laterals, the distance between the laterals of one pair of spaced opposed laterals of said substantially hexagonal enclosure being greater than the distance between the respective laterals of the other pairs of spaced opposed laterals thereof, and a set screw being inserted through a first lateral of said one pair of spaced opposed laterals toward the second lateral of said one pair of spaced opposed laterals for firmly gripping a nut or bolthead between said set screw and said second lateral of said one pair of spaced opposed laterals.

4,765,010

METHOD OF MAKING A STEM FOR A SELF-PLUGGING BLIND FASTENER

Harvey P. Jeal, Stevenage, and Frederick A. Summerlin, Wheathampsted, both of England, assignors to Advel Limited, Hertfordshire, England

Division of Ser. No. 883,816, Jul. 9, 1986. This application Jul. 28, 1987, Ser. No. 78,851
Claims priority, application United Kingdom, Jul. 12, 1985, 85/17659
Int. Cl.[4] B21K *1/44, 1/58*
U.S. Cl. 10—27 R 4 Claims



1. A method of making a stem for a self-plugging blind fastener, which method comprises first forming a stem-blank comprising a plug-blank and a stem-tail blank, and then rolling the stem-blank between suitably profiled tools to form an annular groove between the plug-blank and the stem-tail blank, and thereby forming a breakneck which connects the plug-blank to the stem-tail blank and two circumferential flanges adjacent to said annular groove, said flanges being formed out of material displaced from the groove, one of said flanges being formed on the plug-blank, and the other of said flanges being formed on said stem-tail blank, and then rolling said one of said flanges on the plug-blank to form a first lip which overhangs the groove, and then rolling said other of said flanges on the stem-tail blank to form a second lip which overhangs the groove and overlaps the first lip.

4,765,011

MECHANISM TO TRANSFER A FOOTWEAR UPPER ASSEMBLY BETWEEN STATIONS OF A MULTI-STATION SYSTEM

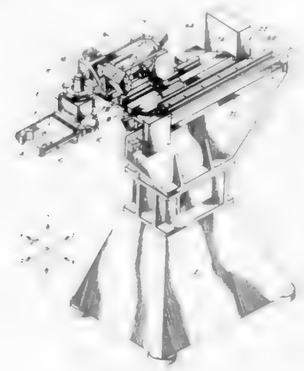
Alan L. Leeper, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Jan. 28, 1987, Ser. No. 7,880
Int. Cl.[4] A43D *11/00*
U.S. Cl. 12—1 A 14 Claims

1. A transfer machine to move a footwear upper stations in a footwear processing system, said transfer machine comprising:

an end effector having means to grasp the footwear upper assembly;

a base serving as a reference in an X-Y-Z coordinate system with respect to which positions of the footwear upper assembly are known during movement of the footwear upper assembly within the footwear processing system; and



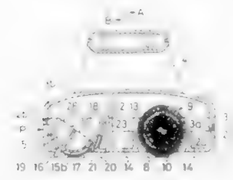
an interconnecting mechanism that connects the end effector to the base and provides seven axes for movement of said means to grasp with respect to said base, three translational movements along the X-Y-Z axes of the transfer machine, pivotal movement respect to the base about the Y axis, a tilting movement about the X-axis, pivotal movement about the Z-axis, and further pivotal movement about the Y-axis.

4,765,012

MANUALLY OPERATED CLEANER

Muneyuki Ueda, Nishinomiya, Japan, assignor to Nippon Seal Co., Ltd., Osaka, Japan

Filed Feb. 27, 1987, Ser. No. 19,805
Claims priority, application Japan, Mar. 6, 1986, 61-31997[U]
Int. Cl.[4] A47L *11/33, 11/40*
U.S. Cl. 15—4 2 Claims



1. A manually operated cleaner comprising a body case composed of a vertically separable box-shaped container having a bottom wall and a lid removably mounted on an upper end opening of said container, two parallel quadrangular openings in the bottom wall of said container and bounded by inner lateral walls of said container, a roll brush having a pair of drive wheels driven by friction against a surface to be cleaned, said roll brush being rotatably held by said inner lateral walls of said container so that said roll brush is received in one of said openings with a part of said roll brush exposed and projecting out of said opening, dust collecting chambers arranged longitudinally along the roll brush in said container, a rotatable semicylindrical brush body having at least one stop defining a lateral surface region between said stop and a lateral edge of said semicylindrical brush body, said brush body having inclined piles or bristles in said lateral surface region with said piles or bristles inclined toward said lateral edge of said semicylindrical brush body, said brush body being rotatably mounted on said inner lateral walls of said container with a part of said brush body exposed to permit said inclined piles or bristles to project through the other opening so as to engage with said surface to be cleaned, half-cylindrical dust collecting chambers defined inside said brush body, a dust removing brush member having dust removing inclined piles or bristles inclined toward the interior of said container and adapted for sliding contact with said inclined piles on said brush body when said brush body is rotated or swung back and forth, said dust removing brush member being pivotally mounted to said inner lateral walls of said container and spring means between said dust removing brush member and said container for urging said dust removing brush member toward said brush body to maintain said sliding contact between said inclined bristles or piles on said dust removing brush member and said inclined bristles or piles on said brush body.

4,765,013

GUTTER BROOM SEGMENT AND ASSEMBLY

James T. Lowe, Fontana, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Dec. 20, 1985, Ser. No. 811,205
Int. Cl.[4] A46B *3/16*
U.S. Cl. 15—180 13 Claims



1. In combination with a gutter broom for use on a surface sweeper, the broom having a plurality of segments holding downwardly projecting bristles and a broom support plate that mounts the segments, the support plate being adapted to be coupled to a power source to rotationally drive the broom, an improvement in the means for mounting the segments to the support plate comprising:

(a) the support plate having a top, a bottom and a pattern of lug holes, each lug hole having a large portion and a narrower slot portion;

(b) a plurality of upstanding lugs of each segment, each lug having a head at its top and a neck connecting the head to the segment, the heads bearing on the support plate top while the segments bear against the support plate bottom to hold the segment to the support plate, each head having a horizontal cross section small enough to pass through the enlarged portion of an associated one of the holes of the support plate and larger than such hole's slot, the neck having a horizontal cross section smaller than the head and small enough to be received in such slot, the lug of each segment being in a pattern corresponding to the lug hole pattern in the support plate so that the during mounting of the segment to the support plates the heads of the lugs pass through corresponding large portions of associated holes of the support plate and the necks slide into the slot portons so that the heads of the lugs bear on the plate and hold the segment to the plate; and

(c) locking means for each of the segments including at least one resilient dog adjacent one of the lugs of each segment,

VOL 1093 ISS 4 AG 23 1988 UMI

each dog having a locking position in which such dog engages the edge of the large portion of the lug hole that receives the adjacent lug to prevent movement of the adjacent lug's neck into the enlarged portion of such hole and thereby lock the segment to the support plate, the dog being in position to be displaced away from its locking position to a second position upon being forced against the bottom of the plate during insertion of the adjacent lug's head into the enlarged portion of the hole that receives such lug so that the adjacent lug's neck can move into the slot of such hole with such head bearing on the support plate top and upon such movement the dog is freed from the bottom of the plate and displaces into its locking position.

4,765,014

FLEXIBLE DUSTER HEAD HOLDER

Theron C. Moss, and Haymond E. Cross, both of Cleveland, Tenn., assignors to Seco Industries, Inc., Cleveland, Tenn.

Filed Mar. 20, 1987, Ser. No. 28,219

Int. Cl.[4] A47L *13/252*

U.S. Cl. 15—229.3 **19 Claims**



1. A duster head holder comprising a shapeable stiffener for a fabric duster head, said stiffener including a metal wire core means bendable by hand into different shapes, said core means being sufficiently rigid to retain the shape into which said core means is bent by hand during use of said holder, and a resilient plastic cover means surrounding said core means, said resilient plastic cover means having sufficient thickness to limit the minimum radius to which the stiffener may be bent whereby the cover means resists breaking of the core means due to bending.

4,765,015

FLOOR SWEEPING BLADE DEVICE FOR SURFACE CLEANING MACHINES

Nello Torta, Felegara di Medesano, Italy, assignor to Idroplina S.r.l., Sanguinaro di Fontanellato, Italy

Filed Nov. 18, 1987, Ser. No. 122,194

Claims priority, application Italy, Jan. 28, 1987, 20657/87[U]

Int. Cl.[4] A47L *1/06*

U.S. Cl. 15—245 **10 Claims**



1. A floor sweeping blade device for surface cleaning machines, comprising a body (**3**) having a main direction of extension, flexible blades (**8**) carried on said body (**3**) and extending substantially parallel with one another and said main direction of extension, said blades (**8**) having a working edge (**8***a*) adapted to rest directly onto a surface (**6**) to be swept, the device being characterized in that said body (**3**) is split into rigid consecutive portions (**3***a*, **3***b*) in mutual articulated relationship and mutually oscillable in substantially parallel planes with said blades (**8**), and in that each said blade (**8**) extends continuously even between said portions (**3***a*, **3***b*), said blades (**8**) being deformable elastically by mutual oscillations of said portions (**3***a*, **3***b*).

4,765,016

CHIP REMOVING DEVICE

Yukio Iwata, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Sep. 18, 1987, Ser. No. 98,461

Claims priority, application Japan, Sep. 22, 1986, 61-224312

Int. Cl.[4] B23D *79/06*

U.S. Cl. 15—246 **12 Claims**



1. An apparatus for removing foreign matter from one or more circumferential grooves defined in an inner peripheral surface of a workpiece having an interior cavity comprising:

a frame having means for securing a workpiece thereto;

means rotatable with respect to said frame about an axis of rotation and having a cylinder defined therein, with an axis of said cylinder being substantially perpendicular to axis of rotation;

means for rotating said rotatable means;

a movable body in said cylinder having a scraper defined on a first end thereof;

means for lifting said rotatable means and said movable body in the direction of said axis of rotation; and

means for moving said movable body in said cylinder, whereby the rotatable means may be positioned within the inner cavity of the workpice, and the movable body may be extended so as to cause the scraper to remove foreign matter from one of the grooves.

4,765,017

WIPING DEVICE FOR WIPING COVER PLATES OF HEADLIGHTS OF MOTOR VEHICLES

Josef Berger, Wolfschlugen; Helmut Ernst, Bühl; Hans-Joachim Linhart, Ottersweier, and Martin Pfeiffer, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

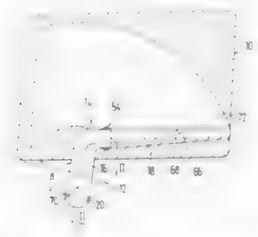
Filed Jun. 23, 1986, Ser. No. 877,433

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1985, 3523927

Int. Cl.[4] B60S *1/04, 1/32*

U.S. Cl. 15—250 A **7 Claims**

1. In a wiping device for cleaning cover plates of the headlights of motor vehicles, comprising a wiping arm; an adapter hingedly connected to one end of said wiping arm by a first hinge; a drive member connected to said adapter so that said wiping arm is releasably-connected to said drive member via said adapter; a prestressed spring element, said wiping arm having another free end carrying a wiper blade which is applied to and pressed against the cover plate of the headlight to be wiped by said prestressed spring element, the improvement comprising said wiping arm including two portions hingedly connected to each other by a a second hinge positioned between said first hinge and said wiper blade, said spring element being interconnected between said two arm portions in the



region of said second hinge, said second hinge having an axis lying at least nearly in a plane parallel to the plane of said cover plate, one of said arm portions being hingedly connected to said adapter by said first hinge (**20**) and being releasably connected to said drive member in an operational position of said wiping arm, said first hinge being positioned in said one of said arm portions so that it can swing by an angle greater than 90° so as pivot said wiping arm away from a path of light beams emitted from a headlight.

4,765,018

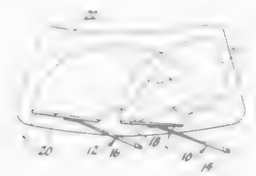
WIPER ASSEMBLY WITH AUTOMATICALLY EXTENDING WIPE PATTERN

Harry C. Buchanan, Jr., Spring Valley, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 16, 1987, Ser. No. 74,098

Int. Cl.[4] B60S *1/04*

U.S. Cl. 15—250.13 **3 Claims**



1. In a vehicle windshield wiper assembly in which a wiper arm is swept outwardly and back inwardly over a normal arcuate wipe pattern defined between inner and outer limits by a power source that has selected lower and higher settings, thereby creating a reaction torque in said wiper arm that peaks as the wiper arm approaches said inner and outer limits, and in which the power source is set higher when the wetting of the windshield surface increases, thereby creating a resultant angular speed of said wiper arm that is higher and a consequent maximum peak reaction torque that is greater than at other conditions of lesser windshield surface wetting and lower power settings, the improvement providing a means for automatically extending the wipe pattern of said wiper arm when the wetting of said windshield is increased, said means comprising,

an indirect drive assembly intermediate said power source and said one wiper arm including a preloaded drive member that is adapted to slip only in the direction of said wiper arm outward sweep, and which continually applies a preloading torque to said wiper arm in the direction of its inward sweep that is less in magnitude than said maximum peak wiper arm reaction torque at increased windshield surface wetting and high power setting, but greater in magnitude than the peak wiper arm reaction torque at said other conditions,

whereby, when the wetting of said windshield is increased and said power source is set higher, said maximum peak wiper arm reaction torque will overcome the preloading torque as the normal outer limit is approached and allow said preloaded drive member to slip so that said wiper arm can sweep past its normal outer limit, while, under other conditions, said wiper arm will turn one to one with said intermediate drive assembly, thereby sweeping through said normal wipe pattern.

4,765,019

WINDSHIELD WIPER DEVICE AND METHOD OF SETTING THE SAME ON AN AUTOMOBILE

Toshiharu Ochino, Hiroshima, Japan, assignor to Mazda Motor Corporation, Japan

Filed Aug. 7, 1987, Ser. No. 82,542

Claims priority, application Japan, Aug. 9, 1986, 61-122265[U]

Int. Cl.[4] B60S *1/04*

U.S. Cl. 15—250.19 **15 Claims**



1. A windshield wiper device of an automobile comprising,

a wiper arm mounted on a body of the automobile to be swingable,

a wiper blade supported by a movable end portion of said wiper arm and having an elastic blade element attached thereto for wiping a surface of a windshield,

an engaging member attached to one of said wiper arm and said wiper blade and having first, second and third contacting portions, and

a blade lifting member mounted on the body of the automobile and having a guide portion for guiding the first contacting portion of said engaging member to run thereon at the end of a wiping operation of said wiper blade, a stopper portion succeeding to the guide portion for coming into contact with the second contacting portion of said engaging member to cause said engaging member to stay at said stopper portion so that said wiper blade is lifted to keep the elastic blade element away from the surface of the windshield, and a holder portion for coming into contact with the third contacting portion of said engaging member to hold said engaging member thereby so that said wiper arm is fixed in position to lift said wiper blade from the windshield when it is mounted on the body of the automobile.

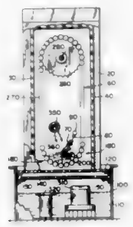
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,020

SILVERWARE WASHING MACHINE

Clyde R. Weihe, 17 Lindberg Ave., Needham Heights, Mass. 02194

Filed Nov. 30, 1987, Ser. No. 126,604
Int. Cl.[4] B08B *3/02*; A47L *15/42*
U.S. Cl. 15—302 14 Claims



1. A flatware washer comprising:
a cogged endless belt means mounted lengthwise in a vertical orientation within a water containment housing;
the top end of the cogged belt means being hung around a drive wheel means having complementary cogs mating with the cogs of the belt means;
the drive wheel means being mounted at the top of the housing and supporting the belt means in a vertical lengthwise orientation such that a curved bottom end section of the belt means is spaced above the bottom edge of the housing and such that a pair of relatively elongated lengthwise sections of the belt extend downwardly from around the drive wheel means in substantially parallel opposing relationship;
the curved bottom end section of the hung belt means being open for receiving a plurality of pieces of flatware between the pair of lengthwise sections;
the drive wheel means being connected to a drive means programmed to drivably oscillate the wheel means between predetermined degrees of clockwise and counterclockwise rotation;
the housing having front and rear walls closely spaced from the front and rear of the curved bottom end section of the hung belt means in approximately perpendicular relationship thereto for containing the plurality of pieces of flatware within the curved bottom end section;
means for directing a spray of fluid at and across the width of the curved bottom end section of the hung belt means; and,
means for directing a flow of air across the width of the curved bottom end section of the hung belt means.

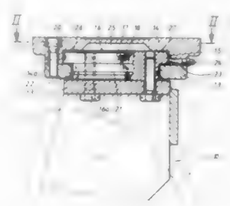
4,765,021

HEAVY DUTY CASTER

Dieter Mellwig, Wermelskirchen, and Wilfried Kurbjuhn, Radevormwald, both of Fed. Rep. of Germany, assignors to Albert Schulte Söhne GmbH. & Co., Wermelskirchen, Fed. Rep. of Germany

Filed Dec. 16, 1986, Ser. No. 942,165
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545161
Int. Cl.[4] B60B *33/00*
U.S. Cl. 16—20 11 Claims

1. A caster, particularly a heavy duty caster for use on machines, conveyances and the like, comprising a support having a depending rib defining a socket, said rib having a lower end face; a friction thrust bearing including a first bearing element having a larger-diameter circular portion rotatably and snugly received in said socket and a smaller-diameter shank rigid with said circular portion, and an annular second bearing element below said support and surrounding said shank, said second bearing element having a first portion immediately below and overlapping said end face and a second portion immediately below and overlapping said circular portion; means for separably fastening said second bearing element to said support; a wheel frame; and means for securing said frame to said first bearing element.

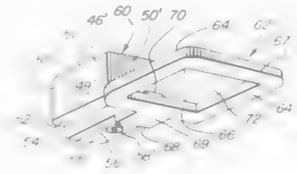


4,765,022

COMBINATION STOP PLUG AND FRAME MEMBER FOR CHANNELLED DRAPERY TRACK

Burton L. Siegal, Skokie, and John T. Magdars, Northbrook, both of Ill., assignors to Coral Industrial Sales Co., Chicago, Ill.

Filed Mar. 25, 1987, Ser. No. 30,452
Int. Cl.[4] A47H *15/00*
U.S. Cl. 16—87.4 R 7 Claims



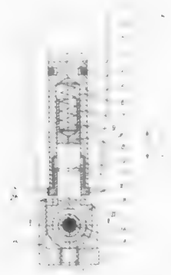
1. An integral stop plug and support frame member for installation in the channel of a drapery track, the channel being open at an end thereof and having a pair of opposing flanges spaced apart to define a gap therebetween, said member comprising a body part and an open frame part, said body part being sized and configured to be insertable into the channel through said open end and thereafter slidable on said flanges along the length of the channel, said body part having a depending island formation adapted to extend outwardly of the channel through said gap when the member is installed in the channel, said depending island formation defining shoulder means for sliding engagement on the flanges, said frame part extending from said island formation in spaced relation below said shoulder means and beyond the body part in the direction of the length of the channel and below said flanges for receiving a channel-mounted carrier member segment therethrough while the carrier member is slidably installed in the channel, and means for releasably locking said stop plug and support frame member against movement in said channel at a selected location.

4,765,023

SPRING BIASED LOCKABLE SAFETY HANDLE FOR TURNING A HAND CONTROL WHEEL

Bernhard Ganter, Tribergerstrasse 3, D-7743 Furtwangen 1, Fed. Rep. of Germany

Continuation of Ser. No. 799,835, Nov. 20, 1985, abandoned. This application Aug. 3, 1987, Ser. No. 81,608
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1984, 8435801[U]
Int. Cl.[4] B25G *1/00*
U.S. Cl. 16—112 3 Claims



1. A safety handle for turning a hand control wheel comprising:
(a) an attachment part fixed to said wheel and having a pivot axis;
(b) a handle part having a handle axis, a pivot part annular about said pivot axis, and a grip part radial to said pivot axis along said handle axis;
(c) a torsion spring displaced in an annular chamber in said handle part;
(d) mounting means for mounting said handle part on said attachment part such that said handle axis intersects said pivot axis, said annular chamber surrounds said pivot axis, said handle part can swivel about said pivot axis from a wheel-turning position that is swung-out from said wheel to a retracted position that is swung into said wheel, and said torsion spring exerts a force against said handle part directed toward said retracted position;
(e) a shoulder on said grip part capable of engaging a detent in said attachment part while in said wheel-turning position, said detent being located away from said pivot axis in the direction of said grip part while in said wheel-turning position, and
(f) engaging means for engaging said shoulder with said detent to lock said handle part in said wheel turning position such that constant force must be applied against said handle part along said handle axis directed toward said attachment part.

4,765,024

RECESSED HINGE

Hans-Dieter Deppendorf, Vlotho, and Manfred Grossmann, Eager, both of Fed. Rep. of Germany, assignors to Oni-Metallwarenfabriken Günter GmbH & Co., Vlotho, Fed. Rep. of Germany

Filed Jul. 17, 1987, Ser. No. 74,927
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1986, 8619865[U]
Int. Cl.[4] E05D *11/00*
U.S. Cl. 16—251 12 Claims

1. A recessed hinge, particularly a single-joint recessed hinge for connecting a movable part of a piece of furniture with a stationary part, comprising a hollow first component arranged to be recessed into one of the stationary and movable parts and having an open side; a second component arranged to be connected to the other of the stationary and movable parts; means for movably coupling said components, including a pintle provided in said first component and defining a first pivot axis, one of said components being pivotable about said axis to and from a predetermined position in which said side of the first component is exposed; a closure for said side of said first component; and means for articulately connecting said closure to said second component, including a pivot member provided on said second component and defining for said closure a second pivot axis substantially parallel to said first axis.



4,765,025

VEHICLE DOOR MOUNTING ASSEMBLY FOR EFFECTING VERTICAL REMOVABILITY

Samorfin Salazar, Toledo, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1986, Ser. No. 947,075
Int. Cl.[4] E05D *7/10*, *7/12*
U.S. Cl. 16—261 8 Claims



1. A mounting arrangement for assembling a vehicle door to a vehicle body comprising:
an upper hinge assembly having a body mounting plate adapted to be secured to the vehicle body, a door mounting plate adapted to be secured to the vehicle door and means for mounting the body and door mounting plates for pivotal movement with respect to each other and for permitting separation of the plates from each other by effecting vertical lifting movement of one with respect to the other;
a lower hinge assembly having a body mounting plate adapted to be secured to the vehicle body, a door hinge portion pivotally mounted on the lower body mounting plate and secured vertically with respect thereto for movement with the vehicle door and including means for receiving a fastener, and a lower door mounting plate adapted to be secured to the vehicle door and including an attachment portion having an aperture formed therein for receiving therethrough the fastener for engagement with the lower door hinge portion, the means for receiving the fastener and the aperture both having a complementary shape to the shape of the fastener and both being or substantially the same size as the fastener to prevent vertical movement between the lower door mounting plate and the lower door hinge portion;
the upper and lower hinge assemblies being vertically spaced to permit lift-off separation of the upper hinge mounting plate from the upper hinge door plate upon removal of the fastener.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,026

DOOR MECHANISM SPRING ASSEMBLY

Gaylord C. Dochnahl, Upland, Calif., assignor to Exemplar, Inc., Ontario, Calif.

Filed Jun. 17, 1985, Ser. No. 744,953
Int. Cl.[4] E05D *11/08*; E05F *3/00*
U.S. Cl. 16—289 24 Claims



1. A spring assembly for counterbalancing a door mechanism having a pair of biasing connection points moving apart relative to each other as the door is lowered from an open position into a closed position, the assembly comprising:
(a) a helical compression spring having a first end and a second end;
(b) first and second tension members respectively engaging the first and second ends of the spring, the first tension member extending from the first end of the spring to beyond the second end of the spring;
(c) means for maintaining axial alignment of the spring with the tension members;
(d) means for limiting the maximum and minimum deflection of the spring;
(e) means for connecting the tension members to the connection points of the door mechanism; and
(f) means for temporarily limiting the deflection of the spring to not less than an intermediate deflection greater than the minimum deflection for facilitating installation of the assembly without tension being applied by the spring to the connection points,
wherein the installed spring is axially compressed as the door is lowered into the closed position.

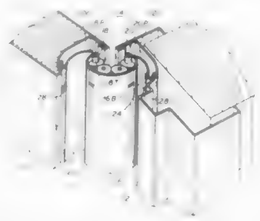
4,765,027

DOOR HINGE

Milos D. Andric, 1635 Central Ave., Wilmette, Ill. 60091

Filed Jun. 30, 1986, Ser. No. 879,921
Int. Cl.[4] E05D *7/00*
U.S. Cl. 16—354 16 Claims

1. A door-hinge assembly for a swinging door having a jam, comprising:
a first hinge positioned adjacent to or within the door;
a second hinge positioned adjacent to or within the jam;
said first and second hinges having axes of rotation generally parallel to one another and being coupled together at a fixed spacing and being coupled, respectively, to the door and the jam; said latter coupling being such as to allow movement of the first and second hinges relative to the door and jam respectively;
means for advancing and retracting the position of the axis of said first hinge a distance relative to the door;
means for advancing and retracting the position of the axis of said second hinge a distance relative to the jam; and,
coordinator means for coordinating the advancing and retracting of the first and second hinges, so that they both advance at approximately the same time and retract at



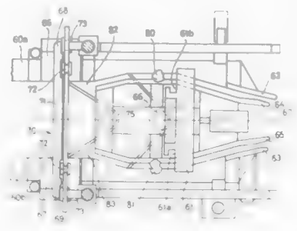
approximately the same time, as the door swings open and shut.

4,765,028

DEVICE FOR THE EJECTION OF A POULTRY CARCASS

Josephus A. van de Nieuwelaar, Gemert, and Petrus C. H. Janssen, Wilbertoord, both of Netherlands, assignors to Stork PMT B.V., Netherlands

Filed May 6, 1987, Ser. No. 47,206
Claims priority, application Netherlands, May 9, 1986, 8601179
Int. Cl.[4] A22C *21/00*
U.S. Cl. 17—11 5 Claims



1. An automatic ejection device for the removal of a poultry carcass suspended by a single leg from a conveyor track guide system having a plurality of outer and inner parallel elongated guide surfaces for supporting both legs of the poultry carcass while being moved along by the pushing action of a driver extending across the upper side of the guides in which either the inner or the outer elongated guide surfaces have a gap disposed along their length, wherein the ejection device comprises:
a plurality of guide elements oppositely situated in said gaps of said elongated guide surfaces and moveable transversely to said elongated guide surfaces;
connecting means for joining said plurality of guide elements to permit unidirectional movement of said guide elements in a direction transverse to the elongated guide surfaces when only a single leg of said poultry carcass is suspended in said conveyor track.

4,765,029

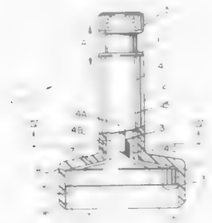
PATTY-FORMING METHOD AND APPARATUS

Norbert L. Rogan, 305-1330 Hornby St., Van Couver, British Columbia, Canada V6Z 1W5

Filed Feb. 17, 1987, Ser. No. 14,874
Int. Cl.[4] A22C *7/00*
U.S. Cl. 17—32 7 Claims

1. A tool for molding patties of variable thickness, comprising:

(a) a tool body comprising a downwardly opening mold cup forming an interior space having vertical interior sides terminating along the lower edges thereof in a patty-severing edge, and a hollow vertical cylinder, the interior of said cylinder communicating with said interior space of said mold cup, the interior surface of said cylinder being provided with at least two vertical grooves of differing lengths and open at the lower ends thereof;
(b) a patty-ejecting piston having a vertical shaft connected to a mold plate received within said tool body, said vertical shaft having an exterior diameter less than the interior diameter of said hollow cylinder of said tool body, said mold plate being connected to the lower end of said vertical shaft and having a lower patty-contacting surface the edges of which are dimensioned to slide in close communication with said vertical edges of said mold cup, and the exterior surface of said shaft having an extended rib sized to slide within said grooves in said hollow cylinder; and
(c) stop means removably attached to said shaft of said piston for limiting the downward movement of said shaft in said hollow cylinder;
wherein when said stop means is attached to said shaft and said piston is in its extreme downward position, a portion of said rib remains in one of said grooves, and when said stop means is removed, said rib may slide freely from a groove for angular adjustment and alignment with a different groove.



4,765,030

METHOD FOR REMOVING SKIN FROM FISH AND FOWL

John M. Dubowik, Nashua, N.H., assignor to Foster-Miller, Inc., Waltham, Mass.

Filed Jul. 13, 1987, Ser. No. 72,631
Int. Cl.[4] A22C *25/17*
U.S. Cl. 17—50 16 Claims



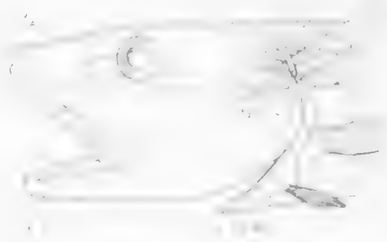
1. A method of removing frozen skin from the underlying flesh of fish and fowl, said method comprising the steps of:
(a) subjecting the frozen skin to intense heat in the range of 750° F. to 1500° F. for a time period in the range of five seconds to sixty seconds;
(b) freezing the skin; and
(c) directing a high velocity fluid spray at the frozen skin and removing the skin from the underlying flesh.

4,765,031

METHOD FOR SEVERING THE HEADS FROM FISH

Horst Braeger, Lübeck, Fed. Rep. of Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH + Co KG, Lübeck, Fed. Rep. of Germany

Filed Dec. 3, 1982, Ser. No. 446,599
The portion of the term of this patent subsequent to Jan. 23, 2002, has been disclaimed.
Int. Cl.[4] A22C *25/14*
U.S. Cl. 17—52 3 Claims



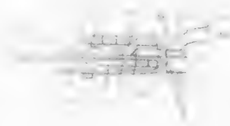
1. A method for severing the heads from fish with their gill cavity opened from the belly side by a throat cut, wherein firstly the superacleithra lying on the upper portions of both shoulder girdle arcs located at opposite sides of the plane of symmetry of the fish are split off to disconnect the shoulder girdle arcs from the head skeleton of the fish, whereupon the connection of the vertebral column with the head skeleton is disjointed be bending the head back towards the nape of the neck in a jack-knife manner and in this jack-knifed position the head and rump are pulled apart.

4,765,032

ENVIRONMENTAL BUNDLING TIE

William A. Fortsch, Bernardsville, N.J., assignor to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Mar. 11, 1987, Ser. No. 24,639
Int. Cl.[4] B65D *63/06*
U.S. Cl. 24—23 R 17 Claims

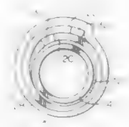


1. A self-locking bundling tie for engagement about an article comprising:
a flexible elongate strap having two opposing longitudinal ends; and
a head attached to said strap adjacent one end thereof, said head including a housing and a locking insert supported by said housing and movable relative thereto, said housing and said locking insert including cooperative latching means for holding said insert fixed in at least two position relative to said housing, said insert in a first position having an opening for receipt of the unattached end of said strap therethrough, said housing and said insert having means that upon movement of said insert to a second position cooperate to engage and bend a portion of said

VOL 1093 ISS 4 AG 23 1988 UMI

strap extending through said opening in a manner capturing said bent strap portion in a locked position relative to said head.

4,765,033
QUICK-RELEASE RADIAL CLAMP
Elmont E. Hollingsworth, 12100 Wander La., Austin, Tex. 78750
Filed Oct. 1, 1987, Ser. No. 103,543
Int. Cl.[4] B65D *63/02*
U.S. Cl. 24—20 CW 13 Claims



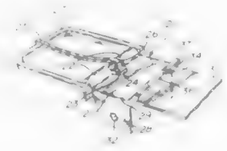
1. A radial clamp comprising:
a cylindrical split ring having two abutting ends;
an elastomeric sleeve coaxially positioned and stretched upon the cylindrical split ring; and
means for removing the split ring ends from their abutting positions in a radial direction thereby permitting them to slide one beneath the other, the ring thereby contracting under the contraction of the elastomeric sleeve.

4,765,034
CORD TIGHTENING DEVICE
Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jun. 2, 1987, Ser. No. 56,766
Claims priority, application Japan, Jun. 2, 1986, 61-83987[U]
Int. Cl.[4] F16G *11/00*
U.S. Cl. 24—136 R 8 Claims



1. A cord tightening device comprising:
(a) a hollow body having a narrower opening at one of its opposite ends and a wider opening at the other end and composed of a pair of spaced face and back plates and a pair of spaced side walls interconnecting said face and back plates, one of said face and back plates having a guide groove defined therein; and
(b) a slider detachably mounted in said body and slidably movable along said guide groove, said slider having a retainer disposed in said body for pressing cord portions against said side walls, and a knob integral with said retainer and normally projecting into said guide groove and engageable with a peripheral wall defining said guide groove, said retainer having an aperture, said knob being resiliently cantilevered to said retainer and normally overlying said aperture, said cantilevered knob being resiliently flexible toward the other plate to such an extent that said knob is substantially fully received in said aperture.

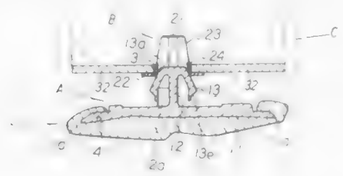
4,765,035
BELT BUCKLE ATTACHMENT CLAMP
Willy Serway, Montreal, Canada, assignor to Century Products Ltd., Quebec, Canada
Filed Jun. 5, 1987, Ser. No. 58,869
Int. Cl.[4] A44B *11/00*
U.S. Cl. 24—265 A 5 Claims



1. A one-piece metal belt buckle attachment clamp stamping for connecting a buckle to an end of a belt, said attachment clamp comprising a metal piece defining a top wall having integrally formed a pair of spaced apart fingers extending from a forward edge thereof, a space between said fingers for accommodating a buckle swivel pin hingedly secured to a buckle arm, said fingers being formed by elongated flat metal extensions of said top wall, said fingers being crimped rearwardly of said top wall to form loops about said buckle arm and permitting said buckle arm to axially rotate therein, said space between said fingers extending into a notch formed in said forward edge of said top wall, and a clamping flange formed integrally with a respective one of opposed side edges of said top wall, a prong formed in and extending above an inner face of each said clamping flanges, said prong being formed by at least one punch hole formed in each said clamping flanges from an outer surface thereof and forming gripping teeth about said hole extending above an inner surface of said clamping flanges, said flanges being bendable rearwardly of said top wall and spaced therefrom to define a belt end receiving throat to attach said attachment clamp to a belt end by pressing said clamping flanges on said belt end to cause said clamping flanges and said gripping means to grip said belt end, a retention loop extending from a rear edge of said top wall, said retention loop having a bridge arm portion extending elevated above said top wall, and depending side arms spaced apart at least the width of said waist belt.

4,765,036
CLIP FOR PROTECTING COATED SURFACE
Tatsuya Iguchi; Kunihiro Fukuhara; Tsutomu Kadomiya, and Moritoshi Fukuda, all of Yokohama, Japan, assignors to Nifco, Inc., Yokohama, Japan
Filed Jan. 7, 1987, Ser. No. 1,257
Claims priority, application Japan, Feb. 12, 1986, 61-18620[U]
Int. Cl.[4] A44B *21/00;* F16B *19/00*
U.S. Cl. 24—289 5 Claims

1. A clip structure insertable through an aperture in a work piece body and for protecting coated surfaces of said work piece body comprising a main clip body including an axially extending support member insertable through said aperture integral at one end with a base plate for overlyling one side of the work piece body and resilient clip means integrally extending from a top end of the support member toward the base plate, said chip means including jaw portion adjacent a free end thereof for cooperating with a margin of the work piece body to resist withdrawal of said support from said aperture, and a protecting cap body comprising a dome having an opening at one end and a flange extending outward at an edge of said opening of the cap body, window means extending through lateral peripheral walls of the cap body axially outwardly of said flange so that at least a lower portion of said clip means may project laterally into said window means and be exposed there through, and wall means extending between a



lower edge of said window means and said flange, said clip structure being characterized in that said main clip body is assembled with said protective cap by sliding the clip means of the main clip body along an inner surface of said last mentioned wall means of the protecting cap to shield the clip means with said last mentioned wall means from direct engagement with said work piece body.

4,765,037
PACIFIER STRAP
Jean S. Perry, 2972 N. 28th St., Milwaukee, Wis. 53210
Filed May 26, 1987, Ser. No. 53,846
Int. Cl.[4] A44B *21/00;* A61J *17/00*
U.S. Cl. 24—301 2 Claims



1. A retainer for tethering a pacifier to an article of clothing, comprising:
a resilient strap constructed of a stretchable material, said strap being capable of stretching in response to a tensile force applied thereto and of returning to its original length upon removal of said tensile force;
clip means for removably attaching said strap to said article of clothing;
ring means disposed between said clip means and said strap for connection to an end of said strap and to said clip means; and
adjustment means provided on said strap for longintudinal varying the length of said strap between said ring means and said pacifier, said adjustment means comprising snap means including a first snap member provided adjacent the end of said strap opposite said end connected to said ring means, and a series of mating second snap members provided along said strap and adapted to receive said first snap member is engageable with said pacifier and said first snap member is mated with a selected one of said mating second snap members to longitudinally adjust the length of said strap.

4,765,038
WATERTIGHT SLIDE FASTENER STRINGER
Kazumi Kasai, Namerikawa, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan
Continuation of Ser. No. 783,273, Oct. 3, 1985, which is a continuation of Ser. No. 530,099, Sep. 7, 1983. This application Feb. 4, 1987, Ser. No. 11,408
Claims priority, application Japan, Sep. 9, 1982, 57-136968[U]; Jul. 22, 1983, 58-113994[U]
Int. Cl.[4] A44B *19/32*
U.S. Cl. 24—389 7 Claims



1. A watertight slide fastener comprising:
(a) a pair of waterproof stringer tapes, each tape having a thickened sealing member along a longitudinal edge portion thereof, said thickened sealing member having a sealing surface facing toward and sealingly engageable with the sealing surface of the thickened sealing member of the opposed stringer tape, and each of said stringer tapes generally defining a plane; and
(b) a series of coupling elements mounted on said longitudinal edge portion of each said tape, each of said coupling elements comprising a pair of members mounted one on each side of said stringer tape, and at least one integral connector extending through said longitudinal edge portion and interconnecting said pair of coupling element members, each said coupling element member having,
(1) a leg portion disposed on said longitudinal edge portion,
(2) a coupling portion having a head joined by a neck to said leg portion and extending partly beyond said thickened sealing member,
(3) a support portion extending from said leg portion and disposed between said coupling portion and said thickened sealing member, and also disposed flatwise against and projecting beyond said thickened sealing member and integral with said coupling portion, and
(4) said support portion and said neck jointly defining a pair of recesses opening away from the general plane of said stringer tape, for receiving therein said coupling heads of two adjacent coupling elements of the opposed stringer tape, said support portion being engageable with the last-mentioned coupling heads to limit relative tilting displacement of coupled adjacent coupling elements when said stringer tapes are flexed under longitudinal or lateral bending stresses as well as torsional stresses while in use,
(5) said support portions of said pair of members jointly defining therebetween a slot extending longitudinally along said thickened sealing member for receiving therein longitudinal portions of said thickened sealing member of the opposed stringer tape, said sealing member having a surface facing into said slot, said support portions being engageable flatwise with said longitudinal portions to prevent the latter from expanding in a direction perpendicular to the plane of said stringer tapes and to force said longitudinal portions of opposed thickened sealing members to expand edgewise into compressed contact together.

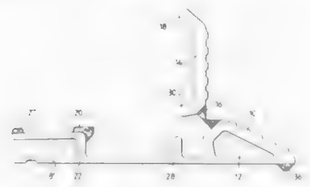
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,039

MAT HOLDER

Martyn Rowlands, and John Calvert, both of Epping, Great Britain, assignors to Kimberly-Clark Limited, Larkfield near Maidstone, England

Filed Sep. 9, 1987, Ser. No. 94,949
Claims priority, application United Kingdom, Sep. 11, 1986, 8621916
Int. Cl.[4] A47G 27/02
U.S. Cl. 24—556 4 Claims



1. A holder for flexible material comprising a flat base on which the material rests and at least one hinged side flap adapted to fold over on top of an edge of the material to hold the material in position, characterised in that beneath each hinged flap an upstanding wall extends from the base to form a backstop and a corresponding flange descends downwardly from the flap adjacent the hinge, the flange and wall being so arranged and dimensioned that when the flange is opened by upward hinged movement from the base ready to receive an edge portion of material, the bottom edge of the flange rests on the upper free edge of the wall to keep the flap open, on closure of the flap the bottom surface of the flange being arranged to 'cam' over the upper surface of the wall, the wall, flange or hinge resiliently moving until the flange is free of the wall to close down over material positioned on the base squeezing the material between the flap and the base.

4,765,040

EMERGENCY RELEASE DEVICE FOR BACKPACK-TYPE WORKING MACHINE

Satoshi Sosoda, Tokyo, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 120,134
Claims priority, application Japan, Nov. 14, 1986, 61-174886[U]
Int. Cl.[4] A44B 11/17; B25G 3/18
U.S. Cl. 24—656 1 Claim



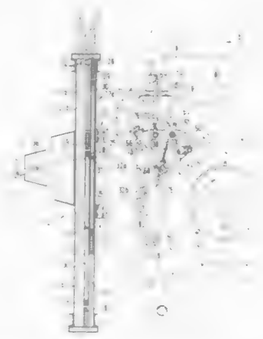
1. An emergency release device for a backpack-type working machine characterized in that said release device comprises a cylindrical guard member mounted on the body portion of the working machine, a shaft member which includes a main part slidably extending through a bore in the boss portion of the guard member and an enlarged end portion formed at one end thereof, a button member attached on the other end portion of said shaft member, a spring exerting force between said guard member and said button member and biasing the enlarged end portion to contact with said boss portion of the guard member, and a connecting member whose upper portion is connected to the lower end portion of the shoulder band, and in that said connecting member is formed with a groove slot whose lower portion opens and into which a waist band and the main part of said shaft member can loosely fit, and said groove slot forms an enlarged groove slot portion which can be engaged with the enlarged end portion of said shaft member.

4,765,041

APPARATUS FOR THE PRODUCTION OF SHORT WARPS ESPECIALLY FOR CLOTH DESIGNS IN MULTICOLOR WEAVING

Erich Baltzer, Nordhorn, Fed. Rep. of Germany, assignor to Hergeth Hollingsworth GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 581,041, Feb. 17, 1984, abandoned.
This application Jul. 15, 1986, Ser. No. 891,963
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307301
Int. Cl.[4] D02H 9/02
U.S. Cl. 28—191 15 Claims



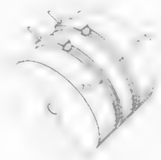
1. Apparatus for the production of short warps, particularly for cloth designs in multicolor weaving, comprising means for successively winding up yarns of different colors upon a drum, means for selectively intermittently rotating said drum, said drum having a cylindrical portion and a conical start portion, means mounting lease rods for displaceable movement along the drum axis, a support, means for supplying a yarn sheet to the drum, means mounting said support for displaceable movement along the drum axis, heald frame means carried by said support for producing yarn sheds from the yarn, the improvement characterized by first and second lease rods operative respectively prior to and after a first yarn shed by said heald frame means to maintain a first yarn crossing therebetween formed by first and second yarn sheets, said heald frame means being further operative to divide said first and second yarn sheets into respective first and second pairs of yarn divisions, third and fourth lease rods operative after the division of the first and second yarn sheets and respectively positioned between the first and second pairs of yarn divisions, means for selectively displacing said first through fourth lease rods to maintain the first yarn crossing of the first and second yarn sheets and the first and second pairs of yarn divisions from the first and second yarn sheets; and control means for coordinating the operation of said first through fourth lease rods, said heald frame means and the intermittent rotation of said drum to produce said first and second yarn sheets, said first yarn crossing and the first and second pairs of yarn divisions.

4,765,042

APPARATUS FOR TEXTURING CONTINUOUS FILAMENTARY TOW

Hsin L. Li, Parsippany, and Hendrikus J. Oswald, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, N.J.

Continuation of Ser. No. 357,499, Mar. 12, 1982, abandoned.
This application Apr. 2, 1984, Ser. No. 594,958
Int. Cl.[4] D02G 1/12, 1/16
U.S. Cl. 28—257 10 Claims



1. An apparatus for crimping a continuous tow of filaments comprising:

means defining a chamber, said means defining the chamber comprising a perforated longitudinally and transversely extending rotatable filament-receiving means, the transverse extension thereof defining a transverse axis, two spaced apart side walls attached to the perforated rotatable filament-receiving means, each sidewall comprising a chamber-defining surface which diverges in a direction away from the rotatable perforated filament-receiving means, each chamber-defining surface cooperating with the transverse axis to define an obtuse angle therebetween, and a stationery cover member having spaced apart surfaces complementing a portion of each of the diverging chamber-defining surfaces for mating therewith and a chamber-defining top surface arranged therebetween; and,

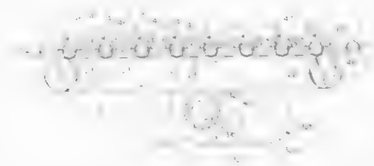
an energy tube cooperating with the means defining the chamber for continuously feeding a tow of filaments to the perforated rotatable filament-receiving means.

4,765,043

APPARATUS FOR REMOVING RESIDUAL ROVINGS ON ROVING BOBBINS

Osamu Yamashita, Kanazawa, Japan, assignor to Murao Boki Kabushiki Kaisha, Kanazawa, Japan

Filed Oct. 16, 1986, Ser. No. 919,691
Claims priority, application Japan, Oct. 16, 1985, 60-230624; Oct. 17, 1985, 60-231498
Int. Cl.[4] B65H 73/00
U.S. Cl. 28—294 9 Claims



1. An apparatus for removing residual rovings on roving bobbins and adapted to be incorporated in a bobbin conveyance device, said apparatus comprising:

a flocked belt for removing residual rovings on roving bobbins;

belt drive means coupled to said flocked belt for driving said flocked belt in a path;

a plurality of bobbin hangers for rotatably suspending roving bobbins therefrom;

bobbin conveyance means on which said bobbin hangers are mounted and for conveying said bobbin hangers in a further path parallel to and adjacent a part of said path of said flocked belt with bobbins suspended from said bobbin hangers in positions opposed to the surface of said flocked belt;

a rockable frame movable toward and away from said belt and having presser members thereof for engaging bobbins suspended from said bobbin hangers and pressing them against said flocked belt;

a comb wheel positioned at a point along the remainder of the path of said flocked belt and having comb-like tip portions thereon engagable with said flocked belt for stripping residual rovings from said flocked belt; and

means for rotating said comb wheel at a peripheral speed greater than the speed of movement of said flocked belt.

4,765,044

SEMIAUTOMATIC TERMINATION APPARATUS FOR RIBBON CABLE

Michael C. Wilson, Oberlin, and Robert Volinskie, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 19, 1986, Ser. No. 910,049
Int. Cl.[4] H01R 43/04
U.S. Cl. 29—33 M 18 Claims



1. An apparatus for terminating conductors of an electrical cable to terminating sections of electrical terminals disposed in a dielectric housing of an electrical connector having conductor receiving passages therein, the apparatus comprising:

clamp means to maintain the cable in proper position:

comb means which cooperate with the conductors of the cable such that as the comb means is moved between a first position and a second position, the comb means spaces the conductors of the cable;

shearing means which cooperate with the conductors such that as the shearing means is moved between a first and second position, conductors are sheared and ends of the conductors are preformed;

shearing blades are provided on the shearing means, the shearing blades shear the conductors as the shearing means is moved from the first position toward the second position, the shearing blades continue past the plane of the conductors until the second position is reached, thereby forming the conductors accordingly;

shuttle means having the connector located therein, the shuttle being movable between a front and a back position;

whereby as the shuttle is moved from the back position to the front position, the tapered surfaces of conductor receiving passages of the connector cooperate with the preformed ends of the conductors so as to position the ends of the conductors in alignment with terminating sections of the terminals of the connector for termination thereto.

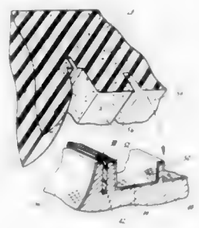
VOL 1093 ISS 4 AG 23 1 1988 UMI

4,765,045

METHOD OF MANUFACTURING TRIMMED SEAT

Alan J. Selbert, Tecumseh, and Randy G. Eschelbach, Saline, both of Mich., assignors to Hoover Universal, Inc., Ann Arbor, Mich.

Continuation of Ser. No. 819,774, Jan. 16, 1986, abandoned. This application Jun. 22, 1987, Ser. No. 64,422
Int. Cl.[4] B68G *7/00*
U.S. Cl. 29—91.1 4 Claims



1. The method of making one part of a two part seat comprising forming a foam body having an interior load supporting section, bolster sections on transversely opposite sides of said load supporting section and a connecting section at one end of said interior section and extending between said bolster sections, and grooves at the junctures of said interior section with said bolster and connecting sections, said method comprising forming a first covering member of a size to lie flat against the top side of said interior section and extend at its outer edge into said grooves, forming a second covering member of a size to lie flat against the top side of said bolster and connecting sections and extend at its inner edge into said grooves, providing an upright trim strip of a size to extend into said grooves, inverting said covering members and securing the inner edge of said first member and the outer edge of the second member to an upper edge portion of said trim strip, positioning said trim strip so as to locate said first and second covering members at positions in which said first covering member can be accurately aligned with said interior load supporting section of said foam body prior to adhering of the foam body to said first covering member, inverting said foam body and moving it downwardly to a position in which said upper edge portion of said trim strip extends into said grooves, adhering said first covering member to said interior section of said body, turning said body over so that said covering members are on the top side of said foam body, extending said second member downwardly along the sides of said body and securing the second member to the underside of said body and tearing off all of said trim strip except said portion secured to said covering members.

4. In a vehicle seat having interconnected cushion and back members, the method of making the cushion portion comprising forming a foam body having an interior load supporting section, bolster sections on transversely opposite sides of said load supporting section and a thigh support section located forwardly of said interior section and between said bolster sections, and grooves at the junctures of said interior section with said bolster and thigh support sections, forming a first covering member of a size to lie flat against the top side of said interior section and extending at its outer edge into said grooves, forming a second covering member of a size to lie flat against the top side of said bolster and thigh support sections and extend at its inner edge into said grooves, providing an upright trim strip of a size to extend into said grooves, providing a trim tool shaped to conform to the shape of said foam body and having trim strip locating grooves corresponding to said grooves in said foam body, inverting said covering members and securing the inner edge of said first member and the outer edge of the second member to an upper edge portion of said trim strip, positioning said trim strip in said trim tool grooves so as to locate said first and second covering members at desired positions relative to said foam body when adhered thereto, inverting said foam body and moving it downwardly to a position in which said upper edge portion of said trim strip extends into said grooves, adhering said first covering member to said interior section of said body, turning said body over so that said covering members are on the top side of said foam body, extending said second member downwardly along the sides of said body and securing the second member to the underside of said body and removing all of said trim strip except said portion secured to said covering members.

4,765,046

ROW ASSEMBLY PROCESS FOR INTEGRAL SHROUD BLADES

Albert J. Partington, Winter Springs; Michael K. Brown, Casselberry; Jurek Ferleger, Longwood, all of Fla.; C. Kelly Ange; Anthony Hodgson, both of Charlotte, N.C.; David A. Hornberger, Waxhaw, N.C.; Marshall J. Rouse; Spencer H. Shepard, both of Charlotte, N.C.; Phillip H. Bonardi, Rural Hall, and William E. Kiger, Germanton, both of N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 22, 1987, Ser. No. 53,300
Int. Cl.[4] B21K *3/04*
U.S. Cl. 29—156.8 R 17 Claims



10. A method of installing turbine blades in rows upon a rotor having an inlet side, an outlet side, and a plurality of N grooves formed therein, the grooves extending longitudinally with respect to the rotor and spaced equidistantly radially thereabout, wherein each of the turbine blades includes a root portion adapted to fit within a respective one of the grooves, a blade portion extending radially outward from the root portion separated therefrom by a platform portion having a concave side and a convex side, with a means for locking the blade to the rotor included on the concave side thereof, and a shroud portion formed integrally with the blade portion at its radial outer end, said method comprising the steps of:

(a) determining a sequence of rows to be installed upon the rotor;
(b) forming a plurality of the blades;
(c) rigidly attaching a plate portion to one of the blades perpendicular to its respective blade portion, said plate portion spanning a distance substantially corresponding to the distance separating two of the grooves;
(d) inserting, from the inlet side of the rotor at a selected row thereof, the blade having said attached plate portion within a selected one of the grooves, said selected groove comprising groove number two;
(e) providing a means of adjusting the radial position of the blade within said selected groove;
(f) inserting a shim beneath the root portion of the blade inserted within said selected groove said shim preloading said adjusting means;
(g) inserting, from the inlet side of the rotor, a monitor blade in the next vacant groove clockwise from said groove number two;
(h) shimming said monitor blade tightly within its respective groove;
(l) monitoring the distance between said attached plate portion and said monitor blade;
(j) inserting, from the inlet side of the rotor, another one of the blades within a next adjacent groove counterclockwise from said groove number two;
(k) inserting at least one tapered wedge beneath the platform portion, on its concave side, of the blade inserted by step (j), said at least one tapered wedge being inserted to provide a predetermined contact between the shroud portion of the blade inserted by step (k) and the shroud portion of its next adjacent clockwise blade;
(l) positioning said other one of the blades in a predetermined direction radially with respect to its groove;
(m) repeating steps (j), (k), and (l) sequentially for each of said grooves number N through seven;
(n) recording the radial positions of the blades inserted within said grooves number N and seven;
(o) measuring the gap between the blades inserted with said grooves number one and seven;
(p) removing the tapered wedge inserted beneath the concave side of the platform portion of a selected blade;
(q) replacing said removed tapered wedge beneath the convex side of the platform portion of said selected blade;
(r) repeating steps (p) and (q) sequentially for each of the blades in a clockwise direction between said selected blade and the blade inserted within said groove number one;
(s) removing the blade having said attached plate portion from within said groove number two;
(t) determining any change of radial position of the blades inserted within said groove numbers N and seven;
(u) repeating steps (j), (k) and (l) sequentially for each of said grooves number six, five, four and three;
(v) removing the blade installed within said groove number one;
(w) determing a total shroud length which must be removed from blades installed within said groves number one and two to provide an interference fit;
(x) modifying the shroud portions of each of the blades to be installed within said grooves number one and two such that their lengths when combined substantially equals said total shroud length;
(y) inserting said modified blades respectively within said grooves number two and one;
(z) locking the blade inserted within said groove number one;
(aa) removing each of said tapered wedges; and
(bb) machining the shroud portions of each of the blades of said selected row to provide a uniformly shaped shroud assembly.

longitudinal axis of the strip, the inclinations forming the repeating sequence left, right, right, left, etc.,



(b) folding the strip back and forth upon the crease lines, so that the folded strip has a taper in both of two directions, and
(c) enclosing the folded strip in an anchoring means.

4,765,048

VALVE STEM INSERTER

Blanchard M. Hokanson, 5413 Skylark Pass, Grand Blanc, Mich. 48439

Continuation-in-part of Ser. No. 789,748, Oct. 21, 1985, abandoned. This application Jan. 20, 1987, Ser. No. 6,265
Int. Cl.[4] B23P *19/04*
U.S. Cl. 29—221.5 7 Claims



1. A tool for installing a valve stem in a stemhole of a wheel rim, said valve stem having a compressible end portion to sealingly engage said wheel rim, said tool comprising:

an elongated body having an outer surface and an inner surface extending between a pair of ends, said inner surface defining a longitudinal bore, said inner surface having a threaded portion extending from one end of said pair of ends, said threaded portion having a diameter greater than a diameter of said valve stem to freely accept said valve stem within said threaded portion, and a conical portion, said conical portion tapering radially inwardly from said threaded portion towards an other of said pair of ends;

a displacement shaft having a threaded surface for engaging said threaded portion of said inner surface for axial movement of said shaft when said shaft is rotated, said threaded surface having a diameter greater than said diameter of said valve stem, and shaft having end portion adapted to engage said valve stem and displace said valve stem through said conical portion of said inner surface when said shaft moves towards said one end of said tubular body, whereby said valve stem being resiliently compressed as said stem is displaced through said conical portion to a size for insertion into said stem hole; and

means for rotating said displacement shaft for reciprocal movement in said bore.

4,765,047

METHOD OF MAKING A METAL HONEYCOMB CATALYST SUPPORT HAVING A DOUBLE TAPER

William B. Retallick, West Chester, Pa., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 905,071, Sep. 8, 1986, Pat. No. 4,673,553. This application Mar. 9, 1987, Ser. No. 23,700
Int. Cl.[4] B21D *53/02*
U.S. Cl. 29—157 R 6 Claims

1. A method of making a catalytic converter for an automobile, comprising the steps of:

(a) forming crease lines across the width of a metal strip, the crease lines being inclined from the perpendicular to the

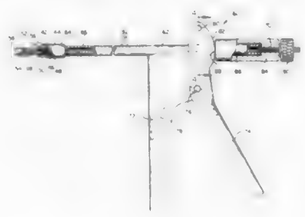
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,049

INSERTING TOOL FOR ELASTOMER DIE PLUG

Lynn Lundquist, 10833 N.E. Russell St., Portland, Oreg. 97220

Division of Ser. No. 549,294, Nov. 7, 1983, abandoned. This application Apr. 25, 1986, Ser. No. 856,679
Int. Cl.[4] B23P *19/02*
U.S. Cl. 29—235 3 Claims



1. For use with a plug having a flexible sleeve and a core member for longitudinal interengagement with the sleeve to radially expand it into sealing engagement with the wall of a hole, an inserting tool comprising:

(a) an elongated, substantially straight tube, of a diameter smaller than the hole, and having at its forward end an abutment surface for supporting the rear end of the sleeve;

(b) a rod extending longitudinally through the tube and having engagement means on the end thereof for releasably attaching to the core member;

(c) a squeeze handle mounted on the tube and having a rearwardly facing cam surface which is rotatable upon squeezing the handle; and

(d) a cam bearing member adjustably secured to the rod and bearing against the cam surface for drawing the rod rearwardly as the handle is squeezed, thus drawing the core member into the sleeve.

4,765,050

APPARATUS AND METHOD FOR DISASSEMBLING A MAGNETIC TAPE CASSETTE

Mario W. Espin, 5333 The Plaza, Charlotte, N.C. 28215

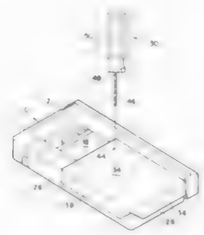
Filed Apr. 21, 1987, Ser. No. 40,647
Int. Cl.[4] B23P *19/02, 21/00, 23/04*
U.S. Cl. 29—426.4 13 Claims

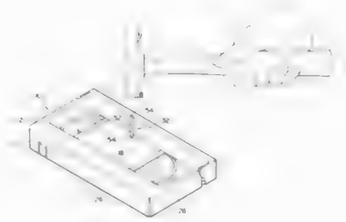
1. An apparatus for disassembling a magnetic tape cassette of the type having at least two housing members assembled by at least one fastener extending through one housing member and attaching internally to the other housing member in a concealed manner, said apparatus comprising template means for positioning on said other housing member to identify exteriorly thereon the location of attachment thereto of said concealed fastener, means for penetrating said other housing member at said fastener attachment location to form opening access to said fastener through said other housing member, and means for expelling said fastener outwardly from said one housing member, thereby to permit said housing members to be separated for disassembly of said cassette.

9. A method of disassembling a magnetic tape cassette of the tape having at least two housing members assembled by at least one fastener extending through one housing member and attaching internally to the other housing member in a concealed manner, said method comprising:

identifying exteriorly on said other housing member the location of attachment thereto to said concealed fastener,

penetrating said other housing member at said fastener attachment location to form opening access to said fastener through said other housing member and expelling said fastener outwardly from said one housing member,





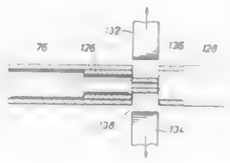
thereby to permit said housing members to be separated for disassembly of said cassette.

4,765,051

METHOD FOR CONSTRUCTING A LOCKING BAR FOR USE IN A SPARE TIRE CARRIER

David L. Helterbrand, 3508 University Dr., Garland, Tex. 75043

Division of Ser. No. 920,274, Oct. 17, 1986, Pat. No. 4,711,382.
This application May 21, 1987, Ser. No. 52,468
Int. Cl.[4] B21D *39/00*
U.S. Cl. 29—516 8 Claims



1. A method for constructing a locking bar for use in a spare tire carrier, comprising the steps of:

inserting a first plug into a tubular member a distance spaced from the end of said tubular member;

inserting a second plug into said end of said tubular member and spaced from said first plug;

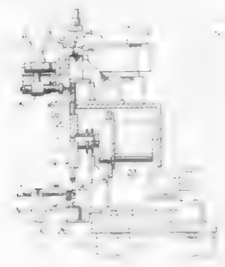
compressing opposing sides of said tubular member at a location between said first plug and said second plug to shear a portion of the sidewalls of said tubular member and to press the sheared sidewall portions toward each other to narrow said tubular member at said location.

4,765,052

METHOD OF FITTING RUBBER STOPPERS ON WIRES

Michio Fukuda, Osaka; Eiji Fudo, Yokkaichi; Koichi Tani, Yokkaichi, and Haruhito Kobayashi, Yokkaichi, all of Japan, assignors to Sumitomo Electric Industries, Ltd. and Sumitomo Wiring Systems, both of Japan

Division of Ser. No. 722,228, Apr. 11, 1985, Pat. No. 4,653,182.
This application Dec. 19, 1986, Ser. No. 944,674
Claims priority, application Japan, Apr. 17, 1984, 59-77392; Apr. 17, 1984, 59-56391[U]; Apr. 17, 1984, 59-56393[U]
Int. Cl.[4] B23P *11/02*
U.S. Cl. 29—450 5 Claims



1. A method of fitting a rubber stopper having an axially extending opening with differently configured end portions for a water proof connector terminal onto an end portion of an electric wire, said method comprising the steps of:

sucessively feeding and aligning a group of rubber stoppers in a row in a state wherein the end portions of each of said rubber stoppers is similarly oriented and wherein said stoppers have their openings extending parallel to each other and extending in the same direction;

inserting a pin into one end of the axially extending opening of said stoppers to pick up said stoppers, transferring said stoppers onto another pin extending through the other end of said axially extending opening;

transferring said rubber stoppers from said another pin into a stopper housing portion;

retaining said electric wire disposed on an imaginary line passing through the center of said stopper housing portion; and

press-fitting said wire into said rubber stopper through said other end of said axially extending opening,

whereby said rubbber stoppers are sucessively and continuously fitted on the respective wires.

4,765,053

WIRE STRAND STACKER

Jack L. Hoffa, Brea, Calif., assignor to Eubanks Engineering Co., Monrovia, Calif.

Filed Mar. 6, 1987, Ser. No. 22,982
Int. Cl.[4] B21F *21/00*
U.S. Cl. 29—564.4 16 Claims

1. In a flexible strand stacker, the combination comprising:

(a) conveyor means having an elongated endwise traveling stretch onto which the strand is fed to be carried endwise on said stretch,

(b) gripper means to grip a trailing portion of the strand as forward extent of the strand is carried endwise on the stretch,

(c) means to effect displacement of said gripper means to a position locating the gripped portion of the strand sufficiently out of alignment with the stretch that the strand is progressively pulled sidewardly off the stretch in response to endwise travel of the stretch relative to the strand,

(d) and holder means to temporarily and locally hold the trailing portion of the strand to the traveling conveyor means stretch to travel therewith, until the strand is endwise positioned for the gripper means to initially grip said trailing portion of the strand,



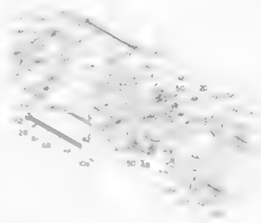
(e) there being spaced barrier fingers traveling with said stretch and initially acting to block sideward displacement of the strand off said stretch, the holder means located to temporarily hold a portion of the strand proximate that portion of the traveling stretch closest to the path of displacement of the gripper means.

4,765,054

METHOD OF MAKING A FIELD SUBASSEMBLY

William D. Sauerwein, Westminster; John E. Dibberu, Jr., Street, both of Md.; Frank J. O'hara, Hanover, Pa., and Robert G. Moores, Jr., Reisterstown, Md., assignors to Black & Decker, Inc., Newark, Del.

Division of Ser. No. 636,367, Jul. 31, 1984, Pat. No. 4,578,852, which is a division of Ser. No. 522,011, Aug. 11, 1983, Pat. No. 4,484,096. This application Mar. 31, 1986, Ser. No. 846,566
The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.
Int. Cl.[4] H02K *15/10*
U.S. Cl. 29—596 19 Claims



1. A method of assembling a field subassembly, comprising the steps of:

(a) providing a ferromagnetic core having a longitudinal axis and defining an axial end face and two through-holes;

(b) providing a first subassembly member having a core-engaging surface and further including two mounting holes operatively associated with the core through-holes;

(c) applying an adhesive to at least one of the core axial end face and the core-engaging surface;

(d) aligning the two mounting holes with respective core through-holes to attain a predetermined relationship between the core-engaging surface and the core axial end face;

(e) joining the subassembly member core-engaging surface and the axial end face in said predetermined relationship;

(f) providing two fasteners having a shank cross-sectional dimension smaller than that of the core through-holes and engageable with the mounting holes in a press-fit;

(g) pushing the fasteners through the respective through-holes and mounting holes; and

VOL 1093 ISS 4 AUG 23 1988 UMI

(h) Allowing the adhesive to set so that said predetermined relationship is maintainable for at least one subsequent assembly step.

4,765,055

METHOD OF FABRICATING A SUPERCONDUCTING CAVITY

Masanori Ozaki, Nikko; Isamu Ohishi, Yokohama; Norimasa Sato, Utsunomiya, and Yasuzou Tanaka, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 18, 1986, Ser. No. 897,740
Claims priority, application Japan, Aug. 26, 1985, 60-186798; Sep. 30, 1985, 60-216726; Oct. 15, 1985, 60-229471; Oct. 15, 1985, 60-229472; Oct. 15, 1985, 60-229473; Oct. 15, 1985, 60-229474
Int. Cl.[4] H01L *39/24*
U.S. Cl. 29—599 13 Claims



1. A method of fabricating a superconducting cavity comprising the steps of:

using a core made of a metal having a higher ionization tendency than hydrogen in the electrochemical series,

forming a first thin film layer made of hydrogen transmission-preventive metal on the outer periphery of the core,

then closely contacting a second thin film layer of niobium or superconducting intermetallic compound on the outer periphery of the first thin film layer,

forming a third thin film layer made of metal having high thermal conductivity and high bondability, on the outside of the second thin film layer,

forming a reinforced coating layer of stabilizing metal on the third thin film layer to be formed in the shape of a superconducting cavity, and

then removing the core and the first thin film layer by dissolving with the surface of the superconductor being a replica of the core surface.

4,765,056

METHOD OF MANUFACTURE OF HELICAL WAVEGUIDE STRUCTURE FOR TRAVELING WAVE TUBES

Robert Harper, Concord, and Joseph L. Rousseau, Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Apr. 3, 1986, Ser. No. 847,999
Int. Cl.[4] H01J *9/00*
U.S. Cl. 29—600 8 Claims

1. A method for fabricating a helical waveguide slow wave structure comprising:

machining a deep, narrow first groove in a cylindrical bar of electrically conductive material to form a helical screwthread between the bar ends centered about an axis, said screwthread forming the upper and lower helical walls of a helical waveguide structure;

machining a second groove at the bottom of said first groove to form at least one ridge extending transversely to at least one face of said screwthread, said second groove bottoming on a central core extending axially along said screwthread;

brazing an electrically conductive sleeve to the periphery of said screwthread to form an outer wall connecting said screwthread walls of said helical waveguide structure;

machining away said cylindrical bar ends to cause said screwthread walls to terminate at the end of said sleeve; and



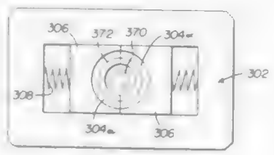
machining a hole along the axis of said cyindrical bar to remove the central core to produce a helical waveguide having radially-extending helical walls, a cylindrical outer wall, and an inner wall comprising at least one helical axially-extending ridge with an axial gap between the adjacent portion of said ridge.

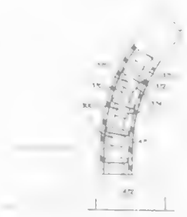
4,765,057

SELF-ATTACHING FASTENER, PANEL ASSEMBLY AND INSTALLATION APPARATUS

Rudolph R. M. Muller, Frankfurt, Fed. Rep. of Germany, assignor to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 773,387, Sep. 6, 1985, Pat. No. 4,633,560, which is a division of Ser. No. 563,833, Dec. 21, 1983, Pat. No. 4,555,838, which is a continuation-in-part of Ser. No. 485,099, Mar. 28, 1983, Pat. No. 4,459,073, and a continuation-in-part of Ser. No. 504,074, Jun. 14, 1983, Pat. No. 4,543,701, said Ser. No. 485,099, is a division of Ser. No. 229,274, Jan. 28, 1981, abandoned, said Ser. No. 504,074, is a continuation of Ser. No. 229,274,. This application Aug. 1, 1986, Ser. No. 892,017
Int. Cl.[4] B23P *21/00*; B23Q *15/00*
U.S. Cl. 29—716 10 Claims





1. An installation apparatus installing self-attaching stud fasteners in a panel, said installation apparatus including an installation head having a plunger reciprocable in a plunger passage to install said fasteners in a panel supported opposite

said plunger passage and a transfer means transferring fasteners from a source of fasteners to said installation head, said stud fasteners each including an elongated shank portion and a tubular riveting wall portion generally coaxially aligned with said shank portion having an internal diameter greater than the diameter of said shank portion, said transfer means including a flexible tube communicating with said source of fasteners and said tube including a stack of fasteners each having said elongated shank portion received in the adjacent fastener tubular wall portion, and said stack of fasteners being flexible for receipt through said flexible tube.

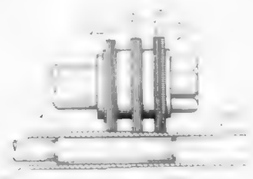
3. An installation apparatus for installing self-attaching elements in a panel, each self-attaching element including an annular barrel portion at one end and a generally coaxially extending portion including a free opposite end, said installation apparatus including a base member and a relatively movable spaced nose member, said nose member including a first passage receiving said self-attaching elements and communicating with a transverse plunger passage, a plunger having a free end movable with said base member and telescopically receivable through said plunger passage for driving one of said self-attaching elements therethrough into a panel located opposite said plunger passage, said plunger passage terminating in a conical exit passage, said conical exit passage comprising expandable radially inwardly biased members defining a generally continuous conical internal surface coaxially aligned with said plunger including a major diameter adjacent said plunger greater than the maximum diameter of said self-attaching elements and a minor diameter adjacent the outlet of said conical passage smaller than said maximum element diameter, said conical passage receiving said barrel portion end of said self-attaching elements from said first passage and said conical surface centering and supporting said self-attaching elements for installation in a panel by said plunger, said plunger having a bore in said free end configured to receive and align said free end of said self-attaching elements in said plunger passage, and upon receipt of a self-attaching element in said plunger conical exit passage said nose member movable relative to said plunger passage to first receive said self-attaching element free end in said plunger bore assuring accurate orientation and alignment of a self-attaching element ready for installation, and actuating means actuating said apparatus to relatively move said plunger through said plunger passage and said oriented self-attaching element through said plunger passage conical exit passage installing said self-attaching element in a panel.

4,765,058

APPARATUS FOR MANUFACTURING ENHANCED HEAT TRANSFER SURFACE

Steven R. Zohler, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 5, 1987, Ser. No. 82,017
Int. Cl.[4] B23P *15/26*
U.S. Cl. 29—727 2 Claims



1. An apparatus for forming a heat transfer tube from an unformed tube comprising:

a mandrel adapted to be placed inside the unformed tube;

an external fin forming means including a plurality of discs for rolling at least one radially extending fin in the tube;

a fin rolling means for rolling over said radially extending fins to form a subsurface channel between adjacent rolled over fins; and

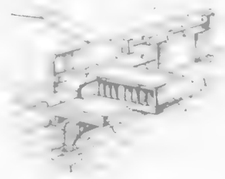
a tooth-like notched disc means having a plurality of alternating projections and V-shaped notches about the circumference of said disc means whereby the projections contact said rolled over fins for matingly engaging adjacent fins at the contact point between said projection and the rolled over fin forming closed portions at said contact point and open pores below said V-shaped notches.

4,765,059

APPARATUS FOR ASSEMBLING TWO-PART CONNECTORS

Howard R. Pearce, London, England, assignor to Thomas & Betts Corporation, Bridgewater, N.J.

Continuation of Ser. No. 765,604, Aug. 14, 1985, abandoned. This application Feb. 27, 1987, Ser. No. 19,803
Claims priority, application United Kingdom, Aug. 17, 1984, [illegible]
Int. Cl.[4] H01R *43/04*
U.S. Cl. 29—749 19 Claims



1. Apparatus for assembling a pre-assembled two-part connector having an upper part and a lower part with an interposed cable, which apparatus comprises a pair of opposing relatively movable press elements, storage means for containing a plurality of said connectors, means for moving a connector from said storage means to an operative position between the pair of press elements, means for actuating at least one of the press elements to achieve crimping of the connector and an interposed cable when the connector is in the operative position, and common control means for selectively causing movement of the connector into the operative position and crimping movement of the press elements, said common control means including means for engaging and detachably separating the respective upper and lower connector parts from each other after the connector has been moved to the operative position, but prior to crimping to facilitate transverse insertion of the cable between the separated connector parts.

4,765,060

DISPOSABLE SHAVER HEAD

Stephen V. Veselaski, Bayshore; Curtis W. Delanoy, North Massapequa, and Robert J. Nicola, West Sayville, all of N.Y., assignors to Micro Contacts Inc., Hicksville, N.Y.

Filed Feb. 17, 1987, Ser. No. 15,689
Int. Cl.[4] B26B *11/02*
U.S. Cl. 30—208 20 Claims

1. A disposable head adapted for one-time use as an attachment to an electric shaver for cutting hair of a patient close to the skin in preparation for surgery, said head comprising:

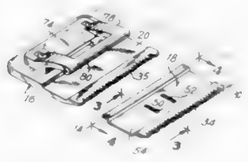
a lower portion comprising a lower plastic member adapted for engagement with a portion of the body of a patient to be shaved and a lower thin metal blade insert-moded integrally with said lower plastic member at an upper region thereof; and

an upper portion comprising an upper plastic member and an

VOL 1093 ISS 4 AUG 23 1988 UMI

upper thin metal blade insert-molded integrally with said upper plastic member at a lower region thereof;

said blades being opposed to and in contact with each other when said head is assembled and each of said blades having an edge formed with a row of cutting teeth, said rows



being substantially parallel to each other and the teeth of each of said rows being relatively reciprocable with respect to the teeth of the other of said rows so as to cut hair drawn between a tooth of one of said rows and an adjacent tooth of the other of said rows.

4,765,061

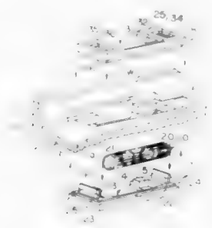
CADDY FOR LEVEL VIAL

Eugene Rawlings, 343 Shore Dr., Ft. Myers, Fla. 33905, and John D. Coleman, 4650 Sheldon St., Philadelphia, Pa. 19127

Filed Aug. 17, 1987, Ser. No. 85,706

Int. Cl.[4] G01C *9/24*

U.S. Cl. 33—379 2 Claims



1. The combination of a level, a level vial, and a caddy for supporting the level vial on the level:

said level having a flat platform and a platform opening therein;

said caddy having an elongated keeper body comprising:

(a) a keeper body mounting shoulder extending at least partially around the edge of said platform opening and engaging one side of said platform;

(b) a keeper central opening;

(c) a pair of keeper sockets respectively formed adjacent opposite ends of said keeper central opening; and

(d) a pair of keeper cavities formed respectively adjacent to and outboard of said keeper sockets and extending through the keeper body and each keeper cavity having an inwardly facing keeper shoulder;

said caddy also having an elongated latch body comprising:

(e) a latch body mounting shoulder extending at least partially around the edge of said platform opening and engaging the opposite side of said platform;

(f) a latch central opening aligned with said keeper central opening;

(g) a pair of latch sockets respectively formed adjacent opposite ends of said latch central opening and aligned with said keeper sockets;

(h) a pair of flexible fingers formed respectively adjacent to and outboard of said latch sockets and respectively extending through said keeper cavities and each finger having an outwardly facing latch shoulder, the latch shoulders respectively engaging said keeper shoulders;

said level vial extending across said keeper and latch central openings with the opposite ends of the level vial being respectively disposed in and engaged with said keeper and latch sockets, the level vial being viewable through the keeper central opening and the latch central opening;

the dimensions of said keeper body and said latch body providing for the bodies to be spaced apart with said keeper body mounting shoulder and said latch body mounting shoulder engaged with said platform and the opposite ends of said level vial engaged with said keeper and latch sockets; and

the respective cross-sectional areas of said keepers cavities providing space for the flexible fingers to enter the cavities and engage said keeper shoulders and for the fingers to be manually moved out of said engagement for purposes of removing the bodies from the level.

4,765,062

ARRANGEMENT IN A CHAIN SAW

Sören N. Henriksson, Kållered, Sweden, assignor to Aktiebolaget Electrolux, Sweden

Filed Sep. 2, 1987, Ser. No. 93,721

Claims priority, application Sweden, Sep. 19, 1986, 8603954

Int. Cl.[4] B27B *17/02*

U.S. Cl. 30—384 4 Claims



1. A chain saw having a handle and provided with a chain saw bar comprising three layers of flat plates secured together with the inner plate being smaller than said outer plates thereby forming a peripheral track, a top wheel journalled on a roller bearing surface in the bar at a location remote from said handle, a slot in each of the outer plates having an extension substantially concentric to the center of said top wheel.

4,765,063

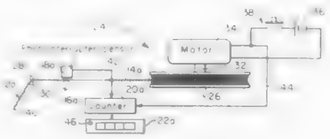
APPARATUS FOR PHOTOELECTRICALLY GENERATED PHYSICAL MEASUREMENTS

Peter Sing, 43 Donny Brook Rd., Scarsdale, N.Y. 10583

Continuation-in-part of Ser. No. 882,144, Jul. 8, 1986, abandoned. This application Jan. 6, 1987, Ser. No. 1,228

Int. Cl.[4] G06M *3/14*; G01B *3/12*

U.S. Cl. 33—140 22 Claims



1. Apparatus for taking and displaying photoelectrically generated physical measurements, which comprises:

movable filament means carrying a single set of light-distinguishable scale markings at pre-selected uniform intervals along its length, said filament means being composed of a homogeneous thin thread-like elongate flexible member, the extent of movement of said filament means being

proportional to the magnitude of the physical measurements being taken;

single photoelectric sensor means for cooperating with said scale markings, said sensor means directly receiving light pulses generated from, and corresponding to, the movement of said scale markings with said filament means when said filament means is moved into operative proximity to, and past, said single sensor means, producing a single electrical pulse for each of said passing scale markings and each of said light pulses generated therefrom;

electronic processing means for receiving, counting, converting and registering said electrical pulses from said single sensor means and forwarding the resultant signals; and

display means for receiving said resultant signals and for displaying the corresponding magnitude of the physical measurement being taken.

4,765,064

DIGITAL DISPLAY TYPE MEASURING INSTRUMENT

Fujio Maeda, Utsunomiya, Japan, assignor to Mitutoyo Corporation, Tokyo, Japan

Filed Jul. 2, 1987, Ser. No. 69,472

Claims priority, application Japan, Jul. 25, 1986, 61-174923

Int. Cl.[4] G01B *3/22*

U.S. Cl. 33—172 E 8 Claims



1. A digital display type measuring instrument, comprising: a spindle axially movably provided on a case and having mounted on one end thereof a measuring element; an encoder including a pair of scales movable relative to each other in association with a movement of said spindle, for detecting a relative moving displacement value between said pair of scales as an electric signal; and a digital displayer for digitally displaying an output from said encoder; wherein the other end of said spindle is located within said case, either one of said pair of scales being mounted in said case on the axial line of said spindle in a manner to be movable in the same direction as said spindle , the other of the scales being fixed in said case, as opposed to said movable scale, and wherein means is provided for biasing said movable scale in a direction so as to abut against the other end of said spindle.

4,765,065

TOOTH PROFILE SENSING INSTRUMENT

Therman B. Bennett, 1103 S. State Rte. 42, Lebanon, Ohio 45036

Continuation of Ser. No. 835,365, Mar. 3, 1986, Pat. No. 4,704,802. This application Nov. 6, 1987, Ser. No. 118,274

The portion of the term of this patent subsequent to Nov. 10, 2004, has been disclaimed.

Int. Cl.[4] G01B *5/18*

U.S. Cl. 33—556 6 Claims

1. A tooth profile sensing instrument for use with an elongate toothed corrugation roll provided with elongate teeth in which each tooth is formed by a pair of valleys, the corrugation roll being adapted to operate in meshed relationship with another corrugation roll, as the two corrugation rolls rotate and corrugate strip material which moves between the corrugation rolls, comprising:

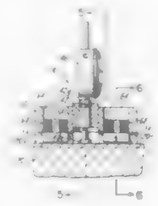
a sled including a rigid body, a pair of spaced-apart elongate slide runners extending from the rigid body and establishing a pair of substantially parallel planes, the elongate slide runners being adapted to be positioned within spaced-apart valleys of a toothed corrugation roll,

an annular member within the rigid body and positioned between the slide runners,

a housing,

means joining the housing to the annular member,

a stem positioned within the annular member and extending through the annular member, the stem being substantially parallel to the planes of the slide runners, the stem being axially movable with respect to the annular member, the



stem having an engagement portion engageable with a tooth of a toothed corrugation roll as the elongate slide runners are positioned within spaced-apart valleys of the toothed corrugation roll,

an indicator member carried by the housing and operably joined to the stem for operation of the indicator member in accordance with axial movement of the stem,

wherein the rigid body is movable along the elongate toothed corrugation roll as the elongate slide runners are slidably positioned within spaced-apart valleys of an elongate toothed corrugation roll and as the engagement portion of the stem engages a tooth which is positioned between the spaced-apart valleys and as the engagement portion of the stem slides along the tooth, as the profile of the tooth which is engaged by the engagement portion of the stem is sensed with axial movement of the stem, as indicated by the indicator member as the elongate slide runners of the rigid body slide within the valleys.

4,765,066

MICROWAVE CLOTHES DRYER

Chang-Hyun Yoon, Palisades Park, N.J., assignor to VBE Inc., Birmingham, Mich.

Filed Aug. 19, 1987, Ser. No. 86,974

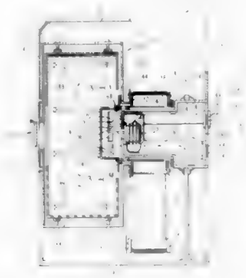
Int. Cl.[4] F26B *23/08*

U.S. Cl. 34—1 10 Claims

1. In a microwave clothes dryer including a housing, a drum rotatably supported in said housing, a microwave energy source, a drive motor, a drive pulley and a drive belt, the improvement comprising bearing support means having a generally cylindrical outer surface, an annular driven pulley member coaxial with and surrounding said bearing surface, said pulley member being fixed to said drum and rotated by said drive belt, said pulley member having an inner cylindrical surface which bears upon the outer surface of said bearing support means and forms therewith a microwave leakage path having a length equal to about a quarter of the wave length of the microwave energy employed in the said dryer, said inner surface of said pulley member having a circumferentially extending opening therein for introducing said microwave leakage energy into the interior of said pulley member, the effec-

VOL 1093 ISS 4 AG 23 1988 UMI

tive length of the interior of said pulley member being equal to about a quarter of the wave length of said microwave energy,



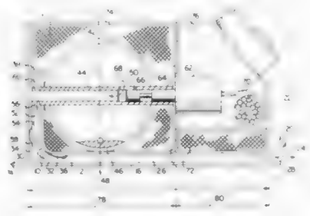
whereby attenuation of said microwave leakage energy occurs within said pulley member.

4,765,067

STEAM-SHOWER APPARATUS AND METHOD OF USING SAME

Bruce F. Taylor, Auburn, Mass., assignor to Thermo Electron - Web Systems, Inc., Auburn, Mass.

Continuation-in-part of Ser. No. 834,957, Feb. 28, 1986, Pat. No. 4,685,221. This application Apr. 27, 1987, Ser. No. 42,911
Int. Cl.[4] F26B *13/02*
U.S. Cl. 34—23 30 Claims



1. An apparatus for applying a flow of steam to a sheet for the purpose of heating the sheet which runs adjacent a surface of the apparatus, the apparatus comprising:

means for creating a supply of steam and means for housing the supply of steam in said apparatus, said means for housing the supply of steam being located at the lower portion of the apparatus so that a bottom surface of said means for housing the supply of steam is also the bottom surface of the lower portion of the apparatus;

a Coanda nozzle positioned within the apparatus to cause the flow of steam to run between said sheet and the adjacent surface of said apparatus, said flow of steam travelling in a direction opposite to the direction of travel of the sheet;

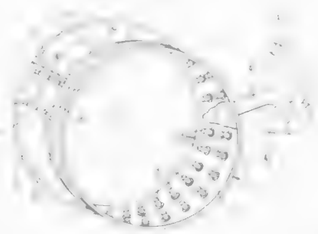
means to provide steam from said supply to said Coanda nozzle.

4,765,068

HOT ZONE ARRANGEMENT FOR A VACUUM FURNACE

Fred W. Ripley, Perkasie, Pa., assignor to Vacuum Furnace Systems Corporation, Souderton, Pa.

Filed Aug. 7, 1987, Ser. No. 83,269
Int. Cl.[4] F26B *17/10*
U.S. Cl. 34—233 2 Claims



1. A vacuum furnace hot zone comprising in combination: outside wall means having at least one aperture therein; inside wall means having at least one aperture therein and having an inside surface disposed to define the inside chamber of a hot zone of a vacuum furnance; heat insulating material menas disposed between said outside wall means and said inside wall means and having at least one aperture therein; said one aperture in said outside wall means disposed to be in alignment with said at least one aperture in said heat insulating material means and said at least one aperture in said heat insulating material means disposed to be in alignment with said at least one aperture in said inside wall means to form a continuous aperture through said outside wall means, said heat insulation material means and said inside wall means; first fastening means disposed at the end of said continuous aperture and secured to said outside wall; and graphite nozzle means disposed in said continuous aperture and securely fastened into said first fastening means for permitting gasses to pass from the outside of said outside wall means through said heat insulating material means and through said inside wall means to the hot zone of a vacuum furnace.

4,765,069

DEVICE FOR CLOSING QUARTERS, PARTICULARLY FOR SKI BOOTS

Giorgio Baggio, S. Martino Di Lupari, and Mariano Sartor, Montebelluna, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Jan. 30, 1987, Ser. No. 9,161
Claims priority, application Italy, Feb. 6, 1986, 20871 B/86
Int. Cl.[4] A43C *11/00*; A43B *5/04*
U.S. Cl. 36—50 24 Claims



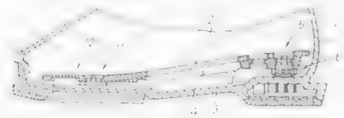
1. A cable actuation device particularly for ski boots, comprising at least one base member, at least one plate-like member, at least one actuation element, ratchet pawl means, and at least one cable having at least one cable portion and at least one other cable portion, said base member being fixable to a ski boot portion, said actuation element being movably associated with said base member and adapted for effecting alternate actuation movement with respect to said base member, said plate-like member being slidably associated with said base member, said at least one cable portion being operatively connected to said plate-like member, said at least one other cable portion being adapted for attachment to at least one other ski boot portion, said ratchet pawl means being associated with said actuation element and cooperating with said plate-like member for converting said alternate actuation movement of said actuation element into successive sliding movement of said plate-like member with respect to said base member.

4,765,070

SKI BOOT WITH ADJUSTABLE INNER SOLE

Jean-Pierre Chemello, Annecy Le Vieux, and Michel Mabboux, Seynod, both of France, assignors to Salomon S. A., Annecy, France

Filed Nov. 24, 1986, Ser. No. 933,947
Claims priority, application France, Nov. 22, 1985, 85 17288
Int. Cl.[4] A43B *5/04, 13/14, 7/16, 7/28*
U.S. Cl. 36—117 13 Claims



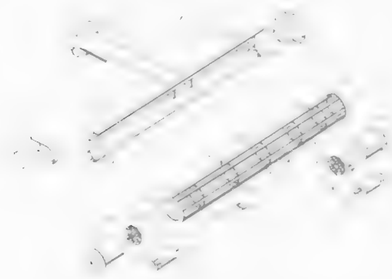
1. Ski boot of the type comprising an inserted inner sole (2) resting on a sole (3) of said boot (1) through the intermediary of at least one pair of chocks (6; 12) disposed at the level of a front and/or rear region for supporting a foot of a skier wearing said boot, each said chock being attached to a lower face of said inner sole (2) by means enabling it to be emplaced or removed by simple rotation of said chock through 90° about an axis perpendicular to a surface of said inner sole.

4,765,071

DREDGE CUTTER HEAD WITH SHOCK ABSORBER

C. Gene Maitlen, Oklahoma City, Okla., assignor to VMI, Incorporated, Bethany, Okla.

Filed Mar. 25, 1986, Ser. No. 843,655
Int. Cl.[4] E02F *3/88*
U.S. Cl. 37—66 9 Claims



1. An improved dredge device of the type having a boat supporting a lowerable boom with a linear suction intake, rotor and rotor drive on the lowerable end thereof for dredging material on the floor of bodies of water, the improvement comprising:

said rotor comprising a cylindrical cage of tooth-carrying bars for digging, shredding and conveying sludge material to the linear sludge intake and into which cage and through which cage vegetation and sludge material can pass in route to said linear intake, said linear intake being disposed along and adjacent said rotor so as to draw sludge material through said cage, said cylindrical cage being connected for rotation to said rotor drive by a support ring rigidly connected to said cage bars; and

shock absorber means for said cylindrical cage comprising a drive plate rigidly connected to said rotor drive and connected to said support ring with a plurality of resilient grommets disposed around the periphery of said drive plate and interposed between said support ring and said drive plate so as to absorb radial, tangential and axial shocks to said cage.

4,765,072

DIRT DEFLECTOR OVERTRAVEL MECHANISM

Philip W. Schroeder, Derby, Kans., assignor to J. I. Case Company, Racine, Wis.

Filed Feb. 18, 1987, Ser. No. 16,163
Int. Cl.[4] E02F *3/14*
U.S. Cl. 37—191 A 1 Claim



1. In a digging boom assembly including a digging boom that is pivotally attached to a frame and a rotatable digging chain supported by said digging boom, the improvement comprising:

a deflector means pivotally attached at one end to said frame and said deflector means having a free end;

said deflector means supported adjacent said digging chain by one end of a deflector link;

said deflector link pivotally attached at said one end to one end of an overtravel link, and the opposite end of the overtravel link pivotally connected to said deflector means adjacent to the pivotal attachment of said deflector means to said frame;

the entire length of said overtravel link being positioned in close proximity to said deflector means when said deflector means is in a first position wherein it is supported by the one end of said deflector link;

said deflector link and said overtravel link moving into colinear relationship upon said deflector means being impacted by a rock or the like thereby permitting said deflector means to move to a second position; and

the deflector means moving under its own weight from said second position to said first position for rotating said deflector link and said overtravel link whereby said links are rotated relative to said digging chain, and the deflector link is rotated in response to the weight of the deflector means such that its one end again supports said deflector means and said overtravel link is rotated such that its length is in close proximity to said deflector means.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,073

SNOW BLOWER WITH VERTICAL ENDLESS BELT DIGGER

Richard Cloutier, 23 Langevin, Boisbriand, Quebec, Canada J7E 4H5

Division of Ser. No. 864,877, May 20, 1986, Pat. No. 4,680,881.
This application Aug. 24, 1987, Ser. No. 88,646
Int. Cl.[4] E01H *5/04*
U.S. Cl. 37—237 9 Claims



1. A snowblower comprising:
a casing having an upstanding rear wall and a generally rectangular opening facing said rear wall;
an endless belt and means for mounting said belt vertically on and within said casing between said rear wall and said opening, said belt defining a forward strand facing said opening and a rearward strand facing said rear wall at a distance therefrom, said rearward strand and rear wall defining therebetween a vertical snow-ejection passage of constant cross-section;
snow scraper members fixed to and projecting away from said belt transversely thereof, said snow scraper members having a projecting length, away from the belt, essentially equal to said distance between said rearward strand and said rear wall; and
means for driving said belt in endless travel with said forward strand moving downwardly at such a speed that the scraper members travelling downwardly with the forward strand have enough power to dig into the snow and drive it downwardly and rearwardly while the scraper members travelling upwardly with the rearward strand have enough power to move the dug snow upwardly through the ejection passage and blow it away from the casing through a top opening provided above said ejection passage.

4,765,074

INSIDE/OUTSIDE DISPLAY WINDOW

Jerold C. Loos, Rocky River, Ohio, assignor to Berkley-Small Manufacturing Company, Inc., Medina, Ohio

Filed Sep. 16, 1986, Ser. No. 908,041
Int. Cl.[4] G09F *3/18*
U.S. Cl. 40—661 12 Claims



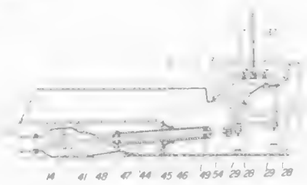
1. An apparatus adapted to selectively display associated advertisements or the like on a newspaper rack, said apparatus comprising:
a housing defining an interior cavity and including a housing panel defining a sidewall thereof, said panel having a first outer surface and a second inner surface adapted for facing relation with said cavity;
an opening of predetermined conformation formed in said housing panel;
a generally transparent window-like member disposed in covering relation with said opening and having opposed first and second faces;
first means adapted for retaining a first associated advertisement adjacent and in at least partially overlying relation to said window-like member first face for viewing the first associated advertisement from said first outer surface of said panel; and
second means adapted for retaining a second associated advertisement adjacent and in at least partially overlying relation to said transparent member second face for viewing the second associated advertisement from said first outer surface of said panel.

4,765,075

WATER PROPULSION UNIT OF WATER JET PROPULSION CRAFT

Ryoichi Nakase, and Masayoshi Nanami, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 7, 1986, Ser. No. 894,281
Claims priority, application Japan, Aug. 8, 1985, 60-174866
Int. Cl.[4] B63H *11/02*
U.S. Cl. 440—38 7 Claims



1. In a jet powered type of watercraft comprising a hull having an engine compartment containing an engine provided at the forward end thereof, a tunnel at the rearward end thereof, and a rider's area overlying said tunnel and adapted to accommodate a rider, a jet propulsion unit comprising an outer housing defining a water inlet, an impeller cavity and a discharge nozzle, an impeller journaled by said outer housing, said outer housing being carried by said hull and positioned at least in part in said tunnel substantially rearwardly of said engine compartment and rearwardly of said rider's area, a bulkhead separating said engine compartment from said tunnel, and means including a drive shaft driven by said engine for driving said impeller of said jet propulsion unit, the improvement comprising a bearing support tube radially fixed directly to said jet propulsion unit outer housing and extending forwardly therefrom through said bulkhead and into said hull and terminating adjacent said engine and bearing means fixed within said tube within said hull forwardly of said bulkhead and rotatably journaling said drive shaft contiguous to its drive connection to said engine.

4,765,076

ADVERTISING APPARATUS FOR TELEPHONE AND INFORMATION DISPLAY APPARATUS

Yoshiaki Sada, Ryuegasaki, Japan, assignor to Kaneken Incorporated, Tokyo, Japan

Filed Feb. 7, 1986, Ser. No. 826,996
Claims priority, application Japan, Mar. 20, 1985, 60-40867[U]; May 31, 1985, 60-82308[U]; May 31, 1985, 60-82309[U]; Jul. 9, 1985, 60-104760[U]
Int. Cl.[4] G09F *13/00*
U.S. Cl. 40—219 6 Claims



1. An information display apparatus comprising:
at least one fluorescent light source and means for controlling the illumination of said light source including
a controller for turning said fluorescent light source ON and OFF,
a signal input unit having an ON-OFF switch for controlling the operation of said controller,
a timer circuit for initiating operation of said signal input unit in response to a signal from said ON-OFF switch, and
a flip-flop circuit which is set by an output of said ON-OFF switch and is reset by an output of said timer circuit, said output signal of said flip-flop circuit being an input signal of said controller;
a light reflecting plate;
a light transmitting plate having one major surface in contact with one major surface of said light reflecting plate, said at least one fluorescent light source entering said light transmitting plate from a side end thereof and being reflected by the surface of said light reflecting plate;
a lens system for focussing an image of said light source into the interior of said light transmitting plate;
a milk white acryl plate as a light scattering transmissive plate disposed on another major surface of said light transmitting plate;
an information display film disposed on a viewing side of said light scattering plate;
a half-mirror acryl plate as a light transmissive front plate mounted over said information display film;
a frame body for supporting said light reflecting plate, said light transmitting plate, said light scattering transmissive plate, and said light transmissive front plate.

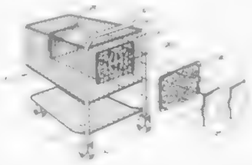
4,765,077

DIRECTORY SUPPORT FRAME

Jeffery Rosenthal, 11616 Chenault, #6, Brentwood, Calif. 90049; Victor Parker, 10509 Larine, Chatsworth, Calif. 91311; James Hoback, 25773 Alta Dr., Valencia, Calif. 91355, and Robert Summers, 5 Coventry Dr., Freehold, N.J. 07728

Filed May 22, 1985, Ser. No. 737,222
Int. Cl.[4] G09F *3/00*
U.S. Cl. 40—308 35 Claims

1. A directory frame for receiving a directory card or the like for use in combination with a shopping cart having a basket, the directory frame to be mounted to the shopping basket of the cart to facilitate shopping for items in a store, the directory frame comprising:
a pair of frame members each having a front surface and a rear surface, said rear surface having a plurality of elongated slots for receiving tab sections of said directory card;
a raised rim portion on each frame member extending substantially continuously along the periphery of said frame member front surface;
a plurality of support pads on each frame member located along the periphery of said rear surface of said frame



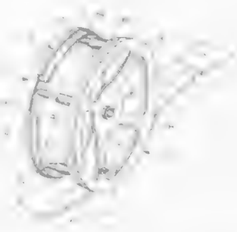
member to space said rear surface of one said frame member from the rear surface of the other said frame member when said frame members are mounted back-to-back;
means for fastening said pair of frame members on the shopping cart in back-to-back relation with a wall of the cart basket positioned between the frames members so that both frame members are held in position by pressure on the wall of the shopping cart basket; and
a plurality of spacers positioned between said basket wall and said rear surface of at least one of said frame members opposite said rim portion to provide uniform spacing between said frame members when said frame members are mounted back-to-back.

4,765,078

REEL ASSEMBLY FOR SLOT MACHINES

Toshio Yamamoto, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

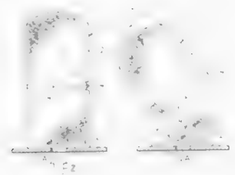
Continuation of Ser. No. 447,559, Dec. 7, 1982, abandoned. This application Jun. 25, 1984, Ser. No. 625,173
Claims priority, application Italy, Dec. 10, 1981, 56 184306
Int. Cl.[4] G09F *3/00*
U.S. Cl. 40—309 9 Claims



1. A reel assembly for a slot machine comprising a right half of the reel; a left half of the reel, and connecting means for interconnecting said right and left halves of the reel, said right and left halves of the reel having a plurality of connecting bosses spaced apart about the periphery of each reel half and projecting toward each other, and means interconnecting said bosses so as to interconnect said right and left halves of the reel.

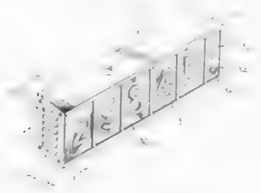
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,079
PNEUMATIC STRUCTURE
Shiro Takahashi, 1-9-20, Gohongi, Meguro-Ku, Tokyo, Japan
Continuation of Ser. No. 839,885, Mar. 14, 1986, abandoned.
This application Dec. 1, 1987, Ser. No. 127,220
Claims priority, application Japan, Apr. 3, 1985, 60-70200; May 1, 1985, 60-92371; Jun. 20, 1985, 60-134485; Jun. 25, 1985, 60-137049; Aug. 1, 1985, 60-168628
Int. Cl.[4] G09F *19/00, 19/08*
U.S. Cl. 40—439 7 Claims



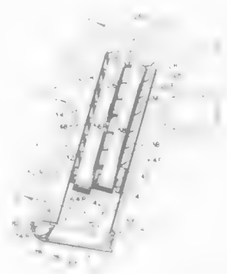
1. A pneumatic structure the outlines of which are cylindrically formed by filling the interior of said pneumatic structure with a pressurized fluid comprising:
at least one spare portion formed on a main body of said pneumatic structure so as to produce at least a pair of fulcra for bending on an axis between each pair of fulcra, the spare portion being kept in a folded condition when the interior of the pneumatic structure is filled with the pressurized fluid,
driving means disposed on the inner surface of said main body in a portion opposed to the portion on which said spare portion is formed, and
a length of arc of the main body including said spare portion and positioned between said pair of fulcra being selected to be shorter than one half of the length of the outer circumference of said structure including said respective fulcra.

4,765,080
ILLUMINATED INFORMATION DISPLAY APPARATUS
William L. Conti, P.O. Box 3821, Pensacola, Fla. 32506
Filed Sep. 30, 1985, Ser. No. 781,639
Int. Cl.[4] G09F *13/04*
U.S. Cl. 40—576 18 Claims



1. An illuminated information display apparatus comprising:
a. a rectangular frame member having top, bottom and side walls defining an elongated housing having at least one open face;
b. grooves provided in interiorly opposing marginal edges of said top and bottom walls and extending the length thereof;
c. a plurality of plate members sized to be slidably received in said opposed grooves to form therewith a continuous rigid wall assembly, some of said plate members having light transmitting and light blocking portions thereon forming indicia;
d. a source of illumination mounted interiorly of said housing;
e. means connected to said source of illumination and exposed to ambient light conditions at one of the plate members for selectively activating and deactivating said source of illumination at predetermined states of ambient light; and
f. means spaced from the wall assembly internally of the housing for preventing the direct exposure of light emitted from said source of illumination from impinging on said plate members, said means for selectively activating and deactivating said source of illumination being mounted on said one of the plate members exteriorly of the housing.

4,765,081
FIREARM MAGAZINE AND METHOD FOR PREVENTING THE SHELLS FROM JAMMING
Dale E. Dieringer, 7720 Teller St., Arvada, Colo. 80003
Filed May 20, 1987, Ser. No. 52,232
Int. Cl.[4] F41C *25/02*
U.S. Cl. 42—50 10 Claims



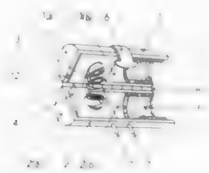
1. In a multiple-round cartridge magazine including spaced sidewalls and endwalls cooperating to define an open-topped chamber adapted to retain in stacked relation a plurality of cartridges of the type having a bullet with a rounded or otherwise tapered nose on the front end thereof and an annular groove adjacent its rear end, a follower positioned within the chamber underneath the stack for feeding the cartridges thereabove one-at-a-time out through the open top, and at least one negator spring having an upper end attached to one of the sidewalls of the chamber alongside the stack near the top thereof and its other end coiled underneath the follower, and wherein the aforesaid spring or springs upon retraction of the follower producing an uncoiled portion located alongside the stack which has a transversely-extending curve therein so shaped that the front and rear edges thereof cooperate with the medial portion to define a concavity opening toward the stack, the improvement which comprises: offsetting said one wall so as to leave an oversized gap for the spring or springs alongside the stack, positioning and sizing the spring or springs relative to the stack such that the rear edge of one spring lies adjacent the annular grooves in the rear ends of the cartridges and the front edge of the same or another spring curls around the nose of the bullet, and providing said one sidewall with abutment-forming means projecting into the gap aligned with the annular grooves of the cartridges in the stack, said abutment-forming means being so designed and positioned as to engage and hold said rear edge lying adjacent the annular grooves in the cartridges seated within the latter, said front and rear edges when so located cooperating with one another to lessen the pressure exerted by any other portion of the spring or springs against the sides of the cartridges in the stack to the degree which allows the follower to raise them freely up through the chamber.

4,765,082
FISHHOOK TYING TOOL
Ben A. Nicholas, 9551 Sierra Dr., Arvada, Colo. 80005
Filed Aug. 31, 1987, Ser. No. 91,100
Int. Cl.[4] A01K *97/00*
U.S. Cl. 43—4 1 Claim



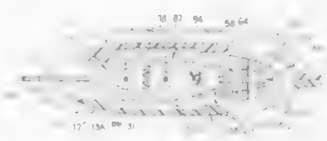
1. A hand held device for holding and attaching a line to small components such as a fish hook comprising:
(a) a first tapered, slotted pen barrel shaped member 10,
(c) a second compression device member including a compression coil spring, said compression coil spring being enclosed inside of said tapered, slotted pen barrel shaped member, said compression coil spring being constructed and arranged for holding a barbed end of said hook in the slot of said slotted barrel while said line is being attached to the hook.

4,765,083
FISHING LINE HOLDER AND FISHING ROD TIP GUARD
James F. Wilkins, 320 Bentley Dr., Brandon, Miss. 39042
Filed Nov. 25, 1987, Ser. No. 125,156
Int. Cl.[4] A01K *97/08*
U.S. Cl. 43—26 7 Claims



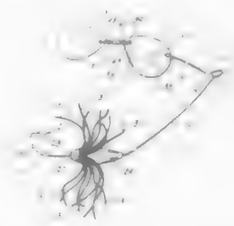
6. A device attachable to a fishing rod comprising:
a plurality of sleeve members having similar peripheral edges, said plurality of sleeve members being connected by a hinge along a pair of adjacent edges so that when said sleeve members are in a closed position, a cavity for accepting the tip of a fishing rod is formed;
a cutting blade secured to one of said sleeve members and the other sleeve member having a slot for accepting said cutting blade when said plurality of sleeve members are in a closed position;
a spring interconnected between said plurality of sleeve members for releasibly securing a fishing line; and
a snap latch for releasibly maintaining said plurality of sleeve members in a closed position.

4,765,084
FISHING LURE WITH RETRACTABLE HOOK
Daniel L. Braden, 893 North Ave. #301, Battle Creek, Mich. 49017
Filed Sep. 4, 1987, Ser. No. 93,504
Int. Cl.[4] A01K *83/00*
U.S. Cl. 43—34 15 Claims



1. A fishing lure for trolling, comprising: a pull member having a line attachment portion to which a fishing line can be attached; a body supported for pivotal movement relative to said pull member about a pivot axis between first and second positions, said line attachment portion being spaced radially from said pivot axis; means for yieldably retaining said body in said first position with respect to said pull member as said lure is drawn through water by forces applied to said line attachment portion, wherein said body can pivot relative to said pull member about said pivot axis from said first position to said second position when a fish strikes said lure; and a hook part and means for effecting movement of said hook part relative to said body between a retracted position and an exposed position in response to relative pivotal movement of said pull member and said body between said first and second positions, respectively, said body having means for preventing aqueous weeds from snagging said hook part when said hook part is in said retracted position, and wherein said hook part is disposed outwardly of said body when in said exposed position so as to be capable of hooking a fish striking said lure.

4,765,085
FISHING LURE
Fred W. Wotawa, 4646 Heege Rd., Affton, Mo. 63123, and Patrick J. Wotawa, 650 Forder, St. Louis, Mo. 63129
Continuation-in-part of Ser. No. 637,075, Aug. 2, 1984, Pat. No. 4,619,068. This application Oct. 27, 1986, Ser. No. 923,325
The portion of the term of this patent subsequent to Oct. 28, 2003, has been disclaimed.
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.11 16 Claims



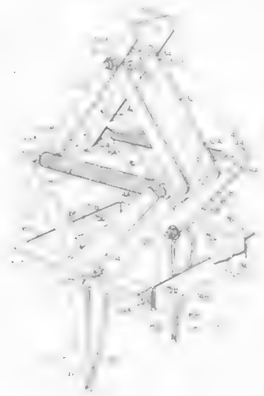
1. A fishing lure comprising a vane adapted for oscillating movement but not full rotational movement, a spinner, means rotatably fastening the spinner to means connecting the hook to the vane at a the vane generally adjacent the rear of the vane, a hook, point forward of the spinner fastening means, said hook connecting means comprising an arm supporting a weighted body and the hook, the weighted body being adjacent the hook and means for attaching the lure to the fishing line.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,086
FISHING LURE
James Schultz, P.O. Box 17177, Fountain Hills, Ariz. 85268
Continuation-in-part of Ser. No. 907,233, Sep. 15, 1986, abandoned. This application Oct. 9, 1987, Ser. No. 107,658
Int. Cl.[4] A01K *85/00*
U.S. Cl. 43—42.52 9 Claims



1. An artificial fishing lure for attachment to a line comprising:
(a) a body having oppositely curved edges, said edges converging at a forward and rear end in a general spoon shape, said body having a generally concave top surface and a convex bottom surface and being substantially smooth on both said top and bottom surfaces and said body being free of apertures therethrough whereby said body will not tend to flop and will assume a generally horizontal position when drawn through the water;
(b) a hook having a shank with a curved body portion at the rear of said shank terminating at a forward oriented point with a barb rear of the point, the shank of said hook being secured to the upper surface of said body along a generally longitudinal axis; and
(c) a weed guard having a pair of legs disposed along opposite sides of the hook and extending rearwardly and upwardly to a location at least corresponding to said barb, said legs being joined at their forward ends at a loop, said loop being secured to the upper surface of said body in the approximate front one-third of the body with a portion of the loop extending forward of the front side of the body to form a line attachment location generally co-planar with the surfaces of said body to which said loop is attached.
(e) a platform, connected to the first and second jaws at their respective hinge points, having a planar surface which



rests on the ground when the trap is set to stabilize the trap on the ground.

4,765,088
CRAB TRAP
Robert L. Stuart, 300 Husson St., Staten Island, N.Y. 10306
Filed Jun. 1, 1987, Ser. No. 58,506
Int. Cl.[4] A01K *69/10*
U.S. Cl. 43—102 5 Claims

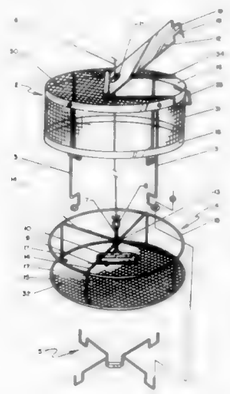


1. A crab trap, comprising, a base, two pairs of gates hinged to said base, for entrapment of a crab, coil spring secured to said gates and said base, providing full automatic opening of said gates when said trap is on bottom of a waterway, a large ring secured to said base, and a pair of posts secured to said large ring, a small ring fastened to said large ring for serving as guide means, cords fastened to said gates for closing said gates when said trap is lifted, and passing through said guide means, and wherein each said gate is substantially triangular in configuration with the upper ends of said gates coming together to form an apex portion, a flange portion formed at the top of each gate portion at substantially right angles thereto, the flange portions including an arcuate cut out, such that said flange portions extend inwardly of said trap to retain the crab, and said arcuate cut outs form a circular opening when said gates are closed for passage of said cords that are tied to a rope for lowering said trap in water, and closing said gates against spring tension of said coil spring when lifting said trap.

4,765,087
MOLE TRAP
Thomas H. Holtgrefe, Sr., 5447 Phillovett Dr., Cincinnati, Ohio
Filed Jun. 10, 1987, Ser. No. 61,119
Int. Cl.[4] A01M *23/26*
U.S. Cl. 43—94 21 Claims

1. A mole trap comprising:
(a) a first pair of angled members hinged together to form a first jaw, wherein each angled member terminates in a blade end and an opposite support end;
(b) a second pair of angled members hinged together to form a second jaw, wherein each angled member terminates in a blade end and an opposite support end;
(c) lever means connected to the support ends of the first and second jaws for setting the trap;
(d) trigger means pivotally connected to the lever means for releasing the trap; and

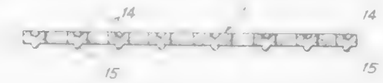
4,765,089
TRAP FOR IMPRISONING ANIMALS
Thomas M. Rowe, 3510 Lilac Dr., Portsmouth, Va. 23703
Filed Dec. 7, 1987, Ser. No. 129,697
Int. Cl.[4] A01K *69/08*
U.S. Cl. 43—102 19 Claims



1. A trap for trapping animals, the trap comprising:
(a) an upper trap portion, the upper portion having a first enclosing surface thereon, the first enclosing surface being substantially impermeable to the animal being trapped, the upper trap portion restricting an uppermost relative position of a lower trap portion once the trap is in a closed configuration;
(b) legs for supporting the upper trap portion, the legs being attached to the upper trap portion, the legs being long enough so that an access created by a lowering of the lower trap portion to the lowermost relative position is large enough for entrance by the animal being trapped;
(c) the lower trap portion, the lower trap portion being moveable from the uppermost relative position to the lowermost relative position so that the trap is fully closed when the lower trap portion is in the uppermost relative position and the trap is fully open when the lower trap portion is in the lowermost relative position, the lower trap portion having a second enclosing surface thereon, the second enclosing surface comprising an impermeable trap bottom surface, the second enclosing surface complementing the first enclosing surface so that when the trap is in a fully closed configuration the first and second enclosing surfaces together define a volume which is substantially impermeable to the animal being trapped;
(d) a means for allowing a trap operator to open and close the trap, raise and lower the trap, and feel an animal disturbing the bait.

4,765,090
SELF-SUPPORTED MOSQUITO INCENSE
Chin-Sheng Kuan, and Chin-Mann Liao, both of P.O. Box 10160, Taipei, Taiwan
Filed Apr. 21, 1986, Ser. No. 854,417
The portion of the term of this patent subsequent to Aug. 23, 2004, has been disclaimed.
Int. Cl.[4] A01M *13/00*
U.S. Cl. 43—127 3 Claims

1. A self-supported mosquito incense comprising an incense coil or spiral formed with a plurality of recess portions on the upper surface of said incense coil and a plurality of supporting extensions on the bottom surface thereof, each said lower supporting extensions projectively corresponding to each said upper recess portion, all said recess portions and said extensions being evenly formed on either the upper surface or the bottom surface of said incense coil.

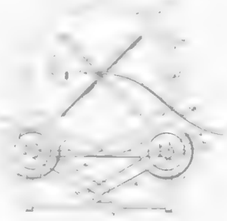


4,765,091
COLLAPSIBLE RODENTICIDE BAIT STATION
Daniel A. Sherman, 1355 Bobolink Pl., Los Angeles, Calif.
Filed Mar. 16, 1988, Ser. No. 168,937
Int. Cl.[4] A01M *1/20*
U.S. Cl. 43—131 5 Claims



1. A station for the containment of rodent bait; said station comprised of a center member; said member cooperating with two folding sides; said sides comprised of entrance and egress portals; said portals being recessed to form an interior pocket containing an independent bait holder; said bait holder being capable of being removed from said station for reloading.

4,765,092
METHOD AND APPARATUS FOR GROWING SPROUTS
Dean R. Cline, 8875 Mission Gorge Rd., Santee, Calif. 92071
Filed Feb. 16, 1982, Ser. No. 349,024
Int. Cl.[4] A01G *31/00, 31/02*
U.S. Cl. 47—61 17 Claims



1. A process for growing commercial quantities of sprouts from seeds having hulls, comprising the steps of:
selecting a quantity of seeds suitable for sprouting;
washing said seeds in water;
placing said seeds in a rotatable container mounted for rotation about a horizontal axis;
subjecting said seeds to periodic sprays of moisture and a

VOL 1093 ISS 4 AG 23 1988 UMI

continuous flow of air in said rotatable container until the seeds have grown so that a substantial portion of the hulls are loose;

loosening additional ones of said hulls in a manner which minimizes breakage of the sprouts;

removing said sprouts from said container and rinsing said sprouts to remove hulls and ungerminated seeds; and

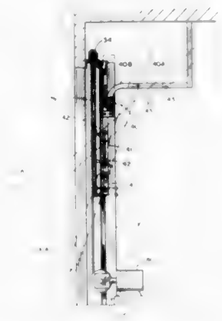
placing said sprouts in a tray and covering said sprouts with a transparent covering while moist.

4,765,093

OVERHEAD TILT DOOR

Charles P. Edwards, Jr., 16728 E. 80th St. North, Owasso, Okla. 74055

Filed Mar. 9, 1987, Ser. No. 23,730
Int. Cl.[4] E05D *15/38*
U.S. Cl. 49—197 5 Claims



1. An overhead tilt door assembly for use with a door opening having an inner side and an outer side in a building, said opening having a jamb on each side, a support beam along the top and a floor which comprises:

a unitary door having a top, a bottom, a first and a second end, an inner side and an outer side;

a first vertical track mounted along one of said jambs and a second vertical tract mounted along the other jamb, each extending from about the midsection of said jamb to the top thereof;

a third track and a fourth track each mounted in a jamb and each consisting of a short vertical section, a curved section connected to said vertical section and on its respective jamb a horizontal section at and perpendicular to the top of said door opening, said third and fourth tracks being closer to the inner side of said opening than said first and second tracks respectively;

a first roller and a second roller mounted on each end of said door, and extending into said first and second vertical track respectively;

third and fourth rollers mounted on said first and second end of said door respectively and mounted to engage said third and fourth tracks.

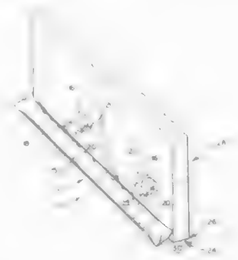
4,765,094

DRAUGHT EXCLUDER

Robert J. Gemmell, 3 Fort Street, Motherwell, ML1 1QR, [illegible]

Filed Feb. 2, 1987, Ser. No. 9,978
Int. Cl.[4] E06B *7/16, 9/52*
U.S. Cl. 49—475 38 Claims

1. A draught excluder for a door, the draught excluder comprising an elongated member having an outer surface which is at least partially flexible, the elongated member being formed of a material which is permeable to gas, and attachment means for attaching said elongated member to the door and including a plurality of roller means each of which is attached to said elongated member at spaced intervals therealong by a



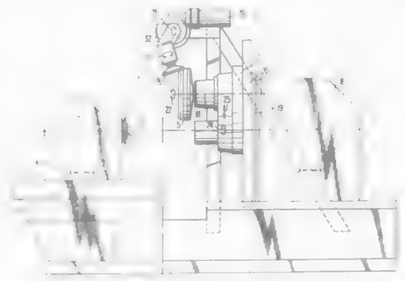
resiliently extensible flexible cord and the elongated member and the rollers are held against opposed sides of the door by the resiliently extensible flexible cord.

4,765,095

METHOD FOR GRINDING PREGEARED BEVEL GEARS

Dieter Wiener, Kaiserstuhlstr. 21a, D-7505 Ettlingen, Fed. Rep. of Germany

Continuation of Ser. No. 617,523, Jun. 4, 1984, abandoned. This application Oct. 20, 1986, Ser. No. 920,770
Claims priority, application Fed. Rep. of Germany, Jun. 3, 1983, 3320042
Int. Cl.[4] B24B *19/00*
U.S. Cl. 51—287 7 Claims



1. A method of grinding pregeared bevel gears in a hobbing motion of a bevel gear and a grinding tool in a grinding machine including a truing device, the method comprising the steps of:

grinding at a gap of each tooth a right-hand flank and a left-hand flank in a single setting by a single grinding tool, by first grinding one flank of a tooth gap in a forward hobbing motion, then grinding another flank in the same tooth gap in a rearward hobbing motion by imparting first to said grinding tool in a radial movement over a predetermined distance and then a compensating movement in a direction perpendicular to that of the radial movement, said compensating movement being a rotational movement of the grinding tool, such that a center point of a grinding radius of said grinding tool is shifted;

numerically controlling said radial movement and said compensating movement in the grinding machine;

continually changing an adjustment of said grinding machine, by changing said predetermined distance between

the grinding of the right-hand flank and the left-hand flank so as to enable grinding of another side of the flank; and

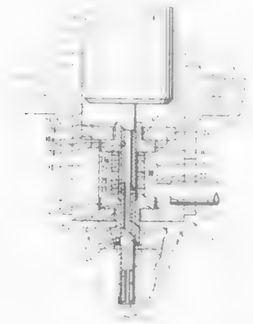
changing the engagement between said grinding tool and a gear being treated from said one flank to said another flank.

4,765,096

HONING DEVICE

Walter Lang, Fellbach, Fed. Rep. of Germany, assignor to Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft, Ostfildern, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,698
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1986, 3607580
Int. Cl.[4] B24B *5/40, 55/02*
U.S. Cl. 51—34 R 19 Claims



1. A honing device for the precision machining of small bores in workpieces comprising:

(a) a honing tool including a shank having at least one work zone equipped with radially expandible abrasive covering means for machining the workpiece,

(b) a coolant duct system formed in said tool for feeding coolant under pressure to the work zone, said system including at least one longitudinally extending groove for supplying coolant to the end face of the tool adjacent the work zone, and at least one return duct extending along the outer periphery of said tool for removing the coolant and removed metal from the work zone, and

(c) a coolant feed device, including coolant supply means, for supplying coolant under pressure to said duct system, said device being aligned with and closely guiding said shank of said tool when coolant is supplied under pressure to said at least one groove and thus to the work zone.

4,765,097

SURFACE-DRESSING ROLLERTOOL

Charles P. Hallez, Teilin, Belgium, assignor to Diamant Boart Societe Anonyme, Brussels, Belgium

Continuation of Ser. No. 877,814, Jun. 24, 1986, abandoned. This application Jul. 16, 1987, Ser. No. 74,194
Claims priority, application Belgium, Jun. 24, 1985, 0/215250
Int. Cl.[4] B24B *7/22*
U.S. Cl. 51—90 4 Claims

1. A surface-dressing tool for hard mineral material presenting a plane face to be treated, said tool comprising a rotary backplate mounted parallel to said face and arranged to be driven in rotation on a spindle perpendicular to said face, said backplate carrying at least one pair of cylindrical abrasive rollers, said rollers of each pair being fixedly mounted to the opposite ends of a common axle joining them, said axle mounted to said backplate, said rollers being mounted to rotate around their own axes in contact with the material and in such a manner that said rollers of said pair exhibit simultaneously the same rolling component and oppositely directed sliding



components coinciding with a generatrix of said cylindrical abrasive rollers.

4,765,098

RAIL CUTTING APPARATUS

Paul Duff, Racine, and Michael E. Beach, East Troy, both of Wis., assignors to Racine Railroad Products, Inc., Racine, Wis.

Filed Jan. 12, 1987, Ser. No. 2,497
Int. Cl.[4] B24B *7/00;* B23D *19/00*
U.S. Cl. 51—99 10 Claims



9. A rail cutting apparatus comprising, a rail clamp, a linkage structure pivotally connected to said rail clamp, a mounting block, an offset arm pivotally mounting said mounting block to said linkage structure, a mounting post extending upwardly from said mounting block, means defining a pair of openings in said mounting block one at either side of said mounting post and said openings and mounting post all centered on a common vertical plane, and a rail saw having a mounting plate having an opening to receive said mounting post and a downwardly projecting pin to fit into one of the openings in said mounting block, said mounting plate opening and downwardly projecting pin lying in the plane of an abrasive disc of the rail saw, said mounting post having a length greater than the downwardly projecting pin whereby said rail saw can be raised to free said pin from one of the mounting block openings for turning of the rail saw on said mounting post to align said pin with the other of said mounting block openings.

4,765,099

SANDING AND DUST COLLECTING APPARATUS

John G. Tanner, 12605 Hickory Hollow Dr., Oklahoma City, Okla. 73142

Filed Dec. 11, 1986, Ser. No. 940,594
Int. Cl.[4] B24B *23/02*
U.S. Cl. 51—170 T 39 Claims

1. A sanding and dust collecting apparatus for use in combination with a powered actuator asembly having a rotatable driver spindle, the apparatus comprising:

a housing assembly attachable to and supportable by the actuator assembly, the housing assembly having an upper end portion and a lower end portion, the housing assembly defining a blower cavity therein, the housing assembly

VOL 1093 ISS 4 AG 23 1988 UMI

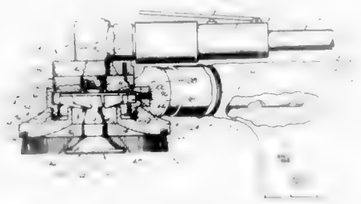
further including an axially disposed bore extending therethrough communicating with the blower cavity for receiving the driver spindle of the actuator assembly and an outlet port disposed in a sidewall of the blower cavity, the upper end portion of the housing being provided with a first elongated slot and a substantially parallel second elongated slot openly communicating with the first slot, the first elongated slot extending inwardly to communicate with the axially disposed bore of the housing assembly, the second elongated slot disposed within the upper end portion of the housing assembly and having a length less than the first elongated slot;

impeller blade means rotatingly supported in the blower cavity by the drive spindle for creating a vortex-like suction within the housing assmebly when rotated by the driver spindle and for exhausting through the outlet port thereof;

a spindle a member having a first end portion and an opposed second end portion, the first end portion connected to the driver spindle for securing the impeller blade means adjacent the driver spindle, the spindle member extending from the driver spindle such that the second end portion thereof is disposed substantially adjacent the lower end portion of the housing assembly;

sanding disc means for sanding a selected surface, the sanding disc means supportable by the second end of the spindle member;

brush means supported by the lower end portion of the housing assembly for forming a flexible dust containment



curtain about the sanding disc means when in contact with the surface being sanded;

thumb engageable wrench means supported by the housing assembly for selectively engaging the driver spindle and for locking the driver spindle in a stationary position when the actuator assembly is in an off mode so that the impeller blade means, the spindle member and the sanding disc means can be installed and removed, the thumb engageable wrench means comprising;

an elongated body member slidably supported in the first elongated slot, the elongated body member characterized as having a first end portion and an opposed second end portion, the second end portion having a pair of spatially disposed legs defining a spindle engaging slot therein adapted to receive and secure the driver spindle in a stationary position;

a pin element supported by the body member and substantially normally disposed to the body member at a position substantially intermediate the first and second end portions thereof so as to extend into the second slot; and

biasing means disposed within the second slot for engaging the pin element and for biasing the elongated body member away from the axial bore to a non-engaging position with the driver spindle;

a collector member having a first end portion and an opposed second end portion with an internal bore extensive therethrough, the first end portion of the collector member connected to the housing assembly such that the bore thereof communicates with the outlet port of the blower cavity of the housing asembly; and

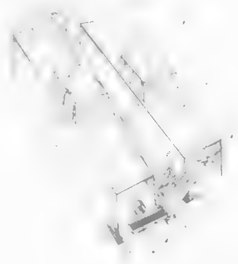
bag collector means supportable by the collector member for receiving and collecting particulate material removed from the surface by the sanding disc means when the driver spindle is rotated.

4,765,100

METHOD OF ABRADING NEW GARMENTS

Curtis O. Majors, Cincinnati, Ohio, assignor to Cookeville Uniform Rental, Inc., Cookeville, Tenn.

Filed May 13, 1987, Ser. No. 49,208
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—313 18 Claims



1. A process for treating new garments comprising the steps of

feeding said garments in a dry condition to a first elongated tumbler drum rotatable on a generally horizontal axis;

providing abrasive members in said first tumbler drum;

rotating said drum to agitate said garments without contacting said garments with liquid;

discharging said garments from said first tumbler drum;

feeding said garments to an oscillating conveyor effective to separate said abrasive members from said garments;

feeding said garments to a second elongated tumbler drum rotatable about a substantially horizontal axis, said second tumbler drum having perforated walls;

rotating said second tumbler drum to separate abrasive members remaining with said garments and thereafter discharging said treated garments from said second tumbler drum while recycling separated abrasive members to said first tumbler drum.

4,765,101

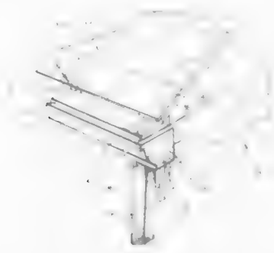
LEAVES AWAY FOR GUTTERS

Paul F. Wolf, 466 Wyndmoor La., Huntingdon Valley, Pa. 19006

Filed Jan. 20, 1987, Ser. No. 4,976
Int. Cl.[4] E04D *13/06*
U.S. Cl. 52—12 10 Claims

1. In a drain and gutter assembly with end members comprising a planar base member having an inner edge adjacent a roof and an outer edge away from said roof and having upper and lower surfaces and adapted to be installed on a roof in a downwardly sloping manner over a gutter, a plurality of apertures extending through the surface of said member, said apertures being distributed on the surface of said member, the improvement comprising means for damming rainwater flowing to said member and blocking said rainwater from flowing over said member attached to said member, said planar base member

being attached to each of said end members and clamped securely to said assembly wherein said means directs said



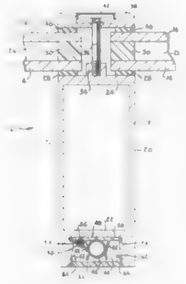
rainwater along said planar base member towards each of said end members.

4,765,102

BUILDING PANEL SUPPORT MEMBER WITH BUILT-IN ILLUMINATION MEANS

Christopher L. Kuchem, 4501 W. 76th, Prairie Village, Kans. 66208

Filed Feb. 20, 1987, Ser. No. 16,927
Int. Cl.[4] E04H *14/00*; E04B *5/37, 7/02*
U.S. Cl. 52—28 13 Claims



1. In an architectural frame construction for holding adjacent edges of building panels, the improvement comprising:

an elongate rigid structural member having opposite edge portions;

means for connecting the adjacent edges of a pair of the panels to said structural member;

an elongate channel in one edge portion of said structural member, said channel extending lengthwise along the structural member;

an elongate light tube operable to emit light when energized, said tube having a size to fit in said channel and to conform with the shape of the channel; and

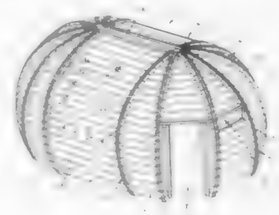
means for mounting said light tube in said channel to extend along at least a substantial part of the length of said structural member, whereby said tube upon energization emits a ribbon of light from said structural member in extension lengthwise thereon, said mounting means comprising a clip having a plate portion secured in said channel and a pair of spaced apart legs between which said light tube is retained and a channel extending on said clip and having a size to closely receive an electrical conductor for supplying power to said tube.

4,765,103

BUILDING STRUCTURE AND COMPONENTS THEREOF

Neville Clarke, 4/481 Princes Highway, Narre Warren, Victoria 3805, Australia

Continuation of Ser. No. 840,559, filed as PCT AU85/00139, Jun. 25, 1985, published as WO86/00360, Jan. 16, 1986, abandoned.
This application Aug. 27, 1987, Ser. No. 91,297
Claims priority, application Australia, Jun. 25, 1984, PG5665
Int. Cl.[4] E04B *1/32, 1/54*; E04C *1/30*
U.S. Cl. 52—86 24 Claims



1. A component piece suitable for use in constructing a generally self-supporting structure, the component piece comprising a body having at least a first substantially rectilinear side, the first substantially rectilinear side including a surface having at least one substantially curved engaging means, the curved engaging means having opposite ends and extending across the surface of the first rectilinear side, and the engaging means being non-linear in the direction extending from one of its opposite ends to the other of its opposite ends, said engaging means being provided for interlocking by engaging with a complementary engaging means of another component piece in use.

4,765,104

BRICK PANEL

Phillip H. Boot, 15-17 Bridge Street, Pymble, New South Wales, Aust. 2073

Filed Nov. 27, 1985, Ser. No. 802,765
Claims priority, application Australia, Nov. 30, 1984, PG8374
Int. Cl.[4] E04B *2/00*
U.S. Cl. 52—143 7 Claims



1. A transportable brick panel, comprising:

a top reinforced concrete beam;

a bottom reinforced concrete beam;

brickwork comprising a plurality of courses of bricks, having mortar filed joints, extending between said beams, said brickwork defining a plurality of columns of bricks extending between said beams;

aligned holes passing through at least some of said columns of bricks;

reinforcing bars passing through said holes and through at least some of said columns of bricks, said reinforcing bars

VOL 1093 ISS 4 AUG 23 1988 UMI

extending between and being connected with said beams, and;

a damp course and sealing means on each reinforcing bar where said bar passes through said damp course for preventing passage of moisture along said reinforcing bar.

4,765,105

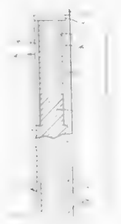
WALL PANEL WITH FOAM INSULATION

Sidney K. Tissington; Henry J. Scheunhage; Clare M. Johnston, and Frederick B. Tissington, all of Grande Prairie, Canada, assignors to Seven S Structures Inc., Alberta, Canada

Continuation-in-part of Ser. No. 876,027, Jun. 19, 1986, abandoned. This application Jun. 22, 1987, Ser. No. 64,479

Int. Cl.[4] E04B *1/00*

U.S. Cl. 52—309.11 5 Claims



1. A wall panel of the type having two outer sheathing boards separated by rigid foam insulation, wherein the panel has a continuous top header extending the full length of the panel which header comprises a pair of upper boards located against upper margins of the opposed interior surfaces of the sheathing boards and further comprises a transverse top bearing plate overlying the upper edges of said upper boards, the panel also having a base reinforcement comprising a pair of lower boards having the same thickness as said upper boards and located against lower margins of said interior surfaces and a transverse lower bearing plate underlying the edges of the lower boards; the panel further comprising a series of vertical stud members each having a central web and a nailing flange along one edge of said web, said flange being internally nailed to one of said sheathing boards and said web having an opposite edge element holding nails applied through said other sheathing board, said central web having extensions fitting between said pair of upper boards to said top bearing plate and between said pair of lower boards to said lower bearing plate, and said flange and edge element providing parts lying between the edges of the web and said sheathing boards, said parts having a thickness equivalent to said upper and lower boards and spanning the vertical spaces between adjacent edges of said upper and lower boards; all spaces between said sheathing boards and upper and lower pairs of boards being filled with said rigid foam insulation.

4,765,106

CONSCREED BRACKET

Nandor I. Modrovich, 2466 E. Chevy Chase Dr., Glendale, Calif. 91206

Filed Apr. 25, 1985, Ser. No. 727,245

Int. Cl.[4] E04F *13/04*

U.S. Cl. 52—365 10 Claims

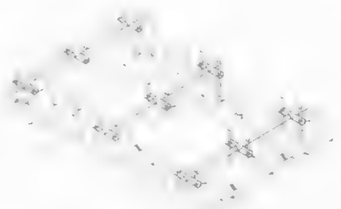
1. A conscreed bracket which comprises:

(a) a bracket member;

(b) a conduit secured to said bracket member for receiving in slidable embracing relation to a rail to be retained in said conduit and constrained by said conduit from upward movement out of said conduit;

(c) thread means to receive bolts secured to said bracket on opposed sides of the conduit; and

(d) bolt means having a head end extending above the conduit threaded into thread means to enable, by rotation of the head end of the bolt means clockwise or counterclockwise, the raising or lowering of the conduit relative to a substrate.



4,765,107

VERTICAL JOINT SEALING OF HORIZONTAL WALL PANELS

Raymond M. L. Ting, 318 Holiday Dr., Pittsburgh, Pa. 15237

Filed Oct. 19, 1987, Ser. No. 109,834

Int. Cl.[4] E04B *1/66*

U.S. Cl. 52—235 10 Claims



1. In an exterior building panel wall assembly formed from individual building panels and supported on vertical mullions, said panels being engaged along their side edges to form horizontal wall joints and being spaced apart between their ends at said mullions to form vertical wall joints, said panel ends having exposed foam core, said horizontal wall joint being sealed internally within the depth of said panels by a horizontal sealant line, said vertical wall joint being sealed to said mullion by a vertical sealant line, said horizontal sealant line being connected to said vertical sealant line by a marriage sealant, said vertical wall joint being covered by a vertical joint cover; the improvement comprising a vertical joint cavity being maintained within said vertical wall joint inside said vertical joint cover, at least one end of said vertical joint cavity being open to a space having a free air passageway to the exterior air, said panel end having a vertical water drainage groove located in front of said horizontal sealant line, said vertical sealant line, as well as said marriage sealant and within said vertical joint cavity.

4,765,108

WALL TIE

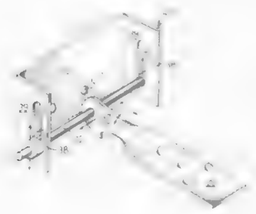
Ernest B. Lapish, 84 Stramford Park Road, Mt. Roskill, Auckland, New Zealand

Continuation of Ser. No. 825,706, Jul. 15, 1986, abandoned. This application Sep. 24, 1987, Ser. No. 101,936

Claims priority, application New Zealand, Jul. 17, 1985, 212774

Int. Cl.[4] E04B *1/16*

U.S. Cl. 52—379 8 Claims



1. A wall tie connector for binding a first wall structure to a second wall structure, comprising:

an attachment plate having means for attachment to a first wall structure

said attachment plate having a pair of flanges protruding from the plane of the attachment plate, each flange having an aperture therein,

a rod or bolt carried by said attachment plate and passing through said apertures in said flanges,

a retaining member having means adjacent a first end thereof for attachment to a second wall structure,

said retaining member having an aperture adjacent a second end thereof through which the rod or bolt passes to connect said retaining member to the attachment plate, said retaining member aperture being only slightly larger than the rod or bolt so that the retaining member is closely coupled to said rod or bolt in the axial direction of the retaining member but slides along and rotates about the rod or bolt,

and means for allowing bodily movement of the retaining member in a direction parallel to said attachment plate and to said flanges.

4,765,109

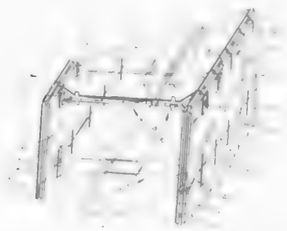
ADJUSTABLE TIE

Patrick E. Boeshart, R.R. 1, Box 134, Sioux City, Iowa 51108

Filed Sep. 25, 1987, Ser. No. 101,055

Int. Cl.[4] E04B *2/00*

U.S. Cl. 52—426 8 Claims



1. A tie for interlocking parallel and spaced-apart form panels, comprising:

an elongated strap means having first and second ends;

said strap means having a pair of diverging leg members projecting from each said end within a generally vertical plane;

an inner and outer plate member mounted to the free ends of each said pair of diverging leg members, said plate members being in parallel planes perpendicular to the longitudinal axis of said elongated strap means; and

at least two leg members mounted between said inner and outer plate member at each end, affixing said plate members in spaced-apart, parallel relation at a distance to retain a form panel therebetween.

4,765,110

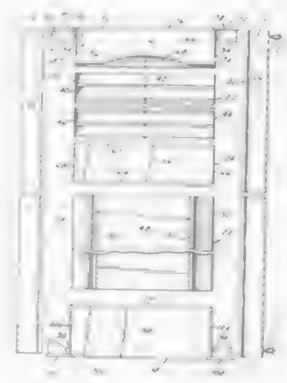
ADJUSTABLE PLASTIC SHUTTER

Richard J. MacLeod, Milford, Mich., assignor to Tapco Products Company, Inc., Detroit, Mich.

Filed Sep. 23, 1982, Ser. No. 421,818

Int. Cl.[4] E06B *7/08*

U.S. Cl. 52—473 14 Claims



1. An adjustable length shutter assembly of molded plastic modular construction comprising

a pair of side rails each including a front wall and spaced parallel integral inside and outside walls, a pair of opposed channels integral with said inside wall forming a double-channel track extending entirely along said inside wall, said side rails each having longitudinally spaced open ends with edges disposed in a plane,

at least one shutter panel including a panel body and flat parallel runners integrally extending along side edges of said body, each of said runners projecting forwardly and rearwardly from said body and being adapted to be slidably received into a corresponding said doublechannel track so as to position said side rails in laterally spaced relation on opposite sides of said panel,

upper and lower end rails each including a front wall, an end flange extending integrally along one edge of said end rail front wall, flat parallel runners integrally extending along side edges of said end rail front wall and projecting forwardly and rearwardly from said end rail front wall so as to be adapted to be slidably received in a corresponding said track, and a pair of integral wings projecting laterally outwardly from said end rail runners, each said wing including a body adapted to be received within a said second rail and a wall continuously integral with said end rail flange, said wing wall including a peripheral lip adapted to overlap said side rail end edges disposed in said plane,

at least one of said end rail front walls projecting as a lip so as to overlap an opposing edge of said shutter panel body in assembly,

fastening means consisting of staples received through said

VOL 1093 ISS 4 AUG 23 1988 UMI

inside walls of said rails and through at least the said runners on said end rails.

4,765,111

ASSEMBLY FOR MOUNTING PLATES ON WALL

Yoshinori Osawa, 178, Oaza Sagami, Koka-cho, Koka-gun, Shiga, Japan

Filed Sep. 23, 1987, Ser. No. 100,345
Claims priority, application Japan, Jun. 18, 1987, 62-94026[U]
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—509 2 Claims



1. An assembly for mounting a plurality of plates on a wall surface, comprising:

a plurality of bar members of a substantially inverted U-shape section and secured to the wall surface with some space left between the back of said each bar member and the wall surface;

a first support means comprising an inverted U-shaped portion adapted to be mounted on said bar member, a horizontal web portion for supporting the plate, and a flange portion downwardly extending from the front edge of said web portion so as to engage the upper edge of the plate; and

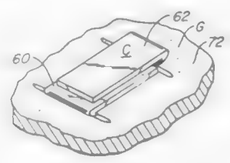
a second support means comprising an inverted U-shaped portion adapted to be mounted on said bar member, a horizontal web portion for supporting the plate, and a flange portion upwardly extending from the front edge of said web portion so as to engage the bottom edge of the plate.

4,765,112

APPARATUS AND METHOD FOR MOUNTING STONE SIDING

Maurice Lafayette, Jr., Danville, Calif., assignor to Lafayette Manufacturing, Inc., Hayward, Calif.

Continuation of Ser. No. 805,161, Dec. 4, 1985, abandoned. This application May 7, 1987, Ser. No. 23,769
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—511 4 Claims



1. In combination, a stone panel having an exterior exposed weather surface portion and an interior exposed mounting surface;

first and second spaced apart planar and arcuate cuts in said stone panel, said cuts commencing at the interior surface of said panel and extending to and towards but not through the exterior portion of said panel, said cuts each being made along oppositely inclined planes with respect to said stone panel and not extending to the side edges of said panel;

first and second clamp sections, each clamp section including a clamp portion, a back and a bend therebetween, the clamp portion of the first clamp section penetrating the first of said cuts, the clamp portion of the second clamp section penetrating the second of said cuts;

each said back spanning into engagement and juxtaposition with the other back, said clamp portion being bent with respect to said back to permit entry of said clamp portion in said cuts while said backs are placed in engagement and juxtaposition one with another and to permit movement of said back portions relative to one another during insertion into said cuts; each said back being spaced at least about one-eighth inch from said interior mounting surface, and

means for engaging juxtaposed backs together to lock said clamp sections to said panel.

4,765,113

ROOFING STRUCTURE

Slosson B. Jong, 20722 Hunter La., Huntington Beach, Calif. 92646

Filed Mar. 10, 1987, Ser. No. 24,166
Int. Cl.[4] E04D *1/30, 3/366*
U.S. Cl. 52—533 20 Claims



1. A roof comprising:

an inclined support structure;

a series of horizontal rows of essentially rectangular roofing tiles supported on said structure with the tiles in each row aligned laterally with one another and with the tiles of successive rows overlapping one another and being staggered laterally relative to one another;

the individual tiles having tile bodies which are formed of cement composition and have upper and lower surfaces and an essentially rectangular configuration defined by essentially parallel top and bottom edges and essentially parallel opposite side edges received adjacent side edges of adjacent tiles in the same row;

individual ones of said cement composition tile bodies containing two downwardly facing grooves formed in the lower surface of the tile body near and generally parallel to said side edges respectively;

apertured sheets of reinforcing material embedded within the tile bodies between said upper and lower surfaces thereof and extending across the major portion of the rectangular area thereof;

individual ones of said tiles containing two inverted channels of apertured reinforcing material embedded within the tile body beneath said sheet of reinforcing material and above said two grooves respectively and each having a top wall near said sheet and flanges projecting downwardly therefrom at opposite sides of one of said grooves;

tubes embedded in said tile bodies between said upper and lower surfaces thereof;

a plurality of protective channels beneath said tiles at the locations of said side edges and each having an inclined bottom wall extending beneath two adjacent side edges of adjacent tiles and two flanges projecting upwardly into said grooves in the two adjacent tiles;

each protective channel having a length substantially coextensive with the length of said side edges of two tile bodies engaged thereby, and terminating in end edges essentially coinciding with said top and bottom edges of said engaged tile bodies, with an upper one of said end edges of the protective channel being received entirely beneath a single tile in a next upper row of tiles; and

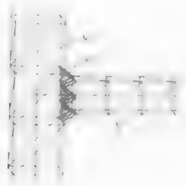
fasteners driven downwardly through said tubes and into said support structure to secure the tiles thereto.

4,765,114

EXPANDABLE PALLET FOR SPACE STATION INTERFACE ATTACHMENTS

Clarence J. Wesselski, Alvin, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 13, 1986, Ser. No. 929,875
Int. Cl.[4] C04H *12/18*
U.S. Cl. 52—646 6 Claims



1. An interface attachment structure for the attaching of a miscellaneous component to a framing member, said framing member having a first node point attachment means spaced apart a first distance and said miscellaneous component having a second node attachment means spaced apart a second distance different from said first distance, said interface attachment structure comprising a foldable, expandable pallet bridging the framing member and having a rectangular first face for structural attachment to the framing member and being formed of a plurality of foldable face struts, being joined together by a plurality of node point fittings, at least three of said node point fittings being structurally attachable to the first node point attaching fittings of the framing member, said interface attachment structure further having a second face for structurally attaching the miscellaneous component and being formed of a plurality of foldable face struts being joined together by a plurality of node point fittings, at least some of said node point fittings being spaced to structurally attach the second node point attachment means of said miscellaneous component, and a plurality of non-foldable struts attached to the node point fittings and extending diagonally between the two faces to form a truss thereby providing strength to the pallet.

4,765,115

BRICK SUPPORTING STRUCTURES

Peter J. Pollina, 1150 Hylan Blvd., Staten Island, N.Y. 10305

Filed May 27, 1987, Ser. No. 54,514
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—712 6 Claims

1. A brick laying form comprising:

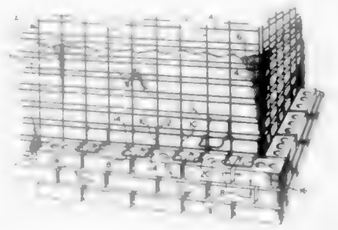
(a) a pre-fabricated wire support structure having a shape generally corresponding to the shape of the completed masonry structure,

(b) said wire support structure including at least one longitudinally extending wire or rod,

(c) said wire support structure including a plurality of unequally spaced-apart transversely extending wire rungs intersecting said longitudinally extending wire or rod,

(d) the distances between successive adjacent rungs forming an alternating sequence and serving as a guide in placing rows of brick and mortar between adjacent rows of brick during fabrication of the masonry structure,

(e) said alternating sequence generally corresponding to the width of an individual brick in each row, alternating with the width of the mortar layer between adjacent brick rows,



(f) said pre-fabricated wire support structure being fastened to a vertically oriented mounting structure,

(g) said bricks being assembled onto said wire support structure and being mounted thereto by hangers, and

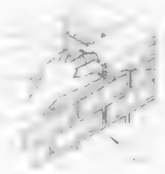
(h) each hanger including a generally U-shaped main body portion and a pair of spaced-apart legs extending perpendicularly from opposite ends of said U-shaped body portion and terminating as hook portions.

4,765,116

BRICK MASON'S SPACER AND METHOD OF USING THE SPACER

Donald H. Shank, 20273 Delise Dr., Hemet, Calif. 92343

Filed Jun. 12, 1987, Ser. No. 61,272
Int. Cl.[4] G01B *3/22;* E04B *1/02*
U.S. Cl. 52—747 5 Claims



1. A one-piece molded spacing device for enabling uniform spacing of adjacent construction blocks comprising a sheath portion and a spacing member portion, the sheath portion comprising a finger-receiving sleeve having an opening at an end thereof for insertion of a user's index finger, said sleeve being formed from a flexible and stretchable material having a wall thickness of less than 0.1", and a second end portion of the sleeve being enclosed, said spacing member portion extending approximately perpendicularly from an axis of the sleeve and having parallel front and rear wall surfaces having a spacing therebetween of from about ¼"–½" substantially equal to the desired spacing between adjacent construction blocks.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,117

APPARATUS FOR WELDING A STRIP OF TAPE TO FILM

Masami Akutsu, Kasukabe; Koh Myowa, Takaoka, and Noboru Hirasawa, Tokyo, all of Japan, assignors to Kureha Chemical Industry Company Limited, Tokyo and Toyama Sanki Company Limited, Toyama, both of, Japan

Filed Jul. 20, 1987, Ser. No. 75,620

Claims priority, application Japan, Aug. 7, 1986, 61-121839[U]

Int. Cl.[4] B65B *61/18*

U.S. Cl. 53—133 8 Claims



1. An apparatus for welding a strip of tape to film comprising:

means for feeding the film at a constant speed;

first rollers disposed in spaced relationship and through which the film fed from said film feeding means passes;

second rollers disposed above the first rollers at narrower spaces than the space between the first rollers and through which the film which is to pass through said first rollers and the film which has been passed through said first roller pass, said second rollers comprising four equally spaced rollers;

four guide rollers disposed at a right and left of said second rollers;

a roller differential mechanism for moving said second rollers in a first direction relative to said first and guide rollers at one quarter of said constant speed to temporarily reduce a speed of part of the film being fed continuously to zero and for moving said second rollers in a second direction opposite to said first direction relatively to said first and guide rollers at a high speed to temporarily increase a speed of part of the film being fed continuously to a speed higher than said constant speed;

tape feeding means for feeding the tape to the part of the film which the speed is temporarily reduced to zero by said roller differential mechanism;

means for cutting the tape being fed into a strip; and

means for welding the tape cut into the strip to the part of the film of which the speed is temporarily reduced to zero.

4,765,118

APPARATUS FOR WELDING A STRIP OF TAPE TO FILM

Masami Akutsu, Kasukabe; Tsutomu Kamojima, Takaoka, and Noboru Hirasawa, Tokyo, all of Japan, assignors to Kureha Chemical Industry Company Limited, Tokyo and Toyama Sanki Company Limited, Toyama, both of, Japan

Filed Jul. 20, 1987, Ser. No. 75,343

Claims priority, application Japan, Aug. 7, 1986, 61-186643

Int. Cl.[4] B65B *61/18*

U.S. Cl. 53—133 6 Claims

1. An apparatus for welding a strip of tape to film comprising:

means for feeding the film continuously;

a tape feeding roller disposed opposite to one side of the film being fed by said film feeding means and including a periphery provided with means for holding the tape in sucked manner;

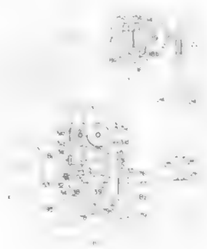
means for feeding the tape to the outside periphery of said tape feeding roller;

means for cutting the tape held by said tape feeding roller into a strip;

a welding roller disposed opposite to said tape feeding roller while holding the film therebetween and including at a periphery thereof means for welding the strip of tape to the film;

a variable-speed transmission mechanism in which an angular velocity of said tape feeding roller and said welding roller is varied to reduce an angular acceleration of said tape feeding roller and said welding roller to substantially zero so that the angular velocity of the rollers is coincident with the feeding velocity of the film when the strip of tape held by said tape feeding roller is welded to the film, said variable-speed transmission mechanism comprising an input arm which is rotated by power of a motor and an output arm for transmitting power to said tape feeding roller and said welding roller, both said arms being coupled through coupling means separated from a rotational center, and said transmission mechanism including adjustment means for varying deviation between a rotational center of said output arm and a rotational center of said input arm; and

a power transmission mechanism for rotating said tape feeding roller and said welding roller in synchronism.



4,765,119

SCREW CAPPING MACHINE WITH VERTICALLY RECIPROCABLE CONTAINER PLATFORM

Samuel S. Aidlin; Stephen H. Aidlin, and Larry Kincaid, all of Sarasota, Fla., assignors to Aidlin Automation Corp, Bradenton, Fla.

Filed Nov. 14, 1986, Ser. No. 931,178

Int. Cl.[4] B67B *3/06;* B65B *7/28*

U.S. Cl. 53—308 7 Claims

1. A machine for threadably engaging a supply of screw caps onto the threaded necks of a supply of containers, comprising in combination:

a turret assembly rotatively mounted relative to a turret table including an upper turret plate, an intermediate turret plate and a lower turret plate rigidly secured together in a spaced apart relationship;

said intermediate turret plate including at least one pocket for receiving the container;

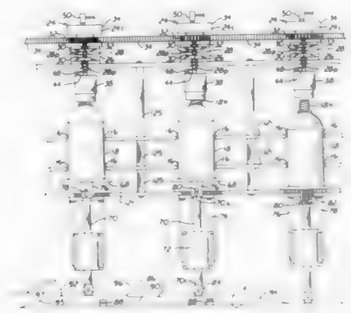
means for sequentially infeeding the containers into said container pocket of said intermediate turret plate;

at least one chuck spindle mounted relative to said upper turret plate in concentric alignment with said container pocket of said intermediate turret plate, said chuck spindle including a rotatable, non-reciprocable shaft journaled relative to said pocket and a cap chuck rigidly secured to a lower end of said shaft in concentric alignment with said container pocket and said chuck spindle;

means for rotating said shaft of said chuck spindle;

means for sequentially infeeding the screw caps into said chuck;

at least one container platform positioned concentrically below said container pocket of said intermediate turret plate to provide seating for said container;



means for vertically reciprocatably mounting said container platform relative to said turret assembly, and

rail means affixed to the table in alignment with said container platform for relative engagement therewith to raise said container platform to a higher level, allowing the threading of the screw cap secured in said chuck onto the threaded neck of the container.

4,765,120

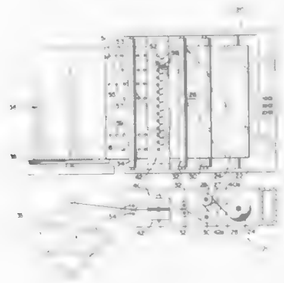
FILM WEB PERFORATION

Thomas E. Phillips, Louisville, Ky., assignor to Lantech, Inc., Louisville, Ky.

Filed Feb. 25, 1987, Ser. No. 18,430

Int. Cl.[4] B65B *11/28, 61/02*

U.S. Cl. 53—441 17 Claims



1. Stretch wrapping apparatus for simultaneously perforating a film web, stretching the film web and wrapping the stretched film web on a load comprising:

web dispenser means for dispensing and stretching the film web along the direction in which is it is dispensed;

means for providing relative rotation between the load and the web dispenser means to wrap the stretched film web on the load;

spaced electrode means positioned proximate to the film web; and

means generating an arc at the electrode means to perforate the film web with the arc while the film web is being wrapped on the load.

4,765,121

BANDING APPARATUS WITH FLOATING MANDREL

Anatole E. Konstantin; William N. Konstantin, both of Norwalk, and Jaroslaw T. Malkowski, Shelton, all of Conn., assignors to PDC International Corporation, Norwalk, Conn.

Filed May 22, 1987, Ser. No. 53,266

Int. Cl.[4] B65B *9/13, 53/02*

U.S. Cl. 53—442 15 Claims



1. Apparatus for banding articles with heat-shrinkable plastic bands severed from tubing having transverse perforations at predetermined intervals, comprising in combination:

(1) means for opening said tubing comprising a floating mandrel, said mandrel being sized to fit slideably inside of said tubing and provided with means for engaging suspension means external of said tubing,

(2) suspension means external of said tubing, in rolling or sliding contact with said engaging means, thereby maintaining the mandrel in a floating position,

(3) unified means for feeding incremental lengths equal to the distance between perforations of heat-shrinkable plastic tubing over said mandrel and clamping said tubing,

(4) tear-off means, located downstream of said feeding and clamping means, capable of tearing off an incremental length of tubing at said perforations located between the said unified feeding and clamping means and the tear-off means, thereby being capable of forming a band,

(5) means for pushing the bands off the lower portion of said mandrel and onto the articles to be banded, and

(6) means for conveying the banded articles to means for heat shrinking said bands.

4,765,122

CONVEYOR

Dulin L. Annas, Sr., Hickory, and Richard M. Teague, Taylorsville, both of N.C., assignors to Anteg, Inc., Hickory, N.C.

Division of Ser. No. 936,109, Nov. 28, 1986, Pat. No. 4,739,607.

This application Dec. 11, 1987, Ser. No. 131,841

Int. Cl.[4] B65B *53/02*

U.S. Cl. 53—442 10 Claims

1. A method of packaging a workpiece comprising:

(a) providing a workpiece, a pallet with an uppermost and lowermost surfaces, a conveyor system, and a return conveyor, the conveyor system having a first, second and third stations at a first level and the return conveyor, communicating with the first and third stations for returning pallets from the third to the first station, disposed below at a second level and laterally offset from said conveyor system;

(b) placing the workpiece on the conveyor system and conveying the workpiece to the first station;

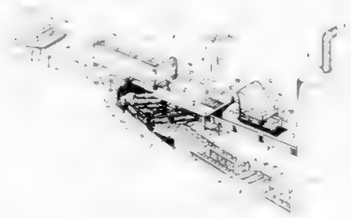
(c) conveying the pallet laterally from the return conveyor to a position below the workpiece;

(d) moving the pallet vertically to the first level so that it's

VOL 1093 ISS 4 AG 23 1988 UMI

uppermost surface is in contact with the workpiece and its lowermost surface is in line with the conveyor system;

(e) conveying the pallet and workpiece thereon to the second station and packaging the workpiece to create a packaged workpiece; and,



(f) conveying the packaged workpiece and pallet on the conveyor system to the third station and at such station vertically lowering the pallet from the packaged workpiece and then laterally moving it onto the return conveyor and placing the packaged workpiece on the conveyor system.

4,765,123

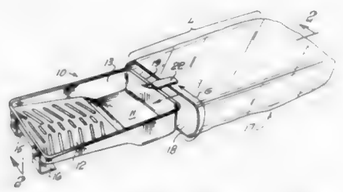
PROCESS FOR COVERING PAINT TRAYS

Nancy E. Caldwell, 6037 S. Painter, Whittier, Calif. 90601

Filed Nov. 4, 1987, Ser. No. 116,674

Int. Cl.[4] B65B *3/00, 67/12*

U.S. Cl. 53—459 7 Claims



1. A process for covering a paint tray so that it may be reused without the necessity of cleaning formerly used paint therefrom, said process comprising:

placing a flexible, paint-impervious bag over the entire paint tray before placing any paint therein, said flexible, paint-impervious bag being sufficiently large in girth so that it may fit against the interior of the tray and of sufficient length so that it extends past the end of the paint tray when placed thereover;

after the paint tray has been used, completely reversing the flexible, paint-impervious bag thereby containing any paint left within said paint tray in the interior of the reversed paint-impervious bags, thus leaving a completely clean tray.

4,765,124

EGG SORTING AND PACKING DEVICE

Yuzo Nakamura, Otsu, Japan, assignor to Nambu Electric Co., Ltd., Kyoto, Japan

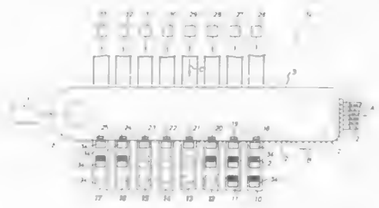
PCT No. PCT/JP86/00365, § 371 Date Mar. 2, 1987, § 102(e) Date Mar. 2, 1987, PCT Pub. No. WO87/00623, PCT Pub. Date Jan. 29, 1987

PCT Filed Jul. 16, 1986, Ser. No. 34,555

Claims priority, application Japan, Jul. 20, 1985, 60-160948; Mar. 5, 1986, 61-47777

Int. Cl.[4] G01G *13/00;* B65B *23/06*

U.S. Cl. 53—502 8 Claims



1. A sorting and packing device for eggs, comprising:

first means for measuring weights of eggs supplied thereto,

second means electrically connected to said first means for storing egg weights measured by the first means,

third means electrically connected to said second means for comparing an egg weight corresponding to an egg and read out from the second means with a predetermined weight range, determining said egg to be selected as one egg for one pack in the case where said egg weight is present within the predetermined weight range in said first comparision and then secondly comparing another weight corresponding to another egg and read out from the second means with a weight range which is newly set based on said egg weight of said determined egg to be selected in order to determine a next one egg to be selected for said one pack, and for thirdly comparing said another weight with said predetermined weight range in the case where said egg weight is not present within the predetermined weight range in said first comparison, determining said another egg to be selected an one egg for said one pack in the case where said other egg weight is present within the predetermined weight range in said third comparison, and then fourthly comparing said egg weight with a weight range which is newly set based on said another egg weight of said determined egg to be selected in order to determine next one egg to be selected for said one pack, and

fourth means electrically connected to said third means for packing egg showing egg weights selected by said third means.

4,765,125

FLEXIBLE PACK POSSESSING AN EVACUATION MEANS AND DEVICE FOR THE EVACUATION OF THIS PACK

Bernard Fafournoux, Le Roumingue, 33138 Lanton, France

Filed Aug. 24, 1987, Ser. No. 88,294

Claims priority, application France, Aug. 26, 1986, 86 12070

Int. Cl.[4] B65B *31/00*

U.S. Cl. 53—512 3 Claims

1. A device for evacuating flexible packs each comprising wall means defining a pocket having an orifice, an elastically compressible chamber located inside said pocket adjacent to, but spaced from, said orifice, and means defining a passage for fluid between said chamber and said pocket, the device comprising a base defining a predetermined position on to which the compressible chamber is to be located when a pack is positioned on said base,

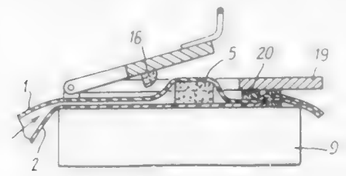
a first carrier movable towards and away from said base,

first sealing means mounted on the first carrier and positioned to engage said base on one side of said predetermined position when the first carrier is moved towards the base,

a compression member mounted on the first carrier and positioned to engage the base in said predetermined position when the first carrier is moved towards said base for compressing said chamber at said predetermined position,

a second carrier movable towards and away from the base,

second sealing means mounted on said second carrier and positioned to engage said base on the opposite side of said predetermined position when the second carrier is moved towards said base.



4,765,126

SADDLE

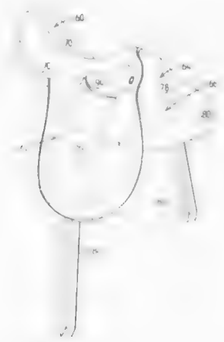
Kenneth J. Bates, Lot 2, Glen Road, Darlington, Western Australia, Australia

Continuation-in-part of Ser. No. 826,483, Jan. 3, 1986. This application Oct. 3, 1986, Ser. No. 914,943

Claims priority, application Australia, May 8, 1984, PG4882

Int. Cl.[4] B68C *1/02*

U.S. Cl. 54—44 6 Claims



1. A saddle comprising a saddle tree formed from a material forming substantially the sole structural element of said saddle, an upper saddle covering including a seat and upper flaps, and an underside saddle covering including a panel and under flaps, said saddle coverings being carried by the saddle tree, the improvement comprising at least upper flaps being formed in part from a composite sheet material consisting of a cloth-covered foam with the cloth facing outwardly and facing the legs of the rider and a wear strip affixed to said upper flaps and positioned to be engaged by the legs of the rider and formed from a more wear resistant material than said composite sheet material.

4,765,127

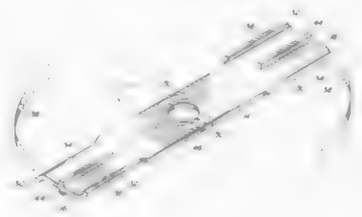
SELF-SHARPENING MOWER BLADE

Elic S. Hamblen, 5115 S. U.S. 27, Leesburg, Fla. 32748

Continuation-in-part of Ser. No. 906,430, Sep. 12, 1986, abandoned. This application Jul. 23, 1987, Ser. No. 77,110

Int. Cl.[4] A01D *34/73*

U.S. Cl. 56—295 3 Claims



1. A reversible, self-sharpening blade for a rotary mower comprising an elongated, flat metallic member having first and second ends and a central aperture for mounting the member on a shaft for rotation in a cutting plane, each of said first and second ends having a downwardly turned leading edge and an upwardly turned trailing edge bilaterally symmetrical about a blade centerline extending end-to-end of said member, a leading cutting edge being defined on each downturnedly turned leading edge of said member when said member is rotating in the cutting plane and a trailing cutting edge being defined on each upturnedly turned edge of said member, said turned edges being commonly angled in opposite directions between 15 and 45 degrees with respect to the cutting plane, said cutting edge being defined by an edge of said turned leading edge lying in the cutting plane, said blade including first and second air dams formed on upper and lower surfaces, respectively, of said member parallel to and coterminous with said cutting edges, said air dams having a height extending from said member normal to the cutting plane substantially coextensive with said upturned and downturned edges of said member.

4,765,128

DEVICE FOR PRODUCING A THREAD CONNECTION BY SPLICING

Klaus Rosen, Moenchengladbach; Josef Bertrams, Wegberg; Rudolf Consoir, Hückelhoven; Heinz Differding, Moenchengladbach; Reinhard Maurien, Moenchengladbach; Heinz Zumfeld, Moenchengladbach, and Wolfgang Irmen, Moenchengladbach, all of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Moenchengladbach, Fed. Rep. of Germany

Filed Aug. 8, 1986, Ser. No. 894,690

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1985, 3528619

Int. Cl.[4] D01H *15/00*

U.S. Cl. 57—22 10 Claims



1. Device for producing a thread connection by splicing, comprising a splicing head having a splicing channel formed

VOL 1093 ISS 4 AG 23 1988 UMI

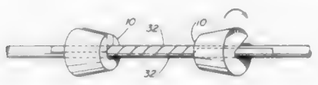
therein in which a tension-proof thread connection is formed by mutually entangling, hooking, intermingling and/or wrapping fibers of thread ends, means in the form of a line for supplying heated splicing air to said splicing channel, an adjustable heat source coupled to said splicing head, another adjustable heat source connected to said air supplying means, and a temperature regulating device for controlling said other adjustable heat source including a first thermostat connected to said other adjustable heat source and a second thermostat measuring the temperature gradient of said other adjustable heat source.

4,765,129

METHOD FOR SPLICING FILAMENTARY MATERIAL AND HOLDING DEVICES THEREFOR

Francois Jodoin, St. Constant, and Jean M. Roberge, Kirkland, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 27, 1987, Ser. No. 78,438
Int. Cl.[4] D01H *15/00*
U.S. Cl. 57—72 15 Claims



1. A method for splicing filamentary material comprising overlapping respective end portions of two pieces of filamentary material by arranging the pieces to extend in opposite directions with respective end portions of the pieces alongside one another, holding the pieces of filamentary material at two axially spaced holding positions and rotating the filamentary material at one holding position with respect to the filamentary material at the other holding position to twist the overlapped end portions together, and treating the twisted end portions to cause the twisted end portions to adhere to one another.

4,765,130

METHOD AND APPARATUS FOR MAKING CABLE CORE

Joseph G. C. C. De Vareanes, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 2, 1987, Ser. No. 115,323
Int. Cl.[4] D07B *1/06*
U.S. Cl. 57—59 8 Claims



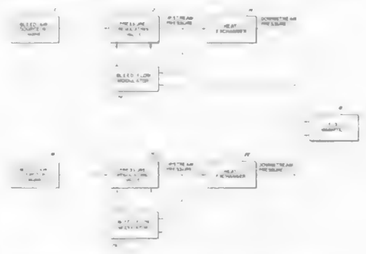
1. A method of making a cable core structure, comprising stranding together a plurality of cable core structure forming elements while drawing the cable core structure forming elements along a passline through a closing die, and simultaneously vibrating the closing die to facilitate movement of the cable core structure forming elements over one another to form a compact cable core structure without permanent deformation of the cable core structure forming elements.

4,765,131

AIRCRAFT ENGINE BLEED AIR FLOW BALANCING TECHNIQUE

Paul A. Benson, Palos Verdes Estates, Calif., assignor to Allied Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 699,753, Feb. 8, 1985, Pat. No. 4,671,318.
This application Jul. 11, 1986, Ser. No. 884,335
Int. Cl.[4] F02C *6/08*
U.S. Cl. 60—39.02 17 Claims



1. A method of controlling bleed air flow in a multi-engine aircraft comprising the steps of:
controlling with a valve the amount of bleed air supplied by an engine;
monitoring bleed air pressure at a first location downstream of said valve at the inlet of a heat exchanger, said monitoring step producing a first signal proportional to bleed air pressure at said first location, said first signal consisting of the pneumatic pressure of said bleed air at said first location;
driving said valve to regulate pressure of bleed air supplied from said engine in response to said first signal, said driving step including producing a control pressure of magnitude less than or equal to said first signal and actuating said valve in response to said first signal and said control pressure;
monitoring bleed air pressure at a second location downstream of said first location at the outlet of said heat exchanger, said monitoring step producing a second signal proportional to bleed air pressure at said second location, said second signal consisting of the pneumatic pressure at said second location; and
modulating said driving step to maintain a preselected flow of bleed air from said engine, said modulating step being responsive to said first signal and said second signal and operable to adjust said control pressure downwardly to cause a corresponding downward adjustment in bleed air flow.

4,765,132

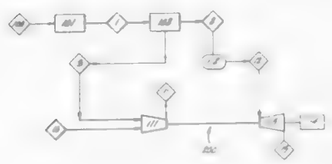
PROCESS FOR COMBUSTION OF A FUEL CONTAINING SULFUR THROUGH THE USE OF A GAS TURBINE

David J. Ahner, Ballston Lake; Richard C. Sheldon, Schenectady, and Joseph J. Oliva, Rexford, all of N.Y., assignors to General Electric Company, New York, N.Y.

Filed Mar. 19, 1985, Ser. No. 713,776
Int. Cl.[4] F02C *3/28*
U.S. Cl. 60—39.02 12 Claims

1. A process for combusting a fuel containing sulfur through the use of a gas turbine, said process comprising the steps of:
subjecting the fuel to a sulfur treatment process;
separating a purified fuel gas stream and a tail gas comprising carbon dioxide and a contaminant containing sulfur;
passing the purified fuel gas stream to a combustor of the gas turbine;
passing a working gas into a compressor of the gas turbine;
passing a stream of the tail gas into the compressor;

compressing the working gas and the tail gas into a compressed stream in the compressor of the gas turbine;
passing the compressed stream into the combustor;
combusting the purified fuel gas stream and the contaminant in the combustor to form a combusted stream; and



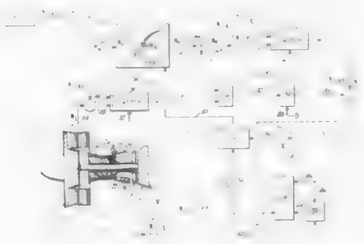
passing the combusted stream to a turbine of the gas turbine wherein the combusted stream is expanded to form an expanded stream.

4,765,133

FUEL CONTROL WITH SMOOTH MODE TRANSITION

Leon Krukoski, Coventry, and Richard F. Laprad, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 8, 1986, Ser. No. 939,217
Int. Cl.[4] F02C *9/28*
U.S. Cl. 60—39.06 9 Claims



1. In the method of operation of a control system for a gas turbine aircraft engine having a compressor, a burner, and a turbine, wherein the actual value of a first parameter is continuously determined, and wherein a scheduled value of the first parameter is compared to the actual value of the first parameter, and the control modulates the fuel flow to the burner to eliminate any difference between the actual and scheduled values of the first parameter, and in the event either the scheduled or actual values of the first parameter cannot be reliably determined and the first parameter is thereby lost, and the control modulates fuel flow to eliminate the difference between a scheduled value of a second parameter, which is compressor speed, and the actual value of the compressor speed to eliminate the difference therebetween, and wherein a trim for the scheduled value of the compressor speed is computed and applied to the scheduled value of the compressor speed upon loss of the first parameter, the trim beign computed as the difference between said scheduled value of the compressor speed and the actual value of the compressor speed last determined before first parameter mode loss, the improvement comprising the steps of:
continuously estimating the value of the compressor speed as a function of the scheduled value of the first parameter;
continuously calculating the difference between the scheduled value of the compressor speed and said estimated value of the compressor speed; and
upon first parameter mode loss, limiting the computed trim applied to the scheduled value of the compressor speed to the continuously calculated difference last calculated in said preceding step prior to loss of said first parameter.

4,765,134

ACOUSTIC OSCILLATORY PRESSURE CONTROL FOR SOLID PROPELLANT ROCKET

Robert S. Brown, Santa Clara, and Roger Dunlap, Sunnyvale, both of Calif., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 28, 1986, Ser. No. 901,117
Int. Cl.[4] F02K *9/72*
U.S. Cl. 60—204 8 Claims



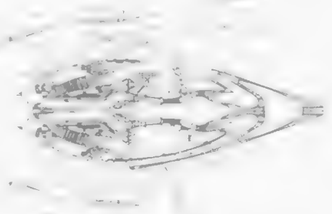
1. A method for controlling the acoustic oscillatory pressures generated by gas flow at the grain transition boundary in solid propellant rocket motors, said boundary transition including a sudden geometry expansion, said method characterized by;
restricting the transition boundary at the sudden expansion geometry such that the gas flow separates upstream and has a vena contracta downstream of said restricted transition boundary.

4,765,135

GAS TURBINE ENGINE

Alain, M. J. Lardellier, Melun, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." , Paris, France

Filed Oct. 29, 1987, Ser. No. 113,918
Claims priority, application France, Oct. 29, 1986, 86 15035
Int. Cl.[4] F02K *3/072*
U.S. Cl. 60—226.2 8 Claims



1. In a gas turbine engine intended for aircraft propulsion and having front and rear ends defined in relation to the direction of travel of the aircraft propelled by said engine,
an engine casing,
air intake means including a plurality of inlet ducts arranged around said engine casing,
means defining an annular chamber disposed to receive said intake air from said inlet ducts,

VOL 1093 ISS 4 AUG 23 1988 UMI

a gas generator disposed to receive said intake air from said annular chamber and comprising
compression stages,
a combustion chamber, and
turbine stages for driving said compression stages, said annular chamber being located to the rear of said gas generator and said generator being arranged such that said air from said chamber travels in a forward direction successively through said compression stages, said combustion chamber, and said turbine stages of said gas generator,
a forwardly extending axial outlet duct from said gas generator,
two interdigitated, contra-rotating, low-speed power turbines adapted to be driven by hot gases from said gas generator and disposed in a radially superposed relationship outwards of said axial outlet duct,
means connected to said axial outlet duct for receiving said gases from said gas generator and reversing the direction of flow thereof to feed said gases in a rearward direction through said power turbines, and
ejection means for said gases exiting from said power turbines,
wherein the interior disposition of said engine, from front to rear, comprises in succession:
said interdigital, contra-rotating, power turbines and said axial outlet duct from said gas generator in radial superposition;
said turbine stages of said gas generator;
said combustion chamber;
said compression stages of said gas generator, and
said annular air inlet chamber.

4,765,136

GAS TURBINE ENGINE AUGMENTOR

Thomas R. Clements, Stuart, and James D. Blevins, Palm Beach Gardens, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 801,642, Nov. 25, 1985, abandoned. This application Sep. 24, 1987, Ser. No. 102,745
Int. Cl.[4] F02C *1/00*
U.S. Cl. 60—261 5 Claims



1. An annular-shaped pilot section for a flameholder disposed in the augmentor of a gas turbine engine and said pilot section having a generally parabolic-shaped wall means defining a cavity, said parabolic-shaped wall means having a closed end portion at the fore end defining a leading edge having a generally concaved-shaped surface defining a portion of said cavity and an opened portion at the aft end for admitting fuel entrained exhaust gases, said augmentor having an axially extending centerline and said annular-shaped pilot section having a centerline in coincidence with said centerline of said augmentor, said fore end and said aft end being relative to the flow of the gas path in said gas turbine engine and an igniter disposed in said cavity, wherein the improvement comprises a slot in said wall means extending transverse to the direction of the flow of exhaust from said gas turbine engine, and being located adjacent said leading edge, said slot being oriented perpendicular to the centerline of said annular-shaped pilot section and said slot is disposed a distance from said igniter wherein the flow of fuel enriched engine exhaust gases flowing through said slot is directed tangentially relative to said concave-shaped surface to create a vortical flow region, and said vortical flow region is located adjacent said igniter.

4,765,137

EXHAUST GAS CONTROL MEANS FOR ENGINE

Tadashi Sakurai, and Wataru Fuchigami, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1987, Ser. No. 22,660
Claims priority, application Japan, Mar. 7, 1986, 61-48493
Int. Cl.[4] F02B *27/02*
U.S. Cl. 60—313 6 Claims



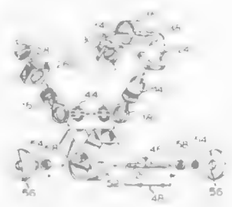
1. In an exhaust system for an internal combustion engine having a first exhaust pipe, a second exhaust pipe, a first reflective means rotatably supported on a first shaft in said first exhaust pipe, the rotated position of said first reflective means being effective to vary the reflective area thereof, second reflective means rotatably supported on a second shaft in said second exhaust pipe, the rotatable position of said second reflective means being effective to vary its reflective area, said shafts being juxtaposed to each other and having adjacent ends and remotely positioned ends, a common control device operatively connected to the remotely positioned ends of said first and second shaft for simultaneously positioning said first and said second reflective means.

4,765,138

STIRLING ENGINE WITH PRESSURIZED CRANKCASE

John A. Corey, Melrose, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Jul. 21, 1987, Ser. No. 76,032
Int. Cl.[4] F02G *1/04*
U.S. Cl. 60—517 12 Claims



1. A Stirling cycle engine comprising an engine housing which includes compression and expansion cylinders and a crankcase area; a compression piston and an expansion piston positioned in respective cylinders in said housing and coupled to a common crankshaft via bearing means; said crankshaft being positioned in the crankcase area which is defined by said pistons and said housing; said pistons include pad means between said pistons and their respective cylinders to minimize the friction therebetween during reciprocal movement thereof; said crankcase being pressurized to inhibit the passing of working gas past the pistons; and means for cooling said crankshaft and said bearing means eliminating the need for oil in the crankcase.

4,765,139

THERMOCOUPLE FOR HEATING AND COOLING OF MEMORY METAL ACTUATORS

Charles Wood, Flintridge, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 23, 1987, Ser. No. 76,956
Int. Cl.[4] F03G *7/06*
U.S. Cl. 60—527 15 Claims



1. An apparatus for cooling a memory metal actuator, comprising:
a semiconductor thermocouple including a first portion having an N-type conductivity, a second portion having a P-type conductivity, and a third electrically conductive portion electrically connecting the first portion and the second portion;
a flexible thermally conductive element extending between the semiconductor thermocouple and the memory metal actuator for transmitting heat therebetween; and
a power supply for supplying DC current through the first, second, and third portions to activate the semiconductor thermocouple.

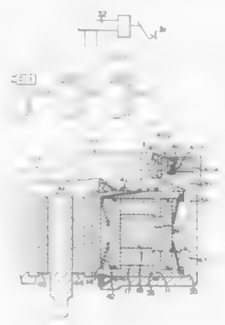
4,765,140

PIEZOELECTRIC SERVOMECHANISM APPARATUS

Yuzo Imoto, Kariya; Yoshiyuki Hattori, Toyoake; Toshihiro Takei, and Mitsuo Inagaki, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Jan. 3, 1986, Ser. No. 816,052
Claims priority, application Japan, Jan. 17, 1985, 60-5040
Int. Cl.[4] F15B *7/00*
U.S. Cl. 60—545 13 Claims

1. A piezoelectric servomechanism apparatus, comprising:
a cylinder chamber;
a fixed support member formed at a first axially opposite inner end portion of said cylinder chamber;
a floating plate which moves inside said cylinder chamber in the axial direction of said cylinder chamber;
a first group of piezoelectric elements, which is provided between the fixed support member of said cylinder chamber and said floating plate and which expands and contracts with the application of voltage, said first group of piezoelectric elements being formed by stacking a plurality of thin-plate piezoelectric elements one on another between said fixed support member and said floating plate, for expanding and contracting in a direction in which the elements are stacked;
a second group of piezoelectric elements which is provided on said floating plate and is parallel with said first group of piezoelectric elements, and which expands and contracts in a direction parallel to the direction in which said first group of piezoelectric elements are stacked, said second group of piezoelectric elements being formed by stacking a plurality of thin-plate piezoelectric elements on said floating plate, for expanding and contracting in a direction in which the elements are stacked;
a working member which is provided on a free end of said second group of piezoelectric elements on the side opposite said floating plate;



first urging means for urging said floating plate and said first group of piezoelectric elements against the fixed support member of said cylinder chamber; and
second urging means for urging said working member and said second group of piezoelectric elements against the floating plate.

4,765,141

METHOD OF CONTROLLING A VARIABLE GEOMETRY TYPE TURBOCHARGER

Yuji Hirabayashi, Zushi, Japan, assignor to Nissan Motor Co., Ltd., Kanagawa, Japan

Division of Ser. No. 706,623, Feb. 28, 1985. This application Oct. 19, 1987, Ser. No. 109,587
Claims priority, application Japan, Feb. 29, 1984, 59-36103; Feb. 29, 1984, 59-36104
Int. Cl.[4] F02B *37/12*
U.S. Cl. 60—602 7 Claims



1. A method of controlling the supercharging pressure of a variable geometry type turbocharger having a bypass, comprising the following steps which are carried out successively:
(a) receiving signals from an engine speed sensor and from an engine knocking sensor;
(b) receiving a signal from a throttle valve sensor;
(c) judging whether or not an engine is being accelerated, and proceeding to step (e) below if the engine is being

VOL 1093 ISS 4 AG 23 1988 UMI

accelerated and to step (d) below if the engine is not being accelerated, i.e., if the engine is in a constant speed operation;
(d) determining a first correction value and proceeding to step (g) below;
(e) judging whether or not the engine is knocking, and proceeding to step (d) if knocking is occurring and to step (f) below if no knocking is occurring;
(f) determining a second correction value and proceeding to step (g);
(g) receiving signals from said engine speed sensor and from an airflow meter which measures the quantity of airflow to be supplied to the engine;
(h) calculating an airflow rate per engine revolution;
(i) determining a duty valve according to said calculated airflow rate;
(j) determining a corrected duty value by subtracting one of said first and second correction values which has been determined in previous steps from said duty value;
(k) comparing said corrected duty value with an upper limit value and a lower limit value;
(l) changing said corrected duty value to be equal to said upper limit value if said corrected duty value exceeds said upper limit value, and to said lower limit value if said corrected duty value is less than said lower limit value, and leaving as it is if said corrected duty value is between said upper and lower limit values; and
(m) transmitting said corrected duty value to control means for controlling the geometry of said variable geometry type turbocharger and the opening said of bypass of said turbocharger, thereby controlling the supercharging pressure of said turbocharger.

4,765,142

COMPRESSED AIR ENERGY STORAGE TURBOMACHINERY CYCLE WITH COMPRESSION HEAT RECOVERY, STORAGE, STEAM GENERATION AND UTILIZATION DURING POWER GENERATION

Michael Nakhamkin, Fanwood, N.J., assignor to Gibbs & Hill, Inc., New York, N.Y.

Filed May 12, 1987, Ser. No. 48,852
Int. Cl.[4] F01K *3/02*; F02C *3/12*
U.S. Cl. 60—652 17 Claims



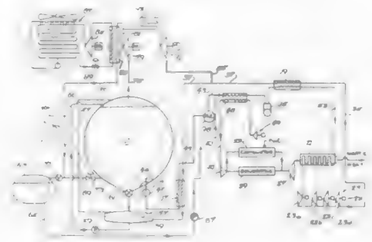
1. A Compressed Air Energy Storage (CAES) plant cycle which utilizes otherwise wasted compression heat by storing such heat in a thermal energy storage (TES) device for subsequent use for steam generation and injection into compressed air flow before entering a high pressure combustor which expands such compressed air to produce additional power, said cycle comprising the steps of:
compressing a quantity of air in a low pressure compressor during an off-peak load period;
partially extracting thermal energy from said compressed air thereby producing cooled compressed air;
storing said extracted thermal energy in said thermal energy storage device;
further compressing said cooled compressed air in a high pressure compressor;
cooling said further compressed air output by said high pressure compressor in an aftercooler;
storing said cooled further compressed air output by said aftercooler in an underground air storage during said off-peak load period;
producing steam by heating water in said thermal energy storage device during a peak load period;
injecting said steam into said compressed air flow before entering said high pressure combustor;
combusting fuel in said high pressure combustor to produce a high temperature mixture of the products of said combustion and said steam; and
expanding said mixture in a turbine.

4,765,143

POWER PLANT USING CO_2 AS A WORKING FLUID

John T. Crawford, Naperville; Lewis Tyree, Jr., Oak Brook, both of Ill.; Harry C. Fischer, Maggie Valley, N.C., and Don H. Coers, Naperville, Ill., assignors to CBI Research Corporation, Plainfield, Ill.

Filed Feb. 4, 1987, Ser. No. 10,685
Int. Cl.[4] F01K *25/10*
U.S. Cl. 60—671 21 Claims



1. A system for storing energy and then using such stored energy plus heat to generate power, which system comprises
insulated vessel means for storing liquid carbon dioxide at its triple point,
means for creating a reservoir of carbon dioxide liquid at about the triple point thereof in said vessel means, which reservoir contains a substantial amount of solid carbon dioxide,
means for withdrawing liquid carbon dioxide from said vessel means and very substantially increasing the pressure of said withdrawn liquid,
means for heating said higher pressure carbon dioxide,
means connected to an outlet from said heating means for expanding said heated carbon dioxide to dry vapor or to vapor containing some entrained liquid to create rotary power, and
means for returning the discharge stream from said expanding means to said vessel means where carbon dioxide vapor is condensed by melting solid carbon dioxide therein.

4,765,144

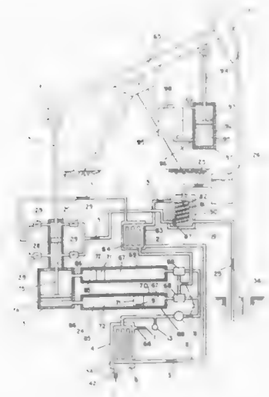
SOLAR-POWERED RANKINE CYCLE PUMPING ENGINE

John P. Spacer, P.O. Box 127, Sandia Park, N. Mex. 87047

Continuation-in-part of Ser. No. 818,359, Jan. 13, 1986, Pat. No. 4,720,978. This application Dec. 15, 1987, Ser. No. 133,025
Int. Cl.[4] F01K *9/02*
U.S. Cl. 60—692 10 Claims

1. A heat engine comprising:
(a) a source of heating fluid;
(b) a two phase working fluid;
(c) a first heat exchanger for heating said working fluid with energy from said heating fluid;

(d) first double acting cylinder means comprising opposing ends, and a piston which reciprocates within said cylinder means between said ends, said piston being affixed to a piston rod which extends through one of said ends;
(e) a pair of hydraulic cylinders, each having a free piston between a working fluid containing end and a lubricating fluid containing end, said lubricating fluid containing end of each of said hydraulic cylinders being connected to a separate one of said opposing ends of said first cylinder means, said lubricating fluid containing ends and said first cylinder means being filled with and sharing a common lubricating fluid;
(f) means for doing work operably connected to said piston rod;
(g) means connected to said first exchanger for passing only working fluid above a predetermined pressure and temperature;
(h) a pair of three-way valves positioned between said hydraulic cylinders and said working fluid passing means, and between said hydraulic cylinders and a second heat exchanger, each of said valves connecting one of said working fluid ends of one of said hydraulic cylinders to said fluid passing means for conducting pressurized work-



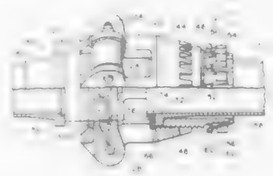
ing fluid from said first heat exchanger to said hydraulic cylinder end, and to said second heat exchanger for exhausting said working fluid from said hydraulic cylinder end through said second heat exchanger;
(i) condenser means;
(j) second double acting cylinder circulating pump means for pumping said working fluid through a working loop, said circulating pump means containing a piston connected to said piston rod of said first cylinder means, said second circulating pump means having ends containing working fluid inlet and outlet check valves beyond piston travel, said circulating pump means being disposed for pumping working fluid through said working loop from said condenser means, through said second circulating pump means, through said second heat exchanger, said first heat exchanger, said pressure and temperature sensitive fluid passing means and said three-way valves, into said working fluid ends of said hydraulic cylinders, back through said three-way valves, through said second heat exchanger and back into said condenser means; and
(k) means for operating said three-way valves to control working fluid entry into and exit from said working fluid ends of said hydraulic cylinders to cause said heat engine to do work.

4,765,145

CONNECTOR ASSEMBLY

Barrett D. Hines, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 20, 1987, Ser. No. 4,521
Int. Cl.[4] F02K *9/42, 9/60*
U.S. Cl. 60—757 20 Claims



15. A rocket engine having a fuel inlet and an oxidizer inlet including a connector assembly for coupling each inlet to a connecting member associated with a fuel conduit and an oxidizer conduit, which connector assembly comprises in combination:
a generally conical body with a forward end and a beveling skirt;
a plurality of slots in the conical body at the forward end opposing the skirt end;
raised retaining collars integral to the body and positioned on opposite sides of the slots;
rotatable books positioned within the slots and retained therein by the retaining collars in cooperation with retaining pivot pins;
a retaining ring at the forward end of the body; and
an opening in the forward end of the body for receiving a connecting member.

4,765,146

COMBUSTION CHAMBER FOR GAS TURBINES

Jaan Hellat, Baden-Rüthof, and Jakob Keller, Dottikon, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Continuation of Ser. No. 828,663, Feb. 12, 1986, abandoned. This application Jul. 27, 1987, Ser. No. 80,254
Claims priority, application Switzerland, Feb. 26, 1985, 863/85
Int. Cl.[4] F02C *1/00*; F02G *3/00*
U.S. Cl. 60—746 14 Claims



1. An annular burner assembly for a gas turbine comprising:
an annular collision chamber;
a first annular reaction chamber communicating with a first side of the collision chamber;
a second annular reaction chamber communicating with a second and opposite side of the collision chamber;
a first annular array of means for directing a plurality of swirled mixtures of fuel and air into the first reaction chamber;
a second annular array of means for directing a plurality of

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VOL
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swirled mixtures of fuel and air into the second reaction chamber;

said directing means having a fuel nozzle, a premixing tube, and a swirl body;

said first array being in a first plane and said second array being in a second plane that is parallel to said first plane;

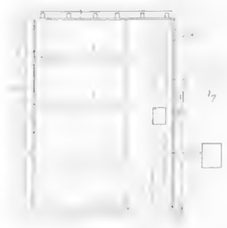
each of said directing means in the first array including means for imparting a swirl in a first direction to said mixtures emitted from the first array, and each of said directing means in the second array including means for imparting a swirl to said mixtures emitted from the second array, such that each swirled mixture emitted from the first array encounters in the collision chamber a swirled mixture emitted from the second array, said swirled mixture from the first array traveling in a substantially opposite direction and swirling in an opposite state from the swirled mixture from the second array of directing means.

4,765,147

METHOD FOR FREEZING SAKE

Tamotsu Adachi, Kobe, Japan, assignor to Ozeki Sake Brewing Co., Ltd., Hyogo, Japan

Filed Apr. 24, 1987, Ser. No. 42,045
Int. Cl.[4] F25D *25/00*
U.S. Cl. 62—62 5 Claims



1. A method for freezing sake which comprises the steps of:

producing sake according to conventional fermentation;

introducing said sake into containers without subjecting it to any heat treatment;

placing said containers in a refrigerator equipped with a cooling device and fan device for producing continuous air flow, said refrigerator having ventilating spaces at the side walls and floor;

controlling the temperature in said refrigerator at 2° to 70° C. lower than the desired frozen sake temperature; and

continuously contacting said sake with flowing air so that said sake takes the form of sherbert wherein the water in said sake is frozen in the form of a spongy material of needles to embrace an alcohol portion contained therein.

4,765,148

AIR CONDITIONING SYSTEM INCLUDING PUMP DRIVEN BY WASTE HEAT

Kotaro Ohashi, Tokyo, Japan, assignor to Nibon Radiator Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1987, Ser. No. 110,864
Claims priority, application Japan, Oct. 22, 1986, 61-249478
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—116 8 Claims

1. In a refrigerating system:

a boiler in which a working fluid can be heated to the point of vaporizing;

a jet pump, said jet pump being fluidly communicated with said boiler in a manner to receive the high pressure temperature vapor generated therein and create a low pressure zone;

a main condenser fluidly communicated with said jet pump for condensing the effluent from said jet pump;

a separating unit fluidly communicated with said main condenser for separating the liquified effluent into a first refrigerant having a first saturation temperature and a second refrigerant having a second saturation temperature which is higher than that of the first refrigerant;

a pump for pumping the second refrigerant in liquid form from said separating unit to said boiler;



an auxiliary condenser for receiving the first refrigerant in vapor form and condensing the same to its liquid state;

an evaporator fluidly interposed between said auxiliary condenser and the low pressure zone in said jet pump; and

an expansion valve which controls the amount of first refrigerant which is permitted to be inducted into said evaporator.

4,765,149

REFRIGERATION CYCLE APPARATUS

Takashi Shiga; Hidekazu Tani; Hiroaki Hama, all of Wakayama, and Hitoshi Iijima, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1987, Ser. No. 79,496
Claims priority, application Japan, Aug. 4, 1986, 61-183813; Aug. 4, 1986, 61-183812; Aug. 4, 1986, 61-183814; Aug. 4, 1986, 61-183815
Int. Cl.[4] F25B *41/00*
U.S. Cl. 62—174 8 Claims
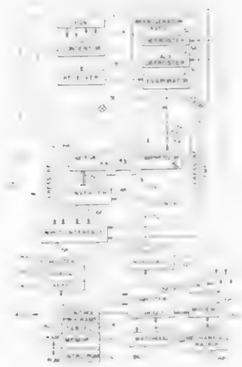


1. A refrigeration cycle apparatus which comprises first and second compressors, a four-way valve, a outdoor heat exchanger, first and second expansion means, at least one indoor heat exchanger, an accumulator, a refrigerant circuit connecting these element in order, a reservoir connected to said accumulator through an overflow pipe and a refrigerant supplying pipe with a first solenoid valve and a feeding pipe with a second solenoid valve for connecting the inlet side of said expansion means to said reservoir, wherein said first and second solenoid valves are opened and closed on the basis of operational conditions in a refrigeration cycle.

4,765,150

CONTINUOUSLY VARIABLE CAPACITY REFRIGERATION SYSTEM

Jacob P. Persem, Tracy, Calif., assignor to Margaux Controls, Inc., Fremont, Calif.

Filed Feb. 9, 1987, Ser. No. 12,578
Int. Cl.[4] F25B *1/00*
U.S. Cl. 62—215 11 Claims



1. A single stage compressor system for use in a refrigeration system having one or more refrigerator cases wherein goods are stored said refrigeration system including condensing means for condensing compressed refrigerant from said compressor system, evaporating means for expanding the refrigerant in said condensing means and thereby removing heat from said refrigerator cases, and compressor suction line means for directing expanded refrigerant from said evaporating means to said compressor system, said compressor system comprising:

a reciprocating compressor coupled to a three phase drive motor in an open direct drive arrangement, said motor having a capacity of at least five horsepower;

inverter means for driving said motor at a speed specified by a motor speed signal, wherein said speed can be varied substantially continuously over a predefined range of speeds;

load sensing means for detecting at least one physical parameter indicative of the load on the refrigeration system selected from the set consisting of the temperature in at least one of said refrigerator cases, and the pressure in said compressor suction line means, and for generating a load differential signal corresponding to the difference between said detected physical parameter and a specified target value;

control means, responsive to said load differential signal, for adjusting the capacity of the refrigeration system by adjusting the speed of said motor within said predefined range of speeds, including software means for establishing an initial speed value and for periodically adjusting said speed value so as to minimize said load differential signal, and means for generating a motor speed signal corresponding to said speed value;

wherein said control means adjusts the capacity of said refrigeration system within a substantially continuous range.

4,765,151

FOOD AND DRINK COOLER FOR AUTOMOBILES

Alan L. Bessey, 406 Main St., N., Dunlap, Tenn. 37327

Filed Nov. 20, 1987, Ser. No. 123,600
Int. Cl.[4] B60H *1/32*
U.S. Cl. 62—239 10 Claims



1. A food and drink cooler for use in an automobile having a storage trunk, a passenger compartment adjacent the trunk and a partition between the trunk and the passenger compartment, said partition having a hole communicating the trunk with the compartment, said cooler comprising a receptacle having a base, a plurality of upstanding walls and a lid for enclosing the top and for permitting entry into the receptacle when the lid is open, a portal formed in one of the walls, said portal including an opening extending through said wall, a hollow cylindrical hub disposed about said opening and projecting from the exterior surface of said wall for entry through said hole when the cooler is mounted in said trunk, a closure member, means for removeably connecting said closure member to said hub for opening and closing access into said cooler by a person within the passenger compartment, and means for limiting movement of said cooler relative to said hole when said cooler is supported in the trunk.

4,765,152

BEVERAGE DISPENSER WITH A PARTITIONLESS REFRIGERATING STAND

Alfred Armstrong, Norwood, Mass., assignor to Cratheo, Inc., Canton, Mass.

Filed Apr. 13, 1987, Ser. No. 37,944
Int. Cl.[4] B67D *5/62*
U.S. Cl. 62—389 10 Claims



1. Beverage-dispenser apparatus of the type including a storage bowl atop a stand housing components of a compression refrigeration system for chilling beverage in the bowl, comprising a motorized compressor positioned in a lower region within the stand, an evaporator and motorized beverage pump located in an upper region within the stand, an air-cooled condenser operatively connected with said compressor and evaporator to form said refrigeration system, said condenser including enclosed refrigerant-circulating passages in a broad-area heat-exchange grid array through which air may readily be circulated, means mounting said condenser grid array within said stand substantially horizontally above said compressor and below said evaporator, said condenser grid array being dimensioned and disposed to occupy substantially the full horizontal cross-section of said stand and alone provid-

VOL 1093 ISS 4 AG 23 1988 UMI

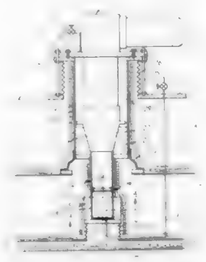
ing passageways in said stand for circulation of air vertically between said lower and upper regions, unbaffled fan means in close proximity to said condenser grid array driven to force air substantially vertically therethrough, and substantially vertical side walls enclosing said stand, including side walls having openings allowing ambient air to be circulated laterally into and out of said upper and lower regions of said stand.

4,765,153

CRYOSTAT WITH RADIATION SHIELDS COOLED BY REFRIGERATOR

Yoshihiro Wachi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 9, 1987, Ser. No. 12,265
Claims priority, application Japan, Feb. 12, 1986, 61-26753
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—514 R 5 Claims



1. A cryostat comprising:
(a) a reservoir for holding cryogenic liquid;
(b) double radiation shields, each of which surrounds said reservoir;
(c) a vacuum vessel surrounding said double radiation shields;
(d) a refrigerator removably mounted on said vacuum vessel, having two different temperature heat stages, one of which is in thermal contact with one of the radiation shields, while the other of which is in thermal contact with the other radiation shield;
(e) a receptacle covering said refrigerator heat stages gastightly;
(f) means for introducing uncondensible gas into said receptacle; and
(g) means for evacuating gas from said receptacle.

4,765,154

COIN HOLDER

Roger Martin, 45 E. Walnut St., Central Islip, N.Y. 11722

Filed Feb. 11, 1987, Ser. No. 13,257
Int. Cl.[4] A44C *21/00, 25/00*
U.S. Cl. 63—23 5 Claims

1. A coin holder ring which comprises:
(a) a body engaging member having an open ring-shaped poriton lying in a plane, a pair of spaced flat tabs at ends thereof lying in said same plane, and an internal annular slot therein;
(b) a cap having a hollow body with an internal wall; and
(c) means for adjustably securing said cap on said flat tabs while urging said flat tabs together, said flat tabs being sloped relative to said internal wall of said hollow body and said cap being displaced onto said flat tabs a distance until said ring portion automatically captures and secures the peripheral edge of the coin so that different sized coins



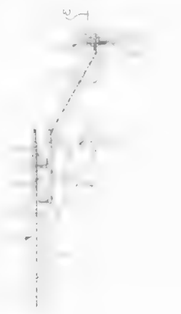
may be automatically captured by said ring portion by merely tightening or loosening said cap.

4,765,155

CIRCULAR KNITTING MACHINE WITH CLOTH TAKE UP SAFETY GATE

Bruce M. Pernick, Glendale, N.Y., assignor to Monarch Knitting Machinery Corporation, Glendale, N.Y.

Filed Jul. 27, 1987, Ser. No. 78,052
Int. Cl.[4] D04B *9/00*
U.S. Cl. 66—8 14 Claims



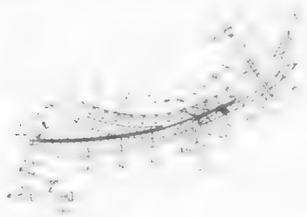
1. In a circular knitting machine having a frame including a circular bed plate supporting a needle cylinder for rotation thereon, vertical legs spaced around and supporting said bed plate on the upper ends thereof, and a knit fabric take up roll mechanism having an upper end supported for rotation beneath and with said needle cylinder, the combination therewith of safety gate means including a safety gate element positioned between and normally enclosing each of the entire spaces between adjacent of said vertical legs, at least one of said safety gate elements including
(a) lower and upper sections, and
(b) means supporting said upper section on said lower section for vertical movement between a raised closed position adjacent said bed plate and a lowered open position, said upper section being vertically movable to the lowered open position to permit access to the area immediately beneath said bed plate.

4,765,156

CIRCULAR KNITTING MACHINE FOR PRODUCING KNIT GOODS WITH COMBED-IN FIBERS

Peter Artzt; Gerhard Egbers, both of Reutlingen; Helmut Grimm, Neckartailfingen; Klaus Kunde, Kohlberg; Adolf Seidel, Reutlingen; Helmut Haecher, Stuttgart; Wolfgang Kolb, Reutlingen; Erwin Schäberle, Gäufelden, and Peter Wachsmuth, Leinfelden, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Filderstadt, Fed. Rep. of Germany

Continuation of Ser. No. 775,525, Sep. 13, 1985, abandoned. This application Jul. 24, 1987, Ser. No. 77,997
Claims priority, application Fed. Rep. of Germany, Sep. 13, 1984, 3433643
Int. Cl.[4] D04B *9/14*
U.S. Cl. 66—9 B 13 Claims



1. Circular knitting machine for the production of knit goods having combed-in fibers, with a preselected fiber density, comprising: a rotatable needle cylinder having needles with needle hooks; means for driving the needle cylinder during knitting cycles; a card which has means for feeding fibers, a comb-in zone through which the needles pass for contactless reception of fibers, and a teasing cylinder rotating at high speed which picks up the fibers from the feeding means and yields the fibers to the comb-in zone; first protective means which can be actuated into a working position for preventing fibers from being fed to the needles; second protective means which can be actuated into a working position for preventing just inserted fiber tufts from being removed from the needle hooks; an ejection flap which can be actuated into a working position for discharging excess fibers, and actuating means for actuating between successive knitting cycles said first and second protective means and said flap into said working positions substantially as long as the needle cylinder is at a standstill such that the preselected fiber density of the knit fabric is substantially maintained constant also when the teasing cylinder is not stopped between successive knitting cycles.

4,765,157

METHOD AND APPARATUS FOR ROLLING UP FABRIC FOR CIRCULAR KNITTING MACHINE

Toshihiko Okada, Kyoto, Japan, assignor to Gunze Limited, Ayabe, Japan

Filed Feb. 5, 1987, Ser. No. 11,501
Claims priority, application Japan, Aug. 23, 1986, 61-197843
Int. Cl.[4] D04B *15/88*
U.S. Cl. 66—151 14 Claims

1. A fabric rolling-up apparatus for a circular knitting machine disposed below the knitting means of the machine and adapted to be brought into and out of operation in synchronism with the knitting means, the rolling-up apparatus having a pair of opposed support frames and a take-up spool supported by bearing means on the support frames and stoppably rotatable about a horizontal axis in a direction for rolling up thereon the knitted fabric delivered in a hanging state from the knitting means, the apparatus being characterized in that the take-up spool comprises a pair of spool members rotatable together on a common axis in the rolling-up direction by transmission means, each of the spool members having a projecting end providing a fabric clamping face, each spool member being supported on bearing means on the corresponding support frame and being axially movable between a rolling-up position and a withdrawn position outwardly away therefrom, retaining means being mounted on each of the support frames and engageable with the outer end of the spool member for preventing the spool member from moving outward, withdrawing means fixedly provided in opposed relationship to each other outside the knitting machine for axially moving the pair of



spool members between the rolling-up position and the withdrawn position when the spool members are released from the retaining means; wherein each of the spool members is formed with axial grooves that are semicircular in cross section and arranged radially of the spool member, and balls are rollably fitted in the semicircular grooves, the balls and the semicircular grooves effecting transmission of torque for the rotation of the spool member in the rolling-up direction and guiding the axial movement of the spool member.

4,765,158

DUST EXTRACTION APPLIANCE FOR FLAT KNITTING MACHINES

Ernst Goller, Reutlingen, and Jochen Dieringer, Hechingen, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Co., Reutlingen, Fed. Rep. of Germany

Filed Oct. 9, 1987, Ser. No. 106,274
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1986, 3635096
Int. Cl.[4] D04B *35/32*
U.S. Cl. 66—168 6 Claims



1. A dust extraction system for a flat knitting machine having a slide which moves relative to needle beds comprising:
a plurality of suction nozzles adjustably mounted on the slide and in alignment with the needle beds;
a suction source mounted on the slide and connected to said plurality of nozzles, said suction source including at least one suction flow device having
(a) a connection inlet and a suction outlet, and
(b) a vacuum forming means for forming a vacuum when a compressed-gas flows through said connection inlet;

VOL 1093 ISS 4 AG 23 1988 UMI

a flexible delivery line connected at one end to said connection inlet and at the other end to a commpressed-gas supply which is stationary; and
a dust collection bag mounted on the slide and connected to said suction outlet of said at least one suction flow device.

4,765,159
CONTROLLER FOR A DRY CLEANING APPARATUS
Akira Maeda, and Haruo Hagiwara, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 10, 1987, Ser. No. 72,214
Claims priority, application Japan, Jul. 17, 1986, 61-168838
Int. Cl.[4] D06F *43/02, 33/02*
U.S. Cl. 68—12 R 1 Claim



1. A controller for a dry cleaning apparatus including one processing tank, tanks capable of exclusively containing two or more types of solvents, respectively, capable of melting to be mixed with each other, a fractionating device for fractionating two or more types of solvents and filters for the respective solvents, comprising:
a memory circuit for storing washing programs for washing with a single solvent and combined solvents;
a control panel for selecting said washing programs;
an input circuit to which a signal from a sensor which detects an amount of the solvent pumped up into the processing tank is supplied;
an output circuit for driving motors for rotating the processing tank, a pump for pumping up or circulating the solvent and a plurality of valves disposed between portions forming the dry cleaning apparatus; and
a CPU (central processor unit) for operating a program selection signal from said control panel, a program signal from said memory circuit and an input signal from said input circuit to supply the operated signal to said output circuit;
whereby an optimum washing method can be selected in accordance with material, processing and form of clothes.

4,765,160
WASHING MACHINE
Kenji Yamamoto; Masakatsu Morishige; Harumi Takeuchi, and Yoshitaka Tsunomoto, all of Shiga, Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Jun. 12, 1986, Ser. No. 873,393
Claims priority, application Japan, Jun. 20, 1985, 60-93105[U]; Jun. 20, 1985, 60-93106[U]; Jun. 20, 1985, 60-93107[U]; Jul. 16, 1985, 60-109149[U]; Jul. 16, 1985, 61-157608; Jul. 16, 1986, 60-157610
Int. Cl.[4] B08B *33/02*
U.S. Cl. 68—12 R 10 Claims

1. A washing machine comprising;
a tub,
a pulsator arranged rotatably within said tub,
a driving means for rotating said pulsator positively and reversely,
a first means for controlling said driving means to form a first cycle consisting of a set of first repeating units including the positive and reverse rotations of said pulsator, and
a second means for controlling said driving means to form

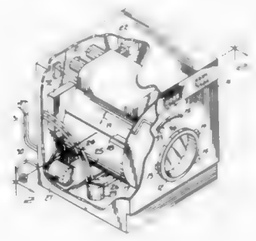


intermittently in said first cycle, a second cycle containing a set of second repeating units including the positive and reverse rotations of said pulsator and shorter than said first cycle.

4,765,161
OUT-OF-BALANCE CONTROL FOR LAUNDRY MACHINES
George Williamson, Cincinnati, Ohio, assignor to American Laundry Machinery, Inc., Cincinnati, Ohio
Filed Oct. 19, 1987, Ser. No. 109,441
Int. Cl.[4] D06F *23/02, 33/02, 37/22*
U.S. Cl. 68—12 R 6 Claims

1. In a laundry machine, or the ike, comprising
a perforated drum in which goods are placed for washing,
electric motor drive means for rotating said drum,
main control means, for said machine, having means for controlling said electric drive means and rotation of said drum, including means for accelerating rotation of said drum to a relatively high rate of rotation for the extraction of liquid from goods therein, by centrifugal force;
an out-of-balance control for preventing damage to the machine from centrifugal forces resulting from an unbalanced load when the drum is rotating at an extraction speed, said out-of-balance control comprising
means for deriving, from the electric motor drive means, a "real time" current signal proportionate to the current drawn by said motor, such current being, in turn, proportionate to the torque required to rotate the drum, the torque requirement for the motor varying cyclically in proportion to any unbalance in the load within the rotating drum and the centrifugal forces generated thereby,
means for averaging said "real time" signal, the time constant for said averaging means being such that the "average" signal output is proporationate to the average current drawn by the motor during a relatively few number of rotations,
means for differentiating said "average" signal from said "real time" signal, to provide an "unbalance torque" output signal of alternating polarity, the amplitude of which is proportionate to variations in motor torque resulting from centrifugal forces generated by load unbalance,
means responsive to the amplitude of the "unbalance torque" signal exceeding a preset magnitude (representing a maximum permissible unbalance centrifugal force), for generating an "unbalance control" output signal, and
means responsive to said "unbalance control" signal for reducing the rate of rotation of said drum.

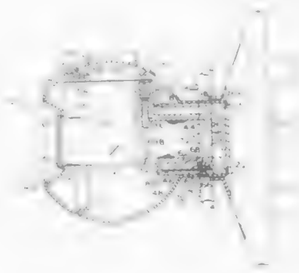
4,765,162
WASHER-DRYER APPARATUS
Raymond Ouellette, R.F.D. 1, Box 814A, Bath, Me. 04530
Filed Aug. 10, 1987, Ser. No. 83,150
Int. Cl.[4] D06F *25/00, 58/04*
U.S. Cl. 68—20 6 Claims



1. A new and improved washer-dryer combination comprising,
a housing, and
a rotatable drum positioned within said housing, and
a fluid supply means for providing washing fluid to said portable drum, and
an elongate heated air plenum supply means positioned within said housing and overlying said rotatable drum for supplying heated drying air to said rotatable drum, and
control means for utilizing either a washing cycle in said drum utilizing a fluid supply from said fluid means or a drying cycle for utilizing heated drying air from said plenum to dry garments positioned within said drum, and
a baffle plate means positioned for circumferential motion about said rotatable drum from a first to a second position for enabling drying air to be provided to said drum during said drying cycle in said first position and upon repositioning said baffle plate means to said second position to seal said plenum supply means from fluid intrusion from said drum during said washing cycle; and
wherein said baffle plate means is overlying said rotatable drum and underlying said plenum supply means in said second position, and
an articulate movable handle integrally secured to said baffle plate means positioned through said housing for enabling positioning of said baffle plate means relative to said plenum means.

4,765,163
FRONT-LOADED KNOB ASSEMBLY
Jeffrey G. Trull, Matthews, and David Dixon, Monroe, both of N.C., assignors to Yale Security Inc., Monroe, N.C.
Filed Apr. 20, 1987, Ser. No. 40,194
Int. Cl.[4] E05B *13/10*
U.S. Cl. 70—224 2 Claims

1. A front-loaded knob assembly for a lockset comprising a tubular knob shank, an inner knob shell half fixedly secured about the outside of the knob shank, a tubular lock cylinder axially disposed in the outer end of the knob shank, the cylinder being keyed for rotation with the shank, a cylinder plug rotatably disposed in the cylinder and adapted to cooperate with a key and pin tumblers in the cylinder in the conventional way, the plug having lock spindle drive means on its inner end, the cylinder having secured thereto the outer knob shell half normally mating with the outer end of the inner knob shell half, the cylinder having a radial opening therein, the shank and the inner half of the knob having a radial opening aligned with the radial opening in the cylinder, the opening in the cylinder being diametrically enlarged in its inner side to form an annular shoulder facing radially inward, and retaining pin means extending through the radial openings in the shank and cylinder normally locking the cylinder against longitudinal displacement, the retaining pin means having an inward enlargement butting against the annular shoulder, the inner end of the plug having a radial recess larger in diameter than the pin means, and removable means preventing axial relative



movement between the plug and cylinder, the pin being always accessible to the outside of the knob but is only depressible when the pin is radially aligned with the recess in the plug, and depression of the pin to a position inward of the shank permits axial removal of the cylinder and the outer knob shell.

4,765,164
SPARE TIRE BRACKET LOCK
John W. Prince, Jr., 17911 Ridge Top, Houston, Tex. 77090
Filed Feb. 17, 1987, Ser. No. 15,300
Int. Cl.[4] B65D *43/04;* **F16B** *41/00*
U.S. Cl. 70—259 8 Claims



1. A spare tire bracket lock for installation on the existing spare tire support bracket of a pick-up truck or similar vehicle of the type having an elongated spare tire support bracket for supporting the spare tire in the stored position against the undercarriage of the vehicle and an elongated threaded bolt extending vertically through an aperture at one end of the tire support bracket engaged by a flanged nut having an eye therein, said spare tire bracket lock comprising;
a quadrilateral tubular member having open top and bottom ends slidably received on one end of the existing spare tire support bracket,
said tubular member having slotted side walls for receiving the said one end of the existing tire support bracket and the threaded bolt and nut therethrough as said tubular member is slid on the one end of the support bracket,
said tubular member surrounding the surface of the spare tire support bracket and extending therebelow and thereabove to substantially surround both the existing nut and elongated threaded bolt extending through same said one end to prevent application of cutting tools to said nut and bolt.

VOL 1093 ISS 4 AG 23 1988 UMI

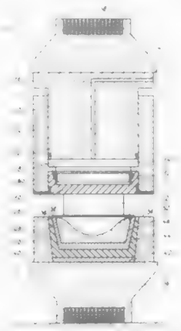
4,765,165
LOCK/PLATE ASSEMBLY, ESPECIALLY AS A REPLACEMENT IN CAR DOORS
James O'Gara, 444 W. 258th St., Riverdale, N.Y. 10471
Filed May 15, 1987, Ser. No. 50,918
Int. Cl.[4] E05B *63/00*
U.S. Cl. 70—417 20 Claims



1. A lock plate assembly adapted to be mounted on a supporting surface formed with a cylinder hole, said assembly comprising:
a cover plate provided with a bulge, said bulge having a keyhole formed in registration with said cylinder hole;
a lock cylinder having a shank with a noncircular outline disposed in said cylinder hole and a head disposed in said bulge;
a holding plate formed with a noncircular opening in registration with said cylinder hole and complementary to said noncircular shank outline and in engagement therewith for preventing rotation of said lock cylinder;
a plurality of bores formed in respective mutual alignment in said cover plate, said supporting surface, and said holding plate; and
respective fastening means traversing the aligned bores for mounting said lock plate assembly on said supporting surface with at least said cover plate on an outer side thereof.

4,765,166
CAVITY FORMING PRESS
Carl Bergman, and Lennart Svensson, both of Västeras, Sweden, assignors to ASEA Aktiebolag, Västeras, Sweden
Continuation of Ser. No. 817,281, Jan. 9, 1986, abandoned. This application Jun. 15, 1987, Ser. No. 62,386
Claims priority, application Sweden, Jan. 11, 1985, 8500124
Int. Cl.[4] B21D *22/10*
U.S. Cl. 72—63 9 Claims

1. A press stand for shaping a sheet blank by pressing it against a forming tool, said press stand comprising
a first press table which provides a support surface,
a rigid ring located on said support surface, said rigid ring having an inner surface and a flat end surface remote from said first press table, said flat end surface defining an imaginary plane,
a bottom plate located within said rigid ring and resting on said support surface of said first press table,
a cup-shaped container located within said rigid ring in spaced fashion from both the inner surface of said rigid ring and from said bottom plate, said cup-shaped container containing said forming tool and having a flat end surface remote from said first press table,
an elastic material filling the space between said cup-shaped container and both the inner surface of said cylindrical ring and said bottom plate, said elastic material providing a flat end surface remote from said first press table and located in said imaginary plane,
an annular cylinder which is movable towards and away from said first press table, said annular cylinder including a flange which is abuttable against the flat end surface of said cylindrical ring, said flange supporting a flexible diaphragm, and
piston means within said annular cylinder which, together with said flexible diaphragm and said annular cylinder provides a closed space, said piston means including a



channel for the supply of pressure medium to said closed space for moving said flexible diaphragm against a sheet blank positioned on the end surface of said cup-shaped container and causing said sheet blank to bend against the forming tool within said cup-shaped container, said elastic material propagating the pressure applied thereagainst by said cup-shaped container in all directions.

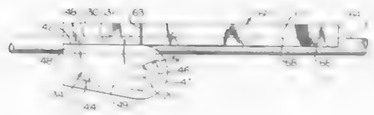
4,765,167
METHOD OF ROLL FORMING PISTON
Sheldon E. Sampson, Davisburg, Mich., assignor to Koppy Corporation, Ferndale, Mich.
Filed Dec. 4, 1986, Ser. No. 937,784
Int. Cl.[4] B21K *1/18*
U.S. Cl. 72—68 13 Claims



1. A method of forming an annular piston having a central hub portion, a radial pressure face and an outer cylindrical flange having an outwardly opening annular seal receiving groove comprising the steps:
(a) forming an annular sheet metal stamping having a central axis, a generally cylindrical central hub portion, a radially extending portion having a radial pressure face, and an axial cylindrical flange having an annular free end portion with a transition portion of reduced thickness located between said flange and said pressure face;
(b) rotating the stamping about its axis while radially and axially supporting said hub portion;
(c) journaling an annular forming first roller of convex shape upon an axis parallel to said stamping axis;
(d) progressively feeding said first roller transversely into said flange while simultaneously axially compressing and permanently bending the free end portion radially outward to form a radially, inwardly concave groove;
(e) replacing said first roller with an annular forming second roller of generally rectangular shape;
(f) progressively feeding said second roller transversely into said flange while further compressing the free end portion to form said groove into generally U-shape and to partially fold said transition portion;
(g) successively replacing said second roller with an annular forming third roller of final rectangular shape; and
(h) progressively feeding said third roller into said flange to further fold said transition portion into a folded over portion and to form a partially flattened outer surface of said transition portion.

4,765,168
METHOD AND APPARATUS FOR BENDING TUBING
Ronald R. Stange, Littleton, and Gary E. Demartelaere, Conifer, both of Colo., assignors to Tools For Bending, Inc., Denver, Colo.
Filed Jul. 27, 1987, Ser. No. 78,465
Int. Cl.[4] B21D *7/04*
U.S. Cl. 72—159 21 Claims





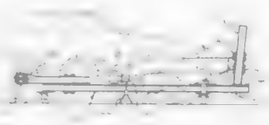
1. In a tube bending machine in which the tube to be bent is clamped between a generally U-shaped bend die and a cooperating pressure die, the pressure die being advanced in a linear direction as said bend die is rotated, said bend die and pressure die having confronting faces with a tube groove in each of said faces for embracing diametrically opposed sides of said tube to be bent, the improvement comprising:
said tube groove on said bend die being generally U-shaped having a bend section of generally semi-circular configuration and opposite sides extending in tangential directions substantially parallel to one another to define tangential grooves along said opposite sides of said bend die, said tangential grooves having a cross-sectional radius of curvature substantially corresponding to that of said tube to be bent, said tube groove along said bend section having a bottom surface portion with a cross-sectional radius of curvature less than one-half of the outside diameter of said tube to be bent and opposite side surfaces of said bend section each having a cross-sectional radius of curvature greater than one-half of the outside diameter of said tube to be bent, and said opposite side surfaces undergoing a smooth gradual transition into said bottom surface portion.

4,765,169
METHOD OF TENSION LEVELING NONHOMOGENEOUS METAL SHEET
Charles R. Bradlee, Sidney, Ohio, assignor to The Monarch Machine Tool Co., New Bremen, Ohio
Filed Nov. 2, 1987, Ser. No. 115,673
Int. Cl.[4] B21D *1/02, 37/16;* B21B *27/00*
U.S. Cl. 72—160 3 Claims



1. In a method of tension leveling a strip of continuous, nonhomogeneous metal sheet of the type in which an area adjacent to a longitudinal edge of said sheet has a lower yield strength than a remainder thereof, wherein said sheet is unwound from a coil supported on an uncoiler, said sheet is passed, under tension, in a serpentine path between upper and lower sets of nested work rolls which impart a controlled plastic strain to said sheet, and said sheet is rewound into a coil on a recoiler, the improvement comprising the step of:
prior to passing said sheet between said work rolls, heating said area to a temperature above a temperature of said remainder to create thermal expansion in said area sufficient to produce a thermal strain in said area such that when added to elastic strain at yield in said area, is equal to an elastic strain at yield in said remainder of said sheet and passing said heated sheet along said serpentine path in said nested work rolls.

4,765,170
VEHICLE FRAME STRAIGHTENING MACHINE
Robert E. Langley, 1817 Mountain Ave., Santa Barbara, Calif. 93101, and Roy B. Ziegler, P.O. Box 50111, Montecito, Calif. 93150
Filed Nov. 4, 1985, Ser. No. 794,579
Int. Cl.[4] B21D *1/12*
U.S. Cl. 72—305 12 Claims



1. An apparatus for straightening vehicular frames which comprises:
(a) a pair of longitudinal beam members;
(b) a pair of transverse beam members clamped to the ends of said longitudinal members whereby a rectangular frame cradle is formed;
(c) at least two clamps for clamping to the structure of said vehicle movably attached to each of the longitudinal members of said frame cradle;
(d) a fifth beam member having one end pivotally mounted to one of said transverse beam members, the position of said pivot along said transverse beam member being adjustable, said fifth beam extending under the transverse beam member of said frame cradle opposite said pivot,

VOL 1093 ISS 4 AG 23 1988 UMI

said fifth beam member being free to rotate about said pivot to align itself with forces exerted;

(e) force generating means for generating a force generally parallel to said fifth beam mounted to the distal end of said fifth beam; and

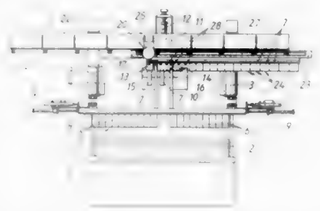
(f) means for coupling said force generating means to a member of said vehicle whereby a straightening force may be applied to said vehicle member.

4,765,171

APPARATUS FOR FLANGING SHEET METAL BLANKS

Johann Klingesberger, Lohnsberg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 10, 1987, Ser. No. 72,252
Claims priority, application Austria, Aug. 14, 1986, 2191/86
Int. Cl.[4] B21D *5/04*
U.S. Cl. 72—316 17 Claims



1. In apparatus for flanging a sheet metal blank comprising

a frame,

a backing structure, and

a holding-down mechanism for holding down a sheet metal blank on said backing structure, which holding-down mechanism comprises

a holding-down ram, which is mounted in said frame for reciprocation in a predetermined direction toward and away from said backing structure, and

a holding-down shoe, which is mounted on said ram and comprises a plurality of segments, which are arranged in a straight row and adapted to be forced by said ram against a sheet metal blank on said backing structure to define on said blank a bend line that is parallel to said row,

said segments comprising mid-segment means, which are mounted to be displaceable relative to said ram transversely to said row, and side segments, which are disposed in said row on opposite sides of said mid-segment means and are displaceable relative to said ram along said row,

the improvement comprising

a slider mounted on said ram for reciprocation in said predetermined direction between extended and retracted positions relative to said ram and provided with a slide track parallel to said row and open at one end and having means to guide said mid-segment means along said track,

a mid-segment changer having a receiving opening on said ram be disposed adjacent to and aligned along said row with said open end of said slide track when said slider is in said retracted position,

said slider having means to hold said mid-segment means in said slide track in said row when said slider is in said extended position and clear of said row when said slider is in said retracted position, and

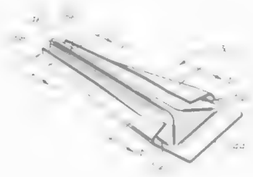
shifting means or said ram for shifting said mid-segment means between said slide track and said receiving opening when said slider is in said retracted position.

4,765,172

METHOD AND TOOLS FOR FORMING SEWING MACHINE BINDER STRIP FOLDERS

Theodore A. Seese, Baldwin Park; Subramanian Narayanan, Rowland Heights, and Gilbert A. Flores, Whittier, all of Calif., assignors to SGT Folders Unlimited, Inc., Rowland Heights, Calif.

Filed Nov. 24, 1986, Ser. No. 933,788
Int. Cl.[4] B21D *53/00*
U.S. Cl. 72—322 9 Claims



1. In a method of forming a binder folder, the steps comprising:

(a) providing a flat bendable sheet having longitudinal edges and opposite first and second ends,

(b) bending longitudinal edge portions of said sheet inwardly over the same side of the sheet to form said sheet into a folded configuration having substantially coplanar longitudinal edge channels which open laterally inward toward one another and open longitudinally at their ends, and a relatively flat central sheet portion between and parallel to the common plane of said edge channels,

(c) bending said sheet laterally and progressively from its first end toward its second end while retaining the second end portion of the sheet in said folded configuration, to form said central sheet portion into a laterally curved longitudinally extending and tapered fold which progressively decreases in height and increases in width from said first end toward said second end of the sheet and to twist said channels substantially about their longitudinal axes, thereby to form a folder body having a relatively narrow mouth at said first sheet end and twisted longitudinal channels having coplanar end portions at said second sheet end and opposite mouth ends which are angularly displaced about said channel longitudinal axes relative to said coplanar channel end portions, and wherein

(d) said bending step (c) comprises placing said central sheet portion between a first forming bar having a longitudinal forming cavity with side walls whose thickness is no greater than the width of said folder edge channels, and a second forming bar having a forming blade engagable in said forming cavity and laterally projecting wings having edge slots in a common longitudinal plane of the second forming bar normal to the plane of and containing the leading edge of its forming blade, with said central sheet portion aligned with said forming cavity and said second sheet end engaging in said slots, and effecting relative movement of said forming blade into said forming cavity to deform said central sheet portion into said cavity and thereby form said sheet fold and twist said sheet edge channels, and

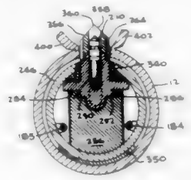
(e) wherein a binder strip is adapted to be fed endwise through said folder body toward said folder mouth with the binder strip edges engaging within said channels to fold the binder strip laterally on itself.

4,765,173

WELL PENETRATION APPARATUS

Herman J. Schellstede, 342 Duperier Ave., New Iberia, La. 70560

Division of Ser. No. 721,848, Apr. 9, 1985, Pat. No. 4,640,362.
This application Aug. 21, 1986, Ser. No. 898,515
Int. Cl.[4] B21D *28/28, 28/26, 28/34*
U.S. Cl. 72—325 17 Claims



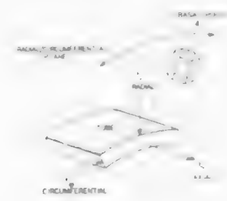
1. A punch member for providing an opening in a heavy workpiece such as a metal tube or sheet, said punch member comprising an elongated member having a generally cylindrical outer surface and curved cutting edge surfaces on one end of said generally cylindrical outer surface for initiating the provision of an opening and partially cutting such an opening in a metal workpiece such as a tube or sheet when urged axially thereagainst and longitudinal grooves bearing axes parallel to the axis of the punch member and intersecting and extending inwardly from said curved cutting edge surfaces for completing the opening by bending back tab portions of the workpiece on opposite sides of the opening in response to further axial movement of the punch member to complete the opening without severing any part of the workpiece moved to form the opening from the remaining portion of the workpiece.

4,765,174

TEXTURE ENHANCEMENT OF METALLIC TUBING MATERIAL HAVING A HEXAGONAL CLOSE-PACKED CRYSTAL STRUCTURE

Charles S. Cook, Murrysville Boro, and George P. Sabol, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 20, 1987, Ser. No. 17,298
Int. Cl.[4] B21C *37/30*
U.S. Cl. 72—367 14 Claims



1. In a method of producing tubing composed of a metallic material having a hexagonal close-packed crystal structure so as to increase the radial texture of basal poles in the crystal structure, said producing method including intermediate and final stages, said intermediate stage including the steps of performing at least one tubing cross-sectional area reduction and a recrystallization anneal following said reduction, said final stage including the steps of performing a last tubing cross-sectional area reduction and a final anneal following said last reduction, a radial texture enhancement procedure comprising the steps of:

(a) peforming at least one tubing diameter size expansion during said intermediate stage of producing said tubing: and

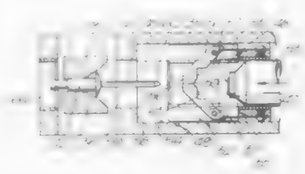
(b) performing a recrystallization anneal following said size expansion and before said final stage of producing said tubing.

4,765,175

APPARATUS FOR INSTALLING FASTENERS

Keith Denham, Welwyn Garden City; Glenn Stride, Hitchin, and Jonathan L. Brewer, Dunstable, all of England, assignors to Avdel Limited, Hertfordshire, England

Filed Sep. 15, 1986, Ser. No. 907,099
Claims priority, application United Kingdom, Sep. 19, 1985, [illegible]
Int. Cl.[4] B21D *31/00*
U.S. Cl. 72—391 10 Claims



1. Apparatus for installing fasteners, which apparatus includes:

a fastener installation head including an aperture having a front end, into which aperture one part of the fasteners is inserted through said front end thereof so that the fastener can be acted on by the installation head when another part of the fastener is inserted in a workpiece, thereby to install the fastener in the workpiece;

and fastener feeding means for feeding new fasteners successively to the front of the aperture of the installation head; which fastener feeding means comprises:

fastener supporting means which can take up an operative position for supporting a new fastener to be inserted into the aperture of the installation head, the fastener supporting means and the fastener installation head being movable relative to each other so that said one part of the fastener may approach the aperture to enter therein,

and fastener guiding means which can take up an operative position for guiding the said one part of an approaching fastener into the aperture,

each of the fastener supporting means and fastener guiding means being movable to a retracted position in which said fastener supporting means and said fastener guiding means allow said another part of the fastener access to a workpiece in which it is to be installed whilst the one part of the fastener is still inserted into the aperture in the fastener installation head to be acted on thereby,

wherein said fastener guiding means and the fastener installation head are movable relative to each other and wherein said fastener guiding means is movable from its operative position to its retracted position by means of engagement of the installation head with said fastener guiding means during continued movement of the instllation head relative to the fastener guiding means in a direction towards the workpiece in which the fastener is to be installed, in a position which is beyond the fastener guiding means on that side thereof which is remote from the side thereof form which the installation head approaches the fastener guiding means.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,176

TOOL FOR MOUNTING CABLE END SLEEVES

Carl Geisser, Letzigraben 156, CH-8047 Zürich, Switzerland

Filed Mar. 17, 1987, Ser. No. 26,571
Claims priority, application Switzerland, Mar. 25, 1986, 1215/86
Int. Cl.[4] H01R 43/04
U.S. Cl. 72—410 7 Claims



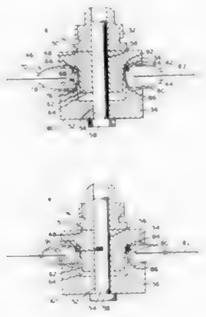
1. A tool for mounting cable end sleeves onto the ends of cables comprising:
two pliers arms comprising a first pliers arm and a second pliers arm;
a toggle joint disposed transversely to the pivot plane of said pliers arms;
two clamping jaws movable with respect to each other via the toggle joint by pressing together the pliers arms;
a first spring opening the pliers arms;
a belt-like magazine carrying the cable end sleeves;
a jump feed device for the incremental advance of the belt-like magazine when the pliers arms are actuated;
said jump feed device comprising a two-armed lever having a first pivot arm and a second pivot arm;
an arresting element associated with the first pivot arm;
a second spring prestressing one of the two pliers arms against a detent in the two-armed lever;
one of the two pliers arms being flexibly connected with the second pivot arm of the two-armed lever;
the two pliers arms being connected in at least a part of their pivot area with the clamping jaws via the toggle joint.

4,765,177

GROMMET FORMING FIXTURE

Richard A. Pendleton, Brockton; Richard C. Jernstedt, Humarock, and Clarke R. Sutherland, East Bridgewater, all of Mass., assignors to PCI Group, Inc., New Bedford, Mass.

Continuation of Ser. No. 783,138, Oct. 2, 1985, abandoned. This application Oct. 31, 1986, Ser. No. 925,455
Int. Cl.[4] B21D 37/00
U.S. Cl. 72—412 1 Claim



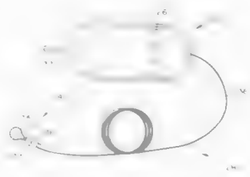
1. A fixture adapted to be used with a pull tool to form the parts of a fastener about an opening in material to reinforce the material opening, the fastener being a grommet having an upper part with an annular shoulder about an opening and a lower part with an annular shoulder and a tubular portion comprising:
(a) an upper die having a die having a truncated lower portion and a central opening and a threaded upper portion adapted to be positioned in the pull tool;
(b) a lower die having a truncated opening for guidingly receiving said truncated lower portion and a pull stem associated therewith, said pull stem adapted to be inserted through the fastener and said opening in said upper die and into the pull tool;
(c) said upper and lower dies each having a working surface contoured to the fastener so that upon the pull tool pulling said pull stem, said dies force the fastener about the material opening;
(d) said upper die working surface having a first outer annular recess for receiving the annular shoulder of the upper grommet part and a second inner annular recess for receiving the tubular portion of the lower grommet part, said truncated lower portion providing means to guide one part of the fastener into another part of the fastener, said second inner recess providing means to fold the tubular portion of the lower grommet part about the opening in the upper grommet part; and,
(e) said lower die working surface having a plurality of annular recesses whereby a single lower die can be used to form more than one size grommet.

4,765,178

HYDROCARBON PROBE

David N. Kempf, Indianapolis; Ford C. Jefferson, Beech Grove, and Brian L. Chandler, Indianapolis, all of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 31, 1986, Ser. No. 846,122
Int. Cl.[4] G01M 3/16
U.S. Cl. 73—49.2 7 Claims



1. A probe for detecting the presence of fluids comprising:
a casing defining a protective chamber and having at least one opening permitting fluid exterior to said casing to enter the chamber,
a fluid monitoring means within said chamber,
a cable attached to said casing for inserting said casing between the walls of a double-walled tank, and
means on the distal end of said cable for attaching said cable to a fish.

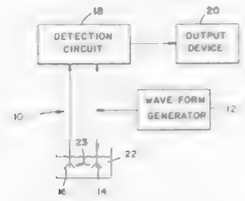
4,765,179

RADIO FREQUENCY SPECTROSCOPY APPARATUS AND METHOD USING MULTIPLE FREQUENCY WAVEFORMS

Milton E. Fuller, Reno, Nev., and Gary S. Fletcher, Jr., Carmichael, Calif., assignors to Solid State Farms, Inc., Reno, Nev.

Continuation-in-part of Ser. No. 774,150, Sep. 9, 1985, Pat. No. 4,679,426. This application Mar. 6, 1987, Ser. No. 22,973
Int. Cl.[4] G01N 29/02
U.S. Cl. 73—53 17 Claims

1. In an apparatus enabling a determination of the concentration of a chemical in a test sample including electromagnetic waveform generation means for generating a electromagnetic signal, probe means coupled to said generation means for transmission of said signal as an input signal into said test sample and formed for receipt of said signal after propagation through at least a portion of said test sample as an output signal, and detection means coupled for receipt of said input signal and said output signal and responsive thereto to quantify a change between said input signal and said output signal, the improvement in said apparatus comprising:



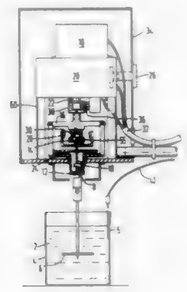
said generation means generating a periodic electromagnetic signal having plurality of simultaneously present frequencies to produce a periodic waveform of known shape; and
said detection means being responsive to said input signal and said output signal to quantify a change in shape between said input signal and said output signal.

4,765,180

VISCOMETER

Michael Clifton, "Willow Rise" Hall Lane, Harbury, Leamington Spa, Great Britain (CV33 9HG)

PCT No. PCT/GB86/00521, § 371 Date Apr. 23, 1987, § 102(e) Date Apr. 23, 1987, PCT Pub. No. WO87/01450, PCT Pub. Date Mar. 12, 1987
PCT Filed Sep. 2, 1986, Ser. No. 47,010
Claims priority, application United Kingdom, Sep. 3, 1985, 8521881
Int. Cl.[4] G01N 11/14
U.S. Cl. 73—59 10 Claims



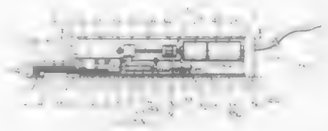
1. A viscometer for use in monitoring the viscosity of a liquid, which includes a rotatable support element, drive means to rotate said support element, a rotatable driven element coaxial with said support element and having a part which is to be immersed in a liquid the viscosity of which is to be monitored and which is to be subjected to a viscous drag which changes as the viscosity of the liquid changes, resilient means connecting the elements and which yields with variation in the relative angular position of the elements as the viscous drag increases, electrical means to sense the variation in the relative angular position of the elements and to provide an electrical output signal of a magnitude dependent upon said relative angular position, and electronic means communicating with the electrical means and arranged to record the variation in angular position characterised in that the electrical means is a magnetoresistive sensor mounted to rotate with one of the elements and responsive to magnetic flux producing means mounted to rotate with the other of the elements, in that the electronic means is connected to the electrical means by an analogue to digital converter, and in that the electronic means is a microprocessor system adapted to derive intermittent electronic signals from the electrical means by intermittent sampling of the output of the analogue to digital converter.

4,765,181

SURFACE TEXTURE MEASURING INSTRUMENT

Minoru Numoto, and Tsutomu Kanzaki, both of Mitaka, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

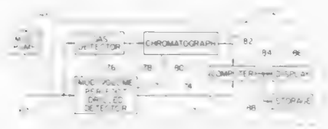
Continuation of Ser. No. 894,144, Aug. 7, 1986, abandoned. This application Aug. 5, 1987, Ser. No. 82,925
Claims priority, application Japan, Aug. 8, 1985, 60-174836; Aug. 8, 1985, 60-121889[U]
Int. Cl.[4] G01B 5/28
U.S. Cl. 73—105 15 Claims



1. A surface texture measuring instrument, comprising a casing which can be directly located on a surface of an object whose surface texture is to be measured, said casing having a bottom surface which defines a flat datum-level surface and which is provided with a recessed v-shaped groove defined by converging surfaces, detachable pick-up means for attachment to and detachment from said instrument, said pick-up means, when attached to said instrument being engagable with the surface of the object to be measured for detecting the surface roughness of said object, said attached pick-up means being movable over the surface of said object relative to said casing so as to follow surface roughness of said object, and driving means in said casing for moving said attached pick-up means over the surface of said object, said attached pick-up means comprising a stylus which projects outward from said casing to move over and come into contact with said surface, said stylus being movable vertically by said roughness at the point of contact, a skid having a curved surface in contact with the surface of said object adjacent to said stylus and the engagement of said stylus with said surface and movably connected to said casing independent of said vertical movement of said stylus, said curved surface having a vertical hole through which said stylus at such point of contact of said stylus with said surface passes, said hole being off-set from a center of said curved surface, a converter for converting the displacement of said stylus by the roughness of said surface at the point of contact into electrical signals, and a shell movably supported in said casing and housing said converter, said shell comprising an electrical connector supported by said shell and electrically connected to said converter, said driving means comprising a connector holder for holding said connector therein, said connector holder having connecting terminals for connection to said connector when said connector is located in said connector holder.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,182
SYSTEM AND METHOD FOR HYDROCARBON RESERVE EVALUATION
Daniel E. Boone, Houston, Tex., assignor to IDL, Inc., Houston, Tex.
Filed Jan. 13, 1986, Ser. No. 818,024
Int. Cl.[4] E21B 49/08
U.S. Cl. 73—153 26 Claims



17. A system for determining a direct quantitative measure of hydrocarbon reserves present in a subsurface earth formation, while drilling a borehole therethrough with a drill bit, comprising:

means for measuring the vertical depth of said borehole in linear incremental units,

means for determining the volume of the subsurface earth formation displaced by the borehole per each of said linear incremental units of depth,

means for measuring the volume of drilling fluid circulated into the borehole during drilling per a selected linear incremental unit of depth,

means for detecting the presence of hydrocarbon gases in a preselected unit volume of drilling fluid recovered at the earth's surface from said measured volume of drilling fluid,

means for measuring the volume of said detected hydrocarbon gases present in said preselected unit volume of drilling fluid,

means for determining the subsurface formation pressure and temperature associated with said selected linear incremental unit of borehole depth, associated with said preselected unit volume of drilling fluid carrying said hydrocarbon gases,

a computer for determining the percentage of hydrocarbon gas saturation for said selected linear incremental unit of borehole depth in the subsurface earth formation that is functionally related to said volume of hydrocarbon gases recovered at the earth's surface present in said preselected unit volume of drilling fluid corrected to the subsurface earth formation pressure and temperature at said selected linear incremental unit of borehole depth expressed as a percentage of said volume of the subsurface earth formation displaced by the borehole in said selected linear incremental unit of borehole depth,

means for detecting the presence of a plurality of preselected hydrocarbon gases present in said preselected unit volume of drilling fluid recovered at the earth's surface from said measure volume of drilling fluid, and

means for measuring the volume of each of a preselected pair of said plurality of detected hydrocarbon gases,

wherein said computer determines the ratio of the lighter to the heavier of said measured volumes of said preselected pair of hydrocarbon gases, and

wherein said computer determines the quantitative measure of hydrocarbon reserves present in said selected linear incremental unit of subsurface earth formation functionally related to the values of said percentage of hydrocarbon gas saturation and a preselected range of said ratio of the lighter to the heavier of said preselected pair of hydrocarbon gases.

4,765,183
APPARATUS AND METHOD FOR TAKING MEASUREMENTS WHILE DRILLING
Glenn E. Coury, P.O. Box 666, Wheat Ridge, Colo. 80034
Filed Mar. 12, 1987, Ser. No. 25,192
Int. Cl.[4] E21B 47/06
U.S. Cl. 73—154 22 Claims



1. An apparatus for determining true formation temperature of an earth formation at the wall of a well bore, comprising:

a first temperature sensing means for measuring the temperature of the face of a well bore;

a support means for carrying said first temperature sensing means at a preselected depth in the well bore, substantially at the position of the earth formation to be measured;

a locating means for positioning said first temperature sensing means laterally of the support means at a proper position with respect to the bore wall for taking a temperature measurement of the face of the bore wall;

a second temperature sensing means measuring the ambient temperature within the well bore near the location of the first temperature sensing means;

an activating means for causing the first temperature sensing means to register temperature readings of the face of the well bore over a predetermined period of elapsed time;

a processing means for receiving the temperature readings of the well bore face and of the ambient temperature of the well bore from said respective first and second temperature sensing means and calculating therefrom by the laws of multidimensional and transient heat transfer by conduction the true formation temperature; and

means for transmitting the readings of the first and second temperature sensing means to said processing means.

4,765,184
HIGH TEMPERATURE SWITCH
Leroy C. Delatorre, 11 Crestwood, Sugar Land, Tex.
Filed Feb. 25, 1986, Ser. No. 842,524
Int. Cl.[4] E21B 47/00
U.S. Cl. 73—151 7 Claims

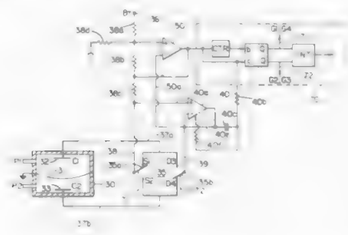
1. Apparatus for processing capacitance measured parameters including:

double pole, double throw FET switch means coupled to first and second measuring capacitors for switching said first measuring capacitor between first and second I/O terminals and for switching said second measuring capacitor between the second and the first I/O terminals and where the measuring capacitors can be charged and discharged through the switch means, said FET switch means having substrates connected to said second I/O terminal,

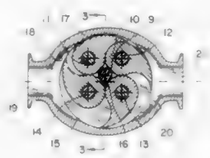
unity gain amplifier means having an input connect to said first I/O terminal and having an output connected to said second I/O terminal, said unity gain amplifier means having control means for adjusting the output signal of said unity gain amplifier means,

oscillator means coupled to said I/O terminals for alternately coupling to one of said measuring capacitors and for providing a frequency output signal with duty cycles which are functionally related in a first predetermined relationship relative to the time for charging and for discharging of a measuring capacitor under conditions of no current leakage in the switch means and where the occurrence of current leakage in the switch means causes the duty cycles to have a second relationship relative to the time for charging and for discharging of a measuring capacitor,

averaging means interconnecting said oscillator means and said unity gain amplifier means for converting the duty cycle of the frequency output signal to a control signal for input to said control means so that said output signal of said unity gain amplifier means is applied to the substrates of said switch means for adjusting the duty cycle of the frequency output signal to said first predetermined relationship whenever current leakage occurs in the switch



4,765,185
PIVOTING FLAP PUMP-FLOWMETER
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 730,853, May 6, 1985, Pat. No. 4,646,586. This application Dec. 4, 1986, Ser. No. 938,388
Int. Cl.[4] G01F 3/08
U.S. Cl. 73—260 22 Claims



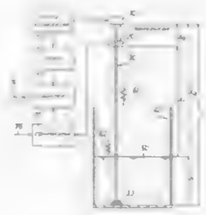
1. An apparatus for pumping and/or measuring fluid flow comprising in combination :

(a) a body including a cylindrical cavity having a smoothly contoured cross section, a first fluid passage open to a first half of the cylindrical cavity; and a second fluid passage open to a second half of the cylindrical cavity opposite to said first half of the cylindrical cavity;

(b) a plurality of flaps with cross section including a generally round first extremity and a crescent second extremity arranged in a generally rotationally symmetric assembly about an axis of rotation in a close relationship between the generally round first extremities of adjacent flaps and disposed within said cylindrical cavity wherein said axis of rotation is parallel to and offset from the central axis of the cylindrical cavity and located on a plane dividing the cylindrical cavity into said first and second halves, and the minimum distance between said axis of rotation and cylindrical wall of the cylindrical cavity is about equal to the radius of a cylindrical surface generally including pheripheral surface of said assembly of flaps folded into an arrangement having a generally circular cross section and the maximum distance between said axis of rotation and cylindrical wall of the cylindrical cavity is less than the sum of the distance between said axis of rotation and the center of curvature of the round first extremity in the cross section of a flap and the distance from said center of curvature to the crescent tip of the flap, said assembly of flaps rotatable about said axis of rotation and each of flaps included in said assembly of flaps pivotable about an axis of pivot coinciding with the center of curvature of the round first extremity in the cross section of said each flap;

(c) means for supporting said assembly of flaps comprising at least one flange rotatable about said axis of rotation and a plurality of journal bearings secured to said flange in an axisymmetric arrangement about said axis of rotation wherein each of said journal bearings supports each of said flaps pivotably about said axis of pivot.

4,765,186
LIQUID LEVEL DETECTOR BY GUIDED ELASTIC WAVES
Eugène Dieulesaint, Saint-Maur, and Daniel Royer, Sainte Genevieve des Bois, both of France, assignors to Universite Pierre et Marie Curie, Paris Cedex, France
Filed Mar. 25, 1987, Ser. No. 31,114
Claims priority, application France, Mar. 28, 1986, 86 04532
Int. Cl.[4] G01F 23/28
U.S. Cl. 73—290 V 12 Claims



1. A liquid level detector using guided elastic waves, comprising a first transducer situated out of the liquid for emitting an incident elastic pulse which propagates in an elongated guide of which a lower part is immersed in the liquid, a second transducer situated out of the liquid for receiving the elastic pulse sent by said first transducer and transmitted by the guide, and electronic circuits for measuring the time elapsing between the emission of said incident elastic pulse by said first transducer and the subsequent reception of the same elastic pulse by said second transducer, the improvement wherein said elongated guide comprises at least one smooth tube having no roughness in the longitudinal direction, said second transducer is situated in a fixed position close to said first transducer so as to receive the elastic pulse delivered by the first transducer after reflection thereof on the surface of the liquid in which is immersed the lower part of the guide, and said first transducer is arranged in such a manner with respect to the guide that periodical radial deformations of the tube are antisymmetrically created by successive incident elastic pulses essentially in a first axial plane of the guide whereas the radial deformations created in a second axial plane of the guide perpendicular to said first axial plane are substantially equal to zero.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,187

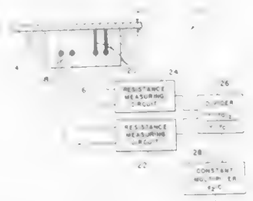
LIQUID THICKNESS GAUGE

Leonard M. Weinstein, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 890,982, Jul. 30, 1986, abandoned, which is a continuation-in-part of Ser. No. 684,186, Dec. 20, 1984, abandoned. This application Sep. 30, 1987, Ser. No. 102,705

Int. Cl.[4] G01F *23/00*

U.S. Cl. 73--304 R 3 Claims



2. A device for measuring the thickness h of a desired liquid on a surface independent of the liquid conductivity comprising:

a first pair of wires having a diameter d_1;

a second pair of wires having a diameter d_2 which is greater than d_1;

said first and second pairs of wires being mounted flush with and normal to said surface which is dry;

a first AC resistance measuring circuit to which said first pair of wires is connected which produces a voltage output:

a second AC resistance measuring circuit to which said second pair of wires is connected which produces a voltage output;

a means for obtaining an offset voltage for said first circuit by varying another voltage supplied to said first circuit until said output voltage of said first circuit is zero;

a means for obtaining an offset voltage for said first circuit by varying another voltage supplied to said second circuit until said output voltage of said first circuit is zero;

a means for obtaining the voltage output of each of said first and second circuits;

a means for calculating a circuit constant C from the following equation:

$$C = \frac{(V_t - V_o)_2}{(V_t - V_o)_1}$$

where V_{t1} and V_{t2} are the respective voltage outputs of said first and second circuits when said liquid on said surface has a thickness greater than d_2 and V_{O1} and V_{O2} are the respective offset voltages of said first and second circuits when said surface was dry;

said surface being covered by said liquid, wherein said liquid has a thickness greater than d_1 and less that 0.7 d_2;

a means for calculating the thickness h of the liquid on said surface from the following equation:

$$h = \frac{d_2}{C} \quad \frac{(V - V_o)_2}{(V - V_o)_1}$$

where h is the thickness of the liquid and V_1 and V_2 are the respective voltage outputs of said first and second circuits when said liquid on said surface has a thickness greater than d_1 and less than 0.7 d_2.

4,765,188

PRESSURE TRANSDUCER WITH INTEGRAL DIGITAL TEMPERATURE COMPENSATION

Roger L. Krechmery, and Mark D. Finefrock, both of Riverside, Calif., assignors to Bourns Instruments, Inc., Riverside, Calif.

Filed Nov. 24, 1986, Ser. No. 933,966

Int. Cl.[4] G01L *7/08, 9/06, 19/04*

U.S. Cl. 73—708 8 Claims



1. A pressure transducer with integral digital compensation comprising:

a pressure sensor assembly including a temperature sensitive element;

an analog signal conditioning circuit connected to said temperature sensitive element, said circuit providing an output proportional to the temperature of said pressure sensor;

an analog-to-digital converter connected to receive the output of said analog signal conditioning circuit and providing a digital output signal;

a read only memory having address lines and a data bus, said address lines being connected to receive said digital output signal from said analog-to-digital converter, and said read only memory being pre-programmed to selectively provide thermal span shift or thermal zero shift correction data on said data bus in response to said digital output signal;

a digital-to-analog converter having an input connected to the data bus of said read only memory and two selectable outputs, said digital-to-analog converter providing an analog signal output to a selected one of said two outputs corresponding to a correction number on said data bus of said read only memory, one of said two outputs being connected to said pressure sensor assembly to provide a thermal span shift compensation;

timing control means connected to said analog-to-digital converter, to said read only memory, and to said digital-to-analog converter for controlling the sampling of the output signal from said analog conditioning circuit by said analog-to-digital converter and for alternately selecting thermal span shift or zero shift data from said read only memory and one or the other of the two outputs of said digital-to-analog converter; and

amplifier means connected to said pressure sensor assembly for amplifying an output voltage from said assembly, the other of said two outputs of said digital-to-analog converter being connected to said amplifier means to modify the amplified voltage from said pressure sensor assembly to compensate for thermal zero shift.

4,765,189

OPTICAL SYSTEM FOR IN-PLANE STRAIN MEASUREMENT USING ELECTRONICS SPECKLE PATTERN INTERFEROMETRY

Richard W. T. Preater, Sevenoaks, England, assignor to National Research Development Corporation, London, England

Filed Dec. 1, 1986, Ser. No. 936,430

Claims priority, application United Kingdom, Nov. 29, 1985, [illegible]

Int. Cl.[4] G01L *1/24*

U.S. Cl. 73—800 5 Claims



1. Apparatus for the measurement of the displacement of a surface under test, comprising:

a source of coherent radiation;

a first curved reflecting surface arranged for reflecting radiation from said source onto a surface under test;

a second curved reflecting surface having a curvature of opposite sign from said first curved reflecting surface, said second reflecting surface being arranged for reflecting radiation reflected from said source via said first curved reflecting surface; and

electro-optic combining means arranged for receiving the radiation scattered from said surface.

4,765,190

FLOW METERING DEVICE

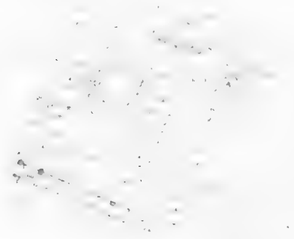
Gilbert J. L. Strubbe, Zedelgem, Belgium, assignor to Ford New Holland, Inc., New Holland, Pa.

Filed Jun. 26, 1986, Ser. No. 878,732

Claims priority, application European Pat. Off., Jul. 12, 1985, [illegible]

Int. Cl.[4] G01F *1/28*

U.S. Cl. 73—861.72 15 Claims



1. In a conveyor means for conveying solid materials, a flow metering device for metering the weight rate of the materials flow having a curved sensor member disposed to receive the materials flow in an arcuate path along its sensor surface while being subjected to centrifugal forces resulting from the deflection of the path of movement of the materials flow; a load cell associated with the curved sensor member and operable to generate a signal proportional to said centrifugal forces; and signal processing means coupled to the load cell for generating an indication of the weight rate of the material flow, the improvement comprising:

an open, non-pressurized mechanical transporter provided forwardly of the sensor member for inducing said material to move along a flow path at a predetermined rate of speed;

conditioning means provided between the transporter and the curved sensor member for concentrating, in a coherent stream, all the material of the materials flow received from the feeder means and for transferring said coherent stream to the sensor member along the curved surface thereof for guiding said coherent stream along said sensor member in continuous contact with the sensor surface; and

said sensor member being positioned such that the sensor surface is inclined inwardly at an angle relative to the direction of the crop materials flow as it issues from the conditioning means

4,765,191

TORQUE DETECTOR

Takeshi Kume, 2-1, 3-chome, Tsukaguchihonmachi, Amagasaki 660, Japan

Filed Feb. 12, 1987, Ser. No. 13,947

Claims priority, application Japan, Apr. 11, 1986, 61-084689

Int. Cl.[4] G01L *3/14*

U.S. Cl. 73—862.19 5 Claims



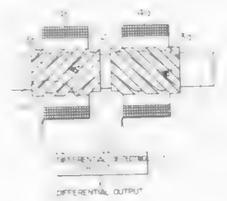
1. A torque detector for use in a power transmission system, comprising a first shaft and a second shaft, which are journalled in axially aligned and fixed relation with each other, a movable shaft interposed between and axially aligned with said first and second shafts, said movable shaft being in axially slidable engagement with said first shaft and rotatable with said first shaft, said movable shaft being in rotatable threaded engagement with said second shaft, and first and second spring means interposed between said movable and second shafts to resist and limit the axial movement and rotation of said movable shaft relative to said second shaft, said first spring means urging said movable shaft in one axial direction relative to said second shaft, and said second spring means urging said movable shaft in the opposite axial direction relative to said second shaft, whereby said axial movement in either axial direction depends on the torque being transmitted between said first and second shafts, when one of said first and second shafts is driven, said movable shaft being adapted to be connected to means for determining said axial movement.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,192
TORQUE SENSOR

Hiroyuki Hase, Katano; Ichiro Yamashita, Hirakata; Shinya Tokuono, Ashiya, and Masayuki Wakamiya, Suita, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 10, 1986, Ser. No. 928,408
Claims priority, application Japan, Nov. 13, 1985, 60-254120
Int. Cl.[4] G01L *3/10*
U.S. Cl. 73—862.36 4 Claims

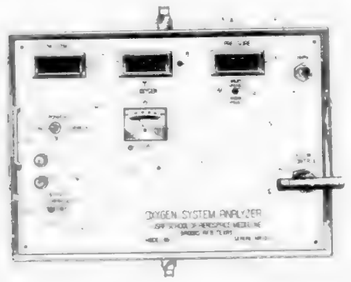


1. A torque sensor comprising:
a pair of multiple thread portions integrally formed in the surface of a rotating shaft in a manner that one of said multiple thread portions forms a positive angle with a thrust direction of said rotating shaft and the other of said multiple thread portions forms a negative angle with said thrust direction, the threads of said multiple thread portions at least being made of a soft magnetic alloy having magnetostrictive properties; and
a pair of coils arranged concentrically in the outer side of said multiple thread portions at a predetermined distance therefrom respectively,
whereby a strain produced in the surface of said rotating shaft by a torque is detected as inductance changes of said coils through permeability changes of said soft magnetic alloy, and said torque is detected from a difference between the inductances of said coils.

4,765,193
OXYGEN SYSTEM ANALYZER

Ronald D. Holden; John B. Tedor; Andrew O. Bergquist; David S. Moran, and Mike Eiserer, all of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 8, 1987, Ser. No. 59,641
Int. Cl.[4] G01M *19/00*; G01D *21/02*
U.S. Cl. 73—865.9 4 Claims



1. An oxygen system analyzer comprising an in-flight test kit for use in a cabin of an aircraft for measuring parameters which comprise breathing gas flow, oxygen concentration and delivery and cabin pressure, for an oxygen system which includes an oxygen system generator installed in the aircraft;
wherein the test kit includes a gas flow passage having coupled together gas inlet means, a flow control valve, an oxygen sensor, a flow tube to assure laminar flow, a flow measurement element, and a flow orifice for gas exit from the test kit, with the gas inlet means having a connector for coupling the test kit to an outlet of the oxygen system generator;
a first pressure transducer coupled via two gas connector tubes across said flow measurement element for measuring pressure drop, an electrical output signal connection from the first pressure transducer to a first digital volt meter for flow readout;
an analog meter having an electrical connection to said oxygen sensor for readout of oxygen concentration, the analog meter being electrically coupled to a second digital volt meter for reading oxygen concentration;
a second pressure transducer coupled via a gas connector tube to said gas inlet means for measuring inlet pressure, a third pressure transducer for measuring cabin pressure, a third digital volt meter for pressure readout, a switch for coupling the third digital voltmeter to either an "inlet" terminal or a "cabin" terminal;
a direct-current power supply means connected for supplying power to the first, second and third pressure transducers, and to the first, second and third digital voltmeters.

4,765,194
PISTON-OPERATED MACHINE

Hendrikus A. B. Van Meegen, Gladstone, Australia, assignor to Van Meegan Constructions Pty. Ltd., Australia

PCT No. PCT/AU85/00143, § 371 Date Feb. 26, 1986, § 102(e) Date Feb. 26, 1986, PCT Pub. No. WO86/00367, PCT Pub. Date Jan. 16, 1986
PCT Filed Jun. 27, 1985, Ser. No. 840,560
Claims priority, application Australia, Jun. 27, 1984, PG5709
Int. Cl.[4] F16H *23/00*
U.S. Cl. 74—60 11 Claims



1. A piston-operated machine including:
a crank shaft having an intermediate crank section, the axis of the crank section being oblique to the axis of the crank shaft and the crank section passing rotatably and centrally through a wobble plate, the centre of the wobble plate lying on a prolongation of the axis of the crank shaft;
a plurality of cylinders, the axes of said cylinders being parallel to and equally spaced from the axis of the crank shaft;
a piston in each cylinder mounted on a piston rod extending substantially coaxially from the cylinder to a respective connection on the wobble plate spaced from the centre of the wobble plate;
each piston rod, at the said connection of that piston rod to the wobble plate, being rotatably and eccentrically but non-slidably engaged in a thrust member which is rotatable about an axis parallel to the axis of the crank shaft, the thrust member being connected to a thrust block which is mounted in the wobble plate for rotation about an axis parallel to the wobble plate axis.

4,765,195
STEPLESS TRANSMISSION MECHANISM

Akira Takami, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1987, Ser. No. 50,125
Claims priority, application Japan, May 15, 1986, 61-113005; Aug. 18, 1986, 61-193104; Sep. 16, 1986, 61-218573
Int. Cl.[4] F16H *3/42*
U.S. Cl. 74—113 8 Claims

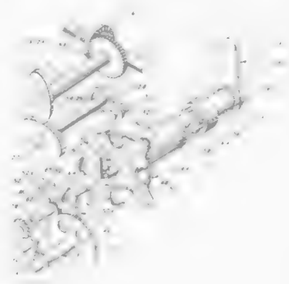


1. An angular velocity modulating device comprising a primary angular velocity modulating means composed of a first non-circular gear fixedly mounted on a first rotary shaft and a second non-circular gear fixedly mounted on a second rotary shaft and meshed with said first non-circular gear for determining a primary angular velocity ratio as an angular velocity ratio of said second rotary shaft to said first rotary shaft, a secondary angular velocity modulating means composed of said first non-circular gear and a third non-circular gear supported on a third rotary shaft such that a power is transmitted therethrough to said third rotary shaft, said third non-circular gear being meshed with said first non-circular gear, said secondary angular velocity modulating means functioning to determine a secondary angular velocity ratio as an angular velocity ratio of said third rotary shaft to said first rotary shaft, a first frame for supporting said first rotary shaft and said second rotary shaft through bearings, respectively, and a second frame for supporting said third rotary shaft through bearings, said second frame being supported by said first rotary shaft rotatably about said first rotary shaft with respect to said first frame, said primary angular velocity ratio being expressed by an exponential function $e^{K\cdot\theta}\cdot F(0)$ where K is an angular velocity modulating coefficient presettable arbitrarily, F(0) is a reference angular velocity ratio presettable arbitrarily and θ is an angular deviation of said first rotary shaft, said secondary angular velocity ratio being expressed by an exponential function $e^{K\cdot(\theta+\alpha)}\cdot F(0)$ where α is an angle arbitrarily selectable by regulating a relative rotational amount between said first frame and said second frame, whereby an angular velocity ratio of said third rotary shaft to said second rotary shaft is obtained as a result of division of said secondary angular velocity ratio by said primary angular velocity ratio, expressed by an exponential function $e^{K\cdot\alpha}$.

4,765,196
INTERMITTENT MOTION TRANSMITTING AND TIMING SYSTEM

David E. Russ, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 927,078, Nov. 5, 1986, abandoned. This application Dec. 8, 1987, Ser. No. 131,321
Int. Cl.[4] F16H *27/06*
U.S. Cl. 74—436 11 Claims



7. An intermittent motion transmitting and timing system for actuating an uplock latch device or the like to provide for high speed, timed power transmission at maximum load requirements, comprising:
rotational input drive means;
rotatable output means;
an inverse geneva drive mechanism;
first drive train means between the input drive means and the inverse geneva drive mechanism;
second drive train means between the inverse geneva drive mechanism and the rotatable output means, including a regular geneva drive mechanism and a shift mechanism operatively associated between the regular geneva drive mechanism and the rotatable output means; and
the inverse geneva drive mechanism, the regular geneva drive mechanism and the shift mecuanism being coupled in timed relationship whereby the rotatable output means is moved at its maximum load at the maximum output torque of the inverse geneva drive mechanism, and whereby the shift mechanism is actuated by the regular drive mechanism when the inverse geneva drive mechanism is in a no torque condition.

4,765,197
SPACER FOR TRANSMISSION SHAFT

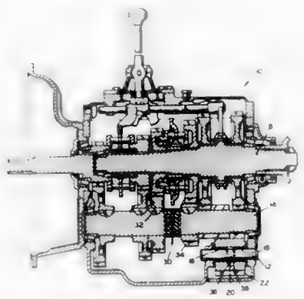
James A. Yarnell, Temperance, Mich., assignor to Dana Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 627,149, Jul. 2, 1984, abandoned. This application Feb. 6, 1986, Ser. No. 826,169
Int. Cl.[4] F16H *57/04*; F01M *9/10*
U.S. Cl. 74—467 4 Claims

1. A spacer disposed for circumferentially encasing a non-rotatable transmission gear shaft, said spacer comprising a helicoidal body portion defining an open coil, said body portion having ends resiliently disposed between a pair of bearings rotatably supported on said shaft, said bearings supporting a gear rotatable about said non-rotatable shaft, said body portion being radially encased by said gear, said body portion causing a unidirectional axial flow of splash and spray oil along said shaft between said rotating bearings thereby defining an axial flow pumping means, said ends of said coil being squared and defining radially uniform resilient support surfaces for contact

VOL 1093 ISS 4 AUG 23 1988 UMI

with opposing ends of said bearings, said shaft having an outside diameter slightly less than the inside diameter of the



spacer, whereby as said bearings rotate about said non-rotatable shaft, said spacer rotates about said shaft with said bearings.

4,765,198

ENERGY STORAGE WHEEL

Constantine Stravrinidis, Oegstgeest, Netherlands, assignor to Agence Spatiale Europeenne, Paris, France

Continuation of Ser. No. 804,539, Dec. 4, 1985, abandoned. This application Aug. 7, 1987, Ser. No. 82,994

Claims priority, application France, Dec. 7, 1984, 84 18725

Int. Cl.[4] G05G *1/00*; F16F *15/22*; B65H *81/00*

U.S. Cl. 74—572 6 Claims



1. An energy storage wheel comprising:

(a) a hub;

(b) a plurality of massive peripherally juxtaposed segments made from a material having a high density and a low thermal expansion coefficient, said segments having a radially external convex surface and a radially internal convex surface;

(c) a first winding (A) securing each segment with respect to the segment which is juxtaposed to it on each peripheral side thereof, said first winding (A) consisting of at least one turn of a continuous filament, the filament of said at least one turn being disposed alternately on the radially external convex surface of one segment and on the radially internal convex surface of the segment which is juxtaposed to it on each peripheral side thereof;

(d) a plurality of spokes, each one of said plurality of spokes comprises at least one turn of a second winding (B) made from a continuous filament, the filament of said at least one turn passing radially outwardly of said radially external convex surface of each one of said segments and being wound around said hub; and

(e) a third winding (C) disposed radially outwardly of said first winding (A), said third winding (C) consisting of at least one turn of a continuous filament, the filament of said at least one turn passing outwardly of said radialy external convex surfaces of said segments, thus securing said segments together as a whole.

4,765,199

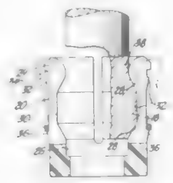
QUICK CONNECT CABLE COUPLER

Carl O. Andersen, Norristown; John E. Irvin, Collegeville, and Gary W. Rhodenbaugh, Mont Clare, all of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Jan. 27, 1987, Ser. No. 6,789

Int. Cl.[4] F16C *1/10*

U.S. Cl. 74—501 D 5 Claims



1. A remote control assembly (10) of the type for transmitting forces along a curved path by a motion transmitting core element (14) comprising:

a flexible conduit (12);

a flexible motion transmitting core element (14) supported for movement in said conduit;

attachment means for connecting said conduit (12) to a support housing (16) which receives said core element (14), said attachment means including a male member (18) for connection to the support housing (16) and a flexible female member (20);

said female member (20) including a plurality of slots (22) defining flexible fingers (24) for movement between an expanded position for disposition about said male member (18) and a smaller contracted position for axial locking engagement with said male member (18), a front cam portion (38) to engage said male member (18) and for opening said fingers (24) in response to said male member (18) being inserted into or removed from said female member (20), locking means including a locking ring (30) moveably disposed on said female member (20) for movement between an unlocked position allowing radial expansion of said fingers (24) to said expanded position and a locked position for preventing said radial movement of said fingers (24) in said contracted position and an annular front shoulder (34) for preventing said locking ring (30) from moving therepast when in said locked position, a plurality of circumferentially spaced ramps (32) on the exterior thereof and being spaced apart from said front shoulder (34) by a plurality of circumferentially spaced grooves, and stop means comprising a plurality of circumferentially spaced projections (36) on the exterior thereof and spaced axially from said ramps (32) for abutting said locking ring (30) when in said unlocked position.

4,765,200

STEPLESS SPEED-CHANGE POWER TRANSMISSION FOR VEHICLE

Masahiko Koshimo, Osaka, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Feb. 4, 1986, Ser. No. 826,037

Claims priority, application Japan, Feb. 5, 1985, 60-20380

Int. Cl.[4] F16H *47/06, 45/02*; F16D *33/16, 43/18*

U.S. Cl. 74—731 6 Claims

1. A stepless speed-change power transmission for a vehicle having a fluid coupling, a drive plate for transmitting drive power from an engine to said fluid coupling a forward/backward change-over mechanism coupled to a rear stage of said fluid coupling, and a stepless speed changer coupled to a rear stage of the forward/backward change-over mechanism, wherein a clutch element for selectively coupling said drive plate with a pump wheel in said fluid coupling when the vehicle is operated to drive is installed between said drive plate transmitting power from an engine to said fluid coupling and the pump wheel of said fluid coupling;

said fluid coupling having a turbine wheel facing said pump wheel and interconnected through a turbine hub to an output shaft; and



drive power from said fluid coupling is transmitted from said output shaft to said forward/backward change-over mechanism;

in which said clutch element comprises a piston on which a hydraulic force inside said fluid coupling acts, said piston having an inner peripheral portion slidable in an axial direction of said turbine hub, a facing secured to a face of said piston facing said drive plate, and a dog clutch on an outer peripheral portion of said piston coupling said piston to said pump wheel and permitting said piston to slide on said turbine hub.

4,765,201

CONTROL METHOD OF AUTOMATIC TRANSMISSION FOR AUTOMOBILES WITH EXHAUST BRAKE

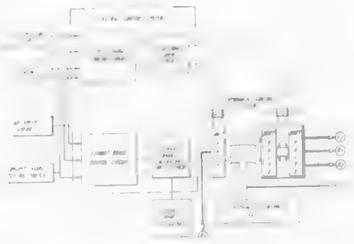
Toshiaki Ishiguro, Nagoya, and Shigeo Takahashi, Anjo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 29, 1986, Ser. No. 912,371

Claims priority, application Japan, Sep. 30, 1985, 60-216972

Int. Cl.[4] B60K *41/10*

U.S. Cl. 74—866 1 Claim



1. A control method of an automatic transmission for an automobile with an exhaust brake including automatic speed change means for automatically switching a speed change stage of at least three speeds, an exhaust brake unit with a control means, sensor means for detecting a degree of throttle opening; sensor means for detecting car speed, and means for determining if a downshift point is passed over, including the steps of:

transmitting a signal from said exhaust brake control means which indicates a particular condition of an exhaust brake control switch;

detecting said degree of throttle opening so as to determine whether a particular downshift pattern should be selected;

detecting said car speed by said sensor means for detecting car speed

selecting a downshift pattern that is to be compared with said car speed;

comparing the detected car speed and the selected downshift pattern and determining from that comparison whether a downshift point is to be passed over; and

downshifting the automatic transmission by said automatic speed change means in response to said signal transmitted from said exhaust brake control means and thereby effecting an engine braking force.

4,765,202

ENGINE BRAKE CONTROL FOR AUTOMATIC TRANSMISSION

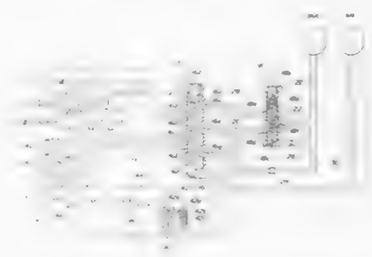
Koichi Hayasaki, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 29, 1986, Ser. No. 890,371

Claims priority, application Japan, Jul. 30, 1985, 60-166646

Int. Cl.[4] B60K *41/04*

U.S. Cl. 74—868 5 Claims



1. In an automatic transmission for an automotive vehicle having an engine, the automatic transmission including an engine brake friction element which is to be activated to effect engine braking during operation with each of various speeds, a capacity required by the engine brake friction element to effect engine braking during operation with the highest one of the various speeds being smaller than a capacity required by the engine brake friction element to effect engine braking during operation with another of the various speeds,

an engine brake control comprising:

means for causing the automatic transmission to shift to the highest one of the various speeds to effect engine braking during operation with the highest one of the various speeds by hydraulically activating the engine brake friction element when a first predetermined drive range is selected and causing the automatic transmission to shift to another of the various speeds to effect engine braking during operation with the other of the various speeds by hydraulically activating the engine brake friction element when a second predetermined drive range is selected;

means for effecting pressure reduction on hydraulic fluid pressure supplied to the engine brake friction element for activation thereof by discharging hydraulic fluid from said engine brake friction element; and

means for rendering said pressure reduction effecting means inoperative to prevent discharging of hydraulic fluid from said engine brake friction element when said second predetermined drive range is selected, whereby hydraulic fluid pressure which is not subject to the pressure reduc-

VOL 1093 ISS 4 AG 23 1988 UMI

tion is supplied to the engine brake friction element for activation thereof when said second predetermined drive range is selected.

4,765,203

ENGINE BRAKE CONTROL FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 29, 1986, Ser. No. 890,370
Claims priority, application Japan, Jul. 30, 1985, 60-166647
Int. Cl.[4] B60K *41/04*
U.S. Cl. 74—869 9 Claims



1. An apparatus, comprising:

an automatic transmission for an automotive vehicle having an engine, the automatic transmission being shiftable between an nth speed and an n−1th speed, the automatic transmission including a shifting friction element and a shift valve having a valve spool movable between an upshift position where the shifting friction element is activated to establish the nth speed and a downshift position where the shifting friction element is deactivated to establish the n−1th speed, the automatic transmission including an engine brake friction element which is to be activated to effect engine braking, and

an engine brake control comprising:

means for generating an engine brake command signal; and

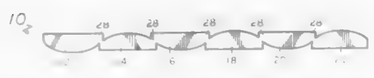
means responsive to said engine brake command signal for activating the engine brake friction element independently of said valve spool and for holding the valve spool of the shift valve in the downshift position thereof where the shifting friction element is deactivated.

4,765,204

METHOD OF MANUFACTURING A MOTIONLESS MIXER

Matthew Buchholz, and Robert O. Zandt, both of Wichita, Kans., assignors to Koch Engineering Company, Inc., Wichita, Kans.

Filed Sep. 3, 1986, Ser. No. 903,267
Int. Cl.[4] B21K *23/00*; B01F *5/06*
U.S. Cl. 76—101 R 9 Claims



1. A method of manufacturing a motionless mixer, which method comprises:

(a) cutting from a flat sheet material an elongated strip, which strip comprises a defined plurality of blades, each blade defined by a curved edge and a flat edge and having a one and another end, the blades connected together, except for the blades at each end of the strip, at the one and the other end with the adjoining blade, the blades arranged in a flat, alternate position sequence as to the curved edge and flat edge;

(b) bending the strip composed of the blades at the connecting area in the strip, to form a plurality of blades in the strip at an angle of about 30°–45° to each other, to provide a strip composed of bent blades or one-half of a motionless mixer;

(c) twisting first and second identical strip elements into a cooperative relationship, wherein the straight edges of the blade elements cross over each other at a defined angle, and the curved edges are disposed outwardly, so that the blades form a plurality of blade pairs, the blade pairs adjacent to each other at an angle of about 90°; and

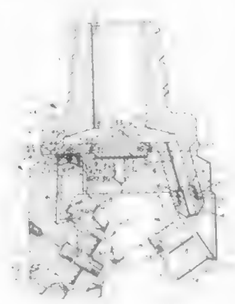
(d) securing the blades together at the crossover points of the straight edges of the blades.

4,765,205

METHOD OF ASSEMBLING DRILL BITS AND PRODUCT ASSEMBLED THEREBY

Bob Higdon, P.O. Box 58407, Houston, Tex. 77258

Filed Jun. 1, 1987, Ser. No. 37,036
Int. Cl.[4] B21K *5/02*
U.S. Cl. 76—108 A 60 Claims



1. A method of assembling drill bits, for rotary earth drilling, of the type comprising a bit body having a shank body with a threaded pin adapted to be detachably secured to drill pipe or the like for rotating the bit and delivering drilling fluid to the bit for removal of spoil or cuttings, a plurality of depending leg members at the lower end thereof, each leg member being uniformly spaced from the other leg members, and having an inwardly and downwardly extending bearing journal at the respective lower ends thereof and a plurality of nozzles for exit of drilling fluid from said bit body, and a plurality of roller cutters, one for each leg, each comprising a generally conical cutter body rotatably mounted on the respective journal and a plurality of cutting elements on each cutter body,

said method comprising the steps of

(a) casting as a single piece a hollow shank body with a threaded hollow pin extending from one side and a plurality of hollow nozzle legs opening from the interior of said hollow pin and extending from the other side of said shank body in the opposite direction from said pin and angled outward from the longitudinal center line thereof,

(b) forming as separate pieces said leg members, each leg member comprising a one piece bit body portion with a depending leg and an inwardly and downwardly extending bearing journal at the lower end thereof,

(c) forming each bit body portion to fit together to form an assembled bit body sub-assembly with an end wall for said hollow pin and defining peripheral recesses when assembled to receive said hollow nozzle legs,

(d) assembling said conical roller cutters on said bearing journals,

(e) assembling said bit body portions and welding them together to form said bit body sub-assembly having a body portion fitting the open end of said hollow shank body and having equally spaced peripheral recesses, said legs depending therefrom and having said bearing journals extending inwardly and downwardly at the lower ends thereof,

(f) assembling said bit body sub-assembly against the open end of said shank body with said nozzle legs extending through said peripheral recesses, and said bit body closing the open end of said hollow pin, and

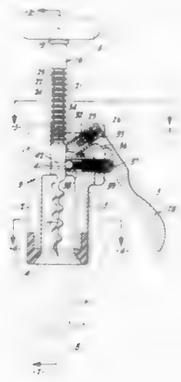
(g) welding said bit body sub-assembly around the periphery thereof to said shank body.

4,765,206

CORKSCREW

Paul W. Poehlmann, 6480 Panoramic Hwy., Stinson Beach, Calif. 94970

Filed Jun. 4, 1987, Ser. No. 58,151
Int. Cl.[4] B67B *7/04*
U.S. Cl. 81—3.37 10 Claims



1. A cork extractor for use with a corked bottle comprising a frame having a first axis, a collar at one end of said frame adapted to abut the end of said bottle in the vicinity of the cork therein, a rod rotatably engaging said frame and slidable therein along said axis, a cork engaging means at one end of said rod means defining a plurality of axially spaced stop rings on said rod, a lever, means for pivoting said lever on said frame to swing about a second axis spaced from and normal to said first axis, a pawl, means for mounting said pawl to telescope in said lever along a third axis substantially intersecting said first axis, a spring for urging said pawl toward said rod, and surface means on said rod for engagement with a surface means on said pawl for moving said rod and pawl together in one direction of lever motion and for ratcheting said pawl allowing relative movement between said rod and pawl in the other direction of lever motion.

4,765,207

SCREW CAP OPENER

Wen C. Yu, 10318 Burgoyne, Houston, Tex. 77042

Filed May 26, 1987, Ser. No. 54,223
Int. Cl.[4] B67B *7/14*
U.S. Cl. 81—3.42 5 Claims

1. A screw cap removing and tightening device comprising:

a. an elongate plate member having

a front gripping member at its front end having a pair of laterally spaced gripping portions connected by a web portion,

a cylindrical channel member at its rear end, and an intermediate portion connecting its front end and the cylindrical channel member, at least one side of the intermediate portion having longitudinally equal spaced teeth members,

b. surrounding means substantially surrounding the intermediate portion of the elongate plate member and being slidably movable along the intermediate portion of the elongate plate member, the surrounding means having a depending front end portion extended forwardly from its top portion, and a depending support portion extended downwardly from its bottom portion, the front end portion having a front guard at its front edge, and the support portion having a threaded circular opening,

c. locking means secured to the surrounding means for selectively engaging with one of the teeth members to prevent a rearward sliding movement of the surrounding means,



or disengaging from one of the teeth members to allow the surrounding means to be moved freely,

d. a rear gripping member having a pair of laterally spaced gripping portions connected by a web portion, the rear gripping member being movably supported by the front end portion of the surrounding means and movably confined by the front guard and the support portion of the surrounding means,

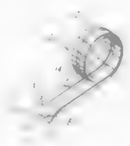
e. rotating and twisting means having a cylindrical bar with a threaded portion at its front end, and a handle secured to its rear end, the threaded portion being rotatably engaged with the threaded circular opening of the support portion of the surrounding means, and the cylindrical bar being movably confined within the cylindrical channel member of the elongate plate member.

4,765,208

DEVICES FACILITATING A QUICK AND TROUBLE-FREE OPENING OF BEER AND OTHER BEVERAGE CANS

Richard C. Sakosky, 4884 Tall Oaks Dr., Dayton, Ohio 45414

Filed Sep. 24, 1982, Ser. No. 423,065
Int. Cl.[4] B67B *7/00*
U.S. Cl. 81—3.55 15 Claims



11. Apparatus facilitating a quick and trouble free opening of a beer or other beverage can having an end wall recessed relative the projected extremity of a bounding outwardly projected rim, a segment of which end wall is bounded by a weakened portion thereof and has attached thereto a tab-like lever snugly and closely fit to said end wall and terminating at its radially outermost end immediately adjacent and in closely spaced relation to the base of said rim comprising a short, narrow, relatively rigid strip of sheet material a substantial portion of the length of which is coiled over one surface thereof to defined a loop forming a finger or thumb receiving portion of said strip for the user of said apparatus, a short portion of said strip at the end thereof remote from said coiled

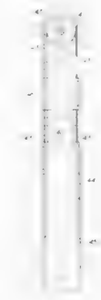
VOL 1093 ISS 4 AG 23 1988 UMI

portion having a shallow wedge-like shape and bearing means in connection therewith, said wedge-like shape having a leading edge portion applicable over said rim and between the outermost end of said tab and said bounding rim and formed to readily slip fit under and inwardly of said tab to the vicinity of its attachment to provide a bearing backing surface for said tab and said wedge-like shape further providing bearing means in connection therewith on which, in a continuing rocking movement of said strip is effective to induce relative sliding movement of said remote end of said tab up the backing surface provided by said strip to smoothly and easily and with little exertion apply forces to said tab effective to substantially immediately produce therethrough a separation in said end surface on said weakened portion thereof and a displacement of said portion of said end wall bounded thereby to create a pour spout in said can.

4,765,209
WRENCHES

Buddy Klebold, 1208 Oakhurst, and Joe C. Howard, Jr., 1012 Jones, both of Clovis, N. Mex. 88101

Filed Sep. 10, 1986, Ser. No. 905,496
Int. Cl.[4] B25B *17/00*
U.S. Cl. 81—57.17 15 Claims



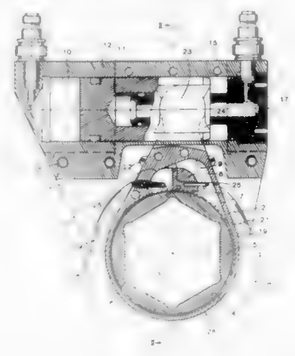
1. An improved tool especially adapted for supporting and rotating a threaded workpiece to be installed or removed from locations of difficult accessibility, said tool comprising an elongated body having a rotatable member mounted to the body near one end thereof and a manually rotatable pulley near the other end thereof, and a continuous resilient elastomeric band connecting said member and pulley in operative relationship whereby when said pulley is turned, said member correspondingly is turned, said elongated body having, intermediate said member and said pulley, at least one thin localized transverse region disposing said elongated body into interconnected hinged sections and providing for hinged movement of said sections with respect to each other about an axis substantially perpendicular to the axis of the rotatable member, and control means for hingeably moving said sections with respect to each other and temporarily locking said sections to configure said elongated body in any of a plurality of positions.

4,765,210
HYDRAULICALLY POWERED SCREWING MEANS

Hans-Bernd Mierbach; Gustav Frohn, both of Konigswinter, and Olaf Blockisch, Hennef, all of Fed. Rep. of Germany, assignors to Applied Power, Inc.

Filed Jun. 13, 1985, Ser. No. 744,325
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1984, 3420446
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—57.39 7 Claims

1. A nut-runner with a power arm and a reaction arm constructed preferably as a casing, said power arm being guided in an end region with respect to said reaction arm to permit said power arm to pivot with respect to said reaction arm about a common axis, with a clamp wheel having external teeth and with gearing mounted in a drilled hole in the first end region of the power arm so as to be rotatable about the axis, and with a catch mounted on the power arm interacting with this clamp wheel, said catch being in the engaged position when the power arm pivots in one direction, in which said catch engages with the teeth of the clamp wheel and slips over the teeth of

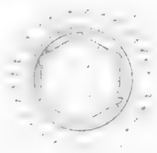


the clamp wheel when the power arm pivots in the other direction, and with a hydraulic power cylinder consisting of a cylinder and a piston which acts between the two arms in the vicinity of their end regions, wherein the reaction arm partially encompasses the clamp wheel through a maximum angle of 180 degrees, and the arms engage by way of a circular guide positioned concentrically relative to the axis, extending over a maximum of 180 degrees, and consisting of a guide groove and a projection, said guide being positioned between the axis and the end region of the arms.

4,765,211
WRENCH OPENING

David S. Colvin, 23933 Haynes, Farmington Hills, Mich. 48018

Division of Ser. No. 777,237, Sep. 18, 1985, Pat. No. 4,598,616.
This application Jun. 16, 1986, Ser. No. 884,732
The portion of the term of this patent subsequent to Jul. 8, 2003, has been disclaimed.
Int. Cl.[4] B25B *13/02*
U.S. Cl. 81—119 9 Claims



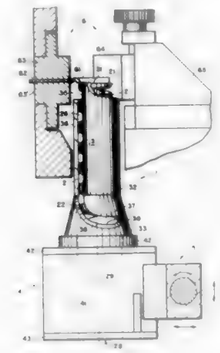
1. A wrench body including a wrench opening having a central axis, said wrench opening comprising: a plurality of engagement surfaces defining a closed shape and facing inwardly toward the central axis, each of said engagement surfaces having an inwardly convex shape and including opposite end portions that are continuously curved with the same curvature as each other, and each end portion having a center of curvature located on a common circle that is concentric with the central axis and of a larger size than the wrench body,

whereby the wrench opening provides greater surface-to-surface engagement with nuts or bolt heads to be torqued than is possible with engagement surfaces having flat surface portions.

4,765,212
CHIP REMOVER FOR MACHINES WHICH PERFORM CUTTING OPERATIONS, ESPECIALLY ON METAL WORKPIECES

Rolf Julius, Wülfrath, Fed. Rep. of Germany, assignor to Julius Maschinenbau GmbH, Wuelfrath, Fed. Rep. of Germany

Filed Mar. 20, 1987, Ser. No. 28,260
Claims priority, application European Pat. Off., Mar. 20, 1986, 86103817.2
Int. Cl.[4] B65G *33/14*; B23Q *11/00*; B23B *25/02*
U.S. Cl. 82—34 R 11 Claims



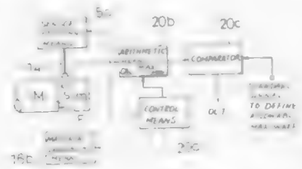
1. In a chip remover for machines which perform a machining operation, especially on metal workpieces, such as strip edging machines, and by means of which the chips produced by the machine are carried away from the area surrounding the chip-producing tool to assure an unhampered machining operation, wherein the chip remover includes a stretched helix rotating about its longitudinal axis with successive turns spaced apart at a distance from one another, said helix having a driven end and a free end, said free end extending into the area of emergence of chips from the chip-producing tool of the machine, the improvement wherein said helix is hollow and is surrounded externally by a non-rotating guide tube with an open end and an open-ended slot which is substantially narrower than the width of said tube and extends in the lengthwise direction of said tube, said free end of said helix projecting freely from said open end of said tube, and wherein said slot extends in the longitudinal direction of said tube from said open end to the opposite, tool-remote part of said tube, and then continues from said longitudinal direction in a partly circumferential direction along said tube and in the direction of rotation of said helix with a pitch contrary to the pitch of said helix.

4,765,213
CROOKED CUT DETECTING SYSTEM APPLICABLE TO A SAWING MACHINE

Mitsuo Kondo, Kawanishi, Japan, assignor to Daito Seiki Company Limited, Osaka, Japan

Filed Dec. 2, 1987, Ser. No. 127,789
Claims priority, application Japan, Dec. 5, 1986, 61-291261
Int. Cl.[4] B23Q *15/20*
U.S. Cl. 83—61 6 Claims

1. A crooked cut detecting system for detecting a warp developed on a cut end surface of a material from which a section was cut away by a sawing machine, said crooked cut detecting system comprising:
- a material displacing means for displacing a material after a section has been cut away from said material by a sawing machine, thereby providing a sensor inserting space in front of the cut end of said material;
- a surface warp sensor to detect the warp of a cut end surface of said material;
- a surface warp sensor feeding means for feeding said surface warp sensor into said sensor inserting space along a line parallel to a plane in which the cut end surface of said section is expected to lie;
- a difference signal outputting means for outputting a difference signal by calculating the difference between the maximum and the minimum values of the signal outputted



from said surface warp sensor while the same is being fed into said sensor inserting space;
- a comparator to compare said difference signal with a predetermined value for the purpose of outputting a crooked cut alarm signal when the value of said difference signal exceeds said predetermined value; and
- a control means for controlling the operations of said material displacing means, said surface warp sensor feeding means, said difference signal outputting means and said sensor.

6. A crooked cut detecting system defined in claim 1, 2, 3, 4 or 5, wherein a means for interrupting cutting operation in accordance with said crooked cut alarm signal is provided for the purpose of making said crooked cut detecting system applicable to an automatic sawing machine.

4,765,214
APPARATUS FOR HANDLING VENEER SHEETS

Takashi Nakaya, Oba, Japan, assignor to Meinan Machinery Works, Inc., Oba, Japan

Filed May 14, 1987, Ser. No. 50,631
Int. Cl.[4] B65H *29/26*
U.S. Cl. 83—80 14 Claims



1. Veneer handling apparatus having a feed conveyor for feeding a ribbon of wood veneer, a veneer clipper disposed adjacent one end of said apparatus for clipping said veneer ribbon continuously into cut sheets each having a predetermined size, a detector located upstream of said veneer clipper with respect to the movement of veneer ribbon in the apparatus for detecting any defect in said veneer ribbon, and a veneer stacker located adjacent the other end of said apparatus for stacking veneer sheets in a pile, said apparatus comprising:
- means disposed downstream of said veneer clipper for selectively distributing said cut veneer sheet;

VOL 1093 ISS 4 AG 23 1988 UMI

control means connected to said detector, clipper and distributing means, for judging whether or not each cut veneer sheet is sound having no defective portion in it and also for controlling the distribution of cut sheets by said distributing means according to the judgement by said control means;

said control means being operable on said distributing means in such a way that those cut sheets which are judged as defective are sorted from those other sheets which are judged as sound and also that such sound veneer sheets are distributed selectively into two ways alternately by said distributing means;

two layers of conveyors extending at vertically spaced intervals and converging at a position adjacent their downstream ends for receiving alternately one sound cut sheet at a time from said distributing means and for transferring such sheet toward said stacker, the conveyor of one layer being driven to move continuously, and the conveyor of the other layer having means for temporarily stopping a veneer sheet at a predetermined position on the conveyor of the other layer and then allowing the sheet to move again at such a controlled time that the sheet thus allowed to move is combined at said converging position with its succeeding sheet moving therebehind on the conveyor of the one layer into a pair with one sheet placed over the other.

4,765,215

DEVICE FOR ADVANCING ROD-SHAPED WORKPIECE MATERIAL IN A CUTTING MACHINE

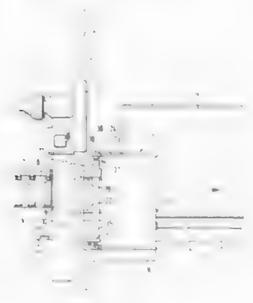
Dieter Spath, Oberachern, Fed. Rep. of Germany, assignor to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co., Achern-Gamshurst, Fed. Rep. of Germany

Filed Nov. 13, 1986, Ser. No. 929,885

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1986, 3601075

Int. Cl.⁴ B23D *55/04, 47/04*

U.S. Cl. 83—153 **26 Claims**



1. Device for advancing a workpiece of material to a cutting station in a cutting machine including a saw means for cutting a desired length of material, advancing the material to a deposition station and discharging a cut piece of material at the deposition station; which comprises a first table for supporting the material during the cutting operation, at least one pair of clamping jaws that can be opened and closed for holding the material during cutting, said at least one pair of clamping jaws being arranged in front of a cutting plane in the material advance direction, feed means for advancing the workpiece of material to its cutting position when said at least one pair of claimping jaws are open, first and second advancing jaws arranged in a material advance direction relative to said clamping jaws, movable means for transversely moving said first advancing jaw for the purpose of opening and closing upon a cut piece of material, support means for moving said advancing jaws and the cut piece of material in the material advance direction to a deposition station, adjustable means for moving said second advancing jaw out of a path in the advancing direction of the material, and said movable means advances transversely to move said first advancing jaw beyond the adjusted position of said second advancing jaw to displace the cut piece of material transverse to the advance direction of the material at said deposition station.

4,765,216

KNIFE SHAFT PAIR FOR CUTTING WEB-LIKE MATERIAL, IN PARTICULAR UNDULATED BOARD

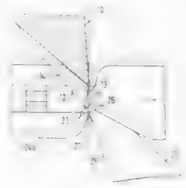
Manfred Schoemmler, and Gerald Martin, both of Hamburg, Fed. Rep. of Germany, assignors to Peter Maschinenfabrik GmbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 3, 1987, Ser. No. 80,774

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626748

Int. Cl.⁴ B26D *1/62*

U.S. Cl. 83—341 **4 Claims**



1. A knife shaft pair supported on respective shafts for cutting web-like material such as undulated board, said knives having cooperating cutting edges other temporarily under bias, if necessary, shortly before termination characterized in that the cutting edge lying at the trailing side of a first knife is uniformly continuous with an equal spacing from the respective shaft axis, the second knife having a saw-toothed cutting edge whose teeth extend from a continuous line of contact with said second knife and in the approximation region of the knives at an acute angle to the connecting plane between the line of contact and the uniform cutting edge of the first knife to lie at one side of the first knife during the cutting operation so that said teeth effect initial perforations of the material being cut at spaced locations along the line of contact.

4,765,217

INSERTABLE SAW TOOTH

Andre M. Ludwig, 101 Redwood Avenue, Thunder Bay, Ontario, Canada P7C 1Z3

Continuation-in-part of Ser. No. 771,215, Aug. 30, 1985, abandoned. This application Oct. 14, 1986, Ser. No. 918,344

Int. Cl.⁴ B27B *33/12*

U.S. Cl. 83—841 **19 Claims**



1. A wood-cutting apparatus comprising a disc rotatable about an axis in a predetermined rotational direction, said disc having a plurality of teeth, and each said tooth comprising a

blade member positioned radially outwardly on said disc, said blade member comprising:

(a) a front surface having a first front surface side edge and a second front surface side edge, each said front surface side edge extending in a generally radial direction, said front surface edges being spaced from each other in a direction generally parallel to said axis;

(b) a central front surface connecting region positioned between said first and said second front surface side edges, said front surface connecting region being positioned rearwardly from said front surface side edges in said rotational direction;

(c) a connecting edge extending along the most radially outward extent of said front surface connecting region, said connecting edge forming a first cutting point at its intersection with said first front surface side edge, and a second cutting point at its intersection with said second front surface side edge; each of said front surface side edges extending radially outwardly further than said connecting edge; and

(d) a top surface extending from said connecting edge rearwardly, away from the direction of rotation, said top surface slanting radially inwardly front-to-back, said top surface having side edges and slanting radially inwardly between said side edges, whereby a top surface angle α is formed by the intersection of a plane parallel to the disc radius.

4,765,218

ELECTRONIC KEYBOARD MUSICAL INSTRUMENT WITH PROCESSING OF DEPRESSION DYNAMICS

Siegfried Eppinger, Trossingen, Fed. Rep. of Germany, assignor to Matth. Hohner AG, Trossingen, Fed. Rep. of Germany

Filed Sep. 19, 1986, Ser. No. 909,517

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1985, 3534250

Int. Cl.⁴ G10H *1/18, 1/46*

U.S. Cl. 84—1.01 **18 Claims**



1. An electronic musical instrument comprising a keyboard including a plurality of keys and identifying means for determining which of said plurality of keys has been depressed, said identifying means comprising:

multiplex circuit means for serially scanning output signals of said plurality of keys, said multiplex circuit means having a plurality of input terminals coupled, respectively, to each of said plurality of keys, and an output terminal;

each of said plurality of keys having coupling means for coupling an AC signal to its respective multiplex circuit means input terminal upon key depression;

rectifying means coupled to the output terminal of the multiplex circuit means;

a sample-and-hold circuit coupled to an output of the rectifying means; and

an output of the identifying means coupled to an output of said sample-and-hold circuit.

4,765,219

MAGNETIC PICK-UP FOR STRINGED MUSICAL INSTRUMENT

John A. Ahn, P.O. Box 224, Tujunga, Calif. 91042-0224

Filed Aug. 15, 1986, Ser. No. 897,117

Int. Cl.⁴ G10G *5/00;* G10H *3/18*

U.S. Cl. 84—1.15 **26 Claims**



26. An electric stringed musical instrument, comprising:

a plurality of laterally spaced apart strings in tension; and

a magnetic pick-up comprising a magnetic core positioned below the strings and insulated wire windings extending about said core, and a magnetic pole piece connected to said magnetic core and extending from the magnetic core toward said strings, said magnetic pole piece presenting pole regions between and laterally adjacent said strings, oriented to produce laterally elongated magnetic flux regions,

wherein the strings are in said magnetic flux regions;

wherein the magnetic pole piece comprises a pair of arms extending away from the magnetic core at an acute angle to each other, each of which has side portions which are positioned laterally adjacent the strings of the instrument;

wherein each arm has an end portion which is situated generally between two strings of the instrument, and which produces a flux region having a substantial component in the direction of string movement when the strings are stroked.

4,765,220

STRAND SUPPLY CARRIER AND TENSIONING MECHANISM

Vincent A. Iannucci, Westlawn, and Rudolf H. Haehnel, Reading, both of Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 25, 1987, Ser. No. 100,851

Int. Cl.⁴ D04C *3/18;* B65H *59/04*

U.S. Cl. 87—57 **5 Claims**

1. A strand supply carrier and tensioning mechanism for holding a strand supply bobbin comprising:

(a) a base;

(b) a bobbin post supported on and extending outwardly from said base to receive a bobbin;

(c) toothed ratchet means journaled on said bobbin post for operative connection to a bobbin;

(d) strand tensioning means including:

(i) an elongated leaf spring;

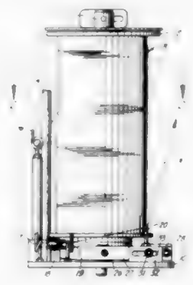
(ii) means including a fulcrum block supporting one end of said leaf spring on said base,

(iii) a strand guide wheel mounted on that end of said leaf spring opposite the end supported on said base, and

(iv) a pawl mounted on said leaf spring between said

VOL 1093 ISS 4 AUG 23 1988 UMI

fulcrum block and said strand guide wheel for engagement with the teeth on said ratchet, and



(e) strand guide means for guiding strand from the bobbin to and away from said guide wheel.

4,765,221

ARRANGEMENT FOR RECEIVING WORKING DEVICES ON VEHICLES, ESPECIALLY CHAIN-EQUIPPED VEHICLES

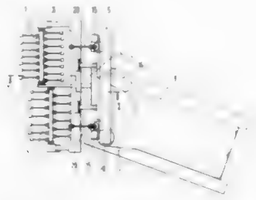
Heinz Sombrowski, Danischenhagen, Fed. Rep. of Germany, assignor to Krupp MaK Maschinenbau GmbH, Kiel, Fed. Rep. of Germany

Filed Sep. 4, 1987, Ser. No. 93,401

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1986, 8624765

Int. Cl.[4] F41H *11/12*

U.S. Cl. 89—1.13 11 Claims



1. An arrangement for receiving working devices on vehicles, especially chain- equipped vehicles such as a clearing device with rotatable clearing tools for clearing land mines, the arrangement comprising

a turning arm arranged to support a clearing device, said turning arm being formed as a traverse and connectable with a vehicle so that said turning arm is offset relative to a longitudinal axis of the vehicle and is turnable between a clearing position in which said turning arm extends substantially transversely to the longitudinal axis of the vehicle and a transporting position in which said turning arm extends substantially in direction of the longitudinal axis of the vehicle;

means for connecting said turning arm with the vehicle turnably between said clearing and transporting positions;

means for fixing said turning arm in said clearing position;

two clearing shafts arranged to support clearing tools;

a clearing frame connected with said turning arm and arranged to support said clearing shafts, said frame having two frame parts which are turnable relative to one another about an axis extending parallel to said shafts for the transporting position and fixable with one another in the clearing position; and

means for turnably connecting said frame parts with one another and fixing said frame parts with one another in said clearing position.

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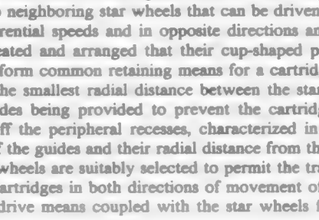
ELECTROSTATIC KINETIC ENERGY WEAPON

George T. Pinson, Huntsville, Ala., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 28, 1985, Ser. No. 793,613

Int. Cl.[4] F41F *1/02*

U.S. Cl. 89—8 11 Claims



1. An electrostatic kinetic energy weapon for accelerating a hollow macroscopic projectile along a predetermined path from an input end to an output end, said weapon comprising:

means for selectively feeding individual macroscopic projectiles to said input end;

means at said input end for charging the exterior surface of each said projectile with one polarity;

means for generating a plurality of bi-polar electrostatic fields in spaced relation along said path, said fields being polarly oriented to progressively accelerate each said projectile along said path toward said outlet end, the spacing between adjacent fields being progressively increased along said path toward said outlet end to provide a minimum residence time in each field as the velocity of said projectile increases;

means proximate the outlet end for selectively electrostatically diverting each said projectile from said path; and

means at said outlet end for neutralizing the charge on the surface of each said projectile.

4,765,223

CARTRIDGE FEED MECHANISM

Rudi Beckmann, Rötenberg, Fed. Rep. of Germany, assignor to Heckler & Koch GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 873,813, Jun. 13, 1986, Pat. No. 4,681,018, which is a continuation of Ser. No. 552,674, Nov. 17, 1983, abandoned. This application Aug. 13, 1986, Ser. No. 896,182

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1982, 3243746; Nov. 26, 1982, 3243744; Nov. 26, 1982, 3243745

The portion of the term of this patent subsequent to Jul. 21, 2004, has been disclaimed.

Int. Cl.[4] F41D *10/22*

U.S. Cl. 89—33.04 3 Claims

1. A cartridge feed mechanism for feeding cartridges in a direction transverse to its longitudinal direction, comprising at least two neighboring star wheels that can be driven at equal circumferential speeds and in opposite directions and which are so seated and arranged that their cup-shaped peripheral recesses form common retaining means for a cartridge in the area of the smallest radial distance between the star wheels, with guides being provided to prevent the cartridges from sliding off the peripheral recesses, characterized in that the design of the guides and their radial distance from the axes of the star wheels are suitably selected to permit the transportation of cartridges in both directions of movement of the star wheels, drive means coupled with the star wheels for selectively driving the star wheels in alternate directions of movement, reversible guide elements for directing the cartridges into the peripheral recesses of the next following star wheels provided on both sides of a plane extending through the axes of said two neighboring star wheels in the area of a tangential plane extending perpendicularly to said plane, a housing defining two discrete paths for two different cartridge types, only one endless chain running along said two paths in opposite directions and having cartridge cups for transporting cartridges along at least one path as a result of movement of said one chain in one direction and for transporting the cartridges along the other of said two paths as a result of said one chain movement in the opposite direction, at least one cup wheel in said housing, said cup wheel having cup shaped segments for receiving said cartridge cups of said chain such that movement of said one chain in one direction causes corresponding rotational movement of the cup wheel in a first direction and movement of said one chain in its opposite direction causes opposite rotational movement of the cup wheel, at least one star wheel having a sector thereof spaced from a sector of said cup wheel and from said one chain so that synchronous rotation of said star wheel in a direction opposite that of said cup wheel carries cartridges by one of said chain cups around said cup wheel sector, said star wheel being stationary except when so rotated to carry cartridges by said chain cup, and further characterized by a cartridge sensor capable of detecting the non-existence of cartridges in at least one path of the chain of the housing and chain combination so that upon reversal of the direction of movement of the chain the feeding of a second type of cartridge into the chain can be delayed until the cartridges of the first type have been discharged through the opening from which they entered the housing.



4,765,224

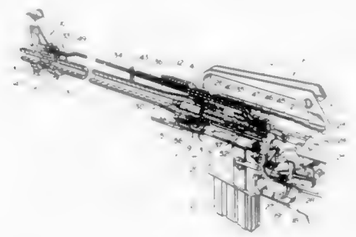
AUTOMATIC RIFLE GAS SYSTEM

Michael C. Morris, Rte. 202 and County Line Rd., Chalfont, Pa. 18914

Filed Aug. 15, 1986, Ser. No. 897,150

Int. Cl.[4] F41D *5/04*

U.S. Cl. 89—191.01 37 Claims



1. A rifle comprising an upper receiver group, a lower receiver group, and a bolt carrier group,

said upper receiver group further comprising a barrel, an upper receiver, a cartridge extractor mechanism, and a gas transfer tube communicating with the barrel for the transfer of propellant gas pressure therefrom and extending aftwardly from said point of communication with the barrel towards the upper receiver, said gas transfer tube having an aftmost portion parallel to said barrel;

said lower receiver group further comprising a trigger mechanism, and a lower receiver adapted to be secured to said upper receiver and together therewith defining a receiver, said lower receiver being adapted to receive an interchangeable magazine adapted to contain a plurality of ammunition cartridges and to feed them individually into said chamber,

said bolt carrier group comprising a bolt, a firing mechanism associated with and carried by said bolt, an extracting mechanism for extracting spent shells, and a bolt carrier slidably mounted within the receiver for forward and backward reciprocation through a cycle of chambering, firing and extracting a round of ammunition, said bolt carrier having affixed thereto a bolt carrier key, said bolt carrier key having a key tube extending therefrom forwardly along the axis of said aftmost portion of the gas transfer tube, said key tube extending through a port in the upper receiver, said port being of a size to provide sliding clearance for said key tube, said key tube having an internal bore of a diameter sufficient to provide sliding clearance with the external surface of said aftmost portion of the gas transfer tube,

whereby the key tube slidably engages in mating relationship with the gas transfer tube during the entire firing cycle.

4,765,225

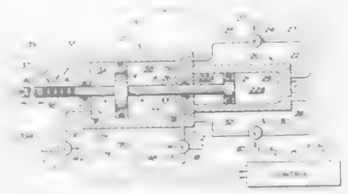
DIGITALLY CONTROLLED AIR-OVER-HYDRAULIC ACTUATOR AND METHOD

William G. Birchard, 9710 Golf Links Rd., Tucson, Ariz. 85730

Filed Aug. 22, 1986, Ser. No. 899,505

Int. Cl.[4] F15B *13/16, 15/22*

U.S. Cl. 91—362 29 Claims



1. A method of operating a pneumatic-over-hydraulic system comprising the steps of:

(a) providing a pneumatic cylinder with a pneumatic piston therein, a hydraulic cylinder with a hydraulic piston therein, and means for connecting the pneumatic piston to the hydraulic piston so that movement of the pneymatic piston forces the hydraulic piston to move;

(b) providing a first digital fluid valve including first and second fluid ports coupled in fluid communication with opposite end portions of the hydraulic cylinder, and a first means for rapidly opening the first digital fluid valve and after a predetermined duration rapidly closing the first digital fluid valve in response to a control signal of the predetermined duration;

(c) applying a predetermined pressure difference across the pneumatic piston to produce a first predetermined force on the connecting means and thereby produce a second predetermined force on the hydraulic piston; and

(d) successively applying a predetermined number of the control signals to the first means to open and close the first

VOL 1093 ISS 4 AUG 23 1988 UMI

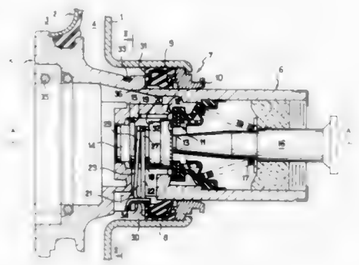
digital fluid valve the predetermined number of times to thereby allow the hydraulic piston and the connecting means to move through a predetermined distance.

4,765,226

BRAKE BOOSTER WITH A HINGED POSITIONING MEMBER

Franck Bequet, Créteil, and Jean-Jacques Carre, Le Raincy, both of France, assignors to Bendix France, Drancy, France

Filed Apr. 16, 1987, Ser. No. 39,555
Claims priority, application France, Apr. 23, 1986, 86 05857
Int. Cl.[4] F15B 9/10
U.S. Cl. 91—369 A 9 Claims



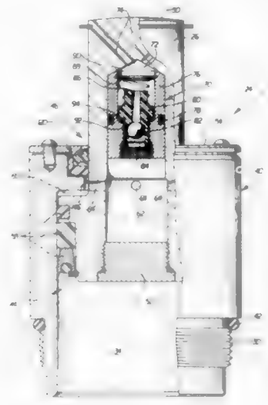
1. A brake booster comprising a housing, a piston structure dividing the housing internally into two chambers, distribution valve means arranged in a valve body integral with the piston structure and actuatable by means of an input member to generate selectively a pressure differential between the chambers, the valve means comprising a plunger mounted axially and slideably in a coaxial central bore of the valve body and connected to the input member, the plunger having at least one peripheral shoulder and defining, at one plunger end, a first flap seat, a second flap seat formed in the valve body concentrically relative to the first flap seat and flap means mounted in the valve body and stressed elastically toward the first and second flap seats, a restoring spring bearing in the valve body and axially stressing the input member in a direction away from the flap seats, and means for positioning the plunger arranged in a radial opening of the valve body opening into the central bore and interacting with the plunger to assign to the plunger at least two separate specific axial positions relative to the valve body, characterized in that the positioning means comprises a combination of a first positioning member mounted fixably in the radial opening and having an inner end zone extending in the central bore and of a second positioning member mounted rockingly in the radial opening and comprising an inner end zone extending in the central bore between the first shoulder of the plunger and the inner end zone of the first positioning member and interacting with the first positioning member in hinged contact, a central portion and an outer end capable of interacting, in the vicinity of a rest position of the booster, with a stationary element connected to the housing to cause the second positioning member to rock from a first position in which the inner end zones are axially adjacent and a second position, in the rest position of the booster, in which the second positioning member, bearing against the first shoulder by means of the associated inner end zone, is set angularly at a distance from the first positioning member, the distance increasing in a direction away from the inner end zones and toward said outer end, the inner end zone of the first positioning member having a U-shaped profile with two lateral arms having ends situated, in an assembly configuration, on the axis side of the central bore away from the outer end of the second positioning member, the inner end zone of the second positioning member having a U-shaped profile with two lateral arms having end portions extending axially above the ends of the lateral arms of the inner end zone of the first positioning member in order to provide said hinged contact therebetween, the positioning members located adjacent one another within the valve body.

4,765,227

DIE CYLINDER ASSEMBLY

Les G. Balazs, Brecksville, and Anthony J. Cydzik, Jr., Cleveland, both of Ohio, assignors to Teledyne Hyson, Brecksville, Ohio

Filed May 28, 1982, Ser. No. 382,939
Int. Cl.[4] F15B 15/17
U.S. Cl. 91—417 R 23 Claims



1. An apparatus to cushion movement of a member in a press or the like in an environment which is contaminated by materials which are detrimental to operation of the apparatus, said apparatus comprising cylinder means for at least partially defining a cylinder chamber, said cylinder means including an end wall and a sidewall, piston means for dividing the cylinder chamber into a rod end variable volume chamber and a head end variable volume chamber and for blocking fluid communication between the rod end variable volume chamber and the head end variable volume chamber, a rigid piston rod connected with said piston means and extending through the end wall of said cylinder means, said piston means and said cylinder means being movable relative to each other under the influence of a relatively high working fluid pressure in the head end variable volume chamber to expand the head end variable volume chamber and contract the rod end variable volume chamber, said piston means and said cylinder means being movable relative to each other under the influence of forces applied to said piston rod and said cylinder means to expand the rod end variable volume chamber and contract the head end variable volume chamber and thereby cushion movement of the member in the press, and means for maintaining the fluid pressure in the rod end variable volume chamber at least as great as ambient fluid pressure during expansion of the rod end variable volume chamber to prevent a flow of materials detrimental to the operation of the apparatus into the rod end variable volume chamber from the environment around said apparatus upon expansion of the rod end variable volume chamber, said means for maintaining the fluid pressure in said rod end variable volume chamber including surface means at least partially defining a third chamber disposed in said piston rod and separate from said head end variable volume chamber for storing a quiescent body of fluid under pressure prior to expansion of said rod end variable volume chamber and port means for conducting a flow of fluid from said third chamber in said piston rod into said rod end variable volume chamber upon expansion of said rod end variable volume chamber and for conducting a flow of fluid from said rod end variable volume chamber into said third chamber in said piston rod upon contraction of said rod end variable chamber to maintain the same body of fluid in said rod end variable volume chamber and third chamber in said piston rod during repeated expansion and contraction of said rod end variable volume chamber, said piston means including means for blocking fluid flow from said head end variable volume chamber into said third chamber during expansion and contraction of said rod end variable volume chamber.

4,765,228

AXIAL PISTON MACHINE WITH A DEVICE FOR FLUSHING THE CIRCUIT

Ludwig Wagenseil, Vohringen, Fed. Rep. of Germany, assignor to Hydromatik GmbH, Elchingen, Fed. Rep. of Germany

Filed Jul. 16, 1987, Ser. No. 73,987
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1986, 3625941; Nov. 14, 1986, 3638890
Int. Cl.[4] F01B 13/04
U.S. Cl. 91—486 22 Claims



1. An axial piston machine having a cylinder block with a plurality of cylinders therein; pistons in said cylinders, and drive means for actuating said pistons for use in a closed-circuit hydrostatic drive, having a control member with high and low pressure kidney ducts therein that controls the working cycle of the axial piston machine and having a circuit flushing device that includes a flushing valve that is arranged in the control member, is acted on by high pressure and connects the low pressure line with a respective return line, characterized in that the flushing valve has a valve body which comprises a cylindrical sleeve valve displaceably mounted in a guide bore extending diametrically directly between the high pressure kidney duct and the low pressure kidney duct in the control member, the guide bore being connected with the free space of the housing of the axial piston machine in the region of the sleeve valve by a connecting duct leading to bearings of said machine.

4,765,229

PORTABLE VACUUM PUMP FOR DESOLDERING PURPOSES

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265, and Robert E. Dallons, 6625 Tamarind St., Agoura, Calif. 91301

Filed Jul. 2, 1984, Ser. No. 627,067
Int. Cl.[4] F01B 29/00
U.S. Cl. 92—128 2 Claims



1. A portable vacuum pump for desoldering purposes comprising:

a hollow cylindrical barrel forming a vacuum stroke cylinder and having a forward, intake end and a rearward end;

a plunger guide body removeably carried by said rearward end of said barrel and including

a forward trigger housing bushing which substantially closes said rearward end, and

a rearwardly extending sleeve portion disposed axially in alignment with said cylindrical barrel;

a plunger shaft extending through said bushing into said cylindrical barrel and rearwardly along said sleeve portion of said plunger guide body;

a loading knob carried by the rear end of said plunger shaft;

axially sliding, transversely interlocking coupling means disposed intercooperatively on said loading knob and said sleeve portion whereby said loading knob and said plunger shaft have only an axial degree of freedom of motion with respect to said barrel and guide body;

a piston carried by said shaft near its forward end within said barrel in an axial, air pump stroke relation therewith;

a trigger element plate having a finger engageable portion and a bottom portion disposed oppositely therefrom and having a central opening for the passage therethrough of said shaft,

said trigger element plate being carried laterally slideable within said trigger housing bushing and retained therein by said shaft with said finger engageable portion extending laterally out of said bushing,

said trigger element plate having a rearwardly exposed, substantially planar, spring engaging surface which is inclined rearwardly at an angle diverging away from lateral in the direction from said bottom portion to said finger engageable portion of said trigger element plate;

a unitary, single coil vacuum stroke and trigger control spring retained about and coaxially with said shaft axially disposed compressively between said loading knob and said inclined, spring engaging surface of said trigger plate whereby the force of the compressed spring against inclined planar surface biases and displaces said trigger plate laterally in the direction toward its said finger engaging portion; and

trigger latching means disposed intercooperatively on said trigger element plate and said plunger shaft, said latching means being of the character to latch when said vacuum stroke spring is fully compressed by said loading knob and said shaft is displaced fully forward, and to unlatch when said finger engageable portion is pressed to move said trigger element plate laterally inwardly against the lateral component of force exerted by said compressed spring upon said inclined planar surface of said trigger element plate, said trigger latching means comprising a circular retaining shoulder disposed about said shaft near its rearward end, said shoulder being formed by a reduced diameter portion toward said rear end cooperating with a step of increased diameter toward said forward end.

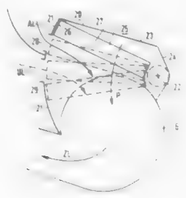
VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,230

ASSEMBLY FOR VENTILATION SYSTEM OF MOTOR VEHICLE

Freddie Soethout, Cologne, and Wolfgang Radtke, Steinenbrück, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1987, Ser. No. 78,546
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1986, 3626392; Aug. 4, 1986, 3626393; Aug. 4, 1986, 3626395
Int. Cl.[4] B60H 3/06
U.S. Cl. 98—2.11 13 Claims



1. An assembly for use in the ventilation system of a motor vehicle, said assembly comprising:

a housing defining an air chamber, said housing including walls provided with first air inlet means communicating with the atmosphere outside said motor vehicle for introducing air from outside of said motor vehicle into said chamber, said walls being further provided with second air inlet means communicating with a passenger compartment of said motor vehicle for introducing air from said passenger compartment into said chamber, said walls being further provided with air outlet means communicating with said passenger compartment for conducting air from said air chamber to said passenger compartment; and

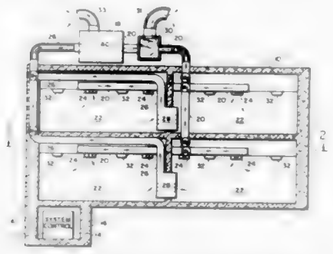
air mix control means for controlling the proportions of air from outside said motor vehicle and air from said passenger compartment guided through said air chamber into said passenger compartment and for selectively filtering air guided into said passenger compartment, said air mix control means including a substantially planar filter pivotably mounted in said air chamber for rotation about a rotational axis.

4,765,231

SMOKE EXHAUSTING AIR CONDITIONING SYSTEM

Michael J. Aniello, 20 Valley Rd., Katonah, N.Y. 10536

Filed Mar. 23, 1987, Ser. No. 29,318
Int. Cl.[4] F24F 11/00
U.S. Cl. 98—33.1 14 Claims



9. A method of exhausting harmful smoke from the rooms of an air conditioned building when an uncontrolled fire erupts, so that the building occupants have sufficient time to evacuate without succumbing to smoke inhalation, comprising:

detecting a level of smoke potentially dangerous to the building occupants;

reversing the direction of operation of supply fan motor means from one in which conditioned air is drawn through a first duct system and expelled out of registers located in rooms of the building, to one in which smoke evolving in the rooms is drawn through said registers into the first duct system when the dangerous level of smoke is detected;

exhausting the smoke drawn from the rooms and into the first duct system, out of the first duct system and away from the occupants; and

directing a first cooling fluid jet toward first fuse means associated with first fire dampers in the first duct system when the potentially dangerous level of smoke is detected;

thereby ensuring that the first dampers will remain in an open position notwithstanding the presence of fire in the vicinity of the first duct system, and allowing smoke drawn through the room registers to pass unobstructed in said first duct system to be exhausted away from the building occupants.

4,765,232

PORTABLE COOKOUT

Joyce P. Reid, 1316 W. 115th St., Chicago, Ill. 60643

Continuation-in-part of Ser. No. 628,896, Jul. 9, 1984, abandoned. This application Oct. 8, 1986, Ser. No. 915,995
Int. Cl.[4] A47J 27/00, 37/07, 43/18
U.S. Cl. 99—427 10 Claims



1. A portable device for cooking food in an enclosed space comprising:

a plurality of baskets constructed and arranged to contain food, said baskets including a portion for holding food and a hinged cover;

a rotatable spit member;

a plurality of clips for attaching said baskets to said rotatable spit member;

a housing constructed and arranged for the rotatable mounting of said rotatable spit member, said housing further defining a base member, a back member including an adjustable vent, two side members, said side members including centrally located rotatable supports for said rotatable spit member and adjustable vent, a top member including an adjustable vent hingedly affixed to said back member and two door members positioned in front of said rotatable spit member for gaining access to said rotatable spit member, said two door members being hingedly affixed to each of said side members, respectively;

said door members and said top member being selectively opened or closed during the cooking process;

means for rotating said rotatable split member and said baskets attached thereto;

a removable heat source container constructed and arranged to contain brickets or charcoal, said heat source container being accessible through said door members and slidably mounted within said housing under said rotatable spit member so as to be positionable with respect to said rotatable spit member and said baskets and not to obstruct the rotation of said rotatable spit member and said baskets;

a removable tray member accessible through said door members, said tray member being constructed and arranged to rest on said base member under said heat source container; and

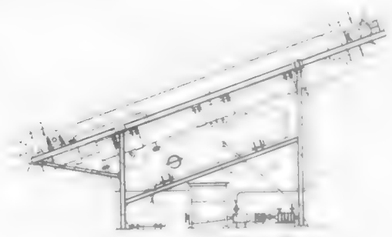
a mounting cart constructed and arranged to mount said housing, said mounting cart including a plurality of wheels and a handle.

4,765,233

APPARATUS FOR VACUUM PEELING OF FRUITS AND VEGETABLES

Lyubomir N. Geachev; Iliya C. Kafedjiev; Kostadin S. Klyamov, and Stefan G. Atanasov, all of Sofia, Bulgaria, assignors to S O "Balgarplod" , Sofia, Bulgaria

Filed Apr. 17, 1987, Ser. No. 40,516
Claims priority, application Bulgaria, Apr. 17, 1986, 74553
Int. Cl.[4] A23N 7/00
U.S. Cl. 99—472 2 Claims



1. An apparatus for vacuum peeling of fruits and vegetables comprising

a frame and a water carrying longitudinal tank fastened to said frame;

a perforated tube mounted inside said tank;

a vapor spiral mounted inside said tank and outside said perforated tube for heating water inside of said tank;

a feeding bin attached to one end of said tank for receiving unpeeled fruits or vegetables for delivery into said perforated tube inside said tank;

a receiver mounted on said frame below said tank and a vacuum pump connected to said receiver by a fourth pipeline;

an operational tube connected to said perforated tube at an end of said perforated tube farthest from said feeding bin;

a vacuum chamber mounted in said operational tube and connected to said receiver by a third pipeline;

a strainer mounted beneath said operational tube, said strainer being located between said vacuum chamber and said perforated tube;

a resevoir and a pump, said resevoir being connected to said strainer by a first pipeline, said pump connecting said reservoir to said tank by a second pipeline;

an endless conveyor chain and a plurality of discs, said discs being mounted on said conveyor chain approximately normal thereto, said chain defining the approximate center of said discs;

said conveyor being mounted on said frame over said tank and arranged so that said disks on said chain pass through said perforated tube and said operational tube;

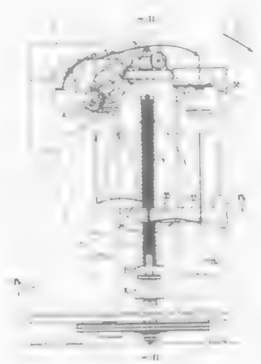
whereby unpeeled fruit or vegetables which enter said feeding bin are carried by said disks on said conveyor through said perforated tube to said operational tube, over said strainer, past said vacuum chamber and out of said operational tube.

4,765,234

FRUIT AND VEGETABLE PEELER

Serge Cailliot, Carabillon, 4700 Cordey-Falaise, France

Filed Jun. 24, 1986, Ser. No. 877,769
Claims priority, application France, Jun. 26, 1985, 85 09737
Int. Cl.[4] A23N 7/00
U.S. Cl. 99—593 10 Claims



1. A peeler for a product, such as a fruit or vegetable, said peeler comprising:

a rotating tool rotatable about an axis and movable in relation to the product so as to perform a cutting action on the surface of the product and mark on it successive parallel turns, said tool having a surface of revolution around said axis capable of coming into contact with the product to limit the depth of penetration of said cutting action into the product, said tool including at least one tooth, forming a projection extending radially beyond said surface of revolution to a predetermined extent in relation to said depth of penetration, said tool being driven in rotation about said axis at such a rotational speed that the tangential speed of said projection exceeds 8 m/s and in such a direction of rotation that said projection engages the skin of the product starting from an adjacent turn already peeled,

a shaft of the rotating tool rotates in bearings of an assembly articulated about a perpendicular pivot pin relative to a holder which is itself movable about a holder axle perpendicular to said pivot pin so that a torque is exerted on the assembly so that the rotating tool operates sensitively, exerting on the product a force below 0.5 N and the product is driven in a relative helical movement in relation to the holder axle and said holder being driven about its axle so that at the start of a peeling cycle, the pivot pin forms with the axis of relative helical movement of the product, an initial angle in such a direction that the reaction force of the product on the rotating tool causes the rotating tool to move away obliquely so as to distance the rotating tool from said axis of relative helical movement, and that at the end of operation, said pivot pin forms with the axis of relative helical movement, a final angle in the opposite direction to the initial angle.

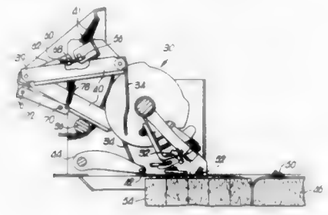
VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,235

MONITORING SYSTEM FOR DETECTING MALFUNCTION OF KNOTTING MECHANISM ON A CROP BALER

Thomas G. Schrag, Hesston, Kans.; Charles F. Hood; Scott A. Morton, both of Rauchester, Wyo., and Kurt Graber, Moundridge, Kans., assignors to Hay & Forage Industries, Hesston, Kans.

Filed Apr. 15, 1987, Ser. No. 38,779
Int. Cl.⁴ B65B *13/22, 13/18*
U.S. Cl. 100—3 24 Claims



11. In combination with a crop baler having a mechanism for binding crop bales produced by the baler with at least one strand of binding material, the binding mechanism cycling through a binding cycle during which the strand progresses from a first slack condition to a second slack condition and returns to the first slack condition, means for monitoring the operation of the binding mechanism comprising:

means for detecting the slack condition of the strand;

means for sensing the cycling of the binding mechanism;

means operably coupled with said detecting and sensing means for determining whether there has been a failure of the strand to progress between the first and second slack conditions during the binding cycle, and

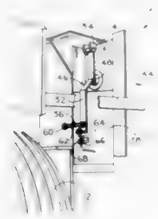
means operably coupled with said determining means for displaying a visual representation indicative of said failure upon the occurrence of said failure.

4,765,236

ROUND BALER HAVING INTERLOCK MECHANISM FOR ASSURING POST DISCHARGE ACTUATION OF EJECTED BALE REPOSITIONER

Bruce L. White, North Newton, Kans., assignor to Hay & Forage Industries, Hesston, Kans.

Filed Sep. 30, 1987, Ser. No. 102,869
Int. Cl.⁴ B30B *5/06*
U.S. Cl. 100—88 7 Claims



1. In a round baler having structure defining a baling chamber with an outlet, a gate normally covering said outlet, and means for opening said gate upon formation of the bale in order to discharge said bale from said baling chamber and onto the ground, bale repositioning apparatus comprising:

a repositioning member;

means activatable to shift said member along a path of travel for contact with a bale discharged onto the ground and for movement of said discharged bale away from the baling chamber;

means for sensing the absence of a bale within said baling chamber; and

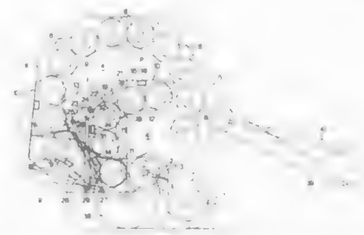
control means operatively connected with said sensing means and said shifting means for normally preventing activation of said shifting means and thereby movement of said repositioning member until such time as said sensing means has sensed the absence of a bale within said chamber.

4,765,237

ROUND BALER WITH EXPANDABLE BALE CHAMBER

Marc G. Vansteelant; Adrianus Naaktgeboren, both of Zedelgem, Belgium, and Shaun A. Seymour, New Holland, Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Oct. 20, 1987, Ser. No. 111,379
Claims priority, application European Pat. Off., Oct. 21, 1986, 86201829.8
Int. Cl.⁴ B30B *3/04*
U.S. Cl. 100—89 16 Claims



1. In a round baler with a bale chamber expandable between a bale start position and a full bale position and comprising a first bale-forming means disposed generally circumferentially around a portion of the full size bale chamber when the baler is in its bale-forming condition, and a second bale-forming means which is movable relative to the first bale-forming means between two extreme positions; said second bale-forming means being cooperable, in one extreme position, with the first bale-forming means to form the bale start chamber of reduced dimensions for starting bale formation, and, in the other extreme position, with the first bale-forming means to define a generally cylindrical bale chamber generally corresponding to a full size bale and said first and second bale-forming means being cooperable to form a round bale of crop material during movement of the second bale-forming means from the one extreme position towards the other extreme position; and an improvement comprised in that:

the second bale-forming means has at least two portions which also are movable relative to each other such that, in partially defining the bale-start chamber said portions of said second bale-forming means are inclined relative to each other at an angle which is smaller than the angle therebetween when the second bale-forming means partially defines the full size bale chamber; and

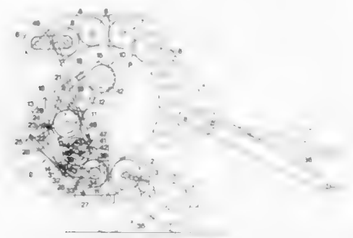
the two portions of the second bale-forming means are both pivotal about a common axis with one portion further also being pivotal relative to the other portion such that said angle between the two portions increases as the bale chamber increase in size during bale formation.

4,765,238

ROUND BALER WITH EXPANDING BALE CHAMBER

Cyriel R. J. De Busscher, Damme; Adrianus Naaktgeboren, Zedelgem, and Odilus A. Stael, Ichtegem, all of Belgium, assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Oct. 20, 1987, Ser. No. 111,382
Claims priority, application European Pat. Off., Oct. 21, 1986, 86201836.6
Int. Cl.⁴ B30B *3/04*
U.S. Cl. 100—89 12 Claims



1. In a round baler with a bale chamber expandable between a bale start position and a full bale position and comprising a first bale-forming means disposed at positions generally circumferentially around a portion of the full size bale chamber when the baler is in its bale-forming condition, and a second bale-forming means which is movable relative to the first bale-forming means between two extreme positions; said second bale-forming means being cooperable, in one extreme position, with the first bale-forming means to form the bale start chamber of reduced dimensions for starting bale formation, and, in the other extreme position, with the first bale-forming means to define a generally cylindrical bale chamber generally corresponding to a full size bale and said first and second bale-forming means being cooperable to form a round bale of crop material during movement of the second bale-forming means from the one extreme position towards the other extreme position; an improvement comprised in that:

part of the first bale-forming means adjacent the second bale-forming means when positioned in the full bale position, is movable relative to the remainder of said first bale-forming means, and

means are provided for moving said part of the first bale-forming means in synchronism with the movement of the second bale-forming means to and from the full bale position, whereby the second bale-forming means does not foul the first bale-forming means in moving to and from the full bale position.

4,765,239

MULTI-IMPRESSION SYSTEMS WITH INDEXING OF PRINTING CYLINDER

Nicolas T. Ciccone, and Hector H. Ciccone, both of Irigoyen 417/19, 1407 Capital Federal, Argentina

Filed Jun. 17, 1986, Ser. No. 873,161
Claims priority, application Argentina, May 28, 1986, 304149
Int. Cl.⁴ B41F *7/04, 21/08*
U.S. Cl. 101—91 4 Claims

1. A device for printing a set of documents on a single sheet, each document having common repetitive impressions and common semi-repetitive impressions, each document in the set having its own differentiated impression, comprising: a first printing body including inking rollers, a fountain supplying ink to said inking rollers, a first printing matrix engageable with said inking rollers so as to receive ink from said inking rollers, and a rubber bearing cylinder for transferring ink from said first printing matrix to said single sheet, said first printing matrix carrying a pattern corresponding to the common semi-repetitive impressions for printing each document of the set of documents on said single sheet with common semi-repetitive impression; a second printing body including a second printing roller carrying a second printing matrix, a second inking roller for applying ink to said second printing matrix and a second transfer cylinder, said second printing matrix having a printing length which is divided into a number of printing portions at least equal to the number of differentiated impressions for all the documents in the set of documents on said single sheet, each printing portion carrying a pattern corresponding to a different one of the differentiated impressions for the documents in the set of documents, said second set printing body printing each document of the set of documents with its own different differentiated impression, conveyor means for transferring a sheet having sets of documents, between said first and second printing body so that each sheet is printed with the common semi-repetitive impressions and each document on said sheet is printed with one of the differentiated impressions, said conveying means including an endless plier chair conveyor extending from said first printing body to said second



printing body so as to individually feed said single sheets to said second printing body; indexing means operatively connected to said second printing body for indexing said second printing matrix by an amount equal to the length of each printing portion of each document or sets of documents before each document on said single sheet is printed by said second printing body, said indexing means including means for rotating said second printing roller by an angular amount corresponding to the length of a printing portion, and a transfer blanket covering part of said second transfer cylinder for transferring ink from the patterns at one end of said printing portions onto a document; storage means for storing a stack of sheets preprinted with the common repetitive impression, adjacent the first printing body and for supplying the sheets, individually, to the first printing body; and, a tray, adjacent said second printing body for receiving single sheets having the set of documents thereon, from said second printing body, each sheet having been printed with said semi-repetitive impressions and with one of said differentiated impressions.

4,765,240

SAFETY RAIL FOR ACCIDENT PREVENTION IN ROTARY PRINTING MACHINES

Josef Kraus, and Erich Wech, both of Augsburg, Fed. Rep. of Germany, assignors to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Augsburg, Fed. Rep. of Germany

Filed Mar. 5, 1987, Ser. No. 22,276
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610697
Int. Cl.⁴ B41F *5/00*
U.S. Cl. 101—216 20 Claims

1. A printing machine having

side walls (1, 2);

two cylinders (3, 4) positioned to define a nip therebetween;

cover plates (5, 6) located laterally adjacent the cylinder end faces and positioned inside the side walls (1, 2), said cover plates serving to protect components of the printing machine;

VOL 1093 ISS 4 AG 23 1988 UMI

an operator safety guard rail (7) located in advance of said nip; and

means for securing said operator safety guard rail, adjustably and selectively, in position,

wherein, accordance with the invention, said securing means comprises

projecting flange elements (8, 9) secured to said safety guard rail (7) and extending essentially parallel to the cover plates (5, 6);

interengaging guide means (10, 11; 12, 13) formed, respectively, on said projecting flange elements (8, 9) on the



cover plates (5, 6), and extending away from said nip in a direction generally tangential to said cylinders at said nip;

means (14, 15, 23) for selectively sliding said safety guard rail between an operating position closely adjacent said nip and a remote position, removed and remote from said nip, said safety guard rail being movable back and forth along said generally tangential direction; and

limit switch means (21, 22) sensing the position of the safety guard rail with respect to said nip and providing, respectively, signals for permitting operation or inhibiting operation of the printing machine in dependence on the position of said safety guard rail with respect to said nip.

4,765,241

ARRANGEMENT FOR NORMALIZED INDICATION OF PRINTING INK SUPPLY HAVING ROLLER WITH ADJUSTABLE SPEED

Dietrich Hank; Heinz Skiera, and Gerd Zimmermann, all of Leipzig, German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed Aug. 18, 1986, Ser. No. 897,844

Claims priority, application German Democratic Rep., Nov. 6, 1985, 2825361

Int. Cl.[4] B41F *31/06, 31/14, 31/34*

U.S. Cl. 101—350 2 Claims

1. An arrangement for providing a normalized indication of the printing ink supply to at least one printing station of a printing machine including a main driving motor operating at a variable first rotational speed and a ductor roller driving motor which drives a ductor roller of the printing station and operates at an adjustable second rotational speed, comprising means for providing a first pulse train having a first pulse frequency proportional to the first rotational speed; means for generating a second pulse train having a second pulse frequency proportional to the second rotational speed; means for forming a ratio of said first and second pulse frequencies at predetermined settable time intervals; means for storing the thus formed ratio; and means for displaying the stored ratio, said providing means including a first incremental digital transducer having an output; wherein said generating means includes a second incremental digital transducer having an output; and wherein said forming means includes a first gate circuit having an input connected to said output of said first incremental digital transducer, a control input and an output, a first counter with a settable counting volume having a counting input connected to said output of said first gate circuit, a resetting input and an output which is activated when said counting volume has been reached, a second gate circuit having an input connected to said output of said second incremental digital transducer, a control input and an output, a second counter having a counting input connected to said output of said second gate circuit, a resetting input and an output connected to said storing means; and a triggering circuit having



one input connected to said output of said first incremental digital transducer and another input connected to said output of said first counter, said triggering circuit being operative for generating from the signals reaching said first and second inputs thereof a start/stop signal and a resetting signal and further having one output carrying said start/stop signal and connected to said control inputs of said first and second gate circuits and another output carrying said resetting signal and connected to said resetting inputs of said first and second counters.

4,765,242

DEVICE FOR CLEANING BLANKET MOUNTED AROUND CYLINDRICAL DRUM OF A PRINTING MACHINE

Motomichi Oya, and Tsutomu Nonomura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Asahi Shimbunsha and Toyo Inki Seizo Kabushiki Kaisha, both of, Japan

Filed Dec. 4, 1986, Ser. No. 937,812

Int. Cl.[4] B41F *35/00*

U.S. Cl. 101—425 10 Claims



1. A device for cleaning a blanket mounted around a cylindrical drum of a printing machine, said drum being mounted on an axis of rotation, comprising a vessel means supported to be

movable up and down so as selectively to approach a downwardly convexed bottom portion of said blanket located vertically under said axis of rotation, said vessel having an upper opening thereof facing toward said vertically convexed bottom portion of said blanket, a pair of rollers mounted in said vessel means for rotation about horizontal parallel axes, said rollers being horizontally spaced apart and adjacent said opening thereof so as to carry thereon as bridging therebetween a portion of a strip sheet material having a porous structure and suitable for rub cleaning said pair of rollers being positioned on horizontally opposite sides of said vertically downwardly convexed bottom portion of said blanket so as to press said bridging portion of said strip sheet material against said vertically downwardly convexed bottom portion of said blanket when said vessel means is moved upward, a nozzle means mounted in said vessel means so as selectively to project a jet flow of a cleaning fluid upward to impinge against said bridging portion of said strip sheet material toward said vertically downwardly convexed bottom portion of said blanket, and a means for selectively feeding said strip sheet material around said pair of rollers so that said bridging portion of said strip sheet material is shifted therealong.

4,765,243

METHOD OF PRINTING ON PLASTIC SUBSTRATE USING A WATER-BASED INK

Harry M. Schiefer, Midland, Mich., and Keith S. McClarnon, Lake Zurich, Ill., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 2, 1987, Ser. No. 57,598

Int. Cl.[4] B41M *1/00;* C09D *11/00*

U.S. Cl. 101—451 13 Claims

1. In a method of flexographic or rotogravure printing onto a plastic substrate using a water-based ink, the improvement comprising adding to said ink from about 0.005 to about 5 weight percent of a silicone compound selected from those represented by the average formulas

$(Me_3SiO)_3SiQ$,

$(Me_3SiO(Me_2SiO))_3SiQ$,

$Me_3SiO(MeQSiO)_xSiMe_3$,

$Me_3SiO(Me_2SiO)_y(MeQSiO)_xSiMe_3$,

$ZMe_2SiO(Me_2SiO)_nSiMe_2Q$ or

$ZMe_2SiO(Me_2SiO)_x(MeQSiO)_ySiMe_2Q$

wherein Me denotes the methyl radical, Z is Me or Q, Q is selected from $—R(CH_2CH_2O)_nR'$ or $—RO(CH_2CH_2O)_nR'$, in which R is an alkylene group having from 2 to 6 carbon atoms, R' is selected from hydrogen, an alkyl group having 1 to 4 carbon atoms or an acyl group having 2 to 7 carbon atoms and n is 3 to 15, and wherein i is 1 to 5, j is 1 to 4, k is 1 to 3, w is 1 to 4, x is 1 to 3 and y is 1 to 3.

4,765,244

APPARATUS FOR THE DETECTION AND DESTRUCTION OF INCOMING OBJECTS

Yechiel Spector, Tel Aviv; Ilan Cohen, Petach Tikva, and Azriel Lorber, Kiryon, all of Israel, assignors to Spectronix Ltd., Tel Aviv, Israel

Continuation-in-part of Ser. No. 485,414, Apr. 15, 1983, abandoned. This application Mar. 6, 1986, Ser. No. 836,683

Int. Cl.[4] F42C *13/00;* F41H *13/00;* G08B *19/00*

U.S. Cl. 102—213 39 Claims

1. Apparatus for the detection of incoming objects, such objects being characterized by a detectable change in the observed intensity of infrared radiation emitted therefrom as said objects approach said apparatus, which comprises:

(a) proximity determination means providing an output and comprising:

(i) means for detecting simultaneous radiation sensing in a plurality of different ranges within the infrared range, and

(ii) radar means;

(b) radiation detection means providing an output and comprising at least UV radiation sensing means; and



(c) means for providing an alarm indication only in response to a predetermined combination of outputs from said proximity determination means and said radiation detecting means.

4,765,245

FIRING PIN AND SAFETY AND ARMING MECHANISM FOR A PENETRATING WARHEAD

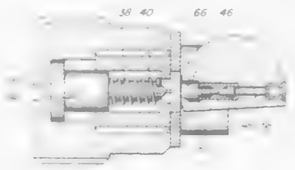
Gilles Bérubé, Neufchatel, and Ghislain Dumas, Duberger, both of Canada, assignors to Her Majesty the Queen in right of Canada, Canada

Continuation of Ser. No. 763,608, Aug. 8, 1985, abandoned. This application Mar. 2, 1987, Ser. No. 21,589

Claims priority, application Canada, Dec. 3, 1984, 469142

Int. Cl.[4] F42C *15/24*

U.S. Cl. 102—251 4 Claims



1. A firing assembly for a hard target penetrating warhead comprising:

a safety and arming device with perpendicular, longitudinal and lateral axes and including a rotor,

means mounting the rotor for rotation about the lateral axis, the center of gravity of the rotor being located eccentrically with respect to the lateral axis,

a through passage in the rotor transverse to the lateral axis,

a pyrotechnical train carried in the through passage in the rotor and consisting of a primer, a pyrotechnical time delay and detonator, the primer being recessed into a counter bore at one end of the through passage,

safety means normally preventing rotation of the rotor out of a safety position and means responsive to longitudinal launching acceleration of the warhead for disabling the safety means and permitting the rotor to move from the safety position to an armed position in response to said longitudinal acceleration;

a striker carrier with a longitudinal bore that is aligned with the counter bore in the armed position of the rotor and a shoulder in the longitudinal bore facing away from the counter rotor;

a striker slidable in the bore and having a radial flange engageable with the shoulder;

a firing pin secured to the striker and including a rod with one end secured to the striker and projecting from the striker towards the rotor, the rod being dimensioned to be a sliding fit in the counter bore and having the end opposite the striker tapered to a point that is spaced from the

VOL 1093 ISS 4 AG 23 1988 UMI

radial flange of the striker by a distance less than the spacing between the shoulder and the pyrotechnical time delay when the rotor is in the armed position; and

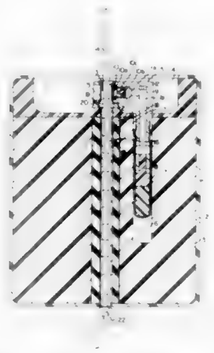
spring means biasing the striker and firing pin away from the rotor.

4,765,246

DETONATOR AND A CHARGE ADAPTED THERETO

Staffan Carlsson; Torsten Persson, both of Karlskoga; Bert Jonsson, Nora, and Tore Boberg, Karlskoga, all of Sweden, assignors to Nobel Kemi, Karlskoga, Sweden

Filed May 21, 1987, Ser. No. 52,338
Int. Cl.[4] F42B 3/10; C06C 5/06
U.S. Cl. 102—318 6 Claims



1. A detonator for explosive charges to be initiated by a detonating fuze which passes through a passage provided in the body of the detonator, comprising:

a detonating means encapsulated in the body of said detonator in an immediate association with said passage,

a blasting cap with an integral delay assembly, anchored in said body of said detonator, in communication with said detonating means, positioned substantially parallel and spaced apart from said passage for the detonating fuze,

said detonating means including a percussion cap which is disposed in immediate association with said detonating fuze, and having an impact sensitive detonating charge facing said passage and having detonation direction coinciding with a first detonation channel disposed at right angle to the longitudinal direction of the fuze, said channel merging, through a right-angled elbow, into a second detonation channel which leads to said blasting cap; and

a detonation capsule in the form of a pyrotechnical assembly, being disposed in the angle between the first and second detonation channels.

4,765,247

PARACHUTE COLLAPSING SYSTEM AND METHOD FOR FLARES

Barry R. Sorenson, Providence, and Roy T. Minert, Brigham City, both of Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Jul. 7, 1987, Ser. No. 70,473
Int. Cl.[4] F42B 4/28
U.S. Cl. 102—339 4 Claims

1. A method of effecting movement of a rocket launched flare and its supporting parachute to the ground quickly after flare burnout comprises the steps of:

a. tethering a line between the flare and the apex of the parachute canopy and including release means for said line so that, upon release of support means attaching the



flare to the parachute for supporting of the flare for slowing of its descent, the parachute will collapse, and

b. releasing the support means.

4,765,248

LIMITED RANGE, ARROW STABILIZED SUBCALIBER PROJECTILE FOR A TUBULAR WEAPON

Heinz-Josef Kruse, Ratingen; Ulrich Theis, Kahlenahl; Klaus D. Pahnke, Solingen; Peter Wallow, and Wilfried Becker, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 23, 1987, Ser. No. 41,376
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1986, 3613866
Int. Cl.[4] F42B 13/205
U.S. Cl. 102—529 6 Claims



1. In a limited range, arrow stabilized subcaliber projectile for a tubular weapon, including a cylindrical main body portion having a stabilizing tail section which is secured to said main body portion and has a larger outer diameter than the diameter of said main body portion; the improvement wherein:

said stabilizing tail section includes means for causing said projectile to rotate about its longitudinal axis during flight; and

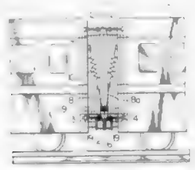
said main body portion further includes means, extending parallel to said longitudinal axis along the peripheral surface of said main body portion, for producing an unbalance of said projectile with respect to its said longitudinal axis so that at a given moment in time, and thus after projectile has covered a corresponding distance on its trajectory, the rotation rate corresponds to a critical number of revolutions which produces resonance in said projectile to cause the breaking apart and the self-destruction of said projectile.

4,765,249

GANGWAY CONSTRUCTION FOR VEHICLES

Masaaki Ishizuka, Kobe; Rokuro Ando, Nagoya; Mikio Hatano, Kasugai, and Koji Tabata, Nagoya, all of Japan, assignors to Narita Seisakusho Mfg., Ltd. and Kawasaki Jukogyo Kabushiki Kaisha, both of, Japan

Filed Jun. 5, 1986, Ser. No. 870,985
Claims priority, application Japan, Jun. 19, 1985, 60-135010
Int. Cl.[4] B60D 5/00
U.S. Cl. 105—10 7 Claims



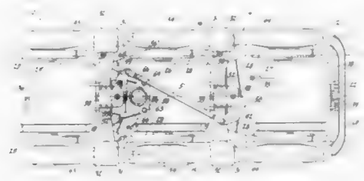
1. A gangway construction for connecting vehicles comprising: divided hood structures, each of which has a first end and a second end, the first ends of the respective hood structures being fixed to the vehicles leaving the second ends thereof free and disposed to face each other; means for resiliently suspending the second ends of the hood structures from the vehicles, a plurality of hood pressers provided between the vehicles and at least upper sides of metal frames on the second ends of the hood structures for urging said hood structures into extended positions, said plurality of hood pressers being coupled to the vehicles and said metal frames by universal joint means for allowing universal movement of said metal frames with respect to the vehicles, said plurality of hood pressers being arranged in a horizontal plane to converge from their respective joint means on the metal frame inwardly toward a centerline of the vehicle; and positioning members for guiding and engaging each other upon mutual approach of said members to effect a centering action on the second ends of the hood structures, said positioning members being provided in said metal frames on the second ends of the hood structures.

4,765,250

LOCOMOTIVE AND MOTORIZED SELF-STEERING RADIAL TRUCK THEREFOR

David J. Goding, Palos Park, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1987, Ser. No. 80,837
Int. Cl.[4] B61F 5/38
U.S. Cl. 105—166 7 Claims



1. A railway locomotive of the type comprising a carbody supported by a self steering truck including a pair of wheel and axle members, a truck frame including a pair of parallel side frames interconnected by at least one laterally extending transom, the truck frame being carried by the axles through resilient suspension means nominally urging the axles into centered positions for motion along straight track but permitting yawing for movement along curved track, traction motors drivingly connected with the axles for driving the locomotive wheels, one of the motors being carried on a side of said transom, first force transmitting linkage connecting the axles with the frame and including a lateral steering beam connected with at least one of the axles and having a center pivotally connected with the frame and free from connection with the carbody to allow self steering of its connected axle while carrying longitudinal forces between it and the frame, and second force transmitting linkage connecting the frame with the carbody and including the improvement of

a carbody post depending from the carbody laterally between the truck side frames and longitudinally adjacent to said at least one transom on the opposite side from said one of the motors,

a carbody beam pivotally carried on the post and having laterally opposite ends each lying between the post and one of the side frames, and

movably attached connecting rods longitudinally connecting each of said carbody beam ends with the adjacent transom to carry traction and braking forces while allowing yawing and lateral motion of the truck frame relative to the carbody.

3. A railway locomotive of the type comprising a carbody supported by a self steering truck including at least three longitudinally spaced wheel and axle members, a truck frame including a pair of parallel side frames interconnected by two laterally extending transoms each spaced longitudinally between one of the end axles and the remaining axles, the truck frame being carried by the axles through resilient primary suspension means nominally urging the axles into centered positions for motion along straight track but permitting yawing for movement along curved track, the carbody being supported on the truck frame by resilient secondary suspension means spaced laterally toward the side frames, traction motors drivingly connected with the axles for driving the locomotive wheels, two of the motors being carried on sides of the transoms, first force transmitting linkage connecting the axles with the frame and including a pair of lateral steering beams connected one with each of the end axles and each beam having a center pivotally connected with the frame and free from connection with the carbody to allow self steering of its connected axle while carrying longitudinal forces between it and the frame, means interconnecting said steering beams to require self steering yaw motions of the wheel and axle members to be of opposite sense and equal extent and the improvement wherein said interconnecting means includes

a torque tube upstanding from each of the steering beams and pivotally mounted on one of the transoms with a crank on the tube above its respective steering beam, the cranks of the two beams extending in laterally opposite directions, and

a link connecting the two cranks for equal and opposite oscillation, said link extending diagonally over the at least one intermediate traction motor to interconnect the steering beams.

4,765,251

RAILWAY CAR TRUCK WITH MULTIPLE EFFECTIVE SPRING RATES

Sergei G. Guins, Okemos, Mich., assignor to Kaser Associates, Inc., Okemos, Mich.

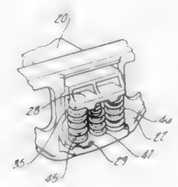
Continuation of Ser. No. 633,590, Jul. 23, 1984, abandoned. This application Sep. 4, 1986, Ser. No. 904,074
Int. Cl.[4] B61F 5/06
U.S. Cl. 105—197.05 21 Claims

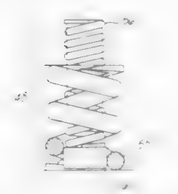
1. A railway car truck including a plurality of spring groups, a side frame on which said spring groups are supported, and a bolster moveable relative to said side frames and supported by said spring groups for transmitting the load weight of the car to said spring groups, each of said spring groups including:

(a) a plurality of single stage springs of a sufficient number to support an empty or lightly weighted railway car, each of said single stage springs consisting of an outer coil and an inner coil of the same height, and

VOL 1093 ISS 4 AG 23 1988 UMI

(b) a plurality of two-stage springs, which in combination with said single stage springs provide the specified total capacity of the spring group required by the railway car capacity, wherein each of said two-stage springs include





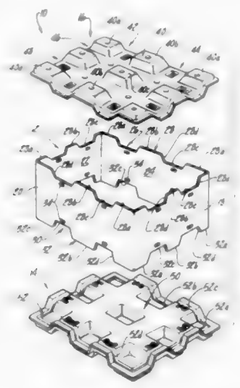
an outer coil, a retainer integrally wound on the outer coil, and an inner coaxial coil mounted on said retainer, said inner coil being under compression, and the combination of the inner coil and retainer preventing lateral displacement of the outer coil.

4,765,252

CONTAINER WITH SLEEVE INTERLOCKING LATCH

Lyle H. Shuert, 817 N. Fieldstone, Rochester, Mich. 48063

Continuation of Ser. No. 858,524, Apr. 23, 1986, abandoned, which is a continuation of Ser. No. 642,778, Aug. 21, 1984, abandoned. This application Jul. 28, 1987, Ser. No. 80,230
The portion of the term of this patent subsequent to Nov. 5, 2002, has been disclaimed.
Int. Cl.[4] B65D *19/18*
U.S. Cl. 108—55.1 13 Claims



1. A container comprising:

(A) a generally planar, horizontally extending base member having downwardly opening tunnels extending across the lower face thereof for receipt of the forks of a forklift truck;

(B) means defining upwardly facing seat portions around the periphery of said base member over said tunnels;

(C) a sleeve member adapted to be positioned on said base member with circumferentially spaced portions of its lower peripheral edge respectively seated over said tunnels on said seat portions;

(D) a slot in at least certain of said lower peripheral edge portions of said sleeve member; and

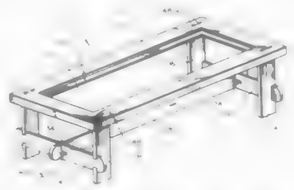
(E) a plurality of latch members mounted on said base member at circumferentially spaced locations around said base member over said tunnels and adjacent said seat portions for sliding movement along a generally horizontal line of action between a latching position in which said latch members extend across a vertical projection of said seat portions and respectively pass through the slots in the lower peripheral edge portions of said sleeve for releasably securing said sleeve to said base member and a released position in which said latch members are slidably withdrawn from said vertical seat portions projection and disengaged from said slots in said lower peripheral edge portions of said sleeve to allow said sleeve to be removed from said base member.

4,765,253

MODULAR FURNITURE ASSEMBLY

Richard Schappach, 1727 Amazon Rd., Mohegan Lake, N.Y. [illegible]

Filed Sep. 23, 1985, Ser. No. 778,860
Int. Cl.[4] A47B *3/06*
U.S. Cl. 108—153 6 Claims



1. A modular furniture assembly having quickly attachable and detachable parts comprising:

a top member having an upper surface and a plurality of keyways;

a plurality of legs to support said top member, each said leg including at least one key bolt member sized and shaped for sliding engagement within one said keyway to attach said leg to said top member;

stabilizing rails disposed opposite each other and interconnecting paired members of said legs to provide support and stability to said legs, said rails being keyed to interlock with notched portions disposed in said legs; and

a cross member interconnecting said oppositely disposed stabilizing rails to provide fixed support for said legs, the end portions of said cross member being keyed to interlock with said stabilizing rails;

each said stabilizing rail including an apertured portion for receiving and engaging the associated cross member end portion, said apertured portion including an elongated through slot centrally disposed in said stabilizing rail, each said cross member end portion extending through said elongated slot of the associated stabilizing rail and each said cross member end portion including a narrowed neck for firm interlocking engagement within said slot;

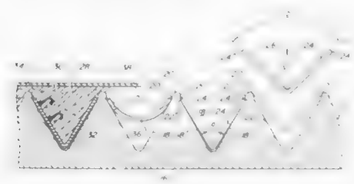
wherein each said key bolt comprises a shaft portion and a key tab projecting radially outwardly from the end of said shaft portion, and wherein each said keyway comprises a central opening extending vertically upwardly into said top member and sized for receiving said key bolt and a shelf portion extending radially outwardly from the upper end of said opening sized and shaped to receive said key tb, each said key bolt being attached at an upper end surface of an associated leg member, said key bolt and said keyway being sized and shaped so that said top member is firmly sandwiched between said key tab and the upper end surface of said leg when said key bolt is fully engaged within said keyway.

4,765,254

REINFORCED SLAB STRUCTURE FOR THE ASSEMBLY OF SAFES, AND METHOD OF MAKING AND USE THEREOF

Ilan Goldman, Kfar Shmaryahu, Israel, assignor to Toot (Engineering) Ltd., Israel

Filed Dec. 30, 1986, Ser. No. 947,844
Claims priority, application Israel, Jan. 3, 1986, 77517
Int. Cl.[4] E04B *2/02*
U.S. Cl. 109—85 14 Claims



1. A method of producing slabs for use in the construction of safe walls comprising the steps of

(a) casting a metal slab having one planar side and having an opposite side formed with a series of parallel, generally v-shaped recesses having sloping side surfaces, the recesses being separated by elongated projections having upright side-surfaces, so that every sloping side-surface of a recess generally intersects with an upright side-surface of a respective projection along a ridge line to there define an elongated ridge; and

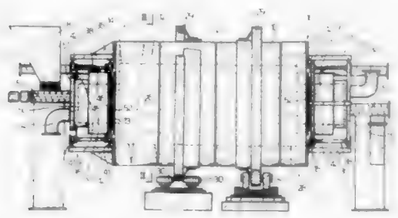
(b) forcibly wedging past the upright side surfaces and into each of the recesses an elongated, springy profiled metal bar having opposite side-edges which the bar normally urge apart and which edges are spaced apart at a distance somewhat larger than the distance between facing ridge lines so that the edges are held at the ridges between opposite ridge lines for preventing the bars from moving out of the recesses.

4,765,255

PERFECTED SYSTEM FOR PYROLYSING AND/OR DRYING BIOLOGICAL SLUDGE OR SIMILAR

Giorgio Chiarva, Cuneo, Italy, assignor to Stella S.p.A., Cuneo, Italy

Filed Dec. 2, 1987, Ser. No. 127,950
Int. Cl.[4] B23K *3/02*; B44B *7/02*; F23D *14/00*
U.S. Cl. 110—226 7 Claims



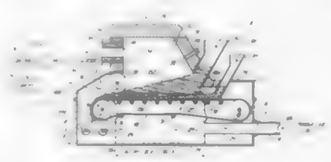
1. A pyrolysis and/or drying system (1), particularly for pyrolysing and/or drying biological sludge, which system (1) comprises a fluidtight furnace (2) into which the material is fed continuously at a first end and from which it is unloaded continuously at a second end by respective loading/unloading means (5); and a cylindrical skirt (10) externally enclosing the said furnace (2) in fluidtight manner and defining, together with an outer lateral surface (11) of the same, an annular cavity (12) along which may be fed a stream of hot burnt gases supplied by a first pipe (31) at one end (14) of the said skirt (10) and exhausted by a second pipe (31) at the opposite end (16) of the said skirt (10); characterised by the fact that the said furnace (2) and the said skirt (10) are connected angularly integral, and are mounted, in such a manner as to turn concentrically, on respective roller supports (28) outside the said skirt (10); the said loading/unloading means (5) and the said first and second pipes (31) being fixed in relation to the said roller supports (28), and being connected to the respective said ends of the said furnace (2) and the said skirt (10) by means of respective devices (35), each comprising a first frame (36) fixed angularly integral with the said skirt (10), a second frame (37) fixed in relation to the said roller supports (28), and a number of rolling bodies (38) inserted between the said first and said second frame (36, 37) in such a manner as to enable mutual rotation of the same; the said first frame (36) being radially outermost, in relation to the axis of the said skirt (10), as compared with the said second frame (37), in such a manner as to support the said second frame (37) by means of the said rolling bodies (38); the inside of the said furnace (2) and the said cavity (12) being connected in fluidtight manner to the inside of the said second frame (37) by means of respective concentric connecting pipes (6, 13) coaxial with the common rotation axis of the said furnace (2) and the said skirt (10), and cooperating with respective sliding seals (39, 40) on the said second frame (37).

4,765,256

REINJECTION GASIFIER

Robert A. Caughey, Antrim, N.H., assignor to New Hampshire Flakeboard, Inc., Antrim, N.H.

Filed Nov. 18, 1987, Ser. No. 122,254
Int. Cl.[4] F23G *5/12*
U.S. Cl. 110—229 22 Claims



1. Gasifier apparatus for particulate combustible material, said apparatus comprising

A. means forming a gasifier chamber,

B. material-transporting grate means for supporting particulate material within said chamber for pyrolysis and for transport from a receive location to a discharge location, where residue of the particulate material is discharged from the grate means,

C. feed means for introducing particulate material to the grate means at said receiving location,

D. means for introducing primary air to the particulate material on said grate means,

E. recirculating means for returning at least a portion of said residue discharged from the grate means to said grate means at said receive location, and

F. outlet means for the passage of combustible vapors from said combustible material outward from said chamber.

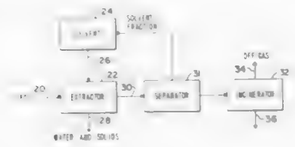
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,257

APPARATUS AND METHOD FOR WASTE DISPOSAL

Ramin Abrishamian, Needham, and Richard P. de Filippi, Cambridge, both of Mass., assignors to CF Systems Corporation, Waltham, Mass.

Filed Dec. 2, 1987, Ser. No. 127,785
Int. Cl.[4] F23B 7/00; F23G 7/04
U.S. Cl. 110—342 14 Claims



1. Apparatus for incinerating waste material having an organics content, said apparatus comprising, in combination:
pressure vessel means for effecting contact of said organics with a pressurized extractant fluid in which at least a fraction of said organics are soluble so as to produce a fluid extract of said organics in said extractant fluid and a non-extracted residue of reduced BTU/lb value; said extractant fluid being a gas at ordinary conditions of temperature and pressure but in said pressure vessel means being under conditions of temperature and pressure sufficient to render said extractant fluid a solvent for said fraction of said organics;
means for separating said residue from the organics extracted from said waste material;
an incinerator having a flue gas outlet;
means for feeding said residue to said incinerator for incineration therein; and
means for feeding said fraction of said organics as a fuel for at least part of said incineration.

10. A process for incinerating waste material having an organics content, said process comprising the steps of:
contacting said waste material with an extractant fluid under conditions of temperature and pressure to render said fluid a solvent for a fraction of said organics content so as to form a fluid extract of said organics in said extractant fluid and a non-extracted residue, said fluid being a gas at ordinary conditions of temperature and pressure;
separating said residue from said fluid extract;
incinerating said residue; and
feeding said fraction of organics as a fuel for at least part of said incinerating.

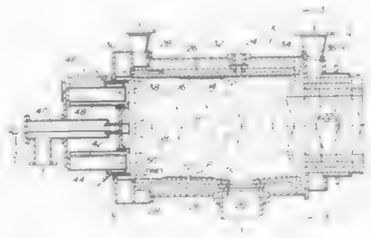
4,765,258

METHOD OF OPTIMIZING COMBUSTION AND THE CAPTURE OF POLLUTANTS DURING COAL COMBUSTION IN A CYCLONE COMBUSTOR

Bert Zauderer, Merion, Pa., assignor to Coal Tech Corp., Merion, Pa.

Continuation of Ser. No. 612,739, May 21, 1984, abandoned. This application Feb. 26, 1986, Ser. No. 834,143
Int. Cl.[4] F23D 1/02
U.S. Cl. 110—347 14 Claims

1. A method for the combustion of coal in a slagging cyclone combustor while minimizing the emission of ash particles and other pollutants, comprising the steps of: pulverizing a quantity of coal; removing from the pulverized coal particles too large to readily be burned in the combustor; injecting the remaining pulverized coal particles into the combustor adjacent to a closed end wall of the combustor together with a stream of primary combustion air so as to form an air-fuel stream; injecting into the combustor adjacent to the closed end wall a stream of secondary air in such a manner as to cause said air-fuel stream to flow helically within the combustor; maintaining the velocity of said secondary air stream such that centrifugal force on said coal particles due to tangential gas velocity drives said particles toward the cylindrical wall of the combustor so that combustion of said coal particles is apportioned between and occurs both in the gas stream and on the walls of the combustor with most of said combustion occurring in the gas stream; injecting into the combustor adjacent to the location at which the fuel-air stream is injected a pulverized sorbent capable of capturing sulphur compounds, whereby the sorbent being injected into a region within the combustor in



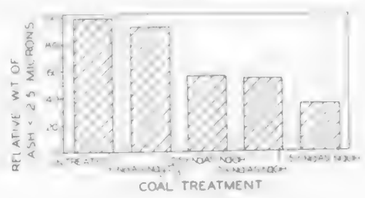
which the local gas conditions are oxidizing and the temperature is lower than the average temperature of the combustor, the average stoichiometry of said combustor being reducing; maintaining a liquid slag layer on the cylindrical wall of the combustor, the sulphur captured by the sorbent being removed from the cyclone as a result of the impingement and retention thereof on the slag layer, and the further steps of controlling by air cooling the temperature of the slag layer, and removing slag from the combustor in a time less than the time required for evolution of sulphur gas from the slag.

4,765,259

SODIUM ADDITION TO LOW RANK COAL TO ENHANCE PARTICULATE REMOVAL FROM COMBUSTION EFFLUENT

Thomas H. Colle, and Ashok K. Moza, both of Houston, Tex., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 20, 1987, Ser. No. 75,429
Int. Cl.[4] F23B 7/00
U.S. Cl. 110—342 9 Claims



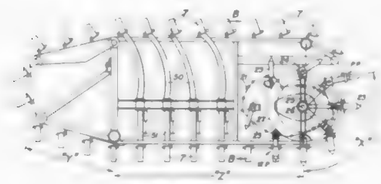
1. A method of preparing coal for combustion in order to increase the particle size of fly ash generated thereupon to enhance the ability to remove the ash from combustion gases, said method comprising contacting said coal with an aqueous solution of a sodium compound in an amount and for a time sufficient to increase the amount of sodium contained in the fly ash when said coal is combusted from about 0.3 percent to about 2 percent over untreated coal whereby the particle size of said fly ash is increased and the ability to remove said fly ash from combustion gases is enhanced.

4,765,260

MACHINE FOR PLANTING SEEDLINGS

Nissim Cafri, Moshav Ram On, D.N., Megido, Israel

Filed May 22, 1987, Ser. No. 53,361
Int. Cl.[4] A01G 11/02
U.S. Cl. 111—2 6 Claims



1. A machine for planting seedlings into the ground, comprising:
a chassis for movement in a travel direction over the ground;
endless chain means mounted for movement along a pathway defined on said chassis;
a plurality of sleeves connected to said chain means for movement along said pathway, each sleeve being insertable into the ground as said chassis moves in the travel direction over the ground and as said endless chain means moves along said pathway;
air stream assisted seedling supply means mounted to said chassis and respectively engagable with each sleeve for supplying a seedling into each sleeve when each sleeve is inserted into the ground;
a rotating member mounted to said chassis for rotation along a portion of said pathway; and
a plurality of pointed dibbles connected to said rotating member for movement along said portion of said pathway and for insertion into each sleeve respectively, as each sleeve passes said portion of said pathway, for making a hole into the ground and for aiding in the insertion of each sleeve into the ground.

4,765,261

FLUID INJECTION CULTIVATOR

Takuji Kaneko, Numazu, Japan, assignor to Fuji Robin Kabushiki Kaisha, Tokyo, Japan

Filed May 20, 1987, Ser. No. 53,599
Claims priority, application Japan, Nov. 15, 1984, 59-242124; Feb. 27, 1985, 60-38499; Feb. 28, 1985, 60-39210
Int. Cl.[4] A01C 23/00
U.S. Cl. 111—7 14 Claims



1. A cultivator comprising:
a frame having a wheel for supporting the frame at a predetermined height;
first means for connecting the frame to a tractor;
at least one blade secured to the frame,
the blade being downwardly projected from the frame and having an edge at the forward side thereof;
an injector projected forwardly from a lower portion of the blade, the injector having a base portion comprising a body adjacent the blade and a tapered portion formed on the front end of the body, the tapered portion increasing in cross section with progression rearwardly along the body, a neck portion formed on the front end of the tapered portion and having at least one air injecting opening, a tip portion formed on the front end of the neck portion and having a surface which flares outward with increasing diameter towards a rear end of the tip portion, the neck portion having a smaller radial measure than that of the rear end of the tip portion, and said injecting opening being formed in the radially smaller neck portion, the front end of the tapered portion being positioned just adjacent to the periphery of the injecting opening and the rear end of the tapered portion being higher than the rear end of the tip portion, the body having a greater cross-sectional expanse than said tip portion and
second means for supplying compressed air to the injection opening of the injector for injecting the compressed air into the soil.

4,765,262

THREE DISK OPENER ASSEMBLY

Frank W. Morgan, 1300 Mt. Ellis Ln., Bozeman, Mont. 59715

Filed Mar. 6, 1987, Ser. No. 22,791
Int. Cl.[4] A01C 5/08
U.S. Cl. 111—73 6 Claims



1. A coulter device to be drawn across a ground surface in a direction of travel for penetrating the ground surface, which coulter device is connected to a frame positioned above the ground surface comprising:
(a) a pair of opposing and spaced apart support members secured in depending relation to the frame;
(b) a first and second spindle, each mounted at one end thereof to a support member with the other end thereof extending in a general direction toward the other support member and each spindle having an axis;
(c) a main shaft having an axis and located in a generally horizontal position and carried within a straight bore formed through the pair of support members and the pair of spindles;
(d) a main coulter hub secured to the main shaft at a position intermediate the ends thereof, the hub having a flange formed thereon coaxial with the axis of the main shaft for carrying a first coulter;
(e) a hub mounted to each spindle in coaxial relation with the spindle, each spindle hub being mounted by means allowing free rotation around the axis of the spindle;
(f) a second coulter secured to the hub of the first spindle;
(g) a third coulter secured to the hub of the second spindle;
(h) the first spindle further being mounted to a support member with the axis of the first spindle tilted with respect to the axis of the main shaft whereby the second coulter is tilted with respect to the first coulter with a portion of the outer edge of the second coulter abutting or in close proximity to the side surface of the first coulter,

VOL 1093 ISS 4 AG 23 1988 UMI

this point of abutment or close proximity being forward, in the direction of travel, of the vertical through the axis of rotation of the first coulter;

(i) the second spindle further being mounted to the other support member with the axis of the second spindle tilted with respect to the axis of the main shaft whereby the third coulter is tilted with respect to the first coulter with a portion of the outer edge of the third coulter abutting or in close proximity to the side surface of the first coulter, this point of abutment or close proximity being forward, in the direction of travel, of the vertical through the axis of rotation of the first coulter.

4,765,263

APPARATUS FOR PLACEMENT OF FERTILIZER BELOW SEED WITH MINIMUM SOIL DISTURBANCE

Dale E. Wilkins, Pendleton, Oreg., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 19, 1986, Ser. No. 876,047

Int. Cl.[4] A01C *23/02, 5/00*

U.S. Cl. 111—86 14 Claims



1. An apparatus which permits application of fertilizer into the soil below seed at the time of seeding with minimum soil disturbance, which comprises:

(a) a first furrow opening means for opening a narrow first furrow in the soil, said means having a width of 5 to 13 mm and a ratio of height to width of 3.8:1 to 20:1;

(b) a second furrow opening means attached to said first furrow opening means for substantially simultaneously opening a second wider furrow above said first furrow;

(c) fertilizer feeding means attached to said first furrow opening means for feeding fertilizer into said first furrow as it is opened by said first furrow opening means; and

(d) seed deflecting means attached to said second furrow opening means for deflecting seed rearward and preventing seed from falling through said second furrow into said first furrow;

wherein said first furrow opening means has an elongated rectangular leading face which curves downward and forward and terminates at an edge which is the forward-most soil engaging edge of said opening means, flat side faces, a flat top face, a trailing face, and a bottom face; and wherein said second furrow opening means has an elongated rectangular leading face which meets tangentially with said leading face of said first furrow opening means, a flat bottom face which is fixedly centered to said top face of said first furrow opening means, flat side faces, and a trailing face.

4,765,264

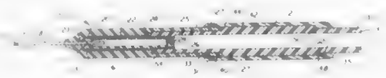
NEEDLE PUNCH FOR PRODUCING DECORATIVE THREAD DESIGNS

James D. Bruton, Seminole, Fla., assignor to Creative Wonders, Inc., Clearwater, Fla.

Filed Aug. 27, 1987, Ser. No. 89,885

Int. Cl.[4] D05C *15/06*

U.S. Cl. 112—80.05 9 Claims



1. A needle punch for producing decorative thread designs comprising:

a hollow needle partially embedded in a hollow plastic needle housing having a front end enclosing a proximal end of the needle and the needle housing having screw threads on an exterior surface;

a hollow guide housing, an exterior front surface of the needle housing juxtaposed to the front inner surface of the guide housing when the needle is fully extended, the guide housing having an elongated rear end with screw threads on its exterior surface;

a cylindrical hollow interior housing having a first end and a second end, the first end having screw threads on an interior surface engaging the screw threads on the needle housing;

a cylindrical hollow exterior housing having a first end and a second end, the first end having screw threads on an interior surface engaging the screw threads on the guide housing, the interior housing being rotatable within the exterior housing when the exterior housing screw threads are not fully engaged and the second end of the interior housing projecting outwardly from the second end of the exterior housing.

4,765,265

APPLIQUE MACHINES

Thomas D. Brownbill, Dartmouth, United Kingdom, and Harald Koenig, Lustmuhle, Switzerland, assignors to Jakob Schlaepfer & Co., AG., Switzerland

Filed Sep. 15, 1986, Ser. No. 907,504

Claims priority, application United Kingdom, Sep. 13, 1985, 8522738; Jun. 13, 1986, 8614489

Int. Cl.[4] D05C *3/02, 7/08*

U.S. Cl. 112—88 12 Claims



1. An embroidery and applique machine, comprising:

a frame and a plurality of needles extending spacedly along and supported by the frame and in position to operate on a fabric;

a plurality of article feeders for supplying to the needles articles which are to be fastened by the needles to the fabric, and an article feeder support for supporting the article feeders; and

moving means for moving the article feeder support relative to the needles in a manner that enables different ones of the article feeders to be aligned to different ones of said needles.

4,765,266

SHUTTLE EMBROIDERING MACHINE

Egon Schnepp, Romanshorn, Switzerland, assignor to Aktiengesellschaft Adolf Saurer, Arbon, Switzerland

Filed Sep. 8, 1987, Ser. No. 94,008

Claims priority, application Switzerland, Sep. 11, 1986, 5656/86

Int. Cl.[4] D05C *15/00*

U.S. Cl. 112—90 6 Claims



1. A shuttle embroidering machine, comprising:

an embroidering frame having a frame plane;

cloth beams provided for said embroidering frame;

drive means for driving said cloth beams;

said cloth beams being arranged in coacting pairs;

each coacting pair of cloth beams serving for receiving therebetween a material web;

said material webs being arranged in superimposed manner in substantially the frame plane;

substantially rod-like temples engaging each material web at a longitudinal edge thereof;

each said coacting pair of cloth beams defining an upper cloth beam and a lower cloth beam;

said two material webs defining an upper material web and a lower material web;

said drive means comprising a respective geared motor provided for each said upper cloth beam and said lower cloth beam;

each geared motor having an associated driving shaft;

each geared motor being carried by the embroidering frame;

said drive means further including a respective pair of endless belts provided for each said upper cloth beam and lower cloth beam;

said upper cloth beam and said lower cloth beam for the respective upper material web and the lower material web being in selective driving connection by means of an associated endless belt of the respective pair of endless belts with the driving shaft of the associated geared motor;

a switchable belt tensioning device provided for each cloth beam and operatively reversible with the rotation direction of the geared motor of the associated cloth beam;

a control circuit provided for the geared motors; and

switch means provided in the control circuit for the geared motors for selectively accomplishing an individual or synchronous operation of the geared motors.

4,765,267

SEWING MACHINE DRIVE DEVICE

Takashi Nakamura, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 491,962, filed as PCT JP82/00326, Aug. 20, 1982, published as WO83/00708, Mar. 3, 1983, Pat. No. 4,627,370.

This application Jul. 21, 1986, Ser. No. 887,685

Claims priority, application Japan, Aug. 20, 1981, 61-130718; Aug. 20, 1981, 61-130719

The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.

Int. Cl.[4] D05B *69/22*

U.S. Cl. 112—275 5 Claims



1. A sewing machine drive device comprising a sewing machine drive mechanism having an induction motor and a braking unit and a position detector connected to the output side of said induction motor for generating a detection signal, characterized by comprising:

a stop position control means;

a converter;

an inverter connected in series to said converter and connected to said position detector, said inverter operative to subject said induction motor to variable speed driving and to operate said braking unit in response to a detection signal from said position detector; and

a speed reduction control means connected to said converter for operating, when the speed of said sewing machine is reduced, said converter as an inverter in order to carry out regenerative braking.

4,765,268

AUTOMATIC DEVICE FOR DETACHING THE CAM FOLLOWERS IN A SEWING MACHINE

Flavio Bisson, Cava Manara, Italy, assignor to Necchi Societa per Azioni, Pavia, Italy

Filed Jan. 16, 1987, Ser. No. 3,818

Claims priority, application Italy, Mar. 12, 1986, 42906 A/86

Int. Cl.[4] D05B *3/02*

U.S. Cl. 112—465 4 Claims



1. Automatic device for detaching the cam followers in a sewing machine comprising a shaft coupled to the main shaft of the machine, a support freely mounted on said shaft, a cam pile mounted on said shaft within said support, free to follow said support in its movements along the axis of said shaft, but fixedly connected to the same shaft in the rotation around its

VOL 1093 ISS 4 AG 23 1988 UMI

own axis, a selector knob mounted on said machine rotatable through first and second arcs of rotation, in said first arc of rotation occurring the detachment of the cam follower and in the second arc of rotation the positioning of said cam pile relatively to same cam follower, first means in contact with said knob for detaching said cam follower and second means attached to said knob for releasing, positioning and locking said cam pile in correspondence with said cam follower.

4,765,269

RIGHTABLE CATAMARAN

D. Kirk Fuller, 31 Breakwater, Santa Barbara, Calif. 93109, assignor to D. Kirk Fuller and T. Felkay, both of Santa Barbara, Calif., part interest to each

Continuation-in-part of Ser. No. 914,354, Oct. 2, 1986, abandoned. This application Jun. 8, 1987, Ser. No. 59,335

Int. Cl.⁴ B63B *1/00*

U.S. Cl. 114—61 **21 Claims**



18. The method of righting a capsized catamaran having hollow pontoons containing inflatable bladders, that includes:

(i) employing and operating automatic flooding means for locally flooding the pontoons to effect rotation and sinking of ends of the pontoons, to cause the catamaran to up-end in the water, and

(ii) removing water from the flooded pontoons by inflating the bladders to cause the catamaran to right itself in the water, from up-ended state.

4,765,270

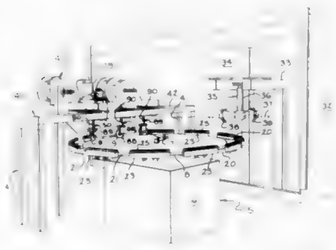
DECORATIVE COATING MACHINE

Elmer L. Faber, Temperance, Mich., assignor to Deco Tools, Inc., Toledo, Ohio

Filed Sep. 16, 1987, Ser. No. 97,133

Int. Cl.⁴ B05C *11/02*

U.S. Cl. 118—102 **13 Claims**



1. A decorative coating machine for use in painting workpieces comprising, in combination, a rotary work table having a plurality of fixtures for receiving such workpieces mounted adjacent its periphery, a spray painting assembly mounted adjacent the periphery of said rotary work table, wherein such workpieces are painted by said spray painting assembly and a wiping assembly positioned adjacent the periphery of said work table for removing a predetermined area of paint from each of said workpieces, said wiping assembly including supply means for supplying a web of wiping material, at least one solvent means positioned adjacent said wiping material for applying solvent to said wiping material and roller means adjacent the periphery of the work table and adjacent the workpiece fixtures, said roller means defining a path for said web of wiping material.

4,765,271

METHOD OF ARRANGEMENT FOR COATING A FIBRE

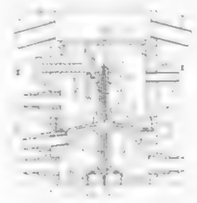
Cornelius M. G. Jochem, and Jacobus W. C. Van Der Ligt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 853,295, Apr. 17, 1986, Pat. No. 4,704,307, which is a continuation-in-part of Ser. No. 780,511, Sep. 26, 1985, abandoned. This application Jul. 2, 1987, Ser. No. 69,746

Claims priority, application Netherlands, Apr. 19, 1985, [illegible]

Int. Cl.⁴ B05D *1/18*

U.S. Cl. 118—405 **5 Claims**



1. An arrangement for a method of coating a fibre, in which a fiber to be coated is passed through an inlet duct with a restricted inlet opening, is guided through a pressure chamber filled with liquid coating material, and after being coated is drawn through the outlet opening of a nozzle, the coating material being supplied under pressure to the pressure chamber, the coating material being supplied at such a pressure and in such a quantity that the material rises in the inlet duct up to a certain level to form a convex meniscus, said arrangement comprising a housing provided with a sidewall portion, a bottom wall portion, a pressure chamber, a nozzle with an outlet opening for said fiber in communication with the pressure chamber, a closure part transverse to, and cooperating with the sidewall portion of said housing, for closing the upper side of said pressure chamber and provided with an inlet duct with a restricted inlet opening, and communicating with said pressure chamber for supplying fiber to said pressure chamber, a cover part, provided with a central opening for said fiber and cooperating with the sidewall portion above the closure part, thereby closing the housing and providing a space in the housing above the closure part, a first supply opening situated in the housing above the closure part for supplying gas to the space above the closure part, a second supply opening situated in the sidewall portion of the housing for supplying liquid coating material to the pressure chamber and an overflow opening situated in the sidewall portion of the housing, the overflow opening in the sidewall portion of the housing being provided at a height lower than the level of the restricted inlet opening.

4,765,272

COATING DEVICE FOR MATERIAL WEBS

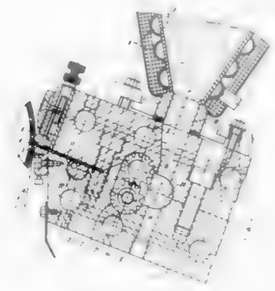
John Mhadota, Lausanne, Switzerland, assignor to Bolton-Emerson, Inc., Lawrence, Mass.

Filed Dec. 31, 1984, Ser. No. 688,016

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1984, 3406099

Int. Cl.⁴ B05C *5/02*

U.S. Cl. 118—410 **[illegible] Claims**



1. A slot nozzle arrangement for applying a thin coating of a coating material onto a web, comprising:

a housing;

a supply passageway in the housing;

a plurality of pairs of meshed gears in the housing, the supply passageway leading through the housing to the engagement of the pairs of meshed gears, at least one of each pair being driven and in turn, driving the other of the pair to provide pump gears, the said driven gears being aligned coaxially;

an axle between and connected coaxially to each said adjacent driven gears in a form locking manner;

a spacer in the housing between each adjacent two said driven gears, each of said spacers serving also as a bearing to mount an axle;

a delivery passageway in the housing;

a slot nozzle extending the width of the coating to be applied and to which nozzle the delivery passageway leads from the gear intersections;

the housing being separable along a central plane on which the central surfaces of the passageways and the line of engagement of the gears lie;

and said housing being pivotally connected to open along said central plane to service and clean; the spacers individually, the axles individually, the gearings individually, the passageways and the nozzle.

4,765,273

TRANSPORTING DEVICE WITH ROLLER SYSTEMS FOR VACUUM-COATING INSTALLATIONS

Friedrich Auderle, Hanau am Main, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

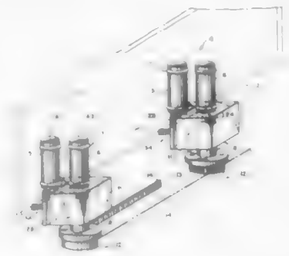
Filed Sep. 26, 1986, Ser. No. 912,355

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1986, 3623970

Int. Cl.⁴ B05C *13/02*

U.S. Cl. 118—729 **9 Claims**

1. In a transporting device for vacuum-coating installations with several stations and having at least one roller system for the guidance and advance of essentially two-dimensional substrate holders in a vertical position along a given transporting path through the stations, said roller system comprising at least one pair of opposed guide rollers mounted for rotation about respective vertical axes, for guiding the lower edges of said substate holders between said pair of rollers, the improvement wherein said substrate holders are guided exclusively in the area of their lower edges, by said guide rollers and wherein both guide rollers of each pair include circumferential contact surfaces at the top and bottom ends thereof, said contact surfaces of one roller in each pair being disposed laterally opposite the contact surfaces of the other roller thereof, thereby providing means for firmly gripping and guiding said substrate holders in the area of their lower edges so as to prevent them from tipping laterally.



4,765,274

METHOD OF MASS PRODUCING AN ENTOMOPHAGOUS INSECT

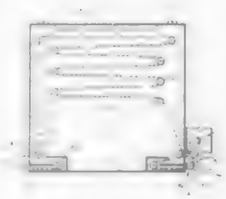
Jeannine Pizzol, Juan-Les-Ping; Jean Voegele, Pierre Jourdheuil, both of Antibes; Bernard Raynaud, Champigny-sur-Marne, and Yves Miermont, Avignon, all of France, assignors to Societe Cooperative Agricole de Semences de Limagne "Limagrain" , Chappes; Union Nationale des Cooperatives Agricoles d'Approvisionnement and Institut National de la Recherche Agronomique, both of Paris, all of, France

Filed Aug. 4, 1986, Ser. No. 894,495

Claims priority, application France, Aug. 7, 1985, 85 12115

Int. Cl.⁴ A01K *67/00*

U.S. Cl. 119—15 **7 Claims**



1. A device for the mass production of an entomophagous insect, comprising a multiplication cage, a first transportation belt, a second transportation belt and external means, in which host eggs are presented to an inoculum producing adult insects for parasitization of said host eggs by said adult insects, said multiplication cage forming a temperature regulated enclosure having an inlet and an outlet, said cage being provided with guide-rollers for said first transporting belt for the introduction of the inoculum and said second transporting belt for the host eggs to be parasitized; said first and second transportating belts travel through said cage along a coaxially aligned path and

a motor unit for driving said first and second transporting belts;

said external means including means for recovering parasitized host eggs at said outlet, said external means also including means for reconditioning said second belt, and said external means further comprising members for form-

VOL 1093 ISS 4 AG 23 1988 UMI

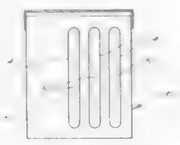
ing, supporting and introducing the inoculum through said inlet.

4,765,275

NEMATODE STORAGE AND TRANSPORT

Takao Yukawa, Killara, and Janice M. Pitt, Cremorne, both of Australia, assignors to Biotechnology Australia Pty. Ltd., New South Wales, Australia

PCT No. PCT/AU85/00020, § 371 Date Nov. 8, 1985, § 102(e) Date Nov. 8, 1985, PCT Pub. No. WO85/03412, PCT Pub. Date Aug. 15, 1985
PCT Filed Feb. 7, 1985, Ser. No. 787,805
Claims priority, application Australia, Feb. 7, 1984, PG3492; Jun. 27, 1984, PG5721
Int. Cl.[4] A01K *67/00*
U.S. Cl. 119—15 45 Claims



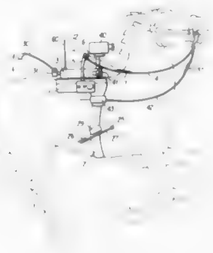
1. A method of storing entomophathogenic nematodes comprising mixing a suspension of infective juvenile entomopathogenic nematodes with an adsorbent and storing under conditions in which microbial growth is inhibited.

4,765,276

MULTI-CHANNEL RADIO-CONTROLLED ROBOTIC JOCKEY/MONITOR

David R. Kime, P.O. Box 105, Windsor, Mich. 65360

Continuation of Ser. No. 792,858, Oct. 30, 1985, Pat. No. 4,654,703. This application Feb. 6, 1987, Ser. No. 12,081
Int. Cl.[4] A01K *15/00*
U.S. Cl. 119—29 20 Claims



1. Apparatus for remote control of a reined animal by an operator, comprising:

rein manipulating means attached to reins of the animal;

rein control means comprising operator-controllable electronic rein input means and rein driving means responsive to said rein input means, said rein driving means comprising means for driving said rein manipulating means to selectively pull at least one of said reins;

side contact means comprising side contact members, said side contact members comprising spurs respectively disposed adjacent opposite sides of said animal in locations corresponding to the lower limbs of a rider and being movable toward and away from said animal to selectively contact the sides of said animal;

side contact control means comprising operator-controllable electronic side contact input means and side contact driving means responsive to said side contact input means for moving said side contact members;

mounting means for mounting on said animal said rein manipulating means, said rein driving means, said side contact means and said side contact driving means; and

remote housing means, remote from said animal, for housing said rein input means and said side contact input means.

4,765,277

TELESCOPIC POLE SYSTEM

Robert A. Bailey, 43 Plainsman Road, Streetsville, Ontario, L5N 1C4, and Gordon H. Laurie, 33 River Road, Streetsville Mississauga, Ontario L5M 1R6, both of Canada

Filed Mar. 5, 1987, Ser. No. 22,184
Int. Cl.[4] A01K *39/00*; A45F *3/44*
U.S. Cl. 119—51 R 10 Claims



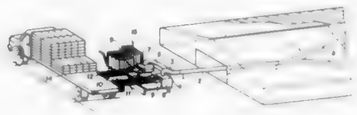
1. A telescopic pole system comprising, in combination, an elongated lower tubular pole component of a predetermined outer diameter, a tubular ground sleeve of circular cross-section having an inner diameter greater than the outer diameter of the lower tubular pole component, said ground sleeve having a pointed, conical termination at its lower end for centering the lower end of the lower pole component therein and a collar at its upper end, a flat disc having an outer diameter slightly less than the inner diameter of the ground sleeve collar but greater than the ground sleeve inner diameter whereby said disc will seat within the said collar on the ground sleeve, said disc having a central opening of a desired diameter and shape to receive the lower pole component in a sliding fit therein for centering said lower pole component with the upper end of the ground sleeve, an upper tubular pole component having an inner diameter greater than the outer diameter of the lower pole component, said lower pole component having an upper end of expanded cross-section for a snug, sliding fit within the upper pole component, and a collar secured to the lower end of the upper pole component having centering means for providing a snug, sliding fit over the lower pole component as the upper component is axially extended and retracted relative to the lower component, said upper pole component collar having locking means for locking the upper component on said lower component.

4,765,278

CATCHING APPARATUS FOR POULTRY, IN PARTICULAR FOR CHICKS

Johannes Boertien, Elim, Netherlands, assignor to Technisch Bureau Boertien, Elim, Netherlands

PCT No. PCT/NL84/00046, § 371 Date Oct. 14, 1986, § 102(e) Date Oct. 14, 1986, PCT Pub. No. WO86/03652, PCT Pub. Date Jul. 3, 1986
PCT Filed Dec. 24, 1984, Ser. No. 907,729
Claims priority, application Netherlands, Jun. 20, 1983, 8302189
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—82 4 Claims



1. A catching apparatus for poultry, in particular for chicks, comprising a circuit for pneumatic transport of the poultry, provided with a tube of a diameter suitable for pneumatic transport of the poultry through the tube, said tube containing a catching end, and a delivery end, respectively, for the poultry, and with means connected to the tube for producing an air suction flow in the tube in the direction of the catching end towards the delivery end, characterized in that the circuit comprises

a suction box having one or more walls to be opened, which suction box connects to the means for producing the air suction flow and within which the delivery end of the tube is disposed, while the suction box contains a loading place for loading a poultry transport box with the pneumatically transported poultry; and

control means for the air flow speed, including one or more bypasses, one end of which is connected to a portion of the tube situated ahead of the suction box, and the other end of which terminates in the suction box beyond the loading place.

4,765,279

CHILD TO ADULT TETHER

Reuben B. Klickstein, 51 Indian Hill, Carlisle, Mass. 01741

Filed Feb. 4, 1986, Ser. No. 825,878
Int. Cl.[4] A01K *1/00*
U.S. Cl. 119—109 2 Claims



1. An adult to child tether of the type having a first loop to be held by the adult, a second loop to hold the child and an intermediate portion of sufficient length to enable the child to walk freely but close to the adult, said tether comprising a length of narrow, flexible material having first and second ends, an adjustable connection between the first end and said intermediate portion establishing the first loop, an adjustable connection between the second end and said intermediate portion establishing the second loop, and a removable slide having a central transverse bar separating first and second material receiving slideways, an end portion of the first loop disposed upwardly through the first slideway, over the bar and downwardly through the second slideway thereby to so divide the first loop as to provide an end portion to be held by the adult and an intermediate portion the length of which depends on the space between the adjustable connections and whereby when the slide is detached, the adjustable connection establishing the first loop can then be adusted to decrease the size of the first loop and increase the length of the intermediate portio ..

4,765,280

DIRECT-CONTACT TYPE HOT WATER HEATER

Kunihiro Kobayashi; Saburo Usui, both of Nagano; Shoji Otsuka, Toyono; Choji Najima, and Toshimichi Ohara, both of Osaka, all of Japan, assignors to Maeda Iron Works Co., Ltd. and Osaka Gas Co., Ltd., both of Osaka, Japan

Filed Jan. 29, 1987, Ser. No. 8,350
Claims priority, application Japan, Jan. 31, 1986, 61-17760; Jan. 26, 1987, 62-14281
Int. Cl.[4] F22B *37/00*
U.S. Cl. 122—5.5 A 6 Claims



1. A direct-contact type hot water heater comprising:

(a) a hot water reservoir;

(b) a high-temperature gas feed chamber located:

(i) in an inside section of a heater body having an internal wall and

(ii) above said hot water reservoir;

(c) an endothermic chamber located:

(i) in an inside section of said heater body and

(ii) above said high-temperature gas feed chamber;

(d) an endothermic material located in said endothermic chamber;

(e) means for spraying water over said endothermic material;

(f) means for generating a flame in said high-temperature gas feed chamber in order to burn gas therein; and

(g) a perforated plate located between said high-temperature gas feed chamber and said endothermic chamber and supporting said endothermic material, said perforated plate extending from side to side of said internal wall, being in peripheral contact with said internal wall over the full extent of its own periphery, and having a top apex, a plurality of apertures therethrough, and a slope which allows water to flow down from its top apex in the form of a water film, said plurality of apertures being sized and shaped so that, in use:

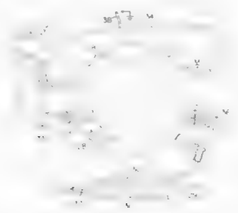
(i) the high temperature gas passes upwardly therethrough;

(ii) the water does not pass downwardly therethrough due to the surface tension of the water; and

(iii) said endothermic material does not project downwardly into said apertures to break the surface tension.

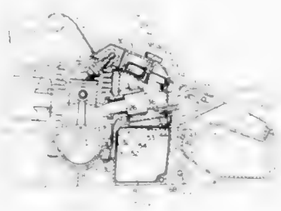
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,281
HEATING DEVICE
Bo Bayard, Täby, Sweden, assignor to Atlas Copco Aktiebolag, Stockholm, Sweden
Filed Feb. 5, 1987, Ser. No. 11,151
Claims priority, application Sweden, Mar. 3, 1986, 8600934
Int. Cl.[4] F02B 63/00
U.S. Cl. 123—2 3 Claims



1. A heating device comprizing:
a combustion engine (11) provided with a flywheel (12) for the operation thereof;
supply means (13) driven by said engine (11) for supplying heating medium to a chamber (14) to be heated therein;
an oil burner (15) for heating said medium;
an oil pump (16) driven by said engine (11) for supplying oil to said oil burner (15), said burner (15) being provided with an outlet channel (17) extending into said chamber (14) in heat exchanging relationship with the medium therein; and
a permanently magnetized area (18) on and rotatable with said flywheel (12) so as to alternately pass in sequence a first ignition coil and semiconductor unit (19) on said engine connected for delivering ignition pulses to a spark-plug (20) of said engine (11), and, subsequently, a second ignition coil and semiconductor unit (21) on said engine (11) for initiating ignition pulses;
said second ignition coil and semiconductor unit (21) being connected to a spark gap (22) in said oil burner (15) for igniting the oil delivered thereto by said oil pump (16).

4,765,282
CHAIN SAW
Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan
Filed Apr. 23, 1987, Ser. No. 41,615
Claims priority, application Japan, Apr. 23, 1986, 61-61584[U]
Int. Cl.[4] F01P 7/10
U.S. Cl. 123—41.7 3 Claims



1. A chain saw having a body containing: an internal combustion engine chamber: a carburetor chamber formed adjacent to said internal combustion engine chamber; an air intake space formed on the side of said body; a first wall portion separating said internal combustion engine chamber and said carburetor chamber which comprises a first double wall defining a heat insulation space which communicates said air intake space with said carburetor chamber; a second wall portion formed integrally with said first wall portion on a side of the first wall portion opposite to said internal combustion engine chamber, said second wall portion comprising a second double wall which defines a communication passage which communicates said air intake space with said carburetor chamber; a first shutter provided between said air intake space and said heat insulation space, said first shutter adapted to selectively cut off communication so that air cannot pass between said air intake space and said heat insulation space but must pass directly through said communication passage when ambient temperature is warm and a second shutter provided between said air intake space and said communication passage adapted to selectively cut off communication so that air cannot pass between said air intake space and said communication passage but must pass through said heat insulating space when ambient temperature is cold.

4,765,283
COOLING DEVICE FOR VEHICLE MOUNTED GENERATOR
Yutaka Kitamura, and Hiroaki Aso, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 10, 1987, Ser. No. 24,199
Claims priority, application Japan, Mar. 18, 1986, 61-62068
Int. Cl.[4] F01P 3/20, 7/16
U.S. Cl. 123—41.31 5 Claims



1. A cooling device for cooling a vehicle mounted generator (8) with a portion of a liquid coolant of an engine (1) of the vehicle, comprising: temperature sensing means (13) for sensing the temperature of the liquid engine coolant, valve means (9) disposed in a branch coolant flow passage passing through the generator, and control means (14) responsive to the output of the temperature sensing means for controlling said valve means such that said branch coolant flow passage is opened only when the output of said temperature sensing means indicates that the temperature of the coolant is within a predetermined, normal operating range to allow the coolant to pass through the generator, and to thereby avoid the excessive heating or excessive cooling of the generator and thermally sensitive components disposed therein.

4,765,284
COOLING CONTROL APPARATUS OF AUTOMOBILE ENGINE
Yoshifusa Kanazawa, and Masayuki Kumada, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 17, 1986, Ser. No. 820,420
Claims priority, application Japan, Jan. 19, 1985, 60-6672
Int. Cl.[4] F01P 5/02
U.S. Cl. 123—41.49 16 Claims

1. A cooling control apparatus for the cooling system of an automobile engine, comprising, a plurality of fan motors each having a fan for moving air through the cooling system, a separate control circuit connected to each fan motor, each control circuit being responsive to the cooling system temperature for causing operation of the fan motor, at least one of said control circuits including means responsive to a different cooling system temperature than a cooling system temperature of a remaining control circuit for operating the fan motor connected to said at least one control circuit without operating any other fan motor, and an air conditioning system having a selected said fan motor operable for providing cooling for the air conditioning system, the control circuit connected to said selected fan motor including switch means for causing operation of said selected fan motor when cooling is required for the air conditioning system regardless of the cooling system temperature.

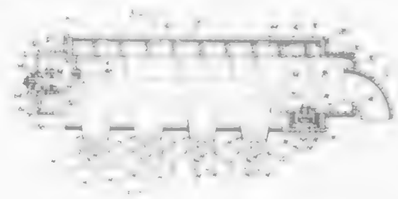


4,765,285
INTAKE SYSTEM FOR INTERNAL COMBUSTION ENGINE
Manabu Kobayashi, Itawa, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Aug. 6, 1986, Ser. No. 893,671
Claims priority, application Japan, Aug. 7, 1985, 60-172375; Aug. 7, 1985, 60-172376
Int. Cl.[4] F02B 27/02
U.S. Cl. 123—52 M 3 Claims



1. In an induction system for an internal combustion engine having a plurality of combustion chambers, a series of first intake passages each having a first effective length for serving a respective one of said combustion chambers, a series of second intake passages each having a second effective length serving a respective one of said combustion chambers, said first induction passages communicating at their inlet ends with a first plenum chamber, said second induction passages communicating at their inlet ends with a second plenum chamber, the effective length of said induction passages being the length between the inlet into the respective plenum chamber and said combustion chamber and the effective lengths of said first and said second intake passages being substantially different from each other, said first intake passages being relatively long and tuned for low speed running and said second intake passages being relatively short and tuned for high speed running, a plurality of first throttle valves for controlling the flow through said second intake passages and a plurality of second throttle valves for controlling the flow through both of said intake passages, said second throttle valves being manually operated, an auxiliary induction passage extending from said second plenum chamber to a point downstream of said second throttle valves, third throttle valve means for controlling the flow through said auxiliary induction passages, and means for providing an atmospheric air inlet only to one of said plenum chambers.

4,765,286
SELECTIVELY TUNED INTAKE MANIFOLD
Jeffrey C. Lyjak, Ferndale, and William Maciejka, Sterling Heights, both of Mich., assignors to Chrysler Motors Corporation, Highland Park, Mich.
Filed Oct. 16, 1986, Ser. No. 919,515
Int. Cl.[4] F02B 75/06
U.S. Cl. 123—52 MB 1 Claim



1. An intake manifold for an internal combustion engine having selectively variable length air flow passages, comprising: a hollow elongated housing about an interior space, the housing member having a side wall and end portions; means extending through the housing end portion to introduce air to the interior space; an air outlet extending from the side wall toward each cylinder of an associated internal combustion engine and being fluidly connected to the interior space; a tubular air distribution member supported for axial and rotative movement in the interior space of the housing and defining therein an interior passage, the distribution member having an open end positioned to pass air from the air inlet means and into the interior passage of the distribution member; a helically extending partition wall attached at an outer edge to the housing and encircling the air distribution member in close fitting fashion to allow relative axial and rotative movement of the distribution member, thus forming a spiral flow passage between the housing member and the outer surface of the air distribution member; window means spaced axially along and extending through the distribution member to allow air to flow from the interior passage to the spiral flow passage; means for selectively shifting the air distribution member both in an axial direction and in a rotative direction thereby positioning the window means along the spiral passage to change the air flow length between the window means and the air outlet means, the means including a drive to exert axially directed forces on the air distribution member and further including a partition wall follower mechanism to convert the axial force on the distribution member into axial and rotative movement thereof; the shifting means including a threaded connection between the air distribution member and a rotatable member supported by the housing in a manner to allow rotation of the rotatable member but not axial movement thereof; the follower mechanism including a body attached to the outer wall of the air distribution member and located in the spiral flow passage formed between spaced portions of the helically extending partition wall, first and second roller means supported for rotation by the body so that the first roller means contacts one of the partition wall portions and a second roller means contacts the other of the partition wall portions whereby low friction rolling action there between causes both axial and

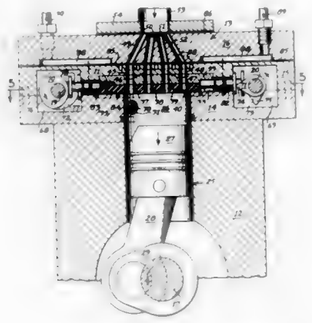
VOL 1093 ISS 4 AUG 23 1988 UMI

rotative movement of the air distibution member in the housing in response to an axial force exerted thereon.

4,765,287
SLIDE VALVE APPARATUS FOR INTERNAL COMBUSTION ENGINE

Bill A. Taylor, Rte. 2, Greenbrier, Tenn. 37073, and Talton O. McMahan, Jr., Rte. 1, Pleasant View, Tenn. 37146

Filed Nov. 2, 1987, Ser. No. 115,344
Int. Cl.[4] F01L 7/06
U.S. Cl. 123—81 D 10 Claims



1. In an internal combustion engine including a combustion cylinder having an opening at one end thereof, a piston mounted within the cylinder for coaxial reciprocable movement, a driven crankshaft, and a connecting rod connecting said crankshaft to said cylinder for linear reciprocable movement of said piston in response to the rotary movement of said crankshaft, a valve apparatus comprising:

(a) a valve chamber extending longitudinally across and in fluid communication with the opening in said cylinder,

(b) an intake valve plate having a longitudinal axis mounted within said valve chamber for slidable, reciprocable, longitudinal movement,

(c) an exhaust valve plate having a longitudinal axis mounted within said valve chamber alongside said intake valve plate for slidable, reciprocable, longitudinal movement and parallel to the longitudinal axis of said intake valve plate,

(d) each of said valve plates having a plurality of longitudinally spaced valve ports therein, said valve ports comprising movable intake valve ports in said intake valve plate and movable exhaust valve ports in said exhaust valve plate,

(e) said valve chamber comprising a planar wall on the opposite side of said valve plates from said cylinder opening and having a plurality of fixed valve ports therethrough, said fixed valve ports being equal in number and substantially equal in size and spacing as said movable intake and exhaust valve ports, whereby said movable intake valve ports are adapted to register with their corresponding fixed valve ports when said intake valve plate is in its intake operative position for opening fluid communication between said cylinder and said corresponding fixed valve ports, said movable exhaust valve ports being adapted to register with their corresponding fixed valve ports when said exhaust valve plate is in its exhaust operative position permitting fluid communication between said cylinder and said corresponding fixed valve ports,

(f) intake means communicating with said fixed intake valve ports for supplying fuel to said cylinder through said fixed intake valve ports and said movable intake valve ports in said intake operative position,

(g) exhaust means for removing exhaust gases from said cylinder through said registered movable exhaust valve ports and fixed exhaust valve ports when said exhaust valve plate is in its exhaust operative position,

(h) cam means operatively connected to said crankshaft and to said intake and exhaust valve plates for longitudinally and reciprocably moving said valve plates for opening and closing fluid communication of said cylinder with said fixed intake valve ports and said fixed exhaust valve ports, respectively, periodically.

4,765,288
VALVE CONTROL ARRANGEMENT

Ernst Linder, Mühlacker, and Helmut Rembold, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1986, Ser. No. 875,318
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1985, 3532549
Int. Cl.[4] F01L 1/24, 1/34
U.S. Cl. 123—90.16 8 Claims



1. A valve control arrangement for controlling closing and opening time of a valve actuatable by a valve control cam of a cam shaft via an axially displaceable valve plunger, in a displacement piston-internal combustion engine, the valve control arrangement comprising means forming a stroke transmitting chamber between the valve control cam and the valve plunger and arranged to be filled with a working medium; means forming a controllable opening for supplying the pressure medium into said stroke transmitting chamber and withdrawing the pressure medium from the latter so as to change an axial dimension of said stroke transmitting chamber between the valve control cam and the valve plunger; means for controlling said opening so that a stroke of the valve control cam which acts with beginning of a valve opening adjusts said opening to an unloading cross-section so that to a closing point of time of the valve, a partial quantity of the pressure medium can flow out of said stroke transmitting chamber, and so that over a time of valve actuation said opening is completely closed within a first operational region and is only partially closed to a partial unloading cross-section of said opening during a second operational region said controlling means including an electromagnetic control valve which has a throughflow opening as said opening and being formed so that the adjustment of the unloading cross-section of said opening is performed only in idle running region and in a lower partial load region of the internal combustion engine, said control valve having a valve seat which surrounds said throughflow opening, a valve needle which cooperates with said valve seat for adjusting the unloading cross-section, and an electromagnet with an armature connected with said valve needle, said control valve also having a first return spring which engages said valve needle and holds said valve needle in a valve opening position in which said valve needle releases a full cross-section of said throughflow opening when said electromagnet is not excited, and a second return spring which is connected with said valve needle and acts after a predetermined displacement path of said valve needle from the valve opening position, said second return spring and said first return spring having identical acting directions, and the displacement path of said valve needle until said second return spring is actuated being selected so that before its reaction said throughflow opening is adjusted to the unloading cross-section and a partial excitement is provided in said electromagnet so as to overcome a return force of said first return spring.

4,765,289
VALVE DRIVING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Shunji Masuda, and Eiji Nakai, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Oct. 7, 1987, Ser. No. 105,730
Claims priority, application Japan, Oct. 16, 1986, 61-246084
Int. Cl.[4] F01L 1/34
U.S. Cl. 123—90.16 9 Claims

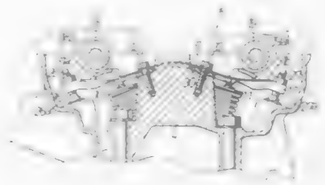


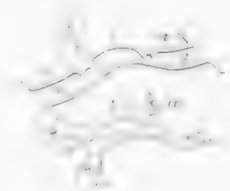
9. A valve driving system for an internal combustion engine having first and second intake valve means and one exhaust valve means, said valve driving system comprising one cam shaft means located over a cylinder head, a first low speed cam, a high speed cam, an exhaust cam and a second low speed cam which are arranged in order in the axial direction of said cam shaft means, first rocker arm means driven by said first low speed cam and engaged with said first intake valve means, second rocker arm means driven by said high speed cam and not engaged with any of said valve means, third rocker arm means driven by said exhaust cam and engaged with said exhaust valve means, fourth rocker arm means driven by said second low speed cam and engaged with said second intake valve means, said first, second and fourth rocker arm means having bores for receiving rocker shaft means and being swingably mounted on said rocker shaft means respectively, said second rocker arm means being located between said first and fourth rocker arm means and formed with a pair of oil pressure chamber means extending in the axial direction of said cam shaft means therein, each of said oil pressure chamber means having an opening facing one of said first and fourth rocker arm means and plunger means movable into and engageable with one of said first and fourth rocker arm means, wall means located between said respective oil pressure means for separating them and restricting the movement of said respective plunger means, first oil passage means formed in said second rocker arm means and communicated with said respective oil pressure chamber means and the inside of said rocker shaft means, each of said first and fourth rocker arm means being formed with a bore therein for receiving said plunger means, said bore having therein return spring means for biasing said plunger means to the outside thereof, lash adjusting means located at the ends of said first and fourth rocker arm means where they are engaged with said first and second intake valve means respectively for adjusting lash between the ends of said first and fourth rocker arm means and said first and second intake valve means, said lash adjusting means being in housing means, second oil passage means formed in said first and fourth rocker arm means for feeding oil to said housing means, said second oil passage means being communicated with the inside of said rocker shaft means and said housing means and formed in rib means extending substantially straight and connecting said housing means and a portion of said first and fourth rocker arm means in the vicinity of said bore for receiving said rocker shaft means, spring means for pressing the end portion of said second rocker arm means against said high speed cam and control means for controlling oil pressure in said rocker shaft means so as to be low engine rpm and high at high engine rpm.

4,765,290
VALVE ACTUATING DEVICE OF INTERNAL COMBUSTION ENGINE

Kunihiko Tanaka, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 25, 1987, Ser. No. 66,939
Claims priority, application Japan, Jun. 25, 1986, 61-97355[U]
Int. Cl.[4] F01L 1/18
U.S. Cl. 123—90.42 4 Claims

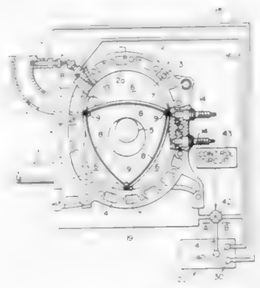




1. A valve actuating device of an internal combustion engine, including a plurality of intake rocker arms disposed between a plurality of parallel-arranged intake valves and an intake cam shaft adapted to drive and open said intake valves, and a plurality of exhaust rocker arms disposed between a plurality of exhaust valves opposed to said intake valves and an exhaust cam shaft adapted to drive and open said exhaust valves, said intake and exhaust rocker arms being pivoted at base ends thereof to a cylinder head of the engine in a freely oscillating manner, respectively, wherein a guide plate is fixed to said cylinder head at a position between adjacent two of said intake rocker arms and two of said exhaust rocker arms opposed to said two intake rocker arms, said guide plate being provided with guide grooves with which said four intake and exhaust rocker arms engage at tip ends thereof in a manner slidable only in an opening and closing direction of the valves.

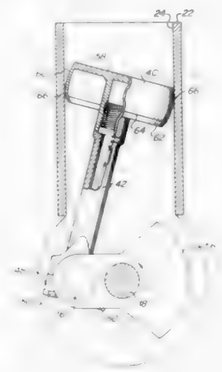
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,291
ENGINE LUBRICATING SYSTEM
Noriyuki Kurio, and Hiroshi Yoshimi, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan
Filed Jan. 20, 1987, Ser. No. 5,073
Claims priority, application Japan, Jan. 20, 1986, 61-10854
Int. Cl.[4] F01M 1/00
U.S. Cl. 123—196 R 14 Claims



1. An engine lubricating system in which a measured amount of lubricating oil is supplied to the combustion chamber of an engine by a metering oil pump so that a larger amount of lubricating oil is supplied to the combustion chamber when the engine load is heavy than when the engine load is light, characterized by having a lubricating oil supply rate correction means which non-linearly increases the amount of the lubricating oil supplied to the combustion chamber with respect to engine r.p.m. so that the amount of oil supplied per unit engine revolution is greater at high engine speed than at low engine speed.

4,765,292
SELF-SEALING PISTON APPARATUS
Ralph G. Morgado, 33080 Lake Mead Dr., Fremont, Calif. 94536
Continuation-in-part of Ser. No. 767,140, Aug. 19, 1985, abandoned. This application Dec. 12, 1986, Ser. No. 941,372
Int. Cl.[4] F02F 3/00
U.S. Cl. 123—193 P 14 Claims



1. Piston apparatus for reciprocating, sliding motion within a cylindrical bore in response to rotation of an eccentric crank about an axis that is normal to the cylindrical bore, the piston apparatus comprising:
- a piston disposed within the cylindrical bore and having a substantially frusto-spherical shape with a plane through of maximum diameter that is substantially equal to the diameter of the cylindrical bore, and having upper and lower truncation diameters less than said maximum diameter for maintaining a substantially continuous normal plane of sealing contact with the cylindrical bore during reciprocatingly sliding and tilting motion of the piston therein, said piston having an integrally-formed solid top near the upper truncation and a hollow interior that is open at the lower truncation to integrally form a skirt of the piston which has a spherical outer surface and having a stem integrally formed with the solid top to extend downwardly therefrom in a central location within the hollow interior;
- a plurality of ribs integrally formed on substantially the entire length of the interior surface of the skirt oriented in a direction between the upper and lower truncation diameters;
- a plurality of web members integrally formed within the hollow interior of the piston on the solid top to radiate outwardly from said stem toward the piston skirt to connect with selected ribs to integrally form substantially continuous ridges within the hollow interior underside of the piston from the stem to the skirt of the piston; and
- connecting rod means rigidly attached axially at one end thereof to said stem and rotatably attached near the other end thereof to the eccentric crank for reciprocatingly sliding and tilting the piston within the cylindrical bore in response to rotation of the crank.

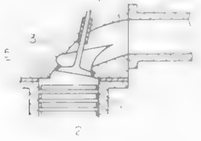
4,765,293
HYBRID INTERNAL COMBUSTION RECIPROCATING ENGINE
Cesar Gonzalez, Wichita, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed May 7, 1986, Ser. No. 860,506
Int. Cl.[4] F02B 17/00
U.S. Cl. 123—275 13 Claims



1. A hybrid type reciprocating internal combustion turbine fuel engine with combined spark ignition, torch-assisted to compression ignition modes comprising:
- a cylinder;
- a cylinder head mounted on the cylinder having a substantially planar inner surface;
- exhaust and inlet valves positioned in the head connected to corresponding exhaust and unthrottled inlet passages;
- a piston reciprocally mounted within the cylinder having a top surface thereon which surface in the top dead center position of the piston is in close proximity with the inner surface of of the cylinder head;

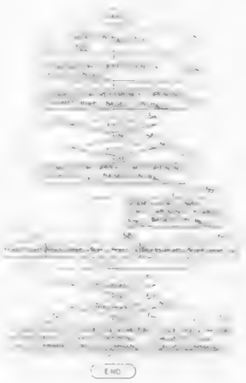
- a substantially spherical precombustion chamber located in the head;
- a lineal passage tangentially joining the precombustion chamber with the inner surface of the cylinder head;
- a pilot fuel injector means and an igniter means both located in the precombustion chamber which inject and ignite a precharge;
- a main fuel injector means in the cylinder head;
- a bowl-shaped recess comprising the main combustion chamber located in the top surface of the piston in close proximity with the main injector means in the top dead center position with said lineal passage tangentially aligned with the main combustion chamber, whereby the burning gases exiting the precombustion chamber are directed into the main combustion chamber causing ignition therein.

4,765,294
INTAKE DEVICE FOR INTERNAL COMBUSTION ENGINE
Takehiko Katsumoto; Osamu Hirako, both of Kyoto, and Reijiro Komagome, Jyoyoe, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Japan
Continuation of Ser. No. 756,096, Jul. 17, 1985, abandoned. This application Apr. 21, 1987, Ser. No. 40,855
Claims priority, application Japan, Jul. 18, 1984, 59-147449; Jul. 1, 1985, 60-144131
Int. Cl.[4] F22B 5/02
U.S. Cl. 123—306 12 Claims



1. An air inlet for a valve controlled internal combustion engine having a cylinder head within which an inlet valve is reciprocable relative to a valve seat and which air inlet includes an air inlet passage means for partial closure of said passage, the improvement comprising:
- said cylinder head being formed with an intake port extending from one side of said cylinder head toward substanially the center of said valve seat, said intake port comprising a straight section and a spiral section arranged along the direction of intake air flow and defining an upper half and a lower half respectively in a vertical section of said cylinder head, said spiral section including a portion of said straight section and further including a swirl producing chamber, said swirl producing chamber extending laterally outwardly beyond the outer periphery of said straight section at a position adjacent to and preceeding said valve seat, said straight section communicating with a combustion chamber through said valve seat; whereby operation of said closure means results in flow being directed to the lower portion of said straight section and being diverted to said swirl producing chamber of said spiral section; said straight section, when unobstructed, providing for flow directly into said valve seat in the substanial absence of swirl.

4,765,295
THROTTLE VALVE CONTROLLER FOR INTERNAL COMBUSTION ENGINE
Yoshikazu Ishikawa; Kouji Yamaguchi, and Takeo Suzuta, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 5, 1987, Ser. No. 58,836
Claims priority, application Japan, Jun. 6, 1986, 61-131554
Int. Cl.[4] F02D 11/10
U.S. Cl. 123—399 4 Claims



1. A throttle valve control apparatus for controlling a degree of opening of a throttle valve disposed in an intake system of an internal combustion engine, comprising:
- accelerator actuation detection means for producing an output in accordance with an actuation position of an accelerator pedal,
- setting means for setting a target degree of opening of the throttle valve in accordance with the actuation position of the accelerator pedal detected by the accelerator actuation detection means,
- throttle valve opening degree detection means for producing an output in accordance with an actual degree of opening of the throttle valve,
- drive means for driving the throttle valve in a direction such as to reduce an amount of deviation between the actual degree of opening of the throttle valve as detected by the throttle valve opening degree detection means and the target degree of opening, and
- command means for issuing a characteristic command to specify a requisite target opening degree characteristic;
- wherein said setting means sets a reference degree of opening of the throttle valve in accordance with the actuation position of the accelerator pedal by utilizing a reference opening degree characteristic and sets a boundary degree of opening of the throttle valve in accordance with the actuation position of the accelerator pedal by utilizing at least one of an upper limit opening degree and a lower limit opening degree of the throttle valve; and
- wherein the target degree of opening is computed from a relationship between the reference degree of opening and the boundary degree of opening which have thus been respectively set by said setting means, in conjunction with the contents of the characteristic command.

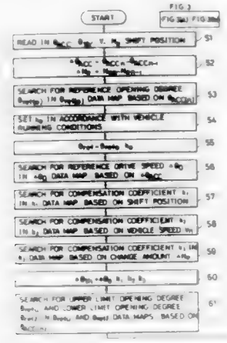
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,296

THROTTLE VALVE CONTROL FOR INTERNAL COMBUSTION ENGINE

Yoshikazu Ishikawa; Kouji Yamaguchi, and Takeo Suzuta, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 5, 1987, Ser. No. 58,915
Claims priority, application Japan, Jun. 6, 1986, 61-131555
Int. Cl.[4] F02D *11/10*
U.S. Cl. 123—399 5 Claims



1. A throttle valve control apparatus for controlling a degree of opening of throttle valve disposed in an intake system of an internal combustion engine, comprising:

accelerator actuation detection means for developing an output in response to an actuation position of an accelerator pedal;

opening degree setting means for setting a target degree of opening of the throttle valve based on the actuation position of the accelerator pedal thus detected, thereby generating an output which expresses the target degree of opening;

throttle valve opening degree detection means for developing an output in response to an actual degree of opening of the throttle valve;

drive speed setting means for setting a speed for driving the throttle valve in response to running conditions of the internal combustion engine; and

drive means for driving the throttle valve at said speed which has been set, so as to reduce deviations between said target degree of opening which are obtained from the opening degree setting means;

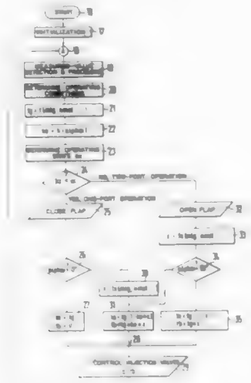
wherein said opening degree setting means derives a reference degree of opening of the throttle valve in response to the actuation position of the accelerator pedal, and corrects said reference degree of opening in response to the running conditions, thereby establishing said target degree of opening, and moreover, and upper limit degree of opening and a lower limit degree of opening of the throttle valve are respectively derived with respect to the actuation position of the accelerator pedal and an output is generated which expresses said target degree of opening as said upper limit degree of opening when said target degree of opening is greater than said upper limit degree of opening, and furthermore an output is generated which expresses said target degree of opening as said lower limit degree of opening when said target degree of opening is less than said lower limit degree of opening.

4,765,297

INTERNAL-COMBUSTION ENGINE HAVING AT LEAST TWO INTAKE VALVES PER CYLINDER

Herwig Richter, Bietigheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Sep. 30, 1987, Ser. No. 102,834
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1986, 3633509
Int. Cl.[4] F02B *15/00*
U.S. Cl. 123—432 6 Claims



1. An arrangement for a multi-cylinder internal-combustion engine having at least two intake valves per cylinder to which separate first and second intake pipes lead that are dimensioned differently with respect to at least one of length and cross-section and are each equipped with a fuel injection valve, a controllable flap in at least said second intake pipe, said flap being opened and closed as a function of an operating state of the internal-combustion engine determined from operating conditions of the internal-combustion engine, comprising:

control means for apportioning, between said intake pipes via said injection valves, a total quantity of fuel fed to said cylinder during the opening and closing of said flap corresponding to flow conditions, changing with the movement of said flap, in said intake pipes.

4,765,298

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Shinji Kojima; Seiji Wataya, both of Himeji, and Ryoji Nishiyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1987, Ser. No. 102,351
Claims priority, application Japan, Sep. 30, 1986, 61-233583
Int. Cl.[4] F02D *41/14*
U.S. Cl. 123—440 5 Claims

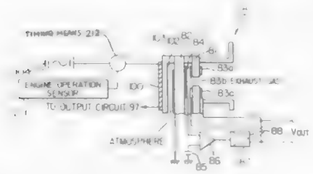
1. An air-fuel ratio control system for internal combustion engines, comprising:

an air-fuel ratio sensor mounted in an exhaust pipe of an internal combustion engine and adapted to produce an output indicative of the air-fuel ratio of a mixture supplied to said engine on the basis of the composition of exhaust gases in said exhaust pipe;

heating means for heating said air-fuel ratio sensor;

an engine operation sensor adapted to sense whether said engine has been stopped; and

control means for controlling said heating means such that it is operated for a predetermined time after said engine



operation sensor has sensed that said internal combustion engine has been stopped.

4,765,299

FAILURE-TIME CONTROL DEVICE FOR A FUEL INJECTION CONTROLLER OF AN INTERNAL COMBUSTION ENGINE

Seiji Wataya, and Yuji Kishimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1987, Ser. No. 44,743
Claims priority, application Japan, May 7, 1986, 61-106059
Int. Cl.[4] F02D *41/22*
U.S. Cl. 123—479 4 Claims



1. A failure-time control device for a fuel injection controller of a internal combustion engine, which comprises in combination:

(a) a trouble detecting means for detecting trouble in an intake air flow detecting means which detects a quantity of intake air flow to be introduced into an air intake passage communicatively connected with the internal combustion engine;

(b) a failure-time by-pass throttle valve control means for maintaining, at a definite value on the basis of an output from said trouble detecting means, an aperture of a by-pass throttle valve which controls the quantity of air in a by-pass passage between the up-stream part and the down-stream part of a main throttle valve which controls said intake air flow; and

(c) a failure-time fuel injection valve control means for controlling a fuel injection quantity from a fuel injection valve for supplying fuel to said internal combustion engine by injection, on the basis of a relationship of the fuel injection quantity with respect to an aperture of said main throttle valve and the number of revolutions of said internal combustion engine with said by-pass throttle valve aperture held at said definite value.

4,765,300

FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES AFTER STARTING IN HOT STATE

Akira Fujimura, and Yoshio Wazaki, both of Wako, Japan, assignors to Honda Giken Kogyo K.K., Tokyo, Japan

Filed Nov. 12, 1987, Ser. No. 119,818
Claims priority, application Japan, Dec. 27, 1986, 61-310654
Int. Cl.[4] F02D *41/06*
U.S. Cl. 123—491 3 Claims



1. In a method of controlling the supply of fuel to an internal combustion engine, including the steps of effecting after-start fuel increasing control wherein an initial value of a fuel increment is set to a value dependent upon a temperature of the engine upon generation of a predetermined control signal immediately after the start of the engine, the fuel increment is progressively decreased from the set initial value in synchronism with subsequent generation of the predetermined control signal, and a fuel quantity corrected by the progressively decreased fuel increment is supplied to the engine, and effecting air-fuel ratio feedback control, which is executed on condition that a predetermined feedback control condition is fulfilled after the start of the engine, wherein a correction coefficient has a value thereof set to a value dependent upon the concentration of an ingredient in exhaust gases emitted from the engine, sensed by sensor means arranged in an exhaust system of the engine, and a fuel quantity corrected by the set correction coefficient is supplied to the engine, the improvement comprising the steps of: (a) setting the initial value of the fuel increment to smaller values as the temperature of the engine is higher; (b) setting the initial value of the fuel increment to a predetermined lower limit if the initial value set depending upon the temperature of the engine is smaller than the predetermined lower limit; and (c) effecting the air-fuel ratio feedback control by correcting a fuel quantity to be supplied to the engine by the fuel increment together with the correction coefficient insofar as the predetermined feedback control condition is fulfilled, when the temperature of the engine is higher than a predetermined value at the start of the engine.

4,765,301

FUEL SUPPLY CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES AFTER STARTING

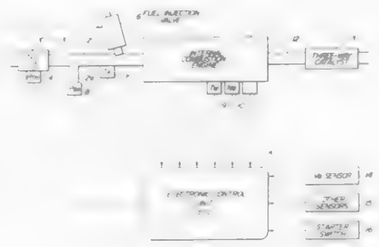
Yuzuru Koike, and Takafumi Nishikawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1987, Ser. No. 12,208
Claims priority, application Japan, Feb. 14, 1986, 61-030110
Int. Cl.[4] F02D *41/06*
U.S. Cl. 123—491 7 Claims

1. A method of controlling the quantity of fuel being supplied to an internal combustion engine having fuel injection valves after starting thereof, which is adapted to set an initial value of a fuel increment in response to a temperature of said engine immediately after the start of said engine, subsequently decrease said fuel increment from the set initial value thereof with the lapse of time, supply said engine with a quantity of fuel set by the use of the thus decreased fuel increment, the

VOL 1093 ISS 4 AG 23 1988 UMI

method comprising the steps of: (a) sensing intake air temperature in the vicinity of said fuel injection valves; and (b) setting



a rate at which said fuel increment is decreased, to a value corresponding to the sensed intake air temperature.

4,765,302

CUT-OFF FUEL EXHAUST MECHANISM IN FUEL INJECTION PUMP

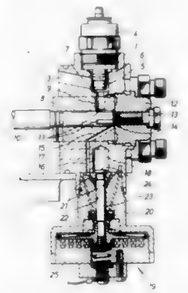
Hiroshi Ikeuchi, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 6, 1987, Ser. No. 46,552

Claims priority, application Japan, Jul. 25, 1986, 61-114084[U]

Int. Cl.[4] F02M *37/04*

U.S. Cl. 123—506 4 Claims



1. A fuel injection pump having an exhaust means for exhausting fuel from the fuel pump at the time of cut-off of fuel flow through the pump, comprising:

a pump body for positioning in a pump space for containing fuel to be pumped, said pump body having a fuel passage extending thereinto from said pump space and a valve means in said fuel passage;

a plunger barrel mounted in said pump body and having a plunger bore therein and a fuel intake port extending through said plunger barrel from a position opposite the inner end of said fuel passage into said plunger bore;

a plunger rotatably and slidably mounted in said plunger bore and defining a pressurizing chamber at the inner end of said plunger bore;

said plunger barrel having an oil passage extending from the end within which said pressurizing chamber is defined to the periphery of said plunger barrel;

said pump body having a lead hole therethrough from a position opposite the end of said oil passage at the periphery of said plunger barrel to the outside of said pump body, and further having an oil chamber extending thereinto from a position on said pump body near the end of said oil passage and an exhaust passage extending from the inner part of said oil chamber to the outside of said pump body and opening into the pump space;

a valve housing mounted on said pump body over the end of said lead hole and the opening into said oil chamber and having a valve guide hole therein opening into said oil chamber and having a valve seat around the end thereof and having an oil induction hole therethrough from a position opposite the end of said lead hole and into said valve guide hole; and

a valve member movably mounted in said guide hole having a valve body on the end thereof for being seated against said valve seat for closing said valve guide hole and for being moved off said valve means for opening said valve guide hole, and valve member actuating means for actuating said valve member in accordance with the pumping of fuel and the cutting off of fuel by the fuel pump, said oil passage, said lead hole, said oil induction hole, said valve guide hole, said oil chamber and said exhaust passage forming an exhaust path for fuel from said pressurizing chamber to the pump space for reducing the pressure of the fuel as it passes along said path, whereby when it is discharged into the pump space from said exhaust passage it will not agitate the fuel in the pump space.

4,765,303

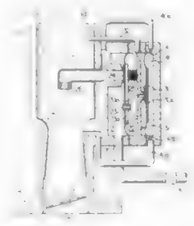
GASEOUS FUEL CHARGE FORMING DEVICE FOR INTERNAL COMBUSTION ENGINES

James S. Jones, 45 Crown Pl., Richardson, Tex. 75080

Filed Jul. 20, 1987, Ser. No. 75,402

Int. Cl.[4] F02B *43/00*

U.S. Cl. 123—527 11 Claims



1. A gaseous fuel charge forming device, comprising:

a body having internal walls defining a bore;

an air inlet at one end of the bore to receive air;

a fuel charge outlet at the other end of the bore adapted for attachment to the induction system of an internal combustion engine;

a throttling valve located in the bore between the air inlet and the fuel charge outlet;

the bore including a venturi section located between the throttling valve and the air inlet;

a fuel injection passageway having an orifice disposed for injection of gaseous fuel into the bore between the throttling valve and the air inlet;

a fuel valve connected to the fuel injection passageway to control flow from a source of pressurized gaseous fuel through the fuel injection passageway to the orifice; and

control means for controlling the flow rate of fuel through the fuel valve being responsive to negative pressure signals from the venturi section, such that increasingly negative pressure signals from the venturi section cause correspondingly increased flow rates of fuel through the fuel valve.

4,765,304

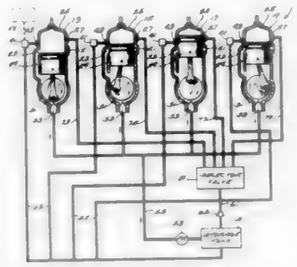
INTERNAL COMBUSTION ENGINE WITH COMPRESSED AIR COLLECTION SYSTEM

Peter W. Brown, Hartland, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 26, 1987, Ser. No. 112,931

Int. Cl.[4] F02M *23/12*

U.S. Cl. 123—532 11 Claims



1. An internal combustion engine comprising a plurality of cylinders respectively including a pressure port, a like plurality of pistons respectively movable in said cylinders through respective compression strokes, a like plurality of fuel injectors respectively connected to said cylinders and operative to supply, from a fuel source to the respective cylinders, a metered quantity of fuel conveyed by compressed gas in response to fuel injector operation during the compression strokes of the respective cylinders, a storage tank for accumulating and storing compressed gas, means for selectively connecting said pressure ports to said storage tank only during the compression strokes of the respective cylinders, and duct means connecting said storage tank to said fuel injectors for supplying said fuel injectors with compressed gas in response to fuel injector operation.

4,765,305

CONTROL METHOD OF CONTROLLING AN AIR/FUEL RATIO CONTROL SYSTEM IN AN INTERNAL COMBUSTION ENGINE

Yoshitaka Hibino; Takeshi Fukuzawa, and Atsushi Totsune, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 12, 1987, Ser. No. 2,346

Claims priority, application Japan, Jan. 13, 1986, 61-5498

Int. Cl.[4] F02M *23/06*

U.S. Cl. 123—589 4 Claims



1. A control method for controlling an air/fuel ratio control system in an internal combustion engine comprising the steps of:

setting a base air/fuel ratio control value in accordance with parameters of the engine operation relating to the load on the engine;

setting an operational air/fuel ratio control value corresponding to a target air/fuel ratio by correcting a set value of said base value in response to an output signal of an oxygen concentration sensor disposed in an exhaust gas passage of said internal combustion engine;

controlling the air/fuel ratio of the mixture to be supplied to said internal combustion engine according to said operational air/fuel ratio control value;

setting a correction value indicative of an error caused by the lapse of time due to deterioration of said oxygen concentration sensor or the carburetor of said internal combustion engine;

detecting continuation of a light load operation of said internal combustion engine for more than a predetermined time period; and

selecting, as the air/fuel ratio control value, an open loop control value by which said air/fuel ratio of the mixture can be controlled around said target air/fuel ratio in accordance with said set base value and said set correction value irrespectively of said output signal of said oxygen concentration sensor during a time period in which said light load operation continues after the continuation of said light load operation detected by said detecting step.

4,765,306

COMBUSTION ENGINE STROKE IDENTIFICATION SYSTEM

Michele Scarnera, Monzuno, and Carlo Conticelli, Bologna, both of Italy, assignors to Weber S.p.A., Turin, Italy

Filed Jun. 4, 1986, Ser. No. 870,454

Claims priority, application Italy, Jun. 4, 1985, 67512 A/85

Int. Cl.[4] F02P *5/04*

U.S. Cl. 123—643 15 Claims



1. A system for identifying the strokes, (I, C, E, Ex) on an internal combustion engine (101), said system comprising first sensor means (103) for detecting given angles of a drive shaft (125), second sensor means (105) for deteting given angles of a distributor (126) shaft, said distributor shaft rotating at a speed equal to one half the rotational speed of the drive shaft, and processing means (102) for receiving signals (S, C) from said first (103) and said second (105) sensor means, means for converting said received signals (S, C) into digital signals, and means for identifying the strokes (I, C, E, Ex) on the said engine (101) by comparing said digital signals with preset stored values, characterised by the fact that said second sensor means comprise a single sensor element (105),

wherein said second sensor element (105) is positioned for detecting subsequent passage of two portions (33) of an element (32) secured to said distributor (126) shaft, and

wherein said two portions (33) are spaced 90° apart, and that said second sensor element (105) is positioned so as to generate its respective signal (C) substantially in the center portion of the interval between the signals (S) from the said first sensor means (103).

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,307
GUIDE PULLEY BASE FOR WIRE SAW
Setsuo Kubo, Kyoto, Japan, assignor to Kabushiki Kaisha Dymosha, Kyoto, Japan
Filed Apr. 10, 1987, Ser. No. 37,242
Claims priority, application Japan, Apr. 12, 1986, 61-55280[U]; Apr. 12, 1986, 61-55281[U]; Dec. 15, 1986, 61-298072
Int. Cl.[4] B28D *1/08*
U.S. Cl. 125—21 5 Claims



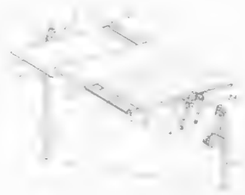
1. A guide pulley base for wire saw comprising a support frame, a pair of main pulleys rotatably supported by the support frame a distance apart from each other on the same plane, and a pair of guidance pulleys rotatably supported by the support frame in parallel to each other on separate planes and in such a way that the outer periphery of each guidance pulley is in contact with a tangent line through the outer periphery of each main pulley wherein each of the guidance pulleys are disposed perpendicularly or at an oblique angle with each of the main pulleys.

4,765,308
VENTING SYSTEM WITH NATURAL CONVECTION COOLING
John D. Marran, Bernardsville, N.J., assignor to Energy Kinetics, Lebanon, N.J.
Filed May 27, 1987, Ser. No. 54,858
Int. Cl.[4] F23L *17/02*
U.S. Cl. 126—85 B 22 Claims



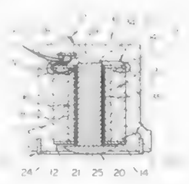
1. A venting system for venting the products of combustion from a combustion process within a building to the outside atmosphere, comprising:
- a flue pipe adapted for the passage of combustion gases therein having a first end and a second end, said first end being in communication with said combustion process;
- an inner cylindrical sleeve, concentric with and disposed within said flue pipe so as to define a first annulus between said inner sleeve and said flue pipe;
- an outer cylindrical sleeve, concentric with and surrounding said flue pipe so as to define a second annulus between said outer sleeve and said flue pipe; and
- a vent hood in fluid communication with said second end of said flue pipe.

4,765,309
SOLAR TRACKING DEVICE
Frank M. Legge, 26 Surrey Road, Wilson, Australia
PCT No. PCT/AU86/00211, § 371 Date Apr. 21, 1987, § 102(e) Date Apr. 21, 1987, PCT Pub. No. WO87/00608, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 24, 1986, Ser. No. 46,876
Claims priority, application Australia, Jul. 24, 1985, PH1608
Int. Cl.[4] F24J *2/38*
U.S. Cl. 126—425 12 Claims



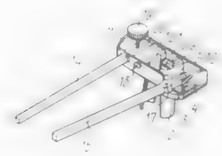
1. A solar tracking device comprising a pivotal support having a centre of gravity below the pivot axis which in use is set substantially parallel with the axis of the earth, a pair of closed containers being an eastern container and a western container, the closed containers being interconnected at or near the lower ends thereof for fluid communication therebetween and containing a volatile fluid, the containers being mounted on the pivotal support, shading means fixed relative to the containers for shading the container nearer the sun more than the container further from the sun to provide unequal solar radiation on the containers when the rays of the sun are not at a predetermined relation to the containers thereby causing fluid transfer between the containers and rotation of the containers and the support about the pivot axis until equal radiation is received by both containers, wherein the containers are so positioned relative to each other than the western container is offset in an upward vertical direction with respect to the eastern container when the device is at the rotational position which it assumes at midday, the extent of said vertical offset being such that the sufficient fluid transfer from the western container to the eastern container will always occur to bring about reorientation to the east when the sun sets or is obscurred.

4,765,310
ELECTRICAL AND MAGNETIC PAIN TREATMENT DEVICE
William R. Deagle, Calgary, and Gary E. Gunthrpe, Bassano, both of Canada, assignors to Dynatens Research Corporation, Calgary, Canada
Filed Oct. 29, 1986, Ser. No. 924,314
Claims priority, application Canada, Nov. 1, 1985, 494447
Int. Cl.[4] A61B *17/52*
U.S. Cl. 128—1.5 5 Claims



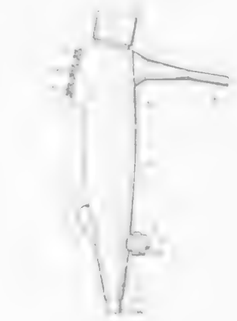
1. Apparatus for the alleviation of pain in a patient, comprising a treatment head for application to the patient and having at least one pair of spaced electrodes, means for generating in the treatment head magnetic field pulses having a force field which extends externally of the treatment head in the vicinity of the electrodes, and means for generating substantially simultaneously with the magnetic field pulses electrical voltage pulses across the pair of electrodes, the pair of spaced electrodes comprising a central electrode an an outer electrode arranged concentrically with respect to the central electrode, the central electrode having a portion which extends inwardly of the treatment head and serves as a ferromagnetic core around which a coil producing the magnetic pulses is wound.

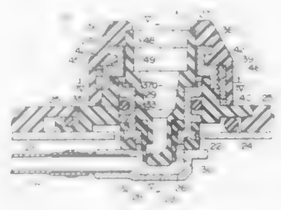
4,765,311
WOUND RETRACTOR
Yaroslav P. Kalik, Ulitsa Zieskaya, 140, kv. 36, Blagoveschensk; Ivan I. Shmyrin, Prospekt Krasnogo Znameni, 30, kv. 132, Vladivostok, and Grigory M. Rutenburg, Ulitsa Lenina, 57, kv. 13, Blagoveschensk, all of U.S.S.R.
Filed Apr. 14, 1987, Ser. No. 38,205
Claims priority, application U.S.S.R., Apr. 24, 1986, 4061958
Int. Cl.[4] A61B *17/02*
U.S. Cl. 128—3 4 Claims



1. A wound retractor, comprising:
- a split tube including a first half of said tube and a second half of said tube;
- a holder of said first tube half; said holder shaped as a rectangular plate having two longer and two shorter sides;
- said plate including flanges on said two longer sides and on one of said shorter sides thereof;
- said plate including an oblong opening arranged lengthwise said longer sides of said plate and having two edges opposite to each other lengthwise the opening;
- said first tube half fitted in said opening at an edge thereof proximal to said shorter plate side devoid of a flange;
- a holder of said second tube half;
- said holder of said second tube half-shaped as a rectangular strip equal in size to said plate and mounted slidably over the surface of said plate lengthwise said longer sides thereof;
- said strip including another oblong opening similar to said opening in said plate and having two edges opposite to each other lengthwise the opening;
- said second tube half fitted in said opening in the strip at an edge thereof opposite to said first tube half;
- said strip, while performing a sliding motion over the surface of said plate, being capable of assuming one of two extreme positions with respect to said plate, wherein said tube halves are brought in contact with each other to form a solid tube having a minimum cross-section in one extreme position, and in the other extreme position, said oblong openings are brought in alignment and are arranged one above the other, while said tube halves are situated opposite to each other and set apart a distance determined by the length of the oblong openings;
- means for spreading said tube halves apart; and
- retainer means for locking said tube halves in position.

4,765,312
ENDOSCOPE
Hiroyuki Sasa, and Akira Suzuki, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Japan
Filed Jul. 29, 1987, Ser. No. 79,140
Claims priority, application Japan, Jul. 30, 1986, 61-179158
Int. Cl.[4] A61B *1/00*
U.S. Cl. 128—4 8 Claims





1. In an endoscope including an insertion portion to be inserted into a body cavity, the one end portion of which has an observation window and an orifice directed to face said observation window, an operation portion connected to the other end portion of said insertion portion, said operation portion having a housing formed with an opening, a supply path for supplying a fluid to said orifice, extending inside said insertion portion and said operation portion, and connecting means provided on said opening of said housing, for connecting fluid injection means for supplying a supplementary fluid into said fluid-supply path, the improvement in which
said connecting means comprises:
- a hollow mount member including shoulder means formed on the outer peripheral surface, and which is formed to extend from a periphery portion of said opening;
- a block received in said housing, the block having a cavity facing said opening, and an inlet and outlet for enabling said cavity to be inserted serially in said supply path;
- a mount piece which is inserted from the extended end of said mount member, such that its distal end portion is placed in said cavity, and on which a supplementary fluid injection means is detachably mounted;
- a seal member for forming a seal between the mount piece and the periphery portion of said cavity;
- a locking member having an arm abutting on the side of the shoulder means; and
- a support member for supporting said mount piece, which is threadably fixed to said locking member to press said mount member, whereby said shoulder means is clamped between said support member and arm.

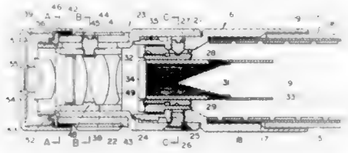
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,313

OBJECTIVE PART REPLACEABLE ENDOSCOPE TIP

Masahiro Kumakura, Zama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1987, Ser. No. 77,927
Claims priority, application Japan, Aug. 1, 1986, 61-181631
Int. Cl.[4] A61B 1/00
U.S. Cl. 128—4 11 Claims



1. An objective part replaceable endoscope tip comprising:
either one of
a first kind of objective part having an objective optical system provided with a rotary adjustment mechanism by a rotating operation, and
a second kind of objective part having an objective optical system having no rotary adjusting mechanism; and
an insertable part of the endoscope having a tip;
an image transmitting means being inserted through said insertable part;
a non-rotary fitting part being in said tip, said non-rotary fitting part being for said first kind of objective part; and
a rotary fitting part being in said tip, said rotary fitting part being for said second kind of objective part.

4,765,314

DEVICE FOR INTRODUCING AN ENDOSCOPE OR A SURGICAL TOOL INTO BODY CAVITIES WITH A FEED FOR A FLUSHING MEDIUM AND AN EXTRACTOR FOR SAID FLUSHING MEDIUM

Dietmar Kolditz, Bochum; Hans Keller, Dürbheim, and Karl Ernst-Kienzle, Immendingen, all of Fed. Rep. of Germany, assignors to Aesculap-Werke Aktiengesellschaft, Tuttlingen, Fed. Rep. of Germany

Filed Jan. 2, 1986, Ser. No. 815,584
Claims priority, application Fed. Rep. of Germany, Jan. 9, 1985, 3500444
Int. Cl.[4] A61B 1/00
U.S. Cl. 128—4 9 Claims



1. Device for introducing an endoscope or a surgical tool into body cavities, the device having a feed for a flushing medium and an extractor for said flushing medium, comprising:
a sluice, insertable into the body cavity from outside, with a cylindrical stem having a free end insertable into the body cavity, said stem comprising an outer tube and an inner tube inserted into said outer tube, said outer tube having openings through its wall at locations outside and inside the body cavity, and said inner tube having at its interior surface two separate longitudinal grooves which are each aligned with two of said openings of said outer tube, the openings outside the body being connected to the feed and the extractor for the flushing medium, and wherein an inserted cylindrical endoscope or tool tightly contacts with its outer wall the inner wall of the stem and thus together with the longitudinal grooves forms sealed channels for the flushing medium.

4,765,315

PARTICLE BRAKE CLUTCH MUSCLE EXERCISE AND REHABILITATION APPARATUS

Richard Krukowski, Chatham, N.J., assignor to Biodex Corporation, Shirley, N.Y.

Continuation-in-part of Ser. No. 907,392, Sep. 15, 1986, Pat. No. 4,691,694, which is a continuation-in-part of Ser. No. 676,493, Nov. 29, 1984, Pat. No. 4,628,910. This application Jun. 8, 1987, Ser. No. 59,392
Int. Cl.[4] A63B 23/00
U.S. Cl. 128—25 R 27 Claims



1. A muscle exercise and rehabilitation apparatus comprising:
movable fixture means against which an actuating force can be applied;
particle brake clutch means for applying a braking force to said fixture means in linear dependence to current supplied thereto, said braking force being applied in counteracting relation to the actuating force in isometric, isotonic and isokinetic modes of operation;
particle brake control means for controlling the supply of current to said particle brake clutch means so that the latter selectively controls said fixture means to move in one of said isometric, isotonic and isokinetic modes of operation;
mode control means for controlling said particle brake control means to change operation of said apparatus between said isometric, isotonic and isokinetic modes of operation; and
compensating means for eliminating effects of hysteresis in said particle brake clutch means in dependence on the amount of braking current previously supplied to said particle brake clutch means.

4,765,316

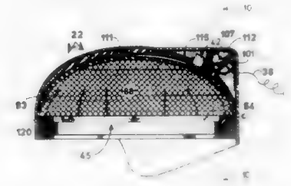
SCALP STIMULATOR

Walter D. Marshall, 7203 Evans, Houston, Tex. 77061

Filed Apr. 20, 1987, Ser. No. 40,094
Int. Cl.[4] A61H 1/00
U.S. Cl. 128—36 5 Claims

1. A portable system for concurrently producing suction and massaging to stimulate the human scalp, said system adapted to be at least temporarily disposed upon the head of a wearer to be treated, said system comprising:
a rigid helmet somewhat greater in size than the head of said wearer for substantially covering the head of the wearer to be treated, said helmet comprising:
an internal helmet wall;
a hollow interior;
a lower internal periphery; and

peripheral cushion means adapted to be secured within said internal periphery for aiding the wearing of said helmet by contacting the lower portion of the wearer's head and for providing a vacuum seal;
a resilient vibration distribution pad disposed within said helmet comprising a generally planar base portion and a plurality of individual, spaced apart finger members integrally emanating away from said base portion for directly contacting the scalp of said wearer when said helmet is worn, and a plurality of vent orifices;
vibration means disposed within said housing within said helmet for vibrating said distribution pad fingers to massage the wearer's scalp, said vibration means comprising:
motor means for generating vibrations; and, mounting means for securing said motor means within said



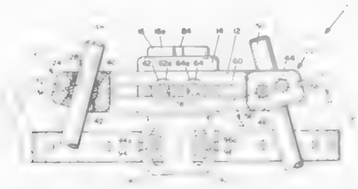
housing, said mounting means rigidly coupled to at least a portion of said vibration pad base portion;
vacuum fan means rotatably disposed within said helmet for concurrently supplying vacuum interiorly of said helmet;
fan motor means for powering said fan means;
said helmet comprising exhaust vents for exhausting said vacuum fan means and a vent orifice in fluid flow communication with said exhaust vent;
dampening pad means disposed within said helmet between said vibration distribution pad base and said internal helmet wall for dampening vibrations, said pad means comprising an orifice adapted to be disposed in fluid flow communication with said vent orifice; and,
wherein said orifice is operatively defined adjacent said fan motor means to maximize motor cooling.

4,765,317

ANTERIOR POSTERIOR HEADBLOCK

William J. Eastman, St. Louis Park, and Alfred A. Iversen, Waqzata, both of Minn., assignors to PMT Corporation, Chanhassen, Minn.

Filed Jan. 12, 1987, Ser. No. 2,386
Int. Cl.[4] A61H 1/02
U.S. Cl. 128—75 4 Claims



1. In a halo fixation device attached to an orthopedic jacket by two pairs of rods, an improved headblock assembly comprising:
a. main body carriers, each slidably and pivotally mounted for horizontal, vertical and lateral movement relative to each pair of said rods, and ball and socket clamping devices for securing said main body carriers in place on said rods, said main body carriers each having a substantially horizontal aligned adjustment slot;
b. adjustable saddles, each slidably mounted for horizontal movement on one of said main body carriers, and means for securing each of said adjustable saddles in place on each of said main body carriers; and, halo ring traction plates, each having vertical opposing slotted body holes and opposing radiused slots;
c. a halo ring secured to said halo traction plates, and means for securing said halo ring in place on said halo ring traction plate.

4,765,318

ORTHOPEDIC KNEE BRACE

Per Tranberg, Lerum, Swedes; Ralph Matties, Hamburg, Fed. Rep. of Germany, and Dale Reese, Göteborg, Sweden, assignors to Volcano International Medical AB, Hisings Backa, Sweden

Filed Jan. 23, 1987, Ser. No. 6,196
Int. Cl.[4] A61F 3/00
U.S. Cl. 128—80 C 3 Claims



1. A knee brace comprising a tubular member formed from a sheet having a core of foamed rubber material laminated on the inner and outer faces of said sheet with a textile fabric, and provided with an opening in a region of the member intended at least partly to be located above the patella of the wearer, and provided at said outer face with segments of inner and outer primary Velcro-type fasteners located in inner and outer spaced-apart lines, respectively, to each side of said opening, said lines being oriented substantially parallel with the longitudinal axis of said tubular member to form attachments for at least one secondary Velcro-type fastener strip, separable from said tubular member, and said at least one secondary fastener strip having a length at least sufficient to reach from one outer primary fastener to the other primary outer fastener, wherein said inner primary fasteners being strips extending from about the level of the top of said opening to a distance well below the lower margin thereof, wherein said outer primary fasteners, each being at least two separate patches located respectively above and below said opening.

4,765,319

HAND SPLINT

Alan Finnieston, 2480 W. 82nd St., Hialeah, Fla. 33016; William E. Burkhalter, 8905 SW. 97 Ave., Miami, Fla. 33176, and Franklin Reyes, 10450 SW. 84 Ave., Miami, Fla. 33156

Filed Nov. 25, 1986, Ser. No. 934,856
Int. Cl.[4] A61F 5/04
U.S. Cl. 128—87 R 9 Claims

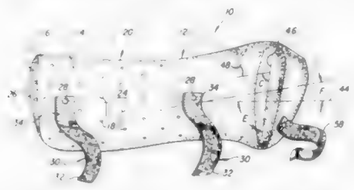
1. A hand splint for immobilizing a hand, wrist, and distal forearm of a user, comprising:
a sleeve in which the hand, wrist and distal forearm are received, said sleeve being made of a semi-rigid material and including
(a) an elongated shell adapted to extend over the wrist and distal forearm, said shell having a substantially C-shape in lateral cross section with an opening of the C-shape being adapted to be located at an M-L plane of the

VOL 1093 ISS 4 AG 23 1988 UMI

forearm, said shell including a dorsal shell portion and volar shell portion,

(b) a dorsal hood extending from said dorsal shell portion, said dorsal hood including a metacarpal hood portion which is adapted to cover the dorsum of the hand and a phalanx hood portion which is adapted to cover the proximal phalanges and which terminates thereat; said metacarpel hood portion adapted to form a dorsiflexion angle of between 60° to 80° with the axis of the forearm so that a comfortable maximal dorsiflexion of the wrist is achieved; and said metacarpal hood portion forming a hood angle of between 75° to 90° with said phalanx hood portion,

(c) a palm arch support extending from said volar shell



portion, said palm arch support extending adjacent said metacarpal hood portion in order to maintain the hand in said dorsal hood with the wrist in dorsiflexion by abutment with said metacarpal hood portion and the metacarpal-phalangeal joints at an angle of greater than about 90° to 105° by abutment of the proximal phalanges with said phalanx hood portion, and

(d) a thumb opening between said dorsal hood and said palm arch support defined by a border of said sleeve, said border being adapted to be recessed from the thumb such that the thumb of the user extends through the thumb opening and all joints of the thumb are free to move; and

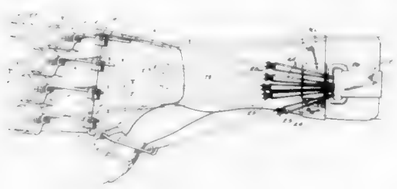
a holding means for holding said sleeve in radial abutment with the hand, wrist and distal forearm of the user.

4,765,320

DYNAMIC LOW PROFILE SPLINT

Peer Lindemann, West Bend, and Robert R. Ungemach, Brown Deer, both of Wis., assignors to Smith & Nephew Rolyan, Inc., Menomonee Falls, Wis.

Filed May 11, 1987, Ser. No. 48,088
Int. Cl.[4] A61F *5/04*
U.S. Cl. 128—87 A 10 Claims



3. A dynamic low profile splint for a hand, comprising:

a forearmpiece of low temperature moldable material for embracing a forearm and a hand;

a low profile outrigger including a frame integral with the forearmpiece;

a pulley system on said outrigger including an elongated laterally adjustable rigging guide operating as a pulley for changing the direction and the force applied by a rigging;

a fastening clamp adjustable fastening said rigging guide on the outrigger for rotational and axial adjustment and selectively locking said rigging guide in a locked position;

means on said fastening clamp adjusting the rigging guide for varying the rigging direction vertically and longitudinally and the tension;

at least one rigging fastened to the forearmpiece having an elastic band for generating a force;

a strand connected to said elastic band and extending through said rigging guide;

a finger loop on the end of said strand for engaging a finger;

said outrigger thereby providing infinite adjustable tension and direction of said rigging force applied to the finger loop to vary the influence of synthesis in said finger.

4,765,321

DISPLACEMENT SENSOR FOR A LIVING BODY

Kaneo Mohri, Fukuoka, Japan, assignor to TDK Corporation, Tokyo, Japan

Filed Nov. 14, 1986, Ser. No. 931,699
Claims priority, application Japan, Dec. 27, 1985, 60-294650; Feb. 21, 1986, 61-24383[U]
Int. Cl.[4] A61B *7/04*
U.S. Cl. 128—715 11 Claims



1. A displacement sensor comprising:

a diaphragm which is adapted to be placed on a living body,

a magnetic pole (M) fixed on said diaphragm,

a pair of saturable inductors (24,25) positioned close to said magnetic pole,

each of said saturable inductors (24,25) comprising a plurality of inductors having saturable cores and coils, each coil wound on said core,

said coils being positioned radially on a plane which is perpendicular to said diaphragm, and

said coils being connected in series alternately.

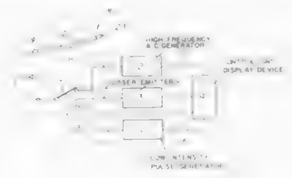
4,765,322

METHOD OF TREATING NEUROVEGETATIVE DISORDERS AND APPARATUS THEREFOR

Rene Charmillot, Delemont, and Jean-Pierre Lebet, Montreux, both of Switzerland, assignors to Symtonic SA, Lausanne, Switzerland

Continuation of Ser. No. 612,544, May 21, 1984, Pat. No. 4,649,935. This application Mar. 16, 1987, Ser. No. 27,181
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.[4] A61N *1/32*
U.S. Cl. 128—783 11 Claims

1. A method of treating a subject suffering from anxiety neurosis and any accompanying neurovegetative disturbance, which comprises the step of applying to the brain of said subject a therapeutically effective amount of an electrically induced energy capable of influencing the vegetative nervous system of the brain, said electrically induced energy comprising rectangular d.c. pulses having a pulse duration of from 0.5 to 5 milliseconds at a voltage of from 10 to 100 millivolts with a repetition frequency of from 10 to 100 hertz, or a.c. pulses having a frequency of from 20 to 100 megahertz modulated with a frequency of modulation of from 2.5 to 6000 hertz, the application of said energy being performed by placing a suitably adapted energy applicator in the form of an emitter in the mouth or endonasal cavity of the subject and energizing the



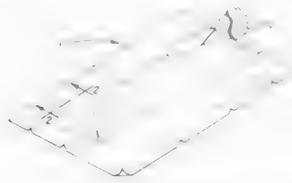
emitter so that the limbic system of the brain receives said electrically induced energy from the emitter.

4,765,323

REFLECTIVE SURGICAL DRAPE

Robert J. Poettgen, Arlington, Tex., assignor to O. R. Concepts, Inc., Roanoke, Tex.

Filed Jul. 25, 1986, Ser. No. 890,403
Int. Cl.[4] B32B *15/08, 17/00;* A61F *13/00*
U.S. Cl. 128—132 D 33 Claims



20. A reflective surgical drape for covering a surgical patient and reducing heat loss from the patient's body during and after a surgical procedure, comprising:

(a) a non-conductive first layer of aluminum;

(b) a second layer of a thermoplastic material attached to said non-conductive first layer of aluminum; and

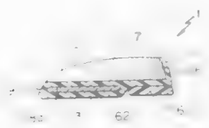
(c) a third layer of non-woven absorbent material attached to said non-conductive first layer of aluminum.

4,765,324

SPORTS MOUTHGUARD WITH SHIM

John R. Lake, Jr., 3854 Falmouth Rd., Marstons Mills, Mass.

Filed May 8, 1986, Ser. No. 860,850
Int. Cl.[4] A61F *5/56*
U.S. Cl. 128—136 1 Claim



1. An improved sports mouthguard in combination with a shim, used for molding the mouthpiece, comprising:

a member with a channel shaped cross-section, formed from a deformable material, said deformable material being adapted to be impressed by the upper and lower teeth and to conform thereto, and said member having two ends and an approximate U-shape corresponding to the shape of the arch of the upper jaw, and being defined by a bottom wall designed to engage the lower teeth, and front and rear side walls extending upward therefrom forming a channel with a floor for receiving the upper teeth, wherein the channel floor and bottom wall are sealed at the member ends, and the bottom wall laterally comprises a surface of sufficient width to extend laterally the full width of the lower teeth and engage the buccal and lingual cusps of the lower teeth, and wherein the anterior portion of said bottom wall is recessed upwardly to provide a space between said anterior portion and the lower teeth incisors;

two, molar, energy absorbing, elastomeric, insert pads, each encased within the member and extending one each from the left and right bicuspids posteriorly the length of the molar region, said insert pads being positioned between the channel floor and the bottom wall of the member, wherein said insert pads are more compressible than said member; and

a removable shim filling in the upward recess of the bottom wall for engaging the lower teeth incisors to facillitate proper positioning of the mouthguard during fitting.

4,765,325

METHOD AND APPARATUS FOR DETERMINING RESPIRATOR FACE MASK FIT

Clifton D. Crutchfield, 7321 N. La Oesta Ave., Tucson, Ariz.

Filed Dec. 12, 1986, Ser. No. 940,925
Int. Cl.[4] A61M *15/00*
U.S. Cl. 128—202.13 19 Claims



1. A method for determining face respirator fit by measurement of leakage air into the interior of the respirator entering between the respirator and the person's face comprising the steps of:

sealing the sources of inhalation and exhalation air entrance into and out of the respirator;

placing the respirator upon the face of the person;

having the person expel air from their lungs and hold their breath;

evacuating air interiorly to the respirator until a desired partial vacuum air pressure is achieved;

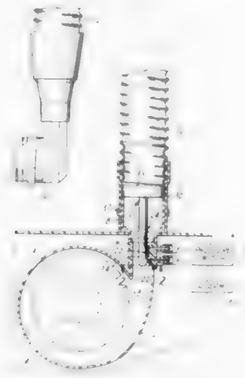
monitoring the pressure interiorly to the respirator;

withdrawing air from the respirator to maintain constant the desired partial vacuum air pressure interiorly to the respirator;

measuring the air withdrawn from the respirator whereby knowing the air withdrawn to maintain the constant partial vacuum air pressure, the leakage air is known and the fit of a respirator on a person determined.

VOL 1093 ISS 4 AG 23 1988 UMI

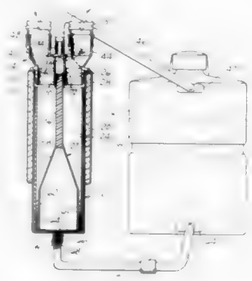
4,765,326
LOW-FLOW ALARM SYSTEM FOR POWDERED AIR-PURIFYING RESPIRATOR
Wendell J. Pieper, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 20, 1987, Ser. No. 40,342
Int. Cl.[4] A61M 15/00
U.S. Cl. 128—202.22 18 Claims



1. Low-flow alarm system for a powered air-purifying respirator comprising a chamber which is formed with an inlet to receive air from a blower and an outlet to deliver air to a breathing tube, the chamber containing a Pitot static sensor which controls a switch that is preset to actuate an alarm whenever the airflow through said breathing tube drops below a predetermined level, wherein the improvement comprises:

means for reducing the cross-sectional area of the interior of the chamber at the impact port of the Pitot static sensor so that the alarm is actuated whenever the airflow drops below a second predetermined level that is lower than said first-mentioned predetermined level.

4,765,327
CARTRIDGE HUMIDIFIER VENT VALVE
Norman Shim, Glenview, Ill., assignor to Respiratory Care, Inc., Arlington Heights, Ill.
Filed Dec. 19, 1986, Ser. No. 944,393
Int. Cl.[4] A61M 15/00, 16/00
U.S. Cl. 128—204.13 13 Claims



1. A cartridge type humidifying apparatus for use with a heating means and for receiving water from a supply container, for heating and humidifying a breathable gas to be inhaled by a patient undergoing inhalation therapy, comprising:

a humidifier column having a top end and a bottom end, said column arranged for the containment of water therein;

a cap on the top end of said column, said column and said cap defining a chamber for said gas;

said chamber having a gas delivery port for receipt of gas thereto, a gas discharge port communicable with a patient, and an air-vent port for permitting the flow of air from said column to a water container supply means; and

a float movably disposed in said column, having an upper-shaft portion which is in communication with said air-vent port to act like a valve for controlling the discharge of water from a supply container through a conduit and into a port on the bottom of said column.

4,765,328
SURGICAL INSTRUMENT HANDLE COUPLING
Philip J. Keller, Pompton Plains, and Robert C. Cohen, Denville, both of N.J., assignors to Osteonics Corp., Allendale, N.J.
Filed Aug. 10, 1987, Ser. No. 83,483
Int. Cl.[4] A61F 17/32
U.S. Cl. 128—303 R 15 Claims



1. A coupling arrangement for use in the selective coupling and uncoupling of the handle and the blade of an axially extending surgical instrument, such as a broach, during a procedure for implanting a prosthetic implant component, the coupling arrangement comprising:

a proximal surface extending transversely along the blade;

a mating surface extending transversely along the handle, the mating surface essentially matching the proximal surface of the blade when the blade and the handle are coupled;

a key extending in a first direction from one of said proximal and mating surfaces toward the other of said proximal and mating surfaces;

a first recess in the corresponding one of said handle and said blade for receiving the key when the blade and the handle are moved along a second direction transverse to the first direction into coupled position;

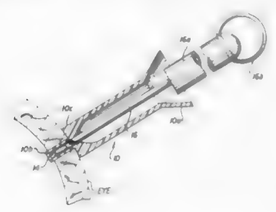
interengagable locking means on the key and in the cavity for interengaging in response to relative movement of the handle and the blade along the second direction into the coupled position to secure the handle and the blade against relative movement in the first direction;

a second recess in the blade, the second recess extending generally in the first direction;

a plunger carried by the handle and movable therein selectively between a first position wherein the plunger extends beyond the proximal and mating surfaces and into the second recess to preclude relative movement between the handle and the blade along the second direction, and a second position wherein the plunger is retracted from the second recess to permit said relative movement; and

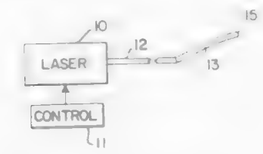
actuator means for moving the plunger selectively between the first and second positions thereof, thereby enabling selective coupling and uncoupling of the handle and the blade.

4,765,329
INTRAOCULAR LENS INSERTION INSTRUMENT
J. Stuart Cumming, Anaheim, and Robert F. Redwitz, Costa Mesa, both of Calif., assignors to Cumming, Redwitz & Wilson, Inc., Costa Mesa, Calif.
Filed Oct. 19, 1987, Ser. No. 109,904
Int. Cl.[4] A61B 17/00; A61F 2/16
U.S. Cl. 128—303 R 5 Claims



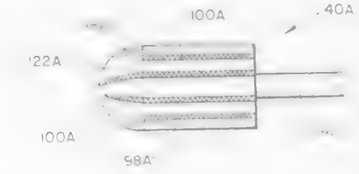
1. An instrument for inserting a lens through an incision into the eye of a patient, comprising: a tubular member having a central section of a particular diameter and a first end section of a reduced outer diameter with respect to said central section to be received in the incision, said first end section forming a shoulder with said central section to limit the distance that the first end section may be inserted into the incision, an elongated probe received into said tubular member through a second end section thereof, a handle mounted at one end of said probe, said handle having a diameter greater than the inner diameter of said central section of said tubular member to prevent the handle from entering said central section and thereby limiting the linear displacement of said probe into said tubular member, said probe being linearly movable in said handle, and a spring mounted in said handle and coupled to said probe to provide a spring-biss action to said probe so as to limit the maximum force that may be exerted on said probe by said handle as said probe is inserted into said tubular member.

4,765,330
METHOD AND APPARATUS FOR REMOVAL OF PLAQUE FROM BLOOD VESSELS
Bert Bach, 370 West End Ave., New York, N.Y. 10023
Filed Aug. 15, 1983, Ser. No. 523,262
Int. Cl.[4] A61B 17/36
U.S. Cl. 128—303.1 14 Claims



1. A surgical system for the application of heat within a patient's body, including a laser source of coherent heat which source is a gas laser operating in the infrared region and a conduction means connected to said laser source to conduct the laser heat, characterized in that the the conduction means is an elongated hollow and empty flexible bendable and resilient tube adapted to be inserted as a catheter into a body vessel and having an internal wall having a continuous and unbroken mirror surface which remains continuous and unbroken when the tube is bent to conduct the laser heat to a selected internal area of the body.

4,765,331
ELECTROSURGICAL DEVICE WITH TREATMENT ARC OF LESS THAN 360 DEGREES
Claude E. Petruzzi, Bronxville; Robert H. Quint, Jamaica, both of N.Y.; Frank D. D'Amelio, Naugatuck, Conn., and Dominick G. Esposito, Mamaroneck, N.Y., assignors to Circon Corporation, Santa Barbara, Calif.
Filed Feb. 10, 1987, Ser. No. 13,246
Int. Cl.[4] A61B 17/36
U.S. Cl. 128—303.14 34 Claims



1. An electrosurgical device for use in the treatment of tissue comprising:

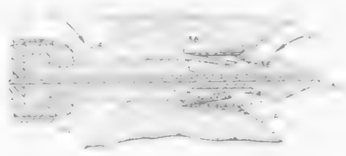
a probe body including:

an active member sufficiently energized to cauterize and/or dessicate tissue and/or coagulate blood having a peripheral surface extending between first and second ends and at least a pair of spaced, longitudinally extending, electrodes on said surface connected, respectively, to opposite poles of an alternating current source of electrical energy, said electrodes defining a limited active area for focusing its energy on only a restricted region of tissue adjacent thereto desired to be treated while leaving other regions of tissue unaffected, said electrodes being of suitable width and spacing for bipolar treatment and being mounted on said peripheral surface so as to cover only that part of said peripheral surface positioned within a defined arc of less than 360° having as its center the longitudinal axis of said active member; and

a non-active member having a contoured peripheral surface adjacent said active member

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4,765,332
PULLBACK ATHERECTOMY CATHETER SYSTEM
Robert E. Fischell, Silver Spring, Md., and Tim A. Fischell, Palo Alto, Calif., assignors to MedInnovations, Inc., Dayton, Md.
Filed Jul. 14, 1986, Ser. No. 885,139
Int. Cl.[4] A61B 17/32
U.S. Cl. 128—305 36 Claims



1. An atherectomy apparatus comprising:

a member having a distal portion adapted to be advanced through an obstructed arterial lumen, said member including,

a cylindrical cutting blade means having a cutting edge facing toward the proximal end of said apparatus for cutting obstructive material as said member is pulled back through said lumen; and,

a means for securing the cut material within a collection chamber that is integrally formed within said cutting blade

VOL 1093 ISS 4 AG 23 1988 UMI

means, whereby removed material is retained without the cooperation of a second member requiring motion relative to said cutting blade means, and wherein said means for securing cut material within said collection chamber comprises a shoulder portion positioned in cooperation with said cutting blade means to form therebetween a restricted entrance mouth to said collection chamber, so as to retain cut material in said collection chamber.

4,765,333

SURGICAL METHODS AND APPARATUS FOR BONE REMOVAL

Robert S. Bray, 411 Pinata Pl., Fullerton, Calif. 92635

Division of Ser. No. 498,093, May 25, 1983, Pat. No. 4,596,243.
This application Jun. 13, 1984, Ser. No. 620,062
Int. Cl.[4] A61F *17/32*
U.S. Cl. 128—305.1 5 Claims



1. Surgical apparatus for use in removing bone from an area of a given thickness comprising:

motor drive means providing a drive shaft rotating at a constant rotational speed; and

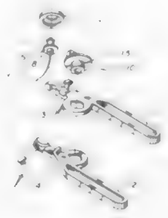
means driven by said drive means for cutting a substantially circular bone plug and for substantially slowing cutting at a depth just short of the thickness of the bone area to which said apparatus is applied.

4,765,334

SURGICAL DEVICE FOR PERFORMING THORACOSTOMIES

Sol Weiss, 17227 Queson Pl., Encino, Calif. 91304

Filed Jan. 12, 1987, Ser. No. 2,579
Int. Cl.[4] A61B *17/32, 17/34*
U.S. Cl. 128—305.3 8 Claims



1. Surgical apparatus for performing thoracostomies comprising:

a pair of upper and lower handle portions removably secured together, each of said handle portions having an elongated handle at one end and a planar extension portion at the other end, each of said extension portions having a generally semi-circular opening therethrough on one side thereof, said handle portions being independent of each other and adapted to abut against each other so that said handles extend in a direction substantially parallel to each other but spaced therefrom with said extension portions abutting against each other such that said semi-circular openings abut against each other with said opening forming a generally circular opening;

each of said handle portions having a flange intermediate said handle and said extension portion, each of said flanges having an opening therethrough, said last mentioned openings being adapted to coincide with each other to form a single opening through said flanges when said portions are abutted against each other as heretofore stated;

a key member removably mounted in said single opening, said key member and said openings in said flanges having key means therein keying said key member within said single opening so that said key member can quickly and easily non-resiliently lock said handle portions together or be removable therefrom upon rotation thereof to release said handle portions from engagement with each other, said key member and said key means comprising the sole means retaining said handle portions together;

a curved needle half secured to each extension portion extending downwardly from said semi-circular opening, each of said needle halves having an inner groove terminating at their terminal ends in sharp edges, each of said grooves being aligned with its respective semi-circular opening so that, when said handle portions abut against each other as heretofore stated, said needle halve form a generally circular channel communicating at one end with the exterior of said extension portions and at the other end with said sharp edges; and

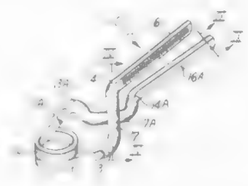
a sytlet having an elongated body terminating in a curved end disposed between said curved needle halves and generally conforming thereto.

4,765,335

ANEURYSM CLIP

Ferenc J. Schmidt, Bryn Mawr, Pa.; P. Kevin Maughan, Sanibel, Fla., and Jack J. Guy, Sunnyvale, Calif., assignors to Intermar, Inc., Upper Marlboro, Md.

Continuation-in-part of Ser. No. 26,266, Mar. 16, 1987, abandoned. This application May 6, 1987, Ser. No. 46,565
Int. Cl.[4] A61B *17/12*
U.S. Cl. 128—326 29 Claims



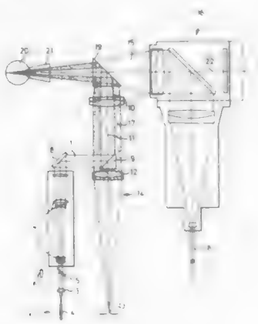
1. An aneurysm clip comprising two clamping arms formed on the respective free ends of an elongated continuous resilient member formed from tittanium-like material that is compatible with human tissue, and non-magnetic, said elongated resilient member being coiled in an intermediate section thereof to form coil spring means for normally urging the clamping arms together in a resilient manner, the elongated resilient member being further shaped to form two forearm sections extending outwardly and away from the coil spring means in the direction of the clamping arms with the forearm sections terminating in inwardly bent first elbow portions that support respective cross arm sections, the cross arm sections extend from the respective first elbow portions in mutually crossing and slidably engaging relationship with each other and terminate in second inwardly bent elbow portions that support the respective clamping arms of the aneurysm clip, at least one of said cross arm sections having a separately defined U-shaped bend therein of sufficient width and depth to slidably accommodate the remaining cross arm section, the depth of the U-shaped bend being at least equal to the thickness of the remaining cross arm section slidably supported within said U-shaped bend and the two cross arm sections having substantially the same cross-sectional area as the original starting material from which the clip is formed, and a straight wire-like retaining member likewise of human tissue compatible material secured lengthwise over said at least one cross arm section at each side of the U-shaped bend and bridging the U-shaped bend so as to lie in a plane spaced from and substantially parallel to the bottom of the U-shaped bend whereby the straight wire-like retaining member applies orthogonally directed force to the cross arm sections in the region of crossing to thereby urge the two cross arms and the respective clamping arms together in a direction at right angles to the plane of movement of the clamping arms.

4,765,336

SUPPLEMENT ARRANGEMENT FOR A SLIT-LAMP APPARATUS FOR TREATING THE EYE BY MEANS OF LASER RAYS

Erich Blaha, Essingen, and Hartmut Gärtner, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Jan. 16, 1987, Ser. No. 4,544
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1986, 8601287
Int. Cl.[4] A61B *17/36*
U.S. Cl. 128—395 6 Claims



1. Supplement arrangement for a slit-lamp apparatus which includes a slit projector defining an optical axis and a corneal microscope, the supplement arrangement comprising:

the slit projector having a collector lens and an objective lens both mounted on said optical axis in spaced relationship to each other so as to conjointly define a parallel projection beam path therebetween along which a beam having mutually parallel rays is transmitted;

a therapeutic laser beam arrangement including: a laser light source mounted adjacent said optical axis for generating a therapeutic laser beam; first deflection means for deflecting said laser beam into said projection beam path; second deflection means located downstream of said first deflection means and arranged on said optical axis and in said projection beam path for deflecting said laser beam toward said objective lens so as to be on a laser beam path coaxial with said projection beam path; and,

displacement means arranged on said optical axis downstream of said second deflection means for displacing said objective lens transversely with respect to said optical axis so as to simultaneously displace only said laser beam path and said projection beam path transversely to said optical axis.

4,765,337

METHOD OF IMPROVING EGG PRODUCTION IN POULTRY HENS

Michael Schonberg, New York, N.Y., assignor to Edward B. Hunter, Jericho, N.Y., a part interest

Continuation of Ser. No. 577,431, Feb. 6, 1984, Pat. No. 4,625,728, which is a continuation-in-part of Ser. No. 406,604, Aug. 9, 1982, abandoned. This application Jul. 28, 1986, Ser. No. [illegible]
Int. Cl.[4] A61N *5/06*
U.S. Cl. 128—395 8 Claims

1. A method for improving egg production in poultry hens comprising:

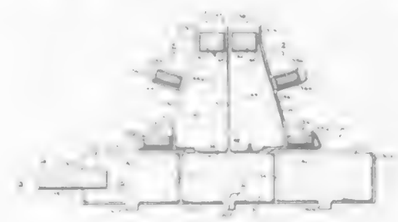
irradiating said hens with a first radiation comprising a near-red radiation within a wavelength band of 600 to 670 nanometers after said hens have attained proper body weight for sexual development to proceed; said near-red radiation being delivered to said hens at a rate of at least 10^{13} quanta/second/cm^2 or, if said near-red radiation is delivered at a rate of less than 10^{13} quanta/second/cm^2, said near-red radiation within a wavelength band of 600 to 670 nanometers comprising at least 75% of said first radiation.

4,765,338

REUSEABLE HEAT TRANSFER DEVICES FOR THE SCALP

Richard W. Turner, 3610 Calle Colina Roca, Alpine, Calif. 92001, and Vernon E. Stewart, 318 S. 4th St., Moberly, Mo. [illegible]

Filed Dec. 29, 1982, Ser. No. 454,413
Int. Cl.[4] A61F *7/00*
U.S. Cl. 128—402 4 Claims



1. A heat exchanging head piece for repeatedly cooling or heating substantially the entire scalp (hair bearing) area of the human head, comprising, in combination:

(1) an elongate, substantially rectangular head band portion adapted to be continuously and circumferentially wrapped around the human head, including the forehead, the temple-ear head side zones and the lower back portion of the cranial vault,

said head band portion having substantially parallel, spaced apart, opposed upper and lower edges and end edges, the latter positioned substantially at right angles to the former, said head band portion also having inner and outer faces with respect to the head of the user, as well as two free ends at the extremities thereof,

said head band portion including three elongate, axially series aligned, hollow cells of sealed, liquid tight construction, said cells each containing temperature affectable materials for heat exchange, one of said cells positioned in symmetrical opposition to the crown portion and being at least substantially the width thereof, the other two cells outboard of said first described cell being of substantially equal length to one another and each such being at least substantially free of any connection to the said crown portion,

(2) a crown portion for such head piece having a forward end and edge secured centrally to the substantial center of

VOL 1093 ISS 4 AG 23 1988 UMI

the upper edge of the head band portion, side edges extending rearwardly from the said forward edge securement and a free rear end and edge spaced rearwardly from and substantially parallel to said forward edge thereof, said crown portion also having inner and outer faces with respect to the head of the user,

said crown portion including two elongate, hollow cells of sealed, liquid-tight construction of substantially equal size and substantially congruent form, said cells each containing temperature effectable materials for heat exchange, said cells extending substantially parallel to one another and substantially at right angles to the forward connection of the crown portion to the head band portion,

(3) means releasably and repeatably engageable between the free ends of the said head band portion adapted to releasably and repeatably secure said free ends together, at least in close adjacency to one another, in adjustable head band size fashion, to form a continuous head band around the head of a human subject,

said means for securing the head portion end edges together comprising a first elongate length of removably engageable material fixed to the outer face of one end of said head band portions and a second elongate length of removably engageable material fixed in a portion of the length thereof to the inside face of the other end of said head band portion, with a further portion of the latter length thereof extending beyond said end, said first and second lengths removably engageable, one with the other,

(4) said head band portion being at least sufficiently long that the end edges thereof will at least substantially abut one another, when said head band portion is continuously and circumferentially wrapped around a human head,

(5) meansn adjacent the rear end of said crown portion, on the inner face thereof, adapted to releasably and repeatably secure the crown portion rear end to the outer face of said head band portion substantially 180° away from and opposed to the crown portion forward edge securement to the head band portion, in adjustable crown size fashion,

the said means at the rear end edge for the crown portion comprising a rearward tab extension of the crown portion of sufficient length and width that such extension is able to overlie, contact and engage a portion of the outer end face of each of the free end portions of the head band portion after the latter have been removably secured to one another,

the underside of said crown portion rearward tab extension and a portion of the outer end face of each of the head band end portions having means thereon for releasably engaging, one with the other,

(6) the width of said crown portion cells adjacent the connection of the crown portion to the head band portion being greater than the width of the center cell of the head band portion, and the width of said crown portion cells in the portions thereof spaced farthest away from the head band-crown connection being equal to a substantial portion of the width of the center cell of the head band portion, said crown portion cells not extending into said crown portion rearward tab extension,

the front connection of said crown portion to said head band portion being substantially the width of the center head band portion cell and in registry therewith,

(7) means for releasably and repeatably securing the side edges of the crown portion to opposed outer side faces of the head band portion, whereby to form, when: (a) the free ends of the head band portions are releasably secured together, (b) the rearward tab extension of the crown portion is releasably secured to the ends of the head band portion and (c) the side edges of the crown portion are releasably secured to the side faces of the head band portion, a reuseable, size adjustable, substantially continuous contact, scalp contacting head piece for substantially completely and uniformly heat exchanging substantially the entire hair bearing zone of the human scalp,

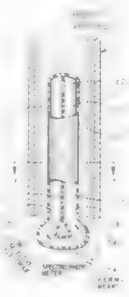
the means for securing the side edges of the crown portion to the opposed outer side faces of the head band portion comprising, first, two depending tabs on each of the side edges of the crown portion, said tabs each having removable engaging means on the inner faces thereof and being fixed at one end thereof to a side edge of the crown portion, one of said two tabs depending from the forward side edge of each respective crown portion edge and the other of said tabs depending from each said crown portion side edge at a position substantially intermediate the forward and rearward edges thereof and, second, lengths of removable engaging means fixed to the opposed outer side faces of the head band portion in the entire length of the outer cells thereof, the said depending tabs each being individually adapted to be releasably and adjustably engaged to a chosen portion of one of the outer side faces of the head band portion by the releasable engaging means thereon.

4,765,339

CLOSED LOOP DIALYSIS SYSTEM

Jeffrey S. Jones, Salem, Va., assignor to Solutech, Inc., Roanoke, Va.

Division of Ser. No. 870,407, Jun. 4, 1986, Pat. No. 4,726,381.
This application Jul. 29, 1987, Ser. No. 79,296
Int. Cl.[4] A61B 5/00
U.S. Cl. 128—632 6 Claims



1. A continuous closed-loop apparatus for equilibrating specified dialyzable components in a complex fluid for analysis comprising:

(1) a body portion including an elongated semipermeable tubular dialyzing membrane having a proximal end and a distal end, said body portion being separated into a first and second passageway by a dividing means extending the length of said body portion, said first and second passageways communicating with each other by means of an opening in said dividing means near said distal end of said elongated tubular membrane;

(2) a looped reservoir portion comprising a nondialyzable tubular membrane, said membrane having a first end and a second end, said first end being in direct communication with said first body portion passageway and said second end of said reservoir portion being in direct communication with said second body portion passageway thereby effecting a continuous closed loop passageway;

(3) membrane solution within said continuous closed loop passageway for receiving said specified dialyzable components from said complex fluid by equilibration;

(4) means for effecting membrane solution flow in a defined direction within said apparatus such that said membrane solution receives said specified dialyzable components in said body portion; and

(5) means associated with said reservoir portion for analyzing said dialyzable components.

4,765,340

APNEA DETECTOR

Takao Saknl, Habikino, and Kenji Hamaguri, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 2, 1986, Ser. No. 847,313
Claims priority, application Japan, Apr. 2, 1985, 60-69690
Int. Cl.[4] A61B 5/00
U.S. Cl. 128—633 8 Claims



1. An apnea detector comprising;

means for measuring oxygen saturation in blood to produce a measured oxygen saturation signal indicating the measured oxygen saturation;

means for storing a normal oxygen saturation of a normal condition to produce a normal oxygen saturation signal;

means for storing an increasing speed of oxygen saturation;

means for comparing the measured oxygen saturation signal with the normal oxygen saturation signal to produce a first detecting signal when the measured oxygen saturation is larger than the normal oxygen saturation stored;

means for calculating an increasing speed of oxygen saturation based on a plurality of the measured oxygen saturation signals to produce a second detecting signal when the calculated increasing speed of oxygen saturation is higher than the stored increasing speed of oxygen saturation; and

means for detecting recovery from apnea condition in accordance with the first and second detecting signals.

4,765,341

CARDIAC ELECTRODE WITH ATTACHMENT FIN

Morton M. Mower, Lutherville, Md., and Marlin S. Heilman, Gibsonia, Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Continuation of Ser. No. 276,066, Jun. 22, 1981, abandoned.
This application Aug. 25, 1983, Ser. No. 526,208
Int. Cl.[4] A61B 1/00
U.S. Cl. 128—785 20 Claims



1. An implantable cardioverting electrode assembly for placement proximate the heart and for connection to a suitable cardioverting system, the assembly comprising:

an elongated planar body divided into forward and rearward portions;

said forward portion including a flexible electrically conductive planar electrode for placement proximate the heart, said planar body occupying substantially the entire area of said forward portion;

said rearward portion defining a planar fin adjacent to and occupying the same plane as said planar electrode for providing an electrically insulated area of substantially the same width as the remainder of said planar body for suturing the electrode assembly to tissue adjacent the heart, said fin lengthening said planar body to increase the overall stiffness of said planar body;

said fin being of sufficient length as measured along the longitudinal axis of said elongated planar body to define an insulated area that may be removed as by cutting by the user to provide a universal planar body of varying length to accommodate hearts of different sizes; and

electrical conductor means arranged to electrically connect said electrode and said cardioverting system, said electrical conductor means not forming part of said fin.

4,765,342

TIMED DRIFT COMPENSATION FOR RATE VOLUME MONITOR

Robert Urman, Schaumberg; Alfred G. Brisson, Kildeer, and Christopher Nowacki, Arlington Heights, all of Ill., assignors to Trutek Research, Inc., Lake Zarich, Ill.

Filed Jul. 27, 1987, Ser. No. 77,747
Int. Cl.[4] A61B 5/08; G01L 19/04
U.S. Cl. 128—725 10 Claims



1. A drift compensating circuit for a rate volume monitor comprising a transducer for providing an electrical signal corresponding to an air pressure signal produced as a result of patient breathing and including an output terminal, a comparison circuit having a first input and a second input and an output, means connecting said output terminal to said first input, means producing a reference voltage and having an output, means connecting said reference voltage output to said second input, said reference voltage providing means including up/down counter means and a digital-to-analog converter controlled by said counter means, said converter having an output connected to said reference voltage output, means connecting said comparison circuit output to said converter means to count up or to count down in accordance with said comparison circuit output, and means connected to said counter means for rendering said counter means effective to count at predetermined intervals.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,343

APPARATUS FOR TRANSFERRING ELECTRICAL ENERGY TO AND FROM LIVING TISSUE

Henry S. Breaman, Cinnaminson, and Benjamin Jarmolow, Cherry Hill, both of N.J., assignors to Biosonics, Inc., Philadelphia, Pa.

Filed Jan. 29, 1985, Ser. No. 696,048
Int. Cl.[4] A61B 5/04
U.S. Cl. 128—639 17 Claims



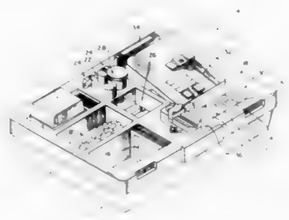
1. Apparatus for selectively transferring electrical energy to and from critical localities in living tissue for diagnostic purposes, comprising a glove of flexible fluid impervious elastomeric material, said material being sufficiently thin and flexible to afford to the wearer substantially unimpeded feel and manual dexterity so as to enable use of said glove for digital palpation while transferring energy to and from tissue, and a pair of electrodes, said electrodes comprising flexible layers of electrically conductive material affixed to the surface of a finger of said glove, said electrodes being spaced from each other and electrically unconnected to each other, and disposed at areas of the glove adapted to be beneath the distal portion of the finger of a wearer of said glove, thereby to facilitate simultaneous application of said electrodes by digital direction and pressure to a palpated locality of tissue, an electrical connector coupled to said glove and adapted to be electrically connected to electrical circuitry external to said glove, and a plurality of flexible electrical conductors coupled to said glove and electrically connecting said electrodes and said connector.

4,765,344

BLOOD TRANSFER ASSEMBLY

Larry J. Lape, Sugarland, Tex., assignor to Boehringer Mannheim Corporation, Indianapolis, Ind.

Continuation of Ser. No. 597,513, Apr. 6, 1984, Pat. No. 4,661,319. This application Oct. 6, 1986, Ser. No. 915,977
Int. Cl.[4] A61B 5/14; G01N 1/20
U.S. Cl. 128—770 10 Claims



1. Apparatus for forming a blood droplet of a controlled, generally uniform size from a finger which has been pricked to draw blood and for positioning said droplet for analysis of a medically significant component thereof, the apparatus comprising means providing a first surface across which blood may flow under the influence of gravity, the first surface including a first vertically lower edge terminating at a point, the first surface including a second vertically upper edge across which a finger may be drawn to deposit blood on the first surface and means providing a second surface onto which a droplet of blood may be deposited, the second surface disposed beneath the point to receive the droplet after it is formed, said droplet being formed from the blood as it flows across the first surface toward the point and, owing to gravity and the surface tension of the blood, develops at the point into the substantially uniformly sized droplet which falls into position on the second surface, the second surface comprising a reagent for reacting with a medically significant component of the blood to produce a visual indication of the concentration of the component in the blood.

4,765,345

MAGNETIC SENSOR FOR JAW TRACKING DEVICE

Fray Adib, Seattle, Wash., assignor to Myo-Tronics Research, Inc., Seattle, Wash.

Filed Feb. 18, 1987, Ser. No. 15,918
Int. Cl.[4] A61B 5/10
U.S. Cl. 128—777 6 Claims



1. A magnetic field sensor for use in a jaw tracking device to monitor motion of a patient's mandible, the sensor comprising:
- a Hall effect generator having first and second sensing faces disposed on opposite sides of the generator;
- a pair of flux concentrators, each flux concentrator comprising a strip of concentrator material formed into a U-shape with a pair of opposed, mutually parallel side members interconnected at one end by a cross member; and
- means for mounting the generator and flux concentrators such that the cross members are positioned adjacent and parallel to the respective sensing faces, and such that the side members extend away from one another along a direction normal to the sensing faces.

4,765,346

ASHTRAY ASSEMBLY

Gerald L. Simin, Holly, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1986, Ser. No. 933,878
Int. Cl.[4] A24F 19/06
U.S. Cl. 131—231 7 Claims

1. An ashtray assembly for a vehicle comprising, in combination, a support having a base wall and side walls, means pivotally mounting the side walls of the support to corresponding side walls of an opening of the vehicle for movement of the support between a non-operative position within the confines of the vehicle opening and an operative position outwardly of the opening, an ash receptacle having upper and lower open walls, means pivotally mounting the receptacle to the side walls of the support for movement of the receptacle between a closed position within the support wherein the base wall of the support closes the lower wall of the receptacle and cooperates therewith in providing an ashtray when the support is in operative position, and a dump position wherein the receptacle is pivoted outwardly of the support when the support is in operative position to open the lower wall of the receptacle and permit dumping of ashes from the ashtray, and means releasably maintaining the receptacle in closed position for movement of the receptacle with the support between non-operative and operative positions.

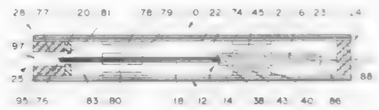


4,765,347

AEROSOL FLAVOR DELIVERY SYSTEM

Andrew J. Sensabaugh, Jr., Winston-Salem, and Henry T. Ridings, Lewisville, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed May 9, 1986, Ser. No. 861,178
Int. Cl.[4] A24D 1/00, 1/04, 47/00
U.S. Cl. 131—273 3 Claims



1. A flavor delivery article comprising:
(a) an outer container providing a pathway for airflow therethrough;
(b) an inner container disposed within the outer container and containing a liquid, the inner container having a delivery means having an output region for output of the liquid;
(c) an airflow acceleration means located near the output region of the delivery means; and
(d) a mouthend region; wherein the airflow acceleration means is a baffle in the form of a disk having an aperture therethrough; wherein the output region of the delivery means and the airflow acceleration means are arranged in a relationship such that puff induced airflow through the outer container experiences a pressure drop adjacent the output region of the delivery means relative to the pressure experienced by the liquid contained within the inner container, which pressure drop is sufficient to disperse liquid from the output region of the delivery means into the airflow to form an aerosol in the mouthend region; and wherein the output end of the delivery means extends through the aperture slightly beyond the output end surface of the disk.

4,765,348

NON-COMBUSTIBLE SIMULATED CIGARETTE DEVICE

Rufus H. Honeycutt, Macon, Ga., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 12, 1986, Ser. No. 940,887
Int. Cl.[4] A24D 1/02
U.S. Cl. 131—273 6 Claims



1. A non-combustible simulated cigarette inhaler device comprising:
- a hollow cylindrical tube having an open air inlet end and an opposed open air outlet end;
- a first element of air permeable meaterial located within the tube across a segment of the transverse cross-sectional area of the tube;
- a volatilizable nicotine free base material impregnating the first element;
- a second element of air permeable material located within the tube next to the first element substantially across the remaining segment of the transverse cross-sectional area of the tube; and,
- a volatilizable acid impregnating the second element which acid is reactive with the nicotine free base to form a salt having a pH in generally the range of approximately 5 to approximately 7.

4,765,349

SYSTEM FOR CONTROLLING LAMINA SIZE IN A RAW MATERIAL TREATMENT PROCESS FOR TOBACCO LEAVES

Kenichi Kagawa, Hiratsuka, Japan, assignor to Japan Tobacco & Salt Public Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 633,237, Jul. 23, 1984, abandoned. This application Oct. 27, 1986, Ser. No. 922,806
Claims priority, application Japan, Jul. 21, 1983, 58-131980
Int. Cl.[4] A24B 3/18
U.S. Cl. 131—327 1 Claim



1. In a raw material treatment process for tobacco arranged by cascading a plurality of rib-removing processes where tobacco leaves are separated into laminae and ribs by a plurality of separating machines after the leaves are given a water content and temperature by a humidity controller and the laminae are threshold from the leaves by a plurality of rotary rib-removing machines having variable physical impact force to the leaves by changing the revolution of the grid or thresh-

VOL 1093 ISS 4 AUG 23 1988 UMI

ing gear, a method for controlling a raw material treatment process comprising the steps of (1) setting a target range of ratios of an amount of laminae thresh separated by a first rib-removing process to an amount of laminae thresh separated by all rib-removing processes, said range having predetermined upper and lower limits; (2) setting a set of preferable operating conditions each including levels concerning the moisture in the humidity controller, the temperature in the humidity controller and the revolution of a first rotary rib-removing machine for which preferable values of the levels are determined from a past experience of operation, and computing further a set of operating conditions above said preferable operating conditions by modifying said revolution of the first rotary rib-removing machine; (3) threshing the tobacco leaves by having all rib-removing processes operated at each set of operating conditions to produce laminae separated from the tobacco leaves, and weighing the amount of laminae separated by said all rib-removing processes and the amount of laminae separated by the first rib-removing process; (4) computing the ratio of the amount of the laminae separated by the first rib-removing process to the amount of the laminae separated by all rib-removing processes; (5) dropping a revolution of the first rotary rib-removing machine which yields the most distant threshing ratio from said target range of ratios if said ratio of the first rib-removing process is outside the predetermined upper and lower limits upon judgement by comparing the ratio corresponding to each set of operating conditions with said target range of ratios, and computing a new value of the revolution which is to be newly set for the first rotary rib-removing machine through a predetermined mathematical operation and outputting said new value of revolution to the first rotary rib-removing machine; (6) threshing the tobacco leaves by having all rib-removing processes operated at a set of operating conditions with said new value of revolution of the first rotary rib-removing machine to produce the laminae separated from tobacco leaves, and weighing the amount of said laminae separated by all rib-removing processes and the amount of said laminae separated by the first rib-removing process; (7) computing the ratio of the amount of laminae separated by the first rib-removing process and the amount of laminae separated by all rib-removing processes at the set of operating conditions with said new value of revolution of the first rotary rib-removing machine; (8) dropping the revolution of the first rotary rib-removing machine which yields the most distant ratio from said target range of ratios if said ratio is outside the predetermined upper and lower limits upon judgment by comparing the ratio corresponding to the set of operating conditions with the new value of revolution of the first rotary rib-removing machine and the previous one remaining set of operating conditions and computing further the new value of revolution which is to be newly set for the first rotary rib-removing machine through the predetermined mathematical operation and outputting said further new value of revolution to the first rotary rib-removing machine; and (9) repeating the steps (6) through (7) in sequence until either the ratio at one set of operating conditions with the further new value of revolution of the first rotary rib-removing machine or the ratio at the previous one remaining set of operating conditions is within the target range of ratios of the amount of the laminae thresh separated by the first rib-removing process to the amount of the laminae thresh separated by all rib-removing processes.

4,765,350

ARTIFICIAL FINGERNAIL SCULPTURING SLIPPER DEVICE

Mary R. Moore, 7186 Foat Ave., Riverside, Calif. 92509

Filed Apr. 4, 1986, Ser. No. 848,220
Int. Cl.[4] A45D *29/00*
U.S. Cl. 132—88.5 10 Claims

1. A device for shaping sculptured nails comprising:
an elongated leg member; and
a concave oblong foot portion contiguous with said leg member at one end of said leg member, said concave oblong foot portion having a working surface shaped to conform to the shape of a fingernail and having a major axis extending in substantially the same direction as said leg member and having a first cross-sectional arc substantially perpendicular to said major axis and a second cross-sectional arc substantially parallel to said major axis, said first cross-sectional arc having a smaller diameter than said second cross-sectional arc.



4,765,351

DUAL TEMPERATURE WATER HEATER

Kenneth B. Clary, 5635 Whitner Dr., NW., Atlanta, Ga. 30327

Filed Aug. 23, 1985, Ser. No. 768,663
Int. Cl.[4] B08B *3/10*
U.S. Cl. 134—56 D 5 Claims



1. A water heater for automatically controlling the temperature of water, comprising:
a. means for storing water having a means for heating water affixed thereto;
b. said means for heating water being adapted to heat water in said storage means to a predetermined first temperature, said predetermined first temperature being greater than ambient temperature;
c. thermostat means for controlling said means for heating water and for maintaining the water in said storing means at said predetermined first temperature in response to a first predetermined setting of said thermostat means; and
d. means for changing the setting of said thermostat to a second predetermined setting which is higher than said first predetermined setting so as to heat the water in said storing means to a predetermined second temperature higher than said predetermined first temperature, said means for changing the setting of said thermostat being responsive to a predetermined external condition.

4,765,352

PORTABLE ISOLATION ENCLOSURE FOR USE IN CLEANING CONTAMINATED ENVIRONMENTS

Jerome F. Strieter, c/o Southern Insulation, Inc., 2313 51st Pl., Hyattsville, Md. 20781

Filed Jul. 17, 1987, Ser. No. 75,827
Int. Cl.[4] B08B *7/04*
U.S. Cl. 134—99 20 Claims



1. A portable isolation enclosure, primarily useful for cleaning contaminated environments, particularly for removing ceiling tile or other asbestos-containing elevated structures, comprising:
an open top booth having a bottom wall and at least one vertically extending side wall to form a closed walled structure sufficiently large to comfortably enclose a worker;
a height adjustable and open top ceiling-contacting plenum above and in open communication with said open top booth and vertically slidably connected thereto;
plenum position locking means, integral with said booth, for locking said plenum at various predetermined elevations relative to said booth;
telescoping means for enclosing and sealing a space formed between said plenum and said booth regardless of the elevation of said plenum relative to said booth;
a waste disposal means for discharging asbestos from said booth, said waste disposal means being in communication with said side wall;
a first vacuum and filtering means for continuously evacuating the interior of said booth, for filtering asbestos particles form the atmosphere within said booth, and for discharging clean air to the exterior of said booth; and
a second vacuum and filtering means having a movable nozzle for vacuuming the interior of said booth including said bottom wall, the area adjacent said waste disposal means and a worker within said booth.

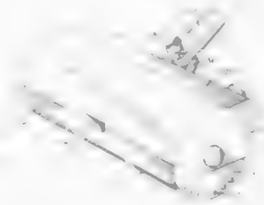
4,765,353

PAINT ROLLER SHIELD WITH INTEGRAL WASHING SPRAY GUARD

Clark J. Rhoades, 181 Tweed Blvd., Nyack, N.Y. 10960

Filed Nov. 6, 1987, Ser. No. 118,019
Int. Cl.[4] B08R *3/02*
U.S. Cl. 134—138 12 Claims

1. A shield for a paint roller, comprising:
(a) a splatter guard partially surrounding the surface and ends of said paint roller;
(b) means for rotatably mounting said paint roller within said splatter guard;
(c) means integral with said splatter guard to permit washing said paint roller while said paint roller is mounted within said splatter guard; and
(d) spray shield means cooperating with said splatter guard and movable between first and second positions; whereby,



when said spray shield means is in said first position, said spray shield means contains watery paint spray while said paint roller is being washed, and when said spray shield means is in said second position, said paint roller may used for painting.

4,765,354

PAINT ROLLER CLEANER STRUCTURE

Stephen J. Thatcher, 2727 W. 1800 South, Logan, Cache County, and Dixon L. Allen, 58 N. 300 West, Smithfield, Cache County, both of Utah 84335

Filed Sep. 25, 1987, Ser. No. 100,836
Int. Cl.[4] B08B *3/04*
U.S. Cl. 134—182 15 Claims



1. Paint roller cleaner structure including, in combination, a container with a longitudinal axis and having a closed end and provided with a solvent inlet port and also an open end defining a peripheral edge, said container having a detent locking slot communicating with said edge, said detent locking slot having a locking portion essentially transverse to said axis and being constructed and arranged for locking the handle portion of an external paint applicator provided such handle portion by the mere cooperation of said handle portion with said slot, whereby to clean within said container a paint roller mounted to said applicator.

4,765,355

WHEELED WALKING DEVICE

Charles C. Kent, 2409 Waneta Dr., Sarasota, Fla. 33581

Filed Sep. 26, 1986, Ser. No. 912,354
Int. Cl.[4] A61H *3/00*
U.S. Cl. 135—67 7 Claims

1. A wheeled walking aid comprising:
a carriage frame having a first and a second side bar with a transverse bar interconnecting said first and second side bars in a torsionally rigid manner;
each said first and second side bars of said carriage frame having a proximal and a distal end;
a first and a second post with each said first and second posts including a first and a second end with each said second end of each said first and second posts being securably

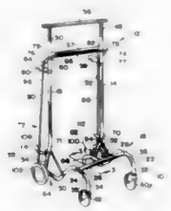
VOL 1093 ISS 4 AUG 23 1988 UMI

positioned at each said proximal end of each said first and second side bars, respectively, such that in use said first and second side bars do not present foot-entangling structure and said first and second posts extend substantially vertically relative to said carriage frame in a parallel and spaced manner;

a first crossbar securely attaching each said first end of said first and second post thereby interconnecting said first and second post and providing an arm rest surface;

a first and a second ground engaging wheel rotatably mounted at each said second end of each said first and second post, respectively;

each said first and second side bars further include a downwardly and rearwardly extending portion to impair rotation of the wheeled walking aid relative to said first and second ground engaging wheels when the walker device is pivoted back enabling said downwardly rearward extending portion of said first and second side bar to frictionally engage the ground thereby preventing the walker device from moving;



a third and a fourth ground engaging caster wheel rotatably mounted at each said distal end of said first and second side bars to enable the wheeled walking device to be steerable in a horizontal plane along the ground;

each said distal end of each said first and second side bars being downwardly concavely shaped with a terminal portion to enable said third and fourth rotatably mounted castor wheels to be mounted at each said terminal portion, respectively, to further maintain said ground engaging wheel against the ground;

each said first and second posts extending upwardly in a slightly forward direction before bending to a vertically upward direction relative to said carriage frame such that in use the force pushing the walker device enhances the contact with the ground of each said third and fourth castor wheels positioned at each said distal end of said first and second side bars, respectively; and

means for directly restraining rotation of at least one of said ground engaging wheels to enable in use a person to walk, slow down or stop without the need for further assistance.

4,765,356

METHOD AND APPARATUS FOR MIXING FLUIDS

John E. Hallberg, 517 Pine Gate Rd., Peachtree City, Ga. 30269

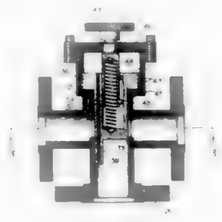
Filed Aug. 10, 1987, Ser. No. 83,159
Int. Cl.[4] G05D *11/03*
U.S. Cl. 137—7 16 Claims

15. The process of mixing fluids using a piston assembly disposed within a housing, the housing having at least two inlets and a mixing chamber, comprising:

(a) discharging fluids from the inlets into the mixing chamber for producing mixed fluids in said mixing chamber;

(b) rotating the piston assembly to dispose a portion of the piston assembly over one or both of said inlets for regulating the ratio of the respective fluids discharged to said mixing chamber;

(c) adjusting the axial position of the piston assembly by applying presure of one fluid against said piston assembly to move said piston assembly in one axial direction and applying the pressure of the mixed fluids against said piston assembly to move said piston assembly in the other



axial direction to thereby regulate the quantity of the fluids delivered to the mixing chamber; and

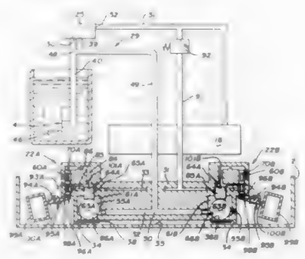
(d) discharging the mixed fluids from the mixing chamber.

4,765,357

PILOT OPERATED FLOW CONTROL VALVE FOR HYDRAULIC SYSTEMS

Marvin J. Malik, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1987, Ser. No. 83,467
Int. Cl.[4] F16K *31/34*
U.S. Cl. 137—195 1 Claim



1. In a system for selectively admitting hydraulic fluid while denying admission of air, a pickup head assembly, said pickup head assembly comprising: an inlet chamber accessible through an inlet port; an inlet valve element movably received within said inlet chamber selectively to open and close said inlet port; an inlet valve piston chamber; an inlet valve piston movable within said inlet valve piston chamber to engage said inlet valve element and selectively to bias said inlet valve element toward said inlet port; a pilot chamber; a spool valve element having first and second ends; first and second rims extending radially of said spool valve element, one at each end thereof; a piston head presented axially from said first rim, and a contacting surface presented axially from said second rim: a central ridge medially of said first and second rims, said central ridge also extending radially of said spool element; said first and second rims as well as said central ridge slidably engaging said pilot chamber to permit axial movement of said spool valve element therein; a first, circumferential recess disposed between said first rim and said central ridge, and a second, circumferential recess disposed between said second rim and said central ridge; float means to sense the level of hydraulic fluid exteriorly of said pickup head assembly; means engaging said contact surface on the spool valve element to move said spool valve element axially in response to the level of the hydraulic fluid sensed by said float means; a source of pressurized actuating fluid communicating with said pilot chamber; a vent communicating between said pilot chamber and the ambient atmosphere exterior of said pickup head assembly; first and second

passages communicating between said pilot chamber and said inlet valve piston chamber; said first passage communicating with that portion of said pilot chamber against which said spool valve piston head operates; said second passage communicating with that portion of said pilot chamber which permits the selected axial disposition of said spool valve element to effect communication between said inlet valve piston chamber and said vent through said first recess; said second passage also communicating with that portion of said pilot chamber which permits the selected axial disposition of said spool valve element to effect communication between said inlet valve piston chamber and said source of pressurized actuating fluid through said second recess.

4,765,358

INFLATION VALVE FOR A DUAL CHAMBER TIRE

John M. Cady, Munroe Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 903,874, Sep. 2, 1986, abandoned, which is a division of Ser. No. 856,090, Apr. 28, 1986, abandoned. This application May 22, 1987, Ser. No. 53,195
Int. Cl.[4] F16K *15/20*
U.S. Cl. 137—223 3 Claims



1. In a tire assembly having a dual chamber pneumatic tire mounted upon a rim, said dual chamber pneumatic tire having an inner tire forming a first inflation chamber and an outer tire forming a second inflation chamber with the inner tire; a pneumatic valve comprising:

a sleeve, carried by said rim and having a first end, body and a second end, the second end carried only by said inner tire, said sleeve defining a stepped bore comprising a smaller diameter portion extending from said first end to a larger diameter portion which in turn extends to an opening in the second end which communicates directly with said first inflation chamber, and said body having an opening located between said rim and said inner tube communicating with said second inflation chamber and an air passage extending radially from said larger diameter portion to said body opening;

a hollow valve stem, disposed within and extending from said stepped bore, capable of slidable and rotational movement therein from a first to a second portion, having a blind-bore therein and an air passageway therein for connecting pneumatically the bore of the hollow valve stem with the larger diameter portion of the stepped-bore of said sleeve;

a valve core means disposed within an open end of said hollow valve stem for controlling the passage of air to said hollow valve stem;

a first seal means attached to another end of said hollow valve stem for mating with said opening in the second end of said sleeve and thereby preventing air passage from said stepped bore to said first inflation chamber when said hollow valve stem is in said first portion and axially disposed a predetermined distance from said opening in the second end of said sleeve when said hollow valve stem is in said second position;

a locking means operable between the hollow valve stem and the sleeve for holding the stem selectively in one of the two positions;

wherein when said hollow valve stem is in said first position the first and second inflation chambers are pneumatically isolated from one another and the air passageway is in pneumatic communication only with the opening in the body of the sleeve and said second inflation chamber; and

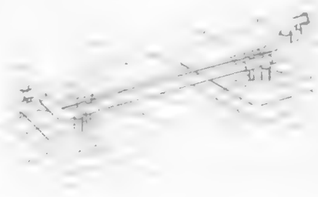
wherein when said hollow valve stem is in said second position the air passage way is in pneumatic communication with both openings in said sleeve and said both inflation chambers.

4,765,359

FILLING MANIFOLD FOR PLURAL FUEL TANKS

Jonathan P. Burnett, 4881 Sunset Ave., La Crescenta, Calif. 91214

Filed Apr. 23, 1987, Ser. No. 41,540
Int. Cl.[4] B65D *25/00*
U.S. Cl. 137—255 8 Claims



1. In a vehicle driven by a liquid fuel-burning engine, said vehicle having a fuel tank with a filling opening, and a filling zone at the periphery of said vehicle; the improvement comprising an additional, separate tank having a filling opening, for additional fuel, installed on said vehicle, a filling neck for said tanks terminating in said zone, a first pipe extending from said neck to a position adjacent said filling opening of said first mentioned tank, a liquid conducting means between said position and said last mentioned filling opening, an intermediate pipe continuing said first pipe to the filling opening of said additional tank, all of the pipes, filling openings and the filling neck being in open communication and arranged for gravity filling of both tanks during a single continuous filling operation, and a vent assembly comprising a vent opening in the top of each tank, a connecting pipe connected to each vent opening, and a pipe connecting said connecting pipe to the interior of said filling neck, said vent assembly thus being in open communication with said tanks at their upper portions and with the atmosphere at the time of filling said tanks.

4,765,360

WATER HEATER LEAK COLLECTOR

Willard J. Baird, Box 54, Broadview, Mont. 59015

Filed Aug. 14, 1987, Ser. No. 85,158
Int. Cl.[4] F24H *9/08, 9/16*
U.S. Cl. 137—312 8 Claims

1. In a water leak collecting apparatus for appliances such as a water heater or the like and adapted to be mounted atop an underlying support surface, the improvement comprising:

a collector member including a base having a centrally disposed opening, a peripheral wall bounding said base and extending upwardly therefrom, inclined upper and lower faces on said base extending downwardly and inwardly from said peripheral wall toward said opening,

a plurality of separate unitary spaced apart support elements extending through said base and spaced from said peripheral wall, each said support element including an upper surface disposed above said base inclined upper face and

VOL 1093 ISS 4 AUG 23 1988 UMI

an integral lower surface disposed in a plane beneath said base inclined lower face, whereby

following disposition of said plurality of support element lower surfaces upon an underlying support surface, an



appliance disposed atop said support element upper surfaces is fully and directly supported by engagement of said support elements upon the underlying surface without said base being supported by its underlying support surface.

4,765,361

PORTED GATE VALVE

Walter A. Clifford, 906 Golf View, Tampa, Fla. 33629

Filed Jun. 29, 1987, Ser. No. 67,288
Int. Cl.[4] F16K *3/02, 31/122, 43/00*
U.S. Cl. 137—315 3 Claims



2. A gate valve assembly comprising;

a gate plate,

a housing including two parallel housing plates with each housing plate having an aperture extending therethrough, spacer means securing said housing plates together in face to face relation with their apertures in alignment about a central axis and defining a chamber therebetween, the housing also including two elastomeric annular sleeves with each having an axially interior sealing projection lining an aperture and extending into the chamber a predetermined distance to define an annular space between the sealing projections and with each sleeve also having an axially exterior washer-shaped gasket positioned on an axially exterior face of a housing plate and extending radially outwardly from its associated aperture, the sleeves also having reinforcing rings formed into the elastomeric material, the rigid reinforcing rings having first portions extending radially with respect to the central axis adjacent to the interior faces of the housing plates, second portions extending generally axially with respect to the central axis along the entire length of the apertures defined by the housing plates, and third portions extending generally radially with respect to the central axis adjacent to the washer-shaped gaskets and along the exterior faces of the housing plates for deforming only a small portion of the sealing projections into sealing engagement with said gate plate and means for coupling each washer-shaped gasket to an exterior face of a housing plate thus allowing for the replacement of a sleeve without the disassembly the housing plates or associated mechanisms;

said gate plate being formed with a first imperforate section and a second section having an aperture and reciprocable within the chamber in sliding contact with the axial interior ends of the sealing projections between an open position wherein the aperture of the gate plate is located in axially alignment with the apertures of the housing plates to allow fluid flow through the passage and a closed position wherein the imperforate portion of the gate plate is located between the apertures of the housing plates to preclude fluid flow through the passage, said gate plate having edges all of which are not formed as knives; and

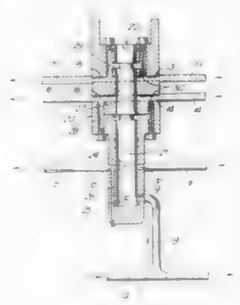
an operator controlled actuator including an actuator cylinder and a selectively reciprocable rod to selectively reciprocate the gate plate between the open and closed positions, the actuator also including support means to position the actuator cylinder and rod in operative proximate to the gate plate and housing and further including means for coupling the gate plate and rod during operation and use and for uncoupling the gate plate and rod to allow removal of the gate plate from the end of the housing plates remote from the actuator without disassembly of the housing plates or associated mechanisms with the sealing projections being spaced from each other even when the gate plate is removed from the housing.

4,765,362

ANTI-THEFT SYSTEM FOR VEHICLES

Yehuda Baruch, 12, Kaplansky Street, Rishon Le'Zion, Israel

Filed Mar. 27, 1987, Ser. No. 31,945
Claims priority, application Israel, Apr. 2, 1986, 78404; Feb. 17, 1987, 81600
Int. Cl.[4] F16K *35/00*
U.S. Cl. 137—384.2 8 Claims



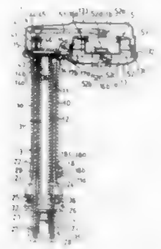
1. A system for installation in mechanized vehicles with an hydraulic brake system for preventing unauthorized operation of such vehicles including a valve of a special construction which comprises a housing with at least two inlet ports and two outlet ports for hydraulic fluid and an inner core member which is movable within the housing between a locked position and an unlocked position and is provided with bores arranged to correspond with said ports in said housing forming a passage, hydraulic fluid pipes connected to said ports for flowing hydraulic fluid through said bores in said inner core member, said valve further comprises at least one by-pass passage provided with a one way valve connected to one of said bores for bypassing hydraulic fluid through said inner core member from passage between said ports when said inner core member is in the locked position, said inner core member further comprises an extension provided with two said bores perpendicular to each other, and said inner core member arranged to be connected to a key operated lock.

4,765,363

INTAKE VALVE FOR TOILET TANK

Ou Pi-Yu, No. 9, Alley 2, Lane 247, Kuang-Chou Road, Tainan City, Taiwan

Filed Aug. 27, 1986, Ser. No. 900,699
Int. Cl.[4] A16K *31/34*
U.S. Cl. 137—414 5 Claims



1. A floatless intake valve for toilet tanks, comprising:

a water inlet pipe including an outwardly extending flange disposed adjacent a lower end thereof, an outer periphery of said inlet pipe disposed above said flange being of saw tooth configuration to define a plurality of vertically spaced annular teeth, a portion of said inlet pipe disposed below said flange being threaded, and a water discharge hole formed in said inlet pipe above said flange,

a valve body including a dual sleeve tubular member comprised of inner and outer coaxially arranged pipes, the upper ends of which being communicable with one another so that water traveling upwardly through said inner pipe may enter the upper end of said outer pipe and flow downwardly along said outer pipe and through said water discharge hole, said inlet pipe being insertable into said outer pipe, lock means extending through said outer pipe and into engagement with one of said teeth to retain said inlet pipe in a selected vertical position within said outer pipe, a disk portion extending transversely outwardly from an upper end of said tubular member, and a cover member detachably mounted on said disk portion to form therewith a space,

valve means disposed in said space above said tubular member and including a hollow valve block defining a diaphragm valve chamber at a lower end thereof and a release valve chamber at an upper end thereof, a diaphragm valve disposed in said diaphragm valve chamber and movable between an open position communicating said inner pipe with said outer pipe and a closed position blocking such communication, a release valve disposed in said release valve chamber and movable to open a hole in said block for exposing an upper side of said diaphragm valve to atmospheric pressure,

a valve control device disposed in said space and including a lever pivotably connected at one end to said valve means by a first pivot, a cylinder pivotably connected to another end of said lever by a second pivot, and an elastic cap connected to said cylinder and forming a downwardly opening compartment which is communicable with a toilet tank whereby said cap expands as the water level in the tank approaches an uppermost limit, said lever arranged for pivoting upwardly about said first pivot in response to expansion of said cap and pivoting downwardly about said second pivot in response to contraction of said cap, said lever operably arranged to actuate said release valve when said lever pivots downwardly, to expose an upper side of said diaphragm valve to atmospheric pressure, and

a control pipe insertable into said inner pipe in a water-tight manner, a check valve disposed in a lower end of said central pipe, an upper open end of said control pipe opposing said diaphragm valve such that water traveling upwardly through said central pipe impinges upon said diaphragm valve to open the latter when the upper side of said diaphragm valve is exposed to atmospheric pressure.

4,765,364

PRESSURE ACTIVATED VALVE FOR SANITARY SYSTEMS

Mario A. Arcari, Chicago, Ill., assignor to Manager Systems Incorporated, Riverwoods, Ill.

Filed Nov. 16, 1987, Ser. No. 121,062
Int. Cl.[4] F16K *15/06*
U.S. Cl. 137—536 11 Claims



1. An in-line pressure activated valve apparatus for integration into sanitary fluid conveyance systems for alternatively blocking and releasing the flow of said fluid therethrough, relative to the level of fluid pressure within said system, said apparatus comprising:

substantially cylindrical housing means having a first end at which said fluid is introduced through first aperture means and a second opposite end having second aperture means at which said fluid is alternatively blocked and released,

said first end being operably attached to first incoming conduit means and said second end being operably attached to second outgoing conduit means, with said cylindrical housing means being positioned wholly axially and in-line between said first and said second conduit means,

said cylindrical housing means further comprising internal fluid passage means, about the longitudinal axis of said cylindrical housing means, for permitting said fluid to flow between said first and second opposite ends of said cylindrical housing means,

said cylindrical housing means further comprising substantially concentrically positioned outwardly protruding valve attachment means operably secured to said first end of said cylindrical housing means for operable positioning within a portion of said first incoming conduit means,

valve means operably and springedly attached at said valve attachment means for reciprocation within and through said cylindrical housing means,

said valve means comprising a valve stem member having a valve head at said first incoming end and a valve closure at said second outgoing end, opposite said first end, as well as spring biasing means operably interposed between said valve means and said cylindrical housing means, to enable biased reciprocation of said valve stem member to, in turn, seat and unseat said valve closure within said second aperture means, at said second end of said cylindrical housing means, to alternatively restrict and release, respectively, the flow of said fluid passing through said internal fluid passage means of said cylindrical housing means,

said spring biasing means being operably interposed between said valve attachment means and said valve stem valve head,

VOL 1093 ISS 4 AG 23 1988 UMI

said level of fluid pressure serving to bear against said valve closure to overcome and compress said spring biasing means to unseat said valve closure from its seated position upon attaining a pre-determined pressure to, in turn, release said fluid from said second aperture at said second end of said cylindrical housing means,

said spring biasing means co-operating with said valve closure to seat same against said second aperture to block the flow of said fluid through said internal fluid passage means of said cylindrical housing means until said spring biasing means is overcome by said pre-determined pressure of said fluid therewithin said cylindrical housing means,

said spring biasing means further being longitudinally positioned axially and in-line with said cylindrical housing means, and located upstream of said cylindrical housing means within said first incoming conduit means,

sealed secondary housing means operably and sealably attached to and about said outwardly protruding valve attachment means for isolating said spring biasing means, said valve head, and said valve attachment means from undesired contact with said fluid passing thereabout,

said secondary housing means comprising a substantially fluid-dynamic shaped member to minimize resistence to the flow of said fluid passing from said first incoming conduit means through and into said pressure activated valve apparatus,

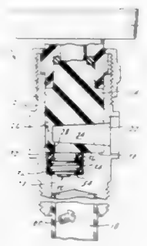
said secondary housing means further being fixedly sealed, yet removably attachable to the outer periphery of said valve attachment means to enable facilitated access to said spring biasing means and said valve head for maintenance and replacement of same.

4,765,365

FAUCET SPRING

R. Douglas Roland, Zionsville, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.

Filed Aug. 10, 1987, Ser. No. 83,248
Int. Cl.[4] F16K *51/00*
U.S. Cl. 137—550 9 Claims



1. In a faucet valve assembly having a valve body with a main bore and an inlet passageway leading from a supply of water under pressure to the main bore, a valving member movably disposed in the bore of the valve body and having a valving surface, selectively operable drive means for moving the valving member within the valve body relative to the inlet passageway, and a tubular seal element in the inlet passageway of the valve body, the improvement comprising:

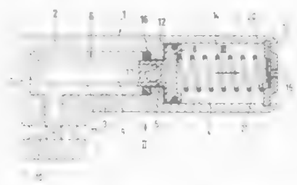
a faucet spring disposed in the inlet passageway for biasing the seal element agains the valving surface of the valving member, said faucet spring having a plurality of helical coils forming a central flow passageway and a lower terminal end forming an integral extension of said helical coils of said coil spring, said lower terminal extension of said coil spring extending into said central flow passageway to prevent debris from traveling into said central flow passageway of said spring whereby such debris is prevented from traveling through the inlet passageway of the valve body in conjunction with the water flowing through said spring and seal member to the valving member.

4,765,366

TEMPERATURE COMPENSATED CONTROL VALVE FOR AUTOMATIC TRANSMISSIONS

Vladimir Premiski; Claudia Premiski, both of BAM-Willerscheid, and Winfried Schultz, Pulheim, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 24, 1987, Ser. No. 100,497
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1986, 3633836
Int. Cl.[4] F16K *47/00*
U.S. Cl. 137—593 7 Claims



1. A temperature compensated control valve for an automatic transmission control comprising a valve chamber, a valve spool in said chamber, said spool having a piston that cooperates with said valve chamber to define fluid pressure chambers with fluid on each side of said piston;

inlet and outlet fluid delivery passages communicating with said valve chamber on one side of said piston, said inlet passage being adapted to be connected to a pressure source and said outlet passage being adapted to be connected to pressure actuatable parts of said transmission control, said piston being movable in said valve chamber as pressure in said inlet and outlet passages increases; and

a flow control orifice in said valve chamber on the other side of said piston, said orifice being formed by thermal sensitive, relatively movable parts whereby the effective size of said orifice is reduced upon an increase in temperature of said fluid.

4,765,367

VALVE ASSEMBLY

Mark E. Scott, 117 Possum Hollow Rd., Wallingford, Pa. 19086

Filed Jul. 3, 1986, Ser. No. 881,863
Int. Cl.[4] F16K *11/07*; B60C *21/12*
U.S. Cl. 137—607 2 Claims



1. Apparatus comprising:

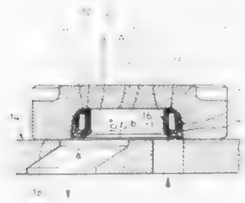
means for receiving a supply of pressurized gas; means for receiving an aerosol type can containing a sealant, said sealant-receiving means comprising an internally threaded bore for receiving a correspondingly threaded fitting of an aerosol type can; outlet means adapted for connection to an inflatable object; valve means having a first position connecting the pressurized gas-receiving means to the outlet means, and a second position connecting the sealant-receiving means with the outlet means and closing the connection from the pressureized gas-receiving means to the outlet means; means to prevent connection from the sealant-receiving means to the gas receiving means when the valve is in the second position; and an aerosol-type can having a threaded fitting engaging said threaded bore, said threaded fitting having positioned adjacent thereto a valve portion activatable by the valve means when the valve means is in the second position.

4,765,368

VALVE ASSEMBLY FOR SINGLE-CONTROL MIXING VALVE

Fabio Mutti, Lonato, and Luigi Gatti, Castiglione delle Stiviere, both of Italy, assignors to Rubinetterie Rapetti S.P.A., Castiglione delle Stiviere, Italy

Filed Oct. 23, 1986, Ser. No. 922,382
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1985, 3537634
Int. Cl.[4] F16K *11/06*
U.S. Cl. 137—625.4 9 Claims



1. A valve assembly for a plate-type flow-control valve, the assembly comprising:

a stationary plate having a planar upper face and formed with a pair of inlet ports and with an outlet port opening offset therefrom on the upper face;

a movable plate having a planar lower face slidable on the upper face of the stationary plate and formed with a pocket open at the face and defined by a generally flat floor having an outer periphery and an annular side wall extending from the periphery to the faces;

an annular and U-section screen in the pocket having

an outer wall lying on the side wall and having a lower edge generally at the faces and an upper edge engaging the floor at its outer periphery,

an inner wall inward of the side wall, generally perpendicular to the lower face, and also having a lower edge spaced slightly above the faces and an upper edge engaging the floor inward of the outer periphery, and

an end wall extending between the lower edges, the screen defining with the side wall and outer periphery of the floor an annular chamber extending in the pocket around the outer floor periphery; and

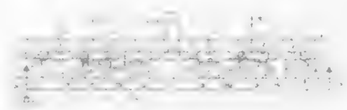
means for sealing both of the upper edges to the floor for flow into and out of the chamber only through the screen.

4,765,369

HYDRAULIC DISTRIBUTOR, PARTICULARLY FOR A POWER-ASSISTED STEERING SYSTEM FOR A VEHICLE

Juan S. Bacardit, Barcelona, Spain, assignor to Bendix Espana S.A., Barcelona, Spain

Filed May 27, 1987, Ser. No. 54,720
Int. Cl.[4] F15B *9/10*
U.S. Cl. 137—625.21 6 Claims



1. A hydraulic distributor, particularly for a power-assisted steering system for a vehicle, comprising a pair of parallel circuits between a pressurized fluid source and a tank, each parallel circuit comprising, in series, at least one first and one second modulable proportioning distribution restriction, the modulable proportioning distribution restrictions of the two circuits being adapted to be operated in synchronism by an inlet component of the distributor for the purpose of controlling a hydraulic motor having opposed chambers each connected to a respective parallel circuit at a point in the latter which is situated between the respective first and second modulable proportioning distribution restrictions, and further comprising a first fixed restriction put into operation by the inlet component in each parallel circuit and in synchronism with the modulable proportioning distribution restrictions, characterized in that the distributor comprises a second fixed restriction in each parallel circuit, the fixed restrictions adapted to be operated alternately in each parallel circuit by the inlet component and the restrictions disposed downstream of the respective first modulable proportioning distribution restriction, the first and second fixed restrictions also adapted to be put into operation downstream of the respective second modulable proportioning distribution restriction of each parallel circuit, the modulable proportioning distribution restrictions and the fixed restrictions formed by cooperating edges of ports formed in adjacent faces of two distributor components which are displaceable in relation to one another on each side of a central position, the fixed restrictions each formed by a recessed surface in at least one of the two distributor components, and the distributor components comprising a star-shaped rotor received in a discoid cavity in a stator, the recessed surfaces formed in the rotor.

4,765,370

DIRECTIONAL CONTROL VALVE

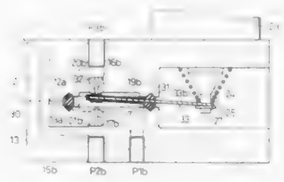
Ryozo Ariizumi, Urawa; Masakuni Kainuma; Sohji Suda, both of Ohmiya; Toshikazu Aoki, Kawagoe; Masao Kojima, and Takashi Ejiri, both of Tokyo, all of Japan, assignors to Fujikura Rubber Ltd., Tokyo, Japan

Filed Nov. 24, 1986, Ser. No. 933,849
Claims priority, application Japan, Nov. 29, 1985, 60-183718; Jun. 30, 1986, 61-100742
Int. Cl.[4] F15B *13/02*
U.S. Cl. 137—625.65 9 Claims

1. A directional control valve comprising upper and lower valve housings opposed and connected to each other to define a pair of valve chambers therebetween, each having three ports consisting of one permanently open port provided in one of the upper and lower valve housings and opposed two selection ports which are provided in the upper and lower valve housing, an elastic seal ring provided between the upper and lower valve housings about the periphery of each chamber to seal the valve chambers, a common valve arm which has two valve bodies in the respective valve chambers and which is pivotably supported in and by a portion of the periphery of

VOL 1093 ISS 4 AG 23 1988 UMI

said seal ring, so that the valve bodies selectively open and close the selection ports in the respective valve chambers, in accordance with the swing movement of the valve arm, said valve arm also having two parallel legs which extend in the respective valve chambers, with the portion of said parallel legs extending into the respective valve chambers being sheathed with an integral portion of the material comprising



said seal ring, and a connecting web portion which connects the legs outside the valve chambers and which is connected to an actuator, said legs and connecting web forming a unitary and integral body, said housing having formed therein a clearing space which allows, upon activation and deactivation of said actuator, said common valve arm to pivot solely about an elastomeric bearing surface provided by said elastic seal ring.

4,765,371

PRESSURE MODULATOR VALVE DEVICE

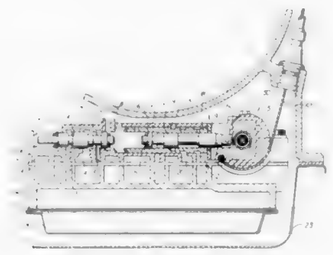
Shigeo Takahashi, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha and Toyota Jidosha Kabushiki Ksiaha, both of Toyota, Japan

Division of Ser. No. 708,948, Mar. 6, 1985, Pat. No. 4,609,013. This application May 2, 1986, Ser. No. 858,700

The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.

Int. Cl.[4] **B60K** *17/00, 41/00*

U.S. Cl. 137—637 2 Claims



1. A pressure modulator valve device disposed in an oil pressure circuit of an automatic transmission, comprising:

first and second modulator valve means each having a valve body and a plunger slidably fitted within each valve body, said first and second modulator valve means being positioned so as to be adjacent each other;

a single fixed supporting member having first and second opposed side wall portions;

a shaft interconnecting said side wall portions of said fixed support member, wherein said fixed support member is substantially U-shaped, wherein each of said first and second modulator valve means further comprises a sleeve within which said plunger is disposed and wherein said single supporting member interconnects said sleeve of each of said first and second modulator valve means so as to maintain said sleeve within each valve body, respectively;

first and second cam means for engaging each said plunger and rotatably mounted on and rotatable around said shaft;

a connecting member for interconnecting each of said first and second cam means; and

an input member connected to at least said first cam means for rotating said first cam means around said shaft.

4,765,372

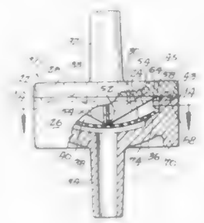
CHECK VALVE

William H. Beecher, Elmhurst, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jun. 17, 1983, Ser. No. 505,501

Int. Cl.[4] **F16K** *15/14*

U.S. Cl. 137—843 10 Claims



1. A backflow check valve comprising: a housing having a fluid inlet and a fluid outlet; a biasable disk carried within said housing disposed transverse to a preselected direction of fluid flow through said housing for controlling fluid flow through said housing; a valve seat carried by said housing against which said disk is biasly urgeable; and first and second disk-biasing means carried by said housing for biasly engaging said disk, at least one of said first and second disk-biasing means having an edge formed from two intersecting planar surfaces, the other one of said first and second disk-biasing means having a depression into which said edge is insertable for simultaneously engaging and respectively biasing opposite sides of said disk between said edge and said depression, said first and second disk-biasing means further including means carried by said housing for biasly engaging said disk along a first pair of spaced opposite end portions thereof and for biasly engaging said disk along a second pair of spaced opposite end portions thereof intermediate the first pair of disk end portions for preventing fluid from flowing contrary to said preselected direction of flow said second-biasing means including said valve seat and said depression, said valve seat being annular and said depression and said valve seat forming a concave cylindrical section, said section being cylindrical about an axis transverse to said direction of fluid flow, said section having a valley disposed transverse to said preselected direction of fluid flow.

4,765,373

GAS FLOW AMPLIFIER

Richard W. Munroe, Millbury, Mass., assignor to Coppus Engineering Corporation, Worcester, Mass.

Filed Jul. 7, 1987, Ser. No. 70,490

Int. Cl.[4] **F16K** *19/00*

U.S. Cl. 137—890 9 Claims

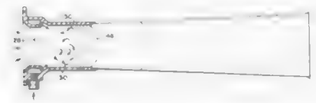
1. A gas flow amplifier comprising:

a housing defining an axially extending cylindrical chamber, said housing having inlet and outlet ports communicating respectively with opposite ends of said chamber;

a hollow truncated conical diffuser diverging outwardly from a smaller end to a larger end;

means for connecting the smaller end of said diffuser to said chamber at said outlet port;

injection means arranged between said inlet and outlet ports for introducing a flow of pressurized primary gas into said chamber in a manner such as to entrain a flow of ambient secondary gas into said chamber via said inlet port, and to cause the thus introduced primary gas and entrained sec-



ondary gas to exit from said chamber as a combined flow via said outlet port and through said diffuser and

means for enhancing localized turbulence in the boundary layer of the combined flow of gases exiting from said chamber.

4,765,374

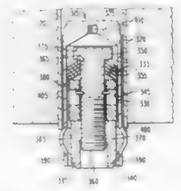
MULTI-SEAL MECHANICAL TUBE PLUG

Leonard F. Ernold, Murrysville; Robert F. Keating, and Lawrence A. Nelson, both of Penn Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 868,225, May 28, 1986. This application Oct. 21, 1987, Ser. No. 110,806

Int. Cl.[4] **F16L** *55/12*

U.S. Cl. 138—89 10 Claims



1. A tube plug for plugging a tube to stop flow therethrough, said tube plug comprising:

a sheath having a closed end, a cylindrical section, and an open end,

expander means adapted to be received within said sheath for expanding said sheath into contact with the tube, said expander means comprising a plurality of disks, each disk being substantially round, being made of a material having a higher yield strength than that of said sheath, having a peripheral surface, a central aperture, and an inner surface defined by the central aperture, and being conically arched from the peripheral surface to the central aperture, said expander means further comprising an expander member, said expander member being adapted to radially expand said disks, the expansion of each disk causing the peripheral surface of each disk to contact the inner wall of the cylindrical section of said sheath and causing a portion of said sheath to expand into contact with the tube to sealingly engage the tube.

4,765,375

DUCT

Kenji Nakajima, 3-5, Nagayoshidedo 6-chome, Hirano-ku, Osaka, Japan

Filed Jan. 30, 1987, Ser. No. 8,953

Claims priority, application Japan, Jan. 30, 1986, 61-12738[U]

Int. Cl.[4] **F16L** *9/00*

U.S. Cl. 138—155 5 Claims

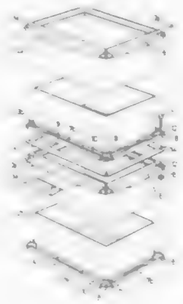
1. A duct piece for coupling together with other like duct pieces, said duct piece comprising a first and second end, a respective flange section at each said end for coupling together the duct pieces, said duct piece being of rectangular section, said first end having a turned-up portion said turned-up portion having at right angles thereto a first flange section, said first flange section having at a free end thereof and at right angles thereto a first terminal right angle end portion, said second end having at right angles thereto a second flange section, said second flange section having at a free end thereof and at right angles thereto a second terminal right angle end portion, said turned-up portion of said first end being a folded portion of double thickness of the material of the duct piece, said second end of said duct piece being a single thickness of the material of the duct piece, each said first and second flange section being longer than said turned-up-portion, and said first terminal right angle end portion being parallel to and extending away from said second terminal right angle end portion.

2. A duct comprising in combination:

a plurality of duct pieces coupled together;

a plurality of corner pieces attached to respective ones of said plurality of duct pieces, said plurality of corner pieces coupling together adjacent ones of said plurality of coupled together duct pieces;

a plurality of packings disposed between adjacent ones of said coupled together duct pieces;



a plurality of detachable elastic clips detachably coupling together adjacent ones of said coupled together duct pieces;

each said duct piece having a first and second end, each said end having respective flange sections for coupling said duct pieces together, each said duct piece being of a rectangular section and having at said first end thereof a turned-up portion, said turned-up portion having at right angles thereto a first flange section, said second end of each said duct piece being a non-turned-up end and having at right angles thereto a second flange section;

said plurality of elastic clips coupling together adjacent ones of said first and second flange sections of said coupled together duct pieces;

said turned-up portion of said first end of one duct piece being received in said second non-turned-up end of an adjacent duct piece;

one of said plurality of packings being disposed between the first flange section of one duct piece and the second flange section of an adjacent duct piece of said coupled together duct pieces; and

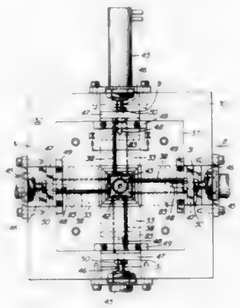
said detachable elastic clips resiliently detachably attaching said first and second flange sections of adjacent duct pieces.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,376
LEAD STRAIGHTENING FOR LEADED PACKAGED ELECTRONIC COMPONENTS

Daniel R. Leiwe, Royal Palm Beach, Fla., assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 28, 1987, Ser. No. 43,407
Int. Cl.[4] B21F *1/02*
U.S. Cl. 140—147 16 Claims

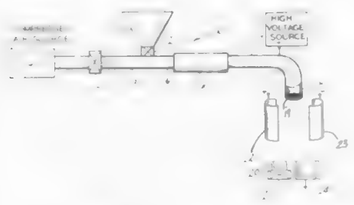


1. An apparatus for straightening leads on all sides of a rectangular plan form leaded component, comprising:
- lead bending members for each respective side of said component, each lead bending member slidably mounted for reciprocal movement in a direction normal to a respective side of said component;
- a groove formed in each member extending parallel to the respective side of said component;
- means for positioning the leaded component above said lead bending members with lower ends of said leads positioned in said grooves;
- means for sliding said members outward relative to said component in order to bend said leads outward beyond a yield point of the lead material; and
- means for bending all the leads on all respective sides of said component back inward past said yield point.

4,765,377
FILLING AND WEIGHING SYSTEM

Sidney Soloway, 202 Sunrise Hill Rd., Norwalk, Conn. 06851

Filed Jun. 6, 1983, Ser. No. 501,653
Int. Cl.[4] H06S *5/02*
U.S. Cl. 141—1 29 Claims

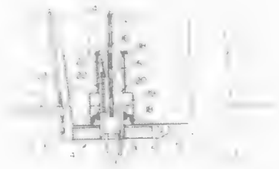


1. A method of filling a container with a predetermined weight of material in powder form comprising the steps of
- providing a conduit,
- creating a gas stream through said conduit,
- introducing the material into a gas stream in said conduit and moving said material through an electric field in said conduit to produce an electric charge on the powder particles,
- providing a container for said powder particles at a filling and weighing station,
- electrically directing the stream of charged particles from said conduit into the container,
- maintaining an electrical potential at said one of said container and said filling and weighing station which attracts said charged particles to said container,
- sensing when the weight of the particles in the container reaches a predetermined value, and ceasing direction of the stream to the container.

4,765,378
VALVE STATION FOR INTERCONNECTING BOREHOLES IN A SEABED

Jurgen Engelskirchen, Contastrasse 3, 2000 Hamburg 20/BRD, and Dieter Koenig, Dahlienweg 2, 2105 Seevetal 1/BRD, both of Fed. Rep. of Germany

Continuation of Ser. No. 764,196, Aug. 9, 1985, abandoned. This application Sep. 23, 1987, Ser. No. 102,790
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1984, 3430628
Int. Cl.[4] B63B *22/02*
U.S. Cl. 141—69 4 Claims

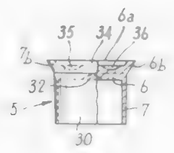


1. In combination for off-shore extraction of oil:
- a tanker;
- a submerged floating buoy;
- means for anchoring said buoy to a seabed and means for connecting said buoy to said tanker for mooring said tanker;
- said tanker having means defining a downwardly open shaft space therein for receiving said buoy;
- said connecting means comprising interengaged bearing means on said buoy and said tanker for retaining said buoy in a predetermined position relative to said tanker at the underside of said tanker and in coupled relationship with said shaft space for movement with said tanker while allowing rotation of said tanker about said buoy;
- a plurality of separate first pipeline means for separately connecting said buoy to respective boreholes on said seabed;
- second pipeline means for connecting said buoy to said tanker;
- high pressure swivel means for rotatably connecting said buoy to said second pipeline means; selectively operable valve means located within said buoy and within said shaft space for separately controlling flow between individual ones of said first pipeline means and said second pipeline means;
- said selectively operable valve means including means for testing and processing an extracted medium flowing through any of said first pipeline means; and
- means on said buoy for providing access to said valve means through said shaft space for maintenance and repair of said valve means.

4,765,379
PLUG AND OUTER CAP FOR CLOSING A CONTAINER

Patrice Szymanski, Montrichard, France, assignor to Laboratoires de Pharmacologie Homeopathique Dolisos - Laboratoires Jean Tetas, Paris, France

Filed Dec. 18, 1987, Ser. No. 134,938
Claims priority, application France, Jul. 3, 1987, 87 09480
Int. Cl.[4] B65D *41/28*
U.S. Cl. 141—381 12 Claims

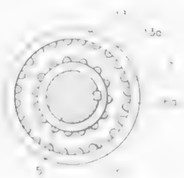


1. A plug for closing a container, especially a tube or flask that contains pharmaceutical products, with said plug being adapted, in turn, to be covered by an outer cap; said plug comprising:
- a lower tubular portion that is adapted to fit into an upper portion of said container; said lower tubular portion has a recessed portion that is provided with first cells for temporarily retaining said pharmaceutical products; and
- an upper portion that is connected to said lower tubular portion and has a peripheral outer edge that is provided with first protruding means adapted to cooperate with second protruding means on an inner portion of said outer cap; said upper portion has an upper circular recessed portion that is remote from said recessed portion of said lower tubular portion and that is provided with second cells for temporarily retaining said pharmaceutical products.

4,765,380
DRIVE ROLLER ASSEMBLY OF VENEER LATHE FOR ROTATING LOG AND VENEER LATHE

Kenzo Watanabe, Ohbu, Japan, assignor to Meinan Machinery Works, Inc., Aichi, Japan

Filed Mar. 10, 1987, Ser. No. 23,944
Claims priority, application Japan, Mar. 24, 1986, 61-064165
Int. Cl.[4] B27L *5/02*
U.S. Cl. 144—213 11 Claims

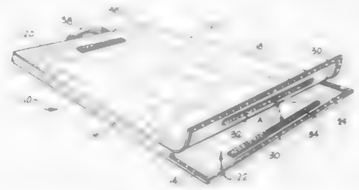


1. A roller assembly of a veneer lathe for rotating a log comprising:
- a rotatable means;
- elastic means provided on said rotatable means; and
- a plurality of ring shaped rigid members each having a periphery for press contacting the periphery of a log to rotate the log, said ring shaped rigid members being spacedly provided on said rotatable means with said elastic means interposed therebetween, said ring shaped rigid members being fixed on said elastic means.

4,765,381
SIGN CARRIER AND STORAGE BAG

Michael C. Castle, 7565 Maureen Ct., San Jose, Calif. 95139

Filed Nov. 6, 1987, Ser. No. 118,282
Int. Cl.[4] B65D *33/00, 33/16*
U.S. Cl. 150—52 R 18 Claims



1. An apparatus for storing and carrying signs of the type having a mounting post, comprising,
- first and second cover panels, each having top and base edges and having opposed lateral edges,
- first and second spaced apart side walls, each side wall fixed to one of said opposed lateral edges of each cover panel to retain said first and second cover panels in a parallel, substantially coextensive condition,
- an upper wall fixed to said top edges of said cover panels, said cover panels and said upper and side walls combining to form a pocket having a base opening,
- closure means for recurringly sealing selected portions of said base opening, said closure means having at least one first fastening member attached to an interior surface of the first cover panel and having at least one second fastening member attached to an interior surface of the second cover panel, and
- stacking means attached to exterior surfaces of said cover panels for selective attachment to similarly constructed cover panels.

4,765,382
REINFORCED RESILIENT WHEEL

Edward H. Sahagian, 67 Chester St., Arlington, Mass. 02174

Filed Jul. 20, 1987, Ser. No. 75,132
Int. Cl.[4] B60B *9/12, 17/00*
U.S. Cl. 152—48 11 Claims



1. A reinforced resilient wheel having:
- an annular tire rim,
- a hub within the rim,
- an annular channel of generally U-shaped cross-section on the inner side of the rim and facing the hub,
- a one-piece, annular, elastomeric member engaging the an-

VOL 1093 ISS 4 AG 23 1988 UMI

nular channel creating a shock absorbing, sealed, air space defined by the inner surface of the elastomeric member and the inner surface of the U-shaped channel,

the hub being connected to the elastomeric member by mechanical fastening means comprising headed fasteners passing through the elastomeric member and secured to the hub, and

flange means attached to the rim extending around the edges of the elastomeric member to clamp the member to the rim.

4,765,383

MOTOR VEHICLE WHEEL WITH INDIVIDUALLY SELECTABLE TWIN PNEUMATIC TIRES

Helmuth Bott, Pforzheim, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 14, 1985, Ser. No. 797,830

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1984, 3441512

Int. Cl.[4] B60C *11/03, 23/00*

U.S. Cl. 152—209 R 12 Claims



1. A motor vehicle wheel comprising twin tire means and a rim means said twin tire means including, one tire means having a winter profile and a further tire means having a summer profile, said twin tire means being arranged on said rim means, and selection means being operable for selecting either of the twin tire means to be a pressurized load-carrying tire means for substantially carrying the load of the motor vehicle and for selecting the other of the tire means to be a non-load-carrying tire means.

4,765,384

PNEUMATIC VEHICLE TIRE TREAD

Dieter Rohde, Lehrte, Fed. Rep. of Germany, assignor to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jan. 22, 1987, Ser. No. 5,940

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1986, 3602102

Int. Cl.[4] B60C *11/11*

U.S. Cl. 152—209 R 1 Claim



1. A pneumatic vehicle tire having a tread comprising: a support surface with circumferential rows of blocks, including a laterally outer row along each laterally outer edge of said tread, with said blocks being separated from one another by grooves that have a base, with the grooves of said laterally outer rows of blocks extending essentially transverse to the circumferential direction of said tire and opening freely to the laterally outer side of these laterally outer rows; said tire having

a respective, smooth essentially cylindrical surface extending directly laterally outwardly adjacent to the laterally outer side of each of said laterally outer rows of blocks, with the bases of said grooves of said laterally outer rows merging directly laterally outwardly in a continuous, stepless manner with the adjacent smooth cylindrical surface such that only said support surface of said tread makes contact with hard ground and both said support surface and said smooth cylindrical surface contact the ground when the ground is soft; and

a belt disposed radially inwardly of said tread, with said belt extending in the circumferential direction of said tire and having side edges that extend laterally beyond the outer sides of said laterally outer rows of blocks and below said laterally outwardly extending cylindrical surfaces so as to be encircled by the latter, said blocks of said laterally outer rows of blocks having rounded-off laterally outwardly disposed edges that merge with essentially radially extending side surfaces that are essentially disposed perpendicular to said laterally outwardly extending cylindrical surfaces.

4,765,385

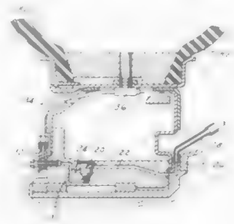
TIRE INFLATION-DEFLATION SYSTEM

Donald E. McGeachy, Milford, Mich., assignor to Numatics, Incorporated, Highland, Mich.

Filed Feb. 27, 1987, Ser. No. 19,940

Int. Cl.[4] B60C *29/02*

U.S. Cl. 152—416 5 Claims



1. A valve combination for installation in the hub of a vehicle wheel for remote control of the inflation and deflation of a vehicle tire on said wheel in conjunction with a vehicle mounted pneumatic pressure source and pressure regulator which comprises:

(a) a valve housing having a generally cylindrical opening with longitudinally spaced wall ports in said cylindrical opening comprising an air inlet, an exhaust outlet, and a tire inlet-outlet,

(b) an axially extending passage in said housing connected to said pressure inlet and open to said tire inlet-outlet port and one end of a third valve,

(c) a first valve, a second valve and a third valve axially movable in said cylindrical opening of said valve housing,

(d) said first valve and said third valve being slidable in opposite ends of said cylindrical opening,

(e) means on said first valve to close said tire inlet-outlet port from said pressure passage in a first position of said first valve and to open said tire inlet-outlet port to said pressure passage in a second position of said first valve,

(f) means on said third valve to close said exhaust outlet port in a first position and to open said exhaust outlet port in a second position,

(g) said second valve being mounted in said first valve cooperating with a seat in said first valve to open and close said tire inlet-outlet port in relation to said exhaust port,

(h) said first valve having an effective area exposed to said tire inlet-outlet greater than the effective area of said one end of said third valve,

(i) means on said first valve and on said third valve to limit initial shifting of said third valve by pressure in said pressure passage, and

(j) means on said third valve and said second valve to effect shifting on said second valve in response to said initial shifting of said third valve to open said tire inlet-outlet port to exhaust port,

whereby pressure in said pressure passage will shift said third valve to a second position to move said first valve to a second position opening said pressure passage to said tire inlet-outlet passage to allow equalization of pressure in said tire and in said pressure passage.

4,765,386

PASSENGER CAR RADIAL TIRE HAVING EXCELLENT MOTION PERFORMANCES AND DURABILITY

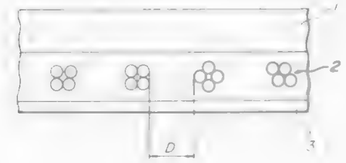
Takao Ogino, Tokorozawa, and Sumito Nakagawa, Kodaira, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Dec. 4, 1986, Ser. No. 937,778

Claims priority, application Japan, Dec. 10, 1985, 60-275874

Int. Cl.[4] B60C *9/08*

U.S. Cl. 152—556 3 Claims



1. A radial tire for use in passenger cars and being excellent in motion performances and durability, said radial tire having a carcass cord layer in which steel cords of a single strand construction represented by (1×n) in which n is a number of filament yarns and is an integer from 1 to 5 are embedded in rubber, wherein a thickness of the rubber between the adjacent steel cords is in a range between 0.80 and 2.00 mm when measured in a tire circumferential direction at a location having a tire maximum width in an arrangement of the steel cords in said carcass cord layer; a product ($n \times d^4$) between a number (n) of the filament yarns constituting the steel cord of the single strand construction and a fourth power of a diameter (d) of the filaments in mm is in a range of $0.002 \leqq n \times d^4 \leqq 0.012$; and the diameter of the filaments is in a range between $0.15 \leqq d \leqq 0.25$ mm.

4,765,387

TIRE CHANGER SAFETY FOOT

Bryce L. Mannen, Conway, Ark., assignor to FMC Corporation, Chicago, Ill.

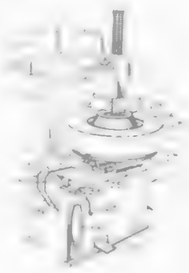
Filed Feb. 2, 1987, Ser. No. 10,030

Int. Cl.[4] B60C *25/00*

U.S. Cl. 157—1.0 8 Claims

1. Safety apparatus mounted on a tire changing machine having a tire inflating system, a table for receiving a rim/tire assembly to be inflated thereon, and having a tower at one side of the machine supporting a tire mount/demount head which is adjustable in height and lateral position to enable said head to be moved from a tire mount/demount position to a position in engagement with said safety apparatus during tire inflation, said safety apparatus comprising

an impact member having means to receive the mount-/demount head and disposed to overlie the surface of a rim on the rim/tire assembly receiving table in a safety



position during tire inflation, and said impact member being removable to a remote out-of-the-way position during tire mount/demount operations.

4,765,388

ROMAN BLIND

Günter Döhlemann, Weilheim/Teck, Fed. Rep. of Germany, assignor to Dofix-Dohlemann GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 666,808, Oct. 31, 1984, abandoned.

This application Dec. 8, 1986, Ser. No. 938,902

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1983, 8331344

Int. Cl.[4] A47H *5/00*

U.S. Cl. 160—84.1 5 Claims



1. A roman blind with a flexible curtain web which may be gathered, thereby forming pleats at right angles to its extent and direction, and having at least one gathering band which is fixed on one side of the web, and extends in the direction of the gathering movement and comprising at least one drawing cord and regularly spaced loops (14) fixed to the gathering band for guiding said at least one drawing cord, the improvement comprising:

at least one gathering cord, wherein the gathering band (12) has at least one longitudinal sleeve and extends along the complete length of the web for forming pleats (22), and said gathering band includes means causing said at least one gathering cord over alternating portions (a) of the web situated before and after a pleat (22) to lie inside said at least one sleeve in said gathering and gathering band (12) to directly guide the at least one gathering cord over

VOL 1093 ISS 4 AG 23 1988 UMI

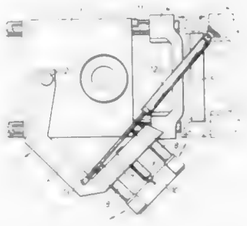
said alternating portions (a) of the band and causing said gathering cord to lie adjacent the side of said gathering band opposite said web over the portions (b) of said web between said alternating portions (a) of the web (10), such that by drawing said at least one gathering cord, said alternating portions of said web are moved into edge abutting position and said portions of said web between said alternating portions are folded into said pleats (22) on the other side of said web opposite that carrying said gathering band.

4,765,389

CORE SETTER

Soren E. Knudsen, Lynge, Denmark, assignor to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed Jan. 21, 1987, Ser. No. 5,723
Claims priority, application Denmark, Jan. 24, 1986, 373/86
Int. Cl.[4] B22C 9/10
U.S. Cl. 164—340 5 Claims



1. In combination, a moulding chamber and a core setter for use in placing one or more cores in a mould impression in the rearmost of a plurality of mould parts in line or in a mould impression on the front of a mould part during conveyance thereof from the moulding chamber, such mould part having been made in a vertical moulding system and during conveyance towards a pouring line, said core setter comprising an essentially L-shaped swingable arm, pivotally journalled at one end thereof around a vertical axis disposed in or aligned with a vertical plane within the moulding chamber and including means at the other end thereof for accepting a core-retaining means whereby the swingable arm can be swung between a core-releasing position, in which the core-retaining means is placed behind the rearmost mould part and in line therewith, and a core-loading position outside the line of mould parts, and said combination further comprising means for providing translational movement of the core-retaining means towards and away from the mould impression in the core-releasing position of the swingable arm.

4,765,390

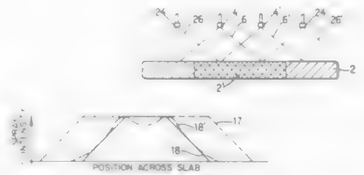
METHOD OF AND ARRANGEMENT FOR COOLING A CONTINUOUSLY CAST STRAND

Arthur Vateriaus, Rüschlikon, Switzerland, assignor to Concast Service Union AG, Zurich, Switzerland

Filed May 12, 1987, Ser. No. 49,318
Claims priority, application Switzerland, May 13, 1986, 01931/86
Int. Cl.[4] B22D 11/124
U.S. Cl. 164—486 13 Claims

1. A method of cooling a continuously cast strand, comprising the steps of conveying said strand along a predetermined path; and spraying said strand at a predetermined location of said path, said strand having a pair of lateral surface portions at said location which are spaced transversely of said path, and another surface portion between said lateral surface portions, and the spraying step including directing a pair of flat sprays towards said another surface portion from two positions spaced laterally of said path and disposed on either side of said another surface portion, combining said pair of sprays to create a combined spray, and contacting said another surface portion with said combined spray, each of said pair of sprays having a triangular intensity distribution, and a predetermined length as considered transversely of said path, and said combining being performed by causing each of said pair of sprays to intersect the other over a distance approximating one-half of said predetermined length, the spraying step further including contacting each of said lateral surface portions with a single flat spray only.

7. A continuous casting apparatus, particularly for the continuous casting of steel slabs, comprising means for conveying



a continuously cast strand along a predetermined path; and means for cooling the strand in said path, said cooling means including a pair of spray nozzles each of which is designed to produce a flat spray having a triangular intensity distribution, a predetermined length as considered transversely of said path and a spray angle between about 60 and about 130 degrees, and said nozzles being disposed at a predetermined location of said path and being spaced from one another transversely of said path by approximately one-half of said predetermined length, said nozzles being arranged such that the respective sprays intersect each other over a distance approximating the spacing between said nozzles.

4,765,391

ARRANGEMENT FOR USE IN THE THERMAL ANALYSIS AND MODIFICATION OF MOLTEN METAL

Stig L. Bäckerud, Lidingö, Sweden, assignor to Sinter-Cast AB, Viken, Sweden

PCT No. PCT/SE86/00047, § 371 Date Sep. 25, 1986, § 102(e) Date Sep. 25, 1986, PCT Pub. No. WO86/04678, PCT Pub. Date Aug. 14, 1986
PCT Filed Feb. 4, 1986, Ser. No. 923,829
Claims priority, application Sweden, Feb. 5, 1985, 8500524
Int. Cl.[4] B22D 2/00, 46/00
U.S. Cl. 164—150 3 Claims



1. An arrangement for effecting the thermal analysis and modification of molten metal, by recording solidification data and controlling a subsequent structure modifying process on the basis of the data obtained, characterized by a sampling container which is intended to be immersed in said molten metal and which is made of a material which remains substantially stable at the temperature of said molten metal, said container being constructed to enable molten metal to enter thereinto when said container is in its immersed stae, and said container being provided on one wall thereof with an opening which co-acts with means effective to close the opening prior to lifting the container from the molten metal and to expose said opening when, subsequent to solidification of the sample, the container is re-immersed in the molten metal and the solidified sample in said container has melted; means which are effective to lift the container from the molten metal while enclosing a given quantity thereof, and to move the container to an area in which substantially the same conditions prevail, and to hold the container in said area until the enclosed sample has solidified, and then to return the container to an immersed position in the molten metal; means which are effective to measure and record solidification data at one or more locations in the sample as said sample solidifies; means for evaluating solidification data in relation to known data derived from melts having a known metallurgical structure; means for controlling the supply of additions to the molten metal, or for subjecting the molten metal to a structure modifying process in a controlled manner; and control means for monitoring continuously structure modifying measures by sampling the molten metal intermittently at suitable time intervals.

4,765,393

THERMALLY REGENERATIVE HOT BEVERAGE CONTAINER

Keith M. Baxter, 8138 Aberdeen Ct., Wauwatosa, Wis. 53213

Continuation of Ser. No. 911,885, Sep. 26, 1986, abandoned. This application Jan. 21, 1988, Ser. No. 147,586
Int. Cl.[4] F24H 7/00; F28D 17/00
U.S. Cl. 165—47 8 Claims



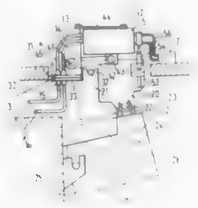
1. A regenerative beverage container comprising:
(a) a substantially cylindrical hollow outer wall disposed about a vertical axis and open at the upper end thereof for receiving a beverage.
(b) a substantially planar hollow bottom wall closing the lower end of said outer wall,
(c) a hollow central member extending upwardly from said bottom wall coaxially within said outer wall to form with said outer wall a beverage receiving space therebetween, and
(d) a phase change material received within the hollow portions of said outer wall, said bottom wall and said central member to regeneratively absorb heat from a preheated beverage received within said container and then to release the heat to the beverage to maintain the beverage at a desired temperature for an extended period, said phase change material changing state at a temperature within the range of 110 degrees F. to 150 degrees F.

4,765,392

CONTINUOUS METAL CASTING PLANT

Robert Vatant, St-Chamond, France, assignor to Clecim, Courbevoie Cedex, France

Filed Mar. 9, 1987, Ser. No. 23,745
Claims priority, application France, Mar. 7, 1986, 86 03282
Int. Cl.[4] B22D 11/04
U.S. Cl. 164—416 20 Claims



1. A continuous metal casting plant comprising
(a) an ingot mold and a secondary cooling device aligned along a casting axis and mounted on a supporting structure;
(b) means for supporting and guiding said ingot mold along said casting axis;
(c) means for controlling oscillations of said ingot mold parallel to said casting axis;
(d) said ingot mold comprising a set of cooled walls defining a bottomless casting cavity and carried by a frame-shaped casing;
(e) said secondary cooling device comprising an assembly of devices for guiding and cooling a cast product, said assembly being mounted on a supporting frame and defining a roller apron extending along said casting axis between an upper part placed immediately downstream of an exit of the casting cavity and a lower part opening out into an extraction device;
(f) said means for controlling the oscillations of said ingot mold resting directly, on one side, on the ingot mold casing and, on the other side, on the upper part of the supporting frame of said roller apron.

4,765,394

HEAT EXCHANGER WITH A SOOT BLOWER

Georg Ziegler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 21, 1986, Ser. No. 898,694
Claims priority, application Switzerland, Sep. 3, 1985, 3779/85
Int. Cl.[4] F22B 37/52; F28G 1/16
U.S. Cl. 165—95 15 Claims



1. In a heat exchanger, the combination comprising
a plurality of coolant-conveying parallel tubes secured together in gas-tight manner to form a wall;
at least one soot-blowing tube extending along said wall and being secured to and between a pair of said coolant-conveying tubes in gas tight manner;
a coolant-conveying protective tube secured to and extending along said wall parallel and in front of said soot-blowing tube on a heat receiving side of said wall, said protective tube being connected in parallel with said coolant-

VOL 1093 ISS 4 AG 23 1988 UMI

conveying tubes relative to a flow of coolant therethrough; and

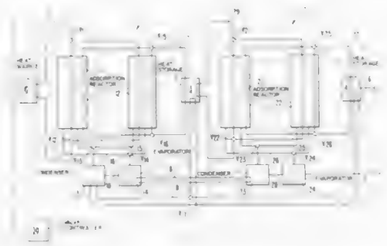
at least one nozzle extending from said sootblowing tube and said heat receiving side of said wall between said protective tube and one of said coolant-conveying tubes for blowing a soot-blowing medium therefrom.

4,765,395

DEVICE FOR THE CONTINUOUS PRODUCTION OF HEAT AND COLD

Gerard Paeye, Carquefou, and Francis Meunier, Paris, both of France, assignors to Jeumont-Schneider Corporation, Puteaux cedex, France

Filed Oct. 30, 1986, Ser. No. 925,746
Claims priority, application France, Nov. 19, 1985, 85 17053
Int. Cl.[4] F25B *17/08, 29/00*
U.S. Cl. 165—104.12 12 Claims



1. A device for continuous production of heat and cold, comprising:

a first adsorption reactor unit and a second adsorbtion reactor unit,

each said reactor unit including condenser means, evaporator means coupled to said condenser means to receive refrigerant fluid therefrom, and a plurality of adsorption reactors all utilizing the same solid-fluid adsorbent-refrigerant pair, with the adsorbent-refrigerant pair of said first reactor unit being different from that of said second reactor unit,

each said reactor unit further including means operatively coupling each reactor thereof to the corresponding condenser means for operation in a desorption mode and simultaneously coupling another reactor thereof to the corresponding evaporator means for operation in an adsorption mode, so that refrigerant desorbed from the reactor in the desorption mode passes through the corresponding condenser means and evaporator means and is adsorbed by the reactor in the adsorption mode, said coupling means alternating each reactor selectively between the corresponding condenser means and evaporator means such that each reactor operates alternately in said desorption mode and said adsorption mode, and means operating to couple and uncouple each reactor to and from a heat source for operation of that reactor in said desorption mode and said adsorption mode, respectively,

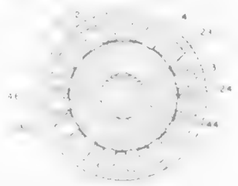
the heat source for said first reactor unit being an external heat source, and the heat source for said second reactor unit being a heat output of said first reactor unit, whereby said reactor units operate in cascade.

4,765,396

POLYMMHIC HEAT PIPE WICK

Benjamin Seldenberg, Baltimore, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 16, 1986, Ser. No. 942,158
Int. Cl.[4] F28D *15/02*
U.S. Cl. 165—104.26 17 Claims



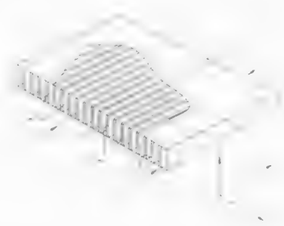
7. A capillary loop including a heat pipe in the form of a continuous loop, a wick positioned within less than the entire portion of said heat pipe comprised of an essentially uniformly porous, permeable and ultra high average molecular weight polymer with a small average pore size, said loop further including a working fluid contained within said heat pipe, said working fluid being selected from the group consisting of anhydrous ammonia and the fluorinated hydrocarbons, said polymer being chemically and physically compatible with said working fluid.

4,765,397

IMMERSION COOLED CIRCUIT MODULE WITH IMPROVED FINS

Gregory M. Chrysler; Richard Chao-Fan Chu, and Robert E. Simmons, all of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 28, 1986, Ser. No. 935,680
Int. Cl.[4] H01L *23/46*
U.S. Cl. 165—104.33 1 Claim



1. A processing component comprising,

an enclosure (12) adapted to hold a dielectric liquid coolant (20),

a plurality of circuit modules (14) which each have a planar array of one or more heat producing circuit devices, a heat conducting hat spaced orthogonally from the array, and means in the module for transferring heat from the array to the hat, the array defining a plane designated X-Y and the direction from the array to the hat being designated Z,

means for supporting said modules in said enclosure, and means defining a path (25, 26, 27) for circulating the coolant past the circuit modules in a predetermined direction designated X,

wherein the improvement comprises,

a plurality of fins (30, 52) which extend from the hat in the Z direction and define channels (54) between the fins extending generally in the X direction, whereby the coolant increases in temperature in the upstream to downstream direction along the channels, said fins being substantially equal in thickness and equal in spacing in the Y dimension,

a shroud (53) which is arranged over the fins to confine the coolant to the channels,

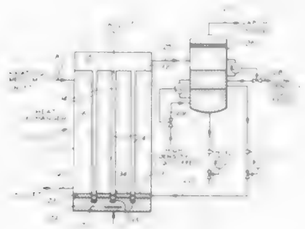
said fins being tapered in the Z dimension in the upstream to downstream direction to decrease the cross sectional area of said channels linearly in the upstream to downstream direction to thereby increase the coolant velocity in said channels and compensate for the increase in temperature of the coolant between the upstream edge and the downstream edge of the circuit module.

4,765,398

VAPORIZATION OF LIQUIDS

Utah Tsao, Jersey City, N.J., assignor to Lummus Crest, Inc., Bloomfield, N.J.

Filed May 6, 1987, Ser. No. 46,316
Int. Cl.[4] F22B *1/00*
U.S. Cl. 165—110 8 Claims





5. A heat exhanger for vaporizing a mixture containing at least first and second liquids which are immiscible with each other, comprising:

an inlet compartment; an outlet compartment; a plurality of vertical tubes having an inlet in fluid flow communication with the inlet compartment and an outlet in fluid flow communication with the outlet compartment, said tubes extending into said inlet compartment; a first inlet means for introducing a first liquid into the inlet compartment; a second inlet means for introducing a second liquid into the inlet compartment, said first and second liquids being immiscible with each other; and inlet control means on the tubes for controlling introduction of the first and second liquids into the tubes to provide both first and second liquids within each of the tubes in amounts such that neither of the first and second liquids is completely vaporized in any of the tubes during vaporization of the liquid mixture.

4,765,399

METHOD AND PLANT FOR THE CONDENSATION OF EXCESS STEAM

Ingo Haacker, Unna, and Friedhelm Landgräber, Dortmund, both of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Nov. 27, 1985, Ser. No. 802,759
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1984, 3443762
Int. Cl.[4] F28B *1/00;* F01K *9/02;* F22D *11/06*
U.S. Cl. 165—110 8 Claims

1. Method for avoiding the flow of steam into the atmosphere by the condensation of excess steam from a mains obtained steam from steam-producing and steam-consuming facilities, in a condenser connected to the mains by control facilities and designed for indirect heat-exchange and for preventing the absorption of oxygen by the condensate, the condenser having a no-load condition free of steam from the mains and a load condition where it receives steam from the mains comprising the steps of filling the condenser with an oxygen-free fluid in the no-load condition of the condenser for maintaining the condenser free of oxygen, in the load condition for displacing the oxygen-free fluid from the condenser by flowing the excess steam from the mains through the control facilities into the condenser while flowing steam through the mains, collecting the displaced oxygen-free fluid in a receiver in direct flow communication with the condenser and pressurizing the oxygen-free fluid within the receiver based on the amount of flow of the oxygen-free fluid received therein from the condenser, condensing the excess steam in the condenser and flowing the condensate from the condenser into the receiver, due to the pressurization of the oxygen-free fluid within the receiver returning the oxygen-free fluid directly from the receiver to the condenser in the absence of excess steam flow into the condenser and returning the condensate from the receiver to the steam-producing and steam-consuming facilities.

5. Plant for avoiding the flow of steam into the atmosphere by the condensation of excess steam received from steam-producing and steam-consuming facilities and for preventing the absorption of oxygen by the condensate comprising a condenser maintained free of access by the atmosphere and including a header for collecting condensate therein, said condenser operating under indirect heat exchange with excess steam passing therethrough, a condensate receiver (5) including a gas dome (9) therein, a condensate discharge line (11) connecting said condenser header and said condensate receiver for providing direct unimpeded flow of condensate from said condenser to said condensate receiver, means for filling said condenser with an oxygen-free fluid including a line (10) separate from said discharge line (11) and directly connecting said condenser header and said gas dome in said condensate receiver for the unimpeded flow of the oxygen-free fluid therebetween, a mains obtaining steam from a steam-producing and steam-consuming facilities, means for controlling the supply of steam from said mains into said condenser, and means for returning condensate from said condenser receiver to said steam-producing and steam-consuming facilities whereby said condenser can be filled with the oxygen-free fluid and when excess steam is passed into said condenser the oxygen-free fluid is displaced into and pressurized within the gas dome in said condensate receiver and in the absence of excess steam flowing into said condenser, due to the pressurization thereof the oxygen-free fluid flows unimpeded back from the gas dome into said condenser.

VOL
1093
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1988
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4,765,400

CIRCUIT MODULE WITH PINS CONDUCTING HEAT FROM FLOATING PLATE CONTACTING HEAT PRODUCING DEVICE

Richard C. Chu; Jeffrey C. Eid, and Michael L. Zambrunnen, all of Poughkeepsie, N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Apr. 14, 1987, Ser. No. 38,088
Int. Cl.[4] F28F 7/00
U.S. Cl. 165—185 8 Claims



1. In a circuit module which has

a planar dielectric substrate and an array of one or more heat producing devices such as semiconductor chips mounted on a surface of the substrate, the substrate being oriented for purposes of terminology in a horizontal plane with the devices on the upward facing surface, each of the devices having an upper surface that is substantially flat,

a plate cooperating with the substrate to form at least part of an enclosure for a space containing the heat producing devices and overlying the devices and forming a barrier between the devices and a coolant,

improved means for transferring heat from the devices to the coolant, comprising,

at least one floating plate for each device, and means for holding the lower surface of the floating plate in heat transfer contact with the upper surface of the associated device,

a set of pins for each said floating plate, said barrier plate supporting said pins with the pins spaced apart in a row and column array, said pins extending vertically downward to said floating plate, said floating plate having cavities for receiving the lower ends of the pins for heat transfer through a gap that permits the floating plate to adjust to variations in the position of the associated device, said pins extending upward through said barrier and support plate into the coolant space where the tops of the pins form fins for transferring heat to the coolant, whereby said pins form a continuous path for conduction independent of the barrier and support plate.

4,765,401

APPARATUS FOR HANDLING WELL PIPE

George I. Boyadjieff, Anaheim, Calif., assignor to Varco International, Inc., Orange, Calif.

Filed Aug. 21, 1986, Ser. No. 898,719
The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.
Int. Cl.[4] E21B 19/20
U.S. Cl. 166—77.5 24 Claims

3. A well pipe handling machine for use in a rig having a string of pipe extending vertically along an axis of a well, comprising:

a movable support;

pipe holding means carried by said support for movement therewith and adapted to hold a section of pipe in vertical condition;

means for moving said support carrying said pipe holding means and a pipe section held thereby between a first position in which the pipe holding means hold said pipe section in vertical condition in alignment with said axis of the well and a second position in which said pipe holding means locate said pipe section in vertical condition at a storage location offset from said axis;

a control station for holding an operator and which is carried by said support for movement therewith between said first and second positions of the support;

a torque wrench for making or breaking a connection between a vertical pipe section and said pipe string and which is carried by said support at essentially the lower



end of said control station and for movement with the support between said first and second positions thereof; and

a spinner for rotating a vertical pipe section and which is carried by said support for movement therewith between said first and second positions thereof and is located at essentially the lower end of said control station above said torque wrench.

4,765,402

SELF-LOCATING SEAL ASSEMBLY

Sydney K. Smith, Jr., Huntsville, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Apr. 22, 1987, Ser. No. 41,380
Int. Cl.[4] E21B 23/02
U.S. Cl. 166—115 6 Claims



1. A self-locating seal assembly for sealing between a well string and the bore of a surrounding well conduit, the surrounding conduit being provided with an internal recess for engagement by the seal assembly, comprising:

a mandrel having an interior bore for conducting well bore fluids, an exterior, upper connecting means for connection in a well string leading to the well surface, and a lower end, the lower end being connected to the remainder of the mandrel to form an external support shoulder, and wherein the mandrel exterior has a region of reduced external diameter adjacent the lower end which defines a setting shoulder in the mandrel exterior;

a seal body carried about the mandrel on the support shoulder while running into the well bore, the seal body having an external seal region for sealingly engaging the interior bore of the surrounding well conduit and an internal seal region for sealingly engaging the mandrel exterior, the seal body being provided with a plurality of window openings at one circumferential location, each window opening having an upper and lower tapered ramp surface;

upper and lower sleeve means circumscribing the seal body at spaced locations to thereby define a circumferential opening, each sleeve means having an interior surface which is spaced-apart from the seal body to define an annular recess;

a plurality of latch elements carried by the seal body in the circumferential opening, each latch element having an interior provided with oppositely sloping camming surfaces and an exterior also provided with oppositely sloping camming surfaces, the interior camming surfaces being received within the window openings of the seal body and being engageable with selected ones of the window opening ramp surfaces, whereby the latch elements are movable axially and radially within the window openings; and

spring means located within a selected one of the annular recesses for biasing the latch elements radially outward in the direction of the surrounding well conduit and into engagement with the internal recess of the surrounding conduit once the latch elements reach the internal recess of the surrounding conduit as the seal assembly is being run into position within the well bore.

4,765,403

APPARATUS FOR PLACING AND REMOVING WELL FLOW CONTROL DEVICES

Douglas W. Crawford; William B. Crawford, both of P.O. Box 51, Atwood Akers, Crowley, La. 70526, and Robert W. Dinning, 9901 Westview, Houston, Tex. 77055

Filed Dec. 7, 1984, Ser. No. 679,263
Int. Cl.[4] E21B 7/08
U.S. Cl. 166—117.5 42 Claims

1. A side pocket mandrel adapted to be connected in a tubing string, comprising:

a body having an open bore aligned with the bore of the tubing and a side pocket laterally offset from said open bore;

a cylindrical opening through a wall of said body at the upper end of said pocket, said opening having an axis that is inclined with respect to the longitudinal axis of said open bore; and

surface means on said body for orienting a kickover tool in a manner such that a flow control device attached thereto can be positioned for entry into said side pocket and eventual insertion into said opening.

10. A kickover tool apparatus for use in placing and removing flow control devices in and from a side pocket mandrel, comprising:

orienting means having upper and lower outwardly projecting dog means that initially have a predetermined angular relationship to one another and means allowing a change in said angular relationship;

tray means connected to the lower end of said orienting means and having normally retracted kickover means mounted thereon;

control means movable longitudinally relative to said tray means for releasing said kickover means for outward movement; and





release means included in said orienting means responsive to a change in said angular relationship of said dog means for allowing longitudinal movement of said said control means.

4,765,404

WHIPSTOCK PACKER ASSEMBLY

Thomas F. Bailey, and John E. Campbell, both of Houston, Tex., assignors to Drilex Systems, Inc., Houston, Tex.

Filed Apr. 13, 1987, Ser. No. 37,517
Int. Cl.[4] E21B 33/128, 33/129
U.S. Cl. 166—117.6 21 Claims

1. A packing assembly for sealing between an inner mandrel and a well casing, said assembly having expandable slip-type anchoring means mounted to the mandrel, a plurality of sleeves slidably mounted coaxially on the mandrel and means for setting the anchoring means, the improvement comprising:

packing means to sealingly engage the well casing and the inner mandrel, said packing means including a pair of resiliently deformable annular packing elements mounted on the inner mandrel and an annular spacer ring mounted on the inner mandrel between said packing elements, said spacer ring extending partially beneath said packing elements and including means for sealingly engaging the

VOL 1093 ISS 4 AUG 23 1988 UMI

inner mandrel, said spacer ring having axially opposed sloped surfaces adapted to guide said packing elements toward the well casing, and

means for compressing said packing means into sealing engagement with the well casing while preventing extrusion of said packing elements, said compressing means mounted on the inner mandrel axially above and axially below said packing means;

said spacer ring being axially movable in response to pressure variations to variably deform said packing elements when said packing elements are in sealing engagement with the well casing thereby enhancing said sealing arrangement of said packing elements with the well casing and the inner mandrel.

19. An apparatus for setting a whipstock and for changing the direction of drilling through a casing wall in a single trip of the drill string, said apparatus comprising:

a whipstock;

a drill string;

a mill connected on said drill string;



means releasably connecting said mill to the upper portion of said whipstock;

a packing assembly for setting said apparatus;

a fluid passage extending through said drill string, said mill, and said whipstock to said packing assembly;

said packing assembly including:

expandable slip-type anchoring means with means for setting said anchoring means;

packing means adapted to sealingly engage the casing wall including at least two resiliently deformable pakcing elements and a spacer ring for variably deforming said packing elements in response to fluid pressure in said well casing, said spacer ring disposed between said packing elements and extending partially beneath said packing elements; and

means for compressing said packing means into sealing engagement with the casing wall while preventing extrusion of said packing elements;

said packing assembly being responsive to fluid pressure supplied through said fluid passage means.

4,765,405

PERFORATION CIRCULATING WASHER

William R. Clark, Box 1639, Riverton, Wyo. 82501

Filed Mar. 13, 1987, Ser. No. 25,348

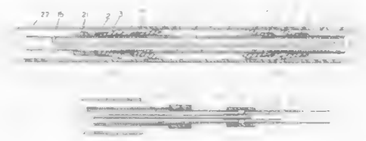
Int. Cl.[4] E21B *33/124, 33/126, 37/08*

U.S. Cl. 166—186 4 Claims

1. An oil well casing perforation cleaning tool having a tubular mandrel connected at its upper end to the lower end of a well pipe string for passage of cleaning fluid, the lower end of the tool being closed, a plurality of openings central to the tool sealed to the well casing by packer cups each side of the openings wherein the improvement comprises:

a, a pair of radially expandable packer cups mounted on said mandrel between the tool and the well casing;

b, means for adjusting the longitudinal spacing between the packer cups;



c, an axial internal by-pass tube extending substantially the length of the tool;

d, an opening in each end section of said tool in fluid communication with with said internal by-pass tube; and,

e, external threads on the terminating ends of the tool.

4,765,406

METHOD OF AND APPARATUS FOR INCREASING THE MOBILITY OF CRUDE OIL IN AN OIL DEPOSIT

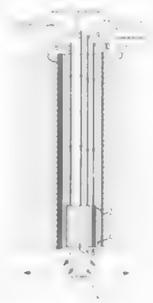
Werner Fröhling, Düren; Manfred Kugeler; Kurt Kugeler, both of Jülich, and Peter W. Philippen, Geilenkirchen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Apr. 16, 1987, Ser. No. 39,605

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1986, 3612946

Int. Cl.[4] E21B *43/24, 43/38*

U.S. Cl. 166—247 6 Claims



1. In a method of increasing the mobility of crude oil in a subterranean deposit thereof wherein a fluid heat carrier is introduced at an inlet region into said deposit at a bottom of a well communicating with the deposit, the improvement which comprises the steps of:

(a) forming a methanizable synthesis gas by steam reformation; and

(b) heating said fluid heat carrier at least in part by catalytically methanizing said methanizable synthesis gas at a location selected from said region and a location within the interior of said deposit and in heat exchanging relationship with said fluid heat carrier;

(c) recovering a product gas from the methanization of said methanizable synthesis gas;

(d) removing the recovered product gas from said deposit;

(e) passing the recovered product gas in heat exchange at said location with said methanizable synthesis gas flowing toward said location to heat said methanizable synthesis gas and cool said product gas substantially to a condensation temperature of water vapor therein;

(f) heating the removed and recovered product gas and subjecting it to steam reforming to transform the recovered product gas to synthesis gas; and

(g) recycling the synthesis gas formed in step (f) to step (a).

4. In a apparatus for increasing the mobility of crude oil in a subterranean deposit thereof which comprises means including a well communicating with said deposit for introducing a fluid heat carrier at an inlet region into said deposit, the improvement which comprises:

(a) means for forming a methanizable synthesis gas by steam reformer;

(b) means for heating said fluid heat carrier at least in part by catalytically methanizing said methanizable synthesis gas a location selected from said region and a site within the interior of said deposit in heat exchanging relationship with said fluid carrier;

(c) a preheater upstream of and communicating with said methanization reactor for effecting heat exchange between a hot methanization product gas withdrawn from said location and synthesis gas fed to said methanization reactor substantially at said location to heat said synthesis gas;

(d) a condenser upstream of said preheater but at said location for cooling with synthesis gas fed to said preheater and traversed by the product gas to condense water vapor therefrom, said synthesis gas cooling said product gas in said condenser to a temperature at most equal to the condensation temperature of water vapor in said product gas; and

(e) means for recycling said product gas to the means for forming the methanizable synthesis gas.

4,765,407

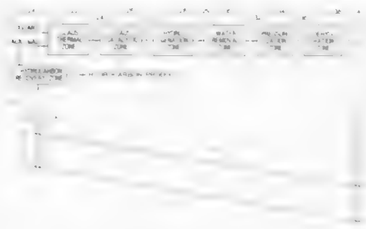
METHOD OF PRODUCING GAS CONDENSATE AND OTHER RESERVOIRS

James A. Yavancic, Tyler, Tex., assignor to Amoco Corporation, Chicago, Ill.

Filed Aug. 28, 1986, Ser. No. 902,247

Int. Cl.[4] E21B *43/40*

U.S. Cl. 166—268 5 Claims



1. A process for producing a reservoir comprising:

producing a Claus plant effluent stream comprising predominantly carbon dioxide, nitrogen, and water, and minor amounts of hydrogen sulfide and sulfur dioxide, from a gaseous stream comprising hydrogen sulfide and carbon dioxide by the steps of oxidizing a portion of the hydrogen sulfide to sulfur dioxide and reacting thus produced sulfur dioxide with a remaining portion of hydrogen sulfide and producing elemental sulfur which is condensed and removed;

hydrogenating substantially all sulfur species in the resulting Claus plant effluent stream to hydrogen sulfide;

removing water from the resulting hydrogenated stream;

pressurizing the resulting hydrogenated stream to about reservoir injection pressure; and

injecting the resulting pressurized dried hydrogenated stream into the reservoir.

4,765,408

MICELLAR SLUG FOR OIL RECOVERY

Hiroshi Morita, Chiba; Yasuyuki Kawada, Odawara; Junichi Yamada, and Toshiyuki Ukigai, both of Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Mar. 26, 1986, Ser. No. 844,438

Claims priority, application Japan, Mar. 28, 1985, 60-62132

Int. Cl.[4] E21B *43/22*

U.S. Cl. 166—274 5 Claims

1. A micellar slug free of lower alcohols for use in the recovery of oil, consisting essentially of 0.1% to 15% by weight of a surfactant and an aqueous medium, which may contain an inorganic salt, said surfactant containing:

(a) 0.01% to 12% by weight based on the amount of the micellar slug of at least one alkoxy sulfonate having the general formula (I):

$$R^1-CH(OR^2)-(CH_2)_n-CH(R^3)-SO_3X \quad (I)$$

wherein R^1 represents an alkyl group having 1 to 26 carbon atoms, R^2 represents an alkyl or alkenyl group having 1 to 24 carbon atoms, R^3 represents hydrogen or an alkyl group having 1 to 24 carbon atoms, n is a number of 0 to 5, and X represents an alkali metal, an alkaline earth metal, ammonia, or an iorganic amine, and

(b) at least one other surfactant which is a member of the following group, a sulfonate, sulfate, and ethoxylate surfactant.

4,765,409

AUTOMATIC SEPARATION DEVICE FOR USE WITH WIRELINE CONVEYED PERFORATING GUN

Gerald B. McClure, Socorro, N. Mex., and William A. McPhee, Houston, Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Oct. 2, 1986, Ser. No. 914,837

Int. Cl.[4] E21B *43/11*

U.S. Cl. 166—297 7 Claims



1. An automatic decoupler for disconnecting a tubular perforating gun from a firing head in a wireline conveyed perforating apparatus, comprising:

a tubular coupling member having a first end fixedly coupled to said firing head and a second end coupled to said perforating gun;

a piston member moveable within said coupling member in response to the firing of said perforating gun; and

means for automatically decoupling said perforating gun

VOL 1093 ISS 4 AUG 23 1988 UMI

from said firing head in response to the movement of said piston member.

5. A method for automatically detaching a perforating gun from a firing head, in a wireline conveyed apparatus for perforating subsurface earth formations, comprising the steps of:

attaching said firing head to said perforating gun with a tubular coupling member having a piston member moveable therein in response to the firing of said perforating gun;

lowering said perforating gun and said firing head into a borehole;

detonating said perforating gun; and

automatically detaching said perforating gun from said firing head in response to the movement of said piston member.

4,765,410

METHOD AND APPARATUS FOR CLEANING WELLS

William C. Rogers, 2301 Bryant Dr., East Point, Ga. 30344; George W. Alford, III, 1954 Old Datona Rd., Daytona Beach, Fla. 32014, and D. Roy Callimore, 2003 Styles Crecent East, Regina, Saskatchewan S4V 0P8, Canada

Filed Jun. 24, 1987, Ser. No. 65,916
Int. Cl.[4] E21B *43/27*
U.S. Cl. 166—303 14 Claims



1. A method for opening a clogged well including the steps of placing a steam line into said well, said steam line terminating generally at the bottom of said well, adding a chemical mix into said steam line, and injecting steam with said chemical mix into said well through said steam line, continuing the step of injecting steam with said chemical mix until the temperature in said well is at least 20° C. above ambient temperature, said chemical mix comprising a sterilizing agent and an acid.

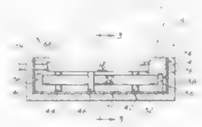
11. Apparatus for cleaning a well, said well including a well casing, and a well screen generally at the lower end of said well casing, said apparatus including steam generating means for providing steam generally at the area of said well screen, and a sleeve disposed adjacent to said well screen, said sleeve being generally parallel with said well screen and defining an open lower end for allowing discharge of said steam, said means for providing steam generally at the area of said well screen including a pipe within said sleeve, concentric with said sleeve and terminating adjacent to said open end of said sleeve, said sleeve defining at least one window at the upper end thereof, said sleeve being of less diameter than said well casing for allowing fluid circulation between said sleeve and said well casing.

4,765,411

ULTRAVIOLET-CURED HORSE SHOE AND METHOD OF SHOEING HOOFED ANIMALS

Jerald L. Tennant, 806 Greentree La., Duncanville, Tex. 75137

Filed Jan. 20, 1987, Ser. No. 4,675
Int. Cl.[4] A01L *3/02, 5/00*
U.S. Cl. 168—4 5 Claims



1. A method of shoeing a hoofed animal comprising the steps of:

forming a mixture of plastic acrylic material, a light activated initiator, and reinforcing material;

placing the mixture directly on the bottom surface of the hoof of the animal in the general shape of the hoof and in the general area used to attach a shoe to the hoof to thereby form a shoe, such that the mixture does not extend substantially into the hoof; and

polymerizing the mixture by exposing the mixture to light, such that the mixture solidifies on the bottom surface of the hoof without any intervening adhesives.

4,765,412

SHOCK RELIEVING HORSESHOE

Richard C. Colonel, Box 2192, Renton, Wash. 98056, and DeVere V. Lindh, 1910 Dogwood Dr. SE., Auburn, Wash. 98002

Filed Feb. 3, 1987, Ser. No. 10,552
Int. Cl.[4] A01L *7/02*
U.S. Cl. 168—15 16 Claims



1. A horseshoe comprising a spring fabricated from a material having a modulus of elasticity in the range of 300,000 to 3,000,000 pounds per square inch, a density in the range of 0.03 to 0.07 pounds per cubic inch and an allowable working stress in the range of 15,000 to 22,000 PSI;

and in which said spring is an integral part comprising an upper flange, a lower flange and a channel,

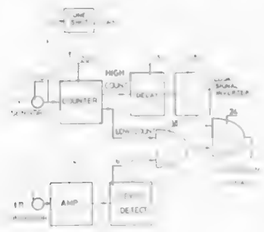
said upper flange being configured for attachment to a horse's hoof.

4,765,413

FIRE AND EXPLOSION DETECTION APPARATUS

Yehiel Spector, Tel-Aviv, and Ilan Cohen, Tikva, both of Israel, assignors to Spectronix, Ltd., Tel-Aviv, Israel

Continuation of Ser. No. 490,246, Apr. 29, 1983, abandoned. This application Jun. 10, 1986, Ser. No. 872,642
Claims priority, application Israel, May 7, 1982, 65715
Int. Cl.[4] A62C *37/18*; G01J *1/00*
U.S. Cl. 169—61 5 Claims



1. Detection apparatus, comprising:

UV sensing means for sensing the presence of UV radiation and generating an output signal proportionate to the level of said UV radiation sensed;

IR sensing means for sensing the presence of IR radiation and generating a first output signal proportionate to the level of said IR radiation sensed; and

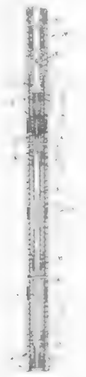
logic means for generating a detection signal only when the level of the output signal from said UV sensing means is between predetermined upper and lower limits, and when the level of said first output signal from said IR sensing means exceeds a predetermined limit.

4,765,414

COREBARREL

Terence A. Moore, Montrose, Scotland, assignor to Diamant Boart Stratabit Limited, Scotland

Filed May 18, 1987, Ser. No. 50,357
Claims priority, application United Kingdom, May 17, 1986, 8612053
Int. Cl.[4] E21B *25/16, 49/02*
U.S. Cl. 175—44 6 Claims



1. A corebarrel for use downhole, comprising:

a. an outer tube defining a through bore;

b. an inner tube disposed within the outer tube and defining a through bore;

c. a bearing assembly between the inner tube and the outer tube providing rotation of the outer tube relative to the inner tube;

d. a survey device disposed within the inner tube below the bearing assembly, said survey device including a solid state survey means for use in oriented coring;

e. mutually co-operating splines on the survey device and the inner tube to prevent rotation of the survey device relative to the inner tube;

f. a latch mechanism on the survey device;

g. a downwardly-directed shoulder on the inner tube, said shoulder engaging the latch mechanism to prevent upward movement of the survey device relative to the inner tube;

h. the inner tube and the outer tube defining between them a first annular passageway, and the survey device and the inner tube defining between them a second annular passageway, the inner tube having an aperture therein above said shoulder whereby the through bore in the inner tube communicates with said first annular passageway at a location above said second annular passageway; and

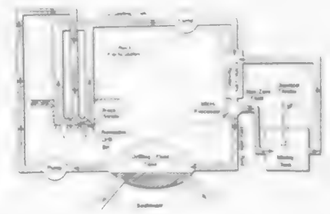
i. means disposed in said inner tube for selectively closing the through bore of the inner tube at a location above said second annular passageway but below said aperture.

4,765,415

ISOELECTRIC DRILLING METHOD

Sanaa E. S. Khalafalla; William H. Engelmann, both of Minneapolis, and John E. Pahlman, Bloomington, all of Minn., assignors to The United States of America as represented by the Secretary of Interior, Washington, D.C.

Filed Jan. 15, 1987, Ser. No. 5,041
Int. Cl.[4] E21B *7/00, 21/06*
U.S. Cl. 175—50 10 Claims



1. An apparatus for increasing the drilling rate and useful drilling life of a drill bit comprising:

a drill bit;

means for supplying an ion charged fluid to the drill bit while it is drilling at a work surface;

means for monitoring the zeta potential of the fluid being supplied to the bit; and

means for adjusting the zeta potential of the monitored fluid being supplied to the bit and work surface to a point at or near zero.

10. A method for determining the isoelectric point of rock surfaces in order to increase the drilling rate while prolonging the bit life of a drill during excavation and natural resource exploration at constant applied stress comprising:

inserting an electrophoresis meter into a circulating drill fluid tank of a drilling apparatus to measure the zero point charge of rock fragmentations during drilling; and

adding a chemical additive into the drilling fluid until the concentration of said material in the drilling fluid is sufficient to register a zero-zeta potential reading at the rock/-drilling fluid interface.

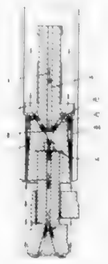
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,416

METHOD FOR PRUDENT PENETRATION OF A CASING THROUGH SENSIBLE OVERBURDEN OR SENSIBLE STRUCTURES

Sven-Erik Bjerking, and Sven-Goran Andersson, both of Upsala, Sweden, assignors to AB Sandvik Rock Tools, Sandviken, Sweden

Filed Jun. 2, 1986, Ser. No. 869,697
Claims priority, application Sweden, Jun. 3, 1985, 8502723
Int. Cl.[4] E21B *10/26, 10/60, 21/00*
U.S. Cl. 175—71 1 Claim



1. In a method of drilling through sensible overburden, comprising the steps of downwardly advancing a drill stem having a drill bit and simultaneously advancing therewith a casing disposed around said drill stem, while conducting compressed air through said drill bit and discharging said compressed air simultaneously through downwardly directed discharge passage means at a lower end of said drill bit, and through a plurality of upwardly directed discharge passages disposed above said lower end and which discharge the air into a space disposed between said drill string and said casing, whereby a major part of the compressed air flows through said upwardly directed discharge passages and a minor part of said pressurized air is directed through said downwardly directed discharge passage means to engage said overburden and then be sucked upwardly along a side wall of said drill bit by the action of said compressed air discharged through said upwardly directed discharge passages, said casing shielding the sensible overburden from air discharged from said upwardly directed passages, the improvement comprising the steps of providing in at least some of said upwardly directed discharge passages a removable insert having a through-passage therein, and exchanging said inserts with different inserts in order to vary the amount of pressurized air which is directed through said upwardly directed discharge passages and thereby vary the amount of pressurized air which exists said downwardly directed discharge passage means and into contact with said sensible overburden in accordance with the type of material in the overburden, whereby the amount of air contacting said sensible overburden is adapted to the type of material in said sensible overburden in a manner controlling the amount of disruption to said sensible overburden.

4,765,417

REAMING APPARATUS FOR WELL DRILLING

Gregg S. Perkin, Kingwood, Tex., and Duane D. Papke, Alberta, Canada, assignors to Oil Patch Group Inc., Alberta, Canada

Division of Ser. No. 892,315, Aug. 4, 1986, Pat. No. 4,709,462.
This application Jun. 24, 1987, Ser. No. 66,006
Int. Cl.[4] E21B *10/30*
U.S. Cl. 175—347 5 Claims

1. A reamer tool apparatus adapted for use in a drill string during rotary drilling operation to form a borehole, including:

a tubular member forming an outer surface and having upper and lower threaded connections for mounting said tubular member at a desired location in the drill string;

at least one borehole wall contacting roller cutter disposed on said outer surface of said tubular member for enlarging the borehole and for radially supporting the drill string in the borehole;

means for mounting said roller cutter on said tubular member including a shaft and a pair of bearing blocks for providing rotational support for said shaft;

said shaft having first and second ends and mounting said roller cutter between said ends;

one of said bearing blocks mountable on said first end of said shaft and the other of said bearing blocks mountable on said second end of said shaft, said shaft movable axially relative to said bearing blocks when positioned thereon;

said tubular member having means for forming a separate mounting groove for each said bearing block to position said bearing blocks on said tubular member;



each of said bearing blocks having a projection facing away from said roller cutter for reception in said complementary mounting groove to prevent radial outward movement of said bearing block from said tubular member when said projection is received in said complementary mounting groove;

means on each of said bearing blocks for enabling the releasable securing of said bearing blocks with said tubular member to prevent relative axial movement of each said bearing block from each said complementary mounting groove; and

at least one resilient C-shaped clamp securable about said shaft between said roller cutter and one of said bearing blocks after said bearing block is releasably secured to said tubular member to limit axial movement of said roller cutter and said shaft toward said bearing block.

4,765,418

BOREHOLE DRILL CONSTRUCTION

Melvyn S. J. Eanis, 19 Wynnland Park, Carnmoney, Newtonabbey, County Antrim, Northern Ireland BT6 6SE

Filed Apr. 22, 1987, Ser. No. 41,600
Claims priority, application United Kingdom, May 7, 1986, 8611091
Int. Cl.[4] E21B *4/14, 17/046, 17/07*
U.S. Cl. 175—396 6 Claims

1. A borehole drill construction having a tubular casing adapted at one end for connection to a drill string, said casing tube being internally screw-threaded at the other end; a tubular chuck member having at one end a screw-threaded portion engaged with the internal screw-thread of said casing, and at the other end at least one axially projecting dog portion; a cutter head having a recess for receiving said dog portion and a stem portion extending through the screw-threaded portion of the chuck member; retaining means for preventing removal of the cutter head from the chuck member while the latter is in



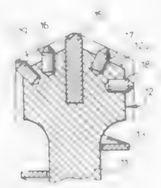
position on the casing; the cutter head having a limited axial movement relative to the chuck member, and said dog portion providing a driving connection between the casing and the cutter head.

4,765,419

ROCK DRILL WITH CUTTING INSERTS

Dieter Scholz, Germering, and Friedrich Fleach, Kaufering, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Dec. 16, 1986, Ser. No. 942,541
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1985, 3544433
Int. Cl.[4] E21B *10/36*
U.S. Cl. 175—415 9 Claims



1. An axially elongated rock drill having an axis and drilling direction extending in the axial direction of said rock drill and comprising an axially extending shank having a first end facing in the drilling direction with a drill head secured to and extending in the axial direction of said rock drill from the first end thereof, said drill head has a drill face extending generally transversely of the axial direction and a circumferentially extending side surface extending generally parallel to and encircling the axis of said shank, a hard metal cutting plate inserted into and projecting outwardly from said drill head, said cutting plate extends completely across the diameter of said drill head, generally cylindrically shaped hard metal cutting pins having an axis and being separate from and spaced laterally from said cutting plate and set into said drill face of said drill head, said hard metal cutting plate and cutting pins being formed of a harder material than the drill head, at least certain of said cutting pins being spaced radially inwardly of said circumferentially extending side surface, said cutting plate projects axially in the drilling direction from said drill face and radially outwardly from the circumferentially extending side surface of said drill head, said cutting plate has a center point located on the axis of said rock drill and a pair of cutting edges extending in an arrow-head-like manner radially outwardly from said center point, and said cutting edges extend at an obtuse angle relative to one another.

4,765,420

WEIGH SCALE FOR FISH LANDING DEVICE

Alfred Mengo, Kenosha, Wis., assignor to Mengo Industries, Inc., Kenosha, Wis.

Filed Oct. 22, 1987, Ser. No. 111,235
Int. Cl.[4] G01G *19/56, 3/02*
U.S. Cl. 177—149 7 Claims



1. A scale and fish landing net which can afford a tamper-proof adjustment of a weigh scale spring comprising:

a net having an elongate handle;

a cylinder axially journalled on said handle with said handle extending completely through said cylinder;

a chamber being defined within said cylinder exteriorly of said handle, said chamber being open at one end and closed at another end of said cylinder by a bearing end fixed to said cylinder and fitting closely about said handle while allowing free axial movement of said handle;

a coil compression spring positioned in said chamber about said handle and bearing at one end against said bearing end;

a slot in said cylinder extending parallel to the axis thereof;

weight calibrations on the exterior of said cylinder along said slot, a sleeve fixedly journalled about said handle at the other end of said spring within said chamber, said sleeve being axially movable with respect to said cylinder, a protrusion on said sleeve extending through said sleeve and into said slot and moving along said slot as said sleeve moves with respect to said cylinder;

an annular plug at the open end of said cylinder opposite said bearing end, an inner end of said plug contacting said sleeve; and

at least one spacing element positioned between said bearing end and said spring in a manner to provide a tamper-proof adjustment of said spring.

4,765,421

FOLDING SCALE

Robert F. Newton, 2459 Whitney Ave., Hamden, Conn. 06518, and Frank D. Sandermeyer, 392 Matthew St., Prospect, Conn. 06712

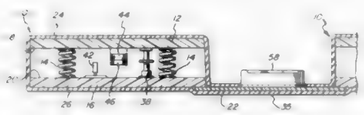
Filed Jan. 11, 1987, Ser. No. 61,873
Int. Cl.[4] G01G *19/00, 21/28, 3/14*
U.S. Cl. 177—199 17 Claims

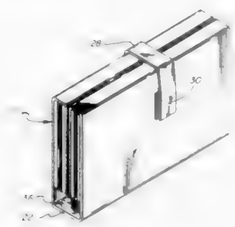
1. A scale for weighing a object, said scale comprising:

at least two means for generating electrical signals representative of a weight of said object, said at least two generating means each comprising a Hall effect integrated circuit

VOL 1093 ISS 4 AG 23 1988 UMI

sensor and at least one magnet, said at least two generating means for supporting said object to be weighed and generating said electrical signals in response to the displacement of said generating means under the weight of said object, and each said at least two generating means for providing an electrical signal representative of the partial weight supported by each said generating means;





means operatively connected to said at least two generating means for electrically summing said electrical signals from said at least two generating means;

means operatively connected to said summing means for electrically displaying an indication of the weight;

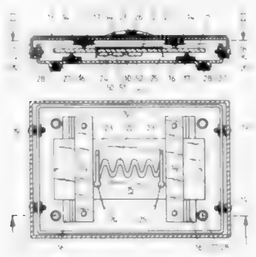
means for flexibly joining said at least two generating means whereby said joining means may be folded to form a compact case from said at least two generating means.

4,765,422

BATHROOM SCALE

Erich Hoffmann, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. KG., Solingen, Fed. Rep. of Germany

Filed Jun. 1, 1987, Ser. No. 56,852
Int. Cl.[4] G01G *3/14;* G01L *1/22*
U.S. Cl. 177—211 8 Claims



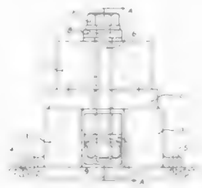
1. A scale, particularly a bathroom scale, comprising a base member; a platform member which is mounted on the base member so that at least a portion thereof is displaced with reference to the base member in response to the application of a load thereto; and a strain gauge mounted on one of said members and including an electrical resistor which is placed under strain in response to the application of a load to said platform to thereby change its resistance to an extent which is a function of the magnitude of the load, said resistor including a thick film conductor and said one member including a body of steel and an insulator between said body and said thick film conductor.

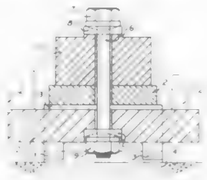
4,765,423

LOAD CELL ADAPTOR

Michael J. Karpa, P.O. Box 408, Stn. B, Hamilton, Canada L8L 7W2

Filed Nov. 5, 1987, Ser. No. 117,637
Int. Cl.[4] G01G *3/14, 21/24;* G01L *1/22*
U.S. Cl. 177—211 6 Claims





1. A device for adapting load cells having a through loading hole to load receptacles or carriers in multiple cell support applications (known as electronic scales) and comprising the following elements:

(a) a supporting base plate for the load cell having a coincident through hole and supported by two spaced blocks resting on and fastened to a foundation,

(b) a suspension bolt passing through said cell and base holes and working against the load cell via a spherical washer assembly at its top and

(c) said bolt supporting via a spherical washer assembly a loading bar at its bottom, said washer being deployed around a central through hole in said bar which in turn carries the applied load or scale structure at its ends.

4,765,424

APPARATUS FOR TRANSPORTING A SUSPENSION CRADLE

Edward Daley, Nelson, United Kingdom, assignor to Colebrand Limited, London, England

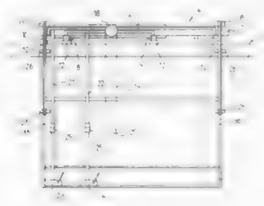
Filed Oct. 3, 1986, Ser. No. 914,880
Claims priority, application United Kingdom, Oct. 3, 1985, [illegible]
Int. Cl.[4] B62D *11/06;* E04G *1/20*
U.S. Cl. 180—8.1 7 Claims

1. Apparatus for transporting a suspension cradle along an upper region of an upright edifice having a substantially flat surface extending in a plane transverse to the upright plane of the edifice, comprising:

(i) a device mountable on the surface; and

(ii) means adapted to engage the surface for moving the device along said surface,

wherein the moving means comprises pairs of extensible members and wherein said members are extended in pairs alternately to engage the surface for moving the device along the surface, wherein there are two pairs of extensible members, and a first frame part and a second frame part of said device, and wherein one pair of said members is carried by said first frame part and the other of said members is carried by the



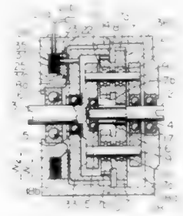
second frame part of the device, and wherein the two frame parts are operatively connected for relative movement, one frame part being within the second frame part and operatively connected by a roller and guide arrangement for relative sliding movement.

4,765,425

ELECTRIC POWER STEERING APPARATUS

Shigeki Saito, and Masato Sakai, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 25, 1987, Ser. No. 66,331
Claims priority, application Japan, Jun. 25, 1986, 61-146927
Int. Cl.[4] B62D *5/04*
U.S. Cl. 180—79.1 4 Claims



1. An electric power steering apparatus comprising:

a steering shaft;

means for detecting an operation of said power steering apparatus;

an electric motor adapted to be driven in response to an output of said detecting means for generating an assisting force for a steering operation;

speed reduction means including an input shaft adapted to be driven by said electric motor, an output shaft connected to said steering shaft, and a planetary gear mechanism for reducing the rotational speed of said input shaft and transmitting said reduced rotational speed to said output shaft, said planetary gear mechanism including a sun gear rotatable together with said input shaft, a ring gear, planet gears connected to said output shaft and adapted to transmit revolving motion thereof around said sun gear to said output shaft, and a gear case for accommodating said sun gear, said ring gear, and said planet gears; and

electromagnetic clutch means accommodated in said gear case and adapted to be actuated in reasons to the output of said detecting means to be switched over between a first position in which it locks said ring gear to make the latter unrotatable and a second position in which it releases the locking of said ring gear to allow the latter to be rotatable with respect to said output shaft;

wherein said gear case includes a wall portion made of a magnetic material, and said electromagnetic clutch means includes a coil provided in said wall portion and a movable member made of a magnetic material, said movable member being movably supported by a side wall portion of said ring gear and frictionally engaging with said wall portion made of magnetic material when said coil is energized so as to lock said ring gear unrotatably.

4,765,426

MOTOR DRIVEN POWER STEERING SYSTEM

Yasuo Shimizu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1987, Ser. No. 33,409
Claims priority, application Japan, Mar. 31, 1986, 61-73816
Int. Cl.[4] B62D *5/04*
U.S. Cl. 180—79.1 7 Claims



1. A motor-driven power steering system comprising:

a steering mechanism;

an electric motor operatively coupled to said steering mechanism for generating assistive steering power;

a power source;

motor driver means connected to said power source for driving said motor;

control means for controlling said motor driver means; and

switch means for selectively electrically connecting and disconnecting said motor driver means and said motor,

wherein said motor driver means includes an arrangement capable of cooperating with said motor in forming a closed loop for allowing an induced current produced in said motor to flow therethrough when the steering system is subjected to a trouble,

and wherein said switching means comprises a relay circuit controlled by said control means for selectively electrically connecting and disconnecting said motor driver means and said motor.

4,765,427

AUXILIARY PUMP SYSTEM FOR VARIABLE EFFORT POWER STEERING

John F. Yonker, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 3, 1987, Ser. No. 80,905
Int. Cl.[4] B62D *5/08*
U.S. Cl. 180—143 2 Claims

1. In a variable effort power steering system for an automotive vehicle of the type including,

a power steering pump continuously driven by an engine of said vehicle whenever said engine is operating and having an intake port and a discharge port,

a fluid reservoir connected to an intake port of said power steering pump whereby said power steering pump delivers a continuous supply of power steering fluid at said discharge port when said power steering pump is being driven,

a power steering gear having a pressure port connected to said discharge port of said power steering pump and an exhaust port,

said power steering pump substantially continuously cir-

VOL 1093 ISS 4 AG 23 1988 UMI

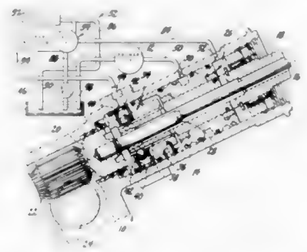
culating power steering fluid through said power steering gear from said pressure port to said exhaust port; and

detent means on said power steering gear between an input member of said power steering gear and an output member of said power steering gear operative to resist relative angular displacement therebetween in proportion to the magnitude of a fluid detent pressure operating on said detent means,

an auxiliary pump system comprising:

an auxiliary pump having an intake port and a high pressure discharge port and a pump rotor operative when rotated to pump fluid from said intake port to said high pressure discharge port at a flow rate proportional to the speed of said rotor,

means mounting said auxiliary pump on a power transmission of said vehicle with a vehicle speed responsive shaft of said transmission connected to said auxiliary pump rotor whereby said auxiliary pump rotor is driven at a speed proportional to the speed of said vehicle,



means connecting said auxiliary pump high pressure discharge to said detent means so that said fluid output of said auxiliary pump provides said detent pressure proportional to the speed of said vehicle,

means defining low pressure discharge port on said auxiliary pump connected to said intake port of said auxiliary pump,

means connecting said power steering gear exhaust port to said auxiliary pump intake port whereby all of the fluid discharge from said power steering gear is directed into said auxiliary pump intake port,

the overage of fluid supplied to said auxiliary pump intake port being discharged from said

auxiliary pump through said low pressure discharge port, and

means connecting said auxiliary pump low pressure discharge port to said power steering pump reservoir whereby the overage of fluid supplied to said auxiliary pump intake port is returned to said reservoir.

4,765,428

POWER-ASSISTED STEERING SYSTEM

Hiroshi Kawakami; Harunori Shiratori; Koichi Sugihara; Atsushi Watanabe, and Fumio Kishida, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Feb. 26, 1987, Ser. No. 19,419

Claims priority, application Japan, Feb. 26, 1986, 61-40647

Int. Cl.[4] B62D 5/08

U.S. Cl. 180—143 8 Claims

1. A power-assisted steering system in an automotive vehicle, comprising:

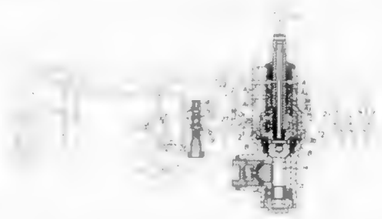
a hydraulic pump driven by a prime mover of the vehicle for supply of fluid under pressure;

a hydraulic power cylinder operatively connected to the dirigible road wheels of the vehicle;

a changeover valve unit including an input member arranged to be moved by the driver's steering effort applied thereto, an output member operatively connected to said power cylinder, and valve means for controlling the supply of fluid under pressure from said pump to said power cylinder in response to relative movement between said input and output members;

a hydraulic reaction mechanism associated with said changeover valve unit to apply a reaction force to said input member in accordance with a hydraulic reaction pressure applied thereto, said reaction mechanism including a reaction fluid chamber to be applied with the hydraulic reaction pressure;

first flow control valve means disposed within a first fluid circuit connecting said pump to said valve means of said changeover valve unit and within a second fluid circuit connecting said reaction fluid chamber to a fluid reservoir to permit a predetermined small quantity of fluid under



pressure supplied therethrough from said pump to said reaction fluid chamber;

a first throttle disposed within a bypass circuit connecting said first fluid circuit to said second fluid circuit between said first flow control valve means and said reaction fluid chamber;

a second throttle disposed within said second fluid circuit between said first flow control valve means and said fluid reservoir; and

second flow control valve means disposed within said second fluid circuit downstream of said second throttle to decrease the quantity of fluid discharged therethrough into said fluid reservoir in accordance with an increase of travel speed of the vehicle thereby increasing the hydraulic reaction pressure in said reaction fluid chamber.

4,765,429

FOUR WHEEL DRIVE VEHICLE WITH ANTI-LOCK BRAKING SYSTEM AND ASSOCIATED METHOD OF OPERATION

Makoto Sato, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1986, Ser. No. 927,792

Claims priority, application Japan, Nov. 5, 1985, 60-247326; Nov. 5, 1985, 60-247327

Int. Cl.[4] B60T 8/26

U.S. Cl. 180—197 19 Claims

1. A four wheel drive vehicle with an antilock braking system comprising:

front and rear axles each having left and right wheels with respective brakes;

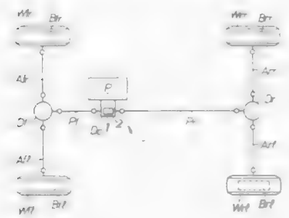
a power transmission assembly between said axles for selectively coupling said axles together in direct driving relation or uncoupling said axles so that only one of said axles is driven;

a hydraulic braking system coupled to said brakes for controlling hydraulic braking pressure applied to said brakes;

an antilock control means in said hydraulic braking system for controlling said hydraulic braking pressure to reduce the pressure applied to said brakes when a wheel is about to become locked;

said antilock control means including a front wheel control section for controlling the hydraulic pressure applied to the brakes associated with the wheels on the front axle, and a rear wheel control section for controlling the hydraulic pressure applied to the brakes associated with the wheels on the rear axle;

said rear wheel control section including means for maintaining the hydraulic braking pressure applied to the



brakes of the wheels on the rear axle at a lower level when said power transmission assembly couples said axles together in direct driving relation as compared to the hydraulic braking pressure when the power transmission assembly uncouples said axles.

4,765,430

METHOD AND ARRANGEMENT FOR PROPULSION REGULATION OF AN AUTOMOBILE

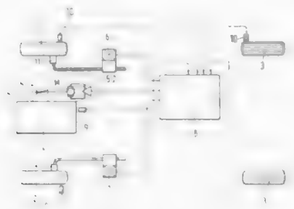
Bernd-Guido Schulze, and Ernst Lissel, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 22, 1986, Ser. No. 922,047

Claims priority, application Fed. Rep. of Germany, Oct. 24, 1985, 3537827

Int. Cl.[4] B60T 8/58

U.S. Cl. 180—197 1 Claim



1. A method for propulsion regulation of an automobile having an engine, revolving driven and non-driven wheels, and wheel brakes associated with the driven wheels, so as to prevent undesirable spinning of the driven wheels, the method comprising the steps of: detecting the speed of the driven wheels and at least one non-driven wheel; detecting engine speed; generating control signals from the detected speed values by means of a digital electronic circuit unit operating with a fixed repetition frequency, said control signals selectively influencing the wheel brakes and a fuel-feeding unit which determines engine torque so as to selectively reduce the engine torque and activate, if necessary, only one wheel brake; and further comprising the following steps in constant repetition, detecting the speed of the wheels and the engine; determining from stored vehicle parameters and the detected speeds for each driven wheel an excess driving moment $M_{\ddot{u}}$ responsible for undesired spinning of the driven wheel concerned according to the relation $M_{\ddot{u}}=\theta^*.\Delta\omega$, wherein θ^* is the effective mass moment of inertia of a driving train concerned and $\Delta\omega$ is a difference in angular acceleration between the driven wheel concerned and a non-driven wheel; determining the reduction moment required for preventing spinning and a tendency to spin for each of the driven wheels according to the relation

$M_{red}=M_{\ddot{u}}+k(\Delta\omega-s)$, wherein k is a constant, $\Delta\omega$ is the difference in rotational speed between the driven wheel concerned and the non-driven wheel at an instant when reduction of the speed of the driven wheel concerned becomes effective, and s is a predefined desired rotational speed difference between the wheels; and determining a speed of travel, and if said speed of travel is smaller than a preset speed of travel and if a reduction moment is determined for only one driven wheel of an axle, applying a braking moment to said one driven wheel corresponding to the reduction moment determined, and if said speed of travel is smaller than the preset speed of travel and if a reduction moment is determined for two driven wheels of the axle, on the one hand applying to the wheel to which the larger of both said reduction moments is determined a braking moment corresponding to the difference of the two reduction moments, and on the other hand modifying control of the fuel-feeding unit so that the engine torque is reduced by a valve corresponding to twice the value of the smaller of both said reduction moments, and if said speed of travel is larger than the preset speed of travel, modifying control of the fuel-feeding unit so that the engine torque is reduced by a value corresponding to the sum of both said reduction moments determined.

4,765,431

SWING ARM SUPPORTING STRUCTURE IN MOTORCYCLE

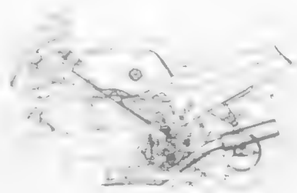
Toshiharu Yoshioka, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,393

Claims priority, application Japan, Sep. 20, 1985, 60-144057[U]

Int. Cl.[4] B62K 25/26

U.S. Cl. 180—219 8 Claims



1. In a motorcycle in which a swing arm supporting a rear wheel is vertically swingably supported through a base end portion thereof by a pivot bolt inserted in a swing arm pivot member provided on the motorcycle body, a swing arm supporting structure comprising:

a swing arm pivot member in the form of a box having three serial chambers formed between right and left side walls and right and left partition walls provided between said right and left side walls; and

two pivot bolts inserted respectively into said right side wall and right partition wall and into said left side wall and left partition wall from both sides of said swing arm pivot member to support base end portions of right and left arms respectively of said swing arm inserted respectively between said right side wall and right partition wall and between said left side wall and left partition wall, thereby to vertically swingably support said swing arm.

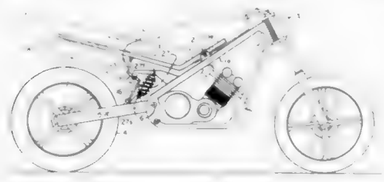
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,432

MOTORCYCLE HAVING A SUSPENSION COUPLED SEAT

H. Paul Odom, 1711 Forest Cove Dr., Mt. Prospect, Ill. 60056

Filed May 21, 1987, Ser. No. 52,837
Int. Cl.[4] B62K *25/20*
U.S. Cl. 180—227 18 Claims



1. A motorcycle having a main frame, a rear wheel, a suspension system supporting the rear wheel relative to the frame, a rider's seat, means for supporting the seat to move relative to the frame, and a means for moving the rider's seat responsive to movement of the rear wheel suspension system, operable to provide that upward movement of the rear wheel relative to the main frame causes a related downward displacement of the rider's seat relative to the main frame, and vice versa.

4,765,433

FOUR WHEEL DRIVE VEHICLE WITH ANTILOCK BRAKE DEVICE AND ASSOCIATED METHOD OPERATION

Etsuo Fujii, and Makoto Sato, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 4, 1986, Ser. No. 927,052
Claims priority, application Japan, Nov. 6, 1985, 60-248400
Int. Cl.[4] B60K *17/356, 17/34*
U.S. Cl. 180—244 18 Claims



1. An antilock brake device for a four wheel drive vehicle having front and rear axles, left and right wheels on each axle with brakes associated with each wheel, a power unit drivingly connected to one of said axles, the other axle being coupled for drive together with said one axle, a hydraulic braking system for controlling the hydraulic pressure applied to the brakes, and antilock control means coupled to said braking system for controlling the hydraulic braking pressure to reduce the pressure when a wheel is about to be locked, said antilock control means comprising a front wheel control section for controlling the brakes of the front wheels and a rear wheel control section for controlling the brakes of the rear wheels, and means included in said front and rear wheel control sections for keeping the hydraulic braking pressure reduced up to the completion of a braking operation, when any of the wheels is about to be locked.

11. A method of controlling a hydraulic braking pressure supplied to brakes of a four wheel drive vehicle having left and right wheels on front and rear axles which are driven from a power unit, said method comprising sensing conditions at each wheel during braking to detect when one of said wheels is about to become locked, reducing the braking pressure to both brakes on one of said axles in response to detection that one of the wheels is about to be locked and maintaining the reduction of the braking pressure on both brakes on said one axle during the entire period of braking.

4,765,434

CONTROL APPARATUS FOR FOUR-WHEEL DRIVE VEHICLE WITH CENTER DIFFERENTIAL MECHANISM

Mutumi Kawamoto, Tokyo; Shuzo Moroto, Handa; Takashi Yamada, and Shouji Yokoyama, both of Tokyo, all of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Japan and Kabushiki Kaisha Shinsangyokaihatsu, Japan

Filed Dec. 29, 1986, Ser. No. 947,247
Claims priority, application Japan, Dec. 27, 1985, 60-294750; Feb. 13, 1986, 61-29388
Int. Cl.[4] B60K *17/352*
U.S. Cl. 180—249 17 Claims



1. In a four-wheel drive vehicle having a center differential mechanism which allows a difference in rotating speed between front and rear wheels so as to absorb a difference in turning radius developed between the front and rear wheels when the vehicle is cornering, and a center differential clutch for restraining differential action of the center differential mechanism, a control apparatus comprising:

front-wheel torque sensing means provided on a front-wheel drive shaft for sensing the front-wheel torque, and wherein said front-wheel torque sensing means comprises:

(a) first and second opposing disks each having a continuous slit, said slits appearing to intersect each other when viewed along the common central axis of said disks, and

(b) light-emitting elements and light-receiving elements arranged to oppose each other with said first and second disks interposed therebetween, and

means for automatically actuating said center differential clutch, thereby reducing or removing the restraint on the differential action of said center differential mechanism, in a case where said front-wheel torque sensing means senses that a negative front-wheel torque is generated while the vehicle is traveling with the differential action of said center differential mechanism restrained.

4,765,435

MOBILE WELL-LOGGING LABORATORY

Volker L. Reichert, Missouri City, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 6, 1985, Ser. No. 762,999
Int. Cl.[4] G01V *1/40, 1/00;* E21B *33/00;* B62D *21/00*
U.S. Cl. 181—102 24 Claims

1. A transportable well-logging laboratory, for use with a well-logging tool which is suspended within a borehole by a wireline, comprising:

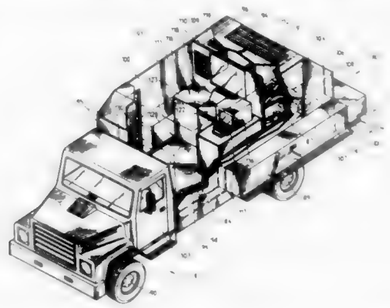
a support surface having first and second ends;

an outer shell associated with the support surface and defining an area therewithin;

a frame associated with the support surface and disposed within the outer shell, the frame being moveable between a first position and a second position within the outer shell, the first position being disposed away from the first end of the support surface, and the second position being disposed adjacent the first end of the support surface;

a drum mounted to the frame and disposed within the outer shell, the drum being adapted for having the wireline disposed thereon and adapted for moving the wireline within the borehole when the frame and drum are disposed in the second position adjacent the first end of the support surface;

means for moving the frame with respect to the support surface and within the outer shell and between the first and second positions, whereby the drum is moveable upon the support surface along at least a portion of the length of



the support surface, and the drum is operable to move the wireline within the borehole when the frame and drum are disposed in the second position adjacent the first end of the support surface;

a moveable, substantially vertical bulkhead disposed within the outer shell; the bulkhead dividing the area within the outer shell into a first and second compartment, the size of each compartment being determined by the location of the bulkhead within the outer shell, upon relative movement of the bulkhead, with respect to the support surface; and

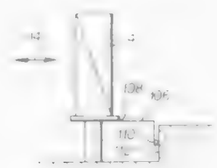
means for moving the bulkhead within the outer shell.

4,765,436

DRY FRICTION DAMPER WITH DAMPING FORCE PERPENDICULAR TO PRINCIPAL DIRECTION OF A VIBRATION

Earl H. Dowell, Durham, N.C., assignor to Duke University, Durham, N.C.

Filed Dec. 10, 1986, Ser. No. 940,108
Int. Cl.[4] F16F *15/00*
U.S. Cl. 181—207 12 Claims



1. In a body subject to cyclic energy of such a nature as to cause said body to mechanically vibrate with a principal motion in a first direction, a dry friction vibration damping means comprising:

a first sliding element fixed to said body and having a first rigid dry sliding surface extending in a second direction having a component perpendicular to said first direction;

a second stationary, element having a second rigid surface engaging said first surface and extending in said second direction; and

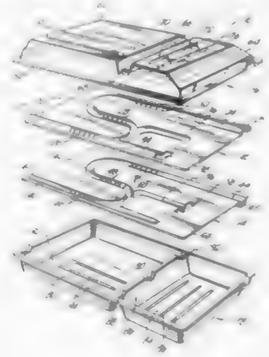
means for applying a normal force between said first and second surfaces, whereby said vibrations are damped by dry friction damping.

4,765,437

STAMP FORMED MUFFLER WITH MULTIPLE LOW FREQUENCY RESONATING CHAMBERS

Jon W. Harwood; Bruno A. Ross, both of Toledo; Bennie A. Van Blaircum, Whitehouse, and Mark S. Kimmet, Toledo, all of Ohio, assignors to AP Industries, Inc., Toledo, Ohio

Filed Oct. 7, 1987, Ser. No. 106,244
The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.
Int. Cl.[4] F01N *1/02, 7/18*
U.S. Cl. 181—282 19 Claims



1. An exhaust muffler comprising an external shell and first and second internal plates, said first and second internal plates being disposed in face-to-face relationship with one another and disposed within and connected to said external shell, said internal plates being stamp formed to define a plurality of channels disposed to define an array of interconnected tubes between the internal plates, with each tube in the array being defined by opposed portions of the respective first and second internal plates, said array of tubes comprising an inlet tube to said muffler, an outlet tube from the muffler and first and second elongated tuning tubes, said first tuning tube comprising a tuning aperture stamp formed through the portion of said first internal plate defining said first tuning tube, and with the portion of said second internal plate defining the first tuning tube being substantially free of apertures, said second tuning tube comprising a tuning aperture stamp formed through the portion of the second internal plate defining said second tuning tube, and with the portion of said first internal plate defining said second tuning tube being substantially free of apertures, said external shell being formed to comprise a first low frequency resonating chamber surrounding the tuning aperture of the first tuning tube and to comprise a second low frequency resonating chamber surrounding the tuning aperture of said second tuning tube.

4,765,438

BOAT PLATFORM LADDERS

Robert G. Rittea, Ft. Pierce, Fla., assignor to Step-On Inc., Ft. Pierce, Fla.

Filed Jul. 24, 1987, Ser. No. 77,446
Int. Cl.[4] B63B *29/20*
U.S. Cl. 182—84 6 Claims

1. In a platform and ladder combination for the transom of a boat having a platform unit, mounting means for supporting said platform unit on a boat transom and a step unit that may be moved between a use position with a step thereof immersed in

VOL 1093 ISS 4 AUG 23 1988 UMI

the water in which the boat floats and a storage position where said step is located above said platform out of said water, which step in said use position extends aft of said platform unit and permits a person to climb out of said water and onto said platform unit without said step making any appreciable movement relative to said platform unit during such climb, the improvement wherein:

said platform unit comprises:

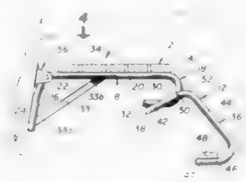
a pair of spaced apart, tubular members having an inboard portion, an outboard portion and a central portion integrally joining said inboard portion to said outboard portion,

said inboard portion being defined by a length of tubing having a first section attached at one end to said central portion by a substantially right angle elbow and a second section integral with said first section, there being a slight bend in said length of tubing at the junction between said first and second sections,

said outboard portion being defined by a U-shaped length of tubing having a first end attached to said central portion and second unattached end so that said inboard portion and said outboard portion lie on the same side of said central portion and in a common plane with said unattached end of said U-shaped length of tubing extending toward said inboard portion and terminating a substantial distance from said inboard portion, and

planking attached to said central portion of each said tubular member holding them spaced apart and with said inboard and said outboard portions thereof extending away from said planking, and

said step unit comprises:



a tubular member defined by a middle section and two parallel end sections integral with said middle section disposed in planes substantially perpendicular to said middle section,

said end sections being substantially identical and comprising a first short leg joined at one end to said middle section, a long leg joined at one end to the other end of said first short leg and a second short leg joined at one end to the other end of said long leg,

all said legs of each end section lying in one plane with said long leg being approximately perpendicular to said first short leg and said second short leg extending from said long leg at an acute angle toward said first short leg,

said end sections being spaced apart approximately the distance between said tubular members of said platform unit and

planking fixed to said second short legs of said end sections spanning the distance between them and forming a step,

said end sections of said step unit being hinged to said U-shaped portions of said tubular members adjacent the corner where said first short leg in said end sections joins the respective long leg whereby said lower unit may be moved between a raised position where said step is positioned above said platform and a lowered position where said step is positioned below and astern of said platform,

said unattached ends of said U-shaped length of tubing serving to engage said middle section of said step unit when said step unit is in said lowered position to limit the downward movement of said step unit in said lowered position.

4,765,439

LADDER RETAINING DEVICE AND METHOD FOR USING SAME

Robert C. Kresmery, 55222 Washington Dr., Rochester, Mich. 48063

Filed May 22, 1987, Ser. No. 53,275
Int. Cl.[4] E06C 7/48
U.S. Cl. 182—107 17 Claims



1. A ladder retaining device for temporarily attaching the upper end of a ladder having a pair of spaced apart longitudinal rails to a building parapet wall or the like, said device comprising:

a frame;

means to temporarily attach the frame to the rails of the ladder to cause the frame to project generally horizontally outwardly therefrom to overhang the building parapet wall; and

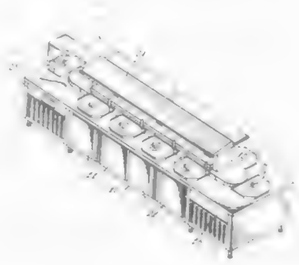
clamp means to temporarily retain the frame to the building parapet wall, said clamp means fastenable to the frame at various positions to allow the ladder to be securely affixed to parapet walls of varying thicknesses.

4,765,440

FOOD SERVICE CONVEYOR

Philip Tashman, 11020 SW. 75th Ct., Miami, Fla. 33156

Filed Jan. 29, 1987, Ser. No. 67,275
Int. Cl.[4] B65G 15/02; E04H 3/04
U.S. Cl. 186—44 4 Claims



1. A food service conveyor apparatus comprising:

A. a substantially rectangular table including a flat horizontal top member;

B. a sprocket chain disposed in a continuous loop configuration in a plane parallel to said top member;

C. electrical motor means for driving said sprocket chain;

D. a continuous upwardly extending rail member mounted on said top member and outwardly located a constant spaced apart distance from said sprocket chain, said rail member further including a continuous low friction tubular member at its upper end;

E. a plurality of sliding blocks having a longitudinal groove through their undersides that cooperatively rest on said rail member, and said blocks having uppersides;

F. connecting means for connecting said blocks to said sprocket chain, said connecting means comprising inverted L-shaped post members rigidly mounted on one end to spaced apart locations on said sprocket chain and a plurality of arm members pivotally connected to the uppersides of said blocks, the other end of said post members extending outwardly from and parallel to said top member and being pivotally mounted to said arm members; and

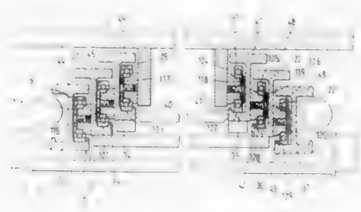
G. a plurality of tray members rigidly mounted to said blocks so that they are moved around the table when said electrical motor means is operated.

4,765,441

INDUSTRIAL TRUCK, PARTICULARLY HIGH-LIFT TRUCK, ALSO AS A HIGH-LIFT TRUCK HAVING A DISPLACEABLE MAST

Bernd David, Hesstedt-Ulzburg, and Alfred Klingberg, Norderstedt, both of Fed. Rep. of Germany, assignors to Jungheinrich Unternehmensverwaltung KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 824,159, Jan. 30, 1986, Pat. No. 4,709,786. This application May 19, 1987, Ser. No. 51,936
Claims priority, application Fed. Rep. of Germany, Feb. 1, 1985, 3503359; Aug. 19, 1985, 3529601
Int. Cl.[4] B66B 9/20
U.S. Cl. 187—9 E 2 Claims



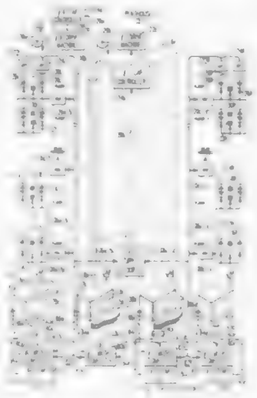
1. An industrial truck comprising a lifting frame and at least one vertically movable load-carrying carriage secured to said lifting frame, said lifting frame comprising a fixed mast section and at least one extensible mast section displaceable vertically relative to said fixed mast section, each of said fixed and said extensible mast sections comprises a pair of laterally disposed vertical rails, rotatably mounted guide rollers, each of said guide rollers has an axis of rotation extending generally horizontally and perpendicularly of the vertical rail and said fixed and said extensible mast sections each comprising a first rail and a second rail spaced apart in the horizontal direction and disposed in parallel relation, each of said first and second rails has a shaped guideway with said rollers mounted therein, cross-braces interconnecting said vertical rails, said rollers in said guideways of said first rails being fixed against axial displacement relative to the axis of rotation of said rollers, and said rollers in said second rails are retained within said guideways and are axially displaceable therein relative to the axis of rotation of said rollers, said guideways are U-shaped and face inwardly in said lifting frame, said U-shaped guideways having a base and a pair of spaced sides extending from said base inwardly relative to said lifting frame, at least one of said sides having a bordering ledge spaced from said base and extending toward the other said side of said U-shaped guideway, said first rails of said mast section located adjacent to one another and said second rails of said mast sections located adjacent to one another, and said first and second rails of said at least one extensible mast section being displaceable vertically relative to said first and second rails of said fixed mast section, each said guide rollers being located in one of said first and second rails and having a bearing secured to an adjacent one of said rails, said bordering ledges preventing said rollers from axial displacement out of said guideways and at least said bearings on said second rails affording axial displacement of said rollers in said guideways of said second rails.

4,765,442

ELEVATOR SYSTEM GRACEFUL DEGRADATION OF BANK SERVICE

Jeffrey W. Blain, Scenic Lakes Township, Sussex County; Denis D. Shah, Union, and Jean Chen, Parsippany, all of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1987, Ser. No. 109,639
Int. Cl.[4] B66B 1/18
U.S. Cl. 187—101 10 Claims



1. A method of controlling a plurality of elevator cars for providing continuous and less noticeably restricted elevator service to each floor of a building, with each car having its car call signals communicating on a local area network from an electronic circuit located with each car through a separate traveling cable to a remote controller,

each remote controller including a microprocessor based computer circuit individual to each car and with each remote controller also communicating corridor signal information on a local area network through a riser cable terminating in a set of floor control circuits distributed proximate to each floor,

each said microprocessor based computer circuit being inherently capable of implementing progressive failure control modes interactive with a floor control strategy to assign the better car or cars into operation, based on communication network integrity, relative car travel positions and timing, to respond to the hall calls registered at the floors along said cable riser,

each said remote controller, concurrently with its response in the strategy for hall calls, controlling the car response individual to its registered car calls for service to the floors, and

each said remote controller repeatedly checking its operational capability and communication signal integrity on the corridor cable riser so as to be available to assume implementing the least restrictive failure control mode for the floor control strategy should there be a failure affecting the remote controller priority of operation.

VOL
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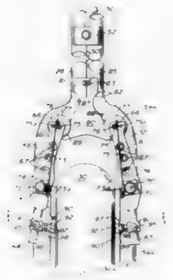
CALIPER BRAKE FOR MOUNTAIN BICYCLES HAVING WIDE TIRES

Charles B. Cunningham, 121 Wood La., Fairfax, Calif. 94930

Continuation of Ser. No. 740,648, Jun. 3, 1985, abandoned, which is a continuation-in-part of Ser. No. 534,380, Sep. 21, 1983, abandoned. This application Mar. 31, 1987, Ser. No. 32,956

Int. Cl.[4] B62L 3/00

U.S. Cl. 188—24.21 8A Claims



1. A caliper brake for wide-tire bicycles having a frame and wheels with a narrow rim and a tire wide relative to the rim, including in combination

a pair of stationary pivot posts rigidly, permanently, and immovably secured directly to said frame, one on each of the opposite sides of the tire and rim,

a caliper arm for each said pivot post having an intermediate pivot portion rotatably mounted on said pivot post, a shoe-attachment end on one extremity, and a cam-facing end at its other extremity,

a separate return spring for each pivot post, each having one end adjustably secured relative to said pivot post and a second end acting on said caliper arm to exert a return force thereon,

a polygonal keyed retention means for frictionally retaining said spring in a stationary position relative to said pivot post while enabling purposeful adjustment of that position at all times while said retention means is fully tight, and at all times enabling relative rotary movement of said spring relatively to said pivot post,

a brake shoe holder with a brake shoe therein, mounted on the shoe-attachement end of said caliper arm,

a roller-mounting post secured to the cam-facing end of each said caliper arm,

a cam roller mounted rotatably on each said roller mounting post and having a circumferential groove therein,

a cam plate having two opposite cammed edges in engagement with said grooves in said rollers, said cammed edges being shaped to cause substantial increases in force the further said cam plate is moved during brake application relative to said cam rollers, and

a brake-actuating cable secured to said cam plate along the central axis thereof for moving said cam plate relative to said cam rollers and thereby to spread said cam rollers apart and force said brake shoes inwardly,

said bushing enabling alignment of said caliper arm thereon with said cable.

4,765,444

FRICTION DAMPER

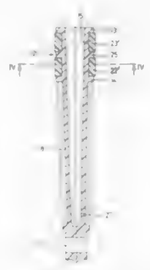
Fritz Baner; Hans-Peter Baner, both of Altdorf, and Hans J. Baner, Röthenbach, all of Fed. Rep. of Germany, assignors to Fritz Baner + Söhne OHG, Altdorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 187,186, Sep. 15, 1980, abandoned. This application May 16, 1983, Ser. No. 494,680

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1979, 2942716

Int. Cl.[4] F16F 7/08; D01H 7/04

U.S. Cl. 188—129 11 Claims



1. In a frictional damper which includes a circular cylindrical casing with an inner wall and a ram which is coaxially displaceable in the casing and has one end which projects from the casing and another end which is provided with a substantially cylindrical friction piston, the friction piston being provided on one external face with friction means elastically pressed against the inner wall of the casing, the improvement wherein

said friction piston is intergrally formed of plastic with said ram, and comprises a bushing having a substantially circular-cylindrical external shape and counter-holder flanges which project radially from said bushings and delimit the latter to a fixed axial extent, and wherein said friction means comprises at least one friction element constituting a substantially annular-cylindrical friction sleeve made of an elastically yielding closed cell polyurethane foam material, and held under substantial uniform radially directed tension against its inner circumferential zone by said bushing on which said sleeve lies, the inner diameter of said friction sleeve in the untensioned state being smaller than the external dismeter of said bushing,

said at least one friction sleeve being pretensioned on its inner circumference against said bushing by from about 5% to about 15%,

wherein damping is achieved substantially solely by means of friction generated between the inner wall of said casing and said at least one friction sleeve.

4,765,445

SHOCK ABSORBER

Werner Komossa, Börnsen, and Peter Brand, Hamburg, both of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Mar. 26, 1987, Ser. No. 31,252

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1986, 3612397; Aug. 30, 1986, 3629644

Int. Cl.[4] F16F 9/46

U.S. Cl. 188—299 22 Claims

1. A shock absorber with a variable damping characteristic, particularly for use in motor vehicles, comprising a hollow cylinder defining an internal space for confinement of at least one damping fluid and having a first end, a second end and an internal surface; a piston rod sealingly extending through one of said ends and into said cylinder; a piston reciprocable by said piston rod and being in sealing engagement with said internal surface to divide said internal space into a first and a second chamber, said piston having at least one passage for the flow of damping fluid between said chambers and a plurality of neighboring bypass channels extending between said chambers; and discrete electrically operated means for individually regulating the flow of damping fluid through said channels.



4,765,446

HYDRAULIC DAMPER OF ADJUSTABLE DAMPING FORCE TYPE

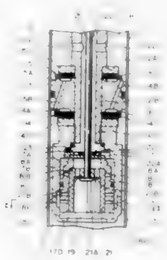
Hiroshi Murata, and Kunihiko Terasawa, both of Kanagawa, Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Feb. 5, 1987, Ser. No. 11,918

Claims priority, application Japan, Feb. 20, 1986, 61-23402[U]

Int. Cl.[4] F16F 9/34

U.S. Cl. 188—319 6 Claims



1. A hydraulic damper of the adjustable damping force type and which has a plurality of different damping force modes, said damper comprising:

a cylinder containing hydraulic liquid therein;

a piston rod having a first end portion thereof inserted into said cylinder and a second end portion thereof extending to the outside of said cylinder, said piston rod having a bore formed therein and extending axially thereof;

a piston secured to said first end portion of said piston rod and partitioning the interior of said cylinder into two liquid chambers;

a liquid passage for communicating said two liquid chambers, said liquid passage including a portion of said bore formed in said piston rod;

at least one pair of orifices disposed midway along said liquid passage, such that selective opening and closing of said orifices changes the damping force mode of said damper;

an adjusting rod rotatably inserted into said bore and adapted to be operated rotatably from said second end portion of said piston rod;

a shutter secured to said adjusting rod and having a pair of radially formed openings for, upon rotation of said adjusting rod and said shutter, opening both of the two orifices of said pair of orifices in one of said different damping force modes and not opening either of said two orifices of said pair in other modes of said different damping force modes; and

at least one of said pair of orifices and said pair of openings being arranged such that either one of said two orifices of said pair starts to open subsequent to the other said orifice when said shutter is rotated to change the damping force mode from one of said other modes to said one mode, and either one of said two orifices of said pair starts to close subsequent to the other said orifice when said shutter is rotated to change the damping force mode from said one mode to one of said other modes.

4,765,447

WEDGE BRAKE ACTIVATING DEVICE

Bernhard A. Fischenich, Alzenau, Fed. Rep. of Germany, assignor to Rockwell-Golde GmbH, Fed. Rep. of Germany

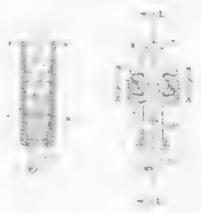
PCT No. PCT/DE86/00454, § 371 Date Jun. 29, 1987, § 102(e) Date Jun. 29, 1987, PCT Pub. No. WO87/03059, PCT Pub. Date May 21, 1987

PCT Filed Nov. 8, 1986, Ser. No. 78,748

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1985, 3540671

Int. Cl.[4] F16D 65/22

U.S. Cl. 188—343 1 Claim



1. In a wedge device adapted for expanding brakes of motor vehicles including a housing, a longitudinal wedge member that has a pair of wedge surfaces and a pair of external surfaces interconnecting said wedge surfaces and protrudes into a recess of the housing and two push tappets, one on each side of said wedge, axially aligned with each other and supported by said housing, each said tappet member having a side slant surface in the form of a slot which is parallel to the adjacent wedge surface of said wedge member, cylindrical rollers having front and rear surfaces, and a roller cage for guiding said rollers in a longitudinal direction along the length of said wedge, each said rollers having two legs transverse to said wedge and having protrusions which guide said rollers tangentially at diametrically opposed locations along the axial direction of said tappets, the improvement comprising:

guidance protrusions having surfaces which are aligned in parallel with the center axis of the rollers from which they project and having external ends whose distance between said external ends is smaller than the diameter of said rollers;

triangular tongues between said guidance protrusions with the tip of the tongue being parallel to the front surface of said rollers;

said wedge being provided with a bore which extends in a

VOL 1093 ISS 4 AG 23 1988 UMI

direction parallel to the axis of said rollers and a plastic rod which is inserted into said bore, said plastic rod protruding beyond the external surfaces of said wedge.

4,765,448

INCHING DRIVE

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Company, Warren, Mich.

Continuation of Ser. No. 726,310, Apr. 23, 1985, abandoned, which is a continuation-in-part of Ser. No. 521,243, Aug. 3, 1983, Pat. No. 4,616,739, which is a continuation-in-part of Ser. No. 403,300, Jul. 30, 1982, Pat. No. 4,494,635. This application Jul. 17, 1986, Ser. No. 889,304

The portion of the term of this patent subsequent to Oct. 14, 2003, has been disclaimed.

Int. Cl.[4] F16D *67/04*; F16H *37/06*

U.S. Cl. 192—18 A 19 Claims



1. An inching drive unit for a cluch/brake unit, said clutch/brake unit having a main housing operatively associated with a main motor shaft, said clutch/brake unit further having a rotatable member operably associated with said main housing and able to drive said main motor shaft, said inching drive unit comprising:

inching motor means for driving said inching drive unit, said inching motor means having an inching drive shaft extending therefrom;

a second housing secured to said inching motor means and removabley secured to said main housing, said inching motor drive shaft of said inching motor means extending into said second housing;

means for causing rotation of said rotatable member by said inching motor comprising an annular member rotatably connecting said inching motor drive shaft to said rotatable member;

brake means disposed within said second housing and operably associated with said annular member, said brake means including a series of brake plates rotatably secured to said annular member and a series of friction discs secured to said second housing and interleaved with said brake plates;

means for selectively engaging said brake plates with said friction discs comprising a piston means nonrotatably secured within said second housing and means for selectively biasing said piston means to allow said brake plates to selectively engage said friction discs and thereby prevent rotation of said inching motor drive shaft and said rotatable member; and

clutch and gear means within said clutch/brake unit for selectively engaging said main motor shaft with said rotatable member, said clutch and gear means associated with said inching drive unit such that said inching drive unit is able to rotate said main motor shaft when said clutch and gear means is engaged and said brake means is disengaged, and said clutch and gear means being further able to prevent rotation of said main motor shaft when said inching drive unit brake means is engaged.

4,765,449

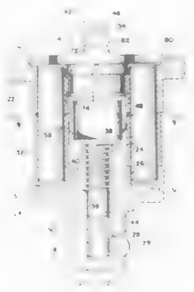
PRESS-IN REVERSING KNOB

Gerald Peters, 269 Hawthorne, Elyria, Ohio 44035

Filed May 6, 1986, Ser. No. 860,325

Int. Cl.[4] F16D *41/16*; B25B *13/46*

U.S. Cl. 192—43.1 13 Claims



1. In a reversible ratchet wrench having handle means carrying a drive shaft to which a socket wrench may be attached, ratchet means disposed in said handle means being operable to drivingly connect said handle means to said drive shaft and including a reversing knob cooperating with said ratchet means to reverse a driving direction having a member receivable for rotational movement within a plug in said wrench, the improvement comprising:

a flange projecting radially outwardly from the upper end of said member;

displaceable projection means formed as one piece with said member and projecting radially outwardly from a point on said member spaced below said flange;

means defining in said plug a cylindrical bore having upper and lower ends, said bore being dimensioned to receive said member but not said flange for rotational movement therein;

means defining a shoulder extending radially outwardly from the lower end of said cylindrical bore; and

means operatively associated with said projection means as the lower end of said member is inserted past said shoulder for displacing said projection means outwardly to engage said shoulder to prevent said projection means from being retracted upwardly therefrom, said projection means being received for rotational movement along said shoulder;

whereby said knob is secured against becoming upwardly disengaged from said plug by said projection means engaging said shoulder, and against becoming downwardly disengaged from said plug by said flange bearing against said means defining the upper end of said bore.

4,765,450

CLUTCH CONTROL APPARATUS RESPONSIVE TO MOTOR AND GEARING CONTROLS

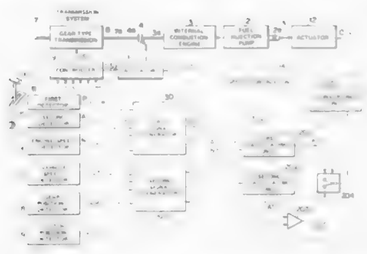
Kazunaga Kurihara, and Kenji Arai, both of Higashimatsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Oct. 23, 1986, Ser. No. 922,226

Claims priority, application Japan, Oct. 30, 1985, 60-243413

Int. Cl.[4] B60K *41/28*

U.S. Cl. 192—0.052 12 Claims



1. An apparatus for controlling a clutch at the time of starting a vehicle powered by an internal combustion engine, wherein said clutch is located between said internal combustion engine and a transmission device whose gear shift position is determined in accordance with an operating position of a selector, said apparatus comprising:

means for producing a position signal indicating the operating position selected by said selector;

first means for generating a command signal for commanding the beginning of the starting of said vehicle;

second means responsive to said position signal and said command signal for selecting one of a plurality of clutch engaging patterns in accordance with said position signal and for generating in accordance with said selected clutch engaging pattern a control signal for engaging said clutch so as to provide a predetermined reduction of a slip rate of said clutch with the passage of time after the generation of said command signal; and,

actuating means responsive to said control signal for actuating said clutch at an engaging speed corresponding to said predetermined slip rate reduction.

4,765,451

APPARATUS AND METHOD FOR SEGREGATING COUNTED SLUGS OF FLATS

Raymond A. Laboumbarde, Nashua, N.H., assignor to International Paper Box Machine Co., Inc., Nashua, N.H.

Continuation of Ser. No. 609,791, May 14, 1984, abandoned. This application Sep. 25, 1986, Ser. No. 911,304

Int. Cl.[4] B65G *60/00*

U.S. Cl. 198—425 11 Claims



1. In a count divider apparatus that segregates a counted slug of flats from a plurality of such flats being advanced in a horizontal path on a stacker apron, while upstanding on the edges thereof, the improvement comprising:

guide means associated with said stacker apron and including a guide extending laterally and moving in parallelism with said path;

a carriage, operatively mounted to said guide to move horizontally in parallelism with said path;

roller means operatively connected to said carriage, including at least one roller in rolling contact with said apron;

one-way clutch means, forming part of said roller means for said carriage to advance only as fast as, or slower than said apron, but permitting free rolling in the opposite direction of said carriage relative to said advancing apron;

and a segregation element, mounted on said carriage to move in and out of said path, said element normally extending into said path, in front of the leading flat in each successive, individual slug, said element supporting said flats in upstanding position, and said element being retractable out of said path for reinsertion at a predetermined position.

4,765,452

DEVICE IN A MACHINE HANDLING PACKAGE UNITS

Per Johansson, Harlösa, Sweden, assignor to Packsystem i Lund AB, Lund, Sweden

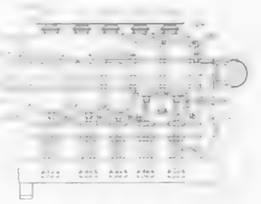
PCT No. PCT/SE86/00180, § 371 Date Dec. 22, 1986, § 102(e) Date Dec. 22, 1986, PCT Pub. No. WO86/06356, PCT Pub. Date Nov. 6, 1986

PCT Filed Apr. 21, 1986, Ser. No. 12,122

Claims priority, application Sweden, Apr. 22, 1985, 8501935

Int. Cl.[4] B65G *47/26*

U.S. Cl. 198—431 3 Claims



1. A device for handling package units transported by a conveyor having a plurality of endless elements (10) running in parallel with one another and including means for conveyance of package units therealong; said device comprising:

(a) a plurality of abutments (16A–16E) for conveyed units; said abutments being spaced in a longitudinal direction of the conveyor; and, each abutment being selectively orientable to engage units on the conveyor;

(i) each abutment having an upper inclined surface, each inclined surface inclining downwardly substantially along a feeding direction of the conveyor;

(ii) each abutment member being selectively, individually, movable between an inoperative position disposed below a load-carrying surface of the conveyor and an operative position with said upper inclined surface raised substantially above the load-carrying surface of the conveyor;

(iii) adjacent abutment members being spaced, longitudinally, so that a package unit selectively supported on one abutment member upper inclined surface overlaps, at least partially, a package unit supported on a next upstream abutment member;

(b) means selectively actuating said abutment members between said inoperative and operative positions; and,

(c) a gripper (20) including means constructed and arranged to selectively: collect a plurality of overlapped package units supported by said abutments in operation; support

VOL 1093 ISS 4 AG 23 1988 UMI

the overlapped package units; and, deposit the plurality of overlapped units in an overlapping manner;

(d) whereby, in operation, package units moved along the conveyor can be selectively engaged by said abutments and raised above the load-carrying surface in an overlapping relationship to one another; and,

(e) whereby the package units can be selectively deposited in an overlapping arrangement.

4,765,453

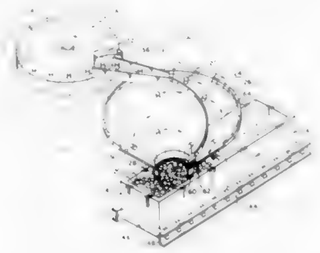
PELLET-PRESS-TO-SINTERING-BOAT NUCLEAR FUEL PELLET LOADING SYSTEM

George D. Bucher, McCandless Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1987, Ser. No. 43,059

Int. Cl.[4] B65G *47/26*

U.S. Cl. 198—431 10 Claims



1. A system for loading nuclear fuel pellets into a sintering boat from a pellet press which ejects newly made said pellets from a pellet press die table surface, said system comprising:

(a) a bowl having an inner surface, a longitudinal axis, an open and generally circular top of larger diameter, and an open and generally circular bottom of smaller diameter;

(b) means for supporting said bowl in a generally upright position such that said bowl is rotatable about its said longitudinal axis;

(c) means for receiving the ejected said pellets proximate said die table surface of said pellet press and for discharging the received said pellets into said bowl at a location proximate said inner surface towards said top of said bowl with a pellet velocity having a horizontal component which is generally tangent to said inner surface of said bowl proximate said location;

(d) means for rotating said bowl about said longitudinal axis such that said bowl proximate said location has a velocity generally equal, in magnitude and direction, to said horizontal component of said pellet velocity at said location; and

(e) means for moving said sintering boat generally horizontally beneath and proximate said bottom of said bowl.

4,765,454

CONVEYOR CHAIN FOR USE WITH FINGERED TRANSFER PLATE

Wasyly G. Hodlewsky, Greendale, and Roger H. Schroeder, Hartland, both of Wis., assignors to Rexnord Inc., Brookfield, Wis.

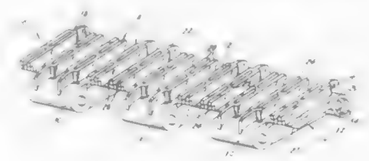
Continuation of Ser. No. 589,925, Mar. 15, 1984, abandoned, which is a division of Ser. No. 259,616, May 1, 1981, Pat. No. 4,438,838. This application Aug. 12, 1985, Ser. No. 764,817

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.[4] B62G *17/08*

U.S. Cl. 198—635 7 Claims

5. A chain link comprising a base portion, and a plurality of fork-shaped member integral with, supported by and extending upwardly from said base portion, said fork-shaped members being spaced apart so that adjacent fork-shaped members define therebetween a slot through which a finger of a fingered transfer plate may pass, and said fork-shaped member each comprising two spaced apart prongs and a stem.



4,765,455

CHAIN CONVEYOR REDUCING LONGITUDINAL CONTACT PRESSURE BETWEEN CONVEYED ARTICLES

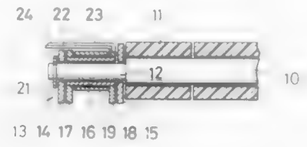
Kazumasa Matsuno, Kawanishi, and Kenji Kose, Nagoya, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Sep. 11, 1986, Ser. No. 906,071

Claims priority, application Japan, Oct. 3, 1985, 60-150859[U]

Int. Cl.[4] B65G *17/00*

U.S. Cl. 198—779 1 Claim



1. A chain conveyor enabling the reduction of longitudinal contact pressure between conveyed articles, comprising two chains arranged to move together in spaced parallel relationship, elongated rods extending transversely from one chain to the other, and rollers, having cylindrical outer peripheral surfaces, rotatably carried on said rods for bearing conveyed articles, each chain comprising links of a first set having inner link plates alternating with links of a second set having outer link plates, the outer link plates and inner link plates of two conveyor chains being coupled together bendably by stay pins formed on and projecting from opposite end portions of said rods in the direction of elongation of the rods, and the upper portions of the link plates in one of said sets in at least one of said chains, positioned on the side of the chain nearest the rollers, being bent to form flat portions whose top surfaces have substantially the same height as the outer peripheral surfaces of the rollers, said flat portions extending parallel to the direction of elongation of the rods and over the side of the same chain remote from the rollers, and projecting beyond the ends of the stay pins remote from the rods.

4,765,456

VARIABLE SPEED BELT CONVEYOR DRIVE SYSTEM

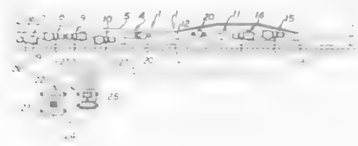
Lewis R. B. Bower, Huddersfield, England, assignor to Fletcher Sutcliffe Wild Limited, Wakefield, England

Filed Jan. 29, 1987, Ser. No. 8,567

Claims priority, application United Kingdom, Feb. 5, 1986, 8602846

Int. Cl.[4] B65G *43/00*

U.S. Cl. 198—810 8 Claims



1. A variable speed conveyor drive system, comprising:

a master rotary member of said conveyor;

a variable speed master drive unit to drive said master rotary member;

at least one slave rotary member of said conveyor;

a variable speed slave drive unit to drive each of said slave rotary members;

each of said master and slave drive units comprising an electric motor, a universal control drive incorporating a torque converter and a modulated wet clutch preceding said torque converter, an engagement-control hydraulic circuit for said modulated wet clutch, and a lubrication circuit for said modulated wet clutch;

a monitor and variable speed and variable power control unit for said drive system, a control loop from said master drive unit to said monitor and control unit; and

a multiplexer, with a master outlet from said multiplexer for said master drive unit, and with a slave outlet from said multiplexer for said slave drive unit(s), said master multiplexer outlet being connected to said master drive unit to form a part of said control loop whereby all said motors share said load at a pre-programmed level at any speed of operation, and an individually adjustable and programmable time delay means, incorporated in said slave multiplexer outlet which time delay means is operable both before start-up of said conveyor and during running of said conveyor.

4,765,457

PAINT BOX

Claus Rayhle, Stuttgart, Fed. Rep. of Germany, assignor to Pelikan Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jan. 28, 1987, Ser. No. 7,687

Claims priority, application Fed. Rep. of Germany, May 24, 1986, 8614126

Int. Cl.[4] B44D *3/04*

U.S. Cl. 206—1.8 4 Claims

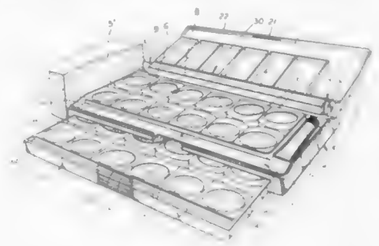
1. A paint box comprising:

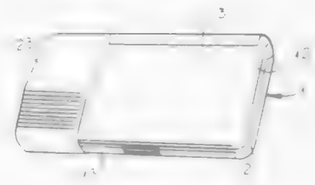
an elongated housing forming an upper tray formed with a plurality of compartments for holding paints and accessories, respective inner and outer side walls being formed at the ends of said housing, the inner side walls delimiting a cutout formed in a front wall of said housing, the inner side walls each being formed with a guide groove and defining a receptacle;

an elongated lower tray forming a drawer formed with a plurality of compartments for holding paint and accessories, opposing side walls at the ends of said drawer being provided with respective guide strips engageable in said guide grooves and said drawer being receivable in said receptacle, a lower surface of said drawer projecting below said housing, whereby said housing is supported on said drawer;

an elongated cover pivotally mounted at a rear wall of said housing and adapted to overlie said housing in a closed position of said cover;

a flexible fastener formed at a front side of said drawer and engageable with said cover in said closed position thereof; and





a water container mountable at a side of said housing and configured to fit over one of said ends of said paint box in a closed position thereof.

4,765,458

ASBESTOS FREE HARDENED MONOLITHIC FILLER MASS

Edith M. Flanigen, White Plains, N.Y., assignor to NI Industries, Inc., Long Beach, Calif.

Filed Oct. 14, 1986, Ser. No. 919,083

Int. Cl.[4] F17C *11/00*; B01J *20/10*

U.S. Cl. 206—0.7 18 Claims



7. An acetylene storage vessel for storing gas solutions of acetylene, said storage vessel comprising a metal shell having uniformly distributed therein an asbestos free, porous, heat hardened and dried monolithic calcium silicate filler mass, the clearance between said metal shell and said filler mass being less than about $\frac{1}{8}$ inch, said calcium silicate filler mass having at least about 0.5 weight percent reinforcing refractory carbon fibers uniformly disposed in said filler mass, said filler mass having uniformly distributed throughout very fine pores of less

VOL 1093 ISS 4 AG 23 1988 UMI

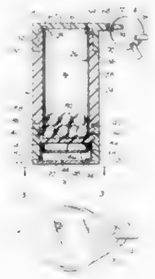
than about 25 microns and having a porosity of at least about 85 volume percent and containing substantially no voids.

4,765,459

INTEGRATED KEYHOLDER/CONTAINER

Charles L. Edwards, 710 East 213th Street, Bronx, N.Y. 10467

Filed Aug. 10, 1987, Ser. No. 83,384
Int. Cl.[4] B65D *85/40, 85/56*
U.S. Cl. 206—38.1 2 Claims



1. An improved integrated keyholder/container unit which comprises:
(a) a receptacle member having a side wall, an opening at one end of the side wall and a separating wall at the other end of the side wall forming a first receptacle;
(b) a first cap, means to removably attach the cap to a portion of the side wall proximate the open end thereof to cover the first receptacle;
(c) a second cap, means to removably attach the cap proximate the separating wall, the cap and wall forming a second receptacle;
(d) means secured to the first cap to secure at least one key to the unit; and
(e) a watch secured to the surface of the separating wall, so that the face of the watch is facing in a direction away from the separating wall.

4,765,460

KEY RING-PILL HOLDER CONTAINER

Rafael Vigueras Pacheco, Urbanización Puente Romano, Merida (Badajoz), Spain

Filed May 11, 1987, Ser. No. 48,040
Claims priority, application Spain, May 12, 1986, 294099; May 5, 1987, 8701514
Int. Cl.[4] B65D *81/36, 83/04*
U.S. Cl. 206—38.1 20 Claims



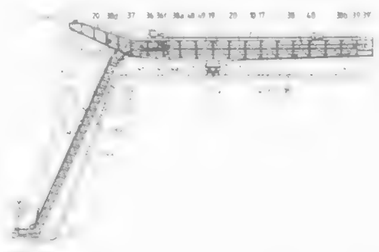
1. A key-ring/pill-holder for carrying keys and pills, comprising:
a musket-type key ring having attachment means for attaching the key ring to a garment, key-attachment means for attaching a key, and a body having faces longitudinally therebetween; and
a pill holder comprising a cavity opening from one of the faces of the body of the key ring for holding pills and a sealing cap means for closing the cavity opening and easily opening the same, whereby to provide a compartment for the pills until desired.

4,765,461

MOBILE ELEVATOR CONVEYOR

Imants Ozolins, Preston, and Gary L. James, Mont Albert, both of Australia, assignors to Minenco Pty. Limited, Melbourne, Australia

Filed May 13, 1986, Ser. No. 862,813
Claims priority, application Australia, May 23, 1985, PH0702
Int. Cl.[4] B65G *15/26*
U.S. Cl. 198—311 17 Claims



1. A mobile elevator conveyor, comprising a main support structure mounted on ground engaging means for mobility along an upper level when in use, elevating conveyor means supported on a boom structure and extendable from a retracted position within said main support structure to an extended position extending downwardly away from said main support structure to a lower level, wherein the boom structure supporting the elevating conveyor means is formed from a plurality of boom segments hingedly connected at lower edges such that, at said main support structure, the boom structure bends downwardly along a bottom chord at the hinges between the boom segments, and wherein adjacent sides of said boom segments engage each other when pivoted about said hinges in a direction opposite to the downward bending of said boom structure over the remainder of the length of said boom structure extending to said lower level and such as to resist bending of said remainder of said extended length of boom structure in said opposite direction.

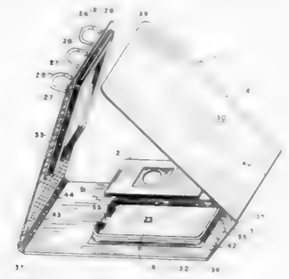
4,765,462

NOTEBOOK FOR STORAGE OF COMPUTER DISKS AND LOOSE-LEAF DOCUMENTATION

Robert D. Rose, Jr., Englewood, Colo., assignor to Communications Packaging Corporation, Denver, Colo.

Filed Feb. 1, 1984, Ser. No. 575,898
Int. Cl.[4] B65D *79/00*
U.S. Cl. 206—45.13 5 Claims

1. A notebook for storing computer disks and loose-leaf documentation comprising in combination:
an articulating cover including an overlay cover hingeably connected along one edge to a back cover and a front cover hingeably connected to a spine, which spine is hingeably connected to a first edge of said back cover, respective inner surfaces of said overlay and back covers having mounted thereon one part of a two-part storage receptacle for computer disks, a first part of said two-part storage receptacle including a backing panel integrally connected to one of said inner surfaces, a ridge of the first part extending a predetermined height above the backing panel and around the periphery thereof, said ridge defining generally the area of the computer disk, the ridge further being continuous around the periphery of said back portion except for an access area, at which area the ridge has a discontinuity and is contiguous with said backing panel, a second part of said two-part storage receptacle having a second backing panel and a second ridge extending around the periphery thereof, the first part insertable into the second part in a male-female connection to sealingly contain therebetween said computer disks, the one of the first and second parts of said storage receptacle associated with said overlay cover inner surface including an integrally formed channel extended along a line parallel to said hingeable connections at a second edge of said overlay cover opposite to the hinge connection of said overlay cover with said back cover, said channel for selective receipt of a free edge of said front cover to therefore define an easel position for displaying said documentation, an outer surface of said overlay cover including a loose-leaf documentation retention mechanism secured along said second edge of said overlay cover, said notebook movable between a storage position wherein said overlay cover and said first part with said channel associated therewith are matable against said back cover and said second part associated therewith to thereby retain between said two-part storage receptacle at least one of the computer disks, said document retention means positioned adjacent to the said spine and holding said documentaion releasably therein, said front cover juxtapositioning said documentation between said outer surface of said overlay cover and said front cover, and an easel position wherein said overlay cover is separated from said back cover for removal and use of said computer disks, said front cover being raised from its position adjacent said documentation to permit insertion of said free edge of said front cover into said channel of said first part of said storage receptacle along said second edge of said overlay cover.



4,765,463

DISPLAY-TRAY CONSTITUTING A PACKAGE

Arthur L. Chanel, Saint-Remy, France, assignor to Fromageries Bresse-Bleu-Societe Laitiere Cooperative Agricole, France

Filed Jun. 29, 1987, Ser. No. 68,888
Claims priority, application France, Jul. 9, 1986, 86 10026
Int. Cl.[4] B65D *25/00, 1/36*
U.S. Cl. 206—45.34 16 Claims

1. A package comprising a rigid bottom of PVC, a "peelable" wall constituting a cover for closing an upper part of said bottom, said cover also being of rigid polyvinyl chloride, at least one of two elements consisting of said bottom and said cover having on a surface thereof inside said package a thin layer of polyethylene of "peelable" quality, the rigidity of said bottom being greater than the rigidity of said cover, and a strip of welding located adjacent to the periphery of said bottom for fixing said cover to said bottom and having at least one weakened region.

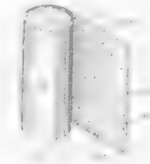


4,765,464

WRAPPED COIN ROLL AND METHOD OF FORMING SAME

Victor G. Ristvedt, Manchester, Tenn., assignor to Ristvedt-Johnson, Inc., Mt. Prospect, Ill.

Continuation of Ser. No. 785,342, Oct. 7, 1985, abandoned. This application Sep. 16, 1986, Ser. No. 908,950
The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.
Int. Cl.[4] B65D *65/00, 85/62*
U.S. Cl. 206—0.82 6 Claims



1. A wrapped roll of coins, comprising:
(a) A roll of coins having a length and a circumference; and
(b) a wrapper comprising:
(i) a flexible substrate having: a substrate length and a substrate width, the substrate width being greater than the circumference of the roll, and the substrate length being at least as great as the length of the roll; along the length of the substrate an inside edge which contacts the length of the roll and, at the opposite end of the substrate, an outside edge; along the width of the substrate a pair of side edges; an inner surface which faces radially toward the roll; and an outer surface which faces radially away from the roll; and
(ii) on the inner surface of the flexible substrate proximate the side edges, a coin-supporting amount of an effective clean-releasing pressure-sensitive adhesive, wherein the adhesive securely retains the coins within the wrapper and the coins can be selectively cleanly released from the wrapper without tearing the wrapper, whereby the wrapper can be reused.

2. A method for selectively holding a roll of coins having a circumference, a length, two ends and two opposite circular sides comprising:
(a) arranging coins to form the roll of coins;
(b) selecting a flexible substrate having: a substrate length and a substrate width, the substrate width being greater than the circumference of the roll, and the substrate length being at least as great as the length of the roll; along the

VOL 1093 ISS 4 AG 23 1988 UMI

length of the substrate an inside edge which is suitable for contacting the length of the roll and, at the opposite end of the substrate, an outside edge; along the width of the substrate a pair of side edges; an inner surface suitable for contacting the roll of coins; and an outer surface opposite the inner surface, wherein on the inner surface proximate the side edges is a coin-supporting amount of an effective clean-releasing pressure-sensitive adhesive;

(c) contacting the length of the roll with the inside edge of the flexible substrate such that the ends of the coin roll are in contact with the adhesive;

(d) wrapping the roll in the flexible substrate, wherein the inner surface of the flexible substrate is in operable contact with the coins around the circumference of the roll of coins and wherein the ends of coin roll are securely retained by the adhesive; and

(e) removing the flexible substrate to unwrap the roll, wherein the roll of coins is cleanly released and wherein the flexible substrate can be reused.

4,765,465

EATING UTENSILS HAVING A SOUND GENERATING MEANS

Katsuyuki Yamada, Ikeda-cho, 9-chome, Tajimi-shi 507, and Ekio Isihama, Asahi-machi, Tsumagi-cho, Toki-shi 509-53, both of Japan

Continuation of Ser. No. 754,861, Jul. 12, 1985. This application Oct. 19, 1987, Ser. No. 113,393
Int. Cl.[4] B65D 77/00
U.S. Cl. 206—217 2 Claims



1. An eating utensil having a sound generating means comprising:

(a) a flanged bottom portion providing the circumferential peripheral bottom of an eating utensil which contacts a setting plane so as to be obscured from ambient light at the time of placing the bottom of the eating utensil on the setting plane;

(b) a recessed portion within the bottom of said eating utensil so as to be in concentrical relationship with said flanged bottom portion;

(c) an electronic circuit located in the recessed portion of said eating utensil to generate a sound upon energization;

(d) a battery cell incorporated into said electronic circuit as a power source thereof;

(e) a light permeable, cast synthetic resin layer positioned within said recessed portion in contact with the inside of said flange to provid a liquid-tight seal for said electronic circuit;

(f) a photo-sensitive switch provided is said electronic circuit to be exposed to the ambient light transmitted through said synthetic resin layer to energize said electronic circuit;

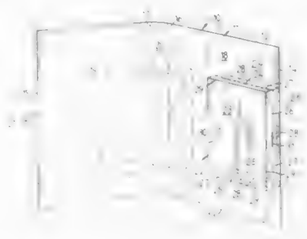
(g) a translucent, liquid-impermeable sheet, the area of which is somewhat smaller than that of said flanged bottom portion provided between said electronic circuit and said light permeable layer to protect said electronic circuit against the synthetic resin at the time of casting, and a translucent binder paper sheet having a sticky adhesive at both sides placed between said electronic circuit and said translucent, liquid-impermeable sheet to fix said sound generating electronic circuit in place.

4,765,466

FOLIO OF CARD MATERIAL

Charles W. Ivey, 356 Glenwood Drive, Glen Lorne, Harare, Zimbabwe

Filed Feb. 2, 1987, Ser. No. 10,044
Claims priority, application United Kingdom, Feb. 13, 1986, 8603554
Int. Cl.[4] B65D 75/06, 85/672
U.S. Cl. 206—232 4 Claims



1. A folio of card material for receiving an article, comprising: a sheet folded to form two panels, one overlying another, hinged to a center spine; and a pocket applied to the inner surface of one of said panels for receiving the article, said pocket being expansible from a flattened condition such that, on insertion of the article, the pocket expands in volume to receive the article; said pocket being of substantially rectangular configuration and having an outer edge substantially flush with the outer edges of the two panels in their folded condition, an inner edge spaced from said center spine, and upper and lower edges spaced inwardly from the upper and lower edges of the two panels in their folded condition; said pocket being defined by a second sheet of card material of smaller dimensions than said panels and being secured to the inner face of one of said panels by extensions formed on all sides of the second sheet except that facing said spine; each of said extensions being formed with a first fold-line hinge at its juncture with the second sheet, a second fold-line hinge at its juncture with the first sheet, and a third fold-line hinge between said first and second fold-line hinges, such as to define said expansible pocket; the extension of the second sheet on the side opposite to that without an extension being formed with a slot, and the side of the panel opposite to that to which that second sheet is secured being formed with a clasp receivable in said slot.

4,765,467

HANGER FOR NECKTIES AND SUSPENDERS

Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., New York, N.Y.

Filed May 15, 1987, Ser. No. 49,795
Int. Cl.[4] A47G 25/36, 25/74
U.S. Cl. 206—296 10 Claims

1. In combination:

(a) a necktie;

(b) suspenders of the type having snap means with a first open state for receiving a trousers waistband and a second closed state for closure retentively upon said waistband; and

(c) a hanger comprising an integral body having a first portion for engaging a display rod, and a second portion depending from said first portion and defining at least one pair of suspender hanging openings therethrough, said snap means being resident in said suspender hanging openings and said suspenders depending from said hanger second portion, each said suspender hanging opening being bounded in first part by continuous wall structure of said body and in second part by a discontinuity in said body providing a passage into said suspenders hanging openings, first and second segments of said wall structure respectively aside said passage being mutually deflectable, permitting the receipt in said suspender hanging openings of said snap means in such closed state thereof, said hanger further defining a necktie hanging opening in said body



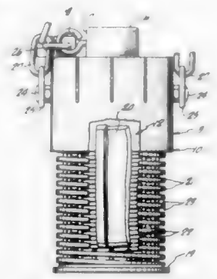
and bounded throughout by further continuous wall structure of said body, said hanger body supporting first and second deflectable members extending collectively across a major extent of said necktie hanging opening and defining thereby first and second opening portions, successive courses of said necktie being resident respectively in said first and second opening portions.

4,765,468

DOSIMETER SECURITY PACKAGING

Barry D. Graham, 841 Vale View Dr., Vista, Calif. 92083

Filed Apr. 26, 1985, Ser. No. 727,906
Int. Cl.[4] B65D 85/38
U.S. Cl. 206—305 15 Claims



1. Dosimeter security packaging comprising at least a first rigid element defining an open-ended interior capable of receiving a radiation measuring dosimeter, the first rigid element having at least partly a substantially grid wall to permit effective ventilation to the interior of the first rigid element, and a second rigid element interengageable with the first element for interlocking relationship with the first element at the open end of the interior of the first element such that a dosimeter received in the interior of the first element is substantially completely surrounded by the first and second elements, the first and second elements collectively providing effective cover to moisture ingress to the dosimeter, means affixed to at least one of the elements for permitting support of the first and second elements in the environment, the first and second elements being constituted by a material pervious to radiation whereby the dosimeter can be simultaneously effectively exposed to radiation and securely mounted with a support.

4,765,469

MULTISECTIONAL STORAGE CONTAINER

Josef Seifert, Grosselfingen, Fed. Rep. of Germany, assignor to Kurz Kunststoffe GmbH, Owingen, Fed. Rep. of Germany

Filed Feb. 2, 1987, Ser. No. 9,774
Claims priority, application Fed. Rep. of Germany, Feb. 5, [illegible]
Int. Cl.[4] B65D 85/57
U.S. Cl. 206—309 18 Claims



1. A multisectional storage container for storing a plurality of plate-like items comprising: a plurality of storage sleeves for storing said items, said storage sleeves being arranged in line; and interconnecting means for interconnecting said storage sleeves so that said storage sleeves may be moved between a collapsed position in which said storage sleeves are stacked against each other and an expanded position in which said storage sleeves are spaced apart, said interconnecting means including a plurality of upper and lower mechanisms forming a parallelogram linkage, said upper mechanism including at least one elongated member and said lower mechanism including at least one elongated member and pivot means connecting one end of each of said members to one of said storage sleeves and the other end of each of said members to the next adjacent sleeve whereby said upper and lower members remain parallel to each other as the sleeves are moved between said collapsed and expanded positions.

13. A multisectional storage container for storing a plurality of plate-like items comprising: a plurality of storage sleeves for receiving said items, said storage sleeves being arranged in line; and interconnecting means for interconnecting said storage sleeves so that said storage sleeves may be moved between a collapsed position in which said storage sleeves are stacked against one another and an expanded position in which said storage sleeves are spaced apart, said interconnecting means including a plurality of pairs of articulation members and pivot means for connecting one end of each of said articulation members to the top edge of one of said storage sleeves and the other of the ends of each of said articulation members to the bottom edge of the next adjacent storage sleeve, whereby each of said members forms a V-shape together with said adjacent storage sleeves that said members connects when said storage sleeves are in the said expanded position.

4,765,470

FISHING TACKLE BOX

William Carci, 3820 20th St., NW., Canton, Ohio 44708

Filed Dec. 5, 1985, Ser. No. 804,886
Int. Cl.[4] B65D 85/00
U.S. Cl. 206—315.11 7 Claims

1. A portable container for storing and transporting small articles such as fishing lures including a frame having a generally channel-shaped cross section, said frame including a back panel having a top edge and a bottom edge, a top panel extending from the top edge of the back panel and a bottom panel extending from the bottom edge of the back panel, said top panel and said bottom panel terminating in outside edges, the top panel edge being located above the bottom panel edge when the said back panel is oriented in the vertical position, top panel hinge pin mounting means located at the top panel edge and bottom panel hinge pin mounting means located at the bottom panel edge, said top panel hinge pin mounting

VOL 1093 ISS 4 AG 23 1988 UMI

means located vertically above the bottom panel hinge pin mounting means when said back panel is oriented in the vertical position, a removably mounted hinge pin extending vertically between and removably retained by the top panel hinge pin mounting means and the bottom panel hinge pin mounting means, said top panel edge and bottom panel edge being flexibly movable toward each other to permit removal of said hinge pin; said top panel, bottom panel and back panel defining a closed position drawer mounting space; at least one box-shaped drawer having front, back and side panels and a bottom panel, the drawer corner defined by the intersection of the drawer front panel and one of the drawer side panels having a



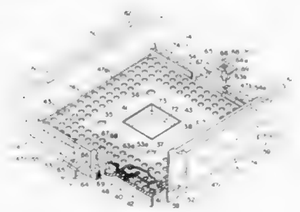
hinge knuckle mounted on and extending outwardly from said drawer corner, said drawer being removably rotatably mounted on said hinge pin, said drawer being rotatable from closed position within the space defined by the top, back and bottom frame panels to open position away from the frame back panel, catch means located on the frame back panel, rib means formed on the drawer back panel for cooperation with said catch means, means mounted on the frame back panel for removably attaching the container to the body of a user, and said hinge knuckle including a reentrant groove defining an elongated slot adapted to snap over and removably engage the hinge pin.

4,765,471

ELECTRICAL COMPONENT CARRIER

Robert Murphy, Powers St., Milford, N.H. 03055

Continuation of Ser. No. 037,224, Apr. 10, 1987, abandoned, which is a continuation of Ser. No. 790,353, Oct. 23, 1985, abandoned. This application Nov. 9, 1987, Ser. No. 118,471
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—329 15 Claims



1. A carrier for components having a generally planar configuration and a plurality of parallel-oriented conductive contact pins depending from the component perpendicularly to the plane of the chip, comprising:

a plate assembly comprising three parallel planar plates, one of which is a non-conductive plate sandwiched between the other two plates which are conductive, the plates having registered apertures, those apertures of the non-conductive plate having lesser transverse dimensions than those of the conductive plates and the plate assembly having at least one vertically upstanding clip at the extreme outside edge of said plate assembly for locking the component to the assembly.

4,765,472

BUCKET ATTACHMENT TOOL HOLDER

Robert Dent, 4145 W. 3800 South, West Valley, Utah 84120

Filed Mar. 30, 1987, Ser. No. 31,417
Int. Cl.[4] B65D *85/28*
U.S. Cl. 206—373 8 Claims



1. A bucket attachment tool holder for mounting on a conventional bucket having a loop handle comprising

an elongate piece of flexible material formed with pockets on one side thereof for receiving and holding tools and the like, with the pocket openings being generally contiguous with or directed toward a top edge of the material,

fastener means disposed near each end of the piece of material for joining the ends together when the piece of material is wrapped around the exterior side walls of the bucket and the pockets are on the outside surface of the material, and

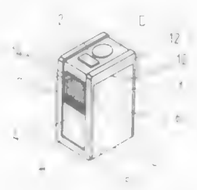
two coupling elements disposed on the piece of material at spaced-apart locations near or on the top edge thereof for attaching to the top rim or handle of the bucket so that the pocket openings face upwardly.

4,765,473

OVERCASE FOR SEWING MACHINE NEEDLE PACKAGES

Klaus Pavel, Eynatten, Belgien, and Horst Lange, Aachen, both of Fed. Rep. of Germany, assignors to Rhein-Nadel Maschinennadel GmbH, Fed. Rep. of Germany

Filed Oct. 2, 1986, Ser. No. 914,333
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 8529110[U]
Int. Cl.[4] B65D *85/28*
U.S. Cl. 206—380 6 Claims



1. An overcase for sewing machine needle packages, said overcase comprising:

a bottom member,

a top member adapted to be slipped over said bottom member,

said bottom member being of U-shaped configuration including two spaced parallel shanks and a web portion interconnecting said shanks,

said shanks forming two side walls and said web forming a bottom wall of said overcase,

said cover member being of U-shaped configuration and including two spaced parallel shanks and a web interconnecting said shanks, said last named shanks forming two side walls of said overcase and said last named web forming a top wall of said overcase,

said cover member being slideable over said bottom member with the shanks of said cover member being offset 90° from the shanks of said bottom member,

and means guiding said shanks of said cover member for sliding movement over substantially the entire length of said shanks of said bottom member,

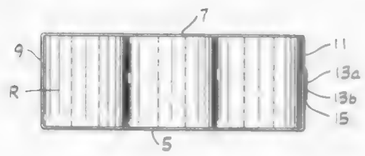
said guiding means being disposed in engagement with the inner surface of said shanks of said cover member, whereby said shanks of said cover member are free to spread outwardly to permit removal of said cover member by sliding said cover member relative to said bottom member.

4,765,474

PACKAGE OF ENWRAPPED ARTICLES

Robert C. James, Sheboygan, Wis., assignor to Haynsen Manufacturing Company, Sheboygan, Wis.

Filed Feb. 19, 1987, Ser. No. 16,743
Int. Cl.[4] B65D *85/671*
U.S. Cl. 206—391 16 Claims



1. A package of enwrapped articles, such as paper rolls, comprising a wrapper formed from a single web of flexible sheet material formed into a tube having overlapping edge margins sealed together to form a single longitudinal seam for the tube lying substantially in the plane of one wall of the package, and a pair of end seals at opposite ends of the package, at least one end seal comprising end portions of two opposite walls of the tube sealed together in face-to-face relation in a plane extending longitudinally of the tube and generally at right angles to the plane of the overlapping edge margins forming said longitudinal seam.

4,765,475

HOLDER AND DISPENSER FOR MULTIPLE ROLLS OF TISSUE

Kerry M. Kayserian, 2615 Green Meadows, Traverse City, Mich. 49684

Filed Dec. 11, 1986, Ser. No. 940,427
Int. Cl.[4] B65D *85/62, 85/67*
U.S. Cl. 206—394 10 Claims

1. A container for storing and dispensing a plurality of rolls of an object to be dispensed comprising side wall means having a longitudinal axis, and a pair of end portions spaced from each other along said axis and being respectively joined to said side wall means, one of said end portions being adapted to position one of said rolls for dispensation therefrom, the other of said end portions including end wall means immovably joined to said side wall means and defining an opening of a size to permit insertion of said rolls into said container, said end wall means cooperating with said opening to prevent removal of said rolls from said container through said opening.

8. A container for storing and dispensing a plurality of rolls of tissue having a general cylindrical passage extending therethrough; said container comprising side wall means having a longitudinal axis, a pair of end portions spaced from each other along said axis and being respectively joined to said side wall means, one of said end portions being adapted to position one of said rolls of tissue for dispensing tissue panels therefrom, the other of said end portions including end wall means inclined radially inwardly and axially relative to said axis and toward



said one of said end portions to define a generally oval-shaped opening through which to insert one of said rolls into said container, rod means operatively fixedly secured to said container and extending substantially coaxially with said axis between said end portions and terminating adjacent said opening, and generally oval-shaped plug means fixedly secured to said rod means adjacent to said opening whereby the central passage of one of said rolls may be distorted to a generally oval shape for insertion through said opening and past said plug means into said container while said plug means prevents removal of said rolls from said container through said opening.

4,765,476

FLEXIBLE INSULATED CONTAINER

Richard E. Lee, 3829 Lakeshore Dr., Shreveport, La. 71109

Filed Apr. 20, 1987, Ser. No. 39,930
Int. Cl.[4] B65D *65/00*
U.S. Cl. 206—427 3 Claims

1. A thermally insulated flexible container constructed of a flexible foam sheet material, comprising:

(a) a flexible bottom and a pair of flexible end panels projecting from fixed attachment to said bottom in spaced, substantially parallel relationship;

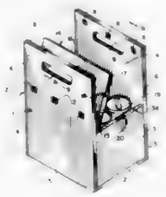
(b) a pair of flexible side panels extending from fixed attachment to said bottom in spaced, substantially parallel relationship, with the edges of a lower segment of each of said side panels attached to said end panels along a portion of

VOL 1093 ISS 4 AG 23 1988 UMI

the length of said side panels, respectively, and an upper segment of each of said side panels extending beyond the top edges of said end panels, with said bottom, said end panels and said side panels forming an enclosure;

(c) at least one opening provided in said upper segment of each of said side panels, whereby said upper segment of each of said side panels is selectively joined at said opening, for carrying said flexible container in a first carrying mode and said upper segment of said side panels are each optionally folded against each other in lapped relationship, in a second non-carrying mode;

(d) a seal flap having one edge attached to one of said side panels and foldable on said top edges of said end panels and against the opposite one of said side panels, for closing said flexible insulated container;



(e) upper segment closure means secured to at least one of said side panels near said extending edges of said side panels and fold line closure means secured to at least the opposite one of said side panels near said fold lines, for folding said opposite one of said side panels over said seal flap and folding said at least one of said side panels over said opposite one of said side panels substantially along said fold lines and engaging said upper segment closure means and said fold line closure means to removably secure said side panels in folded configuration; and

(f) flap closure means carried by said seal flap in spaced relationship near the edges of said seal flap and end panel closure means secured to said top edges of said end panels in alignment with said flap closure means, for engaging said flap closure means and removably securing said seal flap in closed configuration on said top edges of said end panels.

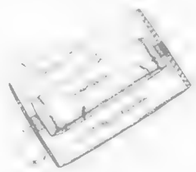
4,765,477

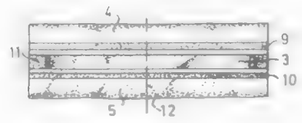
PACKAGE FOR INDIVIDUAL, DISPOSABLE SANITARY ARTICLES AND A METHOD OF MANUFACTURING SUCH A PACKAGE

Arne Fröidh, Stenungsund; Stewe Alsenvik; Urban Widlund, both of Mölnlycke, and Carl-Daniel Norenberg, Göteborg, all of Sweden, assignors to Molnlycke AB, Gothenburg, Sweden

Filed Nov. 26, 1985, Ser. No. 802,212
Claims priority, application Sweden, Nov. 26, 1984, 8405953
Int. Cl.[4] B65D *81/00, 85/16*
U.S. Cl. 206—438 **5 Claims**

1. A packaged individual disposable sanitary article, comprising a bag formed of two layers of material joined along opposite sides and along at least one end, the bag having two major outer surfaces comprised by the sides of said layers which are remote from each other, a said sanitary article disposed on one of said outer surfaces, the bag being folded over the sanitary article and sealed, the bag when unfolded having a width greater than the width of the sanitary article and a length greater than the length of the sanitary article, the portions of the bag of greater width than the article being folded





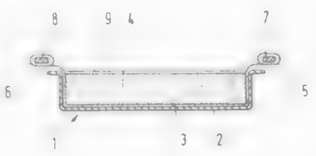
over the article and the portions of the bag of greater length than the article being sealed together.

4,765,478

DISPENSER FOR VISCOUS MEDICANT

Keith D. Bringloe, Ware, United Kingdom, assignor to Smith and Nephew Associated Companies plc, United Kingdom

Filed Sep. 8, 1987, Ser. No. 93,993
Claims priority, application United Kingdom, Sep. 20, 1986, 8622698
Int. Cl.[4] A61M *35/00*
U.S. Cl. 206—440 **17 Claims**



1. A dispenser for a viscous pharmaceutical composition which dispenser comprises a tray, a support layer which covers the base and at least two opposed sides of the tray and is capable of extending over the top edges of said sides of the tray, a viscous pharmaceutically acceptable carrier which overlies the support layer and which may be lifted from the tray on the support layer and a removable protector layer covering the exposed surface of the pharmaceutically acceptable carrier, and in which the pharmaceutically acceptable carrier adheres more strongly to the support layer than to the protector layer.

4,765,479

STRAPPING CORNER SUPPORT

John T. Roberts, 3088 Mountain View Rd., Clover, S.C. 29710

Filed Oct. 27, 1986, Ser. No. 923,340
Int. Cl.[4] B65D *6/36*
U.S. Cl. 206—453 **1 Claim**

1. A strapping support comprising:

a planar sheet of rigid or semirigid plastic material having a longitudinal axis;

said sheet having a score line extending transversely to said longitudinal axis for folding thereof;

said score line extending across less than the entire transverse surface of said sheet to define a fold point for the corner support for mating with a corner of an article to be protected by the support;



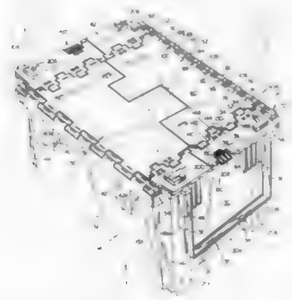
said sheet defining tabs in alignment with said score line whereby when said sheet is folded about said score line, said tabs define an alignment slot for receipt of a strap extending in the direction of said longitudinal axis.

4,765,480

CONTAINER WITH COLLAPSIBLE LID MEMBERS

John A. Malmanger, Vashon Island, Wash., assignor to Xytec Plastics, Inc., Tacoma, Wash.

Filed Aug. 3, 1987, Ser. No. 81,122
Int. Cl.[4] B65D *21/02, 21/06, 43/16, 51/24*
U.S. Cl. 206—506 **8 Claims**



1. A reusable container comprising:

a rectangular floor bounded by first and second sets of opposed margins,

first and second pairs of opposed side walls joined to and extending upwardly from said first and second sets, respectively of said margins imparting a box-like configuration to the container and bounding an article-receiving chamber,

a pair of opposed lid members having rear margins and opposite forward margins, and hinge means hingedly connecting the rear margins of the lid members to respective side walls of said first pair of side walls, said lid members have a closed position where their forward margins are opposite and against each other and the lid members lie in covering relation over said chamber,

at least one lid member including a central expanse and a support flap forming a side margin thereof extending between the forward and rear margins of the lid member, such support flap resting on one of the side walls of said second pair with the lid members in their said closed position,

said support flap being movably mounted on said expanse so as to be shiftable to a collapsed position where such clears said one of the side walls of said second pair thus to enable the lid member to swing inwardly to be disposed in said chamber.

4,765,481

PACKAGED AIRLINE HEADSETS

John T. Walsh, 115 Kane Ave., Middletown, and Ronald J. Hourihan, 146 Rhode Island Ave., Newport, both of R.I.

Filed Aug. 18, 1986, Ser. No. 897,529
Int. Cl.[4] B65D *85/00*
U.S. Cl. 206—525 **7 Claims**



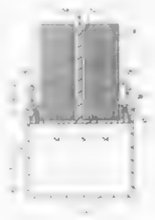
1. A combination including a flexible plastic container and an airline headset operable to be connected to a sound system of an airplane, said container comprising a pouch having an inner pocket for receiving said headset and having an opening for placing said headset in said pouch, and a flap connected to said pouch and operable to open and close said first opening, said headset including a cord adapted at one end for connection to the sound system of the airplane, said pouch having a second opening spaced apart from said first opening, said cord extending from the interior of said pouch through said second opening to the exterior of said pouch for enabling said cord to be connected to the sound system and for preventing said pouch and said headset from becoming separated from one another when said headset is removed from said pouch for use, said headset being returnable to said pouch for storage after use, said pouch comprising a nipple defining said second opening and said headset further includes a jack located at an end of said cord for connecting into the sound system of the airplane, said cord and said nipple being adapted to engage each other at a predetermined positon in proximity to said jack.

4,765,482

PAD DISPENSER

Anthony D. Delia, W. Redding, Conn., assignor to Bristol-Myers Company, New York, N.Y.

Filed Dec. 18, 1987, Ser. No. 135,127
Int. Cl.[4] B65D *1/34*
U.S. Cl. 206—555 **20 Claims**



1. A pad dispenser assembly usable to store and dispense a

VOL 1093 ISS 4 AG 23 1988 UMI

plurality of treatment pads, said pad dispenser assembly comprising:

a generally wide mouth container, said container including an open mouth, a sidewall, and a bottom;

closure means securable to said container mouth; and

a pad elevator insertable into said container through said open mouth, said pad elevator including a generally planar pad support platform having at least one peripheral collet and a central, generally vertically upstanding stem, said collet and said container sidewall being cooperatively sized to form a slidable interference fit over at least a portion of the height of said sidewall.

4,765,483

MEANS FOR APPLYING DESIGNS TO AUTO EXTERIORS

Earl R. Ernsberger, 104 Quail Dr., Dublin, Pa. 18917

Continuation-in-part of Ser. No. 753,929, Jul. 11, 1985, Pat. No. 4,634,607. This application Sep. 19, 1986, Ser. No. 909,179

The portion of the term of this patent subsequent to Jan. 6, 2004, has been disclaimed.

Int. Cl.[4] B05D *1/32*

U.S. Cl. 206—575 15 Claims

1. An auto design kit which comprises:

(1) a precut mask fabricated from a polyvinyl chloride sheet having a thickness of from about 1.75–2.50 mils and being characterized by a rubber based adhesive on one side; and

(2) a pressurized container equipped with nozzle means for spraying onto said mask a heavily pigmented enamel in vaporized form, said enamel being characterized by a high concentration of drying oils.

4,765,484

GLASS SORTING APPARATUS

Wolfgang Klumparendt, Dettenheim-Lie, Fed. Rep. of Germany, assignor to MAB Marlies Kellermann, Dettenheim-Lie, Fed. Rep. of Germany

Filed May 18, 1987, Ser. No. 50,863

Claims priority, application Fed. Rep. of Germany, May 30, 1986, 3618173

Int. Cl.[4] B07C *5/342*

U.S. Cl. 209—577 6 Claims



1. A glass sorting apparatus for the removal of non-glass parts or glass parts with non-glass components attached thereto from a mixture of glass, paper-labeled glass and non-glass parts, said apparatus comprising first conveyor means for supplying said mixture, second conveyor means for carrying away some of said mixture, said first conveyor means having a discharge end disposed at a first elevation and said second conveyor having a loading end at a lower elevation, a slide extending between the discharge end of said first and the loading end of said second conveyor and being adapted to provide for a predetermined slide speed of the parts deposited thereon, said slide having a transparent section and light sending and receiving units arranged on opposite sides thereof such that any part moving on the slide will pass over said transparent section and past said light sending and receiving units, said light sending unit being adapted to emit an infrared radiation close to visible light and being so arranged as to direct said infrared light toward said receiving unit through said transparent section of said slide and said slide further having a drop gate arranged downstream of said light sending and receiving units and controlled by said light receiving unit so as to be momentarily opened upon sensing of the presence of a non-glass part with a delay depending on the part slide speed such that the non-glass part is discharged through the momentarily opened drop gate.

4,765,485

RE-USABLE MAILER PACKAGE

William Perkins, Etobicoke, Canada, assignor to Reid Dominion Packaging Limited, Mississauga, Canada

Filed May 26, 1987, Ser. No. 53,756

Int. Cl.[4] B65D *27/34*

U.S. Cl. 206—610 8 Claims



1. In a paperboard mailing envelope of the type having front and back panels which are interconnected to form a load storage compartment with a pouch which has a loading opening at one end thereof and a closure flap hingedly connected to the front panel, the closure flap being operable to extend across the loading opening to overlie the back panel and close the loading opening in use, the improvement of;

(a) an interlocking tongue and slot formed one on the closure flap and one on the back panel, the tongue and slot being adapted to interlock to prevent undetected withdrawal of the locking tongue from the slot in use, and

(b) a detachable tear strip margin on each of said front and back panels connecting adjacent side edges of the front and back panels, said detachable tear strip margins being bonded to one another in a face-to-face relationship to seal an edge of the pouch and form a tear strip from only two thickness of paperboard, the tear strip being located laterally outwardly from the load storage compartment, said detachable tear strip margins being severable from their associated panels along weakened tear lines which extend along an edge of the tear strip and are located laterally outwardly from said closure flap such that it is only necessary to tear through the thickness of the front and back panels in order to tear along the tear line to remove the tear strip to provide an unloading which extends the full length of one side edge of the pouch through which the contents of the envelope may be removed in use.

4,765,486

METHOD FOR OBTAINING A PURIFIED FRACTION FROM A MIXTURE USING A MAGNETIC FLUID

Arnold G. Berlage; Palaniappa Krishnan, both of Corvallis; Douglas M. Bilsland, Junction City, and N. Robert Brandenburg, Corvallis, all of Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C. and The State of Oregon, acting by and through the State Board of Higher Education on behalf of Oregon State University, Corvallis, Oreg.

Filed Jun. 21, 1983, Ser. No. 506,482

Int. Cl.[4] B03C *1/00*

U.S. Cl. 209—8 1 Claim

1. A method for obtaining a purified fraction of bentgrass seed from a mixture containing bentgrass seed and soil particles, which comprises:

(a) contacting the mixture with aqueous magnetic fluid to sorb the fluid onto the soil particles in preference to the bentgrass seed so that the soil particles become magnetized in preference to the bentgrass seed;



(b) drying the so-contacted mixture; and

(c) separating the preferentially magnetized soil particles from the bentgrass seed in the mixture by passing the dried mixture through a magnetic field.

4,765,487

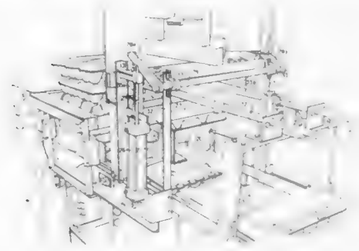
AUTOMATIC ARTICLE STACKING SYSTEM

George N. Bliss, Franklin, Mich., assignor to Diamond Automations, Inc., Farmington Hills, Mich.

Filed Jul. 30, 1986, Ser. No. 891,907

Int. Cl.[4] B07C *5/38;* **B65G** *57/30*

U.S. Cl. 209—510 35 Claims



1. A system for stacking a plurality of articles in a predetermined arrangement, the system being of the type which is provided with a conveyor which moves the articles along a predetermined conveyor path, the system being characterized in that there are further provided:

measurement means for producing a measurement information signal having a first signal state when an article to be stacked has a length in the direction of the predetermined conveyor path which is less than a predetermined threshold length value, and a second signal state when said article has a length which is greater than said predetermined threshold length value;

elevator means having first and second elevator positions responsive to said measurement information signal, said elevator means being in said first elevator position for accumulating therein a predetermined number of the articles, and in said second elevator position for permitting the articles to be conveyed past said elevator means; and

rotative stacking means for receiving said predetermined number of the articles accumulated in said elevator means, said predetermined number of accumulated articles forming a layer of articles to be stacked, said layer of articles being deposited in a stacking zone in a selectable rotative orientation.

27. A system for stacking a plurality of articles in a predetermined configuration, comprising:

conveyor means for moving the articles along a predetermined conveyor path;

turntable means in said predetermined conveyor path for receiving articles to be stacked from said conveyor means, said turntable means having a major plane arranged substantially parallel to the predetermined conveyor path;

rotator means operatively connected to said turntable means for rotating same in said major plane through a predetermined angle, whereby adjacent layers of articles received from said conveyor means may be oriented at an angle with respect to one another, said rotator means including rotator shaft means fixed to said turntable means, said rotator shaft means having a longitudinal central axis orthogonal to said major plane and coincidental with an axis of rotation of said turntable means, said rotator means further including lever arm means mechanically coupled to said rotator shaft means and arranged substantially orthogonal to said longitudinal central axis and rotative actuation means mechanically coupled to said lever arm means for rotatively moving said lever arm means by said predetermined angular segment; and

lift means operatively linked to said turntable means for lifting same in a direction substantially orthogonal to said major plane, said lift means including a lift table separate from and in slidable engagement with said turntable means, said lift means further including lift actuation means, said lift means and said lift actuation means being separate from said rotator means for moving said lift table in a direction substantially perpendicular to said major plane.

4,765,488

APPARATUS FOR SORTING ITEMS ACCORDING TO DETACHABLE CHARACTERISTICS

Larry J. Moriarity, 1339 Hampton Hall Dr., Atlanta, Ga. 30319

Filed Jun. 17, 1986, Ser. No. 875,074

Int. Cl.[4] B07C *5/30, 5/36*

U.S. Cl. 209—551 19 Claims



1. An apparatus for sorting items according to detectable characteristics, comprising:

a detector for detecting predetermined characteristics of items;

an elongated conveyor for conveying items to be sorted to said detector;

a plurality of receivers disposed to receive said items after they are sorted;

a distributor disposed to receive said items and for distributing said items to said receivers, said distributor comprising:

a bi-directionally driven conveyor disposed in a fixed orientation to receive and discharge said items; and

a pair of driven conveyors associated with said bi-direction-

VOL 1093 ISS 4 AG 23 1988 UMI

ally driven conveyor, one of which is disposed to receive items when said bi-directionally driven conveyor is driven in one direction and the other of which is disposed to receive items when said bi-directionally driven conveyor is driven in the other direction and wherein each of said pair of conveyors is associated with at least one receiver, and is driven to transport items received from the bi-directionally driven conveyor to a receiver associated with it; and

means connected to drives for each of said conveyors for selectively driving each of said conveyors in directions responsive to the predetermined characteristics of an item detected by said detector so as to define a path from said detector to the receiver designated for items having said predetermined characteristics.

4,765,489

SEPARATION WALL MOVEMENT CONTROL DEVICE FOR GRAIN SORTING MACHINES

Toshihiko Satake, Hiroshima, Japan, assignor to Satake Engineering Co., Ltd., Tokyo, Japan

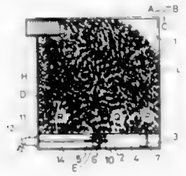
PCT No. PCT/JP80/00016, § 371 Date Aug. 6, 1980, § 102(e) Date Aug. 6, 1980, PCT Pub. No. WO80/01543, PCT Pub. Date Aug. 7, 1980

PCT Filed Jan. 31, 1980, Ser. No. 175,756

Claims priority, application Japan, Feb. 2, 1979, 54-11547

Int. Cl.⁴ B07C *5/00, 5/36*

U.S. Cl. 209—557 **1 Claim**



1. In a grain sorting machine of a type having a rough surface grain sorting plate, a grain exit passage of the sorting plate, a separation wall moveable along a side of said sorting plate and a drive unit communicating with the separation wall: a separation wall movement control device, comprising detector means on said separation wall and including a two-dimensional array of plural light sources and light receiving elements facing the grain exit passage and circuit means interfacing said detector means and said drive unit to position the separation wall; wherein said circuit means includes gate means responsive to said light receiving elements for generating first pulse signals; clock means for generating second pulse signals; counter means for comparing the frequency of said first count signals with the frequency of said second count signals and in response driving a bidirectional motor within said drive unit.

4,765,490

FILE HANGER

Ray Hanson, Aurora, Canada, assignor to Commander Business Furniture, Inc., Agincourt, Canada

Filed Dec. 16, 1986, Ser. No. 942,193

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 211—46 **6 Claims**

1. A frame for hanging file folders, said frame consisting of a set of opposing side rails, a set of opposing end rails and four corner upright leg members for supporting both sets of rails, each side rail comprising a pair of side rail members and each side rail member having a series of spaced apart openings therein, the side rail members of each pair extending inwardly from and being removably secured at opposite ends of said frame and having an overlap with respect to one another by a span and an alignment of at least two openings in each of said side rails, said side rail members being longitudinally adjustable relative to one another by varying said overlap for different length settings of said frame and releasable securing means



securing and supporting said side rail members at the two aligned openings in each side rail member.

4,765,491

DEVICE FOR SUPPORTING FIREWOOD STACK

Dan P. Mueller, 26125 Pierce Rd., Los Gatos, Calif. 95030

Filed May 22, 1987, Ser. No. 52,976

Int. Cl.⁴ A47F *7/00*

U.S. Cl. 211—49.1 **4 Claims**



1. A device for supporting firewood stacks and the like, comprising:

a pair of first elongated members each having two ends;

a first cross piece joining said first elongated members near one end and holding them in the same plane;

hinge means;

a planar base having two ends and formed of a pair of second elongated members each fixed to one of each of said first elongated members by said hinge means at a point intermediate the base ends;

a third elongated rigid member extending between and fixed to said first cross piece and one end of said base to hold said first elongated members substantially perpendicular to said base so that when said base is placed on the floor said first elongated members extend upward to serve as the end brace for a stack of wood or the like; and

a second cross piece joining said second elongated members and releasably joined to said third elongated member to allow said device to be folded into a planar configuration for storage.

4,765,492

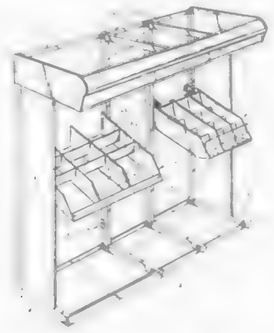
DISPLAY ASSEMBLIES FOR INTEGRATED MODULAR STORE FIXTURE SYSTEM

Fred Howard, New York, and Sydney Edson, East Meadow, both of N.Y., assignors to Sara Lee Corporation, Winston-Salem, N.C.

Filed Jun. 15, 1987, Ser. No. 61,445

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 211—55 **18 Claims**



1. In an integrated modular store fixture system having at least two spaced apart parallel vertical members with side surfaces facing each other and having a series of aligned holes therein and a display assembly having a front, a rear, a base, side support members on both sides of the base and means projecting from the side support members for engaging said holes to retain the display assembly in place between two vertical members with the front facing outwardly, the improvement wherein the display assembly further comprises: at least one separator disposed parallel to the side support members and perpendicular to the base and means mounting the at least one separator on the base for slidable movement across the front of the display assembly to permit adjustment of the position thereof while preventing upward movement of the at least one separator, whereby the display assembly can be selectively configured to receive and display packages of different sizes.

4,765,493

GRAVITY FEED MERCHANDISE RACK

Thomas R. Kinney, Crete, Ill., assignor to The Interlake Corporation, Oak Brook, Ill.

Filed Aug. 25, 1987, Ser. No. 89,223

Int. Cl.⁴ A47F *5/00*

U.S. Cl. 211—59.2 **9 Claims**

1. In a gravity feed merchandise storage and delivery rack including a shelf frame defining a front member and a rear member, means for raising the rear member higher than the front member so that the merchandise is urged by gravity toward the front member and parallel tracks for supporting and enabling the movement of the merchandise, each track having a top surface, a front portion adjacent the front member and a rear portion adjacent the rear member, improved means for facilitating the assembly of the rack and for adjustably securing the tracks to the front and rear members comprising:

front support means carried by the front member for supporting the front portions of the tracks;

rear support means carried by the rear member for supporting the rear portions of the tracks;

front slot means for defining a front retaining surface positioned above the front support means at a level below the level of the top surface and for defining a plurality of front slots extending along the front support means;

rear slot means for defining a rear retaining surface positioned above the rear support means at a level below the level of the top surface and for defining a plurality of rear slots extending along the rear support means,

front engagement means carried by the front portion of each track and positioned between the front support means and the front retaining surface for comating with at least one of said front slots to restrict the lateral movement of the track and for comating with the front retaining surface to restrict the vertical movement of the track;

rear engagement means carried by the rear portion of each track and positioned between the rear support means and the rear retaining surface for comating with at least one of said rear slots to restrict the lateral movement of the track and for comating with the rear retaining surface to restrict



the vertical movement of the track, the front and rear slot means and front and rear engagement means being proportioned such that the track can be moved to an assembly position in which the track is supported by the front and rear support means, the rear engagement means is engaging a rear slot, and the front engagement means is free to be moved laterally along the front slots and such that the track can be moved to an engaged position in which the track is supported by the front and rear support means, at least one front slot is engaged by the front engagement means and at least one rear slot is engaged by the rear engagement means, whereby the track is restricted in both lateral and vertical movement.

4,765,494

MARKER CADDY

Frederick M. Avery, 3502 E. Cochise Rd., Phoenix, Ariz. 85028

Continuation of Ser. No. 899,129, Aug. 22, 1986, abandoned. This application Nov. 5, 1987, Ser. No. 119,236

Int. Cl.⁴ A47F *7/00*

U.S. Cl. 211—69.5 **14 Claims**

1. A marker caddy comprising

a base;

support members secured to and extending above said base;

a frame having upper, lower and side members mounted on the upper ends of said support members;

a marker holder mounted within said frame, said marker holder including a plurality of adjacent rows of marker trays mounted substantially parallel between the sides of said frame in a stair-step configuration, each of said marker trays comprising

a plurality of adjacent substantially vertical wells in the lower portion of said tray;

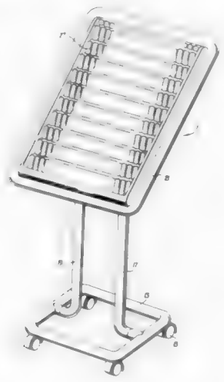
a first plurality of adjacent substantially arcuate indentations in the upper rear portion of said tray equal in number and mating with and extending above said wells;

an upward integral extension of said arcuate indentations on

VOL 1093 ISS 4 AG 23 1988 UMI

substantially all of said trays adjacent to and extending above the next higher level of said wells; and

a second plurality of substantially arcuate indentations in the rear of said extension, said second indentations being substantially aligned with, displaced from, and extending



above said next higher level of wells, the distance between the opposed extremities of said second indentations and said first indentations being greater than the diameter of said adjacent well so as to provide a shelf adjacent to the top of said well.

4,765,495

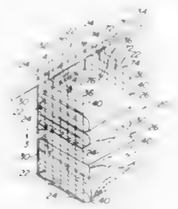
KNOCK DOWN STORAGE SYSTEM AND ACCESSORIES THEREFOR

Leonard Bisk, 7833 Spring Ave., Elkins Park, Pa. 19117

Continuation-in-part of Ser. No. 512,285, Jul. 8, 1983, abandoned. This application Jan. 26, 1984, Ser. No. 573,989

Int. Cl.[4] A47F *5/08*

U.S. Cl. 211—113 12 Claims



1. A knockdown storage system for suspension from a conventional closet rod, said system comprising: at least three generally planar panels; releasable securement means connecting said panels into a storage receptacle having a pair of side panels and a bottom panel, each of said panels being formed of a grid-like plastic member which is generally planar and has a rectangular profile, with the marginal edges of each of said panels including rod-like sections of generally circular cross-section, said releasable securement means comprising a clip formed of an elongated plastic member having a pair of longitudinally extending channels, each of said channels being configured to snugly receive a respective rod-like section of a pair of said panels to secure said panels together to readily assembly said receptacle; and a first pair of plastic hanger brackets, each of said brackets including a loop-like portion through which said conventional closet rod extends when said system is suspended vertically therefrom and at least one leg portion depending vertically from said loop-like portion and further including clip means on said depending leg portion having a vertical channel therein releasably securing said bracket to one of said grid-like panels, whereby said storage receptacle is suspended from said rod when said vertical channel is secured to said grid-like panel.

4,765,496

CLAW COUPLING FOR TOY AND MODEL TRAINS

Hans Diller, Heroldsberg, Fed. Rep. of Germany, assignor to Gebr. Fleischmann, Nuremberg, Fed. Rep. of Germany

Filed Jan. 20, 1987, Ser. No. 4,468

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1986, 3601951

Int. Cl.[4] B61G *1/00*

U.S. Cl. 213—75 TC 15 Claims



1. A claw coupling for toy model trains for coupling and uncoupling to a like claw coupling, comprising an anchoring bracket having hook means, claw means pivotably mounted on the anchoring bracket and having a pivoted coupling position in which the claw means engages and couples the hook means of another like claw coupling, said claw means having a support pin with a vertical axis, said anchoring bracket having a hole means in which said support pin is received, said support pin being engageable by an uncoupling rail to raise said support pin in said hole means to effect uncoupling of said claw means from the hook means of another like coupling, said anchoring bracket having a mandrel means juxtaposed to the claw means of another like coupled claw coupling to preclude the last said claw means from pivoting from its pivoted coupling position, whereby the mandrel means retains the claw means of said other like claw coupling in said pivotal coupling position.

4,765,497

TEAT FOR BABY'S FEEDING BOTTLE

Shen-Kuang Hsu, 2F., No. 8, Lane 168, Chi Lin Road, Taipei, Taiwan

Filed Jan. 21, 1987, Ser. No. 5,763

Int. Cl.[4] A61J *11/00*

U.S. Cl. 215—11.1 2 Claims



1. A teat for a feeding bottle comprising a conical body having at least one nipple on the top end thereof, said nipple having at least three protuberances spaced vertically therealong at successively larger diameters, whereby said protuberances serve to designate the appropriate nipple opening for

babies of three months or below, three to six months and more than six months of age respectively.

4,765,498

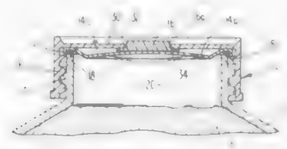
VACUUM-INDICATING CLOSURE FOR CONTAINERS

Charles A. Rafferty, 15 Waterville Rd., Farmington, Conn. 06032

Filed May 27, 1987, Ser. No. 54,527

Int. Cl.[4] B65D *41/04*

U.S. Cl. 215—230 10 Claims



1. A vacuum-indicating closure for containers comprising a lid of metal sheet material having in repose a slightly domed shape and sealing means on its underside adjacent its periphery, the lid being adapted to snap audibly when its center is pressed downward, button means separate from the lid extending upward from the center of the lid, and a cover having a downward sidewall formed with inwardly directed container-engaging coupling means and a top panel with a central opening through which the button means is accessible to be pressed to indicate audibly loss of vacuum.

4,765,499

FILTER CAP

Charles von Reis, 1923 Dunmore Rd., Ann Arbor, Mich. 48103, and Karlis Vizulis, 202-1/2 W. Henry, Saline, Mich. 48176

Filed Dec. 29, 1987, Ser. No. 139,015

Int. Cl.[4] B65D *51/16*

U.S. Cl. 215—261 12 Claims



1. A venting closure (10) for containers (12) having a pour opening (14) defined by a circumferential rim (16), said closure (10) comprising: a top wall (20) having an inner (22) and an outer (24) surface, a side skirt (26) extending from said top wall (20) about said inner surface (22) and liner means (28) mounted adjacent said inner surface (22) for perfecting a seal between said top wall (20) and the circumferential rim (16) when said closure (10) is secured upon the rim (16) and over the opening (14), characterized by said liner means (28) including a gas impermeable non-hydrophobic portion (30) at least about the radial periphery of said liner means (28) and an integral gas permeable hydrophobic portion (32) offset therefrom.

4,765,500

CONTAINER MADE FROM IDENTICAL HALVES

Margaret A. Ingram, 4635 Arriba Dr., Tarzana, Calif. 91356

Filed Oct. 29, 1987, Ser. No. 113,994

Int. Cl.[4] B65D *11/02, 43/10*

U.S. Cl. 220—4 E 11 Claims



1. An improved openable container, said container comprising identical mating first and second portions, each said mating portion including:

(a) a flat bottom wall;

(b) a pair of spaced parallel vertical endwalls, the upper ends of which form identical integral upraised ears of a width less than the width of the remainder of said endwall; and,

(c) a pair of spaced parallel vertical sidewalls interconnecting said bottom wall and said endwalls, to collectively define a central storage space, the upper margin of said sidewalls being at the level of the lower end of said ears, said sidewalls having recessed in the outer priphery thereof extending only part way through said sidewalls and adapted to snugly receive said ears of said portions when said second portion is inverted and mated with said first portion, said central storage space being releasably sealed by said mating of said first and second portions, said portions being rotated 90° relative to each other in the mated state.

4,765,501

TOY CONTAINER

Joe Kao, 3F., No.35, Ching Chung Street, Taipei, Taiwan

Filed Sep. 2, 1987, Ser. No. 91,997

Int. Cl.[4] B65D *6/00, 6/12, 6/16*

U.S. Cl. 220—4 B 2 Claims



1. A toy container comprising an upper shell and a lower shell, wherein the lower portion of said upper shell has three annular ribs therein, each of said annular ribs being formed by a flat portion and a sloping portion separately, the upper portion of said lower shell having also three annular ribs which cooperate with said three annular ribs of said upper shell in such a way that said annular ribs of the upper shell and said annular ribs of the lower shell will closely attach to each other upon holding the upper shell and the lower shell together.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,502

APPARATUS FOR NONSTOP OPERATION OF AN INSERTER SYSTEM WITH MULTIPLE DOCUMENT FEEDING CAPABILITY

Leon A. Pintsov, West Hartford, and David R. Auerbach, Georgetown, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jun. 19, 1987, Ser. No. 64,024
Int. Cl.[4] B65H *5/30*
U.S. Cl. 270—55 5 Claims



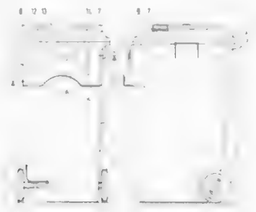
1. An inserter system comprising:
conveyor means for transporting documents at a velocity, v, in a downstream direction;
document entry device means disposed at a position along the conveyor means for ejecting document(s) onto the conveyor means;
multiple document entry drive means disposed at a position along the conveyor means a distance, d, downstream from the document entry device means for assembling a set of documents into an enclosure and ejecting the enclosure onto the conveyor means so as to compile with the document(s) ejected by the document entry device;
lift up station means disposed at a position along the conveyor means between the document entry device and the multiple document entry device for removing documents from the conveyor means in response to a remove command and for replacing documents onto the conveyor means in response to a replace command; and
controller means responsive to the movement of the conveyor means for providing the remove command when the time, t_2, required by the multiple document entry device means to assemble an enclosure exceeds the time, t_1, required by the conveyor means to transport the document(s) ejected by the document entry device means the distance, d, at the velocity, v.

4,765,503

REFUSE BIN WITH DOWNWARDLY OPEN RECEIVING ENGAGEMENT OF A GRIPPER

Werner Otto, Forstweg 2, D 5910 Kreuztal, and Ulrich Beese, Brunnenstrasse 6, D 5963 Wenden-Hüsborn, both of Fed. Rep. of Germany

Filed Dec. 28, 1987, Ser. No. 138,099
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1987, 3703034
Int. Cl.[4] B65D *43/00*
U.S. Cl. 220—74 8 Claims



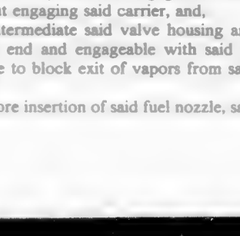
1. Refuse bin comprising a body part of substantially rectangular cross-section and a hinged lid, the body part being provided on its front wall opposite the lid hinges with a downwardly open receiving pocket for engagement of a gripper of a lift-tip apparatus and the rear wall of the receiving pocket extending outwardly in wedge-manner inclined or rounded dome-like, characterized in that the receiving pocket is formed from at least two wall portions which extend approximately parallel to each other and which are connected together by struts.

4,765,504

VAPOR VENTING VALVE FOR VEHICLE FUEL SYSTEM

Carl H. Sherwood, Brockport; Joseph Fornuto, Rochester, both of N.Y., and Roy A. Giacomazzi, Washington Township, Macomb County, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1987, Ser. No. 91,124
Int. Cl.[4] B65B *31/06*
U.S. Cl. 220—86 R 3 Claims



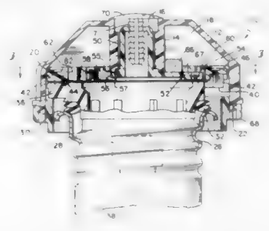
1. In a vehicle fuel system having a fuel tank, a fuel tank filler pipe the upper end of which is openable to atmosphere to receive a liquid fuel filler nozzle, and a vapor storage canister, a vapor venting means to prevent fuel vapors produced during fuel fill from exiting said fuel tank through said filler pipe to atmosphere, said vapor venting means comprising,
a valve housing on said filler pipe below said filler pipe upper end having an upper circular seat opening to the outside of said housing and an opposed, spaced lower circular seat opening to the interior of said filler pipe,
a vapor vent line running from said upper circular seat to said storage canister so as to provide a vapor exit path from the interior of said filler pipe in conjunction with said spaced upper and lower seats,
a lightweight and buoyant ball valve in said housing intermediate said opposed seats and having a diameter that is less than the spacing between said opposed seats, so that said ball valve can close either said lower or said upper seat to block said exit path,
a ball valve carrier in said housing intermediate said ball valve and said upper circular seat and guidably movable toward and away from said opposed seats,
biasing means continually forcing said carrier into said ball valve and toward said lower seat so as to block said exit path,
a remotely actuatable carrier lifter within said housing that is movable from outside of said housing to lift said carrier away from said lower seat against said biasing means and toward said upper seat,
an actuator within said filler pipe movable by the insertion of said fuel filler nozzle to actuate said carrier lifter and push said carrier away from said lower seat sufficiently that said ball valve may float into engagement with said upper seat without engaging said carrier, and,
seal means intermediate said valve housing and said filler pipe upper end and engageable with said inserted fuel filler nozzle to block exit of vapors from said filler pipe upper end,
whereby, before insertion of said fuel nozzle, said ball valve will block said lower seat and prevent vapors from exiting said filler pipe, and after insertion of said fuel nozzle, said carrier will be lifted away from said lower seat to free said ball valve, allowing vapors produced during fuel fill to lift said lightweight ball valve from said lower seat so that said vapors can exit only through said lower and upper seats to said upper seat and vent line to said canister, while any liquid fuel rising within said filler pipe to said ball valve will float said ball valve into engagement with said upper seat to block said exit path.

4,765,505

DELAYED ACTUATION FUEL CAP

Robert S. Harris, Connersville, Ind., assignor to Stant Inc., Connersville, Ind.

Continuation of Ser. No. 42,791, Apr. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 888,575, Jul. 22, 1986, Pat. No. 4,676,390. This application Nov. 25, 1987, Ser. No. 129,416
Int. Cl.[4] B65D *41/04, 41/32*
U.S. Cl. 220—288 15 Claims



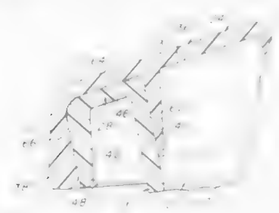
1. A cap for use in the filler neck of a tank, the cap comprising
closure means for closing the filler neck,
handle means for rotating the closure means relative to the filler neck, and
delayed actuation means for providing a lost motion driving connection between the handle means and the closure means.

4,765,506

COMBINATION STORAGE CONTAINER AND TRIPLE SEAL LID

Aaron H. Fishman, Hewlett Harbor, N.Y., and Joseph Bottitta, Belleville, N.J., assignors to APL Corporation, Miami Beach, Fla.

Filed May 12, 1987, Ser. No. 49,764
Int. Cl.[4] B65D *43/06*
U.S. Cl. 220—355 2 Claims



1. The combination of a plastic container and lid, said combination being arranged for storing food stuffs or other goods therein with said lid secured in place on said container, said container comprising a sidewall defining a mouth to the interior of said container and having a rim extending about the periphery thereof, said rim including an outwardly extending portion termination in a downwardly extending flange, said container having a first surface formed by a portion of the inner surface of said sidewall, a second surface formed by a portion of the top surface of the outwardly extending portion of said rim, and a third surface formed by a portion of the outer surface of said flange, said second surface including a portion of conical shape projecting downward, said first and third surfaces of said container each extending at an angle of approximately 7° from the vertical direction when said container is disposed horizontally, said second surface portion extending at an angle of approximately 15° to the horizontal when said container is disposed horizontally said lid being formed of a somewhat flexible material and comprising a central portion and a peripheral portion, said peripheral portion having a bottom surface defining a second surface of said lid, a downwardly projecting flange extending about the periphery of said lid and having an inner surface defining a third surface of said lid, and a downwardly projecting rib spaced inwardly from said flange and having an outer surface defining a first surface of said lid, said second surface of said lid including a portion of conical shape projecting downward, said first and third surfaces of said lid extending at angles of approximately 7° and 12°, respectively, from the vertical direction, when said lid is disposed horizontally, said second surface portion of said lid extending at an angle of approximately 15° from the horizontal direction when said lid is disposed horizontally, said first, second and third surfaces of said lid forming an annular space therebetween, said lid being arranged to be releasably secured to said container with said flange of said lid flexing so that said rim is disposed within said annular space, said first, second and third surfaces of said lid and container being configured and sized so that after said flange flexes the rim is tightly received within said annular space and with said first, second and third surfaces of said lid tightly engaging said first, second and third surfaces, respectively, of said container to create respective first, second and third, liquid-tight seals.

4,765,507

PRESSURE VESSEL WITH AN IMPROVED SIDEWALL STRUCTURE

William M. Yavorsky, Woodbury, and Gary W. Ganer, Cottage Grove, both of Minn., assignors to Ecodyne Corporation, St. Paul, Minn.

Continuation-in-part of Ser. No. 822,921, Jan. 24, 1986, Pat. No. 4,619,374, which is a continuation of Ser. No. 612,239, May 21, 1984, which is a continuation-in-part of Ser. No. 447,769, Jan. 24, 1983. This application Jul. 14, 1986, Ser. No. 885,300
The portion of the term of this patent subsequent to Oct. 28, 2003, has been disclaimed.
Int. Cl.[4] B65D *25/02*
U.S. Cl. 220—414 24 Claims



1. A pressure vessel for containing fluids, said pressure vessel comprising: a thin thermoplastic inner liner providing an impervious barrier to said fluids and having first and second end portions and a substantially cylindrical middle portion connected to said end portions, said cylindrical middle portion having at least one aperture; an insert means secured to said thin inner liner, forming an integral part thereof; an outer layer substantially covering said inner liner and having an aperture

VOL 1093 ISS 4 AG 23 1988 UMI

substantially coincident with said aperture of said inner liner, said insert means comprising: a main body member having an aperture, said main body aperture being substantially coincident with said aperture in said inner liner and said aperture in said outer layer and forming a port into the interior of said vessel; collar means positioned in said aperture of said main body member for forming a seal therebetween and connected to said main body member for restraining said main body member from expanding away from said collar means due to increasing temperature.

4,765,508

SHEET MATERIAL DISPENSING PACKAGE

Kenneth G. Poppe, Miamitown, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 15, 1986, Ser. No. 907,449
Int. Cl.[4] B65H *1/00*
U.S. Cl. 221—48 2 Claims



1. A dispensing package for flexible sheet material, said package comprising a unitary carton and a U-folded bundle of sheets of flexible material, said bundle comprising a closed end and two leg portions in confronting relation, said carton having a top wall and a bottom wall, said top wall having a dispensing aperture therethrough, and said bundle being disposed in said carton with the closed end of said U-folded bundle immediately subjacent said dispensing aperture. said carton further comprising integral anti-bundle-rotation means for directly contacting and restraining said bundle from rotating inside said carton during shipping and handling, said integral anti-bundle-rotation means comprising a pair of integrally hinged end closure flaps having proximal portions and lower distal corner portions, said proximal portions of each said pair being substantially coplanar, said lower distal corner portions being integrally hinged to their respective proximal portions along integral hinge lines which extend obliquely upwardly from adjacent the respective bottom proximal corners of said end closure flaps, and said lower distal corner portions being configured and disposed to have their bottom edges resting on the bottom wall of said carton, and to slope downwardly and inwardly far enough to sufficiently engage the sides of said bundle to substantially obviate rotation of said bundle inside said carton.

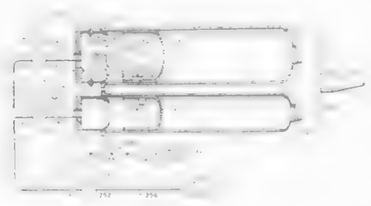
4,765,509

PUMPING SYSTEM

Wolfgang O. Eisenhut, Woodside, and John W. Senf, San Carlos, both of Calif., assignors to Adhesive Engineering Company, San Carlos, Calif.

Division of Ser. No. 914,711, Oct. 2, 1986, Pat. No. 4,701,112. This application Jul. 28, 1987, Ser. No. 78,827
Int. Cl.[4] B67D *5/42*; F01B *25/04*
U.S. Cl. 222—61 1 Claim

1. A multiple fluid pumping apparatus comprising
a first fluid reservoir having means defining a dispensing first neck top opening and means defining an open bottom end,
a first plunger slidably disposed in said first fluid reservoir,
a second fluid reservoir having means defining a dispensing second neck top opening and means defining an open bottom end,
a second plunger slidably disposed in said second fluid reservoir,
means for providing air pressure to each of said first and second plungers to push said plungers down their respective reservoirs toward their respective neck ends,
means for controlling the flow of air pressure to said first and second plungers to maintain said plungers adjacent each other as they move down said reservoirs, said means comprising



means for creating a magnetic field connected to said first plunger,
a first means for detecting a magnetic field connected to said second plunger,
a second means for detecting a magnetic field connected to said second plunger and spaced longitudinally along said plunger apart from said first means for detecting a magnetic field,
means electrically connected to said first means for detecting a magnetic field, for controlling the flow of air to said first plunger when said magnetic field is detected, and
means electrically connected to said second means for detecting a magnetic field, for controlling the flow of air to said second plunger when said magnetic field is detected.

4,765,510

MULTIPLE COLOR FLUID DISPENSING GUN

Vincent N. Rende, 42 Water St., Eastchester, N.Y. 10790

Filed Apr. 7, 1987, Ser. No. 35,184
Int. Cl.[4] A63H *3/18*; B67D *5/52*
U.S. Cl. 222—79 6 Claims



1. A fluid dispensing apparatus comprising
a housing having a manually grasping handle;
a manually movable trigger mounted adjacent said handle;
means defining a plurality of fluid-containing chambers in said housing each of said chambers containing a fluid having a characteristic different from the characteristics of the fluids in the other chambers;
a plurality of laterally spaced nozzles mounted in said housing and pointing in the same general direction,
said nozzles being oriented so that the central axes thereof intersect at a point which is a predetermined distance from said housing;
a plurality of barrels, equal in number to the number of nozzles, slidably mounted in said housing for movement between retracted and extended positions, each of said barrels having one of said nozzles mounted at an end thereof;
spring means urging each of said barrels toward its extended position; and
releasable latch means for holding said barrels in their retracted positions, said latch means being released by manual movement of said trigger;
fluid conduit means interconnecting each of said chambers with one of said nozzles for delivering fluid from said chambers to said nozzles, respectively;
means for concurrently applying pressure to the fluid in all of said fluid conduit means in response to movement of said trigger to force fluid under pressure from said chambers through said conduit means and out of said nozzles, thereby forming a plurality of fluid streams which intersect at said point so that said fluids can interact.

4,765,511

TWIST CAP WITH INTEGRAL PUNCTURE MEANS

James W. Clements, 3 Greenfield Dr., Ancaster, Ontario, Canada L9G 1M2

Filed Sep. 29, 1986, Ser. No. 912,547
Claims priority, application Canada, Oct. 18, 1985, 493311
Int. Cl.[4] B67B *7/24*
U.S. Cl. 222—83 11 Claims



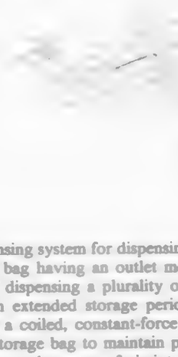
1. A captive closure comprising;
(a) an annular cap member formed as
(i) a cylindrical body defining a central channel that acts as part of a fluid flow channel, the body extending at its distal end into;
(1) a plurality of vanes integral therewith, each extending from relative margins exterior of the central channel and tapering toward and merging into a tip located in the prolongation of the central channel to thereby define a tapered puncture means, adjacent vanes defining between tip, each other and the distal end, a fluid flow space communicating with the central channel;
(2) the vanes carrying therebetween a sealing plug sized larger than the central channel and located coaxially subjacent to the central channel; and,
(ii) means adapted for mounting the cap into sealing engagement with an out-pouring orfice of a container whose liquid is to be removed, so as to dispose the central channel and the vanes within the container;
(b) an annular operative member including;
(i) an annulus that steps into a cylindrical member defining a fluid flow canal, the diameter of which is slightly smaller than but proximate to that of the plug, the outside diameter of the cylindrical member being slightly smaller but proximate to the inside diameter of the central channel; and,
(c) means for matingly moving the operative member relative to the annular cap so as to selectively place the plug into mating sealing engagement with the flow canal.

4,765,512

SELF-DISPENSING SPRING BIASED THIN FILM CONTAINER

Glen C. Bull, Jr., R.R. #3, Box 1695, Spotsylvania County, Va. 22553

Continuation-in-part of Ser. No. 542,905, Oct. 20, 1983, abandoned, which is a continuation of Ser. No. 41,426, May 22, 1979, abandoned, and a continuation of Ser. No. 875,978, Jun. 19, 1986, abandoned, which is a continuation of Ser. No. 448,973, Dec. 16, 1982, abandoned, which is a continuation-in-part of Ser. No. 41,426, May 22, 1979, abandoned. This application Jul. 30, 1986, Ser. No. 890,607
Int. Cl.[4] B65D *35/34*
U.S. Cl. 222—100 36 Claims



1. A dispensing system for dispensing fluent material from a bulk storage bag having an outlet member thereon with the capability of dispensing a plurality of servings from time to time over an extended storage period, by use of the force provided by a coiled, constant-force sheet spring that bears against the storage bag to maintain pressure on the bag contents to prevent the entry of air into the bag while simultaneously dispensing the material, comprising in combination,
a thin walled, flexible film bag for bulk quantities of a fluent material, the bag being in the general form of a rectangular parallepiped having an inner longitudinal end and having an outer longitudinal end including an outlet member, the outlet member including an enlarged portion spaced from the outer longitudinal end of the film bag,
a supporting surface for supporting the bag,
a single sheet, constant force spring member having a predetermined force and an unsupported inner end and having an outer end secured to the supporting surface with the sheet biased to coil up around its inner end into a coil of predetermined final diameter from an uncoiled, sheetlike position along the supporting surface and so constructed as to coil up convolutely with the bulk storage bag so that the bag is coiled up between spring coils from the inner end to the outer end thereof as the fluent material is being dispensed, thereby producing a constant force of the spring member against fluent material contained within the bag,
bag retention means cooperatively disposed adjacent the inner end of the spring member for gripping and retaining the inner end of the bag, the spring overlying the supporting surface with the outlet member of the bag near the outer end of the spring member and for disposing a coiled portion of the bag about the inner end of the spring to bear against a surface of the bag and therefore the fluent material therein so that the coiled portion of the bag and the spring bear against a surface area of the bag substantially across its width and along a portion of its length, thereby to exert a pressure against fluent material disposed within the bag at all times during storage and dispensing to prevent the entry of air into the bag through the outlet member and permitting coiling up of the bag between spring coils during dispensing in response to opening of the outlet member to permit flow of the fluent material therefrom,
bag stop means carried on the supporting surface for retaining the outer end of the bag in place relative to the supporting surface, the bag means including a fixed stop

VOL 1093 ISS 4 AG 23 1988 UMI

extending substantially perpendicularly from the supporting surface for engaging the outer longitudinal end of the bag in contacting relationship and at a position on the supporting surface for permitting substantially the entire bag to be coiled up toward the bag stop means and within the spring member coils, thereby to discharge its fluent contents through the outlet member, the fixed stop further including a substantially U-shaped opening for slidably receiving and retaining the bag outlet member with the enlarged portion of the outlet member abutting the fixed stop and extending laterally outwardly beyond the U-shaped opening for securely supporting the bag outlet member at a lower portion of the U-shaped opening, and bag engaging means carried by the bag stop means and spaced from the supporting surface, the bag engaging means extending over and contacting at least a part of an uppermost surface of the bag for confining and supporting the outer end of the bag relative to the supporting surface to prevent longitudinal and upward bulging of the outer end of the bag as the inner end of the spring approaches the bag stop means, the bag engaging means including slot means communication with the U-shaped opening in the fixed slot for permitting assembly of the outlet member and enlarged portion to the fixed stop,

wherein the spring member when uncoiled is restrained against coiling by a restraining force provided by counter pressure of the fluent material within the bag bearing against the spring member coil.

4,765,513

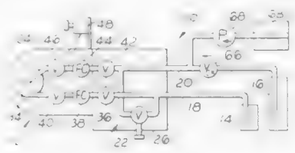
POST-MIX BEVERAGE DISPENSER WITH NOZZLE

John R. McMillin, Maplewood, and Herman S. Fessler, Coon Rapids, both of Minn., assignors to The Cornelius Company, Anoka, Minn.

Continuation-in-part of Ser. No. 769,239, Aug. 26, 1985, abandoned. This application May 15, 1987, Ser. No. 50,830

Int. Cl.[4] B67D *5/56*

U.S. Cl. 222—129.1 33 Claims



1. A method of flushing at least part of the syrup components in a post-mix carbonated beverage dispensing system with carbonated water comprising the steps of:

a. concurrently opening a syrup dispensing valve and carbonated water valve in a pressurized syrup line and pressurized carbonated water line respectively, both lines leading through a respective discrete opened disconnect valve to a dispensing nozzle;

b. selectively and intermittently connecting the carbonated water line to the syrup line at a connecting point upstream of the syrup disconnect valve by opening a normally closed flush valve;

c. precluding reverse flow of syrup in the syrup line by checking against reverse syrup flow upstream of the connection point;

d. propelling all syrup from the connection point to the nozzle out of the nozzle with a displacing flow of carbonated flushing water from the carbonated water line via the connection point;

e. flushing the syrup disconnect valve, syrup dispensing valve, and the nozzle with a further flow of the carbonated flushing water;

f. concurrently flushing a syrup flow control in the syrup line with the carbonated flush water;

g. concurrently flushing a disconnect valve in the syrup line and between a valve body and mounting block, with the carbonated flush water;

h. disconnecting the carbonated water line from the syrup line by closing the flush valve so that syrup can again be supplied to the nozzle, said nozzle, syrup dispensing valve, syrup flow control, and syrup disconnect valve having been completely flushed of syrup and cleaned with carbonated water from the carbonated water supply line;

i. neutralizing syrup pressure upon the normally closed flush valve so that if and when syrup pressure exceeds the carbonated water pressure the syrup pressure cannot open the flush valve; and

j. discretely operating a discrete and dedicated mechanical flush actuator on the dispensing valve, said flush actuator being mechanically connected to said flush valve for mechanical operation of said flush valve in response to manual and mechanical operation of the flush actuator.

2. A method of flushing a post-mix beverage dispensing system comprising the steps of:

(a) concurrently opening a syrup valve and water valve in a syrup line and water line respectively, both lines leading to a dispensing nozzle;

(b) connecting the water line to the syrup line at a connecting point upstream of the syrup valve;

(c) operating a discrete flush lever underneath the dispensing valve to connect the water and syrup lines by squeezing the flush lever and a dispensing lever together with the thumb and a finger of one hand, to connect the water and syrup lines;

(d) precluding reverse flow of syrup in the syrup line;

(e) propelling all syrup from the connection point to the nozzle out of the nozzle with a flow of flushing water from the water line via the connection point;

(f) flushing the syrup valve and nozzle with a further flow of the flushing water; and

(g) then disconnecting the water line from the syrup line so that syrup can again be supplied to the nozzle, which has just been flushed and cleaned with water from the water supply line, by releasing the squeeze upon the flush and dispensing levers.

4,765,514

CONTAINER

Albert I. Berglund, P.O. Box 61, Southold, N.Y. 11971

Filed Jan. 8, 1987, Ser. No. 1,298

Int. Cl.[4] A47G *19/14*

U.S. Cl. 222—145 5 Claims



1. A container for storing and dispensing a substance, especially fluids, comprising:

means defining a lower chamber for containing the substance, said lower chamber including a bottom and a pair of side faces;

means defining a pair of elongated undulating channels extending upwardly and inwardly from the pair of side faces of said lower chamber, said pair of elongated channels defining divided flow paths and a hollow annulus therebetween at about the center of gravity of the container;

means defining a throat section above the center of gravity of said container, said throat section being narrower than said lower chamber and having concave outer surfaces, said pair of elongated channels merging inwardly at said throat section;

means defining an upper chamber in said container merging with said throat section, said upper chamber having a pair of shoulder sections, each shoulder section having a convex outer surface, the concave outer surfaces of said throat section flaring outwardly to merge with the convex outer surfaces of said shoulder sections, said convex outer surfaces merging at an upper common plane;

neck means defining an opening at the common plane where the convex outer surfaces of said pair of shoulder sections merge;

a cap for covering said opening, whereby said elongated channels additionally form a pair of handles for grasping the container; and

said undulating channels, said throat section and said shoulder sections cooperating with said neck means to control the flow of substance through said neck means and out of said container when the container is tilted such that substance in the container flows from one of said channels in an undulating and controlled manner through said throat section and upper chamber and out of said container through said neck means while substance in the other of said channels falls towards said lower chamber.

4,765,515

LIQUID DISPENSING COMBINATION

Jerome Lippman, 3342 W. Smith Rd., Akron, Ohio 44313

Filed Apr. 28, 1986, Ser. No. 856,790

Int. Cl.[4] B67D *5/64*

U.S. Cl. 222—162 10 Claims



1. A liquid dispensing combination comprising:

(A) a mounting unit including

(1) a base having a planar surface and

(2) a cover having a front face and a bottom surface pivotally attached to said base for movement relatively thereof between open and closed positions and having a first access opening in said front face;

(B) a dispensing unit releasably supported by said base for movement relatively thereof and including

(1) a reservoir portion and

(2) a dispensing portion operatively connected to said reservoir portion and partially projecting through said first access opening of said cover when said cover is in its closed position;

(C) said cover having a second access opening in its bottom surface;

(D) a part of said reservoir portion of said dispensing unit projecting through said second access opening when said dispensing unit is supported by said base; and

(E) said dispensing unit being positioned by surfaces along the cover and base so as to be movable along a line parallel to a line extending from said first access opening to a point of intersection with a line extended from a plane lying along the planar surface of said base, movement of said dispensing unit toward said first access opening causing engagement of said dispensing portion with said mounting unit whereby said dispensing portion is caused to dispense liquid.

4,765,516

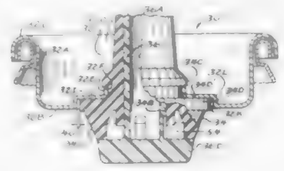
AEROSOL TILT VALVE MOUNTING CUP AND ASSEMBLY

Dale M. Metcoff, Flossmoor, Ill., and Walter Holzboog, Ballwin, Mo., assignors to Epic Corporation, Chesterfield, Mo.

Continuation of Ser. No. 755,413, Jul. 15, 1985, abandoned. This application Dec. 9, 1986, Ser. No. 939,671

Int. Cl.[4] B65D *83/14*

U.S. Cl. 222—402.22 3 Claims



1. An aerosol tilt valve assembly, comprising:

a valve cup with an outside, an inside, a central mounting hole and an inwardly facing recess with a side wall surrounding the hole and having a preselected depth;

a valve stem mounting grommet with a body portion having

a valve seat at one end spaced outside of the recess and without a lateral support from said side wall thereat, and

a base substantially wider than said valve seat at an opposite end of the body portion, abutting the valve cup and being solitarily nestled within the recess, said base being slightly spaced from the cylindrical side wall by a distance less than the depth of the recess to be engaged thereby during relative pivotal movement therebetween, and a relatively narrower neck extending through the mounting hole; and

a valve stem with

a tubular body received within an aperture through the seat, base and neck of the grommet to convey fluid therethrough between an inlet at one end and an outlet at an opposite end, and

a valve stem head substantially coextensive with said valve seat, spaced from said valve cup recess and mounted for pivotal movement relative thereto with a pivoting edge pressed against and being supported by said valve seat during pivoting to form a valve therewith.

4,765,517

VALVE ARRANGEMENT WITH RETAINER BRACKET, FOR HOPPER CAR OUTLET GATE

John D. Pavolka, Michigan City, Ind., assignor to Pullman Rail Leasing, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 810,983, Dec. 9, 1985, abandoned. This application Mar. 20, 1986, Ser. No. 841,843

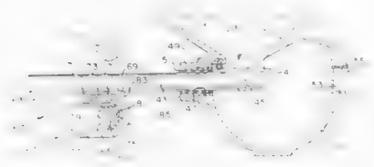
Int. Cl.[4] B61D *7/26, 7/20;* **B65D** *47/20, 90/60*

U.S. Cl. 222—505 22 Claims

1. In a railway hopper car having a lading discharge structure, said lading discharge structure including:

VOL 1093 ISS 4 AG 23 1988 UMI

a pair of spaced slope sheets having lower ends defining a first opening therebetween;
a control tube supported below the opening and having an interior communicating therewith;
a first operating shaft extending adjacent the control tube and being supported in said discharge structure for rotation with respect thereto;
rod means being movably supported with respect to the control tube,
first valve means supported on the rod means for movement with respect to said opening for the opening and closing thereof;
rack means connected with the rod means and movable therewith; and
the operating shaft having pinion means thereon engaging with the rack means for moving the rod means and the valve means to open and close the opening responsive to rotation of the operating shaft;
a first retainer bracket being supported on said rod means, said retainer bracket comprising:
a mounting portion supported on the rack means;
securement means for releasably securing the mounting portion on the rack means;
an intermediate portion connected with the mounting portion and extending away therefrom;





a retaining portion connected with the intermediate portion and having a retaining surface portion facing the rack means and extending generally parallel thereto;
the pinion means extending between the retaining surface portion and the rack means and being secured therebetween in intermeshed engagement with the rack means;
the retaining portion and the mounting portion defining a gap therebetween communicating with the retaining surface portion, said gap being large enough to permit passage of the operating shaft therethrough whereby the retainer bracket may be mounted and removed when the securement means is released without additional disassembly of the discharge structure.

16. In a railway hopper car having a lading discharge structure, said lading discharge structure including:
a pair of spaced slope sheets having lower ends defining an opening therebetween;
a control tube supported below the opening and having an interior communicating therewith;
a first operating shaft extending adjacent the control tube and being supported in said discharge structure for rotation with respect thereto;
rod means being movably supported with respect to the control tube,
valve means supported on the rod means for movement with respect to said opening for the opening and closing thereof;
rack means connected with the rod means and movable therewith; and
the operating shaft having pinion means thereon engaging with the rack means for moving the rod means and the valve means to open and close the opening responsive to rotation of the operating shaft;
a first retainer bracket being supported on said rod means, said retainer bracket comprising:
first and second mounting portions supported on the rack means;
first and second securement means for releasably securing the first and second mounting portions respectively to the rack means;
first and second intermediate portions connected with the respective mounting portion and extending generally away therefrom;
a retaining portion connected to the intermediate portions and having a retaining surface portion facing the rack means and extending between the intermediate portions;
the pinion means extending between the retaining surface portion and the rack means and being secured therebetween in intermeshed engagement with the rack means;
the first and second mounting portions defining an opening therebetween communicating with the retaining surface portion and being large enough to permit passage of the operating shaft when the first and second securement means are released whereby the retainer bracket may be mounted and removed from the discharge structure by release of the securement means and without additional disassembly of the discharge structure.

4,765,518

UNIT DOSE CONTAINER WITH CAPTIVE CAP

John R. O'Meara, Jamesburg, N.J., assignor to C P Packaging, Inc., Jamesburg, N.J.

Continuation of Ser. No. 870,938, Jun. 5, 1986, abandoned. This application Jul. 2, 1987, Ser. No. 69,500
Int. Cl.[4] B65D *47/10*; B67D *3/00*
U.S. Cl. 222—541 1 Claim



1. A one-piece unit dose container-closure assembly made of a molded plastic material comprising an elongated tubular member having an open end to permit filling, a closure cap integrally connected to the opposite end of said tubular member, a break-away junction between the closure-cap portion and the tubular member, a cord integrally attached to the closure-cap portion and having a thickened portion extending outwardly from said cap in a predetermined orientation with respect to said open end to provide an alignment guide for insertion of said tube into a slotted filling mandrel, said cord extending downwardly from said cap to a point adjacent the lower terminal edge of said tubular member where it is permanently heat sealed at its free terminal end to the lower terminal edge of the tubular member when it is sealed by application of heat and pressure, whereby said cap portion remains attached to said tubular member by said cord upon separation of said closure-cap portion from said tubular member at said break-away junction.

4,765,519

ATHLETIC GLOVE POCKET FORMER AND METHOD FOR USING THE SAME

Keith N. Groves, 3200 McLeod Dr., Apt. 210, Las Vegas, Nev. 89121

Filed Feb. 17, 1987, Ser. No. 15,012
Int. Cl.[4] A41D *1/00*
U.S. Cl. 223—78 11 Claims





1. An athletic glove former and retainer comprising a ball like object and a strap consisting of a narrow strip of bendable material with joining means attached to the surface of said strap near the center thereof and joining means attached to the surface of said strap at the two terminal free ends of said strap, the said strap being joined to the surface of the ball like object by the joining means near the center of said strap, with the two terminal free ends of the strap being free to permit them to be tightly pulled around the outside of a glove and tightly joined together by joining means at the two ends of said strap when the ball like object is placed in the pocket of a glove.

4,765,520

STOCKING HOLDER APPARATUS

Jeffrey E. Barton, 8210 E. Garfield, K-13, Scottsdale, Ariz. 85257

Filed Feb. 24, 1987, Ser. No. 18,298
Int. Cl.[4] A47G *25/90*
U.S. Cl. 223—111 6 Claims



1. Apparatus for holding a stocking having a foot portion and a leg portion while a user inserts a foot into the stocking and made of generally flexible material and of continuous construction, comprising, in combination:
base means, including a first base element and a second base element, each of which includes a first end and a second end;
first flexible frame means connected to and extending upwardly from the base means, including
a first pair of generally upwardly and inwardly extending elements secured to the first ends of the first and second base elements,
a first pair of generally upwardly extending elements secured to the first pair of generally upwardly and inwardly extending elements,
a first pair of generally downwardly extending elements connected to and disposed between the first pair of generally upwardly extending elements,
first connecting means for connecting the first pair of generally upwardly extending elements and the first pair of generally downwardly connecting elements, and
second connecting means for connecting the first pair of generally downwardly extending elements remote from the first connecting means; and
second frame means connected to and extending upwardly from the base means aligned with and movable relative to the first frame means, including
a second pair of generally upwardly and inwardly extending elements secured to the second ends of the first and second base elements,
a second pair of generally upwardly extending elements secured to the second pair of generally upwardly and inwardly extending elements,
a second pair of generally downwardly extending elements disposed between the second pair of generally upwardly extending elements,
third connecting means for connecting the second pair of generally upwardly extending elements and the second pair of generally downwardly extending elements, and
fourth connecting means for connecting the second pair of generally downwardly extending elements remote from the third connecting means, and the foot portion of the stocking is disposed between the first frame means and the second frame means, and the leg portion of the stocking is disposed on the first and second frame means and slides off the first and second frame means as a user's foot is extended into the foot portion of the stocking and is moved through the first and second frame means.

4,765,521

ANTI-THEFT CABLE LOCK

Robert J. Finnegan, Williston, Vt., assignor to The Shelburne Corporation, Shelburne, Vt.

Filed Jun. 2, 1987, Ser. No. 56,808
Int. Cl.[4] B60R *9/04*
U.S. Cl. 224—315 16 Claims



1. In combination, a car-top roof rack comprising an elongate rack channel with a pedestal connected top each of the respective end regions of said channel for supporting said channel above a car roof and with the channel having an open side in downwardly facing orientation, said rack having means at its ends for securing the same atop a car roof, said channel having a sectional profile characterized by laterally spaced side-walls with integrally formed flanges which extend toward each other to narrow the open width of the downwardly facing side to a slot which is relatively narrow compared to the spacing of said sidewalls, and said flanges being locally cut-away at least at one location; a first length of flexible cable

VOL 1093 ISS 4 AG 23 1988 UMI

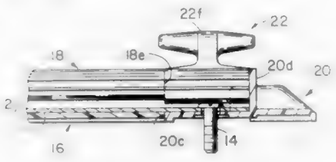
having a first door-engageable block at one end and a first headed slide sized to be inserted through said cut-away and presenting a groove formation for sliding engagement along the slot defined by said flanges, said first slide being selectively clamped to said first cable at an adjustably predetermined location that is offset from said first block; and a second length of flexible cable having a second door-engageable block at one end and a second headed slide similar to said first headed slide and slidably mountable in said slot via the cut-away flange location and connected to said second flexible cable at a longitudinal location that is offset from said second block, said second cable having a free end extending from said second slide to an extent substantially exceeding the longitudinal span of said rack, and said free end being removably engageable to said first slide only when said first slide is removed from said channel, said free end being non-removable from said first slide as long as said first slide is engaged to said channel; whereby when said rack is in operative position with said first and second cables passing around side doors of a vehicle and with the respective blocks locked inside the vehicle, and with said second cable connected to said first slide via passage through and/or around an object carried on said rack, the object may be thereby locked to the vehicle.

4,765,522

LUGGAGE CARRIER

James C. Bell, Stratford, Conn., assignor to Oliver Industries, Inc., North Haven, Conn.

Filed Mar. 6, 1987, Ser. No. 22,784
Int. Cl.[4] B60R *9/04*
U.S. Cl. 224—326 4 Claims



1. An article carrier for use on a generally horizontally disposed surface of an automotive vehicle, said carrier comprising:

at least two spaced parallel elongated slat elements fixedly secured to the vehicle surface, each slat element having a lateral cross-sectional shape characterized by an upwardly open elongated central groove with downwardly divergent side walls of thickness t and a generally flat elongated bottom wall also of thickness t, said side walls having integrally defined elongated slat ribs that are arranged opposite one another, each rib defining a downwardly facing flange of lateral width no greater than said thickness t, and each slat element further including laterally opposed downwardly open elongated cavities defined by symmetrical load support U-shaped portions of said slat element said load support portions being integrally connected to and partially defining said side walls,

an elongated elastomeric strip having an upper portion overlying said load support slat portions and a lower portion slidably received in said slat groove said lower portion having symmetrically arranged longitudinally extending strip grooves to receive said slat ribs, and said strip grooves having a cross-sectional configuration complementary to that of said slat ribs so that said strip is secured in said slat groove,

end caps for said slat elements, each end cap having laterally spaced portions received in the downwardly open cavities adjacent an end portion of an associated slat element, each end cap having an abutment to close the open end of said slat groove, said strip having an end portion spaced from the end portion of said slat and defining a longitudinally extending gap between said strip end portion and said end cap abutment,

a tie-down cleat having a lower portion slidably received in said gap, and more particularly in said slat groove, said tie-down cleat lower portion having a cross-sectional shape that includes longitudinally extending grooves to receive said ribs and secure said tie-down cleat between said end cap abutment and said strip end portion, and

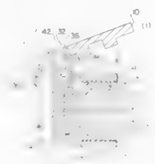
single fastening means securing said end cap and slat element to the vehicle surface, said tie-down cleat being supported solely by said grooves in said slat and held between said strip and said tie-down cleat.

4,765,523

MULTIPOSITION TRACTOR LID

Gregory A. Ferguson, New Bedford, Mass., assignor to Precision Handling Devices, Inc., Fall River, Mass.

Filed Sep. 8, 1987, Ser. No. 94,367
Int. Cl.[4] G03B *1/30*; E05D *15/06*
U.S. Cl. 226—74 7 Claims



1. In a document feed tractor having a frame which presents a surface on which a belt is disposed, said belt having pins projecting therefrom for engagement with perforations in the document to be fed, an improved lid structure comprising: a lid member moveable between a closed position spaced closely adjacent to said surface to confine the document on said frame surface and an open position spaced away from said surface to enable loading of the document with said pins and said perforations; said lid member having lid trunnions projecting over one side of said frame, said frame having frame trunnions projecting from said one side of said frame and disposed in side by side relationship with said lid trunnions; said lid trunnions or said frame trunnions defining, with pins which extend into holes larger than the diameter of said pins, journals for combined pivotal and translational movement of said lid member with respect to said frame between said open and closed positions; said frame having projections extending away from said surface and defining a ledge adjacent to said surface; said lid member having an edge overlying said ledge and disposed in supported relationship on said ledge when said lid is said open position; said lid member being translatable over said ledge and pivotable into said closed position;. and spring means attached between said frame and said lid member for biasing said lid member into its said closed position.

4,765,524

GARMENT-FASTENER ASSEMBLING APPARATUS WITH RAM-DRIVEN POSITION INDICATOR

Keiichi Yoshieda, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Aug. 24, 1987, Ser. No. 88,266
Claims priority, application Japan, Aug. 26, 1986, 61-129900[U]
Int. Cl.[4] A41H *37/10*
U.S. Cl. 227—18 6 Claims

1. An apparatus for assemblying a pair of fastener elements of a garment fastener with a garment fabric disposed between the two fastener elements, comprising:

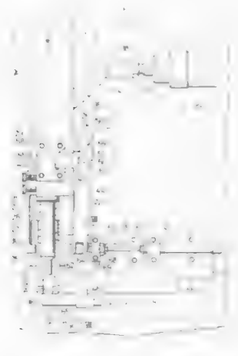
(a) a frame supporting thereon a guide block;

(b) a ram vertically reciprocably supported on said guide block and having a punch connected thereto;

(c) an optical position indictor for indicating a position on the garment fabric where the two fastener elements are to be attached; and

(d) a drive mechanism for reciprocating said position indicator between an indicating position located in registry with the path of movement of said punch and a standby position remote from the path of movement of said punch, said drive mechanism including

(i) a driver slidably mounted on said guide block and horizontally reciprocable in response to vertical movement of said ram,



(ii) a pivot lever pivotably supported by said frame and angularly reciprocable in response to horizontal movement of said driver,

(iii) a slide bar slidably mounted on said guide block and supporting said optical position indicator, said slide bar being pivotably connected with said pivot lever to reciprocate said optical position indicator between said indicating position and said standby position in response to angular movement of said pivot lever, and

(iv) biasing means for urging said slide bar in a direction to move said optical position indicator toward said indicating position.

4,765,525

APPARATUS FOR REMOTELY WELDING A COVER TO THE WALL OF A CONTAINER FOR STORING RADIOACTIVE FUEL ELEMENTS AND WASTES

Franz W. Popp, Wedemark, and Günter Geisert, Leimen-Gauangelloch, both of Fed. Rep. of Germany, assignors to Nuken GmbH, Fed. Rep. of Germany

Division of Ser. No. 697,323, Feb. 1, 1985, abandoned. This application Nov. 18, 1986, Ser. No. 933,265
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 3403541
Int. Cl.[4] B23K *37/04*
U.S. Cl. 228—9 6 Claims

1. Apparatus for automatically and remotely welding a closure plug to the inner wall of the container for radioactive material employing the narrow joint welding technique which comprises

a. a flat welding head movable in three dimensions;

b. control means for said welding head responsive to guide means following the course of the joint;

c. means for rotating said container past said welding head; and

d. means for removing welding slag from the completed weld comprising

a chisel;

means for oscillating said chisel;

a first suction means positioned behind said chisel;

a nailer for loosening residual slag not chipped off by the chisel;



said nailer comprising a plurality of guided movable steel pins disposed over the entire width of said weld, and

a second suction means behind said nailer.

4,765,526

WIRE BONDING APPARATUS

Kazuhide Sato, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 27, 1987, Ser. No. 7,179
Claims priority, application Japan, Jan. 29, 1986, 61-17366
Int. Cl.[4] B23K *37/00*
U.S. Cl. 228—4.5 4 Claims



1. A wire bonding apparatus comprising a capillary having a plurality of through holes for passing bonding wires therethrough, a wire supply unit for simultaneously supplying a plurality of bonding wires, a drive unit adapted to move said capillary to a predetermined bonding position, and a connecting unit for connecting said plurality of bonding wires to a plurality of elements subject to bonding at said predetermined bonding position.

4,765,527

TUBESHEET AND A METHOD FOR EXPLOSIVELY WELDING A TUBE TO A TUBESHEET WHILE PREVENTING SEPARATION OF CLADDING FROM THE TUBESHEET

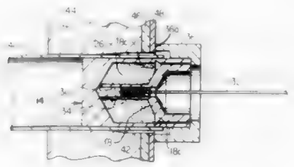
Irwin Berman, Montclair, N.J., assignor to Foster Wheeler Development Corporation, Livingston, N.J.

Filed Oct. 24, 1986, Ser. No. 922,647
Int. Cl.[4] B23K *20/08*
U.S. Cl. 228—107 1 Claim

1. A method for explosively welding a tube to a tubesheet having a cladding extending over an outer surface thereof,

VOL 1093 ISS 4 AG 23 1988 UMI

comprising the steps of placing an explosive within the interior of said tube, bonding a layer of material over said cladding, and detonating said explosive to explode same and weld the tube to



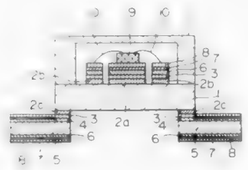
the tubesheet, said layer being of a material which absorbs the energy from the shock wave formed by the explosion of said explosive and prevents breaking up of the bond between the cladding and the tubesheet.

4,765,528

PLATING PROCESS FOR AN ELECTRONIC PART

Masao Sekibata, Kunitachi; Toshihiko Ohta, Hadano, and Osamu Miyazawa, Yokosuka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 12, 1986, Ser. No. 895,842
Claims priority, application Japan, Sep. 6, 1985, 60-195856
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—123 3 Claims



1. A manufacturing process of an electronic part, comprising the steps of:

successively forming, in order, a Ni-plated film, a Co-plated film and an Au-plated film by electroplating method onto metallized pads formed on a ceramic substrate board;

heating the plated substrate board, after the electroplating, so as to remove hydrogen gas produced with said films; and

then die-bonding a semiconductor pellet onto one of said metallized pads after the electroplating so as to form an Au-Si alloy, free from voids due to hydrogen gas, on said pellet.

4,765,529

METHOD OF MANUFACTURING AN EXTERNALLY CLAD TUBULAR PRODUCT

William C. Turner, 85 Pinto La., Sedona, Ariz. 86336

Continuation-in-part of Ser. No. 694,347, Jan. 24, 1985, Pat. No. 4,620,660. This application Oct. 20, 1986, Ser. No. 920,594
The portion of the term of this patent subsequent to Nov. 4, 2003, has been disclaimed.
Int. Cl.[4] B23K *1/00*
U.S. Cl. 228—132 18 Claims

1. A method of manufacturing an externally clad tubular product employing a tubular host having a first and a second end, comprising:

(a) plating the external surface of the tubular host with a low melting point bonding metal alloy;

(b) assembling a tubular cladding member over the plated tubular host forming a close fit annular space between the external cylindrical surface of said tubular host and the internal surface of said tubular cladding member;

(c) welding the ends of the cladding member and the tubular host to form a sealed subassembly having said annular space therein;

(d) sequentially evacuating said annular space and charging it with inert gas in a manner to substantially remove all water and oxygen and to leave the annular space filled with the inert gas, the sequence being continued until the water and oxygen within the annular space is at a level below a dew point of about −60° F.;

(e) heating the subassembly to about 1,650° F. to about 2,100° F.; and

(f) forming the heated subassembly in a mill to metallically bond the cladding member to the tubular host.

4,765,530

METHOD FOR FORMING A TITANIUM LINED ELECTROCHEMICAL CELL

Hiep D. Dang, Lake Jackson, and Richard N. Beaver, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 901,923, Aug. 29, 1986, abandoned, which is a continuation of Ser. No. 682,740, Dec. 17, 1984, abandoned. This application Feb. 12, 1987, Ser. No. 13,852
Int. Cl.[4] B23K *9/225*
U.S. Cl. 228—175 5 Claims

1. A method for welding a thin titanium sheet to a ferrous substrate comprising sequentially performing the following steps:

(a) positioning a substantially homogenous vanadium intermediate adjacent to one surface of a ferrous substrate;

(b) then welding a substantially homogenous titanium intermediate to the vanadium, intermediate, and welding said vanadium intermediate to said ferrous substrate;

(c) then welding a titanium sheet having a thickness of less than about 2 millimeters to the titanium intermediate.

5. A method for welding a thin titanium sheet to a ferrous substrate comprising sequentially performing the following steps:

(a) positioning a plurality of spaced-apart substantially homogenous vanadium intermediates adjacent to one surface of a ferrous substrate;

(b) then welding a homogenous titanium intermediate to each of the vanadium intermediates, and welding each said vanadium intermediate to said ferrous substrate;

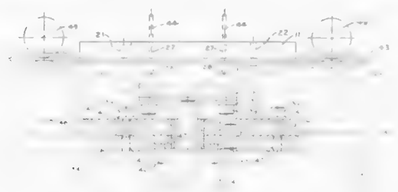
(c) then welding a titanium sheet having a thickness of less than about 2 millimeters to the titanium intermediates.

4,765,531

QUICK CHANGE WORK STATION APPARATUS FOR AUTOMATIC WIRE BONDERS

Tommy H. Ricketson, Danboro; Mark W. Klug, Doylestown; John J. McGlory, Chalfont, and David W. Smith, Carversville, all of Pa., assignors to Kulicke and Soffa Industries Inc., Willow Grove, Pa.

Filed May 14, 1987, Ser. No. 50,242
Int. Cl.[4] B23K *31/02*
U.S. Cl. 228—179 15 Claims



1. A quick change method for exchanging work stations and an automatic wire bonder comprising the steps of:

providing an automatic wire bonder of the type adapted to receive a modular work station,

stopping said wire bonder,

immobilizing said work station,

disconnecting the precisor plate from the drive mechanism of said wire bonder,

lifting said work station from said automatic wire bonder,

placing a new work station in said automatic wire bonder on precision locating means,

connecting the precisor plate of said new work station to the drive means of said wire bonder, and

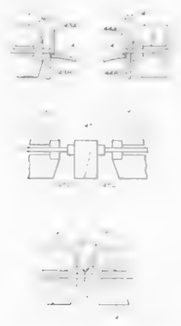
removing the immobilizing means from said new work station.

4,765,532

METHOD OF AND APPARATUS FOR CONNECTING METAL STRIPS

Akiyoshi Uomoti; Hiromi Tajiri; Nobuyoshi Nakatani, and Masafumi Daizumoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1987, Ser. No. 8,620
Claims priority, application Japan, May 31, 1986, 61-126491
Int. Cl.[4] B23K *37/00, 31/02*
U.S. Cl. 228—212 8 Claims



1. In a metal strip connecting method including the steps of: clamping the tail end portion of a preceding metal strip; clamping the forward end portion of a succeeding metal strip; cutting said tail and forward end portion to required sizes; butting said end portion of said succeeding strip against said end portion of said preceding strip; welding the butted portions of said two strips; removing beads produced by the welding; and unclamping each of said strips, thus allowing the connector strips to travel subsequently,

the improvement characterized by comprising:

carrying out said cutting step by cutting means which are respectively mounted on frames secured to tables provided with clampers for clamping said strips and which are movable along a passage extending in the lateral direction of said strips;

carrying out said welding step selectively by flash welding or laser-beam welding in accordance with the material of such strips;

effecting said flash welding by supplying a flash current between said clampers;

effecting said laser beam welding by means of a laser beam machining head which is mounted on the frames secured to either one of said tables and which is movable along said passage;

carrying out said bead removing step by a pair of upper and lower bead removing means which are mounted on the frame secured to either one of said tables and which are movable along said passasge;

moving, after said cutting step, said end portion of said succeeding strip toward said end portion of said preceding strip to an intermediate position; and

correctively machining the respective end faces of said preceding and succeeding strips simultaneously by end face correctively machining means which is mounted on the frame secured to either one of said tables and which is movable along said passage.

4,765,533

ERECTABLE CONTAINER

Hidetoshi Hoshiko, Yokohama; Hideaki Kona, Tokyo; Masanori Yamamoto, and Koichi Inoue, both of Osaka, all of Japan, assignors to House Food Industrial Company Limited, Higashiosaka, Japan

Filed Sep. 8, 1986, Ser. No. 904,357
Claims priority, application Japan, Sep. 10, 1985, 60-138624[U]
Int. Cl.[4] B65D *5/20*
U.S. Cl. 229—101 2 Claims

1. An erectable container formed from a single foldable board member, said board member defining:

a polygonal bottom plate formed in a center of said board member;

pentagonal side plates each having an edge common with an edge of said bottom plate, said pentagonal side plates having a pentagonal form including five vertices, two of said vertices being at ends of said common edge, each said pentagonal side plate defining at least two fold lines, each of said fold lines being connected between one of said two

VOL 1093 ISS 4 AG 23 1988 UMI

vertices and a vertex of said pentagonal side plate which is not adjacent to either of said two vertices; and

trapezoidal side plates each having an edge in common with edges of said bottom plate, wherein said pentagonal and trapezoidal side plates alternate with one another;

adhesion tabs extending from fold lines at side edges of each of said pentagonal side plates;

folding tabs extending from fold lines at top edges of each said pentagonal and trapzeoidal side plates, opposite said common edge thereof;

wherein all of said fold lines have the same sense and said tabs can join said pentagonal and trapezoidal side plates when said board member is folded to erect the container, and

wherein said side plates are dimensioned such that said top edges thereof form a plane when said board member is folded to erect said container.

4,765,534

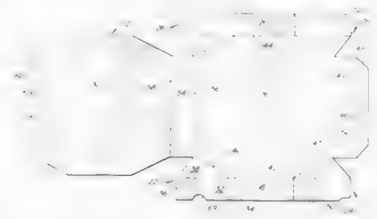
OCTAGONAL CARTON FOR PIZZA PIES OR THE LIKE

Kenneth J. Zion, New Lenox, and Richard H. Johnson, Arlington Heights, both of Ill., assignors to Stone Container Corporation, Chicago, Ill.

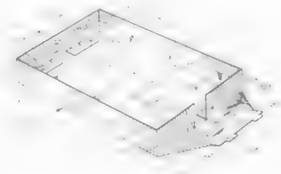
Filed Jul. 17, 1987, Ser. No. 74,931

Int. Cl.[4] B65D *5/20*

U.S. Cl. 229—109 20 Claims







1. A shallow carton for flat food products, such as pizza pies formed from a one-piece paperboard board blank to provide an octagonal tray having a bottom wall, a pair of upstanding opposing side walls, a third upstanding standing wall having a cover hingedly connected thereto at one end of the tray and a fourth wall attached at least to said cover or bottom wall opposite said third wall, each of said side walls having foldable panel means at opposite ends thereof disconnected from said third and fourth walls and connected to said bottom wall and one of said side walls forming four diagonal corner walls for the tray of the erected carton, said cover being foldable to overlie said walls to close the carton.

4,765,535

DECORATIVE PACKAGE WITH SIMULATED OVERWRAP

Louis C. Michetti, Santa Clara, Calif., assignor to Container Corporation of America, Clayton, Mo.

Filed Sep. 10, 1987, Ser. No. 96,633

Int. Cl.[4] B65P *5/24;* **B65D** *5/62*

U.S. Cl. 229—172 3 Claims

1. A carton member for a decorative package that includes a pair of telescoping carton members, said carton member being formed from a composite blank including a sheet of foldable paperboard and a sheet of decorative paper attached to said paperboard sheet, said carton member comprising:

(a) a major wall having pairs of opposed side and end walls joined to each other and to side and end edges of said major wall and extending normal to said major wall to form therewith a box-like structure;

(b) each of said end walls including:

(i) an outer panel having one end edge foldably joined to an end edge of said major wall and folded outwardly 90 degrees;

(ii) an inner panel foldably joined to an end edge of said outer panel opposite from said one edge and folded inwardly 180 degrees into parallel relation with said outer panel;

(iii) a pair of intermediate panels foldably joined to corresponding end edges of said side walls, folded inwardly 90 degrees, and interposed between said inner and outer panels;

(iv) a pair of generally triangular webs each being foldably joined along adjacent side edges to an outer side edge of a related end wall outer panel and to an inner side edge of a related end wall intermediate panel;

(c) said intermediate panels each having foldably joined, to an inner edge thereof, an anchor panel which is folded inwardly 90 degrees against an upper surface of said major wall and has an opening extending therethrough;

(d) said end wall inner panels each having a pair of lock tabs joined to a free end edge thereof and which are folded inwardly 90 degrees and received within openings of related anchor panels;

(e) said sheet of decorative paper being disposed to cover outer surfaces of said major, side, and end walls and being attached to inner surfaces of said side and end wall panels to simulate an overwrapped carton.

4,765,536

THERMOSTATIC CONTROL VALVE ASSEMBLY FOR FUEL GAS BURNER

Frank H. Bergquist, Wheaton, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 14, 1987, Ser. No. 38,104

Int. Cl.[4] F23N *1/00*

U.S. Cl. 236—15 A 13 Claims

1. A thermostatically controlled valve assembly for a fuel gas burner comprising:

(a) body means defining an inlet adapted for connection to a source of fuel gas, a valving cavity communicating with said inlet, a pilot burner outlet and a main burner outlet;

(b) selector valve means disposed in said cavity and selectively moveable between an OFF, PILOT and a range of ON positions for selectively blocking and valving fuel gas flow to said outlets;

(c) thermally sensitive means including control valve means disposed in said cavity and operative, in response to changes in a sensed temperature associated with operation of the burner to control fuel gas flow to said main burner

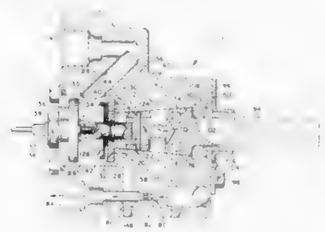
when said selector valve means is in the said range of ON positions;

(d) said valve assembly, upon connection of a fuel gas source to said inlet operative with said selector valve means in

(i) said OFF position to direct fuel gas to neither of said pilot port or main port,

(ii) said PILOT position to direct fuel gas only to said pilot port,

(iii) said ON position to direct fuel gas to said pilot port and said main burner port;



(e) said thermally sensitive means operative in response to sensing a preselected temperature condition to move said control valve means from a first to a second position, said control valve means operative in said second position to reduce flow to said main burner port to a minor fraction of the flow when said control valve means is in said first position; and,

(f) said selector valve means operative when in the "ON" position to be movable within limits to a range of positions for selecting the sensed temperature at which said thermally sensitive means moves said control valve means to said second axial position.

4,765,537

RADIATOR VENT VALVE

John R. Donovan, Indianapolis, Ind., assignor to ITT Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,429

Int. Cl.[4] F16T *1/08*

U.S. Cl. 236—62 8 Claims



1. An air vent valve comprising a cylindrical housing having a wall on one end;

vent means on said one wall, said wall includes an aperture, and said vent means includes a resilient grommet captured in said aperture and having a vent hole therethrough;

a bottom cap closing the other end of said housing;

an inlet port in the sidewall of said housing for providing fluid communication with a steam heating system;

a float within said housing, said float being freely movable within said housing, said float is a sphere of solid material having a specific gravity less than the specific gravity of water;

said inlet port is positioned below the center of said float;

a bimetallic thermostatic strip contained in said housing between said float and said bottom cap and being freely movable within said housing between said float and said bottom cap, said bimetallic thermostatic strip being responsive to fluid temperatures in said housing to raise said float into sealing engagement with said vent hole when said fluid temperature is at or greater than a predetermined operating temperature.

4,765,538

ELASTIC RAIL BEARING

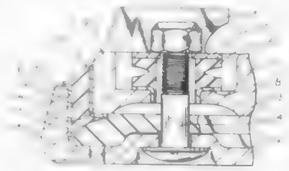
Gerd Meyer, Hamburg, Fed. Rep. of Germany, assignor to Phoenix Aktiengesellschaft, Hamburg-Harburg, Fed. Rep. of Germany

Filed Apr. 8, 1986, Ser. No. 849,547

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1985, 3512987

Int. Cl.[4] E01B *9/62, 19/00*

U.S. Cl. 238—283 13 Claims



1. An elastic rail bearing for railroad rails comprising:

a top plate, a bottom plate, and a rubber plate disposed inbetween said top and bottom plates, said plates each having at least one hole formed therethrough with the holes being in registered alignment with each other forming at least one aligned set of holes, said rubber plate and at least one of said top and bottom plates being configured such that one has at least one protrusion and the other has at least one corresponding recess for receiving said protrusion, said top and bottom plates each having an upstanding flange at the lateral ends thereof with the flange of said top plate being spaced apart from, extending parallel to, and partially overlapping the corresponding flange of said bottom plate;

fastening means cooperating with and passing through said aligned set of holes in said top, bottom and rubber plates for establishing an adjustable and variable initial stress in said rail bearing;

a variable presetressing means disposed between said fastening means and said top plate said adjustable and variable initial stress; and

a connecting rubber strip disposed inbetween said flanges.

4,765,539

ELECTROSTATIC SPRAYING APPARATUS

Timothy J. Noakes, Hampshire; Nevil E. Hewitt, Surrey; Arend L. Grocott, and Philip C. W. Franks, both of Hampshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Feb. 19, 1986, Ser. No. 830,875

Claims priority, application United Kingdom, Feb. 19, 1985, [illegible]

Int. Cl.[4] B05B *5/02*

U.S. Cl. 239—3 25 Claims

1. An electrostatic spraying apparatus comprising an electrostatic sprayhead, means for supplying a liquid to the sprayhead, means for subjecting liquid emerging from the sprayhead to an electrical field sufficiently high for the liquid to be drawn from the sprayhead in the form of at least one filament which subsequently becomes unstable and breaks up into droplets, and means for causing a stream of gas to flow through the region of the high electrical field, there being an angle not greater than

VOL 1093 ISS 4 AG 23 1988 UMI

30° betwen the direction in which the liquid emerges from the sprayhead and the direction in which the gas flows and the stream of gas being insufficient to disrupt the formation of



filaments but sufficient to remove charged droplets of liquid from said region, thereby to reduce a build-up in space charge which affects the magnitude of the electrical field.

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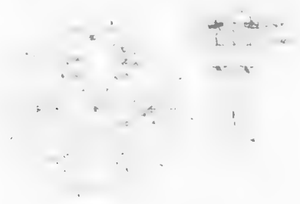
PROCESS AND APPARATUS FOR GENERATING MULTIPLE FLUID JETS

Gene G. Yie, Auburn, Wash., assignor to Fluidyne Corporation, Auburn, Wash.

Continuation-in-part of Ser. No. 800,339, Nov. 21, 1985, Pat. No. 4,666,083. This application May 19, 1987, Ser. No. 52,581

Int. Cl.⁴ E01B *1/00;* B05B *1/34, 1/14;* A62B *31/02*

U.S. Cl. 239—8 21 Claims



2. A process for generating multiple fluid jet stream in a spirally convergent/divergent non-intercept arrangement, comprising the sequential steps of:

passing a pressurized fluid jet stream through a pressurized fluid chamber aligned with a central longitudinal axis;

passing said pressurized fluid jet stream through at least two fluid orifice means in the downstream end of said pressurized fluid chamber, each said fluid orifice means oriented at a compound angle having a spiral angular component and a convergent angular component with respect to said nozzle assembly central longitudinal axis, directing each said spiral angular component in the same direction with respect to said central longitudinal axis and at an angle greater than 0° to said central longitudinal axis of said nozzle assembly, and directing each said convergent angular component at an angle greater than 0° and less than 90° to a central axis through the corresponding said orifice means, said spiral angular component and said convergent angular component providing non-interception of any of said mulitiple fluid jets and forming a curvilinear impingement pattern.

4,765,541

DRIP EMITTER HOUSING

Richard J. Mangels, Victoria, and Rex B. Candy, Back Wombat Road, Boisdale, Victoria, 3860, Victoria, both of Australia, assignors to Rex B. Candy and Jennifer J. Candy, both of Victoria, Australia

Filed Jul. 30, 1986, Ser. No. 890,723

Claims priority, application Australia, Jul. 30, 1985, PH01703/85

Int. Cl.⁴ B05B *15/06*

U.S. Cl. 239—201 6 Claims



1. A housing for use with a drip emitter and adapter to be disposed underground, said housing comprising a tubular body defining a hollow interior capable of receiving a drip emitter, the tubular body being open at one end to provide access to the hollow interior and said hollow interior having an end remote from said one end of the body defined by a wall, a multitude of openings from the hollow interior through at least the wall of such a size as to restrict ingress of exterior matter to the hollow interior when the housing is disposed underground and to allow egress from the hollow interior of water emitted by the drip emitter, the tubular body having on its exterior surface at a position remote from said one end generally transversely outwardly extending flange means to stabilize the housing when it is disposed underground, and the housing including a removable cover engageable with the tubular body at said one end for selectively closing said one end, said cover being provided with means to support the drip emitter within the hollow at a position remote from said wall.

4,765,542

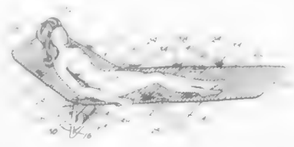
LIQUID MISTING ATTACHMENT FOR SUNBATHER'S CHAIR

Daniel R. Carlson, Rte. 3, Box 32 C Eater Ave., Chico, Calif. 95926

Filed Jan. 22, 1988, Ser. No. 147,146

Int. Cl.⁴ A47C *7/74;* B05B *17/00*

U.S. Cl. 239—289 6 Claims



1. A self-contained liquid misting apparatus attachable to the frames of webbed folding lounge chairs and webbed folding chairs with said apparatus having supplying and pressurizing means for controllably spraying a misted liquid on a sunbather, comprising:

a flexible tubular liquid-conducting H-frame sized for attachment to said frames of said webbed folding lounge chairs and said webbed folding chairs with said H-frame having sufficient pliability to allow folding and unfolding of said webbed folding lounge chairs and said webbed folding chairs with said H-frame attached;

said H-frame having two paralleling conduits with capped terminal ends and a cross-affixed feeder conduit substantially centrally positioned, there being an access fitting in said cross-affixed feeder conduit;

said two paralleling conduits of said H-frame aligned with spaced apertures fitted with liquid misting heads along similarly faced surfaces of said H-frame specifically designated for upwardly positionment;

said liquid misting heads fastened by risers and pivotally installed in said risers for manual directional manipulation, there being means for repositioning, adding, and reducing the number of said liquid misting heads fastened by said risers;

means for fastening said H-frame to said frames of said webbed folding lounge chairs and said webbed folding chairs;

a pressure resistant liquid storage tank equipped with an outflow fitting, a tank output hose, a removable tank cap and air pump assembly, and an auxiliary air intake and safety valve assembly;

a housing for said pressure resistant liquid storage tank attached to said frames of said webbed folding lounge chairs and said webbed folding chairs;

a system input hose of operational length and size having a connector fitting connected to said access fitting in said cross-fixed feeder conduit and to said tank output hose;

a manually operational spring biased flow valve control normally closed and opened only for the period manual pressure is applied with said flow valve control supplied with fittings connected to said system input hose, said flow valve control being attached to said frames of said webbed folding lounge chair and said webbed folding chair;

an attachment by-passing said pressure resistant liquid storage tank when in use with said attachment means providing direct application of water from said external pressurized water supply into said H-frame.

4,765,543

INTERFERENCE CONNECTION BETWEEN A FLUID LINE AND A FLUID INJECTOR

Tibor S. Jaksa, Pontiac; Richard F. Norton; Kenneth W. Hall, both of Peoria; Stephen J. Butler, Chillicothe; Craig C. Chicoine, and Wilford L. Bienz, both of Bloomington, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Division of Ser. No. 893,062, Aug. 4, 1986, Pat. No. 4,715,103. This application Aug. 3, 1987, Ser. No. 81,217

Int. Cl.⁴ F02M *59/48*

U.S. Cl. 239—533.2 13 Claims

1. A fluid injector, comprising:

a housing having first and second bores intersecting one another;

a fluid line having an internal passage and an end portion, said fluid line end portion disposed in the housing second bore and located substantially flush with the housing first bore; and

a body having an end portion disposed in the housing first bore and abutting the fluid line end portion according to a predetermined interference fit with both the fluid line end portion and the housing first bore, said interference fit maintaining a fluid-sealed interface between the body end portion and both the fluid line end portion and the housing



first bore and positively retaining the fluid line end portion between the housing and the body end portion.

4,765,544

ELECTROSTATIC SPRAY GUN

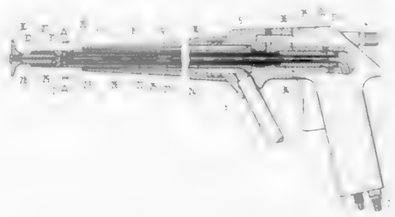
Wolfgang Kuhn, Schloss Holte, and Karl Rapp, Ascswald, both of Fed. Rep. of Germany, assignors to Kopperschmidt-Mueller GmbH & Co. Kg, Bielefeld, Fed. Rep. of Germany

Filed Jan. 15, 1987, Ser. No. 4,188

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1986, 3601081

Int. Cl.⁴ B05B *5/02*

U.S. Cl. 239—698 22 Claims



1. An electrostatic spray gun, particularly for pulverized coating material, comprising a barrel having inner and outer tubes defining an annular gap, said inner tube having a front and a rear end; means for admitting a flowable material into said gap; a high-voltage conductor in said inner tube; and an electrode connected with said conductor, said electrode being disposed between the front and rear ends of said inner tube, and said electrode having a portion inside said inner tube and at least two tips extending outwardly from said portion through said inner tube, said tips being exposed at the exterior of said inner tube and being spaced apart from each other in the circumferential direction of said inner tube.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,545
RICE HULL ASH FILTER
Hendricus A. Van Kruining, Leeton, Australia, assignor to Ricegrowers' Co-operative Mills, Ltd., Leeton, New South Wales, Australia
Filed Mar. 17, 1986, Ser. No. 840,346
Claims priority, application Australia, Mar. 21, 1985, PG9846
Int. Cl.[4] B02C *19/12*
U.S. Cl. 241—5 3 Claims



1. A method of producing and using filter aid material comprising the steps of:
burning rice hulls to produce ash;
grinding said ash to produce reduced size particles;
air classifying said reduced size particles to remove particles smaller than a preselected size;
collecting the remaining particles; and
using the remaining particles as a filter aid material.

4,765,546
JAW-TYPE CRUSHING APPARATUS
Gerald W. Stewart, 299 Montgomery Street, Coquitlam British Columbia, Canada V3K 5G1
Continuation-in-part of Ser. No. 832,128, Feb. 24, 1986, abandoned. This application Mar. 16, 1987, Ser. No. 26,273
Int. Cl.[4] B02C *1/06*
U.S. Cl. 241—36 21 Claims



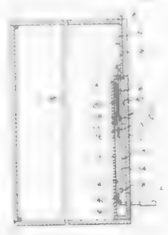
1. A crushing apparatus, comprising:
a main frame having a top;
an opening near the top of the main frame for admitting material to be crushed;
a first jaw having a top and being connected to the frame on one side of the opening by a first pivotal connection near the top of the jaw;
a first toggle mechanism operatively associated with the top mounted jaw;
a second jaw having a bottom and being connected to the frame on a side of the opening opposite the first jaw by a second pivotal connection near the bottom of the second jaw; and
a second toggle mechanism operatively associated with the second jaw.

4,765,547
APPARATUS FOR SEPARATING FIBER FROM FIBER AGGREGATE
Tomohiro Marui; Tadao Kaneko; Kazuo Ao; Toshio Shimono, and Seiichiro Fukada, all of Tokyo, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Mar. 19, 1987, Ser. No. 27,802
Claims priority, application Japan, Mar. 31, 1986, 61-46277
Int. Cl.[4] B02C *19/12, 19/06*
U.S. Cl. 241—40 30 Claims



1. An apparatus for separating fiber from an aggregate comprising:
means defining a cylindrical chamber;
means for introducing fiber aggregate into said cylindrical chamber, said fiber aggregate introducing means having an outlet directed downwardly;
separating means defining a plurality of through openings through a bottom portion of said cylindrical chamber and providing an impact surface opposing said outlet, said bottom portion of said cylindrical chamber being formed of a material which can absorb the shock of collision of said aggregate onto said impact surface so as to maintain an average length of the separated fiber longer than or equal to a predetermined length; and
fiber moving means for forcing said fiber aggregate to repeatedly collide with said separating means for separating said aggregate into individual fibers.

4,765,548
GARBAGE DISPOSAL APPARATUS
Peter Sing, 168-10 84th Ave., Jamaica Hill, N.Y. 11432
Filed Aug. 25, 1986, Ser. No. 899,864
Int. Cl.[4] B65D *90/02;* B65F *1/00*
U.S. Cl. 241—101.3 16 Claims



1. Garbage disposal apparatus for receiving the waste dumped from food trays, which comprises:
a garbage-receiving cabinet having top and bottom members both horizontally disposed, said top and bottom members being connected by vertically disposed side walls and a vertically disposed rear wall; and
a front wall assembly substantially constituting the front face of said cabinet and hingedly mounted thereon, comprising:
a pair of vertically disposed parallel walls, each of said parallel walls extending upwardly from said bottom member of said garbage-receiving cabinet to a point below and short of said top member of said garbage-receiving cabinet, the resulting space left between said top member and the tops of said parallel walls thereby forming an access opening for the insertion of garbage-bearing trays and for the dumping of refuse from these trays into said cabinet, said parallel walls being spaced from each other to form a chamber therebetween;
a vertically disposed door panel of a thickness to fit slidably between said parallel walls within said chamber, said door panel being dimensioned and normally positioned to close said access opening between said top member and said tops of said parallel walls and capable of being moved reciprocally in vertical direction downwardly between said parallel walls to uncover said access opening for tray-dumping and upwardly to re-close said access opening; and
pedal-operated mechanical means for sliding said door panel vertically and reciprically, first to uncover, and subsequently to re-cover said access opening, said mechanical means being operatively mounted within said chamber between said parallel walls, said chamber being closed at its lower end by said bottom member of said cabinet and substantially closed at its upper end by said vertically reciprocating door panel, whereby said mechanical means are shielded within said chamber both from the refuse being dumped into said garbage-receiving cabinet and from damage from outside said cabinet, and whereby said door panel is also protected from the garbage being dumped when said access opening is exposed and said door panel is in its lowermost position between said parallel walls and within said chamber.

4,765,549
TABLET PULVERIZER
Renee Sherman, 635 Waukegan Rd., Deerfield, Ill. 60015
Filed May 15, 1986, Ser. No. 863,350
Int. Cl.[4] B02C *19/08*
U.S. Cl. 241—169 17 Claims



1. A hand-operated pulverizer for crushing solid materials into fine particles comprising:
a container having a closed end forming a pestle and an open mouth at the other end, the closed end having peripheral thread means:
a mortar having internal thread means for complimentary engagement with the peripheral thread means of the container for moving the pestle into engagement with the mortar upon relative rotation thereof in one direction to crush said solid material interposed therebetween; and
a plurality of protrusions on at least one of said pestle and mortar projecting toward the other of the pestle and mortar, each protrusion including a base, the base of each protrusion substantially aligned with those of adjacent protrusions, the protrusions being arranged in a pattern of intersecting lines and columns.

4,765,550
MILL ROLL
Irving C. Chen, No. 279, Liu-Ho 2nd Road, Kaohsiung, Taiwan
Filed Jan. 29, 1987, Ser. No. 8,266
Int. Cl.[4] B02C *4/30*
U.S. Cl. 241—293 21 Claims



1. A mill roll for grinding a material containing juice, such as sugar cane, comprising: a shaft; and a roll body on said shaft, said roll body having an outer peripheral surface, a plurality of juice channels respectively extending axially over the length of said roll body and located at positions inwardly of, and at a distance from, the outer peripheral surface of said roll body, and a plurality of axially spaced, individual, separate juice inlet passages extending from the juice channels outwardly to the outer peripheral surface of said roll body, each of said juice inlet passages being longer in axial than in circumferential direction of said roll body, but considerably shorter than the respective juice channel, said outer peripheral surface being closed except for said spaced juice inlet passages, to thereby reduce risk of clogging of said juice inlet passages and of flow back of juice from said juice channels to said peripheral surface.

4,765,551
WINDING FORM
Teddy L. Page, Dayton, and Alvin C. Banner, Kettering, both of Ohio, assignors to Statomat-Globe, Inc., Dayton, Ohio
Filed Nov. 19, 1985, Ser. No. 799,428
Int. Cl.[4] H02K *15/09*
U.S. Cl. 242—7.05 B 8 Claims



1. For use with a flier-type winding machine for winding slotted cores of dynamoelectric devices, a winding form comprising a chuck body having a first side and a second side spaced from said first side, said first and second sides facing oppositely from one another, first side plate means for guiding wire into one end of the slots of said cores, second side plate means for guiding wire into the opposite end of said slots, and mounting means mounting said first side plate means on said first side, in generally parallel relation to said second side plate means, said mounting means including bias means yieldably biasing said first side plate means toward said chuck body so

VOL 1093 ISS 4 AG 23 1988 UMI

that said first side plate means may move toward and away from said second side plate means.

4,765,552
DRIVE METHOD OF WINDER

Takami Sugioka; Yuzuru Miyake, and Toshiyuki Ueno, all of Matsuyama, Japan, assignors to Teijin Seiki Company Limited, Osaka, Japan

Filed Jul. 13, 1987, Ser. No. 72,710
Claims priority, application Japan, Jul. 16, 1986, 61-165596
Int. Cl.[4] B65H *54/00, 59/00, 67/048*
U.S. Cl. 242—18 R 3 Claims



1. A drive method of a winder for winding a yarn on a bobbin holder, comprising the steps of:
bringing a contact roller into contact with said bobbin holder,
rotating said bobbin holder using a first motor, rotating said contact roller using a second motor, and
controlling said rotations of said first and second motors such that the number of rotations of said contact roller is given by the following equation:

$$N=n1-(K\cdot m\ (n0-n1)/T1),$$

wherein N indicates the number of rotations (r.p.m.) of said contact roller which is operated in pressing contact with said bobbin holder, n0 indicates the number of rotations (r.p.m.) which is synchronized to the power frequency of said second motor driving said contact roller, n1 indicates the number of rotations (r.p.m.) of said second motor with which only said contact roller is driven, T1 indicates a load torque (in kg-cm) of said second motor with which only said contact roller is driven, m indicates the number of packages which are wound in contact with said contact roller, and K is between 0 and 1.5.

4,765,553
WINDING APPARATUS

Vincent L. Allard, Staines, and Henry Gallard, Perivale, both of England, assignors to BICC Public Limited Company, London, England

Continuation of Ser. No. 746,108, Jun. 18, 1985, Pat. No. 4,708,298. This application Jun. 22, 1987, Ser. No. 64,935
Claims priority, application United Kingdom, Jun. 20, 1984, 8415732
The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.
Int. Cl.[4] B65H *67/048*
U.S. Cl. 242—25 A 8 Claims

1. Apparatus for winding cable on to a spool comprising a substantially horizontally mounted movable table; spool locating means for receiving at least three spools thereon with their longitudinal axes substantially vertically upright; means for rotating the table through at least three positions comprising: a loading position, a winding position and an unloading position; spool loading means for lifting an empty spool from a selected location in proximity to the table and loading the spool on to the spool locating means such that the axis of the spool is substantially vertically upright, the spool loading means being situated at the loading position; cable loading means for loading a cable on to an empty spool on the spool locating means, the cable loading means being situated at the winding position; spool winding means for rotating the spool locating means, the

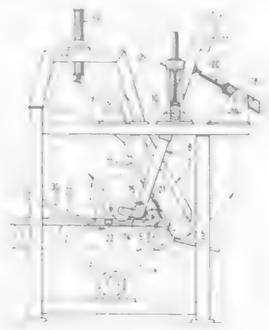


spool winding means being situated at the winding position for rotating the spool on the spool locating means and winding cable thereon; means for cutting the cable; and spool unloading means for lifting a spool from the spool locating means and for removing the spool to a second selected location, the spool unloading means being situated at the unloading position.

4,765,554
RELATING TO COMPRESSION TYPE ROLLING MACHINES

Guy Tuffal, and Yves Audren, both of Orange, France, assignors to Isover Saint-Gobain, Courbevoie, France

Filed Mar. 11, 1987, Ser. No. 24,600
Claims priority, application France, Mar. 11, 1986, 86 03415
Int. Cl.[4] B65H *18/08*
U.S. Cl. 242—55.1 12 Claims

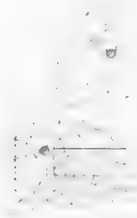


1. An apparatus for forming strips of mineral fibers into compressed fiber rolls, comprising:
a plurality of members defining a space in which the strip is rolled;
means for rolling said strip to form a roll;
means for moving at least one of said members in relation to others of said members in such a manner that said space is altered in accordance with a size of a roll being formed, wherein said at least one of said members each comprises a roller having a felt contacting surface in the form of regularly disposed relief elements; and
an abrasion resistant inorganic coating on at least a portion of said felt contacting surface of said roller.

4,765,555
ROLL PAPER DISPENSER

James J. Gambino, 136 Stanislaus St., Buffalo, N.Y. 14212

Filed Jul. 17, 1987, Ser. No. 74,970
Int. Cl.[4] B65H *19/10*
U.S. Cl. 242—55.53 10 Claims

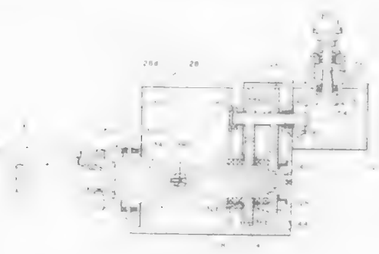


7. A roll paper dispenser comprising a dispenser housing, two parallel disposed removable brackets located on the inner sides of said housing, roller means and a motor and drive means, said brackets fixed to the sides of said housing and having identical upper and lower slots therein, said slots adapted to hold the axle of a roller and movably support said roller, said roller means comprising an upper and a lower roller, said upper roller movably positioned in said upper slot and becoming continuously rotatable upon a pulling action of paper connecting it with said lower roller, said lower roller adapted to be moved by said motor and drive means upon activation of said motor and drive means and adapted to dispense any amount of paper depending upon the duration of its activation, said motor and drive means comprising a motor, a battery compartment, a gear connected to said motor and a drive roller, said drive roller in contact with said lower roller to thereby rotate said lower roller, said lower roller adapted upon rotation to move and continuously dispense paper from said dispenser housing, said motor and drive means being structured to be removed as an integral unit from said dispenser housing.

4,765,556
ROLLING MILL LAYING HEAD

Camille S. Nasrah, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed May 8, 1987, Ser. No. 47,212
Int. Cl.[4] B21C *47/00;* B65H *51/00*
U.S. Cl. 242—82 7 Claims

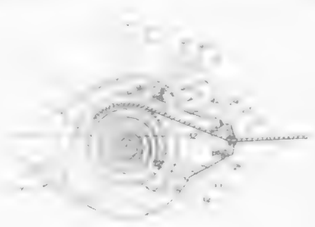


1. For use in a rolling mill, a laying head for forming an axially moving elongated product into a series of rings, said laying head comprising:
a stationary housing;
a first hollow shaft;
first bearing means for supporting said first hollow shaft on said housing for rotation about an axis;
a second hollow shaft having at least a portion thereof extending axially through said first hollow shaft;
second bearing means for supporting said second hollow shaft on said first hollow shaft for rotation about said axis;
a laying pipe carried by said second hollow shaft for rotation therewith about said axis, said laying pipe having a three dimensionally curved configuration with an entry end received within said second hollow shaft and aligned essentially concentric with said axis and with a delivery end arranged externally of said second hollow shaft and located radially from said axis;
guide means for directing the axially moving product along said axis and into said entry end for passage through said laying pipe to exit therefrom; and
drive means for rotatably driving said first hollow shaft in one direction at a first rotational speed relative to said housing, and for driving said second hollow shaft in the same direction at a second rotational speed relative to said first hollow shaft, the sum of said first and second rotational speeds being equal to the rotational speed of said laying pipe relative to said housing and being sufficient to form the product emerging from the delivery end of said laying pipe into the said series of rings.

4,765,557
CHALK SNAP STRING DEVICE HAVING IMPROVED BRAKE MEANS

Paul G. Kahmann, c/o Keson Industries, Inc., 1160 W. Quincy, Naperville, Ill. 60540

Continuation of Ser. No. 842,164, Mar. 21, 1986, abandoned.
This application Dec. 30, 1987, Ser. No. 140,887
Int. Cl.[4] B65H *75/48;* B44D *3/38*
U.S. Cl. 242—107.3 7 Claims



1. In a chalk snap string device having a winding hub, a chalk string wound about the hub, an outer housing with a front and rear to be surroundingly grasped by the hand of a user and defining a string-passing opening at the front of the housing, means for rotatably mounting the hub within the housing with a distal end of the chalk string extending outwardly from the hub through said housing opening, and means for biasing the hub rotatively to wind the chalk string and thereby move the string inwardly through said opening in substantially a straight path from front to rear on the housing towards the palm of a hand surroundingly grasping the housing and about the hub, the improvement comprising:
a brake lever having a brake surface and an exposed manipulating surface extending generally parallel to the straight path;
means pivotally mounting the brake lever to the outer housing for rotation about an axis and in a position to be engaged by a user's finger situated in overlying relationship with the exposed manipulating surface with the housing surroundingly grasped by a user;
spring means for biasing the brake lever for rotation in a first

VOL 1093 ISS 4 AG 23 1988 UMI

direction about said axis to thereby urge the brake surface toward said hub;

first manipulating surface means on said lever exposed to outwardly of said housing and forwardly of said axis to be engaged and depressed by the distal end of the user's finger without any portion of the user's hand surroundingly grasping the housing obstructing the string-passing opening to pivot the brake lever against the bias of the spring means and urge said brake surface away from the hub; and

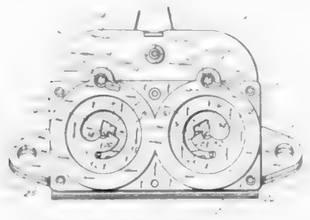
second manipulating surface means on said lever exposed to outwardly of said housing and rearwardly of said axis to be engaged and depressed by the ball of the user's finger to pivot the brake lever and urge the brake surface means against the hub in concert with a bias from said spring means in selectively locking the hub against rotation of said hub biasing means in use of the device.

4,765,558

SEAT BELT RETRACTOR

Wallace C. Higbee, Romeo, Mich., assignor to TRW Automotive Products, Inc., Cleveland, Ohio

Filed Mar. 15, 1984, Ser. No. 589,679
Int. Cl.[4] A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107.4 A 11 Claims



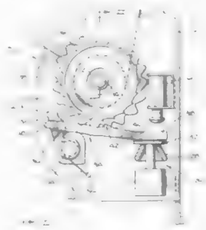
1. A seat belt retractor for a vehicle comprising a frame, a drum rotatably mounted in said frame and on which seat belt webbing is wound, ratchet means secured to and rotatable with said drum, locking means movable into engagement with said ratchet means to lock said ratchet means and thereby lock said drum against rotation in the direction of withdrawal of said selt belt webbing, and means for moving said locking means into engagement with said ratchet means in response to withdrawal of said selt belt webbing in excess of a predetermined amount, said means for moving said locking means into engagement with said ratchet means comprising a cam member rotatable in response to rotation of said drum, and lever means supported for pivotal movement about an axis parallel to the axis of rotation of said cam member and radially with respect to said cam member, said cam member being in the form of a ring having an opening therethrough, said ring having an outer peripheral surface, an inner peripheral surface, and opposite side surfaces extending between said outer and inner peripheral surfaces, said opening being defined by a camming surface formed on said inner peripheral surface, said camming surface having a radially changing profile with respect to said axis of rotation of said cam member for applying only radially directed force to said lever means to effect only radial movement thereof with respect to said cam member, said lever means comprising a follower member extending into said opening and engaging said camming surface for moving said lever means in first and second opposite directions, respectively, said camming surface having a first portion for moving said follower member and said lever means in first and second opposite directions, respectively, said camming surface having a first portion for moving said follower member and said lever means in said first of opposite directions radially with respect to said cam member to move said locking means into engagement with said ratchet means upon a predetermined angular rotation of said cam member in said direction of withdrawal of said seat belt webbing and having a second portion for moving said follower member and said lever means in said second of opposite directions radially with respect to said cam member to move said locking means out of engagement with said ratchet means upon a predetermined angular rotation of said cam member in a direction opposite said direction of withdrawal of said seat belt webbing.

4,765,559

SYNCHRONIZED SAFETY BELT RETRACTOR WITH STRUCTURAL CONTROL LOCKING MEANS

T. Sam Crisp, Romford, Great Britain, assignor to American Safety Equipment Corporation, Troy, Mich.

Filed Jul. 7, 1987, Ser. No. 71,650
Int. Cl.[4] B60R *22/40*
U.S. Cl. 242—107.4 A 8 Claims



1. A structural control locking means for a safety belt retractor having a belt storage spool rotatably mounted on a shaft, said spool having a programming ratchet and a locking ratchet, each ratchet having a respective plurality of teeth, and a programming pawl and a locking pawl for preventing spool rotation when engaged with said teeth by the structural control locking means comprising the provision of:

an actuator means for initiating movement of said programming pawl into engagement with said teeth of said programming ratchet;

sensor means for moving said actuator means in response to changes in vehicle inertia of more than a predetermined amount;

a control means of a substantially bar-shaped configuration having first and second ends and including a pawl mounting means for mounting said programming pawl on said control means, said control means being pivotally connected only to said locking pawl, and

means for mounting said control means for horizontal movement relative said programming ratchet, said locking ratchet and said actuator means, whereby rotation of said programming ratchet after engagement of said programming pawl with said programming ratchet moves said control means horizontally causing synchronized engagement of said locking pawl with said locking ratchet thereby preventing further belt protraction.

4,765,560

CABLE DISPENSER

Robert J. Branback, P.O. Box 2354, Kingsford, Mich. 49801

Filed Jun. 4, 1987, Ser. No. 58,167
Int. Cl.[4] B65H *49/20*, *49/28*
U.S. Cl. 242—129 14 Claims

1. A device for unwinding a coil of cable comprising:

a base having a hole;

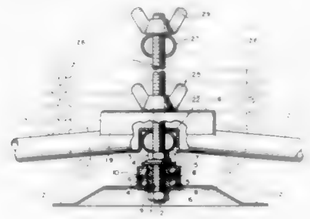
a first radial bearing fixedly mounted in the hole in the base, the first bearing comprising an inner race and an outer race, the inner race circumscribing a hole;

a sleeve mounted so that it surrounds the outer race of the first bearing and so that one end of the sleeve abuts the base;

a second radial bearing mounted in the sleeve, the second bearing comprising an inner race and an outer race, the inner race circumscribing a hole, the second bearing being mounted so that the sleeve surrounds the outer race of the second bearing;

a shaft having a means for engaging the inner race of the first bearing while the shaft passes through the holes circumscribed by the inner races of the first and second bearings;

a cable support having a hole through which passes the shaft, the cable support being mounted in engagement with the shaft and seated on the second bearing in engagement with the inner race of that bearing so that the cable



support can rotate freely with respect to the base to allow cable to be unwound from a coil of cable which is placed on the cable support, the coil of cable being placed on the cable support so that the shaft passes through the center of the coil; and

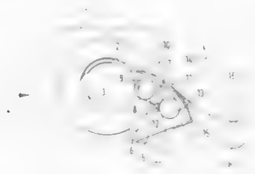
a cable guide which is mounted on the shaft by means of a hole in the cable guide, the cable guide being mounted on the shaft after the coil of cable has been placed on the cable support and being mounted so that it abuts the coil of cable, holds the coil in place and guides the cable as it is unwound.

4,765,561

DRIVE-OUT ASSEMBLY FOR MICROFILM APPARATUS

Wolfgang Kaps, Kaarst, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 28, 1987, Ser. No. 43,354
Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615703
Int. Cl.[4] G11B *15/32*
U.S. Cl. 242—192 16 Claims



1. A drive-out assembly for a microfilm coiled within a microfilm cartridge, said cartridge being adapted to be introduced in a cartridge receiving channel of a microfilm apparatus, said drive-out assembly comprising a pivoting arm mounted to be pivotable between a first position away from said microfilm cartridge and a second position about a first shaft, a mounting plate secured to or formed integral with said pivoting arm distally of said first shaft, a drive-out roll mounted for rotation on said mounting plate to engage the peripheral surface of said coiled microfilm in said second position of said pivoting arm and to move the free end of said microfilm to a stripper element disposed on said pivoting arm, said drive-out roll being driven by a second shaft disposed adjacent the juncture of said pivoting arm and said mounting plate, which second shaft supports for rotation therewith a first wheel and a second wheel, said first wheel being coupled to said drive-out roll by an intermediate wheel mounted for rotation on said mounting plate and by said second wheel coupled to a drive wheel through another intermediate wheel mounted for rotation on said pivoting arm.

4,765,562

DEVICE FOR POSITIONING AND HOLDING A YARN SUPPORT TUBE DURING AN OPERATION OF UNWINDING OR WINDING

Carlos Matas Gabalda, Grange-les-Valence, France, assignor to IC-ACBF, Valence, France

Filed May 29, 1987, Ser. No. 55,259
Claims priority, application France, Jun. 19, 1986, 86 09053
Int. Cl.[4] B65H *49/20*
U.S. Cl. 242—130 4 Claims



1. A mandrel adapted to serve as an element for maintaining a hollow cylindrical support tube around which yarn is wound, which may be used in particular for unwinding said yarn, comprising:

two elementary sleeves, mounted on a drive shaft in an axially spaced apart relationship, said sleeves comprising peripheral fingers regularly spaced with respect to one another, the fingers of one sleeve extending in an opposite axial direction relative to the fingers of the other sleeve and abutting against a cam surface included between the fingers of the other sleeve, at least one of the elementary sleeves being mounted free in translation on the drive shaft; and

thrust means for maintaining the two sleeves in spaced apart relationship with respect to each other, said thrust means urging the elementary sleeves in opposite axial directions relative to said mandrel to move the fingers of one sleeve against the cam surface of the other sleeve so that the ends of the fingers tend to move radially outward with respect to the axis of the mandrel and firmly fix the cylindrical support tube disposed around said mandrel.

4,765,563

CASSETTE FOR ACCOMMODATING TAPE-SHAPED MATERIAL HAVING AN ELECTRICALLY CONDUCTIVE LAYER

Yasuhiko Satoyoshi, and Keishi Kato, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 5, 1986, Ser. No. 938,228
Claims priority, application Japan, Dec. 5, 1985, 60-187548[U]
The portion of the term of this patent subsequent to Aug. 11, 2004, has been disclaimed.
Int. Cl.[4] G03G *21/00*; G11B *23/087*
U.S. Cl. 242—199 10 Claims

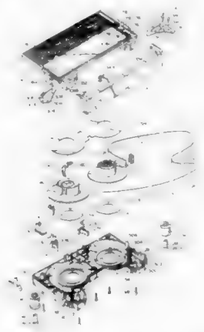
1. A cassette for accommodating a tape-shaped material having an electrically conductive layer, comprising:

a cassette casing accommodating the tape-shaped material;

VOL 1093 ISS 4 AUG 23 1988 UMI

a reel rotatably supported within said cassette casing for winding up said material;

a contact piece disposed on one end face of said reel and electrically connected to an electrically conductive layer of said material;



a reel retainer rigidly secured to said cassette casing and having a grounding contact, said reel retainer being in contact with said contact piece; and

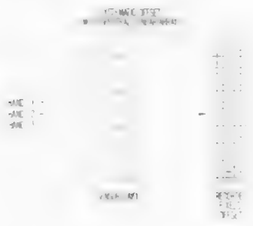
an electrically conductive grease interposed in the area of contact between said contact piece and said reel retainer.

4,765,564

SOLID STATE APPARATUS FOR IMAGING WITH IMPROVED RESOLUTION

Alden P. Colvocoresses, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 2, 1985, Ser. No. 718,975
Int. Cl.[4] F41G *7/00*; H04N *3/14, 5/335*
U.S. Cl. 244—3.16 13 Claims



1. A method for improving the resolution of images of objects taken by a solid state apparatus using at least two sets of solid state detector elements with each set having sensing element areas sensitive to a different wave band of signals of electromagnetic energy, comprising:

(a) systematically offsetting said sets of solid state detector elements each set being sensitive to different wave bands of signals of electromagnetic energy from the other so as to form subpicture elements sensitive to the different wave bands; and

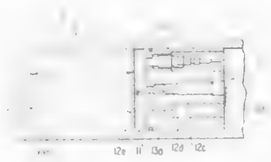
(b) resolving into an image by computer program means and recording means the signals of electromagnetic energy received by the subpicture elements.

4,765,565

PRESSURE RELIEF VALVE ARRANGEMENT FOR A PYROTECHNIC GAS GENERATOR

Sigfrid Bücbele-Buecher, Meerbusch-Strümp, and Klaus Unterstein, Düsseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH., Düsseldorf, Fed. Rep. of Germany

Filed Aug. 20, 1986, Ser. No. 898,405
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 3529859; May 14, 1986, 3616184
Int. Cl.[4] F02K *9/30*
U.S. Cl. 244—3.22 6 Claims



1. A pressure relief valve arrangement forming a combination with a ballistic body and a pyrotechnic gas generator including: a housing; a combustion chamber enclosed by the housing; a pyrotechnic propellant charge disposed within the combustion chamber; control nozzles disposed in the housing and communicating with the exterior of the housing; gas channels connecting the combustion chamber with the nozzles; valve devices for opening and closing the gas channels; and control means for actuating the valve devices; said pressure relief valve arrangement including:

pressure sensor means operatively connected with said combustion chamber for measuring pressure in said combustion chamber and for producing an output signal representing such measured pressure;

an electrical temperature sensor means disposed in said pyrotechnic propellant charge for sensing the temperature of said pyrotechnic propellant charge and for producing an electronic output signal representing the sensed temperature;

electronic circuit means connected for receiving the output signals of said pressure sensor means and said electrical temperature sensor means and for producing a signal representing a desired pressure within said combustion chamber in dependence of the temperature of said pyrotechnic propellant charge and a given combustion speed of said pyrotechnic propellant charge, and for comparing the signal representing desired pressure with the signal representing the measured pressure to produce a pressure regulating signal; and

regulating means connected to said electronic circuit means for being activated by said pressure regulating signal to vent said combustion chamber when a pressure is detected therein which is in excess of the desired pressure value so as to dissipate such excess pressure.

4,765,566

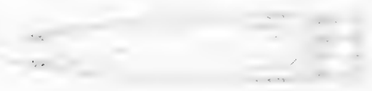
METHOD AND APPARATUS FOR REDUCING PROJECTILE SPREAD

Jan-Olov Fixell; Thomas Gustafsson; Gösta Högberg; Stig Engfors; Kjell Albrektsson, and Arne Franzén, all of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Mar. 4, 1987, Ser. No. 21,827
Int. Cl.[4] B21K *21/06*; F42B *13/00*
U.S. Cl. 244—3.23 8 Claims

1. A method of reducing the spread of shots in a hit pattern for a rotationally-stabilized ammunition unit in the form of a projectile discharged in a ballistic trajectory from a launching device towards a target which is to be combated, by dynamic balancing of a shell in order to reduce the differences in air resistance between different projectile shells and increase hit probability, comprising the steps of:

measuring the inclination between the main axis of the inertia of said shell and the geometric axis of the shell case



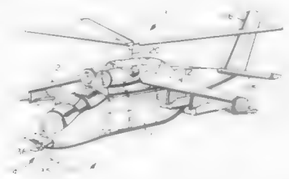
setting said two axes in parallel by providing a weight adjustment on one side of the point of gravity of said shell seen in its longitudinal direction, in the rear region of said shell at the rear plane substantially perpendicular to the longitudinal axis of said shell.

4,765,567

HELICOPTER TARGET

Meyer M. Gutman, Belair, and Christopher N. Lash, Columbia, both of Md., assignors to Tech Serv, Inc., Beltsville, Md.

Filed Mar. 10, 1987, Ser. No. 24,039
Int. Cl.[4] B64C *27/02*
U.S. Cl. 244—17.11 20 Claims



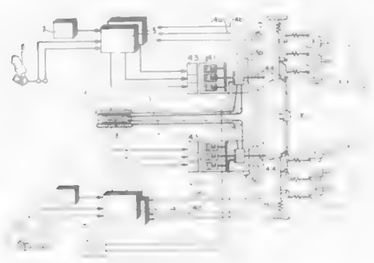
1. A wheel less, hand launchable remote controlled autogyro having a fuselage section simulating the fuselage of a helicopter with stub, lift-providing, wings.

4,765,568

METHOD AND SYSTEM FOR CONTROLLING THE ELEVATOR ASSEMBLIES OF AN AIRCRAFT

Udo Carl, Bremen, and Homayoun Dilmaghani, Gessel, both of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Bremen, Fed. Rep. of Germany

Filed Sep. 9, 1987, Ser. No. 94,831
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1986, 3631089; Sep. 20, 1986, 3632068; Nov. 13, 1986, 3638818
Int. Cl.[4] B64C *13/00*
U.S. Cl. 244—75 R 9 Claims



1. A method for controlling elevator assemblies of an aircraft, comprising the following steps:

(a) normally supplying identical electrical flight control signals in parallel through two electrical control units each including an override mechanism arranged in series between each electrical control unit and respective mechanical control links to a plurality of drive means for each of said elevator assemblies,

(b) supplying, in an emergency, mechanically generated control signals through dual mechanical control links to each of said override mechanisms,

(c) providing with the aid of said override mechanism, a performance priority of said mechanically generated control signals for controlling and operating said elevator assemblies in an emergency, and

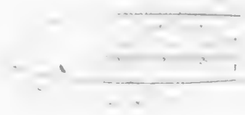
(d) mechanically coupling said mechanical control links by a mechanical synchronizing device at least during high speed flight for assuring a symmetric flap deflection of said elevator assemblies.

4,765,569

PASSENGER SAFETY DEVICE FOR HIGH SPEED VEHICLES

Joseph M. Higgins, 1549 Hampton, Grosse Pointe Woods, Mich. 48236

Filed Apr. 6, 1987, Ser. No. 34,911
Int. Cl.[4] B64D *25/02*
U.S. Cl. 244—118.5 24 Claims



1. A safety device for occupants of vehicles, including:

(a) inflatable means for protecting the occupants of said vehicle,

(b) means to utilize outside air entering said vehicle connected to said inflatable means, wherein said means to utilize include:

i. a manifold communicating with the exterior of said vehicle and said inflatable means, at least one exhaust relief air scoop communicating between the exterior of said vehicle and the interior of said vehicle; and

(c) means to control connected to said means to utilize.

4,765,570

AIRCRAFT EJECTED SEAT STABILIZING AND DELAYED PARACHUTE SYSTEM

Gerald F. Herndon, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1985, Ser. No. 781,658
Int. Cl.[4] B64D *25/10*
U.S. Cl. 244—122 AE 18 Claims

1. A system for stabilizing crew member and aircraft seat after seat ejection and prior to main chute inflation, the system comprising:

a pilot parachute attached to a main chute deployment bag, the bag storing a main chute canopy therein;

pilot chute deployment means attached to the pilot chute for inflating the pilot chute upon ejection of the aircraft seat;

a plurality of restraining bridle lines attached to the rear of the seat and the main chute bag to secure said main chute deployment bag to said aircraft seat;

a suspension line extending from said main chute canopy to said crew member or aircraft seat, said suspension line being slack when said bridle lines are connecting said main chute deployment bag to said aircraft seat; and

VOL 1093 ISS 4 AG 23 1988 UMI

means for releasing said main chute deployment bag from said seat thereby allowing said pilot parachute to strip said



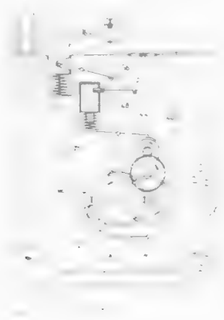
main chute deployment bag from said main chute canopy in order to deploy said main chute canopy.

4,765,571

AUTOMATIC LOAD-RELEASE APPARATUS FOR PARACHUTE EQUIPMENT

Guy Barbe, Marseilles, France, assignor to Societe Amatec, Saint Etienne, France

PCT No. PCT/FR86/00204, § 371 Date Feb. 11, 1987, § 102(e) Date Feb. 11, 1987
PCT Filed Jun. 13, 1986, Ser. No. 29,203
Claims priority, application France, Jun. 14, 1985, 85 09282
Int. Cl.[4] B64D *17/38*
U.S. Cl. 244—151 B **10 Claims**





1. An automatic release apparatus for equipment contained in a pack having suspension straps with loops to be worn by a parachutist comprising a housing adapted to be associated with said pack; cables protruding from said container; controls connected to ends of said cables having pins for fastening to said loops, a plunger subject to deceleration caused by opening a parachute worn by said parachutist in communication with a motor via a flywheel located within said housing, said motor being activated by said plunger to slowly rotate thereby causing a delayed unlatching of a detent spring to permit an oscillation of a lever for pulling said cables to release said pins from said loops and, simultaneously, a latching of said plunger (48) to prevent accidental operation.

4,765,572

SYSTEM FOR CONTROLLING A MOBILE AERODYNAMIC SURFACE OF AN AIRCRAFT

Roger Bellego, Blagnac, and Etienne Foch, Toulouse, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jun. 12, 1987, Ser. No. 61,145
Claims priority, application France, Jun. 16, 1986, 86 08652
Int. Cl.[4] B64C *9/10*
U.S. Cl. 244—178 **10 Claims**



1. A system for controlling an aerodynamic surface mounted mobile on an aircraft so as to be able to pivot freely about a fixed axis and provided with a tab itself articulated on the trailing edge of said aerodynamic surface, said system being such that elastic connecting means are provided between said tab and said aerodynamic surface and said tab can be directly actuated by the pilot, via a voluntary actuating member and a mechanical linkage,

wherein this system comprises:

an actuator interposed between said elastic connecting means and said aerodynamic surface;

a device for controlling said actuator; and

a clutch connecting the structure of the aircraft to said mechanical linkage;

and wherein said device for controlling the actuator also controls said clutch, so that the latter is in disengaged position when said actuator is active and in engaged position when said actuator is inactive.

4,765,573

METHOD OF COMPENSATION FOR FRICTION IN A STABILIZED PLATFORM

Brian H. Wells, Chelmsford, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 29, 1987, Ser. No. 43,781
Int. Cl.[4] F42B *15/02*
U.S. Cl. 244—3.15 **3 Claims**

1. In the operation of a guidance system for a missile in flight to intercept a target, such system including an antenna mounted on an inertially stabilized dual gimbal assembly, each gimbal in such assembly being rotatable about an axis by rotation of an associated torque motor operating through a mechanical drive mechanism, there being a substantial difference between the static and sliding friction of each torque motor and mechanical drive mechanism and the rotation of each torque motor being controlled to null the rate sensed by an associated gyroscope, the method of supplying a control signal to each torque motor to compensate for the substantial difference between the static and sliding friction, such method comprising the steps of:

(a) detecting the difference between a rate signal generated by a gyroscope and a rate command signal to provide a first control signal when the rate signal is greater than the rate command signal and a second control signal when the rate signal is equal to, or less than, the rate command signal;



(b) generating, in response to the first control signal, a first compensation signal having a first polarity and, in response to the second control signal, a second compensation signal having a second polarity; and

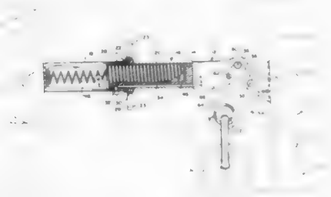
(c) applying the first and the second compensation signal to the associated torque motor to counteract the static friction.

4,765,574

MOUNTAIN CLIMBING SAFETY DEVICE

Michael D. Thomas, Rt. 6, Box 880, Arab, Ala. 35016

Filed Nov. 9, 1987, Ser. No. 118,569
Int. Cl.[4] A47G *29/00*
U.S. Cl. 248—1 R **9 Claims**



1. A device for emplacement in a gap of an obstacle to be climbed to provide a secure anchor therein, said device comprising:

a body having first and second ends, an elongated threaded portion extending from said first end, and gripping means secured to said second end;

an extensible member carried by said elongated portion in biased relation therewith for movement therealong;

first locking means for releasably securing said extensible member to said elongated portion for retention of said extensible member in a first retracted position and for release of said extensible member for movement thereof to a second extended position for engagement with a first surface adjacent said gap;

biasing means for biasing said extensible member to said extended position responsive to release thereof by said first locking means;

second locking means for releasably retaining said extensible member in said extended position; and

said gripping means pivotally secured to said second end of said body for engagement with a second surface adjacent said gap, said gripping means disposed for rotational movement responsive to a downward force acting thereof, whereby said rotational movement causes said device to be further wedged in said gap, thus enhancing the anchoring effect of said device in said gap.

4,765,575

CANTILEVER SHELF SUPPORT

Rodney A. Bergi, Glenview, and Richard J. Tracy, Elgin, both of Ill., assignors to Modulus, Inc., Chicago, Ill.

Filed Mar. 18, 1987, Ser. No. 27,615
Int. Cl.[4] A47B *96/06*
U.S. Cl. 248—250 **10 Claims**



1. A cantilever shelf support which comprises an elongated rigid strip having a length substantially coextensive with the length of a shelf to be supported thereby and having an upright backwall, an integral rigid top leg projecting horizontally outwardly from said backwall, an integral rigid bottom leg in spaced parallel relation below said top leg projecting horizontally from said backwall, said top and bottom legs cooperating with said backwall to define a rigid non-yielding channel along the length of the strip opening outwardly to receive a shelf in snug fitting relation, said bottom leg having an integral upstanding rearwardly inclined spring finger along the length thereof projecting into the channel in its unloaded position and deflected toward the leg to a loaded position by a shelf being inserted into the channel to wedge lock the shelf in the channel supported by the legs, and means for mounting the backwall in upright position on a wall or structural member.

4,765,576

LOAD BEARING SUPPORT PLATFORM

Uri Peled, Kibbutz Masada, D.N. Emek Hayarden, Israel

Filed Jan. 13, 1987, Ser. No. 2,899
Int. Cl.[4] F16L *3/00*
U.S. Cl. 248—49 **14 Claims**



1. A modular system for assembling a load-bearing support platform comprising:

a plurality of longitudinally extending support elements;

a succession of cross-pieces, each provided with a succession

VOL 1093 ISS 4 AUG 23 1988 UMI

of means for locating said elements, which elements are respectively associated with said locating means and are supported by said cross-pieces, wherein each cross-piece is formed with a succession of through-going ports respectively constituting said locating means and into or through which said elements extend, and

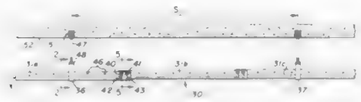
coupling means for joining together adjacent ends of said elements, wherein the number of said longitudinally extending elements per platform is selectively variable between a maximum equaling the number of said element-locating means in said cross-pieces, and a minimum of three.

4,765,577

PIPE SUPPORT SYSTEM

Seymour Collins, and William F. McClellan, both of Vacaville, Calif., assignors to Pipe Shields, Inc., Vacaville, Calif.

Filed Feb. 13, 1987, Ser. No. 14,856
Int. Cl.[4] F16L *3/00*
U.S. Cl. 248—59 14 Claims



1. A system for supporting a substantially horizontal pipe, said system comprising:

a U-shaped trough made of sheet metal for receiving a pipe, said trough having a pair of spaced sides that define the trough widths and a curved bottom that together with the sides define a trough depth, said trough depth being greater than the trough width, and a plurality of spaced supports with each support having a curved surface for accommodating and supporting the curved bottom of the trough, said trough spanning between the spaced supports and supporting the pipe with ridigity sufficient to prevent undue deflection of the pipe; and

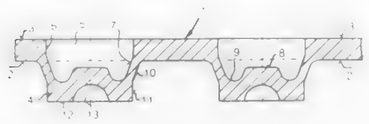
a strap extending transversely about the trough, said strap having a T-shaped slot near one end and a T-shaped locking tab at the other end, said locking tab fitting within the slot to lock the strap in place thereby preventing splaying of trough sides and maintaining the trough shape.

4,765,578

STAMPED SUSPENSION BAND

Viktor Principe, Romanshorn, Switzerland, assignor to Arthur Schmid AG, Switzerland

Filed Nov. 28, 1986, Ser. No. 936,290
Int. Cl.[4] F16L *3/14*
U.S. Cl. 248—59 4 Claims



1. In a suspension band for encircling a stationary body and an object to be suspended, of the type provided with a plurality of impressions spaced at uniform distances from one another, said impressions forming elevations (4) on a front side (2) of said suspension band (1) and forming depressions (5) on a rear side (3) of said suspension band (1), the improvement comprising: each said elevation (4) comprising an inclined external wall (10) forming a smooth rounded transition with said front side (2) to a perpendicular external wall (11) extending perpendicularly to the surface of said front side (2), each said elevation (4) having a parallel surface (12) extending substantially parallel to said front side (2), said parallel surface (12) having a central trough (13); each said depression (5) comprising an inner perpendicular wall (6) extending perpendicularly from said rear side (3) forming a smooth rounded transition into an inclined internal wall (7), said inclined internal wall (7) forming a smooth rounded transition into a surrounding trough (9) surrounding an elevated base (8) formed by material displacement of said central trough (13), said perpendicular external wall (11) and said inner perpendicular wall (6) so dimensioned as to fit in a tightly locking manner with one another.

4,765,579

DEVICE FOR POSITIONALLY RETAINING FLEXIBLE TRASH BAG LINER RELATIVE TO A TRASH RECEPTACLE

Edward S. Robbins, III, 459 N. Court St., Florence, Ala. 35630, and Gary T. Schwertner, St. Joseph, Tenn., assignors to Edward S. Robbins, III, Florence, Ala.

Continuation-in-part of Ser. No. 31,659, Mar. 30, 1987, Pat. No. 4,715,572. This application Sep. 14, 1987, Ser. No. 95,949
The portion of the term of this patent subsequent to Dec. 29, 2004, has been disclaimed.
Int. Cl.[4] B65B *67/04*
U.S. Cl. 248—101 11 Claims



1. A device adapted for positionally retaining an upper portion of a flexible bag liner relative to a top of a trash receptacle, said device comprising:

a rim having an inner surface which defines a cavity sized and configured to accept therein at least a part of said trash receptacle top, and an exterior surface over which an upper portion of a flexible bag liner may be draped said rim including coupling means for removably coupling said rim to said trash receptacle top; and

a locking member sized and configured to lockably engage said rim so as to capture, between said rim and said locking member, said upper liner portion draped over said exterior surface of said rim, whereby said liner is positionally retained relative to said receptacle top, and wherein

said rim further includes at least one pair of spaced-apart ribs, each said rib integrally formed with said rim on said inner surface thereof and projecting into said cavity defined thereby, and wherein

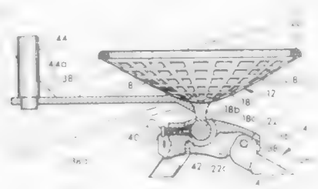
said inner surface of said rim also establishes between said at least one pair of ribs, a channel to permit air trapped between a lower portion of said liner and a lower portion of said trash receptacle to escape to the exterior thereof.

4,765,580

LOUDSPEAKER SUPPORT

Richard M. Wright, 870 Aurora Ave., St. Paul, Minn. 55104

Filed Jun. 22, 1987, Ser. No. 64,504
Int. Cl.[4] F16M *11/14*
U.S. Cl. 248—181 8 Claims



1. A loudspeaker stand and loudspeaker comprising in combination, a pedestal adapted to engage the bottom of the loudspeaker to hold the loudspeaker above the floor or other support surface, said loudspeaker being mounted on the pedestal, legs extending downwardly from the pedestal, said pedestal comprising an openwork to permit the free transmission of sound downwardly from the loudspeaker bottom wall supported upon the pedestal and a brace assembly connected to the pedestal and being constructed and arranged to be placed in contact with a portion of the loudspeaker and to securely engage the loudspeaker so as to thereby hold the loudspeaker in place on the pedestal, a releasable means for the brace assembly, said brace assembly being thereby releasable and engageable with the loudspeaker as required whereby the loudspeaker is securely held in place upon the stand.

4,765,581

UNIVERSAL CUP HOLDER WITH CUP HANDLE SLOT

Robert S. Wallace, Los Angeles, Calif.; Ian C. Goldey, and Terri L. Nelson, both of 6550 #1, Vanalden St., Reseda, Calif. 91335, assignors to Ian C. Goldey and Terri L. Nelson, both of Reseda, Calif., part interest to each

Continuation-in-part of Ser. No. 800,712, Nov. 22, 1985, Pat. No. 4,655,425. This application Feb. 24, 1987, Ser. No. 18,029
Int. Cl.[4] A47K *1/05*
U.S. Cl. 248—311.2 12 Claims



1. In a universal cup holder, the combination comprising

(a) a generally horizontal base to support a cup having a wall, and an upright handle,

(b) an upright frame attached to the base, whereby the base is part of the frame,

(c) a retainer attached to the frame and extending above the base to retain the cup wall,

(d) a resilient pusher element supported by the frame to engage the cup wall and urge the cup toward the retainer,

(e) and means attached to the frame to attach the holder to a vehicle door,

(f) the retainer forming a generally upright slot to guidably downwardly receive the cup handle, vertically,

(g) said pusher having hinged attachment to the frame whereby the pusher may swing toward and away from the retainer extent furthest from the frame,

(h) the pusher being vertically bowed toward said slot, the lower portion of the pusher extending downwardly to engage the frame,

(i) the frame having a rear central panel defining a slot toward and away from which the pusher is swingable as accomodated by said hinged attachment,

(j) the frame extending upwardly and having side panels connected to the base, the central panel swingably supporting the pusher,

(k) the retainer being formed of molded plastic and having opposite ends engaging and biased by said two side panels which are angled relative to the central panel to direct the retainer in loop configuration,

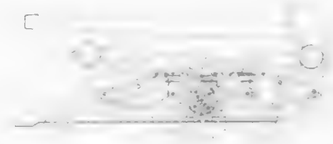
(l) the retainer having two edges between which the guide slot is formed, uppermost extents of said two edges curving downwardly and away from the frame, and toward one another and said edges being continuous and terminating proximate the base, the guide slot being in alignment with said pusher and the slot in the frame rear central panel.

4,765,582

VEHICLE SEAT ADJUSTMENT SYSTEM

Frederick W. Babbs, Radcliffe-on-Trent, England, assignor to I. I. Cox Limited, Nottingham, England

Filed Feb. 20, 1986, Ser. No. 831,647
Claims priority, application United Kingdom, Feb. 22, 1985, 8504625; Mar. 13, 1985, 8506431
Int. Cl.[4] A45B *19/04*
U.S. Cl. 248—394 12 Claims



1. A vehicle seat adjustment mechanism comprising a first member for securing to a seat, and a second member for securing to a vehicle and movable relatively to the first member, one of the members having a pair of closely spaced walls defining between them a substantially enclosed space, and a gear mounted within the enclosed space to turn about an axis transverse to the length of the members for effecting adjustment of the mechanism.

4,765,583

LAP DESK

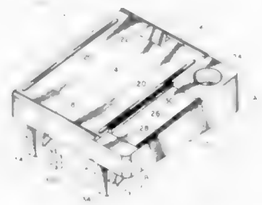
Wanda C. Tenner, 11320 E. 44th Ave., Spokane, Wash. 99206

Filed Aug. 25, 1987, Ser. No. 89,158
Int. Cl.[4] A47B *97/04*
U.S. Cl. 248—444 1 Claim

1. A new and improved lap desk, for use by a child in an automobile, comprising:

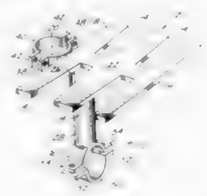
VOL 1093 ISS 4 AUG 23 1988 UMI

a box-like frame having a tapered thickness;
a first compartment in said frame;
a first door for said first compartment connected by a first hinge to a top upper edge of said frame;
a second compartment in said frame;
a second door for said second compartment connected by a second hinge to a top side edge of said frame;
said first and second hinges extending at a right angle;
an upstanding beverage receptacle formed on a top surface of said frame;
an elongated curved ridge projection for use as a handle, extending along an edge portion opposite said hinges of each of said first and second doors;



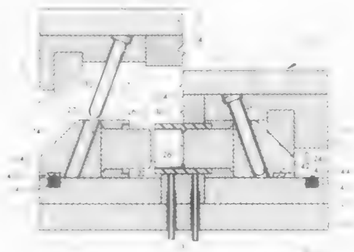
a spring paper clip attached to an upper edge portion of said first door, adjacent said first hinge;
a pair of straps, for attaching said lap desk to an automobile safety belt, each of said straps having both ends secured to a bottom surface of said frame, thereby forming a pair of loops;
a leg strap for securing said lap desk to the legs of a child during use, attached to a bottom surface of said frame;
a pad removably attached to a bottom surface of said frame;
said pad attached to the bottom surface of said frame by means of a plurality of spaced snaps;
said pad having a pair of notches formed at opposite side edges and said leg strap attached to a bottom surface of said frame by snaps through said notches.

4,765,584
TOOL HOLDER FOR WATER PIPE
Timothy Lazaris, 5811 Lourdes Dr., Huntington Beach, Calif. 92649
Filed Jun. 18, 1987, Ser. No. 64,179
Int. Cl.[4] A47G *55/00*
U.S. Cl. 248—558 **17 Claims**



1. A device for holding garden implements and the like, comprising:
a substantially planar rack element having top and bottom surfaces and front and rear edges;
at least one lateral slot extending inwardly from each side of said rack element toward the center thereof, each of said slots gradually increasing in width from its inner end to its outer end, each of said slots being dimensioned to receive and support a portion of a garden implement; and
attachment means for removably attaching said rack element selectably to a vertical pipe or to a horizontal pipe, said attachment means comprising:
first clamping means, at said rear edge of said rack element, for removably attaching said rack element to a vertical pipe;
a vertical support having first and second ends;
mounting means, on said bottom surface of said rack element, for removably mounting said rack element onto said first end of said vertical support; and
second clamping means, on said second end of said vertical support, for removably attaching said vertical support to a horizontal pipe.

4,765,585
SLIDE RETAINER FOR INJECTION MOLDS
Klaus A. Wieder, Helenville, Wis., assignor to Superior Die Set Corporation, Oak Creek, Wis.
Filed Feb. 27, 1987, Ser. No. 19,569
Int. Cl.[4] B29C *45/42*
U.S. Cl. 249—64 **6 Claims**

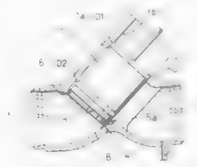


1. A slide retainer for a mold of the type having mold halves which are drawn away from each other and having a slide movable laterally inwardly and outwardly along the surface of a slide plate to move a core part of the mold inwardly and outwardly, the slide retainer comprising:
(a) a latch having an inclined camming surface and a V-shaped notch adjacent the camming surface; and
(b) a slide lock having a holder portion with a flat face surface and a cylindrical cavity therein with a generally rectangular top opening in the flat face surface, a plunger mounted within the cylindrical cavity, the plunger having a cylindrical walled flange which is formed to be housed in the cylindrical cavity of the holder such that the plunger rides upwardly and downwardly in the holder, and a plunger head having inclined camming surfaces meeting at a rounded top edge in a generally inverted V-shape complementary to the shape of the notch in the latch, and a means for spring biasing the plunger upwardly within the holder such that the head of the plunger extends upwardly beyond the flat face surface of the holder.

4,765,586
VALVE-CLOSING ALIGNING MECHANISM FOR AN INCLINED VALVE
Osamu Yoshida, Takahashi, Japan, assignor to Eagle Industry Co. Ltd., Tokyo, Japan
Filed Sep. 30, 1982, Ser. No. 430,567
Claims priority, application Japan, Oct. 9, 1981, 56-161307
Int. Cl.[4] F16K *1/00*
U.S. Cl. 251—86 **7 Claims**

1. A valve-closing aligning mechanism for an inclined valve comprising a valve body, an annular valve seat means in said body, said annular valve seat means having a seat conical section and a juxtaposed cylindrical section such that the smaller diameter of said seat conical section is coincident with

the upper longitudinal end of said cylindrical section along a coincident circle, a generally cylindrical poppet means in said valve body, said valve body having a generally cylindrical internal wall means in which said cylindrical poppet means is axially movable, said cylindrical internal wall means having an axis which is inclined relative to vertical, said cylindrical poppet means also having an axis which is inclined relative to vertical, said poppet means having an upper axial cylindrical end portion and a lower axial cylindrical end portion, said upper axial cylindrical end portion having a smaller diameter than said lower axial cylindrical end portion, said upper axial cylindrical end portion having a diameter less than the diameter of said cylindrical internal wall means so as to provide a clearance between said upper axial cylindrical end portion and said cylindrical internal wall means, said poppet means having a poppet seat means comprising a first conical section and a



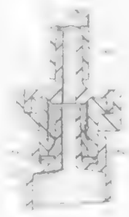
second conical section, the larger diameter end of said first conical section coindicing with the smaller diameter end of said second conical section, the cone angle of said second conical section being greater than the cone angle of said first conical section, said poppet means being operable such that said first conical section of said poppet seat means is operable to be received in said cylindrical section of said valve seat means such that when the valve is being closed, said first conical section is received in said cylindrical section to provide pivotal axial alignment of said poppet means as the poppet means pivots about the abutment between said first conical section and said annular seat means at said coincident circle, said clearance between said upper axial cylindrical end portion of said poppet means and said internal wall means allowing said pivoting of said poppet means to provide said pivotal axial alignment.

4,765,587
PULSE-WIDTH-MODULATED SOLENOID VALVE
Richard D. Cummins, Orchard Park, N.Y., assignor to Moog Inc., East Aurora, N.Y.
Division of Ser. No. 930,750, Nov. 13, 1986, Pat. No. 4,746,094. This application Sep. 9, 1987, Ser. No. 94,862
Int. Cl.[4] F16K *31/06*
U.S. Cl. 251—129.19 **11 Claims**



1. A pulse-width-modulated solenoid valve, comprising:
a body provided with a chamber, said body being provided with inlet and outlet openings communicating with said chamber, said body also having a tubular collar extending into said chamber and terminating in an annular seat surrounding one of said openings;
an armature mounted in said chamber for movement toward and away from said seat;
a coil mounted on said body and adapted to be selectively energized to move said armature in one direction relative to said body;
return means for urging said armature to move in the opposite direction relative to said body; and
a valve element mounted for movement with said armature toward and away from said seat and also mounted for movement relative to said armature, said valve element having a planar surface and being movable in one of said directions until said planar surface sealingly engages said seat to prevent flow through said one opening, said valve element being formed of a material less hard than that of said seat, the connection between said valve element and armature being such that when said valve element moves in said one direction and engages said seat the momentum of the mass of said armature will not exert a substantial force on said seat;
whereby the life of the seal between said element and seat will be extended and said seat may coin a complementary indentation into said valve element without adversely varying the diameter of the orifice therebetween.

4,765,588
CHECK VALVE FOR USE WITH A SYRINGE
Gordon E. Atkinson, Cedarville, Ohio, assignor to Vernay Laboratories, Inc., Yellow Springs, Ohio
Filed Aug. 18, 1986, Ser. No. 897,231
Int. Cl.[4] F16K *21/04*
U.S. Cl. 251—149.1 **9 Claims**



1. A valve for use in sealing a fluid supply while permitting selective withdrawal of the fluid, comprising:
a tubular side wall defining a first end, a supply end, a tube interior and a tube exterior;
a diaphragm connected to said side wall and extending across said tube interior to close said interior, said diaphragm being located along said tube interior remote from said supply end and said first end;
said diaphragm defining a slit therein extending diametrically across said diaphragm;
said diaphragm defining a concave surface thereon toward said first end;
housing means for securing said side wall and disposed in sealing contact with said side wall for sealing said supply end from said tube exterior, said housing means surrounding and enclosing said supply end and defining a port extending through said housing means and communicating with said supply end, said housing means terminating in contact with said side wall remote from said first end to expose said first end;
a flange defined about said side wall at said supply end, said housing means defining a groove therein for containing said flange, whereby said side wall is secured into said housing means;
said housing means including:
an inlet portion closing said supply end of said tubular side

VOL 1093 ISS 4 AG 23 1988 UMI

wall and disposed against said flange, said port extending through said inlet portion to open into said tube interior; and

a retaining portion connected to said inlet portion and having a central opening for passage of said tubular side wall therethrough;

said inlet portion and said retaining portion being connected together to define said groove for containing said flange.

4,765,589

DEVICE FOR REGULATING OR VARYING THE ROTATION ANGLE OF A CONTROL SHAFT OF A VALVE OR GATE

Bernard Sauze, Sorbiers, France, assignor to Dresser Industries, Inc., Dallas, Tex.

PCT No. PCT/FR86/00143, § 371 Date Mar. 5, 1987, § 102(e) Date Mar. 5, 1987, PCT Pub. No. WO86/06812, PCT Pub. Date Nov. 20, 1986

PCT Filed Apr. 28, 1986, Ser. No. 33,101

Claims priority, application France, May 10, 1985, 85 07083

Int. Cl.⁴ F16K *31/122, 31/528*

U.S. Cl. 251—229 5 Claims



1. In the combination of a valve (13) or gate having a rotatable closure member (11) operated by a rotatable shaft (12), said shaft being angularly settable to select a desired flow rate through said valve and an actuator (1) operative through a stroke range to effect changing angular settings of said shaft, connector means connected intermediate between said actuator and said shaft and operable to translate a given stroke of said actuator into angular displacement of said shaft, said connector means including first and second components interconnected through a slot and presettably adjustable by a relatively displaceable setting means associated with said slot to vary the amount of effected angular shaft displacement for a given stroke of said actuator to effect said desired flow rate.

4,765,590

FAUCET VALVE WITH DIAGONAL SEALING RING

Dennis J. Hayman, Birmingham, Mich., assignor to United States Brass Corporation, Plano, Tex.

Continuation of Ser. No. 930,318, Nov. 12, 1986, abandoned. This application Jul. 28, 1987, Ser. No. 78,588

Int. Cl.⁴ F16K *5/04*

U.S. Cl. 251—310 2 Claims

1. A faucet valve comprising:

a. a valve body having a bottom fluid inlet passage and a side fluid discharge passage having a central axis,

b. upper and lower sleeve members disposed in said inlet passage,

i. said upper and lower sleeve members each having an interior cylindrical surface of the same diameter,

ii. said upper and lower sleeve members having complimentary oppositely facing diagonal grooves for receiving and retaining a diagonal sealing ring,

c. a diagonal sealing ring having a central axis and disposed in said grooves,

i. the configuration and orientation of said grooves being such that the central axes of said discharge passage and said sealing ring intersect and said sealing ring is symmetrically disposed about an imaginary cylindrical projection of said discharge passage,

d. a control member having a flow control portion,

i. said flow control portion having a cylindrical exterior surface that is matingly received within said interior cylindrical surfaces of said upper and lower sleeve members and having length sufficient to extend beyond the upper and lower extremities of said diagonal sealing ring,

ii. said flow control portion having a lower end portion that includes a flow direction transition surface,

e. said control member being rotatable substantially 180 degrees from a full open position to a full closed position and vice versa, with said sealing ring being in contact with



the exterior surface of said control member flow control portion over a major portion of the sealing ring inner periphery during the initial stages of opening of the valve when differential pressure is high, and with metering of fluid flow extending over a major portion of the control member rotatinal range;

whereby there is provided a faucet valve with the combination of a static, diagonally disposed seal and a flow control portion that is rotatable and throttling throughout the major portion of its rotation and without moving any control port past said diagonal sealing ring so as to prevent seal damage due to cutting, chaffing, or excessive wear, and so as to prevent seal blowout due to high differential pressure because of a relatively narrow throttling range.

4,765,591

GATE VALVES

Thomas R. Bodnar, 3378 MacIntyre Ave., Murrysville, Pa. 15668

Continuation-in-part of Ser. No. 874,529, Jun. 16, 1986, abandoned, and a continuation-in-part of Ser. No. 734,781, May 16, 1985, abandoned. This application Jun. 1, 1987, Ser. No. 56,154

Int. Cl.⁴ F16K *3/18*

U.S. Cl. 251—330 6 Claims

2. In combination with a gate valve including a valve body having a fluid passage therethrough and a riser passage at right angles to the fluid passage; bonnet means closing said riser passage; valve gate means for selectively opening and closing the fluid passage and movable in the riser passage from a closure position to an open position; a valve stem operably connected with said valve gate means for transmitting movement force to said valve gate means, said valve stem comprising:

an elongated body having one end region thereof formed to operatively engage said valve gate means and the other end region extending outwardly of said bonnet means;

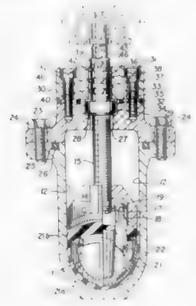
seal means intermediate the ends of said body for engaging said bonnet means in sealed relationship therewith;

first wrench head means on said other end region of said body for removably receiving a drive member;

securing means for removably securing a drive member to said first wrench head means;

second wrench head means on said body on said other end region adjacent to and spaced from said first wrench head means;

said second wrench head means shaped and constructed substantially the same as said first wrench head means for removably securing a drive member;



a first zone of weakness formed on said body between said first and second wrench head means formed to fail completely at a first predetermined overtorque applied to said body to expose said second wrench head means for operative engagement by a drive member, said first predetermined overtorque being less than the overtorque required to fail said elongated body, and whereby said elongated body and said second wrench head remain operative with said gate valve means for transmitting movement force thereto; and

a second zone of weakness formed on said body below said second wrench head formed to fail at a second predetermined overtorque greater than said first predetermined overtorque applied to said body, said second predetermined overtorque being less than the overtorque required to fail said elongated body.

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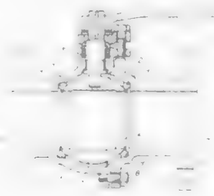
MATERIAL FOR VALVE SEATS

Yasuo Minai, Yamanashi, Japan, assignor to Kitz Corporation, Tokyo, Japan

Filed Apr. 15, 1987, Ser. No. 38,823

Int. Cl.⁴ F16K *5/00*

U.S. Cl. 251—368 10 Claims



1. A material for valve seats, which is a composite material comprising:

a base material composed of polytetrafluoroethylene and 3 to 30% by weight of a copolymer of tetrafluoroethylene and perfluoroalkylvinylether based on the total amount of said base material, and 5 to 30% by weight of glass fiber based on the total amount of said composite material.

4,765,593

HYDRAULIC JACK HAVING A REMOVABLE HYDRAULIC CARTRIDGE

Michael Hung, 11th Fl., 624 Ming Chuan E. Rd., Taipei, Taiwan

Filed Sep. 1, 1987, Ser. No. 91,956

Int. Cl.⁴ B60P *1/48*

U.S. Cl. 254—8 B 6 Claims



1. A hydraulic jack comprising:

a frame body including a pair of spaced opposed vertical side boards, said frame body having a front and rear end;

a pair of spaced opposed side brackets located substantially at the rear end of said frame body and attached to respective ones of said pair of spaced opposed vertical side boards, each said side bracket having a groove, said groves being substantially aligned for receiving and positioning a base of a horizontally oriented hydraulic cartridge;

a pair of spaced opposed blocking pieces located forwardly of said side brackets and attached to respective ones of said pair of vertical side boards, each said blocking piece being located adjacent and spaced from one of said grooves for releasably captively retaining a base of a horizontally oriented hydraulic cartridge;

a horizontally oriented hydraulic cartridge, said cartridge having a substantially horizontal actuatable ram and a base, said base being releasably captively retained by said grooves and said spaced opposed blocking pieces; and

lifting arm means for lifting objects, said lifting arm means being attached to said frame body forwardly of said side brackets and being actuated by said substantially horizontal ram of said hydraulic cartridge.

4,765,594

LIFTING AND DEPOSITING DEVICE FOR TRANSPORTABLE LARGER CONTAINERS, E.G. COMPARTMENTS OR THE LIKE

Reinhold Riedl, Miltenberg, and Conrad Lazarus, Freudenberg, both of Fed. Rep. of Germany, assignors to haacon hebetechnik GmbH, Freudenberg, Fed. Rep. of Germany

Filed Nov. 15, 1985, Ser. No. 798,618

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1984, 3442307

Int. Cl.⁴ B66F *7/26*

U.S. Cl. 254—45 8 Claims

1. Lifting and depositing device for transportable large containers, comprising rack and pinion jacks to be attached to the container corners by means of overhang beams, the jacks having winches provided on uprights so that they can be raised and lowered along each upright, the uprights having wheels for moving the lifting and depositing device and therewith moving a large container, the wheels being mounted on a wheel swiveling mechanism, which has a support surface for

VOL 1093 ISS 4 AG 23 1988 UMI

the bottom end of the uprights, and the wheel swiveling mechanism being rotatable relative to the uprights for controllability of the device, characterized in that the support surface (36) for an upright (15) is provided on a rocker (35) mounted on the wheel swiveling mechanism (32) for rotation about a substantially horizontal axis (34), the support surface (36) is rotatably connected to the bottom end of the upright (15) by a guide



means, and that the support surface (36) is arranged lower in relation to an axis of the wheels, that the wheel swiveling mechanism (32, 51) can be moved when the large containers (10) are placed on the ground to the side beneath the rack and pinion jack (12), to position the bottom end of the relevant upright (15) on the support surface (36, 50) to support and couple them.

4,765,595

SCISSOR JACK

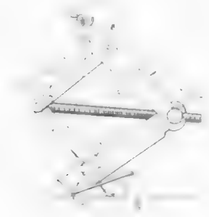
Ferdinand Alten, Mandern, Fed. Rep. of Germany, assignor to August Bilstein GmbH & Co. KG, Ennepetal-Altenvoerde, Fed. Rep. of Germany

Division of Ser. No. 850,499, Apr. 10, 1986, abandoned. This application May 20, 1987, Ser. No. 53,596

Claims priority, application Fed. Rep. of Germany, May 10, 1985, 8513829[U]; Aug. 9, 1985, 8522952[U]

Int. Cl.[4] B66F *3/00*

U.S. Cl. 254—126 6 Claims



1. A scissor jack for lifting a body of a vehicle above the ground, the jack comprising:

a leg having a lower end adapted to bear on the ground and an opposite upper end;

a support arm having a lower end pivoted on the opposite upper end of the leg at an intermediate horizontal axis and an opposite upper end;

a load-bearing member engageable with the vehicle body and formed on the opposite upper end of the intermediate support arm;

upper and lower links pivoted together at another intermediate horizontal axis, the upper link being pivotally connected to the support arm between the ends thereof at an upper horizontal link axis, the lower link being pivotally connected to the leg between the ends thereof at a lower horizontal link axis;

a jack screw operatively connected to the leg, arm, and links at the intermediate axes and rotatable in one direction to draw the intermediate link axes toward one another to raise the load-bearing member and rotatable in the opposite direction to separate the intermediate link axes to lower the load-bearing member;

a foot piece on the lower end of the leg;

pivot means on the foot piece to rock the lower end of the leg relative to the ground about a lower horizontal foot axis as the leg is raised and lowered; and

a control brace fixed on the lower link and projecting therefrom past the leg and beyond the lower horizontal link axis to support the jack in a raised position of the load-bearing member with the lower link axis above the ground, the control brace having an outer end operatively engageable with the ground and forming a lower horizontal brace axis spaced from the axes such that it always defines with the lower foot axis a plane generally parallel to a plane defined by the intermediate link axes.

4,765,596

RACETRACK CONVERTIBLE GUARDRAIL

Richard Fontana, 8525 Bella Vista, Alta Loma, Calif. 91701

Continuation-in-part of Ser. No. 780,010, Sep. 25, 1985, Pat. No. 4,635,905. This application Dec. 22, 1986, Ser. No. 944,745

Int. Cl.[4] E04H *17/14*

U.S. Cl. 256—65 18 Claims



1. A ground fixture for utilization with a horse track rail and for receipt of said horse track rail comprising:

a first flexible tubular member formed from an elastomeric material;

a second tubular member formed of metal for receipt within said first flexible tubular member interiorly thereof and adapted for placement in the ground so that a portion of said first flexible tubular member extending beyond said second tubular member is in proximate relationship to the ground surface in which said tubular members are implaced; and,

wherein said second tubular member is adapted for holding said racetrack rail.

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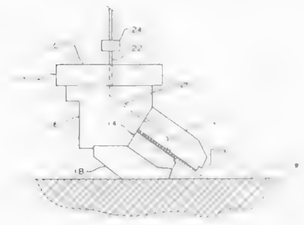
SCARFING NOZZLE

Ronald E. Fuhrhop, Belle Mead, and Raymond J. Makara, Chatham Township, Morris County both of N.J., assignors to L-TEC Company, Florence, S.C.

Continuation of Ser. No. 922,037, Oct. 22, 1986, abandoned. This application Oct. 8, 1987, Ser. No. 106,899

Int. Cl.[4] B23K *7/06, 7/08*

U.S. Cl. 266—51 4 Claims



1. An oxygen discharge nozzle unit for scarfing defects in a metal body characterized by a construction which can be selectively operated to avoid the formation of "fins" along the side edge portions of the scarfing cut, selectively operated to produce scarfing cuts of widths less than the width of the nozzle up to substantially the entire width of the nozzle, and can be operated in side-by-side relationship with other nozzle units to produce scarfing cuts up to substantially the full width of the combined side-by-side nozzle units; said nozzle unit comprising

manifold and head means for receiving therein and distributing therefrom scarfing oxygen and non-scarfing gas;

spaced-apart upper and lower preheat block means connected at one end to and extending from said manifold and head means and defining therebetween a generally uniform slot-like nozzle passageway of a predetermined width and a discharge orifice at the other end for receiving scarfing oxygen from said manifold and head means within said nozzle passageway and discharging a sheet-like stream of scarfing oxygen from said discharge orifice of at least generally the same width as said nozzle passageway;

non-scarfing gas passageway means extending from said manifold and head means through at least one of said upper and lower preheat block means and positioned for selectively receiving non-scarfing gas from said manifold and head means and selectively injecting non-scarfing gas into said nozzle passageway between the ends of said upper and lower preheat blocks and along the sides of said nozzle passageway for selectively admixing the scarfing gas and non-scarfing gas at the side edge portions of the sheet-like stream of scarfing gas being discharged from said discharge orifice prior to discharge therefrom so that the side edge portions of the sheet-like stream of gas being discharged is of a reduced oxygen purity insufficient to scarf the metal body to avoid the formation of fins along the side edge portions of the scarfing cut and to control the width of the scarfing cut; and

means operatively associated with said non-scarfing gas passageways for selectively controlling the flow or non-flow of non-scarfing gas to one or both sides of said nozzle passageway depending upon the width of the scarfing cut desired and whether said nozzle unit is to be used with other nozzle units.

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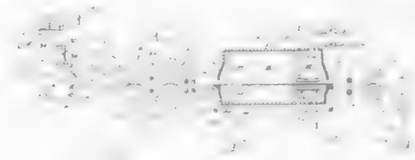
APPARATUS FOR MAKING ELECTRODE MATERIAL FROM HIGH HARDNESS ACTIVE MATERIALS

Douglas Magnuson, Troy; Merle Wolff, Rochester; Sam Lev, Oak Park; Kenneth Jeffries, Pontiac, all of Mich., and Scott D. Mapes, Plano, Tex., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 861,889, May 12, 1986, Pat. No. 4,670,214. This application Feb. 25, 1987, Ser. No. 18,681

Int. Cl.[4] C21D *1/74*

U.S. Cl. 266—110 8 Claims



1. Apparatus for making an electrode from high hardness, powdered, anhydrous active matrix material comprising, in combination:

loss-in-weight feeder means for feeding powder of active electrode material;

substrate feed means for feeding a substrate;

compacting means for compacting said powder and substrate whereby an electrode web comprising said substrate and said active electrode material is formed that has at least sufficient strength to be self-supporting and having at least sufficient strength to allow sintering; and

sintering means for sintering the electrode web including furnace means for heating the web above 950° C. and atmosphere providing means for providing an argon-hydrogen atmosphere substantially free of oxygen and water vapor in said furnace means.

4,765,599

APPARATUS FOR THE AUTOMATIC FORMING OF CONTINUOUS METAL TUBE FILLED WITH POWDERED MATERIALS, ITS DIRECT INTRODUCTION INTO LIQUID METAL, AND RELATED EQUIPMENT

Lorenzo Ferrari, Lugano, Switzerland, assignor to Kinglor-Ltd., Lugano, Switzerland

Division of Ser. No. 940,115, Dec. 10, 1986, Pat. No. 4,711,663. This application Oct. 1, 1987, Ser. No. 103,277

Int. Cl.[4] C21C *7/00*

U.S. Cl. 266—216 6 Claims



1. An apparatus for forming a continuous metal tube filled with powder additives capable of use in an in-ladle metallurgical treatment process for molten metal comprising:

a support base;

a roll of flat metal sheet in close proximity to said base;

a supply means mounted on said base with opposed rollers for unrolling said sheet metal and for making said sheet

VOL 1093 ISS 4 AG 23 1988 UMI

advance horizontally into a position adjacent to a means for metering, weighing and feeding the powder additives onto said metallic sheet;

said means for metering, weighing and feeding the additives capable of metering and weighing the additives prior to the feeding thereof onto said metallic sheet;

comuter means capable of controlling said means for metering and weighing so that a predetermined amount of additives are fed onto said sheet, said predetermined amount being calculated by said computer based on the type, quantity, and determined characteristics of said molten metal;

a roller means capable of folding side flanges of said sheet to form a generally U-shaped channel;

a means for overlapping said side flanges such that said additives are compacted and said sheet forms, in situ, a continuous tubular member; and

a means for immediately introducing said just-formed tubular member under the surface of said molten metal in the ladle.

4,765,600

PNEUMATIC SPRING ELEMENT

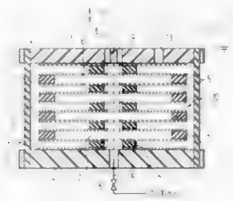
Volker Härtel, Germering, Fed. Rep. of Germany, assignor to Metzeler Kautschuk GmbH, München, Fed. Rep. of Germany

Filed Nov. 13, 1986, Ser. No. 930,301

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1985, 3540300

Int. Cl.[4] F16F *9/08*

U.S. Cl. 267—122 6 Claims



1. Pneumatic spring element, comprising a rubber-elastic peripheral wall and two rigid end walls defining a chamber therebetween, a bellows-like spring body disposed inside said chamber defining an outer sub-chamber between said spring body and said peripheral wall, said bellows-like spring body being formed of a stack of at least three anular disk-shaped metal plates having inner and outer peripheries, annular rubber elements alternately joining said metal plates together at said inner and outer peripheries thereof, said spring body being subjected to compressed air in the interior thereof, an electroviscous fluid filling said outer sub-chamber, and means for alternately connecting said metal plates to a voltage source and to ground potential for controlling said electroviscous fluid with an electrical field.

4,765,601

HYDRAULIC-ELASTOMERIC MOUNT

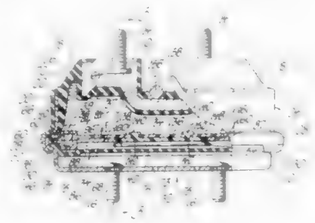
John W. Miller, Centerville, Ohio; Linn A. Peterson, Milford, and Charles A. Kingsley, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 902,060, Aug. 26, 1986, abandoned, which is a continuation of Ser. No. 706,675, Feb. 28, 1985, abandoned. This application Aug. 10, 1987, Ser. No. 85,308

Int. Cl.[4] F16M *5/00;* B60G *15/04*

U.S. Cl. 267—140.1 2 Claims

1. In a hydraulic-elastomeric vehicle engine mount having a pair of rigid mounting members, a hollow elastomeric body operatively connecting the members, an elastomeric diaphragm cooperating with the body to form a closed cavity that is substantially filled with a liquid, a rigid partition dividing the cavity into a chamber enclosed by the body and a chamber enclosed by the diaphragm, and elongated damping orifice having a length substantially greater than its width dimension connecting the chambers so as to provide hydraulic damping as one mounting member is forced to vibrate relative to the other in opposite directions at varying amplitudes and frequencies, a singular rigid damping decoupler mounted for free limited reciprocal movement on the partition so as to effect cyclic volume change in one and then immediately the other of the chambers and thereby permit vibratory amplitudes below a prescribed level and frequency without forcing liquid through



the orifice and thus without hydraulic damping, the improvement comprising a secondary orifice through said partition for connecting said chambers, and singular rigid jounce-rebound control valve means solely on and movable with said decoupler for essentially immediately closing said secondary orifice to prevent flow threrethrough between said chambers on pressure buildup in one of said chambers and essentially immediately opening same to permit flow therethrough between said chambers on pressure buildup in the other chamber so as to essentially immediately effect a reduction in the hydraulic damping normally provided by said damping decoupler in one of said force directions as compared with that in the other force direction during the damping decoupler operation.

4,765,602

COMPOSITE COIL SPRING

William G. Roeseler, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 221,022, Dec. 28, 1980, abandoned. This application Dec. 22, 1982, Ser. No. 452,311

Int. Cl.[4] F16F *1/36*

U.S. Cl. 267—148 21 Claims



1. A helical torsion spring comprising:

a plurality of coils having a first end and a second end, said coils having an inner surface and an outer surface; and,

a continuous core extending through said coils, said core being composed of a synthetic resin and unidirectional fibers oriented longitudinally relative to said core, said fibers being located adjacent said inner surface and said outer surface of said coils and in the central portion of said core, said fibers located adjacent said outer surface having a high tensile strength and being spaced radially outward from said fibers located adjacent said inner surface which have a high compressive strength, said fibers located adjacent said outer surface being aramid fibers, and said fibers located in the central portion of said core being aramid fibers.

4,765,603

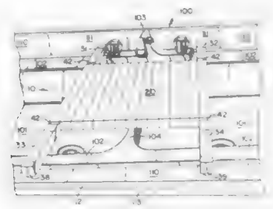
CUTTING BOARD

Raymond H. Huppert, Rte. 1, Box 74, Ellsworth, Wis. 54011, assignor to Raymond Huppert, Ellsworth, Wis.

Filed Apr. 14, 1986, Ser. No. 851,523

Int. Cl.[4] A47J *43/00;* B23Q *3/00*

U.S. Cl. 269—302.1 2 Claims



1. A cutting board which can be stably suspended over the center of a sink having double basins and beneath the sink faucet so as to allow simultaneous use of the cutting board, the basins and the faucet, which comprises:

(a) a solid planar surface about 10 to 12 inches wide, 10 to 15 inches long, and ½ to 1 inch thick;

(b) a first, substantially linear, substantially rigid leg about 4 to 7 inches long which is coupled to and extends substantially radially outward from the planar surface in a first direction;

(c) a second, linear, substantially rigid leg about 4 to 7 inches long which is coupled to and extends substantially radially outward from the planar surface in the first direction, the first and second legs (i) extending substantially the same distance from the planar surface, (ii) being substantially parallel, and (iii) being about 10 to 12 inches apart;

(d) a third, substantially linear, substantially rigid leg about 4 to 7 inches long which is coupled to and extends substantially radially outward from the planar surface in a second direction which is substantially opposed to the first direction;

(e) a fourth, substantially linear substantially rigid leg about 4 to 7 inches long which is coupled to and extends substantially radially outward from the planar surface in the second direction, the third and fourth legs extending substantially the same distance from the planar surface and being substantially parallel;

(f) antiskid pads coupled to the terminal portion of each leg to reduce the tendency of the cutting board to slip when used; and

(g) transverse grooves on each leg to prevent water from flowing longitudinally along the legs; wherein the entire cutting board is about 22 to 24 inches long measured along a line extending in the first and second directions.

4,765,604

RESILIENT CREASER

John F. Trogan, Ashland, Wis., assignor to C. G. Bretting Manufacturing Company, Ashland, Wis.

Filed Apr. 17, 1987, Ser. No. 39,659

Int. Cl.[4] B41L *1/32*

U.S. Cl. 270—39 6 Claims

1. In a paper interfolding machine of the type having first and second folding rolls mounted adjacent each other for rotation about parallel axes with porous tissue paper carried by each of said rolls and a wedge-shaped protrusion on said first folding roll and a mating recess on said second folding roll for receiving said protrusion in a nip between said rolls, the improvement in combination therewith comprising:

(i) a resilient member filling at least a portion of said mating recess and forming an elastic anvil within said recess wherein said protrusion deforms said resilient member



when said protrusion is received in said recess and creases a sheet of said paper received in the nip between said rolls by the action of said protrusion on said anvil, and

(ii) vacuum port means on said second folding roll for selectively adhering said sheet to said second roll during said creasing.

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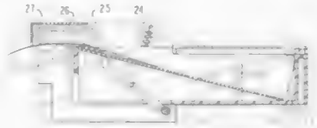
PAPER CASSETTE TRAY WITH FRONT EDGE POSITIONING CAMS

Perry E. Abbott, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1986, Ser. No. 934,370

Int. Cl.[4] B65H *1/08*

U.S. Cl. 271—147 3 Claims



1. A sheet holding mechanism for use in a copier or printer machine comprising:

bin means for holding multiple sheets of print receiving material such as paper piled one upon another to form a stack;

a movable tray located within said bin means capable of providing a bottom surface for receiving said stack, the front edge of the sheets of said stack positioned along the front edge of said tray against the front side of said bin means;

sheet feeding means positioned above the front edge of said tray for moving the top sheet from said stack into said machine;

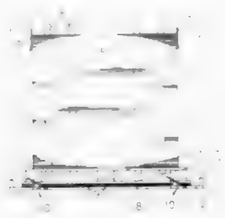
biasing means for lifting the front edge of said tray upwardly so that said top sheet engages said sheet feeding means;

said bin means including a flat vertical plate forming a rear vertical wall; and

said tray including cam means extending upwardly from the rear-edge of said tray for contacting said rear vertical wall to engage said wall in rolling contact as the front edge of said tray is lifted due to a variation in the height of said stack caused, for example, when sheets are fed from said stack into said machine.

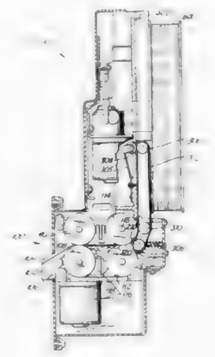
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,606
SHEET FEEDER
Josef Marass, Murnau-Seehausen, Fed. Rep. of Germany, assignor to Georg Spiess GmbH, Gersthofen, Fed. Rep. of Germany
Filed Jun. 23, 1987, Ser. No. 65,825
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1986, 3622692
Int. Cl.[4] B65H *1/08*
U.S. Cl. 271—157 14 Claims



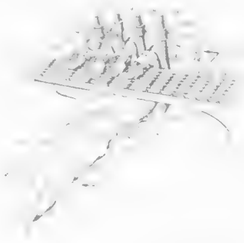
1. A sheet feeder comprising a stack carrying table able to be moved by a lifting device and having front and side abutments, said stack carrying table being composed of a supporting table adapted to be connected with a lifting member of the lifting device and of a loading stage supported on the carrying table for free movement in its own plane in substantially all directions within said plane, said sheet feeder furthermore comprising a clamping device which is able to detachably clamp said stage to said supporting table.

4,765,607
STACKER APPARATUS
John Zouzoulas, Havertown, Pa., assignor to Mars, Incorporated, McLean, Va.
Filed Mar. 8, 1985, Ser. No. 709,559
Int. Cl.[4] G07F *1/06*
U.S. Cl. 271—177 30 Claims



1. An improved banknote stacker for use with a separate banknote validator having a drive means and a banknote output, said banknote stacker comprising
a banknote magazine for storage of facially stacked banknotes;
a prestorage compartment;
a pusher means for pushing a banknote in a direction perpendicular to a face of said banknote from said prestorage compartment into said banknote magazine; banknote receiving means defining an initial banknote passageway within said banknote stacker, for receiving banknotes edgewise and one at a time from said banknote validator; and
bandnote transporting means for transporting banknotes edgewise from the banknote receiving means to said prestorage compartment;
wherein the improvement comprises:
said banknote receiving means comprising passageway walls defining said initial banknote passageway;
interconnection means for aligning said banknote receiving means with the banknote output of said banknote validator to form a smooth and uninterrupted passageway wall surface from the banknote output of the banknote validator to the initial banknote passageway of the banknote stacker;
said banknote transporting means engaging the drive means of said banknote validator and providing substantially continuous positive contact control over banknotes from the output of the banknote validator to the prestorage compartment of the banknote stacker whereby the leading edge of said banknote is substantially prevented from jamming; and
said interconnccetion means and said banknote transporting means are readily disconnectable from said banknote validator.

4,765,608
FINGER EXERCISER
Joseph C. Bonasera, 150 Highland Dr., Kings Park, N.Y. 11754
Filed Jul. 24, 1987, Ser. No. 77,664
Int. Cl.[4] A63B *23/00*
U.S. Cl. 272—67 3 Claims

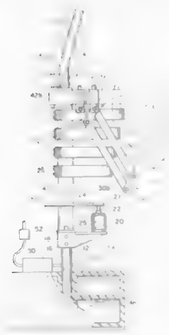


1. A finger exerciser device comprising:
a fork, for securement to a wrist of a user, provided with a main body and a plurality of tines integrally attached at one end of said main body;
a plurality of sleeves adjustably received on said fork such that each sleeve slideably engages a respective tine, and each sleeve including a tension component fixedly secured thereto for applying force to a finger of a user;
fastening means secured to each said component for fastening said component to a finger of a user; and
locking means on each sleeve for securing said sleeve in any desired position along the length of said respective tine.

4,765,609
AUTOMATED BOXING MACHINE
Jerry L. Wilson, 485 NW. 170th Dr., Beaverton, Oreg. 97005, and Gerald E. Nagode, Aloha, Oreg., assignors to Jerry L. Wilson, Beaverton, Oreg.
Continuation-in-part of Ser. No. 896,880, Aug. 15, 1986, abandoned. This application Jan. 27, 1987, Ser. No. 6,779
Int. Cl.[4] A63B *69/00*
U.S. Cl. 272—76 13 Claims

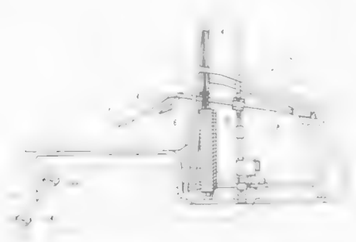
1. An exercise machine which simulates a human boxer by throwing punches at and receiving punches throuwn by the user, comprising:

(a) an upright support;
(b) a simulated shoulder element having opposed ends, said shoulder element being attached intermediate said ends to said support;
(c) means for rotating said shoulder element about said support;
(d) a pair of simulated arms having first ends which are attached to the ends of said shoulder element and second ends which have simulated glove fists located thereon;
(e) linkage means associated with said shoulder element and said arms for moving the arm which is attached to the end of said shoulder element which is being rotated toward its



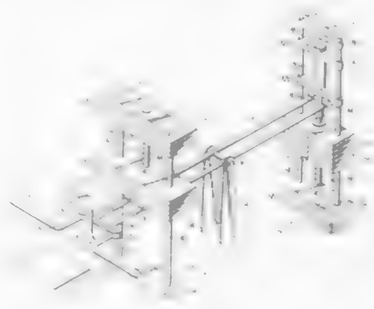
associated arm to an extended position and moving the arm which is attached to the end of said shoulder element which is being rotated away from its associated arm to a retracted position;
(f) wherein said linkage means includes first hinged joints which are located at said first ends of said arms with the first hinged joint of one of said arms being attached to each of the ends of said shoulder element, and second hinge joints which are located medially on said arms; and
(g) said upright support includes a fixed portion and a rotating portion wich can be rotated relative to said fixed portion, and said shoulder element is attached to said rotating portion.

4,765,610
ACCESSORY FOR WEIGHTLIFTING EQUIPMENT
David A. Sidwell, R.R. 1, Box 267, Solon, Iowa 52333
Filed Aug. 21, 1986, Ser. No. 898,938
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—117 3 Claims



1. An accessory for use with weightlifting equipment which equipment has a weight means or the like that is raised and lowered by the user to build muscle tissue, said accessory comprising an electric motor, a rotatable member operatively connected to the motor and driven thereby, a vertically moveable means operatively connected to the weight means, means for translating the rotatable movement of said member into vertical movement of said vertically moveable means to selectively apply force to the weight means to assist in lifting the weight means and also to apply controlled downward force while the weight means is lowered by the user, a clutch for engaging and disengaging the motor from the weight means and allowing free movement of the weight means when the motor is disengaged therefrom, said clutch including a first vertically moveable member operatively connected with the motor and a second vertically moveable member that is operatively connected with the weight means and moveable relative to the first vertically moveable member, means to selectively prevent relative movement between the first and second vertically moveable members, and user-operated control means to operate the motor so as to selectively cause the application of force to the weight means during either the lifting of lowering of the weight means by the user.

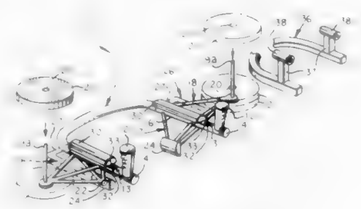
4,765,611
APPARATUS AND METHOD FOR WEIGHT TRAINING EMPLOYING COUNTERWEIGHT
Michael MacMillan, Springfield, Ill., assignor to University of Florida, Gainesville, Fla.
Filed Oct. 22, 1986, Ser. No. 921,763
Int. Cl.[4] A63B *21/06*
U.S. Cl. 272—118 27 Claims



1. A weight training apparatus comprising:
an operating member;
a primary set of weights connected to said operating member, said primary set adapted to be raised during a first phase of a two-phase weight training cycle and lowered during a second phase;
a secondary set of weights adapted to be intermittently positioned to perform as a counterweight;
means for positioning said secondary set of weights to counterbalance said primary set of weights;
means for activating said positioning means wherein said secondary set of weights is positioned for subsequent movement in a downward direction when said primary set of weights is raised in an upward direction during said first phase; and
means for deactivating said positioning means, wherein said deactivating means is operable to preclude said secondary set of weights from counterbalancing said primary set of weights during said second phase.

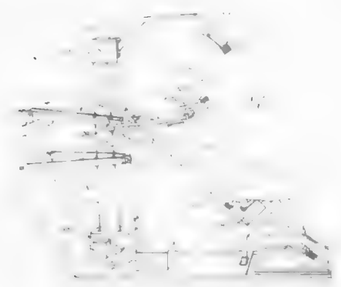
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,612
U-LEG BAR EXERCISING DEVICE
Roy Henry, Jr., 66 Corbin Ave., East Patchogue, N.Y. 11772
Filed Apr. 8, 1987, Ser. No. 36,361
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—119 5 Claims



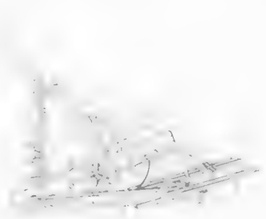
1. An exercise device comprising:
a first U-shaped bar to be received about the waist of a user;
a first pair of sleeves received on the ends of said first U-shaped bar, said first pair of sleeves including a pair of handles;
a second pair of sleeves rotatively received on the ends of said first U-shaped bar and retained on said U-shaped bar by said first pair of sleeves, each of said second pair of sleeves having a first and second arms secured thereto, each of said first arms retaining a hip pad and each of said second arms retaining a plurality of weights;
a pair of second U-shaped bars non-rotatively received on the ends of said first U-shaped bar, said second U-shaped bars serving as stop means against further upward travel of said weights;
a pair of arm rest pads secured to said first U-shaped bar and said first sleeves, and
a third U-shaped bar serving as a support frame means for supporting said device prior to use.

4,765,613
PROGRESSIVE RESISTANCE EXERCISE DEVICE
Harv Voris, North Hollywood, Calif., assignor to Paramount Fitness Equipment Corporation, Los Angeles, Calif.
Filed Jan. 22, 1987, Ser. No. 6,049
Int. Cl.[4] A63B *21/24*
U.S. Cl. 272—129 17 Claims



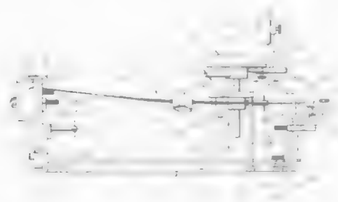
1. An exercising device comprising:
lifting means supported to allow an exerciser to engage a portion thereof to carry out one or more selected exercises, said lifting mechanism adapted for movement in at least two opposing directions;
load regulating means being coupled to said lifting means and selectively operable to vary a resistance applied against the movement of said lifting means as said lifting means is being moved in either or both of said directions;
control means adapted to selectively operate said load regulating means to control said amount of resistance applied agains the movement of said lifting means, said control means defining a range of motion and a force curve for each of said exercises, which force curve delineates said amount of varied resistance to be applied against said movement of said lifting means independent of any force being exerted by or against said lifting means and for incremental degrees in movement of said lifting means, said control means operating said load regulating means in relation to said incremental movement of said lifting means to effect the application of said applied resistance by said load regulating means as said lifting means is being moved during each of said exercises in a positive resistance direction for said selected exercise, said control means further selectively operating said load regulating means to reduce said applied resistance to substantially zero when said lifting means is moved in a negative resistance direction for one of said exercises, provided that said direction is not a positive resistance direction for another of said exercises; and
display means electrically coupled to said control means which includes one or more portions for visually displaying various conditions to said exerciser during said selected exercise, and which includes one or more input portions to allow said exerciser to operate said device, with one of said input portions being adapted to receive an indicated maximum resistance from said exerciser, which maximum resistance is correlated by said control means to a position on said force curve which delineates a maximum amount of said resistance to be applied to said lifting means.

4,765,614
EXERCISE MACHINE FOR PERSON CONFINED TO A WHEELCHAIR
Sammy Shute, 5721 Barkwood St., Jackson, Miss. 39211
Filed Aug. 6, 1987, Ser. No. 82,114
Int. Cl.[4] A63B *21/06, 23/04*
U.S. Cl. 272—130 4 Claims



1. An exercise machine for persons confined to a wheelchair, comprising:
a frame having a back rest and a plurality of base members extending outwardly beyond said back rest, said base members each having an upwardly extending arm having a pivot bar attached thereto;
a plurality of ramp members for accepting the wheels of a wheelchair, said ramp members pivotly secured to said pivot bar;
a multiplicity of resistance members secured to said frame;
whereby the ramp members can be pivoted away from the back rest so that a person confined to a wheelchair can back the wheels of the wheelchair onto the ramp members until the weight of the wheelchair and the person confined to the wheelchair causes the ramp members to pivot toward the back rest allowing the wheelchair to roll in the direction of the weight machine until the back of the person confined to the wheelchair comes in contact with the back rest so that the person confined to the wheelchair can use the multiplicity of resistance members for exercising and after exercising, the wheelchair can be rolled away from the back rest causing the ramp members to pivot away from the exercise machine so that the person confined to the wheelchair may exit.

4,765,615
EXERCISING APPARATUS
William S. Case, 6000 Reims St., #2107, Houston, Tex. 77036
Filed Apr. 21, 1987, Ser. No. 40,792
Int. Cl.[4] A63B *21/00*
U.S. Cl. 272—132 19 Claims



1. Exercising apparatus comprising:
seat means on which a user is seated for exercising a body portion; said seat means further including;
a separate tensioning device mounted on each of the front and back sides of the seat means; and
a flexible cable extending from each tensioning device to said seat means and adapted to be releasably connected to said body portion of the user on the seat means for exerting a predetermined force thereon upon pulling of said cable away from its associated tensioning device, one of said cables exerting said predetermined force when said body portion moves away from its associated tensioning device on the front side of the seat means and the other cable exerting said predetermined force when said body portion moves away from its associated tensioning device on the back side of the seat means.
17. In a tensioning device for exercising apparatus;
a generally cylindrical drum mounted for rotation and having a continuous spiral groove in its outer circumferential surface;
resistance means for providing resistance to rotation of the drum;
a flexible cable having at its end a gripping means for releasable engagement by a user for exercising a force thereon wound about said drum and received within said spiral groove;
a shaft on which said drum is mounted;
means mounting said drum for rotation with said shaft and for axial sliding movement along said shaft as the cable is being wound and unwound on said drum, said means including a pair of axially spaced hubs secured to said shaft on opposed ends of said drum and a pair of guide rods in parallel relation to said shaft extending between and secured to said hubs, said guide rods extending through said drum thereby to effect rotation of said drum upon rotation of said shaft; and
fixed guide means for said cable adjacent said drum to permit the extension and retraction of said cable on said drum from a single fixed location.

4,765,616
ADJUSTABLE WORKOUT BENCH
David W. Wolff, St. Paul, Minn., assignor to ParaBody, Inc., Minneapolis, Minn.
Continuation of Ser. No. 714,101, Mar. 20, 1985, abandoned.
This application Oct. 10, 1986, Ser. No. 918,592
Int. Cl.[4] A63B *23/00*
U.S. Cl. 272—144 6 Claims



6. A workout bench for use in lifting weights comprising a frame, a rack at one end of said frame having means thereon for supporting a bench support crossbar and barbells for weight lifting onto a crossbar, said frame further including a laterally extending frame member extending laterally outwardly from said rack, and a bench for mounting on said laterally extending frame member and for being supported at least partially on said rack, the improvement comprising:
said laterally extending frame member comprising a first tube;
said bench comprising two bench sections, each having first and second ends, the first bench section being substantially longer than the second bench section and the second end being of length to rest on a crossbar supported on the rack;
a slider member comprising a tube section having a cross section complemental to the cross section of the first tube and slidably mounted over said laterally extending frame member, for movement toward and away from said rack;
means for mounting both of said bench sections on said slider member, the first bench section being mounted for independent pivotal movement permitting the second end of said first bench section to be moved upwardly and downwardly relative to the slider member comprising hinge means mounted to the slider member for supporting the first bench section for independent hinging movement;
support means positioned between the second bench section and the slider member for supporting said second bench section with respect to the slider member and the laterally extending frame member; and
means to adjustably fix said slider member in a selected positions along said laterally extending frame member comprising means defining a threaded opening on the tube section of the slider member and a single hand operable screw threaded in the threaded opening and adapted to be threaded to bear against the laterally extending frame member to clamp the slider member in such selected positions to locate the first end of the first bench sections at desired locations relative to said rack for adjusting the position of the bench relative to the rack and thus to permit adjusting the angle of inclination of the first bench section when the second end thereof is resting on a bench support cross bar on the rack.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,617

PORTABLE SEAT FOR BASEBALL CATCHERS POSITIONED BEHIND HOME PLATE

Keith N. Groves, 3200 McLead Dr., Apt. 210 Las Vegas, Nev. #9121

Continuation-in-part of Ser. No. 817,585, Jan. 10, 1986, abandoned. This application Mar. 23, 1987, Ser. No. 28,791
Int. Cl.[4] A63B *71/00*
U.S. Cl. 273—25 3 Claims



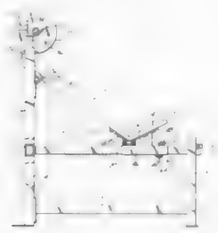
1. A portable seat for baseball catchers positioned behind home plate comprising in combination a base plate adapted to being placed on a substantially level surface but not attached thereto, a vertically extending coil spring having the bottom end thereof fixedly attached to the top of said base plate and the upper end removably attached to the bottom of a horizontally placed seat, said seat being of the bicycle type narrowing in front to provide space for movement of the catchers legs and equipped with spring means underneath to permit bending to either side, and said seat having a vertically extending protector attached to the front of the seat and of a side to side width significantly greater than its front to back dimension to provide protection to the groin area of the catcher as he sits on the seat but low enough to permit the catcher to catch a pitched ball thrown directly across the plate in the strike zone in front of the catcher while the catcher is in the crouched position on the seat, and said coil spring being of such a height and said seat being of such a size as to permit a baseball catcher to sit on the seat in a crouching position with his feet placed on the ground.

4,765,618

TABLE TENNIS ROBOT

Westphal Daley, 68 Simpson St., Hartford, Conn. 06112

Filed Jul. 20, 1987, Ser. No. 75,630
Int. Cl.[4] A63B *29/00*
U.S. Cl. 273—30 8 Claims



1. A table tennis robot apparatus comprising a ball projector, said projector having right and left input ports and right and left output ports; a net means positioned for catching balls hit towards said projector; a chamber having a curved outer wall, entrance and exit ports; ball feed means below said chamber for transferring balls from said net means to said chamber; a motorized fan contained in said chamber; said exit port of said chamber being connected to said input ports of said projector, said fan creating a directional flow of air from said input ports through said output ports of said projector; said projector having right and left adjustable ball servers, said servers being motorized wheels, said wheels being positioned for receiving balls expelled from respective output ports, an adjustable ball deflector vane, said ball deflector vane being positioned between said right and left input ports for biasing balls for movement towards and into contact with either of said right and left wheels; said projector having right and left ball spin means for imparting spin to balls projected from said right and left wheels, said right ball spin means being a pair of side plates and a pair of adjustable guide rails for imparting spin to balls exiting from said right server; and said left ball spin means being a pair of side plates, a bottom guide plate and adjustably connected top and bottom ball deflector plates for imparting spin to balls exiting said left server; a base for supporting said robot on one end of a table opposite a table tennis player; said robot being pivotally supported on said base; motor means for rotating said robot relative to said base in an oscillating fashion; an electrically controlled means for controlling the rotational speed of said right and left wheels and thus controlling the variable speed of balls projected from said robot.

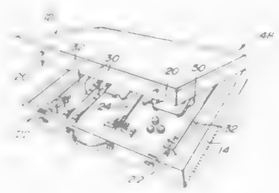
4,765,619

TABLE TENNIS APPARATUS

William A. Cooper, 276 Placid Cove Dr., New Braunfels, Tex. 78130

Filed Apr. 17, 1986, Ser. No. 853,417
Int. Cl.[4] A63B *39/00*
U.S. Cl. 273—30 14 Claims





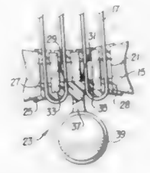
1. In combination with an upwardly facing generally horizontal support surface, a table tennis apparatus, said apparatus including a pair of substantially planar horizontally spaced apart inclined table sections, said sections having substantially planar upwardly facing inclined upper surfaces, support means on said horizontal support surface for releasably attaching and supporting said table sections relative to each other in said horizontally spaced apart relation said inclined upper surfaces being equally and oppositely downwardly inclined toward each other at a shallow angle relative to said horizontal support surface such that a game ball hit downwardly at a shallow angle relative to said horizontal support surface from an elevation above said inclined upper surfaces and toward one of said inclined upper surfaces from above the other of said inclined upper surfaces and impacting with said one inclined upper surface will rebound upwardly from and over said one inclined upper surface and in the same general flight direction at a greater angle relative to said horizontal support surface than if said ball had impacted with said horizontal support surface at the same shallow angle.

4,765,620

RACKET VIBRATION DAMPENER COMBINED WITH GROMMET STRIP

Richard Janes, Belchertown, Mass., assignor to Spalding & Evenflo Companies, Inc., Tampa, Fla.

Filed Jan. 16, 1987, Ser. No. 4,376
Int. Cl.[4] A63B *49/14*
U.S. Cl. 273—73 G 6 Claims



1. A dampening device for playing rackets including a frame and yoke having string holes therethrough, a handle and an open throat comprising:
a strip of flexible material;
a plurality of grommets extending above one face of said strip, said grommets having a geometrical configuration and spacing so as to mate with selected string holes in a yoke;
an arm extending from said strip on the side opposite said grommets; and
a vibration dampener secured to the free end of said arm.

4,765,621

TENNIS RACQUET

Francois Game, 31, avenue de la République, 75011 Paris, France

Filed Jul. 22, 1986, Ser. No. 888,056
Claims priority, application France, Jul. 23, 1985, 85 11214; Dec. 10, 1985, 85 18270
Int. Cl.[4] A63B *51/12*
U.S. Cl. 273—73 E 9 Claims



1. A strung tennis raquet having a frame comprising a head and a handle attached to said head, stringing extending across said head, said stringing comprising at least one tensioned string which passes around a plurality of rollers rotatably supported within said head with at least one end of said string fastened to a tensioning device positioned in the racquet handle, said tensioning device comprising at least one spring connected to said fastened end of the string and an adjusting device for varying the tension imparted by said spring on said spring, said adjusting device comprising a knurled knob rotatably mounted at the end of the racquet handle and applied against said end under a force exerted by said spring, the knob and the end of the handle presenting complementary interfitting shapes to prevent unintended relative rotation therebetween, and at least one of the rotatably disposed rollers for assembly of the stringing having the form of a sector extending over a predetermined angular span less than 360°.

4,765,622

HOCKEY GAME

Donald D. Rienzo, 511 Wolf Hill Rd., Dix Hills, N.Y. 11746

Continuation of Ser. No. 464,345, Feb. 7, 1983, abandoned. This application Nov. 21, 1984, Ser. No. 673,663
Int. Cl.[4] A63F *7/06*
U.S. Cl. 273—85 R 10 Claims



1. A game comprising means defining a board having a playing surface and including longitudinal and transverse boundary side walls, said transverse side walls each having a pair of spaced slots, an object adapted for travel on said playing surface and shaped and dimensioned to pass through said slots, a playing stick for striking said object to propel the object on said surface, said playing stick being dimensioned to permit the user to stand adjacent to the board and swing the stick from above the playing surface to strike the object, barrier means removably insertable in said longitudinal side walls for extending transversely across said board midway of the length of the board, said barrier means being solid and provided with aperture means for allowing passage of said object therethrough and hinge means for folding the board at the center thereof with the barrier means removed, each transverse side wall having opposite ends whereat the transverse side wall is joined to said longitudinal side walls and except for said slots the remainder of each transverse wall is solid, said slots of each pair in each transverse side wall being located at the respective ends of the associated transverse side wall where the side wall is joined to the longitudinal side walls, said aperture means extending in said barrier means to form a single central opening therein which extends upwardly from the playing surface of the board, said slots having a substantially smaller width than said opening.

4,765,623

TALKING CRYSTAL BALL TOY

Gary J. Cardillo, and Douglas R. Cahill, both of P.O. Box 500, Unionville, Conn. 06085

Filed Feb. 12, 1988, Ser. No. 155,375
Int. Cl.[4] A63F *9/18*
U.S. Cl. 273—161 8 Claims

1. A talking crystal ball toy comprising a light-permeable sphere mounted on a base which contains a photosensitive

VOL 1093 ISS 4 AG 23 1988 UMI

element from which a double interruption of light activates a speech synthesis circuit which generates an an audio output of



a digitally pre-recorded voice response to a question asked of the said crystal ball.

4,765,624
GOLF TRAINING APPARATUS
Derek A. Sprague, P.O. Box 3597, James Madison University, Harrisonburg, Va. 22807
Filed Mar. 9, 1987, Ser. No. 23,254
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 E 20 Claims



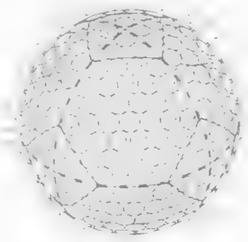
1. A training apparatus used in the sport of golf for the purpose of improving a golfer's putting, comprising,
visual obstruction means, supported above a putting surface by support means connected to the visual obstruction means,
wherein the visual obstruction means comprises an opaque substantially horizontal planar, rectangular member having a cut-away portion located at a forward outer corner of the planar member under which a golf ball is placed prior to putting, wherein during putting the putter head is substantially obscured from the golfer's view by the horizontal planar member rearward of the cut-away portion.

4,765,625
PRACTICE DEVICE FOR PUTTING STROKES
Robert A. Miner, P.O. Box 650460, Vero Beach, Fla. 32965-0460
Filed Sep. 9, 1987, Ser. No. 94,614
Int. Cl.[4] A63B *69/36*
U.S. Cl. 273—183 A 4 Claims



1. A golf practice device comprising:
a flat T-shaped member having a base portion and a crossbar,
indicia means extending the length of the base portion to define a center line,
a V-shaped notch formed in said crossbar with the apex of the V-shaped notch contiguous to one end of said center line, and
a base line on said crossbar extending perpendicular to said center line and intersecting said apex.

4,765,626
GOLF BALL
William Gobush, Dartmouth, Mass., assignor to Acushnet Company, New Bedford, Mass.
Filed Jun. 4, 1987, Ser. No. 58,329
Int. Cl.[4] A63B *37/14*
U.S. Cl. 273—232 13 Claims



13. A golf ball having a spherical surface with a plurality of dimples thereon, and three parting lines which do not intersect any dimples, said parting lines corresponding to circular paths which coextend with twelve bisecting lines, said bisecting lines corresponding to lines which bisect square faces of a truncated octahedron inscribed in said spherical surface, said lines forming twenty-four isosceles triangles; said dimples being arranged in said twenty-four isosceles triangles so that they do not intersect the parting lines.

4,765,627
NUCLEAR WAR GAME
Sherman E. Ross, 2280 Locust St., Denver, Colo. 80207
Filed Feb. 2, 1987, Ser. No. 9,505
Int. Cl.[4] A63F *3/00*
U.S. Cl. 273—255 1 Claim

1. A board game in which players alternate on attack and defense simulating thermonuclear war between two countries, comprising:
(a) a game board subdivided into squares utilizing an alpha-numeric grid pattern on which said countries are located at opposing ends with various symbols denoting target sites, some of said target sites being further denoted by one of said various symbols as launch sites
(b) a plurality of game playing pieces denoting the nuclear weapons used in the game for said attack and defense,
(c) a plurality of game cards denoting name and board location of said targets, said game cards divided into at least two sets, a first set of game cards each having indicia designating it as a launch card and comprising one of said various symbols denoting a launch site and a second set of game cards each having indicia designating it as a target card and comprising one of said various symbols denoting a target site, thus said game cards providing means for randomly selecting launch sites and target sites of said game playing pieces,

(d) a plurality of markers which provide means to label targets that have been destroyed in the game and,



(e) four dice which provide means of movement of said game playing pieces.

4,765,628
FIGHTING WEAPON
Harvey W. Jensen, 4920 Sawyer Ave., Carpinteria, Calif. 93013
Filed Feb. 24, 1987, Ser. No. 17,983
Int. Cl.[4] F41B *15/08*
U.S. Cl. 273—425 4 Claims



1. A fighting weapon comprising:
a ring member, said ring member being flexible but having sufficient rigidity to assume a circular shape when at rest; and
a plurality of identical elongated members, each said elongated member having an inner end and an outer end, said inner end including a through hole, said outer end being formed into a sharp point, said ring member being located within said through hole and forming a loose connection with each said elongated member, said elongated members being substantially evenly spaced apart forming in essence a continuous circular shaped device, each said elongated member being readily swivelable on said ring member, whereby said sharp point of each said elongated member is to be usable as an injury producing member against an assailant, whereby when said ring member is used as a hand held weapon the said ring member is sufficiently rigid to substantially remain in said circular shape.

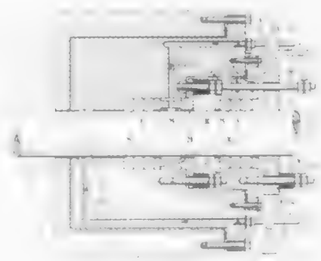
4,765,629
SEALING SYSTEM FOR COMBUSTIBLE ENGINES AND THE LIKE
Michael D. Barks, West Palm Beach, Fla., assignor to Mario Boiardi, St. Michael's, Md.
Filed Dec. 11, 1986, Ser. No. 940,403
Int. Cl.[4] C09K *3/12*; F16J *15/14*
U.S. Cl. 277—1 15 Claims

1. A sealing system for combustible engines and engine cooling systems and the like comprising a liquid carrier for flowing into cracks and openings, solid particles in said liquid carrier for plugging large cracks and openings, and said liquid carrier being capable of solidifying to flow into and completely seal the openings plugged by said solid particles and to seal the remaining cracks and openings.

4,765,630
SEALING SYSTEM FOR COMBUSTIBLE ENGINES AND THE LIKE
Michael D. Barks, West Palm Beach, Fla., assignor to Mario Boiardi, St. Michael's, Md.
Continuation-in-part of Ser. No. 940,403, Dec. 11, 1986. This application Jun. 25, 1987, Ser. No. 66,259
Int. Cl.[4] C09K *3/12*; F16J *15/14*
U.S. Cl. 277—1 9 Claims

1. A sealing system for engine cooling systems and the like comprising a mixture of a major amount of potassium silicate and lesser amounts of ethylene glycol and water, and said mixture being in liquid form for flowing into cracks and solidifying therein to seal the cracks.

4,765,631
STUFFING BOX SEALING ARRANGEMENT
Klaus Köhnen, Mülheim; Adolf Linke, and Hans Niermann, both of Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany
Filed Feb. 13, 1986, Ser. No. 829,698
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1985, 3510422
Int. Cl.[4] F16J *15/18*, *15/40*
U.S. Cl. 277—2 10 Claims



1. A stuffing box sealing arrangement for sealing one portion of a rotary shaft from a pressure space, the rotary shaft having another portion extending into the pressure space, the stuffing box sealing arrangement comprising:
a housing defining two separate consecutive axially extending pressure chambers at axially spaced locations along said one portion of the rotary shaft and also defining an intervening space sealed with respect to the exterior of the arrangement and the pressure between said pressure chambers, said housing sealing said intervening space with respect to outside of said housing;
means for sealing the one portion of the rotary shaft from a pressure space and including a plurality of stuffing sealing rings arranged in each of said pressure chambers;

VOL 1093 ISS 4 AG 23 1988 UMI

two glands each arrangable around the rotary shaft at one of said locations in registry with the respective associated plurality of stuffing sealing rings;

means for independently pressing each of said glands against said respective associated plurality of stuffing sealing rings, said independently pressing means for each said glands being accessible from outside said housing;

menas for supplying lubrication water into said intervening space to continuously lubricate said plualities of stuffing sealing rings; and

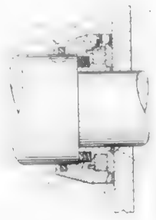
means for ascertaining the amount of lubrication water escaping from the axial inner one of said pressure chambers to the pressure space as well as the amount of lubricantion water escaping from the axial outer one of said pressure chambers to the exterior of the arrangement and including means for determining the amount of lubrication water supplied by said supplying means and means for capturing and measuring the amount of lubrication water escaping from the outer one of said pressure chambers to the exterior of the arrangment.

4,765,632

LUBRICATED ROTARY SHAFT SEAL

Joseph C. D'Alterio, 64 Sugar Maple La., Glen Cove, N.Y. 11542

Filed Nov. 23, 1987, Ser. No. 124,018
Int. Cl.[4] F16J *15/38*
U.S. Cl. 277—81 R 12 Claims



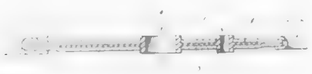
1. A lubricated rotary seal for placement between a shoulder of a rotary shaft and a face plate through which the shaft end extends comprising a ring-shaped body to fit said shaft end, a cylindrical recess in one end of said body to overlap said shoulder, a circular groove in the cylindrical surface of said recess and an O-ring in said groove to provide a seal between said body and said shaft, at least three equally-spaced sockets in the annular base of said recess and a compression spring in each of said sockets, a circular channel in the opposite end of said body and a lubricant-porous bearing washer fastened across said channel.

4,765,633

GASKET MANUFACTURE

David J. Hossack, Windsor, United Kingdom, assignor to Payen International Limited, Berkshire, England

Filed Mar. 18, 1987, Ser. No. 27,320
Claims priority, application United Kingdom, Mar. 21, 1986, 8607065
Int. Cl.[4] B21D *39/00, 39/06;* F16J *15/06, 15/12*
U.S. Cl. 277—166 4 Claims



1. A gasket construction comprising a main body portion formed of two superposed metal layers secured together at a plurality of locations; a plurality of apertures formed in said main body portion, said apertures fitted with resilient, flexible grommets formed of polymeric material, said grommets extending through said apertures for sealing around said apertures on opposite sides of said main body portion; at least some of said grommets being integrally formed with, and interconnected by, a web sandwiched between said metal layers, said web being thinner than either of said metal layers, and wherein said grommets are so disposed in said web relative to one another that they can be installed within the gasket main body portion in a single operation without rupturing the web.

3. A method of making a gasket comprising the steps of:

(a) providing a pair of metal plates formed with a plurality of apertures, said apertures being aligned when said plates are in superposed relationship;

(b) forming a plurality of grommets formed of polymeric material integral with, and interconnected by, a web of said material, said web being thinner than either of said plates;

(c) locating said web and said plurality of grommets between said plates, and arranging said plates in superposed relationship, with said grommets extending through said aligned apertures; and

(d) securing said metal plates together.

4,765,634

METAL GASKET FOR A CYLINDER HEAD ON AN INTERNAL COMBUSTION ENGINE

Masaaki Kobayashi, Koshigaya; Norio Hanba, Urawa; Akira Tanaka, Ohmiya, and Tsunehiko Abe, Kawaguchi, all of Japan, assignors to Nippon Leakless Industry Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1986, Ser. No. 917,514
Claims priority, application Japan, Oct. 12, 1985, 60-155248[U]
Int. Cl.[4] F16J *15/08*
U.S. Cl. 277—235 B 4 Claims



1. A metal gasket including at least one narrow portion extending between bores of a body to be sealed by the gasket and beads extending along circumferences of said bores of the body, adjacent beads extending in opposite directions with respect to the gasket, wherein circles formed by crests of said beads are different from true circles concentric to said bores.

4,765,635

FUEL TANK MOUNTING DEVICE

Hidehiko Okada, Zama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 17, 1987, Ser. No. 74,857
Claims priority, application Japan, Jul. 21, 1986, 61-112522[U]
Int. Cl.[4] B60K *15/08*
U.S. Cl. 280—5 A 3 Claims

1. A fuel tank mounting device comprising:

a rear panel having an inner face;

a rear floor having front and rear end portions and secured at the rear end portion to said rear panel;

a nut plate of an L-like cross section, having a horizontal plate section secured to the rear end portion of said rear floor and a vertical plate section secured to the inner face of said rear panel;

said horizontal plate section having secured thereto a nut;

a fuel tank disposed under said rear panel; and

a supporting band partly encircling said fuel tank and supporting same upon said rear floor;



said supporting band having a front end secured to the front end portion of said rear floor and a rear end secured to the rear end portion of said rear floor by means of a bolt screwed into said nut;

said rear end portion of said rear floor having a downward flange secured to the inner face of said rear panel;

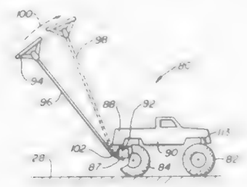
said vertical plate section being interposed between said flange of said rear floor and said rear panel and secured further to said flange.

4,765,636

STEERABLE WHEELED PUSHCART

William W. Speer, 1323 Eleanor Way, Sunnyvale, Calif. 94087

Continuation-in-part of Ser. No. 860,545, May 7, 1986, abandoned. This application Dec. 18, 1986, Ser. No. 942,997
Int. Cl.[4] A63H *33/02*
U.S. Cl. 280—47.11 5 Claims



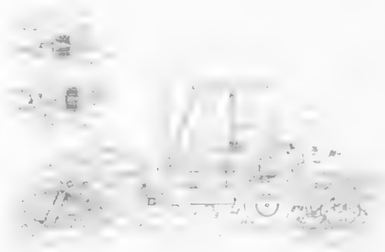
1. A steerable wheeled pushcart, which comprises a body, at least two wheels rotatably mounted on said body and positioned to support said body on a surface, said wheels having a fixed orientation with respect to said body, a handle having a first end with means for applying rotating force to said handle, said handle having a second end at an angle to the first end, the second end of said handle being rotatably attached to said body, said handle having a lever arm extending from the second end of said handle, said pushcart additionally comprising opposing springs connected between the lever arm and a support fixed with respect to said opposing springs, said pushcart additionally comprising a pair of front wheels rotatably and pivotally mounted on said body, said handle being rotatably attached to said body by a steering mechanism, said steering mechanism being pivotally attached to said body for movement about an axis normal to a longitudinal axis of said body, said pair of front wheels being pivotally responsive to movement of said body produced by rotation of said handle when said pair of front wheels rests on a supporting surface.

4,765,637

AGRICULTURAL TRACTOR

Cornelis van der Lely, 7 Brüschenrain, Zug

Continuation of Ser. No. 534,501, Sep. 21, 1983, Pat. No. 4,585,084. This application Apr. 28, 1986, Ser. No. 856,204
Claims priority, application Netherlands, Sep. 21, 1982, [illegible]
Int. Cl.[4] A01B *59/043, 49/02*
U.S. Cl. 280—411 R 5 Claims



1. Agricultural implements for use in a combination of at least two agricultural implements each having means for connecting it to a lifting device having three lifting arms, wherein each of said implements comprises an extending frame, three forked connection means extending from said frame of each of said implements, each of said forked connection means having a forked end comprising two tines which are adapted to receive therebetween an outwardly extending end of one of said lifting arms of said lifting device, a corresponding connecting pin received across each of said forked ends for attaching between said tines said outwardly extending end of a corresponding one of said lifting arms of said lifting device, each of said connecting pins concurrently receiving two of said tines of one of said forked ends of one of said implements and also two of said tines from one of said forked ends of at least one additional of said implements for connecting all of said agricultural implements concurrently to said three lifting arms with all of said forked connection means directly engaging a corresponding one of said connecting pins.

4,765,638

NON-GROUND ENGAGING LIFTING APPARATUS FOR DETACHABLE GOOSENECK TRAILERS

John W. Kulyk, Albion, Pa., assignor to Rogers Brothers Corporation, Albion, Pa.

Filed Apr. 6, 1987, Ser. No. 34,676
Int. Cl.[4] B62D *53/06*
U.S. Cl. 280—423 B 17 Claims



1. In combination, a trailer and a gooseneck for connecting a tractor to said trailer comprising,

said trailer having a frame and ground engaging wheels,

connecting means on said tractor for connecting said trailer to said tractor,

first pivot means on said gooseneck for connecting said gooseneck to said trailer,

said gooseneck has a lifting mechanism thereon,

VOL 1093 ISS 4 AUG 23 1988 UMI

said lifting mechanism comprises at least one hydraulic cylinder,
said hydraulic cylinder being swingably attached to said gooseneck frame at a position spaced from said connecting means,
said hydraulic cylinder having a piston rod connected to a first axle,
guide means on said gooseneck for guiding said first axle in a predetermined path relative to said gooseneck
roller means on said first axle adapted to engage said trailer frame at a position spaced from said connecting means.

4,765,639

IMPLEMENT SWING HITCH PERMITTING ENDWISE TRANSPORT

David L. Murray, Lee's Summit, Mo., assignor to Deutz-Allis Corporation, Milwaukee, Wis.

Filed Apr. 20, 1987, Ser. No. 39,928
Int. Cl.[4] A01B 73/00
U.S. Cl. 280—415 R 15 Claims



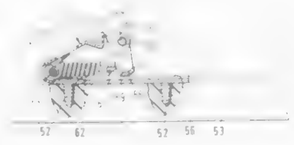
1. In a row crop planter having a transversely extending main frame to which a plurality of planter units are mounted at transversely spaced intervals in trailing relation to the rear of the frame, a plurality of ground engaging wheels supporting the frame during a planting operation and transport wheels supported on the frame for movement between a raised position out of ground contact and a lowered transport position in which they engage the ground and support the planter for endwise transport in a direction transverse to the central longitudinal plane of the planter, a swing hitch structure including
a tongue having
a draft portion with a front end adapted for towed connection to a tractor and
a connecting portion rigidly secured to the draft portion and extending at an obtuse angle to a front part of the frame intermediate one of its transverse ends and said central longitudinal plane of the planter,
a pivot connection between said front part of said frame and the rear end of said connecting portion of said tongue permitting the latter to swing about a vertical pivot axis from a field position in which said front end of said draft portion is approximately at said longitudinal plane to an endwise transport position in which said connecting portion is alongside the front of said frame and said front end is spaced outwardly from said one transverse end of said frame,
a releasable connection between an intermediate part of said tongue and said frame securing said intermediate part to said frame when said tongue is in said field position, said releasable connection including a first component rigidly secured to said frame, a second component rigidly secured to said tongue and pin means releasably securing said components to one another, said releasable connection being spaced from said vertical pivot axis in a transverse direction toward the opposite end of said frame from said one end thereof, said components lying within the tread width of said transport wheels when said tongue is in its endwise transport position and
latch means releasably connecting said tongue to said frame in the endwise transport position of said tongue.

4,765,640

CROSS-COUNTRY SKI BINDING

Roland Jungkind, Garmisch-Partenkirchen, Fed. Rep. of Germany, assignor to Metallwerk K. Pittl GmbH & Co. KG, Australia and Sportschuhfabriken Adi Dassler Stiftung & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 796,018, Oct. 22, 1985, Pat. No. 4,682,785.
This application Apr. 3, 1987, Ser. No. 33,802
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1984, 3406439; Jul. 20, 1984, 3426856
Int. Cl.[4] A63C 9/00
U.S. Cl. 280—615 4 Claims



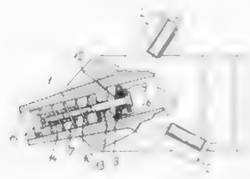
1. A cross-country ski binding for cross-country ski boots having a forwardly extended front sole end portion, which is formed as a downwardly directed hook means, comprising a base plate mountable on a ski, a pair of side jaws extending upwardly from said base plate on opposite sides thereof for holding said front sole end portion therebetween, engagement means for cooperation with said hook means, a transverse member mounted in said side jaws and transversely extending therebetween, a U-shaped stirrup member having a web portion extending parallel with respect to said transverse member and having a pair of limb portions each projecting from a respective end of said web portion and having a free end by means of which said stirrup member is pivotably mounted on said transverse member so as to be pivotable into a clamping position, wherein said front sole end portion when engaged with said engagement means is clamped between said transverse member and said engagement means, and a release position, wherein said hook means may be released from said engagement means, spring means for urging said stirrup member towards said clamping position, and a locking lever which is pivotable about an axis substantially parallel to said transverse member between a locking position and an unlocking position, and which is loaded towards said unlocking position by a spring, whereby in said locking position the locking lever cooperates with said stirrup member so as to hold same in said release position.

4,765,641

SAFETY SKI BINDING

Henri Peyre, St Benin D'Azy, France, assignor to Sté Look, Nevers, France

Filed Apr. 6, 1987, Ser. No. 34,921
Claims priority, application France, Apr. 8, 1986, 86 04970
Int. Cl.[4] A63C 9/08
U.S. Cl. 280—628 8 Claims



1. A safety ski binding which comprises:
(a) a movable toe-abutment body which, in use, contacts the skier's boot, said movable toe-abutment body being slidably mounted on a longitudinal rod for longitudinal displacement relative to said longitudinal rod, said longitudinal rod serving as a support for said movable toe-abutment body;
(b) a knuckle-joint in which said longitudinal rod is mounted so as to be capable of displacement in sliding motion through said knuckle-joint and in pivotal motion by means of said knuckle-joint within an orifice formed in a stationary support so that said movable toe-abutment body is free to undergo pivotal displacements relative to said stationary support in all directions;
(c) two vertical flat faces formed in transverse planes rspectively on the rear side and on the front side of said stationary support;
(d) a first flat cam applied against the front flat face of said stationary support, said first flat cam comprising a bearing surface which is provided on said movable toe-abutment body and which is oriented in a rearward direction;
(e) a second flat cam carried by the rear end of said longitudinal rod and applied against the rear flat face of said stationary support; and
(f) an end member which is carried by the front end of said longitudinal rod, the pressure of a spring being exerted on said end member in the forward direction and on said movable toe-abutment body in the rearward direction.

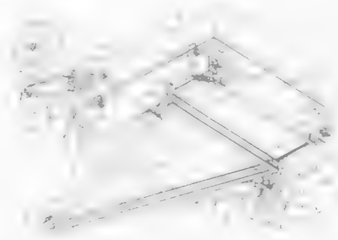
4,765,642

STORABLE TRAILER

Richard J. Struzina, 3 Ascot Avenue, Nepean, Ontario, Canada K2H 6E3

Filed Mar. 20, 1987, Ser. No. 28,701
Claims priority, application Canada, Jul. 31, 1984, 460070
Int. Cl.[4] B62B 1/04
U.S. Cl. 280—656 33 Claims

1. A vertically storable trailer comprising, in combination:
frame means for supportably carrying a load, including attachment means connectable to a trailer hitch of a towing vehicle;
container means having a bottom portion mounted on the frame means for receiving the load and a top opposite the bottom portion, the bottom portion thereof having an end wall adapted to vertically support the trailer in a stored position to reduce trailer storage space;
wheel suspension means pendulously attached to the frame means adjacent the bottom portion;
wheel means rotably fastened to the suspension means;
suspension support means attached to the frame means adjacent the bottom portion in releasably engageable relation with the suspension means for locking same in an operable position to provide ground engagement of the wheel means with a predetermined road clearance and releasing the locked suspension means in the vertically supported position, whereby the wheel means can swing toward the top of the trailer to minimize trailer storage space, and



means for engaging the ground coupled to the suspension support means for automatically unlocking the suspension means when the trailer is in the vertically supported position.

4,765,643

FOLDING CART

Sofia Pappanikolaou, 621 90th St., Brooklyn, N.Y. 11228

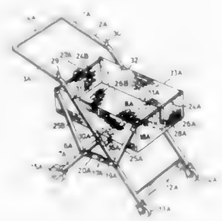
Filed Feb. 13, 1987, Ser. No. 14,773
Int. Cl.[4] B62B 3/02
U.S. Cl. 240—639 9 Claims



1. A folding cart, consisting of a rectangular folding body having a left end panel with two rectangular lengthwise slots, a middle panel with two holes at one end and one hole at the opposite end, and a right end panel with one rectangular lengthwise slot; each of said panels having interlocking side rails at two opposite ends, parallel to said slots, and are held together by studs, through each of said two slots of said left end panel and said two holes at said one end of said middle panel, and by said stud through said remaining hole of said middle panel and said slot of said right end panel, allowing said body to be placed in the folded and unfolded position; a handle assembly attached to the top outer ends of said left and right end panels, means for locking said handle assemblies in a vertical position; wheel assemblies attached to each bottom corner of said body, releasable locking means for locking said wheel assemblies in either a vertical or a horizontal position; means for extending said wheel assemblies away from said body; when said cart is placed in the unfolded condition, said handle and wheel assemblies can be locked in said vertical positions; with the ground contact part of said wheel assemblies resting on the ground; when said cart is placed in the folded condition, said handle and wheel assemblies can be locked in said horizontal positions.

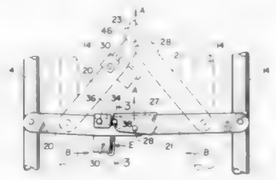
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,644
FOLDABLE CART
Laurence G. Bell, 7 Endicott Terrace, Welland, Ontario, Canada L3C 5B1
Filed Jan. 20, 1987, Ser. No. 5,235
Int. Cl.[4] B62B *3/02*
U.S. Cl. 280—641 9 Claims



1. A foldable cart comprising a first unitary frame member having side members, a lower end member and an upper end member forming a transverse handle and having a first pair of wheel adjacent its lower end member;
a second frame member having a lower end member and side members connected at their upper ends to a pair of first pivot points intermediate the upper and lower ends of the side members of said first frame member and having a second pair of wheels at the lower ends of its side members;
a pair of collapsible struts joining each of said first and second frame members below said first pair of pivot points;
a recpetacle comprising a rectangular fabric bag having sides and front and rear ends and suspended from said frame members by means of a pair of linear trnasverse rods joined to the upper edge of each end of said bag and supported by said frame members;
both of said rods being connected to the side members of said first and second frame members by arms connected to the ends of said rods, said arms being connected to the side members of said frame members at second pivot points and the edge of each side of the receptacle being fastened to the side members of said first frame member above said second pivot points.

4,765,645
SAFETY SPREADER BAR LOCK FOR UMBRELLA STROLLER
Louis Shamie, 972 Dean St., Brooklyn, N.Y. 11238
Filed Jan. 30, 1987, Ser. No. 8,821
Int. Cl.[4] B62B *7/08*
U.S. Cl. 280—644 16 Claims



5. A foldable stroller with safety lock, comprising a pair of side frames each having a main side tube, a bottom scissor frame connected between said side frames, a back scissor frame connected between said side frames, said scissor frames permitting movement together and apart of said side frames, a spreader bar having a first and second parts pivotally connected between said side frames for holding said side frames apart, a flexible fabric seat and back combination connected between said side frames, a slide slideably mounted to said first part of said spreader bar, a lock pin connected to said slide, said second part of said spreader bar including a detente for engaging said lock pin to hold said spreader bar in an aligned use position for maintaining said side frames in a spread use position, a spring operatively connected to said slide for urging said lock pin into engagement with said detente, said second part of said spreader bar including a curved edge below said detente for engaging said lock pin to move said slide against the bias of said spring when said first and second spreader bar parts move to their aligned position, said first part including a slot, a guide pin fixed to said slide, said guide and lock pins both being slidably engaged in said slot for guiding said slide for sliding movement to said first part.

4,765,646
COLLAPSIBLE SHOPPING CART
Karen Cheng, No. 10, Alley 8, Lane 1, Hsiu Lang Road, Yung Ho City, Taipei Hsien, Taiwan
Filed Dec. 22, 1986, Ser. No. 946,916
Int. Cl.[4] B62B *11/00*
U.S. Cl. 280—651 3 Claims



1. In a collapsible shopping cart having a basket, a handle, and a pair of front and rear wheel assemblies, the basket comprising a front mesh panel surrounded by an inverted U-shaped frame, a rear mesh panel surrounded by an inverted U-shaped frame, a plurality of links connected between the frames of said front and rear mesh panels, a first transverse rod connected between the lower ends of the inverted U-shaped frame of said front mesh panel, a rear axle connected between the lower ends of the inverted U-shaped frame of said rear mesh panel and extending outwardly therefrom, said pair of rear wheel assemblies being secured to the ends of said rear axle, a lower mesh panel secured between said front and rear mesh panels, a pair of spaced longitudinal rods connected between said first transverse rod and said rear axle, a second transverse rod secured beneath said lower mesh panel and said longitudinal rods and being located substantially midway between said front and rear mesh panels, said handle having an inverted U-shape with downwardly extending leg portions, a front axle secured between the lowermost ends of said leg portions, said pair of front wheel assemblies being secured to said front axle, a third transverse rod connected between said leg portions at a spaced location above said front axle, two planar swing plates pivotally connected between said second transverse rod and said third transverse rod, and means for pivotally connecting an uppermost link on each side of said basket to a respective leg of said handle.

4,765,647
VEHICLE SUSPENSION SYSTEM
Toshiro Kondo, Hiroshima, and Tadanobu Yamamoto, Higashihiroshima, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Dec. 14, 1987, Ser. No. 132,166
Claims priority, application Japan, Dec. 15, 1986, 61-298166
Int. Cl.[4] B60G *3/00*
U.S. Cl. 280—701 14 Claims



1. A vehicle suspension system which has a suspension member arranged generally in the longitudinal direction of the vehicle body for controlling the longitudinal displacement of a wheel, comprising a shock absorbing means disposed between the wheel and the vehicle body for exerting a reaction force to suppress the upward movement of the wheel which is arranged to incline longitudinally with respect to the vertical so that it produces a horizontal component of said reaction force acting on said suspension member, and a resilient means defining the resilient characteristics of said suspension member in the longitudinal direction, said resilient characteristics being set to exhibit soft resilience against the horizontal component of said reaction force exerted from said inclined shock absorbing means and to exhibit hard resilience against force in the opposite direction to said horizontal component of the reaction force.

4,765,648
SUSPENSION SYSTEM FOR A MOTOR VEHICLE
Philip E. Mander, Stratford-on-Avon, and Jonathan A. Fuller, Warwick, both of England, assignors to Gaydon Technology Limited, Lighthorne, England
Filed Apr. 30, 1987, Ser. No. 44,998
Claims priority, application United Kingdom, May 2, 1986, [illegible]
Int. Cl.[4] B60G *11/26*
U.S. Cl. 280—707 11 Claims



1. A suspension system for a vehicle comprising: at least one resilient means connecting a sprung mass and an unsprung mass; at least one damping means switchable between a relatively soft setting and a relatively stiff setting in both the bump and rebound directions for damping relative motion between the sprung mass and the unsprung mass; sensor means for sensing motion of the sprung mass; filter means for filtering a signal from the sensor means indicative of the frequency of motion of the sprung mass to provide a filtered signal having a band width of 0.3 Hz to 4.5 Hz; and control means having a response time which is substantially less than the period of one cycle of oscillation of the sprung mass, the control means being arranged to switch the at least one damping means between the relatively soft and relatively stiff settings in response to said filtered signal received from the sensor means, wherein the at least one damping means is switched to the relatively stiff setting when the motion of the sprung mass in either direction exceeds a pre-determined level of vertical acceleration of the sprung mass set for that direction of motion, the switching to the stiff setting occurring at the first peak vertical acceleration of the sprung mass following the pre-determined level set for that direction of motion being exceeded, and is restored to the relatively soft setting at the first peak in vertical acceleration of the sprung mass which does not exceed the pre-determined level set for that direction of motion.

4,765,649
SYSTEM FOR VEHICLE BODY ROLL CONTROL DETECTING AND COMPENSATING FOR CHANGES OF LOADED VEHICLE WEIGHT
Hiroyuki Ikemoto; Nobutaka Oowa, both of Toyota; Yasutaka Hayashi, and Shunichi Doi, both of Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Mar. 16, 1987, Ser. No. 26,468
Claims priority, application Japan, Mar. 17, 1986, 61-059032
Int. Cl.[4] B60G *17/02*
U.S. Cl. 280—707 36 Claims



1. For a vehicle comprising a body and a plurality of wheels upon which said vehicle runs, a vehicle roll control system, comprising:
a plurality of suspension means, one provided corresponding to each one of said vehicle wheels and resiliently suspending said one of said vehcile wheels from the vehicle body, each of said suspension means, as a result of a control signal being supplied thereto, being adapted to alter the suspension characteristic provided for its corresponding vehicle wheel at least between a first relatively hard characteristic and a second relatively soft characteristic;
a vehicle speed detecting means for sensing the road speed of the vehicle;
a steering angle detecting means for sensing the steering angle of the vehicle;
a vehicle body total weight detecting means for determining the total weight of said vehicle body; and:
a means for computing and control, which: computes a predictive roll angle of the vehicle body based upon the vehicle speed sensed by said vehicle speed detecting means and the steering angle sensed by said steering angle detecting means; controls said plurality of suspension means to provide their said first relatively hard suspension characteristic for their corresponding vehicle wheels, when the absolute value of said predictive roll angle is

VOL 1093 ISS 4 AG 23 1988 UMI

larger than a threshold roll angle value, while controlling said plurality of suspension means to provide their said second relatively soft suspension characteristic for their corresponding vehicle wheels, when the absolute value of said predictive roll angle is less than said threshold roll angle value; and varies said threshold roll angle value according to the total weight of said vehicle body as detected by said vehicle body total weight detecting means, so as to decrease said threshold roll angle value along with increase of said total weight of said vehicle body.

4,765,650

VEHICLE REAR SUSPENSION

Tetsuya Kameshima; Toshiro Kondo, and Hiroo Shimoe, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Mar. 5, 1987, Ser. No. 22,277

Claims priority, application Japan, Mar. 6, 1986, 61-49411; Mar. 6, 1986, 61-49412; Mar. 6, 1986, 61-49413; Mar. 6, 1986, 61-49414

Int. Cl.[4] B60G *11/20*

U.S. Cl. 280—723 12 Claims



1. A rear suspension comprising left and right wheel supports for supporting left and right rear wheels for rotation, a cross member connected to the wheel supports at opposite ends, left and right trailing arms which are connected to the cross member at the rear ends and to the vehicle body at the front ends by way of elastic members for vertical swinging motion and longitudinal displacement and a lateral rod which is connected to the cross member at one end and to the vehicle body at the other end, at least one of the ends of the lateral rod being connected to the corresponding member by way of an elastic member, characterized in that the left and right trailing arms are disposed so that the space therebetween is larger at the front ends than at the rear ends, the lateral rod is connected to the vehicle body on the front side of the line joining the wheel centers of the left and right rear wheels, and the elastic member for connecting the lateral rod has such elastic characteristics as to be soft in the transverse direction of the vehicle body in a small displacement range and to be hard in the same direction in a large displacement range, the turning rear wheel being caused to toe-in when the side force is small, the toe-in tendency of the turning rear wheel being weakened when the side force is large.

4,765,651

ADJUSTABLE ANCHORING SLIDE BLOCK ASSEMBLY

Hans Unger, Sylmar, Calif., assignor to American Safety Equipment Corporation, Troy, Mich.

Filed May 13, 1986, Ser. No. 862,767

Int. Cl.[4] B60R *22/24;* F16H *21/16*

U.S. Cl. 280—804 11 Claims

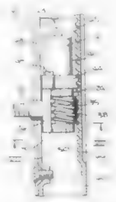
2. An adjustable seat belt system having a plurality of anchor fittings wherein one or more such anchor fittings comprise;

a track;

an anchoring slide block movable along said track comprising a front surface, a top flange at one end of the front surface, a bottom flange at the opposite end of the front surface, and a fastening means for affixing an end fitting of a safety belt to said front surface;

a worm gear mounted to said anchoring slide block positioned for axial rotation in a U-shaped slot between the top and bottom flanges for positioning said anchoring slide block along said track;

means for rotating the gear interacting with a rack located on said track comprising a motor with a base mounted upon the top flange of said anchoring slide block; and



a drive shaft from the motor passing through a drive pin aperture in the top flange of the anchoring slide block to engage said worm gear;

whereby the positioning of the anchoring slide block is affected with respect to the vehicle seat position and size of occupant to be restrained by rotating the worm gear by the motor to position the block along the rack.

4,765,652

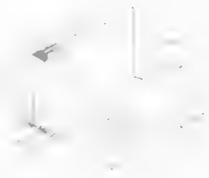
PERMANENT BOOK MARK

Harry D. Troyen, 906 N. 25th St., Reading, Pa. 19606

Filed Sep. 11, 1986, Ser. No. 907,306

Int. Cl.[4] B42D *9/00*

U.S. Cl. 281—42 1 Claim



1. A bound book having a cover, a spine, pages and a flyleaf; the pages and the flyleaf having a dimension in length as measured along a line parallel to the elongated axis of the spine and a dimension in width measured along a line perpendicular to the elongated axis of the spine and the pages and the flyleaf being of the same length,

the improvement comprising:

the flyleaf having a dimension in width substantially greater than the width of the pages but less than twice the width of the pages whereby the free end of the fly leaf extending beyond the width of the pages may be turned over and selectively inserted between adjacent pages to serve as a book mark.

4,765,653

HOSPITAL FORM SET WITH DETACHABLE BAG

Thomas I. K. Fasham, Brighton, and Harry Irvine, Romford, both of England, assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Continuation of Ser. No. 649,843, Sep. 11, 1984, abandoned. This application Dec. 15, 1986, Ser. No. 942,028

Claims priority, application United Kingdom, Sep. 14, 1983, 21369

Int. Cl.[4] B41L *1/20, 1/22*

U.S. Cl. 282—1 R 4 Claims



1. A business form assembly system for use with a medical specimen container comprising, in combination, a backing sheet having a first portion and a second portion, perforations for detachably securing said first portion to said second portion, said first portion having opposed side edges, an outer edge, and an inner edge facing said second portion, a transparent sheet secured to only one side of said first portion of said backing sheet, said transparent sheet being the only sheet secured to said first portion, said transparent sheet being secured to said side edges and to said outer edge only, an opening being defined along said inner edge, said transparent sheet, said first portion, and said three secured edges defining a bag for receiving said medical specimen container, said opening permitting the passage of said container in and out of said bag, said second portion defining a record form area for receiving recorded information concerning said medical specimen, both said record form area and said bag being positioned on the same side of said backing sheet when said first and second portions are in an end-to-end relationship, and adhesive means on said first portion, said adhesive means being constructed and arranged to be partially adhesively secured to the outer surface of said transparent sheet along said opening and also being partially adhesively secured to the surface of said first portion along said opening following detachment of said first portion from said second portion, a line of fold perforations being provided in the backing sheet between said transparent sheet and the record form area of said second portion, and said adhesive means being arranged to be positioned over the opening of the bag, when the assembly is folded about the line of fold perforations, a pair of apertures being provided in said first portion and being spaced equidistantly from the line of fold perforations and being so located that, when folded about the line of fold perforations, the apertures are in register the one with the other.

4,765,654

SINGLE-SHEET PRINTER PAPER AND A METHOD FOR ITS USE

Hisashi Nakamura, Fukuyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 17, 1986, Ser. No. 930,915

Claims priority, application Japan, Dec. 16, 1985, 60-284613

Int. Cl.[4] B42D *15/00, 19/00;* B41F *1/46;* B41J *13/03*

U.S. Cl. 283—67 1 Claim

1. Single-sheet printer paper for use with a printer having an upper pinch roller and a lower pinch roller disposed on both sides of a printing head for holding the paper against a platen comprising:

a single sheet of paper having guide lines for cutting and which is divided by said guide lines into a middle portion having the same dimensions as a sheet of paper of a standard size, an upper holding portion which is located above and is integral with and has the same width as said middle portion, and a lower holding portion which is located below and is integral with and has the same width as said middle portion, the height of said upper holding being equal to the distance measured along said platen from the printing position of said printing head to said upper pinch



rollers, and the height of said lower holding portion being equal to the distance measured along said platen from the printing position of said printing head to said lower pinch rollers; and

said guide lines for cutting being formed along the borders between said holding portions and said middle portion.

4,765,655

RADIOISOTOPE MARKING OF ART OBJECTS IN VIEW OF THEIR RAPID IDENTIFICATION

Ioan G. Crihan, 417 E 64th St. No. 4G, New York, N.Y. 10021

Filed Apr. 22, 1986, Ser. No. 854,576

Int. Cl.[4] B42D *15/00;* G21G *4/00;* G21H *5/00;* A61N *5/12*

U.S. Cl. 283—70 3 Claims

1. A method for rapidly identifying art objects, or other valuables comprising (1) placing an identification measurable radioisotope mark on said objects or valuables, at a specific X, Y position coordinate or X, Y, Z position coordinate, (2) measuring the radioactivity of said mark, (3) recording said mark position and said radioactivity for future use, and (4) detecting said identifiable mark by conventional radioactive detection apparatus connected to a scalar and a ratemeter.

4,765,656

DATA CARRIER HAVING AN OPTICAL AUTHENTICITY FEATURE AND METHODS FOR PRODUCING AND TESTING SAID DATA CARRIER

Wolfgang Becker, Neubiberg; Alexander Hierweger, Rottach-Egern; Hansjürgen Merkle, Munich; Erwin Lob, Munich; Joseph Lass, Munich, and Wittich Kaule, Emmering, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Oct. 15, 1986, Ser. No. 918,921

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1985, 3536739

Int. Cl.[4] B42D *15/00*

U.S. Cl. 283—70 47 Claims

1. A data carrier in which information is provided by means of a laser beam in an inside volume area, said information being visible in the form of changes in the optical properties due to an irreversible change of material caused by the laser beam, characterized in that the data carrier contains at least one transpar-

VOL 1093 ISS 4 AG 23 1988 UMI

ent synthetic layer (7) which is provided at least in one area with a surface relief in the form of a lenticular screen (15), in that at least part of the information provided by the laser beam is provided through this lenticular screen, in that the change in the optical properties is limited to areas (pixels) whose radial extent is smaller than the diameter of an individual lens, so that they are only visible in very limited angle ranges due to the optical effect of the lenses, and in that pieces of information which belong together and extend over the lenticular screen area, and are recorded using laser beams from a very limited angle range, can then be read and/or detected by measuring techniques in the very limited angle range.

29. A method for providing information in a data carrier comprising a carrier layer and a transparent synthetic layer, by means of a laser beam, characterized in that

the transparent synthetic layer is provided at least in one area with a surface relief in the form of a lenticular screen

at least part of the information is provided by the laser beam through the lenticular screen at a predetermined angle, whereby

the laser beam causes an irreversible, optically recognizable change in an inside volume area of the data carrier, and

this change is limited to an area narrower than the lens diameter so that this information can only be read out again in very limited angle ranges corresponding substantially to the angle ranges at which the information was provided by the laser beam.



43. A method for testing a data carrier in which information is provided by means of a laser beam in an inside volume area, said information begin visible in the form of changes in the optical properties due to an irreversible change of material caused by the laser beam wherein the data carrier containing at least one transparent synthetic layer which is provided at least in one area with a surface relief in the form of a lenticular screen, at least part of the information provided by the laser beam is provided through this lenticular screen, the change in the optical properties is limited to areas (pixels) whose radial extent is smaller than the diameter of an individual lens, so that they are only visible in very limited angle ranges due to the optical effect of the lenses, and pieces of information which belong together and extend over the lenticular screen area, and which are recorded using laser beams from a very limited angle range, can then be read and/or detected by measuring techniques in the very limited angle range, characterized in that

the data carrier is illuminated in the area of the lenticular screen in different angle ranges,

the light remitted from the data carrier area in which the lenticular screen is located is evaluated by a plurality of detectors each of which detects light only in one certain angle range,

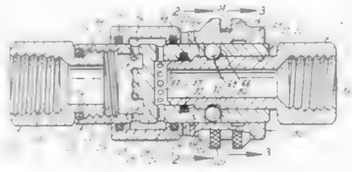
the signals obtained from the detectors are fed to a data processing means, processed there and compared with stored values.

4,765,657

QUICK CONNECT-DISCONNECT COUPLING FOR FLUID LINES

Lee H. Cruse, Ozark, Mo., assignor to Foster Manufacturing Company, Springfield, Mo.

Filed Apr. 13, 1987, Ser. No. 37,935
Int. Cl.[4] F16L *37/22*
U.S. Cl. 285—91 29 Claims



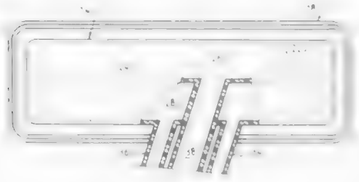
1. A connect-disconnect coupling for fluid which comprises a female member, a sleeve member which encircles said female member, said female member having an outer surface, said sleeve member having an inner surface which bears against, and moves relative to, said outer surface on said female member, whereby said members are relatively moveable, a plug which is dimensioned to telescope into one end of said female member, locking means on said female member and on said plug that selectively respond to telescoping movement of said plug into said one end of said female member and to relative movement of said sleeve member and female member into plug-locked position to lock said plug in position within said one end of said female member and that respond to relative movement of said sleeve member and female member to plug-unlocked position to release said plug for movement away from said female member, and further locking means on said sleeve member and on said female member which selectively lock said members against, or free said members for, relative movement, said further locking means including a locking pin on one of said members and a recess in the other of said members and a notch in said other of said members, said recess having transverse dimensions which are larger than the transverse dimensions of said locking pin, said sleeve member moving toward said one end of said female member in the event said plug has been removed from said female member and said female member is dropped on said one end thereof, one side of said pin and one side of said recess approaching each other whenever said sleeve member moves toward said one end of said female member, said notch being at said one side of said recess and opening to said recess, and said notch having a configuration that is substantially complementary to said one side of said locking pin, whereby said one side of said locking pin can engage said notch in surface-to-surface engagement and receive full support throughout the full length of said surface-to-surface engagement in the event said plug has been removed from said female member and said female member is then dropped on said one end thereof.

4,765,658

FLUID BOX FOR A HEAT EXCHANGER, IN PARTICULAR FOR A MOTOR VEHICLE, AND A RAPID ACTION COUPLING FOR CONNECTING IT TO A FLUID CIRCUIT

Christian Reche, Maintenon, France, assignor to Valeo, Paris, France

PCT No. PCT/FR86/00098, § 371 Date Nov. 20, 1986, § 102(e) Date Nov. 20, 1986, PCT Pub. No. WO86/05580, PCT Pub. Date Sep. 25, 1986
PCT Filed Mar. 20, 1986, Ser. No. 939,122
Claims priority, application France, Mar. 21, 1985, 85 04213
Int. Cl.[4] F16L *39/00*
U.S. Cl. 285—137.1 20 Claims



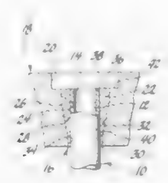
1. A fluid box for a heat exchanger, in particular for a motor vehicle, respective fluid inlet and outlet tubes integrally formed with the fluid box, said tubes (30, 32) terminating in free outer ends outward of said fluid box and being coaxial over at least a portion of their length from their free ends, the tubes being parallel and outside each other adjacent the fluid box (14), one (30) of the two tubes which is outside the other tube in their coaxial free end portions being split into two ducts (34, 36) via which the outer tube is connected to the fluid box (14).

4,765,659

HIGH PRESSURE TUBE ATTACHMENT MECHANISM

Carl E. Goubeaux, Troy, and Donald M. Flory, Arcanum, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 891,442, Jul. 28, 1986, abandoned. This application Jul. 21, 1987, Ser. No. 76,092
Int. Cl.[4] F16L *5/02*
U.S. Cl. 285—215 6 Claims



1. A high pressure tube attachment mechanism comprising:

a housing having an opening therein through which hihg pressure fluid may be conducted;

a high pressure tube having an inner cylindrical surface and an outer cylindrical surface respectively having an inner surface diameter and an outer surface diameter, said tube also having one end positioned in said housing opening in open relationship thereto so as to transmit fluid pressure between said opening and the interior of said tube;

and a securing device having at least an axially extending tube-like first portion thereof received about said tube one end and within said opening in press fitted sealing relation to said tube one end and to said housing;

said housing opening having a first section defined by a right cylindrically formed wall surface and a second section extending from said first section, said second section having a wall surface with at least a portion thereof conically tapered with about a two degree decreasing diameter taper providing a locking angle, said second section terminating at the outer end said housing opening from which said tube extends when secured in place, the minimum wall surface diameter of said housing opening being greater than the outer surface diameter of said tube one end, said tube one end extending axially into said opening outer end and at least through a major portion of the conically tapered portion of said housing opening second section;

said securing device haivng an axially extending second portion extending inwardly of said housing opening, said securing device first and second portions having outer surfaces, the outer diameters of which are less than the diameter of said housing opening first section wall surface and an inner surface having an inner diameter and in which said tube one end is slidably received in at least a part of said securing device prior to final assembly of said attachment arrangement, said securing device first portion having an end extending toward said outer end of said housing opening and fitting into said tapered second section of said housing opening, said securing device having been axially pressed to extend into said housing opening tapered second section and by press fit tapered deformation be outwardly press fitted to said housing opening tapered second section and also be inwardly press fitted to said tube one end to a sufficient extent to sealingly secure said tube one end to said housing by press-fitted locking angle action so as to hold fluid pressure on the order of 5,000 p.s.i. and to hold said tube securely in said housing opening against axial and rotational removal forces tending to remove said tube from said housing.

4,765,660

ELASTIC PIPE CONNECTOR

Hans P. Maier, Zürich, Switzerland, assignor to Agintec AG, Zürich, Switzerland

Division of Ser. No. 901,181, Aug. 27, 1986, Pat. No. 4,717,181.
This application Oct. 1, 1987, Ser. No. 103,269
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1985, 3530972
Int. Cl.[4] F16L *51/02*
U.S. Cl. 285—229 5 Claims



1. A compensator which forms an elastic connection between the ends of two pipes separated by a gap, comprising:

a bellows body connecting said pipes across the gap;

a flange positioned on each pipe adjacent a respective pipe end, each of said flanges being axially split and comprising two half-shells clamped radially against one another such that said pipe ends are clamped between respective said half-shells of said flanges;

a respective counter-flange positioned over said bellows body adjacent each said pipe end and having an end face facing a respective said flange;

means for forming an annular sealing chamber between said flange and said counter-flange on each said pipe, each said

VOL 1093 ISS 4 AUG 23 1988 UMI

sealing chamber having a first conical annular surface in said flange opening in the direction of said end face of said counter-flange;

a torus formed at each respective end of said bellows body adjacent said ends of said pipes, a respective torus being received in each said sealing chamber and fitted over an outer circumference of the respective pipe; and

means for applying a compression load to said tori, such that each said torus fills a respective said annular sealing chamber and bears against said conical annular surface, said end face of said counter-flange and said outer circumference of a respective said pipe, thereby fluidly sealing said compensator against said pipes and providing sealed fluid communication between said pipes.

4,765,661

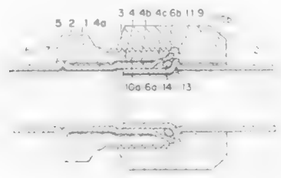
UNION JOINT ASSEMBLY

Koji Fukushima, and Isamu Sasaki, both of Konan, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo and Mitoyo Industries Co., Ltd., Saitama, both of, Japan

Continuation-in-part of Ser. No. 796,447, Nov. 8, 1985, abandoned. This application Mar. 30, 1987, Ser. No. 31,182

Int. Cl.[4] F16L *19/02*

U.S. Cl. 285—382.5 4 Claims



1. A union joint assembly comprising:

first and second pipes joined end to end;

a union fitted around an end of said first pipe having an externally threaded portion and an axial through-hole through which said end of said first pipe extends;

a nut loosely fitted around an end of said second pipe having an internally threaded portion for mating engagement with said externally threaded portion of said union for mating said nut to said union to join said first and second pipes, and retaining means on said second pipe for preventing said nut from sliding off of the end of said second pipe; and

means for normally maintaining said union in a fixed rotational position on said first pipe, said maintaining means comprising a recess in said union open to said axial through-hole and a ridge means on the outer periphery of said end of said first pipe which extends through said recess and engages said union, said union and said ridge means being fitted together in such a manner that a predetermined rotational frictional coupling force between said union and said ridge means exists which is large enough to normally prevent said union from rotating relative to said first pipe until a rotating force greater than said predetermined rotational frictional force is exerted on said union by said nut during said mating of said nut to said union.

4,765,662

COORDINATED DOOR STOP AND LATCH

Charles R. Suska, R.R. 1 - Box 14, Roxbury, Conn. 06783

Filed Dec. 30, 1986, Ser. No. 947,601

Int. Cl.[4] E05C *15/02*

U.S. Cl. 292—92 6 Claims

1. A door stop and latch for a bidirectional swinging door comprising a mounting plate fastened to a frame adjacent to a latch edge of the door, door stop means mounted on the plate for movement from a normal door engaging position to a retracted position which permits movement of the door from a normally closed position to a rescue position, resilient means urging the door means stop to its normal door engaging position to engage one side of the door and locate the door in its normally closed position and prevent the door from swinging to the rescue position, a sliding bolt latch mounted on the other side of the door operable between unlatched and latched positions to latch the door selectively in its closed position, means responsive to movement of the door stop means from its normal door engaging position to its retracted position to slide the bolt from its latched position to its unlatched position, whereby operation of the door stop means to its retracted position will unlatch the door and permit it to be operated in its rescue position.



4,765,663

SPRING-LOADED DEAD BOLT ASSEMBLY

James W. Raymond, Newport Beach, and James A. Millett, Costa Mesa, both of Calif., assignors to Winfield Locks, Inc., Costa Mesa, Calif.

Filed Jan. 25, 1982, Ser. No. 342,144

Int. Cl.[4] F05C *1/08*

U.S. Cl. 292—169.13 2 Claims



1. A door latch assembly comprising: at least one door knob; a frame; a dead bolt slidable in said frame between a retracted position and an extended position; first spring means engaging the dead bolt to move the dead bolt to its extended position with respect to the frame; and a plunger slidably mounted in said frame adjacent to said dead bolt and having a projection formed thereon engaging said dead bolt when said dead bolt is in its retracted position to retain the dead bolt in ints retracted position, said plunger extending outwardly from said frame and said dead bolt being released from said projection when the plunger is retracted into the frame relative to the dead bolt; second spring means engaging said plunger to bias the plunger to its extended position relative to the frame; and a crank rotatably mounted in said frame about an axis spaced axially from at least a portion of the rear end of the dead bolt, and coupled to the door knob, said crank having a projection positioned to engage the dead bolt to cause the dead bolt to be withdrawn from its extended position to its retracted position within said frame when the door knob is turned thereby turning the crank in a clockwise direction from a first angular position to a second angular position, and said crank having an end disposed adjacent to said portion of the rear end of the dead bolt when the crank is in its first angular position in which the crank is in substantial alignment with the dead bolt so as to serve as a stop for said dead bolt when the dead bolt is in its extended position so as to prevent the dead bolt from being forced back to its retracted position.

4,765,664

ANCHOR LOCK

Myron Siegel, 29 Lexington Ave., Brooklyn, N.Y. 11238

Filed Apr. 8, 1987, Ser. No. 36,365

Int. Cl.[4] E05C *19/18*

U.S. Cl. 292—288 4 Claims



1. An anchor lock, comprising, a sleeve, for being anchored in pavement, a bar received in said sleeve, for engagement with and locking said lock to a door in a doorway, wherein said sleeve is provided with a plurality of spaced tabs for anchoring said sleeve in pavement and a bottom wall is fixedly secured to a bottom end of said sleeve, and a channel is fixedly secured by longitudinal edges to an outer periphery of said sleeve, adjacent to edges of a vertical opening provided through the length of said sleeve, and the vertical opening through said sleeve freely receives a projecting pin fixedly secured to a lower portion of said bar.

4,765,665

BUMPER STRUCTURE

Teruhiko Akahoshi, Isehara, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1986, Ser. No. 947,918

Claims priority, application Japan, Jan. 23, 1986, 61-7217[U]

Int. Cl.[4] B60R *19/08*

U.S. Cl. 293—102 12 Claims



1. A bumper attachment assembly for attaching to a vehicle body any one of a number of different types of bumper fascia, each having a different height, said assembly comprising:

an attaching plate adapted to be fixed to an upper inside wall of the bumper fascia along its length;

a bumper reinforcing member of fixed size mounted to the vehicle body to support and reinforce the bumper fascia; and

replaceable means for attaching bumper facia of different height to the bumper reinforcing member, comprising a spacer for coupling the attaching plate to the bumper reinforcing member, the spacer having a size in a dimension extending between the attaching plate and the bumper reinforcing member selected to correspond to the difference in height between a selected bumper fascia and the fixed size reinforcing member.

4,765,666

ANIMAL WASTE COLLECTOR

Jack C. Parks, 4001 Visby La., Las Vegas, Nev. 89119

Filed Feb. 2, 1987, Ser. No. 10,185

Int. Cl.[4] A01K *29/00*; E01H *1/12*

U.S. Cl. 294—1.4 8 Claims



1. Animal excrement collection apparatus comprising

a cart having a base and a handle extending upwardly from the base,

wheel means attached to the base for transporting the cart,

a receptacle removably mounted on the base,

ramp means extending downwardly and forwardly from the base and positioned such that objects moving upwardly on the ramp means drop into the receptacle,

lift means including a rigid arm mounted on the base transverse to the ramp means and adapted to traverse the ramp means for moving animal excrement from a location in front of the cart up the ramp means and into the receptacle, and

actuating means independent of the wheel means for moving the lift means along the ramp means, said actuating means comprising a DC motor operatively connected to the lift means, a battery mounted on the base electrically connected to the DC motor, and switch means for activating the motor.

4,765,667

LIFTING HOOK

Torbjorn Hamrin, Norra Kungsgatan 23, 803 52 Gavle, Sweden

Filed Sep. 9, 1987, Ser. No. 95,057

Claims priority, application Sweden, Jan. 14, 1986, 8600140

Int. Cl.[4] B66C *1/36*; F16B *45/02*

U.S. Cl. 294—82.33 11 Claims

1. A lifting hook for automatic release of a load held by the lifting hook, comprising a hook member (1) with a hooking portion (2) and a suspension portion (3) as well as an intermediate portion (4) between said portions, a suspension means (5) which at least when the hooking portion (2) is loaded is pivoted in the suspension portion (3) and suspended by a traction

VOL 1093 ISS 4 AG 23 1988 UMI

element, and a latch (9), which is pivoted in a bearing (12) arranged in the suspension portion (3) and which is arranged to close an opening (10) of the hook in order to maintain the load in engagement with the hooking portion, said intermediate portion (4) comprising a slot (7) receiving the bearing (8) of the suspension means (5), so that the bearing is displaceable in said slot (7) receiving the bearing (8) of the suspension means (5), so that the bearing is displaceable in said slot (7) and so that the hook member (1), when the traction element is unloaded fol-



lowed by a lifting of the hook member (1), is turned from an ordinary load-carrying position to a load-releasing position by displacement of the centre of gravity of the lifting hook, wherein the bearing (12) of the latch (9) is displaceable in slot (13) in the suspension portion (3) of the hook member (1) and affected by a spring (11) in a direction towards an end position (14) in the slot (13), so that the latch (9), in the non-load-releasing position, resiliently bears against the suspension means (5), and so that the latch (9) is hanging freely pivotable by means of said bearing (12) in the load-releasing position.

4,765,668
ROBOT END EFFECTOR
Alexander H. Slocum, McLean, Va., and Peter A. Jurgens, Kirkland, Wash., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.
Continuation of Ser. No. 829,052, Feb. 13, 1986, abandoned.
This application Jun. 26, 1987, Ser. No. 67,400
Int. Cl.[4] B25J *15/08*
U.S. Cl. 294—88 20 Claims



18. A robot end effector or gripper comprising:
a manipulator having an elongate frame that defines a longitudinal frame axis and comprising an elongate web, an upper cylinder and a lower cylinder mounted integrally on either side of said web;
a pair of hands slidingly mounted on said frame about one of said cylinders and a portion of which slidingly engages said web for reciprocal movement in said longitudinal frame axis; and
means for selectively, reciprocally sliding said pair of hands on said frame such that said hands are moved relatively apart and are moved relatively together.

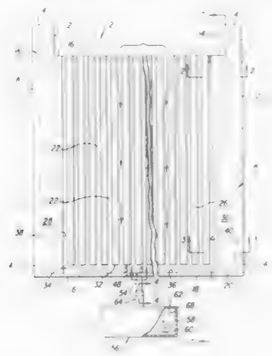
4,765,669
ADAPTABLE ROBOTIC GRIPPER ASSEMBLY
Raymond C. Meier, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Jun. 3, 1987, Ser. No. 57,198
Int. Cl.[4] B25J *15/00;* A61P *1/06;* B66C *1/42*
U.S. Cl. 294—119.1 13 Claims



1. An apparatus for mechanically gripping an object, comprising:
a slotted disk having a slot formed along a portion of the diameter of said slotted disk;
a pair of finger receptacles positioned through said slotted disk in a plane perpendicular to the plane of said slotted disk;
a cam disk positioned in a plane both parallel to and adjacent said plane of said slotted disk;
cam means formed in said cam disk comprising a pair of grooves, each of said grooves being operably coupled to one of said finger receptacles; and
means for rotating said cam disk to slide said finger receptacles longitudinally along said slot through a plane perpendicular to said slotted disk.

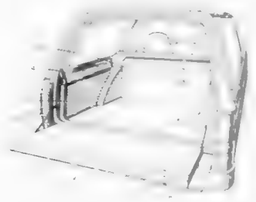
4,765,670
AUTO FLOOR MAT WITH DRAIN
Stonewall Jackson, Rte. 7, Box 339, Connersville, Ind. 47331
Filed Oct. 6, 1987, Ser. No. 105,035
Int. Cl.[4] B60N *3/04*
U.S. Cl. 296—1 F 4 Claims

1. A drainage mat:
(a) said mat having substantially uniform thickness and having a front, rear, sides and substantially parallel top and bottom, substantially smooth and unobstructed planar surfaces;
(b) said top planar surface including a series of spaced parallel grooves of uniform width formed therein and extending substantially from said front to said rear of said mat;
(c) a collecting trough at said rear of said mat and positioned at the end of said grooves;
(d) said grooves each having a floor coplanar with floors of adjacent grooves;
(e) said coplanar floors of said grooves increasing gradually in depth relative to said top surface from said front to said rear of said mat and having a shallow front and deeper rear;
(f) said top and bottom planar surfaces of said mat having outer marginal areas on either side thereof and having a width substantially wider than a width of said groove;
(g) said collecting trough having a floor merging with said rear of said grooves and substantially coplanar with said floor of said grooves at said rear;
(h) said rear of said mat including a barrier wall extending from one of said marginal outer areas to the other of said marginal outer areas, said barrier wall of a height at least equal to the thickness of said mat;



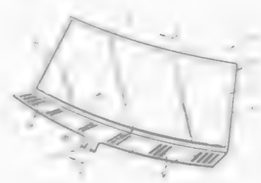
(i) storage means removable from said mat and having a floor positioned substantially coplanar with said bottom of said mat; and
(j) said storage means including a drainage means connectable to said barrier wall for draining fluid collected in said collecting trough to said storage means.

4,765,671
LOW MODULUS CARGO BED LINER
Richard G. Allen, Littleton, Colo., assignor to Gates Formed-Fibre Products, Inc., Auburn, Mass.
Filed Oct. 14, 1986, Ser. No. 918,942
Int. Cl.[4] B62D *25/10*
U.S. Cl. 296—39 R 9 Claims



1. A cargo bed liner system capable of use in a cargo bed having a floor, a first side panel, a second side panel, a forward panel, and a tailgate, comprising:
a floor cover member;
a first side panel cover member attached to a first edge of said floor cover member and having a shape and size to cover at least a portion of said first side panel;
a second side panel cover member attached to a second edge of said floor cover member and having a shape and size to cover at least a portion of said second side panel,
said cover members being made of a nonwoven textile material,
said floor cover member having a plurality of foldable creases and a plurality of cuts so as to enable at least a portion of said floor cover member to be folded upwards to cover at least a portion of said first side panel, said second side panel, said forward panel, or said tailgate.

4,765,672
WINDSHIELD AND LEAF SCREEN ASSEMBLY AND METHOD OF MAKING THE SAME
William R. Weaver, Toledo, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio
Continuation of Ser. No. 812,727, Dec. 23, 1985, abandoned.
This application May 19, 1987, Ser. No. 54,068
Int. Cl.[4] B60J *1/20*
U.S. Cl. 296—84 R 6 Claims



1. A window assembly comprising:
a vehicle windshield including at least one sheet of transparent material;
a first gasket portion encapsulating the peripheral edge portions of said transparent sheet; and
a second gasket portion integral with and forming a unitary gasket means with and extending from said first gasket portion and forming a leaf screen having at least one elongated aperture for passing air and blocking the passage of leaves formed therein.

4,765,673
WINDSHIELD REVEAL MOLDING
Peter W. Frabotta, Allen Park, and Steven C. Lang, Fraser, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 4, 1987, Ser. No. 45,398
Int. Cl.[4] B60R *13/06, 13/07*
U.S. Cl. 296—93 1 Claim



1. A motor vehicle window molding installation having a molding for concealing a space between a flanged vehicle body panel and an edge of a window panel mounted on the body panel flange by a curable adhesive, said molding comprising,
a C-shaped inner member of high durometer extrudable plastic material fitted onto the edge of the window panel and having spaced apart legs which forcibly grip the opposed faces of the window panel and a base connecting the legs;
and an outer member of low durometer extrudable plastic material coextruded onto the inner member, said outer member having a C-shaped channel portion encapsulating the C-shaped inner member and a continuous flexible lip extruded integral therewith and extending therefrom in a free state as molded in a direction generally coplanar with an outer surface of the window panel, said flexible lip being effective upon mounting of the window panel upon

VOL 1093 ISS 4 AG 23 1988 UMI

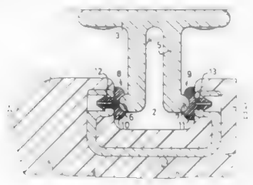
the body panel flange for alternative flexured orientation to extend into self-biasing overlying watertight engagement with the body panel outer surface to bridge across a space between the window panel and the body panel and alternatively flexured to extend inwardly within said space in a folded self-biasing watertight engagement with the flange of the body panel to define in either of the alternative orientations a water conducting drain channel between the molding and the vehicle body panel.

4,765,674

PIVOT BEARING FOR SUN VISOR ASSEMBLIES

E. Gunnar Svensson, Malung, Sweden, assignor to Autopart Sweden AB, Malung, Sweden

Filed Feb. 12, 1987, Ser. No. 13,875
Claims priority, application Sweden, Mar. 19, 1986, 8601284
Int. Cl.[4] B60J 3/02
U.S. Cl. 296—97 K 5 Claims



1. A pivot bearing for a sun visor assembly, the bearing having a first part which is connected to the ceiling of an automotive vehicle and a second part which is connected to the upper edge of a uniplanar sun visor in an end part thereof, one said bearing part comprising a U-shaped bearing element having spaced limbs that have outwardly protruding ball elements on the ends thereof, said ball elements being accommodated in seatings on the other bearing part, the ball elements and the seatings together forming two ball joint couplings, said limbs of the U-shaped bearing element being resilient so as to ensure that the sun visor is released from the ceiling when subjected to forces exceeding a given magnitude and acting in the plane of the sun visor when said plane is disposed at an angle to said limbs, said seatings being carried by locking pegs which coact with apertures in a locking stirrup so as to form a snap-in coupling.

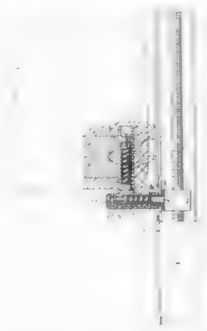
4,765,675

DISPLACEABLE SUN VISOR FOR AUTOMOTIVE VEHICLES

E. Gunnar Svensson, Malung, Sweden, assignor to Autopart Sweden AB, Malung, Switzerland

Filed Apr. 20, 1987, Ser. No. 40,158
Claims priority, application Sweden, Apr. 25, 1986, 8601937
Int. Cl.[4] B60J 3/02
U.S. Cl. 296—97 G 3 Claims

1. A sun visor assembly for automotive vehicles, comprising a visor body, at least one vertically displaceable device supporting said visor body, a horizontal first pivot shaft and an essentially vertical second pivot shaft connecting said visor body to said displaceable device, and a respective torsion spring disposed in each of said first and second pivot shafts, so as to urge said visor body into abutment with the ceiling or



windshield of a said vehicle, depending on the vertical position of the displaceable device.

4,765,676

RIGID LID FOR AN AUTOMOBILE ROOF

Rainer Grimm, Wetzlar; Horst Böhm, Frankfurt am Main; Albert Schlapp, Dreieich; Rainer Hattass, Gründau, and Dieter Federmann, Hanau, all of Fed. Rep. of Germany, assignors to Rockwell-Golde GmbH, Fed. Rep. of Germany

Filed May 29, 1987, Ser. No. 55,386
Int. Cl.[4] B60J 7/04, 7/195
U.S. Cl. 296—216 12 Claims



6. A rigid lid construction for a sliding roof for an automobile comprising:

a rigid lid plate having an edge region and an upper face;

an edge gap sealing strip comprising an outer hollow profile and an inner fixing profile connected therewith;

a first inner frame supporting said lid plate from below in its edge region and having a peripheral raised rim on which said edge gap sealing strip is placed with said raised rim fitting into said inner fixing profile;

a second border frame bearing against the upper face of said lid plate and said edge gap sealing strip and having a T-shaped cross-section, and a downwardly oriented vertical web;

said inner frame having a depression in which a cord is laid, a deformable strip being placed on the inner frame adjacent said depression and providing thereby a predetermined spacing between said inner frame and said rigid plate;

said inner frame being provided with a row of bores parallel to said raised rim and at a predetermined distance from said rim for releasably connecting said inner frame to said border frame;

a downwardly oriented vertical web of said T-cross section constituting said second border frame having a downwardly open slit and said slit being provided with a plurality of acute angle grooves for receiving a threaded fastener; and

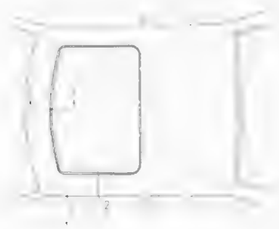
a plurality of threaded fasteners fitting into the grooves and bores for releasably connecting said inner frame to said border frame.

4,765,677

SUPPORT STRUCTURE FOR WEATHERSTRIPPING ON A VEHICLE SUN ROOF

Kazuhisa Nagata, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Sep. 29, 1986, Ser. No. 912,919
Claims priority, application Japan, Sep. 30, 1985, 60-216981
Int. Cl.[4] B60J 7/00
U.S. Cl. 296—216 6 Claims



1. A support structure on a vehicle sun roof, comprising:

a roof panel adapted to be slidably mounted on a vehicle and having substantially planar outer and inner surfaces, said roof panel also including an edge portion extending between said outer and inner surfaces;

holder means formed of hard resin material and mounted onto said roof panel, said holder means including a base member having an interior portion mated with said roof panel along said outer surface, said inner surface, and said edge portion of said roof panel, said holder means also including a flange extending from said base member and having a curved end portion spaced from said base member, said end portion having engagement means projecting in a direction away from said base member; and

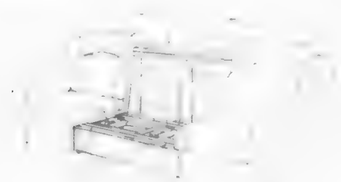
resilient weatherstripping means mounted on said flange and including a projection for engagement with said engagement means, so that said holder means securely supports said weatherstripping means along said flange.

4,765,678

COLLAPSIBLE SETTEE

James Huang, No. 14, Valley 2, Lane 65, Ta Yeh Road, Taipei, Taiwan

Filed Apr. 14, 1987, Ser. No. 40,766
Int. Cl.[4] A47C 15/00
U.S. Cl. 297—236 3 Claims



1. A collapsbile settee (1) having a plurality of seats which are foldable into a smaller number of seats, comprising:

(a) a rectangular settee frame (2) including a longitudinal front wall (21), two parallel transverse end walls (22), a transverse central wall (23) being parallel to said end walls (22), three transverse back frames (24) connected to said transverse end walls (22) and said central wall (23), and a longitudinal block (25) that joins said three back frames (24) at an uppermost position thereof, forming a substantial frame for two collapsible seat frames (4); said settee frame (2) being connected at the both ends thereof to a conventional permanently upholstered frame;

(b) a crook groove (26) being formed on each end wall (22) at a side facing each other; two crook grooves (26) being provided on said central wall (23) with one on each side thereof;

(c) three longitudinal guiding blocks (3) having channels (31) therein disposed on said settee frame (2), two said blocks (3) being disposed on said transverse end walls (22) and said central wall (23) with the channels (31) thereof facing upward; a third block (3) being disposed on an upper location of said back frame (24) with the channel (31) thereof facing a front side;

(d) a runner (32) longitudinally slidable on said channel (31) of each guiding block (3);

(e) two collapsible seat frames (4) disposed in two distinct interior sections of said settee frame (2); each collapsible seat frame (4) having a shaft (41) slidably received by said grooves (26), a rectangular main frame (42), a foot-rest panel (43), and a rectangular back panel (44);

(f) a caster (45) disposed on each end of said shaft (41) to facilitate the sliding movement thereof; and

(g) a rectangular washer (46) disposed around said shaft (41) at a position adjacent to said ends thereof to prevent said shaft (41) from detaching off said end walls (22) or said central wall (23);

(f) said settee being collapsbile with said collapsible seat frames (4) collapsed into folded state, said both end conventional parts of said settee (1) being folded by sliding each end part in a direction toward said central wall (23), said two end parts being capable of sliding on said longitudinal guiding blocks (3) and reaching each other at a location with respect to said central wall (23).

4,765,679

CHAIR HAVING A SEAT WITH FRONT AND REAR SEAT PORTIONS BEING HINGED TO EACH OTHER

Max Lanuzzi, Ponte Caprinasca, and Fredi Dubach, Baretswil, both of Switzerland, assignors to Drabert Sohne GmbH & Co., Minden, Fed. Rep. of Germany

Filed May 20, 1987, Ser. No. 52,626
Claims priority, application Fed. Rep. of Germany, May 26, 1986, 3617623
Int. Cl.[4] A47C 1/02
U.S. Cl. 297—316 7 Claims



1. A chair comprising:

a seat having a front seat portion (6) and a rear seat portion (8) hinged to each other;

a seat support (1) connected to said front seat portion (6) by means of a first guide rod (11) and to said rear seat portion (8) by means of a downwardly extending element (8a), rigidly connected to said rear seat portion (8);

a back rest support (3) having a back rest connected to one

VOL
1093
ISS
4
AG
23
1988
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end, and a connecting section (**14**) at the opposite end, whereby said back rest support (3) is hinged to said seat support (**1**);

a second guide rod (**16**) having one end secured by a first bearing (**17**) to said element (**8***a*) and an opposite end connected to said section (**14**) by a second bearing (15); and

a force storage member (**13**) connected by hinges at one end to said seat support (**1**) and at another end to said first guide rod (**11**) of said seat (**6**,**7**,**8**).

4,765,680

SEAT RECLINING DEVICE

Hatsuo Kawashima, Shizuoka, Japan, assignor to Fuji Kiko Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP86/00182, § 371 Date Feb. 12, 1987, § 102(e) Date Feb. 12, 1987, PCT Pub. No. WO86/05958, PCT Pub. Date Oct. 23, 1986

PCT Filed Apr. 12, 1986, Ser. No. 10,167

Claims priority, application Japan, Apr. 12, 1985, 60-78818; Apr. 12, 1985, 60-129250

Int. Cl.[4] **A47C** *1/025*; **B60N** *1/06*

U.S. Cl. 297—367 2 Claims



1. A seat reclining device having a seat cushion and a seat back and comprising a base plate which is fixed to a side of the seat cushion; an arm plate which is rotatably attached to the said base plate and is also fixed to a side of the seat back; a pair of upper plates, each of which has meshing teeth extending over a certain area, which are fixed to the said arm plate so that they are parallel to each other; a pair of lower pawls each having meshing teeth which engage the meshing teeth of the said upper plates without interfering with each other, said lower pawls being coaxially and pivotally supported on the base plate; a pair of cam plates mounted on the base plate and associated with said lower pawls and in engagement therewith and which can be rotated so as to either hold the said lower pawls out of engagement with upper plates or to release them; and a release control section which is coupled to the said cam plates to control their action; characterized in that the pitches of the respective meshing teeth of the pawls or the upper plates are mutually displaced by $\frac{1}{4}$ tooth.

4,765,681

SEAT BACK RECLINER WITH CABLE RELEASE

Bruce Houghtaling, Battle Creek, and Harry H. White, Richland, both of Mich., assignors to Keiper Recaro Incorporated, Battle Creek, Mich.

Filed Apr. 3, 1987, Ser. No. 33,672

Int. Cl.[4] **B60N** *1/02*

U.S. Cl. 297—367 5 Claims

1. Vehicle seat adjustable recliner hinge assembly comprising a seat bracket, a seat back bracket pivotally connected to said seat bracket, a toothed sector on said seat back bracket engageable in any adjusted position by a toothed pawl pivotally mounted on said seat bracket, an eccentric cam pivotally mounted on said seat bracket releasably engageable with said pawl to retain it and said seat back bracket in adjusted position, resilient means pivotally biasing said cam into pawl retaining engagement, said cam comprising a planar element extending between a pair of seat bracket side plates having a torque transmitting pivot shaft extending therethrough with a projecting end, said resilient means comprising a torque spring mounted on said projecting end with a reaction end engaging one of said side plates and manual means for releasing said cam to accommodate release of said pawl for seat back adjustment, characterized by a flexible release cable means having a reaction mounting on said seat bracket in close proximity to said



cam, a cable housing reaction tube secured at said reaction mounting, a cable connection means for applying cable tension at an effective cam actuating radial moment arm relative to said cam pivot in a direction opposite to said biasing, and a remotely mountable manual release lever means with actuating connection to a remote end of said cable for applying cam releasing cable tension at said cable connection means, said reaction tube including an intermediate tube adjuster to eliminate lost motion in the effective actuation of said manual release lever.

4,765,682

LOCK UNITS

Seiki Satoh, Utsunomiya, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 27, 1987, Ser. No. 77,853

Claims priority, application Japan, Jul. 31, 1986, 61-180896

Int. Cl.[4] **B60N** *1/02*

U.S. Cl. 297—379 7 Claims



1. A lock unit comprising:

a striker;

a latch movable between a first position in which the latch engages said striker for binding the same in a bound position against movement and a second position in which the latch releases said striker for allowing the same to move from said bound position;

a ratchet disposed in close proximity to said latch and having an engageable portion, said ratchet being movable between a first position in which said engageable portion is caused to engage said latch to retain the latter in said first position and a second position in which said engageable portion is disengaged from said latch to allow the same to move to said second position;

a wedge member having an edge zone and disposed for movement between an advanced position, in which said edge zone is engaged with said striker retained in said bound position at a side of the striker opposite to a side thereof engaged by the latch, for preventing chattering of the striker, and a retracted position in which the edge zone is away from said striker in the bound position;

resilient means for urging said wedge member toward said advanced position; and

an engaging means provided on said ratchet so as to be movable therewith, said engageable means being associated with said wedge member such that when the ratchet is caused to move toward its first position, the engaging means allows the wedge member to move to its advanced position under the force of said resilient means, and that when the ratchet is caused to move toward its second position, the engaging means engages the wedge member to cause the same to move to said retracted position against the force of said resilient means.

4,765,683

HEADREST APPARATUS

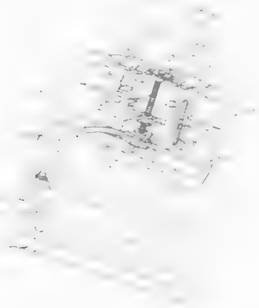
Takemi Hattori, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 26, 1986, Ser. No. 935,329

Claims priority, application Japan, Nov. 26, 1985, 60-263912

Int. Cl.[4] **A47C** *1/10*

U.S. Cl. 297—410 15 Claims



1. A headrest apparatus disposed on a seatback frame comprising:

a pair of guide rails connected to said seatback frame;

a pair of stays connected to said headrest;

a pair of shoes positioned for movement along said guide rails, each of said shoes supporting a separate one of said stays;

a rod pivotably connected at its ends to said pair of shoes;

means for moving said rod in an upward and downward direction thereby moving said shoes in their respective guide rails to raise and lower said headrest;

a cam member attached at an upper portion of each said guide rail, each said cam member being provided with a cam surface configured to rotate said shoes and said stays between about 0° and 90° relative to said seatback frame to move said headrest apparatus to a desired inclined position relative said seatback frame.

4,765,684

MULTI-PURPOSE CHAIR WITH RETRACTABLE KNEE REST

Andrew M. Kvalheim, and Flemming M. Pedersen, both of Petaluma, Calif., assignors to KVAL Marketing Inc., Petaluma, Calif.

Filed Mar. 20, 1987, Ser. No. 28,579

Int. Cl.[4] **A47C** *7/50*

U.S. Cl. 297—429 3 Claims



1. In a conventional chair having a substantially horizontal seat cushion, a substantially vertical back rest cushion and a central support column the improvement of a knee rest disposed to support the knees of an occupant in a knee rest position while seated in said chair comprising:

a forward gusset plate positioned on said support column;

a rear gusset plate positioned on said support column;

a retractable knee rest cushion;

said knee rest cushion being initially positioned underneath said seat cushion and fixedly mounted on a supporting lever;

one end of said supporting lever having a pin fixedly positioned thereon;

said pin being slidably and rotatably engaged in an "L" slot positioned at the first end of a retraction lever;

a pivot positioned on said forward gussest plate;

said retraction lever being rotatably mounted on said pivot;

said retraction lever being further disposed to transport said supporting lever and said knee rest cushion outward from said initial position to a knee rest position facing said seat cushion;

a roller positioned on said retraction lever adjacent said "L" shaped slot and disposed to engage said support lever and hold said knee rest cushion in said knee rest position;

a latch positioned on said rear gusset;

said latch being disposed to engage said supporting lever when said knee rest cushion is in said initial position;

means for tilting said seat cushion forward towards said knee rest position.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,685

CHILD SEAT ARRANGEMENT

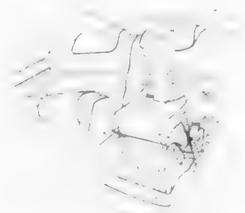
Kunio Sadoh, Tokyo, and Kohei Nogami, Narashino, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha and Kokushin Sanhyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 18, 1986, Ser. No. 943,441

Claims priority, application Japan, Dec. 20, 1985, 60-196230[U]

Int. Cl.[4] A47D *13/08*

U.S. Cl. 297—488 7 Claims



1. A child seat apparatus for a vehicle, the vehicle having a vehicular seat, seat back, and a seat belt associated with the vehicular seat, the child seat apparatus comprising:

(a) a seat section, substantially in a block shape so as to fit on a vehicular seat and on a vehicular seat back, having a transverse opening through which a vehicular seat belt can be extended so as to fasten the seat section to the vehicular seat and vehicular seat back;

(b) a protective support substantially in a block shape, detachably placed on the seat section, releasably bound to the seat section, and being adjustable in height relative to the seat section, the protective support having a first body so as to fit to the child's body, a cushioning member covering at least part of the first body, and an elongated opening through which a support belt is extended so as to bind the protective support to the seat section;

(c) a belt device, having a support belt, a combination buckle and tongue interposed in the belt, and a retractor retracting the belt, for binding the protective support to the seat section and capable of rotating the protective support with one end of the protective support as a center so as to release the protective support from the seat section, both sides of the seat section having upward projections respectively, the seat section having an inner space accommodating the retractor, both sides of the protective support having downward projections disengagably engaging the upward projections of the seat section respectively, the engagement between the projections limiting horizontally frontward movement of the protective support relative to the seat section.

4,765,686

ROTATABLE CUTTING BIT FOR A MINING MACHINE

Wayne F. Adams, Madisonville, Ky., assignor to GTE Valenite Corporation, Troy, Mich.

Filed Oct. 1, 1987, Ser. No. 103,787

Int. Cl.[4] E21C *35/22*

U.S. Cl. 299—81 8 Claims

1. A rotatable cutting bit for the delivery of fluid under pressure to a work area being cut comprising,

a head portion having a forwardly facing hard insert and a plurality of outlet ports for emitting a fluid,

a shank portion depending from said head portion along a longitudinal axis and including a fluid passage, said outlet ports being connected to said passage for the flow of fluid,

said head having an annular recess radially spaced from the longitudinal axis and extending entirely around the periphery of said head, said annular recess forming a forwardly facing surface and a rearwardly facing surface,

said outlets being positioned along said forwardly facing surface for directing a stream of water in a forward direction at an acute angle with the longitudinal axis for enveloping said head with a spray of fluid,

said rearwardly facing surface forming a lip for protecting said outlet ports from the rearward flow of work being cut.

4,765,687

TIP AND MINERAL CUTTER PICK

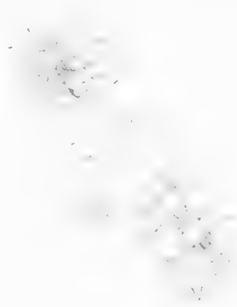
George A. Parrott, Wakefield, England, assignor to Innovation Limited, Wakefield, England

Filed Feb. 11, 1987, Ser. No. 13,856

Claims priority, application United Kingdom, Feb. 19, 1986, [illegible]

Int. Cl.[4] E21B *10/18;* E21C *35/22*

U.S. Cl. 299—81 10 Claims



1. A mineral cutter tip comprising a bottom face and a rear face located in "V"-formation whereby said tip is, in use, seated in a "V"-notch provided in a head of a mineral cutter pick, said tip further comprising a front cutting face, a top face and opposed, lateral side faces and, rearwardly of said front cutting face having regard to the direction of displacement of said tip and pick, in use, there is provided a water-conveying slit between said lateral side faces, with a water inlet end of said slit emerging at said rear face of said tip and a water outlet end emerging at said top face of said tip.

4,765,688

ANTI-FRICTION BEARING FOR WHEELS OF AUTOMOTIVE VEHICLES

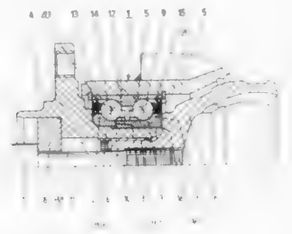
Heinrich Hofmann, Schweinfurt, and Manfred Troster, Bad Kissingen, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Oct. 8, 1986, Ser. No. 916,521

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1985, 3536437

Int. Cl.[4] F16C *13/00*

U.S. Cl. 301—124 R 14 Claims



1. An anti-friction bearing including:

outer ring means, inner ring means, axially spaced first and second sets of rollers interposed between said inner and outer ring means, a hub having an axial projection supporting said inner ring and having an axial passage, a bolt entered into said passage through one end thereof, and a closure member at the other end of said passage in operative engagement with said bolt;

said inner ring means including a first ring section supporting said first set of rollers and a second ring section supporting said second set of rollers;

said first and second ring sections being constituted by separable elements;

said first ring section being interposed between said second ring section and said closure member;

said first ring section having a larger axial cross section than said second ring section;

said first and second ring sections being provided with axial first and second bores, respectively, into which said projection is entered;

said first bore being of slightly smaller diameter than said second bore; the thickness of said first ring section measured in a radial direction being slightly greater than that of said second ring section.

4,765,689

PRESSURE MODULATOR DEVICE

Eckhart Rudiger, and Ulrich Stein, both of Ebern, Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,738

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608573

Int. Cl.[4] B60T *8/42*

U.S. Cl. 303—115 9 Claims

1. A pressure modulator for an anti-locking brake system, comprising:

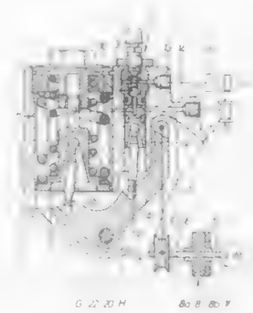
inlet means for receiving hydraulic fluid pressure from an operator-actuated hydraulic pressure generator;

outlet means for transmitting hydraulic fluid pressure to a brake;

control means for communicating hydraulic pressure between the inlet means and the outlet means, the control means including an expandable chamber having a valve for controlling fluid flow between the chamber and the inlet means, the chamber being partially defined by a movable section thereof, and the outlet means communicating with the chamber independently of the valve;

first biasing means urging the valve in a second direction;

second biasing means urging said movable section in a first direction to reduce the volume of said chamber, said movable section engaging the valve, and said second biasing means thereby biasing the valve in said first direction opposite to said second direction;



actuating means for selectively exerting an actuating force substantially in said second direction for opposing said second biasing means and thereby moving said movable section in said second direction to increase the volume of said chamber; and

transmission means including lever means for transmitting forces between said actuating means, said movable section and said second biasing means, said lever means providing a transmission ration which varies as a function of the movement of said movable section.

4,765,690

ELECTROMAGNETICALLY ACTUATABLE PRESSURE MODULATOR

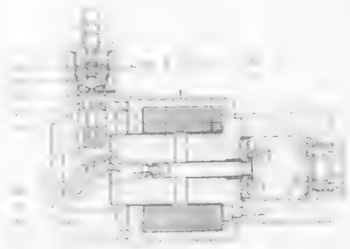
Eckhart Rudiger, and Ulrich Stein, both of Ebern, Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,797

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1986, 3608567

Int. Cl.[4] B60T *8/42*

U.S. Cl. 303—115 9 Claims



1. A pressure modulator for an anti-locking brake system, comprising:

inlet means for receiving hydraulic fluid pressure from an operator-actuated hydraulic pressure generator;

outlet means for transmitting hydraulic fluid pressure to a brake;

control means for communicating hydraulic pressure be-

VOL 1093 ISS 4 AG 23 1988 UMI

tween the inlet means and the outlet means, the control means including an expandable chamber having a valve for controlling fluid flow between the chamber and the inlet means, the chamber being partially defined by a movable section thereof, and the outlet means communicating with the chamber independently of the valve;

first biasing means urging the valve in a second direction;

second biasing means urging said movable section in a first direction to reduce the volume of said chamber, said movable section engaging the valve, and said second biasing means thereby biasing the valve in said first direction opposite to said second direction;

actuating means for selectively exerting an actuating force substantially transverse to said first and second directions for opposing said second biasing means and thereby moving said movable section in said second direction to increase the volume of said chamber; and

transmission means including lever means for transmitting forces between said actuating means, said movable section, and said second biasing means, said lever means providing a transmission ratio which varies as a function of the movement of said movable section.

4,765,691

WHEEL SLIP CONTROL SYSTEM

Yoshiaki Isoue, Toyota; Akira Shirai, Toyosake; Yoshihisa Nomura, Toyota; Kazumasa Nakamura, Okazaki; Takafumi Inagaki, Toyota; Harumasa Minegishi, and Kiyotaka Ise, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jan. 21, 1987, Ser. No. 5,778

Claims priority, application Japan, Jan. 21, 1986, 61-10864

Int. Cl.[4] B60T *8/48, 8/36*

U.S. Cl. 303—117 **5 Claims**



1. A wheel slip control system in a vehicle having a brake master cylinder, at least one wheel cylinder and a hydraulic circuit connected between said master cylinder and said at least one wheel cylinder, said system comprising:

a first capacity control valve positioned in said hydraulic circuit;

a second capacity control valve having a spool and defining a reservoir, the capacity of said reservoir being determined by said spool, said reservoir forming a portion of said hydraulic circuit;

hydraulic pressure source means for generating hydraulic pressure to operate said first and second capacity control valves;

first solenoid valve means provided between said hydraulic pressure source means and said first capacity control valve for selectively varying the hydraulic fluid pressure in said first capacity control valve;

second solenoid valve means provided between said hydraulic pressure source means and said second capacity control valve for moving said spool and varying the capacity of said reservoir;

selector valve means provided in said hydraulic circuit between said first and second capacity control valves for selectively fluidically isolating said first capacity control valve from said reservoir; and

control means for determining a start of traction control and for controlling said second solenoid valve to move said spool and to control said selector valve to fluidically isolate said first capacity control valve from said reservoir upon a determination for starting traction control,

whereby the capacity of said reservoir is not varied during anti-skid control.

4,765,692

ANTISKID CONTROL SYSTEM FOR VEHICLE WITH ELECTROMAGNETIC VALVE HAVING THROTTLED POSITION

Katsuya Miyake, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,092

Claims priority, application Japan, Dec. 10, 1985, 60-277346

Int. Cl.[4] B60T *8/00, 8/36, 13/68, 15/02*

U.S. Cl. 303—119 **2 Claims**



1. An antiskid control system comprising:

a holding pressure valve interposed in a main transmission line connecting a master cylinder and a wheel cylinder of a braking device for holding a hydraulic pressure of said wheel cylinder when it is changed over to a closed position;

a pressure reducing valve of a normally closed type interposed at a by-pass transmission line branched out from said main transmission line at a downstream side of said holding pressure valve and releasing the hydraulic pressure of said wheel cylinder to a reservoir when the pressure reducing valve is changed over to an open position;

a pressure accumulator being interposed within said by-pass transmission line for accumulating fluid pumped up from said reservoir by a pump;

a gate valve of a normally open type interposed at the upstream side of said holding pressure valve within said main transmission line;

said by-pass transmission line connecting said accumulator and said gate valve;

a pressure increasing valve provided in said by-pass transmission line between said accumulator and said gate valve;

said pressure increasing valve having a fluid passage throttling position and a fluid passage opening position;

a differential pressure operated piston in said gate valve having one end on which the hydraulic pressure of said accumulator works and the other end on which the hydraulic pressure of said wheel cylinder works, and being shifted by the difference in the hydraulic pressure working on said both ends for shutting off the communication between said master cylinder and said holding pressure valve by closing a valve part of said piston within said gate valve; and

said gate valve having a check valve housed within said differential pressure operated piston for allowing a flow of the fluid from said pressure increasing valve towards said holding pressure valve.

4,765,693

VALVE ASSEMBLY

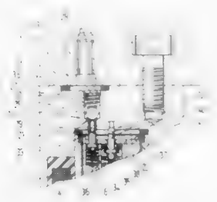
Alwin Stegmaier, Schwieberdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 21, 1987, Ser. No. 5,793

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1986, 3607693

Int. Cl.[4] B60T *13/68, 8/36*

U.S. Cl. 303—119 **24 Claims**



1. A valve assembly having a housing, at least two fluid connections for an anti-skid brake system, an electromagnet upon which different current intensities are imposed, an armature and at least one restoring spring and a barrier spring, first, second and third valves operative by said electromagnet for each of said valves, valve seats and valve elements movable relative to the valve seats, which valve elements are controllable via valve coupling elements by said armature and said at least one restoring spring of said armature, said first and seocnd valves (**10, 11**) being connected to a common fluid connection (**13, 15**) and embodied in the manner of check valves, closing spring means (**26, 27**) for closing said first and second valves with said first and second valves being oriented in a parallel disposition beside one another and synchronously closable such that they have the same opening and closing direction relative to said fluid connection (**13, 15**), and said valve coupling elements (**32, 33, 35, 36**) are embodied such that said valve elements (**24, 25**) of said first and second valves (**10, 11**) are closed simultaneously by an armature of said electromagnet which executes a stroke path, which stroke path is substantially the same as a valve closing stroke, and said valve elements (**24, 25**) are raisable in succession from their valve seats (**18, 19**).

4,765,694

REPLACEABLE ROAD PAD FOR TRACK SHOE OF TRACK LAYING VEHICLE

Robert M. Cory, Roseville, Mich., assignor to General Dynamics Land Systems, Inc., Warren, Mich.

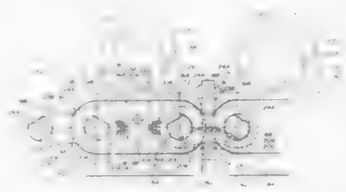
Division of Ser. No. 752,186, Jul. 3, 1985, Pat. No. 4,700,992.

This application Apr. 7, 1987, Ser. No. 35,657

Int. Cl.[4] B62D *55/26, 55/275. 55/28*

U.S. Cl. 305—35 R **5 Claims**

1. A replaceable road pad for a track shoe of an endless track for a track laying vehicle, said replaceable road pad comprising: a sheet metal support having a pair of pin troughs each of which has opposite ends and a generally semicircular cross section that opens in the same direction as the other pin trough; the metal support also including a web extending between the two pin troughs thereof to cooperate therewith in defining one half of a binocular configuration; a resilient road pad made of resilient material molded in situ on the metal support on the opposite side thereof as the direction toward which the pin troughs open; a retainer mounted on the web of the metal support between the two pin troughs thereof; and said retainer including a pair of spring retainer portions which are respectively located adjacent the opposite ends of the pin troughs





thereof and which are elastically deformed to provide mounting of the replaceable road pad on the associated track shoe.

4,765,695

CENTER GUIDE FOR SHOE ASSEMBLY OF TRACK LAYING VEHICLE

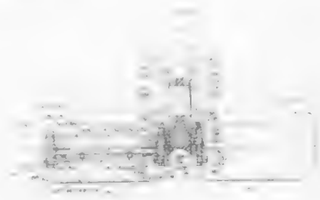
Robert M. Cory, Roseville, Mich., assignor to General Dynamics Land Systems, Inc., Warren, Mich.

Division of Ser. No. 752,186, Jul. 3, 1985, Pat. No. 4,700,992.

This application Apr. 7, 1987, Ser. No. 35,607

Int. Cl.[4] B62D *55/08*

U.S. Cl. 305—56 **4 Claims**



1. In a shoe assembly for an endless track of a track laying vehicle, said shoe assembly including a pair of shoes each of which includes roadwheel and road pads that face in opposite directions, and the shoe assembly including a pair of pin assemblies that connect the shoes and position the shoes in a laterally spaced relationship with respect to each other, a center guide comprising: a pair of guide members each of which has a mounting lug portion and a center guide portion; a resilient material bonded to both guide members with the lug portions and guide portions of each aligned with those of the other to cooperatively provide a mounting lug and a center guide projection; and a connection for securing the mounting lug between the laterally spaced shoes of the associated shoe assembly with the center guide projection extending from the shoe

VOL 1093 ISS 4 AUG 23 1988 UMI

assembly in the direction toward which the roadwheel pads of the shoes thereof face.

4,765,696

ADHESIVE-BONDED MULLION BRACKET FOR HOUSEHOLD REFRIGERATOR

Rexford W. Cordill, Evansville, Ind.; Jerry L. Fortner, Dean Springs Township, Crawford County, and Robert W. Beyerle, Van Buren, both of Ark., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Continuation-in-part of Ser. No. 051,950, May 19, 1987. This application Aug. 18, 1987, Ser. No. 86,530
Int. Cl.[4] A47B *81/00*
U.S. Cl. 312—214 20 Claims



1. In a refrigeration apparatus cabinet structure including a liner defining a space to be refrigerated, said liner having a turned edge, an outer cabinet defining a turned edge having a returned portion defining a channel receiving said turned edge of the liner, said channel including an inner wall, a center rail defining a partition front wall, and a center rail bracket fastened to said center rail and defining a distal portion, the improvement comprising:

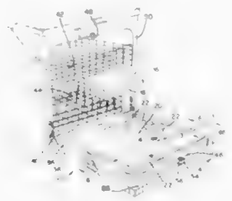
means associated with said distal portion of said bracket engaging a surface area of said channel inner wall for temporarily resiliently retaining said center rail bracket in said cabinet structure.

4,765,697

DISHWASHER DOOR WITH INTERLOCKING MOLDED CONSOLE AND MOLDED INNER DOOR

Dale W. Gardell, Hagar Township, Berrien County, and Larry D. Marks, St. Joseph Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 3, 1987, Ser. No. 80,617
Int. Cl.[4] A47F *3/00*
U.S. Cl. 312—229 18 Claims



1. An automatic front-loading dishwasher comprising

a cabinet having an enlarged opening for access to an internally disposed washing chamber,

a dishwasher door pivotably movable between an open position and a closed position, said dishwasher door in said closed position closing said opening to said washing chamber, said dishwasher door including a molded plastic control console and a molded plastic inner door,

said console and said inner door including means for securing said console and said inner door in an interlocked relationship and increasing the torsional rigidity of said dishwasher door in the area of said console, said securing means including complementary directly engageable interlocking members, one of said interlocking members being disposed on said console and the other in said inner door.

4,765,698

WASHER BACKSPLASH ASSEMBLY

Eddie W. Dooley, Jeffersonville, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Oct. 20, 1986, Ser. No. 920,750
Int. Cl.[4] D06F *1/02*
U.S. Cl. 312—248 11 Claims



1. An appliance comprising:

an appliance cabinet having a mounting portion;

means supporting said cabinet, including a base member and a rear wall, said rear wall including a closure portion positioned adjacent to and extending above said mounting portion;

a control console structure for housing appliance control means; said console structure including a pair of spaced apart end walls, each of said end walls having a base flange, a rear flange and a face flange; said console structure also including a cover member for enclosing the appliance control means, said cover member having opposite ends mounted to respective ones of said end walls;

means for securing each of said base flanges to said cabinet mounting portion; and

means for securing said console structure to said closure portion of said rear wall including, locking members mounted on said closure portion adjacent each of said end walls, said locking members including locking surfaces arranged to engage said face flanges on said end walls for drawing said closure portion of said rear wall into intimate relationship with said rear flanges, and fastening means for moving said locking members into engagement with said rear flanges of said end walls to thereby secure said closure portion to said rear flanges.

4,765,699

DRAWER SLIDE LIFT-OUT LOCK

Walter L. Bessinger, Grand Haven, and Gene R. Clement, Grandville, both of Mich., assignors to Knape & Vogt Manufacturing Company, Grand Rapids, Mich.

Filed Feb. 6, 1987, Ser. No. 11,789
Int. Cl.[4] A47B *88/00*
U.S. Cl. 312—329 16 Claims

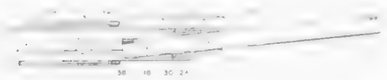
12. A drawer slide comprising:

a drawer rail to be mounted on a drawer;

a second rail;

bearing means for slidably supporting said drawer rail in linear alignment with said second rail for relative longitudinal movement;

stop means for preventing said drawer rail from being fully withdrawn from said second rail, said catch means being effective when said rails are slidably interfitted and linearly aligned, said catch means being releasable by vertically cocking said drawer rail with respect to said second rail; and



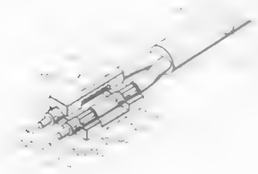
lock means for preventing inadvertent releasing of said catch means, said lock means having a first locked position preventing cocking of said drawer rail and a second unlocked position enabling said drawer rail to be cocked.

4,765,700

PUSHER DEVICE FOR PLASTIC OPTICAL FIBER

Eiji Ito, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Oct. 27, 1986, Ser. No. 923,303
Claims priority, application Japan, Oct. 31, 1985, 60-166733
Int. Cl.[4] G02B *6/36, 7/26*
U.S. Cl. 350—96.2 3 Claims





1. In a pusher device for holding a pair of optical fibers of an optical fiber cable in parallel alignment with a longitudinal axis, the optical fibers having covering sheaths made of a plastic material which are exposed from the optical fiber cable in a holding region of said pusher device,

the improvement wherein said pusher device comprises a pair of opposing pusher members having respective holding surfaces facing each other which are clamped toward each other but spaced apart a slight distance from each other so as to allow pressure to be applied to said pusher members to hold the optical fibers covered in their sheaths therebetween in parallel alignment, each of said holding surfaces having formed therein a pair of channel-like pushing portions in which the respective optical fibers in their sheaths are held in close contact, said channel-like pushing portions being formed as a pair of spaced apart, separate grooves extending in parallel with said longitudinal axis and being recessed in said holding surface, each having an inner wall surface which is contoured in cross section corresponding partially to the cross section of the respective optical fibers in their sheaths, and

wherein each of said channel-like pushing portions is formed with two parts which abut the respective optical fiber in its sheath at two positions longitudinally spaced apart by a predetermined distance therebetween,

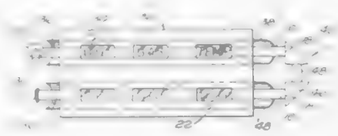
whereby the pusher members hold the optical fibers in two positions longitudinally spaced apart to disperse stress on the optical fibers, the optical fibers are allowed to absorb flexing by the space of said predetermined distance between the two holding positions, and slippage of or damage to the optical fibers is avoided.

4,765,701

ILLUMINATOR OPTICAL FIBER ROD

Leonard W. Cheslak, Tustin, Calif., assignor to Poly-Optical Products, Inc., Santa Ana, Calif.

Filed Jan. 30, 1987, Ser. No. 9,413
Int. Cl.[4] G02B *6/00;* F21V *7/04*
U.S. Cl. 350—96.10 36 Claims



1. An illuminator comprising:

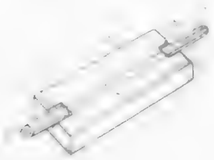
an elongated optically transmissive body characterized by substantially total internal reflection having formed therein one or more recesses, which recesses are defined by two opposing surfaces which angle inwardly from an exterior surface of said body toward each other for a distance substantially equivalent to from about two to about eighty percent of said body cross-sectional distance to define therebetween an included angle, which included angle is from about seventy to about one hundred ten degrees.

4,765,702

GLASS INTEGRATED OPTICAL COMPONENT

Luc Dohan, Fontainebleau, and Carlos Niasim, Vulaines, both of France, assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 2, 1985, Ser. No. 803,256
Claims priority, application France, Dec. 18, 1984, 84 19328
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.12 7 Claims



1. An integrated optical component comprising

a monolithic glass body,

at least one cavity molded into a surface of said glass body, and

VOL 1093 ISS 4 AUG 23 1988 UMI

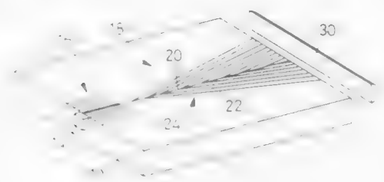
an optical circuit path formed in said surface by ion exchange, said path comprising the same constituents as said glass body and further including ions that increase the refractive index thereof to a value greater than that of said glass body, said path terminating at and being aligned with said cavity, whereby an optical device situated in said cavity is optically aligned with said circuit path.

4,765,703

OPTICAL DEFLECTOR

Makoto Suzuki, and Kazunari Taki, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 4, 1986, Ser. No. 892,250
Claims priority, application Japan, Aug. 5, 1985, 60-171986
Int. Cl.[4] G02F *1/315*
U.S. Cl. 350—96.14 12 Claims



1. An optical deflector for deflecting a light beam for scanning a surface of a medium over a predetermined angular range, comprising:

a substrate having an electro-optical effect;

a three-dimensional waveguide formed on one of opposite surfaces of said substrate, to guide waves of said light beam therethrough, said waveguide including a main path, and a plurality of branch paths diverging from said main path at respective branching portions of said waveguide, said branching portions being spaced apart from each other in a direction parallel to said main path, said branch paths being angled with respect to said main path so as to cover said predetermined angular range, and the number of said branch paths being sufficient to scan the surface of said medium over said predetermined angular range;

a plurality of deflector electrode means each disposed at a corresponding one of said branching portions of said three dimensional waveguide, said each deflector electrode means producing an electric field locally at said corresponding branching portion of said waveguide, and thereby deflecting said light beam from said main path into a corresponding one of said plurality of branch paths, due to said electro-optical effect upon selective application of a voltage to said each deflector electrode means;

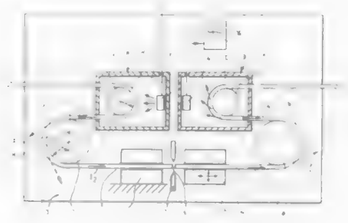
a toroidal lens disposed between an end of said corresponding branch path remote from said corresponding branching portion, and said surface of the medium, for converging the deflected light beam emitted selectively from said end of said corresponding branch path, so as to provide a beam spot at a point on said surface of the medium corresponding to said corresponding branch path.

4,765,704

APPARATUS FOR CENTERING OPTICAL FIBRES DURING WELDING

Karl O. Pers, Norsborg, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 28, 1986, Ser. No. 901,128
Claims priority, application Sweden, Sep. 13, 1985, 8504258
Int. Cl.[4] G02B *6/26*
U.S. Cl. 350—96.15 4 Claims



1. Apparatus for centering optical fibes during welding, and including a holder for a first and a holder for a second optical fibre, with the aid of which the ends of the fibres can be mutually centered at a contact location, light coupling means for coupling in light of a desired wavelength through the cladding of the first fibre to its core, and coupling light of this wavelength out from the core of the second fibre through its cladding, where the optical fibres can be kept bent in the light coupling means with a radius dependent on said wavelength, so that light can be sent through the contact location for the fibres to enable optical detection of whether the fibres have concentric cores, characterized in that a mode filter (**17**, **18**) is arranged in at least one of the fibres (**1**, **4**) between the contact location (**6**) and the light coupling means (**8**, **9**), such that the optical fibres (**1**, **4**) can be kept bent over a sector (α) with a bending radius (R_2) exceeding said radius (R_1) which is dependent on the desired wavelength, whereby, of the light oscillation modes in the cores of the fibres (**1**, **4**), the basic mode can pass the mode filter (**17**, **18**) substantially unaffected, while higher order modes are coupled out of the fibres such that detection of the basic light mode is used for centering the fibre cores.

4,765,705

GRATING SURFACE PLASMON COUPLER

Robert J. Seymour, Wellesley, Mass., and George I. Stegeman, Tucson, Ariz., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 11, 1983, Ser. No. 474,222
Int. Cl.[4] G02B *6/26, 5/18, 6/34*
U.S. Cl. 350—96.15 11 Claims



1. A device for coupling electromagnetic radiation to surface electromagnetic waves comprising:

a portion of a first material of negative dielectric constant having a grating contoured surface;

a thin layer of a second material having a positive dielectric constant and transparent to said electromagnetic radiation, said thin layer of said second material overlying said grating contoured surface;

said thin layer of said second material being in contact with

a third material having a positive dielectric constant less than that of said second material;

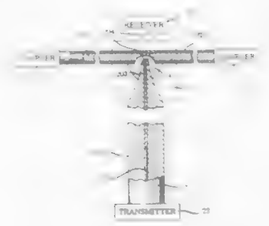
to transform the energy of said electromagnetic radiation in said third material with an efficiency greater than about 50 percent into surface electromagnetic waves in said first material.

4,765,706

OPTICAL COMMUNICATIONS SYSTEM INCLUDING A DIRECTIONAL COUPLER

Enrique A. J. Marcatili, Rumson, and Thomas H. Wood, Highlands, both of N.J., assignors to American Telephone and Telegraph Co., AT&T Bell Labs., Murray Hill, N.J.

Filed Jul. 29, 1986, Ser. No. 891,395
Int. Cl.[4] G02B *6/28*; H01J *5/16*; G02F *1/00*
U.S. Cl. 350—96.16 12 Claims



1. An optical communication system comprising

a first optical fiber having a core-cladding waveguiding structure capable of propagating wave energy in a first plurality of modes, and

a plurality of nodes distributed along the first fiber, each node including a coupler for coupling wave energy between the said first fiber and a transmitter and a receiver of optical radiation,

each of said couplers comprising means for inserting into the first fiber, for propagation in a selected direction, a significant portion of the power in at least one mode being transmitted, and means for withdrawing from the first fiber a significant portion of the power in at least one, but not all, of the modes propagating in the said first fiber in the said selected direction, at least said inserting means comprising optical reflector means,

the number of modes being inserted at any node being significantly smaller than the number of said first plurality of modes,

the power being inserted by any one or more of said inserting means reducing the loss of power being withdrawn along the said length of the first fiber.

4,765,707

METHOD OF TERMINATING FIBER OPTIC CONNECTOR WITHOUT POLISHING OPTICAL FIBER

Mark Margolin, Lincolnwood, Ill., assignor to Amphenol Corporation, Wallingford, Conn.

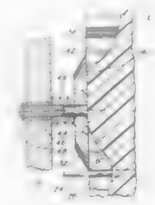
Continuation of Ser. No. 474,099, Mar. 10, 1983, Pat. No. 4,643,520. This application Nov. 18, 1986, Ser. No. 932,134
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 11 Claims

1. A method of terminating an inner fiber core of a fiber optic cable relative to a mating end of a fiber optic connector, the cable having an outer coating about said inner fiber core, comprising the steps of:

providing a substantially complete fiber optic connector with a mating end and means for coupling to an appropriate complementary component and means for receiving said fiber optic cable with a length of said core, stripped of said outer coating, protruding from said mating end of said connector;

clamping said fiber optic cable within said connector against lengthwise movement of said cable; and

cleaving said length of said inner core in situ within said connector flush with said mating end of said connector by scoring said fiber core at a point flush with the mating end



of the connector and applying a separation force to said length of said core along the axis thereof to cause a separation of said core at said scored portion as a result of said tension thereby eliminating subsequent polishing and other preparation and positioning of said core end relative to said connector with said core end flush with said mating end of said connector, and whereby an actual cutting through of the core is not required to effect termination.

4,765,708

STORAGE DEVICE FOR A SPARE LENGTH OF AN OPTICAL LINE

Johann A. Becker, Overath; Peter G. Deusser, and Werner V. Zell, both of Cologne, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 8, 1986, Ser. No. 905,226
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 3532314
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 20 Claims



1. A storage device for a spare length of an optical line, comprising a flat storage space, in which the spare length is wound at a radial distance round a central core and from which the spare length is led out by ends of the spare length through peripheral openings from which a free end can be pulled out, accompanied by reduction of the diameter of the turns, the device further comprising lateral guide walls at right angles to the central core and outer peripheral walls to limit the diameter of the turns, characterized in that the distance between the guide walls (**6** to **10** and **11** to **26**) is greater than the width of the optical line (**1** to **5**) and smaller than 1.3 times that width, the turns of the optical line extending spirally in a plane substantially parallel to the guide walls, a removable end (**32**) being formed by the turn located radially outside, and a fixed end leading outside the plane of the turns over the outer turns to the innermost turn.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,709

EQUIPMENT FOR DISTRIBUTING AND CONNECTING OPTICAL FIBERS

Didier Suillerot, and Robert Violo, both of 41, rue Cantagrel, 75631 Paris Cedex 13, France

Filed May 12, 1987, Ser. No. 48,780
Claims priority, application France, May 16, 1986, 86 07059
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.20 17 Claims



1. An equipment for connecting first optical fibers emerging from first cables to second optical fibers emerging from second cables, comprising

(a) plural fiber-to-fiber connectors, each of said connectors having a first connector end in which an end of a respective first fiber is inserted and a second connector end in which an end of a respective second fiber is inserted, thereby aligning and abutting said ends of said respective first and second fibers longitudinally to said connector; and

(b) holding means having a circular structure with respect to a central axis for holding said connectors;

(c) said first and second ends of each of said connectors being located on outer and inner peripheral circular edges of said circular structure, respectively, and being aligned radially relative to said circular structure, said ends of said second optical fibers being deployed radially from said central axis to said second connector ends, respectively.

4,765,710

DISTRIBUTING FRAME FOR OPTICAL WAVEGUIDES AND THE LIKE

Klaus-Dieter Burmeister; Erhard Holbe, both of Munich, and Werner Schreiner, Hoehenkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 16, 1986, Ser. No. 874,902
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1985, 3527278
Int. Cl.[4] G02B *6/00, 6/36*
U.S. Cl. 350—96.20 12 Claims

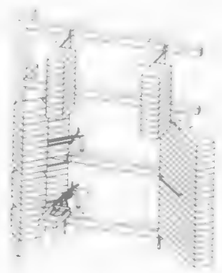
1. A distributing frame for optical waveguides and the like, comprising:

(a) a fixed framework;

(b) a plurality of like hollow connector blocks for receiving waveguide connectors; and

(c) securing means for movably securing each connector block to the framework in a manner that

all the connector blocks are movable to a first position in which they are aligned on top of each other along a longitudinal axis, thereby forming a panel and



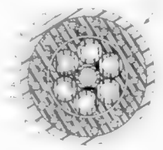
each of the connector blocks is independently movable in a plane which is perpendicular to said longitudinal axis.

4,765,711

UNDERWATER FIBER OPTIC CABLE WEIGHTED WITH METAL PARTICLES

Donald L. Obst, Hickory, N.C., assignor to Siecor Corporation, Hickory, N.C.

Filed Sep. 16, 1983, Ser. No. 532,680
Int. Cl.[4] G02B *6/44;* H02G *3/00;* F16L *1/00*
U.S. Cl. 350—96.23 9 Claims



1. A fiber optic cable comprising:

(a) a core comprising a strength member and a plurality of optical fibers;

(b) a jacket circumscribing and spaced apart from said core defining a volume; and,

(c) said volume occupied by a mixture of metal particles and plastic.

4,765,712

OPTICAL FIBER CABLE

William D. Bohannon, Jr.; Michael D. Kinard, both of Gwinnett County, and Mickey R. Reynolds, Lawrenceville, all of Ga., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill and AT&T Technologies, Inc., Berkeley Heights, both of, N.J.

Filed Jan. 31, 1986, Ser. No. 825,291
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 33 Claims

1. An optical fiber cable, which comprises:

a core comprising at least one optical fiber;

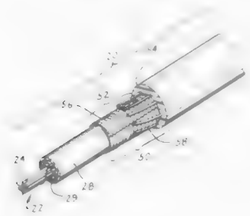
a tube which is made of a plastic material and which encloses said core; and

a sheath system which comprises:

a single metallic shield which encloses said tube;

a jacket which is made of a plastic material and which is bonded adhesively to an outer surface of said metallic shield to enhance substantially the torsional stability of the cable and to inhibit relative movement between portions of the sheath system; and

a plurality of longitudinally extending strength members which are disposed in a single layer between said tube and said jacket which is bonded to an outer surface of



said metallic shield and which are decoupled sufficiently from other portions of said sheath system in a longitudinal direction along the cable to cause said cable to be relatively flexible.

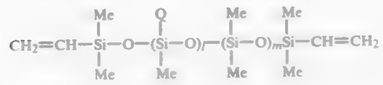
4,765,713

PLASTIC-CLAD LIGHT-TRANSMITTING FIBER

Masashi Matuso; Yutaka Furukawa, both of Yokohama; Toshio Iwamoto, Tokyo, and Shoichi Kawakami, Chiba, all of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Jul. 3, 1986, Ser. No. 881,698
Claims priority, application Japan, Jul. 4, 1985, 60-145858; Aug. 28, 1985, 60-187443
Int. Cl.[4] G02B *6/16*
U.S. Cl. 350—96.34 12 Claims

1. A plastic-clad light-transmitting fiber consisting essentially of a core of quartz glass or optical glass and a clad of organopolysiloxane, said plastic-clad light-transmitting fiber being characterized in that said clad of organopolysiloxane is a cured body having 30% by weight or more of the fluorine content, which is obtained by curing reaction of a vinyl group-containing organofluoropolysiloxane and a hydrogen-containing fluorosilicone compound, and that the vinyl group-containing organofluoropolysiloxane is a copolymerized polysiloxane obtained from a hydrocarbon siloxane unit and a polyfluoroalkyl group-containing siloxane unit, with a ratio of copolymerization of said hydrocarbon siloxane unit ranging from 20 to 75 mol %, and wherein said vinyl group-containing organofluoropolysiloxane is an organofluoropolysiloxane containing the vinyl group at the terminal end thereof, said compound being represented by the following formula:



wherein Q represents a polyfluoroalkyl group which may contain therein an ether bond; Me denotes methyl group; m/l indicates a ratio of from 0.54 to 3; and m+1 is the total unit number of the compounds of 80 or more.

4,765,714

BINARY PHASE-ONLY OPTICAL CORRELATION SYSTEM

Joseph L. Horner, 76 Brattle St., Cambridge, Mass. 02138, and James R. Leger, 162 Flavell Rd., Groton, Mass. 01450

Continuation-in-part of Ser. No. 596,471, Apr. 3, 1984, Pat. No. 4,588,260. This application Feb. 27, 1986, Ser. No. 834,092
Int. Cl.[4] G02B *27/46;* G06G *9/00*
U.S. Cl. 350—162.13 4 Claims

1. A binary phase-only optical correlation system comprising:

means for providing a beam of low power electromagnetic radiation at a preselected wavelength and directing said beam along a preselected optical axis;

means in optical alignment with said beam for taking the Fourier Transform of a preselected first signal and forming said Fournier Transform at a first preselected position coincidental with said optical axis;

a binary phase-only filter located at said first preselected position and in optical alignment with said preselected optical axis, said binary phase-only filter providing binarized phase-only information obtained from a second signal which is to be correlated with said first signal, and



means in optical alignment with said binary phase-only filter for taking the Fourier Transform of the product of said first signal and said binarized phase-only information of said second signal forming said Fournier Transform at a second preselected position coincidental with said optical axis, said Fourier Transform being substantially equivalent to the mathematical correlation function between said first signal and said second signal;

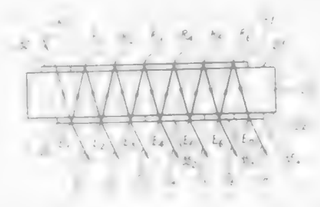
whereby said binary phase-only optical correlation system provides substantially 100 percent utilization of said electromagnetic beam of radiation.

4,765,715

BEAM SPLITTER HAVING A PARTIAL SEMITRANSPARENT LAYER ASSIGNED TO A PLURALITY OF OUTGOING LIGHT BEAMS

Takeo Matsudaira, and Teiji Isoue, both of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

Continuation of Ser. No. 630,591, Jul. 13, 1984, abandoned. This application Jul. 6, 1987, Ser. No. 69,659
Claims priority, application Japan, Jul. 13, 1983, 58-127151
Int. Cl.[4] G02B *27/14*
U.S. Cl. 350—171 11 Claims



1. A beam splitter for use in splitting a single incident light beam into a plurality of outgoing light beams, said beam splitter comprising a transparent block having a first planar surface and a second planar surface which is substantially parallel to said first planar surface, a preselected one of said first and said second planar surfaces having an outgoing area covered with a semitransparent layer through which said outgoing light beams exit transversely of said preselected planar surface while the other planar surface has a reflection area covered with a reflection layer, either of said preselected and said other planar surfaces defining an incident area for receiving said incident light beam, said semi-transparent layer being divided into a plurality of adjacent partial semitransparent layers including:

a first partial semitransparent layer deposited on a first partial area of said preselected planar surface which is adjacent to said incident area, said first partial semitransparent layer serving for emitting one of said outgoing light beams as a preceding outgoing light beam which precedes outgo-

VOL 1093 ISS 4 AUG 23 1988 UMI

ing light beams from a subsequent partial semitransparent layer;

a second partial semitransparent layer deposited on a second partial area of said preselected planar surface which is adjacent to said first partial area and which is farther from said incident area than said first partial area, said second partial semitransparent layer having a sufficient width along said preselected planar surface to emit a plurality of said outgoing light beams including one nearest to said preceding outgoing light beam, said one outgoing light beam which is emitted from said second partial semitransparent layer being the first of said plurality of outgoing light beams, said first and second partial semitransparent layers being such that said first outgoing light beam emitted from said second planar surface is higher in intensity than said preceding outgoing light beam emitted from said first planar surface.

4,765,716

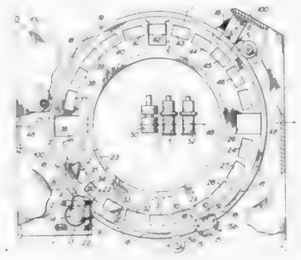
PHOTOGRAPHIC CONTROL DEVICE

Patrick A. Cosgrove, and Michael T. Wolf, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1986, Ser. No. 900,551

Int. Cl.[4] **G02B** *26/02, 5/22;* **G03B** *31/00, 27/32*

U.S. Cl. 350—273 **10 Claims**



1. A photographic control device for scanner and exposure control system calibration in a photographic printer, including:

a rotatable carrier disk having a plurality of apertures around its circumference, a number of said apertures adapted to mount a control patch therein, and

a drive motor and a position sensor operatively connected to said carrier disk to rotate said disk selectively among a plurality of positions for selective placement of diametrically opposed apertures in operative positions relative to said scanner and said exposure control system respectively.

4,765,717

LIQUID CRYSTAL LIGHT VALVE WITH ELECTRICALLY SWITCHABLE SECONDARY ELECTRON COLLECTOR ELECTRODE

Thomas S. Buzak, Beaverton, and Rolf S. Vatne, Portland, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 5, 1987, Ser. No. 46,822

Int. Cl.[4] **G02F** *1/13*

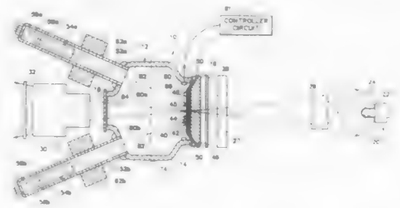
U.S. Cl. 350—331 R **17 Claims**

1. An electron beam-addressed liquid crystal light modulator having writing and erasing means for emitting a writing beam of primary electrons and an erasing beam of primary electrons that strike a target surface of a liquid crystal cell to cause the emission of secondary electrons from the target surface, the writing beam addressing selected regions on the target surface and the erasing beam erasing previously addressed regions on the target surface, the light modulator comprising:

an optically transparent electrode structure spaced apart from and positioned over a substantial portion of the target surface; and

biasing means for selectively applying first and second potential differences between the electrode structure and the target surface during the respective first and second time intervals,

the first potential difference developing an electric field of a first intensity that causes a large number of secondary



electrons generated during a first time interval to collect on the electrode structure to address a predetermined region of the target surface, and the second potential difference developing an electric field of a second intensity that causes a large number of the secondary electrons generated during a second time interval to re-deposit on the target structure to erase a previously addressed region of the target surface.

4,765,718

COLLIMATED LIGHT SOURCE FOR LIQUID CRYSTAL DISPLAY UTILIZING INTERNALLY REFLECTING LIGHT PIPE COLLIMATOR WITH OFFSET ANGLE CORRECTION

John L. Henkes, Latham, N.Y., assignor to General Electric Company, Wilmington, Mass.

Filed Nov. 3, 1987, Ser. No. 116,198

Int. Cl.[4] **G02F** *1/13*

U.S. Cl. 350—345 **6 Claims**



1. A high contrast liquid crystal display system including:

(a) a liquid crystal display element,

(b) a collimated light source positioned to illuminate one side of said display comprising:

(1) a light integrating sphere containing a source of uncollimated light and having an opening to permit a portion of the uncollimated light to exit from the sphere;

(2) elongated tapered light pipe means, one end of said light pipe means positioned adjacent the opening in said sphere and the other end being positioned adjacent to said display whereby light exiting from said sphere is internally reflected in said pipe means to illuminate said display with a collimated light beam,

(c) secondary light collimating means between said light pipe means and said display to compensate for the offset angle from normal of the light emitted from the end of said light pipe means.

4,765,719

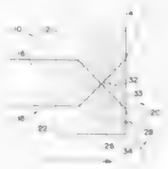
OPTICAL PROTECTION USING SMECTIC LIQUID CRYSTAL

James L. Fergason, 92 Adam Way, Atherton, Calif. 94025

Filed Feb. 4, 1987, Ser. No. 10,748

Int. Cl.[4] **G02F** *1/13*

U.S. Cl. 350—350 S **17 Claims**



1. Apparatus for responding to incident electromagnetic radiation, comprising

a first medium through which incident electromagnetic radiation may be transmitted;

liquid crystal means positioned with respect to said first medium for responding to a characteristic of the incident electromagnetic radiation to cooperate with such first medium to effect refraction of such electromagnetic radiation at an interface of said first medium and said liquid crystal means.

13. A method for responding to incident electromagnetic radiation, comprising

receiving incident electromagnetic radiation,

directing such incident electromagnetic radiation into a first medium through which incident electromagnetic radiation may be transmitted, and

using liquid crystal means positioned with respect to said first medium for responding to a characteristic of the incident electromagnetic radiation to cooperate with such first medium to effect refraction of such electromagnetic radiation at an interface of said first medium and said liquid crystal means.

4,765,720

METHOD AND APPARATUS FOR DRIVING FERROELECTRIC LIQUID CRYSTAL, OPTICAL MODULATION DEVICE TO ACHIEVE GRADATION

Tsutomu Toyono, Yokohama, and Shuzo Kaneko, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1987, Ser. No. 76,179

Claims priority, application Japan, Jul. 22, 1986, 61-172584

Int. Cl.[4] **G02F** *1/13*

U.S. Cl. 350—350 S **12 Claims**

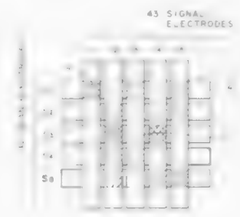
1. A driving method for an optical modulation device comprising first electrodes and second electrodes disposed opposite to and intersecting with the first electrodes, and an optical modulation material providing a first and a second orientation state depending on an electric field applied thereto disposed between the first electrodes and the second electrodes, a pixel being formed at each intersection of the first electrodes and the second electrodes so as to form a matrix of pixels as a whole; said driving method comprising:

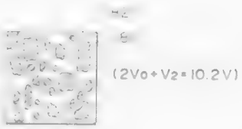
applying an alternating address voltage signal comprising a fore pulse and a rear pulse to an addressed electrode among the first electrodes; and

applying, to the second electrodes, a first voltage signal for orienting the pixels on the addressed electrode to the first orientation state in phase with the fore pulse, and a second voltage signal for providing a pixel among the pixels on the addressed electrode with a prescribed areal ratio between the first and second orientation states in the pixel depending on given gradation data; the first and second voltage signals being set to have substantially the same absolute value.

7. An optical modulation apparatus, comprising:

an optical modulation device comprising first electrodes and second electrodes disposed opposite to and intersecting with first electrodes, and an optical modulation material providing a first and a second orientation state depending on an electric field applied thereto disposed between the first electrodes and the second electrodes, a pixel being formed at each intersection of the first electrodes and the second electrodes so as to form a matrix of pixels as a whole;





means for applying an alternating address voltage signal comprising a fore pulse and a rear pulse to an addressed electrode among the first electrodes; and

means for applying, to the second electrodes, a first voltage signal for orienting the pixels on the addressed electrode to the first orientation state in phase with the fore pulse, and a second voltage signal for providing a pixel among the pixels on the addressed electrode with a prescribed areal ratio between the first and second orientation states in the pixel depending on given gradation data; the first and second voltage signals being set to have substantially the same absolute value.

4,765,721

STRESS-TOLERANT LIGHT VALVE ARRAY CONSTRUCTION

John A. Agostinelli, Rochester, and José M. Mir, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1987, Ser. No. 99,955

Int. Cl.[4] **G02B** *5/30;* **G02F** *1/03*

U.S. Cl. 350—389 **3 Claims**



2. An electro-optic modulator comprising a light valve array

VOL 1093 ISS 4 AUG 23 1988 UMI

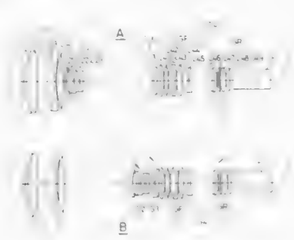
sandwiched between perpendicularly crossed polarizers, said light valve array comprising a linear direction defined by a plurality of electrically-addressable electrode pairs, each pair of electrodes located to affect electro-optic material therebetween to become birefringent in response to an electric field established thereacross, said electrodes being angularly disposed with respect to the direction of said linear array, and said crossed polarizers being arranged so that their respective directions of polarization are substantially perpendicular and parallel to the direction of the linear array.

4,765,722

ZOOM LENS

Yasuhiro Aono, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 25, 1986, Ser. No. 855,731
Claims priority, application Japan, May 11, 1985, 60-100263
Int. Cl.[4] G02B *15/16*
U.S. Cl. 350—427 9 Claims



1. A zoom lens comprising, in succession from the object side:
- a first lens group of positive refractive power movable along the optical axis for focusing;
- a second lens group of negative refractive power movable along the optical axis for changing the magnification;
- a third lens group movable along the optical axis for keeping the position of the image plane fixed; and
- a fourth lens group serving as a relay group for forming an image; wherein

said fourth lens group is composed of a front group on the object side and a rear group on the image side, and the lens groups from the first lens group to said front group of the fourth lens group constitute together substantially an afocal system, and

said rear group of the fourth lens group is movable in a determined relation with the third lens group at least in a part of the range of the magnification change by the movement of said second and third lens groups;

wherein said third lens group has a negative refractive power and both of the front and rear groups of said fourth lens group have a positive refractive power and wherein said third lens group moves forward and backward for changing magnification in such fashion as to describe a locus convex toward the object side and wherein the amount of movement of said rear group of the fourth lens group is less than 0.5 times the amount of the movement of the third lens group.

4,765,723

OBJECTIVE LENS SYSTEM FOR OPTICAL READING DEVICE

Sachiko Takamura, Kyoto, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 3, 1986, Ser. No. 926,644
Claims priority, application Japan, Nov. 5, 1985, 60-247545; Apr. 24, 1986, 61-095400
Int. Cl.[4] G02B *13/18, 3/00*
U.S. Cl. 350—432 10 Claims



1. An objective lens system with a single lens element for use in a device for optically reading digital data on an optical disk, said single lens element including:
- a light source side aspherical surface having a positive refractive power; and
- a disk side surface having a positive refractive power; and wherein

said objective lens system is used with the projecting magnification β, $-\frac{1}{4}<\beta<-\frac{1}{8}$ and the objective lens system fulfills the following conditions:

$$0.9\leqq(N_1-1)r_1/f\leqq3.9$$

$$1.4\leqq d_1r_1/f^2\leqq4.0$$

$$1.4\leqq d_1^2/f^2(N_1-1)\leqq4.0$$

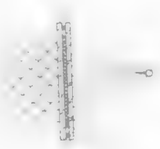
wherein:
- f represents the focal length of the single lens element;
- r_1 represents the paraxial radius of curvature of the light source side surface of the single lens element;
- N_1 represents the refractive index of the single lens element; and
- d_1 represents the axial thickness of the single lens element.

4,765,724

GRATING-FILM RAINBOW-PRODUCING LAMINAR DEVICE

Shang Huichun, 303 Unite 2 Bldg 6, Zaolin Xili, Xuanwu District, Beijing, China

Filed Mar. 28, 1986, Ser. No. 845,519
Claims priority, application China, Apr. 1, 1985, 85200328
Int. Cl.[4] G02B *5/18;* B44F *1/00*
U.S. Cl. 350—162.18 27 Claims



1. A grating-film rainbow-producing device for use with a non-monochromatic light source comprising:

a two-dimensional grating-film having a plurality of sets of equally spaced parallel grooves with the grooves of each set intersecting with respective grooves in the other sets at a selected angle to form a plurality of light-passing ports;

two transparent substrates with said grating-film disposed between said substrates in registry therewith; and

adhesive disposed at the peripheral edges of said substrates for holding said peripheral edges together.

4,765,725

IMAGING SINGLE LENS

Shigeyuki Suda, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1985, Ser. No. 785,617
Claims priority, application Japan, Oct. 15, 1984, 59-214405
Int. Cl.[4] G02B *3/02*
U.S. Cl. 350—432 11 Claims



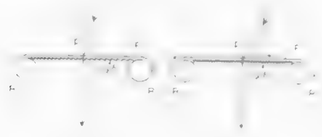
1. An imaging single lens in which a first surface is an axis-symmetrical non-spherical surface having a radius of curvature r_1 in the vicinity of the optical axis, a second surface is a convex spherical surface having a radius of curvature r_2, the center thickness is d, the non-spherical shape of said first surface is a shape displaced outwardly from the central portion to the marginal portion relative to a reference spherical surface of radius r_1, and as $p=-r_2/d$, p is 1 or a value approximate to 1, when $0.9<p<1.1$.

4,765,726

FRESNEL SCROLL SOLAR TRACKING DEVICE

Kenneth C. Johnson, 1215 Brewster Dr., El Cerrito, Calif. 94530

Continuation-in-part of Ser. No. 868,306, May 28, 1986. This application Jan. 26, 1988, Ser. No. 148,497
Int. Cl.[4] F24J *3/02;* G02B *3/08*
U.S. Cl. 350—452 4 Claims



1. An optical mechanism comprising the elements of
- a support structure to which elements of the mechanism are attached
- a thin flexible film F composed of an optically transparent material and bearing refractive Fresnel facets on at least one side, wherein the geometric structure of the Fresnel facets on F is nonuniform along a designated tracking direction on F,
- means for supporting a portion of F on a surface contour C spanning an aperture region which is fixed relative to said support structure, wherein C is substantially fixed relative to said support structure,
- translation means for moving F over some positional range, wherein
  - the portion of F over said aperture region is constrained to remain on C, and,
  - the set of points on F which can be brought into position over any particular point on C substantially constitutes a curve on F,
  - whereby F can be moved over a range of tracking positions so that any (optically functional) portion of F can be brought into position on C over said aperture region,
- means for compactly stowing portions of F outside of said aperture region (e.g., by folding or rolling) and for dispensing and drawing in F as said translation means moves F across C,

wherein said translation means and said nonuniformity of the Fresnel facets allow the optical function of F to be varied in accordance with variations in the direction of an incident beam so that the mechanism may either
- (case 1) function in combination with other elements of a two-axis tracking collector (wherein said translation means comprises one of the tracking axes) to accept any one of a two-parameter set of collimated incident beams and focus the beam substantially onto a point receiver, or,
- (case 2) function alone or in combination with other elements of a one-axis tracking collector (wherein said translation means comprises the tracking axis) to accept any one of a two-parameter set of collimated incident beams and focus the beam substantially onto a line receiver.

4,765,727

COLOR-CORRECTED LENS SYSTEMS

Romeo I. Mercado, San Jose, Calif., assignor to Lockheed Missiles and Space Company, Inc., Sunnyvale, Calif.

Division of Ser. No. 419,705, Sep. 20, 1982. This application Mar. 16, 1987, Ser. No. 26,243
Int. Cl.[4] G02B *3/00*
U.S. Cl. 350—483 10 Claims



1. An optical system rotationally symmetric about an axis, said system comprising a lens multiplet whose individual lens elements coact with each other so that said multiplet has a common focal length along said axis for paraxial marginal rays at least at five optical wavelengths, said multiplet being made of only three different optical materials, namely, a first optical material having a refractive index of approximately 1.50 and an Abbe number of approximately 81.22 at a base wavelength of 0.546 micrometer, a second optical material having a refractive index of approximately 1.73 and an Abbe number of approximately 34.49 at said base wavelength, and a third optical material having a refractive index of approximately 1.70 and an Abbe number of approximately 29.89 at said base wavelength.

4,765,728

CONTACT LENS WITH A BACK SURFACE HAVING SECOND-ORDER PORTIONS

Menachem Porat, and Ofer Rabinovich, both of Kibbutz Hanita, Israel, assignors to Hanita Lenses, a Limited Partnership, Kibbutz Hanita, Israel

Filed Mar. 11, 1986, Ser. No. 838,580
Claims priority, application Israel, Dec. 18, 1985, 77373
Int. Cl.[4] G02C *7/04*
U.S. Cl. 351—160 R 5 Claims

1. A contact lens having an edge; and a back surface comprising a central zone and at least one marginal zone; said central zone being constituted by a portion of a first second-

VOL 1093 ISS 4 AG 23 1988 UMI

order surface of revolution other than spherical; said marginal zone being constituted by a portion of a second second-order surface of revolution other than spherical, different from said



first second-order surface of revolution; transition from said central to said marginal zone being tangential, and in said marginal zone, axial clearance between a cornea and the back surface increasing towards the edge of said lens.

4,765,729

ANTI-REFLECTION OPTICAL ARTICLE

Takashi Taniguchi, Shiga, Japan, assignor to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 30, 1986, Ser. No. 857,477
Claims priority, application Japan, Apr. 30, 1985, 60-91010; Jun. 28, 1985, 60-140185; Sep. 18, 1985, 60-206055
Int. Cl.[4] G02C *7/02*; B32B *5/16*
U.S. Cl. 351—163 9 Claims

1. An anti-reflection optical article having excellent stain resistance, scratch resistance and processability, which comprises a substrate, a single-layer or multi-layer anti-reflection film at least the outermost layer of which being composed of silicon dioxide and which is formed on the substrate by the PVD method, and a silanol-terminated polysiloxane having a number average molecular weight of 1,000 to 1,000,000 formed on the surface of the anti-reflection film, wherein the surface reflectance of the optical article is lower than 3% and the stationary contact angle to water is at least 60°.

4,765,730

DOUBLE SCANNING OPTICAL APPARATUS AND METHOD

Robert H. Webb, Lincoln, Mass., assignor to Eye Research Institute of Retina Foundation, Boston, Mass.

Filed Sep. 17, 1985, Ser. No. 777,406
Int. Cl.[4] A61B *3/10*
U.S. Cl. 351—205 30 Claims

1. Scanning ophthalmoscope apparatus for providing a two-dimensional output representation of the optical reflection characteristics of a scanned eye fundus, said apparatus comprising

an optical source for generating an optical input beam of defined cross sectional area,

a first scanning element comprising a rotatable multi-faceted polygonal reflector positioned to intercept said input beam and to reflect said input beam onto the eye fundus to be scanned,

means for rotating said polygonal reflector at a sufficient speed to generate a scanning motion of said input beam along a first coordinate on said fundus at a predetermined frequency, the dimension along said first coordinate of each facet of said polygonal reflector being large compared to the cross sectional area of said input beam in the scanning direction,

means for directing light reflected from said scanned fundus back onto the same facet of said polygonal reflector which reflected the light from the input beam onto the object, said reflected light being collected across a cross sectional



area which is large compared to the dimension in the scanning direction of said reflecting facets,

optical detector means positioned to receive the light collected from said scanned fundus, which is reflected back from said polygonal facet, to provide a time varying output signal correlated with the scanning frequency of said input beam, and

output means for receiving said time varying signal.

4,765,731

SOLID STATE COLOR VISION TESTING SYSTEM

John M. Williams, Sunnyvale, Calif., assignor to John J. Ferlazzo, Scarsdale, N.Y., a part interest

Filed Mar. 21, 1986, Ser. No. 843,184
Int. Cl.[4] A61B *3/06*
U.S. Cl. 351—243 17 Claims



1. An arrangement for testing color vision response, the arrangement comprising:

first and second LED means, each having an electrical input for receiving an associated one of first and second electrical input signals and an associated optical output from which is emitted an output optical signal having a color composition responsive to said associated one of said first and second electrical input signals;

electrical supply means coupled to said electrical inputs of said first and second LED means for delivering thereto a cyclically varying electrical energy having a substantially constant duty cycle; and

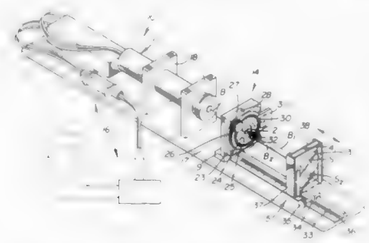
first and second control means for controlling respective ones of said electrical input signals and said color composition of said output optical signals.

4,765,732

HYPERACUITY TESTING INSTRUMENT FOR EVALUATING VISUAL FUNCTION

Jay M. Enoch, Moraga, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Mar. 20, 1987, Ser. No. 28,711
Int. Cl.[4] A61B *3/02*
U.S. Cl. 351—243 20 Claims



1. A hyperacuity testing instrument for evaluating visual function comprising

light producing means for producing at least two beams of coherent light,

display means positioned for receiving and visually displaying spots of said beams for observation by a patient within a patient's field of vision to determine the alignment and separation gap between said spots,

first adjustment means for selectively moving said spots simultaneously to vary the rotational positions and alignment of said spots relative to each other, and

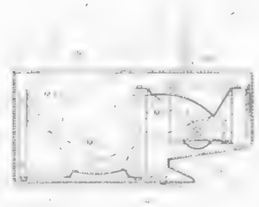
second adjustment means for selectively varying the separation gap between said spots.

4,765,733

LIGHT PROJECTOR

Masataka Negishi, 29-19, Daito 2-chome, Urawa-shi, Saitama-ken, Japan

PCT No. PCT/JP85/00569, § 371 Date Jun. 10, 1986, § 102(e) Date Jun. 10, 1986, PCT Pub. No. WO86/02466, PCT Pub. Date Apr. 24, 1986
PCT Filed Oct. 14, 1985, Ser. No. 878,960
Claims priority, application Japan, Oct. 13, 1984, 59-214762
Int. Cl.[4] G02B *17/00*
U.S. Cl. 353—99 6 Claims



1. A light projector comprising:

a point light source disposed on an imaginary axis;

a light reflecting means for reflecting light rays emitted from said point light source, said light reflecting means comprising first mirror means defined by part of a surface of revolution of a curved line generated about said imaginary axis and reflecting light rays in directions having components in the direction of said imaginary axis thereby producing a uniform distribution of the rays throughout the cross section of the reflected light rays;

light ray shaping mirror means for determining directions of all of the light rays reflected thereby to cause them to converge substantially at one point on said imaginary axis and then diverge from said point with a uniform distribution thereof; and

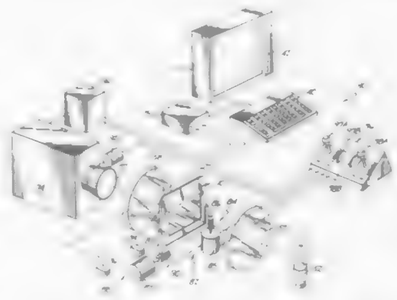
means for mounting an original having an image to be projected at a position such that said light rays diverging from said point pass through said original.

4,765,734

DIGITALLY ENCODED ALPHA-NUMERIC PROJECTOR SLIDE AND SYSTEMS FOR USING THE SAME

James A. True, Wayzata, and Gary A. Hoonsbeen, Crystal, both of Minn., assignors to Pakon, Inc., Minnetonka, Minn.

Filed May 22, 1986, Ser. No. 866,214
Int. Cl.[4] G03B *31/06*
U.S. Cl. 353—121 14 Claims



1. A method for concurrently displaying a photographic film image and alphanumeric information characteristic of the image, comprising:

mounting a photographic film image on a projector slide;

mounting a magnetic recording medium on the projector slide;

digitally encoding alphanumeric information representative of image display;

writing the digitally encoded alphanumeric information to the recording medium on the projector slide;

reading the alphanumeric information from the projector slide;

providing a visual display of the alphanumeric information read from the projector slide; and

displaying an image from the photographic film image on the projector slide as a function of the alphanumeric information read from the slide.

4,765,735

METHOD OF MEASURING A MODE PARTITION CHARACTERISTICS OF A LASER DIODE AND AN APPARATUS OF THE SAME

Masakazu Mori, Kawasaki; Takashi Tsuda, Tokyo, and Kazuo Yamane, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 4, 1987, Ser. No. 21,717
Claims priority, application Japan, Mar. 4, 1986, 61-045334
Int. Cl.[4] G01J *1/00*
U.S. Cl. 356—121 8 Claims

1. An apparatus for measuring mode partition characteristics of a laser diode comprising:

first means, driven by a clock signal having a period T, for generating an N-bit-length pseudo noise pattern;

optoelectric conversion means, including a laser diode to be

VOL 1093 ISS 4 AG 23 1988 UMI

measured, for outputting an optical signal modulated by said pseudo noise pattern;
second means for separating a particular longitudinal mode from the optical signal;
third means for detecting a power P_i of said particular longitudinal mode;
fourth means for detecting a line spectral element $w_{line}(f)$



and continuous spectral element $w_{con}(f)'$ of said particular longitudinal mode; and
processing means, for calculating a coefficient which indicates mode partition characteristics by obtaining a relative power a_i of said particular longitudinal mode in all longitudinal modes, a ratio of line spectral elements to continuous spectral elements and a coefficient defined by a number of N bits of pseudo noise.

4,765,736

FREQUENCY MODULATION SPECTROSCOPY USING DUAL FREQUENCY MODULATION AND DETECTION

Thomas F. Gallagher; Gary R. Janik, and Clinton B. Carlisle, all of Charlottesville, Va., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed Jul. 24, 1986, Ser. No. 889,507
Int. Cl.[4] G01N *21/31*
U.S. Cl. 356—300 **5 Claims**



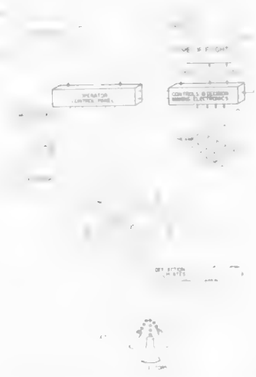
1. Apparatus for use in FM laser spectroscopy comprising
a laser for generating a laser beam (ω_0),
a first oscillator for generating a first signal at a first frequency $(\omega_1+\omega_2)/2$,
a second oscillator for generating a second signal at a second frequency $(\omega_1-\omega_2)/2$,
a first mixer for receiving said signals from said first and second oscillators and producing a third signal at a third frequency (ω_1) and a fourth signal at a fourth frequency (ω_2), said third and fourth signals differing in frequency by a frequency difference $(\Delta=\omega_1-\omega_2)$,
a first modulator,
means for applying a laser beam from said laser and said third and fourth signals to said modulator, said modulator modulating said laser beam with said third and fourth signals and producing in the limit of low modulation index sideband groups on said laser beam ($\omega_0\pm\omega_1$, $\omega_0\pm\omega_2$, $\omega_0\pm\Delta$),
means for applying said modulated laser beam through a substance to be analyzed, and
detector means for detecting said modulated laser beam after passing through said substance, said detector means producing a signal indicative of absorption of said modulated beam by said substance.

4,765,737

CELL SIZE MEASUREMENTS USING LIGHT IN FLOW CYTOMETRY AND CELL SORTING

William V. Harris, Interlaken, and Bruce R. Land, Trumansburg, both of N.Y., assignors to Cornell Research Foundation, Ithaca, N.Y.

Filed Mar. 30, 1987, Ser. No. 31,790
Int. Cl.[4] G01N *15/02*
U.S. Cl. 356—336 **10 Claims**



1. A new and improved method of measuring the size of a biological cell in a flow cytometer, comprising the steps of:
1. Directing said biological cells in column flow at a constant velocity;
2. Passing a laser beam having a cross section larger than each of said cells through said biological cells in column flow so that only one biological cell passes through said laser beam at a time;
3. Measuring the time of flight of each said biological cell through said laser beam deriving an electrical signal commensurate with the width and/or volume of each said biological cell by
a. deriving a first electrical signal from the low angle forward light scatter characteristic or secondary fluorescent emission from a single cell as it passes through the said laser beam;
b. deriving a second electrical signal having an amplitude determined by the time integral of said first electrical signal;
c. deriving a third electrical signal having an amplitude equal to the peak (maximum) amplitude of said first electrical signal;
d. deriving a fourth electrical signal by dividing the said second electrical signal by the said third electrical signal therefore deriving an electrical signal commensurate with the width of each said biological cell plus the width of the laser beam;
e. deriving a fifth electrical signal by subtracting from said fourth electrical signal a constant electrical signal proportional to the width of the said laser beam whereby the fifth electrical signal is directly proportional to the width of said biological cell.

4,765,738

METHOD AND APPARATUS OF MEASURING FREQUENCY RESPONSE IN AN OPTICAL RECEIVING SYSTEM

Naoya Henmi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 8, 1987, Ser. No. 1,451
Claims priority, application Japan, Jan. 8, 1986, 61-2397
Int. Cl.[4] G01B *9/02*
U.S. Cl. 356—349 **8 Claims**



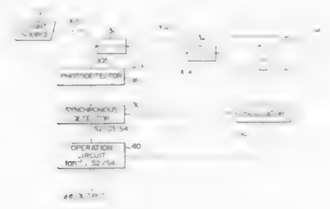
1. A method for measuring a frequency response in an optical receiving system comprising steps of:
controlling the current to be injected into a semiconductor laser,
dividing laser light radiating from said semiconductor laser into two light beams,
delaying one of said two beams relative to the other of said two light beams by a predetermined time,
combining the delayed one of said two light beams and said other of said two light beams to produce combined light,
inputting said combined light into an optical receiving system, and
measuring output power of a beat signal converted from said combined light relative to frequency of said beat signal.

4,765,739

FIBER OPTICAL ROTATION SENSOR UTILIZING THE SAGNAC PHASE DIFFERENCE

Tadashi Koizumi, Yokohama, and Toshiya Kinoshita, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1986, Ser. No. 924,741
Claims priority, application Japan, Nov. 6, 1985, 60-248317
Int. Cl.[4] G01C *19/64*; G01B *9/02*
U.S. Cl. 356—350 **5 Claims**



1. A fiber optical rotation sensor, comprising:
a light source for producing a light wave;
an optical fiber forming a loop for sensing rotation in accordance with the Sagnac effect;
means for coupling said light source to the optical fiber loop to provide a pair of light waves which propagate around the loop in opposite directions, and combining the pair of light waves to form an optical output signal;
means for generating a phase modulating signal having a frequency f_0 and modulating the phase of the light waves propagating in the fiber optical loop with the phase modulation signal;
means for detecting the optical output signal and converting the output signal to an electric signal;
means for extracting from the electric signal a frequency component S(n−1) of (n−1) times the modulation frequency f_0, frequency component Sn of n-times the modulation frequency f_0 and frequency S(n+1) of (n+1) times the modulation frequency f_0, where n represents an integer of 1 or more; and
means for processing said extracted components Sn−1, Sn and Sn+1 corresponding to said (n−1)-, n- and (n+1)-times the modulation frequency f_0, respectively, to evaluate

$$\tan^{-1}\left(K\frac{Sn}{Sn-1+Sn+1}\right)$$

proportional to a phase difference $\Delta\phi$ between said light waves;
wherein said means for processing processes Bessel functions Jn−1 and Jn+1 contained in said frequency components Sn−1 and Sn+1 to produce a feedback signal and said modulation signal generating means is responsive to the feedback signal to generate a predetermined modulation amplitude and to substantially maintain the Bessel function Jn−1 equal to the Bessel function Jn+1 which are contained in said frequency components Sn−1 and Sn+1 processed by said processing means.

4,765,740

OPTICAL APPARATUS BASED ON MEASUREMENT OF PHASE OR FREQUENCY SHIFT OF AN OSCILLATING BEAM, PARTICULARLY USEFUL AS AN OPTICAL GYRO

Baruch Fischer, Neve Shaanan, Israel, assignor to Technion Research & Development Foundation Ltd., Technion, Israel

Filed Jan. 23, 1986, Ser. No. 821,783
Claims priority, application Israel, Feb. 8, 1985, 74284
Int. Cl.[4] G01C *19/64*; G01B *9/02*
U.S. Cl. 356—350 **30 Claims**



1. Optical apparatus comprising:
an optical system defining a closed-loop optical path;
a light source producing a single pumping beam outside said closed-loop optical path;
an optical-wave-mixer producing from said single pumping beam an oscillating beam in said closed-loop optical path;
and means for measuring the phase or frequency shift produced in said oscillating beam by said optical-wave-mixer resulting from the non-reciprocal or reciprocal phase-shift thereof.

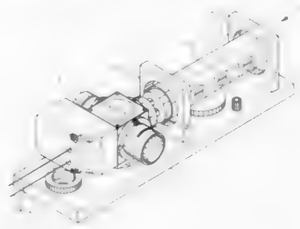
VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,741

WAVELENGTH TRACKING COMPENSATOR FOR AN INTERFEROMETER

Scott M. Detro, Sunnyvale, and Alan H. Field, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 20, 1987, Ser. No. 28,527
Int. Cl.[4] G01B 9/02
U.S. Cl. 356—358 6 Claims



6. A semi-kinematic mount for attaching an optical component to a baseplate, comprising:

a platform for holding the optical component, said platform having a spherical surface with a center coincident with the optical center of the optical component;

a mounting hole in the baseplate formed by a first counterbore in one side of the baseplate and a second concentric counterbore in the other side of the baseplate, with a deformable annular web between the counterbores, the web having a through hole at the center; and

means for securing the platform to the baseplate through the hole in the web so that the spherical surface of the platform rests on the edge of the first counterbore.

4,765,742

OPTICAL MONITORING METHOD AND APPARATUS

Ian Davinson, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Jul. 10, 1986, Ser. No. 883,949
Claims priority, application United Kingdom, Jul. 24, 1985, [illegible]
Int. Cl.[4] G01B 11/14
U.S. Cl. 356—373 25 Claims



1. A method of monitoring a geometrical or positional characteristic of a light spot relative to at least first and second light receptor means arranged in a fixed relationship to each other, the light spot being formed by light incident on the receptor means which produces light signals in each receptor means, the magnitude of the light signals in each receptor means being dependent upon said light spot characteristic, the method comprising:

(a) modulating the incident light at a predetermined frequency to give the incident light a duty cycle of substantially 50%;

(b) delaying the light signals in the second receptor means relative to the light signals in the first receptor means by a predetermined fraction of a cycle of the predetermined frequency;

(c) combining the outputs of the first and second receptor means to produce a compound light signal having an amplitude at the predetermined frequency which is dependent upon the magnitude of the difference in amplitudes between the light signals in the first and second receptor means; and

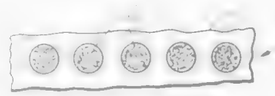
(d) deriving an electrical monitor signal from the compound light signal using photoelectric transducer means linked by a single electrical channel to phase detector means, said monitor signal being representative of the amplitude of the compound light signal at the predetermined frequency and hence of said difference between the light signals in the first and second receptor means, whereby said monitor signal represents the characteristic of said light spot.

4,765,743

METHOD OF INSPECTING A MASTER MEMBER

Frank S. Krufka, Mount Joy, and Charles M. Wetzel, Lititz, both of Pa., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Mar. 10, 1987, Ser. No. 24,219
Int. Cl.[4] G01B 11/00
U.S. Cl. 356—388 5 Claims



1. A method of inspecting a pattern of elements on a working member comprising the steps of:

aligning a negative copy of said working member and a positive inspection plate having elements slightly larger than the elements on said working member whereby flaws, in the form of extra element portions and splashes between said elements, show as light transmissive spots; and

aligning said working member and a negative inspection plate having elements slightly smaller than the elements on said working member whereby flaws, in the form of missing element portions, show as light transmissive spots.

4,765,744

METHOD FOR TESTING A PHOTOMASK

Kenichi Kobayashi, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 861,669, May 7, 1986, abandoned, which is a continuation of Ser. No. 724,507, Apr. 19, 1985, abandoned, which is a continuation of Ser. No. 384,042, Jun. 1, 1982, abandoned. This application Mar. 5, 1987, Ser. No. 22,249
Claims priority, application Japan, Jun. 1, 1981, 56-82538
Int. Cl.[4] G01B 11/00
U.S. Cl. 356—398 2 Claims

1. A method for testing a photomask comprising the steps of:

(a) forming a synchronization pattern surrounding a photomask pattern including first through fourth linear synchronization patterns having an elongated shape formed continuously in first and second directions, the first linear synchronization pattern extending in the first direction, the second linear synchronization pattern formed continuously from an end of the first linear synchronization pattern and extending in the second direction which is perpendicular to the first direction, the third linear synchronization pattern formed continuously from an end of the second linear synchronization pattern and extending in the first direction so as to be parallel to the first linear synchronization pattern, and the fourth linear synchronization pattern formed parallel to the second linear synchronization pattern, a space being formed between each of the first and third linear synchronization patterns and the fourth linear synchronization pattern;

(b) storing a reference data, corresponding to a normal mask pattern, into a first storing means;

(c) mounting the photomask on a stage;

(d) optically scanning the first through fourth linear synchronization patterns and the photomask by driving the stage along the second direction and generating a scanning signal including a synchronization signal for each scanning operation, for detecting whether the photomask



is upside down by detecting the space between the fourth linear synchronization pattern and each of the first and third linear synchronization patterns, the scanning direction being reversed at the end of each scanning operation;

(e) detecting a start of a pattern generating area along the second direction by driving the stage along the first direction;

(f) reading the reference data corresponding to the scanning signal from the first storing means in response to the synchronization signal, for generating a reference signal;

(g) comparing the scanning signal with the reference signal; and

(h) storing a position of the stage into a second storing means when the scanning signal is inconsistent with the reference signal, to form a failure map in the second storing means.

4,765,745

APPARATUS FOR DOSING AND MIXING SOLIDS AND LIQUIDS TO FORM A LOW VISCOSITY SUSPENSION

Jürgen Strecker, Stuttgart, Fed. Rep. of Germany, assignor to Werner & Pfleiderer, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 730,312, May 2, 1985, abandoned. This application Jan. 14, 1987, Ser. No. 3,201
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1984, 3423058
Int. Cl.[4] B29B 5/00
U.S. Cl. 366—76 2 Claims

1. Method for building up a process pressure in a process line leading to a pressurized reaction or process chamber in a suspension of low viscosity comprising at least one solid and one liquid to be fed to this process line comprising

the feeding of said solid and a part of said liquid to a first drag flow pump,

mixing said solid and said part of said liquid in said first drag flow pump to form a suspension of high viscosity,

feeding that suspension of comparatively high viscosity, necessary for the formation of a material plug downstream of said first drag flow pump for the pressure build-up, to a pressure line downstream said first drag flow pump, the pressure of said suspension at the end of said first drag flow pump being as high or somewhat higher than the process pressure in the process line,

conveying that suspension of comparatively high viscosity from that pressure line to a second drag flow pump, which is under process pressure,

adding the remaining part of the liquid to the suspension of



high viscosity in that second drag flow pump and/or said pressure line for production of a suspension of low viscosity, and

feeding that suspension of low viscosity to that process line.

4,765,746

DOUGH KNEADER

Enrique Suay Puig, Vincente Lerma, No. 26, 46980- Paterna (Valencia), Spain

Filed Feb. 19, 1987, Ser. No. 16,219
Claims priority, application Spain, Feb. 20, 1986, 292402
Int. Cl.[4] B28C 1/16, 7/16
U.S. Cl. 366—77 20 Claims



1. A kneader comprising a main body which forms a support structure, part of said main body constituting a support for a bowl or receptacle; a rotatable helix mounted upon said main body so as to extend into said bowl or receptacle when said bowl or receptacle is positioned upon said support; drive means for rotating said helix in either a clockwise or counter-clockwise direction of rotation, such that with rotation in a first direction said helix can knead material in said bowl or receptacle and rotation in a second direction said helix can lift kneaded material out of said bowl or receptacle; and guide means comprising a drum rotatably mounted upon said main body of the kneader so that in use the kneaded material is engaged by said drum when it is lifted out of said bowl or receptable by said helix and is guided out of said bowl or receptable by the rotation of said drum.

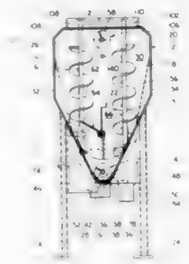
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,747

FEED MIXING APPARATUS

Samuel E. High, Jr., Lititz, and Aquila D. Mast, Lancaster, both of Pa., assignors to Feedmobile, Inc., Lititz, Pa.

Filed Nov. 9, 1987, Ser. No. 118,499
Int. Cl.[4] B01F 7/08, 7/24, 15/02
U.S. Cl. 366—186 19 Claims



1. In a feed material mixing apparatus, the combination comprising:

(a) a tank having a top wall, opposite front and rear end walls, upwardly diverging opposite side walls and an arcuate bottom wall;

(b) a bottom auger disposed in overlying relation along said arcuate bottom wall and being rotatably mounted to and extending fore-and-aft between said front and rear end walls, said bottom auger having flights which convey feed material along said bottom wall away from said front and rear end walls and toward an intermediate location along said bottom wall and side walls;

(c) a pair of tubular housing portions disposed adjacent to opposite sides of said bottom auger at said intermediate location, said tubular housing portions being connected to and protruding outwardly from the exterior of said respective opposite side walls and bottom wall, one of said housing portions having a generally horizontal bottom end wall connected to and extending generally tangentially from said arcuate bottom wall; and

(d) a pair of upright augers disposed at said intermediate location adjacent to opposite sides of said bottom auger and extending within and upwardly from said respective tubular housing portions, one of said upright augers being rotatably mounted to said top wall and to said bottom end wall of said one housing portion, said upright augers having flights which convey feed material upwardly toward said top wall where the material then flows laterally toward said opposite side walls and forwardly and rearwardly toward said front and rear walls, following a plurality of generally circuitous paths within said tank to achieve thorough mixing thereof;

(e) said flight of said one upright auger having a lower end being disposed adjacent said bottom end wall of said one housing portion and generally at the level of a bottom of said flight of said bottom auger such that said bottom auger is only required to push feed material along said horizontal bottom end wall of said one housing portion to reach said lower end of said one upright auger flight.

4,765,748

BODY CONTACT GAME

Loren C. Fidalgo, 304 Arch St., Apt. 4F, Philadelphia, Pa. 19106

Filed Mar. 12, 1986, Ser. No. 839,130
Int. Cl.[4] A63F 9/00
U.S. Cl. 273—1 G 8 Claims

1. A game apparatus for one or more opposing pairs of players, comprising:

(a) a plurality of belts to be worn by the players, each belt having a plurality of spaced apart receiving areas thereon for removably holding transferrable patches thereon;

(b) a plurality of belt mounting devices, each belt mounting device comprising means for attaching the belt mounting device to one of the belts, and means for removably attaching to the belt mounting device different game elements;

(c) first game elements comprising hooks removably attachable to said belt mounting devices;



(d) second game elements comprising spools removably attachable to said belt mounting devices, each spool having wound thereon a length of twine the free end of which has mounted thereon an openable and closable connection loop;

(e) a plurality of transferrable patches which may be attached to a receiving area on one belt and be transferred to another belt by contact with the receiving area on the other belt; and

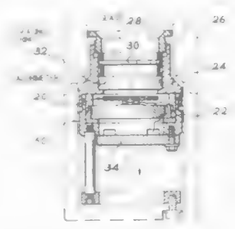
(f) a plurality of rings.

4,765,749

QUASI-ADIABATIC CALORIMETER FOR MEASURING THE ENERGY TRANSPORTED BY RADIATION

Jean-Luc Bourgade, Brunoy; Michel Le Guen, Villecresnes, and Alain Saleres, Noisy le Grand, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 15, 1986, Ser. No. 941,813
Claims priority, application France, Dec. 19, 1985, 85 18853
Int. Cl.[4] G01K 17/20
U.S. Cl. 374—32 12 Claims



1. A calorimeter for measuring energy transported by radiation comprising an absorbing element able to absorb said radiation having at least one outer face exposed to said radiation and one inner face, said element being exposed to a temperature increase during an interaction with said radiation; means for measuring said radiation increase, said measuring means being in contact with a part of a surface of the inner face of the absorbing element; and a selectively heatable calibration resistance on the inner face of the absorbing element, wherein the calibration resistance is in the form of a resistive material coating deposited on a part of the surface of the inner face of the absorbing element for simulating the absorbing element radiation interaction which is not in contact with the measuring means, said coating being in direct contact with said inner face of the absorbing element over at least 50% of the surface thereof.

4,765,750

METHOD OF DETERMINING SUBSURFACE PROPERTY VALUE GRADIENT

Haydn N. G. Wadley, Poolesville, Md., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Mar. 26, 1987, Ser. No. 31,716
Int. Cl.[4] G01K 11/24
U.S. Cl. 374—137 3 Claims



1. A method for determining a subsurface property value gradient of a body having a surface comprising the steps of:

generating a Rayleigh wave in the body by passing a current through a first meander coil having predetermined spaced wires determining a wavelength of the generated Rayleigh wave;

spacing a second meander coil identical to the first meander coil at a predetermined distance from the first meander coil;

detecting the Rayleigh wave with the second meander coil;

determining the velocity of the Rayleigh wave;

determining a property value at a depth determined by the wavelength of the Rayleigh wave which property value is a function of the determined velocity;

repeating the above steps with at least one other pair of first and second meander coils having different predetermined spaced wires than the first-mentioned pair of first and second meander coils such that at least one second property value at a second depth is determined; and

determining a subsurface property value gradient from the first-mentioned property value and the at least one second property value.

4,765,751

TEMPERATURE AND PRESSURE PROBE

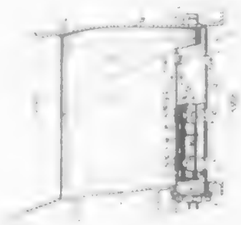
John L. Pannone, Glastonbury, and Rocco M. Tommasini, Marlborough, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 29, 1987, Ser. No. 67,748
Int. Cl.[4] G01F 1/46; G01K 13/02, 1/14
U.S. Cl. 374—143 12 Claims

1. A temperature and pressure probe for measuring the temperature and pressure of a gaseous stream flowing in a downstream direction, comprising:

a probe body adapted to be disposed in said gas stream and having a streamlined shape in cross section perpendicular to its length, its length being the longitudinal direction, said probe also having a longitudinally extending leading edge adapted to face upstream, and a longitudinally extending trailing edge adapted to face downstream, said probe body including a longitudinally extending first cavity therewithin adjacent said leading edge, and a second cavity formed within said probe body separate from and downstream of said first cavity, said probe body including means defining an outlet from said second cavity;

downstream extending first passage means within said probe body, having an inlet at said leading edge and intersecting said first cavity to define an outlet of said first passage means, wherein one end of said first cavity is adapted to communicate with means for sensing the pressure within said first cavity;



second downstream extending passage means within said probe body adjacent and separate from said first cavity and having an inlet at said leading edge and intersecting said second cavity to form an outlet of said second passage means;

means for reducing the free-stream velocity of said gaseous stream to substantially zero at said first and second passage means inlets; and

temperature measuring means including a thermocouple junction disposed within said second cavity and aligned in the downstream direction with said second passage means outlet for receiving a flow of gaseous fluid over said junction from said second passage means.

4,765,752

RADIATION THERMOMETERS

Thomas G. R. Beynon, Sheffield, England, and Peter J. Kirby, Yardley, Pa., assignors to Land Infrared Limited, Dronfield, England

Filed Nov. 15, 1985, Ser. No. 820,250
Claims priority, application United Kingdom, Mar. 5, 1985, 8505731
Int. Cl.[4] G01J 5/00; G01K 1/14
U.S. Cl. 374—153 12 Claims



1. A method of monitoring at least one temperature characteristic of a rotating body, comprising sensing radiation emitted by the body in wavelength bands centered on two different wavelengths λ_1, λ_2 (where $\lambda_1 > \lambda_2$) to determine first and second quantities S_1, $<S_2>$ respectively related to the radiance profile around the body and the average radiance around the

VOL 1093 ISS 4 AG 23 1988 UMI

body; determining a third quantity constituting an average $<S_1>$ of said first quantity S_1; determining a fourth quantity related to the ratio of $<S_1>$ to $<S_2>$; and monitoring a predetermined function of said first and fourth quantities and at least one of said second and third quantities, said predetermined function being related to said at least one temperature characteristic.

4,765,753

METHOD AND APPARATUS FOR HANDING-OVER A RADIO CONNECTION FROM ONE RADIO CELL TO ANOTHER RADIO CELL OF A DIGITAL RADIO TRANSMISSION SYSTEM

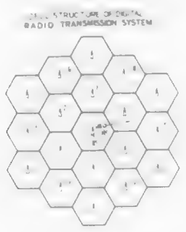
Werner Schmidt, Roscommon, Ireland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1987, Ser. No. 21,105

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1986, 3607687

Int. Cl.[4] H04Q 7/01

U.S. Cl. 379—60 15 Claims



1. A method for deciding when to handing-over a radio connection when a mobile radio station (MS) moves from one radio cell into another radio cell in a digital radio transmission system with frequency-division multiplexing of adjacent radio cells and wherein co-channel radio cells are separated by different spread codes, comprising the steps of the reception quality criteria measurements to be effected in the mobile station (MS) for assigning itself one of the radio cells and consequently for the hand-over decision are effected such that additionally during the existence of a radio connection to a near base station (BS) the reception quality of the co-channel message transmission channels are measured in the mobile radio station (MS).

4,765,754

INCLINED CONTACT RECIRCULATING ROLLER BEARING

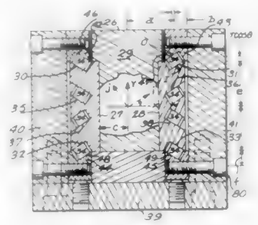
Alexander H. Slocum, McLean, Va., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed May 12, 1987, Ser. No. 48,848

Int. Cl.[4] F16C 29/06

U.S. Cl. 384—44 5 Claims

1. A recirculating roller bearing for guiding a linear movement comprising a base having parallel upwardly extending side members, the side members having upper and lower rails extending the length of the side members and secured thereto by an attachment means, the upper rails having a lower face having a V-groove to receive a roller, said V-groove to receive a roller, said V-groove having an inner face serving as a load bearing surface, the lower rails having an upper edge having a V-groove with an inner face of the groove being a load bearing surface to contact a roller bearing, a carriage assembly comprising a pair of bearing plates disposed between each upper and lower rail, the bearing plate having a V-groove on its upper and lower surfaces as load bearing regions opposite the V-grooves of the rails and capable of receiving a roller bearing in a space formed by the opposing V-grooves, the upper and lower V-grooves of the bearing plates having cooperating U-grooves extending the length of the V-grooves acting as a non-load bearing flight for the rollers thereby forming an



endless trace, the U-grooves having their side walls parallel to the respective cooperating load-bearing surface of the V-groove in the bearing plate such that the rollers within each endless trace are always parallel.

4,765,755

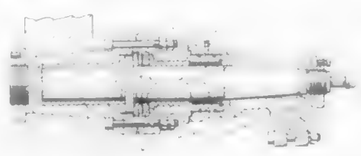
ROLLER MILL

Billie R. Kirkland, Langley, S.C., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Apr. 8, 1985, Ser. No. 721,250

Int. Cl.[4] F16C 21/00

U.S. Cl. 384—126 5 Claims



1. In a roller mill wherein a milling roll is supported on a journal housing for rotational movement about a stationary journal shaft with a portion of the journal housing extending within a journal head which is pivotally attached to a trunnion shaft for providing pivotal movements to these components during a milling operation, the improvement comprising: antifriction thrust-type roller bearing means for supporting said journal-housing-supported milling roll upon said stationary journal shaft for rotational movement thereabout, said journal housing being formed in two parts comprising a lower journal housing and an upper journal housing, and each of said lower journal housing and said upper journal housing being formed with an internal bore within which is positioned a bushing for engaging said stationary journal shaft, said antifriction thrust-type roller bearing means being positioned about said stationary journal shaft and operatively connected with an internal portion of said journal housing, said bearing means being positioned to engage one of said bushings and a shoulder portion formed on said stationary journal shaft, and sealing means carried between said journal housing and said stationary journal shaft for preventing particulate material from contacting said antifriction thrust-type roller bearing means.

4,765,756

ROLLING BEARING

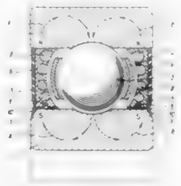
Antonio Gabelli, Ijsselstein, Netherlands, assignor to SKF Industrial Trading and Development Co., B.V., Nieuwegein, Netherlands

Filed Apr. 16, 1987, Ser. No. 39,465

Claims priority, application Netherlands, Apr. 22, 1986, 8601030

Int. Cl.[4] F16C 33/74, 33/82; F16J 15/40

U.S. Cl. 384—133 4 Claims



1. A rolling bearing comprising at least one outer race and at least one inner race situated coaxially therein both races defining an annular space therebetween and at least one row of rolling members situated in the annular space between the races, and generally annular ring seals, having inwardly directed sides and inner and outer peripheral areas, for sealing off from the surroundings, on either side of the rolling members, the annular space between the races wherein a lubricant is present, wherein the inwardly directed sides of the sealing rings being formed with at least one cavity containing a fluid magnetic lubricant, and magnetic means forming magnetic fields, the poles of which fields are located on either side of said at least one cavity, near the races.

4,765,757

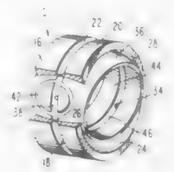
SELF-ALIGNING SPHERICAL BUSHING MEANS

Werner Hartl, Plainsboro, N.J., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Dec. 14, 1987, Ser. No. 133,598

Int. Cl.[4] F16C 25/04

U.S. Cl. 384—213 19 Claims



1. A self-aligning spherical bushing means, being positionable between an inner member and an outer member which are movable with respect to each other, said self-aligning spherical bushing means comprising:

(a) a first ring means mountable with respect to the outer member and defining a first ring lubrication aperture means therein, said first ring means further including:

(1) an outer first ring surface being generally cylindrical and defining a first lubrication groove extending circumferentially therearound in fluid flow communication with respect to said first ring lubrication aperture means, said outer first ring surface being positioned adjacent the outer member;

(2) an inner first ring surface being generally spherically concave and in fluid flow communication with respect to said first ring lubrication aperture means to receive lubrication therefrom for lubrication of said inner first ring surface, said first ring lubrication aperture means extending from said outer first ring surface to said inner first ring surface to allow fluid flow communication between said first lubrication groove and said inner first ring surface;

(b) a second ring means positioned within said inner first ring surface of said first ring means, said second ring means defining a mounting channel extending therethrough being generally cylindrical and adapted to receive the inner member therein, said mounting channel of said second ring means defining a central axis therethrough, said second ring means defining a second ring lubrication aperture means extending therethrough, said second ring means including:

(1) an outer second ring surface being generally spherically convex and defining a second lubrication groove extending circumferentially therearound and being in fluid flow communication with respect to said second ring lubrication aperture means, said outer second ring surface being of generally spherical convex shape and being in slidable abutment with respect to said inner first ring surface of generally spherical concave shape to facilitate self-aligning flexibility of the spherical bushing means, said outer second ring surface being of a smaller convex spherical diameter than the concave spherical diameter of said inner first ring surface to provide operating clearances, said outer second ring surface further defining a supplementary lubrication groove means thereon in direct fluid flow communication with respect to said second lubrication groove, said supplementary lubrication groove means comprising circular channel means defined in said outer second ring surface intersecting said second lubrication groove, said circular channel means adapted to receive lubrication from said second lubrication groove, said circular channel means being oriented in a plane parallel with respect to said central axis of said mounting channel of said second ring means; and

(2) an inner second ring surface being generally cylindrical and defining said mounting channel therein adapted to receive the inner member positioned therein, said inner second ring surface defining a third lubrication groove extending circumferentially therearound and being in fluid flow communication with respect to said second ring lubrication aperture means, said second ring lubrication aperture means extending from said outer second ring surface to said inner second ring surface to allow fluid flow communication between said second lubrication groove and said third lubrication groove.

4,765,758

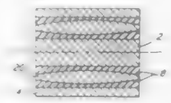
LAMINATED BEARING

Brian R. O'Donnell, Burlington, and Mark F. Peretti, Braintree, both of Mass., assignors to Barry Wright Corporation, Newton Lower Falls, Mass.

Filed Jan. 7, 1985, Ser. No. 689,118

Int. Cl.[4] F16C 27/06; B60G 11/22; F16D 1/00

U.S. Cl. 384—221 18 Claims



14. A laminated bearing comprising:

inner and outer concentric housings;

shim means of substantially non-extensible material disposed between said inner and outer housings and having a first convex surface facing said outer housing and a second convex surface facing said inner housing; and

elastomeric material interposed between said first convex surface and said outer housing, and between said second convex surface and said inner housing.

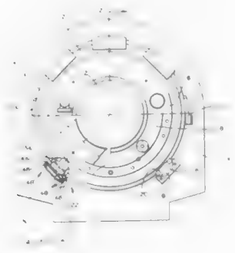
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,759

JOURNAL BEARING SUPPORT AND ALIGNMENT DEVICE

Albert F. Le Breton, Longwood, and William S. Beal, Winter Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 15, 1987, Ser. No. 61,764
Int. Cl.[4] F16C *23/02*
U.S. Cl. 384—252 14 Claims





1. Apparatus for aligning a rotor centrally within a reference bore, each end of the rotor being supported by a respective journal bearing including an upper half and a lower half joined together by a bearing shell for mounting within a bearing pedestal, comprising at each rotor end:

a pair of grooves formed axially within the lower half of the bearing shell, each said groove having a cylindrical surface;

an upper seating pad inserted within each said groove, said upper seating pad including a top cylindrical surface adapted to conform to said cylindrical surface of each said groove, and a lower cylindrical surface formed perpendicularly to said top cylindrical surface;

a bottom seating pad mated to each said upper seating pad, said bottom seating pad having a cylindrical upper surface adapted to conform to said lower cylindrical surface of said mated upper seating pad, and a flat bottom surface; and

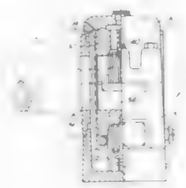
means for retaining each said bottom seating pad relative to the bearing pedestal.

4,765,760

BEARING ASSEMBLY

Hooshang Heshmat, Latham, N.Y., and Paul T. Gorski, Greer, S.C., assignors to Reliance Electric Company, Greenville, S.C.

Continuation of Ser. No. 790,188, Oct. 22, 1985, abandoned, which is a continuation-in-part of Ser. No. 740,236, May 31, 1985, Pat. No. 4,674,894, which is a continuation-in-part of Ser. No. 569,526, Jan. 9, 1984, Pat. No. 4,531,845. This application Jan. 5, 1987, Ser. No. 6,244
Int. Cl.[4] F16C *33/66*
U.S. Cl. 384—398 23 Claims



1. An improved bearing assembly comprising:

(a) a housing, said housing defining a shaft receiving opening therethrough;

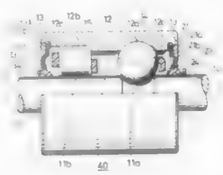
(b) a liner received within said housing and defining a shaft receiving bore opening therethrough, said liner furhter defining an enlarged annulus at opposite ends of said bore opening, said liner further defining at least one lubricant delivry groove in communication with said bore opening and extending axially therealong, said at least one lubricant delivery groove having flow restrictor means at opposite ends of same, said bore opening having a length to diameter ratio of from about 0.87 to about 0.92, whereby said bearing will rotatingly support a shaft extending therethrough at various loads while experiencing low power losses under flooded or starved lubricant conditions.

4,765,761

WATER PUMP BEARING UNIT

Kazuyuki Umezaki, Osaka, Japan, assignor to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Apr. 30, 1987, Ser. No. 44,946
Claims priority, application Japan, May 1, 1986, 61-67203[U]
Int. Cl.[4] F16C *33/78;* F16J *15/32*
U.S. Cl. 384—484 2 Claims



1. In a water pump bearing unit having a water pump shaft extending from a first end of the unit to a second end of the unit, and an impeller proximate the first end and a pulley proximate the second end, a sealing arrangement comprising:

an outer ring surrounding the shaft, to form an internal annular space;

a plurality of roller elements in said internal annular space;

a first annular seal member, operating as a bidirectional seal, located between the pump shaft and said outer ring at said first end of the bearing unit, said first annular seal member having a first inwardly extending lip for sealing said internal annular space at the first end of the bearing unit when the pressure in said internal annular space is higher than the external pressure at the first end and a first outwardly extending lip for sealing said internal annular space at the first end of the bearing unit when the pressure in said internal annular space is less than the external pressure at the first end; and,

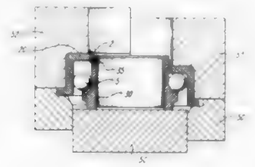
a second annular seal member, operating as a unidirectional seal, located between the pump shaft and said outer ring at said second end of the bearing unit, said second annular seal member having a second inwardly extending lip for sealing said internal annular space at the second end of the bearing unit when the pressure of said internal annular space is higher than the external presure at the second end and a second outwardly extending lip for allowing air penetration into the internal annular space when the pressure in said internal annular space is less than the external pressure of the first end.

4,765,762

HARDENED BALL BEARING ASSEMBLY

Alfreds Rozentals, Northboro, Mass., assignor to Landquist Tool & Mfg. Co., Inc., Worcester, Mass.

Filed Feb. 18, 1987, Ser. No. 15,990
Int. Cl.[4] F16C *19/04*
U.S. Cl. 384—539 10 Claims



1. A hardened bearing assembly having an inner and an outer race and a plurality of rolling bearing elements between the inner and the outer race, wherein said inner and said outer race each have respective opposing retaining faces integral with the said respective races and dimensioned for an interference fit one about the other so that the bearing races may be assembled into a unitary bearing assembly by providing an assembly force to a said race for driving the opposing faces past an interference fit position to a position wherein each race rotates freely with respect to the other, wherein the retaining face of one said race includes a radially-protruding ridge, and the retaining face of the other said race includes a plurality of radially-protruding ears, said ridge and said ears each having a dimension for providing said interference fit; and wherein the interference fit is in the range of approximately 0.001 to 0.006 inches, and wherein the bearing has a diameter of under approximately 2 inches.

4,765,763

METHOD OF CONFIRMING THAT A PATTERN TO BE PRINTED IS A HIGH-DENSITY PATTERN AND DIVISIONALLY PRINTING THE PATTERN, AND A DOT PRINTER WHICH CAN PRINT HIGH-QUALITY, HIGH-DENSITY PATTERNS

Takao Ishikawa, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 20, 1986, Ser. No. 841,800
Claims priority, application Japan, Mar. 27, 1985, 60-62304
Int. Cl.[4] B41J *3/12*
U.S. Cl. 400—121 16 Claims

1. A dot printer for printing high-density patterns with high quality, comprising:
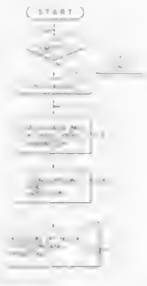
memory means for storing printing pattern data for one line of patterns to be printed, the printing pattern data comprising at least one block data comprising ON data and OFF data representing ON dots to be printed and OFF dots that are not printed, respectively, each of said block data having associated weight data related to the number of ON data in said associated block data and comprises an associated plurality of sub-block data;

processing means for preforming a sequential adding operation on the weight data associated with each of the block data in the lines;

said processing means including a dot number table for generating the number of said ON dots for each of the sub-block data input thereto,

referring means for sequentially reading out each of said sub-block data in the block data, and for referring to said dot number table to generate the umber of ON dots for the read-out sub-block data,

dot adding means for sequentially adding the generated



number of ON dots in said associated sub-block data for each of said block data to the total number of ON dots in said block data, and

ratio calculating means for calculating a ratio of the total number of ON dots to the number of dots in the block data to determine the dot density;

weight data determination means for determining weight data based on a determined dot density;

adding means for performing the sequential adding operation on the weight data associated with each of the block data in the line;

determination means for determining hot many times divisional printing should be performed when an added result of the sequential adding operation exceeds a predetermined value during the sequential adding operation; and

printing means for printing the printing pattern in accordance with a predetermined number of times the divisional printing should be performed.

4,765,764

KEYBOARD

Jerrold P. Lefler, Simi Valley, Calif., assignor to Digitext, Inc., Thousand Oaks, Calif.

Filed Feb. 20, 1986, Ser. No. 832,273
Int. Cl.[4] B41J *5/10*
U.S. Cl. 400—482 6 Claims

1. A stenographic keyboard for generating unique, computer readable and translatable signals to provide unambiguous and context independent translation of a stenographic record comprising, from bottom to top:

a lower row of four vowel keys, which from left to right are A O E U;

a lower middle row of keys arranged to define a first left hand group, a first center group and a first right hand group, the first left hand group keys, from left to right are Z, S, C, W, R, the first center group defining a first stroke

VOL 1093 ISS 4 AG 23 1988 UMI

ambiguity resolution key, and the first right hand group of keys, from left to right, are R, B, G, S, Z;

an upper middle row of keys arranged to define a second left hand group, a second center group and a second right hand group, the second left hand group of keys from left to right are "first control key", K, T, P, H, the second



center group defining a second stroke ambiguity resolution key and the second right hand group of key, from left to right are V, P, L, T, D; and

a top row of individually operable keys defining control keys for controlling computers in a first mode and defining ambiguity resolution keys for resolving stroking ambiguities in a second mode.

4,765,765

LABEL PRINTER

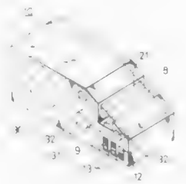
Takashi Futakata, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 14, 1986, Ser. No. 930,295

Claims priority, application Japan, Nov. 21, 1985, 60-262058

Int. Cl.[4] B41J *15/04, 15/16*

U.S. Cl. 400—614 4 Claims



1. a label printer comprising:

(a) a label cassette containing an elongate label sheet having a plurality of labels removably stuck thereon, said label cassette being removably located in said label printer;

(b) a takeup mechanism disposed in said label printer for taking up said elongate label sheet contained in said label cassette;

(c) a printing unit disposed in said label printer for sequentially printing each one of said plurality of labels stuck onto said elongate label sheet;

(d) a memory incorporated in said label printer for storing, as a plurality of print parameters, label formats relative to print contents; and

(e) a parameter selection means comprising:

(i) a plurality of selective elements each one of which has a portion that has at least two light-reflective states, said plurality of selective elements being incorporated in said label cassette, each one of said light-reflective states of each one of said plurality of selective elements corresponding to one of said plurality of print parameters, and

(ii) discriminator means capable of detecting the light-reflective state of said portion of each one of said selective elements and selecting a print parameter stored in said memory conforming to the results of such detection, thereby prescribing the desired label format for printing, said discriminator means being incorporated in said label printer externally of said label cassette.

4,765,766

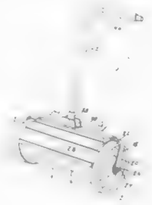
ADJUSTABLE HANDLE FOR APPLICATOR

Kenneth Heitmann, and Goeffrey B. Rench, both of Racine, Wis., assignors to Racine Industries, Inc., Racine, Wis.

Filed May 11, 1987, Ser. No. 48,640

Int. Cl.[4] A46B *11/00, 17/02;* B43K *23/02;* B62B *1/00*

U.S. Cl. 401—48 14 Claims



1. In an applicator for particulate compositions of the type having a horizontally oriented apertured dispensing container, wheels on either side thereof forming a container axis, and an upright handle apparatus for pushing the applicator, the improvement in the handle apparatus comprising:

a yoke having legs adjacent to each of the wheels and a cross member interconnecting the legs and extending in a direction substantially parallel to the container axis;

a mounting bracket affixed with respect to the cross member;

a slide mount attached to the bracket and freely pivotable with respect thereto about a mount axis;

an elongated handle member slidably mounted in the mount, the handle member having a lower end; and

means at least at the lower end of the handle member and at a generally middle position spaced therefrom for selectively securing the handle member in the slide mount in an upright position and in a substantially horizontal position, said mount axis being perpendicular with respect to the plane formed by the container axis and cross member,

whereby, in addition to functioning as an upright handle, the handle can readily be adjusted to a horizontal position parallel to the container axis and cross member and closely adjacent thereto so that it can function as a convenient carrying handle for the container and its contents.

4,765,767

SNAP-ON CLIP FOR ELONGATED INSTRUMENTS

William E. Marynissen, Old Greenwich; Thomas T. Beeson, Fairfield, and Thomas G. Snell, Madison, all of Conn., assignors to BIC Corporation, Milford, Conn.

Filed Aug. 1, 1985, Ser. No. 761,991

Int. Cl.[4] B43K *25/00*

U.S. Cl. 401—213 23 Claims

1. A clip assembly for an elongated instrument which comprises:

(a) a base portion;

(b) a resilient elongated member extending from said base portion; and

(c) at least two spaced apart attachment means, each attachment means including at least two leg members spaced apart from each other by a medial groove and extending in a substantially perpendicular direction from said base portion and being resiliently movable toward and away from each other, at least a portion of said leg members having an arcuate outer surface portion and each pair of leg members being dimensioned for insertion through at least one correspondingly configured aperture defined by

the elongated instrument, at least said arcuate surface portion of each leg member dimensioned for contacting snap-locking engagement therewith by resilient movement of said leg members toward and away from each other during insertion thereof into said corresponding aperture, thereby providing attachment of said base por-



tion thereto, said base portion and resilient elongated member being configured and dimensioned such that attachment of said base portion to said elongated instrument will retain said elongated member in generally parallel relation and sufficiently close proximity with the elongated instrument for releasable attachment of said instrument to wearing apparel or the like.

4,765,768

RING BINDING MECHANISM

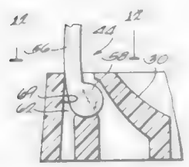
John S. Wright, 6115 N. Lake Drive Ct., Milwaukee, Wis. 53217

Filed Aug. 24, 1987, Ser. No. 88,725

Int. Cl.[4] B42F *13/20*

U.S. Cl. 402—30 21 Claims





1. A ring binding mechanism including

a partial ring having a body including first and second ends which are circumferentially spaced to define an opening for placing apertured sheets on said ring;

a base plate member having a front side, a back side, a longitudinal axis and an internal track which is an integral part of said base plate member and extends transversely of said longitudinal axis for slidably receiving said ring body from said front side for rotational movement of said ring relative to said base plate member in opposite directions about an axis generally parallel to said longitudinal axis between a loading position wherein said opening is located away from said front side of said base plate member and a loaded position wherein said opening is located beneath said front side of said base plate member;

motion limit means on said base plate member and on said ring which cooperate to prevent further rotation of said ring in the direction toward loaded position after said first end of said ring reaches the loaded position; and

locking means on said second end of said ring and on said base plate member which cooperate to releasably lock said second end of said ring in the loaded position.

4,765,769

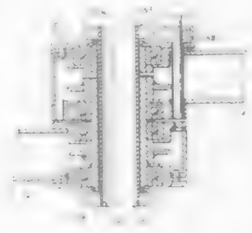
LEG KING PIN SYSTEM

Leonard T. Chapman, 13760 Chandler Blvd., Van Nuys, Calif. 91401

Filed Dec. 17, 1986, Ser. No. 943,629

Int. Cl.[4] F16B *7/00*

U.S. Cl. 403—24 9 Claims



1. A leg king pin system for mounting an auxiliary unit to an articulated joint on a mobile dolly having a frame, comprising, at least one cap member and a receiving tube, said cap members being arranged so as to support said receiving tube on the frame of the mobile dolly.

4,765,770

SELF-ADJUSTING PIVOT JOINT WITH AXIAL PLAY FOR MOTOR VEHICLES

Reinhard Buhl, Bohmte, Fed. Rep. of Germany, assignor to Lemforder Metallwaren AG, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,580

Claims priority, application Fed. Rep. of Germany, Apr. 9, 1987, 3711971

Int. Cl.[4] F16C *11/00*

U.S. Cl. 403—146 5 Claims

1. A self adjusting pivot joint with axial play for motor vehicles, comprising;

a housing having a first end and an opposite end with a closing part, a pivot member rotatably seated in said housing adjacent to one of said ends;

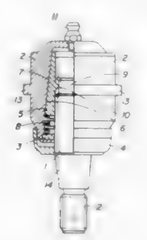
a bearing of elastically deformable material disposed within said housing about said pivot, said bearing being slit lengthwise and having a conical shape tapering from one end toward a terminating inner opposite end tip;

said housing defining a cavity into which said conical bearing is fitted a prestressed spring disposed between said bearing and one of said ends of said bearing to urge said housing away from said closing part of said housing;

said pivot member having a recessed portion interfitting

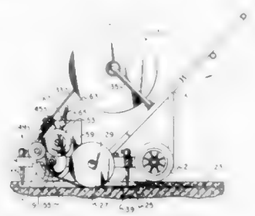
VOL 1093 ISS 4 AG 23 1988 UMI

with a recessed portion of said bearing, said projection widened in the direction of the longitudinal axis of said



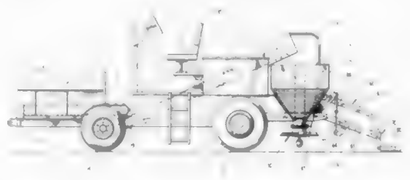
pivot, said projection being less wide than said recessed portion.

4,765,771
APPARATUS FOR INSERTING SEALING STRIP INTO CONCRETE EXPANSION JOINTS
Michael J. Howsley, Weatherford, Tex., assignor to JMK International, Inc., Fort Worth, Tex.
Filed May 15, 1987, Ser. No. 50,723
Int. Cl.[4] E01C *11/02, 23/09*
U.S. Cl. 404—74 10 Claims



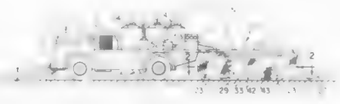
1. An apparatus for inserting a resilient strip into a groove in a concrete surface, comprising in combination:
a frame;
a plurality of wheels mounted to the frame for rolling the frame on the concrete surface;
a supply reel rotatably mounted to the frame, about which a quantity of the strip is adapted to be wound;
an insertion disk rotatably mounted to the frame and adapted to be positioned in the groove for pushing the strip drawn from the reel into the groove;
a pair of pinch rollers rotatably mounted to the frame for tightly receiving the strip between them prior to contact of the strip with the insertion disk;
drive means driven by rotation of the wheels for rotating at least one of the pinch rollers; and
adjusting means for varying the drive means to change the speed of the pinch rollers relative to the speed of the wheels, to pull the strip from the reel with the pinch rollers at a speed selected to remove tension in the strip between the pinch rollers and insertion disk.

4,765,772
METHOD AND APPARATUS FOR FILLING VOIDS IN RECYCLED ASPHALT
Angelo W. Benedetti, and Angelo W. Benedetti, Jr., both of Bedford, Ohio, assignors to Angelo Benedetti, Inc., Bedford, Ohio
Filed May 29, 1987, Ser. No. 55,600
Int. Cl.[4] E01C *7/00, 19/12, 19/22*
U.S. Cl. 404—77 39 Claims



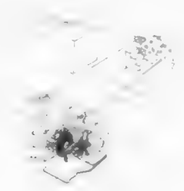
1. A method of recycling and repaving an asphalt pavement surface of a road including the steps of:
(a) heating said pavement surface to a temperature sufficiently high to cause said pavement to soften and maintaining said pavement surface at least said temperature throughout said method;
(b) scarifying said surface to a depth not exceeding the depth to which the asphalt thereof has been softened;
(c) leveling said scarified surface to a desired contour;
(d) spreading a thin overlay of overlay material on said leveled surface, said overlay material filling substantially all voids created in said surface by steps (a), (b) and (c); and
(e) rolling the overlayed leveled surface to provide a smooth trafficable road surface which is substantially free of voids, said spreading step being accomplished by counter-rotating two spinners each supplied with overlay material from a lateral discharge port of a subchamber provided for each spinner, said spinners each having mounted thereon a plurality of distribution vanes.

4,765,773
MICROWAVE HIGHWAY PAINT DRYING APPARATUS
Harry C. Hopkins, Rte. 5, Box 883, Williamston, N.C. 27892
Filed Feb. 27, 1987, Ser. No. 20,109
Int. Cl.[4] E01C *23/16, 23/14*
U.S. Cl. 404—94 14 Claims



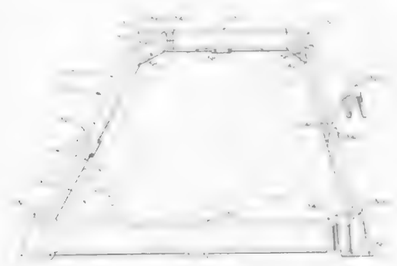
1. A mobile microwave drying apparatus comprising
a generally hollow box shaped frame having a upper wall, two side walls, a front wall and a rear wall, but which is open on the bottom, the interior surfaces of the frame being covered with a microwave absorbent material and forming a microwave cavity,
front and rear rollers pivotally attached to the side walls of said frame adjacent the front wall and rear wall, respectively, such that said frame is mobile over a surface contacted by said rollers, the frame being spaced from the surface by a certain distance;
at least one tread extending about said front and rear rollers, said tread being covered with microwave absorbent material, the thickness of said thread being greater than the certain distance so as to substantially eliminate any straight path from the microwave cavity to the exterior of the frame, except through the surface contacted by said rollers;
a fluid spray nozzle located within the microwave cavity for spraying fluid on the surface; and
at least one microwave generator for directing microwave radiation onto the fluid sprayed on the surface and drying the fluid.

4,765,774
APPARATUS FOR REDISTRIBUTING ASPHALT
Louie Wilson, 655 Georgia Ave., Fayetteville, Ga. 30214
Filed May 1, 1986, Ser. No. 858,116
Int. Cl.[4] E01C *19/20, 19/42*
U.S. Cl. 404—101 10 Claims



1. Apparatus for redistributing asphalt laid by an asphalt spreader overlapping a lane adjacent the lane being surfaced by the spreader, and with the apparatus comprising a mount, motor means mounted to said mount, a brush coupled with said motor for rotatable movement, and means for securing said mount to the rear of an asphalt spreader with said brush located at a position behind the spreader for sweeping asphalt from the adjacent lane onto the lane being surfaced to the rear of the spreader.

4,765,775
DIKE ASSEMBLY
David G. Kroger, Hudson, Ohio, assignor to Magnum Fiberglass Products Inc., Aurora, Ohio
Filed Dec. 19, 1986, Ser. No. 943,743
Int. Cl.[4] E02B *7/02*
U.S. Cl. 405—52 15 Claims



1. A modular, interlocking dike assembly comprising in combination:
strut member components;
corner member components;
sealing means;
fastening means, and optionally,
strut member couplers,
each of said strut member components by itself forming a complete, monolithic wall section of said assembly having ends provided with strut terminal posts, terminal post receiver areas, or some combination thereof, with at least some of said strut member components having strut terminal posts on at least one end thereof by which said strut member components may be connected to said corner member components, and when present to said strut member couplers, said strut member couplers and said corner member components having terminal post receiver areas adapted to connectably enclose said strut terminal posts, said sealing means being provided between said terminal posts and said terminal post receiver areas to prevent the escape of fluids therebetween, and said fastening means permitting said dike assembly to be fastened to a substratum.

4,765,776
CONVERTIBLE BARGE
Robert E. Howson, New Orleans, La., assignor to McDermott Incorporated, New Orleans, La.
Filed Nov. 17, 1986, Ser. No. 931,283
Int. Cl.[4] B63B *35/02;* F16L *1/04*
U.S. Cl. 405—169 18 Claims



1. A convertible barge, comprising:
a. a deck;
b. a plurality of modules positioned on said deck in end to end relation and at least some of which contain pipeline processing equipment, said modules being removably attached to said deck, each said module comprising a floor, ceiling, and a pair of side walls extending longitudinally of the barge between the ends; and
c. means defining a closable opening comprising a roll-up door in at least one end of said modules for passing a pipeline portion from said module to a respectively adjacent module as the pipeline is being processed, for sealing the module during storage and for providing passageways between the modules and a view of pipe laying operations during use.

12. A method for converting a barge to a lay barge, comprising
a. positioning on a deck of the barge in end to end relation of plurality of modules each of which has a floor, ceiling, and a pair of sidewalls extending longitudinally of the barge between the ends;
b. providing pipeline process stations in at least some of the modules;
c. removably attaching the modules to the deck; and
d. providing a roll-up door in at least one of the module ends of each module for passing a pipeline portion from the module to a respectively adjacent module as the pipeline is being processed and for providing passageways between the modules and a view of pipe laying operations during use.

4,765,777
APPARATUS AND METHOD FOR RAISING AND SUPPORTING A BUILDING
Steven D. Gregory, 2400 S. Monta Vista, Ada, Okla. 74820
Filed Jun. 29, 1987, Ser. No. 68,193
Int. Cl.[4] E02D *5/00*
U.S. Cl. 405—230 10 Claims

1. An apparatus for raising and/or supporting the foundation or slab of a building, said apparatus comprising lifting arm means for engaging the lower surface of said foundation or slab, a retaining member engaging said lifting arm means and engaging the outer wall of said foundation or slab, means for

VOL 1093 ISS 4 AG 23 1988 UMI

securing said retaining member to said foundation or slab, pipe means extending adjacent said retaining member, driving means engaging said upper portion of said pipe means, ram means connected between said driving means and said lifting arm means, and means for actuating said ram means to drive said pipe means into the ground until said pipe means encounters a predetermined resistance, said actuating means adapted to further actuate said ram means after said predetermined resistance is encountered to raise and/or stabilize said foundation or slab, said retaining member maintaining said lifting arm means in engagement with said lower surface during said actuation of said ram means.

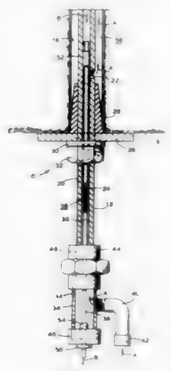


4,765,778

HARDENED MATERIAL SUPPORTED ROCK BOLT AND APPARATUS FOR INSTALLING SAME

Douglas G. Valentine, Sudbury, Canada, assignor to Inco Limited, Toronto, Canada

Filed Jun. 12, 1987, Ser. No. 62,484
Claims priority, application Canada, Jun. 24, 1986, 512255
Int. Cl.[4] E21D *20/02*
U.S. Cl. 405—260 **14 Claims**



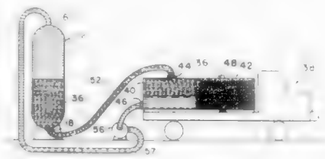
1. A rock bolt system, the system comprising a rock bolt and a feeding attachment demountably affixed to the rock bolt, the rock bolt including an interior channel extending within the rock bolt, means for flowably introducing hardenable material into the feeding attachment and into the interior channel, a tube affixed to the feeding attachment and extending into the interior channel of the rock bolt, the tube and the interior channel forming a void therebetween, at least one aperture disposed in the rock bolt for routing the hardenable material from the void to the exterior of the rock bolt, a seal in the void circumscribing the tube and registered against the interior channel, the seal disposed immediately above the aperture for routing the hardenable material in the void out through the aperture and upwardly around the rock bolt.

4,765,779

APPARATUS AND METHOD FOR CHARGING CANISTERS WITH GRANULAR CARBON

William L. Organ, 6006 Jagger Rd., Ludington, Mich. 49431

Filed Feb. 26, 1987, Ser. No. 19,060
Int. Cl.[4] B65G *53/28*; B60P *1/60*
U.S. Cl. 406—106 **17 Claims**



1. A method of replacing an old carbon charge in an enclosed canister comprising:
providing a vehicle having a supply tank containing a new carbon charge and an enclosed receiving tank;
fluidly connecting a conduit between the canister and the receiving tank;
adding liquid as necessary to the canister to create an old carbon slurry;
filling the conduit and receiving tank with liquid;
drawing liquid from the receiving tank to draw the old carbon slurry into the receiving tank;
removing the conduit from the receiving tank;
fluidly connecting a conduit between the supply tank and the canister;
adding liquid to the supply tank as necessary to create a new carbon slurry;
filling the canister and conduit with liquid;
drawing liquid from the canister to draw the new carbon slurry into the canister, whereby the old carbon charge is transferred from the canister to the vehicle and the new carbon charge is transferred from the vehicle to the canister.

4,765,780

APPARATUS FOR AND METHOD OF PROVIDING A MULTIPLICITY OF STREAMS OF AIR-ENTRAINED FIBERS

John J. Angstadt, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 28, 1986, Ser. No. 868,218
Int. Cl.[4] B65G *53/52*; D04H *1/00*
U.S. Cl. 406—123 **74 Claims**

1. An apparatus for providing a multiplicity of streams of air-entrained fibers by splitting a column of fibers into multiple fiber streams and by independently entraining each of the fibers streams in air, said apparatus comprising:
a curvilinear splitting member having a plurality of ports disposed in and along a surface of said splitting member and comprising a first port and a second port circumferentially spaced downstream and completely axially offset from said first port, wherein a column of fibers is directed along said surface of said splitting member to said ports;
a first conduit duct that is in communication with said first port of said splitting member, said first conduit duct directing a column of air past said first port to cause a portion of the column of fibers to split off and be drawn into said first conduit duct to form a first fiber stream and entraining the first fiber stream in the air to direct the first fiber stream downstream; and
a second conduit duct that is in communication with said second port of said splitting member, said second conduit duct directing a column of air past said second port to cause a portion of the column of fibers to split off and be drawn into said second conduit duct to form a second fiber stream and entraining the second fiber stream in the air to direct the second fiber stream downstream.

62. A method for splitting a column of fibers into a multiplicity of streams of air-entrained fibers, the method comprising the steps of:
providing a column of fibers;
directing said column of fibers along the surface of a curvilinear splitting member having a plurality of ports comprising a first port and a second port;
imparting angular velocity and momentum to said column of fibers;
directing a first column of air through a first conduit duct past the first port so as to create a pressure differential adjacent the first port;



releasing a first portion of said column of fibers away from its angular path of travel;
drawing said first portion of said column of fibers through the first port into the first conduit duct as a result of the angular momentum of the fibers and the pressure differential formed adjacent the first port so as to form a first fiber stream;
entraining said first fiber stream in the first column of air;
directing the first stream of air-entrained fibers downstream;
directing a second column of air through a second conduit duct past the second port so as to create a pressure differential adjacent the second port;
releasing a second portion of said column of fibers away from its angular path of travel;
drawing said second portion of said column of fibers through the second port into the second conduit duct as a result of the angular momentum of the fibers and the pressure differential formed adjacent the second port so as to form a second fiber stream;
entraining said second fiber stream in the second column of air; and
directing the second stream of air-entrained fibers downstream.

4,765,781

COAL SLURRY SYSTEM

David M. Wilks, and Steven L. Mickna, both of Amarillo, Tex., assignors to Southwestern Public Service Company, Amarillo, Tex.

Division of Ser. No. 710,302, Mar. 8, 1985, Pat. No. 4,602,483.
This application May 29, 1986, Ser. No. 868,105
Int. Cl.[4] B65G *53/00*
U.S. Cl. 406—197 **16 Claims**

1. A method of providing a liquified gas coal slurry in a pipeline comprising the steps of:
(a) providing a predetermined weight of pulverized coal into a chamber closed to a slurry receiving means;
(b) providing liquified gas in the closed chamber so as to substantially fill the closed chamber with slurry at a predetermined pressure and temperature;
(c) placing said chamber in communication with said slurry receiving means; and
(d) discharging slurry from the lower end of said closed



chamber into said slurry receiving means that is at a pressure substantially less than said predetermined pressure while simultaneously injecting a pressure maintaining gas at a temperature slightly above said predetermined temperature and at a pressure that is substantially greater than the pressure in said receiving means into the upper extent of said chamber above the slurry so as to maintain said slurry at a sufficiently high pressure as to prevent flashing of the liquid to vapor during the slurry discharge.

4,765,782

CUTTER

Masao Ohkita, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

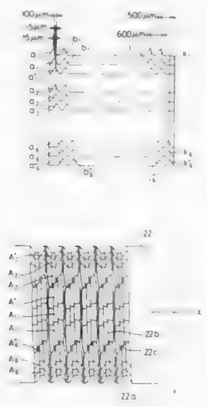
Filed Feb. 25, 1987, Ser. No. 18,929
Claims priority, application Japan, Jul. 4, 1986, 61-156257
Int. Cl.[4] B26D *1/12*
U.S. Cl. 407—24 **3 Claims**

1. A cutter having cutting edges for cutting a spiral groove on a screw shaft, comprising:
a cylindrical body extending in an axial direction and in a circumferential direction;
a plurality of sets of grouped rows of cutting edges extending in the axial direction on said cylindrical body, each of said sets comprising one row of first cutting edges positioned between a pair of rows of second cutting edges spaced on each side thereof in the circumferential direction, wherein each set is spaced apart from an adjacent set by a first angular displacement in the circumferential direction, the first cutting edges of the one row in each set are spaced apart by a first pitch in the axial direction and are offset from the row of first cutting edges of an adjacent set by a second pitch in the axial direction,
wherein, in each set, each of said pair of rows of second cutting edges is spaced on a respective side of the one row of first cutting adges by a second angular displacement in the circumferential direction, and the second cutting edges of one of said pair of rows are spaced apart by said first pitch and displaced by a third pitch to one side of respective ones of the first cutting edges in the axial direction, and the second cutting edges of the other of said pair

VOL 1093 ISS 4 AG 23 1988 UMI

of rows are spaced apart by said first pitch and displaced by said third pitch to the other side of said respective ones of the first cutting edges in the axial direction,

said second angular displacement of the rows of second cutting edges in each set in the circumferential direction being a small fraction of said first angular displacement between adjacent sets, said third pitch of the second cutting edges from the respective first cutting edges in the axial direction in each set being a small fraction of said second pitch between the rows of first cutting edges of adjacent sets, and said second pitch being a small fraction



of said first pitch between the first cutting edges in said one row of each set,

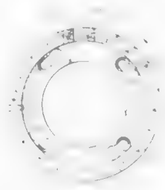
whereby said cutter produces a spiral groove on said shaft having a series of grouped groove portions spaced from each other angularly in correspondence to said first angular displacement and offset axially in correspondence to said second pitch, and each group of groove portions is formed by a series of small groove sections spaced from each other angularly in coreespondence to said second angular displacement and offset axially in correspondence to said third pitch.

4,765,783

FACE MILLING CUTTER

Ralph H. Rawle, Windsor, Canada, assignor to J. P. Tool Limited, Windsor, Canada

Filed May 5, 1987, Ser. No. 46,148
The portion of the term of this patent subsequent to May 6, 2003, has been disclaimed.
Int. Cl.[4] B23C *5/20*
U.S. Cl. 407—41 5 Claims



1. A face milling tool used to machine a workpiece comprising:

a rotatable spindle;

a holder which is securable to said rotatable spindle, said holder having an end face lying substantially perpendicular to the longitudinal axis of said spindle;

a plurality of cutting inserts detachably secured at said end face of said holder at a radial distance from the axis of the spindle in a circumferentially spaced and axially and radially stepped relation to form both an axial and radial progression;

said inserts having a wafer-like form with first and second end faces and a sidewall, said inserts also having at least one substantially straight cutting edge formed by the intersection of an end face and a portion of the sidewall, said cutting edge of each insert lying substantially perpendicular to said spindle axis and at a radial shear angle of less than 15° and extending outwardly of said holder end face, said portion of said sidewall which forms the cutting edge forming a clearance face which lies at an angle of less than 15° to the end of the holder and the end face of said insert which forms the cutting edge forming an axial rake face;

each said insert being mounted in a pocket in the end face of the holder, said pocket including a deep portion for receiving a wedge and a contiguous shallower portion for retaining a cutting insert, the insert retaining portion including a flat side wall and the wedge receiving portion of the pocket including a concave side wall portion opposite said flat side wall and a bottom wall with a threaded hole extending thereinto,

and a wedge mounted in each wedge receiving portion, said wedge including a first side face with a convex projection for movement upwardly and downwardly along said concave side wall portion, a flat second side face opposite the first side face for engaging a side face of an insert, a shoulder projecting outwardly from one end of said flat second side face to engage an end edge of an insert to hold the insert firmly between the shoulder and the pocket outer abutment wall and a hole extending vertically through the wedge,

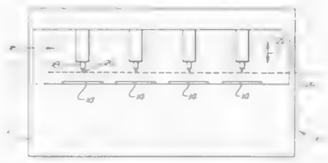
whereby a screw extending through said wedge hole and into the threaded recess in the bottom of the pocket pulls the wedge downwardly in an inclined direction wedging the insert against the pocket flat side wall and against the outer abutment wall, thereby precisely locating each insert both axially and radially.

4,765,784

ELECTRONIC DEPTH CONTROL FOR DRILL

Henry P. Karwan, Fountain Valley, Calif., assignor to Advanced Controls, Inc., Irvine, Calif.

Filed Dec. 6, 1984, Ser. No. 679,119
Int. Cl.[4] B23B *39/08*
U.S. Cl. 408—13 11 Claims



1. A drilling system for precisely drilling a fixed distance into a workpiece having a conductive surface, comprising:

a drill spindle for carrying a drill bit, the drill spindle being movable toward and away from a workpiece;

drive means for driving the drill spindle;

means for applying a predetermined voltage to one of the spindle and workpiece and grounding the other of the spindle and workpiece;

detection means for detecting contact between the drill bit and workpiece by monitoring the voltage of whichever of the spindle and workpiece has the predetermined voltage applied to it and detecting a grounded condition thereof;

control means for controlling the driving means to control the movement of the spindle, said control means causing the spindle to move toward the workpiece until the detection means detects contact between the drill bit and workpiece and thereafter causing the spindle to move a predetermined distance to drill a desired depth into the workpiece; and

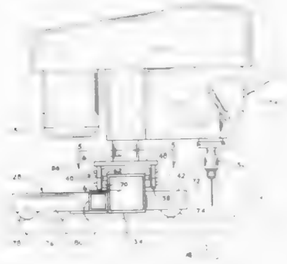
monitoring means for monitoring the voltage of whichever of the spindle and workpiece is grounded and inhibiting operation of the control means if a defective ground connection is detected to limit movement of the spindle toward the workpiece.

4,765,785

TRAILER DRILLING MACHINE

Ronald J. Calzone, HCR 60, Box 296, Dixon, Mo. 65459

Filed Aug. 12, 1987, Ser. No. 84,922
Int. Cl.[4] B23B *45/14*
U.S. Cl. 408—109 9 Claims



1. A drilling machine for drilling holes in the deck of a flat bed trailer or the like, said machine being supported on the deck and being moveable upon a top surface of the deck and along the length of the trailer deck and supporting a drill press moveable upon said machine across the width of the trailer deck, said machine comprising a support beam connected at opposite ends to wheeled trucks supported upon a top surface of the trailer deck and moveable therealong, cross rails fixed at opposite sides of said beam, a carriage supporting said drill press and provided with wheels supporting said carriage upon said rails, said machine being further provided with clamps at opposite ends of said machine, said clamps being supported upon said machine above said deck and extending freely in spaced relation around a side of the trailer and being provided with means for cross-wise adjustment to accommodate trailers of varying width, said clamps being adapted to clamp against an underside of said trailer to anchor firmly said machine in selected positions of longitudinal adjustment along the length of the trailer deck.

4,765,786

DRILL GUIDE

Kris K. Krogh, 6822 Trigo Rd., Goleta, Calif. 93117

Filed May 28, 1987, Ser. No. 58,334
Int. Cl.[4] B23B *45/14*
U.S. Cl. 408—110 15 Claims

1. A guide for hand-held electric drills, where

(a) a suitable drill has a side mounted handle and substantially straight sides disposed parallel to the axis of the drill's chuck,

(b) the guide has a hollow channel-shaped member with substantially straight sides and a slot disposed parallel to the axis of the member,

(c) the hollow channel-shaped member receives and conforms closely, in areas, to the body of said drill, such that the drill is constrained to a linear sliding motion, parallel to the axis of the member, with the slot accommodating the drill's handle, and



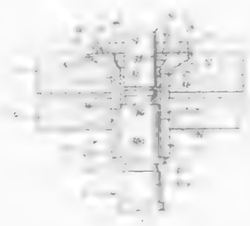
(d) the guide has a work engaging end disposed perpendicular to the axis of the hollow member, permitting accurate perpendicular holes to be drilled in a work piece contacting said end.

4,765,787

BLIND FASTENER POSITIVELY LOCKING TO WORK, AND EMPLOYING INTERIOR LOCKING RING

Franklin S. Briles, 230 Burma Rd., Fallbrook, Calif. 92028

Continuation-in-part of Ser. No. 26,147, Mar. 16, 1987. This application May 4, 1987, Ser. No. 45,289
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—41 9 Claims



1. In a tubular fastener having an axially extending tubular shank receivable in a work bore and an annular head receivable in forcible engagement with the work material forming a counterbore having a mouth, and in combination with said work the improvement comprising:

(a) the head having an annular end face, a first section located forwardly of said end face and having an outer annular and cylindrical surface to be urged in a radially outward direction to take up initial clearance formed between said head cylindrical surface and the work counterbore and to forcibly engage the work counterbore, and a second forwardly tapered section located forwardly of the first section,

(b) a pin extending within the tubular shank, and a stem connected to the pin and extending endwise therefrom and from said tubular fastener,

(c) means responsive to said displacement of the pin toward the head end of the fastener to expand the fastener shank at the opposite end of the fastener and axially retain the

VOL 1093 ISS 4 AG 23 1988 UMI

fastener in position with the head first section forcibly engaging the counterbore,

(d) the head defining a first recess which is annular and sunk axially forwardly from said end face, outwardly of a cylinder defined by a bore of said tubular shank,

(e) the pin defining a peripheral annular recess sunk radially inwardly and located to be brought into proximity to said first recess,

(f) an annular lock ring on the stem and confined within said tubular shank and extending into said pin recess to be reteracted with the pin and to be forcibly deformed to fill both of said recesses in response to said retraction of the pin toward the head, and to exert force acting to expand the head first section against the work counterbore, to provide a tightly interlocking assembly,

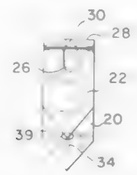
(g) the head expanded to cause the periphery of said end face to engage the work counterbore at the mouth thereof, and said annular and cylindrical surface forcibly engaging said counterbore.

4,765,788

WALL FASTENER

Tom Nowak, Elk Grove; Edward J. Smith, Arlington Heights, both of Ill., and Eastathios Vassiliou, 12 S. Townview La., Newark, Del. 19711, assignors to Eastathios Vassiliou, Newark, Del.

Filed Jan. 9, 1987, Ser. No. 1,756
Int. Cl.[4] F16B *13/04*
U.S. Cl. 411—61 3 Claims



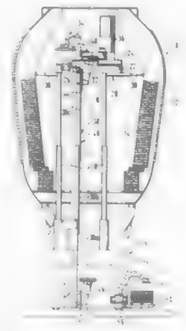
1. A quenched, thin, sheet metal anchor for a fastening member for a hollow wall, fastening member comprising in addition to the anchor a fasterner for insertion in the anchor, the anchor comprising: a substantially flat head portion and a hole therethrough, said hole having an axis perpendicular to the head, a substantially flat neck in a plane perpendicular to the head containing the axis, the neck having an opening therethrough, the opening extending in the plane of the neck the full length of the neck along the axis and, first and second, thin flat sheet metal spreadable anchoring blades extending from said neck in the direction of the axis, the blades being coplanar with the neck, each of the blades having an inner and an outer surface, the inner surface of the first blade being adjacent the inner surface of the second blade, at least one of said blades terminating in a point, complementary engaging means in each of the blades, the engaging means on the first blade comprising a thin elongated portion of the blade extending at least partially into the engaging means in the second blade and snappingly engaged therein, only so far that upon insertion of the fastener into the anchor the first and second anchor blades are spread away from each other disengaging the engaging means and securing the fastening member to the hollow wall.

4,765,789

APPARATUS FOR LINING THE INNER WALL OF A VESSEL WITH BRICKS

Emile Lonardi, L-Bascharage; Jean Liesch, L-Esch s/Alzette; Michel Kirchen, L-Luxembourg; Victor Kremer, L-Luxembourg; Andre Bock, L-Luxembourg; Joseph Colgon, Belvaux, and Charles Hennico, Useldange, all of Luxembourg, assignors to Paul Wurth S.A and Arbed S.A., both of, Luxembourg

Filed Apr. 1, 1987, Ser. No. 33,138
Claims priority, application Luxembourg, Apr. 1, 1986, 86382
Int. Cl.[4] E04G *21/22*
U.S. Cl. 414—10 26 Claims



1. Apparatus for lining the inner wall of a vessel with bricks comprising a work platform movable inside the vessel along the vertical axis of the vessel and capable of rotating about the vertical axis, first robot means for handling and laying the bricks, and further including:

at least two adjacent hoists, each hoist comprising a plurality of telescopic sections;

carriage means movable along said hoists, said carriage means having a pair of lower rollers and a pair of upper rollers arranged respectively on either side of said telescopic sections of each of said hoists, each of said rollers being equipped with a series of profiles, the number of said profiles corresponding to that of said telescopic sections, said profiles being adapted for movement along profiles of matching shape on the rails of each of said telescopic sections;

depalletizing station means located at the bottom of said hoists wherein said carriage means raises bricks from said depalletizing station means up to the level of said work platform; and

second robot means for depalletizing bricks wherein depalletizing of bricks of said second robot means is coordinated with handling and laying by said first robot means and wherein bricks are transferred from pallets onto said carriage means by said second robot means.

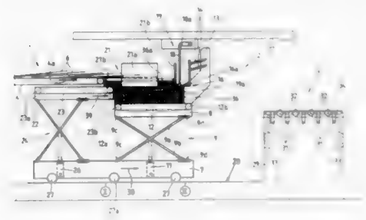
4,765,790

APPARATUS FOR ACCUMULATING STACKS OF PAPER SHEETS AND THE LIKE

Alfred Besemann, Hamburg, Fed. Rep. of Germany, assignor to E.C.H. Will (GmbH & Co.), Hamburg, Fed. Rep. of Germany

Filed Apr. 30, 1987, Ser. No. 44,959
Claims priority, application Fed. Rep. of Germany, May 2, 1986, 3614884
Int. Cl.[4] B65H *31/30*
U.S. Cl. 414—47 14 Claims

1. Apparatus for forming and removing stacks of superimposed sheets, especially large sheets of paper and the like, comprising means for transporting a series of successive sheets along a predetermined path; a gathering table movable between a first position adjacent a portion of said path to accumulate successive sheets of the series into a growing stack and a second position for removal of the fully grown stack therefrom, said table comprising a support and a conveyor movably mounted on said support and arranged to gather oncoming sheets into a growing stack in the first position of said table; a platform movable between a first position of readiness and a second position adjacent said portion of said path to collect successive sheets of the series while said table is out of the first position thereof, said platform comprising a support and a conveyor movably mounted on the support and arranged to gather oncoming sheets into a growing stack in the second position of the platform; means for jointly moving said table and said platform so that the table assumes its first position while the platform assumes its first position and that the table assumes its second position while the platform assumes its second position; and means for operating said conveyors so as to transfer sheets from the platform onto the table during joint movement of the platform and table between said first and second positions.

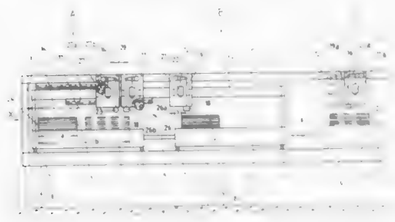


4,765,791

APPARATUS FOR EXPELLING AIR FROM STACKS OF PAPER SHEETS AND THE LIKE

Eckhard Brandt, Norderstedt, and Robert Deutschle, Bokholt-Hanredder, both of Fed. Rep. of Germany, assignors to E. C. H. Will GmbH & Co., Hamburg, Fed. Rep. of Germany

Filed Oct. 20, 1986, Ser. No. 921,943
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1985, 3540203
Int. Cl.[4] B30B *9/00*; B65G *47/22*
U.S. Cl. 414—28 13 Claims



1. Apparatus for manipulating stacks or analogous accumulations of sheets wherein air is, or is likely to be, entrapped between the sheets, comprising first and second conveyors jointly movable back and forth along a predetermined path between first positions in which the first conveyor is ready to receive at least one stack and the second conveyor is ready to be relieved of one or more stacks, and second positions in which the second conveyor is ready to receive at least one stack and the first conveyor is ready to be relieved of one or more stacks; first and second clamping means for respectively urging portions of stacks against the first and second conveyors during movement of the conveyors from the first and second positions, respectively; and first and second air expelling means adjacent said path and operative to respectively expel air from stacks on said first and second conveyors during movement of said conveyors from said first and second positions, respectively, said first and second expelling means being respectively located behind said first and second clamping means as considered in the directions of movement of said conveyors from said first and second positions, respectively.

4,765,792

SURFACE MOUNTED TRUCK LEVELER

Charles W. Cherry, and William J. Benda, both of Edmond, Okla., assignors to Autoquip Corporation, Guthrie, Okla.

Filed Mar. 23, 1987, Ser. No. 29,011
Int. Cl.[4] E02C *3/00*
U.S. Cl. 414—401 5 Claims



1. A surface mounted truck leveler means positioned upon a flat truck apron means of relatively uniform elevation for bringing the bed of a truck level with a contiguous dock means, said loading dock equipped with ancillary dock devices and truck restraining means, comprising:

an approach ramp means;

a platform means being thin and strong enough to support said truck and also allow unrestricted side access;

a primary pivot means securing said approach ramp means to at least one of said platform means and said truck apron means;

a load supporting rear portion means having an end means and a centrally located aperture means with an unrestricted opening for accommodating said truck restraining means;

a primary platform bolster means positioned between and secured to said platform means and said load supporting rear portion; and

lifting support tower means including means having first and second end means, said first end means being pivotally connected to said primary platform bolster means and said second end means secured to said truck apron means whereby upon actuation said platform means, said load supporting rear portion and said primary platform bolster means pivot as a single unit around said primary pivot means.

4,765,793

APPARATUS FOR ALIGNING CIRCULAR OBJECTS

David Goddeau, Palo Alto, Calif., assignor to Procoaics International, Inc., Woburn, Mass.

Filed Feb. 3, 1986, Ser. No. 825,618
Int. Cl.[4] B65G *17/32*
U.S. Cl. 414—416 19 Claims

1. Apparatus for aligning an object having a surface with a distinguishing feature in it, said apparatus comprising

rotator means for holding said object and rotating said object about a rotation axis so that a portion of said surface including said distinguishing feature travels through a surface sensing region,

engagement means for engaging said object and transferring it to and receiving it from said rotator means,

VOL 1093 ISS 4 AG 23 1988 UMI

sensing means for measuring and recording, during rotation of said object, position versus angular orientation information relating to position of said surface along an axis transverse to said surface,

calculating means, responsive to said sensing means, for calculating from said position versus angular orientation information both the angular orientation of said distinguishing feature and the location of the center of said object with respect to said rotation axis, and

alignment correction means for generating angular correction signals for rotating said object such that said distinguishing feature attains a predetermined angular orientation and for generating alignment signals for aligning said center with respect to said rotation axis.

4,765,794

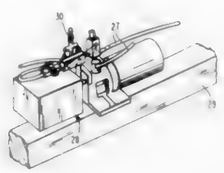
TRUE LINE BOAT LOADER

Cecil L. Stephens, 9816 E. Nora, Spokane, Wash. 99206, and Frank G. Stephens, Rte. 1, Box 646, Davenport, Wash. 99122

Filed Mar. 23, 1987, Ser. No. 28,751

Int. Cl.[4] B60P *1/52*

U.S. Cl. 414—534 **1 Claim**



1. A boat loader, comprising, a trailer frame, said trailer frame including a pair of rails that are spaced apart, a second frame pivotally mounted to said trailer frame, said second frame includes a pair of spaced and shorter rails for the support of a boat, one each of said shorter rails being pivotally secured to said pair of rails of said trailer frame, by pivot pins received through straps secured to said pair of rails of said trailer frame, a cross bar being fixedly secured centrally between said smaller rails and a U-shaped bar, an end having boat guide means thereon, hydraulic means mounted to said trailer frame and said second frame, for elevating one end of said second frame receiving said boat, said hydraulic means including a rearwardly extending hydraulic cylinder secured by pivot brackets to said cross bar and to a bar fixedly secured to said pair of rails of said trailer frame, and a hydraulic control unit being secured to a front end of said trailer frame and providing control means for elevating said second frame at one end, enabling receiving said boat for loading and lowering said second frame and said boat onto said first frame.

4,765,795

OBJECT MANIPULATOR

Jack Rebman, Cary, N.C., assignor to Lord Corporation, Erie, Pa.

Filed Jun. 10, 1986, Ser. No. 872,493

Int. Cl.[4] B66C *23/00*; B66F *9/00*

U.S. Cl. 414—680 **18 Claims**



1. An object manipulator for selectively positioning an object, comprising:

base means;

object support means for supporting the object to be positioned;

elongate flexible main body means connected adjacent one end thereof to said base means and adjacent its opposite end to said support means for undergoing selected multidirectional bending and twisting movements effective to vary the position of said support means relative to said base means;

said elongate body means having a longitudinal axis and including at least three resilient flexure members spaced from and about said axis and extending in generally parallel relationship thereto; and

drive means connected to said flexure members for imparting thereto motions causing said multidirectional bending and twisting movements of said elongate body means, said drive means including means for applying axial compressive-type forces of substantial magnitude upon said flexure members, said flexure members being rods adapted for and capable of transmission of said compressive forces from said one end to said other end thereof.

4,765,796

PROCESS FOR FLAMEPROOFING CELLULOSIC FIBERS PRIOR TO DYEING

Robert J. Harper, Jr., Metairie, and John V. Beninate, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jul. 20, 1987, Ser. No. 75,169

Int. Cl.[1] D06M *9/00*; D06P *5/00*

U.S. Cl. 8—115.7 **20 Claims**

1. A process for producing a dyed fabric comprising

a. affixing a hydroxymethyl phosphonium-nitrogen based polymer to cellulosic fabric for the purpose of imparting flame retardancy and cationic characteristics thereto; and

b. thereafter dyeing said fabric, in an acidic or neutral environment, with a cotton dye having anionic groups.

4,765,797

STORABLE FORMULATIONS OF CATIONIC DYES WITH OXIDIZING AGENT AS STABILIZER

Manfred Hähnke, Kelkheim; Sierling Ong, Hofheim am Taunus, and Kurt Hohmann, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation of Ser. No. 879,106, filed as PCT ER 85/00536, Oct. 12, 1985, published as WO86/02658, May 9, 1986, abandoned.

This application Jun. 8, 1987, Ser. No. 58,983

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1984, 3439266

Int. Cl.[4] C09B *67/32*

U.S. Cl. 8—654 **11 Claims**

1. A process for the long-storage stabilization of aqueous liquid formulations of cationic or in an acidic medium protanatable dyes, or of mixtures of such dyes, containing water in addition to the respective colorant, which comprises adding to the commercial brand of such a dye or dyes, present in form of a homogeneous solution, at least one inorganic or organic oxidizing agent in amounts of from 0.01 to 1%, based on the weight of the dye formulation, for the purpose of safeguarding the tinctorial strength and shade constancy of the said dye formulation during the storage thereof at environmental temperatures in the range of from 0° to 60° C.

4,765,798

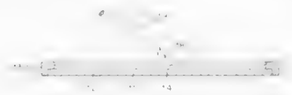
METHOD OF ADDING ELECTROLYTE TO ELECTROCHEMICAL CELLS

David C. Batson, Amesbury; Ronald E. Barth, Chelmsford; Franz Goebel, Sudbury, and Peter B. Harris, Stow, all of Mass., assignors to GTE Government Systems Corporation, Waltham, Mass.

Filed Oct. 20, 1987, Ser. No. 110,751

Int. Cl.[4] H01M *6/00, 10/50*

U.S. Cl. 29—623.1 **6 Claims**



1. A method of adding liquid electrolyte solution to an electrochemical cell during assembly comprising the steps of:

(a) providing one or more porous cell components;

(b) wetting said porous cell components with a liquid electrolyte;

(c) freezing said electrolyte;

(d) assembling said porous cell components with other cell components into a cell; and

(e) allowing said electrolyte to unfreeze.

4,765,799

LATEX COATED ELECTRODES FOR RECHARGEABLE CELLS

Sammy E. Waldrop, Gainesville, Fla., assignor to Gates Energy Products, Inc., Gainesville, Fla.

Filed Jan. 27, 1987, Ser. No. 7,313

Int. Cl.[4] H01M *4/26*

U.S. Cl. 29—623.5 **6 Claims**

1. A process for producing a cadmium negative electrode for a rechargeable cell comprising:

(a) forming a paste of particulate material comprising a mixture of rechargeable, electrochemically active cadmium material including cadmium metal, cadmium oxide, and a binder;

(b) applying said paste to a substrate;

(c) drying said paste coated substrate;

(d) coating said paste coated substrate with a latex material so that such latex material is confined substantially to the surface of the paste coated substrate; and

(e) curing said latex to produce said electrode.

4,765,800

GASOLINE COMPOSITION

Cornelis Van Es, Amsterdam, Netherlands; Richard Miles, Manley; Gautam T. Kalghatgi, Broughton; John S. McArragher, London, and Rudolf F. Heideweg, Chester, all of United Kingdom, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 20, 1986, Ser. No. 876,556

Claims priority, application United Kingdom, Jun. 24, 1985, 8515774

Int. Cl.[4] C10L *1/14*

U.S. Cl. 44—62 **11 Claims**

1. A gasoline composition comprising a major amount of a gasoline suitable for use in spark-ignition engines, and from 1 to 100 ppmw of a spark-aider additive comprising an alkali metal or an alkaline earth metal succinic acid salt having α-carbon atoms and a substituent on a first one of its α-carbon atoms comprising a first unsubstituted or substituted aliphatic hydrocarbon group having at least 20 and up to 200 carbon atoms, wherein said group is connected with a second unsubstituted or substituted aliphatic hydrocarbon group having from 1 to 6 carbon atoms thereby forming a ring structure between said groups.

4,765,801

GRINDSTONE-POLYMER COMPOSITE FOR SUPER COLLOID MILL AND MANUFACTURING METHOD THEREOF

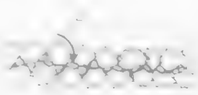
Tsuneo Masuda, No. 12-24, Hon-cho 1-chome, Kawaguchi-shi, Saitama-ken, Japan

Division of Ser. No. 840,172, Mar. 17, 1986, Pat. No. 4,743,508.

This application Oct. 21, 1987, Ser. No. 110,807

Int. Cl.[4] B24D *3/32*

U.S. Cl. 51—293 **3 Claims**



1. A manufacturing method of grindstone-polymer composite for super colloid mill characterized in that, into the inner void pores of the porous vitrified grindstone for super colloid mill, monomer or oligomer of thermoplastic type and thermosetting type plastics (synthetic resins) is injected forcedly under reduced or applied pressure, and, after the impregnated monomer is polycondensed in situ using heat energy, the surface finishing is carried out.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,802

ELECTROSTATIC PRECIPITATOR PLATE SPACER AND METHOD OF INSTALLING SAME

Thomas M. Gombos, Munhall, and Kristen Riss, Pittsburgh, both of Pa., assignors to Wheelabrator Air Pollution Control Inc., Pittsburgh, Pa.

Filed Jul. 15, 1987, Ser. No. 73,724
Int. Cl.[4] B03C 3/08
U.S. Cl. 55—2 21 Claims



1. In an electrostatic precipitator having a pair of adjacent precipitator plates, each of said plates having a generally planar vertically extending surface spaced horizontally from and oriented parallel with the planar surface of the adjacent plate, and wherein each of said plates has a vertically extending rib projecting perpendicularly from the planar surface toward a rib on the adjacent plate, the improvement comprising a spacer for maintaining the pair of adjacent precipitator plates in a horizontally spaced relationship, the spacer including:

a brace which extends horizontally between adjacent precipitator plates at the vertically extending ribs thereof, said brace having an open groove at each end thereof, the groove having a width sufficient to compressively engage the vertically extending ribs therein,

the brace having two plate engaging edges at opposite ends thereof, each of the plate engaging edges having a length of at least about 25% of the horizontal distance between adjacent precipitator plates and abutting against one of the pair of adjacent precipitator plates when said spacer extends horizonally between said plates,

the brace having (i) a diagonal dimension that is no more than about 3% greater than the horizontal interplate spacing between adjacent precipitator plates, and (ii) a height which is less than the horizontal distance between the perpendicularly projecting ribs on the adjacent plates.

4,765,803

METHOD AND DEVICE FOR AGGLOMERATING ELECTRICALLY NONUNIFORMLY CHARGED-UP SOLID OR LIQUID PARTICLES SUSPENDED IN GAS STREAMS

Michael Hirth, Unterentfelden, Switzerland, assignor to BBC Brown, Boveri AG, Baden, Switzerland

Filed Mar. 26, 1987, Ser. No. 30,362
Claims priority, application Switzerland, Mar. 26, 1986, 1211/86
Int. Cl.[4] B03C 3/41, 3/66
U.S. Cl. 55—2 3 Claims

1. A method for agglomeratig solid or liquid particles of opposite charge suspended in gas streams, characterized in that two partial gas streams are provided in which the particles are charged by corona discharge with positive and negative ions in an alternating manner with respect to time using two high-voltage transformers operating in opposite phase and fed with an AC primary voltage, the primary coil of one of said transformers being cross-connected to said primary voltage with respect to that of the primary coil of the other of said transformers and said primary voltage; said transformes providing a synchronism of polarity such that sequences of alternatingly positive and negative particle clouds are formed locally, and that the two partial gas streams are brought together in a manenr such that a positive particle cloud of one partial gas stream meets a negative particle cloud of the other partial gas



stream simultaneously, the positive and negative particles combining and conglomerating into large particles.

4,765,804

PSA PROCESS AND APPARATUS EMPLOYING GASEOUS DIFFUSION BARRIERS

Andrew Lloyd-Williams, High Bridge; Donald L. MacLean, Annandale; Ravi Jain, North Plainfield, and Steven L. Lerner, Berkeley Heights, all of N.J., assignors to The BOC Group, Inc., Montvale, N.J.

Continuation of Ser. No. 914,097, Oct. 1, 1986, abandoned. This application Sep. 17, 1987, Ser. No. 97,776
Int. Cl.[4] B01D 53/04, 53/22
U.S. Cl. 55—16 20 Claims



1. In a process for selective enrichment of a component of a compressed gaseous mixture wherein at least two beds of adsorption material are cycled through adsorption stages and desorption stages to produce in said adsorption stages a product gaseous stream enriched in said component, the improvement wherein a gaseous stream withdrawn from a bed of adsorption material undergoing desorption is introduced directly into a gas diffusion zone, thereby forming a permeate stream and an nonpermeate stream, one of which is enriched in said component and recovering said enriched stream.

19. In an assembly for effecting pressure swing adsorption techniques for selective enrichment of a component of a gaseous mixture and including at least two adsorption vessels having beds of adsorption material, the improvement wherein said assembly additionally includes a gaseous diffusion cell in direct fluid communication with said adsorption vessels to receive a gaseous stream withdrawn from said adsorption vessels to receive a gaseous stream withdrawn from said adsorption vessel during desorption of said bed of adsorption material therein and a second diffusion cell in fluid communication with said adsorption vessels to receive a gaseous stream enriched in said component withdrawn from said vessels during adsorption of other components of said mixture therein.

4,765,805

METHOD AND APPARATUS FOR REMOVING DUST AND GAS POLLUTANTS FROM WASTE GASES, PARTICULARLY WASTE GASES PRODUCED IN THE MANUFACTURE OF OPTICAL WAVEGUIDE PREFORMS

Rudolf Wahl, Stuttgart, and Erwin Walz, Renningen, both of Fed. Rep. of Germany, assignors to Standard Elektrik Lorenz A.G., Fed. Rep. of Germany

Filed Jan. 29, 1987, Ser. No. 8,201
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1986, 3603511
Int. Cl.[4] B01D 46/02
U.S. Cl. 55—18 9 Claims



1. Method for purifying waste gases containing pollutants in dust, gas, and/or vapor form wherein in a first step, dust is extracted, and wherein in one or more further steps, the gaseous pollutants are absorbed from the dust-free waste gas by means of an absorption liquid flowing in an absorption-liquid circulation system,

characterized in that a dry, coated fabric filter is used for the dust extraction, that the pollutant concentration of the absorption liquid is measured continuously, that, when a predeterminable maximum permissible pollutant concentration is reached, part of the absorption liquid is withdrawn from the absorption-liquid circulation system and is subjected to a chemical detoxication treatment in a separate detoxication circulation system and is then introduced into a sewage system, and that in the absorption-liquid circulation system, the withdrawn part of the absorption liquid is replaced by fresh, unpolluted absorption liquid.

4,765,806

CONTROL METHOD FOR A DUAL-CYLINDER MOISTURE REMOVAL APPARATUS

Shigeaki Doto, Kobe, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Sep. 24, 1987, Ser. No. 100,500
Claims priority, application Japan, Sep. 30, 1986, 61-234044
Int. Cl.[4] B01D 53/04
U.S. Cl. 55—21 8 Claims

1. A pneumatic system dual-cylinder moisture removal apparatus control method, said control method comprising the steps of:

(a) establishing a predetermined time which is at least sufficient to substantially dry an absorbent contained in a first drying cylinder, said predetermined time being substantially equal to a time to substantially saturate an absorbent contained in a second drying cylinder with moisture;

(b) linking operation of an air compressor with a timing device;

(c) establishing fluid communication of a moist air from a first solenoid valve with an inlet of said second drying cylinder to remove moisture therefrom;

(d) communicating a first portion of dry air from an outlet of said second drying cylinder to an air reservoir;



(e) diverting a second portion of said dry air to an outlet of said first drying cylinder;

(f) communicating said second portion of dry air through said first drying cylinder to regenerate said absorbent;

(g) exhausting said second portion of air from said first drying cylinder through a second solenoid valve; and

(h) alternating moisture removal in step (c) and regeneration of absorbent in step (f) only when at least one of said predetermined time established in step (a) has elapsed and when operation of said air compressor is stopped.

4,765,807

METHOD AND APPARATUS FOR THE OXYGEN ENRICHMENT OF WATER

Norolf Heariksen, Notodden, Norway, assignor to Norsk Hydro a.s., Oslo, Norway

Filed Dec. 4, 1986, Ser. No. 939,441
Claims priority, application Norway, Feb. 11, 1986, 860474
Int. Cl.[4] B01D 19/00
U.S. Cl. 55—51 14 Claims



1. A method of enriching water with oxygen to increase the oxygen content of the water to a super saturation of at least 120–250%, said method comprising:

simultaneously pumping water to be enriched with oxygen and an excess of oxygen into an oxygen enrichment mixing zone and therein mixing said water and oxygen to form a turbulent, foaming gas-liquid flow and thus enriching said water with a portion of said oxygen to a super saturation of at least 120–250%;

pumping said gas-liquid flow from said mixing zone into a gas-liquid separator zone and therein separating said oxygen enriched water from a gas mixture including an excess portion of said oxygen not enriched into said water and gaseous contaminants released from said water;

releasing at least a portion of said gaseous contaminants from

VOL 1093 ISS 4 AUG 23 1988 UMI

said gas mixture, and recirculating the remaining gas mixture back to said mixing zone for mixture with additional water to be enriched with oxygen; and

discharging said oxygen enriched water from said separator zone to a position of utilization.

4,765,808

SEPARATION OF CARBON MONOXIDE FROM NITROGEN WITH BA EXCHANGED ZEOLITE X

Ei Oigo, and Yoshitaka Noguchi, both of Tokyo, Japan, assignors to Union Showa Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 936,412, Dec. 1, 1986, abandoned, which is a continuation of Ser. No. 706,695, Feb. 28, 1985, abandoned. This application Sep. 28, 1987, Ser. No. 101,926

Claims priority, application Japan, Feb. 28, 1984, 59-35266

Int. Cl.⁴ B01D *53/14, 53/02, 53/34*

U.S. Cl. 55—68 7 Claims



1. A process for separating carbon monoxide from a fluid containing carbon monoxide and nitrogen comprising treating the fluid with a zeolitic molecular sieve agglomerate comprising a bonded product of a crystalline zeolite and a binder, said crystalline zeolite having, except for water of crystallization, the formula:

$$Ba_{43.2}Na_{86(1-x)}[(AlO_2)_{86}(SiO_2)_{106}] \quad (I)$$

wherein x is numbered from 0.6 to 0.8.

4,765,809

APPARATUS FOR REMOVING DUST FROM GAS

Dieter Reichel, Aschaffenburg; Rudolf Jakobs, Bad Homburg; Lothar Brehm, and Gunter Quass, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 10, 1987, Ser. No. 71,847

Claims priority, application Fed. Rep. of Germany, Jul. 10, 1986, 3623147

Int. Cl.⁴ B01D *51/00*

U.S. Cl. 55—267 7 Claims

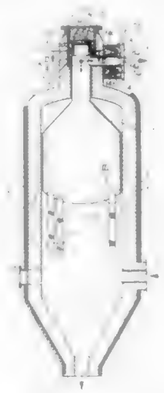
1. An apparatus for collecting dust from a high-temperature, high-pressure gas, comprising:

a pressure-resistant cylindrical outer housing formed at a bottom thereof with a dust-collecting bin and an inlet for gas above said bin, said housing being formed with a cambered cover, a heat-insulating internal liner and a heat-insulating outer layer;

means forming a cylindrical extension extending upwardly from an upper portion of said housing and provided with a horizontal gas outlet;

a gas-tight pear-shaped inner housing provided with a tubular gas-outlet port extending in said gas outlet, a cambered bottom, and a plurality of cylindrical filter elements extending from said bottom of said inner housing downwardly within said outer housing;

a heat-insulating carrier structure supporting said inner housing with said outer housing; and



a gas-tight compensator disposed between said port and said outlet.

4,765,810

TESTABLE GASKET SEAL ARRANGEMENT

Lawrence E. Wetzel, Manlius, N.Y., assignor to Clean Room Technology, Syracuse, N.Y.

Filed Jun. 8, 1987, Ser. No. 59,505

Int. Cl.⁴ B01D *53/30*

U.S. Cl. 55—270 13 Claims



1. A selective fluid control device in which a control element, through which a fluid passes, is held in a sealing relationship with a housing therefor, with first and second sealing means for isolating the fluid flow through the control element and with a portion of the housing defining a sealed chamber from which said fluid is to be excluded; wherein said device further comprises a gas conduit communicating between outside said housing and said sealed chamber for applying a test pressure condition to said chamber to test the quality of te seals formed by said first and second sealing means with respect to said acontrol element; and in which said control element is a filter for removing particulates or other impurities from the fluid, and said first and second sealing means include a rail having first and second sealing ribs and a sealing gasket, with one of said rail and said gasket being formed on said filter and the other thereof being formed on said housing, the ribs mating with said gasket to form an annular space as said chamber.

4,765,811

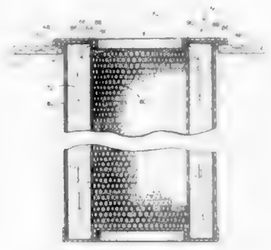
TOP REMOVAL FILTER CARTRIDGE

Weir E. Beckon, 10166 Boone Cir., Bloomington, Minn. 55438

Filed Oct. 16, 1987, Ser. No. 109,195

Int. Cl.⁴ B01D *46/24*

U.S. Cl. 55—498 14 Claims



1. A filtering device for cleaning air passing therethrough which is constructed to be mounted from a top mounting floor comprising:

(a) a filter medium;

(b) a permeable filter housing, including a base end cap, which contains said filter medium and supports the same;

(c) an end plate carried by said housing and being constructed and arranged to support said housing and said filter medium; and

(d) a top removal plate carried by said end plate of the filtering device and constructed and arranged to form a channel between edge portions of said top removal plate and said end plate for receiving said filter medium of the filtering device, said filter medium being sealably connected to said end plate and said top removal plate, and forming a seal thereby between said end plate and said top removal plate to prevent impurities from leaking between said end plate and said top removal plate.

4,765,812

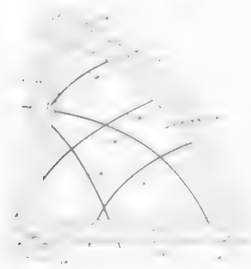
AIR LAID FILTERING MATERIAL

Edward C. Homonoff, Windham, Conn., and Clarke A. Rodman, East Providence, R.I., assignors to Allied-Signal Inc., Morristown, N.J.

Filed Oct. 30, 1987, Ser. No. 114,489

Int. Cl.⁴ B01D *46/02*

U.S. Cl. 55—524 13 Claims



1. An air laid, nonwoven, fibrous filtering medium comprising, in percents by weight, of from about 10% to about 20% of a binder material selected from the group consisting of thermoplastic and thermosetting resins, and from about 80% to about 90% of a fiber mixture, said fiber mixture comprising from about 75% to about 95% of coarse fibers having a diameter of at least 20 microns, said coarse fibers being randomly arrayed in a three dimensional matrix having a relatively large pore size, a substantial percentage of said coarse fibers being oriented in each of the three spatial directions to form said matrix, and from about 25% to about 5% fibers having a diameter less than about 3 microns, said fibers being randomly arranged in all three spatial dimensions within the relatively large pores formed by the coarse fibers to thereby divide the relatively large pores formed by the coarse fibers into substantially smaller pores.

4,765,813

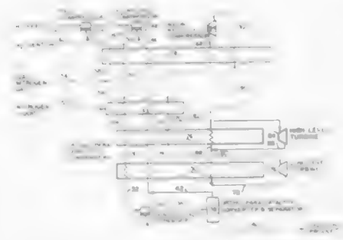
HYDROGEN LIQUEFACTION USING A DENSE FLUID EXPANDER AND NEON AS A PRECOOLANT

Lee S. Gaumer, Jr., Allentown, and Arthur R. Winters, Jr., Coopersburg, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 7, 1987, Ser. No. 1,127

Int. Cl.⁴ F25J *3/02*

U.S. Cl. 62—20 6 Claims



1. In a process for liquefying hydrogen wherein a hydrogen stream is compressed, cooled, and catalytically converted in a multiplicity of steps from a largely ortho form of hydrogen to a largely para form of hydrogen, said converted, cooled, compressed hydrogen stream is expanded in an expander whereby said converted hydrogen stream is partially condensed, said patially condensed hydrogen stream is separated into a liquid phase and gaseous phase, said gaseous phase is warmed to recover refrigeration and recompressed and combined with said compressed hydrogen stream prior to cooling, and said liquid phase is withdrawn as a liquid hydrogen product, the improvement comprising utilizing a dense fluid expander preceding said step of catalytic conversion to expand and further refrigerate said converted, cooled, compressed hydrogen stream and utilizing a closed-loop neon refrigeration cycle to provide at least intermediate refrigeration to said process prior to said final step of catalytic conversion.

4,765,814

PROCESS FOR PURIFICATION OF A GAS STREAM BY A NITROGEN SCRUBBING

Heinz Bauer; Hans Becker, both of Munich, and Walter Scholz, Wolfratshausen, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Aug. 12, 1987, Ser. No. 84,249

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1986, 3627427

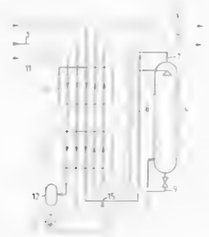
Int. Cl.⁴ F25J *3/02*

U.S. Cl. 62—20 23 Claims

1. In a process for the purification of an impure gas stream at elevated pressure by nitrogen scrubbing comprising cooling an impure feed gas stream and a nitrogen scrubbing stream; scrubbing said impure gas stream with said nitrogen scrubbing stream at elevated pressure; mixing the purified gas stream

VOL 1093 ISS 4 AG 23 1988 UMI

with cooled, pressurized nitrogen to form a mixture in which nitrogen accumulates partly in a liquid phase; heating said mixture by heat exchange with the impure gas stream to be cooled and the nitrogen scrubbing stream to be cooled; evaporating the liquid nitrogen phase of said mixture by heat exchange with the impure gas stream to be cooled and the nitrogen scrubbing stream to be cooled;



the improvement wherein the liquid nitrogen phase of said mixture is evaporated by heat exchange with another stream in addition to said impure gas stream and said nitrogen scrubbing stream, said another stream is at a pressure lower than the scrubbing pressure and is at least partly condensed by heat exchange with said mixture and then pumped to an elevated pressure.

4,765,815

METHOD FOR PRODUCING GLASS PREFORM FOR OPTICAL FIBER

Toshio Danzuka; Hiroshi Yokota, and Yoichi Ishiguro, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 748,563, Jun. 25, 1985, abandoned. This application Aug. 20, 1987, Ser. No. 88,542
Claims priority, application Japan, Jul. 13, 1984, 59-144158
Int. Cl.[4] C03B *37/018*
U.S. Cl. 65—3.12 **2 Claims**



1. A method for producing a glass preform for an optical fiber having a core portion and a cladding portion by means of separate burners, said method comprising jetting a first component stream from a first burner, said first stream including a glass raw material consisting of $SiCl_4$, and jetting a second component stream from a second burner, said second stream including a second glass raw material consisting of a compound or mixture of compounds selected from the group consisting of $SiHCl_3$, SiH_2Cl_2, SiH_3Cl and SiH_4, flame hydrolyzing the glass raw materials to synthesize fine glass particles, depositing the fine glass particles onto a starting member having a longitudinal axis to form a porous soot preform, and heating and sintering the soot preform to obtain a transparent glass preform, wherein the first burner is used to form said core portion and said second burner is used to form said cladding portion, and said soot particles are deposited and grown in a direction parallel to the direction of the axis of said starting member.

4,765,816

METHOD AND APPARATUS FOR MAKING OPTICAL FIBER COUPLERS

Harvey C. Bjornlie, Pacific Palisades, and Timothy E. Clark, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Oct. 23, 1987, Ser. No. 113,038
Int. Cl.[4] C03B *29/00*
U.S. Cl. 65—4.2 **8 Claims**



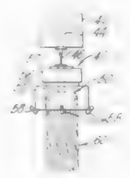
1. A method of making fiber optic couplers, comprising:
(a) mounting and aligning two optical fibers in juxtaposition on two movable platforms at a predetermined tension;
(b) injecting a light signal input to the optical fibers and connecting output detectors to the optical fibers establishing an optical circuit for monitoring the manufacturing process to establish a predetermined coupling ratio;
(c) heating the fibers until they are fused to a predetermined width, length and generally circular cross section;
(d) moving the two platforms in the same direction but at different speeds to stretch the optical fibers to form a coupler having a reducing tapered end, expanding tapered end and a constant diameter cylindrical midsection.

4,765,817

CORROSION RESISTANT COBALT-BASE ALLOY CONTAINING HAFNIUM

David J. Gaul, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 746,157, Jun. 18, 1985, abandoned. This application Feb. 7, 1986, Ser. No. 827,136
Int. Cl.[4] C03B *37/04*
U.S. Cl. 65—8 **13 Claims**



1. As a composition of matter a glass corrosion resistant, high-strength alloy consisting essentially of the following elements in amounts expressed in weight percent:

Element	Approximate Composition, Weight %
Chromium	About 27 to less than about 34
Nickel	About 5 to about 15
Wolfram	About 5 to about 10
Tantalum	About 1.5 to about 4

-continued

Element	Approximate Composition, Weight %
Zirconium	About 0.01 to about 0.5
Silicon	About 0.01 to about 0.2
Carbon	About 0.4 to about 0.7
Boron	About 0.005 to about 0.5
Hafnium	About 0.15 to about 1.6
Cobalt	Balance

the weight ratio of wolfram to tantalum being within the range of from about 1.2 to about 6.6 and the weight ratio of zirconium to boron being within the range of from about 0.02 to about 100.

11. In a method of making mineral fibers comprising passing molten mineral material through a foraminous wall of a metal alloy to form such fibers, the improvement wherein the alloy of the foraminous wall is the composition of matter of claim 1.

4,765,818

POROUS GLASS MONOLITHS

Tessie M. Che, Westfield; Raymond V. Carney, Millington, and Duane L. Dotson, Parsippany, all of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 24, 1987, Ser. No. 18,256
Int. Cl.[4] C03B *20/00*
U.S. Cl. 65—18.1 **15 Claims**

1. A process for producing an inorganic oxide glass monolith composition with a microporous structure which comprises (1) hydrolyzing tetraalkoxysilane under acidic or basic pH conditions in a sol-gel reaction medium comprising water and trioxane until gellation of the reaction medium is completed; (2) heating and drying the gelled medium at a temperature between about 50°–200° C. to remove water and trioxane from the medium and form a microporous glass monolith; and (3) heating the microporous glass monolith at a temperature between about 600°–900° C. to provide a densified microporous glass monolith; wherein the microporous glass monolith has pore diameters in the range between about 15–2000 angstroms, and the pore diameters are within about a 100 angstrom diameter variation range.

4,765,819

METHOD FOR MAKING PLANAR LIGHTWAVE GUIDES

Ralf T. Kersten, Bremthal, and Wolfgang Siefert, Mainz, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mainz, Fed. Rep. of Germany

Filed Oct. 16, 1986, Ser. No. 919,401
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1985, 3536780
Int. Cl.[4] C03B *8/04*; **C03C** *21/00*
U.S. Cl. 65—30.1 **7 Claims**



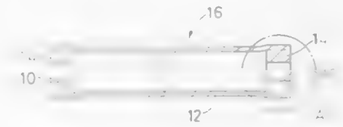
1. A method of making a planar lightwave-guide with light-conducting core zones, the method comprising the steps of:
depositing an initial sheathing layer of glassy material on a substrate by precipitating the glass material directly out of a cold plasma onto the substrate in thin glassy strata using a heterogeneous reaction;
depositing a light-conducting core zone over the first sheathing layer by precipitating glassy material out of a cold plasma containing a doping material onto the first sheathing layer in thin glassy strata using a heterogenous reaction to form doped, core strata for conducting light wave energy;
depositing a subsequent sheathing layer of glassy material over the core zone by precipitating the glassy material out of a cold plasma onto the core zone in thin glassy strata using a heterogeneous reaction; thereby fabricating a lamination of a light conducting core zone sandwiched between a pair of sheathing layers;
delineating opposed marginal surfaces in the core zone and sheathing layers, the opposed marginal surface extending transverse with respect to the layers to define light conducting strips each having a core zone sandwiched between a pair of sheathing layers;
diffusing doping material out of the core zones of the strips in portions of the core zones adjacent to the delineated marginal surfaces to modify the refractive index curve of the core zones, and
covering the strips and substrate with a layer of material having a lower refractive index than that of the core zone.

4,765,820

METHOD OF MAKING CERAMIC ARC TUBE FOR HIGH-PRESSURE METAL-VAPOR DISCHARGE LAMP

Hitoshi Naganawa, Kasugai, and Kouichiro Maekawa, Ichinomiya, both of Japan, assignors to NGK Insulators Ltd., Japan

Filed Jan. 20, 1987, Ser. No. 5,119
Claims priority, application Japan, Jan. 21, 1986, 61-10637
Int. Cl.[4] C03B *23/20*
U.S. Cl. 65—36 **13 Claims**



1. A process of producing a ceramic arc tube for a high-pressure metal-vapor discharge lamp, including a translucent ceramic tube, and at least one end cap which closes a corresponding at least one end of the ceramic tube and which supports a discharge electrode, comprising the steps of:
forming a green ceramic tubular body of a first ceramic material, which gives said ceramic tube;
forming at least one green end cap of a second ceramic material of a same kind as said first ceramic material, which gives said at least one end cap, each of said at least one green end cap including a cylindrical portion, and a flange portion which extends radially outwardly from one of opposite axial ends of an outer circumferential surface of said cylindrical portion;
positioning said cylindrical portion of said each green end cap in a corresponding end portion of said green ceramic tubular body, such that said flange portion abuts on an end face of said corresponding end portion of said green ceramic tubular body; and
subjecting an assembly of said green ceramic tubular body and said at least one green end cap to a firing operation to obtain said ceramic arc tube wherein crystal constitutions of said ceramic tube and said at least one end cap are integrated with each other.

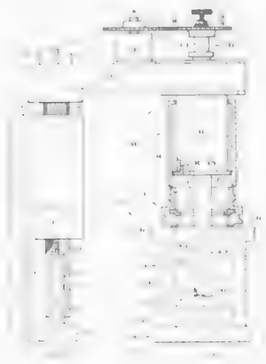
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,821

APPARATUS FOR LUBRICATING GLASSWARE MOLD

Wilbur O. Doud, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Jan. 30, 1987, Ser. No. 9,180
Int. Cl.[4] C03B *40/00*; C03C *40/00*; F16B *1/00*
U.S. Cl. 65—169 11 Claims



1. In an apparatus for lubricating molding surfaces in a glassware molding machine that combine to form a molding cavity around a longitudinal axis, the improvement which comprises lubricant directing means comprising a directing head having an internal passage therein for a lubricant, said directing head is advanceable to a position in alignment with said axis of said molding cavity spaced from and independent of the molding surfaces of said molding cavity to direct said lubricant onto said molding surfaces to form a coating of lubricant thereon when said molding surfaces are combined to form said molding cavity, and having means for advancing and withdrawing said directing head into and out of said molding cavity, said directing head traveling in alignment with said longitudinal axis essentially along the full length of said axis.

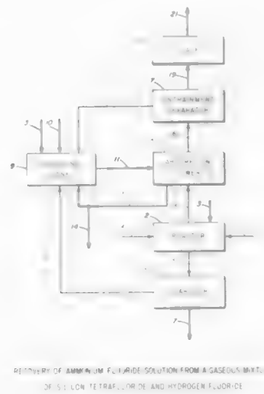
4,765,822

RECOVERY OF FLUORINE FROM WASTE GASES

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Filed Jun. 17, 1985, Ser. No. 745,240
Int. Cl.[4] C05B *7/00*
U.S. Cl. 71—34 40 Claims

1. A process for the production of suspension fertilizers, said process comprised of the following steps:
(a) treating fluorine-laden gas with ammonia and water containing fluosilicates in a reactor to form an alkaline aqueous mixture containing ammonium fluoride;
(b) prepipitating silica from the aqueous mixture formed in said reactor in step (a);
(c) separating silica precipitated in step (b) from a clarified liquid by sedimentation;
(d) pumping the clarified liquid prepared in step (c) to a vessel;
(e) adding phosphoric acid to the vessel in step (d);
(f) adding ammonia to vessel in step (d);
(g) treating the gas from step (a) in an absorption tower wherein liquid from step (d) is the scrubbing medium;
(h) recycling the liquid from the absorption tower in step (g) to vessel in step (d);
(i) bleeding off a stream of liquid from step (h);
(j) dissolving monoammonium phosphate in liquid from step (i) to form a mixture;
(k) adding ammonia to the mixture in step (j);
(l) adding silica separated in step (c) to the mixture in step (k);
(m) agitating the mixture in step (l);



RECOVERY OF AMMONIUM FLUORIDE SOLUTION FROM A GASEOUS MIXTURE OF SILICON TETRAFLUORIDE AND HYDROGEN FLUORIDE

(n) adding gelling clay to the mixture in step (m) to prepare suspension fertilizer; and
(o) pumping suspension fertilizer prepared in step (n) to storage.

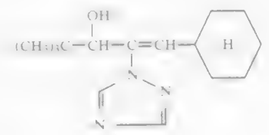
4,765,823

AGENT FOR REGULATING PLANT GROWTH

Klaus Lürssen, Berg.-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 12, 1986, Ser. No. 818,529
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1985, 3501856
Int. Cl.[4] A01N *43/64*
U.S. Cl. 71—92 5 Claims

1. A plant growth-inhibiting composition comprising a plant growth-regulating effective amount of
(a) 1-cyclohexyl-4,4-dimethyl-2-(1,2,4-triazol-1-yl)pent-1-en-3-ol of the formula



and
(b) 2-chloroethyl-trimethyl-ammonium chloride of the formula

$Cl\text{-}CH_2\text{-}CH_2\text{-}N^{\oplus}(CH_3)_3\ Cl^{\ominus}$ in 0.1 to 4 times the weight of (a).

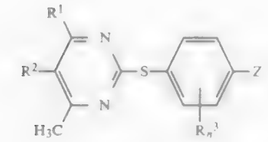
4,765,824

PYRIMIDYL-THIO-CARBOXANILIDES

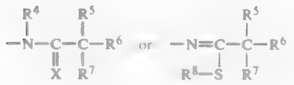
Klaus Sasse, Bergisch Gladbach; Reiner Fischer, Monheim; Hermann Hagemann; Hans-Joachim Santel, both of Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Robert H. Strang, Düsseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 21, 1986, Ser. No. 934,064
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3344209
The portion of the term of this patent subsequent to Dec. 9, 2003, has been disclaimed.
Int. Cl.[4] A01N *43/48*; C07D *239/02*
U.S. Cl. 71—92 8 Claims

1. (Thrice Amended) A pyrimidyl-thio carboxanilide of the formula



in which
R^1 represents hydrogen, a halogen, a C_1 to C_6 alkyl, a C_1 to C_6 alkoxy, a C_1 to C_6 alkylthio, trifluoromethyl or phenyl which is unsubstituted or substituted by a substituent selected from the group consisting of a halogen, methyl, ethyl, methoxy and trifluoromethyl,
R^2 represents hydrogen, a halogen, an alkyl having 1 to 6 carbons atoms or trifluoromethyl,
R^3 represents a halogen, methyl or methoxy,
n is 0, 1 or 2, and
z represents the group



where
X represents oxygen or sulfur,
R^4 represents hydrogen or hydroxyl,
a C_1 to C_6 alkyl, a C_1 to C_6 alkoxy,
a C_3 to C_6 alkenyl or a C_3 to C_6 alkynyl, with the proviso that R^4 does not represent hydrogen when X represents oxygen,
R^5 represents hydrogen, a halogen or an alkyl having 1 to 6 carbon atoms which is unsubstituted or mono- to nona-substituted by a halogen or
R^4 and R^5 together represents the group $—(CH_2)_2—$ or $—(CH_2)_3—$,
R^6 and R^7 independently of one another, represent a halogen or an alkyl having 1 to 6 carbon atoms which is unsubstituted or mono- to nona-substituted, identically or differently by a halogen and
R^8 represents hydrogen, an alkyl having 1 to 6 carbon atoms, which is unsubstituted or singly to quintuply, identically or differently substituted by a substituent selected from the group consisting of a halogen, a C_3 to C_8 alkenyl and a C_3 to C_6 alkynyl.

6. A method for combating weeds, comprising applying to said weeds or to a locus from which it is desired to exclude such weeds a herbicidally effective amount of a pyrimidyl-thio-carboxanilide of the formula (I) according to claim 1.

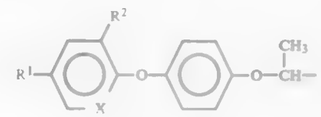
4,765,825

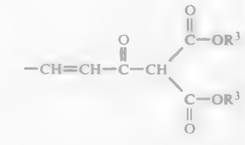
HERBICIDAL ARYLOXY PHENOXY ACYL MALONATES

Tamás Kömives; Ferenc Dutka, both of Budapest; István Barta, Paty; István Jablonkai, Budapest; Ágnes Hulcsch, Budapest; Ferenc Bihari, Budapest; Gyula Eifert, Dunaharaszti; Péter Bohus, Budapest; Katalin Tromfos, Budapest; Ágnes Mészáros neé Szekrényesi, Budapest, and István Küronya, Budapest, all of Hungary, assignors to Budapesti Vegyimuvek and MTA Kozponti Kemiai Kutato Intezet, both of Budapest, Hungary

Filed Sep. 23, 1986, Ser. No. 910,892
Claims priority, application Hungary, Oct. 1, 1985, 3798/85; Jun. 27, 1986, 3798/85
Int. Cl.[4] A01N *43/40*; C07D *213/84, 213/78*; C07C *69/76*
U.S. Cl. 71—94 10 Claims

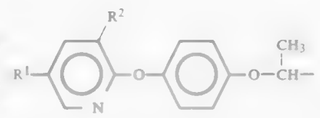
1. A compound of the Formula (Ib)

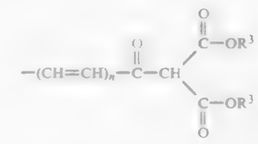




wherein
R^1 stands for hydrogen, halogen, trifluoromethyl, trifluoromethoxy, or cyano;
R^2 is hydrogen, halogen or methyl;
R^3 is C_1 to C_4 alkyl and the R^3 substituents may be the same or different; and
X is —N= or —CH=.

8. A method for controlling weeds which comprises the step of applying to a plant site in need of said treatment, and herbicidally effective amount of the compound of the Formula (Ia)





wherein
R^1 stands for hydrogen, halogen, trifluoromethyl, trifluoromethoxy or cyano;
R^2 is hydrogen, halogen or methyl;
R^3 is C_1 to C_4 alkyl and the R^3 substituents may be the same or different; and
n is 1.

VOL 1093 ISS 4 AG 23 1988 UMI

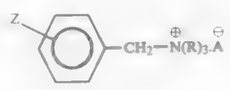
4,765,826

SUBSTITUTED BENZYLTRIALKYLAMMONIUM SALTS AND THEIR USE AS PLANT GROWTH ENHANCERS

John C. Van Heertum, Concord, and Maria P. Herrero, Berkeley, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 19, 1986, Ser. No. 864,679
Int. Cl.[4] A01N *33/02*
U.S. Cl. 71—121 9 Claims

1. A method for enhancing the growth of corn, wheat and sugar cane plants to obtain an increase in weight of said plants which comprises contacting plants or plant parts or their habitat with a growth enhancing amount of a composition containing an inert carrier and as the active material a compound corresponding to the formula



wherein:

Z represents in the 3 or 4 ring position, C_1–C_6 alkoxy or C_1–C_6 alkylthio;

each R independently represents C_1–C_4 alkyl with the proviso that when Z is a C_6 alkoxy or C_6 alkylthio, R cannot be C_4 alkyl; and

A represents a non-phytotoxic anion.

4,765,827

METAL VALUE RECOVERY

Thomas J. Clough, Santa Monica; John W. Sibert, Malibu, and Arthur C. Riese, Toluca Lake, all of Calif., assignors to Ensci, Inc., Woodland Hills, Calif.

Filed Jan. 20, 1987, Ser. No. 5,130
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—2 41 Claims

1. A process for recovering silver from an ore containing reducible manganese comprising contacting said ore with an aqueous composition and a material containing at least one metal sulfide in the presence of a metal redox couple more positive than about +0.1 versus the standard hydrogen electrode, W. M. Latimer convention, at conditions effective to (1) chemically reduce said manganese, (2) oxidize at least one of said metal from said metal sulfide and said sulfide from said metal sulfide, and (3) liberate said silver from said ore, said redox couple being selected from the group consisting of (A) at least one iron complexing agent in an amount effective to promote the oxidation of at least one of saidmetal and said sulfide from said metal sulfide, (B) at least one vanadium component in which vanadium is present in an amount in the 5+ oxidation state effective to promote the oxidation of at least one of saidmetal and said sulfide from said metal sulfide, and mixtures thereof; and recovering said silver from said ore.

4,765,828

METHOD AND APPARATUS FOR REDUCTION OF METAL OXIDES

George R. Nehls, Jr., and Scott D. Anderson, both of Duluth, Minn., assignors to Minnesota Power & Light Company, Duluth, Minn.

Filed Jun. 19, 1987, Ser. No. 64,105
Int. Cl.[4] C22B *4/00*
U.S. Cl. 75—10.19 23 Claims

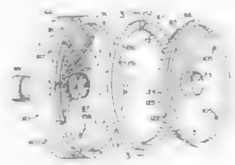
1. A process for the reduction of metal oxides by means of a plasma heated stream in a reactor, said process including the steps of:

(a) providing a reactor including a feed plate assembly and a plasma torch, the feed plate assembly including a bore therein for passage of a plasma heated stream therethrough;

(b) providing a primary feedstock material consisting essentially of ore material including metal oxide to be reduced;

(c) providing a secondary feedstock material including hydrocarbonaceous reductant;

(d) feeding said primary feedstock material into proximity to



the plasma heated stream in the feed plate assembly bore; and

(e) feeding said secondary feedstock material into the reactor at a position more remote from said plasma stream than the feed plate assembly bore;

(f) whereby the hydrocarbonaceous reductant in said secondary feedstock is not fed into the plasma heated stream with said primary feedstock material.

4,765,829

TREATING LEAD- AND ZINC-CONTAINING STEELMAKING BYPRODUCTS

Franz Beckmann, Würselen, Fed. Rep. of Germany; Romain Schmit, and Armand Wagner, both of Esch-Sur-Alzette, Luxembourg, assignors to Laborlux S. A., Esch-Sur-Alzette, Luxembourg

Filed Sep. 8, 1986, Ser. No. 905,270
Claims priority, application Luxembourg, Sep. 9, 1985, 86070
Int. Cl.[4] C22B *7/02*
U.S. Cl. 75—25 12 Claims



1. A method of treating byproducts of a steel or iron plant, the method comprising the steps of sequentially:

(a) heating and mixing fine-granular byproducts containing carbon, zinc oxide, lead oxide, and iron with at least one of the following additives

low-volatile, fine-granular carbonaceous material including anthracite, coke fines, and oil coke;

fine-particulate iron-containing materials including iron ore, iron shavings, and rolling scale; and

oxides and/or chlorides of alkaline earths, whereby a mixture is formed;

(b) briquetting the mixture with caking coal as a binder at a temperature of 450° C. to 530° C. with the portion of carbon substantially more than the quantity necessary for the reduction of the zinc and lead in the mixture, whereby briquets are formed;

(c) heating the briquets to more than 700° C. and at most around 1000° C. and maintaining them at this temperature for a predetermined time to drive gases including carbon oxide out of them and reduce substantially all the zinc and lead oxides to metallic zinc and lead compounds carried in the driven-out gas;

(c') burning the gases driven out of the briquets in step (c) without condensing the metallic zinc therefrom to oxidize the metalllic zinc and lead compounds and form a waste gas carrying zinc and lead oxides;

c'' separating the zinc and lead oxides from the waste gas; and

(d) recycling the briquets from which the zinc and lead have been separated to the iron or steel plant.

4,765,830

INJECTABLE REAGENTS FOR MOLTEN METALS

Edward J. Skach, Jr., Freeport; David W. Brake, West Columbia, and Joseph H. Waibel, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 899,859, Aug. 25, 1986, Pat. No. 4,708,737.
This application Jul. 22, 1987, Ser. No. 76,569
Int. Cl.[4] C21C *7/02*
U.S. Cl. 75—53 8 Claims

1. An injectable reagent for a molten ferrous metal, said reagent consisting essentially of

a major amount of a particulate inorganic reagent said inorganic reagent being an aluminum compound or an alkaline earth metal compound, the particles of which are impregnated with a minor amount of a metal reagent selected from the group consisting of magnesium, magnesium alloys, aluminum, and aluminum alloys.

4,765,831

PROCESS FOR PRODUCTION OF ALKALINE EARTH METAL BY CARBOTHERMIC PRODUCTION OF ALKALINE EARTH METAL ALUMINIDE AND STRIPPING OF ALKALINE EARTH METAL FROM ALKALINE EARTH METAL ALUMINIDE WITH NITROGEN STRIPPING AGENT

C. Norman Cochran, Oakmont, Pa., and Melvin H. Brown, Morning Sun, Iowa, assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 24, 1986, Ser. No. 946,079
Int. Cl.[4] C22B *26/10, 26/20*
U.S. Cl. 75—67 R 16 Claims

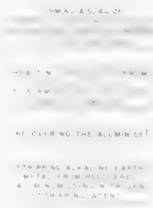
1. An improved carbothermic process for producing alkaline earth metal from an alkaline earth metal aluminide carbothermically formed by reaction of an aluminum-bearing material and an alkaline earth metal compound with a carbonaceous reducing agent which comprises the steps of:

(a) forming a slag comprising said alkaline earth metal compound and said aluminum-bearing material:

(b) reducing said slag with a reducing agent to form the corresponding alkaline earth metal aluminide; and

(c) reacting said alkaline earth metal aluminide with a nitrogen stripping agent to form the alkaline earth metal and aluminum nitride.

16. In a process for carbothermically producing calcium from a calcium aluminide formed by reacting a reducible aluminum-bearing material with a source of carbon and calcium oxide, the improvement which comprises removing reducible metal-bearing impurities from the reducible aluminum-bearing material by the steps of heating said reducible aluminum-bearing material in the presence of said calcium oxide and carbon to a temperature of from 1700° C. to just under 1900° C to reduce said reducible metal-bearing impurities in said reducible aluminum-bearing material to one or more metal alloys without substantially reducing said reducible aluminum-bearing material; separating said one or more reduced metal alloys from said reducible aluminum-bearing material before forming said calcium aluminide; and then recovering reduced calcium from said calcium aluminide by reacting said calcium aluminide with a nitrogen stripping agent at a temperature of at least about 1100° C



4,765,832

PROCESS FOR CARBOTHERMIC PRODUCTION OF CALCIUM ALUMINIDE USING SLAG CONTAINING CALCIUM ALUMINATE

Melvin H. Brown, Morning Sun, Iowa; C. Norman Cochran, Oakmont, and Noel Jarrett, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 24, 1986, Ser. No. 946,004
Int. Cl.[4] C22B *21/06*
U.S. Cl. 75—68 A 19 Claims



1. An improved process for carbothermically producing calcium aluminide from a calcium aluminate-containing slag comprising:

(a) providing an impure slag containing calcium aluminate;

(b) treating said slag at a first temperature to remove impurities; and

(c) reacting the purified slag with a carbonaceous reducing agent at a second temperature to form said calcium aluminide.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,833
POROUS CERAMIC STRUCTURE AND METHOD OF FILTERING ALUMINUM

Tsuneaki Narumiya, Kanagawa; Tomio Oyachi, Tokorozawa, and Yasuhiro Iino, Kodaira, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Nov. 8, 1985, Ser. No. 796,266
Claims priority, application Japan, Nov. 8, 1984, 59-235737
Int. Cl.[4] C22B *21/06*
U.S. Cl. 75—68 R 9 Claims



1. A porous ceramic structure suitable for use as a filter for molten aluminum comprising a porous ceramic body having pores capable of passing the molten aluminum therethrough, and a formed, plated copper layer, having a melting point higher than that of the molten aluminum to be filtered, covering the entire surface of said pores such that said molten aluminum may flow through said pores while in contact with said formed, plated copper layer without melting said copper layer.

4,765,834
PROCESS FOR THE RECOVERY OF METAL VALUES

Kavasery P. Ananthapadmanabhan, Spring Valley, N.Y., and Errol D. Goddard, Haworth, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 9, 1986, Ser. No. 871,747
Int. Cl.[4] B01D *11/04*
U.S. Cl. 75—108 10 Claims

1. A process for the selective concentration of metal values present in aqueous solution comprising
(a) contacting the aqueous metal-containing solution with an aqueous bi-phase system,
(b) isolating the phases of said bi-phase system, and
(c) recovering the metal values from at least one of said isolated phases, wherein said aqueous bi-phase system contains at least one functionalized polymeric material in an amount such that the concentration of metal values in one phase of the bi-phase system is enhanced, said functionalized polymeric material being a polyalkylene glycol, poly(oxyalkylene) polymer or poly(oxyalkylene) copolymer to which are bound functional groups selected from the group consisting of acrylate, sulfate, xanthate, oxime, phosphate and amine moieties.

4,765,835
FILTER PROCESS FOR SILVER RECOVERY FROM POLYMERIC FILMS

James D. Schoenhard, Morrison, Ill., assignor to City of Canton, IL, Canton, Ill.

Continuation-in-part of Ser. No. 802,791, Nov. 27, 1985, Pat. No. 4,629,780, which is a continuation-in-part of Ser. No. 776,256, Sep. 16, 1985, abandoned. This application Jul. 28, 1986, Ser. No. 889,637
Int. Cl.[4] C22B *11/04*
U.S. Cl. 75—118 P 3 Claims

1. A method of recovering silver from photographic film chips, comprising the steps:
dissolving or separating the gelatin layers and silver therein from the film chips in a caustic liquid treatment bath which is comprised of an aqueous solution containing a base metal hydroxide and a reagent selected from the group consisting of a salt, an amine, and an oxidizing agent;
passing liquid and the dissolved or separated silver therein from the treatment bath to a filter including a filter medium having pores in an effective range for silver halides; and collecting the silver contained in the liquid in or on the filter medium.

4,765,836
WEAR AND CORROSION RESISTANT ARTICLES MADE FROM PM ALLOYED IRONS

John J. Hauser, Freedom; William Stasko, West Homestead, and Kenneth E. Pinnow, Pittsburgh, all of Pa., assignors to Crucible Materials Corporation, Pittsburgh, Pa.

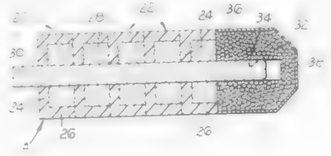
Filed Dec. 11, 1986, Ser. No. 940,658
Int. Cl.[4] C22C *29/02, 29/06*
U.S. Cl. 75—241 9 Claims

1. An alloy article characterized by a good combination of wear resistance and corrosion resistance and having a martensitic structure upon austenitizing, quenching and tempering, said article comprising compacted prealloyed particles of a composition consisting essentially of, in weight percent:
carbon, 2.5 to 5
manganese 0.2 to 1
phosphorus 0.10 max.
sulfur 0.10 max.
silicon 1 max.
nickel 0.5 max.
chromium 15 to 30
molybdenum 2 to 10
vanadium 6 to 11
nitrogen 0.15 max.
iron balance, including incidental impurities, said carbon being present in an amount balanced with vanadium, molybdenum and chromium to form carbides therewith and with sufficient remaining carbon to ensure said martensitic structure with a fine, uniformly distributed MC-carbide phase.

4,765,837
ALLOY AND PRODUCT MADE THEREFROM

Derek J. Whitehead, 103 Dickens La., Poynton, Cheshire, England

Filed Feb. 2, 1987, Ser. No. 9,540
Claims priority, application United Kingdom, Feb. 4, 1986, 8602679
Int. Cl.[4] B22F *3/00*
U.S. Cl. 75—249 21 Claims



1. An alloy of which the constituents, or the principal constituents, are magnesium, zinc and aluminium, and suitable for use in the production of, or incorporation in, a pellet for administration to a ruminant by deposition in its rumeno-reticular sac, characterised in that said alloy comprises magnesium to the extent of at least 40%, zinc at least 30% and aluminium up to 20% by weight.

4,765,838
WATER-SOLUBLE DYE COMPOSITION AND RECORDING LIQUID CONTAINING THE SAME

Tokuya Ohata; Masatsune Kobayashi; Yuko Suga; Konoe Miura; Hiroshi Takimoto, all of Yokohama, and Tomio Yoneyama, Kawasaki, all of Japan, assignors to Mitsubishi Chemical Industries Ltd. and Canon Kabushiki Kaisha, both of Tokyo, Japan

Filed Aug. 11, 1986, Ser. No. 895,441
Claims priority, application Japan, Aug. 13, 1985, 60-178225
Int. Cl.[4] C09D *11/02*
U.S. Cl. 106—22 39 Claims

1. A recording liquid comprising at least two water-soluble dyes and a liquid medium, each of the dyes satisfying the condition defined by the following expression (I), and a mixture of these at least two dyes satisfying the condition defined by the following expression (II)

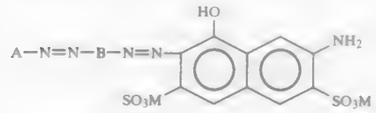
$$0 \leqq \sqrt{a^{*2} + b^{*2}} \leqq 10 \quad [I]$$

$$0 \leqq \sqrt{\left(\sum_{i=1}^{n} a^{*i}\right)^2 + \left(\sum_{i=1}^{n} b^{*i}\right)^2} \leqq 2 \quad [II]$$

wherein a^* and b^* are chromaticness indices defined in the CIE 1976 (L^*, a^*, b^*) space, i indicates the ith dye of the dyes used together, and n is an integer of 2 or more wherein at least one of the water-soluble dyes is selected from dyes of group X given below, and one of the others is selected from dyes of group Y given below:

Dyes of group X

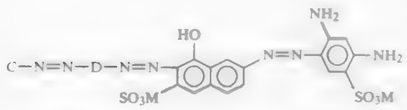
Dyes represented by the following formula [III]



(III)

wherein A represents a phenyl group substituted by a C_1 to C_4 alkylcarbonylamino group, a C_1 to C_4 alkoxy group, the group SO_3M or a phenylazo group which may optionally be substituted by the group SO_3M, or a naphthyl group substituted by the group SO_3M, B represents a naphthyl group substituted by the group SO_3M or phenyl group substituted by a C_1 to C_4 alkoxy group, and M represents an alkali metal cation, ammonium or an amine cation;

Dyes represented by the following general formula [IV]



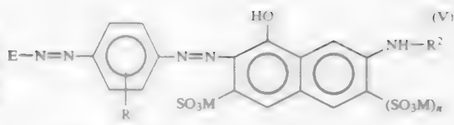
(IV)

wherein C represents a phenyl or naphthyl group substituted by the group SO_3M, D represents a phenyl group substituted by a C_1 to C_4 alkyl group or a C_1 to C_4 alkoxy group or a C_1 to C_4 alkylcarbonylamino group, and M is as defined above;

C. I. Direct Black-19, -22, -62, -108, -113, -154 and -159; and C. I. Acid Black 7, -9, -29, -48, -52:1, -94:1, -109, -110. -187 and -208.

Dyes of group Y

Dyes represented by the following formula [V]



(V)

wherein E represents a naphthyl group substituted by the group SO_3M or a phenyl group substituted by a C_1 to C_4 alkyl group, a C_1 to C_4 alkoxy group, a C_1 to C_4 alkylcarbonylamino group, or a phenylazo group which may optionally be substituted by the group SO_3M, R^1 represents a C_1 to C_4 alkyl group, a C_1 to C_4 alkoxy group or a C_1 to C_4 alkylcarbonylamino group, R^2 represents a hydrogen atom or a phenyl group substituted by the group SO_3M, n represents 0 or 1, and M is as defined above;

C. I. Acid Black-27, -137 and -158;

C. I. Direct Black-64, -93 and -94; and

C. I. Direct Brown-59 and -127.

4,765,839
BITUMINOUS COMPOSITIONS CONTAINING ANTI-STRIPPING ADDITIVES PREPARED FROM AMINES AND SUBSTITUTED HETEROCYCLIC COMPOUNDS

Duane S. Treybig, Lake Jackson, and Dane Chang, Houston, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 19, 1987, Ser. No. 123,009
Int. Cl.[4] C08L *95/00*; C09D *3/24*
U.S. Cl. 106—273 N 12 Claims

1. A composition which comprises a blend of
(I) bituminous material and
(II) the product resulting from reacting at conditions sufficient to complete the reaction of
(A) at least one aromatic heterocyclic compound having one or more rings, at least one heterocyclic nitrogen atom and containing at least one group attached to a carbon atom in the heterocyclic ring selected from the group consisting of
(1) carboxylic acid,
(2) carboxylic acid ester,
(3) acyclic carboxylic acid anhydride,
(4) carboxylic acid halide or
(5) combination thereof; with
(B) an organic mine having at least one primary and secondary amine group or a combination of such groups and at least 4 carbon atoms; and
wherein components (A) and (B) are present in quantities which provide a ratio of —CO— groups to $—NH_2$ or —NH— groups or a combination of such groups of from about 0.1:1 to about 1.2:1; and
wherein components (I) and (II) are employed in quantities which provide from about 0.05 to about 10 percent by weight of component (II) based upon the combined weight of components (I) and (II).

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,840

COMPOSITION FOR DEPOSITING DIFFUSION CARBIDE COATINGS ON IRON-CARBON ALLOY ARTICLES

Igor I. Jurkov; Geanady A. Melnichuk; Natalya V. Stepanova, all of Moscow; Viktor I. Juschenko, Sumskoi; Viktor I. Derkach, Sumskoi; Ivan I. Levchenko, Sumskoi, and Vladimir M. Eremenko, Sumskoi, all of U.S.S.R., assignors to Nauchno-Issledovatelsky Institut Tekhnologii Avtomobilnoi Promyshlennosti, Moscow and Svessky Nasosny Zavod, Poselok Svessa, both of, U.S.S.R.

Filed Apr. 28, 1987, Ser. No. 43,831
Int. Cl.[4] C09D *3/00*
U.S. Cl. 106—285 16 Claims

1. A composition for depositing a diffusion carbide coating on iron-carbon alloy articles comprising a carbide-forming element in an amount of from 40 to 70%, a carbon-containing compound selected from the class of hydrocarbons having a boiling or sublimation point of 180° to 750° C. and which is in a solid state at room temperature in an amount of from 0.5 to 2.5%; an activator in an amount of from 0.2 to 5.0% and an inert filler in an amount of from 22.5 to 59.3%, wherein the carbide forming element is selected from the group consisting of chromium, molybdenum, tungsten, niobium, zirconium, tantalum, and silicone.

4,765,841

PROCESS FOR THE PREPARATION OF AN ORGANIC PIGMENT DISPERSION

Arne Vinther, Koge; Steffen C. Olsen, Farum; Bjorn E. H. Larsen, Koge; Elun S. Madsen, Allerod, and Bjorn Madsen, Helsingor, all of Denmark, assignors to Kemisk Vaerk Koge A/S, Koge, Denmark

Filed Oct. 9, 1986, Ser. No. 917,155
Claims priority, application Denmark, Oct. 11, 1985, 4672/85
Int. Cl.[4] C04B *14/00*
U.S. Cl. 106—402 23 Claims



1. A process for the preparation of an organic pigment dispersion in a non-aqueous medium comprising the steps of:

mixing an aqueous slurry of the organic pigment containing 0.1 to 10% by weight of the pigment, calculated on the slurry, in the presence of a dispersing agent component with the non-aqueous medium under vigorous agitation;

isolating the organic pigment dispersion comprising up to 50% by weight of water from the residual aqueous phase; and

removing a substantial proportion of the water contained in the organic pigment dispersion by contacting the dispersion with a surface with less affinity for water than for the non-aqueous medium and separating the aqueous phase from the non-aqueous phase.

4,765,842

TICKET CLEANER APPARATUS

Charles R. Sanders, 2737 Leisure Dr., Ft. Collins, Colo. 80525, and James L. Sattler, 5915 Neptune Dr., Ft. Collins, Colo. 80526

Filed Oct. 27, 1986, Ser. No. 923,767
Int. Cl.[4] A46B *13/02*
U.S. Cl. 134—9 13 Claims



1. Ticket cleaner apparatus adapted to remove a coating from the surface of a game ticket to reveal characters on said ticket, said apparatus comprising:

(a) a housing which includes an opening therein which is adapted to receive said ticket;

(b) a rotatable cleaning element supported within said housing; said element comprising a cylindrical roll having brush means on the periphery thereof;

(c) positioning means adapted to position said ticket within said housing in a manner such that said coating on said ticket is in contact with said cleaning element; wherein said positioning means comprises spaced-apart parallel plates; wherein one said plate includes an opening enabling said periphery of said cleaning element to project therethrough to contact said coating when said ticket is inserted between said parallel plates;

(d) power means which is adapted to rotate said cleaning element while in contact with said coating; and

(e) switch means operably connected to said power means in a manner such that said power means becomes activated to drive said cleaning element when said ticket is inserted between said parallel plates;

wherein said cleaning element is adapted to remove portions of said coating from said ticket to reveal said characters.

4,765,843

PROCESS FOR PREVENTING CONTAMINATION OF REAGENT SYSTEMS

Sue K. Pierce, Arlington; Jack B. Robinson, Jr., Duncanville, and Ruth R. Scoggin, Haltom City, all of Tex., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Apr. 28, 1987, Ser. No. 43,513
Int. Cl.[4] B08B *17/02*
U.S. Cl. 134—22.14 13 Claims

1. A process for preventing contamination of a reagent for delivery by a reagent delivery system wherein said process comprises:

pretreatment of said reagent delivery system with a silane solution, and

washing said pretreated reagent delivery system to remove excess silane solution, whereby contamination of said reagent is prevented.

4,765,844

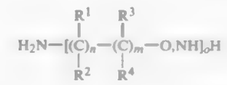
SOLVENTS FOR PHOTORESIST REMOVAL

Hans-Joachim Merrem, Seeheim-Jugenheim, and Axel Schmitt, Walluf, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 20, 1986, Ser. No. 920,665
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1985, 3537441
Int. Cl.[4] C11D *7/32;* C09D *9/04;* C23D *17/00*
U.S. Cl. 134—38 11 Claims

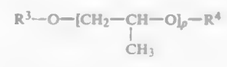
1. An agent for the removal of photoresists consisting essentially of

(a) from about 10 to 90% by weight of at least one water-soluble amine represented by the formula



in which
R^1, R^2, R^3, R^4 denote H or alkyl groups
n, m denote 0 to 2, and
o denotes 1 to 3;
and

(b) from about 10 to 90% by weight of at least one water-soluble propylene glycol derivative represented by the formula



in which
R^3, R^4 denote H, alkyl or



groups, and
P denotes 1 to 3; wherein said agent is biodegradable, of low toxicity, free of ammonium hydroxide base, relatively non corrosive to aluminum and wherein substantially all components of said agent boil at temperatures of at least 160° C.

4,765,845

HEAT-RESISTANT THIN FILM PHOTOELECTRIC CONVERTER

Jun Takada, Kasugai; Minori Yamaguchi, Akashi, and Yoshihisa Tawada, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 744,602, Jun. 14, 1985, abandoned. This application Dec. 17, 1986, Ser. No. 942,644
Claims priority, application Japan, Jun. 15, 1984, 59-124331; Jul. 16, 1984, 59-148411; Oct. 11, 1984, 59-213943; Dec. 18, 1984, 59-267256
Int. Cl.[4] H01L *31/06*
U.S. Cl. 136—258 11 Claims

1. A heat-resistant thin film photoelectric converter, comprising a semiconductor layer, a front transparent electrode, a rear metal electrode, and a diffusion-blocking layer, said diffusion-blocking layer being provided between the semiconductor layer and the rear metal electrode and being a layer of metal silicide having a thickness in the range of 5 Å to 200 Å.



4,765,846

PROCESS FOR AUTOGENIC FLAME CUTTING WITH OXYGEN

Paul Grohmann, Maria-Enzersdorf, Austria, assignor to Messer. Griesheim GmbH, Fed. Rep. of Germany

Filed Dec. 9, 1986, Ser. No. 939,568
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1985, 3543657
Int. Cl.[4] B23K *7/00*
U.S. Cl. 148—9 R 13 Claims



1. In a process for the autogenic flame cutting of metallic workpieces in which the site to be cut has been heated to ignition temperature and in which an oxygen stream is directed to the cutting site with the oxygen stream emerging from a cutting nozzle and with the nozzle and workpiece moving relative to each other to effect the cut, the improvement being in that the oxygen is brought to a high pressure of at least 200 bar while the oxygen is in a liquid state, and the liquid oxygen being fed to the cutting site via a liquid jet cutting nozzle to utilize the high kinetic energy of the liquid jet and to increase the cutting speed thereof.

4,765,847

METHOD OF TREATING THE SURFACE OF IRON ALLOY MATERIALS

Tohru Arai; Hironori Fujita; Junji Endo; Yoshihiko Sugimoto, and Yukio Ohta, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Japan

PCT No. PCT/JP86/00287, § 371 Date Feb. 3, 1987, § 102(e) Date Feb. 3, 1987, PCT Pub. No. WO86/07614, PCT Pub. Date Dec. 31, 1986
PCT Filed Jun. 9, 1986, Ser. No. 23,862
Claims priority, application Japan, Jun. 17, 1985, 60-131556; Aug. 14, 1985, 60-178781; Sep. 24, 1985, 60-210495; Sep. 24, 1985, 60-210496
Int. Cl.[4] C23C *9/10*
U.S. Cl. 148—15.5 20 Claims

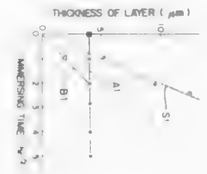
1. A method of treating the surface of an iron alloy material which comprises:

nitriding said iron alloy material to form on said surface thereof a layer of a nitride composed of iron and nitrogen

VOL 1093 ISS 4 AUG 23 1988 UMI

or a carbonitride composed of iron, carbon and nitrogen; and

heating said iron alloy material at a temperature up to 580° C. with a material containing at least one surface layer-forming element selected from the group consisting of chromium, titanium and zirconium, and a treating agent, so that said surface layer-forming element may be diffused



into said surface of said iron alloy material to form thereon a surface layer composed of a nitride or carbonitride of said element, said treating agent being at least one compound selected from the group consisting of chlorides, fluorides, borofluorides, oxides, bromides, iodides, carbonates, nitrates and borates of alkali and alkaline earth metals, ammonium halides and metal halides.

4,765,848

PERMANENT MAGNENT AND METHOD FOR PRODUCING SAME

Kaneo Mohri, 4-24, Yayoi 1-chome, Sawara-ku, Fukuoka-shi, Fukuoka, and Jiro Yamasaki, Fukuoka, both of Japan, assignors to Kaneo Mohri, Fukuoka, Japan

Filed Dec. 27, 1985, Ser. No. 814,183

Claims priority, application Japan, Dec. 31, 1984, 59-280125; Nov. 21, 1985, 60-259816

Int. Cl.[4] H01F *1/04*

U.S. Cl. 148—302 **30 Claims**



1. A permanent magnet having a composition expressed by $(Ce_zLa_{1-z})_x(Fe_{1-y}B_y)_{1-x}$ with a proviso of $0.4 \leqq x \leqq 0.9$, $0.05 \leqq z \leqq 0.3$, and $0.01 \leqq v \leqq 0.3$ and having a coercive force (iHc) of at least 4 kOe.

4,765,849

LOW-ALLOY STEEL MATERIAL, DIE BLOCKS AND OTHER HEAVY FORGINGS MADE THEREOF

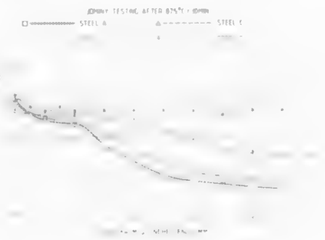
William Roberts, Hagfors, Sweden, assignor to Uddeholm Tooling Aktiebolag, Hagfors, Sweden

Division of Ser. No. 867,566, May 28, 1986, Pat. No. 4,673,433. This application Mar. 23, 1987, Ser. No. 29,158

Int. Cl.[4] C22C *38/50*

U.S. Cl. 148—335 **5 Claims**

1. A low-alloy steel product in the form of a block, bar, plate, or forged shape made from a steel comprising, in weight percent:



Carbon	0.3 to	0.55
Manganese	0.3 to	1.5
Silicon	from traces up to	1.0
Chromium	0.75 to	1.8
Nickel	from traces up to	2.0
Molybdenum	0.05 to	0.4
Vanadium	0.05 to	0.15
Phosphorus		0.03 max
Sulphur	from traces up to	0.05
Aluminum	0.04 to	0.1 or
Titanium	0.015 to	0.08, or
Aluminum and Titanium,		

wherein the total amount of $Al+2\times Ti$ is about 0.04 to about 0.16, balance iron, the bulk of the steel having been melted in a furnace said aluminum and/or titanium having been added to the steel melt by microalloying after melting the bulk of the steel, the microalloyed steel having been subjected to superheating to at least 1625° C. for at least two minutes prior to teeming, casting to ingots, and hot working the ingots to form said block, bar, plate or forged shape, said steel having a Jominy hardenability corresponding to a hardness of more than 50 HRC at a distance of 50 mm from the quenched end after austenitization at 875° C. for 30 minutes.

4. A low-alloy steel product according to claim 1, 2 or 3, wherein the steel product has been austenitized at a temperature of between 800° and 900° C., quenched in oil, and tempered at between 500° and 700° C.

4,765,850

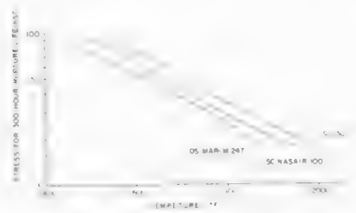
SINGLE CRYSTAL NICKEL-BASE SUPER ALLOY

Frederick A. Schweizer, San Diego, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jan. 10, 1984, Ser. No. 569,633

Int. Cl.[4] C22C *19/05*

U.S. Cl. 148—404 **5 Claims**



1. A single crystal nickel-base super alloy article for use at elevated temperatures, characterized by resistance to hot corrosion, and having a stress-rupture life at 2000° F. at 18 KSI

stress load in excess of 150 hours and being substantially free of precipitated sigma phase in the alloy microstructure, said alloy consisting essentially of the composition: 1–4% Re, 8–12% Co, 4.5–6% Cr, 5–5.8% Al, 1.2–1.8% Ti, 1.7–2.3% Mo, 4–6% W, 5.5–8% Ta, balance Ni and being substantially free of V.

4,765,851

ALUMINUM ALLOY FOR THE PREPARATION OF POWDERS HAVING INCREASED HIGH-TEMPERATURE STRENGTH

Malcolm J. Couper, Ennetbaden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 18, 1986, Ser. No. 875,733

Claims priority, application Switzerland, Jun. 26, 1985, 2713/85

Int. Cl.[4] C22C *21/00*

U.S. Cl. 148—437 **7 Claims**

1. An aluminum alloy for the production of a powder having increased high-temperature strength, which alloy consists of 1.5 to 5% by weight of Li, 4 to 11% by weight of Fe and 1 to 6% by weight of at least one of the elements Mo, V or Zr, the remainder being Al, or of 1.5 to 5% by weight of Li, 4 to 7% by weight of Cr and 1 to 4% by weight of at least one of the elements V, Mn or Zr, the remainder being Al, which alloy contains the phase Al_3Li and the phase of an intermetallic compound of Al with Mo, V, Zr or Mn as a finely divided dispersoid having a particle diameter of no more than 0.1 μm.

4,765,852

TIRE REPAIR BY "PATCH ONLY" METHOD

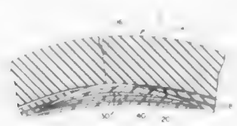
Russell W. Koch, Hartville, Ohio, and Douglas D. Snyder, Tempe, Ariz., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

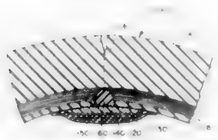
Division of Ser. No. 718,666, Apr. 1, 1985, Pat. No. 4,618,519, which is a continuation-in-part of Ser. No. 584,426, Feb. 28, 1984, abandoned. This application Jun. 26, 1986, Ser. No. 878,716

The portion of the term of this patent subsequent to Oct. 21, 2003, has been disclaimed.

Int. Cl.[4] B60C *21/00*

U.S. Cl. 156—97 **13 Claims**





1. A process for repairing a cured reinforced elastomer article having a crack extending therethrough comprising the steps of:

forming a cavity on the interior surface of said elastomer article in the vicinity of said crack, said cavity extending into the reinforcement area of said article;

applying a treating agent to at least the cavity area, said treating agent selected from the group consisting of N-halohydantoins, N-haloamides, N-haloimides and combinations thereof;

applying a filler to said treated cavity and filling said cavity;

applying an amine curable polymer or prepolymer coating over said filled cavity area;

applying a patch to said amine coated cavity area;

curing said filler; and

curing said amine curable polymer or prepolymer at ambient temperature.

4,765,853

METHOD OF MAKING A PRESSURIZED BALL

Allan C. Hoffman, 2891 Runsey Dr., Riverside, Calif. 92506

Filed Oct. 7, 1987, Ser. No. 105,662

Int. Cl.[4] B32B *31/04*

U.S. Cl. 156—145 **14 Claims**



1. A method of making a two part core for an internally pressurized tennis ball or the like comprising the steps of:

(a) providing a one-way air valve in a side wall of at least one of a pair of molded semi-hemispheric elastomeric material core halves with each of said halves having an annular generally flat base surface;

(b) applying a thermosetting adhesive means to said base surfaces of said core halves for thermal bonding of said halves together;

(c) joining said core halves to each other in the presence of atmospheric pressure with said base surfaces in abutting relation;

(d) applying heat and pressure externally to said joined core halves to cure and set said adhesive means with said core halves interior air mass being only that occurring by virtue of the atmospheric pressure as it existed when said halves were joined together; and

(e) introducing air under pressure into the interior of said core through said valve to pressurize the interior of said ball.

4,765,854

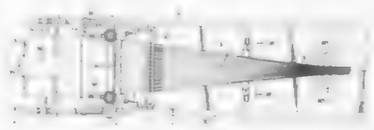
METHOD OF PRODUCING DISPOSABLE HEADDRESS

Thomas J. McKeown, Pennsauken, N.J., assignor to Cellucap Manufacturing Co., Philadelphia, Pa.

Division of Ser. No. 812,269, Dec. 23, 1985, Pat. No. 4,691,390. This application May 1, 1987, Ser. No. 45,825

Int. Cl.[4] B32B *7/14*; B65H *81/00*

U.S. Cl. 156—161 **3 Claims**



1. A method of sequentially producing a plurality of headdresses from a longitudinally continuous running length of fabric of substantially constant width having a thermoplastic surface and elastic cords, consisting of the steps of,

(a) placing the web in longitudinal tension,

(b) positioning a thermoplastically coated elastic cord while in stretched condition parallel adjacent to and inward

VOL 1093 ISS 4 AG 23 1988 UMI

from each of the longitudinally extending free side edges of the web proximate to the web thermoplastic surface,
(c) heating the cords and thermoplastic surface of the web to soften the thermoplastic materials,
(d) turning the free side edges of the web inward around the stretched elastic cords to envelope the latter while securing the inturned free side edges of the web to the web and securing the stretched elastic cords continuously to the contiguous enveloping surfaces of the web by applying pressure to the web,
(e) cooling the enveloped corded web contact to seal the cords and web together before they can separate, by thermally fusing their surfaces together,
(f) pleating the web,
(g) tightly securing together against relative movement the pleats of the tensioned web and the secured stretched elastic cords at a predetermined fixed spacing interval along the length of the tensioned web, and severing the web at points lying outside of the said fixed spacing interval.

4,765,855

METHOD OF MAKING A SANDWICH MATERIAL WITH INTERNAL UNDULATIONS AND PROTECTIVE LAYERS

Vincent Geoffroy-Dechaume, Poissy, and Francois De Capele, Paris, both of France, assignors to I. T. I. Enterprises Ltd., Fribourg, Switzerland

PCT No. PCT/CH85/00001, § 371 Date Sep. 9, 1985, § 102(e) Date Sep. 9, 1985, PCT Pub. No. WO85/03030, PCT Pub. Date Jul. 18, 1985
PCT Filed Jan. 10, 1985, Ser. No. 773,819
Claims priority, application France, Jan. 12, 1984, 84 00467
Int. Cl.[4] B32B *31/12*
U.S. Cl. 156—205 1 Claim



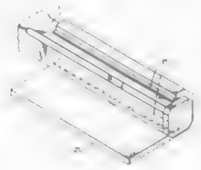
1. A process for the preparation of a paper based sandwich material having an internal block of corrugations formed from two sheets of corrugated paper isolated from each other by the interposition therebetween of a sheet of paper, said internal block being placed between a first and second covering sheets themselves formed of a first inner sheet and a second outer sheet said composite being resistant to humidity by virtue of an external plastic coating, each of the covering sheets being obtained by the assembly of said first and second sheets mentioned above wherein
a first sheet of corrugated paper is glued by the ridges of its corrugation to the inner face of the first covering sheet to provide a first web of corrugated card with a single planar outer surface,
a second sheet of corrugated paper is glued by the troughs of its corrugation to an intermediate sheet of paper to give a second web of corrugated card with a single planar inner surface,
the second covering sheet is glued by its inner surface to the free ridges of the corrugations of the second web of corrugated card,
the troughs of the corrugations of said first web are glued to the free upper suface of the intermediate paper sheet of said second web,
to give a composite sandwich material of corrugated card having two flat outer faces with corrugations on the inner faces thereof separated by the interposition of the sheet of intermediate paper,
characterized by the steps of
(a) providing a first protective web comprising a first sheet of paper having a protective layer of thermoplastic material on the outer face thereof,
feeding said first protective web to a first adhesive application zone,
disposing in said first adhesive application zone, a solution of rapid acting cold setting adhesive,
feeding a first corrugated sheet of paper towards the zone of adhesion and disposing a portion of said solution of cold setting adhesive upon the ridges of said corrugations on one side of the first sheet of corrugated paper,
bringing the glued face of the said first corrugated sheet towards the inner side of the protective web and feeding the sheet and the protective web face to face at the same speed while maintaining the first protective web under tension in said adhesive bonding zone by means of tensioning cylinders,
pressing the glued face of sheet against the internal side of the protective web through a cylinder, said cylinder being maintained at a temperature less than the melting temperature of the thermoplastic material to yield a first web of corrugated material having an upper planar face,
(b) simultaneously producing a second web of corrugated card having a planar surface by
feeding an intermediate paper sheet to a second adhesive application zone,
disposing a solution of thermosetting adhesive activated by endothermic polymerization in said second adhesion zone,
and feeding a second sheet of corrugated paper into said second adhesive application zone and disposing a portion of said thermosetting adhesive onto the ridges of the corrugations of one side of said second sheet of corrugated paper,
bringing the glued face of the said second corrugated sheet towards the inner side of the sheet of intermediate paper and feeding said second corrugated sheet and the intermediate paper sheet face to face at the same speed while maintaining the paper sheet under tension in said adhesive bonding zone by means of tensioning cylinders, pressing the glued side of corrugated sheet against the inner side of the intermediate sheet through a cylinder, said cylinder being maintained at a temperature above the activation temperature of the thermosetting adhesive to yield a second web of corrugated material having an upper planar face,
(c) assembling an initial composite web having an outer protective layer, a paper layer, a corrugated paper layer and a further paper layer, comprising the steps of providing a second protective web comprising a second sheet of paper having a protective layer of thermoplastic material on the outer face thereof,
feeding said second web to a third adhesive application zone,
disposing in said third adhesive application zone, a solution of rapid acting cold setting adhesive, feeding said second web of corrugated material into said third adhesion zone and
disposing a portion of said cold setting adhesive onto the troughs of the exposed corrugations of said second corrugated web,
bringing the glued face of the said second corrugated web towards the inner side of the second protective web and feeding the said corrugated web and the second protective web face to face at the same speed while maintaining the said second corrugated web under tension in said adhesive application zone,
pressing the glued side of said corrugated sheet against the inner side of the second protective web through a cylinder, said cylinder being maintained at a temperature below the fusion temperature of the thermoplastic material to provide said initial composite web,
bringing the glued face of the said first corrugated web towards the upper planar surface of the initial composite web and feeding the said first corrugated web and the initial composite web face to face at the same speed while maintaining the said corrugated web under tension in a fourth adhesive application zone,
pressing the glued side of said first corrugated web against the upper planar surface of the initial composite web through a cylinder,
passing the resulting material sandwich over heating tables in contact with the thermoplastic film faces while maintaining a lower temperature than the temperature of fusion of thermoplastic material but sufficient to cause the polymerization of the adhesive.

4,765,856

PROCESS FOR MANUFACTURING CUSTOM MOLDABLE HAND GRIP

Ruxton C. Doubt, Rte. 1, Box 414, Vashon, Wash. 98070

Division of Ser. No. 844,084, Mar. 26, 1986, Pat. No. 4,696,842. This application Sep. 23, 1987, Ser. No. 100,106
Int. Cl.[4] B65C *3/02, 5/02;* A63B *49/08*
U.S. Cl. 156—212 11 Claims



1. A process for making a substantially rigid, permanent molded article, comprising:
dissolving a thermoplastic-polymer in a solvent;
kneading said polymer with fillers to produce a viscous rubbery mass;
forming said rubbery mass into a sheet of desired dimensions and of sufficient thickness to receive a desired depth of molded impression;
partially evaporating said solvent from said sheet; and
covering at least one surface of said sheet, after partially evaporating said solvent, with a non-permeable film layer that prevents subsequent evaporation of said solvent, and thereafter utilizing said sheet by stripping away said film layer, making a molded impression in said sheet, and allowing the resulting molded article to cure by solvent evaporation to a permanently hardened state.

4,765,857

PROTECTIVE PATCH FOR SHRINKABLE BAG

Daniel J. Ferguson, Spartanburg, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Division of Ser. No. 740,360, Jun. 3, 1985. This application Apr. 8, 1987, Ser. No. 35,836
Int. Cl.[4] B32B *27/16, 31/02, 31/20*
U.S. Cl. 156—229 6 Claims



1. A method of making a multi-layer protective patch for a biaxially heat shrinkable thermoplastic bag comprising the steps of:
(a) coextruding a multi-layer, thermoplastic tube, the inner wall of said tube comprising a first ethylene vinyl acetate copolymer and the outer wall comprising a blend having a major proportion of linear low density polyethylene and a minor amount of a second ethylene vinyl acetate copolymer;
(b) applying a sufficient amount of powdered cornstarch to the interior tube wall so that upon collapsing, the tube will not self adhere;
(c) collapsing the tube;
(d) irradiating the collapsed tube to cross-link the materials thereof;
(e) opening, inflating, heating, and stretching the tube to biaxially orient the tube material;
(f) simultaneously cooling, collapsing and flattening the tube whereupon the tube adheres to itself; and
(g) cutting the tube into at least one patch.

4,765,858

PROCESS OF APPLYING A REACTING TRANSFER COATING FOR DECORATING LAMINATES

Henk F. E. Vankerckhoven, Rijmenam, and Eric H. C. De-Koster, Bornem, both of Belgium, assignors to Scott Continental, N.V., Duffel, Belgium

Filed Feb. 11, 1987, Ser. No. 13,312
Int. Cl.[4] B44C *1/16;* B32B *31/00, 27/08*
U.S. Cl. 156—235 3 Claims

1. In a process for preparing a decorative laminate comprising the steps of:
(A) stacking together in an assembly
(a) one or more resin impregnated core sheets,
(b) a decorative fibrous sheet impregnated with a noble thermosetting resin, and
(c) a releasing carrier surface coated with a film composition in contact with the decorative fibrous sheet;
(B) applying heat and pressure to consolidate the assembly into a unitary structure; and
(C) separating the releasing carrier surface from the unitary structure;
the improvement wherein said film composition comprises polyvinyl butyral resin and melamine resin which reacts with the noble thermosetting resin of the decorative fibrous sheet during assembly consolidation.

4,765,859

METHOD OF MAKING FILTERCLOTHS BY INDUCTION HEATING

Clive A. Heath, 'Greatwood', Offley Brook, Eccleshall, Staffs, England, and Barry F. Hibble, 36 Main St., Amesbury, Mass. 01913

PCT No. PCT/GB86/00335, § 371 Date Feb. 5, 1987, § 102(e) Date Feb. 5, 1987, PCT Pub. No. WO87/00074, PCT Pub. Date Jan. 15, 1987
PCT Filed Jun. 12, 1986, Ser. No. 10,909
Claims priority, application United Kingdom, Jul. 9, 1985, 8517311
Int. Cl.[4] B32B *31/26*
U.S. Cl. 156—272.4 1 Claim

1. A method of making a filter including the steps of bonding two pieces of cloth to the flanges of a flanged tube by locating an annular piece comprising a thermoplastic bonding agent

VOL 1093 ISS 4 AG 23 1988 UMI

mixed with a ferrous metal powder between each flange and the adjacent surface of the cloth and then using induction



heating to heat the ferrous metal powder and thus cause the bonding agent to bond the cloth to the flanges.

4,765,860

METHOD OF MAKING A FLEXIBLE BASE PLATE FOR PRINTED CIRCUIT BOARD

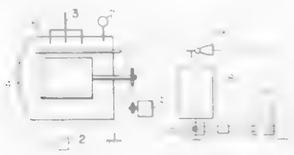
Susumu Ueno, 1, Oaza Touwada, Kamisu-cho, Kashima-gun, Ibaraki-ken; Hajime Kitamura, 6-14-2, Aobadai, Ichihara-shi, Chiba-ken, and Kaname Inoue, 5-18-10-404, Arima, Miyamae-ku, Kawasaki-shi, Kanagawa-ken, all of Japan

Continuation of Ser. No. 606,652, May 3, 1984, abandoned. This application Oct. 27, 1987, Ser. No. 115,659

Claims priority, application Japan, May 6, 1983, 58-79151

Int. Cl.[4] B05D *3/06*; B32B *31/28*

U.S. Cl. 156—272.6 1 Claim



1. A method for the preparation of a flexible base for printed circuit board composed of a flexible sheet-like polymeric base and a metal foil adhesively bonded to the polymeric base by means of an adhesive which comprises

(a) subjecting the surface of the polymeric base to exposure to an atmosphere of low temperature plasma generated by glow discharge with application of an electric voltage of at least 4000 volts between electrodes in an atmosphere of oxygen or a gaseous mixture containing at least 10% by volume of oxygen wherein the density of the electric power in the glow discharge on the electrode is at least 2.5 watts/cm^2 said glow discharge being performed at a pressure between 0.001 to 10 Torr, said electrodes being spaced from each other around 1—20 cm; and

(b) integrally bonding the metal foil to the plasma-treated surface of the polymeric base with a layer of an adhesive intervening therebetween.

4,765,861

APPARATUS AND METHOD FOR WINDING A TOROIDAL MAGNETIC CORE ONTO A BOBBIN FOR A TOROIDAL TRANSFORMER

Joe E. Curtis, Jr., Lexington; Richard W. Martin, Versailles, both of Ky.; Clair E. Piatt, Bronson, Mich.; Hubert L. R. Mohney, Bronson, Mich.; J. Richard McClelland, Bronson, Mich., and John L. Fisher, Lexington, Ky., assignors to Kuhlman Corporation, Troy, Mich.

Filed Feb. 6, 1985, Ser. No. 698,982

Int. Cl.[4] H01F *41/08*; H02K *15/08*

U.S. Cl. 156—457 13 Claims



10. An apparatus for winding a strip of material into a coil within an arcuate elongated passage, said apparatus comprising:

first and second bobbin halves joined together to form a bobbin, said bobbin having a cylindrical hub with an outer surface adapted for receiving the strip of material and an inner surface with two sets of gear teeth disposed circumferentially thereon, said gear teeth being adapted for engaging drive means for rotating said bobbin to wind the strip of material into a coil on said bobbin, the edges of the gear portions of said bobbin halves being circumferentially offset so that the drive means engages one set of gear teeth of one of said bobbin halves and the other set of gear teeth of the other of said bobbin halves during the transition from engaging the gear teeth of one bobbin half to engaging the gear teeth of the other bobbin half; and

joining means for joining said bobbin halves together within the arcuate elongated passage including means for axially and radially positioning said bobbin halves and means for securing said bobbin halves together to form said cylindrical bobbin.

13. An apparatus for winding a strip of magnetic material into a coil to form a magnetic core of a transformer within an arcuate elongated passage through prewound electrical windings of the transformer, said apparatus comprising:

first and second bobbin halves joined together to form a bobbin, said bobbin having a first, outer surface for receiving the strip of material and a second, inner surface having gear teeth adapted for engaging gear driven means for rotating said bobbin to wind the strip of material into a coil on said first surface of said bobbin;

said bobbin including a cylindrical hub having two sets of said gear teeth disposed circumferentially about said second, inner surface and spaced apart by a bearing surface; and

joining means adapted for joining said bobbin halves together within the arcuate elongated passage prior to the winding of said strip of material into a coil on said first surface of said bobbin.

4,765,862

APPARATUS FOR JOINING THE ENDS OF BELT-SHAPED MATERIALS

Toshio Azuma, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Feb. 13, 1987, Ser. No. 14,319

Claims priority, application Japan, Feb. 13, 1986, 61-29378

Int. Cl.[4] B32B *31/20*; B65H *69/06*

U.S. Cl. 156—507 4 Claims



1. An apparatus for joining the ends of belt-shaped materials comprising:

a front end lower pawl and a rear end lower pawl which are extended respectively in a longitudinal direction along a front end of a first belt-shaped material and a rear end of a second belt-shaped material;

a front end upper pawl and a rear end upper pawl which are provided immediately above and in parallel with said front end lower pawl and said rear end lower pawl, respectively; and

drive means for moving said front end lower pawl and said front end upper pawl towards each other to hold the front end portion of said first belt-shaped material therebetween and moving said rear end power pawl and said rear end upper pawl towards each other to hold the rear end portion of said second belt-shaped material therebetween, and moving said rear end lower and upper pawls and said front end lower and upper pawls towards each other so that the front end of said first belt-shaped material and the rear end of said second belt-shaped material are butt-joined; wherein said rear end lower pawl and said rear end upper pawl have rear end lower protrusions and rear end upper protrusions, respectively; which are arranged at intervals in said longitudinal direction and protrude towards said front end lower pawl and said front end upper pawl, respectively, and

said front end lower pawl and said front end upper pawl have front end lower protrusions and front end upper protrusions, respectively, which are arranged at intervals in said longitudinal direction and protrude towards said rear end lower pawl and said rear end upper pawl, respectively, said front end protrusions being intertwined with said rear end protrusions when said rear end lower pawl and rear end upper pawl and said front end lower pawl and front end upper pawl are moved towards each other; and

said front and rear upper protrusions have a front and rear cover surface, respectively, for partially covering a base of a lower surface thereof and said front and rear lower protrusions have a front and rear cover surface, respectively, for partially covering a base of an upper surface thereof whereby said front and rear cover surfaces are substantially abutting when said front end protrusions are intertwined with said rear end protrusions.

4,765,863

METHOD OF PREPARING A CRYSTALLINE INGOT OF $HG_{1-x_0}CD_{x_0}TE$

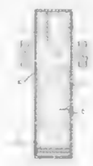
Alain R. L. Durand; Jean-Luc Deseus, both of Poitiers, and Michel Royer, Paris, all of France, assignors to S.A.T. (Societe Anonyme de Telecommunications), Paris, France

Filed Jan. 20, 1987, Ser. No. 4,571

Claims priority, application France, Jan. 21, 1986, 86 00769

Int. Cl.[4] C30B *9/06*, *11/04*

U.S. Cl. 156—604 8 Claims



1. In a method of preparing a crystalline ingot of $H_{o1-x_o}C_{x_o}$ Te of a substantially uniform composition using the THM method (Traveling Heater Method) comprising:

(a) disposing at the bottom of a substantially cylindrical and vertical enclosure a solidified mixture of Te, Hg Te and Cd Te in proportions corresponding to those of the liquid phase, at a temperature at which said ingot is to be prepared;

(b) disposing in contact with said solidified mixture a cylindrical source ingot of Hg Te and a cylindrical source ingot of Cd Te, the ratio of the source ingots respective sections being equal to the desired HgCd ratio $((1-x_o)/x_o)$ of said crystalline ingot to be prepared, wherein $0<x_o<1$;

(c) subjecting the enclosure to a vacuum;

(d) heating a zone of the enclosure, corresponding to said solidified mixture, to melt the solidified mixture and bring it to said temperature, thus obtaining a solvent zone for dissolving the parts of said source ingots in contact with the solvent zone; and

(e) moving said heated zone along said enclosure so as to move said solvent zone and to progressively dissolve, at one of the ends thereof, said source ingots and to obtain, at its other end, the crystallization of said $Hg_{1x1}Cd_{x_o}$ Te ingot to be prepared, wherein the improvement comprises

(f) providing, before disposing the solidified mixture of step (a), a monocrystalline germ of Hg_{1-x1} Cd_{x1} Te, wherein $x_o<x_1, \leqq 1$, said germ having a flat and polished face, in the bottom of said enclosure;

(g) disposing a block of a solid solvent mixture in contact with said polished face, said solvent mixture, in its liquid state, capable of dissolving said monocrystalline germ;

(h) placing a piston having a flat base and a density less than that of the solvent in contact with said solidified solvent;

(i) closing the enclosure and subjecting it to a vacuum;

(j) heating the enclosure to at least partially melt the block of solvent mixture in contact with said polished face so as to dissolve the part of said germ which has been work hardened by polishing;

(k) cooling the enclosure at a given rate so as to crystallize said melt of step (j), the solidified melt forming an adaption zone between said germ and said solid solvent mixture;

(l) opening said enclosure and withdrawing the piston; and,

(m) disposing said source ingots in contact with said solid solvent mixture.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,765,864

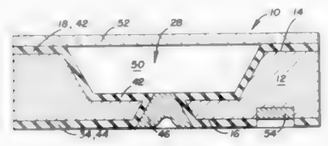
ETCHING METHOD FOR PRODUCING AN ELECTROCHEMICAL CELL IN A CRYSTALLINE SUBSTRATE

Christopher E. Holland, Redwood City; Eugene R. Westerberg; Marc J. Madou, both of Palo Alto, and Takaaki Otagawa, Fremont, all of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jul. 15, 1987, Ser. No. 73,739

Int. Cl.[4] **H01L** *21/306;* **B44C** *1/22;* **C03C** *15/00;* **C23F** *1/02*

U.S. Cl. 156—644 **36 Claims**



1. A method of constructing an electrochemical cell in a crystalline slab having front and back sides facing generally away from one another, comprising:

(a) providing first front and first back masking layers of a first thickness covering, respectively, said front and back sides and a front resist layer covering said first front layer, said front resist layer having at least one hole therethrough exposing a portion of said first front masking layer therebehind;

(b) etching a well through said exposed portion of said first front masking layer and extending into said slab to a location intermediate said front and back sides;

(c) forming a second front masking layer covering said front side and said well, said second front masking layer being of a second thickness which is less than said first thickness;

(d) providing a back resist layer covering said first back masking layer, said back resist layer having at least one opening therethrough exposing a part of said first back masking layer therebehind, said opening being aligned opposite said well;

(e) etching a passage through said exposed part of said first back masking layer and extending into said slab to terminate at said second front masking layer in said well;

(f) providing a third front masking layer covering said front side and said well other than opposite where said passage terminates at said second front masking layer;

(g) depositing a conductor in said passage; and

(h) etching said second and third front masking layers away opposite to said passage sufficiently to expose said conductor.

4,765,865

SILICON ETCH RATE ENHANCEMENT

Roy L. Gealer, West Bloomfield, and Hans K. Karsten, Weidman, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1987, Ser. No. 45,658

Int. Cl.[4] **H01L** *21/306;* **B44C** *1/22;* **C03C** *25/06, 15/00*

U.S. Cl. 156—647 **26 Claims**

1. A method for etching a first face of a single crystal silicon wafer in an anisotropic etching solution, said wafer having a second face opposite said first face, which method comprises:

providing a mask material to a portion of said first face of said single crystal silicon wafer in a predetermined pattern which exposes a region of said first face to be etched;

applying a metal coating to substantially the entire surface of said second face of said single crystal silicon wafer, said metal coating being (a) in electrical contact with said second face of said crystal silicon wafer and (b) selected from metals which (i) are substantially resistant to attack by said anisotropic etching solution and (ii) render the electrode potential of the masked, metal coated single crystal silicon wafer, in said anisotropic etching solution, more anodic than that of said masked, single crystal silicon wafer alone; and



exposing said masked, metal coated single crystal silicon wafer to said anisotropic etching solution for a time necessary to etch, to a desired depth, said region of said first face of said masked, metal coated single crystal silicon wafer.

4,765,866

ENERGY RAY CURING OF ARYLSILOXANE/SILICATE COMPOSITIONS AND SUBSEQUENT ETCHING THEREOF

George E. Whitwell, Campbell Hall; John H. Deatcher, Lake Peekskill, both of N.Y., and Andrea Leone-Bay, Ridgefield, Conn., assignors to Akzo America Inc., New York, N.Y.

Continuation-in-part of Ser. No. 069,088, Jul. 2, 1987. This application Sep. 28, 1987, Ser. No. 101,522

Int. Cl.[4] **B44C** *1/22;* **B29C** *37/00*

U.S. Cl. 156—668 **8 Claims**

1. A process for the etching of a cured arylsiloxane/silicate resin coating which comprises curing a liquid coating of the arylsiloxane/silicate resin at least partially with energy ray irradiation and subsequently etching the cured coating with an etchant comprising HF.

4,765,867

PITCH CONTROL PROCESS UTILIZING QUATERNIZED POLYAMINE IONENE POLYMER

David D. Dreisbach; Gilbert S. Gomes, and Michael A. Schuster, all of Jacksonville, Fla., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Jul. 2, 1986, Ser. No. 881,379

Int. Cl.[4] **D21C** *3/20*

U.S. Cl. 162—72 **20 Claims**

1. A process for controlling pitch deposition from pulp in paper-making systems wherein said pitch deposition is a problem which comprises adding to the pulp an effective amount of about 0.5 ppm to about 150 ppm based on the weight of the pulp of a water-soluble quaternized polyamine ionene polymer to control said pitch deposition.

4,765,868

FLOW RESTRAINING ELEMENTS IN THE HEADBOX OF A PAPER MACHINE

Haruyoshi Fujiwara, Mihara, Japan, assignor to Mitsubishi Jukogyo Jabushiki Kaisha, Tokyo, Japan

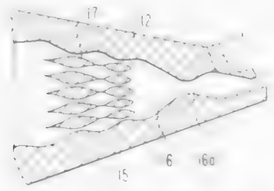
Continuation of Ser. No. 484,694, Apr. 19, 1983, abandoned, which is a continuation of Ser. No. 287,548, Jul. 28, 1981, abandoned. This application Oct. 22, 1984, Ser. No. 662,817

Claims priority, application Japan, Aug. 5, 1980, 55-107378; Nov. 20, 1980, 55-163936

The portion of the term of this patent subsequent to Aug. 5, 2003, has been disclaimed.

Int. Cl.[4] **D21F** *1/02*

U.S. Cl. 162—343 **1 Claim**



1. A head box in a paper machine, comprising:

(1) a slice lip;

(2) a slice chamber delimited by a top plate and a bottom plate converging to said slice lip; and

(3) means, defining a plurality of partitioned flow paths inside said slice chamber upstream of said slice lip, including flow paths immediately adjacent said top and bottom plates, each of said plurality of flow paths having a varying cross-sectional area and having a plurality of alternating acceleration regions and deceleration regions, for repeatedly alternately accelerating and decelerating a raw paper liquid along said flow paths toward said slice lip in order to respectively repeatedly alternately stretch any fiber flocks in said liquid in the direction of flow by application of a tension force thereto in said acceleration regions and extend said any fiber flocks in directions perpendicular to said direction of flow by application of a compression force thereto in said deceleration regions, whereby the fibers in said any fiber flocks are dispersed;

a perforated plate at the upstream end of said slice chamber extending vertically between said top plate and said bottom plate;

a plurality of flow restraining elements extending from said perforated plate toward said slice top and vertically spaced apart inside said chamber to form flow paths between said top and bottom plates which extend widthwise of said headbox, said flow restraining elements having faces which repeatedly, alternately and gradually approach and separate from opposing faces of adjacent ones of said flow restraining elements along said direction of flow so as to substantially linearly repeatedly increase and decrease the dimensions of said cross-sectional area of each of said flow paths along said direction of flow, said faces separating from opposing faces of adjacent ones of said flow restraining elements along said direction of flow in said deceleration regions at an angle of divergence between opposing faces in said deceleration region along said flow paths no greater than 25°, said faces converging toward opposing ones of said faces along said direction of flow in said acceleration regions at an angle of convergence between opposing faces in said acceleration regions which is substantially equal to said angle of divergence;

said top and bottom plates and said flow restraining elements each having flat surfaces extending in the downstream direction from said perforated plate to the start of the increasing and decreasing cross-sectional area flow paths, said flat surfaces defining between them small chambers between said perforated plate and the upstream ends of the increasing and decreasing cross-sectional area flow paths, said perforated plate having the perforations opening into said small chambers; and

said flow restraining elements terminating upstream of said slice lip, said top plate and said bottom plate having facing surfaces downstream of said flow restraining elements which approach and separate from each other while converging toward said slice lip, said facing surfaces being so shaped between said facing surfaces downstream of said flow restraining elements as to define a throttle whose cross-sectional area gradually and smoothly increases and decreases toward said slice lip.

4,765,869

PROCESS FOR THE PRODUCTION OF A DIALKYL MALEATE

Norman Harris, Norton; Colin Rathmell, Yarm; Keith Turner, Stockton-on-Tees, and John Scarlett, Spennymoor, all of England, assignors to Davy McKee (London) Limited, London, England

Filed Jul. 31, 1987, Ser. No. 80,058

Claims priority, application United Kingdom, Aug. 1, 1986, [illegible]

Int. Cl.[4] **B01D** *3/14;* **C07C** *67/54*

U.S. Cl. 203—28 **21 Claims**

1. A continuous process for the production of a substantially acid-free dialkyl maleate from a feed stream containing a major amount of dialkyl maleate and a minor amount of monoalkyl maleate which comprises:

(a) continuously supplying the feed stream to a primary distillation zone;

(b) continuously distilling the feed stream in the primary distillation zone, thereby inducing thermal decomposition of monoalkyl maleate to yield maleic anhydride and alkanol;

(c) recovering from the primary distillation zone (i) a bottom fraction containing monoalkyl maleate and dialkyl maleate in admixture, (ii) a vaporous fraction comprising alkanol, and (iii) an intermediate fraction which is substantially free from alkanol and which comprises a major proportion of dialkyl maleate and a minor proportion of maleic anhydride;

(d) continuously redistilling the intermediate fraction (iii) from step (c) in a secondary distillation zone to yield (i) an overhead fraction containing maleic anhydride and (ii) a bottom fraction containing substantially acid-free dialkyl maleate; and

(e) recovering the bottom fraction (ii) of step (d).

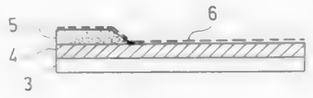
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,870

METHOD OF MANUFACTURE OF AN ELECTRIC MOISTURE-CONTENT SENSOR

Ivan Emmer; Zdenek Hajek, and Petr Repa, all of Prague, Czechoslovakia, assignors to Matematicko-Fyzikalni Fakulta University, Prague, Czechoslovakia

Filed May 8, 1987, Ser. No. 47,805
Int. Cl.[4] C25F *3/20*; C23C *14/16, 14/34, 22/56*
U.S. Cl. 204—129.1 6 Claims



1. A method of manufacturing an electric moisture-content sensor comprising the steps of

on a pure aluminium substrate, creating a layer of aluminiumoxihydroxide by hydratation in boiling redistilled water for 5 to 60 minutes, and

passivating said layer by soaking in an aqueous solution of sodium dihydrogenphosphate of a concentration of 0.01 to 2 mol/liter at a temperature of 35 to 100 degrees C. for a time of 5 to 60 minutes;

where the passivated layer of aluminiumoxihydroxide is tempered in a gaseous medium which is chemically inert to said layer, at a temperature between 70 to 110 degrees C. for 2 to 24 hours, said medium containing water vapors of a lower pressure than the tension of water vapors at the tempering temperature.

2. The method as claimed in claim 1, where the pure aluminium substrate is a compact aluminium, polished sheet.

3. The method as claimed in claim 2, where the polished sheet is electrochemically polished.

4,765,871

ZINC-NICKEL ELECTROPLATED ARTICLE AND METHOD FOR PRODUCING THE SAME

Grace F. Hsu, Issaquah, and Richard C. Colonel, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 348,107, Dec. 28, 1981, abandoned. This application Jul. 6, 1984, Ser. No. 628,594
The portion of the term of this patent subsequent to Dec. 23, 2004, has been disclaimed.
Int. Cl.[4] C25D *3/56*
U.S. Cl. 204—44.2 61 Claims

35. An electroplating bath for producing a coated article exhibitng corrosion resistance and low hydrogen embrittlement, said article being conductive, said bath comprising:

an aqueous, acidic solution containing zinc and nickel ions, an electrolyte in the form of a soluble ammonium salt, and a polyoxyalkylated nonionic surfactant, the weight ratio of nickel ions to zinc ions in said solution being in the range of from about 0.4 to 1.0 to about 4.0 to 1.0.

4,765,872

METHOD FOR TREATING A PLATING SOLUTION

Toshikatsu Hamano, Machida, and Yukio Matsumura, Ichihara, both of Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Oct. 29, 1987, Ser. No. 113,906
Claims priority, application Japan, Oct. 31, 1986, 61-258546; Oct. 31, 1986, 61-258548
Int. Cl.[4] C25D *21/16*
U.S. Cl. 204—130 7 Claims

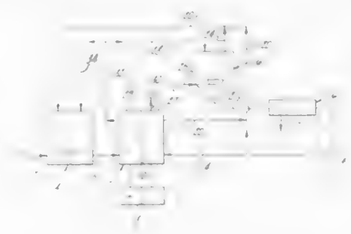
1. A method for treating a plating solution in an electrolytic cell having a cathode compartment and an anode compartment partitioned by an ion-exchange membrane, which comprises supplying a plating solution containing not more than 10 g/liter of Fe^{3+} ions to the cathode compartment and an electrically conductive solution to the anode compartment, and electrolytically reducing the Fe^{3+} ions in the plating solution to Fe^{2+} ions, wherein an electrode having a hydrogen overvoltage of not higher than 350 mV is used as a cathode.

4,765,873

CONTINUOUS PROCESS FOR THE REMOVAL OF HYDROGEN SULFIDE FROM A GASEOUS STREAM

Dane Chang, Houston, and Michael C. McGaugh, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 6, 1985, Ser. No. 805,671
Int. Cl.[4] C01B *17/16, 17/02*; C25B *1/00, 1/02*
U.S. Cl. 204—101 8 Claims



1. A continuous process for the removal of hydrogen sulfide from a gas mixture with the formation of a sulfur product comprising:

(A) contacting said gas mixture in a contact zone with an aqueous solution having a pH of at least 12 and consisting essentially of ammonium hydroxide to produce a first enriched aqueous solution consisting essentially of ammonium sulfide, ammonium hydroxide, and hydrogen sulfide;

(B) introducing said first enriched aqueous solution into an electrolytic cell operated at ambient temperature and pressure, said cell comprising an anode and an anolyte in an anolyte compartment, a cathode and a catholyte in a catholyte compartment, said anode and said cathode being separated by a cell membrane, wherein said anolyte consists of said first enriched aqueous solution and said catholyte comprises ammonium hydroxide;

(C) passing an electric current through said cell to produce at said anode a second enriched aqueous solution, comprising a major proportion of ammonium polysulfide and a minor proportion of sulfur and to produce hydrogen at said cathode;

(D) withdrawing and recycling a major proportion of said second enriched aqueous solution to said contact zone;

(E) introducing a minor proportion of said second enriched aqueous solution to a heating zone maintained at the boiling point thereof, said heating zone being provided with a sparging stream of an oxygen containing gas, to produce sulfur and to remove ammonia and hydrogen sulfide therefrom;

(F) recycling said ammonia and said hydrogen sulfide to said contact zone;

(G) withdrawing hydrogen from said cathode compartment of said electrolytic cell; and

(H) recycling said catholyte to said contact zone; and

wherein said first aqueous solution is automatically maintained at a pH of at least 12 by recycling the aqueous liquid and ammonia from said heating zone and an hydroxide ion enriched aqueous solution of ammonium hdyroxide from the catholyte compartment of said electrolytic cell.

4,765,874

LAMINATED ELECTRODE THE USE THEREOF

Christian Modes, Darmstadt; Heinrich Meyer, Hanau; Jochen-Werner K. Burgsdorff, Bruchköbel; Ulrich Ströder, Rodenbach, and Andrea Krämer, Hanau, all of Fed. Rep. of Germany, assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Continuation of Ser. No. 733,754, May 14, 1985, abandoned.
This application Dec. 22, 1986, Ser. No. 944,849
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1984, 3423605
Int. Cl.[4] C25C *1/00*
U.S. Cl. 204—105 R 20 Claims



1. In an electrochemical cell comprising an anode coupled to means for supplying a positive potential thereto and a cathode coupled to means for supplying a negative potential thereto, for use in an electrochemcial reaction of the type wherein the anode and the cathode project into an electrolyte, and electricity flows therebetween and through the electrolyte, the electrochemical reaction being of the type wherein oxygen is released at the anode, the release of oxygen normally requiring an overpotential to be applied wherein,

the improvement comprises means for reducing the oxygen overpotential comprising an anode comprising an electrically conductive base body comprising electrically conductive plastic, which contains carbon black only in the range of 7.5–25% by weight with a particle size under 0.02 microns; and partially, embedded in said base body, catalytic particles comprising one or more catalysts applied to supporting particles.

19. Method of using an oxygen-evolving laminated anode comprising an electrically conductive base body comprising electrically conductive plastic, which contains carbon black only in the range of 7.5–25% by weight with a particle size under 0.02 microns; and partially embedded in said base body, catalytic particles comprising one or more catalysts applied to supporting particles, the method of using the oxygen-evolving laminated anode comprising:

electrowinning metal from an aqueous acid electrolyte solution containing dissolved metal therein in an electrolysis cell containing a cathode, said anode and means to pass an electrolysis current through said cell between the anode and the cathode, by passing an electrolysis current through said cell to release oxygen at said anode and deposit dissolved metal from said solution on the cathode.

4,765,875

PREPARATION OF SULFONATED LUBRICATING AGENTS FOR LEATHER AND FURS

Wolf-Dieter Willmund, Düsseldorf; Jürgen Plapper, Hilden; Friedrich Pieper, Langenfeld, and Jochen Heidrich, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Continuation of Ser. No. 259,526, May 1, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,316
Claims priority, application Fed. Rep. of Germany, May 12, 1980, 308176
Int. Cl.[4] C07C *143/90*
U.S. Cl. 204—157.79 5 Claims

1. A process for the production of sulfonated lubricating agent for leather and tanned furs consisting of the steps of:

(a) simultaneously sulfochlorinating esters of higher fatty acids having chain lengths of from 8 to 24 carbon atoms with chlorine and SO_2, the molar ratio of chlorine to SO_2 being from about 85:1 to 3:1, at a temperature of from about 40° to 75° C. under UV-radiation for a time sufficient to obtain a compound having a chorine content of from about 5 to 30 percent by weight and a content of $—SO_2Cl$ groups of from about 1 to 20 percent by weight, the ratio of chlorine atoms to $—SO_2Cl$ groups being from about 2:1 to 20:1; and

(b) forming a water-emulsifiable alkali metal, ammonium, or lower alkyl-ammonium salt of the compound produced in step (a).

4,765,876

SIMULTANEOUS PRODUCTION OF HIGHER CHLOROMETHANES

Jean-Jacques Masini, Chaponost, and Yvan Verot, Ecully, both of France, assignors to Atochem, Paris, France

Continuation of Ser. No. 773,927, Sep. 9, 1985, abandoned, which is a continuation of Ser. No. 619,357, Jun. 11, 1984, abandoned. This application Sep. 22, 1987, Ser. No. 99,783
Claims priority, application France, Jun. 10, 1983, 83 09667
Int. Cl.[4] C07C *17/10*
U.S. Cl. 204—157.95 12 Claims

1. A process for the simultaneous preparation of the higher chloromethanes CH_2Cl_2, $CHCl_3$ and CCl_4, comprising chlorinating methyl chloride with chlorine in a first reaction zone A, chlorinating at least one of the higher chloromethanes CH_2Cl_2 and $CHCl_3$ with chlorine in a parallel second reaction zone B, combining the reaction products from said first and said second reaction zones A and B, separating higher chloromethanes from said combined reaction products, and recycling at least one of said separated higher chloromethanes CH_2Cl_2 and $CHCl_3$ as chlorination feed to said second reaction zone B, said chlorination feed being essentially free of methyl chloride.

4,765,877

POWER SUPPLY MEANS FOR A WIRE ELECTRODE OF AN ELECTROEROSION MACHINE

Gideon Levy, Orselina, and Josef Budin, Minusio, both of Switzerland, assignors to AG fur Industrielle Elektronik AGIE, Losone b. Locarno, Losone, Switzerland

Filed Mar. 31, 1987, Ser. No. 33,001
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1986, 3611001
Int. Cl.[4] B23H *7/10*
U.S. Cl. 204—206 10 Claims



7. In an electroerosion machine having an electric power supply with a power cable, in combination:

VOL 1093 ISS 4 AG 23 1988 UMI

means connected to said cable to receive electrical power therefrom said means including a stationary bar, said bar having a core of a first hard material and an outer layer of a second softer electrically conductive material, said power being fed to the outer layer; and

an electrically conductive cutting wire partially imbedded in the outer layer and receiving power therefrom.

4,765,878

PLATING CURRENT AUTOMATIC COMPENSATING APPARATUS

Haruo Komoto; Shigeharu Hamada; Yasuo Shiinoki, all of Hyogo; Katsumi Nagano, Fukuoka; Michio Sato, and Hiroo Goshi, both of Aichi, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha and Nippon Steel Corporation, both of Tokyo, Japan

Continuation-in-part of Ser. No. 681,649, Dec. 14, 1984, abandoned. This application Jan. 20, 1987, Ser. No. 4,563

Int. Cl.[4] C25D *17/00, 21/12*

U.S. Cl. 204—211 2 Claims



1. An apparatus for automatically controlling a plurality of plating cells in response to speed changes of an elongated material passing sequentially through the plating cells so as to maintain plating current density within a predetermined range while forming a desired plating thickness on the elongated material, the apparatus comprising

means for measuring the speed of the elongated material passing through the plating cells,

means connected to the speed measuring means for determining (1) a desired total plating current required to produce the desired plating thickness at the measured speed, and (2) a number of plating cells required to be energized to maintain the plating current density within the predetermined range at the measured speed,

a plurality of current measuring means for measuring the plating currents to the respective plating cells,

summing means connected to the plurality of current measuring means for obtaining the sum of the plating currents to the cells,

a plurality of controllers connected to the respective plating cells and having inputs for controlling the plating currents to the cells in response to signals applied to the inputs of the, controllers, and

means responsive to the determining means and the summing means for generating and applying signals to the inputs of the controllers so as to energize the determined number of plating cells with the remaining number of cells being deenergized and to distribute the total required plating current among the energized plating cells to maintain the plating current density within the predetermined range while producing the desired plating thickness on the elongated material.

4,765,879

DURABLE ELECTRODES FOR ELECTROLYSIS AND PROCESS FOR PRODUCING THE SAME

Yukiei Matsumoto, Kanagawa, and Takayuki Shimamune, Tokyo, both of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Jun. 2, 1987, Ser. No. 56,635

Claims priority, application Japan, Jun. 2, 1986, 61-125702

Int. Cl.[4] C25C *7/02*

U.S. Cl. 204—290 R 9 Claims

1. An electrode for electrolysis comprising an electrode substrate made of a conductive metal having coated thereupon: a first intermediate layer comprised of at least one compound of rare earth element; a second intermediate layer containing at least one of base metals and base metal oxides; and on the substrate having the first and second intermediate layers, a coating of electrode active substance with electrochemical activities containing of a platinum group metal or an oxide thereof.

4,765,880

AIR/FUEL RATIO SENSOR

Nobuhiro Hayakawa; Shigeru Miyata; Tetsusho Yamada, and Kazunori Yokota, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Aichi, Japan

Filed Sep. 29, 1986, Ser. No. 912,462

Claims priority, application Japan, Sep. 27, 1985, 60-214004; Feb. 17, 1986, 61-32496

Int. Cl.[4] G01N *27/46*

U.S. Cl. 204—425 16 Claims



1. An air/fuel ratio sensor for sensing a gaseous atmosphere, comprising:

a first element having first and second porous electrodes on opposite sides of an oxygen ion-conductive solid electrolyte plate;

a second element having first and second porous electrodes on opposite sides of an oxygen ion-conductive solid electrolyte plate;

means for defining a gas compartment disposed between said second electrode of the first element and said first electrode of the second element, said gas compartment defining means having a gas diffusion limiting portion through which said gas compartment communicates with the gaseous atmosphere;

means for defining an internal reference oxygen source in contact with said first electrode of the first element;

leakage resisting portion means for enabling gradual movement of oxygen from said internal reference oxygen source means to said gas compartment;

means for causing a predetermined amount of current to flow through the first element so that oxygen from the gas compartment is transferred to the internal reference oxygen source;

control means for controlling the current flow through the second element, the current flow being controlled to pump oxygen into or out of said gas compartment so that the voltage between the electrodes of the first element is held at a predetermined value; and

means for measuring the air/fuel ratio of the gaseous atmosphere based on the current flow in said second element as a result of said control means.

4,765,881

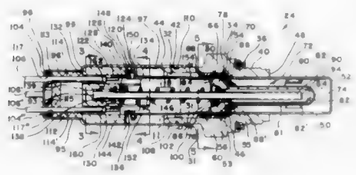
HEATED 0_2 SENSOR HAVING ISOLATED GROUND

Harry P. Wertheimer, Findlay; John C. Miller, Fostoria; Debojit Barua, Findlay, and Kenneth S. Tyree, Tiffin, all of Ohio, assignors to Allied Corporation, Morristown, N.J.

Filed Apr. 13, 1987, Ser. No. 37,360

Int. Cl.[4] G01N *27/26*

U.S. Cl. 204—428 9 Claims



1. A heated oxygen sensor comprising:

a shell having an axial bore therethrough;

a sleeve attached to said shell and having a closed end, said closed end having a plurality of openings;

a cylindrical shield having a first flange that engages a first shoulder on said shell, said shield having a plurality of openings which allow unrestricted communication to the interior of the shield;

sealing means located adjacent said first flange;

a first cylindrical carrier member having a first end with a second flange thereon that engages said sealing means and a second end with a lip thereon;

a tubular electrolyte thimble having a closed end and an opened end with an annular external rib located adjacent said opened end, said thimble having an external conductive coating and an internal conductive coating, said rib engaging said lip to extend an electrical flow path from said external conductive coating;

a contact cup in contact with said internal conductive coating;

a terminal member located in said sleeve having an annular projection extending therefrom with a stepped axial bore that extends through the annular projection into the terminal member to define an external ledge, an internal ledge and a stop in the terminal member, said terminal member having first and second radial slots that extend from the external surface to at least the stepped axial bore;

a first terminal located in said first slot;

a second terminal located in said second slot;

a heater member located in said stepped axial bore having a first and second end, said first end having first and second contacts which engage said first and second terminal when said first end is located against said stop, said second end extending through said contact cup into the interior of said electrolyte thimble;

a first contact ring located on said internal ledge;

a first spring biased between said first contact ring and contact lip to extend the electrical flow path from the internal conductive coating;

a second contact ring located on said external ledge;

a second cylindrical carrier member having a first end and a second end, said second end engaging said first end of said first cylindrical carrier member to further extend said electrical flow path into said second cylindrical carrier member;

a second spring biased between said the first end of said second cylindrical carrier member and second contact ring to extend the electrical flow path from the external conductive coating; and

control means having a first lead connected to said first terminal and a second lead connected to said second terminal of said tubular heater member, a third lead connected to said first contact ring and a fourth lead connected to said second contact ring, said first and third leads being connected to an electrical grounds in the control means, said second lead responding to an operational signal for carrying an electrical voltage to said heater member whereby at least the interior of the electrolyte thimble is maintained above a set temperature, said fourth lead carrying an operational signal produced by a change in the electrical voltage produced by the reaction of the electrolyte thimble to the difference between the partial pressure of oxygen between the interior and exterior of the tubular electrolyte thimble.

4,765,882

HYDROCONVERSION PROCESS

Clyde L. Aldridge; William E. Lewis; Roby Bearden, Jr., and Francis X. Mayer, all of Baton Rouge, La., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 30, 1986, Ser. No. 857,358

Int. Cl.[4] C10G *65/10*

U.S. Cl. 208—59 7 Claims

1. In a slurry hydroconversion process comprising at least two zones, wherein heavy hydrocarbonaceous oil is converted to lower boiling products, which process comprises the steps of:

(a) adding a catalyst or a catalyst precursor to a chargestock comprising a first portion of fresh heavy hydrocarbonaceous oil comprising at least 10 wt.% of materials boiling above about 1050° F., to form a mixture;

(b) reacting the resulting mixture with a hydrogen-containing gas in a first hydroconversion zone operated at a temperature ranging from about 800° F. to about 900° F at hydrogen partial pressures from about 50 to 5,000 psig to produce a first hydroconverted oil;

(c) introducing at least a portion of the effluent of said first hydroconversion zone, including at least a portion of said first hydroconverted oil into a second hydroconversion zone also operated at temperatures ranging from about 800° F. to about 900° F. and hydrogen partial pressures from about 50 to 5,000 psig to react with a hydrogen-containing gas and produce a second hydroconverted oil, the improvement which comprises:

(d) introducing a second portion of said fresh heavy hydrocarbonaceous oil to said second hydroconversion zone.

4,765,883

PROCESS FOR THE PRODUCTION OF AROMATICS BENZENE, TOLUENE, XYLENE (BTX) FROM HEAVY HYDROCARBONS

Axel R. Johnson, North Babylon, N.Y.; S. Narayanan, Westwood, Mass., and Herman H. Woebcke, Stamford, Conn., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Oct. 20, 1982, Ser. No. 435,608

Int. Cl.[4] C10G *9/16*

U.S. Cl. 208—78 6 Claims

1. A thermal cracking process for producing enhanced benzene, toluene and xylene yield from heavy hydrocarbon comprising the steps of:

(a) diluting the heavy hydrocarbon with about 0.2 pound of steam per pound of heavy hydrocarbon;

(b) partially thermally cracking the heavy hydrocarbon under medium severity conditions to temperatures of about 1200° F. to 1450° F. at a residence time of about 0.05 seconds;

(c) thermally cracking a stream of ethane to high conversion; and

(d) mixing the partially thermally cracked hydrocarbon stream with the high temperature ethane stream that has

VOL 1093 ISS 4 AG 23 1988 UMI

been thermally cracked to high conversion to complete thermal cracking of the composite stream.

4,765,884

CRACKING CATALYST AND PROCESS

Darrell W. Walker, Media, Pa., and Arnold M. Schaffer, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 2, 1987, Ser. No. 69,337
Int. Cl.[4] C10G *11/05, 69/04*
U.S. Cl. 208—89 24 Claims

15. A cracking process comprising the steps of

(A) contacting a hydrocarbon-containing feed stream having an initial boiling point of at least about 400° F., measured at atmospheric pressure conditions, with a cracking catalyst composition comprising

(a) zeolite and

(b) a matrix material, in which said zeolite is embedded, comprising aluminum phosphate, wherein said matrix material is substantially free of alumina and magnesia,

under such cracking conditions as to obtain at least one liquid product stream having a lower initial boiling point and a higher API gravity than said feed stream;

(B) separating the cracking catalyst composition, which has been used in step (A), from formed gases and said at least one liquid product;

(C) exposing the separated cracking catalyst composition obtained in step (B) to flowing steam under such conditions as to strip liquids which are adhered to said separated catalyst composition;

(D) heating the steam-stripped cracking catalyst composition obtained in step (C) in a free oxygen containing gas under such conditions as to burn off substantially all coke deposited on said steam-stripped cracking catalyst composition; and

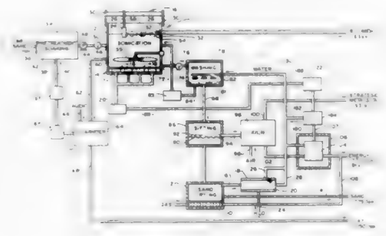
(E) recycling at least a portion of the regenerated catalyst composition obtained in step (D) to the cracking zone of step (A).

4,765,885

TREATMENT OF CARBONACEOUS MATERIALS

Mohammad-Ali Sadeghi; Kazem Sadeghi, both of Pasadena; Jih-Fen Kuo, San Gabriel; Long-Kuan Jang, Long Beach, and Teh F. Yen, Altadena, all of Calif., assignors to Eneresource, Inc., Santa Barbara, Calif.

Continuation-in-part of Ser. No. 684,945, Dec. 21, 1984. This application Jun. 8, 1987, Ser. No. 59,080
Int. Cl.[4] C10G *1/04*
U.S. Cl. 208—391 22 Claims



1. A method of separating a hydrocarbon from particles of a solid carbonaceous bitumen containing material comprising the steps of:

dispersing the particles in an aqueous solution of an inorganic base at ambient temperature and in the absence of organic solvent;

applying sonic energy to the suspension for a time sufficient to react the inorganic base with components of bitumen to form a water miscible separation reagent as a reaction product between the inorganic base and components of the bitumen;

adding a free radical initiator to the aqueous solution in an amount effective to decrease the time for separation of hydrocarbon from the particles by one-half;

separating hydrocarbon from the particles to form a layer on top of the aqueous solution; and

recovering hydrocarbon from the layer.

4,765,886

METHOD FOR SEPARATING SEA PLANTS

R. John Whitaker, Cornwall, Canada, assignor to Carratech, Inc., Charlottetown, Canada

Continuation-in-part of Ser. No. 801,579, Nov. 25, 1985. This application May 13, 1986, Ser. No. 862,664
Int. Cl.[4] B03B *1/04*
U.S. Cl. 209—2 4 Claims



1. The method of separating lambda-carrageenan-containing sea plants from kappa-carrageenan-containing sea plants in a mixture of said plants which comprises

treating said mixture with an aqueous solution at a pH above about 10 and at a temperature from 5° to 95° C., said solution containing a cation selected from the group consisting of ammonium, potassium, rubidium, cesium, calcium barium, strontium and magnesium to preferentially hydrate the first said plants in said mixture until they exhibit compacted sticky characteristics while the second said plants retain substantially their hard incompactible fronded characteristics,

pressing said treated mixture against a perforate surface to extrude the first said plants through said perforations while leaving the second said plants on said perforate surface, and

separating the second said plants from said perforate surface.

4,765,887

SYSTEM FOR JOINING SECTIONS OF A HYDROCYCLONE SEPARATOR

Roy D. Lister, Keller, Tex., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Filed Feb. 26, 1987, Ser. No. 19,422
Int. Cl.[4] B04C *5/85*
U.S. Cl. 209—211 8 Claims

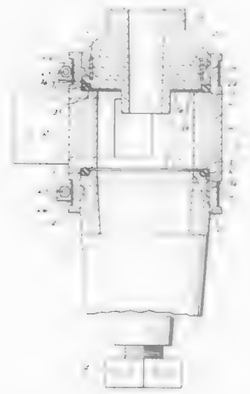
1. In the hydrocyclone separator having an upper section and a lower section, a structure for joining said upper section to said lower section comprising,

a first section providing a generally cylindrical socket,

a second section having a generally cylindrical spigot inserted snugly into said socket,

one of said socket and spigot having a one turn helical groove and the other having a mating helical bead forming a connection between said spigot and said socket,

and a metal clamp surrounding said inserted sections, said clamp being tightened to apply radial compression to said



socket to press it against said spigot and, to press said bead against said groove to form a leak-tight connection.

4,765,888

ARTIFICIAL KIDNEY WITH INTEGRATED DIALYSATE CIRCUIT

Bernard Barthe, Bretigny sur Orge; Georges Vantard, Gournay sur Marne, and Jean-Pierre Vasseur, Longjumeau, all of France, assignors to Hospal Industrie, Meyzieu, France

Continuation of Ser. No. 653,963, Sep. 24, 1984, abandoned, which is a continuation of Ser. No. 512,915, Jul. 12, 1983, abandoned, which is a continuation of Ser. No. 314,734, Oct. 26, 1981, abandoned. This application Oct. 23, 1985, Ser. No. 790,575
Claims priority, application France, Nov. 13, 1980, 80 24476
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—86 15 Claims



1. An artificial kidney comprising:

(a) a hemodialyzer including:

(i) a casing separated into first and second compartments by a membrane enabling blood to be treated by dialysis and by ultrafiltration,

(ii) first connections for introducing and removing blood to and from said hemodialyzer mounted on said first compartment,

(iii) second connections for introducing and removing dialysis liquid to and from said hemodialyzer mounted on said second compartment,

(b) blood circulation means external to said hemodialyzer and connected to said first connections to circulate blood through said first compartment, at an appropriate blood pressure, above atmospheric pressure,

(c) means for storing dialysis liquid,

(d) means for preparing dialysis liquid, connected to said storing means and connectable to a source of water,

(e) means for circulating dialysis liquid, connected to said storing means and to said second connections, to circulate dialysis liquid from said storing means to said second compartment of the hemodialyzer and back to said storing means,

(f) means for removing and measuring amounts of used dialysis liquid equal to a desired amount of ultrafiltrate, connected to said means for circulating dialysis liquid downstream of said hemodialyzer,

(g) means for controlling and checking said blood circulation means, and said means for circulating dialysis liquid, and,

(h) a common unit consisting essentially of one multifunctional, flexible sealing sheet, provided with a first face and a second face and further provided with at least one hole belonging to said means for circulating dialysis liquid, on the first face of said sealing sheet a first rigid or semi-rigid, multifunctional element provided with a part connectable to said source of water, and on the second face of said sealing sheet a second rigid or semi-rigid multifunctional element, provided with at least two ports connectable to said storing means for dialysis liquid, whereby said flexible sealing sheet is sandwiched between said first and second multifunctional elements, said common unit being disposable and providing this intrigrated means for said preparing and circulating means for dialysis liquid, said dialysis liquid circulating through said at least one hole on both sides of said flexible sealing sheet, within said first and second rigid or semi-rigid elements.

4,765,889

MOVING BRIDGE FILTER - TELESCOPING FLOATING POT SKIMMER

Peter Grujanac, Bartlett, Ill., assignor to Lakeside Equipment Corporation, Bartlett, Ill.

Filed Apr. 6, 1987, Ser. No. 34,668
Int. Cl.[4] B01D *23/20*
U.S. Cl. 210—121 8 Claims



1. A liquid filter system for waste water comprising:

a filter compartment for a liquid supply and having spaced side walls and first and second ends;

a bridge spanning the side walls;

means mounting the bridge for movement between the first and second compartment ends;

means for moving the bridge between the first and second compartment ends;

means on the bridge for progressively skimming and accumulating surface scum on the surface of said liquid supply and for moving accumulated surface scum towards one of the filter compartment ends as an incident of said bridge being moved by said moving means towards said one filter compartment end; and

at least one floating pot adjacent the one compartment end to collect skimmed surface scum,

said skimming means comprising a plurality of nozzles, means mounting the nozzles above the surface of the

VOL 1093 ISS 4 AG 23 1988 UMI

liquid supply, means for delivering a pressurized fluid to said nozzles, and means on the nozzles for directing the pressurized fluid angularly downwardly and toward the one filter compartment end.

4,765,890

APPARATUS FOR REDUCING TAILING IN A LIQUID CHROMATOGRAPH

Abolghassem Y. Tehrani; John N. Jones, and Robert W. Allington, all of Lincoln, Nebr., assignors to Isco, Inc., Lincoln, Nebr.

Division of Ser. No. 745,512, Jun. 17, 1985, abandoned, which is a continuation-in-part of Ser. No. 585,298, Mar. 1, 1984, Pat. No. 4,545,904. This application Oct. 5, 1987, Ser. No. 104,437
Int. Cl.[4] B01D *15/08*
U.S. Cl. 210—198.2 2 Claims



1. A fixture for forming a chromatographic fitting adapted to contain a frit comprising:

means adapted to hold the chromatographic fitting;

a first die part mounted, within said means adapted to hold the chromatographic fitting and adapted to exert pressure against said frit;

a second die part adapted to exert pressure from the top of said fitting against said frit, whereby pressure may be exerted on a frit within said fitting;

said second die part including a member less than two millimeters in diameter for exerting pressure on the top of said frit said first and second parts being adapted to receive energy whereby said frit may be sintered.

4,765,891

HELICAL FLOW EFFLUENT WEIR

David K. Wyness, 1624 Willemoore, Springfield, Ill. 60627

Filed Dec. 9, 1986, Ser. No. 939,862
Int. Cl.[4] B01D *21/08*
U.S. Cl. 210—207 14 Claims



1. Apparatus for purifying a liquid containing suspended solids which comprises:

a walled vessel which is closed at the bottom and side and has an upper circular horizontal portion thereby defining a chamber;

a conduit means for feeding a liquid containing suspended solids to the chamber so that the liquid flows in a helical path in the chamber the vessel upper portion;

liquid effluent clarifying and withdrawing means, at the upper portion of the vessel, into which liquid flowing at and adjacent the liquid surface in one direction, of a circular path can substantially change direction including means for maintaining flow of the suspended solids in the circular path to a substantially greater extent than the amount of solids carried along with the liquid which changes direction sufficient for providing a stream of clarified liquid at the withdrawing means; and

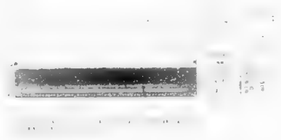
an outlet means into which the stream of clarified liquid can flow from the withdrawing means and be removed from the vessel.

4,765,892

SAND FILTER MEDIA AND AN IMPROVED METHOD OF PURIFYING WATER

Matthew H. Hulbert, and James W. Currier, both of Terre Haute, Ind., assignors to Applied Industrial Materials Corporation, Deerfield, Ill.

Continuation of Ser. No. 880,065, Jun. 30, 1986, abandoned, which is a division of Ser. No. 645,207, Aug. 29, 1984, abandoned. This application Aug. 14, 1987, Ser. No. 86,222
Int. Cl.[4] B01D *23/16*
U.S. Cl. 210—290 5 Claims



1. A slow sand filtering system which comprises:

an uncovered filter tank; an inlet to said tank for water to be treated and an outlet from said tank for the treated water; said uncovered filter tank having therein a layer of sand, an effective filter-enhancing amount of zeolite, said zeolite being topped by a growth of schmutzdecke, said schmutzdecke comprising a layer of living organisms selected from the group consisting of algae, plankton, diatoms, protozoa, rotifers and bacteria.

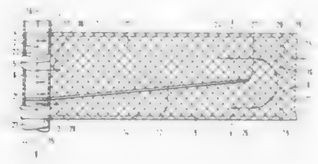
4,765,893

COILED MEMBRANE FILTER CARTRIDGE

Robert Kohlheb, Andershäuser Strasse 15, D-3352 Einbeck, Fed. Rep. of Germany

Filed Jul. 16, 1986, Ser. No. 886,102
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525682
Int. Cl.[4] B01D *29/06*
U.S. Cl. 210—315 11 Claims

1. In a coiled membrane filter cartridge including a central pipe having at least one axial row of openings through which fluid may radially pass into or out of the pipe; two superposed membranes wound in a plurality of turns about said pipe to form a membrane coil having opposite axial ends; said membranes being radially spaced from one another for defining, between themselves, a spiral flow channel being sealed at said axial ends; the improvement comprising a fluidtight partition extending between said membranes and being connected thereto; said partition hermetrically dividing said spiral flow channel longitudinally into axially adjoining partial channels; wherein said central pipe has passage openings and the flow channel has open radially inner and radially outer sides; the partition extending over the entire length of the membranes



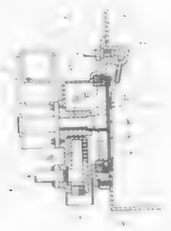
forming the flow channel and forming two partial channels; radially inward ends of the two partial channels being connected with the passage openings; further comprising a separating bottom being disposed in an interior cavity of the central pipe to hydrodynamically separate from one another said radially inward ends of said partial channels.

4,765,894

APPARATUS FOR SEPARATION OF SOLID FROM LIQUID

Mitsuru Inaba, No. 628, Jomyoji, Kamakura-shi, Kanagawa-ken, Japan

Filed Nov. 6, 1986, Ser. No. 927,495
Claims priority, application Japan, Nov. 7, 1985, 60-170456[U]
Int. Cl.[4] B01D *33/22*
U.S. Cl. 210—393 1 Claim



1. A separator for separating machined chips from a coolant, which comprises a receiving vessel for chip-containing coolant, a vessel for filtered coolant disposed next to the receiving vessel, a disc screen through which said vessels communicate with each other, a rotary shaft for rotating said disc screen, means for rotating said rotary shaft thereby to rotate the disc screen, a submerged ejecting nozzle in the filtrate vessel for propelling a fluid against the disc screen thereby to back-wash the disc screen during its rotation, and another ejecting nozzle for ejecting a fluid against the disc screen within the receiving vessel thereby readily to release and remove chips deposited on the surface of the disc screen within the receiving vessel, there being liquid in said receiving vessel having a liquid level, the first-mentioned nozzle being so disposed as to direct fluid against the screen below said liquid level and the second-mentioned nozzle being so disposed as to direct fluid against the screen above said liquid level.

4,765,895

APPARATUS FOR RECOVERY OF CELL MATERIAL FROM BODY FLUIDS

Gert Schlüter, Gundelfingen, and Erwin Albrecht, Freiburg, both of Fed. Rep. of Germany, assignors to Sarstedt, Numbrecht-Rommelsdorf, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,852
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248214
Int. Cl.[4] B01D *39/08*
U.S. Cl. 210—491 3 Claims

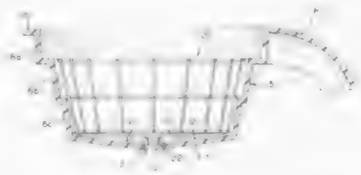
1. Apparatus for recovery of cell material from body fluids, consisting of a filter with a filter material arranged in one or more layers and not soluble in cell-fixing liquids, wherein the filter material consists of a single compressed textured or crimped filament yarn and wherein the filaments of the filament yarn consist of a synthetic polymer.

4,765,896

BREWING FUNNEL WITH REMOVABLE INSERT

Philip G. Hartley, Toronto; Harvey W. Cheatley, Newmarket, and Mitchell J. Koson, Toronto, all of Canada, assignors to Bunn-O-Matic Corporation, Springfield, Ill.

Filed May 27, 1986, Ser. No. 866,976
Claims priority, application Canada, Jun. 13, 1985, 483935
Int. Cl.[4] B01D *23/28*
U.S. Cl. 210—474 6 Claims



1. Brewing funnel means for supporting disposable filters in either a scrunched reduced-capacity condition or a non-scrunched full-capacity condition with the bottom of the filters spaced from the bottom of the funnel in either of said conditions, comprising, in combination:

a funnel of generally rusto-conical shape and having an interior bottom surface dished toward a drain aperture and having a plurality of integral ribs upstanding from said interior bottom surface and of such number and orientation as to maintain the bottom of a said disposable filter in its non-scrunched full-capacity condition spaced from said interior bottom surface; and

a removable skeleton-like basket nestable within said funnel for supporting a said disposable filter therein in its said scrunched reduced-capacity condition and said basket having retention means cooperable with said drain aperture.

4,765,897

POLYAMIDE MEMBRANES USEFUL FOR WATER SOFTENING

John E. Cadotte, Minnetonka, Minn., and David R. Walker, Kilmarnock, Scotland, assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 28, 1986, Ser. No. 856,519
Int. Cl.[4] B01D *13/00*; B32B *27/34*
U.S. Cl. 210—500.23 31 Claims

1. A membrane useful for water softening which is prepared by a process comprising:

(a) contacting a crosslinked polyamide discriminating layer of a reverse osmosis membrane with an aqueous solution of a compatible strong mineral acid;

VOL 1093 ISS 4 AG 23 1988 UMI

(b) maintaining the membrane in contact with the acid at an elevated temperature for a period sufficient to produce a membrane having a water flux of at least about 8 gfd and a $MgSO_4$ rejection of at least about 65 percent when tested under reverse osmosis conditions at 50 psi and 25° C. using an aqueous solution of 0.2 weight percent $MgSO_4$; and

(c) contacting the membrane from step (b) with a rejection enhancing agent so as to produce a membrane having a $MgSO_4$ rejection of at least about 85 percent.

22. A membrane useful for water softening comprising:

(a) a porous support layer;

(b) a crosslinked, aromatic polyamide discriminating layer affixed to the support layer, the discriminating layer having a first surface not in direct contact with the support layer; and

(c) a rejection enhancing agent coating at least part of the first surface of the discriminating layer, wherein the membrane has a water flux of at least about 15 gfd and a rejection of at least about 90 percent when tested with an aqueous solution of 0.2 percent magnesium sulfate at 50 psi and 25° C.

4,765,898

SEMIPERMEABLE MEMBRANES BASED ON POLYMERS CONTAINING SULPHONATE GROUP

Henricus C. W. M. Buys, Vianen; Aart J. Naaktgeboren, and Johan Gons, both of Dedemsvaart, all of Netherlands, assignors to Stork Friesland B.V., Gorredijk, Netherlands

Filed Jun. 25, 1986, Ser. No. 878,347

Claims priority, application Netherlands, Jun. 26, 1985, [illegible]

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—500.41 17 Claims

1. A thermally-resistant semipermeable spearation membrane, consisting essentially of a polymer containing $—SO_3—$ groups in a chain thereof, each of said $—SO_3—$ groups being connected directly and exclusively to an aryl group having at least 6 carbon atoms.

4,765,899

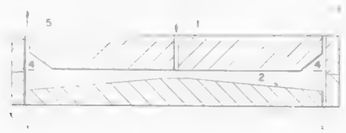
APPARATUS FOR CONTINUOUS SEPARATION OF LEUKOCYTE/PLATELET-ENRICHED FRACTION FROM WHOLE BLOOD

John R. Wells, Culver City, Calif., and John W. Grant, Blacksburg, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 540,773, Oct. 11, 1983, Pat. No. 4,663,058. This application Aug. 18, 1986, Ser. No. 897,360

Int. Cl.⁴ B01D *21/00*

U.S. Cl. 210—519 6 Claims



1. Improved, continuous, noncentrifugal, whole blood sedimentation apparatus, said apparatus providing improved sedimentation efficiency and comprising a chamber having a floor; at one end of the floor, an inlet means for introduction of blood; and at the other end of the floor, a first outlet means, above the floor, for removal of an erythrocyte-depleted, leukocyte/platelet-enriched plasma fraction, and a second outlet means, in the base of the floor, for removal of an erythrocyte-enriched plasma fraction, said floor being declined from said inlet means to said second outlet means at an angle greater than 0° but less than 30°, and wherein the area of the floor increases from said inlet means to said second outlet means.

4,765,900

PROCESS FOR THE TREATMENT OF WASTE

William L. Schwoyer, Boulder; Larry S. Jaycox, Lakewood, and Hermann W. Peterscheck, Longmont, all of Colo., assignors to VerTech Treatment Systems, Inc., Denver, Colo.

Filed Feb. 13, 1987, Ser. No. 14,330

Int. Cl.⁴ C02F *1/72*

U.S. Cl. 210—603 19 Claims



1. A method of treating organic waste having a liquid component and a solid component, comprising the steps of:

weighting the organic waste with ash to accelerate sedimentation of said weighted organic waste;

separating the weighted organic waste to isolate said liquid component from said solid component;

chemically reacting said solid component to substantially lower the oxygen demand of said solid component and to produce a liquid effluent and an ash, a portion of said ash being used in said weighting step to weight said organic waste;

de-ammoniating said liquid component to form a de-ammoniated liquid stream;

combining said liquid effluent with said de-ammoniated liquid stream to form a combined liquid stream; and,

contacting said combined liquid stream with biologically active microbes to lower the oxygen demand of said combined liquid stream.

4,765,901

METHOD FOR PURIFYING WASTE WATER

James A. Field, Balk, Netherlands, assignor to Pacques B.V., Balk, Netherlands

Filed Mar. 16, 1987, Ser. No. 26,255

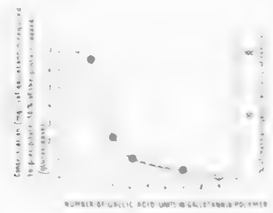
Claims priority, application Netherlands, Mar. 20, 1986, [illegible]

Int. Cl.⁴ C02F *3/28*

U.S. Cl. 210—603 15 Claims

10. Process for detoxifying waste water which contains phenolic compounds which are toxic to aquatic organisms, comprising subjecting the waste water to an oxidative polymerization of said phenolic compounds, with substantially no precipitate being formed of polyphenol compounds produced

and substantially no influence being exerted on the biochemical oxygen demand and the chemical oxygen demand of the waste



water and subsequently anaerobically purifying said waste water.

4,765,902

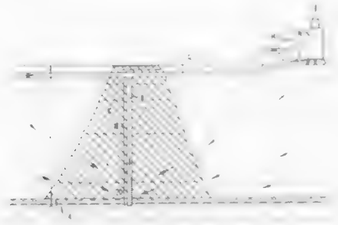
PROCESS FOR IN SITU BIODEGRADATION OF HYDROCARBON CONTAMINATED SOIL

Douglas L. Ely, Novato, and David A. Heffner, El Sobrante, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 25, 1987, Ser. No. 101,358

Int. Cl.⁴ C02F *3/34;* **D06M** *16/00*

U.S. Cl. 210—610 11 Claims



1. A process for biodegrading hydrocarbons by drawing oxygen into a hydrocarbon contaminated zone, comprising:

establishing a borehole from the earth's surface, through a hydrocarbon contaminated zone having hydrocarbon degrading microbes;

establishing a fluid impermeable lining, coaxially spaced and sealingly connected to the inside surface of the borehole, extending from the earth surface to the hydrocarbon-contaminated zone;

establishing a fluid permeable lining, coaxially spaced within the inside of the borehole, fixedly connected to, and extending from, the end of the fluid impermeable lining;

fluidly connecting a source of negative pressure to the fluid impermeable lining;

evacuating gas from the fluid permeable lining to draw oxygen into the hydrocarbon-contaminated zone;

monitoring the oxygen, total hydrocarbon, and carbon dioxide content of the evacuated gas; and

adjusting the flow rate of evacuated gas out of the borehole to between 30 and 250 SCFM per borehole so that a substantial amount of hydrocarbons are biodegraded.

4,765,903

PURIFICATION OF MONOMERIC INTERFERON

Mark J. D'Andrea, Neshanic Station, N.J.; Stanley J. Tarnowski, Jr., Sunnyvale, Calif., and Arthur D. Clark, Jr., Princeton, N.J., assignors to Interferon Sciences, Inc., New Brunswick, N.J.

Filed Oct. 6, 1987, Ser. No. 105,629

Int. Cl.⁴ B01D *15/08;* **C07K** *15/26;* **A61K** *45/02*

U.S. Cl. 210—635 10 Claims



1. A method of isolating the fully oxidized form of human alpha-2 interferon fast moving monomer (FMM), essentially free of partially or fully reduced forms of slow moving monomers (SMM) and oligomers of leukocyte interferon and of non-interferon proteins comprising:

(a) loading unpurified human alpha-2 interferon ("IFN-alpha-2") sample containing the fully oxidized form of human alpha-2 interferon fast moving monomer on a lower alkyl reverse phase column, and eluting;

(b) loading the product of step (a) on a cation exchange column and eluting;

(c) loading the product of step (b) on a gel filtration column and eluting; and

(d) recovering said fast moving monomer in purified form.

4,765,904

METHOD AND APPARATUS FOR EVAPORATION AND LIQUID SEPARATION

Vladimir Kaplan, 13103 Wilton Oaks Dr., Silver Spring, Md. 20906

Continuation-in-part of Ser. No. 517,453, Jul. 26, 1983, abandoned. This application Sep. 17, 1985, Ser. No. 776,976

Int. Cl.⁴ B01D *13/00*

U.S. Cl. 210—637 10 Claims



10. A Method for promoting component separation from an azeotropic liquid mixture of two or more components having different mean molecular free paths comprising:

(1) providing a thin unitary porous membrane having a

VOL 1093 ISS 4 AG 23 1988 UMI

plurality of pores of substantially uniform size which form passages from the first side of the membrane to the second side;

(2) placing said liquid mixture cyclically in contact with said first surface of said membrane and effecting vaporization thereof so that the vaporized molecules of said components having the greater mean molecule free path migrate preferentially to the second side thereby promoting separation of said molecules having greater mean molecular free paths from those with lower mean molecular free paths;

(3) maintaining the duration of said contact for a period of time within which time the composition of the vaporized molecules passing to said second surface remains within a specific range;

(4) evacuating the separated component of said mixture from said second side of the membrane; and

(5) discontinuing the contact between said mixture and said first surface of membrane following said contact period, and removing the components of said mixture from said pores during the period of time when said contact is discontinued, and repeating steps 2 through 5.

4,765,905

METHOD FOR RECOVERING ACIDS FROM AN AQUEOUS SOLUTION OF THE ACIDS AND METAL SALTS BY MEANS OF A FLUORINATED ANION EXCHANGE MEMBRANE

Sakae Kitamura; Yasuhiro Kurauchi, and Toru Seita, all of Shin-nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

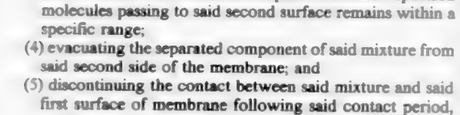
Filed Nov. 7, 1986, Ser. No. 928,036

Claims priority, application Japan, Nov. 11, 1985, 60-250908

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—638 9 Claims

1. A method for recovering acids from an aqueous solution of a mixture of the acids and metal salts by dialysis, characterized in that a fluorinated anion exchange membrane made of a copolymer having repeating units of the formula:



(I)

wherein X is F or CF_3, l is an integer of from 0 to 5, m is 0 or 1, n is an integer of from 1 to 5, p/q is from 2 to 16, and Y is a quaternary ammonium group, is used as a dialysis membrane.

4,765,906

CROSS-FLOW FILTRATION

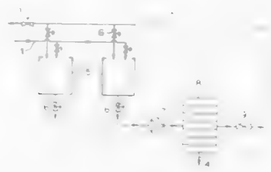
Anthony L. Downing, Welwyn, and Rodney C. Squires, South Godstone, both of England, assignors to EPOC Limited, London, England

Filed Mar. 11, 1986, Ser. No. 838,515

Claims priority, application United Kingdom, Mar. 12, 1985, 8506350; Aug. 19, 1985, 8520736

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—636 30 Claims



16. A method of cross-flow filtration, comprising using a flexible filter support in the form of a material having two plies which are connected together at parallel, spaced seams to form an integral array of side-by-side, continuous, separate tubes, said seams being strong enough to resist a relative pressure of about 59 p.s.i. in said tubes, and said plies providing tube walls each of which has a flexural rigidity in at least one direction greater than zero and of not more than 2500 mg.cm according to British Standard 3356: 1961, said inlet being connected to the interior of said tubes whereby when said tubes are under the pressure of said feed, said walls provide an uninterrupted filter zone of substantial area which is restrained during filtration solely by tensile forces in said walls, feed being passed under pressure into said tubes, thereby bulging out said walls of said tubes beyond a planar configuration and permeate passing through said walls of said tubes, and whereby substantial movement of said walls of said tubes is possible in the direction at right angles to said walls when the pressures inside said tubes and outside said tubes are equal.

4,765,907

WEARABLE, CONTINUOUSLY INTERNALLY OPERABLE AND EXTERNALLY REGENERABLE DIALYSIS DEVICE

Robert D. Scott, West Covina, Calif., assignor to Research Development Systems, Inc., Pasadena, Calif.

Continuation-in-part of Ser. No. 594,203, Mar. 28, 1984, abandoned. This application Oct. 18, 1984, Ser. No. 662,250

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—648 53 Claims



38. Method for the continuous dialyzing of body fluid within the body, including urging a first dialysis fluid through the body intestines in body-fluid dialyzing relation and dialyzing said first dialysis against a second dialysis fluid differing in composition from said first dialysis fluid in first dialyzing fluid regenerating relation.

4,765,908

PROCESS AND COMPOSITION FOR REMOVING CONTAMINANTS FROM WASTEWATER

Barbara Monick, and Alexander Blake, both of 9 Greenwich Rd., Smithtown, N.Y. 11787

Continuation of Ser. No. 697,709, Feb. 4, 1985, abandoned, which is a continuation-in-part of Ser. No. 522,794, Aug. 12, 1983, abandoned. This application Feb. 17, 1987, Ser. No. 16,503

Int. Cl.[4] B01D *15/00;* **B01J** *20/12*

U.S. Cl. 210—666 22 Claims

1. A treatment composition for removing heavy metals from wastewater, comprising effective amounts of the following to remove the heavy metals:

(a) naturally occurring montmorillonite containing at least 60% silica;

(b) bentonite selected from the group consisting of calcium bentonite, sodium bentonite, and combinations thereof;

(c) one or more flocculants;

(d) an alkali metal or alkaline earth metal carbonate; and

(e) a catalyst comprising zirconium and at least one polyelectrolyte.

4,765,909

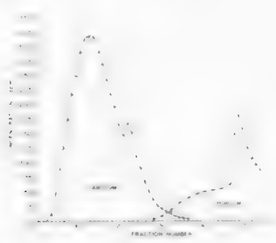
ION EXCHANGE METHOD FOR SEPARATION OF SCANDIUM AND THORIUM

William J. Rourke, Worcester; Wen-Chao Lai, Westboro, and Samuel Natansohn, Sharon, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 23, 1987, Ser. No. 42,150

Int. Cl.[4] B01D *15/04*

U.S. Cl. 210—672 2 Claims



1. A method for separating scandium and thorium comprising the following steps:

Step 1—adjusting a solution comprising scandium and thorium to an acidic pH to form an acid solution having a pH of about 1.95;

Step 2—contacting the acid solution from step 1 with a cation exchange resin, said cation exchange resin having a sulfonic acid functionality;

Step 3—retaining said scandium and thorium on said cation exchange resin;

Step 4—eluting said scandium from said cation exchange resin with a first elution solution comprising about 0.1M diglycolic acid and 1.2M hydrochloric acid; and

Step 5—eluting said thorium from said cation exchange resin with a second elution solution comprising about 6N hydrochloric acid.

4,765,910

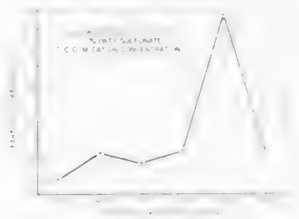
USE OF AMMONIUM CHLORIDE SOLUTIONS TO REMOVE SULFONATE SURFACTANTS FROM CRUDE OIL

Nicholas O. Wolf, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 559,659, Dec. 9, 1983, abandoned, which is a continuation-in-part of Ser. No. 352,404, Feb. 25, 1982, abandoned. This application Apr. 18, 1986, Ser. No. 853,317

Int. Cl.[4] B01D *17/05*

U.S. Cl. 210—708 4 Claims



1. A method for removal of sulfonate surfactants having a molecular weight of about 600 gram/equivalents or less from crude oil or crude oil emulsions containing from 50 parts per million up to 15 weight percent said surfactants, comprising

(a) adding a synthetic brine having an NH_4^+ concentration of from about 0.005 molar to about 0.1 molar to crude oil or crude oil emulsions containing said sulfonate surfactants, said brine comprising water and at least one salt selected from the group consisting of $(NH_4)_nX$, where X is at least one ion selected from the group consisting of sulfate, nitrate or halide and n is the valence of X, said brine being prepared from fresh water containing substantially no detrimental salts selected from the group consisting essentially of Na, Mg, Al, Ca, Zn, and Ba salts;

(b) agitating at a temperature of from about 90° F. to about 150° F. the crude oil or crude oil emulsions containing sulfonate surfactants and synthetic brine to ensure thorough mixing and react said NH_4^+ with said sulfonate surfactants and produce a mixture containing water soluble ammonium sulfonate, and

(c) allowing the mixture of (b) to separate into aqueous and organic phases, said aqueous phase containing predominantly brine and amononium sulfonate, and removing the aqueous phase containing predominately brine and sulfonates from the organic phase containing predominately crude oil.

4,765,911

PROCESS FOR TREATING MUNICIPAL WASTEWATER SLUDGE

Hans W. Rasmussen, St. George, Utah, assignor to North American Metals, Inc., Las Vegas, Nev.

Filed Sep. 14, 1987, Ser. No. 95,860

Int. Cl.[4] C02F *11/14*

U.S. Cl. 210—710 13 Claims



1. A process for treating municipal wastewater sludge from anaerobic or aerobic digestion comprising

(a) placing said sludge into a reaction vessel and introducing between about 25 and about 40 pounds SO_2 per ton of dry solids into said sludge with agitation,

(b) withdrawing the SO_2 treated sludge from the reaction vessel and mixing between about 0.1 and about 0.5 pounds per ton of dry solids of a flocculent having a molecular weight of at least about 10^7 with said treated sludge,

(c) placing the mixture from step (b) in a clarifier and separating the solid sludge from the water phase,

(d) directing the solid sludge to a vessel and introducing between about 300 and 500 pounds SO_2 per ton of dry solids with agitation until the pH of said sludge is no greater than about 2.0,

(e) directing the reaction product mixture of step (d) to a thickener apparatus and separating the aqueous liquor from the solids, and

(f) recovering the solids from step (e).

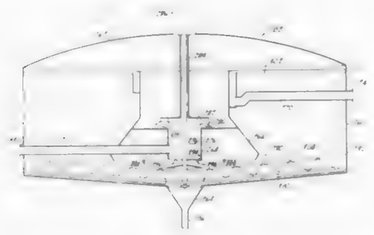
VOL 1093 ISS 4 AG 23 1988 UMI

4,765,912

GEOTHERMAL BRINE CLARIFIER PROCESS FOR REMOVING SOLIDS FROM GEOTHERMAL BRINE

Clay W. Totten, Indio, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 877,341, Jun. 23, 1986, abandoned. This application Mar. 20, 1987, Ser. No. 28,233
Int. Cl.[4] C02F *1/52*
U.S. Cl. 210—713 11 Claims





1. A process for clarifying geothermal brine in a geothermal facility, said process comprising the steps of:

(a) introducing unclarified geothermal brine comprising silica solids into an agglomeration zone containing geothermal brine being clarified;

(b) maintaining a circulation rate within the agglomeration zone to cause agglomeration of solid particles therein and to enable the agglomerated silica solids to settle toward a lower portion of said agglomeration zone to form a sludge blanket comprising at least about 25 percent, by weight, solids consisting essentially of silica and compounds of naturally occurring elements in the unclarified geothermal brine, while enabling clarified brine having less than about 50 parts per million silica solids to pass out of the agglomeration zone for collection thereof, said sludge blanket having a higher solids content than said unclarified brine, said circulation rate being sufficient to circulate a portion of said sludge blanket into upper portions of said agglomeration zone to cause agglomeration of solid particles in the brine being clarified;

(c) withdrawing the sludge blanket from the agglomeration zone, and

(d) introducing a stream consisting essentially of sludge blanket withdrawn from the agglomeration zone with the unclarified brine into the agglomeration zone via a conduit external to the agglomeration zone.

4,765,913

PROCESS FOR REMOVING SILICA FROM SILICA-RICH GEOTHERMAL BRINE

John L. Featherstone, El Centro, Calif., assignor to Union Oil Co. of Calif., Los Angeles; Mono Power Co., Rosemead and Southern Pacific Land Co., San Francisco, all of, Calif.

Continuation of Ser. No. 700,526, Feb. 11, 1986, abandoned. This application Aug. 26, 1986, Ser. No. 902,044
Int. Cl.[4] C02F *1/52*
U.S. Cl. 210—714 4 Claims

1. A process for simultaneously producing steam and flocculated silica particles in a flash vessel from geothermal brine and preventing silica scale formation by in-situ seed formation in a system for handling a flow of hot, naturally pressurized and highly-saline geothermal brine containing dissolved heavy metals and large amounts of dissolved silica and having a natural pH of less than about 6, the system including a high pressure flash vessel in which the geothermal brine is flashed to a substantially reduced pressure to convert a portion of the geothermal brine into steam, while a remaining portion of the geothermal brine becomes supersaturated in silica, the process comprising:

(a) reducing the pressure in the flash vessel to produce steam and combining with the geothermal brine in the high pressure flash vessel an amount of sodium polysulfide, to form a brine-base mixture having a pH between about 6.2 and about 6.6, said sodium polysulfide reacting with at least some of the heavy metals in the geothermal brine to form seed crystals comprising finely divided, insoluble heavy metal compounds capable of precipitating and flocculating silica particles;

(b) maintaining the geothermal brine in the high pressure flash vessel with said seed crystals for between about 2 and about 10 minutes to form a suspension of flocculated silicious material in said brine-base mixture, said flocculated silicious material comprising seed crystals having silica precipitation thereon, the silica precipitated on the seed crystals being prevented from depositing as scale in said flash vessel; and

(c) separating said silicious material from the brine-base mixture.

4,765,914

METHOD OF AND APPARATUS FOR REDUCTION OF TURBIDITY IN A BODY OF FLUID

Moshe Marikovsky, Rehovot, and Benjamin Doron, Jerusalem, both of Israel, assignors to Solmat Systems Ltd., Yavne, Israel

Continuation of Ser. No. 640,885, Aug. 15, 1984, Pat. No. 4,652,378. This application Nov. 26, 1986, Ser. No. 935,322
The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.
Int. Cl.[4] C02F *1/52*
U.S. Cl. 210—716 12 Claims

1. A method for the in-situ reduction of turbidity in a predetermined stratum of the halocline in a saltwater solar pond having a wind-mixed layer overlying the halocline at the surface of the pond, and having a heat storage layer underlying the halocline, said method comprising the steps of:

(a) preparing a treatment solution containing a flocculent, such solution having a density different from the density of said stratum; and

(b) adding the treatment solution to only said stratum for causing the solution to become uniformly distributed throughout the stratum due substantially solely to the influence of gravity on said solution.

4,765,915

POROUS FILTER MEDIA AND MEMBRANE SUPPORT MEANS

Charles F. Diehl, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 737,113, May 23, 1985, abandoned. This application Apr. 14, 1986, Ser. No. 851,178
The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.
Int. Cl.[4] B01D *37/00, 39/20*
U.S. Cl. 210—767 11 Claims

1. A method for filtering fluids comprising passing fluid containing filterable material through at least one porous filter medium comprising a densified random fiber composite sheet which has been expanded, by heating, in a direction normal to the plane of the sheet and which comprises a heat fusible polymer, reinforcing fibers, and a binder.

4,765,916

POLYMER FILM COMPOSITION FOR RINSE RELEASE OF WASH ADDITIVES

George W. Ogar, Jr., Dublin, and Clement K. Choy, Walnut Creek, both of Calif., assignors to The Clorox Company, Oakland, Calif.

Filed Mar. 24, 1987, Ser. No. 30,192
Int. Cl.[4] C11D *17/06, 17/04;* D06M *13/46, 13/54*
U.S. Cl. 252—8.9 18 Claims



1. A water-soluble, free-standing polymeric film comprising

(a) a first film layer having a thickness of between about 0.5 to 2 mils, and comprising a mixture of hydroxybutylmethylcellulose (HBMC) with a weight average molecular weight of at least about 26,000 g/mole, hydroxypropylmethylcellulose (HPMC) with a weight average molecular weight of at least about 10,000 g/mole, and a first plasticizer, wherein a ratio of HPMC to HBMC is between about 9:1 to 1:1; and

(b) a second film layer having a thickness of between about 0.1 to 10 mils, and comprising a mixture of a polyvinyl alcohol having a weight average molecular weight of at least about 10,000 g/mole, a degree of hydrolysis of between about 75% and 95%, a second plasticizer, and a quantity of a cross-linking agent sufficient to reduce the solubility of the film in an alkaline pH, the second film layer and the first film layer being disposed together in an abutting relationship.

16. A wash additive composition for the rinse release of a wash additive comprising

(a) a wash additive particle, having an average diameter of between about 10 to 400 microns;

(b) a first polymeric layer, about 0.5 to 10 mils in thickness, comprising a mixture of a PVA resin having a weight average molecular weight of at least about 10,000 g/mole and a degree of hydrolysis of about 75% to 98%, with a plasticizer, and about 0.05 to 9% of a cross-linking agent, the first polymeric layer being coated onto the additive particle; and

(c) a seoond polymeric layer about 0.5 to 10 mils in thickness, coated onto the first layer and comprising a mixture of a hydroxybutylmethylcellulose (HBMC) resin, having a weight average molecular weight of at least about 90,000 g/mole, a hydroxypropylmethylcellulose (HPMC) resin, having a weight average molecular weight of between about 10,000 and 30,000 g/mole, the hydroxypropylmethylcellulose (HPMC) and hydroxybutylmethylcellulose (HBMC) being present in a ratio of between about 9:1 to 1:1, and a plasticizer.

4,765,917

WATER-BASE METAL FORMING LUBRICANT COMPOSITION

Shiro Otaki, Tokyo, Japan, and Edmond J. Stoutenburg, Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Filed Oct. 1, 1986, Ser. No. 914,009
Int. Cl.[4] C10M *129/52, 173/02*
U.S. Cl. 252—40.7 11 Claims

1. A water-base lubricant composition suitable for use in elevated temperature metal forming operations consisting of:

(a) about 1% to about 40% by weight of a trimellitic acid salt reaction product of trimellitic acid and an alkali metal or alkali earth metal hydroxide such that the pH of the composition is about 6.5 to about 10; and said reaction product containing zero to less than 4% by weight of any other aliphatic carboxylic acid salt,

(b) about 0.1% to about 12% by weight of a water dispersible organic thickening agent;

(c) about 0.01% to about 22% by weight of an extreme pressure additive;

(d) about 0.01% to about 2% by weight of a biocidal agent;

(e) about 0.01% to about 10% by weight of a performance enhancer material; and

(f) the balance water.

4,765,918

LUBRICANT ADDITIVE

Doris Love; Raymond C. Schlicht, both of Fishkill, and Joseph B. Biasotti, Lagrangeville, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 28, 1986, Ser. No. 935,861
Int. Cl.[4] C01M *149/12, 151/04*
U.S. Cl. 252—46.4 13 Claims

1. A lubricant additive prepared by reacting a triglyceride with a basic nitrogen compound employing a mole ratio of said triglyceride to said basic nitrogen compound in the range from about 2:1 to 1:3 respectively to produce a reaction product, reacting said reaction product with a acidic molybdenum compound employing a mole ratio of said reaction product to said molybdenum compound in the range from about 2:1 to 1:3 respectively to produce a second reaction product, and reacting said second reaction product with a sulfur compound employing a mole ratio of said second reaction product, based on molybdenum, to said sulfur in the range from about 1:1 to 1:4 respectively to produce said lubricant additive.

4,765,919

PIEZOELECTRIC CERAMIC MATERIALS

Masahiro Tomita, Anjo; Eturo Yasuda, and Hiroai Matsuoka, both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 810,226, Dec. 17, 1985, abandoned. This application Dec. 23, 1986, Ser. No. 946,163
Claims priority, application Japan, Dec. 17, 1984, 59-265603
Int. Cl.[4] C04B *35/46, 35/48, 35/49*
U.S. Cl. 252—62.9 10 Claims



1. A piezoelectric ceramic material consisting of

VOL 1093 ISS 4 AUG 23 1988 UMI

a ternary solid solution of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$-$PbTiO_3$-$PbZrO_3$ having the composition within an area encircled by lines connecting points:

A(15 mol% of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 45 mol% of $PbTiO_3$ and 40 mol% of $PbZrO_3$),

F(40 mol% of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 30 mol% of $PbTiO_3$ and 30 mol% $PbZrO_3$),

C(51 mol% of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 24 mol% of $PbTiO_3$ and 25 mol% of $PbZrO_3$,

G(45 mol% of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 35 mol% $PbTiO_3$ and 20 mol% of $PbZrO_3$,

H(40 mol% of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 40 mol% of $PbTiO_3$ and 20 mol% of $PbZrO_3$) and

I(30 mol% of $Pb(Ni_{\frac{1}{3}}Nb_{\frac{2}{3}})O_3$, 45 mol% of $PbTiO_3$, and 25 mol% of $PbZrO_3$); and

Sb_2O_3 as an additive in an amount of 0.1 to 1.0 weight % of the ternary solid solution,

said piezoelectric ceramic material having a piezoelectric constant of not less than 450×10^{-12} m/V.

4,765,920

HIGH TEMPERATURE PROCESS FOR PRODUCING FINE MAGNETIC PARTICLES OF M-PHASE STRUCTURE

Todd R. Gattuso, Boston; Kenneth C. Koehlert, Medford; Matthew Neville, Boston; Steven R. Reznek, and Joseph A. Senecal, both of Wellesley, all of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Jul. 14, 1986, Ser. No. 885,346
Int. Cl.[4] C04B *35/26;* **C01G** *49/02*
U.S. Cl. 252—62.58 **25 Claims**



1. A method for producing unaggregated, primary grain magnetic particles having the barium or strontium ferrite M-phase crystal structure, comprising:

evaporating droplets of an iron and alkaline earth metal halide containing feed solution in a main reactor to form an iron and alkaline earth metal halide vapor phase and an oxidizing or hydrolyzing vapor phase; and

maintaining the iron and alkaline earth metal halide vapor phase and the oxidizing or hydrolyzing vapor phase in the main reactor at a temperature greater than 1350° K. yet which is below the decomposition point of unaggregated, primary grain magnetic particles having the barium or strontium ferrite M-phase crystal structure so that iron oxide and alkaline earth metal oxide particles form from the vapor phase and combine to form the unaggregated, primary grain magnetic particles having the barium or strontium ferrite M-phase crystal structure.

4,765,921

ACID COMPOSITION WITH HIGH CONCENTRATIONS OF ACTIVE MATERIALS FOR THE TREATMENT OF WATER AND/OR CLEANING INSTALLATIONS CONTAINING SAME

Jacky Rousset, St Trivier-sur-Moignans, and Jean Moro, Vaulx-en Velin, both of France, assignors to Coatex S.A., Caluire, France

Filed Jun. 22, 1987, Ser. No. 64,395
Claims priority, application France, Jul. 3, 1986, 86 09865
Int. Cl.[4] C11D *7/36, 7/08;* **C23F** *4/04*
U.S. Cl. 252—87 **26 Claims**

1. A composition intended for the treatment of industrial or domestic water and for cleaning the corresponding industrial or sanitary installations, comprising:

(A) from 10 to 60% by weight, expressed in anhydrous form, of a water-soluble carboxylic polymer in its acid form containing at least 5% by weight of itaconic acid and not more than 10% by weight of methacrylic acid;

(B) from 10 to 80% by weight, expressed in anhydrous form, of at least one strong acid which is at least one member selected from the group consisting of phosphoric acid, phosphonic acid, hydrochloric acid, sulfuric acid and sulfamic acid,

(C) from 0 to 15% by weight, expressed in anhydrous form, of zinc in the form of Zn^+ ions,

(D) from 0.1 to 10% by weight, expressed in anhydrous form, of a specific agent, wherein said specific agent is at least one member selected from the group consisting of biocide agents, perfumes, and corrosion inhibitors; and

(E) from 0 to 65% by weight of water.

4,765,922

SKIN CLEANSING COMPOSITION IN THE FORM OF A ROD OR STICK COMPRISING A LACTATE

Jean-Claude Contamin, Chilly Mazarin, and Roberte Latapie, Ablon S/Seine, both of France, assignors to L'Oreal, Paris, France

Filed Sep. 17, 1987, Ser. No. 97,828
Claims priority, application France, Sep. 30, 1986, 86 13604
Int. Cl.[4] C11D *9/30, 17/00*
U.S. Cl. 252—90 **6 Claims**

1. A cosmetic skin cleansing composition, in the form of a rod or stick, comprising a fatty phase, a water phase and a consistency agent, the said consistency agent being a mixture of at least one fatty acid having 12 to 22 carbon atoms and a lactate of the formula

(I)

wherein

R represents alkyl or alkenyl radicals having 13 to 17 carbon atoms or a mixture consisting essentially of said alkyl and/or alkenyl radicals and wherein said water phase is present in an amount ranging from 20 to 70 weight percent, said fatty phase is present in an amount ranging from 15 to 65 weight percent, said fatty acid is present in an amount ranging from 0.5–10 weight percent and said lactate is present in an amount ranging from 1.5 to 6 weight percent, based on the total weight of the composition.

4,765,923

COMPOSITION FOR REDUCING COLOR CONTAMINATION OF INFLUENT WATER

Gerald C. Walterick, Jr., Levittown, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Division of Ser. No. 728,986, Apr. 30, 1985, Pat. No. 4,668,404.
This application May 1, 1987, Ser. No. 44,932
Int. Cl.[4] C02F *1/56*
U.S. Cl. 252—181 **5 Claims**

1. A composition for reducing the color contaminant content of potable influent water, wherein said color contaminant content comprises a member or members selected from the group consisting of humic acids, lignins, tannins, and fulvic acids, comprising in combination:

(a) powdered activated carbon and;

(b) a water soluble or water dispersible cationic polymer selected from the group consisting of (i) polyquaternary ammonium polymers formed from the reaction of dimethylamine and epichlorohydrin and having a molecular weight Mn of about 8,000–14,000 and (ii) cross-linked polyquaternary ammonium polymers formed from the reaction of ethylenediamine, dimethylamine, and epichlorohydrin and having a molecular weight Mn of about $400–600\times10^3$ or mixtures of (i) and (ii).

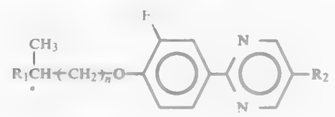
4,765,924

HALOGEN-CONTAINING HETEROCYCLIC COMPOUND AND LIQUID CRYSTAL COMPOSITION

Hiromichi Inoue; Takashi Inukai; Kouji Ohno; Kazutoshi Miyazawa, and Shinichi Saito, all of Kanagawa, Japan, assignors to Chisso Corporation, Tokyo, Japan

Filed Jan. 14, 1987, Ser. No. 3,282
Claims priority, application Japan, Jan. 21, 1986, 61-10578
Int. Cl.[4] G02F *1/13;* **C09K** *19/34;* **C07D** *239/02, 211/70*
U.S. Cl. 252—299.61 **8 Claims**

1. A liquid crystalline, halogen-containing heterocyclic compound expressed by the formula



(I)

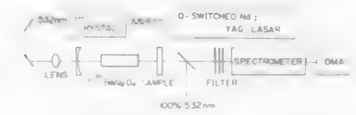
wherein R_1 represents C_2H_5 and R_2 represents an alkyl group of 6 to 12 carbon atoms; n represents an integer of 3 to 7; and the symbol * represents an asymmetric carbon atom.

4,765,925

SOLID STATE LASER HOSTS

Yutaka Anzai, Ageo; Kiyoshi Yamagishi, Urawa; Yasuhide Yamaguchi, and Kazuo Moriya, both of Ageo, all of Japan, assignors to Mitsui Mining & Smelting Co. Ltd., Tokyo, Japan

Filed Mar. 16, 1987, Ser. No. 26,213
Claims priority, application Japan, Mar. 17, 1986, 61-57115
Int. Cl.[4] C30B *29/00;* **C09K** *11/08;* **C04B** *35/44, 35/08*
U.S. Cl. 252—301.4 F **2 Claims**



1. A chrysoberyl solid laser host consisting of a chrysoberyl matrix which is doped with a trivalent titanium ions serving as a luminescent ion thereby to enable a laser operation to be performed over a wider wavelength range.

4,765,926

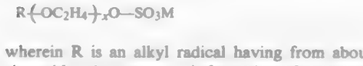
SURFACTANT COMPOSITIONS AND METHOD THEREFOR

Daniel T. Plummer, Ponca City, Okla., assignor to Vista Chemical Company, Houston, Tex.

Filed Mar. 18, 1986, Ser. No. 840,939
Int. Cl.[4] B01F *17/04, 17/12;* **C09K** *7/02*
U.S. Cl. 252—352 **39 Claims**

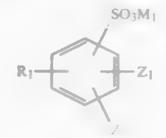
1. A surfactant composition comprising:

from about 30 to about 50% by weight of said composition of a sulfated alkoxylated alcohol having the formula:



wherein R is an alkyl radical having from about 10 to about 16 carbon atoms, x is from about 5 to about 9, M is a monovalent cation selected from the class consisting of alkali metal ions, ammonium ion and mixtures thereof;

from about 7 to about 30% by weight of an alkyl aryl sulfonate having the general formula:



where R_1 is an alkyl radical having from about 10 to about 15 carbon atoms, Z and Z_1 are hydrogen or an alkyl group having up to 2 carbon atoms, and M_1 is a monovalent cation selected from the class consisting of alkali metal ions, ammonium ion and mixtures thereof; and

from about 3 to about 7% by weight of an inorganic, water soluble salt of a divalent acid.

4,765,927

ANTIOXIDIZING COMPOSITION

Yukihiro Nomura, Nara, and Yoko Okuda, Higashiosaka, both of Japan, assignors to House Food Industrial Company Limited, Higashiosaka, Japan

Filed Aug. 6, 1986, Ser. No. 893,887
Claims priority, application Japan, Aug. 12, 1985, 60-177346
Int. Cl.[4] C09K *15/32*
U.S. Cl. 252—400.2 **9 Claims**

1. An anti-oxidizing composition comprising a condensed phosphate, citric acid, and at least one antioxidant selected from the group consisting of tocopherol, BHT, BHA and NDGA.

9. Antioxidizing composition as set forth in claim 1, wherein the antioxidant composition comprises tocopherol, lecithin, pentapolyphosphate and citric acid.

4,765,928

INTRINSICALLY CONDUCTIVE DOPED POLYMERS OF ENHANCED STABILITY

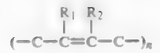
Mrinal Thakur, 55 Ash St., Waltham, Mass. 02154

Filed Aug. 19, 1985, Ser. No. 766,918
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—500 **11 Claims**



1. An electrically conductive doped, solid organic homopolymer characterized by an electrical conductivity when measured by the four point probe method at standard temperature reading within the illustrative range of 10^{-9} to 10^2 mhos/cm., said conductive polymeric composition comprising a dopant treated homopolymer, the mer units thereof each having the chemical structure:

VOL 1093 ISS 4 AG 23 1988 UMI



wherein R_1 and R_2 are selected from the class consisting of hydrogen, halogen and hydrocarbon moieties: wherein when R_1 or R_2 is specifically hydrogen substituted the remaining R_1 or R_2 is selected from the class consisting of halogen and hydrocarbon moieties; in which case the halogen is selected from the group consisting of chlorine, bromine, and iodine and said hydrocarbon moiety consists of methyl, ethyl, propyl and phenyl groups; with the added proviso and limitation relative thereto that in no instance are both R_1 and R_2 mutually hydrogen substituted: and said dopant is selected from the dopant class consisting of electron donor dopants and electron acceptor dopants.

4,765,929

SILK-SCREENABLE CIRCUIT PASTE

John W. Shaffer, Williamsport, Pa., assignor to GTE Products Corporation, Danvers, Mass.

Filed Aug. 29, 1986, Ser. No. 902,357
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—511 14 Claims

1. A silk-screenable circuit paste composition comprising electrically conductive powder an acrylic binding resin, an organic silicone material in an amount from about 0.05 to about 5 weight percent of the circuit paste composition, and a solvent system comprising ethylene glycol diacetate and a suitable cosolvent.

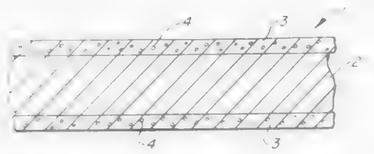
14. A silk-screenable circuit paste composition for forming a circuit apattern on a circuit board for a high-voltage photoflash array, said composition comprising:
about 40 weight percent conductive nickel:
from about 1 to about 5 weight percent conductive carbon black;
greater than 10 to about 15 weight percent methyl methacrylate;
about 11 weight percent propylene glycol monomethyl ether;
about 33 weight percent ethylene glycol diacetate; and
about 0.5 weight percent polydimethyl silicone.

4,765,930

PRESSURE-RESPONSIVE VARIABLE ELECTRICAL RESISTIVE RUBBER MATERIAL

Satoshi Mashimo, Akashi; Susumu Nagayasu, Kobe; Yoshio Yamaguchi, Kobe; Toru Noguchi, Kobe; Masayoshi Nakajima, Ashiya; Hajime Kakiuchi, Itami, and Kijuro Tanida, Ashiya, all of Japan, assignors to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Jul. 3, 1986, Ser. No. 882,083
Claims priority, application Japan, Jul. 3, 1985, 60-147160; Sep. 13, 1985, 60-204020; Nov. 13, 1985, 60-255652
Int. Cl.[4] H01B *1/06*
U.S. Cl. 252—511 9 Claims



1. An electrically conductive rubber material having pressure-responsive variable electrical resistance, said material comprising:
a matrix formed of an electrically insulative rubber;
carbon black distributed in said matrix; and
an inorganic filler distributed in said matrix consisting of semiconductive acicular ceramic whiskers selected from the group consisting of alpha-silicon carbide, beta-silicon carbide, alpha-alumina, titanium oxide, tin oxide, graphite, Fe, and Ni having a diameter of 0.05 to 3 microns, and a length of 5 to 500 microns, 30 to 70 parts by weight of carbon black and 10 to 60 parts by weight of whiskers being provided in 100 parts by weight of said rubber, and the total amount of the carbon black and the whiskers being 40 to 90 parts by weight in 100 parts of said rubber.

4,765,931

OPTICAL MATERIAL AND PROCESS FOR MAKING THE SAME

Kenneth J. Saunders, Waltham, and Richard L. Gentilman, Acton, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 500,703, Jun. 3, 1983, abandoned. This application Jul. 11, 1986, Ser. No. 885,338
Int. Cl.[4] G02B *5/20;* B29D *11/00*
U.S. Cl. 252—584 19 Claims



1. A method of forming an optically transmissive body comprising a binary sulfide and a ternary sulfide said ternary sulfide having two cation types, a first one selected from the group consisting of metal cations, a second one selected fro the group consisting of the lanthanum series cations comprising the steps of:
reacting the two cation types with a material which when reacted provides a source of sulfide anions to convert all of said first cation type and a first portion of said second cation type into the ternary sulfide, and reacting a second remaining portion of said second cation type into the binary sulfidel, said binary sulfide forming a solid solution with said ternary sulfide with said metal cations and lanthanum series cations selected from those which will form a binary sulfide ternary sulfide solution; and
forming the binary sulfide and ternary sulfide into the optically transmissive body.

4,765,932

FUEL SUPPLY DEVICE FOR CARBURETORS

Tetsuo Muraji, Odawara, Japan, assignor to Mikuni Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1987, Ser. No. 94,586
Claims priority, application Japan, Sep. 10, 1986, 61-138632[U]
Int. Cl.[4] F02M *7/16*
U.S. Cl. 261—27 11 Claims



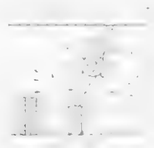
1. A fuel supply device for carburetors comprising a suction bore having therein a stationary venturi and a variable venturi provided on the downstream side of said stationary venturi and made capable of generating a negative pressure higher than in said stationary venturi; a fuel passageway opened at one end in said variable venturi and connected at the other end to a fuel supply source through a jet; a fuel flow rate controlling means provided in the course of said fuel passageway to control the fuel flow rate through said fuel passageway; a negative pressure passageway opened at one end in said stationary venturi, connected at the other end to said fuel passageway between said jet and fuel flow rate controlling means and having an upright part between both ends; a level sensor arranged adjacent to said negative pressure passageway in a predetermined height position of the upright part of said negative passageway; a fuel pump provided within the fuel passageway between the connecting part of said fuel passageway with the negative pressure passageway and said fuel flow rate controlling means; a first control circuit connected between said level sensor and said fuel flow rate controlling means and capable of controlling the operation of said fuel flow rate controlling means so that the fuel column to be formed in the upright part of said negative pressure passageway by receiving an output signal from said level sensor may be maintained at said predetermined height; and a second control circuit connected to said first control circuit and said fuel pump and capable of varying the output of said fuel pump in response to the fuel flow rate to be determined by said fuel flow rate controlling means.

4,765,933

CARBURETOR

Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Jul. 16, 1987, Ser. No. 74,043
Claims priority, application Japan, Jul. 24, 1986, 61-172767
Int. Cl.[4] F02M *17/04*
U.S. Cl. 261—44.6 2 Claims



1. A carburetor having an intake passage for supplying air to an internal combustion engine, a fuel nozzle disposed at one side portion of said intake passage and adapted to spray fuel into said intake passage, and a butterfly valve disposed in said intake passage downstream of said fuel nozzle, said butterfly valve comprising a first valve plate portion for opening and closing a portion of said intake passage adjacent to said fuel nozzle and a second valve plate portion for opening and closing a portion of said intake passage located farther from said fuel nozzle, means to first open said first valve plate portion from a position of closing said intake passage up to a predetermined angle, and, when said first valve plate portion is opened by more than said predetermined angle, to open said second valve plate portion from a position of closing said intake passage, a small diameter valve shaft and a hollow valve shaft for rotating said first and second valve plate portions, said valve shafts extending concentrically and having springs that constantly urge said valve plate portions in the direction of closing the same.

4,765,934

POLYSTYRENE BEAD EXPANSION PROCESS

Steven E. Nazar, Toronto; Jacob Leidner, North York, and Ferdinand M. Sviridys, Scarborough, all of Canada, assignors to Dominion Al-Chrome Corporation, Toronto, Canada

Filed Aug. 19, 1987, Ser. No. 86,875
Int. Cl.[4] C08J *9/24;* B29C *35/12*
U.S. Cl. 264—26 11 Claims

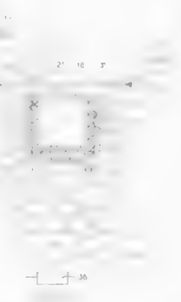
1. A method of forming a consolidated foam structure within an enclosed space, which comprises:
providing in said enclosed space beads of foamable synthetic thermoplastic polymer capable of expansion to a fully-foamed state and an aqueous solution of a water-soluble salt in the weight proportion of about 25 to about 75 wt. % of the thermoplastic polymeric beads substantially uniformly distributed over the surface of the beads, and
applying microwave energy to said aqueous solution to boil the same and cause expansion and cohesion of said beads into a foam structure.

4,765,935

METHOD FOR FOAMING INSULATIONS IN REFRIGERATORS AND THE LIKE

Carlo Fiorentini, Caronno Pertusella Varese, Italy, assignor to AFROS S.p.A., Varese, Italy

Filed Jan. 20, 1987, Ser. No. 4,495
Claims priority, application Italy, Jan. 21, 1986, 19130 A/86
Int. Cl.[4] B29C *45/77, 45/78, 67/20*
U.S. Cl. 264—40.5 10 Claims



1. A method for producing insulation comprised of foamed plastic materials in structures such as cabinets and doors of coolers characterized by spaced apart outer and inner walls, comprising the steps of:
feeding a metered quantity of a foamable mixture into the spaces between the outer and inner walls of such structures positioned in a foaming jig; letting the foamable mixture expand until it fills the aforesaid spaces;

VOL 1093 ISS 4 AG 23 1988 UMI

sensing change in value for at least one of the foaming process parameters and memorizing data in a data processing unit during each foaming operation;

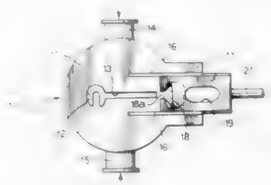
comparing said sensed parameter with a reference parameter memorized in the data processing unit, and emitting a control signal by said data processing unit to control the removal of the structure from the foaming jig, after the sensed value of said at least one process parameter has undergone a variation of a pre-established quantity with respect to a reference value of said reference parameter.

4,765,936

METHOD FOR THE MANUFACTURE OF A WEATHER STRIP FOR MOTOR VEHICLES

Guido Ballocca, Turin, Italy, assignor to S.A.I.A.G. S.p.A., Cirie, Italy

Filed Apr. 3, 1986, Ser. No. 848,007
Claims priority, application Italy, Apr. 3, 1985, 67329 A/85
Int. Cl.[4] B29C *47/56*
U.S. Cl. 264—46.1 1 Claim



1. A method for the manufacture of a weather strip for motor vehicles, of the type including a profiled section having a cross-section in the form of a web with an enlarged end or head portion, the transverse extent of the web of the profiled section being variable between a minimum value and a maximum value in a predetermined manner along the length of the weather strip, wherein the method includes the steps of:

extruding an extrudate including a tab part with a transverse extent greater than said maximum value;

dividing the tab immediately after extrusion into first and second flows of extruded material, the first flow having a cross-section with an area at least equal to the area of the cross-section of the profiled section of the weather strip to be formed;

altering the proportions in which the tab is divided into the first and second flows in dependence on the advance of the extrudate, in correspondence with the variations in the transverse extent of the web of the profiled section which it is desired to form, and

gradually moulding a transverse distal portion of the first flow adjacent the second flow so as to give it the uniform cross-section of the head portion of the profiled section regardless of the transverse extent of the web.

4,765,937

METHOD OF PREPARING HIGH STRENGTH AND MODULUS POLY(VINYL ALCOHOL) FIBERS

Soong-Hyu Hyon, and Yoshito Ikada, both of Uji, Japan, assignors to Biomaterials Universe, Inc., Kyoto, Japan

Filed Mar. 23, 1987, Ser. No. 28,943
Claims priority, application Japan, Mar. 24, 1986, 61-66136
Int. Cl.[4] D10F *6/14*
U.S. Cl. 264—185 6 Claims

1. A method of preparing high strength and modulus poly(-vinyl alcohol) fibers, comprising the steps:

(a) forming a solution of poly(vinyl alcohol) in a mixed solvent from an organic solvent and water having a mixing ratio ranging from 90:10 to 10:90 (organic solvent:water) by weight,

(b) extruding the solution with dry, wet, or the combined dry-wet spinning method to yield fibers,

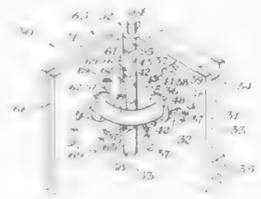
(c) drawing the fibers.

4,765,938

APPARATUS AND METHOD FOR THE APPLICATION OF A PLASTIC LINER TO A FLANGED PIPE ELBOW

Daniel E. Schmidt, Midland, and Robert P. Moeller, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 781,815, Sep. 30, 1985, abandoned. This application Feb. 25, 1987, Ser. No. 16,973
Int. Cl.[4] B29C *45/14, 45/67, 45/73*
U.S. Cl. 264—269 9 Claims



1. An apparatus comprising: a first clamping platen, the first clamping platen having a first face, the first clamping platen defining a passageway adapted to receive and transmit heat plastified synthetic resinous thermoplastic material through said first face; a clamping means in cooperative combination with said first face, said clamping means adapted to engage a flange of a pipe elbow and maintain the flange of the pipe elbow in sealing engagement with said first face in a location wherein material from the resin receiving passageway can enter the elbow; a second clamping platen having a first face, the first and second platens being hingedly affixed to each other, the second clamping platen being selectively positionable relative to the first platen wherein the first and second platens are generally pivoted relative to one another; the second platen having disposed thereon a hollow arcuate mandrel adapted to enter and be removed from a passageway within the pipe elbow clamped on the first face of the first platen with the second platen pivoting relative to the first platen; the mandrel having a terminal end remote from the first face of the second platen, the terminal end of the mandrel adapted to engage a portion of the first face of the first platen in a region of the receiving passageway such that the receiving passageway is adapted to communicate with a space defined between the elbow and the mandrel; means for discharging cooling water into the hollow mandrel and for withdrawing the cooling water from the mandrel, the first face of the second platen having associated therewith clamping means adapted to engage the flange of the pipe elbow clamped to the first face of the first platen; and means to pivotally position the second platen relative to the first platen.

8. A method for the lining of pipe elbows with a synthetic resinous thermoplastic material, the method comprising clamping a flanged elbow between first and second pivotally attached platens, the elbow being clamped by a first flange of the elbow on the first platen, inserting an arcuate mandrel supported by the second platen into the elbow clamped on the first platen, clamping the receiving flange of the elbow on the second platen, injecting a heat plastified synthetic resin into a space defined between the mandrel and elbow, cooling the injected synthetic resinous material to a temperature below its thermoplastic temperature to form a lining on the elbow, unclamping the flange of the elbow adjacent the mandrel supporting platen, withdrawing the mandrel from the elbow and unclamping the remaining clamped flange of the elbow.

4,765,939

PROCESS FOR PREPARING ULTRATHIN POLYMETHYLMETHACRYLATE POLYMER FILMS

Rachel S. Kohn, Springfield, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Filed Oct. 10, 1986, Ser. No. 917,806
Int. Cl.[4] B29C *39/02;* C08F *120/18*
U.S. Cl. 264—298 29 Claims

1. A process for preparing a pinhole-free, polymethylmethacrylate polymer film having a thickness of about 400 angstroms or less wherein the process comprises:

(a) preparing a casting solution containing a polymethylmethacrylate polymer in a mixture of lower and higher alkyl acetates;

(b) depositing the casting solution on water to form a free-standing film; and

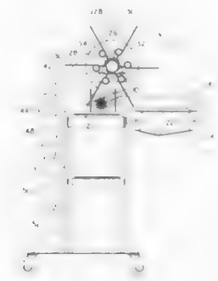
(c) removing the film from the water.

4,765,940

METHOD OF TRANSPORTING AND FORMING TAPERED ENDS ON PIQUETS

Peter A. Circelli, Delmar, and Adolph K. Praemassing, Earlton, both of N.Y., assignors to American Technical Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 752,725, Sep. 21, 1984, abandoned. This application Dec. 22, 1986, Ser. No. 944,004
Int. Cl.[4] B29C *53/02*
U.S. Cl. 264—339 3 Claims



1. In the method for transferring artificial tree piquets from a first conveyor at the exit end of a piquet-making machine to a second conveyor traveling at right angles to the first and for thereafter forming tapered ends on the piquets, the steps of causing formed piquets to travel on said first conveyor until they engage a limit switch at the end of said conveyor, causing rotary wheel means having radially-extending fingers circumferentially spaced around its periphery to rotate in response to actuation of said limit switch whereby the rotary wheel means will push a piquet from the first conveyor to the second conveyor, and while said piquets travel on said second conveyor forming tapered ends on the same.

4,765,941

THICKNESS CONTROL SYSTEM FOR AN EXTRUSION COATING APPARATUS

John D. Anthony, Jr., Wilmington, Del.; Kenneth W. Leffew, Kennett Square, Pa., and Joseph D. Trentacosta, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 646,175, Aug. 30, 1984, abandoned. This application Mar. 26, 1987, Ser. No. 31,170
Int. Cl.[4] B29C *47/92*
U.S. Cl. 264—40.1 17 Claims

1. An extrusion coating apparatus comprising:

a first and a second die member, one of which has a flexible lip thereon, the dies, when mounted in spaced-apart confronting relationship, cooperate to define an elongated extrusion slot having a slot thickness dimension;

a heat responsive expansion element mounted in the one of the dies in an operative relationship with the flexible lip thereon, the element being responsive to the flow of an electric current to expand to an extent corresponding to the magnitude of the current to commensurately modify the thickness dimension of the slot;

an adaptive temperature control network for maintaining the temperature of the heat responsive element within a predetermined range of a predetermined temperature set point corresponding to a predetermined slot thickness dimension by controlling the magnitude of the current permitted to flow through the heat responsive element;

a gauge for monitoring the thickness of an extrudate emanating from the extrusion slot and for generating a signal representative thereof; and,

means responsive to the signal representative of the thickness of the extrudate for generating a required change in the temperature set point to produce an updated temperature set point.



13. A method for controlling the thickness of film from an extrusion die having opposing surfaces forming an opening therebetween, one surface being adjustable to control the width of the opening, and a plurality of thermal die adjusting bolts including electrical heating means for adjusting the size of said bolts and said opening comprising the steps of:

measuring the thickness of film passing through the die opening and providing a signal proportional to the thickness;

measuring the temperature of said bolts and providing a signal proportional to the bolt temperature;

converting the thickness measurement signal into a required change in a temperature reference signal to produce an updated temperature reference signal; and using an adaptive temperature control arrangement, comparing the updated temperature reference signal with the bolt temperature signal and providing a difference signal and controlling the heating of said bolts in accordance with said difference signal to cause said bolt temperature signal to reach said reference signal and maintain the thickness of the film at a predetermined uniform dimension.

4,765,942

METHOD OF CONSOLIDATING THERMOPLASTIC POLY(AMIDE-IMIDE) COMPONENTS

Stephen Christensen, King County, Wash.; Jay O. Rakel, Dupage County, Ill., and Donald J. Ayers, Snohomish County, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1986, Ser. No. 913,525
Int. Cl.[4] B29D *9/00*
U.S. Cl. 264—510 13 Claims

1. A method of consolidating a composite article formed of

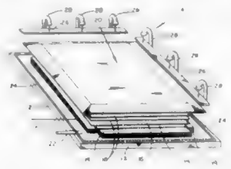
VOL 1093 ISS 4 AG 23 1988 UMI

a fibrous reinforcing material and a thermoplastic poly(amide-imide) resin that includes a solvent, comprising the steps of:

heating the article to a first temperature, wherein said first temperature is greater than the boiling point of the solvent but less than the temperature at which said resin begins to advance in molecular weight and increase in viscosity;

maintaining the article at said first temperature while removing substantially all of the solvent from the article;

heating the article to a second temperature wherein at said



second temperature the viscosity of the resin and remaining solvent is minimized;

applying a pressure differential that acts upon said article at a sufficiently rapid rate of increase such that said article is compressed and said resin flows and fully impregnates said reinforcing material to form a substantially void-free composite; and

cooling said article while maintaining said pressure differential such that residual solvent remaining in the article does not volatilize.

4,765,943

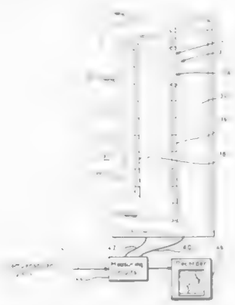
THERMAL NEUTRON DETECTORS AND SYSTEM USING THE SAME

Joseph T. DeLorenzo, Loudon County; Francis E. Levert; James C. Robinson, both of Knox County, and Robert W. Hendricks, Anderson County, all of Tenn., assignors to Technology for Energy Corporation, Knoxville, Tenn.

Filed Nov. 29, 1985, Ser. No. 802,780

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—154 17 Claims



13. A solid state thermal neutron detector for the mapping of thermal neutron fluxes in the presence of a gamma ray flux in an environment of elevated temperature, which comprises:

an elongated cylindrical sheath fabricated of a material resistant to such environment, said sheath being provided with closures at opposite ends to physically isolate contents of said sheath from such environment;

a plurality of cylindrical uranium-containing pellets of a substance resistant to such elevated temperature closely received within said sheath, alternate of said uranium-containing pellets being partially enriched in uranium-235 and the other of said uranium-containing pellets being depleted in uranium-235, with all of said uranium-containing pellets being of substantially uniform mass to substantially equally absorb energy of such gamma ray flux;

a cylindrical pellet of insulator material closely received in said sheath and interposed between each of said alternating uranium-containing pellets, said insulator material being an effective thermal insulator between said uranium-containing pellets in such elevated temperature environment;

an elongated cylindrical sheathed heater unit disposed substantially on the axis of said sheath and threaded through said uranium-containing pellets and said insulator pellets, said heater unit being provided with a high temperature heater portion disposed within each of said uranium-containing pellets partially enriched in uranium-235, and with a lower temperature heater portion disposed within each of said uranium-containing pellets depleted in uranium-235;

a plurality of elongated cylindrically sheathed differential thermocouples symmetrically disposed about said heater unit and threaded through at least a portion of said uranium-containing pellets and said insulator pellets, each of said thermocouples having a hot junction and a cold junction, each of said thermocoupoles disposed axially along said sheath whereby each of said uranium-containing pellets partially enriched in uranium-235 contains said hot junction of a thermocouple and an adjoining uranium-containing pellet depleted in uranium-235 contains said cold junction of that thermocouple;

an adjustable and regulated heater supply attached to said heater unit whereby a selected temperature can be established at each said hot and cold junctions for calibration of said differential thermocouples;

measuring means attached to said differential thermocouples to determine output voltages from said differential thermocouples, said output voltages being function of differential temperature between said hot junction and said cold junction of a particular differential thermocouple and thus a function of such thermal neutron flux at said hot junction; and

wherein said sheath is radially swaged against all of said pellets sufficient to provide uniform heat transfer throughout said uranium-containing pellets to said thermocouples, and between said heater unit and said thermocouples.

4,765,944

DEVICE FOR THE TRANSVERSE RETENTION OF A MOVABLE TUBULAR CONDUIT IN A PRESSURIZED WATER NUCLEAR REACTOR

Alain Heuzé , Paris, and Claude Cauquelin, Neauphles le Chateau, both of France, assignors to Framatome, Courbevoie, France

Filed Feb. 3, 1987, Ser. No. 10,595

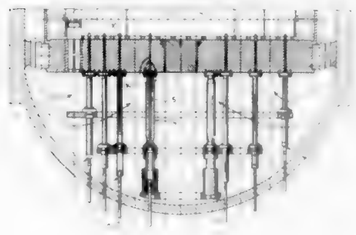
Claims priority, application France, Feb. 3, 1986, 86 01454

Int. Cl.[4] G21C *17/10, 19/20*

U.S. Cl. 376—254 4 Claims

1. In a pressurized water nuclear reactor comprising a vessel having a rounded bottom head comprising through-passages for measuring devices, a core held in said vessel composed of fuel assemblies each comprising a guide tube and resting on a lower core plate fixed in said vessel above said bottom head and guiding devices disposed inside said vessel between said bottom head and said lower core plate, each of said guiding devices defining with a corresponding passage in said bottom head and a corresponding passage through said lower core plate a rectilinear, cylindrical internal passage aligned with a guide tube of an assembly for receiving an axially displaceable neutron measuring device in the form of a tubular conduit, called glove finger, the diameter of said glove finger being substantially smaller than the diameter of said internal passage,

the improvement consisting of device for the transverse retention of said glove finger disposed within said internal passage and comprising, over at least part of the length of said internal passage, a retaining tube having a substantially constant thickness and exhibiting radial deformations regularly distributed over the length thereof in such a manner that the inner surface of said tube defines a cylindrical free passage having straight generatrices, coaxial with said internal passage and inscribed in said inner surface along the entire length of said tube, the diameter of





which is smaller than the external diameter of said glove finger, there being a cylindrical surface having straight generatrices, coaxial with said internal passage and circumscribed around said retaining tube along the entire length thereof, the diameter of said tube being smaller than the minimum diameter of said internal passage.

4,765,945

METHOD AND APPARATUS FOR MEASURING THE FILLING LEVEL IN A REACTOR PRESSURE VESSEL OF A BOILING-WATER REACTOR

Albin Walleser, Offenbach, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany

Filed Nov. 25, 1986, Ser. No. 934,699

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1985, 3541613

Int. Cl.[4] G21C *17/00*

U.S. Cl. 376—258 4 Claims

1. Method for measuring the filling level of a liquid in a reactor pressure vessel (1) of a boiling-water reactor, having an upper steam-filled subspace (12) in the reactor pressure vessel (1), a lower liquid-filled subspace (11) in the reactor pressure vessel, and a reference column (2) connected to the steam-filled upper subspace (12), which comprises:

measuring the pressure difference (Δ_p) between the lower subspace (11) and the reference column (2), measuring the ambient temperature in the vicinity of the reference column (2) and determining the liquid density (ρ_0) in the reference column (2) therefrom with known quantities,

measuring the temperature within the liquid-filled subspace, determining the steam density (ρ_2) in the upper subspace from the measured pressure, determining the



liquid density (ρ_1) in the lower subspace, and subsequently determining the filling level (H) in the reactor pressure vessel (1) according to the equation

$$H = h_o + \frac{g \cdot a(\rho_0 - \rho_2) - \Delta p}{g(\rho_1 - \rho_2)}$$

from the liquid densities (ρ_1), (ρ_0) in the lower subspace (11) and in the reference column (2) and from the steam density (ρ_2) in the upper subspace (12), and from the measured pressure difference (Δ_1) and from taking into account time-dependent transient alterations of said values of (ρ_0, ρ_1 and ρ_2) by measuring the pressure and the pressure change over time in the upper steam-filled subspace (12), the reactor power output and the temperature of the liquid in the reactor pressure vessel (1) and by considering the time difference between the ambient temperature change and the density change in the reference column, determining therefrom more accurately the liquid density (ρ_1) in the lower subspace (11) and the steam density (ρ_2) in the upper subspace (12) with the measured pressure in the steam space (12) and with known dimensions and quantities, wherein

h is the constant vertical distance between the bottom of the reactor pressure vessel and a connecting flange (13), said flange belonging to one of the input lines of a pressure difference meter (3) and being connected to the lower subspace (11), and

a is the vertical distance between the two connecting flanges (13 and 14), the latter belonging to a pressure input line of the top of the reference column and being connected to the upper subspace (12), and

g is the corresponding gravity constant of the earth.

3. Apparatus for measuring the filling level of a liquid in a reactor pressure vessel (1) of a boiling-water reactor, the reactor pressure vessel having a liquid system, an upper steam-filled subspace (12) and a lower subspace (11), comprising a reference column (2) having a top, a vessel (21) disposed at said top of said reference column and connected to said steam-filled upper subspace (12), a pressure difference measuring device (3) connected between said liquid-filled lower subspace (11) and said reference column (2), a pressure measuring device (8) directly connected to said steam-filled upper subspace (12), an evaluation unit (4) for determining a filling level in the reactor pressure vessel (1), electric lines connecting said pressure difference measuring device (3) and said pressure measuring device (8) to said evaluation unit, a temperature sensor (6) disposed outside said reference column (2) and connected to said evaluation unit (4), a time delay member (7) connected between said evaluation unit (4) and said temperature sensor

VOL 1093 ISS 4 AG 23 1988 UMI

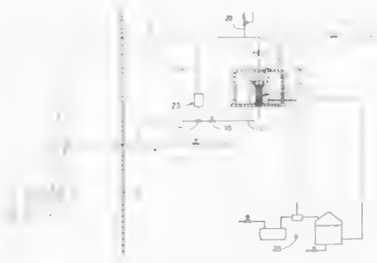
(6) for bridging the time difference between the temperature change and the density change in said reference column (2), a further temperature sensor (9) disposed in the liquid system of the reactor pressure vessel (1) and connected to said evaluation unit (4), A data line (10) for reactor output power connected to said evaluation unit (4), said evaluation unit (4) containing a time delay member and at least one comparator for determining a change over time of the pressure measured by said pressure measuring device (8), said evaluation unit (4) having an output supplying a value for the filling level in the reactor pressure vessel (1), and a control member (5) connected to said output of said evaluation unit.

4,765,946

INTRINSICALLY SAFE EMERGENCY COOLING DEVICE FOR A PRESSURIZED-WATER NUCLEAR REACTOR

Philippe Dagard, Marly Le Roi, and Michel Couturier, Le Vesinet, both of France, assignors to Framatome, Courbevoie, France

Filed Jun. 30, 1986, Ser. No. 880,261
Claims priority, application France, Jul. 1, 1985, 85 10023
Int. Cl.[4] G21C *15/18*
U.S. Cl. 376—282 4 Claims



1. In a pressurized-water nuclear reactor incorporating a primary circuit, in which the pressurized cooling water of the reactor circulates and, in at least one steam generator, ensures the heating and vaporization of feed water, a self-regulating emergency cooling device comprising an auxiliary circuit which feeds the steam generator and is put into operation in the event of an accident in the reactor and which incorporates a steam condenser located at a higher level than a relatively low level of the water of the steam generator, and pipelines which respectively connect the steam outlet of the generator to the inlet of the condenser and the outlet of the condenser to the feed water inlet in the steam generator, wherein the condenser incorporates tubes submerged in water which is contained in a tank and the heating and boiling of which ensure the cooling of the tubes of the condenser, and the cooling device further comprises a passive means of adjusting the flow in the auxiliary feed circuit, consisting of:

(a) an adjustable valve having a shut-off element to make it possible to open to a varying extent the valve arranged on the pipe connecting the outlet of the condenser to the inlet of the steam generator in the auxiliary circuit;

(b) a cylinder, a chamber of which contains a movable piston returned by an elastic means and which communicates on one side of the piston with the pipeline connecting the steam outlet of the steam generator to the inlet of the condenser; and

(c) a coupling means between the piston and the shut-off element of the adjustable valve, to allow this shut-off element to be shifted selectively in the opening direction and closing direction as a function of the steam pressure at the outlet of the steam generator.

4,765,947

PROBE GUIDE DUCT DEVICE FOR A NUCLEAR REACTOR

Michel Babin, Pantin, and Guy Deafontaines, Puteaux, both of France, assignors to Framatome, Courbevoie, France

Filed Dec. 9, 1986, Ser. No. 939,833
Claims priority, application France, Dec. 13, 1985, 85 18495
Int. Cl.[4] G21C *17/10*
U.S. Cl. 376—347 5 Claims



1. In a nuclear reactor having:

a pressure resistant vessel for containment of a pressurized coolant,

a removable cover for said vessel,

a core located in said vessel, arranged to be upwardly traversed by a flow of said coolant, and

internal equipment located between said core and said cover and including a perforated upper core plate in abutting contact with said core on operation of said reactor and an upper equipment plate located near said cover,

a guiding device for slidably guiding flexible probes of elongated shape wihtin said vessel, comprising :

at least one sleeve sealingly projecting through and fixed to said cover,

one upper tubular column corresponding to each sleeve, located within said sleeve and having a lower end in close proximity to said upper equipment plate,

a plurality of lower tubular columns extending vertically across said internal equipment and distributed in areas where said coolant flow has a reduced turbulence,

and a set of probe guide ducts in greater number than the number of said lower tubular columns, said set penetrating into said vessel along and within the upper tubular column, being fractionated at the lower end of said upper tubular column into a plurality of bundles each directed for passing downwardly within and along a respective one of said lower tubular columns and the guide ducts in each of said bundles being mutually separated at a lower end of said respective lower tubular column and each of said guide ducts being directed along a substantially horizontal path at a horizontal level in immediate vicinity to said core to a respective terminal position where it has a closed distal end.

4,765,948

COOLANT CIRCULATION SYSTEM FOR A LIQUID METAL NUCLEAR REACTOR

Robert A. DeLuca, Newton Centre, and George Garabedian, Boston, both of Mass., assignors to Stone & Webster Engineering Corporation, Boston, Mass.

Filed Aug. 29, 1986, Ser. No. 902,228
Int. Cl.[4] G21C *15/24*; H02K *44/02*; G21D *1/04*
U.S. Cl. 376—404 22 Claims



1. A liquid metal circulation system comprising an electromagnetic pump comprised of:

(a) an elongated cylindrical pump support housing;

(b) a cylindrical pressure dome structure coaxially situated and supported within said pump support housing, having a closed, hemispherical upper end and an open, cylindrical lower end;

(c) a cylindrical pump coaxially situated within said pressure dome structure including

(1) a central core body of laminated transformer steel having six peripherally equally spaced helical grooves on its outer surface extending the entire length of said central core body,

(2) a multiplicity of square, ceramic insulated copper wires situated in said helical grooves,

(3) electrical leads extending from the terminal ends of said square copper wires through the upper end of said pressure dome structure and to a three-phase low voltage/high amperage power source,

(4) an austenitic stainless steel jacket covering the outer surface of said central core body and covering said helically coiled square copper wires, said outer stainless steel jacket and the inner surface of said pressure dome structure defining an annular flow passage, said stainless steel jacket being electrically insulated from said square copper wires and said central core body by glass cloth-synthetic mica insulation while maintaining sufficient thermal contact to permit heat transfer from the copper wires and central core body to the annular flow passage,

(5) a plurality of vertical baffles extending into said annular flow passage and equally spaced radially about said central core body, which baffles are effective to inhibit rotational flow or liquid metal about said central body in said annular flow passage,

(6) a central flow cylinder extending longitudinally through the center of said central core body; and

(d) a discharge pipe connected to the lower end of the central flow cylinder and extending to the outside of said cylindrical pump support housing.

4,765,949

SPACING GRID FOR NUCLEAR FUEL ASSEMBLY

Jean-Pierre Denizon, Crapoune, and Bruno Monseca, Lyons, both of France, assignors to Framatome and Compagnie Generale des Matières Nucléaires, both of Courbevoie, France

Filed Apr. 1, 1987, Ser. No. 32,689
Claims priority, application France, Apr. 2, 1986, 86 04708
Int. Cl.[4] G21C *3/34*
U.S. Cl. 376—443 9 Claims



1. A spacer grid for spacing longitudinally extending fuel rods of a nuclear fuel assembly, comprising:

at least two interleaved sets of plates, each set consisting of mutually parallel plates and the plates of two sets being at an angle to each other for defining passages for said fuel rods, and

an external belt formed as a strip having parallel edges provided with fins folded along said edges, said belt having flat faces and corners between adjoining ones of said flat faces, all said corners being devoid of openings and said plates having ends securely connected to said belt,

wherein two at least of said corners each consists of a rounded portion to be located inside of imaginary extensions of said flat faces of the belt between the corners and wherein each of said two at least of said corners is joined to said edges by flat gussets sloping towards the inside of said belt, terminating short of said edges.

4,765,950

PROCESS FOR FABRICATING PARTS FROM PARTICULATE MATERIAL

Kenneth P. Johnson, Diamond Bar, Calif., assignor to Risi Industries, Inc., Chula Vista, Calif.

Filed Oct. 7, 1987, Ser. No. 105,246
Int. Cl.[4] B22F *1/00*
U.S. Cl. 419—2 24 Claims

1. A method of manufacturing sintered parts of particulate material consisting essentially of:

(i) mixing together predetermined amounts of powdered particulate material and a binder to produce a liquid slurry mixture, said binder being comprised of at least two components having differing melting points, at least a lower melting point component and a higher melting point component, with the lower melting point component remaining in a liquid state, becoming semi-solid or relatively soft upon cooling to ambient temperature;

(ii) molding the mixture of particulate material and binder into a part of desired shape by injecting said mixture under heat and pressure into a mold, and allowing said mixture to solidify;

(iii) removing the lower melting point component of the binder by a liquid solvent which selectively dissolves the lower melting point component and leaves at least the higher melting point component of the binder undissolved, rendering said part porous and free of cracks;

(iv) removing the higher melting point component of the binder by heating at a temperature below the final sintering temperature to thereby provide a part which is essentially free of binder; and

VOL 1093 ISS 4 AG 23 1988 UMI

(v) subjecting the binder-free part to a final sintering temperature in order to complete the sintering.

4,765,951

PROCESS FOR PRODUCING TUNGSTEN HEAVY ALLOY SHEET BY DIRECT HYDROMETALLURGICAL PROCESS

Preston B. Kemp, Jr., Athens, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 14, 1988, Ser. No. 143,873
Int. Cl.[4] B22F *9/22*
U.S. Cl. 419—47 1 Claim

1. A process for producing a sheet of tungsten heavy alloy, said process comprising:

(a) forming a solution of chemical compounds containing metal values of said alloy in the correct proportion as in said alloy;

(b) forming from said solution a precipitate of said compounds containing said metal values;

(c) removing said precipitate from the resulting liquor and forming a planar cake of said precipitate;

(d) drying said cake;

(e) reducing the compounds in said cake to their respective metals wherein each of the resulting reduced particles is an admixture of the alloy components; and

(f) sintering said cake to a density equal to or greater than about 90% of the theoretical density of said alloy to form said sheet.

4,765,952

PROCESS FOR PRODUCING TUNGSTEN HEAVY ALLOY SHEET BY A LOOSE FILL HYDROMETALLURGICAL PROCESS

Preston B. Kemp, Jr., Athens, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jan. 14, 1988, Ser. No. 143,865
Int. Cl.[4] B22F *9/22*
U.S. Cl. 419—47 3 Claims

1. A process for producing tungsten heavy alloy sheet, said process comprising:

(a) crystallizing from solution, compounds of the component metals of said alloy and drying said compounds;

(b) introducing said compounds into a container so that said compounds are uniformly packed in said container, said container being made of molybdenum coated with a ceramic, said container having the same shape as the sheet which is to be made;

(c) reducing said compounds to their respective metals; and

(d) sintering said metal powder to a density equal to or greater than about 90% of the theoretical density of said alloy to form said sheet.

4,765,953

HIGH NITROGEN CONTAINING DUPLEX STAINLESS STEEL HAVING HIGH CORROSION RESISTANCE AND GOOD STRUCTURE STABILITY

Carl P. U. Hagenfeldt, Sandviken; Sven-Olof Bernhardsson, Falun, and Erik V. S. Lagerberg, Sandviken, all of Sweden, assignors to Santrade Limited, Lucerne, Switzerland

Filed Sep. 5, 1986, Ser. No. 903,710
Claims priority, application Sweden, Sep. 5, 1985, 8504131
Int. Cl.[4] C22C *38/44*
U.S. Cl. 420—65 8 Claims

1. A high nitrogen-containing duplex stainless steel with high corrosion resistance, good structure stability, and good workability and weldability, characterized in that the alloy contains, in % by weight, max 0.05% C, 23–27% Cr, 5.5–9% Ni, 0.25–0.40% N, max 0.8% Si, max 1.2% Mn, 3.5–4.9% Mo, max 0.5% Cu, max 0.5% W, max 0.010% S, up to 0.5% V, up to 0.18% Ce, balance Fe with incidental impurities and in which the contents of the alloying elements are adjusted that the following conditions are fulfilled:

(a) % Cr+3.3 (% Mo)+16 (% N)−1.6 (% Mn)− 122 (% S)>39.1;



$$\frac{\%\ M}{\%\ N} < 3; \quad \text{(b)}$$

(c) $65<71.1+9\ (7.5-\%\ Ni)+190\ (0.03-\%\ C)+160\ (0.25-\%\ N)+5.3\ (\%\ Cr-25)+8\ (\%\ Mo-4)<75$;

$$\%\ N \geq \frac{1075 - 16(\%\ Cr\ - 25) + 52(\%\ Mo - 4)}{4064} \quad \text{(d)}$$

(e) the ferrite content after solution heat treatment at about 1075° C. is between 30 and 55%; and

$$\frac{\%\ Cr + (\%\ Mo)^{1.8} + 5\ \%\ Si + \%\ W + 0.2\ \%\ Mn}{50\ \%\ N + \%\ ferrite} < 0.75 \quad \text{(f)}$$

4,765,954

RAPIDLY SOLIDIFIED HIGH STRENGTH, CORROSION RESISTANT MAGNESIUM BASE METAL ALLOYS

Santosh K. Das, Randolph, and Chin-Fong Chang, Lake Hiawatha, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 30, 1985, Ser. No. 781,620
Int. Cl.[4] C22C *23/02, 1/04*
U.S. Cl. 420—403 15 Claims



1. A rapidly solidified magnesium based alloy consisting essentially of the formula $Mg_{bal}Al_aZn_bX_c$ wherein X is at least one element selected from the group consisting of manganese, cerium, neodymium, praseodymium, yttrium and silver, "a" ranges from about 0 to 15 atom percent, "b" ranges from about 0 to 4 atom percent, "c" ranges from about 0.2 to 3 atom percent, the balance being magnesium and incidental impurities, with the proviso that the sum of aluminum and zinc present ranges from about 2 to 15 atom percent, said alloy having a microstructure comprised of a subtantially uniform cellular network of solid solution phase of a size ranging from 0.2–1.0 μm together with rccipitates of magnesium containing intermetallic phases of a ize less than 0.5 μm.

4,765,955

CO-BASE ALLOYS FOR ENGINE VALVES AND VALVE SEATS

Ritsue Yabuki, Iwatsuki; Junya Ohe, Urawa, and Sadao Saitoh, Ohmiya, all of Japan, assignors to Mitsubishi Kinzoku Kabushiki Kaisha, Japan

Continuation of Ser. No. 662,304, Sep. 13, 1984, abandoned. This application Sep. 2, 1986, Ser. No. 902,476
Claims priority, application Japan, Jan. 18, 1983, 58-6099
Int. Cl.[4] C22C *19/07*
U.S. Cl. 420—438 20 Claims

1. Co-base alloys for use in engine valves and valve seats of internal combustion engines, characterized by a Vickers hardness number of at least 310 at 800 degrees C., a thermal shock resistance of at least 8 cycles, each cycle consisting of a 15-minute heating at 700 degrees C. followed by water quenching, and a lead oxide corrosion value not greater than 0.039 $g/cm^2/hr$ after submersion for 1 hour in molten lead oxide, said alloys consisting of the following composition, by weight: 0.5–3.5% C; 0.1–3.0% Si; 10–37% Cr; 0.1–17.0% W, 0.1–10.0% Mo; 0.01–4.5% Ti; 0.01–5.5% Al; balance 42–77% Co; and incidental impurities.

4,765,956

NICKEL-CHROMIUM ALLOY OF IMPROVED FATIGUE STRENGTH

Gaylord D. Smith, Huntington; Jack M. Wheeler, Lesage, and Stephen C. Tassen, Huntington, all of W. Va., assignors to Inco Alloys International, Inc., Huntington, W. Va.

Filed Aug. 18, 1986, Ser. No. 897,746
Int. Cl.[4] C22C *19/05*
U.S. Cl. 420—445 14 Claims

1. A nickel-chromium alloy characterized by (i) enhanced fatigue properties as well as (ii) tensile properties and (iii) structural stability, said alloy consisting essentially of 6 to 12% molybdenum, 19 to 27% chromium, 2 to 5% niobium, up to 8% tungsten, up to 0.6% aluminum, up to 0.6% titanium, carbon present in an amount up to 0.03%, nitrogen present up to 0.03%, silicon up to 0.35%, the carbon, nitrogen and silicon being correlated such that the sum of % carbon+% nitrogen+1/10% silicon is less than about 0.035%, up to 5% iron and the balance nickel.

4,765,957

ALLOY RESISTANT TO SEAWATER AND OTHER CORROSIVE FLUIDS

John H. Culling, St. Louis, Mo., assignor to Carondelet Foundry Company, St. Louis, Mo.

Filed Dec. 29, 1986, Ser. No. 947,095
Int. Cl.[4] C22C *30/02*
U.S. Cl. 420—582 5 Claims

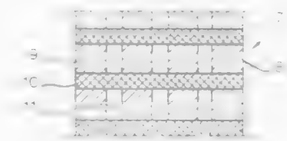
1. An air meltable, castable, fabricable, weldable, and non-magnetic alloy resistant to corrosion by chloride or other halide containing solutions, consisting essentially of between about 13.5% and about 29% by weight nickel, between about 23% and about 26% by weight chromium, between about 3.75% and about 6% by weight molybdenum, between about 2.95% and 4.5% by weight manganese, between about 3% and 6.39% by weight copper, between about 0.3% and 2.07% by weight columbium (niobium), between about 0 and about 1.5% by weight silicon, between about 0 and about 0.09% by weight carbon, between about 0.10% and about 0.45% by weight nitrogen, up to about 1% by weight vanadium, up to about 1% by weight titanium, up to about 5% by weight cobalt, up to about 0.3% by weight of rare earth components selected from the group consisting of cerium, lanthanum, and misch metal, and between about 28% and 48% by weight iron, the sum of the nickel content and cobalt content being between about 18.5% and 29% by weight, and the nickel content exceeds the chromium content by between about 0.5% and about 6% by weight (basis, the entire alloy).

4,765,958

PROCESS FOR INHIBITING THE CORROSION OF A MASS OF METAL IN CONTACT WITH AN ACID BATH CONTAINING FERRIC IONS

Daniel Tygat; Pierre Leferre, and Dominique Balthasart, all of Brussels, Belgium, assignors to Solvay & Cie, S.A., Brussels, Belgium

Filed Apr. 9, 1985, Ser. No. 721,935
Claims priority, application France, Apr. 16, 1984, 84 06098
Int. Cl.[4] C23F *11/04*
U.S. Cl. 422—12 9 Claims



1. A process for inhibiting the corrosion of a mass of metal in contact with an acid bath containing ferric ions, comprising circulating at least a part of the acid bath through a treatment chamber comprising alternating layers of (A) a fibrous member selected from the group consisting of non-graphitic carbon and graphite and (B) a member selected from the group consisting of iron and an iron alloy.

4,765,959

BLOOD CIRCULATING CIRCUIT FOR MEMBRANE-TYPE ARTIFICIAL LUNG, AND RESERVOIR FOR USE IN BLOOD CIRCULATING CIRCUIT

Hiromichi Fukasawa, Funabashi, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 439,422, Nov. 5, 1982, abandoned. This application Nov. 12, 1985, Ser. No. 797,776
Claims priority, application Japan, Nov. 13, 1981, 56-180983
Int. Cl.[4] A61M *1/18*
U.S. Cl. 422—48 10 Claims

1. An extra-corporeal blood circulating circuit, comprising:

a hollow-fiber membrane-type artificial lung in which volume fluctuation in the artificial lung due to a change in internal pressure in the artificial lung is substantially negligible;

a sealed, flexible first reservoir communicating with at least a blood collecting circuit on a blood receiving side of the artificial lung and a blood discharge circuit on a blood delivery side of the artificial lung, said first reservoir being deformable;

a capacity restricting enclosure for said first reservoir for adjustably restricting the capacity of said first reservoir, said capacity restricting enclosure having:

at least two opposing spaced apart plate members between which said first reservoir is disposed;

VOL 1093 ISS 4 AG 23 1988 UMI

slideable engaging means coupled to said opposing plate members for permitting an opposing plate member to be selectively movable relative to another of said opposing plate members to selectively vary the spacing or clearance therebetween; and

fixing means for fixing the position of said movable plate member relative to said another plate member as set by said slideable engaging means to fixedly set the spacing or clearance between said opposing plate members in order to cause said first reservoir always to contain the same limited and fixed predetermined selectable maximum volume of blood during circulation of blood through the blood circulating circuit;

a second, non-deformable reservoir;

communicating means for selectively communicating said second reservoir with said first reservoir;

said second reservoir including a transparent vessel for measuring and adjusting the amount of extra-corporeal circulating blood and indicating means attached to the transparent vessel for indicating the level of blood contained therein;



supporting means for adjustably supporting said second reservoir at a level higher than that of an uppermost edge of said first reservoir, and capable of adjusting said level of said second reservoir; and

means for supplying blood under pressure from said artificial lung to said first reservoir to cause said first reservoir to expand to said limited and fixed predetermined selectable maximum volume as defined by said capacity restricting enclosure so that said first reservoir is filled with said supplied blood and maintained at said limited and fixed predetermined selectable maximum volume, and blood from said first reservoir, responsive to an increase in blood pressure in said first reservoir after said first reservoir is filled to said selectable maximum volume, being forced to flow through said communicating means up to said second reservoir, the quantity of blood forced up to said second reservoir corresponding to said increase in blood pressure in said first reservoir, so that the level of blood in said second reservoir as indicated by said indicating means indicates the amount of blood circulating in the extra-corporeal blood circulating circuit.

4,765,960

APPARATUS FOR INSTALLING PIPE IN MULTIPIPE TYPE GAS-LIQUID CONTACT EQUIPMENT

Toshiaki Urata, Isehara, and Minato Tomikawa, Yokohama, both of Japan, assignors to Chiyoda Chemical Engineering & Construction Co., Ltd., Yokohama, Japan

Filed May 28, 1985, Ser. No. 738,314

Claims priority, application Japan, Jun. 5, 1984, 59-113938

Int. Cl.[4] B01T *8/00*

U.S. Cl. 422—49 7 Claims





1. An apparatus for installing a pipe in a pipe installation bore formed in a deck provided for pipe installation in multiple type gas-liquid contact equipment, comprising: a bush which can be mounted on an inner peripheral surface of a pipe installation bore; a cylindrical head to be provided on an upper end of a pipe, said head being capable of penetrating in conjunction with the pipe through said bush; and a collar member which can be fitted on an outer peripheral surface of said cylindrical head; wherein said cylindrical head has an engagement groove which is provided on the outer peripheral surface thereof, said engagement groove including a longitudinal groove which extends downwardly from an upper end of said cylindrical head and a lateral groove which extends horizontally, said lateral groove communicating with said longitudinal groove and being inclined with respect to a bottom surface of said collar member, and wherein said collar member has a projection which is formed on the inner peripheral surface thereof and cooperated with said engagement groove to permit adjusting and fixing of the length portion of the pipe below a deck, said lateral groove having first engaging means capable of engaging with second engaging means provided on said projection to prevent relative movement therebetween and said projection being capable of moving in said lateral groove of the engagement groove to adjust the length portion of the pipe below the deck and of engaging with said engagement groove such that said first engaging means and said second engaging means are brought into engagement with each other to fix the positioning of the pipe relative to the deck.

4,765,961

APPARATUS FOR DETECTION OF CERTAIN NITROGEN-CONTAINING GASES USING CHEMILUMINESCENCE

Harold I. Schiff, Toronto, Canada, and Donald H. Stedman, Englewood, Colo., assignors to The University of Michigan, Ann Arbor, Mich. and Scintrex Limited, Concord, Canada

Filed Apr. 30, 1984, Ser. No. 605,599

Int. Cl.[4] G01N *21/76, 21/77*

U.S. Cl. 422—52 9 Claims



1. Apparatus for detecting the presence of, and measuring, nitrogen gases in a gas sample, the apparatus comprising:

means defining a reaction region for receiving a gas sample;

a gas inlet positioned and arranged for supplying a gas sample to said means defining a reaction region;

a gas outlet positioned and arranged for removing a gas sample from said means defining a reaction region;

a luminol inlet positioned and arranged for transferring to said means defining a reaction region a luminol solution free from metal ions;

a porous material positioned and arranged to be substantially stationary by stationary support means in said means defining a reaction region, said porous material having a receiving portion thereof positioned in the vicinity of said luminol inlet and arranged to communicate and receive luminol solution from said luminol inlet, said porous material providing a path for the luminol solution to flow therethrough by wicking, in the presence of a gas sample, and providing a surface on which the gas sample reacts with the luminol solution while the luminol solution flows through said path;

a receiving reservoir positioned and arranged for receiving the luminol solution after flowing through said path of said porous material and reacting with the gas sample; and

photomultiplier means arranged in the vicinity of said means defining a reaction region, positioned and arranged for detecting and measuring chemiluminescence the luminol solution.

4,765,962

GAS TESTING VIAL

Ulrich Heim, Reinfeld, Fed. Rep. of Germany, assignor to Dräger werk AG, Fed. Rep. of Germany

Filed May 13, 1986, Ser. No. 862,701

Claims priority, application Fed. Rep. of Germany, May 14, 1986, 3517324

Int. Cl.[4] G01N *21/77, 31/22, 33/497*

U.S. Cl. 422—59 10 Claims

1. A test vial for the detection for gas components in air comprising: a tube having opposite closed ends which are openable to permit a passage of air through said tube; a pair of spaced apart separators in said tube, each separator being adjacent to one of said closed ends and being pervious to air passing through said tube; an amount of impregnated granular carrier substance in said tube between said separators, said impregnated granular carrier substance being impregnated with indicator material which changes color upon being exposed to the gas component; and an unimpregnated granular carrier substance in said tube between said separators, said impregnated and said unimpregnated granular carrier substances substantially filling the volume in said tube between said separators, the ratio between amounts of impregnated and



unimpregnated carrier substance, for a tube cross section per unit length, changing generally continuously from one of said separators to other of said separators.

4,765,963

APPARATUS FOR MEASURING IMPURITIES IN WATER

Yasukazu Mukogawa; Katsuhiko Tamura, and Takaaki Fukumoto, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1986, Ser. No. 911,354

Claims priority, application Japan, Sep. 24, 1985, 60-211572

Int. Cl.[4] G01N *31/02, 33/18, 35/08*

U.S. Cl. 422—68 2 Claims

1. An apparatus for continuously monitoring the level of filterable impurities in a flow of water comprising:

a sampling pipe having an outlet and an inlet in communication with a flow of water for continuously removing sample water from said flow;

means connected to said sampling pipe for maintaining a water pressure within said sampling pipe at a constant value;

filter means disposed at the outlet of said sampling pipe for filtering the sample water passing through said sampling pipe;

flow rate detecting means communicating with said apparatus downstream of said filter means for continuously detecting the flow rate of sample water passing through said filter means and generating a corresponding output as a function of time;

evaluating means coupled to said flow rate detecting means for determining ratios of the flow rate of the sample water passing through said filter means at predetermined times as compared to an initial flow rate of sample water passing through said filter means; and

means for recording said ratios.

VOL 1093 ISS 4 AG 23 1988 UMI

4,765,964

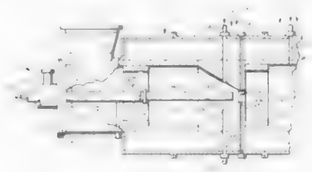
CARBON BLACK REACTOR HAVING A REACTOR THROAT

Mark L. Gravley, and E. Webb Henderson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 534,217, Sep. 20, 1983, abandoned, which is a continuation-in-part of Ser. No. 413,202, Aug. 30, 1982, abandoned. This application Jan. 22, 1985, Ser. No. 693,437

Int. Cl.[4] F01C *21/00*

U.S. Cl. 422—156 6 Claims



1. A carbon black reactor having a reaction flow path with a longitudinal axis, said carbon black reactor comprising

(a) means defining a generally cylindrical combustion zone having an upstream end and a downstream end;

(b) means defining a mixing zone characterized by a frusto-conical sidewall converging from the downstream end of the generally cylindrical combustion zone to a reactor throat;

(c) means connecting the downstream end of the said combustion zone to the means defining the mixing zone;

(d) means defining a generally cylindrical pyrolysis zone defined by a generally cylindrical sidewall connected to the reactor throat by a generally annular end wall wherein each of the combustion zone, mixing zone and pyrolysis zone is aligned along a longitudinal path within the reactor;

(e) a plurality of feedstock injectors extending normally with respect to the longitudinal axis through the means defining the mixing zone, each of said feedstock injectors designed to emit a cone-shaped spray of feedstock which diverges at an angle in the range of about 30° to about 120°;

(f) means for introducing hot gases generally axially into the upstream end of the combustion zone means; and

(g) a source of carbonaceous feedstock connected to said plurality of feedstock injectors.

4,765,965

MIXER CHARGER REACTION CONTROL SYSTEM AND METHOD OF AFFECTING A CHEMICAL REACTION

Paul R. Goudy, Jr., Milwaukee, Wis., assignor to Autotrol Corporation, Milwaukee, Wis.

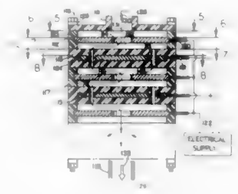
Filed Aug. 29, 1984, Ser. No. 645,841

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] B01F *5/06*

U.S. Cl. 422—186 10 Claims

1. Apparatus for affecting a chemical reaction, comprising: mixer/charger means for simultaneously mixing and electrically charging a fluid to produce a charged fluid, chemical reaction containment means for containing ingredients undergoing a chemical reaction separately from said mixer/charger means, and means for transmission of the charged fluid from said mixer/charger means to said containment means, whereby the rate of the chemical reaction may be influenced, and wherein said mixer/charger means comprises inlet means for receiving a flowing fluid, outlet means positioned to receive fluid from said inlet means and for directing an electrically charged flowing fluid out of said mixer/charger means, cooperative means for dividing at least one stream of fluid into plural streams and for at least once changing at least one of the relative flow direction and relative location of at least part of one of the streams, and charge coupling means for adding or removing an electrical charge with respect to one of said inlet means and outlet means to affect the electrical charge on the fluid flowing through the mixer/charger.



7. A method of affecting a chemical reaction, comprising simultaneously mixing and electrically charging a gas to produce an electrically charged gas, and bubbling said electrically charged gas through a liquid medium in which a chemical reaction is occurring, in order to influence the reaction rate of the chemical reaction.

4,765,966

SUBLIMATION APPARATUS

Martin Tentij, Almelo, Netherlands, assignor to Ultra-Centrifuge Nederland N.V., Almelo, Netherlands

Filed Feb. 2, 1987, Ser. No. 10,004

Claims priority, application Netherlands, Feb. 3, 1986, 8600278

Int. Cl.[4] B01D *7/00*

U.S. Cl. 422—244 8 Claims



1. Apparatus for causing a gas to precipitate in a solid form by cooling and thereafter causing the gas precipitated in the solid form to sublime by heating, comprising: an inner vessel, where precipitation and sublimation occur, placed within an outer vessel leaving an interspace between them, said interspace having top and bottom portions; a conduit connected to said inner vessel for the supply and removal of a gas to be treated; a plurality of parallel-connected heat exchange channels around said inner vessel, said channels being connected to a bottom header below said inner vessel and a top header above said inner vessel; a heat exchanger for cold heat-exchange fluid arranged in said top header; a first reservoir for a vaporizable first heat exchange medium, said first reservoir having an internal upper space which in operation of the apparatus forms a vapor space, a connecting duct including a closable valve between said bottom header and said first reservoir; a connecting duct between the said upper space of said first reservoir and said top header; a second reservoir for a vaporizable second heat exchange medium different from said first heat exchange medium, said second reservoir having an internal upper space which in operation of the apparatus forms a vapor space; a connecting duct including a closable valve between said interspace and said second reservoir; a connecting duct including a closable valve between said upper space of said second reservoir and the top portion of said interspace; and a heating element in said second reservoir.

4,765,967

Patent Not Issued For This Number

4,765,968

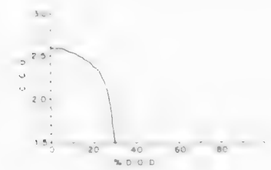
FLUORINATED CARBON COMPOSITION FOR USE IN FABRICATING A LI/CF_x BATTERY CATHODE

George A. Shia, North Tonawanda, and David J. Friedland, Snyder, both of N.Y., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 776,546, Sep. 16, 1985, Pat. No. 4,686,161. This application Jun. 8, 1987, Ser. No. 59,456

Int. Cl.[4] C01B *31/00;* H01M *4/60*

U.S. Cl. 423—445 3 Claims



1. A fluorinated carbon (CF_x) composition comprising a blend of at least two different CF_x compositions which are derived from petroleum-based coke products which have been prepared by heat treatment at a temperature between about 800° C. and 2,000° C.: (a) a bulk CF_x and (b) an additive CF_x and wherein from about 0.5 percent to about 50 percent of (b) is characterized as having a closed circuit voltage of at least 150 mV above the plateau voltage of the bulk CF_x and a specific capacity above 600 mAH/g.

4,765,969

CONTINUOUS PROCESS FOR SCRUBBING HYDROGEN SULFIDE TO PRODUCE ELEMENTAL SULFUR

Dane Chang, Houston, and Michael C. McGaugh, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 805,673, Dec. 6, 1985, abandoned. This application Jan. 15, 1987, Ser. No. 3,884

Int. Cl.[4] B01D *53/34;* C01B *17/05*

U.S. Cl. 423—573 R 8 Claims

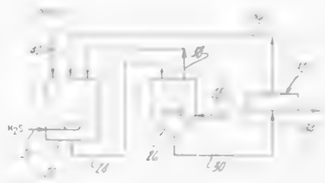
1. A continuous process for treating a gas stream containing hydrogen sulfide to produce elemental sulfur therefrom, said process consisting of:

(A) introducing said gas stream into a gas-aqueous liquid contact zone maintained at a pH of about 8 to about 10, wherein said liquid comprises ammonium hydroxide, to produce an aqueous solution comprising ammonium sulfide as a major component;

(B) passing said aqueous solution to a heating zone maintained at about the boiling temperature of said aqueous solution at ambient pressure, and into which there is sparged an oxygen containing gas;

(C) heating said aqueous solution in said heating zone

(1) to release ammonia and hydrogen sulfide from said aqueous solution and



(2) to oxidize said aqueous solution comprising ammonium sulfide to form an aqueous dispersion of elemental sulfur;

(D) recycling said ammonia and said hydrogen sulfide to said contact zone; and

(E) separating sulfur from said aqueous dispersion and recycling the residual aqueous solution substantially free of sulfur to said contact zone; wherein ammonium hydroxide is formed in said contact zone upon contact of said ammonia with said aqueous solution.

4,765,970

FLAKY ZIRCONIA TYPE FINE CRYSTALS AND METHODS OF PRODUCING THE SAME

Etsuro Kato, Aichi, Japan, assignor to Nissan Chemical Industries, Ltd., Tokyo, Japan

Filed Jul. 3, 1986, Ser. No. 881,812

Claims priority, application Japan, Jul. 3, 1985, 60-147238; Dec. 10, 1985, 60-278526; Dec. 10, 1985, 60-278527

Int. Cl.[4] C03C *3/06*

U.S. Cl. 423—608 18 Claims

1. Flaky zirconia fine crystals having a lamellar structure with layers, having a thickness of less than 500 angstroms, and having a size in a direction parallel to the plane of said layers of greater than five times that of said thickness, wherein said lamellar structure is indicated near 8° on a two theta baseline from the results of powder X-ray diffractometry.

4,765,971

TECHNETIUM (TC-99M)-ARENE COMPLEXES USEFUL IN MYOCARDIAL IMAGING

Dennis W. Wester, Florissant, and Richard T. Dean, Chesterfield, both of Mo., assignors to Mallinckrodt, Inc., St. Louis, Mo.

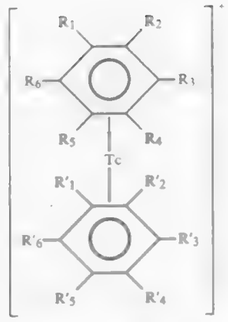
Filed May 31, 1985, Ser. No. 739,511

Int. Cl.[4] A61K *49/02*

U.S. Cl. 424—1.1 39 Claims

1. A composition comprising compounds of the formula:

VOL 1093 ISS 4 AG 23 1988 UMI



wherein Tc is an atom of Tc-99m or Tc-99 in an oxidation state of I, R_{1-6} and R'_{1-6} are each, individually, hydrogen or a substituent selected from the group consisting of alkyl, alkenyl, alkynyl, fluoroalkyl and haloalkenyl having up to 12 carbon atoms; halo; carbamoyl; amido; amino; acyl; acyloxy; cyano; alkoxy; alkoxyalkyl; ester groups; keto groups; and aldehyde groups, provided that the number of halo atoms directly substituted on the two rings does not exceed three,

or pharmaceutically acceptable salts thereof, provided that at least about 3 mol % of the Tc(I) atoms are in the isotopic form Tc-99m.

4,765,972

VINCA ALKALOID PHOTOACTIVE ANALOGS AND THEIR USES

Ahmad R. Safa, Laurel, and Ronald L. Felsted, Phoenix, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 3, 1986, Ser. No. 847,714
Int. Cl.[4] A61K *43/00;* C07D *519/04*
U.S. Cl. 424—1.1 5 Claims

1. N-(p-azido-[3,4-^{3}H]benzoyl)-N'-beta-aminoethylvindesine.

5. A reagent composition for radiolabelling cells to determine the affinity of the cells for vinblastine comprising N-(p-azido-3-[^{125}I]-salicyl-N'-beta-aminoethylvindesine and a suitable carrier.

4,765,973

POLYMERS CONTAINING PENDANT ACID FUNCTIONALITIES AND LABILE BACKBONE BONDS

Jorge Heller, Woodside, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 618,002, Jun. 6, 1984, Pat. No. 4,639,366.
This application Oct. 6, 1986, Ser. No. 915,348
Int. Cl.[4] A61K *31/74*
U.S. Cl. 424—486 3 Claims

1. A controlled release device which comprises:

(A) a polymer selected from the group consisting of polyorthoesters, polyacetals, polyketals, polyesters and polyphosphazenes with at least one labile backbone bond per repeat unit and at least one pendant acid functionality per thousand repeat units; and

(B) a beneficial substance capable of being released to an aqueous atmosphere incorporated within or surrounded by the matrix of said polymer.

4,765,974

PREPARATION FOR PERCUTANEOUS ADMINISTRATION

Shoichi Tokuda; Yusuke Ito; Saburo Otsuka, and Takashi Kinoshita, all of Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 813,213, Dec. 24, 1985, abandoned.
This application May 13, 1987, Ser. No. 48,977
Int. Cl.[4] A61K *9/70, 31/415;* A61L *15/03;* A61F *13/02*
U.S. Cl. 424—443 11 Claims

1. A clonidine preparation for percutaneous administration comprising a support having provided thereon a layer containing an acrylic polymer having a glass transition temperature of from −70° C. to −10° C. and pressure-sensitive adhesion at room temperature as a base, at least one of clonidine and clonidine hydrochloride as an active ingredient, and at least one decomposition inhibitor which inhibits the decomposition of clonidine or clonidine hydrochloride, thereby maintaining the clonidine or clonidine hydrochloride in a stable state within the preparation for a long period of time, wherein said acrylic polymer is a copolymer comprising an alkyl (meth)acrylate having 4 or more carbon atoms in the alkyl moiety thereof, and a monomer copolymerizable with said alkyl (meth)acrylate and said decomposition inhibitor is selected from the group consisting of at least one of citric acid and succinic acid, and sodium and potassium salts thereof.

4,765,975

HAIR CONDITIONING

Carl F. Iovanni, Somerville, and Duane M. Biesel, Framingham, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Mar. 4, 1986, Ser. No. 836,051
Int. Cl.[4] A61K *7/06, 9/10*
U.S. Cl. 424—70 25 Claims

1. A hair conditioning composition comprising a cationic hair conditioning agent, a fatty alcohol, a fluorosurfactant, said fluorosurfactant being present in proportions, based on the weight of the composition, less than about 0.01 percent, a nonionic surfactant, and water.

4,765,976

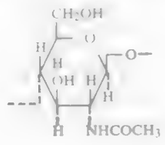
METHOD FOR COMBATING THE GREASY APPEARANCE OF HAIR

Jean F. Grollier; Chantal Fourcadier, both of Paris, and Claude Dubief, Le Chesnay, all of France, assignors to L'Oreal, Paris, France

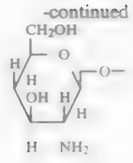
Filed Apr. 10, 1987, Ser. No. 37,014
Claims priority, application France, Apr. 18, 1986, 86 05659
Int. Cl.[4] A61K *7/06, 31/73*
U.S. Cl. 424—70 8 Claims

1. A method for combating the greasy appearance of hair comprising applying to the hair in an amount to combat effectively the greasy appearance of the hair a cosmetic composition containing in a cosmetically acceptable vehicle at least one polymer derived from chitosan comprising monomeric units of the formulae:

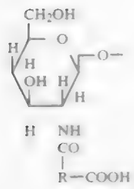
(A)



-continued

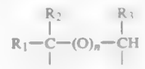


and



wherein the unit A is present in an amount rnaging from 0 to 30 weight percent, the unit B is present in an amount ranging from 5 to 50 weight percent and the unit C is present in an amount ranging from 30 to 90 weight percent, based on the total weight of said polymer,

R represents a radical of the formula



n represents 0 or 1,

when n represents O, R_1, R_2 and R_3 each independently represent hydrogen; methyl; hydroxyl; acetoxy; amino; alkylthio wherein the alkyl moiety bears an amino group; monoalkylamine; dialkylamine; monoalkylamine substituted with one or more amine, hydroxyl, carboxyl, alkylthio or sulphonic groups in which case at least one of R_1, R_2, and R_3 is hydrogen; or dialkylamine substituted with one or more amine, hydroxyl, carboxyl, alkylthio or sulphonic groups in which case at least one of R_1, R_2 and R_3 is hydrogen; and

when n represents 1, each of R_1, R_2 and R_3 represents hydrogen; or

a salt formed by the said chitosan derivative with a base or acid.

4,765,977

OPHTHALMIC LIQUID SUNGLASSES

Neville A. Baron, 146 Sandpiper Key, Secaucus, N.J. 07094

Filed Nov. 28, 1986, Ser. No. 935,843
Int. Cl.[4] F21V *9/06;* A61F *9/08*
U.S. Cl. 424—78 12 Claims

1. An ophthalmic dosage of an aqueous gel for establishing a U.V. absorption spectrum equilibrium between the tear film and epithelium of the cornea of the eye in the UV-A and UV-B wavelengths, said gel comprising a chromophore selected from the group consisting of 2-ethylhexyl-p-methoxycinnamate, octyl methoxy-cinnamate and mixtures thereof and a gel-forming high molecular weight ethylene-maleic anhydride polymer having a molecular weight in excess of 1,000,000 said chromophore being present at a level of from about 1 to about 10 percent by weight, said polymer being present at a level of from about 2 to about 8 percent by weight, said gel having a viscosity of from about 40,000 to about 300,000 cps.

9. A method for delivering an ophthalmic chromophore dosage to the eye to establish a U.V. absorption spectrum equilibrium between the tear film and epithelium of the cornea of the eye in the UV-A and UV-B wavelengths, comprising preparing an aqueous gel of an ophthalmic chromophore, selected from the group consisting of 2-ethylhexyl-p-methoxycinnamate, octylmethoxy-cinnamate and mixtures thereof, and a gel-forming high molecular weight ethylene-maleic anhydride polymer having a molecular weight in excess of 1,000,000 adjusting the pH of said gel to between about 4.5 and about 8.5, said gel containing between about 4.0 to about 6 percent by weight of said chromophore and between about 2 and about 8 percent by weight of said polymer, said gel having a viscosity of between about 40,000 and about 300,000 cps, and introducing said gel into the conjuctival sac of the eye, whereby prolonged retention of said ophthalmic chromophore is provided. (B) (C)

4,765,978

NOVEL VAGINAL SUPPOSITORY

Syed E. Abidi, Sewaren, N.J., and Joel A. Sequeira, New York, N.Y., assignors to Schering Corporation, Kenilworth, N.J.

Filed Dec. 16, 1986, Ser. No. 942,563
Int. Cl.[4] A61K *31/79, 31/415, 9/02*
U.S. Cl. 424—80 10 Claims

1. A vaginal suppository comprising 2 to 20% by weight of cis-2-(1H-imidazolylmethly)-3-(2',6'-difluorobenzyloxy)-2,3-dihydro-5-fluorobenzo[b]thiophene, 1 to 5% by weight of polyethylene, 0.2 to 1% by weight of polyvinylpyrrolidone, 3 to 6% by weight of surfactant, 1 to 3% by weight of absorbent, 60 to 80% by weight of vegetable oil phase and 0 to 1% by weight of antioxidant.

4,765,979

METHOD AND COMPOSITION FOR KILLING TERRESTRIAL MOLLUSCS

James W. Nielsen, P.O. Box 6669, Brookings, Oreg. 97415

Filed Mar. 11, 1986, Ser. No. 838,329
Int. Cl.[4] A01N *25/00, 59/06*
U.S. Cl. 424—84 1 Claim

1. A molluscicidal composition prepared by combining 0.13 lbs. of atomized powdered elemental aluminum, having a particle size of between 4.5 and 6.5 microns in diameter, with 0.13 lbs. of metaldehyde and 0.10 lbs. of beer to form a slurry, adding 0.50 lbs. of sodium propionate and 99.14 lbs. of bran, heating to a temperature of between 120° and 180° F. and mixing at this temperature for 17 to 30 minutes until dry.

4,765,980

STABILIZED PORCINE GROWTH HORMONE

Randolph B. DePrince, and Ravi Viswanathan, both of Terre Haute, Ind., assignors to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Apr. 28, 1986, Ser. No. 856,767
Int. Cl.[4] A61K *35/55;* A61F *2/00*
U.S. Cl. 424—108 21 Claims

4. A stabilized porcine growth hormone composition comprising a mixture of porcine growth hormone or a physiologically acceptable metal complex thereof and a stabilizing amount of porcine serum albumin.

4,765,981

TREATMENT OF GASTROINTESTINAL DISORDERS

Anna M. Joseph, 618 Bellwood Rd., Newport News, Va. 23605

Filed Oct. 15, 1984, Ser. No. 660,966
Int. Cl.[4] A61K *35/78*
U.S. Cl. 424—195.1 2 Claims

1. A process for treating patients having a gastrointestinal disorder selected from the group consisting of infant colic, infant intolerance of milk and synthetic formulas, and intolerance of solid foods by the elderly or the infirm, the gastrointestinal disorder manifested by one of nausea, vomiting, diarrhea, increased flatus, and cramping, which process comprises orally administering to the patient an amount effective to bring about the removal of alleviation of the gastrointestinal disorder of an aqueous extract resulting from boiling a slurry of water and

VOL 1093 ISS 4 AG 23 1988 UMI

raw oatmeal and separating the aqueous phase from the solid oatmeal.

4,765,982

INSECT CONTROL DEVICE

Patricia M. Ronning, St. Paul, and Gregg A. Vandesteeg, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 373,533, Apr. 30, 1982, Pat. No. 4,683,132.
This application Jul. 9, 1987, Ser. No. 71,629
Int. Cl.[4] A01N *25/34*
U.S. Cl. 424—403 1 Claim

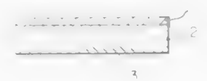
1. A device comprising a plurality of rough-surfaced cellulosic fibers which comprise a graft of copolymer cellulose and an ethylenically unsaturated material copolymerizable with cellulose, wherein there is self-adhered to the surface of said fibers an insect control agent comprising a liquid insecticide composition microencapsulated in a capsule whose shell is permeable to said liquid insecticide, said device being formed into an insect control device.

4,765,983

ADHESIVE MEDICAL TAPES FOR ORAL MUCOSA

Hitoshi Takayanagi, and Yoshihiro Sawai, both of Toyama, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed May 30, 1986, Ser. No. 869,186
Claims priority, application Japan, Jun. 5, 1985, 60-121849
Int. Cl.[4] A61F *13/00*
U.S. Cl. 424—434 6 Claims



1. An adhesive medical tape for oral mucosa comprising a support layer consisting essentially of an intestine-soluble polymer and at least two medicament-containing layers consisting essentially of a water-soluble polymer containing a steroid or non-steroid antiphlogistic and analgesic agent wherein the steroid medicament is selected from the groups consisting of triamcinolone acetonide fluocinolone betamethasone dexamethasone acetate, hydrocortisone acetate, prednisolone, prednisolone valerate and beclomethasone propionate, and wherein the non-steroid medicament is selected from the group consisting of indomethacin diclofenac sodium, bufexamac, ibuprofenpiconol, butyl flufenamate and bendazac, and whereas the water soluble polymer is selected from the group consisting of polyvinylpyrrolidone, polyvinyl alcohol, sodium polyacrylate, sodium algiante, sodium carboxymethyl cellulose, methylcellulose, hydroxypropyl cellulose, carboxyvinyl polymer gelatin, xanthen gum karaya gum, starch, agar-agar and mixture thereof wherein the intestine-soluble polymer is selected from the group consisting of hydroxypropyl cellulose phthalate, cellulose, poly(methacrylic acid, methylmethacrylate) and a mixture thereof.

4,765,984

STABLE SINGLE UNIT DOSE ORAL PRODUCT

Linda J. Vellekoop, Neshanic, and Jordan Barth, East Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 821,567, Jan. 22, 1986, Pat. No. 4,705,680. This application Dec. 16, 1986, Ser. No. 939,892
Int. Cl.[4] A61K *9/68*
U.S. Cl. 424—441 11 Claims

1. A stable, chewable single unit dose, freestanding form of an oral product, stabilized against syneresis, comprising about 0.4–1.5% by weight of a sodium alginate crosslinked with a calcium ion, about 0.1–5.0% by weight of a flavor and at least 40% by weight of a liquid vehicle containing at least 10% by weight water, and at least 5% by weight humectant, and about 2–15% by weight of a liquid vegetable oil.

4,765,985

DEVICES AND METHODS FOR TREATING MEMORY IMPAIRMENT

Lewis J. Leeson, Roseland, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 708,466, Mar. 5, 1985, Pat. No. 4,680,172.
This application May 20, 1987, Ser. No. 51,781
Int. Cl.[4] A61F *13/02;* A61K *9/70*
U.S. Cl. 424—449 11 Claims

1. A device for the transdermal administration of a drug for the treatment of memory impairment comprising

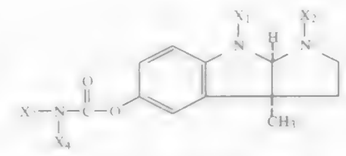
(a) a drug impermeable backing layer;

(b) a drug permeable rate controlling membrane sealed to one side of said backing layer as to define at least one drug reservoir compartment therebetween;

(c) an adhesive layer;

(d) a drug or composition thereof within said hollow drug reservoir;

said drug comprising a memory improving effective amount of a compound having the formula



(II)

wherein X_1, X_2, X_3, X_4 independently represent H or lower alkyl; said composition comprising said drug and at least one pharmaceutically acceptable adjunct; whereby said drug is delivered in a controlled, continuous manner to a patient to which said device has been applied.

4,765,986

MEDICINAL PLASTER FOR SYSTEMIC USE

Rainer K. Liedtke, Tölzer Str. 36, 8022 Grünwald, Fed. Rep. of Germany

Filed Jun. 17, 1986, Ser. No. 875,100
Claims priority, application Fed. Rep. of Germany, Jun. 20, 1985, 3522060
Int. Cl.[4] A61F *13/00*
U.S. Cl. 424—449 9 Claims



1. A medicinal plaster for dermally applied medication which is attachable to the skin, which comprises first and second parts joined in a housing which is closed at the top side and open on the lower side thereof towards the skin surface, wherein said first part at the lower side is a disc comprising a

drug-containing carrier substance, said carrier substance being selected form the group consisting of gelatin; one or more triglycerides of unsaturated carbon acids having 10–18 carbon atoms; and a mixture of one or more of said triglycerides of saturated carbon acids having 10–18 carbon atoms and one or more mono- and diglycerides of saturated and unsaturated, or both, carbon acids having 8–12 carbon atoms; and a mixture of gelatin with one or more of said triglycerides; and a mixture of gelatin with a one or more of said triglycerides and one or more of said mono- and diglycerides; said carrier substance melting at approximately physiological body temperature so that the drug is released from the liquid phase of the carrier substance; and said second part is a disc consisting of a porous and flexiable polyurethane-ether foam or polyurethane-ester foam having approximately the same diameter as said first part; said carrier substance disc being mechanically connected with the polyurethane foam disc by at least partial penetration of the carrier substance into the pores of the polyurethane foam disc.

4,765,987

ARTIFICIAL SURFACTANTS, PHARMACEUTICAL COMPOSITIONS CONTAINING THEM AND USE THEREOF

Frédéric Bonte, Boulogne; Michel Dehan, Verrieres le Buisson; Alain Le Ridant, Neuilly sur Seine; Francis Puisieux, Maisons Alfort, and Christiane C. Taupin, Orsay, all of France, assignors to ADIR & Cie, Neuilly-sur-Seine, France

Filed Aug. 25, 1986, Ser. No. 899,656
Claims priority, application France, Aug. 30, 1985, 85 12950
Int. Cl.[4] A61K *37/22, 9/42;* B01J *13/02;* C07F *9/10*
U.S. Cl. 424—450 12 Claims

1. Artificial surfactant characterised in that it consists essentially of a ternary mixture of:

(1) from 10 to 70 mol % of dipalmitoylphosphatidylcholine,

(2) from 10 to 70 mol % of distearoylphosphatidylcholine,

(3) from 10 to 30 mol % of soya lecithin,

wherein the sum of the constituents indicated under 1 to 3 must, in each case, be equal to 100 mol %.

5. Artificial surfactant of claim 1 in the form of liposomes optionally suspended in water or in a physiologically-acceptable aqueous solution.

4,765,988

AMOSULALOL HYDROCHLORIDE LONG ACTING FORMULATIONS

Takashi Sonobe; Hiroshi Sugiura, both of Saitama; Tomoh Itoh, Tokyo; Masayoshi Aruga, and Hiroitsu Kawata, both of Saitama, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Division of Ser. No. 931,924, Nov. 14, 1986, Pat. No. 4,724,148, which is a continuation of Ser. No. 645,618, Aug. 29, 1984, abandoned. This application May 5, 1987, Ser. No. 46,266
Claims priority, application Japan, Aug. 31, 1983, 58-160086
Int. Cl.[4] A61K *9/32, 9/36, 9/34*
U.S. Cl. 424—468 5 Claims

1. A long acting pharmaceutical formulation comprising pharmaceutically effective amounts of amosulalol hydrochloride, from about 5 to about 50 weight percent of said formulation of an entero-soluble material selected from the group consisting of a methacrylic acid-ethyl acrylate copolymer, a methacrylic acid-methyl methacrylic copolymer, hydroxypropylmethyl cellulose phthalate, cellulose acetate phthalate and shellac, and the balance being at least one pharmaceutically acceptable additive excluding any pharmaceutically acceptable organic acid

4,765,989

OSMOTIC DEVICE FOR ADMINISTERING CERTAIN DRUGS

Patrick S. L. Wong, Hayward; Brian L. Barclay, Sunnyvale; Joseph C. Deters, Mt. View, and Felix Theeuwes, Los Altos, all of Calif., assignors to Alza Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 685,687, Dec. 24, 1984, abandoned, which is a continuation of Ser. No. 493,760, May 11, 1983, abandoned. This application Sep. 2, 1986, Ser. No. 902,915
The portion of the term of this patent subsequent to Sep. 16, 2003, has been disclaimed.
Int. Cl.[4] A61K *9/22*
U.S. Cl. 424—473 19 Claims



1. An osmotic device for the oral administration at a controlled rate the beneficial drug nifedipine to an environment of use, the osmotic device comprising:

(a) a wall comprising in at least a part of a semipermeable material permeable to the passage of an exterior fluid present in the environment of use and substantially impermeable to the passage of the beneficial drug, the wall surrounding and forming:

(b) a compartment;

(c) a first composition in the compartment, said first composition comprising the beneficial drug nifedipine and an osmopolymer that exhibits an osmotic pressure gradient across the wall against an external fluid;

(d) a second composition in the compartment, said second composition comprising an osmopolymer that exhibits an osmotic pressure gradient across the wall against an external fluid; and,

(e) at least one passageway in the wall communicating with the first composition and the exterior of the device for delivering the beneficial drug nifedipine through the passageway from the osmotic device.

4,765,990

SUSTAINED-RELEASE NIFEDIPINE PREPARATION

Isao Sugimoto, Nara; Kazunori Togo, Ibaraki; Kozo Sasaki, Osaka; Atsushi Yamagata, Osaka, and Akira Kuchiki, Osaka, all of Japan, assignors to Kanebo, Ltd, Tokyo, Japan

Continuation of Ser. No. 666,329, filed as PCT JP83/00070, Mar. 5, 1983, published as WO84/03440, Sep. 13, 1984, abandoned.
This application Apr. 21, 1987, Ser. No. 41,663
Int. Cl.[4] A61K *9/14, 9/26, 9/52, 9/58*
U.S. Cl. 424—494 5 Claims

1. A non-compressed sustained-release nifedipine preparation consisting essentially of the following Composition (A) and Composition (B) in a ratio of 15:85 to 50:50 by weight of nifedipine,

Composition (A): a rapid-release preparation containing as an active ingredient nifedipine crystalline fine powder having an average particle size of not more than 5 microns in admixture with a pharmaceutically acceptable carrier,

VOL 1093 ISS 4 AG 23 1988 UMI

Composition (B): a delayed-release preparation containing as the active ingredient nifedipine fine powder having an average particle size of not more than 5 microns and having a surface coating layer comprising a non-toxic, hardly water-soluble substance selected from the group



consisting of ethyl cellulose, hydrogenated soybean oil and glycerin monostearate, and an enteric high molecular compound selected from the group consisting of cellulose acetate phthalate, hydroxypropylmethyl cellulose phthalate and methacrylic acid methyl methacrylate copolymer in a weight ratio of 1:5 to 5:1.

4,765,991

REDUCED CALORIE CHEWING GUMS AND METHOD

Subraman R. Cherukuri, Towaco, N.J.; Frank Hriscisce, Astoria, N.Y., and You C. Wei, Bethlehem, Pa., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 2, 1986, Ser. No. 859,108
Int. Cl.[4] A23G *3/30*
U.S. Cl. 426—3 14 Claims

1. A highly palatable reduced calorie chewing gum composition comprising a high amount of a non-SBR/PVA chewing gum base, a low amount of a polysaccharide, cellulose, and a sweetening agent, by weight percent of the composition the non-SBR/PVA chewing gum base is present in an amount from about 35% to about 94%, by weight percent of the composition the polysaccharide is present in an amount from about 5% to about 10%, and by weight percent of the composition the cellulose is present in an amount up to about 7% and wherein the polysaccharide is selected from the group consisting of polydextrose, polymaltose, modified polydextrose and mixtures thereof.

4,765,992

STIMULATION OF ALCOHOLIC FERMENTATION BY ADSORPTION OF TOXIC SUBSTANCES WITH CELL WALLS

Catherine Geneix, Fontainebleau; Suzanne L. Lafourcade, and Pascal Ribereau-Gayon, both of Bordeaux, all of France, assignors to Universite de Bordeaux II, Bordeaux, France

Continuation of Ser. No. 616,367, Jun. 1, 1984, abandoned. This application Dec. 17, 1986, Ser. No. 942,823
Int. Cl.[4] C12G *1/00, 3/00;* **C12P** *7/06*
U.S. Cl. 426—15 10 Claims

1. In a process for the alcoholic fermentation with yeast of a substratum containing endogenous and exogenous substances toxic to yeast the presence of which substances results in the premature cessation of the fermentation process, the improvement wherein a material consisting of cell walls separated from at least one gram-positive micro-organism is added to said substratum in an amount sufficient to stimulate the fermentation process and permit said fermentation process to go to completion by adsorption of said toxic substances by said cell walls, said cell walls being produced by the boiling or autolysis of at least one gram-positive micro-organism followed by the washing of the material recovered from said boiling or autolysis step.

4,765,993

PREPARATION OF ALCOHOL-FREE BARLEY MALT-BASED BEVERAGE

Joseph L. Owades, 2164 Hyde St., San Francisco, Calif. 94109

Filed Jan. 20, 1987, Ser. No. 4,594
Int. Cl.[4] A23L *1/105, 1/186, 2/00*
U.S. Cl. 426—29 6 Claims

1. In a method for producing an alcohol-free beverage in which a warm malt mash and boiling cereal adjuncts are sequentially blended, boiled, cooled, carbonated, filtered, packaged and pasteurized, the improvement which comprises adding to the resulting beverage after filtering and prior to packaging an enzyme system comprising one or a mixture of amylolytic enzymes in a sufficient amount and for a sufficient period of time to convert maltose and complex carbohydrates present in the resulting product to dextrose.

4,765,994

METHOD OF PREPARING A WATER ABSORBING DIETARY FIBRE PRODUCT

Lennart Holmgren, Ängelholm, Sweden, assignor to Tricum AB, Hoganas, Sweden

Continuation-in-part of Ser. No. 797,189, Nov. 12, 1985, abandoned, Continuation of Ser. No. 578,197, Feb. 8, 1984, abandoned. This application Nov. 6, 1986, Ser. No. 927,468
Claims priority, application Sweden, Feb. 23, 1983, 8300981
Int. Cl.[4] A23L *1/42*
U.S. Cl. 426—31 8 Claims

1. A method of preparing a water absorbing dietary fibre product comprising at least 70% by weight dietary fibre and less than 0.5% phytic acid which comprises mixing bran with aqueous acid of pH about 5 and maintaining the mixture at a temperature of about 50°–60° C. for a time sufficient to permit the naturally occurring phytase in the raw material bran to reduce the naturally occurring phytic acid content to below about 0.5%; increasing the pH to about 6; adding a proteinase to the pH adjusted mixture at about 50°–60° C. and maintaining the resultant mixture at this temperature until the protein content has been reduced to about 8% or less; increasing the temperature to about 70°–75° C. and adding a starch degrading enzyme to the mixture and maintaining the resultant mixture at a temperature and for a time sufficient to permit the starch degrading enzyme to degrade substantially all of the starch in the mixture; increasing the temperature of the mixture containing the starch degrading enzyme sufficient to halt the enzymatic reactions and removing the water from the mixture and drying the resultant product.

4,765,995

TOFU CHEESE PRODUCT AND PROCESS OF PREPARATION

Robert J. Pirello, 620 Christian St., Apt. 2C, Philadelphia, Pa. 19147

Continuation-in-part of Ser. No. 798,566, Nov. 15, 1985, Pat. No. 4,701,332. This application Sep. 16, 1987, Ser. No. 97,202
The portion of the term of this patent subsequent to Oct. 20, 2004, has been disclaimed.
Int. Cl.[4] A23C *20/02*
U.S. Cl. 426—46 15 Claims

1. A process for the preparation of a creamy tofu cheese from a firm tofu brick comprising coating said frim brick with a mellow white miso coating, aging said coated brick for a time sufficient to ferment said brick and produce smooth creamy and texture, removing said miso from said aged brick, steaming said aged brick, and then whipping said steamed brick until a creamy texture is achieved, whereby a soft creamy water separation resistance tofu cheese is formed.

4,765,996

ENRICHED RYE AND BARLEY AND ITS PRODUCTION

Masaru Misaki, Toyonaka; Hisashi Murata, Ikeda; Hideo Yamamoto, Osaka, and Yasuhiko Watanabe, Kobe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 675,971, Nov. 28, 1984, abandoned. This application Jan. 13, 1987, Ser. No. 4,801
Claims priority, application Japan, Nov. 30, 1983, 58-227751
Int. Cl.[4] A23L *1/30*
U.S. Cl. 426—72 4 Claims

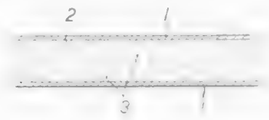
1. In a process for producing enriched polished rice or barley which consists essentially of incorporating or depositing an assortment of nutrients selected from the group consisting of water-soluble vitamins, fat-soluble vitamins, amino acids and minerals, in or on polished rice or barley grains, coating each of the grains with an oil/fat and/or a wax having a melting point of about 40° C. to 80° C., and coating the resultant grains with a starch coating agent containing starch and a binding agent wherein the starch is selected from the group consisting of corn starch, wheat starch and rice starch in raw form, the improvement wherein a hydrophilic emulsifier selected from the group consisting of sucrose fatty acid esters, sorbitan fatty acid esters and glycerol fatty acid esters which have an HLB value of 8 or more, proteins and vegetable gums, is coated on the grains in an amount of 0.05 to 1 weight percent based on the finished product, between the oil/fat and/or wax coating and the starch coating.

4,765,997

METHOD OF CONTROLLING THE ODOR OF LIQUID CONDIMENTS

Yasunori Tominaga, Tokyo, Japan, assignor to Live International Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1987, Ser. No. 86,786
Claims priority, application Japan, Oct. 4, 1986, 61-236647
Int. Cl.[4] C12H *1/04;* **A23L** *1/221*
U.S. Cl. 426—422 6 Claims



1. A method of controlling the odor of liquid condiments selected from the group consisting of soy sauce, vinegar, mayonnaise sauce, Worchestershire sauce and catsup, which comprises the steps of:
immersing a dehydrating sheet in said liquid condiments, the dehydrating sheet comprising semi-permeable external membranes and a solution of an osmotic salt, sugar or mixture thereof therebetween, and
absorbing and removing the odor-emitting substance present in the liquid condiments with said dehydrating sheet.

4,765,998

EDIBLE FOOD PRODUCT

Tong S. Pak, and Tae S. Pak, both of 802 S. Race St., Van Wert, Ohio 45891

Filed Oct. 29, 1986, Ser. No. 924,261
Int. Cl.[4] A23L *1/31*
U.S. Cl. 426—92 5 Claims

1. A sandwich comprising:
two slices of bread having inserted therebetween a meat product and an edible container disposed on the surface of said meat product, said edible container housing a salad therein and structured to contain a concave configuration disposed at the bottom surface having a circular edge portion for causing the edible container to tightly adhere to the meat product whereby the salad is separated from



the meat product to maintain its fresh condition while at the same time prevented from falling from the sandwich.

4,765,999

POLYESTER/COPOLYESTER COEXTRUDED PACKAGING FILM

John P. Winter, Appleton, Wis., assignor to Presto Products, Incorporated, Appleton, Wis.

Filed Jul. 26, 1985, Ser. No. 759,391
Int. Cl.[4] B65B *29/08;* **B65D** *81/34;* **A23L** *1/18;* **B32B** *27/08*
U.S. Cl. 426—113 52 Claims



1. A nonoriented, heat sealable, coextruded film not thicker than 2 mil comprising:
a base layer selected from the group consisting of polyester, copolyester and combinations thereof; and
a heat sealant layer comprising a copolyester having a melting temperature below that of the base layer.

49. A method for cooking a predetermined amount of a consumable food in a closed laminate bag having a peelable seal of a predetermined strength comprising:
disposing the consumable food inside the laminate bag;
sealing the laminate bag to form a closed laminate bag wherein the closed laminate bag comprises a paper lamina adhesively laminated to a non-oriented, heat-sealable, coextruded film not thicker than 2 mil and having a base layer and a heat sealant layer wherein the base layer is selected from the group consisting of polyester, copolyester and combinations thereof and wherein the heat sealant layer comprises a copolyester having a melting temperature below that of the base layer;
placing the closed laminate bag in a microwave oven;
cooking the consumable food for predetermined period of time at a predetermined setting such that steam and pressure from cooking the consumable food can escape from the laminate bag through the peelable seal; and
removing the laminate bag from the microwave oven.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,000

PREVENTION OF CHILL HAZE IN BEER

Michael T. Sobus, Philadelphia, Pa., assignor to PQ Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 755,644, Apr. 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 674,803, Nov. 26, 1984, abandoned. This application Jan. 8, 1987, Ser. No. 59,659
Int. Cl.[4] C12H *1/02*
U.S. Cl. 426—330.4 10 Claims

1. A method for treating beer to prevent chill haze comprising the steps of:

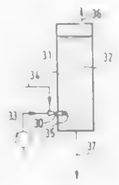
(a) contacting said beer with a combination of 1 to 80 pbw of partially hydrophobic adsorbent and 100 pbw of a silica gel, the amount of said combination being sufficient to remove the chill haze components, wherein the partially hydrophobic adsorbent is a precipitated silica reacted with up to 7% wt/wt of a silicone, wherein said silicone is dimethyl siloxane and said silica gel is a hydrogel having a surface area of at least 700 m^2/g, a mean pore diameter of 30 to 120 Å, an average particle size of 20 microns or less and a loss on ignition of at least 50% by weight (% w/w).

4,766,001

PROCESS FOR TREATING A FOOD LIQUID WITH A GAS

Jean-Luc Mizandjian, Igny; Jean-Marc Meyer, and Jean Amen, both of Versailles, all of France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 8, 1987, Ser. No. 36,549
Claims priority, application France, Apr. 15, 1986, 86 05341
Int. Cl.[4] B01F *3/04*
U.S. Cl. 426—477 2 Claims



1. A process for deoxygenating or carbonating a food or biological liquid product having an initial dissolved oxygen concentration between 9 mg/l and 12 mg/l, comprising injecting at least one gas selected from the group consisting of nitrogen and carbon dioxide into a current of said food or biological liquid product thereby to form a gas/liquid emulsion, and introducing said emulsion into a storage vessel, said gas being at a pressure of about 3 bars, said gas and liquid being injected into a confined mixing chamber at a volume rate of gas to liquid between 3 and 5 to form said emulsion, said emulsion being expelled from said chamber at a velocity of 15 to 30 meters per second into said vessel above the bottom of the vessel a distance which is a minor proportion of the height of the vessel until the residual dissolved oxygen content is less than 0.25 mg/l.

4,766,002

FLAVORING WITH α-CAMPHOLENIC ALCOHOL

Martin Rohr, Glen Rock; Richard H. Potter, Hasbrouck Heights, and Richard E. Naipawer, Wallington, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Continuation of Ser. No. 466,820, Feb. 16, 1983, abandoned. This application Feb. 13, 1986, Ser. No. 829,635
Int. Cl.[4] A23L *1/235*
U.S. Cl. 426—538 16 Claims

1. An improved flavor composition of the type used to impart a fruity flavor to a foodstuff wherein the improvement comprises the incorporation of 0.5% to 20% by weight of a substantially pure compound of the formula

[1]



wherein the dotted line represents an optional bond.

5. An improved foodstuff of the type having a fruity flavor wherein the improvement comprises the incorporation of 0.1 ppm to 200 pppm of a substantially pure compound of the formula

[1]



wherein the dotted line represents an optional bond.

4,766,003

METHOD FOR PRODUCING ACID AND HEAT COAGULATED TYPES OF CHEESE

Erik Skovhauge, Vejlo, and Karl Simoonsen, Randers, both of Denmark, assignors to APV Pasilac A/S, Denmark

Division of Ser. No. 718,451, Apr. 1, 1985, Pat. No. 4,655,127. This application Nov. 7, 1986, Ser. No. 928,043
Claims priority, application Denmark, Aug. 10, 1984, 3879/84
Int. Cl.[4] A23C *19/045*
U.S. Cl. 426—582 7 Claims



1. A method for producing an acid and heat coagulated granular cheese from a starting material selected from the group consisting of milk, whey and mixtures thereof, comprising

pasteurizing said starting material,

cooling the pasteurized material to about 45 to 55° C., and

filtering the cooled material through a membrane to produce a retentate having a solids content of about 1 to 3 wt% higher than the cheese,

heating the retentate to a temperature of about 50–100° C. and then acidifying the heated retentate with a coagulant to a pH of about 5.5–6.1 under a pressure of about 0.5–2.5 bar to form a mixture,

thereafter subjecting the mixture to a sudden pressure drop to about atmospheric pressure to form a non-homogeneous mixture of liquid and cheese grains,

cooling the mixture to a temperature of below about 70° C.,

packaging the cooled mixture to form a packaged product, and

subjecting the packaged product to a temperature of below about 15° C. to form the cheese.

4,766,004

CRUNCHY, HIGHLY PALATABLE, BULK-INCREASING, DIETARY FIBER SUPPLEMENT COMPOSITION

Alan H. Moskowitz, Budd Lake, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 19, 1986, Ser. No. 944,144
Int. Cl.[4] A23L *1/29*
U.S. Cl. 426—658 23 Claims

1. A crunchy, highly palatable, bulk-increasing, dietary fiber supplement composition comprising:

(a) from about 2% to about 30% by weight, based on the weight of the total composition, of whole psyllium husks having a particle size ranging from about 12 to about 70 mesh, U.S. Standard Sieve, wherein about 25% to about 95% of the whole psyllium husks are in the particle size range of about 12 to about 30 mesh, U.S. Standard Sieve;

(b) from about 22.9% to about 40% by weight, based on the weight of the total composition, of a palatable, food-grade vegetable fat which is solid at room temperature;

(c) from about 25% to about 75% by weight, based on the weight of the total composition, of a sweetening agent and;

(d) from about 0.1% to about 25% by weight based on the weight of the total composition, of at least one flavoring agent.

4,766,005

MATERIAL AND METHOD FOR OBTAINING STRONG ADHESIVE BONDING TO PROTEINACEOUS SUBSTRATES

Robert E. Montgomery, Los Angeles, and George W. Schaeffer, Sherman Oaks, both of Calif., assignors to OPI Products, Inc., North Hollywood, Calif.

Filed Oct. 30, 1986, Ser. No. 924,896
Int. Cl.[4] A61K *7/04, 7/06;* A01G *5/06*
U.S. Cl. 427—4 12 Claims

1. A method of treating proteinaceous substrates to obtain strong bonding of composites, coatings or adhesives thereto, comprising applying a pH adjustig material to said proteinaceous substrate to adjust the pH of said proteinaceous substrate to a pH of approximately 8.0 or greater, said pH adjusting material comprising:

a major amount of a non-aqueous solvent selected from the group consisting of methyl lactate, isoamyl acetate, acetone, cyclohexane, n-hexane, trichloroethylene, methyl ethyl ketone, isopropanol, ethanol, butanol, amyl alcohol, n-propanol, primary, secondary or tertiary aliphatic or aromatic alocohols, butyrolactone, valerolactone and N-methyl pyrollidone, ethyl acetate butyl acetate, dimethyl sulfoxide, dimethyl formamide, diethylene glycol dimethyl ether and acetonitrile, or combinations thereof; and

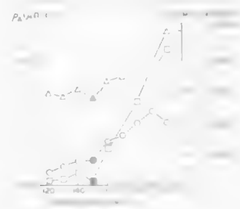
an effective amount of an alkalizing agent selected from the group consisting of ammonium hydroxide, morpholine, N-methyl pyrollidone, dimehtylaminethyl metacrylate, triethylamine, dimethylaminoethanol, sodium hydroxide, ptassium hydroxide, calcium hydroxide and zinc hydroxide.

4,766,006

LOW PRESSURE CHEMICAL VAPOR DEPOSITION OF METAL SILICIDE

Peter J. Gaczi, San Francisco, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 15, 1986, Ser. No. 863,622
Int. Cl.[4] B05D *3/06, 5/12*
U.S. Cl. 427—38 36 Claims



1. A process for the low pressure chemical vapor deposition of a metal silicide film on a substrate at a reduced temperature, which comprises:

(a) maintaining the substrate at a temperature of from about 40° C. to about 250° C. in a reactor whose walls are cooled, and

(b) simultaneously introducing into the reactor a metal compound selected from the group consisting of MoF_6 and WF_6, and a silicon compound selected from the group consisting of SiH_4 and Si_2H_6, with the proviso that when the metal compound is WF_6, the silicon compound is Si_2H_6, such that a metal silicide film having a silicon:metal ratio of less than about 2.3 is deposited on said substrate.

33. A process for the low pressure chemical vapor deposition of a metal silicide film on a substrate at a reduced temperature, which comprises:

(a) maintaining the substrate at a temperature of from about 350° C. to about 400° C. in a reactor whose walls are cooled, and

(b) simultaneously introducing into the reactor Si_2H_6 and a metal compound selected from the group consisting of $TaCl_5$ and $TiCl_4$, such that a metal silicide film having a silicon: metal ratio of less than about 2.3 is deposited on said substrate.

4,766,007

PROCESS FOR FORMING DEPOSITED FILM

Takashi Kurokawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 906,613, Sep. 10, 1986, abandoned, which is a continuation of Ser. No. 631,647, Jul. 17, 1984, abandoned. This application Oct. 1, 1987, Ser. No. 104,526
Claims priority, application Japan, Jul. 21, 1983, 58-131936
Int. Cl.[4] B05D *3/06*
U.S. Cl. 427—39 9 Claims

1. A process for forming a deposited film on a substrate, comprising the steps of:

providing the substrate and silicon and hydrogen atoms in a deposition chamber;

forming a deposited film on the substrate which film comprises amorphous silicon containing hydrogen atoms by

VOL 1093 ISS 4 AG 23 1988 UMI

applying electro-discharging energy to a stainless steel electrode opposed to the substrate; and



cooling said electrode to maintain such electrode at a temperature of 150° C. or lower while performing said forming step.

4,766,008

METHOD OF MANUFACTURING THIN FILM CONDUCTOR WHICH CONTAINS SILICON AND GERMANIUM AS MAJOR COMPONENTS

Setsuo Kodato, Atsugi, Japan, assignor to Anritsu Corporation, Tokyo, Japan

Division of Ser. No. 896,131, Aug. 12, 1986. This application Jun. 30, 1987, Ser. No. 68,273
Claims priority, application Japan, Aug. 26, 1985, 60-186900
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—39 10 Claims



1. A method of manufacturing a thin film conductor comprising the steps of:

placing an insulating substrate on one of a pair of opposing electrodes arranged inside a vacuum chamber;

supplying a gas mixture containing silane and germane as major components to said vacuum chamber at a predetermined flow rate ratio, while maintaining an interior of said vacuum chamber at a predetermined vacuum pressure and said insulating substrate at a predetermined temperature;

adjusting the gas flow rate ratio of silane to germane within said gas mixture to control the ratio of silicon to germanium within the thin film conductor being manufactured;

adding a hydrogen-diluted dopant to the gas mixture containing silane and germane for controlling the conductivity type of the said thin film conductor, and

generating plasma discharge between said electrodes to decompose the components of the gas mixture, so that mainly the decomposed silicon and germane components are deposited on said insulating substrate to prepare said thin film conductor which has a composition containing silicon and germanium as major components, has a structure in which both amorphous and microcrystalline phase are present and has a dark current conductivity which is not less than 1 $S.cm^{-1}$; and

controlling the power density of said plasma discharge to control the ratio of amorphous structure to microcrystalline structure in said thin film conductor.

4,766,009

SELECTIVE WORKING METHOD

Midori Imura, Tokyo; Makoto Morijiri, Hitachi; Masanobu Hanazono, Mito, and Shinichi Kazui, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 757,447, Jul. 22, 1985, abandoned. This application Jan. 6, 1987, Ser. No. 4,279
Claims priority, application Japan, Jul. 23, 1984, 59-152337
Int. Cl.[4] B05D 3/06
U.S. Cl. 427—53.1 24 Claims



1. A method for selectively electrolessly plating or etching a surface of a workpiece having a defective portion thereon, comprising the steps of:

locally circulating a continuously flowing electroless solution, being selected from one of a plating solution and an etching solution, to the defective portion of the workpiece and an immediately surrounding area thereof, whereby another area of the workpiece does not have the electroless solution circulated thereto, so that only the defective portion and the immediately surrounding area thereof, or the workpiece, is supplied with electroless solution, wherein during the locally circulating step an electroless solution cell is positioned above the workpiece, so as to locally supply the continuously flowing electroless solution to the defective portion of the workpiece and the immediately surrounding area thereof, and a pad is directly positioned on the surface of the workpiece so as to expose only the defective portion of the workpiece and the immediately surrounding area thereof, the pad and electroless solution cell, in combination, confining the continuously flowing electroless solution, in its exposure to the workpiece, to the defective portion and the immediately surrounding area thereof; and

locally irradiating an energy beam onto the defective portion of the workpiece to heat the defective portion.

4,766,010

PROCESS FOR MANUFACTURING DIELECTRIC LAYERS FORMED FROM CERAMIC COMPOSITIONS CONTAINING INORGANIC PEROXIDE AND ELECTRONIC DEVICES INCLUDING SAID LAYERS

Yukihisa Takeuchi, Nagoya, and Hideo Masumori, Anjyo, both of Japan, assignors to NGK Insulators, Ltd., Japan

Division of Ser. No. 649,672, Sep. 12, 1984, Pat. No. 4,649,125. This application Dec. 2, 1986, Ser. No. 936,784
Claims priority, application Japan, Apr. 13, 1984, 59-75396
Int. Cl.[4] B05D 5/12; C04B 35/64
U.S. Cl. 427—96 12 Claims

1. A process of manufacturing an electronic circuit board, a hybrid integrated circuit, an integrated circuit package or a multilayer ceramic structure, comprising the steps of:

preparing a dielectric paste for printing, from at least one

insulating glass, at least one organic binder, at least one inorganic peroxide selected from the group consisting of peroxides of alkali metals, peroxides of group II elements of the Periodic Table and peroxides of heavy metals, and at least one material selected from the group consisting of refractory fillers and oxide additives;

preparing a conductor paste from at least one base metal;

printing, with said dielectric paste and conductor paste, at least one dielectric layer in a predetermined pattern, and at least one conductor layer in a pattern of said circuit, alternately in a laminated fashion, thereby preparing an unfired printed laminate structure; and

co-firing said unfired printed laminate structure in a non-oxidizing atmosphere.

4,766,011

RESTORING STRANDED CONDUCTOR ELECTRICAL DISTRIBUTION CABLE

Gary A. Vincent, and Daniel F. Meyer, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 29, 1986, Ser. No. 947,134
Int. Cl.[4] B05D 5/12
U.S. Cl. 427—117 10 Claims

1. A method of restoring a polyolefin insulated cable having water-containing tree voids in its insulation, comprising:

supplying the interstices of the stranded conductor portion of said cable with an organosilicon fluid which comprises aromatic radical containing silanes or partial hydrolyzates and condensates thereof, of the general formula

$$(RO)_xSiR'_yAr_{(4-x-y)}$$

where R denotes an alkyl radical with 1 to 6 carbon atoms, R' denotes an alkyl radical with 1 to 6 carbon atoms, Ar denotes an aromatic organic radical chosen from the group consisting of phenyl and benzyl radicals, x is 1, 2 or 3, y is 0, 1 or 2, $x+y \leqq 3$, where said organosilicon fluid has an initial kinematic viscosity at 25° C. of less than 20 centistokes, whereby said organosilicon fluid is absorbed by said insulation and subsequently polymerizes within said tree voids by reacting with the water contained therein.

4,766,012

MICROENCAPSULATION OF A MEDICAMENT

Mauro Valenti, Magenta, Italy, assignor to Farmaceutici Formenti S.p.A., Milan, Italy

Filed Aug. 22, 1986, Ser. No. 899,147
Claims priority, application Italy, Aug. 29, 1985, 22009 A/85
Int. Cl.[4] A61K 9/58, 9/62; B01J 13/02
U.S. Cl. 427—213.36 19 Claims

1. A process for the microencapsulation of a medicament by at least one coating agent consisting essentially of the steps of:

(a) dissolving the coating agent in water by salification, whereby a solution is formed;

(b) dispersing particles of the medicament to be microencapsulated first in water and then in the solution of salified coating agent obtained in step (a), whereby a suspension is formed;

(c) adding an acidifyig substance to the suspension obtained in step (b) so that the coating agent precipitates onto the particles of medicament kept in suspension by stirring, whereby microcapsules are formed; and

(d) recovering the microcapsules.

4,766,013

CARBON COMPOSITE ARTICLE AND METHOD OF MAKING SAME

James W. Warren, Pacoima, Calif., assignor to Refractory Composites, Inc., Whittier, Calif.

Continuation of Ser. No. 475,521, Mar. 15, 1983, which is a continuation-in-part of Ser. No. 273,953, Jun. 15, 1981. This application Jun. 4, 1984, Ser. No. 617,262
Int. Cl.[4] B05D 3/02
U.S. Cl. 427—228 91 Claims



1. A method of making a composite article comprising the steps of:

forming a starting substrate from a multiplicity of high temperature resistant fibers selected from a group cnsisting of pyrolyzed wool, rayon, polyacrylonitrile and pitch fibers,

exposing said starting substrate to an elevated temperature of about 1800° F. for a period of time sufficient to thermally stabilize said substrate,

suspending said starting substrate by heating said starting substrate to a temperature of between approximately 1500° F. and approximately 4200° F. while exposing said starting substrate to a hydrocarbon gas to form a uniform layer of pyrolytic carbon about each of the fibers in said starting substrate,

removing said intermediate substrate from said first controlled environment and forming it into a shaped substrate having the approximate shape desired of the end product composite article,

supporting said shaped substrate in a second controlled environment while heating said shaped substrate to a

VOL 1093 ISS 4 AUG 23 1988 UMI

temperature of between approximately 1350° F. and approximately 2500° F., and

forming a coated article having a conmtrolled degree of open porosity by depositing about said fibers of said shaped substrate through chemical vapor deposition a metal capable of reacting with carbon, oxygen, boron and nitrogen to form a carbide, oxide, boride and nitride.

4,766,014

PROCESS FOR PRODUCING ARTIFICIAL LEATHER SIMILAR TO REAL LEATHER BY CHEMICALLY PROCESSING SYNTHETIC SHEET MATERIAL

Giorgio Poletto, Cirié , Italy, assignor to Lorica S.p.A., Italy

Filed Dec. 11, 1986, Ser. No. 940,286

Int. Cl.[4] B05D *5/00*

U.S. Cl. 427—245 **11 Claims**

1. A process for producing artificial leather similar to natural leather by chemically processing porous, synthetic sheet material of known type comprising a porous polyurethane matrix and a pressed polyurethane resin cover film patterned to imitate real leather, said process comprising the steps of:

treating said synthetic sheet material with an aqueous solution containing at least one metal salt selected from the group consisting of the sulfates of calcium, chromium, iron, aluminum, magnesium and titanium and the chlorides of chromium, iron, aluminum, magnesium and titanium until said sheet material is saturated by said solution; and in combination:

further treating said sheet material, after the treating with said water solution of metal salts, with a water emulsion of fatty material selected from the group consisting of mineral oil, sulfated sperm oil and esters of substituted or unsubstituted fatty acids having from 12 to 24 carbon atoms.

4,766,015

PHOSPHOLIPID LUBRICANT FOR COATING MOVING WEBS

Koyu Nikoloff, and Raymond J. Peltier, both of N. Kingston, R.I., assignors to Bercen, Inc., Cranston, R.I.

Filed Apr. 21, 1987, Ser. No. 40,632

Int. Cl.[4] B05D *3/00*

U.S. Cl. 427—326 **13 Claims**



1. A lubricant additive mixture adapted for combination with an aqueous-based paper or paper board coating mixture, said additive mixture comprising a fatty acid, a surfactant, and a phospholipid selected from the group consisting of phosphatidylcholine, phosphatidylethanolamine, phosphatidylinositol, phosphatidic acid and mixtures thereof.

4,766,016

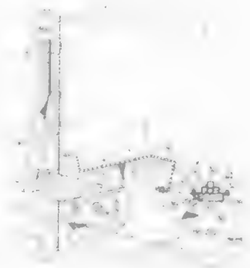
METHOD OF APPARATUS OF APPLYING A LIQUID TO A PLANE SURFACE

Chikanari Kubo, 7-2-101, Shin-Isono 4-chome, Sagamihara City, Kanagawa Pref., Japan

Continuation of Ser. No. 871,795, Jun. 9, 1986, abandoned. This application Oct. 22, 1987, Ser. No. 112,057

Int. Cl.[4] B05D *1/28*

U.S. Cl. 427—428 **2 Claims**



1. A method of applying a thin and uniform layer of a liquid to a plane surface, comprising the steps of:

(a) providing:

(1) a rotatable liquid applicator roller adapted to engage and apply liquid to a said plane surface,

(2) a liquid supply unit having a liquid impregnatable element therein,

(3) and a selectively controllable variable displacement pump, said pump having an output providing a flow of liquid at a predetermined variable rate,

(b) baising said liquid supply unit toward said roller so that said liquid impregnatable element is maintained in continuous engagement with said roller at a constant contact pressure,

(c) pumping liquid from said pump output directly to said liquid impregnatable element so that the rate of flow of liquid to said element is directly responsive to said predetermined liquid flow rate at said pump output and maintains said element in a saturated state;

(d) and controlling the displacement of said pump so that the amount of liquid transferred from said element to said applicator roller is equal to the rate of flow of liquid from said pump to said element.

4,766,017

PROCESS FOR THE ADHESIVE METALLIZATION OF CERAMIC MATERIALS

Kurt Heymann, and Christoph Donner, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 677,293, Dec. 3, 1984, abandoned, which is a continuation of Ser. No. 447,623, Dec. 6, 1982, abandoned. This application Jul. 7, 1986, Ser. No. 882,637

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3150399

Int. Cl.[4] B05D *3/02, 3/10*

U.S. Cl. 427—444 **5 Claims**

1. In a process for the adhesive metallization of ceramic material by roughening of the material and subsequent chemical metal deposition, with or without galvanic metal deposition, the improvement wherein said roughening comprises treating said material with an alkali hydroxide solution having a temperature from 50° to 180° C. and subsequently heating said material to a temperature between about 300° and 600° C.

4,766,018

READILY PEELABLE, STERILIZABLE PACKAGES

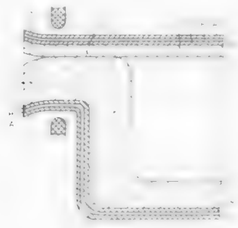
Thomas Hinrichsen, Bomlitz; Holger Preiss, Visselhoevede, and Harry Witte, Bomlitz, all of Fed. Rep. of Germany, assignors to Wolff Walsrode AG, Walsrode, Fed. Rep. of Germany

Filed Dec. 16, 1986, Ser. No. 942,143

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1985, 3545768

Int. Cl.[4] B32B *27/08*

U.S. Cl. 428—35 **3 Claims**



1. A readily peelable and sterilizable package composed of a deep-drawn tray and a lid joined to one another along their edges, each of said tray and said lid comprising a core and at least one sealing layer, the sealing layer of one of the tray and the lid comprising essentially an ethylene/1-butene copolymer and the sealing layer of the other of the tray and the lid comprising essentially a polypropylene or a propylene/ethylene copolymer, the difference between the sealing layers permitting them to be separated so as to separate the lid from the tray.

4,766,019

CARBONATED BEVERAGE CAN AND METHOD FOR PRODUCING A CARBONATED BEVERAGE CAN

Nicholas Michaels; William H. Korcz, both of Houston; R. Neil Campbell, Katy, all of Tex., and Surendra N. Singhal, Tulsa, Okla., assignors to Shell Oil Company, Houston, Tex.

Filed Jul. 14, 1986, Ser. No. 885,507

Int. Cl.[4] B65D *23/08;* **B65H** *81/00*

U.S. Cl. 428—35 **25 Claims**



1. A thin-wall carbonated beverage can with acceptable creep, modulus and yield strength values, which comprises:

a can body which is less than 80 mils thick, which comprises:

a core of a thermoplastic material; at least two layers of a film or sheet of an extruded non-fibrous polyolefin material, both of which have been either monoaxially stretched or biaxially stretched to a tensile yield strength of above 8,000 psi in any one direction, and to an elastic modulus of above 400,000 psi in any one direction, the first layer of which is wrapped around said core singularly or in plys at an angle from the axial direction of said core of greater than 0° and less than +90° and the second layer of which is wrapped around said core singularly or in plys at an angle from the axial direction of said core of the negative value of the angle of the first layer;

an adhesive layer which is placed between said core and said layers of polyolefins in order to adhere said layers to said core as well as said layers to themselves; and

at least one layer of barrier material which is either in said core or contiguous to either said core, said layers of polyolefin or said adhesive layer; and

ends which are attached to said can body.

4,766,020

UNITARY CONNECTING FLOOR MAT SECTIONS

Chester W. Ellingson, Jr., Burnsville, Minn., assignor to Reese Enterprises, Inc., Rosemount, Minn.

Filed Aug. 24, 1987, Ser. No. 88,829

Int. Cl.[4] B32B *3/10*

U.S. Cl. 428—54 **5 Claims**



1. A floor covering mat structure consisting of interconnected sections, having in combination

a first section having a central body portion and unitary therewith lateral terminal body portions at each side thereof, all formed of a plastic material,

said first section having a self formed ribbed tread surface,

said lateral terminal portions each having an axial bore,

a slot extending outwardly laterally of each of said bores,

a second section having a central body portion and unitary therewith lateral terminal body portions at each side thereof, all formed of a plastic material,

said second section having a self formed ribbed tread surface,

said last mentioned lateral terminal portions each having a web extending outwardly laterally thereof,

each of said webs having an outer edge portion disposed within the bore of an adjacent body lateral terminal portion and retained therein,

each of said webs having a medial thickness such as to extend through the slot of the bore of an adjacent body terminal portion, and

the underlying surface portions of said first and said second sections forming an underlying support.

4,766,021

OPTICAL RECORDING MEDIUM

Arend Werner, Bad Durkheim; Hartmut Hibst, Ludwigshafen, and Juergen Petermann, Buxtehude, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 6, 1987, Ser. No. 22,826

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1986, 3608267

Int. Cl.[4] B32B *5/12;* **G01D** *15/10*

U.S. Cl. 428—64 **2 Claims**

1. An optical recording medium for recording and retrieving information by means of high energy radiation, essentially consisting of a polymeric base and, applied on this, a polycrystalline metal film of high reflectivity, wherein the polymer base

VOL 1093 ISS 4 AG 23 1988 UMI

consists essentially of a polymer substrate and a uniaxially oriented polymeric surface layer and the polycrystalline metal film has the uniform crystallographic orientation of the crystallites corresponding to the orientation of the base.

4,766,022

RECTANGULAR TILE-LIKE CARPET WITH LOOPED TILE ON BOTH SURFACES

Yasuyoshi Tone, Yokohama, Japan, assignor to Saami Co., Ltd., Tokyo, Japan

Division of Ser. No. 732,034, May 8, 1985, Pat. No. 4,649,069. This application Oct. 22, 1986, Ser. No. 921,500

Claims priority, application Japan, May 12, 1984, 59-69502[U]; May 12, 1984, 59-69503[U]

Int. Cl.[4] B32B *3/02*

U.S. Cl. 428—95 3 Claims



1. A carpet comprising a rectangular tile-like carpet body consisting of front and back loop-pile layers.

4,766,023

METHOD FOR MAKING A FLEXIBLE LOUVERED PLASTIC FILM WITH PROTECTIVE COATINGS AND FILM PRODUCED THEREBY

Shih-Lai Lu, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 16, 1987, Ser. No. 3,723

Int. Cl.[4] B05D *3/06*

U.S. Cl. 420—120 25 Claims



1. A method of producing a composite structure including a louvered plastic film, said method comprising the steps of:

coating a first major surface of a louvered plastic film with a composition in a fluid state which polymerizes to a transparent hard state upon exposure to a selected type of radiation, said composition bonding strongly to said louvered plastic film upon polymerization;

bringing a first liner film which is transmissive to said selected type of radiation into contact with said coating of composition, said liner film being selected to release easily from said composition after polymerization of said composition; and

exposing said composite to sufficient radiation of said selected type to polymerize said composition to a hard state.

16. A composite louvered plastic film product comprising

a louvered plastic film having first and second major surfaces; and

a first layer of hard radiation polymerized, optically clear composition adhered to said first major surface.

4,766,024

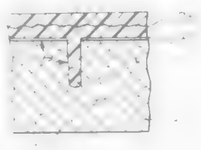
ROOFING SYSTEM

Narikottile G. Nath, Carson, Calif.; Kenneth N. Meehan, Wheaton, Ill., and Robert W. Eberle, Golden, Colo., assignors to International Permalite, Inc., Ontario, Calif.

Filed May 7, 1986, Ser. No. 860,439

Int. Cl.[4] B32B *3/10*

U.S. Cl. 428—139 4 Claims



1. A roofing insulation system comprising:

a perlite board having an outer surface, said outer surface having a plurality of surface perforations formed therein;

a scorch-resistant coating formed on and integral with said perforated outer surface;

an improved bitumen membrane attached to and received by said outer coated surface, including said plurality of surface perforations,

whereby a roofing insulation system having increased structural integrity is provided with the portions of the bitumen material received by the surface perforations increasing the peel-resistance of the insulation system.

4,766,025

COMPOSITE MOLDED ARTICLE AND METHOD OF MAKING SAME

John L. Sanok, Grosse Ile, and Michael L. Piechura, Detroit, both of Mich., assignors to Sheller Globe Corp., Toledo, Ohio

Filed Sep. 25, 1986, Ser. No. 911,499

Int. Cl.[4] B32B *3/26, 5/18;* B29C *67/22, 39/10*

U.S. Cl. 428—159 38 Claims



12. A composite molded vehicle interior panel member having a predetermined exterior shape and configuration, said panel member being formed by a process comprising the steps of:

providing a selectively closable mold assembly including a first mold and a second mold having respective first and second molding surfaces, at least said second mold member having a shape complementary to said predetermined exterior shape of said panel;

positioning a deformable sheet material on said second molding surface;

urging said sheet material into said second mold in order to conform said sheet material to said second mold surface and to form an exterior shape of said sheet material corresponding to said predetermined exterior shape of said panel;

closing said mold assembly;

forming a relatively rigid substrate base for said sheet material be reaction injection molding a first moldable urethane material into said closed mold assembly between said first molding surface and said sheet material, said first moldable material being composed of a material having a rigidity when cured that is greater than the rigidity of said sheet material in order to retain said sheet material in said exterior shape corresponding to said predetermined exterior shape of said panel;

blocking off at least one predetermined area of said sheet material during said reaction injection molding of said first moldable urethane material in order to substantially prevent said first moldable urethane material from contacting said predetermined area of said sheet material; and

reaction injection molding a second moldable urethane material into said mold assembly between said first mold surface and said conformed sheet material at least at said previously blocked-off predetermined area.

4,766,026

IDENTIFICATION CARD WITH A VISIBLE AUTHENTICITY FEATURE AND A METHOD OF MANUFACTURING SAID CARD

Joseph Lass; Hansjürgen Merkle, both of Munich; Wolfgang Becker, Neubiberg; Werner Herget, and Erwin Lob, both of Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft für Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Oct. 15, 1986, Ser. No. 919,006

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1985, 3536740

Int. Cl.[4] B42D *15/02*

U.S. Cl. 428—203 17 Claims



1. An identification card containing a plurality of synthetic layers in which information is provided by means of a laser beam, said information being visible in the form of changes in the optical properties of the synthetic material due to irreversible changes in the material caused by the laser beam, characterized in that

at least a first and a second layer have transparent areas which overlap,

the first layer and the second layer have the property of changing visibly when exposed to the laser beam, this change being caused only as of certain intensity values and the particular intensity value required herefor being lower for the first layer than for the second layer,

a first piece of information is provided in the first layer,

a second piece of information is provided in the second layer, which is identical or is part of the first piece of information and is provided simultaneously with the first piece of information so that the second peice of information is present substantially congruent to the first piece of information in the recording direction, and in that the information in the first and second layers is provided by the beam in such a way as to be visible, either overlapping or singly, depending on the viewing angle, its appearance varying in accordance with the viewing angle.

4,766,027

METHOD FOR MAKING A CERAMIC MULTILAYER STRUCTURE HAVING INTERNAL COPPER CONDUCTORS

Ian Burn, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 13, 1987, Ser. No. 3,259

Int. Cl.[4] B32B *3/00, 15/00;* C04B *35/64, 33/34*

U.S. Cl. 428—210 22 Claims

3. A multilayer electronic element comprising a plurality of patterned conductive layers of thick film copper paste comprising an admixture of finely divided particles, metallic copper dispersed in a liquid organic medium comprising n-butyl methacrylate dissolved in an organic solvent in which other acrylic polymers are insoluble, each of which layers is sandwiched between green ceramic layers comprising finely divided particles of ceramic dielectric material and nonreducing low melting glass dispersed in a solid matrix of thermoplastic acrylic polymer binder which has been fired in a buffered low oxygen containing atmosphere to effect the volatilizable of the organic medium of the thick film copper paste and the polymer matrix of the green ceramic layers.

4,766,028

DAMPING DEVICE FOR DAMPING NOTABLY THE VIBRATIONS RELATIVE TO A STRUCTURAL ELEMENT

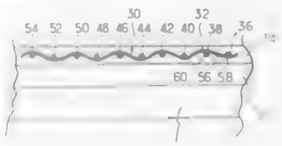
Gerard Rich, Soultz, France, assignor to Rollin, S. A., Steinback, France

Continuation of Ser. No. 779,548, Sep. 24, 1985, abandoned. This application Dec. 30, 1986, Ser. No. 946,673

Claims priority, application France, Sep. 28, 1984, 84 14993

Int. Cl.[4] B32B *7/00*

U.S. Cl. 428—253 20 Claims



1. A daming device for damping notably the vibrations relative to a structural element consisting essentially of a lower damping viscoelastic layer made from a damping viscoelastic material, affixed to a surface of a structural element to be damped, and an upper stress constraining layer located above the viscoelastic layer opposite to the structural element wherein the upper layer is a composite stress constraining layer having a stress constraining element embedded in a damping material.

4,766,029

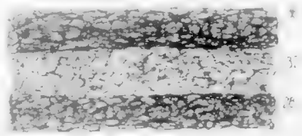
SEMI-PERMEABLE NONWOVEN LAMINATE

Robert J. Brock, Marietta; William Conn, Stone Mountain, and James M. Weber, Marietta, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 23, 1987, Ser. No. 6,526

Int. Cl.[4] B32B *27/00*

U.S. Cl. 428—286 12 Claims



1. A semi-permeable laminate comprising:

(a) an interior layer comprising:

VOL 1093 ISS 4 AG 23 1988 UMI

(i) an array of randomly dispersed microfibers formed from a fiber forming polymer having a melt flow; and
(ii) an interstitial mass, between and among the microfibers, closing up interstitial spaces, formed from a binder-filler polymer having a melt flow, wherein the melt flow of the fiber forming polymer is at least about 80 grams per ten minutes at 230° C. less than the melt flow of the binder-filler polymer; and

(b) at least one exterior layer bonded to the interior layer by means of of the binder-filler polymer of the interior layer, the exterior layer comprising an array of randomly laid, continuous filaments formed from a filament forming polymer having a melt flow, wherein the melt flow of the filament forming polymer is at least about 200 grams per ten minutes at 230° C. less than the melt flow of the binder-filler polymer.

4,766,030

OXONATED POLY(ALKYLENE OXIDE) SURFACE TREATMENT AGENTS

Laurence R. B. Hervey, P.O. Box 363, Wells River, Vt. 05081

Division of Ser. No. 767,898, Aug. 21, 1985, Pat. No. 4,698,259. This application Aug. 31, 1987, Ser. No. 93,199

Int. Cl.[4] D04H *1/58;* B05D *3/02;* C03C *25/02;* D21C *9/00*

U.S. Cl. 428—289 25 Claims

1. A method of reducing an electrostatic charge on textile fibers, which comprises contacting the fibers with an acidic aqueous solution of a poly(alkylene oxide) in which a sufficient number of the ether oxygen atoms have been oxonated with a Lewis acid to cause the poly(alkylene oxide) to adhere to the fibers, said poly(alkylene oxide) being substantially devoid of substituents having hydrocarbon chains of 5 or more carbon atoms.

4,766,031

INTEGRAL FOAM BODY AND METHOD OF MANUFACTURING THE SAME

Walter Kohl, Händelstrasse 5, 6780 Pirmasens, Fed. Rep. of Germany

Continuation of Ser. No. 692,926, Jan. 17, 1985, abandoned. This application Aug. 19, 1986, Ser. No. 898,133

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1984, 3401438

Int. Cl.[4] B32B *1/00, 3/20, 5/22*

U.S. Cl. 428—317.9 20 Claims

1. An integral foam body, comprising
a body part formed by extrusion of hard polyvinyl chloride foam;
a plurality of staple fibers having a high tensile strength and a length of between 2 and 20 mm, said staple fibers being embedded in said body part in a randomly distributed manner and being provided in a quantity of between 10 and 20 weight percent relative to the weight of said body part; and
a non-porous closed outer skin formed integrally with said body part and having an outer surface, the staple fibers being also embedded in said outer skin, and said hard polyvinyl chloride not affecting formation of the outer surface in that the outer surface remains smooth despite embedding of said staple fibers in the foamed body including the outer skin.

4,766,032

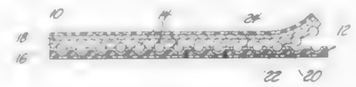
REFLECTIVE TRANSFER SHEETING AND METHOD OF MAKING THE SAME

Vincent S. Pernicano, 2833 Railroad St., Boyne Falls, Mich. 49713

Filed Nov. 21, 1983, Ser. No. 553,564

Int. Cl.[4] B32B *5/16*

U.S. Cl. 428—325 18 Claims



1. A method of making a heat transfer sheeting combination of the type for being applied onto a fibrous article (10) to imprint a reflective design thereon, said method including the steps of:
passing a sheet of substrate (12) having an exposed silicone layer (24) through a mass of beads (14) to adhere a layer of beads (14) over the silicone layer (24), and fixedly securing the beads (14) to the sheet (12).

4,766,033

HIGHLY HEAT-SENSITIVE FILM FOR STENCIL

Isao Yoshimura, Fujisawa; Takashi Nakao, Kawasaki, and Mitsuo Kohno, Yokohama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 14, 1986, Ser. No. 885,210

Claims priority, application Japan, Jul. 15, 1985, 60-154308; Feb. 5, 1986, 61-22145; Feb. 17, 1986, 61-30643

Int. Cl.[4] B32B *27/06;* B41C *1/14;* B41N *1/24*

U.S. Cl. 428—332 20 Claims

1. A highly heat-sensitive film for stencil, comprising a thermoplastic resin having a coefficient of temperature and melt viscosity ($\Delta T/\Delta$ log VI) of not more than 100 and a thermal shrinkage (X%) at 100° C. and a thermal shrinkage stress (Y g/mm^2) at 100° C. falling respectively in the ranges of the formulas; $15 \leqq X \leqq 80$ and $75 \leqq Y \leqq 500$; and both falling in the range of the formula; $-8X+400 \leqq Y \leqq -10X+1000$; having a thickness in the range of 0.5 to 15 μm, and excelling in low-energy perforation property.

4,766,034

MAGNETIC RECORDING MEDIUM

Toshihiko Sato; Takeshi Kitamura, and Shinsaku Nagaoka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1987, Ser. No. 132,681

Claims priority, application Japan, Feb. 16, 1984, 59-27714

Int. Cl.[4] H01F *10/08, 10/16*

U.S. Cl. 428—336 12 Claims



1. A magnetic recording medium comprising a substrate and, directly provided thereon, a magnetic metal layer which has an uppermost layer consisting essentially of a mixture of a magnetic metal and an oxide thereof,
wherein said magnetic metal is Co or Co—Ni alloy of which Ni content is less than 30% by weight,
and wherein the surface portion of said uppermost layer consists essentially of a crystal phase of said oxide,
and wherein the ratio of oxide-forming metallic atoms to the total number of metallic atoms decreases continuously with the depth from the outer surface of said uppermost layer and becomes approximately 0.5 in a region from 105 Å–150 Å of the depth from said surface.

8. A process for the production of a magnetic recording medium which comprises a substrate and a magnetic layer having an uppermost layer consisting essentially of a mixture of a magnetic metal and a oxide thereof, in which the surface portion of said uppermost layer consists essentially of a crystal phase of said oxide, and the ratio of magnetic metal atoms forming said oxide to the total number of magnetic metal atoms continuously decreases in said uppermost layer with the depth from the outer surface and becomes 0.5 in a region from 105 Å to 150 Å of the depth from said surface, comprising
supporting and forwarding said substrate with a drum-shaped substrate-supporting member,
depositing a vapor of said magnetic metal by vacuum deposition on a surface of said substrate in a direction controlled by a mask in a flying space of said magnetic metal vapor, said mask being hollow in and having a slit-shaped nozzle facing said substrate surface along its front edge, said nozzle being placed at a distance of 3 to 10 mm from said substrate surface, and
introducing a reactive gas through said nozzle to said substrate surface to deposit the magnetic metal vapor thereon, at an angle from 140° to 180° to a normal line at the position where said gas hits the surface of the substrate supported on the drum-shaped supporting member.

4,766,035

BARRIER FILM STRUCTURES

Gerald M. Lancaster, Surfside; Russell H. Cramm, Lake Jackson; David C. Kelley, Angleton, all of Tex., and Charles V. Neywick, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 738,009, May 22, 1985, Pat. No. 4,640,865, and a continuation-in-part of Ser. No. 645,990, Aug. 31, 1984, Pat. No. 4,601,948, which is a continuation-in-part of Ser. No. 531,110, Sep. 12, 1983, Pat. No. 4,600,614. This application Dec. 17, 1986, Ser. No. 943,331

Int. Cl.[4] C09J *7/02*

U.S. Cl. 428—345 11 Claims

1. A heat-sealed article comprising a substrate heat-bonded to a carbon monoxide-containing polymer which has coated thereon a halopolymer layer, wherein the heat for the bonding is characterized by having been generated by high-frequency electromagnetic radiation.

4,766,036

PROCESS FOR PRODUCING POROUS FIBERS FROM ORIENTABLE OLEFIN POLYMERS HAVING CATION-CONTAINING, PENDENT REACTIVE SIDE-GROUPS AND THE RESULTANT PRODUCT

Walter L. Vaughn, and Milton S. Wing, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 16, 1985, Ser. No. 776,534

Int. Cl.[4] C08J *9/26, 9/36;* B29B *9/00;* B29C *67/20*

U.S. Cl. 428—364 16 Claims



1. A process for preparing porous fibers, filaments or strands from an elongated, normally-solid, orientable olefin polymer having cation-containing, pendent reactive side-groups along the polymer molecules, said side-groups being substantially reactable with a reagent at a temperature below that at which thermal stress-relaxation of the oriented molecule is substantially encountered, said process comprising the sequential steps of
(a) orienting a cooled, elongated, extrudate of said polymer at a temperature below that at which stress-relaxation is substantially encountered, or else starting with the polymer so-oriented
(b) reacting the side-groups by subjecting the oriented polymer to the action of a fluid reagent which reacts with said side-groups, thereby exchanging cations of the side-groups with cations of the reagent, thereby swelling the polymer while keeping the temperature below the thermal stress-relaxation temperature,
(c) subjecting the so-swelled, oriented polymer to physical

VOL 1093 ISS 4 AG 23 1988 UMI

stress which causes fibrillation of the polymer into separable parts, and optionally,

(d) reacting the polymer with a counter-reagent having reactable cations selected to return the side-groups to their original chemical structure or to another predetermined chemical structure,

said steps resulting in porous product comprising fibers, filaments or strands having microporosity and exhibiting a surface area to weight ratio of at least about 0.5 m^2/g.

12. The porous fibers, filaments or strands, made in accordance with the process of claim 1.

4,766,037

PHOTODEGRADABLE MICROCAPSULES

Akio Watanabe; Shintaro Washizu; Fumiaki Shinozaki, all of Shizuoka; Shun-ichi Ishikawa, and Toshiaki Aoai, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 9, 1986, Ser. No. 906,702

Claims priority, application Japan, Sep. 9, 1985, 60-198744; Sep. 9, 1985, 60-198745

Int. Cl.[4] B01J *13/02;* **B32B** *27/34;* **G03C** *1/72*

U.S. Cl. 428—402.21 **1 Claim**

1. A photodegradable microcapsule which has a wall made of a polymer coat having an acid-decomposable silyluredo bond represented by the formula



(III)

and which contains a compound that generates an acid upon actinic radiation.

4,766,038

TRANSFERABLE PAINT FILM AND METHOD FOR ITS MANUFACTURE

Hubertus M. de Vroom, Heckenrosenweg, Fed. Rep. of Germany, assignor to Nordipa AG, Schwerzenbach, Switzerland

Filed Jul. 21, 1986, Ser. No. 887,787

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1985, 3527609

Int. Cl.[4] B32B *9/04, 27/06;* **B41M** *3/12;* **C09J** *7/02*

U.S. Cl. 428—447 **18 Claims**

1. A transferable paint film consisting essentially of a carrier film,

a silicone layer on said carrier film acting as a release layer,

at least one paint or varnish layer, and

an adhesive layer disposed between the silicone layer and the paint or varnish layer,

wherein the silicone layer is a cross-linked silicone polymer of the polyaddition type.

4,766,039

MAGNETIC HEAD MADE FROM AMORPHOUS MAGNETIC FILM

Shigekazu Otomo, Sayama; Noriyuki Kumasaka, Ome; Noritoshi Saito, Hachioji; Takeo Yamashita, Tachikawa; Kazuo Shiiki, Kanagawa, and Yoshihiro Hamakawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 17, 1986, Ser. No. 875,222

Claims priority, application Japan, Jun. 21, 1985, 60-134143

Int. Cl.[4] G11B *5/31*

U.S. Cl. 428—469 **19 Claims**

1. A magnetic head comprising a magnetic circuit, at least a part of said magnetic circuit including a magnetic film, wherein said magnetic film is composed of an amorphous alloy film having the following composition formula:

$Co_aT_bZr_cN_d$

wherein T is at least one of Nb, Ta, W, Mo, V, and Cr; N is at least one of Au, Pt and Ag; $d \geqq 1$, $b > 0$, $b_1+b_2+2c \geqq 10$, $a+d \geqq 80$,

$-1 \leqq (3c-b_1-3b_2-5b_3-3b_4-4d)/(c+b_1+b_2+b_3+b_4+d) \leqq 1$, and $a+b+c+d=100$, where b_1 is a Nb concentration, b_2 is a Ta concentration, b_3 is a W concentration, b_4 is sum total of Mo, Cr and V concentrations, and $b=b_1+b_2+b_3+b_4$.

4,766,040

TEMPERATURE RESISTANT ABRASIVE POLYCRYSTALLINE DIAMOND BODIES

Lars H. Hillert, Nacka, and Mats G. Waldenström, Bromma, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jun. 26, 1987, Ser. No. 66,478

Int. Cl.[4] B22F *3/00*

U.S. Cl. 428—552 **21 Claims**



1. A temperature resistance abrasive polycrystalline diamond body wherein the superhard body comprises at least two, different homogeneous diamond layers, on top of each other separated by a metal diffusion-blocking intermediate layer between each said diamond layer, each diamond layer having a thickness of 0.1–2.0 mm but with the total layer thickness being below 3.0 mm, each diamond layer having its special amount and composition of relatively low-melting binder metal in amounts between 1 and 40 vol %, and one or more hard refractory compounds and further wherein the metal-diffusion-blocking intermediate layers each have a thickness between 1 and 300 μm.

4,766,041

DUCTILE LOW TEMPERATURE BRAZING ALLOY

Howard Mizuhara, Hillsborough, Calif., assignor to GTE Products Corporation, Stamford, Conn.

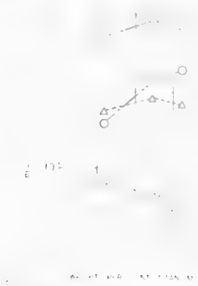
Continuation-in-part of Ser. No. 877,628, Jun. 23, 1986, Pat. No. 4,684,579, which is a continuation-in-part of Ser. No. 823,200, Jan. 28, 1986, abandoned, which is a continuation of Ser. No. 757,962, Sep. 20, 1984, Pat. No. 4,623,513, which is a continuation of Ser. No. 394,226, Jul. 1, 1982, abandoned. This application Oct. 14, 1986, Ser. No. 918,216

The portion of the term of this patent subsequent to Aug. 4, 2004, has been disclaimed.

Int. Cl.[4] C22C *5/08*

U.S. Cl. 428—606 **3 Claims**

1. An article consisting of a ductile foil of a brazing alloy having a liquidus temperature in the range of about 750° to 950° C. and which upon brazing is free of dispersed phases and consists essentially of from about 1.5 to about 2.0% by weight



of titanium, from about 62% to about 66% by silver and from about 32% to about 36.5% by weight of copper.

4,766,042

PLASTICS PROCESSING MACHINE COMPONENTS AND ALLOY FOR USE THEREIN

Tony U. Otani, 6124 Candor St., Lakewood, Calif. 90713

Filed Feb. 27, 1987, Ser. No. 19,978

Int. Cl.[4] B32B *15/18;* **C22C** *19/05*

U.S. Cl. 428—679 **14 Claims**

1. An plastics processing machine component, comprising:

a component substrate; and

a layer of an alloy joined to said component substrate to protect said substrate, said alloy consisting essentially of, in weight percent, from about 12 to about 16 percent molybdenum, from about 10 to about 14 percent chromium, up to about 1.2 percent carbon, up to about 3.5 percent silicon, from about 0.5 to about 3.5 percent boron, balance nickel.

12. An alloy consisting essentially of, in weight percent, from about 12 to about 16 percent molybdenum, from about 10 to about 14 percent chromium, up to about 1.2 percent carbon, up to about 3.5 percent silicon, from about 0.5 to about 3.5 percent boron, balance nickel, said alloy being resistant to corrosion from hydrogen chloride and hydrogen fluoride, and having high fluidity in the temperature range of from about 1800° F. to about 2250° F.

4,766,043

FUEL CELL

Tamotsu Shirogami, Yamato, and Mitsushi Ueno, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 2, 1987, Ser. No. 9,918

Claims priority, application Japan, Feb. 3, 1986, 61-21825

Int. Cl.[4] H01M *2/14*

U.S. Cl. 429—39 **13 Claims**

1. A fuel cell comprising:

a plurality of unit cells stacked in layers, each including an anode and a cathode, each formed of a porous substrate, and an electrolyte matrix layer interposed between the anode and the cathode; and

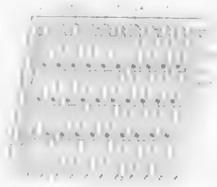
a plurality of separator elements formed of a conductive material, and interposed between the adjacent unit cells to form a stacked structure,

said anode including: (a) an anode catalyst layer formed on its one surface that is located on the side of the electrolyte matrix layer; (b) a plurality of ribs formed in substantially the entire area of that surface that is located on the side of the separator element, said ribs being formed as a result of using said porous substrate and each having a tip end portion; and (c) a plurality of grooves each defined between adjacent ones of said ribs and having an inner surface,

said cathode including a cathode catalyst layer formed on its one surface that is located on the side of the electrolyte matrix layer,

said separator element including: (a) a recess formed in substantially the entire area of its one surface that is located on the side of the anode; and

(b) an oxidant gas channel, formed on its other surface that is located on the side of the cathode, for supplying an oxidant gas to the cathode, said recess being adapted for storing an electrolyte solution and receiving the ribs of said anode, the distance from the bottom of the recess to



the inner surfaces of the grooves, facing the bottom of the recess, being greater than the depth of the recess, said tip end portion of each rib being immersed in the electrolyte solution when the electrolyte solution is present, and a space formed between the inner surface of the groove and the level of the electrolyte solution serving as a fuel gas channel used for supplying a fuel gas to the anode,

whereby the electrolyte solution in said recess soaks through both the ribs and the anode and is supplied to the electrolyte matrix layer.

4,766,044

FUEL CELL RECYCLING SYSTEM

Richard A. Sederquist, Newington, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Nov. 3, 1986, Ser. No. 926,297

Int. Cl.[4] H01M *8/18*

U.S. Cl. 429—19 **6 Claims**



1. A fuel cell recycling system comprising:

a first plurality of fuel cells being adapted to electrochemically convert fuel into electricity and exhaust;

a second plurality of fuel cells being adapted to electrochemically convert fuel into electricity and exhaust;

feed means for supplying fuel to said first plurality of fuel cells in parallel;

exhaust means for receiving exhaust from said first plurality of fuel cells;

recycling means for directing a first portion of the exhaust of said first plurality of fuel cells from said exhaust means to said feed means to recycle said exhaust from said first plurality of fuel cells in said first plurality of fuel cells;

VOL 1093 ISS 4 AG 23 1988 UMI

vent means for directing a second portion of said exhaust from said exhaust means to said second plurality of fuel cells in parallel; and

means for electrically connecting said first plurality of fuel cells and said second plurality of fuel cells in series such that said first plurality of fuel cells and said second plurality of fuel cells utilize equal proportions of said fuel.

4,766,045

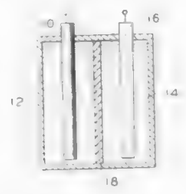
METAL HALOGEN ELECTROCHEMICAL CELL

Richard J. Bellows, Hampton, and Edward Kantner, E. Brunswick, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 835,334, Mar. 3, 1986, abandoned. This application May 4, 1987, Ser. No. 45,377

Int. Cl.[4] H01M *10/36, 2/14*

U.S. Cl. 429—105 6 Claims



1. An electrochemical cell having a metal bromine couple, said cell comprising:

an electrode structure on which the metal of the couple is deposited during charging of the cells;

the counterelectrode structure at which cathodic bromine is generated during charging of the cell;

an aqueous electrolyte comprising an aqueous metal bromide solution, the metal being the same as the metal of the metal bromine couple, said aqueous electrolyte containing a water soluble complexing agent capable of forming a water immiscible complex with cathodic bromine; and

a microporous separator between said electrode and said counterelectrode structure, said microporous separator being selected from separators which are preferentially wet by aqueous electrolyte and are not wet by the water immiscible complex of cathodic bromine.

4,766,046

STABILIZED LIPOSOME/AMPHOTERICIN COMPOSITION AND METHOD

Robert Abra, and Francis C. Szoka, both of San Francisco, Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

Filed Sep. 27, 1985, Ser. No. 781,395

Int. Cl.[4] A61K *9/42;* A61J *5/00*

U.S. Cl. 424—450 4 Claims

1. A method of administering liposomes containing between about 3 to 7 mole percent amphotericin B and having, after a storage period, a selected liposome size distribution in a size range between about 0.2 to 0.5 micron, comprising

preparing a suspension of heterogeneously sized liposomes containing between about 3 to 7 mole percent amphotericin B in the lipid phase, and, in the aqueous phase, at least about 0.5% w/v of a membrane-stabilizing agent,

reducing the size heterogeneity of the liposome suspension to achieve said selected liposome size distribution,

lyophilizing the liposome suspension before the size distribution of the liposomes changes substantially,

after such storage period, adding an aqueous medium to the lyophilized suspension, said adding being effective to produce a reconstituted suspension of liposomes in which the size distribution achieved by said reducing is substantially preserved, and

administering the reconstituted liposomes before the size distribution of the liposomes changes substantially.

4,766,047

OPTICAL RECORDING MEDIUM AND OPTICAL RECORDING PROCESS USING SUCH MEDIUM

Hiroshi Matsuda, Yokohama; Masahiro Haruta, Funabashi; Hirohide Munakata, Yokohama; Yoshinori Tomita, Yokohama, and Takashi Hamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 659,701, Oct. 11, 1984, abandoned. This application Jun. 4, 1986, Ser. No. 870,425

Claims priority, application Japan, Oct. 14, 1983, 58-190932; Oct. 14, 1983, 58-190933; Oct. 14, 1983, 58-190934

Int. Cl.[4] G03C *11/00*

U.S. Cl. 430—19 10 Claims

1. An optical recording process which comprises, in sequence, the steps of:

(a) irradiating a recording medium having a recording layer comprising a monomolecular Langmuir-Blodgett film or a built-up monomolecular Langmuir-Blodgett film of a photopolymerizable monomer having a hydrophilic group, a hydrophobic group and at least one unsaturated bond in the molecule with information signals sufficient to polymerize the irradiated portion of the photopolymerizable monomer, thus forming recorded information corresponding to the polymerized portion of the monomer; and

(b) erasing the recorded information by depolymerization of the polymerized portions of the monomer.

4,766,048

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING SURFACE LAYER CONTAINING FINE SPHERICAL RESIN POWDER AND APPARATUS UTILIZING THE SAME

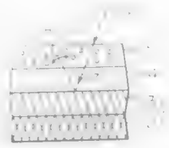
Masafumi Hisamura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 20, 1987, Ser. No. 16,778

Claims priority, application Japan, Feb. 20, 1986, 61-33963

Int. Cl.[4] G03G *5/14*

U.S. Cl. 430—58 35 Claims



1. An electrophotographic photosensitive member which comprises an electroconductive support having a photosensitive layer thereon, wherein the electrophotographic photosensitive member has a surface layer containing fine spherical resin powder having an average degree of sphericity of at least 0.5 in terms of the ratio of the diameter of the maximum incircle of the particles to the diameter of the minimum circumcircle of the particles as the circumcircle being 1, when at least 20 randomly selected particles are observed by a scanning electron microscope.

4,766,049

LATEX BASED COLORED LIQUID DEVELOPERS

Melvin D. Croucher, Oakville; Raymond W. Wong; James M. Duff, both of Mississauga; Michael L. Hair, and John R. C. Fuller, both of Oakville, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 9, 1987, Ser. No. 2,045

Int. Cl.[4] G03G *9/18*

U.S. Cl. 430—115 31 Claims

1. A conductive colored liquid developer composition comprised of an insulating oil base, a stabilized polymer latex component with imbibed molecularly dispersed colored dye components, said polymer latex component and dye components being of a neutral polarity, and a thickener compatible with the stabilizer selected for the latex, said liquid developer having a conductivity of from about 10^9 to about 10^{11} (ohm-cm)$^{-1}$ and a viscosity of from about 100 to about 3,000 centipoise.

4,766,050

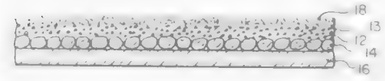
IMAGING SYSTEM WITH INTEGRAL COVER SHEET

Roger E. Jerry, Bellbrook, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Mar. 27, 1987, Ser. No. 32,144

Int. Cl.[4] G03C *1/40, 1/00*

U.S. Cl. 430—138 12 Claims



1. A photosensitive material comprising:

a support,

a layer containing opacifying agent,

a layer containing microcapsules wherein said microcapsules contain a color former and a photohardenable or photosoftenable photosensitive composition, and

a layer of developer material; wherein said layer containing opacifying agent, said layer containing microcapsules, and said layer of developer material are positioned such that upon rupturing said microcapsules, said color former diffuses to said developer material layer to form an image in said developer material layer and said image is viewed against said layer containing opacifying agent and said layer containing opacifying agent shields said microcapsules from said image.

4,766,051

COLORED ENCAPSULATED TONER COMPOSITIONS

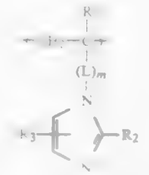
Marcel P. Breton, Toronto; Terry L. Bluhm, Oakville, and Kar P. Lok, Sarnia, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1986, Ser. No. 902,725

Int. Cl.[4] G03G *9/08*

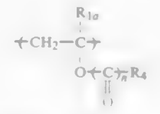
U.S. Cl. 430—138 18 Claims

1. A composition suitable for use as an electrophotographic developer, said composition comprising a cold pressure fixable colored toner composition comprised of a core containing a polymer selected from the Group consisting of polyolefins, polyostrene-butadiene copolymers, polybutadienes, polybutenes, polyisoprenes and polysiloxane. in which is dipersed pigment particles selected from the group consisting of cyan, magenta, red, yellow pigments, and mixtures thereof, other than carbon blacks and magnetites; and encapsulated within a polymericshell formulated by an interfacial polymerization.



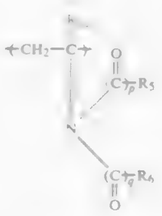
(I)

wherein R_1, R_2 and R_3 each represents a hydrogen atom or an alkyl group of 1 to 6 carbon atoms; L represents a divalent linking group of 1 to 20 carbon atoms; and m is 0 or 1;



(II)

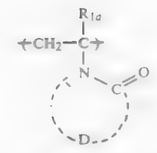
wherein R_{1a} represents a hydrogen atom or an alkyl group of 1 to 6 carbon atoms; R_4 is an alkyl group, an aryl group or an aralkyl group; and n is 0 or 1;



(III)

wherein R_{1a} is as defined in general formula (II); R_5 and R_6 each represents a hydrogen atom or an alkyl group, an alkoxy group, an aryl group or an aralkyl group; and p and q each is equal to 0 or 1; and

VOL 1093 ISS 4 AG 23 1988 UMI



(IV)

wherein R_{1a} is as defined in general formula (II); and D is a divalent linking group necessary for the formation of a 5- to 7-membered ring with the nitrogen atom and carbonyl group.

4,766,053

METHOD FOR FORMING AN IMAGE

Fumiaki Shinozaki; Tomizo Namiki, and Kazuo Suzuki, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 19, 1986, Ser. No. 830,816
Claims priority, application Japan, Feb. 19, 1985, 60-31238
Int. Cl.[4] G03C 1/90
U.S. Cl. 430—256 9 Claims

1. A method for forming an image by transferring an image layer formed on a transferable light-sensitive material to an image-receiving sheet, and then further transferring the image to a permanent support, wherein the image-receiving sheet comprises a support, a first layer on the support, said first layer being made of a first organic polymeric substance, and a second layer on the first layer, said second layer being made of a second organic polymeric substance, wherein

in peeling apart the image-receiving sheet from the transferable light-sensitive material,

$P_1, P_2, P_3 > P_4$

wherein P_1 is an adhesion force between the support and the first layer, P_2 is an adhesion force between the first and second layers, P_3 is an adhesion force between the second layer and the transferable image layer, and P_4 is an adhesion force between the image layer and the support of the image,

in re-transferring the image layer to the permanent support and peeling apart the image-receiving sheet from the permanent support,

$P_5, P_1, P_2 > P_3$, or

$P_5, P_1, P_3 > P_2$

wherein P_5 is in adhesion force between the permanent support and the transferable image layer, and the first layer has a softening point of 80° C. or less and the second layer has a softening point higher than the softening point of the first layer by 10° C. or more.

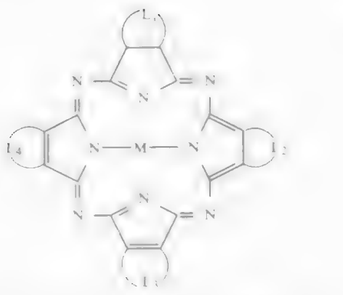
4,766,054

OPTICAL RECORDING MEDIUM

Sumio Hirose, Yokohama; Hiroshi Ozawa, Isehara; Kenji Abe, and Yoichi Hosono, both of Yokohama, all of Japan, assignors to Mitsui Toatsu Chemical, Inc. and Yamamoto Chemicals, Inc., both of, Japan

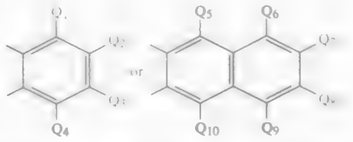
Filed May 29, 1986, Ser. No. 868,630
Claims priority, application Japan, May 31, 1985, 60-116592
Int. Cl.[4] G11B 7/24; G03C 1/72, 5/16
U.S. Cl. 430—270 9 Claims

1. An optical recording medium permitting recording and reading-out of signals without any reflective layer, comprising a transparent substrate and an optical recording layer provided directly on the substrate, said recording layer containing at least 80 wt. % of a silyl-group-substituted phthalo/naphthalocyanine dye represented by the general formula



(I)

wherein M is a metal, metal oxide or metal halide; L_1, L_2, L_3 and L_4 are



in which each one of Q1 through Q10 is a hydrogen atom or a



group; R1, R2 and R3 each representing a straight chain, a branched alkyl group having 1 to 12 carbon atoms, an alkenyl group, a phenyl group or a substituted phenyl group; and wherein in the molecule represented by said general formula (I) there are contained, on the average, two or more



groups.

4,766,055

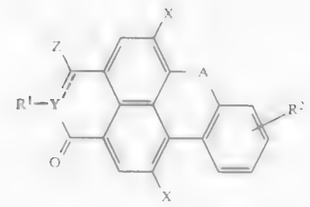
PHOTOPOLYMERIZABLE COMPOSITION CONTAINING A CERTAIN XANTHENE OR THIOXANTHENE DYESTUFF

Masami Kawabata, Suita; Koichi Kimoto, Hirakata, and Yasuyuki Takimoto, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

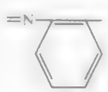
Filed Aug. 1, 1986, Ser. No. 892,076
Claims priority, application Japan, Aug. 1, 1985, 60-170600; Mar. 7, 1986, 61-51027
Int. Cl.[4] G03C 1/68
U.S. Cl. 430—281 10 Claims

1. A photopolymerizable composition comprising a polymerizable compound and a photopolymerization initiator, wherein the photopolymerization initiator comprises:

(a) a xanthene or thioxanthene dyestuff having the formula



wherein A represents an oxygen atom or a sulfur atom, X represents a hydrogen atom or a halogen atom, Y represents a carbon atom or a nitrogen atom, provided that when Y represents a carbon atom the bond with the adjacent carbon atom which is shown by the dotted line is a double bond, and when Y represents a nitrogen atom the bond with the adjacent carbon atom is a single bond, Z represents an oxygen atom wherein the bond with the adjacent carbon atom is a double bond, a lower alkoxy group or a lower alkanoyloxy group, R^1 represents a lower alkyl group, a hydroxy lower alkyl group, a lower alkoxy lower alkyl group, a di- lower alkylamino lower alkyl group or an aryl group, R^2 represents a hydrogen atom, a lower alkoxy group or a di- lower alkylamino group, or Z and R^1 together represent the formula



(b) a photosensitizer selected from the group consisting of N-phenylglycine, 2,4,6-tris(trichloromethyl)-1,3,5-triazine, and a mixture of p-dimethylaminobenzoic acid isopentyl ester and 2,4-diisopropylthioxanthone, and

(c) a peroxide.

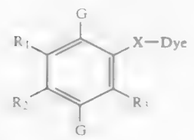
4,766,056

LIGHT-SENSITIVE MATERIAL WITH COMPOUNDS REACTIVE WITH DYE DEVELOPERS

Osamu Takahashi; Koichi Koyama, and Keizo Koya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

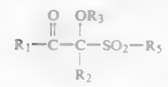
Filed Feb. 21, 1986, Ser. No. 831,675
Claims priority, application Japan, Feb. 21, 1985, 60-33491; Apr. 2, 1985, 60-69716; May 29, 1985, 60-116149
Int. Cl.[4] G03C 7/26, 5/54
U.S. Cl. 430—351 7 Claims

1. A color light-sensitive material comprising a support having thereon at least one light-sensitive silver halide-containing layer, a binder, a compound represented by formula (A), and a compound or a precursor thereof which reacts with an oxidized compound formed from the compound of formula (A), thereby converting the oxidized compound into a non-diffusible form, said compound of formula (A) being represented by



(A)

wherein R_1, R_2 and R_3 each represents a hydrogen atom, an alkyl group, a cycloalkyl group, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group, an acylamino group, an alkylthio group, an arylthio group, or a halogen atom, provided that at least one of R_1, R_2, and R_3 represents a hydrogen atom; X represents a chemical bond or a divalent linking group; Dye represents an image-forming dye moiety; and G represents a hydroxyl group of a group capable of forming a hydroxyl group upon heating and/or by the action of a base, wherein the compound or precursor thereof which reacts with an oxidized compound formed from the compound of formula (A) is selected from the following compounds represented by formula (II):



(II)

wherein R_1 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic ring; R_2 represents a hydrogen atom, a halogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted acyloxy group, or a substituted or unsubstituted sulfonyl group; R_3 represents a hydrogen atom or a group which can be hydrolyzed; and R_5 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, or a substituted or unsubstituted heterocyclic ring.

7. A method for forming a color image which comprises heating a color light-sensitive material as claimed in claim 1 after or simultaneously with image-wise exposure of said material to light.

4,766,057

METHOD OF FORMING A COLOR IMAGE

Nobuo Sakai, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

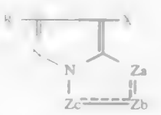
Filed Sep. 4, 1987, Ser. No. 93,342
Claims priority, application Japan, Sep. 4, 1986, 61-208534
Int. Cl.[4] G03C 5/24, 1/46, 1/08, 7/32
U.S. Cl. 430—383 26 Claims

1. A method of forming a color image which comprises processing, after imagewise exposure, with a color developing solution which contains not more than 0.0025 mol of a bromine ion per liter, a silver halide color photographic material comprising a support having thereon a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer, wherein

the silver halide in the blue-sensitive silver halide emulsion layer and the red-sensitive silver halide emulsion layer contains at least 80 mol% of silver chloride relative to the amount of light-sensitive silver halide in mols in each of the respective emulsion layers and substantially no silver iodide,

the silver halide in the green-sensitive silver halide emulsion layer consisting at least 50 mol% of silver bromide relative to the amount of light-sensitive silver halide in mols in the green-sensitive emulsion layer, and

the green-sensitive silver halide emulsion layer contains a magenta dye forming coupler represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom or a substituent; X represents a hydrogen atom or a group capable of being released upon a coupling reaction with an oxidation product of an aromatic primary amine developing agent; Za,

VOL 1093 ISS 4 AG 23 1988 UMI

Zb and Zc each represents a methine group, a substituted methine group, =N— or —NH—, with the proviso that one of the Za-Zb bond and the Zb-Zc bond is a double bond and the other is a single bond; when the Zb-Zc bond is a carbon-carbon double bond, the Zb-Zc bond may be a part of a condensed aromatic ring; or R^1 or X may form a polymer including a dimer or more; and when Za, Zb or Zc is a substituted methine group, the substituted methine group may form a polymer including a dimer or more.

4,766,058

SILVER HALIDE PHOTOGRAPHIC MATERIAL WITH A SPECIFIED SILVER DENSITY AND DRY THICKNESS

Takeshi Sampei; Toshifumi Iijima; Yoshitaka Yamada; Hiroshi Shimazaki; Kenji Kumashiro; Yoshiharu Mochizuki; Syoji Matsuzaka, and Hiroshi Kashiwagi, all of Hibo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1986, Ser. No. 886,552

Claims priority, application Japan, Jul. 17, 1985, 60-157198; Aug. 9, 1985, 60-175374; Aug. 16, 1985, 60-180271

Int. Cl.[4] G03C *5/24, 1/08, 7/32, 1/02*

U.S. Cl. 430—496 17 Claims

1. A silver halide photographic material comprising at least one blue-sensitive silver halide emulsion layer, silver density (d) expressed in terms of the following equation

$$d = N/V$$

(wherein, N is the amount of silver contained in said emulsion layer in term of gram and V is the volume of said blue-sensitive emulsion layer in term of cm^3) of said emulsion layer being 4.0×10^{-1} g/cm^3 to 1.2 g/cm^3 and the dry-thickness of said emulsion layer being 0.8 μm to 4.0 μm.

4,766,059

PHOTOGRAPHIC PROTECTIVE LAYER COMPRISING BEADS OF RESINOUS MATERIAL AND WATER-INSOLUBLE WAX

Hubert Vandenabeele, Mortsel, and Jacques L. Vervecken, Berchem, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 27, 1987, Ser. No. 30,484

Claims priority, application European Pat. Off., Apr. 8, 1986, 86200592.3

Int. Cl.[4] G03C *1/76*

U.S. Cl. 430—531 9 Claims

1. Method of covering photographic elements comprising a support, and on one or on both sides of said support, at least one photosensitive silver halide emulsion layer with at least one protective hydrophilic colloid layer comprising finely divided solid beads having an average size ranging from 0.5 to about 20 um. wherein said method comprises the steps of:

dissolving at least one photographically inert hydrophobic polymeric resinous material and at least one water-insoluble wax, in a ratio by weight ranging from 10:0.1 to 10:5, in a sparingly water-miscible or water-immiscible low-boiling solvent or mixture of such solvents for both said resinous material and said wax,

emulsifying the resulting solution in an aqueous solution of a hydrophilic colloid by homogenizing,

removing said solvent or mixture of solvents by evaporation,

adding the resulting dispersion to the aqueous coating composition for said protective hydrophilic colloid layer, and

applying said aqueous coating composition onto the uppermost silver halide emulsion layer or layers to form said protective hydrophilic colloid layer or layers thereon.

4,766,060

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Hidetaka Ninomiya, Mitaka, and Ryosuke Sato, Hino, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

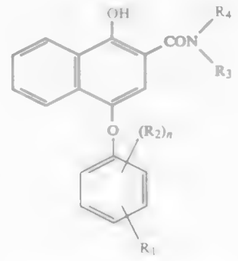
Filed Jun. 24, 1986, Ser. No. 878,078

Claims priority, application Japan, Jul. 1, 1985, 60-144352

Int. Cl.[4] G03C *7/38, 7/32*

U.S. Cl. 430—553 9 Claims

1. A silver halide photographic material containing a cyan coupler represented by the formula:



wherein, R_1 is selected from the group consisting of an acylamino group, an alkylsulfonamido group, an arylsulfonamido group, a carbamoyl group, a sulfamoyl group, an alkylureido group, an arylureido group, an alkyl group, an alkoxy group, an amino group, an alkoxycarbonyl group and an arylcarbonyl group, said groups have at least one carboxyl group as a substituent, R_2 is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a nitro group, a cyano group, a formyl group, a carboxyl group, a hydroxyl group, an amino group, an acylamino group, an alkylsulfonamido group, an arylsulfonamido group, an alkylureido group, an arylureido group, a sulfamoyl group, a carbamoyl group, an alkoxycarbonyl group and an aryloxycarbonyl group, R_3 represents an alkyl group substituted with a phenoxy group, R_4 represents a hydrogen atom or an alkyl group, n represents an integer of 1 to 4, provided that when n is 2 or more the groups represented by the plurality of R_2 may be either same or different from each other, and that the total number of carbon atoms contained in the groups represented by R_3 and R_4 is 10 or more.

4,766,061

PHOTOGRAPHIC COUPLER DISPERSIONS

Michael J. Simons, Ruislip, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 800,260, Nov. 21, 1985, abandoned. This application Apr. 20, 1987, Ser. No. 40,006

Int. Cl.[4] G03C *7/34, 7/32*

U.S. Cl. 430—546 11 Claims

1. In a photographic silver halide element comprising a support bearing at least one hydrophilic layer comprising a photographic coupler dispersion comprising at least one photographic coupler and an oil-former in the presence of an anionic surfactant, the improvement wherein

A. at least one of the photographic coupler and oil-former comprises a phenolic or naphtholic moiety having at least one electron-withdrawing group at a position ortho or para to the phenolic hydroxyl group; and

B. the anionic surfactant is a lipophilic anionic surfactant which is a compound represented by the formula:



wherein the sum of m plus n is at least 17; m and n are the same or different numbers; and, M is hydrogen or a cation, and containing no non-ionic surfactant.

4,766,062

DISPLACEMENT POLYNUCLEOTIDE ASSAY METHOD AND POLYNUCLEOTIDE COMPLEX REAGENT THEREFOR

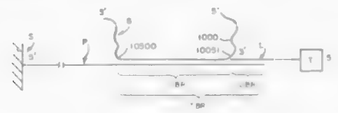
Steven E. Diamond, Springfield; Joseph G. Brewen, Convent Station; Jon I. Williams, Montclair; Marian S. Ellwood, Summit, all of N.J.; Mary Collins, Watertown, and Edward F. Fritsch, Concord, both of Mass., assignors to Allied Corporation, Morristown, N.J. and Genetics Institute, Inc., Cambridge, Mass.

Filed May 7, 1984, Ser. No. 607,885

The portion of the term of this patent subsequent to Jun. 23, 2005, has been disclaimed.

Int. Cl.[4] C12Q *1/68;* G01N *33/566*

U.S. Cl. 435—6 49 Claims



1. A method for determining the presence of a predetermined target nucleotide sequence in the nucleic acid of a biological sample which comprises the steps:

(a) providing a reagent complex of (i) a probe polynucleotide which is capable of base pair binding via hydrogen bonds of purine/pyrimidine bases to the target nucleotide sequence, and (ii) a labeled polynucleotide which is bound by base pair binding via hydrogen bonds of purine/-pyrimidine base pairs to the probe polynucleotide of at least about 20 nucleotides in a region of the probe polynucleotide at least partially coextensive with the region in which the probe polynucleotide is capable of binding to the target nucleotide sequence;

(b) contacting the reagent complex with a biological sample under conditions in which the target nucleotide sequence, if present in the biological sample, binds to the probe polynucleotide and displaces labeled polynucleotide from the complex; and

(c) determining the presence of labeled polynucleotide displaced from the reagent complex.

4,766,063

PROCESS AND DEVICE FOR DETECTING THE ACTIVITY OF A SUBSTANCE ON A MICRO-ORGANISM OR ON A MIXTURE OF MICRO-ORGANISMS

Jean-Pierre Boussemaer, Massieu, France, assignor to l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation Des Procedes Georges Claude, Paris, France

Filed Dec. 13, 1984, Ser. No. 681,321

Claims priority, application France, Dec. 14, 1983, 83 20014

Int. Cl.[4] C12Q *1/70, 1/18, 1/20*

U.S. Cl. 435—5 5 Claims

1. A process for determining the fermentation-inhibiting activity of serum used in the production of cheese from milk by lactic acid-producing bacteria, comprising the steps of:

(a) preparing, in a vessel, a lyophilized medium containing a pure culture of a lactic acid-producing bacteria used in a serum for the production of cheese and a first culture medium for said bacteria;

(b) preparing a solution comprising bromocresol purple and a second culture medium for said bacteria;

(c) heating a sample of said serum at a temperature and time sufficient to destroy bacteria and inhibitory substances therein without killing phage;

(d) adding said sample from step (c) to said solution from step (b) to obtain a liquid;

(e) pouring said liquid into said vessel;

(f) incubating said vessel with said liquid therein for a sufficient time to permit said lactic acid-producing bacteria to reduce the pH within said vessel to a value below 5 when no inhibiting activity is present;

(g) adding janus green to the incubated vessel thus turning the color of the contents of said vessel green;

further incubating said vessel, with said janus green therein, for a time sufficient for the contents of said vessel to turn pink when active lactic-acid producing bacteria are present;

(h) observing the color of the contents of the vessel obtained according to step (g) and thereby determining the presence of inhibiting activity, wherein a green color is positive for the presence of inhibitory activity in said sample and a pink color is negative for the same.

4,766,064

DISPLACEMENT POLYNUCLEOTIDE ASSAY EMPLOYING POLYETHER AND DIAGNOSTIC KIT

Jon I. Williams, Montclair; Marian S. Ellwood, Summit, both of N.J.; Mary Collins, Natick; Edward F. Fritsch, Concord, both of Mass.; Joseph G. Brewen, Convent Station, and Steven E. Diamond, Springfield, both of N.J., assignors to Allied Corporation, Morristown, N.J. and Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 607,885, May 7, 1984. This application Dec. 20, 1984, Ser. No. 684,308

The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.[4] C12Q *1/68;* G01N *33/566*

U.S. Cl. 435—6 31 Claims



1. A method for determining the presence of a predetermined target nucleotide sequence in the nucleic acid of a biological sample which comprises the steps:

(a) providing a reagent complex of (i) a probe polynucleotide which is capable of base pair binding via hydrogen bonds of purine/pyrimidine bases to the target nucleotide sequence, and (ii) a labeled polynucleotide which is bound by base pair binding via hydrogen bonds of purine/-pyrimidine base pairs to the probe polynucleotide in a region of the probe polynucleotide of at least about 20 nucleotides at least partially coextensive with the region in which the probe polynucleotide is capable of binding to the target nucleotide sequence;

(b) contacting the reagent complex with a biological sample in the presence of a polyether polymer under conditions in which the target nucleotide sequence, if present in the biological sample, binds to the probe polynucleotide and displaces labeled polynucleotide from the complex, the polyether polymeric agent being of a molecular weight and at a concentration sufficient to increase the rate of appearance of displaced labeled polynucleotide; and

(c) determining the presence of labeled polynucleotide displaced from the reagent complex.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,065

DETECTION OF CELL MEMBRANE PROTEIN

Larry Mosier, St. Louis, and John Petersen, Creve Cover, both of Mo., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Aug. 23, 1984, Ser. No. 643,403
Int. Cl.[4] G01N *33/53*; C12Q *1/04*
U.S. Cl. 435—7 15 Claims

1. A method for detecting cell membrane proteins of *Chlamydia trachomatis*, comprising:

taking a test sample suspected of containing *Chlamydia trachomatis*;

mixing the sample with a first buffer solution having a pH of from about 6.0 to about 8.0, forming a sample solution thereby;

adjusting the sample solution pH to a value of from about 8.0 to about 12.5 using a solution of base;

incubating the sample solution for a period of from about 5 minutes to about 30 mintues;

adding a neutralizing second buffer having a pH of from about 1.0 to about 7.0 to bring the pH of the sample solution to a final value of from about 7.0 to about 8.0; and

assaying the sample solution to detect the presence of antigens of *Chlamydia trachomatis*.

4,766,066

METHOD OF USING BACTERIOPHAGE LAMBDA P_1 PROMOTER TO PRODUCE A FUNCTIONAL POLYPEPTIDE IN STREPTOMYCES

Stuart A. Kuhstoss, and R. Nagaraja Rao, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 27, 1984, Ser. No. 655,181
Int. Cl.[4] C12P *21/00, 19/34*; C12N *15/00, 1/20*
U.S. Cl. 435—68 17 Claims

1. A method of using bacteriophage lambda p_L promoter to produce a functional polypeptide in Streptomyces, said method comprising:

(a) transforming a Streptomyces host cell with a selectable and autonomously replicating recombinant DNA expression vector comprising:

(1) the bacteriophage λp_L promoter-operator transcriptional activating sequence;

(2) a translational activating sequence;

(3) a DNA sequence that codes for a functional polypeptide; and

(b) culturing said transformed cell under conditions suitable for expression of said polypeptide,

subject to the limitation that said expression vector sequentially contains said λp_L promoter-operator transcriptional activating sequence, said translational activating sequence and said DNA sequence that codes for a functional polypeptide such that a translatable mRNA transcript encodes the functional polypeptide.

4,766,067

GENE AMPLIFICATION

Debajit K. Biswas, Newton, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed May 31, 1985, Ser. No. 739,982
Int. Cl.[4] C12P *21/00, 19/34*; C12N *5/00, 15/00, 1/00*; C07H *21/04*
U.S. Cl. 435—68 11 Claims

1. Hybrid DNA capable of effecting the amplification in a host cell of a heterologous gene determining a desired function, said hybrid DNA comprising two regions:

(1) a first DNA region comprising an amplicon inducible by 5-bromodeoxyuridine, said amplicon being a segment from the 10.3 kb rat prolactin amplicon-containing fragment of ATCC deposit 40187, and

(2) a second DNA region adjacent to said first DNA region comprising said heterologous gene,

said hybrid DNA being capable of amplifying the number of copies of said heterologous gene in a host cell transformed with said hybrid DNA responsive to 5-bromodeoxyuridine.

4,766,068

CYTOCHROME P-450MC GENE, EXPRESSION PLASMID CARRYING THE SAID GENE, YEASTS TRANSFORMED WITH THE SAID PLASMID AND A PROCESS FOR PRODUCING CYTOCHROME P-450MC BY CULTURING THE SAID TRANSFORMANT YEASTS

Kenji Oeda; Toshiyuki Sakaki, both of Toyonaka; Hideo Ohkawa, Takarazuka; Yoshiyasu Yabusaki, Kobe; Hiroko Murakami, Ashiya; Keiko Nakamura, Kobe, and Masatoshi Shimizu, Takarazuka, all of Japan, assignors to Agency of Industrial Science and Technology, Toyka, Japan

Filed Jun. 5, 1985, Ser. No. 741,592
Claims priority, application Japan, Jun. 16, 1984, 59-122953; Aug. 15, 1984, 59-169447; Aug. 24, 1984, 59-175159
Int. Cl.[4] C12P *21/00, 21/02*; C12N *15/00*; C07H *15/12*
U.S. Cl. 435—68 8 Claims

1. An expression vector plasmic for *Saccharomyces cerevisiae* which comprises rat liver cytochrome P-450MC gene inserted into an expression vector plasmid with the yeast alcohol dehydrogenase promoter I and terminator and which expresses the rat liver cytochrome P-450MC.

4,766,069

RECOMBINANT DNA WHICH CODES FOR INTERLEUKIN-1 B

Philip E. Auron, Middlesex County; Charles A. Dinarello, Suffolk County; Andrew C. Webb, Norfolk County; Alexander Rich, Middlesex County, and Sheldon M. Wolff, Norfolk County, all of Mass., assignors to New England Medical Center; Tufts College, both of Boston; Wellesley College, Wellesley and MIT, Cambridge, all of, Mass.

Continuation of Ser. No. 611,669, May 18, 1984, abandoned. This application Jan. 8, 1987, Ser. No. 4,319
Int. Cl.[4] C12P *21/02, 21/00, 21/04, 19/34*; C12N *15/00, 5/00, 1/00, 1/20, 1/16, 1/18*; C07H *21/04*
U.S. Cl. 435—70 24 Claims

1. A recombinant DNA cloning vehicle comprising a DNA sequence comprising the human IL-1 gene DNA sequence.

4,766,070

FERMENTATION PROCESS AND SUBSTRATE

Michel Huchette, and Francis Devos, both of Merville, France, assignors to Roquette Freres, France

Continuation of Ser. No. 734,815, May 16, 1985, abandoned, which is a continuation of Ser. No. 555,448, Nov. 28, 1983, abandoned, which is a continuation of Ser. No. 331,812, Dec. 17, 1981, abandoned. This application Nov. 25, 1986, Ser. No. 935,636
Claims priority, application France, Dec. 19, 1980, 80 27143
Int. Cl.[4] C12P *21/04*
U.S. Cl. 435—71 1 Claim

1. In a conventional fermentation process for the production of amylase, protease or bacitracin, wherein a fermentation medium comprising carbohydrates, inorganic salts, oligoelements, vitamins and proteinic materials is introduced into a fermentation vessel, the fermentation medium is seeded with a fermentation agent effective to produce amylase, protease or bacitracin, and fermentation conditions are established and maintained until the production of amylase, protease or bacitracin is achieved, the improvement consisting essentially of selecting as the proteinic material a protein obtained by coagulation from red waters and containing more than 70% protein calculated as $N \times 6.25$ on dry matter.

4,766,071

PROCESS FOR REGENERATING COENZYMES

Helmut Simon, Freising, and Alexander Deffner, Garching, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellshaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Feb. 14, 1986, Ser. No. 829,732
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1985, 3505397
Int. Cl.[4] C12P *19/36, 19/32, 7/40*; C12R *1/145*
U.S. Cl. 435—90 21 Claims

1. A process for the enzymatic preparation of a coenzyme selected from the group consisting of adenosine triphosphate, acetyl coenzyme A, acetylphosphate, reduced nicotinamide adenine dinucleotide, reduced nicotinamide adenine dinucleotide phosphate, oxidized nicotinamide adenine dinucleotide, oxidized nicotinamide adenine dinucleotide phosphate, and mixtures thereof from the oxidized or reduced form comprising incubating the oxidized to reduced form of said coenzyme with either a primary alkanol containing from 2 to 4 carbon atoms, a primary alkanal containing from 2 to 4 carbon atoms or a mixture thereof as a reducing agent or a primary alkanal containing from 2 to 4 carbon atoms as an oxidizing agent in the presence of a cell lysate of a microorganism of the species *Clostridium kluyveri*.

4,766,072

VECTORS FOR IN VITRO PRODUCTION OF RNA COPIES OF EITHER STRAND OF A CLONED DNA SEQUENCE

Jerome J. Jendrisak; Martin K. Lewis, both of Madison, and Michael J. Fiandt, Cambridge, all of Wis., assignors to Promega Corporation, Madison, Wis.

Filed Jul. 17, 1985, Ser. No. 756,053
Int. Cl.[4] C12P *19/34*; C12N *15/00, 7/00*
U.S. Cl. 435—91 20 Claims

1. A method of producing RNA copies in vitro of a selected DNA sequence, comprising the steps of:

(a) providing a DNA cloning vector comprised of double stranded DNA having two different phage promoter sequences facing each other such that transcription from either phage promoter proceeds in the opposite direction of transcription from and toward the other phage promoter, each phage promoter sequence recognized by a phage encoded RNA polymerase which is specific to that phage promoter and which recognizes no other sequence in the vector, the two phage promoters having located between them a cloning site composed of a sequence of DNA base pairs which includes at least one restriction endonuclease cleavage site which is cleaved by an endonuclease which cleaves no other site on the vector;

(b) applying to the vector a restriction enzyme specific to a selected restriction site between the two opposed phage promoters to cleave the vector at said site;

(c) inserting the selected DNA sequence into the cleaved site;

(d) cloning the vector with the inserted DNA sequence in a suitable host;

(e) purifying the vector with the inserted DNA sequence and resuspending said vector in an aqueous solution;

(f) applying a restriction enzyme to the vector which recognizes a restriction site between the inserted DNA and one of the opposed phase promoters to cleave the vector at said site; and

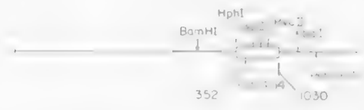
(g) applying to the cleaved vector the phage encoded RNA. polymerase specific to the phase promoter remaining adjacent to the inserted DNA segment in an RNA generating medium to provide RNA copies of the selected DNA sequence.

4,766,073

EXPRESSION OF BIOLOGICALLY ACTIVE PDGF ANALOGS IN EUCARYOTIC CELLS

Mark J. Murray, and James D. Kelly, both of Seattle, Wash., assignors to ZymoGenetics Inc., Seattle, Wash.

Continuation-in-part of Ser. No. 705,175, Feb. 25, 1985, which is a continuation-in-part of Ser. No. 660,496, Oct. 12, 1984. This application Aug. 13, 1986, Ser. No. 896,485
Int. Cl.[4] C12N *15/00, 5/00*; C12P *21/00, 19/34*
U.S. Cl. 435—172.3 44 Claims



4. A vector capable of directing the expression and secretion of biologically active PDGF analogs in eucaryotic cells, said vector containing a transcriptional promoter followed downstream by a DNA sequence, a portion of said DNA sequence encoding a protein which is substantially homologous to at least a portion of the A-chain of PDGF, and a portion of said DNA sequence encoding a protein which is substantially homologous to at least a portion of the B-chain of PDGF, said portions of said DNA sequence encoding a protein having substantially the same biological activity as PDGF.

4,766,074

THERMOSTABLE RHIZOMUCOR RENNET HAVING INCREASED MILK CLOTTING ACTIVITY

Herbert J. Havera, Edwardsburg, Mich., and John D. Humphreys, Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Continuation of Ser. No. 819,720, Jan. 17, 1986, Pat. No. 4,722,900. This application Oct. 13, 1987, Ser. No. 107,776
Int. Cl.[4] C12N *9/58*; C12R *1/785*
U.S. Cl. 435—223 12 Claims

1. Microbial rennet obtained from an organism of the species *Rhizomucor pusillus* and having enhanced milk clotting activity which is prepared by:

(a) providing a solution of rennet obtained from *Rhizomucor pusillus*;

(b) contacting the rennet with a methionine oxidizing composition under conditions suitable and for a time sufficient to increase the thermal liability of the rennet; and

(c) contacting the rennet with the anhydride of a dicarboxylic organic acid under conditions suitable and for a time sufficient to increase its milk clotting activity.

4,766,075

HUMAN TISSUE PLASMINOGEN ACTIVATOR

David V. Goeddel, Hillsborough; William J. Kohr, San Mateo; Diane Pennica, Foster City, and Gordon A. Vehar, San Carlos, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 398,003, Jul. 14, 1982, and a continuation-in-part of Ser. No. 374,860, May 5, 1982. This application Apr. 7, 1983, Ser. No. 483,052
Int. Cl.[4] C12N *5/00, 15/00, 9/48, 9/72, 1/20, 1/00*; C07H *17/00*
U.S. Cl. 435—240.2 11 Claims

1. A DNA isolate consisting essentially of a DNA sequence encoding human tissue plasminogen activator.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,076

METHOD AND BUFFERED BULK STARTER MEDIA FOR PROPAGATION OF USEFUL BACTERIA

William E. Sandine, and James W. Ayres, both of Corvallis, Oreg., assignors to The State of Oregon acting by and through the Oregon State Board of Higher Education on behalf of Oregon State University, Eugene, Oreg.

Filed Jun. 19, 1984, Ser. No. 622,112
Int. Cl.[4] C12N *1/20*; C12R *1/225, 1/46*; A23C *19/032*
U.S. Cl. 435—253 29 Claims

1. A method for preparing a food fermentation inoculum containing acid producing bacteria which comprises:

a. providing an aqueous, liquid bacterial growth medium consisting essentially of water, essential nutrients and a dissolved, nontoxic buffering agent, wherein the buffering agent comprises buffering compounds selected from the group consisting of water soluble salts of linear aliphatic dibasic acids having from 3–6 carbon atoms and mixtures thereof, the buffering agent being present in an amount sufficient to buffer the growth medium to pH levels not less than about 5.0 for at least about 16 hours during production of a lactic acid producing strain of Streptococcus or Lactobacillus, or a mixture of such strains;

b. inoculating the growth medium with a lactic acid producing strain of Streptococcus or Lactobacillus, or a mixture of such strains; and

c. propagating the inoculated acid producing bacteria in the growth medium to provide food fermentation inoculum.

4,766,077

ICE NUCLEATION DEFICIENT MICROORGANISMS BY GENETIC MANIPULATION

Cindy S. Orser; Steven Lindow, both of Berkeley, and Nickolas J. Panopoulos, Oakland, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 534,851, Sep. 22, 1983, abandoned. This application Dec. 4, 1985, Ser. No. 805,574
Int. Cl.[4] C12N *15/00, 1/20*
U.S. Cl. 435—253 16 Claims

1. A microorganism having an ice nucleation deficient phenotype as a result of in vitro modification of an INA gene locus encoding polypeptide(s) responsible for ice nucleation activity, and progeny thereof, said modification being a deletion, substitution, or insertion substantially limited to said INA gene locus and resulting in a non-reverting loss of ice nucleation activity

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4,766,078

AUTOMATED CONSECUTIVE REACTION ANALYZER

Henry Gang, 42 Leighton Ave., Yonkers, N.Y. 10705

Filed Mar. 7, 1985, Ser. No. 709,657
Int. Cl.[4] G01N *21/13*; C12M *1/34*
U.S. Cl. 435—291 7 Claims



1. An automated consecutive reaction analyzer comprising a first member being formed with specimen holding means for holding a plurality of specimen holders and means to move said specimen holding means;

a second member being formed with specimen reaction holding means for holding a plurality of specimen reaction holders containing specimens undergoing reaction and means to move said specimen reaction holding means, said second member further comprising first and second reagent holding means comprising holders respectively containing first and second reagents, said reaction holding means being movable relative to the reagent holding means so that each reaction holder is operatively adjacently positioned to each reagent holder;

first arm means being movably mounted between the members for transferring a specimen from one said specimen holder to one said specimen reaction holder;

second arm means operatively disposed on said second member to transfer the first reagent from the respective reagent holder to the one said transferred specimen reaction holder, and to transfer a second reagent to the one said reaction holder to consecutively cause a first reaction and then a second reaction, said second arm means comprising a plurality of reagent dispensing arms respectively mounted at each reagent holder for dispensing one of the specific respective reagents to the immediately adjacent reaction holder;

measuring means being mounted adjacent said reaction holder so as to measure a reaction parameter of the transferred specimen after initiation of said first reaction and then after initiation of said second reaction with movement of said second member to bring the one said reaction holder adjacent said reaction measuring means; and control means being inter-connected respectively to said first member, second member, first arm means and second are means for cooperative movement thereof, said reaction measuring means comprising two circumferentially spaced photometers, so that one reaction holder is operatively disposed adjacent one photometer, and another said reaction holder is operatively disposed adjacent the other photometer, said plurality of reagent dispensing arms comprising a first plurality and a second plurality, said first plurality being positioned upstream of the movement direction of the reaction holding means and circumferentially spaced from said first photometer and adjacent said first arm means, and said second plurality being positioned downstream of the movement direction of the reaction holding means and circumferentially spaced from said second photometer and more remote from said first arm means than said first plurality, whereby a first reagent is added to a reaction holder to cause of first reaction and photometric measurement thereof, and a second reagent is subsequently added to a reaction holder cause a second reaction and photometric measurement thereof, said first member specimen holders being circumferentially disposed on said first memer, said second member comprising first and second cylinders, said cylinders being coaxial and said reaction holders being circumferentially disposed and radially spaced from the reagent holders, whereby said consecutive reactions are effected and automatically measured.

4,766,079

METHOD OF USING POLYPROPYLENE GLYCOL TO IMPROVE MOVEMENT AND INTERMIXTURE OF BLOOD AND OTHER FLUIDS IN CAPILLARY TUBES

Karl Fele, Varberg, and Stellan Lindberg, Förslöv, both of Sweden, assignors to Biolabimex AB, Varberg, Sweden

PCT No. PCT/SE85/00334, § 371 Date May 1, 1986, § 102(e) Date May 1, 1986, PCT Pub. No. WO86/01891, PCT Pub. Date Mar. 27, 1986
PCT Filed Sep. 9, 1985, Ser. No. 863,376
Claims priority, application Sweden, Sep. 11, 1984, 8404538
Int. Cl.[4] G01N *33/48*
U.S. Cl. 436—63 6 Claims

1. An improved method of handling blood and blood solutions in a capillary tube by reducing the electrostatic forces acting on the blood and blood solutions by adding propylene glycol to the blood and blood solutions to reduce its surface tension without cross-reacting with the blood and blood solutions.

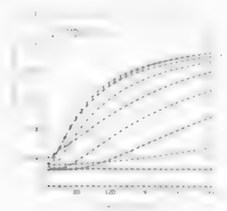
5. An improved method of performing analyses involving sedimentation of particles of blood in a liquid in a capillary tube by adding propylene glycol to said liquid containing blood particles to reduce the repellent forces existing between said particles forming said sediment without cross-reacting with said particles of blood.

4,766,080

QUANTITATIVE MEASUREMENT OF LITHIUM

Roger Fleming, Niles, Mich., assignor to Miles Inc., Elkhart, Ind.

Filed Aug. 28, 1987, Ser. No. 90,765
Int. Cl.[4] G01N *33/00, 21/00*
U.S. Cl. 436—74 [redacted] Claims



1. A method for quantitatively determining the amount of lithium in a liquid test sample, said method comprising the steps of:

(a) forming a reaction mixture comprising said liquid test sample and a lithium precipitating reagent whereby substantially all of the lithium present therein is precipitated by said precipitating reagent in the form of dispersed, suspended particles in said reaction mixture;

(b) directing a beam of light into said reaction mixture and measuring the intensity of light (i) transmitted through said reaction mixture, or (ii) scattered by said dispersed, suspended particles in said reaction mixture over a period of time; and

(c) determining the rate of change in intensity of light transmitted or scattered, respectively, over said period of time whereby the rate of change in intensity thereof can be correlated to the amount of lithium in said liquid test sample.

4,766,081

METHOD FOR THE QUALITATIVE AND QUANTITATIVE DETERMINATION OF THE HYDROGEN ISOTOPES, PROTIUM, DEUTERIUM AND TRITIUM, AND SYSTEM FOR IMPLEMENTING THE METHOD

Friedrich Rückert, Karlsruhe, Fed. Rep. of Germany, assignor to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Mar. 4, 1986, Ser. No. 835,989
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1985, 3510867
Int. Cl.[4] G01N *21/62, 33/00, 33/18*
U.S. Cl. 436—144 7 Claims

1. A method for the qualitative and quantitative measurement of protium, deuterium and tritium in a sample comprising hydrogen or water or a mixture thereof, comprising:

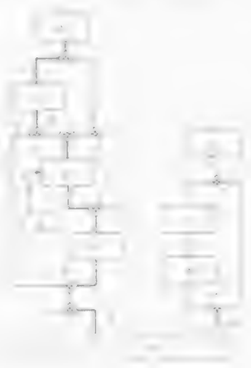
evaporating any water in the sample to form a first gaseous phase material containing a water vapor component;

conveying the first gaseous phase material to a measuring cell of a microwave spectrometer;

measuring an isotope microwave spectrum of the first gaseous phase material to obtain a first measured value;

oxidizing any protium, deuterium, and tritium in the first gaseous phase material and evaporating said oxides to form a second gaseous phase and material containing water vapor;

conveying said second gaseous phase material to a measuring cell of a microwave spectrometer;



measuring an isotope microwave spectrum of said second gaseous phase material to obtain a second measured value;

subtracting said first measured value from said second measured value to obtain a qualitative and quantitative measurement of protium, deuterium and tritium in said sample.

4,766,082

METHOD AND APPARATUS FOR PREPARING SAMPLES FOR ANALYSIS

Eric Marteau D'Autry, 1 rue Boutarel, 75004 Paris, France

Continuation of Ser. No. 790,422, Oct. 23, 1985, abandoned. This application Aug. 26, 1987, Ser. No. 90,412
Claims priority, application France, Oct. 24, 1984, 84 16283
Int. Cl.[4] G01N *1/18, 35/02*
U.S. Cl. 436—178 6 Claims



1. A method of preparing samples for analysis, in which at least one reaction agent and an initial sample are successively injected into a cartridge containing a column of powdery agent and provided with a bottom outlet orifice, with said reaction agent and said sample being injected in such a manner as to pass through the column of powdery agent, and in which the product of a last passage through the column is collected for analysis, the method wherein the improvement comprises said at least one reaction agent and the initial sample are successively injected into a top of a cartridge after the top of the cartridge has been sealed in such a manner substantially effective to cause an increase in pressure at the top of the cartridge by injection of said at least one reaction agent or of the sample resulting in the acceleration of the passage of said at least one reaction agent or the sample through the column substantially as a result of said increased pressure, whereby a requirement

VOL 1093 ISS 4 AUG 23 1988 UMI

for either a vacuum pump or pressurized gas supply is eliminated.

4,766,083

METHOD FOR THE PHOTOMETRIC DETERMINATION OF BIOLOGICAL AGGLUTINATION

Yoshinobu Miyashita; Haruki Oishi; Yasumichi Ueno; Hiromi Shiraishi, all of Osaka, and Kazuyuki Tubaki, Hyogo, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 4, 1983, Ser. No. 481,961

Claims priority, application Japan, Apr. 4, 1982, 57-55862; Apr. 5, 1982, 57-56432; Apr. 5, 1982, 57-56433; Apr. 26, 1982, 57-70136

Int. Cl.[4] G01N *21/82, 33/557*

U.S. Cl. 436—517 10 Claims



1. A photometric method for detecting agglutination in a biological agglutination reaction system test sample using a photometric apparatus comprising a laser beam source and at least one photodetector for detecting light scattered by the test sample, the method comprising:

(1) arranging said at least one photodetector so as to be capable of detecting scattered light from the test sample only at a scatter angle of 30° to 60° with respect to a laser beam directed at the test sample from the laser beam source;

(2) irradiating the test sample with the laser beam from the laser beam source;

(3) selectively detecting the intensity of scattered light from the test sample at the scatter angle of 30° to 60° using the at least one photodector which provides an output indicative thereof; and

(4) determining the first derivative of the output of said at least one photodetector with respect to time and obtaining the maximum value thereof.

4,766,084

PROCESS FOR THE PRODUCTION OF AN ELECTRIC CONTACT ON A HGCDTE SUBSTRATE WITH A P CONDUCTIVITY AND APPLICATION TO THE PRODUCTION OF AN N/P DIODE

Cécile Bory, Saint Egreve; Jean-Louis O. Buffet, Seyssinet Pariset, and Guy Parat, Grenoble, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

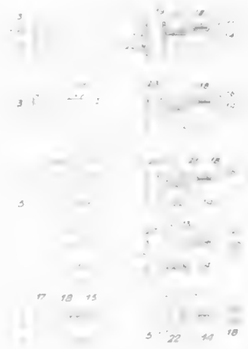
Filed Sep. 16, 1987, Ser. No. 97,616

Claims priority, application France, Sep. 19, 1986, 86 13141

Int. Cl.[4] H01L *31/18, 21/44*

U.S. Cl. 437—3 14 Claims

1. A process for the production of an electric contact on a HgCdTe substrate of P conductivity, wherein at least one insulating layer is deposited on said substrate, the entire thickness of the insulating layer is etched by ion bombardment so as to produce an opening in said insulating layer, the substrate covered by the insulating layer undergoes a heat treatment, so as to at least mitigate the P conductivity drop induced by the ion bombardment in that portion of the substrate facing the opening made in the insulating layer, and a conductive pad is formed in the opening made in the insulating layer to form an



electric contact with that portion of the substrate facing the opening.

4,766,085

METHOD OF MANUFACTURING CONTACT TYPE ONE-DIMENSIONAL IMAGE SENSOR

Satoshi Nishigaki, Nara; Ryusuke Kita, Tenri; Shuhei Tsuchimoto, Nara; Akiteru Rai, Osaka; Masaru Iwasaki, Izumisano; Yuzi Matsuda, Yao, and Takashi Nukii, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1986, Ser. No. 894,051

Claims priority, application Japan, Aug. 7, 1985, 60-174525; Sep. 18, 1985, 60-207981; Sep. 18, 1985, 60-207982

Int. Cl.[4] H01L *31/04*

U.S. Cl. 437—3 9 Claims



1. A method of manufacturing a contact type one-dimensional image sensor comprising the steps of:

providing on a substrate a light receiving element portion composed of at least one Group II-VI compound semiconductor containing Cd;

providing a matrix wiring portion on the same substrate in communication with said light receiving element portion; and

forming an insulating layer over said substrate and said matrix wiring portion in such a manner as to also cover said light receiving element portion.

4,766,086

METHOD OF GETTERING A SEMICONDUCTOR DEVICE AND FORMING AN ISOLATION REGION THEREIN

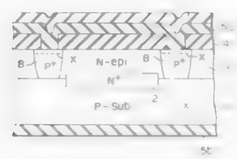
Jiro Ohshima; Shin-ichi Taka, both of Kawasaki; Toshiyo Ito, Yokohama, and Masaharu Aoyama, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

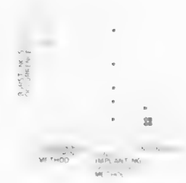
Filed Mar. 2, 1987, Ser. No. 20,758

Claims priority, application Japan, Mar. 7, 1986, 61-49912

Int. Cl.[4] H01L *21/265, 21/225*

U.S. Cl. 437—011 18 Claims





1. A method of gettering a semiconductor device, comprising the steps of:

forming a thermal oxide film on a surface of a monocrystalline silicon layer;

etching a predetermined position of said thermal oxide film to form an opening exposing said monocrystalline silicon layer;

forming a polycrystalline silicon layer on said oxide film and an exposed surface of said monocrystalline silicon layer;

ion-implanting an impurity into said polycrystalline silicon layer; and

converting said polycrystalline silicon layer into an oxide film by thermal oxidation, said converting step also oxidizing a surface of said monocrystalline silicon layer contacting said polycrystalline silicon layer, said oxidized surface of said monocrystalline silicon layer forming a getter site.

4,766,087

ELECTRICAL CONTACTS CONTAINING THALLIUM (III) OXIDE PREPARED AT RELATIVELY LOW TEMPERATURE

Jay A. Switzer, Placentia, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 789,564, Oct. 21, 1985, Pat. No. 4,706,104, which is a continuation-in-part of Ser. No. 653,353, Sep. 24, 1984, Pat. No. 4,608,750, and Ser. No. 740,182, May 31, 1985, Pat. No. 4,626,322, which is a continuation-in-part of Ser. No. 653,353, , which is a division of Ser. No. 518,814, Aug. 1, 1983, Pat. No. 4,492,811. This application Jul. 27, 1987, Ser. No. 78,099

The portion of the term of this patent subsequent to Sep. 2, 2003, has been disclaimed.

Int. Cl.[4] H01L *21/04*

U.S. Cl. 437—15 21 Claims

9. A method for producing an electronic semiconductor device comprising the step of depositing solid n-type degenerate thallium (III) oxide onto a surface of a n-type semiconductor component of said device so as to form a rectifying junction with said surface of said semiconductor component, and wherein the bulk of said semiconductor component has a temperature less than 500° F. during said depositing.

4,766,088

METHOD OF MAKING A MEMORY DEVICE WITH POLYSILICON ELECTRODES

Satoshi Kono, Ikeda; Koshi Nomura, Itami, and Mikio Kyomasu, Toyono, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 543,996, Oct. 20, 1983, abandoned. This application Aug. 21, 1986, Ser. No. 899,742

Claims priority, application Japan, Oct. 22, 1982, 57-184493

Int. Cl.[4] H01L *21/44*

U.S. Cl. 437—52 6 Claims



1. A method for manufacturing a semiconductor device provided with a memory region including a floating gate type memory transistor and a non-memory region including an insulating gate type transistor, said method comprising the steps of:

(a) forming a first polysilicon layer doped with a first predetermined impurity on a first insulating layer formed across the surface of a semiconductor substrate;

(b) selectively etching said first polysilicon layer to form a desired pattern in said memory region while keeping said first polysilicon layer intact in said non-memory region;

(c) forming a second insulating layer across the entire surface of said device;

(d) forming a second polysilicon layer doped with a second predetermined impurity across the entire surface of said device;

(e) patterning said second polysilicon layer both in said memory and non-memory regions; and

(f) etching said second insulating layer and said first polysilicon layer using said patterned second polysilicon layer as a mask thereby forming a floating gate from said first polysilicon layer and a control gate from said second polysilicon layer in said memory region and forming a gate electrode of said insulating gate type transistor in said non-memory region, wherein said substrate is partly exposed in said memory region but is not exposed in said

VOL 1093 ISS 4 AG 23 1988 UMI

non-memory region, where said substrate remains covered by said first insulating layer.

4,766,089

METHOD OF MANUFACTURING A CHARGE-COUPLED DEVICE

Geert J. T. Davids, and Anton P. M. van Arendonk, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 858,478, May 1, 1986. This application Dec. 11, 1987, Ser. No. 131,874

Claims priority, application Netherlands, May 10, 1985, 8501189

Int. Cl.[4] H01L *21/90*

U.S. Cl. 437—53 6 Claims



1. A method of manufacturing a semiconductor device comprising a number of first electrodes which consist of practically parallel electrode strips located on an electrically insulating layer and are separated from each other by grooves with insulated walls, these grooves being filled with a conductive material constituting intermediate second electrodes which are coplanar with the first electrodes, characterized in that the first electrodes are covered by a first insulating layer and are contacted via first contact windows which each overlap in part at least one second electrode, and in that the second electrodes are covered by a second insulating layer which is thinner than said first insulating layer and are contacted via second contact windows which are provided therein and are bounded by the insulating layer on the adjoining first electrodes, each second electrode exhibiting at least one interruption between its second contact window and the first contact windows on the adjoining first electrodes overlapping it, and also between these first contact windows, further characterized in that a number of parallel strip-shaped first electrodes separated from each other by grooves are provided on an electrically insulating layer, in that these first electrodes and the groove walls are covered with an insulating layer, in that subsequently a conductive layer is deposited on the whole, which is then etched until parts of this conductive layer are left only within the grooves, these parts forming intermediate second electrodes, in that a number of interruptions are formed in each second electrode by etching and the second electrodes are provided with an insulating layer, which is thinner than the insulating layer on the first electrodes, in that via a mask on each of the second electrodes a self-aligned second contact window is formed by etching away the said thinner insulating layer, and in that via another mask a first contact window overlapping at least one of the adjacent second electrodes is formed on each first electrode by etching away the insulating layer present on the first electrodes, the contact windows being arranged so that each second electrode between every two overlaps and between an overlap and the second contact window exhibits one of said interruptions.

4,766,090

METHODS FOR FABRICATING LATCHUP-PREVENTING CMOS DEVICE

Gerald A. Coquin, New Providence; William T. Lynch, Summit, and Louis C. Parrillo, Warren, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 857,392, Apr. 21, 1986, abandoned. This application Nov. 21, 1986, Ser. No. 933,631

Int. Cl.[4] H01L *21/425*

U.S. Cl. 437—57 3 Claims



1. A method for fabricating a device, comprising the steps of:

forming a trench in a semiconductor substrate which includes a surface, said trench extending from said surface into said substrate;

depositing a composition comprising polysilicon into said trench; and

completing the fabrication of said device, characterized in that

said substrate includes a bulk region supporting a relatively thin layer whose doping level is less than that of said bulk region, said trench extending through a portion of said relatively thin layer, and

said method further comprises the step of doping a region of said relatively thin layer, immediately beneath said trench, with dopant after said forming step but before said depositing step, to form a relatively heavily doped region in said layer extending from a bottom of said trench to said bulk region.

4,766,091

METHOD FOR PRODUCING AN ELECTRONIC DEVICE HAVING A MULTI-LAYER STRUCTURE

Hirokazu Ohtoshi, Kawasaki; Junichi Hanna, and Isamu Shimizu, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1986, Ser. No. 946,085

Claims priority, application Japan, Dec. 28, 1985, 60-298044

Int. Cl.[4] H01L *21/20*

U.S. Cl. 437—108 20 Claims

1. A method for producing an electronic device having a multi-layer structure comprising one or more controlled band gap semiconductor thin layers formed on a substrate, which comprises forming at least one of said controlled band gap semiconductor thin layers according to the photo CVD method and forming at least one of the other constituent layers according to the method comprising introducing a gaseous starting material for film formation and a gaseous halogenic oxidizing agent having the property of oxidizing said starting material into a reaction space to effect chemical contact therebetween to thereby form a plurality of precursors including a precursor in an excited state and transferring at least one of these precursors into a film forming space communicated with the reaction space as a feed source for the constituent element of the deposited film.

4,766,092

METHOD OF GROWING HETEROEPITAXIAL INP ON SI USING SN SUBSTRATE IMPLANTATION

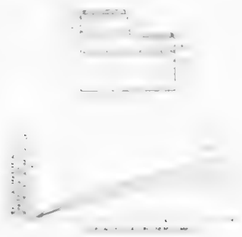
Takao Kuroda; Kenji Hiruma, both of Koganei, and Hiroyoshi Matsumura, Saitama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1986, Ser. No. 937,019

Claims priority, application Japan, Dec. 2, 1985, 60-269396

Int. Cl.[4] H01L *21/20, 7/38, 7/54*

U.S. Cl. 437—126 15 Claims



1. A method of producing a semiconductor device comprising the steps of:

ion-implanting an ion species of Sn, into a substrate of Si crystal; and

growing epitaxially a layer of compound semiconductor material of single crystal InP on the ion-implanted surface of said substrate.

4,766,093

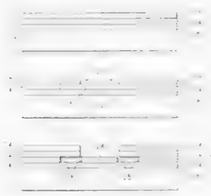
CHEMICALLY FORMED SELF-ALIGNED STRUCTURE AND WAVE GUIDE

Harold J. Hovel, Katonah, and Thomas F. Kuech, Ossining, both of N.Y., assignors to International Business Machines Corp., New York, N.Y.

Continuation of Ser. No. 635,975, Jul. 30, 1984, abandoned. This application Jun. 9, 1987, Ser. No. 62,332

Int. Cl.[4] H01L *21/20*

U.S. Cl. 437—129 15 Claims



1. In a method for the production of a self-aligned semiconductor device having an element on said device in a region adjacent to circuit means for the control of power through said device, the improvement comprising chemically controlling the alignment and proximity of said element next adjacent said circuit means by the steps comprising:

(1) placing said element on a semiconductor substrate,

(2) placing a layer on said element in a region over and adjacent to the area of placement of said circuit means on said substrate,

(3) providing an opening in said layer extending over said region,

(4) chemically converting said element below said opening and in a direction outwardly from said opening to a compound that is removable from said device by a reagent, said compound being removable from said substrate by said reagent at a rate faster than that of said element and layer,

(5) controlling the conversion of said element to said compound for a distance extending under said layer and adjacent said opening in a direction substantially parallel to the plane of said substrate and within a predetermined distance from the edge of said opening,

(6) after completion of said conversion, removing said compound by contacting said compound with said reagent,

(7) depositing said circuit means through said opening.

4,766,094

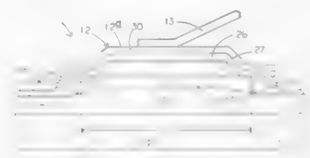
SEMICONDUCTOR DOPING PROCESS

Theodore G. Hollinger, 20606 Coventry Cir., Bend, Oreg. 97702

Filed Mar. 21, 1986, Ser. No. 842,778

Int. Cl.[4] H01L *21/385*

U.S. Cl. 437—164 5 Claims



1. In the manufacture of a semiconductor device which would otherwise include adjacent, spaced zones on opposite sides of an enlarged surface area in the device, with these zones having a known N/P characteristic and exhibiting a proneness to electrical breakdown,

forming in a substantially coextensive/contractive manner over the region between such zones an oxide layer which contains a dopant that is electrically compatible with the N/P characteristic of such zones,

driving the dopant in such layer therefrom substantially coextensively into, and across the expanse of, such region to create therein a doped subregion, and

by said driving, establishing an electrical connection between such subregion and such zones which obviates electrical breakdown.

4,766,095

METHOD OF MANUFACTURING EPROM DEVICE

Okuaki Hiroshi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1985, Ser. No. 688,842

Int. Cl.[4] H01L *23/10, 23/18*

U.S. Cl. 437—217 2 Claims

1. A method of manufacturing an EPROM IC device, comprising the steps of:

(a) preparing an IC lead frame having a chip mounting region and a plurality of leads;

(b) fixing an EPROM IC chip on a surface of said chip mounting region;

(c) connecting pad electrodes of said EPROM IC chip to the leads of said IC lead frame with thin metal wires;

VOL 1093 ISS 4 AG 23 1988 UMI

(d) covering both the EPROM IC chip and the metal wires with a hollow container through which ultraviolet rays can pass, said container being made of a material selected from the group consisting of quartz, alumina and synthetic resins;
(e) introducing a resin material which is capable of passing ultraviolet rays therethrough into said container to cure said resin material by heating and produce an assembled structure with the EPROM chip held in said container with the cured resin;
(f) placing said structure obtained by the steps above in a mold; and
(g) encapsulating said structure, except the bottom surface of said container, with an epoxy resin material in said mold

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4,766,096

SILICON NITRIDE WHISKER REINFORCED GLASS MATRIX COMPOSITES

George K. Layden, Hartford, and Karl M. Prewo, Vernon, both of Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 24, 1987, Ser. No. 18,246
Int. Cl.[4] C04B *35/80, 35/58;* C03C *14/00, 8/14*
U.S. Cl. 501—17 2 Claims

1. A method for preparing a composite material which comprises the steps of:
(a) dispersing silicon nitride whiskers in a suitable liquid at low shear and separating off the fines;
(b) removing the liquid from the remaining silicon nitride whiskers;
(c) blending a desired quantity of the whiskers from step (b) with a desired quantity of glass frit and a temporary binder in a suitable liquid to form a mixture;
(d) coating a suitable carrier substrate with a layer of said mixture;
(e) evaporating the liquid out of said layer;
(f) separating the thus-dried layer from said carrier; and
(g) stacking a plurality of dried layers in a jig and hot-pressing the layers together at a temperature and pressure sufficient to cause the glass particles to flow to form a void-free matrix throughout which are dispersed said silicon nitride whiskers.

4,766,097

ALUMINUM NITRIDE-BASED SINTERED BODY OF HIGH THERMAL CONDUCTIVITY

Kazuo Shinozaki; Kazuo Anzai, both of Tokyo; Takeshi Takano, Kanagawa, and Akihiko Tsuge, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 679,055, Dec. 6, 1984, abandoned. This application May 14, 1987, Ser. No. 51,237
Claims priority, application Japan, Dec. 12, 1983, 58-233938
Int. Cl.[4] C04B *35/58*
U.S. Cl. 501—98 4 Claims

1. A process for preparing an aluminum nitride-based sintered body having a high thermal conductivity and a total oxygen content within the range of 0.01 to 20% by weight which comprises mixing powder ceramic components consisting essentially of as the main component, aluminum nitride powder containing 0.001 to 1% by weight of diffusible oxygen, with a rare earth element compound selected from the group consisting of oxides and carbonates of a rare earth element selected from the group consisting of Y, La, Pr, Nd, Sm, Dy and Gd, said rare earth element compound being capable of chemically fixing such diffusible oxygen, to supply 0.01 to 15% by weight of rare earth element based on the aluminum nitride-based sintered body, and sintering said powder mixture in an inert environment at a temperature of 1550° to 1950° C. and at a pressure and under conditions maintaining the total oxygen content within the above range to obtain said sintered body and to chemically fix said diffusible oxygen, the amount of total oxygen content in the sintered body being that due to said diffusible oxygen and that supplied in combination form with said rare earth element by said rare earth element compound.

4,766,098

METHOD OF PROTECTING A COAL GASIFIER PART FROM ATTACK BY LIQUID SLAGS

Hans-Jurgen Gulas, Magnesitstrasse 6, A-8707 Leoben; Josef Horak, Otto Weininger-G. 6, A-1130 Vienna; Horst Sulzbacher, Dirabockweg 5, A-8700 Leoben, all of Austria, and Gero Papst, Wendelin Ernst-Strasse 9, A-7580 Buhl-Weitenung, Fed. Rep. of Germany

Continuation of Ser. No. 813,711, Dec. 27, 1985, abandoned, which is a division of Ser. No. 674,957, Oct. 11, 1984, abandoned. This application Feb. 19, 1987, Ser. No. 16,541
Claims priority, application Austria, Feb. 15, 1983, 511/83
Int. Cl.[4] C04B *35/52, 35/04*
U.S. Cl. 501—101 3 Claims

1. A method of protecting a part of a coal gasifier for the production of reducing gas from attack by liquid slags having a molar ratio of CaO/SiO_2 below 2, which comprises the step of lining said coal gasifier part with a refractory lining consisting of unburned, carbonaceous magnesia bricks having a carbon content of 5 to 30 percent, by weight.

4,766,099

CATALYST FOR OIL HYDROREFINING OR MILD HYDROCRACKING OF HEAVY OIL CHARGES TO PRODUCE MIDDLE DISTILLATES

Pierre Dufresne, Rueil-Malmaison, and Christian Marcilly, Houilles, both of France, assignors to Institut Francaise du Petrole, Rueil-Malmaison, France

Filed May 8, 1986, Ser. No. 860,927
Claims priority, application France, May 14, 1985, 85 07474
Int. Cl.[4] B01J *21/16*
U.S. Cl. 502—72 14 Claims

1. A catalyst containing (a) a carrier, (b) an amorphous matrix and (c) at least one group VIII metal or compound of a group VIII metal or an association comprising a group VI B metal or metal compound and at least one non-noble group VIII metal or metal compound, wherein in said catalyst:
the carrier contains at least 20% by weight of a fluorinated bridged smectite clay,
the amorphous matrix contains at least 10% by weight of alumina,
the concentration of group VIII metal or metals expressed as oxide(s) thereof, with respect to the final catalyst, ranges from 0.01 to 5% by weight for group VIII noble metals and from 0.01 to 20% by weight for group VIII non-noble metals; or, the total concentration of groups VIII and VI B metals ranges from 5 to 40% by weight for the association of at least one group VIII non-noble metal with at least one group VI B metal,
the carrier amount is sufficient to obtain a content of fluorinated bridged clay of at least 12% by weight of the final catalyst,
the matrix amount corresponds to the amount necessary to total 100% by weight of the final catalyst in combination with (a) and (c) above.

4,766,100

POLYMERIZATION CATALYST, PRODUCTION AND USE (P-1063)

Steven A. Best; Bradley P. Etherton, both of Houston, and Malcolm J. Kaus, Humble, all of Tex., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 637,985, Aug. 6, 1984, abandoned. This application Jul. 5, 1985, Ser. No. 752,422
The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.
Int. Cl.[4] C08F *4/02, 4/64*
U.S. Cl. 502—115 36 Claims

1. A transition metal-containing catalyst component comprising the solid reaction product obtained by treating silica, alumina, or mixtures thereof in an inert solvent with (A) an organometallic compound represented by the formula R^1MgR^2 wherein R^1 and R^2, which can be the same or different contain 1 to 20 carbon atoms and are selected from alkyl groups, aryl groups, cycloalkyl groups, aralkyl groups, alkadienyl groups or alkenyl groups, (B) an alcohol, (C) an acyl halide, (D) a titanium halide, (E) Cl_2, and (F) prereducing the transition metal-containing product with an aluminum alkyl, with the proviso that the (A) and (B) ingredients can be added to the inert solid (i) simultaneously (ii) as the reaction product of (A) and (B), or (iii) treatment with (B) immediately procedes treatment with (A).

4,766,101

ALUMINA-BASED CATALYST CARRIERS HAVING IMPROVED DURABILITY/MECHANICAL STRENGTH/AGING RESISTANCE

Patrice Nortier, Romainville; Thierry Dupin, Garges-Les-Gonesse, and Bertrand Latourrette, Le Raincy, all of France, assignors to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Dec. 4, 1985, Ser. No. 804,641
Claims priority, application France, Dec. 5, 1984, 8418507
Int. Cl.[4] B01J *21/04, 21/08, 31/18, 32/00*
U.S. Cl. 502—164 18 Claims

1. A process for the preparation of a durable, aging-resistant alumina-based catalyst carrier having improved mechanical strength, comprising (i) impregnating an agglomerated alumina-based catalyst carrier with an aqueous solution of a quaternary ammonium silicate of general formula:

$$(SiO_{2+x})^{2x-}+2\times N^+R_4)$$

wherein R is a hydrocarbon radical and in which the ratio r, the number of moles of Si/number of moles of N, is less than 15, (ii) drying said impregnated carrier, and (iii) calcining said dried carrier.

4,766,102

SILVER ALUMINUM BORATE OXIDATION CATALYST AND PROCESS FOR ITS PREPARATION

Larry Satek, Wheaton, Ill.; Laura Wilwerding, Earling, Iowa; John L. Melquist, Naperville, and Melvin L. Luetkens, Lisle, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Feb. 20, 1987, Ser. No. 17,315
Int. Cl.[4] B01J *21/02, 21/04, 23/50*
U.S. Cl. 502—202 11 Claims

1. Silver aluminum borate of the general formula (x) Ag_2O.(y)Al_2O_3.(z)B_2O_3 where x, y and z are numbers representing molar amounts of the oxides such that the mole fraction of Ag_2O, calculated as $x/(x+y+z)$ is from about 0.35 to about 0.60, the mole fraction of Al_2O_3, calculated as $y/(x+y+z)$ is from about 0.10 to about 0.40, and the mole fraction of B_2O_3, calculated as $z/(x+y+z)$ is from about 0.10 to about 0.45.

4,766,103

PREPARATION OF 1,4-DICHLOROBENZENE

Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 883,578, Jul. 7, 1986, Pat. No. 4,727,201. This application Oct. 8, 1987, Ser. No. 106,760
Int. Cl.[4] B01J *27/053, 27/08, 27/125, 27/138*
U.S. Cl. 502—217 10 Claims

1. A composition of matter comprising a mixture of:
(a) at least one aluminum halide selected from the group consisting of $AlCl_3$ and $AlBr_3$,
(b) free iodine, and
(c) at least one substance selected from the group consisting of alkaline earth metal halides, alkaline earth metal sulfates and lanthanide halides.

4,766,104

PROCESS FOR PRODUCING A V_2O_5-AND-ALKALI-METAL-SULFATE-CONTAINING CATALYST FOR OXIDIZING SO_2 TO SO_3

Wolfgang Feuemann, Karben, Fed. Rep. of Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 693,089, Jan. 22, 1985, Pat. No. 4,680,281. This application May 8, 1987, Ser. No. 48,058
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1984, 3401676
The portion of the term of this patent subsequent to Jul. 14, 2004, has been disclaimed.
Int. Cl.[4] B01J *23/22, 27/055*
U.S. Cl. 502—218 6 Claims

1. In a process for producing a catalyst for the oxidation of SO_2 to SO_3, which comprises impregnating carrier bodies with an acidic solution containing soluble vanadium salt and at least one alkali metal sulfate, and subsequently drying the carrier bodies at an elevated temperature, the improvement which comprises the steps of:
effecting the impregnation of the carrier bodies and the drying such that the carrier bodies after drying contain between 9.1569 and 37.4061 precent by weight of catalytically active substance in the foam of the vanadium salt and the alkali metal sulfate; and
activating the dried catalyst bodies by treating them in a countercurrent flow with a gas atmosphere under oxidizing conditions at an activation temperature of 700° C. to 1000° C. for an activation period of 5 to 120 minutes

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4,766,105

ETHYLENE OXIDE CATALYST AND PROCESS FOR PREPARING THE CATALYST

Ann M. Lauritzen, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 31, 1986, Ser. No. 926,025
Int. Cl.[4] B01J *23/04, 23/24, 23/36, 23/50*
U.S. Cl. 502—216 136 Claims

1. An ethylene oxide catalyst for the vapor phase production of ethylene oxide from ethylene and oxygen comprising a catalytically effective amount of silver, a promoting amount of alkali metal and a promoting amount of rhenium and a promoting amount of rhenium co-promoter selected from sulfur, molybdenum, tungsten, chromium and mixtures thereof supported on a suitable support having a surface area ranging from about 0.05 to about 10 m^2/g.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,106

SOLUBILIZATION OF PROTEINS FOR PHARMACEUTICAL COMPOSITIONS USING POLYMER CONJUGATION

Nandini Katre, El Cerrito, and Michael J. Knauf, Oakland, both of Calif., assignors to Cetus Corporation, Emeryville, Calif.

Continuation of Ser. No. 866,459, May 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 749,955, Jun. 26, 1985, abandoned. This application Jan. 25, 1988, Ser. No. 148,145

Int. Cl.[4] **A61K** *37/02; C07K 13/00*

U.S. Cl. 514—12 **15 Claims**

1. A pharmaceutical preparation comprising a non-toxic, inert, pharmaceutically acceptable aqueous carrier medium in which is dissolved an immunotherapeutic effective amount of biologically active, selectively conjugated, recombinant interleukin-2 protein, wherein the protein is covalently conjugated via up to ten amino acid residues on the protein to a water-soluble polymer selected from the group consisting of polyethylene glycol homopolymers and polyoxyethylated polyols, wherein said homopolymer is unsubstituted or substituted at one end with an alkyl group and said polyol is unsubstituted and wherein said protein in its unconjugated form is normally hydrophobic.

4,766,107

16-OXA-BICYCLO-[13.1.0]-HEXADEC-7-ENE AND ITS APPLICATION AS A FRAGRANCE

Hans-Jürgen Eberle, and Helmut Gebauer, both of Munich, Fed. Rep. of Germany, assignors to Consortium fur Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

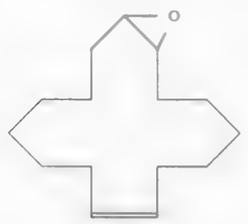
Filed Apr. 24, 1986, Ser. No. 855,350

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1985, 3530885

Int. Cl.[4] **A61K** *7/46;* **C07D** *303/04*

U.S. Cl. 512—13 **3 Claims**

1. 16-oxo-bicyclo-[13.1.0]-hexadec-7-ene having the structural formula:



4,766,108

TYR-ARG-VASOPRESSIN ANTAGONISTS

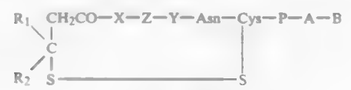
Fadia E. Ali, Cherry Hill, N.J., assignor to Smith Kline Beckman Corporation, Philadelphia, Pa.

Filed Dec. 4, 1986, Ser. No. 937,955

Int. Cl.[4] **A61K** *37/34;* **C07K** *7/16*

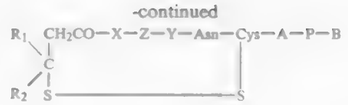
U.S. Cl. 514—16 **33 Claims**

1. A compound having the formulas:



Scroll

-continued



in which:

P is a D or L isomer of Tyr, MeTyr, O-alkyl Tyr, Trp, MeTrp, Phe or MePhe;

A is a D or L isomer of Arg, Lys, HArg, MeArg, Orn, MeLys or MeHArg;

B is OH, HN_2 or NHAlk;

Z is Phe, 4'-AlkPhe, O-AlkTyr, Ile or Tyr;

X is a D or L isomer of Phe, 4'-AlkPhe, Val, Nva, Leu, Ile, Pba, Nle, Cha, Abu, Met, Chg, Tyr or O-AlkTyr;

Y is Val, Ile, Abu, Ala, Chg, Gln, Lys, Cha, Nle Thr, Phe, Leu or Gly; and

R_1 and R_2 are, each, hydrogen, methyl, ethyl or, when taken together and with the β-carbon to which they are attached, a cycloalkylene ring of 4 to 6 members; and wherein Alk is an alkyl of 1 to 4 carbons, except that R_1 and R_2 are not both hydrogen;

or a pharmaceutically acceptable salt or prodrug thereof.

4,766,109

HYDROPHOBIC PEPTIDES

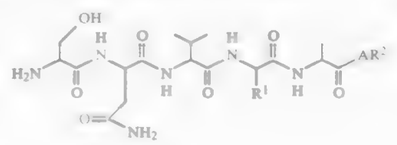
Michael F. Czarniecki, Westfield; Laura L. Verbiar, Verona, and Timothy Kogan, Union, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Oct. 17, 1986, Ser. No. 919,950

Int. Cl.[4] **A61K** *37/02;* **C07K** *7/06*

U.S. Cl. 514—17 **16 Claims**

1. A compound represented by the formula



wherein

A is —O— or —NH—;

R^1 is arylmethyl wherein aryl is 1 or 2 phenyl rings, a polycyclic phenyl fused ring system having 10–14 carbon atoms, or a polycyclic phenyl ring system having two or more phenyl rings bonded to each other by ring carbons, a polycyclic phenyl ring system having two or more phenyl rings bonded to an alkyl group; substituted arylmethyl wherein aryl is as defined above and wherein the substituents on the aryl group are 1–3 substituents selected from hydroxy, halogen, lower alkyl, lower alkoxy, cycloalkyl or aryl; cycloalkylmethyl; substituted cycloalkylmethyl wherein the substituents on the cycloalkyl group are as defined for arylmethyl; hereroarylmethyl wherein heteroaryl is a monocyclic or bicyclic fused ring system comprising 5–10 atoms wherein 1 or more ring atoms are independently selected from nitrogen, oxygen or sulfur; or substituted heteroarylmethyl wherein heteroaryl is as defined above and wherein the substituents on the heteroaryl group are as defined for arylmethyl;

R^2 arylmethyl wherein aryl is as defined above in R^1; cycloalkylmethyl; substituted arylmethyl wherein aryl is as defined above in R^1; and substituted cycloalkylmethyl wherein the substituents are as defined in R^1 for arylmethyl; and the pharmaceutically acceptable salts thereof.



wherein A_3 is:

I. alkylene of 1–6 carbons, branched chain alkyl of 1–6 carbons, cycloalkyl alkylene, alkylcycloalkylalkylene, or alkylcycloalkylene;

II. aralkylene wherein the alkyl group is 1–6 carbons or alkylaryl;

III. phenyl;

IV. alkylaralkylene wherein the alkyl groups may be the same or different and are 1–6 carbons in length;

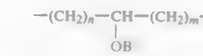
V. substituted alkylene, substituted branched chain alkyl, substituted cycloalkylalkylene, substituted alkyl cycloalkylalkylene, substituted alkylcycloalkylene, substituted alkylaryl, substituted aralkylene, substituted phenyl or substituted alkylaralkylene wherein the substituent or substituents may be the same or different, may be included in an alkylene chain or pendent thereto, and are selected from amino, halo, hydroxy, mercapto, NO_2, carboxy, $CONH_2$, lower alkyl, halomethyl, hydroxymethyl, aminomethyl, dihalomethyl, trihalomethyl, cyano, mercaptomethyl, methoxymethyl, methylthiomethyl, methoxycarbonylmethyl, cyanomethyl, benzyl, acetoxymethyl, $CH_2{=}CH{-}CH_2{-}$, isobutyl mercaptoalkyl of 2–3 carbon atoms, hydroxyalkyl of 2–3 carbons atoms, acetylthioethyl, benzamido, acetamido, phthaloylaminoalkylene wherein the alkylene group has 1–4 carbon atoms, α-alkoxycarbonyl isoalkylene wherein the alkyl group contains 1–5 carbons and the isoalkylene group contains 3–5 carbons, benzoylamino, alkanoylamino of 1–5 carbons, alkylamide of 1–5 carbons, phenylamine, alkylamine of 1–5 carbons, lower alkoxy, aryloxy, lower alkylamino, diloweralkylamino, acylamino, arylamino, guanidino, imidazolyl, indolyl, lower alkylthio, arylthio, carboxy amido and carbolower alkoxy;

VI. alkylenethio- or alkylenethioalkylene of 1–6 carbons, alkylthioalkylene of 1–6 carbons;

VII. alkyleneoxy or alkyleneoxyalkylene wherein the alkyl groups may be the same or different and are 1–6 carbons;

VIII. alkoxyphenyl or alkoxybenzyl in which the alkoxy groups has 1–3 carbons, phenoxyphenyl, phenoxybenzyl, benzyloxybenzyl or benzloxyphenyl or a thioether analog of any of them:

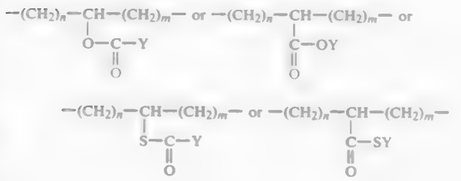
IX.



wherein n=0–4, m=0–4, and

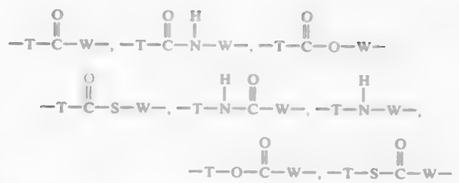
B=H or a 1–5 carbon alkyl group; or an —SB analog thereof;

X.



wherein n and m have the same significance as above, Y is phenyl, benzyl or a 1–5 carbon alkyl group;

XI.



wherein T and W may be the same or different and are alkylene, aryl, benzyl or cycloalkyl; and P and Q may be the same, or one of them may be H or they may combine to form a ring with the nitrogen to which they are attached;

either or both of P and Q may be selected from any of the following:

(a) C_1–C_6 straight or branched chain alkyl groups or C_1–C_6 straight or branched chain alkenyl groups, any one of which may be substituted with any of halo, hydroxy, alkoxy, arloxy, amino, alkylamino, dialkylamino, alkylacylamino, arylamino, guanidino, thioguanidino, nitroguanidino, hydrazino, ureido, nitro, mercaptocarbonyl, hydroxyamino, histidinyl, cyano, imidazolyl, indolyl, mercapto, alkythio, arylthio, carboxy, amido or carboalkoxy, wherein the alkyl groups containg 1–6 carbon atoms;

(b) cycloalkyl or cycloalkyl alkylene wherein cycloalkyl has 4–12 carbons, and alkylene 1–5 carbons, which may be substituted with any of —OH, —SH, halo, —COOH, —COSH, $CONH_2$, $-NO_2NH_2$, $-NO_2$, $-CH_3$, $-OCH_3$,



hydrazino, ureido, $-SCH_3$, hydroxyamino, cyano, guanidino, thioguanidino or nitroguanidino groups;

(c) aralkyl or alkaryl groups which may be ring substituted with one or more of the following:

SH, halo, CH_2COOH, CH_2CONH_2, CH_2CONH-alkyl, COSH, COOH, $CONH_2$, CONH-alkyl, CH_2COSH, CH_2SH, CH_2OH, OH, NO_2, amino alkyl, alkoxy, aralkyloxy, alkylthio, and aralkylthio groups, wherein the alkyl groups contain 1–6 carbons and may also alternatively be chain substituted with $-CH_3$, —OH, $-OCH_3$, halo, $-SCH_3$,

$-NH_2$, $-NO_2$, —CN, —SH, $-NHNH_2$,

—NHOH or a thio or nitro derivative thereof, —COOH or —COSH;

(d) an aryl, heterocyclic or adamantanyl group which may be ring-substituted with at least one group selected from halo, —OH, —O—alkyl, —O—aryl, $-NH_2$, —NH—alkyl, —N—$(alkyl)_2$,

aryl—NH_2, guanidino, thioguanidino, nitroguanidino, hydrazino, ureido, nitro, mercaptocarbonyl, hydroxyam-

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,110

NOVEL COMPLEX AMIDO AND IMIDO DERIVATIVES OF CARBOXYALKYL PEPTIDES

James W. Ryan, 3420 Poinciana Ave., Miami, Fla. 33133, and Alfred Chung, 8781 SW. 87th St., Miami, Fla. 33125

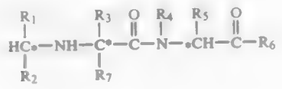
Continuation-in-part of Ser. No. 295,137, Aug. 21, 1981, abandoned. This application Oct. 31, 1986, Ser. No. 925,232

Int. Cl.[4] A61K 37/02; C07D 207/00, 277/04, 275/02, 279/00, 265/00, 239/02, 265/30, 233/30, 231/10, 231/06, 231/00, 207/12, 293/00, 207/10, 233/66, 279/10, 211/60, 211/78

U.S. Cl. 514—19

15 Claims

1. Novel compounds of the general formula:



where

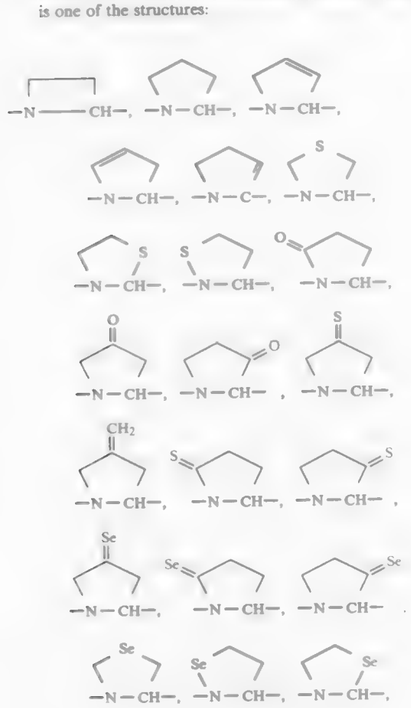
R_2 is COOH, CH_2COOH, COSH, CH_2COSH, CH_2SH, CH_2CH_2SH, a physiologically acceptable nontoxic salt of any of them;

COOY, CH_2COOY, COSY, CH_2SY, or CH_2CH_2SY wherein Y is phenyl, benzyl or a 1–5 carbon alkyl group; or

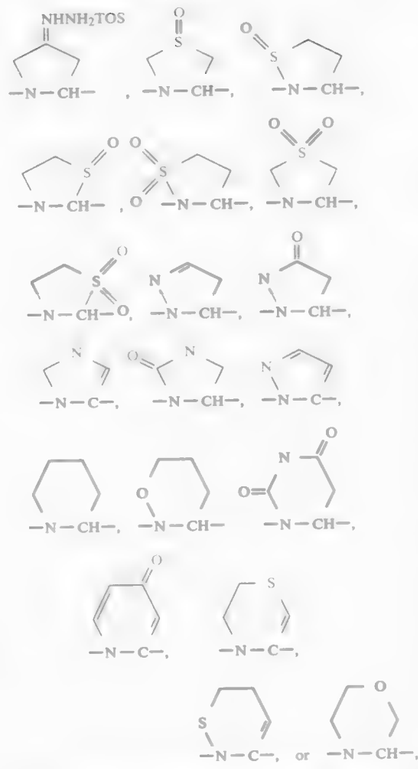


wherein either of A_1 and A_2 may be H, phenyl. benzyl or a 1–5 carbon alkyl group;

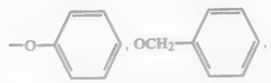
R_4 and R_5 together form a ring with the nitrogen and carbon atoms to which they are respectively attached, which ring is one of the structures:



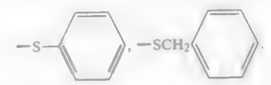
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it being understood that any of these structures may be monosubstituted with —OH, —OCH_3, F,



Cl, Br, I, phenyl, hydroxyphenyl, —SH, —SCH_3,



—$NHCH_3$, —CH_2NH_2, —CH_3, —CH_2OH, propyl, guanidino, nitro guanidino or thioguanidino and that any of the 5- or 6-membered rings may be disubstituted with —OH, F, Cl, Br, I, OCH_6 or any combination of two of this group of substituents;

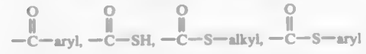
R_6 is —OM or —SM, wherein M may be H, an alkyl group of 1–3 carbon atoms or any other ester moiety hydrolyzable under mammalian in vivo conditions to —OH, or an ionically bonded anion of a physiologically acceptable nontoxic salt;

R_7 is H—, CH_3—, halomethyl, hydroxymethyl, aminomethyl or mercaptomethyl; and

A. R_1 and R_3 may each be of the general formula

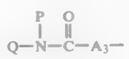
ino, cyano imidazolyl, indanyl, histidinyl, —SH, —S—alkyl, S—aryl,





and —NO_2; when P and Q join with N to form a ring, the ring may be any 4–10 membered heterocyclic ring which contains a nitrogen with only two of its valences attached to other ring members;

B. alternatively R_1 may be



and R_3 may be

(i) mono-N substituted alkylene of 2–4 carbons wherein the N substituent is benzoyl, Boc, CbO, Tos, formyl or acetyl;

(ii) hydroxphenyl or hydroxyphenyl-(1–6C)-alkylene or a thiol analog of either;

(iii) mercaptoalkylene of 1–6 carbons;

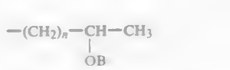
(iv) phenylalkylene wherein the alkylene group has 1–6 carbons;

(v) phenylthioalkylene or benzylthioalkylene wherein the alkylene group has 1–6 carbons;

(vi) alkylthioalkylene wherein the alkyl and alkylene groups have 1–3 carbons;

(vii) alkoxyphenyl or alkoxybenzyl in which the alkoxy group has 1–3 carbons, phenoxyphenyl, phenoxybenzyl, benzyloxybenzyl or benzyloxphenyl or a thioether analog of any of them.

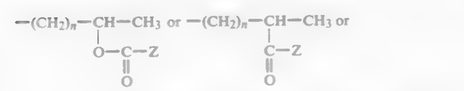
(viii)



wherein n=0–4 and B=H or a 1–6 carbon alkyl group, or an —SB analog thereof;

(ix) $(CH_2)_pCOOZ$ or $(CH_2)_pCOSZ$ wherein p=0–3 and Z is H, phenyl, benzyl, a 1–5 carbon alkyl group, or an anion of a physiologically acceptable salt;

(x)



wherein n is 0 to 4 and Z each have the same significance as above:

(xi)

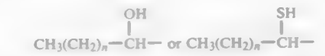


wherein n=0–4, D is phenyl, thienyl or a 1–3 carbon alkyl group;

(xii) HO—$(CH_2)_n$—$C(CH_3)_2$—, HS—$(CH_2)_n$—$C(CH_3)_2$—, p-hydroxyphenyl—$(CH_2)_n$—$C(CH_3)_2$— or —p-mercaptophenyl—$(CH_2)_n$—$C(CH_3)_2$— wherein n has the same significance as above;

(xiii) p-mercaptophenyl—$(CH_2)_n$—CH_2— or p-hydroxyphenyl—$(CH_2)_n$—$CH_{2,2,4}$—wherein the phenyl ring has one or two nitro or amino substituents and n has the same significance as above,

(xiv)

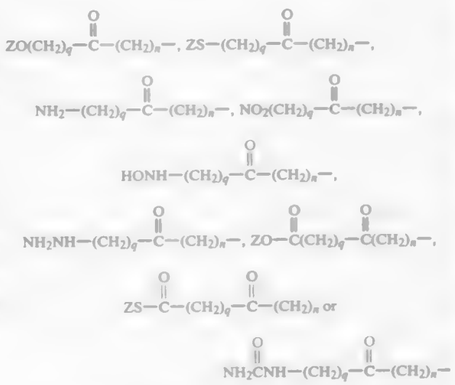


wherein n has the same significance as above;

(xv) NH_2—alkylene or NO_2—alkylene containing one hydroxy or mercapto substituent and having 1–6 carbon atoms;

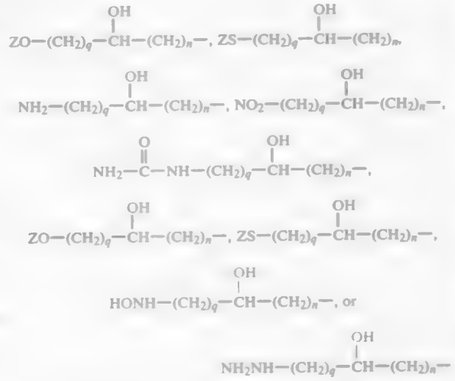
(xvi) hydroxy- or mercapto-phenoxybenzyl;

(xvii)



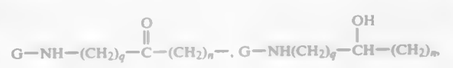
wherein q=1–5 and n is from 0 to 4 and Z has the same significance as above:

(xviii)



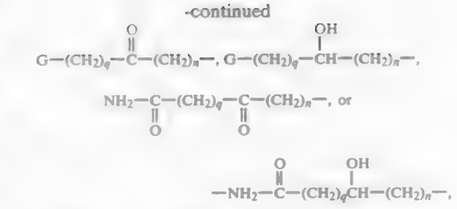
wherein q and n all have the same significance as above.

(xix)



VOL 1093 ISS 4 AG 23 1988 UMI

-continued



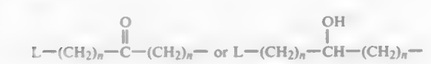
wherein G is an alkacyl or alkacyloxy group of 1–6 carbons, a benzoyl or a benzoyloxy group, or a phenylalkacyl or phenylalkacyloxy group wherein the alkacyl or alkacyloxy group contains 2–6 carbons and q and n have the same significance as set forth above;

(xx)



wherein n has the significance stated above and K is selected from carboxyphenyl, aminophenyl, nitrophenyl, halophenyl, hydroxyphenyl, alkylthiophenyl, alkylphenyl, mercaptophenyl, cyanophenyl, mercapto-carbonyphenyl, alkylcarbonyphenyl, alkycarbonyloxyphenyl, hydrazinophenyl, ureidophenyl, alkylcarbonylaminophenyl, alkylcarbonylthiophenyl, alkyloxylphenyl and hydroxyaminophenyl, wherein all alkyl groups contain 1–6 carbon atoms;

(xxi)



wherein n has the significance stated above and L is selected from cycloalkyl groups of 3–7 carbons which may be unsubstituted or substituted with up to two groups selected from among carboxy, amino, nitro, halo, hydroxy, mercapto, mercaptocarbonyl, hydroxyamino, alkyl, alkylcarbonyl, alkylcarbonyloxy, alkylthio, alkylcarbonylamino, alkycarbonylthio, cyanohydrazino, ureido and alkyloxy, wherein all alkyl groups contain 1–6 carbon atoms;

(xxii) guanidino alkylene, thioguanidinoalkylene, or nitroguanidino alkylene in which the alkylene groups contain 1–6 carbon atoms;

(xxiii) ring substituted aryl groups in which the ring substituents may be the same or different and may comprise up to five per ring of the following: $—NH_2$, —OZ, —SZ, halogen, —CN, $—NO_2$, —COOZ, —COSZ, $—COHN_2$, $—NHNH_2$, alkyl, alkylcarbonyl, alkylcarbonyloxy, alkylcarbonylamino, haloalkyl, dihaloalkyl, trihalomethyl, hydroxyamino, alkylcarbonylthio, phenoxy, and benzyloxy wherein the alkyl groups contain 1–6 carbon atoms and Z has the same significance as above;

(xxiv) amidoalkylene or alkylcarbonyl-aminoalkylene wherein the alkyl and alkylene groups contain 1–6 carbon atoms;

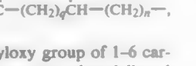
(xxv) hydroxyaminoalkylene of 1–6 carbons;

(xxvi) vinyl and substituted vinyl groups in which the substituents may be alkyl, aryl, cycloalkyl or hetrocyclic groups;

(xxvii) unsubstituted heterocyclic groups from among phenothiazinyl, pyrrolidinyl, pyrrolyl, quinolinyl, imidazolyl, pyridyl, thyminyl, benzothiazinyl, indolyl, thienyl, purinyl, piperidinyl, morpholinyl, azaindolyl, pyrazinyl, pyrimidyl, piperonyl, piperazinyl, furanyl, thiazolyl and thiazolidinyl, cystosinyl;

(xxviii) alkylene or alkenyl groups 1–6 carbons substituted with one of the heterocyclic rings from (xxvii) above;

(xxix) groups from (xxvii) or (xxviii) above containing up to four ring substituents on the heterocyclic ring selected from among —OZ, —SZ, —COOZ, $—NO_2$, $—NH_2$, —COSZ, halogen, haloalkyl, dihaloalkyl, trihalomethyl, cyano, $CONH_2$, alkyl, alkylcarbonyl, alkylcarbonyloxy, alkylcarbonylamino, alkyl-carbonylthio, phenoxy, benzyloxy,



$—NHNH_2$ and HONH—, wherein Z has the same significance as above;

(xxx) groups from (xxvii), (xxviii) or (xxix) attached to one valence of an etheric —O— or —S—;

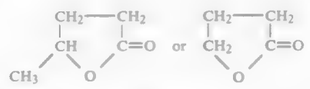
(xxxi) mono-, di- or tri-alkyl, alkenyl- or phenyl-silyl or -selenyl wherein the alkyl or alkenyl groups contain 1–6 carbons;

(xxxii) any of H, 1–5 carbon straight or branched chain alkyl, phenyl, —OH, alkoxy of 1–6 carbons, benzyloxy, benzyloxyalkylene or phenoxyalkylene wherein the alkylene has 1–5 carbons, alkoxyalkylene having 1–5 carbons in the alkoxy and alkelene groups, aminoalkylene of 1–6 carbons, alkenyl of 1–6 carbons, benzyl, hydroxyalkyl of 1–6 carbons, mercaptoalkyl of 1–6 carbons, histidinyl, haloalkyl of 1–6 carbons, 4-aminomethyl-benzyl, acetamidoalkyl of 1–5 carbons, benzylthiomethylene, or dimethylaminoalkyl of 1–5 carbons;

C. alternatively, R_3 may be



and R_1 may be any of groups (i)–(xxxii) above or any of H, C_1–C_8 straight or branched chain alkyl, phenyl, benzyl, unsubstituted aminoalkylene of 2–6 carbons, hydroxyalkylene of 1–6 carbons, hydroxphenyl, phenoxyalkylene or benzyloxyalkylene wherein the alkylene group has 1–6 carbons, cycloalkyl of 3–6 carbons, cycloalkyl methyl, 3-indolyl, phenylethyl, methylthioethyl, 3-indolyl alkyl wherein the alkyl group contains 1–5 carbons, imidazolyl, imidazolyalkyl wherein the alkyl group contains 1–5 carbons, phenoxymethyl, phenylthiomethyl, 4-aminomethyl benzyl, 2-aminophenethyl, naphthylethyl, 4-halophenethyl, 3,4-dihalophenethyl or phenoxyphenethyl, or R_1 and R_2 together may form with —CH a lactone ring of the formula:



or an analogous six-membered ring.

4,766,111

LIPIDS WITH PLASMIN INHIBITORY PROPERTIES

Nicholas Catsimpoolas, Newton Centre, Mass., assignor to Trustees of Boston University, Boston, Mass.

Division of Ser. No. 793,645, Oct. 31, 1985, Pat. No. 4,673,667.
This application Mar. 23, 1987, Ser. No. 11,819
Int. Cl.[4] A61K *31/70, 31/685*
U.S. Cl. 514—25 9 Claims

1. A method of treating conditions characterized by excess plasmin activity comprising administering an effective amount of a pharmaceutically acceptable plasmin inhibiting cerebroside, globoside, ceramide glycoside or sphingomyelin to a subject with a condition characterized by excess plasmin activity under conditions favoring inhibition of plasmin activity by said plasmin inhibiting cerebroside, glyoboside, ceramide glycoside or sphingomyelin.

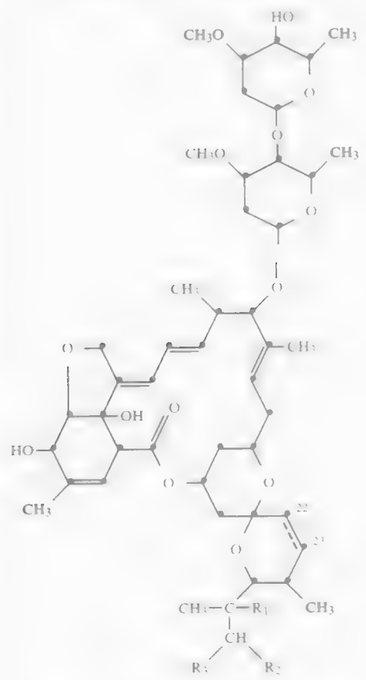
4,766,112

ANTHELMINTIC FERMENTATION PRODUCTS OF A MICROORGANISM

Robert T. Goegelman, Linden; Edward S. Inamine, Rahway, and Raymond F. White, Englishtown, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 759,780, Jul. 29, 1985, abandoned. This application Apr. 30, 1986, Ser. No. 857,670
Int. Cl.[4] A61K *31/71; C07H 17/08*
U.S. Cl. 514—30 3 Claims

1. A compound having the formula:



wherein R_1, R_2, n and the broken line at the 22,23-positions have the following meanings:

Compound A where R_1=H, R_2=OH, R_3=CH_3, 22,23-single bond

Compound B where R_1=H, R_2=OH, R_3=CH_3, 22,23-double bond

Compound C where R_1=OH, R_2=H, R_3=H, 22,23-double bond.

3. A composition useful for the treatment of parasitic diseases which comprises an inert carrier and from 0.001 to 5% of a compound of claim 1.

4,766,113

ANTIMICROBIAL COMPOSITIONS AND METHODS OF USING SAME

Michael H. West, and Fritz J. Nagel, both of Memphis, Tenn., assignors to Chapman Chemical Company, Memphis, Tenn.

Continuation of Ser. No. 419,396, Sep. 17, 1982, Pat. No. 4,602,011, which is a continuation of Ser. No. 175,073, Aug. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 002,555, Jan. 11, 1979, abandoned, which is a continuation of Ser. No. 842,933, Oct. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 625,741, Oct. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 364,018, May 25, 1973, abandoned. This application Apr. 22, 1986, Ser. No. 854,612
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.[4] A01N *43/00, 55/02*
U.S. Cl. 514—187 19 Claims

1. An antimicrobial composition for controlling bacteria and fungi comprising in combination:

(a) a metal chelate of 8-hydroxy quinoline in which the metal is selected from the group consisting of copper, mercury, cadmium, nickel, tin, aluminum and zinc,

(b) an alkyl benzene sulfonic acid wherein the alkyl group is C_6 to C_{18}, said metal chelate being solubilized by said sulfonic acid,

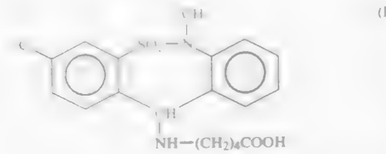
4,766,114

TRICYCLIC COMPOUND CALLED 5-((3-CHLORO-6-METHYL-5,5-DIOXO-6,11-DIHYDRO-DIBENZO (C,F) (1,2)THIAZEPIN-11-YL)-AMINO) PENTANOIC ACID

Charles Malen, Fresnes, and Jean C. Poignant, Bures S/Yvette, both of France, assignors to ADIR Et Compagnie, Neuilly-sur-Seine, France

Filed Feb. 20, 1987, Ser. No. 17,237
Claims priority, application France, Feb. 21, 1986, 86 02399
Int. Cl.[4] A61K *31/55;* C07D *281/02*
U.S. Cl. 514—211 7 Claims

1. Compound of the formula I



(I)

in its racemic form or optical isomers or addition salts thereof with a pharmaceutically acceptable organic or mineral base or mineral or organic acid.

4. A method of treating depression comprising the step of administering to a subject suffering from depression an antidepressive amount of a compound of claim 1.

4,766,115

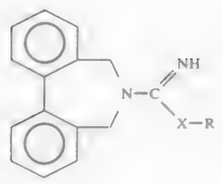
5,6-DIHDRO-6H-DIBENZ(C,E)AZEPINE-6-(THIO)CARBOXIMIDIC ACID ESTERS AND INSECTICIDAL USE THEREOF

Hans Bruderer, Biel-Benken, and René Zurflüh, Bülach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 6, 1986, Ser. No. 816,511
Claims priority, application Switzerland, Jan. 10, 1985, 95/85; Oct. 28, 1985, 4629/85
Int. Cl.[4] A01N *47/42;* C07D *223/18*
U.S. Cl. 514—217 22 Claims

1. A compond of the formula

VOL 1093 ISS 4 AG 23 1988 UMI



wherein

R is C_{1-12}-alkyl, C_{3-12}-alkenyl, C_{3-12}-alkynyl or C_{3-8}-cycloalkyl and

X is oxygen or sulfur, and none of the possible multiple bonds of R is present in the α-position to X, as well as acid addition salts of these compounds.

12. A method for the control of insects, which method comprises treating the locus to be protected or the insects themselves with an effective amount of a compound in accordance with claim 1.

4,766,116

DIARYL BUTYRIC ACID DERIVATIVE AND PHARMACEUTICAL USE THEREOF

Toshio Tatzuoka, Nishinomiya; Kenji Suzuki, Osaka; Kayoko Imao, Ikoma, and Kunihiro Sumoto, Oonojo, all of Japan, assignors to Suntory Limited, Osaka, Japan

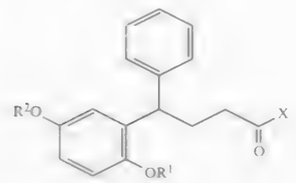
Filed Dec. 19, 1985, Ser. No. 810,591

Claims priority, application Japan, Dec. 21, 1984, 59-268549

Int. Cl.[4] A61K *31/165*; C07C *103/82, 103/84*

U.S. Cl. 514—218 12 Claims

1. A diaryl butyric acid derivative having the general formula:



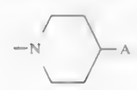
(I)

wherein

R^1 represents a hydrogen atom, an alkyl group having 1 to 3 carbon atoms, or an acyl group having 2 to 4 carbon atoms;

R^2 represents an alkyl group having 1 to 3 carbon atoms; and

X represents a pyrrolidinyl group, a morpholino group, a thiomorpholino group, an amino group, a group having the general formula:



wherein A represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms,

a group having the general formula:



wherein J represents a phenyl group, a benzyl group, a aralkyl group having 7 to 9 carbon atoms substituted with at least one hydroxyl group,

a group having the general formula:

$$-NH-(CH_2)_n-D$$

wherein n is an integer of 0 to 5, D represents a saturated crosslinked ring type hydrocarbon group, a piperidinyl group, a morpholino group, a thiomorpholino group, a pyridyl group, an indolyl group, a piperazinyl group, a pyrrolidinyl group, a carboxyl group, a phenyl group substituted with a hydroxyl, or aryloxy group, an N-[4-(2'-hydroxy-5'-methoxy)phenyl-4-phenylbutyryl]piperazinyl group, or a piperazinyl group having an alkyl group with 1 to 3 carbon atoms substituted for the hydrogen atom on the nitrogen atom,

a group having the general formula:

wherein m is 2 or 3, l is an integer of 0 to 4, E is a hydrogen atom, a phenyl group, a hydroxyl group, a pyrrolidinecarbonyl group, a 4-(4'-methoxyphenyl)-4-phenylbutylamide group, or a 4-(2'-hydroxy-5'-methoxy)phenyl-4-phenylbutyryl group,

a group having the general formula:

$$-O-(CH_2)_p-L$$

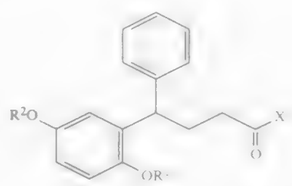
wherein p is an integer of 2 to 4, and L represents a dialkylamino group having a C_1 to C_3 alkyl group, or

a group having the general formula:

wherein G represents an aralkyl group having 8 to 9 carbon atoms substituted with at least two hydroxyl groups;

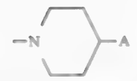
or the pharmaceutically acceptable salt thereof.

5. A method for treating cerebral organic disorders and pathergasia, said method comprising administering an effective amount to treat cerebral organic disorders and pathergasia of a diaryl butyric acid derivative having the general formula:



(I)

wherein R^1 represents a hydrocarbon atom, an alkyl group having 1 to 3 carbon atoms, or an acyl group having 2 to 4 carbon atoms; R^2 represents an alkyl group having 1 to 3 carbon atoms; and X represents a pyrrolidinyl group, a morpholino group, a thiomorpholino group, an amino group, a group having the general formula:



wherein A represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms,

a group having the general formula:

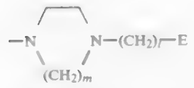


wherein J represents a phenyl group, a benzyl group, an aralkyl group having 7 to 9 carbon atoms substituted with at least one hydroxyl group,

a group having the general formula:

$$-NH-(CH_2)_n-D$$

wherein n is an integer of 0 to 5, D represents a saturated crosslinked ring type hydrocarbon group, a piperidinyl group, a morpholino group, a thiomorpholine group, a pyridyl group, an indolyl group, a piperazinyl group, a pyrrolidinyl group, a carboxyl group, a phenyl group substituted with a hydroxyl, or aryloxy group, an N-[4-(2'-hydroxy-5'-methoxy)phenyl-4-phenylbutyryl]piperazinyl group, or a piperazinyl group having an alkyl group with 1 to 3 carbon atoms substituted for the hydrogen atom on the nitrogen atom,



wherein m is 2 or 3, l is an integer of 0 to 4, E is a hydrogen atom, a phenyl group, a hydroxyl group, a pyrrolidinecabonyl group, a 4-(4,'-methoxyphenyl)-4-phenylbutylamide group, or a 4-(2'-hydroxy-5'-methoxy)phenyl-4-phenylbutyryl group,

a group having the general formula:

$$-O-(CH_2)_p-L$$

wherein p is an integer of 2 to 4, and L represents a dialkylamino group having a C_1 to C_3 alkyl group, or

a group having the general formula:



wherein G represents an aralkyl group having 8 to 9 carbon atoms substituted with at least two hydroxyl groups;

or the pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier therefor.

4,766,117

ANTIINFLAMMATORY COMPOSITIONS AND METHODS

Thomas C. Crawford; Stanley L. Keely, both of Ledyard; David L. Larson, Lyme; Joseph G. Lombardino, Niantic, and James J. Maciejko, Mystic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 821,183, Jan. 21, 1986, Pat. No. 4,672,061, which is a division of Ser. No. 695,950, Jan. 28, 1986, Pat. No. 4,579,846, which is a continuation-in-part of Ser. No. 659,602, Oct. 11, 1984, abandoned. This application Dec. 12, 1986, Ser. No. 941,140

Int. Cl.[4] A61K *31/54, 31/55*

U.S. Cl. 514—219 8 Claims

1. A method for the treatment of inflammation in man, having reduced gastrointestinal side effects, which comprises administering to said man single daily oral doses of 5–50 mg of piroxicam, or an equivalent amount of a pharmaceutically acceptable salt thereof, and 2–40 mg of diazepam.

4,766,118

6-BENZOXAZINYL- AND 6-BENZOTHIAZINYL-2,3,4,5-TETRAHYDROPYRIDAZIN-3-ONES AND PHARMACEUTICAL USE

Donald W. Combs, Piscataway, N.J., assignor to Ortho Pharmaceutical Corporation, Raritan, N.J.

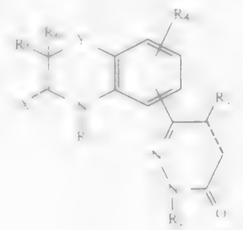
Continuation-in-part of Ser. No. 944,316, Dec. 22, 1986, Pat. No. 4,721,784. This application Jun. 22, 1987, Ser. No. 64,638

The portion of the term of this patent subsequent to Jan. 26, 2005, has been disclaimed.

Int. Cl.[4] A61K *31/535, 31/54*; C07D *413/04, 417/04*

U.S. Cl. 514—224.2 11 Claims

1. A compound of the formula



Where

X is H_2 or O;

Y is O or S;

R_1 is H, C_{1-6} straight- or branched-chain alkyl or C_{3-6} cycloalkyl;

R_2 is H, C_{1-6} straight- or branched-chain alkyl, C_{3-6} cycloalkyl or C_{2-6} alkenyl;

R_3 is H, C_{1-6} straight- or branched-chain alkyl or C_{3-6} cycloalkyl, and when X is H_2, R_3 is also C_2–C_6 acyl, arylacyl or alkanesulfonyl;

R_4 is H, halogen, C_{1-6} straight- or branched-chain alkyl, C_{3-6} cycloalkyl or C_{1-6} alkoxy;

R_5 and R_6 independently H, C_{1-6} straight- or branched-chain alkyl or C_{3-6} cycloalkyl; and

the dotted line is a single or double bond between C4 and C5 of the pyridazine ring and between X and the carbon to which it is attached in the benzoxazinyl and the benzothiazinyl rings.

10. A method of increasing the contractile force of a cardiac muscle in a mammal which comprises administering to said mammal an effective amount of a compound of claim 1.

11. A method of stimulating vasodilation in a mammal which comprises administering to said mammal an effective amount of a compound of claim 1.

VOL 1093 ISS 4 AG 23 1988 UMI

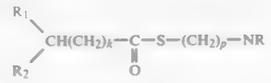
4,766,119

ANTISPASMODIC ALKYLATED AMINOTHIOESTER DERIVATIVES

William M. Davis, Tucson, Ariz., assignor to United Pharmaceuticals, Inc., Tucson, Ariz.

Filed Feb. 20, 1985, Ser. No. 703,281
The portion of the term of this patent subsequent to Mar. 3, 2004, has been disclaimed.
Int. Cl.[4] A61K *31/40, 31/445, 31/535, 31/265*
U.S. Cl. 514—239.2 14 Claims

10. A method of treating a patient suffering smooth muscle spasm comprising administering to the patient a therapeutically effective amount of a compound having the formula



wherein R_1 and R_2 are separate, saturated straight chain alkyl groups containing from one to four carbon atoms, k is an integer from zero to five and the total number of carbon atoms in R_1 plus R_2 plus k are equal to or less than 12, and wherein p is an integer from one to three; and NR is selected from the group consisting of pyrrolidino, piperidino, morpholino and dialkylamino containing a total of two to eight carbon atoms either straight chain or branched.

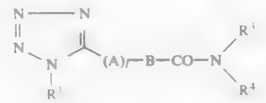
4,766,120

TETRAZOLE DERIVATIVES, HAVING A FURTHER UNSATURATED HETEROCYCLIC RING ANTI-ULCER COMPOSITION CONTAINING THE SAME AND METHOD FOR TREATING ULCERS

Minoru Uchida, Komatsujima; Takao Nishi, and Kazuyuki Nakagawa, both of Tokushima, all of Japan, assignors to Otsuka Pharmaceutical Company, Limited, Japan

Division of Ser. No. 609,332, May 11, 1984, abandoned, which is a division of Ser. No. 333,806, Dec. 23, 1981, Pat. No. 4,540,703, which is a continuation-in-part of Ser. No. 124,710, Feb. 26, 1980, abandoned. This application May 30, 1986, Ser. No. 868,595
Int. Cl.[4] C07D *257/04, 413/06;* A61K *31/41, 31/535*
U.S. Cl. 514—227.8 21 Claims

1. A tetrazole derivative of the formula:



wherein

R^1 is hydrogen, alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 12 ring carbon atoms or phenyl;

A is sulfur or alkylene-thio having from 1 to 6 carbon atoms;

l is 0 or 1;

B is alkylene having from 1 to 6 carbon atoms;

R^3 is hydrogen, alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 12 ring carbon atoms, phenyl, cycloalkyl-alkyl having from 1 to 6 carbon atoms in the alkyl moiety and from 3 to 8 carbon atoms in the cycloalkyl moiety, phenyl-alkyl having from 1 to 6 carbon atoms in the alkyl moiety, or hydroxyalkyl having 1 to 6 carbon atoms in the alkyl moiety;

R^4 is a member selected from the unsaturated heterocyclic groups consisting of pyridyl, pyrrolyl, imidazolyl, pyrazolyl, pyrimidinyl, pyridazinyl, pyrazinyl, oxazolyl, isoxazolyl, 4H-1,4-oxazinyl, thiazolyl, isothiazolyl, 4H-1,4-thiazinyl, furyl, 2H-pyranyl, 4H-pyranyl, and thienyl; or alkyl having from 1 to 6 carbon atoms and being substituted by one of said unsaturated heterocyclic groups;

said cycloalkyl, phenyl and phenylalkyl optionally have on the cycloalkyl or phenyl ring one or two substituents selected from the group consisting of alkoxy having from 1 to 6 carbon atoms, alkyl having from 1 to 6 carbon atoms, halo, N,N-dialkylamino having 1 to 6 carbon atoms in each alkyl moiety, nitro, aminosulfonyl, hydroxy and alkanoyloxy having from 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

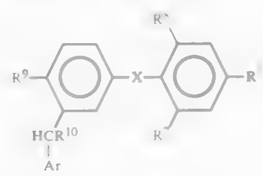
4,766,121

PYRIDYL AND PYRIDAZINYL SUBSTITUTED THYRONINE COMPOUNDS HAVING SELECTIVE THYROMIMETIC ACTIVITY

David Ellis, Letchworth; John C. Emmett; Anthony H. Underwood, both of Welwyn, and Paul D. Leeson, Cambridge, all of England, assignors to Smith Kline & French Laboratories Ltd., Welwyn Garden City, Great Britain

Filed Jan. 14, 1986, Ser. No. 818,626
Claims priority, application United Kingdom, Jan. 18, 1985, 8501372
Int. Cl.[4] C07D *403/10;* A61K *31/50*
U.S. Cl. 514—247 22 Claims

1. A compound of structure (I)



(I)

in which,

R^1 is $-CH_2CR^2R^3NR^4R^5$ or $YCOR^6$;

R^2 is hydrogen or C_{1-4} alkyl;

R^3 is hydrogen or $-COR^6$;

R^4 is hydrogen or C_{1-4} alkyl;

R^5 is hydrogen, C_{1-4} alkyl or C_{1-4} alkanoyl;

R^6 is hydroxy, C_{1-4} alkoxy, or $-NR^4R^5$;

Y is a bond or C_{1-4} alkylene;

R^7 and R^8 are the same or different and are each hydrogen, halogen, C_{1-4} alkyl, nitro or amino,

X is oxygen, sulphur, or CH_2;

R^9 is hydroxy or C_{1-4} alkoxy, aryl C_{1-4} alkoxy, C_{1-4} alkanoyloxy, aryl C_{1-4} alkanoyloxy, arylsulphonyloxy, alkylsulphonyloxy, or 0-glucuronide;

R^{10} is hydrogen or C_{1-4} alkyl; and

Ar is 5-hydroxy-2-pyridyl, 6-oxo-3(1H)pyridyl, or a 6-oxo-3(1H)-pyridazinyl group,

or a pharmaceutically acceptable salt thereof.

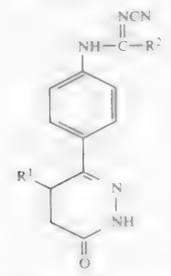
4,766,122

CYANOAMIDINE COMPOUNDS AND DERIVATIVES THEREOF

William J. Coates, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, United Kingdom

Filed Mar. 26, 1986, Ser. No. 844,426
Claims priority, application United Kingdom, Mar. 27, 1985, 8507941; Apr. 15, 1985, 8509605
Int. Cl.[4] C07D *237/04;* A61K *31/50*
U.S. Cl. 514—247 18 Claims

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein

R^1 is hydrogen or methyl; and

R^2 is C_{2-4}alkyl.

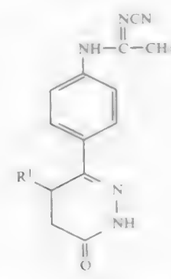
4,766,123

METHYLAMIDINE COMPOUNDS

William J. Coates, Welwyn Garden City, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Filed Feb. 10, 1987, Ser. No. 13,104
Claims priority, application United Kingdom, Feb. 15, 1986, 8603780
Int. Cl.[4] C07D *237/04;* A61K *31/50*
U.S. Cl. 514—247 11 Claims

1. A compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof, wherein

R^1 is hydrogen or methyl.

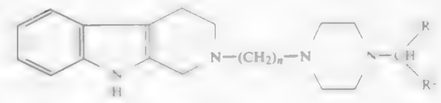
4,766,124

BETA-CARBOLIN H1-RECEPTOR ANTAGONISTS

Magid A. Abou-Gharbia, Wilmington, Del., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 26, 1987, Ser. No. 19,089
Int. Cl.[4] A61K *31/495;* C07D *403/14*
U.S. Cl. 514—253 3 Claims

1. A method for inhibiting histamine activity at H_1 receptors which comprises administering to a mammal in need of antihistaminic treatment, by an oral or parental route, an antihistaminic amount of a compound of the formula:



in which

R^1 is hydrogen or 4-halophenyl;

R^2 is 4-halophenyl when R^1 is 4-halophenyl and 3-trifluoromethylphenyl and R^1 is hydrogen; and

n is one of the integers 2, 3 or 4;

or a pharmaceutically acceptable salt thereof.

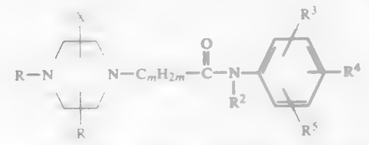
4,766,125

N-ARYL-PIPERAZINEALKANAMIDES USEFUL FOR PROTECTING HEARTS FROM MYOCARDIAL INJURY CAUSED BY ISCHAEMIA, ANOXIA OR HYPOXIA

Georges Van Daele, Turnhout, Belgium, assignor to Janssen Pharmaceutica N.V., Beerse, Belgium

Continuation-in-part of Ser. No. 276,624, Jun. 23, 1981, abandoned. This application Mar. 29, 1982, Ser. No. 362,814
Int. Cl.[4] A61K *31/495;* C07D *295/10*
U.S. Cl. 514—255 18 Claims

1. A chemical compound having the formula



(I)

the stereochemically isomeric forms and the pharmaceutically acceptable acid addition salts thereof, wherein

R^1 is a member selected from the group consisting of hydrogen and lower alkyl;

X is a member selected from the group consisting of hydroxylower alkyl, lower alkyloxylower alkyl, aminocarbonyl, mono- and di(lower alkyl)aminocarbonyl, carboxyl, lower alkyloxycarbonyl, (aminocarbonyl)lower alkyl, [mono- and di(lower alkyl)aminocarbonyl]lower alkyl, carboxylower alkyl, (lower alkyloxycarbonyl)-lower alkyl and (hydroxylower alkyl)aminocarbonyl;

m is the integer 1 or 2;

R^2 is a member selected from the group consisting of hydrogen and lower alkyl;

R^3, R^4 and R^5 are each independently selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkyloxy, halo, trifluoromethyl, lower alkylcarbonyl, aminocarbonyl, lower alkyloxycarbonyl, mono- and di(lower alkyl)amino, amino and (aminocarbonyl)amino, while R^3 may also be nitro cyano or amino; and

R is a member selected from the group consisting of a radical having the formula



(b)

wherein

Alk is an alkanediyl radical or a lower alkenediyl radical, said lower alkanediyl radical being optionally substituted by a hydroxy- or a lower alkyl radical; and

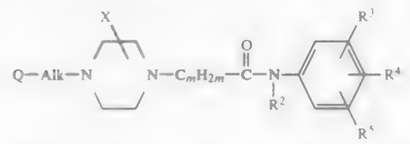
Q is a member selected from the group consisting of aryl, aryloxy, diarylmethoxy, 2,2-diarylethenyl, diarylmethylcarbonyl, mono- and diarylaminocarbonyl, diarylmethyl, the methyl moiety in said diarylmethyl group being optionally substituted with a cyano-, or a lower alkyloxycarbonyl radical, arylamino, said amino moiety

VOL 1093 ISS 4 AG 23 1988 UMI

being optionally substituted with an aryl, radical, 2,3-dihydro-2-oxo-1H-benzimidazol-1-yl, being optionally substituted in the 5- or 6-position by halo, and 1-aryl-1,3-dihydroisobenzofuran-1-yl,

wherein aryl is a member selected from the group consisting of phenyl, substituted phenyl, naphthalenyl, thienyl and pyridinyl, said substituted phenyl having from 1 to 2 substituents, each independently selected from the group consisting of halo and (halo-substituted phenyl)carbonyl.

14. A method for ameliorating the blood perfusion of the muscular tissues of the heart and/or protecting, partially or completely, the heart from myocardial injury caused by more or less brief episodes of ischaemia, anoxia or hypoxia, of a compound having the formula



the stereochemically isomeric forms and the pharmaceutically acceptable acid addition salts thereof, wherein

R^2 is a member selected from the group consisting of hydrogen and lower alkyl;

X is a member selected from the group consisting of hydroxyloweralkyl, aminocarbonyl, and (lower alkyl-)aminocarbonyl;

m is the integer 1 or 2;

R^3, R^4 and R^4 are each independently selected from the group consisting of hydrogen, hydroxy, lower alkyl, lower alkyloxy, halo, trifluoromethyl, lower alkylcarbonyl, aminocarbonyl, lower alkyloxycarbonyl, mono- and di(lower alkyl)amino, and (aminocarbonyl)amino, while R^3 and/or R^4 may also be nitro, cyano or amino and

Alk is an alkanediyl or a lower alkanediyl radical, said lower alkanediyl radical being optionally substituted by a hydroxy- or a lower alkyl radical; and

Q is a member selected from the group consisting of aryl; diarylmethyl, the methyl moiety in said diarylmethyl group being optionally substituted with a cyano or a lower alkyloxycarbonyl radical; diarylamino; and 1-aryl-1,3-dihydroisobenzofuran-1-yl;

wherein aryl is a member selected from the group consisting of phenyl, substituted phenyl, and pyridinyl, said substituted phenyl having from 1 to 2 independently-selected halo substituents.

4,766,126

PROCESS FOR TREATMENT OF NEPHRITIS WITH IMIDAZOQUINAZOLINES

Mitsutaka Takami, Tokyo, Japan, assignor to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

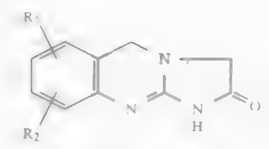
Filed Jan. 6, 1987, Ser. No. 800

Claims priority, application Japan, Jan. 10, 1986, 61-3019

Int. Cl.⁴ A61K *31/505, 31/535*

U.S. Cl. 514—267 **4 Claims**

1. A process for treatment and prevention of nephritis which comprises administering to a patient at least one imidazoquinazoline compound represented by the following formula:



wherein R_1 represents a dialkylamino group having 1 to 6 carbon atoms in each alkyl moiety, or a cyclic amino group selected from the group consisting of 1-pyrrolidinyl group, 1-piperidinyl group, 1-piperazinyl group, or morpholinyl group, all of which may be substituted with 1 or 2 alkyl groups having 1 to 6 carbon atoms; and R_2 represents a hydrogen atom, a halogen atom, an alkyl group having 1 to 6 carbon atoms, or an alkoxy group having 1 to 6 carbon atoms, or a salt thereof in an amount effective to treat nephritis.

4,766,127

2-(3-PYRIDYLMETHYL)NAPHTHALENE-6-CARBOXYLIC ACID AS A THROMBOXANE SYNTHETASE INHIBITOR

Gregory R. Martinez, Palo Alto, and John J. Bruno, Redwood City, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

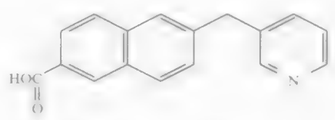
Filed Feb. 10, 1987, Ser. No. 12,979

Int. Cl.⁴ A61K *31/435;* **C07D** *213/06*

U.S. Cl. 514—277 **3 Claims**

1. A method of inhibiting thromboxane synthetase in a mammal having a disease characterized by elevated thromboxane levels or an imbalance of prostacyclin/thromboxane levels which method comprises:

administering to a mammal in need of such a treatment a therapeutically effective amount of a compound of the formula



(I)

or a pharmaceutically acceptable salt or ester thereof, wherein the ester is derived from a lower alcohol, benzyl alcohol, or phenol.

4,766,128

OPTIONALLY 11- TO 13-SUBSTITUTED ERGOLINE COMPOUNDS USEFUL AS MEDICINAL AGENTS

Gerhard Sauer; Gregor Haffer; Helmut Wachtel; Herbert H. Schneider, and Wolfgang Kehr, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

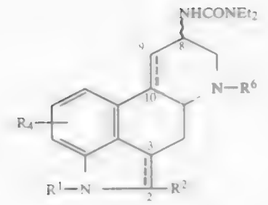
Filed Mar. 14, 1984, Ser. No. 589,376

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1983, 3309493

Int. Cl.⁴ A61K *31/48;* **C07D** *457/12*

U.S. Cl. 514—288 **24 Claims**

1. A substituted ergoline of the formula



wherein

the urea side chain in the 8-position is in the α- or β-configuration,

C_2═══C_3 and C_9═══C_{10} each independently is a CC single or C═C double bond,

R is NO_2 or NR′R″,

R′ and R″ each independently is hydrogen, C_{1-4}-alkyl, C_{3-4}-cycloalkyl C_{1-5}-alkanoyl, C_{7-10}-aroyl or C_{7-10}-aralkanoyl, or, R′ and R″ together with the connecting N-atom form a 3- to 9-membered C-atom ring, optionally substituted by an alkyl group, the total number of carbon atoms being up to 10 in all cases,

R^1 is hydrogen, C_{1-4}-alkyl C_{3-4}-cycloalkyl, C_{1-5}-alkanoyl, C_{7-10}-aroyl, C_{7-10}-aralkanoyl, C_{6-8}-aryl- or C_{1-4}-alkylsulfonyl,

R^2 is hydrogen or halogen when C_2═══C_3 is a C═C double bond, or hydrogen when C_2═══C_3 is a CC single bond, and

R^6 is C_{1-4}-alkyl C_{3-4}-cycloalkyl,

n is 1 or 2 or a physiologically acceptable acid addition salt thereof.

14. A method of treating depression in a patient in need of such treatment comprising administering an effective amount of a 9,10-didehydro compound of claim 1.

15. A method of treating a neuroleptic disturbance in a patient in need of such treatment comprising administering an effective amount of an ergolinyl compound of claim 1.

4,766,129

PYRROLO[2,3-c]PYRIDINES AND THEIR USE AS ANTI-HYPERTENSIVE AGENTS

Gerd Schnorrenberg, Ingelheim am Rhein; Otto Roos, Schwabenheim; Walter Lösel; Ingrid Wiedemann, both of Gau-Algesheim; Wolfram Gaida, Ingelheim am Rhein, and Wolfgang Hoefke, Wiesbaden, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

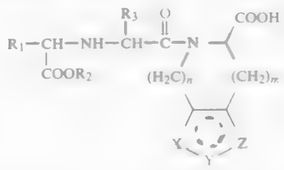
Division of Ser. No. 749,473, Jun. 27, 1985, Pat. No. 4,683,238, which is a division of Ser. No. 572,179, Jan. 19, 1984, Pat. No. 4,555,511. This application May 6, 1987, Ser. No. 47,417

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302125

Int. Cl.⁴ A61K *31/40;* **C07D** *471/04*

U.S. Cl. 514—300 **4 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl(alkyl of 1 to 6 carbon atoms);

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl(alkyl of 1 to 6 carbon atoms);

R_3 is hydrogen or alkyl of 1 to 6 carbon atoms;

n and m are each independently 0, 1 or 2, the sum of n and m being 2;

X, Y and Z are each independently —NR_4— or ═CR_5—, provided that only one of X, Y and Z is —NR_4—;

R_4 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R_5 is hydrogen;

or, when m and n are both 1, the dihydro form with its double bond in conjugation with the C-terminal carboxylic group;

or a non-toxic, pharmacologically acceptable salt thereof.

3. An antihypertensive pharmaceutical composition consisting essentially of an inert pharmaceutical carrier and an effective antihypertensive amount of a compound of claim 1.

4,766,130

2-PHENYL-IMIDAZOPYRIDIN-ONES AND ALSO USEFUL AS CARDIOTONICS AND ANTI-HYPERTENSIVES

Volkhard Austel, Biberach; Joachim Heider, Warthausen; Norbert Hanel, Biberach; Manfred Reiffen, Biberach; Jacobus C. A. van Meel, Biberach, and Willi Diedereu, Biberach, all of Fed. Rep. of Germany, assignors to Celamerck GmbH & Co. KG, Ingelheim am Rhein, Fed. Rep. of Germany

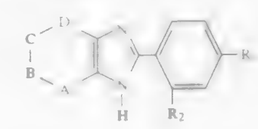
Division of Ser. No. 623,718, Jun. 22, 1984, Pat. No. 4,670,438. This application Jan. 28, 1987, Ser. No. 7,530

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324115

Int. Cl.⁴ A61K *31/435;* **C07D** *471/04*

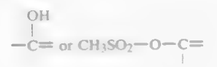
U.S. Cl. 514—303 **11 Claims**

1. A compound of the formula



wherein,

among the four ring members A, B, C or D, one is —N═, two are —CH═, and one is



R_1 is NC—CH_2—O—, HOOC—CH_2—O—, R_3—OOC—CH_2—O—, R_3SO_2—O—, R_3SO_2—NH—, R_3SO_2—NR_3— or R_4—O—;

R_2 is R_3O—,



R_3 is alkyl of 1 or 4 carbon atoms;

R_4 is alkynyl of 2 of 5 carbon atoms; and

R_5 is alkenyl of 2 of 5 carbon atoms or alkynyl of 2 to 5 carbon atoms;

a tautomer thereof; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,131

2-AMINO (OR HYDROXY) PHENETHYL-1,2,3,4-TETRAHYDROISOQUINOLINES AS ANALGESICS

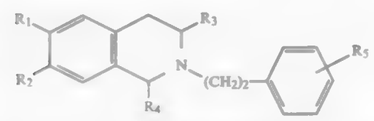
Thomas A. Davidson, Penfield, and Ronald C. Griffith, Pittsford, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 198,227, Oct. 17, 1980, abandoned. This application Dec. 30, 1986, Ser. No. 948,449

Int. Cl.[4] **A61K** *31/47;* **C07D** *217/18*

U.S. Cl. 514—307 **22 Claims**

1. A method of treating a warm blooded animal in need of an analgesic which comprises administering an analgesic effective amount of a compound of the formula



wherein R_1 and R_2 respectively are hydrogen, hydroxy or alkoxy of 1 to 4 carbon atoms, provided however that at least one of R_1 and R_2 is other than hydrogen, R_3 is hydrogen, R_4 is hydrogen or alkyl of 1 to 4 carbon atoms, and R_5 is hydroxy, nitro or



wherein R_6 and R_7 respectively are hydrogen, alkyl of 1 to 4 carbon atoms or RCO— wherein R is hydrogen or alkyl of 1 to 4 carbon atoms, or pharmaceutically acceptable acid additions salts thereof.

4,766,132

AROYLAMINOMETHYLPYRIDINES, COMPOSITION CONTAINING THEM, AND METHOD OF COMBATTING FUNGI USING THEM

Ian T. Kay, Wokingham, England, assignor to Imperial Chemical Industries PLC, London, England

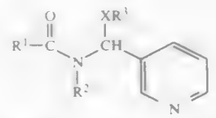
Filed Jan. 29, 1986, Ser. No. 823,751

Claims priority, application United Kingdom, Feb. 26, 1985, 8504971

Int. Cl.[4] **A01N** *43/40;* **C07D** *213/57, 401/12*

U.S. Cl. 514—332 **6 Claims**

1. A compound having the general formula (I):



or a stereoisomer thereof, wherein R^1 is phenyl, thiophene, furan or pyridine, optionally substituted with halogen, alkoxy, alkyl, trifluoromethyl, nitro or phenyl; R^2 is H, C_{1-6} alkyl, C_{3-6} cycloalkyl, C_{1-6} alkoxy C_{1-6} alkyl, alkenyl having from 2 to 6 carbon atoms, or alkynyl having from 2 to 6 carbon atoms; X is O, NH, or S; provided that when X is O, R^3 is C_{1-6} alkyl, alkenyl having from 2 to 6 carbon atoms, or alkynyl having from 2 to 6 carbon atoms, or COR^4 where R^4 is C_{1-6} alkyl, alkenyl having from 2 to 6 carbon atoms or alkynyl having from 2 to 6 carbon atoms; and that when X is NH, R^3 is —CO—C_{1-6} alkyl; and that when X is S, R^3 is C_{1-6} alkyl, alkenyl having from 2 to 6 carbon atoms or $CSNR^5R^6$ where R^5 and R^6, which may be the same or different are H, C_{1-6} alkyl or alkenyl having from 2 to 6 carbon atoms; or XR^3 together represent —CN; or an agronomically acceptable salt or metal complex thereof.

6. A method of combating fungi which comprises applying to a plant, to seed of a plant, or to the locus of the plant or seed, a fungicidally effective amount of a compound as defined in claim 1.

4,766,133

(BEZIMIDAZOL-2-YL)-PYRIDINIUM COMPOUNDS

Albert Fischli, Riehen; Anna Krasso, Basel, and André Szente, Riehen, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

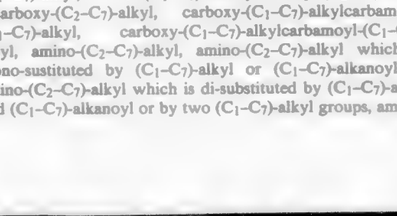
Filed Aug. 6, 1986, Ser. No. 893,856

Claims priority, application Switzerland, Aug. 12, 1985, 3455/85; Jun. 10, 1986, 2350/86

Int. Cl.[4] **C07D** *401/04;* **A61K** *31/44*

U.S. Cl. 514—338 **33 Claims**

1. A compound of the formula



wherein A is $—SR^9$, $—SO_3^-$ or $—S—SO_3^-$; R^1 and R^3 each is hydrogen or $(C_1–C_7)$-alkyl; R^2 is hydrogen, $(C_1–C_7)$-alkyl, $(C_1–C_7)$-alkoxy or a negatively charged oxygen atom; R^4 is hyrdogen or a negative charge; R^5 and R^8 each is aryl, arylcarbonyl, aryloxycarbonyl, aryl-$(C_1–C_7)$-alkoxycarbonyl, aryloxy, arylcarbonyloxy, aryl-$(C_1–C_7)$-alkoxycarbonyloxy or aryloxycarbonyloxy, wherein aryl is phenyl or phenyl substituted by substituents selected from the group consisting of halogen, trifluoromethyl, nitro, $(C_1–C_7)$-alkyl, carboxy, $(C_1–C_7)$-alkoxycarbonyl, amino, amino mono-substituted by $(C_1–C_7)$-alkyl or $(C_1–C_7)$-alkanoyl or amino substituted by two $(C_1–C_7)$-alkyl groups; hydrogen, $(C_1–C_7)$-alkyl, halogen, cyano, nitro, formyl, $(C_1–C_7)$-alkanoyl, carboxy, carboxy-$(C_1–C_7)$-alkyl, $(C_1–C_7)$-alkoxycarbonyl, $(C_1–C_7)$-alkoxycarbonyl-$(C_1–C_7)$-alkyl, carbamoyl, mono- or di-$(C_1–C_7)$-alkylcarbamoyl, pyrrolidinocarbonyl, piperidinocarbonyl, carbamoyl-$(C_1–C_7)$-alkyl, mono- or di-$(C_1–C_7)$-alkylcarbamoyl-$(C_1–C_7)$-alkyl, pyrrolidinocarbonyl-$(C_1–C_7)$-alkyl, piperidino-carbonyl-$(C_1–C_7)$-alkyl, hydroxy, $(C_1–C_7)$-alkoxy, $(C_2–C_7)$-alkanoyloxy, $(C_1–C_7)$-alkoxycarbonyloxy, carbamoyloxy, mono- or di-$(C_1–C_7)$-alkyl-carbamoyloxy, pyrrolidinocarbonyloxy, piperidinocarbonyloxy, hydroxy-$(C_1–C_7)$-alkyl, trifluoromethyl, di-$(C_1–C_7)$-alkoxymethyl or $(C_2–C_3)$-alkylenedioxymethyl and R^{10}, R^{11}, R^{14} and R^{15} each is $(C_1–C_7)$-alkyl; and R^9 is $(C_1–C_{20})$-alkyl, $(C_3–C_7)$-cycloalkyl, $(C_3–C_7)$-alkenylalkyl, $(C_3–C_7)$-alkynylalkyl, $(C_3–C_7)$-alkenylalkyl which is substututed vinylically by halogen; aryl or aryl-$(C_1–C_7)$-alkyl wherein aryl is phenyl or phenyl substituted by substituents selected from the group consisting of halogen, trifluoromethyl, nitro, $(C_1–C_7)$-alkyl, carboxy, $(C_1–C_7)$-alkoxycarbonyl, amino, mono-substituted by $(C_1–C_7)$-alkyl or $(C_1–C_7)$-alkanoyl, amino disubstituted by $(C_1–C_7)$-alkyl and $(C_1–C_7)$-alkanoyl or amino substituted by two $(C_1–C_7)$-alkyl groups; hydroxy-$(C_2–C_7)$-alkyl, $(C_1–C_7)$-alkoxy-$(C_2–C_7)$-alkyl, $(C_1–C_7)$-alkoxycarbonyl-$(C_1–C_7)$-alkyl, carboxy-$(C_1–C_7)$-alkyl, di-$(C_1–C_7)$-alkoxycarbonyl-$(C_2–C_7)$-alkyl, dicarboxy-$(C_2–C_7)$-alkyl, carboxy-$(C_1–C_7)$-alkylcarbamoyl-$(C_1–C_7)$-alkyl, carboxy-$(C_1–C_7)$-alkylcarbamoyl-$(C_1–C_7)$-alkyl, amino-$(C_2–C_7)$-alkyl, amino-$(C_2–C_7)$-alkyl which is mono-sustituted by $(C_1–C_7)$-alkyl or $(C_1–C_7)$-alkanoyl or amino-$(C_2–C_7)$-alkyl which is di-substituted by $(C_1–C_7)$-alkyl and $(C_1–C_7)$-alkanoyl or by two $(C_1–C_7)$-alkyl groups, amino-carboxy-$(C_2–C_7)$-alkyl, amino-carboxy-$(C_2–C_7)$-alkyl which is mono-substituted by $(C_1–C_7)$-alkyl or $(C_1–C_7)$-alkanoyl or amino-carboxy-$(C_2–C_7)$-alkyl which is di-substituted by $(C_1–C_7)$-alkyl and $(C_1–C_7)$-alkanoyl or by two $(C_1–C_7)$-alkyl groups, or amino-$(C_1–C_7)$-alkoxycarbonyl-$(C_2–C_7)$-alkyl, amino-$(C_1–C_7)$-alkoxycarbonyl-$(C_2–C_7)$-alkyl which is mono-substituted by $(C_1–C_7)$-alkyl or $(C_1–C_7)$-alkanoyl or amino-$(C_1–C_7)$-alkoxycarbonyl-$(C_2–C_7)$-alkyl which is di-substituted by $(C_1–C_7)$-alkyl and $(C_1–C_7)$-alkanoyl or by two $(C_1–C_7)$-alkyl groups,

whereby the compound is non-charged or has a net single positive charge provided that when there is a net single positive charge there is an external anion, or a pharmaceutically acceptable acid addition salt thereof.

4,766,134

FUNGICIDAL PYRIDYL CYCLOPROPANE CARBOXAMIDES

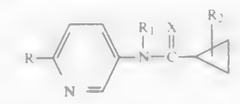
Don R. Baker, Orinda, and Keith H. Brownell, San Jose, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Continuation-in-part of Ser. No. 29,116, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 859,152, May 2, 1986, abandoned. This application Apr. 15, 1987, Ser. No. 36,542

Int. Cl.[4] **C07D** *213/75;* **A01N** *43/40*

U.S. Cl. 514—346 **9 Claims**

1. A compound having the structural formula



in which R is selected from the group of halogen, $C_1–C_3$ alkoxy and $C_1–C_3$ haloalkoxy, R_1 is —C≡N; and R_2 is selected from the group —H, 1—CH_3 and 2—CH_3; X is O or S; or a fungicidally acceptable organic or inorganic salt thereof.

4,766,135

FUNGICIDAL N-(SUBSTITUTED THIO)-PYRIDYL CYCLOPROPANE CARBOXAMIDES

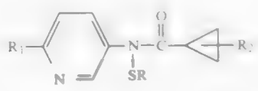
Don R. Baker, Orinda, and Keith H. Brownell, San Jose, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

Continuation-in-part of Ser. No. 29,115, Mar. 23, 1986, abandoned, which is a continuation of Ser. No. 859,170, May 2, 1986, abandoned. This application Apr. 15, 1987, Ser. No. 36,544

Int. Cl.[4] **C07D** *213/64, 213/75;* **A01N** *43/40*

U.S. Cl. 514—346 **9 Claims**

1. A compound having the structural formula



wherein R is selected from the group consisting of $C_1–C_3$ haloalkyl, $C_1–C_8$ alkyl, phenyl, substituted phenyl, and phenylalkyl wherein the alkyl is $C_1–C_3$ alkyl and the phenyl substitutions are selected from the group consisting of Cl, —Br, F and nitro; and $C_1–C_4$ alkanoyl, R_1 is selected from the group consisting of $C_1–C_3$ alkoxy, $C_1–C_3$ haloalkoxy and halogen, R_2 is hydrogen methyl; or a fungicidally acceptable organic or inorganic salt thereof.

4,766,136

PHENYLSULPHONYL-PYRIDINE ALDOXIMES AS FUNGICIDES

Christa Fest, Wuppertal; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

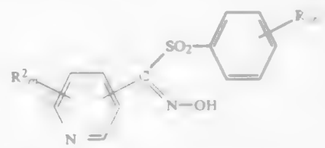
Filed Mar. 3, 1987, Ser. No. 22,318

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, 3608361

Int. Cl.[4] **A01N** *43/40;* **C07D** *213/78*

U.S. Cl. 514—357 **13 Claims**

1. A phenylsulphonyl-pyridine aldoxime of the formula



(I)

in which

R^1 represents halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy, halogenoalkylthio, nitro, alkoxycarbonyl or alkylcarbonylamino,

R^2 represents halogen or alkyl,

n represents an integer 0, 1, 2, 3, 4 or 5, and

m represents an integer 0, 1, 2, 3 or 4.

12. A method of combating fungi which comprises applying to such fungi or to a fungus habitat a fungicidally effective amount of a phenylsulphonyl-pyridine aldoxime according to claim 1.

4,766,137

4-(ISOXAZOLYL)-THIAZOLE-2-OXAMIC ACIDS AND DERIVATIVES THEREOF

Angelo Carenzi, Busto Arsizio; Dario Chiarino, Moaza; Davide Della Bella, Milan, and Giancarlo Grancini, Nova Milanese, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

PCT No. PCT/EP85/00381, § 371 Date Mar. 13, 1986, § 102(e) Date Mar. 13, 1986, PCT Pub. No. WO86/00900, PCT Pub. Date Feb. 13, 1986

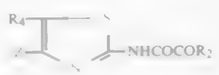
PCT Filed Jul. 30, 1985, Ser. No. 845,694

Claims priority, application Italy, Jul. 31, 1984, 22150 A/84

Int. Cl.[4] **C07D** *417/04;* **A61K** *31/425*

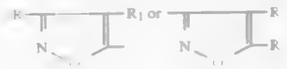
U.S. Cl. 514—371 **9 Claims**

1. A compound of formula



(I)

wherein Z is a group of formula



in which

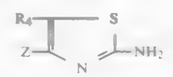
R and R_1 which may be the same or different are a hydrogen or a halogen atom, a hydroxy group, a C_{1-3} alkoxycarbonyl group, a C_{1-3} alkyl group optionally substituted by hydroxy, C_{1-3} alkoxy or alkoxy(1–3C)oxalyloxy, a C_{1-3} alkoxy group optionally substituted by halogen, or a phenyl group optionally substituted by phenyl; and

R_2 is a hydroxy group or OR_3 where R_3 is a C_{3-6} cycloalkyl group or a C_{1-3} alkyl group optionally substituted by phenyl or C_{1-3} alkoxy; and

VOL 1093 ISS 4 AG 23 1988 UMI

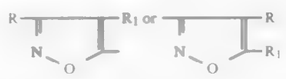
R_4 is a hydrogen atom or a C_{1-3} alkyl group;
and when R_2 is a hydroxy group, their pharmaceutically acceptable salts with organic or inorganic bases.

7. A compound of formula



(III)

wherein Z is a group of formula



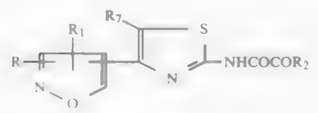
in which
R and R_1 which may be the same or different are a hydrogen or a halogen atom, a hydroxy group, a C_{1-3} alkoxycarbonyl group, a C_{1-3} alkyl group optionally substituted by hydroxy, C_{1-3} alkoxy or alkoxy(1–3C)oxalyloxy, a C_{1-3} alkoxy group optionally substituted by phenyl, or a phenyl group optionally substituted by halogen; and
R_4 is a hydrogen atom or a C_{1-3} alkyl group.

4,766,138
USE OF 4-(ISOXAZOLYL)-THIAZOLE-2-OXAMIC ACID DERIVATIVES

Angelo Careazi, Busto Arsizio; Dario Chiarino, Monza; Davide Della Bella, Milan, and Giancarlo Grancini, Nova Milanese, all of Italy, assignors to Zambon S.p.A., Vicenza, Italy

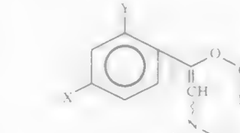
PCT No. PCT/EP85/00380, § 371 Date Mar. 13, 1986, § 102(e) Date Mar. 13, 1986, PCT Pub. No. WO86/00899, PCT Pub. Date Feb. 13, 1986
PCT Filed Jul. 30, 1985, Ser. No. 849,458
Claims priority, application Italy, Jul. 31, 1984, 22150 A/84
Int. Cl.[4] C07D *417/04;* A61K *31/425*
U.S. Cl. 514—371 7 Claims

1. A compound of formula:



(I)

wherein
R and R_1 which may be the same or different represent a hydroxy group; a hydrogen or halogen atom; a C_1–C_6 alkyl or alkoxy group optionally substituted by from one to three substituents selected from the group consisting of halogen, hydroxy, alkoxy, amino, carboxy, alkoxycarbonyl, alkoxalyloxy, and phenyl, the latter in turn optionally substituted by from one to three substituents selected from the group consisting of halogen, hydroxy, alkoxy, amino and trifluoroalkyl; a phenyl group optionally substituted by from one to three substituents selected from the group consisting of halogen, hydroxy, alkoxy, amino and trifluoromethyl;
R_2 is a hydroxy group, an OR_3 group or an NR_4R_5 group;
R_3 is a C_1–C_6 alkyl group optionally substituted with from one to three substituents selected from the group consisting of hydroxy, alkoxy, amino, carboxy and alkoxycarbonyl; a C_{5-6} cycloalkyl group optionally substituted by from one to three alkyl groups; a C_7–C_9 phenylalkyl group optionally substituted on the phenyl ring by from one to three substituents selected from the group consisting of halogen, methyl and methoxy group; a group of the formula $—(CH_2—CH_2—O)_n—R_6$ wherein n is an integer number of 2 to 4 and R_6 is a hydrogen atom or an alkyl group;
R_4 and R_5 which may be the same or different are a hydrogen atom, an alkyl, a C_5–C_6 cycloalkyl, a C_7–C_9 phenylalkyl or a phenyl group; or R_4 and R_5 together with the nitrogen atom to which they are linked, form a 1-piperidyl, 1-piperazinyl, 4-methyl-1-piperazinyl, pirazolyl thiazolyl or imidazolyl radical; or either R_4 or R_5 is a hydrogen atom and the other a group of the formula



wherein
R and R_1 have the above indicated meanings;
R_7 is a hydrogen atom or a C_1–C_3 alkyl radical;
and pharmaceutically acceptable salts thereof with organic and inorganic bases when R_2 is a hydroxy group and with organic and inorganic acids when R_2 contains a basic function;
with the proviso that R_2 is not a hydroxy group or an OR_3 group when the isoxazolyl radical is a 3- or a 5-isoxazolyl radical.

7. A compound of formula

wherein
R and R_1 are each independently hydrogen, chlorine, bromine, hydroxy, methyl, methoxy, ethoxy, benzyloxy, phenyl, halo substituted phenyl, hydroxymethyl, methoxymethyl, ethoxymethyl or carbethoxy; and
R_7 is hydrogen or C_{1-3} alkyl.

4,766,139
TRIAZOLYL-KETO-DERIVATIVES HAVING FUNGICIDE ACTIVITY

Roberto Colle, Basiglio; Franco Gozzo, S. Donato Milanese; Giovanni Camaggi, Lodi; Luigi Mirenna, Milan, and Angela Zagni, Peschiera Borromeo, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Apr. 11, 1985, Ser. No. 722,009
Claims priority, application Italy, Apr. 11, 1984, 20484 A/85
Int. Cl.[4] C07D *248/08;* A01N *43/50*
U.S. Cl. 514—383 9 Claims

1. Compounds having the formula:

wherein:
R′ and R″, equal to or different from each other, represent a linear or branched C_1–C_7 alkyl group; a C_3–C_7 cycloalkyl group, optionally substituted by C_1–C_4 alkyl groups; an

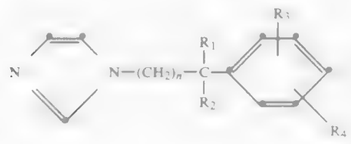
alkoxyalkyl group having from 1 to 4 carbon atoms both in the alkyl part and in the alkoxyl part;
X represents a halogen atom; a C_1–C_4 alkyl group; a C_1–C_4 haloalkyl group; a C_1–C_4 alkoxy group; or a phenyl group; and
Y represents H or a halogen atom.

4,766,140
METHOD OF INHIBITING AROMATASE

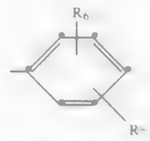
Kenneth S. Hirsch, New Palestine; Charles D. Jones, and Harold M. Taylor, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,417
Int. Cl.[4] A61K *31/415*
U.S. Cl. 514—397 19 Claims

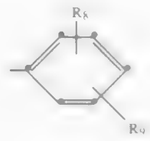
1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula



wherein
n is 1 or 2;
R_1 is hydrogen, hydroxy, or $—OCH_2R_5$;
R_2 is hydrogen or



R_5 is $—CH=CH_2$, thienyl, halothienyl, or



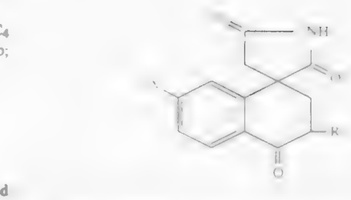
and
R_3, R_4, R_6, R_7, R_8, and R_9 are independently hydrogen, methoxy, halo, trifluoromethyl, or nitro, or a pharmaceutically acceptable salt thereof.

4,766,141
SPIRO-SUCCINIMIDES FOR TREATMENT OF DIABETES COMPLICATIONS

Christopher A. Lipinski, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 946,686, Jan. 6, 1987, abandoned, which is a continuation of Ser. No. 772,781, Sep. 5, 1985, abandoned, which is a continuation-in-part of Ser. No. 535,444, Sep. 23, 1983, abandoned. This application Oct. 14, 1987, Ser. No. 106,943
Int. Cl.[4] C07D *209/96;* A61K *31/40;* C07B *43/08, 43/06*
U.S. Cl. 514—409 12 Claims

1. A compound of the formula:



or a pharmaceutically acceptable salt thereof, wherein:
R is methyl or ethyl; and
X is fluoro.

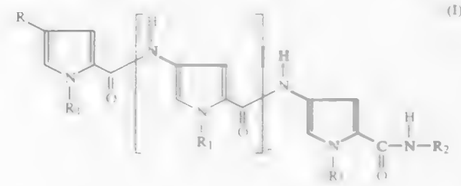
3. A pharmaceutical composition comprising a compound according to claim 1 in an amount effective for the treatment of chronic diabetic complications and a pharmaceutically acceptable carrier or diluent.

4,766,142
POLY-4-AMINOPYRROLE-2-CARBOXAMIDO DERIVATIVES AND THEIR USE AS ANTIUIRAL OR ANTITUMOR AGENTS

Federico Arcamone, Nerviano; Nicola Mongelli, and Sergio Penco, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.r.l., Milan, Italy

Filed Oct. 3, 1985, Ser. No. 783,588
Claims priority, application United Kingdom, Jul. 16, 1985, [illegible]
The portion of the term of this patent subsequent to Apr. 19, 2005, has been disclaimed.
Int. Cl.[4] A61K *31/40;* C07D *403/12, 403/14, 413/14*
U.S. Cl. 514—422 6 Claims

1. A compound of formula (I)



(I)

wherein
n is zero or an integer of 1 to 3;
R is
(a) $—NHR_3$, wherein R_3 is
(a′) $—CON(NO)R_4$, in which R_4 is C_1–C_4 alkyl either unsubstituted or substituted by halogen; or
(b′) $—CO(CH_2)_m—R_5$, in which R_5 is halogen, oxiranyl, methyloxiranyl, aziridinyl, a group



or a group



and m is zero or an integer of 1 to 4; or
(b)

VOL 1093 ISS 4 AUG 23 1988 UMI



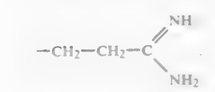
wherein either R_6 and R_7 are the same and are each oxiranemethyl, aziridinemethyl, or C_2–C_4 alkyl 2-substituted by halogen or by a group —OSO_2R_8 wherein R_8 is C_1–C_4 alkyl or pheynl, or one of R_6 and R_7 is hydrogen and the other is as defined above;

each group R_1 is, independently, hydrogen or C_1–C_4 alkyl;

R_2 is a C_1–C_6 alkyl group terminating with (i) a basic moiety chosen from an amino group, a mono- or di-C_1–C_6 alkylamino group, an amidino group, a group



imidazolyl, imidazolinyl, tetrahydropyrimidinyl and oxazolidinyl; or (ii) a carboxy group; or (iii) a free hydroxy group —OH or a glycosilated hydroxy group —OD wherein D is a glucose, mannose or ribose sugar moiety or the daunosamine aminosugar moiety with the proviso that n is different from one when R_2 is



and the pharmaceutically acceptable salts thereof.

4,766,143

HALOALKYLTHIODIBENZOTHIEPINS

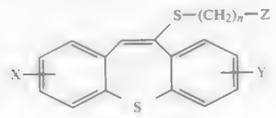
Helen H. Ong, Whippany; Vernon B. Anderson, High Bridge, both of N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 546,642, Oct. 28, 1983, Pat. No. 4,668,695, which is a continuation of Ser. No. 350,531, Feb. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 174,487, Aug. 1, 1980, abandoned, which is a continuation-in-part of Ser. No. 85,751, Oct. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 860,082, Dec. 13, 1977, abandoned. This application Feb. 12, 1987, Ser. No. 13,990

Int. Cl.[4] A61K *31/38;* C07D *337/14*

U.S. Cl. 514—431 6 Claims

1. A compound of the formula



wherein X and Y are the same or different and each can be hydrogen, halogen, trifluoromethyl, loweralkoxy, loweralkyl, loweralkanoyl, loweralkylthio, loweralkylsulfonyl, loweralkylsulfinyl, amino, hydroxy or nitro; Z is halogen; and n is an integer of from 2 to 4; or a physiologically tolerable acid addition salt thereof.

4,766,144

3-CARBAMOYL-4-HYDROXY-COUMARINS FOR COMBATING PARASITIC HEIMINTHS

Nikolaus Müller, Monheim; Eckart Kranz, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

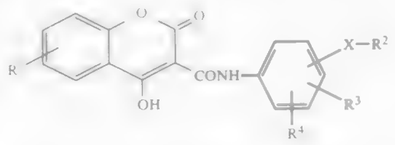
Filed Apr. 3, 1987, Ser. No. 35,543

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613065

Int. Cl.[4] C07D *311/12;* A61K *31/37*

U.S. Cl. 514—457 8 Claims

1. A method of combating parasitic helminths which comprises applying to a host to be freed thereof an anthelminthically effective amount of a 3-carbamoyl-4-hydroxycoumarin of the formula



in which

R^1 represents hydrogen, fluorine, chlorine, bromine, C_{1-4}-alkyl, NO_2, CN or C_{1-4}-alkoxy,

X represents O or S,

R^2 represents C_{1-4}-alkyl, C_{1-4}-halogenoalkyl, phenyl, naphthyl or pyridyl, which are optionally substituted by one or more of alkyl with 1 to 4 carbon atoms; alkoxy with 1 to 4 carbon atoms; alkylthio with 1 to 4 carbon atoms; halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms; halogenoalkoxy with 1 to 4 carbon atoms and 1 to 5 halogen atoms; halogenoalkylthio with 1 to 4 carbon atoms and 1 to 5 halogen atoms; hydroxyl; halogen; cyano; nitro; amino; monoalkyl- and dialkylamino with 1 to 4 carbon atoms per alkyl group; formyl, carboxyl; alkylcarbonyl with 2 to 4 carbon atoms; carbalkoxy with 2 to 4 carbon atoms; sulpho (—SO_3H); alkylsulphonyl with 1 to 4 carbon atoms; halogenalkylsulphonyl with 1–2 carbon atoms and 1–3 halogen atoms; arylsulphonyl with 6 or 10 aryl carbon atoms; and phenyl, naphthyl, phenoxy, naphthoxy, phenylthio and naphthyl-thio, and

R^3 and R^4 independently of one another represent hydrogen; halogen; CN; OH; NO_2; amino, monoalkyl- or dialkylamino with 1 to 4 carbon atoms per alkyl group; alkyl with 1 to 4 carbon atoms; halogenoalkyl with 1 to 4 carbon atoms and 1 to 5 halogen atoms; aralkyl with 1–4 carbon atoms in the alkyl part and phenyl in the aryl part, or phenyl, naphthyl or pyridyl, or

—X—R^2 together with R^3 in the ortho-position relative thereto represent an alkylenedioxy bridge or an oxyalkyleneoxyalkylene bridge with 1 or 2 carbon atoms in each alkylene moiety and which is optionally substituted by one or more halogen atoms.

4,766,145

ANTIHYPERCHOLESTEROLEMIC COMPOUNDS

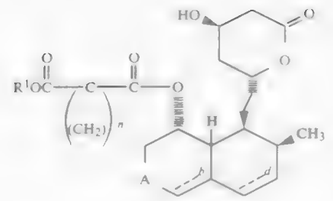
Ta J. Lee, Lansdale; Clarence S. Rooney, Worcester, and William F. Hoffman, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 5, 1986, Ser. No. 859,525

Int. Cl.[4] A61K *31/785, 31/365;* C07D *309/30*

U.S. Cl. 514—460 13 Claims

1. A compound represented by the following general structural formula (I'):

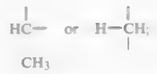


wherein:

n is 2 to 7;

R^1 is C_{1-6} alkyl,

A is



b and d represent single bonds, or both b and d represent double bonds.

11. A method of inhibiting cholesterol biosynthesis comprising the administration to a subject in need of such treatment a nontoxic therapeutically effective amount of a compound of claim 1.

4,766,146

PESTICIDAL SUBSTITUTED HYDRAZINECARBOXYLIC ACID ESTERS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

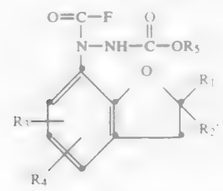
Filed Mar. 12, 1987, Ser. No. 25,251

Claims priority, application Switzerland, Mar. 20, 1986, 1124/86

Int. Cl.[4] A61K *31/34;* C07D *307/79*

U.S. Cl. 514—469 8 Claims

1. A compound of formula I



(I)

wherein

R_1 and R_2 are each independently of the other hydrogen or C_1–C_3alkyl,

R_3 and R_4 are each independently of the other hydrogen, halogen, C_1–C_4alkyl or C_1–C_4-alkoxy, and

R_5 is C_1–C_4alkyl.

(I')

4,766,147

NOVEL 5-MEMBERED CYCLIC COMPOUNDS, PROCESS FOR PRODUCTION THEREOF, AND PHARMACEUTICAL USE THEREOF

Ryoji Noyori, Aichi; Masanori Fukushima, Nagoya; Seizi Kurozumi, Kokubunji, and Satoshi Sugiura, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

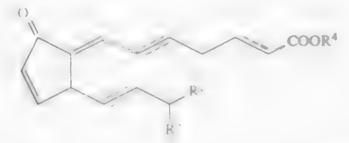
Continuation of Ser. No. 534,256, Sep. 21, 1983. This application Jan. 29, 1986, Ser. No. 823,146

Claims priority, application Japan, Oct. 7, 1982, 57-175267; Oct. 7, 1982, 57-175268; Feb. 14, 1983, 58-21617; Mar. 10, 1983, 58-38197

Int. Cl.[4] C07C *177/00;* A61K *31/557*

U.S. Cl. 514—530 5 Claims

1. A 5-alkylidene-4-substituted-2-cyclopentenone represented by the following formula (I)-2



wherein

R^2 represents a hydrogen atom, a linear or branched alkyl group having 1 to 9 carbon atoms which may have a substituent, or a cycloalkyl group having 3 to 8 carbon atoms which may have a substituent;

R^3 represents a hydrogen atom, a hydroxyl group, or a hydroxyl group protected by a tri(C_{1-7} hydrocarbon) silyl group or an acetal linkage togehter with the oxygen atom of the hydroxyl group;

R^4 represents a hydrogen atom, an alkyl group having 1 to 10 carbon atoms or one equivalent of a cation;

the symbol ----- represents a single, double or triple bond;

the symbol ═══ represents a single or double bond; and

the substitutents are selected from the group consisting of a group of the formula —$COOR^4$ in which R^4 is defined as above; a group of the formula —OR^5 in which R^5 represents a hydrogen atom, an alkyl group having 1 to 6 carbon atoms which may be substituted by a halogen atom, a carbonacyl group having 1 to 7 carbon atoms, or a phenyl group, the phenyl group being optionally substituted by a halogen atom, an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms; a phenyl group which may be substituted by a halogen atom, an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms; and a cycloalkyl group having 3 to 8 carbon atoms which may be substituted by a halogen atom, an alkyl group having 1 to 4 carbon atoms or an alkoxy group having 1 to 4 carbon atoms.

4,766,148

BIPHENYLYLPROPIONIC ACID DERIVATIVE AND PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Katsuhiro Uchida, Kyoto; Shozo Masumoto, Shiga; Masao Tohno; Mitsuo Mimura, both of Otsu, and Makoto Okumura, Moriyama, all of Japan, assignors to Kaken Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 531,378, Sep. 12, 1983, abandoned. This application Jun. 7, 1985, Ser. No. 742,147

Claims priority, application Japan, Feb. 19, 1983, 58-26559

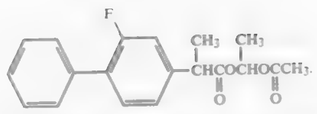
The portion of the term of this patent subsequent to Oct. 13, 2004, has been disclaimed.

Int. Cl.[4] A61K *31/22;* C07C *69/635*

U.S. Cl. 514—533 4 Claims

1. The compound 1-(acetoxy)ethyl 2-(2-fluoro-4-biphenylyl)propionate having the formula

VOL 1093 ISS 4 AG 23 1988 UMI



2. A pharmaceutical composition having anti-inflammatory, analgesic and antipyretic activities which comprises an effective amount of 1-(acetoxy)ethyl 2-(2-fluoro-4-biphenyl)propionate and a pharmaceutically acceptable carrier.

4,766,149

USE OF N-LOW-ALKYL GLYCINES, THEIR ACID AMIDES AND OF SARCOSINE ANHYDRIDE AS TUMOR-INHIBITING ACTIVE SUBSTANCES, A REMEDY CONTAINING THE FORMER AND A PROCESS FOR ITS MANUFACTURE

Hans Oesterwald, and Mahmoud Youssef, both of Heidelberg, Fed. Rep. of Germany, assignors to Stiftung Deutsches Krebsforschungszentrum, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 379,445, May 18, 1982, abandoned, which is a continuation-in-part of Ser. No. 58,187, Jul. 17, 1979, abandoned. This application May 8, 1986, Ser. No. 861,753

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2832009

Int. Cl.[4] A61K *31/135*

U.S. Cl. 514—553 10 Claims

1. A method for inhibiting the growth of cancer cells selected from the group consisting of leukemias, carcinomas, sarcomas and Yoshida tumor in a lower animal host which comprises the administration to the host of a growth-inhibiting pharmaceutical composition, the pharmaceutical composition comprises a mixture of (a) a compound selected from the group consisting of sarcosine anhydride, N-C_1-4-alkyl glydine, N-C_1-4-alkyl glycinamide, a pharmaceutically acceptable salt thereof or mixtures thereof, and (b) an antineoplastic chemotherapeutic selected from the group consisting of cyclophosphamide, adriamycin, cis-platinum, bleomycin, vincristine, spiramycin, thymidine, cytidine, methotrexate, thiotepa, teniposide and etoposide in a ratio of 2:1–50:1 parts by weight of a:b and a pharmaceutically acceptable adjuvant.

4,766,150

METHOD FOR IMMUNOSUPPRESSION

Jonathan L. Kiel, of Lubbock, Tex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 251,694, Apr. 7, 1981, Pat. No. 4,486,408. This application Sep. 19, 1984, Ser. No. 652,370

Int. Cl.[4] A61K *31/195*

U.S. Cl. 514—567 4 Claims

1. A method of suppressing the immune system of a mammal comprising administering an immunosuppressant amount of 3-aminotyrosine to a mammal.

4,766,151

ETHERS AND OXIME ETHERS OF ALKYLAMINO ALCOHOLS AS MEDICAMENTS AND NOVEL PRODUCTS, AND PROCESSES FOR THEIR PREPARATION

Gérard Leclerc; Mohammed Bouzoubaa, both of Strasbourg; Guy Andermann, Colmar; Georges de Burlet, Beblenheim; Catherine Cannet, Colmar, and Jacques Himber, Guebwiller, all of France, assignors to Laboratoires, P.O.S., Kaysersberg, France

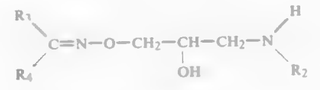
Continuation of Ser. No. 467,262, Feb. 17, 1983, abandoned. This application Oct. 21, 1985, Ser. No. 788,694

Claims priority, application France, Feb. 19, 1982, 82 02740

Int. Cl.[4] C07C *131/02, 131/04;* A61K *31/15*

U.S. Cl. 514—640 16 Claims

10. A pharmaceutical composition for the treatment of glaucoma comprising a physiologically active amount of a compound of the formula



in which:

each of R_3 and R_4 is selected from hydrogen, and alkyl, alkenyl and cycloalkyl radicals, or R_3 and R_4 together with the carbon between them are a cycloalkylidene radical,

R_2 is a lower alkyl radical, and the salts thereof with pharmaceutically acceptable acids, and an opthamologically accepted carrier therefor.

4,766,152

OXIME DERIVATIVES

Friedrich Karrer, Zofingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

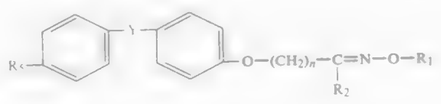
Filed May 1, 1986, Ser. No. 858,619

Claims priority, application Switzerland, May 2, 1985, 1868/85; Jun. 4, 1985, 2364/85; Mar. 21, 1986, 1144/86

Int. Cl.[4] A61K *31/15*

U.S. Cl. 514—640 18 Claims

1. A compound of formula



wherein

R_1 is C_1–C_6alkyl, C_2–C_5alkenyl, C_3monohaloalkenyl or C_3–C_5-alkynyl;

R_2 is hydrogen or methyl;

R_5 is hydrogen, fluorine, chlorine or methyl;

n is 0 or 1 and

Y is oxygen, sulfur or



4,766,153

ALKYL POLYOXYALKYLENE CARBOXYLATE ESTERS AND SKIN CARE COMPOSITIONS CONTAINING THE SAME

Robert V. Casciani, Matthews, N.C., assignor to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 857,683, Apr. 30, 1986, abandoned. This application Apr. 1, 1987, Ser. No. 34,119

Int. Cl.[4] A61K *7/48;* C07C *69/708*

U.S. Cl. 514—785 18 Claims

1. A compound of formula I,



where

R is C_8–C_{22} straight or branched chain alkyl;

R_1 is C_1–C_{22} straight or branched chain alkyl;

m is O or an integer 1 to 4;

n is an integer 3 to 20;

o is an integer 1 to 4; and

p is O or an integer 1 to 20, with the provisos that: (1) when R_1 is C_1–C_3 alkyl, then p is O; and (2) when m is O, n is an integer 6 to 20,

or a mixture of said compounds.

13. A skin care composition for moisturizing and conditioning the skin comprising, as the essential emollient component, from about 0.5% to about 15% of a compound according to claim 1, or a mixture thereof, and a carrier therefor.

4,766,154

LIQUID PHASE METHANOL REACTOR STAGING PROCESS FOR THE PRODUCTION OF METHANOL

Leo W. Bonnell; Alan T. Perka, both of Macungie, and George W. Roberts, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 6, 1987, Ser. No. 11,647

Int. Cl.[4] C07C *27/06*

U.S. Cl. 518—700 3 Claims

1. In a staged process for the production of methanol from a syngas feed stream containing carbon monoxide, carbon dioxide and hydrogen, the improvement comprising:

(a) passing the syngas feed stream to a first liquid phase methanol reactor to convert a portion of the syngas to methanol and thereby form a methanol-containing first reactor effluent;

(b) cooling the methanol-containing first reactor effluent to condense the methanol and thereby produce a first methanol stream and a first reactor unreacted syngas stream;

(c) passing the first reactor unreacted syngas stream to a second liquid phase methanol reactor to convert at least a portion of the first reactor unreacted syngas stream to methanol and thereby form a methanol-containing second reactor effluent;

(d) cooling the methanol-containing second reactor effluent; condense the methanol and thereby produce a second methanol stream and a second unreacted gas stream; and

(e) recovering the first and second methanol streams as product;

wherein the reaction conditions in said first reactor are controlled to favor the conversion of CO to methanol over CO_2 to methanol relative to said second reactor and the reaction conditions of said second reactor are controlled to favor the conversion of CO_2 to methanol over CO to methanol relative to said first reactor.

4,766,155

PROCESS FOR PRODUCING ALCOHOLS

Jui-Yuan Sun, South Holland, and Erek J. Erekson, University Park, both of Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Continuation of Ser. No. 674,885, Nov. 26, 1984, abandoned. This application Dec. 4, 1985, Ser. No. 805,395

Int. Cl.[4] C07C *27/06*

U.S. Cl. 518—713 14 Claims

1. In a process for producing alcohols by reacting carbon monoxide with hydrogen in the presence of a catalyst, the improvement which comprises utilizing a catalyst consisting essentially of (a) copper (Cu); (b) zinc (Zn), (c) ruthenium (Ru); and (d) at least one element, A, selected from a group consisting of alkali metal, alkaline earth metal, and mixtures thereof, in the following atomic proportions:

$$Cu(Zn)x(Ru)y(A)z$$

where:

x is in the range of about 0.3 to about 3,

y is in the range of about 0.01 to about 1,

z is in the range of about 0.05 to about 0.5, and

x is equal to more than 1.0y.

4,766,156

PELLETS OF CHLORINATED VINYL CHLORIDE RESIN COMPOSITION, PRE-EXPANDED PARTICLES AND PROCESS FOR PREPARING THEREOF

Yoshihiro Kimura, Osaka, and Hisao Shimazu, Settsu, both of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 5, 1987, Ser. No. 82,630

Claims priority, application Japan, Aug. 7, 1986, 61-186284; Aug. 12, 1986, 61-188812; Feb. 9, 1987, 62-28676

Int. Cl.[4] C08J *9/22*

U.S. Cl. 521—58 5 Claims

1. A process for preparing pre-expanded pellets of chlorinated vinyl chloride resin having an average degree of polymerization of 300 to 5000 and a chlorine content of 60 to 75% by weight containing inorganic material selected from the group consisting of particles and fibers which comprises kneading a chlorinated vinyl chloride resin, inorganic material and a solvent, pelletizing the kneaded mixture, impregnating a physical blowing agent into the resulting pellets and pre-expanding the pellets.

4,766,157

FOAMED PARTICLES OF PROPYLENE-TYPE POLYMER

Hideaki Yamada; Satoru Hosoda, and Tadatoshi Ogawa, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 771,916, Sep. 3, 1985, abandoned. This application Dec. 16, 1986, Ser. No. 942,043

Claims priority, application Japan, Sep. 3, 1984, 59-184135

Int. Cl.[4] C08J *9/22*

U.S. Cl. 521—60 6 Claims

1. Foamed particles of propylene-type polymer of substantially non-crosslinked type, wherein the propylene-type polymer particles have a Melt Index of from 0.1 to 20, said polymer is at least one member selected from the group consisting of:

(a) a soft polypropylene homopolymer having an <mmmm> partial rate of a stereoregular pentad partial rate by ^{13}C-NMR spectrum of from 45 to 85% and a fusion heat quantity of from 5 to 22 cal/g; and

(b) a random copolymer of propylene and an α-olefin having a carbon number of 4 or more, or a random copolymer of propylene, an α-olefin having a carbon number of 4 or more, and ethylene, in which the content of the α-olefin having a carbon number of 4 or more is from 7 to 30 mol%, the content of ethylene is 5 mol% or less, and the cold xylene-soluble matter of said copolymer is from 15 to

VOL 1093 ISS 4 AG 23 1988 UMI

60 wt%, said polymer particles being foamed with the use of an evaporation type blowing agent.

4,766,158

URETHANE-CONTAINING OXAZOLIDONE-MODIFIED ISOCYANURATE FOAMS AND A COMPOSITION AND METHOD FOR THEIR PRODUCTION

Stephen Fuzesi, and Robert W. Brown, both of Hamden, Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Aug. 3, 1987, Ser. No. 80,946
Int. Cl.[4] C08G *18/14*
U.S. Cl. 521—110 17 Claims

1. A composition useful for fabricating a high temperature degradation-resistant, cracking-resistant and scorching-resistant rigid urethane-containing oxazolidone-modified isocyanurate comprising:
(a) at least one polyisocyanate having an isocyanate equivalent weight of between about 80 and about 160,
(b) at least one polyepoxide present in an amount of between about 0.1 and about 0.6 equivalents of polyepoxide per equivalent of said polyisocyanate,
(c) at least one polyol in an amount of between about 1 and about 10 weight percent based upon the total weight of said polyisocyanate plus said polyepoxide plus said polyol in said composition,
(d) at least one catalyst to promote isocyanate trimerization and reaction of said polyepoxide and said polyol with said polyisocyanate, and
(e) at least one blowing agent.

4,766,159

PROCESS FOR PRODUCING POLYPROPYLENE FOAM

Sotoyuki Kitagawa; Takashi Nakayama, and Masatoshi Isono, all of Kanagawa, Japan, assignors to Tonen Sekiyukagaku K.K., Tokyo, Japan

Filed Jun. 22, 1987, Ser. No. 64,627
Claims priority, application Japan, Jun. 25, 1986, 61-148784
Int. Cl.[4] C08J *9/06*
U.S. Cl. 521—134 2 Claims

1. In a process for the production of polypropylene foam comprising mixing polypropylene with a blowing agent and crosslinking auxiliary, molding the mixture, crosslinking the molded mixture and foaming, the improvement comprising employing a polypropylene selected from homo-polypropylene or block-polyproplene containing 1–20 wt % ethylene and having a MFR in the range of 30–100.

4,766,160

PHOTO-HARDENABLE COMPOSITION FOR BIOACTIVE COATINGS

Daniel Bichon, Gaillard; Van Tao Nguyen, Cruseilles, both of France, and Michel Schneider, Troinex, Switzerland, assignors to Battelle Memorial Institute, Carouge, Switzerland

Filed Jul. 21, 1986, Ser. No. 887,627
Claims priority, application Switzerland, Jul. 22, 1985, 03164/85
Int. Cl.[4] C08J *3/28*
U.S. Cl. 522—46 5 Claims

1. In a photopolymerisable composition which when irradiated in air gives a hydrophilic resin which swells in water but is insoluble therein, the resin being of use as such or in the form of a film-producing coating adhering firmly to the surface of a substrate such as glass, ceramic, plastics or metals, for immobilizing and fixing bioactive substances to the surface of the film or in the mass of the resin, the composition comprising:
(i) at least 20% by weight of a first photopolymerisable ingredient (I) consisting of acrylic acid (A) and an acrylate or methacrylate of an N-dialkylated aminoalcohol (B);
(ii) 5 to 70% by weight of a second photopolymersiable ingredient (II) consisting of one or more olefinic monomers copolymerisable with components A and B and bearing reactive groups capable of bonding to the bioactive molecules to be fixed;
(iii) 0.5 to 10% of a photoinitiator or polymerization photosensitizer (III) compatible with the monomers herein;
wherein the improvement comprises the molar ratio between components A and B is between 0.9 and 1.1, and that components A and B are present in the mixture partly in the form of an amine acrylate and partly in the form of a carboxybetaine addition reaction product of A and B; and wherein the proportion of carboxybetaine to amine acrylate is up to 35%;
wherein the recited component percentages are in sufficient quantity to make up 100%.

4,766,161

BIPOLAR MEMBRANES AND METHODS OF MAKING SAME

Frederick P. Chlanda, Rockaway, and Ming J. Lan, Parsippany, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 5, 1986, Ser. No. 871,184
Int. Cl.[4] B32B *27/30*
U.S. Cl. 521—27 16 Claims



1. A bipolar membrane comprising:
(a) a first layer comprising the reaction product of a polymer containing between about 1.2 meq/g and of about 3.9 meq/g benzyl halide and amine having tertiary and non-tertiary amine groups, the reaction product comprising quaternary amine groups derived from halomethyl groups of the polymer in the first layer;
(b) a second layer comprising the reaction product of a matrix polymer containing between about 2.0 meq/g and about 3.9 meq/g benzyl halide and amine having tertiary and non-tertiary amine groups, the reaction product comprising quaternary amine groups and non-quaternary amine groups derived from halomethyl groups of the polymer in the second layer, and the matrix polymer having dispersed therein cross-linked cation exchange resin having an ion exchange capacity of between about 3 meq/g and about 5 meq/g, the amount of quaternary and non-quaternary amine groups in the second layer being sufficient so that the bipolar membrane has a potential drop of less than 1.2 volts at 109 mA/cm^2 in 0.5 M Na_2SO_4 at about 30° C.; and
(c) a third layer having a cation exchange capacity of between about 1.0 meq/g and about 1.6 meq/g.

3. A bipolar membrane comprising and anion permselective proton, a cation perselective proton and a region therebetween comprising a matrix material comprising the reaction product of a matrix polymer containing between about 30 wt % and about 60 wt % vinylbenzyl halide and amine having tertiary and nontertiary amine groups, which matrix material includes quaternary and non-quaternary amine groups derived from halomethyl groups of the polymer, and an ion exchange resin having a charge opposite the charge of the quaternary amine groups, the amount of quaternary and nonquaternary amine groups in the region being sufficient so that the bipolar membrane has a potential drop of less than 1.2 volts at 109 mA/cm^2 in 0.5 M Na_2SO_4 at about 30° C.

12. A bipolar membrane comprising an anion exchange layer, a cation exchange layer and an interfacial layer comprising a matrix polymer having dispersed therein a cation exchange resin and said matrix polymer also containing a sufficient amount of quaternary and non-quaternary amine groups so that the bipolar membrane has a potential drop of less than 1.2 volts at 109 mA/cm^2 in 0.5 M Na_2SO_4 at about 30° C.

4,766,162

RESIN COMPOSITION FOR SEALING ELECTRONIC PARTS, AND HYDRATION-RESISTANT MAGNESIA POWDER AND PROCESS FOR PREPARATION THEREOF

Toshikazu Hamamoto; Motojirou Aoi, both of Hirakata; Kozaburo Yoshida, and Yasuhiko Toda, both of Ube, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Division of Ser. No. 885,083, Jul. 14, 1986, Pat. No. 4,677,026.
This application Apr. 3, 1987, Ser. No. 34,439
Claims priority, application Japan, Jul. 17, 1985, 60-157716; Jul. 17, 1985, 60-157717
Int. Cl.[4] C08K *3/22*
U.S. Cl. 523—440 12 Claims

1. A resin composition for sealing electronic parts, which comprises a thermosetting resin and, incorporated therein, high-purity magnesium oxide, said oxide containing uranium and thorium at a total content lower than 10 ppb.

4,766,163

MODIFIED POLYESTER THERMOSETTING RESIN COMPOSITIONS

Kenneth R. Strudwick, Adelaide, Australia, assignor to Bridges Corporation Pty Ltd, Australia

PCT No. PCT/AU86/00030, § 371 Date Oct. 10, 1986, § 102(e) Date Oct. 10, 1986, PCT Pub. No. WO86/04908, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 11, 1986, Ser. No. 931,465
Claims priority, application Australia, Feb. 13, 1985, PG9263
Int. Cl.[4] C08L *67/06*
U.S. Cl. 523—509 32 Claims

1. A thermosetting resin prepolymer composition comprising an unsaturated thermosetting polyester resin reacted with a thermosetting organo-silicone compound based on a siloxane backbone containing organic functional groups:



wherein n is an integer and R is a hydride, alkyl group, amine, unsaturated group, alkyl halide, epoxide, or aromatic group and each R being the same or different, in a non-condensation reaction in the presence of a catalyst by cross-linking to establish chemical bonds between the thermosetting polyester resin and the thermosetting organo-silicone compound.

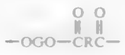
4,766,164

STABILIZED THERMOPLASTIC ELASTOMER

Michael D. Golder, Allendale; and Stanley J. Gromelski, Jr., W. Caldwell, both of N.J. assignors to Hoechst Celanese Corporation, Chatham, N.J.

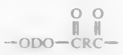
Filed Dec. 1, 1983, Ser. No. 557,099
Int. Cl.[4] C08L *67/02*
U.S. Cl. 524—100 14 Claims

1. Thermoplastic elastomer composition consisting essentially of:
(a) segmented thermoplastic copolyester elastomer consisting essentially of a multiplicity of recurring long chain ester units and short chain ester units joined head to tail through ester linkages, said long chain units being represented by the formula



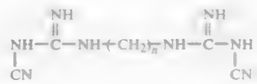
Formula I

and said short chain units being represented by the formula



Formula II

where G is a divalent radical remaining after the removal of the terminal hydroxyl groups from a difunctional polyether glycol having a number average molecular weight in the range from about 400 to about 6,000, R is a hydrocarbon radical remaining after removal of the carboxyl groups from terephthalic acid or isophthalic acid, and D is a divalent radical remaining after removal of hydroxyl groups from 1,4-butanediol or 1,4-butenediol; provided, said short chain units amount to between about 30% and about 85% by weight of the copolyester;
(b) between about 0.1 and about 25% by weight of said copolyester of polyvinylpyrrolidone having a K value not exceeding about 30;
(c) between about 0.05 and about 5% by weight of said copolyester of cyanoguanidine or guanidine stabilizer of the formula



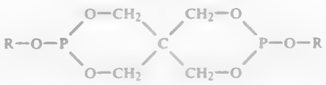
Formula III

where n is an integer between 2 and about 20;
(d) between about 0.1 and about 5% by weight of said copolyester of diphenylamine derivative of the formula



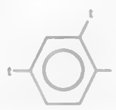
Formula IV

where R and R^1 are methyl or phenyl; and
(e) between about 0.05 and about 3% by weight of said copolyester of phosphorus compound of the formula



Formula V

where R represents an alkyl radical having from 6 to about 22 carbon atoms or a hydrocarbon radical of the structure



where t represents a tertiary butyl radical.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,165

THERMOPLASTIC MOULDING COMPOSITIONS HAVING FLAME-RETARDING PROPERTIES

Hans-Jürgen Kress, Krefeld; Friedemann Müller, Neuss; Christian Lindner, Cologne; Horst Peters, Leverkusen; Josef Buekers, Krefeld, and Gert Tödtemann, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 5, 1986, Ser. No. 870,840

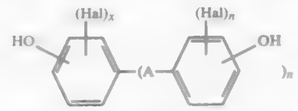
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1985, 3521388

Int. Cl.[4] C08K *5/52*

U.S. Cl. 524—140 16 Claims

1. A thermoplastic moulding composition, containing

(A) 50–90 parts by weight of a thermoplastic aromatic polycarbonate, based on the diphenols consisting essentially of the formula



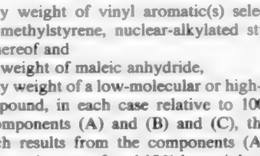
wherein

A is a single bond, C_1–C_5-alkylene, C_2–C_5-alkylidene, C_5–C_6-cycloalkylidene, —S— or —SO_2—, Hal is chlorine or bromine, x is 0, 1 or 2 and "n" is 1 or 0;

(B) 10–50 parts by weight of a copolymer of random structure of

1. 95–70% by weight of vinyl aromatic(s) selected from styrene, α-methylstyrene, nuclear-alkylated styrene and mixtures thereof and
2. 5–30% by weight of maleic anhydride,

(C) 0–15 parts by weight of a low-molecular or high-molecular halogen compound, in each case relative to 100 parts by weight of components (A) and (B) and (C), the halogen content which results from the components (A) and (C) being in each case between 3 and 10% by weight, relative to the total weight of the components (A) and (C), characterized in that they additionally contain 1–20 parts by weight, relative to 100 parts by weight of components (A) and (B) and, if present, (C), of a phosphorous compound of the formula



(I)

wherein

R_1, R_2 and R_3 independently of one another represent an optionally halogenated C_6–C_{20}-aryl radical and n and m independently of each other are 0 or 1, and

(E) 0.05–2.0 parts by weight, relative to 100 parts by weight of (A) and (B) and, if present, (C), of a tetrafluoroethylene polymer with mean particle sizes of 0.05–20 μm and a density of 1.2–1.9/cm^3, the component (E) being employed in the form of a coagulated mixture of emulsions of the tetrafluoroethylene polymers (E) with emulsions of graft polymers (F) obtained from

(1) 5–90 parts by weight of a mixture of:

(i) 50–95% weight of styrene, α-methylstyrene, nuclear-substituted styrene, methyl methacrylate or mixtures thereof and

(ii) 50–5% by weight of (meth)-acrylonitrile, methyl methacrylate, maleic anhydride, N-substituted maleimide or mixtures thereof on

(2) 95–10 parts by weight of a rubber having a glass temperature T_G of ≦10° C., and the weight ratio of (F)/(E) being between 95:5 and 60:40 and the content of component (F), relative to 100 parts by weight of (A) and (B) and, if present (C) being between 0.1 and 3.0 parts by weight.

4,766,166

COMPOSITIONS HAVING THE PROPERTIES OF LOW VISCOSITY POLYETHYLENES

Janardan D. Upadhyaya, Fairfield; Harry M. Farnham, Easton; Ing C. Lin, North Haven, and Alan R. Case, New Milford, all of Conn., assignors to Moore and Munger Marketing and Refining, Inc., Shelton, Conn.

Filed Feb. 13, 1987, Ser. No. 14,510

Int. Cl.[4] C08L *23/06, 91/06*

U.S. Cl. 524—275 8 Claims

1. A composition comprising:

(a) one or more synthetic waxes each of which has been produced synthetically by polymerizing smaller building blocks and each of which has a Brookfield viscosity at 284° F. of less than 50 centipoise, a needle penetration value at 77° F. of less than 20 mm/10, and a congealing point in the range of from about 160° F. to about 240° F., said one or more synthetic waxes comprising between about 50 and about 80 percent by weight of the total composition; and

(b) a polyethylene material having a Brookfield viscosity at 284° F. greater than about 5000 centipoise, a needle penetration value at 77° F. of less than 5 mm/10, and a softening point in the range of from about 200° F. to about 250° F., said polyethylene material comprising between about 10 and about 50 percent by weight of the total composition;

the final composition having a Brookfield viscosity at 284° F. of less than about 1000 centipoise, a needle penetration value at 77° F. of less than 10 mm/10, and a melting point in the range of from about 190° F. to about 240° F.

4,766,167

HYDROXY ACID ESTER PLASTICIZED URETHANE ELASTOMERS

Lawrence F. Marnett, Leawood, and Joseph B. Kubec, Overland Park, both of Kans., assignors to C. J. Patterson Company, Kansas City, Mo.

Filed Sep. 23, 1987, Ser. No. 100,290

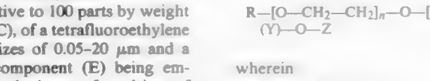
Int. Cl.[4] C08L *75/04*

U.S. Cl. 524—310 48 Claims

1. A plasticized polyurethane comprising:

a polyurethane elastomer in self-sustaining form; and

a sufficient amount of an agent combined with the elastomer to plasticize the same, said agent being represented by the formula



wherein

R=HO—CH(X)—C(O)

X=CH_3 or H

Y=H or CH_3 or CH_2OH or CH_2OR or CH_2OW or CH_3CH_2

Z=H or R or W

W=CH_3—$[CH_2]_l$—$[CH{=}C]_p$—C(O)

V=H or CH_3

n=0 to 2

m=1 to 3

l=4 to 20

p=0 to 3

l+2p=4 to 20.

4,766,168

STABILIZED POLYACETAL COMPOSITIONS

Norman E. West, Vienna, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 853,287, Apr. 15, 1986, abandoned. This application Feb. 27, 1987, Ser. No. 20,084

Int. Cl.[4] C08K *5/05, 5/10;* C08L *59/00, 59/02*

U.S. Cl. 524—377 19 Claims

1. A thermoplastic polyacetal composition consisting essentially of

(a) 0.1–10 weight percent of at least one compound selected from the group consisting of hydroxy containing polymers and hydroxy containing oligomers, and

(b) 90–99.9 weight percent of at least one polyacetal polymer,

provided that the above-stated percentages are based on the total amount of components (a) and (b) only, provided further that the atoms in the backbone of the polymer or oligomer to which the hydroxy groups are attached, directly or indirectly, are separated from each other, on average, by not more than twenty chain atoms; and provided further that the hydroxy containing compound is substantially free of acidic materials.

4,766,169

TACKIFIERS AND THEIR USE IN PRESSURE SENSITIVE ADHESIVES

Andre Lepert, Allouville Bellefosse, France; Morris L. Evans, Baton Rouge, La., and Lutz E. Jacob, Wezembeek-Oppem, Belgium, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 717,980, Mar. 28, 1985, Pat. No. 4,623,698. This application Aug. 18, 1986, Ser. No. 899,185

Claims priority, application United Kingdom, Mar. 28, 1984, 8407984

Int. Cl.[4] C08J *3/04*

U.S. Cl. 524—499 9 Claims

1. An aqueous emulsion containing from 40% to 70% by weight of a resin having a softening point from 10° C. to 80° C., and said resin being a Friedel-Crafts catalysed polymerization copolymer of a feed which is predominantly petroleum cracked distillate C_5 olefines and diolefines and one or more monovinyl aromatic compounds, said resin containing from 10 to 30 wt.% of the monovinyl aromatic compounds.

4,766,170

HEAT CURING ORGANOPOLYSILOXANE COMPOSITION

Hiroshi Honma; Mitsuo Hamada, and Hideki Kobayashi, all of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Feb. 11, 1987, Ser. No. 13,502

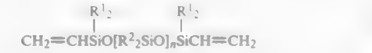
Claims priority, application Japan, Feb. 25, 1986, 61-39726

Int. Cl.[4] C08L *83/08, 83/07*

U.S. Cl. 524—500 4 Claims

1. Heat-curing organopolysiloxane composition consisting essentially of

(A) 100 parts by weight of organopolysiloxane gum with the general formula



in which R^1 and R^2 are selected from the group consisting of monovalent hydrocarbon groups excluding alkenyl groups, and cyanoalkyl groups, and n is equal to or greater than 3,000.

(B) 50 to 150 parts by weight of organopolysiloxane gum with the general formula



in which R^3 is selected from the group consisting of monovalent hydrocarbon group, cyanoalkyl group, and the hydroxyl group; R^4 is selected from the group consisting of monovalent hydrocarbon group, and cyanoalkyl group, of which 0.1 to 0.2 percent of the radicals attached to the silicon atoms are alkenyl group; and m is equal to or greater than 3,000.

(C) 0.5 to 10 parts by weight of organohydrogenpolysiloxane having at least 2 silicon-bonded hydrogen atoms in each molecule, having a viscosity ranging from 10 to 1000 centipoise at 25° C. surface area of at least 250 m^2/g, at the rate of 20 to 50 parts by weight per 100 parts by weight of the total quantity of components (A) plus (B).

(E) 0.1 to 5 parts by weight of organoperoxide, and

(F) 1 to 50 parts by weight of organopolysiloxane oil with the general formula



in which R^5 is a hydroxyl group or methyl group; R^6 is a monovalent hydrocarbon group, of which 10 to 75 percent of the radicals attached to the silicon atoms are alkenyl group; and p is 5 to 100.

4,766,171

ORGANIC NONLINEAR OPTICAL SUBSTRATES

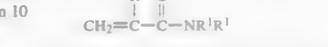
Ronald N. DeMartino, Wayne, N.J., assignor to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 771,864, Sep., 1985, Pat. No. 4,717,508. This application Mar. 4, 1986, Ser. No. 836,135

Int. Cl.[4] C08L *33/26;* H01S *3/16;* H03F *7/00*

U.S. Cl. 524—722 6 Claims

1. A process for producing an optically transparent solid solution which comprises preparing a homogeneous blend of components comprising (1) an organic compound which exhibits nonlinear optical response, and (2) at least one polymerizable monomer corresponding to the formula:



where R is a substituent selected from hydrogen, methyl and ethyl groups, and R^1 is an alkyl substituent containing between about 1–4 carbon atoms; and subjecting the homogeneous blend to polymerization conditions to produce a homogeneous solid solution of host polymer and guest organic compound which exhibits optical nonlinearity, wherein the organic compound component is present in a quantity of at least about 25 weight percent based on the total weight of organic components.

4,766,172

MOLD RELEASE COMPOSITION, MIXTURES CONTAINING THIS MOLD RELEASE COMPOSITION, A PROCESS FOR THE PRODUCTION OF MOLDED ARTICLES AND THE MOLDED ARTICLES OBTAINED BY THIS PROCESS

Christian Weber, Leverkusen, and Peter Haas, Haan, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 21, 1987, Ser. No. 76,431

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1986, 3626673

Int. Cl.[4] C08G *18/30*

U.S. Cl. 524—783 12 Claims

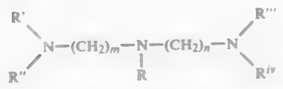
1. A mold release composition comprising a solution which is liquid at room temperature of

(i) about 10 to 75%, based on the weight of the composition of at least one zinc salt of a straight or branched chain,

VOL 1093 ISS 4 AG 23 1988 UMI

saturated or unsaturated aliphatic carboxylic acid having 8 to 24 carbon atoms in

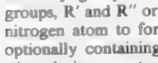
(ii) at least one organic compound containing tertiary nitrogen atoms which is liquid at room temperature and comprises at least one compound corresponding to the formula



wherein

R', R'', R''' and R^{iv} may be identical or different and represent alkyl groups with 1 to 4 carbon atoms or two of the groups, R' and R'' or R''' and R^{iv}, may combine with the nitrogen atom to form a 6-membered heterocyclic ring optionally containing an oxygen atom or an alkyl-substituted nitrogen atom as heteroatoms and having a total of 4 or 5 carbon atoms,

R denotes hydrogen or a group corresponding to the formula



and m, n and o stand for identical or different integers having values from 2 to 6.

4,766,173

METHOD FOR REDUCING RESIDUAL ACRYLIC ACID IN ACRYLIC ACID POLYMER GELS

Kristy M. Bailey, Naperville, and Patrick J. Marek, Geneva, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed May 11, 1987, Ser. No. 48,337
Int. Cl.[4] C08F 6/06, 6/24, 22/02
U.S. Cl. 524—819 3 Claims

1. A method for reducing the residual acrylic acid present in water-insoluble polyacrylic acid water absorbent gel polymers which comprises treating these polymers with at least 0.5 mole of either amino acid cysteine or lysine per mole of residual acrylic acid present in said polymers for at least 15 minutes at a temperature of at least 80° C.

4,766,174

PROCESS FOR PREPARING MELT-PROCESSIBLE ALUMINUM IONOMER BLENDS

Robert J. Statz, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 2, 1986, Ser. No. 815,599
Int. Cl.[4] C08L 33/02
U.S. Cl. 525—64 19 Claims

1. Process for preparing melt processible blend of aluminum ionomer and thermoplastic resin or elastomer by

(A) mixing at from about 150° to about 300° C.

(a) from about 50 to about 95% by weight of direct or graph copolymer of ethylene, alpha,beta-ethylenically unsaturated carboxylic acid having from 3 to 8 carbon atoms, and softening comonomer selected from the group consisting of vinyl esters of aliphatic carboxylic acids wherein the acids have 2 to 10 carbon atoms, vinyl ethers wherein the alkyl group contains 1 to 10 carbon atoms, and alkyl acrylates or methacrylates wherein the alkyl group contains 1 to 10 carbon atoms, and wherein the ethylene content of the copolymer is from about 30 to about 98 weight percent, the carboxylic acid content is from about 1 to about 25 weight percent and the softening comonomer content is from 0 to about 60 weight percent, and

(b) from about 5 to about 50% by weight of at least one thermoplastic resin or thermoplastic elastomer selected from the group consisting of polyamide, polyester, polyester ether, block copolymer of aromatic substituted ethylenically unsaturated monomer with diolefin and hydrogenated derivative of said copolymer, polyurethane, and polyolefin resin which thermoplastic resin or thermoplastic elastomer is nonreactive with the aluminum ion source, and

(B) subsequent to or simultaneously with said mixing neutralizing from about 1 to about 100% of the carboxylic acid groups with an aluminum ion source provided, however that when the thermoplastic resin or thermoplastic elastomer is polyamide, polyester, polyester ether or polyurethane the aluminum ion source is selected from the group consisting of (1) chelated aluminum compound and (2) mixture of aluminum alkoxide with chelated aluminum compound or with chelating agent.

4,766,175

BLEND COMPRISING EPDM GRAFT TERPOLYMER AND ACRYLATE RUBBER

David E. Henton, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 737,368, May 23, 1985, abandoned.
This application Aug. 15, 1986, Ser. No. 898,743
Int. Cl.[4] C08L 51/04, 51/06, 25/12
U.S. Cl. 525—71 22 Claims

1. A rubber-reinforced thermoplastic polyblend comprising an elastomer and a compatible matrix polymer wherein the matrix polymer comprises styrene and acrylonitrile in polymerized form and the elastomer comprises both a styrene/acrylonitrile coplymer grafted EPDM terpolymer rubber and a styrene/acrylonitrile copolymer grafted crosslinked polymer consisting of a C_{1-8} alkyl acrylate and at least one multivinyl monomer crosslinker.

4,766,176

STORAGE STABLE HEAT CURABLE ORGANOSILOXANE COMPOSITIONS CONTAINING MICROENCAPSULATED PLATINUM-CONTAINING CATALYSTS

Chi-long Lee, Midland; Donnie R. Juen, Sanford; John C. Saam, and Robin L. Willis, Jr., both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 20, 1987, Ser. No. 75,177
Int. Cl.[4] C08F 8/00
U.S. Cl. 525—100 13 Claims

1. In an improved one-part, storage stable, heat curable organosiloxane composition comprising

(A) a curable polyorganosiloxane containing at least two ethylenically unsaturated hydrocarbon radicals per molecule;

(B) an organohydrogensiloxane containing at least two silicon bonded hydrogen atoms per molecule in an amount sufficient to achieve curing of said polyorganosiloxane (A), where the sum of the average number of ethylenically unsaturated hydrocarbon radicals per molecule of (A) and the average number of silicon bonded hydrogen atoms per molecule of said organohydrogensiloxane (B) is greater than 4, and

(C) an amount of a platinum-containing hydrosilation catalyst sufficient to promote curing of said composition at a temperature of at least 70° C. and above,

the improvement comprising the presence of said platinum-containing catalyst in the form of microcapsules that in turn, comprise said catalyst as finely divided particles or droplets that are completely enveloped within a thermoplastic organic polymer where the average diameter of said microcapsules is less than 500 microns, and said thermoplastic organic polymer constitutes at least 50 percent of the weight of said microcapsules.

4,766,177

HIGH SOLIDS COATINGS FOR PLASTIC SUBSTRATES

Susan M. Miller, Middleburg Hts.; Gary P. Craun, Berea, and Perry A. Toman, Medina, all of Ohio, assignors to The Glidden Company, Cleveland, Ohio

Filed May 4, 1987, Ser. No. 45,081
Int. Cl.[4] C08L 75/06
U.S. Cl. 525—131 6 Claims

1. A high solids thermosetting coating composition comprising on a weight basis a blend of polymers comprising:

between 10% and 80% acrylic copolymer, between 0% and 40% polyester polymer, between 1% and 60% urethane-polyester adhesion promoter, and between 10% and 58.5% amine crosslinking resin selected from an aminoplast or a glycoluril, where the total equals 100%;

said acrylic copolymer being copolymerized monomers by weight comprising at least 5% acrylic monomer, between 5% and 30% hydroxyl containing ethylenically unsaturated monomer, with the balance being other ethylenically unsaturated monomer, said acrylic copolymer having a number average molecular weight measured by GPC between 500 and 2500 and a hydroxyl number between 50 and 200;

said polyester polymer having a number average molecular weight measured by GPC between 250 and 2000 and a hydroxyl number between 115 and 285;

said urethane-polyester adhesion promoter having a number average molecular weight measured by GPC between 700 and 10,000 and comprising copolymerized components per equivalent of hydroxyl component, between 0.5 and 0.8 equivalents of carboxylic acid component and between 0.01 and 0.4 equivalents of isocyanate component; and

where said amine cross-linking resin is adapted to cross-link with said acrylic copolymer and said polyester polymer to provide a thermosetting coating composition.

4,766,178

BUTENE-RICH BUTENE-1 PROPYLENE COPOLYMER COMPOSITION

Charles C. Hwo, Sugarland, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 801,343, Nov. 25, 1985, abandoned.
This application May 12, 1987, Ser. No. 48,854
Int. Cl.[4] C08L 23/10, 23/16, 23/20, 23/12
U.S. Cl. 525—240 4 Claims

1. A blend for producing a heat shrinkable, thermoplastic film which has good clarity and good processability, comprising a mixture containing:

from about 10% by weight to about 60% by weight butene-1-propylene copolymer, where the propylene comonomer content of said butene-1-propylene copolymer is from about 27 m% to about 40 m%; and

from about 40% by weight to about 90% by weight propylene homopolymer.

4,766,179

BISMALEIMIDE COMPOSITIONS

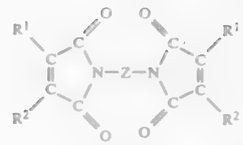
Adrianus J. De Koning, Sh Vlaardingen, Netherlands, assignor to DSM Resins B.V., Zwolle, Netherlands

Filed May 28, 1986, Ser. No. 867,691
Claims priority, application Netherlands, Jun. 8, 1985, 8501660
Int. Cl.[4] C08L 79/08
U.S. Cl. 525—282 13 Claims

1. A composition comprising:

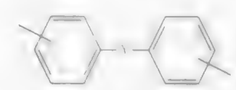
A: 64–4 parts by weight of:

(a) 80–30 weight percent of one or more compounds of the formula

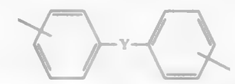


or a corresponding isomaleimide isomer thereof, wherein R^1 and R^2 each independently represent hydrogen; an aliphatic, cycloaliphatic or aromatic group, containing 1–12 carbon atoms; or halogen; or R^1 and R^2 together with the carbon atoms to which they are attached form a ring system with at least one polymerizable C═C bond, and

Z represents alkylene containing 2–25 carbon atoms; alkylene containing 2–25 carbon atoms and substituted by halogen, hydroxide or nitro; meta- or paraphenylene group; meta- or paraphenylene group substituted by halogen or nitro; a group having the formula

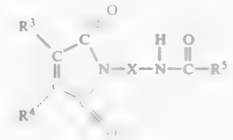


wherein Y represents —CH_2—, —$C(CH_3)_2$—, —O— or —SO_2—; or a group having the formula



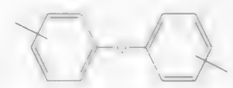
wherein Y represents —CH_2—, —$(CH_3)_2$—, —O— or —SO_2— and substituted by halogen or nitro;

(b) 5 to 60 weight percent of one or more compounds of the formula



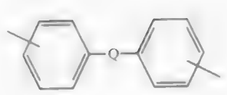
or a corresponding isomaleimide isomer thereof, wherein R^3 and R^4 each independently represent hydrogen; an aliphatic, cycloaliphatic or aromatic group, containing 1–12 carbon atoms; or halogen; or R^3 and R^4 together with the carbon atoms to which they are attached form a ring system with at least one polymerizable C═C bond,

X represents alkylene containing 2–25 carbon atoms; alkylene containing 2–25 carbon atoms and substituted by halogen, hydroxide or nitro; meta- or paraphenylene group; meta- or paraphenylene group substituted by halogen or nitro; a group having the formula



wherein Q represents —CH_2—, —$C(CH_3)_2$—, —O— or —SO_2; a group having the formula

VOL 1093 ISS 4 AG 23 1988 UMI

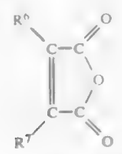


IV

wherein Q represents $—CH_2—$, $—C(CH_3)_2—$, —O— or $—SO_2$ and substituted by halogen or nitro; and

R_5 represents alkyl, cycloalkyl, aryl, aralkyl or alkylaryl, having 1–12 carbon atoms; or alkyl cycloalkyl, aryl, aralkyl or alkylaryl, having 1–12 carbon atoms and wherein the alkyl moiety is substituted by one or more of halogen, hydroxide or nitro;

(c) 1 to 10 weight percent of a maleic anhydride compound having the formula:



V

wherein R^6 and R^7 each independently represent hydrogen; an aliphatic, cycloaliphatic or aromatic group, containing 1–12 carbon atoms; or halogen; or R^6 and R^7 together with the carbon atoms to which they are attached form a ring system with at least one polymerizable C=C bond, with the proviso that the sum of the weight percentages of (a)+(b)+(c) is 100 weight percent;

B: 7–77 parts by weight of one or more ethylenically unsaturated compounds containing 5–50 carbon atoms, said ethylenically unsaturated compounds being selected from the group consisting of vinyl aromatic compounds, allyl compounds, vinyl ether and vinyl ester compounds, acrylic acid esters and methacrylic acid esters;

C: 3–60 parts by weight of one or more hydroxy-alkylacrylates or amino-alkylacrylates; and

D: 1–20 parts by weight of one or more terminally functional polymers as flexibilizer, said terminally functional polymers being selected from the group consisting of amino-, hydroxy-, isocyanate-, carboxyl-, and vinyl-terminated polymers;

with the proviso that the sum of the parts by weight of A, B, C and D is equal to 100.

4,766,180

CROSSLINKED ELASTOMERS CONTAINING BENZOCYCLOBUTENE DERIVATIVES AS CROSSLINKING AGENTS

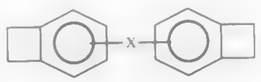
Pui K. Wong, Katy, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 812,422, Dec. 23, 1985, abandoned. This application Dec. 23, 1986, Ser. No. 946,131

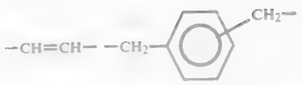
Int. Cl.[4] C08C *19/28;* **C08F** *255/06*

U.S. Cl. 525—289 **19 Claims**

1. A polymeric composition which may be readily crosslinked at temperatures above about 200° C., said composition comprising an elastomeric polymer having olefinic unsaturation and an effective crosslinking amount of a benzocyclobutene derivative having the general formula



where "X" is selected from the group consisting of



and

where "R" is an alkylene group of 1 to 10 carbon atoms.

4,766,181

SILICONE-MODIFIED POLYESTER RESIN AND SILICONE-SHEATHED POLYESTER FIBERS MADE THEREFROM

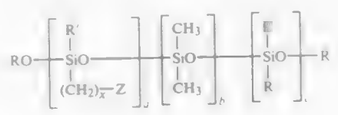
Robert L. Ostrozynski, Williamsville; George H. Greene, Croton-on-Hudson, and James H. Merrifield, Mt. Kisco, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 774,962, Sep. 11, 1985, Pat. No. 4,640,962. This application Sep. 18, 1986, Ser. No. 908,717

Int. Cl.[4] B32B *27/34*

U.S. Cl. 428—395 **34 Claims**

1. A silicone-sheathed polyester fiber comprising a polyester matrix sheathed within a silicone-modified polyester matrix, said silicone modified polyester matrix comprising the reaction product of an aromatic dicarboxylic acid or its diester, a diol and a siloxane-block copolymer of the general formula:



wherein

R is individually a monovalent group selected from the group consisting of alkyl, aryl, acyl, aralkyl and polyoxyalkylene group;

R' is individually a monovalent group selected from the group consisting of alkyl, aryl, alkenyl and aralkyl groups containing from 1 to 8 carbon atoms;

Z is a substituted or unsubstituted group selected from the group consisting of alkyl, aryl, aralkyl, alkoxy, polyoxyalkyl, alkenyl and siloxy, with the proviso that when z is siloxy x must equal zero;

a has a value of 0 to 10;

b has a value of 0 to 50,000

c has a value of 0 to 1,000 and the sum of a+b+c is such that the polysiloxane block polymer contains at least 10 silicon atoms;

x has a value of 0, 1, 2, or 3, and

wherein prior to the reaction said silicone block copolymer is present within the polyester matrix in microdomains ranging in size from about 0.05 to 6 microns.

4,766,182

POLYLACTIDE COMPOSITIONS

Joseph R. Murdoch, Wilmington, Del., and Gary L. Loomis, Drexel Hill, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 944,588, Dec. 22, 1986, Pat. No. 4,719,246. This application Oct. 15, 1987, Ser. No. 108,531

Int. Cl.[4] C08G *63/76*

U.S. Cl. 525—413 **6 Claims**

1. A process for interlocking polymeric segments of poly(R-lactide) and poly (S-lactide) comprising intimately contacting said segments at a temperature below the melting temperature of the highest melting phase until interlocking occurs.

4,766,183

THERMOSETTING COMPOSITION FOR AN INTERPENETRATING POLYMER NETWORK SYSTEM

Sidky D. Rizk, Westfield, and Navinchandra B. Shah, Oldbridge, both of N.J., assignors to Essex Specialty Products, Inc., Clifton, N.J.

Continuation-in-part of Ser. No. 822,777, Jan. 22, 1986, abandoned. This application Nov. 4, 1986, Ser. No. 926,528

Int. Cl.[4] C08L *63/02, 75/04, 83/04*

U.S. Cl. 525—454 **12 Claims**

1. A method for making a one package, heat crosslinkable composition which, on heating, forms an interpenetrating urethane/epoxy/silicone polymer network, which method comprises combining a polyepoxide compound and a thermo-reversibly blocked polyamine curing agent with an extended polyurethane prepolymer, free of isocyanate groups, prepared by thermo-reversibly blocking some of the isocyanate groups of a polyurethane prepolymer having a plurality of isocyanate groups and reacting the non-blocked isocyanate groups with a silicone polycarbinol and a polyol.

4,766,184

POLYCARBONATE MODIFIED VINYL ESTERS

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 14, 1987, Ser. No. 39,191

Int. Cl.[4] C08F *283/02*

U.S. Cl. 525—463 **22 Claims**

1. A vinyl ester composition comprising the reaction product of

(A) a polymerizable ethylenically monounsaturated monocarboxylic acid with

(B) the reaction product of

(1) one or more epoxy resins with

(2) from about 0.1 to about 10.0% by weight based on the total weight of the product of a polycarbonate resin or oligomer

whereby said epoxy resin is linked by one or more carbonate bonds to the transesterification induced chain scission products of said polycarbonate to provide chain branching and or crosslinking of said epoxy resin.

4,766,185

POLYSILOXANE GRAFT COPOLYMERS, FLEXIBLE COATING COMPOSITIONS COMPRISING SAME AND BRANCHED POLYSILOXANE MACROMERS FOR PREPARING SAME - II

Rose A. Ryntz, Clinton Township, Macomb County; Kenneth R. Kurple, Anchorville, and Panagiotis Kordomenos, Mt. Clemens, all of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 22, 1987, Ser. No. 41,247

Int. Cl.[4] C08F *283/00*

U.S. Cl. 525—479 **26 Claims**

1. Hydroxy functional polysiloxane graft copolymer suitable for flexible, thermosetting coating compositions over metal and plastic substrates, which copolymer has number average molecular weight between about 1,300 and about 15,000, has a hydroxyl number between about 30 and about 300, and is the reaction product of carbon-carbon double bond-reactive monoethylenically unsaturated monomer with hydroxy functional carbon-carbon double bond-bearing branched polysiloxane macromonomer, under free radical polymerization reaction conditions, said monomer bearing substantially no functionality which is substantially reactive with hydroxy functionality of said macromonomer under said reaction conditions, and said macromonomer being the reaction product of (i) isocyanato monomer having the formula:



wherein R is hydrogen or C_1 to about C_7 alkyl, and R' is a divalent linking moiety which does not substantially interfere with the reactivity of either the isocyanate or the ethylenic double bond of said isocyanato monomer with (ii) hydroxy functional polysiloxane reactant having about 0–10 urethane groups per molecule.

4,766,186

EPOXY ADHESIVE

Kathy B. Sellstrom, Pflugerville, and Harold G. Waddill, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 3, 1987, Ser. No. 92,855

Int. Cl.[4] C08G *59/04;* **C08L** *63/02*

U.S. Cl. 525—532 **4 Claims**

1. An adhesive comprising the cured reaction product of:

A. An epoxy resin component comprising:

1. 72 to 104 parts by weight of a vicinal polyepoxide having an average of at least 1.8 reactive 1,2-epoxy groups per molecule,

2. 8 to 16 parts by weight trimethylolpropanetriacrylate

3. 5 to 15 parts by weight of a polyoxypropylene diureide having a molecular weight of about 2000 to 3000, and

B. A curative component comprising:

1. a curing amount of triethyleneglycol diamine, and

2. an effective cure accelerating amount of piperazine, N-aminoethylpiperazine or mixture thereof.

4,766,187

COPOLYMERIZABLE ETHYLENICALLY UNSATURATED SURFACTANTS FOR LATEX PREPARATION

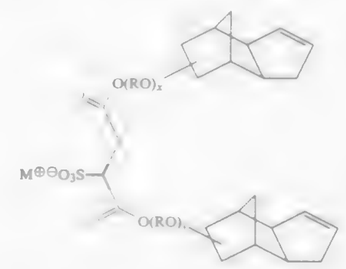
Ronald S. Beckley, Gilbertsville; Rodney L. Randow, Norristown, and Graham Swift, Blue Bell, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 683,973, Dec. 20, 1984, Pat. No. 4,683,100. This application Oct. 22, 1986, Ser. No. 921,972

Int. Cl.[4] C08F *2/26*

U.S. Cl. 526—209 **8 Claims**

1. A process for the polymerization of one or more ethylenically unsaturated monomers comprising the use as polymerizable surfactants of compounds of the formula



wherein M is a cation selected from the group consisting of alkali metal, ammonium, amino, and hydrogen; wherein R is independently C_2 to C_4; and wherein x and y are independently selected from 0 to 2 wherein said ethylenically unsaturated monomers are selected from the group consisting of acrylates, methacrylates, styrenes, acrylonitriles, vinyl alkanoates, and butadienes.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,188
PRODUCTION OF TETRAFLUOROETHYLENE POLYMERS

Terence E. Attwood, Blackpool, and Richard F. Bridges, Near Blackpool, both of United Kingdom, assignors to Imperial Chemical Industries plc, London, England

Filed Nov. 9, 1987, Ser. No. 118,253
Claims priority, application United Kingdom, Nov. 26, 1986, [illegible]
Int. Cl.[4] C08F 4/28
U.S. Cl. 526—227 7 Claims

1. Process for the production of a coagulated dispersion grade tetrafluoroethylene homo- or copolymer which process comprises emulsion polymerising tetrafluoroethylene, and optionally one or more comonomers, in an aqueous medium in the presence of a surfactant(s) as emulsifying agent and a water-soluble initiator system comprising disuccinic acid peroxide and ammonium sulphite, the ammonium sulphite being added to the aqueous reaction medium after the start of polymerisation, namely at a conversion within the range 1 to 95%, and the amount of ammonium sulphite employed being within the range 25 to 300% by weight, based on the weight of disuccinic acid peroxide used.

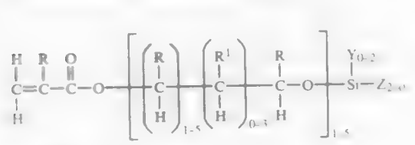
4,766,189
COMPOSITIONS FOR MAKING IMPROVED GAS PERMEABLE CONTACT LENSES

George F. Tsuetaki, and Hidehiko Ono, both of Chicago, Ill., assignors to Fused Kontacts of Chicago, Inc., Chicago, Ill.

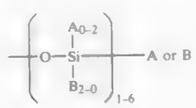
Filed Aug. 13, 1987, Ser. No. 85,400
Int. Cl.[4] C08F 212/06, 214/18
U.S. Cl. 526—245 12 Claims

1. A novel composition suitable for use in a corneal contact lens comprising the reaction product of:

(a) between about 20 and about 60% by weight of polymerizable silicate having the general formula:



wherein
R=alkyl, aryl or H
R′=R or OR
Y=alkyl, vinyl, aryl or fluoroalkyl
Z=



A=Y, or H
B=oxyalkyl, oxyaryl, oxyfluoroalkyl, oxyalkylacrylate, alkyl esters, aryl esters, fluoroalkylesters, or acrylic esters;

(b) from about 0 to about 9% of a polymerizable substituted or unsubstituted lower alkyl ester siloxane, including those having alkyl, aryl, or cycloalkyl substituents forming parts of the siloxane groups;

(c) from about 5% to about 50% of a polymerizable substituted or unsubstituted lower alkyl or cycloalkyl acrylic ester;

(d) at least 5% of a polymerizable fluoroacrylic ester;

(e) a wetting agent material which includes a mixture of acrylic or methacrylic acid and N-(1,1-dimethyl-3-oxobutyl)-acrylamide;

(f) at least one catalyst and sufficient crosslinking agents to provide a durable, machinable, oxygen permeable composition capable of being used in a corneal contact lens.

4,766,190
NOVEL ELASTOMERIC FLUOROPOLYMER AND PREPARATION THEREOF

Shigeru Morita; Kazuhiko Kuwahara, both of Osaka; Masayasu Tomoda, and Masahiko Oka, both of Shiga, all of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Oct. 10, 1986, Ser. No. 917,500
Claims priority, application Japan, Oct. 12, 1985, 60-227265
Int. Cl.[4] C08F 16/24
U.S. Cl. 526—247 5 Claims

1. An elastomeric terpolymer consisting of 12 to 50% by mole of repeating units derived from a perfluorovinyl ether of the formula:

$$CF_2=CFO-(CF_2CFXO)_m-R_f \quad (I)$$

wherein R_f is a C_1–C_6 perfluoroalkyl group, X is a fluorine atom or a trifluoromethyl group and m is an integer of 1 to 5, 50 to 88% by mole of repeating units derived from tetrafluoroethylene and 0.1 to 5% by mole of repeating units of hexafluoropropylene.

4,766,191
SILICONE POLYMER TERMINATION

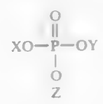
Nedeljko V. Gvozdic, Bay City; Terrence K. Hilty, and John C. Saam, both of Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jul. 10, 1987, Ser. No. 71,965
Int. Cl.[4] C08G 77/06
U.S. Cl. 528—14 13 Claims

1. A method of producing a polydiorganosiloxane substantially free of hydroxyl groups comprising

(A) heating 100 parts by weight of polydiorganosiloxane containing alkali metal to a temperature of from room temperature to 160° C., then

(B) adding sufficient acidic or acid producing phosphoric component of the formula



where X, Y, and Z are hydrogen or SiR_3, and R is a monovalent hydrocarbon radical or halogenated hydrocarbon radical having 1 to 6 carbon atoms, to give a mole ratio of alkali metal from the polydiorganosiloxane in (A) to the phosphorus in (B) of from 1:1 to 1:10, and from 0.3 to 3.0 parts by weight of silylamine component of the formula

$$R_3SiNR'R''$$

where R is hydrogen, monovalent hydrocarbon radical or halogenated hydrocarbon radical having from 1 to 6 carbon atoms, and R′ and R″ are hydrogen, monovalent hydrocarbon radical having from 1 to 6 carbon atoms or R_3Si— radical, and mixing with the exclusion of atmospheric moisture, then

(C) holding at temperature for a sufficient time to allow the removal of the hydroxyl groups, then

(D) devolatilizing to remove any volatile products and unreacted ingredients, to yield a polydiorganosiloxane having a slight change in viscosity and a reduced number of hydroxyl groups on silicon.

4,766,192
SILICONE POLYMER TERMINATION

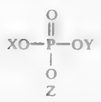
Nedeljko V. Gvozdic, Bay City, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 10, 1987, Ser. No. 72,192
Int. Cl.[4] C08G 77/06
U.S. Cl. 528—14 12 Claims

1. A method of producing a polydiorganosiloxane free of hydroxyl groups comprising

(A) heating 100 parts by weight of polydiorganosiloxane containing alkali metal to a temperature of from room temperature to 160° C., then

(B) adding sufficient acidic or acid producing phosphoric component of the formula



where X, Y, and Z are hydrogen or SiR_3, and R is a monovalent hydrocarbon radical or halogenated hydrocarbon radical having 1 to 6 carbon atoms, to give a mole ratio of alkali metal from the polydioganosiloxane in (A) to the phosphorous in (B) of from 1:1 to 1:10, and from 0.2 to 1.0 parts by weight of silylamide component of the formula

$$R_3SiNR'C(O)R''$$

where R is hydrogen, monovalent hydrocarbon radical or halogenated hydrocarbon radical having from 1 to 6 carbon atoms, and R′ and R″ are hydrogen, monovalent hydrocarbon radical having from 1 to 6 carbon atoms, or R_3Si- radical, and mixing with the exclusion of atmospheric moisture, then

(C) holding at temperature for a sufficient time to allow the removal of the hydroxyl groups, then

(D) devolatilizing to reduce the level of silylamide or volatile products to a level of less than 0.15 part by weight, to yield a polydiorganosiloxane having a slight change in viscosity and no hydroxyl groups.

4,766,193
ADHESIVE FOR SILICONE RUBBERS

Katsuyoshi Nakasuji, Chiba, Japan; Ryuzo Mikami, Midland, Mich.; Kazuo Hiria, and Takao Matsushita, both of Chiba, Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 866,412, May 23, 1986, abandoned. This application Aug. 20, 1987, Ser. No. 87,576
Claims priority, application Japan, Jun. 5, 1985, 60-122046
Int. Cl.[4] C08G 77/06
U.S. Cl. 528—17 5 Claims

1. An adhesive for silicone rubbers characterized as consisting of

(A) 100 weight parts organopolysiloxane produced by the condensation reaction of alkenyl group containing alkoxysilane, with the general formula

$$R^1{}_aR^2{}_b(R^3O)_cSiO_{(4-a-b-c)/2}$$

where R^1 is an alkyl or aryl group, R^2 is an alkenyl group, R^3 is a hydrogen atom or alkyl group, a is 0.0 to 1.0 on average, b is 0.1 to 2.0 on average, c is 0.1 to 2.5 on average and a+b+c is 1 to 3 on average,

(B) 0.01 to 200 weight parts condensation reaction catalyst and

(C) 0.1 to 300 weight parts organoperoxide.

4,766,194
BOWLING BALL HAVING IMPROVED SURFACE SLIP

John R. Robertson, Glenn Mills, Pa., assignor to ICI Americas Inc., Wilmington, Del.

Continuation of Ser. No. 21,111, Mar. 3, 1987, abandoned. This application Oct. 21, 1987, Ser. No. 115,577
Int. Cl.[4] C08L 75/00; G08G 18/38
U.S. Cl. 528—28 38 Claims

1. A bowling ball having at least an outer portion fabricated from reactants comprising

(i) a polyisocyanate,

(ii) an active hydrogen-containing compound having an average functionality of at least 2.0, and

(iii) a slip agent compound containing a moiety which imparts lubricity to said ball, said slip agent compound also having at least one active hydrogen-containing group which is reactive with isocyanate groups, wherein said slip agent compound is present in an amount between about 0.5 and about 5 weight percent based on the weight of (i) and (ii),

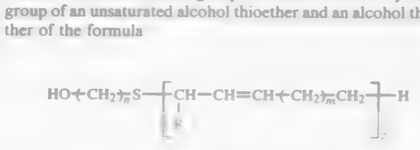
the ratio of (i) to the total of (ii) plus (iii) being such that the reaction is conducted at an isocyanate index between about 0.90 and about 1.30.

4,766,195
POLYMERS OF UNSATURATED ALCOHOL THIOETHERS

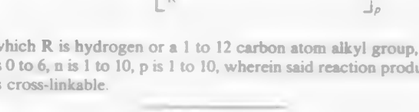
Yves Labat, Pau, France, assignor to Societe Nationale Elf Aquitaine, France

Continuation of Ser. No. 779,490, Sep. 24, 1985, abandoned. This application Dec. 15, 1986, Ser. No. 942,966
Claims priority, application France, Sep. 25, 1984, 84 14666
Int. Cl.[4] C08G 18/30
U.S. Cl. 528—76 4 Claims

1. A polymeric reaction product of a polymer which carries a terminal or side chain group reactive with the hydroxyl group of an unsaturated alcohol thioether and an alcohol thioether of the formula



said reaction product having a terminal or side chain group of the formula



which R is hydrogen or a 1 to 12 carbon atom alkyl group, m is 0 to 6, n is 1 to 10, p is 1 to 10, wherein said reaction product is cross-linkable.

4,766,196
ACCELERATORS FOR THE CURE OF EPOXY RESINS WITH AMINE CURING AGENTS

Anil B. Goel, Worthington, and Teresa A. DeLong, Plain City, both of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 14, 1987, Ser. No. 85,481
Int. Cl.[4] C08G 59/68
U.S. Cl. 528—89 21 Claims

1. A rapid curing epoxy resin composition comprising a mixture of

(a) a first component comprising a polyepoxide, and

(b) a second component comprising a mixture of thereaction product of

(1) an ammonium salt of a non-nucleophilic acid with

(2) the reaction product of

VOL 1093 ISS 4 AUG 23 1988 UMI

(a) a bicyclic amide acetal with
(b) an amine, and
(3) an amine curing agent.

4,766,197

MODIFIED POLY(ARYL ETHER KETONES) DERIVED FROM BIPHENOL

Robert A. Clendinning, New Providence, and Donald R. Kelsey, Somerville, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 28, 1986, Ser. No. 924,068
Int. Cl.[4] C08G *65/40*
U.S. Cl. 528—125 6 Claims

1. A poly(aryl ether ketone) having a melting point greater than about 300° C. and less than about 400° C. and containing units of the following formula:

—Ar—X—Ar(O—Ar)$_m$O——Ar''—X—Ar'-
—O—Ar''—Ar')$_n$O—

wherein Ar is independently phenyl or biphenyl; X is independently —CO— or —CO—Ar—CO—; Ar' is independently —O—Ar or —SO_2—Ar—; Ar'' is independently phenyl or biphenyl, with the proviso that at least one of the Ar's is biphenyl; n is 0 to 2, and m is 0 or 1.

4,766,198

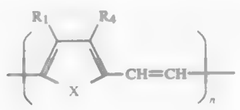
PROCESS FOR MAKING THIOPHENE AND FURFURANE POLYMERS

Kevin Harper, West Yorkshire, and William J. W. Watson, Middlesex, both of England, assignors to The British Petroleum Company p.l.c., London, England

Division of Ser. No. 13,144, Feb. 11, 1987, Pat. No. 4,223,831, which is a continuation of Ser. No. 797,447, Nov. 13, 1985, abandoned. This application May 19, 1987, Ser. No. 51,902
Claims priority, application United Kingdom, Nov. 17, 1984, 8429111
Int. Cl.[4] C08G *85/00, 61/12*
U.S. Cl. 528—377 5 Claims



1. A process for preparing polymers of formula (I):



(I)

wherein
X is a sulphur or an oxygen atom:
R_1 and R_4 are the same or different substituents selected from H, a C_1–C_4 alkyl, a carbonitrile, a halide, a trihalomethyl and a phenyl group, and n has a value greater than 10,
said process comprising (a) contacting a 2,5-bis-methylene halide substituted thiophene or furan with a sulphide of the formula R_2R_3S, wherein R_2 are R_3 are independently H or an alkyl group or together with the sulphur atom form a heterocyclic ring, to form a bis-sulphonium salt, (b) polymerising the bis-sulphonium salt of the bis-methylene halide substituted thiophene or furan in the liquid phase in the presence of an organic nitrogen containing base supported on a polymeric backbone capable of forming a quaternary ammonium halide which is insoluble in the liquid reaction phase to form a precursor polymer in solution, (c) separtating a solution of the precursor polymer from the reaction mixture and recovering the precursor polymer from said solution, and (d) thermally decomposing the recovered precursor polymer to form the final polymer of formula (I).

4,766,199

SECONDARY AMINE-TERMINATED OLIGOMERS AND COPOLYURETHANECARBONATES PREPARED THEREFROM

Tohru Takekoshi, Scotia, and Patricia P. Anderson, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 877,623, Jun. 23, 1986, Pat. No. 4,695,612. This application Feb. 17, 1987, Ser. No. 15,638
Int. Cl.[4] C08G *8/02*
U.S. Cl. 528—128 9 Claims

1. A composition comprising secondary amine-terminated aromatic oligomers having the formula

$$R^1—NH—A^1\text{-}ZA^2ZA^3\text{-}_nZA^2Z—A^1—NHR^1 \quad (I),$$

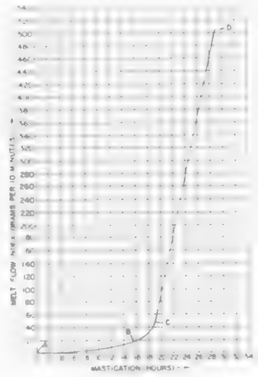
wherein:
R^1 is C_{1-4} alkyl or phenyl;
each of A^1, A^2 and A^3 is independently an aromatic radical, with A^1 and A^3 being divalent and A^2 being divalent or tetravalent;
Z is a bridging radical containing at least one non-carbon linking atom; and
n is from 0 to about 20.

4,766,200

PROCESS FOR IMPROVING THE MELT FLOW INDEX OF THERMOPLASTIC POLYMERS

John Riazi, Akron, Ohio, assignor to The Hygenic Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 616,053, Jun. 1, 1984, Pat. No. 4,632,977. This application Dec. 23, 1986, Ser. No. 945,784
The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.
Int. Cl.[4] C08J *3/18*; A61C *5/02*
U.S. Cl. 528—502 24 Claims



1. A process for the plasticization of thermoplastic polymer selected from the group consisting of natural and synthetic trans-polyisoprene having an unprocessed melt flow index falling within the range of approximately 0.2 to 0.8 grams per 10 minutes comprising the steps of:
masticating said polymer with sufficient shear to heat the polymer until the temperature reaches a range of from about 90° to 110° C.;
cooling the polymer to about 54° C. while continuing mastication; and
discontinuing the mastication of said polymer when the melt index reaches the desired level.

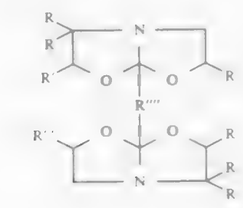
4,766,201

HYDROXY ALKYL AMIDE THIO ETHER COMPOSITION FROM BIS-BICYCLIC AMIDE ACETAL AND POLYTHIOL

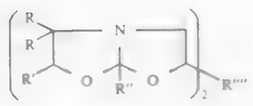
Anil B. Goel, Worthington, Ohio, assignor to Ashland Oil Inc., Ashland, Ky.

Continuation of Ser. No. 702,180, Feb. 14, 1985, Pat. No. 4,665,229. This application Jan. 20, 1987, Ser. No. 4,737
Int. Cl.[4] C08G *75/00, 75/02, 83/00*
U.S. Cl. 528—374 2 Claims

1. The process for preparing hydroxy alkyl amide thioethers comprising reacting a bicyclic amide acetal conforming to one of the following formulas:



II



III

wherein R, R' and R'' independently are hydrogen or a hydrocarbon group having from 1–18 carbon atoms, R''' is hydrogen, a hydrocarbon or an ether group having from 1 to 20 carbon atoms and R'''' is hydrocarbon or a hydrocarbon ether, ester, amide or urethane diradical having from 1 to 20 carbon atoms with a thiol conforming to the formula $(HS\text{-})_x$-L wherein L represents an alkylene group, an alkylene ether group, an alkylene ester group having at least two carbon atoms, a cycloalkylene group having from 4 to 7 carbon atoms, a substituted or cycloalkylene group having from 5 to 12 carbon atoms, or an arylene group having from 6 to 12 carbon atoms and x represents an integer greater than one at a temperature in the range of from about room temperature up to about 200° C. and at a pressure in the range of from about atmospheric up to about 100 atomospheres.

4,766,202

METHOD FOR THE PREPARATION OF A VINYLIDENE CHLORIDE INTERPOLYMER FILM

Phillip DeLassus, and William J. Raich, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 655,794, Oct. 1, 1984, Pat. No. 4,694,068. This application Jun. 17, 1987, Ser. No. 44,163
Int. Cl.[4] C08F *6/00*
U.S. Cl. 528—502 9 Claims

1. An improved process for preparing a vinylidene chloride interpolymer article having enhanced barrier to atmospheric gases and water vapor, the process comprising four sequential steps, the steps being:
(a) preparing a vinylidene chloride interpolymer having polymerized therein vinylidene chloride in an amount of from about 75 to about 95 percent by weight of interpolymer and from about 25 to about 5 percent by weight of interpolymer of at least one monomer copolymerized therewith, said interpolymer having a monomer copolymerized therewith, said interpolymer having a melting point, the interpolymer prepared by the following steps;
(1) initiating polymerization of a starting monomer composition, the starting monomer composition comprising vinylidene chloride in an amount of from about 95 to 100 percent by weight of starting monomer composi- and one or more monomers copolymerizable therewith in an amount of from about 0 to 5 percent by weight of starting monomers composition and continuing polymerization of the starting monomber composition until a conversion of monomer to polymer of from 0.5 to about 2.5 percent by weight of starting monomer composition, said polymer having a melting point;
(2) continuing polymerization of the interpolymer by adding an additional amount of one or more monomers to the starting monomer composition to form a resultant monomer mixture and polymerizing the resultant monomer mixture to form a polymer which has a melting point at least about 10? C. lower than the polymer formed by polymerizing the starting monomer composition; and
(3) completing preparation of the interpolymer by terminating polymerization after achieving a conversion of monomer to polymer of from about 50 to 100 percent based on total monomer mixture; and wherein step (c) and step (d) are performed at a temperature below the melting point of the polymer formed from the starting monomer composition.
(b) recovering the vinylidene chloride interpolymer;
(c) heat plastifying said vinylidene chloride interpolymer; and
(d) fabricating said heat plastified interpolymer into an article; wherein the improvement comprises fabricating the vinylidene chloride interpolymer into an article in a manner which allows between about 5 and about 50 percent crystallization to occur in the vinylidene chloride interpolymer article while the artice is at a temperature above about 90° C. and below the melting point of the interpolymer but before the interpolymer cools below about 90° C.

4,766,203

NEW STRAIN OF BACILLUS, A TOXIN DERIVED THEREOF AND A COMPOSITION FOR COMBATING COLEOPTERA

Aloisius Krieg, Darmstadt; Alois M. Huger, Darmstadt-Eberstadt, and Wolfgang Schnetter, Bammental, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 681,918, Dec. 14, 1984, abandoned. This application Mar. 13, 1987, Ser. No. 27,991
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1983, 3346138
Int. Cl.[4] C12N *1/20*; A01N *63/00*
U.S. Cl. 530—370 8 Claims

1. A toxin against Coleoptera isolated from a strain of *Bacillus thuringiensis* characterized in that said toxin is a protein with a molecular weight of from 65 to 70 kilodaltons, is obtained from parasporal crystals produced by said *Bacillus thuringiensis*, said crystals characterized by a flat, plate-like form with an edge length of from about 0.8 to 1.5 μm, said toxin further characterized by producing antibodies which do not cross react with other toxins obtained from *Bacillus thuringiensis*.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,204

PROCESS FOR PREPARING PRODUCTS FROM LEGUMES USING CENTRIFUGATION

Gary B. Nickel, Winnipeg, Canada, assignor to Woodstone Foods Limited, Winnipeg, Canada

Filed May 25, 1979, Ser. No. 42,631
Claims priority, application Canada, Jan. 2, 1978, 304709
Int. Cl.[4] A23J *1/14, 1/12*
U.S. Cl. 530—378 2 Claims

1. A process for the preparation of novel protein and starch products from legume seed which comprises suspending finely ground or powdered legume seed in an aqueous medium to provide an aqueous suspension thereof wherein the pH is within the range of from about 2.2 to about 3.2, subjecting said aqueous suspension to centrifugation to provide an overflow fraction containing a major proportion of soluble proteins and an underflow fraction containing a major proportion of insoluble starches, adjusting the pH of said overflow fraction to render said proteins insoluble and isolating said proteins therefrom to yield a protein product, and isolating a starch product from said underflow fraction.

4,766,205

METHOD FOR ISOLATION OF RECOMBINANT POLYPEPTIDES IN BIOLOGICALLY ACTIVE FORMS

Pradip Ghosh-Dastidar, Los Angeles, Calif., assignor to Beatrice Companies, Inc., Chicago, Ill.

Filed Nov. 13, 1985, Ser. No. 797,473
Int. Cl.[4] C07K *3/12*
U.S. Cl. 530—402 12 Claims

1. A method for establishing a biologically active native conformation in a polypeptide containing multiple disulfide bonds comprising the steps:

(1) treating the polypeptide with (a) a denaturing agent and (b) a reducing agent capable of reductively dissociating disulfide bonds;

(2) concurrently reducing the concentration of the reducing agent while forming a stable intermediate by reacting a disulfide-group containing compound with the reduced cysteine moieties of the polypeptide; and

(3) forming native disulfide bonds in the presence of a mild oxidizing/reducing environment while dissociating the disulfide-group polypeptide moieties.

4,766,206

REACTIVE DYESTUFFS COMPRISING A VINYLSULFONYLALKYLAMINOCARBONYL MOIETY

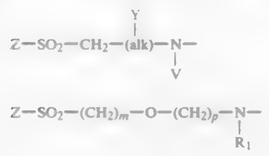
Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 24, 1986, Ser. No. 911,176
Claims priority, application Switzerland, Oct. 3, 1985, 4289/85
Int. Cl.[4] C09B *62/08, 62/02, 62/44, 62/62*
U.S. Cl. 534—619 10 Claims

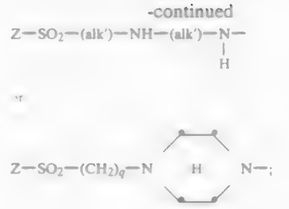
1. A fiber-reactive dye of the formula

$$(R—U)_n D—(X)_r$$

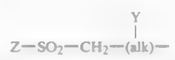
in which D is the radical of a monoazo, polyazo or metal complex azo dye; U is —CO—; R is a radical of the formula



-continued



Z is sulfatoethyl, β-thiosultafoethyl, β-phosphatoethyl, β-acetoxyethyl, β-halogenoethyl or vinyl; alk is stright-chained or branched C_1–C_6-alkylene; Y is hydrogen, chlorine, bromine, fluorine, hydroxyl, sulfato, C_1–C_4-alkanoyloxy, cyano, carboxyl, alkoxycarbonyl having 1 to 5 C-atoms, carbamoyl or a radical $—SO_2—Z$ in which Z is as defined above; V is hydrogen or C_1–C_4-alkyl unsubstituted or substituted by carboxyl, sulfo, C_1–C_2-alkoxy, halogen or hydroxyl or is a radical



in which Z, alk and Y are as defined above; R_1 is hydrogen or C_1-$_6$-alkyl; alk′ are independently of each other straight-chained or branched C_2–C_6-alkylene; n is 1 or 2, r is 1 or 2, m is 1 to 6, p is 1 to 6, q is 1 to 6; and X is a fiber-reactive radical comprising a halogenotriazine, halogenopyrimidine, halogenoacryloyl, halogenopropionyl, β-halogenoethylsulfonyl, β-sulfatoethylsulfonyl or vinylsulfonyl fiber-reactive group, with the proviso that if D is a monoazo dye X must be a halogenotriazine or halogenopyrimidine group.

4,766,207

PROCESS FOR THE PREPARATION OF WATER-SOLUBLE POLYSACCHARIDES, THE SACCHARIDES THUS OBTAINABLE, AND THEIR USE

Hans-Matthias Deger, Hofheim am Taunus, Fed. Rep. of Germany; Rüdiger Erckel, Coventry, R.I.; Raimund Franz, Kelkheim, Fed. Rep. of Germany; Wolfram Fritsche-Lang, Heppenheim, Fed. Rep. of Germany; Gert-Wolfhard von Rymon Lipinski, Frankfurt am Main, Fed. Rep. of Germany, and Merten Schlingmann, Königstein, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 26, 1985, Ser. No. 748,934
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1984, 3423421; Aug. 2, 1984, 3428522
Int. Cl.[4] C08B *37/00;* A23L *1/30;* A23G *3/00;* A21D *13/08*
U.S. Cl. 536—18.6 16 Claims

1. A process for the manufacture of water-soluble polysaccharides, which comprises reacting at a temperature in the range from −25° to +120° C. an aldose or a carbohydrate derived to the extent of at least 50 mol-% from an aldose as monomer structural unit with hydrogen fluoride in addition to a polyhydric alcohol and evaporating the hydrogen fluoride at the end of the reaction.

4,766,208

METHOD OF PERFORMING AN OXIDATION REACTION

Kiyomitsu Kunugiza, and Kozo Kamiya, both of Hikari, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 8, 1986, Ser. No. 883,695
Claims priority, application Japan, Jul. 15, 1985, 60-156821
Int. Cl.[4] C07B *41/00, 45/00;* C07H *15/16, 15/20*
U.S. Cl. 536—18.5 5 Claims

1. A method of performing an oxidation reaction in which an alkali hypohalite is used as an oxidizing agent which comprises:

carrying out the oxidation reaction in an aqueous medium with concurrently distilling off a solvent used in the reaction as the reaction proceeds under a reduced pressure.

4,766,209

AMINO SUGAR CARBONATING AGENTS AND THEIR PREPARATION

Teh-Kuei Chen, Gaylordsville, Conn.; Dorothy J. Muffett, Bloomington, Minn., and Karen G. Tandy, Litchfield, Conn., assignors to Nestec S. A., Vevey, Switzerland

Filed Mar. 10, 1986, Ser. No. 837,718
Int. Cl.[4] C07H *5/04, 5/06, 3/00;* C08B *37/00*
U.S. Cl. 536—55.3 11 Claims

1. A method for preparing a carbonating agent which comprises reacting bicarbonate ions with a 2-amino sugar selected from the group consisting of glucosamine and galactosamine in aqueous solution for forming a bicarbonate selected from the group consisting of glucosamine bicarbonate and galactosamine bicarbonate in the solution and then drying the solution for isolating the bicarbonate in a dry stable form.

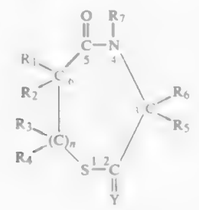
4,766,210

ANTIHYPERTENSIVE LACTAMS

John T. Suh, 59 Stanwich Rd., Greenwich, Conn. 06830; Bruce E. Williams, 8822 Upper 89th St.-Cir. S., Cottage Grove, Minn. 55016; Jerry W. Skiles, 1 Consulate Dr., Tuckahoe, N.Y. 10707, and Bernard Loev, 42 Penny La., Scarsdale, N.Y. 10583

Continuation of Ser. No. 142,945, Apr. 23, 1980, Pat. No. 4,287,203. This application Jul. 29, 1981, Ser. No. 288,134
Int. Cl.[4] C07D *513/04*
U.S. Cl. 540—488 18 Claims

1. A compound of the structure



wherein:

n is an integer from 0 to 2 inclusive,

R_1, R_2, R_3, R_4 and R_5 are independently hydrogen, alkyl having from 1 to 6 carbon atoms, alkenyl having from 2 to 6 carbon atoms, alkynyl having from 2 to 6 carbon atoms, cycloalkyl having from 3 to 16 carbon atoms, phenyl, benzyl, tolyl, naphthyl, phenethyl, indanyl, tetrahydronaphthyl, decahydronaphthyl, pyridyl, quinolyl, pyrrolidyl, pyrrolyl, morpholinyl, thiomorpholinyl, furyl, furfuryl, tetrahydrofurfuryl, benzimidazole, thienyl, imidolyl, or tetrahydroindolyl, and where the R_1 to R_5 groups are alkyl, said groups carrying a substituent selected from hydroxy, alkoxy, amino, carboxy, or carbalkoxy, the alkyl group in alkoxy and carbalkoxy having from 1 to 6 carbon atoms, or R_2 taken together with R_3 and the carbons to which they are attached is tetrahydronaphthyl or phenyl, and when phenyl R_1 and R_4 are absent; and, R_6 and R_7 taken together with the carbon to which R_6 is attached and the nitrogen to which R_7 is attached form a heterocycle selected from thiazolidine, tetrahydrolisoquinoline, thiomorpholine, or 2,2,5,5-tetramethylthiazolidine, with the proviso that when the heterocycle is thiozolidine R_1 is other than hydrogen, and

Y is =O, =S, $=NR_1$, $=NOR_1$ or $—N—NH_2$, R_1 being the same as defined above.

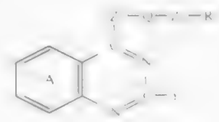
4,766,211

CHROMOGENIC QUINAZOLINES

Rudolf Zink, Therwil, and Ian J. Fletcher, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 27, 1986, Ser. No. 901,090
Claims priority, application Switzerland, Sep. 6, 1985, 3855/85
Int. Cl.[4] C07D *237/26*
U.S. Cl. 544—58.6 16 Claims

1. A chromogenic quinazoline of the formula



wherein

R is a phenyl, biphenylyl or naphthyl radical, each unsubstituted or substituted by halogen, cyano, nitro, lower alkyl, lower alkoxy, lower alkoxycarbonyl or lower alkylcarbonyl, or R is an aromatic heterocyclic radical selected from the group consisting of thienyl, furyl, pyrrolyl, pyrazolyl, imidazolyl and pyridyl, each unsubstituted or substituted by halogen, cyano, lower alkyl, lower alkoxy, lower alkoxycarbonyl or fused benzene, or R is a saturated heterocyclic radical selected from the group consisting of pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino, piperazino and N-methylpiperazino;

Z_1 is oxygen or sulfur;

Z_2 is oxygen, sulfur or $—NR'$;

R′ is hydrogen, alkyl of not more than 12 carbon atoms, unsubstituted or substituted by halogen, cyano or lower alkoxy, or is C_5–C_6cycloalkyl, phenyl, benzyl, phenethyl or C_1–C_{12}-acyl, or $—NRR'$ is a 5- or 6-membered heterocyclic radical selected from the group consisting of pyrrolidino, piperidino, pipecolino, piperazino or morpholino;

Q is an aliphatic radical or an aliphatic radical which is interrupted by a further member Z_2;

Y is the radical of a couplable compound bound to the quinazoline moiety through a phenyl ring and is selected from the group consisting of unsubstituted, N-monosubstituted, or N,N-disubstituted aniline or naphthylamine, N-unsubstituted or N-substituted indole, indoline, carbazole, tetrahydrocarbazole, oxazine, thiazine, dihydroquinoline, tetrahydroquinoline, dibenzylimide or benzomorpholine wherein C-substituents are selected from the group consisting of halogen, hydroxyl, cyano, nitro, lower alkyl, lower alkoxy, lower alkoxycarbonyl, acyl of 1 to 8 carbon atoms, C_1–C_4acylamino, alkylene of 3 to 6 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, benzyl and phenyl, and wherein N-substituents are selected from the group consisting of alkyl with 1 to 12 carbon atoms, alkenyl of 2 to 12 carbon atoms, cycloalkyl of 5 or 6 carbon atoms, phenyl, benzyl and phenethyl, each of which is unsubstituted or substituted by cyano, halogen, nitro, hydroxy, lower alkyl, lower alkoxy or lower alkoxycarbonyl, or when N is disubstituted the 2N-substituents and the nitrogen atom to which they are attached are a 5- or 6-membered heterocylic radical selected from the group consisting of pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino; and the ring

A is unsubstituted or substituted by halogen, phenyl, cyano, nitro, lower alkyl, lower alkoxy or lower alkoxycarbonyl.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,212

2H-[1]BENZOXEPINO[5,4-b]-1,4-OXAZINE DERIVATIVES

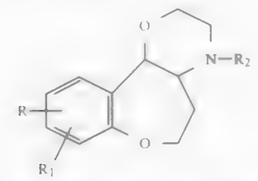
Jules Freedman, and Richard C. Dage, both of Cincinnati, Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 45,918, May 4, 1987, abandoned, which is a continuation of Ser. No. 811,591, Dec. 20, 1985, abandoned, which is a continuation-in-part of Ser. No. 748,700, Jun. 25, 1985, abandoned, and Ser. No. 748,701, Jun. 25, 1985, abandoned, said Ser. No. 748,700, is a continuation of Ser. No. 562,759, Dec. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 466,407, Feb. 15, 1983, abandoned, said Ser. No. 748,701, is a continuation of Ser. No. 562,757, Dec. 21, 1983, abandoned, which is a continuation-in-part of Ser. No. 466,442, Feb. 15, 1983, abandoned. This application Oct. 29, 1987, Ser. No. 114,475

Int. Cl.[4] C07D *498/04*

U.S. Cl. 544—101 9 Claims

1. A 3,4,4a,5,6,11b-hexahydro-2H-[1]benzoxepino[5,4-b]-1,4-oxazine having the formula



wherein R and R_1 are each hydrogen, hydroxy, loweralkoxy, loweralkyl, halogen, $—CF_3$, $—NO_2$ or $—NH_2$, or when taken together are methylenedioxy, R_2 is selected from the group consisting of hydrogen, loweralkyl, phenyl(loweralkyl), (loweralkoxy)(C_{2-4} loweralkyl), cyclopropylmethyl, 2-furanylmethyl and R_3R_4N-(C_{2-4} loweralkyl) wherein R_3 and R_4 are each hydrogen or loweralkyl; and the pharmaceutical acceptable salts thereof.

4,766,213

1,4-DIHYDROPYRIDINES

Horst Juraszyk; Rolf Gericke, both of Seeheim; Inge Lues, Darmstadt; Rolf Bergmann, Reichelsheim, and Claus J. Schmitges, Gross-Umstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jan. 16, 1987, Ser. No. 3,994

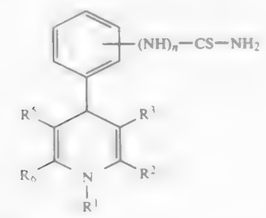
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1986, 3601196

Int. Cl.[4] C07D *211/90, 211/84, 401/06, 491/048*

U.S. Cl. 544—127 2 Claims

1. A compound of the formula

VI



wherein

n is 0 or 1

R^1 is H, A, Ar-alkyl, AO-alkyl, ArO-alkyl, Ar-alkyl-O-alkyl or R^7R^8N-alkyl,

each of R^2 and R^6 is H, A, Ar-alkyl, Hal-alkyl, CF_3, $R^9OCH_2—$, $R^7R^8N—(CH_2)_n—CHR^{10}$,$R^{11}SO_m—CH_2—$, CN or a free CHO group,

each of R^3 and R^5 is $R^{12}CO—$, $R^{11}SO_2$, $(AO)_2PO—$, NO_2 or CN,

R^7 is H, A, Ar, AOOC—, Ar-alkyl-OOC, $R^{10}NHCO—$, $R^{11}SO_2—$ or Ac,

R8 is H, A or Ar-alkyl,

R^7 and R^8 together can also be Z, $—COCH_2CH_2CO—$, $—COCH{=}CHCO—$or $—CO—(o\text{-}C_6H_4)—CO—$,

R^9 is H, A, Ar, Ar-alkyl, AO-alkyl, R^7R^8N-alkyl, Ac, $R^{10}NHCO—$, $R^{11}SO_2—$ or $CF_3SO_2—$,

R^{10} is H, A or Ar,

R^7 and R^{10} together can also be alkylene having 2–4 C atoms,

R^{11} is A or Ar,

R^{12} is HO, AO, R^{14}-alkyl—O—, Z═CH—0—,A, Ar, Het, $R^7R_8N—$ or R^{15}O-alkyl—NH—.

R^9 and R^{12} and R^8 and R^{12} together in each case can also be a bond,

R^{14} is AO, Aro, Ar-alkyl—O—, $R^7R^8N—$, $R^{11}SO2^{O}—$ or $(AO)2PO—O—$,

R^{15} is H, A, Ar or Ac, each of a and m are 0, 1 or 2,

A is a linear or branched, saturated or unsaturated, aliphatic or cycloaliphatic hydrocarbon radical having 1–20 C atoms,

Ac is $R^{10}CO—$, Ar-alkyl—CO— or Ar-alkenyl—CO—,

Ar is phenyl; phenyl which is monosubstituted to trisubstituted by A, AO, AcO, Hal, CF3, HO, $O2^N$, H_2N, ANH, $A2^N$, AcNH, AOOCNH—, Ar-alkyl—OOCNH—, CN, H_2NCO, HOOC, AOOC, H_2NSO_2 and/or $R^{11}NHCONH—$; or naphthyl,

Hal is F, CL, Br or I,

Het is a 5-membered or 6-membered, mononuclear or polynuclear, heterocyclic radical which has 1–4 O, N and/or S atoms and which can be monosubstituted or polysubstituted by A, AO, Hal, CF3, HO, O_2N, H2N, NHA, NA2, AcNH, ASO_m, AOOC, CN, H_2NCO, HOOC, H_2NSO_2, ASO_2NH, Ar, Ar-alkenyl and/or pyridyl, and

Z is an alkylene chain which has 4 or 5 C atoms and which can be interrupted by O, HN, AN, ArN, Ar-alkyl-N, Ar2CHN or AcN, and

alkyl or alkenyl are alkylene or alkenylene chains each of which has 1–4 C atoms.

4,766,214

ETHERS OF SUBSTITUTED HYDROXYMETHYLPYRAZINES

Paolo Cozzi; Antonio Pillan; Leone Bertone, and Pier P. Lovisolo, all of Milan, Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

Continuation of Ser. No. 780,728, Sep. 27, 1985, abandoned, which is a continuation of Ser. No. 734,747, May 15, 1985, abandoned, which is a continuation of Ser. No. 629,760, Jul. 13, 1984, abandoned, which is a continuation of Ser. No. 479,362, Mar. 28, 1983, abandoned, which is a division of Ser. No. 321,628, Nov. 16, 1981, Pat. No. 4,406,901. This application Dec. 5, 1986, Ser. No. 939,295

Claims priority, application United Kingdom, Dec. 9, 1980, 8039357

Int. Cl.[4] C07D *241/12;* A61K *31/45*

U.S. Cl. 544—336 1 Claim

1. 2-Ethoxymethyl-5-methylpyrazine-4-oxide.

4,766,215

HISTAMINE H_1-RECEPTOR ANTAGONISTS

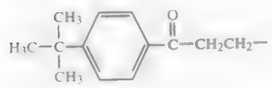
Magid A. Abou-Gharbia, Wilmington, Del., and Usha R. Patel, Audubon, Pa., assignors to American Home Products Corporation, New York, N.Y.

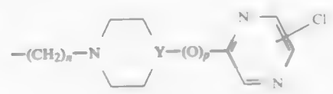
Filed Feb. 27, 1987, Ser. No. 19,730

Int. Cl.[4] C07D *403/04, 401/12;* A61K *31/495*

U.S. Cl. 544—357 4 Claims

1. A compound of the formula





in which

n is one of the integers 0, 1 or 2;

p is one of the integers 0 or 1;

Y is —N═ or —CH═, with the proviso that when Y is —N═, p is zero, and when Y is —CH═, p is one;

or a pharmaceutically acceptable salt thereof.

4,766,216

ESSENTIALLY PURE ACIDIC AMINE LIGAND ALUMINUM COMPLEXES AND THEIR PREPARATION

Arthur P. G. Wright, Markham; Betty P. L. Wen, Scarborough; Terry G. Schenck, Willowdale, and Antonina Maron, Scarborough, all of Canada, assignors to Warner-Lambert Company, Morris Plains, N.J.

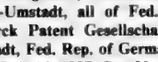
Filed Dec. 2, 1986, Ser. No. 937,174

Claims priority, application Canada, Nov. 21, 1986, 523589

Int. Cl.[4] C07F *5/06*

U.S. Cl. 546—7 2 Claims

1. An essentially pure complex of an acidic amine ligand and aluminum having the formula:



wherein: L is an acidic amine ligand having at least 3 carbon atoms and two donating atoms at least one of which is a nitrogen and a second an oxygen, said oxygen atom is in the form of an acidic group; and x=1 and y=2, wherein the acidic amine ligand is selected from the group consisting of iminodiacetec acid, and hydroxyquinoline.

4,766,217

PREPARATION OF 5,6-DIHYDRO-PYRROLO[2,1-A]ISOQUINOLINES

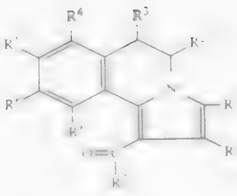
Walter Lösel, Gau-Algesheim; Otto Roos, Schwabenheim, and Gerd Schnorrenberger, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 843,084, Mar. 24, 1986, Pat. No. 4,694,085, which is a continuation-in-part of Ser. No. 691,444, Jan. 14, 1985, abandoned. This application Jun. 16, 1987, Ser. No. 62,851

Int. Cl.[4] C07D *401/02, 491/147, 471/04*

U.S. Cl. 546—94 4 Claims

1. A process of preparing a compound of the formula



wherein

R, R^2, R^3, and R^7 are each independently hydrogen or alkyl of 1 to 4 carbon atoms;

R^1 is cyano, hydroxycarbonyl, (alkoxy of 1 to 4 carbon atoms)carbonyl, (hydroxy-lower alkyl)aminocarbonyl, furfuryl-aminocarbonyl, (lower alkoxy-lower alkyl-)aminocarbonyl, (lower alkoxy-phenyl)-lower alkylaminocarbonyl or (di-lower alkoxy-phenyl) lower alkyl-aminocarbonyl;

R^4 and R^8 are each independently hydrogen, hydroxyl, alkoxy of 1 to 4 carbon atoms, (alkyl of 1 to 4 carbon atoms)thio or $—NR^9R^{10}$;

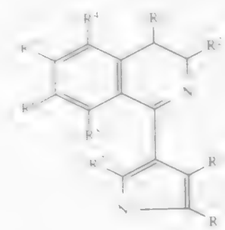
R^5 and R^6 are each independently hydroxyl, alkoxy of 1 to 4 carbon atoms or (alkyl of 1 to 4 carbon atoms)thio; or

R^5 and R^6, together with each other, are $—O—CH_2—O—$, $—O—CH_2—CH_2—O—$ or $—O—CH{=}CH—O—$;

R^9 is hydrogen or alkyl of 1 to 4 carbon atoms; and

R^{10} is alkyl of 1 to 4 carbon atoms, hydroxy(alkyl of 1 to 4 carbon atoms), methoxy(alkyl of 1 to 4 carbon atoms) or furfuryl (alkyl of 1 to 4 carbon atoms),

which comprises heating a 1-(3-furyl)-3,4-dihydro-isoquinoline of the formula



wherein R, R^1, R^2, R^3, R^4, R^5, R^6, R^7 and R^8 have the meanings defined above, in the presence of a primary or secondary aliphatic, cycloaliphatic or araliphatic amine at a temperature of between 80° C. and the boiling point of the reaction mixture for several hours, removing the amine from the reaction mixture, treating the residue with a dilute acid, and isolating the reaction product.

4,766,218

METHOD FOR THE PREPARATION OF QUINOLINE-2,3-DICARBOXYLIC ACID

Donald R. Maulding, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Aug. 29, 1986, Ser. No. 902,275

Int. Cl.[4] C07D *215/54, 215/48*

U.S. Cl. 546—170 8 Claims

1. A method for the preparation of quinoline-2,3-dicarboxylic acid, said method comprising: reacting a dichlorosuccinate of formula I

VOL 1093 ISS 4 AG 23 1988 UMI



I

wherein R is C_1–C_4 alkyl, with a minimum of 3 molar equivalents of an amine of formula II



II

wherein R_1 and R_2 are each H or C_1–C_6 alkyl, with the proviso that only one of R_1 or R_2 is H; or when taken together R_1 and R_2 with the nitrogen atom to which they are attached form a 5 and 6 membered ring containing at most 2 heteroatoms; in an inert solvent at a temperature of about 25° C. to reflux for about 1 to 24 hours; and further reacting the resulting mixture of formula IIIa alkylaminomaleate or alkylaminofumarate and formula IIIb chloroaminosuccinate



IIIa



IIIb

wherein R, R_1 and R_2, are as described hereinabove for formula I and formula II with a molar equivalent of aniline in an inert organic solvent containing an organic acid; at a temperature of about 25° C. to 90° C. for about 1 to 24 hours; reacting the thus-formed anilinofumarate with an equimolar amount of a Vilsmeier reagent in the presence of a hydrocarbon solvent or a chlorinated hydrocarbon solvent, at a temperature of about 40° C. to 110° C., for a period of time sufficient to essentially complete the reaction and yield a dialkyl qunioline-2,3-dicarboxylate; hydrolyzing said dialkyl quinoline-2,3-dicarboxylate to quinoline-2,3-dicarboxylic acid.

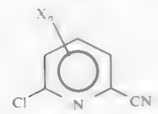
4,766,219

PREPARATION OF 2-CYANO-6-CHLOROPYRIDINE COMPOUNDS

Jon A. Orvik, Walnut Creek; Alexander P. Fung, Martinez; Jim Love, Walnut Creek, and Thomas J. Dietsche, Berkeley, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

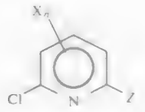
Continuation-in-part of Ser. No. 740,935, Jun. 3, 1985, abandoned. This application Jun. 26, 1987, Ser. No. 66,597
Int. Cl.[4] C07D *213/57, 213/85*
U.S. Cl. 546—286 18 Claims

1. A method for preparing 2-cyano-6-chloropyridine compounds of the formula



(I)

wherein X is chloro and n is an integer from 1 to 3 are prepared by contacting, in the presence of a suitable solvent, a halopyridine compound of the formula



(II)

wherein X and n are defined as hereinbefore and Z is chloro, fluoro or bromo, with an effective amount of an alkali metal cyanide of the formula

MCN

wherein M is an alkali metal of Group IA.

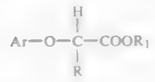
4,766,220

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE ARYLOXYALKANOIC ACID COMPOUNDS

Georges Gras, Genay, France, assignor to Rhone-Poulenc Agrochimie, Lyons, France

Continuation of Ser. No. 163,407, Jun. 26, 1980, abandoned. This application Jul. 30, 1985, Ser. No. 761,302
Claims priority, application France, Jun. 29, 1979, 79 17423
Int. Cl.[4] C07D *213/64;* C07C *69/76, 69/88*
U.S. Cl. 546—302 22 Claims

1. In a process for preparing an optically active aryloxyalkanoic acid compound of the formula:



wherein:

Ar represents a monocyclic or bicyclic aromatic hydrocarbon radical of 6 to 10 carbon atoms which is optionally substituted by

(a) one to three substituents, which are identical or different and are chosen from amongst halogen atoms and alkyl radicals of 1 to 4 carbon atoms,

(b) a phenoxy radical which is optionally substituted by 1 to 3 identical or different substituents chosen from amongst halogen atoms, alkyl radicals of 1 to 4 carbon atoms the trifluoromet yl radical and the nitro radical, or

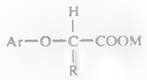
(c) a pyridyloxy radical which is optionally substituted by 1 to 3 substituents chosen from halogen atoms, alkyl radical of 1 to 4 carbon atoms and the trifluoromethyl radical,

R_1 represents a hydrogen atom, one equivalent of a cation of an organic or inorganic base or an alkyl radical of 1 to 12 carbon atoms, which is optionally substituted by 1 or more halogen atoms or hydroxyl radical, and

R represents an alkyl radical of 1 to 4 carbon atoms, by reacting an optically active alkali metal salt of a 2-halogenoalkanoic acid, of 3 to 6 carbon atoms, with an alkali metal salt of the phenol of the formula

Ar—OH

in which Ar has the same meaning as above, to give an optically active alkali metal salt of the formula



in which Ar has the same meaning as above and M represents an alkali metal cation, and then optionally, converting the alkali metal salt product to a corresponding optically active aryloxyalkanoic acid or ester, the improvement comprising:

preparing the alkali metal salt of the aryloxyalkanoic acid by reacting said optionally active alkali metal salt of 2-halogenoalkanoic acid with said alkali metal salt of phenol, in an aqueous or aqueous-organic solution at a temperature of about above 40° C. to about 160° C., under a pressure lower than the vapor pressure of water at the reaction temperature.

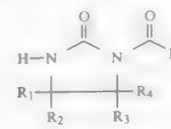
4,766,221

N-ACYL SUBSTITUTED CYCLIC UREAS

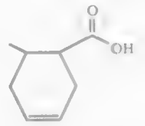
William C. Floyd, Chester, S.C., assignor to Sequa Chemicals, Inc., Chester, S.C.

Filed Apr. 4, 1986, Ser. No. 848,201
Int. Cl.[4] C07D *233/38*
U.S. Cl. 548—320 8 Claims

1. A N-Acyl substituted cyclic urea of the formula



wherein R_1, R_2, R_3 and R_4 may be the same or different and each may be H, OH, COOH, R, OR or COOR, wherein R has 1 to 4 carbon atoms and is an alkyl or substituted alkyl group and wherein R_5 has 2 to 40 carbon atoms and is an olefin consisting of —CH=CH_2, a saturated aliphatic alkyl carboxylic acid, a halogenated alkyl, or an ester of a carboxylic acid chosen from the group consisting of CHR_6CHR_7COOH, $(CH_2)_3COOH$, CR_6CR_7COOH, wherein R_6 and R_7 may be the same or different and is an H or up to C_{40} alkenyl and



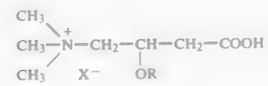
4,766,222

NOVEL CLASS OF ACYL-DERIVATIVES OF CARNITINE PROCESS FOR PREPARING SAME AND THERAPEUTIC USE THEREOF

Claudio Cavazza; Paolo De Witt, and Maria O. Tinti, all of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Pomezia, Italy

Continuation of Ser. No. 753,653, Jul. 10, 1985, abandoned, which is a continuation of Ser. No. 433,427, Oct. 8, 1982, abandoned, which is a continuation of Ser. No. 237,312, Feb. 23, 1981, abandoned. This application Jun. 30, 1987, Ser. No. 68,748
Claims priority, application Italy, Mar. 6, 1980, 48099 A/80
Int. Cl.[4] C07D *339/02, 333/24;* C07C *101/12*
U.S. Cl. 549—39 7 Claims

1. An acyl-derivative of carnitine, or pharmaceutically acceptable salt thereof, having the general formula



(I)

wherein:

X is an anion, and

R is the radical of one of the following organic acids: 1,2-dithiolane 3-pentanoic, or 2-thiophenecarboxylic or 2-thiopheneacetic acid.

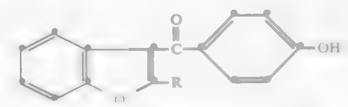
4,766,223

PREPARATION OF 2-ALKYL-3-(4-HYDROXYBENZOYL)BENZOFURAN

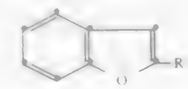
Claude Grain, Volonne, and Fernand Jammot, Sisteron, both of France, assignors to Sanofi, Paris, France

Filed Jun. 19, 1986, Ser. No. 876,003
Claims priority, application France, Jun. 25, 1985, 85 09669
Int. Cl.[4] C07D *307/80*
U.S. Cl. 549—468 6 Claims

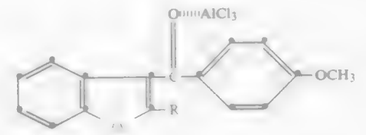
1. In a process for preparing 3-(4-hydroxybenzoyl)benzofuran having a formula:



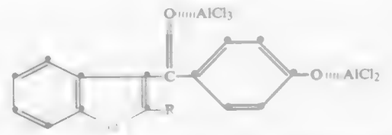
in which R represents a C_{1-4} alkyl group which comprises reacting a benzofuran derivative having a formula:



in which R has the same meaning as above, with a 4-methoxybenzoyl halide in an aromatic hydrocarbon, at a temperature of between −10° C. and room-temperature and in the presence of ferric chloride as a catalyst, hydrolysing the reaction product so formed, in the presence of a strong acid, to obtain a solution of the corresponding 2-alkyl-3-(4-methoxybenzoyl)benzofuran and subsequently demethylating the said 2-alkyl-3-(4-methoxybenzoyl)-benzofuran in crude form so obtained using aluminum chloride, wherein the improvement comprises introducing in the solution of 2-alkyl-3-(4-methoxybenzoyl)benzofuran at a temperature below or equal to room-temperature, 1.8 to 2 mols of aluminum chloride per mol of 2-alkyl-3-(4-methoxybenzoyl)benzofuran to form a 1:1 complex having a formula:



in which R has the same meaning as above, gradually pouring the solution, which contains the 1:1 complex so obtained into an aromatic hydrocarbon under reflux to form the 2:1 complex having a formula:



in which R has the same meaning as above the hydrolysing, the solution which contains the 2:1 complex so obtained, the presence of a strong acid at a temperature nor exceeding 75° C. to 80° C. to provide the required 2-alkyl-3-(4-hydroxybenzoyl)-benzofuran.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,224

PURIFICATION AND ACTIVATION OF PROTEINS FROM INSOLUBLE INCLUSION BODIES

Steven K. Rausch, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Aug. 19, 1985, Ser. No. 767,032
Int. Cl.[4] C07K *3/28*
U.S. Cl. 530—412 25 Claims

1. A method for purifying and solubilizing a protein that is produced as an insoluble, impure inclusion body in a transformant microorganism which consists essentially of:

(a) extracting the inclusion bodies into a buffered solution of sodium dodecyl sulfate to solubilize the protein;

(b) treating the sodium dodecyl sulfate and protein with urea to insure that SDS can be removed from the protein solution by anion-exchange chromatography;

(c) removing the sodium dodecyl sulfate and purifying the protein by chromatographing the solution obtained in step (b) on an anion-exchange column; and

(d) dialyzing the solution obtained from the anion-exchange column, thereby removing the urea and allowing the protein to refold into its native conformation.

4,766,225

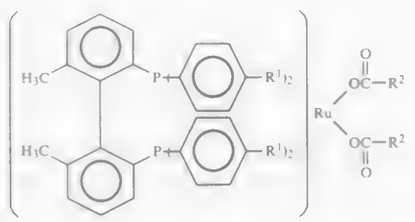
RUTHENIUM-PHOSPHINE COMPLEX

Noboru Sayo, Kanagawa; Takanao Taketomi, Chiba; Hidenori Kumobayashi, and Susumu Akutagawa, both of Kanagawa, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Dec. 9, 1987, Ser. No. 130,577
Claims priority, application Japan, Dec. 9, 1986, 61-293075
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—16 5 Claims

1. A ruthenium-phosphine complex represented by formula (I):

(I)



wherein R^1 represents a hydrogen atom, a methyl group, or a methoxy group; and R^2 represents a lower alkyl group, a halogenated lower alkyl group, a phenyl group, or a phenyl group substituted with a lower alkyl group.

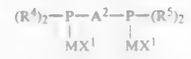
4,766,226

ANTITUMOR PHARMACEUTICAL COMPOSITIONS AND METHODS FOR TREATING TUMORS EMPLOYING α,ω-BIS(DISUBSTITUTED PHOSPHINO)HYDROCARBON DERIVATIVES OR [α,ω-BIS(DISUBSTITUTED PHOSPHINO)HYDROCARBON] DIGOLD(I), DIGOLD(III), DISILVER(I), AND DICOPPER (I) DERIVATIVES

David T. Hill, North Wales; Randall K. Johnson, Ardmore, and Christopher K. Mirabelli, Malvern, all of Pa., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 685,881, Dec. 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 575,650, Feb. 1, 1984, abandoned. This application Apr. 2, 1985, Ser. No. 718,905
Int. Cl.[4] C07F *1/08, 1/10, 1/12*
U.S. Cl. 556—18 5 Claims

1. A compound of the formula:



wherein

R^4 and R^5 are the same and are phenyl, perdeuterophenyl, ethyl, cyclohexyl, benzyl, pentahalophenyl, monosubstituted phenyl wherein said substituent is selected from halo, methoxy, methylthio or trihalomethyl; or R^4 is ethyl provided that R^5 is phenyl;

A^2 is a straight or branched alkanediyl chain of one to six carbon atoms, cis-vinylene or trans-vinylene;

M is the same and is Au(I), Au(III), Ag(I) or Cu(I); and

X^1 is the same and is halo, nitrato, C_{1-6} alkylcarboxylato, thiocyanato, perfluoroalkylthio, C_{1-6} alkylthiocarbanato; or cysteine C_{1-6} alkylester;

provided that when R^4 and R^5 are phenyl and M is Ag(I), X^1 is other than nitrato;

and further provided that when R^4 and R^5 are phenyl, M is Ag(I), and A^2 is ethane-1,2-diyl, X^1 is other than acetato;

and further provided that when R^4 and R^5 are phenyl, M is Cu(I) and A^2 is ethane-1,2-diyl, X^1 is other than chloro;

and further provided that when R^4 and R^5 are phenyl M is Au(I), X^1 is other than halo or thiocyanato;

and further provided that when R^4 and R^5 are phenyl, M is Au(III), and A is ethane-1,2-diyl, X^1 is other than halo or thiocyanato.

4,766,227

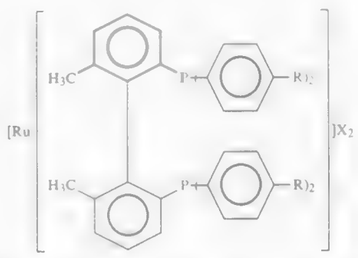
RUTHENIUM-PHOSPHINE COMPLEX

Noboru Sayo, Kanagawa; Takanao Taketomi, Chiba; Hidenori Kumobayashi, and Susumu Akutagawa, both of Kanagawa, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

Filed Dec. 9, 1987, Ser. No. 130,578
Claims priority, application Japan, Dec. 9, 1986, 61-293076
Int. Cl.[4] C07F *15/00*
U.S. Cl. 556—21 4 Claims

1. A ruthenium-phosphine complex represented by formula (I):

(I)



wherein R represents a hydrogen atom, a methyl group, or a methoxy group; and X represents ClO_4, BF_4, or PF_6.

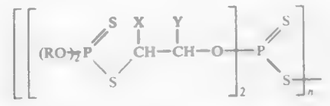
4,766,228

METAL DIHYDROCARBYL-DITHIOPHOSPHYL-DITHIOPHOSPHATES THEIR MANUFACTURE AND USE AS ADDITIVES FOR LUBRICANTS

Maurice Born, Nanterre; Jacques Lallement, Aubervilliers; Pierre Marchand, Orgeval; Guy Parc, Rueil Malmaison, and Nicole Thevenin, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 4, 1986, Ser. No. 904,082
Claims priority, application France, Sep. 4, 1985, 85 13236
Int. Cl.[4] C07F *3/06, 3/08, 9/90, 9/201*
U.S. Cl. 556—25 11 Claims

1. A compound of metal dihydrocarbyl-dithiophosphyl-dithiophosphate type, represented by the general formula:



wherein R is at least one monovalent substantially hydrocarbon-containing radical of 1 to 30 carbon atoms; X and Y are each a hydrogen atom or a substantially hydrocarbon-containing radical of 1 to 30 carbon atoms and may be optionally interconnected to form a polymethylene chain, M is a metal selected from zinc, cadmium lead and antimony; and n is the valence of the metal.

4,766,229

MATERIALS FOR GAS SEPARATION

Yoshiteru Kobayashi; Isao Kouno, both of Yokohama, and Junichi Matsuura, Kamakura, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Jan. 17, 1986, Ser. No. 819,517
Claims priority, application Japan, Jan. 18, 1985, 60-5833; Jul. 3, 1985, 60-144579; Jul. 18, 1985, 60-157057
Int. Cl.[4] C01G *51/00*
U.S. Cl. 556—138 5 Claims

1. A material for oxygen separation consisting essentially of:

(A) a cobalt compound; and

(B) amine compound or its derivatives containing therein a unit structure to be represented by the following general formula:

$$—NHCH_2CH_2—_n$$

where n is an integer of 2 or more, said components being brought into mutual contact to form a complex which is capable of absorbing and desorbing oxygen.

4,766,230

PREPARATION OF ARYLAMINOALUMINUMS

Bernard Besson, Villeurbanne, France, assignor to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Oct. 16, 1986, Ser. No. 919,683
Claims priority, application France, Oct. 16, 1985, 85 15544
Int. Cl.[4] C07F *5/06*
U.S. Cl. 556—176 11 Claims

1. A process for the preparation of a tri(arylamino)aluminum, comprising reacting at least one aromatic amine with metallic aluminum, at elevated temperature, in the presence of a catalytically effective amount of iodine or precursor thereof.

4,766,231

PROCESS FOR THE PREPARATION OF KETOXIMOSILANES

Günter Zoche, Bonn, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Troisdorf, Fed. Rep. of Germany

Filed Dec. 4, 1987, Ser. No. 128,879
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1986, 3641756
Int. Cl.[4] C07F *7/10, 7/18*
U.S. Cl. 556—422 6 Claims

1. A process for the production of a ketoximosilane of the formula

$$R^1Si(ON{=}X)_{(3-a)}(OR^2)_a$$

in which a can assume values from 0 to 2, R^1 and R^2 represent identical or different alkyl moieties with 1 to 6 carbon atoms and X is a group of the formula CR^1R^2, comprising: reacting a ketoxime of the formula HON=X with an alkyl trialkoxysilane of the formula $R^1Si(OR^2)_3$ in the presence of an alkali metal or of at least one basic compound of an element selected from the 1st and 2nd main group and the 3rd secondary group of the Periodic Table of Elements and lanthanides.

4,766,232

PRODUCTION OF UNSATURATED NITRILES USING CATALYSTS CONTAINING BORON, GALLIUM OR INDIUM

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Warrensville Heights, and Arthur F. Miller, Cleveland, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 389,749, Jun. 18, 1982, abandoned, which is a continuation of Ser. No. 918,747, Jun. 26, 1978, abandoned, which is a continuation of Ser. No. 367,042, Jun. 4, 1973, abandoned. This application Jun. 25, 1984, Ser. No. 624,498
Int. Cl.[4] C07C *120/14*
U.S. Cl. 558—324 2 Claims

1. In a process for the preparation of acrylonitrile or methacrylonitrile by the reaction of propylene or isobutylene, molecular oxygen and ammonia at a temperature of about 200° to 600° C. in the presence of an oxidation catalyst, the improvement comprising using as the oxidation catalyst an antimony-free catalyst having the atomic ratios described by the formula:

$$X_aA_bC_cFe_dBi_eMo_{12}O_x$$

wherein

X is Ga, In or mixtures thereof;

A is alkali metal;

C is Ni, Co or mixture thereof; and

wherein

a is 0.01 to about 4;

b is 0 to about 4;

c and d are 0.01 to about 12;

e is 0.01 to about 6; and

x is a number sufficient to satisfy the valence requirements of the other elements present.

2. In a process for the preparation of acrylonitrile or methacrylonitrile by the reaction of propylene or isobutylene, molecular oxygen and ammonia at a temperature of about 200° to 600° C. in the presence of an oxidation catalyst, the improvement comprising using as the oxidation catalyst an antimony-free catalyst having the atomic ratios described by the formula:

$$X_aK_bNi_cCo_dFe_eP_fBi_gMo_{12}O_x$$

wherein

X is B, Ga, In or mixture thereof; and

further wherein

a is about 0.5 to 2.4;

b is about 0.1;

c+d is about 7;

VOL 1093 ISS 4 AUG 23 1988 UMI

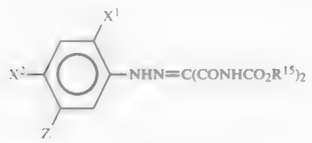
e is about 3;
f is 0 to about 0.5;
g is about 1; and
x is a number sufficient to satisfy the valence requirements of the other elements present,
propylene or isobutylene being contacted with said catalyst at a rate such that the WWH is 0.05 to 0.25.

4,766,233
HERBICIDAL 2-ARYL-1,2,4-TRIAZINE-3,5(2H,4H)-DIONES AND SULFUR ANALOGS THEREOF

John W. Lyga, Basking Ridge, N.J., assignor to FMC Corporation, Philadelphia, Pa.

PCT No. PCT/US85/01041, § 371 Date Jul. 2, 1985, § 102(e) Date Jul. 2, 1985, PCT Pub. No. WO86/00072, PCT Pub. Date Jan. 3, 1986
Continuation-in-part of Ser. No. 755,749, Jul. 2, 1985, abandoned. This PCT application Jun. 3, 1985, Ser. No. 807,790
Int. Cl.[4] C01C *79/46*
U.S. Cl. 560—22 **4 Claims**

1. The compound of the formula



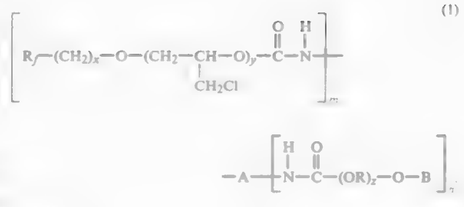
wherein R_{15} is an alkyl group of 1 to 4 carbons;
X^1 is fluorine;
X^2 is chlorine or bromine;
Z is fluorine, chlorine, bromine, iodine, nitro, amino, alkoxycarbonylamino of 1 to 6 alkyl carbon atoms, di(alkylcarbonyl)amino in which each alkyl is of 1 to 6 carbon atoms, hydroxysulfonyl, halosulfonyl, alkyl of 1 to 6 carbon atoms, haloalkyl of 1 to 5 carbon atoms, —QR, —S-$(O)_mR^8$, —Q^2R^9,
Q is O
R is hydrogen, alkyl of 1 to 6 carbon atoms (which is unsubstituted or substituted with cycloalkyl of 3 to 7 carbon atoms), cycloalkyl of 3 to 7 carbon atoms (which is unsubstituted or substituted with alkyl of 1 to 6 carbon atoms), benzyl, alkoxyalkyl of 2 to 8 carbon atoms, alkoxyalkoxyalkyl of 3 to 8 carbon atoms, alkylthioalkyl, alkylsulfinylalkyl, or alkylsulfonylalkyl of 2 to 8 carbon atoms, alkyenyl or haloalkenyl of 2 to 5 carbon atoms, alkynyl or haloalkynyl of 2 to 5 carbon atoms, haloalkyl of 1 to 5 carbon atoms, alkylcarbonyl of 1 to 6 alkyl carbon atoms, or dialkylaminocarbonyl or dialkylaminothiocarbonyl in which each alkyl is of 1 to 6 carbon atoms.

4,766,234
URETHANES WHICH CONTAIN PERFLUOROALKYL GROUPS, EPICHLOROHYDRIN GROUPS AND DIALCOHOL RADICALS, THE PREPARATION AND USE THEREOF

Frank Wehowsky, Burgkirchen; Rolf Kleber, Neu-Isenburg, and Lothar Jaeckel, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

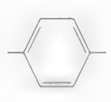
Filed Nov. 12, 1986, Ser. No. 930,504
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1985, 3540147
Int. Cl.[4] C07C *125/06*
U.S. Cl. 560—26 **3 Claims**

1. A urethane which contains perfluoralkyl groups, epichlorohydrin groups and dialcohol radicals and has the following formula 1

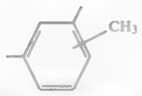


(1)

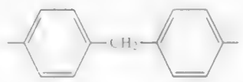
in which
R_f denotes a perfluoroalkyl group,having 4 to 20 carbon atoms or an $R'_fSO_2NR_1$ group in which R'_f is a perfluoroalkyl group having 4 to 20 carbon atoms and R_1 is H or an alkyl group having 1 to 4 carbon atoms,
x is a whole number from 1 to 4,
y is a number from 1 to 10,
z is a number from 1 to 25
m is a number from 1 to 2 and
n is a number from 1 to 2, the sum of m+n being at most 3,
A denotes one of the groups conforming to the following formulae 2 to 10:



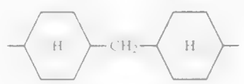
(2)



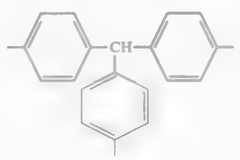
(3)



(4)



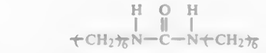
(5)



(6)



(7)

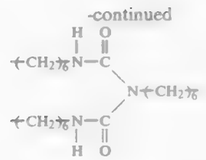


(8)



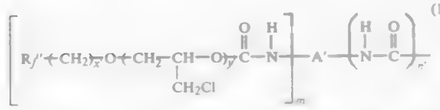
(9)

-continued



(10)

R denotes an alkylene group having 2 to 6 carbon atoms, the chloromethylethylene group or a group of the formula —$CH(CH_2OCH_2CH_2—C_4F_9$ to $C_{20}F_{41})—CH_2—$, where R can also have more than one of these meanings if z is greater than 1, and
B denotes the hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a group conforming to the following formula 11



(11)

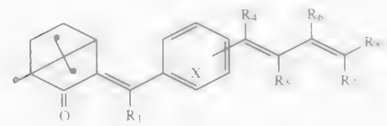
in which R_f', x', y', m', n' and A' have one of the meanings of R_f, x, y, m, n and A, respectively.

4,766,235
UNSATURATED CAMPHOR DERIVATIVES, PROCESSES FOR PREPARING THE SAME AND PHARMACEUTICAL AND COSMETIC COMPOSITIONS CONTAINING THE SAME

Gérard Lang, Epinay-sur-Seine; Braham Shroot, Antibes; Serge Forestier, Claye Souilly, and Alain Lagrange, Chatou, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 681,661, Dec. 14, 1984. This application Nov. 5, 1986, Ser. No. 927,226
Claims priority, application Luxembourg, Dec. 16, 1983, 85144
Int. Cl.[4] C07C *69/76, 103/22*
U.S. Cl. 560—051 **2 Claims**

1. An unsaturated camphor derivative having the formula



wherein
the x bond is affixed in the meta or para position on the aromatic ring,
R_1 represents hydrogen,
R_4, R_5, R_6 and R_7 each independently represent hydrogen or methyl, and
R_8 represents (i)



wherein R_{15} represents hydrogen, alkyl or mono- or polyhydroxyalkyl or (ii)



wherein r' represents hydrogen and r'' represents alkyl, mono or polyhydroxyalkyl, phenyl, phenyl substituted by hydroxy, or r' and r'' together with the nitrogen atom to which they are attached form a piperidine ring.

4,766,236
PURIFICATION OF DIPHENYL PHTHALATES

A. Lee Stautzenberger, and Ellen A. Langford, both of Nueces, Tex., assignors to Hoechst Celanese Corporation, Chatham, N.J.

Filed Jun. 30, 1987, Ser. No. 68,584
Int. Cl.[4] C07C *67/48*
U.S. Cl. 560—78 **4 Claims**

1. A method for purifying a crude phenolic ester of an aromatic dicarboxylic acid which comprises distilling said ester under subatmospheric pressure in the presence of a boron oxide compound at temperatures ranging from about 225° C. to 260° C. to reduce color impurities thereof, and thereafter recovering a diphenyl ester having improved color properties.

4,766,237
PREPARATION OF 6-AMINOCAPROATES

Hans-Martin Hutmacher; Franz J. Broecker, both of Ludwigshafen; Franz Merger, Frankenthal; Rolf Fischer, Heidelberg; Uwe Vagt, Speyer; Heinz-Walter Schneider, Ludwigshafen; Wolfgang Richter, Wachenheim; Wolfgang Harder, Weinheim, and Claus-Ulrich Priester, Meckenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 28, 1987, Ser. No. 7,578
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1986, 3602378
Int. Cl.[4] C07C *67/30*
U.S. Cl. 560—155 **10 Claims**

1. A process for producing 6-aminocaproate which comprises: reacting a 5-formylvalerate dissolved in an alkanol with ammonia and hydrogen in the presence of a hydrogenation catalyst under superatmospheric pressure and at a temperature of from 40° to 95° C.

4,766,238
FLUORINE-CONTAINING COMPOUNDS, AND THEIR PREPARATION AND USE

Yasuhisa Furutaka; Masayuki Yamana, and Tsunetoshi Honda, all of Osaka, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Division of Ser. No. 921,207, Oct. 21, 1986, Pat. No. 4,739,123. This application Sep. 3, 1987, Ser. No. 92,527
Claims priority, application Japan, Oct. 21, 1985, 60-235967; Oct. 21, 1985, 60-235968
Int. Cl.[4] C07C *69/63*
U.S. Cl. 560—227 **4 Claims**

1. A fluorine-containing compound of the formula:

$$(CF_3)_2CHCO_2CClX^1X^2 \quad (I)$$

wherein X^1 and X^2 are, the same or different, each a hydrogen atom or a chlorine atom.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,239

PROCESS FOR THE IN SITU PRODUCTION OF UREA GROUP-CONTAINING ISOCYANATES IN POLYOLS, DISPERSIONS OR SOLUTIONS RESULTING THEREFROM AND USE THEREOF

Gerhard Grögler, Leverkusen; Richard Kopp, Cologne, and Heinrich Hess, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 682,623, Dec. 17, 1984, Pat. No. 4,605,756. This application May 8, 1986, Ser. No. 860,938

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1983, 3347247

Int. Cl.[4] C07C *119/48*; C08G *18/10*

U.S. Cl. 560—351 1 Claim

1. Dispersions or solutions of urea group-containing isocyanates in relatively high molecular weight, liquid or low-melting polyols having molecular weights of from 400 to 10,000 said urea group-containing isocyanates having a content of free NCO groups of from 0.1 to 10%, which dispersions or solutions are produced by the reaction of aromatic isocyanates with water in solvents, characterized in that:

(a) aromatic diisocyanates and/or polyisocyanates are reacted in;

(b) relatively high molecular weight liquid or low-melting di- or poly-hydric polyols having molecular weights of from 400 to 10,000 with;

(c) from about 0.15 to about 0.40 mols of water per NCO equivalent, in the presence of; and

(d) from about 0.1 to about 2.5%, by weight, based on aromatic polyisocyanates, of catalysts which accelerate the NCO/water reaction to a greater extent than the NCO/-hydroxyl reaction, at a temperature of up to 80° C. until the end of CO_2 evolution.

4,766,240

PROCESS FOR PREPARING 2-(ALKYLBENZOYL)BENZOIC ACID

Louis T. Gunkel, Yardley, Pa., and John Crosby, Lawrenceville, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Apr. 24, 1987, Ser. No. 42,072

Int. Cl.[4] C07C *59/76*

U.S. Cl. 562—460 8 Claims

1. A process for synthesizing a 2-(alkylbenzoyl)benzoic acid without generating a large quantity of aqueous waste comprising incorporating phthalic anhydride, an alkylbenzene and aluminum chloride into an inert solvent thereby forming a reaction mixture, maintaining the temperature of the reaction mixture between 0° C. and 90° C. for a sufficient time to react at least part of the phthalic anhydride and alkylbenzene to form a 2-(alkylbenzoyl)benzoic acid in the reaction mixture, combining the reaction mixture and an aqueous, dilute acid thereby forming an aqueous phase and an organic phase, separating the organic phase and the aqueous phase, combining the organic phase with a solvent quantity of a low boiling aliphatic hydrocarbon solvent to precipitate the (alkylbenzoyl)benzoic acid as a solid phase in the combined solvent-organic phase, and separating the solid phase from the solvent-organic phase.

4,766,241

2-AMINOMETHYL-6-SULFAMOYLPHENOL DERIVATIVES WITH SALIDIURETIC ACTIVITIES

Heinrich C. Englert, Hofheim am Taunus; Dieter Manis, Kelkheim Taunus; Roman Muschaweck, Frankfurt am Main, and Max Hropot, Flörsheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

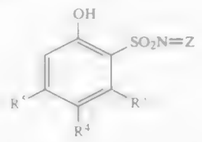
Continuation of Ser. No. 868,522, May 30, 1986, abandoned, which is a division of Ser. No. 751,995, Jul. 3, 1985, Pat. No. 4,607,030, which is a continuation of Ser. No. 472,005, Mar. 4, 1983, abandoned. This application Sep. 23, 1987, Ser. No. 102,793

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1982, 3208189

Int. Cl.[4] C07C *143/80*

U.S. Cl. 564—89 1 Claim

1. A compound of formula II

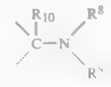


(II)

in which R^3 and R^5 are identical or different and denote hydrogen, halogen, alkyl having 1 or 2 carbon atoms or alkoxy having 1 or 2 carbon atoms, R^4 denotes halogen, alkyl having 1 to 12 carbon atoms or cycloalkyl having 3 to 12 carbon atoms and up to 8 ring members, or taken together either R^3 and R^4 or R^4 and R^5 form a $-(CH_2)_m-$ chain in which m is 3 to 6 and which is unsubstituted or substituted by 1 or 2 methyl groups and z represents

(a) R^1 and R^2, wherein R^1 and R^2 are identical or different and represent alkyl having 1 to 4 carbon atoms, alkenyl having 2 to 4 carbon atoms, alkynyl having 2 to 4 carbon atoms, or benzyl which is unsubstituted or substituted by methyl, methoxy, or halogen, or

(b) a sulfonamide protecting group of the formula III



(III)

in which the radical R^{10} denotes hydrogen or alkyl having 1 to 4 carbon atoms and R^8 and R^9 denote alkyl having 1 to 4 carbon atoms.

4,766,242

SYNTHESIS OF SUBSTITUTED ARYL SULFIDES

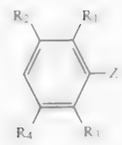
Harry T. Hanson, Millburn, N.J., and John B. Sapp, Jr., Houston, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 1, 1982, Ser. No. 344,335

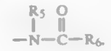
Int. Cl.[4] C07C *103/19*

U.S. Cl. 564—154 19 Claims

1. A process for the synthesis of an aryl sulfide substituted with an alkanoylamino or (N-alkyl)alkanoylamino substituent which comprises reacting a sulfur dihalide with an aromatic reactant compound of the structural formula



wherein R_1, R_2, R_3, and R_4, which can be the same or different, represent hydrogen or lower alkyl, and Z is



wherein R_5 represents hydrogen or a lower alkyl and R_6 a lower alkyl, in the presence of a catalytic amount of an alkali metal tetrafluoroborate catalyst wherein said alkali metal is selected from the group consisting of lithium and sodium, and an ether comprising solvent capable of solvating said reactants and catalyst sufficiently to allow said reacting to occur.

4,766,243

ELECTROPHILIC FLUORINATION OF AROMATIC COMPOUNDS

Michael J. Fifolt, Grand Island, N.Y., assignor to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Aug. 10, 1984, Ser. No. 639,291

Int. Cl.[4] C07C *85/20*

U.S. Cl. 564—414 1 Claim

1. A process for the preparation of 2-fluoro-4-trifluoromethylaniline which comprises:

(A) reacting 4-trifluoromethyl-acetanilide with fluoroxytrifluoromethane to form 2-fluoro-4-trifluoromethylacetanilide

(B) hydrolyzing the 2-fluoro-4-trifluoromethylacetanilide to form the 2-fluoro-4-trifluoromethyl aniline product which contains a quantity of 4-trifluoromethylaniline,

(C) treating the 2-fluoro-4-trifluoromethylaniline product by acidification with phosphoric acid to form a precipitate containing the 4-trifluoromethylaniline, and

(D) separating the precipitate from the liquid containing 2-fluoro-4-trifluoromethylaniline.

4,766,244

HIGH PURITY PROCESS FOR THE PREPARATION OF 4,6-DIAMINO-1,3-BENZENEDIOL

Zenon Lysenko, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 30, 1986, Ser. No. 925,358

Int. Cl.[4] C07C *85/11*

U.S. Cl. 564—418 8 Claims

1. A process for the preparation of 4,6-diamino-1,3-benzenediol in high purity comprising the steps of

(a) contacting a 1,2,3-trihalobenzene with a nitrating agent and an acid under reaction conditions such that a 1,2,3-trihalo-4,6-dinitrobenzene is produced:

(b) contacting the 1,2,3-trihalo-4,6-dinitrobenzene with an alkanol and a base under reaction conditions such that a 4,6-dinitro-2-halo-1,3-benzenediol is produced; and

(c) contacting the 4,6-dinitro-2-halo-1,3-benzenediol with a hydrogenating agent in the presence of a solvent and a catalyst under reaction conditions such that 4,6-diamino-1,3-benzenediol is produced.

4,766,245

PROCESS FOR THE PREPARATION OF POLYOXYALKYLENE POLYAMINES

John M. Larkin, and Terry L. Renken, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 1, 1985, Ser. No. 707,126

Int. Cl.[4] C07C *85/02, 85/06*

U.S. Cl. 564—474 19 Claims

1. A method which comprises contacting a hydroxy-terminated polyoxyalkylene compound having a molecular weight of at least about 500 with ammonia and hydrogen in the presence of a catalyst under anhydrous reductive amination conditions to at least partially convert said compound to the corresponding amine, said catalyst being a aney nickel-/aluminum catalyst containing about 60 wt. % to about 75 wt. % of nickel and, correspondingly, about 40 wt. % to about 25 wt. % of aluminum.

4,766,246

L-AMINODICARBOXYLIC ACID ESTERS

Paul R. Zanno, Nanuet; Ronald E. Barnett, Suffern, and Glenn M. Roy, Garnerville, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 19, 1986, Ser. No. 898,063

Int. Cl.[4] C07C *69/74*

U.S. Cl. 560—117 2 Claims

1. N-L-Aspartyl-D-alanine [β(+)fenchyl]ester.

4,766,247

COLOR REDUCTION OF POLYAMINES BY MILD CATALYTIC HYDROGENATION

Michael E. Ford, Center Valley; Thomas A. Johnson, Orefield, and Gamini A. Vedage, Bethlehem, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Sep. 26, 1986, Ser. No. 912,882

Int. Cl.[4] C07C *85/26*

U.S. Cl. 564—498 10 Claims

1. A process for the reduction of color of a polyamine product which comprises contacting said polyamine at elevated temperature and pressure with a catalytically effective amount of a hydrogenation catalyst, selected from the group consisting of palladium on carbon, ruthenium on carbon and mixtures thereof, in the presence of a hydrogen-containing atmosphere

4,766,248

β-SUBSTITUTED POLYFLUOROETHYL COMPOUNDS

Carl G. Krespan, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 399,281, Jul. 19, 1982, Pat. No. 4,576,752. This application Jan. 16, 1986, Ser. No. 819,285

Int. Cl.[4] C07C *147/02, 147/06, 149/16, 149/273*

U.S. Cl. 568—31 14 Claims

1. The β-substituted polyfluoroethyl compound having the formula, XCF_2CFYZ, wherein

X is $-SR^1$ and $-SO_2R^1$;

Y is —F, —Cl or $-OR_F^1$;

Z is $-C(O)R_FX^1$;

R^1 is $C_{1\ to\ 10}$ alkyl, $C_{6\ to\ 10}$ aryl, or $C_{6\ to\ 10}$ aralkyl;

R_F^1 is $C_{1\ to\ 4}$ perfluoroalkyl;

R_F is $-CF_2-$, $C_{2\ to\ 8}$ perfluoroalkylene, or $C_{2\ to\ 8}$ perfluoroalkylene containing one in-chain ether oxygen bond, or two in-chain ether oxygen bonds separated by at least two carbon atoms;

X^1 is —F or $-OR^2$; and

R^2 is $-CH_3$, $-C_2H_5$ or phenyl.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,249

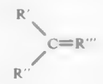
METHOD OF CATALYTICALLY HYDROLYZING ALPHA, BETA-UNSATURATED CARBONYL COMPOUNDS

Keith T. Buck; Anthony J. Boeing; Joseph E. Dolfini, and Jerome Gliaka, all of Cincinnati, Ohio, assignors to Mallinckrodt, Inc., St. Louis, Mo.

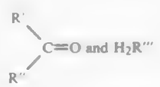
Continuation-in-part of Ser. No. 856,595, Apr. 25, 1986, Pat. No. 4,673,766. This application Dec. 24, 1986, Ser. No. 942,491
The portion of the term of this patent subsequent to Jun. 16, 2004, has been disclaimed.
Int. Cl.⁴ C07C *45/42*
U.S. Cl. 568—433 **8 Claims**

1. A method of producing a carbonyl-containing compound which comprises

hydrolyzing by dispersing in water an alpha,beta-unsaturated carbonyl compound of the formula



to produce a carbonyl-containing compound and by-product according to the following formulas



wherein R′ and R″ are hydrogen, aliphatic or aromatic hydrocarbon groups or substituted derivatives thereof, and R‴ is an aliphatic or aromatic aldehyde- or ketone-containing group having the carbon to oxygen double bond of said aldehyde or ketone conjugated with the alpha, beta double bond between C and R‴′ of said alpha, beta-unsaturated carbonyl compound, and

conducting said hydrolysis of the alpha, beta-unsaturated carbonyl compound under the action of heat in the presence of a catalytic amount of hydroxide ion and at a pH of about 11 to about 13.

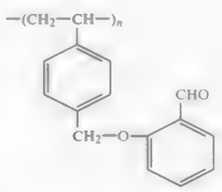
4,766,250

RACEMIZATION CATALYST FOR AMINO ACIDS

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Co., Westport, Conn.

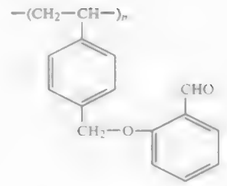
Division of Ser. No. 736,724, May 22, 1985, Pat. No. 4,713,470. This application Jul. 10, 1987, Ser. No. 53,906
Int. Cl.⁴ C07C *45/64, 47/575;* C08L *27/00*
U.S. Cl. 568—433 **6 Claims**

1. A racemization catalyst for amino acids having the structure:



wherein n is an integer from 100 to about 1,000,000.

2. A process for the production of the racemization catalyst of the structure



wherein n is an integer from 100 to about 1,000,000, which comprises reacting a hydroxy aromatic aldehyde with a chloroalkylsubstituted vinylbenzene polymer in the presence of a base.

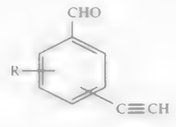
4,766,251

PROCESS FOR THE PREPARATION OF ETHYNYLBENZALDEHYDES

Robert D. Rossi, Levittown, Pa., and Steven P. Fenelli, Hillsborough, N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 894,142, Aug. 7, 1986, abandoned. This application Aug. 11, 1987, Ser. No. 84,261
Int. Cl.⁴ C07C *47/546, 119/10*
U.S. Cl. 568—436 **8 Claims**

1. A multi-step process for preparing ethynylbenzaldehyde having the structure:



wherein R is H, C_1–C_4 alkyl, phenyl, nitro, Cl, F or —CHO, which comprises the steps of:

(a) reacting bromobenzaldehyde or substituted bromobenzaldehyde with 2-methyl-3-butyn-2-ol or 3-methylpentyn-3-ol in the presence of a palladium catalyst to replace the bromine with the protected ethynyl functionality,

(b) reacting the product of (a) with a primary mono- or diamine to form the corresponding Shiff's base,

(c) treating the product of (b) with solid alkali to cleave the acetone from the protected ethynyl functionality and thereby form the arylacetylene,

(d) treating the product of (c) with aqueous acid to recover the aldehyde group and thereby form the desired ethynylbenzaldehyde.

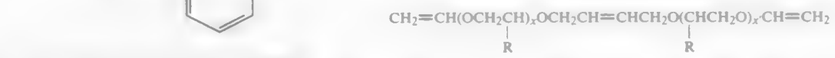
4,766,252

SOLVENT AND STAIN RESISTANT COATINGS

Fulvio J. Vara, Chester; Lowell R. Anderson, Morristown, and James A. Dougherty, Prospect Park, all of N.J., assignors to GAF Corporation, Wayne, N.J.

Filed Oct. 16, 1987, Ser. No. 109,676
Int. Cl.⁴ C07C *43/16;* B05D *3/06*
U.S. Cl. 568—616 **1 Claim**

1. An alkoxylated divinylether alkene compound having the formula.



wherein x and x′ are integers each having a value of from 1 to 24 wherein R is hydrogen or methyl.

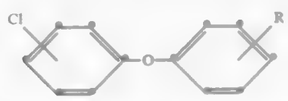
4,766,253

PROCESS FOR PREPARING CHLORINATED DIPHENYL ETHERS

Peter Rauber, Thürnen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

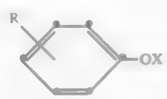
Filed May 4, 1987, Ser. No. 46,594
Int. Cl.⁴ C07C *41/16, 43/275, 43/29*
U.S. Cl. 568—639 **14 Claims**

1. A process for preparing chlorodiphenyl ethers of the formula I



(I)

in which R is hydrogen or chlorine, which comprises heating a phenolate of the formula III



(III)

in which X is one equivalent of an alkali metal or alkaline earth metal ion and R is as defined above, in an excess comprising 3–15 moles of a dichlorobenzene of the formula II



(II)

in the presence of a copper catalyst and 0.003 to 3 moles of an aprotic dipolar solvent as cocatalyst at temperatures of 120°–220° C.

4,766,254

METHOD FOR MAXIMIZING YIELD AND PURITY OF BISPHENOL A

Gary R. Faler, Scotia, N.Y., and Michael J. Cipullo, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 5, 1987, Ser. No. 104,602
Int. Cl.⁴ C07C *37/68*
U.S. Cl. 568—724 **9 Claims**

1. A method for recovering bisphenol A from a product stream which comprises:

forming and separating an adduct of bisphenol A and phenol, leaving a crude liquid stream containing crude bisphenol A and impurities;

removing acidic impuritites from said crude liquid stream by contact with a basic ion exchange resin at a temperature in the range of about 45°–125° C. for a period of time effective to remove said impurities by salt formation with said resin; and

recovering further bisphenol A from the resin-treated crude liquid stream by distillation.

4,766,255

PROCESSES FOR BISPHENOLS

Beng S. Ong, Mississauga, and Lupu Alexandru, Toronto, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1987, Ser. No. 67,588
Int. Cl.⁴ C07C *39/16*
U.S. Cl. 568—728 **27 Claims**

25. A process for the preparation of gem-bis(hydroxyaryl)alkanes which comprises the reaction, at a temperature of from about 30° C. to about 80° C., of a ketone present in an amount of about 1 mole equivalent and selected from the group consisting of acetone, butanones, pentanones, cyclopentanone, substituted cyclopentanones, cyclohexanone, and substituted cyclohexanones; a hydroxyarene present in an amount of from about 2 mole equivalents to about 10 mole equivalents and selected from the group consisting of phenol, cresols, ethylphenols, halophenols, cyanophenols, nitrophenols, and naphthols; and an alkylhalosilane present in an amount of from about 0.1 mole equivalent to about 3 mole equivalents, having 1 to 3 alkyl substituents, each with from 1 to about 10 carbon atoms, and having 1 to 3 halogen substituents selected from the group consisting of fluoro, chloro, bromo, or iodo.

4,766,256

ANISOTROPIC MELT POLYESTERS WITH IMPROVED GLASS TRANSITION TEMPERATURE

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 912,082, Sep. 29, 1986, Pat. No. 4,719,280. This application Jan. 18, 1987, Ser. No. 63,456
Int. Cl.⁴ C07C *39/10*
U.S. Cl. 568—765 **5 Claims**

1. A method for preparing 2-chloro-5-hydrocarbyl hydroquinone comprising reacting a mono-hydrocarbyl hydroquinone with an approximately equimolar amount of sulfuryl chloride in the presence of glacial acetic acid.

4,766,257

PREPARATION OF NITRO COMPOUNDS BY VAPOR PHASE NITRATION OF OLEFINS

Shu-Chieh P. Wang, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Sep. 12, 1984, Ser. No. 849,765
Int. Cl.⁴ C07C *79/04, 79/06*
U.S. Cl. 568—948 **24 Claims**



1. A process for selectively forming nitroalkanes and nitroaromatics comprising contacting in a reaction zone at an elevated pressure of from about 2 to 20 bars and a temperature of from about 100° C. to 500° C. in a homogeneous gas phase, nitrogen dioxide or nitric acid or both with an olefinic unsaturated hydrocarbon represented by the formula



VOL 1093 ISS 4 AG 23 1988 UMI

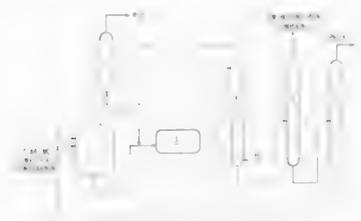
whereby when R^1 represents an alkyl group, R^2, R^3 and R^4 each separately represent hydrogen or an alkyl group such that the sum of the carbon atoms of R^1, R^2, R^3 and R^4 is up to 10 or whereby when R^1 represents a phenyl or a C_7–C_{10} aralkyl group, R^2, R^3 and R^4 are hydrogen; and recovering the formed dominant nitrocompound R^1NO_2 whereby R^1 represents the same group as for the olefinic hydrocarbon defined above and when R^2, R^3 or R^4 represent an alkyl, additionally recovering the respective nitrocompounds R^2NO_2, R^3NO_2 and R^4NO_2.

4,766,258

PROCESS FOR PRODUCING HYDROCARBON FLUORIDE

Takahiro Komatsu; Tohru Ide; Hirohumi Akiyama; Takao Kitamura, and Shinichi Yamamoto, all of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 9, 1986, Ser. No. 817,379
Claims priority, application Japan, Jan. 9, 1985, 60-940
Int. Cl.⁴ C07C *17/10*
U.S. Cl. 570—168 **34 Claims**



1. A process for producing a hydrocarbon fluoride which comprises reacting a hydrogen-containing hydrocarbon halide with anhydrous hydrogen fluoride in a liquid phase in the presence of reaction product of

(i) at least one of (a) an oxygen-containing compound selected from the group consisting of H_2O, H_2O_2 and an oxygen-containing organic compound selected from the group consisting of alcohols, ketones, carboxylic acids, aldehydes, ethers, esters and epoxy compounds, and (b) a nitrogen-containing compound selected from the group consisting of HN_3 and a nitrogen-containing organic compound,

(ii) a tin compound selected from the group consisting of a stannic halide, a stannic oxyhalide and an organotin compound, and

(iii) anhydrous hydrogen fluoride,

said reaction product being soluble in anhydrous hydrogen fluoride.

4,766,259

GAS-PHASE FLUORINATION PROCESS

Leo E. Manzer, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 13, 1987, Ser. No. 85,027
Int. Cl.⁴ C07C *17/04, 17/20, 19/02, 19/08*
U.S. Cl. 570—168 **9 Claims**

1. A process for the preparation of 1,1-difluoro-1,2-dichloroethane and/or 1-fluoro-1,1,2-trichloroethane by fluorination of a trihaloethylene, $CClX{=}CHCl$, wherein X=Cl or F, and/or tetrahaloethane, CCl_2XCH_2Cl, wherein X=Cl or F, which process comprises

contacting in the gaseous phase at about 100° to about 200° C. said trihaloethylene and/or tetrahaloethane with HF and a catalyst comprising a catalytically effective amount of at least one metal in an oxidation state greater than zero, said metal selected from the group consisting of iron, manganese, magnesium, and nickel,

said metal in combination with a composition consisting essentially of aluminum, oxygen, and fluorine in such proportions that the fluorine content corresponds to an AlF_3 content of at least 90% by weight of the catalyst exclusive of the metal, said AlF_3 content being obtained by pretreatment of alumina with HF,

said contacting step producing a product stream containing 1,1-difluoro-1,2-dichloroethane and/or 1-fluoro-1,1,2-trichloroethane, and, thereafter,

separating the 1,1-difluoro-1,2-dichloroethane and/or 1-fluoro-1,1,2-trichloroethane from the product stream.

4,766,260

GAS-PHASE FLUORINATION PROCESS

Leo E. Manzer, and V. N. Mallikarjuna Rao, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 7, 1987, Ser. No. 70,826
Int. Cl.⁴ C07C *17/20, 19/045, 19/05, 19/08*
U.S. Cl. 570—168 **8 Claims**

1. A process for the preparation of 1,1,1-trifluorodichloroethane and 1,1,1,2-tetrafluorochloroethane by fluorination of a tetrahaloethylene, $C_2Cl_{4-x}F_x$, wherein x=0 to 3, comprising contacting in the gaseous phase at about 300° C. to about 450° C. said tetrahaloethylene and HF with a catalyst comprising at least one metal in an oxidation state greater than zero, said metal selected from the group consisting of chromium, manganese, nickel, and cobalt, on a support consisting essentially of aluminum, oxygen, and fluorine in such proportions that the fluorine content corresponds to an AlF_3 content of at least 90% by weight of the catalyst composition exclusive of said metal, said AlF_3 content being obtained by pretreatment of alumina with HF.

4,766,261

PURIFICATION OF FLUOROCARBONS

Thomas W. Bierl, Pittsburgh, Pa., assignor to Adamantech, Inc., Linwood, Pa.

Continuation of Ser. No. 650,679, Sep. 17, 1984, abandoned, which is a continuation-in-part of Ser. No. 547,314, Oct. 31, 1983, abandoned. This application Dec. 10, 1985, Ser. No. 805,545
Int. Cl.⁴ C07C *17/38*
U.S. Cl. 570—179 **12 Claims**

1. A method of purifying a mixture of perfluorocarbons containing 7 to 18 carbon atoms and other fluorocarbons containing hydrogen in the molecule, which comprises contacting said mixture with a base of a metal selected from alkali metals and alkaline earth metals and containing not more than about 30 wt. % water, at a temperature sufficient to react such other compounds with said base, thereby to convert such other fluorocarbons to reaction products, separating unreacted base, if present, and said reaction products from unreacted perfluorocarbons and subjecting the separated perfluorocarbons to a treatment with organic carbonyl compound consisting essentially of contacting said perfluorocarbons in liquid phase with an organic carbonyl compound in liquid phase to form a fluorocarbon phase and an organic carbonyl phase, and separating the phases to obtain a purified fluorocarbon phase.

4,766,262

PROCESS FOR SEPARATING ISOMERIC DICHLOROTOLUENES BY ADSORPTION

Sergio Carra, Milan; Renato Paludetto, Pioltello; Giuseppe Storti, Lodi; Massimo Morbidelli, Milan, all of Italy; Bernard Gartner, Grenoble, and Raymond Commandeur, Vizille, both of France, assignors to Atochem, France

Filed Nov. 3, 1986, Ser. No. 926,461
Claims priority, application France, Nov. 6, 1985, 85 16446
Int. Cl.⁴ C07C *17/38, 25/02*
U.S. Cl. 570—211 **9 Claims**

1. A process for separating one or more dichlorotoluene isomers from one or more different dichlorotoluene isomers in a mixture containing at least two dichlorotoluene isomers comprising

(a) passing said mixture containing dichlorotoluene isomers through a mordenite having the following composition; in molar ratios:

a H_2O:b $M_{2/n}O$:Al_2O_3:(10–400 SiO_2)

in which M is at least one cation selected from an alkali metal or an alkaline-earth metal with the exception of cesium and rubidium, n is the valence of M, $0.7 \leqq a+b \leqq 1.1$, and $0 \leqq b \leqq 0.2$,

(b) separating the non-adsorbed dichlorotoluenes from said mordenite,

(c) contacting said mordenite containing the adsorbed isomers with a desorbent capable of separating said isomers from said mordenite, and

(d) separating the desorbed isomers from the desorbent.

4,766,263

HYDROCARBON SYNTHESIS PROCESS UTILIZING CRYSTALLINE ALUMINOSILICATE CATALYST

Nobuyuki Morimoto; Kozo Takatsu, both of Sodegaura, and Michio Sugimoto, Ichihara, all of Japan, assignors to Research Association for Petroleum Alternatives Development, Tokyo, Japan

Division of Ser. No. 790,741, Jan. 9, 1986, Pat. No. 4,695,440, which is a division of Ser. No. 582,529, Feb. 22, 1984, Pat. No. 4,578,259. This application Jun. 29, 1987, Ser. No. 67,965
Claims priority, application Japan, Mar. 7, 1983, 58-35926; Oct. 14, 1983, 58-190977
Int. Cl.⁴ C07C *1/20*
U.S. Cl. 585—408 **4 Claims**



1. In a process for producing hydrocarbons which comprises bringing alcohols having from 1 to 4 carbon atoms into contact with a catalyst, the improvement comprising using, as said catalyst, a crystalline aluminosilicate, when determined after calcination in the air at 550° C., having a composition represented by the following formula (I) and giving a principal X-ray diffraction pattern as set forth in Table I:

$$pM_{2/n}O.Al_2O_3.qSiO_2 \quad (I)$$

wherein M represents at least one element selected from hydrocarbon, alkali metals, and alkaline earth metals, n represents the valence of M, and p and q each represent a molar ratio and are chosen within the ranges of $0.05 \leqq p \leqq 3.0$, and $5 \leqq q \leqq 500$.

4,766,264

AROMATIZATION OF PARAFFINS

Ian C. Bennett, Weybridge, and Antony H. P. Hall, Cobham, both of England, assignors to The British Petroleum Company, London, England

Filed Mar. 17, 1986, Ser. No. 840,385
Claims priority, application United Kingdom, Mar. 27, 1985, 8507947
Int. Cl.⁴ C07C *12/00*
U.S. Cl. 585—412 **7 Claims**

1. A process for the conversion of C_2–C_6 paraffinic hydrocarbons to aromatic hydrocarbons over a gallium loaded zeolite at elevated temperature characterised in that the process comprises the steps of:

(a) bringing a feedstock comprising predominantly ethane into contact with a freshly prepared or regenerated gallium loaded zeolite catalyst at a temperature from 550° to 650° C. over a period from 10 to 50 hours;

(b) bringing a paraffinic feedstock comprising predominantly C_3–C_6 hydrocarbons into contact with the residual catalyst from step (a) after contact with ethane at a temperature from 470° to 580° C. over a period from 40 to 200 hours;

(c) regenerating the residual catalyst from step (b) after contact with the C_3–C_6 hydrocarbon; and

(d) recycling the regenerated catalyst from step (c) to step (a).

4,766,265

CATALYSTS FOR THE CONVERSION OF ETHANE TO LIQUID AROMATIC HYDROCARBONS

Michael J. Desmond, Cleveland Heights, Ohio, and Joann Henry, Greenwood, Ind., assignors to The Standard Oil Company, Cleveland, Ohio

Filed Jun. 8, 1987, Ser. No. 59,433
Int. Cl.⁴ C07C *12/02*
U.S. Cl. 585—415 **19 Claims**

1. A process for the conversion of ehtane to liquid aromatic hydrocarbons comprising contacting, at a temperature of from about 500° C. to about 700° C., an ethane rich feedstock with a catalyst consisting essetially of a gallium modified acid form ZSM-5 or ZSM-11 molecular sieve, promoted with rhenium and a metal selected from the group consisting of nickel, palladium, platinum, rhodium and iridium.

4,766,266

DEHYDROGENATION OF ISOBUTANE

Sargis Khoobiar, Kinnelon, N.J., assignor to Arco Chemical Company, Newtown Square, Pa.

Filed Nov. 13, 1985, Ser. No. 797,559
Int. Cl.⁴ C07C *5/333*
U.S. Cl. 585—660 **7 Claims**

1. A process for the dehydrogenation of isobutane to isobutylene in the presence of steam over a noble metal catalyst followed by oxidation of said isobutylene to methacrolein, wherein the feed gas to said dehydrogenation catalyst comprises fresh isobutane and a recycle gas comprising isobutylene derived from said oxidation of isobutylene to methacrolein, thereby providing a combined gas containing 20 to 40 mol % isobutane and 3 to 15 mol % isobutylene and 15 to 40 mol % steam, the improvement comprising isomerizing or cracking no more than 15% of the fresh isobutane in the feed gas by employing a catalyst comprising platinum plus at least one of the group consisting of In, Nd, and Sn on a nonacidic support, and carrying out said dehydrogenation at a pressure of 0.14 to 2 bar and at a residence time no lower than that defined by the equation:

$$R = 1.76 \times 10^{-4} e^{7890/T},$$

where

R=minimum residence time for the C_4 portion, seconds

T=average temperature, °K, at the end of the on-stream cycle.

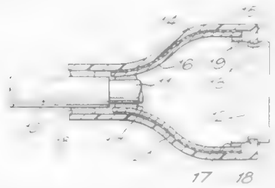
VOL
1093
ISS
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23
1988
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4,766,267

HEAT-SHRINKABLE ARTICLE

David R. Gray, Plympton, and Michael J. Sleeman, S. Brent, both of England, assignors to Bowthorpe Hellermann Limited, Crawley, United Kingdom

Filed Feb. 18, 1987, Ser. No. 15,969
Claims priority, application United Kingdom, Feb. 19, 1986, [illegible]
Int. Cl.[4] H02G 15/04
U.S. Cl. 174—36 18 Claims



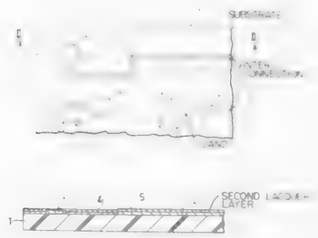
1. A heat-shrinkable tubular article provided with an electrically conductive lining on its inner surface, said lining being formed of a continuous coating of a metal which changes between solid and liquid phases over a broad range of temperatures, the article exhibiting a recovery temperature which lies within said broad range of temperatures so that the coating will soften without fully melting and deform without cracking during recovery of said article and, after recovery, remain continuous and adhered to said surface of the article.

4,766,268

BOARD FOR PRINTED CIRCUITS AND PROCESSES FOR MANUFACTURING SUCH PRINTED BOARDS

Werner Uggowitzer, Ferlach, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1987, Ser. No. 27,751
Claims priority, application Austria, Mar. 25, 1986, 791/86
Int. Cl.[4] H05K 1/00, 3/00
U.S. Cl. 174—68.5 7 Claims



1. A printed circuit board comprising electrical interconnections and solder lands provided in the form of electrically conductive sections on a substrate comprising a board of insulating material and a solder-resistant lacquer mask, consisting of two lacquer layers masking the substrate and the interconnections but not the lands, one of said lacquer layers at least partially covering the other lacquer layer, characterized in that one of said lacquer layers directly masks the substrate and extends to the edges of the electrically conductive sections, at least in the region, adjacent to the lands while leaving the lands, uncovered and said other lacquer layer masks the interconnections, extends to the region occupied by the lacquer layer extending to the edges of the electrically conductive sections and leaves the lands uncovered, said lacquer layers overlapping at least at the edges of said electrically conductive sections.

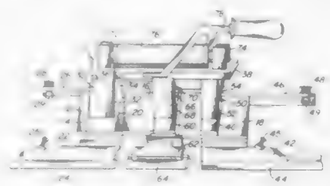
4. A process for manufacturing a printed circuit board comprising a substrate comprising a board of insulating material, desired electrical conductive interconnections and lands in the form of electrically conductive sections provided on said substrate and a solder-resistant lacquer mask masking the interconnections and the substrate but not the lands, said process comprising, after providing the interconnections and lands on the substrate, applying to the substrate and the interconnections at least in the region of the lands, a first lacquer layer (4), and which adheres only to the substrate, hardening said first lacquer layer, removing said first hardened lacquer layer from said lands and interconnections by chemical means, applying a second solder-resistant lacquer layer (5), said second lacquer layer adheres to said substrate, to said interconnections and to said lands to partially cover the interconnections, and said hardened first lacquer layer, at least in the region of said lands, so as to leave the lands partially uncovered and spaced from the substrate, hardening said second solder-resist solder lacquer and then completing the manufacture of the printed circuit board in the usual manner.

4,766,269

FUSED TROLLEY SWITCH

Meryl M. Hall, Sr., HC 69, Box 76, Herndon, W. Va. 24726-9710

Filed Jan. 12, 1987, Ser. No. 2,426
Int. Cl.[4] H01H 85/00
U.S. Cl. 191—39 3 Claims



1. A trolley wire section insulator for connecting a trolley wire section to a feeder cable, including:

a non-conductive base;

first trolley wire connecting means for connecting a first trolley wire to said base;

first feeder cable connecting means for connecting a first feeder cable to said base;

first inter-connecting means for electrically connecting said first feeder cable connecting means to said first trolley wire connecting means;

second trolley wire connecting means for connecting a second trolley wire to said base;

second feeder cable connecting means for connecting a second feeder cable to said base;

second inter-connector means for electrically connecting said second feeder cable connecting means to said second trolley wire connecting means;

a blade member comprising an electrically conductive proximal portion, an electrical conductive distal portion, and a central portion, said proximal portion being pivotally connected to said first trolley wire connecting means, allowing said blade member to be moved from a closed position wherein said distal portion is in contact with said second trolley wire connecting means to an open position wherein said distal portion is out of contact with said second trolley wire connecting means, and wherein said central portion contains an electrically non-conductive cavity; and

a fuse positioned in said cavity for allowing an electrical connection to be maintained between said first trolley wire and said second trolley wire when said blade member is in the closed position.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,270

LIMITED FORCE INTERLOCK MECHANISM

Dominick Tringali, Columbia, S.C., assignor to Square D Company, Palatine, Ill.

Filed Jul. 12, 1985, Ser. No. 754,872
Int. Cl.[4] H01H *9/20*
U.S. Cl. 200—50 A 9 Claims



2. An interlock mechanism for an electric contactor enclosure where the enclosure has a door, an isolation switch is mounted inside the enclosure, an operating handle for operating the isolation switch is mounted on the exterior of said enclosure, a contactor having at least one set of contacts connected in electrical series with said isolation switch is mounted inside the enclosure, the contactor has a movable armature, and the armature has a contact closed position and a contact open position, comprising:

a flag attached to said armature having a first flag position when said at least one set of contacts are open and having a second flag position when said at least one set of contacts are closed;

a first linkage movable in response to said handle for transmitting motion of said handle to said isolation switch for operating said isolation switch;

a second linkage movable in response to said handle;

means responsive to said flag and to said second linkage for preventing operation of said isolation switch when said armature is in said contact closed position; and

a first plate movably attached to said first linkage, a second plate movably attached to said second linkage, and a spring connecting said first plate to said second plate for moving said second linkage in response to said handle, and for limiting the force that said second linkage can exert against said flag in response to motion of said handle in order to reduce breakage of said contactor when excessive force is applied to said handle.

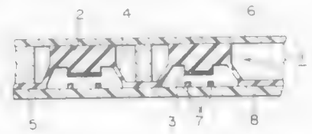
4,766,271

ELASTOMER-MADE PUSH BUTTON SWITCH COVERING MEMBER

Masayuki Mitsuhashi; Naoto Komine, and Takao Shimizu, all of Saitama, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 806,443, Dec. 9, 1985. This application Jun. 24, 1987, Ser. No. 65,921
Claims priority, application Japan, Dec. 12, 1984, 59-262605
Int. Cl.[4] H01H *3/12*
U.S. Cl. 200—159 B 2 Claims

1. A push button switch having a push button switch covering member having a dome-like configuration as a whole integrally composed of a base portion, a top portion, and a riser portion connecting the base portion and the top portion in a dome-like form and made of a rubbery elastomer having a Shore D hardness of at least 35 and a rebound of at least 40%;



said push button switch having a click ratio of at least 30% according to the formula $(a-d)/a \times 100$, wherein a is the pushing load at the peak and d is the pushing load at the moment of clicking,

at a switching stroke of about 0.5 mm or less.

4,766,272

SEALED PUSH BUTTON SWITCH

Giorgio Guzzon, Pero, Italy, assignor to Officine Meccaniche Vimercati S.p.A., Milan, Italy

Filed Oct. 2, 1986, Ser. No. 915,244
Claims priority, application Italy, Oct. 9, 1985, 53917/85[U]
Int. Cl.[4] H01H *13/06*
U.S. Cl. 200—302.2 3 Claims



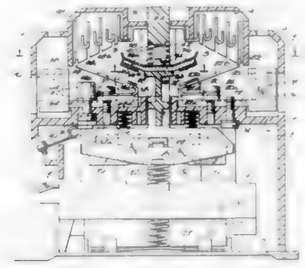
1. A sealed self compensating push button switch comprising a hollow support body; a plurality of electrical contacts mounted in fixed positions within said support body; a movable control member mounted slidably on said support body; a resiliently deformable bellows interposed between said support body and said movable control member, said bellows engaging said support body and said movable control member in a fluid-tight manner; resilient means interposed between said support body and said movable control member; and a plurality of movable electrical contacts carried by said movable control member and movable therewith in relation to said support body and against action of said resilient means from a extended position in which said fixed and movable contacts are electrically connected together to a retracted position in which said fixed and movable contacts are electrically disconnected from one another; said movable control member comprising an outer push button, a contact carrier element supporting said movable contacts and having a raidally outwardly elastically deformable portion, and a cylindrical connection member rigidly connected to said push button and telescopically engaging said contact carrier element; said connection member comprising first and second portions, said first poriton being provided with a plurality of outer annular grooves, and said second portion being tubular and extending axially from said first portion, said second section further having axial through slots and being radially inwardly elastically deformable; and rib means extending radially inwardly from said deformable portion of said contact carrier element for selective snap-engagement in said outer grooves thereby to axially lock said connection member and said contact carrier element relative to one another in any one of a plurality of distinct relative axial positions whereby, upon the application of a compression force to said push button in excess of a predetermined value, said rib means engages with a successive one of said outer grooves.

4,766,273

HIGH CURRENT DOUBLE-BREAK ELECTRICAL CONTACTOR

Edmund M. Butterworth, Bedford, England, and Daniel A. Wyckleadt, Milwaukee, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 17, 1985, Ser. No. 745,765
Int. Cl.[4] H01H *33/20*
U.S. Cl. 200—147 R 2 Claims



1. A longer contact life high-current double-break electrical contactor comprising:

an insulating housing;

a pair of stationary contact-terminal means mounted in said housing and comprising connector terminals accessible from the exterior of said housing for attachment of electrical wires and inwardly-directed conductor portions extending laterally from said terminals toward one another into spaced-apart relation and provided thereat with reentrant conductor portions and arc-runner conductor portions made from heavy gauge copper extending from said reentrant portions at upward and outward angles and stationary contact tips above said reentrant portions;

a movable double-break bridging contact overlying said stationary contact tips;

contact carrier and actuator means for supporting and actuating said bridging contact into and out of engagement with said stationary contact tips to close and open, respectively, an electrical circuit between said terminals;

said stationary contact-terminal means also comprising conductive means providing electrically conductive paths from said conductor portions through and across the bight portions of said reentrant portions to said stationary contact tips to allow substantially straight-through current flow therethrough and through said bridging contact when said contacts are closed under normal current conditions to retain maximum contact pressure;

and said reentrant conductor portions and said arc-runner conductor portions providing turn-back current conduction loops to afford maximum arc blowout force when said contacts are opened under high current conditions thereby to quickly remove the electric arcs and their associated heat from said contact tips and to move said arcs outwardly along said arc-runner conductor portions to rupture and efficiently extinguish the same.

4,766,274

VACUUM CIRCUIT INTERRUPTER CONTACTS CONTAINING CHROMIUM DISPERSIONS

Natraj C. Iyer, Monroeville; Alan T. Male, Murrysville Borough, both of Pa.; Sidney J. Cherry, Elmira, N.Y., and Robert E. Gainer, Monroeville Boro., Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 25, 1988, Ser. No. 147,420
Int. Cl.[4] H01H *33/66*
U.S. Cl. 200—144 B 36 Claims



1. The method of manufacturing copper chromium electrical contacts for vacuum-type circuit interrupters which method consists of the following steps:

(a) admixing copper and chromium metals wherein to the copper, chromium is mixed in an amount of between twelve weight percent and thirty-seven weight percent;

(b) melting the admixed copper and chromium mixture of (a) at a temperature of between 1200° C. and 1500° C.;

(c) rapidly solidifying the molten mixture directly into five particles or in the form of thin ribbons and forming said ribbons into fine powder;

(d) cold pressing the copper-chromium powder of step (c) at about 100,000 psig. and vacuum sintering between 800° C. and 1400° C. to form said contact.

4,766,275

DOLL OR THE LIKE WITH MOTION SENSING SWITCH AND SWITCH THEREFOR

Ronald S. Hemmann, Newington, and Frank Mercurio, Wallingford, both of Conn., assignors to Coleco Industries, Inc., West Hartford, Conn.

Filed Feb. 6, 1987, Ser. No. 11,832
Int. Cl.[4] H01H *1/16, 35/02*
U.S. Cl. 200—153 A 9 Claims



1. A motion sensing device in which a conductive ball makes and breaks electrical contact with one of a plurality of stationary contacts, comprising a conductive ball; a base member having a bottom wall providing a recess of inverted frustoconical configuration therein and an opening therethrough in said recess, said base member also having an upstanding cylindrical wall about said recess with inside and outside surfaces and defining a cavity open at an upper end of said sidewall; a plurality of equiangularly spaced contacts having an inverted J-shaped end extending over the upper end of said sidewall and extending vertically through said base member; and inverted U-shaped contact member having legs and a bight portion disposed on said sidewall with said legs extending through said

VOL 1093 ISS 4 AG 23 1988 UMI

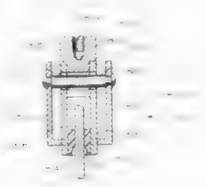
base member, said bight portion extending across said open end of said cavity, said sidewall having opposed detents on the outside surface thereof; a closure member having opposed openings therein fitted over said cylindrical wall with said detents received in said openings to lock said closure member to said base member; and a contact member having a partially cylindrical head extending into said cavity, said ball being disposed within said cavity and normally contacting the bight portion of said U-shaped contact or said partially cylindrical head and one of said J-shaped contacts.

4,766,276

FLOATING JAW RETENTION SPRINGS FOR A SWITCH

Michael R. Clark; Fred Erb, and Miklos J. Orosz, all of Columbia, S.C., assignors to Square D Company, Palatine, Ill.

Filed Jul. 12, 1985, Ser. No. 754,877
Int. Cl.[4] H01H *1/50, 1/42, 21/54*
U.S. Cl. 200—256 9 Claims



8. An isolation switch for control of three phase alternating electric currents and having blade type moving contacts comprising:

a mount for each phase;

a base attached to each said mount;

a first jaw attached to each said base, and a second jaw attached to each said base, thereby forming a pair of jaws on each said base, said first jaw having a first electric contact on a first contact side at a distal end of said first jaw and said second jaw having a second electric contact, on a second contact side at a distal end of said second jaw, so that a switchblade may fit between and make electrical contact to said electrical contacts of each said pair of jaws;

a pin slidably mounted in a hole in each said base;

at least one flat retention spring mounted upon each end of each said pin for providing a force on said first and second jaws at their distal ends towards said contacts on a side of each jaw respectively opposite said contact sides so as to urge said electrical contacts of said first and second jaws into mechanical and electrical connection with said switchblade for each phase, and said pin is free to slide in an axial direction within said hole, and said at least one spring and said pin maintain electrical contact between each said jaw and said corresponding switchblade when said switchblade is subject to lateral motion due to magnetic forces generated by current flow in said switchblades;

threaded means formed in each said base for attaching each said base to each said mount;

a spring pin mounted in a hole on each said base and capable of fitting into each said mount, and each said spring pin capable of resisting rotational motion of each said base when subjected to forces by lateral movement of said switchblades.

4,766,277

ROTARY ELECTRIC SWITCH

Warren B. Bigelow, Jr., Shelby, N.C., assignor to General Electric Company, Brideport, Conn.

Filed Nov. 24, 1986, Ser. No. 933,802
Int. Cl.[4] H01H *21/04*
U.S. Cl. 200—293 6 Claims



1. A rotary switch housing, comprising:

a molded insulating body having a compartment and open at top for receiving integrally molded portions hingedly attached to three sides of said body including a first portion having means that allow said first portion to mount an electrical contact pad thereon, and being foldable into the bottom of said compartment,

a second portion having means that allow said second portion to be folded over said first portion, including means for securing said contact pad in said compartment and a first half-port for extending a switch actuator to the housing exterior from the housing interior, and

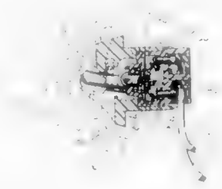
a third portion having means that allow said third portion to be folded over said second portion to provide a closure for said compartment, including a second half-port that mates with said first half-port so as to provide a full port for extending said switch actuator to the housing exterior from the housing interior.

4,766,278

SEALED TOGGLE ACTION ELECTRICAL SWITCHES

Andrew F. Raab, Morton Grove, and John W. Habecker, Zion, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Dec. 2, 1985, Ser. No. 803,491
Int. Cl.[4] H01H *1/52*
U.S. Cl. 200—327 4 Claims



1. A toggle action electrical switch, comprising

a casing,

an electrically insulating resinous plastic operating lever swingable in the casing between first and second positions, the lever having an outer arm projecting out of the casing and an inner arm projecting rearwardly into the casing,

an electrically conductive electrical contactor plate having an oversize slot for receiving the inner arm of the lever, the oversize slot affording a loose fit with the inner arm to provide for relative swinging movement between the inner arm and the contactor plate,

a coil spring mounted around the inner arm and interposed between the lever and the contactor plate for rearwardly biasing the contactor plate,

such contactor plate being movable with the lever between first and second positions corresponding with the first and second positions of the lever,

the spring being additionally compressed by movement of the lever between its first and second positions and thereby affording a toggle action whereby the lever is alternately biased toward its first and second positons,

first and second fixed electrical contacts in the casing and slidably engageable by the contactor plate,

such contactor plate forming an electrical bridge between the first and second contacts when the plate is in its first position while not forming an electrical bridge between the contacts when the plate is in its second position,

such contactor plate including first and second rearwardly projecting J-shaped flanges thereon at opposite ends of said plate for slidably engaging the respective first and second fixed contacts,

such first fixed contact comprising a detent formation including a forwardly projecting electrically conductive protuberance for detaining the first J-shaped flange in the first and second positions of the contactor plate,

such protuberance having oppositely sloping sides for engagement by the first J-shaped flange in the first and second positions of the contactor plate,

the first J-shaped flange being deflected forwardly against the biasing action of such coil spring to produce a detent action as such first J-shaped flange passes over such protuberance during the movement of the contactor plate between the first and second positions thereof, said first J-shaped flange being in continuous contact with said protuberance during movement of said first J-shaped flange between said first and second positions of said contactor plate,

the second fixed contact comprising a forwardly projecting electrically conductive contact point engageable by the second J-shaped flange when the contactor plate is in its first position,

and a pair of electrically insulating ramps sloping forwardly on such casing and adjacent such contact point on opposite sides thereof for slidable engagement by the second J-shaped flange to hold the second J-shaped flange out of engagement with the contact point in the second position of the contactor plate,

whereby the second J-shaped flange engages the contact point in the first position of the contactor plate while engaging the insulating ramps in the second position of the contactor plate.

4,766,279

HEAT VARIATION DETECTING CIRCUIT FOR THE MICROWAVE OVEN

Jong-In Park, Kyungsangnam-do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 24, 1986, Ser. No. 946,024
Claims priority, application Rep. of Korea, Dec. 27, 1985, 17713
Int. Cl.[4] H05B *6/68*
U.S. Cl. 219—10.55 B 3 Claims

1. A heat variation detection circuit for use with a microwave oven comprising:

heat sensor means for detecting temperature in said microwave oven and for outputting signals in response thereto;

present temperature register means for determining a present temperature value of said microwave oven in response to said signals from said heat sensor means, said present temperature register means storing said present temperature value for a predetermined period of time and thereafter outputting said present temperature value;

prior temperature register means for receiving said present temperature value output from said present temperature register means and for storing said present temperature value as a prior temperature value;

first comparator means for comparing said present temperature value stored in said present temperature register means with at least a last prior temperature value input to said prior temperature register means, said first comparator means thereafter outputting one of a RESET signal and an ENABLE signal in response to said comparing, said RESET signal being output when said present temperature value is noncoincident with said prior temperature value, said ENABLE signal being output when said present temperature value is coincident with said prior temperature value;

error counter means for receiving said RESET signals and said ENABLE signals from said first comparator means and for outputting a counter value, each successive ENABLE signed causing said error counter means to output an increasing counter value;

preset register means for storing and outputting a preset value; and

second comparator means for receiving said counter values from said error counter means and for receiving said preset value from said preset register means, said second comparator means terminating operation of said microwave oven in response to said counter value and said preset value such that when said heat sensor means fails to detect a change in temperature for a selected period of time during operation of said microwave oven, said heat sensor means is determined to be defective and said microwave oven operation is terminated.

4,766,280

WIRE ELECTRODE FOR THE SPARK EROSIVE CUTTING

Heinrich Groos, Herborn, Fed. Rep. of Germany, assignor to Berkenhoff GmbH, Heuchelheim, Fed. Rep. of Germany

Continuation of Ser. No. 722,103, Apr. 11, 1985, abandoned. This application Feb. 12, 1987, Ser. No. 14,143
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1984, 3415055
Int. Cl.[4] B23H *7/08, 7/22*
U.S. Cl. 219—69 W 9 Claims



5. A wire electrode for the electroerosive cutting of electri-

VOL 1093 ISS 4 AG 23 1988 UMI

cally conducting workpieces, wherein the wire electrode is a flexible single wire which has a solid polygonal cross section and is twisted about its central longitudinal axis, and wherein longitudinally extending edges on said polygonal cross-sectioned wire are helically formed to define a helical recess therebetween, said solid polygonal cross section being fully retained throughout the length of said wire electrode so that electrical current loads and strength characteristics will be unaffected by the formation of said helically formed recesses.

4,766,281

PULSE GENERATOR SPARK-EROSIVE METAL WORKING

Ernst Bühler, Losone, Switzerland, assignor to AG für industrielle Elektronik AGIE Losone bei Locarno, Losone, Switzerland

Filed Nov. 13, 1987, Ser. No. 120,351

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1986, 3639256

Int. Cl.⁴ B23H *7/14;* **G05F** *1/44;* **H02M** *3/335*

U.S. Cl. 219—69 P **7 Claims**



1. A pulse generator having first and second output terminals and adapted for use with a load including a spark gap and connected across the output terminals in order to work metals by spark erosion, the generator comprising:

a direct current source having positive and negative terminals and producing a constant direct voltage between the positive and negative terminals, the positive terminal being connected to the first output terminal;

a storage capacitor;

a switching device having mutually exclusive conductive and non-conductive states;

a first back-resonating blocking rectifier, the capacitor, the device and the first rectifier being connected in series between the first and second output terminals, the capacitor being connected directly to the first output terminals;

a second charge reversal rectifier;

a transformer having primary and secondary windings which are poled in opposite sense, the capacitor, the primary winding and the second rectifier being connected in series between the positive and negative terminals; and

a third recovery rectifier connected in series with the secondary winding between the positive and negative terminals.

4,766,282

FUSING APPARATUS AND METHOD WITH ELECTRODE CHANGING

Edward D. Riordan, S. Somerville, and Charles F. Szantho, Roselle Park, both of N.J., assignors to Joyal Products, Inc., Linden, N.J.

Filed Sep. 18, 1986, Ser. No. 908,566

Int. Cl.⁴ B23K *11/10*

U.S. Cl. 219—86.25 **11 Claims**

1. Fusing apparatus comprising: a fusing electrode holder means and ground electrode holder means for holding fusing and ground electrodes defining fusing and ground contact regions, respectively, at least one of said fusing and ground electrode holder means being a multicontact electrode holder means operative to hold at least one electrode defining a plurality of contact regions;

electrode positioning means for positioning each of said electrode holder means so that one said fusing contact region is presented in a workpiece engaging disposition and one said ground contact region is presented in a workpiece-engaging disposition;

engagement means for repetitively engaging said fusing and ground contact regions in workpiece-engaging dispositions with successive workpieces;

power means for directing electricity through the fusing and ground contact regions engaged with each workpiece so as to fuse elements of the workpiece to one another; and



electrode change means for moving each said multicontact electrode holder means to thereby present a new contact region in workpiece engaging disposition;

wherein one said multicontact electrode holder means includes a blade holder means for holding an electrode having an elongated edge and said electrode change means includes means for moving said blade holder means in a lengthwise direction of said edge to present a new region of said edge in workpiece-engaging disposition.

4,766,283

APPARATUS FOR ATTACHING INSULATION TO DUCT WORK

Allan McCorvey, and Timothy R. McCorvey, both of 10702 Munn, Houston, Tex. 77029

Filed Mar. 20, 1987, Ser. No. 28,557

Int. Cl.⁴ B23K *11/00, 11/30*

U.S. Cl. 219—98 **21 Claims**



1. An electric resistance welding apparatus for attaching insulation to duct work comprising

a supporting anvil having a substantially uninterrupted planar surface for supporting a sheet metal duct work with a sheet insulating material positioned thereon,

at least one resistance welding pin,

a movable hammer member positioned in spaced relation to and aligned with said anvil, including magnetic means adapted to support said resistance welding pin on a pin-supporting surface thereof, and movable toward and away from said anvil to drive said pin through said insulating material to engage said sheet metal duct work,

said hammer member and anvil each having an electrode electrically connected by said pin through said insulating material on engagement with said sheet metal duct work,

means for supplying an electric welding current through said electrodes, said pin and said sheet metal to weld the end of said pin to said sheet metal,

said pin having a rod-like shank with a pointed or small diameter end and an enlarged head portion with a substantially flat washer thereon, at least part of said washer and head portion being of magnetic material cooperable with said magnetic means to secure said pin on said hammer member,

said hammer member being of metal with a recess formed in said pin supporting surface of a size receiving said pin head portion and permitting said washer to rest flat against said pin-supporting surface,

a cylindrical highly conductive metal electrode member removably positioned in said hammer recess to engage said pin head portion,

said anvil being of metal with a recess formed in said planar sheet metal supporting surface,

a cylindrical highly conductive electrode member removably positioned in said anvil recess at or below said planar sheet metal supporting surface, and

said removable electrode members carrying the main flow of welding current to direct the same through said pin and sheet metal to weld the same together on operation of said hammer to drive said pin through said insulation to contact said sheet metal and energizing said current supplying means to bring said washer into contact with said insulation, said electrode members being replaceable after predetermined electrical erosion.

4,766,284

PRODUCTION OF COMPOUNDS BY REACTION OF SOLID MATERIALS AT HIGH TEMPERATURES PRODUCED BY PLASMA ARC TORCHES

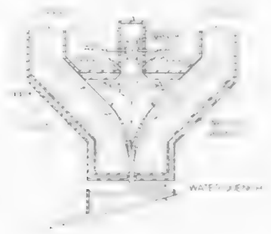
Patrick E. Cavanagh, Toronto, Canada, assignor to Magbemite Inc., Mississauga, Canada

Filed Mar. 5, 1986, Ser. No. 836,530

Claims priority, application United Kingdom, Mar. 5, 1985, 8505597

Int. Cl.⁴ B23K *9/00;* **B22F** *9/00*

U.S. Cl. 219—121.59 **13 Claims**



1. A process for reacting solid materials to form a strontium ferrite in the form of a eutectic mixture of SrO and Fe_2O_3 by reacting together ferric oxide with at least one strontium oxide-forming compound carried out in a furnace comprising a sloping wall of strontium ferrite, which comprises:

heating a primary feed material comprising a ferric oxide to a molten condition by a plasma gas stream,

feeding a secondary feed material comprising at least one strontium oxide-forming compound and including fluxes in sufficient quantity to lower the melting point of said secondary feed material below the melting point of said strontium ferrite wall and effective to form separable slag from impurities in said secondary feed material, in particulate form down said sloping wall,

directing said molten primary feed material and said plasma gas stream against said secondary feed material to cause the same to melt and react with the primary feed material to form a strontium ferrite, thereby to form a molten product pool and a liquid layer of molten slag material comprising fluxed impurities in said secondary feed material on the surface of said product pool, and

collecting said product pool and solidifying the same separately from the slag layer.

4,766,285

APPARATUS FOR THE REAL TIME CHECKING OF A TOTAL PENETRATION WELD FOR A JOINT WHICH CANNOT BE DIRECTLY OBSERVED

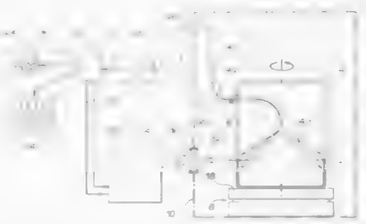
Claude Decailloz, Palaiseau; Jean Robin, Paris, and Jean-Pierre Massy, Bretigny sur Orge, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Sep. 16, 1986, Ser. No. 908,024

Claims priority, application France, Sep. 16, 1985, 85 13700

Int. Cl.⁴ B23K *26/00*

U.S. Cl. 219—121.63 **6 Claims**



1. An apparatus for the real time inspection or checking of a total penetration weld appropriate for a joint which cannot be directly observed, comprising:

an optical detection means,

a processing means; and

a signaling means, wherein said optical detection means comprises an optoelectronic detector and an optical fibre, said fiber having one end cut in the shape of a cone and wherein said fiber end in the shape of a cone collects the light intensity present at the back of a welding bead, while the other end of said fiber is connected to said optoelectronic detector.

4,766,286

ARC LENGTH CONTROL FOR PLASMA WELDING

William F. Iceland, Los Alamitos, Calif., assignor to United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1987, Ser. No. 79,317

Int. Cl.⁴ B23K *9/00*

U.S. Cl. 219—121.57 **12 Claims**

1. For use with a variable polarity plasma arc welding apparatus having a plasma arc power supply connected to a movable electrode assembly above a work piece and including a motor for moving the electrode assembly, a control apparatus comprising plasma arc power supply voltage measuring means connected in a servo loop incorporating the motor wherein said voltage measuring means includes a variable polarity AC

VOL 1093 ISS 4 AG 23 1988 UMI

to DC adapter employing half wave rectification of the AC voltage across the arc, and wherein said voltage measuring



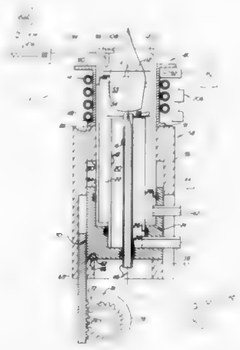
means forms a control voltage dependent on plasma arc length for operation of the motor.

4,766,287

INDUCTIVELY COUPLED PLASMA TORCH WITH ADJUSTABLE SAMPLE INJECTOR

Peter J. Morrisroe, New Milford; Andrew T. Zander, Brookfield; David C. Manning, Trumbull, and Peter H. Gagne, Brookfield, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Mar. 6, 1987, Ser. No. 22,910
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121.52 11 Claims



1. An induction plasma generating system comprising:
a tubular torch member formed of electrically insulating heat resistant material;
means for passing plasma-forming gas through the torch member in a forward direction;
a helical induction coil with an axis, a forward edge and a rearward edge, disposed outside of and substantially concentrically with a torch member so as to energize the gas as a plasma discharge in a plasma region in the torch member;
injection means for injecting a sample substance into the gas in the torch member;
adjusting means for adjusting the position of the injection means in an axial direction with respect to the induction coil while the gas is being energized, including means for varying the position of the injection means between a first location and a second location, the first location being proximate a first plane that is oriented perpendicularly to the axis of the induction coil in contact with the forward edge of the induction coil, and the second location being proximate a second plane that is oriented perpendicularly to the axis of the induction coil in contact with the rearward edge of the coil; and
means for initiating the plasma discharge while the injection means is positioned at the first location, the adjusting means further including means for relocating the injection means from the first location to the second location after the plasma discharge is initiated.

4,766,288

FLASH FUSING REFLECTOR CAVITY

John S. Berkes, Webster, and Stanley B. Swackhamer, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 17, 1987, Ser. No. 85,824
Int. Cl.[4] H05B *33/24*
U.S. Cl. 219—216 3 Claims



1. Apparatus for fusing heat fixable toner images to a final support material upon which toner images are loosely adhering comprising:
illuminating means capable of emitting radiant energy at wavelengths at which the toner images are highly absorptive,
a substantially enclosed cavity, the illuminating means disposed therein,
said cavity including a plurality of reflecting surfaces arranged in proximity to the illuminating means to produce substantially uniform radiation across the cavity, the reflecting surfaces including a flat diffuse reflector, at least two essentially parabolic diffuse reflectors, and a specular reflector disposed at a first end of each of the parabolic diffuse reflectors, a second end of each of the parabolic diffuse reflectors being disposed near the flat diffuse reflector, the flat diffuse reflector and the parabolic diffuse reflectors forming a gap allowing flow of air.

4,766,289

LIGHT WEIGHT, VERY FAST TEMPERATURE COMPENSATING SOLDERING IRON

Giovanni Santoro, Via Campodimele, 55, and Ermanno Francolini, V. Campo Ligure 19, both of Rome, Italy

Continuation-in-part of Ser. No. 524,203, Aug. 18, 1983, abandoned. This application Jun. 23, 1986, Ser. No. 877,386
Claims priority, application Italy, Aug. 18, 1982, 49004 A/82
Int. Cl.[4] A05B *1/00*
U.S. Cl. 219—235 17 Claims

1. A soldering iron, comprising:
a soldering tip having a loop of conductive material for receiving current, said soldering tip having a resistance element for ohmicly producing heat, said resistive element having a resistance value that increases with temperature;

a power oscillator coupled to said soldering tip to produce current flow in said loop, said power oscillator transfer-



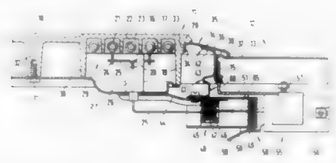
ring power to said soldering tip until said soldering tip reaches a predetermined temperature.

4,766,290

SEALED ELECTRIC HOTPLATE

Felix Schreder, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Fed. Rep. of Germany

Filed Aug. 27, 1986, Ser. No. 900,781
Int. Cl.[4] H05B *3/70*
U.S. Cl. 219—458 21 Claims



1. A sealed electric hotplate for fitting in a mounting opening of a mounting plate, comprising:
a hotplate body with a planar, sealed cooking surface, electric heating resistors, which are embedded in electrically insulating manner on an underside of the hotplate body and can be connected to a power supply,
electric connecting means for connecting the heating resistors to a connecting member located below the mounting plate,
at least one sheet metal trim ring surrounding the hotplate body and which engages on the hotplate body and whose outer edge rests on the mounting plate in the area surrounding the mounting opening,
centering means connected to the trim ring and constructed to cooperate with an inner face of the mounting opening, and
grounding means for the trim ring.

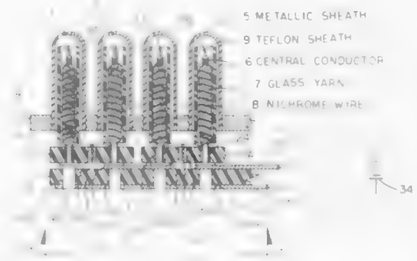
4,766,291

ELECTRICAL HEATING ELEMENT MODULE FOR HAIR COMB OR PICK

Virgil H. Collins, 958 Sunbury, Columbus, Ohio 43219

Filed Mar. 28, 1986, Ser. No. 845,452
Int. Cl.[4] H05B *3/00;* A45D *20/48;* H01C *1/028*
U.S. Cl. 219—534 6 Claims

1. An electrical heating element module for use in a comb or the like comprising:
(a) a pair of elongated metallic central conductors arranged in parallel, side-by-side spaced relationship,
(b) a fibrous inorganic electrical insulation material separately wound on each of said central conductors leaving opposite ends thereof exposed,
(c) a continuous electrical resistance heater wire common to said pair of insulated central conductors, said heater wire being wound first on one of said insulated central conductors and then thereafter wound onto the other of said insulated central conductors with one end of said wire being electrically connected to an exposed end of one conductor and the other end of wire being electrically connected to corresponding exposed end of the other conductor,
(d) a flat electrical insulator receiving said remaining exposed ends of said insulated central conductors with said



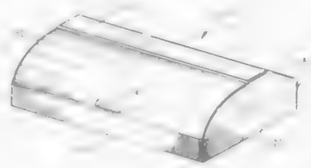
pair of conductors vertically positioned therein and said remaining exposed ends being adaptable to an electrical connection,
(e) a separate tubular electrical insulation sheath of non-fibrous expandable material surrounding each of said insulated conductors and the heater wire thereon in spaced relation to said heater wire,
(f) a separate metallic sheath enclosing each of said non-fibrous expandable insulation sheaths surrounding said heater wire and said insulated central conductor in spaced relationship to said non-fibrous sheath when unheated.

4,766,292

REMOTELY CONTROLLED CASH BOX

Richard E. Cone, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 23, 1987, Ser. No. 99,974
Int. Cl.[4] G07G *1/00*
U.S. Cl. 235—22 6 Claims



1. In a checkout system for processing purchased merchandise items including a processing means, a remotely positioned cash box assembly comprising:
a support structure having front, rear and a pair of side wall portions;
a currency receptacle mounted within said support structure having a plurality of separate coin and bill compartments;
a movable cover member rotatably mounted to said side walls, said cover member movable between a first position engaging said front wall portion and a second position adjacent said rear wall portion;

VOL 1093 ISS 4 AG 23 1988 UMI

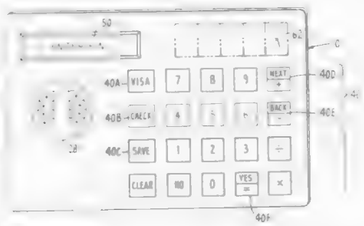
resilient means engaging said cover member normally urging said cover member towards said second position;
said cover member including a recessed portion enabling the cover member to be manually moved to said first position;
electrically operated latching means mounted to said front wall portion for latching said cover member in said first position upon movement of the cover member to said first position; and
cable means interconnecting said latching means and said processing means enabling said processing means to operate said latching means whereby said latching means releases said cover member for movement to said second position under the action of said resilient means.

4,766,293

PORTABLE FINANCIAL TRANSACTION CARD CAPABLE OF AUTHORIZING A TRANSACTION IN FOREIGN CURRENCIES

Vincent Boston, San Mateo, Calif., assignor to VISA International Service Association, San Mateo, Calif.

Filed Jun. 26, 1986, Ser. No. 878,619
Int. Cl.[4] G06F *15/30, 7/38*
U.S. Cl. 235—379 10 Claims



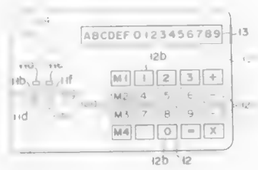
1. A transaction card capable of authorizing a transaction in foreign currencies comprising:
data entry means;
storage means for holding a transaction limit represented in a base currency and at least one rate for converting the base currency to a different, foreign currency, said storage means also holding an expiration date associated with each said conversion rate; and
processor means, which includes a calender function and is connected to the data entry means and the storage means, said processor means functioning such that when a transaction is to be carried out in a foreign currency said processor means will initially determine whether the current date is before the expiration date associated with the conversion rate of said foreign currency, and if so, the processor means will convert the transaction limit initially represented in said base currency into said foreign currency using the associated conversion rate and thereafter compare the transaction amount expressed in the foreign currency supplied through said data entry means to said converted transaction limit to determine if the transaction should be approved.

4,766,294

PORTABLE MEDIUM

Seietsu Nara, Yokohama; Katsuhisa Hirokawa, Yokosuka, and Kenichi Kobayashi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 27, 1987, Ser. No. 89,998
Claims priority, application Japan, Aug. 29, 1986, 61-203358; Aug. 29, 1986, 61-203360
Int. Cl.[4] G06K *5/00*
U.S. Cl. 235—380 20 Claims



1. A portable medium comprising:
input means;
display means for displaying the contents as input by said input means;
control means for controlling said input means and said display means;
first clock means for providing time, said time being displayed by said display means, change of the contents of the time by said input means being allowed; and
second clock means for providing time, displaying of the time by said display means being prohibited, change of the contents of the time by said input means being prohibited.

4,766,295

ELECTRONIC PRICING DISPLAY SYSTEM

Malcolm H. Davis; Kent A. Janes; Daniel J. Kleffner; William P. Seltzer, and Hugh F. Spence, all of San Antonio, Tex., assignors to H.E. Butt Grocery Company, San Antonio, Tex.

Filed Mar. 2, 1987, Ser. No. 21,328
Int. Cl.[4] G06F *15/24*
U.S. Cl. 235—383 14 Claims



1. A computer driven system for displaying product pricing information, said system comprising:
a source of computer based information, said information including a programmed address code and product pricing information;
a plurality of transmitters located in a store and adapted to receive said computer based information, said transmitters comprising means for converting said computer based information into a modulated signal and means for wireless transmission of said modulated signal throughout an area of said store;
a plurality of remote wireless display tags positioned adjacent selected product locations in said area of said store, each said display tag comprising,
means for receiving said modulated signal including said programmed address code and said product pricing information,
processor means for storing internally a local address code for said display tag and for comparing said received programmed address code with said local address code, and

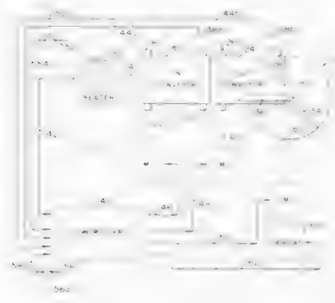
display means responsive to said processor means for selectively displaying said received product pricing information when said local address code matches said programmed address code; and
a hand-held controller for providing information directly to a selected display tag from the immediate vicinity of said selected tag, said controller comprising a microcomputer and a short range transmitter, whereby said hand-held controller when placed in the immediate vicinity of a selected display tag can transmit specific pricing information directly to said selected display tag for display thereon, independently of said source of computer based information.

4,766,296

ARTICLE CHECKOUT COUNTER AND SYSTEM

Hans Barth, Fort Lauderdale, Fla., assignor to CheckRobot, Inc., Deerfield Beach, Fla.

Filed Apr. 29, 1987, Ser. No. 43,938
Int. Cl.[4] G06K *15/00*
U.S. Cl. 235—383 12 Claims



1. A system for the checkout of articles selected for purchase by consumers, such system comprising a code reader for reading an identification code on such articles and generating an output signal indicative of such code reading, conveyor means for receiving and transporting said articles, first and second bagging areas served by the conveyor means, channeling means operable for placing said conveyor means selectively in communication with one or the other of said bagging areas, switch means operable by said consumers for use of said system, and controller means responsive to said code reader output signals and said switch means for operation of said channeling means.

4,766,297

DUAL MODE STATIONARY AND PORTABLE SCANNING SYSTEM

Robert M. McMillan, Carrollton, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Jan. 8, 1987, Ser. No. 1,806
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—455 14 Claims

1. A scanning system for reading symbols comprising:
portable hand-held scanning means for generating electrical signals descriptive of the symbols including manually actuable trigger means for initiating reading of the symbols each time said trigger means is manually actuated by the user when said portable hand-held scanning means is supported by the user;
said portable hand-held scanning means, further including:
a housing;
a light source mounted within said housing for generating a light beam;
optic means mounted within said housing for directing said light beam along a path towards the symbol;
scanning means mounted within said housing for cyclically sweeping said light beam across the symbol;
sensor means mounted within said housing for detecting the intensity of light reflected from the symbol, and for generating an electrical signal indicative of the detected intensity of the reflected light;
signal processing means mounted within said housing for processing said electrical signal and for generating said electrical signals descriptive of the symbol; and
handle means for normally supporting said housing in a non-contacting relationsip with the symbol during reading thereof when said scanning means is supported by the user, said manually actuatable trigger means being disposed in said handle means;
fixture means for receiving and supporting said portable hand-held scanning means and including a head portion and a base portion, said hand-held scanning means being supported by said head portion a predetermined distance above said base portion to allow objects bearing the symbols to pass between said head portion and said base portion;
said scanning means housing is generally handgun-shaped and said handle means is dimensioned to be gripped by the hand of a user and wherein said housing further includes a barrel portion connected to said handle portion, said barrel portion being received by said head portion of said fixture means; and
said fixture means further including means interconnected to said protable hand-held scanning means for sensing the presence of an object between said head portion and said base portion and for automatically initiating reading by said portable hand-held scanning means of the symbols without actuation of said manually actuatable trigger means each time said sensing means senses the presence of an object when said portable hand-held scanning means is supported by said fixture means.

4,766,298

LOW-PROFILE PORTABLE UPC OPTICAL SCANNER

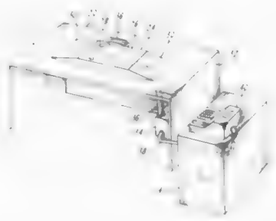
Thomas J. Meyers, St. Clairsville, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Nov. 10, 1986, Ser. No. 929,112
Int. Cl.[4] G06K *7/14*
U.S. Cl. 235—462 13 Claims

1. In an optical scanning system, an optical scanner checkout station for reading bar code symbols on objects passing over the checkout station comprising:
an elongated portable housing structure which includes a pair of wall members, a floor member and a cover member having an aperture therein through which scanning light beams are projected and portions over which a merchandise item bearing a coded label is supported for movement past the aperture;
a supporting surface on which the housing structure is positioned;

VOL 1093 ISS 4 AG 23 1988 UMI

a source of light beams mounted away from the housing structure;
light emitting means mounted in one of said wall members for transmitting received light beams from said source into said housing structure along a defined path;
light transmitting means connected between the source of light beams and the light emitting means for transmitting light beams to the light emitting means;
optical means mounted on said floor member adjacent said light emitting means in said defined path for transmitting



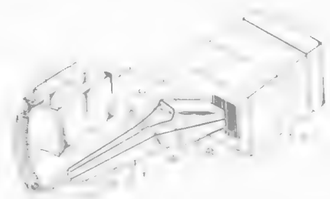
the light beams from the light emitting means along a first light path;
scanning means mounted on said floor member and in the first light path for cyclically sweeping the light beam along a second light path; and
reflecting means mounted in said second light path and at an angle to said floor member adjacent the cover member for reflecting the light beams through said aperture in the cover member for scanning a bar code label positioned adjacent said aperture.

4,766,299
HAND-MOUNTED BAR CODE READER
Danial J. Tierney, Eugene, and P. Guy Howard, Junction City, both of Oreg., assignors to Spectra-Physics, Inc., San Jose, Calif.
Filed Mar. 28, 1986, Ser. No. 845,677
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—472 3 Claims



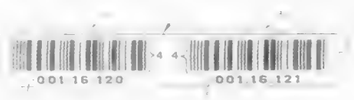
1. A laser bar code scanner device adapted to be worn on the back of a human hand, comprising,
a compact laser bar code scanner including a laser for projecting a beam, a laser beam scanner, a housing surrounding the laser and scanner, and a connection to a power supply,
switch means for energizing the laser,
a hand strap connected to the housing, and of a length sufficient to extend around the hand to retain the housing on the back of the hand in a position to project a scanning beam forward generally in the direction of the natural pointing of the hand and arm, and
means associated with the strap and the switch means for activating the switch means to energize the laser upon a deliberate flexure of muscles in the hand.

4,766,300
INSTANT PORTABLE BAR CODE READER
George E. Chadima, Jr., Cedar Rapids, Iowa, and Vadim Laser, Cincinnati, Ohio, assignors to Norand Corporation, Cedar Rapids, Iowa
Division of Ser. No. 637,693, Aug. 6, 1984, Pat. No. 4,570,057, said Ser. No. 637,693, is a continuation of Ser. No. 334,811, Dec. 28, 1981, abandoned. This application Feb. 7, 1986, Ser. No. 827,286
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.[4] G06K *7/10*
U.S. Cl. 235—472 65 Claims



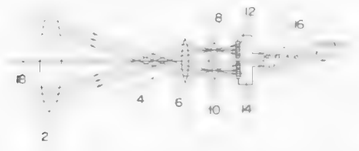
1. A portable instant bar code reader comprising:
a hand-held unit having illumination and light receiving window means;
a flash illuminating device positioned behind said window means;
said flash illuminating device and window means being configured to distribute light across the surface of a bar code being read by said reader, said window means being configured to receive light reflected from the surface of said bar code;
a photodetector disposed within the reader;
lens means for casting an image of light received through said window means onto said photodetector;
said flash illuminating device comprising elliptical-effect reflector means having a light source at a near focal point thereof, and having a second focal point disposed in front of said window means, such that the elliptical axis for said elliptical-effect reflector means extends obliquely relative to said window means.

4,766,301
TEXTILE FABRIC WITH WOVEN-IN BAR CODE
Hubertus N. C. Evers, Heeze, Netherlands, assignor to Robert A. Van der Laan, Cierlingsbeek, Netherlands
Filed Aug. 5, 1986, Ser. No. 893,504
Claims priority, application Netherlands, Aug. 20, 1985, [illegible]
Int. Cl.[4] G06K *19/00*
U.S. Cl. 235—487 12 Claims



1. A textile fabric composed of natural and/or synthetic fibers, characterized in that a bar code has been woven into the fabric.

4,766,302
FOCUS DETECTING DEVICE INCLUDING MEANS FOR DETERMINING A PRIORITY OF CORRELATION CALCULATIONS
Tokuji Ishida, Osaka; Katsumi Kozakai, Sakai, and Masataka Hamada, Minami Kawachi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 17, 1985, Ser. No. 735,569
Claims priority, application Japan, May 17, 1984, 59-100069; May 22, 1984, 59-104212; May 22, 1984, 59-104213
Int. Cl.[4] G02B *7/11*
U.S. Cl. 250—201 2 Claims



1. A focus detection system for detecting the focus condition of an objective lens comprising:
dividing means for dividing a predetermined detectable range of an amount of defocus of the objective lens into a plurality of divided ranges;
selecting means for selecting one of the divided ranges;
discriminating means for discriminating whether the amount of defocus can be detected within the selected range, and
calculating means for calculating the amount of defocus within the selected range when the discriminating means discriminates that the amount of defocus can be detected within the selected range, and for calculating the amount of defocus within the divided range other than the selected range when the discriminating means discriminates that the amount of defocus cannot be detected within the selected range.

4,766,303
OPTICAL INFORMATION SYSTEM HAVING A BIREFRINGENCE PLATE MOVABLY DISPOSED IN ACCORDANCE WITH THE DETECTED LIGHT INTENSITY
Keiichi Yoshizumi; Akira Matsubara, and Takao Hayashi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 13, 1987, Ser. No. 49,262
Claims priority, application Japan, May 20, 1986, 61-115292
Int. Cl.[4] G01J *1/32*
U.S. Cl. 250—205 16 Claims



1. An optical information system comprising:
(a) means for emitting light;
(b) an information recording member exposed to the emitted light;
(c) a beam splitter disposed between the light emitting means and the information recording member for separating light reflected by the information recording member and light traveling from the light emitting means to the information recording member;
(d) means for detecting intensity of the separated reflected light;
(e) a birefringence plate movably disposed between the light emitting means and the information recording member; and
(f) means for moving the birefringence plate in accordance with the detected intensity of the separated reflected light.

4,766,304
SENSITIVITY-CALIBRATION CIRCUIT FOR USE IN AN ABSORPTION ANALYZER
Nobutaka Kihara; Ichiro Asano, and Kensosuke Kojima, all of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan
Filed Sep. 11, 1986, Ser. No. 906,016
Claims priority, application Japan, Nov. 9, 1985, 60-251524
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—214 C 2 Claims



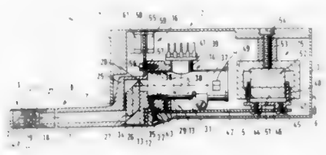
1. A sensitivity-calibration circuit for an absorption analyzer including an optical system and a sample system and provided with a check-signal generating means for easily checking the sensitivity, said sensitivity-calibration circuit comprising: a temperature-compensation circuit means for said optical system for compensating for a temperature-drift due to said optical system; a temperature-compensation circuit means for said sample system for compensating for a temperature-drift due to said sample system; said temperature-compensation circuit for said optical system and said temperature-compensation circuit for said sample system being separately provided, and a switch means which is switchable to a measuring state, in which both said temperature-compensation circuit for said optical system and said temperature-compensation circuit for said sample system are operative so as to compensate for respective temperature drifts, and is switchable to a checking state in which said temperature-compensation circuit for said sample system is disconnected so as not to be inoperative but said temperature-compensation circuit for said optical system is operative so as to compensate for temperature drift.

4,766,305
OPTICAL SURFACE TEST APPARATUS FOR TESTING CONSTRICTED SURFACE AREAS
Christoph Fahl, Göttingen, Fed. Rep. of Germany, assignor to Feinprüf Feinmess und Prüferäte GmbH, Göttingen, Fed. Rep. of Germany
Filed Aug. 24, 1987, Ser. No. 88,856
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1986, 3630124
Int. Cl.[4] H01J *3/14*; G01J *1/20*
U.S. Cl. 250—216 17 Claims

1. Optical surface test apparatus having
a housing (2);
a light source (L,37) generating a beam of light;
a collimator lens (36), the light source being located in the focus of the collimator lens;
a light detector (39,41);
a beam splitter (38) located in the path of the beam of light from the source through the collimator lens and splitting

VOL 1093 ISS 4 AG 23 1988 UMI

a return beam for directing the return beam to the light detector;
an objective lens (21) in the path of light from the collimator lens (36) for focussing the light on the surface of a test object and receiving reflected light therefrom;
positioning means (15) coupled to the objective lens for changing the spacing between the objective lens and the test object and for focussing the light from the objective lens; and
a position sensing means (16) coupled to the objective lens for measuring the change of spacing of the objective lens with respect to the test object,
comprising, in accordance with the invention, a tubular, hollow, elongated support arm (8) projecting from the housing (2) for supporting the objective lens (21) at an outer or forward end portion (9);
pivot means (12) located in a housing (2) and supporting the inner or rearward end portion (13) of the arm for pivotal



movement of the arm about an axis transverse to the longitudinal extent of said arm;
a right-angled deflection mirror (22) located within said arm;
a light transmission opening (23) located at said forward portion of the arm and transmitting light from said mirror to a test object and reflected light from the test object to said mirror for passage through the objective lens (21) and longitudinally into the arm;
the light source (L,37), the collimator (36), the beam splitter (38) and the light detector (39,41) being located on an inner or rearward portion of the arm;
light projection means (27) for projecting the beam of light from the collimator lens into the hollow arm and towards the deflection mirror (22); and
wherein the positioning means (15) and the position sensing means (16) are located within the housing, operatively coupled to the inner or rearward end portion of the arm and positioned kinematically between the housing (2) and said arm (8).

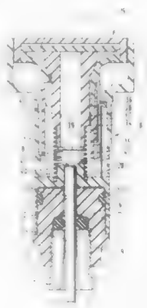
4,766,306

APPARATUS WITH ILLUMINATED ACTUATOR FOR PHOTOELECTRICALLY CONTROLLING A LOAD

Daniel Bichsel, Wangen, and Martin Plüss, Aarburg, both of Switzerland, assignors to Elektro-Apparatebau Olten AG, Zürich, Switzerland

Filed Oct. 1, 1986, Ser. No. 913,951
Claims priority, application Switzerland, Oct. 28, 1985, 4631/85
Int. Cl.[4] H03K 3/00
U.S. Cl. 250—227 11 Claims

1. Apparatus for controlling a load, comprising a load operating circuit; first and second radiation sources; a photodetector responsive to radiation from one of said sources to change the condition of said circuit; an optomechanical transducer defining a path for the radiation from said sources and including means for reflecting radiation from said one source to said photodetector, said path including a substantially conically diverging portion and said reflecting means including a radiation reflecting surface disposed substantially transversely of the direction of propagation of radiation along said portion of said path and having an area at least matching the smallest cross-sectional area of said portion of said path; means for moving said reflecting means in and counter to said direction between first and second positions in which the quantity of reflected radiation from said one source respectively suffices and is insufficient to effect a change in the condition of said



circuit; and means for changing the intensity of radiation which issues from the other of said sources in response to changes in the condition of said circuit.

4,766,307

SEMICONDUCTIVE RADIAL PHOTODETECTOR AND APPARATUS COMPRISING SUCH A DETECTOR

Marcellinus J. M. Pelgrom, Eindhoven, and Jan G. Dil, Almelo, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1986, Ser. No. 924,230
Claims priority, application Netherlands, Nov. 1, 1985, [redacted]
Int. Cl.[4] G01D 5/34
U.S. Cl. 250—231 SE 6 Claims



4. An apparatus for measuring angular displacement of an object comprising
a circular measurement disk mechanically connect to an object,
a pattern of alternate first and second strips disposed on said measurement disk, said first strips extending in a radial direction on said circular measurement disk, and said first strips alternating with said second strips in a tangential direction, said first and said second strips having different optical properties,
radiation source means for illuminating said pattern of alternate strips, and
photodetector means for converting radiation from said pattern of alternate strips into electrical signals, said photodetector means comprising
a semiconductor region of a first conductivity type having a plurality of strip-shaped photodiodes, said photodiodes being regions of a second opposite conductivity type,
a plurality of p-n junctions disposed between said regions of first and second conductivity type,
said photodiodes having ends located on two concentric arcs

of a circle, said photodiodes having longitudinal sides extending in a radial direction, and said photodiodes being separated at similar distances in a tangential direction,
a first output electrode connected to one end of alternate consecutive photodiodes and a second output electrode connected to opposite ends of remaining alternate photodiodes,
an image-defining shield of a conductive layer provided above said photodiodes, said shield being impervious to radiation, and said shield covering ends of said photodiodes,
said shield having an opening to expose a main portion of said photodiodes, said opening having opposite edges concentric with said two concentric arcs of a circle,
said shield having bands adjoining said opposite edges of said opening, said bands having respective constant widths, said widths having a ratio substantially inversely proportional to a ratio of radii of curvature of center lines of said bands such that cross-talk of adjacent photodiodes is minimized, and
a field effect transistor having an insulated gate electrode positioned adjacent to one of said first and second output electrodes, said field effect transistor connecting said one of said first and second output electrodes to each photodiode.

4,766,308

OPTICAL SCANNER WITH REFRACTIVE MATERIAL POSITIONED ON INNER REFLECTIVE FACETS

Lars Karlsson, Täby, Sweden, assignor to Pharos AB, Stockholm, Sweden

PCT No. PCT/SE86/00104, § 371 Date Nov. 24, 1986, § 102(e) Date Nov. 24, 1986, PCT Pub. No. WO86/05597, PCT Pub. Date Sep. 25, 1986
PCT Filed Mar. 11, 1986, Ser. No. 943,214
Claims priority, application Sweden, Mar. 22, 1985, 8501429
Int. Cl.[4] G02B 26/08; H01J 3/14
U.S. Cl. 250—236 4 Claims



1. An optical scanner arrangement which comprises a stationary optical system and at least one rotatable unit (15) provided with at least one scanning reflecting surface placed in a beam path of said scanner arrangement, wherein
(a) said at least one scanning reflecting surface is positioned so that said beam path upon reflection thereagainst passes through a material having a refractive index greater than 1 and provided in contact with said at least one scanning reflecting surface, wherein, during one scan, said scanning reflecting surface rotates so that the angle formed thereby with an optical axis of a stationary part of said scanner arrangement varies;
(b) said material having a retractive index greater than 1 has a curved outer transition surface of such a shape that said beam path passes through said transition surface at a transition point, which point, during one scan, moves along said transition surface along a path concentric with the rotational axis (18) of said rotatable unit and at least substantially parallel with a path along which an image point for radiation is arranged to travel during a scan and lying in a plane normal to said rotational axis so that said transition surface acts as a stationary part belonging to said optical system;
(c) said rotating unit being formed as a rotatable drum provided with an annulus comprising a plurality of reflecting facets (16) as a scanning component, a detector (D') having a relay optics (19) which generates an image (1') of said detector in the vicinity of one of said facets, and at least on e concave mirror (20, 21) located externally of the mirrored drum;
(d) said facets (16) being reflective on both the inner and outer surfaces; and
(e) a body (17) made of material which is transparent to the radiation in question being positioned so as to adjoin the inner surfaces of said facets (16) and being curved outwardly from the side of the facet annulus, at least on one side thereof.

4,766,309

AIR FLOW SHIELDING ATTACHMENT FOR USE IN PROJECTION TYPE EXPOSURE APPARATUS

Yoshihiko Kudo, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Aug. 25, 1986, Ser. No. 899,863
Claims priority, application Japan, Aug. 29, 1985, 60-190253
Int. Cl.[4] H01J 40/14
U.S. Cl. 250—237 R 7 Claims



1. In a projection type exposure apparatus having a projection optical system for projecting an image of an original pattern on a mask onto a substrate, a stage member for supporting said mask and a barrel member for holding said optical system between said mask and said substrate, wherein a light path exposed to external air is defined between said stage member and said barrel member, an air flow shielding attachment for shielding said light path from the external air flow comprising:
a tubular member having a length corresponding substantially to the distance between said stage member and said barrel member, and having cross-dimensions sufficient to envelop said light path; and
means for detachably positioning said tubular member between said stage member and said barrel member such that said light path is enveloped by said tubular member.

4,766,310

PHOTOELECTRIC POSITION MEASURING INSTRUMENT WITH GRIDS

Dieter Michel, Traunstein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Nov. 19, 1986, Ser. No. 932,788
Claims priority, application Fed. Rep. of Germany, Nov. 21, 1985, 3541199
Int. Cl.[4] H01J 3/14
U.S. Cl. 250—237 G 10 Claims

1. A photoelectric position measuring instrument of the type comprising a measuring graduation, the measuring graduation defining a measuring direction and formed by grids, the measuring graduation further defining a grid constant; and a scanning graduation formed by grids and defining a grid constant

VOL 1093 ISS 4 AUG 23 1988 UMI

substantially equal to that of the measuring graduation; wherein the scanning graduation and the measuring graduation are arranged parallel to and shiftable with respect to one another; the improvement comprising:

at least one of the scanning and measuring graduations is constructed as a phase grid with the slat width unequal to the furrow width;

at least a first and second scanning field, the scanning fields displaced with respect to one another in the measuring direction by a fraction of the grid constant; the scanning



fields cooperating with the measuring graduation to produce respective sets of diffracted partial light rays such that the firt set is substantially opposite in phase to the second set;

selectively acting optical means allocated to the scanning fields to detectably separate the two sets of diffracted rays; and

at least a first and second plurality of photodetectors arranged to detect selected diffraction orders of the respective sets of diffracted rays.

4,766,311

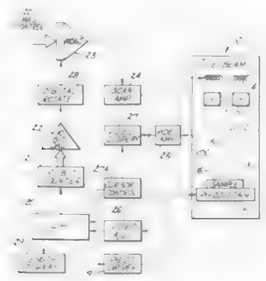
METHOD AND APPARATUS FOR PRECISION SEM MEASUREMENTS

Dieter G. Seiler, Carleton Place, and David V. Sulway, Nepean, both of Canada, assignors to Vickers Instruments (Canada) Inc., Canada

Continuation of Ser. No. 591,616, Mar. 20, 1984, abandoned. This application Feb. 13, 1987, Ser. No. 14,198

Int. Cl.[4] G01D *18/00;* **G01N** *23/00*

U.S. Cl. 250—252.1 8 Claims



1. A method for making calibrated distance measurements of a structural feature on an object represented by an SEM image in terms of predetermined absolute distance units, said method comprising the steps of:

generating a first SEM representation of at least a portion of said object;

displacing said object through a known absolute distance Δd along a predetermined direction in terms of predetermined units of distance measure;

generating a second SEM representation of at least said portion of the object;

comparing said first and second SEM representations to determine the apparent displacement therebetween $\Delta d'$ in terms of arbitrary distance measurement units;

generating a calibration factor $\Delta d/\Delta d'$;

measuring an apparent dimension D_x of said structural feature within an SEM image in terms of said arbitrary distance measurement units; and

determining the calibrated absolute dimension $D_c = D_x \Delta d/\Delta d'$ of said structural feature in terms of said predetermined units of distance measure.

4,766,312

METHODS AND APPARATUS FOR DETECTING NEGATIVE IONS FROM A MASS SPECTROMETER

Gordon J. Fergusson, Claremont, Calif., and Marvin L. Vestal, Houston, Tex., assignors to Vestec Corporation, Houston, Tex.

Filed May 15, 1987, Ser. No. 49,928

Int. Cl.[4] H01J *49/02*

U.S. Cl. 250—281 20 Claims



1. An improved mass spectrometry system for analyzing the composition of a sample, including an ion source and focusing means for generating an ion beam having ions representative of the sample, a mass analyzer for scanning selected ions from the beam either at a specific atomic mass unit or over a range of atomic mass units, and an ion detector having an electron multiplier with an anode and cathode for receiving ions from the beam discharged from the mass analyzer and for providing a detector output signal indicative of the intensity of ions at a specific atomic mass unit and representative of the composition of the sample, the system further comprising:

power supply means for charging the cathode at a high negative potential to attract positive ions or at a high positive potential to attract negative ions while maintaining the anode at a positive potential relative to the cathode;

means for modulating the ion beam to the mass analyzer for producing a modulated ion beam to the detector and a modulated high-voltage output signal from the detector;

circuitry means for capacitively or inductively coupling the modulated high-voltage output signal to ground and providing a coupled output signal functionally related to the modulated high-voltage output signal;

sensing means for measuring distortion of the coupled output signal introduced by the capacitive or inductive coupling of the modulated high-voltage output signal to ground; and

signal modification means for correcting the coupled output signal in response to the measured coupled output signal distortion to provide a modified coupled output signal representative of the modulated high-voltage output signal and thus the composition of the sample.

4,766,313

APPARATUS FOR QUANTITATIVE SECONDARY ION MASS SPECTROMETRY

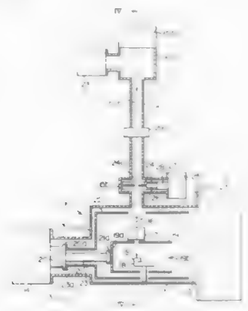
Yoshikazu Homma, and Yoshikazu Ishii, both of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Continuation of Ser. No. 713,308, Mar. 18, 1985. This application Feb. 26, 1987, Ser. No. 20,181

Claims priority, application Japan, Mar. 22, 1984, 59-53462; Jul. 6, 1984, 59-140241

Int. Cl.[4] H01J *49/24*

U.S. Cl. 250—289 12 Claims



1. An apparatus for quantitative secondary ion mass spectrometry comprising:

a sealed chamber for storing a sample containing a light impurity element which is to be analyzed;

secondary ion generating means for bombarding a emit a secondary ion of the light element;

quantitative analyzing means for detecting the secondary ion so as to quantitatively analyze the light element contained in the sample; and

means for producing an ultrahigh vacuum of at least 10^{-10} Torr during quantitative analysis including first evacuating means for evacuating said sealed chamber having first and second vacuum pumps respectively connected to said sealed chamber and opposed relative to each other, said first vacuum pump comprising a first cryopanel means arranged to surround the sample in spaced relationship therefrom and including a first cylinder with a bottom and an opposed opening, a second cryopanel means arranged to surround the first cryopanel means and including a second cylinder with a bottom and an opposed opening, the openings of said first and second cylinders arranged to oppose said second pump, and first cooling means for keeping said first and second cryopanel means at a cryogenic temperature during quantitative analysis so that said first and second cryopanel means adsorb a gas present in said sealed chamber.

4,766,314

LENS ARRANGEMENT FOR THE FOCUSING OF ELECTRICALLY CHARGED PARTICLES, AND MASS SPECTROMETER WITH SUCH A LENS ARRANGEMENT

Gerhard Jung, Delmenhorst, Fed. Rep. of Germany, assignor to Finnigan MAT GmbH, Bremen, Fed. Rep. of Germany

Filed Apr. 29, 1986, Ser. No. 857,168

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1985, 3522340

Int. Cl.[4] H01J *49/32*

U.S. Cl. 250—296 25 Claims

1. Double focusing mass spectrometer comprising

an ion source, an imaging system having a sector field magnet and an electrostatic analyzer with a detector positioned downstream with respect to a particle beam, the latter for particles of organic and inorganic substances to be examined, said imaging system providing a deviation in a predetermined direction of a particle, said deviation being subject to abberration due to image defects which are present, said defects including first and second order directional and energy focusing terms, the system further comprising

a lens means disposed between said sector field magnet and said electrostatic analyzer at the location of the intermediate image produced by said imaging system



for making negligible only said second order terms but not affecting said first order terms, said lens means being further disposed substantially symmetrically relative to said location of said intermediate image, said lens means comprising a plurality of lens elements, which form a transmission channel for a particle beam, said lens elements being disposed with transmission apertures thereof in alignment and being disposed in succession in the direction of the beam and being connected to an adjustable source of electric energy.

4,766,315

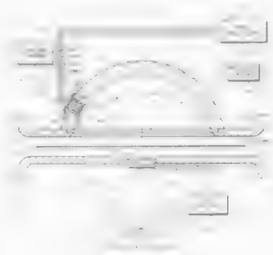
APPARATUS AND PROCESS FOR MEASURING PHYSICAL PARAMETERS OF SHEET MATERIAL

Ake A. Hellstrom, Columbus, and James E. Throm, Jr., Galloway, both of Ohio, assignors to AccuRay Corporation, Columbus, Ohio

Filed Jul. 14, 1986, Ser. No. 885,017

Int. Cl.[4] G01N *21/35, 21/86*

U.S. Cl. 250—339 26 Claims



1. An apparatus containing a source of electromagnetic radiation and being adapted for measurement, via infrared absorption phenomena, of one or more physical parameters of sheet material during production thereof, comprising:

(a) a sensor housing, and

(b) an integral filter-detector package contained within the sensor housing and containing both a plurality of separate filters, at least three of which pass selected narrow bands of infrared radiation that is directed from the source and that interacts with the sheet material, and a corresponding

VOL 1093 ISS 4 AG 23 1988 UMI

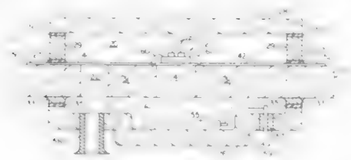
plurality of detectors which detect the radiation that passes through the filters.

4,766,316

DISC DETECTOR ASSEMBLY HAVING VACUUM CHAMBER

David L. Jungkman, Hudson, N.H., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 7, 1985, Ser. No. 763,153
The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.
Int. Cl.[4] G01J 5/16
U.S. Cl. 250—352 15 Claims



1. An infrared energy apparatus for receiving infrared energy from a scene of interest, said apparatus having a refrigerator Dewar device, said apparatus comprising:

A. said refrigerator device comprising:

(i) an upper surface and a lower surface,

(ii) means for cooling a first region of said refrigerator device,

(iii) a second region which remains substantially at the ambient temperature of said infrared energy apparatus, and

(iv) a third region for heat exchange, said third region at an intermediate temperature between that of said first region and said second region;

B. a detector assembly having one or more detector elements mounted on said upper surface of said refrigerator device in said first region such that said detector assembly is cooled by operation of said refrigerator device;

C. an electrically conductive pattern applied to said upper surface of said refrigerator device, said pattern having electrical leads to enable electrical connection to said detector elements of said detector assembly;

D. a vacuum chamber means for thermally insulating said first region and said third region from ambient environments, said vacuum chamber means shaped such that energy entering said receiver from said scene of interest may be collected and measured by said assembly, and wherein said vacuum chamber means is hermetic and comprises an upper vacuum member bonded to the upper surface and a lower vacuum member bonded to the lower surface of said refrigerator device, and means, included in said refrigerator device, for connecting said upper vacuum member to said lower vacuum member; and

E. an optically transparent means, coupled to said vacuum chamber means over said first region such that energy of the desired wave and from said scene of interest may be collected and measured by said detector assembly.

4,766,317

OPTICAL REFLECTANCE METHOD OF EXAMINING A SIMOX ARTICLE

Guenther Harbeke, Affoltern am Albis, Switzerland, and Lubomir L. Jastrzebski, Plainsboro, N.J., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 23, 1987, Ser. No. 41,565
Int. Cl.[4] G01N 23/00; G01T 1/22; G01J 1/42
U.S. Cl. 250—358.1 5 Claims

1. A method of determining the degree of amorphism, surface roughness and surface contamination of a SIMOX article comprising the steps:

(a) determining the difference in reflectance, ΔR_λ, between single crystalline silicon and said SIMOX article at three selected wavelengths of light of λ1, λ2, and λ3;

(b) determining a unique value for A, B, and C by means of:

$$\Delta R_{\lambda 1} = A + C + B(1/\lambda 1)^4$$



$$\Delta R_{\lambda 2} = C + B(1/\lambda 2)^4$$

$$\Delta R_{\lambda 3} = C + B(1/\lambda 3)^4$$

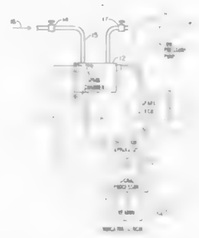
wherein A, B, and C are representative of said degree of amorphism, surface roughness, and surface contamination respectively.

4,766,318

SPARK DISCHARGE TRACE ELEMENT DETECTION SYSTEM

Steven Adler-Golden, Newtonville; Lawrence S. Bernstein, Bedford, and Fritz Bien, Concord, all of Mass., assignors to Spectral Sciences, Inc., Burlington, Mass.

Filed May 27, 1986, Ser. No. 866,915
Int. Cl.[4] H01J 47/10
U.S. Cl. 250—385.2 32 Claims



1. A spark discharge trace element detection system comprising:

a spark chamber including a pair of electrodes for receiving a sample of gas to be analyzed at no greater than atmospheric pressure;

means for regulating the gas pressure in said spark chamber to remain no greater than one atmosphere;

means for providing a voltage across said electrodes for generating a spark in said gas sample;

means for detecting the intensity of radiation emitted from the spark discharge in at least one primary selected narrow band of the radiation emitted from the spark discharge in said gas sample, each primary band corresponding to an element to be detected in the gas;

means for integrating, during the afterglow time interval of the spark emission, the intensity of the emission in each detected primary band; and

means responsive to a signal representative of the integrated intensity of the emission in each selected primary band for determining the concentration of the corresponding element in the gas.

4,766,319

PORTABLE NUCLEAR MOISTURE-DENSITY GAUGE WITH LOW ACTIVITY NUCLEAR SOURCES

Ali Regimand, Raleigh, N.C., assignor to Troxler Electronic Laboratories, Inc., Research Triangle Park, N.C.

Filed Feb. 12, 1987, Ser. No. 13,678
Int. Cl.[4] G01N 23/22, 23/222
U.S. Cl. 250—390 10 Claims



6. A method of measuring the density of a test material using a low activity gamma radiation source in the presence of a neutron radiation source, comprising:

directing fast neutrons from a neutron radiation source into the test material,

detecting neutrons which have been moderated and thermalized by neutron moderating elements present in the test material and generating a signal representative of the moisture content of the test material,

directing gamma radiation from a gamma radiation source into the test material,

detecting gamma radiation emitted from the gamma radiation source and which passes through the test material and generating an uncorrected signal which is representative of the density of the test material plus error due to extraneous background radiation,

generating a correction signal which is a function of said moisture signal and which represents the amount of gamma radiation emitted from said test material resulting from the (n, γ) neutron capture reaction due to the presence of neutron capture elements, such as hydrogen, in the test material, and

applying said correction signal to said uncorrected density signal to obtain a corrected density signal which is unaffected by background gamma radiation caused by the presence of neutron capture elements in the test material.

4,766,320

APPARATUS FOR ION IMPLANTATION

Masao Naitoh, and Tomoji Ogawa, both of Kyoto, Japan, assignors to Nissin Electric Company, Ltd., Kyoto, Japan

Filed Mar. 4, 1986, Ser. No. 835,952
Claims priority, application Japan, Mar. 8, 1985, 60-46755
Int. Cl.[4] H01J 37/317
U.S. Cl. 250—492.2 17 Claims

1. An apparatus for ion implantation comprising:

(a) an ion source;

(b) an ion extraction electrode oppositely disposed with respect to said ion source, said electrode comprising means for extracting ions from said ion source;

(c) an ion extraction power supply connected to said ion extraction electrode;

(d) a mass separator for selecting desired ions from among the ions extracted from the ion source by the ion extraction electrode;

(e) a deceleration tube for receiving said desired ions from the mass separator and decelerating said desired ions;

(f) an ion deceleration power supply connected to the deceleration tube;



(g) an ion implantation unit for implanting said desired ions received from the deceleration tube into an article to be treated;

(h) a suppressor electrode disposed within the deceleration tube adjacent to an ion inlet of said deceleration tube, said electrode comprising means for suppressing the flow of secondary electrons into the deceleration tube; and

(i) a suppressor power supply connected to the suppressor electrode.

4,766,321

SYMBIOTIC FILTER-STERILIZER

Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005, and Michael Stranahan, Woody Creek, Colo., assignors to Jung G. Lew and Hyok S. Lew, both of Arvada, Colo.

Continuation-in-part of Ser. No. 866,893, May 27, 1986, Pat. No. 4,694,179. This application May 13, 1987, Ser. No. 49,223
Int. Cl.[4] G01N 21/01
U.S. Cl. 250—431 14 Claims



1. An apparatus for filtering and sterilizing fluid medium comprising in combination:

(a) a container vessel including a first port and a second port;

(b) at least one tubular filter with porous wall disposed within said container vessel wherein said first port is open to a first compartment intermediate wall of said container vessel and said tubular filter, and said second port is open to interior space of said tubular filter; and

(c) at least one germicidal lamp disposed in said first compartment wherein germicidal electromagnetic radiation from said germicidal lamp transmits through fluid medium occupying said first compartment and irradiates porous

VOL 1093 ISS 4 AG 23 1988 UMI

wall of said tubular filter to break down by oxidation and radiation degrading particles clogging up the pores of said filter, while said filter enhances the sterilizing effect of said lamp by distributing the fluid flow for uniform exposure to the ultraviolet rays produced.

4,766,322

ROBOT HAND INCLUDING OPTICAL APPROACH SENSING APPARATUS

Hideaki Hashimoto, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Mar. 14, 1986, Ser. No. 839,574
Int. Cl.[4] B25G *13/08*
U.S. Cl. 250—561 3 Claims



1. Apparatus for controlling the movement of a robot hand in response to the distance between the robot hand and objects in the vicinity thereof, said apparatus comprising:

distance sensing means for reflecting light from an object and receiving at least a portion of the reflected light such that the intensity of light received is indicative of the distance between the robot hand and the object, said distance sensing means being further adapted to provide a sensor signal output the magnitude of which is indicative of the intensity of received light; and

control means for controlling the movement of the robot hand, said control means being responsive to said sensor signal for determining the distance between the robot hand and the object, said control means being further responsive to the determined distance for varying the speed at which the robot hand moves,

said control means comprising output circuit means coupled to receive the output from said distance sensing means for determining when the robot hand is a predetermined distance from the object,

said output circuit means being responsive to the sensor signal from said distance sensing means for providing first and second output signals, the first output signal indicating that the robot hand is a first predetermined distance from the object and the second output signal indicating that the robot hand is a second predetermined distance from the object,

said output circuit means comprising

a reference signal generator for generating first and second voltage signals each of a predetermined magnitude; and

first and second voltage comparator means adapted to receive the first and second voltage signals, respectively, said first comparator means for providing the first output signal when the magnitude of the sensor signal exceeds the predetermined magnitude of the first voltage signal and said second comparator means for providing the second output signal when the magnitude of the sensor signal exceeds the predetermined magnitude of the second voltage signal.

4,766,323

METHOD AND APPARATUS FOR DETERMINING THE DISTANCE OF AN OBJECT

Douglas E. Franklin, Abbotsford; Gordon I. Frank, North Vancouver; Richard A. Palylyk, Surrey, and Paul O. Toom, Delta, all of Canada, assignors to B. C. Hydro, Vancouver, Canada

Filed Aug. 29, 1986, Ser. No. 902,360
Int. Cl.[4] G01N *21/86;* G01V *9/04;* G01C *3/00*
U.S. Cl. 250—561 18 Claims



1. A method to determine the position, velocity and orientation of an object with respect to an observation point, comprising the steps of:

(a) emitting at least two non-parallel incident beams of radiation towards the object from a sensor at the observation point spaced from the object;

(b) mounting retroreflecting means on the object to reflect the incident beams of radiation oppositely;

(c) causing relative motion between said retroreflective means and said incident beams of radiation, to intercept said incident beams for a finite time period thereby generating at least one pulse of reflected radiation;

(d) receiving said at least one pulse of reflected radiation at the sensor and measuring the duration and time intervals between received pulses;

(e) processing said measured time intervals to produce an indication of the position, velocity and orientation of said object.

4,766,324

PARTICLE DETECTION METHOD INCLUDING COMPARISON BETWEEN SEQUENTIAL SCANS

Sohail Sandat, Sunnyvale; Jiri Pecen; Armand P. Neukermans, both of Palo Alto, and George J. Kren, Los Altos, all of Calif., assignors to Tencor Instruments, Mountain View, Calif.

Filed Aug. 7, 1987, Ser. No. 83,695
Int. Cl.[4] G01N *21/00*
U.S. Cl. 250—563 19 Claims

1. A method of matching particles detected on a surface at consecutive times comprising,

detecting first particles on a surface at a first time, each first particle being characterized by a first measured position and by a first light scattering intensity reaching a photodetector that is above a predetermined collection threshold intensity,

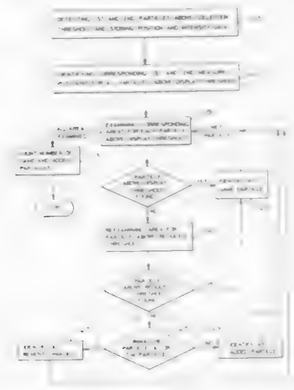
storing said position and light scattering intensity information for each first particle in a computer memory,

detecting second particles on said surface at a second time, at least some of said second particles being the same as at least some of said first particles, each second particle being characterized by a second measured position and by a second light scattering intensity reaching a photodetector that is above said predetermined collection threshold intensity,

storing said position and light scattering intensity information for each second particle in a computer memory,

selecting from computer memory three or more first particles with light scattering intensities that are substantially above said threshold intensity, said selected first particles defining a first polygon characterized by a perimeter and an area,

selecting from computer memory candidate second particles for each of said selected first particles, each candidate second particle having a light scattering intensity within a predetermined range of intensities around the light scattering intensity of said selected first particle for which said second particle is a candidate,



forming variants of said first polygon with said candidate second particles, said variants characterized by a perimeter and area, candidate second particles forming the variant determined to have the perimeter and area closest to those of said first polygon to within a specified percentage being identified as the same as the corresponding selected first particles that form said first polygon, and

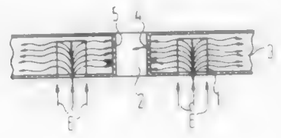
calculating from the first and second measured positions of said identified same particles the translation and rotation transformations which map one of said first and second measured positions into the other of said first and second measured positions.

4,766,325

METHOD FOR TESTING FOR FAULTY PLATED-THROUGH BORES CIRCUIT BOARDS

Hans-Hermann Merkenschlager, Augsburg; Friedrich Kraus, Adelsried, and Gergely Szolnoki, Augsburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 17, 1987, Ser. No. 74,908
Claims priority, application Fed. Rep. of Germany, Jul. 18, 1986, 3624379
Int. Cl.[4] G01N *21/88*
U.S. Cl. 250—572 3 Claims



1. A method for testing for faultily plated-through bores in a printed circuit board by means of a light transmitter at the one side of the respective bore and a receiver at the other side of the respective bore which receives light penetrating through the voids of the plated-through bore, comprising:

applying an annular opening around the bore to be evaluated after the plating-through, the depth of said bore being slightly less than the printed circuit board thickness; and

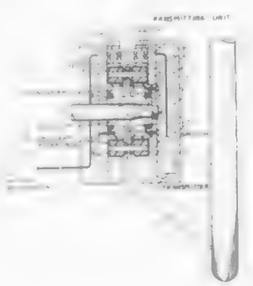
illuminating said annular opening.

4,766,326

COMMUNICATION STRUCTURE IN A STEERING WHEEL

Chikahisa Hayashi; Makoto Kawai; Yoshikazu Hirose, and Junichi Mizutani, all of Aichi, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jul. 21, 1986, Ser. No. 887,622
Claims priority, application Japan, Jul. 20, 1985, 60-160650
Int. Cl.[4] H02G *3/00*
U.S. Cl. 307—10 R 18 Claims



1. A communication structure in a steering wheel, comprising: a steering shaft; a boss fixed to said steering shaft; at least one spoke fixed to said boss; a pad installed relatively rotatably to said steering shaft so as to remain non-rotational at a position more proximate to a driver than said boss; a column positioned in relation to said pad so that at least one of said spoke and a boss plate is sandwiched therebetween; and at least one set of magnetic communication units each set of which is composed of a receiving unit and a transmitting unit, each said set having respective units thereof provided on said pad and said column, at least one unit of which consists of a core and a coil wound thereon, said boss and said spoke being interposed between said receiving unit and said transmitting unit.

4,766,327

CIRCUIT AND METHOD FOR SYNCHRONIZING POWER SOURCES IN A PARALLEL AC ELECTRICAL POWER SYSTEM

David A. Fox, Lima, Ohio, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 31, 1987, Ser. No. 80,032
Int. Cl.[4] H02V *3/16*
U.S. Cl. 307—87 9 Claims

1. A method for synchronizing a first controllable frequency, controllable voltage, electrical power source with a second electrical power source, comprising the steps of:

producing a voltage difference signal representative of the difference in output voltages of a first controllable frequency, controllable voltage, electrical power source and a second electrical power source;

demodulating said voltage difference signal to produce a frequency control signal and a voltage magnitude control signal; and

varying the output frequency of said first electrical power source in response to said frequency control signal and

VOL 1093 ISS 4 AG 23 1988 UMI

varying the output voltage of said first electrical power source in response to said voltage magnitude signal, to



minimize the difference in output voltages between said first and second electrical power sources.

4,766,328

PROGRAMMABLE PULSE GENERATOR

Ta-Yung Yang, Tao Yuan, Taiwan, assignor to System-General Corporation, Taichung, Taiwan

Filed May 26, 1987, Ser. No. 53,681
Int. Cl.[4] H03K *13/02*
U.S. Cl. 307—106 8 Claims



1. A programmable pulse generator comprising:

a digital information processing system which generates first and second program-controlled signals;

a first digital-to-analog converter operatively connected to said digital information processing system, generating a first current signal in response to said first program-controlled signal;

a second digital-to-analog converter operatively connected to said digital information processing system, generating a second current signal in response to said second program-controlled signal; and

a differential amplifier responsive to said digital information processing system having:

a differential amplifier input stage operatively connected to said digital-to-analog converters and responsive to said current signals of said digital-to-analog converters wherein the bias current of said differential amplifier input stage is responsive to said second current signal;

an integrator operatively connected to said differential amplifier input stage and having an integrating capacitor;

a push-pull output stage operatively connected to said integrator which produces a pulse signal in response to said current signals of said digital-to-analog converters;

wherein the voltage and pulse width of said pulse signal are responsive to said first current signal and the slew rate of said pulse signal is linearly responsive to the bias current of said differential amplifier input stage and the capacitance of said integrating capacitor; and

a feedback resistor operatively connected between said push-pull output stage and said differential amplifier input stage.

4,766,329

AUTOMATIC PUMP CONTROL SYSTEM

Elias Santiago, P.O. Box 3199, Bayamon, P.R. 00621-3199

Filed Sep. 11, 1987, Ser. No. 95,815
Int. Cl.[4] H01H *35/18*
U.S. Cl. 307—118 17 Claims



1. At a site having a battery, a water pump control system comprising:

a battery-operated main motor-and-pump unit for pumping water out of the site;

an electrically conductive high water level probe positioned to be exposed to water at the site at least as high as a predetermined high level;

an electrically conductive low water level probe positioned to be exposed to water at the site at least as high as a lower level than said high level;

a grounded electrically conductive probe positioned to be exposed to water at the site touching said low water level probe;

a normally non-conductive pump turn-on transistor connected between the battery and said high water level probe to be turned on when water at the site touches said high water level probe and to be turned off when the water level at the site drops below said high water level probe;

a relay comprising a coil and a set of normally-open contacts which close when the coil is energized, said coil being connected to the battery and to said pump turn-on transistor to be de-energized before said pump turn-on transistor turns on and to be energized when said pump turn-on transistor turns on, said contacts being connected between the battery and said main motor-and-pump unit to turn on said main motor-and-pump unit when said contacts close;

and a normally non-conductive pump turn-off transistor connected to the battery through said relay contacts and connected to said low water level probe to be turned on by the closing of said relay contacts and to remain on as long as said relay contacts remain closed and the water at the site touches said low water level probe, said pump turn-off transistor being connected to said relay coil to hold said coil energized independent of said pump turn-on transistor while the water level at the site is dropping from said high water level probe to said low water level probe.

4,766,330

SWITCHING EQUIPMENT FOR NUMERICAL CONTROLLED MACHINE TOOLS

Horst E. Dreier, Horb, Fed. Rep. of Germany, assignor to Laserlux AG, Luxembourg, Luxembourg

Filed May 22, 1986, Ser. No. 866,113
Claims priority, application Fed. Rep. of Germany, May 22, 1985, 3518300
Int. Cl.[4] H01H *7/00;* H01S *3/04*
U.S. Cl. 307—139 4 Claims



1. Switching equipment for numerically controlled machine tools comprising at least one controllable switch for activating measuring equipment, a switch control connected to said at least one switch, said switch control having an input connected to a power supply connecting wire of a pump for providing cooling water, whereby said switch control closes said at least one switch when a supply voltage having a particular magnitude appears on said wire to initiate at least one of a measuring process and a measuring transfer, said at least one controllable switch being closed only for a predetermined time interval by said switch control.

4,766,331

TIMER SWITCH WITH AUXILIARY ACTUATOR

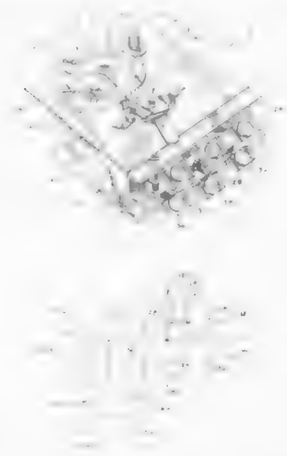
David D. Flegel, and Dean F. Flegel, both of Racine, Wis., assignors to Reliance Time Controls, Inc., Racine, Wis.

Filed Sep. 18, 1987, Ser. No. 98,393
Int. Cl.[4] H01H *43/00;* H05B *37/02*
U.S. Cl. 307—141 21 Claims

1. An apparatus for regulating the supply of electricity from an electricity source to an electrical load, comprising:

a time switch including a timing mechanism, one or more switch contacts, and first switch means operable on said switch contacts, said first switch means being responsive to said timing mechanism for selectively connecting and disconnecting said load to and from said electricity source at predetermined times by selectively closing and opening said switch contacts; and

auxiliary actuator means including second switch means operable on said switch contacts, said auxiliary actuator means including linkage means interconnected with said second swtich means and being responsive to an actuating stimulus independent of said time switch for selectively connecting and disconnecting said load to and from said electrically source by closing and opening said switch contacts independent of the closing and opening of said switch contacts by said first switch means of said time switch, to provide a supplementary means of connecting



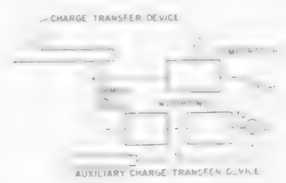
and disconnecting said load to and from said electricity source.

4,766,332

DETECTING BINARY INFORMATION FROM A CHARGE TRANSFER DEVICE

Marcellinus J. M. Pelgrom; Hendrik A. Harwig, and Jan W. Slotboom, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 409,206, Aug. 18, 1982, abandoned.
This application Feb. 22, 1985, Ser. No. 704,891
Claims priority, application Netherlands, Sep. 8, 1981, 8104154
Int. Cl.[4] H03K *5/24*
U.S. Cl. 307—358 3 Claims



1. A method of detecting binary information from an output signal of a charge transfer device, which signal comprises a train of sequential pulses, which device is used for temporarily storing or for delaying said binary information in the form of charge packets, the amplitude of said pulses being representative of the values of the binary information and the amplitude of each of said pulses being compared in sequence in a comparator circuit with a reference signal derived from an output signal of a reference source characterized in that in order to generate said reference signal for each pulse after the first pulse in the sequence an auxiliary signal is added to the output signal of the reference source, which auxiliary signal depends on the binary value of the immediately preceding pulse detected.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,333

CURRENT SENSING DIFFERENTIAL AMPLIFIER

Kenneth J. Mobley, Colorado Springs, Colo., assignor to INMOS Corporation, Colorado Springs, Colo.

Filed Mar. 9, 1987, Ser. No. 23,184
Int. Cl.[4] H03K 5/24
U.S. Cl. 307—530 9 Claims



1. An amplifier for a semiconductor circuit comprising:
first and second inputs;
first and second outputs;
first and second circuit paths each coupling a source of operating voltage to a reference voltage, said first circuit path being coupled to said first input and said first output, said second circuit path being coupled to said second input and said second output said first and second circuit paths including first and second transistors, said first transistor having its source-drain path coupled between said first input and said first output, said second transistor having its source-drain path coupled between said second input and said second output, said first and second transistors being matched; and
a voltage clamp circuit coupling said first input to said second input and providing a common bias to the gate electrodes of said first and said second transistors.

4,766,334

LEVEL CLAMP FOR TRI-STATE CMOS BUS STRUCTURE

Richard C. Warner, Morris Plains, N.J., assignor to The Singer Company, Stamford, Conn.

Continuation of Ser. No. 849,049, Mar. 7, 1986, abandoned. This application Feb. 27, 1987, Ser. No. 20,184
Int. Cl.[4] H03K 5/08, 19/003, 19/094
U.S. Cl. 307—540 4 Claims

1. An active bus line clamp for clamping a multi-state bus line of a CMOS system to a particular logic level, the bus line being set to different logic levels by at least one driving means connected thereto, the level of the bus line tending to drift if not clamped and if the bus line is not being driven by the at least one driving means, the clamp comprising:
a non-inverting CMOS buffer driver connected to the bus line for tapping power therefrom, the power being represented as voltages at an input and an output of the buffer driver;
wherein the CMOS buffer driver comprises a first set of low impedance P and N transistors connected to a second set of low power P and N transistors; and
a resistor having a first end connected to the input and a second end connected to the output of the buffer driver for limiting differences in the voltages between the input and the output of the buffer driver by draining current to or supplying current from the bus line, thereby automatically clamping the bus line at the logic level at which the bus line was last set by the driving means.

4,766,335

ANALOG-DIGITAL HYBRID INTEGRATED CIRCUIT

Osamu Shiraishi, and Hiroshi Hashimoto, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,684
Claims priority, application Japan, Feb. 27, 1986, 61-42150
Int. Cl.[4] H03K 17/22, 17/30
U.S. Cl. 307—592 13 Claims



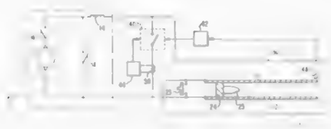
1. A circuit for resetting a logical circuit contained within an integrated circuit comprising:
an analog signal input terminal for receiving an analog signal;
a power source terminal for supplying a source voltage to said integrated circuit;
a power source ground terminal for providing a ground potential to said integrated circuit;
an analog ground terminal connected to said power source terminal and said power source ground terminal by a voltage divider means so as to provide an intermediate potential between a power source potential on said power source terminal and said ground potential on said power source ground terminal;
a by-pass capacitor connected between said analog ground terminal and said power source ground terminal;
a level comparing means having a minus (−) terminal and a plus (+) terminal, said minus (−) terminal being connected to said analog ground terminal and said plus (+) terminal being adapted to receive a synthesized potential of voltage of said power source terminal divided by resistive means and a feedback potential from an output of said level comparing means via another resistive means, said level comparing means comparing said potential on said analog ground terminal with first and second threshold voltages, and delivering a high level voltage to said logical circuit so as to reset said logical circuit when said potential on said analog ground terminal is lower than said first threshold voltage while delivering a low level voltage to said logical circuit when said potential on said analog ground terminal is higher than said second threshold voltage; wherein said by-pass capacitor is arranged external to said integrated circuit and wherein said level comparing means and voltage divider means and resistive means and another resistive means are disposed internal to said integrated circuit; whereby said analog signal input terminal serves both as a means for inputting an analog signal to said integrated circuit as well as serving as part of a circuit used to reset said logical circuit contained within said integrated circuit.

4,766,336

HIGH EFFICIENCY RAPID FIRE AUGMENTED ELECTROMAGNETIC PROJECTILE LAUNCHER

Daniel W. Deis, Churchill Boro; George A. Kemeny, Wilkins Township, Allegheny County, and David W. Scherbarth, Wilkinsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1987, Ser. No. 1,132
Int. Cl.[4] F41F 1/02
U.S. Cl. 310—12 15 Claims



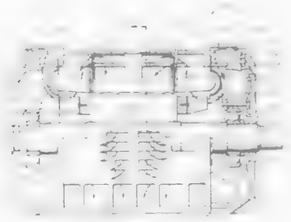
13. A method of operating an electromagnetic projectile launcher which has a high current source, including a storage inductor, for supplying current to a pair of conducting rails between which a bridging armature is propelled along the rails, comprising the steps of:
(A) providing an augmenting winding adjacent said rails, in electrical circuit with said storage inductor, to recover post-firing inductive energy;
(B) temporarily decoupling said storage inductor from said augmenting winding during said post-firing inductive energy recovery to allow efficient current increase substantially independently in said storage inductor and in said augmenting winding.

4,766,337

OPEN DRIP-PROOF MACHINERY COOLING SYSTEM USING TOTALLY ENCLOSED TYPE BEARING BRACKETS

David D. Parkinson, West Allis, and Gilbert T. Latus, Milwaukee, both of Wis., assignors to MagneTek, Inc., Los Angeles, Calif.

Filed May 21, 1987, Ser. No. 53,102
Int. Cl.[4] H02K 9/02
U.S. Cl. 310—58 21 Claims



1. An improved airflow passageway structure for cooling open drip-proof rotating electric machinery comprising a totally enclosed shaft bearing bracket characterized by
the absence of airflow apertures therethrough;
a frame member mounted to and axially spaced apart from said bearing bracket forming a radially oriented aperture; and
an axially projecting airflow ring spaced radially outwardly from said radially oriented aperture and secured to the assembly of said bearing bracket and said frame member to admit external cooling air to the interior of said machinery.

4,766,338

ARC DISCHARGE LAMP

Norman R. King, and Kent L. Collins, both of Hammondsport, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Continuation of Ser. No. 684,548, Dec. 21, 1984, abandoned. This application Apr. 15, 1987, Ser. No. 39,819
Int. Cl.[4] H01J 61/30
U.S. Cl. 313—25 3 Claims



1. An electric lamp comprising:
a transparent elongate outer envelope having a smoothly rounded end portion and a base end portion;
a lamp base attached to said base end portion of said outer envelope;
a light source within said outer envelope;
supporting means for supporting said light source within said outer envelope, said supporting means comprising a rod within said outer envelope extending generally along the length dimension thereof offset from the center line of said outer envelope and having a fixed end at said base end portion of said outer envelope and a free end extending toward said smoothly rounded end portion of said outer envelope, and means for suspending said light source from said rod and for positioning said light source on the center axis of said outer envelope; and
a single arcuate leaf spring having a fixed end fixed to said free end of said rod, an arcuate shape extending toward said envelope curved end portion, and curving toward the center line of said outer envelope and a first end bearing against said envelope curved end portion and contacting said envelope curved end portion on the envelope center line, said leaf spring free end having a reverse curvature curving away from the point of contact and defining a fulcrum at which said leaf spring makes contact with said envelope, wherein flexure of said rod causes displacement of the point of contact of said leaf spring and compression of said leaf spring thereby causing said leaf spring to react against the flexure of said rod and center said light source.

4,766,339

ELECTRIC LAMP WITH REINFORCED FILAMENT STRUCTURE

William L. Berry; Robert S. Coney, both of Winchester, and Stephen P. Senft, Lexington, all of Ky., assignors to GTE Products Corporation, Danvers, Mass.

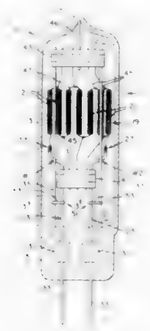
Filed Mar. 16, 1987, Ser. No. 26,324
Int. Cl.[4] H01J 61/10
U.S. Cl. 313—276 9 Claims

1. An electric lamp including an envelope having a sealed end portion;
a filament structure disposed within said envelope;
a first insulative bridge located within said envelope between said filament structure and said sealed end portion;
first and second lead-in conductors sealed within said end portion and extending through said first insulative bridge, said conductors being electrically coupled to said filament structure;

VOL 1093 ISS 4 AG 23 1988 UMI

first and second support wires sealed in said end portion and extending within said envelope adjacent said first and second conductors for supporting said filament structures; and

reinforcement means disposed within said envelope for



reinforcing the support of the filament structure disposed therein, said reinforcing means interconnecting said first conductor and said first support wire and said second conductor and said second support wire, said reinforcement means being disposed at a location below said first insulative bridge and above said sealed end portion.

4,766,340

SEMICONDUCTOR DEVICE HAVING A COLD CATHODE

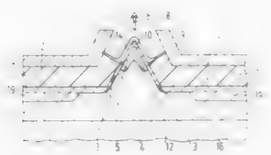
Karel D. van der Mast, Hofzicht 20, Pijnacker; Arthur M. E. Hoeberechts, and Gerardus G. P. van Gorkom, both of Groenewoudseweg 1, Eindhoven, all of Netherlands

Continuation of Ser. No. 695,656, Jan. 28, 1985, abandoned. This application Mar. 2, 1987, Ser. No. 21,564

Claims priority, application Netherlands, Feb. 1, 1984, 8400297

Int. Cl.[4] H01L *31/00*

U.S. Cl. 313—366 **10 Claims**



1. A semiconductor device for producing an electron beam, having at least one cathode comprising a semiconductor body having a major surface, an electrically insulating layer with at least one opening at said major surface, at least one acceleration electrode on the insulating layer at the edge of the opening, and a p-n junction in the semiconductor body within the opening, within the opening the semiconductor body comprising at least one projecting portion, whose cross-section parallel to the major surface decreases as the distance from said major surface increases, and said p-n junction comprising a nonplanar junction whose contour substantially follows the contour of said projecting portion, said device comprising an n-type surface region adjoining the surface of the semiconductor body within said opening and a p-type region therebelow, said n-type and p-type regions forming said p-n junction, so that, when a voltage is applied in the reverse direction across the p-n junction, electrons are generated which emanate from the semiconductor body, said p-n junction locally having a part with a lower breakdown voltage within said opening than over the remaining part of the p-n junction, an n-type surface layer, the junction part with the lower breakdown voltage being separated from the surface by said n-type surface layer, said surface layer having a thickness and doping concentration such that at the breakdown voltage the depletion zone of the p-n junction does not extend as far as the surface, but remains separated therefrom by a distance which is sufficiently thin to allow the generated electrons to pass, the acceleration electrode, viewed in a direction perpendicular to the major surface, leaving free the part of the p-n junction with the lower breakdown voltage, and voltage control means for limiting the electric field strength at the end of the projecting portion to a value of at most 2×10^9 V/m.

4,766,341

COLOR PICTURE TUBE WITH SHADOW MASK HAVING ALTERNATELY DISPLACED APERTURES

Koji Nakamura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1986, Ser. No. 908,896

Claims priority, application Japan, Sep. 18, 1985, 60-208005; Feb. 21, 1986, 61-37701

Int. Cl.[4] H01J *29/07*

U.S. Cl. 313—402 **14 Claims**



1. A color picture tube comprising a display surface having a plurality of major axes defining a major axis direction and a plurality of minor axes defining a minor axis direction, said display surface being provided with a fluorescent dot pattern on an inner surface thereof and a shadow mask having an aperture pattern comprising a plurality of apertures corresponding to said fluorescent dot pattern, each dot of said dot pattern being disposed at a location defined by an intersection of a major axis and a minor axis,

the apertures of said shadow mask being arrayed along any given axis of at least one of said major and minor axis directions, alternate one of said apertures along said given axis being displaced from intersections of said given axis with axes in the other of said major and minor axis directions, to provide a zig-zag array of said apertures along said given axis, such that a line connecting successive apertures along said given axis of said display surface is bent at least every other aperture to form a polygonal line with respect to said given axis.

4,766,342

TENSION MASK ASSEMBLY FOR A COLOR CRT

James R. Fendley, Arlington Heights; Johann Steiner, Des Plaines, and Paul Strauss, Chicago, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

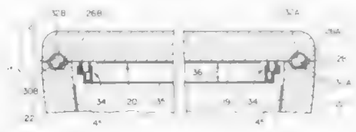
Filed Dec. 17, 1986, Ser. No. 942,663

Int. Cl.[4] H01J *29/07*

U.S. Cl. 313—402 **24 Claims**

1. A front assembly for a color cathode ray tube including a faceplate having on its inner surface a centrally disposed phosphor screen surrounded by a peripheral area adapted to mate with a funnel, said assembly including a shadow mask support

structure for securing a shadow mask in tension adjacent to and spaced from the faceplate, the support structure comprising an undulated member defining top and bottom sinuous



edges, the bottom sinuous edge providing means for securing said undulated member to said inner surface of the faceplate, and the top sinuous edge providing means for securing the shadow mask to the support structure.

4,766,343

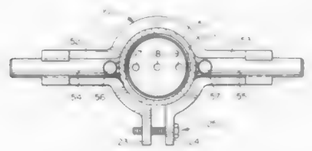
STATIC CONVERGENCE ASSEMBLY

Roddy Belica, 1221 N. Humphrey Ave., Oak Park, Ill. 60302

Filed Nov. 5, 1985, Ser. No. 795,280

Int. Cl.[4] H01J *29/54, 29/76*

U.S. Cl. 313—412 **27 Claims**



1. A cathode ray tube deflection system, comprising:

a cathode ray tube having an elongate neck and a screen for displaying a desired predetermined picture;

an electron gun assembly contained within said neck and including an outer, an inner, and another outer electron gun;

said electron guns being arranged in a generally linear fashion along a diameter of said neck and providing, respectively, an outer, an inner, and another outer beam of electrons, said electron beams, when undeflected generally defining a plane across said neck;

first and second mounting means extending outwardly from said neck;

a first magnet carried by said first mounting means with the magnetic poles of said first magnet in magnetic communication with one of said outer electron beams, said magnetic poles defining a first magnetic axis;

a second magnet carried by said second mounting means with the magnetic poles of said second magnet in magnetic communication with one of said outer electron beams, said magnetic poles defining a second magnetic axis; and

whereby with adjustment of said mounting means the angles between said first and second magnetic axes and said plane are adjustable to vary the deflection of said outer electron beams, both within and out of said plane, by said first and second magnets.

4,766,344

IN-LINE ELECTRON GUN STRUCTURE FOR COLOR CATHODE RAY TUBE HAVING OBLONG APERTURES

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,347

Int. Cl.[4] H01J *29/62*

U.S. Cl. 313—414 **9 Claims**



1. In an in-line electaron gun structure for a color cathode ray tube, a lensing arrangement in the final focusing and accelerating electrodes comprising:

a first lensing structure in the forward portion of the focusing electrode, such structure having an upstanding perimetrical rim defining an oval-shaped cavity, and two upstanding partition walls extending across the width of the cavity, at least a central portion of the walls having a height substantially less than the height of the rim, the rim and walls together defining three vertically elongated in-line apertures, the central aperture being oblong and the side apertures being D-shaped, and

a second lensing structure in the rear portion of the final accelerating electrode in adjacent, facing relationship with the first structure, such second structure having an upstanding perimetrical rim defining an oval-shaped cavity, and two upstanding partition walls extending across the width of the cavity, at least a central portion of the walls having a height substantially less than the height of the rim, the rim and walls together defining three vertically elongated in-line apertures, the central aperture being oblong and the side apertures being D-shaped.

4,766,345

GAS DISCHARGE DISPLAY PANEL HAVING NOVEL CATHODE ASSEMBLY

Edgar L. Harvey, Jamesburg, and Joseph Lippencott, Somerset, both of N.J., assignors to Telegenix, Inc., Cherry Hill, N.J.

Filed May 20, 1987, Ser. No. 51,588

Int. Cl.[4] H01J *61/66*

U.S. Cl. 313—518 **6 Claims**



1. A cold cathode gas discharge display panel comprising an envelope made up of a glass base plate and a glass face plate hermetically sealed together, the envelope being

VOL 1093 ISS 4 AG 23 1988 UMI

filled with an ionizable gas capable of sustaining cathode glow,

a plurality of cathode electrodes disposed on said base plate and arrayed in a pattern such that the cathodes can be energized and caused to glow in different groups to represent different characters,

said cathodes each comprising a body of glowable material having a continuous periphery including an edge portion, the edge portion of one cathode lying adjacent to an edge portion of another adjacent cathode whereby when said one cathode and said another adjacent cathode are energized and caused to glow, the glow at said edge portions tend to connect the glows of the two cathodes together,

a layer of insulating material extending along and overlying a portion of the perhiphery of each cathode except the edge portion thereof whereby said cathodes can be positioned with their edge portions positioned optimally close together to provide continuous glow between the edge portions of two adjacent cathodes which are energized and caused to glow at the same time, and

anode electrode means in said envelope operable with the cathode electrodes therein to cause cathode glow.

4,766,346

LAMP WITH LOW-TOXICITY, MOLYBDENUM-COMPATIBLE SEALING GLASS

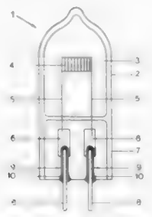
Werner Weiss, Stadtbergen, and Ewald Pöal, Kissing, both of Fed. Rep. of Germany, assignors to Patent Treuhand Gesellschaft für elektrische Glülampen mbH, Munich, Fed. Rep. of Germany

Filed Apr. 27, 1987, Ser. No. 43,189

Claims priority, application Fed. Rep. of Germany, May 12, 1986, 3615944

Int. Cl.[4] H01K *1/22, 1/38, 1/40*

U.S. Cl. 313—579 **13 Claims**



1. An electric lamp having

a bulb (2) of high-temperature-resistant glass;

light generating means (4) located within the bulb;

a fill within the bulb;

a pinch or press seal (7) closing off at least one end of the bulb, vacuum-tight, with respect to outside ambient atmosphere;

external current supply leads (8) passed into the pinch or press seal;

foil means (6) electrically connected to internal current supply leads (5) and connected to the external leads (8), and sealed into the pinch or press seal; and

a lead borate sealing glass (10) filling capillary spaces (9) which occur adjacent the external current supply leads (8) leading to the foil means (6),

wherein the sealing glass (10) has the following composition:

3–10% Bi_2O_3,

25–40% B_2O_3,

remainder primarily PbO, all in mol percent.

4,766,347

HIGH-PRESSURE DISCHARGE LAMP HAVING A LEAD-THROUGH WITH A PROTUBERANCE

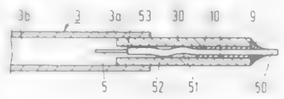
Marc F. R. Janssen, Turnhout, Belgium, and Max L. P. Renardus, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1986, Ser. No. 929,932

Claims priority, application Netherlands, Nov. 13, 1985, 8503117

Int. Cl.[4] H01J *61/073, 61/36, 9/28*

U.S. Cl. 313—623 **8 Claims**



1. A high pressure discharge lamp, comprising:

(a) an outer envelope;

(b) an elongate discharge vessel having a pair of closing members each at a respective end of said discharge vessel, each said closing member having a surface defining a bore through said each closing member, a longitudinal axis of said bore aligned with the longitudinal axis of said discharge device;

(c) a solid cylindrical lead-through member extending through said bore into said discharge vessel defining an intermediate space between said bore surface and said cylindrical lead-through,

said lead further comprising a curve portion defining a protrusion, said bore surface engaging said curved portion with a clamping fit whereby said lead-through is secured with respect to said bore surface and said closing member;

(d) a pair of electrodes within said discharge vessel between which a discharge takes place during lamp operation, each said electrode being connected to a respective said lead-through member; and

(e) sealing means to seal said intermediate space in a gas-tight manner.

4,766,348

SINGLE-ENDED METAL HALOGEN LAMP AND FABRICATION PROCESS EMPLOYING IONIZATION POTENTIAL SELECTION OF ADDITIVE GASES

George J. English, Reading; Harold L. Rothwell, Jr., Rowley, and Mark Beschle, Danvers, all of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Filed Jun. 9, 1983, Ser. No. 502,773

Int. Cl.[4] H01J *61/06, 61/20, 61/33, 61/54*

U.S. Cl. 313—631 **1 Claim**



1. A single-ended metal halide discharge lamp comprising:

an elliptical shaped envelope of fused silica having a volume of about 0.15 cm^3 and an inner surface area of about 1.45 cm^2;

a pair of electrodes sealed into and passing through said envelope with each of said pair of electrodes having a spherical ball on the end thereof within said envelope and said spherical balls spaced from one another along a longitudinal axis; and

a gas fill within said envelope including 400 torr of argon, about 7.4 mg of mercury, and additive gases including 0.10 gm of lithium iodide, 0.50 mg of zinc iodide, 0.30 mg of scandium iodide, 0.05 mg of thallium iodide, and 0.05 mg of dysprosium iodide, said additive gases varying directly in relative intensity and inversely in spatial location from said longitudinal axis in accordance with the ionization potential thereof.

4,766,349

ARC ELECTRODE

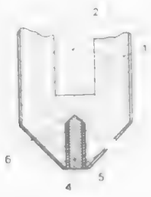
Jan O. Johansson, Vinslöv; Jan-Erik Andersson, Lund; Tomasz Niklewski, and Lars E. Edshammar, both of Stockholm, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Filed Jun. 5, 1986, Ser. No. 900,796

Claims priority, application Sweden, Nov. 5, 1985, 8502765

Int. Cl.[4] H01J *17/04;* **B23K** *9/26*

U.S. Cl. 313—631 **7 Claims**



1. An electrode for plasma arc working in active or inert media comprising a holder of high thermal and electrical conductivity into which is fitted a diffusion coated or case hardened zirconium or hafnium insert to provide a diffusion zone of high temperature compounds between said holder and said insert.

4,766,350

ELECTRIC CIRCUIT WITH TRANSIENT VOLTAGE DOUBLING FOR IMPROVED OPERATION OF A DISCHARGE LAMP

Theo Hüsgen, Aachen, Fed. Rep. of Germany; Hubert Raets, Nieuwenhagen, Netherlands; Gerd Schiefer, Aachen, Fed. Rep. of Germany, and Jan Zwier, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,722

Claims priority, application Netherlands, Sep. 11, 1981, 8104200

Int. Cl.[4] H05B *41/36*

U.S. Cl. 315—207 **18 Claims**



1. An electric circuit arrangement for operating an electric discharge lamp comprising: two input terminals for connection to a supply source which supplies a pulsatory direct voltage of the form obtained from a sinusoidal alternating voltage via a substantially unsmoothed full-wave rectification, means connecting a series-combination of at least the discharge lamp, a coil, and a controlled semiconductor switch across said input terminals, a part of said series-combination which includes the lamp and excludes the semiconductor switch being shunted by a first rectifier, a control circuit coupled to a control electrode of the semiconductor switch for switching the semiconductor switch several times during each period of the pulsatory direct voltage, means coupling a capacitor in shunt with the discharge lamp, and wherein in the operating condition of the lamp the control circuit switches off the semiconductor switch at each minimum voltage occurrence of the pulsatory direct voltage and renders the semiconductor switch conductive only when the instantaneous voltage across the input terminals is 0.5 to 0.8 times the then required lamp re-ignition voltage and also exceeds the operating voltage of the lamp.

4,766,351

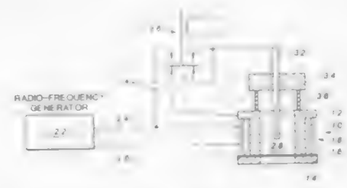
STARTER FOR INDUCTIVELY COUPLED PLASMA TUBE

Donald E. Hull, 969 Nambe Loop, and Thomas M. Bieniewski, 285 Donna Ave., both of Los Alamos, N. Mex. 87544

Filed Jun. 29, 1987, Ser. No. 67,080

Int. Cl.[4] B23K *5/00, 9/00;* **H01J** *7/24*

U.S. Cl. 315—240 **6 Claims**



1. In an inductively coupled plasma tube having a coil with a high voltage lead energizable by a high voltage radio-frequency generator and a grounded lead and wound about a shield assembly defining an axis of said tube, a starter assembly effective for internal pressures greater than 30 microns, comprising:

a conductive probe for connecting with said generator and insulated from said shield assembly and placed within said coil along said axis; and

a starter circuit including a capacitor and a switch having a first starting position for connecting said probe with said high voltage lead of said generator through said capacitor

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4,766,352

METHOD AND APPARATUS FOR STARTING AND OPERATING FLUORESCENT LAMP AND AUXILIARY BALLAST SYSTEMS AT REDUCED POWER LEVELS

Don F. Widmayer, 4704 Locust Hill Rd., Bethesda, Md. 20814

Filed Aug. 27, 1985, Ser. No. 769,829

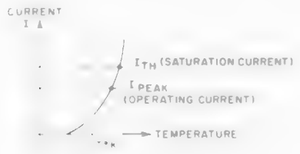
Int. Cl.[4] H05B *37/00*

U.S. Cl. 315—244 **11 Claims**

1. In a lamp-ballast system comprising an A.C. voltage source, a ballast transformer having a primary winding connected to the A.C. voltage source and at least one secondary winding, and at least one lamp connected to said secondary winding, the improvement comprising a capacitor connected in series between the A.C. source and the primary winding of the ballast transformer and having a capacitance value such as to produce ferroresonance with the ballast transformer so as to provide, after initial energization of the lamp but prior to arc ignition, a jump increase in the value of the ballast transformer voltage for a given value of the voltage applied by the A.C.

VOL 1093 ISS 4 AUG 23 1988 UMI

voltage source and immediately upon arc ignition, a lowering of the voltage applied to the primary winding of the ballast



transformer to a regulated level sufficient to provide stable arc operation, and so as to provide continuous regulation thereafter at a substantially constant voltage level.

4,766,353

LAMP SWITCHING CIRCUIT AND METHOD

David E. Burgess, Torrance, Calif., assignor to Sunlass U.S.A., Inc., Torrance, Calif.

Filed Apr. 3, 1987, Ser. No. 33,816
Int. Cl.[4] H05B *41/22*
U.S. Cl. 315—324 **30 Claims**



1. A lamp switching circuit device for connection in circuit with a plurality of relatively cold operating phosphor excitable lamps and a ballast for operation of said lamps, said lamp switching circuit device comprising:

(a) first connecting means for connecting said circuit device to said ballast and which ballast is connected to receive electrical power from a source thereof to generate lamp operating voltages therefrom,

(b) second connecting means for connecting said circuit device to said phosphor excitable lamps,

(c) switching means operable with said ballast for causing a lamp operating voltage from said ballast to be delivered to at least a first of a pair of lamps but not to a second of the pair of lamps,

(d) relay means operatively connected to said switching means to activate the switching means to enable the delivery of the lamp operating voltage to the second one of the pair of lamps but not to the first one of the pair of lamps when the power is interrupted and again turned on to the ballast, and

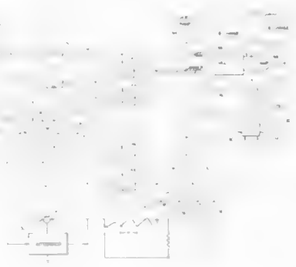
(e) said relay means and switching means being connected in such manner that the switching circuit device operates independently of said ballast other than to receive lamp operating voltages therefrom and independently of said lamps other than to switch lamp operating voltages relative to same, such that a failure of one or more of the lamps connected in circuit with the switching device will not interfere with normal operation of said switching circuit device.

4,766,354

INDEPENDENT TOP/BOTTOM PINCUSHION CORRECTION

Kirk Oliver, Forest Park, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jan. 6, 1987, Ser. No. 694
Int. Cl.[4] H01J *29/56*
U.S. Cl. 315—371 **4 Claims**



1. A pincushion correction system for controlling the raster on a cathode ray tube comprising:

multiplier means having first and second inputs;

means for producing a vertical ramp signal coupled to said first input of said multiplier means;

means for generating a horizontal rate pincushion correction signal;

a pair of separate adjustment means coupled between said generating means and said second input of said multiplier means for providing two independent, adjustable, horizontal rate pincushion correction signals; and

switch means for selectively activating said adjustment means for independently controlling pincushion correction of the top and bottom portions of said raster with said two correction signals, respectively.

4,766,355

AUTOMATIC VERTICAL SIZE CONTROL

Joseph Kadlec, Berwyn; Kenneth W. Kociolek, Des Plaines, and Thaddeus P. Okrzesik, Chicago, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Sep. 25, 1987, Ser. No. 101,036
Int. Cl.[4] H01J *29/70*; H04N *5/68*; N04N *5/04*
U.S. Cl. 315—399 **4 Claims**



1. A monitor having at least two vertical display resolutions comprising:

horizontal deflection means and vertical deflection means;

means for receiving horizontal and vertical synchronizing signal information;

means for generating a mode signal indicative of the vertical display resolution from said horizontal and vertical synchronizing signal information;

oscillatormeans, including voltage means supplying operating voltage for said oscillator means and transistor switch means for changing said operating voltage by changing the loading on said voltage means responsive to said mode signal, for processing said vertical synchronizing signal information to develop a vertical ramp signal, the magnitude of which is dependent upon said mode signal;

means for coupling said vertical signal to said vertical deflection means; and

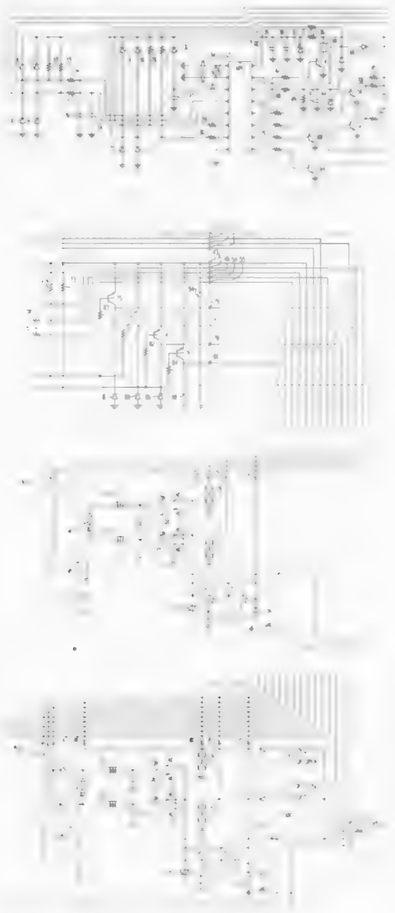
means for changing said vertical signal in response to said mode signal.

4,766,356

DEVICE FOR OPENING AND CLOSING A VEHICLE TOP

Nobora Handa, and Takahiko Tanaka, both of Shizuoka, Japan, assignors to Asmo Co., Ltd., Kosai and Mazda Co., Ltd., Hiroshima, both of, Japan

Filed Dec. 3, 1986, Ser. No. 937,238
Claims priority, application Japan, Dec. 3, 1985, 60-272138; Jan. 23, 1986, 61-146710
Int. Cl.[4] B60J *7/08*; H02P *5/50*
U.S. Cl. 318—55 **5 Claims**



1. A device for opening and closing a vehicle top by rotations of drive shafts rotatably provided with both right and left sides of the vehicle, comprising two individual motors which actuate said individual drive shafts through speed reduction mechanisms, switching relays which switch the direction of rotation of both of said motors respectively, switching relay actuation transistors which individually actuate both of said switching relays, top-open and top-close command switches which command the opening and closing of said vehicle top, a switch command determination means which ascertains whether said top-open and top-close command switches are operated, an actuation means which conducts the top opening and closing by actuation of said switching relays via said switching relay actuation transistors on the basis of a signal from said switch command determination means when said top-open and top-close command switches are operated, rotation synchronization sensors which are possessed by at least one of the aforesaid two motors and generate a pulse synchronized to the rotation of said motor, and a rotation synchronization correction means which synchronizes the rotation speed of both of said motors when the pulses are fed back via said rotation synchronization sensors as the rotation speed of one of said two motors drops.

4,766,357

DEMAGNETIZATION COMPENSATED MAGNETOSTRICTIVE ACTUATOR

Walter L. Glomb, Jr., West Willington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 685,939, Dec. 24, 1984, abandoned. This application Feb. 19, 1987, Ser. No. 18,798
Int. Cl.[4] H02N *2/00*; H01L *41/12*
U.S. Cl. 318—118 **6 Claims**



1. A magnetostrictive actuator which provides for displacement along an axis in depedence on the magnitude of an external signal comprising:

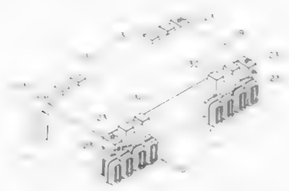
displacement element means having a first and a second end portion and comprising a high magnetic permeablity metallic glass, for providing said displacement along said axis in proportion to an applied magnetic field,

excitation means disposed about said displacement element means for providing said magnetic field to said displacement element means at a magnitude in dependence on the magnitude of said external signal, and

a magnetic yoke means enclosing said displacement means for providing a low magnetic reluctance path for magnetic flux provided by said magnetic field for minimizing uncompensated magnetic poles so that said displacement means is displaced along said axis in approximately linear proportion to said applied magnetic field.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,358
LINEAR STEPPING MOTOR
Toshiro Higuchi, Yokohama, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan, a part interest
Continuation-in-part of Ser. No. 804,167, Dec. 3, 1985, Pat. No. 4,689,529. This application Jan. 5, 1987, Ser. No. 418
Int. Cl.[4] H02K *41/00*
U.S. Cl. 318—135 3 Claims



1. A linear stepping motor comprising:
an elongated stationary member having a plurality of teeth arranged at a pitch τ transversely of a longitudinal direction of said stationary member;
a movable member having first, second, third and fourth pole pieces arranged in the order named in said longitudinal direction of said stationary member, each of said pole pieces having a plurality of teeth opposed to said teeth of the stationary member and arranged at the pitch τ, wherein said teeth of the second pole piece are located apart by $l\tau+\frac{1}{4}\tau$, those of the third pole piece are located apart by $m\tau\pm\frac{1}{2}\tau$, and those of the fourth pole piece are located apart by $n\tau\pm\frac{1}{4}\tau$ from the respective teeth of the first pole piece, in which l, m and n are integers;
attraction magnetic pole means for maintaining said movable member floated by a magnetic coil providing an attractive force of a magnetic flux passing through a body of the movable member, between the first and the second pole pieces, a tooth portion of the stationary member, a body of the stationary member, between the third and the fourth pole pieces, and said body of the movable member;
guiding magnetic pole means comprising first, second, third and fourth magnetic coils wound on the first, the second, the third and the fourth pole pieces, respectively;
guiding control means for controlling said guiding magnetic pole means to consecutively selectively energize said first to fourth magnetic coils in a predetermined order such that the teeth of the pole piece on which the energized magnetic coil is wound align with the teeth of the stationary member, and thereby to cause the movable member to move in the longitudinal direction of the stationary member; and
gap control means for maintaining a gap between said stationary member and said movable member constant during the movement of the movable member.

4,766,359
ABSOLUTE SHAFT POSITION SENSING CIRCUIT
Geoffrey M. Smith, Reisterstown, Md., and Eric J. Stacey, Penn Hills Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Mar. 18, 1987, Ser. No. 27,468
Int. Cl.[4] G05B *1/06*
U.S. Cl. 318—652 9 Claims

1. A shaft position sensing circuit comprising:
means for generating a first pulse train having a plurality of regularly spaced pulses occurring at a frequency representative of the speed of rotation of a shaft;
means for generating a second pulse train having a plurality of regularly spaced pulses and at least one irregularly spaced pulse, said irregularly spaced pulse occurring once for each rotation of said shaft;
phase locked loop having a voltage controlled oscillator for producing a first signal having a frequency which is representative of but greater than the frequency of pulses in said first pulse train;
a counter for producing an output count in response to said first signal, said count being representative of the relative angular position of said shaft;



means for detecting the occurrence of said irregularly spaced pulse in said second pulse train; and
means for resetting said counter in response to the occurrence of said irregularly spaced pulse, thereby making said output count representative of the absolute angular position of said shaft.

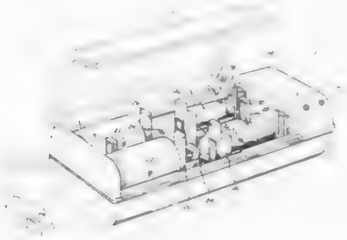
4,766,360
INDUCTION GENERATOR/MOTOR SYSTEM
Eiji Haraguchi, Ibaraki; Hiroto Nakagawa, Osaka; Akira Bando, Hitachi; Yoji Tanaka, Hitachi; Kenichi Ono, Hitachi; Hiroshi Kashiwazaki, Hitachi, and Hiroshi Sugisaka, Hitachi, all of Japan, assignors to Hitachi, Ltd. and The Kansai Electric Power Co., Both of Tokyo, Japan
Filed Sep. 24, 1986, Ser. No. 911,072
Claims priority, application Japan, Sep. 25, 1985, 60-210003
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—732 6 Claims



1. An induction generator/motor system comprising:
a wound-rotor induction machine having secondary phases and connected at its primary side to an AC power line system;
thyristor power converter means connected to each of the secondary phases of said induction machine, for supplying secondary current to said induction machine, said thyristor power converter means including a thyristor converter comprised of a forward thyristor converter and a backward thyristor converter connected in anti-parallel relationship with the forward thyristor converter;
a phase detector for detecting a slip phase equal to a difference between a phase of voltage on said AC power line system and a rotating phase on the secondary side of said induction machine in terms of electrical angle;
current command generating means for generating a secondary current command for said induction machine, said secondary current command containing two components having phases relative to the slip phase which are $\pi/2$ out of phase mutually;

a current command arithmetic unit for generating a current pattern in each phase on the secondary side on the basis of the current command from said current command generating means and the slip phase detected by said phase detector;
a current detector for detecting an output current of said thyristor power converter means;
phase controlling means for controlling a thyristor igniting phase of said thyristor power converter means on the basis of the current command from said current command generating means, the slip phase detected by said phase detector and a current detection value from said current detector;
polarity switching means for generating a forward/backward command signal for said thyristor power converter means on the basis of the current detection value of said current detector and the current pattern generated from said current command arithmetic unit;
a voltage detector for detecting a voltage across output terminals of said thyristor power converter means; and
polarity inverting means for causing, when the detection voltage from said voltage detector exceeds a predetermined set range which covers the output voltage derivable from said thyristor power converter means, said polarity switching means to generate said forward/backward command signal whereby the polarity direction of said detection voltage in excess of said set range is rendered forward.

4,766,361
BATTERY CHARGER HAVING AN INTERLOCKING ASSEMBLY FOR ACCOMMODATING INCREASED CHARGING RATE CAPACITY
Vincent J. Pusateri, Norcross, Ga., assignor to General Electric Company, Schenectady, N.Y.
Filed Sep. 23, 1987, Ser. No. 99,961
Int. Cl.[4] H02J *7/00*; H01M *10/46*
U.S. Cl. 320—2 7 Claims



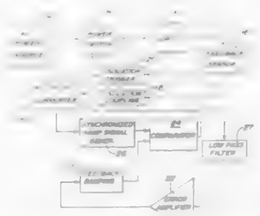
1. A charging assembly for at least one rechargeable cell selected from a group of cells of various sizes and having a desired first, second and third desired charging rate currents, said assembly comprising;
(a) means for connecting to an external power source;
(b) a charging network connected to said connecting means and providing a first and second charging path with each path having three branches respectively developing said first, second and third charging rate currents;
(c) means for accepting said selected at least one cell, said cell accepting means connected to said charging network and comprising stationary and moveable charging contacts for respectively receiving charging current in said first and second charging paths, said cell accepting means being connected to said charging network so that the accepted cell is appropriately interconnected to its desired charging rate current, said stationery and moveable contacts allowing only one charging rate current to be developed by said network and
(d) moveable ejector means arranged between said stationary and moveable charging contacts, said ejector means being moveable so as to contact and assist removal of said selected cell from said means of accepting.

4,766,362
REGULATABLE PERMANENT MAGNET ALTERNATOR
John W. Sadvary, Little Falls, N.J., assignor to Simmonds Precision Products, Inc., Tarrytown, N.Y.
Filed Nov. 24, 1986, Ser. No. 935,377
Int. Cl.[4] H02K *21/14*
U.S. Cl. 322—50 30 Claims



1. A regulatable permanent magnet alternator comprising:
a stator member having at least one pair of poles;
a rotor member having at least one pair of poles;
permanent magnet field means on one of said members;
armature windings on the other of said members;
a hollow, cylindrical sleeve coaxial and concentric with said rotor member; said sleeve encompassing and connected to said rotor member, said sleeve extending between said poles of said rotor member and said poles of said stator member, said sleeve comprising a plurality of peripherally spaced bridging members, each said bridging member including ferromagnetic material; means for shifting the angular position of said bridging members with respect to the rotor poles as the rotor rotates and thereby shifting the magnetic flux linkage between the field means and the armature winding means.

4,766,363
VOLTAGE LIMITING CONTROL SYSTEM FOR HEAT EMITTING LOADS
Robert E. Rutter, Tempe, Ariz., and Robert M. Jensen, Albuquerque, N. Mex., assignors to Devore Aviation Corporation, Albuquerque, N. Mex.
Filed May 29, 1987, Ser. No. 55,294
Int. Cl.[4] G05F *1/40*
U.S. Cl. 323—243 16 Claims

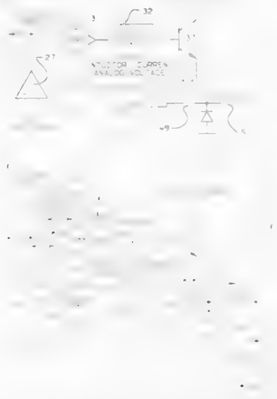


1. In an apparatus for maintaining substantially constant electrical power through a load despite voltage changes in a power source to which the load is connected, having means for sensing an effective voltage across the load and control means

VOL 1093 ISS 4 AUG 23 1988 UMI

for varying power applied to the load from the power source, feedback loop means operatively connecting the sensing means to the control means for regulation thereof as a function of said effective voltage including damping means for preventing oscillation of said variation in power applied and isolation coupling means operatively connected to the control means and the sensing means for isolation of the feedback loop means from the power source and the load.

4,766,364
PARALLEL POWER SYSTEMS
Robert A. Biamonte, West Hurley; Joseph W. Bogdanski, Saugerties; Kevin R. Covi, Glenford; Herman P. Meyer, Rifton, and Daniel I. Rafkind, Kingston, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 4, 1987, Ser. No. 116,855
Int. Cl.[4] G05F 1/46
U.S. Cl. 323—272 7 Claims



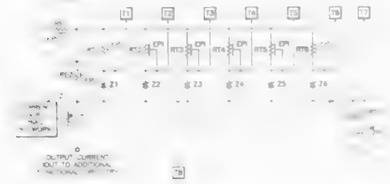
1. A regulated voltage D.C. power system comprising, in combination,
- a master switching regulator for providing an output to a load,
- a plurality slave switching regulators connected in parallel with said master regulator to supply said load,
- said master and slave switching regulators comprising a redundant configuration of N+1 switching regulators wherein each of said regulators contributes a substantially equal amount to said load,
- said master switching regulator having a current mode control circuit operative to compare the output signal from said master switching regulator with a reference to generate an error signal,
- each said slave regulator also having a current mode control circuit, and
- means responsive to the failure of said master switching regulator to transfer control from said master to said slave regulators while maintaining a stable output to said load.

4,766,365
SELF-REGULATED TRANSFORMER-INDUCTOR WITH AIR GAPS
Léonard Bolduc, Sainte-Julie, and Grégoire Pare, Montarville, both of Canada, assignors to Hydro Quebec, Montreal, Canada
Filed Jul. 20, 1987, Ser. No. 75,759
Claims priority, application Canada, Apr. 15, 1987, 534843
Int. Cl.[4] G05F 3/06
U.S. Cl. 323—308 27 Claims



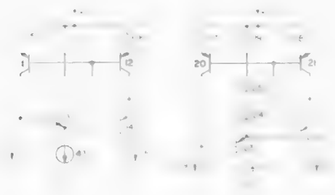
1. A self-regulated transformer-inductor comprising:
- a magnetic core defining a first limb, a second limb, and a third limp each having a first end and a second end, said first ends being interconnected through a first common point of the magnetic core and said second ends being interconnected through a second common point of said magnetic core;
- transformer means including primary winding means wound around at least one of said limbs of the magnetic core and supplied with alternating current by a source of electric energy; and
- variable inductor means including second winding means different from said primary winding means, wound around at least one of said limbs of the magnetic core, and supplied with an alternating current generated by said source of electric energy;
- said primary and second winding means being so positioned on the magnetic core that the said two alternating currents in the primary and second winding means are coupled to an alternating current magnetic flux induced in each of the second and third limbs;
- said variable inductor means also including control winding means supplied with direct current and so disposed on the magnetic core that the said direct current current induces a direct current magnetic flux in each of said second and third limbs;
- the alternating current and direct current magnetic fluxes in one of the second and third limbs assisting each other while the alternating current and direct current magnetic fluxes in the other of said second and third limbs are in opposition with respect to each other;
- said varaible inductor means further comprising means for converting the alternating current in the second winding means into direct current for the supply of the control winding means, the direct current supplying the control winding means having an amplitude which varies with the amplitude of the alternating current in the second winding means for thereby varying the density of the direct current magnetic flux in the second and third limbs and controlling the permeability of said second and third limbs to the alternating current magnetic flux; and
- said transformer means also including secondary winding means subjected to the alternating current magnetic flux in said second and third limbs, and connected to an electric load for the supply of said load.

4,766,366
TRIMMABLE CURRENT SOURCE
Walter L. Davis, Coral Springs, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Division of Ser. No. 689,101, Jan. 4, 1985, Pat. No. 4,713,599. This application Sep. 3, 1987, Ser. No. 92,843
Int. Cl.[4] G05F 3/26
U.S. Cl. 323—312 5 Claims



2. A trimmable current source circuit for use with low voltage circuitry comprising:
- a plurality of trimming networks,
- each said trimming network including a trimming resistor in an isolated epitaxial region series connected to a zener diode, for each of said trimming networks, the isolated epitaxial region being connected to the junction of the trimming resistor and the zener diode,
- whereby a programming signal having a voltage level which would normally damage said low voltage circuitry can be applied to the junction of said trimming resistor and said zener diode and to said isolated epitaxial region containing said resistor of the trimming network to be programmed without damage to said low voltage circuitry.

4,766,367
CURRENT MIRROR WITH UNITY GAIN BUFFER
Kenneth R. Saller; Alan J. Baker, and Steven O. Smith, all of Fort Collins, Colo., assignors to Comlinear Corporation, Fort Collins, Colo.
Filed Jul. 20, 1987, Ser. No. 75,140
Int. Cl.[4] G05F 3/26
U.S. Cl. 323—315 7 Claims



1. An improved current mirror having input and output terminals, and further comprising:
- (a) a simple current mirror having input and output terminals, and a bias terminal for connection to a voltage source;
- (b) unit gain buffer having input and output terminals; and
- (c) a first transistor having emitter, base and collector terminals;

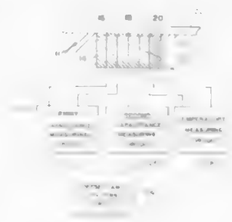
wherein said input terminal of said buffer is connected in common with said output terminal of said simple current mirror to form said input terminal of said improved current mirror; wherein said output terminal of said buffer is connected to said base terminal of said first transistor; wherein said emitter terminal of said first transistor is connected to said input of said simple current mirror; and wherein said collector terminal of said first transistor comprises said output terminal of said improved current mirror; and wherein said buffer includes means for causing a correction current to flow through said input terminal of said buffer, said correction current being responsive to the operation of said simple current mirror and in the proper sense to reduce the error current between said input terminal and said output terminal.

4,766,368
CAPACITIVE SENSOR
Harold A. Cox, Highway 49 North, Rte. 15, Box 559, Hattiesburg, Miss. 39401
Filed Sep. 30, 1986, Ser. No. 913,726
Int. Cl.[4] G01R 27/26
U.S. Cl. 324—61 P 6 Claims



1. A capacitive sensor comprising:
- a capacitive proximity sensor circuit means for producing low impedance ac voltages and for detecting capacitive loading of a sense head; and
- a printed circuit board sense head means including a substrate, a sense electrode layered on the substrate, and electrically driven guard shields layered on said substrate for shielding the sense electrode, said sense head means being remotely connected by an electrical lead means to the capacitive proximity sensor circuit means for receiving the low impedance ac voltages for capacitively coupling objects present and for reducing substantially the capacitance of the sense electrode capacitance to ground thereby preserving the capacitance loading quantity being monitored to detect the presence of an object.

4,766,369
ICE DETECTOR
Leonard M. Weinstein, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Continuation-in-part of Ser. No. 846,429, Mar. 31, 1986, abandoned. This application May 28, 1987, Ser. No. 54,980
Int. Cl.[4] G01R 27/26
U.S. Cl. 324—61 R 8 Claims



1. A device for determining the thickness of ice on an outer surface of an object independently of both temperature and ice composition comprising:
- a first capacitance measuring circuit which produces an output voltage and is located within said object;
- a first capacitive gauge which is connected to said first capacitance measuring circuit and whose electrode size is

VOL 1093 ISS 4 AG 23 1988 UMI

selected so that the output voltage of said first capacitance measuring circuit reaches a constant maximum for the minimum ice thickness desired to be determined;

a second capacitance measuring circuit which produces an output voltage and is located within said object;

a second capacitive gauge which is connected to said second capacitance measuring circuit and whose electrode size is selected so that the output voltage of said second capacitance measuring circuit reaches a constant maximum from the maximum ice thickness desired to be determined;

a temperature measuring circuit which produces an output voltage and is located within said object;

a temperature gauge which is connected to said temperature measuring circuit and is sensitive to a temperature of 0° C.;

a means for embedding said first capacitive gauge, second capacitive gauge, and said temperature gauge slightly below said outer surface such that no irregularities result in contours of said outer surface and such that said gauges may sense conditions on said outer surface:

an offset and dividing circuit to which said first and second capacitance measuring circuits are connected and which produces a voltage output V_{out} proportional to the thickness of ice present according to the following equation:

$$V_{out} = \frac{(V - V_o)_2}{(V - V_o)_1}$$

where V_1 and V_2 are the respective voltage outputs of said first and second capacitance measuring circuits when ice is present, and V_{o1} and V_{o2} are the respective voltage outputs of said first and second capacitance measuring circuits when no ice is present.

4,766,370

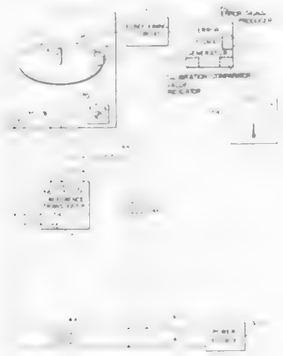
SYSTEM AND METHOD FOR CALIBRATING AN ENERGY METER

John M. Carr, Millville, N.J., assignor to The Eastern Specialty Company, Philadelphia, Pa.

Filed Apr. 12, 1984, Ser. No. 599,544

Int. Cl.[4] G01R *11/32;* **G08B** *23/00*

U.S. Cl. 324—74 **12 Claims**



1. A system for calibrating an energy meter having input means for receiving electrical energy and a rotor having a periphery which rotates at an angular velocity generally proportional to the electrical energy input into the meter, said system comprising:

(a) reference means having input means for receiving electrical energy, said reference means generating a reference signal having a predetermined signal parameter generally proportional to the electrical energy input into the reference means;

(b) a plurality of marks disposed around the periphery of the rotor;

(c) detection means communicating with the rotor for detecting the marks on the rotor and generating a test signal having a predetermined signal parameter generally proportional to the angular velocity of the rotor;

(d) a source of electrical energy connected in common to the energy meter and said reference means such that substantially the same electrical energy is input to both the energy meter and said reference means;

(e) error signal generator means responsive to the reference signal from the reference means and the test signal from the detection means for sensing a difference in a predetermined relationship between the signal parameter of the test signal and the signal parameter of the reference signal during at least a fractional rotation of the rotor and for generating an error signal representing the amount of error in the calibration of the energy meter when a difference in said predetermined relationship is sensed upon said fractional rotation of the rotor;

(f) indicator means connected with the error signal generator means to receive the error signal for indicating the magnitude and polarity of error in the calibration of the energy meter and for indicating changes in the magnitude and polarity of the error in the calibration of the energy meter; and

(g) calibration adjustment means associated with the energy meter for adjusting the angular velocity of the rotor while the calibration error is indicated by said indicator means so that changes in the magnitude and polarity of the error in calibration are indicated by the indicator means during adjustment to provide essentially continuous adjustment of meter calibration until the signal parameter of the test signal corresponds to the predetermined relationship with the signal parameter of the reference signal and the energy meter is thus properly calibrated.

4,766,371

TEST BOARD FOR SEMICONDUCTOR PACKAGES

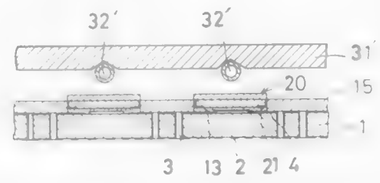
Tadashi Moriya, Osaka, Japan, assignor to Risho Kogyo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 474,035, Mar. 10, 1983, abandoned. This application Jun. 19, 1986, Ser. No. 875,517

Claims priority, application Japan, Jul. 24, 1982, 57-112481[U]; Sep. 14, 1982, 57-140932[U]; Sep. 24, 1982, 57-145547[U]; Sep. 29, 1982, 57-149282[U]

Int. Cl.[4] G01R *31/02;* **H05K** *1/00*

U.S. Cl. 324—158 F **2 Claims**



1. A burn-in device for resting leadless semiconductor packages, comprising:

a printed circuit board having a planar outer board surface and having terminal and electrical circuits thereon and through holes therein, said terminals having outer terminal surfaces formed in planes parallel to said board surface;

a frame plate on said board having a plurality of through openings over said terminals and of a size for receiving and for positioning respective semiconductor packages therein;

a plurality of elastic connectors mounted in said openings, said connectors having lower surfaces opposing and contacting said terminal surfaces and upper surfaces opposite said lower surfaces, said upper surfaces being disposed so as to receive the semiconductor packages thereon when the packages are positioned in said openings, said connectors being formed of an elastic material and each having embedded therein a plurality of thin metal wires electrically insulated from each other extending from said lower surfaces to said upper surfaces for providing electrical connection between semiconductor packages on said upper surfaces and said terminal surfaces opposing said lower surfaces; and

a cover plate over said board, having a back side opposing said openings and a plurality of elastic bodies attached to said back side and aligned with said openings, said cover plate being movable toward said board such that said elastic bodies press downwardly on the semiconductor packages positioned in said openings so as to elastically press the semiconductor packages against said elastic connectors so as to insure electrical connection of the semiconductor packages with said terminals through said metal wires.

4,766,372

ELECTRON BEAM TESTER

Valluri R. M. Rao, Milpitas, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Feb. 10, 1987, Ser. No. 13,006

Int. Cl.[4] G01N *23/00;* **H01J** *37/26*

U.S. Cl. 324—158 R **30 Claims**



1. An apparatus for testing integrated circuits comprising:

electron emitting means for providing a plurality of primary electrons;

accelerating means operatively associated with the electron emitting means for accelerating the primary electrons along a substantially linear path;

alignment means operatively associated with the accelerating means for aligning the path of the primary electrons with an optical axis;

first lens means operatively associated with the alignment means for focusing the primary electrons into a beam directed along the optical axis;

second lens means operatively associated with the first lens means for focusing the beam of primary electrons on a surface of a specimen such that a plurality of secondary electrons is emitted from the surface of the specimen;

deflection means operatively associated with the second lens means for selectively positioning the beam of primary electrons on the surface of the specimen;

extraction means operatively associated with the second lens means for accelerating the secondary electrons in a direction along the optical axis and substantially opposite to the direction of the beam of primary electrons;

retarding means operatively associated with the extraction means for controllably decelerating the secondary electrons; and

detection means operatively associated with the retarding means for providing an electrical signal as a function of a potential of the secondary electrons;

whereby said electrical signal varies as a function of a surface potential at a location on the surface of the specimen where the beam of primary electrons is positioned.

4,766,373

METHOD AND APPARATUS FOR REAL-TIME, ON-LINE MONITORING OF WEAR IN MACHINERY

Keith W. Chambers, Pinawa, and Clinton A. Waggoner, Victoria, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Canada

Continuation of Ser. No. 593,653, Mar. 26, 1984, Pat. No. 4,651,091. This application Feb. 20, 1987, Ser. No. 16,791

Claims priority, application Canada, Oct. 17, 1983, 439146

The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.

Int. Cl.[4] G01N *27/74;* **G01R** *33/12;* **G01F** *1/708;* **G01P** *5/18*

U.S. Cl. 324—204 **23 Claims**

14. A real-time, on-line apparatus for monitoring the rate of wear of a machine having ferromagnetic components which wear during operation resulting in the production of ferromagnetic particulate material, said machine having a lubrication system utilizing a lubricating fluid, in which said material becomes entrained, for lubricating said ferromagnetic components, said apparatus comprising:

means defining a fluid flow passage having one end adapted to be connected to said machine for taking a sample of said lubricating fluid from said machine and another end adapted to be connected to said machine for returning said sample to said machine, said passage having a portion thereof formed of nonmagnetic material;

sensing means including an RF oscillator having an inductance coil disposed about said portion of said passage means, said oscillator being adapted to operate at a base RF frequency and produce an RF output signal, said coil being arranged such that the frequency of said RF output signal deviates from said base RF frequency in proportion to the mass of ferromagnetic particulate material entrained in the fluid passing through said coil;

means for accumulating ferromagnetic material in said sample stream upstream of said inductance coil; and

electrical circuit means for:

(a) integrating with respect to time the frequency transient in said RF output signal resulting from the passage of said accumulated material through said coil to provide an integrated output signal;

(b) comparing said integrated output signal against a predetermined threshold and providing a second output

VOL 1093 ISS 4 AG 23 1988 UMI

signal representative of the rate of wear of said machine; and

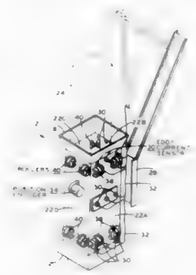
(c) controlling said accumulating means so as to activate said accumulating means for predetermined timed intervals at predetermined increments of time whereby to accumulate ferromagnetic particulate material at said site and deactivate said accumulating means at the end of said intervals whereby to release any accumulation at said site into said fluid passage.

4,766,374

FUEL CHANNEL FLATNESS MEASUREMENT

Samuel W. Glass, III; John C. Griffith, both of Lynchburg; John D. Brew, Forest; Charles C. England, Jr., and John M. Phillips, both of Lynchburg, all of Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Nov. 14, 1986, Ser. No. 931,474
Int. Cl.[4] G01B 7/28; G01R 33/12; G21C 17/00
U.S. Cl. 324—207 6 Claims



1. A fuel channel flatness measurement system, comprising:
a. a measurement unit in which said fuel channel is measured;
b. conditioning electronics which receive electronic measurement signals from said measurement unit and condition said signals for further processing;
c. a computer analysis unit which receives said conditioned signals and generates a contour profile of said measured fuel channel; and
d. said measurement unit comprising:
i. a box-like structure having open top and bottom ends;
ii. a multichannel array of sensors mounted on two adjacent sides of said structure which provide measurement signals of sensors to fuel channel surface distance to said conditioning electronics;
iii. a position encoder mounted on one side of said structure for detecting and providing the axial position of said fuel channel to said conditioning electronics;
iv. a plurality of fixed rollers mounted on said structure adjacent said sensors and extending interior of said structure so as to be in rolling contact with a fuel channel being measured; and
v. a plurality of spring loaded rollers mounted on two sides of said structure substantially opposite said fixed rollers and extending interior of said structure so as to be in rolling contact with a fuel channel being measured.

4,766,375

HEAD ASSEMBLY HAVING FREE AXIAL AND RESTRICTED PERPENDICULAR MOVEMENT IN A MAGNETIC SCALE

Kazuo Nagaoka, Tokyo, Japan, assignor to Sony Magnescale Corporation, Tokyo, Japan

Filed Mar. 6, 1986, Ser. No. 836,753
Claims priority, application Japan, Mar. 13, 1985, 60-50098
Int. Cl.[4] G01B 7/02
U.S. Cl. 324—208 8 Claims



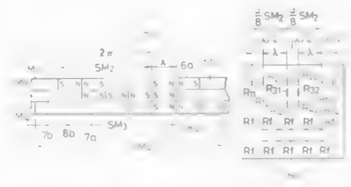
1. A magnetic reading head assembly for a magnetic scale comprising:
an elongated magnetic scale member;
a magnetic head defining an axial opening through which said magnetic scale member extends so that said magnetic head moves along said magnetic scale member; and
first means for permitting movement of said magnetic head along said said magnetic scale member and restricting movement of said magnetic head in a direction perpendicular to the axis of said magnetic scale member and thereby holding the axis of said axial opening substantially parallel to and in a predetermined positional relationship with the axis of said magnetic scale member, wherein said first means comprises a pair of resilient members biasing said magnetic head against said magnetic scale member so that the inner periphery of said axial opening of said magnetic head is in constant contact with the outer periphery of said magnetic scale member, said pair of resilient members being adapted to exert biasing forces in essentially perpendicular directions to each other.

4,766,376

MAGNETIC POSITION DETECTOR FOR DETECTING AN ABSOLUTE POSITION OF A MOVABLE MEMBER

Tadashi Takahashi; Kunio Miyashita, and Syouichi Kawamata, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1986, Ser. No. 896,255
Claims priority, application Japan, Aug. 14, 1985, 60-177642
Int. Cl.[4] G01B 7/30
U.S. Cl. 324—208 10 Claims



1. A magnetic position detector for detecting an absolute position of a movable member to produce a digital position signal of plural bits encoded in accordance with the absolute position, comprising:
a magnetic recording medium movable in response to the movement of the movable member, and having a plurality of magnetic tracks arranged in the moving direction thereof, each magnetic track having a predetermined positional significance with magnetic signals of required lengths SM being recorded along said magnetic tracks, the length SM of the magnetic tracks being determined in accordance with the respective positional significance and being smallest in a least significant one of said magnetic tracks;
a first group of magnetoresistive element pairs, each element pair being composed of two magnetoresistive elements spaced at a predetermined interval and provided on a stationary part of the position detection so that each element pair is close to and opposed to a corresponding one of said magnetic tracks to produce a periodic output signal as said magnetic recording medium moves, one cycle of the periodic output signal being dependent on the length SM of the magnetic signal of the corresponding magnetic track;
a second group of magnetoresistive element pairs, each element pair being composed of two magnetoresistive elements spaced at the predetermined interval and provided on the stationary part of the position detector so that every element pair is close to and opposed to the least significant magnetic track to produce periodic output signals as said magnetic recording medium moves, one cycle of the periodic output signals being dependent on the length SM_L of the magnetic signal of the least significant track and having a predetermined phase difference from the periodic output signal produced by the magnetoresistive element pair belonging to said first group and opposed to the least significant track; and
means for processing the output signals produced by said first group of magnetoresistive element pairs to create a main position signal of plural bits, for processing the output signals produced by said second group of magnetoresistive element pairs to create an auxiliary position signal of at least one bit indicative of positions finer than those indicated by the least significant digit of the main position signal, and for forming the digital position signal by combining the main and auxiliary position signals so as to obtain the digital position signal having a number of bits greater than the number of said magnetic tracks.

4,766,377

PHASE CORRECTION METHOD IN TWO-DIMENSIONAL NMR SPECTROSCOPY

Muneki Ohuchi, and Soukichi Uchida, both of Tokyo, Japan, assignors to Jeol Ltd., Tokyo, Japan

Filed Oct. 20, 1987, Ser. No. 110,941
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—307 3 Claims



1. A method of correcting the phase of a two-dimensional NMR spectrum, comprising the steps of:
applying a first pulse or pulse train to a sample;
applying a second pulse or pulse train to the sample when an evolution period of t_1 elapses after the application of the first pulse or pulse train;
then detecting the free induction decay signal emanating from the sample during a detection period of t_2, using a quadrature detection system;
repeating the above process with different values of t_1 to obtain a complex NMR spectrum $S_1(t_1, t_2)$;
exciting the sample with a pulse sequence which is similar to the first-mentioned pulse sequence except that the second pulse or pulse train of this sequence is shifted in phase by 90°/n wherein n is a natural number, with respect to the second pulse or pulse train of the first-mentioned pulse sequence;
detecting the resulting free induction decay signal;
repeating this process with the same number of values of t_1 as the first-mentioned values of t_1 to obtain a complex NMR spectrum $S_2(t_1, t_2)$;
subjecting the spectra $S_1(t_1, t_2)$ and $S_2(t_1, t_2)$ to complex Fourier transformation with respect to the axis t_2 to obtain spectra $S_1(t_1, F_2)$ and $S_2(t_1, F_2)$
interchanging the imaginary part of $S_1(t_1, F_2)$ and the real part of $S_2(t_1, F_2)$ to give rise to $S_1'(t_1, F_2)$ and $S_2'(t_1, F_2)$;
subjecting $S_1'(t_1, F_2)$ and $S_2'(t_1, F_2)$ to complex Fourier transformation with respect to the axis t_1 to obtain $S_1'(F_1, F_2)$ and $S_2'(F_1, F_2)$;
correcting the phase along one of the axes;
interchanging the imaginary part of $S_1'(F_1, F_2)$ and the real part of $S_2'(F_1, F_2)$; and
correcting the phase along the other axis.

4,766,378

NUCLEAR MAGNETIC RESONANCE SCANNERS

Gordon T. Danby, Wading River; Hauk C. H. Hsieh, Roukonkoma; John W. Jackson, Shoreham, and Raymond V. Damadian, Woodbury, all of N.Y., assignors to Fonar Corporation, Melville, N.Y.

Filed Nov. 28, 1986, Ser. No. 935,933
Int. Cl.[4] G01R 33/20
U.S. Cl. 324—307 53 Claims



1. A medical NMR scanner comprising a primary field magnet assembly including:
(a) a ferromagnetic frame defining a patient-receiving space adapted to receive a human body, said frame having a pair of opposed polar regions aligned on a polar axis and disposed on opposite sides of said patient-receiving space, and said frame including a substantially continuous ferromagnetic flux return path extending between said polar regions remote from said patient-receiving space;
(b) flux-generating means including a plurality of superconductive windings and cryostat means for maintaining said windings at superconducting temperatures; and
(c) support means for maintaining said windings in proximity to said frame so that when a current passes through said windings magnetic flux emanating from said windings produces a magnetic field within said patient-receiving space and at least a portion of said flux passes into said patient-receiving space by way of said polar regions.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,379

METHOD FOR OBTAINING NUCLEAR MAGNETIC RESONANCE INFORMATION DATA

Toshiyuki Miyazaki, and Tohru Yamamoto, both of Atsugi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 29, 1986, Ser. No. 901,695
Claims priority, application Japan, Sep. 2, 1985, 60-194621
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 12 Claims



1. A method for obtaining nuclear magnetic resonance information data containing chemical shift data from a selected slice of a target, comprising the steps of:

placing said target in a main magnetic field and causing nuclear spin excitation of a selected type of atoms in said selected target slice defined in said magnetic field;

applying to said target for a predetermined period of time first and second magnetic gradient fields parallel to said main magnetic field and having respective strengths varying along first and second axes crossing each other in said slice;

subsequently applying to said target a readout magnetic gradient field parallel to said first magnetic gradient field and varying in strength along said first axis, to thereby encode spatial information in frequency along said first axis;

detecting, in the presence of said readout magnetic gradient field, a free induction signal from said target after the lapse of a substantially constant period of time from said nuclear spin excitation;

repeating a sequence of the foregoing steps a predetermined number of times while varying for each sequence the strength of said second magnetic gradient field, to thereby encode spatial information in phase along said second axis; and

repeating at least once a series of said predetermined number of sequences while varying for each series the gradient field strength of said magnetic gradient field, to thereby encode chemical shift information in phase.

4,766,380

METHOD AND ARRANGEMENT FOR DETERMINING A NUCLEAR MAGNETIZATION DISTRIBUTION IN A PART OF A BODY

Johannes H. Den Boef, Eindhoven, Netherlands; Johannes M. Van Eggermond, Bridgeport, Conn., and Cornelis M. J. Van Uijen, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 17, 1987, Ser. No. 40,010
Claims priority, application Netherlands, Apr. 21, 1986, 8601007
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 34 Claims

1. A method for determining a nuclear magnetization distribution in a part of a body located in a homogeneous stationary magnetic field, said method comprising the steps of:

(a) generating high frequency electromagnetic pulse so as to excite nuclear magnetizations in said part of said body and produce a resonance signal,

(b) producing a dephasing magnetic field so as to non-linearly dephase said excited nuclear magnetizations,

(c) taking a plurality of samples of said resonant signal during a measurement time period so as to obtain a group of signal samples,



(d) compensating for said dephasing so as to obtain a further group of corrected signal samples, and

(e) determining an image of the nuclear magnetization distribution from said further group of corrected sample signals.

4,766,381

DRIVEN INVERSION SPIN ECHO MAGNETIC RESONANCE IMAGING

Thomas E. Conturo, and Robert M. Kessler, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Aug. 12, 1987, Ser. No. 84,575
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—309 47 Claims



1. A method of inversion spin echo magnetic resonance imaging including

providing a specimen disposed within a main magnetic field, a source of pulsed RF signals, receiver means for receiving signals from said specimen responsive to said RF pulses and emitting responsive output signals, computer means for receiving said output signals from said receiver means and establishing image information related thereto and visual display means for displaying images from said image information,

during an initial echo period imposing three pulses on said main magnetic field with the first and third said pulses having a first value and the second said pulse having a second value substantially larger than said first value,

creating a first echo with said second pulse,

converting said first echo into negative longitudinal magnetization by said third pulse,

after an inversion recovery period, during a second echo period imposing fourth and fifth pulses on said main magnetic field in the same sequence as said first and second pulses, respectively,

creating a second spin echo with said fifth pulse,

responsive to the said spin echo, emitting said output signals from said receiver means to said computer means,

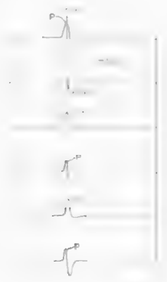
responsive to receipt of said output signals by said computer means, emitting image information directly or indirectly from said computer means to said visual display means, whereby said visual display means will display the image obtained from said echo pulse.

4,766,382

TWO-DIMENSIONAL NUCLEAR MAGNETIC RESONANCE SPECTROMETRY

Muneki Ohuchi, Tokyo, Japan, assignor to Jeol Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 732,846, May 10, 1985, Pat. No. 4,677,383. This application Feb. 25, 1987, Ser. No. 18,492
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—312 1 Claim



1. A method of two-dimensional nuclear magnetic resonance spectrometry comprising the steps of:

(a) applying a radio-frequency pulse train to a sample containing gyromagnetic resonators, the pulse train consisting of a plurality of radio-frequency pulses;

(b) detecting the free induction decay after the end of the application of the radio-frequency pulse train and storing it in a memory;

(c) repeating the steps (a) and (b) with different values of evolution period t_1 that is defined as the pulse separation between certain two pulses of the radio-frequency pulse train to generate the data set $S(t_1, t_2)$ of the free induction decay signals, the initial value of t_1 being identified as t_{1000};

(d) taking the Fourier transform of the set $S(t_1, t_2)$ of the free induction decay signals with respect to t_2 to generate the transformed data set $S_c(t_1, F_2)$ or $S_s(t_1, F_2)$;

(e) obtaining phase angle θ_2 for phase shifting interferograms defined by t_1 values corresponding to selected F_2 values in the data sets $S_c(t_1, F_2)$ or $S_s(t_1, F_2)$ so that each peak in the interferograms corresponding to peaks in the spectrums $S_c(t_{1000}, F_2)$ and $S_s(t_{1000}, F_2)$ takes an absorption or dispersion waveform;

(f) shifting the phases of all the data in data sets $S_c(t_1, F_2)$ or $S_2(t_1, F_2)$ derived in the step (d) by phase angles θ_2 to make phase correction; and

(g) shifting the phases of all the data in data sets $S_c(t_1, F_2)$ or $S_s(t_1, F_2)$ derived in the step (f) by phase angles θ_1 to make phase correction with respect to t_1, and then taking the Fourier transform of the data sets $S_c(t_1, F_2)$ or $S_s(t_1, F_2)$ with respect to t_1.

4,766,383

QUADRATURE ANTENNA FOR MAGNETIC RESONANCE IMAGING USING ELLIPTICAL COILS

Timothy R. Fox, Chicago, and Simon H. C. Hughes, Gurnee, both of Ill., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 24, 1987, Ser. No. 18,035
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—318 22 Claims

1. A quadrature antenna for magnetic resonance imaging having a longitudinal axis, said antenna comprising:

a first channel including,

a first elliptical coil lying in a first plane, the center point of said first coil coinciding with a reference point on said longitudinal axis, the minor axis of said first coil lying in a reference plane, said reference plane intersecting said longitudinal axis at said reference point and being normal to said longitudinal axis, said first plane being inclined approximately forty five degrees (45°) with respect to said longitudinal axis,

a second elliptical coil lying in a second plane, the center point of said second coil coinciding with said reference point, the minor axis of said second coil lying in said reference plane and being colinear with the minor axis of said first coil, said second plane being normal to said first plane and inclined approximately forty five degrees (45°) with respect to said longitudinal axis, and

means for electrically coupling said first channel to an external transmit/receive circuit; and a second channel including,



a third elliptical coil lying in a third plane, the center point of said third coil coinciding with said reference point, the minor axis of said third coil lying in said reference plane and being perpendicular to the minor axis of said first coil, said third plane being inclined approximately forty five degrees (45°) with respect to said longitudinal axis,

a fourth elliptical coil lying in a fourth plane, the center point of said fourth coil coinciding with said reference point, the minor axis of said fourth coil lying in said reference plane and being colinear with the minor axis of said third coil, said fourth plane being normal to said third plane and inclined approximately forty five degrees (45°) with respect to said longitudinal axis, and

means for electrically coupling said second channel to an external transmit/receive circuit.

4,766,384

WELL LOGGING APPARATUS FOR DETERMINING DIP, AZIMUTH, AND INVADED ZONE CONDUCTIVITY

Robert L. Kleinberg, Ridgefield, Conn.; Brian Clark, Missouri City, Tex.; Weng C. Chew, Champaign, Ill., and David Mariani, Darien, Conn., assignors to Schlumberger Technology Corp., New York, N.Y.

Filed Jun. 20, 1986, Ser. No. 876,514
Int. Cl.[4] G01V *3/18, 3/28;* H01Q *13/10*
U.S. Cl. 324—339 36 Claims

1. Induction well logging apparatus for investigating formations surrounding a borehole, comprising:

a body moveable in the borehole, said body having a face which is adapted for engagement with the borehole wall;

an antenna set mounted in said face of said body and comprising: an electrically conductive base having a slot therein which opens toward the borehole wall, a plurality of conductive probes traversing said slot in a direction that is transverse the direction of a borehole radius through the slot, said probes respectively constituting a transmitting antenna and at least one receiving antenna;

means for coupling an electronic energizing signal to said transmitting antenna probe to induce secondary currents in said surrounding formations; and

means coupled to said at least one receiving antenna probe for generating an output signal dependent on the signal induced in said receiving antenna probe.

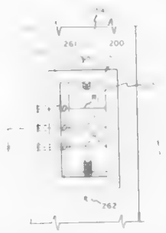
VOL 1093 ISS 4 AG 23 1988 UMI

32. Well logging apparatus for investigating formations surrounding a borehole, comprising:

a body moveable in the borehole, said body having a face which is adapted for engagement with the borehole wall;

a transmitting antenna mounted in said wall-engaging face of said body for transmitting electromagnetic energy into said formation;

a receiver array, for receiving said electromagnetic energy, mounted in said wall-engaging face of said body and



spaced from said transmitting antenna, said receiver array comprising: a conductive base having a slot therein which opens toward the borehole wall, and a plurality of spaced parallel conductive probes traversing the slot in a direction that is transverse the direction of a borehole radius through the slot;

means for coupling an electronic energizing signal, to said transmitting antenna; and

means coupled to the probes of said receiver array for generating an output signal.

4,766,385

UNDERWATER BURIED MINE CLASSIFIER

Donald G. Polvani, Arnold, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 8, 1987, Ser. No. 94,187
Int. Cl.[4] G01V *3/165*
U.S. Cl. 324—345 12 Claims



1. Apparatus for determining the magnetic moment of an underwater magnetic anomaly which may be buried in the bed of a body of water comprising:

(A) an underwater platform including means for guiding said platform to a position above said anomoly;

(B) a sensor system carried by said platform and including at least two vertically separated scalar magnetometers each operable to provide a respective output signal proportional to the magnitude of the magnetic field of said anomaly at the position of the magnetometer;

(C) first means responsive to the outputs of said sensor system for obtaining an indication of the vertical spatial gradient of said magnetic field (dT/dz);

(D) means for providing an indication of the vertical distance (Z) between said sensor system and said anomaly;

(E) means for providing an indication of the dip angle (δ) of the earth's magnetic field at the location of said anomaly;

(F) second means responsive to the outputs of said sensor system for obtaining indications of two orthogonal horizontal spatial gradients of said magnetic field (dT/dx and dT/dy);

(G) third means responsive to said indications of vertical distance, dip angle, vertical and one horizontal spatial gradients for obtaining indications of the vertical and one of two orthogonal horizontal components of the magnetic moment of said anomaly;

(H) fourth means responsive to said indications of vertical distance, dip angle, and the other one of said horizontal spatial gradients for obtaining an indication of the other horizontal component of the magnetic moment of said anomaly; and

(I) means responsive to said vertical and horizontal magnetic moment components to obtain an indication of the magnitude of said magnetic moment.

4,766,386

TIME DOMAIN REFLECTOMETER FOR MEASURING IMPEDANCE DISCONTINUITIES ON A POWERED TRANSMISSION LINE

Christopher J. Oliver, E. Rochester, N.H., and Frederick W. Sarles, Lexington, Mass., assignors to Cabletron, E. Rochester, N.H.

Filed May 23, 1986, Ser. No. 867,241
Int. Cl.[4] G01R *27/04*
U.S. Cl. 324—533 7 Claims



1. A time domain reflectometer for measuring impedance discontinuities on a powered transmission line system, the system including a conductor to which at least one transceiver is attached, the transceiver having safe operating limits defined by an upper voltage limit and a lower voltage limit and the transceiver being disabled when the average voltage level on the conductor falls below a collision detection threshold which lies between the upper and lower voltage limits, and wherein the tap impedance of the transceiver on the conductor is distorted if the upper voltage limit is exceeded, said reflectometer comprising:

source means for applying a negative voltage test waveform to the conductor which test waveform generates a return reflected waveform when an impedance discontinuity is encountered along the conductor;

bias means for selectively applying a DC bias voltage to the conductor of a value more negative than the collision detection threshold in order to disable the transceiver and thus prevent transmissions from the transceiver from interfering with the reflected waveform and to provide additional headroom for a positive relfected waveform without exceeding the upper voltage limit; and

means for displaying the reflected waveform to permit measurement of the impedance discontinuity along the conductor.

4,766,387

MOTOR WINDING INSULATION RESISTANCE MONITORING SYSTEM

Frederick D. Browne, Atlanta, Ga., and Fred E. Sevier, Stoneham, Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 12, 1987, Ser. No. 24,813
Int. Cl.[4] G01R *31/06*
U.S. Cl. 324—545 17 Claims



1. A motor winding insulation resistance monitoring system for measuring the insulation resistance of a motor winding of a polyphase motor while the motor is operating, comprising:

a motor winding insulation resistance measuring circuit;

switching means for selectively interconnecting each winding with a separate phased power source and said insulation resistance measuring circuit; and

means for directing said switching means to disconnect a winding from its power source and connect one end of that winding with said winding insulation measuring circuit to measure the resistance of that winding's insulation to ground while the motor continues operating.

4,766,388

METHOD AND APPARATUS FOR HIGH VOLTAGE TESTING OF COILS WITH GROUNDED INSULATION

Leonard B. Simmonds, Winter Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 15, 1987, Ser. No. 3,535
Int. Cl.[4] G01R *31/06, 31/12*
U.S. Cl. 324—545 12 Claims



4. Apparatus for preventing flashover during high voltage testing of electrical coils having grounded insulation, end turns with ungrounded insulation, and uninsulated terminals, said apparatus comprising:

an electrically non-conductive tube which is placed over and extends substantially the full length of an insulated end turn, a source of a pressurized gas having an electrical breakdown voltage higher than that of ambient air, and means for introducing said gas into one end of said tube such that said gas flows down said tube around the end turn and out the other end of the tube to provide a layer of said gas around the end turn.

4,766,389

CAPACITOR ARRAY SENSORS TACTILE AND PROXIMITY SENSING AND METHODS OF USE THEREOF

Lawrence J. Rhoades, Pittsburgh; Donald Risko, Monroeville, and Ralph L. Resnick, Slickville, all of Pa., assignors to Extrude Hone Corporation, Irwin, Pa.

Filed Sep. 3, 1986, Ser. No. 903,178
Int. Cl.[4] G01B *7/28, 7/34*
U.S. Cl. 324—61 QS 24 Claims



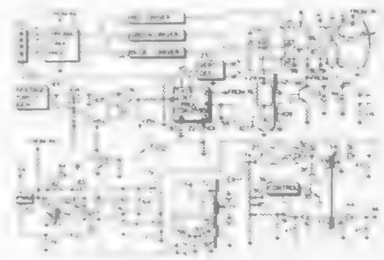
1. A capacitance sensor array for proximity and tactile sensing of properties of an object comprising a plurality of capacitor plate elements formed in an array of known topology, means for actively connecting each of said plate elements and said object to one of a plurality of corresponding oscillator circuits so that the oscillation frequency of each said circuit is a function of the capacitance between each said plate element and said object, when said sensor array and said object are in contact, and means for generating an output from said sensor which is a function of the tactile properties of said object from the said plurality of oscillator circuits.

4,766,390

CRT FILAMENT SUPPLY FOR MULTIPLE FREQUENCY VIDEO APPARATUS

James H. Wharton, and Peter D. Osman, both of Indianapolis, Ind., assignors to RCA Licensing Corporation, Princeton, N.J.

Filed Feb. 27, 1987, Ser. No. 20,004
Int. Cl.[4] H01J *19/82*; H05B *39/00*
U.S. Cl. 328—270 1 Claim



1. Video apparatus operable at a line deflection frequency selected from widely spaced frequency limits, comprising:

a cathode ray tube incorporating an electron gun assembly for producing an electron beam;

a deflection winding disposed about said cathode ray tube for deflecting said electron beam in response to current flow in said deflection winding;

a line deflection rate output means responsive to a first signal for producing said current in said deflection winding;

means for providing a second signal indicative of a predetermined selected line deflection frequency within said widely spaced frequency limitis, said second signal having

VOL 1093 ISS 4 AUG 23 1988 UMI

a substantially constant duty cycle independent of the selected line deflection frequency; and

a transformer comprising:

a first winding coupled to said means for providing said second signal and being energized therefrom;

a second winding responsive to the energization of said first winding for providing said first signal; and

a third winding responsive to the energization of said first winding for providing a third signal to said electron gun assembly, said third signal having an rms voltage level that remains substantially constant independent of said line deflection frequency that is selected.

4,766,391

VIDEO DEMODULATOR SYSTEM

Michael McGinn, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 3, 1987, Ser. No. 80,934
Int. Cl.[4] H04N 5/44
U.S. Cl. 329—50 10 Claims



1. A demodulator system for detecting a modulated input signal, comprising:

first and second cascoded limiter stages for limiting the amplitude of the input signal applied to said first limiter stage;

a phase locked loop (PLL) coupled to the output of said second limiter stage for providing an output signal at outputs thereof representative of the input signal, said PLL including a voltage controlled oscillator (VCO) operated at half the frequency of the input signal and third and fourth cascoded limiter stages;

a phase shift circuit receiving the input signal for providing a predetermined amount of phase shift thereto; and

a double balanced demodulator circuit receiving both said phase shifted input signal and said representative signal for demodulating the input signal to provide a detected output signal.

4,766,392

DEMODULATING AN ANGLE-MODULATED SIGNAL

Paul A. Moore, Hove, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 29, 1987, Ser. No. 79,548
Claims priority, application United Kingdom, Aug. 1, 1986, 8619055
Int. Cl.[4] H03D 3/00
U.S. Cl. 329—124 5 Claims

1. A method of demodulating an angle-modulated signal, comprising quardrature-mixing said angle-modulated signal with a local oscillator signal to produce a pair of signals in each of which a frequency within the bandwidth of the angle-modulated signal has been translated to zero, differentiating with respect to time a signal derived from one signal of the pair and multiplying the result by a signal derived from the other signal of the pair to produce a first auxiliary signal, differentiating with respect to time the signal derived from the other signal of the pair and multiplying the result by the signal derived from the one signal of the pair to produce a second auxiliary signal, forming an output signal proportional to the difference between said first and second auxiliary signals, and varying the proportionality factor in dependence upon the sum of the squares of the instantaneous amplitudes of said signals derived from the one and the other signal of the pair, characterized in that each of the signals derived from the one and the other signal of tie pair is a filtered version of the corresponding signal of the pair in which any d.c. component of the corresponding signal of the pair has been removed and in that the proportionality factor is varied in inverse relationship to an additive combination of the squares of said instantaneous amplitudes and a low-pass filtered version of the squares of said instantaneous amplitudes.

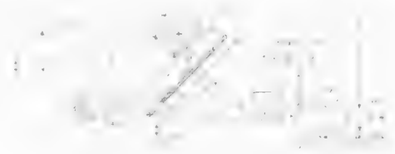


4,766,393

LIMITED DIFFRACTION FEEDBACK LASER SYSTEM

William M. Johnson, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Oct. 28, 1985, Ser. No. 792,128
Int. Cl.[4] H01S 3/08; G01B 11/26
U.S. Cl. 330—4.3 10 Claims



1. A controlled diffraction-feedback high-energy laser system, comprising:

an injection laser for providing an injection laser beam;

first and second spaced cavity reflectors defining a master oscillation and power amplification cavity having a cavity axis, with one of the reflectors thereof having walls defining a central aperture;

means for injecting said injecting laser beam into said master oscillation and power amplification cavity coaxially with the cavity axis so that the injection laser beam is amplified by the master oscillation and power amplification cavity;

means including a sensor peripherally surrounding the aperture and cooperative with said injecting means for aligning said injection laser beam with said cavity axis externally of said cavity so that said injection laser beam is centered with the aperture; and

means cooperative with said external cavity aligning means for aligning said injection laser beam with said cavity axis internally of said cavity.

4,766,394

OPERATIONAL AMPLIFIER CIRCUIT HAVING WIDE OPERATING RANGE

Akira Yukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 10, 1987, Ser. No. 94,786
Claims priority, application Japan, Sep. 10, 1986, 61-212895; Sep. 10, 1986, 61-212898; Nov. 25, 1986, 61-280991
Int. Cl.[4] H03F 3/45
U.S. Cl. 330—253 4 Claims



1. An operational amplifier circuit comprising

(a) first and second source voltage supply lines,

(b) a pair of input terminals,

(c) a first differential transistor pair consisting of first and second transistors of a first conductivity type, said first and second transistors having respective control terminals connected to said input terminals, respectively, and respective current input terminals connected together, each of the first and second transistors further having a current output terminal,

(d) a second differential transistor pair consisting of third and fourth transistors of a second conductivity type opposite to said first conductivity type, said third and fourth transistors having respective control terminals also connected to said input terminals, respectively, and respective current input terminals connected together, each of the third and fourth transistors further having a current output terminal,

(e) a first current mirror circuit responsive to the current on said first source voltage supply line and having an input terminal connected to the current output terminal of said first transistor and an output terminal connected to the current output terminal of said fourth transistor through a first node,

(f) a second current mirror circuit responsive to the current on said first source voltage supply line and having an input terminal connected to the current output terminal of said second transistor and an output terminal connected to the current output terminal of said third transistor through a second node,

(g) a third current mirror circuit responsive to the current on said first source voltage supply line and having an input terminal connected to the current input terminal of each of said first and second transistors and an output terminal connected to the current input terminal of each of said third and fourth transistors,

(h) reference voltage generator means operative to produce predetermined first and second reference voltages,

(i) a first constant-current source device responsive to said first reference voltage and connected between the input terminal of said third current mirror circuit and the current input terminal of each of said first and second transistors,

(j) a second constant-current source device responsive to said second reference voltage and connected between said second source voltage supply line and the current input terminal of each of said first and second transistors,

(k) a fourth current mirror circuit responsive to the current on said second source voltage supply line and having an input terminal connected to said first node and an output terminal connected to said second node, and

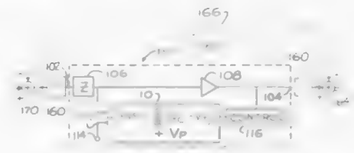
(l) inverting amplifier means having an input terminal connected to said second node and an output terminal, the inverting amplifier means comprising a phase compensation circuit connected between the input and output terminals thereof.

4,766,395

CIRCUITS TO PROVIDE DESIRED CONDUCTANCE CHARACTERISTICS USING A FET

Ray M. Dolby, 3340 Jackson St., San Francisco, Calif. 94118

Continuation-in-part of Ser. No. 787,637, Oct. 15, 1985, abandoned. This application Oct. 7, 1986, Ser. No. 914,481
Int. Cl.[4] H03G 5/22
U.S. Cl. 330—284 45 Claims



1. A circuit for providing a variable resistance whose conductance is a predetermined function of a control signal V_C of the form $F(c(V_C-V_T))$, where c and V_T are desired constants and F a selected function, said resistance suitable for controllably attenuating a signal in a manner in accordance with the predetermined function, said circuit comprising:

a field effect transistor whose drain-source conductance is substantially a function $F(a(V_{GS}-V_P))$ of its gate-source voltage V_{GS}, wherein constants a and V_P are different from the desired constants c and V_T respectively, wherein the signal is applied between the drain and source of the transistor; and

means for providing a modified control signal by multiplying the control signal by a factor and adding thereto an offset, said modified control signal being applied to the gate of the transistor, said factor and said offset being such that the drain-source conductance of the transistor is substantially the predetermined function of the control signal, so that the signal is controllably attenuated by the transistor in accordance with the predetermined function.

4,766,396

CURRENT SOURCE TYPE CURRENT OUTPUT CIRCUIT USING CURRENT MIRRORS

Takashi Taya, and Toshiyuki Tahara, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1987, Ser. No. 82,648
Claims priority, application Japan, Aug. 28, 1986, 61-199994
Int. Cl.[4] H03F 1/34
U.S. Cl. 330—288 4 Claims

1. A current source type current output circuit for applying to a load a current which is proportional to an input, comprising:

an amplifier of a type receiving a current and producing a voltage; and

a feedback circuit for feeding back an output of said amplifier to an input terminal of said amplifier;

said feedback circuit comprising a first, a second, and a third current mirror circuit, and a first, a second, and a third resistor;

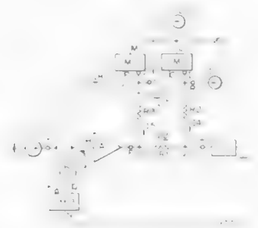
an output terminal of said amplifier being connected to an input terminal of said second current mirror circuit via said third resistor and to an input terminal of said first

VOL 1093 ISS 4 AG 23 1988 UMI

current mirror circuit via a series connection of said first and second resistors;

the load being connected to an intermediate point of said serial connection of said first and second resistors;

an output terminal of said second current mirror circuit being connected to an input terminal of said third current mirror circuit;



an output terminal of said first current mirror circuit and an output terminal of said third current mirror circuit being connected to said input terminal of said amplifier such that a current which is proportional to an input is fed to the load;

a reference terminal of each of said first and second current mirror circuits being connected to a first power source, and a reference terminal of said third current mirror circuit being connected to a second power source.

4,766,397

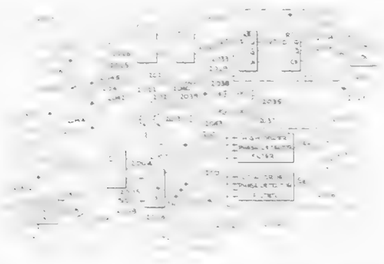
PHASE DETECTOR AND PHASE-LOCKED LOOP APPARATUS

Neil R. Adams, San Francisco, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 697,545, Feb. 1, 1985. This application May 5, 1987, Ser. No. 47,077

Int. Cl.[4] H03L *7/08*

U.S. Cl. 331—1 A **4 Claims**



1. A phase-locked loop apparatus for generating a frequency signal substantially in phase with a data signal, the data signal having a data rate within a range of at least one of a plurality of nominal data rates, comprising:

reference means for generating a reference signal indicating the at least one nominal data rate;

first controllable oscillator means, responsive to a control signal, for generating the frequency signal;

first phase detector means, responsive to the data signal and the frequency signal, and having a frequency response, for generating an error signal indicating the difference in phase between the data signal and the frequency signal, said first phase detector means including means, responsive to the reference signal, for varying the frequency response of the first phase detector means to substantially match the at least one nominal data rate; and

control means, responsive to the reference signal and the error signal, for generating the control signal.

4,766,398

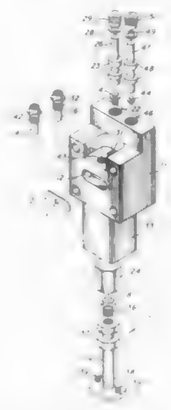
BROADBAND TEMPERATURE COMPENSATED MICROWAVE CAVITY OSCILLATOR

Paul A. Kiedrowski, Hanover Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 30, 1987, Ser. No. 44,186

Int. Cl.[4] H03B *7/14;* **H03L** *1/04*

U.S. Cl. 331—96 **5 Claims**



1. A broadband compensated microwave cavity oscillator having:

a housing, made substantially of a single material, having a resonant cavity formed therein and having an output port formed to allow microwave signals formed within said resonant cavity to escape from within said resonant cavity;

active device means within said resonant cavity for forming microwave signals through oscillation within said resonant cavity; and

tuning means for selecting a frequency of oscillation; and

means for compensating for frequency variations in said oscillator due to variations in said cavity due to temperature and cavity structure material, variations in said active device means due to temperature, and variations due to electrical loads associated with said oscillator, said frequency compensating means being internally associated with said cavity.

4,766,399

OSCILLATOR CIRCUIT

John D. Davis, Beacon, and Allan L. Mullgrav, Jr., Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1987, Ser. No. 81,058

Int. Cl.[4] H03K *3/26*

U.S. Cl. 331—111 **5 Claims**

1. An oscillator with noise rejection and a fifty percent duty cycle, comprising:

a first reference voltage line at a first voltage;

a low gain current switch circuit including a first and second switching transistors, with the control lines of said first and second transistors connected to said first reference voltage line;

a reference connected across the control input and the current receiving terminal of said first transistor so that a square wave is obtained at the current-receiving terminal of said second transistor;

a diode-coupled receiver circuit with an input node and an output node; and



a threshold circuit for adjusting the voltage of said square wave signal from said second transistor and applying said adjusted signal to the input node of said diode-coupled receiver, wherein a low noise square wave is obtained at said receiver output node with essentially a fifty percent duty cycle.

4,766,400

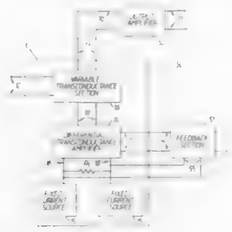
VARIABLE-TRANSCONDUCTANCE FOUR-QUADRANT GILBERT-TYPE MODULATOR WITH FEEDBACK CIRCUITRY IN IMPROVED NMR TRANSMISSION

Timothy R. Fox, Chicago, Ill., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 19, 1986, Ser. No. 943,799

Int. Cl.[4] G01R *33/22;* **H03K** *7/00*

U.S. Cl. 332—9 R **6 Claims**



1. In the transmission circuitry of a nuclear magnetic resonance imaging system, a variable-transconductance four-quadrant Gilbert-type modulator having reduced non-linearity for generating pulses of nuclear magnetic resonance imaging radio-frequency current, said modulator comprising:

a differential-transconductance amplifier, having an input port for receiving an input voltage signal, an output port for a differential output current, and a common port having two leads, for providing a change in its differential output current on its output port when the voltage signal on its input port changes;

a fixed current source for providing drive currents to the two leads of the common port of the differential-transconductance amplifier, the sum of the drive currents being approximately equal to the sum of the output currents of the differential transconductance amplifier;

a current sensing resistor coupled across the two leads of the common port of the differential-transconductance amplifier;

variable-transconductance circuitry, operatively connected to the output port of the differential-transconductance amplifier to receive the differential output current, having a nuclear magnetic resonance imaging carrier input port for receiving a nuclear magnetic resonance imaging carrier input signal, and having a modulated output port, responsive to the differential output current of the differential-transconductance amplifier to vary the gain of the carrier input signal to provide a modulated output in the form of the pulses of nuclear magnetic resonance imaging radio-frequency current for the transmission circuitry of the nuclear magnetic resonance imaging system; and

feedback circuitry having a nuclear magnetic resonance imaging modulation input port for receiving a nuclear magnetic resonance imaging system modulation voltage signal, a modulation output port operatively connected to the input port of the differential-transconductance amplifier for providing the modulation voltage signal to the differential-transcoductance amplifier, and a feedback port having two leads operatively connected across the current sensing resistor, for causing the voltage across the current sensing resistor to follow the voltage of the modulation voltage signal and cause the differential output current of the differential-transconductance amplifier to be directly proportional to the voltage signal on its input port.

4,766,401

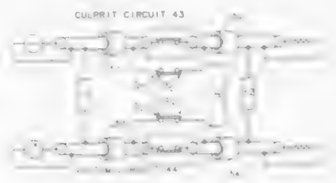
COAXIAL SWITCHING SYSTEM WITH SWITCHED SHIELDS AND CROSSTALK SUPPRESSION

David P. Kjosness, Longmont, and Joe E. Marriott, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 30, 1987, Ser. No. 79,568

Int. Cl.[4] H04B *3/28;* **H01P** *1/12*

U.S. Cl. 333—12 **1 Claim**



1. A circuit for switching transmission lines comprising:

first and second segments of a first transmission line having a center conductor and a shield;

a first coaxial relay having first and second center conductor and shield contacts, the first center conductor and shield contacts respectively coupled to the center conductor and shield of the first segment of the first transmission line;

a second coaxial relay having first and second center conductor and shield contacts, the second center conductor and shield contacts respectively coupled to the center conductor and shield of the second segment of the first transmission line;

a first section of interconnecting transmission line having a center conductor and a shield, at one end of the first section the center conductor being connected to the second center conductor contact of the first coaxial relay and the shield being connected to the second shield contact of the first coaxial relay, and at the other end of the first section the center conductor being connected to the first center conductor contact of the second coaxial relay, and the shield of the first section being left unconnected to the second shield contact of the second coaxial relay;

a first relay means, coupled to the shield contacts of the first and second coaxial relays, for electrically connecting those shield contacts together whenever the first and second coaxial relays are closed;

VOL 1093 ISS 4 AUG 23 1988 UMI

first and second segments of a second transmission line having a center conductor and a shield;

a third coaxial relay having first and second center conductor and shield contacts, the first center conductor and shield contacts respectively coupled to the center conductor and shield of the first segment of the second transmission line;

a fourth coaxial relay having first and second center conductor and shield contacts, the second center conductor and shield contacts respectively coupled to the center conductor and shield of the second segment of the second transmission line;

a second section of interconnecting transmission line having a center conductor and a shield, at one end of the second section the center conductor being connected to the second center conductor contact of the third coaxial relay and the shield being connected to the second shield contact of the third coaxial relay, and at the other end of the second section the center conductor being connected to the first center conductor contact of the fourth coaxial relay, and the shield of the second section being left unconnected to the second shield contact of the fourth coaxial relay;

a second relay means, coupled to the shield contacts of the third and fourth coaxial relays, for electrically connecting those shield contacts together whenever the third and fourth coaxial relays are closed; and

at least one magnetic core disposed about at least one of the first and second transmission line segments of the first and second transmission lines in close proximity to an associated one of the first through fourth coaxial relays.

4,766,402

APPARATUS FOR MATCHING UNBALANCED R. F. BASEBAND SIGNALS TO BALANCED SIGNALS ON A TWISTED TWO-WIRE LINE

Ronald C. Crane, Mountain View, Calif., assignor to 3COM Corporation, Santa Clara, Calif.

Filed Aug. 6, 1987, Ser. No. 83,499
Int. Cl.[4] H03H *7/42*
U.S. Cl. 333—25 13 Claims



1. An apparatus for coupling an unbalanced termination of a first characteristic impedance to a substantially balanced termination of a second characteristic impedance with matching from d.c. to above about 10 MHz comprising:

a low-pass filter means for limiting bandwidth to a system passband, said low-pass filter means coupled at a first filter port to a first connector suited for termination in an unbalanced line of said first characteristic impedance and at a second port coupled to an autotransformer means, said unbalanced line having a center conductor coupled to a center conductor side and a signal common coupled to a common node;

autotransformer means with a first d.c. blocking capacitor coupled to said common node for impedance matching and for balanced to unbalanced signal conversion; and

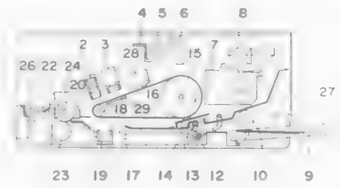
a common mode inductor means for providing common mode rejection over a bandwidth up to at least said system passband, said common mode inductor means to be coupled to a second connector suited for termination in a substantially balanced line of said second characteristic impedance.

4,766,403

COPYING MACHINE HAVING MEANS TO ELIMINATE LOCAL TEMPERATURE CHANGES IN A PHOTORECEPTOR BELT

Hiromu Sasaki, Yamatokoriyama, and Ikuo Itoh, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 16, 1986, Ser. No. 886,254
Claims priority, application Japan, Jul. 16, 1985, 60-156269
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R 5 Claims



2. A copying machine comprising:

first and second rollers;

an endless photoreceptor belt trained between said first and second rollers in a predetermined direction;

fixing means disposed adjacent a predetermined portion of said endless photoreceptor belt for heat fixing a powder image transferred from said endless photoreceptor belt onto a copying paper, wherein said fixing means is disposed adjacent one of said first and second rollers; and

means for avoiding localized heating of said photoreceptor belt by said fixing means, whereby said means for driving drives at least one of said first and second rollers at a low speed when said copying machine is in a mode other than a copying mode.

4,766,404

COORDINATE INPUT APPARATUS

Masato Ishida, Yokohama; Hiroaki Takeda, Kawasaki; Kazuo Watanabe; Akira Suzuki, both of Yokohama; Nobuyuki Suzuki, Musashino; Isamu Sato, and Kazuki Miyamoto, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 17, 1986, Ser. No. 930,913
Claims priority, application Japan, Nov. 18, 1985, 60-258112; Dec. 11, 1985, 60-278483
Int. Cl.[4] G03G *15/00;* G08C *21/00*
U.S. Cl. 355—7 18 Claims



1. A coordinate input apparatus comprising:

a tablet;

a position designating device for designating an arbitrary position on said tablet;

output means for outputting coordinate data for image processing corresponding to the coordinate of said position on said tablet designated by said position designating device; and

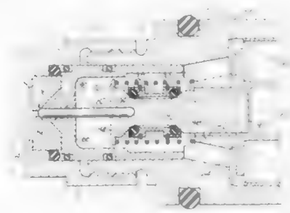
control means for controlling said output means such that when a position on said tablet corresponding to a coordinate adjacent to a predetermined coordinate is designated by said position designating device, coordinate data related to said adjacent coordinate is corrected so that said output means outputs coordinate data relating to said predetermined coordinate.

4,766,405

DYNAMIC ENERGY ABSORBER

Paul D. Daly, Troy; Mark A. Brooks, Sterling Heights, and Robert Fallis, Milford, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 14, 1987, Ser. No. 38,162
Int. Cl.[4] H01F *7/08*
U.S. Cl. 335—257 21 Claims



1. A device comprising

an armature movable in a first and a second direction;

means for providing a motion stop in at least said first direction;

means for moving said armature in said first and said second directions; and

means, attached to and movable with said armature for damping the motion of said armature by dissipating energy from a collision of said armature with said stop means wherein said damping means comprises a damper including an elastomeric sheath positioned about said armature and a weight attached to the outer surface of said sheath.

4,766,406

FLUORESCENT BALLAST ASSEMBLY

Leonard J. Kurgan, Jackson, and Fred P. Bauer, Mendenhall, both of Miss., assignors to Universal Manufacturing Corporation, Paterson, N.J.

Continuation of Ser. No. 39,780, Apr. 16, 1987, abandoned, which is a continuation of Ser. No. 747,353, Jun. 21, 1985, abandoned. This application Nov. 16, 1987, Ser. No. 122,577
Int. Cl.[4] H01F *15/02, 15/10*
U.S. Cl. 336—65 4 Claims

1. A fluorescent lamp ballast comprising:

a first bobbin, the bobbin having a central longitudinal opening extending from a substantially planar flange at one end of the bobbin to a second substantially planar flange at the other end of the bobbin;

a second bobbin, the second bobbin also having a central longituidnal opening extending from a substantially planar flange at one end of the second bobbin to a second substantially planar flange at the other end of the second bobbin, with one flange of each of the first and second bobbins disposed adjacent the other so that the central longitudinal openings of the first and second bobbins are substantially aligned;

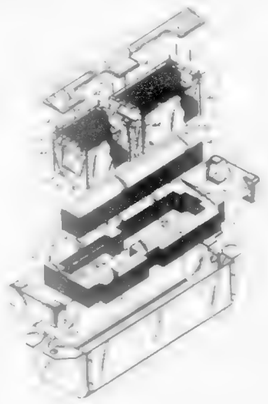
a magnetic core having at least a first portion inside the aligned bobbin central openings, and second and third portions disposed on opposite sides of the bobbins;

each bobbin flange having a plurality of holes extending inwardly from an outer flange edge on a side of the respective bobbin without said second or third magnetic core portions disposed thereon;

a primary coil wound on one of the bobbins, and a lag coil wound on the other bobbin, the coils having starts, taps and finishes;

conductive pins laterally inserted into a number of the flange edge holes, each of the pins being electrically coupled to one of the coil starts, taps and finishes; and

a planar elongated printed circuit board whose length and width dimensions are approximately the same as that of the first and second bobbins positioned end-to-end, the circuit board having a predetermined pattern of holes therethrough, the holes being electrically coupled in a predetermined pattern by conductive strips on the printed circuit board, the printed circuit board being substantially perpendicular to and in contact with each of the conductive pin-bearing flange edges, each of the conductive pins extending through one of the holes through the printed circuit board and also being electrically coupled to the printed circuit board conductive strip adjacent the hole through which each respective conductive pin passes.



4,766,407

FIXTURE FOR THE WINDOW OF A MAGNETIC CORE

Frank H. Grimes, Athens, Ga., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 896,782, Aug. 15, 1986, Pat. No. 4,723,349. This application Nov. 2, 1987, Ser. No. 115,744
Int. Cl.[4] H01F *27/26*
U.S. Cl. 336—196 3 Claims

1. A metallic fixture for defining the window of a magnetic core constructed of amorphous metal, while accurately dimensioning and supporting said magnetic core, comprising:

first and second elongated sheet metal members each having first and second ends, and a longitudinal axis which extends between said ends,

an elongated tongue at each of the first and second ends of said first member,

an offset joggle in each of said tongues having a predetermined dimension,

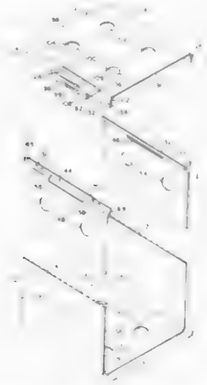
a transversely extending elongated slot disposed adjacent to each of the first and second ends of said second member with said elongated slot being dimensioned to receive said elongated tongue,

bends in said second member disposed transverse to the longitudinal axis thereof and located such that each of said elongated slots is located on the radius of a bend,

VOL 1093 ISS 4 AG 23 1988 UMI

and a pair of spaced right angle bends in each of said first and second members arranged to define substantially U-shaped configurations for each of said first and second members,

said first and second members being assembleable such that the offset joggle of the tongues of said first member enter the slots and rigidly supportingly engage the inner wall of



said second member, with the predetermined dimension of the joggle controlling the positions of the tongues of said first member on the radii of the transverse bends which extend through the transverse slots of said second member, as well as controlling the dimension between the first and second ends of said second member by preventing said first and second ends from moving toward one another.

4,766,408

CURRENT LIMITING FUSE WITH INDICATOR

Frank L. Cameron, and George A. Smith, both of N. Huntingdon, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 3, 1987, Ser. No. 92,965
Int. Cl.[4] H01H *85/30*
U.S. Cl. 337—244 **5 Claims**



1. A current limiting fuse with indicator comprising

a generally tubular, electrically insulating casing;

terminal means disposed adjacent to each of the opposite ends of the casing, one of the terminal means including an opening at one of the axial ends of the fuse;

a fusible element disposed in the casing and conductively interconnected with the terminal means;

the terminal means at one end of the casing including a terminal stud and an indicator plunger which plunger is movably mounted on the stud between extended and retracted positions and being biased in one of said positions;

a restraining wire connected between the indicator plunger and the other of the terminal means for normally retaining the plunger in the retracted position, the wire having a lower coefficient of electrical conductivity than the fusible element; and

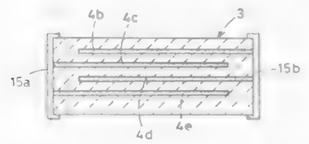
an electrically conductive grease between the stud and indicator to maintain an electrically conductive path therebetween.

4,766,409

THERMISTOR HAVING A POSITIVE TEMPERATURE COEFFICIENT OF RESISTANCE

Haruhumi Mandai, Nagaokakyo, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Nov. 25, 1985, Ser. No. 801,679
Int. Cl.[4] H01C *7/10*
U.S. Cl. 338—22 R **27 Claims**



1. A thermistor having a positive temperature coefficient of resistance, said thermistor comprising:

a ceramic sintered body obtained by firing a plurality of laminated ceramic layers, said ceramic layers having a positive temperature coefficient of resistance;

a plurality of inner electrode layers arranged so that each of said ceramic layers is interposed between respective inner electrode layers; and

a pair of outer electrodes formed in two different regions on the outer surface of said ceramic sintered body and connected to predetermined ones of said inner electrode layers,

said inner electrode layers comprising metal and being in ohmic contact with said ceramic layers, and said inner electrode layers being formed of a metal selected from the group consisting of lead, tin, and lead-tin alloy injected in its molten state into a gap layer between each two of said ceramic layers under pressure from the outside and then hardened.

10. A method of manufacturing a ceramic electrical component comprising the steps of:

(a) providing a plurality of ceramic green sheets;

(b) applying a paste layer comprising a thermally removable material to selected surfaces of said ceramic green sheets, with one end of each paste layer extending to one end of the corresponding ceramic green sheet;

(c) arranging said ceramic green sheets into a laminated body with said paste layers alternating with said ceramic green sheets and each of said paste layers extending alternately to a respective one of two electrode faces of said body;

(d) sintering said laminated body so as to remove the thermally removable material in the paste layers and form gap layers;

(e) dipping the laminated body into molten metal selected from the group consisting of lead, tin and lead-tin alloy so that molten metal enters into said gap layers;

(f) solidifying said molten metal to form inner ohmic electrodes in said body, each of which extends to a respective one of said two electrode faces of said body;

(g) providing an outer electrode on each of said two electrode faces of said body, said electrode being connected to said inner electrodes which extend to the electrode face on which it is provided.

4,766,410

HIGH-VOLTAGE CYLINDRICAL FILM-TYPE RESISTOR AND METHOD OF MAKING IT

Richard E. Caddock, Jr., Riverside, Calif., assignor to Caddock Electronics, Inc., Riverside, Calif.

Filed Oct. 14, 1986, Ser. No. 918,139
Int. Cl.[4] H01C *1/034*
U.S. Cl. 338—275 **16 Claims**



1. A high-voltage resistor, comprising:

(a) an elongate insulating substrate having a cylindrical exterior surface,

(b) a resistive film adherently provided on said exterior surface, and

(c) electrically highly conductive end caps mounted coaxially on the ends of said substrate in electrical contact with said resistive film,

said end caps being generally cup-shaped and having the substrate ends inserted therein, the rims of said end caps being convexly radiused in planes that contain the axis of said substrate,

the radius of said rims in said planes being at least 1.5 mils so as to decrease the field strengths of the coronas that emanate from said rims.

15. A method of manufacturing a high-voltage resistor characterized by relatively low-strength corona discharge, which comprises:

(a) forming metal end caps that are generally cup shaped,

(b) abrading said end caps much more than necessary to remove any burrs from the rims thereof,

said abrading being continued sufficiently long to increase substantially the radius of each cap rim in any plane containing the axis of said cup,

said abrading step being continued sufficiently long to increase each of said end-cap rim radiuses in said plane to at least 1.5 mils, and

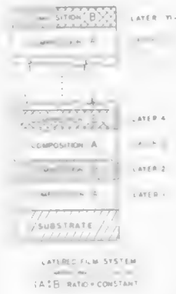
(c) mounting said caps over the ends of a cylindrical substrate having a resistive film thereon, in electrical contact with said film.

4,766,411

USE OF COMPOSITIONALLY MODULATED MULTILAYER THIN FILMS AS RESISTIVE MATERIAL

Argeais R. Prieto, and David P. Clark, both of Mineral Wells, Tex., assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 29, 1986, Ser. No. 868,843
Int. Cl.[4] H01C *1/012*
U.S. Cl. 338—306 **10 Claims**



1. A multilayer metal film resistor having an improved TCR and an improved and controllable TCR Slope, wherein said TCR and TCR Slope both approach zero, comprising:

an insulative substrate suitable for deposition of a metallic film;

a first layer of a first metallic composition, said first layer formed by deposition of said first metallic composition on said substrate and heating said deposition in air at a temperature ranging from 290° C. to 350° C. for a period of time sufficient to effect a desired TCR;

a second layer of a second metallic composition, said second layer formed by deposition of said second composition on and coextensive with said first composition and heating said layers in air at temperatures ranging from 290° C. to 350° C. for a period of time sufficient to effect a desired TCR for said two layers;

wherein said first and second metallic compositions are different compositions; and

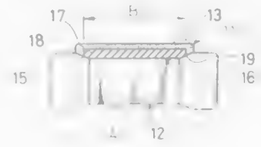
wherein said TCR Slope approaches zero as said TCR approaches zero.

4,766,412

ELECTRONIC COMPOSITE COMPONENT HAVING RESISTOR ELEMENT

Shin-ichi Takakura; Shigehiro Nojiri, and Norio Sakai, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 20, 1987, Ser. No. 52,490
Claims priority, application Japan, May 23, 1986, 61-119450
Int. Cl.[4] H01C *13/00*
U.S. Cl. 338—334 **9 Claims**



1. A chip-type electronic composite component comprising:

a first functional element comprising a resistor element formed by a resistor film;

a second chip-shaped functional element having a chip-

VOL 1093 ISS 4 AG 23 1988 UMI

shaped body with a pair of opposite end portions, and first and second terminal electrodes respectively provided on surfaces of both end portions of said body; and

electric insulation layer means for partially covering said first and second terminal electrodes, as well as to at least patially cover said surface of said body across respective boundary lines between said first and second terminal electrodes and surface parts of said body uncovered by said first and second terminal electrodes,

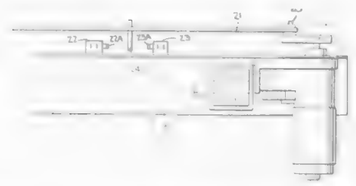
said resistor film being formed to electrically connect said first and second terminal electrodes across respective boundary lines between said insulation layer means and said first and second terminal electrodes while partially covering said first and second terminal electrodes uncovered by said insulation layer means.

4,766,413

SCHOOL BUS STOP SIGN CONTROL APPARATUS

James Reavell, Campbellford, Canada, assignor to School Bus Parts Co. of Canada Inc., Campbellford, Canada

Filed Apr. 1, 1987, Ser. No. 33,110
Int. Cl.[4] G08B 5/22
U.S. Cl. 340—130 6 Claims



1. A stop sign control apparatus mountable on the side of a school bus and provided with a hinge mechanism which is caused by the apparatus to swing the sign to an outstretched position when the door of the bus is opened and to return the sign to its retracted position when the door is thereafter closed, said apparatus comprising:

A. a control switch which is closed when the door is open and is open when the door is closed;

B. a unidirectional DC motor coupled through an eccentric drive by an elongated link arm to the hinge mechanism to cause the sign in response to movement of the link arm in one direction to swing toward its outstretched position and in response to movement of the link arm in the reverse direction to return to its retracted position;

C. a control circuit associated with the control switch to connect a DC power supply to the motor, said circuit including first and second normally-closed limit switches operatively coupled to the link arm whereby said first limit switch is caused to open when the sign reaches its outstretched position and said second limit switch is caused to open when the sign reaches its retracted position, and means connecting said power supply to said motor either through said first or second limit switch whereby when the control switch is open, said first limit switch is caused to open when the sign reaches its outstretched position to cut off the motor, and when the control switch is closed, said second limit switch is caused to open when the sign reaches its retracted position to cut off the motor, said limit switches being mounted in spaced relation at a site intermediate said motor and said hinge mechanism and having depressible actuators which face each other, said link arm being provided with an actuator pin which projects into the space between the actuators and moves back and forth in this space to alternately engage the actuators.

4,766,414

POWER LINE COMMUNICATION INTERFERENCE PREVENTING CIRCUIT

Kenneth C. Shuey, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 17, 1986, Ser. No. 875,154
Int. Cl.[4] H04B 3/56, 3/54
U.S. Cl. 340—310 A 3 Claims



1. A power line communication device, comprising:

means for connecting a transmitter in signal communications with a power line, said connecting means comprising a transformer having a first and a second winding, said second winding of said transformer being connected to said transmitter, said first winding of said transformer being connected in signal communication with said power line;

means electrically connected to said connecting means for tuning said connecting means to provide a low impedance circuit path between said power line and ground potential for a preselected frequency signal when said second winding is shorted;

means for shorting said second winding, said shorting means being switchable between a shorting position and a non-shorting position;

said shorting means comprises a switch connected between termini of said second winding, said switch being operable between a first state and a second state, said second state being effective to short said second winding; and

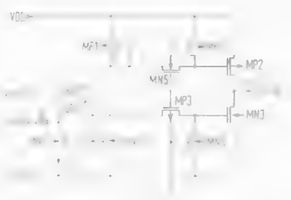
means for controlling said switch, said controlling means being associated with said transmitter to short said second winding when said transmitter is not transmitting.

4,766,415

DIGITAL-TO-ANALOG CONVERTER WITH TEMPERATURE COMPENSATION

Franz Dielacher, Villach, Austria, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 29, 1986, Ser. No. 913,390
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1985, 3534915
Int. Cl.[4] H03M 1/06
U.S. Cl. 340—347 DA 13 Claims



5. A digital-to-analog converter with a voltage output comprising means for applying a reference voltage, a resistance and

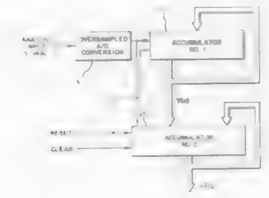
switch network for converting a digital input code into an analog output current, an inverting operational amplifier connected to said network and negatively fed back by a feedback resistance, and a reference current source formed by a reference voltage and a resistance determining the reference current, said reference current source being connected to said resistance and switch network for feeding the network, said reference current source being formed by a bipolar reference current source, and including a bipolar voltage source applied to said bipolar current source, said bipolar current source including a first current reflector having input and output transistors of one conductivity type and a second current reflector having input and output transistors of a conductivity type opposite to said one conductivity type, said current reflector being serially connected to one another, and said output transistors thereof being switchable off.

4,766,416

CIRCUIT FOR GENERATING THE SQUARE OF A FUNCTION WITHOUT MULTIPLIERS

Sharbel E. Noujaim, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1987, Ser. No. 74,374
Int. Cl.[4] H03M 1/00
U.S. Cl. 340—347 AD 6 Claims



1. An analog to digital conversion circuit for producing a digital signal representative of the square of the input signal, said circuit comprising:

oversampled analog to digital conversion means for producing a time sequence of a single bit output signal whose binary sum over a period of at least L bit-time periods represents, in binary form, the level of an analog input signal;

a first, N-bit, clocked, feedback accumulator receiving said single bit output signal from said oversampled analog to digital conversion means and adding to said single bit signal the previous contents of said first accumulator every clock cycle;

a second, clocked, feedback accumulator having 2N bits for receiving said N bit binary output signal from said first accumulator, said first accumulator output signal being supplied to N contiguous bit positions of said second accumulator beginning with the next highest bit position after the least significant bit position in said second accumulator, said second accumulator also receiving said single bit output signal in the least significant bit position of said second accumulator, said second accumulator also being configured to add to its input its previous binary output signal every bit-time clock cycle; and

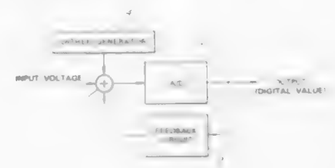
means for inhibiting the receipt of said N-bit binary output signal from said first accumulator, said inhibition being based upon said single bit output signal.

4,766,417

AUTOMATIC OFFSET COMPENSATING BIPOLAR A/D CONVERTER CIRCUIT

Jun Takayama, Tokyo, and Takeshi Ninomiya, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 1, 1987, Ser. No. 55,849
Claims priority, application Japan, Jun. 7, 1986, 61-132205
Int. Cl.[4] H03M 1/06
U.S. Cl. 340—347 CC 6 Claims



1. A bipolar A/D converter circuit which automatically compensates an offset error between a specific level of an input analog voltage and a specific output code of output digital value corresponding to said input analog voltage, where said input analog voltage may include residual noise greater than one least significant bit of said output code, comprising:

an A/D converter means for convering an input analog voltage into an output code of corresponding output digital value; and

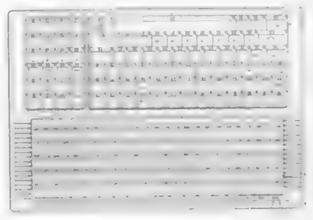
a feedback circuit means for adding a compensation voltage to said input analog voltage so as to equalize the probabilities of occurrence of output codes which are more than, and less than, said specific output code of said output value, respectively, in response to the output digital value, said feedback circuit means including hysteresis circuit means having transistion points of substantially equal magnitude respectively more than and less than said specific output code for returning an output to said input analog voltage.

4,766,418

CONTROL KEYBOARD FOR A MULTIPLE SYSTEM ACCESSING UNIT

Derek Dowsett, Near Chertsey, and Charles Hodgson, Heath Edn Reach, both of United Kingdom, assignors to C & P Technology Limited, United Kingdom

Filed Mar. 23, 1987, Ser. No. 28,948
Claims priority, application United Kingdom, Mar. 25, 1986, 8607,341
Int. Cl.[4] G06F 3/00
U.S. Cl. 340—365 R 9 Claims



1. A control keyboard for a multiple system accessing unit, the keyboard comprising

a first keyboard area including system select keys and re-

VOL 1093 ISS 4 AG 23 1988 UMI

spective groups of associated function keys for each of the selectable systems;
a first microcomputer control circuit arranged to scan the keys of said first keyboard area to detect depression of a key in said first area;
a second keyboard area including standard alpha numeric keys;
a second microcomputer control circuit arranged to scan the keys of said second keyboard area to detect depression of a key in said second area;
a data communication port for sending digital data to the multiple system accessing unit;
and a data bus and control lines interlinking said first and second control circuits and said port;
the first control circuit responding to detection of a depressed key in said first area by generating a code word identifying the depressed key and transmitting data including the code word over the data bus to said port for sending to said accessing unit;
the second control circuit responding to detection of a depressed key in said second area by generating a code word identifying the depressed key and further sending a code word ready flag to the first control circuit;
the first control circuit having an additional function of responding to the code word ready flag from said second control circuit by enabling the second control circuit to apply the code word to the data bus, reading the applied code word from the data bus and then transmitting data including said code word from the second control circuit over the data bus to said port for sending to said accessing unit.

4,766,419

APPARATUS FOR RECORDING THE OPERATION OF A CLOSURE MEMBER

Gilbert O. Hayward, Dyfed, Wales, assignor to Enigma Electronics Limited, Middlesex, England

Filed Feb. 5, 1986, Ser. No. 826,193
Claims priority, application United Kingdom, Feb. 5, 1985, 8502857; Oct. 23, 1985, 8526147
Int. Cl.[4] G08B *13/08*
U.S. Cl. 340—545 12 Claims



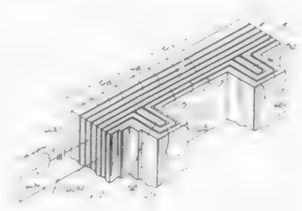
1. Apparatus for recording the operation of a closure member, comprising means for generating an electrical signal on actuation of an ancillary device associated with operation of the closure member, an electronic circuit for generating a random code, such as a random or quasi-random number on receipt of the electrical signal and for storing the generated code, and display means for displaying the generated code.

4,766,420

INSULATING APPARATUS AND COMPOSITE LAMINATES EMPLOYED THEREIN

Otis H. Hastings, and Otis M. Hastings, both of 130 E. Crescent Ave., Mahwah, N.J. 07430

Division of Ser. No. 282,709, Jul. 13, 1981, which is a continuation-in-part of Ser. No. 102,552, Dec. 11, 1979, which is a continuation-in-part of Ser. No. 912,974, Jun. 5, 1978, abandoned. This application Jun. 14, 1985, Ser. No. 744,624
Int. Cl.[4] G08B *13/22*
U.S. Cl. 340—550 21 Claims



1. A laminate of integrally bended components comprising at least two electrically conductive plies; at least one structural element and at least one radiant heat reflective ply; each of said structural element and said radiant heat reflective ply being separated from said electrically conductive plies, each of said electrically conductive plies, and said radiant heat-reflective ply and said structural element, being isolated from each other by an electrically insulating fibrous, refractory, ceramic ply disposed therebetween and bonded thereto by means of an adhesive ply.

4,766,421

OBJECT DETECTION APPARATUS EMPLOYING ELECTRO-OPTICS

George Begga, Boulder, and Richard Speck, Denver, both of Colo., assignors to Auto-Sense, Ltd., Englewood, Colo.

Filed Feb. 19, 1986, Ser. No. 831,016
Int. Cl.[4] G08G *1/16*
U.S. Cl. 340—904 16 Claims



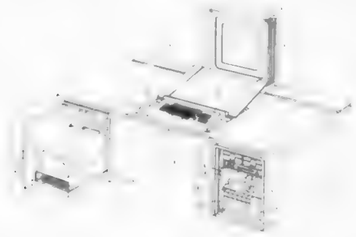
1. For use on a host vehicle such as a truck or automobile normally travelling on public roads, collision avoidance apparatus for detecting the presence of an adjacent vehicle within a monitored zone located in the visual blind spot of the driver of the host vehicle, comprising:
means for emitting light energy into said zone, said light energy having a preselected wavelength between 750 and 1100 nanometers;
means coupled with said emitting means for modulating the intensity of said light energy emitted by said emitting means at a preselected modulation frequency;
means for receiving light energy from said zone having said preselected wavelength, said receiving means including filter means for passing only light energy having said preselected wavelength and means for converting said received light energy having said preselected wavelength to a first signal which varies in accordance with the magnitude of light passed by said filter means;
means coupled with said receiving means for detecting the magnitude of light energy received having an intensity modulated at said preselected modulation frequency to generate a detected signal;
master clock means for providing a clock signal to said modulating means and said detecting means, said detecting means sampling said clock signal and said light energy having said preselected wavelength at the same frequency, such that said modulating means and said detecting means operate in sychronism with each other;
means coupled with said detecting means for comparing said detected signal with a threshold value; and
means responsive to said comparing means for producing a signal indicative of the prsence of said adjacent vehicle in said zone when said detected signal exceeds said threshold value.

4,766,422

COMPUTER INTEGRATED DESK

Richard H. Wolters, Grand Rapids Township, Kent County, Mich.; Vince Kleyla, Phoenix, Ariz.; Arnold J. Hooton, Caledonia Township, Kent County, and Gregory L. Converse, Wyoming, both of Mich., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 23, 1986, Ser. No. 866,514
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—700 4 Claims



1. A computer work station or desk comprising, in combination:
a work surface having an opening therethrough adjacent the front edge thereof;
storage means connected to the underside of said work surface adjacent at least one side thereof;
a desk pad covering said opening in said work surface and a keyboard tray mounted within said opening beneath said desk pad;
means cooperating with said desk pad to raise said keyboard tray to an operating position within said opening in response to said desk pad being moved from a first position overlying said opening to a second position rearward of said opening,
a flat VDT screen mounted to the rear of said work surface for relative movement therewith; and
motorized elevating means associated with said VDT screen for moving said VDT screen from a position beneath said work surface to a viewable position above said work surface.

4,766,423

THREE-DIMENSIONAL DISPLAY APPARATUS

Seigo Ono, Kofu, and Osamu Ebina, Atsugi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 5, 1987, Ser. No. 375
Claims priority, application Japan, Jan. 7, 1986, 61-1089
Int. Cl.[4] G06F *3/14*
U.S. Cl. 340—709 17 Claims



1. A three-dimensional display device comprising:
display means for displaying a cursor as virtually located in a three-dimensional space and as moving in said space according to a velocity vector that can be changed in response to control signals representing said cursor;
input means for inputting first parameter signals including two parameters that three-dimensionally define the direction of said velocity vector;
control means connected between said display means and said input means for generating said control signals to display the cursor at a position virtually located in said three-dimensional space and with a configuration such that the cursor appears to move at a constant speed in a fixed direction when said parameter signals indicate no change and such that the cursor appears to change its moving direction in a direction and at a rate represented by said first parameter signals when a change occurs in said parameter signals.

4,766,424

LIGHT COLLECTING AND REDIRECTING MEANS

Robert Adler, Northfield, and Paul Strauss, Chicago, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Mar. 30, 1984, Ser. No. 595,170
Int. Cl.[4] G09G *3/00*
U.S. Cl. 340—712 13 Claims

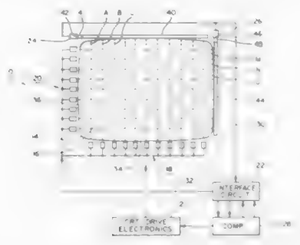
1. In a touch panel graphics display apparatus having means for producing a plurality of substantially parallel light beams directed across a display surface of said apparatus, an improved light collector means for collecting light in said light beams and for redirecting it in a substantially common direction substantially perpendicular to said light beams for detection by a common detector means positioned adjacent one end of said collector,
said light collecting and redirecting means comprising:
an elongated strip of light transmissive material having a longitudinal axis, and being terminated by a light collection station;
a plurality of light reflecting elements disposed inside and spaced along one side of said strip and having a transverse dimension small in comparison to said strip cross-section,

VOL 1093 ISS 4 AUG 23 1988 UMI

the surface of each said reflecting element being tilted with respect to said longitudinal axis of said strip;

a like plurality of focusing elements disposed along said strip and individually associated with an assigned one of said reflecting elements,

each said focusing element being oriented and configured to collect light received in a direction substantially perpendicular to said longitudinal axis of said strip and to direct



such collected light to said reflecting element assigned to said focusing element,

each said focusing element being spaced from its assigned reflecting element a distance such that said reflecting element is positioned at, or close to, the focal plane of its assigned focusing element,

each said reflecting element being so tilted as to direct light received from its assigned focusing element to said light collection station.

4,766,425

WAVEFORM SELECTION BY TOUCH

James L. Tallman, Hillsboro; Terry G. Sherbeck, Aloha, and Beverlea J. Kramlich, Tigard, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 19, 1986, Ser. No. 944,304

Int. Cl.[4] G09G *1/00*

U.S. Cl. 340—712 **8 Claims**



1. For an oscilloscope capable of simultaneously displaying a plurality of waveforms on a screen, each waveform formed by pixels on said screen, said oscilloscope being further capable of performing at least one operation with respect to a selected one of the displayed waveforms, a method for selecting said one waveform comprising the steps of:

storing in memory means waveform data indicating a position on said screen of each pixel forming each of said plurality of waveforms;

determining when an object is proximate said screen;

determining a particular area of said screen nearest said object from among a plurality of screen areas;

reading said waveform data stored in said memory means;

determining from the waveform data read positions on said screen of pixels forming said waveforms;

determining from said waveform data stored in said memory means whether any one waveform of said plurality of waveforms passes through said particular area of said screen nearest to said object by comparing determined positions on said screen of pixels forming said any one waveform to positions on said screen included in said particular area; and

selecting said any one waveform passing through said particular area of said screen nearest said object.

4,766,426

DISPLAY PANEL ASSEMBLY HAVING A PLURALITY OF FILM CARRIER TAPES ON EACH OF WHICH A SEMICONDUCTOR DIVICE IS MOUNTED

Kenzo Hatada, Katano, and Koji Matsunaga, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 14, 1986, Ser. No. 829,819

Claims priority, application Japan, Feb. 14, 1985, 60-26943; Feb. 27, 1985, 60-38004

Int. Cl.[4] G09G *3/00*

U.S. Cl. 340—719 **18 Claims**



1. A display panel assembly comprising:

a display panel having a plurality of electrodes;

a printed circuit board connected to said display panel;

a plurality of semiconductor devices disposed between said electrodes and said printed circuit board;

a plurality of film tapes each having an opening extending therein;

first and second lead groups extending from each of the film tapes;

the first and second lead groups of each respective one of the film tapes extending in different directions from one another, each of the lead groups comprising a plurality of leads, one end of each of the leads of each of said lead groups of the respective one of the film tapes projecting into the opening of that film tape, the other end of each of the leads of the first lead group of each of the film tapes projecting from the respective film tapes and contacting said electrodes, the other end of each of the leads of the second lead group of each of the film tapes operatively electrically connected to said printed circuit board, said semiconductor devices each disposed in respective ones of said openings of the film tapes and in operative electrical contact with said one end of each of the leads of each of said lead groups projecting into said openings; and

means for pressing the other end of each of the leads of the first lead group of each of the film tapes against said electrodes to maintain an operative electrical connection therebetween.

4,766,427

DISPLAY APPARATUS WITH DISPLAY SCREEN SPLITTING FUNCTION

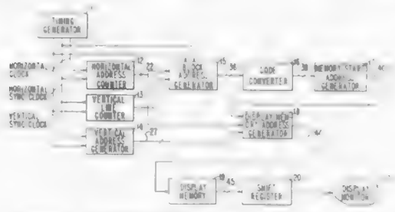
Yoshio Abe, Ibaraki; Masashi Kubota, Katano, and Koa Miyake, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 15, 1985, Ser. No. 787,374

Claims priority, application Japan, Oct. 15, 1984, 59-215413

Int. Cl.[4] G09G *1/16*

U.S. Cl. 340—721 **23 Claims**



1. A display apparatus comprising:

a raster scan display means having a display screen split by predetermined horizontal split positions and vertical split positions into a plurality of split blocks which are respectively identified by block address which are sequentially coded numbers assigned sequentially to said pluraity of split blocks;

display memory for storing display data to be displayed on said display screen;

a means for producing a current display address indicating a current display position on said display screen;

a block address generating means for comparing said current display address with predetermined values indicating said horizontal and vertical split positions, and for generating from the comparison result a current block address indicating one of said plurality of split blocks in which said current display position exists;

a code conversion means for converting said current block address to a predetermined code corresponding to a predetermined memory area in said display memory in which display data to be displayed in the split block identified by said current block address are stored;

a memory start address generating means for generating a start address of said predetermined memory area in said display memory according to said predetermined code; and

a memory address generating means for adding said start address and said current display address to generate a memory address in said predetermined memory area in said display memory, said generated memory address being supplied to said display memory so that display data stored in said memory address is transmitted from said display memory to said display means and displayed on said current display position on said display screen;

whereby display data to be displayed in each of said plurality of split blocks on said display screen are supplied from a predetermined one of a plurality of memory areas defined in said display memory.

4,766,428

THREE-DIMENSIONALLY CONTROLLED LIQUID CRYSTAL MATRIX DISPLAY AND ITS CONTROL PROCESS

Jean-Frédéric Clerc, St Egreve, and Thierry Leroux, Fontaine, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

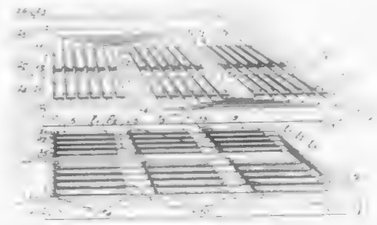
Filed Apr. 3, 1986, Ser. No. 847,735

Claims priority, application France, Apr. 5, 1985, 85 05247

Int. Cl.[4] G09G *3/36*

U.S. Cl. 340—784 **6 Claims**

1. A process for the control of a display having a first and a second facing insulating walls, respectively covered by m electrode rows L_a and q electrode columns C_b, a and b being integers such $1 <= a <= m$ and $1 <= b <= q$, said electrode rows and electrode columns crossing one another; said display having a liquid crystal layer placed between electrode rows and electrode columns; said dispaly having means for applying electrical signals to said electrode rows and electrode columns for exciting the liquid crystal, each electrode row being constituted by n aligned row strips and each electrode column being constituted by r aligned column strips, said row strips being grouped into p first packets of s parallel row strips and said column strips being grouped into p second packets of t parallel column strips, with $p=n\times r$, $s=m\times n/p$ and $t=q\times r/p$, an image point I_{ab} being defined by the region corresponding to the superimposing of a row strip l_i of a first packet P_k and a columns strip c_j of the corresponding second packet T_k, i, j, and k being integers such that $1 <= i <= s$, $1 <= j <= t$ and $1 <= k <= p$; said display having $m\times n$ first transistors formed on said first wall and serving on the one hand to interconnect the n row strips of each electrode row, and to interconnect the electrode rows in order to form s first



connections and on the other hand to interconnect the s row strips of each packet in order to form p second connections; and said display having $q\times r$ second transistors formed on said second wall and serving on the one hand to interconnect the r column strips of each electrode column, and to interconnect the electrode columns in order to form t third connections and on the other hand to interconnect the t column strips of each second packet in order to form p fourth connections respectively connected to said p second connections; said process comprising the steps of continuously applying to said t third connections first cyclic electric signals of cycle T with polarity reversal for each half-cycle T/2, said first signals being alternately positive and then negative on each half-cycle T/2, applying to said s first connections second cyclic pulse-type electric signals of cycle T with polarity reversal for each half-cycle T/2, each second signal being non-zero during a time $T_L=T/(2\times s)$, all the times T_L being distributed over a half-cycle T/2, and applying to said p second and fourth connections third cyclic pulse-type electric signals of cycle T_L, each third signal being non-zero during a time $T_c1=T_L/p$, all the times T_c being distributed over a time T_L, T_C corresponding to the charging time of the transistors.

4,766,429

GRAPHIC SIMULATION SYSTEM

Alan L. Stapleton, Newbury, United Kingdom, assignor to Quantel Limited, Newbury, United Kingdom

Filed May 24, 1985, Ser. No. 737,829

Claims priority, application United Kingdom, Jun. 22, 1984, 8416039

Int. Cl.[4] G09G *1/00*

U.S. Cl. 340—724 **14 Claims**

1. A video graphic simulator system comprising:

(a) video signal store means having a multiplicity of storage locations for storing at least one stored frame of video signals which collectively represent a panorama;

(b) display means for displaying a display frame of signals representing a view of the panorama;

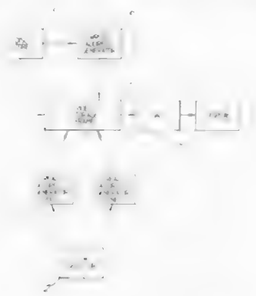
(c) view selector means for selecting the view to be dis-

VOL 1093 ISS 4 AG 23 1988 UMI

played, including means for positioning said display frame with respect to said stored frame to cause a part of the display frame to project beyond the stored frame at least at one edge of the panorama, wherein said view selector means is operator controlled; and

(d) reading means for reading, from said store means, video signals which are within said stored frame to said display means, said reading means including means to fill said part of the display frame which projects beyond the stored frame with video signals read from storage locations for video signals representing a selected region of said stored frame which is adjacent to said at least one edge of the panorama;

wherein said reading means further includes address generating means to generate addresses of storage locations



which store video signals to be used to fill said part of the display frame which projects beyond the stored frame, said address generating means being controlled by said view selector means;

wherein said address generating means includes means for determining the position of the display frame with respect to the stored frame, and said address generating means generates the addresses of the video signals to be read to fill the projecting part of the display frame in response to the determined position of that frame; and

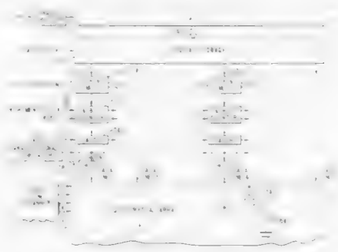
wherein said address generating means generates addresses causing a plurality of lines of video signals to be read to fill said projecting part of the display frame in such a manner as to produce a mirror image of the stored frame represented by the plurality of lines therein adjacent said at least one edge of the panorama represented thereby.

4,766,430

DISPLAY DEVICE DRIVE CIRCUIT

Glynn G. Gillette, Flemington; Roger G. Stewart, Neshanic Station, and John T. Fischer, Princeton, all of N.J., assignors to General Electric Company, Fairfield, Conn.

Filed Dec. 19, 1986, Ser. No. 943,496
Int. Cl.[4] G09G 3/36
U.S. Cl. 340—793 6 Claims



1. A system for applying various voltage levels of a ramp voltage to the individual columns of pixels in a display device having a matrix of pixels arranged vertically in columns and horizontally in rows comprising:

a plurality of voltage responsive signal transfer means individually actuating said columns of pixels, said signal transfer means simultaneously receiving said ramp voltage whereby pixel columns actuated by conductive signal transfer means are charged to voltage levels proportional to the level of said ramp voltage;

means for providing an analog information signal having brightness levels for controlling the brightness of said pixels;

means for receiving said analog information signal and providing digital brightness signals individually indicative of said brightness levels;

digital storage means for receiving and storing said digital brightness signals, said digital storage means including a plurality of digital storage sets, each of said digital storage sets having a plurality of serially loaded digital storage segments, each of said digital storage segments storing said grey scale codes for one of said columns of pixels to individually provide said brightness signals to said columns;

a plurality of counter means individually responsive to said digital storage segments for receiving said digital brightness signals as brightness counts for each of said columns, whereby said counter means are set to counts equal to said brightness levels and are set to count to zero, said counter means individually actuating said voltage reponsive signal transfer means whereby each of said signal transfer means is conductive when the associated counter is counting and nonconductive when the associated counter reaches zero whereby the pixels of individual columns are charged to various voltage levels of said ramp voltage in accordance with said brightness levels.

4,766,431

PERIPHERAL APPARATUS FOR IMAGE MEMORIES

Yoshiki Kobayashi; Hiroshi Takenaga, and Takeshi Katoh, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 5, 1985, Ser. No. 772,695
Claims priority, application Japan, Sep. 5, 1984, 59-184658
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—799 21 Claims



1. A peripheral apparatus for image memories which includes an image memory for an image processing system together with a memory assembly composed of plural random access memory blocks (RAM blocks) such that n of said plural random access memory blocks, wherein n is an integer greater than or equal to 2, are available for accessing in parallel, and with the image memory being connected with an external image processor and a display monitor to communicate processed data or display data therewith under control of the peripheral apparatus, comprising:

a read data processing unit comprising a selector which receives image data of n pixels read out from said n RAM blocks in parallel, selects the image data of one of said n pixels designated by a block address signal given from said external processor, and transmits the selected data to said external processor;

a write data processing unit receiving the processed data from said external processor, modifying the received data in accordance with a modification function signal, and writing the modified data into said n RAM blocks in the form of n parallel pixels or in a single pixel in response to a control data given from said external processor;

a display data processing unit comprising a display shift register, which stores the image data read out from said n RAM blocks during the read operation for display, and outputs the image data stored therein as a display data for each pixel in response to a video clock of the display monitor, the storing capacity of said display shift register being equal to n×m pixels, wherein m is an integer equal to or greater than 2, which represents the maximal number of repetition times of access per one memory cycle, and the amount of the image data actually stored therein being dependent upon an access mode signal indicative of the number of repetition times of access per one memory cycle; and

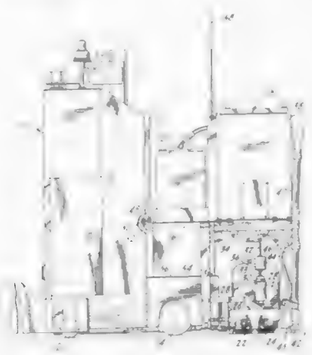
a control unit which provides control signals to each of said processing units including the modification function signal and the access mode signal in response to instructions from said external processor and for controlling the write operation by accessing said memory assembly.

4,766,432

TELEMETRY SYSTEM FOR FLOOR MAINTENANCE MACHINES

Bruce F. Field, Minneapolis, Minn., assignor to Tennant Company, Minneapolis, Minn.

Filed Mar. 14, 1986, Ser. No. 839,879
The portion of the term of this patent subsequent to Jun. 30, 2004, has been disclaimed.
Int. Cl.[4] H04Q 9/00; G08B 5/36
U.S. Cl. 340—825.17 5 Claims



5. A method for remotely monitoring the operating conditions of one or more unmanned mobile floor maintenance machines, including the steps of sensing predetermined operating conditions of each floor maintenance machine and periodically transmitting signals relating to its identity and said sensed operating conditions to a location remote from the machine and displaying the identity and sensed conditions of a particular machine at the remote location.

4,766,433

OPTICAL CARD-KEY DATA CONNECTOR

Robert W. Herman, Laguna Beach, and Rex K. Lee, Laguna Hills, both of Calif., assignors to Codercard, Inc., Costa Mesa, Calif.

Filed Jul. 6, 1984, Ser. No. 628,234
Int. Cl.[4] H04Q 1/00
U.S. Cl. 340—825.31 3 Claims

1. In a card-key/card receptacle system, an electrical-magnetic latch and connector, comprising

first connective means for completing an electrical connection attached to the card key;

second connective means for completing an electrical connection attached to the card receptacle;

magnetic means for attracting the first connective means to the second connective means, whereby sliding the first connective means nearby to the second connective means



causes an electrical connection to be maintained by an attractive force; and

spring means for maintaining said first and second connective means in substantial mechanical alignment, whereby said electrical connection is not broken by small lateral forces.

4,766,434

SELECTIVE PAGING RECEIVER WITH MESSAGE DISPLAY

Masahiro Matai, and Toshihiro Mori, both of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Sep. 11, 1986, Ser. No. 906,148
Claims priority, application Japan, Sep. 17, 1985, 60-204912
Int. Cl.[4] H04Q 7/00; G05B 5/22
U.S. Cl. 340—825.44 12 Claims



BLOCK DIAGRAM OF SELECTIVE PAGING RECEIVER WITH MESSAGE DISPLAY

1. A selective paging receiver with a message display means which is capable of receiving selective paging numbers and message data for displaying messages to the user, said receiver comprising:

first memory means for storing message data;

second memory means for storing control data relative to the display of messages which are sent and arrive together with the message data;

display controller means for controlling the contents of the messages to be displayed based on the control data to produce a summary of the messages; and

display means responsive to control from the display controller for displaying said summary of the messages.

4,766,435

ADAPTIVE RADAR FOR REDUCING BACKGROUND CLUTTER

Donald R. Wells, Villa Park, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 27, 1986, Ser. No. 867,866
Int. Cl.[4] G01S 7/42
U.S. Cl. 342—82 1 Claim

1. A method for substantially reducing in radar the relatively time-invariant background clutter at low grazing angles, said method being used in a radar of the type having means for transmitting radar signals having a selectable polarization, and

VOL 1093 ISS 4 AG 23 1988 UMI

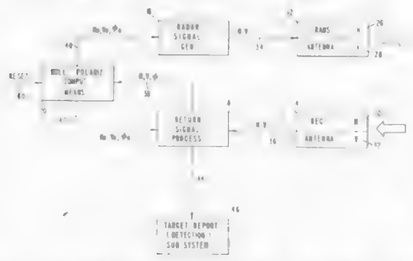
having means for determining the polarization of received signals, said method comprising the steps of:

(a) transmitting test radar signals having a selected polarization, said test signal being directed toward a preestablished group of radar range cells and azimuth cells;

(b) receiving radar return signals generated by said transmitted test signals;

(c) determining the polarization state of the radar return signals for each of said radar range and azimuth cells;

(d) calculating, for the radar return signal from each range cell, the position of the polarization state of said radar return signal on the Poincare polarization sphere;



(e) calculating the means central angle of said radar return signals on said Poincare polarization sphere, said means central angle representing the means null polarization of the background clutter, said means central angle identifying a specific polarization;

(f) transmitting operational radar signals having said specific polarization state;

(g) receiving the operational radar return signals generated by said transmitted radar signals having said specific polarization state; and

(h) processing said operational radar return signals at said specific polarization state.

4,766,436

RADAR DEVICE FOR MEASURING THE DISTANCE OF THE DEVICE TO A SURFACE

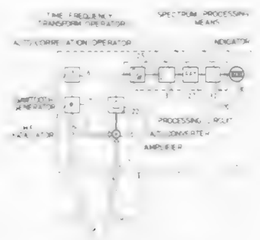
Hugues Crepin, Buc, and Serge Hethuin, Meudon, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1987, Ser. No. 65,535

Claims priority, application France, Jun. 27, 1986, 86 09367

Int. Cl.⁴ G01S *13/26*

U.S. Cl. 342—122 5 Claims



1. A radar device for measuring the distance h of the device from a surface, said device comprising:

a. transmitting means for transmitting a frequency-modulated wave toward the surface;

b. receiving means for receiving a reflection of the wave from the surface;

c. a mixer circuit electrically coupled to the transmitting and receiving means for producing a beat signal; and

d. processing means for determining from the beat signal the distance h, said processing circuit including:

(1) a digitizing circuit electrically coupled to the mixer circuit for producing digital samples of the beat signal;

(2) auto-correlation means electrically coupled to the digitizing circuit for effecting auto-correlation of the digital samples of the beat signal;

(3) time-frequency transform means electrically coupled to the auto-correlation means for producing from the auto-correlated samples components representative of the frequency spectrum of the reflection wave; and

(4) spectrum processing means electrically coupled to the time-frequency transform means for operating on selected ones of the components having predefined amplitudes and determining a frequency f_b representative of the distance h.

4,766,437

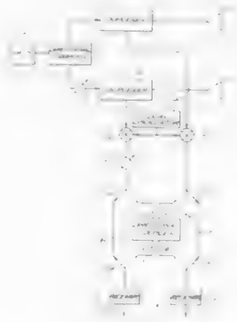
ANTENNA APPARATUS HAVING MEANS FOR CHANGING THE ANTENNA RADIATION PATTERN

Charles J. Schmidt, Riverdale, N.J., and Victor J. Albanese, Valley Stream, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 457,414, Jan. 12, 1983, abandoned. This application Jan. 9, 1987, Ser. No. 2,060

Int. Cl.⁴ H01Q *3/22, 3/24, 3/26*

U.S. Cl. 342—368 12 Claims



1. Antenna apparatus having means for changing the antenna radiation pattern, comprising

transmitter means;

first and second antenna members, each antenna member having a plurality of antenna elements which are arranged such that the elements of each antenna member are exponentially amplitude fed;

directional coupler means responsive to said transmitter means for dividing the power from said transmitter means between said first and second antenna members such that each antenna member is provided with a signal of equal amplitude and phase, said directional coupler means consisting of a 3-dB hybrid junction;

radio frequency variable phase shifter means connected between said directional coupler means and one of said antenna members, said variable phase shifter means being selectively operable either at 0° or at a predetermined value in the range of about 60° to 120°; and

means for providing a symmetrical pencil beam pattern when said variable phase shifter means is set at 0°, and a cosecant squared pattern when said variable phase shifter means is set at a value in the range of about 60° to 120°.

4,766,438

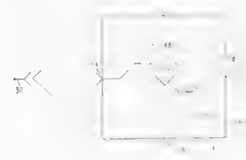
THREE DIMENSIONAL FEED THROUGH LENS WITH HEMISPHERICAL COVERAGE

Raymond Tang, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 27, 1987, Ser. No. 20,003

Int. Cl.⁴ H01Q *3/24, 19/06*

U.S. Cl. 342—372 17 Claims



1. A three dimensional lens antenna for providing hemispherical coverage, comprising:

a lens having four faces, each face covering approximately a quarter of a hemisphere and said faces disposed in relation to each other so that approximately a complete hemisphere is covered by the combination of said four faces;

a plurality of radiating elements disposed on each of said faces, said radiating elements being adapted to form beams when energized;

feed means for feeding the radiating elements of a selected face from a position removed from said selected face;

a plurality of interconnetion means each for interconnecting a set of four radiating elements, said four elements comprising one radiating element from each of the four faces, and for applying a selected amount of phase shift to energy received by one of said radiating elements and feeding said phase shifted energy to another of said radiating elements as selected;

wherein said set of four radiating elements comprises first and second sets of two radiating elements, the radiating elements of each of said sets of two being located adjacent one another; and

wherein each interconnection means comprises:

a single phase shifter having first and second terminals;

first switch means for selectively coupling the first terminal of the phase shifter to one of a first set of two radiating elements; and

second switch means for selectively coupling the second terminal of the phase shifter to one of a second set of two radiating elements.

4,766,439

DIRECTION FINDING SYSTEM

Victor A. Misek, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Jan. 18, 1984, Ser. No. 571,770

Int. Cl.⁴ G01S *5/04*

U.S. Cl. 342—445 6 Claims



1. An adcock DF-on-the-fly type direction finding system for finding a signal arrival angle comprising:

(a) an adcock type array having four antenna elements designated for convenience as "A1", "B1", "C1", and "D1" adapted to provide respective electrical signals reflecting the received signal, said antenna elements being disposed at the vertices of a square with an electrical half diameter τ and with said elements A1 and C1 and said elements B1 and D1 being disposed diagonally opposite one another;

(b) first combiner means operably connected to receive said electrical signals for forming a signal $\Delta 1$ which is equal to A1−C1 and for forming a signal equal to A1+C1;

(c) second combiner means operably connected to receive said electrical signals for forming a signal $\Delta 2$ which is equal to B1−D1 and for forming a signal equal to B1+D1;

(d) first summer means operably connected for forming a DF reference signal $S\phi$ equal to A1+B1+C1+D1;

(e) shifter means operably connected for forming a signal $-j\Delta 1$ which is equal to $\Delta 1$ shifted by −90°;

(f) second summer means operably connected for forming a signal S equal to $\Delta 2 - j\Delta 1$; and,

(g) means operably connected for measuring the phase difference α between said S and $S\phi$ signals whereby the signal arrival angle of interest is determined as being approximately equal to said phase difference α.

4,766,440

TRIPLE FREQUENCY U-SLOT MICROSTRIP ANTENNA

Michael J. Gegan, Menlo Park, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 11, 1986, Ser. No. 909,363

Int. Cl.⁴ H01Q *1/38, 13/08*

U.S. Cl. 343—700 MS 12 Claims



1. A triple frequency microstrip antenna comprising:

(a) a thin dielectric substrate;

(b) a thin conductive layer disposed on one surface of said substrate, said conductive layer forming a ground plane;

(c) a thin conductive rectangular radiating element disposed on the other surface of said substrate, said rectangular radiating element having a length, a width, and a front end, said rectangular radiating element having a first resonance polarized in a direction parallel to the length of said radiating element, and a second resonance polarized in a direction parallel to the width of said radiating element;

(d) said radiating element having a U-shaped slot oriented parallel to the length to create a third resonance in the direction parallel to the length of said radiating element; and

(e) a single microstrip feedline for coupling radio frequency signals to said radiating element, said single feedline being coplanar with said radiating element.

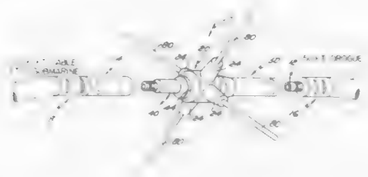
VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,441

SPOKEWHEEL CONVERTIBLE ANTENNA FOR BCA SYSTEMS ABOARD SUBMARINES

Raymond J. Phillips, Oakdale, and Anthony R. Susi, Waterford, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 6, 1987, Ser. No. 15,392
Int. Cl.[4] H01Q *1/34*
U.S. Cl. 343—709 2 Claims



1. A spokewheel convertible antenna system comprising:
a spokewheel antenna having a plurality of spokes wherein each of said plurality of spokes has insulated covering over a portion of said plurality of spokes;
a hub assembly having a hub with a plurality of apertures with each of said plurality of apertures having one of said plurality of spokes inserted into it, said hub further having a plurality of truncated extensions with each one of said truncated extensions having one of said plurality of apertures, said hub assembly further comprises an adapter sleeve inserted inside said hub, said adapter sleeve having a plurality of apertures aligned with said apertures of said truncated extensions, an amplifier adapter extending over one end of said adapter sleeve and abutting with one side of said hub, a seal located between said hub, said adapter sleeve and said amplifier adapter, a forward insulator located inside said adapter sleeve and said amplifier adapter, a pair of spaced insulators abutting said amplifier adapter and said forward insulator, an end fitting adapter abutting the other side of said hub, a coupling located inside said end fitting adapter and said hub, a seal located between said end fitting adapter, said hub and said coupling, said coupling having interior threads threaded to said adapter sleeve, a retaining bushing having aligning pins and having outer threads threaded to said coupling interior threads, and a socket contact insulator having outer threads threaded to said retaining bushing;
a cable assembly;
first cable connecting means for connecting to the adapter amplifier side of said hub assembly and to said cable assembly;
a drogue assembly;
second cable connecting means for connecting to the end fitting adapter side of said hub assembly and for connecting to said drogue assembly; and
conductor means for conducting electrical signals connected to each of said plurality of spokes and said conductor means having connecting means for connecting to conductive elements within said cable assembly and said drogue assembly.

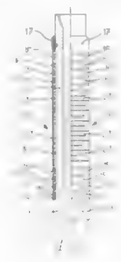
4,766,442

ANTENNA STRUCTURE FOR USE WITH A TRANSMITTER LOCATED AT A GREAT DEPTH

Olivier Issenmann, Lamorlaye, France, assignor to Geoservices, La Blanc Mesnil, France

Filed May 21, 1987, Ser. No. 53,364
Claims priority, application France, Jun. 12, 1986, 8608701
Int. Cl.[4] H01Q *1/04*
U.S. Cl. 343—719 20 Claims

1. An antenna structure for transmitting signals from a transmitter at the bottom of a drill well to the earth's surface including means for transmitting signals from the transmitter at the bottom of the drill well to the earth's surface, said means comprising:
a drill collar which extends in an axial direction and which is adapted to support a transmitter therein;
a cylindrical metal sleeve for forming part of an antenna for electromagnetic wave transmission, said cylindrical metal sleeve being disposed around said drill collar and adapted to be connected electrically to the transmitter, said cylindrical metal sleeve having a diameter greater than the diameter of said drill collar and having an axial length shorter than the axial length of said drill collar;



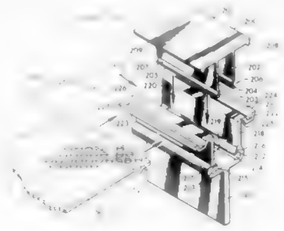
an insulating sheath disposed between said cylindrical metal sleeve and said drill collar, said insulating sheath having an axial length longer than the axial length of said cylindrical metal sleeve; and
a plurality of metal rings disposed between each opposite axial end of said cylindrical metal sleeve and a confronting opposite axial end of said insulating sheath, said rings being electrically insulated from each other, from said cylindrical metal sleeve and from said drill collar.

4,766,443

SATELLITE DISH ANTENNA APPARATUS

John R. Winegard, Evergreen, and Keith B. Cowan, Arvada, both of Colo., assignors to Winegard Company, Burlington, Iowa

Continuation of Ser. No. 621,069, Jun. 15, 1984, Pat. No. 4,568,945. This application Oct. 25, 1985, Ser. No. 791,292
Int. Cl.[4] H01Q *15/14*
U.S. Cl. 343—840 23 Claims



1. In a satellite dish antenna having a plurality of adjacent reflective petals, each of said petals having two opposing curved parabolic shaped sides and two opposing ends, an apparatus for connecting adjacent petals together, said apparatus comprising:
a parabolic-shaped support rib firmly engaging the entire longitudinal length of said parabolic shaped sides of adjacent petals for holding the aforesaid sides to said support rib, said support rib comprising:

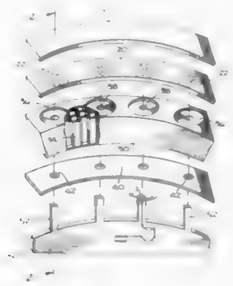
(a) an upper rib member having an upper surface and at least one downwardly extending prong, said upper surface and at least one prong extending the substantial longitudinal length of said upper rib member,
(b) a lower rib member providing support to said rib, said lower rib member having a formed channel and two outwardly extending regions located on opposing sides of said formed channel, said lower rib member and said formed channel and regions extending the substantial longitudinal length of said lower rib member, and
(c) said at least one prong of said upper rib member being capable of locking into said formed channel of said lower rib member the substantial longitudinal length of said support rib to hold said sides of said adjacent petals under said upper surface of said upper rib member and between said upper rib member and said outwardly extending regions of said lower rib member.

4,766,444

CONFORMAL CAVITY-LESS INTERFEROMETER ARRAY

Peter J. Conroy, Clarksville, and Ronald A. Marino, Laurel, both of Md., assignors to Litton Systems, Inc., Little Falls, N.J.

Filed Jul. 1, 1986, Ser. No. 880,712
Int. Cl.[4] H01Q *1/36*
U.S. Cl. 343—895 39 Claims



1. A conformal spiral interferometer array, comprising
a plurality of spiral antennae rotationally, mechanically aligned;
stratum means for mounting said antennae thereon;
a ground plane situated below said stratum means;
deformable spacing means separating said stratum means from said ground plane;
said spacing means for forming a cavity-less space in close proximity to said antennae between said stratum means and said ground plane; and
said stratum means, ground plane and deformable spacing means capable of being conformally shaped to a surface for shaping said antennae.

4,766,445

ELECTRODE ARRAY FOR A PRINT HEAD

Johann Springer, Aichwald, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands

Filed May 21, 1987, Ser. No. 53,140
Claims priority, application Fed. Rep. of Germany, May 22, 1986, 3617249
Int. Cl.[4] G01D *9/42;* G02F *1/07*
U.S. Cl. 346—108 5 Claims

1. In the print head of an electrooptical facsimile recording device, the combination comprising:
an electrooptical substrate;
a first row of at least three spot electrodes disposed on a first surface of said substrate, said row of at least three spot electrodes defining a first spot-electrode row axis;
a first elongated electrode defining a first longitudinal axis and being disposed on said first surface of said substrate on a first side of said first spot-electrode row axis, said first elongated electrode being parallel to and spaced apart from said row of spot electrodes whereby adjacent portions of said first elongated electrode and of said spot electrodes define therebetween a first row of light-gate areas, and



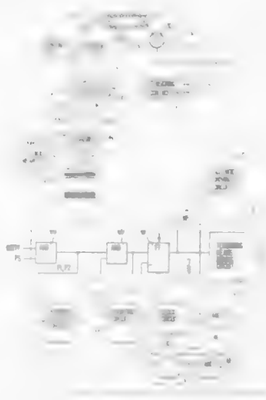
a second elongated electrode defining a second longitudinal axis and being disposed on said first surface of said substrate on a second side of said first spot-electrode row axis, said second elongated electrode being parallel to and spaced apart from said row of spot electrodes and separated from said first elongated electrode by said first row of spot electrodes, whereby adjacent portions of said second elongated electrode and of said spot electrodes define therebetween a second row of light-gate areas.

4,766,446

PRINTING APPARATUS HAVING MEANS FOR PROVIDING TENSION TO A RECORDING MATERIAL

Akihiro Abe, Yokohama, and Akinori Kamata, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 14, 1986, Ser. No. 930,254
Claims priority, application Japan, Nov. 19, 1985, 60-259366
Int. Cl.[4] G01D *9/00*
U.S. Cl. 346—136 19 Claims



1. A printing apparatus including an advancing motor, comprising:
a printing control circuit;
a printing head, operatively connected to said printing con-

VOL 1093 ISS 4 AG 23 1988 UMI

trol circuit, for printing an image on a printing material and being controlled by said printing control circuit;

advancing means, located on a first side of said printing head, connected to the advancing motor, for automatically advancing said printing material by activating the advancing motor during an automatic advancing operation and for manually advancing said printing material by suspending the advancing motor during a manual feeding operation;

tension means, located on a second side of said printing head opposite said first side, for providing tension to said printing material, and including a driving roller and a tension motor connected to said driving roller for driving said driving roller;

detecting means, operatively connected to said advancing means, for detecting a feeding distance of said advancing means and outputting a displacement signal indicating said detected feeding distance; and

a tension control circuit including a driving circuit, operatively connected to said tension motor and said detecting means, for driving said tension motor and for generating a tension driving signal enabling said driving circuit in response to said displacement signal during the manual feeding operation of said advancing means, said driving roller being rotated by said tension motor to provide tension to said printing material on said second side of said advancing means during the manual feeding operation of said advancing means.

4,766,447

IMAGE DISPLAY APPARATUS

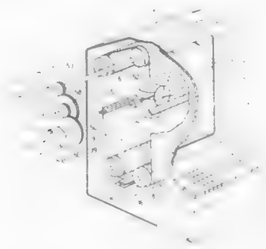
Masaharu Tsukada, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 654,108, Sep. 24, 1984, abandoned. This application Feb. 4, 1987, Ser. No. 11,399

Claims priority, application Japan, Sep. 29, 1983, 58-179423; Sep. 29, 1983, 58-179424; Sep. 29, 1983, 58-179425; Sep. 29, 1983, 58-179426; Oct. 17, 1983, 58-193864; Oct. 17, 1983, 58-193866; Oct. 17, 1983, 58-193867

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—150 41 Claims



1. Am image display apparatus comprising:

image holding material;

input means for inputting an image signal;

image forming means for forming an image on said image holding material in response to said image signal input by said input means;

a display section for displaying said image formed on said image holding material; and

control means for controlling said image forming means in response to the sizes of said display section and of said input image signal to display said image at a predetermined location of said display section.

4,766,448

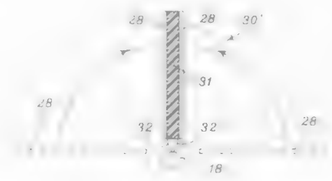
ELECTROSTATIC PRINTHEAD METHOD AND APPARATUS

James R. Hack, Villa Park; Bernard V. Masson, Yorba Linda, and David T. Beegan, Newport Beach, all of Calif., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 19, 1987, Ser. No. 86,919

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—150 26 Claims



1. The method of forming and attaching an electrostatic printhead to a printed circuit board to make an electrostatic printhead assembly comprising the steps of:

(a) disposing a plurality of wires within an insulating material in a common plane in parallel, spaced relationship;

(b) cutting the wires and the insulating material adjacent one end of the wires in a plane perpendicular to the wires to form a print head face;

(c) cutting the wires and the insulating material adjacent the other end of the wires to form an attachment face having the ends of the wires exposed at the surface thereof;

(d) disposing a plurality of spaced, metal, electrical contacts along the edge of the printed circuit board;

(e) positioning the printed circuit board with the electrical contacts in adjacent, parallel, spaced relationship with the ends of the wires of the attachment face; and,

(f) wire bonding connecting wires between the electrical contacts and the exposed ends of the wires of the attachment face.

4,766,449

COLOR RECORDING MEDIUM PACKAGE

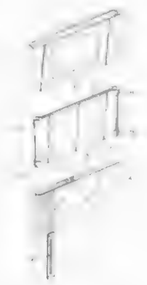
Minoru Isobe, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 21, 1987, Ser. No. 111,518

Claims priority, application Japan, Oct. 29, 1986, 61-164940[U]

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—150 5 Claims



1. A color recording medium package for use on heat transfer color printer which prints an image in a multicolor print by means of a thermal print head, said color recording medium package comprising:

a recording sheet supporting member;

a recording sheet supported on said recording sheet supporting member;

an endless color ink ribbon having a plurality of color sections respectively coated with a plurality of fusible or hot-sublimable color inks and put on said recording sheet supporting member so that one of the plurality of color sections coincides with said recording sheet supported on said recording sheet supporting member;

a ribbon feed member which is driven by driving means of the heat transfer color printer to locate the color sections of said color ink ribbon sequentially in front of said recording sheet, said ribbon feed member being moved by the driving mechanism of the heat transfer color printer after a color pattern has been printed by using one of the color sections of said color ink ribbon to locate the next color section of said color ink ribbon in front of said recording sheet;

a cassette accommodating the assembly of said recording sheet supporting member, said recording sheet, said color ink ribbon and said ribbon feed member and having an opening in the front wall thereof at a position coinciding with said recording sheet to expose said recording sheet and the color section of said color ink ribbon facing said recording sheet to the thermal print head for printing.

4,766,450

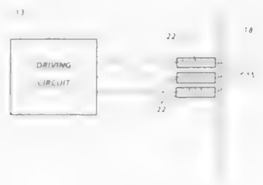
CHARGING DEPOSITION CONTROL IN ELECTROGRAPHIC THIN FILM WRITTING HEAD

Patrick A. O'Connell, Fremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 17, 1987, Ser. No. 74,644

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—155 5 Claims



1. In an improved electrographic writing head for forming discrete electrostatic charges on a recording medium moved in a plane relative to said head comprising

a substrate,

a plurality of spatially disposed electrode lines formed on said substrate,

writing nibs formed at the ends of said electrode lines having their writing tips lying along an edge of said substrate,

the improvement comprising an impedance formed in said nibs at said writings or adjacent to said writing tips to reduce the intercoupling capacitance effect between adjacently disposed nibs so as to aid in the prevention of flaring on the deposition of charge friom said writing tips onto said recording medium.

4,766,451

PHOTOGRAPHIC FILM PACKAGE

Ikuo Fujimura; Kimiaki Nakada, and Tsutomu Tanaka, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 30, 1987, Ser. No. 68,224

Claims priority, application Japan, Jun. 30, 1986, 61-100488[U]; Jun. 30, 1986, 61-100489[U]

Int. Cl.[4] G03B *17/08*

U.S. Cl. 354—64 16 Claims



1. A photographic film package with a taking lens and an operating element comprising:

a polygonal box-shaped internal film casing with its back open;

a removable film cartridge in said internal film casing;

a rectangular box-shaped external casing tightly enclosing said internal film casing, said external film casing having openings for exposing said taking lens and operating element; and

sealing means covering said openings.

4,766,452

TRANSMISSION CHANGEOVER MECHANISM FOR CAMERA

Tsunemasa Ohara, Tokyo; Masayuki Suzuki, Kanagawa; Yoichi Tosaka, Tokyo; Masaharu Kawamura, Kanagawa; Yoshihito Harada, Kanagawa, and Ryuichi Kobayashi, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 23, 1986, Ser. No. 889,087

Int. Cl.[4] G03B *1/12, 17/00*

U.S. Cl. 354—173.1 3 Claims



1. A transmission changeover mechanism for a camera comprising:

(a) a transmission system for transmitting rotation of a motion generating wheel to a transmision gear of an operating mechanism of the camera;

(b) a planetary clutch arranged in said transmission system, said planetary clutch comprising a sun gear and at least one planetary gear, said sun gear meshing with a gear on the motion generating wheel side, and said planetary gear

VOL 1093 ISS 4 AUG 23 1988 UMI

being changeable between a meshing and non-meshing engagement with said transmission gear; and

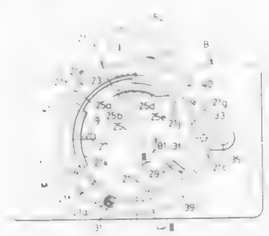
(c) a limiting member for limiting the revolving movement of said planetary gear of said planetary clutch, said limiting member inhibiting the revolving movement of said planetary gear in the meshing release direction in response to the meshing position of said planetary gear in the rotation in the meshing direction with said transmission gear, and said limiting member releasing the inhibition of said revolving movement in response to the rotation of said planetary gear in the non-meshing direction, wherein said operating mechanism of the camera causes by way of operation production of an event wherein the transmission of force is directed in the following sequence: said transmission gear→ said planetary gear→ said sun gear, and wherein said operating mechanism of the camera includes a cam which rotates as said transmission gear rotates, and a lever whose swinging is controlled by said cam, a cam displacement of said cam being set such that the transmission of force is transmitted in the following sequence: said transmission gear→ said planetary gear→ said sun gear occurs on the way of operation.

4,766,453

BAYONET MOUNT STRUCTURE FOR INTERCHANGEABLE PHOTOGRAPHING LENS TUBE

Yoshiharu Shiokama, Kawasaki, and Sachio Ohmori, Yokosuka, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 7,172
Claims priority, application Japan, Jan. 31, 1986, 61-20955
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—286 **7 Claims**



1. A lens mount of a photographing lens tube attachable to a camera body containing a motor for driving a lens system along the optical axis for auto-focusing, said lens mount comprising:

a lens mount member fixed to the rear end of the photographing lens tube, said lens mount member having a reference surface extending normally to the optical axis;

first, second and third bayonet pawls radially projecting from the outer circumference of the lens mount member with a determined spacing between each bayonet pawl and said reference surface, said three bayonet pawls being arranged along the circumference with a determined spacing therebetween;

a lock slot for determining the rotational position of the lens mount member, formed on the reference surface between the first and second bayonet pawls;

a through-hole formed on the reference surface between the first and third bayonet pawls;

a transmission shaft rotatably supported in the through-hole for transmitting the driving force from the motor to the lens system;

electric contact means provided on the lens mount member in the vicinity of one end of the second bayonet pawl on the side near the third bayonet pawl for electrically connecting the photographing lens tube to the camera body;

a mechanical information-transmitting surface fixedly provided on the lens mount member in the vicinity of the first bayonet pawl, said surface being disposed so as to intersect the circumferential direction, the angle which said surface and the center of the lock slot form about the optical axis representing an optical characteristic of the photographing lens.

4,766,454

DEVELOPING TRAY

Rex S. Larsen, Rodovre, Denmark, assignor to Eskofot A/S, Ballerup, Denmark

Filed Apr. 20, 1987, Ser. No. 39,734
Claims priority, application Denmark, Apr. 28, 1986, 1941/86
Int. Cl.[4] G03D *3/08*
U.S. Cl. 354—302 **4 Claims**



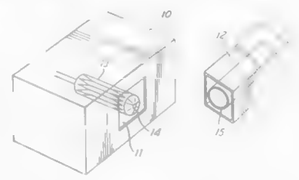
1. A developing tray for feeding a sheet of positive material and a sheet of negative material through a bath of developer, above which bath a lid is mounted for minimizing the evaporation of developer, said tray and lid defining an input opening to the tray and an output opening from the tray, feed rollers at the input opening and at the output opening, the bottom of the tray being provided with ribs extending substantially in the feed direction of the sheets, a wetting roller situated at the output opening associated with the rollers at the output opening, said wetting roller being rotated by the feed rollers at the output opening and partly immersed in the developer.

4,766,455

PROCESS UNIT FOR AN IMAGING APPARATUS

Robert A. Carter, Stevenage, Great Britain, assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 14, 1987, Ser. No. 38,093
Claims priority, application United Kingdom, Apr. 15, 1986, 8609160
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 BE **19 Claims**



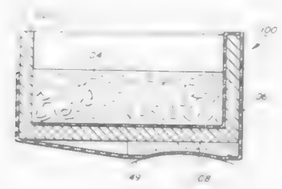
1. Process unit adapted to be removably mounted in a main assembly of an imaging apparatus, said process unit comprising a housing member and an endless imaging member having open opposite ends loosely retained in said housing member prior to mounting said process unit in said main assembly, said imaging member being adapted to be supported in an operative position by support means forming part of said main assembly when said process unit is inserted into said main assembly and said housing member being adapted to receive said support means through an end of said housing member into one of said open opposite ends of said imaging member when said process unit is inserted into said main assembly.

4,766,456

RELEASE AGENT MANAGEMENT SYSTEM FOR A HEAT AND PRESSURE FUSER

Robert G. Pirwitz, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 31, 1986, Ser. No. 846,644
Int. Cl.[4] G03G *15/10*
U.S. Cl. 355—3 FU **9 Claims**



1. A release agent management system for applying release agent material to the surface of a fuser roll member, said system comprising:

a rigid reservoir containing a porous member containing a quantity of liquid release agent material;

an elongated wick having one end thereof in contact with said porous member and a portion thereof positioned for contact with a fuser roll member, said elongated wick being disposed along a predetermined elongated path between said porous member and said rigid reservoir and between said rigid reservoir and a fuser roll member, said elongated wick being constructed such that release agent material is conveyed at a relatively slow rate by capillary action to thereby prevent the application of excess oil to a fuser roll member;

a deformable structure disposed between said wick and said rigid reservoir;

said rigid reservoir being supported by said deformable structure and a fuser roll member whereby said deformable structure is deformed to thereby form an elongated nip between said wick and a fuser roll member.

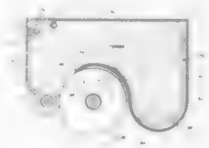
4,766,457

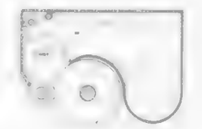
PARTICULATE MATERIAL DISPENSER

Laurence S. Barker; Dan A. Hays, both of Fairport; Thomas P. Redding, Penfield, and William H. Wayman, Ontario, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 2, 1987, Ser. No. 92,109
Int. Cl.[4] G03G *15/08*
U.S. Cl. 355—3 DD **21 Claims**

1. Apparatus for dispensing particulate material comprising a substantially enclosed rigid housing with longitudinally disposed walls and parallel side walls, an opening in said housing for dispensing particulate material therefrom, a flexible sheet-like inner liner conformable to at least some of the longitudinal walls of said housing, one end of said flexible sheet-like inner liner being fixedly attached to a portion of said housing, the other end of said flexible sheet-like inner liner being attached to means for winding said flexible sheet-like inner liner; said sheet-like inner liner conforming to said longitudinal walls when said housing is filled with particulate material, said portion of said housing, said winding means and said dispensing opening being disposed relative to each other such that as said sheet-like inner liner is wound by said winding means, particulate material is transported by said sheet like inner liner toward said opening and dispensed therethrough.





4,766,458

DEVELOPING APPARATUS FOR USE IN IMAGE-FORMING SYSTEM AND DEVELOPING PROCESS EMPLOYING SAID DEVELOPING APPARATUS

Tateki Oka, Toyohashi; Tomoaki Yokoyama, Toyokawa, and Naoki Toyoshi, Toyohashi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 10, 1986, Ser. No. 928,514
Claims priority, application Japan, Nov. 12, 1985, 60-254394; Nov. 13, 1985, 60-255784; Nov. 25, 1985, 60-265576; Nov. 25, 1985, 60-265577; Jun. 30, 1986, 61-154707
Int. Cl.[4] G03G *15/00, 15/09*
U.S. Cl. 355—3 DD **14 Claims**



1. A developing apparatus which comprises a developing sleeve rotatably provided to confront an object to be developed, a magnet roller incorporated within said developing sleeve so as to be driven for rotation in the same direction said developing sleeve, and a supply means for supplying developing material onto the peripheral surface of said developing sleeve at a developing section, said developing apparatus being so arranged as to satisfy such conditions as

$$D \cdot \pi \cdot Wsl > d1 \cdot p \cdot Wmg$$

where

D: developing sleeve diameter (mm)

Wsl: developing sleeve revolutions (rpm)

d1: the closest distance between the sleeve surface and the object to be developed

p: number of poles of the magnet roller

Wmg: revolutions of the magnet roller (rpm);

said developing material being returned toward said sup-

VOL 1093 ISS 4 AG 23 1988 UMI

ply means prior to reaching the closest distance between the sleeve surface and the object to be achieved.

4,766,459

APPARATUS FOR SEPARATING TRANSFER PAPER FROM PHOTOSENSITIVE MEMBER OF COPYING MACHINE

Masato Jinbo, Nashiki, and Kenji Kojima, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 1, 1986, Ser. No. 880,899
Claims priority, application Japan, Jul. 10, 1985, 60-149926
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—3 SH 9 Claims





1. Apparatus comprising:
a photosensitive member and means for moving transfer paper along a transfer paper travelling path, wherein at least a portion of the transfer paper is pressed against the photosensitive member in a portion of said travelling path;
a pick-off blade which comprises a portion which is between a portion of the transfer paper travelling path and the photosensitive member and separates the leading edge of the transfer paper from the photosensitive member;
a separation belt and a separation roller which face each other and flank a portion of said transfer paper travelling path which is downstream from said pick-off blade;
a first support plate supporting one of said separation belt and separation roller and a second support plate supporting the other one of said separation belt and separation roller;
a mechanism selectively causing relative movement between said first and second support plates, wherein at least one of the plates moves independently of the other relative to the photosensitive member, axially of the photosensitive member.

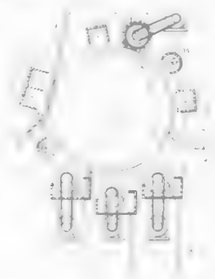
4,766,460

COLOR ELECTROPHOTOGRAPHIC METHOD

Hajime Yamamoto, Ibaraki, and Yuji Takashima, Nishinomiya, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 2, 1987, Ser. No. 92,184
Claims priority, application Japan, Sep. 3, 1986, 61-207235; Oct. 2, 1986, 61-234816; Oct. 2, 1986, 61-234818
Int. Cl.[4] G03G *15/01*
U.S. Cl. 355—4 20 Claims

1. Color electrophotographic process having
plural sequential electrophotographic steps of producing plural color toner images of different colors each comprising:
forming an electrostatic latent image on a photoconductor layer having electrostatic capacitance of 170 pF/cm^2 or smaller,
putting thin layer of toner on a toner carrier, surface thereof being situated to oppose surface of said photoconductor layer with a predetermined gap not to make touching of both said surfaces, and
applying D.C. potential between said photoconductor layer and said toner carrier, thereby to develop said latent image by a process of toner flying under D.C. electric field,



transferring accumulated toner images on said photoconductor made by said sequential electrophotographic steps onto a recording medium at one time, and
fixing said transferred accumulated toner images on said recording medium.

4,766,461

APPARATUS FOR PROJECTING, RECORDING AND COPYING AN IMAGE IN AN ELECTROPHOTOGRAPHIC SYSTEM HAVING MECHANISMS FOR SIMULTANEOUSLY PROJECTING AND RECORDING THE SAME IMAGE

Shuichi Ohtsuka, Kaisei, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 1, 1987, Ser. No. 32,809
Claims priority, application Japan, Apr. 1, 1986, 61-075161
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—5 11 Claims



1. A projecting, recording and copying apparatus for use in an electrophotographic system, comprising:
an image-forming optical system for forming an image recorded on a film on a screen;
a movable mirror of a narrow width disposed between said screen and said image-forming optical system in such a manner as to be capable of traveling in the direction of its width and swiveling about its longitudinal axis so as to reflect a portion of the light rays transmitted through said image-forming optical system;
a drum disposed for free rotation about its axis and having a photosensitive material on the surface thereof;
a mirror moving device for moving said movable mirror in the direction of its width; and
a mirror swiveling device for swiveling said movable mirror about its longitudinal axis,
wherein the widthwise travel and the longitudinal swivel of said movable mirror enables focusing on said drum the

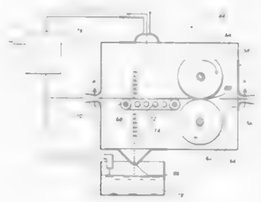
light rays reflected from said movable mirror and at the same time focusing on said screen the light rays passing by said movable mirror, whereby both projection of an image onto said screen and recording of the same on said photosensitive material are performed at the same time.

4,766,462

LIQUID CARRIER RECOVERY SYSTEM

Dexter A. Dyer, Williamson; William C. Howe, Walworth, and Thomas F. Szlucha, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 21, 1986, Ser. No. 887,766
Int. Cl.[4] G03G *21/00, 15/20*
U.S. Cl. 355—10 12 Claims



1. A reproducing machine of the type having a latent image recorded on a member, wherein the improvement includes:
means for developing the latent image recorded on the member with a liquid developer material comprising at least a liquid carrier having pigmented particles dispersed therein;
means for transferring the developed imaged from the member to a sheet of support material;
a housing having sheet inlet and sheet outlet passageways therein;
means, disposed interiorly of said housing, for applying heat and pressure to the sheet of support material having the developed image thereon to vaporize liquid carrier thereon and to fuse the pigmented particles to the sheet of support material in image configuration thereon;
means for cooling said housing to liquefy the vaporized liquid carrier on an interior surface of said housing; and
means, mounted on a wall of said housing, for directing a flow of air across the path of the sheet of support material moving from the sheet inlet passageway to the sheet outlet passageway of said housing to move the vaporized liquid carrier from the region of said applying means to the interior surface said housing being cooled by said cooling means.

4,766,463

IMAGE FORMING APPARATUS

Masayoshi Watanuki; Tsutomu Shoji; Yukio Noguchi, all of Yokohama, and Tadahide Sawamura, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 22, 1987, Ser. No. 64,542
Claims priority, application Japan, Jun. 20, 1986, 61-142870; Jun. 30, 1986, 61-151386
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—145 H 9 Claims

1. An image forming apparatus comprising:
a latent image carrier for carrying an electrostatic latent image formed thereon;
an image developing unit for developing the electrostatic latent image on said latent image carrier into a visible image;
a movable holder for holding a transfer sheet thereon;
means for transferring the visible image from said latent image carrier onto the transfer sheet on said holder through an image transfer region;
an image fixing device for fixing the visible image to said transfer sheet; and
control means for accelerating and decelerating said holder



while the transfer sheet is positioned out of said image transfer region and during an interval after the trailing end of said transfer sheet has left said image transfer region and before the leading end of said transfer sheet reaches said image fixing device when said transfer sheet is delivered from said holder toward said image fixing device.

4,766,464

IMAGE FORMING METHOD AND APPARATUS

Junji Watanabe, Yokohama, and Masahiko Ogura, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 906,390, Sep. 12, 1986, abandoned, which is a division of Ser. No. 629,976, Jul. 11, 1984, Pat. No. 4,657,375. This application Jun. 19, 1987, Ser. No. 65,152
Claims priority, application Japan, Jul. 18, 1983, 58-130509; Jul. 25, 1983, 58-135407
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 R 12 Claims



1. A method of photocopying comprising the steps of:
(1) inputting a numerical value and setting copying conditions;
(2) selectively enabling a check mode;
(3) inputting a start command after step (2)
(4) if said check mode is not enabled by said selectively enabling step (2), producing a quantity of photocopies equal to said numerical value inputted by said inputting step (1);
(5) if said check mode is enabled by said selectively enabling step (2), automatically performing the following steps:
(a) producing a predetermined set number of photocopies,
(b) after said producing step (a), waiting until a further command is inputted, and

VOL 1093 ISS 4 AG 23 1988 UMI

(c) producing a further quantity of photocopies after said waiting step, said further quantity being equal to the difference between said numerical value inputted by said inputting step (1) and said predetermined number;

(6) if the performance of said producing step 5(a) is not suitable, changing the copying conditions; and

(7) if a start command is inputted during said waiting step (5)(b), returning to step (5)(a) and then performing steps (5)(a)–(5)(c).

5. A copying device comprising:

a photosensitive body;

a document table for supporting a document;

exposing means for exposing a document supported on said document table and for forming an image of the document on said photosensitive body;

transfer means for transferring the image formed on said photosensitive body to a copying sheet;

copy number inputting means for inputting a predetermined number of copies;

check command inputting means for inputting a check command;

copy start command inputting means for inputting a start command; and

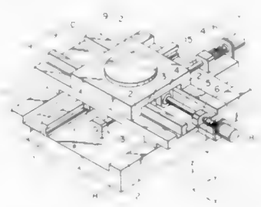
copying operation control means for automatically interrupting a copying operation when a preset number of copies are obtained if the check command has been input before the start command is input, and for restarting the copying operation to obtain a number of copies equal to the difference between the inputted predetermined number of copies and the preset number of copies in response to input of the check command again during the time the copying operation is interrupted.

4,766,465

CARRY DEVICE FOR FINE MOVEMENT

Kazuo Takahashi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 566,166, Dec. 28, 1983, abandoned.
This application Nov. 26, 1986, Ser. No. 936,972
Claims priority, application Japan, Jan. 8, 1983, 58-1576
Int. Cl.[4] B23Q *3/18, 16/08, 16/12;* B23K *37/04*
U.S. Cl. 355—53 5 Claims



1. A stage for use in a semiconductor manufacturing apparatus that operates on a wafer, said stage comprising:

a wafer carrier for carrying a wafer and mounted for movement;

means for guiding the movement of said wafer carrier; and

driving means for driving said wafer carrier along said guiding means, said driving means including driving force producing means and transmission means for transmitting the driving force produced thereby to said wafer carrier; said wafer carrier, said guiding means, and said transmission means being made of ceramic material.

4,766,466

VARIABLE MAGNIFICATION PROJECTING DEVICE

Nobuyuki Kawai, Toyohashi, and Yasuo Goto, Nagoya, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 14, 1987, Ser. No. 37,974
Claims priority, application Japan, Apr. 15, 1986, 61-86646
Int. Cl.[4] G03B *27/34, 27/40, 27/70*
U.S. Cl. 355—57 9 Claims



1. A variable magnification projecting device of slit scanning type having a projection lens for projecting an original image on a plane of projection and reflecting mirrors arranged in front and rear of the projection lens for folding the optical path of projection, the lens and the mirrors being movable relative to each other to give a corrected conjugate length and a variable magnification, the projecting device comprising:

lens shifting means for moving the projection lens substantially along its optical axis,

means for holding the mirrors movably along the optical axis of projection, and

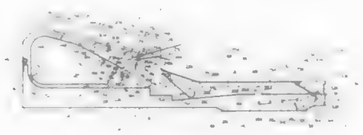
mirror shifting means for moving the mirrors with the movement of the projection lens, the mirror shifting means being operable to move at least the mirror in the rear of the projection lens when the projection lens is moved between a same-size magnification position and an enlarged magnification position and to move at least the mirrors in front of the projection lens when the projection lens is moved between the same-size magnification position and a reduced magnification position.

4,766,467

ELECTROSTATIC COPYING APPARATUS AND AUXILIARY UNIT CAPABLE OF BEING DETACHABLY MOUNTED THEREON

Shuji Yamada, Kobe; Tetsuya Matsushita, and Hironori Andou, both of Osaka, all of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Nov. 21, 1986, Ser. No. 933,506
Claims priority, application Japan, Nov. 28, 1985, 60-266131; Nov. 30, 1985, 60-269819
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—14 SH 47 Claims



9. An auxiliary unit for, and capable of bing detachabley mounted on, an electrostatic copying apparatus, said electrostatic copying apparatus comprising a copying paper conveying passage, a copying paper feed means for feeding a copying paper to the paper conveying passage and a copying paper feed passage whose downstream end is connected to the paper conveying passage, and said electrostatic copying apparatus being adapted to form a copied image on one surface of the copying paper while the paper introduced into the paper conveying passage from the paper feed means or the paper feed passage is conveyed through the paper conveying passage; wherein

said auxiliary unit comprises an inlet portion adapted to be connected to the downstream end of the paper conveying passage, an outlet portion adapted to be connected to the upstream end of the paper feed passage, a copying paper stock means located adjacent to the outlet portion, a copying paper moving passage disposed between the inlet portion and the paper stock means, and a paper moving means for feeding the paper discharged from the paper conveying passage and introduced into the paper moving passage through the inlet portion into the paper stock means,

the paper moving passage includes a curved reversal passage extending from the inlet portion to the paper stock means and a short-circuit passage connecting the upstream end portion of the curved reversal passage to the paper stock means,

the paper moving means selectively performs a first moving mode by which the paper is turned inside out by passing it through the curved reversal passage and then fed into the paper stock means, and a second moving mode by which the copying paper is introduced into the curved reversal passage and then moved in the reverse direction and fed into the paper stock means from the upstream end portion of the curved reversal passage through the short-circuit passage, and

the paper fed to the paper stock means is again introduced into the paper conveying passage through the outlet portion and the paper feed passage.

containing a mixture of the non-magnetic developer and magnetic particles while confining the magnetic particles within the container using a magnetic field and a gate electrode disposed adjacent to and upstream of said magnetic member with respect to a movement direction of said developer carrying member to control the passage of the developer;

control means for controlling said gate electrode means to apply substantially uniformly the developer onto that section of the surface of said developer carrying member which corresponds to a section of the latent image bearing member to be developed, but to directly prevent substantially uniform application of the developer onto that section of the surface of said developer carrying member which corresponds to a section of the latent image bearing member not to be developed; and

means for effecting development of the latent image on said latent image bearing member with said developer carrying member carrying the thus applied developer.

4,766,469

INTEGRATED BURIED ZENER DIODE AND TEMPERATURE COMPENSATION TRANSISTOR

Lorimer K. Hill, Cupertino, Calif., assignor to Siliconix Incorporated, Santa Clara, Calif.

Filed Jan. 6, 1986, Ser. No. 816,593
Int. Cl.[4] H01L *29/90, 29/72, 29/74, 27/02*
U.S. Cl. 357—13 14 Claims



1. A circuit comprising:

a transistor including first, second and third semiconductor regions, said first semiconductor region being of a first conductivity type and containing said second semiconductor region, said first semiconductor region serving as the collector of said transistor, said second semiconductor region being of a second conductivity type and contacting said third semiconductor region, said second semiconductor region serving as the base of said transistor, said third semiconductor region being of said first conductivity type and serving as the emitter of said transistor; and

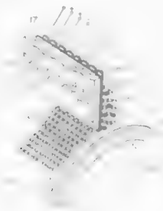
a Zener diode, the cathode of said Zener diode comprising a fourth semiconductor region of said second conductivity type formed within said third semiconductor region, said third semiconductor region serving as the anode of said Zener diode.

4,766,468

DEVELOPING METHOD AND APPARATUS FOR A PHOTOCOPIER

Nagao Hosono, Hachiohji; Haruo Fujii; Yujiro Ando, both of Yokohama, and Kimio Nakahata, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 619,113, Jun. 11, 1984, abandoned.
This application Feb. 13, 1987, Ser. No. 15,570
Claims priority, application Japan, Jun. 15, 1983, 58-108078
Int. Cl.[4] G03G *15/09*
U.S. Cl. 355—3 DD 21 Claims



14. An apparatus for developing a latent image formed on a latent image bearing member by latent image forming means, comprising:

a developer carrying member, movable along an endless path, for carrying a non-magnetic developer for deposit on the latent image bearing member;

a developer container for containing the developer;

means for applying the developer onto a surface of the developer carrying member, said applying means including a magnetic member disposed adjacent to a surface of said developer carrying member so as to allow the non-magnetic developer to be fed from a developer container

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4,766,470

EDGE EMITTING, LIGHT-EMITTING DIODE

Frederick W. Scholl, Riverdale; Stephen J. Anderson, Yorktown Heights, and Michael H. Coden, Bronx, all of N.Y., assignors to Codenoll Technology, Yonkers, N.Y.

Continuation of Ser. No. 42,607, Apr. 21, 1987, abandoned, which is a continuation of Ser. No. 582,844, Feb. 23, 1984, abandoned. This application Nov. 24, 1987, Ser. No. 125,812
Int. Cl.[4] H01L *33/00;* H01S *3/19*
U.S. Cl. 357—17 21 Claims

1. In a light emitting diode of the edge-emitting type comprising a plurality of contiguous semiconductor layers one of which forms an active layer with a p-n junction thereat and into which carriers are injected when a bias voltage is applied and from which electromagnetic radiation is produced,

means for applying said bias voltage to at least a portion of said p-n junction; and

VOL 1093 ISS 4 AUG 23 1988 UMI

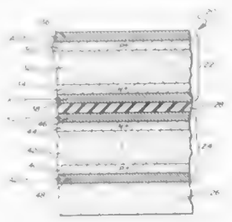
means to establish a transverse optical cavity for allowing efficient propagation of optical radiation in a direction parallel to said active layer when said bias voltage is applied across said junction with electromagnetic radiation being emitted from said diode at an end surface thereof, said means comprising:

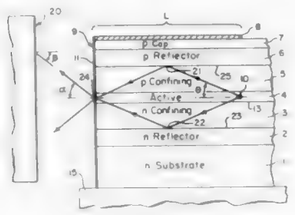
a first confining layer of n-type semiconductor material of a first composition located within said optical cavity contiguous with said active layer for confining carriers in said active layer and having such a thickness that said electromagnetic radiation that leaves said end surface from said first confining layer at an exit angle within the numerical aperture of a receiving optical fiber travels through said first confining layer with no more than one reflection by another layer of said diode thereby minimizing the amount of electromagnetic energy absorbed; and

a second confining layer of p-type semiconductor material of a second composition located within said optical cavity contiguous with a surface of said active layer not in contact with said first confining layer for confining carriers in said active layer and having such a thickness that said electromagnetic radiation that leaves said end surface from said first confining layer at an exit angle within said numerical aperture of said receiving optical fiber travels through said second confining layer with no more than one reflection by another layer of said diode thereby minimizing the amount of electromagnetic energy absorbed;

said first and second confining layers having different compositions, said first confining layer and said active layer and said second confining layer and said active layer having sufficient compositional differences to confine electrical carriers to said active layer, said compositions of said confining layers and said active layer thickness being selected so that the confinement factor, γ, is approximately zero and substantially all of said electro-magnetic radiation produced in said active layer leaves said active layer and enters said first and second confining layers.

elements adapted to project light signals within said conduit means in response to electrical signals applied thereto, and at least another one of said elements adapted to detect said light signals transmitted within said conduit means.





4,766,471

THIN FILM ELECTRO-OPTICAL DEVICES

Stanford R. Ovshinsky, Bloomfield Hills; Robert R. Johnson, Franklin; Stephen J. Hudgens, Southfield; Roger W. Pryor, Bloomfield Hills; Guy C. Wicker, Rochester Hills, and Robert S. Nolan, Saint Clair Shores, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 23, 1986, Ser. No. 821,643
Int. Cl.[4] H01L *31/12*
U.S. Cl. 357—19 9 Claims

1. An improved communications system employing electro-optical devices; said system comprising an integrated structure, said structure including very wide band gap, light transmissive conduit means and a plurality of active elements, each element including at least one layer of thin film amorphous silicon alloy material, said active elements distributed adjacent to and integrally formed with said conduit means; at least one of said

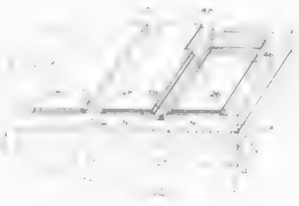
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4,766,472

MONOLITHIC SEMICONDUCTOR STRUCTURE OF A LASER AND A FIELD EFFECT TRANSISTOR

Francois Brillouet, 34Bis rue des Fontaines, 92310 Sevres; Krishna Rao, 1 rue du Moulin de Pierre, 92310 Issy les Moulineaux, and Francois Alexandre, 11 rue des Recollets, 75010 Paris, all of France

Filed Jan. 5, 1987, Ser. No. 2,407
Claims priority, application France, Jan. 6, 1986, 86 00089
Int. Cl.[4] H01L *31/12, 29/761, 33/00;* H01S *3/19*
U.S. Cl. 357—19 14 Claims



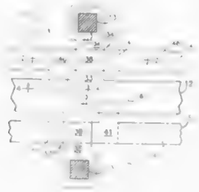
1. A monolithic semiconductor structure of a laser and a field effect transistor, produced on a monocrystalline semi-insulating substrate and comprising a first, a second and a third semiconductor layer superimposed in this order, said second layer constituting the active layer of said laser and the channel of said transistor and having a forbidden band narrower than the forbidden bands of said first and third layers which are formed with an undoped semiconductor material; a first region of a first conductivity type, a second and a third region of a second conductivity type, said regions being formed in said first, second and third semiconductor layers and oriented perpendicularly to the planes of said first, second and third layers, said first and second regions defining between them said active zone of said laser, said second and third regions respectively forming the transistor drain and source and defining between them said transistor channel, the gate of the transistor being situated above said channel.

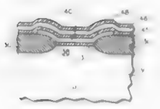
4,766,473

SINGLE TRANSISTOR CELL FOR ELECTRICALLY-ERASABLE PROGRAMMABLE READ-ONLY MEMORY AND ARRAY THEREOF

Clinton C. K. Kuo, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 29, 1986, Ser. No. 947,213
Int. Cl.[4] H01L *29/78*
U.S. Cl. 357—23.5 4 Claims





1. An EEPROM cell comprising:

a semiconductor body predominantly of a first conductivity type;

source and drain regions in said body at a first face thereof, said source and drain regions being of a second conductivity type, said source region being disposed generally along a first line and said drain region being spaced from said source region along a second line approximately perpendicular to said first line;

a channel region in said body at said first face thereof separating said source and drain regions, said channel region being of said first conductivity type;

a floating gate formed of patterned conductive material overlying and isolated from said body, said floating gate overlying said channel region and a portion of said source region;

tunnel oxide means for selectively providing a tunneling path between said floating gate and said source, said tunnel oxide means being in a position removed from said second line; and

a control gate formed of patterned conductive material overlying and isolated from said floating gate and said body, said control gate and said floating gate being co-extensive over said channel region and over said tunnel oxide means.

conductor substrate formed adjacent to and substantially surrounding said source region;

a field dope region positioned lateral to said first channel region;

a source electrode above and connected to said source region, said channel region and said field dope region;

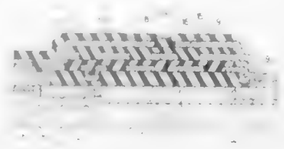
a pinch high resistance region of said second type conductivity medial to a drain region and medial to and spaced from said channel region by a portion of said semiconductor substrate;

a first insulating layer overlying said channel region and said pinch high resistance region;

a drain region having a conductivity of said second type opposite that of said semiconductor substrate lateral to said pinch high resistance region opposite said source region;

a drain electrode connected to said drain region;

a gate electrode formed above said channel region having said first insulating layer interpositioned therebetween;



first covering layer for covering said pinch high resistance region, said first covering layer comprising at least one floating conductive element, disposed on said first insulating layer, said first insulating layer interpositioned between said covering layer and said pinch high resistance region and second covering layer comprising at least one floating conductive element, disposed on a second insulating layer, said first and second covering layers substantially completely covering said pinch high resistance region;

a third insulating layer disposed on said second covering layer; and

a third covering layer comprising first and second field plates disposed on said third insulating layer over said first and second covering layers, said first field plate extending from said source electrode and said second field plate extending from said drain electrode.

4,766,474

HIGH VOLTAGE MOS TRANSISTOR

Kiyotoshi Nakagawa, Nara; Katsumi Miyano, Sakai, and Takeo Fujimoto, Osaka, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 27, 1981, Ser. No. 267,643
Claims priority, application Japan, May 30, 1980, 55-73917
The portion of the term of this patent subsequent to Sep. 30, 2003, has been disclaimed.
Int. Cl.[4] H01L *29/78, 29/52*
U.S. Cl. 357—23.8 3 Claims

1. An high voltage metal oxide semiconductor device comprising:

a semiconductor substrate having a conductivity of a first type;

a source region having a conductivity of a second type opposite to that of said semiconductor substrate;

a channel region of the same conductivity type as said semi-

4,766,475

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING AN IMPROVED BUFFER ARRANGEMENT

Masatoshi Kawashima, Fuchu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 634,068, Jul. 25, 1984, abandoned. This application Dec. 29, 1986, Ser. No. 946,608
Claims priority, application Japan, Jul. 25, 1983, 58-134316
Int. Cl.[4] H01L *27/02*
U.S. Cl. 357—40 28 Claims

1. A semiconductor integrated circuit device comprising:

a semiconductor substrate;

a logic circuit portion formed at a predetermined location of said semiconductor substrate;

a plurality of unit cells which are formed at a predetermined location of said semiconductor substrate, each said unit cell including MISFETs which are interconnected in order to form one of an input circuit and an output circuit for said logic circuit portion independently of interconnections made for others of said plurality of unit cells, wherein said MISFETs, before being interconnected, have a dual identity of both input and output possible circuits;

a plurality of bonding pads which are formed on said semi-

VOL 1093 ISS 4 AUG 23 1988 UMI

conductor substrate so that each bonding pad is adjacent to a predetermined unit cell; and

wiring leads which serve to interconnect MISFETs of said each unit cell to form one of an input circuit and an output circuit and which include an interconnection with an adjacent bonding pad,



said MISFETs being arranged such that a predetermined MISFET in each of said unit cells will form a protective MISFET connected to other MISFETs in the unit cell and between an adjacent bonding pad and a predetermined reference potential to prevent destruction of any of said other MISFETs whose gate electrode is supplied with a signal from the bonding pad in said unit cells interconnected to form an input circuit.

4,766,476

C-MOS TECHNOLOGY BASE CELL

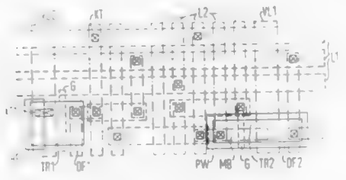
Burghardt Schallenberger, Feldolling; Josef Stockinger, Munich, and Paul Fuchs, Leinach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 21, 1985, Ser. No. 703,711

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1984, 3422715

Int. Cl.[4] H01L *27/04, 23/50, 23/52*

U.S. Cl. 357—42 6 Claims



1. A CMOS integrated circuit, comprising:

a plurality of base cells each base cell having

a first transistor of first channel type, having source and drain regions of first conductivity type located in a second conductivity type portion of a semiconductor substrate, and a gate electrode located between the source and drain regions of first conductivity type;

a second transistor of second channel type, having source and drain regions of second conductivity type located in a tub of first conductivity type in said semiconductor substrate, and a gate electrode located between the source and drain regions of second conductivity type, a direction from the source region to the drain region of the first transistor being parallel to a direction from the source region to the drain region of the second transistor;

a plurality of said base cells each having a plurality of first polysilicon interconnects positioned parallel to the direction from the source region to the drain region of each transistor, and each having a plurality of second metal interconnects positioned perpendicular to and crossing said first interconnects but insulated therefrom except at selected contact locations where a contact is desired at a cross point;

said base cells being arranged adjacent each other in a direction perpendicular to said direction from the source region to the drain region of said base cells, said direction from the source region to the drain region of each cell being parallel to said direction from the source region to the drain region of the adjacent cells;

at least one of said second metal interconnects in at least one of said base cells running perpendicular to the direction from the source region to the drain region of the transistors of that base cell, being positioned between the first and second transistors of that base cell, and extending from a position between the transistors of the adjacent cell on one side of that base cell to a position between the transistors of the adjacent cell on the other side of that base cell;

at least one other of said second metal interconnects being a power supply line and extending over one of the source or drain regions of the first transistor of each base cell; and

at least one further second interconnect being a second power supply line and extending over one of the source or drain regions of the second transistor of each base cell.

4,766,477

SEMICONDUCTOR DEVICE INCLUDING A SEMICONDUCTOR LAYER HAVING A POLYCRYSTALLINE SILICON FILM WITH SELECTED ATOMIC CONSTITUENCY

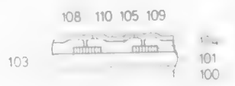
Katsumi Nakagawa, Tokyo; Toshiyuki Komatsu, Yokohama; Yoshiyuki Osada, Yokosuka; Satoshi Omata, Tokyo; Yutaka Hirai, Tokyo, and Takashi Nakagiri, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 494,049, May 12, 1983, abandoned. This application Jul. 11, 1986, Ser. No. 885,336

Claims priority, application Japan, May 17, 1982, 57-82651

Int. Cl.[4] H01L *29/04, 29/78*

U.S. Cl. 357—59 20 Claims



1. A semiconductor device which comprises a semiconductor layer of a polycrystalline silicon film containing as a constituent at least one atom selected from the group consisting of carbon, sulfur, nitrogen and oxygen, the semiconductor layer having an X-ray diffraction pattern or an electron beam diffraction pattern of which the orientation strength at the (220) plane is 30% or more based on the total orientation strength, wherein said polycrystalline silicon film consists essentially of crystal grains having an average particle size of 200 Å or larger and contains hydrogen atoms in an amount of 0.01–3 atomic %.

4,766,478

LEAD FRAME FOR SEMI-CONDUCTOR DEVICE AND PROCESS OF CONNECTING SAME

Richard K. Dennis, 295 Sipe Rd., Box 518A, York Haven, Pa. 17370

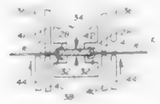
Continuation-in-part of Ser. No. 902,798, Sep. 2, 1986. This application Feb. 2, 1987, Ser. No. 10,297

Int. Cl.[4] H01L *23/48*

U.S. Cl. 357—70 5 Claims

1. A lead frame for supporting a semi-conductor device comprising a metallic planar frame unit having a central open-

ing and at least a pair of opposite rows of flat leads having heads on one end, each of said heads comprising a pair of similar substantially straight upper and lower terminal leg portions extending from said leads which leg portions respectively are bent substantially equally in opposite directions from the plane of said leads in a forked manner, and said rows of flat leads are connected integrally intermediately of the opposite ends thereof to a flat elongated connecting strip and the ends of all connecting strips surrounding said central opening being integrally connected, said connecting strips being parallel to each other at opposite sides of said central opening and terminal ends of the legs of the heads in opposite parallel rows thereof are spaced apart a distance less than the transverse dimension of a semi-conductor device to be supported by said opposite rows of heads, the opposite ends of said connecting strips are also connected to spaced portions of said lead frame unit and the intermediate portion of said strips between said ends when rotated about the axis of said strips in one direction



sufficiently transpose the plane of the flat leads at an angle to the plane of said frame and thereby elevate the heads of said leads above the plane of said frame to space apart the ends of the upper legs of said heads in opposite rows thereof a distance at least slightly greater than the transverse dimension of a semi-conductor device to be supported between said opposite rows of heads and the lower legs of said opposite rows of heads extending toward each other a distance no less than when in the plane of said lead frame, whereby a device is received between said opposite rows of upper legs and is positioned upon said opposite rows of lower legs and said connecting strips and flat leads are then rotated to restore the same to the plane of said lead frame and said upper legs of said heads overlie said device and the lower legs of said heads underlie said device for support and thereby the device is secured between the inner ends of the straight terminal leg portions of said opposite rows of heads for sole independent support thereby.

4,766,479

LOW RESISTANCE ELECTRICAL INTERCONNECTION FOR SYNCHRONOUS RECTIFIERS

Alvin L. Krum, and Charles W. Conklin, both of Huntington Beach, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Oct. 14, 1986, Ser. No. 918,186

Int. Cl.[4] H01L *23/02*

U.S. Cl. 357—74 12 Claims

1. A synchronous rectifier device comprising:

an electrically conductive case;

at least one power transistor having a drain region, a source region and a gate region;

an electrically conductive substrate layer applied to said transistor in electrical contact with said drain region thereof, said substrate soldered to an interior surface of said case to secure said transistor to said case and form a low resistance electrical connection between said drain region and said case;

means for forming an electrical interconnection to said gate region of said transistor; and

means for forming a low resistance electrical connection to said source region of said transistor for carrying high current levels, said means comprising:

(i) one or more solderable contact bumps extending from an exposed surface of said transistors in electrical contact with said source region;

(ii) an electrically conductive member having first and second ends, said member passed through and electrically isolated from said case so that said first end is



disposed within the interior of said case proximate to said transistor; and

(iii) a pliable, electrically conductive strap having first and second ends, said first end soldered to said contact bumps and said second end soldered to said first end of said conductive member.

4,766,480

INTEGRATED CIRCUIT CARD HAVING MEMORY ERRASABLE WITH ULTRAVIOLET RAY

Yoshitaka Hamada, Kawasaki, Japan, assignor to Mips Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 804,476, Dec. 4, 1985, abandoned. This application Sep. 9, 1987, Ser. No. 96,318

Claims priority, application Japan, May 16, 1985, 60-72914[U]

Int. Cl.[4] H01L *23/08, 23/18, 23/30*

U.S. Cl. 357—74 2 Claims



1. An integrated circuit card for use in an electronic arrangement, said card being capable of being received in a slot of said electronic arrangement, said slot having a plurality of mating connection terminals therein, said integrated circuit card comprising:

a card body having a flat rectangular shape and a first and second primary surface, said first primary surface having a recess formed therein;

a printed circuit board being mounted in said recess of said card body, said circuit board having a first and second side, said circuit board being mounted in said recess in a manner to permit said first side of said printed circuit board to form a flat, continuous surface with the first primary surface of said card body;

an integrated circuit chip being carried on the second side of said printed circuit board and including a memory capable of storing information which can be erased by ultraviolet rays irradiated thereupon, said chip being adhered to said circuit board and encapsulation by a molding adhesive;

a window being formed in the second primary surface of

VOL 1093 ISS 4 AUG 23 1988 UMI

said card body to communicate with said recess, said window being located adjacent to the printed circuit board when said board is mounted in said recess of said card body, said window being smaller in size than said recess, and having an edge tapered in the direction from the second side of said circuit board to the second primary surface of said card body;

a plate for covering said window, said plate being made from material which is permeable to ultraviolet rays, said plate being positioned in said window to permit ultraviolet rays to pass through the window and to reach the integrated circuit chip to thereby erase any information stored in said memory of the integrated circuit chip;

a frame having an outer edge tapered to mate with the tapered edge of said window for carrying said plate;

a plurality of connection terminals extending along an edge of the first primary surface of the card body, said plurality of connection terminals establishing electrical connections with said plurality of mating connection terminals of said electronic arrangement when said card is received in said slot; and

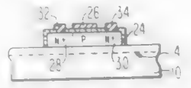
a plurality of connection wires being mounted on the second side of said printed circuit board, each said connection terminal having a connection wire extending therefrom to the integrated circuit chip through throughholes formed in the printed circuit board, said plurality of connection wires serving to connect said integrated circuit chip with the connection terminals.

4,766,482

SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME

Ronald K. Smeltzer; Alvin M. Goodman, both of Princeton Township, Mercer County, N.J., and George L. Schnable, Lansdale Borough, Pa., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 9, 1986, Ser. No. 939,688
Int. Cl.[4] H01L 29/78
U.S. Cl. 357—23.7 5 Claims



1. A semiconductor device, comprising:

a layer of semiconductor material disposed on an insulating substrate;

a plurality of recombination center means disposed within said insulating substrate for minimizing both the accumulation of charge carriers in said insulating substrate and the collection of charge carriers injected from said insulating substrate into said layer of semiconductor material; and

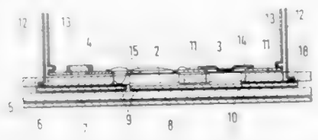
a semiconductor structure disposed in said layer of semiconductor material directly above said means.

4,766,481

POWER SEMICONDUCTOR MODULE

Jens Gobrecht, Gebenstorf, Switzerland, and Reinhold Bayerer, Reichelsheim, Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG, Mannheim-Käfertal, Fed. Rep. of Germany

Filed Oct. 31, 1986, Ser. No. 925,414
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1985, 3538933
Int. Cl.[4] H01L 39/02
U.S. Cl. 357—80 10 Claims



5. Power semiconductor module, comprising a multi-layered substrate formed of a first ceramic bottom plate, at least one second ceramic plate disposed above and parallel to said first ceramic bottom plate, a metal foil in the form of a textured metallization having a thickness of substantially between 0.1 and 0.5 mm located between and directly bonded to said ceramic plates, said second ceramic plate having cutouts formed therein defining a soldering form, and assembly elements fixed in place by said soldering form and soldered in said cutouts, said textured metallization and said second ceramic plate forming stiplines having a defined wave resistance.

4,766,483

AUTOMATIC COLOR TUNING SYSTEM WITH VARIABLE GAIN APC CIRCUIT

Timothy J. Donovan, Wheeling, and Daniel L. Reneau, Elmhurst, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 2, 1987, Ser. No. 57,414
Int. Cl.[4] H04N 9/45
U.S. Cl. 358—19 12 Claims

1. An automatic tuning circuit for a color television including a color burst signal comprising:

automatic phase control means including a tunable oscillator for locking up to said color burst signal;

means for adjusting the tuning of said tunable oscillator to search for said color burst signal within a limited frequency range; and

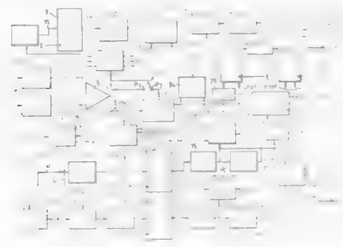
means for rendering the gain of said automatic phase control means low while said tunable oscillator is searching and high when said tunable oscillator is not searching, thereby assuring that said tunable oscillator is within a predetermined frequency of said color burst signal when said automatic phase control locks up.

4,766,484

NTSC/PAL SWITCHABLE VIDEO COLOR DECODER USING A DIGITAL COMB FILTER AND METHOD

John C. Clayton, Harrow Weald, and Trevor J. Barnes, Woking, both of England, assignors to Avesco p.l.c., Chessington, England

Filed Apr. 7, 1987, Ser. No. 35,446
Claims priority, application United Kingdom, Apr. 11, 1986, 8608811
Int. Cl.[4] H04N 9/78, 9/66
U.S. Cl. 358—23 9 Claims



1. A video colour decoder using a digital comb filter, comprising

first means for deriving a first analog signal Y1 representing low band luminance component of a video colour input signal Icv;

second means for deriving a second analog signal Yhc representing high band luminance and chrominance components of the video colour input signal Icv;

third means to enable synchronous demodulation of the second analog signal Yhc to provide a B-Y chrominance component signal U_1 and an R-Y chrominance component signal V_1 (where B and R is the conventional notation for the respective RGB component signals);

first analog to digital converter (ADC) means for digitising the first analog signal Y1 to produce the equivalent digital signal Yd1;

second analog to digital converter (ADC) means for digitising the (B-Y) and (R-Y) chrominance component signals U_1V_1;

first digital delay means for providing a single line delay of the first digital signal Yd1;

second digital delays means for providing a single line delay of the chrominance component signals U_1V_1 with a delay period of one line, the chrominance component signals so delayed by one line period being designated U_0, V_0;

third digital delay means for providing a further single line delay of the chrominance signals U_0,V_0 with a further delay period of one line, the chrominance component signals so delayed by one further line period being designated U_{-1}, V_{-1};

summing means arranged to reject consistent chrominance information and operable to provide a high band luminance signal Yu as a function of at least two of the respective chrominance component signals U_1, U_0 and U_{-1};

summing means arranged to reject consistent chrominance information and operable to provide a high band luminance signal Yv as a function of at least two of the respective chrominance component signals V_1,V_0 and V_{-1};

means for generating digital sinewave and cosinewave reference signals Uref, Vref representing the sine wave of the coded (B-Y) subcarrier reference phase signal and the cosinewave of the coded (R-Y) subcarrier reference phase signal;

digital means for obtaining the products of the signals Yu,Yv and their respective sinewave and cosinewave reference signals Uref, Vref;

means for summing these products to provide a digital high band luminance component signal Yh;

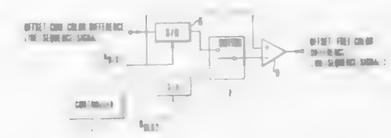
and digital means for summing the digital signal Yd1 and the digital signal Yh to provide a digital wide band luminance output signal Yd.

4,766,485

COLOR-DIFFERENCE LINE-SEQUENCE SIGNAL PROCESSING APPARATUS

Makoto Takayama, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 7, 1986, Ser. No. 894,129
Claims priority, application Japan, Aug. 7, 1986, 60-172434
Int. Cl.[4] H04N 1/46, 9/71
U.S. Cl. 358—34 11 Claims



1. An offset removing device comprising:

(a) input means for inputting a color differnece line-sequence signal with diverse parts, each having a difference offset level during each horizontal period thereof;

(b) detecting means for detecting the level during the horizontal blanking period of the signal inputting thereto by said input means and generating an output signal indicative of such different offset levels during altenate cycles of said line-sequence signal; and

(c) computing means for subtracting the output signal of said detecting means from the color difference line-sequence signal inputted by said input means.

4,766,486

CARRIER CHROMINANCE SIGNAL PROCESSING CIRCUIT

Hidetoshi Ozaki, Tokyo, Japan, assignor to Victor Company of Japan, Yokohama, Japan

Filed Sep. 9, 1986, Ser. No. 906,402
Claims priority, application Japan, Sep. 9, 1985, 60-198959; Sep. 9, 1985, 60-198960
Int. Cl.[4] H04N 9/87
U.S. Cl. 358—40 12 Claims



1. A carrier chrominance signal processing circuit for processing a carrier chrominance signal of a television video signal constituted by said carrier chrominance signal and a luminance signal, said processing circuit comprising:

a feedback type of filter coupled to receive said carrier chrominance signal, for reducing noise components contained in said carrier chrominance signal;

coherence detection means for detecting conditions of verti-

VOL 1093 ISS 4 AUG 23 1988 UMI

cal coherence and vertical non-coherence of said carrier chrominance signal and said luminance signal and for producing detection signals indicative of said conditions, and;

control means responsive to said detection signals for controlling a degree of feedback within said filter in accordance with respective ones of a plurality of combinations of said conditions of vertical coherence and non-coherence of said luminance signal and said carrier chrominance signal.

4,766,487

CHROMINANCE SIGNAL PROCESSING CIRCUIT

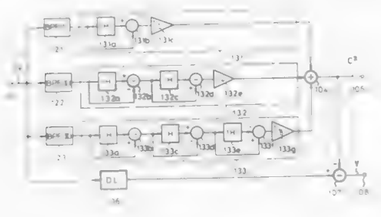
Yutaka Tanaka, and Osamu Matsunaga, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 4, 1987, Ser. No. 81,348

Claims priority, application Japan, Aug. 13, 1986, 61-190080; Aug. 14, 1986, 61-190992

Int. Cl.[4] H04N *9/64*

U.S. Cl. 358—40 **10 Claims**



1. A chrominance signal processing circuit comprising:

N band-pass filters, where N is an integer ≦2, for dividing a chrominance signal into N regions;

N signal processing circuits, each having a separate output, and respectively having different noise eliminating characteristics from each other and being connected to said N band-pass filters in series; and

means for synthesizing the outputs from said N signal processing circuits to obtain a chrominance signal.

4,766,488

FALLING PARTICLE TELEVISING APPARATUS

Nagaichi Suga; Shinichi Katayanagi; Yoshio Sasho, and Taro Mori, all of Tokyo, Japan, assignors to Suga Test Instruments Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1987, Ser. No. 65,514

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—93 **13 Claims**

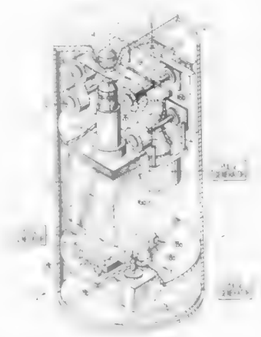
1. A televising apparatus for televising falling particles in a chamber, said televising apparatus comprising:

a television camera within the chamber and having an object lens;

a television camera transfer unit to which said television camera is mounted, said television camera transfer unit being movable in fine increments along both first and second axes for moving said television camera within the chamber along both of said axes, the first and the second axes extending perpendicularly to one another;

a film feeder for feeding a transparent film, onto which the falling particles fall, in fine increments past said objective lens; and

a focus regulator for moving said film feeder relative to said object lens in small increments toward and away from the object lens along a third axis which extends perpendicularly to said first and second axes for allowing the particles



falling on the transparent film to be focused when televised.

4,766,489

ELECTRONIC ENDOSCOPE WITH IMAGE EDGE ENHANCEMENT

Tadashi Kato, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

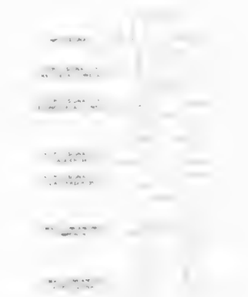
Filed Jul. 30, 1987, Ser. No. 80,364

Claims priority, application Japan, Aug. 1, 1986, 61-181630

Int. Cl.[4] A61B *1/04*; H04N *7/18*

U.S. Cl. 358—98 **8 Claims**





1. An electronic endoscope comprising:

an endoscope provided with an imaging means;

a signal treating means for producing color signals from output signals of said imaging means;

an image enhancing means for enhancing edges of the images of the color signals produced by said signal treating means; and

an image enhanced amount setting means for setting the image enhanced amount by said image enhancing means independently of the respective color signals.

4,766,490

METHOD OF AND DEVICE FOR ESTIMATING MOTION IN A SEQUENCE OF PICTURES

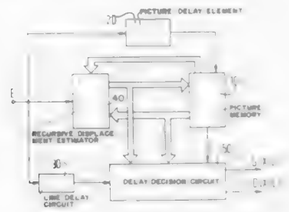
Mohammad-Reza Haghiri, Fontenay-aux-Roses, France, assignor to U.S. Philips Corp., New York, N.Y.

Filed Nov. 24, 1986, Ser. No. 934,048

Claims priority, application France, Nov. 22, 1985, 85 17303

Int. Cl.[4] H04N *7/18, 7/12*

U.S. Cl. 358—105 **5 Claims**



1. A method of estimating motion in a picture sequence in which the luminosity of each element is expressed in a digital form and each of these elements is defined by two coordinates (m,n), respectively, indicating the row of the picture line in which the element is present and the row of the element on this m^{th} line, comprising:

(A) preserving the preceding picture with respect to the current picture for constituting a reference picture;

(B) defining three groups as fixed elements, moving elements and as exposed elements, in which groups the elements are classified with a delay of L elements according to scanning of the picture by examining a given number of possible group sequences for the L elements succeeding the current element X considered and in accordance with a given classification criterion, said criterion for the fixed and moving elements being the difference in luminosity between two successive pictures, taking the displacement of the elements of one picture with respect to the other into account for the moving elements, and the difference in luminosity between two adjacent lines for the exposed elements;

(C) constructing a classification tree whose 3^L branches at each successive level are equal in number to those of the possible groups and which correspond from the first to the Lth level to the sequences of possible groups for the L considered successive elements of the picture sequence;

(D) associating two parameters with each branch of each level:

(a) a first parameter referred to as displacement vector representative of the possible displacement of the element with respect to the picture or to the preceding line and determined by means of a recursive displacement estimation method; and

(b) a second parameter referred to as cumulated distortion representative of the cumulative sum of the classification errors of the preceding elements, the groups of these elements being those of the tree branches traversed to arrive at the current branch, each classification error being rendered minimum by taking into account the influence of a displacement estimated for an element on the displacement estimated for the L following elements, said influence being only examined, among the 3^L possible branches of the tree, for M branches of the weakest cumulated distortion referred to as surviving branches, where M is a limited number chosen to be substantially smaller than the maximum number of branches 3L;

(E) and in accordance with this procedure relating to L elements, taking a decision of the majority type concerning the effective group and concerning the displacement vector of the element situated L elements earlier with respect to the current element, said decision being taken by examining the surviving branches and by classifying each element situated L elements earlier in the group to which the largest number of these surviving branches corresponds, the corresponding displacement vector being thus considered as the displacement of this element situated L elements earlier, said decision procedure being identically repeated but for the L last elements of the picture sequence in which one avoids taking a decision.

4,766,491

ADAPTOR FOR A VIDEO MONITORING SYSTEM

Mitsumasa Saitoh; Naoyuki Sumi, and Susumu Tagawa, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 14, 1987, Ser. No. 49,429

Claims priority, application Japan, May 30, 1986, 61-125125

Int. Cl.[4] H04N *7/18*

U.S. Cl. 358—108 **20 Claims**



1. A video monitoring system, comprising:

(a) at least one television camera;

(b) at least a first television monitor;

(c) a first DC power supply for the television monitor; and

(d) a first adaptor for connecting the television camera to the television monitor, the first adaptor including,

(e) first means for transmitting the first DC power supply to the first television monitor;

(f) second means for transmitting the first DC power supply to a prior stage component of the first adaptor in the monitoring system via the first television monitor;

(g) third means for transmitting a command signal to feed a power supply for the television camera from the first DC power supply;

(h) fourth means for feeding the first DC power supply via the prior stage component of the first adaptor to the television camera in response to the command signal transmitted by the third means; and

(i) fifth means for transmitting the video signal of the television camera from the prior stage component to the television monitor.

4,766,492

PAPER MASK ASSEMBLY FOR USE IN PHOTOGRAPHIC PRINTING

Hiroshi Miyawaki, Wakayama, Japan, assignor to Noritsu Kenkyu Center Co., Ltd., Wakayama, Japan

Filed Aug. 31, 1987, Ser. No. 90,990

Claims priority, application Japan, Aug. 30, 1986, 61-133539

Int. Cl.[4] G03B *27/28*

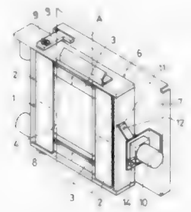
U.S. Cl. 355—125 **4 Claims**

1. A paper mask assembly for use in photographic printing, comprising:

VOL 1093 ISS 4 AG 23 1988 UMI

a frame movably mounted for holding a paper mask in a position adjacent to a photographic paper;

a working arm having one end thereof pivotally mounted to said frame;



a drive means fixedly mounted for pivoting said working arm, whereby moving said frame and thus the paper mask away from and toward the photographic paper.

4,766,493

DEVICE FOR VERIFYING OPERATIONAL CONDITIONS OF MONITOR

Woo J. Kim, Kumi, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed May 6, 1987, Ser. No. 46,583

Claims priority, application Rep. of Korea, May 6, 1986, 6277

Int. Cl.[4] H04N *17/04*

U.S. Cl. 358—139 3 Claims



1. A device for determining the operational conditions of a display monitor, comprising:

amplifying means for amplifying input display signals and outputting amplified display signals;

display means for displaying said amplified display signals; and

switching means, responsive to input display synchronizing signals, for applying a test display signal to said amplifying means upon the absence of said display synchronizing signals.

4,766,494

LINE NUMBER HAVING CIRCUIT FOR A SAMPLED INTERLACED TELEVISION SIGNAL

Terence Doyle, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

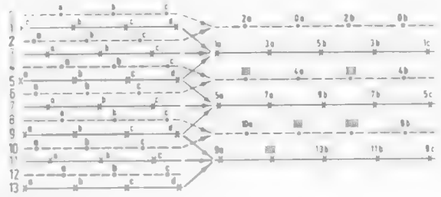
Filed Oct. 2, 1987, Ser. No. 104,317

Claims priority, application Netherlands, Oct. 3, 1986, 8602493

Int. Cl.[4] H04N *5/02*

U.S. Cl. 358—140 2 Claims

1. A line number halving circuit for a sampled interlaced television signal for obtaining an interlaced television signal which is halved in line number and is doubled in its number of signal samples per line, comprising means for shifting one hundred and eighty degrees from line to line and ninety degrees from field to field, the sampling in the sampled television signal to be halved in line number, means for doubling the number of signal samples per line by placing signal samples (*0a, 0b, 4a, 4b; 8a, 8b*) of field lines (**0, 4, 8**) being cancelled during line number halving between signal samples (*2a, 2b; 6a, 6b; 10a, 10b*) of field lines (**2, 6, 10**) being maintained and extended in duration during line number halving, said line number halving



circuit further comprising means for placing in one of the two fields of each picture between the lines (**3, 7, 11**) which are maintained, alternately a signal sample of horizontally intermediate position of the overlying (*1a, 1c; 5a, 5c; 9a, 9c*) (**1, 5, 9**) and of the underlying (*5b; 9b; 13b*) cancelled line (**5, 9, 13**) of that field.

4,766,495

PHASE ERROR CORRECTING APPARATUS

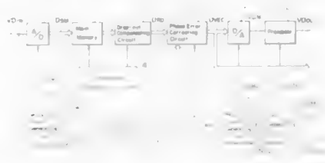
Yuji Kobayashi, and Tsutomu Takamori, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 31, 1986, Ser. No. 948,076

Claims priority, application Japan, Jan. 21, 1986, 61-11357

Int. Cl.[4] H04N *5/04*

U.S. Cl. 358—148 3 Claims



1. An apparatus for correcting a phase error of digital data with a predetermined clock rate comprising:

signal source means for generating an analog signal;

digital data generating means supplied with said analog signal for generating said digital data, said digital data generating means including analog to digital converting means for converting the analog signal to the digital data occurring at original sampling timings established at said predetermined clock rate and further including memory means, write clock generating means for generating a write clock signal supplied to said memory means, and read clock generating means for generating a read clock signal supplied to said memory means, said write clock signal being controlled by time base error information of said analog signal, and said read clock signal having a predetermined frequency and phase determined by a reference signal, whereby the digital data read out from said memory means is provided at a predetermined clock rate determined by said read clock signal;

phase error detecting means for detecting a phase error of the digital data and for generating a phase error signal; and

correcting means supplied with the digital data from said digital data generating means and the phase error signal from said phase error detecting means for correcting the phase error of the digital data; wherein:

said correcting means includes interpolating means for determining by interpolation a value of a digital datum at a timing apart from a corresponding one of said original sampling timings of said digital datum by a duration determined by said phase error signal and for producing the interpolated value of said digital datum at said corresponding original sampling timing of said digital datum;

said interpolating means includes coefficient data generating means controlled by said read clock signal and the phase error signal for generating coefficient data, digital filter means having at least one delay means supplied with said digital data for delaying the digital data for one clock period associated with said predetermined clock rate, multiplying means for multiplying said coefficient data and the digital data input to and output from said delay means respectively to provide multiplied outputs, and adding means for adding the outputs of said multiplying means; and

said coefficient data generating means includes read only memory means storing plural coefficient data, address signal generating means controlled by said phase error signal for generating an address signal supplied to said read only memory means so that the coefficient data at the address designated by said address signal is read out, and a latch means for latching the data read out of the read only memory means.

4,766,496

VIDEO SIGNAL MEMORIES

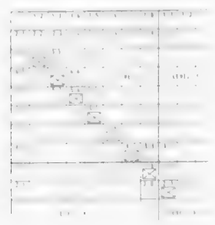
David J. Hedley, Winchester, and Morgan W. A. David, Farnham, both of United Kingdom, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 17, 1985, Ser. No. 776,958

Claims priority, application United Kingdom, Sep. 25, 1984, 8424207

Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—160 5 Claims



1. A video signal memory for storing n^2m video data words, comprising:

n^2 memory modules each capable of storing m said video data words corresponding respectively to sample values at respective sample positions of a raster display, each said memory module being arranged to store one only of said video data words in any square of n by n said sample positions of said raster in any one write cycle; and

means to write up to n said video data words corresponding to n adjacent sample positions of said raster in said video memory in any one write cycle, said sample positions forming a line that may extend in any of a plurality of directions including a diagonal direction.

4,766,497

IF CIRCUIT WITH REDUCED SOUND ATTENUATION FOR CABLE SIGNALS

Frank G. Banach, Oak Lawn; James G. Haerle, Streamwood, and David S. Tait, Wood Dale, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed May 6, 1987, Ser. No. 46,962

Int. Cl.[4] H04N *5/62, 7/10*

U.S. Cl. 358—188 4 Claims



1. A television receiver for use with off-air and cable signals comprising:

tuner means for receiving said signals and for developing therefrom an IF signal having a video carrier and an audio carrier;

said tuner means further including switch means having a cable position and an off-air position for selectively operating said tuner means with said off-air and said cable signals to develop said IF signal;

detecting means for receiving said IF signal and for developing therefrom audio and video information;

trap means coupled between said tuner means and said detecting means for reducing the level of said audio carrier with respect to said video carrier in said IF signal; and

circuit means, operable responsive to said switch means, for reducing the effectiveness of said trap means for cable signals by detuning said trap means.

4,766,498

IMAGE PROJECTION SYSTEM

Johannes H. Spruit, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1987, Ser. No. 18,301

Claims priority, application Netherlands, Nov. 24, 1986, 8602978

Int. Cl.[4] H04N *5/74*

U.S. Cl. 358—237 9 Claims



1. An image projection system comprising at least one display tube and a multi-element projection lens system for imaging a display tube picture on a projection screen, said lens system having an image end toward said screen, an object end toward said display tube, and a radiation path extending therebetween, said display tube comprising a display screen in an evacuated envelope, the display screen being arranged on the inside of a display window in the wall of the envelope and being provided with a luminescent material, a multi-layer interference filter being arranged between said luminescent material and the display window, characterized in that a first lens element of the projection lens system, viewed from the image end, is of positive power and has a first refractive aspherical surface facing the image end and a second refractive surface facing the object end, which surface is convex and whose centre of curvature is located in the half of said first lens element toward said image end, in that the projection lens

VOL 1093 ISS 4 AUG 23 1988 UMI

system further comprises a second lens element of negative power having a concave surface facing the image end and an opposed surface having a curvature adapted to that of the display window and in that the projection lens system has an entrance pupil located in the image end half of the first lens element.

4,766,499

METHOD AND APPARATUS FOR ENCODING AND DECODING DITHER SIGNALS FOR REPRODUCTION OF THE HALFTONE OF A PICTURE

Tatsuki Isuzuka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 10, 1987, Ser. No. 72,165
Claims priority, application Japan, Jul. 10, 1986, 61-162225
Int. Cl.⁴ H04N *1/41, 1/415, 1/417*
U.S. Cl. 358—283 **13 Claims**

1. A method for encoding and decoding dither signals for reproduction of the halftone of an original picture, in which there are provided the same dither thresholds on both an encoding side and a decoding side, picture signals, which are obtained pel by pel by scanning the original picture, are converted into signals for transmission by using the dither thresholds, on the encoding side, and the converted signals for transmission are reconverted into the dither signals by using the dither thresholds to reproduce the halftone of the picture, on the decoding side,

characterized by the following steps;

on the encoding side,

first step of obtaining a predictive picture signal x_{ij} of a pel (i, j) of j-th column on i-th scanning line, taking account of predictive picture signals of pels prior to the pel (i, j), which have been already obtained;

second step of determining a two-level transposition signal d_{ij} and calculating an approximation signal y_{ij}, in accordance with the predetermined relations of an actual picture signal x_{ij} of the pel (i, j) and the predictive signal x_{ij} obtained in the first step to the thresholds t_{ij} for the pel (i, j), the approximation signal y_{ij} being available as the prior predictive picture signals in the first step for obtaining the predictive picture signal of a posterior pel; and

third step of encoding the transposition signals d_{ij} obtained in the second step and transmitting them to the decoding side;

and, on the decoding side,

fourth step of obtaining the predictive picture signal x_{ij} of the pel (i, j), taking account of predictive signals of pels prior to the pel (i, j), which have been already obtained on the basis of the transposition signals previously transmitted;

fifth step of calculating an approximation signal y_{ij} in accordance with the predetermined relation of the predictive signal x_{ij} of the pel (i, j) obtained in the fourth step to the thresholds t_{ij} for the pel (i, j) and the transposition signal d_{ij} transmitted from the encoding side; and

sixth step of reproducing a dither signal z_{ij} in accordance with the predetermined relation of the approximation signal y_{ij} to the dither threshold t_{ij}.

4,766,500

METHOD OF REPLICATING IMAGES ON A CONTOURED IMAGE-BEARING SURFACE

Zvi Yaniv, Farmington Hills, and Vincent D. Cannella, Birmingham, both of Mich., assignors to Ovonic Imaging Systems, Inc., Troy, Mich.

Continuation of Ser. No. 886,293, Jul. 15, 1986, Pat. No. 4,725,890. This application Jul. 6, 1987, Ser. No. 70,274
Int. Cl.⁴ H04N *1/024*
U.S. Cl. 358—285 **18 Claims**

1. A method of replicating an image-bearing surface including the steps of:

providing a non-planar surface having features to be scanned;

providing a large area, flexible substrate;

operatively disposing a large area array of discrete, small area, operatively interconnected, thin film photosensitive elements upon said substrate;



flexing said large area array into a condition generally corresponding to the general overall contour of the non-planar surface to be scanned.

4,766,501

METHOD FOR SPLICING NON-CONSECUTIVE VIDEO SIGNAL FRAMES

Anders Hjelm, Spånga, and Tommy Heinermark, Sollentuna, both of Sweden, assignors to AB Film-Teknik, Solna, Sweden

PCT No. PCT/SE85/00100, § 371 Date Nov. 6, 1985, § 102(e) Date Nov. 6, 1985, PCT Pub. No. WO85/04066, PCT Pub. Date Sep. 12, 1985
PCT Filed Mar. 5, 1985, Ser. No. 803,287
Claims priority, application Sweden, Mar. 8, 1984, 8401297
Int. Cl.⁴ H04N *5/76*
U.S. Cl. 358—311 **5 Claims**



1. A method for editing and splicing color videograms comprising:

recording in a first video tape machine videogram sequences contained on a video tape in a second machine, said sequences including a first frame series terminated with a final frame, and a second frame series which begins with a first frame;

determining when a first video line of said second series first frame has a chrominance coding the same as the last line of the last frame of said first frame series; and,

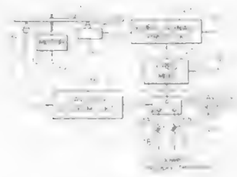
shifting during each frame of said second frame series, each video line subsequent to the first video line forward, skipping said first video line, when said same chrominance coding between said last line of said first frame series and said first line of said second frame series is detected.

4,766,502

INFORMATION SIGNAL RECORDING APPARATUS

Akira Mashimo, Tokorozawa, Japan, assignor to TEAC Corporation, Musashino, Japan

Filed Apr. 9, 1987, Ser. No. 36,914
Claims priority, application Japan, Apr. 14, 1986, 61-84347
Int. Cl.⁴ H04N *9/80;* **G11B** *19/26*
U.S. Cl. 358—322 **9 Claims**



1. An information signal recording apparatus for recording an information signal on an information signal recording disc having a rotation controlling signal recording track prerecorded with a rotation controlling signal including a rotation mode discrimination signal, said rotation mode discrimination signal indicating whether the information signal recording disc is to be rotated in a constant angular velocity mode or in a constant linear velocity mode, said information signal recording apparatus comprising:

reproducing means for reproducing said rotation controlling signal recorded on said rotation controlling signal recording track;

a motor for rotating said information signal recording disc responsive to said reproduced rotation controlling signal;

mode discriminating means for discriminating whether said information signal recording disc is to be rotated in said constant angular velocity mode or in said constant linear velocity mode responsive to said rotation mode discrimination signal within said rotation controlling signal reproduced by said reproducing means;

frequency modulation means supplied with a luminance signal for producing a frequency modulated luminance signal, said frequency modulation means changing a predetermined carrier reference frequency responsive to a discrimination result in said mode discriminating signal, said carrier reference frequency specifying a predetermined frequency portion of a spectrum of said carrier;

processing means supplied with said frequency modulated luminance signal and a carrier chrominance signal for producing a recording video signal; and

recording means for recording said recording video signal on said information recording disc.

4,766,503

COLOR FILM WRITING SYSTEM WITH CLOSED LOOP CONTROL FOR ELECTRONIC IMAGES

Thomas W. Lambert, Dousman, and Barry F. Belanger, Milwaukee, both of Wis., assignors to General Electric Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 761,439, Aug. 1, 1985, Pat. No. 4,700,058. This application Jul. 21, 1986, Ser. No. 887,702
Int. Cl.⁴ H04N *9/79, 5/84*
U.S. Cl. 358—332 **24 Claims**

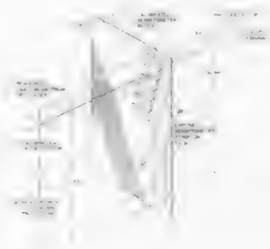
1. In an imaging system for generating an image on film from electronic image data, the system including a plurality of controllable transfer devices, each of said devices controlling image data corresponding to one of a plurality of regions of the light spectrum, a method for controlling film density comprising the steps of:

providing at least one film writing device having a predetermined light intensity output in response to a predetermined input command signal amplitude;

generating for each of the regions of the light spectrum an input command signal having an amplitude varying as a function of position of a light beam from the film writing device whereby the light intensity output varies in correspondence with beam position;

exposing a film to the light output from the film writing device;

developing the exposed film;



reading the image density on the film for each of the plurality of regions of the light spectrum using the film writing device;

adjusting each of the controllable transfer devices to correct for deviations in film density from a desired value; and

repeating the steps of generating, exposing, developing, reading and adjusting until a film image is obtained having the desired density value.

4,766,504

VIDEO DISK AND RECORDER WITH TIME RECORDED TWICE

Toshio Narusawa, and Ryoji Higashi, both of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo and Pioneer Video Corporation, Yamanashi, both of, Japan

Filed Jul. 3, 1986, Ser. No. 882,002
Claims priority, application Japan, Jul. 4, 1985, 60-146985
Int. Cl.⁴ H04N *5/91*
U.S. Cl. 358—337 **4 Claims**



1. An apparatus for generating a time code to be inserted into each frame of a first and a second signal recorded in frequency-divided time-multiplex form on a track, said first and second signals being divided respectively into respective frames of unequal, asynchronous lengths, comprising:

first detecting means for detecting frames of said first signal;

first counting means for counting a first number of said frames of said first signal and for incrementing a first time value and for resetting said first number after a count of a predetermined first number;

second detecting means for detecting frames of said second signal;

second counting means for counting a second number of said frames of said second signal and for incrementing a second time value; and

correlation means responsive to said resetting of said first counting means for incrementing said second time value and for resetting said second number at a count of said second counting means subsequent to said resetting of said first counting means.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,505

METHOD AND APPARATUS FOR RECORDING VIDEO AND AUDIO SIGNALS IN SUCCESSIVE TRACKS ON A RECORD MEDIUM

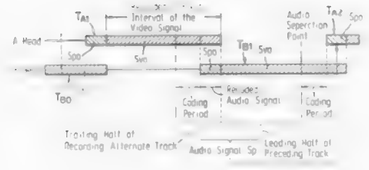
Kenji Nakano, Ebina, and Hisayoshi Moriwaki, Isehara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 904,832, Sep. 9, 1985, abandoned, which is a continuation of Ser. No. 767,676, Aug. 22, 1985, abandoned, which is a continuation of Ser. No. 444,522, Nov. 26, 1982, abandoned. This application Oct. 20, 1987, Ser. No. 111,107

Claims priority, application Japan, Nov. 30, 1981, 56-192139

Int. Cl.[4] H04N *5/78, 5/76*

U.S. Cl. 360—19.1 12 Claims



1. Apparatus for recording an information signal formed of a video signal and an audio signal in a plurality of successive tracks on a record medium, each track being divided into at least two sections, the apparatus comprising:

means for converting the audio signal into a coded digital audio signal;

means for time base compressing the digital audio signal; and

means for recording the compressed digital audio signal and said video signal in said plurality of tracks such that in each track one section has said compressed digital audio signal recorded therein and another section has the video signal recorded therein, characterized in that control means are provided so that one field of a selected video signal is recorded in one of said sections of each track, said one of said sections of each track being formed of a leading portion of one video field and a trailing portion of the same video field, and a portion of said compressed digital audio signal having a length in real time base equivalent to one video field interval of said video signal that is prior to the selected video signal on a real time base axis is recorded in another section of each track, said compressed digital audio signal corresponds to the video signal formed of a trailing portion of one video field and a leading portion of a next successive video field, and said recorded audio signal is separated from the recorded video signal portions to which it corresponds by a predetermined interval including a digital coding duration imparted by said means for converting, such that said compressed digital audio signal recorded in said another section of each track corresponds on a real time base axis to a prior video signal recorded in a trailing portion of the next but one preceding successive track and to a prior video signal recorded in a leading portion of the next preceding successive track.

4,766,506

PROCESSING CIRCUIT FOR TELEVISION SYNC SIGNALS PRODUCED FROM A RECORDING MEDIUM FOR PREFORMING A NON-INTERLACED DISPLAY

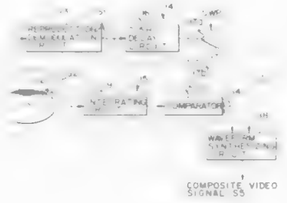
Motoi Yagi, Zushi; Tadao Miyabayashi, Tokyo; Yasuo Morikawa, Fujisawa, and Yasuhito Kobayashi, Kawasaki, all of Japan, assignors to Tokyo Electric Co., Ltd., Nakameguro and Fuji Photo Film Co., Ltd., Minami-ashigara, both of, Japan

Filed Dec. 30, 1985, Ser. No. 814,617

Claims priority, application Japan, Jan. 18, 1985, 60-7060

Int. Cl.[4] H04N *5/78, 5/04*

U.S. Cl. 360—37.1 13 Claims



1. A television synchronizing signal processing circuit, comprising:

a reproduction and demodulation circuit means for reproducing a video signal by repeatedly reading out a video signal for one field from a video signal recording medium upon which is stored a video signal of a plurality of fields in accordance with a one-half scanning system, and for generating said reproduced video signal and a synchronizing signal separated from said reproduced video signal;

a first delay means coupled to said reproduction and demodulation circuit means for delaying said reproduced video signal read out for every other field by one half of a period (H) of the horizontal synchronizing signal, said first delay means transmitting said reproduced video signal read out for the remaining field without any delay;

a second delay means coupled to said reproduction and demodulation circuit means for delaying a vertical synchronizing signal included in said separated synchronizing signal and having a variable delay time (TD) of $0<T-D<H/2$ within which a vertical synchronizing signal from said reproduction and demodulation circuit can be delayed; and

a waveform synthesizing circuit means for combining the outputs of said first and second delay means to produce a composite video signal used for performing substantially non-interlaced display.

4,766,507

ROTARY HEAD REPRODUCER WITH MEANS FOR DETECTING THE DIRECTION OF AUDIO RECORDING DURING SEARCHING

Motokazu Kashida, Tokyo; Masahiro Takei, Kanagawa; Kouji Takahashi, Kanagawa, and Kenichi Nagasawa, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1986, Ser. No. 823,053

Claims priority, application Japan, Jan. 28, 1985, 60-14074; Jan. 28, 1985, 60-14075

Int. Cl.[4] G11B *27/19, 15/467, 5/09*

U.S. Cl. 360—72.2 29 Claims

23. An audio signal reproducing apparatus for reproducing audio signals from a tape-shaped recording medium on which said audio signals are recorded together with mark signals respectively showing specific longitudinal positions of said audio signals along said medium, comprising:

(a) moving means for moving said medium in the longitudinal direction thereof;

(b) first reproducing means for reproducing said audio signals from said medium;

(c) second reproducing means for reproducing said mark signals from the medium;

(d) look-up means responsive to said second reproducing means for looking up one of said mark signals recorded on said medium;



(e) detection means for detecting the medium moving direction taken in recording said audio signals and producing a direction signal; and

(f) control means responsive to said look-up means for controlling the reproducing operation of said reproducing means on the basis of said direction signal produced by said detection means after completion of the look-up operation of said look-up means.

4,766,508

BURST INTEGRAL DETECTING EMBEDDED SERVO DISK TRACKING SYSTEM

Christopher W. Mathewson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1986, Ser. No. 914,703

Int. Cl.[4] G11B *5/596*

U.S. Cl. 360—77 9 Claims



6. A data storage system, comprising:

a floppy disk characterized by a magnetic media, said disk being divided into a plurality of sectors in which user data may be recorded, adjacent ones of said sectors being separated by sector interface regions, said disk being further characterized by a plurality of arcuate tracks extending through said sectors and interface regions;

a head positionable over a selected one of said disk tracks;

a plurality of odd tracking bursts prerecorded in a first position of each of said sector interface regions adjacent sides of said tracks, a plurality of odd and even tracking bursts prerecorded in a second portion of each of said interface regions adjacent opposite sides of said tracks, whereby said odd and even servo bursts are placed in serial succession along the length of each of said tracks;

means for rectifying the response of said head to said odd and even bursts;

means for peak detecting the output of said rectifying means so as to generate odd and even burst peaks in serial sequence;

means for producing the difference between the integral of said odd burst peaks and the integral of said even burst peaks;

means for changing the radial position of said head with respect to said selected track by an amount proportional to said difference, whereby said odd and even bursts are processed in a single channel comprising said peak detection means and said integration means, and whereby said difference is at least nearly independent of the waveform of said bursts and virtually unaffected by the radial position of said selected track;

wherein said difference producing means comprises an analog circuit, said analog circuit comprising:

an integrating capacitor;

means for connecting one side of said capacitor to the output of said peak detecting means during the occurrence of an odd burst and for connecting the opposite side of said capacitor to the output of said peak detecting means during the occurrence of an even one of said bursts;

means for resetting the voltage across said capacitor at a time prior to the occurrence of a pair of said odd and even bursts.

4,766,509

MAGNETIC HEAD ASSEMBLY

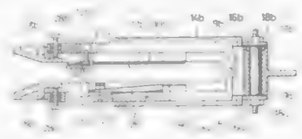
Yoshihiro Moribe, Chigasaki; Masataka Fujii, Minamisshigara; Akira Chuma, Odawara, and Hiroshi Tsuchiya, Ninomiya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 9, 1986, Ser. No. 917,052

Claims priority, application Japan, Oct. 14, 1985, 60-226711

Int. Cl.[4] G11B *5/55, 21/08*

U.S. Cl. 360—106 7 Claims



1. A magnetic head assembly for use with a magnetic disc in the recording and reproduction of information signals, the head assembly to be mounted for radial movement relative to the disc on guide means for defining a relatively fixed reference plane parallel to and spaced from the magnetic disc; said magnetic head assembly comprising:

a first magnetic head portion and a second magnetic head portion, each having a slider surface to be brought into contact with respective sides of the magnetic disc;

a carriage;

a first swing arm and a second swing arm supporting said first and second magnetic head portions, respectively;

a first elastic body and a second elastic body supporting said first and second swing arms, respectively on said carriage for movement of each of said swing arms toward and away from the other in a vertical direction relative to the magnetic disc;

stoppers disposed to limit a movable range of each of said swing arms in the vertical direction;

first and second spring means on said first and second swind arms respectively for biasing said first and second magnetic head portions generally vertically toward one another and in contact with each other to define a plane of contact between the sliders in the absence of an interposed magnetic disc and to establish a distance in the vertical

VOL 1093 ISS 4 AUG 23 1988 UMI

direction between said reference plane and said plane of contact; and

adjusting means for separately adjusting said biasing of at least one of said first and second spring means while holding the biasing of the other of said spring means fixed and for correspondingly adjusting said vertical distance between said plane of contact and said reference plane when said sliders contact one another in the absence of an interposed magentic disc.

4,766,510

CARRIAGE SHIFT ASSEMBLY FOR DISC DRIVING DEVICE

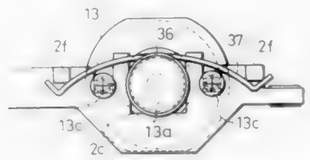
Masao Okita; Tadami Sagawara, and Hiroshi Yoshida, all of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed May 30, 1986, Ser. No. 869,035

Claims priority, application Japan, May 30, 1985, 60-79973[U]

Int. Cl.[4] G11B *5/55, 5/012*

U.S. Cl. 360—106 1 Claim



1. A carriage shift mechanism for a disk driving device having a chassis into which a disk cartridge containing a magnetic disk is inserted in a rearward longitudinal direction horizontally through a slot in a front side thereof into the chassis along an insertion path to a loading position on a turntable for rotating the disk, and a carriage supporting a magnetic head for movement in a radial direction of the magnetic disk to record and reproduce information therefrom, the carriage shift mechanism comprising:

a housing assembly plate (**2**) mounted in a horizontal plane toward a rear side of the chassis and having an upper surface on which fore and rear guide slots (**2***b*) are formed spaced apart and aligned in the longitudinal direction, and on which fore and rear bearing slots (**2***d*, **2***c*) are formed spaced apart and aligned in the longitudinal direction, the longitudinally aligned guide slots being arranged in parallel and spaced apart laterally from the longitudinally aligned bearing slots, said plate further having a motor mounting opening (**18**) formed adjacent the rear bearing slot and a pair of motor mounting slots (**2***e*) spaced on each side of the rear bearing slot (**2***c*);

a stepping motor (**13**) mounted in the motor mounting opening (**18**) of the housing assembly plate (**2**) provided with a screw shaft (**20**) extending axially in the longitudinal direction from a front side thereof terminating in a fore bearing end (**13***b*) and provided on a rear side thereof with a rear bearing end (**13***a*), the fore bearing end (**13***b*) being assembled in the fore bearing slot (**2***d*), the rear bearing end (**13***a*) being assembled in the rear slot (**2***c*), and a pair of motor fixing bolts (**13***c*) being assembled in the motor mounting slots (**2***e*) and fixed to the rear side of the stepping motor (**13**);

a guide rod (**21**) disposed longitudinally with its ends assembled in the fore and rear guide slots (**2***b*); and

a carriage (**12**) supporting a magnetic head mounted slidably longitudinally on the guide rod (**21**) and having an engaging piece (**23**) extending laterally therefrom which is meshingly engaged with the screw shaft (**20**) of the stepping motor so as to drive the carriage in longitudinal movement in response to rotation of the screw shaft by the stepping motor,

wherein the guide slots (**2***b*), bearing slots (**2***d*, **2***c*) and motor mounting slots (**2***e*) can be machined in the housing assembly plate (**2**) to precise depths relative to the horizontal plane thereof so that the guide rod, carriage, motor, and screw shaft can be assembled thereon to provide precise vertical height positioning of the carriage and magnetic head relative to the disk insertion path and the magnetic disk and eliminate the need for any vertical height adjustments thereof, and

wherein the rear bearing end (**13***a*) of the stepping motor is provided with a peripheral groove (**36**) which has a V-shaped cross-section, the groove being located outwardly of the rear bearing slot (**2***c*), and the housing assembly plate (**2**) having means (**2***f*) in conjunction with the rear bearing slot (**2***c*) for mounting a linear spring (**37**) pressed in the groove so that the stepping motor can be mounted accurately on the housing assembly plate.

4,766,511

ANTI-STATIC SURFACE FOR MAGNETIC TAPE CARTRIDGE

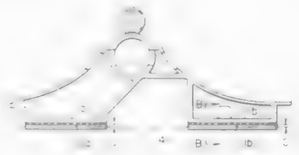
Takahito Miyoshi, and Masaaki Fujiyama, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 712,980, Mar. 18, 1985, abandoned. This application May 15, 1987, Ser. No. 53,504

Claims priority, application Japan, Mar. 30, 1984, 59-46330[U]

Int. Cl.[4] G11B *23/02*

U.S. Cl. 360—132 4 Claims



1. A magnetic tape cassette comprising a magnetic tape for recording data such as image signals and voice signals and a cassette case which houses said magnetic tape, said cassette case having a front face portion, said magnetic tape defining a tape path traveling across the front face portion of the cassette, said front face portion being substantially parallel to the tape path, and said cassette case having anti-static means for preventing static charge being generated by frictional contact between the tape and the cassette case; and anti-static means having a plurality of raised embossments bound by adhesive means to the front face portion of the cassette case in close proximity to the magnetic tape when the tape is in motion and spaced apart from the tape.

4,766,512

DEVICE FOR INSPECTING THE SURFACE OF MAGNETIC MEMORY DISKS

Michael Bogdanski, Salzkotten, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Dec. 19, 1985, Ser. No. 811,108

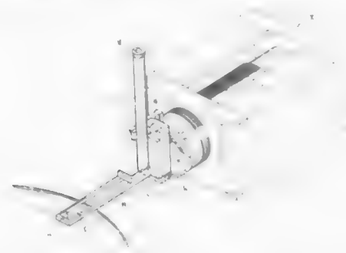
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1984, 3446991

Int. Cl.[4] G11B *5/012*

U.S. Cl. 360—137 5 Claims

1. A device for manually inspecting the surfaces of magnetic memory disks in a magnetic disk memory which contains a read/write head assigned to a selected one of the respective magnetic memory disks, said head held on a head arm and said head arm arranged on a head arm carrier which is movable parallel to the plane of the selected magnetic memory disk, said device including a plurality of memory disks having surfaces that may be damaged or impaired, means for transmitting an optical image of the surface of a selected disk along a path

which is parallel to the surface of said selected disk and parallel to a bracket, said path extending from an optical pickup on said bracket to a viewing apparatus which is angularly positioned relative to said bracket for permitting manual inspection to determine whether the selected disk surface is damaged or impaired, means for mounting said bracket on the head arm carrier in place of the head arm, said bracket extending substantially parallel to the plane of the selected magnetic memory disk, and said means for mounting said bracket on said head arm carrier including means for permitting movement of the bracket in the direction of the axis of the selected magnetic disk, and said bracket being movable such that the surfaces of a plurality of magnetic memory disks may be selectively inspected for damage or impairment without removing the disks from the disk memory.



4,766,513

HIGH VOLTAGE APPARATUS

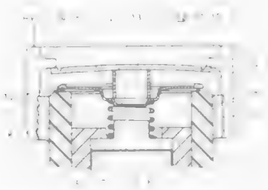
Bernardo Blass, Aarau, Switzerland, assignor to BBC Brown, Boveri AG, Switzerland

Filed Apr. 15, 1987, Ser. No. 38,617

Claims priority, application Switzerland, Apr. 22, 1986, 1627/86

Int. Cl.[4] H02H *9/04*

U.S. Cl. 361—117 12 Claims



1. A high-voltage apparatus, comprising:

a casing filled with insulating medium and at least one active part disposed in said casing;

a pressure-relief valve mounted to normally retain insulating medium within said casing, said pressure-relief valve including a cover mounted to an opening of said casing and at least one bending spring acting on the cover to bias said cover against said casing, said at least one bending spring being constituted of a beam which is supported at opposed ends thereof; and

at least one recess defined in the beam in the region where each beam is supported and forming a weakened region therein, said bending spring being electrically coupled to said at least one part and enabling current flow through said at least one active part to flow through said at least one bending spring whereby the rigidity of said at least one bending spring suddenly drops when the current flowing through said at least one active part exceeds a predetermined value.

4,766,514

PSEUDO-MOBIUS STATIC-RESISTANT CIRCUIT CONTAINER

Kevin L. Johnson, 3248 Northampton Ct., Pleasanton, Calif. [redacted]

Filed Nov. 6, 1986, Ser. No. 927,682

The portion of the term of this patent subsequent to Dec. 23, 2004, has been disclaimed.

Int. Cl.[4] H05F *1/02*

U.S. Cl. 361—220 3 Claims



1. A psuedo-mobius static-resistant circuit container to prevent the introduction of static electricity to electrical circuits housed therein and comprising: a pair of strips of non-conductive material each coated on one side with an electrical conductive material sandwiched together to form a container having two ends and having the electrical conductive surfaces on the outside thereof, the container being given a 180 degree twist and joined at the ends to form a psuedomobius strip.

4,766,515

ELECTROSTATIC HOLDER

Romain H. Bollen, St. Troud; Jozef E. Mariën, Boechout, and Valentin G. Winsels, Edegem, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Sep. 24, 1987, Ser. No. 100,420

Claims priority, application European Pat. Off., May 1, 1987, [redacted]

Int. Cl.[4] H01T *23/00*

U.S. Cl. 361—234 14 Claims



1. A supporting means capable of electrostatically holding or adhering thereto paper and developed silver halide emulsion films, wherein said means comprises in the following order:

(1) an electrically insulating member carrying the hereinafter mentioned elements (2) to (5),

(2) an electrically conductive member acting as electrode,

(3) a dielectric layer having a dielectric strength of at least 150 kV.cm and a thickness in the range of 10 to 1000 μm,

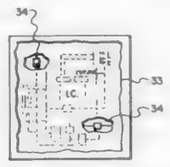
(4) an electrically conductive member acting as electrode and having the form of a grid or electrically interconnected conductor strips, and

(5) a covering layer having a surface resistivity of at least 10^9 ohm/square and a thickness of at most 100 μm, and

wherein said interconnected conductor strips are grounded and put at a direct current potential difference with respect to said electrode (2).

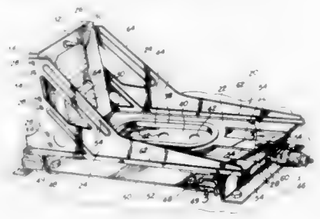
VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,516
METHOD AND APPARATUS FOR SECURING INTEGRATED CIRCUITS FROM UNAUTHORIZED COPYING AND USE
Falk S. Ozdemir, Thousand Oaks; Robert L. Seliger, Agoura, and Gerald B. Rosenberg, San Mateo, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Sep. 24, 1987, Ser. No. 101,529
Int. Cl.[4] H02B *1/00*; H01L *19/00, 21/00*
U.S. Cl. 361—380 65 Claims



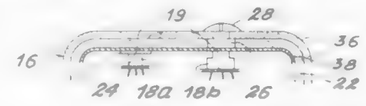
1. A secure electrical circuit system, comprising:
at least one integrated circuit (IC) designed to perform a desired circuit function, the IC including circuit elements interconnected to perform said circuit function;
at least one additional circuit element in the IC which does not contribute towards said circuit function, said additional element being connected with the remainder of the IC circuitry to inhibit the proper functioning thereof in case of an attempted unauthorized use or copying of the system, and
means for disguising the identity of said additional circuit elements.

4,766,517
AVIONIC TRAY OF DECREASED WEIGHT
Robert H. Abell, 7415 Crescent Ave., Buena Park, Calif. 90620
Filed Apr. 28, 1987, Ser. No. 43,507
Int. Cl.[4] H05K *7/20*
U.S. Cl. 361—383 21 Claims



1. A generally elongated avionic tray adapted to be substituted for a prior art avionic tray formed of sheet aluminum with a predetermined thickness, the tray arranged to be mounted on a pair of cross-channels provided in an aircraft, said tray has means for holding a box containing electronic instruments, a bottom section of the avionic tray holding a gasket and an air flow metering plate and forming a portion of an upper boundary of an air plenum into which air is drawn, the avionic tray comprising:
a botton section of unitary construction from aluminum alloy sheet having a thickness less than said predetermined thickness and having a plurality of corrugations in the aluminum alloy sheet, each corrugation comprising a portion of the sheet wherein the material of the sheet on one side of the corrugation is offset relative to the material on the other side, said corrugations offsetting the material of the sheet less than the thickness of the sheet, said bottom section portion of said sheet and said corrugations combined thickness being about the same thickness as said predetermined thickness and
a pair of side rails of unitary construction with the bottom section, each one of the side rails being formed of aluminum alloy sheet having a thickness less than said predetermined thickness and having at least one corrugation in the sheet, at least one corrugation comprising a portion of the sheet wherein the material of the sheet on one side is offset relative to the material on the other side, said corrugation offsetting the material of the sheet less than the thickness of the sheet, said side rail portion of said sheet and said corrugations combined thickness being about the same thickness as said predetermined thickness, the said rails extending upwardly at lateral edges of the botton section.

4,766,518
BOX FOR THE THERMAL STABILIZATION OF EQUIPMENT, SUCH AS ELECTRONIC COMPONENTS CONTAINED THEREIN
Didier Pedelaborde-Augas; Philippe Pillois, and Yves Valy, all of Saint Medard en Jalles, France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France
Filed Apr. 20, 1987, Ser. No. 40,311
Claims priority, application France, Apr. 21, 1986, 86 05713
Int. Cl.[4] H05K *7/20*
U.S. Cl. 361—389 14 Claims



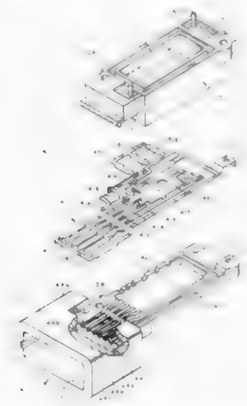
1. A box for equipment, such as electronic components constituting heat sources distributed within said box, said box having a rigid mechanical structure of a thermally insulating material carrying passive heat draining members made from a thermally conductive material, said members being arranged in such a way that each heat source is in contact with one of said members, wherein the heat transfer members comprise at least one implant mounted on the inner face of the rigid mechanical structure.

4,766,519
HOUSING, PARTICULARLY FOR HAND HELD DEVICES
Bernd Heiland, Hermann-Löns-Strasse 11, 4410 Warendorf, Fed. Rep. of Germany
Filed Dec. 4, 1986, Ser. No. 937,979
Int. Cl.[4] H05K *1/02*
U.S. Cl. 361—399 3 Claims



1. In a housing for an electronic circuit having parts which fit together and interlock, the improvement which comprises providing only two single-piece housing parts, each housing part being substantially U-shaped in cross-section and having a single end cover that covers the total cross-section of the closed housing, the opposing interfacing surfaces of the longitudinal edges of the housing being profiled in the longitudinal direction which enables said housing parts to be fitted together in the transverse direction to the longitudinal axis of the housing and at the same time serving as guiding rails to allow said housing parts to slide against in the longitudinal direction of the housing, wherein one of the housing parts has at least one protruding locking knob on each of its longitudinal edges and the other housing part has a plurality of locking notches along each of its longitudinal edges, said notches being equally spaced along the full length of the housing at appropriate distances to enable the two housing parts to interlock in the longitudinal direction of the housing, and wherein said housing parts fit together so as to provide spaces along the inside of their longitudinal edges which form elongated gaps in the longitudinal direction of the housing that support a printed circuit board.

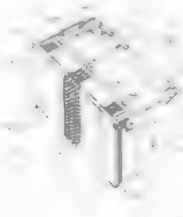
4,766,520
INJECTION MOLDED CIRCUIT HOUSING
Duane Huber, Bartlett, and James P. Liautaud, Cary, both of Ill., assignors to Capsonic Group, Inc., Elgin, Ill.
Filed Dec. 5, 1986, Ser. No. 938,416
Int. Cl.[4] H05K *1/02*
U.S. Cl. 361—421 8 Claims



1. An automotive ignition module comprising:
a pre-mold base member including a series of channels therein;
a lead frame including a plurality of electrically conductive internal segments and outwardly projecting contacts mounted on said pre-mold base member with at least some of said segments confined within said channels;
an overmold encapsulating at least a portion of said pre-mold base member and locking said lead frame in said channels;
top and bottom cover members enclosing said pre-mold base member and said overmold; and
circuit means carried by at least one of said cover members and electrically connected to said internal segments of said lead frame.

4,766,521
CONNECTING BLOCKS FOR TELEPHONE SYSTEMS
Claude Pelletier, Laval, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed May 22, 1987, Ser. No. 52,925
Int. Cl.[4] H01R *9/24*
U.S. Cl. 361—426 6 Claims

1. A connector block comprising:
a housing having a rear and sides extending forwardly from the rear to enclose a chamber;
a terminal support member pivotally carried at two spaced pivotal locations at upper portions of the sides of the housing forwardly of the rear, the support member being pivotally locatable alternatively in a use position and a position withdrawn from the use position, the support member in the use position depending from its pivotal locations and lying between the housing sides to close the front of the chamber with the support member extending to upper, lower and side boundaries of the housing, and the support member in the withdrawn position extending upwardly from the pivotal locations;
the terminal support member having two generally rectangular faces and sides extending between the faces, one of the faces being a front face and the other face a rear face in the use position of the support member and one of the sides facing upwardly and another downwardly in said use position;
the side which faces upwardly in the use position, formed with a row of laterally spaced apart conductor wire guide projections which lie at the upper boundary of the housing with the support member in the use position, extend forwardly of the front face and define wire guide spaces which face downwardly across the front face;
a cover for the support member, the cover hingedly connected to the support member at two hinge positions of the support member which are disposed at lower corner regions of the front face in the use position;
the cover and the support member having cooperable flexible retaining means to retain the cover in a position covering the front face of the support member, said retaining means formed partly at the ends of the upwardly facing side, and also partly at two corner regions of the cover;
the support member formed with terminal holding locations extending through the support member from face-to-face with some fo the terminal holding locations extending along a lower edge region of the front face between the hinge positions at the lower corner regions and other terminal holding locations extending along an upper edge region of the front face between the upper corner regions of the front face;
a latching arrangement for detachably connecting the support member to the housing when the support member is in the use position, the latching arrangement provided partly upon the downwardly facing side of the support member and partly upon the housing; and
said corner regions of the cover and upper regions of the housing sides having cooperable locking means to detachably hold said corner regions of the cover and stabilize the support member when the support member is in its withdrawn position with the cover pivotally moved out of its covering position on the support member.



4,766,522
ELECTROCHEMICAL CAPACITOR
John McHardy, Westlake Village; Frank A. Ludwig, Rancho Palos Verdes; Lin R. Higley, Costa Mesa; Andrew Kindler, San Marino, and Carl W. Townsend, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 15, 1987, Ser. No. 73,673
Int. Cl.[4] H01G *9/00*
U.S. Cl. 361—433 25 Claims

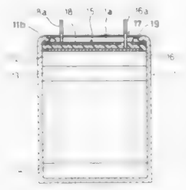
1. An electrochemical capacitor device adapted to provide rapid charging and discharging times ranging from a few milliseconds to a few seconds, said capacitor device comprising at least one electrochemical cell comprising two electrodes

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having opposed non-insulated surfaces and an electrolyte therebetween, wherein said electrodes and electrolyte are capable of rapid redox kinetics and wherein said electrodes are spaced apart by no more than about 0.002 inch (5.08×10^{-3} cm) to there-by provide charging and discharging times ranging from a few milliseconds to a few seconds.



4,766,523
ELECTRIC DOUBLE LAYER CAPACITOR
Yoshinori Mori, Takefu, Japan, assignor to Murata Manufacturing Co., Ltd., Japan
Filed May 11, 1987, Ser. No. 48,220
Claims priority, application Japan, May 27, 1986, 61-80377
Int. Cl.[4] H01G *9/00*
U.S. Cl. 361—433 13 Claims



1. A sealed electric double layer capacitor comprising:
a metal case having an opening at least in a first end thereof;
a plurality of electric double layer capacitor elements stacked and received in said metal case; and
a terminal board inserted in said first end of said metal case in said opening to enclose said capacitor elements,
said metal case having a crimped end portion surrounding said opening which projects radially inwardly and toward said terminal board, thereby holding said electric double layer capacitor elements and said terminal board in said metal case, and defining a clearance between said crimped end portion and said terminal board,
said terminal board having conductive terminal means on at least one surface thereof for connecting said capacitor elements to external circuits, wherein said conductive terminal means conductively contacts said crimped end portion of said metal case:
said sealed electric double layer capacitor further comprising a resin member disposed for sealing at least a portion of said clearance between said crimped end portion of said metal case and said terminal board.

4,766,524
BACK LIGHT DEVICE FOR UNIFORMLY ILLUMINATING A LIQUID CRYSTAL DISPLAY PLATE
Soichiro Ogawa, Tokyo; Toshihiko Sano, and Takao Shimizu, both of Ome, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Feb. 9, 1987, Ser. No. 12,172
Claims priority, application Japan, Feb. 7, 1986, 61-23773; Nov. 17, 1986, 61-271694
Int. Cl.[4] G01D *11/28*
U.S. Cl. 362—29 8 Claims



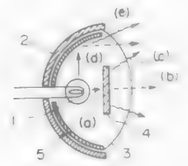
1. A back light device for liquid crystal display comprising:
a liquid crystal display plate having a substantially rectangular shape,
a light source for illuminating the liquid crystal display plate and comprising a fluorescent lamp in the form of a tube and two base terminal sections, one connected to each end of the fluorescent tube, said two base terminal sections being located at one side beyond the periphery of the liquid crystal display plate,
a diffusion plate interposed between the liquid crystal display plate and the fluorescent lamp, and
a reflector for reflecting light radiated from the fluorescent lamp toward the diffusion plate.

4,766,525
LADDER BEACON
Bernard M. Loughlin, P.O. Box 385, Sayville, N.Y. 11782
Continuation of Ser. No. 870,403, Jun. 4, 1986. This application Dec. 16, 1987, Ser. No. 133,731
Int. Cl.[4] F21L *7/00;* E06C *5/34*
U.S. Cl. 362—183 6 Claims



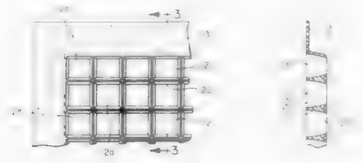
1. A heat resistant, impact resistant, and water resistant ladder beacon for use on a ladder, comprising, a high impact waterproof case having a top, a bottom, and four sides, means for attachment of said ladder beacon to the rung of a ladder, a strobe light means adapted to fit said high impact case, electronic means for activating and deactivating said strobe light means, with said electronic means further comprising a rechargeable power source means for providing a flash of lumens for a predetermined period of time at a predetermined strobe rate, a tilt switch means, and a low voltage indicator means having an indicator light positioned oppositely from said strobe light means and having a receptacle for a battery replacement, said tilt switch means being arranged to activate said strobe light means when said ladder is in a vertical position and to deactivate said strobe light means when said ladder is in a horizontal position, said electronic means being encapsulated in a potting compound to afford protection to said electronic [illegible]

4,766,526
LIGHT SOURCE
Kiyoshi Morimoto, and Hitoshi Toki, both of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan
Filed Jul. 7, 1986, Ser. No. 882,402
Claims priority, application Japan, Jul. 15, 1985, 60-156290
Int. Cl.[4] F21M *3/14;* F21V *7/00*
U.S. Cl. 362—255 9 Claims



1. A light source comprising:
a lamp;
a lamp holder means for receiving said lamp therein and reflecting light produced from said lamp;
a cover glass for said lamp; and
a filter containing phosphor layer for emitting light of visible region to be excited by said lamp, said filter being arranged to adjacent to said lamp,
wherein said filter allows light to pass in the range of 500–700 nm.

4,766,527
FLANGED LOUVER CONSTRUCTION
Walter Glass, Northfield, Ill., assignor to American Louver Company, Skokie, Ill.
Filed Apr. 14, 1987, Ser. No. 38,623
Int. Cl.[4] F21V *11/06*
U.S. Cl. 362—354 12 Claims



1. A louver for a light box, or the like, comprising:
(a) a rectangular grid of cubes including a plurality of internal cubes and a row of perimeter cubes forming a border around said internal cubes;
(b) all of said internal cubes being square in external plan configuration and having first predetermined identical lengths and widths;
(c) at least some of said border row of cubes being other than square in plan configuration and having second predetermined lengths and widths which differ from said first predetermined lengths and widths; and
(d) a flange formed unitarily with and around the periphery of said border row of cubes and protruding outwardly therefrom;
(e) said grid and said flange being molded in one piece.

4,766,528
SWITCHED-MODE POWER SUPPLY HAVING A STANDBY STATE
Antonius A. M. Marinus, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Continuation of Ser. No. 890,592, Jul. 30, 1986. This application Mar. 10, 1987, Ser. No. 24,275
Claims priority, application Netherlands, Aug. 26, 1985, [illegible]
The portion of the term of this patent subsequent to Aug. 18, 2004, has been disclaimed.
Int. Cl.[4] H02M *3/335*
U.S. Cl. 363—21 6 Claims



1. A self-oscillating power supply circuit having an operating state and a stand-by state comprising: a pair of terminals for connection to a source of DC voltage, a transformer having a primary winding and at least first and second secondary windings, a first controllable switch connected in series arrangement with the primary winding of the transformer, means coupling said series arrangement to said pair of terminals, said first and second secondary windings supplying first and second DC output voltages, respectively, in the operating state of the power supply circuit, a second controllable switch for controlling the power supply circuit into the stand-by state wherein the first secondary winding supplies a lower value of the first DC output voltage than in the operating state, a third controllable switch coupled to the second secondary winding and controlled by the second switch so that in the stand-by state the second secondary winding maintains the second output voltage at approximately the same value as in the operating state, a comparison stage for comparing an output voltage with a reference voltage and for generating a control signal for controlling the duration of periodically occurring drive pulses applied to the first switch, and a duration-determining circuit controlled by the second switch in the stand-by state so as to maintain a burst oscillation mode in which the first switch conducts a number of consecutive times and subsequently is non-conductive for a given time period and with an oscillation frequency much lower than the repetition frequency of said drive pulses.

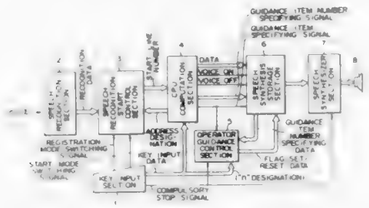
VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,529

OPERATOR GUIDANCE BY COMPUTER VOICE SYNTHESIZER

Harumi Nakano, Oome; Yoshihito Shimura, Kokubunji; Masaaki Fukumura, Iruma, and Nobuaki Kuwabara, Hamura, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 489,157, Apr. 27, 1983, Pat. No. 4,677,569.
This application Feb. 25, 1987, Ser. No. 18,708
Claims priority, application Japan, May 11, 1982, 57-77467
Int. Cl.[4] G10L *5/00*
U.S. Cl. 364—513.5 8 Claims



1. An electronic apparatus with a voice control function, comprising:

guidance memory means for storing guidance data corresponding to a plurality of items, based on which a voice operator guidance is produced;

voice synthesis means for reading out said guidance data from said guidance memory means and for producing a voice signal corresponding to said read out guidance data;

voice guidance stop means for forcibly stopping an ongoing voice operator guidance, said voice operator guidance stop means being driven by a key-in signal of a given key provided on a key input device;

flag memory means for storing a flag for controlling the ON and OFF states of the voice operator guidance produced based on said guidance data stored in said guidance memory means, said flag memory means having flag areas corresponding to said guidance data corresponding to said plurality of items;

wherein when ongoing voice operator guidance corresponding to any one of said plurality of items is forcibly stopped by said voice guidance stop means, said flag setting means sets a stop flag in a flag area corresponding to said any one item, whereby voice operator guidance corresponding to said any one item is prohibited during a next processing corresponding to said any one item.

4,766,530

TOKEN PASSING SCHEME FOR A PREDETERMINED CONFIGURATION LOCAL AREA NETWORK

Charles J. Roslund, Penn Hills Twp., Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1986, Ser. No. 934,386
Int. Cl.[4] G06F *1/00*; H04Q *3/00*; H04J *3/02*
U.S. Cl. 364—200 14 Claims

1. A token passing method for a communications network carrying a message, including a token value, said method comprising the steps of:

a. accessing a token ring list using the token value as an index when the message is received over the network;

b. transmitting a new message over the network including an updated token value if an entry in the token ring list corresponding to the token value is equal to a predetermined value; and



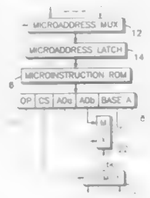
c. awaiting another message if the entry is not equal to the predetermined value.

4,766,531

METHOD AND APPARATUS FOR GENERATING THE NEXT MICROADDRESS FOR A MICROMACHINE

Clayton D. Huntsman, Brandon, Fla., and Duane W. Cawthron, Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 14, 1986, Ser. No. 852,008
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—200 6 Claims



4. Apparatus for generating the next microaddress of a micromachine comprising:

first means for latching a current microinstruction comprising:

a primary base microaddress in a first field;

a first primary microaddress qualifier in a second field;

a second primary microaddress qualifier in a third field;

a condition selector value in a fourth field;

second means for selecting a primary one of a plurality of current conditions in response to the condition selector value in said fourth field;

third means for selecting one of the first and second primary microaddress qualifiers in response to said selected one of said primary current conditions; and

fourth means for combining the selected primary microaddress qualifier and the primary base microaddress to form a composite primary microaddress comprising said primary base microaddress and said selected primary microaddress qualifier;

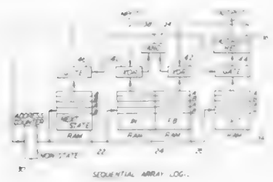
wherein the composite primary microaddress comprises the next microaddress of the micromachine.

4,766,532

SEQUENTIAL ARRAY LOGIC

Kenneth A. Pearson, Kingston, and Larry R. Zacker, Saugerties, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1985, Ser. No. 728,719
Int. Cl.[4] G06F *12/00*
U.S. Cl. 364—200 7 Claims



1. A programmable sequential logic array for performing logical operations within a memory array, comprising:

an input storage array having addressable locations for storing input control words;

input compare means for receiving a plurality of input signals and a plurality of input control words from said input storage array and producing signals indicating the relationship between conditions of said input signals and conditions represented by said input control words;

output means for providing binary output signals representative of the logic function performed by such programmable sequential logic array;

an output storage array having addressable locations for storing output control words for controlling a state of said output means;

a next state array for identifying a next address from one of a plurality of fields within said next state array;

a feedback storage array having addressable locations for storing control words for comparison with said binary output signals;

address generation means for receiving address signals from said next state array and for applying said address signals to address circuits of said input storage array, said output storage array, said feedback storage array, and said next state array; and

control means connected between said input means, said output means, said feedback storage array and said next state array and responsive to said input signals, said output signals and said control words stored in said input storage array and said feedback storage array to enable said output means to respond to selected output control words.

4,766,533

NANOSEQUENCER DIGITAL LOGIC CONTROLLER

Charles R. Lahmeyer, Temple City, Calif., assignor to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 587,749, Mar. 9, 1984, abandoned. This application Jan. 5, 1987, Ser. No. 4,282
Int. Cl.[4] G06F *9/26*
U.S. Cl. 364—200 13 Claims

1. A logic controller receiving a plurality of status line inputs with status states thereof defining conditional instructions to the logic controller and having a single memory access time to access an instruction having a fixed duration instruction execution time, said controller comprising:

a memory means having a plurality of address lines for storing a plurality of instructions and providing a plurality of first output lines, said memory having segments associated with the status of the plurality of status line inputs and having stored therein a plurality of instructions for application to said first output lines with each instruction including separate bit sequences for controlling logic control, status select, and next address lines;

register means connected to and supplied by said plurality of first output lines for receiving an instruction from said memory means and providing said instruction on a second plurality of output lines, said second plurality of output lines including logic control, status select, and next address lines for respectively emitting said bit sequences received from said memory means thereat;

means connecting said next address lines of said second plurality of output lines from said register means to said plurality of address lines of said memory means;



status control selection means connected to receive said plurality of status line inputs and connected to and controlled by said status select lines of said second plurality of output lines for selecting, once each instruction execution time, one status line input from among said plurality of status line inputs based upon the bit sequence emitted by said register means at said status select lines; and

memory enabling means connected between said memory means and said status control selection means and responsive to the status of said selected status line input for enabling the corresponding segment of said memory means based upon said status and said next address signal from said register means to thereby select the next instruction to be accessed from said memory means.

4,766,534

PARALLEL PROCESSING NETWORK AND METHOD

Erik P. DeBenedictis, Highlands, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 16, 1986, Ser. No. 919,808
Int. Cl.[4] G06F *9/00, 9/06*
U.S. Cl. 364—200 8 Claims



1. A parallel processing system including a plurality of processing nodes interconnected in a prescribed manner for passing messages directly between the processing nodes and message passing protocol apparatus at each node for sending and receiving said messages, said messages containing information identifying a protocol type to which a message belongs, said protocol type identifying rules for processing the message, an identification of a task being processed using the protocol type and data, said protocol apparatus comprising:

VOL 1093 ISS 4 AG 23 1988 UMI

input means for receiving a message from a first node connected to the input means and including means for signaling to the first node that the input means is empty,

output means for sending a message to the input means of a second connected node only when the input means at the second node signals that it is empty,

a protocol processor for independently performing protocol input functions and output functions on messages received and to be transmitted, respectively, according to the protocol type identified in the message; and

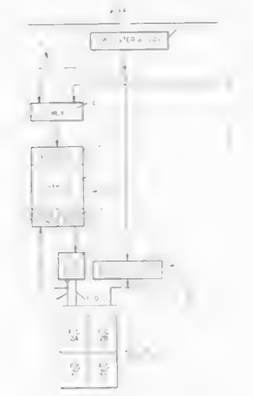
a memory accessible by the protocol processor for storing state information individually pertaining to each task being processed and containing protocol status information for controlling the operations of the input and output functions pertaining to each task, said input and output functions operating to change the state information.

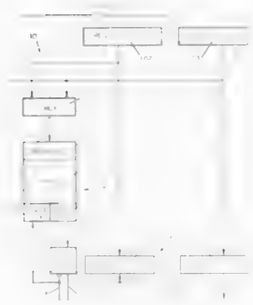
4,766,535

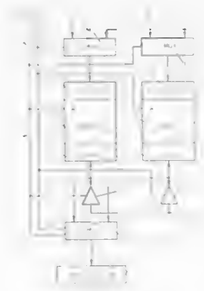
HIGH-PERFORMANCE MULTIPLE PORT MEMORY

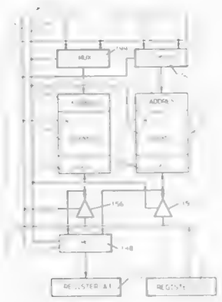
Daniel J. Auerbach; Tien C. Chen, and Wolfgang J. Paul, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1985, Ser. No. 811,624
Int. Cl.[4] G06F *12/00, 13/00, 13/38*
U.S. Cl. 364—200 **6 Claims**









1. A memory apparatus, responsive to first, second and third addresses supplied within an instruction cycle from respective address registers, for supplying data read from the first and second addresses to output registers and for writing data received from an input register to the third address, comprising:

a first group of two memory banks, responsive at a predetermined time in the instruction cycle to the first address and the third address, for supplying data read from the first address in one of the two banks of said first group and for writing data received to the third address in the other bank of said first group;

a second group of two memory banks, responsive to the second address and the third address at said predetermined time, for supplying data read from the second address in one of the two banks of said second group and for writing data received to the third address in the other bank of the two banks of said second group; and

pointer means for each group for controlling the two banks of each group so that the one of the two banks in one of said groups then containing valid data is read while data is written to the other bank of the same group in each cycle, valid data being the latest data written, as denoted by what had been stored in said pointer means.

4,766,536

COMPUTER BUS APPARATUS WITH DISTRIBUTED ARBITRATION

James A. Wilson, Jr., Sunnyvale, and David H. Bernstein, Los Altos, both of Calif., assignors to Rational, Santa Clara, Calif.

Continuation of Ser. No. 602,154, Apr. 19, 1984, abandoned. This application Feb. 17, 1987, Ser. No. 15,114
Int. Cl.[4] G06F *13/26*
U.S. Cl. 364—200 **2 Claims**

1. A bus apparatus for interconnecting a plurality of nodes comprising:

a first plurality of bus lines coupled to said nodes;

a second plurality of bus lines coupled to said nodes; each of said nodes including;

transceiver means for both transmitting onto and receiving from said first bus lines, first signals representative of data and said second bus lines, second signals representative of status;

delay means for delay readying of untransmitted ones of said data signals until it has transmitted signals responsive to received ones of said data signals;

priority storage means for storing signals representative of said nodes priority for access to said first and second bus lines, each of said nodes having a unique priority number stored in said priority storage means;

adapter circuit means for coupling at least one of said nodes with an input/output bus, said adapter circuit means includes:

a. an adapter buffer memory;

b. selector means for selectively coupling said buffer memory to said input/output bus on said bus lines;

c. a buffer state memory for storing signals representative of the state of said buffer memory;

d. hunting means for examining the contents of said buffer state memory to identify locations in said buffer memory which are able to receive data from said input/output bus and from said first and second bus lines;

e. addressing means coupled to said hunting means and said buffer memory for addressing locations in said buffer memory identified by said hunting means;

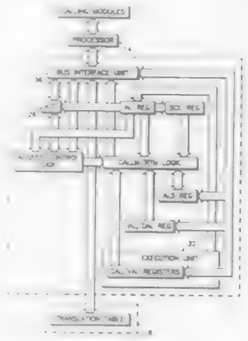
interface circuit means for coupling between at least one of said nodes and said bus lines, said interface circuit means includes:

4,766,537

PAGED MEMORY MANAGEMENT UNIT HAVING STACK CHANGE CONTROL REGISTER

John Zolnowsky, Milpitas, Calif., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 2, 1986, Ser. No. 815,600
Int. Cl.[4] G06F *12/14*
U.S. Cl. 364—200 **11 Claims**



1. In a paged memory management unit (PMMU) which cooperates with a processor to provide access by a calling module to called module, each of said modules having a selected one of a plurality of access levels and being allocated a new stack area by the processor in response to the processor receiving a change stack signal, the improvement comprising:

storage means for selectively storing a stack change indicator for each of said access levels, each of said indicators being selectively set in response to a respective signal from said processor; and

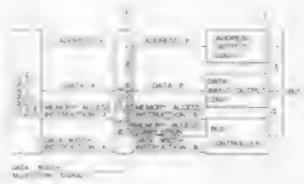
control means, responsive to said storage means, for providing said change stack signal to said processor if any stack change indicator in said storage means corresponding to an access level between the access level of the calling module and the access level of the called module, including the access level of the called module, is set.

4,766,538

MICROPROCESSOR HAVING VARIABLE DATA WIDTH

Akio Miyoshi, Oume, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Dec. 10, 1985, Ser. No. 807,224
Claims priority, application Japan, Dec. 11, 1984, 59-261377
Int. Cl.[4] G06F *13/00*
U.S. Cl. 364—200 **5 Claims**



1. A microprocessor having a variable data width comprising:

a command execution unit which executes a plurality of commands;

an address output logic which outputs memory addresses to an address bus;



a. an interface buffer memory for providing temporary storage of data being transferred between said one node and said bus lines, said buffer memory including a plurality of sections each of which is dedicated to receive data from a certain one of said nodes and to transmit data to a certain one of said nodes;

arbitration means coupled to said first and second lines, said transceiver means and said storage means, said arbitration means includes:

a. means for sending said priority number on said first lines when said node is ready to transmit said data signals;

b. means for sending said priority number on said second lines when said node is ready to transmit said status signals;

c. means for receiving priority numbers from said first and second lines from said nodes and comparing them with said node's priority number;

d. means for causing said node to transmit said data or status signals on said first and second lines if said node has the highest priority and has sent its priority number on one of said first and second lines;

e. means for updating said priority number by lowering said priority number if said node has transmitted data signals;

whereby separate fair accessing said nodes to said first and second lines is maintained.

VOL 1093 ISS 4 AG 23 1988 UMI

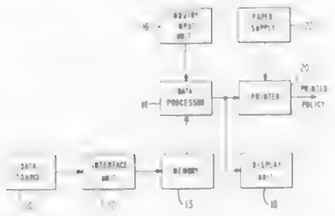
a data input/output logic which exchanges instructions and data between said command execution unit and a data bus;
a bus controller which outputs control signals from said command execution unit to a control bus; and
a bus cycle changeover circuit which is connected between said command execution unit and each of said address output logic, said data input/output logic, and said bus controller, said bus cycle changeover circuit comprising:
a cycle control circuit which outputs data width instructions for the bus controller at an appropriate timing for a selected data width according to an externally supplied data width selection signal, a memory access instruction for the bus controller depending on the data width, and a signal expressing a latter half access cycle,
an upper/lower selection circuit which selects an upper part or a lower part of the data bus according to the signal expressing the latter half access cycle from the cycle control circuit,
a data bus changeover circuit which receives, modifies and transmits data at said timing through said data input/output logic according to the output of said upper/lower selection circuit,
an address adder circuit which adds address values according to said signal expressing the latter half access cycle, and
a shift circuit which shifts the address outputted from the address adder circuit at said timing according to said data width selection signal to supply it to the bus through the data input/output logic.

4,766,539

METHOD OF DETERMINING THE PREMIUM FOR AND WRITING A POLICY INSURING AGAINST SPECIFIED WEATHER CONDITIONS

Henry L. Fox, 555 N. Broadway, Jericho, N.Y. 11753

Continuation of Ser. No. 709,877, Mar. 8, 1985, abandoned. This application Jul. 15, 1987, Ser. No. 73,866
Int. Cl.[4] G06F *15/21*
U.S. Cl. 364—401 27 Claims



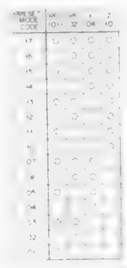
1. A method, with the aid of a digital computer system including a printer, of preparing a policy insuring a customer in a specified amount against a specified weather condition occurring in a given location during a given time period, said method comprising the steps of:
(a) acquiring from the customer identification of the customer, the specified amount, the specified weather condition, the given location, and the given time period;
(b) applying the acquired identifications to the digital computer;
(c) acquiring data containing information about certain weather conditions, including the specified weather condition, in the given location during predetermined time intervals in available ones of a predetermined number of years previous to the given time period, each of the predetermined time intervals encompassing a time period corresponding with the given time period;
(d) storing the acquired data in the digital computer;
(e) actuating the digital computer to determine the number of occurrences of the specified weather condition in the given location during the predetermined time intervals and to calculate the premium for the policy based upon the specified amount, the number of occurrences of the specified weather condition in the given location, the number of predetermined time intervals, and a factor covering overhead expense and profit; and
(f) actuating the printer to print the policy at the calculated premium.

4,766,540

ELECTRONIC CASH REGISTER WITH PROGRAMMABLE MODE/FUNCTION KEY SETTINGS

Yutaka Mizuno, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,303
Claims priority, application Japan, Oct. 13, 1981, 56-163936
Int. Cl.[4] G06F *15/21*
U.S. Cl. 364—405 3 Claims



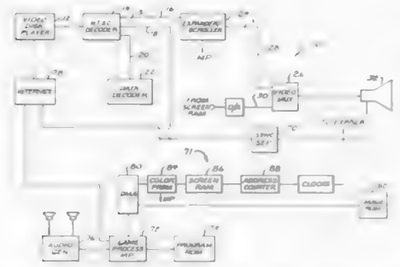
1. An electronic cash register with programmable mode/function key settings, comprising:
a keyboard with a plurality of function keys;
a central processing unit coupled to said keyboard;
mode switching means, connected to said central processing unit, for selecting a desired one of a plurality of different mode position data; and
memory means, connected to said central processing unit, for storing preset mode data at address locations each corresponding to a different one of said function keys for indicating whether a key-in operation by one of said plurality of function keys is a valid operation or an invalid operation in accordance with the operated one of said plurality of function keys,
wherein said central processing unit includes means for (1) reading out mode data preset in said memory means at an address location corresponding to the operated one of said plurality of function keys, (2) accessing the selected mode position data from said mode switching means, (3) comparing the preset mode data read out from said memory means with the selected mode position data, and (4) determining from a comparing result whether said operated one of said plurality of function keys is a valid key or an invalid key in the mode corresponding to said selected one of said plurality of mode position data,
and said central processing unit includes means for prohibiting said operated one of said plurality of function keys from initiating further operations when said selected one of said plurality of function keys is determined to be an invalid key.

4,766,541

APPARATUS FOR GENERATING INTERACTIVE VIDEO GAME PLAYFIELD ENVIRONMENTS

Charles R. Bleich, Palatine; Walter E. Smolucha, Melrose Park; Gregory W. Wepner, Clarendon Hills; Kenneth F. Lantz, and Scott C. Herschler, both of Chicago, all of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Continuation of Ser. No. 664,239, Oct. 24, 1984, abandoned.
This application May 22, 1987, Ser. No. 54,094
Int. Cl.[4] G06F *15/44, 3/14;* A63F *9/22*
U.S. Cl. 364—410 2 Claims



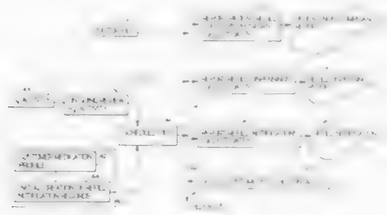
1. In a video game having a color game display monitor; permanent memory means for the storage of color game symbols; a first source of picture information comprising a temporary screen memory means, including game symbols, to be displayed on the monitor; a game processor adapted to control game play and to transfer game symbols from the permanent memory means to the screen memory means and to reposition symbols therein; color translator means programmable by the game processor, said translator means operatively connected to the permanent and screen memory means whereby one or more of the colors of the game symbols retained in the memory means may altered by the translator as the symbol is written to the screen memory means.

4,766,542

SYSTEM AND SOFTWARE FOR PHARMACEUTICAL PRESCRIPTION COMPLIANCE

Richard R. Pilarczyk, Aurora, Ohio, assignor to General Computer Corporation, Twinsburg, Ohio

Filed Nov. 7, 1986, Ser. No. 928,850
Int. Cl.[4] G06F *15/24, 15/42*
U.S. Cl. 364—413 15 Claims



7. A method for automatically contacting customers of a pharmacist to remind them of the need to have a prescription refilled, said method comprising the steps of
receiving information concerning each customer's name, phone number, the medication prescribed, the schedule prescribed for taking the medication, the number of doses to be dispensed and the number of refills prescribed and dispensed,
computing from the information received a refull due date corresponding to the day on which each prescription will require refilling,
storing at least a portion of the information received together with the associated refill due date in chronological order,
using a computer receiving the stored information and refill due date to detect prescriptions requiring refill, and
using automatic telephone dialing means for automatically dialing the telephone number of a customer whose prescription requires refilling for communicating the information that the prescription requires refilling to the customer.

4,766,543

WELL LOGGING DIRECT MEMORY ACCESS SYSTEM AND METHOD

Mathew G. Schmidt, Houston, Tex., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Apr. 22, 1985, Ser. No. 725,603
Int. Cl.[4] G01V *5/10*
U.S. Cl. 364—422 23 Claims



1. Apparatus for subsurface acquisition of nuclear well logging data, comprising:
detector means for generating a series of electrical indications corresponding to a series of discrete nuclear events;
buffer means for storing said series of electrical indications in sequential order of detection;
means for retrieving from said buffer means said series of electrial indications in sequential order of storage;
memory means for accumulating said electrical indications, wherein said electrical indications stored in said memory means is a time or energy gamma ray spectrum; and
processor means for retrieving from said memory means said accumulated electrical indications, without interrupting said accumulating said electrical indications in said memory means, and processing said accumulated electrical indications, wherein said processing of said electrical indications comprises deriving a function of said spectrum, wherein said function of said spectrum is a control signal; and
wherein said apparatus further includes subsurface control means responsive to said control signal.
2. A method of gain control for nuclear well logging of a subsurface earth formation, comprising:
disposing a logging tool within a borehole having a housing encasing a gamma ray detector;
detecting gamma rays with said detector incident on said housing from said formation;

VOL 1093 ISS 4 AG 23 1988 UMI

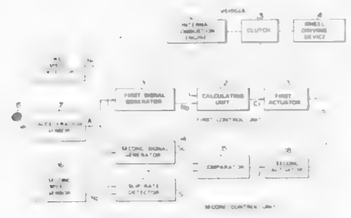
deriving an energy spectrum of said detected gamma rays within said tool;
detecting an energy peak in said spectrum wherein said peak corresponds to gamma rays from material; and
adjusting gain in said detector of said gamma rays as a function of relative position of said peak and said spectrum.
9. A method of nuclear well logging comprising the steps of:
disposing a pulsed neutron source within a subsurface earth formation;
activating said source a first time;
deriving a subsurface electrical representation of an energy spectrum of said detected gamma rays;
deriving simultaneously a subsurface electrical representation of a time spectrum of said detected gamma rays;
activating said source a second time; and
deriving from said representation of said time spectrum electrical representations functionally related to thermal neutron decay between said activations of said source.
11. Apparatus for acquiring spectral well logging data from a subsurface earth formation comprising:
detector means for generating electrical indications of subsurface gamma ray particles;
pulse height analyzer means for deriving a digital representation of the energy magnitude of each of said gamma ray particles from said electrical indications;
pulse arrival time means for deriving a digital representation corresponding to the arrival time of each of said gamma ray particles from said electrical indication;
storage means for correlatively storing said digital representations of said energy and arrival time for each of said gamma ray particles; and
subsurface processor means for deriving from said stored digital representations time and energy spectra and for detecting peaks in said derived spectra.

4,766,544

APPARATUS FOR AUTOMATICALLY CONTROLLING STARTING OF VEHICLE POWERED BY INTERNAL COMBUSTION ENGINE

Kazumasa Kurihara, Higashimatsuyama, and Kenji Arai, Higashimatsuyama, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1986, Ser. No. 831,728
Claims priority, application Japan, Feb. 26, 1985, 60-35332
Int. Cl.[4] B60K *41/02*
U.S. Cl. 364—424.1 7 Claims



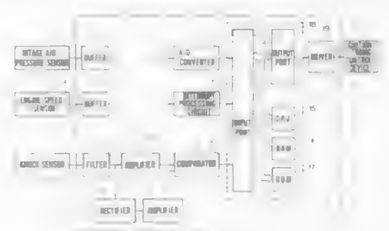
1. An apparatus for automatically controlling the start of a vehicle powered by an internal combustion engine adapted to automatically engage a friction clutch in response to the depression of an accelerator pedal, said apparatus comprising:
means for producing a first signal relating to the amount of depression of the accelerator pedal;
a control means responsive to the first signal for controlling the speed of the engine in isochronous control mode so as to maintain the speed of the engine at a target speed set in relation to the first signal;
a gear detecting means for detecting the gear position at which the vehicle starts;
a setting means responsive to the first signal and the output of said gear detecting means for setting target slip rate characteristics indicating the engaging control characteristics;
a slip detecting means for detecting the actual slip rate of said clutch at each instant; and
means responsive to the outputs of said setting means and said slip detecting means for controlling the operation for engaging said clutch in such a way that the actual slip rate is changed with the passage of time in accordance with the target slip rate characteristics.

4,766,545

SYSTEM FOR CONTROLLING THE IGNITION TIMING OF AN INTERNAL COMBUSTION ENGINE

Masaaki Nagai, Fuchu, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,101
Claims priority, application Japan, Dec. 28, 1984, 59-280559
The portion of the term of this patent subsequent to Nov. 4, 2003, has been disclaimed.
Int. Cl.[4] F02P *5/06*; F02M *7/00*
U.S. Cl. 364—431.08 3 Claims



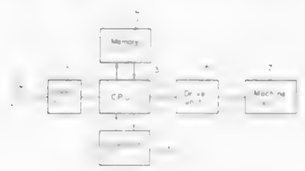
1. A system for controlling the ignition timing of an internal combustion engine having a microprocessor and an ignition timing control device comprising:
first sensing means for sensing operating conditions of the engine at steady state and for producing an engine operating condition signal;
second sensing means for sensing the acceleration of the engine and for producing an acceleration signal;
a knock sensor for sensing engine knock and for producing a knock signal;
rough correcting means responsive to the engine operation condition signal and to the knock signal for roughly correcting the ignition timing to a desired ignition timing and for producing a completion signal when the correction reaches a complete state;
fine correcting means responsive to the completion signal and to the engine operation condition signal and knock signal for finely correcting the ignition timing decided by the rough correcting means;
acceleration correcting means responsive to the acceleration signal and the knock signal for correcting the corrected ignition timing decided by the rough correcting means.

4,766,546

NUMERICALLY CONTROLLED APPARATUS INCLUDING FUNCTIONS OF SYNCHRONOUS-SIMULTANEOUS TRANSACTION AND INDEPENDENT-SIMULTANEOUS TRANSLATION

Akihiko Fujimoto, Nagoya, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1987, Ser. No. 21,861
Claims priority, application Japan, Aug. 29, 1985, 60-190411
Int. Cl.[4] G05B *19/407*; G06F *15/46*
U.S. Cl. 364—474 3 Claims



1. A numerical control apparatus for simultaneously performing plural control operations comprising:
an input unit (2) for receiving numerical control data from a source (1) thereof;
a central processing unit (CPU) (3);
a memory unit (4), said memory unit including a first memory region (41) for storing X, Y and Z translation-axis data, a second memory region (43) for storing distance data for each translation axis, a third memory region (421) for storing synchronous-translation velocity data for each translation axis, a fourth memory region (422) for storing independent-translation velocity data for each translation axis, and a fifth memory region (440) for storing independent-translation axis data; and
means controlled by said CPU for processing data received from said source and storing each type of said data in respective memory unit regions and, upon command, selectively reading said stored data from said memory unit in accordance with said command, performing calculations to derive numerical control signals therefrom in the form of a plurality of incremental control signals representing control operations, and applying said control signals to control means for performing said control operations;
said control operations including each of a control operation such as linear translation wherein a single translation in an axis is performed, independent translation wherein translations of plural means are performed in different axes independently at the same time, synchronous translation wherein translations of a plurality of means are performed simultaneously in a plurality of axes, synchronous translation wherein translation of a single means is performed in a vectorial direction, and combinations of more than one of said translations simultaneously.

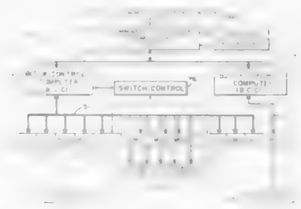
4,766,547

COMPUTER CONTROLLED CONVEYOR SYSTEM

Richard G. Modery; John C. Bell, and Charles R. Cope, all of Grand Rapids, Mich., assignors to Transfer Technologies, Inc., Grand Rapids, Mich.

Filed Apr. 14, 1986, Ser. No. 851,787
Int. Cl.[4] G06F *15/46*
U.S. Cl. 364—478 28 Claims

8. A computer-controlled conveyor system comprising:
a conveyor path including a plurality of subpaths;
a plurality of self-propelled vehicles confined to said conveyor path, each vehicle including means for determining the location of the vehicle with respect to said conveyor path;
switching means coupled to said conveyor path for routing each vehicle between and along selected subpaths of said conveyor path;
control means coupled to said switching means for controlling said switching means; and
communication means extending substantially continuously



along said conveyor path for permitting said control means to poll said vehicles as substantially any time to ascertain the locations of said vehicles enabling said control means to make switching decisions in controlling said switching means to route each vehicle along selected subpaths.

4,766,548

TELELINK MONITORING AND REPORTING SYSTEM

Louis A. Cedrone, Eastchester, N.Y., and Joseph J. Sobodowski, Miami, Fla., assignors to PepsiCo Inc., Purchase, N.Y.

Filed Jan. 2, 1987, Ser. No. 36
Int. Cl.[4] G06F *15/20*
U.S. Cl. 364—479 27 Claims



1. A telelink system particularly designed for interface with a vending machine, without interrupting or disturbing the existing vending machine electrical circuits or affecting the normal operation of the vending machine, comprising:
a. a microprocessor, having a memory associated therewith, for controlling operation of the telelink system, and also for storing in said memory data related to the overall status of the vending machine, including total vends of each of several vended products, inventory of each of several vended products, cash taken in by the machine, and data related to the status of the vending machine;
b. a plurality of machine status sensors, for reporting on the vending machine status without interrupting normal vending machine functions, said vending machine status sensors comprising sensors which are installed as add-on attachments to the vending machine without interrupting the existing vending machine electrical circuits or affecting the normal operation of the vending machine, such that operation or a malfunction of the telelink system does no adversely affect operation of the vending machine;
c. a telephone interface circuit connecting the telelink system to a telephone line to enable the microprocessor to periodically and on a nondedicated basis establish a con-

VOL 1093 ISS 4 AUG 23 1988 UMI

nection to and use the telephone line, to establish a telephone connection to enable the microprocessor to call a central computer; and

d. a modem for enabling data messages to be transferred through said telephone interface circuit to the central computer.

4,766,549

SINGLE-ENDED TRANSMISSION LINE FAULT LOCATOR

Edmund O. Schweitzer, III, and Masaoki Ando, both of Pullman, Wash., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Nov. 30, 1984, Ser. No. 676,747
Int. Cl.[4] G06F *15/56;* **G01R** *31/08*
U.S. Cl. 364—481 **19 Claims**



1. A system for locating a fault in a transmission line, comprising:

means at one end of the transmission line for detecting transients at said one generated by a fault;

means at said one end for sorting said transients produced by a fault and reflected either by said one end or an end of the transmission line remote therefrom, said transients sorted by polarity and said sorting means connected to said detecting means; and

means at said one end for determining the arrival times of said transients at said one end and for calculating the difference between said arrival times so as to determine the location of the fault.

4,766,550

AUTOMATIC ON-LINE CHEMISTRY MONITORING SYSTEM

William A. Byers, Penn Hills Twp., Allegheny County; Gerald L. Carlson, Mt. Lebanon; David F. Pensenstadler, North Huntingdon; Michael J. Wootten, Murrysville, and James E. Richards, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 30, 1985, Ser. No. 793,061
Int. Cl.[4] G06F *15/46;* **G01N** *31/00;* **G01L** *3/26*
U.S. Cl. 364—497 **17 Claims**

1. Apparatus for automatic, continuous on-line monitoring of a power plant steam cycle water system having a plurality of points where the chemical characteristics of the water in the system are to be measured, said water in the system at each said point having characteristic temperature conditions and cation conductivity levels in addition to said chemical characteristics, said apparatus comprising:

means at each point for extracting a respective extracted fluid sample stream to be monitored;

continuous monitor module means for each extracted fluid sample stream, each said continuous monitor module means comprising:

means for monitoring the temperature conditions of the corresponding extracted fluid sample stream and generating a temperature signal representative of the temperature conditions so monitored,

calibration means for selectively conditioning the corresponding extracted fluid sample stream in accordance with calibration actuation signals, to provide a conditioned calibration stream having predetermined chemical characteristics for calibration of downstream components,

first flow-splitter means for dividing said extracted fluid sample stream into first and second fluid sample streams, and

means for continuous on-line monitoring of one or more selected chemical characteristics of said first fluid sample stream and generating continuous monitor signals representative of said one or more selected chemical characteristics so monitored;

second flow-splitter means for each of said second fluid sample streams for dividing the latter into respective third and fourth fluid sample streams;

means for monitoring the cation conductivity levels of each of said third fluid sample streams and generating corresponding cation conductivity signals representative of the cation conductivity levels so monitored;



ion chromatography means for on-line monitoring of one or more selected chemical characteristics of selected ones of said third and fourth fluid sample streams in accordance with chromatography actuation signals and generating chromatograph signals representative of the selected chemical characteristics so monitored by ion chromatography;

valve means selectively operable to supply a plurality of said third fluid sample streams and corresponding fourth fluid sample streams to said ion chromatograph means in individual succession, in accordance with a sampling sequence; and control means for:

receiving said temperature, continuous monitor, cation conductivity and chromatograph signals,

determining said sampling sequence,

calculating a derived cation conductivity for the fluid sample stream which corresponds to the third and fourth fluid sample streams being supplied to said ion chromatography means in accordance with predetermined conductivity equations, the temperature levels monitored in the fluid sample stream, and the selected chemical characteristics monitored by said ion chromatograph means,

comparing said derived cation conductivity of the corresponding fluid sample stream with the cation conductivity levels monitored by the means for monitoring the cation conductivity levels, and using such comparison to choose which chemical characteristics are to be monitored by said ion chromatography means and to determine if calibration is necessary,

selectively generating said calibration actuation signals at predetermined time intervals and between said predetermined time intervals, and

generating said chromatograph actuation signals in accordance with the chemical characteristics selected by comparing said derived cation conductivity with the monitored cation conductivity levels.

4,766,551

METHOD OF COMPARING SPECTRA TO IDENTIFY SIMILAR MATERIALS

Timothy H. Begley, Cheverly, Md., assignor to Pacific Scientific Company, Anaheim, Calif.

Filed Sep. 22, 1986, Ser. No. 909,952
Int. Cl.[4] G06F *7/04*
U.S. Cl. 364—498 **10 Claims**



1. A method of determining whether the composition of a test material is the same as the composition of a standard material, said test material and said standard material each having a reflectivity, comprising the steps of measuring the reflectivity of the standard material throughout a range of the near infrared spectrum to produce a measurement of reflectivity, determining from the measurement of the reflectivity of the standard material a first set of n values representing a derivative of any variation of reflectivity with wavelength throughout said range, measuring the reflectivity of said test material throughout said range to produce a measurement of reflectivity, determining from the measurement of the reflectivity of said test material a second set of n values representing a derivative of any variation of the reflectivity of said test material with wavelength throughout said range, defining a first vector having an end point in n-dimensional space represented mathematically by said first set of n values as coordinates of the end point of said first vector, defining a second vector having an end point in n-dimensional space represented mathematically by said second set of n values as the coordinates of the end point of said second vector, and determining the cosine of any angle between first and second vectors as an index of similarity of the composition of said test material and the composition of said standard material.

4,766,552

METHOD OF CONTROLLING THE ALUMINA FEED INTO REDUCTION CELLS FOR PRODUCING ALUMINUM

Johannes Aalbu; Tom Moen; Morit S. Aalbu, all of Ovre Ardal, and Peter Borg, Lillestrom, all of Norway, assignors to Ardal og Sunndal Verk a.s., Oslo, Norway

PCT No. PCT/NO86/00017, § 371 Date Dec. 17, 1986, § 102(e) Date Dec. 17, 1986, PCT Pub. No. WO86/05008, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 17, 1986, Ser. No. 929,291
Claims priority, application Norway, Feb. 21, 1985, 850700
Int. Cl.[4] G05B *17/02;* **G06F** *15/46;* **C25C** *3/06*
U.S. Cl. 364—500 **3 Claims**

1. A method of controlling the alumina feed to reduction cells for producing aluminum, comprising the steps of: using the non-linear function relationship between resistance and alumina concentration in an electrolytic bath for obtaining the value of the alumina concentration at all times; estimating the derivative of this function; and controlling the alumina supply so as to secure reliable estimates, so that the value of this derivative oscillates about a freely selected working point corresponding to an alumina concentration being favorable to the production of aluminum; wherein a linear model is applied for this estimation, said linear model being of the relationship between resistance change, alumina concentration change and a change in the anode position and in accordance with the following equation:

$$y(k)=b_1u_1(k-1)+b_2u_2(k-1)+v(k)+c_1v(k-1)$$

wherein:

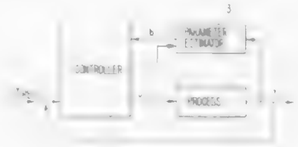
y(k) is an output corresponding to an electrical resistance change across the cell during a time increment k−1 to k;

u_1 is a first input variable corresponding to the difference between alumina added and assumed alumina consumption in said time increment in terms of concentration change;

u_2 is a second input variable corresponding to the movement of the anode position in said time increment;

v is a white noise sequence which drives the noise model:

$$v(k)+c_1v(k-\ldots)$$



k is the time increment number; and

wherein: parameter b_1 represents said derivative of the curve for resistance as a function of alumina concentration in the electrolytic bath; parameter b_2 represents resistance change per length unit movement of the anode and parameter c_1 is incorporated in a first order model of the noise which influences the resistance, parameters b_1, b_2 and c_1 being estimated recursively by relating predicted resistance change for the instant k+1 to the actually occurring resistance change, and the deviation being utilized for updating the parameter estimates in accordance with the following equations:

$$e(k+1)=y(k+1)-\psi(k+1)\,\theta(k)$$

$$\theta(k+1)=\theta(k)+\gamma(k)e(k+1)/\Gamma$$

wherein

$\psi(k+1)$ is the data vector $[u_1(k)u_2(k)e(k)]^T$,

$\theta(k)$ is the parameter vector $[b_1b_2c_1]^T$ and

T designates that the vector is to be transposed,

wherein the gain vector γ is determined in accordance with the following equation:

$$\gamma(k)=\frac{P(k)\psi(k+1)}{1+\psi^T(k+1)P(k)\psi(k+1)}$$

wherein P is proportional to the covariance matrix of the parameter estimate and is updated recursively by the equation:

$$P(k+1)=[I-\gamma(k)\psi^T(k+1)]P(k),$$

wherein I is the identity matrix; and wherein Γ, which reduces the gain at large estimation errors caused by sudden excursions

VOL 1093 ISS 4 AUG 23 1988 UMI

of the resistance, is determined in accordance with the equation:

$$\Gamma = \max\left[1.0, \frac{|e(k+1)|}{e_{filt}(k+1)}\right]$$

wherein $e_{filt}(k+1)=s\,e_{filt}(k)+t(1-s)|e(k)|$ and wherein s and t are preselected constants.

4,766,553

HEAT EXCHANGER PERFORMANCE MONITOR

Azmi Kaya, 2365 Woodpark Rd., Akron, Ohio 44313, and Marion A. Keyes, IV, 120 Riverstone Dr., Chagrin Falls, Ohio 44022

Continuation of Ser. No. 592,498, Mar. 23, 1984, abandoned. This application Feb. 13, 1987, Ser. No. 15,554

Int. Cl.[4] **G06F** *15/20;* **G05D** *23/00*

U.S. Cl. 364—506 **9 Claims**



1. A heat exchanger performance monitor for generating a fouling factor, indicative of the cleanliness of a heat exchanger, said heat exchanger having a heat exchange surface area for transferring heat between a medium which passes against one side of said heat exchange surface area and a heat exchange fluid which passes against an opposite side of said heat exchange surface area, comprising:

first temperature transmitter means for supplying a first signal corresponding to the output temperature of the medium exiting from the heat exchanger;

second temperature transmitter means for supplying a second signal corresponding to the input temperature of the medium entering the heat exchanger;

third temperature transmitter means for supplying a third signal corresponding to the temperature of the heat exchange fluid on the opposite side of the heat exchange surface area;

first mass flow rate means for supplying a fourth signal corresponding to the mass flow rate of medium passing through the heat exchanger;

second mass flow rate means for supplying a fifth signal corresponding to the mass flow rate of heat exchange fluid passing through the heat exchanger;

an actual heat transfer module, connected to said first, second and third temperature transmitter means and to said second mass flow rate means, for calculating a sixth signal corresponding to an actual heat transfer coefficient (U_{act}) of said heat exchanger as a function of said first, second, third and fifth signals, said heat exchange surface area, and a specific heat value of said medium;

means for calculating a seventh signal corresponding to a nominal heat transfer coefficient (U_{ava}) of said heat exchanger; and

a first divider unit, connected to said actual heat transfer module for calculating said sixth signal corresponding to said actual heat transfer coefficient (U_{act}) and to said means for calculating said seventh signal corresponding to said nominal heat transfer coefficient (U_{ava}) for calculating an eighth signal corresponding to a ratio of said nominal heat transfer coefficient (U_{ava}) to said actual heat transfer coefficient (U_{act}), said ratio corresponding to the fouling factor of said heat exchanger.

4,766,554

ULTRASONIC INSPECTION SYSTEM WITH LINEAR TRANSDUCER ARRAY

Dennis P. Sarr, Kent, and Fred D. Young, Bellevue, both of Wash., assignors to The Boeing Company, Del.

Filed Dec. 31, 1985, Ser. No. 815,047

Int. Cl.[4] **G01N** *29/04*

U.S. Cl. 364—507 **15 Claims**



1. An ultrasonic inspection system, comprising:

a plurality of ultrasonic transmitting transducers;

means for simultaneously energizing individual transducers of selectable groups of said transmitting transducers;

a plurality of ultrasonic receiving transducers, each of said receiving transducers generating a data output signal representative of ultrasonic energy received by said receiving transducer; and

means for combining said data output signals of selectable groups of said receiving transducers independent of said transmitting transducer groups and for supplying a second output signal representive of said combined data output signals.

4,766,555

SYSTEM FOR THE AUTOMATIC GENERATION OF DATA BASES FOR USE WITH A COMPUTER-GENERATED VISUAL DISPLAY

William S. Bennett, Chenango Bridge, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Sep. 3, 1985, Ser. No. 771,953

Int. Cl.[4] **G06F** *3/153;* **H04N** *7/18*

U.S. Cl. 364—518 **2 Claims**

1. A system for generating data bases automatically that are ultimately used as visual scene data bases for a computer image generator wherein the final stored image is highly realistic in cultural geographical scene content, the system comprising:

(a) data processing circuit means for generating digital signals that are storable as a data base for a digital image generator representing images having numerous edges forming polyhedra representing realistic visual cultural objects found in a visual geographical view of the earth's surface statistically in accordance with a predetermined data base generation program;

(b) first means connected as an input to said data processing circuit means storing data identifying and describing prominent features to be included as a starting point in generating a data base in said data processing circuit means;

(c) second means connected as an input to said data processing circuit means storing data describing the dominating cultural feature of a geographical area in the form of a hierarchy of features in which lower hierarchy features are for association with higher hierarchy features, in



which predetermined attributes of each feature are in terms of an average and a standard deviation, said data influences the statistical generation of data bases by controlling which feature is associated geographically with which feature, the numbers of such features, and dimensions and angles associated with describing such features; and

(d) third means to store data connected to output from said data processing circuit means for use by said digital image generator.

4,766,556

THREE-DIMENSIONAL SOLID OBJECT MANIPULATING APPARATUS AND METHOD THEREFOR

Yoshiki Arakawa, Yawata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 19, 1985, Ser. No. 799,655

Claims priority, application Japan, Nov. 20, 1984, 59-245169; Mar. 1, 1985, 60-40414

Int. Cl.[4] **G06F** *15/20*

U.S. Cl. 364—522 **14 Claims**



1. Three-dimensional solid object manipulating apparatus comprising:

first memory means for storing elemental data defining at least one elemental three-dimensional solid object;

means for setting in a defined space a three-dimensional solid shape corresponding to said elemental data;

means for setting a hypothetical plane on the defined space and dividing said hypothetical plane into minute segments and setting perpendicular lines on said minute segments and calculating data representing intersections of said three-dimensional solid shape and said perpendicular lines;

second memory means for storing said data representing intersections; and

means for calculating data representing specifications of said three dimensional solid object from said data representing intersections of said three dimensional solid shape and said perpendicular lines.

4,766,557

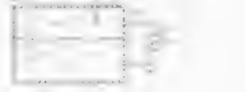
APPARATUS FOR MONITORING HYDROGEN GAS LEAKAGE INTO THE STATOR COIL WATER COOLING SYSTEM OF A HYDROGEN COOLED ELECTRIC GENERATOR

Michael Twerdochlib, Oviedo, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 20, 1986, Ser. No. 876,562

Int. Cl.[4] **G06C** *11/30;* **H02K** *9/00*

U.S. Cl. 364—550 **8 Claims**



1. Apparatus for monitoring cooling gas leakage into a closed circuit liquid cooling system of an electric generator, the interior of which is cooled by said cooling gas and the stator coils of which are internally cooled by said closed circuit liquid cooling system, said closed circuit liquid cooling system including a liquid tank pressurized by a source of gas of the same type of said cooling gas, said cooling gas leakage being indicative of a breach in said closed circuit liquid cooling system, and causing a net increase of the amount of gas in said liquid tank, comprising:

(A) sensor means operable to sense predetermined parameters relative to said liquid tank and provide corresponding output signals indicative thereof;

(B) computer means responsive to said output signals and operable in repetitive time increments to calculate, for each said time increment, the number of moles of gas within said liquid tank;

(C) means for determining a relatively rapid change in the number of said moles due to an addition to, or venting of gas from, said liquid tank;

(D) said computer means being operable to estimate a projected value for the number of moles of said gas within said liquid tank after said change, had said change not occurred;

(E) said computer means being further operable to obtain the difference between said projected value and the actual calculated number of moles and to add said difference to the actual calculated number of moles for that time increment and to subsequent calculated number of moles for subsequent time increments.

VOL 1093 ISS 4 AUG 23 1988 UMI

4,766,558

METHOD OF CALCULATING MINIMUM MISCIBILITY PRESSURE

Kraemer D. Luks; Edward A. Turek, and Lee E. Baker, all of Tulsa, Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 21, 1986, Ser. No. 842,506
Int. Cl.[4] G06F *15/46*; E21B *43/16*
U.S. Cl. 364—558 9 Claims



1. A method of determining the thermodynamic minimum miscibility pressure, of a three (3) or more component fluid system, encountered during displacement of an in-place fluid with an injected fluid comprising:

(a) for a given initial pressure, varying the concentration of said injected fluid until a multiphase fluid state is indicated;

(b) calculating coexisting equilibrium phase compositions for the multiphase fluid that define a tieline;

(c) parallel translating the tieline, retaining the direction of its slope, to estimate a new tieline that is coincident with the in-place fluid's composition for a vaporizing mechanism or the injected fluid's composition for a condensing mechanism, the midpoint of which tieline is used to locate a multiphase state; and repeating b, c unit convergence;

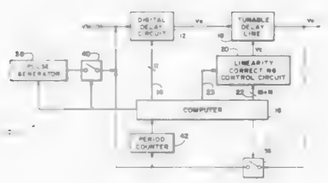
(d) performing steps a, b, c, utilizing an increased pressure if a coincident tieline is located, or utilizing a decreased pressure if a coincident tieline does not exist, until a boundary pressure is achieved representing the thermodynamic minimum miscibility pressure.

4,766,559

LINEARITY CORRECTING CONTROL CIRCUIT FOR TUNABLE DELAY LINE

Laszlo J. Dobos, and Agoston Agoston, both of Beaverton, Oreg., assignors to Tektronix Inc., Beaverton, Oreg.

Filed Mar. 31, 1986, Ser. No. 846,319
Int. Cl.[4] H03M *1/68*
U.S. Cl. 364—573 10 Claims



1. A contol circuit for providing an analog signal input to a tunable delay line, wherein the duration of a signal delay produced by the tunable delay line is a nonlinear function of the magnitude of the analog signal, the control circuit comprising:

means for storing a range of values accessible through an output in accordance with digital input data;

means responsive to the accessed output of said storing means for producing said analog signal in proportion to said accessed output;

means for iteratively measuring the response of the tunable delay line; and

means for adjusting the stored values responsive to the measured response of the tunable delay line,

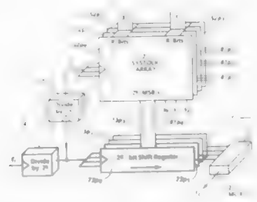
wherein the accessed output provided in response to each magnitude of digital input data is such that the duration of the time delay produced by the tunable delay line is a substantially linear function of the digital input data.

4,766,560

PARALLEL/PIPELINED ARITHMETIC VARIABLE CLOCK FREQUENCY SYNTHESIZER

Douglas N. Carry, and Donald J. Carry, both of Menlo Park, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1985, Ser. No. 812,541
Int. Cl.[4] G06F *1/02*
U.S. Cl. 364—721 5 Claims



1. An arithmetic frequency synthesizer comprising the combination of

array means for cyclically and recursively accumulating a predetermined number of consecutive integer multiples of a R-bit long binary word having a time dependent value N; where $R>1$ and N is within the range $-2^{R-1} \leq N < 2^{R-1}$, whereby said array means accumulates said predetermined number of binary values during each cycle, with each of said accumulated values having a most significant bit;

register means;

means coupled between said array means and said register means for loading the most significant bits of the binary values accumulated by said array means during each cycle into said register means in parallel; and

clock means coupled to said register means for serially shifting said most significant bits out of said register means in accumulated order, thereby serializing said bits to synthesize a frequency which varies as a function of N.

4,766,561

METHOD AND APPARATUS FOR IMPLEMENTING MULTIPLE FILTERS WITH SHARED COMPONENTS

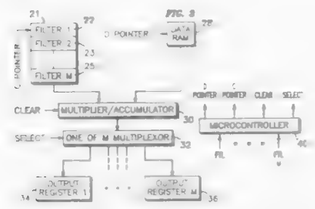
Charles D. Thompson, and Joseph P. Gergen, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 26, 1986, Ser. No. 878,770
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—724 7 Claims

1. A filter circuit for implementing a plurality of digital filters, each of said filters implementing a predetermined digital filter algorithm, said circuit comprising:

storage means for storing in a sequential order groups of coefficient operands, each group of coefficient operands being used in calculations to implement a predetermined one of the digital filter algorithms and for storing in a sequential order groups of time sampled data operands, each group of data operands being used in the calculations to implement a predetermined one of the digital filter algorithms;

an arithmetic unit coupled to the storage means, for sequentially performing predetermined arithmetic operations with selected coefficient and data operands to implement the digital filter algorithms; and



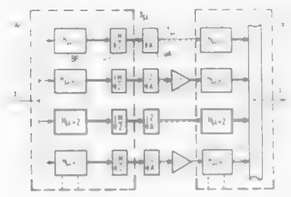
sequencing control means coupled to the storage means and to the arithmetic unit for sequentially selecting and coupling pairs of operands from the storage means, each of said pairs comprising a coefficient operand and a data operand for input to the arithmetic unit to implement the digital filter algorithms.

4,766,562

DIGITAL ANALYZING AND SYNTHESIZING FILTER BANK WITH MAXIMUM SAMPLING RATE REDUCTION

Peter Vary, Herzogenaurach, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

Filed Mar. 24, 1986, Ser. No. 843,331
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1985, 3510573
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—724 4 Claims



1. A digital analyzing and synthesizing filter bank comprising: an analyzing filter bank which divides a digital input signal (x) having an input sampling rate into M complex sub-band signals (x_μ) with simultaneous sampling rate reduction by a factor M/2, and a synthesizing filter bank which by interpolation increases the sampling rate of the M complex sub-band signals (x_μ) to derive interpolated sub-band signals (y_μ) at the initital sampling rate and adds together the interpolated sub-band signals (y_μ) to produce an output signal at such sampling rate; characterized in that the analyzing filter band effects a further reduction of the sampling rate of the M complex sub-band signals (x_μ) by staggered complex sampling rate reduction of the real and imaginary components $a_\mu(i)$, $b_\mu(i)$ of said complex sub-band signals (x_μ).

4,766,563

AUTO-CORRELATION FILTER

Yoshiji Fujimoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 8, 1985, Ser. No. 785,515
Claims priority, application Japan, Oct. 17, 1984, 59-219240
Int. Cl.[4] G06F *7/38*; G01R *23/16*
U.S. Cl. 364—724 10 Claims



1. A filter for determining, from an analog signal, the power of a specified frequency band of said analog signal within a predetermined time frame, comprising:

an analaog-to-digital converter operatively connected to receive said analog signal and converting said analog signal to a digital signal;

auto-correlation means, responsive to said digital signal, for auto-correlating said digital signal to develop an auto-correlated signal;

linear coupling coefficient means for developing linear coupling coefficients; and

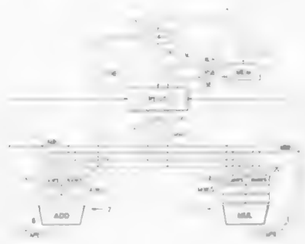
a sum of products calculator, responsive to said linear coupling coefficients from said linear coupling coefficient means and to said auto-correlated signal, and weighting said auto-correlated signal with said linear coupling coefficients and developing an output signal representative of the power of said analog signal.

4,766,564

DUAL PUTAWAY/BYPASS BUSSES FOR MULTIPLE ARITHMETIC UNITS

Richard D. DeGroot, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1984, Ser. No. 639,754
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—748 3 Claims



1. In a floating point arithmetic unit, responsive to a sequence of instructions, for producing multiple results per cycle, the combination comprising:

an adder having first and second inputs and an output;

a multiplier having first and second inputs and an output;

a first bus connected to said adder's first and second inputs and output, and also connected to said multiplier'first and second inputs;

a second bus connected to said multiplier's first and second

VOL 1093 ISS 4 AUG 23 1988 UMI

inputs and output, and also connected to said adder's first and second inputs; and

a register file having at least a first input connected to said first bus and a second input connected to said second bus and at least first and second outputs connected to inputs of said adder and multiplier, each register stage in said register file including a source register for storing an identification of the source of results on each bus destined for said register so the respective register stages may be connected to a correct one of said first and second busses on which a result is to appear, results from said adder and said multiplier being produced and put away on said first and second busses respectively, during each cycle, permitting decoding of subsequent ones of said instructions while waiting for said results.

4,766,565

ARITHMETIC LOGIC CIRCUIT HAVING A CARRY GENERATOR

Roland A. Béchade, South Burlington, Vt., and Martin S. Schmookler, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1986, Ser. No. 930,177
Int. Cl.[4] G06F *7/50*
U.S. Cl. 364—784 **15 Claims**



13. A carry generator comprising

a NAND circuit,

a first NOR circuit,

an AND circuit having a first input connected to the output of said NAND circuit and a second input to which is applied a carry signal of a true polarity,

a second NOR circuit having a first input connected to the output of said first AND circuit and a second input connected to the output of said first NOR circuit, and

means for applying a first logic signal of complemented polarity to a first input of said NAND and said first NOR circuits and for applying a second logic signal of complemented polarity to a second input of said NAND and said first NOR circuits.

4,766,566

PERFORMANCE ENHANCEMENT SCHEME FOR A RISC TYPE VLSI PROCESSOR USING DUAL EXECUTION UNITS FOR PARALLEL INSTRUCTION PROCESSING

Chiao-Mei Chuang, Briarcliff Manor, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Aug. 18, 1986, Ser. No. 896,156
Int. Cl.[4] G06F *9/38*
U.S. Cl. 364—900 **18 Claims**

9. In a reduced instruction set computer processing system having instruction handling apparatus comprising an instruction buffer, control read only storage and control registers, an adder for calculating an instruction address and instruction execution apparatus comprising a register file having inputs and outputs, one of said inputs being connected to receive data from memory, staging registers connected to said outputs, and first and second execution units, said first execution unit comprising an arithmetic logic unit having inputs connected to two of said staging registers, said second execution unit comprising a rotator and mask generator means having inputs connected to three of said staging registers, said arithmetic logic unit and said rotator and mask generator means having outputs, a first output register for receiving the outputs of said arithmetic logic unit or said rotator and mask generator means and supplying an input to said register file wherein the system performs sequential data manipulations under the control of instructions, said instructions being executed by one of said first and second execution units, the improvement which increases the throughput of the computer comprising:

said control read only storage comprising first and second segments for respectively storing instruction sets for said first and second execution units;

said instruction handling apparatus further including means for routing instructions from said first segment of said control read only storage to said first execution unit and means for routing instructions from said second segment of said control read only storage to said second execution unit;

said adder being in said second execution unit and having inputs connected to two of said three of said staging registers;

a multiplexer in said second execution unit connected to receive outputs from said adder and said rotate and mask generator means;

a second output register, the outputs from said arithmetic logic unit and said multiplexer being separately connected to a respective one of said output registers, outputs from each of said first and second output registers being connected to inputs of said register file; and

said first execution unit and said second execution unit simultaneously receiving outputs from staging registers connected to outputs of said register file and executing in parallel.

4,766,567

ONE-CHIP DATA PROCESSING DEVICE INCLUDING LOW VOLTAGE DETECTOR

Mitsuharu Kato, Aichi, Japan, assignor to Ltd. Nippondenso Co., Kariya, Japan

Filed Apr. 11, 1985, Ser. No. 722,075
Claims priority, application Japan, Apr. 19, 1984, 59-77496; Jun. 20, 1984, 59-128021; Dec. 10, 1984, 59-261562
Int. Cl.[4] G06F *11/30*
U.S. Cl. 364—900 **17 Claims**

1. A one-chip semiconductor device comprising:

a semiconductor substrate;

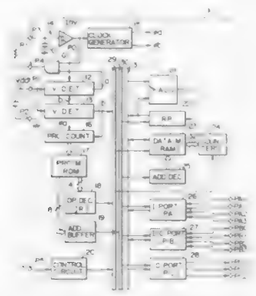
a plurality of power supply terminals mounted on said substrate and adapted to be coupled to an external power source;

a plurality of data terminals mounted on said substrate for receiving data from and outputting data to an external device;

clock generating means formed on said substrate for generating a clock signal when supplied with a power supply voltage from the external power source;

data processing means formed on said substrate and driven by the clock signal supplied from said clock generating means, for processing the data supplied from said data terminals;

first voltage detecting means formed on said substrate for comparing the power supply voltage with a first reference voltage, said first reference voltage of a level above which said data processing means operates stably;



clock stopping means formed on said substrate, for producing a clock stop signal when the power supply voltage falls below the first reference voltage, thereby stopping said clock generating means;

interruption processing means, formed on said substrate and connected to receive said clock stop signal, for interrupting said data processing means and maintaining the condition thereof when said clock generating means is stopped;

second voltage detecting means, formed on said substrate, for comparing the power supply voltage with a second reference voltage, said second reference voltage of a level above which said data processing means can retain its contents; and

initializing means formed on said substrate, for producing an initializing signal to the data processing means when the power supply voltage falls below the second reference voltage, thereby initializing said data processing means to restart the operation from a beginning of its operation.

4,766,568

GENERIC ASSOCIATIVE MEMORY

Douglas R. McGregor, and Jon R. Malone, both of Glasgow, Scotland, assignors to University of Strathclyde, United Kingdom

Continuation of Ser. No. 789,919, Oct. 18, 1985, abandoned, which is a continuation of Ser. No. 454,333, Dec. 29, 1982, abandoned. This application Oct. 6, 1986, Ser. No. 915,920
Int. Cl.[4] G11C *15/00*
U.S. Cl. 365—49 **7 Claims**

1. A computer memory device for storing identified associations between data items of a data collection, said device comprising

an array of signal-flow pathways, which pathways are respectively representative of data items of said data collection,

interconnect means operable in any one of a plurality of states, and externally controllable as to which such state by an external control device, for selectively interconnecting said pathways in one or more pairs and effecting directional control of signal flow between each interconnected pair in accordance with the identified associations between the respectively represented data items of said data collection,

and signal input/outputs means connected to said array for delivering an input signal to a selected pathway representative of a selected data item and for receiving output signals from the selected pathway and from the pathways interconnected therewith and representative of the selected data item and the data items of said data collection which have identified associations with said selected data item.

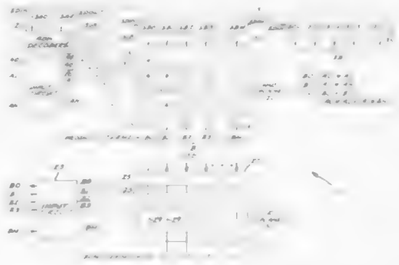


4,766,569

PROGRAMMABLE LOGIC ARRAY

John E. Turner, Beaverton, and Gregg R. Josephson, Lake Oswego, both of Oreg., assignors to Lattice Semiconductor Corporation, Hillsboro, Oreg.

Continuation-in-part of Ser. No. 707,667, Mar. 4, 1985. This application Jun. 5, 1986, Ser. No. 871,063
Int. Cl.[4] G11C *7/00, 29/00*
U.S. Cl. 365—185 **15 Claims**



1. A programmable logic array comprising:

a first array having a plurality of first cells arranged in rows and columns for providing first logical outputs respectively associated with the columns of said first cells, said logical outputs including first logical combinations of logical inputs respectively available at said first cells of

VOL 1093 ISS 4 AUG 23 1988 UMI

respective rows, said first logical combinations being of selectively programmed ones of said first cells in respective columns;

a second array having a plurality of second cells arranged in rows and columns for providing second logical combinations of said first array logical outputs respectively available at said second cells of respective rows, said second logical combinations being of selectively programmed ones of said second cells in respective columns;

storage means for selectively storing either (a) first array row address information and first array row programming information, or (b) second array row address information and second array row programming information;

row addressing means responsive to said first array row address information and associated with said first array for selectively enabling a selected row of said first array for programming pursuant to said first array row programming information stored in said storage means;

switching means respectively associated with said columns of cells of said first array for controlling said first logical outputs to alternatively provide said second array row address information as said first array logical outputs; and

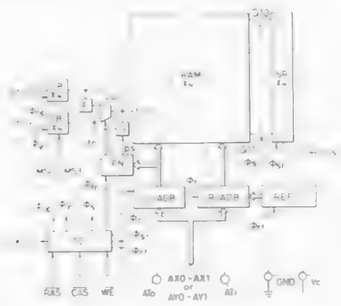
means responsive to said second array row address information contained in said first array logical outputs for enabling the programming of a selected row of said second array pursuant to said second array programming information stored in said storage means.

4,766,570

SEMICONDUCTOR MEMORY DEVICE

Yasunori Yamaguchi, Tachikawa, and Jun Miyake, Musashino, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 13, 1986, Ser. No. 874,106
Claims priority, application Japan, Jun. 17, 1985, 60-129826
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—189 **13 Claims**



1. A semiconductor memory device comprising;

a memory portion for storing data, wherein said memory portion includes means to allow data stored therein to be rewritten;

an internal circuit coupled to said memory portion to provide data to said memory portion, wherein said internal circuit has a plurality of operation modes which are respectively selected in accordance with a function signal so that the data to be provided to said memory portion in each operation mode is determined by said function signal;

an address input terminal; and

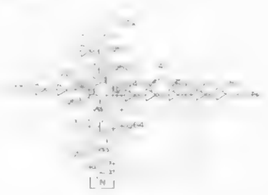
a function setting circuit coupled to receive an input signal from said address input terminal, said function setting circuit including means to form said function signal in accordance with said input signal.

4,766,571

SEMICONDUCTOR MEMORY DEVICE

Syoichiro Kawashima, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 27, 1985, Ser. No. 706,290
Claims priority, application Japan, Feb. 29, 1984, 59-35920
Int. Cl.⁴ G11C *7/00*
U.S. Cl. 365—189 **8 Claims**



1. A semiconductor memory device comprising:

means for receiving a chip selection control signal having a first level and a second level each with a respective period;

a plurality of memory cells;

pairs of signal line means, respectively connected to corresponding ones of said memory cells, for transferring complementary signals to and from the corresponding ones of said memory cells;

reset means, operatively connected to said pairs of signal line means, for resetting each pair of said pairs of signal line means to an equal potential in response to said chip selection control signal; and

reset signal generator means, operatively connected to said reset means, for generating a first reset signal in response to a change of said chip selection control signal from said first level to said second level such that said first reset signal has a pulse width longer than the period of said second level when the period of said second level is shorter than a predetermined period, and so that said first reset signal has a pulse width substantially the same period as the period of said second level when the period of said second level is longer than the predetermined period.

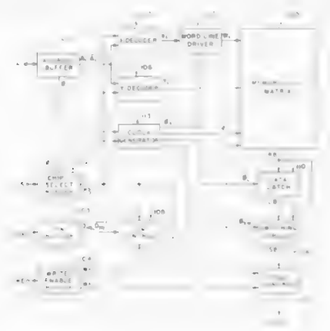
4,766,572

SEMICONDUCTOR MEMORY HAVING A BYPASSABLE DATA OUTPUT LATCH

Yasuo Kobayashi, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Dec. 26, 1985, Ser. No. 813,604
Claims priority, application Japan, Dec. 27, 1984, 59-277356
Int. Cl.⁴ G11C *7/00, 8/00*
U.S. Cl. 365—190 **8 Claims**

1. A semiconductor memory comprising a plurality of memory cells, a plurality of address terminals supplied with address signals, first means coupled to each of said address terminals for producing a pulse signal when a level of at least one of said address terminals is changed, second means responsive to said address signals for selecting one of said memory cells to read data out of the selected memory cell, third means responsive to said pulse signal for generating a control signal during a predetermined period of time, fourth means for detecting a pulse width of said pulse signal for producing a latch-enable signal when said pulse width of said pulse signal is larger than a predetermined width, a latch circuit having an input terminal supplied with said data read from said selected memory cell and an output terminal deriving a latched data and latching said data therein in response to said latch-enable signal, an output circuit, fifth means coupled between said input terminal of said latch circuit and said output circuit for supplying said data to said output circuit without passing through said latch circuit when said control signal is generated, and sixth means coupled between said output terminal of said latch circuit and said output circuit for supplying the data latched in said latch



circuit to said output circuit when said control signal is not generated.

4,766,573

SEMICONDUCTOR MEMORY DEVICE WITH ERROR CORRECTING CIRCUIT

Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Mar. 17, 1987, Ser. No. 26,519
Claims priority, application Japan, Mar. 18, 1986, 61-58205
Int. Cl.⁴ G11C *7/00, 29/00;* **G06F** *11/00, 11/10*
U.S. Cl. 365—222 **4 Claims**



1. A semiconductor memory device including a plurality of cell blocks, a refresh control circuit for sequentially refreshing said plurality of said cell blocks and an access control circuit for accessing said plurality of said cell blocks comprising:

an error correcting circuit provided in a data path between said access control circuit and said plurality of said cell blocks, said error correcting circuit converting data received from said access control circuit to data having a larger number of bits than that of said received data and storing the converted data in said plurality of said cell blocks,

a plurality of selection circuits each provided respectively in correspondence to said plurality of said cell blocks, said selection circuits selectively supplying column addresses received from said refresh control circuit and column addresses received from said access control circuit to a column decoder in said cell blocks, and when said refresh control circuit selects a predetermined cell block, access from said access control circuit to said predetermined cell blocks is inhibited, and when said access control circuit accesses a predetermined cell block, a refresh by said refresh control circuit to said predetermined cell block is inhibited,

when the data is read from a specified cell by said access control circuit while said specified cell is in a refresh state, the data in said specified cell is not read out, and the data from which one bit is omitted is read out in parallel and input to said error correcting circuit, and

said error correcting circuit corrects the data from which one bit is omitted into the original number of bits.

4,766,574

METHOD FOR DEPTH IMAGING MULTICOMPONENT SEISMIC DATA

Norman D. Whitmore, Jr., Broken Arrow, and Kurt J. Marfurt, Tulsa, both of Okla., assignors to Amoco Corporation, Chicago, Ill.

Filed Mar. 31, 1987, Ser. No. 32,907
Int. Cl.⁴ G01V *1/28*
U.S. Cl. 367—50 **31 Claims**



21. A method of geophysical exploration to obtain depth images of the earth's subsurface geological structures from multicomponent seismic data U_{ij}, wherein seismic energy is imparted into the earth with seismic sources having at least one linearly independent line of action i and the earth's response thereto is recorded by receivers having at least two linearly independent lines of action j, comprising steps of:

(a) obtaining separate measures of compressional and shear wavefields generated by the seismic energy imparted into the earth which are incident on reflecting interfaces in the earth's subsurface;

(b) obtaining separate measures of compressional and shear wavefields scattered from reflecting interfaces in the earth's subsurface from the multicomponent seismic data U_{ij}, and

(c) migrating the incident and scattered compressional and shear wavefields to obtain depth images of the earth's subsurface geological structures.

4,766,575

CYLINDRICAL SONAR ARRAY

Stanley L. Ehrlich, Middletown, R.I., and George G. Gray, Mattapoisett, Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 826,392, Feb. 5, 1986. This application Jul. 29, 1987, Ser. No. 80,152
Int. Cl.⁴ H04R *17/00*
U.S. Cl. 367—153 **11 Claims**

1. A cylindrical array of transducers comprising:

a plurality of planar array segments lying in a corresponding plurality of planes;

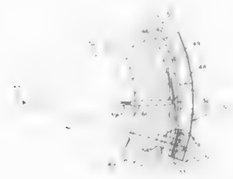
each segment comprising a plurality of solely planar pairs of transducer elements;

each of said elements having an acoustic center;

the acoustic centers of each pair being on a different parallel transverse axis;

VOL 1093 ISS 4 AUG 23 1988 UMI

means for supporting each of said plurality of segments to cause each said acoustic center of a planar pair of each



segment to lie on a circle transverse to a longitudinal axis to form an array.

4,766,576

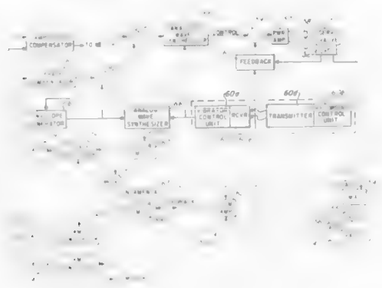
SEISMIC SOURCE VIBRATOR HAVING IMPROVED SWEEP GENERATOR

John J. Sallas, Plano, and George W. Wood, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 595,856, Apr. 2, 1984, abandoned. This application Aug. 15, 1986, Ser. No. 896,342

Int. Cl.[4] G01V *1/28*

U.S. Cl. 367—189 **12 Claims**



1. An improved method of providing a desired non-linear sweep signal in a seismic source vibrator for generating reciprocatory forces, adapted to receive analytical mathematical functions defining the desired sweep signal having an analog wave synthesizer, a hydraulic system responsive to the analog wave synthesizer, and a pad for imparting acoustic energy into the earth, activated by the hydraulic system means, comprising the steps of:

(a) inputting a plurality of pairs of time and amplitude for defining a desired sweep signal;

(b) determining a plurality of polynomial coefficients from the plurality of pairs of amplitude parameters time and parameter;

(c) generating a time series of instantaneous parameters based on the coefficients; and

(d) providing the instantaneous parameters to the analog wave synthesizer for causing the hydraulic system to apply reciprocatory forces to the pad, with the desired sweep signal.

4,766,577

AXIAL BOREHOLE TELEVIEWER

Edward A. Clerke, Missouri City, and Brent H. Larson, Sugarland, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 27, 1985, Ser. No. 813,736

Int. Cl.[4] G01V *1/40*

U.S. Cl. 367—911 **4 Claims**



1. An axial borehole televiewer, comprising:

a housing movable longitudinally within a borehole;

an acoustical transducer;

circuit means coupled to said transducer to cause said transducer to emit a sequence of acoustic pulses into the borehole and to produce signals functionally related to the acoustic pulses reflected back and received by said transducer;

mounting and scan means within the bottom of said housing for mounting said acoustical transducer within the bottom of said housing for scanning the borehole therebeneath, said mounting and scan means including:

(i) means orienting said transducer to emit at least a portion of said acoustic pulses substantially longitudinally along the borehole; and

(ii) moving means for moving said transducer within said housing to scan across a transverse section of said borehole, said moving means including means for simultaneously orbiting said transducer around the longitudinal axis of said housing and moving said transducer radially inwardly and outwardly across at least a portion of the bottom of said housing while said transducer is emitting and receiving said sequence of acoustic pulses, to transmit and receive said pulses across the corresponding areal extent of the borehole, said means for simultaneously orbiting and moving said transducer further including:

(a) a sub-chassis rotatably supported at the bottom of said housing for rotation substantially in a plane substantially perpendicular to the longitudinal axis of said housing;

(b) drive means coupled to said sub-chassis for rotating said sub-chassis in said plane; and

(c) oscillating means coupled to said drive means and driven in response to said rotation of said sub-chassis in said plane for moving said transducer radially inwardly and outwardly to provide a period for said oscillating means which includes a plurality of rotations of said sub-chassis in said plane; and

correlation means for correlating said signals produced by said circuit means with the corresponding transverse section scan positions of said transducer.

4,766,578

METHOD OF SETTING TIME IN DIGITAL CLOCK AND SYSTEM THEREFOR

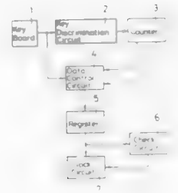
Hiroshi Yamazaki, and Kazuhiko Shiratori, both of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1986, Ser. No. 915,811

Claims priority, application Japan, Oct. 9, 1985, 60-225182

Int. Cl.[4] G04C *17/00*

U.S. Cl. 368—69 **12 Claims**



1. A system for performing time setting in a digital timepiece, comprising: a mode-key operable for setting a time set mode; a ten-key operable for entering a series of time data; a set-key operable for instructing execution of the time setting; counter means for generating a first output when the operation of the ten-key for entering a first time data is not performed within a first predetermined lapse time from the operation of the mode-key and for generating a second output after a second predetermined lapse time, which is longer than the first lapse time, from the operation of the ten-key for entering the first time data; control means for returning the time set mode to a normal mode in response to either of the first and second outputs from the counter means; time setting means for setting a time in accordance with the series of time data entered by the ten-key when the first time data from the ten-key is entered within the first lapse time from the operation of the mode-key, then the rest of the time data is entered by the successive operations of the ten-key, and finally the set-key is operated within the second lapse time from the operation of the ten-key for entering the first time data.

4,766,579

TIMEPIECE HAVING A CONTROL STEM CORRECTING MECHANISM WITH AT LEAST TWO SETTING POSITIONS

Jörg Spörring, Lacerae, Switzerland, assignor to Complications S.A., Canton of Neuchatel, Switzerland

Filed Jan. 8, 1987, Ser. No. 1,565

Claims priority, application Switzerland, Jan. 14, 1986, 120/86

Int. Cl.[4] G04B *17/12, 27/00*

U.S. Cl. 368—190 **9 Claims**

1. Clockwork for a timepiece comprising a basic clockwork provided with a manually operable control mechanism having a control stem able to occupy at least two axial positions, a first one of which positions serves in the setting of the time indicators and a second one of which positions serves in the correction of other indicating members by means of a correcting mechanism having a first sliding pinion mounted on said control stem, and an additional module secured to said basic clockwork carrying a driving mechanism for at least two indicators, a second sliding pinion of said correcting mechanism of the basic clockwork extending up to said additional module and carrying, at the level of this additional module, a pinion operatively meshing alternatively according to the sense in which the control stem is operated, with a correction gear train of one or of the other of said two indicators in order to permit correction thereof, in which said additional module is mounted on said basic clockwork, said first sliding pinion of said correcting mechanism engaging said second sliding pinion mounted on a shaft extending substantially perpendicular to the sliding movement of said correcting mechanism first sliding pinion,





said shaft carrying said operatively meshing pinion for correcting said other two indicators.

4,766,580

INFORMATION REPRODUCING SYSTEM WITH IMPROVED RESPONSE TO INTERMITTENT POWER SUPPLY

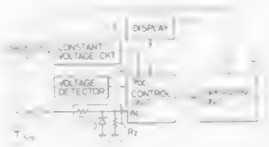
Yasunao Go; Yoshiharu Ueki; Minoru Motohashi; Kouzou Nozawa, and Norihisa Urayama, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 30, 1985, Ser. No. 781,588

Claims priority, application Japan, Sep. 29, 1984, 59-148290[U]; Sep. 29, 1984, 59-148291[U]; Sep. 29, 1984, 59-148292[U]

Int. Cl.[4] G11B *31/00, 5/00*

U.S. Cl. 369—21 **21 Claims**



1. An information reproducing system for use in an automobile including a battery for generating a predetermined voltage level for supplying power to said system, comprising: a voltage detector circuit for detecting a predetermined drop in the voltage level of said battery and for detecting the predetermined voltage level, operating means for receiving the power supplied from said battery and reproducing information from that which has been stored on a recording medium, and control means for controlling the reproduction of the information by said operating means in response to an operation command input, and means for inhibiting said control means from responding to the operation command input when said voltage detector circuit has detected at least the predetermined drop in the voltage level of said battery until said voltage detector circuit detects the predetermined voltage level.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,581

INFORMATION RETRIEVAL SYSTEM AND METHOD USING INDEPENDENT USER STATIONS

Justin Korn, Sapphire Beach, 164, Rte. 6, St. Thomas, V.I. 00802, and Stephen F. Schmelzer, Maplewood, N.J., assignors to Justin Korn, New York, N.Y.

Filed Aug. 7, 1984, Ser. No. 638,401
Int. Cl.[4] G11B *17/22, 21/08;* H04N *5/85*
U.S. Cl. 369—30 28 Claims



1. An information system comprising:
means for storing a plurality of storage units;
a plurality of operating means, each operable for retrieving information stored in a respective storage unit, the information in each of such storage units including at least one selection, at least one of the user units comprising selection input means for receiving inputs from a user requesting one of the selections and for providing a selection input signal to the control means indicating the selection requested;
a plurality of user units for presenting information to users, at least one of the user units being a menu display unit for displaying menu information to a user, the control means being further operable for providing menu information for display on the menu display unit;
the information in each of such storage units including stored menu information;
control means for selectively connecting at least one of the operating means to at least one of the user units for presenting information, retrieved from such respective storage unit by each selectively connected operating means, to a user;
the control means further operable for controlling the respective operating means to provide the selection requested to the user unit in response to the selection input signal;
the control means comprising accounting memory means for storing accounting data, the accounting data including a count of the selection input signals for each selection, the control means being further operable for incrementing the count for each selection whenever a selection input signal for that selection is received;
the control means being further operable for controlling each operating means to retrieve the stored menu information from all storage units of such plurality of storage units for integrating and updating the menu information provided to the menu display unit, prior to display of menu information by the menu display unit of stored menu information from such plurality of storage units;
the control means being further operable for controlling the respective operating means to provide the selection requested to the user unit in response to the selection input signal.

24. A method of displaying stored information to at least one user, comprising:
selecting an operating unit from a plurality of operating units for retrieving stored information from a storage unit;
selecting at least one user unit from a plurality of user units to display information to at least one user;
connecting the selected operating unit to each selected user unit to provide the stored information from such storage unit to each selected user unit;
displaying the stored information on each selected user unit;
receiving an input from a user to one of the user units indicating a selection from the stored information to be displayed to the user from one of a plurality of storage units including such first-mentioned storage unit;
retrieving menu information from each of the plurality of storage units, the menu information from each storage unit indicating the selections in that storage unit;
processing the menu information to provide a formatted menu; and
displaying the formatted menu on a menu display unit to provide the menu information to a user.

4,766,582

OPTICAL HEAD

Hideo Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 673,764, Nov. 21, 1984, abandoned, which is a continuation of Ser. No. 16,488, Feb. 17, 1987, abandoned. This application Sep. 4, 1987, Ser. No. 94,024
Claims priority, application Japan, Nov. 22, 1983, 58-219707; Nov. 22, 1983, 58-219708; Nov. 22, 1983, 58-219709; Nov. 25, 1983, 58-221568
Int. Cl.[4] G11B *7/135*
U.S. Cl. 369—45 25 Claims



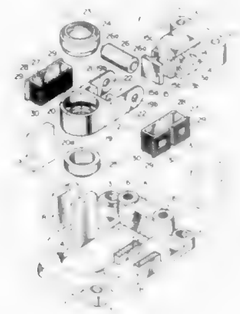
1. An optical head for recording/reproducing information with respect to a recording surface subjected to information recording/reproduction, comprising:
means for emitting at least first and second light beams;
optical means for transmitting said first and second light beams;
objective lens means for converging said first and second light beams transmitted from said optical means toward said recording surface;
converging means for obtaining said first and second light beams from said recording surface and converging said first and second light beams obtained from said recording surface so as to cause said second light beam to be spatially separate from said first light beam, a converged first light beam forming a light beam spot of minimum size at a location of a first plane spatially separate from said second light beam;
detecting means for detecting said first light beam, and having first and second photosensitive regions separated from each other; and
light beam-separating means, substantially located in said first plane for allowing only said first light beam to impinge on said detecting means.

4,766,583

OPTICAL PICKUP DEVICE WITH OBJECTIVE LENS MOVABLE IN TWO DIRECTIONS

Hiroshi Oinoue, Tokyo, and Yoshimass Gods, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 15, 1986, Ser. No. 896,922
Claims priority, application Japan, Aug. 16, 1985, 60-180145
Int. Cl.[4] G11B *7/08;* G02B *7/02*
U.S. Cl. 369—45 10 Claims





1. An optical pickup device comprising:
an objective lens having an optical axis for focusing a light beam emitted from a light beam source on an optical recording medium;
a support member supporting said objective lens thereon;
electromagnetic coil members secured to said support member and arranged to move said objective lens in a first direction parallel to said optical axis and in a second direction perpendicular to said optical axis;
a parallel link means supporting said support member for movement in said first direction;
a base plate supporting said parallel link means;
a coupling unit including a hinge portion and a pair of hinge members each connected to said hinge portion, one of said pair being supported by said parallel link means and the other of said pair being fixed to said support means;
said coupling unit supporting said support member for movement in said second direction;
said coupling unit having a center of gravity substantially coinciding with the center of gravity of said support member.

4,766,584

THREE-DIMENSIONAL DRIVING ARRANGEMENT

Yoshihiro Sekimoto; Shigeo Terashima, both of Tenri, and Kunio Kojima, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 697,465, Feb. 1, 1985, Pat. No. 4,696,566. This application Jun. 18, 1987, Ser. No. 63,495
Claims priority, application Japan, Feb. 8, 1984, 59-22493; Feb. 8, 1984, 59-22494; Apr. 13, 1984, 59-75544; Apr. 13, 1984, 59-75545
Int. Cl.[4] G11B *7/12*
U.S. Cl. 369—4 2 Claims

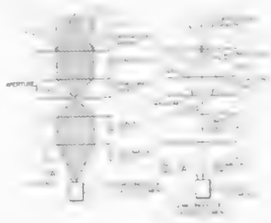
1. A three-dimensional driving arrangement for an objective lens, which comprises an objective lens support member having an objective lens provided at a central portion thereof, a driving means for driving said objective lens support member vertically and horizontally in three directions, and a pair of elastic members respectively provided at upper and lower portions of the objective lens support member for movably supporting said support member and for effecting damping action in the respective vertical and horizontal directions, said driving means includes, respective two coils each having a V-shaped cross section and inserted, at one side arms thereof, into each of four slits formed in a flange portion of said objective lens support member at intervals of 90°, with the other side arms of said coils being fixed onto an outer peripheral surface of said flange portion in a symmetrical relation with respect to said slit so as to utilize the one side arm of each of the coils inserted in said slit as a returning passage arm and the other side arm thereof at the outer peripheral surface as a going passage arm so as to alternately form the tracking control coils and tangential control coils by the neighboring two coils between the respective slits, one annular focusing control coil provided around outer peripheral surfaces of said coils, and a magnetic circuit constituted by a yoke plate, a magnet and a flanged cylindrical yoke, said focusing control coil and said going passage arms of said tracking control coils and said tangential control coils being provided in a magnetic gap of said magnetic circuit, said returning passage arms of said tracking control coils and said tangential control coils being disposed outside said magnetic gap through four slit-like notches formed at intervals of 90° in said flanged cylindrical yoke.

4,766,585

TRACKING ERROR DETECTING APPARATUS FOR OPTICAL HEAD

Atsushi Fukumoto; Kiyoshi Ohsato, and Michio Oka, all of Shinagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP85/00391, § 371 Date Mar. 12, 1986, § 102(e) Date Mar. 12, 1986, PCT Pub. No. WO86/00742, PCT Pub. Date Jan. 30, 1986
PCT Filed Jul. 11, 1985, Ser. No. 844,178
Claims priority, application Japan, Jul. 13, 1984, 59-145768
Int. Cl.[4] G11B *7/125*
U.S. Cl. 369—46 1 Claim



1. An optical head tracking error detecting apparatus comprising a semiconductor laser element, a diffraction grating on

VOL 1093 ISS 4 AUG 23 1988 UMI

which a laser beam from said semiconductor laser element is made incident, a beam splitter passing therethrough a 0-order beam and ±1st-order beams emitted from said diffraction grating, an objective lens for converging a 0-order beam and ±1st-order beams from said beam splitter and for introducing the same on an optical recording medium and a photodetector to which the 0-order beam and ±1st-order beams reflected on said optical recording medium, passed thorugh said objective lens and then reflected on a reflection surface of said beam splitter are introduced, wherein a pair of photo-detection outputs corresponding to said ±1st order beams are obtained from said photodetector, said photodetector having means for generating a tracking error signal corresponding to the tracking state of said 0-order beam on said optical recording medium on the basis of a difference between said pair of photo-detection outputs, said optical head tracking error detecting apparatus being characterized in that a pair of positive lenses are provided between said semiconductor laser element and said diffraction grating and a light shielding member is provided between said pair of positive lenses so as to pass therethrough a central beam of the central beam and both side beams thereof, which are reflected on said optical recording medium, passed through said objective lens, said beams splitter, said diffraction grating and directed to said semiconductor laser element, and to shield said both side beams.

4,766,586

DISC-RECORD PLAYER

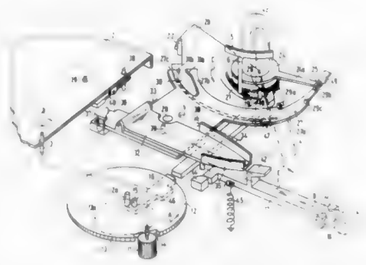
Hermanus F. Einhaus, Ham, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 20, 1987, Ser. No. 18,107

Claims priority, application Netherlands, Feb. 28, 1986, 8600538

Int. Cl.⁴ G11B *3/10, 17/08*

U.S. Cl. 369—217 **20 Claims**



1. A disc-record player comprising a deck plate (1) carrying a rotatable turntable (2) and a pivotable pick-up arm (4) which is rigidly connected to a pick-up arm support (24) underneath said deck plate, in which turntable (2) two depressible sensing pins (38,39) are arranged at different distances from the turntable shaft (3) to sense the presence of a disc record on the turntable (2), a coptrol device being provided which comprises:

a drive element (20) which is movably connected to the deck plate (1) and which is provided for controlling the pivotal movement of the pick-up arm (4) from a rest position towards the turntable (2) and for this purpose can be coupled to the pick-up arm support (24),

a selection element (27),which can be set selectively to two operative positions and carries first and second positioning projections (29*a*, 29*c*) which each constitute a stop for the pivotal movement of the pick-up arm support (24) as a result of the coupling to the drive element (20), to position the free end of the pick-up arm (4) above the turntable (2) in a first position and a second position respectively,

a positioning element (32) which cooperates with the selection element (27) and which comprises first and second positioning portions (34,35) which during a revolution of the turntable (2) cooperate with a first or a second depressed sensing pin (38,39) respectively depending on the diameter of a disc record placed on the turntable (2) after which the positioning element (32) always sets the selection element (27) in one of the operative positions, and

a starting element (17) which is movable between two positions and which by a movement to a first position causes the rotation of the turntable (2) to be started and the control device to be activated, characterized in that

the positioning portions (34,35) are movable between an upper or operative and a lower or inoperative position, the positioning portions (34,35) being situated in the path of the respective depressed sensing pin (38,39) in the upper position only, p1 a movement of the starting element (17) to the first position causes the positioning portions (34,35) to be set to the upper position and a movement of the starting element (17) to a second position causes the positioning portions (34,35) to be set to the lower position,

control means are provided which after the first revolution of the turntable (2) enable the starting element (17) to move out of the first position, so that the starting element (17) moves to the second position,

the selection element (27) can also be set to an inoperative position in which a third positioning projection of the selection element (27) functions as a stop for the pick-up arm support (24) to prevent the pick-up arm (4) from being pivoted out of the rest position, and

the drive element (20) carries a control element (22) which positions the selection element (27) into the inoperative position after every pivotal movement of the pick-up arm support (24) and of the free end of the pick-up arm (4) into one of the positions above the turntable(2).

4,766,587

ELECTRICAL APPARATUS SUCH AS A DISC-RECORD PLAYER, COMPRISING A MOUNTING DEVICE FOR A DRIVE MOTOR

Franciscus A. Doss, Hasselt, and Hermanus F. Einhaus, Ham, both of Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 24, 1987, Ser. No. 18,212

Claims priority, application Netherlands, Feb. 24, 1986, 8600451

Int. Cl.⁴ G11B *25/04*

U.S. Cl. 369—263 **8 Claims**



1. An electrical apparatus, such as a disc-record player, comprising a mounting device for a drive motor (7) and a housing, the motor (7) having a housing (6) which is resiliently suspended on motor supports (4) so as to be movable in a radial direction with respect to the motor axis (7*a*) for which purpose suspension rings (11) of an elastic and vibration-damping material are arranged around mounting elements (10) on the motor housing (6) and around the motor supports (4) which supports (4) occupy fixed positions inside the housing of the apparatus; stop portions (13) are arranged on the motor housing (6) which in the event of axial movement of the motor housing (6) abut against fixed abutment surfaces (14) inside the housing (1) of the apparatus to limit said axial movement, characterized in that positioning means (15,20) are provided which position said stop portions (13) and abutment surfaces (14) in such a way relative to each other after turning of the motor housing (6) about the motor axis and stretching of the suspension rings (11) that the stop portions (13) can move freely along the abutment surfaces (14) in an axial direction.

4,766,588

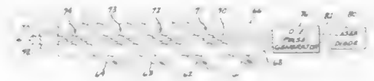
MULTIPLEXER AND DEMULTIPLEXER COMPRISING OPTICAL SWITCHES AND COMMON ELECTRODES

Robert A. Falk, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1986, Ser. No. 912,939

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 370—4 **15 Claims**



1. A device for time multiplexing a plurality of parallel optical input signals to produce a serial optical output signal, the device comprising:

an optical output waveguide;

a plurality of optical input waveguides, each input waveguide including means for receiving one of the input signals;

a plurality of optical switches, each optical switch coupling one of the input waveguides to the output waveguide, each optical switch including means for receiving an electrical activation signal which, when present, causes light entering the optical switch through the associated input waveguide to pass through the optical switch into the output waveguide; and,

activation means for providing activation signals to the optical switches such that input signals on the input waveguides are time multiplexed onto the output waveguide to produce the output signal, the activation means comprising an electrode pair positioned and dimensioned such that each optical switch is adjacent to a different portion of the electrode pair.

4,766,589

DATA TRANSMISSION SYSTEM

David A. Fisher, Saffron Walden, United Kingdom, assignor to STC PLC, London, England

Filed Jun. 26, 1985, Ser. No. 749,063

Claims priority, application United Kingdom, Jul. 11, 1984, 8417661

Int. Cl.⁴ H04L *5/14*

U.S. Cl. 370—32 **6 Claims**

1. A method for maintaining synchronization between a master terminal and a slave terminal of a digital data transmission system in which data is transmitted over a line between the terminals in an analogue form, which method includes:

sending from the master terminal to the slave terminal a pilot tone additional to the data, the amplitude of the pilot tone being small compared with that of the data signal, the pilot tone having a frequency with a fixed and known relation to the data bit rate, so that adding the pilot tone does not increase bandwidth;

sampling the data signal at the slave terminal under the control of a local clock signal;

detection of the pilot tone being effected concurrently with the sampling of the data signals, said pilot tone detection being effected by a coefficient generation circuit similar to the coefficient generation circuits used in an adaptive decision feedback equalizer and included in an echo canceller at the slave terminal, which coefficient generation circuit comprises a first multiplier fed at a first input thereto with the output of the echo canceller, an accumulator and a second multiplier all connected in series, said second multiplier having a first input fed from an output of the accumulator;



feeding a locally-generated pilot tone reference signal to second inputs of both said multipliers; and

adjusting the said local clock signal under control of the pilot tone detected from the incoming data streams, thus maintaining synchronization between the slave terminal and the master terminal.

4,766,590

LOOP TRANSMISSION SYSTEM HAVING PLURAL STATIONS CONNECTED IN A VARIABLE ORDER

Takuji Hamada, Hitachiohta; Masahiro Takahashi; Kotaro Hirasawa, both of Hitachi; Junji Ide, Mito; Hitoshi Fushimi, and Seiichi Yasumoto, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1985, Ser. No. 792,319

Claims priority, application Japan, Oct. 31, 1984, 59-227759

Int. Cl.⁴ H04Q *11/00;* **H04J** *3/00*

U.S. Cl. 370—56 **8 Claims**



1. A loop transmission system for conducting data transmission among a plurality of transmission stations, and in which a plurality of said transmission stations have data processors connected thereto comprising:

a plurality of transmission stations, each transmission station having a receiver for receiving data and a transmitter for transmitting data, said receiver and said transmitter in each station being connected to a respective transmission line to provide a data input line and a data output line for said transmission station, respectively, and outputting

VOL 1093 ISS 4 AG 23 1988 UMI

means for transmitting a switching request signal on the data output line of the transmission station; and

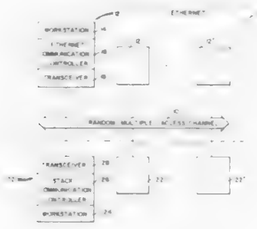
a concentrator connected to said plurality of transmission stations via said respective transmission lines in such a manner as to selectively form a series transmission loop through said concentrator in which said transmission stations are connected in series in a selected order, said concentrator including switching means for changing the connection relationship between a number of data input lines and the same number of data output lines of the transmission stations connected thereto so that said stations are connected in series in any arbitrary order, and switching control means responsive to said switching request signal for outputting switching commands to said switching means to control the connection relationship of said transmission stations in said series transmission loop to connect said stations in series in an order indicated by said switching request signal.

4,766,591

RANDOM MULTIPLE-ACCESS COMMUNICATION SYSTEM

Jian-Cheng Huang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 12, 1987, Ser. No. 25,234
Int. Cl.[4] H04Q *11/04*; **H04J** *3/02, 3/24*
U.S. Cl. 370—60 **16 Claims**



1. A random multiple-access communication system, comprising:

a communication channel; and

a plurality of communication terminals for transmitting and receiving information over said communication channel, said plurality including a first group of terminals having means for implementing a packet-switching feedback-ignored protocol for resolving channel access disputes, and a second group of terminals having means for implementing a packet-switching, random splitting, feedback-utilized protocol for resolving channel access disputes, said protocols interacting to resolve channel access disputes in such a manner that after a collision, every transmitting terminal ceases transmission and initiates retransmission according to its own protocol.

4,766,592

BROADCAST CONFERENCING ARRANGEMENT

Elliott Baral, Chicago, Ill.; Jonathan D. Dharmapalan, Red Bank, N.J.; Travis H. Gordon, Madison, N.J., and Ross M. Richardson, Sea Bright, N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 28, 1987, Ser. No. 90,867
Int. Cl.[4] H04Q *11/04*
U.S. Cl. 370—62 **14 Claims**

1. An arrangement for broadcasting a digital signal from a transmitting station to a plurality of receiving stations comprising:

broadcast bridge means for replicating a transmitted digital signal received at a one-way input port of said bridge means to a plurality of one-way output ports of said bridge means;

means responsive to a first preselected number from said transmitting station for connecting said transmitting station to said input port and to no output ports of said broadcast bridge means; and



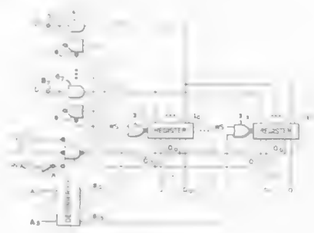
means responsive to a second preselected number from each of said plurality of receiving stations for connecting said one receiving station to one of said plurality of output ports and to no input port of said broadcast bridge means.

4,766,593

MONOLITHICALLY INTEGRATED TESTABLE REGISTERS THAT CANNOT BE DIRECTLY ADDRESSED

Ronnie L. Cates, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1986, Ser. No. 944,084
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—15 **10 Claims**



1. A circuit having an operation mode and a test mode, said circuit comprising:

a plurality of input pins, each of said input pins receiving one of a plurality of input signals;

a plurality of latch registers, each of said plurality of latch registers coupled to said input pins for selectively latching said input signals and having a plurality of outputs and a plurality of complementary outputs, wherein each of said plurality of complementary outputs of each of said plurality of latch registers corresponding to each of said input signals are coupled together;

first means coupled to said latch registers for selectively enabling one of said latch registers for latching said input signals during said operation mode; and

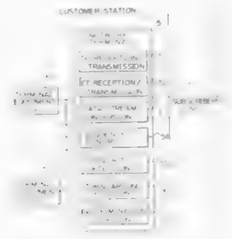
second means coupled between said plurality of latch registers and said plurality of input pins for selectively coupling each of said input pins to said corresponding complementary outputs of said latch registers during said test mode.

4,766,594

DIGITAL NETWORK SYSTEM HAVING ARRANGEMENT FOR TESTING DIGITAL SUBSCRIBER LINE

Yasunori Ogawa, Yokohama; Kenji Tsutsumi, Kawasaki; Yasuo Tanaka, and Ryoji Shimozono, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 14, 1986, Ser. No. 863,040
Claims priority, application Japan, May 20, 1985, 60-105952
Int. Cl.[4] H04B *3/46*
U.S. Cl. 371—22 **7 Claims**





1. A digital network system for testing a digital subscriber line, said system comprising a switching device, an exchange terminal device and a subscriber circuit connected with said switching device, the digital subscriber line being connected with said exchange terminal device through the subscriber circuit, and a network terminal device and terminal equipment devices at a subscriber's side of the system, the network terminal devices being connected between the subscriber line and the terminal equipment devices, said network terminal device comprising:

turn-around means for forming a turn-around loop through which a signal is turned around to the subscriber line connected with said network terminal device, in response to receipt of a frame synchronization bit signal from the exchange terminal device by the network terminal device; and

discrimination means for detecting that data transmission can be carried out and, in response to such detecting, for cancelling said turn-around loop;

whereby communication for either monitoring of transmission or bit error testing can be carried out between the network terminal device and the switching device while said turn-around loop is formed, and data transmission between the exchange terminal device and the terminal equipment devices can be carried out after the turn-around loop is cancelled.

4,766,595

FAULT DIAGNOSTIC SYSTEM INCORPORATING BEHAVIOR MODELS

Bernard P. Gollomp, West Lawrence, N.Y., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 26, 1986, Ser. No. 935,651
Int. Cl.[4] G01R *31/28*
U.S. Cl. 371—23 **9 Claims**



1. A fault diagnostic system for a unit under test, characterized by:

a plurality of model data bases for modeling and providing unit under test behavior data including first model data bases for modeling and providing unit under test parts connectivity data, second model data bases for modeling and providing unit under test parts attributes data, and third model data bases for modeling and providing unit under test behavior, failure modes and effects analysis, and functional data;

means bidirectionally connected to the plurality of model data bases for receiving the data therefrom and for converting the received data into a predetermined context and format, and for transmitting the converted data to the plurality of model data bases;

a model bididirectionally connected to the converting means and receiving the converted data therefrom for modeling and providing failure modes and effects analysis data and for transmitting said data to the converting means;

means bidirectionally connected to the converting means and to the failure modes and effects analysis data means and receiving the converted data and the failure modes and effects analysis data for providing modifying data, and for transmitting the modifying data to the converting means and to the failure modes and effects analysis data means; and

means bidirectionally connected to the converting means and to the modifying data means and receiving the converted data and the modifying data for modeling both good and faulty performance of the unit under test and for providing corresponding data, and for transmitting the corresponding data to the converting means and to the modifying data means.

VOL 1093 ISS 4 AG 23 1988 UMI

4,766,596

METHOD AND CIRCUIT ARRANGEMENT FOR THE TRANSMISSION OF DATA SIGNALS BETWEEN CONTROL DEVICES CONNECTED TO ONE ANOTHER VIA A LOOP SYSTEM

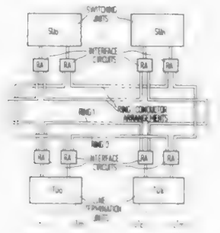
Karl-Heinz Michels-Krohn, Martinsried, Fed. Rep. of Germany, and Josef Untergruber, deceased, late of Nubdorf Inn, Fed. Rep. of Germany (by Angela Untergruber, legal representative), assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 27, 1986, Ser. No. 900,908

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 3532469

Int. Cl.[4] G06F *11/00*

U.S. Cl. 371—62 6 Claims



4. A system for transmitting data between a plurality of control devices in said system connected to each other by at least one clock-controlled loop operated directionally dependent, said system comprising:

means in each control device for transmitting successive transmit authorization signals via said loop from control device to control device and means for placing a control device which receives the transmit authorization signal in a transmit authorization status;

means in each control device for emitting data signals to be transmitted via said loop to a selected other control device upon receipt of said transmit authorization signal and before forwarding said transmit authorization signal to another control device, said data signals being transmitted together with a receiver address identifying said selected other control device intended to receive said data signals;

means in each control device for switching a control device which has transmitted said data signals for an intended other control device to an acknowledgement signal reception status;

means in each control device for sending an acknowledgement signal via said loop upon receipt of data signals from another control device to the control device which sent the data signals;

means for maintaining a control device which has transmitted said data signals in said acknowledgement signal reception status for a time no longer than by the arrival of a successive transmit authorization signal at said control device which has transmitted said data signals;

means in each control device for switching a control device which has transmitted said data signals to a status enabling renewed emission of further data signals if said acknowledgement signal is received within said time; and

means in each control device for switching a control device which has transmitted data signals to an error status if no acknowledgement signal is received within said time.

4,766,597

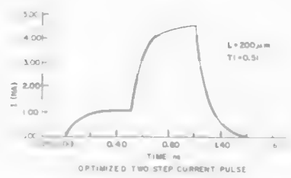
SINGLE FREQUENCY SEMICONDUCTOR LASER AND DRIVE WITH REDUCED LINEWIDTH AND IMPROVED SIDE MODE SUPPRESSION

Robert Olshansky, Wayland, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Dec. 21, 1984, Ser. No. 685,061

Int. Cl.[4] M01S *3/096*

U.S. Cl. 372—44 1 Claim



1. In the method of operating a single frequency laser, selected from the group of distributed feedback, coupled cavity and short cavity lasers, with and without external reflectors; the improvement comprising:

driving said laser with a current pulse having a double step turn-on, thereby suppressing relaxation oscillations; wherein the current pulse has the optimized shape illustrated in FIG. 2 or FIG. 9.

4,766,598

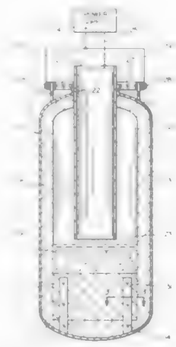
ELECTRIC ARC FURNACE AND METHOD WITH COAXIAL CURRENT FLOW

Charles H. Titus, Newtown Square, and J. Kenneth Wittle, Chester Springs, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jan. 12, 1987, Ser. No. 2,563

Int. Cl.[4] H05B *7/20*

U.S. Cl. 373—108 11 Claims



1. In a electric arc furnace: an outer shell of electrically conductive material having a top wall, a generally cylindrical side wall and a bottom wall, an electrically conductive hearth positioned above the bottom wall and connected electrically to the lower portion of the outer shell for receiving a material to be heated, a vertically elongated electrically conductive electrode positioned coaxially within the outer shell and having a lower tip spaced above the hearth for forming a high current arc with the material to be heated means for connecting a first terminal of a high current power supply to the upper portion of the electrode, and means for connecting a second terminal of the power supply to the upper portion of the outer shell at a plurality of points spaced symmetrically about the side wall of the outer shell so that the current which forms the arc flows in and is distributed substantially uniformly around the side wall of the outer shell as it passes between the second terminal and the electrically conductive hearth.

4,766,599

COMMUNICATION SYSTEM WITH VARIABLY REPEATED TRANSMISSION OF DATA BLOCKS

Shinichi Miyazaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 27, 1986, Ser. No. 900,922

Claims priority, application Japan, Aug. 28, 1985, 60-189037; Oct. 31, 1985, 60-245407

Int. Cl.[4] H04L *1/08*

U.S. Cl. 375—8 7 Claims



1. A radio transceiver comprising:

first means for receiving signals from a distant station and constantly detecting reception quality;

second means for generating a series of copies of a message signal, a number of copies in said series being variable as a function of said detected reception quality;

third means for transmitting said series of copies to said distant station;

fourth means, operable during a transmit mode, for generating a control signal representative of the number of said copies contained in said series and causing said third means to transmit said control signal to said distant station immediately prior to the transmission of said series of copies; and

fifth means, operable during a receive mode, for analyzing each of said copies received from said distant station in accordance with said control signal and varying said number of copies accordingly.

4,766,600

CHARACTERIZATION OF DIGITAL RADIO SIGNALS

Andrew L. Martin, Feray Creek, Australia, assignor to Australian Telecommunications Commission, Melbourne, Australia

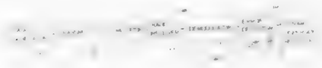
PCT No. PCT/AU85/00107, § 371 Date Feb. 24, 1986, § 102(e) Date Feb. 24, 1986, PCT Pub. No. WO85/05518, PCT Pub. Date Dec. 5, 1985

PCT Filed May 15, 1985, Ser. No. 829,150

Claims priority, application Australia, May 15, 1984, PG4999; Dec. 24, 1984, PG8701

Int. Cl.[4] H04B *17/00*

U.S. Cl. 375—10 32 Claims



1. A method of characterising a modulated carrier signal comprising:

(a) repetitively generating samples of in band amplitude dispersion of the signal at time spaced intervals;

(b) accumulating first counts of numbers of occurrences of respective in band dispersion values over a range thereof;

(c) decoding said modulated carrier signal;

(d) monitoring a parameter indicative of signal quality of said decoded carrier signal;

(e) accumulating second counts of numbers of occurrences of respective in band amplitude dispersions of said values within said range, and which last mentioned in band amplitude dispersions at least substantially coincide with the value of said parameter crossing a predetermined level; and

(f) dividing one of said first and second counts for each said in band amplitude disperison value by the the other of said first and second counts therefor, to obtain respective divided counts each representative of the probability that, at the respective in band amplitude dispersion value, the value of said parameter will cross said predetermined level.

4,766,601

CONSTANT CARRIER WATCHDOG

John A. Hammond, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 23, 1985, Ser. No. 812,474

Int. Cl.[4] H04L *27/10*

U.S. Cl. 375—59 8 Claims



1. A constant carrier watchdog circuit comprising:

means for detecting when a carrier frequency of a radio frequency modem is continuously on for longer than a predetermined period of time indicating a fault condition; and

means for shifting said carrier frequency out of the data channel bands associated with said modem in response to the output of said detecting means when said predetermined period is exceeded.

4,766,602

SYNCHRONIZING SIGNAL DECODING

James H. Wilkinson, Yokohama, and Roger Lagadec, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 18,209

Claims priority, application United Kingdom, Feb. 27, 1986, [illegible]

Int. Cl.[4] H04L *7/08*

U.S. Cl. 375—116 6 Claims

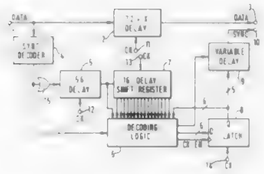
1. A method of decoding digital synchronizing signals each of which consists of a plurality of bits in a fixed pattern, wherein the intervals between the starts of successive said synchronizing signals in an input digital signal are variable over a range of P bit periods plus or minus Q bit periods, the method comprising the steps of:

ascertaining the bit period distance between the starts of two successive said synchronizing signals, said step of ascertaining including first searching said input digital signal for two successive alternating synchronizing signal patterns;

VOL
1093
ISS
4
AG
23
1988
UMI

providing a window comprising said bit period distance, which window is varied in position if said bit period distance changes;

subsequently searching said input digital signal for said pattern using said window; and



supplying an output synchronizing pulse in synchronism with subsequent said synchronizing signals found in said window.

4,766,603

APERTURE DEVICE OF RADIATION DIAGNOSTIC APPARATUS

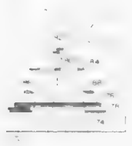
Kanichi Okabe, Tochigi; Hirotsugu Suzuki, Ootawara; Kohsaku Nishio, Ootawara, and Katsuhiko Koyama, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 672,194, Nov. 16, 1984. This application Nov. 10, 1986, Ser. No. 928,389

Claims priority, application Japan, Nov. 18, 1983, 58-216008; Dec. 13, 1983, 58-234571

Int. Cl.[4] G21K *1/04*

U.S. Cl. 378—152 9 Claims



1. An aperture device of a radiation diagnostic apparatus which defines first and second radiation beams omitted from two radiation focal points spaced apart from each other along a first direction, the first and second radiation beams being defined by the aperture device to selectively form a radiation area in stereoscopy or monoscopy, the two radiation focal points also being spaced from an imaging surface in another direction and the apparatus including means for selectively changing the distance between the focal points and the imaging surface, the aperture device comprising:

first and second blades, made of a radiation shielding material and movable along the first direction, for respectively defining, during selected stereoscopic operation, inner and outer edges of the first radiation beam along the first direction;

first and second drive means for respectively driving said first and second blades;

third and fourth blades, made of a radiation sheilding material and movable along the first direction, for respectively defining, during selected stereoscopic operation, inner and outer edges of the second radiation beam along the first direction, said second and fourth blades overlapping each other in the first direction;

third and fourth drive means for respectively driving said third and fourth blades;

fifth and sixth blades, made of a radiation shileding material and movable along a second direction transverse to the first direction, for respectively defining two edges of each of the first and second radiation beams along the second direction;

fifth and sixth drive means for respectively driving said fifth and sixth blades, the first radiation beam being defined by said first, second fifth, and sixth blades in a rectangular shape, and the second radiation beam being defined by said third, fourth, fifth and sixth blades in a rectangular shape;

adjusting means for automatically adjusting the position of said first to sixth blades to define the radiation area to be identical with a predetermined diagnostic area in accordance with the change of the distance between the X-ray focal points and the imaging surface; and

means associated with said first blade for obscuring said first radiation beam during selective monoscopy operation, said obscuring means including a progressive, double slide-type first blade for defining the edge of the second beam opposed to the edge defined by said third blade during operation of the second beam only.

4,766,604

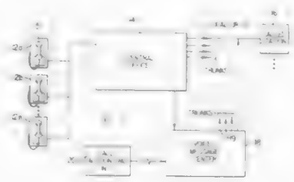
METHOD FOR RECEIVING AND DELIVERING VOICE MESSAGES

David R. Axberg, Carrollton, Tex., assignor to MessagePhone, Inc., Dallas, Tex.

Filed Nov. 7, 1986, Ser. No. 928,534

Int. Cl.[4] H04M *1/66, 3/50*

U.S. Cl. 379—67 4 Claims



4. A method for receiving and forwarding voice messages over a telephone system having a voice message facility connectible to one or more calling stations and a called station via a central office, comprising the steps of:

receiving and storing a called number identifying the called station;

transmitting the called number from the calling station to the central office via a trunk to initiate a call to the called station;

evaluating whether the called station remains on-hook for a predetermined number of rings or is busy;

if the called station remains on-hook for a predetermined time or is busy, disabling the handset of the calling station and is connecting the call from the trunk to prevent unauthorized access to the voice message facility via the handset;

speed-dialing the voice message facility while the handset is disabled;

reactivating the handset when the voice message facility goes off-hook and then automatically inquiring whether the caller at the calling station desires to record a voice message for the called station; and

if the caller desires to record a voice message for the called station, connecting the calling station to the voice message facility and transmitting the called number thereto.

4,766,605

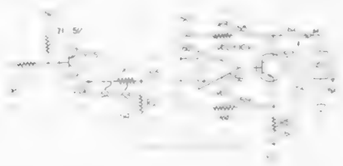
TELEPHONE TIE TRUNK DRIVER CIRCUIT

Lacas Tin, Union City, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 13, 1986, Ser. No. 874,013

Int. Cl.[4] H04M *7/00*

U.S. Cl. 379—225 16 Claims



1. In a telecommunication network where a load is coupled to be driven by a driver, a circuit to limit power dissipation in said driver when said load impedance drops below a predetermined threshold value, comprising:

an active device coupled to drive said load;

detection means coupled to said active device for sensing a drive current of said active device;

control means coupled to said active device and said detection means for controlling conduction of said active device, said control means causes said active device to operate in its saturation region while impedance of said load is above said threshold value, but when impedance of said load falls below said threshold value, said detection means senses decrease of impedance of said load and in response thereto, said control means causes said active device to conduct less such that decrease of said drive current is proportional to said decrease of impedance of said load;

said control means controlling said active device such that for each given value of impedance of said load, said active device functions to provide only one value of said drive current.

4,766,606

SIGNAL REPEATER FOR MULTI SUBSCRIBER COMMUNICATION OVER SINGLE PAIR TELEPHONE LINE

Ronald W. Bardutz, Vancouver; Joseph P. Kortje, Saskatoon, and Craig P. Twardy, Regina, all of Canada, assignors to Dell Canada Marketing Corp., Vancouver, Canada

Filed May 21, 1987, Ser. No. 54,428

Int. Cl.[4] H04L *25/60*

U.S. Cl. 379—344 17 Claims



1. A signal repeater for regenerating digitally encoded signals transmitted in bursts over a single pair telephone line to enable simultaneous communication between a telephone central office and a plurality of subscriber transmitter/receivers, said repeater comprising:

(a) signal coupling means for decoupling said signals from said line for regeneration thereof by said repeater and for recoupling signals regenerated by said repeater onto said line;

(b) clock recovery means for deriving clock frequency and phase information characteristic of said decoupled signals to facilitate accurate regeneration thereof;

(c) data recovery means for decoding said decoupled signals and for regenerating said decoded signals to replicate the signals originally produced by said telephone central office and subscriber transmitter/receivers respectively;

(d) data conversion means for re-encoding said regenerated signals for recoupling thereof onto said line; and,

(e) signal processing means for controlling the operation of said signal coupling means, said clock recovery means, said data recovery means and said data conversion means.

4,766,607

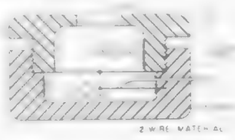
METHOD OF IMPROVING THE SENSITIVITY OF THE EARPHONE OF AN OPTICAL TELEPHONE AND EARPHONE SO IMPROVED

Nathan W. Feldman, 910 Van Court Ave., Long Branch, N.J. [illegible]

Filed Mar. 30, 1987, Ser. No. 31,815

Int. Cl.[4] H04B *9/00*

U.S. Cl. 455—612 2 Claims



1. An improved earphone for an optical telephone, said earphone including a base and a cap positioned above said base, a sound chamber contained within said cap, a taut membrane extending horizontally through said base, a strip of bimetallic thermal element with thermal memory that reacts forcefully when heated and cooled being positioned beneath and spaced from said taut membrane by means of a taut coupling extending from said taut membrane to one end of said strip of bimetallic thermal element with thermal memory and wherein the other end of said strip of bimetallic thermal element with thermal memory is firmly embedded in the wall of the base of the earphone, and an optical fiber extending from the strip of bimetallic thermal element with thermal memory through the base of the earphone so that motion of the non-embedded end of the stip of bimetallic thermal element with thermal memory results from the varying temperature of the strip of bimetallic thermal element with thermal memory that results from the varying intensity issuing at the strip of bimetallic thermal element with thermal memory from the optical fiber.

VOL
1093

ISS
4

AG
23

1988

UMI

297,280

COOKIE HAVING OPENINGS THERETHROUGH

Michael P. Lucas, Ridgewood, N.J.; Robert Tabor, New York, N.Y.; Richard B. Gerstman, Tenafly, N.J., and Juan F. Concepcion, Brooklyn, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed May 7, 1985, Ser. No. 731,488

Term of patent 14 years

U.S. Cl. D1—109



297,281

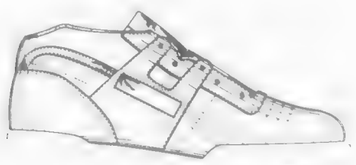
SHOE UPPER

Edward Lussier, Hingham, Mass., assignor to Reebok International Ltd., Canton, Mass.

Filed Jul. 1, 1985, Ser. No. 750,597

Term of patent 14 years

U.S. Cl. D2—314



297,282

INNERSOLE WITH SHOCK-ABSORBING INSERTS

Richard B. Fox, Mashpee, Mass., assignor to Atlantic Thermoplastics Co., Inc., Blackstone, Mass.

Filed Oct. 9, 1985, Ser. No. 785,731

The portion of the term of this patent subsequent to Aug. 2, 2002, has been disclaimed.

Term of patent 14 years

U.S. Cl. D2—318



297,283

FOLDABLE TRAVELING JEWELRY HOLDER

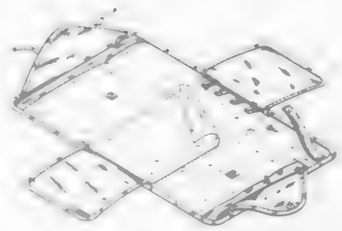
Evelyn A. Gray, P.O. Box 40033, Grand Junction, Colo. 81504

Filed Jul. 25, 1985, Ser. No. 758,684

Term of patent 14 years

U.S. Cl. D3—75





VOL 1093 ISS 4 AG 23 1988 UMI

297,284
MULTIPLE PURPOSE HANGER
Frank P. Campbell, 11853 W. 71st Ave., Arvada, Colo. 80004
Filed Oct. 24, 1986, Ser. No. 923,729
Term of patent 14 years
U.S. Cl. D6—317





297,285
HANGER FOR BOOTS, CLOTHS OR THE LIKE
Lars O. J. Larsson, Spanga, Sweden, assignor to Swards AB, Vallingby, Sweden
Filed Aug. 27, 1986, Ser. No. 901,246
Claims priority, application Sweden, Jul. 18, 1986, 86-1726
Term of patent 14 years
U.S. Cl. D6—326



297,286
GARMENT HANGERS
Russell O. Blanchard, Zeeland, Mich., assignor to Batts, Inc., Zeeland, Mich.
Filed Sep. 5, 1986, Ser. No. 904,237
Term of patent 14 years
U.S. Cl. D6—326



297,287
JUMP SEAT
Gabriel A. Lopez, 144 W. Las Flores, Arcadia, Calif. 91006
Filed Sep. 9, 1985, Ser. No. 773,466
Term of patent 14 years
U.S. Cl. D6—356



297,288
FRAME FOR AN ADJUSTABLE CHAISE LOUNGE
Gerald T. Raney, Orange, Calif., assignor to Pacific Sun Casual Furniture, Inc., Hemet, Calif.
Filed Jan. 2, 1986, Ser. No. 815,534
Term of patent 14 years
U.S. Cl. D6—361



297,289
[illegible]
Victor Strom, 50 N. Hillside Pl., Ridgewood, N.J. 07450
Filed May 29, 1986, Ser. No. 868,343
Term of patent 14 years
U.S. Cl. D6—389



297,290
VERTICALLY ADJUSTABLE TABLE
David R. Close, 416 Dee Rd., Park Ridge, Ill. 60068
Filed Jul. 25, 1986, Ser. No. 889,505
Term of patent 14 years
U.S. Cl. D6—429



297,291
LEG EXTENSION FOR FURNITURE
Gunnar Liljedahl, Alvik 7555, Lulea, Sweden S-95190
Filed Sep. 19, 1984, Ser. No. 652,191
Term of patent 14 years
U.S. Cl. D6—495

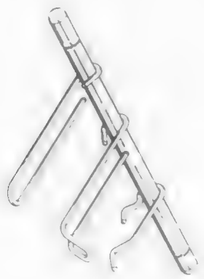


297,292
TOILET BOWL BRUSH WITH HOLDER
Janet C. Plymale, New York, N.Y., assignor to Associated Products, Inc., New York, N.Y.
Filed Jul. 1, 1985, Ser. No. 750,800
Term of patent 14 years
U.S. Cl. D6—551



VOL
1093
ISS
4
AG
23
1988
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297,293
COMBINED BAR AND BRACKETS FOR A STORAGE AND DISPLAY RACK
John M. Fagan, 260 Daniel Avenue, Ottawa, Ontario, Canada K1Y 0C8
Filed May 29, 1985, Ser. No. 739,037
Claims priority, application Canada, Nov. 29, 1984, 29-11-84-8
Term of patent 14 years
U.S. Cl. D6—566



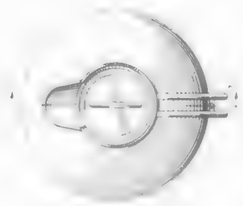
297,294
NAPKIN DISPENSER
Furio Minuti, Macerata, Italy, assignor to Fratelli Guzzini S.p.A., Recanati, Italy
Filed Jul. 2, 1986, Ser. No. 881,206
Claims priority, application Italy, Jan. 8, 1986, 20424 B/86
Term of patent 14 years
U.S. Cl. D7—72





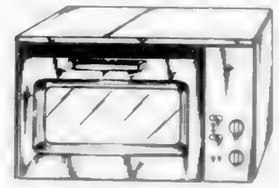
297,295
INSULATED FLASK
Ole Palsby, Copenhagen, Denmark, assignor to Carl Zitzmann GmbH & Co., Wertheim, Fed. Rep. of Germany
Filed Dec. 26, 1985, Ser. No. 813,627
Claims priority, application Int'l Pat. Institute, Jun. 25, 1985, DM/005 450
Term of patent 14 years
U.S. Cl. D7—317



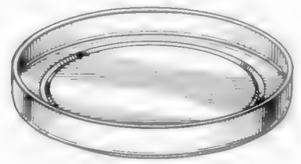




297,296
COMPACT OVEN
Rolf Feil, Günzburg-Reisenburg, and Roland Vetter, Giengen, both of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Stuttgart, Fed. Rep. of Germany
Filed Apr. 27, 1984, Ser. No. 604,828
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1983, MR 5690
Term of patent 14 years
U.S. Cl. D7—348



297,297
PAN SEPARATOR
Ronald E. Lacey, Wichita, Kans., assignor to Pizza Hut, Inc., Wichita, Kans.
Filed Jun. 24, 1985, Ser. No. 748,237
Term of patent 14 years
U.S. Cl. D7—354

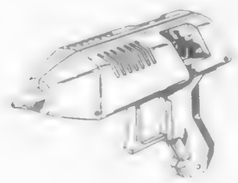




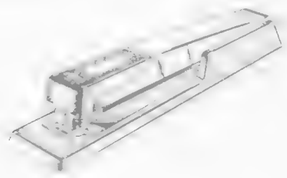
297,298
MICROWAVE DISH COVER
Norton Sarnoff, Northbrook, and Carl R. Fletcher, Arlington Heights, both of Ill., assignors to Essar Corporation, Wheeling, Ill.
Filed Mar. 27, 1986, Ser. No. 847,009
Term of patent 14 years
U.S. Cl. D7—391



297,299
HOT MELT GLUE GUN
Wolf-Dieter Krause, Muenster, Fed. Rep. of Germany, assignor to Emhart Industries, Inc., Farmington, Conn.
Filed Jan. 31, 1985, Ser. No. 697,038
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1984, 10MR642
Term of patent 14 years
U.S. Cl. D8—30



297,300
DESK STAPLER
Richard B. McDermott, N. Providence, R.I., and Maurice J. Turcotte, Worcester, Mass., assignors to Stanley-Bostitch, Inc., East Greenwich, R.I.
Filed Aug. 13, 1985, Ser. No. 765,156
Term of patent 14 years
U.S. Cl. D8—50



VOL 1093 ISS 4 AG 23 1988 UMI

297,301
CLAMP
Takashi Aoki; Nobuyuki Aoki, and Hidesori Aoki, all of Tokyo, Japan, assignors to Koto Sangyo Company, Limited, Tokyo, Japan
Filed Jan. 21, 1986, Ser. No. 820,140
Term of patent 14 years
U.S. Cl. D8—72

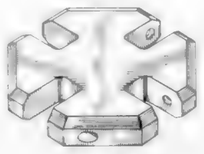


297,302
SWING MOUNT HOSE REEL
Terry N. Nelson, Shoreview, Minn., assignor to Specialty Manufacturing Company, St. Paul, Minn.
Filed Dec. 14, 1984, Ser. No. 681,922
Term of patent 14 years
U.S. Cl. D8—359





297,303
MULTIPLE PANEL CONNECTOR
David Finklestein, 3420 W. 67th St., Los Angeles, Calif. 90043
Filed Apr. 29, 1985, Ser. No. 728,225
Term of patent 14 years
U.S. Cl. D8—382



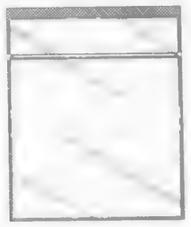
297,304
STRING FASTENER
Hitomi Ito, Kawasaki, and Nobuhiro Ago, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 12, 1985, Ser. No. 756,437
Claims priority, application Japan, Jan. 16, 1985, 60-914
Term of patent 14 years
U.S. Cl. D8—383



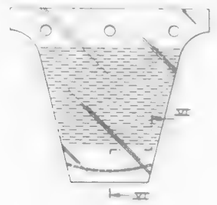
297,305
DISPENSING CONTAINER
Arthur G. Rudick, Marietta; William S. Credle, Jr.; Bradley P. Baker, both of Stone Mountain, and Robert D. Bruffey, Lilburn, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Continuation-in-part of Ser. No. 724,156, Apr. 17, 1985. This application Sep. 18, 1985, Ser. No. 777,330
Term of patent 14 years
U.S. Cl. D9—300



297,306
VACUUM SEALED BAG WITH A RECLOSABLE FRICTION FASTENER
Michael H. King, 27046 Tidal Way, Tega Cay, S.C. 29715
Filed Jun. 27, 1985, Ser. No. 749,431
Term of patent 14 years
U.S. Cl. D9—305



297,307
STORAGE BAG
Gary Garber, 19561 Avndale Dr., Tarzana, Calif. 91356
Filed Sep. 16, 1985, Ser. No. 776,489
Term of patent 14 years
U.S. Cl. D9—305



297,308
BOTTLE
Gerard E. Lyons, Burlington, Canada, assignor to Polybottle, Brampton, Canada
Filed Oct. 10, 1985, Ser. No. 786,105
Term of patent 14 years
U.S. Cl. D9—352



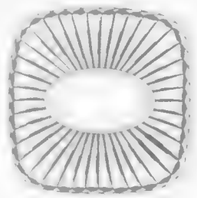
297,309
CAN
Arne Andersson, Sparres vag 53, and Lars-Eric Piltz, Konventsvag 3, both of S-240 10 Dalby, Sweden
Filed Mar. 21, 1985, Ser. No. 714,258
Claims priority, application Sweden, Sep. 25, 1984, 842551
Term of patent 14 years
U.S. Cl. D9—368



297,310
BOTTLE OR THE LIKE
Juris M. Mednis, Howell, N.J., assignor to Universal Symetrics Corporation, Howell, N.J.
Filed Nov. 6, 1985, Ser. No. 803,904
Term of patent 14 years
U.S. Cl. D9—373



297,311
HOLDER FOR A TISSUE DISPENSER
Vanda J. Bussell, 283 Nottingham Rd., Ramsey, N.J. 07446
Filed Aug. 19, 1985, Ser. No. 766,487
Term of patent 14 years
U.S. Cl. D9—418



VOL 1093 ISS 4 AG 23 1988 UMI

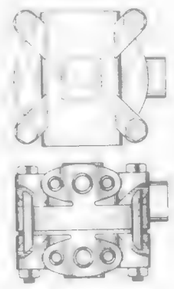
297,312
WRIST WATCH
Shingo Ishizaka, Hachioji, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Mar. 5, 1986, Ser. No. 841,743
Claims priority, application Japan, Sep. 19, 1985, 60-39511
Term of patent 14 years
U.S. Cl. D10—32



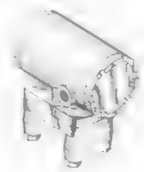
297,313
WRISTWATCH
Alain Claude, Bassecourt, Switzerland, assignor to NOW S.A., La Chaux de Fonds, Switzerland
Filed Aug. 7, 1985, Ser. No. 763,480
Claims priority, application ,
Term of patent 14 years
U.S. Cl. D10—33



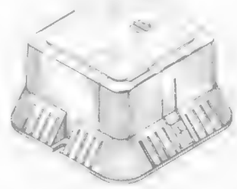
297,314
PRESSURE TRANSMITTER HOUSING
Robert C. Hedtke, Hamburg, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.
Filed Jul. 15, 1985, Ser. No. 755,285
Term of patent 14 years
U.S. Cl. D10—46



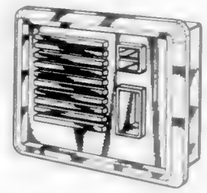
297,315
COMPACT DIFFERENTIAL PRESSURE TRANSMITTER
Dean S. Pierce, St. Paul, and Gerald R. Cucci, Minneapolis, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.
Filed Dec. 16, 1985, Ser. No. 809,149
Term of patent 14 years
U.S. Cl. D10—85



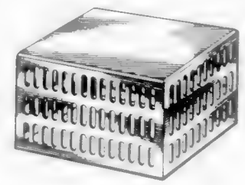
297,316
SMOKE DETECTOR
Louis L. Mastro, Milford, Mich., assignor to Square D Company, Palatine, Ill.
Filed Aug. 1, 1986, Ser. No. 893,051
Term of patent 14 years
U.S. Cl. D10—106



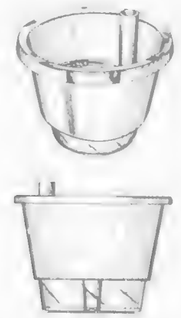
297,317
GAS DETECTOR
Stephen C. Taylor, Etobicoke, Canada, assignor to Dicon Systems Limited, Toronto, Canada
Filed Aug. 6, 1986, Ser. No. 893,718
Term of patent 14 years
U.S. Cl. D10—106



297,318
SMOKE DETECTOR CHAMBER
Stephen C. Taylor, Etobicoke, Canada, assignor to Dicon Systems Limited, Toronto, Canada
Filed Aug. 6, 1986, Ser. No. 893,719
Term of patent 14 years
U.S. Cl. D10—106



297,319
PLANT POT
Arthur R. Carlson, Melbourne, Australia, assignor to The Decor Corporation Proprietary Limited, Scoresby, Australia
Filed Mar. 18, 1985, Ser. No. 712,867
The portion of the term of this patent subsequent to Jun. 28, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—152



297,320
BICYCLE TIRE
Eiji Fukuchi, Kagawa, Japan, assignor to Mitsuboshi Belting Ltd., Japan
Filed Jan. 10, 1986, Ser. No. 817,711
Claims priority, application Japan, Oct. 17, 1985, 60-43774
Term of patent 14 years
U.S. Cl. D12—146



297,321
COLLAPSIBLE GRAPNEL ANCHOR
Carl Merrie, 120 Dinsdale Road, Hamilton, New Zealand
Filed Jun. 3, 1985, Ser. No. 740,209
Claims priority, application Netherlands, Dec. 4, 1984, 19530
Term of patent 14 years
U.S. Cl. D12—215

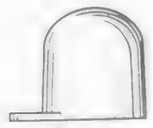


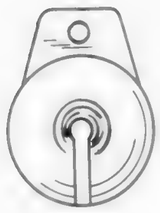
297,322
COMBINED ELECTRICAL SOCKET AND RETAINER FOR FOUR PIN U-SHAPED FLUORESCENT LAMP
George E. Johnson, Bronxville, and Walter Newman, Bayside, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.
Filed Sep. 23, 1985, Ser. No. 777,884
Term of patent 14 years
U.S. Cl. D13—25



VOL 1093 ISS 4 AG 23 1988 UMI

297,323
SAFETY COVER FOR ELECTRICAL OUTLET
Jeffery A. Fischer, 700 Holiday Dr., Wauwatosa, Wis. 53597
Filed Sep. 23, 1985, Ser. No. 780,673
Term of patent 14 years
U.S. Cl. D13—31

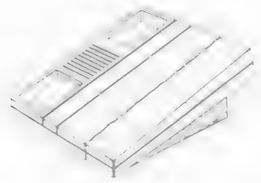




297,324
HEADPHONE
Kenichiro Kohno, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jan. 17, 1985, Ser. No. 692,230
Claims priority, application Japan, Jul. 25, 1984, 59-31061
Term of patent 14 years
U.S. Cl. D14—36

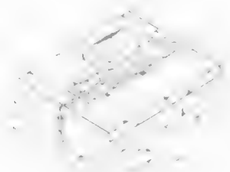


297,325
TELEPHONE STAND
John G. Engstrom, Indianapolis, Ind.; Henry J. Mack, Jr., Levittown; John N. McGarvey, Drexel Hill, both of Pa.; Robert A. Till, Jr., Indianapolis, Ind., and Michael P. Zambelli, Maplewood, N.J., assignors to American Telephone & Telegraph Company, AT&T Information Systems, Holmdel, N.J.
Filed Feb. 13, 1987, Ser. No. 14,491
The portion of the term of this patent subsequent to Dec. 30, 2000, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—60

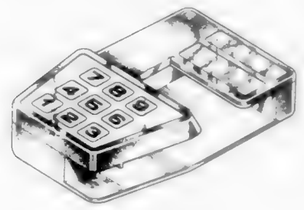




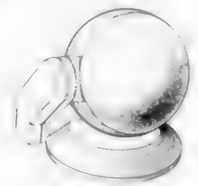
297,326
PRINTER
Roger C. Williams, Raleigh, N.C., assignor to International Business Machines Corp., Armonk, N.Y.
Filed Sep. 18, 1985, Ser. No. 777,138
Term of patent 14 years
U.S. Cl. D14—111



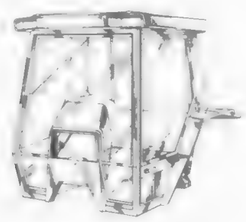
297,327
KEY PAD
W. Andrew Morrison, Saratoga, Calif., assignor to Thumbscan, Inc., Oakbrook Terrace, Ill.
Filed Dec. 17, 1985, Ser. No. 810,396
Term of patent 14 years
U.S. Cl. D14—114



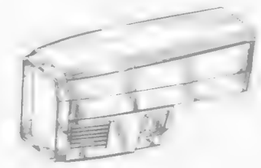
297,328
OPTICAL SPACE TRANSMISSION MODULE FOR DATA COMMUNICATION NETWORK
Mikio Nozo; Isao Shinoda, both of Nara; Shinji Fujuwara, and Yoshikazu Kikkawa, both of Osaka, all of Japan, assignors to Matsushita Electrical Industrial Co., Ltd., Osaka, Japan
Filed Nov. 6, 1985, Ser. No. 804,002
Claims priority, application Japan, May 16, 1985, 60-20221
Term of patent 14 years
U.S. Cl. D14—114



297,329
VEHICLE CAB
Lionel Monchaie, Les Essarts le Roi, and Stanislas Brousse, Troissereux, both of France, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed May 13, 1985, Ser. No. 732,992
Claims priority, application United Kingdom, Nov. 27, 1984, 1023537
Term of patent 14 years
U.S. Cl. D15—30



297,330
TRACTOR HOOD
Lionel Monchaie, Les Essarts le Roi, and Stanislas Brousse, Troissereux, both of France, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed May 13, 1985, Ser. No. 732,993
Claims priority, application United Kingdom, Nov. 27, 1984, 1023536
Term of patent 14 years
U.S. Cl. D15—31



297,331
COMBINED DRILLING AND INSERTION MACHINE FOR FURNITURE FITTINGS
Dietmar Blum, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Hochst, Austria
Filed Feb. 5, 1985, Ser. No. 698,595
Claims priority, application Austria, Aug. 16, 1984, 26850/426/1984; Aug. 16, 1984, 26.851/426/1984
Term of patent 14 years
U.S. Cl. D15—132





VOL 1093 ISS 4 AG 23 1988 UMI

297,332
GUITAR NECK
P. J. Marx, 4931 S. Jonathan La., New Berlin, Wis. 53151
Filed Sep. 9, 1985, Ser. No. 773,663
Term of patent 14 years
U.S. Cl. D17—20



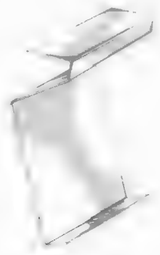
297,333
DRUMSTICK
Richard A. Benson, and Peter A. Scott, both of "Green Hedges", Wrotham Road, Meopham, Kent, DA13 OHW, Great Britain
Filed Feb. 18, 1986, Ser. No. 833,772
Claims priority, application United Kingdom, Aug. 19, 1985, 1,028,671
Term of patent 14 years
U.S. Cl. D17—22



297,334
BOOKMARKER
Marty C. Trent, San Pedro, Calif., assignor to Group X, Rolling Hills Estates, Calif.
Filed Nov. 27, 1985, Ser. No. 806,842
Term of patent 14 years
U.S. Cl. D19—34



297,335
PAPER TRAY FOR COMPUTER OR SIMILAR ARTICLE
J. Dwayne Atwell, P.O. Box 23749, Tempe, Ariz. 85282
Filed Jun. 3, 1985, Ser. No. 740,504
Term of patent 14 years
U.S. Cl. D19—86



297,336
MAGNETIC NOTE HOLDER
John Anastos, deceased, late of Westchester County, N.Y. (by Arleen Anastos, executrix), assignor to Arjon Mfg. Corp., Hillside, N.J.
Filed Sep. 28, 1984, Ser. No. 655,884
Term of patent 14 years
U.S. Cl. D19—90



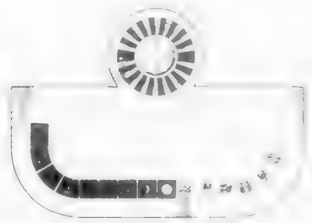
297,337
HEAT ENERGIZABLE IDENTIFICATION LABEL FOR TOYS
Henry Orenstein, West Caldwell, N.J., and George Dunsay, Boston, Mass., assignors to Hasbro Bradley, Inc., Pawtucket, R.I., a part interest
Filed Jun. 24, 1985, Ser. No. 748,664
Term of patent 14 years
U.S. Cl. D20—27



297,338
VIBRATING GAME PROJECTOR OR SIMILAR ARTICLE
A. Edward Fogarty, and Bonnie R. Fogarty, both of Sarasota, Fla., assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Jul. 2, 1985, Ser. No. 751,271
Term of patent 14 years
U.S. Cl. D21—2



297,339
GAME BOARD
David G. de Keller, c/o The East India & Sports Club, 16, St. James' Square, London SW1, England
Filed Dec. 20, 1985, Ser. No. 784,044
Claims priority, application United Kingdom, Aug. 5, 1985, 1025970
Term of patent 14 years
U.S. Cl. D21—40



297,340
TOY ROTOR
Fernando Larrea, Södra Allégatan 12, 413 01 Göteborg, Sweden
Filed Sep. 17, 1986, Ser. No. 908,511
Claims priority, application Sweden, Mar. 18, 1986, 86-0691
Term of patent 14 years
U.S. Cl. D21—92



297,341
BRUSSEL SPROUT DOLL
Cal M. Gardner, 8203 S. Lamon, Burbank, Ill. 60459
Filed Nov. 27, 1985, Ser. No. 806,832
Term of patent 14 years
U.S. Cl. D21—155

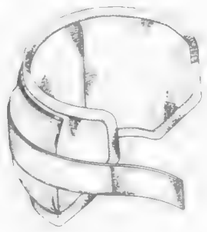


297,342
TOY AIRCRAFT CARRIER
Lawrence J. Robinson, 217 E. Taylor Ave., Sunnyvale, Calif.
Filed Jul. 30, 1985, Ser. No. 760,526
Term of patent 14 years
U.S. Cl. D21—130



VOL 1093 ISS 4 AG 23 1988 UMI

297,343
ANKLE WEIGHT
Edith Winston, 135 Hazelwood Dr., Jericho, N.Y. 11735
Filed Nov. 7, 1985, Ser. No. 803,940
Term of patent 14 years
U.S. Cl. D21—196



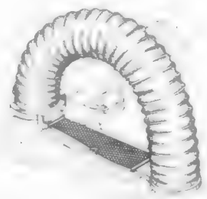
297,344
ELONGATED FRAME REVOLVER
William B. Ruger, Croydon, N.H., and Lawrence L. Larson, Branford, Conn., assignors to Sturm, Ruger & Company, Inc., Southport, Conn.
Filed Nov. 15, 1985, Ser. No. 805,076
Term of patent 14 years
U.S. Cl. D22—104



297,345
PERCUSSION PISTOL
Kenneth D. Hartfelder, Rte. 4, Box 540B-12, Muskogee, Okla. 74401
Filed Nov. 22, 1985, Ser. No. 806,183
Term of patent 14 years
U.S. Cl. D22—104



297,346
HANDGUN CARTRIDGE CATCHER
William MacKenzie, 4718 Lago Vista Cir., San Jose, Calif. 95129, and Stephen Peart, 21116 Locust Dr., Los Gatos, Calif. [redacted]
Filed Feb. 7, 1986, Ser. No. 827,249
Term of patent 14 years
U.S. Cl. D22—108



297,347
IGNITION APPARATUS FOR BLASTING MACHINE
Ake Gustafsson, Gyttorp, and Sune Hallin, Nora, both of Sweden, assignors to Nitro Nobel AB, Gyttorp, Sweden
Filed Jul. 17, 1985, Ser. No. 756,064
Claims priority, application Sweden, Jan. 17, 1985, 85-0111
Term of patent 14 years
U.S. Cl. D22—112



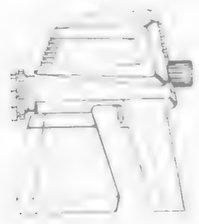
297,348
LINT FILTER FOR CLOTHES DRYER
Charles R. Clement, 3561 Curry St., Long Beach, Calif. 90805
Filed Apr. 22, 1985, Ser. No. 725,544
Term of patent 14 years
U.S. Cl. D23—365



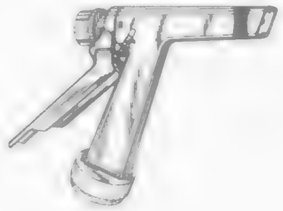
297,349
PROCESS FILTER HOUSING
Dirk G. Krousbein, Haan, Fed. Rep. of Germany, assignor to Ultrafilter GmbH Düsseldorf
Filed Dec. 9, 1985, Ser. No. 806,664
Term of patent 14 years
U.S. Cl. D23—209



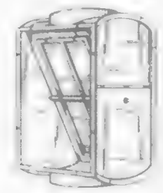
297,350
FLUID SPRAY GUN
Ewald Kille, Friedrichshafen, Fed. Rep. of Germany, assignor to J. Wagner GmbH, Fed. Rep. of Germany
Filed Feb. 28, 1986, Ser. No. 840,724
Term of patent 14 years
U.S. Cl. D23—225



297,351
PISTOL GRIP GARDEN SPRAY NOZZLE
Keith Kitts, Glenview, Ill., assignor to Suncast Corporation, Batavia, Ill.
Filed Jan. 6, 1986, Ser. No. 816,636
Term of patent 14 years
U.S. Cl. D23—226



297,352
ROTARY AIR VALVE
Charles R. Clement, 3561 Curry St., Long Beach, Calif. 90805
Filed Apr. 22, 1985, Ser. No. 725,543
Term of patent 14 years
U.S. Cl. D23—233

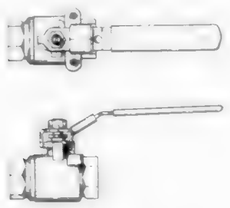


297,353
ROTARY AIR VALVE
Charles R. Clement, 3561 Curry St., Long Beach, Calif. [redacted]
Filed Jul. 29, 1985, Ser. No. 759,903
Term of patent 14 years
U.S. Cl. D23—233

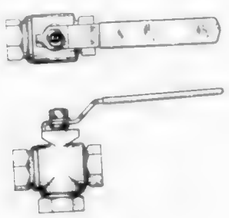


VOL 1093 ISS 4 AG 23 1988 UMI

297,354
LOCKING FLUID VALVE
Steven E. Wirth, Bloomington, Minn., assignor to Precision Fitting and Valve Company, Inc., Eden Prairie, Minn.
Filed Nov. 27, 1985, Ser. No. 806,839
Term of patent 14 years
U.S. Cl. D23—245



297,355
FLUID VALVE
Steven E. Wirth, Bloomington, Minn., assignor to Precision Fitting and Valve Company, Inc., Eden Prairie, Minn.
Filed Jun. 27, 1986, Ser. No. 879,799
Term of patent 14 years
U.S. Cl. D23—245



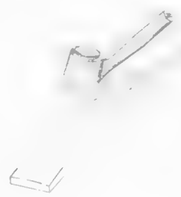
297,356
PLUMBING FITTING HANDLE
Mary J. Reid, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Feb. 24, 1986, Ser. No. 836,172
Term of patent 14 years
U.S. Cl. D23—252



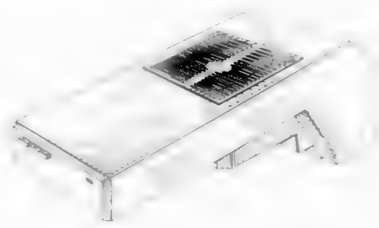
297,357
KITCHEN FAUCET HANDLE
Anthony G. Spangler, Sheridan, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Dec. 19, 1986, Ser. No. 944,599
Term of patent 14 years
U.S. Cl. D23—252



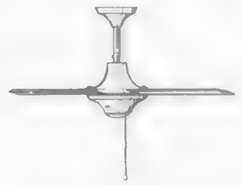
297,358
FAUCET HANDLE
Loran R. Hill, Indianapolis, Ind., assignor to Masco Corporation of Indiana, Taylor, Mich.
Filed Aug. 18, 1986, Ser. No. 897,719
Term of patent 14 years
U.S. Cl. D23—252



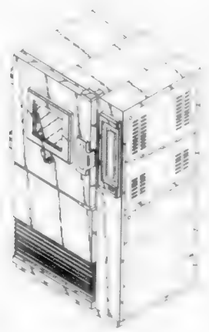
297,359
COMPUTER COOLING FAN
John Schmid, Amherst, and Martin A. Jaffe, New York, both of N.Y., assignors to Kensington Microware Limited, New York, N.Y.
Filed Sep. 24, 1986, Ser. No. 911,310
Term of patent 14 years
U.S. Cl. D23—370



297,360
CEILING FAN
Edward P. Cheslock, Oxford, Pa., assignor to Lasko Metal Products, Inc., West Chester, Pa.
Filed Jul. 10, 1987, Ser. No. 72,234
Term of patent 14 years
U.S. Cl. D23—385



297,361
TEMPERATURE AND HUMIDITY CHAMBER
Toshio Yamamoto, Osaka, and Mitsuyoshi Futatsuka, Hyogo, both of Japan, assignors to Tabai Espec Kabushikikaisha, Osaka, Japan
Filed Nov. 2, 1984, Ser. No. 667,775
Term of patent 14 years
U.S. Cl. D24—1.1



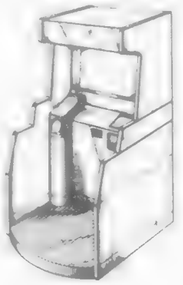
297,362
DENTAL MATRIX BAND
William B. Dragan, 85 Burr St., Easton, Conn. 06612
Filed Apr. 7, 1986, Ser. No. 850,886
Term of patent 14 years
U.S. Cl. D24—16



297,363
LARYNGOSCOPE BLADE
Albert Salerno, 10830 Carla Pl., Cerritos, Calif. 90701, and Gabor Racz, 4505 17th St., Lubbock, Tex. 79416
Filed Jul. 8, 1985, Ser. No. 752,541
Term of patent 14 years
U.S. Cl. D24—18



297,364
CONSOLE FOR SELF-MEASURING ONE'S WEIGHT, HEIGHT, BLOOD PRESSURE AND PULSE RATE
Daniel Slater, 2320 Westwood Ln., Palatine, Ill. 60067
Filed Apr. 21, 1986, Ser. No. 857,415
Term of patent 14 years
U.S. Cl. D24—21

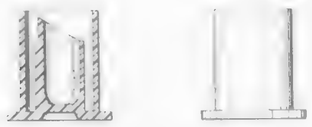


297,365
NEEDLE GUARD
Charles F. Barnett, Lenoir City, Tenn., assignor to Stik-Guard, Inc., Chattanooga, Tenn.
Filed Jul. 14, 1987, Ser. No. 72,847
Term of patent 14 years
U.S. Cl. D24—25



VOL 1093 ISS 4 AG 23 1988 UMI

297,366
BODY FLUID SPECIMEN HOLDER
Paul K. Hsei, Huntington Beach, Calif., assignor to Smithkline Diagnostics, Inc., Sunnyvale, Calif.
Filed Jan. 21, 1986, Ser. No. 820,084
Term of patent 14 years
U.S. Cl. D24—29



297,367
MANIFOLD FOR CONNECTING TUBES IN BLOOD ADMINISTRATION EQUIPMENT
Eiichi Miyasaka; Tetsuro Nishimura, and Kazuhiko Sudo, all of Fujimomiya, Japan, assignors to Terumo Corporation, Tokyo, Japan
Filed Sep. 25, 1985, Ser. No. 780,011
Claims priority, application Japan, Apr. 8, 1985, 60-13817
Term of patent 14 years
U.S. Cl. D24—53



297,368
COMBINED ANKLE AND FOOT ORTHOSIS
Darryl L. Womack, Lakewood, Colo., assignor to Scott Orthotic Labs, Inc., Denver, Colo.
Filed Aug. 15, 1986, Ser. No. 896,641
Term of patent 14 years
U.S. Cl. D24—64



297,369
OCTAHEDRAL RESIDENTIAL STRUCTURE
Robert E. Bryan, 709 Holbrook Ave., Wilmington, N.C. 28403
Filed Nov. 12, 1985, Ser. No. 805,129
Term of patent 14 years
U.S. Cl. D25—1



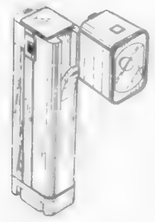
297,370
BOLSTER FOR SUPPORTING A REINFORCING CAGE WITHIN A PIER HOLE
Thomas W. Foster, Jr., 3901 Shady Valley Dr., Arlington, Tex. 76013
Filed Dec. 16, 1985, Ser. No. 809,406
Term of patent 14 years
U.S. Cl. D25—133



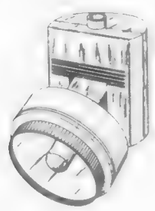
297,371
BATTERY OPERATED FLUORESCENT LANTERN
Kwong Y Leung, Kowloon, Hong Kong, assignor to Forexim (H.K.) Limited, Kowloon, Hong Kong
Filed Aug. 9, 1985, Ser. No. 764,668
Term of patent 14 years
U.S. Cl. D26—42



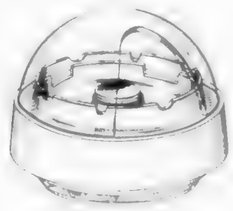
297,372
COMBINED FLUORESCENT LANTERN AND ADJUSTABLE TORCH
Tit-Wing Poon, 2F, Lam Uk Village, Chaiwan, Hong Kong
Filed Nov. 1, 1985, Ser. No. 794,355
Claims priority, application United Kingdom, May 8, 1985, 1026647
Term of patent 14 years
U.S. Cl. D26—44



297,373
ADJUSTABLE SPOTLIGHT
Stefanus F. W. Joosten, Eindhoven, and Leonardus A. C. Krol, Gorkum, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 15, 1986, Ser. No. 907,712
Claims priority, application Hague, Mar. 25, 1986, DM/006687
Term of patent 14 years
U.S. Cl. D26—63



297,374
DOMED ASHTRAY
Ronald O. Hilger, Elmhurst, Ill., assignor to Associated Mills Inc., Chicago, Ill.
Filed Jun. 5, 1986, Ser. No. 871,614
Term of patent 14 years
U.S. Cl. D27—135

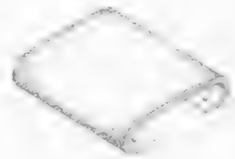


297,375
SHAVER
Kwok H. Lin, Kowloon, Hong Kong, assignor to Transistolite Manufacturing Limited, Hong Kong, Hong Kong
Filed Jun. 13, 1986, Ser. No. 874,369
Claims priority, application United Kingdom, Dec. 30, 1985, [illegible]
Term of patent 14 years
U.S. Cl. D28—49





297,376
BACKWASHER
Dewey D. Bastedo, 38745 Hwy. 53, Nehalem, Oreg. 97131
Filed Oct. 3, 1985, Ser. No. 783,699
Term of patent 14 years
U.S. Cl. D28—63



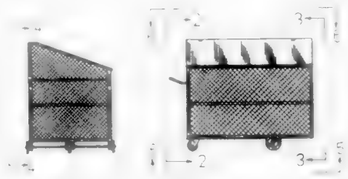
VOL 1093 ISS 4 AG 23 1988 UMI

297,377
VACUUM CLEANER
Loon Chai, Kwai Chung, Hong Kong, assignor to Joiner Electric Products Co. Ltd., Kwai Chung, Hong Kong
Filed Dec. 18, 1985, Ser. No. 810,183
Claims priority, application United Kingdom, Jul. 8, 1985, 1027797
Term of patent 14 years
U.S. Cl. D32—18

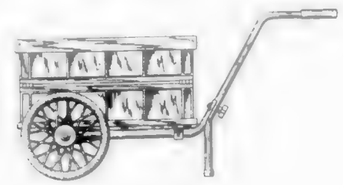




297,378
TRASH CART OR THE LIKE
Jowel J. Briscoe, Denver, Colo., assignor to B & J Welding Shop, Inc., Denver, Colo.
Filed Apr. 21, 1986, Ser. No. 856,137
Term of patent 14 years
U.S. Cl. D34—11



297,379
CART
Roger J. Morrissette, 265 N. Woodstock Rd., Southbridge, Mass. 01550
Continuation-in-part of Ser. No. 711,593, Mar. 13, 1985, Pat. No. 292,338. This application Jul. 27, 1987, Ser. No. 79,181
The portion of the term of this patent subsequent to Oct. 13, 2001, has been disclaimed.
Term of patent 14 years
U.S. Cl. D34—24



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aalbu, Johannes; Moen, Tom; Aalbu, Morit S.; and Borg, Peter, to Ardal og Sunndal Verk a.s. Method of controlling the alumina feed into reduction cells for producing aluminum. 4,766,552, Cl. 364-500.000.

Aalbu, Morit S.: *See*—
Aalbu, Johannes; Moen, Tom; Aalbu, Morit S.; and Borg, Peter, 4,766,552, Cl. 364-500.000.

AB Film-Teknik: *See*—
Hjelm, Anders; and Heinermark, Tommy, 4,766,501, Cl. 358-311.000.

AB Sandvik Rock Tools: *See*—
Bjerking, Sven-Erik; and Andersson, Sven-Goran, 4,765,416, Cl. 175-71.000

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Pierce, Sue K.; Robinson, Jack B., Jr.; and Scoggin, Ruth R., 4,765,843, Cl. 134-22.140.

Abbott, Perry E., to International Business Machines Corporation. Paper cassette tray with front edge positioning cams. 4,765,605, Cl. 271-147.000.

Abe, Akihiro; and Kamata, Akinori, to Fujitsu Limited. Printing apparatus having means for providing tension to a recording material. 4,766,446, Cl. 346-136.000.

Abe, Kenji: *See*—
Hirose, Sumio; Ozawa, Hiroshi; Abe, Kenji; and Hosono, Yoichi, 4,766,054, Cl. 430-270.000

Abe, Tsunehiko: *See*—
Kobayashi, Masaaki; Hanba, Norio; Tanaka, Akira; and Abe, Tsunehiko, 4,765,634, Cl. 277-235.00B.

Abe, Yoshio; Kubota, Masashi; and Miyake, Kou, to Matsushita Electric Industrial Co., Ltd. Display apparatus with display screen splitting function. 4,766,427, Cl. 340-721.000.

Abell, Robert H. Avionic tray of decreased weight. 4,766,517, Cl. 361-383.000

Abidi, Syed E.; and Sequeira, Joel A., to Schering Corporation. Novel vaginal suppository. 4,765,978, Cl. 424-80.000.

Abou-Gharbia, Magid A., to American Home Products Corporation. Beta-carbolin H1-receptor antagonists. 4,766,124, Cl. 514-253.000.

Abou-Gharbia, Magid A.; and Patel, Usha R., to American Home Products Corporation. Histamine H_1-receptor antagonists. 4,766,215, Cl. 544-357.000

Abra, Robert; and Szoka, Francis C., to Liposome Technology, Inc. Stabilized liposome/amphotericin composition and method. 4,766,046, Cl. 424-450.000.

Abrishamian, Ramin; and de Filippi, Richard P., to CF Systems Corporation. Apparatus and method for waste disposal. 4,765,257, Cl. 110-342.000

AccuRay Corporation: *See*—
Hellstrom, Ake A.; and Throm, James E., Jr., 4,766,315, Cl. 250-339.000

Acheson Industries, Inc.: *See*—
Otaki, Shiro; and Stoutenburg, Edmond J., 4,765,917, Cl. 252-40.700

Acushnet Company: *See*—
Gobush, William, 4,765,626, Cl. 273-232.000.

Adachi, Tamotsu, to Ozeki Sake Brewing Co., Ltd. Method for freezing sake. 4,765,147, Cl. 62-62.000.

Adamantech, Inc.: *See*—
Bierl, Thomas W., 4,766,261, Cl. 570-179.000

Adams, Neil R., to Advanced Micro Devices, Inc. Phase detector and phase-locked loop apparatus. 4,766,397, Cl. 331-1.00A.

Adams, Wayne F., to GTE Valenite Corporation. Rotatable cutting bit for a mining machine. 4,765,686, Cl. 299-81.000.

Adhesive Engineering Company: *See*—
Eisenhut, Wolfgang O.; and Senf, John W., 4,765,509, Cl. 222-61.000

Adib, Fray, to Myo-Tronics Research, Inc. Magnetic sensor for jaw tracking device. 4,765,345, Cl. 128-777.000

ADIR & Cie: *See*—
Bonte, Frederic; Dehan, Michel; Le Ridant, Alain; Puisieux, Francis; and Taupin, Christiane C., 4,765,987, Cl. 424-450.000.

ADIR Et Compagnie: *See*—
Malen, Charles; and Poignant, Jean C., 4,766,114, Cl. 514-211.000.

Adler-Golden, Steven; Bernstein, Lawrence S.; and Bien, Fritz, to Spectral Sciences, Inc. Spark discharge trace element detection system. 4,766,318, Cl. 250-385.200.

Adler, Robert; and Strauss, Paul, to Zenith Electronics Corporation. Light collecting and redirecting means. 4,766,424, Cl. 340-712.000.

Advanced Controls, Inc.: *See*—
Karwan, Henry P., 4,765,784, Cl. 408-13.000.

Advanced Micro Devices, Inc.: *See*—
Adams, Neil R., 4,766,397, Cl. 331-1.00A.

Advel Limited: *See*—
Jeal, Harvey P.; and Summerlin, Frederick A., 4,765,010, Cl. 10-27.00R.

Aerospatiale Societe Nationale Industrielle: *See*—
Bellego, Roger; and Foch, Etienne, 4,765,572, Cl. 244-178.000
Pedelaborde-Augas, Didier; Pillois, Philippe; and Valy, Yves, 4,766,518, Cl. 361-389.000

Aesculap-Werke Aktiengesellschaft: *See*—
Kolditz, Dietmar; Keller, Hans; and Ernst-Kienzle, Karl, 4,765,314, Cl. 128-4.000

AFROS S.p.A.: *See*—
Fiorentini, Carlo, 4,765,935, Cl. 264-40.500

AG fur Industrielle Elektronik AGIE, Losone b. Locarno: *See*—
Levy, Gideon; and Budin, Josef, 4,765,877, Cl. 204-206.000

AG fur industrielle Elektronik AGIE Losone bei Locarno: *See*—
Buhler, Ernst, 4,766,281, Cl. 219-69.00P.

AGA Aktiebolag: *See*—
Johansson, Jan O.; Andersson, Jan-Erik; Niklewski, Tomasz; and Edshammar, Lars E., 4,766,349, Cl. 313-631.000

Agence Spatiale Europeenne: *See*—
Stravrinidis, Constantine, 4,765,198, Cl. 74-572.000

Agency of Industrial Science and Technology: *See*—
Kobayashi, Yoshiteru; Konno, Isao; and Matsuura, Jun-ichi, 4,766,229, Cl. 556-138.000
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000

Agfa-Gevaert N.V.: *See*—
Bollen, Romain H.; Marien, Jozef E.; and Wissels, Valentin G., 4,766,515, Cl. 361-234.000
Vandenabeele, Hubert; and Vervecken, Jacques L., 4,766,059, Cl 430-531.000

Agintec AG: *See*—
Maier, Hans P., 4,765,660, Cl. 285-229.000.

Agostinelli, John A.; and Mir, Jose M., to Eastman Kodak Company Stress-tolerant light valve array construction. 4,765,721, Cl 350-389.000

Agoston, Agoston: *See*—
Dobos, Laszlo J.; and Agoston, Agoston, 4,766,559, Cl. 364-573.000

Ahner, David J.; Sheldon, Richard C.; and Oliva, Joseph J., to General Electric Company. Process for combustion of a fuel containing sulfur through the use of a gas turbine. 4,765,132, Cl. 60-39.020

Aidlin Automation Corp: *See*—
Aidlin, Samuel S.; Aidlin, Stephen H.; and Kincaid, Larry, 4,765,119, Cl. 53-308.000.

Aidlin, Samuel S.; Aidlin, Stephen H.; and Kincaid, Larry, to Aidlin Automation Corp. Screw capping machine with vertically reciprocable container platform. 4,765,119, Cl. 53-308.000.

Aidlin, Stephen H.: *See*—
Aidlin, Samuel S.; Aidlin, Stephen H.; and Kincaid, Larry, 4,765,119, Cl. 53-308.000.

Air Products and Chemicals, Inc.: *See*—
Bonnell, Leo W.; Perka, Alan T.; and Roberts, George W., 4,766,154, Cl. 518-700.000
Ford, Michael E.; Johnson, Thomas A.; and Vedage, Gamini A., 4,766,247, Cl. 564-498.000.
Gaumer, Lee S., Jr.; and Winters, Arthur R., Jr., 4,765,813, Cl. 62-20.000

Aisin Seiki Kabushiki Kaisha: *See*—
Hattori, Takemi, 4,765,683, Cl. 297-410.000
Ishiguro, Toshiaki; and Takahashi, Shigeo, 4,765,201, Cl 74-866.000
Nagata, Kazuhisa, 4,765,677, Cl. 296-216.000
Takahashi, Shigeo, 4,765,371, Cl. 137-637.000

Aisin-Warner Kabushiki Kaisha: *See*—
Kawamoto, Mutumi; Moroto, Shuzo; Yamada, Takashi; and Yokoyama, Shouji, 4,765,434, Cl. 180-249.000

Akahoshi, Teruhiko, to Nissan Motor Co., Ltd. Bumper structure 4,765,665, Cl. 293-102.000

Akebono Brake Industry Co., Ltd.: *See*—
Iwata, Yukio, 4,765,016, Cl. 15-246.000
Miyake, Katsuya, 4,765,692, Cl. 303-119.000

Akiyama, Hirohumi: *See*—
Komatsu, Takahiro; Ide, Tohru; Akiyama, Hirohumi; Kitamura, Takao; and Yamamoto, Shinichi, 4,766,258, Cl. 570-168.000

Aktiebolaget Bofors: *See*—
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, 4,765,566, Cl. 244-3.230.

Aktiebolaget Electrolux: *See*—
Henriksson, Soren N., 4,765,062, Cl. 30-384.000

216-172 O.G.-88-19

VOL 1093 ISS 4 AG 23 1988 UMI

Aktiengesellschaft Adolf Saurer: *See*—
Schuepp, Egon, 4,765,266, Cl. 112-90.000.

Akutagawa, Susumu: *See*—
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,225, Cl. 556-16.000.
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,227, Cl. 556-21.000.

Akutsu, Masami; Myowa, Koh; and Hirasawa, Noboru, to Kureha Chemical Industry Company Limited; and Toyama Sanki Company Limited. Apparatus for welding a strip of tape to film. 4,765,117, Cl. 53-133.000

Akutsu, Masami; Kamojima, Tsutomu; and Hirasawa, Noboru, to Kureha Chemical Industry Company Limited; and Toyama Sanki Company Limited. Apparatus for welding a strip of tape to film. 4,765,118, Cl. 53-133.000.

Akzo America Inc.: *See*—
Whitwell, George E.; Deatcher, John H.; and Leone-Bay, Andrea, 4,765,866, Cl. 156-668.000.

Albanese, Victor J.: *See*—
Schmidt, Charles J.; and Albanese, Victor J., 4,766,437, Cl 342-368.000.

Albert Schulte Sohne GmbH. & Co.: *See*—
Mellwig, Dieter; and Kurbjuhn, Wilfried, 4,765,021, Cl. 16-20.000.

Albrecht, Erwin: *See*—
Schluter, Gert; and Albrecht, Erwin, 4,765,895, Cl. 210-491.000

Albrektsson, Kjell: *See*—
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, 4,765,566, Cl. 244-3.230.

Alcatel N.V.: *See*—
Springer, Johann, 4,766,445, Cl. 346-108.000.

Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., to Exxon Research and Engineering Company. Hydroconversion process. 4,765,882, Cl. 208-59.000.

Alexandre, Francois: *See*—
Brillouet, Francois; Rao, Krishna; and Alexandre, Francois, 4,766,472, Cl. 357-19.000.

Alexandru, Lupu: *See*—
Ong, Beng S.; and Alexandru, Lupu, 4,766,255, Cl. 568-728.000.

Alford, George W., III: *See*—
Rogers, William C.; Alford, George W., III; and Cullimore, D Roy, 4,765,410, Cl. 166-303.000

Ali, Fadia E., to Smith Kline Beckman Corporation. Tyr-Arg-vasopressin antagonists. 4,766,108, Cl. 514-16.000.

Allard, Vincent L.; and Gallard, Henry, to BICC Public Limited Company. Winding apparatus. 4,765,553, Cl. 242-25.00A.

Allen, Dixon L.: *See*—
Thatcher, Stephen J.; and Allen, Dixon L., 4,765,354, Cl. 134-182.000

Allen, Richard G., to Gates Formed-Fibre Products, Inc. Low modulus cargo bed liner. 4,765,671, Cl. 296-39.00R.

Allied Corporation: *See*—
Chlanda, Frederick P.; and Lan, Ming J., 4,766,161, Cl. 521-27.000
Daly, Paul D.; Brooks, Mark A.; and Fallis, Robert, 4,766,405, Cl. 335-257.000
Das, Santosh K.; and Chang, Chin-Fong, 4,765,954, Cl. 420-403.000
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000.
Li, Hsin L.; and Oswald, Hendrikus J., 4,765,042, Cl. 28-257.000
Wertheimer, Harry P.; Miller, John C.; Barua, Debojit; and Tyree, Kenneth S., 4,765,881, Cl. 204-428.000
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000

Allied Signal Inc.: *See*—
Benson, Paul A., 4,765,131, Cl. 60-39.020.
Gollomp, Bernard P., 4,766,595, Cl. 371-23.000.
Homonoff, Edward C.; and Rodman, Clarke A., 4,765,812, Cl. 55-524.000
Schweizer, Frederick A., 4,765,850, Cl. 148-404.000
Shia, George A.; and Friedland, David J., 4,765,968, Cl. 423-445.000

Allington, Robert W.: *See*—
Tehrani, Abolghassem Y.; Jones, John N.; and Allington, Robert W., 4,765,890, Cl. 210-198.200

Alm, John A. Magnetic pick-up for stringed musical instrument. 4,765,219, Cl. 84-1.150.

Alps Electric Co., Ltd.: *See*—
Ito, Eiji, 4,765,700, Cl. 350-96.200.
Ohkita, Masao, 4,765,782, Cl. 407-24.000.
Okita, Masao; Sugawara, Tadami; and Yoshida, Hiroshi, 4,766,510, Cl. 360-106.000

Alsenvik, Stewe: *See*—
Froidh, Arne; Alsenvik, Stewe; Widlund, Urban; and Norenberg, Carl-Daniel, 4,765,477, Cl. 206-438.000

Alten, Ferdinand, to August Bilstein GmbH & Co. KG. Scissor jack. 4,765,595, Cl. 254-126.000.

Aluminum Company of America: *See*—
Brown, Melvin H.; Cochran, C. Norman; and Jarrett, Noel, 4,765,832, Cl. 75-68.00A.
Cochran, C. Norman; and Brown, Melvin H., 4,765,831, Cl. 75-67.00R.

Alza Corporation: *See*—
Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 4,765,989, Cl. 424-473.000.

Amen, Jean: *See*—
Mizandjian, Jean-Luc; Meyer, Jean-Marc; and Amen, Jean, 4,766,001, Cl. 426-477.000.

American Allsafe Company: *See*—
Bourgeois, Roy M., 4,764,989, Cl. 2-422.000.

American Brass & Aluminum Foundry Co. Inc.: *See*—
Oropallo, Robert A., 4,764,993, Cl. 4-295.000.

American Cyanamid Company: *See*—
Maulding, Donald R., 4,766,218, Cl. 546-170.000.

American Home Products Corporation: *See*—
Abou-Gharbia, Magid A., 4,766,124, Cl. 514-253.000.
Abou-Gharbia, Magid A.; and Patel, Usha R., 4,766,215, Cl. 544-357.000

American Laundry Machinery, Inc.: *See*—
Williamson, George, 4,765,161, Cl. 68-12.00R.

American Louver Company: *See*—
Glass, Walter, 4,766,527, Cl. 362-354.000

American Safety Equipment Corporation: *See*—
Crisp, T. S., 4,765,559, Cl. 242-107.40A
Unger, Hans, 4,765,651, Cl. 280-804.000.

American Standard Inc.: *See*—
Platner, Joseph W., 4,765,002, Cl. 4-619.000.

American Technical Industries, Inc.: *See*—
Circelli, Peter A.; and Praemassing, Adolph K., 4,765,940, Cl. 264-339.000

American Telephone and Telegraph Company, AT&T Bell Laboratories: *See*—
Baral, Elliott; Dharmapalan, Jonathan D.; Gordon, Travis H.; and Richardson, Ross M., 4,766,592, Cl. 370-62.000.
Bohannon, William D., Jr.; Kinard, Michael D.; and Reynolds, Mickey R., 4,765,712, Cl. 350-96.230.
Coquin, Gerald A.; Lynch, William T.; and Parrillo, Louis C., 4,766,090, Cl. 437-57.000.
DeBenedictis, Erik P., 4,766,534, Cl. 364-200.000

American Telephone and Telegraph Co., AT&T Bell Labs.: *See*—
Marcatili, Enrique A. J.; and Wood, Thomas H., 4,765,706, Cl. 350-96.160.

Amoco Corporation: *See*—
Clendinning, Robert A.; and Kelsey, Donald R., 4,766,197, Cl. 528-125.000
Luks, Kraemer D.; Turek, Edward A.; and Baker, Lee E., 4,766,558, Cl. 364-558.000
Satek, Larry; Wilwerding, Laura; Melquist, John L.; and Luetkens, Melvin L., 4,766,102, Cl. 502-202.000.
Whitmore, Norman D., Jr.; and Marfurt, Kurt J., 4,766,574, Cl. 367-50.000
Yuvancic, James A., 4,765,407, Cl. 166-268.000.

AMP Incorporated: *See*—
Wilson, Michael C.; and Volinskie, Robert, 4,765,044, Cl. 29-33.00M

Amphenol Corporation: *See*—
Margolin, Mark, 4,765,707, Cl. 350-96.200.

Ananthapadmanabhan, Kavssery P.; and Goddard, Errol D., to Union Carbide Corporation. Process for the recovery of metal values 4,765,834, Cl. 75-108.000

Anderle, Friedrich, to Leybold-Heraeus GmbH. Transporting device with roller systems for vacuum-coating installations. 4,765,273, Cl. 118-729.000

Andermac: *See*—
Anderson, Clifford M.; Stearns, Brian D.; and Witt, Hillard T., 4,764,997, Cl. 4-420.300.

Andermann, Guy: *See*—
Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, 4,766,151, Cl. 514-640.000.

Andersen, Carl O.; Irvin, John E.; and Rhodenbaugh, Gary W., to Teleflex Incorporated. Quick connect cable coupler. 4,765,199, Cl. 74-501 00D.

Anderson, Clifford M.; Stearns, Brian D.; and Witt, Hillard T., to Andermac. Sitz bath for use with douche. 4,764,997, Cl. 4-420 300

Anderson, Lowell R.: *See*—
Vara, Fulvio J.; Anderson, Lowell R.; and Dougherty, James A., 4,766,252, Cl. 568-616.000

Anderson, Patricia P.: *See*—
Takekoshi, Tohru; and Anderson, Patricia P., 4,766,199, Cl. 528-128.000

Anderson, Scott D.: *See*—
Nehls, George R., Jr.; and Anderson, Scott D., 4,765,828, Cl. 75-10.190

Anderson, Stephen J.: *See*—
Scholl, Frederick W.; Anderson, Stephen J.; and Coden, Michael H., 4,766,470, Cl. 357-17.000.

Anderson, Vernon B.: *See*—
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,766,143, Cl. 514-431.000

Andersson, Jan-Erik: *See*—
Johansson, Jan O.; Andersson, Jan-Erik; Niklewski, Tomasz; and Edshammar, Lars E., 4,766,349, Cl. 313-631.000.

Andersson, Sven-Goran: *See*—
Bjerking, Sven-Erik; and Andersson, Sven-Goran, 4,765,416, Cl. 175-71.000

Ando, Hideo, to Kabushiki Kaisha Toshiba. Optical head. 4,766,582, Cl. 369-45.000

Ando, Masaoki: *See*—
Schweitzer, Edmund O., III; and Ando, Masaoki, 4,766,549, Cl 364-481.000.

Ando, Rokuro: *See*—
Ishizuka, Masashi; Ando, Rokuro; Hatano, Mikio; and Tabata, Koji, 4,765,249, Cl. 105-10.000.

Ando, Yujiro: *See*—
Hosono, Nagao; Fujii, Haruo; Ando, Yujiro; and Nakahata, Kimio, 4,766,468, Cl. 355-3.0DD.

Andou, Hironori: *See*—
Yamada, Shuji; Matsushita, Tetsuya; and Andou, Hironori, 4,766,467, Cl. 355-14.0SH

Andrews, Peter: *See*—
Muller, Nikolaus; Kranz, Eckart; and Andrews, Peter, 4,766,144, Cl. 514-457.000.

Andric, Milos D. Door hinge. 4,765,027, Cl. 16-354.000.

Ange, C. Kelly: *See*—
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R

Angelo Benedetti, Inc.: *See*—
Benedetti, Angelo W.; and Benedetti, Angelo W., Jr., 4,765,772, Cl. 404-77.000.

Angstadt, John J., to Procter & Gamble Company, The. Apparatus for and method of providing a multiplicity of streams of air-entrained fibers. 4,765,780, Cl. 406-123.000.

Aniello, Michael J. Smoke exhausting air conditioning system. 4,765,231, Cl. 98-33.100.

Annas, Dulin L., Sr.; and Teague, Richard M., to Anteg, Inc. Conveyor. 4,765,122, Cl. 53-442.000.

Anritsu Corporation: *See*—
Kodato, Setsuo, 4,766,008, Cl. 427-39.000.

Anteg, Inc.: *See*—
Annas, Dulin L., Sr.; and Teague, Richard M., 4,765,122, Cl. 53-442.000.

Anthony, John D., Jr.; Leffew, Kenneth W.; and Trentacosta, Joseph D., to Du Pont de Nemours, E. I., and Company. Thickness control system for an extrusion coating apparatus. 4,765,941, Cl. 264-40.100.

Anzai, Kazuo: *See*—
Shinozaki, Kazuo; Anzai, Kazuo; Takano, Takeshi; and Tsuge, Akihiko, 4,766,097, Cl. 501-98.000.

Anzai, Yutaka; Yamagishi, Kiyoshi; Yamaguchi, Yasuhide; and Moriya, Kazuo, to Mitsui Mining & Smelting Co. Ltd. Solid state laser hosts. 4,765,925, Cl. 252-301.40F.

Ao, Kazuo: *See*—
Marui, Tomohiro; Kaneko, Tadao; Ao, Kazuo; Shimono, Toshio; and Fukada, Seiichiro, 4,765,547, Cl. 241-40.000.

Aoai, Toshiaki: *See*—
Watanabe, Akio; Washizu, Shintaro; Shinozaki, Fumiaki; Ishikawa, Shun-ichi; and Aoai, Toshiaki, 4,766,037, Cl. 428-402.210.

Aoi, Motojirou: *See*—
Hamamoto, Toshikazu; Aoi, Motojirou; Yoshida, Kozaburo; and Toda, Yasuhiko, 4,766,162, Cl. 523-440.000.

Aoki, Toshikazu: *See*—
Ariizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, 4,765,370, Cl. 137-625.650.

Aono, Yasuhiro, to Nippon Kogaku K.K. Zoom lens. 4,765,722, Cl. 350-427.000

Aoyama, Masaharu: *See*—
Ohshima, Jiro; Taka, Shin-ichi; Ito, Toshiyo; and Aoyama, Masaharu, 4,766,086, Cl. 437-011.000.

AP Industries, Inc.: *See*—
Harwood, Jon W.; Rosa, Bruno A.; Van Blaircum, Bennie A.; and Kimmet, Mark S., 4,765,437, Cl. 181-282.000.

APL Corporation: *See*—
Fishman, Aaron H.; and Bottitta, Joseph, 4,765,506, Cl. 220-355.000.

Applied Industrial Materials Corporation: *See*—
Hulbert, Matthew H.; and Currier, James W., 4,765,892, Cl 210-290.000.

Applied Power, Inc.: *See*—
Mierbach, Hans-Bernd; Frohn, Gustav; and Blockisch, Olaf, 4,765,210, Cl. 81-57.390.

APV Pasilac A/S: *See*—
Skovhauge, Erik; and Simonsen, Karl, 4,766,003, Cl. 426-582.000.

Arai, Kenji: *See*—
Kurihara, Kazumasa; and Arai, Kenji, 4,765,450, Cl. 192-0.052.
Kurihara, Kazumasa; and Arai, Kenji, 4,766,544, Cl. 364-424.100.

Arai, Tohru; Fujita, Hironori; Endo, Junji; Sugimoto, Yoshihiko; and Ohta, Yukio, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method of treating the surface of iron alloy materials. 4,765,847, Cl. 148-15.500.

Arakawa, Yoshiki, to Matsushita Electric Industrial Co., Ltd. Three-dimensional solid object manipulating apparatus and method therefor. 4,766,556, Cl. 364-522.000.

Arbed S.A.: *See*—
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000.

Arcamone, Federico; Mongelli, Nicola; and Penco, Sergio, to Farmitalia Carlo Erba S.r.l. Poly-4-aminopyrrole-2-carboxamido derivatives and their use as antiviral or antitumor agents. 4,766,142, Cl. 514-422.000

Arcari, Mario A., to Manager Systems Incorporated. Pressure activated valve for sanitary systems. 4,765,364, Cl. 137-536.000.

Arco Chemical Company: *See*—
Khoobiar, Sargis, 4,766,266, Cl. 585-660.000

Ardal og Sunndal Verk a.s.: *See*—
Aalbu, Johannes; Moen, Tom; Aalbu, Morit S.; and Borg, Peter, 4,766,552, Cl. 364-500.000.

Ariizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, to Fujikura Rubber Ltd. Directional control valve. 4,765,370, Cl. 137-625.650.

Armstrong, Alfred, to Crathco, Inc. Beverage dispenser with a partitionless refrigerating stand. 4,765,152, Cl. 62-389.000.

Arthur Schmid AG: *See*—
Principe, Viktor, 4,765,578, Cl. 248-59.000

Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, to Sulzer Morat GmbH. Circular knitting machine for producing knit goods with combed-in fibers. 4,765,156, Cl 66-9.00B.

Aruga, Masayoshi: *See*—
Sonobe, Takashi; Sugiura, Hiroshi; Itoh, Tomoh; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,765,988, Cl. 424-468.000

Asahi Glass Company, Ltd.: *See*—
Hamano, Toshikatsu; and Matsumura, Yukio, 4,765,872, Cl. 204-130.000
Matsuo, Masashi; Furukawa, Yutaka; Iwamoto, Toshio; and Kawakami, Shoichi, 4,765,713, Cl. 350-96.340

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Komatsu, Takahiro; Ide, Tohru; Akiyama, Hirohumi; Kitamura, Takao; and Yamamoto, Shinichi, 4,766,258, Cl. 570-168.000
Miyazaki, Toshiyuki; and Yamamoto, Tohru, 4,766,379, Cl 324-309.000
Yoshimura, Isao; Nakao, Takashi; and Kohno, Mitsuo, 4,766,033, Cl. 428-332.000

Asano, Ichiro: *See*—
Kihara, Nobutaka; Asano, Ichiro; and Kojima, Kennosuke, 4,766,304, Cl. 250-214.00C.

ASEA Aktiebolag: *See*—
Bergman, Carl; and Svensson, Lennart, 4,765,166, Cl. 72-63.000.

Ashland Oil, Inc.: *See*—
Goel, Anil B.; and DeLong, Teresa A., 4,766,196, Cl. 528-89.000
Goel, Anil B., 4,766,201, Cl. 528-374.000.

Asmo Co., Ltd.: *See*—
Handa, Noboru; and Tanaka, Takahiko, 4,766,356, Cl. 318-55.000

Aso, Hiroaki: *See*—
Kitamura, Yutaka; and Aso, Hiroaki, 4,765,283, Cl. 123-41.310

AT&T Technologies, Inc.: *See*—
Bohannon, William D., Jr.; Kinard, Michael D.; and Reynolds, Mickey R., 4,765,712, Cl. 350-96.230.

Atanasov, Stefan G.: *See*—
Genchev, Lyubomir N.; Kafedjiev, Iliya C.; Klyamov, Kostadin S.; and Atanasov, Stefan G., 4,765,233, Cl. 99-472.000

Atkinson, Gordon E., to Vernay Laboratories, Inc. Check valve for use with a syringe. 4,765,588, Cl. 251-149.100.

Atlantic Richfield Company: *See*—
Sun, Jui-Yuan; and Erekson, Erek J., 4,766,155, Cl. 518-713.000.

Atlas Copco Aktiebolag: *See*—
Bayard, Bo, 4,765,281, Cl. 123-2.000.

Atochem: *See*—
Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, 4,766,262, Cl. 570-211.000.
Masini, Jean-Jacques; and Verot, Yvan, 4,765,876, Cl. 204-157.950

Attwood, Terence E.; and Bridges, Richard F., to Imperial Chemical Industries plc. Production of tetrafluoroethylene polymers. 4,766,188, Cl. 526-227.000

Audren, Yves: *See*—
Tuffal, Guy; and Audren, Yves, 4,765,554, Cl. 242-55.100.

Auerbach, Daniel J.; Chen, Tien C.; and Paul, Wolfgang J., to International Business Machines Corporation. High-performance multiple port memory. 4,766,535, Cl. 364-200.000

Auerbach, David R.: *See*—
Pintsov, Leon A.; and Auerbach, David R., 4,765,502, Cl. 270-55.000

August Bilstein GmbH & Co. KG: *See*—
Alten, Ferdinand, 4,765,595, Cl. 254-126.000.

Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., to New England Medical Center; Tufts College; Wellesley College; and MIT. Recombinant DNA which codes for interleukin-1 B. 4,766,069, Cl. 435-70.000.

Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, to Celamerck GmbH & Co KG. 2-phenyl-imidazopyridin-ones and also useful as cardiotonics and anti-hypertensives. 4,766,130, Cl. 514-303.000

Australian Telecommunications Commission: *See*—
Martin, Andrew L., 4,766,600, Cl. 375-10.000

Auto-Sense, Ltd.: *See*—
Beggs, George; and Speck, Richard, 4,766,421, Cl. 340-904.000

Autopart Sweden AB: *See*—
Svensson, E. Gunnar, 4,765,674, Cl. 296-97.00K
Svensson, E. Gunnar, 4,765,675, Cl. 296-97.00G

Autoquip Corporation: *See*—
Cherry, Charles W.; and Benda, William J., 4,765,792, Cl 414-401.000

Autotrol Corporation: *See*—
Goudy, Paul R., Jr., 4,765,965, Cl. 422-186.000

VOL 1093 ISS 4 AG 23 1988 UMI

Avdel Limited: *See*—
Denham, Keith; Strnde, Glenn; and Brewer, Jonathan L., 4,765,175, Cl. 72-391.000.
Avery, Frederick M. Marker caddy. 4,765,494, Cl. 211-69.500.
Avesco p.l.c.: *See*—
Clayton, John C.; and Barnes, Trevor J., 4,766,484, Cl. 358-23.000.
Azberg, David R., to MessagePhone, Inc. Method for receiving and delivering voice messages. 4,766,604, Cl. 379-67.000.
Ayers, Donald J.: *See*—
Christensen, Stephen; Rakel, Jay O.; and Ayers, Donald J., 4,765,942, Cl. 264-510.000.
Ayres, James W.: *See*—
Sandine, William E.; and Ayres, James W., 4,766,076, Cl. 435-253.000.
Azuma, Toshio, to Bridgestone Corporation. Apparatus for joining the ends of belt-shaped materials. 4,765,862, Cl. 156-507.000.
B. C. Hydro: *See*—
Franklin, Douglas E.; Frank, Gordon I.; Palylyk, Richard A.; and Toom, Paul O., 4,766,323, Cl. 250-561.000.
B&G Plastics, Inc.: *See*—
Kolton, Chester; and Spater, Stuart S., 4,765,467, Cl. 206-296.000.
Babbs, Frederick W., to I. I. Cox Limited. Vehicle seat adjustment system. 4,765,582, Cl. 248-394.000.
Babcock & Wilcox Company, The: *See*—
Glass, Samuel W., III; Griffith, John C.; Brew, John D.; England, Charles C., Jr.; and Phillips, John M., 4,766,374, Cl. 324-207.000.
Babin, Michel; and Desfontaines, Guy, to Framatome. Probe guide duct device for a nuclear reactor. 4,765,947, Cl. 376-347.000.
Bacardit, Juan S., to Bendix Espana S.A. Hydraulic distributor, particularly for a power-assisted steering system for a vehicle. 4,765,369, Cl. 137-625.210.
Bach, Bert. Method and apparatus for removal of plaque from blood vessels. 4,765,330, Cl. 128-303.100.
Backerud, Stig L., to Sinter-Cast AB. Arrangement for use in the thermal analysis and modification of molten metal. 4,765,391, Cl. 164-150.000.
Baggio, Giorgio; and Sartor, Mariano, to Nordica S.p.A. Device for closing quarters, particularly for ski boots. 4,765,069, Cl. 36-50.000.
Bailey, Kristy M.; and Marek, Patrick J., to Nalco Chemical Company. Method for reducing residual acrylic acid in acrylic acid polymer gels. 4,766,173, Cl. 524-819.000.
Bailey, Robert A.; and Laurie, Gordon H. Telescopic pole system. 4,765,277, Cl. 119-51.00R
Bailey, Thomas F.; and Campbell, John E., to Drilex Systems, Inc. Whipstock packer assembly. 4,765,404, Cl. 166-117.600.
Baird, Willard J. Water heater leak collector. 4,765,360, Cl 137-312.000
Baker, Alan J.: *See*—
Saller, Kenneth R.; Baker, Alan J.; and Smith, Steven O., 4,766,367, Cl. 323-315.000
Baker, Don R.; and Brownell, Keith H., to Stauffer Chemical Co. Fungicidal pyridyl cyclopropane carboxamides. 4,766,134, Cl. 514-346.000
Baker, Don R.; and Brownell, Keith H., to Stauffer Chemical Co. Fungicidal N-(substituted thio)-pyridyl cyclopropane carboxamides. 4,766,135, Cl. 514-346.000.
Baker, Lee E.: *See*—
Luks, Kraemer D.; Turek, Edward A.; and Baker, Lee E., 4,766,558, Cl. 364-558.000
Balazs, Les G.; and Cydzik, Anthony J., Jr., to Teledyne Hyson. Die cylinder assembly. 4,765,227, Cl. 91-417.00R
Ball Corporation: *See*—
Doud, Wilbur O., 4,765,821, Cl. 65-169.000
Ballocca, Guido, to S.A.I.A.G. S.p.A. Method for the manufacture of a weather strip for motor vehicles. 4,765,936, Cl. 264-46.100.
Balthasart, Dominique: *See*—
Tygat, Daniel; Lefevre, Pierre; and Balthasart, Dominique, 4,765,958, Cl. 422-12.000.
Baltzer, Erich, to Hergeth Hollingsworth GmbH. Apparatus for the production of short warps especially for cloth designs in multicolor weaving. 4,765,041, Cl. 28-191.000.
Banach, Frank G.; Haerle, James G.; and Tait, David S., to Zenith Electronics Corporation. IF circuit with reduced sound attenuation for cable signals. 4,766,497, Cl. 358-188.000.
Bando, Akira: *See*—
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.
Banner, Alvin C.: *See*—
Page, Teddy L.; and Banner, Alvin C., 4,765,551, Cl. 242-7.05B.
Baral, Elliott; Dharmapalan, Jonathan D.; Gordon, Travis H.; and Richardson, Ross M., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Broadcast conferencing arrangement. 4,766,592, Cl. 370-62.000.
Barbe, Guy, to Societe Amatec. Automatic load-release apparatus for parachute equipment. 4,765,571, Cl. 244-151.00B.
Barber, James C., to James C. Barber and Associates, Inc. Recovery of fluorine from waste gases. 4,765,822, Cl. 71-34.000
Barclay, Brian L.: *See*—
Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 4,765,989, Cl. 424-473.000
Bardutz, Ronald W.; Kortje, Joseph P.; and Twardy, Craig P., to Dell Canada Marketing Corp. Signal repeater for multi subscriber communication over single pair telephone line. 4,766,606, Cl. 379-344.000
Barker, Laurence S.; Hays, Dan A.; Redding, Thomas P.; and Wayman, William H., to Xerox Corporation. Particulate material dispenser. 4,766,457, Cl. 355-3.0DD
Barks, Michael D., to Boiardi, Mario. Sealing system for combustible engines and the like. 4,765,629, Cl. 277-1.000.
Barks, Michael D., to Boiardi, Mario. Sealing system for combustible engines and the like. 4,765,630, Cl. 277-1.000.
Barnes, Trevor J.: *See*—
Clayton, John C.; and Barnes, Trevor J., 4,766,484, Cl. 358-23.000.
Barnett, Ronald E.: *See*—
Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,766,246, Cl. 560-117.000
Baron, Neville A. Ophthalmic liquid sunglasses. 4,765,977, Cl. 424-78.000
Barry Wright Corporation: *See*—
O'Donnell, Brian R.; and Peretti, Mark F., 4,765,758, Cl. 384-221.000
Barta, Istvan: *See*—
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.
Barth, Hans, to CheckRobot, Inc. Article checkout counter and system. 4,766,296, Cl. 235-383.000.
Barth, Jordan: *See*—
Vellekoop, Linda J.; and Barth, Jordan, 4,765,984, Cl. 424-441.000.
Barth, Ronald E.: *See*—
Batson, David C.; Barth, Ronald E.; Goebel, Franz; and Harris, Peter B., 4,765,798, Cl. 29-623.100.
Barthe, Bernard; Vantard, Georges; and Vasseur, Jean-Pierre, to Hospal Industrie. Artificial kidney with integrated dialysate circuit. 4,765,888, Cl. 210-86.000.
Barton, Jeffrey E. Stocking holder apparatus. 4,765,520, Cl. 223-111.000
Barua, Debojit: *See*—
Wertheimer, Harry P.; Miller, John C.; Barua, Debojit; and Tyree, Kenneth S., 4,765,881, Cl. 204-428.000
Baruch, Yehuda. Anti-theft system for vehicles. 4,765,362, Cl. 137-384.200
BASF Aktiengesellschaft: *See*—
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.
Werner, Arend; Hibst, Hartmut; and Petermann, Juergen, 4,766,021, Cl. 428-64.000
Bates, Kenneth J. Saddle. 4,765,126, Cl. 54-44.000.
Batson, David C.; Barth, Ronald E.; Goebel, Franz; and Harris, Peter B., to GTE Government Systems Corporation. Method of adding electrolyte to electrochemical cells. 4,765,798, Cl. 29-623.100.
Battelle Memorial Institute: *See*—
Bichon, Daniel; Nguyen, Van Tao; and Schneider, Michel, 4,766,160, Cl. 522-46.000.
Bauer, Fred P.: *See*—
Kurgan, Leonard J.; and Bauer, Fred P., 4,766,406, Cl. 336-65.000.
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans J., to Fritz Bauer+-Sohne OHG. Friction damper. 4,765,444, Cl. 188-129.000
Bauer, Hans J.: *See*—
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans J., 4,765,444, Cl. 188-129.000
Bauer, Hans-Peter: *See*—
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans J., 4,765,444, Cl. 188-129.000
Bauer, Heinz; Becker, Hans; and Scholz, Walter, to Linde Aktiengesellschaft. Process for purification of a gas stream by a nitrogen scrubbing. 4,765,814, Cl. 62-20.000.
Baxter, Keith M. Thermally regenerative hot beverage container. 4,765,393, Cl. 165-47.000.
Bayard, Bo, to Atlas Copco Aktiebolag. Heating device. 4,765,281, Cl. 123-2.000
Bayer Aktiengesellschaft: *See*—
Fest, Christa; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,766,136, Cl. 514-357.000.
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,766,239, Cl. 560-351.000
Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, 4,766,165, Cl. 524-140.000
Lurssen, Klaus, 4,765,823, Cl. 71-92.000.
Muller, Nikolaus; Kranz, Eckart; and Andrews, Peter, 4,766,144, Cl. 514-457.000.
Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,765,824, Cl. 71-92.000
Weber, Christian; and Hass, Peter, 4,766,172, Cl. 524-783.000
Bayerer, Reinhold: *See*—
Gobrecht, Jens; and Bayerer, Reinhold, 4,766,481, Cl. 357-80.000.
BBC Brown, Boveri AG: *See*—
Blass, Bernardo, 4,766,513, Cl. 361-117.000
Hirth, Michael, 4,765,803, Cl. 55-2.000.
BBC Brown, Boveri & Company, Limited: *See*—
Couper, Malcolm J., 4,765,851, Cl. 148-437.000.
Hellat, Jaan; and Keller, Jakob, 4,765,146, Cl. 60-746.000.
Beach, Michael E.: *See*—
Duff, Paul; and Beach, Michael E., 4,765,098, Cl. 51-99.000.

Beal, William S.: *See*—
Le Breton, Albert F.; and Beal, William S., 4,765,759, Cl. 384-252.000.
Bearden, Roby, Jr.: *See*—
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,765,882, Cl. 208-59.000.
Beatrice Companies, Inc.: *See*—
Ghosh-Dastidar, Pradip, 4,766,205, Cl. 530-402.000.
Beaver, Richard N.: *See*—
Dang, Hiep D.; and Beaver, Richard N., 4,765,530, Cl. 228-175.000.
Bechade, Roland A.; and Schmookler, Martin S., to International Business Machines Corporation. Arithmetic logic circuit having a carry generator. 4,766,565, Cl. 364-784.000.
Becker, Hans: *See*—
Bauer, Heinz; Becker, Hans; and Scholz, Walter, 4,765,814, Cl. 62-20.000
Becker, Johann A.; Deusser, Peter G.; and Zell, Werner V., to U.S. Philips Corporation. Storage device for a spare length of an optical line. 4,765,708, Cl. 350-96.200.
Becker, Wilfried: *See*—
Kruse, Heinz-Josef; Theis, Ulrich; Pahnke, Klaus D.; Wallow, Peter; and Becker, Wilfried, 4,765,248, Cl. 102-529.000
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen; Lob, Erwin; Lass, Joseph; and Kaule, Wittich, to GAO Gesellschaft fur Automation und Organisation mbH. Data carrier having an optical authenticity feature and methods for producing and testing said data carrier. 4,765,656, Cl. 283-70.000
Becker, Wolfgang: *See*—
Lass, Joseph; Merkle, Hansjurgen; Becker, Wolfgang; Herget, Werner; and Lob, Erwin, 4,766,026, Cl. 428-203.000.
Beckley, Ronald S.; Randow, Rodney L.; and Swift, Graham, to Rohm and Haas Company. Copolymerizable ethylenically unsaturated surfactants for latex preparation. 4,766,187, Cl. 526-209.000.
Beckmann, Franz; Schmit, Romain; and Wagner, Armand, to Laborlux S. A. Treating lead- and zinc-containing steelmaking byproducts 4,765,829, Cl. 75-25.000.
Beckmann, Rudi, to Heckler & Koch GmbH. Cartridge feed mechanism. 4,765,223, Cl. 89-33.040.
Beckon, Weir E. Top removal filter cartridge. 4,765,811, Cl. 55-498.000.
Becton Dickinson and Company: *See*—
Mosier, Larry; and Petersen, John, 4,766,065, Cl. 435-7.000.
Beecher, William H., to Illinois Tool Works Inc. Check valve. 4,765,372, Cl. 137-843.000
Beegan, David T.: *See*—
Hack, James R.; Masson, Bernard V.; and Beegan, David T., 4,766,448, Cl. 346-150.000.
Beese, Ulrich: *See*—
Otto, Werner; and Beese, Ulrich, 4,765,503, Cl. 220-74.000.
Beeson, Thomas T.: *See*—
Marynissen, William E.; Beeson, Thomas T.; and Snell, Thomas G., 4,765,767, Cl. 401-213.000.
Beggs, George; and Speck, Richard, to Auto-Sense, Ltd. Object detection apparatus employing electro-optics. 4,766,421, Cl. 340-904.000.
Begley, Timothy H., to Pacific Scientific Company. Method of comparing spectra to identify similar materials. 4,766,551, Cl. 364-498.000.
Belanger, Barry F.: *See*—
Lambert, Thomas W.; and Belanger, Barry F., 4,766,503, Cl. 358-332.000
Belica, Roddy. Static convergence assembly. 4,766,343, Cl. 313-412.000.
Bell, James C., to Oliver Industries, Inc. Luggage carrier. 4,765,522, Cl. 224-326.000
Bell, John C.: *See*—
Modery, Richard G.; Bell, John C.; and Cope, Charles R., 4,766,547, Cl. 364-478.000
Bell, Laurence G. Foldable cart. 4,765,644, Cl. 280-641.000.
Bellego, Roger; and Foch, Etienne, to Aerospatiale Societe Nationale Industrielle. System for controlling a mobile aerodynamic surface of an aircraft. 4,765,572, Cl. 244-178.000.
Bellows, Richard J.; and Kantner, Edward, to Exxon Research and Engineering Company. Metal halogen electrochemical cell. 4,766,045, Cl. 429-105.000
Benda, William J.: *See*—
Cherry, Charles W.; and Benda, William J., 4,765,792, Cl. 414-401.000
Bendix Espana S.A.: *See*—
Bacardit, Juan S., 4,765,369, Cl. 137-625.210.
Bendix France: *See*—
Bequet, Franck; and Carre, Jean-Jacques, 4,765,226, Cl. 91-369.00A.
Benedetti, Angelo W.; and Benedetti, Angelo W., Jr., to Angelo Benedetti, Inc. Method and apparatus for filling voids in recycled asphalt. 4,765,772, Cl. 404-77.000
Benedetti, Angelo W., Jr.: *See*—
Benedetti, Angelo W.; and Benedetti, Angelo W., Jr., 4,765,772, Cl. 404-77.000
Beninate, John V.: *See*—
Harper, Robert J., Jr.; and Beninate, John V., 4,765,796, Cl. 8-115.700
Bennett, Ian C.; and Hall, Antony H. P., to British Petroleum Company, The. Aromatization of paraffins. 4,766,264, Cl. 585-412.000.
Bennett, Therman B. Tooth profile sensing instrument. 4,765,065, Cl. 33-556.000.
Bennett, William S., to Singer Company, The. System for the automatic generation of data bases for use with a computer-generated visual display. 4,766,555, Cl. 364-518.000.
Benson, Paul A., to Allied Signal Inc. Aircraft engine bleed air flow balancing technique. 4,765,131, Cl. 60-39.020.
Bequet, Franck; and Carre, Jean-Jacques, to Bendix France. Brake booster with a hinged positioning member. 4,765,226, Cl. 91-369.00A.
Bercen, Inc.: *See*—
Nikoloff, Koyu; and Peltier, Raymond J., 4,766,015, Cl 427-326.000
Berger, Josef; Ernst, Helmut; Linhart, Hans-Joachim; and Pfeiffer, Martin, to Robert Bosch GmbH. Wiping device for wiping cover plates of headlights of motor vehicles. 4,765,017, Cl. 15-250.00A
Bergl, Rodney A.; and Tracy, Richard J., to Modulus, Inc. Cantilever shelf support. 4,765,575, Cl. 248-250.000
Berglund, Albert I. Container. 4,765,514, Cl. 222-145.000
Bergman, Carl; and Svensson, Lennart, to ASEA Aktiebolag. Cavity forming press. 4,765,166, Cl. 72-63.000
Bergmann, Rolf: *See*—
Juraszyk, Horst; Gericke, Rolf; Lues, Inge; Bergmann, Rolf; and Schmitges, Claus J., 4,766,213, Cl. 544-127.000.
Bergquist, Andrew O.: *See*—
Holden, Ronald D.; Tedor, John B.; Bergquist, Andrew O.; Moran, David S.; and Eiserer, Mike, 4,765,193, Cl. 73-865.900
Bergquist, Frank H., to Eaton Corporation. Thermostatic control valve assembly for fuel gas burner. 4,765,536, Cl. 236-15.00A.
Berkenhoff GmbH: *See*—
Groos, Heinrich, 4,766,280, Cl. 219-69.00W.
Berkes, John S.; and Swackhamer, Stanley B., to Xerox Corporation. Flash fusing reflector cavity. 4,766,288, Cl. 219-216.000.
Berkley-Small Manufacturing Company, Inc.: *See*—
Loos, Jerold C., 4,765,074, Cl. 40-661.000
Berlage, Arnold G.; Krishnan, Palaniappa; Bilsland, Douglas M.; and Brandenburg, N. Robert, to United States of America, Agriculture, and State of Oregon, acting by and through the State Board of Higher Education on behalf of Oregon State University, The. Method for obtaining a purified fraction from a mixture using a magnetic fluid 4,765,486, Cl. 209-8.000.
Berman, Irwin, to Foster Wheeler Development Corporation. Tubesheet and a method for explosively welding a tube to a tubesheet while preventing separation of cladding from the tubesheet. 4,765,527, Cl. 228-107.000
Bernhardsson, Sven-Olof: *See*—
Hagenfeldt, Carl P. U.; Bernhardsson, Sven-Olof; and Lagerberg, Erik V. S., 4,765,953, Cl. 420-65.000
Bernstein, David H.: *See*—
Wilson, James A., Jr.; and Bernstein, David H., 4,766,536, Cl 364-200.000
Bernstein, Lawrence S.: *See*—
Adler-Golden, Steven; Bernstein, Lawrence S.; and Bien, Fritz, 4,766,318, Cl. 250-385.200.
Berry, William L.; Coney, Robert S.; and Senft, Stephen P., to GTE Products Corporation. Electric lamp with reinforced filament structure. 4,766,339, Cl. 313-276.000
Bertone, Leone: *See*—
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,766,214, Cl. 544-336.000
Bertrams, Josef: *See*—
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000
Berube, Gilles; and Dumas, Ghislain, to Canada, Her Majesty the Queen in right of. Firing pin and safety and arming mechanism for a penetrating warhead. 4,765,245, Cl. 102-251.000.
Beschle, Mark: *See*—
English, George J.; Rothwell, Harold L., Jr.; and Beschle, Mark 4,766,348, Cl. 313-631.000
Besemann, Alfred, to E.C.H. Will (GmbH & Co.). Apparatus for accumulating stacks of paper sheets and the like. 4,765,790, Cl. 414-47.000
Bessey, Alan L. Food and drink cooler for automobiles. 4,765,151, Cl 62-239.000
Bessinger, Walter L.; and Clement, Gene R., to Knape & Vogt Manufacturing Company. Drawer slide lift-out lock. 4,765,699, Cl 312-339.000
Besson, Bernard, to Rhone-Poulenc Chimie de Base. Preparation of arylaminoaluminums. 4,766,230, Cl. 556-176.000
Best, Steven A.; Etherton, Bradley P.; and Kaus, Malcolm J., to Exxon Research & Engineering Co. Polymerization catalyst, production and use (P-1063). 4,766,100, Cl. 502-115.000.
Betz Laboratories, Inc.: *See*—
Dreisbach, David D.; Gomes, Gilbert S.; and Schuster, Michael A., 4,765,867, Cl. 162-72.000
Walterick, Gerald C., Jr., 4,765,923, Cl. 252-181.000
Beyerle, Robert W.: *See*—
Cordill, Rexford W.; Fortner, Jerry L.; and Beyerle, Robert W., 4,765,696, Cl. 312-214.000
Beynon, Thomas G. R.; and Kirby, Peter J., to Land Infrared Limited. Radiation thermometers. 4,765,752, Cl. 374-153.000.
Biamonte, Robert A.; Bogdanski, Joseph W.; Covi, Kevin R.; Meyer, Herman P.; and Rafkind, Daniel I., to International Business Machines Corporation. Parallel power systems. 4,766,364, Cl 323-272.000
Biasotti, Joseph B.: *See*—
Love, Doris; Schlicht, Raymond C.; and Biasotti, Joseph B., 4,765,918, Cl. 252-46.400
BIC Corporation: *See*—
Marynissen, William E.; Beeson, Thomas T.; and Snell, Thomas G., 4,765,767, Cl. 401-213.000

VOL 1093 ISS 4 AG 23 1988 UMI

BICC Public Limited Company: *See—*
Allard, Vincent L.; and Gallard, Henry, 4,765,553, Cl. 242-25.00A

Bichon, Daniel; Nguyen, Van Tao; and Schneider, Michel, to Battelle Memorial Institute. Photo-hardenable composition for bioactive coatings. 4,766,160, Cl. 522-46.000.

Bichsel, Daniel; and Pluss, Martin, to Elektro-Apparatebau Olten AG. Apparatus with illuminated actuator for photoelectrically controlling a load. 4,766,306, Cl. 250-227.000.

Bien, Fritz: *See—*
Adler-Golden, Steven; Bernstein, Lawrence S.; and Bien, Fritz, 4,766,318, Cl. 250-385.200.

Bieniewski, Thomas M.: *See—*
Hull, Donald E.; and Bieniewski, Thomas M., 4,766,351, Cl. 315-240.000.

Bienz, Wilford L.: *See—*
Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., 4,765,543, Cl. 239-533.200.

Bierl, Thomas W., to Adamantech, Inc. Purification of fluorocarbons. 4,766,261, Cl. 570-179.000.

Biesel, Duane M.: *See—*
Iovanni, Carl F.; and Biesel, Duane M., 4,765,975, Cl. 424-70.000.

Bigelow, Warren B., Jr., to General Electric Company. Rotary electric switch. 4,766,277, Cl. 200-293.000.

Bihari, Ferenc: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Bilsland, Douglas M.: *See—*
Berlage, Arnold G.; Krishnan, Palaniappa; Bilsland, Douglas M., and Brandenburg, N. Robert, 4,765,486, Cl. 209-8.000.

Biodex Corporation: *See—*
Krukowski, Richard, 4,765,315, Cl. 128-25.00R.

Biolabimex AB: *See—*
Fele, Karl; and Lindberg, Stellan, 4,766,079, Cl. 436-63.000.

Biomaterials Universe, Inc.: *See—*
Hyon, Suong-Hyu; and Ikada, Yoshito, 4,765,937, Cl. 264-185.000.

Biosonics, Inc.: *See—*
Brenman, Henry S.; and Jarmolow, Benjamin, 4,765,343, Cl. 128-639.000.

Biotechnology Australia Pty. Ltd.: *See—*
Yukawa, Takao; and Pitt, Janice M., 4,765,275, Cl. 119-15.000.

Birchard, William G. Digitally controlled air-over-hydraulic actuator and method. 4,765,225, Cl. 91-362.000.

Bisk, Leonard. Knock down storage system and accessories therefor. 4,765,495, Cl. 211-113.000.

Bisson, Flavio, to Necchi Societa per Azioni. Automatic device for detaching the cam followers in a sewing machine. 4,765,268, Cl. 112-465.000.

Biswas, Debajit K., to President and Fellows of Harvard College. Gene amplification. 4,766,067, Cl. 435-68.000.

Bjerking, Sven-Erik; and Andersson, Sven-Goran, to AB Sandvik Rock Tools. Method for prudent penetration of a casing through sensible overburden or sensible structures. 4,765,416, Cl. 175-71.000.

Bjornlie, Harvey C.; and Clark, Timothy E., to McDonnell Douglas Corporation. Method and apparatus for making optical fiber couplers. 4,765,816, Cl. 65-4.200.

Black & Decker, Inc.: *See—*
Sauerwein, William D.; Dibbern, John E., Jr.; O'hara, Frank J.; and Moores, Robert G., Jr., 4,765,054, Cl. 29-596.000.

Blaha, Erich; and Gartner, Hartmut, to Carl-Zeiss-Stiftung. Supplement arrangement for a slit-lamp apparatus for treating the eye by means of laser rays. 4,765,336, Cl. 128-395.000.

Blain, Jeffery W.; Shah, Denis D.; and Chen, Jean, to Westinghouse Electric Corp. Elevator system graceful degradation of bank service. 4,765,442, Cl. 187-101.000.

Blake, Alexander: *See—*
Monick, Barbara; and Blake, Alexander, 4,765,908, Cl. 210-666.000.

Blass, Bernardo, to BBC Brown, Boveri AG. High voltage apparatus. 4,766,513, Cl. 361-117.000.

Bleich, Charles R.; Smolucha, Walter E.; Wepner, Gregory W.; Lantz, Kenneth F.; and Herschler, Scott C., to Williams Electronics Games, Inc. Apparatus for generating interactive video game playfield environments. 4,766,541, Cl. 364-410.000.

Blevins, James D.: *See—*
Clements, Thomas R.; and Blevins, James D., 4,765,136, Cl. 60-261.000.

Bliss, George N., to Diamond Automations, Inc. Automatic article stacking system. 4,765,487, Cl. 209-510.000.

Blockisch, Olaf: *See—*
Mierbach, Hans-Bernd; Frohn, Gustav; and Blockisch, Olaf, 4,765,210, Cl. 81-57.390.

Bluhm, Terry L.: *See—*
Breton, Marcel P.; Bluhm, Terry L.; and Lok, Kar P., 4,766,051, Cl. 430-138.000.

Boberg, Tore: *See—*
Carlsson, Staffan; Persson, Torsten; Jonsson, Bert; and Boberg, Tore, 4,765,246, Cl. 102-318.000.

BOC Group, Inc., The: *See—*
Lloyd-Williams, Andrew; MacLean, Donald L.; Jain, Ravi; and Lerner, Steven L., 4,765,804, Cl. 55-16.000.

Bock, Andre: *See—*
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000.

Bodnar, Thomas R. Gate valves. 4,765,591, Cl. 251-330.000.

Boehringer Ingelheim KG: *See—*
Losel, Walter; Roos, Otto; and Schnorrenberger, Gerd, 4,766,217, Cl. 546-94.000.
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,766,129, Cl. 514-300.000.

Boehringer Mannheim Corporation: *See—*
Lape, Larry J., 4,765,344, Cl. 128-770.000.

Boehringer Mannheim GmbH: *See—*
Krieg, Aloisius; Huger, Alois M.; and Schnetter, Wolfgang, 4,766,203, Cl. 530-370.000.

Boeing, Anthony J.: *See—*
Buck, Keith T.; Boeing, Anthony J.; Dolfini, Joseph E.; and Glinka, Jerome, 4,766,249, Cl. 568-433.000.

Boeing Company, The: *See—*
Christensen, Stephen; Rakel, Jay O.; and Ayers, Donald J., 4,765,942, Cl. 264-510.000.
Falk, Robert A., 4,766,588, Cl. 370-4.000.
Herndon, Gerald F., 4,765,570, Cl. 244-122.0AE.
Hsu, Grace F.; and Colonel, Richard C., 4,765,871, Cl. 204-44.200.
Pinson, George T., 4,765,222, Cl. 89-8.000.
Roeseler, William G., 4,765,602, Cl. 267-148.000.
Sarr, Dennis P.; and Young, Fred D., 4,766,554, Cl. 364-507.000.

Boertien, Johannes, to Technisch Bureau Boertien. Catching apparatus for poultry, in particular for chicks. 4,765,278, Cl. 119-82.000.

Boeshart, Patrick E. Adjustable tie. 4,765,109, Cl. 52-426.000.

Bogdanski, Joseph W.: *See—*
Biamonte, Robert A.; Bogdanski, Joseph W.; Covi, Kevin R.; Meyer, Herman P.; and Rafkind, Daniel I., 4,766,364, Cl. 323-272.000.

Bogdanski, Michael, to Nixdorf Computer AG. Device for inspecting the surface of magnetic memory disks. 4,766,512, Cl. 360-137.000.

Bohannon, William D., Jr.; Kinard, Michael D.; and Reynolds, Mickey R., to American Telephone and Telegraph Company, AT&T Bell Laboratories; and AT&T Technologies, Inc. Optical fiber cable. 4,765,712, Cl. 350-96.230.

Bohm, Horst: *See—*
Grimm, Rainer; Bohm, Horst; Schlapp, Albert; Hattass, Rainer; and Federmann, Dieter, 4,765,676, Cl. 296-216.000.

Bohus, Peter: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Boiardi, Mario: *See—*
Barks, Michael D., 4,765,629, Cl. 277-1.000.
Barks, Michael D., 4,765,630, Cl. 277-1.000.

Bolduc, Leonard; and Pare, Gregoire, to Hydro Quebec. Self-regulated transformer-inductor with air gaps. 4,766,365, Cl. 323-308.000.

Bollen, Romain H.; Marien, Jozef E.; and Wissels, Valentin G., to Agfa-Gevaert N.V. Electrostatic holder. 4,766,515, Cl. 361-234.000.

Bolton-Emerson, Inc.: *See—*
Mladota, John, 4,765,272, Cl. 118-410.000.

Bonardi, Phillip H.: *See—*
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Bonasera, Joseph C. Finger exerciser. 4,765,608, Cl. 272-67.000.

Bonnell, Leo W.; Perka, Alan T.; and Roberts, George W., to Air Products and Chemicals, Inc. Liquid phase methanol reactor staging process for the production of methanol. 4,766,154, Cl. 518-700.000.

Bonte, Frederic; Dehan, Michel; Le Ridant, Alain; Puisieux, Francis; and Taupin, Christiane C., to ADIR & Cie. Artificial surfactants, pharmaceutical compositions containing them and use thereof. 4,765,987, Cl. 424-450.000.

Boone, Daniel E., to IDL, Inc. System and method for hydrocarbon reserve evaluation. 4,765,182, Cl. 73-153.000.

Boot, Phillip H. Brick panel. 4,765,104, Cl. 52-143.000.

Borg, Peter: *See—*
Aalbu, Johannes; Moen, Tom; Aalbu, Morit S.; and Borg, Peter, 4,766,552, Cl. 364-500.000.

Born, Maurice; Lallement, Jacques; Marchand, Pierre; Parc, Guy; and Thevenin, Nicole, to Institut Francais du Petrole. Metal dihydrocarbyl-dithiophosphyl-dithiophosphates their manufacture and use as additives for lubricants. 4,766,228, Cl. 556-25.000.

Bory, Cecile; Buffet, Jean-Louis O.; and Parat, Guy, to Commissariat a l'Energie Atomique. Process for the production of an electric contact on a HgCdTe substrate with a P conductivity and application to the production of an N/P diode. 4,766,084, Cl. 437-3.000.

Boston University, Trustees of: *See—*
Catsimpoolas, Nicholas, 4,766,111, Cl. 514-25.000.

Boston, Vincent, to VISA International Service Association. Portable financial transaction card capable of authorizing a transaction in foreign currencies. 4,766,293, Cl. 235-379.000.

Bott, Helmuth, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Motor vehicle wheel with individually selectable twin pneumatic tires. 4,765,383, Cl. 152-209.00R.

Bottitta, Joseph: *See—*
Fishman, Aaron H.; and Bottitta, Joseph, 4,765,506, Cl. 220-355.000.

Bourgade, Jean-Luc; Le Guen, Michel; and Saleres, Alain, to Commissariat a l'Energie Atomique. Quasi-adiabatic calorimeter for measuring the energy transported by radiation. 4,765,749, Cl. 374-32.000.

Bourgeois, Roy M., to American Allsafe Company. Safety goggles retainer for hard hat. 4,764,989, Cl. 2-422.000.

Bourns Instruments, Inc.: *See—*
Krechmery, Roger L.; and Finefrock, Mark D., 4,765,188, Cl. 73-708.000.

Boussemaer, Jean-Pierre, to l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation Des Procedes Georges Claude. Process and device for detecting the activity of a substance on a micro-organism or on a mixture of micro-organisms. 4,766,063, Cl. 435-5.000.

Bouzoubaa, Mohammed: *See—*
Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, 4,766,151, Cl. 514-640.000.

Bower, Lewis R. B., to Fletcher Sutcliffe Wild Limited. Variable speed belt conveyor drive system. 4,765,456, Cl. 198-810.000.

Bowthorpe Hellermann Limited: *See—*
Gray, David R.; and Sleeman, Michael J., 4,766,267, Cl. 174-36.000.

Boyadjieff, George I., to Varco International, Inc. Apparatus for handling well pipe. 4,765,401, Cl. 166-77.500.

Braden, Daniel L. Fishing lure with retractable hook. 4,765,084, Cl. 43-34.000.

Bradlee, Charles R., to Monarch Machine Tool Co., The. Method of tension leveling nonhomogeneous metal sheet. 4,765,169, Cl. 72-160.000.

Braeger, Horst, to Nordischer Maschinenbau Rud. Baader GmbH + Co KG. Method for severing the heads from fish. 4,765,031, Cl. 17-52.000.

Brake, David W.: *See—*
Skach, Edward J., Jr.; Brake, David W.; and Waibel, Joseph H., 4,765,830, Cl. 75-53.000.

Branback, Robert J. Cable dispenser. 4,765,560, Cl. 242-129.000.

Brand, Peter: *See—*
Komossa, Werner; and Brand, Peter, 4,765,445, Cl. 188-299.000.

Brandenburg, N. Robert: *See—*
Berlage, Arnold G.; Krishnan, Palaniappa; Bilsland, Douglas M.; and Brandenburg, N. Robert, 4,765,486, Cl. 209-8.000.

Brandes, Wilhelm: *See—*
Fest, Christa; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,766,136, Cl. 514-357.000.

Brandt, Eckhard; and Deutschle, Robert, to E. C. H. Will GmbH & Co. Apparatus for expelling air from stacks of paper sheets and the like. 4,765,791, Cl. 414-28.000.

Bray, Robert S. Surgical methods and apparatus for bone removal. 4,765,333, Cl. 128-305.100.

Brehm, Lothar: *See—*
Reichel, Dieter; Jakobs, Rudolf; Brehm, Lothar; and Quass, Gunter, 4,765,809, Cl. 55-267.000.

Brenman, Henry S.; and Jarmolow, Benjamin, to Biosonics, Inc. Apparatus for transferring electrical energy to and from living tissue. 4,765,343, Cl. 128-639.000.

Breton, Marcel P.; Bluhm, Terry L.; and Lok, Kar P., to Xerox Corporation. Colored encapsulated toner compositions. 4,766,051, Cl. 430-138.000.

Brew, John D.: *See—*
Glass, Samuel W., III; Griffith, John C.; Brew, John D.; England, Charles C., Jr.; and Phillips, John M., 4,766,374, Cl. 324-207.000.

Brewen, Joseph G.: *See—*
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000.
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000.

Brewer, Jonathan L.: *See—*
Denham, Keith; Stride, Glenn; and Brewer, Jonathan L., 4,765,175, Cl. 72-391.000.

Bridges Corporation Pty Ltd: *See—*
Strudwick, Kenneth R., 4,766,163, Cl. 523-509.000.

Bridges, Richard F.: *See—*
Attwood, Terence E.; and Bridges, Richard F., 4,766,188, Cl. 526-227.000.

Bridgestone Corporation: *See—*
Azuma, Toshio, 4,765,862, Cl. 156-507.000.
Narumiya, Tsuneaki; Oyachi, Tomio; and Iino, Yasuhiro, 4,765,833, Cl. 75-68.00R.
Ogino, Takao; and Nakagawa, Sumito, 4,765,386, Cl. 152-556.000.

Briles, Franklin S. Blind fastener positively locking to work, and employing interior locking ring. 4,765,787, Cl. 411-41.000.

Brillouet, Francois; Rao, Krishna; and Alexandre, Francois. Monolithic semiconductor structure of a laser and a field effect transistor. 4,766,472, Cl. 357-19.000.

Bringloe, Keith D., to Smith and Nephew Associated Companies plc. Dispenser for viscous medicant. 4,765,478, Cl. 206-440.000.

Brisson, Alfred G.: *See—*
Urman, Robert; Brisson, Alfred G.; and Nowacki, Christopher, 4,765,342, Cl. 128-725.000.

Bristol-Myers Company: *See—*
Delia, Anthony D., 4,765,482, Cl. 206-555.000.

British Petroleum Company, The: *See—*
Bennett, Ian C.; and Hall, Antony H. P., 4,766,264, Cl. 585-412.000.

British Petroleum Company p.l.c., The: *See—*
Harper, Kevin; and Watson, William J. W., 4,766,198, Cl. 528-377.000.

Brock, Robert J.; Conn, William; and Weber, James M., to Kimberly-Clark Corporation. Semi-permeable nonwoven laminate. 4,766,029, Cl. 428-286.000.

Broecker, Franz J.: *See—*
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.

Brooks, Mark A.: *See—*
Daly, Paul D.; Brooks, Mark A.; and Fallis, Robert, 4,766,405, Cl. 335-257.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Suzuki, Makoto; and Taki, Kazunari, 4,765,703, Cl. 350-96.140.

Brown, Boveri & Cie AG: *See—*
Gobrecht, Jens; and Bayerer, Reinhold, 4,766,481, Cl. 357-80.000.

Brown, Melvin H.; Cochran, C. Norman; and Jarrett, Noel, to Aluminum Company of America. Process for carbothermic production of calcium aluminide using slag containing calcium aluminate. 4,765,832, Cl. 75-68.00A.

Brown, Melvin H.: *See—*
Cochran, C. Norman; and Brown, Melvin H., 4,765,831, Cl. 75-67.00R.

Brown, Michael K.: *See—*
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Brown, Peter W., to Outboard Marine Corporation. Internal combustion engine with compressed air collection system. 4,765,304, Cl. 123-532.000.

Brown, Robert S.; and Dunlap, Roger, to United Technologies Corporation. Acoustic oscillatory pressure control for solid propellant rocket. 4,765,134, Cl. 60-204.000.

Brown, Robert W.: *See—*
Fuzesi, Stephen; and Brown, Robert W., 4,766,158, Cl. 521-110.000.

Brown & Williamson Tobacco Corporation: *See—*
Honeycutt, Rufus H., 4,765,348, Cl. 131-273.000.

Brownbill, Thomas D.; and Koenig, Harald, to Jakob Schlaepfer & Co., AG. Applique machines. 4,765,265, Cl. 112-88.000.

Browne, Frederick D.; and Sevier, Fred E., to Charles Stark Draper Laboratory, Inc., The. Motor winding insulation resistance monitoring system. 4,766,387, Cl. 324-545.000.

Brownell, Keith H.: *See—*
Baker, Don R.; and Brownell, Keith H., 4,766,134, Cl. 514-346.000.
Baker, Don R.; and Brownell, Keith H., 4,766,135, Cl. 514-346.000.

Bruderer, Hans; and Zurfluh, Rene , to Hoffmann-La Roche Inc. 5,6-dihdro-6H-dibenz[c,e]azepine-6-(thio)carboximidic acid esters and insecticidal use thereof. 4,766,115, Cl. 514-217.000.

Bruno, John J.: *See—*
Martinez, Gregory R.; and Bruno, John J., 4,766,127, Cl. 514-277.000.

Bruton, James D., to Creative Wonders, Inc. Needle punch for producing decorative thread designs. 4,765,264, Cl. 112-80.050.

Buchanan, Harry C., Jr., to General Motors Corporation. Wiper assembly with automatically extending wipe pattern. 4,765,018, Cl. 15-250.130.

Buchele-Buecher, Sigfrid; and Unterstein, Klaus, to Rheinmetall GmbH. Pressure relief valve arrangement for a pyrotechnic gas generator. 4,765,565, Cl. 244-3.220.

Bucher, George D., to Westinghouse Electric Corp. Pellet-press-to-sintering-boat nuclear fuel pellet loading system. 4,765,453, Cl. 198-431.000.

Buchholz, Matthew; and Zandt, Robert O., to Koch Engineering Company, Inc. Method of manufacturing a motionless mixer. 4,765,204, Cl. 76-101.00R.

Buck, Keith T.; Boeing, Anthony J.; Dolfini, Joseph E.; and Glinka, Jerome, to Mallinckrodt, Inc. Method of catalytically hydrolyzing alpha, beta-unsaturated carbonyl compounds. 4,766,249, Cl. 568-433.000.

Budapesti Vegyimuvek: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan, Jablonkai, Istvan, Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Budin, Josef: *See—*
Levy, Gideon; and Budin, Josef, 4,765,877, Cl. 204-206.000.

Buekers, Josef: *See—*
Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, 4,766,165, Cl. 524-140.000.

Buffet, Jean-Louis O.: *See—*
Bory, Cecile; Buffet, Jean-Louis O.; and Parat, Guy, 4,766,084, Cl. 437-3.000.

Buhl, Reinhard, to Lemforder Metallwaren AG. Self-adjusting pivot joint with axial play for motor vehicles. 4,765,770, Cl. 403-146.000.

Buhler, Ernst, to AG fur industrielle Elektronik AGIE Losone bei Locarno. Pulse generator spark-erosive metal working. 4,766,281, Cl. 219-69.00P.

Bull, Glen C., Jr. Self-dispensing spring biased thin film container. 4,765,512, Cl. 222-100.000.

Bunn-O-Matic Corporation: *See—*
Hartley, Philip G.; Cheatley, Harvey W.; and Konop, Mitchell J., 4,765,896, Cl. 210-474.000.

Burgess, David E., to Sunlass U.S.A., Inc. Lamp switching circuit and method. 4,766,353, Cl. 315-324.000.

Burgsdorff, Jochen-Werner K.: *See—*
Modes, Christina; Meyer, Heinrich; Burgsdorff, Jochen-Werner K.; Stroder, Ulrich; and Kramer, Andrea, 4,765,874, Cl. 204-105.00R.

VOL 1093 ISS 4 AG 23 1988 UMI

Burkhalter, William E.: *See—*
Finneston, Alan; Burkhalter, William E.; and Reyes, Franklin, 4,765,319, Cl. 128-87.00R.

Burmeister, Klaus-Dieter; Holbe, Erhard; and Schreiner, Werner, to Siemens Aktiengesellschaft. Distributing frame for optical waveguides and the like. 4,765,710, Cl. 350-96.200.

Burn, Ian, to Du Pont de Nemours, E. I., and Company. Method for making a ceramic multilayer structure having internal copper conductors. 4,766,027, Cl. 428-210.000.

Burnett, Jonathan P. Filling manifold for plural fuel tanks. 4,765,359, Cl. 137-255.000.

Butler, Stephen J.: *See—*
Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., 4,765,543, Cl. 239-533.200.

Butterworth, Edmund M.; and Wycklendt, Daniel A., to Eaton Corporation. High current double-break electrical contactor. 4,766,273, Cl. 200-147.00R.

Buys, Henricus C. W. M.; Naaktgeboren, Aart J.; and Gons, Johan, to Stork Friesland B.V. Semipermeable membranes based on polymers containing sulphonate group. 4,765,898, Cl. 210-500.410.

Buzak, Thomas S.; and Vatne, Rolf S., to Tektronix, Inc. Liquid crystal light valve with electrically switchable secondary electron collector electrode. 4,765,717, Cl. 350-331.00R.

Byers, William A.; Carlson, Gerald L.; Pensenstadler, David F.; Wootten, Michael J.; and Richards, James E., to Westinghouse Electric Corp. Automatic on-line chemistry monitoring system. 4,766,550, Cl 364-497.000.

C. G. Bretting Manufacturing Company: *See—*
Trogan, John F., 4,765,604, Cl. 270-39.000.

C. J. Patterson Company: *See—*
Marnett, Lawrence F.; and Kubec, Joseph B., 4,766,167, Cl. 524-310.000.

C P Packaging, Inc.: *See—*
O'Meara, John R., 4,765,518, Cl. 222-541.000.

C & P Technology Limited: *See—*
Dowsett, Derek; and Hodgson, Charles, 4,766,418, Cl. 340-365.00R.

Cabletron: *See—*
Oliver, Christopher J.; and Sarles, Frederick W., 4,766,386, Cl. 324-533.000.

Cabot Corporation: *See—*
Gattuso, Todd R.; Koehlert, Kenneth C.; Neville, Matthew; Reznek, Steven R.; and Senecal, Joseph A., 4,765,920, Cl. 252-62.580.

Caddock Electronics, Inc.: *See—*
Caddock, Richard E., Jr., 4,766,410, Cl. 338-275.000.

Caddock, Richard E., Jr., to Caddock Electronics, Inc. High-voltage cylindrical film-type resistor and method of making it. 4,766,410, Cl 338-275.000.

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Cafri, Nissan. Machine for planting seedlings. 4,765,260, Cl. 111-2.000.

Cahill, Douglas R.: *See—*
Cardillo, Gary J.; and Cahill, Douglas R., 4,765,623, Cl 273-161.000.

Calliot, Serge. Fruit and vegetable peeler. 4,765,234, Cl. 99-593.000.

Caldwell, Nancy E. Process for covering paint trays. 4,765,123, Cl 53-459.000.

Calvert, John: *See—*
Rowlands, Martyn; and Calvert, John, 4,765,039, Cl. 24-556.000.

Calzone, Ronald J. Trailer drilling machine. 4,765,785, Cl. 408-109.000.

Camaggi, Giovanni: *See—*
Colle, Roberto; Gozzo, Franco; Camaggi, Giovanni; Mirenna, Luigi; and Zagni, Angela, 4,766,139, Cl. 514-383.000.

Cameron, Frank L.; and Smith, George A., to Westinghouse Electric Corp. Current limiting fuse with indicator. 4,766,408, Cl. 337-244.000.

Campbell, John E.: *See—*
Bailey, Thomas F.; and Campbell, John E., 4,765,404, Cl. 166-117.600.

Campbell, R. Neil: *See—*
Michaels, Nicholas; Korcz, William H.; Campbell, R. Neil; and Singhal, Surendra N., 4,766,019, Cl. 428-35.000.

Canada, Her Majesty the Queen in right of: *See—*
Berube, Gilles; and Dumas, Ghislain, 4,765,245, Cl. 102-251.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Chambers, Keith W.; and Waggoner, Clinton A., 4,766,373, Cl. 324-204.000.

Candy, Jennifer J.: *See—*
Mangels, Richard J.; and Candy, Rex B., 4,765,541, Cl. 239-201.000.

Candy, Rex B.: *See—*
Mangels, Richard J.; and Candy, Rex B., 4,765,541, Cl. 239-201.000.

Cannella, Vincent D.: *See—*
Yaniv, Zvi; and Cannella, Vincent D., 4,766,500, Cl. 358-285.000.

Cannet, Catherine: *See—*
Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, 4,766,151, Cl. 514-640.000.

Canon Kabushiki Kaisha: *See—*
Hisamura, Masafumi, 4,766,048, Cl. 430-58.000.
Hosono, Nagao; Fujii, Haruo; Ando, Yujiro; and Nakahata, Kimio, 4,766,468, Cl. 355-3.0DD.

Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000.

Kashida, Motokazu; Takei, Masahiro; Takahashi, Kouji; and Nagasawa, Kenichi, 4,766,507, Cl. 360-72.200.

Kurokawa, Takashi, 4,766,007, Cl. 427-39.000.

Matsuda, Hiroshi; Haruta, Masahiro; Munakata, Hirohide; Tomita, Yoshinori; and Hamamoto, Takashi, 4,766,047, Cl. 430-19.000.

Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki; Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, 4,766,477, Cl. 357-59.000.

Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, 4,766,452, Cl. 354-173.100.

Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000.

Ohtoshi, Hirokazu; Hanna, Junichi; and Shimizu, Isamu, 4,766,091, Cl. 437-108.000.

Suda, Shigeyuki, 4,765,725, Cl. 350-432.000.

Takahashi, Kazuo, 4,766,465, Cl. 355-53.000.

Takayama, Makoto, 4,766,485, Cl. 358-34.000.

Toyono, Tsutomu; and Kaneko, Shuzo, 4,765,720, Cl. 350-350.00S.

Tsukada, Masaharu, 4,766,447, Cl. 346-150.000.

Capsonic Group, Inc.: *See—*
Huber, Duane; and Liautaud, James P., 4,766,520, Cl. 361-421.000.

Cardillo, Gary J.; and Cahill, Douglas R. Talking crystal ball toy. 4,765,623, Cl. 273-161.000.

Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, to Zambon S.p.A. 4-(isoxazolyl)-thiazole-2-oxamic acids and derivatives thereof. 4,766,137, Cl. 514-371.000.

Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, to Zambon S.p.A. Use of 4-(isoxazolyl)-thiazole-2-oxamic acid derivatives. 4,766,138, Cl. 514-371.000.

Carl, Udo; and Dilmaghani, Homayoun, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method and system for controlling the elevator assemblies of an aircraft. 4,765,568, Cl. 244-75.00R.

Carl-Zeiss-Stiftung: *See—*
Blaha, Erich; and Gartner, Hartmut, 4,765,336, Cl. 128-395.000.

Carlisle, Clinton B.: *See—*
Gallagher, Thomas F.; Janik, Gary R.; and Carlisle, Clinton B., 4,765,736, Cl. 356-300.000.

Carlson, Daniel R. Liquid misting attachment for sunbather's chair. 4,765,542, Cl. 239-289.000.

Carlson, Gerald L.: *See—*
Byers, William A.; Carlson, Gerald L.; Pensenstadler, David F.; Wootten, Michael J.; and Richards, James E., 4,766,550, Cl. 364-497.000.

Carlsson, Staffan; Persson, Torsten; Jonsson, Bert; and Boberg, Tore, to Nobel Kemi. Detonator and a charge adapted thereto. 4,765,246, Cl. 102-318.000.

Carney, Raymond V.: *See—*
Che, Tessie M.; Carney, Raymond V.; and Dotson, Duane L., 4,765,818, Cl. 65-18.100.

Carondelet Foundry Company: *See—*
Culling, John H., 4,765,957, Cl. 420-582.000.

Carr, John M., to Eastern Specialty Company, The. System and method for calibrating an energy meter. 4,766,370, Cl. 324-74.000.

Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, to Atochem. Process for separating isomeric dichlorotoluenes by adsorption. 4,766,262, Cl. 570-211.000.

Carratech, Inc.: *See—*
Whitaker, R. John, 4,765,886, Cl. 209-2.000.

Carre, Jean-Jacques: *See—*
Bequet, Franck; and Carre, Jean-Jacques, 4,765,226, Cl. 91-369.00A.

Carrier Corporation: *See—*
Zohler, Steven R., 4,765,058, Cl. 29-727.000.

Carter, Robert A., to Xerox Corporation. Process unit for an imaging apparatus. 4,766,455, Cl. 355-3.0BE.

Casciani, Robert V., to Sandoz Ltd. Alkyl polyoxyalkylene carboxylate esters and skin care compositions containing the same. 4,766,153, Cl. 514-785.000.

Case, Alan R.: *See—*
Upadhyaya, Janardan D.; Farnham, Harry M.; Lin, Ing C.; and Case, Alan R., 4,766,166, Cl. 524-275.000.

Case, William S. Exercising apparatus. 4,765,615, Cl. 272-132.000.

Casio Computer Co., Ltd.: *See—*
Mizuno, Yutaka, 4,766,540, Cl. 364-405.000.
Nakano, Harumi; Shinmura, Yoshihito; Fukumura, Masaaki; and Kuwabara, Nobuaki, 4,766,529, Cl. 364-513.500.

Castle, Michael C. Sign carrier and storage bag. 4,765,381, Cl. 150-52.00R.

Caterpillar Inc.: *See—*
Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., 4,765,543, Cl. 239-533.200.

Cates, Ronnie L., to Motorola, Inc. Monolithically integrated testable registers that cannot be directly addressed. 4,766,593, Cl. 371-15.000.

Catsimpoolas, Nicholas, to Boston University, Trustees of. Lipids with plasmin inhibitory properties. 4,766,111, Cl. 514-25.000.

Caughey, Robert A., to New Hampshire Flakeboard, Inc. Reinjection gasifier. 4,765,256, Cl. 110-229.000.

Cauquelin, Claude: *See—*
Heuze , Alain; and Cauquelin, Claude, 4,765,944, Cl. 376-254.000.

Cavanagh, Patrick E., to Maghemite Inc. Production of compounds by reaction of solid materials at high temperatures produced by plasma arc torches. 4,766,284, Cl. 219-121.590.

Cavazza, Claudio; De Witt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Novel class of acyl-derivatives of carnitine process for preparing same and therapeutic use thereof. 4,766,222, Cl. 549-39.000.

Cawthron, Duane W.: *See—*
Huntsman, Clayton D.; and Cawthron, Duane W., 4,766,531, Cl. 364-200.000.

CBI Research Corporation: *See—*
Crawford, John T.; Tyree, Lewis, Jr.; Fischer, Harry C.; and Coers, Don H., 4,765,143, Cl. 60-671.000.

Cedrone, Louis A.; and Sobodowski, Joseph J., to PepsiCo INc. Telelink monitoring and reporting system. 4,766,548, Cl. 364-479.000.

Celamerck GmbH & Co. KG: *See—*
Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, 4,766,130, Cl. 514-303.000.

Cellucap Manufacturing Co.: *See—*
McKeown, Thomas J., 4,765,854, Cl. 156-161.000.

Century Products Ltd.: *See—*
Servay, Willy, 4,765,035, Cl. 24-265.00A.

Cessna Aircraft Company, The: *See—*
Gonzalez, Cesar, 4,765,293, Cl. 123-275.000.

Cetus Corporation: *See—*
Katre, Nandini; and Knauf, Michael J., 4,766,106, Cl. 514-12.000.

CF Systems Corporation: *See—*
Abrishamian, Ramin; and de Filippi, Richard P., 4,765,257, Cl. 110-342.000.

Chadima, George E., Jr.; and Laser, Vadim, to Norand Corporation. Instant portable bar code reader. 4,766,300, Cl. 235-472.000.

Chambers, Keith W.; and Waggoner, Clinton A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Method and apparatus for real-time, on-line monitoring of wear in machinery. 4,766,373, Cl. 324-204.000.

Chandler, Brian L.: *See—*
Kempf, David N.; Jefferson, Ford C.; and Chandler, Brian L., 4,765,178, Cl. 73-49.200.

Chanel, Arthur L., to Fromageries Bresse-Bleu-Societe Laitiere Cooperative Agricole. Display-tray constituting a package. 4,765,463, Cl. 206-45.340.

Chang, Chen-Hsiung. Portable hands-free wash stand. 4,765,003, Cl. 4-624.000.

Chang, Chin-Fong: *See—*
Das, Santosh K.; and Chang, Chin-Fong, 4,765,954, Cl. 420-403.000.

Chang, Dane; and McGaugh, Michael C., to Dow Chemical Company, The. Continuous process for the removal of hydrogen sulfide from a gaseous stream. 4,765,873, Cl. 204-101.000.

Chang, Dane; and McGaugh, Michael C., to Dow Chemical Company, The. Continuous process for scrubbing hydrogen sulfide to produce elemental sulfur. 4,765,969, Cl. 423-573.00R.

Chang, Dane: *See—*
Treybig, Duane S.; and Chang, Dane, 4,765,839, Cl. 106-273.00N.

Chapman Chemical Company: *See—*
West, Michael H.; and Nagel, Fritz J., 4,766,113, Cl. 514-187.000.

Chapman, Leonard T. Leg king pin system. 4,765,769, Cl. 403-24.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Browne, Frederick D.; and Sevier, Fred E., 4,766,387, Cl. 324-545.000.
Johnson, William M., 4,766,393, Cl. 330-4.300.

Charmillot, Rene; and Lebet, Jean-Pierre, to Symtonic SA. Method of treating neurovegetative disorders and apparatus therefor. 4,765,322, Cl. 128-783.000.

Che, Tessie M.; Carney, Raymond V.; and Dotson, Duane L., to Hoechst Celanese Corporation. Porous glass monoliths. 4,765,818, Cl. 65-18.100.

Cheatley, Harvey W.: *See—*
Hartley, Philip G.; Cheatley, Harvey W.; and Konop, Mitchell J., 4,765,896, Cl. 210-474.000.

CheckRobot, Inc.: *See—*
Barth, Hans, 4,766,296, Cl. 235-383.000.

Chemello, Jean-Pierre; and Mabboux, Michel, to Salomon S. A. Ski boot with adjustable inner sole. 4,765,070, Cl. 36-117.000.

Chen, Irving C. Mill roll. 4,765,550, Cl. 241-293.000.

Chen, Jean: *See—*
Blain, Jeffery W.; Shah, Denis D.; and Chen, Jean, 4,765,442, Cl. 187-101.000.

Chen, Teh-Kuei; Muffett, Dorothy J.; and Tandy, Karen G., to Nestec S. A. Amino sugar carbonating agents and their preparation. 4,766,209, Cl. 536-55.300.

Chen, Tien C.: *See—*
Auerbach, Daniel J.; Chen, Tien C.; and Paul, Wolfgang J., 4,766,535, Cl. 364-200.000.

Cheng, Karen. Collapsible shopping cart. 4,765,646, Cl. 280-651.000.

Cherry, Charles W.; and Benda, William J., to Autoquip Corporation. Surface mounted truck leveler. 4,765,792, Cl. 414-401.000.

Cherry, Sidney J.: *See—*
Iyer, Natraj C.; Male, Alan T.; Cherry, Sidney J.; and Gainer, Robert E., 4,766,274, Cl. 200-144.00B.

Cherukuri, Subraman R.; Hriscisce, Frank; and Wei, You C., to Warner-Lambert Company. Reduced calorie chewing gums and method. 4,765,991, Cl. 426-3.000.

Cheslak, Leonard W., to Poly-Optical Products, Inc. Illuminator optical fiber rod. 4,765,701, Cl. 350-96.100.

Chevron Research Company: *See—*
Ely, Douglas L.; and Heffner, David A., 4,765,902, Cl. 210-610.000.

Chew, Weng C.: *See—*
Kleinberg, Robert L.; Clark, Brian; Chew, Weng C.; and Mariani, David, 4,766,384, Cl. 324-339.000.

Chiarino, Dario: *See—*
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,137, Cl. 514-371.000.
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,138, Cl. 514-371.000.

Chiarva, Giorgio, to Stella S.p.A. Perfected system for pyrolysing and/or drying biological sludge or similar. 4,765,255, Cl. 110-226.000.

Chicoine, Craig C.: *See—*
Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., 4,765,543, Cl. 239-533.200.

Chisso Corporation: *See—*
Inoue, Hiromichi; Inukai, Takashi; Ohno, Kouji; Miyazawa, Kazutoshi; and Saito, Shinichi, 4,765,924, Cl. 252-299.610.

Chiyoda Chemical Engineering & Construction Co., Ltd.: *See—*
Urata, Toshiaki; and Tomikawa, Minato, 4,765,960, Cl. 422-49.000.

Chlanda, Frederick P.; and Lan, Ming J., to Allied Corporation. Bipolar membranes and methods of making same. 4,766,161, Cl. 521-27.000.

Choy, Clement K.: *See—*
Ogar, George W., Jr.; and Choy, Clement K., 4,765,916, Cl 252-8.900.

Christensen, Stephen; Rakel, Jay O.; and Ayers, Donald J., to Boeing Company, The. Method of consolidating thermoplastic poly(amide-imide) components. 4,765,942, Cl. 264-510.000.

Chrysler, Gregory M.; Chu, Richard Chao-Fan; and Simmons, Robert E., to International Business Machines Corp. Immersion cooled circuit module with improved fins. 4,765,397, Cl. 165-104.330.

Chrysler Motors Corporation: *See—*
Lyjak, Jeffrey C.; and Maciejka, William, 4,765,286, Cl. 123-52.0MB.

Chu, Richard C.; Eid, Jeffrey C.; and Zumbrunnen, Michael L., to International Business Machines Corp. Circuit module with pins conducting heat from floating plate contacting heat producing device. 4,765,400, Cl. 165-185.000.

Chu, Richard Chao-Fan: *See—*
Chrysler, Gregory M.; Chu, Richard Chao-Fan; and Simmons, Robert E., 4,765,397, Cl. 165-104.330.

Chuang, Chiao-Mei, to International Business Machines Corp. Performance enhancement scheme for a RISC type VLSI processor using dual execution units for parallel instruction processing. 4,766,566, Cl 364-900.000.

Chuma, Akira: *See—*
Moribe, Yoshihiro; Fujii, Masataka; Chuma, Akira; and Tsuchiya, Hiroshi, 4,766,509, Cl. 360-106.000.

Chung, Alfred: *See—*
Ryan, James W.; and Chung, Alfred, 4,766,110, Cl. 514-19.000.

Ciba-Geigy Corporation: *See—*
Ehrenfreund, Josef, 4,766,146, Cl. 514-469.000.
Karrer, Friedrich, 4,766,152, Cl. 514-640.000.
Leeson, Lewis J., 4,765,985, Cl. 424-449.000.
Rauber, Peter, 4,766,253, Cl. 568-639.000.
Tzikas, Athanassios, 4,766,206, Cl. 534-619.000.
Zink, Rudolf; and Fletcher, Ian J., 4,766,211, Cl. 544-58.600.

Ciccone, Hector H.: *See—*
Ciccone, Nicolas T.; and Ciccone, Hector H., 4,765,239, Cl 101-91.000.

Ciccone, Nicolas T.; and Ciccone, Hector H. Multi-impression systems with indexing of printing cylinder. 4,765,239, Cl. 101-91.000.

Cipullo, Michael J.: *See—*
Faler, Gary R.; and Cipullo, Michael J., 4,766,254, Cl. 568-724.000.

Circelli, Peter A.; and Praemassing, Adolph K., to American Technical Industries, Inc. Method of transporting and forming tapered ends on piquets. 4,765,940, Cl. 264-339.000.

Circon Corporation: *See—*
Petruzzi, Claude E.; Quint, Robert H.; D'Amelio, Frank D.; and Esposito, Dominick G., 4,765,331, Cl. 128-303.140.

City of Canton, IL: *See—*
Schoenhard, James D., 4,765,835, Cl. 75-118.00P.

Clark, Arthur D., Jr.: *See—*
D'Andrea, Mark J.; Tarnowski, Stanley J., Jr.; and Clark, Arthur D., Jr., 4,765,903, Cl. 210-635.000.

Clark, Brian: *See—*
Kleinberg, Robert L.; Clark, Brian; Chew, Weng C.; and Mariani, David, 4,766,384, Cl. 324-339.000.

Clark, David P.: *See—*
Prieto, Argenis R.; and Clark, David P., 4,766,411, Cl. 338-306.000.

Clark, Michael R.; Erb, Fred; and Orosz, Miklos J., to Square D Company. Floating jaw retention springs for a switch. 4,766,276, Cl. 200-256.000.

Clark, Timothy E.: *See—*
Bjornlie, Harvey C.; and Clark, Timothy E., 4,765,816, Cl. 65-4.200.

Clark, William R. Perforation circulating washer. 4,765,405, Cl 166-186.000.

Clarke, Neville. Building structure and components thereof. 4,765,103, Cl. 52-86.000.

Clary, Kenneth B. Dual temperature water heater. 4,765,351, Cl. 134-56.00D.

VOL 1093 ISS 4 AG 23 1988 UMI

Clayton, John C.; and Barnes, Trevor J., to Avesco p.l.c. NTSC/PAL switchable video color decoder using a digital comb filter and method. 4,766,484, Cl. 358-23.000.
Clean Room Technology: *See—*
Wetzel, Lawrence E., 4,765,810, Cl. 55-270.000.
Clecim: *See—*
Vatant, Robert, 4,765,392, Cl. 164-416.000
Clement, Gene R.: *See—*
Bessinger, Walter L.; and Clement, Gene R., 4,765,699, Cl. 312-339.000.
Clements, James W. Twist cap with integral puncture means. 4,765,511, Cl. 222-83.000.
Clements, Thomas R.; and Blevins, James D., to United Technologies Corporation. Gas turbine engine augmentor. 4,765,136, Cl. 60-261.000.
Clendinning, Robert A.; and Kelsey, Donald R., to Amoco Corporation. Modified poly(aryl ether ketones) derived from biphenol 4,766,197, Cl. 528-125.000.
Clerc, Jean-Frederic; and Leroux, Thierry, to Commissariat a l'Energie Atomique. Three-dimensionally controlled liquid crystal matrix display and its control process. 4,766,428, Cl. 340-784.000.
Clerke, Edward A.; and Larson, Brent H., to Shell Oil Company. Axial borehole televiewer. 4,766,577, Cl. 367-911.000.
Clifford, Walter A. Ported gate valve. 4,765,361, Cl. 137-315.000.
Clifton, Michael. Viscometer. 4,765,180, Cl. 73-59.000.
Cline, Dean R. Method and apparatus for growing sprouts. 4,765,092, Cl. 47-61.000
Clorox Company, The: *See—*
Ogar, George W., Jr.; and Choy, Clement K., 4,765,916, Cl. 252-8.900
Clough, Thomas J.; Sibert, John W.; and Riese, Arthur C., to Ensci, Inc. Metal value recovery. 4,765,827, Cl. 75-2.000.
Cloutier, Richard. Snow blower with vertical endless belt digger. 4,765,073, Cl. 37-237.000.
Coal Tech Corp.: *See—*
Zauderer, Bert, 4,765,258, Cl. 110-347.000.
Coates, William J., to Smith Kline & French Laboratories Limited. Cyanoamidine compounds and derivatives thereof. 4,766,122, Cl 514-247.000
Coates, William J., to Smith Kline & French Laboratories Limited. Methylamidine compounds. 4,766,123, Cl. 514-247.000.
Coatex S.A.: *See—*
Rousset, Jacky; and Moro, Jean, 4,765,921, Cl. 252-87.000.
Cobb, Raymond L., to Phillips Petroleum Company. Preparation of 1,4-dichlorobenzene. 4,766,103, Cl. 502-217.000
Cochran, C. Norman; and Brown, Melvin H., to Aluminum Company of America. Process for production of alkaline earth metal by carbothermic production of alkaline earth metal aluminide and stripping of alkaline earth metal from alkaline earth metal aluminide with nitrogen stripping agent. 4,765,831, Cl. 75-67.00R.
Cochran, C. Norman: *See—*
Brown, Melvin H.; Cochran, C. Norman; and Jarrett, Noel, 4,765,832, Cl. 75-68.00A.
Coden, Michael H.: *See—*
Scholl, Frederick W.; Anderson, Stephen J.; and Coden, Michael H., 4,766,470, Cl. 357-17.000
Codenoll Technology: *See—*
Scholl, Frederick W.; Anderson, Stephen J.; and Coden, Michael H., 4,766,470, Cl. 357-17.000.
Codercard, Inc.: *See—*
Herman, Robert W.; and Lee, Rex K., 4,766,433, Cl. 340-825.310.
Coers, Don H.: *See—*
Crawford, John T.; Tyree, Lewis, Jr.; Fischer, Harry C.; and Coers, Don H., 4,765,143, Cl. 60-671.000.
Cohen, Ilan: *See—*
Spector, Yechiel; Cohen, Ilan; and Lorber, Azriel, 4,765,244, Cl. 102-213.000
Spector, Yehiel; and Cohen, Ilan, 4,765,413, Cl. 169-61.000.
Cohen, Robert C.: *See—*
Keller, Philip J.; and Cohen, Robert C., 4,765,328, Cl. 128-303.00R
Colebrand Limited: *See—*
Daley, Edward, 4,765,424, Cl. 180-8.100.
Coleco Industries, Inc.: *See—*
Hemmann, Ronald S.; and Mercurio, Frank, 4,766,275, Cl. 200-153.00A
Coleman, John D.: *See—*
Rawlings, Eugene; and Coleman, John D., 4,765,061, Cl. 33-379.000
Colgate-Palmolive Company: *See—*
Vellekoop, Linda J.; and Barth, Jordan, 4,765,984, Cl. 424-441.000.
Colgon, Joseph: *See—*
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000.
Colle, Roberto; Gozzo, Franco; Camaggi, Giovanni; Mirenna, Luigi; and Zagni, Angela, to Montedison S.p.A. Triazolyl-keto-derivatives having fungicide activity. 4,766,139, Cl. 514-383.000.
Colle, Thomas H.; and Moza, Ashok K., to Exxon Research and Engineering Company. Sodium addition to low rank coal to enhance particulate removal from combustion effluent. 4,765,259, Cl. 110-342.000
Collins, Kent L.: *See—*
King, Norman R.; and Collins, Kent L., 4,766,338, Cl. 313-25.000
Collins, Mary: *See—*
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000.
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000
Collins, Seymour; and McClellan, William F., to Pipe Shields, Inc. Pipe support system. 4,765,577, Cl. 248-59.000.
Collins, Virgil H. Electrical heating element module for hair comb or pick. 4,766,291, Cl. 219-534.000.
Colonel, Richard C.; and Lindh, DeVere V. Shock relieving horseshoe. 4,765,412, Cl. 168-15.000.
Colonel, Richard C.: *See—*
Hsu, Grace F.; and Colonel, Richard C., 4,765,871, Cl. 204-44.200.
Colvin, David S. Wrench opening. 4,765,211, Cl. 81-119.000.
Colvocoresses, Alden P., to United States of America, Interior. Solid state apparatus for imaging with improved resolution. 4,765,564, Cl. 244-3.160.
Combs, Donald W., to Ortho Pharmaceutical Corporation. 6-benzoxazinyl- and 6-benzothiazinyl-2,3,4,5-tetrahydropyridazin-3-ones and pharmaceutical use. 4,766,118, Cl. 514-224.200.
Comlinear Corporation: *See—*
Saller, Kenneth R.; Baker, Alan J.; and Smith, Steven O., 4,766,367, Cl. 323-315.000
Commander Business Furniture, Inc.: *See—*
Hanson, Ray, 4,765,490, Cl. 211-46.000.
Commandeur, Raymond: *See—*
Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, 4,766,262, Cl. 570-211.000
Commissariat a l'Energie Atomique: *See—*
Bory, Cecile; Buffet, Jean-Louis O.; and Parat, Guy, 4,766,084, Cl. 437-3.000.
Bourgade, Jean-Luc; Le Guen, Michel; and Saleres, Alain, 4,765,749, Cl. 374-32.000.
Clerc, Jean-Frederic; and Leroux, Thierry, 4,766,428, Cl. 340-784.000
Decailloz, Claude; Robin, Jean; and Massy, Jean-Pierre, 4,766,285, Cl. 219-121.630
Communications Packaging Corporation: *See—*
Rose, Robert D., Jr., 4,765,462, Cl. 206-45.130.
Compagnie Generale des Matieres Nucleaires: *See—*
Denizou, Jean-Pierre; and Mouesca, Bruno, 4,765,949, Cl. 376-443.000
Complications S.A.: *See—*
Sporring, Jorg, 4,766,579, Cl. 368-190.000.
Concast Service Union AG: *See—*
Vaterlaus, Arthur, 4,765,390, Cl. 164-486.000.
Cone, Richard E., to NCR Corporation. Remotely controlled cash box. 4,766,292, Cl. 235-22.000.
Coney, Robert S.: *See—*
Berry, William L.; Coney, Robert S.; and Senft, Stephen P., 4,766,339, Cl. 313-276.000
Conklin, Charles W.: *See—*
Krum, Alvin L.; and Conklin, Charles W., 4,766,479, Cl. 357-74.000
Conn, William: *See—*
Brock, Robert J.; Conn, William; and Weber, James M., 4,766,029, Cl. 428-286.000
Conoco Inc.: *See—*
Wolf, Nicholas O., 4,765,910, Cl. 210-708.000
Conroy, Peter J.; and Marino, Ronald A., to Litton Systems, Inc. Conformal cavity-less interferometer array. 4,766,444, Cl. 343-895.000
Consoir, Rudolf: *See—*
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Eberle, Hans-Jurgen; and Gebauer, Helmut, 4,766,107, Cl. 512-13.000.
Container Corporation of America: *See—*
Michetti, Louis C., 4,765,535, Cl. 229-172.000.
Contamin, Jean-Claude; and Latapie, Roberte, to L'Oreal. Skin cleansing composition in the form of a rod or stick comprising a lactate. 4,765,922, Cl. 252-90.000.
Conti, William L. Illuminated information display apparatus. 4,765,080, Cl. 40-576.000
Conticelli, Carlo: *See—*
Scarnera, Michele; and Conticelli, Carlo, 4,765,306, Cl. 123-643.000
Continental Aktiengesellschaft: *See—*
Rohde, Dieter, 4,765,384, Cl. 152-209.00R.
Conturo, Thomas E.; and Kessler, Robert M., to Vanderbilt University. Driven inversion spin echo magnetic resonance imaging. 4,766,381, Cl. 324-309.000
Converse, Gregory L.: *See—*
Wolters, Richard H.; Kleyla, Vince; Hooton, Arnold J.; and Converse, Gregory L., 4,766,422, Cl. 340-700.000.
Cook, Charles S.; and Sabol, George P., to Westinghouse Electric Corp. Texture enhancement of metallic tubing material having a hexagonal close-packed crystal structure. 4,765,174, Cl. 72-367.000.
Cookeville Uniform Rental, Inc.: *See—*
Majors, Curtis O., 4,765,100, Cl. 51-313.000.
Cooper, Willam A. Table tennis apparatus. 4,765,619, Cl. 273-30.000.

Cope, Charles R.: *See—*
Modery, Richard G.; Bell, John C.; and Cope, Charles R., 4,766,547, Cl. 364-478.000
Coppus Engineering Corporation: *See—*
Munroe, Richard W., 4,765,373, Cl. 137-890.000
Coquin, Gerald A.; Lynch, William T.; and Parrillo, Louis C., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Methods for fabricating latchup-preventing CMOS device. 4,766,090, Cl. 437-57.000.
Coral Industrial Sales Co.: *See—*
Siegal, Burton L.; and Magdars, John T., 4,765,022, Cl. 16-87.40R.
Cordill, Rexford W.; Fortner, Jerry L.; and Beyerle, Robert W., to Whirlpool Corporation. Adhesive-bonded mullion bracket for household refrigerator. 4,765,696, Cl. 312-214.000
Corey, John A., to Mechanical Technology Incorporated. Stirling engine with pressurized crankcase. 4,765,138, Cl. 60-517.000.
Cornelius Company, The: *See—*
McMillin, John R.; and Fessler, Herman S., 4,765,513, Cl. 222-129.100.
Cornell Research Foundation: *See—*
Harris, William V.; and Land, Bruce R., 4,765,737, Cl. 356-336.000.
Corning Glass Works: *See—*
Dohan, Luc; and Nissim, Carlos, 4,765,702, Cl. 350-96.120.
Cory, Robert M., to General Dynamics Land Systems, Inc. Replaceable road pad for track shoe of track laying vehicle. 4,765,694, Cl. 305-35.00R
Cory, Robert M., to General Dynamics Land Systems, Inc. Center guide for shoe assembly of track laying vehicle. 4,765,695, Cl. 305-56.000
Cosgrove, Patrick A.; and Wolf, Michael T., to Eastman Kodak Company. Photographic control device. 4,765,716, Cl. 350-273.000
Couper, Malcolm J., to BBC Brown, Boveri & Company, Limited Aluminum alloy for the preparation of powders having increased high-temperature strength. 4,765,851, Cl. 148-437.000.
Coury, Glenn E. Apparatus and method for taking measurements while drilling. 4,765,183, Cl. 73-154.000.
Cousins, Neville L.: *See—*
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., 4,764,998, Cl 4-502.000.
Cousins, Neville Lawrence: *See—*
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., 4,764,998, Cl. 4-502.000
Couturier, Michel: *See—*
Dagard, Philippe; and Couturier, Michel, 4,765,946, Cl. 376-282.000
Covi, Kevin R.: *See—*
Biamonte, Robert A.; Bogdanski, Joseph W.; Covi, Kevin R.; Meyer, Herman P.; and Rafkind, Daniel I., 4,766,364, Cl. 323-272.000
Cowan, Keith B.: *See—*
Winegard, John R.; and Cowan, Keith B., 4,766,443, Cl. 343-840.000
Cox, Harold A. Capacitive sensor. 4,766,368, Cl. 324-61.00P
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., to Farmitalia Carlo Erba, S.p.A. Ethers of substituted hydroxymethylpyrazines. 4,766,214, Cl. 544-336.000.
Cramm, Russell H.: *See—*
Lancaster, Gerald M.; Cramm, Russell H.; Kelley, David C.; and Neywick, Charles V., 4,766,035, Cl. 428-345.000
Crane, Ronald C., to 3COM Corporation. Apparatus for matching unbalanced R. F. baseband signals to balanced signals on a twisted two-wire line. 4,766,402, Cl. 333-25.000.
Crathco, Inc.: *See—*
Armstrong, Alfred, 4,765,152, Cl. 62-389.000
Craun, Gary P.: *See—*
Miller, Susan M.; Craun, Gary P.; and Toman, Perry A., 4,766,177, Cl. 525-131.000.
Crawford, Douglas W.; Crawford, William B.; and Dinning, Robert W. Apparatus for placing and removing well flow control devices. 4,765,403, Cl. 166-117.500.
Crawford, John T.; Tyree, Lewis, Jr.; Fischer, Harry C.; and Coers, Don H., to CBI Research Corporation. Power plant using CO_2 as a working fluid. 4,765,143, Cl. 60-671.000.
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., to Pfizer Inc. Antiinflammatory compositions and methods. 4,766,117, Cl. 514-219.000.
Crawford, William B.: *See—*
Crawford, Douglas W.; Crawford, William B.; and Dinning, Robert W., 4,765,403, Cl. 166-117.500.
Creative Wonders, Inc.: *See—*
Bruton, James D., 4,765,264, Cl. 112-80.050.
Crepin, Hugues; and Hethuin, Serge, to U.S. Philips Corporation. Radar device for measuring the distance of the device to a surface. 4,766,436, Cl. 342-122.000.
Crihan, Ioan G. Radioisotope marking of art objects in view of their rapid identification. 4,765,655, Cl. 283-70.000.
Crisp, T. S., to American Safety Equipment Corporation. Synchronized safety belt retractor with structural control locking means. 4,765,559, Cl. 242-107.40A.
Crosby, John: *See—*
Gunkel, Louis T.; and Crosby, John, 4,766,240, Cl. 562-460.000.
Cross, Haymond E.: *See—*
Moss, Theron C.; and Cross, Haymond E., 4,765,014, Cl 15-229.300
Croucher, Melvin D.; Wong, Raymond W.; Duff, James M.; Hair, Michael L.; and Fuller, John R. C., to Xerox Corporation. Latex based colored liquid developers. 4,766,049, Cl. 430-115.000
Crucible Materials Corporation: *See—*
Hauser, John J.; Stasko, William; and Pinnow, Kenneth E., 4,765,836, Cl. 75-241.000
Cruse, Lee H., to Foster Manufacturing Company. Quick connect-disconnect coupling for fluid lines. 4,765,657, Cl. 285-91.000
Crutchfield, Clifton D. Method and apparatus for determining respirator face mask fit. 4,765,325, Cl. 128-202.130.
Cullimore, D. Roy: *See—*
Rogers, William C.; Alford, George W., III; and Cullimore, D Roy, 4,765,410, Cl. 166-303.000.
Culling, John H., to Carondelet Foundry Company. Alloy resistant to seawater and other corrosive fluids. 4,765,957, Cl. 420-582.000
Cumming, J. Stuart; and Redwitz, Robert F., to Cumming, Redwitz & Wilson, Inc. Intraocular lens insertion instrument. 4,765,329, Cl. 128-303.00R
Cumming, Redwitz & Wilson, Inc.: *See—*
Cumming, J. Stuart; and Redwitz, Robert F., 4,765,329, Cl. 128-303.00R.
Cummins, Richard D., to Moog Inc. Pulse-width-modulated solenoid valve. 4,765,587, Cl. 251-129.190
Cunningham, Charles B. Caliper brake for mountain bicycles having wide tires. 4,765,443, Cl. 188-24.210.
Curci, William. Fishing tackle box. 4,765,470, Cl. 206-315.110.
Currie, Gordon J. Bathtub enclosure. 4,765,000, Cl. 4-580.000
Currier, James W.: *See—*
Hulbert, Matthew H.; and Currier, James W., 4,765,892, Cl 210-290.000
Curry, Donald J.: *See—*
Curry, Douglas N.; and Curry, Donald J., 4,766,560, Cl 364-721.000
Curry, Douglas N.; and Curry, Donald J., to Xerox Corporation. Parallel/pipelined arithmetic variable clock frequency synthesizer 4,766,560, Cl. 364-721.000
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., to Kuhlman Corporation. Apparatus and method for winding a toroidal magnetic core onto a bobbin for a toroidal transformer. 4,765,861, Cl 156-457.000
Cydzik, Anthony J., Jr.: *See—*
Balazs, Les G.; and Cydzik, Anthony J., Jr., 4,765,227, Cl. 91-417.00R
Czarniecki, Michael F.; Verbuar, Laura L.; and Kogan, Timothy, to Schering Corporation. Hydrophobic peptides. 4,766,109, Cl 514-17.000
Dagard, Philippe; and Couturier, Michel, to Framatome. Intrinsically safe emergency cooling device for a pressurized-water nuclear reactor. 4,765,946, Cl. 376-282.000
Dage, Richard C.: *See—*
Freedman, Jules; and Dage, Richard C., 4,766,212, Cl. 544-101.000
Daiichi Seiyaku Co., Ltd.: *See—*
Takami, Mitsutaka, 4,766,126, Cl. 514-267.000
Daikin Industries, Ltd.: *See—*
Furutaka, Yasuhisa; Yamana, Masayuki; and Honda, Tsunetoshi, 4,766,238, Cl. 560-227.000
Morita, Shigeru; Kuwahara, Kazuhiko; Tomoda, Masayasu; and Oka, Masahiko, 4,766,190, Cl. 526-247.000
Daito Seiki Company Limited: *See—*
Kondo, Mitsuo, 4,765,213, Cl. 83-61.000
Daizumoto, Masafumi: *See—*
Uomoti, Akiyoshi; Tajiri, Hiromi; Nakatani, Nobuyoshi; and Daizumoto, Masafumi, 4,765,532, Cl. 228-212.000
Daley, Edward, to Colebrand Limited. Apparatus for transporting a suspension cradle. 4,765,424, Cl. 180-8.100.
Daley, Westphal. Table tennis robot. 4,765,618, Cl. 273-30.000
Dallons, Robert E.: *See—*
Fortune, William S.; and Dallons, Robert E., 4,765,229, Cl 92-128.000
D'Alterio, Joseph C. Lubricated rotary shaft seal. 4,765,632, Cl. 277-81.00R.
Daly, Paul D.; Brooks, Mark A.; and Fallis, Robert, to Allied Corporation. Dynamic energy absorber. 4,766,405, Cl. 335-257.000
Damadian, Raymond V.: *See—*
Danby, Gordon T.; Hsieh, Hank C. H.; Jackson, John W.; and Damadian, Raymond V., 4,766,378, Cl. 324-307.000
D'Amelio, Frank D.: *See—*
Petruzzi, Claude E.; Quint, Robert H.; D'Amelio, Frank D.; and Esposito, Dominick G., 4,765,331, Cl. 128-303.140.
Dana Corporation: *See—*
Yarnell, James A., 4,765,197, Cl. 74-467.000
Danby, Gordon T.; Hsieh, Hank C. H.; Jackson, John W.; and Damadian, Raymond V., to Fonar Corporation. Nuclear magnetic resonance scanners. 4,766,378, Cl. 324-307.000
D'Andrea, Mark J.; Tarnowski, Stanley J., Jr.; and Clark, Arthur D., Jr., to Interferon Sciences, Inc. Purification of monomeric interferon 4,765,903, Cl. 210-635.000
Dang, Hiep D.; and Beaver, Richard N., to Dow Chemical Company, The. Method for forming a titanium lined electrochemical cell 4,765,530, Cl. 228-175.000.
Dansk Industri Syndikat A/S: *See—*
Knudsen, Soren E., 4,765,389, Cl. 164-340.000.
Danzuka, Toshio; Yokota, Hiroshi; and Ishiguro, Yoichi, to Sumitomo Electric Industries, Ltd. Method for producing glass preform for optical fiber. 4,765,815, Cl. 65-3.120.

VOL 1093 ISS 4 AG 23 1988 UMI

Das, Santosh K.; and Chang, Chin-Fong, to Allied Corporation. Rapidly solidified high strength, corrosion resistant magnesium base metal alloys. 4,765,954, Cl. 420-403.000.

David, Bernd; and Klingberg, Alfred, to Jungheinrich Unternehmensverwaltung KG. Industrial truck, particularly high-lift truck, also as a high-lift truck having a displaceable mast. 4,765,441, Cl. 187-9.00E.

David, Morgan W. A.: *See*—
Hedley, David J.; and David, Morgan W. A., 4,766,496, Cl. 358-160.000.

Davids, Geert J. T.; and van Arendonk, Anton P. M., to U.S. Philips Corporation. Method of manufacturing a charge-coupled device. 4,766,089, Cl. 437-53.000.

Davidson, Thomas A.; and Griffith, Ronald C., to Pennwalt Corporation. 2-amino (or hydroxy) phenethyl-1,2,3,4-tetrahydroisoquinolines as analgesics. 4,766,131, Cl. 514-307.000.

Davinson, Ian, to Rolls-Royce plc. Optical monitoring method and apparatus. 4,765,742, Cl. 356-373.000.

Davis, John D.; and Mulligrav, Allan L., Jr., to International Business Machines Corporation. Oscillator circuit. 4,766,399, Cl. 331-111.000.

Davis, Malcolm H.; Janes, Kent A.; Kleffner, Daniel J.; Seltzer, William P.; and Spence, Hugh F., to H.E. Butt Grocery Company. Electronic pricing display system. 4,766,295, Cl. 235-383.000.

Davis, Walter L., to Motorola, Inc. Trimmable current source. 4,766,366, Cl. 323-312.000.

Davis, William M., to United Pharmaceuticals, Inc. Antispasmodic alkylated aminothioester derivatives. 4,766,119, Cl. 514-239.200.

Davy McKee (London) Limited: *See*—
Harris, Norman; Rathmell, Colin; Turner, Keith; and Scarlett, John, 4,765,869, Cl. 203-28.000.

Deagle, William R.; and Gunthrpe, Gary E., to Dynatens Research Corporation. Electrical and magnetic pain treatment device 4,765,310, Cl. 128-1.500.

Dean, Richard T.: *See*—
Wester, Dennis W.; and Dean, Richard T., 4,765,971, Cl. 424-1.100.

Deatcher, John H.: *See*—
Whitwell, George E.; Deatcher, John H.; and Leone-Bay, Andrea, 4,765,866, Cl. 156-668.000.

DeBenedictis, Erik P., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Parallel processing network and method. 4,766,534, Cl. 364-200.000.

de Burlet, Georges: *See*—
Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, 4,766,151, Cl. 514-640.000.

De Busscher, Cyriel R. J.; Naaktgeboren, Adrianus; and Stael, Odilus A., to Ford New Holland, Inc. Round baler with expanding bale chamber. 4,765,238, Cl. 100-89.000.

Decailloz, Claude; Robin, Jean; and Massy, Jean-Pierre, to Commissariat a l'Energie Atomique. Apparatus for the real time checking of a total penetration weld for a joint which cannot be directly observed. 4,766,285, Cl. 219-121.630.

De Capele, Francois: *See*—
Geoffroy-Dechaume, Vincent; and De Capele, Francois, 4,765,855, Cl. 156-205.000.

Deco Tools, Inc.: *See*—
Faber, Elmer L., 4,765,270, Cl. 118-102.000.

Deffner, Alexander: *See*—
Simon, Helmut; and Deffner, Alexander, 4,766,071, Cl. 435-90.000.

de Filippi, Richard P.: *See*—
Abrishamian, Ramin; and de Filippi, Richard P., 4,765,257, Cl 110-342.000

Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Process for the preparation of water-soluble polysaccharides, the saccharides thus obtainable, and their use. 4,766,207, Cl. 536-18.600

DeGroot, Richard D., to International Business Machines Corporation. Dual putaway/bypass busses for multiple arithmetic units. 4,766,564, Cl. 364-748.000

Dehan, Michel: *See*—
Bonte, Frederic; Dehan, Michel; Le Ridant, Alain; Puisieux, Francis; and Taupin, Christiane C., 4,765,987, Cl. 424-450.000.

Deis, Daniel W.; Kemeny, George A.; and Scherbarth, David W., to Westinghouse Electric Corp. High efficiency rapid fire augmented electromagnetic projectile launcher. 4,766,336, Cl. 310-12.000.

De Koning, Adrianus J., to DSM Resins B.V. Bismaleimide compositions. 4,766,179, Cl. 525-282.000.

DeKoster, Eric H. C.: *See*—
Vankerckhoven, Henk F. E.; and DeKoster, Eric H. C., 4,765,858, Cl. 156-235.000

Delanoy, Curtis W.: *See*—
Veselaski, Stephen V.; Delanoy, Curtis W.; and Nicola, Robert J., 4,765,060, Cl. 30-208.000.

DeLassus, Phillip; and Raich, William J., to Dow Chemical Company, The. Method for the preparation of a vinylidene chloride interpolymer film. 4,766,202, Cl. 528-502.000.

Delatorre, Leroy C. High temperature switch. 4,765,184, Cl. 73-151.000.

Delia, Anthony D., to Drackett Company, The. Dispenser having air lock forming means. 4,764,992, Cl. 4-228.000.

Delia, Anthony D., to Bristol-Myers Company. Pad dispenser. 4,765,482, Cl. 206-555.000.

Dell Canada Marketing Corp.: *See*—
Bardutz, Ronald W.; Kortje, Joseph P.; and Twardy, Craig P., 4,766,606, Cl. 379-344.000

Della Bella, Davide: *See*—
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,137, Cl. 514-371.000.
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,138, Cl. 514-371.000.

DeLong, Teresa A.: *See*—
Goel, Anil B.; and DeLong, Teresa A., 4,766,196, Cl. 528-89.000.

DeLorenzo, Joseph T.; Levert, Francis E.; Robinson, James C.; and Hendricks, Robert W., to Technology for Energy Corporation. Thermal neutron detectors and system using the same. 4,765,943, Cl. 376-154.000.

DeLuca, Robert A.; and Garabedian, George, to Stone & Webster Engineering Corporation. Coolant circulation system for a liquid metal nuclear reactor. 4,765,948, Cl. 376-404.000.

Demartelaere, Gary E.: *See*—
Stange, Ronald R.; and Demartelaere, Gary E., 4,765,168, Cl. 72-159.000

DeMartino, Ronald N., to Hoechst Celanese Corporation. Organic nonlinear optical substrates. 4,766,171, Cl. 524-722.000.

Den Boef, Johannes H.; Van Eggermond, Johannes M.; and Van Uijen, Cornelis M. J., to U.S. Philips Corporation. Method and arrangement for determining a nuclear magnetization distribution in a part of a body. 4,766,380, Cl. 324-309.000.

Denham, Keith; Stride, Glenn; and Brewer, Jonathan L., to Avdel Limited. Apparatus for installing fasteners. 4,765,175, Cl. 72-391.000.

Denizou, Jean-Pierre; and Mouesca, Bruno, to Framatome; and Compagnie Generale des Matieres Nucleaires. Spacing grid for nuclear fuel assembly. 4,765,949, Cl. 376-443.000.

Dennis, Richard K. Lead frame for semi-conductor device and process of connecting same. 4,766,478, Cl. 357-70.000.

Dent, Robert. Bucket attachment tool holder. 4,765,472, Cl. 206-373.000

Deppendorf, Hans-Dieter; and Grossmann, Manfred, to Oni-Metallwarenfabriken Gunter GmbH & Co. Recessed hinge. 4,765,024, Cl. 16-251.000

DePrince, Randolph B.; and Viswanathan, Ravi, to International Minerals & Chemical Corp. Stabilized porcine growth hormone. 4,765,980, Cl. 424-108.000.

Derkach, Viktor I.: *See*—
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.

Desfontaines, Guy: *See*—
Babin, Michel; and Desfontaines, Guy, 4,765,947, Cl. 376-347.000.

Desmond, Michael J.; and Henry, Joann, to Standard Oil Company, The. Catalysts for the conversion of ethane to liquid aromatic hydrocarbons. 4,766,265, Cl. 585-415.000.

Dessus, Jean-Luc: *See*—
Durand, Alain R. L.; Dessus, Jean-Luc; and Royer, Michel, 4,765,863, Cl. 156-604.000.

Deters, Joseph C.: *See*—
Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 4,765,989, Cl. 424-473.000.

Detro, Scott M.; and Field, Alan H., to Hewlett-Packard Company. Wavelength tracking compensator for an interferometer. 4,765,741, Cl. 356-358.000

Deusser, Peter G.: *See*—
Becker, Johann A.; Deusser, Peter G.; and Zell, Werner V., 4,765,708, Cl. 350-96.200

Deutschle, Robert: *See*—
Brandt, Eckhard; and Deutschle, Robert, 4,765,791, Cl. 414-28.000.

Deutz-Allis Corporation: *See*—
Murray, David L., 4,765,639, Cl. 280-415.00R.

De Varennes, Joseph G. C. C., to Northern Telecom Limited. Method and apparatus for making cable core. 4,765,130, Cl. 57-59.000.

Devore Aviation Corporation: *See*—
Rutter, Robert E.; and Jensen, Robert M., 4,766,363, Cl. 323-243.000

Devos, Francis: *See*—
Huchette, Michel; and Devos, Francis, 4,766,070, Cl. 435-71.000.

de Vroom, Hubertus M., to Nordipa AG. Transferable paint film and method for its manufacture. 4,766,038, Cl. 428-447.000.

De Witt, Paolo: *See*—
Cavazza, Claudio; De Witt, Paolo; and Tinti, Maria O., 4,766,222, Cl. 549-39.000

Dharmapalan, Jonathan D.: *See*—
Baral, Elliott; Dharmapalan, Jonathan D.; Gordon, Travis H.; and Richardson, Ross M., 4,766,592, Cl. 370-62.000.

Diamant Boart Societe Anonyme: *See*—
Hallez, Charles P., 4,765,097, Cl. 51-90.000.

Diamant Boart Stratabit Limited: *See*—
Moore, Terence A., 4,765,414, Cl. 175-44.000.

Diamond Automations, Inc.: *See*—
Bliss, George N., 4,765,487, Cl. 209-510.000.

Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., to Allied Corporation; and Genetics Institute, Inc. Displacement polynucleotide assay method and polynucleotide complex reagent therefor. 4,766,062, Cl. 435-6.000.

Diamond, Steven E.: *See*—
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000.

Dibbern, John E., Jr.: *See*—
Sauerwein, William D.; Dibbern, John E., Jr.; O'hara, Frank J.; and Moores, Robert G., Jr., 4,765,054, Cl. 29-596.000.

Diederen, Willi: *See*—
Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, 4,766,130, Cl. 514-303.000

Diehl, Charles F., to Dow Chemical Company, The. Porous filter media and membrane support means. 4,765,915, Cl. 210-767.000.

Dielacher, Franz, to Siemens Aktiengesellschaft. Digital-to-analog converter with temperature compensation. 4,766,415, Cl. 340-347.0DA.

Dieringer, Dale E. Firearm magazine and method for preventing the shells from jamming. 4,765,081, Cl. 42-50.000.

Dieringer, Jochen: *See*—
Goller, Ernst; and Dieringer, Jochen, 4,765,158, Cl. 66-168.000.

Diesel Kiki Co., Ltd.: *See*—
Fukushima, Koji; and Sasaki, Isamu, 4,765,661, Cl. 285-382.500
Ikeuchi, Hiroshi, 4,765,302, Cl. 123-506.000.
Kurihara, Kazumasa; and Arai, Kenji, 4,765,450, Cl. 192-0.052.
Kurihara, Kazumasa; and Arai, Kenji, 4,766,544, Cl. 364-424.100.

Dietsche, Thomas J.: *See*—
Orvik, Jon A.; Fung, Alexander P.; Love, Jim; and Dietsche, Thomas J., 4,766,219, Cl. 546-286.000.

Dieulesaint, Eugene; and Royer, Daniel, to Universite Pierre et Marie Curie. Liquid level detector by guided elastic waves. 4,765,186, Cl. 73-290.00V.

Differding, Heinz: *See*—
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000.

Digitext, Inc.: *See*—
Lefler, Jerrold P., 4,765,764, Cl. 400-482.000.

Dil, Jan G.: *See*—
Pelgrom, Marcellinus J. M.; and Dil, Jan G., 4,766,307, Cl. 250-231.0SE.

Diller, Hans, to Gebr. Fleischmann. Claw coupling for toy and model trains. 4,765,496, Cl. 213-75.0TC.

Dilmaghani, Homayoun: *See*—
Carl, Udo; and Dilmaghani, Homayoun, 4,765,568, Cl. 244-75.00R.

Dinarello, Charles A.: *See*—
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000.

Dinning, Robert W.: *See*—
Crawford, Douglas W.; Crawford, William B.; and Dinning, Robert W., 4,765,403, Cl. 166-117.500.

Dixon, David: *See*—
Trull, Jeffrey G.; and Dixon, David, 4,765,163, Cl. 70-224.000.

Dobbyns, Vaughan: *See*—
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., 4,764,998, Cl. 4-502.000

Dobos, Laszlo J.; and Agoston, Agoston, to Tektronix Inc. Linearity correcting control circuit for tunable delay line. 4,766,559, Cl. 364-573.000

Dochnahl, Gaylord C., to Exemplar, Inc. Door mechanism spring assembly. 4,765,026, Cl. 16-289.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See*—
Bott, Helmuth, 4,765,383, Cl. 152-209.00R.
Richter, Herwig, 4,765,297, Cl. 123-432.000.

Dr. Johannes Heidenhain GmbH: *See*—
Michel, Dieter, 4,766,310, Cl. 250-237.00G

Dofix-Dohlemann GmbH: *See*—
Dohlemann, Gunter, 4,765,388, Cl. 160-84.100.

Dohan, Luc; and Nissim, Carlos, to Corning Glass Works. Glass integrated optical component. 4,765,702, Cl. 350-96.120.

Dohlemann, Gunter, to Dofix-Dohlemann GmbH. Roman blind. 4,765,388, Cl. 160-84.100.

Doi, Shunichi: *See*—
Ikemoto, Hiroyuki; Oowa, Nobutaka; Hayashi, Yasutaka; and Doi, Shunichi, 4,765,649, Cl. 280-707.000

Dolby, Ray M. Circuits to provide desired conductance characteristics using a FET. 4,766,395, Cl. 330-284.000.

Dolfini, Joseph E.: *See*—
Buck, Keith T.; Boeing, Anthony J.; Dolfini, Joseph E.; and Glinka, Jerome, 4,766,249, Cl. 568-433.000.

Dominion Al-Chrome Corporation: *See*—
Nazar, Steven E.; Leidner, Jacob; and Svirklys, Ferdinand M., 4,765,934, Cl. 264-26.000

Donner, Christoph: *See*—
Heymann, Kurt; and Donner, Christoph, 4,766,017, Cl. 427-444.000

Donovan, John R., to ITT Corporation. Radiator vent valve. 4,765,537, Cl. 236-62.000

Donovan, Timothy J.; and Reneau, Daniel L., to Zenith Electronics Corporation. Automatic color tuning system with variable gain APC circuit. 4,766,483, Cl. 358-19.000

Dons, Franciscus A.; and Einhaus, Hermanus F., to U.S. Philips Corporation. Electrical apparatus such as a disc-record player, comprising a mounting device for a drive motor. 4,766,587, Cl. 369-263.000.

Dooley, Eddie W., to General Electric Company. Washer backsplash assembly. 4,765,698, Cl. 312-248.000.

Doron, Benjamin: *See*—
Marikovsky, Moshe; and Doron, Benjamin, 4,765,914, Cl. 210-716.000

Doto, Shigeaki, to Nippon Air Brake Co., Ltd. Control method for a dual-cylinder moisture removal apparatus. 4,765,806, Cl. 55-21.000

Dotson, Duane L.: *See*—
Che, Tessie M.; Carney, Raymond V.; and Dotson, Duane L., 4,765,818, Cl. 65-18.100

Doubt, Ruxton C. Process for manufacturing custom moldable hand grip. 4,765,856, Cl. 156-212.000.

Doud, Wilbur O., to Ball Corporation. Apparatus for lubricating glassware mold. 4,765,821, Cl. 65-169.000

Dougherty, James A.: *See*—
Vara, Fulvio J.; Anderson, Lowell R.; and Dougherty, James A., 4,766,252, Cl. 568-616.000

Dow Chemical Company, The: *See*—
Cadotte, John E.; and Walker, David R., 4,765,897, Cl. 210-500.230.
Chang, Dane; and McGaugh, Michael C., 4,765,873, Cl. 204-101.000
Chang, Dane; and McGaugh, Michael C., 4,765,969, Cl. 423-573.00R.
Dang, Hiep D.; and Beaver, Richard N., 4,765,530, Cl. 228-175.000
DeLassus, Phillip; and Raich, William J., 4,766,202, Cl. 528-502.000
Diehl, Charles F., 4,765,915, Cl. 210-767.000
Hefner, Robert E., Jr., 4,766,184, Cl. 525-463.000
Henton, David E., 4,766,175, Cl. 525-71.000.
Lancaster, Gerald M.; Cramm, Russell H.; Kelley, David C.; and Neywick, Charles V., 4,766,035, Cl. 428-345.000
Lysenko, Zenon, 4,766,244, Cl. 564-418.000.
Orvik, Jon A.; Fung, Alexander P.; Love, Jim; and Dietsche, Thomas J., 4,766,219, Cl. 546-286.000
Schmidt, Daniel E.; and Moeller, Robert P., 4,765,938, Cl 264-269.000
Skach, Edward J., Jr.; Brake, David W.; and Waibel, Joseph H., 4,765,830, Cl. 75-53.000
Treybig, Duane S.; and Chang, Dane, 4,765,839, Cl. 106-273.00N
Van Heertum, John C.; and Herrero, Maria P., 4,765,826, Cl 71-121.000
Vaughn, Walter L.; and Wing, Milton S., 4,766,036, Cl 428-364.000

Dow Corning Corporation. *See*—
Gvozdic, Nedeljko V.; Hilty, Terrence K.; and Saam, John C., 4,766,191, Cl. 528-14.000
Gvozdic, Nedeljko V., 4,766,192, Cl. 528-14.000
Lee, Chi-long; Juen, Donnie R.; Saam, John C.; and Willis, Robin L., Jr., 4,766,176, Cl. 525-100.000
Schiefer, Harry M.; and McClarnon, Keith S., 4,765,243, Cl 101-451.000
Vincent, Gary A.; and Meyer, Daniel F., 4,766,011, Cl 427-117.000

Dowell, Earl H., to Duke University. Dry friction damper with damping force perpendicular to principal direction of a vibration. 4,765,436, Cl. 181-207.000

Downing, Anthony L.; and Squires, Rodney C., to EPOC Limited. Cross-flow filtration. 4,765,906, Cl. 210-636.000

Dowsett, Derek; and Hodgson, Charles, to C & P Technology Limited Control keyboard for a multiple system accessing unit. 4,766,418, Cl. 340-365.00R

Doyle, Terence, to U.S. Philips Corp. Line number having circuit for a sampled interlaced television signal. 4,766,494, Cl. 358-140.000

Drabert Sohne GmbH & Co.: *See*—
Lanuzzi, Max; and Dubach, Fredi, 4,765,679, Cl. 297-316.000

Drackett Company, The: *See*—
Delia, Anthony D., 4,764,992, Cl. 4-228.000

Dragerwerk AG: *See*—
Heim, Ulrich, 4,765,962, Cl. 422-59.000.

Drei, Clara B. Garment pattern transfer marking device and method. 4,764,987, Cl. 2-243.00R.

Dreier, Horst E., to Laserlux AG. Switching equipment for numerical controlled machine tools. 4,766,330, Cl. 307-139.000

Dreisbach, David D.; Gomes, Gilbert S.; and Schuster, Michael A., to Betz Laboratories, Inc. Pitch control process utilizing quaternized polyamine ionene polymer. 4,765,867, Cl. 162-72.000

Dresser Industries, Inc.: *See*—
Sauze, Bernard, 4,765,589, Cl. 251-229.000

Drilex Systems, Inc.: *See*—
Bailey, Thomas F.; and Campbell, John E., 4,765,404, Cl. 166-117.600

DSM Resins B.V.: *See*—
De Koning, Adrianus J., 4,766,179, Cl. 525-282.000

Dubach, Fredi: *See*—
Lanuzzi, Max; and Dubach, Fredi, 4,765,679, Cl. 297-316.000

Dubief, Claude: *See*—
Grollier, Jean F.; Fourcadier, Chantal; and Dubief, Claude, 4,765,976, Cl. 424-70.000

Dubowik, John M., to Foster-Miller, Inc. Method for removing skin from fish and fowl 4,765,030, Cl. 17-50.000.

Duff, James M.: *See*—
Croucher, Melvin D.; Wong, Raymond W.; Duff, James M.; Hair, Michael L.; and Fuller, John R. C., 4,766,049, Cl. 430-115.000

Duff, Paul; and Beach, Michael E., to Racine Railroad Products, Inc. Rail cutting apparatus. 4,765,098, Cl. 51-99.000.

Dufresne, Pierre; and Marcilly, Christian, to Institut Francaise du Petrole. Catalyst for oil hydrorefining or mild hydrocracking of heavy oil charges to produce middle distillates. 4,766,099, Cl 502-72.000

Duke University: *See*—
Dowell, Earl H., 4,765,436, Cl. 181-207.000

Dumas, Ghislain: *See*—
Berube, Gilles; and Dumas, Ghislain, 4,765,245, Cl. 102-251.000

VOL 1093 ISS 4 AG 23 1988 UMI

Dunlap, Roger: *See—*
Brown, Robert S.; and Dunlap, Roger, 4,765,134, Cl. 60-204.000.

Dupin, Thierry: *See—*
Nortier, Patrice; Dupin, Thierry; and Latourrette, Bertrand, 4,766,101, Cl. 502-164.000

Du Pont de Nemours, E. I., and Company: *See—*
Anthony, John D., Jr.; Leffew, Kenneth W.; and Trentacosta, Joseph D., 4,765,941, Cl. 264-40.100.
Burn, Ian, 4,766,027, Cl. 428-210.000
Irwin, Robert S., 4,766,256, Cl. 568-765.000.
Krespan, Carl G., 4,766,248, Cl. 568-31.000.
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 4,766,259, Cl. 570-168.000.
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 4,766,260, Cl. 570-168.000
Murdoch, Joseph R.; and Loomis, Gary L., 4,766,182, Cl 525-413.000
Ryntz, Rose A.; Kurple, Kenneth R.; and Kordomenos, Panagiotis, 4,766,185, Cl. 525-479.000
Statz, Robert J., 4,766,174, Cl. 525-64.000.
Wells, John R.; and Grant, John W., 4,765,899, Cl. 210-519.000
West, Norman E., 4,766,168, Cl. 524-377.000

Durand, Alain R. L.; Dessus, Jean-Luc; and Royer, Michel, to S.A.T (Societe Anonyme de Telecommunications). Method of preparing a crystalline ingot of $Hg_{1-x}oCd_xoTe$. 4,765,863, Cl. 156-604.000

Dutka, Ferenc: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Dyer, Dexter A.; Howe, William C.; and Szlucha, Thomas F., to Xerox Corporation. Liquid carrier recovery system. 4,766,462, Cl 355-10.000

Dynamit Nobel AG: *See—*
Zoche, Gunter, 4,766,231, Cl. 556-422.000

Dynatens Research Corporation: *See—*
Deagle, William R.; and Gunthrpe, Gary E., 4,765,310, Cl. 128-1.500

E.C.H. Will (GmbH & Co.): *See—*
Besemann, Alfred, 4,765,790, Cl. 414-47.000
Brandt, Eckhard; and Deutschle, Robert, 4,765,791, Cl. 414-28.000.

E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Schreder, Felix, 4,766,290, Cl. 219-458.000.

Eagle Industry Co. Ltd.: *See—*
Yoshida, Osamu, 4,765,586, Cl. 251-86.000

Eagle-Picher Industries, Inc.: *See—*
Lister, Roy D., 4,765,887, Cl. 209-211.000

Eastern Specialty Company, The: *See—*
Carr, John M., 4,766,370, Cl. 324-74.000.

Eastman Kodak Company: *See—*
Agostinelli, John A.; and Mir, Jose M., 4,765,721, Cl. 350-389.000.
Cosgrove, Patrick A.; and Wolf, Michael T., 4,765,716, Cl. 350-273.000.
Huang, Jian-Cheng, 4,766,591, Cl. 370-60.000.
Mathewson, Christopher W., 4,766,508, Cl. 360-77.000
Simons, Michael J., 4,766,061, Cl. 430-546.000.

Eastman, William J.; and Iversen, Alfred A., to PMT Corporation. Anterior posterior headblock. 4,765,317, Cl. 128-75.000.

Eaton Corporation: *See—*
Bergquist, Frank H., 4,765,536, Cl. 236-15.00A.
Butterworth, Edmund M.; and Wycklendt, Daniel A., 4,766,273, Cl. 200-147.00R

Eberle, Hans-Jurgen; and Gebauer, Helmut, to Consortium fur Elektrochemische Industrie GmbH. 16-Oxa-bicyclo-[13.1.0]-hexadec-7-ene and its application as a fragrance. 4,766,107, Cl. 512-13.000.

Eberle, Robert W.: *See—*
Nath, Narikottile G.; Meehan, Kenneth N.; and Eberle, Robert W., 4,766,024, Cl. 428-139.000

Ebina, Osamu: *See—*
Ono, Seigo; and Ebina, Osamu, 4,766,423, Cl. 340-709.000.

Ecodyne Corporation: *See—*
Yavorsky, William M.; and Gauer, Gary W., 4,765,507, Cl 220-414.000

Edshammar, Lars E.: *See—*
Johansson, Jan O.; Andersson, Jan-Erik; Niklewski, Tomasz; and Edshammar, Lars E., 4,766,349, Cl. 313-631.000

Edson, Sydney: *See—*
Howard, Fred; and Edson, Sydney, 4,765,492, Cl. 211-55.000

Edwards, Charles L. Integrated keyholder/container. 4,765,459, Cl. 206-38.100

Edwards, Charles P., Jr. Overhead tilt door. 4,765,093, Cl. 49-197.000

Egbers, Gerhard: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B

Ehrenfreund, Josef, to Ciba-Geigy Corporation. Pesticidal substituted hydrazinecarboxylic acid esters. 4,766,146, Cl. 514-469.000

Ehrlich, Stanley L.; and Gray, George G., to Raytheon Company. Cylindrical sonar array. 4,766,575, Cl. 367-153.000

Eid, Jeffrey C.: *See—*
Chu, Richard C.; Eid, Jeffrey C.; and Zumbrunnen, Michael L., 4,765,400, Cl. 165-185.000

Eifert, Gyula: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Einhaus, Hermanus F., to U.S. Philips Corporation. Disc-record player. 4,766,586, Cl. 369-217.000

Einhaus, Hermanus F.: *See—*
Dons, Franciscus A.; and Einhaus, Hermanus F., 4,766,587, Cl. 369-263.000

Eisenhut, Wolfgang O.; and Senf, John W., to Adhesive Engineering Company. Pumping system. 4,765,509, Cl. 222-61.000.

Eiserer, Mike: *See—*
Holden, Ronald D.; Tedor, John B.; Bergquist, Andrew O.; Moran, David S.; and Eiserer, Mike, 4,765,193, Cl. 73-865.900.

Ejiri, Takashi: *See—*
Ariizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, 4,765,370, Cl. 137-625.650

Electric Power Research Institute: *See—*
Gallagher, Thomas F.; Janik, Gary R.; and Carlisle, Clinton B., 4,765,736, Cl. 356-300.000

Electric Power Research Institute, Inc.: *See—*
Schweitzer, Edmund O., III; and Ando, Masaoki, 4,766,549, Cl. 364-481.000
Titus, Charles H.; and Wittle, J. Kenneth, 4,766,598, Cl. 373-108.000

Elektro-Apparatebau Olten AG: *See—*
Bichsel, Daniel; and Pluss, Martin, 4,766,306, Cl. 250-227.000.

Eli Lilly and Company: *See—*
Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., 4,766,140, Cl. 514-397.000.
Kuhstoss, Stuart A.; and Rao, R. Nagaraja, 4,766,066, Cl. 435-68.000

Ellingson, Chester W., Jr., to Reese Enterprises, Inc. Unitary connecting floor mat sections. 4,766,020, Cl. 428-54.000.

Ellis, David; Emmett, John C.; Underwood, Anthony H.; and Leeson, Paul D., to Smith Kline & French Laboratories Ltd. Pyridyl and pyridazinyl substituted thyronine compounds having selective thyromimetic activity. 4,766,121, Cl. 514-247.000.

Ellwood, Marian S.: *See—*
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000

Ely, Douglas L.; and Heffner, David A., to Chevron Research Company. Process for in situ biodegradation of hydrocarbon contaminated soil. 4,765,902, Cl. 210-610.000

Emhart Industries, Inc.: *See—*
Kempf, David N.; Jefferson, Ford C.; and Chandler, Brian L., 4,765,178, Cl. 73-49.200.

Emmer, Ivan; Hajek, Zdenek; and Repa, Petr, to Matematicko-Fyzikalni Fakulta University. Method of manufacture of an electric moisture-content sensor. 4,765,870, Cl. 204-129.100

Emmett, John C.: *See—*
Ellis, David; Emmett, John C.; Underwood, Anthony H.; and Leeson, Paul D., 4,766,121, Cl. 514-247.000

Endo, Junji: *See—*
Arai, Tohru; Fujita, Hironori; Endo, Junji; Sugimoto, Yoshihiko; and Ohta, Yukio, 4,765,847, Cl. 148-15.500.

Eneresource, Inc.: *See—*
Sadeghi, Mohammad-Ali; Sadeghi, Kazem; Kuo, Jih-Fen; Jang, Long-Kuan; and Yen, Teh F., 4,765,885, Cl. 208-391.000.

Energy Conversion Devices, Inc.: *See—*
Magnuson, Douglas; Wolff, Merle; Lev, Sam; Jeffries, Kenneth; and Mapes, Scott D., 4,765,598, Cl. 266-110.000.
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J.; Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S., 4,766,471, Cl. 357-19.000.

Energy Kinetics: *See—*
Marran, John D., 4,765,308, Cl. 126-85.00B.

Engelmann, William H.: *See—*
Khalafalla, Sanaa E. S.; Engelmann, William H.; and Pahlman, John E., 4,765,415, Cl. 175-50.000.

Engelskirchen, Jurgen; and Koenig, Dieter. Valve station for interconnecting boreholes in a seabed. 4,765,378, Cl. 141-69.000.

Engfors, Stig: *See—*
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, 4,765,566, Cl. 244-3.230.

England, Charles C., Jr.: *See—*
Glass, Samuel W., III; Griffith, John C.; Brew, John D.; England, Charles C., Jr.; and Phillips, John M., 4,766,374, Cl. 324-207.000.

Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hropot, Max, to Hoechst Aktiengesellschaft. 2-Aminomethyl-6-sulfamoylphenol derivatives with salidiuretic activities. 4,766,241, Cl. 564-89.000

English, George J.; Rothwell, Harold L., Jr.; and Beschle, Mark, to GTE Products Corporation. Single-ended metal halogen lamp and fabrication process employing ionization potential selection of additive gases. 4,766,348, Cl. 313-631.000

Enigma Electronics Limited: *See—*
Hayward, Gilbert O., 4,766,419, Cl. 340-545.000.

Ennis, Melvyn S. J. Borehole drill construction. 4,765,418, Cl. 175-396.000

Enoch, Jay M., to University of California, The Regents of the. Hyperacuity testing instrument for evaluating visual function. 4,765,732, Cl. 351-243.000

Ensci, Inc.: *See—*
Clough, Thomas J.; Sibert, John W.; and Riese, Arthur C., 4,765,827, Cl. 75-2.000.

Epic Corporation: *See—*
Metcoff, Dale M.; and Holzboog, Walter, 4,765,516, Cl. 222-402.220.

EPOC Limited: *See—*
Downing, Anthony L.; and Squires, Rodney C., 4,765,906, Cl. 210-636.000

Eppinger, Siegfried, to Matth. Hohner AG. Electronic keyboard musical instrument with processing of depression dynamics. 4,765,218, Cl. 84-1.010.

Erb, Fred: *See—*
Clark, Michael R.; Erb, Fred; and Orosz, Miklos J., 4,766,276, Cl. 200-256.000.

Erckel, Rudiger: *See—*
Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, 4,766,207, Cl. 536-18.600.

Erekson, Erek J.: *See—*
Sun, Jui-Yuan; and Erekson, Erek J., 4,766,155, Cl. 518-713.000

Eremenko, Vladimir M.: *See—*
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.

Ermold, Leonard F.; Keating, Robert F.; and Nelson, Lawrence A., to Westinghouse Electric Corp. Multi-seal mechanical tube plug. 4,765,374, Cl. 138-89.000

Ernsberger, Earl R. Means for applying designs to auto exteriors. 4,765,483, Cl. 206-575.000.

Ernst, Helmut: *See—*
Berger, Josef; Ernst, Helmut; Linhart, Hans-Joachim; and Pfeiffer, Martin, 4,765,017, Cl. 15-250.00A.

Ernst-Kienzle, Karl: *See—*
Kolditz, Dietmar; Keller, Hans; and Ernst-Kienzle, Karl, 4,765,314, Cl. 128-4.000

Eschelbach, Randy G.: *See—*
Selbert, Alan J.; and Eschelbach, Randy G., 4,765,045, Cl. 29-91.100

Eskofot A/S: *See—*
Larsen, Rex S., 4,766,454, Cl. 354-302.000.

Espin, Mario W. Apparatus and method for disassembling a magnetic tape cassette. 4,765,050, Cl. 29-426.400

Esposito, Dominick G.: *See—*
Petruzzi, Claude E.; Quint, Robert H.; D'Amelio, Frank D.; and Esposito, Dominick G., 4,765,331, Cl. 128-303.140.

Essex Specialty Products, Inc.: *See—*
Rizk, Sidky D.; and Shah, Navinchandra B., 4,766,183, Cl. 525-454.000

Etherton, Bradley P.: *See—*
Best, Steven A.; Etherton, Bradley P.; and Kaus, Malcolm J., 4,766,100, Cl. 502-115.000.

Eubanks Engineering Co.: *See—*
Hoffa, Jack L., 4,765,053, Cl. 29-564.400

Evans, Morris L.: *See—*
Lepert, Andre; Evans, Morris L.; and Jacob, Lutz E., 4,766,169, Cl. 524-499.000.

Evers, Hubertus N. C., to Van der Laan, Robert A. Textile fabric with woven-in bar code. 4,766,301, Cl. 235-487.000

Everse, Johannes: *See—*
Kiel, Jonathan L.; and Everse, Johannes, 4,766,150, Cl. 514-567.000

Exemplar, Inc.: *See—*
Dochnahl, Gaylord C., 4,765,026, Cl. 16-289.000

Extrude Hone Corporation: *See—*
Rhoades, Lawrence J.; Risko, Donald; and Resnick, Ralph L., 4,766,389, Cl. 324-61.0QS.

Exxon Research and Engineering Company: *See—*
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,765,882, Cl. 208-59.000
Bellows, Richard J.; and Kantner, Edward, 4,766,045, Cl. 429-105.000
Best, Steven A.; Etherton, Bradley P.; and Kaus, Malcolm J., 4,766,100, Cl. 502-115.000.
Colle, Thomas H.; and Moza, Ashok K., 4,765,259, Cl. 110-342.000.
Lepert, Andre; Evans, Morris L.; and Jacob, Lutz E., 4,766,169, Cl. 524-499.000.

Eye Research Institute of Retina Foundation: *See—*
Webb, Robert H., 4,765,730, Cl. 351-205.000

Faber, Elmer L., to Deco Tools, Inc. Decorative coating machine 4,765,270, Cl. 118-102.000.

Fafournoux, Bernard. Flexible pack possessing an evacuation means and device for the evacuation of this pack. 4,765,125, Cl. 53-512.000.

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Hofmann, Heinrich; and Troster, Manfred, 4,765,688, Cl. 301-124.00R
Rudiger, Eckhart; and Stein, Ulrich, 4,765,689, Cl. 303-115.000.
Rudiger, Eckhart; and Stein, Ulrich, 4,765,690, Cl. 303-115.000.

Fahl, Christoph, to Feinpruf Feinmess and Pruferate GmbH. Optical surface test apparatus for testing constricted surface areas. 4,766,305, Cl. 250-216.000

Faler, Gary R.; and Cipullo, Michael J., to General Electric Company. Method for maximizing yield and purity of bisphenol A. 4,766,254, Cl. 568-724.000

Falk, Robert A., to Boeing Company, The. Multiplexer and demultiplexer comprising optical switches and common electrodes. 4,766,588, Cl. 370-4.000

Fallis, Robert: *See—*
Daly, Paul D.; Brooks, Mark A.; and Fallis, Robert, 4,766,405, Cl. 335-257.000

Farmaceutici Formenti S.p.A.: *See—*
Valenti, Mauro, 4,766,012, Cl. 427-213.360.

Farmitalia Carlo Erba S.r.l.: *See—*
Arcamone, Federico; Mongelli, Nicola; and Penco, Sergio, 4,766,142, Cl. 514-422.000

Farmitalia Carlo Erba, S.p.A.: *See—*
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,766,214, Cl. 544-336.000.

Farnham, Harry M.: *See—*
Upadhyaya, Janardan D.; Farnham, Harry M.; Lin, Ing C.; and Case, Alan R., 4,766,166, Cl. 524-275.000

Fasham, Thomas I. K.; and Irvine, Harry, to Moore Business Forms, Inc. Hospital form set with detachable bag. 4,765,653, Cl. 282-1.00R.

Featherstone, John L., to Union Oil Co. of Calif.; Mono Power Co.; and Southern Pacific Land Co. Process for removing silica from silica-rich geothermal brine. 4,765,913, Cl. 210-714.000.

Federmann, Dieter: *See—*
Grimm, Rainer; Bohm, Horst; Schlapp, Albert; Hattass, Rainer; and Federmann, Dieter, 4,765,676, Cl. 296-216.000

Feedmobile, Inc.: *See—*
High, Samuel E., Jr.; and Mast, Aquila D., 4,765,747, Cl 366-186.000

Feinpruf Feinmess and Pruferate GmbH: *See—*
Fahl, Christoph, 4,766,305, Cl. 250-216.000.

Feldman, Nathan W. Method of improving the sensitivity of the earphone of an optical telephone and earphone so improved. 4,766,607, Cl. 455-612.000

Fele, Karl; and Lindberg, Stellan, to Biolabimex AB. Method of using polypropylene glycol to improve movement and intermixture of blood and other fluids in capillary tubes. 4,766,079, Cl. 436-63.000

Felkay, T.: *See—*
Fuller, D. Kirk, 4,765,269, Cl. 114-61.000

Felsted, Ronald L.: *See—*
Safa, Ahmad R.; and Felsted, Ronald L., 4,765,972, Cl. 424-1.100.

Fendley, James R.; Steiner, Johann; and Strauss, Paul, to Zenith Electronics Corporation. Tension mask assembly for a color CRT. 4,766,342, Cl. 313-402.000

Fenelli, Steven P.: *See—*
Rossi, Robert D.; and Fenelli, Steven P., 4,766,251, Cl. 568-436.000

Fennemann, Wolfgang, to Metallgesellschaft Aktiengesellschaft. Process for producing a V_2O_5-and-alkali-metal-sulfate-containing catalyst for oxidizing SO_2 to SO_3. 4,766,104, Cl. 502-218.000.

Fergason, James L. Optical protection using smectic liquid crystal 4,765,719, Cl. 350-350.00S

Ferguson, Daniel J., to W. R. Grace & Co., Cryovac Div. Protective patch for shrinkable bag. 4,765,857, Cl. 156-229.000.

Ferguson, Gregory A., to Precision Handling Devices, Inc. Multiposition tractor lid. 4,765,523, Cl. 226-74.000

Fergusson, Gordon J.; and Vestal, Marvin L., to Vestec Corporation Methods and apparatus for detecting negative ions from a mass spectrometer. 4,766,312, Cl. 250-281.000

Ferlazzo, John J.: *See—*
Williams, John M., 4,765,731, Cl. 351-243.000

Ferleger, Jurek: *See—*
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Ferrari, Lorenzo, to Kinglor-Ltd. Apparatus for the automatic forming of continuous metal tube filled with powdered materials, its direct introduction into liquid metal, and related equipment. 4,765,599, Cl 266-216.000

Fessler, Herman S.: *See—*
McMillin, John R.; and Fessler, Herman S., 4,765,513, Cl. 222-129.100

Fest, Christa; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, to Bayer Aktiengesellschaft. Phenylsulphonyl-pyridine aldoximes as fungicides. 4,766,136, Cl. 514-357.000.

Fiandt, Michael J.: *See—*
Jendrisak, Jerome J.; Lewis, Martin K.; and Fiandt, Michael J., 4,766,072, Cl. 435-91.000

Fidalgo, Loren C. Body contact game. 4,765,748, Cl. 273-1.00G.

Field, Alan H.: *See—*
Detro, Scott M.; and Field, Alan H., 4,765,741, Cl. 356-358.000

Field, Bruce F., to Tennant Company. Telemetry system for floor maintenance machines. 4,766,432, Cl. 340-825.170

Field, James A., to Pacques B.V. Method for purifying waste water 4,765,901, Cl. 210-603.000

Fifolt, Michael J., to Occidental Chemical Corporation. Electrophilic fluorination of aromatic compounds. 4,766,243, Cl. 564-414.000

Finefrock, Mark D.: *See—*
Krechmery, Roger L.; and Finefrock, Mark D., 4,765,188, Cl. 73-708.000

Finnegan, Robert J., to Shelburne Corporation, The. Anti-theft cable lock. 4,765,521, Cl. 224-315.000

Finnieston, Alan; Burkhalter, William E.; and Reyes, Franklin. Hand splint. 4,765,319, Cl. 128-87.00R.

VOL 1093 ISS 4 AG 23 1988 UMI

Finnigan MAT GmbH: *See—*
Jung, Gerhard, 4,766,314, Cl. 250-296.000.
Fiorentini, Carlo, to AFROS S.p.A. Method for foaming insulations in refrigerators and the like. 4,765,935, Cl. 264-40.500.
Firestone Tire & Rubber Company, The: *See—*
Koch, Russell W.; and Snyder, Douglas D., 4,765,852, Cl 156-97.000.
Fischell, Robert E.; and Fischell, Tim A., to MedInnovations, Inc Pullback atherectomy catheter system. 4,765,332, Cl. 128-305.000
Fischell, Tim A.: *See—*
Fischell, Robert E.; and Fischell, Tim A., 4,765,332, Cl 128-305.000
Fischenich, Bernhard A., to Rockwell-Golde GmbH. Wedge brake activating device. 4,765,447, Cl. 188-343.000.
Fischer, Harry C.: *See—*
Crawford, John T.; Tyree, Lewis, Jr.; Fischer, Harry C.; and Coers, Don H., 4,765,143, Cl. 60-671.000
Fischer, John T.: *See—*
Gillette, Glynn G.; Stewart, Roger G.; and Fischer, John T., 4,766,430, Cl. 340-793.000.
Fischer, Reiner: *See—*
Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,765,824, Cl. 71-92.000.
Fischer, Rolf: *See—*
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.
Fischli, Albert; Krasso, Anna; and Szente, Andre , to Hoffman-La Roche Inc. (Bezumidazol-2-yl)-pyridinium compounds. 4,766,133, Cl. 514-338.000
Fisher, Baruch, to Technion Research & Development Foundation Ltd. Optical apparatus based on measurement of phase or frequency shift of an oscillating beam, particularly useful as an optical gyro. 4,765,740, Cl. 356-350.000.
Fisher, David A., to STC PLC. Data transmission system. 4,766,589, Cl. 370-32.000
Fisher, John L.: *See—*
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., 4,765,861, Cl. 156-457.000
Fishman, Aaron H.; and Bottitta, Joseph, to APL Corporation. Combination storage container and triple seal lid. 4,765,506, Cl. 220-355.000
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, to Aktiebolaget Bofors. Method and apparatus for reducing projectile spread. 4,765,566, Cl. 244-3.230.
Flanigen, Edith M., to NI Industries, Inc. Asbestos free hardened monolithic filler mass. 4,765,458, Cl. 206-0.700.
Flegel, David D.; and Flegel, Dean F., to Reliance Time Controls, Inc Timer switch with auxiliary actuator. 4,766,331, Cl. 307-141.000.
Flegel, Dean F.: *See—*
Flegel, David D.; and Flegel, Dean F., 4,766,331, Cl. 307-141.000
Fleming, Roger, to Miles Inc. Quantitative measurement of lithium. 4,766,080, Cl. 436-74.000
Flesch, Friedrich: *See—*
Scholz, Dieter; and Flesch, Friedrich, 4,765,419, Cl. 175-415.000
Fletcher, Gary S., Jr.: *See—*
Fuller, Milton E.; and Fletcher, Gary S., Jr., 4,765,179, Cl. 73-53.000
Fletcher, Ian J.: *See—*
Zink, Rudolf; and Fletcher, Ian J., 4,766,211, Cl. 544-58.600.
Fletcher Sutcliffe Wild Limited: *See—*
Bower, Lewis R. B., 4,765,456, Cl. 198-810.000
Flores, Gilbert A.: *See—*
Seese, Theodore A.; Narayanan, Subramanian; and Flores, Gilbert A., 4,765,172, Cl. 72-322.000.
Flory, Donald M.: *See—*
Goubeaux, Carl E.; and Flory, Donald M., 4,765,659, Cl 285-215.000
Floyd, William C., to Sequa Chemicals, Inc. N-acyl substituted cyclic ureas. 4,766,221, Cl. 548-320.000
Fluidyne Corporation: *See—*
Yie, Gene G., 4,765,540, Cl. 239-8.000
FMC Corporation: *See—*
Gunkel, Louis T.; and Crosby, John, 4,766,240, Cl. 562-460.000.
Lowe, James T., 4,765,013, Cl. 15-180.000
Lyga, John W., 4,766,233, Cl. 560-22.000.
Mannen, Bryce L., 4,765,387, Cl. 157-1.000.
Foch, Etienne: *See—*
Bellego, Roger; and Foch, Etienne, 4,765,572, Cl. 244-178.000
Fonar Corporation: *See—*
Danby, Gordon T.; Hsieh, Hank C. H.; Jackson, John W.; and Damadian, Raymond V., 4,766,378, Cl. 324-307.000
Fontana, Richard. Racetrack convertible guardrail. 4,765,596, Cl 256-65.000
Ford, Michael E.; Johnson, Thomas A.; and Vedage, Gamini A., to Air Products and Chemicals, Inc. Color reduction of polyamines by mild catalytic hydrogenation. 4,766,247, Cl. 564-498.000
Ford Motor Company: *See—*
Gealer, Roy L.; and Karsten, Hans K., 4,765,865, Cl. 156-647.000.
Meier, Raymond C., 4,765,669, Cl. 294-119.100.
Premiski, Vladimir; Premiski, Claudia; and Schultz, Winfried, 4,765,366, Cl. 137-593.000.
Salazar, Sumorfin, 4,765,025, Cl. 16-261.000
Ford New Holland, Inc.: *See—*
De Busscher, Cyriel R. J.; Naaktgeboren, Adrianus; and Stael, Odilus A., 4,765,238, Cl. 100-89.000.
Strubbe, Gilbert J. I., 4,765,190, Cl. 73-861.720.
Vansteelant, Marc G.; Naaktgeboren, Adrianus; and Seymour, Shaun A., 4,765,237, Cl. 100-89.000.
Forestier, Serge: *See—*
Lang, Gerard; Shroot, Braham; Forestier, Serge; and Lagrange, Alain, 4,766,235, Cl. 560-051.000.
Fornuto, Joseph: *See—*
Sherwood, Carl H.; Fornuto, Joseph; and Giacomazzi, Roy A., 4,765,504, Cl. 220-86.00R
Fortner, Jerry L.: *See—*
Cordill, Rexford W.; Fortner, Jerry L.; and Beyerle, Robert W., 4,765,696, Cl. 312-214.000.
Fortsch, William A., to Thomas & Betts Corporation. Environmental bundling tie. 4,765,032, Cl. 24-23.00R.
Fortune, William S.; and Dallons, Robert E. Portable vacuum pump for desoldering purposes. 4,765,229, Cl. 92-128.000.
Foster Manufacturing Company: *See—*
Cruse, Lee H., 4,765,657, Cl. 285-91.000
Foster-Miller, Inc.: *See—*
Dubowik, John M., 4,765,030, Cl. 17-50.000
Foster Wheeler Development Corporation: *See—*
Berman, Irwin, 4,765,527, Cl. 228-107.000
Fourcadier, Chantal: *See—*
Grollier, Jean F.; Fourcadier, Chantal; and Dubief, Claude, 4,765,976, Cl. 424-70.000.
Fox, David A., to Westinghouse Electric Corp. Circuit and method for synchronizing power sources in a parallel AC electrical power system. 4,766,327, Cl. 307-87.000.
Fox, Henry L. System for and a method of determining the premium for and writing a policy insuring against specified weather conditions. 4,766,539, Cl. 364-401.000
Fox, Timothy R.; and Hughes, Simon H. C., to Kabushiki Kaisha Toshiba. Quadrature antenna for magnetic resonance imaging using elliptical coils. 4,766,383, Cl. 324-318.000
Fox, Timothy R., to Kabushiki Kaisha Toshiba. Variable-transconductance four-quadrant Gilbert-type modulator with feedback circuitry in improved NMR transmission. 4,766,400, Cl. 332-9.00R.
Frabotta, Peter W.; and Lang, Steven C., to General Motors Corporation. Windshield reveal molding. 4,765,673, Cl. 296-93.000
Framatome: *See—*
Babin, Michel; and Desfontaines, Guy, 4,765,947, Cl. 376-347.000
Dagard, Philppe; and Couturier, Michel, 4,765,946, Cl. 376-282.000
Denizou, Jean-Pierre; and Mouesca, Bruno, 4,765,949, Cl. 376-443.000
Heuze , Alain; and Cauquelin, Claude, 4,765,944, Cl. 376-254.000.
Francolini, Ermanno: *See—*
Santoro, Giovanni; and Francolini, Ermanno, 4,766,289, Cl. 219-235.000
Frank, Gordon I.: *See—*
Franklin, Douglas E.; Frank, Gordon I.; Palylyk, Richard A.; and Toom, Paul O., 4,766,323, Cl. 250-561.000.
Franklin, Douglas E.; Frank, Gordon I.; Palylyk, Richard A.; and Toom, Paul O., to B. C. Hydro. Method and apparatus for determining the distance of an object. 4,766,323, Cl. 250-561.000.
Franks, Philip C. W.: *See—*
Noakes, Timothy J.; Hewitt, Nevil E.; Grocott, Arend L.; and Franks, Philip C. W., 4,765,539, Cl. 239-3.000.
Franz, Raimund: *See—*
Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, 4,766,207, Cl. 536-18.600.
Franzen, Arne: *See—*
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, 4,765,566, Cl. 244-3.230.
Freedman, Jules; and Dage, Richard C., to Merrell Dow Pharmaceuticals Inc. 2H-[1]benzoxepino[5,4-b]-1,4-oxazine derivatives. 4,766,212, Cl. 544-101.000
Friedland, David J.: *See—*
Shia, George A.; and Friedland, David J., 4,765,968, Cl. 423-445.000
Fritsch, Edward F.: *See—*
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000.
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000
Fritsche-Lang, Wolfram: *See—*
Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, 4,766,207, Cl. 536-18.600.
Fritz Bauer+Sohne OHG: *See—*
Bauer, Fritz; Bauer, Hans-Peter; and Bauer, Hans J., 4,765,444, Cl. 188-129.000
Frohling, Werner; Kugeler, Manfred; Kugeler, Kurt; and Phlippen, Peter W., to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of and apparatus for increasing the mobility of crude oil in an oil deposit. 4,765,406, Cl. 166-247.000
Frohn, Gustav: *See—*
Mierbach, Hans-Bernd; Frohn, Gustav; and Blockisch, Olaf, 4,765,210, Cl. 81-57.390.

Froidh, Arne; Alsenvik, Stewe; Widlund, Urban; and Norenberg, Carl-Daniel, to Molnycke AB. Package for individual, disposable sanitary articles and a method of manufacturing such a package 4,765,477, Cl. 206-438.000.
Fromageries Bresse-Bleu-Societe Laitiere Cooperative Agricole: *See—*
Chanel, Arthur L., 4,765,463, Cl. 206-45.340.
Fuchigami, Wataru: *See—*
Sakurai, Tadashi; and Fuchigami, Wataru, 4,765,137, Cl. 60-313.000.
Fuchs, Paul: *See—*
Schallenberger, Burghardt; Stockinger, Josef; and Fuchs, Paul, 4,766,476, Cl. 357-42.000.
Fudo, Eiji: *See—*
Fukuda, Michio; Fudo, Eiji; Tani, Koichi; and Kobayashi, Haruhito, 4,765,052, Cl. 29-450.000
Fuhrhop, Ronald E.; and Makara, Raymond J., to L-TEC Company. Scarfing nozzle. 4,765,597, Cl. 266-51.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Nagai, Masaaki, 4,766,545, Cl. 364-431.080.
Fuji Kiko Kabushiki Kaisha: *See—*
Kawashima, Hatsuo, 4,765,680, Cl. 297-367.000.
Fuji Photo Film Co., Ltd.: *See—*
Fujimura, Ikuo; Nakada, Kimiaki; and Tanaka, Tsutomu, 4,766,451, Cl. 354-64.000.
Miyoshi, Takahito; and Fujiyama, Masaaki, 4,766,511, Cl. 360-132.000.
Nakamura, Taku; Nakamura, Koichi; and Hayashi, Hiroshi, 4,766,052, Cl. 430-203.000.
Ohtsuka, Shuichi, 4,766,461, Cl. 355-5.000
Sakai, Nobuo, 4,766,057, Cl. 430-383.000.
Satoyoshi, Yasuhiko; and Kato, Keishi, 4,765,563, Cl. 242-199.000.
Shinozaki, Fumiaki; Namiki, Tomizo; and Suzuki, Kazuo, 4,766,053, Cl. 430-256.000.
Takahashi, Osamu; Koyama, Koichi; and Koya, Keizo, 4,766,056, Cl. 430-351.000.
Watanabe, Akio; Washizu, Shintaro; Shinozaki, Fumiaki; Ishikawa, Shun-ichi; and Aoai, Toshiaki, 4,766,037, Cl. 428-402.210
Yagi, Motoi; Miyabayashi, Tadao; Morikawa, Yasuo; and Kobayashi, Yasuhito, 4,766,506, Cl. 360-37.100.
Fuji Robin Kabushiki Kaisha: *See—*
Kaneko, Takuji, 4,765,261, Cl. 111-7.000.
Fujii, Etsuo; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Four wheel drive vehicle with antilock brake device and associated method operation. 4,765,433, Cl. 180-244.000
Fujii, Haruo: *See—*
Hosono, Nagao; Fujii, Haruo; Ando, Yujiro; and Nakahata, Kimio, 4,766,468, Cl. 355-3.0DD.
Fujii, Masataka: *See—*
Moribe, Yoshihiro; Fujii, Masataka; Chuma, Akira; and Tsuchiya, Hiroshi, 4,766,509, Cl. 360-106.000.
Fujikura Rubber Ltd.: *See—*
Arizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, 4,765,370, Cl. 137-625.650.
Fujimoto, Akihiko, to Mitsubishi Denki Kabushiki Kaisha. Numerically controlled apparatus including functions of synchronous-simultaneous transaction and independent-simultaneous translation. 4,766,546, Cl. 364-474.000
Fujimoto, Takeo: *See—*
Nakagawa, Kiyotoshi; Miyano, Katsumi; and Fujimoto, Takeo, 4,766,474, Cl. 357-23.800.
Fujimoto, Yoshiji, to Sharp Kabushiki Kaisha. Auto-correlation filter. 4,766,563, Cl. 364-724.000.
Fujimura, Akira; and Wazaki, Yoshio, to Honda Giken Kogyo K.K. Fuel supply control method for internal combustion engines after starting in hot state. 4,765,300, Cl. 123-491.000.
Fujimura, Ikuo; Nakada, Kimiaki; and Tanaka, Tsutomu, to Fuji Photo Film Co., Ltd. Photographic film package. 4,766,451, Cl. 354-64.000
Fujita, Hironori: *See—*
Arai, Tohru; Fujita, Hironori; Endo, Junji; Sugimoto, Yoshihiko; and Ohta, Yukio, 4,765,847, Cl. 148-15.500.
Fujitsu Limited: *See—*
Abe, Akihiro; and Kamata, Akinori, 4,766,446, Cl. 346-136.000
Kawashima, Syoichiro, 4,766,571, Cl. 365-189.000.
Kobayashi, Kenichi, 4,765,744, Cl. 356-398.000.
Mori, Masakazu; Tsuda, Takashi; and Yamane, Kazuo, 4,765,735, Cl. 356-121.000
Ogawa, Yasunori; Tsutsumi, Kenji; Tanaka, Yasuo; and Shimozono, Ryoji, 4,766,594, Cl. 371-22.000.
Takemae, Yoshihiro, 4,766,573, Cl. 365-222.000
Fujiwara, Haruyoshi, to Mitsubishi Jukogyo Jabushiki Kaisha. Flow restraining elements in the headbox of a paper machine. 4,765,868, Cl 162-343.000
Fujiyama, Masaaki: *See—*
Miyoshi, Takahito; and Fujiyama, Masaaki, 4,766,511, Cl. 360-132.000
Fukada, Seiichiro: *See—*
Marui, Tomohiro; Kaneko, Tadao; Ao, Kazuo; Shimono, Toshio; and Fukada, Seiichiro, 4,765,547, Cl. 241-40.000
Fukasawa, Hiromichi, to Terumo Kabushiki Kaisha. Blood circulating circuit for membrane-type artificial lung, and reservoir for use in blood circulating circuit. 4,765,959, Cl. 422-48.000
Fukuda, Michio; Fudo, Eiji; Tani, Koichi; and Kobayashi, Haruhito, to Sumitomo Electric Industries, Ltd.; and Sumitomo Wiring Systems. Method of fitting rubber stoppers on wires. 4,765,052, Cl. 29-450.000.
Fukuda, Moritoshi: *See—*
Iguchi, Tatsuya; Fukuhara, Kunihiro; Kadomiya, Tsutomu; and Fukuda, Moritoshi, 4,765,036, Cl. 24-289.000
Fukuhara, Kunihiro: *See—*
Iguchi, Tatsuya; Fukuhara, Kunihiro; Kadomiya, Tsutomu; and Fukuda, Moritoshi, 4,765,036, Cl. 24-289.000
Fukumoto, Atsushi; Ohsato, Kiyoshi; and Oka, Michio, to Sony Corporation. Tracking error detecting apparatus for optical head. 4,766,585, Cl. 369-46.000
Fukumoto, Takaaki: *See—*
Mukogawa, Yasukazu; Tamura, Katsuhiko; and Fukumoto, Takaaki, 4,765,963, Cl. 422-68.000
Fukumura, Masaaki: *See—*
Nakano, Harumi; Shinmura, Yoshihito; Fukumura, Masaaki; and Kuwabara, Nobuaki, 4,766,529, Cl. 364-513.500
Fukushima, Koji; and Sasaki, Isamu, to Diesel Kiki Co., Ltd.; and Mitoyo Industries Co., Ltd. Union joint assembly. 4,765,661, Cl. 285-382.500
Fukushima, Masanori: *See—*
Noyori, Ryoji; Fukushima, Masanori; Kurozumi, Seizi; and Sugiura, Satoshi, 4,766,147, Cl. 514-530.000
Fukuzawa, Takeshi: *See—*
Hibuno, Yoshitaka; Fukuzawa, Takeshi; and Totsune, Atsushi, 4,765,305, Cl. 123-589.000
Fuller, D. Kirk, to Fuller, D. Kirk; and Felkay, T., part interest to each. Rightable catamaran. 4,765,269, Cl. 114-61.000
Fuller, John R. C.: *See—*
Croucher, Melvin D.; Wong, Raymond W.; Duff, James M.; Hair, Michael L.; and Fuller, John R. C., 4,766,049, Cl. 430-115.000
Fuller, Jonathan A.: *See—*
Mander, Philip E.; and Fuller, Jonathan A., 4,765,648, Cl 280-707.000
Fuller, Milton E.; and Fletcher, Gary S., Jr., to Solid State Farms, Inc. Radio frequency spectroscopy apparatus and method using multiple frequency waveforms. 4,765,179, Cl. 73-53.000.
Fung, Alexander P.: *See—*
Orvik, Jon A.; Fung, Alexander P.; Love, Jim; and Dietsche, Thomas J., 4,766,219, Cl. 546-286.000
Furukawa Electric Co., Ltd., The: *See—*
Ozaki, Masanori; Ohishi, Isamu; Sato, Normasa; and Tanaka, Yasuzou, 4,765,055, Cl. 29-599.000
Furukawa, Yutaka: *See—*
Matsuo, Masashi; Furukawa, Yutaka; Iwamoto, Toshio; and Kawakami, Shoichi, 4,765,713, Cl. 350-96.340.
Furutaka, Yasuhisa; Yamana, Masayuki; and Honda, Tsunetoshi, to Daikin Industries, Ltd. Fluorine-containing compounds, and their preparation and use. 4,766,238, Cl. 560-227.000.
Fused Kontacts of Chicago, Inc.: *See—*
Tsuetaki, George F.; and Ono, Hidehiko, 4,766,189, Cl 526-245.000
Fushimi, Hitoshi: *See—*
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, 4,766,590, Cl 370-56.000
Futaba Denshi Kogyo Kabushiki Kaisha: *See—*
Morimoto, Kiyoshi; and Toki, Hitoshi, 4,766,526, Cl. 362-255.000
Futakata, Takashi, to Tokyo Electric Co., Ltd. Label printer. 4,765,765, Cl. 400-614.000
Fuzesi, Stephen; and Brown, Robert W., to Olin Corporation. Urethane-containing oxazolidone-modified isocyanurate foams and a composition and method for their production. 4,766,158, Cl 521-110.000
Gabelli, Antonio, to SKF Industrial Trading and Development Co., B.V. Rolling bearing. 4,765,756, Cl. 384-133.000
Gaczi, Peter J., to Varian Associates, Inc. Low pressure chemical vapor deposition of metal silicide. 4,766,006, Cl. 427-38.000
GAF Corporation: *See—*
Vara, Fulvio J.; Anderson, Lowell R.; and Dougherty, James A., 4,766,252, Cl. 568-616.000.
Gagne, Peter H.: *See—*
Morrisroe, Peter J.; Zander, Andrew T.; Manning, David C.; and Gagne, Peter H., 4,766,287, Cl. 219-121.520.
Gaida, Wolfram: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,766,129, Cl 514-300.000
Gainer, Robert E.: *See—*
Iyer, Natraj C.; Male, Alan T.; Cherry, Sidney J.; and Gainer, Robert E., 4,766,274, Cl. 200-144.00B
Gallagher, Thomas F.; Janik, Gary R.; and Carlisle, Clinton B., to Electric Power Research Institute. Frequency modulation spectroscopy using dual frequency modulation and detection. 4,765,736, Cl 356-300.000
Gallard, Henry: *See—*
Allard, Vincent L.; and Gallard, Henry, 4,765,553, Cl. 242-25.00A
Gambino, James J. Roll paper dispenser. 4,765,555, Cl. 242-55.530
Game, Francois. Tennis racquet. 4,765,621, Cl. 273-73.00E
Gang, Henry. Automated consecutive reaction analyzer. 4,766,078, Cl. 435-291.000
Ganter, Bernhard. Spring biased lockable safety handle for turning a hand control wheel. 4,765,023, Cl. 16-112.000
GAO Gesellschaft fur Automation und Organisation mbH: *See—*
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen, Lob, Erwin; Lass, Joseph; and Kaule, Wittich, 4,765,656, Cl 283-70.000

VOL 1093 ISS 4 AG 23 1988 UMI

Lass, Joseph; Merkle, Hansjurgen; Becker, Wolfgang; Herget, Werner; and Lob, Erwin, 4,766,026, Cl. 428-203.000

Garabedian, George: *See—*
DeLuca, Robert A.; and Garabedian, George, 4,765,948, Cl. 376-404.000.

Gardell, Dale W.; and Marks, Larry D., to Whirlpool Corporation. Dishwasher door with interlocking molded console and molded inner door. 4,765,697, Cl. 312-229.000.

Garrood, Stephen T.: *See—*
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., 4,764,998, Cl. 4-502.000

Gartner, Hartmut: *See—*
Blaha, Erich; and Gartner, Hartmut, 4,765,336, Cl. 128-395.000

Gates Energy Products, Inc.: *See—*
Waldrop, Sammy E., 4,765,799, Cl. 29-623.500.

Gates Formed-Fibre Products, Inc.: *See—*
Allen, Richard G., 4,765,671, Cl. 296-39.00R.

Gatti, Luigi: *See—*
Mutti, Fabio; and Gatti, Luigi, 4,765,368, Cl. 137-625.400.

Gattuso, Todd R.; Koehlert, Kenneth C.; Neville, Matthew; Reznek, Steven R.; and Senecal, Joseph A., to Cabot Corporation. High temperature process for producing fine magnetic particles of M-phase structure. 4,765,920, Cl. 252-62.580.

Gauer, Gary W.: *See—*
Yavorsky, William M.; and Gauer, Gary W., 4,765,507, Cl. 220-414.000.

Gaul, David J., to Owens-Corning Fiberglas Corporation. Corrosion resistant cobalt-base alloy containing hafnium. 4,765,817, Cl 65-8.000.

Gaumer, Lee S., Jr.; and Winters, Arthur R., Jr., to Air Products and Chemicals, Inc. Hydrogen liquefaction using a dense fluid expander and neon as a precoolant refrigerant. 4,765,813, Cl. 62-20.000.

Gaydon Technology Limited: *See—*
Mander, Philip E.; and Fuller, Jonathan A., 4,765,648, Cl. 280-707.000

Gealer, Roy L.; and Karsten, Hans K., to Ford Motor Company. Silicon etch rate enhancement. 4,765,865, Cl. 156-647.000.

Gebauer, Helmut: *See—*
Eberle, Hans-Jurgen; and Gebauer, Helmut, 4,766,107, Cl. 512-13.000

Gebr. Fleischmann: *See—*
Diller, Hans, 4,765,496, Cl. 213-75.0TC.

Gegan, Michael J., to United States of America, Navy. Triple frequency U-slot microstrip antenna. 4,766,440, Cl. 343-700.0MS.

Geisert, Gunter: *See—*
Popp, Franz W.; and Geisert, Gunter, 4,765,525, Cl. 228-9.000

Geisser, Carl. Tool for mounting cable end sleeves. 4,765,176, Cl. 72-410.000

Gemmell, Robert J. Draught excluder. 4,765,094, Cl. 49-475.000.

Genchev, Lyubomir N.; Kafedjiev, Iliya C.; Klyamov, Kostadin S.; and Atanasov, Stefan G., to S O "Bulgarplod" . Apparatus for vacuum peeling of fruits and vegetables. 4,765,233, Cl. 99-472.000.

Geneix, Catherine; Lafourcade, Suzanne L.; and Ribereau-Gayon, Pascal, to Universite de Bordeaux II. Stimulation of alcoholic fermentation by adsorption of toxic substances with cell walls. 4,765,992, Cl. 426-15.000

Genentech, Inc.: *See—*
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 4,766,075, Cl. 435-240.200

General Computer Corporation: *See—*
Pilarczyk, Richard R., 4,766,542, Cl. 364-413.000

General Dynamics Land Systems, Inc.: *See—*
Cory, Robert M., 4,765,694, Cl. 305-35.00R.
Cory, Robert M., 4,765,695, Cl. 305-56.000.

General Electric Company: *See—*
Ahner, David J.; Sheldon, Richard C.; and Oliva, Joseph J., 4,765,132, Cl. 60-39.020.
Bigelow, Warren B., Jr., 4,766,277, Cl. 200-293.000.
Dooley, Eddie W., 4,765,698, Cl. 312-248.000.
Faler, Gary R.; and Cipullo, Michael J., 4,766,254, Cl. 568-724.000.
Gillette, Glynn G.; Stewart, Roger G.; and Fischer, John T., 4,766,430, Cl. 340-793.000
Harbeke, Guenther; and Jastrzebski, Lubomir L., 4,766,317, Cl. 250-358.100
Henkes, John L., 4,765,718, Cl. 350-345.000
Lambert, Thomas W.; and Belanger, Barry F., 4,766,503, Cl. 358-332.000
Noujaim, Sharbel E., 4,766,416, Cl. 340-347.0AD.
Pusateri, Vincent J., 4,766,361, Cl. 320-2.000.
Smeltzer, Ronald K.; Goodman, Alvin M.; and Schnable, George L., 4,766,482, Cl. 357-23.700
Takekoshi, Tohru; and Anderson, Patricia P., 4,766,199, Cl. 528-128.000.

General Foods Corporation: *See—*
Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,766,246, Cl. 560-117.000

General Motors Corporation: *See—*
Buchanan, Harry C., Jr., 4,765,018, Cl. 15-250.130
Frabotta, Peter W.; and Lang, Steven C., 4,765,673, Cl. 296-93.000.
Goding, David J., 4,765,250, Cl. 105-166.000.
Goubeaux, Carl E.; and Flory, Donald M., 4,765,659, Cl 285-215.000
Malik, Marvin J., 4,765,357, Cl. 137-195.000
Miller, John W.; Peterson, Linn A.; and Kingsley, Charles A., 4,765,601, Cl. 267-140.100.
Sherwood, Carl H.; Fornuto, Joseph; and Giacomazzi, Roy A., 4,765,504, Cl. 220-86.00R.
Simin, Gerald L., 4,765,346, Cl. 131-231.000
Yonker, John F., 4,765,427, Cl. 180-143.000

Genetics Institute, Inc.: *See—*
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000.
Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., 4,766,064, Cl. 435-6.000

Gentilman, Richard L.: *See—*
Saunders, Kenneth J.; and Gentilman, Richard L., 4,765,931, Cl. 252-584.000

Geoffroy-Dechaume, Vincent; and De Capele, Francois, to I. T. I. Enterprises Ltd. Method of making a sandwich material with internal undulations and protective layers. 4,765,855, Cl. 156-205.000

Georg Spiess GmbH: *See—*
Marass, Josef, 4,765,606, Cl. 271-157.000.

Geoservices: *See—*
Issenmann, Olivier, 4,766,442, Cl. 343-719.000.

Gergen, Joseph P.: *See—*
Thompson, Charles D.; and Gergen, Joseph P., 4,766,561, Cl. 364-724.000

Gericke, Rolf: *See—*
Juraszyk, Horst; Gericke, Rolf; Lues, Inge; Bergmann, Rolf; and Schmitges, Claus J., 4,766,213, Cl. 544-127.000.

Ghosh-Dastidar, Pradip, to Beatrice Companies, Inc. Method for isolation of recombinant polypeptides in biologically active forms. 4,766,205, Cl. 530-402.000.

Giacomazzi, Roy A.: *See—*
Sherwood, Carl H.; Fornuto, Joseph; and Giacomazzi, Roy A., 4,765,504, Cl. 220-86.00R.

Gibbs & Hill, Inc.: *See—*
Nakhamkin, Michael, 4,765,142, Cl. 60-652.000

Gillette Company, The: *See—*
Iovanni, Carl F.; and Biesel, Duane M., 4,765,975, Cl. 424-70.000

Gillette, Glynn G.; Stewart, Roger G.; and Fischer, John T., to General Electric Company. Display device drive circuit. 4,766,430, Cl. 340-793.000

Givaudan Corporation: *See—*
Rohr, Martin; Potter, Richard H.; and Naipawer, Richard E., 4,766,002, Cl. 426-538.000.

Glass, Samuel W., III; Griffith, John C.; Brew, John D.; England, Charles C., Jr.; and Phillips, John M., to Babcock & Wilcox Company, The. Fuel channel flatness measurement. 4,766,374, Cl. 324-207.000.

Glass, Walter, to American Louver Company. Flanged louver construction. 4,766,527, Cl. 362-354.000.

Glidden Company, The: *See—*
Miller, Susan M.; Craun, Gary P.; and Toman, Perry A., 4,766,177, Cl. 525-131.000

Glinka, Jerome: *See—*
Buck, Keith T.; Boeing, Anthony J.; Dolfini, Joseph E.; and Glinka, Jerome, 4,766,249, Cl. 568-433.000

Glomb, Walter L., Jr., to United Technologies Corporation. Demagnetization compensated magnetostrictive actuator. 4,766,357, Cl. 318-118.000

Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kouzou; and Urayama, Norihisa, to Pioneer Electronic Corporation. Information reproducing system with improved response to intermittent power supply. 4,766,580, Cl. 369-21.000.

Gobrecht, Jens; and Bayerer, Reinhold, to Brown, Boveri & Cie AG. Power semiconductor module. 4,766,481, Cl. 357-80.000

Gobush, William, to Acushnet Company. Golf ball. 4,765,626, Cl. 273-232.000

Goda, Yoshimasa: *See—*
Oinoue, Hiroshi; and Goda, Yoshimasa, 4,766,583, Cl. 369-45.000

Goddard, Errol D.: *See—*
Ananthapadmanabhan, Kavssery P.; and Goddard, Errol D., 4,765,834, Cl. 75-108.000

Goddeau, David, to Proconics International, Inc. Apparatus for aligning circular objects. 4,765,793, Cl. 414-416.000.

Goding, David J., to General Motors Corporation. Locomotive and motorized self-steering radial truck therefor. 4,765,250, Cl. 105-166.000

Goebel, Franz: *See—*
Batson, David C.; Barth, Ronald E.; Goebel, Franz; and Harris, Peter B., 4,765,798, Cl. 29-623.100.

Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., to Genentech, Inc. Human tissue plasminogen activator. 4,766,075, Cl. 435-240.200.

Goegelman, Robert T.; Inamine, Edward S.; and White, Raymond F., to Merck & Co. Inc. Anthelmintic fermentation products of a microorganism. 4,766,112, Cl. 514-30.000.

Goel, Anil B.; and DeLong, Teresa A., to Ashland Oil, Inc. Accelerators for the cure of epoxy resins with amine curing agents. 4,766,196, Cl. 528-89.000

Goel, Anil B., to Ashland Oil Inc. Hydroxy alkyl amide thio ether composition from bis-bicyclic amide acetal and polythiol. 4,766,201, Cl. 528-374.000

Gold Star Co., Ltd.: *See—*
Kim, Woo J., 4,766,493, Cl. 358-139.000.

Golder, Michael D.; and Gromelski, Stanley J., Jr. Stabilized thermoplastic elastomer. 4,766,164, Cl. 524-100.000.

Goldey, Ian C.: *See—*
Wallace, Robert S.; Goldey, Ian C.; and Nelson, Terri L., 4,765,581, Cl. 248-311.200.

Goldman, Ilan, to Toot (Engineering) Ltd. Reinforced slab structure for the assembly of safes, and method of making and use thereof. 4,765,254, Cl. 109-85.000

Goldstar Co., Ltd.: *See—*
Park, Jong-In, 4,766,279, Cl. 219-10.55B.

Goller, Ernst; and Dieringer, Jochen, to H. Stoll GmbH & Co. Dust extraction appliance for flat knitting machines. 4,765,158, Cl. 66-168.000

Gollomp, Bernard P., to Allied-Signal Inc. Fault diagnostic system incorporating behavior models. 4,766,595, Cl. 371-23.000

Gombos, Thomas M.; and Risa, Kristen, to Wheelabrator Air Pollution Control Inc. Electrostatic precipitator plate spacer and method of installing same. 4,765,802, Cl. 55-2.000.

Gomes, Gilbert S.: *See—*
Dreisbach, David D.; Gomes, Gilbert S.; and Schuster, Michael A., 4,765,867, Cl. 162-72.000

Gons, Johan: *See—*
Buys, Henricus C. W. M.; Naaktgeboren, Aart J.; and Gons, Johan, 4,765,898, Cl. 210-500.410.

Gonzalez, Cesar, to Cessna Aircraft Company, The. Hybrid internal combustion reciprocating engine. 4,765,293, Cl. 123-275.000.

Goodman, Alvin M.: *See—*
Smeltzer, Ronald K.; Goodman, Alvin M.; and Schnable, George L., 4,766,482, Cl. 357-23.700.

Goodyear Tire & Rubber Company, The: *See—*
Cady, John M., 4,765,358, Cl. 137-223.000.

Gordon, Travis H.: *See—*
Baral, Elliott; Dharmapalan, Jonathan D.; Gordon, Travis H.; and Richardson, Ross M., 4,766,592, Cl. 370-62.000

Gorski, Paul T.: *See—*
Heshmat, Hooshang; and Gorski, Paul T., 4,765,760, Cl. 384-398.000.

Goshi, Hiroo: *See—*
Komoto, Haruo; Hamada, Shigeharu; Shiinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl 204-211.000

Goto, Yasuo: *See—*
Kawai, Nobuyuki; and Goto, Yasuo, 4,766,466, Cl. 355-57.000.

Goubeaux, Carl E.; and Flory, Donald M., to General Motors Corporation. High pressure tube attachment mechanism. 4,765,659, Cl. 285-215.000

Goudy, Paul R., Jr., to Autotrol Corporation. Mixer charger reaction control system and method of affecting a chemical reaction. 4,765,965, Cl. 422-186.000.

Gozzo, Franco: *See—*
Colle, Roberto; Gozzo, Franco; Camaggi, Giovanni; Mirenna, Luigi; and Zagni, Angela, 4,766,139, Cl. 514-383.000.

Graber, Kurt: *See—*
Schrag, Thomas G.; Hood, Charles F.; Morton, Scott A.; and Graber, Kurt, 4,765,235, Cl. 100-3.000.

Graham, Barry D. Dosimeter security packaging. 4,765,468, Cl. 206-305.000

Grain, Claude; and Jammot, Fernand, to Sanofi. Preparation of 2-alkyl-3-(4-hydroxybenzoyl)benzofuran. 4,766,223, Cl. 549-468.000

Grancini, Giancarlo: *See—*
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,137, Cl. 514-371.000.
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,138, Cl. 514-371.000.

Grant, John W.: *See—*
Wells, John R.; and Grant, John W., 4,765,899, Cl. 210-519.000

Gras, Georges, to Rhone-Poulenc Agrochimie. Process for the preparation of optically active aryloxyalkanoic acid compounds. 4,766,220, Cl. 546-302.000

Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., to Standard Oil Company, The. Production of unsaturated nitriles using catalysts containing boron, gallium or indium. 4,766,232, Cl. 558-324.000

Gravley, Mark L.; and Henderson, E. Webb, to Phillips Petroleum Company. Carbon black reactor having a reactor throat. 4,765,964, Cl. 422-156.000.

Gray, David R.; and Sleeman, Michael J., to Bowthorpe Hellermann Limited. Heat-shrinkable article. 4,766,267, Cl. 174-36.000.

Gray, George G.: *See—*
Ehrlich, Stanley L.; and Gray, George G., 4,766,575, Cl 367-153.000

Greene, George H.: *See—*
Ostrozynski, Robert L.; Greene, George H.; and Merrifield, James H., 4,766,181, Cl. 428-395.000.

Gregory, Steven D. Apparatus and method for raising and supporting a building. 4,765,777, Cl. 405-230.000.

Griffith, John C.: *See—*
Glass, Samuel W., III; Griffith, John C.; Brew, John D.; England, Charles C., Jr.; and Phillips, John M., 4,766,374, Cl. 324-207.000

Griffith, Ronald C.: *See—*
Davidson, Thomas A.; and Griffith, Ronald C., 4,766,131, Cl. 514-307.000

Grimes, Frank H., to Westinghouse Electric Corp. Fixture for the window of a magnetic core. 4,766,407, Cl. 336-196.000.

Grimm, Helmut: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B

Grimm, Rainer; Bohm, Horst, Schlapp, Albert; Hattass, Rainer; and Federmann, Dieter, to Rockwell-Golde GmbH. Rigid lid for an automobile roof. 4,765,676, Cl. 296-216.000

Grocott, Arend L.: *See—*
Noakes, Timothy J.; Hewitt, Nevil E.; Grocott, Arend L.; and Franks, Philip C. W., 4,765,539, Cl. 239-3.000

Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, to Bayer Aktiengesellschaft. Process for the in situ production of urea group-containing isocyanates in polyols, dispersions or solutions resulting therefrom and use thereof. 4,766,239, Cl. 560-351.000

Grohmann, Paul, to Messer. Griesheim GmbH. Process for autogenic flame cutting with oxygen. 4,765,846, Cl. 148-9.00R

Grollier, Jean F.; Fourcadier, Chantal; and Dubief, Claude, to L'Oreal Method for combating the greasy appearance of hair. 4,765,976, Cl. 424-70.000

Gromelski, Stanley J., Jr.: *See—*
Golder, Michael D.; and Gromelski, Stanley J., Jr., 4,766,164, Cl 524-100.000

Groos, Heinrich, to Berkenhoff GmbH. Wire electrode for the spark erosive cutting. 4,766,280, Cl. 219-69.00W.

Grossmann, Manfred: *See—*
Deppendorf, Hans-Dieter; and Grossmann, Manfred, 4,765,024, Cl. 16-251.000

Groves, Keith N. Athletic glove pocket former and method for using the same. 4,765,519, Cl. 223-78.000

Groves, Keith N. Portable seat for baseball catchers positioned behind home plate. 4,765,617, Cl. 273-25.000.

Grujanac, Peter, to Lakeside Equipment Corporation. Moving bridge filter - telescoping floating pot skimmer. 4,765,889, Cl. 210-121.000

Grumman Aerospace Corporation: *See—*
Schmidt, Charles J.; and Albanese, Victor J., 4,766,437, Cl 342-368.000

GTE Government Systems Corporation: *See—*
Batson, David C.; Barth, Ronald E.; Goebel, Franz; and Harris, Peter B., 4,765,798, Cl. 29-623.100

GTE Laboratories Incorporated: *See—*
Olshansky, Robert, 4,766,597, Cl. 372-44.000
Rourke, William J.; Lai, Wen-Chao; and Natansohn, Samuel, 4,765,909, Cl. 210-672.000
Seymour, Robert J.; and Stegeman, George I., 4,765,705, Cl 350-96.150

GTE Products Corporation: *See—*
Berry, William L.; Coney, Robert S.; and Senft, Stephen P., 4,766,339, Cl. 313-276.000.
English, George J.; Rothwell, Harold L., Jr.; and Beschle, Mark, 4,766,348, Cl. 313-631.000.
Kemp, Preston B., Jr., 4,765,951, Cl. 419-47.000
Kemp, Preston B., Jr., 4,765,952, Cl. 419-47.000.
Mizuhara, Howard, 4,766,041, Cl. 428-606.000
Shaffer, John W., 4,765,929, Cl. 252-511.000

GTE Valenite Corporation: *See—*
Adams, Wayne F., 4,765,686, Cl. 299-81.000

Guins, Sergei G., to Kaser Associates, Inc. Railway car truck with multiple effective spring rates. 4,765,251, Cl. 105-197.050

Gulas, Hans-Jurgen; Horak, Josef; Sulzbacher, Horst; and Papst, Gero Method of protecting a coal gasifier part from attack by liquid slags 4,766,098, Cl. 501-101.000

Gunkel, Louis T.; and Crosby, John, to FMC Corporation. Process for preparing 2-(alkylbenzoyl)benzoic acid. 4,766,240, Cl. 562-460.000

Gunness, Donald. Flail-type honeycomb decapper and method 4,765,008, Cl. 6-12.00A.

Gunthrpe, Gary E.: *See—*
Deagle, William R.; and Gunthrpe, Gary E., 4,765,310, Cl. 128-1.500

Gunze Limited: *See—*
Okada, Toshihiko, 4,765,157, Cl. 66-151.000

Gurtner, Bernard: *See—*
Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, 4,766,262, Cl. 570-211.000

Gustafsson, Thomas: *See—*
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, 4,765,566, Cl 244-3.230

Gutman, Meyer M.; and Lash, Christopher N., to Tech Serv, Inc. Helicopter target. 4,765,567, Cl. 244-17.110.

Guy, Jack J.: *See—*
Schmidt, Ferenc J.; Maughan, P. Kevin; and Guy, Jack J., 4,765,335, Cl. 128-326.000

Guzzon, Giorgio, to Officine Meccaniche Vimercati S.p.A. Sealed push button switch. 4,766,272, Cl. 200-302.200

Gvozdic, Nedeljko V.; Hilty, Terrence K.; and Saam, John C., to Dow Corning Corporation. Silicone polymer termination. 4,766,191, Cl 528-14.000

Gvozdic, Nedeljko V., to Dow Corning Corporation. Silicone polymer termination. 4,766,192, Cl. 528-14.000

H.E. Butt Grocery Company: *See—*
Davis, Malcolm H.; Janes, Kent A.; Kleffner, Daniel J.; Seltzer, William P.; and Spence, Hugh F., 4,766,295, Cl. 235-383.000

H. Stoll GmbH & Co.: *See—*
Goller, Ernst; and Dieringer, Jochen, 4,765,158, Cl. 66-168.000.

Haacker, Ingo; and Landgraber, Friedhelm, to Uhde GmbH. Method and plant for the condensation of excess steam. 4,765,399, Cl 165-110.000

haacon hebetechnik GmbH: *See—*
Riedl, Reinhold, and Lazarus, Conrad, 4,765,594, Cl. 254-45.000

VOL 1093 ISS 4 AG 23 1988 UMI

Haas, Peter: *See—*
Weber, Christian; and Haas, Peter, 4,766,172, Cl. 524-783.000
Habecker, John W.: *See—*
Raab, Andrew F.; and Habecker, John W., 4,766,278, Cl. 200-327.000
Hack, James R.; Masson, Bernard V.; and Beegan, David T., to Sanders Associates, Inc. Electrostatic printhead method and apparatus. 4,766,448, Cl. 346-150.000
Haehnel, Rudolf H.: *See—*
Iannucci, Vincent A.; and Haehnel, Rudolf H., 4,765,220, Cl 87-57.000.
Haerle, James G.: *See—*
Banach, Frank G.; Haerle, James G.; and Tait, David S., 4,766,497, Cl. 358-188.000
Haffer, Gregor: *See—*
Sauer, Gerhard; Haffer, Gregor; Wachtel, Helmut; Schneider, Herbert H.; and Kehr, Wolfgang, 4,766,128, Cl. 514-288.000.
Hagemann, Hermann: *See—*
Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,765,824, Cl. 71-92.000.
Hagenfeldt, Carl P. U.; Bernhardsson, Sven-Olof; and Lagerberg, Erik V. S., to Santrade Limited. High nitrogen containing duplex stainless steel having high corrosion resistance and good structure stability. 4,765,953, Cl. 420-65.000.
Haghiri, Mohammad-Reza, to U.S. Philips Corp. Method of and device for estimating motion in a sequence of pictures. 4,766,490, Cl. 358-105.000.
Hagiwara, Haruo: *See—*
Maeda, Akira; and Hagiwara, Haruo, 4,765,159, Cl. 68-12.00R.
Hahnke, Manfred; Ong, Sierling; and Hohmann, Kurt, to Hoechst Aktiengesellschaft. Storable formulations of cationic dyes with oxidizing agent as stabilizer. 4,765,797, Cl. 8-654.000.
Hair, Michael L.: *See—*
Croucher, Melvin D.; Wong, Raymond W.; Duff, James M.; Hair, Michael L.; and Fuller, John R. C., 4,766,049, Cl. 430-115.000.
Hajek, Zdenek: *See—*
Emmer, Ivan; Hajek, Zdenek; and Repa, Petr, 4,765,870, Cl. 204-129.100.
Hall, Antony H. P.: *See—*
Bennett, Ian C.; and Hall, Antony H. P., 4,766,264, Cl. 585-412.000.
Hall, Kenneth W.: *See—*
Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., 4,765,543, Cl. 239-533.200.
Hall, Meryl M., Sr. Fused trolley switch. 4,766,269, Cl. 191-39.000
Hallberg, Jean E. Method and apparatus for mixing fluids. 4,765,356, Cl. 137-7.090.
Hallez, Charles P., to Diamant Boart Societe Anonyme. Surface-dressing rollertool. 4,765,097, Cl. 51-90.000.
Hama, Hiroaki: *See—*
Shiga, Takashi; Tani, Hidekazu; Hama, Hiroaki; and Iijima, Hitoshi, 4,765,149, Cl. 62-174.000.
Hamada, Masataka: *See—*
Ishida, Tokuji; Kozakai, Katsumi; and Hamada, Masataka, 4,766,302, Cl. 250-201.000
Hamada, Mitsuo: *See—*
Honma, Hiroshi; Hamada, Mitsuo; and Kobayashi, Hideki, 4,766,170, Cl. 524-500.000.
Hamada, Shigeharu: *See—*
Komoto, Haruo; Hamada, Shigeharu; Shiinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl. 204-211.000
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, to Hitachi, Ltd. Loop transmission system having plural stations connected in a variable order. 4,766,590, Cl. 370-56.000
Hamada, Yoshitaka, to Mips Co., Ltd. Integrated circuit card having memory errasable with ultraviolet ray. 4,766,480, Cl. 357-74.000.
Hamaguri, Kenji: *See—*
Sakai, Takao; and Hamaguri, Kenji, 4,765,340, Cl. 128-633.000.
Hamakawa, Yoshihiro: *See—*
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, 4,766,039, Cl. 428-469.000
Hamamoto, Takashi: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Munakata, Hirohide; Tomita, Yoshinori; and Hamamoto, Takashi, 4,766,047, Cl. 430-19.000.
Hamamoto, Toshikazu; Aoi, Motojirou; Yoshida, Kozaburo; and Toda, Yasuhiko, to Ube Industries, Ltd. Resin composition for sealing electronic parts, and hydration-resistant magnesia powder and process for preparation thereof. 4,766,162, Cl. 523-440.000.
Hamano, Toshikatsu; and Matsumura, Yukio, to Asahi Glass Company, Ltd. Method for treating a plating solution. 4,765,872, Cl 204-130.000
Hamblen, Elic S. Self-sharpening mower blade. 4,765,127, Cl. 56-295.000
Hammond, John A., to Tektronix, Inc. Constant carrier watchdog 4,766,601, Cl. 375-59.000.
Hamrin, Torbjorn. Lifting hook. 4,765,667, Cl. 294-82.330.
Hanazono, Masanobu: *See—*
Imura, Midori; Morijiri, Makoto; Hanazono, Masanobu; and Kazui, Shinichi, 4,766,009, Cl. 427-53.100.
Hanba, Norio: *See—*
Kobayashi, Masaaki; Hanba, Norio; Tanaka, Akira; and Abe, Tsunehiko, 4,765,634, Cl. 277-235.00B.
Handa, Noboru; and Tanaka, Takahiko, to Asmo Co., Ltd.; and Mazda Co., Ltd. Device for opening and closing a vehicle top. 4,766,356, Cl. 318-55.000.
Hanita Lenses, a Limited Partnership: *See—*
Porat, Menachem; and Rabinovich, Ofer, 4,765,728, Cl. 351-160.00R.
Hank, Dietrich; Skiera, Heinz; and Zimmermann, Gerd, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Arrangement for normalized indication of printing ink supply having roller with adjustable speed. 4,765,241, Cl. 101-350.000.
Hanna, Junichi: *See—*
Ohtoshi, Hirokazu; Hanna, Junichi; and Shimizu, Isamu, 4,766,091, Cl. 437-108.000
Hanson, Harry T.; and Sapp, John B., Jr., to Hoechst Celanese Corporation. Synthesis of substituted aryl sulfides. 4,766,242, Cl. 564-154.000.
Hanson, Ray, to Commander Business Furniture, Inc. File hanger. 4,765,490, Cl. 211-46.000.
Hanssler, Gerd: *See—*
Fest, Christa; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,766,136, Cl. 514-357.000
Harada, Yoshihito: *See—*
Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, 4,766,452, Cl. 354-173.100.
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, to Hitachi, Ltd.; and Kansai Electric Power Co., The. Induction generator/motor system. 4,766,360, Cl. 318-732.000.
Harbeke, Guenther; and Jastrzebski, Lubomir L., to General Electric Company. Optical reflectance method of examining a SIMOX article. 4,766,317, Cl. 250-358.100.
Harder, Wolfgang: *See—*
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.
Harney, Donald E. Dual flush mechanism. 4,764,995, Cl. 4-325.000.
Harper, Kevin; and Watson, William J. W., to British Petroleum Company p.l.c., The. Process for making thiophene and furfurane polymers. 4,766,198, Cl. 528-377.000.
Harper, Robert; and Rousseau, Joseph L., to Raytheon Company. Method of manufacture of helical waveguide structure for traveling wave tubes. 4,765,056, Cl. 29-600.000.
Harper, Robert J., Jr.; and Beninate, John V., to United States of America, Agriculture. Process for flameproofing cellulosic fibers prior to dyeing. 4,765,796, Cl. 8-115.700.
Harris, Norman; Rathmell, Colin; Turner, Keith; and Scarlett, John, to Davy McKee (London) Limited. Process for the production of a dialkyl maleate. 4,765,869, Cl. 203-28.000.
Harris, Peter B.: *See—*
Batson, David C.; Barth, Ronald E.; Goebel, Franz; and Harris, Peter B., 4,765,798, Cl. 29-623.100.
Harris, Robert S., to Stant Inc. Delayed actuation fuel cap. 4,765,505, Cl. 220-288.000
Harris, William V.; and Land, Bruce R., to Cornell Research Foundation. Cell size measurements using light in flow cytometry and cell sorting. 4,765,737, Cl. 356-336.000
Hartel, Volker, to Metzeler Kautschuk GmbH. Pneumatic spring element. 4,765,600, Cl. 267-122.000.
Hartl, Werner, to Roller Bearing Company of America. Self-aligning spherical bushing means. 4,765,757, Cl. 384-213.000.
Hartley, Philip G.; Cheatley, Harvey W.; and Konop, Mitchell J., to Bunn-O-Matic Corporation. Brewing funnel with removable insert. 4,765,896, Cl. 210-474.000.
Haruta, Masahiro: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Munakata, Hirohide; Tomita, Yoshinori; and Hamamoto, Takashi, 4,766,047, Cl. 430-19.000.
Harvey, Edgar L.; and Lippencott, Joseph, to Telegenix, Inc. Gas discharge display panel having novel cathode assembly. 4,766,345, Cl. 313-518.000
Harwig, Hendrik A.: *See—*
Pelgrom, Marcellinus J. M.; Harwig, Hendrik A.; and Slotboom, Jan W., 4,766,332, Cl. 307-358.000.
Harwood, Jon W.; Rosa, Bruno A.; Van Blaircum, Bennie A.; and Kimmet, Mark S., to AP Industries, Inc. Stamp formed muffler with multiple low frequency resonating chambers. 4,765,437, Cl. 181-282.000
Hascher, Helmut: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B.
Hase, Hiroyuki; Yamashita, Ichiro; Tokuono, Shinya; and Wakamiya, Masayuki, to Matsushita Electric Industrial Co., Ltd. Torque sensor. 4,765,192, Cl. 73-862.360
Hashimoto, Hideaki, to Kabushiki Kaisha Toshiba. Robot hand including optical approach sensing apparatus. 4,766,322, Cl. 250-561.000.
Hashimoto, Hiroshi: *See—*
Shiraishi, Osamu; and Hashimoto, Hiroshi, 4,766,335, Cl. 307-592.000
Hastings, Otis H.; and Hastings, Otis M. Insulating apparatus and composite laminates employed therein. 4,766,420, Cl. 340-550.000.
Hastings, Otis M.: *See—*
Hastings, Otis H.; and Hastings, Otis M., 4,766,420, Cl. 340-550.000.
Hatada, Kenzo; and Matsunaga, Koji, to Matsushita Electric Industrial Co., Ltd. Display panel assembly having a plurality of film carrier tapes on each of which a semiconductor divice is mounted. 4,766,426, Cl. 340-719.000.
Hatano, Mikio: *See—*
Ishizuka, Masashi; Ando, Rokuro; Hatano, Mikio; and Tabata, Koji, 4,765,249, Cl. 105-10.000.
Hattass, Rainer: *See—*
Grimm, Rainer; Bohm, Horst; Schlapp, Albert; Hattass, Rainer; and Federmann, Dieter, 4,765,676, Cl. 296-216.000.
Hattori, Takemi, to Aisin Seiki Kabushiki Kaisha. Headrest apparatus. 4,765,683, Cl. 297-410.000.
Hattori, Yoshiyuki: *See—*
Imoto, Yuzo; Hattori, Yoshiyuki; Takei, Toshihiro; and Inagaki, Mitsuo, 4,765,140, Cl. 60-545.000.
Hauel, Norbert: *See—*
Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, 4,766,130, Cl 514-303.000.
Hauser, John J.; Stasko, William; and Pinnow, Kenneth E., to Crucible Materials Corporation. Wear and corrosion resistant articles made from pm alloyed irons. 4,765,836, Cl. 75-241.000.
Havera, Herbert J.; and Humphreys, John D., to Miles Inc. Thermostable Rhizomucor rennet having increased milk clotting activity. 4,766,074, Cl. 435-223.000.
Hay & Forage Industries: *See—*
Schrag, Thomas G.; Hood, Charles F.; Morton, Scott A.; and Graber, Kurt, 4,765,235, Cl. 100-3.000.
White, Bruce L., 4,765,236, Cl. 100-88.000.
Hayakawa, Nobuhiro; Miyata, Shigeru; Yamada, Tetsusho; and Yokota, Kazunori, to NGK Spark Plug Co., Ltd. Air/fuel ratio sensor. 4,765,880, Cl. 204-425.000.
Hayasaki, Koichi, to Nissan Motor Co., Ltd. Engine brake control for automatic transmission. 4,765,202, Cl. 74-868.000.
Hayashi, Chikahisa; Kawai, Makoto; Hirose, Yoshikazu; and Mizutani, Junichi, to Toyoda Gosei Co., Ltd. Communication structure in a steering wheel. 4,766,326, Cl. 307-10.00R.
Hayashi, Hiroshi: *See—*
Nakamura, Taku; Nakamura, Koichi; and Hayashi, Hiroshi, 4,766,052, Cl. 430-203.000.
Hayashi, Takao: *See—*
Yoshizumi, Kenichi; Matsubara, Akira; and Hayashi, Takao, 4,766,303, Cl. 250-205.000.
Hayashi, Yasutaka: *See—*
Ikemoto, Hiroyuki; Oowa, Nobutaka; Hayashi, Yasutaka; and Doi, Shunichi, 4,765,649, Cl. 280-707.000.
Hayman, Dennis J., to United States Brass Corporation. Faucet valve with diagonal sealing ring. 4,765,590, Cl. 251-310.000.
Hays, Dan A.: *See—*
Barker, Laurence S.; Hays, Dan A.; Redding, Thomas P.; and Wayman, William H., 4,766,457, Cl. 355-3.0DD.
Hayssen Manufacturing Company: *See—*
James, Robert C., 4,765,474, Cl. 206-391.000.
Hayward, Gilbert O., to Enigma Electronics Limited. Apparatus for recording the operation of a closure member. 4,766,419, Cl 340-545.000.
Heath, Clive A.; and Hibble, Barry F. Method of making filtercloths by induction heating. 4,765,859, Cl. 156-272.400.
Heckler & Koch GmbH: *See—*
Beckmann, Rudi, 4,765,223, Cl. 89-33.040.
Hedley, David J.; and David, Morgan W. A., to Sony Corporation. Video signal memories. 4,766,496, Cl. 358-160.000.
Heffner, David A.: *See—*
Ely, Douglas L.; and Heffner, David A., 4,765,902, Cl. 210-610.000.
Hefner, Robert E., Jr., to Dow Chemical Company, The. Polycarbonate modified vinyl esters. 4,766,184, Cl. 525-463.000
Heider, Joachim: *See—*
Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, 4,766,130, Cl. 514-303.000.
Heidrich, Jochen: *See—*
Willmund, Wolf-Dieter; Plapper, Jurgen; Pieper, Friedrich; and Heidrich, Jochen, 4,765,875, Cl. 204-157.790.
Heiland, Bernd. Housing, particularly for hand held devices. 4,766,519, Cl. 361-399.000
Heilman, Marlin S.: *See—*
Mower, Morton M.; and Heilman, Marlin S., 4,765,341, Cl. 128-785.000
Heim, Ulrich, to Dragerwerk AG. Gas testing vial. 4,765,962, Cl. 422-59.000
Heinermark, Tommy: *See—*
Hjelm, Anders; and Heinermark, Tommy, 4,766,501, Cl. 358-311.000
Heitmann, Kenneth; and Rench, Goeffrey B., to Racine Industries, Inc. Adjustable handle for applicator. 4,765,766, Cl. 401-48.000.
Heldeweg, Rudolf F.: *See—*
Van Es, Cornelis; Miles, Richard; Kalghatgi, Gautam T.; McArragher, John S.; and Heldeweg, Rudolf F., 4,765,800, Cl 44-62.000.
Hellat, Jaan; and Keller, Jakob, to BBC Brown, Boveri & Company, Ltd. Combustion chamber for gas turbines. 4,765,146, Cl. 60-746.000
Heller, Jorge, to Merck & Co., Inc. Polymers containing pendant acid functionalities and labile backbone bonds. 4,765,973, Cl. 424-486.000
Hellstrom, Ake A.; and Throm, James E., Jr., to AccuRay Corporation Apparatus and process for measuring physical parameters of sheet material. 4,766,315, Cl. 250-339.000.
Helterbrand, David L. Method for constructing a locking bar for use in a spare tire carrier. 4,765,051, Cl. 29-516.000.
Hemmann, Ronald S.; and Mercuno, Frank, to Coleco Industries, Inc. Doll or the like with motion sensing switch and switch therefor. 4,766,275, Cl. 200-153.00A
Henderson, E. Webb: *See—*
Gravley, Mark L.; and Henderson, E. Webb, 4,765,964, Cl 422-156.000
Hendricks, Robert W.: *See—*
DeLorenzo, Joseph T.; Levert, Francis E.; Robinson, James C and Hendricks, Robert W., 4,765,943, Cl. 376-154.000
Henkel Kommanditgesellschaft auf Aktien: *See—*
Willmund, Wolf-Dieter; Plapper, Jurgen; Pieper, Friedrich; and Heidrich, Jochen, 4,765,875, Cl. 204-157.790
Henkel Kommanditgesellshaft auf Aktien: *See—*
Simon, Helmut; and Deffner, Alexander, 4,766,071, Cl. 435-90.000
Henkes, John L., to General Electric Company. Collimated light source for liquid crystal display utilizing internally reflecting light pipe collimator with offset angle correction. 4,765,718, Cl. 350-345.000
Henmi, Naoya, to NEC Corporation. Method and apparatus of measuring frequency response in an optical receiving system. 4,765,738, Cl 356-349.000.
Hennico, Charles: *See—*
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor, Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000
Henriksen, Norolf, to Norsk Hydro a.s. Method and apparatus for the oxygen enrichment of water. 4,765,807, Cl. 55-51.000
Henriksson, Soren N., to Aktiebolaget Electrolux. Arrangement in a chain saw. 4,765,062, Cl. 30-384.000
Henry, Joann: *See—*
Desmond, Michael J.; and Henry, Joann, 4,766,265, Cl 585-415.000
Henry, Roy, Jr. U-leg bar exercising device. 4,765,612, Cl. 272-119.000
Henton, David E., to Dow Chemical Company, The. Blend comprising EPDM graft terpolymer and acrylate rubber. 4,766,175, Cl. 525-71.000
Herget, Werner: *See—*
Lass, Joseph; Merkle, Hansjurgen; Becker, Wolfgang; Herget, Werner; and Lob, Erwin, 4,766,026, Cl. 428-203.000
Hergeth Hollingsworth GmbH: *See—*
Baltzer, Erich, 4,765,041, Cl. 28-191.000
Herman, Robert W.; and Lee, Rex K., to Codercard, Inc. Optical card-key data connector. 4,766,433, Cl. 340-825.310.
Herndon, Gerald F., to Boeing Company, The. Aircraft ejected seat stabilizing and delayed parachute system. 4,765,570, Cl. 244-122.0AE
Herrero, Maria P.: *See—*
Van Heertum, John C.; and Herrero, Maria P., 4,765,826, Cl 71-121.000
Herschler, Scott C.: *See—*
Bleich, Charles R.; Smolucha, Walter E.; Wepner, Gregory W.; Lantz, Kenneth F.; and Herschler, Scott C., 4,766,541, Cl 364-410.000
Hervey, Laurence R. B. Oxonated poly(alkylene oxide) surface treatment agents. 4,766,030, Cl. 428-289.000.
Heshmat, Hooshang; and Gorski, Paul T., to Reliance Electric Company. Bearing assembly. 4,765,760, Cl. 384-398.000
Hess, Heinrich: *See—*
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,766,239, Cl. 560-351.000
Hethuin, Serge: *See—*
Crepin, Hugues; and Hethuin, Serge, 4,766,436, Cl. 342-122.000
Heuze , Alain; and Cauquelin, Claude, to Framatome. Device for the transverse retention of a movable tubular conduit in a pressurized water nuclear reactor. 4,765,944, Cl. 376-254.000
Hewitt, Nevil E.: *See—*
Noakes, Timothy J.; Hewitt, Nevil E.; Grocott, Arend L.; and Franks, Philip C. W., 4,765,539, Cl. 239-3.000.
Hewlett-Packard Company: *See—*
Detro, Scott M.; and Field, Alan H., 4,765,741, Cl. 356-358.000
Kjosness, David P.; and Marriott, Joe E., 4,766,401, Cl. 333-12.000
Heymann, Kurt; and Donner, Christoph, to Schering Aktiengesellschaft. Process for the adhesive metallization of ceramic materials 4,766,017, Cl. 427-444.000.
Hibble, Barry F.: *See—*
Heath, Clive A.; and Hibble, Barry F., 4,765,859, Cl. 156-272.400
Hibino, Yoshitaka; Fukuzawa, Takeshi; and Totsune, Atsushi, to Honda Giken Kogyo Kabushiki Kaisha. Control method of controlling an air/fuel ratio control system in an internal combustion engine. 4,765,305, Cl. 123-589.000
Hibst, Hartmut: *See—*
Werner, Arend; Hibst, Hartmut; and Petermann, Juergen, 4,766,021, Cl. 428-64.000
Hierweger, Alexander: *See—*
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen; Lob, Erwin; Lass, Joseph; and Kaule, Wittich, 4,765,656, Cl 283-70.000
Higbee, Wallace C., to TRW Automotive Products, Inc. Seat belt retractor. 4,765,558, Cl. 242-107.40A.
Higdon, Bob. Method of assembling drill bits and product assembled thereby. 4,765,205, Cl. 76-108.00A.
Higgins, Joseph M. Passenger safety device for high speed vehicles. 4,765,569, Cl. 244-118.500
High, Samuel E., Jr.; and Mast, Aquila D., to Feedmobile, Inc. Feed mixing apparatus. 4,765,747, Cl. 366-186.000.
Higley, Lin R.: *See—*
McHardy, John; Ludwig, Frank A.; Higley, Lin R.; Kindler, Andrew; and Townsend, Carl W., 4,766,522, Cl. 361-433.000

VOL 1093 ISS 4 AG 23 1988 UMI

Higuchi, Toshiro, to Nippon Seiko Kabushiki Kaisha, a part interest. Linear stepping motor. 4,766,358, Cl. 318-135.000.

Hill, David T.; Johnson, Randall K.; and Mirabelli, Christopher K., to SmithKline Beckman Corporation. Antitumor pharmaceutical compositions and methods for treating tumors employing α,ω-bis(disubstitutedphosphino)hydrocarbon derivatives or [α,ω-bis(disubstituted-phosphino)hydrocarbon] digold(I), digold(III), disilver(I), and dicopper. 4,766,226, Cl. 556-18.000.

Hill, Lorimer K., to Siliconix Incorporated. Integrated buried zener diode and temperature compensation transistor. 4,766,469, Cl. 357-13.000.

Hillert, Lars H.; and Waldenstrom, Mats G., to Sandvik Aktiebolag. Temperature resistant abrasive polycrystalline diamond bodies. 4,766,040, Cl. 428-552.000.

Hilti Aktiengesellschaft: *See*—
Scholz, Dieter; and Flesch, Friedrich, 4,765,419, Cl. 175-415.000.

Hilty, Terrence K.: *See*—
Gvozdic, Nedeljko V.; Hilty, Terrence K.; and Saam, John C., 4,766,191, Cl. 528-14.000.

Himber, Jacques: *See*—
Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, 4,766,151, Cl. 514-640.000.

Hines, Barrett D., to Rockwell International Corporation. Connector assembly. 4,765,145, Cl. 60-757.000.

Hinrichsen, Thomas; Preiss, Holger; and Witte, Harry, to Wolff Walsrode AG. Readily peelable, sterilizable packages. 4,766,018, Cl. 428-35.000.

Hippel, George H. Support device. 4,765,005, Cl. 5-443.000.

Hirabayashi, Yuji, to Nissan Motor Co., Ltd. Method of controlling a variable geometry type turbocharger. 4,765,141, Cl. 60-602.000.

Hirai, Yutaka: *See*—
Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki; Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, 4,766,477, Cl. 357-59.000.

Hirako, Osamu: *See*—
Katsumoto, Takehiko; Hirako, Osamu; and Komagome, Reijiro, 4,765,294, Cl. 123-306.000.

Hirasawa, Kotaro: *See*—
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, 4,766,590, Cl 370-56.000.

Hirasawa, Noboru: *See*—
Akutsu, Masami; Myowa, Koh; and Hirasawa, Noboru, 4,765,117, Cl. 53-133.000.
Akutsu, Masami; Kamojima, Tsutomu; and Hirasawa, Noboru, 4,765,118, Cl. 53-133.000.

Hiria, Kazuo: *See*—
Nakasuji, Katsuyoshi; Mikami, Ryuzo; Hiria, Kazuo; and Matsushita, Takao, 4,766,193, Cl. 528-17.000.

Hirokawa, Katsuhisa: *See*—
Nara, Setsu; Hirokawa, Katsuhisa; and Kobayashi, Kenichi, 4,766,294, Cl. 235-380.000.

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Hirose, Yoshikazu: *See*—
Hayashi, Chikahisa; Kawai, Makoto; Hirose, Yoshikazu; and Mizutani, Junichi, 4,766,326, Cl. 307-10.00R.

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Hiruma, Kenji: *See*—
Kuroda, Takao; Hiruma, Kenji; and Matsumura, Hiroyoshi, 4,766,092, Cl. 437-126.000.

Hisamura, Masafumi, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member having surface layer containing fine spherical resin powder and apparatus utilizing the same. 4,766,048, Cl. 430-58.000.

Hitachi, Ltd.: *See*—
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, 4,766,590, Cl. 370-56.000.
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.
Imura, Midori; Morijiri, Makoto; Hanazono, Masanobu; and Kazui, Shinichi, 4,766,009, Cl. 427-53.100.
Inuzuka, Tatsuki, 4,766,499, Cl. 358-283.000.
Kawashima, Masatoshi, 4,766,475, Cl. 357-40.000.
Kobayashi, Yoshiki; Takenaga, Hiroshi; and Katoh, Takeshi, 4,766,431, Cl. 340-799.000.
Kuroda, Takao; Hiruma, Kenji; and Matsumura, Hiroyoshi, 4,766,092, Cl. 437-126.000.
Moribe, Yoshihiro; Fujii, Masataka; Chuma, Akira; and Tsuchiya, Hiroshi, 4,766,509, Cl. 360-106.000.
Ogawa, Soichiro; Sano, Toshihiko; and Shimizu, Takao, 4,766,524, Cl. 362-29.000.
Ono, Seigo; and Ebina, Osamu, 4,766,423, Cl. 340-709.000
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, 4,766,039, Cl. 428-469.000.
Saito, Shigeki; and Sakai, Masato, 4,765,425, Cl. 180-79.100.
Sekibata, Masao; Ohta, Toshihiko; and Miyazawa, Osamu, 4,765,528, Cl. 228-123.000.
Takahashi, Tadashi; Miyashita, Kunio; and Kawamata, Syouichi, 4,766,376, Cl. 324-208.000.
Yamaguchi, Yasunori; and Miyake, Jun, 4,766,570, Cl. 365-189.000.

Hjelm, Anders; and Heinermark, Tommy, to AB Film-Teknik. Method for splicing non-consecutive video signal frames. 4,766,501, Cl. 358-311.000.

Hoback, James: *See*—
Rosenthal, Jeffery; Parker, Victor; Hoback, James; and Summers, Robert, 4,765,077, Cl. 40-308.000.

Hodgson, Anthony: *See*—
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Hodgson, Charles: *See*—
Dowsett, Derek; and Hodgson, Charles, 4,766,418, Cl. 340-365.00R.

Hodlewsky, Wasyly G.; and Schroeder, Roger H., to Rexnord Inc. Conveyor chain for use with fingered transfer plate. 4,765,454, Cl. 198-635.000.

Hoeberechts, Arthur M. E.: *See*—
van der Mast, Karel D.; Hoeberechts, Arthur M. E.; and van Gorkom, Gerardus G. P., 4,766,340, Cl. 313-366.000.

Hoechst Aktiengesellschaft: *See*—
Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, 4,766,207, Cl. 536-18.600.
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hropot, Max, 4,766,241, Cl. 564-89.000.
Hahnke, Manfred; Ong, Sierling; and Hohmann, Kurt, 4,765,797, Cl. 8-654.000.
Merrem, Hans-Joachim; and Schmitt, Axel, 4,765,844, Cl. 134-38.000.
Wehowsky, Frank; Kleber, Rolf; and Jaeckel, Lothar, 4,766,234, Cl. 560-26.000.

Hoechst Celanese Corporation: *See*—
Che, Tessie M.; Carney, Raymond V.; and Dotson, Duane L., 4,765,818, Cl. 65-18.100.
DeMartino, Ronald N., 4,766,171, Cl. 524-722.000.
Hanson, Harry T.; and Sapp, John B., Jr., 4,766,242, Cl. 564-154.000.
Kohn, Rachel S., 4,765,939, Cl. 264-298.000.
Stautzenberger, A. Lee; and Langford, Ellen A., 4,766,236, Cl. 560-78.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,766,143, Cl. 514-431.000.

Hoefke, Wolfgang: *See*—
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,766,129, Cl. 514-300.000.

Hoffa, Jack L., to Eubanks Engineering Co. Wire strand stacker. 4,765,053, Cl. 29-564.400.

Hoffman, Allan C. Method of making a pressurized ball. 4,765,853, Cl. 156-145.000.

Hoffman-La Roche Inc.: *See*—
Fischli, Albert; Krasso, Anna; and Szente, Andre , 4,766,133, Cl. 514-338.000.

Hoffman, William F.: *See*—
Lee, Ta J.; Rooney, Clarence S.; and Hoffman, William F., 4,766,145, Cl. 514-460.000.

Hoffmann, Erich, to Robert Krups Stiftung & Co. KG. Bathroom scale. 4,765,422, Cl. 177-211.000.

Hoffmann-La Roche Inc.: *See*—
Bruderer, Hans; and Zurfluh, Rene , 4,766,115, Cl. 514-217.000.

Hofmann, Heinrich; and Troster, Manfred, to FAG Kugelfischer Georg Schafer (KGaA). Anti-friction bearing for wheels of automotive vehicles. 4,765,688, Cl. 301-124.00R.

Hogberg, Gosta: *See*—
Fixell, Jan-Olov; Gustafsson, Thomas; Hogberg, Gosta; Engfors, Stig; Albrektsson, Kjell; and Franzen, Arne, 4,765,566, Cl. 244-3.230.

Hohmann, Kurt: *See*—
Hahnke, Manfred; Ong, Sierling; and Hohmann, Kurt, 4,765,797, Cl. 8-654.000.

Hokanson, Blanchard M. Valve stem inserter. 4,765,048, Cl. 29-221.500.

Holbe, Erhard: *See*—
Burmeister, Klaus-Dieter; Holbe, Erhard; and Schreiner, Werner, 4,765,710, Cl. 350-96.200.

Holden, Ronald D.; Tedor, John B.; Bergquist, Andrew O.; Moran, David S.; and Eiserer, Mike, to United States of America, Air Force. Oxygen system analyzer. 4,765,193, Cl. 73-865.900.

Holland, Christopher E.; Westerberg, Eugene R.; Madou, Marc J.; and Otagawa, Takaaki, to SRI International. Etching method for producing an electrochemical cell in a crystalline substrate. 4,765,864, Cl. 156-644.000.

Hollinger, Theodore G. Semiconductor doping process. 4,766,094, Cl. 437-164.000.

Hollingsworth, Elmont E. Quick-release radial clamp. 4,765,033, Cl. 24-20.0CW.

Holmgren, Lennart, to Tricum AB. Method of preparing a water absorbing dietary fibre product. 4,765,994, Cl. 426-31.000.

Holtgrefe, Thomas H., Sr. Mole trap. 4,765,087, Cl. 43-94.000.

Holzboog, Walter: *See*—
Metcoff, Dale M.; and Holzboog, Walter, 4,765,516, Cl. 222-402.220.

Homma, Yoshikazu; and Ishii, Yoshikazu, to Nippon Telegraph & Telephone Public Corporation. Apparatus for quantitative secondary ion mass spectrometry. 4,766,313, Cl. 250-289.000.

Homonoff, Edward C.; and Rodman, Clarke A., to Allied-Signal Inc Air laid filtering material. 4,765,812, Cl. 55-524.000.

Honda Giken Kogyo K.K.: *See*—
Fujimura, Akira; and Wazaki, Yoshio, 4,765,300, Cl. 123-491.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Fujii, Etsuo; and Sato, Makoto, 4,765,433, Cl. 180-244.000.
Hibino, Yoshitaka; Fukuzawa, Takeshi; and Totsune, Atsushi, 4,765,305, Cl. 123-589.000.
Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, 4,765,295, Cl. 123-399.000.
Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, 4,765,296, Cl. 123-399.000.
Kanazawa, Yoshifusa; and Kumada, Masayuki, 4,765,284, Cl. 123-41.490.
Koike, Yuzuru; and Nishikawa, Takafumi, 4,765,301, Cl 123-491.000.
Sato, Makoto, 4,765,429, Cl. 180-197.000.
Shimizu, Yasuo, 4,765,426, Cl. 180-79.100.
Tanaka, Kunihiko, 4,765,290, Cl. 123-90.420.
Yoshioka, Toshiharu, 4,765,431, Cl. 180-219.000.

Honda, Tsunetoshi: *See*—
Furutaka, Yasuhisa; Yamana, Masayuki; and Honda, Tsunetoshi, 4,766,238, Cl. 560-227.000.

Honeycutt, Rufus H., to Brown & Williamson Tobacco Corporation. Non-combustible simulated cigarette device. 4,765,348, Cl. 131-273.000.

Honeywell Inc.: *See*—
Jungkman, David L., 4,766,316, Cl. 250-352.000

Honma, Hiroshi; Hamada, Mitsuo; and Kobayashi, Hideki, to Toray Silicone Company, Ltd. Heat curing organopolysiloxane composition. 4,766,170, Cl. 524-500.000.

Hood, Charles F.: *See*—
Schrag, Thomas G.; Hood, Charles F.; Morton, Scott A.; and Graber, Kurt, 4,765,235, Cl. 100-3.000.

Hoonsbeen, Gary A.: *See*—
Truc, James A.; and Hoonsbeen, Gary A., 4,765,734, Cl. 353-121.000.

Hooton, Arnold J.: *See*—
Wolters, Richard H.; Kleyla, Vince; Hooton, Arnold J.; and Converse, Gregory L., 4,766,422, Cl. 340-700.000.

Hoover Universal, Inc.: *See*—
Selbert, Alan J.; and Eschelbach, Randy G., 4,765,045, Cl 29-91.100.

Hopkins, Harry C. Microwave highway paint drying apparatus. 4,765,773, Cl. 404-94.000.

Horak, Josef: *See*—
Gulas, Hans-Jurgen; Horak, Josef; Sulzbacher, Horst; and Papst, Gero, 4,766,098, Cl. 501-101.000.

Horiba, Ltd.: *See*—
Kihara, Nobutaka; Asano, Ichiro; and Kojima, Kennosuke, 4,766,304, Cl. 250-214.00C.

Hornberger, David A.: *See*—
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Horner, Joseph L.; and Leger, James R. Binary phase-only optical correlation system. 4,765,714, Cl. 350-162.130.

Hoshiko, Hidetoshi; Kona, Hideaki; Yamamoto, Masanori; and Inoue, Koichi, to House Food Industrial Company Limited. Erectable container. 4,765,533, Cl. 229-101.000.

Hosoda, Satoru: *See*—
Yamada, Hideaki; Hosoda, Satoru; and Ogawa, Tadatoshi, 4,766,157, Cl. 521-60.000.

Hosono, Nagao; Fuji, Haruo; Ando, Yujiro; and Nakahata, Kimio, to Canon Kabushiki Kaisha. Developing method and apparatus for a photocopier. 4,766,468, Cl. 355-3.0DD.

Hosono, Yoichi: *See*—
Hirose, Sumio; Ozawa, Hiroshi; Abe, Kenji; and Hosono, Yoichi, 4,766,054, Cl. 430-270.000.

Hospal Industrie: *See*—
Barthe, Bernard; Vantard, Georges; and Vasseur, Jean-Pierre, 4,765,888, Cl. 210-86.000.

Hossack, David J., to Payen International Limited. Gasket manufacture. 4,765,633, Cl. 277-166.000.

Houghtaling, Bruce; and White, Harry H., to Keiper Recaro Incorporated. Seat back recliner with cable release. 4,765,681, Cl. 297-367.000.

Hourihan, Ronald J.: *See*—
Walsh, John T.; and Hourihan, Ronald J., 4,765,481, Cl. 206-525.000.

House Food Industrial Company Limited: *See*—
Hoshiko, Hidetoshi; Kona, Hideaki; Yamamoto, Masanori; and Inoue, Koichi, 4,765,533, Cl. 229-101.000.
Nomura, Yukihiro; and Okuda, Yoko, 4,765,927, Cl. 252-400.200.

Hovel, Harold J.; and Kuech, Thomas F., to International Business Machines Corp. Chemically formed self-aligned structure and wave guide. 4,766,093, Cl. 437-129.000.

Howard, Fred; and Edson, Sydney, to Sara Lee Corporation. Display assemblies for integrated modular store fixture system. 4,765,492, Cl. 211-55.000.

Howard, Joe C., Jr.: *See*—
Klebold, Buddy; and Howard, Joe C., Jr., 4,765,209, Cl. 81-57.170.

Howard, P. Guy: *See*—
Tierney, Danial J.; and Howard, P. Guy, 4,766,299, Cl. 235-472.000.

Howe, William C.: *See*—
Dyer, Dexter A.; Howe, William C.; and Szlucha, Thomas F., 4,766,462, Cl. 355-10.000.

Howsley, Michael J., to JMK International, Inc. Apparatus for inserting sealing strip into concrete expansion joints. 4,765,771, Cl. 404-74.000.

Howson, Robert E., to McDermott Incorporated. Convertible barge 4,765,776, Cl. 405-169.000.

Hoya Corporation: *See*—
Matsudaira, Takeo; and Inoue, Teiji, 4,765,715, Cl. 350-171.000.

Hriscisce, Frank: *See*—
Cherukuri, Subraman R.; Hriscisce, Frank; and Wei, You C., 4,765,991, Cl. 426-3.000.

Hropot, Max: *See*—
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hropot, Max, 4,766,241, Cl. 564-89.000.

Hsieh, Hank C. H.: *See*—
Danby, Gordon T.; Hsieh, Hank C. H.; Jackson, John W.; and Damadian, Raymond V., 4,766,378, Cl. 324-307.000.

Hsu, Grace F.; and Colonel, Richard C., to Boeing Company, The Zinc-nickel electroplated article and method for producing the same. 4,765,871, Cl. 204-44.200.

Hsu, Shen-Kuang. Teat for baby's feeding bottle. 4,765,497, Cl. 215-11.100.

Huang, James. Collapsible settee. 4,765,678, Cl. 297-236.000.

Huang, Jian-Cheng, to Eastman Kodak Company. Random multiple-access communication system. 4,766,591, Cl. 370-60.000.

Huber, Duane; and Liautaud, James P., to Capsonic Group, Inc. Injection molded circuit housing. 4,766,520, Cl. 361-421.000.

Huchette, Michel; and Devos, Francis, to Roquette Freres. Fermentation process and substrate. 4,766,070, Cl. 435-71.000.

Hudgens, Stephen J.: *See*—
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S 4,766,471, Cl. 357-19.000.

Huger, Alois M.: *See*—
Krieg, Aloisius; Huger, Alois M.; and Schnetter, Wolfgang, 4,766,203, Cl. 530-370.000.

Hughes Aircraft Company: *See*—
Krum, Alvin L.; and Conklin, Charles W., 4,766,479, Cl 357-74.000.
McHardy, John; Ludwig, Frank A.; Higley, Lin R.; Kindler, Andrew; and Townsend, Carl W., 4,766,522, Cl. 361-433.000.
Ozdemir, Faik S.; Seliger, Robert L.; and Rosenberg, Gerald B., 4,766,516, Cl. 361-380.000.
Tang, Raymond, 4,766,438, Cl. 342-372.000.
Wells, Donald R., 4,766,435, Cl. 342-82.000.

Hughes, Simon H. C.: *See*—
Fox, Timothy R.; and Hughes, Simon H. C., 4,766,383, Cl 324-318.000.

Hughes Tool Company: *See*—
Smith, Sydney K., Jr., 4,765,402, Cl. 166-115.000.

Huichun, Shang. Grating-film rainbow-producing laminar device. 4,765,724, Cl. 350-162.180.

Hulbert, Matthew H.; and Currier, James W., to Applied Industrial Materials Corporation. Sand filter media and an improved method of purifying water. 4,765,892, Cl. 210-290.000.

Hulesch, Agnes: *See*—
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Hull, Donald E.; and Bieniewski, Thomas M. Starter for inductively coupled plasma tube. 4,766,351, Cl. 315-240.000.

Humphreys, John D.: *See*—
Havera, Herbert J.; and Humphreys, John D., 4,766,074, Cl 435-223.000.

Hung, Michael. Multi-functional bar of a manually operated jack. 4,765,009, Cl. 7-100.000.

Hung, Michael. Hydraulic jack having a removable hydraulic cartridge 4,765,593, Cl. 254-8.00B.

Hunter, Edward B.: *See*—
Schonberg, Michael, 4,765,337, Cl. 128-395.000.

Huntsman, Clayton D.; and Cawthron, Duane W., to Motorola, Inc Method and apparatus for generating the next microaddress for a micromachine. 4,766,531, Cl. 364-200.000.

Huppert, Raymond: *See*—
Huppert, Raymond H., 4,765,603, Cl. 269-302.100.

Huppert, Raymond H., to Huppert, Raymond. Cutting board 4,765,603, Cl. 269-302.100.

Husgen; Raets, Hubert; Schiefer, Gerd; and Zwier, Jan, to U.S. Philips Corporation. Electric circuit with transient voltage doubling for improved operation of a discharge lamp. 4,766,350, Cl. 315-207.000.

Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, to BASF Aktien-

VOL 1093 ISS 4 AG 23 1988 UMI

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Hwo, Charles C., to Shell Oil Company. Butene-rich butene-1 propylene copolymer composition. 4,766,178, Cl. 525-240.000.

Hydro Quebec: *See—*
Bolduc, Leonard; and Pare, Gregoire, 4,766,365, Cl. 323-308.000.

Hydromatik GmbH: *See—*
Wagenseil, Ludwig, 4,765,228, Cl. 91-486.000.

Hygenic Corporation, The: *See—*
Riazi, John, 4,766,200, Cl. 528-502.000.

Hyon, Suong-Hyu; and Ikada, Yoshito, to Biomaterials Universe, Inc. Method of preparing high strength and modulus poly(vinyl alcohol) fibers. 4,765,937, Cl. 264-185.000.

I. I. Cox Limited: *See—*
Babbs, Frederick W., 4,765,582, Cl. 248-394.000.

I. T. I. Enterprises Ltd.: *See—*
Geoffroy-Dechaume, Vincent; and De Capele, Francois, 4,765,855, Cl. 156-205.000.

Iannucci, Vincent A.; and Haehnel, Rudolf H., to Rockwell International Corporation. Strand supply carrier and tensioning mechanism. 4,765,220, Cl. 87-57.000.

IC-ACBF: *See—*
Matas Gabalda, Carlos, 4,765,562, Cl. 242-130.000

Iceland, William F., to United States of America, National Aeronautics and Space Administration. Arc length control for plasma welding. 4,766,286, Cl. 219-121.570.

ICI Americas Inc.: *See—*
Robertson, John R., 4,766,194, Cl. 528-28.000

Ide, Jushi: *See—*
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, 4,766,590, Cl. 370-56.000.

Ide, Tohru: *See—*
Komatsu, Takahiro; Ide, Tohru; Akiyama, Hirohumi; Kitamura, Takao; and Yamamoto, Shinichi, 4,766,258, Cl. 570-168.000.

IDL, Inc.: *See—*
Boone, Daniel E., 4,765,182, Cl. 73-153.000.

Idroplina S.r.l.: *See—*
Nello, Torta, 4,765,015, Cl. 15-245.000.

Iguchi, Tatsuya; Fukuhara, Kunihiro; Kadomiya, Tsutomu; and Fukuda, Moritoshi, to Nifco, Inc. Clip for protecting coated surface 4,765,036, Cl. 24-289.000

Iijima, Hitoshi: *See—*
Shiga, Takashi; Tani, Hidekazu; Hama, Hiroaki; and Iijima, Hitoshi, 4,765,149, Cl. 62-174.000.

Iijima, Toshifumi: *See—*
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000.

Iino, Yasuhiro: *See—*
Narumiya, Tsuneaki; Oyachi, Tomio; and Iino, Yasuhiro, 4,765,833, Cl. 75-68.00R.

Ikada, Yoshito: *See—*
Hyon, Suong-Hyu; and Ikada, Yoshito, 4,765,937, Cl. 264-185.000.

Ikemoto, Hiroyuki; Oowa, Nobutaka; Hayashi, Yasutaka; and Doi, Shunichi, to Toyota Jidosha Kabushiki Kaisha. System for vehicle body roll control detecting and compensating for changes of loaded vehicle weight. 4,765,649, Cl. 280-707.000.

Ikeuchi, Hiroshi, to Diesel Kiki Co., Ltd. Cut-off fuel exhaust mechanism in fuel injection pump. 4,765,302, Cl. 123-506.000.

Illinois Tool Works Inc.: *See—*
Beecher, William H., 4,765,372, Cl. 137-843.000.

Imao, Kayoko: *See—*
Tatsuoka, Toshio; Suzuki, Kenji; Imao, Kayoko; and Sumoto, Kunihiro, 4,766,116, Cl. 514-218.000.

Imoto, Yuzo; Hattori, Yoshiyuki; Takei, Toshihiro; and Inagaki, Mitsuo, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Piezoelectric servomechanism apparatus. 4,765,140, Cl. 60-545.000.

Imperial Chemical Industries plc: *See—*
Attwood, Terence E.; and Bridges, Richard F., 4,766,188, Cl. 526-227.000
Kay, Ian T., 4,766,132, Cl. 514-332.000.
Noakes, Timothy J.; Hewitt, Nevil E.; Grocott, Arend L.; and Franks, Philip C. W., 4,765,539, Cl. 239-3.000
Imura, Midori; Morijiri, Makoto; Hanazono, Masanobu; and Kazui, Shinichi, to Hitachi, Ltd. Selective working method. 4,766,009, Cl. 427-53.100.

Inaba, Mitsuru. Apparatus for separation of solid from liquid. 4,765,894, Cl. 210-393.000.

Inagaki, Mitsuo: *See—*
Imoto, Yuzo; Hattori, Yoshiyuki; Takei, Toshihiro; and Inagaki, Mitsuo, 4,765,140, Cl. 60-545.000.

Inagaki, Takafumi: *See—*
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000.

Inamine, Edward S.: *See—*
Goegelman, Robert T.; Inamine, Edward S.; and White, Raymond F., 4,766,112, Cl. 514-30.000.

Inco Alloys International, Inc.: *See—*
Smith, Gaylord D.; Wheeler, Jack M.; and Tassen, Stephen C., 4,765,956, Cl. 420-445.000.

Inco Limited: *See—*
Valentine, Douglas G., 4,765,778, Cl. 405-260.000.

Indak Manufacturing Corp.: *See—*
Raab, Andrew F.; and Habecker, John W., 4,766,278, Cl. 200-327.000

Ingram, Margaret A. Container made from identical halves. 4,765,500, Cl. 220-4.00E.

INMOS Corporation: *See—*
Mobley, Kenneth J., 4,766,333, Cl. 307-530.000.

Innovation Limited: *See—*
Parrott, George A., 4,765,687, Cl. 299-81.000.

Inoue, Hiromichi; Inukai, Takashi; Ohno, Kouji; Miyazawa, Kazutoshi; and Saito, Shinichi, to Chisso Corporation. Halogen-containing heterocyclic compound and liquid crystal composition. 4,765,924, Cl. 252-299.610.

Inoue, Kaname: *See—*
Ueno, Susumu; Kitamura, Hajime; and Inoue, Kaname, 4,765,860, Cl. 156-272.600.

Inoue, Koichi: *See—*
Hoshiko, Hidetoshi; Kona, Hideaki; Yamamoto, Masanori; and Inoue, Koichi, 4,765,533, Cl. 229-101.000.

Inoue, Teiji: *See—*
Matsudaira, Takeo; and Inoue, Teiji, 4,765,715, Cl. 350-171.000

Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, to Toyota Jidosha Kabushiki Kaisha. Wheel slip control system. 4,765,691, Cl. 303-117.000.

Institut Francais du Petrole: *See—*
Born, Maurice; Lallement, Jacques; Marchand, Pierre; Parc, Guy; and Thevenin, Nicole, 4,766,228, Cl. 556-25.000.

Institut Francaise du Petrole: *See—*
Dufresne, Pierre; and Marcilly, Christian, 4,766,099, Cl. 502-72.000.

Institut National de la Recherche Agronomique: *See—*
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000.

Intel Corporation: *See—*
Rao, Valluri R. M., 4,766,372, Cl. 324-158.00R.

Interferon Sciences, Inc.: *See—*
D'Andrea, Mark J.; Tarnowski, Stanley J., Jr.; and Clark, Arthur D., Jr., 4,765,903, Cl. 210-635.000.

Interlake Corporation, The: *See—*
Kinney, Thomas R., 4,765,493, Cl. 211-59.200.

Intermar, Inc.: *See—*
Schmidt, Ferenc J.; Maughan, P. Kevin; and Guy, Jack J., 4,765,335, Cl. 128-326.000.

International Business Machines Corporation: *See—*
Abbott, Perry E., 4,765,605, Cl. 271-147.000.
Auerbach, Daniel J.; Chen, Tien C.; and Paul, Wolfgang J., 4,766,535, Cl. 364-200.000.
Bechade, Roland A.; and Schmookler, Martin S., 4,766,565, Cl. 364-784.000.
Biamonte, Robert A.; Bogdanski, Joseph W.; Covi, Kevin R.; Meyer, Herman P.; and Rafkind, Daniel I., 4,766,364, Cl. 323-272.000
Chrysler, Gregory M.; Chu, Richard Chao-Fan; and Simmons, Robert E., 4,765,397, Cl. 165-104.330.
Chu, Richard C.; Eid, Jeffrey C.; and Zumbrunnen, Michael L., 4,765,400, Cl. 165-185.000.
Chuang, Chiao-Mei, 4,766,566, Cl. 364-900.000.
Davis, John D.; and Mullgrav, Allan L., Jr., 4,766,399, Cl. 331-111.000
DeGroot, Richard D., 4,766,564, Cl. 364-748.000.
Hovel, Harold J.; and Kuech, Thomas F., 4,766,093, Cl. 437-129.000
Pearson, Kenneth A.; and Zucker, Larry R., 4,766,532, Cl. 364-200.000
Tin, Lucas, 4,766,605, Cl. 379-225.000.

International Fuel Cells Corporation: *See—*
Sederquist, Richard A., 4,766,044, Cl. 429-19.000.

International Minerals & Chemical Corp.: *See—*
DePrince, Randolph B.; and Viswanathan, Ravi, 4,765,980, Cl. 424-108.000
Rausch, Steven K., 4,766,224, Cl. 530-412.000.

International Paper Box Machine Co., Inc.: *See—*
Labombarde, Raymond A., 4,765,451, Cl. 198-425.000.

International Permalite, Inc.: *See—*
Nath, Narikottile G.; Meehan, Kenneth N.; and Eberle, Robert W., 4,766,024, Cl. 428-139.000.

International Shoe Machine Corporation: *See—*
Leeper, Alan L., 4,765,011, Cl. 12-1.00A.

Inukai, Takashi: *See—*
Inoue, Hiromichi; Inukai, Takashi; Ohno, Kouji; Miyazawa, Kazutoshi; and Saito, Shinichi, 4,765,924, Cl. 252-299.610.

Inuzuka, Tatsuki, to Hitachi, Ltd. Method and apparatus for encoding and decoding dither signals for reproduction of the halftone of a picture. 4,766,499, Cl. 358-283.000.

Iovanni, Carl F.; and Biesel, Duane M., to Gillette Company, The. Hair conditioning. 4,765,975, Cl. 424-70.000.

Irmen, Wolfgang: *See—*
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000.

Irvin, John E.: *See—*
Andersen, Carl O.; Irvin, John E.; and Rhodenbaugh, Gary W., 4,765,199, Cl. 74-501.00D.

Irvine, Harry: *See—*
Fasham, Thomas I. K.; and Irvine, Harry, 4,765,653, Cl. 282-1.00R.

Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Anisotropic melt polyesters with improved glass transition temperature. 4,766,256, Cl. 568-765.000.

Isco, Inc.: *See—*
Tehrani, Abolghassem Y.; Jones, John N.; and Allington, Robert W., 4,765,890, Cl. 210-198.200.

Ise, Kiyotaka: *See—*
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000.

Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, to Canon Kabushiki Kaisha. Coordinate input apparatus. 4,766,404, Cl 355-7.000.

Ishida, Tokuji; Kozakai, Katsumi; and Hamada, Masataka, to Minolta Camera Kabushiki Kaisha. Focus detecting device including means for determining a priority of correlation calculations. 4,766,302, Cl. 250-201.000.

Ishiguro, Toshiaki; and Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha. Control method of automatic transmission for automobiles with exhaust brake. 4,765,201, Cl. 74-866.000

Ishiguro, Yoichi: *See—*
Danzuka, Toshio; Yokota, Hiroshi; and Ishiguro, Yoichi, 4,765,815, Cl. 65-3.120.

Ishii, Yoshikazu: *See—*
Homma, Yoshikazu; and Ishii, Yoshikazu, 4,766,313, Cl. 250-289.000.

Ishikawa, Shun-ichi: *See—*
Watanabe, Akio; Washizu, Shintaro; Shinozaki, Fumiaki; Ishikawa, Shun-ichi; and Aoai, Toshiaki, 4,766,037, Cl. 428-402.210.

Ishikawa, Takao, to Kabushiki Kaisha Toshiba. Method of confirming that a pattern to be printed is a high-density pattern and divisionally printing the pattern, and a dot printer which can print high-quality, high-density patterns. 4,765,763, Cl. 400-121.000.

Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, to Honda Giken Kogyo Kabushiki Kaisha. Throttle valve controller for internal combustion engine. 4,765,295, Cl. 123-399.000.

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Ishizuka, Masashi; Ando, Rokuro; Hatano, Mikio; and Tabata, Koji, to Narita Seisakusho Mfg., Ltd.; and Kawasaki Jukogyo Kabushiki Kaisha. Gangway construction for vehicles. 4,765,249, Cl. 105-10.000.

Isihama, Ekio: *See—*
Yamada, Katuyuki; and Isihama, Ekio, 4,765,465, Cl. 206-217.000.

Isobe, Minoru, to Oki Electric Industry Co., Ltd. Color recording medium package. 4,766,449, Cl. 346-150.000.

Isono, Masatoshi: *See—*
Kitagawa, Sotoyuki; Nakayama, Takashi; and Isono, Masatoshi, 4,766,159, Cl. 521-134.000

Isover Saint-Gobain: *See—*
Tuffal, Guy; and Audren, Yves, 4,765,554, Cl. 242-55.100.

Issenmann, Olivier, to Geoservices. Antenna structure for use with a transmitter located at a great depth. 4,766,442, Cl. 343-719.000.

Ito, Eiji, to Alps Electric Co., Ltd. Pusher device for plastic optical fiber. 4,765,700, Cl. 350-96.200.

Ito, Toshiyo: *See—*
Ohshima, Jiro; Taka, Shin-ichi; Ito, Toshiyo; and Aoyama, Masaharu, 4,766,086, Cl. 437-011.000.

Ito, Yuusuke: *See—*
Tokuda, Shoichi; Ito, Yuusuke; Otsuka, Saburo; and Kinoshita, Takashi, 4,765,974, Cl. 424-443.000

Itoh, Ikuo: *See—*
Sasaki, Hiromu; and Itoh, Ikuo, 4,766,403, Cl. 355-3.00R.

Itoh, Tomoh: *See—*
Sonobe, Takashi; Sugiura, Hiroshi; Itoh, Tomoh; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,765,988, Cl. 424-468.000

ITT Corporation: *See—*
Donovan, John R., 4,765,537, Cl. 236-62.000

Iversen, Alfred A.: *See—*
Eastman, William J.; and Iversen, Alfred A., 4,765,317, Cl. 128-75.000

Ivey, Charles W. Folio of card material. 4,765,466, Cl. 206-232.000.

Iwamoto, Toshio: *See—*
Matsuo, Masashi; Furukawa, Yutaka; Iwamoto, Toshio; and Kawakami, Shoichi, 4,765,713, Cl. 350-96.340.

Iwasaki, Masaru: *See—*
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000.

Iwata, Yukio, to Akebono Brake Industry Co., Ltd. Chip removing device. 4,765,016, Cl. 15-246.000

Iyer, Natraj C.; Male, Alan T.; Cherry, Sidney J.; and Gainer, Robert E., to Westinghouse Electric Corp. Vacuum circuit interrupter contacts containing chromium dispersions. 4,766,274, Cl. 200-144.00B

J. I. Case Company: *See—*
Schroeder, Philip W., 4,765,072, Cl. 37-191.00A.

J. M. Huber Corporation: *See—*
Kirkland, Billie R., 4,765,755, Cl. 384-126.000

J. P. Tool Limited: *See—*
Rawle, Ralph H., 4,765,783, Cl. 407-41.000.

Jablonkai, Istvan: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000

Jackson, John W.: *See—*
Danby, Gordon T.; Hseh, Hank C. H.; Jackson, John W.; and Damadian, Raymond V., 4,766,378, Cl. 324-307.000

Jackson, Randall D.; and Jackson, Sue A. Enclosure for converting a bed into a play area. 4,765,006, Cl. 5-508.000.

Jackson, Stonewall. Auto floor mat with drain. 4,765,670, Cl. 296-1.00F

Jackson, Sue A.: *See—*
Jackson, Randall D.; and Jackson, Sue A., 4,765,006, Cl. 5-508.000

Jacob, Lutz E.: *See—*
Lepert, Andre; Evans, Morris L.; and Jacob, Lutz E., 4,766,169, Cl. 524-499.000

Jaeckel, Lothar: *See—*
Wehowsky, Frank; Kleber, Rolf; and Jaeckel, Lothar, 4,766,234, Cl. 560-26.000

Jain, Ravi: *See—*
Lloyd-Williams, Andrew; MacLean, Donald L.; Jain, Ravi; and Lerner, Steven L., 4,765,804, Cl. 55-16.000

Jakob Schlaepfer & Co., AG.: *See—*
Brownbill, Thomas D.; and Koenig, Harald, 4,765,265, Cl. 112-88.000

Jakobs, Rudolf: *See—*
Reichel, Dieter; Jakobs, Rudolf; Brehm, Lothar; and Quass, Gunter, 4,765,809, Cl. 55-267.000

Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., to Caterpillar Inc Interference connection between a fluid line and a fluid injector. 4,765,543, Cl. 239-533.200.

James C. Barber and Associates, Inc.: *See—*
Barber, James C., 4,765,822, Cl. 71-34.000

James, Gary L.: *See—*
Ozolins, Imants; and James, Gary L., 4,765,461, Cl. 198-311.000

James, Robert C., to Hayssen Manufacturing Company. Package of enwrapped articles. 4,765,474, Cl. 206-391.000

Jammot, Fernand: *See—*
Grain, Claude; and Jammot, Fernand, 4,766,223, Cl. 549-468.000

Janes, Kent A.: *See—*
Davis, Malcolm H.; Janes, Kent A.; Kleffner, Daniel J.; Seltzer, William P.; and Spence, Hugh F., 4,766,295, Cl. 235-383.000

Janes, Richard, to Spalding & Evenflo Companies, Inc. Racket vibration dampener combined with grommet strip. 4,765,620, Cl. 273-73.00G.

Jang, Long-Kuan: *See—*
Sadeghi, Mohammad-Ali; Sadeghi, Kazem; Kuo, Jih-Fen; Jang, Long-Kuan; and Yen, Teh F., 4,765,885, Cl. 208-391.000

Janik, Gary R.: *See—*
Gallagher, Thomas F.; Janik, Gary R.; and Carlisle, Clinton B., 4,765,736, Cl. 356-300.000

Janssen, Marc F. R.; and Renardus, Max L. P., to U.S. Philips Corporation. High-pressure discharge lamp having a lead-through with a protuberance. 4,766,347, Cl. 313-623.000

Janssen, Petrus C. H.: *See—*
van de Nieuwelaar, Josephus A.; and Janssen, Petrus C. H., 4,765,028, Cl. 17-11.000

Janssen Pharmaceutica N.V.: *See—*
Van Daele, Georges, 4,766,125, Cl. 514-255.000.

Japan Tobacco & Salt Public Corporation: *See—*
Kagawa, Kenichi, 4,765,349, Cl. 131-327.000

Jarmolow, Benjamin: *See—*
Brennan, Henry S.; and Jarmolow, Benjamin, 4,765,343, Cl. 128-639.000

Jarrett, Noel: *See—*
Brown, Melvin H.; Cochran, C. Norman; and Jarrett, Noel, 4,765,832, Cl. 75-68.00A.

Jastrzebski, Lubomir L.: *See—*
Harbeke, Guenther; and Jastrzebski, Lubomir L., 4,766,317, Cl. 250-358.100

Jaycox, Larry S.: *See—*
Schwoyer, William L.; Jaycox, Larry S.; and Peterscheck, Hermann W., 4,765,900, Cl. 210-603.000

Jeal, Harvey P.; and Summerlin, Frederick A., to Advel Limited. Method of making a stem for a self-plugging blind fastener. 4,765,010, Cl. 10-27.00R

Jefferson, Ford C.: *See—*
Kempf, David N.; Jefferson, Ford C.; and Chandler, Brian L. 4,765,178, Cl. 73-49.200

Jeffries, Kenneth: *See—*
Magnuson, Douglas; Wolff, Merle; Lev, Sam; Jeffries, Kenneth; and Mapes, Scott D., 4,765,598, Cl. 266-110.000

Jendrisak, Jerome J.; Lewis, Martin K.; and Fiandt, Michael J., to Promega Corporation. Vectors for in vitro production of RNA copies of either strand of a cloned DNA sequence. 4,766,072, Cl 435-91.000

Jensen, Harvey W. Fighting weapon. 4,765,628, Cl. 273-425.000

Jensen, Robert M.: *See—*
Rutter, Robert E.; and Jensen, Robert M., 4,766,363, Cl 323-243.000

Jeol Ltd.: *See—*
Ohuchi, Muneki; and Uchida, Soukichi, 4,766,377, Cl. 324-307.000
Ohuchi, Muneki, 4,766,382, Cl. 324-312.000

Jernstedt, Richard C.: *See—*
Pendleton, Richard A.; Jernstedt, Richard C.; and Sutherland, Clarke R., 4,765,177, Cl. 72-412.000

Jerry, Roger E., to Mead Corporation, The. Imaging system with integral cover sheet. 4,766,050, Cl. 430-138.000

VOL 1093 ISS 4 AG 23 1988 UMI

Jeumont-Schneider Corporation: *See—*
Paeye, Gerard; and Meunier, Francis, 4,765,395, Cl. 165-104.120.

Jinbo, Masato; and Kojima, Kenji, to Ricoh Company, Ltd. Apparatus for separating transfer paper from photosensitive member of copying machine. 4,766,459, Cl. 355-3.0SH.

JMK International, Inc.: *See—*
Howsley, Michael J., 4,765,771, Cl. 404-74.000

Jochem, Cornelius M. G.; and Van Der Ligt, Jacobus W. C., to U.S. Philips Corporation. Method of arrangement for coating a fibre. 4,765,271, Cl. 118-405.000.

Jodoin, Francois; and Roberge, Jean M., to Northern Telecom Limited. Method for splicing filamentary material and holding devices therefor. 4,765,129, Cl. 57-72.000

Johansson, Jan O.; Andersson, Jan-Erik; Niklewski, Tomasz; and Edshammar, Lars E., to AGA Aktiebolag. Arc electrode. 4,766,349, Cl 313-631.000

Johansson, Per, to Packsystem i Lund AB. Device in a machine handling package units. 4,765,452, Cl. 198-431.000.

Johnson, Axel R.; Narayanan, S.; and Woebcke, Herman H., to Stone & Webster Engineering Corporation. Process for the production of aromatics benzene, toluene, xylene (BTX) from heavy hydrocarbons. 4,765,883, Cl. 208-78.000.

Johnson, Kenneth C. Fresnel scroll solar tracking device. 4,765,726, Cl. 350-452.000.

Johnson, Kenneth P., to Risi Industries, Inc. Process for fabricating parts from particulate material. 4,765,950, Cl. 419-2.000.

Johnson, Kevin L. Pseudo-mobius static-resistant circuit container. 4,766,514, Cl. 361-220.000

Johnson, Randall K.: *See—*
Hill, David T.; Johnson, Randall K.; and Mirabelli, Christopher K., 4,766,226, Cl. 556-18.000.

Johnson, Richard H.: *See—*
Zion, Kenneth J.; and Johnson, Richard H., 4,765,534, Cl 229-109.000

Johnson, Robert R.: *See—*
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J.; Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S., 4,766,471, Cl. 357-19.000

Johnson, Thomas A.: *See—*
Ford, Michael E.; Johnson, Thomas A.; and Vedage, Gamini A., 4,766,247, Cl. 564-498.000

Johnson, William M., to Charles Stark Draper Laboratory, Inc., The. Limited diffraction feedback laser system. 4,766,393, Cl. 330-4.300

Johnston, Clare M.: *See—*
Tissington, Sidney K.; Scheunhage, Henry J.; Johnston, Clare M.; and Tissington, Frederick B., 4,765,105, Cl. 52-309.110.

Jones, Charles D.: *See—*
Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., 4,766,140, Cl. 514-397.000

Jones, James S. Gaseous fuel charge forming device for internal combustion engines. 4,765,303, Cl. 123-527.000.

Jones, Jeffrey S., to Solutech, Inc. Closed loop dialysis system. 4,765,339, Cl. 128-632.000

Jones, John N.: *See—*
Tehrani, Abolghassem Y.; Jones, John N.; and Allington, Robert W., 4,765,890, Cl. 210-198.200.

Jong, Slosson B. Roofing structure. 4,765,113, Cl. 52-533.000

Jonsson, Bert: *See—*
Carlsson, Staffan; Persson, Torsten; Jonsson, Bert; and Boberg, Tore, 4,765,246, Cl. 102-318.000

Joseph, Anna M. Treatment of gastrointestinal disorders. 4,765,981, Cl. 424-195.100

Josephson, Gregg R.: *See—*
Turner, John E.; and Josephson, Gregg R., 4,766,569, Cl. 365-185.000

Jourdheuil, Pierre: *See—*
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000

Joyal Products, Inc.: *See—*
Riordan, Edward D.; and Szantho, Charles F., 4,766,282, Cl. 219-86.250.

Juen, Donnie R.: *See—*
Lee, Chi-long; Juen, Donnie R.; Saam, John C.; and Willis, Robin L., Jr., 4,766,176, Cl. 525-100.000.

Julius Maschinenbau GmbH: *See—*
Julius, Rolf, 4,765,212, Cl. 82-34.00R.

Julius, Rolf, to Julius Maschinenbau GmbH. Chip remover for machines which perform cutting operations, especially on metal workpieces. 4,765,212, Cl. 82-34.00R

Jung, Gerhard, to Finnigan MAT GmbH. Lens arrangement for the focusing of electrically charged particles, and mass spectrometer with such a lens arrangement. 4,766,314, Cl. 250-296.000

Jungheinrich Unternehmensverwaltung KG: *See—*
David, Bernd; and Klingberg, Alfred, 4,765,441, Cl. 187-9.00E

Jungkind, Roland, to Metallwerk K. Pittl GmbH & Co. KG; and Sportschuhfabriken Adi Dassler Stiftung & Co. KG. Cross-country ski binding. 4,765,640, Cl. 280-615.000.

Jungkman, David L., to Honeywell Inc. Disc detector assembly having vacuum chamber. 4,766,316, Cl. 250-352.000.

Juraszyk, Horst; Gericke, Rolf; Lues, Inge; Bergmann, Rolf; and Schmitges, Claus J., to Merck Patent Gesellschaft mit beschrankter Haftung. 1,4-dihydropyridines. 4,766,213, Cl. 544-127.000.

Jurgens, Peter A.: *See—*
Slocum, Alexander H.; and Jurgens, Peter A., 4,765,668, Cl. 294-88.000

Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., to Nauchno-Issledovatelsky Institut Tekhnologii Avtomobilnoi Promyshlennosti; and Svessky Nasosny Zavod. Composition for depositing diffusion carbide coatings on iron-carbon alloy articles. 4,765,840, Cl. 106-285.000.

Juschenko, Viktor I.: *See—*
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000

Kabushiki Kaisha Asahi Shimbunsha: *See—*
Oya, Motomichi; and Nonomura, Tsutomu, 4,765,242, Cl. 101-425.000

Kabushiki Kaisha Daikin Seisakusho: *See—*
Koshimo, Masahiko, 4,765,200, Cl. 74-731.000.

Kabushiki Kaisha Dymosha: *See—*
Kubo, Setsuo, 4,765,307, Cl. 125-21.000.

Kabushiki Kaisha Shinsangyokaihatsu: *See—*
Kawamoto, Mutumi; Moroto, Shuzo; Yamada, Takashi; and Yokoyama, Shouji, 4,765,434, Cl. 180-249.000.

Kabushiki Kaisha Toshiba: *See—*
Ando, Hideo, 4,766,582, Cl. 369-45.000
Fox, Timothy R.; and Hughes, Simon H. C., 4,766,383, Cl. 324-318.000
Fox, Timothy R., 4,766,400, Cl. 332-9.00R
Hashimoto, Hideaki, 4,766,322, Cl. 250-561.000
Ishikawa, Takao, 4,765,763, Cl. 400-121.000
Koizumi, Tadashi; and Kinoshita, Toshiya, 4,765,739, Cl. 356-350.000
Miyoshi, Akio, 4,766,538, Cl. 364-200.000.
Nara, Seietsu; Hirokawa, Katsuhisa; and Kobayashi, Kenichi, 4,766,294, Cl. 235-380.000.
Ohshima, Jiro; Taka, Shin-ichi; Ito, Toshiyo; and Aoyama, Masaharu, 4,766,086, Cl. 437-011.000.
Okabe, Kanichi; Suzuki, Hirotsugu; Nishio, Kohsaku; and Koyama, Katsuhiko, 4,766,603, Cl. 378-152.000.
Sato, Kazuhide, 4,765,526, Cl. 228-4.500.
Shinozaki, Kazuo; Anzai, Kazuo; Takano, Takeshi; and Tsuge, Akihiko, 4,766,097, Cl. 501-98.000.
Shirogami, Tamotsu; and Ueno, Mitsushi, 4,766,043, Cl. 429-39.000.
Wachi, Yoshihiro, 4,765,153, Cl. 62-514.00R
Watanabe, Junji; and Ogura, Masahiko, 4,766,464, Cl. 355-14.00R.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Arai, Tohru; Fujita, Hironori; Endo, Junji; Sugimoto, Yoshihiko; and Ohta, Yukio, 4,765,847, Cl. 148-15.500

Kabushiki Kaisha Universal: *See—*
Yamamoto, Toshio, 4,765,078, Cl. 40-309.000.

Kadlec, Joseph; Kociolek, Kenneth W.; and Okrzesik, Thaddeus P., to Zenith Electronics Corporation. Automatic vertical size control. 4,766,355, Cl. 315-399.000

Kadomiya, Tsutomu: *See—*
Iguchi, Tatsuya; Fukuhara, Kunihiro; Kadomiya, Tsutomu; and Fukuda, Moritoshi, 4,765,036, Cl. 24-289.000

Kafedjiev, Iliya C.: *See—*
Genchev, Lyubomir N.; Kafedjiev, Iliya C.; Klyamov, Kostadin S.; and Atanasov, Stefan G., 4,765,233, Cl. 99-472.000.

Kagawa, Kenichi, to Japan Tobacco & Salt Public Corporation. System for controlling lamina size in a raw material treatment process for tobacco leaves. 4,765,349, Cl. 131-327.000

Kahmann, Paul G. Chalk snap string device having improved brake means. 4,765,557, Cl. 242-107.300.

Kainuma, Masakuni: *See—*
Ariizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, 4,765,370, Cl. 137-625.650.

Kaken Pharmaceutical Co., Ltd.: *See—*
Uchida, Katsuhiro; Masumoto, Shozo; Tohno, Masao; Mimura, Mitsuo; and Okumura, Makoto, 4,766,148, Cl. 514-523.000.

Kakiuchi, Hajime: *See—*
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000.

Kalghatgi, Gautam T.: *See—*
Van Es, Cornelis; Miles, Richard; Kalghatgi, Gautam T.; McArragher, John S.; and Heldeweg, Rudolf F., 4,765,800, Cl. 44-62.000

Kamata, Akinori: *See—*
Abe, Akihiro; and Kamata, Akinori, 4,766,446, Cl. 346-136.000.

Kameshima, Tetsuya; Kondo, Toshiro; and Shimoe, Hiroo, to Mazda Motor Corporation. Vehicle rear suspension. 4,765,650, Cl. 280-723.000

Kamiya, Kozo: *See—*
Kunugiza, Kiyomitsu; and Kamiya, Kozo, 4,766,208, Cl. 536-18.500

Kamojima, Tsutomu: *See—*
Akutsu, Masami; Kamojima, Tsutomu; and Hirasawa, Noboru, 4,765,118, Cl. 53-133.000.

Kanazawa, Yoshifusa; and Kumada, Masayuki, to Honda Giken Kogyo Kabushiki Kaisha. Cooling control apparatus of automobile engine. 4,765,284, Cl. 123-41.490

Kanebo, Ltd: *See—*
Sugimoto, Isao; Togo, Kazunori; Sasaki, Kozo; Yamagata, Atsushi; and Kuchiki, Akira, 4,765,990, Cl. 424-494.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Kimura, Yoshihiro; and Shimazu, Hisao, 4,766,156, Cl. 521-58.000.
Takada, Jun; Yamaguchi, Minori; and Tawada, Yoshihisa, 4,765,845, Cl. 136-258.000.

Kaneken Incorporated: *See—*
Sada, Yoshiaki, 4,765,076, Cl. 40-219.000

Kaneko, Shuzo: *See—*
Toyono, Tsutomu; and Kaneko, Shuzo, 4,765,720, Cl. 350-350.00S.

Kaneko, Tadao: *See—*
Marui, Tomohiro; Kaneko, Tadao; Ao, Kazuo; Shimono, Toshio; and Fukada, Seiichiro, 4,765,547, Cl. 241-40.000

Kaneko, Takuji, to Fuji Robin Kabushiki Kaisha. Fluid injection cultivator. 4,765,261, Cl. 111-7.000.

Kaneo Mohri: *See—*
Mohri, Kaneo; and Yamasaki, Jiro, 4,765,848, Cl. 148-302.000.

Kansai Electric Power Co., The: *See—*
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.

Kantner, Edward: *See—*
Bellows, Richard J.; and Kantner, Edward, 4,766,045, Cl. 429-105.000

Kanzaki, Tsutomu: *See—*
Numoto, Minoru; and Kanzaki, Tsutomu, 4,765,181, Cl. 73-105.000

Kao, Joe. Toy container. 4,765,501, Cl. 220-4.00B.

Kaplan, Vladimir. Method and apparatus for evaporation and liquid separation. 4,765,904, Cl. 210-637.000.

Kaps, Wolfgang, to Minnesota Mining and Manufacturing Company. Drive-out assembly for microfilm apparatus. 4,765,561, Cl. 242-192.000.

Karlsson, Lars, to Pharos AB. Optical scanner with refractive material positioned on inner reflective facets. 4,766,308, Cl. 250-236.000

Karpa, Michael J. Load cell adaptor. 4,765,423, Cl. 177-211.000.

Karrer, Friedrich, to Ciba-Geigy Corporation. Oxime derivatives. 4,766,152, Cl. 514-640.000.

Karsten, Hans K.: *See—*
Gealer, Roy L.; and Karsten, Hans K., 4,765,865, Cl. 156-647.000

Karwan, Henry P., to Advanced Controls, Inc. Electronic depth control for drill. 4,765,784, Cl. 408-13.000

Kasai, Kazumi, to Yoshida Kogyo K. K. Cord tightening device 4,765,034, Cl. 24-136.00R.

Kasai, Kazumi, to Yoshida Kogyo K. K. Watertight slide fastener stringer. 4,765,038, Cl. 24-389.000.

Kaser Associates, Inc.: *See—*
Guins, Sergei G., 4,765,251, Cl. 105-197.050

Kashida, Motokazu; Takei, Masahiro; Takahashi, Kouji; and Nagasawa, Kenichi, to Canon Kabushiki Kaisha. Rotary head reproducer with means for detecting the direction of audio recording during searching. 4,766,507, Cl. 360-72.200.

Kashiwagi, Hiroshi: *See—*
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000.

Kashiwazaki, Hiroshi: *See—*
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.

Katayanagi, Shinichi: *See—*
Suga, Nagaichi; Katayanagi, Shinichi; Sasho, Yoshio; and Mori, Taro, 4,766,488, Cl. 358-93.000.

Kato, Etsuro, to Nissan Chemical Industries, Ltd. Flaky zirconia type fine crystals and methods of producing the same. 4,765,970, Cl. 423-608.000

Kato, Keishi: *See—*
Satoyoshi, Yasuhiko; and Kato, Keishi, 4,765,563, Cl. 242-199.000

Kato, Mitsuharu, to Nippondenso Co., Ltd. One-chip data processing device including low voltage detector. 4,766,567, Cl. 364-900.000.

Kato, Tadashi, to Olympus Optical Co., Ltd. Electronic endoscope with image edge enhancement. 4,766,489, Cl. 358-98.000.

Katoh, Takeshi: *See—*
Kobayashi, Yoshiki; Takenaga, Hiroshi; and Katoh, Takeshi, 4,766,431, Cl. 340-799.000

Katre, Nandini; and Knauf, Michael J., to Cetus Corporation. Solubilization of proteins for pharmaceutical compositions using polymer conjugation. 4,766,106, Cl. 514-12.000

Katsumoto, Takehiko; Hirako, Osamu; and Komagome, Reijiro, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Intake device for internal combustion engine. 4,765,294, Cl. 123-306.000

Kaule, Wittich: *See—*
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen; Lob, Erwin; Lass, Joseph; and Kaule, Wittich, 4,765,656, Cl. 283-70.000

Kaus, Malcolm J.: *See—*
Best, Steven A.; Etherton, Bradley P.; and Kaus, Malcolm J., 4,766,100, Cl. 502-115.000

Kawabata, Masami; Kimoto, Koichi; and Takimoto, Yasuyuki, to Nippon Paint Co., Ltd. Photopolymerizable composition containing a certain xanthene or thioxanthene dyestuff. 4,766,055, Cl. 430-281.000.

Kawada, Yasuyuki: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,765,408, Cl. 166-274.000.

Kawai, Makoto: *See—*
Hayashi, Chikahisa; Kawai, Makoto; Hirose, Yoshikazu; and Mizutani, Junichi, 4,766,326, Cl. 307-10.00R

Kawai, Nobuyuki; and Goto, Yasuo, to Minolta Camera Kabushiki Kaisha. Variable magnification projecting device. 4,766,466, Cl 355-57.000

Kawakami, Hiroshi; Shiratori, Harunori; Sugihara, Koichi; Watanabe, Atsushi; and Kishida, Fumio, to Toyota Jidosha Kabushiki Kaisha. Power-assisted steering system. 4,765,428, Cl. 180-143.000.

Kawakami, Shoichi: *See—*
Matsuo, Masashi; Furukawa, Yutaka; Iwamoto, Toshio; and Kawakami, Shoichi, 4,765,713, Cl. 350-96.340

Kawamata, Syouichi: *See—*
Takahashi, Tadashi; Miyashita, Kunio; and Kawamata, Syouichi, 4,766,376, Cl. 324-208.000.

Kawamoto, Mutumi; Moroto, Shuzo; Yamada, Takashi; and Yokoyama, Shouji, to Aisin-Warner Kabushiki Kaisha; and Kabushiki Kaisha Shinsangyokaihatsu. Control apparatus for four-wheel drive vehicle with center differential mechanism. 4,765,434, Cl 180-249.000

Kawamura, Masaharu: *See—*
Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, 4,766,452, Cl. 354-173.100

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Ishizuka, Masashi; Ando, Rokuro; Hatano, Mikio; and Tabata, Koji, 4,765,249, Cl. 105-10.000

Kawasaki Steel Corporation: *See—*
Marui, Tomohiro; Kaneko, Tadao; Ao, Kazuo; Shimono, Toshio; and Fukada, Seiichiro, 4,765,547, Cl. 241-40.000

Kawashima, Hatsuo, to Fuji Kiko Kabushiki Kaisha. Seat reclining device. 4,765,680, Cl. 297-367.000

Kawashima, Masatoshi, to Hitachi, Ltd. Semiconductor integrated circuit device having an improved buffer arrangement. 4,766,475, Cl. 357-40.000

Kawashima, Syoichiro, to Fujitsu Limited. Semiconductor memory device. 4,766,571, Cl. 365-189.000

Kawata, Hiroitsu: *See—*
Sonobe, Takashi; Sugiura, Hiroshi; Itoh, Tomoh; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,765,988, Cl. 424-468.000

Kay, Ian T., to Imperial Chemical Industries PLC. Aroylaminomethylpyridines, composition containing them, and method of combatting fungi using them. 4,766,132, Cl. 514-332.000

Kaya, Azmi; and Keyes, Marion A., IV. Heat exchanger performance monitor. 4,766,553, Cl. 364-506.000

Kaysserian, Kerry M. Holder and dispenser for multiple rolls of tissue 4,765,475, Cl. 206-394.000

Kazui, Shinichi: *See—*
Imura, Midori; Morijiri, Makoto; Hanazono, Masanobu; and Kazui, Shinichi, 4,766,009, Cl. 427-53.100

Keating, Robert F.: *See—*
Ermold, Leonard F.; Keating, Robert F.; and Nelson, Lawrence A., 4,765,374, Cl. 138-89.000

Keely, Stanley L.: *See—*
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,766,117, Cl 514-219.000

Kehr, Wolfgang: *See—*
Sauer, Gerhard; Haffer, Gregor; Wachtel, Helmut; Schneider, Herbert H.; and Kehr, Wolfgang, 4,766,128, Cl. 514-288.000

Keiper Recaro Incorporated: *See—*
Houghtaling, Bruce; and White, Harry H., 4,765,681, Cl 297-367.000

Keller, Hans: *See—*
Kolditz, Dietmar, Keller, Hans; and Ernst-Kienzle, Karl, 4,765,314, Cl. 128-4.000

Keller, Jakob: *See—*
Hellat, Jaan; and Keller, Jakob, 4,765,146, Cl. 60-746.000

Keller, Philip J.; and Cohen, Robert C., to Osteonics Corp. Surgical instrument handle coupling. 4,765,328, Cl. 128-303.00R

Kelley, David C.: *See—*
Lancaster, Gerald M.; Cramm, Russell H.; Kelley, David C.; and Neywick, Charles V., 4,766,035, Cl. 428-345.000

Kelly, James D.: *See—*
Murray, Mark J.; and Kelly, James D., 4,766,073, Cl. 435-172.300

Kelsey, Donald R.: *See—*
Clendinning, Robert A.; and Kelsey, Donald R., 4,766,197, Cl. 528-125.000

Kemeny, George A.: *See—*
Deis, Daniel W.; Kemeny, George A.; and Scherbarth, David W., 4,766,336, Cl. 310-12.000

Kemisk Vaerk Koge A/S: *See—*
Vinther, Arne; Olsen, Steffen C.; Larsen, Bjorn E. H.; Madsen, Elun S.; and Madsen, Bjorn, 4,765,841, Cl. 106-402.000

Kemp, Preston B., Jr., to GTE Products Corporation. Process for producing tungsten heavy alloy sheet by direct hydrometallurgical process. 4,765,951, Cl. 419-47.000

Kemp, Preston B., Jr., to GTE Products Corporation. Process for producing tungsten heavy alloy sheet by a loose fill hydrometallurgical process. 4,765,952, Cl. 419-47.000.

Kempf, David N.; Jefferson, Ford C.; and Chandler, Brian L., to Emhart Industries, Inc. Hydrocarbon probe. 4,765,178, Cl. 73-49.200

Kent, Charles C. Wheeled walking device. 4,765,355, Cl. 135-67.000

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. *See—*
Frohling, Werner; Kugeler, Manfred; Kugeler, Kurt; and Philippen, Peter W., 4,765,406, Cl. 166-247.000

Kernforschungszentrum Karlsruhe GmbH: *See—*
Ruckert, Friedrich, 4,766,081, Cl. 436-144.000

Kersten, Ralf T.; and Siefert, Wolfgang, to Schott Glaswerke. Method for making planar lightwave guides. 4,765,819, Cl. 65-30.100

Kessel, Jason H., to West End Hub Spring Company. Folding portable crib. 4,765,004, Cl. 5-93.00R

VOL 1093 ISS 4 AG 23 1988 UMI

Kessler, Robert M.: *See—*
Conturo, Thomas E.; and Kessler, Robert M., 4,766,381, Cl. 324-309.000

Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co.: *See—*
Spath, Dieter, 4,765,215, Cl. 83-153.000.

Keyes, Marion A., IV: *See—*
Kaya, Azmi; and Keyes, Marion A., IV, 4,766,553, Cl. 364-506.000.

Khalafalla, Sanaa E. S.; Engelmann, William H.; and Pahlman, John E., to United States of America, Interior. Isoelectric drilling method. 4,765,415, Cl. 175-50.000.

Khoobiar, Sargis, to Arco Chemical Company. Dehydrogenation of isobutane. 4,766,266, Cl. 585-660.000.

Kiedrowski, Paul A., to Motorola, Inc. Broadband temperature compensated microwave cavity oscillator. 4,766,398, Cl. 331-96.000.

Kiel, Jonathan L.; and Everse, Johannes, to United States of America, Air Force. Method for immunosuppression. 4,766,150, Cl. 514-567.000.

Kiger, William E.: *See—*
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Kihara, Nobutaka; Asano, Ichiro; and Kojima, Kennosuke, to Horiba, Ltd. Sensitivity-calibration circuit for use in an absorption analyzer. 4,766,304, Cl. 250-214.00C.

Kim, Woo J., to Gold Star Co., Ltd. Device for verifying operational conditions of monitor. 4,766,493, Cl. 358-139.000.

Kimberly-Clark Corporation: *See—*
Brock, Robert J.; Conn, William; and Weber, James M., 4,766,029, Cl. 428-286.000.

Kimberly-Clark Limited: *See—*
Rowlands, Martyn; and Calvert, John, 4,765,039, Cl. 24-556.000.

Kime, David R. Multi-channel radio-controlled robotic jockey/monitor. 4,765,276, Cl. 119-29.000

Kimmet, Mark S.: *See—*
Harwood, Jon W.; Rosa, Bruno A.; Van Blaircum, Bennie A.; and Kimmet, Mark S., 4,765,437, Cl. 181-282.000.

Kimoto, Koichi: *See—*
Kawabata, Masami; Kimoto, Koichi; and Takimoto, Yasuyuki, 4,766,055, Cl. 430-281.000.

Kimura, Yoshihiro; and Shimazu, Hisao, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Pellets of chlorinated vinyl chloride resin composition, pre-expanded particles and process for preparing thereof. 4,766,156, Cl. 521-58.000.

Kinard, Michael D.: *See—*
Bohannon, William D., Jr.; Kinard, Michael D.; and Reynolds, Mickey R., 4,765,712, Cl. 350-96.230

Kincaid, Larry: *See—*
Aidlin, Samuel S.; Aidlin, Stephen H.; and Kincaid, Larry, 4,765,119, Cl. 53-308.000.

Kindler, Andrew: *See—*
McHardy, John; Ludwig, Frank A.; Higley, Lin R.; Kindler, Andrew; and Townsend, Carl W., 4,766,522, Cl. 361-433.000.

King, Norman R.; and Collins, Kent L., to North American Philips Corporation. Arc discharge lamp. 4,766,338, Cl. 313-25.000.

Kinglor-Ltd.: *See—*
Ferrari, Lorenzo, 4,765,599, Cl. 266-216.000.

Kingsley, Charles A.: *See—*
Miller, John W.; Peterson, Linn A.; and Kingsley, Charles A., 4,765,601, Cl. 267-140.100.

Kinney, Thomas R., to Interlake Corporation, The. Gravity feed merchandise rack. 4,765,493, Cl. 211-59.200.

Kinoshita, Takashi: *See—*
Tokuda, Shoichi; Ito, Yuusuke; Otsuka, Saburo; and Kinoshita, Takashi, 4,765,974, Cl. 424-443.000

Kinoshita, Toshiya: *See—*
Koizumi, Tadashi; and Kinoshita, Toshiya, 4,765,739, Cl. 356-350.000

Kioritz Corporation: *See—*
Nagashima, Akira, 4,765,282, Cl. 123-41.700.
Nagashima, Akira, 4,765,933, Cl. 261-44.600
Sonoda, Satoshi, 4,765,040, Cl. 24-656.000

Kirby, Peter J.: *See—*
Beynon, Thomas G. R.; and Kirby, Peter J., 4,765,752, Cl. 374-153.000

Kirchen, Michel: *See—*
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000

Kirkland, Billie R., to J. M. Huber Corporation. Roller mill. 4,765,755, Cl. 384-126.000

Kishida, Fumio: *See—*
Kawakami, Hiroshi; Shiratori, Harunori; Sugihara, Koichi; Watanabe, Atsushi; and Kishida, Fumio, 4,765,428, Cl. 180-143.000

Kishimoto, Yuji: *See—*
Wataya, Seiji; and Kishimoto, Yuji, 4,765,299, Cl. 123-479.000.

Kita, Ryusuke: *See—*
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000

Kitagawa, Sotoyuki; Nakayama, Takashi; and Isono, Masatoshi, to Tonen Sekiyukagaku K.K. Process for producing polypropylene foam. 4,766,159, Cl. 521-134.000

Kitamura, Hajime: *See—*
Ueno, Susumu; Kitamura, Hajime; and Inoue, Kaname, 4,765,860, Cl. 156-272.600

Kitamura, Sakae; Kurauchi, Yasuhiro; and Seita, Toru, to Toyo Soda Manufacturing Co., Ltd. Method for recovering acids from an aqueous solution of the acids and metal salts by means of a fluorinated anion exchange membrane. 4,765,905, Cl. 210-638.000.

Kitamura, Takao: *See—*
Komatsu, Takahiro; Ide, Tohru; Akiyama, Hirohumi; Kitamura, Takao; and Yamamoto, Shinichi, 4,766,258, Cl. 570-168.000.

Kitamura, Takeshi: *See—*
Sato, Toshihiko; Kitamura, Takeshi; and Nagaoka, Shinsaku, 4,766,034, Cl. 428-336.000.

Kitamura, Yutaka; and Aso, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Cooling device for vehicle mounted generator. 4,765,283, Cl. 123-41.310.

Kitz Corporation: *See—*
Minai, Yasuo, 4,765,592, Cl. 251-368.000.

Kjosness, David P.; and Marriott, Joe E., to Hewlett-Packard Company. Coaxial switching system with switched shields and crosstalk suppression. 4,766,401, Cl. 333-12.000

Kleber, Rolf: *See—*
Wehowsky, Frank; Kleber, Rolf; and Jaeckel, Lothar, 4,766,234, Cl. 560-26.000

Klebold, Buddy; and Howard, Joe C., Jr. Wrenches. 4,765,209, Cl. 81-57.170.

Kleffner, Daniel J.: *See—*
Davis, Malcolm H.; Janes, Kent A.; Kleffner, Daniel J.; Seltzer, William P.; and Spence, Hugh F., 4,766,295, Cl. 235-383.000.

Kleinberg, Robert L.; Clark, Brian; Chew, Weng C.; and Mariani, David, to Schlumberger Technology Corp. Well logging apparatus for determining dip, azimuth, and invaded zone conductivity. 4,766,384, Cl. 324-339.000

Kleyla, Vince: *See—*
Wolters, Richard H.; Kleyla, Vince; Hooton, Arnold J.; and Converse, Gregory L., 4,766,422, Cl. 340-700.000

Klickstein, Reuben B. Child to adult tether. 4,765,279, Cl. 119-109.000.

Klingberg, Alfred: *See—*
David, Bernd; and Klingberg, Alfred, 4,765,441, Cl. 187-9.00E.

Klingesberger, Johann, to Voest-Alpine Aktiengesellschaft. Apparatus for flanging sheet metal blanks. 4,765,171, Cl. 72-316.000.

Klug, Mark W.: *See—*
Ricketson, Tommy H.; Klug, Mark W.; McGlory, John J.; and Smith, David W., 4,765,531, Cl. 228-179.000.

Klumparendt, Wolfgang, to MAB Marlies Kellermann. Glass sorting apparatus. 4,765,484, Cl. 209-577.000.

Klyamov, Kostadin S.: *See—*
Genchev, Lyubomir N.; Kafedjiev, Iliya C.; Klyamov, Kostadin S.; and Atanasov, Stefan G., 4,765,233, Cl. 99-472.000.

Knape & Vogt Manufacturing Company: *See—*
Bessinger, Walter L.; and Clement, Gene R., 4,765,699, Cl. 312-339.000

Knauf, Michael J.: *See—*
Katre, Nandini; and Knauf, Michael J., 4,766,106, Cl. 514-12.000

Knudsen, Soren E., to Dansk Industri Syndikat A/S. Core setter. 4,765,389, Cl. 164-340.000

Kobayashi, Haruhito: *See—*
Fukuda, Michio; Fudo, Eiji; Tani, Koichi; and Kobayashi, Haruhito, 4,765,052, Cl. 29-450.000.

Kobayashi, Hideki: *See—*
Honma, Hiroshi; Hamada, Mitsuo; and Kobayashi, Hideki, 4,766,170, Cl. 524-500.000

Kobayashi, Kenichi, to Fujitsu Limited. Method for testing a photomask. 4,765,744, Cl. 356-398.000.

Kobayashi, Kenichi: *See—*
Nara, Seietsu; Hirokawa, Katsuhisa; and Kobayashi, Kenichi, 4,766,294, Cl. 235-380.000.

Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, to Maeda Iron Works Co., Ltd.; and Osaka Gas Co., Ltd. Direct-contact type hot water heater. 4,765,280, Cl. 122-5.50A.

Kobayashi, Manabu, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for internal combustion engine. 4,765,285, Cl. 123-52.00M.

Kobayashi, Masaaki; Hanba, Norio; Tanaka, Akira; and Abe, Tsunehiko, to Nippon Leakless Industry Co., Ltd. Metal gasket for a cylinder head on an internal combustion engine. 4,765,634, Cl. 277-235.00B.

Kobayashi, Masatsune: *See—*
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000

Kobayashi, Ryuichi: *See—*
Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, 4,766,452, Cl. 354-173.100

Kobayashi, Yasuhito: *See—*
Yagi, Motoi; Miyabayashi, Tadao; Morikawa, Yasuo; and Kobayashi, Yasuhito, 4,766,506, Cl. 360-37.100.

Kobayashi, Yasuo, to NEC Corporation. Semiconductor memory having a bypassable data output latch. 4,766,572, Cl. 365-190.000.

Kobayashi, Yoshiki; Takenaga, Hiroshi; and Katoh, Takeshi, to Hitachi, Ltd. Peripheral apparatus for image memories. 4,766,431, Cl. 340-799.000

Kobayashi, Yoshiteru; Konno, Isao; and Matsuura, Jun-ichi, to Agency of Industrial Science and Technology. Materials for gas separation. 4,766,229, Cl. 556-138.000

Kobayashi, Yuji; and Takamori, Tsutomu, to Sony Corporation. Phase error correcting apparatus. 4,766,495, Cl. 358-148.000.

Koch Engineering Company, Inc.: *See—*
Buchholz, Matthew; and Zandt, Robert O., 4,765,204, Cl. 76-101.00R.

Koch, Russell W.; and Snyder, Douglas D., to Firestone Tire & Rubber Company, The. Tire repair by "patch only" method. 4,765,852, Cl. 156-97.000

Kociolek, Kenneth W.: *See—*
Kadlec, Joseph; Kociolek, Kenneth W.; and Okrzesik, Thaddeus P., 4,766,355, Cl. 315-399.000.

Kodato, Setsuo, to Anritsu Corporation. Method of manufacturing thin film conductor which contains silicon and germanium as major components. 4,766,008, Cl. 427-39.000.

Koehlert, Kenneth C.: *See—*
Gattuso, Todd R.; Koehlert, Kenneth C.; Neville, Matthew; Reznek, Steven R.; and Senecal, Joseph A., 4,765,920, Cl. 252-62.580.

Koenig, Dieter: *See—*
Engelskirchen, Jurgen; and Koenig, Dieter, 4,765,378, Cl. 141-69.000.

Koenig, Harald: *See—*
Brownbill, Thomas D.; and Koenig, Harald, 4,765,265, Cl. 112-88.000

Kogan, Timothy: *See—*
Czarniecki, Michael F.; Verbiar, Laura L.; and Kogan, Timothy, 4,766,109, Cl. 514-17.000.

Kohl, Walter. Integral foam body and method of manufacturing the same. 4,766,031, Cl. 428-317.900

Kohlheb, Robert. Coiled membrane filter cartridge. 4,765,893, Cl. 210-315.000.

Kohn, Rachel S., to Hoechst Celanese Corporation. Process for preparing ultrathin polymethylmethacrylate polymer films. 4,765,939, Cl. 264-298.000

Kohnen, Klaus; Linke, Adolf; and Niermann, Hans, to Krupp-Koppers GmbH. Stuffing box sealing arrangement. 4,765,631, Cl. 277-2.000.

Kohno, Mitsuo: *See—*
Yoshimura, Isao; Nakao, Takashi; and Kohno, Mitsuo, 4,766,033, Cl. 428-332.000

Kohr, William J.: *See—*
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 4,766,075, Cl. 435-240.200.

Koike, Yuzuru; and Nishikawa, Takafumi, to Honda Giken Kogyo Kabushiki Kaisha. Fuel supply control method for internal combustion engines after starting. 4,765,301, Cl. 123-491.000.

Koizumi, Tadashi; and Kinoshita, Toshiya, to Kabushiki Kaisha Toshiba. Fiber optical rotation sensor utilizing the Sagnac phase difference. 4,765,739, Cl. 356-350.000.

Kojima, Kenji: *See—*
Jinbo, Masato; and Kojima, Kenji, 4,766,459, Cl. 355-3.0SH.

Kojima, Kennosuke: *See—*
Kihara, Nobutaka; Asano, Ichiro; and Kojima, Kennosuke, 4,766,304, Cl. 250-214.00C.

Kojima, Kunio: *See—*
Sekimoto, Yoshihiro; Terashima, Shigeo; and Kojima, Kunio, 4,766,584, Cl. 369-4.000

Kojima, Masao: *See—*
Ariizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, 4,765,370, Cl. 137-625.650.

Kojima, Shinji; Wataya, Seiji; and Nishiyama, Ryoji, to Mitsubishi Denki Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines. 4,765,298, Cl. 123-440.000.

Kokushin Sanhyo Kabushiki Kaisha: *See—*
Sudoh, Kunio; and Nogami, Kohei, 4,765,685, Cl. 297-488.000

Kolb, Wolfgang: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B.

Kolditz, Dietmar; Keller, Hans; and Ernst-Kienzle, Karl, to Aesculap-Werke Aktiengesellschaft. Device for introducing an endoscope or a surgical tool into body cavities with a feed for a flushing medium and an extractor for said flushing medium. 4,765,314, Cl. 128-4.000.

Kolton, Chester; and Spater, Stuart S., to B&G Plastics, Inc. Hanger for neckties and suspenders. 4,765,467, Cl. 206-296.000.

Komagome, Reijiro: *See—*
Katsumoto, Takehiko; Hirako, Osamu; and Komagome, Reijiro, 4,765,294, Cl. 123-306.000

Komatsu, Takahiro; Ide, Tohru; Akiyama, Hirohumi; Kitamura, Takao; and Yamamoto, Shinichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for producing hydrocarbon fluoride. 4,766,258, Cl 570-168.000

Komatsu, Toshiyuki: *See—*
Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki; Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, 4,766,477, Cl. 357-59.000

Komine, Naoto: *See—*
Mitsuhashi, Masayuki; Komine, Naoto; and Shimizu, Takao, 4,766,271, Cl. 200-159.00B.

Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, to Budapesti Vegyimuvek; and MTA Kozponti Kemiai Kutato Intezet. Herbicidal aryloxy phenoxy acyl malonates. 4,765,825, Cl. 71-94.000

Komossa, Werner; and Brand, Peter, to Korber AG. Shock absorber. 4,765,445, Cl. 188-299.000

Komoto, Haruo; Hamada, Shigeharu; Shimoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha; and Nippon Steel Corporation. Plating current automatic compensating apparatus. 4,765,878, Cl. 204-211.000.

Kona, Hideaki: *See—*
Hoshiko, Hidetoshi; Kona, Hideaki; Yamamoto, Masanori; and Inoue, Koichi, 4,765,533, Cl. 229-101.000.

Kondo, Mitsuo, to Daito Seiki Company Limited. Crooked cut detecting system applicable to a sawing machine. 4,765,213, Cl. 83-61.000

Kondo, Toshiro; and Yamamoto, Tadanobu, to Mazda Motor Corporation. Vehicle suspension system. 4,765,647, Cl. 280-701.000.

Kondo, Toshiro: *See—*
Kameshima, Tetsuya; Kondo, Toshiro; and Shimoe, Hiroo, 4,765,650, Cl. 280-723.000

Konishiroku Photo Industry Co., Ltd.: *See—*
Ninomiya, Hidetaka; and Sato, Ryosuke, 4,766,060, Cl. 430-553.000
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000
Sato, Toshihiko; Kitamura, Takeshi; and Nagaoka, Shinsaku, 4,766,034, Cl. 428-336.000

Konno, Isao: *See—*
Kobayashi, Yoshiteru; Konno, Isao; and Matsuura, Jun-ichi, 4,766,229, Cl. 556-138.000

Kono, Satoshi; Nomura, Koshi; and Kyomasu, Mikio, to Ricoh Company, Ltd. Method of making a memory device with polysilicon electrodes. 4,766,088, Cl. 437-52.000

Konop, Mitchell J.: *See—*
Hartley, Philip G.; Cheatley, Harvey W.; and Konop, Mitchell J., 4,765,896, Cl. 210-474.000.

Konstantin, Anatole E.; Konstantin, William N.; and Malkowski, Jaroslaw T., to PDC International Corporation. Banding apparatus with floating mandrel. 4,765,121, Cl. 53-442.000

Konstantin, William N.: *See—*
Konstantin, Anatole E.; Konstantin, William N.; and Malkowski, Jaroslaw T., 4,765,121, Cl. 53-442.000

Kopp, Richard: *See—*
Grogler, Gerhard; Kopp, Richard; and Hess, Heinrich, 4,766,239, Cl. 560-351.000

Kopperschmidt-Mueller GmbH & Co. Kg: *See—*
Kuhn, Wolfgang; and Rapp, Karl, 4,765,544, Cl. 239-698.000

Koppy Corporation: *See—*
Sampson, Sheldon E., 4,765,167, Cl. 72-68.000.

Korber AG: *See—*
Komossa, Werner; and Brand, Peter, 4,765,445, Cl. 188-299.000

Korcz, William H.: *See—*
Michaels, Nicholas; Korcz, William H.; Campbell, R. Neil; and Singhal, Surendra N., 4,766,019, Cl. 428-35.000

Kordomenos, Panagiotis: *See—*
Ryntz, Rose A.; Kurple, Kenneth R.; and Kordomenos, Panagiotis, 4,766,185, Cl. 525-479.000

Korn, Justin; and Schmelzer, Stephen F., to Korn, Justin. Information retrieval system and method using independent user stations. 4,766,581, Cl. 369-30.000

Kortje, Joseph P.: *See—*
Bardutz, Ronald W.; Kortje, Joseph P.; and Twardy, Craig P., 4,766,606, Cl. 379-344.000

Kose, Kenji: *See—*
Matsuno, Kazumasa; and Kose, Kenji, 4,765,455, Cl. 198-779.000

Koshimo, Masahiko, to Kabushiki Kaisha Daikin Seisakusho. Stepless speed-change power transmission for vehicle. 4,765,200, Cl 74-731.000

Koya, Keizo: *See—*
Takahashi, Osamu; Koyama, Koichi; and Koya, Keizo, 4,766,056, Cl. 430-351.000

Koyama, Katsuhiko: *See—*
Okabe, Kanichi; Suzuki, Hirotsugu; Nishio, Kohsaku; and Koyama, Katsuhiko, 4,766,603, Cl. 378-152.000

Koyama, Koichi: *See—*
Takahashi, Osamu; Koyama, Koichi; and Koya, Keizo, 4,766,056, Cl. 430-351.000

Koyo Seiko Co., Ltd.: *See—*
Umezaki, Kazuyuki, 4,765,761, Cl. 384-484.000.

Kozakai, Katsumi: *See—*
Ishida, Tokuji; Kozakai, Katsumi; and Hamada, Masataka, 4,766,302, Cl. 250-201.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Walleser, Albin, 4,765,945, Cl. 376-258.000

Kramer, Andrea: *See—*
Modes, Christina; Meyer, Heinrich; Burgsdorff, Jochen-Werner K.; Stroder, Ulrich; and Kramer, Andrea, 4,765,874, Cl. 204-105.00R

Kramlich, Beverlea J.: *See—*
Tallman, James L.; Sherbeck, Terry G.; and Kramlich, Beverlea J., 4,766,425, Cl. 340-712.000

Kranz, Eckart: *See—*
Muller, Nikolaus; Kranz, Eckart; and Andrews, Peter, 4,766,144, Cl. 514-457.000

Krasso, Anna: *See—*
Fischli, Albert; Krasso, Anna; and Szente, Andre , 4,766,133, Cl. 514-338.000

Kraus, Friedrich: *See—*
Merkenschlager, Hans-Hermann; Kraus, Friedrich; and Szolnoki, Gergely, 4,766,325, Cl. 250-572.000

VOL 1093 ISS 4 AG 23 1988 UMI

Kraus, Josef; and Wech, Erich, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Safety rail for accident prevention in rotary printing machines. 4,765,240, Cl. 101-216.000.

Krechmery, Roger L.; and Finefrock, Mark D., to Bourns Instruments, Inc. Pressure transducer with integral digital temperature compensation. 4,765,188, Cl. 73-708.000.

Kremer, Victor: *See*—
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000.

Kren, George J.: *See*—
Saadat, Soheil; Pecen, Jiri; Neukermans, Armand P.; and Kren, George J., 4,766,324, Cl. 250-563.000.

Kresmery, Robert C. Ladder retaining device and method for using same. 4,765,439, Cl. 182-107.000.

Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. β-substituted polyfluoroethyl compounds. 4,766,248, Cl. 568-31.000.

Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions having flame-retarding properties. 4,766,165, Cl. 524-140.000.

Krieg, Aloisius; Huger, Alois M.; and Schnetter, Wolfgang, to Boehringer Mannheim GmbH. New strain of Bacillus, a toxin derived thereof and a composition for combating Coleoptera. 4,766,203, Cl. 530-370.000.

Krishnan, Palaniappa: *See*—
Berlage, Arnold G.; Krishnan, Palaniappa; Bilsland, Douglas M.; and Brandenburg, N. Robert, 4,765,486, Cl. 209-8.000.

Kroger, David G., to Magnum Fiberglass Products Inc. Dike assembly. 4,765,775, Cl. 405-52.000.

Krogh, Kris K. Drill guide. 4,765,786, Cl. 408-110.000.

Krufka, Frank S.; and Wetzel, Charles M., to RCA Licensing Corporation. Method of inspecting a master member. 4,765,743, Cl. 356-388.000.

Krukoski, Leon; and Laprad, Richard F., to United Technologies Corporation. Fuel control with smooth mode transition. 4,765,133, Cl. 60-39.060.

Krukowski, Richard, to Biodex Corporation. Particle brake clutch muscle exercise and rehabilitation apparatus. 4,765,315, Cl. 128-25.00R

Krum, Alvin L.; and Conklin, Charles W., to Hughes Aircraft Company. Low resistance electrical interconnection for synchronous rectifiers. 4,766,479, Cl. 357-74.000.

Krupp-Koppers GmbH: *See*—
Kohnen, Klaus; Linke, Adolf; and Niermann, Hans, 4,765,631, Cl. 277-2.000

Krupp MaK Maschinenbau GmbH: *See*—
Sombrowski, Heinz, 4,765,221, Cl. 89-1.130.

Kruse, Heinz-Josef; Theis, Ulrich; Pahnke, Klaus D.; Wallow, Peter; and Becker, Wilfried, to Rheinmetall GmbH. Limited range, arrow stabilized subcaliber projectile for a tubular weapon. 4,765,248, Cl. 102-529.000

Kuan, Chin-Sheng; and Liao, Chin-Mann. Self-supported mosquito incense. 4,765,090, Cl. 43-127.000

Kubec, Joseph B.: *See*—
Marnett, Lawrence F.; and Kubec, Joseph B., 4,766,167, Cl. 524-310.000

Kubo, Chikanari. Method of apparatus of applying a liquid to a plane surface. 4,766,016, Cl. 427-428.000

Kubo, Setsuo, to Kabushiki Kaisha Dymosha. Guide pulley base for wire saw. 4,765,307, Cl. 125-21.000.

Kubota, Masashi: *See*—
Abe, Yoshio; Kubota, Masashi; and Miyake, Kou, 4,766,427, Cl. 340-721.000

Kuchem, Christopher L. Building panel support member with built-in illumination means. 4,765,102, Cl. 52-28.000.

Kuchiki, Akira: *See*—
Sugimoto, Isao; Togo, Kazunori; Sasaki, Kozo; Yamagata, Atsushi; and Kuchiki, Akira, 4,765,990, Cl. 424-494.000.

Kudo, Yoshihiko, to Nippon Kogaku K. K. Air flow shielding attachment for use in projection type exposure apparatus. 4,766,309, Cl. 250-237.00R

Kuech, Thomas F.: *See*—
Hovel, Harold J.; and Kuech, Thomas F., 4,766,093, Cl. 437-129.000

Kugeler, Kurt: *See*—
Frohling, Werner; Kugeler, Manfred; Kugeler, Kurt; and Phlippen, Peter W., 4,765,406, Cl. 166-247.000.

Kugeler, Manfred: *See*—
Frohling, Werner; Kugeler, Manfred; Kugeler, Kurt; and Phlippen, Peter W., 4,765,406, Cl. 166-247.000

Kuhlman Corporation: *See*—
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., 4,765,861, Cl. 156-457.000.

Kuhn, Wolfgang; and Rapp, Karl, to Kopperschmidt-Mueller GmbH & Co. Kg. Electrostatic spray gun. 4,765,544, Cl. 239-698.000

Kuhstoss, Stuart A.; and Rao, R. Nagaraja, to Eli Lilly and Company Method of using bacteriophage lambda p_1 promoter to produce a functional polypeptide in streptomyces. 4,766,066, Cl. 435-68.000.

Kulicke and Soffa Industries Inc.: *See*—
Ricketson, Tommy H.; Klug, Mark W.; McGlory, John J.; and Smith, David W., 4,765,531, Cl. 228-179.000.

Kulik, Yaroslav P.; Shmyrin, Ivan I.; and Rutenburg, Grigory M. Wound retractor. 4,765,311, Cl. 128-3.000

Kulyk, John W., to Rogers Brothers Corporation. Non-ground engaging lifting apparatus for detachable gooseneck trailers. 4,765,638, Cl. 280-423.00B

Kumada, Masayuki: *See*—
Kanazawa, Yoshifusa; and Kumada, Masayuki, 4,765,284, Cl. 123-41.490.

Kumakura, Masahiro, to Olympus Optical Co., Ltd. Objective part replaceable endoscope tip. 4,765,313, Cl. 128-4.000.

Kumasaka, Noriyuki: *See*—
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, 4,766,039, Cl. 428-469.000.

Kumashiro, Kenji: *See*—
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000.

Kume, Takeshi. Torque detector. 4,765,191, Cl. 73-862.190.

Kumobayashi, Hidenori: *See*—
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,225, Cl. 556-16.000.
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,227, Cl. 556-21.000.

Kunde, Klaus: *See*—
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B.

Kunugiza, Kiyomitsu; and Kamiya, Kozo, to Takeda Chemical Industries, Ltd. Method of performing an oxidation reaction. 4,766,208, Cl. 536-18.500.

Kuo, Clinton C. K., to Motorola, Inc. Single transistor cell for electrically-erasable programmable read-only memory and array thereof. 4,766,473, Cl. 357-23.500

Kuo, Jih-Fen: *See*—
Sadeghi, Mohammad-Ali; Sadeghi, Kazem; Kuo, Jih-Fen; Jang, Long-Kuan; and Yen, Teh F., 4,765,885, Cl. 208-391.000.

Kurauchi, Yasuhiro: *See*—
Kitamura, Sakae; Kurauchi, Yasuhiro; and Seita, Toru, 4,765,905, Cl. 210-638.000

Kurbjuhn, Wilfried: *See*—
Mellwig, Dieter; and Kurbjuhn, Wilfried, 4,765,021, Cl. 16-20.000.

Kureha Chemical Industry Company Limited: *See*—
Akutsu, Masami; Myowa, Koh; and Hirasawa, Noboru, 4,765,117, Cl. 53-133.000.
Akutsu, Masami; Kamojima, Tsutomu; and Hirasawa, Noboru, 4,765,118, Cl. 53-133.000.

Kurgan, Leonard J.; and Bauer, Fred P., to Universal Manufacturing Corporation. Fluorescent ballast assembly. 4,766,406, Cl. 336-65.000.

Kurihara, Kazumasa; and Arai, Kenji, to Diesel Kiki Co., Ltd. Clutch control apparatus responsive to motor and gearing controls. 4,765,450, Cl. 192-0.052

Kurihara, Kazumasa; and Arai, Kenji, to Diesel Kiki Co., Ltd. Apparatus for automatically controlling starting of vehicle powered by internal combustion engine. 4,766,544, Cl. 364-424.100.

Kurio, Noriyuki; and Yoshimi, Hiroshi, to Mazda Motor Corporation. Engine lubricating system. 4,765,291, Cl. 123-196.00R.

Kuroda, Takao; Hiruma, Kenji; and Matsumura, Hiroyoshi, to Hitachi, Ltd. Method of growing heteroepitaxial InP on Si using Sn substrate implantation. 4,766,092, Cl. 437-126.000.

Kurokawa, Takashi, to Canon Kabushiki Kaisha. Process for forming deposited film. 4,766,007, Cl. 427-39.000.

Kuronya, Istvan: *See*—
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Kurozumi, Seizi: *See*—
Noyori, Ryoji; Fukushima, Masanori; Kurozumi, Seizi; and Sugiura, Satoshi, 4,766,147, Cl. 514-530.000.

Kurple, Kenneth R.: *See*—
Ryntz, Rose A.; Kurple, Kenneth R.; and Kordomenos, Panagiotis, 4,766,185, Cl. 525-479.000.

Kurz Kunststoffe GmbH: *See*—
Seifert, Josef, 4,765,469, Cl. 206-309.000

Kuwabara, Nobuaki: *See*—
Nakano, Harumi; Shinmura, Yoshihito; Fukumura, Masaaki; and Kuwabara, Nobuaki, 4,766,529, Cl. 364-513.500.

Kuwahara, Kazuhiko: *See*—
Morita, Shigeru; Kuwahara, Kazuhiko; Tomoda, Masayasu; and Oka, Masahiko, 4,766,190, Cl. 526-247.000.

KVAL Marketing Inc.: *See*—
Kvalheim, Andrew M.; and Pedersen, Flemming M., 4,765,684, Cl. 297-429.000

Kvalheim, Andrew M.; and Pedersen, Flemming M., to KVAL Marketing Inc. Multi-purpose chair with retractable knee rest. 4,765,684, Cl. 297-429.000.

Kyomasu, Mikio: *See*—
Kono, Satoshi; Nomura, Koshi; and Kyomasu, Mikio, 4,766,088, Cl. 437-52.000.

L-TEC Company: *See*—
Fuhrhop, Ronald E.; and Makara, Raymond J., 4,765,597, Cl. 266-51.000

Labat, Yves, to Societe Nationale Elf Aquitaine. Polymers of unsaturated alcohol thioethers. 4,766,195, Cl. 528-76.000.

Labombarde, Raymond A., to International Paper Box Machine Co., Inc. Apparatus and method for segregating counted slugs of flats. 4,765,451, Cl. 198-425.000.

Laboratoires de Pharmacologie Homeopathique Dolisos - Laboratoires Jean Tetau: *See*—
Szymanski, Patrice, 4,765,379, Cl. 141-381.000

Laboratoires, P.O.S.: *See*—
Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, 4,766,151, Cl. 514-640.000.

Laborlux S. A.: *See*—
Beckmann, Franz; Schmit, Romain; and Wagner, Armand, 4,765,829, Cl. 75-25.000.

Lafayette Manufacturing, Inc.: *See*—
Lafayette, Maurice, Jr., 4,765,112, Cl. 52-511.000.

Lafayette, Maurice, Jr., to Lafayette Manufacturing, Inc. Apparatus and method for mounting stone siding. 4,765,112, Cl. 52-511.000.

Lafourcade, Suzanne L.: *See*—
Geneix, Catherine; Lafourcade, Suzanne L.; and Ribereau-Gayon, Pascal, 4,765,992, Cl. 426-15.000.

Lagadec, Roger: *See*—
Wilkinson, James H.; and Lagadec, Roger, 4,766,602, Cl. 375-116.000.

Lagerberg, Erik V. S.: *See*—
Hagenfeldt, Carl P. U.; Bernhardsson, Sven-Olof; and Lagerberg, Erik V. S., 4,765,953, Cl. 420-65.000.

Lagrange, Alain: *See*—
Lang, Gerard; Shroot, Braham; Forestier, Serge; and Lagrange, Alain, 4,766,235, Cl. 560-051.000.

Lahmeyer, Charles R., to United States of America, National Aeronautics and Space Administration. Nanosequencer digital logic controller. 4,766,533, Cl. 364-200.000.

Lai, Wen-Chao: *See*—
Rourke, William J.; Lai, Wen-Chao; and Natansohn, Samuel, 4,765,909, Cl. 210-672.000.

l'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation Des Procedes Georges Claude: *See*—
Boussemaer, Jean-Pierre, 4,766,063, Cl. 435-5.000
Mizandjian, Jean-Luc; Meyer, Jean-Marc; and Amen, Jean, 4,766,001, Cl. 426-477.000.

Lake, John R., Jr. Sports mouthguard with shim. 4,765,324, Cl. 128-136.000

Lakeside Equipment Corporation: *See*—
Grujanac, Peter, 4,765,889, Cl. 210-121.000

Lallement, Jacques: *See*—
Born, Maurice; Lallement, Jacques; Marchand, Pierre; Parc, Guy; and Thevenin, Nicole, 4,766,228, Cl. 556-25.000

Lambert, Thomas W.; and Belanger, Barry F., to General Electric Company. Color film writing system with closed loop control for electronic images. 4,766,503, Cl. 358-332.000.

Lan, Ming J.: *See*—
Chlanda, Frederick P.; and Lan, Ming J., 4,766,161, Cl. 521-27.000

Lancaster, Gerald M.; Cramm, Russell H.; Kelley, David C.; and Neywick, Charles V., to Dow Chemical Company, The. Barrier film structures. 4,766,035, Cl. 428-345.000

Land, Bruce R.: *See*—
Harris, William V.; and Land, Bruce R., 4,765,737, Cl. 356-336.000

Land Infrared Limited: *See*—
Beynon, Thomas G. R.; and Kirby, Peter J., 4,765,752, Cl. 374-153.000

Landgraber, Friedhelm: *See*—
Haacker, Ingo; and Landgraber, Friedhelm, 4,765,399, Cl. 165-110.000

Lang, Gerard; Shroot, Braham; Forestier, Serge; and Lagrange, Alain, to Societe Anonyme dite: L'Oreal. Unsaturated camphor derivatives, processes for preparing the same and pharmaceutical and cosmetic compositions containing the same. 4,766,235, Cl. 560-051.000.

Lang, Steven C.: *See*—
Frabotta, Peter W.; and Lang, Steven C., 4,765,673, Cl. 296-93.000.

Lang, Walter, to Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft. Honing device. 4,765,096, Cl. 51-34.00R

Lange, Horst: *See*—
Pavel, Klaus; and Lange, Horst, 4,765,473, Cl. 206-380.000.

Langford, Ellen A.: *See*—
Stautzenberger, A. Lee; and Langford, Ellen A., 4,766,236, Cl. 560-78.000.

Langley, Robert E.; and Ziegler, Roy B. Vehicle frame straightening machine. 4,765,170, Cl. 72-305.000.

Lantz, Kenneth F.: *See*—
Bleich, Charles R.; Smolucha, Walter E.; Wepner, Gregory W.; Lantz, Kenneth F.; and Herschler, Scott C., 4,766,541, Cl. 364-410.000

Lanuzzi, Max; and Dubach, Fredi, to Drabert Sohne GmbH & Co. Chair having a seat with front and rear seat portions being hinged to each other. 4,765,679, Cl. 297-316.000.

Lape, Larry J., to Boehringer Mannheim Corporation. Blood transfer assembly. 4,765,344, Cl. 128-770.000.

Lapish, Ernest B. Wall tie. 4,765,108, Cl. 52-379.000.

Laprad, Richard F.: *See*—
Krukoski, Leon; and Laprad, Richard F., 4,765,133, Cl. 60-39.060.

Lardellier, Alain, M. J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." . Gas turbine engine 4,765,135, Cl. 60-226.200.

Larkin, John M.; and Renken, Terry L., to Texaco Inc. Process for the preparation of polyoxyalkylene polyamines. 4,766,245, Cl. 564-474.000

Larsen, Bjorn E. H.: *See*—
Vinther, Arne; Olsen, Steffen C.; Larsen, Bjorn E. H., Madsen, Elun S.; and Madsen, Bjorn, 4,765,841, Cl. 106-402.000

Larsen, Rex S., to Eskofot A/S. Developing tray. 4,766,454, Cl. 354-302.000

Larson, Brent H.: *See*—
Clerke, Edward A.; and Larson, Brent H., 4,766,577, Cl. 367-911.000

Larson, David L.: *See*—
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,766,117, Cl 514-219.000

Laser, Vadim: *See*—
Chadima, George E., Jr.; and Laser, Vadim, 4,766,300, Cl 235-472.000

Laserlux AG: *See*—
Dreier, Horst E., 4,766,330, Cl. 307-139.000

Lash, Christopher N.: *See*—
Gutman, Meyer M.; and Lash, Christopher N., 4,765,567, Cl 244-17.110.

Lass, Joseph; Merkle, Hansjurgen; Becker, Wolfgang; Herget, Werner; and Lob, Erwin, to GAO Gesellschaft fur Automation und Organisation mbH. Identification card with a visible authenticity feature and a method of manufacturing said card. 4,766,026, Cl. 428-203.000.

Lass, Joseph: *See*—
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen; Lob, Erwin; Lass, Joseph; and Kaule, Wittich, 4,765,656, Cl 283-70.000.

Latapie, Roberte: *See*—
Contamin, Jean-Claude; and Latapie, Roberte, 4,765,922, Cl. 252-90.000

Latech, Inc.: *See*—
Phillips, Thomas E., 4,765,120, Cl. 53-441.000

Latourrette, Bertrand: *See*—
Nortier, Patrice; Dupin, Thierry; and Latourrette, Bertrand, 4,766,101, Cl. 502-164.000

Lattice Semiconductor Corporation: *See*—
Turner, John E.; and Josephson, Gregg R., 4,766,569, Cl 365-185.000

Latus, Gilbert T.: *See*—
Parkinson, David D.; and Latus, Gilbert T., 4,766,337, Cl 310-58.000

Laurie, Gordon H.: *See*—
Bailey, Robert A.; and Laurie, Gordon H., 4,765,277, Cl. 119-51.00R

Lauritzen, Ann M., to Shell Oil Company. Ethylene oxide catalyst and process for preparing the catalyst. 4,766,105, Cl. 502-216.000.

Layden, George K.; and Prewo, Karl M., to United States of America, Air Force. Silicon nitride whisker reinforced glass matrix composites 4,766,096, Cl. 501-17.000

Lazaris, Timothy. Tool holder for water pipe. 4,765,584, Cl 248-558.000

Lazarus, Conrad: *See*—
Riedl, Reinhold; and Lazarus, Conrad, 4,765,594, Cl. 254-45.000

Lebet, Jean-Pierre: *See*—
Charmillot, Rene; and Lebet, Jean-Pierre, 4,765,322, Cl. 128-783.000

Le Breton, Albert F.; and Beal, William S., to Westinghouse Electric Corp. Journal bearing support and alignment device. 4,765,759, Cl. 384-252.000

Leclerc, Gerard; Bouzoubaa, Mohammed; Andermann, Guy; de Burlet, Georges; Cannet, Catherine; and Himber, Jacques, to Laboratoires, P.O.S. Ethers and oxime ethers of alkylamino alcohols as medicaments and novel products, and processes for their preparation. 4,766,151, Cl. 514-640.000.

Lee, Chi-long; Juen, Donnie R.; Saam, John C.; and Willis, Robin L., Jr., to Dow Corning Corporation. Storage stable heat curable organosiloxane compositions containing microencapsulated platinum-containing catalysts. 4,766,176, Cl. 525-100.000.

Lee, Rex K.: *See*—
Herman, Robert W.; and Lee, Rex K., 4,766,433, Cl. 340-825.310

Lee, Richard E. Flexible insulated container. 4,765,476, Cl. 206-427.000

Lee, Ta J.; Rooney, Clarence S.; and Hoffman, William F., to Merck & Co., Inc. Antihypercholesterolemic compounds. 4,766,145, Cl 514-460.000

Leeper, Alan L., to International Shoe Machine Corporation. Mechanism to transfer a footwear upper assembly between stations of a multi-station system. 4,765,011, Cl. 12-1.00A

Leeson, Lewis J., to Ciba-Geigy Corporation. Devices and methods for treating memory impairment. 4,765,985, Cl. 424-449.000

Leeson, Paul D.: *See*—
Ellis, David; Emmett, John C.; Underwood, Anthony H., and Leeson, Paul D., 4,766,121, Cl. 514-247.000

Lefevre, Pierre: *See*—
Tygat, Daniel; Lefevre, Pierre; and Balthasart, Dominique, 4,765,958, Cl. 422-12.000

Leffew, Kenneth W.: *See*—
Anthony, John D., Jr.; Leffew, Kenneth W.; and Trentacosta, Joseph D., 4,765,941, Cl. 264-40.100

Lefler, Jerrold P., to Digitext, Inc. Keyboard. 4,765,764, Cl 400-482.000

Leger, James R.: *See*—
Horner, Joseph L.; and Leger, James R., 4,765,714, Cl. 350-162.130

Legge, Frank M. Solar tracking device. 4,765,309, Cl. 126-425.000

VOL 1093 ISS 4 AG 23 1988 UMI

Le Guen, Michel: *See—*
Bourgade, Jean-Luc; Le Guen, Michel; and Saleres, Alain, 4,765,749, Cl. 374-32.000.

Leidner, Jacob: *See—*
Nazar, Steven E.; Leidner, Jacob; and Svirklys, Ferdinand M., 4,765,934, Cl. 264-26.000.

Leiwe, Daniel R., to Northern Telecom Limited. Lead straightening for leaded packaged electronic components. 4,765,376, Cl. 140-147.000.

Lemforder Metallwaren AG: *See—*
Buhl, Reinhard, 4,765,770, Cl. 403-146.000.

Leone-Bay, Andrea: *See—*
Whitwell, George E.; Deatcher, John H.; and Leone-Bay, Andrea, 4,765,866, Cl. 156-668.000.

Lepert, Andre; Evans, Morris L.; and Jacob, Lutz E., to Exxon Research & Engineering Co. Tackifiers and their use in pressure sensitive adhesives. 4,766,169, Cl. 524-499.000.

Le Ridant, Alain: *See—*
Bonte, Frederic; Dehan, Michel; Le Ridant, Alain; Puisieux, Francis; and Taupin, Christiane C., 4,765,987, Cl. 424-450.000.

Lerner, Steven L.: *See—*
Lloyd-Williams, Andrew; MacLean, Donald L.; Jain, Ravi; and Lerner, Steven L., 4,765,804, Cl. 55-16.000.

Leroux, Thierry: *See—*
Clerc, Jean-Frederic; and Leroux, Thierry, 4,766,428, Cl. 340-784.000.

Lev, Sam: *See—*
Magnuson, Douglas; Wolff, Merle; Lev, Sam; Jeffries, Kenneth; and Mapes, Scott D., 4,765,598, Cl. 266-110.000.

Levchenko, Ivan I.: *See—*
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.

Levert, Francis E.: *See—*
DeLorenzo, Joseph T.; Levert, Francis E.; Robinson, James C.; and Hendricks, Robert W., 4,765,943, Cl. 376-154.000.

Levy, Gideon; and Budin, Josef, to AG fur Industrielle Elektronik AGIE, Losone b. Locarno. Power supply means for a wire electrode of an electroerosion machine. 4,765,877, Cl. 204-206.000.

Lew, Hyok S. Pivoting flap pump-flowmeter. 4,765,185, Cl. 73-260.000.

Lew, Hyok S.; and Stranahan, Michael, to Lew, Jung G.; and Lew, Hyok S. Symbiotic filter-sterilizer. 4,766,321, Cl. 250-431.000.

Lew, Jung G.: *See—*
Lew, Hyok S.; and Stranahan, Michael, 4,766,321, Cl. 250-431.000.

Lewis, Martin K.: *See—*
Jendrisak, Jerome J.; Lewis, Martin K.; and Fiandt, Michael J., 4,766,072, Cl. 435-91.000.

Lewis, William E.: *See—*
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,765,882, Cl. 208-59.000.

Leybold-Heraeus GmbH: *See—*
Anderle, Friedrich, 4,765,273, Cl. 118-729.000.

Li, Hsin L.; and Oswald, Hendrikus J., to Allied Corporation. Apparatus for texturing continuous filamentary tow. 4,765,042, Cl. 28-257.000.

Liao, Chin-Mann: *See—*
Kuan, Chin-Sheng; and Liao, Chin-Mann, 4,765,090, Cl. 43-127.000.

Liautaud, James P.: *See—*
Huber, Duane; and Liautaud, James P., 4,766,520, Cl. 361-421.000.

Libbey-Owens-Ford Co.: *See—*
Weaver, William R., 4,765,672, Cl. 296-84.00R.

Liedtke, Rainer K. Medicinal plaster for systemic use. 4,765,986, Cl. 424-449.000.

Liesch, Jean: *See—*
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000.

Lin, Ing C.: *See—*
Upadhyaya, Janardan D.; Farnham, Harry M.; Lin, Ing C.; and Case, Alan R., 4,766,166, Cl. 524-275.000.

Lindberg, Stellan: *See—*
Fele, Karl; and Lindberg, Stellan, 4,766,079, Cl. 436-63.000.

Linde Aktiengesellschaft: *See—*
Bauer, Heinz; Becker, Hans; and Scholz, Walter, 4,765,814, Cl. 62-20.000.

Lindemann, Peer; and Ungemach, Robert R., to Smith & Nephew Rolyan, Inc. Dynamic low profile splint. 4,765,320, Cl. 128-87.00A.

Linder, Ernst; and Rembold, Helmut, to Robert Bosch GmbH. Valve control arrangement. 4,765,288, Cl. 123-90.160.

Lindh, DeVere V.: *See—*
Colonel, Richard C.; and Lindh, DeVere V., 4,765,412, Cl. 168-15.000.

Lindner, Christian: *See—*
Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, 4,766,165, Cl. 524-140.000.

Lindow, Steven: *See—*
Orser, Cindy S.; Lindow, Steven; and Panapoulos, Nickolas J., 4,766,077, Cl. 435-253.000.

Linhart, Hans-Joachim: *See—*
Berger, Josef; Ernst, Helmut; Linhart, Hans-Joachim; and Pfeiffer, Martin, 4,765,017, Cl. 15-250.00A.

Linke, Adolf: *See—*
Kohnen, Klaus; Linke, Adolf; and Niermann, Hans, 4,765,631, Cl. 277-2.000.

Lion Corporation: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,765,408, Cl. 166-274.000.

Lipinski, Christopher A., to Pfizer Inc. Spiro-succinimides for treatment of diabetes complications. 4,766,141, Cl. 514-409.000.

Liposome Technology, Inc.: *See—*
Abra, Robert; and Szoka, Francis C., 4,766,046, Cl. 424-450.000.

Lippencott, Joseph: *See—*
Harvey, Edgar L.; and Lippencott, Joseph, 4,766,345, Cl. 313-518.000.

Lippman, Jerome. Liquid dispensing combination. 4,765,515, Cl. 222-162.000.

Lissel, Ernst: *See—*
Schulze, Bernd-Guido; and Lissel, Ernst, 4,765,430, Cl. 180-197.000.

Lister, Roy D., to Eagle-Picher Industries, Inc. System for joining sections of a hydrocyclone separator. 4,765,887, Cl. 209-211.000.

Litton Systems, Inc.: *See—*
Conroy, Peter J.; and Marino, Ronald A., 4,766,444, Cl. 343-895.000.

Live International Co., Ltd.: *See—*
Tominaga, Yasunori, 4,765,997, Cl. 426-422.000.

Lloyd-Williams, Andrew; MacLean, Donald L.; Jain, Ravi; and Lerner, Steven L., to BOC Group, Inc., The. PSA process and apparatus employing gaseous diffusion barriers. 4,765,804, Cl. 55-16.000.

Lob, Erwin: *See—*
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen; Lob, Erwin; Lass, Joseph; and Kaule, Wittich, 4,765,656, Cl. 283-70.000.
Lass, Joseph; Merkle, Hansjurgen; Becker, Wolfgang; Herget, Werner; and Lob, Erwin, 4,766,026, Cl. 428-203.000.

Lockheed Missiles and Space Company, Inc.: *See—*
Mercado, Romeo I.; and Robb, Paul N., 4,765,727, Cl. 350-483.000.

Loev, Bernard: *See—*
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,766,210, Cl. 540-488.000.

Lok, Kar P.: *See—*
Breton, Marcel P.; Bluhm, Terry L.; and Lok, Kar P., 4,766,051, Cl. 430-138.000.

Lombardino, Joseph G.: *See—*
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,766,117, Cl. 514-219.000.

Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, to Paul Wurth S.A; and Arbed S.A. Apparatus for lining the inner wall of a vessel with bricks. 4,765,789, Cl. 414-10.000.

Loomis, Gary L.: *See—*
Murdoch, Joseph R.; and Loomis, Gary L., 4,766,182, Cl. 525-413.000.

Loos, Jerold C., to Berkley-Small Manufacturing Company, Inc. Inside/outside display window. 4,765,074, Cl. 40-661.000.

Lorber, Azriel: *See—*
Spector, Yechiel; Cohen, Ilan; and Lorber, Azriel, 4,765,244, Cl. 102-213.000.

Lord Corporation: *See—*
Rebman, Jack, 4,765,795, Cl. 414-680.000.

L'Oreal: *See—*
Contamin, Jean-Claude; and Latapie, Roberte, 4,765,922, Cl. 252-90.000.
Grollier, Jean F.; Fourcadier, Chantal; and Dubief, Claude, 4,765,976, Cl. 424-70.000.

Lorica S.p.A.: *See—*
Poletto, Giorgio, 4,766,014, Cl. 427-245.000.

Losel, Walter; Roos, Otto; and Schnorrenberger, Gerd, to Boehringer Ingelheim KG. Preparation of 5,6-dihydro-pyrrolo[2,1-a]isoquinolines. 4,766,217, Cl. 546-94.000.

Losel, Walter: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,766,129, Cl. 514-300.000.

Loughlin, Bernard M. Ladder beacon. 4,766,525, Cl. 362-183.000.

Love, Doris; Schlicht, Raymond C.; and Biasotti, Joseph B., to Texaco Inc. Lubricant additive. 4,765,918, Cl. 252-46.400.

Love, Jim: *See—*
Orvik, Jon A.; Fung, Alexander P.; Love, Jim; and Dietsche, Thomas J., 4,766,219, Cl. 546-286.000.

Lovisolo, Pier P.: *See—*
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,766,214, Cl. 544-336.000.

Lowe, James T., to FMC Corporation. Gutter broom segment and assembly. 4,765,013, Cl. 15-180.000.

Lu, Shih-Lai, to Minnesota Mining and Manufacturing Company. Method for making a flexible louvered plastic film with protective coatings and film produced thereby. 4,766,023, Cl. 420-120.000.

Ludwig, Andre M. Insertable saw tooth. 4,765,217, Cl. 83-841.000.

Ludwig, Frank A.: *See—*
McHardy, John; Ludwig, Frank A.; Higley, Lin R.; Kindler, Andrew; and Townsend, Carl W., 4,766,522, Cl. 361-433.000.

Lues, Inge: *See—*
Juraszyk, Horst; Gericke, Rolf; Lues, Inge; Bergmann, Rolf; and Schmitges, Claus J., 4,766,213, Cl. 544-127.000.

Luetkens, Melvin L.: *See—*
Satek, Larry; Wilwerding, Laura; Melquist, John L.; and Luetkens, Melvin L., 4,766,102, Cl. 502-202.000.

Luks, Kraemer D.; Turek, Edward A.; and Baker, Lee E., to Amoco Corporation. Method of calculating minimum miscibility pressure. 4,766,558, Cl. 364-558.000.

Lummus Crest, Inc.: *See—*
Tsao, Utah, 4,765,398, Cl. 165-110.000.

Lundquist, Lynn. Inserting tool for elastomer die plug. 4,765,049, Cl. 29-235.000.

Lundquist Tool & Mfg. Co., Inc.: *See—*
Rozentals, Alfreds, 4,765,762, Cl. 384-539.000.

Lurssen, Klaus, to Bayer Aktiengesellschaft. Agent for regulating plant growth. 4,765,823, Cl. 71-92.000.

Lyga, John W., to FMC Corporation. Herbicidal 2-aryl-1,2,4-triazine-3,5(2H,4H)-diones and sulfur analogs thereof. 4,766,233, Cl. 560-22.000.

Lyjak, Jeffrey C.; and Maciejka, William, to Chrysler Motors Corporation. Selectively tuned intake manifold. 4,765,286, Cl. 123-52.0MB.

Lynch, William T.: *See—*
Coquin, Gerald A.; Lynch, William T.; and Parrillo, Louis C., 4,766,090, Cl. 437-57.000.

Lysenko, Zenon, to Dow Chemical Company, The. High purity process for the preparation of 4,6-diamino-1,3-benzenediol. 4,766,244, Cl. 564-418.000.

M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See—*
Kraus, Josef; and Wech, Erich, 4,765,240, Cl. 101-216.000.

MAB Marlies Kellermann: *See—*
Klumparendt, Wolfgang, 4,765,484, Cl. 209-577.000.

Mabboux, Michel: *See—*
Chemello, Jean-Pierre; and Mabboux, Michel, 4,765,070, Cl. 36-117.000.

Maciejka, William: *See—*
Lyjak, Jeffrey C.; and Maciejka, William, 4,765,286, Cl. 123-52.0MB.

Maciejko, James J.: *See—*
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,766,117, Cl. 514-219.000.

MacLean, Donald L.: *See—*
Lloyd-Williams, Andrew; MacLean, Donald L.; Jain, Ravi; and Lerner, Steven L., 4,765,804, Cl. 55-16.000.

MacLeod, Richard J., to Tapco Products Company, Inc. Adjustable plastic shutter. 4,765,110, Cl. 52-473.000.

MacMillan, Michael, to University of Florida. Apparatus and method for weight training employing counterweight. 4,765,611, Cl. 272-118.000.

Madou, Marc J.: *See—*
Holland, Christopher E.; Westerberg, Eugene R.; Madou, Marc J.; and Otagawa, Takaaki, 4,765,864, Cl. 156-644.000.

Madsen, Bjorn: *See—*
Vinther, Arne; Olsen, Steffen C.; Larsen, Bjorn E. H.; Madsen, Elun S.; and Madsen, Bjorn, 4,765,841, Cl. 106-402.000.

Madsen, Elun S.: *See—*
Vinther, Arne; Olsen, Steffen C.; Larsen, Bjorn E. H.; Madsen, Elun S.; and Madsen, Bjorn, 4,765,841, Cl. 106-402.000.

Maeda, Akira; and Hagiwara, Haruo, to Mitsubishi Jukogyo Kabushiki Kaisha. Controller for a dry cleaning apparatus. 4,765,159, Cl. 68-12.00R.

Maeda, Fujio, to Mitutoyo Corporation. Digital display type measuring instrument. 4,765,064, Cl. 33-172.00E.

Maeda Iron Works Co., Ltd.: *See—*
Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, 4,765,280, Cl. 122-5.50A.

Maekawa, Kouichiro: *See—*
Naganawa, Hitoshi; and Maekawa, Kouichiro, 4,765,820, Cl. 65-36.000.

Magdars, John T.: *See—*
Siegal, Burton L.; and Magdars, John T., 4,765,022, Cl. 16-87.40R.

Maghemite Inc.: *See—*
Cavanagh, Patrick E., 4,766,284, Cl. 219-121.590.

MagneTek, Inc.: *See—*
Parkinson, David D.; and Latus, Gilbert T., 4,766,337, Cl. 310-58.000.

Magnum Fiberglass Products Inc.: *See—*
Kroger, David G., 4,765,775, Cl. 405-52.000.

Magnuson, Douglas; Wolff, Merle; Lev, Sam; Jeffries, Kenneth; and Mapes, Scott D., to Energy Conversion Devices, Inc. Apparatus for making electrode material from high hardness active materials 4,765,598, Cl. 266-110.000.

Maier, Hans P., to Agintec AG. Elastic pipe connector. 4,765,660, Cl. 285-229.000.

Maitlen, C. Gene, to VMI, Incorporated. Dredge cutter head with shock absorber. 4,765,071, Cl. 37-66.000.

Majors, Curtis O., to Cookeville Uniform Rental, Inc. Method of abrading new garments. 4,765,100, Cl. 51-313.000.

Makara, Raymond J.: *See—*
Fuhrhop, Ronald E.; and Makara, Raymond J., 4,765,597, Cl. 266-51.000.

Male, Alan T.: *See—*
Iyer, Natraj C.; Male, Alan T.; Cherry, Sidney J.; and Gainer Robert E., 4,766,274, Cl. 200-144.00B.

Malen, Charles; and Poignant, Jean C., to ADIR Et Compagnie. Tricyclic compound called 5-((3-chloro-6-methyl-5,5-dioxo-6,11-dihydrodibenzo (c,f) (1,2)thiazepin-11-yl)-amino) pentanoic acid. 4,766,114, Cl. 514-211.000.

Malik, Marvin J., to General Motors Corporation. Pilot operated flow control valve for hydraulic systems. 4,765,357, Cl. 137-195.000.

Malkowski, Jaroslaw T.: *See—*
Konstantin, Anatole E., Konstantin, William N., and Malkowski, Jaroslaw T., 4,765,121, Cl. 53-442.000.

Mallinckrodt, Inc.: *See—*
Buck, Keith T.; Boeing, Anthony J.; Dolfini, Joseph E.; and Glinka, Jerome, 4,766,249, Cl. 568-433.000.
Wester, Dennis W.; and Dean, Richard T., 4,765,971, Cl. 424-1.100.

Malmanger, John A., to Xytec Plastics, Inc. Container with collapsible lid members. 4,765,480, Cl. 206-506.000.

Malone, Jon R.: *See—*
McGregor, Douglas R.; and Malone, Jon R., 4,766,568, Cl. 365-49.000.

Manager Systems Incorporated: *See—*
Arcari, Mario A., 4,765,364, Cl. 137-536.000.

Mandai, Haruhumi, to Murata Manufacturing Co., Ltd. Thermistor having a positive temperature coefficient of resistance. 4,766,409, Cl. 338-22.00R.

Mander, Philip E.; and Fuller, Jonathan A., to Gaydon Technology Limited. Suspension system for a motor vehicle. 4,765,648, Cl. 280-707.000.

Mangels, Richard J.; and Candy, Rex B., to Candy, Rex B.; and Candy, Jennifer J. Drip emitter housing. 4,765,541, Cl. 239-201.000.

Mania, Dieter: *See—*
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman, and Hropot, Max, 4,766,241, Cl. 564-89.000.

Mannen, Bryce L., to FMC Corporation. Tire changer safety foot. 4,765,387, Cl. 157-1.000.

Manning, David C.: *See—*
Morrisroe, Peter J.; Zander, Andrew T.; Manning, David C.; and Gagne, Peter H., 4,766,287, Cl. 219-121.520.

Manzer, Leo E.; and Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Gas-phase fluorination process. 4,766,259, Cl. 570-168.000.

Manzer, Leo E.; and Rao, V. N. Mallikarjuna, to Du Pont de Nemours, E. I., and Company. Gas-phase fluorination process. 4,766,260, Cl. 570-168.000.

Mapes, Scott D.: *See—*
Magnuson, Douglas; Wolff, Merle; Lev, Sam; Jeffries, Kenneth; and Mapes, Scott D., 4,765,598, Cl. 266-110.000.

Marass, Josef, to Georg Spiess GmbH. Sheet feeder. 4,765,606, Cl. 271-157.000.

Marcatili, Enrique A. J.; and Wood, Thomas H., to American Telephone and Telegraph Co., AT&T Bell Labs. Optical communications system including a directional coupler. 4,765,706, Cl. 350-96.160.

Marchand, Pierre: *See—*
Born, Maurice; Lallement, Jacques; Marchand, Pierre; Parc, Guy; and Thevenin, Nicole, 4,766,228, Cl. 556-25.000.

Marcilly, Christian: *See—*
Dufresne, Pierre; and Marcilly, Christian, 4,766,099, Cl. 502-72.000.

Marek, Patrick J.: *See—*
Bailey, Kristy M.; and Marek, Patrick J., 4,766,173, Cl. 524-819.000.

Marfurt, Kurt J.: *See—*
Whitmore, Norman D., Jr.; and Marfurt, Kurt J., 4,766,574, Cl. 367-50.000.

Margaux Controls, Inc.: *See—*
Persem, Jacob P., 4,765,150, Cl. 62-215.000.

Margolin, Mark, to Amphenol Corporation. Method of terminating fiber optic connector without polishing optical fiber. 4,765,707, Cl. 350-96.200.

Mariani, David: *See—*
Kleinberg, Robert L.; Clark, Brian; Chew, Weng C.; and Mariani, David, 4,766,384, Cl. 324-339.000.

Marien, Jozef E.: *See—*
Bollen, Romain H.; Marien, Jozef E.; and Wissels, Valentin G., 4,766,515, Cl. 361-234.000.

Markovsky, Moshe; and Doron, Benjamin, to Solmat Systems Ltd. Method of and apparatus for reduction of turbidity in a body of fluid 4,765,914, Cl. 210-716.000.

Marino, Ronald A.: *See—*
Conroy, Peter J.; and Marino, Ronald A., 4,766,444, Cl. 343-895.000.

Marinus, Antonius A. M., to U.S. Philips Corporation. Switched-mode power supply having a standby state. 4,766,528, Cl. 363-21.000.

Markert, Allan R. Ventilated face shield. 4,764,990, Cl. 2-429.000.

Marks, Larry D.: *See—*
Gardell, Dale W.; and Marks, Larry D., 4,765,697, Cl. 312-229.000.

Marnett, Lawrence F.; and Kubec, Joseph B., to C. J. Patterson Company. Hydroxy acid ester plasticized urethane elastomers. 4,766,167, Cl. 524-310.000.

Maron, Antonina: *See—*
Wright, Arthur P. G.; Wen, Betty P. L.; Schenck, Terry G.; and Maron, Antonina, 4,766,216, Cl. 546-7.000.

Marran, John D., to Energy Kinetics. Venting system with natural convection cooling. 4,765,308, Cl. 126-85.00B.

Marriott, Joe E.: *See—*
Kjosness, David P.; and Marriott, Joe E., 4,766,401, Cl. 333-12.000.

Mars, Incorporated: *See—*
Zouzoulas, John, 4,765,607, Cl. 271-177.000.

Marshall, Walter D. Scalp stimulator. 4,765,316, Cl. 128-36.000.

Marteau D'Autry, Eric. Method and apparatus for preparing samples for analysis. 4,766,082, Cl. 436-178.000.

Martin, Andrew L., to Australian Telecommunications Commission Characterization of digital radio signals. 4,766,600, Cl. 375-10.000.

Martin, Gerald: *See—*
Schommler, Manfred; and Martin, Gerald, 4,765,216, Cl. 83-341.000.

VOL 1093 ISS 4 AG 23 1988 UMI

Martin, Richard W.: *See*—
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., 4,765,861, Cl. 156-457.000

Martin, Roger. Coin holder. 4,765,154, Cl. 63-23.000

Martinez, Gregory R.; and Bruno, John J., to Syntex (U.S.A.) Inc. 2-(3-pyridylmethyl)naphthalene-6-carboxylic acid as a thromboxane synthetase inhibitor. 4,766,127, Cl. 514-277.000.

Marui, Tomohiro; Kaneko, Tadao; Ao, Kazuo; Shimono, Toshio; and Fukada, Seiichiro, to Kawasaki Steel Corporation. Apparatus for separating fiber from fiber aggregate. 4,765,547, Cl. 241-40.000.

Marynissen, William E.; Beeson, Thomas T.; and Snell, Thomas G., to BIC Corporation. Snap-on clip for elongated instruments. 4,765,767, Cl. 401-213.000.

Maschinenfabrik Gehring Gesellschaft mit beschrankter Haftung & Co. Kommanditgesellschaft: *See*—
Lang, Walter, 4,765,096, Cl. 51-34.00R

Masco Corporation of Indiana: *See*—
Roland, R. Douglas, 4,765,365, Cl. 137-550.000

Mashimo, Akira, to TEAC Corporation. Information signal recording apparatus. 4,766,502, Cl. 358-322.000.

Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, to Mitsuboshi Belting Ltd. Pressure-responsive variable electrical resistive rubber material. 4,765,930, Cl. 252-511.000.

Masini, Jean-Jacques; and Verot, Yvan, to Atochem. Simultaneous production of higher chloromethanes. 4,765,876, Cl. 204-157.950.

Masson, Bernard V.: *See*—
Hack, James R.; Masson, Bernard V.; and Beegan, David T., 4,766,448, Cl. 346-150.000

Massy, Jean-Pierre: *See*—
Decailloz, Claude; Robin, Jean; and Massy, Jean-Pierre, 4,766,285, Cl. 219-121.630

Mast, Aquila D.: *See*—
High, Samuel E., Jr.; and Mast, Aquila D., 4,765,747, Cl. 166-186.000

Masuda, Shunji; and Nakai, Eiji, to Mazda Motor Corporation. Valve driving system for internal combustion engine. 4,765,289, Cl. 123-90.160

Masuda, Tsuneo. Grindstone-polymer composite for super colloid mill and manufacturing method thereof. 4,765,801, Cl. 51-293.000.

Masumori, Hideo: *See*—
Takeuchi, Yukihisa; and Masumori, Hideo, 4,766,010, Cl. 427-96.000

Masumoto, Shozo: *See*—
Uchida, Katsuhiro; Masumoto, Shozo; Tohno, Masao; Mimura, Mitsuo; and Okumura, Makoto, 4,766,148, Cl. 514-533.000

Matai, Masahiro; and Mori, Toshihiro, to NEC Corporation. Selective paging receiver with message display. 4,766,434, Cl. 340-825.440.

Matas Gabalda, Carlos, to IC-ACBF. Device for positioning and holding a yarn support tube during an operation of unwinding or winding. 4,765,562, Cl. 242-130.000.

Matematicko-Fyzikalni Fakulta University: *See*—
Emmer, Ivan; Hajek, Zdenek; and Repa, Petr, 4,765,870, Cl. 204-129.100

Mathewson, Christopher W., to Eastman Kodak Company. Burst integral detecting embedded servo disk tracking system. 4,766,508, Cl. 360-77.000

Matsubara, Akira: *See*—
Yoshizumi, Keiichi; Matsubara, Akira; and Hayashi, Takao, 4,766,303, Cl. 250-205.000

Matsuda, Hiroshi; Haruta, Masahiro; Munakata, Hirohide; Tomita, Yoshinori; and Hamamoto, Takashi, to Canon Kabushiki Kaisha. Optical recording medium and optical recording process using such medium. 4,766,047, Cl. 430-19.000

Matsuda, Yuzi: *See*—
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000

Matsudaira, Takeo; and Inoue, Teiji, to Hoya Corporation. Beam splitter having a partial semitransparent layer assigned to a plurality of outgoing light beams. 4,765,715, Cl. 350-171.000

Matsumoto, Yukiei; and Shimamune, Takayuki, to Permelec Electrode Ltd. Durable electrodes for electrolysis and process for producing the same. 4,765,879, Cl. 204-290.00R

Matsumura, Hiroyoshi: *See*—
Kuroda, Takao; Hiruma, Kenji; and Matsumura, Hiroyoshi, 4,766,092, Cl. 437-126.000

Matsumura, Yukio: *See*—
Hamano, Toshikatsu; and Matsumura, Yukio, 4,765,872, Cl. 204-130.000

Matsunaga, Koji: *See*—
Hatada, Kenzo; and Matsunaga, Koji, 4,766,426, Cl. 340-719.000

Matsunaga, Osamu: *See*—
Tanaka, Yutaka; and Matsunaga, Osamu, 4,766,487, Cl. 358-40.000.

Matsuno, Kazumasa; and Kose, Kenji, to T subakimoto Chain Co. Chain conveyor reducing longitudinal contact pressure between conveyed articles. 4,765,455, Cl. 198-779.000.

Matsuo, Masashi; Furukawa, Yutaka; Iwamoto, Toshio; and Kawakami, Shoichi, to Asahi Glass Company, Ltd. Plastic-clad light-transmitting fiber. 4,765,713, Cl. 350-96.340

Matsushita Electric Industrial Co., Ltd.: *See*—
Abe, Yoshio; Kubota, Masashi; and Miyake, Kou, 4,766,427, Cl. 340-721.000
Arakawa, Yoshiki, 4,766,556, Cl. 364-522.000
Hase, Hiroyuki; Yamashita, Ichiro; Tokuono, Shinya; and Wakamiya, Masayuki, 4,765,192, Cl. 73-862.360.
Hatada, Kenzo; and Matsunaga, Koji, 4,766,426, Cl. 340-719.000.
Yamamoto, Hajime; and Takashima, Yuji, 4,766,460, Cl. 355-4.000.
Yoshizumi, Keiichi; Matsubara, Akira; and Hayashi, Takao, 4,766,303, Cl. 250-205.000

Matsushita, Takao: *See*—
Nakasuji, Katsuyoshi; Mikami, Ryuzo; Hiria, Kazuo; and Matsushita, Takao, 4,766,193, Cl. 528-17.000

Matsushita, Tetsuya: *See*—
Yamada, Shuji; Matsushita, Tetsuya; and Andou, Hironori, 4,766,467, Cl. 355-14.0SH

Matsuura, Jun-ichi: *See*—
Kobayashi, Yoshiteru; Konno, Isao; and Matsuura, Jun-ichi, 4,766,229, Cl. 556-138.000.

Matsuzaka, Syoji: *See*—
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000.

Matth. Hohner AG: *See*—
Eppinger, Siegfried, 4,765,218, Cl. 84-1.010.

Matties, Ralph: *See*—
Tranberg, Per; Matties, Ralph; and Reese, Dale, 4,765,318, Cl. 128-80.00C.

Matuoka, Hirosi: *See*—
Tomita, Masahiro; Yasuda, Eturo; and Matuoka, Hirosi, 4,765,919, Cl. 252-62.900

Maughan, P. Kevin: *See*—
Schmidt, Ferenc J.; Maughan, P. Kevin; and Guy, Jack J., 4,765,335, Cl. 128-326.000.

Maulding, Donald R., to American Cyanamid Company. Method for the preparation of quinoline-2,3-dicarboxylic acid. 4,766,218, Cl. 546-170.000

Mauries, Reinhard: *See*—
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000

Mayer, Francis X.: *See*—
Aldridge, Clyde L.; Lewis, William E.; Bearden, Roby, Jr.; and Mayer, Francis X., 4,765,882, Cl. 208-59.000.

Mazda Co., Ltd.: *See*—
Handa, Noboru; and Tanaka, Takahiko, 4,766,356, Cl. 318-55.000.

Mazda Motor Corporation: *See*—
Kameshima, Tetsuya; Kondo, Toshiro; and Shimoe, Hiroo, 4,765,650, Cl. 280-723.000
Kondo, Toshiro; and Yamamoto, Tadanobu, 4,765,647, Cl. 280-701.000
Kurio, Noriyuki; and Yoshimi, Hiroshi, 4,765,291, Cl. 123-196.00R.
Masuda, Shunji; and Nakai, Eiji, 4,765,289, Cl. 123-90.160.
Ochino, Toshiharu, 4,765,019, Cl. 15-250.190.

McArragher, John S.: *See*—
Van Es, Cornelis; Miles, Richard; Kalghatgi, Gautam T.; McArragher, John S.; and Heldeweg, Rudolf F., 4,765,800, Cl. 44-62.000

McCarthy, Grant R. Leaf cutter bee nest block. 4,765,007, Cl. 6-1.000

McClarnon, Keith S.: *See*—
Schiefer, Harry M.; and McClarnon, Keith S., 4,765,243, Cl. 101-451.000

McClellan, William F.: *See*—
Collins, Seymour; and McClellan, William F., 4,765,577, Cl. 248-59.000

McClelland, J. Richard: *See*—
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., 4,765,861, Cl. 156-457.000

McClure, Gerald B.; and McPhee, William A., to Western Atlas International, Inc. Automatic separation device for use with wireline conveyed perforating gun. 4,765,409, Cl. 166-297.000.

McCorvey, Allan; and McCorvey, Timothy R. Apparatus for attaching insulation to duct work. 4,766,283, Cl. 219-98.000.

McCorvey, Timothy R.: *See*—
McCorvey, Allan; and McCorvey, Timothy R., 4,766,283, Cl. 219-98.000

McDermott Incorporated: *See*—
Howson, Robert E., 4,765,776, Cl. 405-169.000

McDonnell Douglas Corporation: *See*—
Bjornlie, Harvey C.; and Clark, Timothy E., 4,765,816, Cl. 65-4.200.

McGaugh, Michael C.: *See*—
Chang, Dane; and McGaugh, Michael C., 4,765,873, Cl. 204-101.000
Chang, Dane; and McGaugh, Michael C., 4,765,969, Cl. 423-573.00R

McGeachy, Donald E., to Numatics, Incorporated. Tire inflation-deflation system. 4,765,385, Cl. 152-416.000.

McGinn, Michael, to Motorola, Inc. Video demodulator system. 4,766,391, Cl. 329-50.000

McGlory, John J.: *See*—
Ricketson, Tommy H.; Klug, Mark W.; McGlory, John J.; and Smith, David W., 4,765,531, Cl. 228-179.000

McGregor, Douglas R.; and Malone, Jon R., to University of Strathclyde. Generic associative memory. 4,766,568, Cl. 365-49.000.

McHardy, John; Ludwig, Frank A.; Higley, Lin R.; Kindler, Andrew; and Townsend, Carl W., to Hughes Aircraft Company. Electrochemical capacitor. 4,766,522, Cl. 361-433.000

McKeown, Thomas J., to Cellucap Manufacturing Co. Method of producing disposable headdress. 4,765,854, Cl. 156-161.000.

McMahan, Talton O., Jr.: *See*—
Taylor, Bill A.; and McMahan, Talton O., Jr., 4,765,287, Cl. 123-81.00D.

McMillan, Robert M., to Recognition Equipment Incorporated. Dual mode stationary and portable scanning system. 4,766,297, Cl. 235-455.000

McMillin, John R.; and Fessler, Herman S., to Cornelius Company, The. Post-mix beverage dispenser with nozzle. 4,765,513, Cl. 222-129.100.

McPhee, William A.: *See*—
McClure, Gerald B.; and McPhee, William A., 4,765,409, Cl. 166-297.000.

Mead Corporation, The: *See*—
Jerry, Roger E., 4,766,050, Cl. 430-138.000.

Mechanical Technology Incorporated: *See*—
Corey, John A., 4,765,138, Cl. 60-517.000.

MedInnovations, Inc.: *See*—
Fischell, Robert E.; and Fischell, Tim A., 4,765,332, Cl. 128-305.000

Meehan, Kenneth N.: *See*—
Nath, Narikottile G.; Meehan, Kenneth N.; and Eberle, Robert W., 4,766,024, Cl. 428-139.000.

Meel, Jacobus C. A.: *See*—
Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, 4,766,130, Cl. 514-303.000.

Meier, Raymond C., to Ford Motor Company. Adaptable robotic gripper assembly. 4,765,669, Cl. 294-119.100.

Meinan Machinery Works, Inc.: *See*—
Nakaya, Takashi, 4,765,214, Cl. 83-80.000.
Watanabe, Kenzo, 4,765,380, Cl. 144-213.000.

Mellwig, Dieter; and Kurbjuhn, Wilfried, to Albert Schulte Sohne GmbH. & Co. Heavy duty caster. 4,765,021, Cl. 16-20.000

Melnichuk, Gennady A.: *See*—
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.

Melquist, John L.: *See*—
Satek, Larry; Wilwerding, Laura; Melquist, John L.; and Luetkens, Melvin L., 4,766,102, Cl. 502-202.000

Mengo, Alfred, to Mengo Industries, Inc. Weigh scale for fish landing device. 4,765,420, Cl. 177-149.000.

Mengo Industries, Inc.: *See*—
Mengo, Alfred, 4,765,420, Cl. 177-149.000.

Mercado, Romeo I.; and Robb, Paul N., to Lockheed Missiles and Space Company, Inc. Color-corrected lens systems. 4,765,727, Cl. 350-483.000

Merck & Co. Inc.: *See*—
Goegelman, Robert T.; Inamine, Edward S.; and White, Raymond F., 4,766,112, Cl. 514-30.000.
Heller, Jorge, 4,765,973, Cl. 424-486.000.
Lee, Ta J.; Rooney, Clarence S.; and Hoffman, William F., 4,766,145, Cl. 514-460.000

Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Juraszyk, Horst; Gericke, Rolf; Lues, Inge; Bergmann, Rolf; and Schmitges, Claus J., 4,766,213, Cl. 544-127.000.

Mercurio, Frank: *See*—
Hemmann, Ronald S.; and Mercurio, Frank, 4,766,275, Cl. 200-153.00A.

Merger, Franz: *See*—
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.

Merkenschlager, Hans-Hermann; Kraus, Friedrich; and Szolnoki, Gergely, to Siemens Aktiengesellschaft. Method for testing for faulty plated-through bores circuit boards. 4,766,325, Cl. 250-572.000.

Merkle, Hansjurgen: *See*—
Becker, Wolfgang; Hierweger, Alexander; Merkle, Hansjurgen; Lob, Erwin; Lass, Joseph; and Kaule, Wittich, 4,765,656, Cl. 283-70.000
Lass, Joseph; Merkle, Hansjurgen; Becker, Wolfgang; Herget, Werner; and Lob, Erwin, 4,766,026, Cl. 428-203.000.

Merrell Dow Pharmaceuticals Inc.: *See*—
Freedman, Jules; and Dage, Richard C., 4,766,212, Cl. 544-101.000.

Merrem, Hans-Joachim; and Schmitt, Axel, to Hoechst Aktiengesellschaft. Solvents for photoresist removal. 4,765,844, Cl. 134-38.000.

Merrifield, James H.: *See*—
Ostrozynski, Robert L.; Greene, George H.; and Merrifield, James H., 4,766,181, Cl. 428-395.000.

MessagePhone, Inc.: *See*—
Axberg, David R., 4,766,604, Cl. 379-67.000.

Messer. Griesheim GmbH: *See*—
Grohmann, Paul, 4,765,846, Cl. 148-9.00R.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Carl, Udo; and Dilmaghani, Homayoun, 4,765,568, Cl. 244-75.00R.

Meszaros neee Szekrenyes, Agnes: *See*—
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Fennemann, Wolfgang, 4,766,104, Cl. 502-218.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Reichel, Dieter; Jakobs, Rudolf; Brehm, Lothar; and Quass, Gunter, 4,765,809, Cl. 55-267.000

Metallwerk K. Pittl GmbH & Co. KG: *See*—
Jungkind, Roland, 4,765,640, Cl. 280-615.000.

Metcoff, Dale M.; and Holzboog, Walter, to Epic Corporation. Aerosol tilt valve mounting cup and assembly. 4,765,516, Cl. 222-402.220.

Metzeler Kautschuk GmbH: *See*—
Hartel, Volker, 4,765,600, Cl. 267-122.000.

Meunier, Francis: *See*—
Paeye, Gerard; and Meunier, Francis, 4,765,395, Cl. 165-104.120.

Meyer, Daniel F.: *See*—
Vincent, Gary A.; and Meyer, Daniel F., 4,766,011, Cl. 427-117.000

Meyer, Gerd, to Phoenix Aktiengesellschaft. Elastic rail bearing. 4,765,538, Cl. 238-283.000

Meyer, Heinrich: *See*—
Modes, Christina; Meyer, Heinrich; Burgsdorff, Jochen-Werner K.; Stroder, Ulrich; and Kramer, Andrea, 4,765,874, Cl. 204-105.00R.

Meyer, Herman P.: *See*—
Biamonte, Robert A.; Bogdanski, Joseph W.; Covi, Kevin R.; Meyer, Herman P.; and Rafkind, Daniel I., 4,766,364, Cl. 323-272.000.

Meyer, Jean-Marc: *See*—
Mizandjian, Jean-Luc; Meyer, Jean-Marc; and Amen, Jean, 4,766,001, Cl. 426-477.000

Meyers, Thomas J., to NCR Corporation. Low-profile portable UPC optical scanner. 4,766,298, Cl. 235-462.000

Michaels, Nicholas; Korcz, William H.; Campbell, R. Neil; and Singhal, Surendra N., to Shell Oil Company. Carbonated beverage can and method for producing a carbonated beverage can. 4,766,019, Cl. 428-35.000

Michel, Dieter, to Dr. Johannes Heidenhain GmbH. Photoelectric position measuring instrument with grids. 4,766,310, Cl. 250-237.00G

Michels-Krohn, Karl-Heinz; and Untergruger, Josef, deceased (by Untergruber, Angela, legal representative), to Siemens Aktiengesellschaft. Method and circuit arrangement for the transmission of data signals between control devices connected to one another via a loop system. 4,766,596, Cl. 371-62.000.

Michetti, Louis C., to Container Corporation of America. Decorative package with simulated overwrap. 4,765,535, Cl. 229-172.000.

Mickna, Steven L.: *See*—
Wilks, David M.; and Mickna, Steven L., 4,765,781, Cl. 406-197.000

Micro Contacts Inc.: *See*—
Veselaski, Stephen V.; Delanoy, Curtis W.; and Nicola, Robert J., 4,765,060, Cl. 30-208.000

Mieczyslaw Mirowski: *See*—
Mower, Morton M.; and Heilman, Marlin S., 4,765,341, Cl. 128-785.000

Mierbach, Hans-Bernd; Frohn, Gustav; and Blockisch, Olaf, to Applied Power, Inc. Hydraulically powered screwing means. 4,765,210, Cl. 81-57.390.

Miermont, Yves: *See*—
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000.

Mikami, Ryuzo: *See*—
Nakasuji, Katsuyoshi; Mikami, Ryuzo; Hiria, Kazuo; and Matsushita, Takao, 4,766,193, Cl. 528-17.000.

Mikuni Kogyo Kabushiki Kaisha: *See*—
Muraji, Tetsuo, 4,765,932, Cl. 261-27.000.

Miles Inc.: *See*—
Fleming, Roger, 4,766,080, Cl. 436-74.000
Havera, Herbert J.; and Humphreys, John D., 4,766,074, Cl. 435-223.000

Miles, Richard: *See*—
Van Es, Cornelis; Miles, Richard; Kalghatgi, Gautam T.; McArragher, John S.; and Heldeweg, Rudolf F., 4,765,800, Cl. 44-62.000

Miller, Arthur F.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,766,232, Cl. 558-324.000

Miller, John C.: *See*—
Wertheimer, Harry P.; Miller, John C.; Barua, Debojit; and Tyree, Kenneth S., 4,765,881, Cl. 204-428.000.

Miller, John W.; Peterson, Linn A.; and Kingsley, Charles A., to General Motors Corporation. Hydraulic-elastomeric mount. 4,765,601, Cl. 267-140.100.

Miller, Susan M.; Craun, Gary P.; and Toman, Perry A., to Glidden Company, The. High solids coatings for plastic substrates. 4,766,177, Cl. 525-131.000

Millett, James A.: *See*—
Raymond, James W.; and Millett, James A., 4,765,663, Cl. 292-169.130

Mimura, Mitsuo: *See*—
Uchida, Katsuhiro; Masumoto, Shozo; Tohno, Masao; Mimura, Mitsuo; and Okumura, Makoto, 4,766,148, Cl. 514-533.000

Minai, Yasuo, to Kitz Corporation. Material for valve seats. 4,765,592, Cl. 251-368.000

Minegishi, Harumasa: *See*—
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000.

Minenco Pty. Limited: *See*—
Ozolins, Imants; and James, Gary L., 4,765,461, Cl. 198-311.000

VOL 1093 ISS 4 AG 23 1988 UMI

Miner, Robert A. Practice device for putting strokes. 4,765,625, Cl. 273-183.00A.
Minert, Roy T.: *See—*
Sorenson, Barry R.; and Minert, Roy T., 4,765,247, Cl. 102-339.000
Minnesota Mining and Manufacturing Company: *See—*
Kaps, Wolfgang, 4,765,561, Cl. 242-192.000.
Lu, Shih-Lai, 4,766,023, Cl. 420-120.000
Pieper, Wendell J., 4,765,326, Cl. 128-202.220.
Ronning, Patricia M.; and Vandesteeg, Gregg A., 4,765,982, Cl 424-403.000
Minnesota Power & Light Company: *See—*
Nehls, George R., Jr.; and Anderson, Scott D., 4,765,828, Cl. 75-10.190.
Minolta Camera Kabushiki Kaisha: *See—*
Ishida, Tokuji; Kozakai, Katsumi; and Hamada, Masataka, 4,766,302, Cl. 250-201.000
Kawai, Nobuyuki; and Goto, Yasuo, 4,766,466, Cl. 355-57.000
Oka, Tateki; Yokoyama, Tomoaki; and Toyoshi, Naoki, 4,766,458, Cl. 355-3.0DD
Sakai, Takao; and Hamaguri, Kenji, 4,765,340, Cl. 128-633.000
Takamura, Sachiko, 4,765,723, Cl. 350-432.000
Mips Co., Ltd.: *See—*
Hamada, Yoshitaka, 4,766,480, Cl. 357-74.000.
Mir, Jose M.: *See—*
Agostinelli, John A.; and Mir, Jose M., 4,765,721, Cl. 350-389.000
Mirabelli, Christopher K.: *See—*
Hill, David T.; Johnson, Randall K.; and Mirabelli, Christopher K., 4,766,226, Cl. 556-18.000
Mirenna, Luigi: *See—*
Colle, Roberto; Gozzo, Franco; Camaggi, Giovanni; Mirenna, Luigi; and Zagni, Angela, 4,766,139, Cl. 514-383.000.
Mirviss, Stanley B., to Stauffer Chemical Co. Racemization catalyst for amino acids. 4,766,250, Cl. 568-433.000
Misaki, Masaru; Murata, Hisashi; Yamamoto, Hideo; and Watanabe, Yasuhiko, to Takeda Chemical Industries, Ltd. Enriched rye and barley and its production. 4,765,996, Cl. 426-72.000.
Misek, Victor A., to Sanders Associates, Inc. Direction finding system. 4,766,439, Cl. 342-445.000.
MIT: *See—*
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000
Mita Industrial Co. Ltd.: *See—*
Yamada, Shuji; Matsushita, Tetsuya; and Andou, Hironori, 4,766,467, Cl. 355-14.0SH.
Mitoyo Industries Co., Ltd.: *See—*
Fukushima, Koji; and Sasaki, Isamu, 4,765,661, Cl. 285-382.500.
Mitsubishi Chemical Industries Ltd.: *See—*
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000
Mitsubishi Denki Kabushiki Kaisha: *See—*
Fujimoto, Akihiko, 4,766,546, Cl. 364-474.000
Kitamura, Yutaka; and Aso, Hiroaki, 4,765,283, Cl. 123-41.310.
Kojima, Shinji; Wataya, Seiji; and Nishiyama, Ryoji, 4,765,298, Cl. 123-440.000
Komoto, Haruo; Hamada, Shigeharu; Shiinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl. 204-211.000
Mukogawa, Yasukazu; Tamura, Katsuhiko; and Fukumoto, Takaaki, 4,765,963, Cl. 422-68.000
Nakamura, Hisashi, 4,765,654, Cl. 283-67.000
Nakamura, Koji, 4,766,341, Cl. 313-402.000.
Nakamura, Takashi, 4,765,267, Cl. 112-275.000
Shiga, Takashi; Tani, Hidekazu; Hama, Hiroaki; and Iijima, Hitoshi, 4,765,149, Cl. 62-174.000.
Takami, Akira, 4,765,195, Cl. 74-113.000.
Uomoti, Akiyoshi; Tajiri, Hiromi; Nakatani, Nobuyoshi; and Daizumoto, Masafumi, 4,765,532, Cl. 228-212.000
Wataya, Seiji; and Kishimoto, Yuji, 4,765,299, Cl. 123-479.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Katsumoto, Takehiko; Hirako, Osamu; and Komagome, Reijiro, 4,765,294, Cl. 123-306.000.
Mitsubishi Jukogyo Jabushiki Kaisha: *See—*
Fujiwara, Haruyoshi, 4,765,868, Cl. 162-343.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Maeda, Akira; and Hagiwara, Haruo, 4,765,159, Cl. 68-12.00R.
Mitsubishi Kinzoku Kabushiki Kaisha: *See—*
Yabuki, Ritsue; Ohe, Junya; and Saitoh, Sadao, 4,765,955, Cl. 420-438.000.
Mitsuboshi Belting Ltd.: *See—*
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000.
Mitsuhashi, Masayuki; Komine, Naoto; and Shimizu, Takao, to Shin-Etsu Polymer Co., Ltd. Elastomer-made push button switch covering member. 4,766,271, Cl. 200-159.00B.
Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Satoh, Seiki, 4,765,682, Cl. 297-379.000.
Mitsui Mining & Smelting Co. Ltd.: *See—*
Anzai, Yutaka; Yamagishi, Kiyoshi; Yamaguchi, Yasuhide; and Moriya, Kazuo, 4,765,925, Cl. 252-301.40F.
Mitsui Toatsu Chemical, Inc.: *See—*
Hirose, Sumio; Ozawa, Hiroshi; Abe, Kenji; and Hosono, Yoichi, 4,766,054, Cl. 430-270.000.
Mitutoyo Corporation: *See—*
Maeda, Fujio, 4,765,064, Cl. 33-172.00E.
Miura, Konoe: *See—*
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000
Miyabayashi, Tadao: *See—*
Yagi, Motoi; Miyabayashi, Tadao; Morikawa, Yasuo; and Kobayashi, Yasuhito, 4,766,506, Cl. 360-37.100.
Miyake, Jun: *See—*
Yamaguchi, Yasunori; and Miyake, Jun, 4,766,570, Cl. 365-189.000.
Miyake, Katsuya, to Akebono Brake Industry Co., Ltd. Antiskid control system for vehicle with electromagnetic valve having throttled position. 4,765,692, Cl. 303-119.000
Miyake, Kou: *See—*
Abe, Yoshio; Kubota, Masashi; and Miyake, Kou, 4,766,427, Cl. 340-721.000
Miyake, Yuzuru: *See—*
Sugioka, Takami; Miyake, Yuzuru; and Ueno, Toshiyuki, 4,765,552, Cl. 242-18.00R
Miyamoto, Kazuki: *See—*
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000
Miyano, Katsumi: *See—*
Nakagawa, Kiyotoshi; Miyano, Katsumi; and Fujimoto, Takeo, 4,766,474, Cl. 357-23.800
Miyashita, Kunio: *See—*
Takahashi, Tadashi; Miyashita, Kunio; and Kawamata, Syouichi, 4,766,376, Cl. 324-208.000
Miyashita, Yoshinobu; Oishi, Haruki; Ueno, Yasumichi; Shiraishi, Hiromi; and Tubaki, Kazuyuki, to Wako Pure Chemical Industries, Ltd. Method for the photometric determination of biological agglutination. 4,766,083, Cl. 436-517.000.
Miyata, Shigeru: *See—*
Hayakawa, Nobuhiro; Miyata, Shigeru; Yamada, Tetsusho; and Yokota, Kazunori, 4,765,880, Cl. 204-425.000
Miyawaki, Hiroshi, to Noritsu Kenkyu Center Co., Ltd. Paper mask assembly for use in photographic printing. 4,766,492, Cl. 355-125.000.
Miyazaki, Shinichi, to NEC Corporation. Communication system with variably repeated transmission of data blocks. 4,766,599, Cl. 375-8.000.
Miyazaki, Toshiyuki; and Yamamoto, Tohru, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for obtaining nuclear magnetic resonance information data. 4,766,379, Cl. 324-309.000.
Miyazawa, Kazutoshi: *See—*
Inoue, Hiromichi; Inukai, Takashi; Ohno, Kouji; Miyazawa, Kazutoshi; and Saito, Shinichi, 4,765,924, Cl. 252-299.610.
Miyazawa, Osamu: *See—*
Sekibata, Masao; Ohta, Toshihiko; and Miyazawa, Osamu, 4,765,528, Cl. 228-123.000.
Miyoshi, Akio, to Kabushiki Kaisha Toshiba. Microprocessor having variable data width. 4,766,538, Cl. 364-200.000
Miyoshi, Takahito; and Fujiyama, Masaaki, to Fuji Photo Film Co., Ltd. Anti-static surface for magnetic tape cartridge. 4,766,511, Cl. 360-132.000
Mizandjian, Jean-Luc; Meyer, Jean-Marc; and Amen, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process for treating a food liquid with a gas. 4,766,001, Cl. 426-477.000.
Mizuhara, Howard, to GTE Products Corporation. Ductile low temperature brazing alloy. 4,766,041, Cl. 428-606.000.
Mizuno, Yutaka, to Casio Computer Co., Ltd. Electronic cash register with programmable mode/function key settings. 4,766,540, Cl. 364-405.000
Mizutani, Junichi: *See—*
Hayashi, Chikahisa; Kawai, Makoto; Hirose, Yoshikazu; and Mizutani, Junichi, 4,766,326, Cl. 307-10.00R.
Mladota, John, to Bolton-Emerson, Inc. Coating device for material webs. 4,765,272, Cl. 118-410.000
Mobley, Kenneth J., to INMOS Corporation. Current sensing differential amplifier. 4,766,333, Cl. 307-530.000.
Mochizuki, Yoshiharu: *See—*
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000.
Modery, Richard G.; Bell, John C.; and Cope, Charles R., to Transfer Technologies, Inc. Computer controlled conveyor system. 4,766,547, Cl. 364-478.000
Modes, Christina; Meyer, Heinrich; Burgsdorff, Jochen-Werner K.; Stroder, Ulrich; and Kramer, Andrea, to W. C. Heraeus GmbH. Laminated electrode the use thereof. 4,765,874, Cl. 204-105.00R
Modrovich, Nandor I. Conscreed bracket. 4,765,106, Cl. 52-365.000
Modulus, Inc.: *See—*
Bergl, Rodney A.; and Tracy, Richard J., 4,765,575, Cl 248-250.000
Moeller, Robert P.: *See—*
Schmidt, Daniel E.; and Moeller, Robert P., 4,765,938, Cl. 264-269.000
Moen, Tom: *See—*
Aalbu, Johannes; Moen, Tom; Aalbu, Morit S.; and Borg, Peter, 4,766,552, Cl. 364-500.000
Mohney, Hubert L. R.: *See—*
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., 4,765,861, Cl. 156-457.000
Mohri, Kaneo, to TDK Corporation. Displacement sensor for a living body. 4,765,321, Cl. 128-715.000

Mohri, Kaneo; and Yamasaki, Jiro, to Kaneo Mohri. Permanent magnent and method for producing same. 4,765,848, Cl. 148-302.000.
Molnycke AB: *See—*
Froidh, Arne; Alsenvik, Stewe; Widlund, Urban; and Norenberg, Carl-Daniel, 4,765,477, Cl. 206-438.000.
Monarch Knitting Machinery Corporation: *See—*
Pernick, Bruce M., 4,765,155, Cl. 66-8.000
Monarch Machine Tool Co., The: *See—*
Bradlee, Charles R., 4,765,169, Cl. 72-160.000.
Mongelli, Nicola: *See—*
Arcamone, Federico; Mongelli, Nicola; and Penco, Sergio, 4,766,142, Cl. 514-422.000.
Monick, Barbara; and Blake, Alexander. Process and composition for removing contaminants from wastewater. 4,765,908, Cl. 210-666.000
Mono Power Co.: *See—*
Featherstone, John L., 4,765,913, Cl. 210-714.000.
Montedison S.p.A.: *See—*
Colle, Roberto; Gozzo, Franco; Camaggi, Giovanni; Mirenna, Luigi; and Zagni, Angela, 4,766,139, Cl. 514-383.000.
Montgomery, Robert E.; and Schaeffer, George W., to OPI Products, Inc. Material and method for obtaining strong adhesive bonding to proteinaceous substrates. 4,766,005, Cl. 427-4.000.
Moog Inc.: *See—*
Cummins, Richard D., 4,765,587, Cl. 251-129.190.
Moore Business Forms, Inc.: *See—*
Fasham, Thomas I. K.; and Irvine, Harry, 4,765,653, Cl. 282-1.00R.
Moore, Mary R. Artificial fingernail sculpturing slipper device. 4,765,350, Cl. 132-88.500.
Moore and Munger Marketing and Refining, Inc.: *See—*
Upadhyaya, Janardan D.; Farnham, Harry M.; Lin, Ing C.; and Case, Alan R., 4,766,166, Cl. 524-275.000.
Moore, Paul A., to U.S. Philips Corporation. Demodulating an angle-modulated signal. 4,766,392, Cl. 329-124.000.
Moore, Terence A., to Diamant Boart Stratabit Limited. Corebarrel. 4,765,414, Cl. 175-44.000.
Moores, Robert G., Jr.: *See—*
Sauerwein, William D.; Dibbern, John E., Jr.; O'hara, Frank J.; and Moores, Robert G., Jr., 4,765,054, Cl. 29-596.000.
Moran, David S.: *See—*
Holden, Ronald D.; Tedor, John B.; Bergquist, Andrew O.; Moran, David S.; and Eiserer, Mike, 4,765,193, Cl. 73-865.900.
Morbidelli, Massimo: *See—*
Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, 4,766,262, Cl. 570-211.000.
Morgado, Ralph G. Self-sealing piston apparatus. 4,765,292, Cl. 123-193.00P.
Morgan Construction Company: *See—*
Nasrah, Camille S., 4,765,556, Cl. 242-82.000
Morgan, Frank W. Three disk opener assembly. 4,765,262, Cl 111-73.000
Mori, Masakazu; Tsuda, Takashi; and Yamane, Kazuo, to Fujitsu Limited. Method of measuring a mode partition characteristics of a laser diode and an apparatus of the same. 4,765,735, Cl. 356-121.000.
Mori, Taro: *See—*
Suga, Nagaichi; Katayanagi, Shinichi; Sasho, Yoshio; and Mori, Taro, 4,766,488, Cl. 358-93.000.
Mori, Toshihiro: *See—*
Matai, Masahiro; and Mori, Toshihiro, 4,766,434, Cl. 340-825.440.
Mori, Yoshinori, to Murata Manufacturing Co., Ltd. Electric double layer capacitor. 4,766,523, Cl. 361-433.000.
Moriarity, Larry J. Apparatus for sorting items according to detachable characteristics. 4,765,488, Cl. 209-551.000.
Moribe, Yoshihiro; Fujii, Masataka; Chuma, Akira; and Tsuchiya, Hiroshi, to Hitachi, Ltd. Magnetic head assembly. 4,766,509, Cl. 360-106.000.
Morijiri, Makoto: *See—*
Imura, Midori; Morijiri, Makoto; Hanazono, Masanobu; and Kazui, Shinichi, 4,766,009, Cl. 427-53.100.
Morikawa, Yasuo: *See—*
Yagi, Motoi; Miyabayashi, Tadao; Morikawa, Yasuo; and Kobayashi, Yasuhito, 4,766,506, Cl. 360-37.100.
Morimoto, Kiyoshi; and Toki, Hitoshi, to Futaba Denshi Kogyo Kabushiki Kaisha. Light source. 4,766,526, Cl. 362-255.000.
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, to Research Association for Petroleum Alternatives Development. Hydrocarbon synthesis process utilizing crystalline aluminosilicate catalyst 4,766,263, Cl. 585-408.000
Morishige, Masakatsu: *See—*
Yamamoto, Kenji; Morishige, Masakatsu; Takeuchi, Harumi; and Tsunomoto, Yoshitaka, 4,765,160, Cl. 68-12.00R.
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, to Lion Corporation. Micellar slug for oil recovery. 4,765,408, Cl. 166-274.000
Morita, Shigeru; Kuwahara, Kazuhiko; Tomoda, Masayasu; and Oka, Masahiko, to Daikin Industries Ltd. Novel elastomeric fluoropolymer and preparation thereof. 4,766,190, Cl. 526-247.000.
Moriwaki, Hisayoshi: *See—*
Nakano, Kenji; and Moriwaki, Hisayoshi, 4,766,505, Cl. 360-19.100.
Moriya, Kazuo: *See—*
Anzai, Yutaka; Yamagishi, Kiyoshi; Yamaguchi, Yasuhide; and Moriya, Kazuo, 4,765,925, Cl. 252-301.40F.
Moriya, Tadashi, to Risho Kogyo Co., Ltd. Test board for semiconductor packages. 4,766,371, Cl. 324-158.00F.
Moro, Jean: *See—*
Rousset, Jacky; and Moro, Jean, 4,765,921, Cl. 252-87.000.
Moroto, Shuzo: *See—*
Kawamoto, Mutumi; Moroto, Shuzo; Yamada, Takashi; and Yokoyama, Shouji, 4,765,434, Cl. 180-249.000
Morris, Michael C. Automatic rifle gas system. 4,765,224, Cl. 89-191.010.
Morrisroe, Peter J.; Zander, Andrew T.; Manning, David C.; and Gagne, Peter H., to Perkin-Elmer Corporation, The. Inductively coupled plasma torch with adjustable sample injector. 4,766,287, Cl. 219-121.520.
Morton, Scott A.: *See—*
Schrag, Thomas G.; Hood, Charles F.; Morton, Scott A.; and Graber, Kurt, 4,765,235, Cl. 100-3.000
Morton Thiokol, Inc.: *See—*
Sorenson, Barry R.; and Minert, Roy T., 4,765,247, Cl. 102-339.000
Mosier, Larry; and Petersen, John, to Becton Dickinson and Company. Detection of cell membrane protein. 4,766,065, Cl. 435-7.000.
Moskowitz, Alan H., to Warner-Lambert Company. Crunchy, highly palatable, bulk-increasing, dietary fiber supplement composition 4,766,004, Cl. 426-658.000
Moss, Theron C.; and Cross, Haymond E., to Seco Industries, Inc Flexible duster head holder. 4,765,014, Cl. 15-229.300
Motohashi, Minoru: *See—*
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kouzou; and Urayama, Norihisa, 4,766,580, Cl. 369-21.000
Motorola, Inc.: *See—*
Cates, Ronnie L., 4,766,593, Cl. 371-15.000
Davis, Walter L., 4,766,366, Cl. 323-312.000.
Huntsman, Clayton D.; and Cawthron, Duane W., 4,766,531, Cl. 364-200.000
Kiedrowski, Paul A., 4,766,398, Cl. 331-96.000
Kuo, Clinton C. K., 4,766,473, Cl. 357-23.500
McGinn, Michael, 4,766,391, Cl. 329-50.000
Thompson, Charles D.; and Gergen, Joseph P., 4,766,561, Cl 364-724.000
Zolnowsky, John, 4,766,537, Cl. 364-200.000.
Mouesca, Bruno: *See—*
Denizou, Jean-Pierre; and Mouesca, Bruno, 4,765,949, Cl. 376-443.000
Mower, Morton M.; and Heilman, Marlin S., to Mieczyslaw Mirowski. Cardiac electrode with attachment fin. 4,765,341, Cl. 128-785.000.
Moza, Ashok K.: *See—*
Colle, Thomas H.; and Moza, Ashok K., 4,765,259, Cl. 110-342.000
MTA Kozponti Kemiai Kutato Intezet: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000
Mueller, Dan P. Device for supporting firewood stack. 4,765,491, Cl. 211-49.100.
Muffett, Dorothy J.: *See—*
Chen, Teh-Kuei; Muffett, Dorothy J.; and Tandy, Karen G., 4,766,209, Cl. 536-55.300.
Mukogawa, Yasukazu; Tamura, Katsuhiko; and Fukumoto, Takaaki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for measuring impurities in water. 4,765,963, Cl. 422-68.000
Muller, Friedemann: *See—*
Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, 4,766,165, Cl 524-140.000
Muller, Nikolaus; Kranz, Eckart; and Andrews, Peter, to Bayer Aktiengesellschaft. 3-carbamoyl-4-hydroxy-coumarins for combating parasitic helminths. 4,766,144, Cl. 514-457.000
Muller, Rudolph R. M., to Multifastener Corporation. Self-attaching fastener, panel assembly and installation apparatus. 4,765,057, Cl 29-716.000
Mullgrav, Allan L., Jr.: *See—*
Davis, John D.; and Mullgrav, Allan L., Jr., 4,766,399, Cl. 331-111.000
Multifastener Corporation: *See—*
Muller, Rudolph R. M., 4,765,057, Cl. 29-716.000
Munakata, Hirohide: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Munakata, Hirohide; Tomita, Yoshinori; and Hamamoto, Takashi, 4,766,047, Cl. 430-19.000
Munroe, Richard W., to Coppus Engineering Corporation. Gas flow amplifier. 4,765,373, Cl. 137-890.000.
Muraji, Tetsuo, to Mikuni Kogyo Kabushiki Kaisha. Fuel supply device for carburetors. 4,765,932, Cl. 261-27.000
Murakami, Hiroko: *See—*
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000
Murao Boki Kabushiki Kaisha: *See—*
Yamashita, Osamu, 4,765,043, Cl. 28-294.000.
Murata, Hiroshi; and Terasawa, Kunihiko, to Tokico Ltd. Hydraulic damper of adjustable damping force type. 4,765,446, Cl. 188-319.000
Murata, Hisashi: *See—*
Misaki, Masaru; Murata, Hisashi; Yamamoto, Hideo; and Watanabe, Yasuhiko, 4,765,996, Cl. 426-72.000.
Murata Manufacturing Co., Ltd.: *See—*
Mandai, Haruhumi, 4,766,409, Cl. 338-22.00R
Mori, Yoshinori, 4,766,523, Cl. 361-433.000
Takakura, Shin-ichi; Nojiri, Shigehiro; and Sakai, Norio, 4,766,412, Cl. 338-334.000
Murdoch, Joseph R.; and Loomis, Gary L., to Du Pont de Nemours, E I., and Company. Polylactide compositions. 4,766,182, Cl 525-413.000

VOL 1093 ISS 4 AG 23 1988 UMI

Murphy, Robert. Electrical component carrier. 4,765,471, Cl. 206-329.000

Murray, David L., to Deutz-Allis Corporation. Implement swing hitch permitting endwise transport. 4,765,639, Cl. 280-415.00R.

Murray, Mark J.; and Kelly, James D., to ZymoGenetics Inc. Expression of biologically active PDGF analogs in eucaryotic cells 4,766,073, Cl. 435-172.300.

Muschaweck, Roman: *See*—
Englert, Heinrich C.; Mania, Dieter; Muschaweck, Roman; and Hropot, Max, 4,766,241, Cl. 564-89.000

Mutti, Fabio; and Gatti, Luigi, to Rubinetterie Rapetti S.P.A. Valve assembly for single-control mixing valve. 4,765,368, Cl. 137-625.400

Myo-Tronics Research, Inc.: *See*—
Adib, Fray, 4,765,345, Cl. 128-777.000.

Myowa, Koh: *See*—
Akutsu, Masami; Myowa, Koh; and Hirasawa, Noboru, 4,765,117, Cl. 53-133.000

Naaktgeboren, Aart J.: *See*—
Buys, Henricus C. W. M.; Naaktgeboren, Aart J.; and Gons, Johan, 4,765,898, Cl. 210-500.410.

Naaktgeboren, Adrianus: *See*—
De Busscher, Cyriel R. J.; Naaktgeboren, Adrianus; and Stael, Odilus A., 4,765,238, Cl. 100-89.000
Vansteelant, Marc G.; Naaktgeboren, Adrianus; and Seymour, Shaun A., 4,765,237, Cl. 100-89.000.

Nagai, Masaaki, to Fuji Jukogyo Kabushiki Kaisha. System for controlling the ignition timing of an internal combustion engine. 4,766,545, Cl. 364-431.080

Naganawa, Hitoshi; and Maekawa, Kouichiro, to NGK Insulators Ltd. Method of making ceramic arc tube for high-pressure metal-vapor discharge lamp. 4,765,820, Cl. 65-36.000.

Nagano, Katsumi: *See*—
Komoto, Haruo; Hamada, Shigeharu; Shinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl. 204-211.000.

Nagaoka, Kazuo, to Sony Magnescale Corporation. Head assembly having free axial and restricted perpendicular movement in a magnetic scale. 4,766,375, Cl. 324-208.000.

Nagaoka, Shinsaku: *See*—
Sato, Toshihiko; Kitamura, Takeshi; and Nagaoka, Shinsaku, 4,766,034, Cl. 428-336.000.

Nagasawa, Kenichi: *See*—
Kashida, Motokazu; Takei, Masahiro; Takahashi, Kouji; and Nagasawa, Kenichi, 4,766,507, Cl. 360-72.200

Nagashima, Akira, to Kioritz Corporation. Chain saw. 4,765,282, Cl. 123-41.700

Nagashima, Akira, to Kioritz Corporation. Carburetor. 4,765,933, Cl. 261-44.600

Nagata, Kazuhisa, to Aisin Seiki Kabushiki Kaisha. Support structure for weatherstripping on a vehicle sun roof. 4,765,677, Cl. 296-216.000

Nagayasu, Susumu: *See*—
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000

Nagel, Fritz J.: *See*—
West, Michael H.; and Nagel, Fritz J., 4,766,113, Cl. 514-187.000

Nagode, Gerald E.: *See*—
Wilson, Jerry L.; and Nagode, Gerald E., 4,765,609, Cl. 272-76.000.

Naipawer, Richard E.: *See*—
Rohr, Martin; Potter, Richard H.; and Naipawer, Richard E., 4,766,002, Cl. 426-538.000

Naitoh, Masao; and Ogawa, Tomoji, to Nissin Electric Company, Ltd. Apparatus for ion implantation. 4,766,320, Cl. 250-492.200.

Najima, Choji: *See*—
Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, 4,765,280, Cl. 122-5.50A.

Nakada, Kimiaki: *See*—
Fujimura, Ikuo; Nakada, Kimiaki; and Tanaka, Tsutomu, 4,766,451, Cl. 354-64.000

Nakagawa, Hiroto: *See*—
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.

Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki; Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, to Canon Kabushiki Kaisha. Semiconductor device including a semiconductor layer having a polycrystalline silicon film with selected atomic constituency. 4,766,477, Cl. 357-59.000

Nakagawa, Kazuyuki: *See*—
Uchida, MInoru; Nishi, Takao; and Nakagawa, Kazuyuki, 4,766,120, Cl. 514-227.800

Nakagawa, Kiyotoshi; Miyano, Katsumi; and Fujimoto, Takeo, to Sharp Kabushiki Kiasha. High voltage MOS transistor. 4,766,474, Cl. 357-23.800

Nakagawa, Sumito: *See*—
Ogino, Takao; and Nakagawa, Sumito, 4,765,386, Cl. 152-556.000.

Nakagiri, Takashi: *See*—
Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki; Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, 4,766,477, Cl. 357-59.000

Nakahata, Kimio: *See*—
Hosono, Nagao; Fujii, Haruo; Ando, Yujiro; and Nakahata, Kimio, 4,766,468, Cl. 355-3.0DD.

Nakai, Eiji: *See*—
Masuda, Shunji; and Nakai, Eiji, 4,765,289, Cl. 123-90.160.

Nakajima, Kenji. Duct. 4,765,375, Cl. 138-155.000.

Nakajima, Masayoshi: *See*—
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000.

Nakamura, Hisashi, to Mitsubishi Denki Kabushiki Kaisha. Single-sheet printer paper and a method for its use. 4,765,654, Cl. 283-67.000.

Nakamura, Kazumasa: *See*—
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000.

Nakamura, Keiko: *See*—
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000

Nakamura, Koichi: *See*—
Nakamura, Taku; Nakamura, Koichi; and Hayashi, Hiroshi, 4,766,052, Cl. 430-203.000.

Nakamura, Koji, to Mitsubishi Denki Kabushiki Kaisha. Color picture tube with shadow mask having alternately displaced apertures. 4,766,341, Cl. 313-402.000.

Nakamura, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Sewing machine drive device. 4,765,267, Cl. 112-275.000.

Nakamura, Taku; Nakamura, Koichi; and Hayashi, Hiroshi, to Fuji Photo Film Co., Ltd. Photographic element with polymeric imidazole dye mordant. 4,766,052, Cl. 430-203.000.

Nakamura, Yuzo, to Nambu Electric Co., Ltd. Egg sorting and packing device. 4,765,124, Cl. 53-502.000

Nakano, Harumi; Shinmura, Yoshihito; Fukumura, Masaaki; and Kuwabara, Nobuaki, to Casio Computer Co., Ltd. Operator guidance by computer voice synthesizer. 4,766,529, Cl. 364-513.500

Nakano, Kenji; and Moriwaki, Hisayoshi, to Sony Corporation. Method and apparatus for recording video and audio signals in successive tracks on a record medium. 4,766,505, Cl. 360-19.100.

Nakao, Takashi: *See*—
Yoshimura, Isao; Nakao, Takashi; and Kohno, Mitsuo, 4,766,033, Cl. 428-332.000

Nakase, Ryoichi; and Nanami, Masayoshi, to Sanshin Kogyo Kabushiki Kaisha. Water propulsion unit of water jet propulsion craft. 4,765,075, Cl. 440-38.000.

Nakasuji, Katsuyoshi; Mikami, Ryuzo; Hiria, Kazuo; and Matsushita, Takao, to Toray Silicone Company, Ltd. Adhesive for silicone rubbers. 4,766,193, Cl. 528-17.000

Nakatani, Nobuyoshi: *See*—
Uomoti, Akiyoshi; Tajiri, Hiromi; Nakatani, Nobuyoshi; and Daizumoto, Masafumi, 4,765,532, Cl. 228-212.000

Nakaya, Takashi, to Meinan Machinery Works, Inc. Apparatus for handling veneer sheets. 4,765,214, Cl. 83-80.000.

Nakayama, Takashi: *See*—
Kitagawa, Sotoyuki; Nakayama, Takashi; and Isono, Masatoshi, 4,766,159, Cl. 521-134.000

Nakhamkin, Michael, to Gibbs & Hill, Inc. Compressed air energy storage turbomachinery cycle with compression heat recovery, storage, steam generation and utilization during power generation. 4,765,142, Cl. 60-652.000

Nalco Chemical Company: *See*—
Bailey, Kristy M.; and Marek, Patrick J., 4,766,173, Cl. 524-819.000.

Nambu Electric Co., Ltd.: *See*—
Nakamura, Yuzo, 4,765,124, Cl. 53-502.000

Namiki, Tomizo: *See*—
Shinozaki, Fumiaki; Namiki, Tomizo; and Suzuki, Kazuo, 4,766,053, Cl. 430-256.000

Nanami, Masayoshi: *See*—
Nakase, Ryoichi; and Nanami, Masayoshi, 4,765,075, Cl. 440-38.000

Nara, Seietsu; Hirokawa, Katsuhisa; and Kobayashi, Kenichi, to Kabushiki Kaisha Toshiba. Portable medium. 4,766,294, Cl. 235-380.000

Narayanan, S.: *See*—
Johnson, Axel R.; Narayanan, S.; and Woebcke, Herman H., 4,765,883, Cl. 208-78.000

Narayanan, Subramanian: *See*—
Seese, Theodore A.; Narayanan, Subramanian; and Flores, Gilbert A., 4,765,172, Cl. 72-322.000

Narita Seisakusho Mfg., Ltd.: *See*—
Ishizuka, Masashi; Ando, Rokuro; Hatano, Mikio; and Tabata, Koji, 4,765,249, Cl. 105-10.000.

Narumiya, Tsuneaki; Oyachi, Tomio; and Iino, Yasuhiro, to Bridgestone Corporation. Porous ceramic structure and method of filtering aluminum. 4,765,833, Cl. 75-68.00R.

Narusawa, Toshio; and Ryoji, Higashi, to Pioneer Electronic Corporation; and Pioneer Video Corporation. Video disk and recorder with time recorded twice. 4,766,504, Cl. 358-337.000

Nasrah, Camille S., to Morgan Construction Company. Rolling mill laying head. 4,765,556, Cl. 242-82.000.

Natansohn, Samuel: *See*—
Rourke, William J.; Lai, Wen-Chao; and Natansohn, Samuel, 4,765,909, Cl. 210-672.000

Nath, Narikottile G.; Meehan, Kenneth N.; and Eberle, Robert W., to International Permalite, Inc. Roofing system. 4,766,024, Cl. 428-139.000

National Research Development Corporation: *See*—
Preater, Richard W. T., 4,765,189, Cl. 73-800.000

National Starch and Chemical Corporation: *See*—
Rossi, Robert D.; and Fenelli, Steven P., 4,766,251, Cl. 568-436.000

Nauchno-Issledovatelsky Institut Tekhnologii Avtomobilnoi Promyshlennosti: *See*—
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.

Nazar, Steven E.; Leidner, Jacob; and Svirklys, Ferdinand M., to Dominion Al-Chrome Corporation. Polystyrene bead expansion process. 4,765,934, Cl. 264-26.000.

NCR Corporation: *See*—
Cone, Richard E., 4,766,292, Cl. 235-22.000
Meyers, Thomas J., 4,766,298, Cl. 235-462.000

NEC Corporation: *See*—
Henmi, Naoya, 4,765,738, Cl. 356-349.000.
Kobayashi, Yasuo, 4,766,572, Cl. 365-190.000.
Matai, Masahiro; and Mori, Toshihiro, 4,766,434, Cl. 340-825.440.
Miyazaki, Shinichi, 4,766,599, Cl. 375-8.000.
Yukawa, Akira, 4,766,394, Cl. 330-253.000

Necchi Societa per Azioni: *See*—
Bisson, Flavio, 4,765,268, Cl. 112-465.000

Negishi, Masataka. Light projector. 4,765,733, Cl. 353-99.000

Nehls, George R., Jr.; and Anderson, Scott D., to Minnesota Power & Light Company. Method and apparatus for reduction of metal oxides. 4,765,828, Cl. 75-10.190.

Nello, Torta, to Idroplina S.r.l. Floor sweeping blade device for surface cleaning machines. 4,765,015, Cl. 15-245.000.

Nelson, Lawrence A.: *See*—
Ermold, Leonard F.; Keating, Robert F.; and Nelson, Lawrence A., 4,765,374, Cl. 138-89.000

Nelson, Terri L.: *See*—
Wallace, Robert S.; Goldey, Ian C.; and Nelson, Terri L., 4,765,581, Cl. 248-311.200

Nestec S. A.: *See*—
Chen, Teh-Kuei; Muffett, Dorothy J.; and Tandy, Karen G., 4,766,209, Cl. 536-55.300

Neukermans, Armand P.: *See*—
Saadat, Soheil; Pecen, Jiri; Neukermans, Armand P.; and Kren, George J., 4,766,324, Cl. 250-563.000.

Neville, Matthew: *See*—
Gattuso, Todd R.; Koehlert, Kenneth C.; Neville, Matthew; Reznek, Steven R.; and Senecal, Joseph A., 4,765,920, Cl. 252-62.580.

New England Medical Center: *See*—
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000

New Hampshire Flakeboard, Inc.: *See*—
Caughey, Robert A., 4,765,256, Cl. 110-229.000.

Newton, Robert F.; and Sundermeyer, Frank D. Folding scale. 4,765,421, Cl. 177-199.000.

Neywick, Charles V.: *See*—
Lancaster, Gerald M.; Cramm, Russell H.; Kelley, David C.; and Neywick, Charles V., 4,766,035, Cl. 428-345.000.

NGK Insulators Ltd.: *See*—
Naganawa, Hitoshi; and Maekawa, Kouichiro, 4,765,820, Cl. 65-36.000
Takeuchi, Yukihisa; and Masumori, Hideo, 4,766,010, Cl. 427-96.000

NGK Spark Plug Co., Ltd.: *See*—
Hayakawa, Nobuhiro; Miyata, Shigeru; Yamada, Tetsusho; and Yokota, Kazunori, 4,765,880, Cl. 204-425.000

Nguyen, Van Tao: *See*—
Bichon, Daniel; Nguyen, Van Tao; and Schneider, Michel, 4,766,160, Cl. 522-46.000

NI Industries, Inc.: *See*—
Flanigen, Edith M., 4,765,458, Cl. 206-0.700.

Nicholas, Ben A. Fishhook tying tool. 4,765,082, Cl. 43-4.000.

Nickel, Gary B., to Woodstone Foods Limited. Process for preparing products from legumes using centrifugation. 4,766,204, Cl. 530-378.000

Nicola, Robert J.: *See*—
Veselaski, Stephen V.; Delanoy, Curtis W.; and Nicola, Robert J., 4,765,060, Cl. 30-208.000

Nielsen, James W. Method and composition for killing terrestrial molluscs. 4,765,979, Cl. 424-84.000

Niermann, Hans: *See*—
Kohnen, Klaus; Linke, Adolf; and Niermann, Hans, 4,765,631, Cl. 277-2.000

Nifco, Inc.: *See*—
Iguchi, Tatsuya; Fukuhara, Kunihiro; Kadomiya, Tsutomu; and Fukuda, Moritoshi, 4,765,036, Cl. 24-289.000

Nihon Radiator Co., Ltd.: *See*—
Ohashi, Kotaro, 4,765,148, Cl. 62-116.000

Niklewski, Tomasz: *See*—
Johansson, Jan O.; Andersson, Jan-Erik; Niklewski, Tomasz; and Edshammar, Lars E., 4,766,349, Cl. 313-631.000

Nikoloff, Koyu; and Peltier, Raymond J., to Bercen, Inc. Phospholipid lubricant for coating moving webs. 4,766,015, Cl. 427-326.000.

Ninomiya, Hidetaka; and Sato, Ryosuke, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material. 4,766,060, Cl. 430-553.000

Ninomiya, Takeshi: *See*—
Takayama, Jun; and Ninomiya, Takeshi, 4,766,417, Cl. 340-347.0CC

Nippon Air Brake Co., Ltd.: *See*—
Doto, Shigeaki, 4,765,806, Cl. 55-21.000

Nippon Kogaku K. K.: *See*—
Kudo, Yoshihiko, 4,766,309, Cl. 250-237.00R
Shiokama, Yoshiharu; and Ohmori, Sachio, 4,766,453, Cl. 354-286.000

Nippon Kogaku K.K.: *See*—
Aono, Yasuhiro, 4,765,722, Cl. 350-427.000

Nippon Leakless Industry Co., Ltd.: *See*—
Kobayashi, Masaaki; Hanba, Norio; Tanaka, Akira; and Abe, Tsunehiko, 4,765,634, Cl. 277-235.00B

Nippon Paint Co., Ltd.: *See*—
Kawabata, Masami; Kimoto, Koichi; and Takimoto, Yasuyuki, 4,766,055, Cl. 430-281.000

Nippon Seal Co., Ltd.: *See*—
Ueda, Muneyuki, 4,765,012, Cl. 15-4.000

Nippon Seiko Kabushiki Kaisha: *See*—
Higuchi, Toshiro, 4,766,358, Cl. 318-135.000
Sudoh, Kunio; and Nogami, Kohei, 4,765,685, Cl. 297-488.000

Nippon Soken, Inc.: *See*—
Imoto, Yuzo; Hattori, Yoshiyuki; Takei, Toshihiro; and Inagaki, Mitsuo, 4,765,140, Cl. 60-545.000
Tomita, Masahiro; Yasuda, Eturo; and Matuoka, Hirosi, 4,765,919, Cl. 252-62.900

Nippon Steel Corporation: *See*—
Komoto, Haruo; Hamada, Shigeharu; Shinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl. 204-211.000

Nippon Telegraph & Telephone Public Corporation: *See*—
Homma, Yoshikazu; and Ishii, Yoshikazu, 4,766,313, Cl. 250-289.000

Nippondenso Co., Ltd.: *See*—
Kato, Mitsuharu, 4,766,567, Cl. 364-900.000

Nippondenso Co., Ltd.: *See*—
Imoto, Yuzo; Hattori, Yoshiyuki; Takei, Toshihiro; and Inagaki, Mitsuo, 4,765,140, Cl. 60-545.000

Nishi, Takao: *See*—
Uchida, MInoru; Nishi, Takao; and Nakagawa, Kazuyuki, 4,766,120, Cl. 514-227.800

Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, to Sharp Kabushiki Kaisha. Method of manufacturing contact type one-dimensional image sensor. 4,766,085, Cl. 437-3.000

Nishikawa, Takafumi: *See*—
Koike, Yuzuru; and Nishikawa, Takafumi, 4,765,301, Cl. 123-491.000

Nishio, Kohsaku: *See*—
Okabe, Kanichi; Suzuki, Hirotsugu; Nishio, Kohsaku; and Koyama, Katsuhiko, 4,766,603, Cl. 378-152.000

Nishiyama, Ryoji: *See*—
Kojima, Shinji; Wataya, Seiji; and Nishiyama, Ryoji, 4,765,298, Cl. 123-440.000

Nissan Chemical Industries, Ltd.: *See*—
Kato, Etsuro, 4,765,970, Cl. 423-608.000

Nissan Motor Co., Ltd.: *See*—
Akahoshi, Teruhiko, 4,765,665, Cl. 293-102.000
Hayasaki, Koichi, 4,765,202, Cl. 74-868.000
Hirabayashi, Yuji, 4,765,141, Cl. 60-602.000
Okada, Hidehiko, 4,765,635, Cl. 280-5.00A
Sugano, Kazuhiko, 4,765,203, Cl. 74-869.000.

Nissim, Carlos: *See*—
Dohan, Luc; and Nissim, Carlos, 4,765,702, Cl. 350-96.120

Nissin Electric Company, Ltd.: *See*—
Naitoh, Masao; and Ogawa, Tomoji, 4,766,320, Cl. 250-492.200

Nitto Electric Industrial Co., Ltd.: *See*—
Tokuda, Shoichi; Ito, Yuusuke; Otsuka, Saburo; and Kinoshita, Takashi, 4,765,974, Cl. 424-443.000

Nixdorf Computer AG: *See*—
Bogdanski, Michael, 4,766,512, Cl. 360-137.000

Noakes, Timothy J.; Hewitt, Nevil E.; Grocott, Arend L.; and Franks, Philip C. W., to Imperial Chemical Industries PLC. Electrostatic spraying apparatus. 4,765,539, Cl. 239-3.000

Nobel Kemi: *See*—
Carlsson, Staffan; Persson, Torsten; Jonsson, Bert; and Boberg, Tore, 4,765,246, Cl. 102-318.000

Nogami, Kohei: *See*—
Sudoh, Kunio; and Nogami, Kohei, 4,765,685, Cl. 297-488.000

Noguchi, Toru: *See*—
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000.

Noguchi, Yoshitaka: *See*—
Oigo, Ei; and Noguchi, Yoshitaka, 4,765,808, Cl. 55-68.000.

Noguchi, Yukio: *See*—
Watanuki, Masayoshi; Shoji, Tsutomu; Noguchi, Yukio; and Sawamura, Tadahide, 4,766,463, Cl. 355-145.00H

Nojiri, Shigehiro: *See*—
Takakura, Shin-ichi; Nojiri, Shigehiro; and Sakai, Norio, 4,766,412, Cl. 338-334.000

Nolan, Robert S.: *See*—
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J.; Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S., 4,766,471, Cl. 357-19.000

Nomura, Koshi: *See*—
Kono, Satoshi; Nomura, Koshi; and Kyomasu, Mikio, 4,766,088, Cl. 437-52.000

Nomura, Yoshihisa: *See*—
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000

VOL 1093 ISS 4 AG 23 1988 UMI

Nomura, Yukihiro; and Okuda, Yoko, to House Food Industrial Company Limited. Antioxidizing composition. 4,765,927, Cl. 252-400.200.
Nonomura, Tsutomu: *See*—
Oya, Motomichi; and Nonomura, Tsutomu, 4,765,242, Cl. 101-425.000
Norand Corporation: *See*—
Chadima, George E., Jr.; and Laser, Vadim, 4,766,300, Cl. 235-472.000
Nordica S.p.A.: *See*—
Baggio, Giorgio; and Sartor, Mariano, 4,765,069, Cl. 36-50.000.
Nordipa AG: *See*—
de Vroom, Hubertus M., 4,766,038, Cl. 428-447.000.
Nordischer Maschinenbau Rud. Baader GmbH+Co KG: *See*—
Braeger, Horst, 4,765,031, Cl. 17-52.000.
Norenberg, Carl-Daniel: *See*—
Froidh, Arne; Alsenvik, Stewe; Widlund, Urban; and Norenberg, Carl-Daniel, 4,765,477, Cl. 206-438.000
Noritsu Kenkyu Center Co., Ltd.: *See*—
Miyawaki, Hiroshi, 4,766,492, Cl. 355-125.000.
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., to Cousins, Neville Lawrence; and Santolina Securities Limited. Retractable cover. 4,764,998, Cl. 4-502.000.
Norsk Hydro a.s.: *See*—
Henriksen, Norolf, 4,765,807, Cl. 55-51.000.
North American Metals, Inc.: *See*—
Rasmussen, Hans W., 4,765,911, Cl. 210-710.000
North American Philips Consumer Electronics Corp.: *See*—
Say, Donald L., 4,766,344, Cl. 313-414.000.
North American Philips Corporation: *See*—
King, Norman R.; and Collins, Kent L., 4,766,338, Cl. 313-25.000
Northern Telecom Limited: *See*—
De Varennes, Joseph G. C. C., 4,765,130, Cl. 57-59.000.
Jodoin, Francois; and Roberge, Jean M., 4,765,129, Cl. 57-72.000.
Leiwe, Daniel R., 4,765,376, Cl. 140-147.000.
Pelletier, Claude, 4,766,521, Cl. 361-426.000
Nortier, Patrice; Dupin, Thierry; and Latourrette, Bertrand, to Rhone-Poulenc Specialites Chimiques. Alumina-based catalyst carriers having improved durability/mechanical strength/aging resistance. 4,766,101, Cl. 502-164.000.
Norton, Richard F.: *See*—
Jaksa, Tibor S.; Norton, Richard F.; Hall, Kenneth W.; Butler, Stephen J.; Chicoine, Craig C.; and Bienz, Wilford L., 4,765,543, Cl. 239-533.200.
Noujaim, Sharbel E., to General Electric Company. Circuit for generating the square of a function without multipliers. 4,766,416, Cl. 340-347.0AD
Nowacki, Christopher: *See*—
Urman, Robert; Brisson, Alfred G.; and Nowacki, Christopher, 4,765,342, Cl. 128-725.000.
Nowak, Tom; Smith, Edward J.; and Vassiliou, Eustathios, to Vassiliou, Eustathios. Wall fastener. 4,765,788, Cl. 411-61.000
Noyori, Ryoji; Fukushima, Masanori; Kurozumi, Seizi; and Sugiura, Satoshi, to Teijin Limited. Novel 5-membered cyclic compounds, process for production thereof, and pharmaceutical use thereof. 4,766,147, Cl. 514-530.000
Nozawa, Kouzou: *See*—
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kouzou; and Urayama, Norihisa, 4,766,580, Cl. 369-21.000.
Nuken GmbH: *See*—
Popp, Franz W.; and Geisert, Gunter, 4,765,525, Cl. 228-9.000.
Nukii, Takashi: *See*—
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000
Numatics, Incorporated: *See*—
McGeachy, Donald E., 4,765,385, Cl. 152-416.000.
Numoto, Minoru; and Kanzaki, Tsutomu, to Tokyo Seimitsu Co., Ltd. Surface texture measuring instrument. 4,765,181, Cl. 73-105.000
O. R. Concepts, Inc.: *See*—
Poettgen, Robert J., 4,765,323, Cl. 128-132.00D.
Obst, Donald L., to Siecor Corporation. Underwater fiber optic cable weighted with metal particles. 4,765,711, Cl. 350-96.230.
Occidental Chemical Corporation: *See*—
Fifolt, Michael J., 4,766,243, Cl. 564-414.000
Ochino, Toshiharu, to Mazda Motor Corporation. Windshield wiper device and method of setting the same on an automobile. 4,765,019, Cl. 15-250.190.
O'Connell, Patrick A., to Xerox Corporation. Charging deposition control in electrographic thin film writting head. 4,766,450, Cl. 346-155.000
Odom, H. Paul. Motorcycle having a suspension coupled seat. 4,765,432, Cl. 180-227.000.
O'Donnell, Brian R.; and Peretti, Mark F., to Barry Wright Corporation. Laminated bearing. 4,765,758, Cl. 384-221.000
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, to Agency of Industrial Science and Technology. Cytochrome P-450MC gene, expression plasmid carrying the said gene, yeasts transformed with the said plasmid and a process for producing cytochrome P-450MC by culturing the said transformant yeasts. 4,766,068, Cl. 435-68.000
Officine Meccaniche Vimercati S.p.A.: *See*—
Guzzon, Giorgio, 4,766,272, Cl. 200-302.200.
Ogar, George W., Jr.; and Choy, Clement K., to Clorox Company, The. Polymer film composition for rinse release of wash additives. 4,765,916, Cl. 252-8.900.
O'Gara, James. Lock/plate assembly, especially as a replacement in car doors. 4,765,165, Cl. 70-417.000.
Ogawa, Soichiro; Sano, Toshihiko; and Shimizu, Takao, to Hitachi, Ltd. Back light device for uniformly illuminating a liquid crystal display plate. 4,766,524, Cl. 362-29.000.
Ogawa, Tadatoshi: *See*—
Yamada, Hideaki; Hosoda, Satoru; and Ogawa, Tadatoshi, 4,766,157, Cl. 521-60.000.
Ogawa, Tomoji: *See*—
Naitoh, Masao; and Ogawa, Tomoji, 4,766,320, Cl. 250-492.200.
Ogawa, Yasunori; Tsutsumi, Kenji; Tanaka, Yasuo; and Shimozono, Ryoji, to Fujitsu Limited. Digital network system having arrangement for testing digital subscriber line. 4,766,594, Cl. 371-22.000.
Ogino, Takao; and Nakagawa, Sumito, to Bridgestone Corporation. Passenger car radial tire having excellent motion performances and durability. 4,765,386, Cl. 152-556.000.
Ogura, Masahiko: *See*—
Watanabe, Junji; and Ogura, Masahiko, 4,766,464, Cl. 355-14.00R.
O'hara, Frank J.: *See*—
Sauerwein, William D.; Dibbern, John E., Jr.; O'hara, Frank J.; and Moores, Robert G., Jr., 4,765,054, Cl. 29-596.000.
Ohara, Toshimichi: *See*—
Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, 4,765,280, Cl. 122-5.50A.
Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, to Canon Kabushiki Kaisha. Transmission changeover mechanism for camera. 4,766,452, Cl. 354-173.100.
Ohashi, Kotaro, to Nihon Radiator Co., Ltd. Air conditioning system including pump driven by waste heat. 4,765,148, Cl. 62-116.000.
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, to Mitsubishi Chemical Industries Ltd.; and Canon Kabushiki Kaisha. Water-soluble dye composition and recording liquid containing the same. 4,765,838, Cl 106-22.000
Ohe, Junya: *See*—
Yabuki, Ritsue; Ohe, Junya; and Saitoh, Sadao, 4,765,955, Cl. 420-438.000.
Ohishi, Isamu: *See*—
Ozaki, Masanori; Ohishi, Isamu; Sato, Norimasa; and Tanaka, Yasuzou, 4,765,055, Cl. 29-599.000.
Ohkawa, Hideo: *See*—
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000.
Ohkita, Masao, to Alps Electric Co., Ltd. Cutter. 4,765,782, Cl. 407-24.000
Ohmori, Sachio: *See*—
Shiokama, Yoshiharu; and Ohmori, Sachio, 4,766,453, Cl. 354-286.000
Ohno, Kouji: *See*—
Inoue, Hiromichi; Inukai, Takashi; Ohno, Kouji; Miyazawa, Kazutoshi; and Saito, Shinichi, 4,765,924, Cl. 252-299.610.
Ohsato, Kiyoshi: *See*—
Fukumoto, Atsushi; Ohsato, Kiyoshi; and Oka, Michio, 4,766,585, Cl. 369-46.000.
Ohshima, Jiro; Taka, Shin-ichi; Ito, Toshiyo; and Aoyama, Masaharu, to Kabushiki Kaisha Toshiba. Method of gettering a semiconductor device and forming an isolation region therein. 4,766,086, Cl. 437-011.000.
Ohta, Toshihiko: *See*—
Sekibata, Masao; Ohta, Toshihiko; and Miyazawa, Osamu, 4,765,528, Cl. 228-123.000
Ohta, Yukio: *See*—
Arai, Tohru; Fujita, Hironori; Endo, Junji; Sugimoto, Yoshihiko; and Ohta, Yukio, 4,765,847, Cl. 148-15.500.
Ohtoshi, Hirokazu; Hanna, Junichi; and Shimizu, Isamu, to Canon Kabushiki Kaisha. Method for producing an electronic device having a multi-layer structure. 4,766,091, Cl. 437-108.000.
Ohtsuka, Shuichi, to Fuji Photo Film Co., Ltd. Apparatus for projecting, recording and copying an image in an electrophotographic system having mechanisms for simultaneously projecting and recording the same image. 4,766,461, Cl. 355-5.000.
Ohuchi, Muneki; and Uchida, Soukichi, to Jeol Ltd. Phase correction method in two-dimensional NMR spectroscopy. 4,766,377, Cl. 324-307.000
Ohuchi, Muneki, to Jeol Ltd. Two-dimensional nuclear magnetic resonance spectrometry. 4,766,382, Cl. 324-312.000.
Oigo, Ei; and Noguchi, Yoshitaka, to Union Showa Kabushiki Kaisha Separation of carbon monoxide from nitrogen with Ba exchanged zeolite X. 4,765,808, Cl. 55-68.000.
Oil Patch Group Inc.: *See*—
Perkin, Gregg S.; and Papke, Duane D., 4,765,417, Cl. 175-347.000.
Oinoue, Hiroshi; and Goda, Yoshimasa, to Sony Corporation. Optical pickup device with objective lens movable in two directions. 4,766,583, Cl. 369-45.000
Oishi, Haruki: *See*—
Miyashita, Yoshinobu; Oishi, Haruki; Ueno, Yasumichi; Shiraishi, Hiromi; and Tubaki, Kazuyuki, 4,766,083, Cl. 436-517.000.
Oka, Masahiko: *See*—
Morita, Shigeru; Kuwahara, Kazuhiko; Tomoda, Masayasu; and Oka, Masahiko, 4,766,190, Cl. 526-247.000

Oka, Michio: *See*—
Fukumoto, Atsushi; Ohsato, Kiyoshi; and Oka, Michio, 4,766,585, Cl. 369-46.000.
Oka, Tateki; Yokoyama, Tomoaki; and Toyoshi, Naoki, to Minolta Camera Kabushiki Kaisha. Developing apparatus for use in image-forming system and developing process employing said developing apparatus. 4,766,458, Cl. 355-3.0DD
Okabe, Kanichi; Suzuki, Hirotsugu; Nishio, Kohsaku; and Koyama, Katsuhiko, to Kabushiki Kaisha Toshiba. Aperture device of radiation diagnostic apparatus. 4,766,603, Cl. 378-152.000.
Okada, Hidehiko, to Nissan Motor Co., Ltd. Fuel tank mounting device. 4,765,635, Cl. 280-5.00A
Okada, Toshihiko, to Gunze Limited. Method and apparatus for rolling up fabric for circular knitting machine. 4,765,157, Cl. 66-151.000.
Oki Electric Industry Co., Ltd.: *See*—
Hiroshi, Okuaki, 4,766,095, Cl. 437-217.000.
Isobe, Minoru, 4,766,449, Cl. 346-150.000.
Shiraishi, Osamu; and Hashimoto, Hiroshi, 4,766,335, Cl. 307-592.000
Taya, Takashi; and Tahara, Toshiyuki, 4,766,396, Cl. 330-288.000.
Okita, Masao; Sugawara, Tadami; and Yoshida, Hiroshi, to Alps Electric Co., Ltd. Carriage shift assembly for disc driving device. 4,766,510, Cl. 360-106.000
Okrzesik, Thaddeus P.: *See*—
Kadlec, Joseph; Kociolek, Kenneth W.; and Okrzesik, Thaddeus P., 4,766,355, Cl. 315-399.000.
Okuda, Yoko: *See*—
Nomura, Yukihiro; and Okuda, Yoko, 4,765,927, Cl. 252-400.200.
Okumura, Makoto: *See*—
Uchida, Katsuhiro; Masumoto, Shozo; Tohno, Masao; Mimura, Mitsuo; and Okumura, Makoto, 4,766,148, Cl. 514-533.000.
Olin Corporation: *See*—
Fuzesi, Stephen; and Brown, Robert W., 4,766,158, Cl. 521-110.000.
Oliva, Joseph J.: *See*—
Ahner, David J.; Sheldon, Richard C.; and Oliva, Joseph J., 4,765,132, Cl. 60-39.020.
Oliver, Christopher J.; and Sarles, Frederick W., to Cabletron. Time domain reflectometer for measuring impedance discontinuities on a powered transmission line. 4,766,386, Cl. 324-533.000.
Oliver Industries, Inc.: *See*—
Bell, James C., 4,765,522, Cl. 224-326.000.
Oliver, Kirk, to Zenith Electronics Corporation. Independent top/bottom pincushion correction. 4,766,354, Cl. 315-371.000.
Olsen, Steffen C.: *See*—
Vinther, Arne; Olsen, Steffen C.; Larsen, Bjorn E. H.; Madsen, Elun S.; and Madsen, Bjorn, 4,765,841, Cl. 106-402.000.
Olshansky, Robert, to GTE Laboratories Incorporated. Single frequency semiconductor laser and drive with reduced linewidth and improved side mode suppression. 4,766,597, Cl. 372-44.000.
Olympus Optical Co., Ltd.: *See*—
Kato, Tadashi, 4,766,489, Cl. 358-98.000.
Kumakura, Masahiro, 4,765,313, Cl. 128-4.000
Sasa, Hiroyuki; and Suzuki, Akira, 4,765,312, Cl. 128-4.000.
Omata, Satoshi: *See*—
Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki; Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, 4,766,477, Cl. 357-59.000
O'Meara, John R., to C P Packaging, Inc. Unit dose container with captive cap. 4,765,518, Cl. 222-541.000.
Ong, Beng S.; and Alexandru, Lupu, to Xerox Corporation. Processes for bisphenols. 4,766,255, Cl. 568-728.000.
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc. Haloalkylthiodibenzothiepins. 4,766,143, Cl. 514-431.000.
Ong, Sierling: *See*—
Hahnke, Manfred; Ong, Sierling; and Hohmann, Kurt, 4,765,797, Cl. 8-654.000
Oni-Metallwarenfabriken Gunter GmbH & Co.: *See*—
Deppendorf, Hans-Dieter; and Grossmann, Manfred, 4,765,024, Cl. 16-251.000.
Ono, Hidehiko: *See*—
Tsuetaki, George F.; and Ono, Hidehiko, 4,766,189, Cl. 526-245.000
Ono, Kenichi: *See*—
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.
Ono, Seigo; and Ebina, Osamu, to Hitachi, Ltd. Three-dimensional display apparatus. 4,766,423, Cl. 340-709.000.
Oowa, Nobutaka: *See*—
Ikemoto, Hiroyuki; Oowa, Nobutaka; Hayashi, Yasutaka; and Doi, Shunichi, 4,765,649, Cl. 280-707.000
OPI Products, Inc.: *See*—
Montgomery, Robert E.; and Schaeffer, George W., 4,766,005, Cl. 427-4.000
Organ, William L. Apparatus and method for charging canisters with granular carbon. 4,765,779, Cl. 406-106.000.
Oropallo, Robert A., to American Brass & Aluminum Foundry Co. Inc. Two-position latchable drain valve. 4,764,993, Cl. 4-295.000.
Orosz, Miklos J.: *See*—
Clark, Michael R.; Erb, Fred; and Orosz, Miklos J., 4,766,276, Cl. 200-256.000
Orser, Cindy S.; Lindow, Steven; and Panapoulos, Nickolas J., to University of California, The Regents of the. Ice nucleation deficient microorganisms by genetic manipulation. 4,766,077, Cl. 435-253.000
Ortho Pharmaceutical Corporation: *See*—
Combs, Donald W., 4,766,118, Cl. 514-224.200
Orvik, Jon A.; Fung, Alexander P.; Love, Jim; and Dietsche, Thomas J., to Dow Chemical Company, The. Preparation of 2-cyano-6-chloropyridine compounds. 4,766,219, Cl. 546-286.000
Osada, Yoshiyuki: *See*—
Nakagawa, Katsumi; Komatsu, Toshiyuki; Osada, Yoshiyuki, Omata, Satoshi; Hirai, Yutaka; and Nakagiri, Takashi, 4,766,477, Cl. 357-59.000
Osaka Gas Co., Ltd.: *See*—
Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, 4,765,280, Cl. 122-5.50A
Osawa, Yoshinori. Assembly for mounting plates on wall. 4,765,111, Cl 52-509.000
Osman, Peter D.: *See*—
Wharton, James H.; and Osman, Peter D., 4,766,390, Cl 328-270.000
Osswald, Hans; and Youssef, Mahmoud, to Stiftung Deutsches Krebsforschungszentrum. Use of N-low-alkyl glycines, their acid amides and of sarcosine anhydride as tumor-inhibiting active substances, a remedy containing the former and a process for its manufacture 4,766,149, Cl. 514-553.000
Osteonics Corp.: *See*—
Keller, Philip J.; and Cohen, Robert C., 4,765,328, Cl. 128-303.00R
Ostrozynski, Robert L.; Greene, George H.; and Merrifield, James H., to Union Carbide Corporation. Silicone-modified polyester resin and silicone-sheathed polyester fibers made therefrom. 4,766,181, Cl 428-395.000
Oswald, Hendrikus J.: *See*—
Li, Hsin L.; and Oswald, Hendrikus J., 4,765,042, Cl. 28-257.000
Otagawa, Takaaki: *See*—
Holland, Christopher E., Westerberg, Eugene R.; Madou, Marc J.; and Otagawa, Takaaki, 4,765,864, Cl. 156-644.000
Otaki, Shiro; and Stoutenburg, Edmond J., to Acheson Industries, Inc. Water-base metal forming lubricant composition. 4,765,917, Cl. 252-40.700
Otani, Tony U. Plastics processing machine components and alloy for use therein. 4,766,042, Cl. 428-679.000
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, to Hitachi, Ltd Magnetic head made from amorphous magnetic film. 4,766,039, Cl. 428-469.000
Otsuka Pharmaceutical Company, Limited: *See*—
Uchida, MInoru; Nishi, Takao; and Nakagawa, Kazuyuki, 4,766,120, Cl. 514-227.800
Otsuka, Saburo: *See*—
Tokuda, Shoichi; Ito, Yuusuke; Otsuka, Saburo; and Kinoshita, Takashi, 4,765,974, Cl. 424-443.000
Otsuka, Shoji: *See*—
Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, 4,765,280, Cl. 122-5.50A.
Otto, Werner; and Beese, Ulrich. Refuse bin with downwardly open receiving engagement of a gripper. 4,765,503, Cl. 220-74.000
Ouellette, Raymond. Washer-dryer apparatus. 4,765,162, Cl. 68-20.000
Outboard Marine Corporation: *See*—
Brown, Peter W., 4,765,304, Cl. 123-532.000
Ovonic Imaging Systems, Inc.: *See*—
Yaniv, Zvi; and Cannella, Vincent D., 4,766,500, Cl. 358-285.000
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J.; Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S., to Energy Conversion Devices, Inc. Thin film electro-optical devices. 4,766,471, Cl. 357-19.000
Owades, Joseph L. Preparation of alcohol-free barley malt-based beverage. 4,765,993, Cl. 426-29.000
Owens-Corning Fiberglas Corporation: *See*—
Gaul, David J., 4,765,817, Cl. 65-8.000
Oya, Motomichi; and Nonomura, Tsutomu, to Kabushiki Kaisha Asahi Shimbunsha; and Toyo Inki Seizo Kabushiki Kaisha. Device for cleaning blanket mounted around cylindrical drum of a printing machine. 4,765,242, Cl. 101-425.000
Oyachi, Tomio: *See*—
Narumiya, Tsuneaki; Oyachi, Tomio; and Iino, Yasuhiro, 4,765,833, Cl. 75-68.00R
Ozaki, Hidetoshi, to Victor Company of Japan. Carrier chrominance signal processing circuit. 4,766,486, Cl. 358-40.000.
Ozaki, Masanori; Ohishi, Isamu; Sato, Norimasa; and Tanaka, Yasuzou, to Furukawa Electric Co., Ltd., The. Method of fabricating a superconducting cavity. 4,765,055, Cl. 29-599.000.
Ozawa, Hiroshi: *See*—
Hirose, Sumio; Ozawa, Hiroshi; Abe, Kenji; and Hosono, Yoichi, 4,766,054, Cl. 430-270.000
Ozdemir, Faik S.; Seliger, Robert L.; and Rosenberg, Gerald B., to Hughes Aircraft Company. Method and apparatus for securing integrated circuits from unauthorized copying and use. 4,766,516, Cl 361-380.000
Ozeki Sake Brewing Co., Ltd.: *See*—
Adachi, Tamotsu, 4,765,147, Cl. 62-62.000
Ozolins, Imants; and James, Gary L., to Minenco Pty. Limited. Mobile elevator conveyor. 4,765,461, Cl. 198-311.000
Pacific Scientific Company: *See*—
Begley, Timothy H., 4,766,551, Cl. 364-498.000.
Packsystem i Lund AB: *See*—
Johansson, Per, 4,765,452, Cl. 198-431.000
Pacques B.V.: *See*—
Field, James A., 4,765,901, Cl. 210-603.000

VOL 1093 ISS 4 AG 23 1988 UMI

Paeye, Gerard; and Meunier, Francis, to Jeumont-Schneider Corporation. Device for the continuous production of heat and cold. 4,765,395, Cl. 165-104.120.
Page, Teddy L.; and Banner, Alvin C., to Statomat-Globe, Inc. Winding form. 4,765,551, Cl. 242-7.05B.
Pahlman, John E.: *See*—
Khalafalla, Sanaa E. S.; Engelmann, William H.; and Pahlman, John E., 4,765,415, Cl. 175-50.000.
Pahnke, Klaus D.: *See*—
Kruse, Heinz-Josef; Theis, Ulrich; Pahnke, Klaus D.; Wallow, Peter; and Becker, Wilfried, 4,765,248, Cl. 102-529.000.
Pak, Tae S.: *See*—
Pak, Tong S.; and Pak, Tae S., 4,765,998, Cl. 426-92.000.
Pak, Tong S.; and Pak, Tae S. Edible food product. 4,765,998, Cl. 426-92.000
Pakon, Inc.: *See*—
Truc, James A.; and Hoonsbeen, Gary A., 4,765,734, Cl 353-121.000
Paludetto, Renato: *See*—
Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, 4,766,262, Cl. 570-211.000.
Palylyk, Richard A.: *See*—
Franklin, Douglas E.; Frank, Gordon I.; Palylyk, Richard A.; and Toom, Paul O., 4,766,323, Cl. 250-561.000.
Panapoulos, Nickolas J.: *See*—
Orser, Cindy S.; Lindow, Steven; and Panapoulos, Nickolas J., 4,766,077, Cl. 435-253.000
Pannone, John L.; and Tommasini, Rocco M., to United Technologies Corporation. Temperature and pressure probe. 4,765,751, Cl. 374-143.000
Papke, Duane D.: *See*—
Perkin, Gregg S.; and Papke, Duane D., 4,765,417, Cl. 175-347.000
Pappanikolaou, Sofia. Folding cart. 4,765,643, Cl. 240-639.000.
Papst, Gero: *See*—
Gulas, Hans-Jurgen; Horak, Josef; Sulzbacher, Horst; and Papst, Gero, 4,766,098, Cl. 501-101.000
ParaBody, Inc.: *See*—
Wolff, David W., 4,765,616, Cl. 272-144.000.
Paramount Fitness Equipment Corporation: *See*—
Voris, Harv, 4,765,613, Cl. 272-129.000.
Parat, Guy: *See*—
Bory, Cecile; Buffet, Jean-Louis O.; and Parat, Guy, 4,766,084, Cl. 437-3.000
Parc, Guy: *See*—
Born, Maurice; Lallement, Jacques; Marchand, Pierre; Parc, Guy; and Thevenin, Nicole, 4,766,228, Cl. 556-25.000.
Pare, Gregoire: *See*—
Bolduc, Leonard; and Pare, Gregoire, 4,766,365, Cl. 323-308.000
Park, Jong-In, to Goldstar Co., Ltd. Heat variation detecting circuit for the microwave oven. 4,766,279, Cl. 219-10.55B.
Parker, Victor: *See*—
Rosenthal, Jeffery; Parker, Victor; Hoback, James; and Summers, Robert, 4,765,077, Cl. 40-308.000
Parkinson, David D.; and Latus, Gilbert T., to MagneTek, Inc. Open drip-proof machinery cooling system using totally enclosed type bearing brackets. 4,766,337, Cl. 310-58.000.
Parks, Jack C. Animal waste collector. 4,765,666, Cl. 294-1.400.
Parrillo, Louis C.: *See*—
Coquin, Gerald A.; Lynch, William T.; and Parrillo, Louis C., 4,766,090, Cl. 437-57.000.
Parrott, George A., to Innovation Limited. Tip and mineral cutter pick. 4,765,687, Cl. 299-81.000
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., to Westinghouse Electric Corp. Row assembly process for integral shroud blades. 4,765,046, Cl. 29-156.80R
Patel, Usha R.: *See*—
Abou-Gharbia, Magid A.; and Patel, Usha R., 4,766,215, Cl. 544-357.000
Patent Treuhand Gesellschaft fur elektrische Glulampen mbH: *See*—
Weiss, Werner; and Posl, Ewald, 4,766,346, Cl. 313-579.000.
Paul, Wolfgang J.: *See*—
Auerbach, Daniel J.; Chen, Tien C.; and Paul, Wolfgang J., 4,766,535, Cl. 364-200.000
Paul Wurth S.A: *See*—
Lonardi, Emile; Liesch, Jean; Kirchen, Michel; Kremer, Victor; Bock, Andre; Colgon, Joseph; and Hennico, Charles, 4,765,789, Cl. 414-10.000
Pavel, Klaus; and Lange, Horst, to Rhein-Nadel Maschinennadel GmbH. Overcase for sewing machine needle packages. 4,765,473, Cl 206-380.000
Pavolka, John D., to Pullman Rail Leasing, Inc. Valve arrangement with retainer bracket, for hopper car outlet gate. 4,765,517, Cl. 222-505.000
Payen International Limited: *See*—
Hossack, David J., 4,765,633, Cl. 277-166.000.
PCI Group, Inc.: *See*—
Pendleton, Richard A.; Jernstedt, Richard C.; and Sutherland, Clarke R., 4,765,177, Cl. 72-412.000
PDC International Corporation: *See*—
Konstantin, Anatole E.; Konstantin, William N.; and Malkowski, Jaroslaw T., 4,765,121, Cl. 53-442.000.
Pearce, Howard R., to Thomas & Betts Corporation. Apparatus for assembling two-part connectors. 4,765,059, Cl. 29-749.000.
Pearson, Kenneth A.; and Zucker, Larry R., to International Business Machines Corporation. Sequential array logic. 4,766,532, Cl. 364-200.000
Pecen, Jiri: *See*—
Saadat, Soheil; Pecen, Jiri; Neukermans, Armand P.; and Kren, George J., 4,766,324, Cl. 250-563.000.
Pedelaborde-Augas, Didier; Pillois, Philippe; and Valy, Yves, to Aerospatiale Societe Nationale Industrielle. Box for the thermal stabilization of equipment, such as electronic components contained therein. 4,766,518, Cl. 361-389.000.
Pedersen, Flemming M.: *See*—
Kvalheim, Andrew M.; and Pedersen, Flemming M., 4,765,684, Cl. 297-429.000.
Peled, Uri. Load bearing support platform. 4,765,576, Cl. 248-49.000.
Pelgrom, Marcellinus J. M.; and Dil, Jan G., to U.S. Philips Corporation. Semiconductive radial photodetector and apparatus comprising such a detector. 4,766,307, Cl. 250-231.0SE.
Pelgrom, Marcellinus J. M.; Harwig, Hendrik A.; and Slotboom, Jan W., to U.S. Philips Corporation. Detecting binary information from a charge transfer device. 4,766,332, Cl. 307-358.000.
Pelikan Aktiengesellschaft: *See*—
Rayhle, Claus, 4,765,457, Cl. 206-1.800.
Pelletier, Claude, to Northern Telecom Limited. Connecting blocks for telephone systems. 4,766,521, Cl. 361-426.000.
Peltier, Raymond J.: *See*—
Nikoloff, Koyu; and Peltier, Raymond J., 4,766,015, Cl. 427-326.000
Penco, Sergio: *See*—
Arcamone, Federico; Mongelli, Nicola; and Penco, Sergio, 4,766,142, Cl. 514-422.000.
Pendleton, Richard A.; Jernstedt, Richard C.; and Sutherland, Clarke R., to PCI Group, Inc. Grommet forming fixture. 4,765,177, Cl. 72-412.000
Pennica, Diane: *See*—
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 4,766,075, Cl. 435-240.200
Pennwalt Corporation: *See*—
Davidson, Thomas A.; and Griffith, Ronald C., 4,766,131, Cl. 514-307.000
Pensenstadler, David F.: *See*—
Byers, William A.; Carlson, Gerald L.; Pensenstadler, David F.; Wootten, Michael J.; and Richards, James E., 4,766,550, Cl 364-497.000
PepsiCo INc.: *See*—
Cedrone, Louis A.; and Sobodowski, Joseph J., 4,766,548, Cl. 364-479.000
Peretti, Mark F.: *See*—
O'Donnell, Brian R.; and Peretti, Mark F., 4,765,758, Cl. 384-221.000
Perka, Alan T.: *See*—
Bonnell, Leo W.; Perka, Alan T.; and Roberts, George W., 4,766,154, Cl. 518-700.000.
Perkin-Elmer Corporation, The: *See*—
Morrisroe, Peter J.; Zander, Andrew T.; Manning, David C.; and Gagne, Peter H., 4,766,287, Cl. 219-121.520.
Perkin, Gregg S.; and Papke, Duane D., to Oil Patch Group Inc. Reaming apparatus for well drilling. 4,765,417, Cl. 175-347.000
Perkins, William, to Reid Dominion Packaging Limited. Re-usable mailer package. 4,765,485, Cl. 206-610.000.
Permelec Electrode Ltd.: *See*—
Matsumoto, Yukiei; and Shimamune, Takayuki, 4,765,879, Cl. 204-290.00R.
Pernicano, Vincent S. Reflective transfer sheeting and method of making the same. 4,766,032, Cl. 428-325.000.
Pernick, Bruce M., to Monarch Knitting Machinery Corporation. Circular knitting machine with cloth take up safety gate. 4,765,155, Cl. 66-8.000
Perry, Jean S. Pacifier strap. 4,765,037, Cl. 24-301.000
Pers, Karl O., to Telefonaktiebolaget L M Ericsson. Apparatus for centering optical fibres during welding. 4,765,704, Cl. 350-96.150.
Persem, Jacob P., to Margaux Controls, Inc. Continuously variable capacity refrigeration system. 4,765,150, Cl. 62-215.000.
Persson, Torsten: *See*—
Carlsson, Staffan; Persson, Torsten; Jonsson, Bert; and Boberg, Tore, 4,765,246, Cl. 102-318.000
Peter Maschinenfabrik GmbH: *See*—
Schommler, Manfred; and Martin, Gerald, 4,765,216, Cl. 83-341.000
Petermann, Juergen: *See*—
Werner, Arend; Hibst, Hartmut; and Petermann, Juergen, 4,766,021, Cl. 428-64.000
Peters, Gerald. Press-in reversing knob. 4,765,449, Cl. 192-43.100.
Peters, Horst: *See*—
Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, 4,766,165, Cl. 524-140.000
Peterscheck, Hermann W.: *See*—
Schwoyer, William L.; Jaycox, Larry S.; and Peterscheck, Hermann W., 4,765,900, Cl. 210-603.000.
Petersen, John: *See*—
Mosier, Larry; and Petersen, John, 4,766,065, Cl. 435-7.000
Peterson, Linn A.: *See*—
Miller, John W.; Peterson, Linn A.; and Kingsley, Charles A., 4,765,601, Cl. 267-140.100.
Petruzzi, Claude E.; Quint, Robert H.; D'Amelio, Frank D.; and Esposito, Dominick G., to Circon Corporation. Electrosurgical device

with treatment arc of less than 360 degrees. 4,765,331, Cl. 128-303.140.
Peyre, Henri, to Ste Look. Safety ski binding. 4,765,641, Cl. 280-628.000
Pfeiffer, Martin: *See*—
Berger, Josef; Ernst, Helmut; Linhart, Hans-Joachim; and Pfeiffer, Martin, 4,765,017, Cl. 15-250.00A
Pfizer Inc.: *See*—
Crawford, Thomas C.; Keely, Stanley L.; Larson, David L.; Lombardino, Joseph G.; and Maciejko, James J., 4,766,117, Cl. 514-219.000
Lipinski, Christopher A., 4,766,141, Cl. 514-409.000.
Pharos AB: *See*—
Karlsson, Lars, 4,766,308, Cl. 250-236.000.
Phillips, John M.: *See*—
Glass, Samuel W., III; Griffith, John C.; Brew, John D.; England, Charles C., Jr.; and Phillips, John M., 4,766,374, Cl. 324-207.000
Phillips Petroleum Company: *See*—
Cobb, Raymond L., 4,766,103, Cl. 502-217.000.
Gravley, Mark L.; and Henderson, E. Webb, 4,765,964, Cl. 422-156.000
Walker, Darrell W.; and Schaffer, Arnold M., 4,765,884, Cl. 208-89.000
Phillips, Raymond J.; and Susi, Anthony R., to United States of America, Navy. Spokewheel convertible antenna for BCA systems aboard submarines. 4,766,441, Cl. 343-709.000.
Phillips, Thomas E., to Latech, Inc. Film web perforation. 4,765,120, Cl. 53-441.000
Phlippen, Peter W.: *See*—
Frohling, Werner; Kugeler, Manfred; Kugeler, Kurt; and Phlippen, Peter W., 4,765,406, Cl. 166-247.000.
Phoenix Aktiengesellschaft: *See*—
Meyer, Gerd, 4,765,538, Cl. 238-283.000.
Pi-Yu, Ou. Intake valve for toilet tank. 4,765,363, Cl. 137-414.000.
Piatt, Clair E.: *See*—
Curtis, Joe E., Jr.; Martin, Richard W.; Piatt, Clair E.; Mohney, Hubert L. R.; McClelland, J. Richard; and Fisher, John L., 4,765,861, Cl. 156-457.000
Piechura, Michael L.: *See*—
Sanok, John L.; and Piechura, Michael L., 4,766,025, Cl. 428-159.000
Pieper, Friedrich: *See*—
Willmund, Wolf-Dieter; Plapper, Jurgen; Pieper, Friedrich; and Heidrich, Jochen, 4,765,875, Cl. 204-157.790.
Pieper, Wendell J., to Minnesota Mining and Manufacturing Company Low-flow alarm system for powdered air-purifying respirator 4,765,326, Cl. 128-202.220.
Pierce, Sue K.; Robinson, Jack B., Jr.; and Scoggin, Ruth R., to Abbott Laboratories. Process for preventing contamination of reagent systems. 4,765,843, Cl. 134-22.140
Pilarczyk, Richard R., to General Computer Corporation. System and software for pharmaceutical prescription compliance. 4,766,542, Cl. 364-413.000
Pillan, Antonio: *See*—
Cozzi, Paolo; Pillan, Antonio; Bertone, Leone; and Lovisolo, Pier P., 4,766,214, Cl. 544-336.000.
Pillois, Philippe: *See*—
Pedelaborde-Augas, Didier; Pillois, Philippe; and Valy, Yves, 4,766,518, Cl. 361-389.000.
Pinnow, Kenneth E.: *See*—
Hauser, John J.; Stasko, William; and Pinnow, Kenneth E., 4,765,836, Cl. 75-241.000.
Pino, Charles W. Water saving device for water closet. 4,764,996, Cl. 4-415.000
Pinson, George T., to Boeing Company, The. Electrostatic kinetic energy weapon. 4,765,222, Cl. 89-8.000
Pintsov, Leon A.; and Auerbach, David R., to Pitney Bowes Inc. Apparatus for nonstop operation of an inserter system with multiple document feeding capability. 4,765,502, Cl. 270-55.000.
Pioneer Electronic Corporation: *See*—
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kouzou; and Urayama, Norihisa, 4,766,580, Cl. 369-21.000
Narusawa, Toshio; and Ryoji, Higashi, 4,766,504, Cl. 358-337.000
Pioneer Video Corporation: *See*—
Narusawa, Toshio; and Ryoji, Higashi, 4,766,504, Cl. 358-337.000.
Pipe Shields, Inc.: *See*—
Collins, Seymour; and McClellan, William F., 4,765,577, Cl. 248-59.000
Pirello, Robert J. Tofu cheese product and process of preparation 4,765,995, Cl. 426-46.000.
Pirwitz, Robert G., to Xerox Corporation. Release agent management system for a heat and pressure fuser. 4,766,456, Cl. 355-3.0FU
Pitney Bowes Inc.: *See*—
Pintsov, Leon A.; and Auerbach, David R., 4,765,502, Cl. 270-55.000
Pitt, Janice M.: *See*—
Yukawa, Takao; and Pitt, Janice M., 4,765,275, Cl. 119-15.000.
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, to Societe Cooperative Agricole de Semences de Limagne "Limagrain" ; Union Nationale des Cooperatives Agricoles d'Approvisionnement; and Institut National de la Recherche Agronomique. Method of mass producing an entomophagous insect. 4,765,274, Cl. 119-15.000
Plapper, Jurgen: *See*—
Willmund, Wolf-Dieter; Plapper, Jurgen; Pieper, Friedrich; and Heidrich, Jochen, 4,765,875, Cl. 204-157.790
Platner, Joseph W., to American Standard Inc. Lavatory. 4,765,002, Cl 4-619.000
Plummer, Daniel T., to Vista Chemical Company. Surfactant compositions and method therefor. 4,765,926, Cl. 252-352.000
Pluss, Martin: *See*—
Bichsel, Daniel; and Pluss, Martin, 4,766,306, Cl. 250-227.000
PMT Corporation: *See*—
Eastman, William J.; and Iversen, Alfred A., 4,765,317, Cl. 128-75.000
Poehlmann, Paul W. Corkscrew. 4,765,206, Cl. 81-3.370
Poettgen, Robert J., to O. R. Concepts, Inc. Reflective surgical drape 4,765,323, Cl. 128-132.00D.
Poignant, Jean C.: *See*—
Malen, Charles; and Poignant, Jean C., 4,766,114, Cl. 514-211.000
Poletto, Giorgio, to Lorica S.p.A. Process for producing artificial leather similar to real leather by chemically processing synthetic sheet material. 4,766,014, Cl 427-245.000
Pollina, Peter J. Brick supporting structures. 4,765,115, Cl. 52-712.000
Polvani, Donald G., to Westinghouse Electric Corp. Underwater buried mine classifier. 4,766,385, Cl. 324-345.000
Poly-Optical Products, Inc.: *See*—
Cheslak, Leonard W., 4,765,701, Cl. 350-96.100.
Popp, Franz W.; and Geisert, Gunter, to Nuken GmbH. Apparatus for remotely welding a cover to the wall of a container for storing radioactive fuel elements and wastes. 4,765,525, Cl. 228-9.000
Poppe, Kenneth G., to Procter & Gamble Company, The. Sheet material dispensing package. 4,765,508, Cl. 221-48.000.
Porat, Menachem; and Rabinovich, Ofer, to Hanita Lenses, a Limited Partnership. Contact lens with a back surface having second-order portions. 4,765,728, Cl. 351-160.00R.
Posl, Ewald: *See*—
Weiss, Werner; and Posl, Ewald, 4,766,346, Cl. 313-579.000
Potter, Richard H.: *See*—
Rohr, Martin; Potter, Richard H.; and Naipawer, Richard E., 4,766,002, Cl. 426-538.000
PQ Corporation: *See*—
Sobus, Michael T., 4,766,000, Cl. 426-330.400
Praemassing, Adolph K.: *See*—
Circelli, Peter A.; and Praemassing, Adolph K., 4,765,940, Cl 264-339.000
Preater, Richard W. T., to National Research Development Corporation. Optical system for in-plane strain measurement using electronics speckle pattern interferometry. 4,765,189, Cl. 73-800.000
Precision Handling Devices, Inc.: *See*—
Ferguson, Gregory A., 4,765,523, Cl. 226-74.000
Preiss, Holger: *See*—
Hinrichsen, Thomas; Preiss, Holger; and Witte, Harry, 4,766,018, Cl. 428-35.000
Premiski, Claudia: *See*—
Premiski, Vladimir; Premiski, Claudia; and Schultz, Winfried, 4,765,366, Cl. 137-593.000.
Premiski, Vladimir; Premiski, Claudia; and Schultz, Winfried, to Ford Motor Company. Temperature compensated control valve for automatic transmissions. 4,765,366, Cl. 137-593.000
President and Fellows of Harvard College: *See*—
Biswas, Debajit K., 4,766,067, Cl. 435-68.000.
Presto Products, Incorporated: *See*—
Winter, John P., 4,765,999, Cl. 426-113.000
Prewo, Karl M.: *See*—
Layden, George K.; and Prewo, Karl M., 4,766,096, Cl. 501-17.000
Priester, Claus-Ulrich: *See*—
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000
Prieto, Argenis R.; and Clark, David P., to U.S. Philips Corporation Use of compositionally modulated multilayer thin films as resistive material. 4,766,411, Cl. 338-306.000.
Prince, John W., Jr. Spare tire bracket lock. 4,765,164, Cl. 70-259.000
Principe, Viktor, to Arthur Schmid AG. Stamped suspension band 4,765,578, Cl. 248-59.000
Proconics International, Inc.: *See*—
Goddeau, David, 4,765,793, Cl. 414-416.000
Procter & Gamble Company, The: *See*—
Angstadt, John J., 4,765,780, Cl. 406-123.000
Poppe, Kenneth G., 4,765,508, Cl. 221-48.000
Profitt, James A.: *See*—
Ong, Helen H.; Anderson, Vernon B.; and Profitt, James A., 4,766,143, Cl. 514-431.000
Promega Corporation: *See*—
Jendrisak, Jerome J.; Lewis, Martin K.; and Fiandt, Michael J 4,766,072, Cl 435-91.000
Pryor, Roger W.: *See*—
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J., Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S., 4,766,471, Cl. 357-19.000
Puisieux, Francis: *See*—
Bonte, Frederic; Dehan, Michel; Le Ridant, Alain; Puisieux, Francis; and Taupin, Christiane C., 4,765,987, Cl. 424-450.000
Pullman Rail Leasing, Inc.: *See*—
Pavolka, John D., 4,765,517, Cl. 222-505.000
Pusateri, Vincent J., to General Electric Company. Battery charger having an interlocking assembly for accommodating increased charging rate capacity. 4,766,361, Cl. 320-2.000
Quantel Limited: *See*—
Stapleton, Alan L., 4,766,429, Cl. 340-724.000

VOL 1093 ISS 4 AG 23 1988 UMI

Quass, Gunter: *See—*
Reichel, Dieter; Jakobs, Rudolf; Brehm, Lothar; and Quass, Gunter, 4,765,809, Cl. 55-267.000

Quint, Robert H.: *See—*
Petruzzi, Claude E.; Quint, Robert H.; D'Amelio, Frank D.; and Esposito, Dominick G., 4,765,331, Cl. 128-303.140.

R. J. Reynolds Tobacco Company: *See—*
Sensabaugh, Andrew J., Jr.; and Ridings, Henry T., 4,765,347, Cl. 131-273.000

Raab, Andrew F.; and Habecker, John W., to Indak Manufacturing Corp. Sealed toggle action electrical switches. 4,766,278, Cl. 200-327.000

Rabinovich, Ofer: *See—*
Porat, Menachem; and Rabinovich, Ofer, 4,765,728, Cl. 351-160.00R

Racine Industries, Inc.: *See—*
Heitmann, Kenneth; and Rench, Goeffrey B., 4,765,766, Cl. 401-48.000

Racine Railroad Products, Inc.: *See—*
Duff, Paul; and Beach, Michael E., 4,765,098, Cl. 51-99.000

Radtke, Wolfgang: *See—*
Soethout, Freddie; and Radtke, Wolfgang, 4,765,230, Cl. 98-2.110.

Raets, Hubert: *See—*
Husgen; Raets, Hubert; Schiefer, Gerd; and Zwier, Jan, 4,766,350, Cl. 315-207.000

Rafferty, Charles A. Vacuum-indicating closure for containers 4,765,498, Cl. 215-230.000

Rafkind, Daniel I.: *See—*
Biamonte, Robert A.; Bogdanski, Joseph W.; Covi, Kevin R.; Meyer, Herman P.; and Rafkind, Daniel I., 4,766,364, Cl. 323-272.000

Rai, Akiteru: *See—*
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000

Raich, William J.: *See—*
DeLassus, Phillip; and Raich, William J., 4,766,202, Cl 528-502.000

Rakel, Jay O.: *See—*
Christensen, Stephen; Rakel, Jay O.; and Ayers, Donald J., 4,765,942, Cl. 264-510.000

Randow, Rodney L.: *See—*
Beckley, Ronald S.; Randow, Rodney L.; and Swift, Graham, 4,766,187, Cl. 526-209.000

Rao, Krishna: *See—*
Brillouet, Francois; Rao, Krishna; and Alexandre, Francois, 4,766,472, Cl. 357-19.000

Rao, R. Nagaraja: *See—*
Kuhstoss, Stuart A.; and Rao, R. Nagaraja, 4,766,066, Cl. 435-68.000

Rao, V. N. Mallikarjuna: *See—*
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 4,766,259, Cl. 570-168.000
Manzer, Leo E.; and Rao, V. N. Mallikarjuna, 4,766,260, Cl. 570-168.000

Rao, Valluri R. M., to Intel Corporation. Electron beam tester. 4,766,372, Cl. 324-158.00R

Rapp, Karl: *See—*
Kuhn, Wolfgang; and Rapp, Karl, 4,765,544, Cl. 239-698.000.

Rasmussen, Hans W., to North American Metals, Inc. Process for treating municipal wastewater sludge. 4,765,911, Cl. 210-710.000

Rathmell, Colin: *See—*
Harris, Norman; Rathmell, Colin; Turner, Keith; and Scarlett, John, 4,765,869, Cl. 203-28.000

Rational: *See—*
Wilson, James A., Jr.; and Bernstein, David H., 4,766,536, Cl. 364-200.000

Rauber, Peter, to Ciba-Geigy Corporation. Process for preparing chlorinated diphenyl ethers. 4,766,253, Cl. 568-639.000

Rausch, Steven K., to International Minerals & Chemical Corp. Purification and activation of proteins from insoluble inclusion bodies. 4,766,224, Cl. 530-412.000

Rawle, Ralph H., to J. P. Tool Limited. Face milling cutter. 4,765,783, Cl. 407-41.000

Rawlings, Eugene; and Coleman, John D. Caddy for level vial 4,765,061, Cl. 33-379.000

Rayhle, Claus, to Pelikan Aktiengesellschaft. Paint box. 4,765,457, Cl 206-1.800

Raymond, James W.; and Millett, James A., to Winfield Locks, Inc. Spring-loaded dead bolt assembly. 4,765,663, Cl. 292-169.130.

Raynaud, Bernard: *See—*
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000

Raytheon Company: *See—*
Ehrlich, Stanley L.; and Gray, George G., 4,766,575, Cl. 367-153.000
Harper, Robert; and Rousseau, Joseph L., 4,765,056, Cl. 29-600.000.
Saunders, Kenneth J.; and Gentilman, Richard L., 4,765,931, Cl. 252-584.000
Wells, Brian H., 4,765,573, Cl. 244-3.150.

RCA Licensing Corporation: *See—*
Krufka, Frank S.; and Wetzel, Charles M., 4,765,743, Cl. 356-388.000
Wharton, James H.; and Osman, Peter D., 4,766,390, Cl. 328-270.000

Reavell, James, to School Bus Parts Co. of Canada Inc. School bus stop sign control apparatus. 4,766,413, Cl. 340-130.000.

Reaver, Phyllis E. Detachable garment fastener attachment for brassiere strap. 4,764,988, Cl. 2-268.000

Rebman, Jack, to Lord Corporation. Object manipulator. 4,765,795, Cl. 414-680.000

Reche, Christian, to Valeo. Fluid box for a heat exchanger, in particular for a motor vehicle, and a rapid action coupling for connecting it to a fluid circuit. 4,765,658, Cl. 285-137.100.

Recognition Equipment Incorporated: *See—*
McMillan, Robert M., 4,766,297, Cl. 235-455.000

Redding, Thomas P.: *See—*
Barker, Laurence S.; Hays, Dan A.; Redding, Thomas P.; and Wayman, William H., 4,766,457, Cl. 355-3.0DD.

Redwitz, Robert F.: *See—*
Cumming, J. Stuart; and Redwitz, Robert F., 4,765,329, Cl. 128-303.00R

Reese, Dale: *See—*
Tranberg, Per; Matties, Ralph; and Reese, Dale, 4,765,318, Cl. 128-80.00C.

Reese Enterprises, Inc.: *See—*
Ellingson, Chester W., Jr., 4,766,020, Cl. 428-54.000

Refractory Composites, Inc.: *See—*
Warren, James W., 4,766,013, Cl. 427-228.000

Regimand, Ali, to Troxler Electronic Laboratories, Inc. Portable nuclear moisture-density gauge with low activity nuclear sources. 4,766,319, Cl. 250-390.000.

Reichel, Dieter; Jakobs, Rudolf; Brehm, Lothar; and Quass, Gunter, to Metallgesellschaft Aktiengesellschaft. Apparatus for removing dust from gas. 4,765,809, Cl. 55-267.000

Reichert, Volker L., to Schlumberger Technology Corporation. Mobile well-logging laboratory. 4,765,435, Cl. 181-102.000

Reid Dominion Packaging Limited: *See—*
Perkins, William, 4,765,485, Cl. 206-610.000.

Reid, Joyce P. Portable cookout. 4,765,232, Cl. 99-427.000.

Reiffen, Manfred: *See—*
Austel, Volkhard; Heider, Joachim; Hauel, Norbert; Reiffen, Manfred; Meel, Jacobus C. A.; and Diederen, Willi, 4,766,130, Cl. 514-303.000

Reinecke, Paul: *See—*
Fest, Christa; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,766,136, Cl. 514-357.000

Reliance Electric Company: *See—*
Heshmat, Hooshang; and Gorski, Paul T., 4,765,760, Cl. 384-398.000

Reliance Time Controls, Inc.: *See—*
Flegel, David D.; and Flegel, Dean F., 4,766,331, Cl. 307-141.000.

Rembold, Helmut: *See—*
Linder, Ernst; and Rembold, Helmut, 4,765,288, Cl. 123-90.160.

Renardus, Max L. P.: *See—*
Janssen, Marc F. R.; and Renardus, Max L. P., 4,766,347, Cl. 313-623.000.

Rench, Goeffrey B.: *See—*
Heitmann, Kenneth; and Rench, Goeffrey B., 4,765,766, Cl. 401-48.000

Rende, Vincent N. Multiple color fluid dispensing gun. 4,765,510, Cl. 222-79.000

Reneau, Daniel L.: *See—*
Donovan, Timothy J.; and Reneau, Daniel L., 4,766,483, Cl. 358-19.000

Renken, Terry L.: *See—*
Larkin, John M.; and Renken, Terry L., 4,766,245, Cl. 564-474.000

Repa, Petr: *See—*
Emmer, Ivan; Hajek, Zdenek; and Repa, Petr, 4,765,870, Cl. 204-129.100

Research Association for Petroleum Alternatives Development: *See—*
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, 4,766,263, Cl. 585-408.000

Research Development Systems, Inc.: *See—*
Scott, Robert D., 4,765,907, Cl. 210-648.000

Resnick, Ralph L.: *See—*
Rhoades, Lawrence J.; Risko, Donald; and Resnick, Ralph L., 4,766,389, Cl. 324-61.0QS

Respiratory Care, Inc.: *See—*
Shim, Norman, 4,765,327, Cl. 128-204.130.

Retallick, William B., to W. R. Grace & Co.-Conn. Method of making a metal honeycomb catalyst support having a double taper. 4,765,047, Cl. 29-157.00R

Rexnord Inc.: *See—*
Hodlewsky, Wasyly G.; and Schroeder, Roger H., 4,765,454, Cl. 198-635.000

Reyes, Franklin: *See—*
Finnieston, Alan; Burkhalter, William E.; and Reyes, Franklin, 4,765,319, Cl. 128-87.00R

Reynolds, Mickey R.: *See—*
Bohannon, William D., Jr.; Kinard, Michael D.; and Reynolds, Mickey R., 4,765,712, Cl. 350-96.230.

Reznek, Steven R.: *See—*
Gattuso, Todd R.; Koehlert, Kenneth C.; Neville, Matthew; Reznek, Steven R.; and Senecal, Joseph A., 4,765,920, Cl. 252-62.580.

Rhein-Nadel Maschinennadel GmbH: *See—*
Pavel, Klaus; and Lange, Horst, 4,765,473, Cl. 206-380.000

Rheinmetall GmbH: *See—*
Buchele-Buecher, Sigfrid; and Unterstein, Klaus, 4,765,565, Cl. 244-3.220

Kruse, Heinz-Josef; Theis, Ulrich; Pahnke, Klaus D.; Wallow, Peter; and Becker, Wilfried, 4,765,248, Cl. 102-529.000.

Rhoades, Clark J. Paint roller shield with integral washing spray guard. 4,765,353, Cl. 134-138.000.

Rhoades, Lawrence J.; Risko, Donald; and Resnick, Ralph L., to Extrude Hone Corporation. Capacitor array sensors tactile and proximity sensing and methods of use thereof. 4,766,389, Cl. 324-61.0QS.

Rhodenbaugh, Gary W.: *See—*
Andersen, Carl O.; Irvin, John E.; and Rhodenbaugh, Gary W., 4,765,199, Cl. 74-501.00D.

Rhone-Poulenc Agrochimie: *See—*
Gras, Georges, 4,766,220, Cl. 546-302.000.

Rhone-Poulenc Chimie de Base: *See—*
Besson, Bernard, 4,766,230, Cl. 556-176.000

Rhone-Poulenc Specialites Chimiques: *See—*
Nortier, Patrice; Dupin, Thierry; and Latourrette, Bertrand, 4,766,101, Cl. 502-164.000.

Riazi, John, to Hygenic Corporation, The. Process for improving the melt flow index of thermoplastic polymers. 4,766,200, Cl. 528-502.000.

Ribereau-Gayon, Pascal: *See—*
Geneix, Catherine; Lafourcade, Suzanne L.; and Ribereau-Gayon, Pascal, 4,765,992, Cl. 426-15.000.

Ricegrowers' Co-operative Mills, Ltd.: *See—*
Van Kruining, Hendricus A., 4,765,545, Cl. 241-5.000.

Rich, Alexander: *See—*
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000.

Rich, Gerard, to Rollin, S. A. Damping device for damping notably the vibrations relative to a structural element. 4,766,028, Cl. 428-253.000.

Richards, David A.: *See—*
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., 4,764,998, Cl. 4-502.000.

Richards, James E.: *See—*
Byers, William A.; Carlson, Gerald L.; Pensenstadler, David F.; Wootten, Michael J.; and Richards, James E., 4,766,550, Cl. 364-497.000.

Richardson, Ross M.: *See—*
Baral, Elliott; Dharmapalan, Jonathan D.; Gordon, Travis H.; and Richardson, Ross M., 4,766,592, Cl. 370-62.000.

Richter, Herwig, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Internal-combustion engine having at least two intake valves per cylinder. 4,765,297, Cl. 123-432.000.

Richter, Wolfgang: *See—*
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.

Ricketson, Tommy H.; Klug, Mark W.; McGlory, John J.; and Smith, David W., to Kulicke and Soffa Industries Inc. Quick change work station apparatus for automatic wire bonders. 4,765,531, Cl 228-179.000.

Ricoh Company, Ltd.: *See—*
Jinbo, Masato; and Kojima, Kenji, 4,766,459, Cl. 355-3.0SH.
Kono, Satoshi; Nomura, Koshi; and Kyomasu, Mikio, 4,766,088, Cl 437-52.000.
Watanuki, Masayoshi; Shoji, Tsutomu; Noguchi, Yukio; and Sawamura, Tadahide, 4,766,463, Cl. 355-145.00H

Ridings, Henry T.: *See—*
Sensabaugh, Andrew J., Jr.; and Ridings, Henry T., 4,765,347, Cl. 131-273.000.

Riedl, Reinhold; and Lazarus, Conrad, to haacon hebetechnik GmbH. Lifting and depositing device for transportable larger containers, e.g compartments or the like. 4,765,594, Cl. 254-45.000.

Rienzo, Donald D. Hockey game. 4,765,622, Cl. 273-85.00R.

Riese, Arthur C.: *See—*
Clough, Thomas J.; Sibert, John W.; and Riese, Arthur C., 4,765,827, Cl. 75-2.000.

Riordan, Edward D.; and Szantho, Charles F., to Joyal Products, Inc. Fusing apparatus and method with electrode changing. 4,766,282, Cl. 219-86.250.

Ripley, Fred W., to Vacuum Furnace Systems Corporation. Hot zone arrangement for a vacuum furnace. 4,765,068, Cl. 34-233.000.

Risa, Kristen: *See—*
Gombos, Thomas M.; and Risa, Kristen, 4,765,802, Cl. 55-2.000.

Risho Kogyo Co., Ltd.: *See—*
Moriya, Tadashi, 4,766,371, Cl. 324-158.00F.

Risi Industries, Inc.: *See—*
Johnson, Kenneth P., 4,765,950, Cl. 419-2.000.

Risko, Donald: *See—*
Rhoades, Lawrence J.; Risko, Donald; and Resnick, Ralph L., 4,766,389, Cl. 324-61.0QS.

Ristvedt-Johnson, Inc.: *See—*
Ristvedt, Victor G., 4,765,464, Cl. 206-0.820.

Ristvedt, Victor G., to Ristvedt-Johnson, Inc. Wrapped coin roll and method of forming same. 4,765,464, Cl. 206-0.820.

Ritten, Robert G., to Step-On Inc. Boat platform ladders. 4,765,438, Cl. 182-84.000.

Rizk, Sidky D.; and Shah, Navinchandra B., to Essex Specialty Products, Inc. Thermosetting composition for an interpenetrating polymer network system. 4,766,183, Cl. 525-454.000.

Robb, Paul N.: *See—*
Mercado, Romeo I.; and Robb, Paul N., 4,765,727, Cl. 350-483.000.

Robbins, Edward S., III; and Schwertner, Gary T., to Robbins, Edward S., III. Device for positionally retaining flexible trash bag liner relative to a trash receptacle. 4,765,579, Cl. 248-101.000

Roberge, Jean M.: *See—*
Jodoin, Francois; and Roberge, Jean M., 4,765,129, Cl. 57-72.000.

Robert Bosch GmbH: *See—*
Berger, Josef; Ernst, Helmut; Linhart, Hans-Joachim; and Pfeiffer, Martin, 4,765,017, Cl. 15-250.00A
Linder, Ernst; and Rembold, Helmut, 4,765,288, Cl. 123-90.160
Stegmaier, Alwin, 4,765,693, Cl. 303-119.000.

Robert Krups Stiftung & Co. KG.: *See—*
Hoffmann, Erich, 4,765,422, Cl. 177-211.000

Roberts, George W.: *See—*
Bonnell, Leo W.; Perka, Alan T.; and Roberts, George W., 4,766,154, Cl. 518-700.000.

Roberts, John T. Strapping corner support. 4,765,479, Cl. 206-453.000.

Roberts, William, to Uddeholm Tooling Aktiebolag. Low-alloy steel material, die blocks and other heavy forgings made thereof. 4,765,849, Cl. 148-335.000

Robertson, John R., to ICI Americas Inc. Bowling ball having improved surface slip. 4,766,194, Cl. 528-28.000.

Robin, Jean: *See—*
Decailloz, Claude; Robin, Jean; and Massy, Jean-Pierre, 4,766,285, Cl. 219-121.630.

Robinson, Jack B., Jr.: *See—*
Pierce, Sue K.; Robinson, Jack B., Jr.; and Scoggin, Ruth R., 4,765,843, Cl. 134-22.140.

Robinson, James C.: *See—*
DeLorenzo, Joseph T.; Levert, Francis E.; Robinson, James C.; and Hendricks, Robert W., 4,765,943, Cl. 376-154.000

Rockwell-Golde GmbH: *See—*
Fischenich, Bernhard A., 4,765,447, Cl. 188-343.000
Grimm, Rainer; Bohm, Horst; Schlapp, Albert; Hattass, Rainer; and Federmann, Dieter, 4,765,676, Cl. 296-216.000

Rockwell International Corporation: *See—*
Hines, Barrett D., 4,765,145, Cl. 60-757.000.
Iannucci, Vincent A.; and Haehnel, Rudolf H., 4,765,220, Cl 87-57.000

Rodman, Clarke A.: *See—*
Homonoff, Edward C.; and Rodman, Clarke A., 4,765,812, Cl. 55-524.000

Roeseler, William G., to Boeing Company, The. Composite coil spring 4,765,602, Cl. 267-148.000.

Rogan, Norbert L. Patty-forming method and apparatus. 4,765,029, Cl 17-32.000

Rogers Brothers Corporation: *See—*
Kulyk, John W., 4,765,638, Cl. 280-423.00B

Rogers, William C.; Alford, George W., III; and Cullimore, D. Roy Method and apparatus for cleaning wells. 4,765,410, Cl. 166-303.000.

Rohde, Dieter, to Continental Aktiengesellschaft. Pneumatic vehicle tire tread. 4,765,384, Cl. 152-209.00R

Rohm and Haas Company: *See—*
Beckley, Ronald S.; Randow, Rodney L.; and Swift, Graham, 4,766,187, Cl. 526-209.000.

Rohr, Martin; Potter, Richard H.; and Naipawer, Richard E., to Givaudan Corporation. Flavoring with α-campholenic alcohol. 4,766,002, Cl. 426-538.000.

Roland, R. Douglas, to Masco Corporation of Indiana. Faucet spring 4,765,365, Cl. 137-550.000.

Roller Bearing Company of America: *See—*
Hartl, Werner, 4,765,757, Cl. 384-213.000

Rollin, S. A.: *See—*
Rich, Gerard, 4,766,028, Cl. 428-253.000.

Rolls-Royce plc: *See—*
Davinson, Ian, 4,765,742, Cl. 356-373.000.

Ronning, Patricia M.; and Vandesteeg, Gregg A., to Minnesota Mining and Manufacturing Company. Insect control device. 4,765,982, Cl. 424-403.000

Rooney, Clarence S.: *See—*
Lee, Ta J.; Rooney, Clarence S.; and Hoffman, William F., 4,766,145, Cl. 514-460.000

Roos, Otto: *See—*
Losel, Walter; Roos, Otto; and Schnorrenberger, Gerd, 4,766,217, Cl. 546-94.000
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,766,129, Cl 514-300.000

Roquette Freres: *See—*
Huchette, Michel; and Devos, Francis, 4,766,070, Cl. 435-71.000

Rosa, Bruno A.: *See—*
Harwood, Jon W.; Rosa, Bruno A.; Van Blaircum, Bennie A.; and Kimmet, Mark S., 4,765,437, Cl. 181-282.000.

Rose, Robert D., Jr., to Communications Packaging Corporation. Notebook for storage of computer disks and loose-leaf documentation. 4,765,462, Cl. 206-45.130

Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, to W Schlafhorst & Co. Device for producing a thread connection by splicing. 4,765,128, Cl. 57-22.000

Rosenberg, Gerald B.: *See—*
Ozdemir, Faik S.; Seliger, Robert L.; and Rosenberg, Gerald B., 4,766,516, Cl. 361-380.000

Rosenthal, Jeffery; Parker, Victor; Hoback, James; and Summers, Robert. Directory support frame. 4,765,077, Cl. 40-308.000

VOL 1093 ISS 4 AG 23 1988 UMI

Roslund, Charles J., to Westinghouse Electric Corp. Token passing scheme for a predetermined configuration local area network. 4,766,530, Cl. 364-200.000.

Ross, Sherman E. Nuclear war game. 4,765,627, Cl. 273-255.000.

Rossi, Robert D.; and Fenelli, Steven P., to National Starch and Chemical Corporation. Process for the preparation of ethynylbenzaldehydes. 4,766,251, Cl. 568-436.000.

Rothwell, Harold L., Jr.: *See*—
English, George J.; Rothwell, Harold L., Jr.; and Beschle, Mark, 4,766,348, Cl. 313-631.000.

Rourke, William J.; Lai, Wen-Chao; and Natansohn, Samuel, to GTE Laboratories Incorporated. Ion exchange method for separation of scandium and thorium. 4,765,909, Cl. 210-672.000.

Rouse, Marshall J.: *See*—
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Rousseau, Joseph L.: *See*—
Harper, Robert; and Rousseau, Joseph L., 4,765,056, Cl. 29-600.000.

Rousset, Jacky; and Moro, Jean, to Coatex S.A. Acid composition with high concentrations of active materials for the treatment of water and/or cleaning installations containing same. 4,765,921, Cl. 252-87.000.

Rowe, Thomas M. Trap for imprisoning animals. 4,765,089, Cl. 43-102.000.

Rowlands, Martyn; and Calvert, John, to Kimberly-Clark Limited. Mat holder. 4,765,039, Cl. 24-556.000.

Roy, Glenn M.: *See*—
Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., 4,766,246, Cl. 560-117.000.

Royer, Daniel: *See*—
Dieulesaint, Eugene; and Royer, Daniel, 4,765,186, Cl. 73-290.00V.

Royer, Michel: *See*—
Durand, Alain R. L.; Dessus, Jean-Luc; and Royer, Michel, 4,765,863, Cl. 156-604.000.

Rozentals, Alfreds, to Lundquist Tool & Mfg. Co., Inc. Hardened ball bearing assembly. 4,765,762, Cl. 384-539.000.

Rubinetterie Rapetti S.P.A.: *See*—
Mutti, Fabio; and Gatti, Luigi, 4,765,368, Cl. 137-625.400.

Ruckert, Friedrich, to Kernforschungszentrum Karlsruhe GmbH. Method for the qualitative and quantitative determination of the hydrogen isotopes, protium, deuterium and tritium, and system for implementing the method. 4,766,081, Cl. 436-144.000.

Rudiger, Eckhart; and Stein, Ulrich, to FAG Kugelfischer Georg Schafer (KGaA). Pressure modulator device. 4,765,689, Cl. 303-115.000.

Rudiger, Eckhart; and Stein, Ulrich, to FAG Kugelfischer Georg Schafer (KGaA). Electromagnetically actuatable pressure modulator. 4,765,690, Cl. 303-115.000.

Rushing, Christopher. Hydrotherapeutic jet apparatus. 4,764,999, Cl. 4-542.000.

Russ, David E., to Sundstrand Corporation. Intermittent motion transmitting and timing system. 4,765,196, Cl. 74-436.000.

Rutenburg, Grigory M.: *See*—
Kulik, Yaroslav P.; Shmyrin, Ivan I.; and Rutenburg, Grigory M., 4,765,311, Cl. 128-3.000.

Rutter, Robert E.; and Jensen, Robert M., to Devore Aviation Corporation. Voltage limiting control system for heat emitting loads. 4,766,363, Cl. 323-243.000.

Ryan, James W.; and Chung, Alfred. Novel complex amido and imido derivatives of carboxyalkyl peptides. 4,766,110, Cl. 514-19.000.

Ryntz, Rose A.; Kurple, Kenneth R.; and Kordomenos, Panagiotis, to Du Pont de Nemours, E. I., and Company. Polysiloxane graft copolymers, flexible coating compositions comprising same and branched polysiloxane macromers for preparing same - II. 4,766,185, Cl. 525-479.000.

Ryoji, Higashi: *See*—
Narusawa, Toshio; and Ryoji, Higashi, 4,766,504, Cl. 358-337.000.

S.A.I.A.G. S.p.A.: *See*—
Ballocca, Guido, 4,765,936, Cl. 264-46.100.

S.A.T. (Societe Anonyme de Telecommunications): *See*—
Durand, Alain R. L.; Dessus, Jean-Luc; and Royer, Michel, 4,765,863, Cl. 156-604.000.

S O "Bulgarplod" : *See*—
Genchev, Lyubomir N.; Kafedjiev, Iliya C.; Klyamov, Kostadin S.; and Atanasov, Stefan G., 4,765,233, Cl. 99-472.000.

Saadat, Soheil; Pecen, Jiri; Neukermans, Armand P.; and Kren, George J., to Tencor Instruments. Particle detection method including comparison between sequential scans. 4,766,324, Cl. 250-563.000.

Saam, John C.: *See*—
Gvozdic, Nedeljko V.; Hilty, Terrence K.; and Saam, John C., 4,766,191, Cl. 528-14.000.
Lee, Chi-long; Juen, Donnie R.; Saam, John C.; and Willis, Robin L., Jr., 4,766,176, Cl. 525-100.000.

Saami Co., Ltd.: *See*—
Tone, Yasuyoshi, 4,766,022, Cl. 428-95.000.

Sabol, George P.: *See*—
Cook, Charles S.; and Sabol, George P., 4,765,174, Cl. 72-367.000.

Sada, Yoshiaki, to Kaneken Incorporated. Advertising apparatus for telephone and information display apparatus. 4,765,076, Cl. 40-219.000.

Sadeghi, Kazem: *See*—
Sadeghi, Mohammad-Ali; Sadeghi, Kazem; Kuo, Jih-Fen; Jang, Long-Kuan; and Yen, Teh F., 4,765,885, Cl. 208-391.000.

Sadeghi, Mohammad-Ali; Sadeghi, Kazem; Kuo, Jih-Fen; Jang, Long-Kuan; and Yen, Teh F., to Eneresource, Inc. Treatment of carbonaceous materials. 4,765,885, Cl. 208-391.000.

Sadvary, John W., to Simmonds Precision Products, Inc. Regulatable permanent magnet alternator. 4,766,362, Cl. 322-50.000.

Safa, Ahmad R.; and Felsted, Ronald L., to United States of America, Health and Human Services. Vinca alkaloid photoactive analogs and their uses. 4,765,972, Cl. 424-1.100.

Sahagian, Edward H. Reinforced resilient wheel. 4,765,382, Cl. 152-48.000.

Saito, Noritoshi: *See*—
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, 4,766,039, Cl. 428-469.000.

Saito, Shigeki; and Sakai, Masato, to Hitachi, Ltd. Electric power steering apparatus. 4,765,425, Cl. 180-79.100.

Saito, Shinichi: *See*—
Inoue, Hiromichi; Inukai, Takashi; Ohno, Kouji; Miyazawa, Kazutoshi; and Saito, Shinichi, 4,765,924, Cl. 252-299.610.

Saitoh, Mitsumasa; Sumi, Naoyuki; and Tagawa, Susumu, to Sony Corporation. Adaptor for a video monitoring system. 4,766,491, Cl. 358-108.000.

Saitoh, Sadao: *See*—
Yabuki, Ritsue; Ohe, Junya; and Saitoh, Sadao, 4,765,955, Cl. 420-438.000.

Sakai, Masato: *See*—
Saito, Shigeki; and Sakai, Masato, 4,765,425, Cl. 180-79.100.

Sakai, Nobuo, to Fuji Photo Film Co., Ltd. Method of forming a color image. 4,766,057, Cl. 430-383.000.

Sakai, Norio: *See*—
Takakura, Shin-ichi; Nojiri, Shigehiro; and Sakai, Norio, 4,766,412, Cl. 338-334.000.

Sakai, Takao; and Hamaguri, Kenji, to Minolta Camera Kabushiki Kaisha. Apnea detector. 4,765,340, Cl. 128-633.000.

Sakaki, Toshiyuki: *See*—
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000.

Sakosky, Richard C. Devices facilitating a quick and trouble-free opening of beer and other beverage cans. 4,765,208, Cl. 81-3.550.

Sakurai, Tadashi; and Fuchigami, Wataru, to Yamaha Hatsudoki Kabushiki Kaisha. Exhaust gas control means for engine. 4,765,137, Cl. 60-313.000.

Salazar, Sumorfin, to Ford Motor Company. Vehicle door mounting assembly for effecting vertical removability. 4,765,025, Cl. 16-261.000.

Saleme, Lola M. Female urinal for supine use. 4,764,991, Cl. 4-144.100.

Saleres, Alain: *See*—
Bourgade, Jean-Luc; Le Guen, Michel; and Saleres, Alain, 4,765,749, Cl. 374-32.000.

Sallas, John J.; and Wood, George W., to Texas Instruments Incorporated. Seismic source vibrator having improved sweep generator. 4,766,576, Cl. 367-189.000.

Saller, Kenneth R.; Baker, Alan J.; and Smith, Steven O., to Comlinear Corporation. Current mirror with unity gain buffer. 4,766,367, Cl. 323-315.000.

Salomon S. A.: *See*—
Chemello, Jean-Pierre; and Mabboux, Michel, 4,765,070, Cl. 36-117.000.

Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic material with a specified silver density and dry thickness. 4,766,058, Cl. 430-496.000.

Sampson, Sheldon E., to Koppy Corporation. Method of roll forming piston. 4,765,167, Cl. 72-68.000.

Sanders Associates, Inc.: *See*—
Hack, James R.; Masson, Bernard V.; and Beegan, David T., 4,766,448, Cl. 346-150.000
Misek, Victor A., 4,766,439, Cl. 342-445.000.

Sanders, Charles R.; and Sattler, James L. Ticket cleaner apparatus. 4,765,842, Cl. 134-9.000.

Sandine, William E.; and Ayres, James W., to State of Oregon acting by and through the Oregon State Board of Higher Education on behalf of Oregon State University, The. Method and buffered bulk starter media for propagation of useful bacteria. 4,766,076, Cl. 435-253.000.

Sandoz Ltd.: *See*—
Casciani, Robert V., 4,766,153, Cl. 514-785.000

Sandvik Aktiebolag: *See*—
Hillert, Lars H.; and Waldenstrom, Mats G., 4,766,040, Cl. 428-552.000

Sanitation Equipment Limited: *See*—
Stewart, John M., 4,764,994, Cl. 4-321.000

Sano, Toshihiko: *See*—
Ogawa, Soichiro; Sano, Toshihiko; and Shimizu, Takao, 4,766,524, Cl. 362-29.000

Sanofi: *See*—
Grain, Claude; and Jammot, Fernand, 4,766,223, Cl. 549-468.000.

Sanok, John L.; and Piechura, Michael L., to Sheller Globe Corp. Composite molded article and method of making same. 4,766,025, Cl. 428-159.000

Sanshin Kogyo Kabushiki Kaisha: *See*—
Nakase, Ryoichi; and Nanami, Masayoshi, 4,765,075, Cl. 440-38.000

Santel, Hans-Joachim: *See*—
Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,765,824, Cl. 71-92.000

Santiago, Elias. Automatic pump control system. 4,766,329, Cl. 307-118.000.

Santolina Securities Limited: *See*—
Norris, Kevin N.; Dobbyns, Vaughan; Richards, David A.; Garrood, Stephen T.; and Cousins, Neville L., 4,764,998, Cl. 4-502.000.

Santoro, Giovanni; and Francolini, Ermanno. Light weight, very fast temperature compensating soldering iron. 4,766,289, Cl. 219-235.000.

Santrade Limited: *See*—
Hagenfeldt, Carl P. U.; Bernhardsson, Sven-Olof; and Lagerberg, Erik V. S., 4,765,953, Cl. 420-65.000.

Sanyo Electric Co., Ltd.: *See*—
Yamamoto, Kenji; Morishige, Masakatsu; Takeuchi, Harumi; and Tsunomoto, Yoshitaka, 4,765,160, Cl. 68-12.00R.

Sapp, John B., Jr.: *See*—
Hanson, Harry T.; and Sapp, John B., Jr., 4,766,242, Cl. 564-154.000.

Sara Lee Corporation: *See*—
Howard, Fred; and Edson, Sydney, 4,765,492, Cl. 211-55.000.

Sarles, Frederick W.: *See*—
Oliver, Christopher J.; and Sarles, Frederick W., 4,766,386, Cl. 324-533.000.

Sarr, Dennis P.; and Young, Fred D., to Boeing Company, The. Ultrasonic inspection system with linear transducer array. 4,766,554, Cl 364-507.000

Sarstedt: *See*—
Schluter, Gert; and Albrecht, Erwin, 4,765,895, Cl. 210-491.000

Sartor, Mariano: *See*—
Baggio, Giorgio; and Sartor, Mariano, 4,765,069, Cl. 36-50.000.

Sasa, Hiroyuki; and Suzuki, Akira, to Olympus Optical Co., Ltd. Endoscope. 4,765,312, Cl. 128-4.000.

Sasaki, Hiromu; and Itoh, Ikuo, to Sharp Kabushiki Kaisha. Copying machine having means to eliminate local temperature changes in a photoreceptor belt. 4,766,403, Cl. 355-3.00R

Sasaki, Isamu: *See*—
Fukushima, Koji; and Sasaki, Isamu, 4,765,661, Cl. 285-382.500.

Sasaki, Kozo: *See*—
Sugimoto, Isao; Togo, Kazunori; Sasaki, Kozo; Yamagata, Atsushi; and Kuchiki, Akira, 4,765,990, Cl. 424-494.000.

Sasho, Yoshio: *See*—
Suga, Nagaichi; Katayanagi, Shinichi; Sasho, Yoshio; and Mori, Taro, 4,766,488, Cl. 358-93.000.

Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., to Bayer Aktiengesellschaft. Pyrimidyl-thio-carboxanilides. 4,765,824, Cl. 71-92.000.

Satake Engineering Co., Ltd.: *See*—
Satake, Toshihiko, 4,765,489, Cl. 209-557.000

Satake, Toshihiko, to Satake Engineering Co., Ltd. Separation wall movement control device for grain sorting machines. 4,765,489, Cl. 209-557.000.

Satek, Larry; Wilwerding, Laura; Melquist, John L.; and Luetkens, Melvin L., to Amoco Corporation. Silver aluminum borate oxidation catalyst and process for its preparation. 4,766,102, Cl. 502-202.000.

Sato, Isamu: *See*—
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000.

Sato, Kazuhide, to Kabushiki Kaisha Toshiba. Wire bonding apparatus. 4,765,526, Cl. 228-4.500.

Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Four wheel drive vehicle with anti-lock braking system and associated method of operation. 4,765,429, Cl. 180-197.000.

Sato, Makoto: *See*—
Fujii, Etsuo; and Sato, Makoto, 4,765,433, Cl. 180-244.000.

Sato, Michio: *See*—
Komoto, Haruo; Hamada, Shigeharu; Shiinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl. 204-211.000.

Sato, Norimasa: *See*—
Ozaki, Masanori; Ohishi, Isamu; Sato, Norimasa; and Tanaka, Yasuzou, 4,765,055, Cl. 29-599.000.

Sato, Ryosuke: *See*—
Ninomiya, Hidetaka; and Sato, Ryosuke, 4,766,060, Cl. 430-553.000.

Sato, Toshihiko; Kitamura, Takeshi; and Nagaoka, Shinsaku, to Konishiroku Photo Industry Co., Ltd. Magnetic recording medium. 4,766,034, Cl. 428-336.000.

Satoh, Seiki, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Lock units. 4,765,682, Cl. 297-379.000.

Satoyoshi, Yasuhiko; and Kato, Keishi, to Fuji Photo Film Co., Ltd. Cassette for accommodating tape-shaped material having an electrically conductive layer. 4,765,563, Cl. 242-199.000.

Sattler, James L.: *See*—
Sanders, Charles R.; and Sattler, James L., 4,765,842, Cl. 134-9.000.

Sauer, Gerhard; Haffer, Gregor; Wachtel, Helmut; Schneider, Herbert H.; and Kehr, Wolfgang, to Schering Aktiengesellschaft. Optionally 11- to 13-substituted ergoline compounds useful as medicinal agents. 4,766,128, Cl. 514-288.000.

Sauerwein, William D.; Dibbern, John E., Jr.; O'hara, Frank J.; and Moores, Robert G., Jr., to Black & Decker, Inc. Method of making a field subassembly. 4,765,054, Cl. 29-596.000

Saunders, Kenneth J.; and Gentilman, Richard L., to Raytheon Company. Optical material and process for making the same. 4,765,931, Cl. 252-584.000

Sauze, Bernard, to Dresser Industries, Inc. Device for regulating or varying the rotation angle of a control shaft of a valve or gate. 4,765,589, Cl. 251-229.000

Sawai, Yoshihiro: *See*—
Takayanagi, Hitoshi; and Sawai, Yoshihiro, 4,765,983, Cl. 424-434.000.

Sawamura, Tadahide: *See*—
Watanuki, Masayoshi; Shoji, Tsutomu; Noguchi, Yukio; and Sawamura, Tadahide, 4,766,463, Cl. 355-145.00H.

Say, Donald L., to North American Philips Consumer Electronics Corp. In-line electron gun structure for color cathode ray tube having oblong apertures. 4,766,344, Cl. 313-414.000

Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, to Takasago International Corporation. Ruthenium-phosphine complex. 4,766,225, Cl. 556-16.000.

Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, to Takasago International Corporation. Ruthenium-phosphine complex. 4,766,227, Cl. 556-21.000

Scarlett, John: *See*—
Harris, Norman; Rathmell, Colin; Turner, Keith; and Scarlett, John, 4,765,869, Cl. 203-28.000.

Scarnera, Michele; and Conticelli, Carlo, to Weber S.p.A. Combustion engine stroke identification system. 4,765,306, Cl. 123-643.000.

Schaberle, Erwin: *See*—
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B.

Schaeffer, George W.: *See*—
Montgomery, Robert E.; and Schaeffer, George W., 4,766,005, Cl 427-4.000

Schaffer, Arnold M.: *See*—
Walker, Darrell W.; and Schaffer, Arnold M., 4,765,884, Cl 208-89.000.

Schallenberger, Burghardt; Stockinger, Josef; and Fuchs, Paul, to Siemens Aktiengesellschaft. C-MOS technology base cell. 4,766,476, Cl. 357-42.000.

Schappach, Richard. Modular furniture assembly. 4,765,253, Cl. 108-153.000.

Schellstede, Herman J. Well penetration apparatus. 4,765,173, Cl. 72-325.000

Schenck, Terry G.: *See*—
Wright, Arthur P. G.; Wen, Betty P. L.; Schenck, Terry G.; and Maron, Antonina, 4,766,216, Cl. 546-7.000

Scherbarth, David W.: *See*—
Deis, Daniel W.; Kemeny, George A.; and Scherbarth, David W., 4,766,336, Cl. 310-12.000.

Schering Aktiengesellschaft: *See*—
Heymann, Kurt; and Donner, Christoph, 4,766,017, Cl 427-444.000.
Sauer, Gerhard; Haffer, Gregor; Wachtel, Helmut; Schneider, Herbert H.; and Kehr, Wolfgang, 4,766,128, Cl. 514-288.000

Schering Corporation: *See*—
Abdi, Syed E.; and Sequeira, Joel A., 4,765,978, Cl. 424-80.000.
Czarniecki, Michael F.; Verbiar, Laura L.; and Kogan, Timothy, 4,766,109, Cl. 514-17.000.

Scheunhage, Henry J.: *See*—
Tissington, Sidney K.; Scheunhage, Henry J.; Johnston, Clare M.; and Tissington, Frederick B., 4,765,105, Cl. 52-309.110.

Schiefer, Gerd: *See*—
Husgen; Raets, Hubert; Schiefer, Gerd; and Zwier, Jan, 4,766,350, Cl. 315-207.000.

Schiefer, Harry M.; and McClarnon, Keith S., to Dow Corning Corporation. Method of printing on plastic substrate using a water-based ink. 4,765,243, Cl. 101-451.000.

Schiff, Harold I.; and Stedman, Donald H., to University of Michigan, The; and Scintrex Limited. Apparatus for detection of certain nitrogen-containing gases using chemiluminescence. 4,765,961, Cl. 422-52.000

Schlapp, Albert: *See*—
Grimm, Rainer; Bohm, Horst; Schlapp, Albert; Hattass, Rainer; and Federmann, Dieter, 4,765,676, Cl. 296-216.000

Schlicht, Raymond C.: *See*—
Love, Doris; Schlicht, Raymond C.; and Biasotti, Joseph B., 4,765,918, Cl. 252-46.400.

Schlingmann, Merten: *See*—
Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, 4,766,207, Cl. 536-18.600.

Schlumberger Technology Corp.: *See*—
Kleinberg, Robert L.; Clark, Brian; Chew, Weng C.; and Mariani, David, 4,766,384, Cl. 324-339.000.
Reichert, Volker L., 4,765,435, Cl. 181-102.000.

Schluter, Gert; and Albrecht, Erwin, to Sarstedt. Apparatus for recovery of cell material from body fluids. 4,765,895, Cl. 210-491.000.

Schmelzer, Stephen F.: *See*—
Korn, Justin; and Schmelzer, Stephen F., 4,766,581, Cl. 369-30.000

Schmidt, Charles J.; and Albanese, Victor J., to Grumman Aerospace Corporation. Antenna apparatus having means for changing the antenna radiation pattern. 4,766,437, Cl. 342-368.000

Schmidt, Daniel E.; and Moeller, Robert P., to Dow Chemical Company, The. Apparatus and method for the application of a plastic liner to a flanged pipe elbow. 4,765,938, Cl. 264-269.000

VOL 1093 ISS 4 AG 23 1988 UMI

Schmadt, Ferenc J.; Maughan, P. Kevin; and Guy, Jack J., to Intermar, Inc. Aneurysm clip. 4,765,335, Cl. 128-326.000.

Schmidt, Mathew G., to Western Atlas International, Inc. Well logging direct memory access system and method. 4,766,543, Cl. 364-422.000.

Schmidt, Robert R.: *See*—
Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,765,824, Cl. 71-92.000.

Schmidt, Werner, to U.S. Philips Corporation. Method and apparatus for handing-over a radio connection from one radio cell to another radio cell of a digital radio transmission system. 4,765,753, Cl. 379-60.000.

Schmit, Romain: *See*—
Beckmann, Franz; Schmit, Romain; and Wagner, Armand, 4,765,829, Cl. 75-25.000.

Schmitges, Claus J.: *See*—
Juraszyk, Horst; Gericke, Rolf; Lues, Inge; Bergmann, Rolf; and Schmitges, Claus J., 4,766,213, Cl. 544-127.000.

Schmitt, Axel: *See*—
Merrem, Hans-Joachim; and Schmitt, Axel, 4,765,844, Cl. 134-38.000.

Schmookler, Martin S.: *See*—
Bechade, Roland A.; and Schmookler, Martin S., 4,766,565, Cl. 364-784.000.

Schnable, George L.: *See*—
Smeltzer, Ronald K.; Goodman, Alvin M.; and Schnable, George L., 4,766,482, Cl. 357-23.700.

Schneider, Heinz-Walter: *See*—
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.

Schneider, Herbert H.: *See*—
Sauer, Gerhard; Haffer, Gregor; Wachtel, Helmut; Schneider, Herbert H.; and Kehr, Wolfgang, 4,766,128, Cl. 514-288.000.

Schneider, Michel: *See*—
Bichon, Daniel; Nguyen, Van Tao; and Schneider, Michel, 4,766,160, Cl. 522-46.000.

Schnetter, Wolfgang: *See*—
Krieg, Aloisius; Huger, Alois M.; and Schnetter, Wolfgang, 4,766,203, Cl. 530-370.000.

Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, to Boehringer Ingelheim KG. Pyrrolo[2,3-C]pyridines and their use as anti-hypertensive agents. 4,766,129, Cl. 514-300.000.

Schnorrenberger, Gerd: *See*—
Losel, Walter; Roos, Otto; and Schnorrenberger, Gerd, 4,766,217, Cl. 546-94.000.

Schoenhard, James D., to City of Canton, IL. Filter process for silver recovery from polymeric films. 4,765,835, Cl. 75-118.00P.

Scholl, Frederick W.; Anderson, Stephen J.; and Coden, Michael H., to Codenoll Technology. Edge emitting, light-emitting diode. 4,766,470, Cl. 357-17.000.

Scholz, Dieter; and Flesch, Friedrich, to Hilti Aktiengesellschaft. Rock drill with cutting inserts. 4,765,419, Cl. 175-415.000.

Scholz, Walter: *See*—
Bauer, Heinz; Becker, Hans; and Scholz, Walter, 4,765,814, Cl. 62-20.000.

Schommler, Manfred; and Martin, Gerald, to Peter Maschinenfabrik GmbH. Knife shaft pair for cutting web-like material, in particular undulated board. 4,765,216, Cl. 83-341.000.

Schonberg, Michael, to Hunter, Edward B., a part interest. Method of improving egg production in poultry hens. 4,765,337, Cl. 128-395.000.

School Bus Parts Co. of Canada Inc.: *See*—
Reavell, James, 4,766,413, Cl. 340-130.000.

Schott-Glaswerke: *See*—
Kersten, Ralf T.; and Siefert, Wolfgang, 4,765,819, Cl. 65-30.100.

Schrag, Thomas G.; Hood, Charles F.; Morton, Scott A.; and Graber, Kurt, to Hay & Forage Industries. Monitoring system for detecting malfunction of knotting mechanism on a crop baler. 4,765,235, Cl. 100-3.000.

Schreder, Felix, to E.G.O. Elektro-Gerate Blanc u. Fischer. Sealed electric hotplate. 4,766,290, Cl. 219-458.000.

Schreiner, Werner: *See*—
Burmeister, Klaus-Dieter; Holbe, Erhard; and Schreiner, Werner, 4,765,710, Cl. 350-96.200.

Schroeder, Philip W., to J. I. Case Company. Dirt deflector overtravel mechanism. 4,765,072, Cl. 37-191.00A.

Schroeder, Roger H.: *See*—
Hodlewsky, Wasyly G.; and Schroeder, Roger H., 4,765,454, Cl. 198-635.000.

Schuepp, Egon, to Aktiengesellschaft Adolf Saurer. Shuttle embroidering machine. 4,765,266, Cl. 112-90.000.

Schultz, James. Fishing lure. 4,765,086, Cl. 43-42.520.

Schultz, Winfried: *See*—
Premiski, Vladimir; Premiski, Claudia; and Schultz, Winfried, 4,765,366, Cl. 137-593.000.

Schulze, Bernd-Guido; and Lissel, Ernst, to Volkswagen AG. Method and arrangement for propulsion regulation of an automobile. 4,765,430, Cl. 180-197.000.

Schuster, Michael A.: *See*—
Dreisbach, David D.; Gomes, Gilbert S.; and Schuster, Michael A., 4,765,867, Cl. 162-72.000.

Schweitzer, Edmund O., III; and Ando, Masaoki, to Electric Power Research Institute, Inc. Single-ended transmission line fault locator. 4,766,549, Cl. 364-481.000.

Schweizer, Frederick A., to Allied-Signal Inc. Single crystal nickel-base super alloy. 4,765,850, Cl. 148-404.000.

Schwertner, Gary T.: *See*—
Robbins, Edward S., III; and Schwertner, Gary T., 4,765,579, Cl. 248-101.000.

Schwoyer, William L.; Jaycox, Larry S.; and Peterscheck, Hermann W., to VerTech Treatment Systems, Inc. Process for the treatment of waste. 4,765,900, Cl. 210-603.000.

Scintrex Limited: *See*—
Schiff, Harold I.; and Stedman, Donald H., 4,765,961, Cl. 422-52.000

Scoggin, Ruth R.: *See*—
Pierce, Sue K.; Robinson, Jack B., Jr.; and Scoggin, Ruth R., 4,765,843, Cl. 134-22.140.

Scott Continental, N.V.: *See*—
Vankerckhoven, Henk F. E.; and DeKoster, Eric H. C., 4,765,858, Cl. 156-235.000.

Scott, Mark E. Valve assembly. 4,765,367, Cl. 137-607.000.

Scott, Robert D., to Research Development Systems, Inc. Wearable, continuously internally operable and externally regenerable dialysis device. 4,765,907, Cl. 210-648.000

Seco Industries, Inc.: *See*—
Moss, Theron C.; and Cross, Haymond E., 4,765,014, Cl. 15-229.300

Sederquist, Richard A., to International Fuel Cells Corporation. Fuel cell recycling system. 4,766,044, Cl. 429-19.000.

Seese, Theodore A.; Narayanan, Subramanian; and Flores, Gilbert A., to SGT Folders Unlimited, Inc. Method and tools for forming sewing machine binder strip folders. 4,765,172, Cl. 72-322.000.

Seidel, Adolf: *See*—
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B.

Seidenberg, Benjamin, to United States of America, National Aeronautics and Space Administration. Polymeric heat pipe wick. 4,765,396, Cl. 165-104.260

Seifert, Josef, to Kurz Kunststoffe GmbH. Multisectional storage container. 4,765,469, Cl. 206-309.000.

Seikosha Co., Ltd.: *See*—
Yamazaki, Hiroshi; and Shiratori, Kazuhiko, 4,766,578, Cl. 368-69.000

Seiler, Dieter G.; and Sulway, David V., to Vickers Instruments (Canada) Inc. Method and apparatus for precision SEM measurements. 4,766,311, Cl. 250-252.100.

Seita, Toru: *See*—
Kitamura, Sakae; Kurauchi, Yasuhiro; and Seita, Toru, 4,765,905, Cl. 210-638.000

Sekibata, Masao; Ohta, Toshihiko; and Miyazawa, Osamu, to Hitachi, Ltd. Plating process for an electronic part. 4,765,528, Cl. 228-123.000.

Sekimoto, Yoshihiro; Terashima, Shigeo; and Kojima, Kunio, to Sharp Kabushiki Kaisha. Three-dimensional driving arrangement. 4,766,584, Cl. 369-4.000

Selbert, Alan J.; and Eschelbach, Randy G., to Hoover Universal, Inc. Method of manufacturing trimmed seat. 4,765,045, Cl. 29-91.100.

Seliger, Robert L.: *See*—
Ozdemir, Faik S.; Seliger, Robert L.; and Rosenberg, Gerald B., 4,766,516, Cl. 361-380.000.

Sellstrom, Kathy B.; and Waddill, Harold G., to Texaco Inc. Epoxy adhesive. 4,766,186, Cl. 525-532.000.

Seltzer, William P.: *See*—
Davis, Malcolm H.; Janes, Kent A.; Kleffner, Daniel J.; Seltzer, William P.; and Spence, Hugh F., 4,766,295, Cl. 235-383.000.

Senecal, Joseph A.: *See*—
Gattuso, Todd R.; Koehlert, Kenneth C.; Neville, Matthew; Reznek, Steven R.; and Senecal, Joseph A., 4,765,920, Cl. 252-62.580.

Senf, John W.: *See*—
Eisenhut, Wolfgang O.; and Senf, John W., 4,765,509, Cl. 222-61.000

Senft, Stephen P.: *See*—
Berry, William L.; Coney, Robert S.; and Senft, Stephen P., 4,766,339, Cl. 313-276.000.

Sensabaugh, Andrew J., Jr.; and Ridings, Henry T., to R. J. Reynolds Tobacco Company. Aerosol flavor delivery system. 4,765,347, Cl. 131-273.000

Sequa Chemicals, Inc.: *See*—
Floyd, William C., 4,766,221, Cl. 548-320.000.

Sequeira, Joel A.: *See*—
Abidi, Syed E.; and Sequeira, Joel A., 4,765,978, Cl. 424-80.000.

Servay, Willy, to Century Products Ltd. Belt buckle attachment clamp. 4,765,035, Cl. 24-265.00A.

Seven S Structures Inc.: *See*—
Tissington, Sidney K.; Scheunhage, Henry J.; Johnston, Clare M.; and Tissington, Frederick B., 4,765,105, Cl. 52-309.110.

Sevier, Fred E.: *See*—
Browne, Frederick D.; and Sevier, Fred E., 4,766,387, Cl. 324-545.000.

Seymour, Robert J.; and Stegeman, George I., to GTE Laboratories Incorporated. Grating surface plasmon coupler. 4,765,705, Cl. 350-96.150.

Seymour, Shaun A.: *See*—
Vansteelant, Marc G.; Naaktgeboren, Adrianus; and Seymour, Shaun A., 4,765,237, Cl. 100-89.000

SGT Folders Unlimited, Inc.: *See*—
Seese, Theodore A.; Narayanan, Subramanian; and Flores, Gilbert A., 4,765,172, Cl. 72-322.000.

Shaffer, John W., to GTE Products Corporation. Silk-screenable circuit paste. 4,765,929, Cl. 252-511.000.

Shah, Denis D.: *See*—
Blain, Jeffery W.; Shah, Denis D.; and Chen, Jean, 4,765,442, Cl. 187-101.000

Shah, Navinchandra B.: *See*—
Rizk, Sidky D.; and Shah, Navinchandra B., 4,766,183, Cl 525-454.000.

Shamie, Louis. Safety spreader bar lock for umbrella stroller. 4,765,645, Cl. 280-644.000.

Shank, Donald H. Brick mason's spacer and method of using the spacer 4,765,116, Cl. 52-747.000.

Sharp Kabushiki Kaisha: *See*—
Fujimoto, Yoshiji, 4,766,563, Cl. 364-724.000.
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000.
Sasaki, Hiromu; and Itoh, Ikuo, 4,766,403, Cl. 355-3.00R.
Sekimoto, Yoshihiro; Terashima, Shigeo; and Kojima, Kunio, 4,766,584, Cl. 369-4.000.

Sharp Kabushiki Kiasha: *See*—
Nakagawa, Kiyotoshi; Miyano, Katsumi; and Fujimoto, Takeo, 4,766,474, Cl. 357-23.800.

Shelburne Corporation, The: *See*—
Finnegan, Robert J., 4,765,521, Cl. 224-315.000.

Sheldon, Richard C.: *See*—
Ahner, David J.; Sheldon, Richard C.; and Oliva, Joseph J., 4,765,132, Cl. 60-39.020.

Shell Oil Company: *See*—
Clerke, Edward A.; and Larson, Brent H., 4,766,577, Cl. 367-911.000
Hwo, Charles C., 4,766,178, Cl. 525-240.000.
Lauritzen, Ann M., 4,766,105, Cl. 502-216.000.
Michaels, Nicholas; Korcz, William H.; Campbell, R. Neil; and Singhal, Surendra N., 4,766,019, Cl. 428-35.000
Van Es, Cornelis; Miles, Richard; Kalghatgi, Gautam T.; McArragher, John S.; and Heldeweg, Rudolf F., 4,765,800, Cl 44-62.000
Wong, Pui K., 4,766,180, Cl. 525-289.000.

Sheller Globe Corp.: *See*—
Sanok, John L.; and Piechura, Michael L., 4,766,025, Cl. 428-159.000

Shepard, Spencer H.: *See*—
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.

Sherbeck, Terry G.: *See*—
Tallman, James L.; Sherbeck, Terry G.; and Kramlich, Beverlea J., 4,766,425, Cl. 340-712.000

Sherman, Daniel A. Collapsible rodenticide bait station. 4,765,091, Cl. 43-131.000.

Sherman, Renee. Tablet pulverizer. 4,765,549, Cl. 241-169.000.

Sherwood, Carl H.; Fornuto, Joseph; and Giacomazzi, Roy A., to General Motors Corporation. Vapor venting valve for vehicle fuel system. 4,765,504, Cl. 220-86.00R.

Shia, George A.; and Friedland, David J., to Allied-Signal Inc. Fluorinated carbon composition for use in fabricating a Li/CF_x battery cathode. 4,765,968, Cl. 423-445.000.

Shiga, Takashi; Tani, Hidekazu; Hama, Hiroaki; and Iijima, Hitoshi, to Mitsubishi Denki Kabushiki Kaisha. Refrigeration cycle apparatus. 4,765,149, Cl. 62-174.000.

Shiki, Kazuo: *See*—
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, 4,766,039, Cl. 428-469.000.

Shinoki, Yasuo: *See*—
Komoto, Haruo; Hamada, Shigeharu; Shinoki, Yasuo; Nagano, Katsumi; Sato, Michio; and Goshi, Hiroo, 4,765,878, Cl. 204-211.000

Shim, Norman, to Respiratory Care, Inc. Cartridge humidifier vent valve. 4,765,327, Cl. 128-204.130.

Shimamune, Takayuki: *See*—
Matsumoto, Yukiei; and Shimamune, Takayuki, 4,765,879, Cl. 204-290.00R

Shimazaki, Hiroshi: *See*—
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000.

Shimazu, Hisao: *See*—
Kimura, Yoshihiro; and Shimazu, Hisao, 4,766,156, Cl. 521-58.000.

Shimizu, Isamu: *See*—
Ohtoshi, Hirokazu; Hanna, Junichi; and Shimizu, Isamu, 4,766,091, Cl. 437-108.000

Shimizu, Masatoshi: *See*—
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000.

Shimizu, Takao: *See*—
Mitsuhashi, Masayuki; Komine, Naoto; and Shimizu, Takao, 4,766,271, Cl. 200-159.00B.
Ogawa, Soichiro; Sano, Toshihiko; and Shimizu, Takao, 4,766,524, Cl. 362-29.000.

Shimizu, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Motor driven power steering system. 4,765,426, Cl. 180-79.100.

Shimoe, Hiroo: *See*—
Kameshima, Tetsuya; Kondo, Toshiro; and Shimoe, Hiroo, 4,765,650, Cl. 280-723.000

Shimono, Toshio: *See*—
Marui, Tomohiro; Kaneko, Tadao; Ao, Kazuo; Shimono, Toshio and Fukada, Seiichiro, 4,765,547, Cl. 241-40.000

Shimozono, Ryoji: *See*—
Ogawa, Yasunori; Tsutsumi, Kenji; Tanaka, Yasuo; and Shimozono, Ryoji, 4,766,594, Cl. 371-22.000

Shin-Etsu Polymer Co., Ltd.: *See*—
Mitsuhashi, Masayuki; Komine, Naoto; and Shimizu, Takao, 4,766,271, Cl. 200-159.00B.

Shinmura, Yoshihito: *See*—
Nakano, Harumi; Shinmura, Yoshihito; Fukumura, Masaaki, and Kuwabara, Nobuaki, 4,766,529, Cl. 364-513.500.

Shinozaki, Fumiaki; Namiki, Tomizo; and Suzuki, Kazuo, to Fuji Photo Film Co., Ltd. Method for forming an image. 4,766,053, Cl 430-256.000

Shinozaki, Fumiaki: *See*—
Watanabe, Akio; Washizu, Shintaro; Shinozaki, Fumiaki; Ishikawa, Shun-ichi; and Aoai, Toshiaki, 4,766,037, Cl. 428-402.210

Shinozaki, Kazuo; Anzai, Kazuo; Takano, Takeshi; and Tsuge, Akihiko, to Kabushiki Kaisha Toshiba. Aluminum nitride-based sintered body of high thermal conductivity. 4,766,097, Cl. 501-98.000

Shiokama, Yoshiharu; and Ohmori, Sachio, to Nippon Kogaku K. K Bayonet mount structure for interchangeable photographing lens tube. 4,766,453, Cl. 354-286.000

Shirai, Akira: *See*—
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000.

Shiraishi, Hiromi: *See*—
Miyashita, Yoshinobu; Oishi, Haruki; Ueno, Yasumichi; Shiraishi, Hiromi; and Tubaki, Kazuyuki, 4,766,083, Cl. 436-517.000

Shiraishi, Osamu; and Hashimoto, Hiroshi, to Oki Electric Industry Co., Ltd. Analog-digital hybrid integrated circuit. 4,766,335, Cl 307-592.000.

Shiratori, Harunori: *See*—
Kawakami, Hiroshi; Shiratori, Harunori; Sugihara, Koichi; Watanabe, Atsushi; and Kishida, Fumio, 4,765,428, Cl. 180-143.000.

Shiratori, Kazuhiko: *See*—
Yamazaki, Hiroshi; and Shiratori, Kazuhiko, 4,766,578, Cl 368-69.000

Shirogami, Tamotsu; and Ueno, Mitsushi, to Kabushiki Kaisha Toshiba. Fuel cell. 4,766,043, Cl. 429-39.000

Shmyrin, Ivan I.: *See*—
Kulik, Yaroslav P.; Shmyrin, Ivan I.; and Rutenburg, Grigory M., 4,765,311, Cl. 128-3.000

Shoji, Tsutomu: *See*—
Watanuki, Masayoshi; Shoji, Tsutomu; Noguchi, Yukio; and Sawamura, Tadahide, 4,766,463, Cl. 355-145.00H.

Shroot, Braham: *See*—
Lang, Gerard; Shroot, Braham; Forestier, Serge; and Lagrange, Alain, 4,766,235, Cl. 560-051.000.

Shuert, Lyle H. Container with sleeve interlocking latch. 4,765,252, Cl. 108-55.100

Shuey, Kenneth C., to Westinghouse Electric Corp. Power line communication interference preventing circuit. 4,766,414, Cl. 340-310.00A.

Shute, Sammy. Exercise machine for person confined to a wheelchair. 4,765,614, Cl. 272-130.000

Sibert, John W.: *See*—
Clough, Thomas J.; Sibert, John W.; and Riese, Arthur C., 4,765,827, Cl. 75-2.000

Sidwell, David A. Accessory for weightlifting equipment. 4,765,610, Cl. 272-117.000

Siecor Corporation: *See*—
Obst, Donald L., 4,765,711, Cl. 350-96.230.

Siefert, Wolfgang: *See*—
Kersten, Ralf T.; and Siefert, Wolfgang, 4,765,819, Cl. 65-30.100

Siegal, Burton L.; and Magdars, John T., to Coral Industrial Sales Co Combination stop plug and frame member for channelled drapery track. 4,765,022, Cl. 16-87.40R

Siegel, Myron. Anchor lock. 4,765,664, Cl. 292-288.000

Siemens Aktiengesellschaft: *See*—
Burmeister, Klaus-Dieter; Holbe, Erhard; and Schreiner, Werner, 4,765,710, Cl. 350-96.200.
Dielacher, Franz, 4,766,415, Cl. 340-347.0DA.
Merkenschlager, Hans-Hermann; Kraus, Friedrich; and Szolnoki, Gergely, 4,766,325, Cl. 250-572.000
Michels-Krohn, Karl-Heinz; and Untergruger, Josef, deceased, 4,766,596, Cl. 371-62.000
Schallenberger, Burghardt; Stockinger, Josef; and Fuchs, Paul, 4,766,476, Cl. 357-42.000.
Soethout, Freddie; and Radtke, Wolfgang, 4,765,230, Cl. 98-2.110.

Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See*—
Cavazza, Claudio; De Witt, Paolo; and Tinti, Maria O., 4,766,222, Cl. 549-39.000

Siliconix Incorporated: *See*—
Hill, Lorimer K., 4,766,469, Cl. 357-13.000.

Simin, Gerald L., to General Motors Corporation. Ashtray assembly 4,765,346, Cl. 131-231.000.

Simmonds, Leonard B., to Westinghouse Electric Corp. Method and apparatus for high voltage testing of coils with grounded insulation. 4,766,388, Cl. 324-545.000

VOL 1093 ISS 4 AG 23 1988 UMI

Simmonds Precision Products, Inc.: *See—*
Sadvary, John W., 4,766,362, Cl. 322-50.000.
Simmons, Robert E.: *See—*
Chrysler, Gregory M.; Chu, Richard Chao-Fan; and Simmons, Robert E., 4,765,397, Cl. 165-104.330.
Simon, Helmut; and Deffner, Alexander, to Henkel Kommanditgesellschaft auf Aktien. Process for regenerating coenzymes. 4,766,071, Cl 435-90.000
Simons, Michael J., to Eastman Kodak Company. Photographic coupler dispersions. 4,766,061, Cl. 430-546.000.
Simonsen, Karl: *See—*
Skovhauge, Erik; and Simonsen, Karl, 4,766,003, Cl. 426-582.000.
Sing, Peter. Apparatus for photoelectrically generated physical measurements. 4,765,063, Cl. 33-140.000.
Sing, Peter. Garbage disposal apparatus. 4,765,548, Cl. 241-101.300.
Singer Company, The: *See—*
Bennett, William S., 4,766,555, Cl. 364-518.000
Warner, Richard C., 4,766,334, Cl. 307-540.000.
Singhal, Surendra N.: *See—*
Michaels, Nicholas; Korcz, William H.; Campbell, R. Neil; and Singhal, Surendra N., 4,766,019, Cl. 428-35.000.
Sinter-Cast AB: *See—*
Backerud, Stig L., 4,765,391, Cl. 164-150.000.
Skach, Edward J., Jr.; Brake, David W.; and Waibel, Joseph H., to Dow Chemical Company, The. Injectable reagents for molten metals. 4,765,830, Cl. 75-53.000.
SKF Industrial Trading and Development Co., B.V.: *See—*
Gabelli, Antonio, 4,765,756, Cl. 384-133.000.
Skiera, Heinz: *See—*
Hank, Dietrich; Skiera, Heinz; and Zimmermann, Gerd, 4,765,241, Cl. 101-350.000.
Skiles, Jerry W.: *See—*
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,766,210, Cl. 540-488.000.
Skovhauge, Erik; and Simonsen, Karl, to APV Pasilac A/S. Method for producing acid and heat coagulated types of cheese. 4,766,003, Cl. 426-582.000
Sleeman, Michael J.: *See—*
Gray, David R.; and Sleeman, Michael J., 4,766,267, Cl. 174-36.000.
Slocum, Alexander H.; and Jurgens, Peter A., to United States of America, Commerce. Robot end effector. 4,765,668, Cl. 294-88.000.
Slocum, Alexander H., to United States of America, Commerce. Inclined contact recirculating roller bearing. 4,765,754, Cl. 384-44.000.
Slotboom, Jan W.: *See—*
Pelgrom, Marcellinus J. M.; Harwig, Hendrik A.; and Slotboom, Jan W., 4,766,332, Cl. 307-358.000.
Smeltzer, Ronald K.; Goodman, Alvin M.; and Schnable, George L., to General Electric Company. Semiconductor device and method of making the same. 4,766,482, Cl. 357-23.700
Smith, David W.: *See—*
Ricketson, Tommy H.; Klug, Mark W.; McGlory, John J.; and Smith, David W., 4,765,531, Cl. 228-179.000
Smith, Edward J.: *See—*
Nowak, Tom; Smith, Edward J.; and Vassiliou, Eustathios, 4,765,788, Cl. 411-61.000.
Smith, Gaylord D.; Wheeler, Jack M.; and Tassen, Stephen C., to Inco Alloys International, Inc. Nickel-chromium alloy of improved fatigue strength. 4,765,956, Cl. 420-445.000.
Smith, Geoffrey M.; and Stacey, Eric J., to Westinghouse Electric Corp. Absolute shaft position sensing circuit. 4,766,359, Cl. 318-652.000
Smith, George A.: *See—*
Cameron, Frank L.; and Smith, George A., 4,766,408, Cl. 337-244.000
Smith Kline Beckman Corporation: *See—*
Ali, Fadia E., 4,766,108, Cl. 514-16.000.
Smith Kline & French Laboratories Limited: *See—*
Coates, William J., 4,766,122, Cl. 514-247.000.
Coates, William J., 4,766,123, Cl. 514-247.000.
Ellis, David; Emmett, John C.; Underwood, Anthony H.; and Leeson, Paul D., 4,766,121, Cl. 514-247.000.
Smith and Nephew Associated Companies plc: *See—*
Bringloe, Keith D., 4,765,478, Cl. 206-440.000.
Smith & Nephew Rolyan, Inc.: *See—*
Lindemann, Peer; and Ungemach, Robert R., 4,765,320, Cl. 128-87.00A.
Smith, Steven O.: *See—*
Saller, Kenneth R.; Baker, Alan J.; and Smith, Steven O., 4,766,367, Cl. 323-315.000
Smith, Sydney K., Jr., to Hughes Tool Company. Self-locating seal assembly. 4,765,402, Cl. 166-115.000.
Smith, William J. Splash guard for bathtub showers. 4,765,001, Cl. 4-609.000
SmithKline Beckman Corporation: *See—*
Hill, David T.; Johnson, Randall K.; and Mirabelli, Christopher K., 4,766,226, Cl. 556-18.000.
Smolucha, Walter E.: *See—*
Bleich, Charles R.; Smolucha, Walter E.; Wepner, Gregory W.; Lantz, Kenneth F.; and Herschler, Scott C., 4,766,541, Cl 364-410.000
Snell, Thomas G.: *See—*
Marynissen, William E.; Beeson, Thomas T.; and Snell, Thomas G., 4,765,767, Cl. 401-213.000
Snyder, Douglas D.: *See—*
Koch, Russell W.; and Snyder, Douglas D., 4,765,852, Cl. 156-97.000
Sobodowski, Joseph J.: *See—*
Cedrone, Louis A.; and Sobodowski, Joseph J., 4,766,548, Cl. 364-479.000
Sobus, Michael T., to PQ Corporation. Prevention of chill haze in beer. 4,766,000, Cl. 426-330.400.
Societe Amatec: *See—*
Barbe, Guy, 4,765,571, Cl. 244-151.00B.
Societe Anonyme dite: L'Oreal: *See—*
Lang, Gerard; Shroot, Braham; Forestier, Serge; and Lagrange, Alain, 4,766,235, Cl. 560-051.000.
Societe Cooperative Agricole de Semences de Limagne "Limagrain" : *See—*
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation "S.N.E.C.M.A." : *See—*
Lardellier, Alain, M. J., 4,765,135, Cl. 60-226.200.
Societe Nationale Elf Aquitaine: *See—*
Labat, Yves, 4,766,195, Cl. 528-76.000.
Soethout, Freddie; and Radtke, Wolfgang, to Siemens Aktiengesellschaft. Assembly for ventilation system of motor vehicle. 4,765,230, Cl. 98-2.110.
Solid State Farms, Inc.: *See—*
Fuller, Milton E.; and Fletcher, Gary S., Jr., 4,765,179, Cl. 73-53.000
Solmat Systems Ltd.: *See—*
Marikovsky, Moshe; and Doron, Benjamin, 4,765,914, Cl. 210-716.000
Soloway, Sidney. Filling and weighing system. 4,765,377, Cl. 141-1.000.
Solutech, Inc.: *See—*
Jones, Jeffrey S., 4,765,339, Cl. 128-632.000.
Solvay & Cie, S.A.: *See—*
Tygat, Daniel; Lefevre, Pierre; and Balthasart, Dominique, 4,765,958, Cl. 422-12.000
Sombrowski, Heinz, to Krupp MaK Maschinenbau GmbH. Arrangement for receiving working devices on vehicles, especially chain-equipped vehicles. 4,765,221, Cl. 89-1.130.
Sommer Company: *See—*
Sommer, Gordon M., 4,765,448, Cl. 192-18.00A.
Sommer, Gordon M., to Sommer Company. Inching drive. 4,765,448, Cl. 192-18.00A.
Sonobe, Takashi; Sugiura, Hiroshi; Itoh, Tomoh; Aruga, Masayoshi; and Kawata, Hiroitsu, to Yamanouchi Pharmaceutical Co., Ltd. Amosulalol hydrochloride long acting formulations. 4,765,988, Cl. 424-468.000
Sonoda, Satoshi, to Kioritz Corporation. Emergency release device for backpack-type working machine. 4,765,040, Cl. 24-656.000.
Sony Corporation: *See—*
Fukumoto, Atsushi; Ohsato, Kiyoshi; and Oka, Michio, 4,766,585, Cl. 369-46.000
Hedley, David J.; and David, Morgan W. A., 4,766,496, Cl. 358-160.000
Kobayashi, Yuji; and Takamori, Tsutomu, 4,766,495, Cl. 358-148.000
Nakano, Kenji; and Moriwaki, Hisayoshi, 4,766,505, Cl. 360-19.100.
Oinoue, Hiroshi; and Goda, Yoshimasa, 4,766,583, Cl. 369-45.000.
Saitoh, Mitsumasa; Sumi, Naoyuki; and Tagawa, Susumu, 4,766,491, Cl. 358-108.000
Takayama, Jun; and Ninomiya, Takeshi, 4,766,417, Cl. 340-347.0CC.
Tanaka, Yutaka; and Matsunaga, Osamu, 4,766,487, Cl. 358-40.000.
Wilkinson, James H.; and Lagadec, Roger, 4,766,602, Cl. 375-116.000
Sony Magnescale Corporation: *See—*
Nagaoka, Kazuo, 4,766,375, Cl. 324-208.000.
Sorenson, Barry R.; and Minert, Roy T., to Morton Thiokol, Inc. Parachute collapsing system and method for flares. 4,765,247, Cl. 102-339.000
Southern Pacific Land Co.: *See—*
Featherstone, John L., 4,765,913, Cl. 210-714.000
Southwestern Public Service Company: *See—*
Wilks, David M.; and Mickna, Steven L., 4,765,781, Cl. 406-197.000
Spacer, John P. Solar-powered Rankine cycle pumping engine. 4,765,144, Cl. 60-692.000
Spalding & Evenflo Companies, Inc.: *See—*
Janes, Richard, 4,765,620, Cl. 273-73.00G.
Spater, Stuart S.: *See—*
Kolton, Chester; and Spater, Stuart S., 4,765,467, Cl. 206-296.000.
Spath, Dieter, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Device for advancing rod-shaped workpiece material in a cutting machine. 4,765,215, Cl. 83-153.000.
Speck, Richard: *See—*
Beggs, George; and Speck, Richard, 4,766,421, Cl. 340-904.000.
Spector, Yechiel; Cohen, Ilan; and Lorber, Azriel, to Spectronix Ltd. Apparatus for the detection and destruction of incoming objects. 4,765,244, Cl. 102-213.000.
Spector, Yehiel; and Cohen, Ilan, to Spectronix, Ltd. Fire and explosion detection apparatus. 4,765,413, Cl. 169-61.000.
Spectra-Physics, Inc.: *See—*
Tierney, Danial J.; and Howard, P. Guy, 4,766,299, Cl. 235-472.000
Spectral Sciences, Inc.: *See—*
Adler-Golden, Steven; Bernstein, Lawrence S.; and Bien, Fritz, 4,766,318, Cl. 250-385.200

Spectronix Ltd.: *See—*
Spector, Yechiel; Cohen, Ilan; and Lorber, Azriel, 4,765,244, Cl 102-213.000.
Spector, Yehiel; and Cohen, Ilan, 4,765,413, Cl. 169-61.000.
Speer, William W. Steerable wheeled pushcart. 4,765,636, Cl. 280-47.110.
Spence, Hugh F.: *See—*
Davis, Malcolm H.; Janes, Kent A.; Kleffner, Daniel J.; Seltzer, William P.; and Spence, Hugh F., 4,766,295, Cl. 235-383.000.
Sporring, Jorg, to Complications S.A. Timepiece having a control stem correcting mechanism with at least two setting positions. 4,766,579, Cl. 368-190.000.
Sportschuhfabriken Adi Dassler Stiftung & Co. KG: *See—*
Jungkind, Roland, 4,765,640, Cl. 280-615.000.
Sprague, Derek A. Golf training apparatus. 4,765,624, Cl. 273-183.00E.
Springer, Johann, to Alcatel N.V. Electrode array for a print head. 4,766,445, Cl. 346-108.000.
Spruit, Johannes H., to U.S. Philips Corporation. Image projection system. 4,766,498, Cl. 358-237.000.
Square D Company: *See—*
Clark, Michael R.; Erb, Fred; and Orosz, Miklos J., 4,766,276, Cl. 200-256.000
Tringali, Dominick, 4,766,270, Cl. 200-50.00A.
Squires, Rodney C.: *See—*
Downing, Anthony L.; and Squires, Rodney C., 4,765,906, Cl 210-636.000.
SRI International: *See—*
Holland, Christopher E.; Westerberg, Eugene R.; Madou, Marc J.; and Otagawa, Takaaki, 4,765,864, Cl. 156-644.000.
Stacey, Eric J.: *See—*
Smith, Geoffrey M.; and Stacey, Eric J., 4,766,359, Cl. 318-652.000.
Stael, Odilus A.: *See—*
De Busscher, Cyriel R. J.; Naaktgeboren, Adrianus; and Stael, Odilus A., 4,765,238, Cl. 100-89.000.
Standard Elektrik Lorenz A.G.: *See—*
Wahl, Rudolf; and Walz, Erwin, 4,765,805, Cl. 55-18.000.
Standard Oil Company, The: *See—*
Desmond, Michael J.; and Henry, Joann, 4,766,265, Cl. 585-415.000.
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,766,232, Cl. 558-324.000.
Stange, Ronald R.; and Demartelaere, Gary E., to Tools For Bending, Inc. Method and apparatus for bending tubing. 4,765,168, Cl. 72-159.000
Stant Inc.: *See—*
Harris, Robert S., 4,765,505, Cl. 220-288.000.
Stapleton, Alan L., to Quantel Limited. Graphic simulation system. 4,766,429, Cl. 340-724.000.
Stasko, William: *See—*
Hauser, John J.; Stasko, William; and Pinnow, Kenneth E., 4,765,836, Cl. 75-241.000.
State of Oregon acting by and through the Oregon State Board of Higher Education on behalf of Oregon State University, The: *See—*
Sandine, William E.; and Ayres, James W., 4,766,076, Cl. 435-253.000.
State of Oregon, acting by and through the State Board of Higher Education on behalf of Oregon State University, The: *See—*
Berlage, Arnold G.; Krishnan, Palaniappa; Bilsland, Douglas M.; and Brandenburg, N. Robert, 4,765,486, Cl. 209-8.000.
Statomat-Globe, Inc.: *See—*
Page, Teddy L.; and Banner, Alvin C., 4,765,551, Cl. 242-7.05B
Statz, Robert J., to Du Pont de Nemours, E. I., and Company. Process for preparing melt-processible aluminum ionomer blends. 4,766,174, Cl. 525-64.000.
Stauffer Chemical Co.: *See—*
Baker, Don R.; and Brownell, Keith H., 4,766,134, Cl. 514-346.000.
Baker, Don R.; and Brownell, Keith H., 4,766,135, Cl. 514-346.000.
Mirviss, Stanley B., 4,766,250, Cl. 568-433.000.
Stautzenberger, A. Lee; and Langford, Ellen A., to Hoechst Celanese Corporation. Purification of diphenyl phthalates. 4,766,236, Cl 560-78.000
STC PLC: *See—*
Fisher, David A., 4,766,589, Cl. 370-32.000.
Ste Look: *See—*
Peyre, Henri, 4,765,641, Cl. 280-628.000.
Stearns, Brian D.: *See—*
Anderson, Clifford M.; Stearns, Brian D.; and Witt, Hillard T., 4,764,997, Cl. 4-420.300.
Stedman, Donald H.: *See—*
Schiff, Harold I.; and Stedman, Donald H., 4,765,961, Cl 422-52.000.
Stegeman, George I.: *See—*
Seymour, Robert J.; and Stegeman, George I., 4,765,705, Cl. 350-96.150.
Stegmaier, Alwin, to Robert Bosch GmbH. Valve assembly. 4,765,693, Cl. 303-119.000
Stein, Ulrich: *See—*
Rudiger, Eckhart; and Stein, Ulrich, 4,765,689, Cl. 303-115.000.
Rudiger, Eckhart; and Stein, Ulrich, 4,765,690, Cl. 303-115.000.
Steiner, Johann: *See—*
Fendley, James R.; Steiner, Johann; and Strauss, Paul, 4,766,342, Cl. 313-402.000
Stella S.p.A.: *See—*
Chiarva, Giorgio, 4,765,255, Cl. 110-226.000
Step-On Inc.: *See—*
Ritten, Robert G., 4,765,438, Cl. 182-84.000.
Stepanova, Natalya V.: *See—*
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.
Stephens, Cecil L.; and Stephens, Frank G. True line boat loader 4,765,794, Cl. 414-534.000
Stephens, Frank G.: *See—*
Stephens, Cecil L.; and Stephens, Frank G., 4,765,794, Cl 414-534.000
Stewart, Gerald W. Jaw-type crushing apparatus. 4,765,546, Cl 241-36.000
Stewart, John M., to Sanitation Equipment Limited. Portable toilet 4,764,994, Cl. 4-321.000
Stewart, Karen D. Waterproof garment for patient with thoracic incision. 4,764,986, Cl. 2-115.000
Stewart, Roger G.: *See—*
Gillette, Glynn G.; Stewart, Roger G.; and Fischer, John T., 4,766,430, Cl. 340-793.000
Stewart, Vernon E.: *See—*
Turner, Richard W.; and Stewart, Vernon E., 4,765,338, Cl. 128-402.000
Stiftung Deutsches Krebsforschungszentrum: *See—*
Osswald, Hans; and Youssef, Mahmoud, 4,766,149, Cl. 514-553.000
Stockinger, Josef: *See—*
Schallenberger, Burghardt; Stockinger, Josef; and Fuchs, Paul, 4,766,476, Cl. 357-42.000
Stone Container Corporation: *See—*
Zion, Kenneth J.; and Johnson, Richard H., 4,765,534, Cl. 229-109.000
Stone & Webster Engineering Corporation: *See—*
DeLuca, Robert A.; and Garabedian, George, 4,765,948, Cl 376-404.000
Johnson, Axel R.; Narayanan, S.; and Woebcke, Herman H., 4,765,883, Cl. 208-78.000
Stork Friesland B.V.: *See—*
Buys, Henricus C. W. M.; Naaktgeboren, Aart J.; and Gons, Johan, 4,765,898, Cl. 210-500.410.
Stork PMT B.V.: *See—*
van de Nieuwelaar, Josephus A.; and Janssen, Petrus C. H., 4,765,028, Cl. 17-11.000
Storti, Giuseppe: *See—*
Carra, Sergio; Paludetto, Renato; Storti, Giuseppe; Morbidelli, Massimo; Gurtner, Bernard; and Commandeur, Raymond, 4,766,262, Cl. 570-211.000
Stoutenburg, Edmond J.: *See—*
Otaki, Shiro; and Stoutenburg, Edmond J., 4,765,917, Cl. 252-40.700
Stranahan, Michael: *See—*
Lew, Hyok S.; and Stranahan, Michael, 4,766,321, Cl. 250-431.000
Strang, Robert H.: *See—*
Sasse, Klaus; Fischer, Reiner; Hagemann, Hermann; Santel, Hans-Joachim; Schmidt, Robert R.; and Strang, Robert H., 4,765,824, Cl. 71-92.000
Strauss, Paul: *See—*
Adler, Robert; and Strauss, Paul, 4,766,424, Cl. 340-712.000
Fendley, James R.; Steiner, Johann; and Strauss, Paul, 4,766,342, Cl. 313-402.000
Stravrinidis, Constantine, to Agence Spatiale Europeenne. Energy storage wheel. 4,765,198, Cl. 74-572.000
Strecker, Jurgen, to Werner & Pfleiderer. Apparatus for dosing and mixing solids and liquids to form a low viscosity suspension 4,765,745, Cl. 366-76.000
Stride, Glenn: *See—*
Denham, Keith; Stride, Glenn; and Brewer, Jonathan L., 4,765,175, Cl. 72-391.000
Strieter, Jerome F. Portable isolation enclosure for use in cleaning contaminated environments. 4,765,352, Cl. 134-99.000.
Stroder, Ulrich: *See—*
Modes, Christina; Meyer, Heinrich; Burgsdorff, Jochen-Werner K.; Stroder, Ulrich; and Kramer, Andrea, 4,765,874, Cl. 204-105.00R.
Strubbe, Gilbert J. I., to Ford New Holland, Inc. Flow metering device. 4,765,190, Cl. 73-861.720.
Strudwick, Kenneth R., to Bridges Corporation Pty Ltd. Modified polyester thermosetting resin compositions. 4,766,163, Cl 523-509.000
Struzina, Richard J. Storable trailer. 4,765,642, Cl. 280-656.000.
Stuart, Robert L. Crab trap. 4,765,088, Cl. 43-102.000
Suay Puig, Enrique. Dough kneader. 4,765,746, Cl. 366-77.000.
Suda, Shigeyuki, to Canon Kabushiki Kaisha. Imaging single lens 4,765,725, Cl. 350-432.000
Suda, Sohji: *See—*
Ariizumi, Ryozo; Kainuma, Masakuni; Suda, Sohji; Aoki, Toshikazu; Kojima, Masao; and Ejiri, Takashi, 4,765,370, Cl. 137-625.650.
Sudoh, Kunio; and Nogami, Kohei, to Nippon Seiko Kabushiki Kaisha; and Kokushin Sanhyo Kabushiki Kaisha. Child seat arrangement 4,765,685, Cl. 297-488.000
Suga, Nagaichi; Katayanagi, Shinichi; Sasho, Yoshio; and Mori, Taro, to Suga Test Instruments Co., Ltd. Falling particle televising apparatus. 4,766,488, Cl. 358-93.000.
Suga Test Instruments Co., Ltd.: *See—*
Suga, Nagaichi; Katayanagi, Shinichi; Sasho, Yoshio; and Mori, Taro, 4,766,488, Cl. 358-93.000

VOL 1093 ISS 4 AG 23 1988 UMI

Suga, Yuko: *See—*
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000.

Sugano, Kazuhiko, to Nissan Motor Co., Ltd. Engine brake control for automatic transmission. 4,765,203, Cl. 74-869.000.

Sugawara, Tadami: *See—*
Okita, Masao; Sugawara, Tadami; and Yoshida, Hiroshi, 4,766,510, Cl. 360-106.000.

Sugihara, Koichi: *See—*
Kawakami, Hiroshi; Shiratori, Harunori; Sugihara, Koichi; Watanabe, Atsushi; and Kishida, Fumio, 4,765,428, Cl. 180-143.000.

Sugimoto, Isao; Togo, Kazunori; Sasaki, Kozo; Yamagata, Atsushi; and Kuchiki, Akira, to Kanebo, Ltd. Sustained-release nifedipine preparation. 4,765,990, Cl. 424-494.000.

Sugimoto, Michio: *See—*
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, 4,766,263, Cl. 585-408.000.

Sugimoto, Yoshihiko: *See—*
Arai, Tohru; Fujita, Hironori; Endo, Junji; Sugimoto, Yoshihiko; and Ohta, Yukio, 4,765,847, Cl. 148-15.500.

Sugioka, Takami; Miyake, Yuzuru; and Ueno, Toshiyuki, to Teijin Seiki Company Limited. Drive method of winder. 4,765,552, Cl. 242-18.00R

Sugisaka, Hiroshi: *See—*
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.

Sugiura, Hiroshi: *See—*
Sonobe, Takashi; Sugiura, Hiroshi; Itoh, Tomoh; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,765,988, Cl. 424-468.000.

Sugiura, Satoshi: *See—*
Noyori, Ryoji; Fukushima, Masanori; Kurozumi, Seizi; and Sugiura, Satoshi, 4,766,147, Cl. 514-530.000.

Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard. Antihypertensive lactams. 4,766,210, Cl. 540-488.000.

Suillerot, Didier; and Violo, Robert. Equipment for distributing and connecting optical fibers. 4,765,709, Cl. 350-96.200.

Sulway, David V.: *See—*
Seiler, Dieter G.; and Sulway, David V., 4,766,311, Cl. 250-252.100.

Sulzbacher, Horst: *See—*
Gulas, Hans-Jurgen; Horak, Josef; Sulzbacher, Horst; and Papst, Gero, 4,766,098, Cl. 501-101.000.

Sulzer Brothers Limited: *See—*
Ziegler, Georg, 4,765,394, Cl. 165-95.000.

Sulzer Morat GmbH: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B

Sumi, Naoyuki: *See—*
Saitoh, Mitsumasa; Sumi, Naoyuki; and Tagawa, Susumu, 4,766,491, Cl. 358-108.000.

Sumitomo Chemical Company, Limited: *See—*
Yamada, Hideaki; Hosoda, Satoru; and Ogawa, Tadatoshi, 4,766,157, Cl. 521-60.000.

Sumitomo Electric Industries, Ltd.: *See—*
Danzuka, Toshio; Yokota, Hiroshi; and Ishiguro, Yoichi, 4,765,815, Cl. 65-3.120.
Fukuda, Michio; Fudo, Eiji; Tani, Koichi; and Kobayashi, Haruhito, 4,765,052, Cl. 29-450.000

Sumitomo Wiring Systems: *See—*
Fukuda, Michio; Fudo, Eiji; Tani, Koichi; and Kobayashi, Haruhito, 4,765,052, Cl. 29-450.000

Summerlin, Frederick A.: *See—*
Jeal, Harvey P.; and Summerlin, Frederick A., 4,765,010, Cl. 10-27.00R

Summers, Robert: *See—*
Rosenthal, Jeffery; Parker, Victor; Hoback, James; and Summers, Robert, 4,765,077, Cl. 40-308.000.

Sumoto, Kunihiro: *See—*
Tatsuoka, Toshio; Suzuki, Kenji; Imao, Kayoko; and Sumoto, Kunihiro, 4,766,116, Cl. 514-218.000

Sun, Jui-Yuan; and Erekson, Erek J., to Atlantic Richfield Company. Process for producing alcohols. 4,766,155, Cl. 518-713.000.

Sundermeyer, Frank D.: *See—*
Newton, Robert F.; and Sundermeyer, Frank D., 4,765,421, Cl. 177-199.000

Sundstrand Corporation: *See—*
Russ, David E., 4,765,196, Cl. 74-436.000.

Sunlass U.S.A., Inc.: *See—*
Burgess, David E., 4,766,353, Cl. 315-324.000.

Suntory Limited: *See—*
Tatsuoka, Toshio; Suzuki, Kenji; Imao, Kayoko; and Sumoto, Kunihiro, 4,766,116, Cl. 514-218.000

Superior Die Set Corporation: *See—*
Wieder, Klaus A., 4,765,585, Cl. 249-64.000.

Suresh, Dev D.: *See—*
Grasselli, Robert K.; Suresh, Dev D.; and Miller, Arthur F., 4,766,232, Cl. 558-324.000

Susi, Anthony R.: *See—*
Phillips, Raymond J.; and Susi, Anthony R., 4,766,441, Cl. 343-709.000

Suska, Charles R. Coordinated door stop and latch. 4,765,662, Cl. 292-92.000

Sutherland, Clarke R.: *See—*
Pendleton, Richard A.; Jernstedt, Richard C.; and Sutherland, Clarke R., 4,765,177, Cl. 72-412.000.

Suzuki, Akira: *See—*
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000.
Sasa, Hiroyuki; and Suzuki, Akira, 4,765,312, Cl. 128-4.000.

Suzuki, Hirotsugu: *See—*
Okabe, Kanichi; Suzuki, Hirotsugu; Nishio, Kohsaku; and Koyama, Katsuhiko, 4,766,603, Cl. 378-152.000.

Suzuki, Kazuo: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; and Suzuki, Kazuo, 4,766,053, Cl. 430-256.000.

Suzuki, Kenji: *See—*
Tatsuoka, Toshio; Suzuki, Kenji; Imao, Kayoko; and Sumoto, Kunihiro, 4,766,116, Cl. 514-218.000.

Suzuki, Makoto; and Taki, Kazunari, to Brother Kogyo Kabushiki Kaisha. Optical deflector. 4,765,703, Cl. 350-96.140.

Suzuki, Masayuki: *See—*
Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, 4,766,452, Cl. 354-173.100.

Suzuki, Nobuyuki: *See—*
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000.

Suzuta, Takeo: *See—*
Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, 4,765,295, Cl. 123-399.000.
Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, 4,765,296, Cl. 123-399.000.

Svensson, E. Gunnar, to Autopart Sweden AB. Pivot bearing for sun visor assemblies. 4,765,674, Cl. 296-97.00K.

Svensson, E. Gunnar, to Autopart Sweden AB. Displaceable sun visor for automotive vehicles. 4,765,675, Cl. 296-97.00G.

Svensson, Lennart: *See—*
Bergman, Carl; and Svensson, Lennart, 4,765,166, Cl. 72-63.000.

Svessky Nasosny Zavod: *See—*
Jurkov, Igor I.; Melnichuk, Gennady A.; Stepanova, Natalya V.; Juschenko, Viktor I.; Derkach, Viktor I.; Levchenko, Ivan I.; and Eremenko, Vladimir M., 4,765,840, Cl. 106-285.000.

Svirklys, Ferdinand M.: *See—*
Nazar, Steven E.; Leidner, Jacob; and Svirklys, Ferdinand M., 4,765,934, Cl. 264-26.000.

Swackhamer, Stanley B.: *See—*
Berkes, John S.; and Swackhamer, Stanley B., 4,766,288, Cl. 219-216.000.

Swift, Graham: *See—*
Beckley, Ronald S.; Randow, Rodney L.; and Swift, Graham, 4,766,187, Cl. 526-209.000.

Switzer, Jay A., to Union Oil Company of California. Electrical contacts containing thallium (III) oxide prepared at relatively low temperature. 4,766,087, Cl. 437-15.000.

Symtonic SA: *See—*
Charmillot, Rene; and Lebet, Jean-Pierre, 4,765,322, Cl. 128-783.000

Syntex (U.S.A.) Inc.: *See—*
Martinez, Gregory R.; and Bruno, John J., 4,766,127, Cl. 514-277.000.

System-General Corporation: *See—*
Yang, Ta-Yung, 4,766,328, Cl. 307-106.000.

Szantho, Charles F.: *See—*
Riordan, Edward D.; and Szantho, Charles F., 4,766,282, Cl. 219-86.250

Szente, Andre : *See—*
Fischli, Albert; Krasso, Anna; and Szente, Andre , 4,766,133, Cl. 514-338.000

Szlucha, Thomas F.: *See—*
Dyer, Dexter A.; Howe, William C.; and Szlucha, Thomas F., 4,766,462, Cl. 355-10.000

Szoka, Francis C. *See—*
Abra, Robert; and Szoka, Francis C., 4,766,046, Cl. 424-450.000.

Szolnoki, Gergely: *See—*
Merkenschlager, Hans-Hermann; Kraus, Friedrich; and Szolnoki, Gergely, 4,766,325, Cl. 250-572.000.

Szymanski, Patrice, to Laboratoires de Pharmacologie Homeopathique Dolisos - Laboratoires Jean Tetau. Plug and outer cap for closing a container. 4,765,379, Cl. 141-381.000.

T subakimoto Chain Co.: *See—*
Matsuno, Kazumasa; and Kose, Kenji, 4,765,455, Cl. 198-779.000.

Tabata, Koji: *See—*
Ishizuka, Masashi; Ando, Rokuro; Hatano, Mikio; and Tabata, Koji, 4,765,249, Cl. 105-10.000.

Tagawa, Susumu: *See—*
Saitoh, Mitsumasa; Sumi, Naoyuki; and Tagawa, Susumu, 4,766,491, Cl. 358-108.000.

Tahara, Toshiyuki: *See—*
Taya, Takashi; and Tahara, Toshiyuki, 4,766,396, Cl. 330-288.000.

Tait, David S.: *See—*
Banach, Frank G.; Haerle, James G.; and Tait, David S., 4,766,497, Cl. 358-188.000

Tajiri, Hiromi: *See—*
Uomoti, Akiyoshi; Tajiri, Hiromi; Nakatani, Nobuyoshi; and Daizumoto, Masafumi, 4,765,532, Cl. 228-212.000

Taki, Shin-ichi: *See—*
Ohshima, Jiro; Taka, Shin-ichi; Ito, Toshiyo; and Aoyama, Masaharu, 4,766,086, Cl. 437-011.000.

Takada, Jun; Yamaguchi, Minori; and Tawada, Yoshihisa, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Heat-resistant thin film photoelectric converter. 4,765,845, Cl. 136-258.000.

Takahashi, Kazuo, to Canon Kabushiki Kaisha. Carry device for fine movement. 4,766,465, Cl. 355-53.000.

Takahashi, Kouji: *See—*
Kashida, Motokazu; Takei, Masahiro; Takahashi, Kouji; and Nagasawa, Kenichi, 4,766,507, Cl. 360-72.200.

Takahashi, Masahiro: *See—*
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, 4,766,590, Cl. 370-56.000.

Takahashi, Osamu; Koyama, Koichi; and Koya, Keizo, to Fuji Photo Film Co., Ltd. Light-sensitive material with compounds reactive with dye developers. 4,766,056, Cl. 430-351.000.

Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Ksiahs. Pressure modulator valve device. 4,765,371, Cl. 137-637.000.

Takahashi, Shigeo: *See—*
Ishiguro, Toshiaki; and Takahashi, Shigeo, 4,765,201, Cl. 74-866.000.

Takahashi, Shiro. Pneumatic structure. 4,765,079, Cl. 40-439.000.

Takahashi, Tadashi; Miyashita, Kunio; and Kawamata, Syouichi, to Hitachi, Ltd. Magnetic position detector for detecting an absolute position of a movable member. 4,766,376, Cl. 324-208.000

Takakura, Shin-ichi; Nojiri, Shigehiro; and Sakai, Norio, to Murata Manufacturing Co., Ltd. Electronic composite component having resistor element. 4,766,412, Cl. 338-334.000.

Takami, Akira, to Mitsubishi Denki Kabushiki Kaisha. Stepless transmission mechanism. 4,765,195, Cl. 74-113.000.

Takami, Mitsutaka, to Daiichi Seiyaku Co., Ltd. Process for treatment of nephritis with imidazoquinazolines. 4,766,126, Cl. 514-267.000.

Takamori, Tsutomu: *See—*
Kobayashi, Yuji; and Takamori, Tsutomu, 4,766,495, Cl. 358-148.000.

Takamura, Sachiko, to Minolta Camera Kabushiki Kaisha. Objective lens system for optical reading device. 4,765,723, Cl. 350-432.000.

Takano, Takeshi: *See—*
Shinozaki, Kazuo; Anzai, Kazuo; Takano, Takeshi; and Tsuge, Akihiko, 4,766,097, Cl. 501-98.000.

Takasago International Corporation: *See—*
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,225, Cl. 556-16.000.
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,227, Cl. 556-21.000.

Takashima, Yuji: *See—*
Yamamoto, Hajime; and Takashima, Yuji, 4,766,460, Cl. 355-4.000.

Takatsu, Kozo: *See—*
Morimoto, Nobuyuki; Takatsu, Kozo; and Sugimoto, Michio, 4,766,263, Cl. 585-408.000.

Takayama, Jun; and Ninomiya, Takeshi, to Sony Corporation. Automatic offset compensating bipolar A/D converter circuit. 4,766,417, Cl. 340-347.0CC.

Takayama, Makoto, to Canon Kabushiki Kaisha. Color-difference line-sequence signal processing apparatus. 4,766,485, Cl. 358-34.000.

Takayanagi, Hitoshi; and Sawai, Yoshihiro, to Yamanouchi Pharmaceutical Co., Ltd. Adhesive medical tapes for oral mucosa. 4,765,983, Cl. 424-434.000.

Takeda Chemical Industries, Ltd.: *See—*
Kunugiza, Kiyomitsu; and Kamiya, Kozo, 4,766,208, Cl. 536-18.500.
Misaki, Masaru; Murata, Hisashi; Yamamoto, Hideo; and Watanabe, Yasuhiko, 4,765,996, Cl. 426-72.000.

Takeda, Hiroaki: *See—*
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000.

Takei, Masahiro: *See—*
Kashida, Motokazu; Takei, Masahiro; Takahashi, Kouji; and Nagasawa, Kenichi, 4,766,507, Cl. 360-72.200.

Takei, Toshihiro: *See—*
Imoto, Yuzo; Hattori, Yoshiyuki; Takei, Toshihiro; and Inagaki, Mitsuo, 4,765,140, Cl. 60-545.000.

Takekoshi, Tohru; and Anderson, Patricia P., to General Electric Company. Secondary amine-terminated oligomers and copolyurethanecarbonates prepared therefrom. 4,766,199, Cl. 528-128.000.

Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor memory device with error correcting circuit. 4,766,573, Cl. 365-222.000.

Takenaga, Hiroshi: *See—*
Kobayashi, Yoshiki; Takenaga, Hiroshi; and Katoh, Takeshi, 4,766,431, Cl. 340-799.000.

Taketomi, Takanao: *See—*
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,225, Cl. 556-16.000.
Sayo, Noboru; Taketomi, Takanao; Kumobayashi, Hidenori; and Akutagawa, Susumu, 4,766,227, Cl. 556-21.000.

Takeuchi, Harumi: *See—*
Yamamoto, Kenji; Morishige, Masakatsu; Takeuchi, Harumi; and Tsunomoto, Yoshitaka, 4,765,160, Cl. 68-12.00R

Takeuchi, Yukihisa; and Masumori, Hideo, to NGK Insulators, Ltd. Process for manufacturing dielectric layers formed from ceramic compositions containing inorganic peroxide and electronic devices including said layers. 4,766,010, Cl. 427-96.000.

Taki, Kazunari: *See—*
Suzuki, Makoto; and Taki, Kazunari, 4,765,703, Cl. 350-96.140

Takimoto, Hiroshi: *See—*
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000

Takimoto, Yasuyuki: *See—*
Kawabata, Masami; Kimoto, Koichi; and Takimoto, Yasuyuki, 4,766,055, Cl. 430-281.000.

Tallman, James L.; Sherbeck, Terry G.; and Kramlich, Beverlea J., to Tektronix, Inc. Waveform selection by touch. 4,766,425, Cl. 340-712.000

Tamura, Katsuhiko: *See—*
Mukogawa, Yasukazu; Tamura, Katsuhiko; and Fukumoto, Takaaki, 4,765,963, Cl. 422-68.000.

Tanaka, Akira: *See—*
Kobayashi, Masaaki; Hanba, Norio; Tanaka, Akira; and Abe, Tsunehiko, 4,765,634, Cl. 277-235.00B.

Tanaka, Kunihiko, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating device of internal combustion engine. 4,765,290, Cl. 123-90.420

Tanaka, Takahiko: *See—*
Handa, Noboru; and Tanaka, Takahiko, 4,766,356, Cl. 318-55.000

Tanaka, Tsutomu: *See—*
Fujimura, Ikuo; Nakada, Kimiaki; and Tanaka, Tsutomu, 4,766,451, Cl. 354-64.000

Tanaka, Yasuo: *See—*
Ogawa, Yasunori; Tsutsumi, Kenji; Tanaka, Yasuo; and Shimozono, Ryoji, 4,766,594, Cl. 371-22.000

Tanaka, Yasuzou: *See—*
Ozaki, Masanori; Ohishi, Isamu; Sato, Norimasa; and Tanaka, Yasuzou, 4,765,055, Cl. 29-599.000

Tanaka, Yoji: *See—*
Haraguchi, Eiji; Nakagawa, Hiroto; Bando, Akira; Tanaka, Yoji; Ono, Kenichi; Kashiwazaki, Hiroshi; and Sugisaka, Hiroshi, 4,766,360, Cl. 318-732.000.

Tanaka, Yutaka; and Matsunaga, Osamu, to Sony Corporation. Chrominance signal processing circuit. 4,766,487, Cl. 358-40.000.

Tandy, Karen G.: *See—*
Chen, Teh-Kuei; Muffett, Dorothy J.; and Tandy, Karen G., 4,766,209, Cl. 536-55.300

Tang, Raymond, to Hughes Aircraft Company. Three dimensional feed through lens with hemispherical coverage. 4,766,438, Cl. 342-372.000.

Tani, Hidekazu: *See—*
Shiga, Takashi; Tani, Hidekazu; Hama, Hiroaki; and Iijima, Hitoshi, 4,765,149, Cl. 62-174.000

Tani, Koichi: *See—*
Fukuda, Michio; Fudo, Eiji; Tani, Koichi; and Kobayashi, Haruhito, 4,765,052, Cl. 29-450.000.

Tanida, Kijuro: *See—*
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000.

Taniguchi, Takashi, to Toray Industries, Inc. Anti-reflection optical article. 4,765,729, Cl. 351-163.000.

Tanner, John G. Sanding and dust collecting apparatus. 4,765,099, Cl. 51-170.00T.

Tapco Products Company, Inc.: *See—*
MacLeod, Richard J., 4,765,110, Cl. 52-473.000

Tarnowski, Stanley J., Jr.: *See—*
D'Andrea, Mark J.; Tarnowski, Stanley J., Jr.; and Clark, Arthur D., Jr., 4,765,903, Cl. 210-635.000.

Tashman, Philip. Food service conveyor. 4,765,440, Cl. 186-44.000.

Tassen, Stephen C.: *See—*
Smith, Gaylord D.; Wheeler, Jack M.; and Tassen, Stephen C., 4,765,956, Cl. 420-445.000

Tatsuoka, Toshio; Suzuki, Kenji; Imao, Kayoko; and Sumoto, Kunihiro, to Suntory Limited. Diaryl butyric acid derivative and pharmaceutical use thereof. 4,766,116, Cl. 514-218.000.

Taupin, Christiane C.: *See—*
Bonte, Frederic; Dehan, Michel; Le Ridant, Alain; Puisieux, Francis; and Taupin, Christiane C., 4,765,987, Cl. 424-450.000.

Tawada, Yoshihisa: *See—*
Takada, Jun; Yamaguchi, Minori; and Tawada, Yoshihisa, 4,765,845, Cl. 136-258.000.

Taya, Takashi; and Tahara, Toshiyuki, to Oki Electric Industry Co., Ltd. Current source type current output circuit using current mirrors 4,766,396, Cl. 330-288.000

Taylor, Bill A.; and McMahan, Talton O., Jr. Slide valve apparatus for internal combustion engine. 4,765,287, Cl. 123-81.00D

Taylor, Bruce F., to Thermo Electron - Web Systems, Inc. Steam-shower apparatus and method of using same. 4,765,067, Cl. 34-23.000

Taylor, Harold M.: *See—*
Hirsch, Kenneth S.; Jones, Charles D.; and Taylor, Harold M., 4,766,140, Cl. 514-397.000.

TDK Corporation: *See—*
Mohri, Kaneo, 4,765,321, Cl. 128-715.000.

TEAC Corporation: *See—*
Mashimo, Akira, 4,766,502, Cl. 358-322.000

Teague, Richard M.: *See—*
Annas, Dulin L., Sr.; and Teague, Richard M., 4,765,122, Cl. 53-442.000

Tech Serv, Inc.: *See—*
Gutman, Meyer M.; and Lash, Christopher N., 4,765,567, Cl. 244-17.110.

VOL 1093 ISS 4 AG 23 1988 UMI

Technion Research & Development Foundation Ltd.: *See—*
Fisher, Baruch, 4,765,740, Cl. 356-350.000.
Technisch Bureau Boertien: *See—*
Boertien, Johannes, 4,765,278, Cl. 119-82.000.
Technology for Energy Corporation: *See—*
DeLorenzo, Joseph T.; Levert, Francis E.; Robinson, James C.; and Hendricks, Robert W., 4,765,943, Cl. 376-154.000.
Tedor, John B.: *See—*
Holden, Ronald D.; Tedor, John B.; Bergquist, Andrew O.; Moran, David S.; and Eiserer, Mike, 4,765,193, Cl. 73-865.900.
Tehrani, Abolghassem Y.; Jones, John N.; and Allington, Robert W., to Isco, Inc. Apparatus for reducing tailing in a liquid chromatograph. 4,765,890, Cl. 210-198.200.
Tejin Limited: *See—*
Noyori, Ryoji; Fukushima, Masanori; Kurozumi, Seizi; and Sugiura, Satoshi, 4,766,147, Cl. 514-530.000.
Teijin Seiki Company Limited: *See—*
Sugioka, Takami; Miyake, Yuzuru; and Ueno, Toshiyuki, 4,765,552, Cl. 242-18.00R.
Tektronix, Inc.: *See—*
Buzak, Thomas S.; and Vatne, Rolf S., 4,765,717, Cl. 350-331.00R.
Dobos, Laszlo J.; and Agoston, Agoston, 4,766,559, Cl. 364-573.000.
Hammond, John A., 4,766,601, Cl. 375-59.000.
Tallman, James L.; Sherbeck, Terry G.; and Kramlich, Beverlea J., 4,766,425, Cl. 340-712.000.
Teledyne Hyson: *See—*
Balazs, Les G.; and Cydzik, Anthony J., Jr., 4,765,227, Cl. 91-417.00R.
Teleflex Incorporated: *See—*
Andersen, Carl O.; Irvin, John E.; and Rhodenbaugh, Gary W., 4,765,199, Cl. 74-501.00D.
Telefonaktiebolaget L M Ericsson: *See—*
Pers, Karl O., 4,765,704, Cl. 350-96.150.
Telegenix, Inc.: *See—*
Harvey, Edgar L.; and Lippencott, Joseph, 4,766,345, Cl. 313-518.000.
Tencor Instruments: *See—*
Saadat, Soheil; Pecen, Jiri; Neukermans, Armand P.; and Kren, George J., 4,766,324, Cl. 250-563.000.
Tennant Company: *See—*
Field, Bruce F., 4,766,432, Cl. 340-825.170.
Tennant, Jerald L. Ultraviolet-cured horse shoe and method of shoeing hoofed animals. 4,765,411, Cl. 168-4.000.
Tenner, Wanda C. Lap desk. 4,765,583, Cl. 248-444.000.
Tentij, Martin, to Ultra-Centrifuge Nederland N.V. Sublimation apparatus. 4,765,966, Cl. 422-244.000.
Terasawa, Kunihiko: *See—*
Murata, Hiroshi; and Terasawa, Kunihiko, 4,765,446, Cl. 188-319.000
Terashima, Shigeo: *See—*
Sekimoto, Yoshihiro; Terashima, Shigeo; and Kojima, Kunio, 4,766,584, Cl. 369-4.000
Terumo Kabushiki Kaisha: *See—*
Fukasawa, Hiromichi, 4,765,959, Cl. 422-48.000.
Texaco Inc.: *See—*
Larkin, John M.; and Renken, Terry L., 4,766,245, Cl. 564-474.000
Love, Doris; Schlicht, Raymond C.; and Biasotti, Joseph B., 4,765,918, Cl. 252-46.400.
Sellstrom, Kathy B.; and Waddill, Harold G., 4,766,186, Cl. 525-532.000
Texas Instruments Incorporated: *See—*
Sallas, John J.; and Wood, George W., 4,766,576, Cl. 367-189.000.
Thakur, Mrinal. Intrinsically conductive doped polymers of enhanced stability. 4,765,928, Cl. 252-500.000.
Thatcher, Stephen J.; and Allen, Dixon L. Paint roller cleaner structure. 4,765,354, Cl. 134-182.000.
Theeuwes, Felix: *See—*
Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, 4,765,989, Cl. 424-473.000.
Theis, Ulrich: *See—*
Kruse, Heinz-Josef; Theis, Ulrich; Pahnke, Klaus D.; Wallow, Peter; and Becker, Wilfried, 4,765,248, Cl. 102-529.000
Thermo Electron - Web Systems, Inc.: *See—*
Taylor, Bruce F., 4,765,067, Cl. 34-23.000.
Thevenin, Nicole: *See—*
Born, Maurice; Lallement, Jacques; Marchand, Pierre; Parc, Guy; and Thevenin, Nicole, 4,766,228, Cl. 556-25.000.
Thomas & Betts Corporation: *See—*
Fortsch, William A., 4,765,032, Cl. 24-23.00R.
Pearce, Howard R., 4,765,059, Cl. 29-749.000
Thomas, Michael D. Mountain climbing safety device. 4,765,574, Cl. 248-1.00R
Thompson, Charles D.; and Gergen, Joseph P., to Motorola, Inc. Method and apparatus for implementing multiple filters with shared components. 4,766,561, Cl. 364-724.000.
Throm, James E., Jr.: *See—*
Hellstrom, Ake A.; and Throm, James E., Jr., 4,766,315, Cl. 250-339.000.
Tierney, Danial J.; and Howard, P. Guy, to Spectra-Physics, Inc. Hand-mounted bar code reader. 4,766,299, Cl. 235-472.000
Tin, Lucas, to International Business Machines Corporation. Telephone tie trunk driver circuit. 4,766,605, Cl. 379-225.000.
Ting, Raymond M. L. Vertical joint sealing of horizontal wall panels. 4,765,107, Cl. 52-235.000.
Tinti, Maria O.: *See—*
Cavazza, Claudio; De Witt, Paolo; and Tinti, Maria O., 4,766,222, Cl. 549-39.000.
Tissington, Frederick B.: *See—*
Tissington, Sidney K.; Scheunhage, Henry J.; Johnston, Clare M.; and Tissington, Frederick B., 4,765,105, Cl. 52-309.110.
Tissington, Sidney K.; Scheunhage, Henry J.; Johnston, Clare M.; and Tissington, Frederick B., to Seven S Structures Inc. Wall panel with foam insulation. 4,765,105, Cl. 52-309.110.
Titus, Charles H.; and Wittle, J. Kenneth, to Electric Power Research Institute, Inc. Electric arc furnace and method with coaxial current flow. 4,766,598, Cl. 373-108.000.
Toda, Yasuhiko: *See—*
Hamamoto, Toshikazu; Aoi, Motojirou; Yoshida, Kozaburo; and Toda, Yasuhiko, 4,766,162, Cl. 523-440.000.
Todtemann, Gert: *See—*
Kress, Hans-Jurgen; Muller, Friedemann; Lindner, Christian; Peters, Horst; Buekers, Josef; and Todtemann, Gert, 4,766,165, Cl. 524-140.000
Togo, Kazunori: *See—*
Sugimoto, Isao; Togo, Kazunori; Sasaki, Kozo; Yamagata, Atsushi; and Kuchiki, Akira, 4,765,990, Cl. 424-494.000
Tohno, Masao: *See—*
Uchida, Katsuhiro; Masumoto, Shozo; Tohno, Masao; Mimura, Mitsuo; and Okumura, Makoto, 4,766,148, Cl. 514-533.000.
Toki, Hitoshi: *See—*
Morimoto, Kiyoshi; and Toki, Hitoshi, 4,766,526, Cl. 362-255.000.
Tokico Ltd.: *See—*
Murata, Hiroshi; and Terasawa, Kunihiko, 4,765,446, Cl. 188-319.000
Tokuda, Shoichi; Ito, Yuusuke; Otsuka, Saburo; and Kinoshita, Takashi, to Nitto Electric Industrial Co., Ltd. Preparation for percutaneous administration. 4,765,974, Cl. 424-443.000.
Tokuono, Shinya: *See—*
Hase, Hiroyuki; Yamashita, Ichiro; Tokuono, Shinya; and Wakamiya, Masayuki, 4,765,192, Cl. 73-862.360.
Tokyo Electric Co., Ltd.: *See—*
Futakata, Takashi, 4,765,765, Cl. 400-614.000.
Yagi, Motoi; Miyabayashi, Tadao; Morikawa, Yasuo; and Kobayashi, Yasuhito, 4,766,506, Cl. 360-37.100.
Tokyo Seimitsu Co., Ltd.: *See—*
Numoto, Minoru; and Kanzaki, Tsutomu, 4,765,181, Cl. 73-105.000
Toman, Perry A.: *See—*
Miller, Susan M.; Craun, Gary P.; and Toman, Perry A., 4,766,177, Cl. 525-131.000
Tomikawa, Minato: *See—*
Urata, Toshiaki; and Tomikawa, Minato, 4,765,960, Cl. 422-49.000.
Tominaga, Yasunori, to Live International Co., Ltd. Method of controlling the odor of liquid condiments. 4,765,997, Cl. 426-422.000.
Tomita, Masahiro; Yasuda, Eturo; and Matuoka, Hirosi, to Nippon Soken, Inc. Piezoelectric ceramic materials. 4,765,919, Cl. 252-62.900.
Tomita, Yoshinori: *See—*
Matsuda, Hiroshi; Haruta, Masahiro; Munakata, Hirohide; Tomita, Yoshinori; and Hamamoto, Takashi, 4,766,047, Cl. 430-19.000.
Tommasini, Rocco M.: *See—*
Pannone, John L.; and Tommasini, Rocco M., 4,765,751, Cl. 374-143.000
Tomoda, Masayasu: *See—*
Morita, Shigeru; Kuwahara, Kazuhiko; Tomoda, Masayasu; and Oka, Masahiko, 4,766,190, Cl. 526-247.000.
Tone, Yasuyoshi, to Saami Co., Ltd. Rectangular tile-like carpet with looped tile on both surfaces. 4,766,022, Cl. 428-95.000.
Tonen Sekiyukagaku K.K.: *See—*
Kitagawa, Sotoyuki; Nakayama, Takashi; and Isono, Masatoshi, 4,766,159, Cl. 521-134.000.
Tools For Bending, Inc.: *See—*
Stange, Ronald R.; and Demartelaere, Gary E., 4,765,168, Cl. 72-159.000
Toom, Paul O.: *See—*
Franklin, Douglas E.; Frank, Gordon I.; Palylyk, Richard A.; and Toom, Paul O., 4,766,323, Cl. 250-561.000.
Toot (Engineering) Ltd.: *See—*
Goldman, Ilan, 4,765,254, Cl. 109-85.000.
Toray Industries, Inc.: *See—*
Taniguchi, Takashi, 4,765,729, Cl. 351-163.000.
Toray Silicone Company, Ltd.: *See—*
Honma, Hiroshi; Hamada, Mitsuo; and Kobayashi, Hideki, 4,766,170, Cl. 524-500.000.
Nakasuji, Katsuyoshi; Mikami, Ryuzo; Hiria, Kazuo; and Matsushita, Takao, 4,766,193, Cl. 528-17.000.
Tosaka, Yoichi: *See—*
Ohara, Tsunemasa; Suzuki, Masayuki; Tosaka, Yoichi; Kawamura, Masaharu; Harada, Yoshihito; and Kobayashi, Ryuichi, 4,766,452, Cl. 354-173.100.
Totsune, Atsushi: *See—*
Hibino, Yoshitaka; Fukuzawa, Takeshi; and Totsune, Atsushi, 4,765,305, Cl. 123-589.000.
Totten, Clay W., to Union Oil Company of California. Geothermal brine clarifier process for removing solids from geothermal brine. 4,765,912, Cl. 210-713.000.
Townsend, Carl W.: *See—*
McHardy, John; Ludwig, Frank A.; Higley, Lin R.; Kindler, Andrew; and Townsend, Carl W., 4,766,522, Cl. 361-433.000
Toyama Sanki Company Limited: *See—*
Akutsu, Masami; Myowa, Koh; and Hirasawa, Noboru, 4,765,117, Cl. 53-133.000

Akutsu, Masami; Kamojima, Tsutomu; and Hirasawa, Noboru, 4,765,118, Cl. 53-133.000.
Toyo Inki Seizo Kabushiki Kaisha: *See—*
Oya, Motomichi; and Nonomura, Tsutomu, 4,765,242, Cl. 101-425.000.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Kitamura, Sakae; Kurauchi, Yasuhiro; and Seita, Toru, 4,765,905, Cl. 210-638.000.
Toyoda Gosei Co., Ltd.: *See—*
Hayashi, Chikahisa; Kawai, Makoto; Hirose, Yoshikazu; and Mizutani, Junichi, 4,766,326, Cl. 307-10.00R
Toyono, Tsutomu; and Kaneko, Shuzo, to Canon Kabushiki Kaisha. Method and apparatus for driving ferroelectric liquid crystal, optical modulation device to achieve gradation. 4,765,720, Cl. 350-350.00S.
Toyoshi, Naoki: *See—*
Oka, Tateki; Yokoyama, Tomoaki; and Toyoshi, Naoki, 4,766,458, Cl. 355-3.0DD.
Toyota Jidosha Kabushiki Kaisha: *See—*
Ikemoto, Hiroyuki; Oowa, Nobutaka; Hayashi, Yasutaka; and Doi, Shunichi, 4,765,649, Cl. 280-707.000.
Inoue, Yoshiaki; Shirai, Akira; Nomura, Yoshihisa; Nakamura, Kazumasa; Inagaki, Takafumi; Minegishi, Harumasa; and Ise, Kiyotaka, 4,765,691, Cl. 303-117.000
Kawakami, Hiroshi; Shiratori, Harunori; Sugihara, Koichi; Watanabe, Atsushi; and Kishida, Fumio, 4,765,428, Cl. 180-143.000.
Toyota Jidosha Kabushiki Ksiahs: *See—*
Takahashi, Shigeo, 4,765,371, Cl. 137-637.000.
Tracy, Richard J.: *See—*
Bergl, Rodney A.; and Tracy, Richard J., 4,765,575, Cl. 248-250.000.
Tranberg, Per; Matties, Ralph; and Reese, Dale, to Volcano International Medical AB. Orthopedic knee brace. 4,765,318, Cl. 128-80.00C
Transfer Technologies, Inc.: *See—*
Modery, Richard G.; Bell, John C.; and Cope, Charles R., 4,766,547, Cl. 364-478.000.
Trentacosta, Joseph D.: *See—*
Anthony, John D., Jr.; Leffew, Kenneth W.; and Trentacosta, Joseph D., 4,765,941, Cl. 264-40.100
Treybig, Duane S.; and Chang, Dane, to Dow Chemical Company, The. Bituminous compositions containing anti-stripping additives prepared from amines and substituted heterocyclic compounds. 4,765,839, Cl. 106-273.00N.
Tricum AB: *See—*
Holmgren, Lennart, 4,765,994, Cl. 426-31.000.
Tringali, Dominick, to Square D Company. Limited force interlock mechanism. 4,766,270, Cl. 200-50.00A
Trogan, John F., to C. G. Bretting Manufacturing Company. Resilient creaser. 4,765,604, Cl. 270-39.000.
Tromfos, Katalin: *See—*
Komives, Tamas; Dutka, Ferenc; Barta, Istvan; Jablonkai, Istvan; Hulesch, Agnes; Bihari, Ferenc; Eifert, Gyula; Bohus, Peter; Tromfos, Katalin; Meszaros neee Szekrenyes, Agnes; and Kuronya, Istvan, 4,765,825, Cl. 71-94.000.
Troster, Manfred: *See—*
Hofmann, Heinrich; and Troster, Manfred, 4,765,688, Cl. 301-124.00R.
Troxler Electronic Laboratories, Inc.: *See—*
Regimand, Ali, 4,766,319, Cl. 250-390.000.
Troyen, Harry D. Permanent book mark. 4,765,652, Cl. 281-42.000.
Truc, James A.; and Hoonsbeen, Gary A., to Pakon, Inc. Digitally encoded alpha-numeric projector slide and systems for using the same. 4,765,734, Cl. 353-121.000.
Trull, Jeffrey G.; and Dixon, David, to Yale Security Inc. Front-loaded knob assembly. 4,765,163, Cl. 70-224.000.
Trutek Research, Inc.: *See—*
Urman, Robert; Brisson, Alfred G.; and Nowacki, Christopher, 4,765,342, Cl. 128-725.000.
TRW Automotive Products, Inc.: *See—*
Higbee, Wallace C., 4,765,558, Cl. 242-107.40A.
Tsao, Utah, to Lummus Crest, Inc. Vaporization of liquids. 4,765,398, Cl. 165-110.000.
Tsuchimoto, Shuhei: *See—*
Nishigaki, Satoshi; Kita, Ryusuke; Tsuchimoto, Shuhei; Rai, Akiteru; Iwasaki, Masaru; Matsuda, Yuzi; and Nukii, Takashi, 4,766,085, Cl. 437-3.000.
Tsuchiya, Hiroshi: *See—*
Moribe, Yoshihiro; Fujii, Masataka; Chuma, Akira; and Tsuchiya, Hiroshi, 4,766,509, Cl. 360-106.000
Tsuda, Takashi: *See—*
Mori, Masakazu; Tsuda, Takashi; and Yamane, Kazuo, 4,765,735, Cl. 356-121.000.
Tsuetaki, George F.; and Ono, Hidehiko, to Fused Kontacts of Chicago, Inc. Compositions for making improved gas permeable contact lenses. 4,766,189, Cl. 526-245.000.
Tsuge, Akihiko: *See—*
Shinozaki, Kazuo; Anzai, Kazuo; Takano, Takeshi; and Tsuge, Akihiko, 4,766,097, Cl. 501-98.000
Tsukada, Masaharu, to Canon Kabushiki Kaisha. Image display apparatus. 4,766,447, Cl. 346-150.000.
Tsunomoto, Yoshitaka: *See—*
Yamamoto, Kenji; Morishige, Masakatsu; Takeuchi, Harumi; and Tsunomoto, Yoshitaka, 4,765,160, Cl. 68-12.00R.
Tsutsumi, Kenji: *See—*
Ogawa, Yasunori; Tsutsumi, Kenji; Tanaka, Yasuo; and Shimozono, Ryoji, 4,766,594, Cl. 371-22.000.
Tubaki, Kazuyuki: *See—*
Miyashita, Yoshinobu; Oishi, Haruki; Ueno, Yasumichi; Shiraishi, Hiromi; and Tubaki, Kazuyuki, 4,766,083, Cl. 436-517.000
Tuffal, Guy; and Audren, Yves, to Isover Saint-Gobain. Relating to compression type rolling machines. 4,765,554, Cl. 242-55.100.
Tufts College: *See—*
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000
Turek, Edward A.: *See—*
Luka, Kraemer D.; Turek, Edward A.; and Baker, Lee E., 4,766,558, Cl. 364-558.000.
Turner, John E.; and Josephson, Gregg R., to Lattice Semiconductor Corporation. Programmable logic array. 4,766,569, Cl. 365-185.000
Turner, Keith: *See—*
Harris, Norman; Rathmell, Colin; Turner, Keith; and Scarlett, John, 4,765,869, Cl. 203-28.000.
Turner, Richard W.; and Stewart, Vernon E. Reuseable heat transfer devices for the scalp. 4,765,338, Cl. 128-402.000
Turner, William C. Method of manufacturing an externally clad tubular product. 4,765,529, Cl. 228-132.000.
Twardy, Craig P.: *See—*
Bardutz, Ronald W.; Kortje, Joseph P.; and Twardy, Craig P., 4,766,606, Cl. 379-344.000
Twerdochlib, Michael, to Westinghouse Electric Corp. Apparatus for monitoring hydrogen gas leakage into the stator coil water cooling system of a hydrogen cooled electric generator. 4,766,557, Cl. 364-550.000.
Tygat, Daniel; Lefevre, Pierre; and Balthasart, Dominique, to Solvay & Cie, S.A. Process for inhibiting the corrosion of a mass of metal in contact with an acid bath containing ferric ions. 4,765,958, Cl. 422-12.000
Tyree, Kenneth S.: *See—*
Wertheimer, Harry P.; Miller, John C.; Barua, Debojit; and Tyree, Kenneth S., 4,765,881, Cl. 204-428.000.
Tyree, Lewis, Jr.: *See—*
Crawford, John T.; Tyree, Lewis, Jr.; Fischer, Harry C.; and Coers, Don H., 4,765,143, Cl. 60-671.000
Tzikas, Athanassios, to Ciba-Geigy Corporation. Reactive dyestuffs comprising a vinylsulfonylalkylaminocarbonyl moiety. 4,766,206, Cl 534-619.000
Ube Industries, Ltd.: *See—*
Hamamoto, Toshikazu; Aoi, Motojirou; Yoshida, Kozaburo; and Toda, Yasuhiko, 4,766,162, Cl. 523-440.000.
Uchida, Katsuhiro; Masumoto, Shozo; Tohno, Masao; Mimura, Mitsuo; and Okumura, Makoto, to Kaken Pharmaceutical Co., Ltd. Biphenylylpropionic acid derivative and pharmaceutical composition containing the same. 4,766,148, Cl. 514-533.000.
Uchida, MInoru; Nishi, Takao; and Nakagawa, Kazuyuki, to Otsuka Pharmaceutical Company, Limited. Tetrazole derivatives, having a further unsaturated heterocyclic ring anti-ulcer composition containing the same and method for treating ulcers. 4,766,120, Cl 514-227.800
Uchida, Soukichi: *See—*
Ohuchi, Muneki; and Uchida, Soukichi, 4,766,377, Cl. 324-307.000
Uddeholm Tooling Aktiebolag: *See—*
Roberts, William, 4,765,849, Cl. 148-335.000.
Ueda, Muneyuki, to Nippon Seal Co., Ltd. Manually operated cleaner. 4,765,012, Cl. 15-4.000
Ueki, Yoshiharu: *See—*
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kouzou; and Urayama, Norihisa, 4,766,580, Cl. 369-21.000.
Ueno, Mitsushi: *See—*
Shirogami, Tamotsu; and Ueno, Mitsushi, 4,766,043, Cl. 429-39.000
Ueno, Susumu; Kitamura, Hajime; and Inoue, Kaname. Method of making a flexible base plate for printed circuit board. 4,765,860, Cl. 156-272.600
Ueno, Toshiyuki: *See—*
Sugioka, Takami; Miyake, Yuzuru; and Ueno, Toshiyuki, 4,765,552, Cl. 242-18.00R
Ueno, Yasumichi: *See—*
Miyashita, Yoshinobu; Oishi, Haruki; Ueno, Yasumichi; Shiraishi, Hiromi; and Tubaki, Kazuyuki, 4,766,083, Cl. 436-517.000
Uggowitzer, Werner, to U.S. Philips Corporation. Board for printed circuits and processes for manufacturing such printed boards. 4,766,268, Cl. 174-68.500
Uhde GmbH: *See—*
Haacker, Ingo; and Landgraber, Friedhelm, 4,765,399, Cl. 165-110.000
Ukigai, Toshiyuki: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,765,408, Cl. 166-274.000.
Ultra-Centrifuge Nederland N.V.: *See—*
Tentij, Martin, 4,765,966, Cl. 422-244.000
Umezaki, Kazuyuki, to Koyo Seiko Co., Ltd. Water pump bearing unit. 4,765,761, Cl. 384-484.000.
Underwood, Anthony H.: *See—*
Ellis, David; Emmett, John C.; Underwood, Anthony H.; and Leeson, Paul D., 4,766,121, Cl. 514-247.000
Ungemach, Robert R.: *See—*
Lindemann, Peer; and Ungemach, Robert R., 4,765,320, Cl. 128-87.00A
Unger, Hans, to American Safety Equipment Corporation. Adjustable anchoring slide block assembly. 4,765,651, Cl. 280-804.000.
Union Carbide Corporation: *See—*
Ananthapadmanabhan, Kavssery P.; and Goddard, Errol D., 4,765,834, Cl. 75-108.000

VOL 1093 ISS 4 AG 23 1988 UMI

Ostrozynski, Robert L.; Greene, George H.; and Merrifield, James H., 4,766,181, Cl. 428-395.000.
Union Nationale des Cooperatives Agricoles d'Approvisionnement: *See—*
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000.
Union Oil Co. of Calif.: *See—*
Featherstone, John L., 4,765,913, Cl. 210-714.000.
Union Oil Company of California: *See—*
Switzer, Jay A., 4,766,087, Cl. 437-15.000.
Totten, Clay W., 4,765,912, Cl. 210-713.000.
Union Showa Kabushiki Kaisha: *See—*
Oigo, Ei; and Noguchi, Yoshitaka, 4,765,808, Cl. 55-68.000.
United Pharmaceuticals, Inc.: *See—*
Davis, William M., 4,766,119, Cl. 514-239.200.
United States Brass Corporation: *See—*
Hayman, Dennis J., 4,765,590, Cl. 251-310.000.
United States of America
Agriculture: *See—*
Berlage, Arnold G.; Krishnan, Palaniappa; Bilsland, Douglas M.; and Brandenburg, N. Robert, 4,765,486, Cl. 209-8.000.
Harper, Robert J., Jr.; and Beninate, John V., 4,765,796, Cl 8-115.700.
Wilkins, Dale E., 4,765,263, Cl. 111-86.000.
Air Force: *See—*
Holden, Ronald D.; Tedor, John B.; Bergquist, Andrew O.; Moran, David S.; and Eiserer, Mike, 4,765,193, Cl. 73-865.900.
Kiel, Jonathan L.; and Everse, Johannes, 4,766,150, Cl. 514-567.000.
Layden, George K.; and Prewo, Karl M., 4,766,096, Cl. 501-17.000
Commerce: *See—*
Slocum, Alexander H.; and Jurgens, Peter A., 4,765,668, Cl. 294-88.000.
Slocum, Alexander H., 4,765,754, Cl. 384-44.000.
Wadley, Haydn N. G., 4,765,750, Cl. 374-137.000.
Health and Human Services: *See—*
Safa, Ahmad R.; and Felsted, Ronald L., 4,765,972, Cl. 424-1.100.
Interior: *See—*
Colvocoresses, Alden P., 4,765,564, Cl. 244-3.160.
Khalafalla, Sanaa E. S.; Engelmann, William H.; and Pahlman, John E., 4,765,415, Cl. 175-50.000.
National Aeronautics and Space Administration: *See—*
Iceland, William F., 4,766,286, Cl. 219-121.570.
Lahmeyer, Charles R., 4,766,533, Cl. 364-200.000.
Seidenberg, Benjamin, 4,765,396, Cl. 165-104.260.
Weinstein, Leonard M., 4,765,187, Cl. 73-304.00R.
Weinstein, Leonard M., 4,766,369, Cl. 324-61.00R.
Wesselski, Clarence J., 4,765,114, Cl. 52-646.000.
Wood, Charles, 4,765,139, Cl. 60-527.000.
Navy: *See—*
Gegan, Michael J., 4,766,440, Cl. 343-700.0MS.
Phillips, Raymond J.; and Susi, Anthony R., 4,766,441, Cl. 343-709.000.
U.S. Philips Corporation: *See—*
Becker, Johann A.; Deusser, Peter G.; and Zell, Werner V., 4,765,708, Cl. 350-96.200.
Crepin, Hugues; and Hethuin, Serge, 4,766,436, Cl. 342-122.000.
Davids, Geert J. T.; and van Arendonk, Anton P. M., 4,766,089, Cl. 437-53.000.
Den Boef, Johannes H.; Van Eggermond, Johannes M.; and Van Uijen, Cornelis M. J., 4,766,380, Cl. 324-309.000.
Dons, Franciscus A.; and Einhaus, Hermanus F., 4,766,587, Cl. 369-263.000.
Doyle, Terence, 4,766,494, Cl. 358-140.000.
Einhaus, Hermanus F., 4,766,586, Cl. 369-217.000.
Haghiri, Mohammad-Reza, 4,766,490, Cl. 358-105.000.
Husgen; Raets, Hubert; Schiefer, Gerd; and Zwier, Jan, 4,766,350, Cl. 315-207.000.
Janssen, Marc F. R.; and Renardus, Max L. P., 4,766,347, Cl. 313-623.000.
Jochem, Cornelius M. G.; and Van Der Ligt, Jacobus W. C., 4,765,271, Cl. 118-405.000.
Marinus, Antonius A. M., 4,766,528, Cl. 363-21.000.
Moore, Paul A., 4,766,392, Cl. 329-124.000.
Pelgrom, Marcellinus J. M.; and Dil, Jan G., 4,766,307, Cl. 250-231.0SE.
Pelgrom, Marcellinus J. M.; Harwig, Hendrik A.; and Slotboom, Jan W., 4,766,332, Cl. 307-358.000.
Prieto, Argenis R.; and Clark, David P., 4,766,411, Cl. 338-306.000.
Schmidt, Werner, 4,765,753, Cl. 379-60.000.
Spruit, Johannes H., 4,766,498, Cl. 358-237.000.
Uggowitzer, Werner, 4,766,268, Cl. 174-68.500.
Vary, Peter, 4,766,562, Cl. 364-724.000.
United Technologies Corporation: *See—*
Brown, Robert S.; and Dunlap, Roger, 4,765,134, Cl. 60-204.000.
Clements, Thomas R.; and Blevins, James D., 4,765,136, Cl. 60-261.000.
Glomb, Walter L., Jr., 4,766,357, Cl. 318-118.000.
Krukoski, Leon; and Laprad, Richard F., 4,765,133, Cl. 60-39.060.
Pannone, John L.; and Tommasini, Rocco M., 4,765,751, Cl. 374-143.000.
Universal Manufacturing Corporation: *See—*
Kurgan, Leonard J.; and Bauer, Fred P., 4,766,406, Cl. 336-65.000.
Universite de Bordeaux II: *See—*
Geneix, Catherine; Lafourcade, Suzanne L.; and Ribereau-Gayon, Pascal, 4,765,992, Cl. 426-15.000.
Universite Pierre et Marie Curie: *See—*
Dieulesaint, Eugene; and Royer, Daniel, 4,765,186, Cl. 73-290.00V.
University of California, The Regents of the: *See—*
Enoch, Jay M., 4,765,732, Cl. 351-243.000.
Orser, Cindy S.; Lindow, Steven; and Panapoulos, Nickolas J., 4,766,077, Cl. 435-253.000.
University of Florida: *See—*
MacMillan, Michael, 4,765,611, Cl. 272-118.000.
University of Michigan, The: *See—*
Schiff, Harold I.; and Stedman, Donald H., 4,765,961, Cl. 422-52.000.
University of Strathclyde: *See—*
McGregor, Douglas R.; and Malone, Jon R., 4,766,568, Cl. 365-49.000
Untergruber, Angela, legal representative: *See—*
Michels-Krohn, Karl-Heinz; and Untergruber, Josef, deceased, 4,766,596, Cl. 371-62.000.
Untergruger, Josef, deceased: *See—*
Michels-Krohn, Karl-Heinz; and Untergruber, Josef, deceased, 4,766,596, Cl. 371-62.000.
Unterstein, Klaus: *See—*
Buchele-Buecher, Sigfrid; and Unterstein, Klaus, 4,765,565, Cl. 244-3.220.
Uomoti, Akiyoshi; Tajiri, Hiromi; Nakatani, Nobuyoshi; and Daizumoto, Masafumi, to Mitsubishi Denki Kabushiki Kaisha. Method of and apparatus for connecting metal strips. 4,765,532, Cl. 228-212.000
Upadhyaya, Janardan D.; Farnham, Harry M.; Lin, Ing C.; and Case, Alan R., to Moore and Munger Marketing and Refining, Inc. Compositions having the properties of low viscosity polyethylenes. 4,766,166, Cl. 524-275.000.
Urata, Toshiaki; and Tomikawa, Minato, to Chiyoda Chemical Engineering & Construction Co., Ltd. Apparatus for installing pipe in multipipe type gas-liquid contact equipment. 4,765,960, Cl. 422-49.000.
Urayama, Norihisa: *See—*
Go, Yasunao; Ueki, Yoshiharu; Motohashi, Minoru; Nozawa, Kouzou; and Urayama, Norihisa, 4,766,580, Cl. 369-21.000.
Urman, Robert; Brisson, Alfred G.; and Nowacki, Christopher, to Trutek Research, Inc. Timed drift compensation for rate volume monitor. 4,765,342, Cl. 128-725.000.
Usui, Saburo: *See—*
Kobayashi, Kunihiro; Usui, Saburo; Otsuka, Shoji; Najima, Choji; and Ohara, Toshimichi, 4,765,280, Cl. 122-5.50A.
Vacuum Furnace Systems Corporation: *See—*
Ripley, Fred W., 4,765,068, Cl. 34-233.000.
Vagt, Uwe: *See—*
Hutmacher, Hans-Martin; Broecker, Franz J.; Merger, Franz; Fischer, Rolf; Vagt, Uwe; Schneider, Heinz-Walter; Richter, Wolfgang; Harder, Wolfgang; and Priester, Claus-Ulrich, 4,766,237, Cl. 560-155.000.
Valenti, Mauro, to Farmaceutici Formenti S.p.A. Microencapsulation of a medicament. 4,766,012, Cl. 427-213.360.
Valentine, Douglas G., to Inco Limited. Hardened material supported rock bolt and apparatus for installing same. 4,765,778, Cl. 405-260.000.
Valeo: *See—*
Reche, Christian, 4,765,658, Cl. 285-137.100.
Valy, Yves: *See—*
Pedelaborde-Augas, Didier; Pillois, Philippe; and Valy, Yves, 4,766,518, Cl. 361-389.000.
Van Meegan Constructions Pty. Ltd.: *See—*
Van Meegen, Hendrikus A. B., 4,765,194, Cl. 74-60.000.
van Arendonk, Anton P. M.: *See—*
Davids, Geert J. T.; and van Arendonk, Anton P. M., 4,766,089, Cl. 437-53.000.
Van Blaircum, Bennie A.: *See—*
Harwood, Jon W.; Rosa, Bruno A.; Van Blaircum, Bennie A.; and Kimmet, Mark S., 4,765,437, Cl. 181-282.000.
Van Daele, Georges, to Janssen Pharmaceutica N.V. N-arylpiperazinealkanamides useful for protecting hearts from myocardial injury caused by ischaemia, anoxia or hypoxia. 4,766,125, Cl. 514-255.000.
Vandenabeele, Hubert; and Vervecken, Jacques L., to Agfa-Gevaert, N.V. Photographic protective layer comprising beads of resinous material and water-insoluble wax. 4,766,059, Cl. 430-531.000.
van de Nieuwelaar, Josephus A.; and Janssen, Petrus C. H., to Stork PMT B.V. Device for the ejection of a poultry carcass. 4,765,028, Cl. 17-11.000.
Vanderbilt University: *See—*
Conturo, Thomas E.; and Kessler, Robert M., 4,766,381, Cl. 324-309.000
Van der Laan, Robert A.: *See—*
Evers, Hubertus N. C., 4,766,301, Cl. 235-487.000.
van der Lely, Cornelis. Agricultural tractor. 4,765,637, Cl. 280-411.00R.
Van Der Ligt, Jacobus W. C.: *See—*
Jochem, Cornelius M. G.; and Van Der Ligt, Jacobus W. C., 4,765,271, Cl. 118-405.000.
van der Mast, Karel D.; Hoeberechts, Arthur M. E.; and van Gorkom, Gerardus G. P. Semiconductor device having a cold cathode. 4,766,340, Cl. 313-366.000.

Vandesteeg, Gregg A.: *See—*
Ronning, Patricia M.; and Vandesteeg, Gregg A., 4,765,982, Cl. 424-403.000
Van Eggermond, Johannes M.: *See—*
Den Boef, Johannes H.; Van Eggermond, Johannes M.; and Van Uijen, Cornelis M. J., 4,766,380, Cl. 324-309.000.
Van Es, Cornelis; Miles, Richard; Kalghatgi, Gautam T.; McArragher, John S.; and Heldeweg, Rudolf F., to Shell Oil Company. Gasoline composition. 4,765,800, Cl. 44-62.000.
van Gorkom, Gerardus G. P.: *See—*
van der Mast, Karel D.; Hoeberechts, Arthur M. E.; and van Gorkom, Gerardus G. P., 4,766,340, Cl. 313-366.000.
Van Heertum, John C.; and Herrero, Maria P., to Dow Chemical Company, The. Substituted benzyltrialkylammonium salts and their use as plant growth enhancers. 4,765,826, Cl. 71-121.000
Vankerckhoven, Henk F. E.; and DeKoster, Eric H. C., to Scott Continental, N.V. Process of applying a reacting transfer coating for decorating laminates. 4,765,858, Cl. 156-235.000.
Van Kruining, Hendricus A., to Ricegrowers' Co-operative Mills, Ltd. Rice hull ash filter. 4,765,545, Cl. 241-5.000.
Van Meegen, Hendrikus A. B., to Van Meegan Constructions Pty. Ltd. Piston-operated machine. 4,765,194, Cl. 74-60.000.
Vansteelant, Marc G.; Naaktgeboren, Adrianus; and Seymour, Shaun A., to Ford New Holland, Inc. Round baler with expandable bale chamber. 4,765,237, Cl. 100-89.000.
Vantard, Georges: *See—*
Barthe, Bernard; Vantard, Georges; and Vasseur, Jean-Pierre, 4,765,888, Cl. 210-86.000.
Van Uijen, Cornelis M. J.: *See—*
Den Boef, Johannes H.; Van Eggermond, Johannes M.; and Van Uijen, Cornelis M. J., 4,766,380, Cl. 324-309.000.
Vara, Fulvio J.; Anderson, Lowell R.; and Dougherty, James A., to GAF Corporation. Solvent and stain resistant coatings. 4,766,252, Cl. 568-616.000.
Varco International, Inc.: *See—*
Boyadjieff, George I., 4,765,401, Cl. 166-77.500.
Varian Associates, Inc.: *See—*
Gaczi, Peter J., 4,766,006, Cl. 427-38.000.
Vary, Peter, to U.S. Philips Corp. Digital analyzing and synthesizing filter bank with maximum sampling rate reduction. 4,766,562, Cl. 364-724.000
Vasseur, Jean-Pierre: *See—*
Barthe, Bernard; Vantard, Georges; and Vasseur, Jean-Pierre, 4,765,888, Cl. 210-86.000.
Vassiliou, Eustathios: *See—*
Nowak, Tom; Smith, Edward J.; and Vassiliou, Eustathios, 4,765,788, Cl. 411-61.000
Vatant, Robert, to Clecim. Continuous metal casting plant. 4,765,392, Cl. 164-416.000.
Vaterlaus, Arthur, to Concast Service Union AG. Method of and arrangement for cooling a continuously cast strand. 4,765,390, Cl. 164-486.000.
Vatne, Rolf S.: *See—*
Buzak, Thomas S.; and Vatne, Rolf S., 4,765,717, Cl. 350-331.00R
Vaughn, Walter L.; and Wing, Milton S., to Dow Chemical Company, The. Process for producing porous fibers from orientable olefin polymers having cation-containing, pendent reactive side-groups and the resultant product. 4,766,036, Cl. 428-364.000.
VBE Inc.: *See—*
Yoon, Chang-Hyun, 4,765,066, Cl. 34-1.000.
VEB Kombinat Polygraph "Werner Lamberz" Leipzig: *See—*
Hank, Dietrich; Skiera, Heinz; and Zimmermann, Gerd, 4,765,241, Cl. 101-350.000
Vedage, Gamini A.: *See—*
Ford, Michael E.; Johnson, Thomas A.; and Vedage, Gamini A., 4,766,247, Cl. 564-498.000.
Vehar, Gordon A.: *See—*
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 4,766,075, Cl. 435-240.200.
Vellekoop, Linda J.; and Barth, Jordan, to Colgate-Palmolive Company. Stable single unit dose oral product. 4,765,984, Cl. 424-441.000.
Verbiar, Laura L.: *See—*
Czarniecki, Michael F.; Verbiar, Laura L.; and Kogan, Timothy, 4,766,109, Cl. 514-17.000.
Vernay Laboratories, Inc.: *See—*
Atkinson, Gordon E., 4,765,588, Cl. 251-149.100.
Verot, Yvan: *See—*
Masini, Jean-Jacques; and Verot, Yvan, 4,765,876, Cl. 204-157.950
VerTech Treatment Systems, Inc.: *See—*
Schwoyer, William L.; Jaycox, Larry S.; and Peterscheck, Hermann W., 4,765,900, Cl. 210-603.000.
Vervecken, Jacques L.: *See—*
Vandenabeele, Hubert; and Vervecken, Jacques L., 4,766,059, Cl. 430-531.000
Veselaski, Stephen V.; Delanoy, Curtis W.; and Nicola, Robert J., to Micro Contacts Inc. Disposable shaver head. 4,765,060, Cl. 30-208.000
Vestal, Marvin L.: *See—*
Fergusson, Gordon J.; and Vestal, Marvin L., 4,766,312, Cl. 250-281.000.
Vestec Corporation: *See—*
Fergusson, Gordon J.; and Vestal, Marvin L., 4,766,312, Cl. 250-281.000
Vickers Instruments (Canada) Inc.: *See—*
Seiler, Dieter G.; and Sulway, David V., 4,766,311, Cl. 250-252.100.
Victor Company of Japan: *See—*
Ozaki, Hidetoshi, 4,766,486, Cl. 358-40.000
Vigueras Pacheco, Rafael. Key ring-pill holder container. 4,765,460, Cl. 206-38.100.
Vincent, Gary A.; and Meyer, Daniel F., to Dow Corning Corporation Restoring stranded conductor electrical distribution cable. 4,766,011, Cl. 427-117.000
Vinther, Arne; Olsen, Steffen C.; Larsen, Bjorn E. H.; Madsen, Elun S.; and Madsen, Bjorn, to Kemisk Vaerk Koge A/S. Process for the preparation of an organic pigment dispersion. 4,765,841, Cl 106-402.000
Violo, Robert: *See—*
Suillerot, Didier; and Violo, Robert, 4,765,709, Cl. 350-96.200
VISA International Service Association: *See—*
Boston, Vincent, 4,766,293, Cl. 235-379.000
Vista Chemical Company: *See—*
Plummer, Daniel T., 4,765,926, Cl. 252-352.000.
Viswanathan, Ravi: *See—*
DePrince, Randolph B.; and Viswanathan, Ravi, 4,765,980, Cl 424-108.000
Vizulis, Karlis: *See—*
von Reis, Charles; and Vizulis, Karlis, 4,765,499, Cl. 215-261.000
VMI, Incorporated: *See—*
Maitlen, C. Gene, 4,765,071, Cl. 37-66.000
Voegele, Jean: *See—*
Pizzol, Jeannine; Voegele, Jean; Jourdheuil, Pierre; Raynaud, Bernard; and Miermont, Yves, 4,765,274, Cl. 119-15.000.
Voest-Alpine Aktiengesellschaft: *See—*
Klingesberger, Johann, 4,765,171, Cl. 72-316.000.
Volcano International Medical AB: *See—*
Tranberg, Per; Matties, Ralph; and Reese, Dale, 4,765,318, Cl. 128-80.00C
Volinskie, Robert: *See—*
Wilson, Michael C.; and Volinskie, Robert, 4,765,044, Cl. 29 33.00M
Volkswagen AG: *See—*
Schulze, Bernd-Guido; and Lissel, Ernst, 4,765,430, Cl. 180-197.000
von Reis, Charles; and Vizulis, Karlis. Filter cap. 4,765,499, Cl. 215-261.000
von Rymon Lipinski, Gert-Wolfhard: *See—*
Deger, Hans-Matthias; Erckel, Rudiger; Franz, Raimund; Fritsche-Lang, Wolfram; von Rymon Lipinski, Gert-Wolfhard; and Schlingmann, Merten, 4,766,207, Cl. 536-18.600
Voris, Harv, to Paramount Fitness Equipment Corporation. Progressive resistance exercise device. 4,765,613, Cl. 272-129.000
W. C. Heraeus GmbH: *See—*
Modes, Christina; Meyer, Heinrich; Burgsdorff, Jochen-Werner K.; Stroder, Ulrich; and Kramer, Andrea, 4,765,874, Cl. 204-105.00R
W. R. Grace & Co.: *See—*
Wang, Shu-Chieh P., 4,766,257, Cl. 568-948.000
W. R. Grace & Co.-Conn.: *See—*
Retallick, William B., 4,765,047, Cl. 29-157.00R
W. R. Grace & Co., Cryovac Div.: *See—*
Ferguson, Daniel J., 4,765,857, Cl. 156-229.000.
W. Schlafhorst & Co.: *See—*
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz; Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000
Wachi, Yoshihiro, to Kabushiki Kaisha Toshiba. Cryostat with radiation shields cooled by refrigerator. 4,765,153, Cl. 62-514.00R.
Wachsmuth, Peter: *See—*
Artzt, Peter; Egbers, Gerhard; Grimm, Helmut; Kunde, Klaus; Seidel, Adolf; Hascher, Helmut; Kolb, Wolfgang; Schaberle, Erwin; and Wachsmuth, Peter, 4,765,156, Cl. 66-9.00B
Wachtel, Helmut: *See—*
Sauer, Gerhard; Haffer, Gregor; Wachtel, Helmut; Schneider, Herbert H.; and Kehr, Wolfgang, 4,766,128, Cl. 514-288.000.
Waddill, Harold G.: *See—*
Sellstrom, Kathy B.; and Waddill, Harold G., 4,766,186, Cl 525-532.000
Wade, Vicki J. Garment for a wheelchair occupant. 4,764,985, Cl. 2-88.000
Wadley, Haydn N. G., to United States of America, Commerce. Method of determining subsurface property value gradient 4,765,750, Cl. 374-137.000
Wagenseil, Ludwig, to Hydromatik GmbH. Axial piston machine with a device for flushing the circuit. 4,765,228, Cl. 91-486.000.
Waggoner, Clinton A.: *See—*
Chambers, Keith W.; and Waggoner, Clinton A., 4,766,373, Cl 324-204.000
Wagner, Armand: *See—*
Beckmann, Franz; Schmit, Romain; and Wagner, Armand, 4,765,829, Cl. 75-25.000.
Wahl, Rudolf; and Walz, Erwin, to Standard Elektrik Lorenz A.G Method and apparatus for removing dust and gas pollutants from waste gases, particularly waste gases produced in the manufacture of optical waveguide preforms. 4,765,805, Cl. 55-18.000.
Waibel, Joseph H.: *See—*
Skach, Edward J., Jr.; Brake, David W.; and Waibel, Joseph H., 4,765,830, Cl. 75-53.000
Wakamiya, Masayuki: *See—*
Hase, Hiroyuki; Yamashita, Ichiro; Tokuono, Shinya; and Wakamiya, Masayuki, 4,765,192, Cl. 73-862.360.

VOL 1093 ISS 4 AG 23 1988 UMI

Wako Pure Chemical Industries, Ltd.: *See—*
Miyashita, Yoshinobu; Oishi, Haruki; Ueno, Yasumichi; Shirashi, Hiromi; and Tubaki, Kazuyuki, 4,766,083, Cl. 436-517.000.

Waldenstrom, Mats G.: *See—*
Hillert, Lars H.; and Waldenstrom, Mats G., 4,766,040, Cl. 428-552.000.

Waldrop, Sammy E., to Gates Energy Products, Inc. Latex coated electrodes for rechargeable cells. 4,765,799, Cl. 29-623.500.

Walker, Darrell W.; and Schaffer, Arnold M., to Phillips Petroleum Company. Cracking catalyst and process. 4,765,884, Cl. 208-89.000.

Walker, David R.: *See—*
Cadotte, John E.; and Walker, David R., 4,765,897, Cl. 210-500.230.

Wallace, Robert S.; Goldey, Ian C.; and Nelson, Terri L., to Goldey, Ian C.; and Nelson, Terri L., part interest to each. Universal cup holder with cup handle slot. 4,765,581, Cl. 248-311.200.

Walleser, Albin, to Kraftwerk Union Aktiengesellschaft. Method and apparatus for measuring the filling level in a reactor pressure vessel of a boiling-water reactor. 4,765,945, Cl. 376-258.000.

Wallow, Peter: *See—*
Kruse, Heinz-Josef; Theis, Ulrich; Pahnke, Klaus D.; Wallow, Peter; and Becker, Wilfried, 4,765,248, Cl. 102-529.000.

Walsh, John T.; and Hourihan, Ronald J. Packaged airline headsets. 4,765,481, Cl. 206-525.000.

Walterick, Gerald C., Jr., to Betz Laboratories, Inc. Composition for reducing color contamination of influent water. 4,765,923, Cl. 252-181.000.

Walz, Erwin *See—*
Wahl, Rudolf; and Walz, Erwin, 4,765,805, Cl. 55-18.000.

Wang, Shu-Chieh P., to W. R. Grace & Co. Preparation of nitro compounds by vapor phase nitration of olefins. 4,766,257, Cl. 568-948.000.

Warner-Lambert Company: *See—*
Cherukuri, Subraman R.; Hriscisce, Frank; and Wei, You C., 4,765,991, Cl. 426-3.000.
Moskowitz, Alan H., 4,766,004, Cl. 426-658.000.
Wright, Arthur P. G.; Wen, Betty P. L.; Schenck, Terry G.; and Maron, Antonina, 4,766,216, Cl. 546-7.000.

Warner, Richard C., to Singer Company, The. Level clamp for Tri-state CMOS bus structure. 4,766,334, Cl. 307-540.000.

Warren, James W., to Refractory Composites, Inc. Carbon composite article and method of making same. 4,766,013, Cl. 427-228.000.

Washizu, Shintaro: *See—*
Watanabe, Akio; Washizu, Shintaro; Shinozaki, Fumiaki; Ishikawa, Shun-ichi; and Aoai, Toshiaki, 4,766,037, Cl. 428-402.210.

Watanabe, Akio; Washizu, Shintaro; Shinozaki, Fumiaki; Ishikawa, Shun-ichi; and Aoai, Toshiaki, to Fuji Photo Film Co., Ltd. Photodegradable microcapsules. 4,766,037, Cl. 428-402.210.

Watanabe, Atsushi: *See—*
Kawakami, Hiroshi; Shiratori, Harunori; Sugihara, Koichi; Watanabe, Atsushi; and Kishida, Fumio, 4,765,428, Cl. 180-143.000.

Watanabe, Junji; and Ogura, Masahiko, to Kabushiki Kaisha Toshiba Image forming method and apparatus. 4,766,464, Cl. 355-14.00R.

Watanabe, Kazuo: *See—*
Ishida, Masato; Takeda, Hiroaki; Watanabe, Kazuo; Suzuki, Akira; Suzuki, Nobuyuki; Sato, Isamu; and Miyamoto, Kazuki, 4,766,404, Cl. 355-7.000

Watanabe, Kenzo, to Meinan Machinery Works, Inc. Drive roller assembly of veneer lathe for rotating log and veneer lathe. 4,765,380, Cl. 144-213.000.

Watanabe, Yasuhiko: *See—*
Misaki, Masaru; Murata, Hisashi; Yamamoto, Hideo; and Watanabe, Yasuhiko, 4,765,996, Cl. 426-72.000

Watanuki, Masayoshi; Shoji, Tsutomu; Noguchi, Yukio; and Sawamura, Tadahide, to Ricoh Company, Ltd. Image forming apparatus. 4,766,463, Cl. 355-145.00H.

Wataya, Seiji; and Kishimoto, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Failure-time control device for a fuel injection controller of an internal combustion engine. 4,765,299, Cl. 123-479.000.

Wataya, Seiji: *See—*
Kojima, Shinji; Wataya, Seiji; and Nishiyama, Ryoji, 4,765,298, Cl. 123-440.000.

Watson, William J. W.: *See—*
Harper, Kevin; and Watson, William J. W., 4,766,198, Cl. 528-377.000

Wayman, William H.: *See—*
Barker, Laurence S.; Hays, Dan A.; Redding, Thomas P.; and Wayman, William H., 4,766,457, Cl. 355-3.0DD.

Wazaki, Yoshio: *See—*
Fujimura, Akira; and Wazaki, Yoshio, 4,765,300, Cl. 123-491.000

Weaver, William R., to Libbey-Owens-Ford Co. Windshield and leaf screen assembly and method of making the same. 4,765,672, Cl. 296-84.00R.

Webb, Andrew C.: *See—*
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000

Webb, Robert H., to Eye Research Institute of Retina Foundation. Double scanning optical apparatus and method. 4,765,730, Cl. 351-205.000

Weber, Christian; and Haas, Peter, to Bayer Aktiengesellschaft. Mold release composition, mixtures containing this mold release composition, a process for the production of molded articles and the molded articles obtained by this process. 4,766,172, Cl. 524-783.000

Weber, James M.: *See—*
Brock, Robert J.; Conn, William; and Weber, James M., 4,766,029, Cl. 428-286.000

Weber S.p.A.: *See—*
Scarnera, Michele; and Conticelli, Carlo, 4,765,306, Cl. 123-643.000

Wech, Erich: *See—*
Kraus, Josef; and Wech, Erich, 4,765,240, Cl. 101-216.000.

Wehowsky, Frank; Kleber, Rolf; and Jaeckel, Lothar, to Hoechst Aktiengesellschaft. Urethanes which contain perfluoroalkyl groups, epichlorohydrin groups and dialcohol radicals, the preparation and use thereof. 4,766,234, Cl. 560-26.000

Wei, You C.: *See—*
Cherukuri, Subraman R.; Hriscisce, Frank; and Wei, You C., 4,765,991, Cl. 426-3.000

Weihe, Clyde R. Silverware washing machine. 4,765,020, Cl. 15-302.000

Weinstein, Leonard M., to United States of America, National Aeronautics and Space Administration. Liquid thickness gauge. 4,765,187, Cl. 73-304.00R

Weinstein, Leonard M., to United States of America, National Aeronautics and Space Administration. Ice detector. 4,766,369, Cl. 324-61.00R.

Weiss, Sol. Surgical device for performing thoracostomies. 4,765,334, Cl. 128-305.300

Weiss, Werner; and Posl, Ewald, to Patent Treuhand Gesellschaft fur elektrische Glulampen mbH. Lamp with low-toxicity, molybdenum-compatible sealing glass. 4,766,346, Cl. 313-579.000.

Wellesley College: *See—*
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000.

Wells, Brian H., to Raytheon Company. Method of compensation for friction in a stabilized platform. 4,765,573, Cl. 244-3.150.

Wells, Donald R., to Hughes Aircraft Company. Adaptive radar for reducing background clutter. 4,766,435, Cl. 342-82.000.

Wells, John R.; and Grant, John W., to Du Pont de Nemours, E. I., and Company. Apparatus for continuous separation of leukocyte/platelet-enriched fraction from whole blood. 4,765,899, Cl. 210-519.000

Wen, Betty P. L.: *See—*
Wright, Arthur P. G.; Wen, Betty P. L.; Schenck, Terry G.; and Maron, Antonina, 4,766,216, Cl. 546-7.000.

Wepner, Gregory W.: *See—*
Bleich, Charles R.; Smolucha, Walter E.; Wepner, Gregory W.; Lantz, Kenneth F.; and Herschler, Scott C., 4,766,541, Cl. 364-410.000.

Werner, Arend; Hibst, Hartmut; and Petermann, Juergen, to BASF Aktiengesellschaft. Optical recording medium. 4,766,021, Cl. 428-64.000

Werner & Pfleiderer: *See—*
Strecker, Jurgen, 4,765,745, Cl. 366-76.000.

Wertheimer, Harry P.; Miller, John C.; Barua, Debojit; and Tyree, Kenneth S., to Allied Corporation. Heated 0_2 sensor having isolated ground. 4,765,881, Cl. 204-428.000.

Wesselski, Clarence J., to United States of America, National Aeronautics and Space Administration. Expandable pallet for space station interface attachments. 4,765,114, Cl. 52-646.000

West End Hub Spring Company: *See—*
Kessel, Jason H., 4,765,004, Cl. 5-93.00R.

West, Michael H.; and Nagel, Fritz J., to Chapman Chemical Company. Antimicrobial compositions and methods of using same. 4,766,113, Cl. 514-187.000

West, Norman E., to Du Pont de Nemours, E. I., and Company. Stabilized polyacetal compositions. 4,766,168, Cl. 524-377.000

Wester, Dennis W.; and Dean, Richard T., to Mallinckrodt, Inc. Technetium (Tc-99m)-arene complexes useful in myocardial imaging. 4,765,971, Cl. 424-1.100

Westerberg, Eugene R.: *See—*
Holland, Christopher E.; Westerberg, Eugene R.; Madou, Marc J.; and Otagawa, Takaaki, 4,765,864, Cl. 156-644.000.

Western Atlas International, Inc.: *See—*
McClure, Gerald B.; and McPhee, William A., 4,765,409, Cl. 166-297.000.
Schmidt, Mathew G., 4,766,543, Cl. 364-422.000.

Westinghouse Electric Corp.: *See—*
Blain, Jeffery W.; Shah, Denis D.; and Chen, Jean, 4,765,442, Cl. 187-101.000
Bucher, George D., 4,765,453, Cl. 198-431.000.
Byers, William A.; Carlson, Gerald L.; Pensenstadler, David F.; Wootten, Michael J.; and Richards, James E., 4,766,550, Cl. 364-497.000
Cameron, Frank L.; and Smith, George A., 4,766,408, Cl. 337-244.000
Cook, Charles S.; and Sabol, George P., 4,765,174, Cl. 72-367.000.
Deis, Daniel W.; Kemeny, George A.; and Scherbarth, David W., 4,766,336, Cl. 310-12.000.
Ermold, Leonard F.; Keating, Robert F.; and Nelson, Lawrence A., 4,765,374, Cl. 138-89.000
Fox, David A., 4,766,327, Cl. 307-87.000
Grimes, Frank H., 4,766,407, Cl. 336-196.000
Iyer, Natraj C.; Male, Alan T.; Cherry, Sidney J.; and Gainer, Robert E., 4,766,274, Cl. 200-144.00B.
Le Breton, Albert F.; and Beal, William S., 4,765,759, Cl. 384-252.000
Partington, Albert J.; Brown, Michael K.; Ferleger, Jurek; Ange, C. Kelly; Hodgson, Anthony; Hornberger, David A.; Rouse, Marshall J.; Shepard, Spencer H.; Bonardi, Phillip H.; and Kiger, William E., 4,765,046, Cl. 29-156.80R.
Polvani, Donald G., 4,766,385, Cl. 324-345.000
Roslund, Charles J., 4,766,530, Cl. 364-200.000.

Shuey, Kenneth C., 4,766,414, Cl. 340-310.00A.
Simmonds, Leonard B., 4,766,388, Cl. 324-545.000.
Smith, Geoffrey M.; and Stacey, Eric J., 4,766,359, Cl. 318-652.000.
Twerdochlib, Michael, 4,766,557, Cl. 364-550.000.
Wolters, Richard H.; Kleyla, Vince; Hooton, Arnold J.; and Converse, Gregory L., 4,766,422, Cl. 340-700.000.

Wetzel, Charles M.: *See—*
Krufka, Frank S.; and Wetzel, Charles M., 4,765,743, Cl. 356-388.000.

Wetzel, Lawrence E., to Clean Room Technology. Testable gasket seal arrangement. 4,765,810, Cl. 55-270.000.

Wharton, James H.; and Osman, Peter D., to RCA Licensing Corporation. CRT filament supply for multiple frequency video apparatus. 4,766,390, Cl. 328-270.000.

Wheelabrator Air Pollution Control Inc.: *See—*
Gombos, Thomas M.; and Risa, Kristen, 4,765,802, Cl. 55-2.000.

Wheeler, Jack M.: *See—*
Smith, Gaylord D.; Wheeler, Jack M.; and Tassen, Stephen C., 4,765,956, Cl. 420-445.000.

Whirlpool Corporation: *See—*
Cordill, Rexford W.; Fortner, Jerry L.; and Beyerle, Robert W., 4,765,696, Cl. 312-214.000.
Gardell, Dale W.; and Marks, Larry D., 4,765,697, Cl. 312-229.000.

Whitaker, R. John, to Carratech, Inc. Method for separating sea plants. 4,765,886, Cl. 209-2.000.

White, Bruce L., to Hay & Forage Industries. Round baler having interlock mechanism for assuring post discharge actuation of ejected bale repositioner. 4,765,236, Cl. 100-88.000.

White, Harry H.: *See—*
Houghtaling, Bruce; and White, Harry H., 4,765,681, Cl. 297-367.000

White, Raymond F.: *See—*
Goegelman, Robert T.; Inamine, Edward S.; and White, Raymond F., 4,766,112, Cl. 514-30.000.

Whitehead, Derek J. Alloy and product made therefrom. 4,765,837, Cl. 75-249.000

Whitmore, Norman D., Jr.; and Marfurt, Kurt J., to Amoco Corporation. Method for depth imaging multicomponent seismic data. 4,766,574, Cl. 367-50.000.

Whitwell, George E.; Deatcher, John H.; and Leone-Bay, Andrea, to Akzo America Inc. Energy ray curing of arylsiloxane/silicate compositions and subsequent etching thereof. 4,765,866, Cl. 156-668.000.

Wicker, Guy C.: *See—*
Ovshinsky, Stanford R.; Johnson, Robert R.; Hudgens, Stephen J.; Pryor, Roger W.; Wicker, Guy C.; and Nolan, Robert S., 4,766,471, Cl. 357-19.000.

Widlund, Urban: *See—*
Froidh, Arne; Alsenvik, Stewe; Widlund, Urban; and Norenberg, Carl-Daniel, 4,765,477, Cl. 206-438.000.

Widmayer, Don F. Method and apparatus for starting and operating fluorescent lamp and auxiliary ballast systems at reduced power levels. 4,766,352, Cl. 315-244.000.

Wiedemann, Ingrid: *See—*
Schnorrenberg, Gerd; Roos, Otto; Losel, Walter; Wiedemann, Ingrid; Gaida, Wolfram; and Hoefke, Wolfgang, 4,766,129, Cl. 514-300.000

Wieder, Klaus A., to Superior Die Set Corporation. Slide retainer for injection molds. 4,765,585, Cl. 249-64.000.

Wiener, Dieter. Method for grinding pregeared bevel gears. 4,765,095, Cl. 51-287.000.

Wilkins, Dale E., to United States of America, Agriculture. Apparatus for placement of fertilizer below seed with minimum soil disturbance. 4,765,263, Cl. 111-86.000.

Wilkins, James F. Fishing line holder and fishing rod tip guard. 4,765,083, Cl. 43-26.000

Wilkinson, James H.; and Lagadec, Roger, to Sony Corporation. Synchronizing signal decoding. 4,766,602, Cl. 375-116.000.

Wilks, David M.; and Mickna, Steven L., to Southwestern Public Service Company. Coal slurry system. 4,765,781, Cl. 406-197.000.

Williams, Bruce E.: *See—*
Suh, John T.; Williams, Bruce E.; Skiles, Jerry W.; and Loev, Bernard, 4,766,210, Cl. 540-488.000

Williams Electronics Games, Inc.: *See—*
Bleich, Charles R.; Smolucha, Walter E.; Wepner, Gregory W.; Lantz, Kenneth F.; and Herschler, Scott C., 4,766,541, Cl. 364-410.000

Williams, John M., to Ferlazzo, John J., a part interest. Solid state color vision testing system. 4,765,731, Cl. 351-243.000.

Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; Fritsch, Edward F.; Brewen, Joseph G.; and Diamond, Steven E., to Allied Corporation; and Genetics Institute, Inc. Displacement polynucleotide assay employing polyether and diagnostic kit. 4,766,064, Cl. 435-6.000

Williams, Jon I.: *See—*
Diamond, Steven E.; Brewen, Joseph G.; Williams, Jon I.; Ellwood, Marian S.; Collins, Mary; and Fritsch, Edward F., 4,766,062, Cl. 435-6.000.

Williamson, George, to American Laundry Machinery, Inc. Out-of-balance control for laundry machines. 4,765,161, Cl. 68-12.00R.

Willis, Robin L., Jr.: *See—*
Lee, Chi-long; Juen, Donnie R.; Saam, John C.; and Willis, Robin L., Jr., 4,766,176, Cl. 525-100.000.

Willmund, Wolf-Dieter; Plapper, Jurgen; Pieper, Friedrich; and Heidrich, Jochen, to Henkel Kommanditgesellschaft auf Aktien. Preparation of sulfonated lubricating agents for leather and furs. 4,765,875, Cl. 204-157.790.

Wilson, James A., Jr.; and Bernstein, David H., to Rational. Computer bus apparatus with distributed arbitration. 4,766,536, Cl. 364-200.000

Wilson, Jerry L.; and Nagode, Gerald E., to Wilson, Jerry L. Automated boxing machine. 4,765,609, Cl. 272-76.000

Wilson, Louie. Apparatus for redistributing asphalt. 4,765,774, Cl. 404-101.000

Wilson, Michael C.; and Volinskie, Robert, to AMP Incorporated. Semiautomatic termination apparatus for ribbon cable. 4,765,044, Cl. 29-33.00M

Wilwerding, Laura: *See—*
Satek, Larry; Wilwerding, Laura; Melquist, John L.; and Luetkens, Melvin L., 4,766,102, Cl. 502-202.000

Winegard Company: *See—*
Winegard, John R.; and Cowan, Keith B., 4,766,443, Cl. 343-840.000.

Winegard, John R.; and Cowan, Keith B., to Winegard Company. Satellite dish antenna apparatus. 4,766,443, Cl. 343-840.000.

Winfield Locks, Inc.: *See—*
Raymond, James W.; and Millett, James A., 4,765,663, Cl. 292-169.130

Wing, Milton S.: *See—*
Vaughn, Walter L.; and Wing, Milton S., 4,766,036, Cl. 428-364.000

Winter, John P., to Presto Products, Incorporated. Polyester/copolyester coextruded packaging film. 4,765,999, Cl. 426-113.000

Winters, Arthur R., Jr.: *See—*
Gaumer, Lee S., Jr.; and Winters, Arthur R., Jr., 4,765,813, Cl. 62-20.000

Wissels, Valentin G.: *See—*
Bollen, Romain H.; Marien, Jozef E.; and Wissels, Valentin G., 4,766,515, Cl. 361-234.000

Witt, Hillard T.: *See—*
Anderson, Clifford M.; Stearns, Brian D.; and Witt, Hillard T., 4,764,997, Cl. 4-420.300

Witte, Harry: *See—*
Hinrichsen, Thomas; Preiss, Holger; and Witte, Harry, 4,766,018, Cl. 428-35.000

Wittle, J. Kenneth: *See—*
Titus, Charles H.; and Wittle, J. Kenneth, 4,766,598, Cl. 373-108.000

Woebcke, Herman H.: *See—*
Johnson, Axel R.; Narayanan, S.; and Woebcke, Herman H., 4,765,883, Cl. 208-78.000.

Wolf, Michael T.: *See—*
Cosgrove, Patrick A.; and Wolf, Michael T., 4,765,716, Cl. 350-273.000

Wolf, Nicholas O., to Conoco Inc. Use of ammonium chloride solutions to remove sulfonate surfactants from crude oil. 4,765,910, Cl. 210-708.000

Wolf, Paul F. Leaves away for gutters. 4,765,101, Cl. 52-12.000

Wolff, David W., to ParaBody, Inc. Adjustable workout bench. 4,765,616, Cl. 272-144.000

Wolff, Merle: *See—*
Magnuson, Douglas; Wolff, Merle; Lev, Sam; Jeffries, Kenneth; and Mapes, Scott D., 4,765,598, Cl. 266-110.000.

Wolff, Sheldon M.: *See—*
Auron, Philip E.; Dinarello, Charles A.; Webb, Andrew C.; Rich, Alexander; and Wolff, Sheldon M., 4,766,069, Cl. 435-70.000.

Wolff Walsrode AG: *See—*
Hinrichsen, Thomas; Preiss, Holger; and Witte, Harry, 4,766,018, Cl. 428-35.000

Wolters, Richard H.; Kleyla, Vince; Hooton, Arnold J.; and Converse, Gregory L., to Westinghouse Electric Corp. Computer integrated desk. 4,766,422, Cl. 340-700.000

Wong, Patrick S. L.; Barclay, Brian L.; Deters, Joseph C.; and Theeuwes, Felix, to Alza Corporation. Osmotic device for administering certain drugs. 4,765,989, Cl. 424-473.000.

Wong, Pui K., to Shell Oil Company. Crosslinked elastomers containing benzocyclobutene derivatives as crosslinking agents. 4,766,180, Cl. 525-289.000

Wong, Raymond W.: *See—*
Croucher, Melvin D.; Wong, Raymond W.; Duff, James M.; Hair, Michael L.; and Fuller, John R. C., 4,766,049, Cl. 430-115.000

Wood, Charles, to United States of America, National Aeronautics and Space Administration. Thermocouple for heating and cooling of memory metal actuators. 4,765,139, Cl. 60-527.000.

Wood, George W.: *See—*
Sallas, John J.; and Wood, George W., 4,766,576, Cl. 367-189.000.

Wood, Thomas H.: *See—*
Marcatili, Enrique A. J.; and Wood, Thomas H., 4,765,706, Cl. 350-96.160

Woodstone Foods Limited: *See—*
Nickel, Gary B., 4,766,204, Cl. 530-378.000

Wootten, Michael J.: *See—*
Byers, William A.; Carlson, Gerald L.; Pensenstadler, David F.; Wootten, Michael J.; and Richards, James E., 4,766,550, Cl. 364-497.000

Wotawa, Fred W.; and Wotawa, Patrick J. Fishing lure. 4,765,085, Cl. 43-42.110.

Wotawa, Patrick J.: *See—*
Wotawa, Fred W.; and Wotawa, Patrick J., 4,765,085, Cl. 43-42.110

Wright, Arthur P. G.; Wen, Betty P. L.; Schenck, Terry G.; and Maron, Antonina, to Warner-Lambert Company. Essentially pure acidic amine ligand aluminum complexes and their preparation. 4,766,216, Cl. 546-7.000

VOL 1093 ISS 4 AG 23 1988 UMI

Wright, John S. Ring binding mechanism. 4,765,768, Cl. 402-30.000.
Wright, Richard M. Loudspeaker support. 4,765,580, Cl. 248-181.000
Wycklendt, Daniel A.: *See—*
Butterworth, Edmund M.; and Wycklendt, Daniel A., 4,766,273, Cl. 200-147.00R.
Wyness, David K. Helical flow effluent weir. 4,765,891, Cl 210-207.000.
Xerox Corporation: *See—*
Barker, Laurence S.; Hays, Dan A.; Redding, Thomas P.; and Wayman, William H., 4,766,457, Cl. 355-3.0DD.
Berkes, John S.; and Swackhamer, Stanley B., 4,766,288, Cl. 219-216.000.
Breton, Marcel P.; Bluhm, Terry L.; and Lok, Kar P., 4,766,051, Cl 430-138.000.
Carter, Robert A., 4,766,455, Cl. 355-3.0BE.
Croucher, Melvin D.; Wong, Raymond W.; Duff, James M.; Hair, Michael L.; and Fuller, John R. C., 4,766,049, Cl. 430-115.000.
Curry, Douglas N.; and Curry, Donald J., 4,766,560, Cl. 364-721.000.
Dyer, Dexter A.; Howe, William C.; and Szlucha, Thomas F., 4,766,462, Cl. 355-10.000.
O'Connell, Patrick A., 4,766,450, Cl. 346-155.000.
Ong, Beng S.; and Alexandru, Lupu, 4,766,255, Cl. 568-728.000.
Pirwitz, Robert G., 4,766,456, Cl. 355-3.0FU
Xytec Plastics, Inc.: *See—*
Malmanger, John A., 4,765,480, Cl. 206-506.000.
Yabuki, Ritsue; Ohe, Junya; and Saitoh, Sadao, to Mitsubishi Kinzoku Kabushiki Kaisha. Co-base alloys for engine valves and valve seats. 4,765,955, Cl. 420-438.000.
Yabusaki, Yoshiyasu: *See—*
Oeda, Kenji; Sakaki, Toshiyuki; Ohkawa, Hideo; Yabusaki, Yoshiyasu; Murakami, Hiroko; Nakamura, Keiko; and Shimizu, Masatoshi, 4,766,068, Cl. 435-68.000.
Yagi, Motoi; Miyabayashi, Tadao; Morikawa, Yasuo; and Kobayashi, Yasuhito, to Tokyo Electric Co., Ltd.; and Fuji Photo Film Co., Ltd. Processing circuit for television sync signals produced from a recording medium for preforming a non-interlaced display. 4,766,506, Cl 360-37.100.
Yale Security Inc.: *See—*
Trull, Jeffrey G.; and Dixon, David, 4,765,163, Cl. 70-224.000.
Yamada, Hideaki; Hosoda, Satoru; and Ogawa, Tadatoshi, to Sumitomo Chemical Company, Limited. Foamed particles of propylene-type polymer. 4,766,157, Cl. 521-60.000.
Yamada, Junichi: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,765,408, Cl. 166-274.000.
Yamada, Katuyuki; and Isihama, Ekio. Eating utensils having a sound generating means. 4,765,465, Cl. 206-217.000.
Yamada, Shuji; Matsushita, Tetsuya; and Andou, Hironori, to Mita Industrial Co. Ltd. Electrostatic copying apparatus and auxiliary unit capable of being detachably mounted thereon. 4,766,467, Cl. 355-14.0SH
Yamada, Takashi: *See—*
Kawamoto, Mutumi; Moroto, Shuzo; Yamada, Takashi; and Yokoyama, Shouji, 4,765,434, Cl. 180-249.000.
Yamada, Tetsusho: *See—*
Hayakawa, Nobuhiro; Miyata, Shigeru; Yamada, Tetsusho; and Yokota, Kazunori, 4,765,880, Cl. 204-425.000.
Yamada, Yoshitaka: *See—*
Sampei, Takeshi; Iijima, Toshifumi; Yamada, Yoshitaka; Shimazaki, Hiroshi; Kumashiro, Kenji; Mochizuki, Yoshiharu; Matsuzaka, Syoji; and Kashiwagi, Hiroshi, 4,766,058, Cl. 430-496.000
Yamagata, Atsushi: *See—*
Sugimoto, Isao; Togo, Kazunori; Sasaki, Kozo; Yamagata, Atsushi; and Kuchiki, Akira, 4,765,990, Cl. 424-494.000
Yamagishi, Kiyoshi: *See—*
Anzai, Yutaka; Yamagishi, Kiyoshi; Yamaguchi, Yasuhide; and Moriya, Kazuo, 4,765,925, Cl. 252-301.40F.
Yamaguchi, Kouji: *See—*
Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, 4,765,295, Cl. 123-399.000.
Ishikawa, Yoshikazu; Yamaguchi, Kouji; and Suzuta, Takeo, 4,765,296, Cl. 123-399.000.
Yamaguchi, Minori: *See—*
Takada, Jun; Yamaguchi, Minori; and Tawada, Yoshihisa, 4,765,845, Cl. 136-258.000.
Yamaguchi, Yasuhide: *See—*
Anzai, Yutaka; Yamagishi, Kiyoshi; Yamaguchi, Yasuhide; and Moriya, Kazuo, 4,765,925, Cl. 252-301.40F.
Yamaguchi, Yasunori; and Miyake, Jun, to Hitachi, Ltd. Semiconductor memory device. 4,766,570, Cl. 365-189.000.
Yamaguchi, Yoshio: *See—*
Mashimo, Satoshi; Nagayasu, Susumu; Yamaguchi, Yoshio; Noguchi, Toru; Nakajima, Masayoshi; Kakiuchi, Hajime; and Tanida, Kijuro, 4,765,930, Cl. 252-511.000
Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Kobayashi, Manabu, 4,765,285, Cl. 123-52.00M.
Sakurai, Tadashi; and Fuchigami, Wataru, 4,765,137, Cl. 60-313.000
Yamamoto Chemicals, Inc.: *See—*
Hirose, Sumio; Ozawa, Hiroshi; Abe, Kenji; and Hosono, Yoichi, 4,766,054, Cl. 430-270.000
Yamamoto, Hajime; and Takashima, Yuji, to Matsushita Electric Industrial Co., Ltd. Color electrophotographic method. 4,766,460, Cl. 355-4.000
Yamamoto, Hideo: *See—*
Misaki, Masaru; Murata, Hisashi; Yamamoto, Hideo; and Watanabe, Yasuhiko, 4,765,996, Cl. 426-72.000.
Yamamoto, Kenji; Morishige, Masakatsu; Takeuchi, Harumi; and Tsunomoto, Yoshitaka, to Sanyo Electric Co., Ltd. Washing machine. 4,765,160, Cl. 68-12.00R.
Yamamoto, Masanori: *See—*
Hoshiko, Hidetoshi; Kona, Hideaki; Yamamoto, Masanori; and Inoue, Koichi, 4,765,533, Cl. 229-101.000.
Yamamoto, Shinichi: *See—*
Komatsu, Takahiro; Ide, Tohru; Akiyama, Hirohumi; Kitamura, Takao; and Yamamoto, Shinichi, 4,766,258, Cl. 570-168.000.
Yamamoto, Tadanobu: *See—*
Kondo, Toshiro; and Yamamoto, Tadanobu, 4,765,647, Cl. 280-701.000.
Yamamoto, Tohru: *See—*
Miyazaki, Toshiyuki; and Yamamoto, Tohru, 4,766,379, Cl. 324-309.000.
Yamamoto, Toshio, to Kabushiki Kaisha Universal. Reel assembly for slot machines. 4,765,078, Cl. 40-309.000
Yamana, Masayuki: *See—*
Furutaka, Yasuhisa; Yamana, Masayuki; and Honda, Tsunetoshi, 4,766,238, Cl. 560-227.000.
Yamane, Kazuo: *See—*
Mori, Masakazu; Tsuda, Takashi; and Yamane, Kazuo, 4,765,735, Cl. 356-121.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See—*
Sonobe, Takashi; Sugiura, Hiroshi; Itoh, Tomoh; Aruga, Masayoshi; and Kawata, Hiroitsu, 4,765,988, Cl. 424-468.000.
Takayanagi, Hitoshi; and Sawai, Yoshihiro, 4,765,983, Cl. 424-434.000.
Yamasaki, Jiro: *See—*
Mohri, Kaneo; and Yamasaki, Jiro, 4,765,848, Cl. 148-302.000.
Yamashita, Ichiro: *See—*
Hase, Hiroyuki; Yamashita, Ichiro; Tokuono, Shinya; and Wakamiya, Masayuki, 4,765,192, Cl. 73-862.360.
Yamashita, Osamu, to Murao Boki Kabushiki Kaisha. Apparatus for removing residual rovings on roving bobbins. 4,765,043, Cl. 28-294.000.
Yamashita, Takeo: *See—*
Otomo, Shigekazu; Kumasaka, Noriyuki; Saito, Noritoshi; Yamashita, Takeo; Shiiki, Kazuo; and Hamakawa, Yoshihiro, 4,766,039, Cl. 428-469.000.
Yamazaki, Hiroshi; and Shiratori, Kazuhiko, to Seikosha Co., Ltd. Method of setting time in digital clock and system therefor. 4,766,578, Cl. 368-69.000.
Yang, Ta-Yung, to System-General Corporation. Programmable pulse generator. 4,766,328, Cl. 307-106.000.
Yaniv, Zvi; and Cannella, Vincent D., to Ovonic Imaging Systems, Inc. Method of replicating images on a contoured image-bearing surface. 4,766,500, Cl. 358-285.000.
Yarnell, James A., to Dana Corporation. Spacer for transmission shaft. 4,765,197, Cl. 74-467.000.
Yasuda, Eturo: *See—*
Tomita, Masahiro; Yasuda, Eturo; and Matuoka, Hirosi, 4,765,919, Cl. 252-62.900.
Yasumoto, Seiichi: *See—*
Hamada, Takuji; Takahashi, Masahiro; Hirasawa, Kotaro; Ide, Jushi; Fushimi, Hitoshi; and Yasumoto, Seiichi, 4,766,590, Cl. 370-56.000
Yavorsky, William M.; and Gauer, Gary W., to Ecodyne Corporation. Pressure vessel with an improved sidewall structure. 4,765,507, Cl. 220-414.000
Yen, Teh F.: *See—*
Sadeghi, Mohammad-Ali; Sadeghi, Kazem; Kuo, Jih-Fen; Jang, Long-Kuan; and Yen, Teh F., 4,765,885, Cl. 208-391.000.
Yie, Gene G., to Fluidyne Corporation. Process and apparatus for generating multiple fluid jets. 4,765,540, Cl. 239-8.000.
Yokota, Hiroshi: *See—*
Danzuka, Toshio; Yokota, Hiroshi; and Ishiguro, Yoichi, 4,765,815, Cl. 65-3.120.
Yokota, Kazunori: *See—*
Hayakawa, Nobuhiro; Miyata, Shigeru; Yamada, Tetsusho; and Yokota, Kazunori, 4,765,880, Cl. 204-425.000.
Yokoyama, Shouji: *See—*
Kawamoto, Mutumi; Moroto, Shuzo; Yamada, Takashi; and Yokoyama, Shouji, 4,765,434, Cl. 180-249.000.
Yokoyama, Tomoaki: *See—*
Oka, Tateki; Yokoyama, Tomoaki; and Toyoshi, Naoki, 4,766,458, Cl. 355-3.0DD
Yoneyama, Tomio: *See—*
Ohata, Tokuya; Kobayashi, Masatsune; Suga, Yuko; Miura, Konoe; Takimoto, Hiroshi; and Yoneyama, Tomio, 4,765,838, Cl. 106-22.000
Yonker, John F., to General Motors Corporation. Auxiliary pump system for variable effort power steering. 4,765,427, Cl. 180-143.000.
Yoon, Chang-Hyun, to VBE Inc. Microwave clothes dryer. 4,765,066, Cl. 34-1.000.
Yoshida, Hiroshi: *See—*
Okita, Masao; Sugawara, Tadami; and Yoshida, Hiroshi, 4,766,510, Cl. 360-106.000
Yoshida Kogyo K. K.: *See—*
Kasai, Kazumi, 4,765,034, Cl. 24-136.00R.
Kasai, Kazumi, 4,765,038, Cl. 24-389.000
Yoshida Kogyo K.K.: *See—*
Yoshieda, Keiichi, 4,765,524, Cl. 227-18.000.

Yoshida, Kozaburo: *See—*
Hamamoto, Toshikazu; Aoi, Motojirou; Yoshida, Kozaburo; and Toda, Yasuhiko, 4,766,162, Cl. 523-440.000.
Yoshida, Osamu, to Eagle Industry Co. Ltd. Valve-closing aligning mechanism for an inclined valve. 4,765,586, Cl. 251-86.000.
Yoshieda, Keiichi, to Yoshida Kogyo K.K. Garment-fastener assembling apparatus with ram-driven position indicator. 4,765,524, Cl. 227-18.000.
Yoshimi, Hiroshi: *See—*
Kurio, Noriyuki; and Yoshimi, Hiroshi, 4,765,291, Cl. 123-196.00R.
Yoshimura, Isao; Nakao, Takashi; and Kohno, Mitsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Highly heat-sensitive film for stencil 4,766,033, Cl. 428-332.000.
Yoshioka, Toshiharu, to Honda Giken Kogyo Kabushiki Kaisha. Swing arm supporting structure in motorcycle. 4,765,431, Cl. 180-219.000
Yoshizumi, Keiichi; Matsubara, Akira; and Hayashi, Takao, to Matsushita Electric Industrial Co., Ltd. Optical information system having a birefringence plate movably disposed in accordance with the detected light intensity. 4,766,303, Cl. 250-205.000.
Young, Fred D.: *See—*
Sarr, Dennis P.; and Young, Fred D., 4,766,554, Cl. 364-507.000.
Youssef, Mahmoud: *See—*
Osswald, Hans; and Youssef, Mahmoud, 4,766,149, Cl. 514-553.000.
Yu, Wen C. Screw cap opener. 4,765,207, Cl. 81-3.420.
Yukawa, Akira, to NEC Corporation. Operational amplifier circuit having wide operating range. 4,766,394, Cl. 330-253.000
Yukawa, Takao; and Pitt, Janice M., to Biotechnology Australia Pty. Ltd. Nematode storage and transport. 4,765,275, Cl. 119-15.000.
Yuvancic, James A., to Amoco Corporation. Method of producing gas condensate and other reservoirs. 4,765,407, Cl. 166-268.000
Zagni, Angela: *See—*
Colle, Roberto; Gozzo, Franco; Camaggi, Giovanni; Mirenna, Luigi; and Zagni, Angela, 4,766,139, Cl. 514-383.000.
Zambon S.p.A.: *See—*
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,137, Cl. 514-371.000
Carenzi, Angelo; Chiarino, Dario; Della Bella, Davide; and Grancini, Giancarlo, 4,766,138, Cl. 514-371.000.
Zander, Andrew T.: *See—*
Morrisroe, Peter J.; Zander, Andrew T.; Manning, David C.; and Gagne, Peter H., 4,766,287, Cl. 219-121.520
Zandt, Robert O.: *See—*
Buchholz, Matthew; and Zandt, Robert O., 4,765,204, Cl. 76-101.00R.
Zanno, Paul R.; Barnett, Ronald E.; and Roy, Glenn M., to General Foods Corporation. L-aminodicarboxylic acid esters. 4,766,246, Cl 560-117.000
Zauderer, Bert, to Coal Tech Corp. Method of optimizing combustion and the capture of pollutants during coal combustion in a cyclone combustor. 4,765,258, Cl. 110-347.000
Zell, Werner V.: *See—*
Becker, Johann A.; Deusser, Peter G.; and Zell, Werner V 4,765,708, Cl. 350-96.200.
Zenith Electronics Corporation: *See—*
Adler, Robert; and Strauss, Paul, 4,766,424, Cl. 340-712.000
Banach, Frank G.; Haerle, James G.; and Tait, David S., 4,766,497 Cl. 358-188.000
Donovan, Timothy J.; and Reneau, Daniel L., 4,766,483, Cl 358-19.000
Fendley, James R.; Steiner, Johann; and Strauss, Paul, 4,766,342 Cl. 313-402.000
Kadlec, Joseph; Kociolek, Kenneth W.; and Okrzesik, Thaddeus P., 4,766,355, Cl. 315-399.000
Oliver, Kirk, 4,766,354, Cl. 315-371.000
Ziegler, Georg, to Sulzer Brothers Limited. Heat exchanger with a soot blower. 4,765,394, Cl. 165-95.000
Ziegler, Roy B.: *See—*
Langley, Robert E.; and Ziegler, Roy B., 4,765,170, Cl. 72-305.000
Zimmermann, Gerd: *See—*
Hank, Dietrich; Skiera, Heinz; and Zimmermann, Gerd, 4,765,241. Cl. 101-350.000.
Zink, Rudolf; and Fletcher, Ian J., to Ciba-Geigy Corporation. Chromogenic quinazolines. 4,766,211, Cl. 544-58.600
Zion, Kenneth J.; and Johnson, Richard H., to Stone Container Corporation. Octagonal carton for pizza pies or the like. 4,765,534, Cl 229-109.000
Zoche, Gunter, to Dynamit Nobel AG. Process for the preparation of ketoximosilanes. 4,766,231, Cl. 556-422.000
Zohler, Steven R., to Carrier Corporation. Apparatus for manufacturing enhanced heat transfer surface. 4,765,058, Cl. 29-727.000
Zolnowsky, John, to Motorola, Inc. Paged memory management unit having stack change control register. 4,766,537, Cl. 364-200.000
Zouzoulas, John, to Mars, Incorporated. Stacker apparatus. 4,765,607 Cl. 271-177.000
Zucker, Larry R.: *See—*
Pearson, Kenneth A.; and Zucker, Larry R., 4,766,532, Cl 364-200.000
Zumbrunnen, Michael L.: *See—*
Chu, Richard C.; Eid, Jeffrey C.; and Zumbrunnen, Michael L 4,765,400, Cl. 165-185.000
Zumfeld, Heinz: *See—*
Rosen, Klaus; Bertrams, Josef; Consoir, Rudolf; Differding, Heinz Mauries, Reinhard; Zumfeld, Heinz; and Irmen, Wolfgang, 4,765,128, Cl. 57-22.000
Zurfluh, Rene : *See—*
Bruderer, Hans; and Zurfluh, Rene , 4,766,115, Cl. 514-217.000
Zwier, Jan: *See—*
Husgen; Raets, Hubert; Schiefer, Gerd; and Zwier, Jan, 4,766,350 Cl. 315-207.000
ZymoGenetics Inc.: *See—*
Murray, Mark J.; and Kelly, James D., 4,766,073, Cl. 435-172 300
3COM Corporation: *See—*
Crane, Ronald C., 4,766,402, Cl. 333-25.000

VOL 1093 ISS 4 AG 23 1988 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Clay, Burton R.; and Thrailkill, William O., to Holographix Inc. Line scan reader/writer by holographic collection. Re. 32,735, Cl. 250-235.000

Holographix Inc.: *See—*
Clay, Burton R.; and Thrailkill, William O., Re. 32,735, Cl 250-235.000

Lovell, Patrick A. Alignment system for vehicle load bed. Re. 32,736, Cl. 280-6.00R

McLeod, Arlis D. Reversible mattress. Re. 32,734, Cl. 5-464.000.

Ortolano, Ralph J., to Southern California Edison. Continuous harmonic shrouding. Re. 32,737, Cl. 416-190.000.

Southern California Edison: *See—*
Ortolano, Ralph J., Re. 32,737, Cl. 416-190.000.

Thrailkill, William O.: *See—*
Clay, Burton R.; and Thrailkill, William O., Re. 32,735, Cl. 250-235.000

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Basilone, Anthony J.: *See—*
Sivertz, Christian; and Basilone, Anthony J., B1 3,963,842, Cl. 427-305.000

Brownstein, George: *See—*
Mandell, Ronald C.; and Brownstein, George, B1 3,333,198, Cl. 455-6.000

International Telemeter Corp.: *See—*
Mandell, Ronald C.; and Brownstein, George, B1 3,333,198, Cl. 455-6.000

Kawabata, Nariyoshi; and Yasuda, Sinichi, to Koei Chemical Co., Ltd. Method for adsorbing and recovering phenols. B1 4,303,531, 8-23-88, Cl. 210-663.000

Koei Chemical Co., Ltd.: *See—*
Kawabata, Nariyoshi; and Yasuda, Sinichi, B1 4,303,531, Cl. 210-663.000

London Laboratories Limited Co.: *See—*
Sivertz, Christian; and Basilone, Anthony J., B1 3,963,842, Cl. 427-305.000

Mandell, Ronald C.; and Brownstein, George, to International Telemeter Corp. Television converter for CATV system. B1 3,333,198, 8-23-88, Cl. 455-6.000

Sivertz, Christian; and Basilone, Anthony J., to London Laboratories Limited Co. Deposition of copper B1 3,963,842, 8-23-88, Cl. 427-305.000

Yasuda, Sinichi: *See—*
Kawabata, Nariyoshi; and Yasuda, Sinichi, B1 4,303,531, Cl. 210-663.000

LIST OF DESIGN PATENTEES

Ago, Nobuhiro: *See—*
Ito, Hitomi; and Ago, Nobuhiro, 297,304, Cl. D8-383.000.

American Telephone & Telegraph Company, AT&T Information Systems: *See—*
Engstrom, John G.; Mack, Henry J., Jr.; McGarvey, John N.; Till, Robert A., Jr.; and Zambelli, Michael P., 297,325, Cl. D14-60.000

Anastos, Arleen, executrix: *See—*
Anastos, John, deceased, 297,336, Cl. D19-90.000.

Anastos, John, deceased (by Anastos, Arleen, executrix), to Arjon Mfg. Corp. Magnetic note holder. 297,336, 8-23-88, Cl. D19-90.000.

Andersson, Arne; and Piltz, Lars-Eric. Can. 297,309, 8-23-88, Cl. D9-368.000

Aoki, Hidenori: *See—*
Aoki, Takashi; Aoki, Nobuyuki; and Aoki, Hidenori, 297,301, Cl. D8-72.000

Aoki, Nobuyuki: *See—*
Aoki, Takashi; Aoki, Nobuyuki; and Aoki, Hidenori, 297,301, Cl. D8-72.000

Aoki, Takashi; Aoki, Nobuyuki; and Aoki, Hidenori, to Koto Sangyo Company, Limited. Clamp. 297,301, 8-23-88, Cl. D8-72.000.

Arjon Mfg. Corp.: *See—*
Anastos, John, deceased, 297,336, Cl. D19-90.000.

Associated Mills Inc.: *See—*
Hilger, Ronald O., 297,374, Cl. D27-135.000.

Associated Products, Inc.: *See—*
Plymale, Janet C., 297,292, Cl. D6-551.000.

Atlantic Thermoplastics Co., Inc.: *See—*
Fox, Richard B., 297,282, Cl. D2-318.000.

Atwell, J. Dwayne. Paper tray for computer or similar article. 297,335, 8-23-88, Cl. D19-86.000

B & J Welding Shop, Inc.: *See—*
Briscoe, Jowel J., 297,378, Cl. D34-11.000

Baker, Bradley P.: *See—*
Rudick, Arthur G.; Credle, William S., Jr.; Baker, Bradley P.; and Bruffey, Robert D., 297,305, Cl. D9-300.000

Barnett, Charles F., to Stik-Guard, Inc. Needle guard. 297,365, 8-23-88, Cl. D24-25.000

Bastedo, Dewey D. Backwasher. 297,376, 8-23-88, Cl. D28-63.000

Batts, Inc.: *See—*
Blanchard, Russell O., 297,286, Cl. D6-326.000.

Benson, Richard A.; and Scott, Peter A. Drumstick. 297,333, 8-23-88, Cl. D17-22.000

Blanchard, Russell O., to Batts, Inc. Garment hangers. 297,286, 8-23-88, Cl. D6-326.000

Blum, Dietmar, to Julius Blum Gesellschaft m.b.H. Combined drilling and insertion machine for furniture fittings. 297,331, 8-23-88, Cl. D15-132.000.

Bosch-Siemens Hausgeraete GmbH: *See—*
Feil, Rolf; and Vetter, Roland, 297,296, Cl. D7-348.000.

Briscoe, Jowel J., to B & J Welding Shop, Inc. Trash cart or the like. 297,378, 8-23-88, Cl. D34-11.000.

Brousse, Stanislas: *See—*
Monehaie, Lionel; and Brousse, Stanislas, 297,329, Cl. D15-30.000.
Monehaie, Lionel; and Brousse, Stanislas, 297,330, Cl. D15-31.000.

Bruffey, Robert D.: *See—*
Rudick, Arthur G.; Credle, William S., Jr.; Baker, Bradley P.; and Bruffey, Robert D., 297,305, Cl. D9-300.000.

Bryan, Robert E. Octahedral residential structure. 297,369, 8-23-88, Cl. D25-1.000

Bussell, Vanda J. Holder for a tissue dispenser. 297,311, 8-23-88, Cl. D9-418.000

Campbell, Frank P. Multiple purpose hanger. 297,284, 8-23-88, Cl. D6-317.000

Canon Kabushiki Kaisha: *See—*
Ito, Hitomi; and Ago, Nobuhiro, 297,304, Cl. D8-383.000

Carl Zitzmann GmbH & Co.: *See—*
Palsby, Ole, 297,295, Cl. D7-317.000

Carlson, Arthur R., to Decor Corporation Proprietary Limited, The. Plant pot. 297,319, 8-23-88, Cl. D11-152.000

Casio Computer Co., Ltd.: *See—*
Ishizaka, Shingo, 297,312, Cl. D10-32.000.

Cheslock, Edward P., to Lasko Metal Products, Inc. Ceiling fan. 297,360, 8-23-88, Cl. D23-385.000.

Chui, Loon, to Joiner Electric Products Co. Ltd. Vacuum cleaner. 297,377, 8-23-88, Cl. D32-18.000

Claude, Alain, to NOW S.A. Wristwatch. 297,313, 8-23-88, Cl. D10-33.000.

Clement, Charles R. Lint filter for clothes dryer. 297,348, 8-23-88, Cl. D23-365.000

Clement, Charles R. Rotary air valve. 297,352, 8-23-88, Cl. D23-233.000.

Clement, Charles R. Rotary air valve. 297,353, 8-23-88, Cl. D23-233.000

Close, David R. Vertically adjustable table. 297,290, 8-23-88, Cl. D6-429.000

Coca-Cola Company, The: *See—*
Rudick, Arthur G.; Credle, William S., Jr.; Baker, Bradley P.; and Bruffey, Robert D., 297,305, Cl. D9-300.000.

Concepcion, Juan F.: *See—*
Lucas, Michael P.; Tabor, Robert; Gerstman, Richard B.; and Concepcion, Juan F., 297,280, Cl. D1-109.000

Credle, William S., Jr.: *See—*
Rudick, Arthur G.; Credle, William S., Jr.; Baker, Bradley P.; and Bruffey, Robert D., 297,305, Cl. D9-300.000.

Cucci, Gerald R.: *See—*
Pierce, Dean S.; and Cucci, Gerald R., 297,315, Cl. D10-85.000.

Decor Corporation Proprietary Limited, The: *See—*
Carlson, Arthur R., 297,319, Cl. D11-152.000.

de Keller, David G. Game board. 297,339, 8-23-88, Cl. D21-40.000

Dicon Systems Limited: *See—*
Taylor, Stephen C., 297,317, Cl. D10-106.000.
Taylor, Stephen C., 297,318, Cl. D10-106.000.

Dragan, William B. Dental matrix band. 297,362, 8-23-88, Cl. D24-16.000.

Dunsay, George: *See—*
Orenstein, Henry; and Dunsay, George, 297,337, Cl. D20-27.000.

Emhart Industries, Inc.: *See—*
Krause, Wolf-Dieter, 297,299, Cl. D8-30.000.

Engstrom, John G.; Mack, Henry J., Jr.; McGarvey, John N.; Till, Robert A., Jr.; and Zambelli, Michael P., to American Telephone & Telegraph Company, AT&T Information Systems. Telephone stand. 297,325, 8-23-88, Cl. D14-60.000

Ensar Corporation: *See—*
Sarnoff, Norton; and Fletcher, Carl R., 297,298, Cl. D7-391.000.

Fagan, John M. Combined bar and brackets for a storage and display rack. 297,293, 8-23-88, Cl. D6-566.000.

Feil, Rolf; and Vetter, Roland, to Bosch-Siemens Hausgeraete GmbH. Compact oven. 297,296, 8-23-88, Cl. D7-348.000.

Finklestein, David. Multiple panel connector. 297,303, 8-23-88, Cl. D8-382.000

Fischer, Jeffery A. Safety cover for electrical outlet. 297,323, 8-23-88, Cl. D13-31.000.

Fletcher, Carl R.: *See—*
Sarnoff, Norton; and Fletcher, Carl R., 297,298, Cl. D7-391.000.

Fogarty, A. Edward; and Fogarty, Bonnie R., to Hasbro, Inc. Vibrating game projector or similar article. 297,338, 8-23-88, Cl. D21-2.000.

Fogarty, Bonnie R.: *See—*
Fogarty, A. Edward; and Fogarty, Bonnie R., 297,338, Cl. D21-2.000

Forexim (H.K.) Limited: *See—*
Leung, Kwong Y, 297,371, Cl. D26-42.000

Foster, Thomas W., Jr. Bolster for supporting a reinforcing cage within a pier hole. 297,370, 8-23-88, Cl. D25-133.000.

Fox, Richard B., to Atlantic Thermoplastics Co., Inc. Innersole with shock-absorbing inserts. 297,282, 8-23-88, Cl. D2-318.000.

Fratelli Guzzini S.p.A.: *See—*
Minuti, Furio, 297,294, Cl. D7-72.000

Fujuwara, Shinji: *See—*
Nozo, Mikio; Shinoda, Isao; Fujuwara, Shinji; and Kikkawa, Yoshikazu, 297,328, Cl. D14-114.000.

Fukuchi, Eiji, to Mitsuboshi Belting Ltd. Bicycle tire. 297,320, 8-23-88, Cl. D12-146.000

Futatsuka, Mitsuyoshi: *See—*
Yamamoto, Toshio; and Futatsuka, Mitsuyoshi, 297,361, Cl. D24-1.100

Garber, Gary. Storage bag. 297,307, 8-23-88, Cl. D9-305.000

Gardner, Cal M. Brussel sprout doll. 297,341, 8-23-88, Cl. D21-155.000.

Gerstman, Richard B.: *See—*
Lucas, Michael P.; Tabor, Robert; Gerstman, Richard B.; and Concepcion, Juan F., 297,280, Cl. D1-109.000.

Gray, Evelyn A. Foldable traveling jewelry holder. 297,283, 8-23-88, Cl. D3-75.000

Group X: *See—*
Trent, Marty C., 297,334, Cl. D19-34.000

Gustafsson, Ake; and Hallin, Sune, to Nitro Nobel AB. Ignition apparatus for blasting machine. 297,347, 8-23-88, Cl. D22-112.000.

Hallin, Sune: *See—*
Gustafsson, Ake; and Hallin, Sune, 297,347, Cl. D22-112.000

Hartfelder, Kenneth D. Percussion pistol. 297,345, 8-23-88, Cl. D22-104.000

Hasbro Bradley, Inc.: *See—*
Orenstein, Henry; and Dunsay, George, 297,337, Cl. D20-27.000

Hasbro, Inc.: *See—*
Fogarty, A. Edward; and Fogarty, Bonnie R., 297,338, Cl. D21-2.000

Hedtke, Robert C., to Rosemount Inc. Pressure transmitter housing 297,314, 8-23-88, Cl. D10-46.000

Hilger, Ronald O., to Associated Mills Inc. Domed ashtray. 297,374, 8-23-88, Cl. D27-135.000

Hill, Loran R., to Masco Corporation of Indiana. Faucet handle. 297,358, 8-23-88, Cl. D23-252.000

Hsei, Paul K., to Smithkline Diagnostics, Inc. Body fluid specimen holder. 297,366, 8-23-88, Cl. D24-29.000

International Business Machines Corp.: *See—*
Williams, Roger C., 297,326, Cl. D14-111.000

Ishizaka, Shingo, to Casio Computer Co., Ltd. Wrist watch. 297,312, 8-23-88, Cl. D10-32.000.

Ito, Hitomi; and Ago, Nobuhiro, to Canon Kabushiki Kaisha. String fastener. 297,304, 8-23-88, Cl. D8-383.000.

J. Wagner GmbH: *See—*
Kille, Ewald, 297,350, Cl. D23-225.000.

Jaffe, Martin A.: *See—*
Schmid, John; and Jaffe, Martin A., 297,359, Cl. D23-370.000

Johnson, George E.; and Newman, Walter, to Leviton Manufacturing Company, Inc. Combined electrical socket and retainer for four pin U-shaped fluorescent lamp. 297,322, 8-23-88, Cl. D13-25.000

Joiner Electric Products Co. Ltd.: *See—*
Chui, Loon, 297,377, Cl. D32-18.000

Joosten, Stefanus F. W.; and Krol, Leonardus A. C., to U.S. Philips Corporation. Adjustable spotlight. 297,373, 8-23-88, Cl. D26-63.000

Julius Blum Gesellschaft m.b.H.: *See—*
Blum, Dietmar, 297,331, Cl. D15-132.000

Kensington Microware Limited: *See—*
Schmid, John; and Jaffe, Martin A., 297,359, Cl. D23-370.000

Kikkawa, Yoshikazu: *See—*
Nozo, Mikio; Shinoda, Isao; Fujuwara, Shinji; and Kikkawa, Yoshikazu, 297,328, Cl. D14-114.000

Kille, Ewald, to J. Wagner GmbH. Fluid spray gun. 297,350, 8-23-88, Cl. D23-225.000

King, Michael H. Vacuum sealed bag with a reclosable friction fastener. 297,306, 8-23-88, Cl. D9-305.000

Kitts, Keith, to Suncast Corporation. Pistol grip garden spray nozzle. 297,351, 8-23-88, Cl. D23-226.000

Kohler Co.: *See—*
Reid, Mary J., 297,356, Cl. D23-252.000

Kohno, Kenichiro, to Sony Corporation. Headphone. 297,324, 8-23-88, Cl. D14-36.000

Koto Sangyo Company, Limited: *See—*
Aoki, Takashi; Aoki, Nobuyuki; and Aoki, Hidenori, 297,301, Cl D8-72.000

Krause, Wolf-Dieter, to Emhart Industries, Inc. Hot melt glue gun 297,299, 8-23-88, Cl. D8-30.000

Krol, Leonardus A. C.: *See—*
Joosten, Stefanus F. W.; and Krol, Leonardus A. C., 297,373, Cl. D26-63.000

Kronsbein, Dirk G., to Ultrafilter GmbH Dusseldorf. Process filter housing. 297,349, 8-23-88, Cl. D23-209.000

Lacey, Ronald E., to Pizza Hut, Inc. Pan separator. 297,297, 8-23-88, Cl. D7-354.000

Larrea, Fernando. Toy rotor. 297,340, 8-23-88, Cl. D21-92.000

Larson, Lawrence L.: *See—*
Ruger, William B.; and Larson, Lawrence L., 297,344, Cl. D22-104.000

Larsson, Lars O. J., to Swards AB. Hanger for boots, cloths or the like 297,285, 8-23-88, Cl. D6-326.000

Lasko Metal Products, Inc.: *See—*
Cheslock, Edward P., 297,360, Cl. D23-385.000.

Leung, Kwong Y, to Forexim (H.K.) Limited. Battery operated fluorescent lantern. 297,371, 8-23-88, Cl. D26-42.000

Leviton Manufacturing Company, Inc.: *See—*
Johnson, George E.; and Newman, Walter, 297,322, Cl. D13-25.000

Liljedahl, Gunnar. Leg extension for furniture. 297,291, 8-23-88, Cl. D6-495.000

Liu, Kwok H., to Transistolite Manufacturing Limited. Shaver. 297,375, 8-23-88, Cl. D28-49.000

Lopez, Gabriel A. Jump seat. 297,287, 8-23-88, Cl. D6-356.000

Lucas, Michael P.; Tabor, Robert; Gerstman, Richard B.; and Concepcion, Juan F., to Nabisco Brands, Inc. Cookie having openings therethrough. 297,280, 8-23-88, Cl. D1-109.000

Lussier, Edward, to Reebok International Ltd. Shoe upper. 297,281, 8-23-88, Cl. D2-314.000

Lyons, Gerard E., to Polybottle. Bottle. 297,308, 8-23-88, Cl. D9-352.000

Mack, Henry J., Jr.: *See—*
Engstrom, John G.; Mack, Henry J., Jr.; McGarvey, John N.; Till, Robert A., Jr.; and Zambelli, Michael P., 297,325, Cl. D14-60.000

MacKenzie, William; and Peart, Stephen. Handgun cartridge catcher 297,346, 8-23-88, Cl. D22-108.000

Marx, P. J. Guitar neck. 297,332, 8-23-88, Cl. D17-20.000

Masco Corporation of Indiana: *See—*
Hill, Loran R., 297,358, Cl. D23-252.000
Spangler, Anthony G., 297,357, Cl. D23-252.000

Massey-Ferguson Services N.V.: *See—*
Monehaie, Lionel, and Brousse, Stanislas, 297,329, Cl. D15-30.000

VOL 1093 ISS 4 AG 23 1988 UMI

Monehaie, Lionel; and Brousse, Stanislas, 297,330, Cl. D15-31.000.
Mastro, Louis L., to Square D Company. Smoke detector. 297,316, 8-23-88, Cl. D10-106.000.
Matsushita Electrical Industrial Co., Ltd.: *See—*
Nozo, Mikio; Shinoda, Isao; Fujuwara, Shinji; and Kikkawa, Yoshikazu, 297,328, Cl. D14-114.000.
McDermott, Richard B.; and Turcotte, Maurice J., to Stanley-Bostitch, Inc. Desk stapler. 297,300, 8-23-88, Cl. D8-50.000.
McGarvey, John N.: *See—*
Engstrom, John G.; Mack, Henry J., Jr.; McGarvey, John N.; Till, Robert A., Jr.; and Zambelli, Michael P., 297,325, Cl. D14-60.000.
Mednis, Juris M., to Universal Symetrics Corporation. Bottle or the like. 297,310, 8-23-88, Cl. D9-373.000
Merrie, Carl. Collapsible grapnel anchor. 297,321, 8-23-88, Cl. D12-215.000.
Minuti, Furio, to Fratelli Guzzini S.p.A. Napkin dispenser. 297,294, 8-23-88, Cl. D7-72.000.
Mitsuboshi Belting Ltd.: *See—*
Fukuchi, Eiji, 297,320, Cl. D12-146.000.
Miyasaka, Eiichi; Nishimura, Tetsuro; and Sudo, Kazuhiko, to Terumo Corporation. Manifold for connecting tubes in blood administration equipment. 297,367, 8-23-88, Cl. D24-53.000.
Monehaie, Lionel; and Brousse, Stanislas, to Massey-Ferguson Services N.V. Vehicle cab. 297,329, 8-23-88, Cl. D15-30.000
Monehaie, Lionel; and Brousse, Stanislas, to Massey-Ferguson Services N.V. Tractor hood. 297,330, 8-23-88, Cl. D15-31.000.
Morrison, W. Andrew, to Thumbscan, Inc. Key pad. 297,327, 8-23-88, Cl. D14-114.000.
Morrissette, Roger J. Cart. 297,379, 8-23-88, Cl. D34-24.000.
Nabisco Brands, Inc.: *See—*
Lucas, Michael P.; Tabor, Robert; Gerstman, Richard B.; and Concepcion, Juan F., 297,280, Cl. D1-109.000.
Nelson, Terry N., to Specialty Manufacturing Company. Swing mount hose reel. 297,302, 8-23-88, Cl. D8-359.000.
Newman, Walter: *See—*
Johnson, George E.; and Newman, Walter, 297,322, Cl. D13-25.000
Nishimura, Tetsuro: *See—*
Miyasaka, Eiichi; Nishimura, Tetsuro; and Sudo, Kazuhiko, 297,367, Cl. D24-53.000.
Nitro Nobel AB: *See—*
Gustafsson, Ake; and Hallin, Sune, 297,347, Cl. D22-112.000.
NOW S.A.: *See—*
Claude, Alain, 297,313, Cl. D10-33.000.
Nozo, Mikio; Shinoda, Isao; Fujuwara, Shinji; and Kikkawa, Yoshikazu, to Matsushita Electrical Industrial Co., Ltd. Optical space transmission module for data communication network. 297,328, 8-23-88, Cl. D14-114.000.
Orenstein, Henry; and Dunsay, George, to Hasbro Bradley, Inc., a part interest. Heat energizable identification label for toys. 297,337, 8-23-88, Cl. D20-27.000.
Pacific Sun Casual Furniture, Inc.: *See—*
Raney, Gerald T., 297,288, Cl. D6-361.000
Palsby, Ole, to Carl Zitzmann GmbH & Co. Insulated flask. 297,295. 8-23-88, Cl. D7-317.000
Peart, Stephen: *See—*
MacKenzie, William; and Peart, Stephen, 297,346, Cl. D22-108.000
Pierce, Dean S.; and Cucci, Gerald R., to Rosemount Inc. Compact differential pressure transmitter. 297,315, 8-23-88, Cl. D10-85.000
Piltz, Lars-Eric: *See—*
Andersson, Arne; and Piltz, Lars-Eric, 297,309, Cl. D9-368.000.
Pizza Hut, Inc.: *See—*
Lacey, Ronald E., 297,297, Cl. D7-354.000.
Plymale, Janet C., to Associated Products, Inc. Toilet bowl brush with holder. 297,292, 8-23-88, Cl. D6-551.000.
Polybottle: *See—*
Lyons, Gerard E., 297,308, Cl. D9-352.000.
Poon, Tit-Wing. Combined fluorescent lantern and adjustable torch. 297,372, 8-23-88, Cl. D26-44.000.
Precision Fitting and Valve Company, Inc.: *See—*
Wirth, Steven E., 297,354, Cl. D23-245.000.
Wirth, Steven E., 297,355, Cl. D23-245.000
Racz, Gabor: *See—*
Salerno, Albert; and Racz, Gabor, 297,363, Cl. D24-18.000.
Raney, Gerald T., to Pacific Sun Casual Furniture, Inc. Frame for an adjustable chaise lounge. 297,288, 8-23-88, Cl. D6-361.000
Reebok International Ltd.: *See—*
Lussier, Edward, 297,281, Cl. D2-314.000.
Reid, Mary J., to Kohler Co. Plumbing fitting handle. 297,356, 8-23-88, Cl. D23-252.000.
Robinson, Lawrence J. Toy aircraft carrier. 297,342, 8-23-88, Cl. D21-130.000
Rosemount Inc.: *See—*
Hedtke, Robert C., 297,314, Cl. D10-46.000.
Pierce, Dean S.; and Cucci, Gerald R., 297,315, Cl. D10-85.000
Rudick, Arthur G.; Credle, William S., Jr.; Baker, Bradley P.; and Bruffey, Robert D., to Coca-Cola Company, The. Dispensing container. 297,305, 8-23-88, Cl. D9-300.000
Ruger, William B.; and Larson, Lawrence L., to Sturm, Ruger & Company, Inc. Elongated frame revolver. 297,344, 8-23-88, Cl. D22-104.000
Salerno, Albert; and Racz, Gabor. Laryngoscope blade. 297,363, 8-23-88, Cl. D24-18.000.
Sarnoff, Norton; and Fletcher, Carl R., to Ensar Corporation. Microwave dish cover. 297,298, 8-23-88, Cl. D7-391.000
Schmid, John; and Jaffe, Martin A., to Kensington Microware Limited. Computer cooling fan. 297,359, 8-23-88, Cl. D23-370.000.
Scott Orthotic Labs, Inc.: *See—*
Womack, Darryl L., 297,368, Cl. D24-64.000.
Scott, Peter A.: *See—*
Benson, Richard A.; and Scott, Peter A., 297,333, Cl. D17-22.000.
Shinoda, Isao: *See—*
Nozo, Mikio; Shinoda, Isao; Fujuwara, Shinji; and Kikkawa, Yoshikazu, 297,328, Cl. D14-114.000.
Slater, Daniel. Console for self-measuring one's weight, height, blood pressure and pulse rate. 297,364, 8-23-88, Cl. D24-21.000.
Smithkline Diagnostics, Inc.: *See—*
Hsei, Paul K., 297,366, Cl. D24-29.000.
Sony Corporation: *See—*
Kohno, Kenichiro, 297,324, Cl. D14-36.000.
Spangler, Anthony G., to Masco Corporation of Indiana. Kitchen faucet handle. 297,357, 8-23-88, Cl. D23-252.000.
Specialty Manufacturing Company: *See—*
Nelson, Terry N., 297,302, Cl. D8-359.000.
Square D Company: *See—*
Mastro, Louis L., 297,316, Cl. D10-106.000.
Stanley-Bostitch, Inc.: *See—*
McDermott, Richard B.; and Turcotte, Maurice J., 297,300, Cl. D8-50.000
Stik-Guard, Inc.: *See—*
Barnett, Charles F., 297,365, Cl. D24-25.000.
Strom, Victor. Bed. 297,289, 8-23-88, Cl. D6-389.000.
Sturm, Ruger & Company, Inc.: *See—*
Ruger, William B.; and Larson, Lawrence L., 297,344, Cl. D22-104.000
Sudo, Kazuhiko: *See—*
Miyasaka, Eiichi; Nishimura, Tetsuro; and Sudo, Kazuhiko, 297,367, Cl. D24-53.000.
Suncast Corporation: *See—*
Kitts, Keith, 297,351, Cl. D23-226.000.
Swards AB: *See—*
Larsson, Lars O. J., 297,285, Cl. D6-326.000.
Tabai Espec Kabushikikaisha: *See—*
Yamamoto, Toshio; and Futatsuka, Mitsuyoshi, 297,361, Cl. D24-1.100.
Tabor, Robert: *See—*
Lucas, Michael P.; Tabor, Robert; Gerstman, Richard B.; and Concepcion, Juan F., 297,280, Cl. D1-109.000.
Taylor, Stephen C., to Dicon Systems Limited. Gas detector. 297,317, 8-23-88, Cl. D10-106.000.
Taylor, Stephen C., to Dicon Systems Limited. Smoke detector chamber. 297,318, 8-23-88, Cl. D10-106.000.
Terumo Corporation: *See—*
Miyasaka, Eiichi; Nishimura, Tetsuro; and Sudo, Kazuhiko, 297,367, Cl. D24-53.000.
Thumbscan, Inc.: *See—*
Morrison, W. Andrew, 297,327, Cl. D14-114.000.
Till, Robert A., Jr.: *See—*
Engstrom, John G.; Mack, Henry J., Jr.; McGarvey, John N.; Till, Robert A., Jr.; and Zambelli, Michael P., 297,325, Cl. D14-60.000
Transistolite Manufacturing Limited: *See—*
Liu, Kwok H., 297,375, Cl. D28-49.000.
Trent, Marty C., to Group X. Bookmarker. 297,334, 8-23-88, Cl. D19-34.000
Turcotte, Maurice J.: *See—*
McDermott, Richard B.; and Turcotte, Maurice J., 297,300, Cl. D8-50.000
Ultrafilter GmbH Dusseldorf: *See—*
Kronsbein, Dirk G., 297,349, Cl. D23-209.000.
U.S. Philips Corporation: *See—*
Joosten, Stefanus F. W.; and Krol, Leonardus A. C., 297,373, Cl. D26-63.000
Universal Symetrics Corporation: *See—*
Mednis, Juris M., 297,310, Cl. D9-373.000.
Vetter, Roland: *See—*
Feil, Rolf; and Vetter, Roland, 297,296, Cl. D7-348.000.
Williams, Roger C., to International Business Machines Corp. Printer. 297,326, 8-23-88, Cl. D14-111.000.
Winston, Edith. Ankle weight. 297,343, 8-23-88, Cl. D21-196.000.
Wirth, Steven E., to Precision Fitting and Valve Company, Inc. Locking fluid valve. 297,354, 8-23-88, Cl. D23-245.000.
Wirth, Steven E., to Precision Fitting and Valve Company, Inc. Fluid valve. 297,355, 8-23-88, Cl. D23-245.000.
Womack, Darryl L., to Scott Orthotic Labs, Inc. Combined ankle and foot orthosis. 297,368, 8-23-88, Cl. D24-64.000.
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Zambelli, Michael P.: *See—*
Engstrom, John G.; Mack, Henry J., Jr.; McGarvey, John N.; Till, Robert A., Jr.; and Zambelli, Michael P., 297,325, Cl. D14-60.000

LIST OF PLANT PATENTEES

Jackson & Perkins Company: *See—*
Warriner, William A., 6,255, Cl. 22.000.
Moore, Ralph S., to Sequoia Nursery. Miniature rose plant named Mortorch. 6,254, 8-23-88, Cl. 7.000.
Sequoia Nursery: *See—*
Moore, Ralph S., 6,254, Cl. 7.000.
Warriner, William A., to Jackson & Perkins Company. Rose plant Jacrim. 6,255, 8-23-88, Cl. 22.000.
Yoshida, Eiichi. African violet named Arctic Winter. 6,256, 8-23-88, Cl. 69.000
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VOL
1093
ISS
4
AG
23
1988
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 23, 1988

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
88 4,764,985
115 4,764,986
243 R 4,764,987
268 4,764,988
422 4,764,989
429 4,764,990

CLASS 4
144.1 4,764,991
228 4,764,992
295 4,764,993
321 4,764,994
325 4,764,995
415 4,764,996
420.3 4,764,997
502 4,764,998
542 4,764,999
580 4,765,000
609 4,765,001
619 4,765,002
624 4,765,003

CLASS 5
93 R 4,765,004
443 4,765,005
464 Re.32,734
508 4,765,006

CLASS 6
1 4,765,007
12 A 4,765,008

CLASS 7
100 4,765,009

CLASS 8
115.7 4,765,796
654 4,765,797

CLASS 10
27 R 4,765,010

CLASS 12
1 A 4,765,011

CLASS 15
4 4,765,012
180 4,765,013
229.3 4,765,014
245 4,765,015
246 4,765,016
250 A 4,765,017
250.13 4,765,018
250.19 4,765,019
302 4,765,020

CLASS 16
20 4,765,021
87.4 R 4,765,022
112 4,765,023
251 4,765,024
261 4,765,025
289 4,765,026
354 4,765,027

CLASS 17
11 4,765,028
32 4,765,029
50 4,765,030
52 4,765,031

CLASS 24
20 CW 4,765,033
23 R 4,765,032
136 R 4,765,034
265 A 4,765,035
289 4,765,036
301 4,765,037
389 4,765,038
556 4,765,039
656 4,765,040

CLASS 28
191 4,765,041
257 4,765,042
294 4,765,043

CLASS 29
33 M 4,765,044
91.1 4,765,045
156.8 R 4,765,046
157 R 4,765,047
221.5 4,765,048
235 4,765,049
426.4 4,765,050
450 4,765,052
516 4,765,051
564.4 4,765,053
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599 4,765,055
600 4,765,056
623.1 4,765,798
623.5 4,765,799
716 4,765,057
727 4,765,058
749 4,765,059

CLASS 30
[illegible] 4,765,060
[illegible] 4,765,062

CLASS 33
140 4,765,063
172 E 4,765,064
379 4,765,061
556 4,765,065

CLASS 34
1 4,765,066
23 4,765,067
233 4,765,068

CLASS 36
50 4,765,069
117 4,765,070

CLASS 37
[illegible] 4,765,071
191 A 4,765,072
237 4,765,073

CLASS 40
219 4,765,076
308 4,765,077
309 4,765,078
439 4,765,079
576 4,765,080
661 4,765,074

CLASS 42
50 4,765,081

CLASS 43
[illegible] 4,765,082
26 4,765,083
34 4,765,084
42.11 4,765,085
42.52 4,765,086
[illegible] 4,765,087
102 4,765,088
4,765,089
127 4,765,090
131 4,765,091

CLASS 44
62 4,765,800

CLASS 47
61 4,765,092

CLASS 49
197 4,765,093
475 4,765,094

CLASS 51
34 R 4,765,096
90 4,765,097
99 4,765,098
170 T 4,765,099
287 4,765,095
293 4,765,801
313 4,765,100

CLASS 52
12 4,765,101
28 4,765,102
86 4,765,103
143 4,765,104
235 4,765,107
309.11 4,765,105
365 4,765,106
379 4,765,108
426 4,765,109
473 4,765,110
509 4,765,111
511 4,765,112
533 4,765,113
646 4,765,114
712 4,765,115
747 4,765,116

CLASS 53
133 4,765,117
4,765,118
[illegible] 4,765,119
441 4,765,120
442 4,765,121
4,765,122
459 4,765,123
502 4,765,124
512 4,765,125

CLASS 54
44 4,765,126

CLASS 55
2 4,765,802
4,765,803
16 4,765,804
18 4,765,805
21 4,765,806
51 4,765,807
[illegible] 4,765,808
267 4,765,809
270 4,765,810
498 4,765,811
524 4,765,812

CLASS 56
295 4,765,127

CLASS 57
22 4,765,128
59 4,765,130
72 4,765,129

CLASS 60
39.02 4,765,131
4,765,132
39.06 4,765,133
204 4,765,134
226.2 4,765,135
261 4,765,136
313 4,765,137
517 4,765,138
527 4,765,139
545 4,765,140
602 4,765,141
652 4,765,142
671 4,765,143
692 4,765,144
746 4,765,146
757 4,765,145

CLASS 62
20 4,765,813
4,765,814
62 4,765,147
116 4,765,148
174 4,765,149
215 4,765,150
239 4,765,151
389 4,765,152
514 R 4,765,153

CLASS 63
23 4,765,154

CLASS 65
3.12 4,765,815
4.2 4,765,816
8 4,765,817
18.1 4,765,818
30.1 4,765,819
36 4,765,820
169 4,765,821

CLASS 66
8 4,765,155
9 B 4,765,156
151 4,765,157
168 4,765,158

CLASS 68
12 R 4,765,159
4,765,160
4,765,161
20 4,765,162

CLASS 70
224 4,765,163
259 4,765,164
417 4,765,165

CLASS 71
34 4,765,822
92 4,765,823
4,765,824
94 4,765,825
121 4,765,826

CLASS 72
63 4,765,166
68 4,765,167
159 4,765,168
160 4,765,169
305 4,765,170
316 4,765,171
322 4,765,172
325 4,765,173
367 4,765,174
391 4,765,175
410 4,765,176
412 4,765,177

CLASS 73
49.2 4,765,178
53 4,765,179
59 4,765,180
105 4,765,181
151 4,765,184
153 4,765,182
154 4,765,183
260 4,765,185
290 V 4,765,186
304 R 4,765,187
[illegible] 4,765,188
[illegible] 4,765,189
861.72 4,765,190
862.19 4,765,191
862.36 4,765,192
865.9 4,765,193

CLASS 74
60 4,765,194
113 4,765,195
436 4,765,196
467 4,765,197
501 D 4,765,199
572 4,765,198
731 4,765,200
[illegible] 4,765,201
868 4,765,202
[illegible] 4,765,203

CLASS 75
2 4,765,827
10.19 4,765,828
25 4,765,829
53 4,765,830
67 R 4,765,831
68 A 4,765,832
[illegible] 4,765,833
[illegible] 4,765,834
118 P 4,765,835
241 4,765,836
249 4,765,837

CLASS 76
101 R 4,765,204
108 A 4,765,205

CLASS 81
3.37 4,765,206
3.42 4,765,207
3.55 4,765,208
57.17 4,765,209
57.39 4,765,210
119 4,765,211

CLASS 82
34 R 4,765,212

CLASS 83
61 4,765,213
80 4,765,214
153 4,765,215
341 4,765,216
841 4,765,217

CLASS 84
1.01 4,765,218
1.15 4,765,219

CLASS 87
57 4,765,220

CLASS 89
1.13 4,765,221
[illegible] 4,765,222
33.04 4,765,223
191.01 4,765,224

CLASS 91
362 4,765,225
369 A 4,765,226
417 R 4,765,227
486 4,765,228

CLASS 92
128 4,765,229

CLASS 98
2.11 4,765,230
33.1 4,765,231

CLASS 99
427 4,765,232
472 4,765,233
593 4,765,234

CLASS 100
3 4,765,235
88 4,765,236
89 4,765,237
4,765,238

CLASS 101
91 4,765,239
216 4,765,240
350 4,765,241
425 4,765,242
451 4,765,243

CLASS 102
213 4,765,244
251 4,765,245
318 4,765,246
339 4,765,247
529 4,765,248

CLASS 105
10 4,765,249
166 4,765,250
197.05 4,765,251

CLASS 106
22 4,765,838
273 N 4,765,839
285 4,765,840
402 4,765,841

CLASS 108
55.1 4,765,252
153 4,765,253

CLASS 109
85 4,765,254

CLASS 110
226 4,765,255
229 4,765,256
342 4,765,257
4,765,259
347 4,765,258

CLASS 111
2 4,765,260
7 4,765,261
73 4,765,262
[illegible] 4,765,263

CLASS 112
80.05 4,765,264
[illegible] 4,765,265
90 4,765,266
275 4,765,267
465 4,765,268

CLASS 114
61 4,765,269

CLASS 118
102 4,765,270
405 4,765,271
410 4,765,272
729 4,765,273

CLASS 119
15 4,765,274
4,765,275
29 4,765,276
51 R 4,765,277
82 4,765,278
109 4,765,279

CLASS 122
5.5 A 4,765,280

CLASS 123
2 4,765,281
41.31 4,765,283
41.49 4,765,284
41.7 4,765,282
52 M 4,765,285
52 MB 4,765,286
81 D 4,765,287
90.16 4,765,288
4,765,289
90.42 4,765,290
193 P 4,765,292
196 R 4,765,291
275 4,765,293
306 4,765,294
399 4,765,295
4,765,296
432 4,765,297
440 4,765,298
479 4,765,299
491 4,765,300
4,765,301
506 4,765,302
527 4,765,303
532 4,765,304
589 4,765,305
643 4,765,306

CLASS 125
21 4,765,307

CLASS 126
85 B 4,765,308
425 4,765,309

CLASS 128
1.5 4,765,310
3 4,765,311
[illegible] 4,765,312
4,765,313
4,765,314
25 R 4,765,315
36 4,765,316
75 4,765,317
80 C 4,765,318
87 A 4,765,320
87 R 4,765,319
132 D 4,765,323
136 4,765,324
202.13 4,765,325
202.22 4,765,326
204.13 4,765,327
303 R 4,765,328
4,765,329
303.1 4,765,330
303.14 4,765,331
305 4,765,332
305.1 4,765,333
305.3 4,765,334
326 4,765,335
395 4,765,336
4,765,337
402 4,765,338
632 4,765,339
633 4,765,340
639 4,765,343
715 4,765,321
725 4,765,342
770 4,765,344
777 4,765,345
783 4,765,322
785 4,765,341

CLASS 131
231 4,765,346
273 4,765,347
4,765,348
327 4,765,349

CLASS 132
88.5 4,765,350

CLASS 134
9 4,765,842
22.14 4,765,843
38 4,765,844

VOL 1093 ISS 4 AG 23 1988 UMI

56 D 4,765,351
99 4,765,352
138 4,765,353
182 4,765,354

CLASS 135

67 4,765,355

CLASS 136

258 4,765,845

CLASS 137

7 4,765,356
195 4,765,357
223 4,765,358
255 4,765,359
312 4,765,360
315 4,765,361
384 2 4,765,362
414 4,765,363
536 4,765,364
550 4,765,365
593 4,765,366
607 4,765,367
625 21 4,765,369
625 4 4,765,368
625 65 4,765,370
637 4,765,371
843 4,765,372
890 4,765,373

CLASS 138

89 4,765,374
155 4,765,375

CLASS 140

147 4,765,376

CLASS 141

1 4,765,377
69 4,765,378
381 4,765,379

CLASS 144

213 4,765,380

CLASS 148

9 R 4,765,846
15 5 4,765,847
302 4,765,848
335 4,765,849
404 4,765,850
437 4,765,851

CLASS 150

52 R 4,765,381

CLASS 152

48 4,765,382
209 R 4,765,383
4,765,384
416 4,765,385
556 4,765,386

CLASS 156

97 4,765,852
145 4,765,853
161 4,765,854
205 4,765,855
212 4,765,856
229 4,765,857
235 4,765,858
272.4 4,765,859
272.6 4,765,860
457 4,765,861
507 4,765,862
604 4,765,863
644 4,765,864
647 4,765,865
668 4,765,866

CLASS 157

1.0 4,765,387

CLASS 160

84.1 4,765,388

CLASS 162

72 4,765,867
343 4,765,868

CLASS 164

150 4,765,391
340 4,765,389
416 4,765,392
486 4,765,390

CLASS 165

47 4,765,393
95 4,765,394
104 12 4,765,395
104 26 4,765,396
104 33 4,765,397
110 4,765,398
4,765,399
185 4,765,400

CLASS 166

77 5 4,765,401
115 4,765,402
117.5 4,765,403
117.6 **4,765,404**
186 4,765,405
247 4,765,406
268 4,765,407
274 4,765,408
297 4,765,409
303 4,765,410

CLASS 168

4 4,765,411
15 4,765,412

CLASS 169

61 4,765,413

CLASS 174

36 4,766,267
68.5 4,766,268

CLASS 175

44 4,765,414
50 4,765,415
71 4,765,416
347 4,765,417
396 4,765,418
415 4,765,419

CLASS 177

149 4,765,420
199 4,765,421
211 4,765,422
4,765,423

CLASS 180

8 1 4,765,424
79 1 4,765,425
4,765,426
143 4,765,427
4,765,428
197 4,765,429
4,765,430
219 4,765,431
227 4,765,432
244 4,765,433
249 4,765,434

CLASS 181

102 4,765,435
207 4,765,436
282 4,765,437

CLASS 182

84 4,765,438
107 4,765,439

CLASS 186

44 4,765,440

CLASS 187

9 E 4,765,441
101 4,765,442

CLASS 188

24.21 4,765,443
129 **4,765,444**
299 4,765,445
319 4,765,446
343 4,765,447

CLASS 191

39 4,766,269

CLASS 192

0.052 4,765,450
18 A 4,765,448
43.1 4,765,449

CLASS 198

311 4,765,461
425 4,765,451
431 4,765,452
4,765,453
635 4,765,454
779 4,765,455
810 4,765,456

CLASS 200

50 A 4,766,270
144 B 4,766,274
147 R 4,766,273
153 A 4,766,275
159 B 4,766,271
256 4,766,276
293 4,766,277
302 2 4,766,272
327 4,766,278

CLASS 203

28 4,765,869

CLASS 204

44.2 4,765,871
101 4,765,873
105 R 4,765,874
129.1 4,765,870
130 4,765,872
157.79 4,765,875
157 95 4,765,876
206 4,765,877
211 4,765,878
290 R 4,765,879
425 4,765,880
428 4,765,881

CLASS 206

0.7 4,765,458
0.82 4,765,464
1.8 4,765,457
38.1 4,765,459
4,765,460
45.13 4,765,462
45.34 4,765,463
217 4,765,465
232 4,765,466
296 4,765,467
305 4,765,468
309 4,765,469
315.11 4,765,470
329 4,765,471
373 4,765,472
380 4,765,473
391 4,765,474
394 4,765,475
427 4,765,476
438 4,765,477
440 4,765,478
453 4,765,479
506 4,765,480
525 4,765,481
555 4,765,482
575 4,765,483
610 4,765,485

CLASS 208

59 4,765,882
78 4,765,883
89 4,765,884
391 4,765,885

CLASS 209

2 4,765,886
8 4,765,486
211 4,765,887
510 4,765,487
551 4,765,488
557 4,765,489
577 4,765,484

CLASS 210

86 4,765,888
121 4,765,889
198 2 4,765,890
207 4,765,891
290 4,765,892
315 4,765,893
393 4,765,894
474 4,765,896
491 4,765,895
500 23 4,765,897
500 41 4,765,898
519 4,765,899
603 4,765,900
4,765,901
610 4,765,902
635 4,765,903
636 4,765,906
637 4,765,904
638 4,765,905
648 4,765,907
663 B1 4,303,531
666 4,765,908
672 4,765,909
708 4,765,910
710 4,765,911
713 4,765,912
714 4,765,913
716 4,765,914
767 4,765,915

CLASS 211

46 4,765,490
49.1 4,765,491
55 4,765,492
59.2 4,765,493
69 5 4,765,494
113 4,765,495

CLASS 213

75 TC 4,765,496

CLASS 215

11.1 4,765,497
230 4,765,498
261 4,765,499

CLASS 219

10.55 B 4,766,279
69 P 4,766,281
69 W 4,766,280
86.25 4,766,282
98 4,766,283
121.52 4,766,287
121.57 4,766,286
121 59 4,766,284
121 63 4,766,285
216 4,766,288
235 4,766,289
458 4,766,290
534 4,766,291

CLASS 220

4 B 4,765,501
4 E 4,765,500
74 4,765,503
86 R 4,765,504
288 4,765,505
355 4,765,506
414 4,765,507

CLASS 221

48 4,765,508

CLASS 222

61 4,765,509
79 4,765,510
83 4,765,511
100 4,765,512
129 1 4,765,513
145 4,765,514
162 4,765,515
402.22 4,765,516
505 4,765,517
541 4,765,518

CLASS 223

78 4,765,519
111 4,765,520

CLASS 224

315 4,765,521
326 4,765,522

CLASS 226

74 4,765,523

CLASS 227

18 4,765,524

CLASS 228

4.5 4,765,526
9 4,765,525
107 4,765,527
123 4,765,528
132 4,765,529
175 4,765,530
179 4,765,531
212 4,765,532

CLASS 229

101 4,765,533
109 4,765,534
172 4,765,535

CLASS 235

22 4,766,292
379 4,766,293
380 4,766,294
383 4,766,295
4,766,296
455 4,766,297
462 4,766,298
472 4,766,299
4,766,300
487 4,766,301

CLASS 236

15 A 4,765,536
62 4,765,537

CLASS 238

283 4,765,538

CLASS 239

3 4,765,539
8 4,765,540
201 4,765,541
289 4,765,542
533 2 4,765,543
698 4,765,544

CLASS 240

639 4,765,643

CLASS 241

5 4,765,545
36 4,765,546
40 4,765,547
101 3 4,765,548
169 4,765,549
293 4,765,550

CLASS 242

7.05 B 4,765,551
18 R 4,765,552
25 A 4,765,553
55 1 4,765,554
55.53 4,765,555
82 4,765,556
107.3 4,765,557
107.4 A 4,765,558
4,765,559
129 4,765,560
130 4,765,562
192 4,765,561
199 4,765,563

CLASS 244

3.15 4,765,573
3.16 4,765,564
3.22 4,765,565
3 23 4,765,566
17.11 4,765,567
75 R 4,765,568
118.5 4,765,569
122 AE 4,765,570
151 B 4,765,571
178 4,765,572

CLASS 248

1 R 4,765,574
49 4,765,576
59 4,765,577
4,765,578
101 4,765,579
181 4,765,580
250 4,765,575
311.2 4,765,581
394 4,765,582
444 4,765,583
558 4,765,584

CLASS 249

64 4,765,585

CLASS 250

4,766,302
205 4,766,303
214 C 4,766,304
216 4,766,305
227 4,766,306
231 SE 4,766,307
235 Re.32,735
236 4,766,308
237 G 4,766,310
237 R 4,766,309
252.1 4,766,311
281 4,766,312
289 4,766,313
296 4,766,314
339 4,766,315
352 4,766,316
358 1 4,766,317
385 2 4,766,318
390 4,766,319
431 4,766,321
492 2 4,766,320
561 4,766,322
4,766,323
563 4,766,324
572 4,766,325

CLASS 251

86 4,765,586
129 19 4,765,587
149.1 4,765,588
229 4,765,589
310 4,765,590
330 4,765,591
368 4,765,592

CLASS 252

8 9 4,765,916
40.7 4,765,917
46 4 4,765,918
62 58 4,765,920
62.9 4,765,919
87 4,765,921
90 4,765,922
181 4,765,923
299 61 4,765,924
301.4 F 4,765,925
352 4,765,926
400 2 4,765,927
500 4,765,928
511 4,765,929
4,765,930
584 4,765,931

CLASS 254

8 B 4,765,593
45 4,765,594
126 4,765,595

CLASS 256

65 4,765,596

CLASS 261

27 4,765,932
44.6 4,765,933

CLASS 264

26 4,765,934
40 1 4,765,941
40 5 4,765,935
46 1 4,765,936
185 4,765,937
269 4,765,938
298 4,765,939
339 4,765,940
510 4,765,942

CLASS 266

51 4,765,597
110 4,765,598
216 4,765,599

CLASS 267

122 4,765,600
140.1 4,765,601
148 4,765,602

CLASS 269

302.1 4,765,603

CLASS 270

39 4,765,604
55 4,765,502

CLASS 271

147 4,765,605
157 4,765,606
177 4,765,607

CLASS 272

67 4,765,608
76 4,765,609
117 4,765,610
118 4,765,611
119 4,765,612
129 4,765,613
130 4,765,614
132 4,765,615
144 4,765,616

CLASS 273

1 G 4,765,748
25 4,765,617
30 4,765,618
4,765,619
73 E 4,765,621
73 G 4,765,620
85 R 4,765,622
161 4,765,623
183 A 4,765,625
183 E 4,765,624
232 4,765,626
255 4,765,627
425 4,765,628

CLASS 277

1 4,765,629
4,765,630
2 4,765,631
81 R 4,765,632
166 4,765,633
235 B 4,765,634

CLASS 280

5 A 4,765,635
6 R Re.32,736
47.11 4,765,636
411 R 4,765,637
415 R 4,765,639
423 B 4,765,638
615 4,765,640
628 4,765,641
641 4,765,644
[redacted] 4,765,645
651 4,765,646
656 4,765,642
701 4,765,647
707 4,765,648
4,765,649
723 4,765,650
[redacted] 4,765,651

CLASS 281

42 4,765,652

CLASS 282

1 R 4,765,653

CLASS 283

67 4,765,654
70 4,765,655
4,765,656

CLASS 285

91 4,765,657
137.1 4,765,658
215 4,765,659
229 4,765,660
382.5 4,765,661

CLASS 292

92 4,765,662
169 13 4,765,663
288 4,765,664

CLASS 293

102 4,765,665

CLASS 294

1.4 4,765,666
82.33 4,765,667
88 4,765,668
119.1 4,765,669

CLASS 296

1 F 4,765,670
39 R 4,765,671
84 R 4,765,672
93 4,765,673
97 G 4,765,675
97 K 4,765,674
216 4,765,676
4,765,677

CLASS 297

236 4,765,678
316 4,765,679
367 4,765,680
4,765,681
379 4,765,682
410 4,765,683
429 4,765,684
488 4,765,685

CLASS 299

81 4,765,686
4,765,687

CLASS 301

124 R 4,765,688

CLASS 303

115 4,765,689
4,765,690
117 4,765,691
119 4,765,692
4,765,693

CLASS 305

35 R 4,765,694
56 4,765,695

CLASS 307

10 R 4,766,326
87 4,766,327
106 4,766,328
118 4,766,329
139 4,766,330
141 4,766,331
358 4,766,332
530 4,766,333
540 4,766,334
592 4,766,335

CLASS 310

12 4,766,336
58 4,766,337

CLASS 312

214 4,765,696
229 4,765,697
248 4,765,698
339 4,765,699

CLASS 313

25 4,766,338
276 4,766,339
366 4,766,340
402 4,766,341
4,766,342
412 4,766,343
414 4,766,344
518 4,766,345
579 4,766,346
623 4,766,347
631 4,766,348
4,766,349

CLASS 315

207 4,766,350
240 4,766,351
244 4,766,352
324 4,766,353
371 4,766,354
399 4,766,355

CLASS 318

55 4,766,356
118 4,766,357
135 4,766,358
652 4,766,359
732 4,766,360

CLASS 320

2 4,766,361

CLASS 322

50 4,766,362

CLASS 323

243 4,766,363
272 4,766,364
308 4,766,365
312 4,766,366
315 4,766,367

CLASS 324

61 P 4,766,368
61 QS 4,766,389
61 R 4,766,369
74 4,766,370
158 F 4,766,371
158 R 4,766,372
204 4,766,373
207 4,766,374
[redacted] 4,766,375
4,766,376
307 4,766,377
4,766,378
309 4,766,379
4,766,380
4,766,381
312 4,766,382
318 4,766,383
339 4,766,384
345 4,766,385
533 4,766,386
545 4,766,387
4,766,388
[redacted]
270 4,766,390

CLASS 329

50 4,766,391
124 4,766,392

CLASS 330

4.3 4,766,393
253 4,766,394
284 4,766,395
288 4,766,396

CLASS 331

1 A 4,766,397
96 4,766,398
111 4,766,399

CLASS 332

9 R 4,766,400

CLASS 333

12 4,766,401
25 4,766,402

CLASS 335

257 4,766,405

CLASS 336

65 4,766,406
196 4,766,407

CLASS 337

244 4,766,408

CLASS 338

22 R 4,766,409
275 4,766,410
306 4,766,411
334 4,766,412

CLASS 340

130 4,766,413
310 A 4,766,414
347 AD 4,766,416
347 CC 4,766,417
347 DA 4,766,415
365 R 4,766,418
545 4,766,419
550 4,766,420
700 4,766,422
709 4,766,423
712 4,766,424
4,766,425
719 4,766,426
721 4,766,427
724 4,766,429
784 4,766,428
793 4,766,430
799 4,766,431
825.17 4,766,432
825 31 4,766,433
825 44 4,766,434
904 4,766,421

CLASS 342

82 4,766,435
122 4,766,436
368 4,766,437
372 4,766,438
445 4,766,439

CLASS 343

700 MS 4,766,440
709 4,766,441
719 4,766,442
840 4,766,443
895 4,766,444

CLASS 346

108 4,766,445
136 4,766,446
150 4,766,447
4,766,448
4,766,449
155 4,766,450

CLASS 350

96.10 4,765,701
96 12 4,765,702
96 14 4,765,703
96.15 4,765,704
4,765,705
96.16 4,765,706
96 2 4,765,700
96 20 4,765,707
4,765,708
4,765,709
4,765,710
96.23 4,765,711
4,765,712
96 34 4,765,713
162.13 4,765,714
162 18 4,765,724
171 4,765,715
273 4,765,716
331 R 4,765,717
345 4,765,718
350 S 4,765,719
4,765,720
389 4,765,721
427 4,765,722
432 4,765,723
4,765,725
452 4,765,726
483 4,765,727

CLASS 351

160 R 4,765,728
163 4,765,729
205 4,765,730
243 4,765,731
4,765,732

CLASS 353

99 4,765,733
121 4,765,734

CLASS 354

64 4,766,451
173.1 4,766,452
286 4,766,453
302 4,766,454

CLASS 355

3 BE 4,766,455
3 DD 4,766,457
4,766,458
4,766,468
3 FU 4,766,456
3 R 4,766,403
3 SH 4,766,459
4 4,766,460
5 4,766,461
7 4,766,404
10 4,766,462
14 R 4,766,464
14 SH 4,766,467
53 4,766,465
57 4,766,466
125 4,766,492
145 H 4,766,463

CLASS 356

121 4,765,735
300 4,765,736
336 4,765,737
349 4,765,738
350 4,765,739
4,765,740
358 4,765,741
373 4,765,742
388 4,765,743
398 4,765,744

CLASS 357

13 4,766,469
17 4,766,470
19 4,766,471
4,766,472
23.5 4,766,473
23 7 4,766,482
23 8 4,766,474
40 4,766,475
42 4,766,476
59 4,766,477
70 4,766,478
74 4,766,479
4,766,480
80 4,766,481

CLASS 358

19 4,766,483
23 4,766,484
34 4,766,485
40 4,766,486
4,766,487
93 4,766,488
98 4,766,489
105 4,766,490
108 4,766,491
139 4,766,493
140 4,766,494
148 4,766,495
160 4,766,496
188 4,766,497
237 4,766,498
283 4,766,499
285 4,766,500
311 4,766,501
322 4,766,502
332 4,766,503
337 4,766,504

CLASS 360

19 1 4,766,505
37.1 4,766,506
72.2 4,766,507
77 4,766,508
106 4,766,509
4,766,510
132 4,766,511
137 4,766,512

CLASS 361

117 4,766,513
220 4,766,514
234 4,766,515
380 4,766,516
383 4,766,517
389 4,766,518
399 4,766,519
421 4,766,520
426 4,766,521
433 4,766,522
4,766,523

CLASS 362

29 4,766,524
183 4,766,525
255 4,766,526
354 4,766,527

CLASS 363

21 4,766,528

CLASS 364

200 4,766,530
4,766,531
4,766,532
4,766,533
4,766,534
4,766,535
4,766,536
4,766,537
4,766,538
401 4,766,539
405 4,766,540
410 4,766,541
413 4,766,542
422 4,766,543
424 1 4,766,544
431 08 4,766,545
474 4,766,546
478 4,766,547
479 4,766,548
481 4,766,549
497 4,766,550
498 4,766,551
500 4,766,552
506 4,766,553
507 4,766,554
513.5 4,766,529
518 4,766,555
522 4,766,556
550 4,766,557
558 4,766,558
573 4,766,559
721 4,766,560
724 4,766,561
4,766,562
4,766,563
748 4,766,564
784 4,766,565
900 4,766,566
4,766,567

CLASS 365

49 4,766,568
185 4,766,569
189 4,766,570
4,766,571
190 4,766,572
222 4,766,573

CLASS 366

76 4,765,745
77 4,765,746
186 4,765,747

CLASS 367

50 4,766,574
153 4,766,575
189 4,766,576
911 4,766,577

CLASS 368

69 4,766,578
190 4,766,579

CLASS 369

4 4,766,584
21 4,766,580
30 4,766,581
45 4,766,582
4,766,583
46 4,766,585
217 4,766,586
263 4,766,587

CLASS 370

4 4,766,588
32 4,766,589
56 4,766,590
66 4,766,591
62 4,766,592

CLASS 371

15 4,766,593
22 4,766,594
23 4,766,595
62 4,766,596

CLASS 372

44 4,766,597

CLASS 373

108 4,766,598

CLASS 374

32 4,765,749
137 4,765,750
143 4,765,751
153 4,765,752

CLASS 375

8 4,766,599
10 4,766,600
59 4,766,601
116 4,766,602

CLASS 376

154 4,765,943
254 4,765,944
258 4,765,945
282 4,765,946
347 4,765,947
404 4,765,948
443 4,765,949

CLASS 378

152 4,766,603

CLASS 379

60 4,765,753
67 4,766,604
225 4,766,605
344 4,766,606

CLASS 384

44 4,765,754
126 4,765,755
133 4,765,756
213 4,765,757
221 4,765,758
252 4,765,759
398 4,765,760
484 4,765,761
539 4,765,762

CLASS 400

121 4,765,763
482 4,765,764
614 4,765,765

CLASS 401

48 4,765,766
213 4,765,767

CLASS 402

30 4,765,768

CLASS 403

24 4,765,769
146 4,765,770

CLASS 404

74 4,765,771
77 4,765,772
94 4,765,773
101 4,765,774

CLASS 405

52 4,765,775
169 4,765,776
230 4,765,777
260 4,765,778

CLASS 406

106 4,765,779
123 4,765,780
197 4,765,781

CLASS 407

24 4,765,782
41 4,765,783

CLASS 408

13 4,765,784
109 4,765,785
110 4,765,786

CLASS 411

41 4,765,787
61 4,765,788

CLASS 414

10 4,765,789
28 4,765,791
47 4,765,790
401 4,765,792
416 4,765,793
534 4,765,794
680 4,765,795

CLASS 416

190 Re.32,737

CLASS 419

2 4,765,950
47 4,765,951
4,765,952

CLASS 420

65 4,765,953
120 4,766,023
403 4,765,954
438 4,765,955
445 4,765,956
582 4,765,957

CLASS 422

12 4,765,958
48 4,765,959
49 4,765,960
52 4,765,961
59 4,765,962
68 4,765,963
156 4,765,964
186 4,765,965
244 4,765,966

CLASS 423

445 4,765,968
573 R 4,765,969
608 4,765,970

CLASS 424

1.1 4,765,971
4,765,972
70 4,765,975
4,765,976
78 4,765,977
80 4,765,978
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108 4,765,980
195 1 4,765,981
403 4,765,982
434 4,765,983
441 4,765,984
443 4,765,974
449 4,765,985
4,765,986
450 4,765,987
4,766,046
468 4,765,988
473 4,765,989
486 4,765,973
494 4,765,990

CLASS 426

3 4,765,991
15 4,765,992
29 4,765,993
31 4,765,994
46 4,765,995
72 4,765,996
92 4,765,998
113 4,765,999
330 4 4,766,000
422 4,765,997
477 4,766,001
538 4,766,002
582 4,766,003
658 4,766,004

CLASS 427

4 4,766,005
38 4,766,006
39 4,766,007
4,766,008
53.1 4,766,009
96 4,766,010
117 4,766,011
213.36 4,766,012
228 4,766,013
245 4,766,014
305 B1 3,963,842
326 4,766,015
428 4,766,016
444 4,766,017

CLASS 428

35 4,766,018
4,766,019
54 4,766,020
64 4,766,021
95 4,766,022
4,766,024
159 4,766,025
203 4,766,026

VOL 1093 ISS 4 AG 23 1988 UMI

210	4,766,027	172.3	4,766,073		CLASS 514	713	4,766,155	28	4,766,194	138	4,766,229
253	4,766,028	223	4,766,074	12	4,766,106		CLASS 521	76	4,766,195	176	4,766,230
286	4,766,029	240 2	4,766,075	16	4,766,108	27	4,766,161	89	4,766,196	422	4,766,231
289	4,766,030	253	4,766,076	17	4,766,109	58	4,766,156	125	4,766,197		CLASS 558
317 9	4,766,031		4,766,077	19	4,766,110	60	4,766,157	128	4,766,199	324	4,766,232
325	4,766,032	291	4,766,078	25	4,766,111	110	4,766,158	374	4,766,201		CLASS 560
332	4,766,033		CLASS 436	30	4,766,112	134	4,766,159	377	4,766,198	22	4,766,233
336	4,766,034	63	4,766,079	187	4,766,113		CLASS 522	502	4,766,200	26	4,766,234
345	4,766,035	74	4,766,080	211	4,766,114	46	4,766,160		4,766,202	78	4,766,236
364	4,766,036	144	4,766,081	217	4,766,115		CLASS 523		CLASS 530	051	4,766,235
395	4,766,181	178	4,766,082	218	4,766,116	440	4,766,162	370	4,766,203	117	4,766,246
402 21	4,766,037	517	4,766,083	219	4,766,117	509	4,766,163	378	4,766,204	155	4,766,237
447	4,766,038		CLASS 437	224.2	4,766,118		CLASS 524	402	4,766,205	227	4,766,238
469	4,766,039	3	4,766,084	227.8	4,766,120	100	4,766,164	412	4,766,224	351	4,766,239
552	4,766,040		4,766,085	239 2	4,766,119	140	4,766,165		CLASS 534		CLASS 562
606	4,766,041	15	4,766,087	247	4,766,121	275	4,766,166	619	4,766,206	460	4,766,240
679	4,766,042	52	4,766,088		4,766,122	310	4,766,167		CLASS 536		CLASS 564
	CLASS 429	53	4,766,089	253	4,766,123	377	4,766,168	18 5	4,766,208	89	4,766,241
19	4,766,044	57	4,766,090	255	4,766,124	499	4,766,169	18 6	4,766,207	154	4,766,242
39	4,766,043	011	4,766,086	267	4,766,125	500	4,766,170	55 3	4,766,209	414	4,766,243
105	4,766,045	108	4,766,091	277	4,766,126	722	4,766,171		CLASS 540	418	4,766,244
	CLASS 430	126	4,766,092	288	4,766,127	783	4,766,172	488	4,766,210	474	4,766,245
19	4,766,047	129	4,766,093	300	4,766,128	819	4,766,173		CLASS 544	498	4,766,247
58	4,766,048	164	4,766,094	303	4,766,129		CLASS 525	58 6	4,766,211		CLASS 568
115	4,766,049	217	4,766,095	307	4,766,130	64	4,766,174	101	4,766,212	31	4,766,248
138	4,766,050		CLASS 440	332	4,766,131	71	4,766,175	127	4,766,213	433	4,766,249
	4,766,051	38	4,765,075	338	4,766,132	100	4,766,176	336	4,766,214		4,766,250
203	4,766,052		CLASS 455	346	4,766,133	131	4,766,177	357	4,766,215	436	4,766,251
256	4,766,053	6	B1 3,333,198		4,766,134	240	4,766,178		CLASS 546	616	4,766,252
270	4,766,054	612	4,766,607	357	4,766,135	282	4,766,179	7	4,766,216	639	4,766,253
281	4,766,055		CLASS 501	371	4,766,136	289	4,766,180	94	4,766,217	724	4,766,254
351	4,766,056	17	4,766,096		4,766,137	413	4,766,182	170	4,766,218	728	4,766,255
383	4,766,057	98	4,766,097	383	4,766,138	454	4,766,183	286	4,766,219	765	4,766,256
496	4,766,058	101	4,766,098	397	4,766,139	463	4,766,184	302	4,766,220	948	4,766,257
531	4,766,059		CLASS 502	409	4,766,140	479	4,766,185		CLASS 548		CLASS 570
546	4,766,061	72	4,766,099	422	4,766,141	532	4,766,186	320	4,766,221	168	4,766,258
553	4,766,060	115	4,766,100	431	4,766,142		CLASS 526		CLASS 549		4,766,259
	CLASS 435	164	4,766,101	457	4,766,143	209	4,766,187	39	4,766,222		4,766,260
4	4,766,063	202	4,766,102	460	4,766,144	227	4,766,188	468	4,766,223	179	4,766,261
6	4,766,062	216	4,766,105	469	4,766,145	245	4,766,189		CLASS 556	211	4,766,262
	4,766,064	217	4,766,103	530	4,766,146	247	4,766,190	10	4,766,225		CLASS 585
-	4,766,065	218	4,766,104	533	4,766,147		CLASS 528	18	4,766,226	408	4,766,263
65	4,766,066		CLASS 512	553	4,766,148	14	4,766,191	21	4,766,227	412	4,766,264
	4,766,067	13	4,766,107	567	4,766,149		4,766,192	25	4,766,228	415	4,766,265
	4,766,068			640	4,766,150	17	4,766,193			660	4,766,266
76	4,766,069				4,766,151						
77	4,766,070			785	4,766,152						
80	4,766,071				4,766,153						
95	4,766,072				CLASS 518						
				700	4,766,154						

CLASSIFICATION OF DESIGNS

D1—	109	297,280		354	297,297		46	297,314		132	297,331	D23—	209	297,349		21	297,364
D2—	314	297,281		391	297,298		85	297,315	D17—	[illegible]	297,332		225	297,350		25	297,365
	318	297,282	D8—	[illegible]	297,299		106	297,316		22	297,333		226	297,351		29	297,366
D3—	75	297,283		50	297,300			297,317	D19—	34	297,334		233	297,352		53	297,367
D6—	317	297,284		72	297,301			297,318		86	297,335			297,353		[illegible]	297,368
	326	297,285		359	297,302	D11—	152	297,319		90	297,336		245	297,354	D25—	1	297,369
		297,286		382	297,303	D12—	146	297,320	D20—	27	297,337			297,355		133	297,370
	356	297,287		383	297,304		215	297,321	D21—	2	297,338		252	297,356	D26—	42	297,371
	361	297,288	D9—	[illegible]	297,305	D13—	25	297,322		[illegible]	297,339			297,357		[illegible]	297,372
	389	297,289		305	297,306		31	297,323		92	297,340			297,358		63	297,373
	429	297,290			297,307	D14—	36	297,324		130	297,342		365	297,348	D27—	135	297,374
	495	297,291		352	297,308		[illegible]	297,325		155	297,341		370	297,359	D28—	49	297,375
	551	297,292		[illegible]	297,309		111	297,326		196	297,343		385	297,360		63	297,376
	566	297,293		373	297,310		114	297,327	D22—	104	297,344	D24—	1.1	297,361	D32—	18	297,377
D7—	72	297,294		418	297,311			297,328			297,345		16	297,362	D34—	11	297,378
	317	297,295	D10—	32	297,312	D15—	30	297,329		[illegible]	297,346		18	297,363		24	297,379
	[illegible]	297,296		33	297,313		31	297,330		112	297,347						

CLASSIFICATION OF PLANTS

P—	7	6,254		69	6,256		6,257		6,258		6,259		6,260
	22	6,255											

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	4,765,222		4,765,500		4,766,087	09	4,764,992		4,765,448		4,766,189
	4,765,574		4,765,509		4,766,106		4,765,002		4,765,625		4,766,278
	4,765,579		4,765,535		4,766,127		4,765,121		4,765,629		4,766,342
	4,765,822		4,765,542		4,766,134		4,765,133		4,765,630		4,766,343
04	4,765,086		4,765,577		4,766,135		4,765,377		4,765,759		4,766,354
	4,765,225		4,765,581		4,766,205		4,765,421		4,765,799		4,766,355
	4,765,325		4,765,584		4,766,219		4,765,482		4,765,867		4,766,383
	4,765,494		4,765,596		4,766,286		4,765,498		4,766,110		4,766,398
	4,765,520		4,765,613		4,766,293		4,765,502		4,766,296		4,766,400
	4,765,529		4,765,628		4,766,312		4,765,522		4,766,366		4,766,424
	4,766,119		4,765,636		4,766,324		4,765,618		4,766,388		4,766,483
	4,766,363		4,765,651		4,766,353		4,765,623		4,766,531		4,766,497
	4,766,391		4,765,663		4,766,372		4,765,662		4,766,557		4,766,520
	4,766,593		4,765,684		4,766,395		4,765,751	11	4,764,986		4,766,527
05	4,765,387		4,765,701		4,766,397		4,765,767		4,765,348		4,766,541
06	Re.32,737		4,765,719		4,766,402		4,765,812		4,765,351		4,766,592
	4,764,993		4,765,726		4,766,410		4,766,044		4,765,356	18	4,765,178
	4,764,997		4,765,727		4,766,433		4,766,096		4,765,410		4,765,365
	4,764,999		4,765,731		4,766,435		4,766,117		4,765,488		4,765,505
	4,765,013		4,765,732		4,766,438		4,766,141		4,765,712		4,765,517
	4,765,026		4,765,741		4,766,440		4,766,158		4,765,774		4,765,537
	4,765,053		4,765,764		4,766,448		4,766,166		4,766,029		4,765,670
	4,765,077		4,765,769		4,766,450		4,766,209		4,766,361		4,765,696
	4,765,091		4,765,784		4,766,469		4,766,210		4,766,387		4,765,698
	4,765,092		4,765,786		4,766,479		4,766,250		4,766,407		4,765,821
	4,765,106		4,765,787		4,766,514		4,766,275	17	4,764,985		4,765,892
	4,765,112		4,765,793		4,766,516		4,766,287		4,765,022		4,765,980
	4,765,113		4,765,816		4,766,517		4,766,357		4,765,027		4,766,066
	4,765,116		4,765,826		4,766,522		4,766,384		4,765,143		4,766,140
	4,765,123		4,765,827		4,766,533		4,766,441		4,765,196		4,766,224
	4,765,131		4,765,850		4,766,535	10	4,765,941		4,765,232		4,766,390
	4,765,134		4,765,853		4,766,536		4,766,027		4,765,250	19	4,765,109
	4,765,139		4,765,864		4,766,537		4,766,124		4,765,327		4,765,610
	4,765,145		4,765,885		4,766,560		4,766,182		4,765,342		4,765,832
	4,765,150		4,765,899		4,766,605		4,766,215		4,765,364		4,766,300
	4,765,170		4,765,902		3,333,198		4,766,248		4,765,372	20	4,765,072
	4,765,172		4,765,907	[illegible]	4,765,081		4,766,256		4,765,432		4,765,102
	4,765,188		4,765,912		4,765,082		4,766,259		4,765,493		4,765,204
	4,765,206		4,765,913		4,765,168		4,766,260		4,765,516		4,765,235
	4,765,229		4,765,916		4,765,183	12	4,765,005		4,765,534		4,765,236
	4,765,269		4,765,950		4,765,185		4,765,046		4,765,536		4,765,293
	4,765,292		4,765,973		4,765,462		4,765,061		4,765,543		4,766,167
	4,765,329		4,765,989		4,765,605		4,765,080		4,765,549	21	4,765,120
	4,765,333		4,765,993		4,765,627		4,765,119		4,765,575		4,765,686
	4,765,334		4,766,005		4,765,671		4,765,127		4,765,611		4,765,861
	4,765,338		4,766,006		4,765,842		4,765,136		4,765,707		4,766,339
	4,765,350		4,766,013		4,765,900		4,765,264		4,765,788	22	4,764,989
	4,765,359		4,766,024		4,766,321		4,765,319		4,765,835		4,765,173
	4,765,381		4,766,041		4,766,333		4,765,355		4,765,889		4,765,403
	4,765,401		4,766,042		4,766,367		4,765,361		4,765,891		4,765,476
	4,765,443		4,766,046		4,766,401		4,765,376		4,766,102		4,765,776
	4,765,468		4,766,075		4,766,421		4,765,438		4,766,155		4,765,796
	4,765,491		4,766,077		4,766,443		4,765,440		4,766,173		4,765,882

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37 : 4,765,050
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4,766,558
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41 : 4,764,995
4,765,049
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4,765,345
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04 : 297,335
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297,346
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297,353
297,363
297,366
08 : 297,283
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09 : 297,362
12 : 297,338
13 : 297,305
17 : 297,290

297,298
297,341
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18 : 297,325
297,357
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20 : 297,297
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27 : 297,302
297,314
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33 : 297,344
34 : 297,280
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297,310
297,311
297,337
36 : 297,292
297,322
297,336
297,343
297,359
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297,369

40 297,345
41 297,376
42 297,360
44 297,300
45 297,306
47 297,365
48 297,370
55 297,323
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PLANT PATENTS

06 : 6,254
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VOL 1093 ISS 4 AG 23 1988 UMI

VOL
1093

ISS
4

AG
23

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UMI

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VOL
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AG
23

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VOL
1093

ISS
4

AG
23

1988

UMI

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C. William Verity, *Secretary*
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Donald J. Quigg, *Commissioner*

VOL
1093

ISS
5

AG
30

1988

UMI

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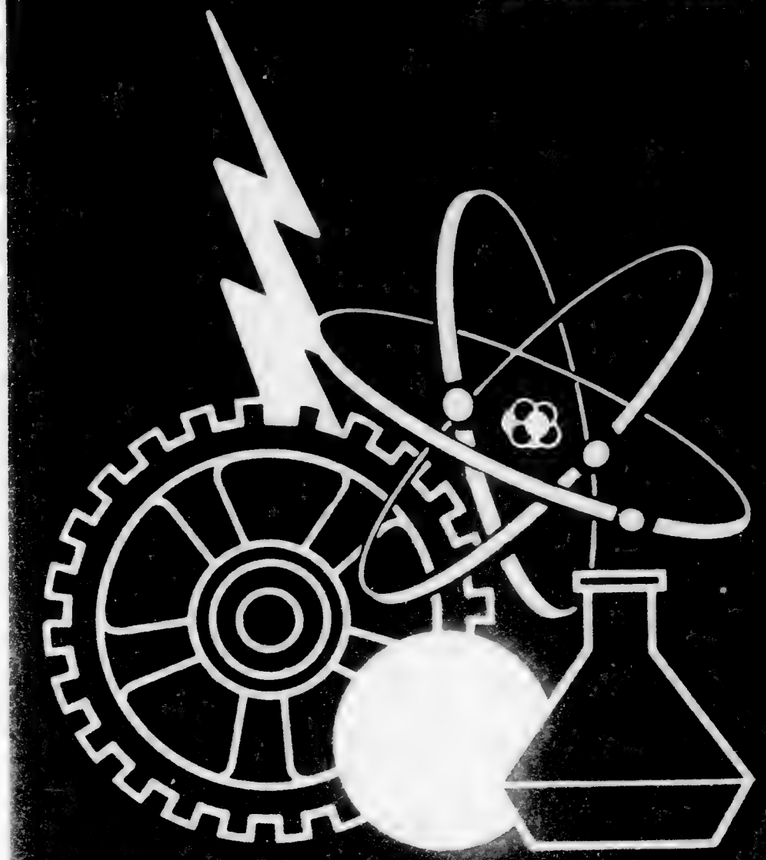
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

August 30, 1988



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VOL
1093

ISS
5

AG
30

1988

UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
August 30, 1988 Volume 1093 Number 5

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1093 OG 46
Status of Appeal Cases	1093 OG 46
Notice of Maintenance Fees Payable	1093 OG 47
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1093 OG 47
Reissue Applications Filed	1093 OG 49
Requests for Reexaminations Filed	1093 OG 49
Service by Publication	1093 OG 50
Notice	1093 OG 50
Status of PTO Services	1093 OG 51
Patent Certificates of Correction	1093 OG 52
Special Boxes for Mail	1093 OG 53
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1093 OG 54
Condition of Patent Applications	1093 OG 55
Reexaminations	2115
Reissue Patents Granted (32,738)	2117
Plant Patents Granted (6,261)	2119
Patents Granted	
General and Mechanical (4,766,608)	2121
Chemical (4,767,419)	2405
Electrical (4,767,890)	2535
Design Patents Granted (297,380)	2657
Index of Patentees	PI 1
Indices of Reissue, Reexaminations, Design and Plant Patentees	PI 65
Classification of	
Patents (Including Reissues and Reexaminations)	PI 69
Designs and Plant Applications	PI 72
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 73
Designs and Plant Applications	PI 75
Change of Address Form and Subscription Order Form	Back Page

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VOL
1093
ISS
5
AG
30
1988
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1076 O.G. 3 on Mar. 3, 1987.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

For use of the European Patent Office as a Preliminary Examining Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1080 O.G. 2 on July 7, 1987.

Certain domestic PCT fees for international applications have been changed effective Oct. 5, 1985 in the rule change notice titled "Revision of Patent Fees" published at 1057 O.G. 24 on Aug. 20, 1985.

The Search fee of the European Patent Office was changed due to a difference in the exchange rate of the U.S. dollar with regard to the German Mark as of Mar. 15, 1988, and was announced in the *Official Gazette* at 1087 O.G. 24 on Feb. 16, 1988.

Domestic PCT Fees for Chapter II, effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

International PCT fees were changed on July 1, 1987 due to a difference in the exchange rate of the U.S. dollar with regard to the Swiss Franc and were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987.

International PCT Chapter II fees which were effective July 1, 1987, were announced in the *Official Gazette* at 1079 O.G. 50 on June 23, 1987. The elimination of multiple handling fees and the supplement to the handling fee under PCT Rule 57 was announced at 1085 O.G. 34 on Dec. 22, 1987.

The withdrawal of the Japanese declaration under PCT Article 64(2)(a), concerning the requirement for a Japanese translation of the international application within 20 months from the priority date when Japan is elected under PCT Chapter II, as from Dec. 8, 1987, was announced at 1085 O.G. 34 on Dec. 22, 1987.

National stage fees effective July 1, 1987, for entering the U.S. Patent and Trademark Office as a designated or elected Office were changed effective July 1, 1987, and were announced in the *Official Gazette* at 1079 O.G. 32 on June 16, 1987.

The current schedule of PCT fees is as follows:

Transmittal fee:	170.00
Search Fee	
U.S. Patent and Trademark Office as Searching Authority (ISA)	
—No corresponding prior U.S. national application filed:	520.00
—Corresponding prior U.S. national application filed:	350.00
—Supplemental search fee, per additional invention	140.00
European Patent Office as Searching Authority	1300.00
Preliminary examination fee	
U.S. Patent and Trademark Office as Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as Searching Authority	370.00
—Additional examination fee, per additional invention	125.00
—Searching Authority not the USPTO	570.00
—Additional examination fee, per additional invention	190.00
International fees	
Basic fee:	485.00
Basic Supplemental fee (for each page over 30):	10.00
Designation fee per country or region for the first 10 national or regional offices:	120.00
Designation fee for 11th and subsequent designations:	No Charge
Handling fee:	150.00

U.S. National Stage fees

	Small Entity	Non-small Entity
U.S. Patent and Trademark Office was Preliminary Examining Authority (IPEA)	150.00	300.00
USPTO was ISA but not IPEA	170.00	340.00
USPTO was neither ISA nor IPEA	225.00	450.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(1) to (4)	25.00	50.00
—For each independent claim in excess of 3	17.00	34.00
—For each claim in excess of 20	6.00	12.00
—For each application containing a multiple dependent claim	55.00	110.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39.1	55.00	110.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39.1	26.00	26.00

Mar. 21, 1988.

DONALD J. QUIGG,
Assistant Secretary and Commissioner of Patents and Trademarks.

Status of Appeal Cases

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Assignment to Panel for A Decision Without A Hearing as of July 31, 1988.

Chemical	-	June 1, 1987
Mechanical Discipline	-	October 1, 1986
Electrical Discipline	-	September 9, 1986

The Date of Examiner's Answer of Oldest Ex Parte Appeals Awaiting Hearing as of July 31, 1988.

Chemical	-	April 1, 1986
Electrical	-	March 6, 1986
Mechanical	-	April 1, 1986

Board of Patent Appeals and Interferences Decisions Rendered in Ex Parte Appeals During the Month of July 1988.

Affirmed	221
Affirmed-in-Part	46
Reversed	165
Total Decided	432

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), as amended effective Oct. 5, 1985. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 27, 1985, for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,536,889 through 4,538,300
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), as amended effective Oct. 5, 1985, which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 225.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§1.9(f)) . . . . . $ 225.00
By other than a small entity . . . . . $ 450.00"

The amounts of the surcharges as amended effective Oct. 5, 1985, are set forth in 37 CFR 1.20 (k) and (l) which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 110.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:

By a small entity (§1.9(f)) . . . . . $ 55.00
By other than a small entity . . . . . $ 110.00"

Section 1.20 paragraph (m) as amended as a result of enactment of Public Law 98–622 effective Nov. 8, 1984, is reproduced below:

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED JUNE 12, 1988, DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,453,271	06/427,430	6/12/84
4,453,272	06/382,710	6/12/84
4,453,274	06/488,726	6/12/84
4,453,277	06/410,159	6/12/84
4,453,279	06/452,029	6/12/84
4,453,280	06/460,254	6/12/84
4,453,281	06/414,707	6/12/84
4,453,282	06/387,514	6/12/84
4,453,295	06/386,490	6/12/84
4,453,303	06/402,272	6/12/84
4,453,311	06/436,014	6/12/84
4,453,315	06/473,060	6/12/84
4,453,316	06/454,001	6/12/84
4,453,318	06/432,276	6/12/84
4,453,322	06/345,922	6/12/84
4,453,323	06/314,676	6/12/84
4,453,327	06/349,166	6/12/84
4,453,331	06/359,453	6/12/84
4,453,333	06/251,269	6/12/84
4,453,334	06/352,016	6/12/84
4,453,338	06/371,566	6/12/84
4,453,342	06/269,971	6/12/84
4,453,347	06/328,861	6/12/84
4,453,354	06/305,194	6/12/84
4,453,359	06/375,813	6/12/84
4,453,362	06/390,275	6/12/84
4,453,364	06/317,587	6/12/84
4,453,368	06/373,694	6/12/84
4,453,372	06/452,063	6/12/84
4,453,383	06/287,195	6/12/84
4,453,384	06/333,572	6/12/84
4,453,387	06/344,808	6/12/84
4,453,398	06/450,074	6/12/84
4,453,409	06/290,838	6/12/84
4,453,411	06/380,688	6/12/84
4,453,423	06/375,645	6/12/84
4,453,433	06/257,917	6/12/84
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VOL 1093 ISS 5 AG 30 1988 UMI

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4,453,445	06/422,546	6/12/84
4,453,448	06/469,371	6/12/84
4,453,459	06/384,007	6/12/84
4,453,462	06/354,602	6/12/84
4,453,468	06/454,349	6/12/84
4,453,472	06/350,755	6/12/84
4,453,473	06/461,983	6/12/84
4,453,481	06/283,808	6/12/84
4,453,482	06/334,718	6/12/84
4,453,485	06/300,305	6/12/84
4,453,490	06/326,607	6/12/84
4,453,491	06/419,082	6/12/84
4,453,498	06/520,751	6/12/84
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4,453,503	06/376,854	6/12/84
4,453,508	06/313,559	6/12/84
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4,453,549	06/569,410	6/12/84
4,453,550	06/369,369	6/12/84
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4,453,571	06/264,748	6/12/84
4,453,572	06/401,694	6/12/84
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4,453,591	06/255,260	6/12/84
4,453,597	06/3 ,331	6/12/84
4,453,599	06/376,298	6/12/84
4,453,600	06/404,402	6/12/84
4,453,601	06/361,342	6/12/84
4,453,608	06/394,308	6/12/84
4,453,610	06/412,159	6/12/84
4,453,618	06/299,480	6/12/84
4,453,620	06/357,883	6/12/84
4,453,624	06/383,667	6/12/84
4,453,631	06/432,654	6/12/84
4,453,637	06/456,695	6/12/84
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4,453,733	06/321,565	6/12/84
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4,453,789	06/368,562	6/12/84
4,453,791	06/419,287	6/12/84
4,453,804	06/337,349	6/12/84
4,453,815	06/358,595	6/12/84
4,453,817	06/441,817	6/12/84
4,453,832	06/314,777	6/12/84
4,453,837	06/445,733	6/12/84
4,453,840	06/447,148	6/12/84
4,453,843	06/404,396	6/12/84
4,453,849	06/389,906	6/12/84
4,453,850	06/367,703	6/12/84
4,453,853	06/325,573	6/12/84
4,453,855	06/289,189	6/12/84
4,453,857	06/301,455	6/12/84
4,453,858	06/280,796	6/12/84
4,453,859	06/390,911	6/12/84
4,453,866	06/239,707	6/12/84
4,453,868	06/289,826	6/12/84
4,453,869	06/251,904	6/12/84
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4,453,879	06/337,204	6/12/84
4,453,881	06/292,244	6/12/84
4,453,884	06/410,088	6/12/84
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4,453,903	06/476,973	6/12/84
4,453,905	06/499,835	6/12/84
4,453,911	06/422,790	6/12/84
4,453,913	06/380,560	6/12/84
4,453,917	06/489,580	6/12/84
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4,453,958	06/444,436	6/12/84
4,453,959	06/352,193	6/12/84
4,453,962	06/386,441	6/12/84
4,453,966	06/337,001	6/12/84
4,453,973	06/337,004	6/12/84
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4,454,037	06/422,890	6/12/84
4,454,041	06/438,856	6/12/84
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4,454,048	06/487,919	6/12/84
4,454,051	06/270,362	6/12/84
4,454,075	06/471,805	6/12/84
4,454,079	06/394,525	6/12/84
4,454,080	06/360,990	6/12/84
4,454,081	06/299,196	6/12/84
4,454,090	06/535,565	6/12/84
4,454,093	06/315,604	6/12/84
4,454,111	06/528,545	6/12/84
4,454,114	06/425,597	6/12/84
4,454,120	06/423,055	6/12/84
4,454,124	06/467,767	6/12/84
4,454,126	06/434,454	6/12/84
4,454,132	06/413,954	6/12/84
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4,454,136	06/302,460	6/12/84
4,454,141	06/422,218	6/12/84
4,454,145	06/369,579	6/12/84
4,454,147	06/382,537	6/12/84
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4,454,150	06/312,464	6/12/84
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4,454,170	06/433,774	6/12/84
4,454,172	06/515,543	6/12/84
4,454,185	06/399,104	6/12/84
4,454,187	06/506,749	6/12/84
4,454,188	06/519,892	6/12/84
4,454,198	06/464,740	6/12/84
4,454,201	06/394,204	6/12/84
4,454,235	06/383,826	6/12/84
4,454,238	06/446,870	6/12/84
4,454,251	06/487,869	6/12/84
4,454,273	06/518,371	6/12/84
4,454,279	06/523,893	6/12/84
4,454,287	06/452,058	6/12/84
4,454,304	06/256,005	6/12/84
4,454,359	06/390,620	6/12/84

Patent Number	Serial Number	Issue Date
4,454,380	06/362,891	6/12/84
4,454,387	06/334,065	6/12/84
4,454,401	06/416,914	6/12/84
4,454,405	06/415,400	6/12/84
4,454,409	06/358,018	6/12/84
4,454,425	06/500,644	6/12/84
4,454,430	06/379,807	6/12/84
4,454,449	06/394,005	6/12/84
4,454,456	06/261,338	6/12/84
4,454,475	06/431,235	6/12/84
4,454,482	06/310,254	6/12/84
4,454,504	06/303,506	6/12/84
4,454,511	06/294,575	6/12/84
4,454,513	06/287,451	6/12/84
4,454,515	06/431,723	6/12/84
4,454,518	06/377,655	6/12/84
4,454,552	06/378,882	6/12/84
4,454,562	06/418,674	6/12/84
4,454,573	06/406,477	6/12/84
4,454,574	06/328,780	6/12/84
4,454,601	06/348,524	6/12/84
4,454,605	06/342,610	6/12/84

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

3,780,781, Re. S.N. 027,000, Filed Mar. 12, 1987, Cl. 206, OPENABLE BAG, Tatsuro Uramoto, Owner of Record: *Minigrip Inc., Orangeburg, N.Y.,* Attorney or Agent: Gerald Levy, Ex. Gp.: 241

4,423,077, Re. S.N. 196,859, Filed May 20, 1988, Cl. 514/759, PERFLUOROCHEMICAL EMULSION ARTIFICIAL BLOOD, Henry A. Sloviter, Owner of Record: *University of Pennsylvania, Philadelphia, Pa.,* Attorney or Agent: Daniel A. Monaco, Ex. Gp.: 125

4,527,852, Re. S.N. 055,088, Filed May 28, 1987, Cl. 339/97P, MULTIGAUGE INSULATION DISPLACEMENT CONNECTOR AND CONTACTS THEREFOR, Helen Dechelette, Owner of Record: *Molex Inc., Lisle, Ill.,* Attorney or Agent: Louis A. Hecht, Ex. Gp.: 322

4,556,128, Re. S.N. 127,777, Filed Dec. 2, 1987, Cl. 187/9R, WHEELCHAIR LIFT, Graham R. Thorley, et al., Owner of Record: *Hogan Manufacturing Inc., Escalon, Calif.,* Attorney or Agent: Bruce E. O'Connor, Ex. Gp.: 311

4,571,742, Re. S.N. 160,215, Filed Feb. 25, 1988, Cl. 2/67, SWIM SUIT, Carol W. Wior, Owner of Record: *Wior Corp., Los Angeles, Calif.,* Attorney or Agent: Robert Berliner, Ex. Gp.: 247

4,601,720, Re. S.N. 107,806, Filed Oct. 13, 1987, Cl. 623/6, INTRAOCULAR LENS ASSEMBLY, Robert M. Sinskey, Owner of Record: *Inventor,* Attorney or Agent: Walton E. Tinsley, et al., Ex. Gp.: 332

4,620,300, Re. S.N. 222,537, Filed July 21, 1988, Cl. 369/47, DIGITAL SIGNAL DETECTING AND COMPENSATING CIRCUIT WITH ADJUSTABLE WINDOW SIGNAL, Hiroshi Ogawa, Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: Jay H. Maioli, Ex. Gp.: 235

4,630,962, Re. S.N. 160,331, Filed Feb. 25, 1988, Cl. 404/2, DRAINAGE CHANNEL WITH LOCKING GRATE, Roland Thomann, et al., Owner of Record: *Polydrain, Inc., Troutman, N.C.,* Attorney or Agent: W. Thad Adams, III, Ex. Gp.: 356

4,631,023, Re. S.N. 171,108, Filed Mar. 7, 1988, Cl. 431/329, BURNER FOR GAS BLOW TORCH, Claude Courrege, Owner of Record: *Ripper S.A., La Haillan, France,* Attorney or Agent: William A. Drucker, Ex. Gp.: 345

4,650,952, Re. S.N. 221,515, Filed July 19, 1988, Cl. 219/121, ROBOT-LASER SYSTEM, Hadi A. Akeel, Owner of Record: *G.M.F. Robotics Corp., Troy. Mich.,* Attorney or Agent: David R. Syrowik, Ex. Gp.: 216

4,684,805, Re. S.N. 189,495, Filed May 28, 1988, Cl. 250/343, METHOD AND APPARATUS FOR MEASURING STABLE ISOTOPES, Peter S. Lee, Owner of Record: *General Motors Corp., Detroit, Mich.,* Attorney or Agent: Domenica N. S. Hartman, Ex. Gp.: 256

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,434,154, Reexam. No. 90/001,558, Requested: July 18, 1988, Cl. 424/60, TANNING AND ULTRA-VIOLET SCREENING COMPOSITION HAVING HIGH STABILITY, James E. McShane, Owner of Record: *Plough Corp., Madison, N.J.,* Attorney or Agent: Robert S. Salzman, Ex. Gp.: 120, Requester: Avon Products Inc., New York, N.Y.

4,449,182, Reexam. No. 90/001,556, Requested: July 18, 1988, Cl. 364/200, INTERFACE BETWEEN A PAIR OF PROCESSORS, SUCH AS HOST AND PERIPHERAL-CONTROLLING PROCESSORS IN DATA PROCESSING SYSTEMS, Barry L. Rubinson, et al., Owner of Record: *Digital Equipment Corp., Maynard, Mass.,* Attorney or Agent: Kenyon & Kenyon, Ex. Gp.: 230, Requester: Owner

4,456,590, Reexam. No. 90/001,553, Requested: July 14, 1988, Cl. 424/101, HEAT TREATMENT OF LYOPHILIZED BLOOD CLOTTING FACTOR VIII CONCENTRATE, Alan Rubinstein, Owner of Record: *Cedars Sinai Medical Ctr., Los Angeles, Calif.,* Attorney or Agent: Lyon & Lyon, Ex. Gp.: 180, Requester: Alpha Therapeutic Corp., Los Angeles, Calif.

4,557,656, Reexam. No. 90/001,552, Requested: July 14, 1988, Cl. 414/43, TOP FEEDING AND EJECTING MATERIALS HANDLING APPARATUS, Joseph F. Ouellette, Owner of Record: *Alwey Inc., St. Louis, Mo.,* Attorney or Agent: Rogers, Howell, et al., Ex. Gp.: 310, Requester: Owner

4,568,420, Reexam. No. 90/001,554, Requested: July 14, 1988, Cl. 162/65, MULTI-STAGE BLEACHING PROCESS INCLUDING AN ENHANCED OXIDATION EXTRACTION STAGE, Arthur J. Nonni, Owner of Record: *International Paper Co., Tuxedo, N.Y.,* Attorney or Agent: Jay S. Cinamon, Ex. Gp.: 130, Requester: Pennie & Edmonds, New York, N.Y.

4,622,174, Reexam. No. 90/001,551, Requested: July 11, 1988, Cl. 252/582, TRANSPARENT PROTECTIVE LASER SHIELD, Vincent McCoy, et al., Owner of Record: *Barnes Engineering Co., Stamford, Conn.,* Attorney or Agent: Parmalee, Bollinger, et al., Ex. Gp.: 220, Requester: Shenier & O'Connor, New York, N.Y.

VOL
1093
ISS
5
AG
30
1988
UMI

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceedings sent by registered mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Davis Laboratories, Inc., Cherry Hill, N.J., Reg. No. 919,525, for the mark "DENTU BRITE", Canc. No. 17,235.

ERMA S. BROWN,
Administrator
of the Trademark Trial
and Appeal Board.
For JEFFREY M. SAMUELS,
Assistant Commissioner
for Trademarks.

Department of Commerce

Agency: Patent and Trademark Office.
Action: Notice.
Summary: In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), announcement is made of the open meeting of the Public Advisory Committtee for Trademark Affairs.

Date: The Public Advisory Committee for Trademark Affairs will meet from 10:00 a.m. until 4:00 p.m. on Sept. 27, 1988.
Place: U.S. Patent and Trademark Office, 2121 Crystal Dr., Crystal Park 2, Room 912, Arlington, Va.
Status: The meeting will be open to public observation; approximately twelve (12) seats will be available for the public on a first-come-first-served basis. If time permits, oral comments by the public of three (3) minutes on each topic within the agenda below will be allowed. Written comments and suggestions will be accepted before or after the metting on any of the matters discussed. Copies of the minutes will be available upon request.
Matters to be Considered: The agenda for the meeting is as follows:

(1) Implementation of Proposed Intent-to-Use Legislation
(2) Automation Activities
(3) Application Processing and Prosecution and Registration Maintenance
(4) TTAB Proposed Rule Amendments

Contact Person for more Information: For further information, contact Carlisle E. Walters, Office of the Assistant Commissioner for Trademarks, Room CPK2-910, Patent and Trademark Office, Washington, D.C. 20231. Telephone: (703) 557-7464.

DONALD J. QUIGG,
Assistant Secretary and
Commissioner of Patents
and Trademarks.

Status of PTO Services

The following is an update of the status of PTO services for July 1988:

Service Item	FY 1988 (Calendar Days[1])	Monthly Average (Calendar Days[1])
Filing Receipts:		
Patents	22	38*
Trademarks	30	23**
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	19 Hours
Window Coupons	5	2
Mail Coupons	12	4
Letter Orders	16	8
Certified Copies:		
Trademark Registrations	21	32
Applications-As-Filed	17	11***
File-Wrapper/Contents	N/A	10
Walk-up Certification	1	1
Trademark Search Library:		
Filing Pending Marks	21	45****
Filing Reg. Certificates	Issue Date	Issue Date
Filing Temp. Drawings	6	8
Assignments:		
Recording Patent Assignments	20	12
Receipt Date of Patent Documents Returned		July 12, 1988
Recording Trademark Assignments	20	17
Receipt Date of Trademark Documents Returned		July 12, 1988
Avg. Days from Issue Fee Payment to Issue Date	90–100	88
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule
Patent Copies Available	95% on Issue Date	99% on Issue Date
Trademark Copies Available	95% on Issue Date	99% on Issue Date

1] Unless otherwise noted.
* Backlog created due to unusually high number of applications being received. Extra resources are being applied and days have been reduced by 7 since last month.
** Average days to process have decreased by 5 since last month.
*** The 5% of orders for which fiche are not on site are not included in calculations.
**** Due to staff shortages.

IMPROVEMENTS TO SERVICES

- *Mail Processing* —The Mail Room is back on target for processing mail. Over the past few months, there was an intensive effort to process the backlog created by increased mail receipts. As a result, in addition to processing the daily receipts averaging 30,000 documents, about 300,000 backlogged documents were processed. Since mid-June, the days to process mail has been at or below the target of 3 days.

Aug. 4, 1988

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

VOL
1093
ISS
5
AG
30
1988
UMI

PATENT NOTICES

Certificates of Correction for the Week of Aug. 30, 1988

Re. 32,643	4,688,196	4,716,088	4,732,835
Re. 32,657	4,688,234	4,716,176	4,732,866
D. 285,052	4,689,419	4,716,589	4,733,524
D. 293,557	4,690,024	4,716,702	4,733,927
D. 294,629	4,693,482	4,716,952	4,733,959
D. 294,638	4,697,939	4,718,489	4,734,396
D. 295,565	4,700,420	4,718,645	4,734,424
4,350,388	4,701,510	4,719,006	4,735,117
4,544,849	4,702,016	4,719,097	4,735,295
4,559,181	4,702,034	4,719,351	4,736,274
4,567,354	4,702,558	4,719,833	4,736,740
4,594,251	4,702,736	4,719,839	4,736,914
4,599,758	4,703,545	4,720,562	4,736,972
4,604,675	4,703,968	4,721,142	4,737,163
4,609,196	4,704,480	4,721,428	4,737,216
4,611,151	4,704,846	4,721,620	4,737,676
4,611,205	4,704 968	4,722,010	4,738,179
4,625,137	4,706,274	4,722,389	4,738,840
4,628,115	4,707,422	4,722,416	4,738,841
4,629,788	4,708,678	4,722,895	4,739,050
4,654,159	4,709,251	4,723,085	4,739,262
4,655,327	4,709,410	4,723,474	4,740,552
4,655,862	4,710,243	4,723,998	4,740,613
4,659,567	4,710,439	4,724,164	4,740,962
4,663,069	4,710,583	4,724,193	4,741,039
4,663,593	4,710,917	4,724,202	4,741,230
4,668,773	4,711,869	4,725,385	4,741,482
4,672,766	4,713,022	4,726,398	4,741,767
4,673,867	4,713,277	4,726,776	4,741,877
4,675,754	4,713,855	4,727,051	4,742,290
4,676,513	4,714,045	4,727,498	4,742,729
4,678,919	4,714,290	4,727,926	4,742,932
4,681,834	4,714,306	4,728,274	4,743,125
4,681,945	4,714,356	4,728,573	4,743,406
4,682,507	4,715,275	4,729,695	4,743,521
4,683,295	4,715,585	4,730,021	4,743,723
4,683,484	4,715,721	4,731,756	4,745,440
4,685,309	4,715,888	4,732,175	4,750,711
4,687,972	4,715,975	4,732,818	

SPECIAL BOXES FOR MAIL

Special PTO mail box numbers should be used to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Only the specified type of document should be placed in an envelope addressed to one of these special boxes. If any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they are intended.

The following special boxes should be used only for their specified purpose. Address mail as follows:

Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

Box 3	Mail for the Office of Personnel from NFC.
Box 4	Mail for the Assistant Commissioner for External Affairs and the Office of Legislation and International Affairs.
Box 5	"No fee" mail related to trademarks.
Box 6	Mail for the Office of Procurement.
Box 7	Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8	All papers for the Office of the Solicitor except communications relating to pending litigation.
Box 9	Coupon orders for U.S. patent and trademark copies.
Box 10	Orders for certified copies of patent and trademark applications.
Box 11	Electronic Ordering Service (EOS).
Box 12	Contributions to the Examiner Education Program.
Box 13	Mail for the Employee and Labor Relations Division.
Box AF	Expedited procedure for processing amendments and other responses after final rejection.
Box FWC	Requests for File Wrapper Continuation Applications. (under 37 CFR 1.62).
Box Interference	Communications relating to interferences and applications and patents involved in interference.
Box Issue Fee	Issue Fee Transmittals (PTOL Form 85) and associated fees and corrected drawings.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non Fee Amendment	Non-fee amendments to patent applications.
Box OED	Mail for the Office of Enrollment and Discipline.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Mail related to reexamination.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain data received and/or serial number for patent applications prior to the Office's standard notification (return post card or the official "Filing Receipt", "Notice to File Missing Parts," or " Notice of Incomplete Information Application").
PATENT APPLICATION	New patent application and associated papers and fees.
TRADEMARK APPLICATION	New trademark application and associated papers and fees.

VOL
1093
ISS
5
AG
30
1988
UMI

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries (PDLs), receive current issues of U.S. Patents and maintain collections of earlier-issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections, which are organized in patent number sequence, are available for use by the public free of charge. Each of the PDLs, in addition, offers supplemental reference publications of the U.S. Patent Classification System, including the *Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions*, and provides technical staff assistance in their use to aid the public, in gaining effective access to information contained in patents. CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data, is available at all PDLs. Facilities for making paper copies of patents from either microfilm or paper collections are generally provided for a fee.

Since there are variations in the scope of patent collections among the PDLs and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours in order to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext. 21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 261-2907
Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7140
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 612-3200
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2347
Connecticut	New Haven: Science Park Library	(203) 786-5447
Delaware	Newark: University of Delaware Library	(302) 451-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 636-5060
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami–Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis–Marion County Public Library	(317) 269-1741
Kentucky	Louisville Free Public Library	(502) 561-8614
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4222
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada-Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-7040
	Buffalo and Erie County Public Library	(716) 846-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, North Carolina State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, Free Library of	(215) 686-5330
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2371
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: Virginia Commonwealth University Library	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin -Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 30, 1988

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	2-10-87
ORGANIC CHEMISTRY GROUP 120—S. N. ZAHARNA, Director	9-3-85
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-15-87
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	3-3-87
BIOTECHNOLOGY, GROUP 180—S. N. ZAHARNA, Acting Director	10-24-85
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	9-25-86
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	10-14-85
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	2-6-86
PACKAGES, CLEANING, TEXTILES, AND GEOMETRICAL INSTRUMENTS, GROUP 240—TRYGVE M. BLIX, Director	1-20-87
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—EDWARD E. KUBASIEWICZ, Director	2-27-87
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	1-8-87
DESIGN, GROUP 290—K. L. CAGE, Director	8-8-85
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	3-13-87
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—VACANT, Director	11-13-86
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—VACANT, Director	4-9-86
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-16-87
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-1-87

Expiration of patents: The patents within the range of numbers indicated below expire during July 1988, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,590,388 to 3,596,287, inclusive

Plant Patents . . . . . None

VOL
1093
ISS
5
AG
30
1988
UMI

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 31,873 (913th)
Patent Not Issued For This Number

B1 3,613,887 (914th)

CYCLONE SEPARATOR TO BE BUILT IN A CASING OR SIMILAR

Nils A. L. Wikdahl, 42, Bravallavagen, Djursholm, Sweden

Reexamination Request No. 90/000,863, Sep. 17, 1985.
Reexamination Certificate for Patent No. 3,613,887, issued Oct. 19, 1971, Ser. No. 767,151, Oct. 14, 1968.
Int. Cl.[4] B04C *5/13*
U.S. Cl. 209—211

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claim 2 is confirmed.

Claims 1, 3 and 4 are cancelled.

Claim 5 is determined to be patentable as amended.

New claim 6 is added and determined to be patentable.

6. A cyclone separator for separating material including fibers suspended in a liquid suspension into a light fraction containing the fibers and a heavy fraction containing rejects and which employs partitions to prevent the twisting together of fibers in the light fraction and to recover pressure energy, said cyclone separator comprising:

a generally conical separation chamber having at its narrow end an outlet for the heavy fraction and at its wide end an outlet for the light fraction;

a vortex finder having means for preventing the twisting together of fibers and for recovering pressure energy mounted in the outlet for the light fraction, said means including an elongate nave disposed coaxially with said chamber and a plurality of



partition walls for positioning the nave and for dividing the light fraction into adjacent partial flows and for arresting the rotation of said flows, said partition walls being joined along an edge to the nave and extending radially from said nave to a wall of the vortex finder surrounding said nave, said nave protruding form the outer end of said outlet for the light fraction; and

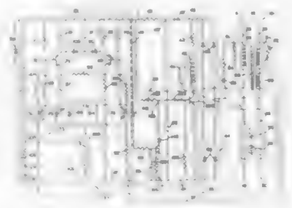
a casing to receive the light fraction, said casing including a wall portion disposed substantially parallel to the outer end of said outlet for the light fraction and spaced apart therefrom, and wherein a portion of said nave protrudes from said outlet and into abutment with said wall portion, the protruding nave portion constituting a distancing member which defines about said nave portion an annular slot of predetermined width between said casing wall portion and said outlet, said slot deflecting the light fraction in radial direction.

B1 3,633,070 (915th)

GROUND FAULT CURRENT INTERRUPTER

Louis J. Vassos, and Alex F. Gawron, both of Chicago, Ill., assignors to Leviton Manufacturing Co., Little Neck, N.Y.

Reexamination Request No. 90/001,274, Jul. 2, 1987.
Reexamination Certificate for Patent No. 3,633,070, issued Jan. 4, 1972, Ser. No. 884,888, Dec. 15, 1969.
Int. Cl.[4] H02H *3/16*
U.S. Cl. 361—45



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7 and 9–11 are cancelled.

Claim 8 is determined to be patentable as amended.

8. [The improvement according to claim 7 wherein] *In a ground fault current interrupter including a control circuit which is adapted to detect a current imbalance between the current flowing in a first conductor connected between an alternating current source and a load and the current flowing in a second conductor connected between said source and said load and then to actuate open circuiting means connecting said conductors to said source, the improvement comprising, said control circuit including a differential transformer having a single magnetic core, two primary windings each of which is connected in series with one of said conductors, and a secondary winding, said primary windings being arranged so that under normal current conditions the total magnetomotive force produced in said magnetic core is balanced such that the net magnetic flux in said core is zero and under a current imbalance condition a net flux results which produces a voltage signal in said secondary winding of said differential transformer, amplifier circuit means connected to said secondary winding for developing a differential signal from the latter and for amplifying such signal, which amplifier circuit means includes means immunizing the latter from erroneous input noise signals and input transient signals, and means connected between said open circuiting means and said amplifier circuit means for actuating said open circuiting means upon receiving an amplified signal from said amplifier circuit means when said*

VOL 1093 ISS 5 AG 30 1988 UMI

current unbalance is at or above a predetermined value for a predetermined time period, said interrupter further including other means adapting such control circuit to be responsive to a current unbalance condition on both half cycles of the AC source, said other means [include] *including* at least a pair of unidirectional current blocking elements.

B1 4,405,881 (916th)

COLOR CATHODE RAY TUBE INCLUDING ND_2O_3 AND CR_2O_3 IN FACE GLASS

Hiroo Kobayashi, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Reexamination Request Nos. 90/000,788, May 24, 1985 and 90/000,823, Jul. 22, 1985.

Reexamination Certificate for Patent No. 4,405,881, issued Sep. 20, 1983, Ser. No. 265,678, May 20, 1981.

Claims priority, application Japan, May 29, 1980, 55/72382; Aug. 28, 1980, 55/119983

Int. Cl.[4] H01J *29/86*

U.S. Cl. 313—480



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims 1–7 are cancelled.

[1. In a color cathode ray tube comprising a fluorescent screen having at least one phosphor on an inner surface of the face glass for plural color emission, the improvement comprising:

incorporating 0.3 to 1.5 wt% per 10 mm glass thickness, of Nd_2O_3 and a small amount of the colorant Cr_2O_3 and optionally other colorants in said face glass to impart wavelength selectivity to said face glass.]

B1 4,545,906 (917th)

SWIMMING POOL FILTERING SYSTEM

Stanley H. Frederick, Ramsey, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Reexamination Request No. 90/001,430, Feb. 2, 1988.

Reexamination Certificate for Patent No. 4,545,906, issued Oct. 8, 1985, Ser. No. 519,622, Aug. 2, 1983.

Division of Ser. No. 946,979, Sep. 29, 1978, Pat. No. 4,421,643, which is a continuation of Ser. No. 742,387, Nov. 16, 1976, abandoned, which is a continuation-in-part of Ser. No. 627,179, Oct. 30, 1975, abandoned.

Int. Cl.[4] E04H *3/20*

U.S. Cl. 210—138

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1–12 is confirmed.

1. A pool water filter system of the type wherein a closed water circulation path is provided having an inlet for receiving water from a pool and an outlet for discharging water into a pool at a point below the normal water level, said path including a centrifugal liquid pump and a filter between the inlet and outlet, said water circulation path having flow characteristics defining a system head curve that is variable depending upon the cleanliness of the filter when said water circulation path is primed with water, a motor is closely coupled to said pump for driving said pump at a first speed at which speed said pump is capable of developing a maximum pump head H_{max} and a minimum pump head H_{min}, the actual pump head and water flow rate being determined by the instantaneous system head curve, said first speed sufficient to provide pump heads and water flow rates for priming said system, vacuuming and rapidly cleaning up after a storm, wherein the improvement comprises:

said motor being capable of operating at a second speed lower than said first speed for driving said pump to provide an energy efficient low water circulation rate through said circulation path in accordance with the instantaneous system head curve, said second speed providing a maximum pump head less than H_{max} minus H_{min}; and

switch means for selecting one of said first and second motor speeds to thereby achieve a water circulation rate in accordance with the instantaneous system head curve.

REISSUES

AUGUST 30, 1988

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 32,738

PICTURE VIEWER

Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Original No. 4,550,516, dated Nov. 5, 1985, Ser. No. 560,385, Dec. 12, 1983. Application for reissue Oct. 29, 1987, Ser. No. 114,233

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1982, 3246103

Int. Cl.[4] G09F *11/30*

U.S. Cl. 40—513 16 Claims



1. A picture viewer comprising:

(a) a housing member adapted to accommodate a stack of pictures of substantially equal size, the housing member having a top wall provided with a viewing window, a bottom wall opposite the top wall, side walls, a rear wall, and an open front end;

(b) a slider member adapted to slide into and out of the open front end of the housing parallel to the plane of the viewing window of the housing member;

(c) a picture exchange means comprising: (i) a separator bar adapted to move pictures in the stack of pictures out of the housing member when the slider is moved out of the housing member; and (ii) a retentive element in the housing member adapted to engage a first picture in a stack of pictures in the housing member to retain the first picture in the housing member when the slider is moved out of the housing member, the first picture being at a first end of the stack of pictures, whereby, in use, when the slider member is moved out of said housing member, the first picture is separated from the stack of pictures and when the slider member is moved back into the housing member, the first picture is returned to a second end of the stack opposite to the first end; and

(d) bias means in the slider member adapted to urge the topmost picture of a stack of pictures in the picture viewer against the viewing window when the slider member is moved into the housing member.

3. A picture viewer as set forth in claim 2 wherein the stop means comprises part of the housing member and part of the slider member.

4. A picture viewer as set forth in claim 3 wherein said part of the slider member is a [pivotable] *displaceable* stop member which, when the slider member is moved out of the housing member, may be [pivoted] *moved* to an open position to permit insertion and removal of a stack of pictures *respectively* into and out of the slider member.

Re. 32,739

FROZEN FOOD PACKAGE AND COVER LID

Oskar R. Terauds, Willoughby, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Original No. 4,535,889, dated Aug. 20, 1985, Ser. No. 578,016, Feb. 8, 1984. Application for reissue Jan. 21, 1987, Ser. No. 5,662

Int. Cl.[4] B65D *1/34, 43/10*

U.S. Cl. 220—306 36 Claims

1. In a container comprised of a molded rigid plastic bottom tray with a surrounding laterally outward extending flanged rim of generally rectangular contour with gradually rounded corner portions, and an upper dome lid comprised of a semi-rigid sheet-like member of plastic material having a laterally outward extending annular seating flange matching the contour of, and seated against the upper surface of and locked onto the said rim of the tray, to join the tray and dome lid together into a unitary assembly, the said seating flange having a depending locking flange closely fitting around the flanged rim of the tray and having gradually rounded corner portions matching the said rounded corner portions of said flanged rim, and the said locking flange being provided with a plurality of inwardly projecting locking rib means spaced therearound and engaged with the tray rim under the peripheral outer edge thereof to lock the dome lid in place on the tray, the improvement comprising: said locking rib means being located within the peripheral extent of respective ones of the said rounded corner portions of said locking flange, and said seating flange having an outwardly opening thumb notch recess in the outer peripheral edge thereof exposing a portion of the said tray rim through said recess, said thumb notch recess being spaced around the said seating flange a distance, from one of said locking rib means, such as to enable engagement through said thumb recess of the said flanged rim of the tray by the thumb of a person's hand while at the same time enabling engagement of the fingers of the person's same hand with the underside of the said locking flange of the dome lid, at a region outwardly adjacent the said one locking rib means, for application of a separating force couple directly and normal to the flanged rim of the tray and the said locking flange to disengage the said one locking rib means from the tray rim.



22. A dome lid for locking attachment onto a bottom tray having a surrounding laterally outward extending flanged rim of generally rectangular contour with gradually rounded corner portions, said lid comprising a semi-rigid sheet-like member of plastic material having a laterally outward extending annular seating flange matching the contour of and adapted for seating against the upper surface of and locking onto the said rim of the tray, said seating flange having a depending locking flange for fitting closely around the flanged rim of the tray and having gradually rounded corner portions matching the said rounded corner portions of said flanged rim, said locking flange being provided with a plurality of inwardly projecting locking rib means spaced therearound and located within the peripheral extent of respective ones of the said rounded corner portions of said locking flange for engagement with the tray rim under the peripheral outer edge thereof to lock the dome lid in place on the tray, and said seating flange having an outwardly opening thumb notch recess in the outer peripheral edge thereof for exposing therethrough a portion of the tray rim, said thumb notch recess being spaced around the said seating flange a distance, from one of said locking rib means, such as to enable engagement through said thumb notch recess of the flanged rim of the tray by the thumb on a person's hand while enabling simultaneous engagement of the fingers on the same hand with the underside of said locking flange, at a region outwardly adjacent the said one locking rib means, for applica-

VOL 1093 ISS 5 AG 30 1988 UMI

tion of a separating force couple directly and normal to the flanged rim of the tray and said locking flange to disengage the said one locking rib means from the tray rim

35. In a container comprised of a molded rigid plastic bottom tray with a surrounding laterally outward extending flanged rim and an upper dome lid comprised of a semi-rigid sheet-like member of plastic material having a laterally outward extending seating flange matching the contour of, and seated against the upper surface of and locked onto the said rim of the tray, to join the tray and dome lid together into a unitary assembly, the said seating flange having a depending locking flange closely fitting around the flanged rim of the tray and the said locking flange being provided with a plurality of inwardly projecting locking rib means spaced therearound and engaged with the tray rim under the peripheral outer edge thereof to lock the dome lid in place on the tray, the improvement comprising: said seating flange having an outwardly opening thumb notch recess in the outer peripheral edge thereof exposing a portion of the said tray rim through said recess, said thumb notch recess being spaced, around the said seating flange a distance, from one of said locking rib means, such as to enable engagement through said thumb recess of said flanged rim of the tray by the thumb of a person's hand while at the same time enabling engagement of a finger of the person's same hand with the underside of the said locking flange of the dome lid vertically beneath the said one locking rib means for application of a separating force coupled directly and normal to the flanged rim of the tray and the said locking flange to disengage the said one locking rib means from the tray rim.

36. A dome lid for locking attachment onto a bottom tray having a surrounding laterally outward extending flanged rim, said lid comprising a semi-rigid sheet-like member of plastic material having a laterally outward extending seating flange matching the contour of and adapted for seating against the upper surface of and locking onto the said rim of the tray, said seating flange having a depending locking flange for fitting closely around the flanged rim of the tray, said locking flange being provided with a plurality of inwardly projecting locking rib means spaced therearound for engagement with the tray rim under the peripheral outer edge thereof to lock the dome lid in place on the tray, and said seating flange having an outwardly opening thumb notch recess in the outer peripheral edge thereof for exposing therethrough a portion of the tray rim, said thumb notch recess being spaced around the said seating flange a distance, from one of said locking rib means, such as to enable engagement through said thumb notch recess of the flanged rim of the tray by the thumb on a person's hand while enabling simultaneous engagement of a finger on the same hand with the underside of said locking flange, vertically beneath the said one locking rib means for application of a separating force coupled directly and normal to the flanged rim of the tray and said locking flange to disengage the said one locking rib means from the tray rim.

Re. 32,740

MULTIPLE USE SHELF FOR COOLER

William J. Steffes, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Original No. 4,515,421, dated May 7, 1985, Ser. No. 548,978, Nov. 7, 1983. Application for reissue Apr. 27, 1987, Ser. No. 42,900

Int. Cl.[4] A47B *96/02*

U.S. Cl. 312—351 **8 Claims**



1. In combination:

a cooler having a horizontally extending bottom wall, parallel front and back walls extending upwardly from the bottom wall, and parallel end walls extending between the front and back walls, each of the front and back walls having an inside surface which is provided with vertically extending retaining means for holding a shelf in a vertical position and horizontally extending supporting means for holding a shelf in a horizontal position, and a pair of handle assemblies mounted on a pair of walls of the cooler, each of the handle assemblies including a pair of mounting brackets which are spaced apart in a horizontal direction and a handle which is positioned between the mounting brackets and is supported thereby, and

a generally flat, generally rectangular shelf *having* a pair of parallel side edges, the side edges being engageable with the retaining means on the front and back walls of the cooler when the shelf is retained in a generally vertical position, the side edges being engageable with the supporting means on the front and back walls of the cooler when the shelf is supported in a generally horizontal position, the shelf including a ledge which extends generally perpendicularly from one side thereof, the ledge having a pair of recesses which are spaced apart the same distance as the mounting brackets of the handle assemblies whereby the shelf can be supported in a generally horizontal position by inserting the recesses of the ledge over the mounting brackets of one of the handle assemblies.

Re. 32,741

POLYESTER FIBER AND METHOD FOR THE PRODUCTION THEREOF

Takehiko Miyoshi, Mishima; Tadayuki Matsumoto, Otsu, and Keizo Sano, Musashino, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Original No. 4,526,738, dated Jul. 2, 1985, Ser. No. 512,206, Jul. 8, 1983. Application for reissue Jun. 4, 1987, Ser. No. 57,944 Claims priority, application Japan, Aug. 9, 1982, 57-1184408

Int. Cl.[4] C08G *63/68*

U.S. Cl. 528—295 **7 Claims**

1. A polyester fiber having a tenacity of at least 4.0 g/d which fiber comprises a copolyester having a degree of polymerization of from 80 to 100, the copolyester including an acid component and a glycol component, 1.0 to 2.0 mol percent of said acid component being metal sulfoisophthalic residues, and 0.5 to 1.9 weight percent of the copolyester being glycol residues provided by a glycol having a molecular weight of from 400 to 6000.

PLANT PATENTS

GRANTED AUGUST 30, 1988

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

6,261

ROSE PLANT NAMED POULTEX

Pernille Olesen, and Mogens N. Olesen, both of Hillerodvej 49, DK 3480 Fredensborg, Denmark

Filed Sep. 15, 1986, Ser. No. 907,372

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—8 **1 Claim**

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by relatively large, unusually attractive, Buttercup yellow colored flowers of good form that hold color well through development and aging.

6,262

ROSE PLANT NAMED STEBIGPU

Patrick N. Stephens, deceased, late of Te Awamutu, New Zealand, and by Patricia I. J. Stephens, legal representative, 139 Kihi Kihi Road, Te Awamutu, New Zealand

Filed Aug. 11, 1986, Ser. No. 895,289

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by large, heavily petalled reddish purple flowers borne on a vigorous, disease resistant plant and which are long lasting on the plant and as cut flowers.

6,263

ROSE PLANT NAMED MACDEEPO

Samuel D. McGredy, 130 B Beach Road, Castor Bay, Auckland 9, New Zealand

Filed Aug. 11, 1986, Ser. No. 895,305

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by Naples yellow colored flowers attractively displayed against shiny dark green foliage and which are long lasting on the plant and as cut flowers.

6,264

ROSE PLANT NAMED POULMAN

Pernille Olesen, and Mogens N. Olesen, both of Hillerodvej 49, DK 3480 Fredensborg, Denmark

Filed Sep. 15, 1986, Ser. No. 907,373

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea rose class, substantially as shown and described, characterized particularly by very well formed flowers of Currant red to Cardinal red coloring having good form and which are long lasting on the plant and as cut flowers.

6,265

ROSE PLANT NAMED POULANDER

Pernille Olesen, and Mogens N. Olesen, both of Hillerodvej 49, DK 3480 Fredensborg, Denmark

Filed Sep. 15, 1986, Ser. No. 907,377

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by flowers of warm currant red coloring borne in large sprays and which maintain their color well through maturity.

6,266

OLEA EUROPAEA CV. MONTRA

Dick Zylstra, Goleta, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed Jul. 21, 1986, Ser. No. 887,336

Int. Cl.[4] A01H *5/03*

U.S. Cl. Plt.—33 **1 Claim**

1. A new and distinct selection of *Olea europaea* as substantially shown and described herein, that is characterized particularly as a novelty by the unique combination of a dwarf shrub habit, a rapid grower when young and a dense compact growth habit.

6,267

PEACH TREE 'SALEM'

Charles W. Haines, Elmer, N.J., assignor to Adams County Nursery, Inc., Aspers, Pa.

Filed Jun. 24, 1986, Ser. No. 877,772

Int. Cl.[4] A01H *5/00*

U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree as herein shown and described, characterized as to novelty by the unique combination of vigorous upright growth, ability to manufacture substantial quantities of strong budwood, which enables buds to resist low temperatures, fruit which is very large averaging 2.6 to 3.0 inches harvested in two to three pickings, the color of the flesh of the fruit being yellow, mottled with red, abundant juice being present, ripening evenly, and five to ten days before Loring, the quantity of fruit produced increasing with the age of the tree, and the tree having demonstrated tolerance to bacterial spot (*Xanthomonas campestris* pruni) in an area where such disease can be severe.

VOL
1093

ISS
5

AG
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1988

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VOL
1093
ISS
5
AG
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1988
UMI

PATENTS

GRANTED AUG. 30, 1988

ERRATA

For CLASS	See PATENT NO.
068-213	4,766,755
156-624	4,766,954
181-240	4,766,983
416-193	4,767,247
091-173	4,767,294
005-508	4,767,419
209-127	4,767,506
364-318	4,767,588
548-365	4,767,871
318-375	4,767,970

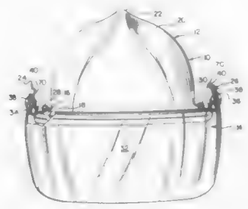
GENERAL AND MECHANICAL

4,766,608
RADIATION SHIELD GARMENT
Donald J. Cusick, Woodland Hills, and Douglas T. Cusick, Saugus, both of Calif., assignors to Infab Corporation, Van Nuys, Calif.
Filed Nov. 4, 1985, Ser. No. 794,567
Int. Cl.[4] A41D *13/04*; G21F *3/02*
U.S. Cl. 2—2 30 Claims



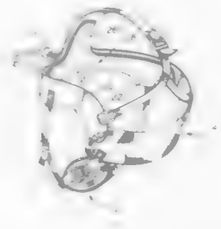
1. A radiation shield garment comprising:
a flexible front portion;
a shoulder portion connected to the front portion for suspending the garment on the body of the wearer thereof;
a broad elongated belt arraged to be fastened around the garment at substantially hip/waist level, the belt being elasticized at least along a major portion of its length and adapted for stretching, tightening and securing around at least a part of the waist of a wearer of the garment such that at least part of the weight of the garment is substantially transferred to be carried by the hips and/or waist of the wearer and such that the wearer of the garment is provided lumbar support by the belt.

4,766,609
FIRE FIGHTER HELMET AND FACE SHIELD
Abbott A. Lane, Dayton, Ohio, assignor to Firequip Helmets, Inc., Dayton, Ohio
Filed Mar. 31, 1987, Ser. No. 32,795
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—5 12 Claims



1. In a fire fighter helmet of the type having a body including a peripheral brim, an improved face shield system comprising:
an arcuate face sheild;
hinge means for connecting said shield to said helmet body to pivot between an up position, wherein said shield is substantially above a face of a user, and a down position, wherein said shield extends below said brim and is in front of a face of a user;
said hinge means including at least one hinge having a hinge plate attached to a side of said body, a pivot pin, defining a pivot axis of said shield, extending through said shield and journaled into said hinge plate, and resilient means attached to said hinge plate rearwardly of said pin and attached to said shield forwardly of said pin; and
said hinge plate having an upright portion receiving said pivot pin and an inwardly extending leg portion attached to said helmet body and angled relative to said upright portion such that said upright portion is inclined inwardly toward said helmet, thereby minimizing side overhang of said hinge.

4,766,610
REPLACEABLE CUSHION LINER FOR MILITARY HEADGEAR
Paul B. Mattes, Garland, Tex., assignor to Varo, Inc., Garland, Tex.
Filed Jan. 22, 1987, Ser. No. 6,734
Int. Cl.[4] A42B *3/00*
U.S. Cl. 2—6 13 Claims



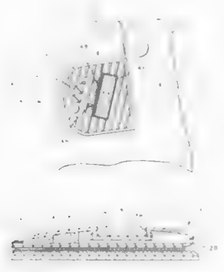
1. A cushion adapted for use in a night vision headgear, comprising:
a closed-cell foam core formed in a shape for fitting into the headgear;
a dark colored vinyl/nitrile coating covering substantially all surfaces of said foam core to form a nonallergenic surface, said dark coloring being effective to reduce light reflections so that said headgear remains secure from detection by other night vision equipment; and
a pressure responsive material covering substantially one entire side surface of said foam core and fixed thereto by adhering said material to the vinyl/nitrile coating.

4,766,611
GLOVE AND WATCH
Young S. Kim, 22573 Woodridge Ct., Cupertino, Calif. 95014
Filed Jul. 31, 1987, Ser. No. 80,329
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—160 10 Claims

1. In combination, a glove, a timepiece, and means for attaching said timepiece to said glove, said glove having a flap joined by a first end to said glove, said flap having a second end, said combination including a means for attaching the

VOL 1093 ISS 5 AG 30 1988 UMI

second end of said flap to said glove, and said means for attaching said timepiece to said glove being configured to attach said



timepiece to an upper surface of said flap so as to be visible when the second end of the flap is attached to said glove.

4,766,612

PROTECTIVE WORK GLOVE

Edward E. Patton, Sr., 5080 Fremont Ave., Jacksonville, Fla. 32210

Filed Jan. 28, 1987, Ser. No. 7,489
Int. Cl.[4] A41D *19/00*
U.S. Cl. 2—161 R 35 Claims



1. A protective work glove comprising a glove having internal cavities for fingers and hand of a wearer with finger and hand protective members cooperating therewith on the back and sides of the fingers and the back of a hand, said finger protective members each including a plurality of stiff spaced channel members adapted to fit around the back of and sides of and along the phalange of each finger and held in place between the knuckles of the finger, and said hand protective member including a curved stiff plate member adapted to fit over the back of the hand between the wrist and the fingers, at least said channel member overlying the outermost phalange of each finger having a height greater than the height of such phalange to inhibit crushing of such phalange.

4,766,613

CONVERTIBLE PANTS

Brian K. Wells, San Leandro, Calif., assignor to David F. Wells, Oakland, Calif.

Filed Aug. 25, 1987, Ser. No. 89,140
Int. Cl.[4] A41D *1/06, 27/10*
U.S. Cl. 2—227 2 Claims



1. Trousers intended for use with a human lower torso comprising:

a. a flexible upper part having a portion intended for surrounding the torso waist and a pair of lower portions, each of said pair of lower portions intended for substantially encompassing a torso leg and extending from said torso waist surrounding portion, each of said lower portions of said flexible upper part including an outer surface, an inner surface, each capable of contacting a torso leg, and an edge portion between said inner and outer surfaces, each of said lower portions of said flexible upper part further including a substantially vertical seam;

b. a pair of flexible lower parts, each intended for substantially encompassing a torso lower leg, each of said lower pants having an outer surface, an inner surface, and an edge portion therebetween, each of said pair of flexible lower parts further including a seam;

c. means for detachably connecting each of said lower parts to each one of said lower portions of said flexible upper part, said means comprising a pair of strips of pile fastening material connected to said inside surface of each of said lower portions of said flexible upper part, and a pair of strips of hook fastening material connected to the outer surface of each of said pair of flexible lower parts, said strips of pile material extending substantialy parallel to the majority of said edge portions of each of said lower portions of said flexible upper part, said strips of hook material extending substantially parallel to the majority of said edge portions of each pair of flexible lower parts; and

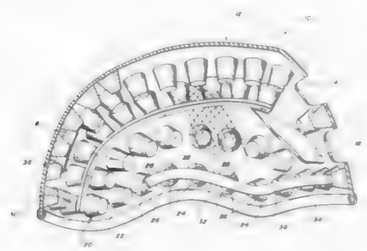
d. alignment means for orienting said seams of each of said lower portions of said flexible upper part with a substantially vertical seam of one of said pair of flexible lower parts, including each of said strips of hook and pile fastening material stopping short of its respective substantially vertical seam to provide a gap whereby alignment of said gaps provide for alignment of said seams.

4,766,614

VENTILATED PROTECTIVE HEADGEAR

Jay S. Cantwell, 15 Depaul Hills Ct., Bridgeton, Mo. 63044, and William R. Burkett, 6718 Dale Ave., St. Louis, Mo. 63139

Filed Dec. 31, 1986, Ser. No. 948,230
Int. Cl.[4] A42B *3/00*; A42C *5/04*
U.S. Cl. 2—414 4 Claims



1. A lightweight protective headgear having improved ventilating qualities comprising:

a unitary outer shell of substantially rigid material, said outer shell having front and rear apertures;

an elastomeric liner for attenuating shock comprising a plurality of elastomeric members having a base and a surface tapering towards a truncated apex and arranged in a loosely fitted side by side pattern with their small ends directed axially inward for engaging the head of a wearer and with their large ends engaging the inside of the outer shell, said elastomeric members varying in height to conform the liner to the wearer's head and arranged along the inside of the outer shell in front to back rows having greater spacing between the rows than between the elastomeric members in said rows for airflow through the headgear; and,

a porous material covering the elastomeric liner whereby air may circulate through the porous material and between the elastomeric members.

4,766,615

SAFETY HELMET

Claude Morin, Peymeinade, France, and T.A.C. (Tongerese Automaten Centrale), 03, Tongeren, Belgium

Filed Jul. 27, 1987, Ser. No. 77,813
Claims priority, application European Pat. Off., Aug. 1, 1986, 86201350.5
Int. Cl.[4] A42B *1/08, 3/02, 7/00*
U.S. Cl. 2—421 10 Claims



1. Safety helmet for engine driver or passengers, comprising a rigid, impact-withstanding shell for protecting the forehead, the skull top, the temples, the skull occipital portion, as well as the nape, and a chin-strap associated with said shell for securing the helmet in position and prevent same being stripped away by impacts, in which the one chin-strap end is rotatably mounted on a pivot fastened to the shell and the axis of which substantially lies in parallel relationship with a straight line passing through the ears, the other chin-strap end being joined to the shell through means provided with a control member which is rotatably mounted on a pivot fastened to the shell and with an axis substantially parallel with said straight line, said means being so arranged as to move the chin-strap between two end positions, a first position allowing either fitting the helmet on, or removing the head therefrom, wherein the chin-strap projects in front of the chin to leave the helmet opening completely free, and a second position corresponding to securing the helmet in position, wherein that chin-strap portion intended to bear under the chin, is bearing underneath the chin, said means being further so arranged on the one hand when the chin-strap is being moved from the first to the second end position thereof, to have each point from said chin-strap portion describe substantially an arc of circle the center of which lies on the axis of that pivot whereabout the control member revolves to go round the chin and then, when said portion lies facing the location where it bears under the chin to secure the helmet in position, to impart to said chin-strap portion a substantially straight translation movement in the direction of said pivot axis, to bear firmly underneath the chin, and on the other hand, when the chin-strap moves from the second to the first end position thereof, said chin-strap portion moves away from the chin with a substantially straight translation movement to move away from said pivot axis to then describe the substantially circular movement thereof so as to go round the chin and release the helmet opening, said means comprising locking means for the chin-strap when same lies in the second end position thereof.

4,766,616

LOCKING SAFETY HELMET

John P. Donahue, 63 Eliot Rd., Arlington, Mass. 02174

Filed Apr. 1, 1987, Ser. No. 32,608
Int. Cl.[4] A42B *3/02*
U.S. Cl. 2—422 2 Claims



1. A locking safety helmet comprising:

a helmet;

a curved shackle having a retracted position on the helmet;

locking means for locking said shackle to said helmet in a locking position; and

storage means including a compartment in said helmet curved similarly to said shackle for storing said shackle in the retracted position, said shackle, in its retracted position, not interfering with the wearer's head when the helmet is worn.

VOL 1093 ISS 5 AG 30 1988 UMI

4,766,617

DISPOSABLE SANITARY TOILET SEAT COVER

Eskild G. Thygesen, Broholmvej 14, Tulstrup, DK-7430 Ikast, and Bente Merrild, SindinggÅrdvej 21, Sinding, DK-7400 Herning, both of Denmark

Continuation of PCT DK 86/00087 filed Aug. 11, 1986, published as WO 87/01022 on Feb. 26, 1987. This application Apr. 3, 1987, Ser. No. 33,655

Claims priority, application Denmark, Aug. 12, 1985, 3656/85

Int. Cl.[4] A47K *13/14*

U.S. Cl. 4—243 4 Claims



1. In a disposable sanitary toilet seat cover which can be flushed away in the toilet, said toilet seat cover consisting of an elongated sheet made of foil or paper, said elongated sheet including a first endless weakening line therein that divides the elongated sheet into a central part and an outer annular part, and a plurality of spaced-apart adhesive means on one surface of said annular part for attaching the annular part to a toilet seat, the improvement wherein a second weakening line extends from said first weakening line into said central part and back to said first weakening line, thereby dividing said central part into a first field portion defined within the second weakening line and a second field portion defined outside said second weakening line and within said first weakening line, said first and second field portions being separately removable from within said annular part such that one or both of said first and second field portions can be used as toilet paper, wherein said second weakening line connects said first field portion with said second field portion less strongly than said first weakening line connects said first field portion and said second field portion to said outer annular part, and wherein said second field portion includes a finger hole to enable it to be manually detached from both said outer annular part and said first field portion, thereby leaving said first field portion attached to said annular part.

4,766,618

TOILET SEAT COVERING

Samuel J. Boker, Queens, N.Y., assignor to Sani-Seat, Inc., Syosset, N.Y.

Filed Jun. 6, 1986, Ser. No. 871,230

Int. Cl.[4] A47K *13/14*

U.S. Cl. 4—247 17 Claims

1. Apparatus for supplying a cover on a toilet seat comprising:

a. a toilet seat made up of a body extending in a generally ring-like configuration having a pair of first and second spaced termini;

b. means for supplying fresh cover material to said seat at the first terminus for encircling completely the body of said seat and extending along the length of the body of said seat;

c. means for taking up at the second terminus used cover material which has passed along and over at least a substantial portion of said body;

d. means included in said body for making positive engagement with said cover material along a surface of said body to guide said cover material along said body, said guide means comprising a single well located within said body and a single slot for providing communication between said well and a body surface for said well to receive and trap a portion of said cover material therein; and

e. transition means at each of the first and second termini for



providing engagment and disengagement, respectively, of said cover material with said guide means, said slot and well extending along said body between said transition means at said first terminus and the transition means at the second terminus.

4,766,619

SANITARY DEVICE

Hisanobu Takeda, Aichi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 31, 1987, Ser. No. 79,972

Claims priority, application Japan, Jul. 31, 1986, 61-181667; Jul. 31, 1986, 61-181668; Jul. 31, 1986, 61-181669; Aug. 9, 1986, 61-187164

Int. Cl.[4] A47K *13/10*

U.S. Cl. 4—251 10 Claims



1. A sanitary device comprising:

a toilet bowl;

a seat pivotably mounted on a rear end portion of said toilet bowl;

shock-absorber means mounted on said rear end portion of said bowl for preventing a hard collision of said seat on an upper side of said toilet bowl; and

operating means connected to said seat for rotation therewith whereby upon lowering said seat, said operating means is brought into operative engagement with said shock-absorber means when the inclination of said seat relative to said upper side of said toilet bowl becomes less than a set value.

4,766,620

SMALL CHILD'S HAIR WASHING DEVICE

Arlene P. Boyhan, 215 Daniels Ave., Bridgeport, Conn. 06606-1513

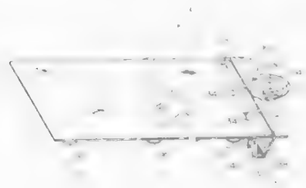
Filed Jul. 27, 1987, Ser. No. 78,584

Int. Cl.[4] A47K *3/12*

U.S. Cl. 4—516 8 Claims

1. A small child's hair washing device comprising a body

support portion for supporting the child's body in supine position on a counter top adjacent a sink, a head rest portion for supporting the child's head above the sink, a neck support portion adjacent the head rest portion and between said head rest portion and said body support portion, and a drain portion between said body support portion and said neck support



portion, wherein said drain portion is V-shaped and has stiffening ribs joining the sides of the V, said sides extending crosswise of said device and wherein one of said sides of said V intersects and is substantially perpendicular to said body support portion and is provided with suction cups for engaging the side of the sink.

4,766,621

FISHERMAN'S PORTABLE SINK

Cecil E. Rasor, P.O. Box 690-683, Tulsa, Okla. 74169

Filed Aug. 6, 1986, Ser. No. 893,716

Int. Cl.[4] A47K *1/05*

U.S. Cl. 4—643 3 Claims



1. A manually portable fisherman's sink comprising:

(a) a unitary rigid, plastic fabricated rectangular sink consisting of an essentially flat surface adapted to be held substantially horizontal during use, wherein said essentially flat surface contains at least one integrally fabricated sink bowl recessed downwardly relative to said horizontal flat surface during use and wherein the periphery of said essentially flat surface is completely encircled with integrally fabricated sidewalls that extend vertically above the esentially flat surface during use to retain liquid and extend vertically below said essentially flat surface during use and terminate at the lower extremity of the sidewall with a plurality of notched means for receiving and holding a handrail therein;

(b) a cutting board mounted to the top side of said essentially flat surface;

(c) a water delivery system means for withdrawing water from a natural source, delivering the water to said rectangular sink for cleaning fish and returning the water to the natural source;

(d) four removable legs and leg engaging means wherein one of each of said leg engaging means is located at each of the four corners of said rectangular sink;

(e) a pair of leg and bracket means wherein one of said leg and brackets means is pivotally attached to a first sidewall and adustably engaged and wherein the other of said leg and bracket means is pivotally attached to a second sidewall opposite said first sidewall and adjustably engaged such as to support said rectangular sink by having said notched means receive and hold a handrail and said leg and bracket means making contact with the sidewall below the handrail: and

(f) a plurality of locking means attached to the underside of said essentially flat surface and positioned such as to fasten to the handrail being held in one or more of said plurality of notched openings.

4,766,622

PERITONEAL WASTE DISCHARGE SYSTEMS

Alphonso Pacelli, 246 Rte. 46 West, Totowa, N.J. 07512

Filed Mar. 23, 1987, Ser. No. 28,736

Int. Cl.[4] A47K *17/00*; A61M *31/00*

U.S. Cl. 4—661 1 Claim



1. A waste container discharge system, for use in combination with a toilet, comprising:

(a) a disinfectant storage chamber located near the ceiling of a room;

(b) a measuring chamber in selectable fluid communication with said storage chamber and beneath said storage chamber with reference to the gravity vector;

(c) first valve means located medially between said storage chamber and said measuring chamber, said valve means defining said selective fluid communication, wherein filling of said measuring chamber to a desired quantity of disinfectant may be accomplished by said first valve means;

(d) hook means for holding a body fluid bag in vertical, gravity-drain position;

(e) cup means, above the level of said toilet, disposed proximal to the mouth of said fluid bag and beneath an output of said measuring chamber;

(f) second valve means located medially between said measure-chamber and the output thereof, wherein said second valve may be selectably opened to permit flow of the contents of said measuring chamber into said cup means at the time said fluid bag is drained thereinto; and

(g) conduit means for fluidly communicating the output of said cup means to a bowl of said toilet,

whereby the flush lever of said toilet will be depressed as the contents of said conduit means reaches said bowl.

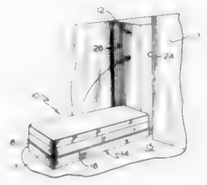
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,623

SPRING COUNTERBALANCED FOLDING WALL BED

William L. Beihoffer, 1903 East/15th, Burnsville, Minn. 55337, and Douglas C. Zellmer, 917 Westwood Ct., Farmington, Minn. 55024

Filed Jul. 23, 1987, Ser. No. 77,107
Int. Cl.[4] A47C *19/06*
U.S. Cl. 05—164 R 6 Claims



1. A spring counterbalanced folding wall bed comprising a supporting frame structure including a pair of laterally spaced apart fixed frame members supporting fixed bed pivot means at substantially floor level,

a bed frame including a mattress supporting means,

said bed frame having a head end pivotally mounted on the bed pivot means for pivotal movement with respect to the fixed frame members about a horizontal axis between a horizontal operative position and a generally upright storage position,

compression spring means mounted upon the bed frame and having a spring axis in alignment with the bed frame,

a spring pivot member mounted in a fixed position relative to the fixed frame member and displaced horizontally a predetermined distance D on the opposite side of the bed pivot from the bed frame,

a spring compression rod having one end pivotally connected to the spring pivot and the other end connected to one end of the spring to compress the spring progressively as the bed is lowered to the operative position,

the laterally spaced apart fixed frame members comprise a pair of laterally spaced apart frame elements, each of said frame elements has a pair of pivots mounted thereon including said bed pivot mounted at a first elevation and said spring pivot mounted at a higher elevation spaced vertically from the bed pivot by a predetermined height H whereby the compression spring is compressed through the action of the connecting rod when moved through an angle of 90° by an overall distance which is approximately equal to the sum of D plus H.

4,766,624

MATTRESS ASSEMBLY HAVING ROWS OF COIL SPRINGS FORMED FROM A SINGLE CONTINUOUS LENGTH OF WIRE

Chester R. Yates, Carthage, Mo.; Marvin D. Selzer, Hutchinson, Kans., and Henry G. Mohr, Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Oct. 17, 1986, Ser. No. 920,845
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[4] A47C *23/02*
U.S. Cl. 5—248 8 Claims

1. A bedding mattress including

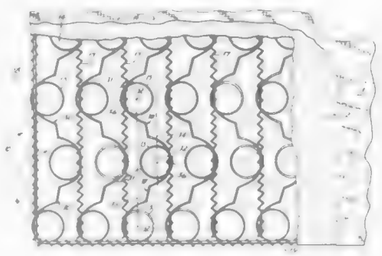
a spring assembly, said spring assembly having upper and lower planar surfaces, said spring assembly comprising a plurality of parallel rows of coil springs,

each of said rows of coil springs being formed from a single continuous length of wire and each of said rows containing a plurality of coils interconnected by connector segments, alternate ones of said connector segments being disposed in the planes of said upper and lower planar surfaces, the axes of said coils being disposed perpendicular to said upper and lower planar surfaces,

each of said coils terminating in a cordal flat bar section located in one of the planes of said upper and lower planar surfaces, the cordal flat bar sections of adjacent coils in a row of coils being interconnected by one of said connector segments,

multiple helical spring means extending parallel to said rows for the length of said rows in the planes of said upper and lower planar surfaces,

each of said helical spring means being alternately wound around cordal flat bar sections of coils of a pair of adjacent rows of coils so as to secure said pair of rows of coils in an assembled relation,



padding over said top and bottom surfaces of said spring assembly,

an upholstered covering completely encasing said spring assembly and said padding, and

each of said connector segments of each of said rows of coils comprising a generally diagonally extending connector bar having generally parallel end portions connected at the center by an offset section, said offset section forming an obtuse angle with each of said parallel end portions, said offset section being formed by rotation of said offset section relative to the end portions of said connector bar while said end portions are restrained against rotation.

4,766,625

BOX SPRING HAVING ROWS OF COIL SPRINGS FORMED FROM A SINGLE LENGTH OF WIRE

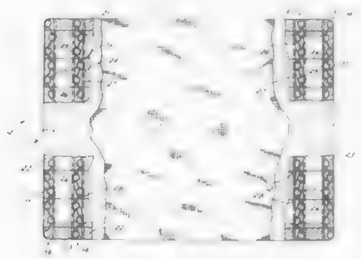
Chester R. Yates, Carthage, Mo.; Marvin D. Selzer, Hutchinson, Kans., and Henry G. Mohr, Carthage, Mo., assignors to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Oct. 17, 1986, Ser. No. 920,248
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[4] A47C *23/02;* F16F *3/04*
U.S. Cl. 5—248 15 Claims

1. A box spring for supporting a bedding mattress, which box spring comprises a generally planar base, a planar wire grid, and a plurality of parallel rows of coil springs resiliently supporting said wire grid spaced from said base,

each of said rows of coil springs being formed from a single continuous length of wire and each of said rows containing a plurality of coils interconnected by interconnecting segments, alternate ones of said interconnecting segments being disposed in the planes of said base and grid, the axes of said coils being disposed perpendicular to the plane of said base and grid,

each of said coils terminating in a cordal flat bar located in a plane of said base and grid, and the cordal flat bars of adjacent coils being interconnected by said interconnecting segments, each of said interconnecting segments being in the form of a generally diagonally extending bar having substantially parallel end portions connected to said cordal flat bars at a point on said cordal flat bars which is tangential to said coils, said substantially parallel end portions of said diagonally extending bar being connected at the center by an offset section, said offset section forming an obtuse angle with each of said parallel end portions, said offset section being formed by rotating said offset



section while said parallel end portions are restrained against rotation so as to convert said diagonally extending bar from a non-planar to a planar configuration,

padding located on the top side of said wire grid, and

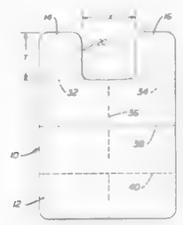
an upholstered covering encasing said base, rows of coil springs, wire grid, and said padding.

4,766,626

SUPPORT PAD WORKING ON OR ABOUT VEHICLE TIRES

Philip A. Green, 653 E. Blithdale, Mill Valley, Calif. 94941

Filed Oct. 8, 1987, Ser. No. 105,812
Int. Cl.[4] A47G *9/06*
U.S. Cl. 5—420 2 Claims



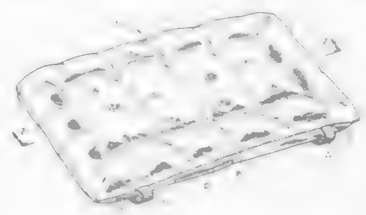
1. A portable pad to be employed as a protective support for a user thereof when said user performs work on or about a tire on a vehicle, said pad being flexible and formed of an inner layer of closed cell, plastic foam disposed between outer layers of substantially waterproof, plastic sheet material, including a primary pad section of generally rectangular configuration and having rounded corners and secondary pad sections having rounded corners and integrally connected to and projecting from said primary pad section, said secondary pad sections being spaced from one another and defining along with said primary pad section an indentation having a generally rectangular configuration within said pad for receiving said tire, said secondary pad sections adapted to be disposed on opposite sides of said tire when said tire received within said indentation, said pad being adapted to be folded into a compact configuration along fold lines dividing said secondary pad sections from said primary pad section and additional fold lines formed in said primary pad section and intersecting to divide said primary pad section into a plurality of portions which are in at least partial registry with each other and with said secondary pad sections when said pad is in said compact configuration, both layers of said plastic sheet material being continuous and extending over said fold lines.

4,766,627

BED PAD SUPPORT FOR AN INVALID

Lela C. Landry, Sulphur, La., assignor to Brumline USA, Inc., Sulphur, La.

Filed Feb. 24, 1986, Ser. No. 832,418
Int. Cl.[4] A47C *27/08, 27/00*
U.S. Cl. 5—446 1 Claim



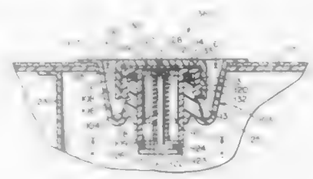
1. A bed buoyant underbody support for an invalid comprising a rectangular top and bottom sheet of fabric stitched together defining a boundary for said underbody support, comprising 65% polyester and 35% cotton of a 76 inch warp and a 52 inch weft having a weight of 1.83 yards per pound, a buoyant batting filler of a hollow slick polyester batting of 6 denier filaments garnetted into a batting, lines of stitching defining rectangular lines of quilt-like stitching forming an internal set set inwardly from said boundary and having longitudinal and transverse runs joining said top and bottom sheets and defining a channel about the perimeter of said top and bottom sheet, said channel containing air and said bouyant batting filler, transverse quilt-like stitching between the longitudinal runs of said rectangular lines of stitching being set in from the longitudinal runs of said rectangular lines of stitching dividing the internal set of transverse lines of stitching into a plurality of adjacent channels along the major axis of said rectangle and containing air and the buoyant batting filler of hollow slick polyester batting wherein said transverse stitching stops short of the longitudinal stitching of the rectangular lines of quilt-like stitching leaving an opening betweet the adjacent transverse channels to permit passage of air between channels so that the bed buoyant underbody support is not so rigid as to not provide a resilient buoyant underbody support for an invalid.

4,766,628

AIR MATTRESS WITH FILLER CHECK VALVE AND CAP THEREFOR

Robert A. Walker, 108A Commerce Dr., Greer, S.C. 29651

Continuation-in-part of Ser. No. 819,937, Jan. 21, 1986, abandoned. This application Feb. 19, 1987, Ser. No. 16,566
Int. Cl.[4] A47C *27/08;* F16K *15/20*
U.S. Cl. 5—449 41 Claims



1. An air mattress comprising: air impervious wall means

VOL 1093 ISS 5 AG 30 1988 UMI

surrounding a chamber for accommodating air under pressure, filler check valve assembly for use in selectively supplying air under pressure to said chamber and venting air from said chamber, holder means mounting said filler check valve assembly on said wall means, said holder means having a tubular body and an annular flexible wall joined to the body to locate the check valve assembly in said chamber, and means securing said annular flexible wall to said wall means, said tubular body having a smooth inside cylindrical surface, said surface having a uniform diameter, said valve assembly having a sleeve with an inside tubular surface surrounding an air passage open to said chamber and externally of the air mattress mounted on the tubular body, said sleeve having a smooth outside cylindrical surface having a uniform diameter located in a tight fit relationship with the inside cylindrical surface of the tubular body, said sleeve having a collar to cooperate with the tubular body to mount the sleeve on the body in a tight fit relation with the inside surface of the body, said collar comprising an outwardly directed annular flange secured normally to the sleeve and a cylindrical side wall extending downwardly from the flange, valving means movably mounted on the sleeve operable to open and close the air passage, said valving means including head means located in said chamber engageable with the sleeve to close said passage, a rod secured to said head means projected axially into said passage, a tubular guide joined to said sleeve slidably accommodating said rod, a spider head secured to the rod having outer end portions slidably engageable with the inside tubular surface of the sleeve, biasing means engageable with said tubular guide and spider head for holding the head means in a closed position, said valving means being movable against the force of the biasing means to open said air passage thereby allowing air to flow out of the chamber, and a cap means mounted on the cylindrical side wall of the collar for closing air passage in said sleeve.

4,766,629

VENTILATED FLOTATION MATTRESS

Tyler E. Schueler, 30 Winchester Dr., Huntington, Conn. 06484

Filed Jun. 2, 1987, Ser. No. 56,713
Int. Cl.[4] A47C *27/10*
U.S. Cl. 5—451 **18 Claims**



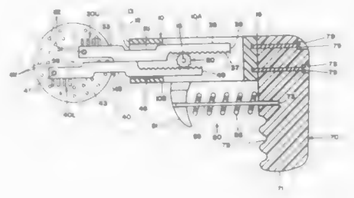
1. A floatation mattress comprising an outer cover means formed to define an enclosed inner area, said outer cover means including an upper panel and a lower panel extending in spaced relationship to said upper panel, means mounted within said enclosed inner area to form water compartment means for receiving and containing water and ventilation chamber means separate from said water compartment means, said means to form said water compartment means and ventilation chamber means including inclined, spaced sidewalls which are secured to said upper and lower panels and which extend therebetween, each water compartment means including a pair of said inclined spaced sidewalls which incline outwardly away from one another from said lower panel to said upper panel, the cross-sectional area of each such water compartment means being greater adjacent said upper panel than is the cross-sectional area of said water compartment means adjacent said lower panel, and openings formed in said cover means in communication with said ventilation chamber means.

4,766,630

TWIN-BRUSHES ROTARY TOOTHBRUSH

Kenneth J. Hegemann, 930 East Grove St., West Point, Nebr.

Filed May 11, 1987, Ser. No. 48,086
Int. Cl.[4] A46B *13/08*
U.S. Cl. 15—22 R **16 Claims**



1. An improved twin-brushes rotary toothbrush comprising:

(A) a horizontally and directionally longitudinally extending hollow barrel having a fore-end and a rear-end, and also having directionally longitudinally extending topside and bottomside;

(B) a contra-directional coordinator located within said barrel, a central portion of said coordinator being pivotably attached to said barrel along a horizontal and directionally transversely extending barrel-pivot;

(C) a pair of substantially parallel, directionally longitudinally extending, and vertically offset horizontal stroke-arms including an upper-strokearm and a lower-strokearm, respective strokearms having a forward-portion located forwardly remote from the barrel fore-end, respective strokearms having a rearward-portion actuatably connected to said coordinator on vertically opposite sides of the barrel-pivot whereby as said coordinator is pivoted in alternating angular directions about said barrel-pivot, the strokearms simultaneously longitudinally reciprocate and respectively move in opposite longitudinal directions; and

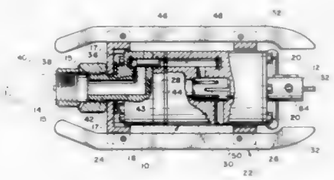
(D) a pair of directionally transversely separated rotary brushes flanking the strokearms forward-portions and there respectively surrounding a transverse-axis, each of said brushes comprising an upright leadward-side provided with an elliptical upper-slot located above said transverse-axis and also with an elliptical lower-slot located below said transverse-axis, and each of said brushes also comprising directionally transversely extending bristles arrayed to substantially surround said transverse-axis, the upper-strokearm being provided with transversely extending crankshafts extending into and being journalled by said elliptical upper-slots, and the lower-strokearm being provided with transversely extending crankshafts extending into and being journalled by said elliptical lower-slots whereby as said contradirectional coordinator is pivoted in alternating angular directions and the respective strokearms reciprocate in opposite longitudinal directions, the said crankshafts bear directionally longitudinally against said brushes slotted portions and the brushes are caused to move in alternating angular directional synchronization with the coordinator, and there being means for maintaining a fixed transverse spacing between said brushes.

4,766,631

SEWER PIPELINE HYDRAULIC ROOT CUTTER APPARATUS

Patrick R. Crane, Calabasas, and Donald J. Bell, Northridge, both of Calif., assignors to Sewer Rodding Equipment Company, Lima, Ohio

Filed Sep. 1, 1987, Ser. No. 91,912
Int. Cl.[4] B08B *9/02*
U.S. Cl. 15—104.12 **4 Claims**



1. In a sewer pipeline cleaning apparatus having a hydraulic motor with a drive shaft, an inlet for connecting a high pressure hydraulic fluid to drive a sewer cleaning tool attached to said drive shaft the improvement comprising:

a hydraulically driven motor having a drive shaft on a forward end and a cap on the rearward end;

passageway means in said end cap for delivering fluid under high pressure to said hydraulically driven motor to operate said drive shaft;

thrusting nozzle means detachably mounted on said end cap for connecting a high pressure fluid to said hydraulically driven motor;

interchangeable skid means mounted on said hydraulically driven motor;

said interchangeable skid means being held on said hydraulically driven motor by mounting said thrusting nozzle means on said end cap;

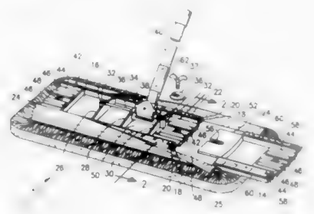
whereby skids for different diameter sewer pipelines may exchanged easily by removing said thrusting nozzle from said end cap.

4,766,632

EXPANDABLE MOP FRAME

John H. Murray, LaGrange, Ga., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Mar. 23, 1987, Ser. No. 29,528
Int. Cl.[4] A47L *13/258, 13/254*
U.S. Cl. 15—147 R **7 Claims**



1. A dust mop comprising: an elongated mop frame, an upstanding flange along both edges of the elongated sides of said mop frame, means mounting a mop handle engaging member centrally of and parallel to the longitudinal direction of said mop frame, said mop handle engaging member having a first portion substantially in the midpoint of said mop frame and a second portion offset therefrom, said mop frame having means to support an extension thereto on both ends thereof, means connecting a mop frame extension to at least one of said mop frame support extension means, said mop frame extension having flanges on the edges thereof mating with the flanges on the mop frame, said mop frame and said mop frame extension having strips of material mounted on said flanges having upstanding hook members thereon and a mop head with a connecting strip on both sides thereof mounted on said mop frame and said mop frame extension with the connecting strip engaging said hook members.

4,766,633

TOOTH AND SULCUS BRUSH

Quentin S. Clark, 1935 Wilbur Ave., San Diego, Calif. 92109

Filed May 18, 1987, Ser. No. 50,959
Int. Cl.[4] A46B *9/04*
U.S. Cl. 15—167.1 **1 Claim**



1. A toothbrush having a longitudinally aligned handle and a wider head portion on one end thereof for providing a unitary base for supporting bristles thereon, said unitary brush supporting base comprising a central single row of tufts of bristles and at least two parallel outer rows of tufts of shorter bristles on each side of said single row of bristles, said tufts of bristles on each side of said central row being all equal in length and said central row of longer tufts of bristles being all equal in length, said central bristles and said outer bristles having a diameter of about 0.005 to 0.0075 inches with their ends being rounded, said central single row of bristles exending from about 0.050 to 0.075 inches longer than the bristles on each side thereof, whereby when the toothbrush is used in a somewhat horizontal position, the longer bristles in the central row of tufts clean the sulcus area while the bristles on one side of said central row of bristles will serve to support and massage the gum tissue while the bristles on the other side of said central row of bristles will serve to clean the sides of the teeth and when the toothbrush is used in a somewhat vertical position to clean behind the upper and lower front teeth, the longer central row of bristles will serve to clean the spaces between the teeth, said handle having a square cross-section portion near said bristle supporting base for providing a finger-gripping area a short distance away from said bristle supporting base, said square cross-section portion then tapering into a round cross-section portion as it progresses down the handle, ending in a hemispherical end on which to support and rotate the toothbrush as it is held in one's hand.

4,766,634

RADIUS EDGER

Louis DeVitis, R.D. #1, Box 258-A, Hightstown, N.J. 08520

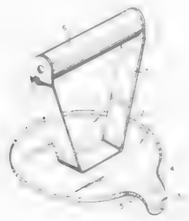
Filed Jan. 4, 1988, Ser. No. 140,558
Int. Cl.[4] B28B *17/00*
U.S. Cl. 15—235.4 **4 Claims**

1. A hand tool for forming the exterior tight radius corner of a cementious material, comprising:

(a) a flat inflexible circular plate the edge of which is circumferencely curved upward, except for one segment of which is radially extended out from the edge and downward curved, said upwardly curved circumference gradu-

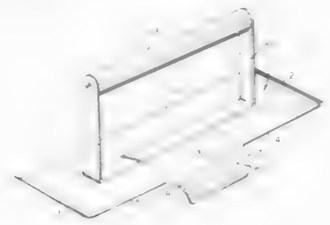
VOL 1093 ISS 5 AG 30 1988 UMI

ally tapering-off until the middle of both sides of the downward curving extension;



(b) a handle; and
(c) means for connecting said handle to the top of said plate.

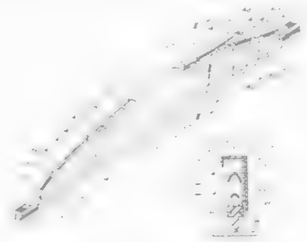
4,766,635
INTERIOR EDGE-EDGER
Louis DeVitis, R.D. #1, Box 258-A, Hightstown, N.J. 08520
Filed Jan. 4, 1988, Ser. No. 140,737
Int. Cl.[4] B28B *17/00*
U.S. Cl. 15—235.4 4 Claims



1. A hand tool for forming the interior edge of a cementious material, comprising:
(a) a flat inflexible rectangular plate, the center portion of one of the longer edges of which is extended outward and downward curved, the two outer remaining portions of said edge being of the same dimension as the leading and trailing adjacent edges, said adjacent leading and trailing edges curving upward;
(b) a handle; and
(c) means for connecting handle to the top of said plate.

4,766,636
WIPER BLADE HAVING FLOATING SUPPRESSING STRUCTURE
Yuji Shinpo, Fujisawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Sep. 10, 1987, Ser. No. 94,778
Claims priority, application Japan, Sep. 13, 1986, 61-216851; Dec. 8, 1986, 61-188729[U]
Int. Cl.[4] B60S *1/02*
U.S. Cl. 15—250.42 15 Claims

1. A wiper blade adapted to be fixed to a wiper arm, comprising:
a main lever detachably connected to said wiper arm and having a longitudinally extending ridge portion;
sub-levers aligned along said main lever and pivotally connected to the same;
an elongate blade rubber held by said sub-levers and extending along said main lever;
first means providing said main lever with a substantially flat wall which extends from one side of said ridge portion toward said blade rubber to such a degree as to partially cover or cancel the same in an overlapping manner; and



second means providing said ridge portion with a plurality of openings.

4,766,637
WET VACUUM APPARATUS
James Winnicki, 7500 Whirlaway St., Bakersfield, Calif. 93307
Filed Jan. 15, 1988, Ser. No. 145,811
Int. Cl.[4] A47L *5/38*
U.S. Cl. 15—314 4 Claims



1. In combination of the floor of a building, said floor having an opening through which waste material is to be conducted, a toilet having a bowl, said bowl to be located about said opening, a wet vacuum apparatus comprising:
a mounting plate fixedly located between said toilet and said floor, said mounting plate having a center hole connecting with said opening, said center hole being adapted to conduct waste from said bowl into said opening;
a passage located within said mounting plate, said passage connecting with said center hole;
a pump connected to said passage; and
a hose connected to said pump, said hose terminating in a vacuum head, whereby said pump causes material to be sucked into said vacuum head and through said hose and said pump into said passage and then discharged through said center hole into said opening.

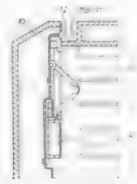
4,766,638
FOUR-WAY VACUUM CLEANER
David E. McDowell, Grand Rapids, Mich., assignor to Bissell Inc., Grand Rapids, Mich.
Filed Mar. 4, 1987, Ser. No. 21,635
Int. Cl.[4] A47L *9/00*
U.S. Cl. 15—329 23 Claims

1. A vacuum cleaner having a central body enclosing a material collection chamber; an air inlet orifice at one end of said central body and communicating with said collection chamber, said central body narrowing towards the end opposite said one end into a primary handle integral with said central body, said handle being elongated along an axis generally passing through said inlet orifice whereby said central body and integral handle comprise a sleek, compact vacuum cleaner; an extension handle and opening in the end of said primary



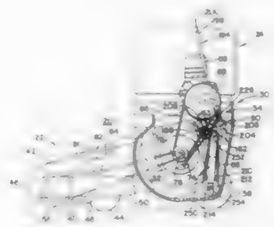
handle centered on said axis for telescopically receiving an end of said extension handle, a latch for detachably locking said extension handle to said primary handle whereby said central body and its air inlet orifice can be made accessible to otherwise remote areas.

4,766,639
BLOCKING DEVICE FOR A VACUUM CLEANER
Nils T. Lindquist, Farsta; Ann-Christine Hedin, Danderyd; Kurt O. Francke, Huddinge, and Milos Vukotic, Skärholmen, all of Sweden, assignors to Aktiebolaget Electrolux, Sweden
Filed Jan. 11, 1988, Ser. No. 142,121
Claims priority, application Sweden, Jan. 29, 1987, 8700340
Int. Cl.[4] A47L *9/14*
U.S. Cl. 15—339 3 Claims



1. A vacuum cleaner, having a dust bag of the type provided with a rigid attachment plate, comprising: an openable cover for replacement of said dust bag, a blocking device for preventing the closing of said cover when a dust bag is missing in the vacuum cleaner, said blocking device including a slide, a resilient member biasing said slide to a first position within said vacuum cleaner whereby closing of said cover is prevented when the dust bag is missing in said vacuum cleaner, and a toggle joint mechanism actuated by said attachment plate to move said slide to a second position whereby the closing of said cover is permitted.

4,766,640
SELF-PROPELLED UPRIGHT VACUUM CLEANER HAVING A REMOTELY DISPOSED TRANSMISSION AND A POSITIVE LOCKING MECHANISM
Dean C. Martin, Golden Valley; Roderick E. Kleiss, Little Canada, both of Minn., and James A. Hardy, Boyle County, Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Dec. 31, 1986, Ser. No. 568
Int. Cl.[4] A47L *9/00*
U.S. Cl. 15—340 12 Claims



1. A self-propelled, upright vacuum cleaner comprising
a base unit,
a handle assembly pivotally mounted on said base unit for movement between an upright position and an operating position,
a cleaner motor having a motor output shaft,
at least one drive wheel for propelling said vacuum cleaner,
a drive shaft to which said drive wheel is attached for rotating said drive wheel,
a transmission for transferring the power from said motor to said drive wheel, said transmission having a transmission input shaft coupled to said motor output shaft and a transmission output shaft coupled to said drive shaft, said transmission being disposed in said cleaner remote from said drive shaft,
elongated drive belt means for coupling said transmission output shaft to said drive shaft,
manually engageable means mounted on said handle assembly for controlling said transmission,
an actuator for controlling the movement of said transmission output shaft, said actuator including opposed E-shaped end walls connected by spaced-apart side walls and being mounted in said transmission for pivotal movement,
clutch means included in said transmission and responsive to said actuator for controlling the movement of said transmission output shaft,
an elongated cable connected between said control means and said actuator for moving said actuator in response to the movement of said control means, said actuator being movable by said cable to a first position such that said transmission output shaft is rotated in a first direction, to a second position such that said transmission output shaft is rotated in a second, opposite direction and to a third position such that said transmission output shaft is not rotated and
locking means for engaging and maintaining said actuator in said third position when said handle assembly is in said upright position.

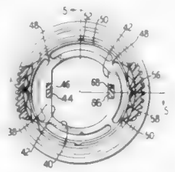
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,641

DETENT CLUTCH FOR A VACUUM CLEANER

Terry D. Daglow, White Bear Lake, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 31, 1985, Ser. No. 815,392
Int. Cl.[4] A47L 5/30
U.S. Cl. 15—390 14 Claims



1. In a vacuum cleaner, the combination comprising:
a brush dowel rotatably mounted to engage a floor surface to be cleaned;
an electric drive motor with an output shaft drivingly engageable with said brush towel to rotate said brush dowel about an axis;
a drive belt connecting said output shaft and said brush dowel providing said driving engagment;
a clutch mechanism on said brush dowel between said brush dowel and said drive belt to prevent damage to said drive belt if said brush dowel is restrained against rotation; said clutch mechanism including;
a pulley member mounted on said brush dowel for receiving said drive belt.
a cam member mounted on said brush dowel to corotate therewith;
said pulley member having an interior opening therein for receiving said cam member;
two end caps engageable to axially sandwich the asembly of said pulley member and said cam member therebetween;
said end cups each having an axially projecting finger of sufficient length to extend through the assembly of said cam and pulley and lockingly engage with the other of said end caps to provide a unitary assembly;
said cam member having a resilient outer surface which engages an interior surface of said pulley member;
said engaging surfaces being configured such that they engage in a torque transmitting manner to transmit sufficient torque from said drive belt to said brush dowel to cause said dowel to rotate against said floor surface, said outer surface of said cam member being sufficiently flexible to permit said configured surfaces to pass each other, thereby causing slippage therebetween when said dowel is held against rotation while said drive belt continues to rotate;
whereby, said pulley and said cam will provide sufficient slippage therebetween to prevent damage to said drive belt and brush dowel.

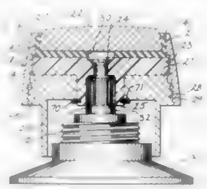
4,766,642

HANDLE ASSEMBLY

Thomas E. Gaffney, Sheboygan; Alan J. Weir, New Holstein; Brent W. Lillesand, Kohler, and Jeffery E. Collins, Sheboygan Falls, all of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Aug. 31, 1987, Ser. No. 91,419
Int. Cl.[4] B25G 3/28
U.S. Cl. 16—121 15 Claims

1. A handle assembly having a decorative insert member comprising:
a handle defining a cavity that converges along at least a part of it to define a stem attachment end and a decorative end;
a retainer assembly adapted to engage said insert member, said retainer assembly and said handle constructed and arranged to restrict movement of said retainer assembly with said insert member through said decorative end;
a collar member having a threaded portion for engagement with a threaded portion on said handle;
said handle, said retainer assembly and said collar member being constructed and arranged to exert a driving force on said retainer assembly in the direction of said decorative



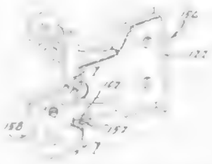
end when said threaded portions on said collar member and said handle engage; and
means to secure said handle assembly to a rotatable stem.

4,766,643

VEHICLE DOOR HINGE HAVING VERTICALLY SEPARABLE PIVOTAL CONNECTIONS

Sumorfin Salazar, Toledo, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1986, Ser. No. 947,071
Int. Cl.[4] E05D 7/10, 11/00
U.S. Cl. 16—222 1 Claim



1. A lift-off hinge assembly for mounting a vehicle door to a vehicle body comprising:
a body mounting plate adapted to be secured to the vehicle body;
a door mounting plate adapted to be secured to the vehicle door;
a first pivot pin member fixedly secured to an upper portion of one of the body mounting plate or the door mounting plate and extending downwardly therefrom;
a second pivot pin member fixedly secured to a lower portion of the other of the body mounting plate or the door mounting plate and extending upwardly therefrom;
bearing means fixedly secured to facing portions of said mounting plates in registration with the pivot pins for permitting insertion of the pivot pins into the bearing means to surround and support the pivot pins for pivotal movement of the mounting plates between positions corresponding to open and closed positions of the vehicle door with respect to the vehicle body; and
abutment means formed integrally with one of the body mounting plate or the door mounting plate to prevent separation of the mounting plates by vertical displacement when the plates are in the vehicle door closed position;
the body mounting plate and the door mounting plate are formed as stampings;
the body mounting plate is integrally formed to include a base portion shaped to abuttingly engaged a portion of the vehicle body and a pair of vertically spaced upstanding trunnion portions extending perpendicularly from the base portion away from the vehicle body, one of said trunnion portions carrying one of the pivot pins and one carrying one of the bearing means;
and the door mounting plate is integrally formed to include a pair of vertically spaced mounting ears shaped to abuttingly engage a portion of the vehicle door and a bridge portion spanning the ears and including upstanding vertically spaced leg portions, one of said leg portions carrying one of the pivot pins and one carrying one of the bearing

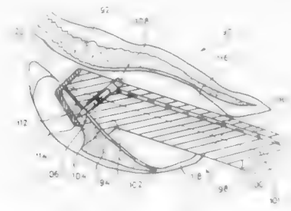
means, the bridge portion being configured to interleafingly engage the body mounting plate between the trunnion portions;
the base portion including spaced flat mounting feet, a upstruct abutment tab extending from the lower one of the mounting feet, an aperture formed in the tab, a separate frangible push pin being snuggly received in the aperture, and extendingly upwardly therefrom, an aperture in one of the leg portions being aligned with the tab aperture, the separate frangible push pin also being received in the leg portion aperture when the mounting plates are in the closed position of the vehicle door with respect to the body, the upstruck abutment tab engaging the lower surface of the lower trunnion, and the frangible pin resisting relative vertical pivotal movement between the door and the body mounting plate until the frangible pin is broken movement of the door from the closed toward the open position.

4,766,644

MOUNTING SUPPORT

Josephus A. van den Nieuwelaar, Gemert, and Petrus C. H. Janssen, Wilbertoord, both of Netherlands, assignors to Stork PMT B.V., Netherlands

Filed Jul. 20, 1987, Ser. No. 75,608
Claims priority, application Netherlands, Jul. 24, 1986, 8601921
Int. Cl.[4] A22C 21/00
U.S. Cl. 17—11 5 Claims



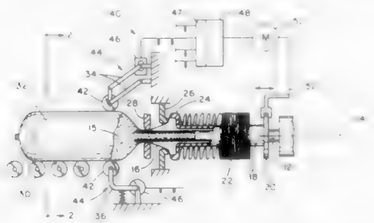
1. Device for supporting a carcass or part of a carcass of slaughtered and eviscerated poultry on the inside of the body cavity, comprising a support body with an end face and a support member in the form of a sharpened blade suitable for penetrating into connective tissue at the exterior of the breast bone of said carcass, and extending substantially parallel to or at an acute angle to said end face.

4,766,645

SIZE CONTROL SYSTEM FOR STUFFING MACHINE

Salvatore P. Lamartino, Orland Park; Jack L. Stansbeary, Schaumburg, and Charles R. Saville, Worth, all of Ill., assignors to Viskase Corporation, Chicago, Ill.

Filed Apr. 16, 1987, Ser. No. 39,197
Int. Cl.[4] A22C 11/02
U.S. Cl. 17—49 18 Claims



1. A stuffing apparatus having means for automatically maintaining the diameter of a stuffed product at a preselected diameter comprising:
(a) means for extruding a food product along a stuffing axis and into a casing drawn in a forward direction from a shirred stick disposed about said stuffing axis for stuffing the casing;
(b) adjustable casing drag means arranged to contact and press against a casing being drawn forwardly from a said shirred stick, said drag means being adjustable for increasing or decreasing the drag on the casing to alter the stuffed diameter of the casing;
(c) sensing means for monitoring the stuffed diameter of the casing including at least two diametrically opposed shoes supported for independent movement in a plane transverse said stuffing axis and bias means for urging said shoes towards said stuffing axis and against the surface of a stuffed product passing between said shoes;
(d) means operatively connected to said shoes for generating an electric control signal representing changes in the stuffed diameter from said preselected value; and
(e) an electric motor operatively connected to said adjustable drag means and driven responsive to said control signal for adjusting the drag on the casing being drawn forward from a said shirred stick.

4,766,646

POULTRY PROCESSING

David A. Parker, Hull, England, assignor to BP Chemicals Limited, London, England

Filed May 22, 1987, Ser. No. 53,377
Claims priority, application United Kingdom, May 28, 1986, 8612954
Int. Cl.[4] A22C 21/04
U.S. Cl. 17—51 6 Claims

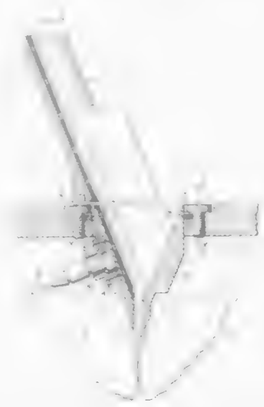
1. A method of processing poultry which processing comprises the step of dipping the poultry carcass into a scald water tank prior to plucking, characterised in that the scald water contains an effective amount of an acid polyformate salt.

4,766,647

APPARATUS AND METHOD FOR MEASURING A PROPERTY OF A CONTINUOUS STRAND OF FIBROUS MATERIALS

Norbert J. Ackermann, Jr.; Hossein M. Ghorashi, and Peyman H. Dehkordi, all of Knoxville, Tenn., assignors to Spinlab Partners, Ltd., Richmond, Va.

Filed Apr. 10, 1987, Ser. No. 36,999
Int. Cl.[4] G01N 19/08; D01H 5/38
U.S. Cl. 19—0.22 15 Claims



1. A monitor for sensing the varying linear density along the length of a moving fibrous strand comprising:
a trumpet-line device having a throughput opening with an

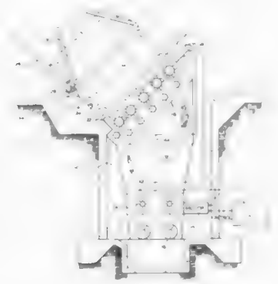
VOL 1093 ISS 5 AUG 30 1988 UMI

inside surface with which said strand frictionally engages as it passes through said opening in a compressed state;

a high frequency acoustical to electrical transducer coupled acoustically to said trumpet-like device for detecting the naturally occurring acoustically emitted signals generated by the friction between the fibers of said strand and between said strand and said inside surface of said trumpet as the strand passes in a compressed state through said trumpet, said transducer converting said acoustically emitted signals to an electrical signal which varies with the intensity of said acoustically emitted signals and which variation is proportional to the density of said fibrous strand; and

an electronic apparatus for receiving said varying electrical signal and indicating the variations in intensity of said emitted signal and thereby variations in density along the length of said fibrous strand.

4,766,648
MODULE FEEDER
Donald J. Kerley, Box 66, Saragosa, Tex. 79780
Filed Aug. 27, 1982, Ser. No. 412,266
Int. Cl.[4] D01B *1/00*
U.S. Cl. 19—80 R 4 Claims



1. The method of feeding seed cotton from a module into a gin comprising:

a. placing a module of packed seed cotton upon a horizontal deck,

b. tilting the deck to slide the seed cotton of the module onto a slide,

c. sliding the packed seed cotton on the slide into a breaking header,

d. breaking the packed cotton on the slide, and

e. throwing the broken cotton into a pit, then

f. feeding the broken cotton from the pit, and

g. conveying the cotton to the gin.

4,766,649
PAPERMAKER'S FELT UTILIZING SPECIAL WEB-MAKING TECHNIQUES TO AVOID VIBRATION
Robert J. Rudt, Clifton Park, and W. Daniel Aldrich, Latham, both of N.Y., assignors to Albany International Corp., Menands, N.Y.
Filed Feb. 27, 1987, Ser. No. 19,938
Int. Cl.[4] D01G *15/00*
U.S. Cl. 19—98 6 Claims

1. An apparatus for manufacturing papermaker's felt web having non-periodic nonuniformities comprising:

a fiber carding means;

a means for gradually varying the width of said web of fibers;

a conveying means for conveying a web of fibers from said fiber carding means;

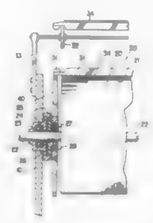
a cross lapper for receiving said web of fibers from said conveying means, said cross lapper depositing said web onto a receiving conveyor using reciprocating movements back and forth over said receiving conveyor;

said receiving conveyor moving said web away from said cross lapper as said cross lapper lays said web thereon;



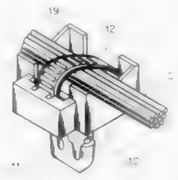
a pivoting means acting on said web of fibers as a unit to form superimposed layers thereof on said receiving conveyor so that the edge of the layer which is being deposited contacts the edge of an adjacent layer previously deposited on said felt web.

4,766,650
TRAVELING FLAT MOUNTING MEANS
David Guindin, Pedernera 247, Villa Progreso Prov. Buenos Aires, Argentina 1650
Filed May 1, 1987, Ser. No. 45,068
Claims priority, application Argentina, May 14, 1986, 303,959
Int. Cl.[4] D01G *15/24*
U.S. Cl. 19—103 2 Claims



1. In a textile raw material card machine comprising a structure whereupon a horizontal transversal carding cylinder is rotatively mounted on a shaft, its revolution surface being provided with barbs and operatively related with an upper carding surface that comprises an endless conveyor formed by a plurality of carding sheets transversely mounted in relation to the forward direction of said conveyor and articulated with respect to each other, said endless conveyor being disposed in such a way that its lower portion copies correspondingly the curvature of an upper circumferential sector of the carding cylinder, the improvement comprising a pair of coaxial idler wheels having approximately the same diameter as that of said cylinder, freely mounted relative to said shaft at a central portion thereof and having a periphery engaging said sheet ends for support thereof.

4,766,651
BAND CLAMP
Shigehiko Kobayashi, and Mamoru Ono, both of Toyota, Japan, assignors to Yazaki Corporation, Tokyo, Japan
Filed Aug. 24, 1987, Ser. No. 88,451
Int. Cl.[4] B65D *63/00*
U.S. Cl. 24—16 PB 3 Claims



1. A band clamp for bundling and securing a plurality of automotive electric cables against movement comprising:

a generally planar body (**10**) having first and second sides, said body further having first and second ends;

a band (**12**) extending from said first end and having first and second sides corresponding to the first and second sides of said body;

a band receiving slot (**15**) laterally formed in the second end of said body;

a fixing clip (**11**) mounted on the second side of said body (**10**) for fixing the same to and automotive panel or the like;

said band being formed with a plurality of ribs (**14**) spaced longitudinally along the first side thereof and with a plurality of laterally extending grooves (**13**) spaced apart from each other in a longitudinal direction in the second side thereof;

said band receiving slot (**15**) having on an outward side thereof an inner wall formed with a pawl (**16**) projecting laterally into said slot (**15**) for locking engagement with said grooves (**13**);

said inner wall defining a manually deflectable lever (**17**);

a pair of walls (**20**) upstanding from said first side of said body and parallel to the edges of said band (**12**), each of said walls having an upper edge (**19**) in the form of an upwardly open V-shaped cut with the lowest points of said V-shaped cuts centrally located and aligned with each other; and

a band support rib (**21**) having a top support portion erected on said first side of said body at said first end thereof with said top support portion lower than said lowest points of said V-shaped cuts,

whereby when said cables are placed on said V-shaped cuts and said band is secured in said band receiving slot, said cables will be elastically deformed and secured against longitudinal movement between said V-shaped slots and said ribs will contact said cables and prevent lateral movement and rotation of said cables.

4,766,652
BOARD FASTENER
Haruyuki Sugiura, Kariya, Japan, assignor to Kitagawa Industries Co., Ltd., Nagoya, Japan
Filed Oct. 7, 1986, Ser. No. 916,110
Claims priority, application Japan, Apr. 2, 1986, 61-76165
Int. Cl.[4] F16B *2/00, 5/06*
U.S. Cl. 24—453 4 Claims

1. A board fastener for holding a first board and a second board in position spaced apart from each other, at least the second board having at least two planar at least generally parallel surfaces, an aperture extending through the second board from one planar surface to the other planar surface, and an edge surface extending from one planar surface to the other planar surface adjacent the aperture, said board fastener comprising:

(a) a base which, in use, is attached to the first board;

(b) a post projecting in a first direction from said base, said post having an abutment surface which, in use, abuts against a first planar surface of the second board;

(c) a projection projecting from said post in the first direction and extending beyond said abutment surface on said post, said projection being sized, shaped, and positioned so that, in use, it projects beyond said abutment surface on said post into an aperture in the second board; and

(d) a handle comprising:

(i) an arm projecting in the first direction from said base;

(ii) a reverse detention member connected to said arm, said reverse detention member being sized, shaped, and positioned so that, in use, it abuts against a second surface of the second board opposite to the first surface of the second board, whereby the second board is gripped between said abutment surface on said post and said reverse detention member;

(iii) a handling member sized, shaped, and positioned so that it can be manipulated from the second side of the second board, said handling member being connected to said arm and to said reverse detention member so that, when said handling member is moved away from said post, said reverse detention member is moved out of



contact with the second side of the second board and beyond an edge surface of the second board; and

(iv) a thrust-up member connected to said arm, to said handling member, and to said reverse detention member, said thrust-up member being sized, shaped, and positioned so that, in use, when said handling member is moved away from said post, said thrust-up member contacts the first side of the second board and pushes the second board away from said abutment surface on said post until an edge of said reverse detention members bears against the edge surface on the second board in a direction at least approximately perpendicular to the first direction, wherein:

(e) said handle further comprises a spring bar having a first end and a second end, the first end of said spring bar projecting from said arm at least approximately perpendicularly thereto;

(f) said thrust-up member has a first end and a second end, the first end of said thrust-up member being pivotally mounted on the second end of said spring bar; and

(g) said reverse detention member and said handling member are mounted on the second end of said thrust-up member,

whereby, when said handling member is moved away from said post in use, said thrust-up member pivots relative to said spring bar and said spring bar stores spring energy which biases the edge of said reverse detention member against the edge surface of the second board.

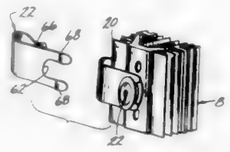
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,653

METHOD AND TOOL FOR ASSEMBLING POWER SEMICONDUCTOR AND HEAT SINK

Joseph L. Della Porta, Southington, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Oct. 16, 1987, Ser. No. 109,134
Int. Cl.[4] A44B 21/00
U.S. Cl. 24—563 2 Claims



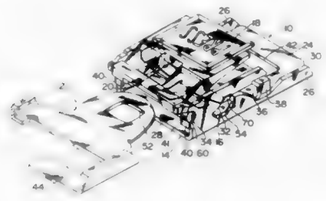
1. A spring clip for temporarily securing a power semiconductor member to a heat sink body having a plurality of heat dissipating fins, said clip comprising: a flat sheet of springy material which includes a first radiused spring end portion flanked by first and second clamping arms, one of said clamping arms having a first terminal edge proximate said spring end portion of the clip, and the other of said clamping arms having a concave terminal edge distal of said spring end portion and extending beyond said first terminal edge, said concave terminal edge of said other clamping arms forming a concavity for contacting a side wall of the semiconductor member in a non-gripping manner, and including a pair of smoothly radiused fingers flanking the concavity, each of said fingers being formed with a first linear bend which provides engagement with a radial flange extending perpendicular to the semiconductor member side wall, and said first and second clamping arms forming clamping means which can be slid over one of the heat dissipating fins on the heat sink body to fix the clip to the heat sink body and bias the semiconductor member against the heat sink body.

4,766,654

PUSH BUTTON BUCKLE ASSEMBLY FOR A SEAT BELT

Mutsumi Sugimoto, Hamamatsu, Japan, assignor to Katsuyama Kinzoku Kogyo Kabushiki Kaisha, Shizuoka, Japan

Filed Mar. 22, 1985, Ser. No. 715,242
Claims priority, application Japan, Oct. 19, 1984, 59-219698; Nov. 23, 1984, 59-177583[U]
Int. Cl.[4] A44B 11/26
U.S. Cl. 24—637 37 Claims



1. A seat belt buckle assembly capable of positive and quick release engagement with a tongue, the buckle assembly comprising:

(a) a base having a front end through which the tongue is inserted in and withdrawn from the buckle assembly, and a rear end opposite the front end, the base comprising a generally flat major portion of generally rectangular shape and a pair of opposed side walls provided on and extending along the opposite sides of the major portion, the side walls having therein means defining a first pair of opposed apertures located intermediate the front and rear ends of the base and means defining a second pair of opposed apertures which open at the front end of the base;

(b) a latch having a pair of opposite ends engaged in the first pair of apertures in the side walls of the base for pivotal motion about a first axis, which extends through the center of gravity of the latch, relative to the base between a latching position for positive engagement with the tongue inserted in the buckle assembly and an unlatching position for releasing the tongue;

(c) a push button generally overlying the latch and having a pair of trunnions projecting laterally from the front end of the push button, the trunnions being inserted rearwardly into the second pair of apertures and being rotatably engaged in the side walls of the base for pivotal motion about a second axis, which extends parallel to the first axis, relative to the base between a normal position for holding the latch in the latching position and a working position for holding the latch in the unlatching position; and

(d) a dual-purpose integral spring mounted on the base and disposed between the latch and the push button, the dual-purpose spring having a first spring portion extending laterally of the base between the opposed side walls thereof for connecting the spring to the base and acting directly on the latch for normally urging the latch in the latching position, a second spring portion protruding forwardly with respect to the first portion and acting directly on the push button for normally urging the push button in the normal position, and a mid spring portion interconnecting the first and second spring portions, the mid spring portion comprising a pair of wings extending laterally of the base, each wing having a pair of opposed leg portions extending laterally in the widthwise direction of the base, one end of one leg portion being connected to the first spring portion and the corresponding one end of the other leg portion being connected to the second spring portion, and a connecting portion interconnecting the other ends of the pair of leg portions;

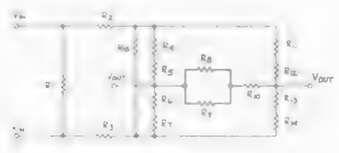
(e) the push button being operative when pushed manually from the normal position to the working position against the force of the dual-purpose spring to act directly on the latch for pivoting the same from the latching position to the unlatching position against the force of the dual-purpose spring.

4,766,655

METHOD FOR FABRICATING A COMPENSATED SILICON PRESSURE SENSING DEVICE

Robert E. Hickox, Tucson, Ariz., assignor to Burr-Brown Corporation, Tucson, Ariz.

Division of Ser. No. 666,372, Oct. 30, 1984, Pat. No. 4,672,853.
This application Oct. 24, 1986, Ser. No. 922,770
Int. Cl.[4] H01L 41/22
U.S. Cl. 29—25.35 8 Claims



1. A method for fabricating a pressure transducer including a silicon piezo-resistive bridge circuit with a pair of input terminals and a pair of output terminals, comprising the steps of:

providing a single crystal silicon substrate including a diaphragm region containing piezo-resistive silicon bridge elements;

forming a first doped silicon resistive means having a positive temperature coefficient in said single crystal substrate;

depositing low-temperature coefficient trimmable thin-film resistive elements over said silicon substrate;

coupling said piezo-resistive silicon bridge elements and said trimmable thin-film resistive elements to form a bridge circuit having a silicon bridge element and trimmable thin-film resistive means in each arm; and

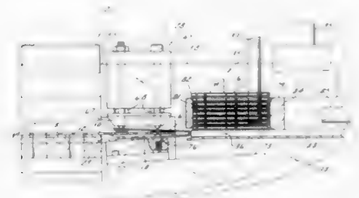
serially coupling one of said trimmable thin-film resistive elements and said first doped silicon resistive means across said pair of output terminals of said bridge circuit.

4,766,656

APPARATUS FOR SECURING METAL TABS TO FILE UNIT BODIES

Richard W. Gutowski, 424 Oakton Ave., Pewaukee, Wis. 53072

Filed Jul. 8, 1987, Ser. No. 71,198
Int. Cl.[4] B23D 23/04
U.S. Cl. 29—33 K 6 Claims



1. Apparatus for securing metal indicia tabs to file unit bodies of pressboard or the like, each said body having a tab edge at which a tab is to be secured and other edges that extend transversely to the tab edge, and each said tab being bent substantially to a U-shape to have a bright portion which defines a folded edge of the tab and a pair of eyeletted wings extending from said bight portion that are adapted to flatwise overlie opposite surfaces of a file unit body and to be secured thereto by peening of their eyelets through rivet holes in the body, said apparatus comprising:

A. a stationary frame;

B. a table on said frame

(1) having an upper surface for flatwise slidable support of a file unit body and

(2) having a rear edge;

C. a punching mechanism on said frame at a punching station spaced in a forward direction from said rear edge of the table, for punching rivet holes through a file unit body on said table;

D. a peening mechanism on said frame at a peening station spaced in said forward direction from said punching station, said peening mechanism comprising

(1) a peening platen

(a) having a top surface for supporting a tab and which is flatwise overlain by a lower wing of a supported tab, and

(b) tab locator means comprising abutments engageable by edge portions of a tab on said top surface for positioning the tab with its folded edge facing in said forward direction,

(2) peening pins fixed above said peening platen and

(3) means for actuating said peening platen between

(a) a lowered position wherein a tab positioned thereon has its lower wing below the level of said upper surface of the table and its upper wing above that level, and

(b) a raised position wherein the platen cooperates with said peening pins for peening the eyelets of a tab on the platen; and

E. guide means on said frame for positioning a file unit body on said table that is urged for sliding in said forward direction with its tab edge forward, said guide means comprising

(1) a side guide projecting above said upper surface of the table for sliding engagement by one of said other edges of the body, and

(2) a front guide comprising a movable element engageable by the tab edge of the body for establishing the body successively

(a) at a punching location wherein a portion of the body adjacent to said tab edge is at said punching station, and

(b) at a peening location wherein said portion of the body is at said peening station and is received between the wings of a tab on said platen with the latter in its lowered position.

4. Apparatus for securing metal indicia tabs to file unit bodies of pressboard or the like, each said body having a tab edge at which a tab is to be secured and other edges that extend transversely to the tab edge, and each said tab being bent substantially to a U-shape to have a bight portion which defines a folded edge of the tab and a pair of eyeletted wings extending from said bight portion that are adapted to flatwise overlie opposite surfaces of a file unit body and to be secured thereto by peening of their eyelets, said apparatus comprising:

A. relatively stationary means comprising a frame and defining

(1) an upwardly facing table surface for flatwise slidable support of a file unit body, said table surface having a rear edge,

(2) a peening station which is spaced in a forward direction from said rear edge and at which there are downwardly projecting eyelet peening pins at a level above that of said table surface,

(3) a tab storage station spaced in said forward direction from said peening station, and

(4) an upwardly facing tab supporting surface extending in said forward direction from said peening station through said storage station;

B. guide means projecting above the level of said table surface and engageable by the tab edge and at least one of said other edges of a file unit body on said table surface for guiding that body in forward sliding motion to a location in which a portion of that body adjacent to its tab edge is at said peening station;

C. an upright tab storage guide on said frame, at said storage station, for holding a plurality of tabs in a stacked relationship with the wings of each tab extending substantially horizontally, the folded edge of said tab facing in said forward direction and a lowermost tab of the stack resting on said tab supporting surface, said tab storage guide

(1) being spaced above said tab- supporting surface by a distance to be clear of said lowermost tab and

(2) being arranged to engage edge portions of all tabs above said lowermost tab for confining them to downward translation;

D. a tab pusher slidable on said tab supporting surface in said forward direction and in an opposite rearward direction, said tab pusher having a height to pass under said tab storage guide and having a rearwardly facing abutment engageable against the folded edge of said lowermost tab for displacing that tab from the storage station to the peening station upon movement of said pusher in said rearward direction;

E. a peening platen at said peening station

(1) having a top surface for supporting a tab at said peening station and which is flatwise overlain by a lower wing of that tab and

(2) having stop means projecting above said top surface and cooperable with edge portions of a tab thereon to

VOL 1093 ISS 5 AUG 30 1988 UMI

position it with its eyelets in alignment with said peening pins; and

F. means for actuating said peening platen in substantially up and down motion between

(1) a lower limit in which said top surface of the peening platen is below the level of said table surface and said portion of a file unit body at said location is between the wings of a tab thereon, and

(2) an upper limit in which said top surface is above said level and the peening platen cooperates with said peening pins for eyelet peening.

4,766,657

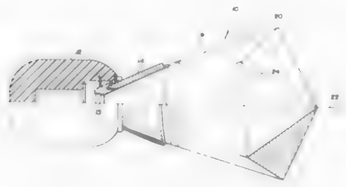
ROCKET MOTOR EXTENDIBLE NOZZLE EXIT CONE

Victor Singer, Newark, Del., assignor to Morton Thiokol, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 762,472, Aug. 5, 1985, abandoned. This application Jun. 20, 1986, Ser. No. 876,570

Int. Cl.[4] **B23P** *15/00*

U.S. Cl. 29—157 C **21 Claims**



1. The method of making an extendible nozzle exit cone for attachment to the exit cone of a rocket motor nozzle with a portion at least of said extendible nozzle exit cone being initially folded inwardly thereof for compact stowage relative to the rocket motor nozzle and adapted to be unfolded upon firing of the rocket motor due to forward-to-aft flow of rocket motor gas therethrough for substantially increasing the ratio of the effective rocket motor nozzle/extendible nozzle exit cone exit plane area to the rocket motor nozzle throat area, said method comprising the steps of:

(a) forming a frustum of a cone from heat resistant material;

(b) deforming a portion at least of the surface of the larger radius region of said frustum of a cone to provide a plurality of creases therein in first and second sets, each of the creases of said first and second sets having an apex, with the apex of each of the creases of the first set pointing at the viewer and the apex of each of the creases of the second set pointing away from the viewer with the creases of the first set running both longitudinally and transversely with respect to said frustum of a cone and the creases of said second set running longitudinally only with respect thereto; and

(c) progressively folding, inwardly and forwardly of the larger radius end of said frustum of a cone a sufficient amount of said heat resistant material, in at least one inwardly folded layer, to close the end of said frustum of a cone at the larger radius end thereof,

whereby the frustum of a cone so made is adapted to be attached at the smaller radius end thereof to the exit end of a rocket motor nozzle with the cone in a stowed position relative thereto; and

whereby upon rocket motor firing, the stowed frustum of a cone may deploy due to the forward-to-aft flow of rocket motor gas therethrough to provide a substantially increased ratio of the effective rocket motor nozzle/extendible exit cone exit plane area to the rocket motor nozzle throat area.

4,766,658

METHOD OF PRODUCING COMPOSITE NUCLEAR FUEL CLADDING

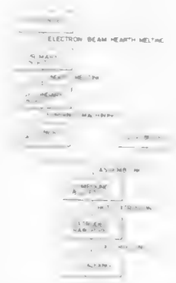
Toshihiro Matsumoto, Hitachi; Hajime Umehara, Katsuta; Junjiro Nakajima, Hitachi, and Norihisa Fujii, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 14, 1986, Ser. No. 884,895

Claims priority, application Japan, Jul. 12, 1985, 60-152261

Int. Cl.[4] **B23P** *17/00;* **G21C** *3/20*

U.S. Cl. 29—527.7 **7 Claims**



1. A method of producing a composite nuclear fuel cladding lined with a liner of high purity zirconium, which method comprises the steps of:

charging a hearth cavity with a raw material of zirconium;

determining a removal rate of oxygen contained in the raw material, based on a concentration of oxygen contained in the raw material and a target concentration of oxygen contained in a zirconium ingot to be produced;

determining an amount of heat per unit volume (w·sec/mm^3) to be supplied to said raw material according to said removal rate;

melting and refining the raw material by irradiating an electron beam on the raw material while controlling an amount of heat per unit volume (w·sec/mm^3) to be supplied to the raw material, thereby producing at least one refined ingot of zirconium;

forming a liner using at least one refined ingot of zirconium;

assembling said liner in a tube for a fuel cladding; and

subjecting said assembled tube and liner to plastic deformation, thereby forming a composite nuclear fuel cladding.

4,766,659

METHOD OF MAKING A CARTRIDGE FOR USE IN INJECTING A LIQUID INTO A TREE

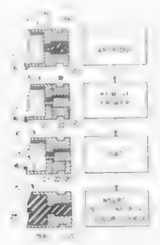
Duane Cronenwett, 725 Hummingbird Way, North Palm Beach, Fla. 33408, and Robert W. Gottfried, 748 Hi Mount Rd., Palm Beach, Fla. 33480

Division of Ser. No. 841,240, Mar. 19, 1986, Pat. No. 4,698,935. This application Jun. 8, 1987, Ser. No. 59,512

Int. Cl.[4] **B21K** *21/16;* **A01G** *29/00, 7/06*

U.S. Cl. 29—401.1 **1 Claim**

1. The method of making a cartridge for use in injecting a liquid into a tree, comprising the steps of providing a rifle cartridge having a primer, removing the primer from the cartridge, such that the cartridge comprises a cylindrical shell having a central longitudinal opening therein, and such that the cylindrical shell further has an open forward end and an integral rearward portion, coating the outer surface of the cartridge, and inserting a room temperature vulcanizable material



into the rearward portion of the cartridge and into a portion of the central longitudinal opening in the cylindrical shell.

4,766,660

PROCESS FOR ELONGATING VEHICLE DOORS

Keith M. La Rose, 21957 Audrey, Warren, Mich. 48089

Filed Apr. 6, 1987, Ser. No. 34,675

Int. Cl.[4] **B22D** *19/10*

U.S. Cl. 29—401.1 **20 Claims**



1. A process for elongating vehicle doors having a sheet metal skin attached to a door substructure, said process comprising:

removing the sheet metal skin from the door substructure;

severing the door substructure vertically into two portions, each having an outer end;

inserting extension sections of predetermined length into the door substructure between the severed portions to create an elongated door substructure; and

applying a new skin to the elongated door substructure.

4,766,661

APPARATUS FOR APPLYING A FABRIC MATERIAL TO A FRAME

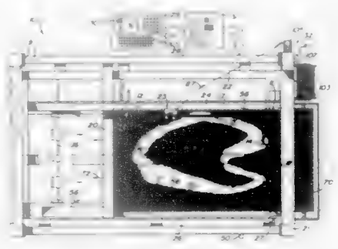
René Croteau, Contrecoeur, Canada, assignor to Les Produits Duvernay, Ltee, Canada

Filed Dec. 16, 1986, Ser. No. 942,294

Int. Cl.[4] **B23P** *17/02*

U.S. Cl. 29—417 **38 Claims**

1. An apparatus for applying a fabric material to a rectangular frame having a fabric retention groove along respective side members thereof, said apparatus comprising a support structure having a planar frame support surface which is comprised of two pairs of opposed parallel frame engaging members, one of said frame engaging members of each said pairs is an adjustably displaceable frame, each frame engaging member having gripping means for clamping a respective one of said side members of said frame along a substantially straight axis when actuated to a gripping position and for releasing said side members when actuated to a release position, the other ones of said frame engaging members of each said pairs are stationary and provided with displaceable bars to apply clamping pressure on said side members of said frame to ensure proper corner connections, an adjacent end of said displaceable bars are spaced from one another and pivotally connected on a flat support plate, said support plate exceeding a straight frame abutting edge of said other ones of said frame engaging members to constitute a frame support surface, said frame abutting



edge extending at right angles to said frame support surface, fabric positioning means for positioning a predetermined length of said fabric material over said frame to overlie said fabric retention groove of said frame side members, a spline cord positioner displaceable in alignment with said retention grooves for applying a spline cord in said grooves from above said fabric material to retain said material in said grooves, and cutting means for severing said fabric material from said frame.

4,766,662

METHOD OF PROTECTING HOSE WITH A PLASTIC ABRASION-RESISTANT PROTECTIVE SLEEVE

Johnny S. Bradshaw; Jonas L. Ganter; Liggett A. Cothran, all of Haywood; William M. Edwards, Waynesville, and Pearlson W. Heary, Jackson, all of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Continuation of Ser. No. 641,081, Aug. 15, 1984, abandoned. This application Dec. 16, 1986, Ser. No. 941,494

Int. Cl.[4] **B23P** *11/02*

U.S. Cl. 29—450 **5 Claims**



1. In a method of making and packaging a length of vehicle radiator hose that has been protected from abrasion by the attaching of a protective sleeve to said hose, the improvement comprising the steps of forming a corrugated abrasion resistant protective sleeve with a slit along its longitudinal axis and of a plastic material that is substantially unaffected by high temperature and that has a relatively constant abrasion resistance during aging, forming a length of radiator hose with curve means between the ends thereof, bending said protective sleeve to the curved shape of said length of hose, then spreading the edges of said slit of said protective sleeve, then applying said sleeve around said length of hose, then closing said edges toward each other to cause said sleeve to fit snugly over said

VOL 1093 ISS 5 AUG 30 1988 UMI

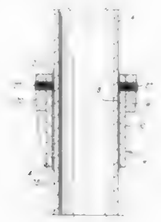
length of said hose, and then packaging the thus sleeve covered length of hose.

4,766,663

METHOD OF ATTACHING MEMBER TO A TUBULAR STRING

Jack J. Milam, 2217 Lane Way Cir., Oklahoma City, Okla. 73159

Division of Ser. No. 766,644, Aug. 16, 1985, Pat. No. 4,658,896.
This application Jan. 21, 1987, Ser. No. 6,472
Int. Cl.[4] B21D *39/00*
U.S. Cl. 29—455.1 10 Claims



1. A method of attaching an object to a tubular member between the connecting ends thereof for use in a well bore, comprising:

disposing the object around the tubular member so that a space is defined between the object and the tubular member;

injecting an adhesive substance into the space for rigidly bonding the object and the tubular member; and

tightening a plurality of screws through the object into engagement with the tubular member

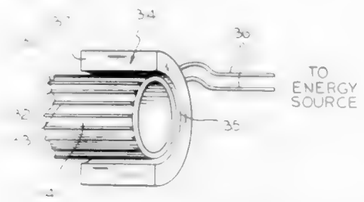
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4,766,664

PROCESS FOR FORMATION OF HIGH STRENGTH ALUMINUM LADDER STRUCTURES

Joseph C. Benedyk, Lake Zurich, Ill., assignor to Alumax Extrusions, Inc., St. Charles, Ill.

Filed Feb. 17, 1987, Ser. No. 15,329
Int. Cl.[4] B21D *41/02*
U.S. Cl. 29—512 12 Claims



1. A method for forming aluminum ladders with strengthened ladder rung structures in position within co-operating ladder stile members, the method consisting of the steps of:

age hardening a plurality of tubular, formed ladder rung components to a hardness ranging from 13 to 18 W. bster;

selectively softening the opposing ends of each of said plurality of formed ladder rungs to a hardness falling within the range of 0 to 12 Webster through the application of localized and regionally confined heating means while isolating the transmission and conducted migration of said heating means from the regions of ladder rungs between said opposing ends;

closely controlling said application of confined heat means through quickly elevating the temperature of same for a substantially brief time period, to facilitate said isolation of the transmission and conducted migration of same so as to heat only said desired opposing end portions;

said application of confined heat means being controlled by elevating the temperature of each said ladder rung end to a range of from 600° to 1100° F. over a period of time ranging from one-half second to ten seconds;

said accelerated application of generated heat during said substantially brief time period serving to control said selective softening of said ladder rung ends to said isolated region while further controlling against the inadvertent and undesired migration of conducted heat from beyond said confined localized region;

forming collar and upset flanging into each said respective ends of said plurality of ladder rungs for positioning through and into respectively aligned apertures in said ladder stile members;

restrainably affixing the collar and upset flanging portions of said ladder rungs, positioned at opposite ends thereof, in attached spacial relationship about the inner and outer surfaces of each said ladder stile respectively; and

exposing the ladder structure so formed and particularly the treated ladder rung ends and juxtaposed portions of said ladder stiles to ambient room temperatures, so as to alternatively age harden treated ladder rung ends softened to a hardness below 8 Webster to a hardness ranging from 8 to 13 Webster, and maintain treated ladder rung ends softened to a hardness ranging between 8 and 13 Webster within said respective range.

4,766,665

METHOD FOR MACHINING PARTS MADE OF TUNGSTEN AND OF TUNGSTEN WITH THORIA

Bernard J. McKernan, Wysox; Richard G. Burke, Towanda, and Phillip D. Wurzler, Laceyville, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 11, 1987, Ser. No. 95,209
Int. Cl.[4] B23P *13/04;* B23C *3/00;* B23B *35/00, 1/00*
U.S. Cl. 29—557 15 Claims

1. A method for shaping tungsten parts, said method comprising machining said parts with a machining apparatus wherein the machining tool is made of material selected from the group consisting of diamond, and material of which tungsten carbide is the main phase, said material having a hardness of greater than about 91 Rockwell A, said machining being done at a speed of from about 40 to about 120 surface feet per minute and a feed rate of from about 0.0002 to about 0.006 inches per revolution, said part being cooled by a halocarbon solvent.

4,766,666

SEMICONDUCTOR PRESSURE SENSOR AND METHOD OF MANUFACTURING THE SAME

Susumu Sugiyama; Takashi Suzuki, and Mitsuharu Takigawa, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed Sep. 24, 1986, Ser. No. 911,245
Claims priority, application Japan, Sep. 30, 1985, 60-217672; Sep. 30, 1985, 60-217673; Sep. 30, 1985, 60-217674
Int. Cl.[4] G01L *7/08, 9/06;* H01C *17/00*
U.S. Cl. 29—610 SG 10 Claims

1. A method of manufacturing a semiconductor pressure sensor comprising the steps of:

forming an insulating diaphragm film of an etching-resistant material on the main surface of a semiconductor substrate;

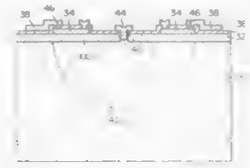
forming at least one strain gage at a predetermined position of a pressure receiving region of said diaphragm film;

forming an insulating protective film of an etching-resistant material on said strain gage;

forming at least one etching hole at a predetermined position of said pressure receiving region such as to penetrate through said insulating protective film and said diaphragm film and reach said semiconductor substrate;

forming a movable diaphragm and a reference pressure chamber of a predetermined configuration by etching and removing a part of said semiconductor substrate on pouring an etchant into said etching hole;

sealing at least one etching hole by a sealing member;



forming a plurality of connecting holes on said insulating protective film at both ends of said strain gage; and

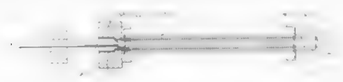
forming a plurality of electrodes which are connected to said strain gage through said connecting holes, wherein all the processing steps are conducted solely on the main surface of said semiconductor substrate which is provided with said strain gage.

4,766,667

APPARATUS FOR TENSION EXPANDING TUBES

Kenneth P. Gray, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 22, 1986, Ser. No. 944,487
Int. Cl.[4] B23P *15/26*
U.S. Cl. 29—727 3 Claims



1. An apparatus for tension expanding tubes into a plate fin heat exchanger unit having parallel hairpin tubes passing in rows through fin plates and tube sheets of the unit comprising:

indexing means for positioning the open end of the tubes a predetermined distance beyond a desired final position in one of the tube sheets, said predetermined distance equal to the final desired bell length plus an additional desired length;

clamping means for providing a clamp force to hold the tubes, said clamping means gripping the tubes along said additional desired length;

bell forming means for deforming the open end of the tubes radially outward to form a bell having a length equal to said final desired bell length;

seating means for seating said bell adjacent said one of said tube sheets, said bell being arranged to position the open end of the tubes a distance beyond said one of said tube sheets equal to said final desired bell length;

retaining means for retaining said bells along the final desired bell length to restrain the tubes from axial movement during expansion; and

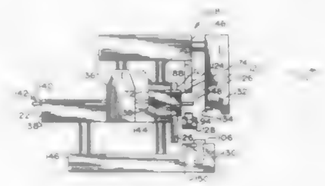
tube expanding means for passing expanding bullets into each tube through the bell or end thereof to expand the tube walls into contact with the fin plates and tube sheets of the unit whereby the forces due to expansion are supported by said bells.

4,766,668

PITCH TRANSITION WIRE GUIDE APPARATUS

Kevin Urness, Elmhurst; Leonard J. Lickus, Plainfield; Douglas Heisner, Downers Grove; Peter Ingwersen, Cary, and Eric Stenstrom, Des Plaines, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 24, 1987, Ser. No. 17,651
Int. Cl.[4] H01R *43/01*
U.S. Cl. 29—749 9 Claims



1. A machine for making a wire harness, said harness including a plurality of parallel, coplanar insulation clad wires terminated to at least two spaced-out connectors, each connector having a corresponding number of contacts for electrically engaging said wires, the centerline spacing of the contacts of the first and the second connectors being different, said machine including:

a termination station whereat wires are terminated to contacts of a connector; means for positioning a connector at the termination station; means for feeding the wires to the termination station; wire positioning means at the termination station for presenting the wires in alignment with the contacts of a connector positioned thereat; and pitch-controlling wire management means for changing the spacing of the wires from a first distance to a second distance equal to the centerline distance of the contacts of the connector at the termination station;

the improvement comprising:

said connector positioning means including a first connector nest for said first connector and a second connector nest for said second connector, said first and second connector nests being selectively and independently moveable to and from said termination station; and

said wire management means having means for engaging and sensing which connector nest is at the termination station and means cooperating with said connector positioning means to selectively change the centerline spacing of the wires to the contact spacing of the particular connector in the nest positioned at the termination station.

4,766,669

STRIPPING METHOD AND APPARATUS FOR COAXIAL CABLE

Benjamin Schwartzman, Hagerstown, Md., assignor to AMP Incorporated, Harrisburgh, Pa.

Filed Dec. 22, 1986, Ser. No. 944,779
Int. Cl.[4] H02G *1/12*
U.S. Cl. 29—828 5 Claims



1. In a method for stripping miniaturized coaxial cable of a type having a central signal conductor surrounded by a soft and porous foam dielectric core, in turn surrounded by a pro-

VOL 1093 ISS 5 AG 30 1988 UMI

tective jacket including a ground conductor, disposed between the outside of said core and the inside of said jacket, the steps comprising:

a. placing the cable between a set of stripping blades having dulled stripping surfaces and adapted to close on said cable and including a rounded geometry of a diameter substantially less than the relaxed diameter of said cable;
b. closing said stripping blades on said cable to tightly clamp said jacket therebetwen;
c. pulling said cable to tear said jacket from said core at said stripping blades and removing the cut end of said jacket from said cable;
d. cutting the end of said core and conductors to provide a proper length of the stripped end of said cable; and
e. heating the end of said core to effect a shrinking thereof exposing a projection of said central signal conductor relative to the end of said core.

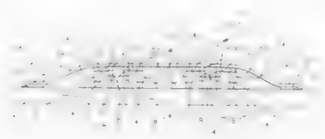
4. As an article of manufacture, a set of cable stripping blades for stripping coaxial cable, said blades being adapted to be driven together in a common axis of closure by a straight action tool, said blades including flat edge sections adapted to mate and limit travel thereof, said blades further including between said flat sections a rounded surface including a flat portion on the order of between one and two thousandths of an inch and of a geometry such that when said blades are closed, said surfaces substantially deform the cable to be stripped and pinch the outer jacket thereof between said flat portions, said blades further including proximate the ends thereof a relief area such that when said blades are closed, a volume is left to accommodate the presence of ground wires in said cable.

4,766,670

FULL PANEL ELECTRONIC PACKAGING STRUCTURE AND METHOD OF MAKING SAME

Charles E. Gazdik, Endicott; Donald G. McBride, Binghamton; Donald P. Seraphim, Vestal, all of N.Y., and Patrick A. Toole, Westport, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1987, Ser. No. 9,981
Int. Cl.[4] H05K *3/34*
U.S. Cl. 29—830 6 Claims



1. A method for making an electronic packaging structure comprising the steps of:

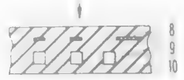
fabricating a substrate with circuitry having a plurality of bonding sites arranged in a selected pattern;
forming a layer of flexible polyimide film on a support structure, said flexible film sized and configured to cover the bonding sites of the circuitized substrate when said flexible film is mounted on the circuitized substrate, and said flexible polyimide film having a thickness of less than approximately 25.0 microns (about 0.001 inch);
circuitizing the flexible film on the support structure with a circuit pattern having a plurality of device attachment sites matching the selected pattern of bonding sites on the circuitized substrate, said circuit pattern including pads at each device attachment site for facilitating connection of an electronic device to the circuitry on the flexible film and lands for facilitating connection of the circuitry on the flexible film to the circuitry at the bonding sites on the circuitized substrate;
attaching a selected electronic device to the pads at each device attachment site of the circuitry on the flexible film using a controlled collapse chip connection (C-4) technique;
testing each of the electronic devices attached to the circuitized, flexible film; and
mounting the circuitized, flexible film, with the electronic devices attached thereto, on the circuitized substrate, only if for each matching bonding site on the circuitized substrate there is a corresponding electronic device, found to be functional after testing, which, as a result of this mounting step, will be electrically interconnected through the circuitry on the flexible film to the circuitry at the matching bonding site on the circuitized substrate.

4,766,671

METHOD OF MANUFACTURING CERAMIC ELECTRONIC DEVICE

Kazuaki Utsumi; Hideo Takamizawa; Mitsuo Tsuzuki; Michihisa Suga, and Sadayuki Takahashi, all of Tokyo, Japan, assignors to NEC Corporation, Japan

Filed Oct. 24, 1986, Ser. No. 923,105
Claims priority, application Japan, Oct. 29, 1985, 60-243218; Oct. 29, 1985, 60-243219; Oct. 29, 1985, 60-243220; Dec. 4, 1985, 60-273942; Dec. 4, 1985, 60-273943; Dec. 9, 1985, 60-277243; Apr. 11, 1986, 61-83656; Apr. 11, 1986, 61-83657; Jun. 25, 1986, 61-150383
Int. Cl.[4] H01K *3/22*
U.S. Cl. 29—848 9 Claims



1. A method of manufacturing a ceramic electronic device comprising steps of:

forming a material into a pattern of a predetermined shape, said material decomposing when it is heated to a temperature which is not higher than a sintering temperature of a ceramic material;
forming an electrical circuit element in a ceramic green sheet of said ceramic material;
stacking said pattern, said ceramic green sheet having said electrical circuit element, and at least another ceramic green sheet to obtain a laminated body; and
sintering said laminated body to obtain a sintering body from which said material formed into said pattern has been removed by a decomposition thereof.

4,766,672

STRIPPING TOOL

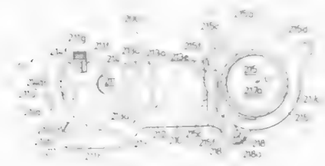
Hans Undin, Akersberga, and Hans Wiener, Täby, both of Sweden, assignors to C. A. Weidmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Jun. 17, 1986, Ser. No. 875,098
Claims priority, application Sweden, Jun. 17, 1985, 8502980
Int. Cl.[4] B21F *13/00*; B26B *27/00*
U.S. Cl. 30—90.1 20 Claims

1. A stripping tool for electrical conductors having substantially circular cross-sections which are covered with at least one layer of insulation, comprising:

a housing in which is accommodated a first set of two settable elongated cutting blades, which first set is interchangeable with a second set of two settable elongated cutting blades, said second set having at least one cutting blade disposed at a spacing location in said second set not coinciding with the spacing location of the corresponding cutting blade in the first set;

means for accommodating an electrical conductor;
means for pressing said conductor against said cutting blades so that when the housing is rotated relative to the inserted conductor, local incisions made by said cutting blades are extended around the entire cross-sectional periphery of the conductor,
each cutting blade being served by at least one of a plurality of operatively located setting screws wherein at least



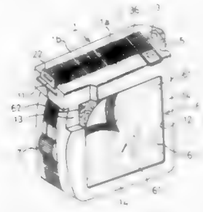
some of the setting screws are arranged at locations where cutting blades from at least two sets of cutting blades lie within an area covered by a front face of the setting screw.

4,766,673

TAPE MEASURE SYSTEM

Steven J. Bolson, 18827 Siesta Dr., Penn Valley, Calif. 95945

Filed Jul. 8, 1987, Ser. No. 71,214
Int. Cl.[4] G01B *3/10*
U.S. Cl. 33—138 8 Claims



1. A multifunction tape measuring device, comprising:

a housing including two housing halves joined together and forming an interior chamber therein,
a tape reel mounted in said chamber for rotation in forward and rearward directions and being spring-biased in said rearward direction,
an extensible measuring tape wound on said reel,
wall means in said housing defining a compartment within said housing, said wall means isolating said compartment from said chamber,
a pencil sharpener mounted in said compartment for receiving a pencil inserted into said compartment, shavings from said pencil being collected in said compartment,
said compartment including an outlet for discharging shavings,
a lid movably mounted on said housing for opening and closing said outlet,
a holder arranged on said housing for retaining a writing implement, and
a recess formed in an outer surface of said housing for retaining one or more sheets of writing material.

4,766,674

SENSING DEVICE FOR AN INDEPENDENT LINEAR-MAGNITUDE MEASUREMENT APPARATUS

Adriano Zanier, Prilly, and Charles-Henri Zafferey, Lausanne, both of Switzerland, assignors to Tesa A.A., Renens, Switzerland

Filed Mar. 30, 1987, Ser. No. 32,170
Claims priority, application Switzerland, Apr. 30, 1986, 01768/86
Int. Cl.[4] G01B *7/02*
U.S. Cl. 33—503 6 Claims



1. A sensing device for an independent linear magnitude measurement apparatus intended for measuring, with reference to a plane and along a measurement axis perpendicular to said plane, a part which is immobilized with respect to said plane, and having a slide intended to be mounted for movement along a linear slideway of the measurement apparatus which is displaceable on the plane and oriented in the direction of the measurement axis, a carriage displaceable by translation in said same direction on the slide and against the opposing forces of two springs holding it in a position of rest between two fixed supports of the slide, a sensor with a measurement feeler mounted to the carriage on the slide and operative to sense under a selected sensing force an element of the part to be measured by displacement of the carriage against the force of retention of one of the two springs, a detector for the relative displacements of the carriage with respect to the slide adapted to deliver signals which are representative of these displacements in direction and amplitude and indicative of variations of the sensing force, and an electronic circuit connected to the detector and adapted to control a pre-established process of acquisition of the measurement and detection of the point of regression of the sensor upon the sensing of diametrically opposite points of a shaft or of a bore of the part to be measured as a function of the variations in relative amplitude of the signals of the detector, and comprising a panel signalling said variations, characterized by the fact that the sensor (26) is fastened on a support (19) which is mounted for displacement on the carriage (14) by translation in the measurement plane and in a direction (X) perpendicular to that of the displacements of the carriage with respect to the slide (13), and said support (19) has a device (22, 23) for controlling its displacements and locking it on the carriage.

4,766,675

ANGLE MEASURING INSTRUMENT

Bao-Shen Liu, 3rd Fl., No. 20, Alley 6, Lane 190, Te Hsing E. Rd., Shih Lin District, Taipei, Taiwan

Continuation-in-part of Ser. No. 872,589, Jun. 10, 1986, abandoned. This application Apr. 1, 1987, Ser. No. 34,033
Int. Cl.[4] B43L *7/00*
U.S. Cl. 33—529 3 Claims

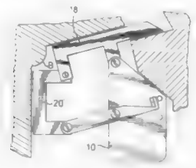
1. An angle measuring instrument comprising:

a plate member having a plurality of sides including a first straight side, a second bent side, a third bent side and a fourth side, said second side having two ends connected to said first and third sides, said first side and said second side intersecting and forming an acute angle therebetween,

VOL 1093 ISS 5 AG 30 1988 UMI

said third side intersecting said second side, forming an obtuse angle therebetween and being parallel to said first side, said fourth side being perpendicular to said first side, said plate member further including a surface having a graduated semi-circular region confined by a curved bounding end and a diametral bounding end, said diametral bounding end lying adjacent and parallel to said first side;

a first measuring arm pivoted to said plate member at a first point centered in said semi-circular region and having a portion extending in said semi-circular region as an indication means;



a second bent measuring arm pivoted to said plate member at a second point near said acute angle outside said semi-circular region;

a third bent measuring arm being pivoted to said first measuring arm at a third point and to said second measuring arm at a fourth point; and

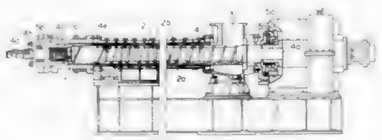
wherein said second and third arms each comprise a main straight measuring portion and two branch portions extending perpendicularly from said main straight portion, said branch portions providing said pivotal connection.

4,766,676

DRYER FOR DRYING EXTRUDABLE MATERIALS

Toshihiro Shogenji, and Kenichi Takahashi, both of Kanagawa, Japan, assignors to Japan Butyl Company Limited, Kanagawa, Japan

Filed Mar. 12, 1987, Ser. No. 24,834
Claims priority, application Japan, Jun. 10, 1986, 61-132832
Int. Cl.[4] F26B *17/20*
U.S. Cl. 34—70 3 Claims



1. A dryer for drying rubber having water content of 5 to 20% to obtain rubber having water content of 0.3% or smaller by blowing through dies the rubber compressed to 40 to 90 Kgf/cm^{2}G and heated to at least 180° C. but below a temperature that would unacceptably degrade the rubber comprising a worm rotatably disposed in a tubular sleeve which is equipped at its front portion with a hopper to supply rubber to be dried, said worm being supported at both of its ends by bearings connected to the sleeve, a seal screw formed around the rear portion of said worm, a water circulating means for cooling said seal screw, and an outlet to said dies for discharging rubber formed on the side surface at the sleeve near the front end of the seal screw, said end being connected with a flushing ring which protrudes from the end of the worm.

4,766,677

METHOD AND APPARATUS FOR VAPOR PHASE SOLDERING

Terrill W. Brooks, and Donald R. Gerard, both of Bowling Green, Ky., assignors to Detrex Chemical Industries, Inc., Southfield, Mich.

Filed May 27, 1986, Ser. No. 867,816
Int. Cl.[4] F26B *15/12*
U.S. Cl. 34—78 34 Claims



1. A vapor phase soldering apparatus comprising a processing chamber, including means associated with the processing chamber for heating a solder-melting fluid therein to a predetermined solder-melting vapor phase temperature in a vapor zone at an upper portion of the chamber, entrance and exit tunnels communicating with the vapor zone of the chamber, and conveyor means extending through said tunnels and vapor zone of said processing chamber from a location ahead of the inlet to said entrance tunnel to a location beyond the outlet of said exit tunnel for conveying articles to be soldered therethrough, the improvement comprising openable closures for sealing the inlet and outlet of said entrance and exit tunnels respectively, against discharge of vapor therethrough.

4,766,678

VERTICAL APPARATUS FOR HEAT TREATING A SEMICONDUCTOR SUBSTRATE

Toshinobu Yanase, Ooita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 21, 1987, Ser. No. 87,806
Claims priority, application Japan, Sep. 8, 1986, 61-210993
Int. Cl.[4] F26B *19/00*
U.S. Cl. 34—229 4 Claims



1. A semiconductor substrate heat treating apparatus which comprises:

a reactor provided with an opening on one side allowing for the insertion and withdrawal of a boat and the inlet and outlet of a reaction gas;

a cap provided at the opening of the reactor so as to be fitted to or removed from said opening;

a boat rest provided with a gas inlet and outlet and mounted on the cap; and

a boat mounted on the boat rest so as to horizontally hold wafers.

4,766,679

MIDSOLE FOR ATHLETIC SHOES

Gerhard Bender, Herzogenaurach, Fed. Rep. of Germany, assignor to PUMA Aktiengesellschaft Rudolf Dassler Sport, Herzogenaurach, Fed. Rep. of Germany

Filed Aug. 28, 1987, Ser. No. 90,580
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629212
Int. Cl.[4] A43B *13/12, 7/14*
U.S. Cl. 36—30 R 19 Claims



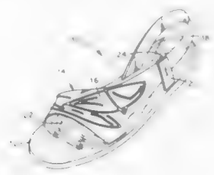
1. Midsole for sport shoes, especially for medium and long distance running, of soft elastic material, which has a recess formed on an underside thereof, and a stabilizing element of a material that is harder than the material forming the midsole inserted into said recess; wherein said stabilizing element has a U-shaped part filling said recess in the entirety of a heel edge area, a bar part which extends across the midsole in an area corresponding to a middle part of a wearer's foot in a manner forming a window in which an island of the softly elastic midsole material engages, and a strip part which extends along the lateral side of the midsole up to at least approximately a little toe area; wherein the bar part has a thickness which is about 20 to 70 percent of the thickness of the stabilizing element at a medial portion of the heel edge area.

4,766,680

SHOE WITH TRANSPARENT SOLE AND SCUFF PADS

João P. Maciel, and José H. Baungratz, both of Carlos Barbosa, Brazil, assignors to Grendene S.A., Brazil

Filed Dec. 23, 1986, Ser. No. 946,530
Int. Cl.[4] A43B *1/14, 3/12, 13/12*
U.S. Cl. 36—87 3 Claims



1. A plastic shoe for being worn on a human foot comprising

a transparent plastic sole having a lower surface and an upper surface for fitting against the sole of a human foot, said upper and lower surfaces being visible from above and below said sole due to its transparency, and said sole having a heel area for being disposed adjacent the heel of the foot and a ball area for being disposed adjacent the ball of the foot;

an upper for securing the transparent sole to the foot; and

at least one opaque scuff pad disposed on the lower surface of said transparent sole at least in said ball area of said sole, said pad being visible from above the shoe through the upper surface of the sole, said pad being positioned in an area of said sole typically subject to a high degree of scuffing so that said scuff pad receives scuffing in said area instead of the lower surface of the sole, which scuffing is not visible from above the sole due to the opaqueness of the pad, and being dimensioned to extend over only a portion of said lower surface so that a substantial portion of said lower surface remains uncovered and is, therefore, visible from above said sole.

4,766,681

ATHLETIC SHOE WITH Y SUPPORT

John J. O'Rourke, Weston, and Richard P. Bunch, Reading, both of Mass., assignors to Converse Inc., Worcester, Mass.

Continuation of Ser. No. 36,986, Apr. 10, 1987, abandoned, which is a continuation of Ser. No. 735,081, May 16, 1985, Pat. No. 4,676,011. This application Nov. 9, 1987, Ser. No. 120,749
Int. Cl.[4] A43B *7/20, 7/14*
U.S. Cl. 36—89 3 Claims



1. An improved athletic shoe of the type having an outsole, a midsole and an upper, wherein the upper is formed with lateral and medial side sheet portions having adjacent edges, and fastening means for fastening the lateral and medial side portions along a portion of the adjacent edges thereof together, wherein the improvement comprises: a structure, having first and second sheet springs, made of a material which is resistant to both bending and twisitng out of its plane, and is relatively unstretchable and incompressible in such plane, conformally affixed along substantially the entire perimeter thereof to the lateral and medial sheet portions respectively, and each spring having a Y shape with a vertical portion extending upward from the region of the sole and attached thereto directly below the region of the ankle and forking at approximately the level of the ankle into fore and rear arm portions; and

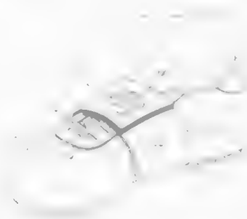
means for fastening under tension the ends of the corresponding pair of fore arms so as to form a structure for inhibiting displacement of the ankle.

4,766,682

REMOVABLE LACE COVER STRAP

J. Michael Malloy, III, 31036 Pickwick, Birmingham, Mich. [illegible]

Filed Apr. 6, 1987, Ser. No. 34,627
Int. Cl.[4] A43B *5/00, 23/00;* A43C *7/06*
U.S. Cl. 36—132 5 Claims



1. In combination with a cleated shoe having lace knot loops, a removable lace cover strap positioned about the instep of said shoe and covering the loose lace knot loops thereof, said strap

VOL 1093 ISS 5 AG 30 1988 UMI

comprising a single elongated strap with an elastic medial portion and opposite end portions with means for attaching said opposite end portions to each other.

4,766,683

MAIL BAG TAG

Jacob Fast, 7561 NW. 9th St., Plantation, Fla. 33317

Continuation-in-part of Ser. No. 841,302, Mar. 19, 1986, abandoned, which is a continuation-in-part of Ser. No. 777,337, Sep. 18, 1985, abandoned. This application Jan. 21, 1987, Ser. No. 5,898

Int. Cl.[4] G09F *3/08*

U.S. Cl. 40—665 10 Claims



1. An information tag suitable for mounting on a mailbag strap, the tag comprising a card of plastic sheet material having a body portion and an adjacent attachment portion at one end of the body portion, a pair of substantially parallel elongate slots in the attachment portion for threading the tag on the strap, and the tag further including a flexible sidearm at the side of the attachment portion with a free end for insertion of the side arm through a hasp on the strap to provide a hasp lock, the side arm being substantially adjacent and parallel to said slots.

4,766,684

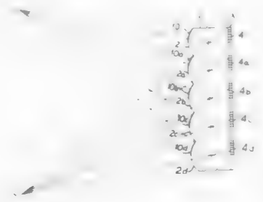
LENTICULAR SCREEN FOR OUTDOOR DISPLAY

Allen K. Wah Lo, 5022 Hidden Branches Dr., Dunwoody, Ga.

Filed Apr. 10, 1987, Ser. No. 37,012

Int. Cl.[4] G03B *25/02*

U.S. Cl. 40—454 12 Claims



1. A lenticular screen with a multiplicity of animated images designed for displaying in sunlight, said lenticular screen consisting of a multiplicity of horizontally arranged cylindrical lenticules with each lenticule having top and bottom portions and front and back portions, an image bearing section with a multiplicity of images located in the top portion in the focal plane of the lenticules, said lenticular screen display having means for preventing the sun's rays from focusing in the same focal plane in which the image bearing section is located so as to prevent the images from burning.

4,766,685

LIGHT BOX

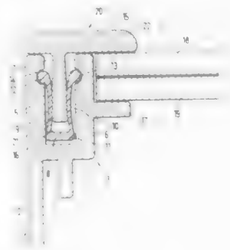
Heinz Kramer, Osnabrück, Fed. Rep. of Germany, assignor to Hinrichs Fotowerbung GmbH + Co. KG, Georgsmarienhütte, Fed. Rep. of Germany

Filed Mar. 10, 1986, Ser. No. 838,087

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1985, 3510594

Int. Cl.[4] G09F *13/04*

U.S. Cl. 40—574 15 Claims



1. A light box for photographic transparencies or the like comprising an outer frame means supporting transparent supporting plates, said frame means comprising a wall having a longitudinal edge portion, a projection means extending from said wall, said edge portion and said projection means defining a retention pocket, plug-in means resiliently retainable in said retention pocket, said plug-in means comprising an approximately U-shaped and resiliently deformable clamping part and a plug-in part having an insertion portion disposed within said clamping part, said clamping part having two leg portions and a bottom portion, each of said two leg portions having a free end with a projection thereon, said edge portion of said wall and said projection means having grooves receiving said projections to retain said plug-in part in said retention pocket, said plug-in part having a cover part overlying said projection means, said projection means having a lateral extension which together with said cover part forms a groove for receiving and supporting said transparent supporting plates.

4,766,686

SELF-RIGHTING DISPLAY DEVICE

Kenneth A. Glasener, Gold, Ill., assignor to Dynagraphics Merchandising Corporation, Chicago, Ill.

Continuation of Ser. No. 628,458, Jul. 6, 1984, Pat. No. 4,658,526, which is a continuation-in-part of Ser. No. 510,633, Jul. 5, 1983. This application May 1, 1986, Ser. No. 859,274

The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.

Int. Cl.[4] G09F *7/00*

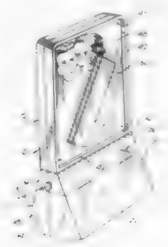
U.S. Cl. 40—602 4 Claims

1. In a self-righting, rockable, display device that is adapted to be positioned out-of-doors and to be moved by wind blowing thereagainst, and having an axially elongated arcuate lowermost convex rocking wall portion, about which rocking of the display device, in response to wind, takes place, and wherein the display device includes a pair of identical, vertically elongated, segments, that are joined together in mirror image relationship along a continuous, peripheral, elongated seam that extends along the entire vertical height and width of the rockable display device;

the improvement comprising, in combination: a transverse shelf mounted above said convex rocking wall portion and serving to divide the display device into an upper section above which an advertising display is to be positioned, and a lower section, said transverse shelf being smaller in cross sectional area than the lower section and at least as large in cross sectional area as the upper section;

said upper section being further shaped to provide a pair of laterally spaced sides connected to and extending above the transverse shelf to bound a sign holding section that is adapted to hold a pair of oppositely facing display panels positioned above the transverse shelf and between the pair of upright sides that extend above the transverse shelf;

said lower section including a pair of laterally spaced, lower upright side walls which are coplanar with said pair of lateral upright sides that extend above the transverse shelf,



said laterally spaced, lower upright side walls extending below said transverse shelf and being joined to the axial ends of said axially elongated convex rocking wall portion;

said pair of vertically elongated segments being molded of plastic to provide a lightweight construction; and

weighting means carried by said lower section to provide stability for the lightweight construction, and to cause said self-righting display to be normally positioned in an upright attitude.

4,766,687

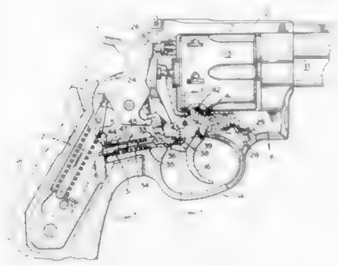
TRIGGER AND TRIGGER GUARD SPRING SYSTEM

William B. Ruger, Croydon, N.H., assignor to Sturm, Ruger & Company, Inc., Southport, Conn.

Continuation of Ser. No. 716,739, Mar. 27, 1985, abandoned. This application Nov. 21, 1986, Ser. No. 933,421

Int. Cl.[4] F41C *1/00, 19/00, 23/00*

U.S. Cl. 42—65 5 Claims



1. In a handgun having a frame, a detachable trigger guard mounted on the frame, and a trigger pivotally mounted on the trigger guard, the improvement comprising

(a) first latch means for engaging a forward portion of the trigger guard to the frame;

(b) second latch means for engaging a rearward portion of the trigger guard to the frame including a latch-receiving recess in the frame; the second latch means in turn comprising:

(i) strut means pivotally mounted on trigger;

(ii) spring means on the trigger guard urging the strut means forward to place the trigger in a biased-forward position; and

(iii) releasable latch means on the trigger guard which latch means is urged into the said latch-receiving recess in the frame by said spring means;

(iv) trigger pivot means on the trigger guard about which the trigger rotates as the trigger moves rearwardly carrying the strut means to compress the spring means to in turn increase the forces with which the detachable trigger guard is held in the frame;

whereby said spring means simultaneously biases the trigger and the releasable latch means and whereby the pulling of the trigger in a rearward direction increases the biasing force on the releasable latch means.

4,766,688

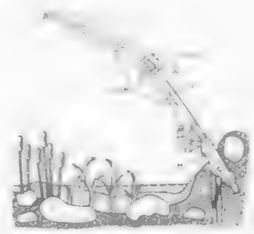
STRIKE INDICATOR FOR FISHING TACKLE

Richard Hiles, 2870 Maysville Pike, Lot No. 54, Zanesville, Ohio 43701

Filed May 8, 1987, Ser. No. 47,092

Int. Cl.[4] A01K *97/12*

U.S. Cl. 43—17 14 Claims



1. A strike indicator for use on a flexible fishing pole which is held in a mount at a predetermined angle after casting, said indicator comprising

an elongated hollow casing having a top, a bottom, opposite ends and opposite sides,

circuit means supported in said casing including a motion responsive electrical switch supported at a predetermined angle with respect to said bottom of said casing at which angle said switch is open,

battery contact means in said casing for receiving one or more batteries as an electric power source,

an audible and/or visible indicator means supported by said casing and electrically connected to said battery contact means through said motion responsive switch,

a pair of spaced apart grommet caddies on said casing adjacent said opposite ends thereof, and

a pair of annular compressible grommets, one in each of said caddies, for engaging around a fishing pole at spaced apart locations to support said casing on the pole with said sides of said casing aligned with the length of said pole whereby flexing motion of the pole will result in actuation of said motion responsive switch.

4,766,689

FISH HOOK UNSNAGGER AND METHOD

Winfred A. Stinar, Sr., Rte. 3, Box 427, and Winfred A. Stinar, Jr., Rte. 3, Box 393, both of Bagley, Minn. 56621

Filed May 26, 1987, Ser. No. 54,231

Int. Cl.[4] A01K *97/00*

U.S. Cl. 43—17.2 5 Claims

1. A fish hook unsnagger for jarring loose from an underwater object a hook or a fishing lure that is connected to a fishing line,

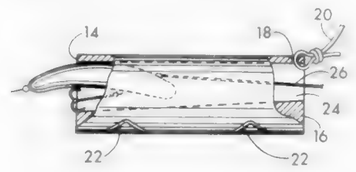
said unsnagger comprising a weight having a fishing line opening extending therethrough from a first end thereof

VOL 1093 ISS 5 AG 30 1988 UMI

to a second end and said opening being constructed and arranged to slide freely on the fishing line,

said opening being of sufficient size and internal smoothness to slide easily over existing swivels, knots, sinkers and the like connected between the line and the hook so that when the unsnagger is allowed to slide down the line under the influence of gravity said swivels, knots, sinkers and the like will pass through the opening so that the unsnagger will be free to strike the hook and/or fishing lure connected to the hook with sufficient impact to jar the hook or lure loose from an underwater object upon which the hook or lure is caught,

said unsnagger having a slot therein for the insertion of the fishing line into the opening and said slot extending all the



way from said first end of the unsnagger to the second end and communicating with the opening throughout its length whereby said fishing line can be passed through the slot into the opening and said opening being offset within the unsnagger toward the side of the unsnagger opposite the slot, the side of the unsnagger having the slot being thereby thicker and heavier than the side thereof opposite the slot whereby by having the opening offset away from the slot the heavier weight of the unsnagger on the side of the slot will gravitationally orient the unsnagger causing the side of the unsnagger containing the slot to hang downwardly on the line during use thereby reducing the likelihood of the line from being inadvertently removed from the unsnagger through the slot as it slides on the fishing line toward the hook.

4,766,690

FISHING ROD MARKING BUOY

Louis J. Troha, 23501 Geneva, Oak Park, Mich. 48237

Filed Feb. 17, 1987, Ser. No. 15,668
Int. Cl.[4] A01K *97/00, 87/00*
U.S. Cl. 43—25 4 Claims



1. A marking buoy for attachment to an article, such as a fishing rod, which may accidentally be dropped into the water, comprising:

a housing having a first opening;

reel means rotatably mounted in the housing;

a cord connected to the reel means so as to be unwound therefrom as the reel means is rotated;

floatable buoy means disposed in the housing and connected to the cord such that as the buoy is moved away from the reel means, the cord is unwound therefrom;

water soluble material in the housing wedging the buoy means to prevent the buoy from passing through the first opening unless the buoy is immersed in water for a predetermined time, and to permit a sudden motion of the housing without ejecting the buoy through said first opening;

means for attaching the housing to the article which may be dropped in the water; and

the housing having a second opening for engaging a hook used to retrieve both the housing and the article from the water.

4,766,691

BAIT WELL REPLENISHER

Donald Lynn, 9267 Prosperity Farm Rd., Lake Park, Fla. 33403

Filed Jul. 9, 1987, Ser. No. 71,371
Int. Cl.[4] B63B *35/26*
U.S. Cl. 43—55 1 Claim



1. A system for replenishing the water in a live inboard bait well of a motor powered fishing boat, comprised of:

a bracket means connectable to the transom of a fishing boat;

a housing means slidingly and removably connectable to said bracket means;

said housing means encapsulating an electric motor/water pump unit, said housing means further having a water pickup means communicating the exterior of said housing means with the interior thereof, said water pickup means aligned at least partially below the bottom surface of the boat to receive a forced flow of water therein when the boat is moving across a body of water;

water flow conduit means communicating said electric motor/water pump with said live bait well;

said water pickup means is a fixed depending ram water intake scoop;

said bracket means is comprised of a generally rectangular planar member rigidly connectable to the transom of a fishing boat, said bracket having means for receiving in sliding engagement said housing means and securing said housing means in connection thereto by way of a quickly disconnectable means for holding;

said housing means having an upper surface;

said means for holding is comprised of a pivotable elongated member connected to one end of said bracket means and swingable into and out of association with the other side of said bracket means, said housing means being slidable into and out of association with said bracket means when said means for holding is swung out of association with said other side of said bracket means, said housing means being fixable in association with respect to said bracket means when said means for holding is swung into association with said other side of said bracket means, said elongated member abutting the upper surface of said housing means in planar contact;

said means for holding is comprised of a generally elongated rigid bar pivotably connected at one end to one side of said bracket means, said rigid bar being removably connectable to the other end of said bracket means by way of a quick-disconnect means for attachment;

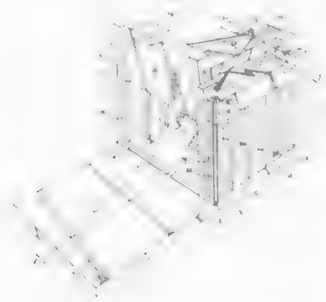
the quick-disconnect means for attachment is comprised of a bolt and wing nut combination.

4,766,692

ANIMAL TRAP

Charles H. Shurden, Rte. 4, P.O. Box 512, Starkville, Miss. 39759

Filed Oct. 22, 1987, Ser. No. 111,069
Int. Cl.[4] A01M *23/30*
U.S. Cl. 43—78 22 Claims



1. An animal trap of the guillotine type comprising:

(a) a housing having a right, left, top and rear side and an entrance conforming essentially to the size of an animal to be trapped;

(b) a spring biased guillotine member capable of reciprocating between an open set and closed tripped position in relation to said entrance, said guillotine member having means adapted to releasably engage said housing to hold said guillotine member in said open set position;

(c) a spring biased striker member slidable longitudinally along said housing from a retracted position to a tripped position and adapted for impacting said guillotine member to disengaged said guillotine member from said housing assembly; and

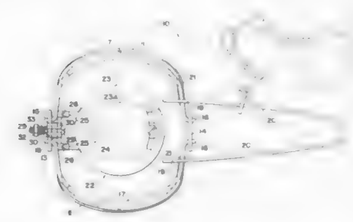
(d) a pivotally mounted bait lever in said housing having means for releasably engaging said striker member in said retracted position.

4,766,693

HUMANE ANIMAL AND FOWL TRAP

Thaddeus M. Splawinski, Box 7066, Saskatoon, Saskatchewan, Canada S7K 4J1

Continuation-in-part of Ser. No. 820,007, Jan. 21, 1986, abandoned, which is a continuation-in-part of Ser. No. 695,559, Jan. 28, 1985, abandoned. This application Jun. 15, 1987, Ser. No. 62,432
Int. Cl.[4] A01M *23/26*
U.S. Cl. 43—88 14 Claims



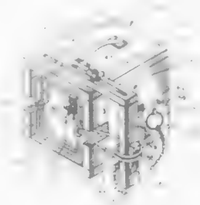
1. An animal trap comprising in combination a base a pair of open jaws pivoted by each end thereof to opposite sides of the said base, coil spring means operatively connected to said jaws and normally urging the jaws away from one another towards said base and trip means within the said base operatively connected to said jaws and normally maintaining the jaws in the vertical open position substantially perpendicular to said base, against the pressure of said spring means when in the "set" position, said jaws having inner and outer edges when in the "set" position, said trip means including a pan and a separate trigger component operatively connectible thereto, said pan including means mounting said pan to said base for up and down pivotal movement, said means including a mounting portion, and a bait holding portion extending therefrom part way across said base, means to vary the effective area of said bait holding portion within limits, and bait holding means in said bait holding portion, said bait holding means including a pair of bait retaining, elongated slots formed therethrough and extending from adjacent the longitudinal axis of said pan towards the edges thereof, perpendicular to said longitudinal axis, said slots providing bait position adjustment thereof relative to said edges of said pan.

4,766,694

PORTABLE ANIMAL TRAP HOLDER

Carl W. Buckley, P.O. Box 100, White Heath, Ill. 61884

Filed Dec. 7, 1987, Ser. No. 130,102
Int. Cl.[4] A01M *23/26*
U.S. Cl. 43—96 19 Claims



12. A portable trap holder for a body type animal trap having a spring arm, hinged trap jaws biased by the spring arm toward a closed position, and trigger means for releasably holding the trap jaws in an open position, the holder comprising:

a box with a bottom, top, two opposing sides, and at least one open end, the open end being of sufficient dimensions to receive the trap jaws in the open position;

a notch in one of the two opposing sides adjacent to the open end and about midway between the top and bottom for receiving the spring arm of the body type animal trap;

wherein when said spring arm is received into said notch, the trap jaws, while in the open position, lie in a plane generally parallel to the plane of the open end of the box, and, while in the closed position, lie in a plane generally perpendicular to the plane of the open end of the box;

leg means for connecting the anchoring means of the animal trap to the box, the leg means comprising a horizontal portion including a slot and affixed to the top of the box by a releasable fastener passing through the slot, and a vertical portion attached to an end of the horizontal which is distal from the box, which vertical portion extends between said end of the horizontal portion and a surface upon which the holder is placed, and which vertical portion is adapted to pass through a coil portion of the spring arm

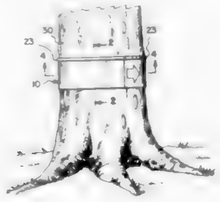
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,695

TREE BANDING ARTICLE TO PROTECT AGAINST GYPSY MOTH LARVAE

David A. Harlow, 2880 Stop Eight Road, Apt. 12, Dayton, Ohio 45414

Filed Nov. 7, 1983, Ser. No. 549,058
Int. Cl.[4] A01G *17/12*
U.S. Cl. 47—24 4 Claims



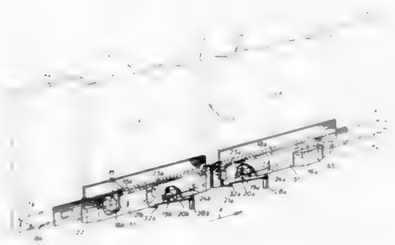
1. An article comprising a band for protecting trees from gypsy moth larvae and like crawling insects which consists essentially of an elongated, relatively wide strip of flexible vinyl polymeric film, having a raised lip at one edge thereof and bearing on one surface strips of butyl rubber which hold well to tree bark and in close, firm contact therewith, and bearing on the surface a functional coating in the form of a matrix having a toxicant for gypsy moth larvae dispersed therein such that in use any crawling insects attempting to climb the tree must cross the exposed surface of said functional coating and come into direct physical contact with the toxicant present in said functional coating.

4,766,696

AUTOMATIC SLIDING DOOR OPERATING DEVICE FOR GUIDED VEHICLE

Jean Huon de Kermadec, Le Chesnay, France, assignor to SOULE, Bagneres de Bigorre, France

Filed Nov. 12, 1986, Ser. No. 929,377
Claims priority, application France, Nov. 13, 1985, 85 16728
Int. Cl.[4] E05F *13/02*
U.S. Cl. 49—262 32 Claims



1. Transportation system employing at least one car provided with at least one sliding door, comprising means for locking said at least one door in a closed position, means for unlocking said at least one door adapted to be operated as said car passes a predetermined location, wherein said locking means comprise a lever pivoted to said at least one door, a rear abutment member on said lever adapted to come into contact with a surface of said car, spring means urging said lever into contact with said surface via said rear abutment member, and a housing in said surface adapted to receive said rear abutment member when said at least one door is closed, and wherein said unlocking means comprise means for turning said lever against the action of said spring means in the direction tending to disengage said rear abutment member from said housing when said car reaches a location at which said at least one door is required to be unlocked, and means for securing said at least one door until said locking means are operated when said car reaches a location at which said at least one door is required to be closed.

4,766,697

MODULAR PANEL ASSEMBLY, PARTICULARLY AUTOMOTIVE DOOR PANELS, WITH INDEPENDENT COUPLING OF MODULAR COMPONENTS

Daniel E. Boileau, Dearborn Heights, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Sep. 15, 1987, Ser. No. 97,230
Int. Cl.[4] E05F *11/48*
U.S. Cl. 49—352 8 Claims



1. A modular vehicular panel assembly requiring independent, subsequent component interface coupling, comprising:
an exterior panel structure;
a repeatably moveable assembly positioned for movement within said exterior panel structure;
a receiver connected to said moveable assembly, said receiver having a coupling element located thereon;
a separable interior panel attached to said exterior panel structure closing off easy direct access to said receiver and its coupling element;
drive means connected to and mounted on the side of said interior panel facing said exterior panel structure and also having a coupling element for coupling with the first receiver coupling element for repeatably moving said moveable assembly when coupled with said receiver; and
mechanical guide means associated with said coupling elements for mechanically leading one into coupling engagement with the other, said guide means having guided the drive means coupling element into coupling engagement with said receiver coupling element in an automatic operation after said exterior and said interior panels had been attached together covering over said coupling elements, said guide means being a ramp attached to at least one side of one of said coupling elements leading to said one of said coupling elements, said other of said coupling elements being capable of orthogonal movement with respect to the general plane defined by said attached panels, said ramp causing said other of said coupling elements to be moved orthogonally as said ramp leads said other coupling element to said one coupling element for the initial, post-panel-attachment coupling of said coupling elements.

4,766,698

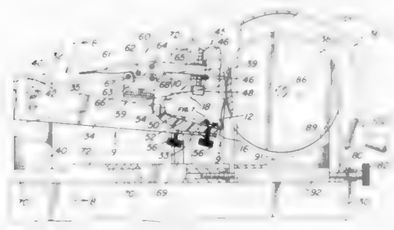
APPARATUS FOR FINISHING THE FACE OF THE HEAD OF A GOLF CLUB WOOD

Alexander Solomko, 908 Sanderson St., Throop, Pa. 18412

Filed Nov. 16, 1987, Ser. No. 121,130
Int. Cl.[4] B27M *3/22;* B24B *9/00*
U.S. Cl. 51—96 18 Claims

1. An apparatus for finishing the face of the head of a golf club wood with bulge and roll face curvatures comprising:
a base,
a jig means movably mounted on said base,
a jig member mounted on said jig means for movement therewith,

means for mounting said jig member on said jig means for pivotal movement about a pivotal axis,
means for holding the head of a golf club wood in a fixed position on said jig member at a free end thereof so that the face of the head is movable through a circular arc centered on said pivotal axis and having a predetermined radius,
means for sanding the face of said head as it moves through said circular arc including a rotating sanding member mounted for rotation about an axis of rotation and having a concave sanding surface having a predetermined radius of curvature,



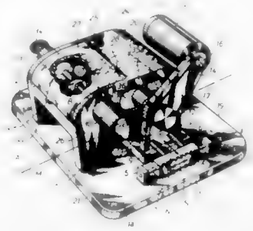
means for guiding said jig means for movement on said base toward said sanding member to present the head face into contact with said concave sanding surface for finishing the face surface with bulge and roll face curvatures,
the radius of curvature of said concave sanding surface being equal to the radius of curvature of said bulge face curvature of the head face, and the radius of said circular arc through which the head face is movable on said jig member being equal to the radius of curvature of said roll face curvature of the head face.

4,766,699

APPARATUS FOR GRINDING THE EDGES OF LENSES

Lutz Gottschald, Meerbusch; Fritz Kötting, Dormagen, and Günther Barwasser, Neuss, all of Fed. Rep. of Germany, assignors to Wernicke & Co GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 13, 1987, Ser. No. 25,486
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3608957
Int. Cl.[4] B24B *7/00*
U.S. Cl. 51—101 LG 11 Claims



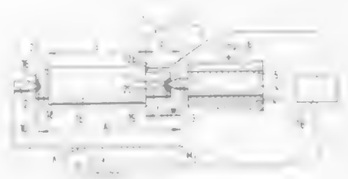
1. An apparatus for grinding the edges of lenses, comprising:
a frame;
a lens shaft journaled on said frame;
a motor driven grinding wheel that can be moved against a lens as well as being shiftable parallel to said lens shaft;
a chamber means that is mounted on said frame and accommodates said lens and said grinding wheel; said chamber means has an observation window and walls thereof, including oppositely disposed side walls that extend essentially perpendicular to said lens shaft, with said walls enclosing, and being spaced slightly from, said grinding wheel and said lens; said chamber means has a width that is approximately equal to the thickness of said grinding wheel plus the axial displacement stroke of the latter;
a grinding wheel shaft that extends through one of said chamber side walls and has two ends, one of which is disposed in said chamber means and carries said grinding wheel, and the other of which extends beyond said one side wall; and
a mechanism that supports and drivingly interconnects said grinding wheel shaft and a motor located in common thereby for movement in different directions, with said mechanism being displaceably mounted on said frame so that said mechanism and said grinding wheel shaft, and hence said grinding wheel, can be moved toward and away from said lens, and parallel to said lens shaft, in two directions that are essentially perpendicular to one another.

4,766,700

METHOD AND APPARATUS FOR DETERMINING THE POSITION OF A WORKPIECE IN AN NC-CONTROLLED MACHINE

Gerhard Kramberg, Esslingen, and Horst Kühne, Remseck, both of Fed. Rep. of Germany, assignors to Fortuna-Werke Maschinenfabrik Gesellschaft mit beschrankter Haftung, Stuttgart, Fed. Rep. of Germany

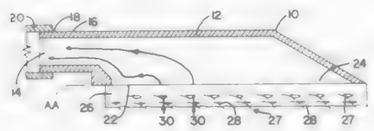
Filed Dec. 18, 1985, Ser. No. 810,489
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1984, 3446138
Int. Cl.[4] B24B *49/00, 49/12*
U.S. Cl. 51—165.74 7 Claims



1. A method of determining the position of a workpiece in a numerically controlled machine having at least one center point and a computing unit, said method in combination including the steps of:
clamping said workpiece in said machine;
using a first measuring device to determine the position of at least one reference point on the workpiece;
using said first measuring device to determine the position of said center point;
feeding the measured value of said center point in the form of a signal to a computing unit;
determining the position of said workpiece from differing signals obtained from the measured value of said center point with which said workpiece is held in a machining position; providing a movable machine table for moving a workpiece during machining; using a second measuring device to determine the position of said machine table; feeding the measured value of said position in the form of a signal to a computing unit; and
on a machine side, using said second measuring device to measure a distance x from said reference point and on a first surface of said workpiece during machining.

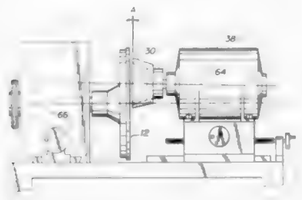
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,701
VACUUM RASP
Jerome R. Roestenberg, 11 Woodpecker La., Levittown, N.Y. 11756
Continuation-in-part of Ser. No. 902,852, Sep. 2, 1986, Pat. No. 4,680,895. This application Mar. 27, 1987, Ser. No. 31,052
Int. Cl.[4] B24B *23/00*
U.S. Cl. 51—170 R 8 Claims



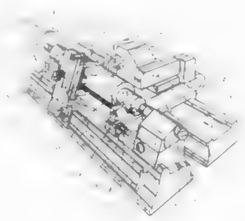
1. A hand powered vacuum abrading apparatus comprising:
a substantially airtight housing, said housing having a forward end, a rear end, and a bottom,
means for coupling to a vacuum source, said coupling means being attached to and in communication with said housing for establishing a partial vacuum within said housing,
a surface for abrading a work surface,
means for attaching said surface for abrading to said bottom,
said surface for abrading occupying a substantial portion of said bottom without intervening back up plate or pad supporting said surface for abrading and, including a plurality of downward facing openings therethrough for receiving air and abraded particles from under said surface, into said housing, for removal from said housing by said vacuum source and,
said surface for abrading including abrading elements which extend below a substantial portion of the downward facing openings,
means for gripping said apparatus for pressing it against and moving it across said work surface.

4,766,702
DISK BRAKE GRINDER
James Kinner, 1620 Sixteenth Ave., San Francisco, Calif. 94122
Continuation-in-part of Ser. No. 758,794, Jul. 25, 1985, abandoned. This application Dec. 18, 1986, Ser. No. 943,922
Int. Cl.[4] B24B *1/00, 7/00*
U.S. Cl. 51—281 SF 8 Claims



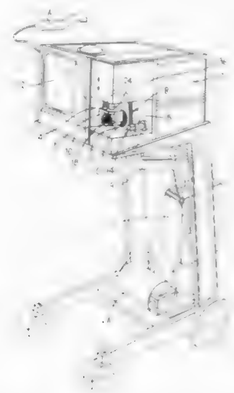
1. A method of grinding and resurfacing brake disks having two opposed faces each with annular braking areas and having a central hub area with at least one opening, and for producing on the braking areas a desirable surface pattern of curving lines generally transverse to the circumference of the disk, comprising:
securing the brake disk to a shaft via an opening in the hub area of the disk, the shaft extending from a first housing secured to a table;
providing a motor-driven cup-shaped abrading wheel on a base connected to the table, with a rotational axis generally parallel to the shaft holding the disk, and with position adjustment means in association with the base for advancing the abrading wheel substantially axially forward toward the brake disk in position to contact the braking area of the disk, the abrading wheel being on a rotational axis which is slightly tilted with respect to the shaft with the brake disk, so that only a portion of the abrading wheel in a single arc contacts the brake disk at one time and being positioned so that only a portion of the wheel's abrasive surface overlaps the face of the brake disk;
rotating the shaft with the brake disk at a first predetermined speed at least about 400 rpm, and rotating the abrading wheel at a second predetermined speed at least about 3450 rpm;
advancing the abrading wheel toward and into contact with the braking area of a face of the brake disk, using the position adjustment means such that the single arc of contact of the tilted abrading wheel on the disk extends substantially only from the periphery of said central hub area to the outer edge of the brake disk, until the braking area is rendered substantially smooth and there is produced a desirable surface pattern comprising curving lines non-concentric with the disk and positioned generally radially on the disk essentially without crossing over each other, for promoting proper brake wear.

4,766,703
ADJUSTABLE SUPPORT REST FOR A CYLINDER GRINDING MACHINES OR THE LIKE
Paolo Rattazzini, Alpignano, Italy, assignor to Giustina International S.P.A., Torino, Italy
Filed Mar. 20, 1987, Ser. No. 28,482
Claims priority, application Italy, Apr. 4, 1986, 19982 A/86
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—289 R 5 Claims



1. A motorized rest for supporting a workpiece on a bed of a grinding machine having means for rotating the workpiece around a longitudinal axis thereof, and means for displacing a grinding wheel parallel to said axis to grind a surface region of said workpiece while said workpiece is rotated, said motorized rest comprising:
a lower body mounted upon said bed;
an upper body slidable on said lower body in a direction transverse to said axis;
at least two blocks on said upper body slidably engaging a portion of said workpiece beyond said surface region;
an eccentric shaft rotatable on said lower body about an axis perpendicular to said direction;
a connecting pin on said upper body;
a link extending generally in said direction and coupling said eccentric shaft with said pin to shift said upper body in said direction on rotation of said eccentric shaft;
a servomotor on said lower body provided with a speed-reduction gear with a high reduction ratio connected with said eccentric shaft for rotating same;
flexible means braced between said upper body and said lower body for compensation of play therebetween;
lubricating means for lubrication mutually contacting sliding surfaces of said upper and lower bodies; and
controllable clamping means coupling said upper and lower bodies for selectively clamping mutually juxtaposed surfaces thereof against one another to block shifting of said upper body.

4,766,704
METHOD AND APPARATUS FOR THE CUSTOM SHAPING OF DENTAL INLAYS, ONLAYS, CROWNS, BRIDGES AND PARTS THEREOF
Marco Brandestini, 10 Gartenstr CH-8702, Zollikon, and Werner H. Moermaan, 57 Zwelackerstrasse, CH-8053 Zuerich, both of Switzerland
Filed Oct. 22, 1985, Ser. No. 790,294
Claims priority, application Switzerland, Oct. 24, 1984, 05 [illegible]
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—327 23 Claims



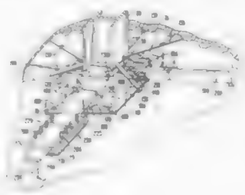
1. A method of fabricating a custom shaped dental implant which has an external surface, comprising the steps of removably supporting a workpiece blank on a workpiece support, and then completely machining said implant, including all of said external surface thereof, from said prefabricated workpiece blank without removing said workpiece blank from said workpiece support during the machining of said implant, said machining step terminating with the step of detaching said implant from a portion of said workpiece blank remaining on said workpiece support.

4,766,705
METHOD FOR POLISHING THE END OF AN OPTICAL FIBER
Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, Princeton, N.J.
Filed Feb. 25, 1983, Ser. No. 469,736
Int. Cl.[4] B24B *1/00*
U.S. Cl. 51—328 6 Claims



1. A method of imparting a defect-free, roof-shaped tip having a predetermined angle of intersection to the end of an optical fiber which comprises:
(a) mounting a fiber in a fixture so that the end of the fiber extends beyond the fixture sufficiently to allow the fiber to bend;
(b) mounting an abrasive, flexible lapping tape between take-up reels;
(c) presenting the fixture and the end of the fiber to the abrasive tape between the take-up reels at said predetermined angle such that the fiber tip contacts the tape;
(d) moving the fixture and fiber perpendicularly closer to the tape such that the fiber end bends against the tape while the remainder of the fiber is maintained at said predetermined angle;
(e) lapping said fiber tip by establishing a relative motion between said fiber and said tape until the fiber end straightens out and the predetermined angle has been imparted to said fiber tip, whereby the force of the fiber end against the tape automatically decreases as the lapping continues and the fiber bend straightens; and,
(f) rotating said fiber 180° and repeating steps (c), (d) and (e).

4,766,706
EARTHQUAKE PROTECTION SYSTEM FOR STRUCTURES
Marc S. Caspe, 1640 Oakwood Dr., San Mateo, Calif. 94403
Filed Mar. 12, 1986, Ser. No. 839,232
Int. Cl.[4] E04H *9/02*; E04B *1/36*
U.S. Cl. 52—1 39 Claims



1. Apparatus for resisting torsional rotation of a building superstructure about a vertical axis relative to a foundation of the building, wherein the building superstructure includes an array of columns and walls supporting the building above the foundation, said apparatus provided between the base of each column and the foundation, comprising:
a top plate, a middle plate and a bottom plate in a vertically stacked, three-level arrangement, wherein said top plate is fixedly mounted to the base end of a column, and said bottom plate is fixedly mounted to an upper surface that is connected to the foundation which is centered directly below said top plate at a normal position, with said middle plate sandwiched between said top plate and said bottom plate, contacting surfaces of said plates being provided with a low-friction lubricant, said top, middle and bottom plates further comprising
means for guiding horizontal movement of said plates relative to one another, said guiding means constraining said top plate to horizontal linear movement in a first direction with respect to said middle plate and said guiding means further constraining said middle plate to horizontal linear movement with respect to said bottom plate in a second direction that is perpendicular to said first direction, said guiding means comprising mating track and carriage pairs provided in adjacent plate surfaces for sliding engagement, wherein the track and carriage pair between said top plate and said middle plate are oriented for movement in said first direction and wherein the track and carriage pair between said middle plate and the bottom plate are oriented for movement in said second direction.

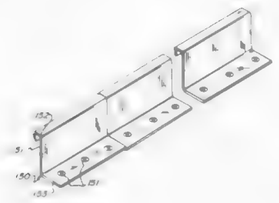
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,707

STRIP OF LOOSELY CONNECTED HOLD DOWN CLIPS

Gary A. Knudson, 17356 W. 57th Ave., Golden, Colo. 80401

Division of Ser. No. 719,513, Apr. 3, 1985, Pat. No. 4,621,511.
This application Sep. 12, 1986, Ser. No. 906,440
Int. Cl.[4] E04B *1/38*
U.S. Cl. 52—98 3 Claims



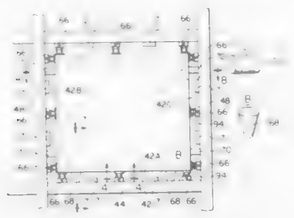
1. A strip of loosely connected hold-down clips comprising:
a strip of sheet material having the cross-sectional shape of a hold-down clip having an upstanding portion, a top flange portion and a bottom flange portion, said strip having opposite side edges, there being along the length of said strip a series of alined pairs of slits opening along opposite side edges to provide a series of slits in said top flange portion and a series of slits in said bottom flange portion and an intermediate scored portion between each of said pairs of slits, each said slit in said bottom flange portion being defined by a pair of spaced apart offset opposite end edges that can move past one another when adjacent sections of the strip are bent about the associated intermediate scored portions,
whereby the sheet material between successive slits is a single hold-down clip that is readily broken away from the strip by hand-twisting.

4,766,708

SHOCK AND VIBRATION RESISTANT STRUCTURES

Peter Sing, 168-10 84th Ave., Jamaica, N.Y. 11432

Filed Dec. 27, 1985, Ser. No. 814,143
Int. Cl.[4] E02D *77/34*; F16M *13/00*
U.S. Cl. 52—167 37 Claims



1. A shock and vibration resistant structure comprising:
a frame having a plurality of substantially rectangular regions therein;
a plurality of modular units each adapted to be positioned removably and replaceably in one of said regions, each of said modular units having a lower external surface, side external surfaces and a top external surface, said frame having means for temporary removal of a selected portion thereof to permit access to each of said regions for placement in or removal from each of said regions of the one said modular unit positioned therein;
a plurality of shock and vibration isolation means for protecting said modular units from externally generated shock and vibration, each of said shock and vibration isolation means being fixedly mounted on, and projecting into each of said regions from, portions of said frame, said isolation means extending toward and contacting at least two adjacent said external surfaces of each of said modular units for resilient engagement therewith, one of said adjacent external surfaces being horizontal whereby when the shock and vibration resistant structure is subjected to externally generated shock and vibration forces, each of sid modular units is resiliently restrained in both horizontal and vertical directions by said isolation means.

4,766,709

DOUBLE-PANED WINDOW SECUREMENT

Darrell L. Galbraith, Overland Park, Kans., assignor to Midland Glass Company, Merriam, Kans.

Continuation-in-part of Ser. No. 856,816, Apr. 28, 1986, abandoned. This application Apr. 27, 1987, Ser. No. 43,024
Int. Cl.[4] E06B *3/24*
U.S. Cl. 52—235 17 Claims



1. A mount in a double-paned glass unit having two plates of glass comprised of an exterior plate and an interior plate joined together in spaced apart relation by means spaced inwardly from the perimeter of the glass unit thereby presenting a pair of opposed plate faces and a pair of outboard faces, with an outboard opening channel formed between the opposed faces of the glass plates along the perimeter of the glass unit, the exterior plate forming the outside facing part of the glass unit when the glass unit is mounted in a window opening formed in a structure, the mount comprising:
an elongated one-piece resilient elastomeric member having a first portion received in the channel formed between the glass plates, and a second portion extending beyond the perimeter of the glass unit, and
means for mechanically fixing said second portion of said resilient member within the window opening,
said resilient member being separate from said glass unit and operative to retain the glass unit in place within the window opening through engagement of the opposed interior plate face without requiring any substantial engagement of the outboard face of the exterior plate.

4,766,710

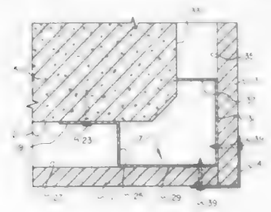
COLUMN SUPPORT FOR DRYWALL PANEL

Charles A. Tompkins, Rte. 1, Box 65, Alvarado, Tex. 76009, and William A. Hames, Rte. 5, Box 920, Burleson, Tex. 76028

Continuation of Ser. No. 817,806, Jan. 10, 1986, abandoned, which is a continuation of Ser. No. 546,941, Oct. 31, 1983, abandoned. This application Jun. 26, 1987, Ser. No. 68,809
Int. Cl.[4] E04B *2/30*
U.S. Cl. 52—278 1 Claim

1. A corner construction comprising a pair of wall panels attached to a corner defined by the intersection of a pair of vertical perpendicular faces,

including a corner support strip consisting essentially of the following:
first and second wall support sections integral with each other and which are generally perpendicular to one another;
a first spacer section integral to and extending from the first wall support section perpendicular to the first wall support section and parallel to the second wall support section;
a second spacer section integral to and extending from the second wall support section perpendicular to the second wall support section and parallel to the first wall support section, the second spacer section consisting essentially of a flat member that lies in a single plane and terminates with a free edge in the same plane and opposite the junction of the second spacer section and the second wall support section; and
a single flange integral to and extending from the first spacer section at a right angle to the first spacer section and on the opposite side of the first spacer section from the first wall support section;
whereby the flange is placed against one of the faces of the corner and the free edge of the second spacer section abuts against the other face of the corner;
the corner support strip is fastened to the corner by fasteners extending only through the flange into one of the faces of the corner; and
screws are inserted through the wall panels and into the wall support sections to attach the wall panels to the corner strip.



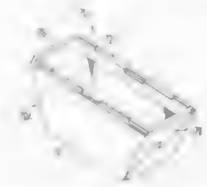
4,766,711

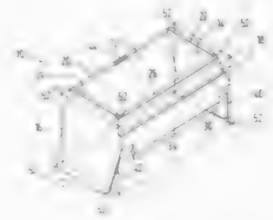
BUILDING ELEMENT AND A CONSTRUCTION METHOD USING SUCH AN ELEMENT

Hubert P. M. Bermingham, and Pietro Cavanna, both of London, England, assignors to Desert Systems Limited, England

Continuation of Ser. No. 635,395, Jul. 30, 1984, abandoned. This application Apr. 30, 1987, Ser. No. 49,014
Claims priority, application United Kingdom, Aug. 3, 1983, 8320902; Feb. 15, 1984, 8403926
Int. Cl.[4] E04C *1/08*
U.S. Cl. 52—404 21 Claims

1. A building element for use in the construction of a substantially smooth and vertical parallel-faced wall comprising a plurality of such elements laid in courses, the element comprising a shell for receiving a filler material subsequent to incorporation of the shell in said wall, wherein the shell includes one continuous side wall and two end walls defining an interior space which is open in an upward and a downward direction and said side wall and said end walls having upper edges which lie generally in a first interface plane and lower edges which lie generally in a second interface place parallel to the first interface plane, both of said planes being perpendicular to the side wall, wherein the shell further includes integrally formed key means associated with at least one of the upper edges and lower edges of the side wall for locating the shell with respect to other shells in adjacent courses in said substantially vertical wall, with the upper and lower edges of the one side wall engaging lower and upper edges respectively of side walls of adjacent courses, and wherein the said end walls of the element are inclined with respect to each other and are so shaped that, prior to construction of said substantially vertical wall, the shell can form part of a stack of similar shells for the purposes of storage and transportation with the major part of each shell received within another such shell.



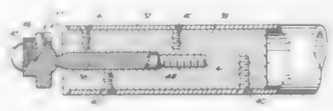


4,766,712

SPACE FRAMING SYSTEM

Whitney M. Hale, 2012 N. Normal Ave., Tempe, Ariz. 85281

Filed Sep. 9, 1982, Ser. No. 416,126
Int. Cl.[4] E04H *12/06*; F16D *1/00*
U.S. Cl. 52—645 6 Claims



1. A connector assembly for space framing systems comprising:
a first multi-face body having at least one socket-type connection means in one of said faces,
said socket-type connecting means comprising an opening with at least a part of said connecting means being provided with a first means for independently connecting with an associated connector arm,
said first means comprising a machine thread,
at least one relatively angularly disposed connector arm connected to and radiating from said one of said socket-type connecting means,
said connector arm having a spherical terminal male portion, the external dimensions of which fit into said one opening and an anchor nut portion which connects with said first means of said socket-type connecting means,
said connector arm comprising a second means for forming a shank for connecting with a framing arm of a framing system, and
a plug having an internal bore within which the shank of said connector arm is connected.

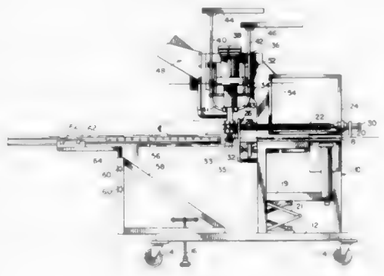
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,713

PACKAGING DEVICE INCLUDING DUAL CLIP ATTACHMENT APPARATUS, A CASING BRAKE MECHANISM AND GATHERING MECHANISM

Alfred J. Evans, Raleigh, N.C., assignor to Delaware Capital Formation, Inc., Wilmington, Del.

Filed Jul. 27, 1987, Ser. No. 78,188
Int. Cl.[4] B65B 51/04
U.S. Cl. 53—138 A 19 Claims



1. In a packaging device for filling tubular casing with product and for attaching metal clips about the casing at intervals to enclose the product, said device of the type including

a frame;

a generally cylindrical product discharge horn mounted on the frame, said horn defining an axis and having a product discharge end;

means for feeding product into the horn for ultimate discharge from the product discharge and;

means for maintaining casing on the outside of the horn for withdrawal therefrom as the casing is filled with product, at least one metal clip having been attached to the casing before said means for feeding discharges product into the casing;

brake means supported by the frame for controlling the withdrawal of casing from the horn; and

clip attachment means supported by the frame for fastening a generally U-shaped metal clip about the casing withdrawn from the horn thereby sealing the casing, the improvement comprising, in combination:

an improved brake mechanism cooperative with the horn, said brake mechanism including:

a generally cylindrical brake member having an internal diameter section cooperative with the discharge end of the horn to control tension on casing passing between the inside of the brake member and the outside of the horn as product is discharged from the horn into casing;

a support plate for the brake member; and

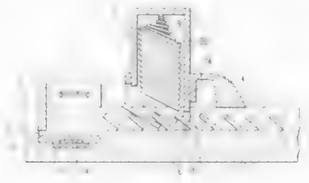
means for attaching the support plate to the frame, said means for attaching including means for translating the plate and brake axially with respect to the horn between a position of cooperative engagement of the brake member with the horn and a position wherein the brake member is axially spaced from the discharge end of the horn, said means for attaching also including means for pivoting the brake member away from axial alignment with the horn whereby the horn is exposed for full access and wherein said plate is mounted on a rod extending along a second axis parallel to the horn axis, said rod extensible to displace the plate member and brake from the end of the horn, said rod also rotatable about said second axis whereby the brake may be pivoted from alignment with the horn axis to non-alignment with the horn axis.

4,766,714

APPARATUS FOR LOADING ANALYTICAL SLIDES IN CARTRIDGE

Fumio Sugaya, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 17, 1987, Ser. No. 39,268
Claims priority, application Japan, Apr. 19, 1986, 61-91024
Int. Cl.[4] B65B 5/08, 5/10
U.S. Cl. 53—242 13 Claims



1. An apparatus for loading analytical slides in a cartridge comprising

a tray having a plurality of spaced apart, upwardly inclined partition members disposed in a row with each partition member having a width narrower than the width of analytical slides adapted to be disposed in the tray between the partition members and

a pushing out member having slide receiving means slidably mounted on said tray for movement along said tray in the direction said partition members are inclined and having slide engaging means disposed adjacent said row of partition members for engaging each slide as the pushing out member moves along said tray to push each slide upwardly into said slide receiving means to form a stack of slides therein.

4,766,715

ENVELOPE OPENING DEVICE

Gérard Dimur, Epinay sur Orge, France, assignor to SMH Alcatel, Paris, France

Filed May 26, 1987, Ser. No. 53,891
Claims priority, application France, May 26, 1986, 86 07472
Int. Cl.[4] B65H 47/00
U.S. Cl. 53—381 R 8 Claims



1. In a device for opening envelopes received from a conveyor and separate from one another with their flaps folded over the bodies of the envelopes, said device comprising first means for driving the envelopes and for simultaneously curving them in order to start opening their flaps, together with an associated blade for retaining the flap of each envelope, the improvement wherein said device further comprises a substantially horizontal chute operatively positioned between said conveyor and said first means, and defining an envelope path and being disposed to receive said envelopes from said conveyor with top edges of said envelopes moving along the bottom of the chute, and for positioning bottom edges of each envelope level with said first means, and wherein said first means comprises a blade operatively positioned with a first pair of rolls mounted above the chute and constituted on one side of the chute by an extraction drive first roll whose periphery projects partially into the envelope path defined by said chute and against which the envelope present in the chute rests freely, and one the other side by an associated counter second roll carried by a first pivot arm, controlled by actuator means to move between an extraction position in which said second roll presses against said first roll, and a rest position in which it is at a distance from said first roll, said blade being mounted beneath said first pair of rolls and having one end inserted partially into the envelope path and extending laterally substantially beyond a pressure zone formed between the first and second rolls to abut said envelope to deflect said envelope between said first and second rolls and to deflect said envelope path away from said body during extraction of said envelope from said chute.

4,766,716

ADJUSTABLE GUIDE ROLLER ASSEMBLY FOR TUBE FORMING APPARATUS

Ben Dominguez, Pasadena, Tex., assignor to Formers of Houston, Inc., Pasadena, Tex.

Filed Nov. 12, 1987, Ser. No. 104,815
Int. Cl.[4] B65B 9/06
U.S. Cl. 53—551 23 Claims



1. In a form, fill and seal packaging machine comprising:

a supporting frame,

means for supporting a rolled strip of elongated, flexible, sealable packaging material on said frame,

a vertical tube former having a support plate supported on said frame and adapted to receive said strip of packaging material and progressively form the same to a depending and upwardly open tubular configuration, with opposite longitudinal edge portions of said strip of packaging material being progressively juxtaposed by said former in parallel vertically extending relationship,

means for horizontally removably mounting said support plate on said frame,

a guide roller assembly removably mounted on said tube former on said frame and movable relative thereto to receive and position said strip of packaging material adjustably thereon,

means for mounting said guide roller assembly for pivotal movement above the top of said former support plate sufficiently to clear said machine frame when said former is pulled horizontally from said machine,

a tubular fill pipe associated with said former and depending therefrom, with the formed tube of packaging material surrounding the exterior surface and through which measured quantities of product are passed,

product dispensing means associated with said former and operable for the gravity discharge of measured quantities of product through said fill pipe to the formed tube interior through its upwardly open end,

longitudinal seam sealing means disposed beneath said former adjacent said fill pipe and movable relative thereto into and out of sealing engagement with the juxtaposed edge portions of the tubular configuration,

intermittently operable tube advancing means adjacent said tubular fill pipe cooperative therewith to draw said tube downwardly therebetween whereby successively to present integral blanks in tubular form at said longitudinal seam sealing means, and

end sealing means disposed beneath said fill pipe and operable intermittently to seal transversely end portions of said tubular blanks to form product bearing packages.

4,766,717

AGRICULTURAL APPARATUS FOR MAKING ROUND BALES

Hans Thomann, Wachenroth, Fed. Rep. of Germany, assignor to Klockner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

Filed Aug. 24, 1987, Ser. No. 88,920
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1986, 3628633
Int. Cl.[4] A01D 89/00, 90/04
U.S. Cl. 56—341 3 Claims



1. A baler comprising:

a housing normally displaceable in a travel direction along the ground and forming a rotary baling chamber;

guides forming relative to the direction a passage having a forwardly opening front end and a rear end opening rearward into the chamber;

means including a pickup device forward of the passage for picking a strand of crop up off the ground and feeding it up and back to the front end of the passage;

means including a conveyor having relative to a conveyor axis at least two sets of radially projecting and axially spaced arms engageable radially downward into the passage and movable backward in the passage to advance the strand of crop backward in the passage and into the baling chamber, the arms of each set being axially aligned with one another and angularly offset from the arms of the other set, the sets of arms defining an orbit chordally traversed below the conveyor axis by the passage;

means in the chamber for winding up the strand issuing from the rear end of the passage into a cylindrical bale;

a cutter rotatable about a cutter axis below the passage and having a shaft carrying two sets of generally identical and generally semicircular blades all having generally part-circular outer edges defining a cylinder centered on the cutter axis, overlapping the conveyor orbit, and chordally traversed above the cutter axis by the passage, the blades being engageable up into the passage at the conveyor, the blades of one of the sets being axially interleaved with but offset by about 180° to those of the other set; and

means for synchronously rotating the cutter and conveyor to introduce a blade upward into the strand between two respective axially adjacent conveyor arms of the same set and angularly in line with two angularly succeeding arms of the preceding and following sets, the arms of succeeding sets of conveyor arms being staggered and spaced like the blades of the cutter.

VOL 1093 ISS 5 AG 30 1988 UMI

4,766,718

POSITIONING MECHANISM FOR A TRAVELING AUTOMATIC MAINTENANCE UNIT FOR A TEXTILE RING SPINNING MACHINE OR THE LIKE

Ivo Righi, Esslingen, Fed. Rep. of Germany, assignor to Zinser Textilmaschinen GmbH, Fed. Rep. of Germany

Filed Oct. 15, 1986, Ser. No. 919,219

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1985, 3536850

Int. Cl.⁴ D01H *15/00, 9/00, 9/10*

U.S. Cl. 57—1 R **14 Claims**



1. A positioning mechanism for a traveling automatic maintenance unit for a textile ring spinning machine or the like in which the spinning machine has a plurality of adjacent spinning stations and the traveling unit includes a carriage movable on a track along the spinning stations for stopping to perform maintenance at spinning stations that are determined to require maintenance, said positioning mechanism comprising a frame for carrying said automatic operable maintenance unit and movable together with said maintenance unit transversely of the track into operating position adjacent a spindle at the spinning station at which the maintenance operation is tc be performed, and an aligning device movable into engagement with a component of said spinning station and being movable with transverse movement of said frame into operating position to cause said frame and said maintenance unit to properly align with said spinning station for effective operation thereat.

4,766,719

APPARATUS AND METHOD FOR DETWISTING A MOVING FABRIC

William O. Young, Jr., Spartanburg, S.C., assignor to Young Engineering, Inc., Spartanburg, S.C.

Filed Oct. 13, 1987, Ser. No. 107,013

Int. Cl.⁴ D06C *3/06, 29/00*

U.S. Cl. 57—1 UN **20 Claims**

1. Apparatus for handling a moving fabric in rope form for removing twist therein and for opening up said fabric, comprising:

(a) means for moving said fabric along a first path;

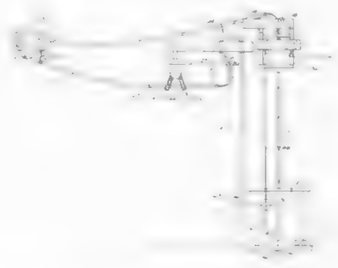
(b) means for receiving said fabric from said first path and for directing said fabric in a downwardly vertical path;

(c) means for lifting said fabric from its downward path along an upward path, whereby a generally vertical U-shaped loop of said fabric is formed along said path between said lifting means and said receiving means;

(d) means located downstream of a nadir of said loop portion of said fabric path for opening said fabric to its full width;

(e) means disposed along said first path of said fabric travel for engaging said fabric and for removing twist therefrom;

(f) means disposed along said U-shaped loop of fabric at a point between the nadir of said loop and said lifting means for detecting the presence of and measuring the amount and the direction of twist remaining in said fabric; and



(g) means responsive to said detecting means for controlling said twist removal means for removing twist in further fabric to be processed thereby.

4,766,720

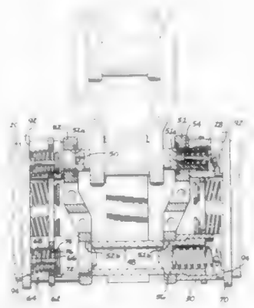
PRESS WITH SELF ALIGNING TOOLING

Dean W. Martin, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 28, 1987, Ser. No. 101,528

Int. Cl.⁴ B21L *9/06*

U.S. Cl. 59—7 **10 Claims**



1. Apparatus for assembling a track chain of the type having a plurality of articulated link assemblies each comprising a pair of spaced, interconnected links having bores in each end and joined by a pin and a concentrically disposed bushing said apparatus comprising a press having a ram, a fixture for holding and locating the bushing during assembly, and link locating and driving means comprising:

a pressure plate mounted on the ram;

a support plate attached to the pressure plate by guide means, said guide means having enlarged heads seated in matching seats in the support plate;

resilient means extending between the pressure plate and the support plate to urge the support plate against the heads of the guide means, said guide means maintaining the support plate at a prescribed location spaced from the pressure plate;

a pressure barrel attached to the support plate and having a trailing end adjacent and spaced from the pressure plate and an opposite end facing the pin and bushing in the fixture;

a spring loaded plunger in the opposite end of the pressure barrel and extending therefrom with an exposed surface for engaging the bores of the link, and said plunger having a tapered nose extending outwardly of the link toward the pin and bushing; and

wherein the spring loaded plunger has a higher compressive force than a combined compressive force of the resilient means thereby allowing the support plate to move away from the pin and bushing as the tapered noses engage openings in the pin and bushing causing the pressure barrels and the bores of the link to self-align with the pin and bushing.

4,766,721

COMBUSTOR FOR GAS TURBINE

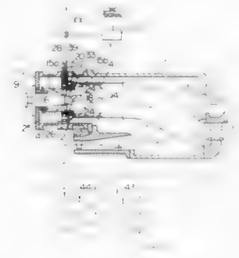
Nobuyuki Iizuka; Yoji Ishibashi; Isao Sato; Fumiyuki Hirose; Hiroshi Inose; Katsukuni Hisano; Katsuo Wada; Seiichi Kirikami; Michio Kuroda, and Yoshihiro Uchiyama, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 917,973

Claims priority, application Japan, Oct. 11, 1985, 60-224747

Int. Cl.⁴ F02C *9/18*

U.S. Cl. 60—39.23 **9 Claims**



5. A gas turbine combustor comprising primary fuel nozzle means for supplying fuel over an entire operation range of the gas turbine combustor from a starting of a gas turbine to full-load, a primary combustion chamber to which the primary fuel nozzle means opens and in which a pilot flame is formed, a secondary combustion chamber provided with means for supplying a mixture of secondary fuel and secondary combustion air on a circumferential wall of said secondary combustion chamber located downstream of the pilot flame, air-bleed means for bleeding a part of the secondary combustion air downstream of an intake for said secondary combustion air to discharge said part of the secondary combustion air outside the combustor, and means for controlling an amount of bleed air by said air-bleed means.

4,766,722

ENLARGED BOWL MEMBER FOR A TURBOJET ENGINE COMBUSTION CHAMBER

Gerard J. P. Bayle-Laboure, Avon; Michel A. A. Desaulty, Vert Saint Denis; Jérome Perigne, Vaux le Peinl, and Denis J. M. Sandelis, Nangis, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA), Paris, France

Filed Jul. 30, 1986, Ser. No. 890,474

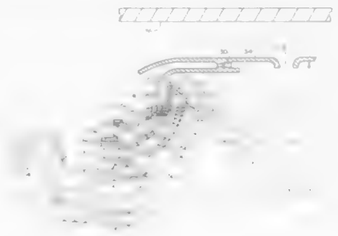
Claims priority, application France, Aug. 2, 1985, 85.11842

Int. Cl.⁴ F02C *3/14*

U.S. Cl. 60—39.23 **10 Claims**

1. An enlarged bowl member for a turbojet engine having a combustion chamber with a longitudinal axis and an upstream base of the combustion chamber defining at least one opening with a radius r_1, to accommodate fuel injection means to inject fuel into the combustion chamber comprising:

(a) an inner sleeve having an upstream end portion attached to the fuel injection means and a downstream end portion attached to the combustion chamber base, the inner sleeve flaring radially outwardly from the axis in a downstream direction, and defining at least one row of atomizing air outlet orifices adjacent the downstream end, the outlet orifices being distributed along a circular path around the fuel injection means having a radius r_2 such that $r_2 > r_1$ and oriented such that each of their central axes subtends an angle (α) of between 20° and 30° with respect to a line



extending normal to a line tangent to a downstream surface of the inner sleeve at the outlet orifice; and,

(b) an outer sleeve having an upstream end portion attached to the inner sleeve and a downstream end portion attached to the combustion chamber base so as to define an intermediary air chamber between the inner and outer sleeves, and defining at least one row of air inlet orifices.

4,766,723

TURBOFAN GAS TURBINE ENGINE AND MOUNTINGS THEREFORE

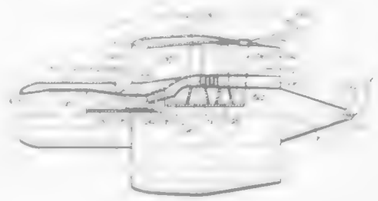
Arnold C. Newton, Derby, England, assignor to Rolls-Royce plc, London, England

Filed Apr. 8, 1987, Ser. No. 35,865

Claims priority, application United Kingdom, Apr. 9, 1986, 8608659

Int. Cl.⁴ F02K *3/062*

U.S. Cl. 60—39.31 **15 Claims**



1. A turbofan gas turbine engine comprising:

a core engine which includes compressor means, combustor means, turbine means, and a core casing,

a fan assembly positioned downstream of the core engine and including at least one fan, the at least one fan operating within a fan duct defined in part by a fan casing, the fan casing having an integral deep section support ring,

upstream support means extending from the fan casing to the core engine casing to support the core engine from the fan casing,

downstream support means extending from the fan casing to the fan assembly to support the fan assembly from the fan casing, the downstream support means being secured to the deep section support ring,

an axially extending support means extending in an upstream direction from the downstream support means and being secured to the core engine casing at its upstream end,

VOL 1093 ISS 5 AG 30 1988 UMI

the fan assembly being positioned axially between the upstream support means and the downstream support means, and the fan assembly being rotatably mounted on the axially extended support means,

upstream mounted means on the fan casing for carrying the turbo fan gas turbine engine from an aircraft structure, said upstream mounting means including said deep section support ring, and

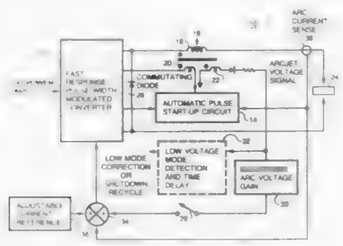
downstream mounting means arranged to assist in carrying the turbofan gas turbine engine from the aircraft structure.

4,766,724

ARCJET POWER SUPPLY AND START CIRCUIT

Robert P. Gruber, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 10, 1987, Ser. No. 60,200
Int. Cl.[4] F02K *11/00*
U.S. Cl. 60—203.1 6 Claims



1. A dc power supply for an arcjet thruster having a regulated, constant current output, and comprising:

(a) a pulse width modulated (PWM) converter;

(b) means for controlling the pulse widths of the PWM converter to maintain current supplied to the thruster at a virtual constant value despite instantaneous changes in the thruster voltage; and,

(c) an output current averaging inductor connected between said converter and said arcjet thruster to enable instantaneous current control, a high voltage ignition pulse, and a galvanically isolated voltage signal proportional to said arcjet thruster voltage.

4,766,725

METHOD OF SUPPRESSING FORMATION OF CONTRAILS AND SOLUTION THEREFOR

Surjit Singh, Williamsville, N.Y., assignor to Scipar, Inc., Williamsville, N.Y.

Filed Dec. 24, 1985, Ser. No. 813,098
Int. Cl.[4] F02K *3/04*; C09K *3/18*; B01D *7/02*
U.S. Cl. 60—204 32 Claims

1. A method of suppressing the formation of contrails from water vapor in the hot exhaust gases of an engine discharged into a cold temperature atmosphere comprising the steps of providing in relatively sufficient proportions to effect hypernucleation of said water vapor in said hot exhaust gases a solution of a non-corrosive surfactant for reducing the surface energy of said water vapor and a combined carrier and nucleating agent selected from the group of water soluble monohydric, dihydric, trihydric and polyhydric alcohols, and injecting said solution into said hot exhaust gases of said engine, said solution reducing ice particles formed from said water vapor in said cold atmosphere to a size below a humanly visible range.

4,766,726

SEGMENTED CASE ROCKET MOTOR

E. Wayne Tackett, Logan; Bradley W. Smith, Ogden, and Charles R. Voris, Brigham City, all of Utah, assignors to Morton Thiokol, Inc., Chicago, Ill.

Filed Dec. 27, 1985, Ser. No. 813,819
Int. Cl.[4] F02K *9/34*; F42B *15/10*
U.S. Cl. 60—255 7 Claims



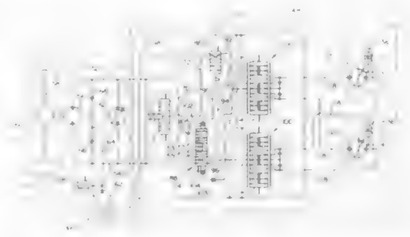
6. A rocket motor comprises an elongated cylindrical case including an axis and at least two elongated cylindrical case segments joined in end to end relation to form a joint, means for joining said case segments, means for sealing said joint, and means for forcing said case segments in directions axially of the case into position to remove free play at the joining means, said forcing means comprises a plurality of wedge means and cooperating bearing plate means, an end portion of one of said case segments overlaps radially inwardly an end portion of the other of said case segments so that the radially outer surface of said end portion of said one of said case segments is disposed radially inwardly of the radially inner surface of said end portion of said other of said case segments, a surface on said one of said case segments which extends radially outwardly from the radially outer surface of said end portion of said one of said case segments, a radially extending end surface on said end portion of said other of said case segments which is spaced from said radially outwardly extending surface on said one of said case segments to define a space therebetween for insertion of said wedge means and cooperating bearing plate means to bear in axial directions against said radially extending surfaces of said case segments respectively for movement axially thereof, and means for forcing said wedge means radially between said bearing plate means and one of said radially extending surfaces to provide a thrust load on said bearing plate means which in turn bears against the other of said radially extending surfaces.

4,766,727

FLUID CONTROL VALVE

David A. Dull, Lafayette, and Richard K. Taden, Remington, both of Ind., assignors to Dyneer Corporation, Scottsdale, Ariz.

Filed Jun. 1, 1987, Ser. No. 56,870
Int. Cl.[4] F16D *31/02*
U.S. Cl. 60—427 32 Claims



1. A valve for selectively controlling the flow of a fluid at a first pressure and the flow of the fluid at a second pressure, said valve comprising:

a first pressure input;

a second pressure input;

a fluid output;

spool means for selectively directing the fluid at a first pressure from said first pressure input to said fluid output;

spool control means for shifting said spool means between a closed position and a flow position; and

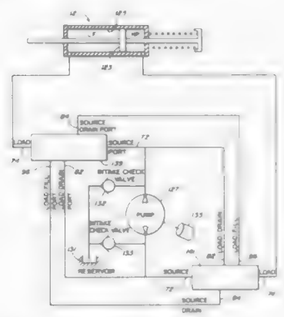
channel means for directing the fluid at the second pressure from said second pressure input to said fluid output when said spool means is being shifted from said closed position to said flow position.

4,766,728

FLOW MATCHING VALVE AND HYDRAULIC SYSTEM EMPLOYING SAME

J. Robert Glomeau, Dover, Mass., assignor to Rexa Corporation, Dover, Mass.

Continuation-in-part of Ser. No. 674,537, filed as PCT US 84/00448, Mar. 22, 1984, published as WO 84/03916, Oct. 11, 1984, Pat. No. 4,696,163, which is a continuation-in-part of Ser. No. 479,672, Mar. 28, 1983, Pat. No. 4,557,180, and a continuation-in-part of Ser. No. 479,673, Mar. 28, 1983, Pat. No. 4,625,513. This application Sep. 28, 1987, Ser. No. 101,688
Int. Cl.[4] F15B *7/00*
U.S. Cl. 60—476 3 Claims



1. A control valve comprising;

a generally tubular sleeve;

a piston axially slidable within said sleeve, said sleeve and piston having a first pair of mating valving surfaces and, axially spaced from said first pair, a second pair of mating valving surfaces, said valving surfaces being matched to open in synchronism;

in said piston, a first passageway from said first valving surface to one end of said piston and a second passageway opening from said second valving surfaces to the other end of said piston;

in said sleeve, passageways connecting each set of said valving surfaces to respective drain ports;

at one end of said sleeve, a valve seat;

a valving member adapted to mate with and close off said seat, said piston including a portion which, during movement of the piston, engages said valving member to lift it off said seat substantially at the same time that said mating valving surfaces open; and

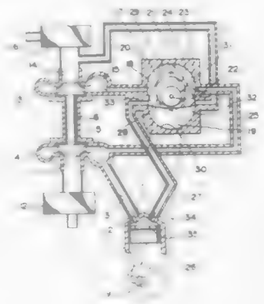
in said sleeve, separate from said drain ports, a fill port connecting into the space between said valving member and said piston.

4,766,729

APPARATUS FOR TRANSMITTING POWER OBTAINED BY CONVERTING THE EXHAUST ENERGY OF AN ENGINE

Hidenobu Miyajima, Fukuroi, Japan, assignor to Asahi Malleable Iron Co., Ltd., Japan

Continuation of Ser. No. 710,052, Mar. 11, 1985, abandoned. This application Jul. 24, 1987, Ser. No. 78,020
Claims priority, application Japan, Apr. 3, 1984, 59-67230
Int. Cl.[4] F02B *33/36*
U.S. Cl. 60—598 2 Claims



1. Apparatus for transmitting power obtained by converting the exhaust energy of a primary engine, the primary engine having a crank shaft and an exhaust passage for passing exhaust gas from the engine, the apparatus comprising:

an output turbine having an output shaft and an intake port coupled to said exhaust passage;

a compressor mounted on said output shaft of said turbine and including an outlet port;

a rotary type engine having a double jointed trochoidal shaped rotor housing, said housing having an expansion chamber with an intake port and an outlet port and a compression chamber, the engine further comprising an eccentrically rotatable generally triangular shaped rotor mounted within the housing and a rotor shaft coupled to the rotor,

said outlet port of said compressor being coupled to said intake port of said expansion chamber, said outlet port of said expansion chamber being coupled to said intake port of said output turbine; and

power transmitting means connected between the crank shaft of the primary engine and the rotor shaft of the rotary engine whereby auxiliary power is provided to the primary engine.

4,766,730

GAS EJECTING SYSTEM FOR MAIN CONDENSER IN GEOTHERMAL STEAM TURBINE PLANT

Masayuki Amano, Yokohama; Seiji Okawa, and Yoshio Nakano, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 10, 1987, Ser. No. 24,038
Claims priority, application Japan, Mar. 10, 1986, 61-50301
Int. Cl.[4] F03G *7/04*
U.S. Cl. 60—641.5 8 Claims

1. A system for ejecting gas from a main condenser located in a geothermal steam turbine plant including a steam turbine operatively connected to a production well, an indirect-contact type main condenser into which a geothermal steam including non-condensed gas is introduced from said steam turbine, and means for supplying cooling water to said main condenser through a cooling water pipe line system, comprising:

steam ejector means connected to said main condenser at an

VOL 1093 ISS 5 AG 30 1988 UMI

inlet side thereof for ejecting the non-condensed gas from said main condenser;

condensing means connected to said steam ejector means at the outlet side thereof for condensing the geothermal steam into a geothermal water;

first connecting means for connecting said condensing



means to said main condenser for returning the geothermal water in said condensing means; and

second condensing means for connecting said main condenser to said condensing means for circulating a condensate pooled in said main condenser to said condensing means, said second connecting means being independent of said cooling water pipe line system.

4,766,731

METHOD TO DELIVER ULTRA HIGH PURITY HELIUM GAS TO A USE POINT

Lawrence S. Graczyk, Orchard Park, and Arthur W. Francis, Sr., New City, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 1, 1987, Ser. No. 91,888
Int. Cl.[4] F17C *7/02*
U.S. Cl. 62—55 31 Claims



1. A method to deliver helium gas to a use point comprising:

(A) providing gaseous helium from a high pressure cylinder or tube into a storage container containing liquid helium;

(B) passing the gaseous helium in heat exchange relation with said liquid helium to:

(i) vaporize liquid helium,

(ii) increase or maintain the helium pressure, and

(iii) condense and/or solidify impurities out of the gaseous helium;

(C) withdrawing ultra high purity helium gas comprising resulting vaporized helium and cleaned gaseous helium from the storage container; and

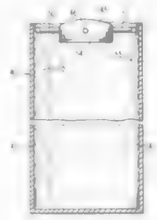
(D) providing ultra high purity helium gas to a use point without need for further pressurization, said helium gas containing less than 10 ppm impurities.

4,766,732

CHAMBER REFRIGERATED BY SOLID CARBON DIOXIDE

Julius Rubin, 54 Madison Ave., Franklin Square, N.Y. 11010

Filed Oct. 26, 1987, Ser. No. 112,363
Int. Cl.[4] F25D *25/00*
U.S. Cl. 62—62 18 Claims



1. The method of storing refrigeration in the form of solid CO_2 in a chamber requiring refrigeration, which comprises supplying pressurized liquid CO_2 to a pressurizable horizontal tubular metal container through an opening close to the top of said container, said container being positioned adjacent the top of said chamber, stopping the supply of said liquid CO_2 before said container is completely filled, and opening a vent close to the top of said container to reduce the pressure therein to a pressure below the triple point of CO_2 to effect vaporization of part of said liquid CO_2 within said container and to allow CO_2 vapor to escape from said container, thereby effecting solidification of the remainder of said liquid CO_2 within said container.

4,766,733

REFRIGERANT RECLAMATION AND CHARGING UNIT

Carmelo J. Scuderi, 173 Prospect St., Springfield, Mass. 01107

Filed Oct. 19, 1987, Ser. No. 110,122
Int. Cl.[4] F25B *45/00*
U.S. Cl. 62—77 14 Claims



1. An apparatus for recovering compressible refrigerant from a refrigeration system and delivering the recovered refrigerant to refrigerant receiver means comprising:

first fluid carrying line means, a first end of said first line means adapted for fluid communication with a refrigeration system and a second end of said first line means adapted for fluid communication with a refrigerant receiver means;

second fluid carrying line means, a first end of said second line means being in fluid communication with said first line means and a second end of said second line means adapted for fluid communication with the refrigerant receiver means, said second fluid carrying line means including;

compressor means in communication with said second end of said second line means;

condenser means downstream of said compressor means; and

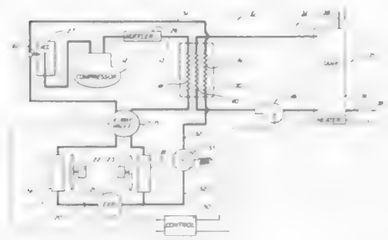
back pressure regulator means downstream of said condenser means wherein refrigerant is adapted to flow from the refrigerant receiver means sequentially through said compressor means, condenser means, back pressure means and into said first line means wherein the refrigerant mixes with refrigerant from the refrigeration system which is flowing into the refrigerant receiver means.

4,766,734

HEAT PUMP SYSTEM WITH HOT WATER DEFROST

Kevin F. Dudley, Cazenovia, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Sep. 8, 1987, Ser. No. 94,266
Int. Cl.[4] F25B *13/00*
U.S. Cl. 62—160 6 Claims



1. An integrated heat pump and hot water system that includes,

a heat pump having an indoor heat exchanger unit and an outdoor heat exchanger unit that are selectively connected to a compressor inlet and a compressor outlet by a flow reversing means and to each other by a refrigerant liquid line containing a bi-flow expansion valve for metering refrigerant moving in either direction through the liquid line, said bi-flow expansion valve having a positive shut off means to prevent refrigerant from flowing therethrough,

a refrigerant to water heat exchanger having a water flow circuit that is in heat transfer relation with a first refrigerant condensing circuit and a second refrigerant evaporating circuit,

said refrigerant condensing circuit being connected into a discharge line connecting the outlet of the compressor to the reversing means whereby all refrigerant discharged by the compressor passes through said condensing circuit,

said refrigerant evaporating circuit being connected at one end to the inlet of the compressor and at the other end to an evaporator line that is operatively joined to the liquid line at a point between the bi-flow expansion valve and the outdoor heat exchanger,

a metering valve in the evaporator line that is selectively movable between a first closed position whereby refrigerant is prevented from moving through the evaporator line and an open position whereby refrigerant is throttled from the liquid line into the evaporator circuit, and

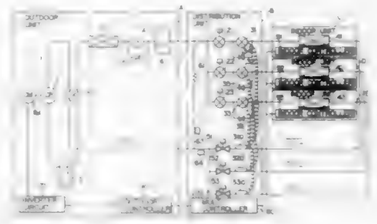
control means for cycling the metering valve and the bi-flow expansion valve.

4,766,735

INVERTER-AIDED MULTISYSTEM AIR CONDITIONER WITH CONTROL FUNCTIONS OF REFRIGERANT DISTRIBUTION AND SUPERHEATING STATES

Yukifumi Gotou, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 27, 1987, Ser. No. 77,811
Claims priority, application Japan, Jul. 29, 1986, 61-178305
Int. Cl.[4] F24F *3/00*
U.S. Cl. 62—175 6 Claims



1. An inverter-aided multisystem air conditioner comprising:

a single outdoor unit having at least an inverter circuit for supplying a drive power at a predetermined frequency, a compressor motor to be variably driven by the drive power from the inverter circuit, a variable capacity compressor coupled to the compressor motor, and an outdoor heat exchanger coupled to the compressor;

a plurality of indoor units, each having at least an indoor heat exchanger and means for detecting the air-conditioning load of said indoor heat exchanger, said air-conditioning load detect means having means for setting a desired temperature and means for detecting the indoor temperature, and means for outputting data at a predetermined frequency corresponding to a difference between the set temperature by said temperature setting means and the detected temperature by said indoor temperature detect means;

distribution means for coupling said single outdoor unit to said plurality of indoor units in parallel by liquid-side refrigerant piping and gas-side refrigerant piping, to form a refrigerating cycle of a heat pump type, said liquid-side refrigerant piping including motor-operated flow regulating means and pressure reducing means, both being connected in a series fashion;

pseudo-refrigerant superheating state detecting means for detecting a pseudo-refrigerant superheating state on the basis of the temperature of the refrigerant in the aggregated portion of the gas-side refrigerant piping of said distribution means;

first control means for outputting first predetermined control signals respectively for controlling the open factors of said motor-operated flow regulating means in accordance with the predetermined frequency data from said predetermined frequency data generating means of said air-conditioning load detecting mean;

second control means for computing, by using said predetermined frequency data from said predetermined frequency data generating means of said air conditioning load detecting means, a total amount of the contents of said predetermined frequency data corresponding to a total air conditioning load of said indoor heat exchangers, and for outputting second predetermined control signals for controlling the output frequency of said inverter circuit in accordance with the total amount; and

third control means for outputting third predetermined control signals each for incrementally controlling the open factor of said motor-operated flow regulating means to a value larger than the current value, on the basis of the

VOL 1093 ISS 5 AG 30 1988 UMI

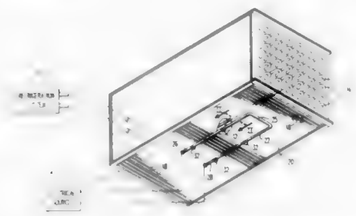
detection result of said pseudo-refrigerant superheating state detecting means.

4,766,736

EVAPORATOR COIL HEAT EXCHANGER ASSEMBLY

William L. Waldschmidt, Farmington, Minn., assignor to Thermal King Corporation, Minneapolis, Minn.

Filed Oct. 13, 1987, Ser. No. 107,733
Int. Cl.[4] F25B *47/00*
U.S. Cl. 62—275 6 Claims



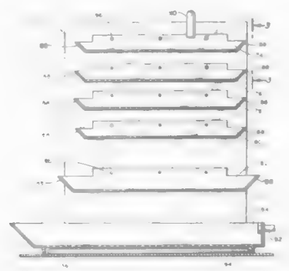
1. An evaporator coil heat exchanger assembly comprising:
a plurality of refrigerant carrying tubes,
a plurality of cooling fins disposed in heat conducting relation about said tubes,
said cooling fins being disposed in spaced relation with a predetermined spacing, with said spaced fins having edges in a common plane to collectively define a discontinuous surface which is spaced from said refrigerant carrying tubes,
a heating element for defrosting the evaporator coil section,
and a plurality of spring retainer clips disposed to hold said heating element against the discontinuous surface defined by the edges of said cooling fins,
each of said spring retainer clips being a single piece of wire having a diameter which is less than the predetermined spacing between cooling fins, said single piece of wire having first and second ends, first and second curved end sections at the first and second ends, rspectively, having facing concave portions, and at least one intermediate curved section which functions as both a spring and handle,
said first and second curved end sections, and the at least one intermediate curved section, being disposed in a common plane, to enable the associated portions of the spring retainer clip to fit in the predetermined spacing between adjacent cooling fins,
said first curved end section being disposed between spaced cooling fins and hooked over a refrigerant carrying tube of said evaporator section,
said second curved end section being outside said fins, adjacent to said discontinuous surface, and disposed about said heating element,
said first and second curved end sections being spaced from one another by a predetermined dimension selected to cause the intermediate curved portion of each spring retainer clip, when stressed, to cause the second curved end section to exert a force against the heating element which holds the heating element against the discontinuous surface defined by the edges of said cooling fins.

4,766,737

REFRIGERATED STORAGE AND DISPLAY DEVICE WITH MULTIPLE PAN DISSIPATOR ARRAY

Franklin Baxter, II, Huntington Beach, Calif., assignor to Displaymor Manufacturing Company, Los Angeles, Calif.

Filed May 9, 1983, Ser. No. 492,939
Int. Cl.[4] F25B *47/00*
U.S. Cl. 62—279 7 Claims



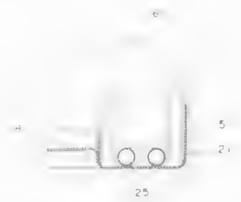
1. In a refrigerated storage and display device of the general type having a horizontally open display section along the major portion of at least one side thereof, and air flow cooled by a refrigeration unit having an air flow path passing downwardly through the display section and then rearwardly and upwardly ultimately back to its point of origination to begin another cycle downwardly through the display section; an improved condensate dissipator assembly as part of the refrigeration unit including: a multiplicity of pans mounted spaced apart one beneath the other aligned for condensate to flow from an upper pan downwardly to a lower pan, said pans being positioned for evaporating air to flow over and beneath said pans, a condensate supply directed into said upper pan, certain edges of said pans being arranged for condensate flow on both upper and under surfaces of said pans.

4,766,738

AIR CONDITIONER

Yasuhiko Ebata, Otsu, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 29, 1987, Ser. No. 114,069
Claims priority, application Japan, Oct. 30, 1986, 61-258816; Oct. 30, 1986, 61-258817
Int. Cl.[4] F25B *47/00*
U.S. Cl. 62—280 7 Claims



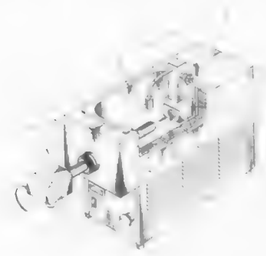
1. An air conditioner which comprises an air conditioner main body constituted by an outer casing (3) formed into a box-like configuration, a base plate accommodated in said outer casing and a bulkhead provided on said base plate so as to partition the interior into an indoor side and an outdoor side, outdoor side air intake port and air blast port provided at the outdoor side of said outer casing, indoor side air intake port and air blast port provided at the indoor side of said outer casing, an outdoor heat-exchanger placed on said base plate and positioned to confront said outdoor side air intake port, an outdoor side air guider constituting an outdoor side wind circuit accommodating said outdoor side heat-exchanger, an outdoor fan provided in said outdoor side wind circuit for producing air current so that air introduced from said outdoor side air intake port and passing through the outdoor heat exchanger flows into said outdoor side air blast port, a slinger ring provided on said outdoor fan, a fan motor for driving said outdoor fan, a compressor connected at one end of said outdoor heat exchanger and a pressure reducer connected to the other end of said outdoor heat-exchanger which are provided at the outdoor side of said air conditioner main body, an indoor heat-exchanger positioned to confront said indoor side air intake port and connected, at its opposite ends, respectively to said compressor and said pressure reducer, an indoor air guider constituting said indoor heat-exchanger, and an indoor fan provided in said indoor side wind circuit for producing air current so that air introduced from said indoor side intake port and passing through said indoor heat-exchanger flows into said indoor side air blast port and a water receiving pan for receiving condensed water dropping from said indoor heat-exchanger which are provided at the indoor side of said air conditioner main body, a water discharge port provided at the side close to said outer casing in said water receiving pan for discharging water collected in said pan onto said base plate, and further, a cooling medium outlet pipe in said outdoor heat-exchanger provided at the outlet side of said water discharge port to extend over said base plate.

4,766,739

SIMPLIFIED CREAM WHIPPER

Antonio Cimenti, Via Baron 15, 30027 S. Dona' Di Piave (VE), Italy

Filed Apr. 13, 1987, Ser. No. 37,835
Claims priority, application Italy, May 2, 1986, 60377/86[U]
Int. Cl.[4] F25D *19/00*
U.S. Cl. 62—298 11 Claims



1. A simplified cream whipper, comprising:
a vessel which holds cream;
refrigeration means for refrigerating the cream in the vessel; and
a whipping assembly connected with the vessel which aspirates, whips, and delivers the cream, said whipping assembly comprising:
an aspiration-compression unit which draws cream from the vessel and aspirates the cream, said aspiration-compression unit including a pump having a pump chamber located within a pump body and attached thereto;
a whipping unit which receives the cream from said aspiration-compression unit and whips the cream, and
a delivery unit which receives whipped cream from said whipping unit and dispenses the whipped cream;
wherein said aspiration-compression unit, whipping unit, and delivery unit can be dismantled and withdrawn from each other and can be easily and individually cleaned.

4,766,740

CONTAINER FOR THE PRESERVATION AND TRANSPORTATION OF SEVERED LIMBS OR OTHER BODY PARTS

Laurie Bradley, 55 Alpine Avenue, Surbiton, Surrey; Richard J. Lilleystone, 32 High Pine Close, Weybridge, Surrey, and Clive S. Cumner, Surrey, all of England, assignors to The Distillers Company (Carbon Dioxide) Limited, Reigate; Laurie Bradley, Surbiton and Richard J. Lilleystone, Weybridge, all of, England

Filed Aug. 4, 1987, Ser. No. 81,388
Claims priority, application United Kingdom, Aug. 8, 1986, [illegible]
Int. Cl.[4] F25D *3/12*
U.S. Cl. 62—384 19 Claims



1. A portable container for transporting a severed part of a body and keeping it cool during transport, said container comprising: an openable housing, said housing including heat insulated walls, a holder (13) for holding said body part removably mounted within said housing, a rechargeable cylinder (19) of compressed carbon dioxide mounted to said housing, a shut-off valve (20) on said cylinder, an injector nozzle (23), means (22) connecting said injector nozzle to said shut-off valve, means communicating said nozzle with the inside of said housing for injecting carbon dioxide coolant into said housing to produce dry ice or expanded and cooled gas within said housing, means for venting said housing to atmosphere, and thermostatic means (24) for controlling the flow of said gas through said nozzle into said housing to maintain the temperature in said housing within predetermined limits, wherein said thermostatic means incorporates a spring made of shape-memory alloy, said spring returning from a deformed state to a previous state to open said nozzle when said temperature within said housing rises to an upper one of said predetermined limits.

4,766,741

CRYOGENIC RECONDENSER WITH REMOTE COLD [illegible]

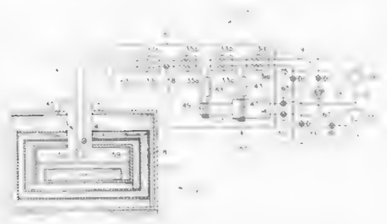
Allen J. Bartlett, Milford; Bruce R. Andeen, and Philip A. Lessard, both of Acton, all of Mass., assignors to Helix Technology Corporation, Waltham, Mass.

Filed Jan. 20, 1987, Ser. No. 5,082
Int. Cl.[4] F25B *19/00*
U.S. Cl. 62—514 R 31 Claims

1. A cryogenic recondenser for recondensing cryogen retained in a storage vessel, the recondenser comprising:
cooling means comprising a mechanical refrigerator positioned outside of the storage vessel, said means precooling a volume of gaseous refrigerant;
a transfer line leading from the cooling means and removeably inserted into the storage vessel; and
a JT valve at an end of the transfer line in the storage vessel, the precooled refrigerant being transferred in the transfer line from the cooling means to the JT valve in heat ex-

VOL 1093 ISS 5 AG 30 1988 UMI

change relation with returning refrigerant and being expanded through the JT valve to form a liquid-gas cryogen mixture within the end of the transfer line which is in heat exchange relation with boil-off from the cryogen retained in the storage vessel such that the boil-off is cooled and recondensed;



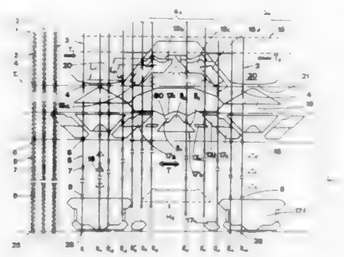
refrigerant being returned to the cooling means through the transfer line in a manner in which the returning refrigerant is in heat exchange relation with the refrigerant being transferred to the JT valve.

4,766,742

PERFECTED AUTOMATIC FLAT KNITTING MACHINE

Benito Stoppazzini, Sala Bolognese, Italy, assignor to E.M.M. S.R.L., Italy

Filed Nov. 10, 1987, Ser. No. 119,199
Claims priority, application Italy, Nov. 11, 1986, 3571 A/86
Int. Cl.[4] D04B *7/00*
U.S. Cl. 66—75.1 8 Claims



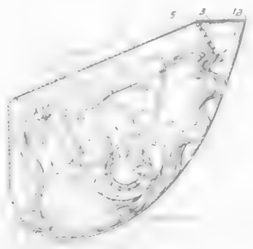
1. A perfected automatic flat knitting machine including two flat needle beds inclined away from each other in a downwards direction, and located so that they are symmetrical to one another in a longitudinal vertical plane, each of said needle beds having equidistantly spaced slots in each of which a needle featuring a butt is located from the top proceeding downwards, and a sinker featuring at least four butts, first, second, third and fourth butt, respectively, all protruding from the related needle bed; said machine also being fitted with a carriage that runs above said needle beds, including: movable selection cams, each of which, when in its operational position, strikes against said second butt of the corresponding sinker selected, consequently raising the latter from its idle position to a first intermediate position; a first assembly of movable and/or fixed operational cams designed to strike against the above-mentioned first and fourth butts of said selected sinker, lifting the latter from its said first intermediate position to a fully raised position and subsequently lowering it to said idle position, the lifting of said sinker beyond a predetermined second intermediate position, higher than said first intermediate position, causing said sinker to strike against said needle, as a result raising said needle from its idle position to a first level; a second assembly of operational fixed and/or movable cams which operate in a first longitudinal band extending above and below a longitudinal line formed by said butts of said needles in their idle position, said cams being equidistant from a face of said needle bed below them, located at a predetermined first distance away from it; a third operational fixed cam assembly, located downstream of the aforementioned second assembly in relation to the direction of travel of said carriage, operating in a second longitudinal band extending below said longitudinal line, said cams in which are equidistant from said needle bed below them, located at a second predetermined distance away from it, the length of which is lower than said first distance; said butt of said needle being mounted on said needle body by means of a spring extension which, in said idle position, keeps said butt partially within its related slot, from which it protrudes into the above-mentioned second band alone, and when the upper head of said sinker strikes against said spring extension, as a result of the sinker itself being beyond the aforesaid second intermediate position, said spring extension is bent towards the outside of its related slot, thus enabling said butt of said needle to enter the above-mentioned first band, said sinker and needle featuring a ledge and stop respectively, that are brought into contact with one another, causing both said sinker and needle to be driven in the same direction, when said butt of said needle has been positioned in the aforementioned first band, with said carriage provided with means for striking said butt of said needle, designed to guide the lifting of the latter as a result of said head of said sinker striking against the above-mentioned extension.

4,766,743

MACHINE FOR WASHING, BREAKING AND FULLING OF FABRICS, WITH PNEUMATIC DRAGGING

Fiorenzo Biancalani, Prato, and Luigi Marcora, Vicchio, both of Italy, assignors to Officina Meccanica Biancalani & C. di Biancalani Fiorenzo & C.S.n.c. and Coramtex s.r.l., both of, Italy

Filed Aug. 25, 1986, Ser. No. 900,360
Claims priority, application Italy, Aug. 27, 1985, 9483 A/85
Int. Cl.[4] D06B *5/08*
U.S. Cl. 68—20 10 Claims



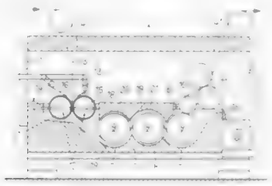
1. A device for treating textile materials comprising: a housing defining a working space; a grid wall defining openings through which air may pass, said grid wall being connected to said wall; a venturi injector having an inner conduit defining a central suction area and an outer conduit surrounding said inner conduit, said venturi injector being positioned within said housing having jet opening directed at said grid wall substantially perpendicular thereto; pneumatic pump means having a suction inlet for drawing air into said pump means and a discharge opening for directing air under pressure; and, a conduit connecting said pneumatic pump means discharge with said outer conduit of said venturi injector, textile material fed into said central suction inner conduit being dragged by air from said outer conduit and being transported with an air stream into said grid wall, the air stream continuing to flow through said grid and said textile material striking said grid.

4,766,744

PROCESS FOR RENDERING WOOL SLIVER SHRINKPROOF, AND APPARATUS FOR PERFORMING THE PROCESS

Gerold Fleissner, Chur, Switzerland, assignor to Fleissner Gmbh & Co., Fed. Rep. of Germany

Division of Ser. No. 685,853, Dec. 24, 1984, Pat. No. 4,657,555.
This application Jan. 14, 1987, Ser. No. 3,327
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1984, 3403593
Int. Cl.[4] D06B *3/02*
U.S. Cl. 68—22 R 11 Claims



1. An apparatus for making wool slivers shrinkproof which comprises a housing, a liquid vessel located within said housing, said liquid vessel being filled to a predetermined liquid level with an aqueous hypochlorous solution, an inlet for introducing the wool slivers into said housing, spray means positioned on both sides of the wool slivers and located above the liquid level for applying a hypochlorous solution onto said slivers, an oppositely driven, revolving pair of squeeze rolls arranged at the height of the liquid level directly below the spray means for squeezing the slivers to remove occluded gas bubbles therefrom, upper portions of the pair of squeeze rolls being positioned above the liguid level and lower portions of the squeeze rolls being positioned below the liquid level to ensure that the slivers sprayed with the hypochlorous solution are directed immediately below said liquid level, a guide channel located in said vessel below said liquid level, means located in the guide channel for transporting the slivers and entrained solution through said guide channel to a means for removing liquid from said treated slivers, said liquid removing means being positioned above said liquid level in said housing, and an outlet through which the slivers are removed from said housing.

4,766,745

APPARATUS FOR PRINTING CARPET TILES

Jerry H. Johnston, and Charles F. Lowery, both of Summerville, Ga., assignors to Bigelow-Sanford, Inc., Greenville, S.C.

Filed Feb. 10, 1986, Ser. No. 828,627
Int. Cl.[4] D06B *1/10, 11/00;* B41F *17/00*
U.S. Cl. 68—200 15 Claims

1. An apparatus for accurate, precise and successive registration, indexing and printing of individual pre-cut backed carpet tiles, said apparatus comprising:

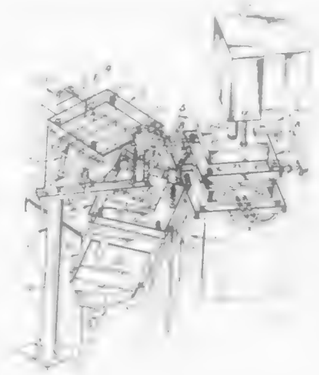
a central control and transport mechanism for controlling and accomplishing the movement, registration, indexing, printing and unloading of individual carpet tiles and including a motorized turret having a plurality of arms thereon for bearing carpet tiles and for movably and sequentially presenting carpet tiles to each of said processing stations, and means for controlling the sequential movement and presentation of said arms;

a plurality of tile processing stations adjacent one another and surrounding said central control and transport mechanism;

a plurality of tile carriers movably carried by said arms, each of said carriers being sequentially movable to each of said respective processing stations for sequentially carrying individual carpet tiles to one or more of said processing stations and each of said tile carriers further comprising a platen support maintained upon each of said arms, and a vacuum platen positioned immediately beneath said platen support for exerting a vacuum pull against individual carpet tiles to be carried by said tile carrier;

at least one of said processing stations comprising a tile registration station;

tile registration means, portions of which overlie said tile registration station for accurate and precise registration of individual carpet tiles with one of said tile carriers;



at least one of said processing stations comprising a printing station;

tile printing means positioned at said printing station for receiving, and printing individual carpet tiles carried by said tile carriers;

at least one of said processing stations comprising a tile unloading station; and

tile unloading and orientation means positioned at said unloading station for unloading individual carpet tiles from said tile carriers and for properly orienting individual carpet tiles for further transport and processing.

4,766,746

ELECTRONIC REAL ESTATE LOCKBOX SYSTEM

Walter G. Henderson, Corvallis; John Q. Archer, II, Salem; Gerald R. Daum, Salem; George A. Ellson, Salem; John E. Gray, Salem; Wayne F. Larson, Salem; Rockne M. Olds, Salem; Jerry P. Scansen, Portland; John W. Sherman, Corvallis, and Edgar J. Unrein, Newberg, all of Oreg., assignors to Supra Products, Inc., Salem, Oreg.

Continuation-in-part of Ser. No. 831,601, Feb. 21, 1986, Pat. No. 4,727,368, which is a continuation of Ser. No. 814,364, Dec. 30, 1985, abandoned, which is a continuation of Ser. No. 788,072, Oct. 16, 1985, abandoned. This application Feb. 17, 1987, Ser. No. 15,864
Int. Cl.[4] E05B *49/00*
U.S. Cl. 70—63 37 Claims

1. An electronic lock system comprising an electronic lock, said lock including memory means for storing a lock access code having at least two portions, the first of said portions indicating a particular class of persons associated with said lock and the second of said portions indicating a particular subclass of the aforesaid class, the system further comprising an electronic key for cooperating with the electronic lock to execute an operation, the electronic key including memory means for storing a key access code comprised of at least two

VOL 1093 ISS 5 AG 30 1988 UMI

portions, said first portion indicating a particular class of persons to which the key is assigned and the second portion indicating a subclass of the aforesaid class to which the key is more particularly assigned, the system further including permission means in either the electronic lock or the electronic key for storing a permission code and control means in either the



electronic lock or the electronic key cooperating with the permission means for controlling execution of said operation, the permission code dictating which respective classes and/or subclasses, if any, indicated by the lock and key access codes must correspond to each other before said control means will allow execution of the operation.

4,766,747

VEHICLE DOOR LOCKING SYSTEM

Norman A. Ernest, Solihull, England, assignor to Rockwell Automotive Body Components (U.K.) Limited, Birmingham, England

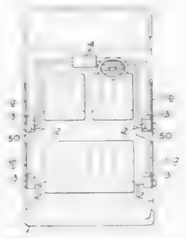
PCT No. PCT/GB86/00332, § 371 Date Mar. 5, 1987, § 102(e) Date Mar. 5, 1987, PCT Pub. No. WO86/07405, PCT Pub. Date Dec. 18, 1986

PCT Filed Jun. 10, 1986, Ser. No. 14,762

Claims priority, application United Kingdom, Jun. 13, 1985, 8515039

Int. Cl.[4] E05B *53/00*

U.S. Cl. 70—264 9 Claims



1. A power actuated unit for use in combination with lock mechanism for operation by a central locking system, said unit including

(a) a lock actuating formation shiftable between a locked position at which the lock mechanism is held secure and an unlocked position at whcih said mechanism is freely releasable;

(b) a rotary cam having a snail formation coacting with said actuating formation, said snail formation being so profiled that the actuating formation is positively driven to the locked position, and is positively retained against movement from that position when the cam is at a first angular position, so that the lock mechanism is thereby deadlocked in the secure condition while the cam remains at said first position, that the actuating formation is freed for movement between the locked and unlocked positions without restriction by the snail formation when the cam is at a second angular position remote from the first position, and that the actuating formation is positively driven to the unlocked position when the cam is at a third angular position and on the side thereof opposite to the first position;

(c) motor drive means responsive to operation of an electrical central control unit of the locking system for selective angular displacement of the rotary cam in either direction; and

(d) resilient means acting unidirectionally on the cam between the third and second positions only, to provide a restoring force urging the cam to return to the second position from the third position but not exerting any force on the cam between the second and first positions whereby once driven to the first position the can will remain thereat to hold the mechanism deadlocked until movement from that position is effected by operation of the central control unit, whereby the cam will be automatically restored to the second position freeing the lock mechanism for unrestricted operation thereof following powered displacement to the third position, and whereby greater power is needed to shift the cam from the second position to the third position against the force of the resilient means than is needed to shift the cam between the first and second positions.

4,766,748

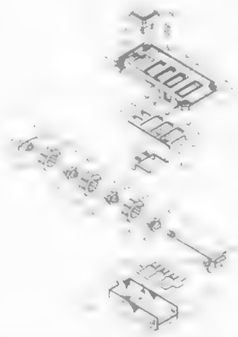
KNOCKDOWN TYPE COMBINATION LOCKING DEVICE FOR SUITCASES

Yaw K. Yang, 190-30 Chang Shiu Rd., Chang-Hua City, Taiwan

Filed May 21, 1987, Ser. No. 53,076

Int. Cl.[4] E05B *37/02*

U.S. Cl. 70—312 11 Claims



1. A combination lock for suitcases comprising:

a generally hollow and rectangular housing having two longitudinal sides;

a front plate having a plurality of openings and cooperating with said housing;

a generally flat sliding member having a plurality of openings and cooperating with said front plate, said sliding member located between said front plate and said housing;

a generally U-shaped coupling element having openings in its surface and cooperating with said front plate, said coupling element lying between said sliding member and said housing;

a generally block-shaped operating mechanism comprised of a pair of pawls extending from the bottom of said operating mechanism and perpendicular to said bottom, each of said pawls having a hooked portion and passing through at least one opening in each of said front plate, sliding member and coupling element to firmly secure said members together while being operable for the displacement of said operating mechanism; and

a combination locking means operable by said operating mechanism and positioned between the housing and said coupling element, said means passing partially through the openings defined in said sliding member, front plate and coupling element.

4,766,749

LOCKING DEVICE

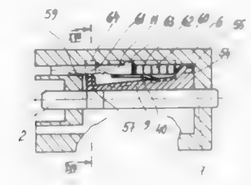
Alfred Sperber, 24 Reckendorfer Weg, D-8601 Gerach, Fed. Rep. of Germany

Filed Sep. 22, 1986, Ser. No. 910,400

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1985, 3534448; Feb. 28, 1986, 3606570

Int. Cl.[4] E05B *27/08*

U.S. Cl. 70—491 11 Claims



1. A locking device comprising: a lock and a key; a shaft in said lock and blocked in a closed state of said lock, said shaft having an outer end, said key being positioned non-rotating against said outer end; at least two diametrically opposed cams and blocking elements, said cams operating in an unblocked position and in conjuction with said blocking elements, said blocking elements being slidable or pivotable radially outward by turning said shaft, a predetermined secret code independent of another code and setable at the key is associated with each blocking element; said blocking elements comprising two blocking plates pivoting inside said lock and resiliently forced inward; said blocking plates having blocking extensions mounted on the outside; and blocking pins secured inside said lock and having perforations entered by said blocking extensions when said blocking pins are in an unblocked position and when said shaft is turned.

4,766,750

CONTROL MECHANISM FOR THREAD ROLLING ATTACHMENT

Robert J. Brinkman, Rochester, N.Y., assignor to C. J. Winter Machine Works, Rochester, N.Y.

Filed Dec. 14, 1987, Ser. No. 133,135

Int. Cl.[4] B21H *3/04*

U.S. Cl. 72—30 10 Claims

1. In a thread rolling attachment have a reciprocable operating element for selectively swinging a pair of pattern rolls into engagement with a rotating workpiece, and a fluid pressure cylinder having a piston rod reciprocable at one end in an axial bore in said cylinder between retracted and advanced positions, and projecting at its oposite end slidably out of one end of said cylinder to engage and inpart reciprocation to said operating element, an improved mechanism for controlling the flow of fluid under pressure to said cylinder, comprising

reversible valve means connected to a first plurality of ports in said cylinder and operable selectively to supply fluid under pressure from a supply thereof alternately to opposite ends of said cylinder, thereby to effect reciprocation of said piston rod,

said cylinder having in the opposite end thereof a further port opening at one end on the bore in said cylinder and connected at its opposite end to said valve means to effect reversal thereof when fluid under pressure is supplied to said further port from the bore in said cylinder,



a valve stem movable mounted in said opposite end of said cylinder and having thereon a valve seat normally closing said one end of said further port when said piston rod is in its retracted position, and

means connecting said valve stem to said piston rod and operative, when said piston rod has moved to its advanced position, momentarily to shift said valve stem and said valve seat in a direction to open said one end of said further port, thereby to admit fluid under pressure from said cylinder bore to said valve means to reverse the latter.

4,766,751

APPARATUS FOR CONTINUOUSLY PRODUCING TUBE HAVING HELICAL GROOVES IN ITS INNER SURFACE

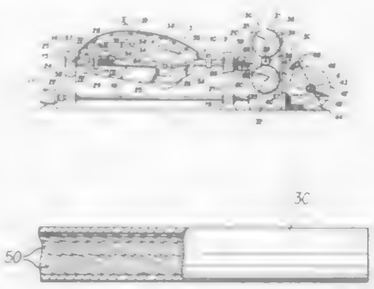
Iwao Ueda, Izumi, and Sakimoto Minobu, Sakai, both of Japan, assignors to Hamana Iron Works Co., Ltd., Izumi, Japan

Filed Apr. 9, 1987, Ser. No. 36,055

Claims priority, application Japan, Apr. 10, 1986, 61-83388

Int. Cl.[4] B21B *15/02*

U.S. Cl. 72—64 8 Claims



1. An apparatus for continuously producing a tube having helical grooves in its inner surface comprising a first drum having a shaft and being for paying off a tube having straight grooves in its inner surface, a stationary cradle supporting the shaft of the first drum, a flier having an axis intersecting the axis of the first drum at right angles therewith and rotatable around the cradle for twisting the tube, a second drum positioned adjacent said flier and said first drum and serving as a take-up drum for winding thereon the helically grooved tube obtained through rotation of the flier, a capstan disposed between said flier and said second drum, preventing means mounted on said cradle disposed at one side of the pay-off drum where the paid-off straight-grooved tube is to be transferred to the flier for preveting the torsion of the tube pro-

VOL 1093 ISS 5 AG 30 1988 UMI

duced by the rotation of the flier from being transmitted toward the pay-off drum, and correcting means provided between the flier and the capstan for remedying any undesired cross-sectional deformation of the helically grooved tube that may have occurred during rotation of said flier.

4,766,752

MACHINE TOOL FOR THE PRODUCTION OF TUBULAR COMPONENTS

Heinz Grönert, Emmering; Manfred Eckert, Dachau; Henning von Petersdorff, Puchheim; Johann Münich, Munich; Maximilian Hammer, Windach; Günther Nuissl, Karlsfeld; Klaus Bergen, Oberschweinbach; Josef Appoloner; Anton Pfeil, both of Munich; Willibald Huber, Jetzendorf, and Klaus Kiessling, Munich, all of Fed. Rep. of Germany, assignors to Man Technologie GmbH, Munich, Fed. Rep. of Germany

Filed Dec. 5, 1986, Ser. No. 937,965

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1985, 3545506

Int. Cl.[4] B21B *19/14*

U.S. Cl. 72—84 **13 Claims**



1. An apparatus for rolling the wall of a tubular workpiece to reduce its wall thickness, comprising:

base means extending radially of an axis and defining a plane perpendicular thereto, said base means including a frame structure;

a workpiece holder for supporting a workpiece so that it is centered on said axis;

an internal roll carrier, means attached to said frame structure supporting said internal roll carrier inside said workpiece holder in radial symmetry with respect to said axis;

a pair of internal rolls, roll support means on said internal roll carrier supporting said internal rolls in diametric opposition on said internal roll carrier;

an external roll carrier, means attached to said frame structure supporting said external roll carrier around said workpiece, a pair of external rolls, roll support means on said external roll carrier supporting said external rolls in diametric opposition on said external roll carrier such that the internal and external rolls face one another and form wall-rolling pairs each of which defines a rolling nip for reducing the thickness of the wall of the workpiece;

said means which supports said internal and external roll carriers from said frame structure providing axial movement for each of the roll carriers relative to said frame structure;

means supporting said workpiece holder from said frame structure so that relative axial feed motion and relative rotation about said axis may take place between said workpiece and said pairs of rolls; and

drive means for producing said relative axial motion and said relative rotation between said rolls and said workpiece.

4,766,753

ROLLING APPARATUS FOR SURFACE HARDENING OR SMOOTHING

Garri Berstein; Willi Hansen, both of Erkelenz, and Rudolf Winkens, Erkelenz-Gerderath, all of Fed. Rep. of Germany, assignors to W. Hegenscheidt GmbH, Erkelenz, Fed. Rep. of Germany

Filed Aug. 29, 1986, Ser. No. 902,152

Claims priority, application European Pat. Off., Aug. 30, 1985, 85110946.2; Jan. 14, 1986, 86100404.2

Int. Cl.[4] B21K *1/08*

U.S. Cl. 72—110 **34 Claims**



1. Surface-hardening and smoothing rolling apparatus comprising at least one movable rolling device at least including a die carrier with at least one backing element and a die carrier with at least one rolling element, as well as at least one additional rolling devices, said movable and additional rolling device being carried by a standard disposed on a slide, said standard being movable relative to a crankshaft to be rolled, said movable rolling device being arranged so that the position thereof is changeable relative to that of said additional rolling device in a radial plane of the crankshaft to be rolled and independently of a center of rotation of the crankshaft.

4,766,754

CONTINUOUS PROCESS FOR BENDING LONG RODS OR TUBES

Sang R. Shiue, Kaohsiung, Taiwan, assignor to Watt Yang, Kaosiung Hsieng, Taiwan, a part interest

Division of Ser. No. 856,798, Apr. 28, 1986. This application Apr. 20, 1987, Ser. No. 40,080

Int. Cl.[4] B21D *7/022, 43/20, 43/28*

U.S. Cl. 72—294 **6 Claims**



2. A process for bending long metal rods comprising:

providing a rod support having an inner end and an outer end;

placing a plurality of rods on the support with the longitudinal axes of the rods extending transversely to the support;

restricting the position of the ends of the rods to maintain the middle portions only of the rods on the support;

raising the support so that the rods are supported at the middle portions thereof in a bent condition;

inclining the support from the inner end thereof to the outer downstream end thereby sliding the rods downwardly along the support in the feed direction of the rods toward the outer end of the support;

vibrating the support upwardly and downwardly;

providing a gradually restricting space and a following uniformly restricted space for the rods above the support toward the outer downstream end of the support;

passing the rods through the gradually restricted space and then the uniformly restricted space in a direction substantially transverse to the longitudinal axes of the rods;

removing the individual rods from the support in a direction transverse to the longitudinal axes of the rods;

feeding the rods to a cutting station by sliding the rods in the feeding direction transverse to the longitudinal axes of the rods;

shifting each rod in the direction of the longitudinal axis thereof a predetermined distance to place each rod in alignment with at least one cutting member;

moving each rod in the aligned position to cutting position;

cutting each rod in the cutting position;

providing at least one bending station downstream in the feeding direction of said cutting station;

providing at least one cut rod collecting and feeding member and collecting a predetermined number of cut sections of each rod and feeding them to the art least one bending unit;

moving the cut sections of the rod in the direction of the longitudinal axis of the rod a predetermined distance to align at least one of the cut sections with the at least one bending unit;

bending the at least one aligned cut rod section; and

removing each bent rod from the at least one bending unit.

4,766,755

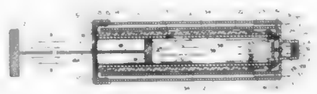
PLUNGER-TYPE PAINT ROLLER CLEANING DEVICE

Dixon L. Allen, 58 N. 300 West, Smithfield, Cache County, Utah 84335

Filed Sep. 14, 1987, Ser. No. 95,763

Int. Cl.[4] B08B *3/08*

U.S. Cl. 68—213 **13 Claims**



11. A plunger-type paint roller cleaning device including, in combination, an elongated container having a closed end and an open end; a cap removably secured to said open end; a plunger passing through one of said ends and having piston means for reciprocatingly operating within and dimensioned to peripherally engage the interior of an exteriorly supplied hollow paint roller, having an interior tube and an applicator nap peripherally secured thereto, when the latter is temporarily placed within said container, the combination of said container and said cap including structure for constraining solvent flow, when external solvent is supplied said container, through said nap longitudinally and circularly therethrough, preparatory to paint-charged solvent exit from said container; and means for discharging said solvent from said container and, wherein the combination of said cap and said container is provided with a solvent inlet port having a one-way valve.

4,766,756

CONTINUOUS PROCESSING MACHINE ASSEMBLY FOR BENDING LONG RODS OR TUBES

Sang R. Shiue, Kaohsiung, Taiwan, assignor to Watt Yang, Kaohsiung Hsieng, Taiwan, a part interest

Filed Apr. 28, 1986, Ser. No. 856,798

Int. Cl.[4] B21D *7/022, 43/20, 43/28*

U.S. Cl. 72—294 **34 Claims**



28. A feeding and separating unit for a continuous processing machine assembly for long metal rods comprising:

a rod bundle-handling unit comprising a frame having a front side and a rear side;

an elongated support extending outwardly at said front side of said frame for supporting a bundle of rods at the middle portion of the rods with said rods extending transversely to the direction of extension of said support, said support having a rear end and a forward end and being mounted on the frame at the rear end of said support for reciprocation upwardly and downwardly with respect to the frame;

means for vibrating said support;

said support being mounted for positioning in an inclined position with respect to the frame;

means for adjusting the inclination of said support;

means adjustably mounted at lateral opposite sides of said frame engageable with the opposite ends of the rods for positioning the rods with respect to said support;

means for raising and lowering said support;

an advancing roller rotatably mounted at the forward end of said support and having grooves in the periphery thereof for advancing individually the rods from the forward end of said support;

a cantilever arm mounted on said frame above said support extending in substantially the same direction as said support and being inclined downwardly toward the forward end of said support defining a space between said support and said cantilever arm providing a gradually restricting space for limiting the number of rods moving toward said advancing roller and a restricted space adjacent said advancing roller for the passage therethrough of single rods;

power means for adjustably positioning said cantilever arm in said inclined position; and

sliding bars disposed downstream of said advancing roller outwardly therefrom for receiving said rods from said advancing roller and supporting the rods for sliding movement of the rods forwardly.

4,766,757

SHEET BENDING BRAKE

Douglas G. Break, Farmington Hills; Walter G. Marsh, Detroit, and James J. Rhoades, Garden City, all of Mich., assignors to Tapco Products Company, Inc., Detroit, Mich.

Continuation of Ser. No. 288,660, Jul. 30, 1981, abandoned. This application May 11, 1984, Ser. No. 609,515

Int. Cl.[4] B21D *5/04*

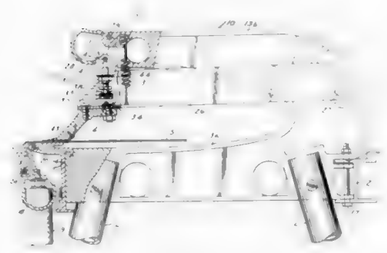
U.S. Cl. 72—319 **5 Claims**

1. A sheet bending brake comprising

a frame,

VOL 1093 ISS 5 AG 30 1988 UMI

a fixed jaw mounted on said frame and extending longitudinally of said frame,
a movable jaw pivoted to said frame,
an anvil member secured to said movable jaw and extending longitudinally of said frame,
said movable jaw having a clamping surface movable between workpiece clamping and non-clamping positions relative to the anvil member,
a bending member hingedly connected to the fixed jaw,
means for releasably locking the movable jaw in workpiece clamping position comprising
a handle pivoted to said frame and extending longitudinally of said frame,
a plurality of longitudinally spaced adjustable axially extensible links pivoted to said handle and said movable jaw,
each said link having one end pivoted to said handle and the other end pivoted to said movable jaw such that in one position of said handle, said links hold said movable jaw out of clamping position and, in another position of said handle, said links hold said movable jaw in clamping position,
each said link including a first part which is pivoted to said handle, a shaft threaded into said first part and having a free end and a second part pivoted to said movable jaw,
each said second part supporting an axially compressible resilient pad interposed between the free end of said shaft



and said second part to accommodate variations in thickness of said sheet material due to manufacturing tolerances,
said shaft extending into said second part and engaging said resilient pad at all times,
means extending between said shaft and said second part interconnecting said shaft and said second part and normally holding said shaft against said resilient pad,
said first part, second part, pad and shaft of said link normally forming a solid connection between said handle and said movable jaw,
said last-mentioned means limiting axial outward movement of said shaft relative to said second part and operable to lift said movable jaw out of clamping position and to hold said movable jaw out of clamping position,
said last-mentioned means permitting axial inward movement of said shaft relative to said second part against the action of said resilient pad to compress said resilient pad sufficiently only to accommodate manufacturing variations and tolerances in the thickness of the sheet material when the jaw is in clamping position,
said last-mentioned means comprising radially inwardly extending flange means on said second part engaging said shaft to provide the solid connection to limit axial outward movement of said shaft relative to said second part and to hold the jaw out of clamping position.

4,766,758

METHOD OF MEASURING STRAIN FORCES IN A PRESS

Mark H. Lucas, Maumee; Richard J. Grogan; Robert L. Wagner, both of Toledo, and Richard T. Wilhelm, Holland, all of Ohio, assignors to Helm Instrument Co., Inc., Maumee, Ohio

Filed Apr. 27, 1987, Ser. No. 42,718
Int. Cl.[4] G01L *25/00, 5/00*
U.S. Cl. 73—1 B 15 Claims



11. A method of measuring the forces applied to dies in an underdrive press having a bed adapted to retain a lower die, an inner upper slide adapted to retain an inner upper die, and an outer upper slide adapted to retain an outer upper die, comprising the steps of:

a. determining the position of a frame of the inner upper slide relative to a surface of the inner upper slide in the underdrive press;
b. determining the position of a frame of the outer upper slide relative to a surface of the outer upper slide in the underdrive press;
c. mounting at least four strain force measuring transducers on said surface of the inner upper slide with at least one of said transducers being mounted adjacent each corner of the frame of the inner upper slide, whereby said transducers each generate a signal representing the force applied to a corresponding area of the inner upper die, it being attached to the inner upper slide during operation of the press;
d. mounting at least four strain force measuring transducers on said surface of the outer upper slide with at least one of said transducers being mounted adjacent each corner of the frame of the outer upper slide, whereby said transducers each generate a signal representing the force applied to a corresponding area of the outer upper die, it being attached to the outer upper slide during operation of the press;
e. connecting each of said transducers to a load monitoring device to indicate the forces being sensed by each of said transducers; and
f. calibrating said load monitoring device to indicate the forces applied to said inner and outer upper dies during the operation of the press.

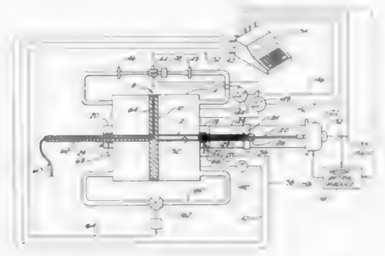
4,766,759

APPARATUS AND METHOD FOR DETERMINING THE FLOW CHARACTERISTIC OF A VOLUMETRIC FLOWMETER

Gary D. Cohrs, Tempe, and Edward E. Francisco, Jr., Paradise Valley, both of Ariz., assignors to Calibron Systems, Inc., Phoenix, Ariz.

Continuation-in-part of Ser. No. 843,001, Mar. 24, 1986, Pat. No. 4,674,317, which is a division of Ser. No. 757,272, Jul. 19, 1985, Pat. No. 4,627,267. This application Mar. 9, 1987, Ser. No. 23,658
Int. Cl.[4] G01F *25/00*
U.S. Cl. 73—3 13 Claims

1. A flowmeter calibrator comprising:
a fluid displacement measuring cylinder;
a fluid displacement measuring member adapted to travel through the measuring cylinder from end to end in synchronism with fluid flow;
means for sensing the displacement of the measuring member as the measuring member travels through the measuring cylinder;
a first fluid line external of the measuring cylinder connected between the ends of the measuring cylinder;
a flowmeter connected in the first fluid line;



a second fluid line external of the measuring cylinder connected between the ends of the measuring cylinder;
means in one of the fluid lines for inducing fluid flow to drive fluid through the flowmeter; and
control means for alternately blocking and unblocking fluid flow through the second fluid
line so the only path for fluid flow is through the measuring cylinder.

4,766,760

METHOD OF CHROMATOGRAPHIC ANALYSIS OF A MIXTURE OF LIQUID SUBSTANCES AND A GAS CHROMATOGRAPH FOR CARRYING OUT THE METHOD

Vladimir M. Poshemansky; Eduard P. Skornyakov, and Vitaly P. Chizhkov, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno-issledovatelsky i Konstruktorsky institute Khromatografii, Moscow, U.S.S.R.

Filed Nov. 3, 1987, Ser. No. 116,454
Int. Cl.[4] G01N *30/38*
U.S. Cl. 73—23.1 9 Claims



1. A method of chromatographic analysis of a mixture of liquid subtances in a gas chromatograph comprising a chromatographic column having an inlet portion and an outlet separating portion connected to a detector, which includes a sequence of the following operations:
dividing a flow of carrier gas into at least two parts, particularly first and second parts;
conveying said first part of the flow of carrier gas through said chromatographic column in a direction from the inlet to the outlet;
mixing at the outlet of said chromatographic column of said first part of the flow of carrier gas with the second part of the flow of carrier gas to result in a united flow of carrier gas;
conveying said united flow of carrier gas through said detector;
stabilizing the pressure of said united flow of carrier gas at the inlet of said detector;
introducing a sample of the mixture of substances to be analyzed into said inlet portion of the chromatographic column at a temperature below the boiling point of the substances under analysis;
transferring said substances under analysis to a vaporous state by increasing the temperature in said chromatographic column;
entraining the vapours of said substances under analysis by said first part of the flow of carrier gas through said chromatographic column in a direction from the inlet to the outlet to result in a chromatographic separation of the substances under analysis;
entraining the substances under analysis separated in said chromatographic column by said united flow of carrier gas from the outlet of said chromatographic column to said detector;
detecting said separated substances under analysis in said detector;
conveying said first part of the flow of carrier gas through said chromatographic column in a direction from the outlet to the inlet to result in cleaning of said column from the remainder of the sample material not of interest for the purposes of analysis;
venting to the atmosphere said first part of the flow of carrier gas conveyed through said chromatographic column in a direction from its outlet to the inlet together with the remainder of the sample material not of interest for the purposes of analysis.

4,766,761

METHOD OF DETERMINING THE INTERNAL POROSITY OF POWDERS

Biing-Lin Lee, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 3, 1987, Ser. No. 92,817
Int. Cl.[4] G01N *15/08*
U.S. Cl. 73—38 11 Claims



1. A method of determining an approximate value for the internal porosity I of a powder wherein all units V_o, V_1, V_{Eo}, V_{EI} are expressed as cc/g, comprised of particles having a fused density characterized by pd, comprising the steps of:
(a) determining the fused density pd of said powder;
(b) forming a powder bed in a container,
(c) determining for said powder bed an initial volume V_o, equaling the volume of said solid 1/pd, the volume of the external voids V_{Eo} and the volume of the internal porosity I;
(d) suspending at least a portion of a drawing object a depth H in said powder bed and thereafter measuring the initial maximum force F_o necessary to draw said object out of said container,
(e) compacting said powder bed to change the volume of

VOL 1093 ISS 5 AG 30 1988 UMI

said powder bed to V_1 and said external void volume to V_{E1} by altering the packing arrangements of said particles;
(f) determining a new volume V_1 of said powder bed, equaling the volume of said solid 1/pd, the new volume of the external voids V_{E1} and the volume of the internal porosity I;
(g) suspending said drawing object to said depth H in said powder bed and thereafter measuring the maximum force F_1 necessary to draw said object out of said container, and
(h) calculating the internal porosity I by simultaneously solving the equations:

$$V_{BED} = \frac{1}{pd} + I + V_E \quad (1)$$

and

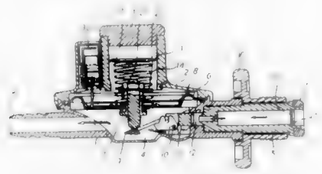
$$E_1 - E_0 = -\frac{1}{B}\log\frac{F_1}{F_0} \quad (2)$$

to obtain the equation:

$$I_{(c.m./gm)} = \left(\frac{1}{B}\log\frac{F_1}{F_0}\right)\left(\frac{V_0 \times V_1}{V_0 - V_1}\right) - \frac{1}{pd} \quad (3)$$

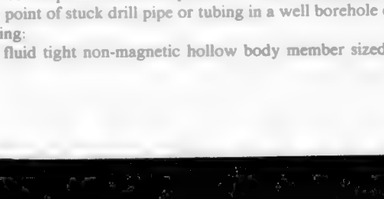
wherein B is a constant, F is the maximum drawing force, V is the volume of the powder bed, pd is the fused density of said powder, and the subscripts o and 1 respectively refer to the initial and the subsequent compacted condition.

4,766,762
GAS REGULATOR WITH LEAKAGE-DETECTING DEVICE
Su-Li Tsan, No. 8, Alley 5, Lane 493, Chung Ho Street, Peitou District, Taipei, Taiwan
Filed Nov. 14, 1986, Ser. No. 932,194
Int. Cl.[4] G01M *3/28*
U.S. Cl. 73—40 **3 Claims**



1. A gas regulator comprising:
a housing having an exit connecting duct and a transparent viewing cover connected to a top portion of the housing;
a pressure-reducing chamber disposed within said housing;
a leakage-detecting means for depressurizing the supplied gas and detecting leakage in a gas supply line, said leakage-detecting means being located in said housing and fixed to an upper cap of said housing by means of fixing flanges, said leakage-detecting means being disposed above said pressure-reducing chamber and at a side of the exit connecting duct, said leakage-detecting means comprising:
a reinforcement plate;
a resilient element;
a diaphragm;
a pressure-adjustment spring;
a sensing rack member fixed in an abutting relationship with said reinforcement plate by means of said resilient element such that said sensing rack member is able to move up and down in synchronism with said diaphragm and said reinforcement plate in response to actuation of said pressure-adjustment spring and gas pressure in said pressure-reducing chamber;
a driven gear operatively connected to a pointer-actuating gear and responsive to movement of said sensing rack member;
pointer means adapted to swing to the left and right in a fluctuating manner along an indicator board responsive to said driven gear and the pointer-actuating gear, whereby gas leakage can be detected from the swinging condition of said pointer means.

4,766,763
GAS LEAK DETECTION APPARATUS AND METHODS
Anthony D. Kurtz, Teaneck, N.J., assignor to Kulite Semiconductor Products, Inc., Leonia, N.J.
Filed May 5, 1987, Ser. No. 46,167
Int. Cl.[4] G01M *3/26*
U.S. Cl. 73—49.2 **2 Claims**



1. A gas leak detector apparatus for detecting a gas leak in a gas containing vessel of a given volume, comprising:
a pressure transducer of the type having a deflectable diaphragm, wherein said pressure transducer includes a full Wheatstone bridge array mounted on said diaphragm and having one or more pressure responsive resistors forming said array for providing at an output a voltage proportional to a net force applied to said diaphragm, said bridge array having a first and a second output terminal;
an operational amplifier having a gain proportional to 1/T where T is the absolute temperature of said gas, said operational amplifier having a first input coupled to said first bridge array output terminal and a second input coupled to said second bridge array output terminal, with one input of said operational amplifier in series with a resistive circuit having a resistance value which varies with temperature to provide at an output of said amplifier a voltage which varies inversely with temperature according to 1/T whereby the gain of said amplifier is inversely proportional to the absolute temperature of said vessel so that said output of said amplifier is responsive solely to the number of moles of gas in said vessel and independent of the temperature to thereby provide an output only when the amount of gas in said vessel changes indicative of a gas leak.

4,766,764
MAGNETIC FREEPOINT SENSOR UTILIZING SPACED HALL EFFECT DEVICES
William L. Trevillion, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Feb. 25, 1987, Ser. No. 18,673
Int. Cl.[4] E21B *47/09*
U.S. Cl. 73—151 **8 Claims**

1. A freepoint indicator system for use in determining the free point of stuck drill pipe or tubing in a well borehole comprising:
a fluid tight non-magnetic hollow body member sized and adapted for passage through a well borehole, said body member housing;
coil means for marking the inside of drill pipe or tubing with magnetic marks by passing a DC current pulse through said coil means;
first Hall effect transducer means spaced longitudinally in said body member from said coil means for detecting magnetic fields and generating signals representative thereby;



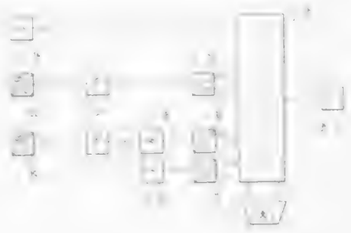
second Hall effect transducer means spaced longitudinally from said coil means and said first transducer for detecting magnetic fields and generating signals representative thereof;
means for transmitting said representative signals from said body member to the surface of the earth; and
means for generating a signal representative of the difference in said two representative magnetic field signals and for recording said difference signal as a function of borehole depth.

4,766,765
MULTIPHASE VALVE TESTING
L. Ike Ezekoye, Wilkinsburg, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Nov. 13, 1986, Ser. No. 930,197
Int. Cl.[4] G01M *19/00;* **G01L** *27/00*
U.S. Cl. 73—168 **16 Claims**



1. Apparatus for testing a pressure relief valve comprising:
a housing defining an internal chamber;
piston means slidable in said internal chamber and dividing said chamber into a test chamber and a pressurizing chamber;
means for attaching the relief valve to be tested to the housing with the relief valve in communication with the test chamber;
inlet means for selectively introducing into and sealing within the test chamber and relief valve a fixed amount of a selected test fluid;
means for measuring the pressure of the test fluid in the test chamber;
means for heating the selected test fluid within the test chamber; and
pressurizing means for introducing a pressurizing fluid into said pressurizing chamber to increase the pressure of said test fluid through movement of said piston means until said relief valve actuates, whereby the pressure measuring means provides an indication of the pressure at which the relief valve actuated with the selected test fluid.

4,766,766
METHOD AND APPARATUS FOR PREPARING DOUGH
Dieter Ahlert, Ostercappeln; Konrad Böert, Melle, and Armin Maiss, Ibbenbüren-Laggenbeck, all of Fed. Rep. of Germany, assignors to Dierks & Söhne GmbH & Co., KG, Osnabrueck, Fed. Rep. of Germany
Filed Feb. 3, 1986, Ser. No. 825,715
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1985, 3504860
Int. Cl.[4] G01N *33/10;* **B28C** *7/04*
U.S. Cl. 73—169 **10 Claims**



6. Apparatus for mixing dough comprising a mixing vessel receiving dough contituents to be mixed to form a dough product, means operable in said vessel for mixing said dough constituents in said vessel, measuring probe means operable in said vessel to produce a first low frequency signal indicative of the viscosity of the dough being mixed and a second higher frequency signal indicative of the inhomogeneity of the dough being mixed, monitoring means for monitoring said first and second signals, input means for inputting known desired values of said first and second signals, evaluation means operatively connected between said input means and said monitoring means for comparing said first and second signals with said known desired values and for producing a difference value signal representing the difference between said first and second signals and said known desired values, control means for adding a metered amount of one of said dough constituents to said vessel, said evaluation means being operably connected to said control means such that said control means introduces a metered amount of said one dough constituent to said vessel in response to said difference value signal.

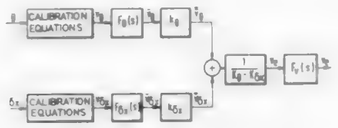
VOL 1093 ISS 5 AUG 30 1988 UMI

4,766,767

METHOD FOR DETERMINING THE HORIZONTAL AIRSPEED OF HELICOPTERS IN HIGHER SPEED RANGES

Wolfgang Hassenpflug, Freiburg, and Rainer Schwäble, Garbsen, both of Fed. Rep. of Germany, assignors to Litef GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Jun. 2, 1987, Ser. No. 57,805
Claims priority, application European Pat. Off., Jun. 2, 1986, 86107464
Int. Cl.[4] G01C 21/10
U.S. Cl. 73—181 7 Claims



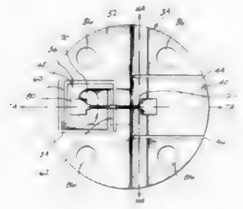
1. A method for determining the horizontal airspeed of a helicopter in the higher speed range comprising the steps of:
(a) determining calibration equations for the functional relationship between airspeed and pitch angle and airspeed and longitudinal control during quasi-steady state flight of said helicopter in said velocity range; then
(b) storing said equations; then
(c) measuring pitch angle and longitudinal control δx values of said helicopter by means of sensors; then
(d) recording said values, then
(e) calculating equivalent speed parameter signals v_ϑ and $v_{\delta x}$ by applying said pitch angle and longitudinal control values to said calibration equations; then
(f) filtering said signals to produce $\bar{v}_\vartheta$ and $\bar{v}_{\delta x}$; and
(g) determining weighting factors k_ϑ and $k_{\delta x}$ in accordance with measurements of said sensors; then
(h) storing said weighting factors; then
(i) converting said filtered signals to weighted signals by means of said weighting factors; and then
(j) determining a horizontal airspeed signal as a function of the sum of said weighted pitch angle v_ϑ and longitudinal control $v_{\delta x}$ signals divided by the sum of said weighing factors k_ϑ and $k_{\delta x}$.

4,766,768

ACCELEROMETER WITH ISOLATOR FOR COMMON MODE INPUTS

Brian L. Norling, Mill Creek, and Craig J. Cornelius, Redmond, both of Wash., assignors to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Oct. 22, 1987, Ser. No. 111,984
Int. Cl.[4] G01P 15/10
U.S. Cl. 73—497 14 Claims



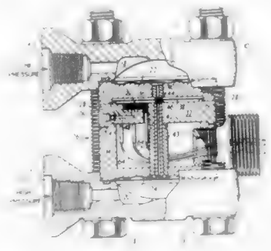
1. An accelerometer for measuring acceleration along a sensitive axis, the accelerometer comprising:
a support;
a proof mass;
mounting means for mounting the proof mass to the support such that the proof mass can rotate about a hinge axis perpendicular to the sensitive axis;
an isolator;
isolator suspension means for mounting the isolator to the support, the isolation suspension means being relatively compliant for isolator movement parallel to a transducer axis normal to the hinge axis and relatively noncompliant for isolator rotation about the hinge axis; and
two force transducers connected between the isolator and the proof mass, the force transducers being parallel to the transducer axis, and positioned on opposite sides of the hinge axis from one another such that rotation of the proof mass about the hinge axis puts one force transducer in tension and the other force transducer in compression.

4,766,769

DIFFERENTIAL-PRESSURE MEASURING APPARATUS WITH IMPROVED ARRANGEMENT FOR COUPLING PRESSURES TO A SEMICONDUCTOR SENSOR

Howard W. Nudd, Jr., Foxboro, and David N. Demoura, Taunton, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Division of Ser. No. 741,538, Jun. 5, 1985, Pat. No. 4,693,121.
This application Jul. 13, 1987, Ser. No. 72,514
Int. Cl.[4] G01L 7/08, 9/00
U.S. Cl. 73—706 7 Claims



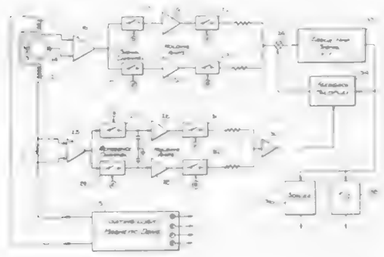
1. In a differential pressure measuring instrument of the type having a body formed with a sealed interior pressure chamber containing a fill-liquid and provided at opposite ends of the body with respective flexible diaphragms through which an input differential pressure may be applied to said fill-liquid, said instrument further including sensing means responsive to said differential pressure to produce a corresponding output signal;
that improvement comprising:
a spring plate mounted in said body between said flexible diaphragms and extending completely across said pressure chamber so as to divide said pressure chamber into first and second separated fill-liquid sections;
each of said fill-liquid sections comprising a first region adjacent the flexible diaphragm for that section and a second region adjacent the corresponding side of said spring plate, with said first and second regions being connected by respective fluid passages;
an IC chip to serve as said sensing means and mounted in the portion of said instrument body which is between said spring plate and one of said flexible diaphragms;
means to provide at one surface of the IC chip the pressure of the fill-liquid in the chamber section including the side of said spring plate which is adjacent said body portion; and
liquid passageway means connected to the chamber section including the side of said spring plate which is remote from said body portion, said passageway means extending around the outer edge of said spring plate into said body portion to a region adjacent the surface of said IC chip which is opposite said one surface thereof, whereby said IC chip receives between said two surfaces thereof the differential pressure existing between said two chamber sections.

4,766,770

LOW DUTY CYCLE ELECTROMAGNETIC FLOWMETER

Elmer D. Mannherz, Southampton, and Roy F. Schmoock, Yardley, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 30, 1984, Ser. No. 595,386
Int. Cl.[4] G01F 1/60
U.S. Cl. 73—861.17 3 Claims



1. An electromagnetic flowmeter comprising:
A. a flow tube through which the fluid to be metered is conducted, said flow tube having a pair of electrodes;
B. an electromagnet to produce a magnetic field whose lines of flux are substantially normal to the flow axis of the tube, whereby these lines are intersected by the fluid to induce a voltage in the fluid which is transferred to the electrodes to provide a signal indicative of flow rate;
C. a drive system for applying a low frequency pulsatory wave whose frequency is no higher than 30 Hz to said electromagnet, each periodic cycle of which is constituted by an excitation pulse having an excitation interval of brief duration which is less than 10 milliseconds followed by a relaxation interval of relatively long duration which is at least ten times longer than the excitation interval so that the resultant duty cycle is low and the average power consumed by the electromagnet is at a very low level, said pulse being of high amplitude to provide an exceptionally high flux density during the excitation interval, thereby enhancing the signal-to-noise ratio of the flowmeter;
D. means to apply the signal yielded by the electrodes during the excitation interval to a holding amplifier which maintains the signal during the relaxation interval which follows and updates it when the next signal is applied thereto, and
E. electronic switching means interposed between the electrodes and the holding amplifier to apply said signal to said holding amplifier only during its steady state condition.

4,766,771

SHAKING APPARATUS

Frank V. Bailey, and Lee A. Woodward, both of Racine, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 671,629, Nov. 15, 1984, Pat. No. 4,600,046, which is a continuation-in-part of Ser. No. 568,051, Jan. 4, 1984, Pat. No. 4,593,739. This application Mar. 12, 1986, Ser. No. 838,796
Int. Cl.[4] B06B 1/16
U.S. Cl. 74—61 24 Claims

1. A variably unbalanced rotating mechanism comprising a frame, a main shaft having a longitudinal axis and supported on said frame for rotation about said longitudinal axis, means for rotating said main shaft, first and second eccentric weights mounted for rotation in coaxial relation to said main shaft, and means for rotating said weights in common with said main shaft and for adjusting the angular positions of each of said weights relative to each other and relative to said main shaft and independently of main shaft movement.

21. A variably unbalanced rotating mechanism comprising a frame, a shaft having a longitudinal axis and supported on said frame, means for rotating said shaft, means on said frame for creating a shaking force acting in a predetermined reciprocal direction and passing through said axis in response to shaft



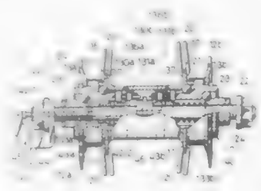
rotation and for adjustably locating the shaking force axially of said shaft during shaft rotation and independently of shaft movement, said means including axially spaced first and second pairs of eccentric weights rotatable in common with said shaft, said eccentric weights in each of said pairs being angularly adjustable relative to each other, means for selectively angularly adjusting said eccentric weights in said first pair independently of the angular adjustment of said eccentric weights in said second pair, and means for angularly adjusting said eccentric weights in said second pair independently of the angular adjustment of said eccentric weights in said first pair.

4,766,772

HUB MECHANISM FOR SELF-PROPELLING TYPE LIGHT VEHICLE

Kimihiro Tsuchie, 35-1, Kinugasa Tenjimori-cho, Kita-ku, Kyoto-shi, Japan

Filed Dec. 12, 1986, Ser. No. 940,955
Claims priority, application Japan, Dec. 27, 1985, 60-204110[U]
Int. Cl.[4] F16H 27/02
U.S. Cl. 74—126 3 Claims



1. A hub mechanism for a self-propelling type light vehicle provided with:
a hub shaft secured to a main body of the vehicle;
a pair of right and left drivers rotatably carried by said hub shaft and independently rotatable in the directions for forward and backward movements of the vehicle when actuated by the driving force transmitted from a driving force generating source;
a hub shell rotatably carried by said drivers;
a pair of right and left one-way clutches for forward movement to transmit rotations of said drivers in the forward movement direction to said hub shell respectively and another pair of right and left one-way clutches for backward movement to transmit rotations of said drivers in the

VOL 1093 ISS 5 AG 30 1988 UMI

backward movement direction to said hub shell respectively, the one-way clutches each being composed of ratchet gears formed on the inner periphery of the hub shell and of at least a ratchet pawl provided for the driver; and

releasing members to release the rotation transmitting actions of said one-way clutches for forward and backward movement individually or collectively, said releasing members for releasing the rotation-transmitting action of the one-way clutches being sliders slidably fitted onto the hub shaft and a control over the position of the sliders adapts diametrally large parts formed on the outer periphery of the sliders to tilt the ratchet pawl selectively releasing engagement between the ratchet pawl and the ratchet gear.

4,766,773

GEAR TYPE TRANSMISSION UNIT

Toubei Yamaguchi; Kazuhiko Moriyama, and Ethuo Shira, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 29, 1986, Ser. No. 901,588

Claims priority, application Japan, Aug. 31, 1985, 60-133283[U]; Aug. 31, 1985, 60-133285[U]

Int. Cl.[4] F16H *57/04*

U.S. Cl. 74—467 8 Claims



1. A gear type transmission unit which comprises a transmission unit housing, a bearing retainer mounted at a front wall portion of said transmission unit housing, and a first bearing held in said bearing retainer for supporting an input shaft, the improvement comprising an upper portion of a bearing holding portion of said bearing retainer, formed to project toward the side of a gear speed changing mechanism, said projecting upper portion formed with an oil groove for introducing lubricating oil to be communicated with an oil hole formed in said bearing retainer for directing the oil and provide for bearing lubrication, further including an extension housing provided at the end portion thereof opposite to the front wall portion of said transmission unit housing, said extension housing including a forward wall and a further bearing provided in said forward wall for supporting an output shaft, said further bearing being composed of a seal bearing, said forward wall of said extension housing being formed with an oil discharge opening in a position around and outer periphery of said seal bearing at a height corresponding to that of a bearing portion in the rear end portion of said extension housing, and also, formed with an oil introducing opening for leading the lubricating oil into the extension housing in a position around the outer periphery of said seal bearing at a height higher than that of said oil discharge opening.

4,766,774

SHIFT CONTROL METHOD AND APPARATUS FOR AUTOMATIC TRANSMISSIONS USED IN AUTOMOTIVE VEHICLES

Hidefumi Tamai, Ebina, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

Filed Aug. 19, 1986, Ser. No. 897,851

Claims priority, application Japan, Aug. 29, 1985, 60-190094

Int. Cl.[4] B60K *20/00, 41/18, 20/10*

U.S. Cl. 74—475 6 Claims



1. A method of controlling the shifting of an automotive automatic transmission having a detent mechanism for performing shift positioning of a shift fork shaft which actuates a clutch sleeve of the transmission, a shift actuator for actuating the shift fork shaft, a stroke sensor for constantly sensing an operating position of the shift actuator, and an electronic control unit for controlling drive of the shift actuator, said method comprising:

a first step in which the electronic control unit operates the shift actuator at an initial shifting operation of the transmission to move the shift fork shaft for each and every gear stage to the position of a maximum stroke for which said clutch sleeve is designed to move;

a second step in which the electronic control unit removes driving force from the shift actuator at the end of said first step;

a third step, executed at the end of said second step, in which the electronic control unit reads in a value from the stroke sensor that prevails when the detent mechanism is in a stable state; and

a fourth step, executed at the end of said third step, in which the electronic control unit selects the read value from the stroke sensor as a target value for the next shifting operation.

4,766,775

MODULAR ROBOT MANIPULATOR

Steven W. Hodge, 3725 Robinson Pike Rd., Grandview, Mo. 64030

Filed May 2, 1986, Ser. No. 858,683

Int. Cl.[4] B25J *17/00, 18/00;* F16L *23/02*

U.S. Cl. 74—479 7 Claims

1. A module for a remote manipulator and having a driven input end and a driving output end spaced from the input end, said module comprising:

structure at the input end adapted to be operably coupled in driven relationship with said manipulator for rotating said structure about a first axis;

a component pivotally carried by said structure for pivoting movement about a second axis intersecting with said first axis, said component being adapted to be operably coupled with said manipulator for pivoting the component;

an ouptut element rotatably carried by the component for movement therewith and for rotation about a third axis, said element extending to the module output end;

motor means carried by the module and operably coupled with the element for rotating the latter;

said first, second and third axes all intersecting between the module input and output ends whereby to maximize the range of movement of the element which may be effected at the module output end within the spacing afforded between said module ends; and

a second motor means secured to the element for rotation



therewith, the output shaft of said second motor means being rotatable on said third axis to provide a rotary drive at the module output end concentric with but independently rotatable with respect to the rotation of said element, said rotary drive being adapted for coupling with another module for rotating the latter.

4,766,776

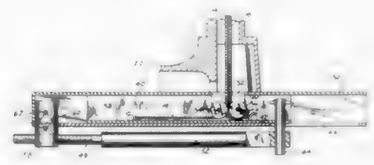
SINGLE CABLE SHIFT ASSEMBLY

Neil A. Newman, Omro, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 15, 1987, Ser. No. 96,948

Int. Cl.[4] B63H *21/21, 21/26*

U.S. Cl. 74—501 A 7 Claims



1. The single cable shift conversion assembly for use with a pair of pull-pull cables, said assembly comprising:

elongated guide means mounted to a surface adjacent the cable ends and having cable guides to direct the cables in opposite directions along its longitudinal axis;

an elongated slide mounted for sliding linear movement on said guide means and having a pair of spaced cable anchors for securing the cable ends to said slide at positions spaced along the longitudinal axis of said slide so that linear movement of said slide in a first direction within said guide means results in a pulling force on one of the cables and linear movement of said slide in a second direction results in a pulling force on the other cable; and

connector means for securing an end portion of the control cable to said slide so that linear movement of the control cable results in linear movement of said slide.

4,766,777

INTERRUPTED THREAD LOCK MECHANISM FOR AN ENGINE-TRANSMISSION ASSEMBLY

James F. Hartz; Rayman E. Bazilio, both of Indianapolis, and Glenn W. Adamson, Danville, all of Ind., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 5, 1986, Ser. No. 874,197

Int. Cl.[4] F16H *57/02*

U.S. Cl. 74—606 R 1 Claim



1. In association with an engine housing (10) having an end surface (12) and a drive shaft (16) extending therebeyond, and a cooperating transmission housing (18) having an end surface (25) and driven shaft (20) extending therebeyond to mate with said drive shaft:

the improvement including a mechanism (22) for detachably locking the engine housing and transmission housing in operative driving relationship;

said locking mechanism comprising an annular generally cylindrical housing (24) secured to said end surface of the transmission housing in concentric relation to the driven shaft axis, said annular housing having an end face (27) adapted to engage the aforementioned end surface of the engine housing; said annular housing comprising an outer annular wall, an inwardly radiating wall (28) connected to said outer wall, and an internal annular wall (34) projecting axially from one face of said inwardly radiating wall, whereby the outer surface of said internal annular wall (34) forms a circumferential bearing surface; said inwardly radiating wall and internal annular wall (34) cooperatively defining an outwardly facing annular groove (31);

a cylindrical ring structure (32) disposed within the annular housing, with an inner surface of said ring structure being slidably engaged on the aforementioned circumferential bearing surface so that the ring structure can rotate on said internal annular wall (34); a radial flange (30) extending inwardly from said ring structure into said annular groove (31); said flange having a lesser axial dimension than the groove whereby the ring structure is capable of limited axial motion within the annular housing; and a worm wheel segment (36) extending outwardly from the ring structure in concentric relation to the ring structure axis;

an actuator shaft (40) rotatably mounted in the annular housing for rotation around the actuator shaft axis; a toothed worm (38) carried on the actuator shaft in operative driving engagement with said worm wheel segment; said actuator shaft having its axis located tangent to the circumferential plane of the worm wheel segment; said actuator shaft extending outwardly through the annular housing to provide an exposed manual actuator section,

VOL 1093 ISS 5 AG 30 1988 UMI

whereby a manual turning force on the exposed actuator section causes the toothed worm to rotate the worm wheel segment and associated ring structure the ring structure axis;

means forming a plural number of first interrupted circumferential splines (**47**) on the engine housing in concentric relation to the drive shaft axis; means forming a plural number of second interrupted circumferential splines (**49**) on said cylindrical ring structure (**32**) in concentric relation to the driven shaft axis:

said first splines being circumferentially spaced from one another to define spline-free spaces (**45**) therebetween; said second splines being circumferentially spaced from one another to define spline-free spaces therebetween; whereby movement of the annular housing in an axial direction enables the second splines to move into the free spaces between the first splines;

said actuator shaft (**40**) being manually rotatable to effect rotation of the ring structure, whereby the second splines can move from the first mentioned free spaces into meshed locking engagement with the first splines:

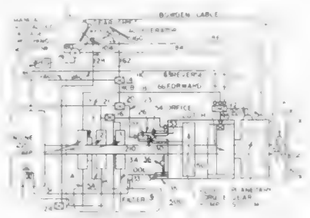
said first and second splines extending at very slight angles to imaginary radial planes passing through the drive shaft axis and driven shaft axis, respectively, whereby the aforementioned flange (**30**) exerts an axial force on an associated groove surface to effect a pressure-lock action of the meshed splines.

4,766,778

INEXPENSIVE VARIABLE TORQUE TRANSMISSION WITH OVERDRIVE AND METHOD

Carl D. Russell, P.O. Box 334, Sallisaw, Okla. 74955

Filed Dec. 17, 1984, Ser. No. 682,664
Int. Cl.[4] F16H *47/04, 47/08, 47/00*
U.S. Cl. 74—687 13 Claims



1. A ratio change transmission for variable speed driving connection between an engine and its load, directly through, or via low and reverse gears of a planetary gear system, comprising in combination:

a housing; a driving shaft penetrating the housing and powered from the engine;

a fluid variable torque pump having casing means and rotor means therein;

said rotor means affixed to said shaft for rotation therewith and said casing means rotatably carried by said shaft for rotation independently of said rotor means;

a fluid flow system including means for supplying fluid to the pump for pumping by the rotor means out of said casing means into said fluid flow system;

means restricting said pumped fluid flow to increase the fluid pressure in said casing means and impart variable rotation and torque to the casing means with said torque being proportional to the amount of restricting;

means establishing driving connections from the casing means to the load directly or via said planetary gear system supported by said shaft;

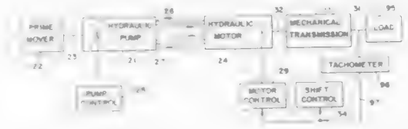
the means restricting comprises impeding means extendible into and retractible from said pumped fluid flow and, means responsive to engine vacuum to control positioning of said impeding means.

4,766,779

HYDROSTATIC TRANSMISSION ASSEMBLY AND METHOD OF INCREASING THE TORQUE AND SPEED RANGE THEREOF

Donald Massy, Concord, Calif., assignor to Fabco Automotive Corporation, Oakland, Calif.

Filed Mar. 5, 1984, Ser. No. 586,168
Int. Cl.[4] F16H *47/02*
U.S. Cl. 74—733 15 Claims



1. A hydrostatic transmission assembly for use with a prime mover and inCluding a variable displacement hydraulic pump formed for coupling to said prime mover to be driven thereby; a variable displacement hydraulic motor connected in fluid communication with said pump and having a motor output and motor control means connected to enable variation of the displacement of said motor to or from a fully stroked condition and a fully destroked condition to change the speed of said motor output; and a mechanical transmission having a transmission input coupled to said motor, a transmission output, shiftable gear train means coupling said transmission input to said transmission output and formed for change of the speed ratio between said transmission input and said transmission output upon shifting said mechanical transmission, and shift control means connected to enable shifting of said gear train means, wherein the improvement of said assembly comprises:

said motor being formed to have a known displacement ratio between said fully stroked condition and said fully destroked condition,

said gear train means being formed for shifting between two transmission output speeds for change of said speed ratio upon shifting by an amount which is substantially matched to the change in output speed of said motor output when said motor is shifted between said fully stroked condition and said fully destroked condition; and

said motor control means and said shift control means being further formed and operatively connected to said assembly for substantially simultaneous shifting of the displacement of said motor over the full displacement ratio between said fully stroked condition and said fully destroked condition, while shifting of said gear train means between said two transmission output speeds to change said speed ratio in an amount and a direction matching said change in output speed of said motor output.

4,766,780

AUTOMATIC CORKSCREW

Frank Sechen, 120 Havenside Dr., San Francisco, Calif. 94132

Filed Sep. 21, 1987, Ser. No. 99,049
Int. Cl.[4] B67B *7/04*
U.S. Cl. 81—3.2 8 Claims

1. An automatic corkscrew for extracting a cork from the neck of a wine bottle comprising in combination:

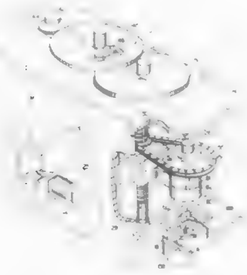
a rigid frame;

a bottle stop mounted in said frame for securely bracing the neck of said bottle relative thereto;

a platform mounted for guided movement within said frame toward and away from said braced bottle neck;

an auger rotatably mounted to said platform and having a flight for penetrating said cork of said braced wine bottle during movement of said platform toward said bottle neck;

a ball screw including a threaded shaft and a ball nut for following said threaded shaft, said ball nut attached to said platform;



a reversible motor for driving said thread shaft during penetration and removal of said cork;

auger rotating means coupling said motor to said auger for rotating said auger flight during movement of said platform towards and away from said braced bottle neck;

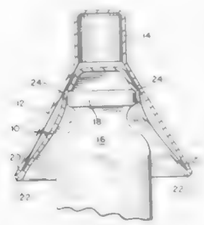
clutch means for disengaging said auger from powered rotation during movement of said platform away from said bottle neck, whereby said auger entrains said cork with stationary auger flight to permit removal of said cork.

4,766,781

JAR OPENER

Frederick G. J. Grisé, P.O. Box 186, Osterville, Mass. 02655, and Carlton D. Adams, 3 Commonwealth Ave., Attleboro, Mass. 02703

Filed Feb. 2, 1987, Ser. No. 9,878
Int. Cl.[4] B67B *7/18*
U.S. Cl. 81—3.4 17 Claims



1. A jar opener comprising a hollow generally cone shaped member having a small enclosed end and an open wide end to receive a jar cap or the like therein,

said member comprising a relatively stiff outer cone and a flexible distortable insert therein generally co-extensive with the outer cone,

and means normally spacing the insert from the outer cone,

whereby pressure may be exerted by the outer cone, throught the insert, to the jar cap or lid, thereby distorting the insert and conforming the same at least in part to the cap or lid, and thereby exerting pressure on the cap or lid at its periphery and increased gripping effect of the flexible insert on the cap or lid.

4,766,782

SCREW AND NAIL GUIDE

Bernard C. Tanner, #57 366-94th Avenue, Calgary, Alberta, Canada T2J 5P1

Filed Apr. 28, 1986, Ser. No. 856,478
Claims priority, application Canada, May 7, 1985, 480982
Int. Cl.[4] B25C *3/00*
U.S. Cl. 81—44 21 Claims



1. A nail or screw guide device comprising in combination:

(a) a pair of longitudinally extending bars including opposing faces,

(b) means mounting said bars for movement towards and apart from one another thus defining a closed position and an open position, the said opposing faces of said bars being in parallel inter-facial relationship when in the closed position and in parallel spaced apart relationship when in the open position,

(c) nail or screw guiding partial bores on at least one of said faces extending from the upper to the lower side of said opposing faces, and

(d) means co-operating between said bars to retain said bars with the opposing faces in parallel relationship one with the other and to selectively move said bars from the closed position to the open position and vice versa.

4,766,783

EXTENSION DEVICE FOR POWER SCREWDRIVER

Louis Stanich, 34 McNicoll Ave., Willowdale, Ontario, Canada M2J 2A8, and Henry D. Sweeny, 152 Stoneybrook Dr., Kitchener, Ontario, Canada N2M 4L7

Filed Jul. 22, 1986, Ser. No. 888,303
Int. Cl.[4] B25B *21/00*
U.S. Cl. 81—54 6 Claims



1. In an apparatus for driving screws into a receiving medium, the apparatus normally including power means, bit means, polygonal drive means removably connecting said power means to said bit means and depth gauge means threadedly connected to said power means, the improvement comprising an extension device for increasing the distance between the power means and the bit means, said device comprising:

first elongated polygonal extension rod means connectable to said power means in place of the polygonal drive means;

VOL 1093 ISS 5 AG 30 1988 UMI

first elongated cylindrical sleeve means having a polygonal bore therethrough for receiving said first extension rod means in a press fit at one end thereof;

first adapter means for receiving said first sleeve means therein, said first adapter means having threaded sections at each end thereof, one of said sections being adapted for threadedly connecting said first adapter means to said power means in place of said depth gauge means;

second elongated polygonal extension rod means connected to the other end of said first sleeve means;

second elongated cylindrical sleeve means having a polygonal bore therethrough for receiving said second extension rod means in a press fit at one end thereof and for receiving the polygonal drive means in a press fit at the other end thereof; and

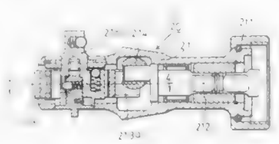
second adapter means for receiving said second sleeve means therein, said second adapter means having threaded sections at each end thereof, for threaded connection at one end thereof to the other end of said first adapter means, and at the other end thereof to said depth gauge means.

4,766,784

PNEUMATIC TOOL WITH A REPLACEABLE TOOL BIT TURNING SCREWS AND NUTS

Ban Lai, No. 2, Lane 58, Sec. 2, Ta-Ching St., Taichung, Taiwan

Filed Jan. 13, 1988, Ser. No. 143,584
Int. Cl.[4] B25B *13/46*
U.S. Cl. 81—57.39 5 Claims



1. A pneumatic tool for turning screws and nuts comprising:

a tool body including a driving member mounted rotatably thereon and capable of being pneumatically rotated;

a ratchet wrench unit including a crank having a crankpin and a crankshaft journaled in said ratchet wrench unit, and a swing arm mounted rotatably in said ratchet wrench unit and connected slidably to said crankpin so that said swing arm can be swung by said crankpin;

a first coupling means for connecting removably said ratchet wrench unit to said tool body in such a manner that said crankshaft can be rotated by said driving member;

a screwdriver; and

a second coupling means for connecting removably said screwdriver to said tool body in such a manner that said screwdriver can be rotated by said driving member;

whereby, either said ratchet wrench unit or said screwdriver may be coupled removably with said tool body.

4,766,785

PIPE CLAMP

Hsi Pin Chen, P.O. Box 32-130, Taipei, Taiwan

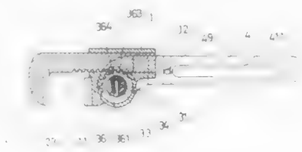
Filed Sep. 29, 1986, Ser. No. 913,085
Int. Cl.[4] B25B *13/12*
U.S. Cl. 81—129 3 Claims

1. A pipe clamp comprising:

a body frame having fixed a first jaw on one side thereof and a slot extending therethrough, said body frame being provided with a circular hole in communication with said slot;

an adjustable arm extending through said slot of said body frame, said adjustable arm having a second jaw and a plurality of teeth formed thereon, said adjustable arm being movable within said slot for moving said second jaw relative to said first jaw;

an actuating assembly having a toothed member, a driving member mounted within a recess formed in said toothed member and a tongue disposed within a recess formed in said driving member and pivotally connected to said driving member, said toothed member having (1) external teeth engaged with said teeth of said adjustable arm, and



(2) internal teeth formed within said recess formed in said toothed member, said tongue having teeth engageable with said internal teeth of said toothed member;

spring means for biasing said teeth of said tongue against said internal teeth of said toothed member, said spring means being mounted between said tongue and said driving member on opposing ends thereof; and,

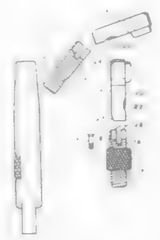
a handle having two prongs between which is sandwiched said body frame at a first end thereof.

4,766,786

ADJUSTABLE WRENCH

Miodrag Jeremic, 241 W. King Edward Street, Vancouver, British Columbia, Canada V5Y 2J1

Filed Jan. 14, 1987, Ser. No. 3,084
Int. Cl.[4] B25B *13/12*
U.S. Cl. 81—129 2 Claims



1. An adjustable wrench comprising:

a handle having an attached wrench head, said wrench head having a gripping cavity adapted for gripping an object and further having an enlarged opening, said handle defining an axial passage that opens into said gripping cavity adjacent the enlarged opening;

a key comprising an elongated body slidable within said axial passage and having a gripping end extending into said gripping cavity and an attachment end opposite said gripping end, said key body having bevelled surfaces on a first surface adjacent said gripping and attachment ends and a transverse notch formed across a second surface directly opposite said first surface;

key adjustment means for moving said key axially through the passage and comprising a threaded stem fixed against rotation within said axial passage and adapted to engage the key body attachment end, said key adjustment means further comprising removable securing means for removably securing said threaded stem to said key body attachment end, and an adjustment member rotatable about said threaded stem to move said stem axially through said passage in order to engage said key body attachment end and vary the position of said key in said gripping cavity thereby varying the size of said gripping cavity;

access ports in said wrench head providing access to said axial passage so that said securing means can be removed to separate said key and said threaded stem;

said key being removable from said axial passage by sliding said key into said gripping cavity after removal of said securing means such that said key extends into the gripping cavity a distance sufficient to position said notch of said key body against the edge of said enlarged opening of said gripping cavity, and pivoting said key about said edge out of the plane of the gripping cavity for removal from said axial passage through the gripping cavity, the bevelled surfaces of said key providing sufficient clearance with the surfaces of said axial passage and said gripping cavity to allow the key to be pivoted in such a manner;

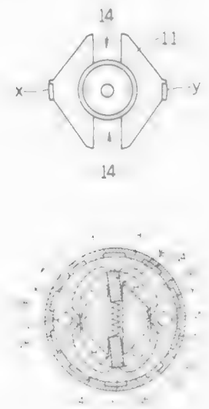
said threaded stem being removable from said axial pasage by rotating said adjustment member to move said threaded stem out of said axial passage and into said gripping cavity for removal.

4,766,787

TWO-BLADE TYPE IMPULSE WRENCH

Tadakatsu Sugimoto; Yoshiaki Igarashi; Shiro Saito; Eiichi Wada, and Keiji Murai, all of Higashiosaka, Japan, assignors to Yokota Industrial Co., Ltd., Osaka, Japan

Filed Dec. 2, 1986, Ser. No. 937,108
Int. Cl.[4] B25B *19/00*
U.S. Cl. 81—463 14 Claims



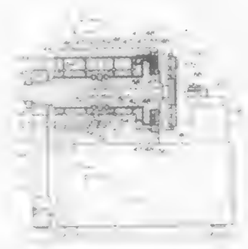
1. A two-blade type impulse wrench comprising a liner rotated by a motor, a main shaft inserted in the liner to be rotatable coaxially therewith, and two blades inserted to be retractable respectively into two grooves formed in the main shaft with their outer ends abutting against an inside wall of said liner, being intended to generate an impact pulse on said main shaft when said liner rotates and the seals formed on the inside wall of said liner coincide with the seals formed on the outside wall of said main shaft and the outer ends of said blades, wherein at least four seals are formed on the inside wall of said liner, and at the same time at least two seals are formed between said two blades on the outside wall of said main shaft, whereas two seals of at least four seals of said liner and two seals of at least two seals of said main shaft are all in a same shape which is a linear shape along a plane parallel to a rotational axis of said main shaft and inclined relative to the rotational axis of said main shaft, so that the same two seals of said liner and the same two seals of said main shaft coincide with each other only once per rotation of said liner.

4,766,788

SUPERPRECISION LATHE

Hiroshi Yashiki, Odawara, and Kenji Morita, Hachioji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1987, Ser. No. 13,113
Claims priority, application Japan, Feb. 20, 1986, 61-33722
Int. Cl.[4] B23B *19/02*
U.S. Cl. 82—30 4 Claims



1. A superprecision lathe, comprising a main spindle rotatably supported contactlessly in an air bearing mounted on a headstock, vacuum chuck means fixed on one end of said main spindle for holding an object to be worked, driving means for rotating the other end of said main spindle, a first vacuum passage formed in said main spindle and opened at an orifice on the outer surface of said main spindle and being connected to said vacuum chuck means, a first annular groove including said orifice and formed on the outer surface of said main spindle, a second annular groove formed on the inner surface of said air bearing, said second annular groove being opposite to said first annular groove, and a second vacuum passage extending from said second annular groove through said air bearing and said headstock so as to be connected to a vacuum pump disposed outside of said headstock, wherein the space defined by said first and second annular grooves is an interconnection region for said first and second vacuum passages, two annular pocket regions at a gap formed by the outer surface of said main spindle and the inner surface of said air bearing, means for supplying compressed air from an air compressor to said gap, said two annular pocket regions being located respectively at both side of said interconnection region and spaced axially apart from each other, and each of said annular pocket regions being connected to an exhaust passage opened at the inner surface of said air bearing and one end of said headstock.

4,766,789

APPARATUS AND PROCESS FOR PREPARING BELTS

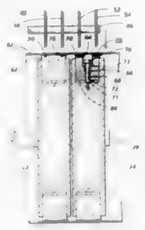
Gerald E. Sayer, Pickering, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 24, 1987, Ser. No. 17,398
Int. Cl.[4] B23B *3/04*
U.S. Cl. 82—47 8 Claims

1. Apparatus for fabricating flexible belts comprising at least one cylindrical mandrel having a plurality of moveable segments circumferentially arranged in a ring around the periphery of said mandrel, each of said segments having an outwardly facing gripping surface which cooperates with adjacent gripping surfaces on adjacent segments in said ring to form a substantially cylindrical surface having at least one annular groove which circumscribes said substantially cylindrical surface, means to guide said segments radially toward and away from the axis of said mandrel in a direction perpendicular to said axis of said mandrel, means to rotate said mandrel and to move said segments under an applied centrifugal force radially away from said axis of said mandrel in a direction perpendicu-

VOL 1093 ISS 5 AG 30 1988 UMI

lar to said axis of said mandrel, at least one cutting means adjacent to and spaced from said groove, and means to move



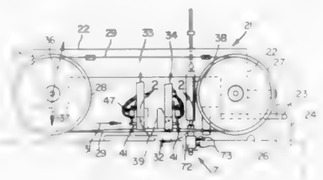
said cutting means and said cylindrical surface of segments relative to each other whereby said cutting means circumscribes said mandrel along a path defined by said groove.

4,766,790

BAND SAW APPARATUS AND METHOD

Gerald R. Harris, P.O. Box 1148, Pryor, Okla. 74361

Continuation-in-part of Ser. No. 577,527, Feb. 6, 1984, Pat. No. 4,558,614. This application May 11, 1984, Ser. No. 609,429
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.[4] B23D *53/04, 55/08*
U.S. Cl. 83—56 17 Claims



1. A method of cutting a workpiece with a band saw or the like including the steps of: moving a cutting stretch of a saw blade across said workpiece to effect cutting, and simultaneously varying the force per unit area of said saw blade against said workpiece, wherein the improvement in said method of cutting is comprised of:

said varying step is accomplished by periodically reducing and thereafter increasing the area of said workpiece engaged by said saw blade by:

(i) substantially simultaneously displacing said saw blade in opposite directions at two spaced-apart locations along said saw blade by balde guide assemblies having displaceable blade engaging portions to tilt said cutting stretch about said workpiece in a first direction and to reduce said area;

(ii) thereafter maintaining said cutting stretch tilted in said first direction while moving said saw blade across said workpiece to cut said workpiece and thereby increase said area;

(iii) thereafter substantially simultaneously displacing said saw blade by said blade engaging portions in opposite directions at two spaced-apart locations along said saw blade to tilt said cutting stretch about said workpiece in a second direction opposite said first direction and to reduce said area; and

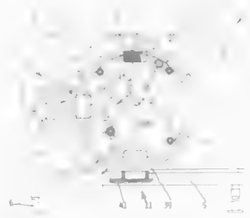
(iv) thereafter maintaining said cutting stretch tilted in said second direction while moving said saw blade across said workpiece to cut said workpiece and thereby increase said area.

4,766,791

SLICING APPARATUS

Richard A. McMillan; Bruce M. Gavin, and Edward A. Senner, all of Invercargill, New Zealand, assignors to Southland Frozen Meat Limited, New Zealand

Filed Jul. 17, 1987, Ser. No. 74,696
Int. Cl.[4] B26D *7/06*
U.S. Cl. 83—155 6 Claims



1. A slicing apparatus comprising a plurality of cutting elements disposed in adjacent spaced apart parallel relationship within an interior of a drum, the drum being rotatably supported about a horizontally disposed axis of rotation and the parallel disposition of the cutting elements extending longitudinally of the drum with cutting edges of the cutting elements being operative in a cutting zone disposed in juxtaposition to an inner side of a peripheral wall of the drum, at least one outwardly opening pocket set into the peripheral wall of the drum, said at least one pocket being formed by a plurality of adjacently spaced apart elements forming open slots therebetween, the slots being aligned with the cutting elements which can thus pass through said at least one pocket with rotation of the drum, a workpiece retaining element mounted externally of the drum in conjunction with actuation means operable to impinge the workpiece retaining element onto a workpiece in said at least one pocket as said at least one pocket, with rotation of the drum approaches the cutting zone, to be rotated about with said at least one pocket, the workpiece retaining element being mounted externally of the drum on a guide extending adjacently about the cutting zone and the actuating means retracting and resetting the workpiece retaining element upon exiting the cutting zone, and means to support a packaging element as to collect a sliced workpiece deposited from said at least one pocket after said at least one pocket exits the cutting zone and is inverted with rotation of the drum.

4,766,792

CUT-OFF DIE SET

John J. Borzym, Birmingham, and Alexander Borzym, West Bloomfield, both of Mich., assignors to Alpha Industries, Inc., Novi, Mich.

Continuation of Ser. No. 844,568, Mar. 27, 1986, abandoned.
This application Nov. 25, 1987, Ser. No. 129,429
Int. Cl.[4] B26D *1/60, 3/14*
U.S. Cl. 83—319 13 Claims

7. A cut-off die apparatus for successively severing sections of tubing from a continuous length of tubing moving along a tube path, said apparatus comprising:

(a) a lower platen positioned below said path;

(b) a pair of die jaws mounted on said lower platen and selectively movable on said platen into clamping relation to the tubing;

(c) an upper platen positioned above said path over said lower platen and mounted for vertical reciprocal movement relative to said lower platen between a raised rest position and a lowered cutting position;

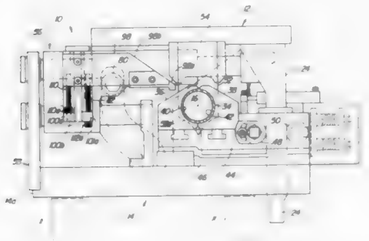
(d) an elongated guide member carried by and immovably secured to said lower platen and extending horizontally from one side of said path to the other side of said path at

a level between said lowered position of said upper platen and said path, said guide member being spaced from and unconnected to both of said die jaws and both of said die jaws being movable on said lower platen relative to said guide member into clamping relation to the tubing;

(e) a cross slide mounted for reciprocal horizontal movement on said guide member;

(f) a notching blade mounted on said cross slide and operative to make a notching cut in the upper periphery of the tubing in response to the reciprocal movement of said cross slide on said guide member; and

(g) a guillotine extending downwardly from said upper platen in the plane of said notching blade and operative to sever a section of tubing from the tube in response to movement of said upper platen from its raised to its lowered position following said notching cut of said notching blade.



4,766,793

KNIFE ASSEMBLY FOR A WATER GUN

Robert R. Fischer, Michigan City, and Eugene H. Cole, Valparaiso, both of Ind., assignors to Urschel Laboratories, Inc., Valparaiso, Ind.

Filed Jun. 8, 1987, Ser. No. 59,859
Int. Cl.[4] B26D *1/03, 3/26*
U.S. Cl. 83—698 16 Claims



1. A knife element for the knife assembly of a water gun, which element comprises:

(a) a rectangular-shaped elongate member defined by a longitudinal base portion and a blade portion having a longitudinal cutting edge;

(b) the blade portion including at least one transversely extending elongate slot of a substantially U-shaped configuration formed by a closed bottom, a pair of longitudinal sidewalls, and an open top defined by a pair of opposed cutting edge corner portions;

(c) each sidewall including a parallel portion extending from the bottom of the slot and terminating at a point short of the cutting edge, and a diverging portion extending from the termination point to the cutting edge; and

(d) each diverging portion diverging outwardly from its termination point at an angle sufficient to position it corresponding corner portion away from the base portion of an adjacent knife element interengaged within the slot to prevent the corner portion from being deformed when the adjacent knife element undergoes twisting during cutting of a product by the knife assembly.

4,766,794

ROTARY SAW BLADE

Robert A. Blake, 16766 Lincoln, East Detroit, Mich. 48021

Filed Aug. 25, 1986, Ser. No. 899,677
Int. Cl.[4] B27B *33/08*
U.S. Cl. 83—847 7 Claims



1. A rotary saw blade for cutting wood comprising:

a substantially flat disc having an outer peripheral edge formed with opposed sets of stepped teeth positioned between and directly adjacent opposed sets of teeth, each of said sets including a peripheral section, said peripheral edge having radial inwardly extending notches;

said peripheral sections of said opposed sets of stepped teeth each having a plurality of said notches radially stepped about said periphery, said stepped notches being arranged at sequentially decreasing radial distances from the center of said flat disc in the direction of rotation of said rotary saw blade and being arranged at circumferentially spaced distances about the periphery of each peripheral section of said opposed sets of stepped teeth;

said peripheral sections of said opposed sets of teeth each having a plurality of said notches arranged at substantially equal radial distances from said center of said flat disc and circumferentially spaced about the periphery of each peripheral section of said opposed sets of teeth;

said notches of said opposed sets of stepped teeth increasing radially to a distance from said center equal to the radial distance from said center of the notches of said opposed sets of teeth;

a cutting insert arranged within each of said notches and affixed in a seat facing in the direction of rotation of said disc, said inserts having cutting edges formed on side edges of said inserts extending radially from both sides of said disc and a crowned edge extending axially from said peripheral edge, said side edges and said crown edge each having a beveled surface extending from the direction of rotation of said disc and toward said disc to define a relief angle;

wherein said inserts are affixed within said notches of said opposed sets of stepped teeth to cut in an axial direction relative to said disc for curved cutting and for diagonal cutting and wherein said inserts within said opposed sets of stepped-teeth raw cut edges cut by said opposed sets of teeth of inserts on straight cuts.

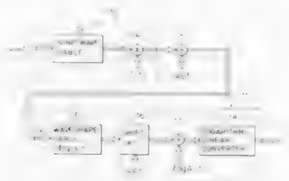
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,795

TONE SYNTHESIS METHOD USING MODULATION OPERATION FOR AN ELECTRONIC MUSICAL INSTRUMENT

Chifumi Takeuchi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 10, 1984, Ser. No. 659,574
Claims priority, application Japan, Oct. 14, 1983, 190869
Int. Cl.[4] G10H *1/14, 7/00*
U.S. Cl. 84—1.01 23 Claims



1. In a method for synthesizing a musical tone signal on the basis of a predetermined modulation operation employing a modulation signal and a carrier signal, the steps comprising:

storing waveshape data representing a waveshape of a predetermined first harmonic content and expressed in a logarithmic form in a waveshape table used for defining at least one of a modulation wave function and a carrier wave function;

multiplying said waveshape data read out from said waveshape table with a pre-established coefficient to obtain data expressed in logarithmic form and representing a waveshape having a second harmonic content different from the first harmonic content; and

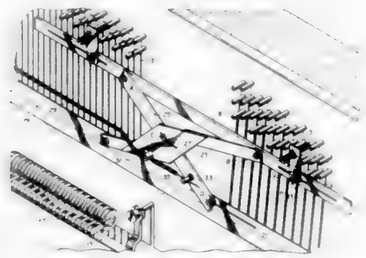
executing said modulation operation by utilizing the multiplied result as said modulation signal or said carrier signal.

4,766,796

UNIVERSAL MUTE FOR VERTICAL PIANOS

Laurence A. Langowski, Rte. 3, Box 179, Austin, Minn. 55912

Filed Nov. 19, 1987, Ser. No. 122,681
Int. Cl.[4] G10C *3/26*
U.S. Cl. 84—220 4 Claims



1. A muffler assembly for vertical pianos, said muffler assembly comprising:

a muting assembly adapted to extend horizontally across the strings of said vertical piano, said muting assembly including muting material attached to a muting rail acting as an impact absorbing mute when placed between an activated hammer and a piano string;

a mounting assembly for connecting said muting assembly to the tuning pins of said vertical piano, said mounting assembly being capable of adjusting said muting assembly relative to said tuning pins, said mounting assembly including coupling means for grasping at least one tuning pin; and

a connecting assembly connecting said mounting assembly and said muting assembly for selectively moving said muting assembly between a muting position and a non-muting position.

4,766,797

MOISTURE COLLECTION ATTACHMENT FOR BRASS MUSICAL INSTRUMENTS

Patrick T. Jones, Bowling Green, Ohio, assignor to Brasswell Corporation, Bowling Green, Ohio

Filed Dec. 18, 1987, Ser. No. 134,970
Int. Cl.[4] G10G *7/00*
U.S. Cl. 84—453 7 Claims



1. A device for attachment to the water key of a brass musical instrument comprising:

a main body portion, having a bottom and side wall means extending away from the bottom defining a channel-shaped cavity; and

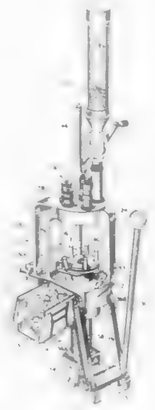
means integral with and extending from said main body portion for intimate selective attachment only to the water key of the brass instrument.

4,766,798

SHELL LOADER

Donald M. David; Melvin R. Holmes; Larry E. Hoback, and Ronnie L. Reiber, all of Grand Island, Nebr., assignors to Hornady Manufacturing Company, Grand Island, Nebr.

Filed Jun. 8, 1987, Ser. No. 59,046
Int. Cl.[4] F42B *33/02, 33/00*
U.S. Cl. 86—27 5 Claims



1. Reloading apparatus comprising:

carriage means adapted to support a shell holder;

means for moving the carriage means vertically between a first location and a second location;

said shell holder including a plurality of positions for supporting shells;

a plurality of working stations at said first location for operating simultaneously on a plurality of said shells; and at least one working station at said second location, whereby said shells may be refinished and loaded;

means for moving said shell holder from position-to-position between a first station and a last station as said carriage means moves from the first and second location and again when said carriage means moves from the second to the first location, whereby said shell holder is advanced a first predetermined amount when moving from the first to second location and a second predetermined amount when moving from the second to the first location; and

said positions of said shell holder being aligned with at least one working station as said first location and one working station at said last location;

cam means and ejector means mounted at said last station for cooperation with each other;

one of said cam means and ejector means being mounted to said carriage means for vertical movement between the first and second locations and the other being stationary;

said ejector means including a cam follower positioned in the path of said cam means as said carriage means moves vertically between said first and second locations, wherein said cam follower is moved by said cam means; and

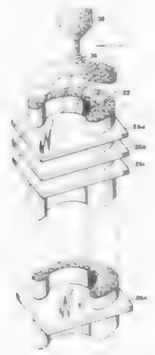
shell contact means connected to said cam follower for ejecting a shell at said last station when said cam follower is moved by said cam means.

4,766,799

METHOD OF AND APPARATUS FOR FABRICATING A TOOL TO FORM AN ASYMMETRICAL CONSTANT CROSS SECTION BORE IN THE PROPELLANT IN A SOLID ROCKET MOTOR

Martin T. Olliff, Huntsville, Ala., assignor to Morton Thiokol, Inc., Chicago, Ill.

Division of Ser. No. 851,186, Apr. 14, 1986. This application Aug. 20, 1987, Ser. No. 87,539
Int. Cl.[4] F42B *33/00*
U.S. Cl. 86—45 10 Claims



1. Apparatus for fabricating a tool for forming a bore of desired cross sectional form in the propellant of a rocket motor comprising,

template means providing a shaped opening corresponding to the cross sectional form desired for the propellant bore,

a multiplicity of individual solid pieces of matter, and

a bag of flexible material fitted inside the opening provided by said template means and filled with said individual solid pieces of matter, said bag when filled being sealed and exhausted of air until tight on the multiplicity of pieces of matter therein and thereby formed into a rigid structure, whereby said template means may be removed and said rigid structure may be used in the loading of a rocket motor propellant to form a bore therein.

4,766,800

GUN AND MAGAZINE SYSTEM

Michael K. Miller, and Warren D. Stockton, both of 405 E. 19th St., Bakersfield, Calif. 93305

Continuation-in-part of Ser. No. 736,071, May 20, 1985, Pat. No. 4,676,137. This application Nov. 25, 1985, Ser. No. 802,152
Int. Cl.[4] F41C *25/10, 23/00;* F41G *1/02*
U.S. Cl. 89—33.02 53 Claims



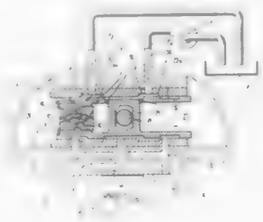
1. A gun/magazine system comprising a top loading gun, an ammunition magazine, means to removably mount said magazine on said gun above and closely spaced to the axial line of fire of said gun, said gun comprising grip means and barrel means defining said line of fire and extending forwardly of said grip means, said gun including a trigger means, said grip means and said trigger means being so located on said gun that said grip means can be gripped and simultaneously said trigger means can be operated with one hand of a user, said magazine mounting means locating said magazine on said gun at least substantially rearwardly of said grip means, whereby the front-/rear balance and handling of said gun/magazine system is enhanced, said magazine including a drive spring to urge the ammunition stored in the magazine into said top loading gun, said magazine including winder means for said drive spring and manual release means to relieve the energy stored in said drive spring regardless of the amount of ammunition in said magazine, and means for operating said winder means and said manual release means independently of the loading and unloading of ammunition into and out of said magazine.

4,766,801

HYDRAULICALLY OPERATED POWER STEERING SYSTEM

Hiroshi Hachisuka, Nishi, Japan, assignor to Aisin Seiki Co., Ltd., Kariya, Japan

Filed Nov. 12, 1986, Ser. No. 929,393
Claims priority, application Japan, Nov. 13, 1985, 60-252813
Int. Cl.[4] F15B *9/10*
U.S. Cl. 91—371 4 Claims



1. A hydraulically operated power steering system comprising:

a reciprocating-type hydraulically operated cylinder unit for moving a steering link mechanism and having first and second hydraulic chambers,

VOL 1093 ISS 5 AG 30 1988 UMI

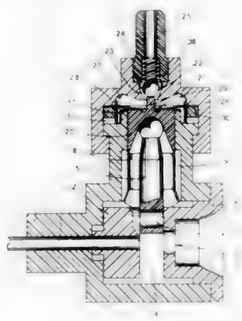
a reservoir containing hydraulic fluid therein,
a hydraulic pump feeding said hydraulic fluid in said reservoir to said cylinder unit,
a control valve unit including a line coupled to communicate with said hydraulic pump, a line coupled to communicate with said reservoir, a valve cylinder having passages coupled between said first and second chambers to provide fluid communication therebetween, and a valve spool slidably arranged in said valve cylinder and reciprocatingly movable in response to rotation of an input shaft, wherein the hydraulic fluid from said hydraulic pump is introduced into said first hydraulic chamber upon rotation of said input shaft in one direction while said hydraulic fluid in said second hydraulic chamber is discharged to said reservoir, and wherein said hydraulic fluid from said hydraulic pump is introduced into said second hydraulic chamber upon rotation of said input shaft in the other direction while said hydraulic fluid in said first hydraulic chamber is discharged to said reservoir, said valve cylinder including therein right and left reaction chambers to which opposite ends of said valve spool are exposed, said reaction chambers being in communication with the respective first and second hydraulic chambers through orifices, and valve means for dividing said left reaction chamber into a reaction chamber portion and a small chamber portion communicable with said second hydraulic chamber through an orifice, said valve means being a check valve slidably fitted in said valve spool in said left reaction chamber and being operable to allow fluid communication between said reaction chamber portion and said line coupled to said resrvoir when hydraulic pressure in said reaction chamber portion exceeds a predetermined point as well as fluid communication between said small chamber portin and said line coupled to said reservoir when hydraulic pressure in said small chamber portion exceeds a predetermined point.

4,766,802

SMALL-SIZED ENGINE OPERATED BY FLUID

Alessandro Caenazzo, and Silvana Pasqualotto, both of Via Vittorio Veneto 79, 31020 S.Vendemiano (TV), Italy

Filed Mar. 27, 1987, Ser. No. 30,622
Claims priority, application Italy, Mar. 28, 1986, 83338 A/86
Int. Cl.[4] F15B *15/22*; F20B *75/04*
U.S. Cl. 91—394 **11 Claims**



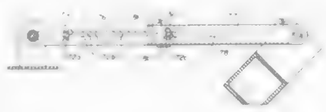
1. A small-sized engine operated by an expanding gaseous fluid, comprising:
a cylinder;
a piston within said cylinder, having an upper surface which defines an expansion chamber in the cylinder;
an output shaft rotatably secured to and driven by the piston;
inlet valve means for introducing fluid into the expansion chamber; and
a perforated, resilient membrane in the expansion chamber, circumferentially secured to the cylinder, said piston engaging with and disengaging from said membrane during operation of the engine, said membrane temporarily functioning as a pneumatic seal, by resilient deformation of the membrane, during operation of the engine.

4,766,803

VARIABLE STROKE HYDRAULIC CYLINDER CONTROL LINKAGE

Gilbert A. Cartee, Holtville, Calif., and Emmett G. Webster, New Holland, Pa., assignors to New Holland Inc., New Holland, Pa.

Filed Sep. 24, 1986, Ser. No. 911,036
Int. Cl.[4] F01B *31/14*
U.S. Cl. 92—13.4 **2 Claims**



1. A variable stroke control mechanism for use with a linear actuator having a base end and an extension end, said extension end being selectively linearly movable relative to said base end for a stroke distance along both an extension stroke wherein said extension end moves away from said base end and a retraction stroke wherein said extension end moves toward said base end, said variable stroke control mechanism being operable to selectively vary the length of said stroke distance, comprising:
a slide member operably connected to said extension end and movable therewith, said slide member having a plurality of holes formed therein and being spaced along the length thereof;
a bracket member operably connected to said base end and adapted for telescopically receiving said slide member, said bracket member having a slotted opening formed therein and alignable with the holes in said slide member during the telescopic movement of said slide member relative to said bracket member; and
an extension limiting mechanism operably associated with said slide member and said bracket member to limit the amount of movement of said slide member telescopically from said bracket member, said extension limiting mechanism including a first removable fastener insertable through a selected one of said holes to engage said slotted opening and limit the length of stroke of said linear actuator, said fastener being positionable through a selected one of said holes and said slotted opening to vary the length of said extension stroke, a second fastener being positionable within one of said holes externally of said slotted opening to vary the length of said retraction stroke, whereby said extension limiting mechanism is operable to selectively vary the amount of permissible extension of said slide member from said bracket member with respect to both the extension stroke and the retraction stroke.

4,766,804

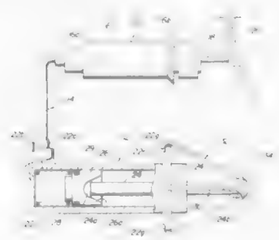
RETAINER ASSEMBLY FOR HYDRAULIC ACTUATOR

David C. Barker, Utica, Mich., assignor to Automotive Products plc, Warwickshire, England

Filed Feb. 24, 1987, Ser. No. 18,273
Int. Cl.[4] F15B *15/26*
U.S. Cl. 92—23 **9 Claims**

1. A cylinder assembly for use as the slave cylinder in a hydraulic apparatus of the type including a prefilled master cylinder, a slave cylinder, and an interconnecting conduit, said cylinder assembly comprising:
(A) a cylinder housing defining a pressure chamber for containing a hydraulic fluid;

(B) a piston slidably positioned in said pressure chamber;
(C) an output member connected to said piston and projecting out of an end of said housing to define a free end outside of said housing, said output member having a retracted position and movable in response to pressurization of said chamber to an extended position;
(D) a non-rupturable strap releasably connect between said output member and said housing and operative to maintain said output member in its retracted position even upon pressurization of said chamber; and



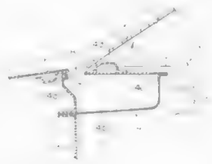
(E) a rupturable strap secured at one end thereof to said housing at a first point on said housing, extending over said free end of said output member, and secured at its other end to a second point on said housing circumferentially spaced from said first point, said rupturable strap being operative to maintain said output member in its retracted position but rupturable in response to pressurization of said chamber to allow said output member to move to an extended position following release of said non-rupturable strap.

4,766,805

WINDSHIELD DEFROSTER SYSTEM FOR VEHICLE

Yuzo Sato; Hiroshi Saito, and Toshinori Sakamoto, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Jan. 16, 1987, Ser. No. 3,847
Claims priority, application Japan, Jan. 17, 1986, 61-8321; Jan. 17, 1986, 61-8322
Int. Cl.[4] B60H *1/10*
U.S. Cl. 98—2.07 **22 Claims**



1. A windshield defroster system in which conditioned air discharged from an air conditioner is blown through a defroster duct toward the windshield from below, characterized in that the lower edge of the windshield is fixed to the upper side of a front portion of a cowl box disposed in front of the passenger compartment, and said defroster duct extends along the upper side of the cowl box from the rear side of the same to a position near the lower edge of the windshield and has a front air plenum on the front edge portion thereof; the cowl box has a cowl upper panel forming the top surface thereof, and the lower end of the windshield is fixed to the front portion of the cowl upper panel; the defroster duct disposed on the cowl upper panel, has a portion for receiving conditioned air disposed in the rear of the cowl box in the passenger compartment side and an open front portion for discharging the air toward the lower portion of the windshield disposed in the vicinity of the lower end of the windshield; the front portion extends in the transverse direction of the vehicle body along the lower end of the windshield; the defroster duct is of a substantially flat structure extending from the portion for receiving conditioned air to the front portion.

4,766,806

FLUSH MOUNT WHOLE HOUSE FAN SHUTTER

Frank J. Tomiser, Jr., St. Louis, and James P. Shawcross, St. Louis County, both of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Jan. 2, 1987, Ser. No. 146
Int. Cl.[4] F24F *7/10*
U.S. Cl. 98—42.1 **11 Claims**



1. A shutter assembly adapted to be mounted in substantially flush relation to the inner face of a ceiling and to close an opening in said ceiling, said opening providing communication between a room and a fan located above said ceiling, said shutter assembly comprising a frame somewhat larger than said opening and being adapted to be substantially flush mounted to the underside of the ceiling surrounding said opening, said frame being comprised of a plurality of frame members, a bracket at the intersection of two of said frame members for securely joining these intersecting frame members together, means for holding said frame in place with respect to said ceiling until said frame may be securely fastened to said ceiling, said holding means comprising a plurality of tabs carried by said brackets and spaced from the portion of said frame flush mounted to the underside of said ceiling thereby to hold said ceiling captive between said frame and said tabs, at least one of said tabs being movable between a retracted position in which position said frame may be inserted upwardly through said opening in said ceiling, and an extended position in which said at least one tab extends out over said ceiling thereby to hold said shutter assembly secure with respect to said ceiling.

4,766,807

DAMPER BLADE SEAL

James A. Davis, Franklin, Tenn., assignor to American Standard Inc., New York, N.Y.

Filed Aug. 27, 1987, Ser. No. 90,191
Int. Cl.[4] F24F *13/10*
U.S. Cl. 98—121.2 **12 Claims**

1. A damper assembly comprising:
a. generally rectangular solid damper blade adapted to divide a current of air between an upstream and downstream side, said blade being rotatable about its longitudinal center line between an open and a closed position, said damper blade having two generally similar flat longitudinal edges that generally describe a cylinder as said blade is rotated, said flat longitudinal edges extend generally perpendicular to said generally planar damper blade;
b. a first seal attached to one of said longitudinal edges and including a flexible lip extending generally upstream and sealing in sliding contact against a first adjacent edge to provide a wiping action in a direction generally tangent to

VOL 1093 ISS 5 AG 30 1988 UMI

said cylinder as said damper blade closes and to urge said damper blade to said closed position under the impetus of a pressure differential between said upstream and downstream side; and

c. a second seal, substantially similar to said first seal, attached to a second edge adjacent to an other longitudinal edge of said blade, said second seal including a flexible lip extending generally upstream and sealing in sliding contact against said other longitudinal edge of said blade to provide a wiping action in a direction generally tangent to said cylinder as said damper blade closes.

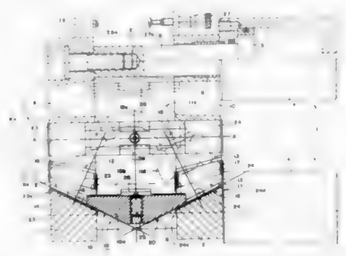


4,766,808

RADIAL PRESS WITH V-SHAPED PRESS JAWS

Peter Schröck, Frankfurt am Main, Fed. Rep. of Germany, assignor to Uniflex-Hydraulic GmbH, Frankfurt Main, Fed. Rep. of Germany

Filed Apr. 16, 1987, Ser. No. 38,906
Int. Cl.[4] B30B *1/40*; B25B *27/10*
U.S. Cl. 100—232 7 Claims



1. A radial press having an axis extending through the radial press and accommodating a workpiece having both an axially symmetrical outer surface and an axis substantially corresponding to the axis of the radial press during the pressing operation, the radial press comprising:

(a) a plurality of press jaws disposed concentrically about the axis of the radial press and being movable in a substantially radial direction relative to the axis of the radial press, each of said press jaws having at least two planar controlling surfaces, at least two guiding surfaces, and a grooved bottom surface, said guiding surfaces disposed on lateral sides of each of the press jaws and extending in a parallel direction relative to each other, said planar controlling surfaces disposed between said guiding surfaces facing away from the workpiece and sloping away from the axis of the radial press to form V-shaped surfaces relative to each other, such that a bisecting line aligned in a radial direction relative to the axis symmetrically bisects each of said press jaws and a normal line passing through a centroid of each of said planar controlling surfaces intersects the axis of the radial press;

(b) control means disposed near said press jaws for moving said press jaws, said control means defining a plurality of grooves corresponding in number to the number of press jaws of the radial press, each groove having parallel side walls and a flat bottom surface corresponding in slope to a slope of the planar controlling surfaces of the press jaws, and accommodating a plate of a bearing material, each plate having planar, control surfaces which are defined by planar parallel surfaces facing toward the workpiece, the control surfaces cooperating with the controlling surfaces of the press jaws in mirror-image symmetry relative to a radial plane of the radial press and said grooves defined by said parallel side walls which function as guiding surfaces for the controlling surfaces of each of said press jaws; and

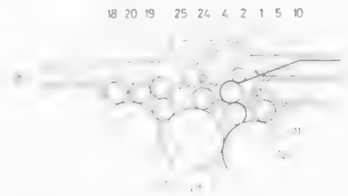
(c) drive means for radially displacing said control means relative to the axis of the radial press.

4,766,809

MULTICOLOR PERFECTING PRESS

Gualtiero Giori, Lonay, and Manuel Hernandez, Lausanne, both of Switzerland, assignors to De La Rue Giori S.A., Lausanne, Switzerland

Continuation-in-part of Ser. No. 622,986, Jun. 21, 1984, Pat. No. 4,574,696. This application Dec. 9, 1985, Ser. No. 806,617
Claims priority, application Switzerland, Dec. 18, 1984, 5988/84; Oct. 15, 1985, 4438/85
The portion of the term of this patent subsequent to Mar. 11, 2003, has been disclaimed.
Int. Cl.[4] B41F *5/16*
U.S. Cl. 101—152 22 Claims



1. Rotary multicolor printing machine for the simultaneous printing of both sides of a paper in web or sheet form, more particularly for printing the safety background of fiduciary documents, which comprises a first blanket cylinder contacting a plurality of offset plate cylinders each inked by an inking device in a different color, the number of said offset plate cylinders corresponding to the number of colors and designs of the first image to be printed on one side of the paper, said first image consisting of superposed colors and designs, and comprising a second blanket cylinder operating as a color collecting cylinder contacting a plurality of selective color inking cylinders and a typographic plate cylinder, said typographic plate representing the complete design of the second image to be printed on the other side of the paper, said selective color inking cylinders, of which the number corresponds to the number of colors of said second image and wherein the relief areas correspond to the portions of this image to be colored in the different colors, being each linked by an inking unit in a different color and applying an image with juxtaposed colors to said collecting cylinder inking in turn said typographic plate cylinder, a third blanket cylinder, contacting said typographic plate cylinder and receiving therefrom the image with juxtaposed colors, said third blanket cylinder having the same diameter as said first blanket cylinder, and being pressed against said first blanket cylinder, said paper passing between said first and third blanket cylinders so as to be printed simultaneously on both sides with said first and second images, respectively; further comprising at least one additional printing unit, the plate cylinder thereof contacting the third blanket cylinder.

4,766,810

SHEET FEEDER FOR PRINTING BOUND SHEETS

Karl-Heinz Alt, Schwabmunchen, Fed. Rep. of Germany, assignor to Print-Collect GmbH, Fed. Rep. of Germany

Filed May 18, 1987, Ser. No. 50,335
Claims priority, application Fed. Rep. of Germany, May 24, 1986, 3617597
Int. Cl.[4] B41F *17/02*
U.S. Cl. 101—217 6 Claims



1. A sheet feeder and a printing device for printing sheets in a stack already bound along a common edge, comprising:

(a) a stack holder for holding the sheet stack along the bound edge,

(b) a rotating endless conveyor driven between the sheet stack top and printing device,

(c) a lifting element, placed in the area of sheet stack, which is stationary with respect to the rotational movement of the endless conveyor but movable perpendicularly with respect to the sheet stack top for lifting of the respective topmost sheet of the sheet stack, and

(d) at least one driving and pressure roller which is rotatably connected to the endless conveyor for sliding under a sheet lifted by the lifting element, and moving the sheet against an impression cylinder supported by said printing device and thereby serving as a pressure roller.

4,766,811

APPARATUS FOR AND METHOD OF PROTECTING THE CIRCUMFERENTIAL SURFACE OF A PRINTING CYLINDER AND PROTECTIVE CYLINDER

Rudolf Linska, Alsmoos, Fed. Rep. of Germany, assignor to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Oct. 30, 1986, Ser. No. 925,813
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1985, 3539586
Int. Cl.[4] B41F *27/00, 29/00*
U.S. Cl. 101—415.1 18 Claims



1. Method of protecting the circumferential surface of a printing cylinder (30, 44, 50, 63) and adjacent surface portions of the walls of a cylinder groove (34, 47, 65),

comprising the steps of

providing a cover plate (1, 36, 65);

providing a protective foil (2) which is coated on both foil sides with a contact, pressure sensitive adhesive,

one side of the double-side coated adhesive foil (2) being adhered to a side of the cover plate (1), starting at a first end portion (3, 68, 69) of the cover plate, and forming the leading end portion—in the direction of rotation of the cylinder—while leaving a second end portion (4) of the cover plate (1) free from the foil;

applying the first end portion (3, 68, 69) of the cover plate (1) on the printing cylinder by pressing, and thus adhering the first end portion of the adhesively coated second side of the foil against the leading wall of the groove (31, 47, 64);

applying the cover plate (1, 36, 65) thereto on the circumference of the cylinder up to about the trailing edge of the groove by pressing, and thus adhering the adhesively coated second side of the foil on the circumference of the printing cylinder; and

separately adhering the trailing end portion (4, 38, 68) of the plate (1, 36, 65) to the trailing surface (35, 54, 69) of the groove.

4,766,812

VARNISH PROTECTING A CASELESS OR COMBUSTIBLE-CASE ROUND OF AMMUNITION AGAINST THERMOINITIATION

Gerard D. Sauvestre, Bourges, France, assignor to Etat Francais represente par le Delegue Ministeriel pour l'Armement, Paris, France

Filed Nov. 13, 1986, Ser. No. 929,843
Int. Cl.[4] F42B *5/18*
U.S. Cl. 102—290 14 Claims

1. A varnish for protecting a caseless or combustible-case round of ammunition against thermoinitiation, said varnish comprising at least one reactive layer applied to said ammunition, said reactive layer consisting of a synthetic resin and an oxidizer, said oxidizer having a decomposition temperature above 350° C.; and at least one insulating layer applied to said reactive layer, said insulating layer consisting of a synthetic resin and a heat-insulating compound.

4,766,813

METAL SHAPED CHARGE LINER WITH ISOTROPIC COATING

Joseph Winter, New Haven, and Derek E. Tyler, Cheshire, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 29, 1986, Ser. No. 947,446
Int. Cl.[4] F42B *1/02*
U.S. Cl. 102—307 22 Claims



1. A liner having a desired shape and a desired thickness for use in a shaped charge device, said liner comprising:

a first layer formed from a wrought metal or metal alloy; and

a coating deposited on a surface of said first layer, said deposited coating comprising a substantially uniform, substantially homogeneous isotropic material having a relatively fine grain structure.

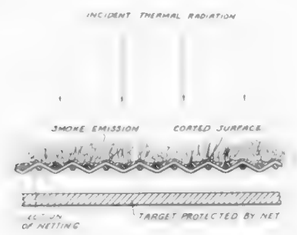
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,814

MATERIALS FOR THERMAL PROTECTION BY RAPID SMOKE PRODUCTION

Lloyd C. Wilson, 579 Wavell Ave., Ottawa, 13, Ontario, and Patrick Cavanagh, 32 Gervin Cres., Ottawa SS. 12., Ontario, both of Canada

Filed Dec. 26, 1963, Ser. No. 333,758
Int. Cl.[4] F42B *13/44*
U.S. Cl. 102—334 11 Claims



1. A device for protection from thermal radiation which comprises a net coated with a mixture of neoprene and at least one explosive initiator selected from the group consisting of tetracene, lead styphnate and silver fulminate.

4,766,815

UP-GRADE SPEED CONTROL SYSTEM OF RAILWAY MARSHALLING YARD

Zhong Chongben, and Xu Zhengli, both of Harbin, China, assignors to TDJ System Research Center of Haerbin Railway Bureau, Haerbin, China

Filed May 2, 1986, Ser. No. 859,074
Claims priority, application China, May 4, 1985, 85103302
Int. Cl.[4] B61B *1/00*
U.S. Cl. 104—26.2 6 Claims



1. In a railway marshalling yard, a speed control system comprising:

primary acceleration means for providing a predeterminable initial speed to a running car to be sorted, said primary acceleration means including a main hump over which a railway track guiding said running car extends;

first deceleration means for decreasing a velocity of said running car upon acceleration of said running car to said initial speed, said first deceleration means including at least one subhump over which said railway track extends downgrade of said main hump, said subhump having a height differing from a height of said main hump in accordance with the running characteristics of an average railway car;

control means for determining acceleration and deceleration characteristics of said running car, said control means including velocity and weight sensors disposed alongside said railway track at said subhump;

second deceleration means including a retarding mechanism operatively coupled to said control means for additionally decreasing, under the control of said control means, the velocity of said running car upon a determination by said control means that said running car has better running characteristics, said second deceleration means being disposed downgrade of said subhump; and

secondary acceleration means including a booster mechanism operatively coupled to said control means for accelerating, under the control of said control means, said running car upon a determination by said control means that said running car has poorer running characteristics, said secondary acceleration means being disposed downgrade of said main hump.

4,766,816

SYSTEM FOR MOVING ELECTRICAL EQUIPMENT

Kouichi Fukada, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Nov. 26, 1986, Ser. No. 934,991
Claims priority, application Japan, Nov. 27, 1985, 60-265065
Int. Cl.[4] B61B *13/00*
U.S. Cl. 104—172.4 9 Claims



5. A car for carrying electrical equipment and for moving along a railway via a trolley chain, said car comprising:

a housing assembly;

a sprocket wheel rotatably supported by said housing assembly and engaging the trolley chain;

a brake cooperatively arranged with said sprocket wheel for selectively braking said sprocket wheel;

a wheel rotatably supported by said housing assembly and rotatably engaging said railway;

an electrical generator for generating electric power for the electrical equipment; and

means coupled to said wheel, said sprocket wheel, and said electrical generator for selectively transmitting rotation from one of said wheel and said sprocket wheel to said generator.

4,766,817

ELECTRIC POWER SUPPLY SYSTEM FOR RAILWAY TRAIN

Yukio Uozumi, Kobe, Japan, assignor to Transport Systems Engineering Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1987, Ser. No. 7,373
Claims priority, application Japan, Jan. 28, 1986, 61-16238; Jan. 28, 1986, 61-16239; May 20, 1986, 61-115466
Int. Cl.[4] B61L *21/06*
U.S. Cl. 104—299 8 Claims



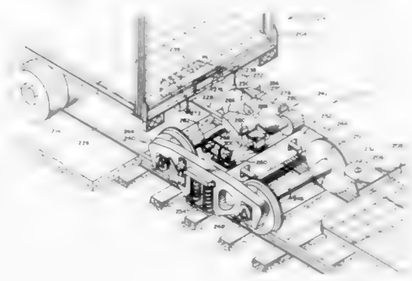
1. A railway system including track means, a train of railway cars, said track means being provided with power feeding means extending along said track means for supplying a three-phase AC power to said train, sensing means provided along said track means for detecting said train, said train being provided with motor means for traction of the train and at least two collecting means for collecting electric power from said power feeding means, said two collecting means being parallel with each other and connected with said motor means and located on the train with a spacing in a longitudinal direction of the train, train stop stations provided along said track means, said power feeding means having separated feed sections which are longitudinally aligned with each other and located along said track means with an insulated junction between each two adjacent feed sections, one of said junctions being positioned in each of said stations so that it is located between the two collecting means on the train when the train is stopped at a predetermined location in the station, at least one of said junctions being located between said stations, electric power supplying means provided in at least one of said stations, said electric power supplying means including controlling means for providing a three-phase AC power of at least a desired frequency, switching means for selectively connecting said controlling means with one of the feed sections and logic means for controlling said controlling means and said switch means in accordance with an external command which represents a desired operation of the train and a detection signal from the sensing means.

4,766,818

TRAIN OF HIGHWAY TRAILERS AND METHOD OF MAKING

Harry O. Wicks, and Monte P. Riefler, both of Hamburg, N.Y., assignors to Railmaster System, Inc., Hamburg, N.Y.

Continuation of Ser. No. 740,650, Jun. 3, 1985, Pat. No. 4,669,391, which is a continuation-in-part of Ser. No. 469,215, Feb. 24, 1983, abandoned. This application Aug. 26, 1986, Ser. No. 900,547
Int. Cl.[4] B61D *3/12*
U.S. Cl. 105—4.3 37 Claims



1. An improved train of highway trailers including leading and trailing trailers which are interconnected to each other and supported by railtrucks, each of said highway trailers including a main frame and one or more highway wheel assemblies, and each of said railtrucks being provided with a pair of side frames and a bolster supported on said side frames for limited rocking movement; said improvement comprising:

a forwardly extending tongue for each highway trailing trailer, said tongue having a forward vertically apertured portion and a rear portion secured to the main frame of the associated trailing highway trailer in load carrying relationship;

first receiving means interconnected to a rear portion of the main frame of each leading highway trailer, the first receiving means including a pair of spaced apart generally vertically aligned apertures;

an intermodal adapter supported on the bolster of each rail truck, the adapter in turn supporting the rear of an associated leading trailer and the front of an associated trailing trailer;

securing means securing the adapter to the rear portion of the associated leading trailer; and

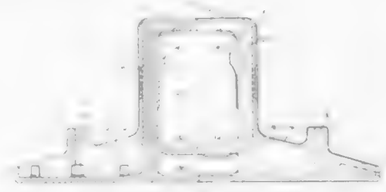
a coupler pin passing through the vertically aligned apertures of the first receiving means and the apertured portion of said tongue to maintain the forward portion of the tongue within the first receiving means, said tongue being supported by a portion of said first receiving means.

4,766,819

SADDLE FRAME FOR PASSIVE STEERING SINGLE-AXLE TRUCK FOR A RAILWAY FREIGHT CAR

Hans B. Weber, Rotonda West, Fla., assignor to National Castings, Inc., Oakbrook Terrace, Ill.

Filed Mar. 26, 1987, Ser. No. 31,102
Int. Cl.[4] B61F *3/00*
U.S. Cl. 105—157.1 16 Claims



1. In a saddle frame for a single-axle truck for a railway freight car, in which said saddle frame has a longitudinal center line thereof and comprises a lower, center web section having a pair of horizontally-disposed, parallel, vertically spaced-apart lower flanges, a pair of upright columns, and an upper wall portion interconnecting upper portions of said pair of columns, said saddle frame defining a substantially hollow interior in which may be received a wheel bearing set, and a pair of spring arms associated with said pair of upright columns, one said spring arm associated with one said upright column and connected to and extending longitudinally from a lower portion of the respective said upright column, each of said pair of upright columns, said spring arms, and said lower flanges defining an inboard side thereof and an outboard side thereof, wherein the improvement comprises:

each of said pair of lower flanges comprising a first outboard section and a second inboard section, said longitudinal center line demarcating the boundary between said inboard section and said outboard section, each said inboard section having an inboard-most side edge-surface, said inboard section of each of said pair of lower flanges being cut back a distance such that said inboard-most side edge-surface thereof is, in the horizontal direction, spaced from the inboard-most side edge-surfaces of said spring arms and said columns, said horizontal distance being transverse to said longitudinal center line and extending from the inboard side to the outboard side; each said inboard section being cut back a distance allowing for the unobstructed passage of infrared rays from a respective wheel bearing mounted by the saddle frame to an infrared ray-detecting hot-box detector mounted on the rail bed, whereby the hot-box detector may sense the state of operating temperature of each wheel bearing.

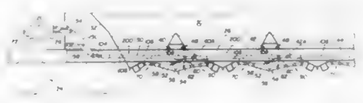
VOL 1093 ISS 5 AUG 30 1988 UMI

4,766,820

HOPPER CAR WITH AUTOMATIC DISCHARGE DOOR MECHANISM

John A. Ritter, Cincinnati, Ohio, and Keith J. Hallam, Roswell, Ga., assignors to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Jun. 3, 1987, Ser. No. 57,111
Int. Cl.[4] B61D 7/26
U.S. Cl. 105—240 15 Claims



1. A railroad hopper car comprising:
an elongated car body having a plurality of laterally pivoted bottom discharge doors;
a door opening and closing elongated beam assembly positioned longitudinal of and along the bottom portion of the car;
a plurality of spaced apart door operating levers mounted on pivot means lateral to the car body along and to the bottom of the car;
each door operating lever having at least first and second outwardly extending arm portions;
a bar link pivotally connected at a first end to each door operating lever first arm portion and pivotally connected at a second end to one of the doors;
the second arm portion of each door operating lever being pivotally connected to the elongated beam assembly;
the second arm portions of the various levers being pivotally connected to the elongated beam assembly in spaced apart consecutive arrangement thereby defining beam sections between such pivotally connected lever arm portions;
each beam section including a longitudinal lost motion means which permits displacement of the beam section for a short distance before it can apply a force in either direction to an adjacent beam section so that it can thereby apply sequential movement and force in one direction in tension and in the opposite direction in compression; and
power means mounted on the car to drive the elongated beam in longitudinally opposite directions.

4,766,821

TABLE LEG SECUREMENT DEVICE

Jericho P. Pauer, Onalaska, and Harry T. Janke, Galesville, both of Wis., assignors to Ashley Furniture Industries, Inc., Arcadia, Wis.

Filed Dec. 7, 1987, Ser. No. 129,608
Int. Cl.[4] F16M 11/16
U.S. Cl. 108—156 20 Claims



1. Device for securing first and second apron sections to a table top and to a table leg, with the first apron section having a longitudinal axis parallel to the table top, an edge, and a first end, with the second apron section having a longitudinal axis parallel to the table top, an edge, and a first end, with the table leg having a longitudinal axis and a first end, comprising, in combination: means for placing the first apron section in a first position with the edge of the first apron section generally perpendicular to the table top and in a second position with the edge of the first apron section abutting the table top; means for placing the second apron section in a first position with the edge of the second apron section generally perpendicular to the table top and in a second position with the edge of the second apron section abutting the table top; a corner block having a first end, with the corner block having means captured between the table top and the edges of the first and second apron sections in their second position for maintaining the first end of the corner block against the table top; means for attaching the first end of the table leg to the corner block; and means located on the first ends of the first and second apron sections for engaging the corner block and for simultaneously forcing the first ends of the apron sections against the first end of the table leg while maintaining the longitudinal axis of the table leg perpendicular to the longitudinal axes of the first and second apron sections.

4,766,822

METHOD AND APPARATUS FOR TREATING WASTE CONTAINING ORGANIC CONTAMINANTS

Steven G. De Cicco, Knoxville; Sung K. Lee, Clinton; Rudy G. Novak, Knoxville; William E. Wass, and Kai K. Mak, both of Concord, all of Tenn., assignors to International Technology Corporation, Knoxville, Tenn.

Division of Ser. No. 869,200, May 29, 1986, Pat. No. 4,746,290.
This application Nov. 25, 1987, Ser. No. 125,354
Int. Cl.[4] F23G 7/06
U.S. Cl. 110—212 5 Claims



1. A vertically oriented combustion unit for oxidizing large volumes of gaseous and vaporized organic materials, including walls defining an upper burner section, an intermediate holding section and a lower cooling section, said sections being interconnected and in free communication with one another, each of said sections being generally circular at horizontal cross section, said burner section including means defining an upper primary combustion zone having a generally cylindrical peripheral wall and a generally bulbous secondary combustion zone defined by upper walls which slope outwardly and downwardly from the cylindrical wall of said primary combustion zone, a generally cylindrical intermediate wall connected with said upper wall and a lower wall which slopes inwardly from said cylindrical wall to a central opening, an inlet for the gaseous material to be burned, passageway means connecting said gaseous inlet to a plurality of openings in the cylindrical wall of said primary combustion zone and a plurality of openings in said upper wall of said secondary combustion zone, a burner in the upper end of said primary combustion zone, means supplying said burner with a hydrocarbon fuel, means for supplying combustion air into said primary combustion zone adjacent said burner and for supplying combustion air into said primary combustion zone and around said openings for the gaseous material into said primary combustion zone and around the openings for the gaseous material in the upper wall of said secondary combustion zone, the opening in the upper wall of said secondary combustion zone being oriented to provide rotative flow in said combustion zone whereby turbulent mixing of the gases and combustion air occurs in said primary and secondary combustion zones to assure uniform temperatures therein, a holding zone communicating with said lower opening of said secondary combustion zone, said holding zone being defined by generally cylindrical wall means and being proportioned to have a volume sufficient to hold gases emanating from said combustion zones for a predetermined period of time, said holding zone communication with a cooling zone form which said gases are discharged.

4,766,823

SYSTEM FOR AND METHOD OF PRODUCING A BENEFICIATED FUEL

Samuel W. Seabury, 1523 Waterside Ct., Dallas, Tex. 75218

Continuation-in-part of Ser. No. 843,186, Mar. 21, 1986. This application Sep. 24, 1986, Ser. No. 910,898
Int. Cl.[4] B23K 3/02; B44B 7/12; F23D 14/00
U.S. Cl. 110—226 36 Claims



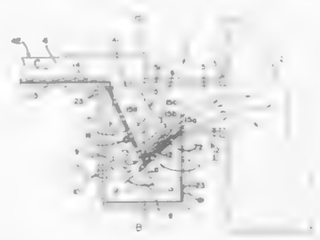
1. A system for producing a beneficiated fuel from a moisture ladened fuel, comprising: combustion turbine means for flowing exhaust gas out of an exhaust outlet at a temperature above ambient; and moisture reduction means connected to the exhaust outlet of said combustion turbine means to receive the flowing exhaust gas from the exhaust outlet of said combustion turbine means for directing the exhaust gas across the moisture ladened fuel such that a portion of the moisture carried by the fuel is removed to produce the beneficiated fuel, said moisture reduction means including drying means disposed to receive the exhaust gas flowing from the combustion turbine for continuously moving the fuel through the received exhaust gas, the drying means including a drum rotary dryer means for moving the fuel in the same direction as the flowing exhaust gas while tumbling the fuel being processed, dust collecting means receiving the exhaust gas from the rotary drum dryer means for removing particulate matter from the exhaust gas after the exhaust gas has moved past the rotary drum dryer means, and fan means receiving the exhaust gas from the dust collecting means for providing a balanced draft system.

4,766,824

BURNER ESPECIALLY FOR BURNING BIOMASS

Erkki Tenhunen, Viitasaari, Finland, assignor to Sermet Oy and Maamiehen Sähkö Oy, both of, Finland

PCT No. PCT/FI86/00022, § 371 Date Oct. 24, 1986, § 102(e) Date Oct. 24, 1986, PCT Pub. No. WO86/05257, PCT Pub. Date Sep. 12, 1986
PCT Filed Feb. 28, 1986, Ser. No. 933,220
Claims priority, application Finland, Feb. 28, 1985, 850808
Int. Cl.[4] F23G 5/00, 5/12, 5/44
U.S. Cl. 110—256 8 Claims



1. A biomass burner for attachment to a furnace having a combustion gas furnace opening, comprising a separate burner housing having a tubular combustion gas discharge connected to the furnace opening, wall means defining an ash pit below said furnace opening, a combustion chamber over said ash pit having a connection at one end to said combustion gas discharge and having an opposite combustion chamber end, a burnable material inlet shaft connected to said combustion chamber opposite end, said combustion chamber being a fire shaft above said ash pit having an inclined inlet surface extending inwardly and downwardly from one side toward the middle of said inlet fire shaft, said inlet surface having an upper end connected to said burnable material inlet shaft, support means extending into said fire shaft, said inlet surface having a lower end extending downwardly and inwardly of said upper end and being supported on said support means, an inclined counter surface having a lower end spaced from said inlet lower end surface so as to define together with said inlet surface an ignited material support with an air passage opening therebetween for ash and combustion air, and means for directing air through said air passage opening.

4,766,825

PIN-TUCKING DEVICE IN PIN TUCK SEWING MACHINE

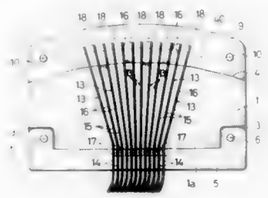
Masaya Yamamoto, Shijonawate, Japan, assignor to Morimoto Mfg. Co., Ltd., Osaka, Japan

Filed Mar. 24, 1987, Ser. No. 29,865
Claims priority, application Japan, Sep. 19, 1986, 61-144226[U]
Int. Cl.[4] D05B 35/08; A41H 43/00
U.S. Cl. 112—146 4 Claims

1. A pin tucking device in a sewing machine for pin tucks comprising a base plate, front and rear guide plate mounting plates mounted respectively to front and rear edges of the base plate, front and rear fixing plates coupled to and overlaying said first and second guide plate mounting plates and a plurality of guide plate mounting plates and a plurality of guide plates over a space between the front and rear guide plate mounting plates, the front and rear guide plate mounting plates each having a plurality of comb tooth-shaped kerfs spaced from one another in transverse relation to a direction of movement of fabric to be sewn, said front and rear guide plates including a plurality of parallel plate portions provided in parallel to each other and each having a first hook portion which is fitted in one of the kerfs of the front guide plate mounting plate to thereby lock it in position and which is fixed

VOL 1093 ISS 5 AG 30 1988 UMI

to said front guide plate mounting plate by being pressed thereagainst by said front fixing plate, and a plurality of radial plate portions individually, radially extending at predetermined angles from said parallel plate portions to said rear guide plate



mounting plate, said radial plate portions each having a second hook portion which is fitted in one of the kerfs of the rear guide plate mounting plates and thereby locked in position and in which is fixed to said rear guide plate mounting plate by being pressed thereagainst by said rear fixing plate.

4,766,826

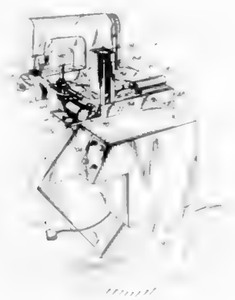
SMALL PART FEEDING AND INSERTING SYSTEM

Charles Block, North Bellmore, N.Y., assignor to Joseph Galkin Corporation, Hicksville, N.Y.

Continuation of Ser. No. 910,592, Sep. 23, 1986, Pat. No. 4,682,556. This application Apr. 27, 1987, Ser. No. 43,281

Int. Cl.⁴ D05B *21/00, 97/00*

U.S. Cl. 112—265.1 **2 Claims**



1. A method of joining a first object to a second object, the steps comprising, in combination:
positioning a first object within said joining zone,
causing a second object to be moved to a pickup zone,
moving transfer clamp means to said pickup zone,
causing said transfer clamp means to accept and hold said second object,
causing said transfer clamp means to transfer said second object from said pickup zone to an insertion zone,
causing said transfer clamp means to insert said second object into a joining zone,
clamping a left side of said second object against said first object positioned within said joining zone,
causing said transfer clamp means to release said second object and to move from said joining zone, and
joining said first and second objects, said step of causing a second object to be moved to a pickup zone including imposing reduced air pressure to one side of said second object, thereby causing a flattening and relative stiffening of the second object prior to its acceptance by said transfer clamp.

4,766,827

THREAD MEASURING AND FEEDING APPARATUS FOR A SEWING MACHINE

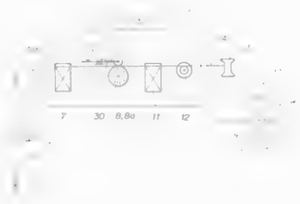
Toru Matsubara, 5-49-3 Fuda, Chofu-shi, Japan

Filed May 30, 1986, Ser. No. 868,499

Claims priority, application Japan, Jun. 1, 1985, 60-119517

Int. Cl.⁴ D05B *47/04*

U.S. Cl. 112—278 **7 Claims**





1. An apparatus for feeding thread for a sewing machine comprising:
first motor means of said sewing machine with a main drive shaft;
take-up lever means mounted on said sewing machine and driven by said main drive shaft; and
thread feeding means for guiding a thread from a spool to said take-up lever means of said sewing machine, said thread feeding means including
second motor means
feed roller means rotatably driven about an axis by said second motor means,
pressure roller means mounted such that said pressure roller means may be urged into contact with said feed roller means,
encoding device means mounted on said main drive shaft of said sewing machine,
encoder means for measuring the length of said thread fed, said encoder means being mounted on the axis of said feed roller means, and
first thread holding means located in front of said pressure roller means and said feed roller means, wherein said encoding device means sends a signal to said first thread holding means to release said thread, said thread feeding means feeds said thread for completing one stitch, and said encoder means actuates said first thread holding means to hold said thread during the stitching.

4,766,828

PATTERN SENSOR FOR SEWING MACHINE FEED ADUSTING SYSTEM

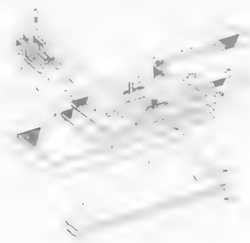
Etsuzo Nomura, Kasugai, and Shigeru Suzuki, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

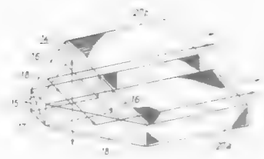
Filed Aug. 11, 1987, Ser. No. 84,028

Claims priority, application Japan, Aug. 14, 1986, 61-190945

Int. Cl.⁴ D05B *27/06, 27/08*

U.S. Cl. 112—314 **11 Claims**





1. A pattern sensor for sensing patterns on opposing surfaces of two sheets of material utilized in a sewing machine for sewing the two sheets of material in such a manner that the patterns are aligned in a predetermined relation, comprising:
a light source for generating a light;
a light receiver for receiving the light; and
a sensor head for sensing the patterns of the two sheets of material, said sensor head reflecting the light from said light source in one direction toward one opposing surface and in an opposite direction toward the other opposing surface of the two sheets of material, and reflecting the light reflected from the opposing surfaces to said light receiver.

4,766,829

CATAMARAN-TYPE MARINE CRAFT

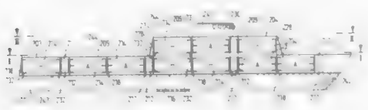
Norbert Schlichthorst, Beckdorf, Fed. Rep. of Germany, assignor to Blohm + Voss AG, Hamburg, Fed. Rep. of Germany

Filed May 14, 1986, Ser. No. 863,148

Claims priority, application Fed. Rep. of Germany, May 17, 1985, 3517862

Int. Cl.⁴ B63B *1/00*

U.S. Cl. 114—61 **37 Claims**



1. A catamaran-type marine craft comprising: two floats, arranged spaced apart parallel to each other, extending in the direction of travel of the craft, and having top portions; a connection structure connecting said two floats together at said top portions; a transverse deck sealing said connection structure at a bottom portion thereof; said connection structure including a plurality of transverse trussed girders arranged parallel to each other transverse to the direction of travel and each having a front side and a rear side, the front side of each girder being spaced from the rear side of the adjacent girder by a distance sufficient to provide therebetween a space for at least one row of containers and for at least one supply element; at least one row of containers and at least one supply element in said space and carried by said girders; at least two of said transverse trussed girders being double trussed girders; each double trussed girder consisting of two single trussed girders having such a height and a such a distance from each other so as to form a passageway sufficiently large for persons and a passageway for supply lines; said passageways for persons being means for providing access to said containers and said at least one supply element; said trussed girders absorbing all forces to which said floats are subjected.

4,766,830

BOAT, ESPECIALLY A CATAMARAN, WITH LARGE DECK SPACE AND COLLAPSIBLE FRAME

Daniel Kunz, 5903 Mount Eagle Dr., Alexandria, Va. 22303

Filed Aug. 15, 1986, Ser. No. 896,776

Int. Cl.⁴ B63H *9/04*

U.S. Cl. 114—61 **23 Claims**



1. In a catamaran having a rectangular collapsible frame for securing a pair of hulls in spaced relation, and a trampoline on said frame, the improvement comprising:
said collapsible frame including fore, aft and central sub-frame assemblies, and a first pair of longitudinally extending tubular members extending between said fore and central sub-frame assemblies and a second pair of longitudinally extending tubular members extending between said aft and said central sub-frame assemblies, each said sub-frame assembly including a cross-bar, a pair of laterally spaced semi-circular hull embracing brackets secured beneath said cross-bar, flexible strap means for securing said hulls in said semi-circular brackets, a pair of tubular end pieces for telescopically receiving one end of said longitudinally extending tubular members, respectively, said tubular end pieces being secured at a 90 degree angle to the lateral ends of said cross-bar, and locking means operative between each said longitudinally extending tubular members and tubular end pieces.

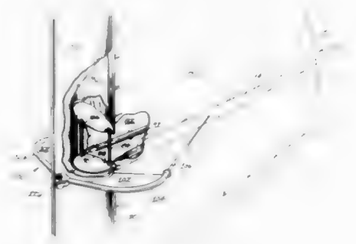
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,831

RIGGING FOR A WIND PROPELLED CRAFT

Patrick M. Johnston, 57 Solomon St., Palmyra, Western Australia, Australia 6157

PCT No. PCT/AU86/00005, § 371 Date Sep. 11, 1986, § 102(e) Date Sep. 11, 1986, PCT Pub. No. WO86/04034, PCT Pub. Date Jul. 17, 1986
PCT Filed Jan. 9, 1986, Ser. No. 906,232
Claims priority, application Australia, Jan. 14, 1985, PG8868
Int. Cl.[4] B63H 9/06
U.S. Cl. 114—102 5 Claims



1. Rigging for a wind propelled craft comprising: a sail comprising two substantially identical flexible sail portions each having a leach and a luff and a foot, each of said leach and said foot being joined at a clew and said leaches of said flexible sail portion being attached together, said sail portions each having a variable camber; a plurality of elongated battens each having flexure in at least two dimensions, each of said elongated battens comprising two batten portions one of which is disposed in contact with one of said sail portions and the other of which is disposed in contact with the other of said sail portions; a spar comprising a boom and a control rod, said control rod being arranged to be disposed upright and rotatable upon said wind propelled craft, said boom being rotatably attached to said control rod and having said clew of each of said sail portions attached to said boom remotely of said control rod, said control rod having said batten portions of each of said elongated battens and said luff of each of said sail portions pivotally attached to said control rod in spaced apart manner so that a perpendicular distance between said two sail portions adjacent said control rod may be varied; and a control means comprising a lever fixed in rotation with said control rod, said lever being capable of angularly displacing said control rod with respect to the boom; said sail portion and said elongated battens and said spar forming an aerofoil having a leading edge adjacent the spar and a trailing edge adjacent the leaches of said sail portions, such that angular displacement of the control rod with respect to the boom causes said batten portions in contact with one of said sail portions to be compressed along their length so as to bend said one of said sail portions to increase the camber thereof while causing said batten portions in contact with the other one of said sail portions to be tensioned along their length so as to tend to partly straighten the other one of said sail portions to reduce the camber thereof which decreases the perpendicular distance between said two sail portions adjacent said control rod, the respective bending and straightening of said sail portions resulting in asymmetry of the aerofoil and the spaced apart attachment of luffs to said control rod producing thickness in the aerofoil, said asymmetry and thickness of the aerofoil being dependent on the angular displacement of said lever with respect to the boom.

4,766,832

BEADED-LUFF FREE FLYING SAIL FOR A BOAT

Kevin S. Dailey, 65 Summit Dr., Smithtown, N.Y. 11788

Filed Jun. 12, 1987, Ser. No. 62,124
Int. Cl.[4] B63H 9/04
U.S. Cl. 114—103 13 Claims



8. A spinnaker for a sailboat having sail head for suspension from a mast and two clews for attachment of trimming lines and a shape, when spread flat, of a convex triangle as the result of the luffs of the sail bowing out convexly to provide additional sail area for the upper part of the sail, said spinnaker being further characterized in that:

said spinnaker luffs are each provided, over a major part of the length of the luff, with a flexible bead attached thereto extending along the luff of the sail,

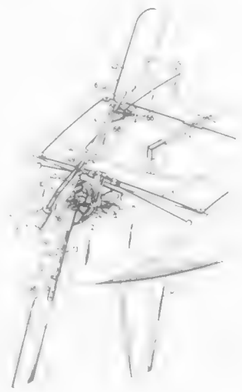
said bead being of a cross section which is round in shape at least for the surfaces of the bead respectively facing in directions away from and transversely to adjacent surfaces of the sail when the sail is set.

4,766,833

STEERING GEAR FOR A YACHT

Stellan P. Knöös, 5933 Avenida Chamnez, La Jolla, Calif. 92037

PCT No. PCT/SE85/00413, § 371 Date Jun. 25, 1986, § 102(e) Date Jun. 25, 1986, PCT Pub. No. WO86/02614, PCT Pub. Date May 9, 1986
PCT Filed Oct. 23, 1985, Ser. No. 882,907
Claims priority, application Sweden, Oct. 26, 1984, 8405379-2
Int. Cl.[4] B63H 25/04
U.S. Cl. 114—144 C 13 Claims



1. Steering gear for a yacht, comprising

a bracket adapted for attachment to the transom of a yacht,

a rocker supported by the bracket and pivotally movable relative to the bracket about a rocker axis which extend generally in the fore-and-aft direction of the yacht when the bracket is attached to the transom, the rocker being connectable to a rudder member such that the rudder member is deflected in response to pivotal motion of the rocker about the rocker axis,

a servo oar supported by the rocker and pivotally movable together with the rocker about the rocker axis, the servo oar being rotatable relative to the rocker about an oar axis which is generally perpendicular to the rocker axis, and

a steering arm which is pivotally movable about a steering arm axis and coupled through a linkage to the oar such that the oar is rotated about the oar axis in response to pivotal motion of the steering arm about the steering arm axis, the steering arm axis and the rocker axis intersecting behind the bracket and including between them an angle within the range of 15° to 55°,

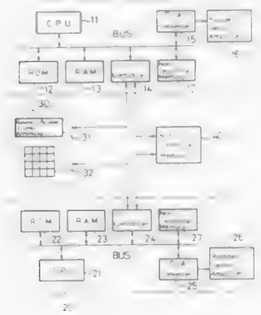
characterised in that the steering arm is pivotally supported on the bracket such that the steering arm axis is stationary with respect to the rocker axis.

4,766,834

MARINE AUTOMATIC STEERING APPARATUS

Toshio Miyayama; Isao Masuzawa; Kanshi Yamamoto, all of Kuroiso; Mitsuo Watanabe, Nishi-nasumachi, and Hidemitsu Yamada, Yokohama, all of Japan, assignors to Kabushiki Kaisha Tokyo Keiki, Tokyo, Japan

Filed Feb. 9, 1987, Ser. No. 12,351
Claims priority, application Japan, Feb. 17, 1986, 61-32488
Int. Cl.[4] B63H 25/06
U.S. Cl. 114—144 E 10 Claims



1. In an automatic steering apparatus for maritime vessels having a control circuit provided in whole or in part with duplicate steering control sections and an indicating/setting section for inputting selected setting and control parameters data for the steering of the vessel, the improvement comprising:

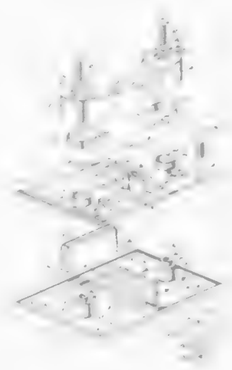
a common non-volatile memory means, connected to each of said duplicate steering control sections, said common non-volatile memory means being selectively controlled by either one of said duplicate steering control sections, said selected one operating such that data can be written in and read out from said non-volatile memory means.

4,766,835

ROPE CLEAT

Richard C. Randall, 27622 San Blas, Mission Viejo, Calif. 92692; Jimmy Myer, and William R. Sanford, both of Riverside, Calif., assignors to Richard C. Randall, Mission Viejo, Calif.

Filed Sep. 10, 1987, Ser. No. 94,868
Int. Cl.[4] B63B 21/04
U.S. Cl. 114—218 15 Claims



1. A rope cleat for releasably securing a rope under tension to a supporting structure, said rope cleat comprising:

(a) a top plate formed as a stamping from sheet steel and having a plurality of openings extending therethrough and adjacent bosses formed therein and extending upwardly therefrom;

(b) a bottom plate made of injection molded plastic with at least one rope abutment and at least one cam spindle integrally formed therein and extending upwardly therefrom;

(c) said top and bottom plates being nested, with each rope abutment and each cam spindle of the bottom plate protruding through the corresponding opening in the top plate and residing against the adjacent boss formed in the top plate;

(d) a cam rotatably mounted on each cam spindle, the rise of each cam facing a rope abutment;

(e) means connecting the top and bottom plates in nested configuration; and

(f) means for mounting the nested plates to the supporting structure.

4,766,836

MODULAR SYSTEM FOR THE OFFSHORE PRODUCTION, STORAGE AND LOADING OF HYDROCARBONS

Isaac Behar, Paris, and Hubert Berthet, Arles, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation of Ser. No. 603,156, Apr. 23, 1984, Pat. No. 4,703,709. This application Aug. 28, 1986, Ser. No. 901,392
Claims priority, application France, Apr. 21, 1983, 83 06715
Int. Cl.[4] B65D 89/10
U.S. Cl. 114—256 11 Claims

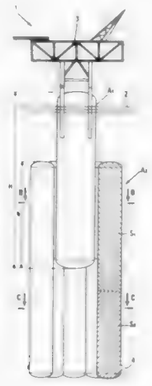
1. A floating modular system comprising an assembly of cylinders disposed about a common axis and rigidly connected together, the cylinders comprising:

metal storage cylinders for storing oil on a water column communicating with water surrounding the system, a level of the water in said metal storage cylinders falling or rising in dependence upon whether oil is stored in or withdrawn from the storage cylinders, said metal storage

VOL 1093 ISS 5 AG 30 1988 UMI

cylinders being disposed entirely below the level of the surrounding water,

at least one metal ballast cylindrical member filled with at least one of oil, water, air and inert gas, and associated with regulating means for compensating for a variation in a buoyancy of the modular system following variations of the water-oil level in said metal storage cylinders, said at least one metal ballast cylindrical member being disposed below the level of the surrounding water,



at least one metal flotation cylinder at least partially surrounded by said storage cylinders so as to form an assembly of peripheral cylinders extending substantially below a bottom end of said at least one metal flotation cylinder, said assembly of peripheral cylinders and said bottom end of said at least one metal flotation cylinder defining a free space therebetween,

means disposed in said free space for increasing a rigidity of the modular system, and

cable means connected to anchorage means for anchoring the floating modular system at a selected site.

4,766,837

RECOVERABLE SEA ANCHOR

James M. Parish, Wadsworth, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 20, 1987, Ser. No. 39,882
Int. Cl.[4] B63B *21/48*
U.S. Cl. 114—311 20 Claims



1. A recoverable sea anchor for a vessel comprising a flexible sheet material with a periphery and a center;

a ring; a plurality of lines interconnecting said ring with a plurality of spaced points around said periphery to define a concave chute with said periphery displaced from said center by a predetermined distance upon deployment as a chute, a swivel for connection to a mooring line for attachment to a vessel;

releasable connecting means for connecting said ring to said swivel,

said releasable connecting means actuated in response to a predetermined load on said chute to release said connection between said swivel and said ring;

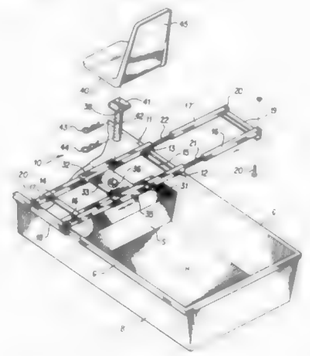
a disabling line in a slack inoperative condition interconnecting said swivel and said chute and operative upon actuating of said releasable connection in response to said predetermined load being reached to render said chute inoperative and collapse said chute.

4,766,838

AUXILIARY BOAT SEAT

Grady Johnson, Rte. 1, Box 378, Luxora, Ark. 72358

Filed Jun. 30, 1987, Ser. No. 67,976
Int. Cl.[4] B63B *29/00*
U.S. Cl. 114—363 8 Claims



8. An auxiliary boat seat which is selectively mounted to the gunnels of a boat comprising a frame, said frame having a pair of generally parallel hollow beam members which extend inwardly between the gunnels of the boat, a pair of oppositely oriented and extendable supplemental beam members carried by each of said beam members, resilient means mounted within each of said beam members for resiliently urging said supplemental beam members inwardly thereof, clamp means carried by said supplemental beam members for engaging the gunnels of the boat, a bracket assembly slideably carried by said beam members so as to be longitudinally adjustable with respect thereto, a seat means mounted to said bracket means, and means for selectively vertically adjusting said seat means with respect to said bracket means.

4,766,839

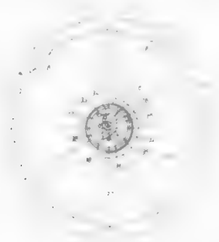
DRUM WITH SPRAY FITTING FOR THE PRODUCTION OF DRAGEES

Rudolf Dunajtschik, Flurstrasse 20, D-8990 Lindau (Bodensee), Fed. Rep. of Germany

Filed Dec. 12, 1985, Ser. No. 808,279
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1984, 3445515
Int. Cl.[4] B05C *5/00*
U.S. Cl. 118—19 8 Claims

1. A drum for the production of dragees having a coating chamber with a spray arm (6) is arranged to run parallel to the drum axis (2) and on which a jet arrangement (9)(36) to spray the kernels to be coated, together with a cleaning fixture for the cleaning of the jet arrangements (9)(36) is provided, characterized by a drum (1) divided in an axial direction into several, separate coating chambers, drum sections (10) and (11), for the separate treatment of kernels to be coated, several parallel partitions (12) each dividing a section of the drum and

extending diametrically from and fixed to the inner circumference of the drum (1) and extending radially inwards in the



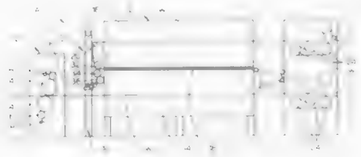
direction of the drum axis (2), and a separate spray arm section (13)(14) arranged in each drum section.

4,766,840

PAPER COATING MACHINE

Robert A. Beckley, and Harold D. Stroder, both of Mount Vernon, Ill., assignors to World Color Press, Inc., Effingham, Ill.

Filed Jan. 14, 1987, Ser. No. 3,123
Int. Cl.[4] B05C *1/16, 11/00*
U.S. Cl. 118—46 24 Claims



1. In combination with a printing press including at least one print stand where a printed image is applied to a web and a dryer located beyond the last print stand and including a first drying chamber through which the web passes to dry ink that is applied to it at the print stands, the improvement comprising: deflecting means for directing the web back toward the last print stand after the web passes through the dryer, and a coating unit physically interposed between the last print stand and the dryer, said coating unit comprising: first and second blanket cylinders which are located adjacent to each other so as to form a nip between them, with the nip being located such that the web passes into it after passing through the dryer and being directed back toward the last print stand by the deflecting means, a plate cylinder located adjacent to the second blanket cylinder and carrying a generally cylindrical plate which bears against the surface of the second blanket cylinder, and transfer means for applying a coating fluid to the outwardly exposed surface of the plate, whereby the coating fluid is transferred to the second blanket cylinder and thence to the web as the web passes through the nip.

4,766,841

FLEXOGRAPHIC PRESS APPLIED PAPER COLOR COATING

Richard C. Brown, Somers, Conn.; Robert E. Lafler, Charlton City; Joseph M. Murphy, Wilbraham, both of Mass., and Westvaco Corporation, 02, New York, N.Y.

Division of Ser. No. 766,647, Aug. 19, 1985, abandoned. This application May 11, 1987, Ser. No. 48,218
Int. Cl.[4] B05C *1/08*
U.S. Cl. 118—75 4 Claims

1. A colored envelope production apparatus comprising a flexographic printing machine operatively combined with an envelope converting machine for uniformly coloring with a water-based ink a continuous web supply to said converting machine, said printing apparatus comprising an elastomer covered fountain roll having an elastomer cure of about 85 to 90 Shore "A" durometer and finished to a surface roughness height of about 64 microinches, an anilox roll adjacent said



fountain roll having a ceramic coating engraved with 19 to 21μ deep cells distributed over an interlaced pattern of 380 to 408 lines per inch, and an elastomer covered plate roll adjacent said anilox roll of within 0.001 in. concentricity, cured to about 50 to 55 Shore "A" durometer and finished to a surface roughness height of about 32 microinches.

4,766,842

METHOD AND MEANS FOR WAVE SOLDERING OF LEADS OF AN INTEGRATED CIRCUIT PACKAGE

Jon Long, Livermore, Calif., and LSI Logic Corporation, 02, Milpitas, Calif.

Filed Apr. 29, 1987, Ser. No. 43,895
Int. Cl.[4] B05C *3/02, 3/00*
U.S. Cl. 118—409 8 Claims



1. An apparatus for solder coating leads of integrated circuit packages comprising:

a plurality of rectangular or square integrated circuit packages having leads;

a pallet for supporting said packages for transport along a substantially linear path, said pallet including ramps having surfaces on which said packages are seated, said ramp surfaces being tilted relative to a supportive surface of said pallet;

means for maintaining each of said packages in a fixed and tilted position.

4,766,843

RUBBER OR PLASTIC-COATED ROLLER, METHOD AND APPARATUS FOR PRODUCTION THEREOF

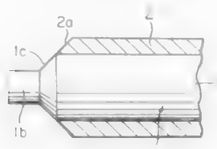
Takatoshi Murakami; Toshio Kida, both of Yokohama; Shiji Kon, Sagamihara; Toshinobu Asai, Yokohama, and Yoshiyuki Nunome, Kawasaki, all of Japan, assignors to Showa Electric Wire & Cable Co, Ltd., Kanagawa, Japan

Filed Aug. 1, 1986, Ser. No. 891,660
Claims priority, application Japan, Aug. 2, 1985, 60/171640; Aug. 26, 1985, 60/129819[U]
Int. Cl.[4] B05D *1/00*
U.S. Cl. 118—661 7 Claims

1. A fixing roller having a core shaft, a core shaft proper with opposite ends, support parts at said opposite ends of said core shaft proper and a rubber or plastic-coated layer having

VOL 1093 ISS 5 AG 30 1988 UMI

opposite ends provided on a periphery of said core shaft proper, comprising an inward tapered surface on said opposite ends of said core shaft proper, excepting said support parts, and



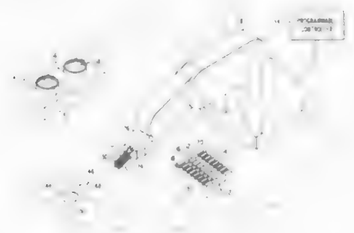
on said opposite ends of said rubber or plastic-coated layer, wherein said tapered surfaces form one continuous tapered surface at each one of said opposite ends.

4,766,844

ROBOTIC TINNING STATION FOR AXIAL LEAD ELECTRONIC COMPONENTS

Troy D. Brewer, Forest Hill, and Thorner S. Defibaugh, Jr., Westminster, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 28, 1987, Ser. No. 55,495
Int. Cl.[4] B05C *11/00*
U.S. Cl. 118—668 8 Claims



1. A tinning station for axial lead components comprising:

a presentation system for arranging a plurality of axial lead components in an elevated linear array with each of said components having a body with an axis and a pair of leads extending from opposite sides of said body along said axis, wherein axes of adjacent components lie generally parallel to each other;

a pair of grippers, each including a bar having a longitudinal slot and having a length at least as long as said linear array of components;

said gripper bars lying generally parallel to each other;

an actuator for moving said gripper bars toward or away from each other in a direction substantially parallel to said axes, thereby enabling said gripper bars to clamp opposite ends of each of said component bodies in said linear array of components, wherein each of said component leads extends through one of said slots in said grippers;

a flux pot for containing a pool of liquid solder flux;

means for producing a generally horizontal layer of molten solder; and

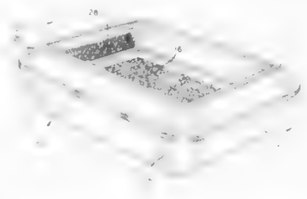
a robotic arm for supporting and moving said actuator and said grippers, such that said leads extending from each side of said array of axial lead components, which is clamped between said gripper bars, are first dipped in said flux and then dipped in said solder to tin each end of said leads.

4,766,845

CAT LITTER PAN SYSTEM

Andrew L. Bavas, 556 W. Arlington Pl., Chicago, Ill. 60614

Filed Dec. 15, 1986, Ser. No. 941,723
Int. Cl.[4] A01K *45/00*
U.S. Cl. 119—1 7 Claims



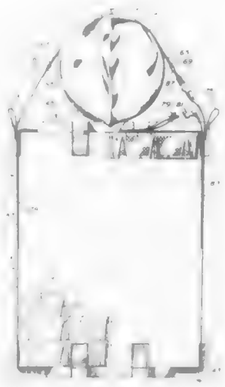
1. A cat litter pan system comprising an extruded plastic receptacle, a disposable litter tray suitable for positioning within said receptacle and a two component cover section that matingly engages the plastic receptacle, said two component cover section having an upper retaining lid and a lower retaining lid, said lower retaining lid having sides that are sloped in a downwardly inward direction, wherein said inwardly directed sides are in an adjacent relationship to upper edges of the disposable litter tray, said litter tray being easily removed and disposed.

4,766,846

SYSTEM AND METHOD FOR THE CULTURE OF MOLLUSKS

Jean-Pierre Lavoie, Charlesbourg, Canada, assignor to Aquiculture Climax Concept Inc., Quebec, Canada

Filed Oct. 7, 1986, Ser. No. 916,371
Int. Cl.[4] A01K *61/00*
U.S. Cl. 119—4 15 Claims



1. A system for the culture of mollusca, especially oysters, in a water stretch, comprising:

an inflatable and deflatable elongated balloon, to be connected to a source of gas under pressure by means of a conduit connecting said gas source and said balloon;

means enabling introduction of gas from said source under pressure into said balloon to inflate the balloon, and means for removing said gas from said balloon to deflate the balloon;

a grid of baskets containing mollusca strains to be kept in suspension at any level or to rest on the bottom of the water stretch;

means enabling said grid to be merely submerged when the balloon is inflated, and to rest on the bottom of the water stretch when said balloon is deflated;

attaching means associated with said balloon enabling connection of the balloon to said grid of baskets;

each basket being rectangular, the top part being open, the bottom and all sides thereof comprising screen material to permit free circulation of water through said baskets;

means for connecting together adjacent sides of two neighboring baskets;

said grid of baskets including a base, a plurality of said baskets laterally connected together at said adjacent sides and stacked over one another in a plurality of rows of baskets, said plurality of baskets being disposed on said base, holding means placed over said plurality of baskets, and a belt assembly tightly surrounding said base and said holding means, said belt assembly being fixed to said balloon in order to enable said balloon to hold said grid by means of said belt assembly.

4,766,847

APPARATUS AND SYSTEM FOR ANIMAL TRAINING

John Venczel, 32 Overlook Rd., Ossining, N.Y. 10562, and Béla G. Liptak, 84 Old N. Stamford Rd., Stamford, Conn. 06905

Filed Jun. 1, 1987, Ser. No. 56,053
Int. Cl.[4] A01K *15/00*
U.S. Cl. 119—29 7 Claims



1. Apparatus for training an animal to remain confined to a predetermined area defined by the location of an electrical conductor through which an AC current is passed comprising a receiver having a first and second coil tuned to the magnetic field generated around the conductor with each coil substantially disposed at right angles to each other, control signal means for comparing the signal strength in said first and second coil and means responsive to said control signal means for generating a high voltage and applying said voltage as an electrical shock to said animal when the signals induced in said first and second coil are related to each other in a given proportion corresponding to a predetermined distance between the animal and the electrical conductor.

4,766,848

PORTABLE CONDITIONING AND EXERCISING DEVICE FOR ANIMALS

Lucille M. Rocco, and Francine A. Wild, both of 819 Tyler Rd., NW., Albuquerque, N. Mex. 87107

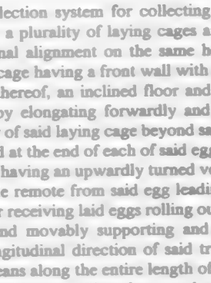
Filed Apr. 17, 1987, Ser. No. 40,591
Int. Cl.[4] A01K *15/00*
U.S. Cl. 119—29 21 Claims

1. A portable device for exercising animals of various heights, said device being assembleable and disassembleable by a user, without tools, said device comprising:

a lower drive unit comprising a substantially flat base for supporting said device while in use, a rotatable driveshaft extending vertically therefrom, and power driving means for rotating said driveshaft;

an upper arm unit comprising a central post, one end of which is attachable to and detachable from said driveshaft, without the use of tools, the other end of which comprises arm affixing means;

at least one arm rotatably attached at its inner end to said arm affixing means, said arm being rotatable within a plane extending through said central post, between and setable at a fully down, collapsed position against said cental post and a fully up position, perpendicular to said



central post, said arm being affixable at a plurality of selected angles, between said fully down and fully up positions, to said central post, without the use of tools, said angles being selectable in accordance with the height of the animal to be exercised; and

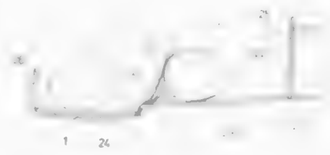
means for affixing an animal to be exercised to the outer end of said arm.

4,766,849

EGG COLLECTION SYSTEM

Kenji Kawabata, Matsuto; Takeshi Iwata, Ishikawa; Seizo Sakamoto, Ibaragi, and Zenjiro Watanabe, Tondabayashi, all of Japan, assignors to Sekisui Jushi Kabushiki Kaisha; Hanshin Keiran Kabushiki Kaisha and Kabushiki Kaisha Daikyo, all of Osaka, Japan

Filed Sep. 30, 1986, Ser. No. 913,272
Claims priority, application Japan, Sep. 30, 1985, 60-150776
Int. Cl.[4] A01K *31/14*
U.S. Cl. 119—48 8 Claims



1. An egg collection system for collecting eggs of laying hens comprising: a plurality of laying cages arranged side by side in longitudinal alignment on the same horizontal plane, each said laying cage having a front wall with an egg aperture at a lower part thereof, an inclined floor and an egg leading slope provided by elongating forwardly and slightly downwardly said floor of said laying cage beyond said egg aperture, a trough disposed at the end of each of said egg leading slopes, each said trough having an upwardly turned vertical confining side wall at a side remote from said egg leading slopes, and a conveyor belt for receiving laid eggs rolling out along said egg leading slopes and movably supporting and delivering said eggs along a longitudinal direction of said troughs, said belt having retard means along the entire length of one side of said belt adjacent to said egg leading slopes and overhanging said egg leading slopes for engaging eggs discharged from said laying cages and effectively decreasing the rolling speed of

VOL 1093 ISS 5 AG 30 1988 UMI

said eggs while permitting said eggs to drop from said egg leading slopes onto said conveyor belt.

4,766,850

METHOD AND APPARATUS FOR COLLECTING AND CONVEYING OBJECTS FROM A SURFACE

James J. O'Neill, County Down, Great Britain, assignor to Tamnaharry Developments Limited, Lisburn, Great Britain

Filed May 9, 1985, Ser. No. 732,296
Claims priority, application United Kingdom, May 11, 1984, 8412019
Int. Cl.[4] A01K *29/00*
U.S. Cl. 119—82 42 Claims



28. A harvesting device for gathering poultry from a poultry carrying surface such as the floor of a broiler house and for conveying the gathered poultry to a transportable container such as a coop or a cage, said device comprising:

a mobile chassis for being movably advanced along a poultry-carrying surface;

a conveyor system having a poultry-receiving leading edge for being positioned adjacent the poultry-carrying surface and a loading portion for conveying poultry along said chassis and to a transportable container;

a rotating flexible barrier carried by said chassis and spaced in advance of said leading edge of said conveyor system for moving poultry which are positioned on a poultry-carrying surface spaced in advance of said leading edge along that surface towards said leading edge in a direction opposite the advancement of said mobile chassis; and

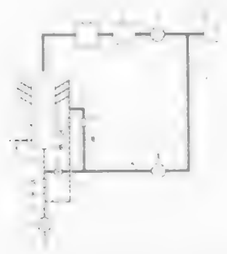
means for periodically repositioning said rotating flexible barrier with respect to said poultry carrying surface and said leading edge of said conveyor system.

4,766,851

COMBUSTION CHAMBER FOR A FLUIDIZED-BED FURNACE

Werner Emsperger, Erlangen; Hermann Brückner; Georg Lösel, both of Uttenreuth, and Rudolf Pieper, Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim/Ruhr, Fed. Rep. of Germany

Filed May 21, 1986, Ser. No. 866,051
Claims priority, application Fed. Rep. of Germany, May 23, 1985, 3518628; Dec. 18, 1985, 3544887
Int. Cl.[4] F23C *11/02*
U.S. Cl. 122—4 D 20 Claims



1. Combustion chamber with a fluidized bed furnace having a nozzle plate, a fuel feed above the nozzle plate, a primary air feed below the nozzle plate, an exhaust gas channel at an upper end of the combusition chamber, and heat-exchanging heating surfaces, comprising a cylindrical combustion chamber wall disposed vertically upright and having, in an upper region thereof, a plurality of secondary air nozzles disposed tangentially as well as downwardly inclined to the cylindrical wall for separating and returning unspent solid particles into a lower region of the fluidized bed, means for directing a flow of gas and particles vertically upwardly in a central region of the combustion chamber and spirally downwardly along the cylindrical wall, and means for impressing an upwardly increasing rotary flow about an axis of symmetry of the combustion chamber upon the gas flow, an annular orifice being inserted between the nozzle plate and the exhaust gas channel, heat exchanger heating surfaces being located on said combustion chamber wall, said secondary air nozzles being disposed between said annular orifice and the exhaust gas channel for producing a secondary air hose flowing downwardly along said combustion chamber wall, and means for defining slot-shaped openings being located between said annular orifice and said combustion chamber wall for the prupose of internally returning solids.

4,766,852

COOLING SYSTEM FOR AUTOMOTIVE ENGINE OR THE LIKE

Yoshinori Hirano, Yokohama, and Takao Kubozuka, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 7, 1987, Ser. No. 35,514
Claims priority, application Japan, Apr. 11, 1986, 61-83668
Int. Cl.[4] F01P *3/22*
U.S. Cl. 123—41.21 15 Claims



1. In an internal combustion engine having a structure subject to high heat flux

a cooling system comprising:

a coolant jacket disposed about said structure and into which coolant is introduced in liquid form, permitted to boil and discharged in gaseous form;

a radiator in fluid communication with said coolant jacket which receives coolant vapor produced therein and condenses it to its liquid form, said radiator including a small collection vessel disposed at the bottom thereof;

a reservoir in which coolant is stored, said reservoir being fluidly interposed between the collection vessel of said radiator and said coolant jacket, said reservoir being sized so as to contain sufficient liquid coolant to fill said radiator but insufficient to fill said radiator and said coolant jacket;

means for returning condensate from said radiator to said coolant jacket in a manner which maintains the level of liquid coolant in said coolant jacket at a predetermined level;

a first temperature sensor disposed in said radiator;

a second temperature sensor disposed in said coolant jacket;

a device associated with said radiator, said device being responsive to at least one of said first and second temperature sensors for varying the rate of condensation of the coolant vapor in said radiator; and

a first valve responsive to said first and second temperature sensors which selectively controls communication between one of the interior of said reservoir and the ambient atmosphere and said reservoir and said radiator.

4,766,853

INTAKE PASSAGE FOR MULTI-CYLINDER ENGINE

Takeshi Iwanami, Hamakita, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 6, 1987, Ser. No. 22,662
Claims priority, application Japan, Mar. 8, 1986, 61-51041
Int. Cl.[4] F02B *75/18*
U.S. Cl. 123—52 M 20 Claims



1. An induction system for an internal combustion engine comprising at least two variable volume chambers each having at least one intake port for delivering a charge thereto, a plenum chamber, a first intake passage extending from said plenum chamber to the intake port of a first of said chambers, a second intake passage extending from said plenum chamber to the intake port of the other of said chambers, a flow control valve operable in response to an engine running characteristic for controlling the flow through said second intake passage, first and second atmospheric air inlets to said plenum chamber, and throttle valve means for controlling the flow into said plenum chamber through each of said atmospheric air inlets.

4,766,854

EXHAUST VALVE THROTTLING MECHANISM FOR TWO-STROKE ENGINE

Stephen B. Riese, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jun. 19, 1987, Ser. No. 64,195
Int. Cl.[4] F02B *75/02*
U.S. Cl. 123—65 PE 14 Claims

1. In a two-stroke engine, an engine block having a plurality of in-line cylinders, piston means disposed for reciprocal movement in each cylinder, each cylinder including exhaust port means disposed to be closed by said piston means, said block including a passage intersecting each of said exhaust port means, and exhaust port throttling means including a shaft journalled for rotation within said passage, a plurality of valve members disposed in spaced relation on said shaft, each valve member disposed in registry with one of said exhaust port means, each valve member being movable between a closed position where said valve member substantially closes off the respective exhaust port means and an open position, and operating means for rotating said shaft in accordance with a variation in engine speed to move said valve members from said closed position at low throttle speed to said open position at high throttle speed, said valve members when in said closed



position at low speed acting to restrict the propagation of pressure waves to the cylinders.

4,766,855

PLASMA JET IGNITION APPARATUS

Luigi Tozzi, Columbus, Ind., assignor to Cummins Engine Co., Inc., Columbus, Ind.

Continuation of Ser. No. 799,255, Nov. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 766,517, Aug. 19, 1985, abandoned, which is a continuation of Ser. No. 636,169, Jul. 31, 1984, abandoned, which is a continuation of Ser. No. 515,557, Jul. 31, 1984, Pat. No. 4,471,732. This application Dec. 23, 1986, Ser. No. 946,150
Int. Cl.[4] F02P *3/08*
U.S. Cl. 123—143 B 10 Claims



1. A plasma ignition apparatus for generating plasma and for propelling said plasma from said ignition apparatus for ignition external to said ignition apparatus, said ignition apparatus comprising:

means defining a cavity;

a solid plasma medium insert disposed within said cavity;

electrical energy discharge means cooperatively arranged with said cavity and arranged for generating an electrical energy discharge in the vicinity of said solid plasma medium insert and for transforming a portion of said solid plasma medium insert into generated plasma radicals within said cavity, said electrical energy discharge being at a level sufficient to generate said plasma radicals and below a level at which the generated plasma radicals are propelled from the cavity and capable of ignition external to the cavity, whereby electrode erosion is minimized; and

magnetic field generation means establishing a magnetic

VOL 1093 ISS 5 AG 30 1988 UMI

field within said cavity, said magnetic field providing a supplemental propelling force on said generated plasma radicals, the strength of said magnetic field being predetermined based upon the energy level of said discharge and the geometry of said cavity so as to propel the generated plasma radicals from the cavity for ignition external to the cavity, whereby ignition and flame propagation are enhanced.

4,766,856

STARTING HANDLE FOR INTERNAL COMBUSTION ENGINES

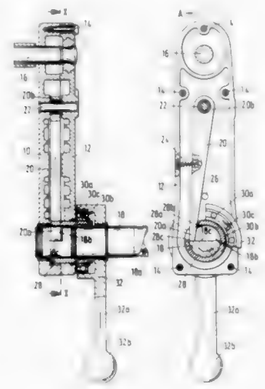
Ernst Hatz, Ruhstorf, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed Aug. 25, 1987, Ser. No. 89,499

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1986, 3632267

Int. Cl.[4] F02N *1/02*

U.S. Cl. 123—185 S 4 Claims



1. In a starting handle for internal combustion engines, comprising a hand crank and a starting shaft which can be connected to an appropriate element of the engine to be started, a driving mechanism being provided between the hand crank and the starting shaft, so that when the hand crank is turned in the starting direction, the hand crank drives the starting shaft and thereby the said engine element, the driving mechanism being released in the event of kickback of the starting shaft and movement thereof in the direction opposite to the direction of starting, the improvement comprising wherein a weighted element is provided which is independent of the engine, and which is mounted coaxially with respect to the starting shaft, the weighted element being held by gravity in a vertical position and, in the event of kickback, being thereby restrained from movement from the vertical to cause the driving mechanism between the hand crank and the starting shaft to be released, wherein there is provided an uncoupler mounted coaxially with respect to the starting shaft, and a freewheel clutch having first and second bearing rings and clamping elements interposed therebetween, a first bearing ring of the freewheel clutch being connected to the uncoupler and the second bearing ring to the weighted element in such a way that, when the hand crank and therewith the starting shaft and the said engine element are moved in the starting direction, the first bearing ring of the freewheel clutch freewheels with the uncoupler in the same direction, whereas the second bearing ring is held in a fixed position by the weighted element, and wherein, in the event of kickback of the starting shaft and in the opposite direction to the starting direction, the freewheel clutch is locked and the uncoupler is detained by the gravity restrained weighted element, whereupon the detained uncoupler releases the driving connection between the hand crank and the starting shaft.

4,766,857

BALANCING DEVICE FOR A RECIPROCATING PISTON ENGINE

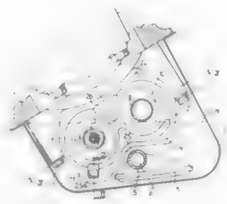
Gabriel Lainé, Andrésy, and Henri Zawadzki, Vitry sur Seine, both of France, assignors to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly sur Seine, both of, France

Filed Sep. 9, 1987, Ser. No. 94,454

Claims priority, application France, Sep. 9, 1986, 86 12623

Int. Cl.[4] F01M *1/00;* F02B *75/06*

U.S. Cl. 123—192 B 6 Claims



1. A balancing device for a reciprocating piston internal combustion engine, comprising two balancing shafts disposed in a casing, each provided with a balancing weight and each fastened to one of two intermeshing pinions, characterized in that the casing is divided by a partition into two parts, namely a main part and an auxiliary part, the balancing weights of the shafts being housed in the closed main part of the casing, which is connected by a bottom passage to the auxiliary part containing the two pinions and arranged as a draining gear pump, and in that the auxiliary part comprises a bottom suction zone, into which the bottom passage leads, and a top delivery zone connected to an oil reserve.

4,766,858

INTERNAL COMBUSTION ENGINE

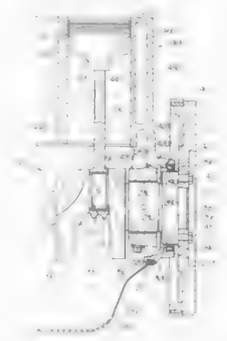
Toshio Yoshidome; Takanori Nagai; Tadayoshi Kono, and Mikio Goto, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Mar. 21, 1986, Ser. No. 842,483

Claims priority, application Japan, Mar. 25, 1985, 60-42858

Int. Cl.[4] F01M *1/06*

U.S. Cl. 123—195 R 12 Claims



1. An internal combustion engine comprising:

a cylinder block including a plurality of cylinders, a crank shaft support portion and a first oil seal retainer portion, the crank shaft support portion being located under the plurality of cylinders, the first oil seal retainer portion projecting outwardly from the cylinder block, a first and second portion of a crank case being defined within the cylinder block;

a cap member secured to the crank shaft support portion of the cylinder block, an opening being defined between the cap member and the crank shaft support portion;

a crank shaft including a journal and a flange portion, the journal being inserted into said opening defined between the crank shaft support portion and the cap member, said crank shaft being mounted rotatably on both the cylinder block and the cap member, the flange portion extending outwardly from the journal, the flange portion having an outer peripheral surface, the flange portion being spaced from the crank shaft support portion and the oil seal retainer portion of the cylinder block, the first portion of the crank case being defined at one side of the crank shaft, the second portion of the crank case being defined at the other side of the crank shaft;

a seal means located between the first oil seal retainer portion and the outer peripheral surface of the flange portion;

a chamber being defined between the flange portion of the crank shaft, the oil seal retainer portion and the crank shaft support portion of the cylinder block, the cap member and the seal means;

a first connecting passage located between the crank shaft support portion and the oil seal retainer portion, the first connecting passage being in connection with the chamber and the first portion of the crank case; and

a second connecting passage being defined between a second oil seal retainer portion and the cap member, the second connecting passage being in communication with the chamber and the other portion of the crank case, whereby the chamber is in communication with at least two portions of the crank case through the first and second connecting passages.

4,766,859

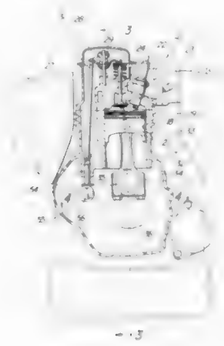
LUBRICATING SYSTEM FOR VERTICAL SHAFT ENGINE

Mutsuaki Miyaki; Yoshimi Tachibana; Kiyohiko Oguri, and Yoshiharu Isaka, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 24, 1987, Ser. No. 77,619

Int. Cl.[4] F01M *1/00*

U.S. Cl. 123—196 W 20 Claims



1. In a lubrication system for an internal combustion engine having an output shaft rotatable about a generally vertically extending axis, a lubricant reservoir defined at least in part by a lower wall of said engine surrounding said output shaft and through which said output shaft passes for driving a driven element, said lower wall being formed with an upwardly extending baffle for dividing said lubricant reservoir into separate sections and for reducing sloshing of lubricant within said lubricant reservoir, and oil passage means extending through said baffle for permitting lubricant to flow therethrough.

4,766,860

WARNING SYSTEM OF FILTER BINDING IN LIQUID SUPPLYING SYSTEM

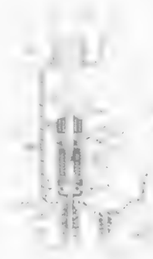
Koji Abe; Masao Fukasawa, and Masaki Okazaki, all of Hamamatsu, Japan, assignors to Shanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 17, 1987, Ser. No. 15,745

Claims priority, application Japan, Mar. 17, 1986, 61-56962

Int. Cl.[4] F01M *1/00*

U.S. Cl. 123—196 A 33 Claims



1. A lubricating system for a machine having a lubricant reservoir, conduit means for delivering lubricant from said lubricant reservoir to an element of said machine lubricating system by the force of gravity, and filter means for filtering lubricant prior to delivery to said machine lubricating system element, the improvement comprising sensing means for providing an indication of clogging of said filter means.

4,766,861

IGNITION DEVICE FOR AIR-COMPRESSING INTERNAL COMBUSTION ENGINE

Gerhard Finsterwalder, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Kloeckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Sep. 14, 1987, Ser. No. 96,898

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1986, 3631444

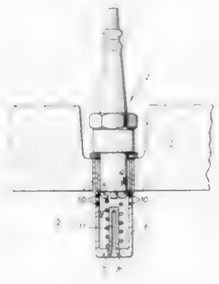
Int. Cl.[4] F02B *19/12*

U.S. Cl. 123—254 3 Claims

1. An ignition device for an air-compressing internal combustion engine having a combustion chamber, said ignition device comprising: a high voltage spark plug serving as the source of fuel ignition including a shell electrode extending into said combustion chamber, a casing surrounding said electrode and presenting at least one fuel inlet opening, said casing including a wall disposed within said combustion chamber, a

VOL 1093 ISS 5 AG 30 1988 UMI

rod secured to said wall and extending into the interior of said casing and an incandescent helix coiled about said rod and



supported at one of its ends on said wall and at the other of its ends on said shell electrode of said spark plug.

4,766,862

IDLING SPEED-UP CONTROL APPARATUS INTERNAL COMBUSTION ENGINE

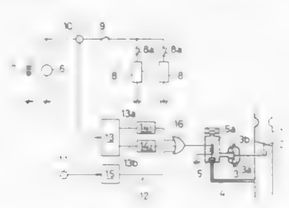
Yoshitaka Hibino; Kogi Kajita, both of Utsunomiya; Satoru Kubo, Hagamachi, and Atsushi Totsune, Utsunomiya, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1987, Ser. No. 137,628

Claims priority, application Japan, Dec. 29, 1986, 61-309469

Int. Cl.[4] F02D *41/16*

U.S. Cl. 123—339 **4 Claims**



1. An idling speed-up control apparatus in an internal combustion engine comprising:

an electric generator driven by the internal combustion engine;

a load detecting means for detecting the value of an electric load connected to the electric generator;

an idling speed-up means for stepwise increasing an idling speed of the engine; and

a control means for causing the idling speed-up means to operate when detecting value of the electric load continuously remains above a predetermined value for a predetermined length of waiting time, the control means includes a variable setting means for variably setting the waiting time such that the larger the detected value of the electric load, the shorter the length of the waiting time.

4,766,863

APPARATUS FOR CONTROLLING THE IDLING OPERATION OF AN INTERNAL COMBUSTION ENGINE

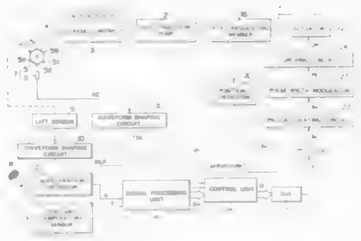
Kyoichi Fujimori, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1986, Ser. No. 928,088

Claims priority, application Japan, Nov. 14, 1985, 60-253726

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—357 **10 Claims**



1. An apparatus for controlling the idling operation of an internal combustion engine having a closed-loop control system for controlling the amount of fuel to be supplied to a multi-cylinder internal combustion engine so as to maintain the average engine speed of the internal combustion engine at a desired target idling rotational speed, the output torque produced during the power stroke of a cylinder of said engine being influenced by the output torque of another cylinder, said apparatus comprising:

a first detecting means for detecting the operation timing of the internal combustion engine;

a second detecting means for producing a timing signal for determining a predetermined measurement period for each cylinder which includes that part of the combustion period during which torque is produced due to fuel combustion in a cylinder concerned during which no influence arises because of torque produced in cylinders other than the specific cylinder concerned, and only a portion of that part of the combustion period during which there is said influence because of torque produced in another cylinder such that said predetermined measurement period corresponds substantially to the minimum points of the instantaneous crankshaft speed associated with the specific cylinder concerned;

a first calculating means responsive to the timing signal for calculating and producing a first data related to the output from each cylinder of the internal combustion engine;

a second calculating means responsive to the first data for sequentially and repeatedly calculating and producing for every cylinder a difference data corresponding to the difference between the output from each cylinder and the output from a predetermined reference cylinder among the cylinders;

a third calculating means responsive to the difference data for calculating and producing an individual cylinder control data related to the supply of fuel necessary for reducing to zero the difference shown by the difference data;

an output control means for outputting the individual cylinder control data at a predetermined timing before the next fuel regulating process for the individual cylinders on the basis of the result of the detection in the first detecting means; and

an adding means for supplying the individual cylinder control data to the closed-loop control system.

4,766,864

FUEL INJECTION CONTROL BASED ON SPILL PORT OPENING TIMING CORRECTION

Mitsuru Ban, Gamagori; Masahiko Miyaki, Oobu; Takashi Hasegawa, Tajimi; Fumiaki Kobayashi, Toyota, and Mamoru Kobashi, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Mar. 27, 1986, Ser. No. 845,111

Claims priority, application Japan, Mar. 29, 1985, 60-68108

Int. Cl.[4] F02M *39/00*

U.S. Cl. 123—357 **12 Claims**



1. A fuel injection control system for an internal combustion engine, comprising:

(a) a fuel injection pump including:

a pump chamber;

a low pressure chamber;

plunger means reciprocating in synchronism with rotation of said engine for introducing fuel into said pump chamber, and for feeding said fuel under pressure from said pump chamber to a cylinder of said engine,

detector means for detecting a reference position of said plunger, and for generating a detection signal indicative of the reference position, and

a spill port coupled to said pump chamber and in communication with said low pressure chamber,

(b) solenoid valve means for opening and closing said spill port;

(c) first circuit means including first and second adjusting resistors, said first circuit means being replaceably disposed on said fuel injection pump;

(d) first control means for calculating a fuel injection time period according to operating conditions of said engine;

(e) second control means including second circuit means comprising first and second fixed resistors, said first fixed resistor being connected to said first adjusting resistor so as to produce a first voltage signal corresponding to a ratio of a resistance value of said first adjusting resistor to a resistance value of said first fixed resistor, said second fixed resistor being connected to said second adjusting resistor so as to produce a second voltage signal corresponding to a ratio of a resistance value of said second adjusting resistor to a resistance value of said second fixed resistor, said second control means correcting said calculated fuel injection time period based on said first and second voltage signals, said second control means being positioned together with said first control means and apart from said first circuit means; and

(f) third control means for controlling said solenoid valve means to close said spill port for said corrected fuel injection time period and to open said spill port after elapse of said corrected fuel injection time period.

4,766,865

DEVICE FOR DETERMINING THE POSITION OF A CRANKSHAFT IN RELATION TO THE CYLINDER

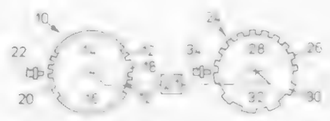
Günter Härtel, Neuss, Fed. Rep. of Germany, assignor to Pierburg GmbH, Neuss, Fed. Rep. of Germany

Filed Mar. 11, 1987, Ser. No. 24,590

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1986, 3608321

Int. Cl.[4] F02D *41/00*; F02P *9/00*

U.S. Cl. 123—414 **23 Claims**





1. An arrangement for determining in relation to an operating cycle of individual cylinders the position of a crankshaft of a four-cycle engine with an even number n of cylinders for releasing at the correct time an engine activating process, comprising: a first signal generator rotating with said crankshaft; a second signal generator rotating with a camshaft, each signal generator comprising a toothed generator disk secured to the respective shaft rotating with the respective signal generator shaft for generating pulses in relation to angular position for providing said generators with signal marks; stationary signal receivers associated with said generator disks; a pulse-processing stage connected to said receivers and associating each position of the crankshaft with said cylinders; said first signal generator rotating with said crankshaft having evenly-graduated signal marks into n/2 equal crankshaft sections, an identification mark identifying an upper cylinder dead center and being differentiable from said signal marks, said identification mark being associated with each crankshaft section; said second signal generator rotating with said camshaft having a circumference divided into equal camshaft sections that are definitely associated with said crankshaft sections and have equal signal-mark graduations that differ from each other; the identification marks on said crankshaft sections being different when the number of crankshaft and camshaft sections is equal and can be identical when the number is unequal; a pulse-processing stage synchronized by the pulses from said identification marks and associating the position of the crankshaft with said cylinders by comparing instantaneous pulses of both the crankshaft and camshaft sections, said pulse-processing stage associating the position of the crankshaft with said cylinders also dependent on a difference between pulses from particular associated identification marks when the number of said crankshaft and camshaft sections is equal.

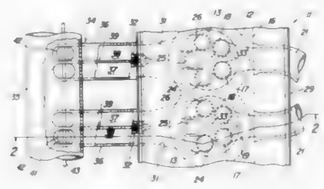
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,866

INTAKE SYSTEM FOR ENGINE

Osamu Takii; Hironobu Ukei, both of Hamamatsu, and Keiji Fujikawa, Iwata, all of Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Mar. 30, 1987, Ser. No. 32,021
Claims priority, application Japan, Mar. 31, 1986, 61-72738
Int. Cl.[4] F02B 15/00
U.S. Cl. 123—432 10 Claims



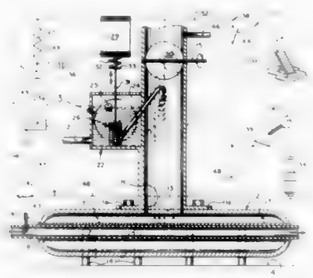
1. In an induction system for an internal combustion engine having a variable volume chamber, first and second intake passages serving said variable volume chamber, throttle valve means for controlling the communication of said second intake passage with said chamber, said throttle valve means being disposed upstream of the point where said second intake passage communicates with said chamber for defining a volume communicating with said chamber, and means for opening said throttle valve means in response to a running condition of the engine under which said volume would act as a side branch resonator if said volume were closed for precluding said volume from acting as a side branch resonator during at least some phases of engine running.

4,766,867

FUEL SUPPLY SYSTEM FOR INTERNAL COMBUSTION ENGINE

Harvey A. Gantenbine, 680 Oakwood Ct., Los Altos, Calif. 94022

Filed Aug. 3, 1987, Ser. No. 80,614
Int. Cl.[4] F02B 3/00
U.S. Cl. 123—438 3 Claims



1. In a fuel supply system for use with an internal combustion engine of a type controlled by an accelerator pedal, said system comprising means forming a fuel vaporizing chamber, an air intake housing having openings therein, one of said openings being open to receive air therethrough, another of said openings serving to discharge air into said chamber to form a flow path defined between said openings, said flow path leading into said chamber, variable valve means within said air intake housing for controlling the flow rate of air therealong, means for injecting fuel into air moving along said flow path to provide a mixture of fuel and air, the means for injecting fuel into the flow path comprises a supplemental fuel storage chamber, a fuel supply line adapted and designed to be coupled to said fuel storage chamber and to a fuel pump for partially filling and refilling said fuel storage chamber, means forming a spout extending between said fuel storage chamber and said flow path for delivering fuel into the flow path at a location which is subjected to suction from the flow of air passing to the vaporizer chamber, said flow of air across the open discharge end of said spout serving to aspirate fuel from said storage chamber via said spout and into said flow path, means for suddenly releasing a supplemental charge of fuel to travel from said storage chamber into said flow path, the last named said means including a valve movable between advanced and retracted positions respectively reducing and enlarging the fuel flow path via said spout, means for operating said valve to retract said valve in response to accelerated flow of air via the first named flow path caused by accelerated movement of said foot pedal thereby enriching the fuel mixture delivered to said vaporizing chamber, said means for operating said valve including an electric power supply, a solenoid and first and second circuit branches, each said branch serving to interconnect said power supply and said solenoid, ignition switch means for electrically coupling both said branches to said power supply, first and second switches disposed respectively in said first and second branches, said switches serving to connect and disconnect said solenoid to said power supply via an associated one of said branches, said first switch being normally closed and said second switch being normally open whereby closure of said ignition switch serves to engage said solenoid via said first branch, heat responsive means coupled to operate said first switch, said heat responsive means being disposed to sense the heat at said tube and in response to sensing a predetermined degree of heat serving to open said first switch to deenergize said solenoid, and vacuum sensitive means coupled to operate said second switch, said vacuum sensitive means being disposed to sense the vacuum in said flow path and to respond to a sudden increase in vacuum sensed in said flow path to close said second switch to energize said solenoid via said second branch, means extending across the interior of said chamber to provide a heat exchange jacket, means for carrying hot exhaust gases from the engine through said jacket for heating same, said jacket being disposed in the path of the fuel/air mixture entering the chamber for preheating the mixture to precondition the fuel/air mixture for ignition when delivered to a cylinder of the engine.

4,766,868

METHOD AND APPARATUS FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Norio Shibata, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 17, 1987, Ser. No. 134,144
Claims priority, application Japan, Dec. 18, 1986, 61-300144
Int. Cl.[4] F02B 3/00
U.S. Cl. 123—440 4 Claims



1. A method for controlling the air-fuel ratio in an internal combustion engine having a carburetor and a throttle valve in an intake air passage thereof, comprising the steps of:
- determining whether said engine is cold;
- determining whether said engine is under a full or heavy load;
- detecting an air-fuel ratio of said engine;
- setting a first maximum guard value of an amount of air bleeding when said engine is not cold, said engine is not under a full or heavy load, and said air-fuel ratio is rich;
- setting a second maximum guard value of the amount of air bleeding which is smaller than said first maximum guard value, when said engine is cold, said engine is under a full or heavy load, or said air-fuel ratio is lean;
- calculating the amount of air bleeding in accordance with said detected air-fuel ratio;
- guarding the amount of air bleeding by said first maximum guard value when said engine is not cold, said engine is not under a full or heavy load, and said air-fuel ratio is rich;
- guarding the amount of air bleeding by said second maximum guard value when said engine is cold, said engine is under a full or heavy load, or said air-fuel ratio is lean;
- adjusting said air-fuel ratio by supplying the amount of air bleeding after guarding by said first or second maximum guard value.

4,766,869

HOUSING SYSTEM FOR A CENTRAL ELECTRONIC PROCESSING UNIT OF A HEAT ENGINE

Roberto de Concini, Via Belvedere, and Gianni Fargnoli, Via Goldoni, both of Italy, assignors to Weber S.r.l., Turin, Italy

Filed Apr. 22, 1987, Ser. No. 41,148
Claims priority, application Italy, Apr. 22, 1986, 67336 A/86
Int. Cl.[4] F01P 1/06
U.S. Cl. 123—478 16 Claims



1. A housing system for an electronic central processing unit for a heat engine, characterized by the fact that it includes a first part (14) in thermal contact with heat-developing component elements (16) of said central processing unit, said first part being in contact, over at least a substantial part of its surface, with an outer surface (7) of a portion (1) of a fuel mixture induction manifold (2) of said engine, and being further characterized by the absence of any cooling fins on said housing system.

4,766,870

METHOD OF AIR/FUEL RATIO CONTROL FOR INTERNAL COMBUSTION ENGINE

Toyohei Nakajima; Yasushi Okada; Toshiyuki Mieno, and Nobuyuki Oono, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1987, Ser. No. 43,727
Claims priority, application Japan, Apr. 30, 1986, 61-100384
Int. Cl.[4] F02M 51/00; F02B 3/00
U.S. Cl. 123—489 6 Claims

1. A method of air/fuel ratio control for a multi-cylinder internal combustion engine provided with at least one oxygen concentration sensor mounted within an exhaust system of said internal combustion engine for producing an output which varies substantially in proportion to an oxygen concentration in exhaust gas from said engine, the method comprising:
- setting a basic value for airfuel ratio control, in accordance with a plurality of engine operating parameters relating to engine load;
- detecting the air/fuel ratio of a mixture supplied to the engine, based upon the output from said oxygen concentration sensor;
- compensating said basic value by at least an air/fuel ratio feedback compensation value which is derived in accordance with a deviation from a target air/fuel ratio of an air/fuel ratio detected utilizing the output from said oxygen concentration sensor and by a learning control compensation value representing a secular change of an air/fuel ratio control system including said oxygen concentration sensor and, to thereby determine an output value with respect to said target air/fuel ratio and;
- controlling the air/fuel ratio of said mixture in accordance with said output value;
- wherein the improvement comprises: detecting a predetermined operating condition of said engine in which variations of said detected air/fuel ratio are small and, computing the updating respective individual values of said learning control compensation value for the respective cylinders of said engine, each said compensation being executed in accordance with the magnitude of a change in said detected air/fuel ratio when said predetermined operating condition is detected.



4,766,871

PROCESS AND SYSTEM OF ELECTRONIC INJECTION WITH REGULATION BY PROBE λ FOR INTERNAL COMBUSTION ENGINE

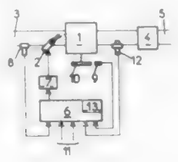
Rémi Lefevre, Colombes, and Francis Prampolini, Antony, both of France, assignors to Regie Nationale Des Usines Renault, Boulogne Billancourt, France

Filed Feb. 25, 1987, Ser. No. 18,530
Claims priority, application France, Feb. 25, 1986, 86 02557
Int. Cl.[4] F02M 51/00
U.S. Cl. 123—489 13 Claims

1. Process of metering of the fuel supplied to an internal combustion engine by at least an injector controlled by a computer associated with a probe delivering a signal (Sλ) which is able to take one or the other of two states as a function of the composition of the exhaust gases, said process comprising the steps of using the computer to determine an opening time (Ti) of the injector from a nominal time (Tin) which is a function of operating parameters of the engine and from a proportional and integral correction term (αcl) which is a function of the state of the probe signals, said correction term (αcl) being

VOL 1093 ISS 5 AG 30 1988 UMI

determined from a simulated probe signal (SsA) based upon a richness predictive estimate (Re) of the exhaust gases, estimate (Re) being determined from the operating parameters of the engine and from an experimentally determined pure delay (m)



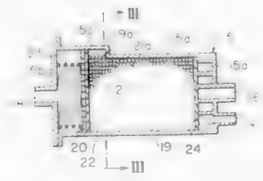
between the injector and the probe, and periodically modifying said correction term (acl) in response to a detection of a difference between the stat of measured probe signal (SA) and the state of a delayed simulated probe signal (S"sA).

4,766,872

CANISTER FOR CAPTURING EVAPORATED FUEL

Takashi Kato; Kazumi Haruta, both of Obu, and Yutaka Yamada, Hekinan, all of Japan, assignors to Aisan Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Jun. 1, 1987, Ser. No. 55,880
Claims priority, application Japan, Jun. 2, 1986, 61-128775
Int. Cl.[4] F02M *33/02*
U.S. Cl. 123—519 4 Claims



1. A horizontally mounted canister for capturing evaporating fuel comprising:

a canister case having a horizontally disposed longitudinal axis, said canister case having a top wall and first and second end walls, one of said end walls having an evaporated fuel supply port defined therethrough and a purge port defined therethrough, the other of said end walls having an atmospheric air port defined therethrough, said top wall having a first portion defining a first height of said case and a second portion defining a second height of said case, greater than said first height, said first height defining with said first and second end walls a first absorber chamber for receiving an absorber, said second portion of said top wall defining a second absorber chamber vertically above the first absorber chamber for receiving additional absorber;

a tray slidably received within said canister case in the portion thereof defined by said second portion of said top wall, said tray being vertically disposed in said canister case in a plane disposed substantially transverse to said longitudinal axis of said canister case; and

a spring disposed between one of said end walls and said tray for urging said tray toward the other of said end walls, so that said tray presses against an absorber within said first absorber chamber between said tray and said other end wall so as to prevent the formation of voids in absorber within said first absorber chamber, said tray also being urged against an absorber within said second absorber chamber whereby absorber in said second absorber chamber replenishes said first absorber chamber when voids are formed in said absorber in said first absorber chamber.

4,766,873

SYSTEM FOR CONTROLLING INTAKE PRESSURE IN A SUPERCHARGED INTERNAL COMBUSTION ENGINE

Hideo Miyagi, Okazaki; Fumiaki Ohya, Toyota; Koji Fukushima, Toyota, and Shin Adachi, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed May 14, 1986, Ser. No. 862,971
Claims priority, application Japan, May 21, 1985, 60-106832; May 27, 1985, 60-112033
Int. Cl.[4] F02D *23/00*
U.S. Cl. 123—559.3 9 Claims



1. An intake system for a supercharged internal combustion engine, comprising:

an intake line for introduction of an amount of intake air into the engine;

a mechanically operated type supercharged arranged in the intake line;

connection means for connecting the supercharger to the engine for transmitting engine rotation to the supercharger in at least an acceleration condition of the engine;

detecting means for detecting a degree of engine acceleration and issuing signals indicative of the degree of acceleration; and

control means, responsive to a signal from the detecting means, for controlling the supercharger in accordance with the degree of acceleration, whereby the speed of increase in supercharging pressure is decreased as the degree of acceleration is decreased;

said detecting means comprising sensor means for detecting a moderate acceleration wherein the degree of acceleration is lower than a predetermined value, means for detecting switching to the moderate acceleration, and a timer means for counting a duration time after the occurrence of the switching so as to generate said signal for decreasing the supercharging pressure.

4,766,874

SHOOTING CROSSBOW

Jim Z. Nishioka, 1268 Hemlock N.W., Salem, Oreg. 97304

Filed May 11, 1987, Ser. No. 48,245
Int. Cl.[4] F41B *5/00*
U.S. Cl. 124—25 9 Claims

1. A shooting bow comprising:

a bowstring including a main span and a pair of end spans,

an elongated frame extending longitudinally in a shooting direction of the bowstring main span,

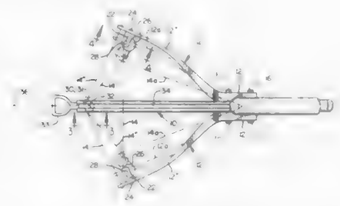
a pair of arms connected to the frame, the arms each comprising a rigid butt portion and a flexible portion, respectively, the flexible portions providing a tension for the bowstring,

a pair of rotatable bowstring guide members on the flexible portions of the arms, respectively,

said bowstring main span extending between the rotatable bowstring guide members and the pair of bowstring end spans extending from the pair of rotatable bowstring guide members, respectively,

a bowstring catch and trigger mechanism on the frame for holding the bowstring in a drawn position and for releasing it,

said pair of flexible portions of the arms extending in a forwardly direction,



means on the bow for engaging the bowstring end spans, said means being positioned forwardly of the rotatable guide members so that when the bowstring main span is drawn rearwardly said means will cause the end spans to apply an inwardly and a forwardly tension to the flexible portions of the arms.

4,766,875

ENDLESS WIRE SAW HAVING MATERIAL RECOVERY CAPABILITY

Robert S. Feigelson, Saratoga, Calif., assignor to Stanford University, Stanford, Calif.

Continuation of Ser. No. 443,322, Nov. 22, 1982, abandoned.
This application Nov. 13, 1984, Ser. No. 671,063
Int. Cl.[4] B28D *1/08*
U.S. Cl. 125—21 4 Claims



1. An improved saw requiring a small amount of recycled cutting material such as an abrasive slurry and especially suited for slicing toxic material comprising

a cutting material,

an endless wire for carrying said cutting material,

support means for said endless wire whereby said wire is directed to a cutting position and including an idler wheel positioned below said cutting position,

drive means operably connected with said support means for driving said endless wire,

a support means for positioning a workpiece to be cut in pressure engagement with said endless wire at said cutting position, and

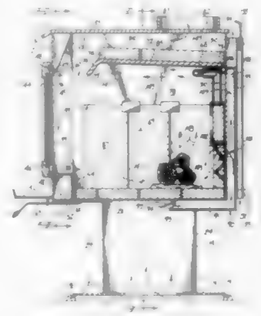
a funnel positioned under said cutting position for collecting said cutting material and directing the collected cutting material to said idler wheel and back to said endless wire without need for a collection reservoir during operation.

4,766,876

WOOD STOVE

Daniel S. Henry, and G. Michael Hoteling, both of Colville, Wash., assignors to Aladdin Steel Products, Inc., Colville, Wash.

Filed Jul. 24, 1987, Ser. No. 77,227
Int. Cl.[4] F24C *1/14*
U.S. Cl. 126—77 21 Claims



1. A wood stove, comprising:

a firebox enclosure having a base wall, a top wall, a front wall with a fuel entry opening formed therein, a rear wall and side walls extending between the base wall and the top wall;

a front entry door mounted on the front wall for enabling wood fuel to be loaded through the fuel entry opening when the door is open and for covering the fuel entry opening when the door is closed;

a baffle mounted in the enclosure between the side walls and intermediate the top and base wall and extending forward from the back wall terminating in a front edge spaced from the front wall dividing the interior of the enclosure into a lower fuel combustion chamber below the baffle and an upper exhaust heat-exchanging chamber above the baffle;

an exhaust opening formed through one of the walls and opening into the upper exhaust heat exchanging chamber;

a first air supply means having an opening in the rear wall for permitting the flow of air into the fuel combustion chamber to impinge the fuel from the rear to support primary combustion of the fuel;

a second air supply means for permitting flow of air into the fuel combustion chamber and for directing the air in a circular current path, first in a downward path along the inside of the front wall, second in a rearward path along the base wall to wash the fuel from the front to support combustion of the fuel, third in an upward exhaust path, fourth in a forward exhaust path along a lower surface of the baffle, and fifth in a path upward over the front edge of the baffle and rearward through the exhaust chamber to the exhaust opening;

a third air supply means having an air injection manifold positioned at an elevated position in the fuel combustion chamber immediately below the baffle for injecting air into the forward exhaust path to facilitate the burning of previously unburned hydrocarbon gases released from the fuel within the fuel combustion chamber; and

said baffle having heat absorbing and insulating means thereon in heat exchanging relationship with lower combustion chamber and the upper exhaust heat exchanging chamber to minimize a loss of heat through the baffle and to maximize the burning temperature in the fuel combustion chamber.

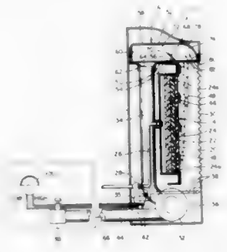
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,877

CATALYTIC SPACE HEATER

William F. Jensen, Olympia, Wash., assignor to Thermal Systems, Inc., Tumwater, Wash.

Filed Sep. 30, 1987, Ser. No. 103,931
Int. Cl.[4] F24C *3/04*
U.S. Cl. 126—92 AC 10 Claims



1. A catalytic space heater for heating an enclosed living space, comprising:

a catalytic bed having an upwardly extending forward surface positionable to be openly exposed to the living space and defined by upper and lower borders and left and right side borders, said exposed bed surface generating during operation of the heater under a flow of fuel a partially laminar flow and a partially turbulent flow of substantially smokeless gaseous combustion products upward along said bed surface, each flow extending between said left and right bed side borders, said laminar flow being adjacent said bed surface and said turbulent flow being positioned forward of said laminar flow;

a control sensing flow in an exhaust duct, and terminating said fuel flow to said catalytic bed if the sensed flow is below a predetermined level indicative of insufficient flow for safe operation;

a pressure source sufficient to create a negative pressure exhaust flow in said exhaust duct; and

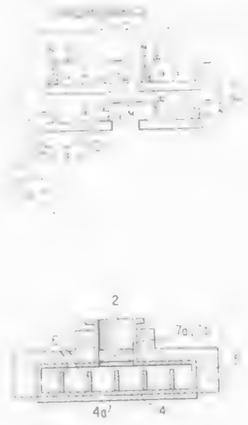
a collection chamber positioned above said bed and having a lower wall and an upper wall, each wall extending laterally substantially between said left and right bed side borders, said lower wall having a rearward wall portion generally rearward of said bed surface and terminating at a forward edge portion, said upper wall having a rearward wall portion generally rearward of said bed surface and spaced above said lower rearward wall portion to define an interior collection space therebetween, said pressure source being connected to said interior collection space to create said exhaust flow from said collection space, said lower wall further having a baffle wall portion extending laterally substantially between said left and right bed side borders and projecting upwardly from said forward edge portion and terminating at a baffle wall upper edge portion spaced below said upper rearward wall portion to create a pressure drop between said collection space and an inlet space forward of said baffle wall portion and to provide a substantially uniform draw along the length of said baffle wall portion, said upper wall further having a forward wall portion projecting forward beyond said bed surface and downward and terminating at an upper wall forward edge portion, said upper forward wall portion and said baffle wall portion defining said inlet space therebetween, said upper wall forward edge portion being positioned generally above said bed surface and spaced forwardly thereof sufficient to extend forward beyond said turbulent flow and define an opening to said inlet space communicating with the living space and extending laterally substantially between said left and right bed side borders, with said opening being sufficiently large in the forward direction to capture therein both said laminar flow and said turbulent flow when rising under their natural buoyancy and to draw in under the influence of said pressure source a curtain flow of air from the living space positioned forward of said turbulent flow and extending laterally substantially between said left and right bed side borders to block escape of the upward flow of said turbulent flow forward of said upper wall forward edge portion, said pressure source creating a sufficient exhaust flow to produce said curtain flow of air to block escape of said turbulent flow, and also to cause the exhaust flow to be above said predetermined level under normal operation to prevent said sensor control from terminating said flow of fuel, but not to be so great as to reduce the fuel efficiency of the heater by withdrawing said gaseous combustion products prior to being substantially fully combusted to reduce the heating efficiency below by withdrawing air from the living space beyond that necessary to create the curtain flow of air.

4,766,878

FAR-INFRARED RADIATING SYSTEM

Saburo Maruko, Yamato, Japan, assignor to Nippon Chemical Plant Consultant Co., Ltd., Tokyo, Japan

Filed Feb. 9, 1987, Ser. No. 12,391
Claims priority, application Japan, Feb. 10, 1986, 61-025990
Int. Cl.[4] F24H *3/00;* F24D *5/00;* F23Q *11/00*
U.S. Cl. 126—116 R 5 Claims



1. A far infrared radiating system comprising:

plural far-infrared radiating units, each unit comprising means for defining a combustion-gas passage having an inlet portion, an outlet portion, and an outer peripheral surface, a ceramic coating adhered to a part of said outer peripheral surface for radiating far-infrared rays upon being heated, heat-insulating material coated on the remainder of said outer peripheral surface, and a catalytic-combustion unit mounted in said inlet portions;

plural mixing units for mixing a fuel with an oxygen-containing gas, each having a fuel intake portion, an oxygen-containing gas intake portion, and a mixed gas outlet, the mixed gas outlet of each mixing unit being connected to the inlet portion of one of the plural far-infrared radiating units;

means for feeding fuel to said fuel intake portions of said plural mixing units which includes a flow-control valve at each fuel intake portion and a fuel-feeding line connected in parallel to said flow-control valves;

means for supplying oxygen-containing gas to said oxygen-containing gas intake portions of said plural mixing units which includes means for series connecting the outlet portion of each far-infrared radiating unit to the oxygen containing gas intake portion of the next downstream mixing unit so that said plural far-infrared radiating units are connected with each other in series with respect to oxygen-containing gas flow, and an air intake pipe connected to the oxygen-containing gas intake portion of the first mixing unit in the series; and

means for preheating air in said air intake pipe which includes a heat exchanger connected on one side thereof to said air intake pipe and on the other side to said outlet portion of the final far-infrared radiating unit in the series.

4,766,879

FIREPLACE COOKING GRILL

Leo J. Freese, 118 N. Oak St., Lake City, Minn. 55041

Filed Jul. 28, 1987, Ser. No. 78,673
Int. Cl.[4] F24B *1/26*
U.S. Cl. 126—137 8 Claims



1. A fireplace cooking grill comprising a vertically disposed supporting post, means securing said post to a fireplace, a slide, means vertically adjustably supporting said slide on the post, a grill assembly, means supporting the grill assembly from the slide for horizontal adjustment of the grill assembly, said means vertically adjustably supporting said slide on the post including a rack gear on said post and said slide including a pinion gear in mesh with the rack gear, handle means connected with said pinion gear for rotating the pinion gear for varying the elevational position of the slide on the post, said means supporting the grill assembly from the slide for horizontal adjustment of the grill assembly including a horizontally disposed slide bar rigidly affixed to the slide, said grill assembly including a horizontally disposed slide member slidable on the slide bar, said slide bar and slide member being perpendicular to the post for horizontal sliding movement in relation to the fireplace, and wherein said grill assembly further includes a periphery frame having the slide member along one edge thereof, said slide member and said bar being of corresponding polygonal configuration so that the grill assembly and any food items thereon will be cantilever supported from the slide bar for frictionally securing the slide member and grill assembly in adjusted position.

4,766,880

APPARATUS FOR DRAWING OFF VAPORS FROM KITCHEN EQUIPMENT

Georg von Blanquet, Baden-Baden, Fed. Rep. of Germany, assignor to Gaggenau-Werke Haus-and Lufttechnik GmbH, Gaggenau, Fed. Rep. of Germany

Filed Jan. 20, 1987, Ser. No. 4,879
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1986, 3601460
Int. Cl.[4] F24C *15/20*
U.S. Cl. 126—299 D 9 Claims



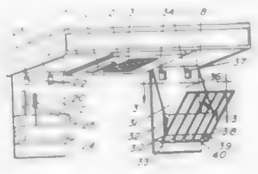
1. Apparatus for drawing off vapors from kitchen equipment, the apparatus comprising at least one draught flue running along one lateral side of the kitchen appliance and having a long, narrow suction opening and a fan connected thereto by flexible air ducts, characterized in that at least one cover for an exhaust opening is pivotably mounted between an open and a closed position on the draught flue and is provided with a drive coupled to an on-off switch of the fan and in that the covers are detachably mounted on the draught flue.

4,766,881

RANGE HOOD DEVICE

Henry A. Pax, 3108 Auburn Cir., Jeffersontown, Ky. 40299

Filed May 18, 1987, Ser. No. 50,853
Int. Cl.[4] F24C *15/20*
U.S. Cl. 126—299 R 8 Claims



1. Holding means in combination with a cooking range hood which includes a generally horizontally disposed outer frame to be located above a cooking range and a gas flow opening within said frame for emission of gases from said cooking range where at least one generally rectangular chamber is provided on one side of said frame and said chamber is downwardly open to define a utensil holder receiving opening means and inwardly directed lip means on opposite sides of said utensil holder opening means; a hinge means adjacent one of said lip areas; a utensil holder pivotally connected to said hinge means adjacent said lip area where said utensil holder has a generally planar base to allow said base to be pivoted from a position within said chamber to position extending downwardly therefrom and wherein said hinge allows longitudinal movement of

VOL 1093 ISS 5 AG 30 1988 UMI

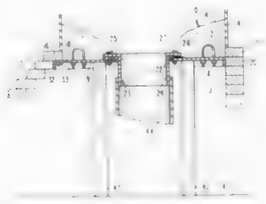
said base panel so that said base can be swung upwardly into said utensil holder rectangular opening and can than be moved longitudinally so that one edge of the base is located on the second lip to retain said base in stored position and where said base can be moved longitudinally in the opposite direction to allow said base to be lowered into said accessible position.

4,766,882

POURED FLUE ADAPTER

Steven E. Schinbeckler, Brownsburg, Ind., assignor to Wright-Bachman, Inc., Indpls., Ind.

Filed Jun. 8, 1987, Ser. No. 59,496
Int. Cl.[4] F23J *13/00*
U.S. Cl. 126—315 14 Claims



1. A poured flue adapter for insertion within a fireplace, the fireplace including a flue and an inwardly and downwardly facing shoulder below the flue, the adapter comprising:

a plate having a flat main portion having a rear edge and a flange extending downwardly from the rear edge, said plate being sized to be received adjacent the downwardly facing shoulder below the flue of the fireplace, said plate having an aperture in the flat portion of said plate;

angle bars secured to the underside of the flat portion of said plate adjacent the perimetric edge of said plate in the area other than the location of the downwardly-extending flange at the rear edge of said plate;

a gasket on the top of said plate surrounding the aperture;

a slip connector positioned within the aperture of said plate and against the top of said plate, said slip connector including a cylindrical portion extending through and spaced inwardly of the aperture and a radially-extending flange at one end of the cylindrical portion received against said gasket, said slip connector being free from direct contact with said plate;

attachment means for attaching the flange of said slip connector through said gasket and to said plate; and

at least one attachment member secured to said plate and extending upwardly therefrom to be received within the flue of said fireplace when said plate is positioned against the downwardly facing shoulder.

4,766,883

FORCED DRAFT CONTROLLED MIXTURE HEATING SYSTEM USING A CLOSED COMBUSTION CHAMBER

A. Larson Cameron, Culver City, and Henry J. Moore, Los Angeles, both of Calif., assignors to Mor-Flo Industries, Inc., Cleveland, Ohio

Continuation of Ser. No. 832,992, Feb. 26, 1986. This application Oct. 7, 1987, Ser. No. 106,930
Int. Cl.[4] F24H *1/00*
U.S. Cl. 126—351 11 Claims

1. A heating apparatus capable of maintaining a steady state efficiency of operation of approximately 95% over a wide range of input capacities of from about 10,000 to about 120,000 BTU's comprising:

a tank adapted to contain a body of fluid to be heated;

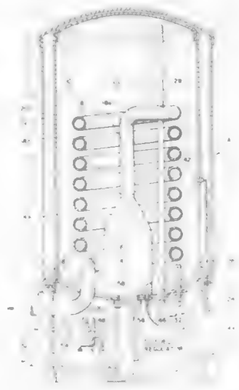
a sealed combustion chamber disposed within said tank having an inlet opening and an exhaust aperture;

an exhaust gas exit tube connected to said exhaust aperture and exiting said tank;

a burner disposed within said combustion chamber receiving fuel and air through said combustion chamber inlet opening;

an airtight fluid moving means having an output fixed to said combustion chamber inlet opening and having an inlet;

a venturi type air and fuel proportioner having an air inlet section of a first cross-sectional area in flow communication with a source of air, a venturi throat section of a second cross-sectional area smaller than said flow regulator output through a fuel aperture in said venturi throat section and having an outlet fixed to said fluid moving



means inlet whereby a stream of air and a stream of fuel are drawn at less than standard atmospheric pressure through said air and fuel proportioner in response to operation of said fluid moving means;

said fuel regulator having an air inlet section pressure chamber connected by an air-tight tube to said air inlet section and valve means maintaining the pressure of fuel delivered to said fuel flow regulator output in fixed relationship to said air inlet section pressure and;

said air-tight fluid moving means effective to mix said air and fuel into a combustible mixture away from said proportioner and direct said mixture at pressure above standard atmosphere into said burner.

4,766,884

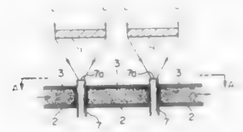
ACCUMULATOR ARRANGEMENT FOR THE SUNLIGHT ENERGY

Kei Mori, No. 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Division of Ser. No. 548,427, Nov. 3, 1983. This application Jun. 5, 1987, Ser. No. 58,880
Claims priority, application Japan, Nov. 10, 1982, 57-197135; Nov. 15, 1982, 57-200229
Int. Cl.[4] F24J *2/40, 2/08*
U.S. Cl. 126—419 6 Claims

1. A solar energy accumulator arrangement comprising an optical system for focussing the sunlight and a photoconductor having its light receiving end disposed at the focal point of said optical system, said sunlight being focussed through said optical system and transmitted through said photoconductor to any desired place, and further including a transparent conduit defining a fluid passage through which said photoconductor passes, an induction substance flowing through said fluid passage at a flow rate responsive to the intensity of said sunlight, said induction substance being capable of transformation to a

higher energy level by a photochemical reaction to thereby accumulate solar energy from the light component thereof,



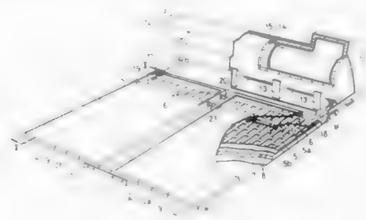
whereby, when the energy level of said induction substance returns to its original state, said energy is emitted as heat.

4,766,885

SOLAR WATER HEATER

Toshiaki Muramatsu, Oyama, Japan, assignor to Showa Aluminum Corporation, Osaka, Japan

Continuation of Ser. No. 749,911, Jun. 28, 1985. This application Dec. 19, 1986, Ser. No. 943,883
Claims priority, application Japan, Jun. 29, 1984, 59-136221; Jun. 29, 1984, 59-136222; Jun. 29, 1984, 59-136223; Jul. 2, 1984, 59-137811
Int. Cl.[4] F24J *2/32*
U.S. Cl. 126—433 9 Claims



1. A solar water heater comprising:

a hot water storage tank;

at least one casing housing a flat heat receiving tank arranged to contain water and a heat collector panel of the heat pipe containing a working fluid, said casing disposed in close proximity to the hot water storage tank, said hot water storage tank being placed on the heat receiving tank in the casing with a heat insulator being interposed between the two tanks; and

a supply pipe and a return pipe each connecting an interior of the hot water storage tank with an interior of the flat heat receiving tank to allow interchange of water therebetween; wherein

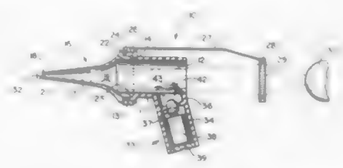
the heat collector panel has a heat collecting portion and a condenser portion, said condenser portion being in a direct heat exchange relationship with the flat heat receiving tank so that heat is transferred between the working fluid in the condenser portion of the heat collector panel and water in the flat heat receiving tank.

4,766,886

METHOD AND APPARATUS FOR VIEWING AND COLLECTING SPECIMENS

Steven K. Juhn, 2624 Rice Creek Ter., New Brighton, Minn. 55112

Division of Ser. No. 735,098, May 17, 1985, Pat. No. 4,641,663. This application Feb. 9, 1987, Ser. No. 12,357
Int. Cl.[4] A61B *1/22*
U.S. Cl. 128—9 12 Claims



1. A viewer for visual examination of the tympanic membrane and fluid in the middle ear chamber of a human ear comprising: a cylindrical body having a first open end, second open end and a passage extended between said open ends, an ear piece mounted on the first end of the body, said ear piece having an open forward end adapted to be positioned in the ear canal to view the tympanic membrane and fluid in the middle ear chamber, said ear piece having a passage open to the passage of the body, lens means spaced from the body, means mounted on the body supporting the lens means spaced from the body in optical alignment with the open forward end of the ear piece, said lens means having a focal point adjacent the open forward end of the ear piece to magnify the tympanic membrane and fluid in the middle ear chamber, said body having a cylindrical end flange having a diameter larger than the diameter of the body forming an inwardly directed shoulder, said ear piece having a sleeve slidably positioned within said end flange and engageable with said shoulder whereby said ear piece is removably mounted on said body, said means mounted on the body supporting the lens being located on the end flange and rotatable thereon to maintain the lens means in concentric relationship with the open forward end of the ear piece, and means mounted on the body operable to project light into said passages to illuminate the tympanic membrane and fluid in the middle ear chamber.

4,766,887

DISPOSABLE VAGINAL SPECULUM

John Cecil, Jr., Skaneateles, and Robert R. Black, Syracuse, both of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Jun. 19, 1986, Ser. No. 876,211
Int. Cl.[4] A61B *1/32*
U.S. Cl. 128—17 10 Claims



1. Two-piece vaginal speculum comprising

an upper blade member and lower blade member pivotally connected thereto by a slot and pin arrangement to permit relative pivotal and spatial adjustment of the blade mem-

VOL 1093 ISS 5 AG 30 1988 UMI

bers, with slots being formed in sides of one of the blade members, and corresponding trunnions being formed on facing sides of the other blade member, the trunnions each having a lug penetrating an associated one of the slots; said slots each having a plurality of notches therein wherein said lugs may be reposed defining pivot axes for said blade members, one of said blade members having a longitudinal slide member extending generally in the direction of said slots and the other of said blade members having a plurality of teeth for selectively engaging said slide member to define respective degrees of opening of said speculum blade members, the engaged teeth being slideable along said slide member to permit spatial adjustment of said trunnion lugs from one set of the notches of said slots to another,

wherein each of the blade members has a pair of spaced side walls extending proximally and downwardly, the pair of side walls of one blade member being disposed to fit between the pair of side walls of the other blade member, and

wherein said slide member extends along the side walls of one blade member and said teeth are disposed in the facing side wall of the other blade member, the slide member and teeth having mating surfaces angled at an angle from normal with respect to said surfaces, so as to urge the facing side walls of the blade members towards one another.

4,766,888

SHOCK WAVE GENERATOR FOR AN APPARATUS FOR NON-CONTACTING DISINTEGRATION OF CALCULI IN THE BODY OF A LIFE FORM

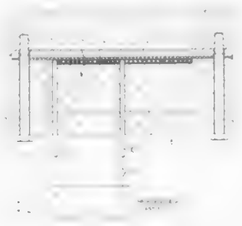
Sylvester Oppelt, Bamberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 8, 1987, Ser. No. 70,936

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1986, 3623775

Int. Cl.[4] A61B *17/22*

U.S. Cl. 128—24 A 4 Claims



1. A shock wave generator comprising:

a high voltage supply having two supply terminals, one of said supply terminals being at a first potential and the other of said supply terminals being at a second potential lower than said first potential;

a housing having a volume filled with a shock wave conducting medium, said housing having an electrically conductive membrane terminating said volume on one side;

a coil having a plurality of windings disposed adjacent said membrane, and having two coil terminals with means for connecting said coil to said supply terminals of said high voltage supply so that one coil terminal is at said first potential and the other coil terminal is at said second potential; and

means at a third potential between said first and second potentials connected to said membrane for applying said third potential to said membrane so that a positive difference in potential is present between said one coil terminal at said first potential and said membrane, and a negative difference in potential is present between said other coil terminal at said second potential and said membrane.

4,766,889

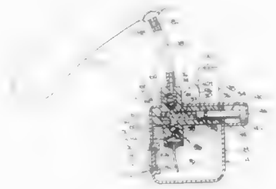
INFUSION ERECTILE SYSTEM

Robert E. Trick, and Garry L. Carter, both of Racine, Wis., assignors to Medical Engineering Corporation, Racine, Wis.

Filed Jun. 26, 1986, Ser. No. 878,554

Int. Cl.[4] A61F *2/26*

U.S. Cl. 128—79 15 Claims



1. A prosthesis for synthesizing an erection comprising, dispensing means for infusing a first predetermined amount of an erection stimulating material into the penis, said dispensing means including reservoir means for storing a second predetermined amount of said erection stimulating material, flow means communicable with said reservoir means and communicable with said penis for directing flow of said first predetermined amount of erection stimulating material into said penis, and pumping means for actuating movement of said erection stimulating material from said reservoir means through said flow means and into said penis, wherein said pumping means includes control means for enabling said pumping means to pump a predetermined amount of said erection stimulating material only after a predetermined minimum time delay form the last actuation of said pumping means.

4,766,890

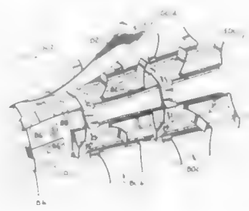
CAST WITH SPACED-APART RIBS

Scott Hollrah, 14909 Caenen La., Olathe, Kans. 66062

Filed Jan. 6, 1987, Ser. No. 839

Int. Cl.[4] A61F *5/04*

U.S. Cl. 128—89 R 10 Claims



9. A cast for immobilizing a fracture site comprising:

a plurality of laterally spaced-apart ribs for providing longitudinal support about said fracture site, each of said ribs comprising an elongated face strip and a strip of foam padding affixed to the inner side of said face strip, said padding contacting the skin of said fracture site;

means for maintaining said ribs in said spaced-apart relationship to present a grid of said ribs in a desired position about said fracture site;

at least one initially flexible casting tape for winding about said rib grid at selected longitudinal positions theralong, said tape adapted to rigidify upon an initial moistening and subsequent drying;

means on said ribs for indicating said selected positions of said casting tape including a base member on each of said face strips, said base members being laterally interaligned to present zones of overlay for a first ply of said casting tape wound about said rib grid;

a strip of flexible material interposed between each base member and its underlying face strip, each strip of material being relatively longer than the corresponding base member to present first and second flaps extending from opposed sides of the base member, said flaps being folded atop at least a first ply of said wound casting tape and held in place by a successive ply of said wound casting tape, said flaps holding said unlerlying plies of said casting tape in place during drying, whereby said wound casting tape further maintains said rib grid about said fracture site to provide longitudinal immobilization of the same.

4,766,891

ARTHROSCOPIC LEG HOLDER

James E. Schultz, 4476 Ampudia St., San Diego, Calif. 92103

Filed Dec. 15, 1986, Ser. No. 941,693

Int. Cl.[4] A61F *3/00*

U.S. Cl. 128—133 21 Claims



1. A device for assisting a surgeon during arthroscopic procedures, said device comprising:

an oval-shaped substantially rigid girdle member adapted to embrace the waist/hip area of the surgeon, said girdle member having a separation to permit circumferential flexibility, said girdle member being formed with first and second opposite rounded sides and relatively flat front and back portions;

a cinch strap connected to said girdle member across said separation to removably secure said girdle member around the surgeon; and

substantially rigid leg holder means comprising at least one channel shaped, upwardly opening stirrup rigidly secured to said girdle member on at least one of said rounded sides thereof, said stirrup being adapted to receive and retain the lower leg portion of a patient during arthroscopic procedures;

whereby when the patient's upper leg portion is immobilized the lower leg portion is controllably moved by the surgeon as necessary during arthroscopic procedures in both lateral and vertical directions.

4,766,892

LIMB RESTRAINT

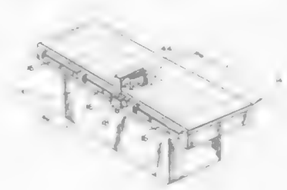
Gary Kreitman, 8700 N. Kendall Dr., Miami, Fla. 33176

Continuation of Ser. No. 172,401, Jul. 25, 1980, abandoned. This application Jul. 19, 1985, Ser. No. 756,794

Int. Cl.[4] A61F *13/00*

U.S. Cl. 128—134 15 Claims

1. A limb restraining apparatus for use in combination with a table upon which a patient is resting, the patient having a limb to which a procedure comprising arthroscopic diagnosis and surgery is to be performed, the limb including an articulated joint, a proximal limb section disposed between the articulated joint and the patient's torso and a distal limb section extending from the articulated joint, the limb restraining apparatus being applied to the patient's limb about the proximal limb section, the limb restraining apparatus comprising peripherally confining means for restraining a zone of the proximal limb section substantially about a peripheral surface of the proximal limb portion except for an underside portion of the proximal limb section resting upon the table, the confining means including an open nonrestraining section in registry with the peripheral section of the patient's proximal limb section resting upon the table, the open nonrestraining section of the limb restraining apparatus comprising means for maintaining blood vessels within the limb in a zone registered with the restraining apparatus free of constrictions, the peripherally confining restraining means including means for restraining a b of the proximal limb section from movement while allowing movement and manipulation of the distal limb section, the peripherally confining means including a rigid support and a flexible support, the rigid support having frame means surrounding the top and sides of the limb section, means mounting the rigid support to the table, means mounting the flexible support within the rigid support, the flexible support bearing against the peripheral surface of the proximal limb section zone except for the underside portion of the proximal limb section resting upon the table.



4,766,893

EMERGENCY OXYGEN SUPPLY UNIT WITH A RESPIRATOR

Wolfgang Drews, Bahrenhof, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 21, 1987, Ser. No. 40,936

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1986, 3613814

Int. Cl.[4] A62B *7/00*

U.S. Cl. 128—201.29 4 Claims



1. An emergency supply unit, comprising a housing having a

VOL 1093 ISS 5 AG 30 1988 UMI

detachable part, an oxygen supply unit mounted on said detachable part, a mask mounted on said detachable part which is connectible to said oxygen supply unit, and a carrying strap associated with said detachable part, wherein said housing includes a trough-shaped member, said detachable part comprising a cover hinged to said member, said cover being foldable downwardly out of said member on said hinge connection, said oxygen unit being secured to said cover and having a hose portion extending outwardly therefrom and downwardly when said cover is opened, said mask being removable with said hose portion to position it on a wearer's head, and a life preserver encompassing the wearer's shoulder and secured to said mask.

4,766,894

PROCESS AND DEVICE FOR SIGNALING MALFUNCTIONS OF A RESPIRATOR

Michel Legrand, Lescar; Luc Caillot, Pau; Jean-Michel Donnola, Villecomtal, and Roman Siretchi, Pau, all of France, assignors to Societe Anonyme: M.M.S. s.a. a french corporation, Paris, France

Filed Apr. 13, 1987, Ser. No. 37,860
Claims priority, application France, Apr. 15, 1986, 86 05382
Int. Cl.[4] A62B *7/02*
U.S. Cl. 128—204.21 18 Claims



1. A process for signaling malfunctions of a respirator with single source of energy constituted by the source of respiratory gas under pressure of the respirator, which makes it possible to apply a pulsatory insufflation pressure to a patient to whom it is connected, in which said pulsatory insufflation pressure is compared with an adjustable threshold value (P_s) and an alarm is triggered off if the difference between the maximum value of this pressure and said threshold exceeds a predetermined quantity either by excess or by want,

said process comprising the following steps of:

creating a pneumatic signal formed by pulses which coincide with the periods when the insufflation pressure is greater than said threshold (P_s), and

detecting the appearance of an excessive difference between the maximum value of this pressure and the threshold by observing the difference between a representative parameter of said pulses and a predetermined normal value (t_n, a_n) of this parameter, this value being adjustable.

4,766,895

APPARATUS FOR CORNEAL CURVATURE ADJUSTMENT

Alvin E. Reynolds, Tulsa, Okla., assignor to Kera Corneal Devices, Inc., Santa Clara, Calif.

Division of Ser. No. 579,480, Feb. 23, 1984, Pat. No. 4,671,276, which is a division of Ser. No. 336,919, Jan. 4, 1982, Pat. No. 4,452,235. This application Feb. 3, 1987, Ser. No. 10,400
Int. Cl.[4] A61B *17/00*
U.S. Cl. 128—303 R 4 Claims



1. Apparatus for rotatably inserting a dissecting ring that has a forward cutting end and a trailing end into the corneal tissue of the eye including;

an elongated member;

a concave concentrical surface on one end of said elongated member concentric groove means within said surface to releasably retain said dissecting ring;

means within said concave concentrical surface to abut against said trailing end;

surface means on at least a portion of said elongated member to facilitate rotation of said elongated member.

4,766,896

ANTERIOR CAPSULOTOMY PROCEDURES

David S. C. Pao, 95 Highpoint Dr., Churchville, Pa. 18966

Continuation of Ser. No. 822,122, Jan. 24, 1986, abandoned. This application Aug. 6, 1987, Ser. No. 83,897
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—305 6 Claims



6. The method of performing an anterior capsulotomy on an eye with a cystitome having a rotating stylus comprising the steps of:

(a) making a limbal incision in the eye; and

(b) severing a closed curvilinear central portion of an uncoagulated anterior capsule entirely through the initial limbal incision by at least two connected incisions in said anterior capsule including:

a first elongated incision slicing along a curvilinear path passing across a diametric axis of said anterior capsule from an approximately 120° position and extending more than 180° around a center point of said anterior capsule, and

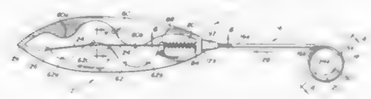
a second elongated incision slicing along a curvilinear path passing across said diametric axis from a point beginning near an end of said first elongated incision and spaced therefrom so as to maintain a bridge of anterior capsule between said end of said first elongated incision and the beginning of said second incision.

4,766,897

CAPSULECTOMY SURGICAL INSTRUMENT

Heinz Smirmaul, 1307 Brookstone La., Duncanville, Tex. 75137

Filed Jun. 16, 1987, Ser. No. 62,865
Int. Cl.[4] A61B *17/32*
U.S. Cl. 128—305 6 Claims



1. An ophthalmic surgical instrument for incising the anterior lens capsule of the crystalline lens of an eye comprising:

a handle adapted for support in a hand of a user;

a elongated tubular means having first and second ends, said first end being attached to said handle and said second end terminating in a loop;

a circular cutting blade interconnected to said loop, such that said circular cutting blade is supported by and is rotatable within said loop; and

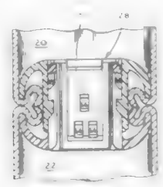
a flexible elongate wire having first and second ends and being disposed within said elongated tubular member, said first end thereof being interconnected to said handle and said second end thereof being interconnected to said circular cutting blade, such that upon compression of said handle, said wire is retracted within said handle for rotating said cutting blade around a predetermined angle within said loop.

4,766,898

ANASTOMOTIC DEVICE

Thomas G. Hardy, Columbus, Ohio; Alan L. Kaganov, Danbury, Conn., and William G. Pace, Columbus, Ohio, assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 766,711, Aug. 19, 1985, abandoned, which is a continuation of Ser. No. 583,956, Feb. 27, 1984, Pat. No. 4,552,148, which is a continuation of Ser. No. 287,500, Jul. 27, 1981, Pat. No. 4,467,804, which is a continuation-in-part of Ser. No. 198,448, Oct. 20, 1980, abandoned. This application Jun. 29, 1987, Ser. No. 68,778
Int. Cl.[4] A61B *17/11*
U.S. Cl. 128—334 C 7 Claims



7. An anastomotic device for use in the surgical joining of the free end of two tubular members to be anastomosed comprising: a pair of identical ring members for securement to the free end of each of the tubular members to be anastomosed, the tubular member free ends each having terminal edges; annular connecting means joined to each of said ring members cooperatively mating with each other to connect said ring members and to form an interior passageway providing the sole flow path through the anastomotic device, the interior passageway being free from the presence of the free end terminal edges of the tubular members so that said free ends are joined outside the interior flow path of the anastomotic device and tubular members; and means associated with said annular connecting means enabling the securement of said ring members a distance from each other whereby said tubular member free ends are positioned contiguous to each other over said ring members and around said connecting means to enable the ends to grow together in an atmosphere outside the flow path of the tubular members to be anastomosed and approximate the outer surface of the tubular member.

4,766,899

SOLAR RAY ENERGY RADIATION DEVICE FOR USE IN MEDICAL TREATMENT

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Filed Jan. 8, 1987, Ser. No. 1,296
Claims priority, application Japan, Jan. 16, 1986, 61-6973
Int. Cl.[4] A61N *3/00*
U.S. Cl. 128—397 2 Claims



1. A solar ray energy radiation device for use in medical treatment comprising a transparent or semi-transparent cylindrical means, a cover member closing off one longitudinal end of said cylindrical means, an optical conductor cable having a light ray emitting end placed through said cover member, in which solar ray energy, transmitted through said optical conductor cable, is radiated from said light ray emitting end into said cylindrical means, the other longitudinal end of said cylindrical means being open and facing the treatment area in order to administer solar ray energy onto a person receiving treatment, said cylindrical means comprising at least two cylindrical portions which are capable of sliding telescopically within one another in the direction of the axis of said cylindrical means, and a fixing screw mounted on said cylindrical means operable to fix said two cylindrical portions in a desired position.

4,766,900

RATE RESPONSIVE PACING SYSTEM USING THE INTEGRATED CARDIAC EVENT POTENTIAL

Frank J. Callaghan, Miami, Fla., assignor to Telectronics N.V., Netherlands

Continuation-in-part of Ser. No. 810,877, Dec. 18, 1985. This application Mar. 19, 1986, Ser. No. 841,478
The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.
Int. Cl.[4] A61N *1/36*
U.S. Cl. 128—419 PG 29 Claims

1. A cardiac pacing method which comprises the steps of:

applying electrical stimulus pulses to the heart;

detecting a cardiac event potential;

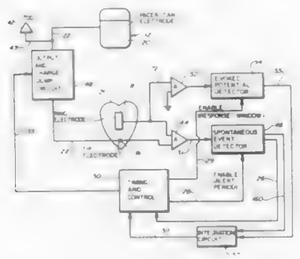
integrating the detected potential over time to obtain a selected parameter;

storing said selected parameter;

comparing said selected parameter with a corresponding

VOL 1093 ISS 5 AG 30 1988 UMI

selected parameter of at least one previous cardiac cycle that has been stored; and



controlling the rate of said electrical stimulus pulses in response to said comparison.

4,766,901

RATE RESPONSIVE PACING SYSTEM USING THE INTEGRATED EVOKED POTENTIAL

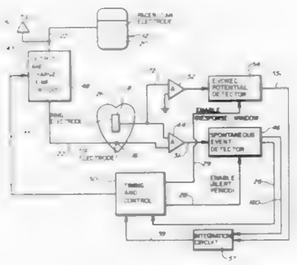
Frank J. Callaghan, Miami, Fla., assignor to Telectronics N.V., Netherlands Antilles

Filed Dec. 18, 1985, Ser. No. 810,877

The portion of the term of this patent subsequent to Aug. 30, 2005, has been disclaimed.

Int. Cl.[4] A61N *1/30*

U.S. Cl. 128—419 PG **15 Claims**



1. A cardiac pacing method which comprises the steps of:
applying electrical stimulus pulses to the heart;
detecting the evoked potential of said applied electrical stimulus pulses;
integrating said detected potential over time to obtain a selected parameter;
storing said selected parameter;
comparing said selected parameter with a corresponding selected parameter of at least one previous cardiac cycle that has been stored; and
controlling the rate of said electrical stimulus pulses in response to said comparison.

4,766,902

AUTOMATIC SENSITIVITY CONTROL FOR CARDIAC PACER

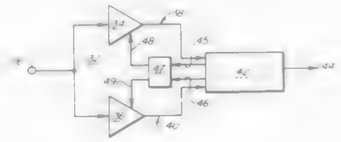
Edward A. Schroeppel, Miramar, Fla., assignor to Telectronics N.V., Netherlands Antilles

Filed Jun. 4, 1986, Ser. No. 870,398

Int. Cl.[4] A61N *1/36*

U.S. Cl. 128—419 PG **8 Claims**

1. In a cardiac pacer including a pulse generator for providing pacing pulses and an electrical lead for connection to a chamber of the heart, the improvement comprising, in combination:
a pair of separate sensing amplifiers for receiving the same polarity of a cardiac waveform;
means for connecting said electrical lead to both of said separate sensing amplifiers so that both of said sensing amplifiers will receive the same polarity of the cardiac waveform simultaneously;
one of said sensing amplifiers having a slightly lower threshold and thus a slightly higher sensitivity level than the other sensing amplifier; and
means for adjusting the thresholds of the respective sensing amplifiers so that said one sensing amplifier will sense said cardiac waveform and said other sensing amplifier will not sense said cardiac waveform; said adjusting means comprises control circuit means coupled to the outputs of each of said sensing amplifiers and including feedback means from said control circuit means to each of said sensing amplifiers.



4,766,903

APPARATUS FOR DETECTING OF VOLTAGES OR CHARGES ON THE HUMAN BODY AND FOR REMOVING SUCH STRESSES OR CHARGES FROM THE HUMAN BODY

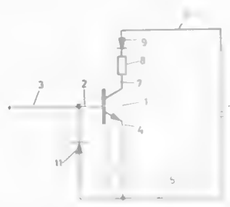
Herbert Esper, Bgm-Heinrich -Strasse 23, 8403 Bad Abbach, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 572,183

Claims priority, application European Pat. Off., Jul. 8, 1983, 83106720.2

Int. Cl.[4] A61B *5/00;* **H05F** *3/00*

U.S. Cl. 128—630 **12 Claims**



1. Apparatus for detecting voltages or charges on the body of a human or animal, which comprises an electrical conductive probe; a controllable electrical circuit comprising a control-current loop and a working current loop, said control-current loop and said working current loop having a common electrical connection; said control-current loop having a control connection electrically connected to said probe and having voltage maintaining means for maintaining said control connection at a predetermined voltage level in the absence of external voltage on said probe; and said working current loop including an indicator means for indicating flow of current in said working current loop.

4,766,904

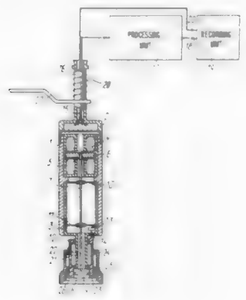
APPLANATION TONOMETER

Mikhail P. Kozin; Nikolai V. Kudashov; Jury I. Sakharov, all of Kuibyshev; Svyatoslav N. Fedorov, Moscow, all of U.S.S.R., and 1, assignors to Kuibyshevsky Politeknichesky Institute, Kuibyshev and Moskovsky Nauchno-Issledovatelsky Institute Mikrohirurgii Glaza, Moscow, both of, U.S.S.R.

Filed Feb. 17, 1987, Ser. No. 15,618

Int. Cl.[4] A61B *3/16*

U.S. Cl. 128—652 **2 Claims**



1. An applanation tonometer, comprising:
a housing;
a rod positioned inside said housing and having a first end and a second end, and
said first end being located outside said housing;
plane-parallel springs holding said rod in position inside said housing;
a contact disk made fast on said first rod end,
a flat working surface of said disk interacting with the cornea and exerting force thereon;
a unit for measuring said force applied to the corneal surface and converting said force into a signal suitable for processing, said unit being connected to said second end of said rod and having an output;
a means for registering the instant of time when the diameter of an applanation circle on said corneal surface, formed due to the effect of said force exerted by said contact disk on said cornea, reaches a preset value, said registering means having an output; and
a recording unit having a first input and a second input, said first input being connected to said output of the unit for measuring, and said second input being connected to said output of the means for registering; wherein
said registering means comprises:
a first sleeve having an inside diameter equal to said preset value of the applanation circle diameter and arranged coaxially with said rod carrying the contact disk and traversably along the axis of said rod,
a flat end of said first sleeve most removed from said housing interacting with said cornea; and
a contact set electrically connected to said second input of the recording unit and one of the contacts of said contact set being connected with said first sleeve,
contacts of said contact set being closed by movement of said first sleeve at the instant when said working surface of the contact disk and said flat end of said first sleeve become coplanar in the course of mutual movement as a result of application of said force to said cornea.

4,766,905

ULTRASONIC TRANSMITTER/RECEIVER

Kouroku Namekawa, Tokyo, Japan, assignor to Aloka Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 717,496, Mar. 28, 1985, abandoned. This application May 8, 1987, Ser. No. 48,969

Claims priority, application Japan, Apr. 2, 1984, 59-063281

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—663 **2 Claims**



1. An ultrasonic transmitter/receiver for detection and measurement of a moving member comprising:
a means for transmitting and receiving an ultrasonic pulse beam into and from a subject under examination at a fixed pulse-repetition frequency and for outputting signal corresponding to received ultrasonic pulses;
scanning means for causing the ultrasonic pulse beam to reciprocally scan the subject in a go-direction and return-direction and for generating address data representing scanning positions of the ultrasonic beam;
a means for comparing each of the signals received during each reciprocal scan in the go-direction and return-direction with each of the signals received during a previous reciprocal scan in the go-direction and return-direction, respectively, to obtain comparison signals;
memory means for storing comparison signals and addresses corresponding to the scanning position of the ultrasonic beam, said memory means be responsive to address data from the scanning means representing the scanning position of said ultrasonic beam to output the comparison signal stored at the corresponding address of the previous reciprocal scan and simultaneously store at the same address the comparison signal for the same scanning position of a current reciprocal scan; and
adder means for adding the comparison signal for said position of the current reciprocal scan and the comparison signal for said position of the previous reciprocal scan outputted from said memory means, whereby scanning noise contained in the comparison signals is eliminated.

4,766,906

BRONCHOSCOPIC NEEDLE ASSEMBLY

Ko Pen Wang, 813 Jamieson Rd., Lutherville, Md. 21093

Continuation-in-part of Ser. No. 260,602, May 6, 1981, abandoned. This application Nov. 1, 1982, Ser. No. 438,245

Int. Cl.[4] A61B *10/00*

U.S. Cl. 128—753 **7 Claims**

1. A completely flexible bronchoscopic needle assembly for use with a flexible bronchoscope comprising:
an elongated axially flexible catheter having proximal and distal ends and defining an interior cavity therebetween;
a hard tip including means for rigidly fixing said tip to said catheter distal end;
a hollow needle rigidly and coaxially fixed to said tip, said needle defining a sharp edge extended away from said tip, the hollow of said needle being in communication with and having a cross-sectional diameter less than said interior cavity, wherein said tip effects secure union between said rigid needle and said flexible catheter by virtue of said fixing means to prevent separation of said rigid needle and said flexible catheter; and

VOL 1093 ISS 5 AG 30 1988 UMI

protecting means reciprocably moveable within said catheter and said hollow needle for protecting said bronchoscope and said patient from inadvertent damage due to said sharp edge, said protecting means including an elongated flexible stylet having a smoothly rounded distal end and being of sufficient length to enable said smoothly



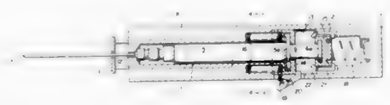
rounded distal end to be extendable beyond said sharp edge a predetermined dimension so as to substantially mask said sharp edge to prevent inadvertent damage thereby, the diameter of said stylet closely fitting within said hollow of said needle thereby defining with said interior cavity a substantially annular space through which biopsy material can flow.

4,766,907

APPARATUS AND METHOD FOR PERFORMING A BIOPSY AND A DEVICE FOR MANIPULATING SAME

William J. de Groot, #1 Cedar Lawn South, Galveston, Tex. 77550; Theodore J. de Groot, 53 Lafayette St., Norwich, Conn. 06360, and Joseph B. de Groot, 50 Morahapa Rd., Centerport, L. I., N.Y. 11721

Filed Oct. 15, 1986, Ser. No. 918,927
Int. Cl.[4] A61B *10/00*
U.S. Cl. 128—754 9 Claims



1. Apparatus for obtaining cells in performing a percutaneous biopsy comprising a relatively long, thin needle in the range of 18 to 21 gauge having an angled sharp cutting tip, a cell retrieving instrument slidably mounted in said needle, a syringe assembly connected to said needle and said cell retrieving instrument, said syringe assembly including a cylinder portion connected to one end of said needle, and a plunger portion slidably mounted in said cylinder portion, said cell retrieving instrument being connected to said plunger, whereby the needle and cell retrieving instrument can be slid relative to each other; a housing, said syringe assembly being removably mounted in said housing, said needle extending outwardly of said housing through a first end wall thereof, a pair of carriages slidably mounted in said housing, means connecting the syringe cylinder to one carriage, means connecting the syringe plunger to the other carriage, and means for sequentially sliding the syringe cylinder carriage and the syringe plunger carriage in a direction toward the other end of the housing, whereby the needle, with the cell retrieving instrument wholly contained therein, is manually inserted inwardly into a living body, the syringe cylinder carriage is first slid in a direction toward said other end of said housing, to thereby expose said cell retrieving instrument within the living body, and then the syringe plunger carriage is slid in a direction toward said other end of said housing to thereby pull said cell retrieving instrument back into said needle.

4,766,908

ASPIRATION SYRINGE

Thomas P. Clement, Bloomington, Ind., assignor to Van-Tec, Inc., Spencer, Ind.

Filed Jan. 12, 1987, Ser. No. 2,037
Int. Cl.[4] A61B *5/00*
U.S. Cl. 128—765 13 Claims



1. An aspiration syringe suitable for one-handed operation, comprising;

a barrel defining a bore,

a plunger comprising a small cross-section plunger shaft extending into the bore, and a first seal member within the bore, carried by the distal end of the shaft for axial movement within the bore, and

means for generating a syringe-actuating vacuum condition, comprising: said first seal member, a stationary end closure across the bore, proximal of the first seal member, the plunger shaft extending in sliding, sealed engagement therethrough, the first seal member sized and constructed, relative to the wall defining the bore, to engage said wall in vacuum-tight sealing engagement, and the transverse cross-sectional area of the shaft being much less than the transverse cross-sectional area of the bore to provide a syringe-actuating vacuum chamber of substantial volume within the bore between said seal and said closure,

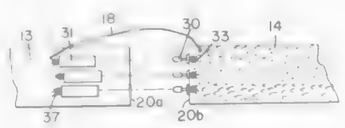
whereby movement of the plunger shaft to carry the first seal member distally, from a first position, away from the end closure, creates a vacuum condition within said vacuum chamber sufficient that when the plunger shaft is released, the first seal member is propelled by pressure differential acting across said first seal member, while the distal end of the syringe is exposed to fluid, to automatically move the plunger proximally toward the end closure and cause entry of fluid into the portion of the bore distal of said first seal.

4,766,909

THRESHOLD PENILE RIGIDITY MEASURING DEVICE

Gerald W. Timm, Minneapolis, Minn., and William E. Bradley, Huntington Beach, Calif., assignors to Dacomed Corporation, Minneapolis, Minn.

Continuation of Ser. No. 590,542, Mar. 19, 1984, abandoned, which is a continuation of Ser. No. 318,373, Nov. 5, 1982, abandoned. This application Feb. 2, 1987, Ser. No. 11,342
The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.
Int. Cl.[4] A61B *5/10*
U.S. Cl. 128—774 14 Claims



1. An apparatus for measuring rigidity of a penis in a penile tumescent event, comprising:

(a) band means for encircling at least a major portion of the circumference of the penis, and

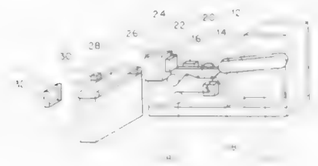
(b) detection means attached to a surface of the band means for detecting and recording the occurence of multiple levels of predetermined force urging the band means toward a larger diameter, the multiple levels of predetermined force corresponding to multiple levels of predetermined penile rigidity.

4,766,910

CONTENT TOBACCO AMOUNT CONTROLLING DEVICE FOR A CIGARETTE MAKING MACHINE

Yutaka Okumoto, Musashino, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Feb. 26, 1985, Ser. No. 705,877
Claims priority, application Japan, May 8, 1984, 59-90256
Int. Cl.[4] A24C *5/14*
U.S. Cl. 131—84.1 1 Claim



1. A content tobacco amount controlling device for use with a cigarette making machine for the type including a cigarette conveyor for attracting and conveying shredded tobacco thereon, a trimming device for removing an excessive amount of shredded tobacco conveyed by said cigarette conveyor to regulate an amount of content tobacco, and tobacco wrapping means for transferring the content tobacco trimmed by said trimming device onto continuous tobacco roll paper and for wrapping the content tobacco into the tobacco roll paper to make a bar-like cigarette, said content tobacco amount controlling device comprising:

a first radio ray density detecting means for irradiating with radio rays tobacco on said cigarette conveyor directly after the tobacoo has been trimmed by said trimming device and for measuring an amount of radio rays passing through the tobacco to produce an electric output signal representative of a difference between a measured density of the tobacco and a reference density;

a second radio ray density detecting means for irradiating with radio rays a bar-like cigarette made by said tobacco wrapping means and for measuring an amount of radio rays passing through the bar-like cigarette to produce an electric output signal representative of a difference between a measured density of a bar-like cigarette and a reference density;

a first integrating means connected to said second radio ray density detecting means for integrating an electric signal from said radio ray density detecting means;

an adding means connected to said first integrating means for adding an output of said first integrating to an output of said first radio ray density detecting means; and

a second integrating means connected to said adding means for integrating an output of said adding means;

said trimming device being operated in response to an output of second integrating means to control an amount of content tobacco after trimming.

4,766,911

METHOD FOR TRACING SMOKING ARTICLES

Robert L. Oglesby, Kernersville, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Jun. 23, 1986, Ser. No. 877,047
Int. Cl.[4] A24C *5/60*
U.S. Cl. 131—281 12 Claims

1. A process for coding rod shaped smoking articles for subsequent identification, each coded smoking article having a perforated region in the outer wrap thereof, the process comprising the steps of:

(a) providing different, predetermined, coded perforation patterns to different sets of smoking articles from within a particular brand; and



(b) recording the perforation patterns which are provided to the different sets of smoking articles; whereby the subsequent identification is capable of being provided by comparing the perforation pattern of a smoking article from within a set so provided with the recorded perforation patterns of the different sets.

4,766,912

METHOD AND APPARATUS FOR PUFFING TOBACCO

Klaus-Georg Hackman; Reinhard Liebe, both of Hamburg; Enno Freesemann, Reinbek; Willi Thiele, Geesthacht, and Waldemar Wochnowski, Hamburg, all of Fed. Rep. of Germany, assignors to Körber AG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 940,197, Dec. 12, 1986, abandoned, which is a continuation of Ser. No. 602,187, Apr. 19, 1984, abandoned. This application Oct. 6, 1987, Ser. No. 106,921
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314828; Dec. 2, 1983, 3343603
Int. Cl.[4] A24B *3/18*
U.S. Cl. 131—296 26 Claims



1. A method of increasing the specific volume of tobacco particles, especially comminuted tobacco ribs, comprising the steps of transporting the particles into the inlet of, along and through the outlet of a predetermined path, including vibrating the path and the particles of tobacco between said inlet and outlet; sealing the particles of tobacco in said path from the surrounding atmosphere, at least in regions other than said inlet and said outlet; and contacting the particles of tobacco in said path with steam including conveying steam transversely of said path at a temperature and pressure such that the temperature of tobacco particles is raised to between 100.5° and 120° C. not later than when the particles reach the outlet of said path, said contacting step including condensation of steam on tobacco particles.

VOL 1093 ISS 5 AG 30 1988 UMI

4,766,913

MICROPROCESSOR CONTROLLED HAIR TREATMENT APPLIANCE

Gustave J. Klein, Great Neck, N.Y., assignor to Revlon, Inc., New York, N.Y.

Filed Nov. 24, 1982, Ser. No. 444,147
Int. Cl.[4] A45D *20/20*
U.S. Cl. 132—9 9 Claims



1. Apparatus for treating hair in association with a head bonnet adapted to be placed about the hair being treated and having a heater for heating the hair during the treatment, comprising:

a. a control panel having a plurality of selection switches, with each selection switch representing a different hair type for allowing the selection and entry of the type of hair to be treated from a plurality of possible hair types indicated thereon;

b. a temperature sensor for detecting the temperature produced by the heater at the hair during the treatment thereof;

c. a binary memory having stored therein as binary words a treatment time and temperature for each of the plurality of switches for the possible hair types indicated on the control panel; and

d. a processing circuit means, comprising a microprocessor having said memory as a component thereof, responsive to the entry by actuation of a switch for the selected hair type, for retrieving from said memory the treatment time and temperature therefor, said processing circuit being responsive to said temperature sensor for controlling the heater of the head bonnet to maintain it substantially at the temperature retrieved from memory during the treatment, said processing circuit further including a timer for timing the treatment time retrieved from memory to turn off the head bonnet heater after the measured treatment time.

4,766,914

HAIRDRESSER'S GLOVE

Blanca F. Briggs, 1021 E. Las Olas Blvd., Fort Lauderdale, Fla. 33301

Filed Jun. 18, 1984, Ser. No. 621,613
Int. Cl.[4] A45D *1/00*
U.S. Cl. 132—9 11 Claims

11. A hairdresser's glove formed with flexible fingers and having elongated flexible and resilient comb teeth projecting forwardly from at least certain of said fingers on the front of the glove and spaced laterally from each other substantially more than the thickness of each comb tooth; and means for



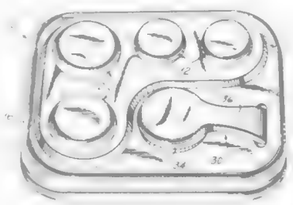
discharging air at a plurality of locations on the front of the glove.

4,766,915

FACIAL TREATMENT AND LOTION KIT

Geoff Ficke, Studio City, Calif., assignor to Thermagene Limited, Geneva, Switzerland

Division of Ser. No. 641,711, Aug. 17, 1984, Pat. No. 4,655,232.
This application Dec. 16, 1986, Ser. No. 942,510
Int. Cl.[4] A45D *40/00*
U.S. Cl. 132—79 F 4 Claims



1. A kit comprising:

(a) an electrically inactive handle member comprising an electrically inactive substantially flat metal disk capable of absorbing and holding heat, and held by a handle portion having heat insulating characteristics and being substantially non-heat conducting;

(b) a plurality of lotion preparation containers containing lotion preparations;

(c) a tray member comprising:

(i) holding wells for holding a corresponding plurality of lotion preparation containers containing lotion preparations at ambient temperature;

(ii) a heating element having heating pad means and adapted to hold said electrically inactive substantially flat metal disk, for raising the temperature of said electrically inactive substantially flat metal disk while it is being held by said heating element, to temperature of from approximately 109° F. to approximately 115° F.; and,

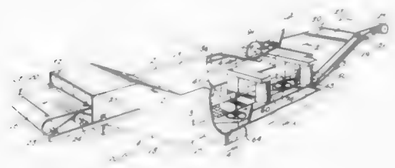
(iii) means for thermally insulating said heating element and said substantially flat metal disk from said holding wells and from said lotion preparation containers being held therein.

4,766,916

CONTINUOUS CONVEYOR DEGREASING AND CLEANING MACHINE

Donald R. Bowden, 8707 Valleyview Dr., Huntsville, Ala. 35802

Filed Nov. 21, 1986, Ser. No. 933,159
Int. Cl.[4] B08B *3/02*
U.S. Cl. 134—109 22 Claims



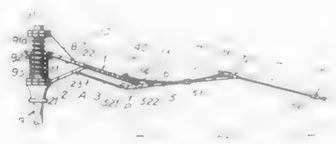
1. A degreasing and cleaning machine for cleaning parts and other articles comprising a housing having an inlet end, a discharge end and an intermediate fluid retention portion, a cleaning chamber defined within said housing and spaced vertically below said inlet end and said discharge end thereof, upper and lower headers mounted within said cleaning chamber of said housing so as to be in spaced vertical relationship with respect to one another, each of said upper and lower headers having a plurality of discharge opening therein which are oriented in opposing relationship with respect to one another, a first fluid inlet opening into said upper header, a second fluid inlet opening in said lower header, fluid flow control means for circulating fluid from within said cleaning chamber through said first inlet opening to said upper header and out of said discharge openings therein and through said second fluid inlet opening and through said discharge openings in said lower header, a contaminant containment chamber mounted in fluid communication with said intermediate fluid retention portion of said housing, means mounted to said housing for removing contaminants from said containment chamber, and conveyor means mounted within said housing and extending from said inlet end to said discharge end thereof, said conveyor means extending through said cleaning chamber so that a section thereof extends between said upper and lower headers whereby parts carried by said conveyor means are carried through said cleaning chamber and acted upon by opposing fluid currents being directed through said discharge openings in said upper and lower headers.

4,766,917

EASILY-FOLDED LINK MEANS OF MULTIPLE-FOLD UMBRELLA

Chi-Kuo Yang, P.O. Box 10160, Taipei, Taiwan

Continuation-in-part of Ser. No. 882,423, Jul. 7, 1986, Pat. No. 4,676,262. This application Jul. 30, 1987, Ser. No. 79,710
Int. Cl.[4] A45B *19/00*
U.S. Cl. 135—25 R 2 Claims



1. An easily-folded link means of multiple-fold umbrella comprising:

a first link pivotally secured to a middle bracket jacketed on a central handle;

a second link pivotally secured to a lower bracket jacketed on the central handle;

a third link juxtaposedly pivotally formed under said first link, having its inner end pivotally secured to an outer portion next to an outermost end of said second link;

a concealed reinforcing link secured to said second link;

a fourth link having its innermost end pivotally secured to an outer end of said third link, having its inner portion next to its innermost end pivotally secured to an outer end of said first link;

a spring link having its central portion slidingly held within said fourth link, having its inner end secured to said first link and;

a fifth link respectively pivotally secured to each outer end of either said fourth link and said spring link; and

a wire securing said first link to an upper bracket fixed on a top portion of said central handle;

the improvement which comprises:

said concealed reinforcing link having its inner end pivotally secured to the outermost end of said second link and having its outer end pivotally secured to an inner portion of the fourth link next to the innermost end of the fourth link;

said concealed reinforcing link generally parallel to said third link and operatively engaged with a longitudinal groove formed in

said first link, adapted for supporting said first link when raising said lower bracket and said second link for extending the plural link means and an umbrella hook for shielding purpose;

said inner portion of said fourth link respectively pivotally secured with each outer end of said reinforcing link and said first link.

4,766,918

CONVERTIBLE, INFLATABLE SHELTER APPARATUS

W. G. Odekirk, Las Vegas, Nev., assignor to Aspen Enterprises, Inc., Las Vegas, Nev.

Filed Nov. 3, 1986, Ser. No. 926,902
Int. Cl.[4] E04H *15/02, 15/36;* B63B *35/58;* E04B *1/34*
U.S. Cl. 135—96 22 Claims



1. A convertible, inflatable shelter apparatus for use on land and in a body of water, the apparatus comprising:

(a) a buoyant vehicle comprising:

(i) an inflatable frame comprising an outer member;

(ii) a flexible member forming a floor for the vehicle, the flexible member having a perimeter, the perimeter of

VOL 1093 ISS 5 AG 30 1988 UMI

the flexible member being sealingly attached to the frame; and

(iii) anchor means on the frame for holding a spaced plurality of cylindrical members; and

(b) a shelter assembly comprising:

(i) a plurality of elongated struts, a cylindrical portion of each strut being removably held by the anchor means, each strut extending upwardly therefrom and across the floor;

(ii) a flexible cover supported by the struts and extending to proximate the perimeter of the floor, the cover having entrance means for an occupant of the shelter;

(iii) an inflatable cushion for covering the floor, the cushion being removably retained against the floor by the frame; and

(iv) means for holding a bottom portion of the cover proximate an edge of the cushion,

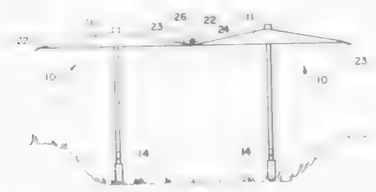
wherein when the cushion, the struts, and the cover are removed from the vehicle, the holding means is capable of maintaining the bottom portion of the cover proximate the cushion with the struts extending upwardly therefrom and across the cushion, the cushion and the struts being capable of being supported on the land apart from the vehicle for forming a tent.

4,766,919

UMBRELLA WITH MEANS FOR CONNECTING TO LIKE UMBRELLAS AND METHOD FOR CONSTRUCTING TEMPORARY SHELTER

Thomas B. Crates, Charlotte, N.C., assignor to Jameson Corporation, Charlotte, N.C.

Filed Apr. 13, 1987, Ser. No. 37,827
Int. Cl.[4] A45F *1/16*
U.S. Cl. 135—97 21 Claims



1. An umbrella usable alone as a protective shelter or together with a plurality of like umbrellas to provide a larger, temporary shelter from the rain or sun, said umbrella comprising:

(a) a protective sheet having at least three straight sides;

(b) an elongate pole attached to the center of the protective sheet for spacing the sheet in a predetermined spaced-apart relation above a surface and supporting said sheet in the spaced-apart position;

(c) a plurality of ribs attached to said sheet;

(d) opening and closing means slidably positioned on said elongate pole and connected to said ribs for opening said umbrella into an open position wherein said protective sheet is extended substantially perpendicular to said elongate pole with the sheet being supported by the ribs, and a closed position wherein said protective sheet resides in a collapsed, folded position alongside said elongate pole; and

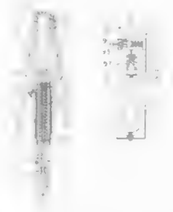
(e) connecting means cooperating with said protective sheet for connecting together a plurality of like umbrellas along adjacent sheet edges to form a relatively large temporary protective shelter, said connecting means comprising male fastening members attached to one side edge of said sheet and complementary female fastening members attached to the opposite side edge of said sheet for attaching together a row of adjacently positioned like umbrellas.

4,766,920

INTERNAL ACTION IMPROVED GAS POWERED UMBRELLA

Clyde C. Grady, II, Baytown, Tex., assignor to Christianson Manufacturing Corp., Baytown, Tex.

Continuation-in-part of Ser. No. 482,770, Apr. 7, 1983, abandoned, which is a continuation-in-part of Ser. No. 475,770, May 8, 1983, Pat. No. 4,523,601. This application Feb. 13, 1984, Ser. No. 579,679
Int. Cl.[4] A45B *25/14, 23/00*
U.S. Cl. 135—20 B 9 Claims



1. An umbrella having a canopy and a frame of interconnected ribs and a means for the automatic opening and closing of the aforesaid ribs and canopy comprising:

a spring for biasing the ribs of the umbrella into the closed position;

a fluid actuated piston and cylinder for biasing the ribs of the umbrella into the open position;

a reservoir containing fluid for actuation of the aforesaid piston;

a manually-actuated primary means for controlling the flow of fluid from the aforesaid reservoir to the aforesaid piston and cylinder;

a passive secondary means for controlling the flow of fluid from the aforesaid reservoir such that upon manual actuation of the primary means for controlling the flow of fluid from the aforesaid reservoir the larger resistance to the flow of fluid from the the aforesaid reservoir is provided by said secondary means of controlling the flow of fluid.

4,766,921

METHOD OF OPERATING A PWM SOLENOID VALVE

Leonard J. Williams, East Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Oct. 17, 1986, Ser. No. 920,303
Int. Cl.[4] F16K *31/06*
U.S. Cl. 137—1 13 Claims



1. A method of controlling the operation of a pulse-width-modulated on/off-type solenoid valve, said valve having one member mounted for movement relative to another member and having at least one coil operatively arranged to be supplied with current for selectively displacing said one member relative to said other member, wherein the improvement comprises the steps of:

generating a repetitious train of first pulses at a predetermined repetition rate, each of said first pulses having a width necessary to substantially eliminate the lag in the dynamic response characteristics of said valve;

generating a repetitious train of second pulses at said repetition rate, each of said second pulses having a width proportional to a desired percentage of time that said valve is to remain open;

adding such second pulse train to such first pulse train so that the width of each of said second pulses will be effectively summed with the width of an associated one of said first pulses; and

supplying a current reflective of such combined pulse trains to said coil;

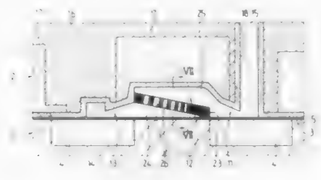
thereby to cause the actual percentage of time that said valve remains open to be substantially proportional to the widths of said second pulses.

4,766,922

PROCEDURE FOR FORMING COCKS CLOSABLE BY FREEZING, BELONGING TO A LIQUID BATCH HANDLING UNIT, AND HANDLING UNIT SET UP ACCORDING TO THE PROCEDURE

Niilo Kaartinen, Kuusisto; Henrik Johansson; Ahti Leinvuo, both of Espoo, and Paul Collander, Kauniainen, all of Finland, assignors to Fluilogic Systems Oy, Finland

PCT No. PCT/FI86/00039, § 371 Date Dec. 11, 1986, § 102(e) Date Dec. 11, 1986, PCT Pub. No. WO86/06144, PCT Pub. Date Oct. 23, 1986
PCT Filed Apr. 11, 1986, Ser. No. 15,130
Claims priority, application Finland, Apr. 12, 1985, 851478
Int. Cl.[4] F16K *49/00;* F17D *1/18*
U.S. Cl. 137—13 12 Claims



1. Procedure for providng valves for a liquid batch handling unit with the use of two blocks having surfaces which define the valves at predetermined valve areas as the surfaces are brought against each other, the procedure comprising the steps of

providing two blocks having valve areas at their surfaces, a first block and a second block, said first block with flow passages leading to valve areas at the surface of said first block;

connecting the second block to a permanently operable refrigerator and providing electric heating elements to register with valve areas of its surface;

providing cavities in at least one of said two blocks in the vicinity of the valve areas of its surface and filling the cavities as formed with thermal lagging material;

providing depressions to the surface of at least one of said two blocks at its valve areas;

providing the surfaces of the two blocks which define the valves with a layer of a chemically inert material so that the electric heating elements and the thermal lagging material are covered by said inert material, at least the block which is connected to the refrigerator and is provided with the heating elements having the inert material layer at its valve areas so thin as to have a thermal conductivity in the range of 0.2–100 $mV/^{\circ}C. mm^2$;

placing the block surfaces against each other so that the respective valve areas at the opposite surfaces will mate with each other; and

conducting a liquid between the surfaces;

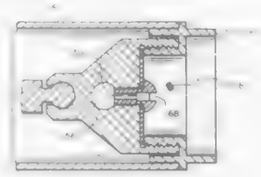
so that any gaps between the different valves as providing are filled with said liquid and closed permanently by freezing the liquid by means of the refrigerator, the valves being then constituted by said depressions providing valve chambers between the opposite surfaces, the valves being connected to said flow passages and defined by the inert material layers covering said surfaces and the permanently frozen liquid as present between said surfaces, and the valves being controllable by means of the electric heating elements which, when in operation, keep the respective valves open for a flow conducted through said flow passages and, when out of operation, let the refrigerator close the valves by freezing the liquid as conducted to or present in the valve chamber.

4,766,923

FREEZE SAFE VALVE

Bernarr G. Roper, 1528 N. 1450 West, Provo, Utah 84604

Filed Nov. 20, 1986, Ser. No. 933,048
Int. Cl.[4] F16K *17/36*
U.S. Cl. 137—15 5 Claims



1. A fluid valve, comprising:

a valve body;

a valve seat positioned within said valve body;

a valve gate sized to fit within said body for operatively positioning against said valve seat in a closed position to restrict fluid flow, said valve gate having an upstream and a downstream side;

a washer screw configured and adapted to be removably coupled to said valve gate and having a channel formed therein for providing fluid intercommunication between said downstream and said upstream sides with said valve gate in a closed position, said channel having a first portion in communication with said upstream side and a second portion in communication with said first portion and said downstream side, said first portion having a greater cross sectional area than said second portion wherein said first and second portions are sized and shaped to form a shoulder therebetween; and

a resilient plug sized and shaped to snugly be positioned in an interference fit in said first portion of said channel to abut said shoulder to restrict the flow of fluid through said channel from said upstream side to said downstream side, said plug being moveable to be dislodged upstream of said first portion with said valve gate in said closed position to pass fluid from said downstream side to said upstream side when the fluid pressure on said downstream side exceeds the fluid pressure on said upstream side a certain preselected amount.

4,766,924

PRESSURE RELIEF VALVE

Leighton Lee, III, Madison, and Stephen E. Anderson, Old Saybrook, both of Conn., assignors to The Lee Company, Westbrook, Conn.

Filed Dec. 8, 1986, Ser. No. 938,816
Int. Cl.[4] F16K *17/04*
U.S. Cl. 137—536 5 Claims

1. A relief valve comprising:

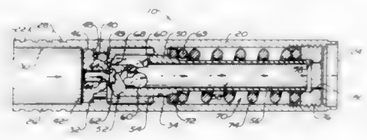
housing means for forming a generally axially extending body defining a cavity;

stationary seat means disposed in fixed relationship with said body, said seat means forming an axially extending passage and a stationary valve seat surrounding said passage,

VOL 1093 ISS 5 AUG 30 1988 UMI

said stationary valve seat comprising a convex-shaped surface having a generally spherical curvature;

poppet means received in said cavity and axially displaceable therein, said poppet means having a poppet valve surface sealingly engageable with said stationary valve seat to prevent the flow of fluid through said valve seat and axially displaceable from said valve seat to permit fluid flow between said poppet valve surface and said valve seat, said poppet means comprising a poppet member having a generally sleeve-like portion and a plurality of angularly spaced passages to provide fluid communication with the interior of said sleeve-like portion and having an end portion having a recessed end axially spaced from said poppet valve surface and an axially extending, generally cylindrical inner wall in the vicinity of said poppet valve



surface, said wall at least partially defining said recessed end; and

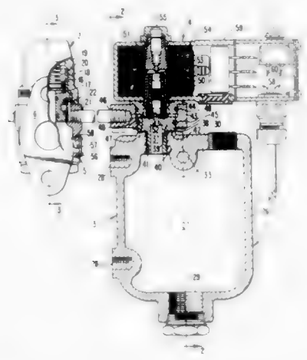
closure spring means for biasing said poppet means in a first axial direction so that when the pressure exerted against the poppet means in the opposing axial direction is below a preestablished threshold, said poppet valve surface sealingly engages said stationary valve seat, and when pressure exerted against the poppet means exceeds the threshold pressure, said poppet valve surface is axially displaced from said valve seat and the low pressure to which said poppet valve means is subjected in the vicinity of said poppet valve surface resulting from accelerating fluid flow between said poppet valve surface and said stationary valve seat is substantially radially distributed against said axially extending wall.

4,766,925

DUMP VALVE ASSEMBLY

Virgil L. Frantz, Salem, Va., assignor to Roanoke College, Salem, Va.

Filed Jun. 17, 1987, Ser. No. 63,454
Int. Cl.[4] E03B 7/10; F16L 55/07
U.S. Cl. 137—62 8 Claims



1. A dump valve assembly for dumping coolant from a cooling system, comprising an air-operated dump valve connected in said system, a reservoir discrete to said valve and having an outlet connectable to an operating air port thereof, means connecting said reservoir for charging by and against discharging to an associated compressed air system, and solenoid-actuated valve means mounted on said reservoir and interposed between said reservoir and said dump valve, said valve means being operative on demand for passing operating air from said reservoir directly to said dump valve for dumping coolant from said cooling system when said compressed air system is shut down.

4,766,926

HYDRAULIC UNLOADING VALVES

Derek J. Smith, Sutton Coldfield, United Kingdom, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Sep. 16, 1987, Ser. No. 97,568
Claims priority, application United Kingdom, Oct. 1, 1986, 8623556
Int. Cl.[4] G05D 7/01
U.S. Cl. 137—115 7 Claims



1. An hydraulic unloading valve having an inlet through which fluid enters the valve, an outlet through which fluid may leave the valve, an outlet valve seat, a valve member movable towards and away from the valve seat and carrying a valve surface for closing off the valve seat, a first orifice means sensitive to viscosity which in response to the flow of fluid through the inlet generates a first pressure drop arranged to tend to move the valve member away from the valve seat, and second orifice means which is not sensitive to viscosity and which in response to said flow generates a second pressure drop arranged to tend to move the valve toward the valve seat to bring the valve seat and surface into contact to close-off flow through the valve outlet when the second pressure drop is greater than the first pressure drop.

4,766,927

ABRASIVE FLUID CONTROL VALVE WITH PLASTIC SEAT

Roger L. Conatser, Antioch, Tenn., assignor to Scott & Fetzer Company, Westlake, Ohio

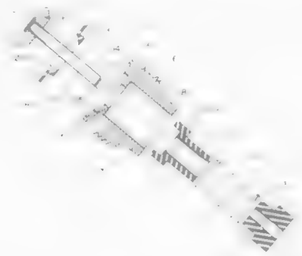
Filed Jan. 29, 1987, Ser. No. 8,872
Int. Cl.[4] F16K 43/00, 15/06
U.S. Cl. 137—315 3 Claims

3. A fluid control valve adapted for use with resilient sealing components in high pressure abrasive environments comprising:

a. a valve cartridge having a generally cylindrically shaped valve cartridge body; a generally centrally located bore through said cartridge body; a ridge integral to said cartridge body located aroud the outer periphery of the high-pressure end of the surface of said cartridge body for sealingly engaging and supporting a unitary valve seat of plastic material and concentrating contact pressure along said ridge to reduce extrusion of said valve seat; and ledge means integral to said cartridge body for positioning and supporting said valve seat both radially and axially;

b. said valve seat being adapted for use with abrasive fluids under high pressure having an outer circular disc flange which

sealingly covers substantially all of the high-pressure end surface of the cartridge valve; an inner valve poppet seat section defined by interior and outer walls, where said interior walls are tapered to matingly receive substantially all of the tapered walls of the tapered valve poppet such that when said poppet and said seat are engaged under pressure, said popped provides axial and radial support to said seat, and said outer walls being perpendicular to said disc flange for generally vertically and horizontally positioning and engaging the corresponding walls of said valve seat ledge, said ridge, said corresponding walls, said outer walls, and said disc flange defining a void allowing



for deformation of said valve seat during assembly of said valve seat and said cartridge to prevent leakage therebetween;

c. a valve stem centrally aligned within the bore of said valve cartridge;

d. a valve poppet with tapered exterior walls to matingly engage the tapered recess of said valve seat;

e. a means for locating and securing said valve stem within the bore of said valve cartridge;

f. a ring radial support means surrounding said cylindrical section of said valve seat; and

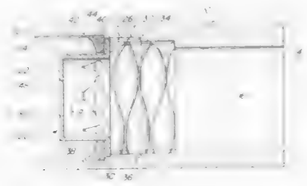
g. washer means immediately adjacent to said valve seat to provide additional axial support to said seat.

4,766,928

CONSTANT FLOW RATE CONTROL VALVE

Farhad Golestaneh, Dallas, Tex., assignor to Packaged Systems, Inc., Dallas, Tex.

Filed Oct. 27, 1986, Ser. No. 923,179
Int. Cl.[4] G05D 7/01
U.S. Cl. 137—504 13 Claims



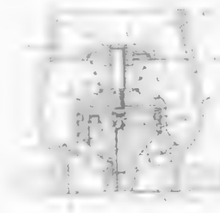
1. A constant flow rate control valve including a valve body having a flow passage; a cup member in the flow passage, said cup member having a cylindrical sidewall and an end wall defining an interior of said cup member, said cylindrical sidewall having a plurality of side extending therethrough; a shear plate having a central aperture extending therethrough, said cup member being movably disposed in said aperture so that movement of said cup member within said aperture varies the area of at least some of said side ports; and means resiliently urging said cup through said aperture such that flow through said flow passage impinges said end wall and flows through said side ports, the improvement comprising: an orifice port formed in said end wall, said orifice port being positioned and configured such that a stream of liquid flowing through said orifice port is contracted after passage through said orifice port forming an area of reduced turbulence and reduced pressure inside said cup member adjacent said side ports in the cylindrical sidewall of the cup member and such that the total flow of liquid into said interior through said orifice port and through said side ports including said variable area side ports is substantially constant over a range of pressure differentials across said valve, which range is sufficient to vary the area of at least one said variable are side port between its minimum and maximum areas, and wherein the size of said orifice port is sufficient to allow said substantially constant total flow of liquid to pass through said orifice port at the upper end of said range of pressure differential.

4,766,929

CHECK VALVE

Charles Yaindl, Allentown, Pa., assignor to Durabla Manufacturing Co., Lionville, Pa.

Division of Ser. No. 843,308, Mar. 24, 1986, Pat. No. 4,693,270.
This application Jun. 25, 1987, Ser. No. 66,258
Int. Cl.[4] F16K 15/02
U.S. Cl. 137—514.3 6 Claims



1. A check valve, the valve having an inlet end and an outlet end, the valve comprising:

(a) a disk means, and a seat means, the disk means being mounted for movement within the valve, the disk means being biased by a spring means to abut the seat means, the disk means, when abutting the seat means, being located near a central member, the disk means being capable of moving away from the seat means in response to fluid flow originating from the inlet end of the valve, and of opening a path for fluid flow through the valve, said fluid flow path being generally unobstructed, and being free of right-angle bends.

(b) the disk means including chamber defining means, wherein the disk means and the central member together form a chamber for fluid, and

(c) orifice means, of known size, disposed in the central member and fluidly communicating with the chamber, the orifice means providing a controlled path for fluid flow out of the chamber, into the inlet end, and out of the valve, when the disk means is moving towards the seat means,

wherein the central member includes a central bore, the central bore providing a path for fluid flowing into the chamber, and wherein the orifice means comprises a hole in the central member which is spaced apart from the central bore,

the valve further comprising means for sealing the central member against the disk means and means for preventing the flow of fluid out of the chamber and into the central bore, such that substantially the only path for fluid flow out of the chamber, when the disk means is moving towards the seat means, is through the orifice

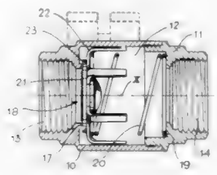
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,930

CHECK VALVE WITH SELF-GUIDED SHUTTER IN THE VALVE BODY

Vincenzo Patti, Brescia, Italy, assignor to ITAP S.p.A., Italy

Filed Jul. 7, 1987, Ser. No. 70,567
Claims priority, application Italy, Jun. 3, 1987, 7030/87[U]
Int. Cl.[4] F16K *15/02*
U.S. Cl. 137—540 4 Claims



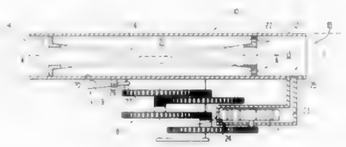
1. A fluid delivery check valve, comprising: a valve body, a sleeve threaded on said valve body, said valve body and said sleeve defining a valve chamber; an inlet port and an outlet port associated with said valve body forming an inlet and an outlet to said valve chamber; a valve seat positioned between said inlet and said outlet; a spring-actuated plate shutter positioned in said chamber; an annular sealing gasket; said plate shutter being provided with wing portions parallel to a central axis of said shutter and slidingly interacting with an inner surface of said chamber for guiding the opening and closing displacements of said shutter, said valve seat interacting with said shutter through said gasket, said plate shutter including a pair of steel sheet metal disks superimposed on each other and welded to each other and partially enclosing therebetween said annular sealing gasket.

4,766,931

SUBMERGED VALVE

Daniel J. V. D. Chauvier, and Peter Woodman, both of 57 Miller Road, Nuffield Springs, South Africa

Filed Mar. 26, 1987, Ser. No. 30,048
Claims priority, application South Africa, Apr. 2, 1986, 86/2408; Sep. 17, 1986, 86/7062
Int. Cl.[4] F16K *31/365*
U.S. Cl. 137—624.14 5 Claims



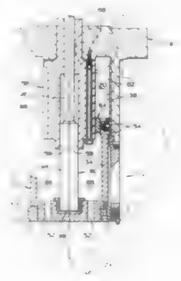
1. A valve adapted to periodically interrupt suction along a submerged suction conduit through which liquid flows toward a suction source, said valve comprising:
a body defining a first flow passage therethrough extending between an inlet to and an outlet from the body;
said body being operatively connected with said submerged suction conduit, with said outlet being connected with said suction source;
a closure member movably mounted within said body for movement between a closed position which blocks flow through said flow passage and an open position which permits flow through said flow passage;
timing means for controlling the length of time said closure member remains in it open and closed positions; and
actuating means to cause said closure member to move to its open and closed positions at predetermined intervals as determined by said timing means;
said timing means comprising a gear train;
said actuating means comprising:
a variable volume chamber;
an equalisation port defined in said chamber; and
a movable port closure member;
said movable port closure member being movable between a position which opens said port and a position which closes said port;
said movable port closure member being operatively engageable with said gear train;
whereby said gear train determines when said port closure member opens and closes said port;
a further flow passage having an inlet thereto and an outlet into said body downstream of said closure member in the body;
a water wheel rotatably mounted in said further flow passage and connected with said gear train;
said liquid flow toward said suction source causing some of said liquid to enter said further flow passage through said inlet and to rotate said water wheel as it passes to said outlet;
said port closure member normally being in a position which closes said port and said operation of said gear train periodically causing said port closure member to open and close said port thereby causing said closure member in the body periodically to move between its open and closed positions.

4,766,932

STEAM CONTROL VALVE

Frank J. Heymann; Gilbert F. Hyde, both of Winter Springs, and Thomas L. Schuchart, Casselberry, all of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 14, 1987, Ser. No. 49,484
Int. Cl.[4] F16K *47/02, 47/14*
U.S. Cl. 137—625.3 5 Claims



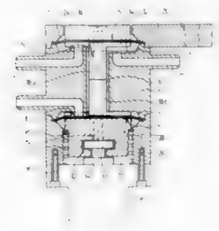
1. A valve for controlling the flow of a pressurized fluid comprising:
a. a body member having a central axis, a valve cage concentric with said central axis, and a bonnet for supporting said body member and said valve cage, said body member forming a fluid chamber surrounding said valve cage, the valve having an outlet port connectable to said fluid chamber through said valve cage;
b. a valve plug having a substantially cylindrical plug wall, said plug being concentrically disposed within said valve cage and moveable from an open position to a closed position whereby said chamber is isolated from said outlet port when said valve plug is in a closed position thus blocking passage of fluid through the valve;
c. a valve stem having a first end connected to said valve plug, a first portion extending into said valve cage, and another portion extending therefrom for moving said plug along said central axis;
d. guiding means attached to an inner surface of said valve plug for guiding movement of said plug substantially parallel to said central axis, said guiding means comprising an annular guide ring attached to an upper portion of said plug wall, said guide ring separating said valve cage into a bonnet chamber and a plug chamber, the valve including means for balancing pressure between said chambers; and
e. bushing means rigidly connected to said bonnet and extending into said valve cage, said bushing means having an inner surface along a central bore for guiding movement of said valve stem along said central axis and an outer surface in operative association with said plug guiding means for guiding movement of said valve plug between open and closed positions.

4,766,933

TWO OR THREE WAY MICROELECTROVALVE WITH TWIN SEALING MEMBRANE

Henri Champseix, Montesson, and Serge Champseix, Les Mureaux, both of France, assignors to Societe Anonyme Dite: ABX, Levallois, France

Filed Jun. 19, 1987, Ser. No. 64,060
Claims priority, application France, Jun. 20, 1986, 86 08908
Int. Cl.[4] F16K *11/048*
U.S. Cl. 137—625.5 8 Claims



1. In a microelectrovalve with at least two ways including a main body having two opposite faces which are countersunk to form cups, said main body defining an inner chamber into which open fluid incoming and outgoing pipes, and a mobile assembly forming a closure member moved by a mobile core of an electromagnet, the mobile aassembly being essentially formed of two flexible membranes mounted on each side of a core which passes through a central well provided in the main body of the microelectrovalve, the improvement comprising each flexible membrane sealingly closing, by a small eccentric part of its surface, the outgoing pipes which open into a zone of the corresponding cup, transverse from the central wall and the fluid incoming pipe opens into one of the cups in a zone also transverse from the central wall.

4,766,934

CLOSURE HEAD FOR A HYDRAULIC TUBE-TESTING BENCH

Bernard Ollivaud, Launay le Cellier, and Philippe Blot, Nantes, both of France, assignors to Alsthom, Paris, France

Filed Aug. 10, 1987, Ser. No. 83,112
Claims priority, application France, Aug. 14, 1986, 86 11765
Int. Cl.[4] G01M *3/28*
U.S. Cl. 138—90 4 Claims

1. A closure head for a hydraulic tube-testing bench, the head comprising a head body including:
a first bore into which one end of a tube may be freely inserted;
a second bore of larger diameter than the first bore;
a resilient sealing ring inserted at the end of the second bore and defining a chamber between the outer periphery of said sealing ring and said second bore;
means for conveying a fluid under pressure into said chamber for causing said sealing ring to contract against said tube;
an annular series of thrust sectors which are independent from said sealing ring and which are disposed on the side of said sealing ring remote from the inserted end of the tube, thereby preventing said sealing ring from moving axially, said sectors including radial sliding control means for causing said sectors to be clamped radially against the tube and also for radially retracting them away from said tube, said sectors further including axial retention means



on their sides remote from said sealing ring for restraining said sectors from axial movement;
said closure head including the improvement whereby said axial retention means for the thrust sectors comprise:
a packing press fixed to said head body on the side of the head body remote from said sealing ring; and
a rubbing plate in contact with the packing press and terminating in a circular peripheral rim radially overlying the outer periphery of the thrust sectors, and said thrust sectors including circumferential grooves provided in the periphery of the thrust sectors sized to and receiving the circular peripheral rim when the thrust sectors are radially retracted.

4,766,935

POSITIVE DOBBY

Tadashi Tanaka, and Noboru Sekitani, both of Ohtsu, Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Aug. 20, 1987, Ser. No. 87,697
Claims priority, application Japan, Aug. 25, 1986, 61-199822
Int. Cl.[4] D03C *13/00*
U.S. Cl. 139—55.1 7 Claims



1. A positive dobby comprising:
a driving shaft;
a first cam shaft being supported axially in parallel to the driving shaft;
a second cam shaft being provided on brackets which are pivotable about the first cam shaft;

VOL 1093 ISS 5 AG 30 1988 UMI

a pair of cam plates mounted on the first and second cam shafts rotatably with respect to the cam shafts;
cam levers adapted to move pivotally about the driving shaft following the paired cam plates; and
jack levers integrally combined with the cam levers.

4,766,936

CARD SWITCHING APPARATUS FOR DOBBY

Hiroshi Takada, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 6, 1986, Ser. No. 816,742
Claims priority, application Japan, Jan. 17, 1985, 60-7006
Int. Cl.[4] D03D *51/00*
U.S. Cl. 139—324 3 Claims



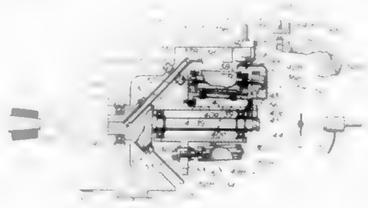
1. A card switching apparatus for a dobby comprising:
a first gear securely mounted on a rotary shaft of a cylinder with a card, which is supported on a bracket mounted for rocking motion around a first shaft;
a driving gear securely mounted on an input shaft driven in response to a loom;
an idle gear supported on a second shaft, said idle gear being disposed between the first gear and the driving gear and transmits the rotation of the input shaft to the cylinder;
an eccentric crank lever being connected to and supporting a second shaft of the idle gear thereon; and
a motor for moving the crank lever,
a second gear supported on the bracket and engaged with the first gear,
wherein said idle gear comprises a third gear which is supported on the second shaft extending through a cam slot formed in a cam plate and is in meshed engagement with the second gear and the driving gear, said cam plate being secured to a frame,
wherein said eccentric crank lever has a round hole formed at the end portion opposite the second shaft, and an eccentric disk is fitted in the round hole of the crank lever and is secured to a shaft of the motor, whereby said crank lever is displaced to move the second shaft along the cam slot in response to a rotational angle of the shaft of the motor;
wherein said cam slot consists of a levelling cam slot formed to extend from a position corresponding to the forward rotation position of the second shaft for normal operation to a first arc centering around the center of the driving gear and another reverse rotating cam slot formed contiguously to the levelling cam slot and extending from the position to a second arc centering around the center of the second gear.

4,766,937

WEFT STORAGE DEVICE

Shuichi Kojima; Takao Ishido, and Shogo Sasaki, all of Tokyo, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 4, 1985, Ser. No. 772,547
Claims priority, application Japan, Sep. 5, 1984, 59-184431; Sep. 5, 1984, 59-184432; Sep. 5, 1984, 59-133874[U]; Sep. 5, 1984, 59-133873[U]; Dec. 6, 1984, 59-184326[U]
Int. Cl.[4] D03D *47/36*; B65H *51/20*
U.S. Cl. 139—452 33 Claims



1. A method for storing a weft yarn between weft supply means and a weft inserting nozzle in a fluid jet loom, said method comprising:
winding said weft yarn on a roller reel in a coil shape prior to introduction to said weft inserting nozzle, said roller reel including a plurality of rollers arranged to be nearly circular and nearly parallel with each other, an axis of at least one of said rollers being outside any of planes containing an axis of said roller reel, said rollers including at least one driving roller which is fixed in location in said roller reel, and follower rollers which are changeable in location in said roller reel;
feeding said weft yarn on said roller reel toward a first end section of said roller reel by driving said driving roller to rotate around an axis of said driving roller and by sliding said weft yarn axially along smooth surfaces provided on said rollers, in which said follower rollers rotate with said driving roller through said weft yarn fed on said driving roller and said follower rollers, said first end section being located on side of said weft inserting nozzle; and
driving an engaging member to engage with said weft yarn and to disengage from said weft yarn during weft picking, said engaging member movably disposed in the vicinity of said first end section of said roller reel and disposed adjacent said driving roller.

2. A method as claimed in claim 1, further comprising the steps of:
feeding weft yarn on said roller reel by rotating a weft guide member around said roller reel to wind said weft yarn on said roller reel; and
during said feeding step, changing a ratio in rotational speed between said weft guide member and said at least one roller.

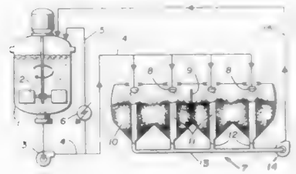
4,766,938

METHOD OF SHIPPING WET SOLIDS

Earl R. Beaver; Lawrence A. Stichweh, and Thomas J. Thompson, all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Nov. 15, 1982, Ser. No. 441,349
Int. Cl.[4] B65B *1/04*
U.S. Cl. 141—1 8 Claims

1. A method for loading and unloading wet pulverulent solids into and out of a shipping container having in its bottom at least one drain orifice consisting essentially of:
(a) filling the shipping container with the wet pulverulent solid generally around and adjacent to an elongated generally vertical spacer means disposed over the drain orifice thereby creating a generally vertical, elongated cavity having walls comprising a mass of the solid,
(b) showering a liquid solvent for the solid through the cavity and against the walls thereby dissolving and slurrying the walls and producing a solution/mixture of the solid in the solvent, and concommittantly
(c) removing the solid through the drain orifice as part of the solution/mixture.

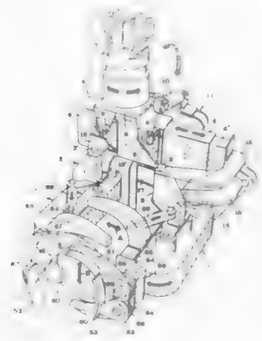


4,766,939

ASSEMBLY FOR LIMBING TREE STEMS

Torsten Forslund, Alfta, Sweden, assignor to Osa AB, Alfta, Sweden

Filed Apr. 9, 1987, Ser. No. 37,392
Claims priority, application Sweden, Apr. 11, 1986, 8601629
Int. Cl.[4] B27L *1/00*
U.S. Cl. 144—2 Z 10 Claims



1. An assembly for the limbing of a tree trunk comprising
at least two limbing means adapted to remove limbs from a tree trunk each separately pivotably mounted on at least two respective feeding means adapted to effect transport of said limbing means longitudinally along a tree trunk so as to feed individual limbs to said at least two limbing means,
said at least two feeding means being mounted upon a supporting frame which includes means to move said at least two feeding means into contact with said tree trunk and out of contact from said tree trunk,
said at least two limbing means being mounted upon respective support arms pivotably mounted on respective feeding means, said feeding means each including a stop means which cooperates with each said respective support arm to prevent said limbing means from moving toward said tree trunk beyond a point in a plane defined by the contact surface of said feeding means with said tree trunk, each said support are adapted to pivot about a pivot axis parallel to said contact surface and located substantially in the plane defined by said contact surface with said tree trunk, and
means to urge said limbing means toward said tree trunk.

4,766,940

PNEUMATIC RADIAL TIRE HAVING AN EXCELLENT STEERING STABILITY

Hideki Yokoyama, Musashino; Tatsuro Shimada, Fussa, and Masao Nakagawa, Higashimurayama, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation of Ser. No. 277,373, Jun. 25, 1981, abandoned.
This application Feb. 6, 1987, Ser. No. 15,498
Claims priority, application Japan, Jul. 8, 1980, 55-92196
Int. Cl.[4] B60C *15/06*
U.S. Cl. 152—541 7 Claims



1. A radial tire comprising; a pair of annular bead rings, a carcass composed of at least one radially arranged textile cord ply toroidally extending from the bead rings through side portions to a crown portion, the bead portion being reinforced by a rubber filter interposed between a turn-up portion of the carcass ply wound around the bead ring from the inside toward the outside thereof and the carcass and extending from the upper portion of the bead ring to the side portion region, and the crown portion being reinforced by an inextensible belt layer superimposed about the carcass, said rubber filler having a dynamic modulus of elasticity of 600 to 1,500 kg/cm^2 and, a single additional layer interposed between the carcass and the rubber filler, said single additional layer consisting of steel cords inclined at an angle within a range between 45° and 75° with respect to the carcass cord, said single additional layer closely adhering to said rubber filler and arranged over a range which is 50% to 75% of the tire sectional height defined by the distance in the radial direction from the bead portion base to the tread top point, an upper end of said rubber filler extending toward said tread portion beyond an upper end of said additional layer and a neutral axis of bending deformation produced at an area disposed in said rubber filler in the bead portion when the tire is subjected to a load passes through said rubber filler along the side of said single additional layer.

4,766,941

WINDOW SHADE WITH SELECTIVELY VARIABLE SHADING CHARACTERISTICS

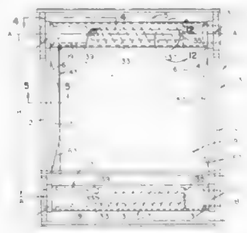
David J. Sloop, and Hsiang-Lin Yu, both of St. Louis, Mo., assignors to Sytron Corporation, University City, Mo.

Filed Jun. 9, 1986, Ser. No. 871,846
Int. Cl.[4] A47G *5/02*
U.S. Cl. 160—241 9 Claims

1. Apparatus installable within a window opening for selectively at least partially absorbing, reflecting, and transmitting light, said apparatus comprising an upper roller assembly, a lower roller assembly, and an elongate flexible web substantially longer than the spacing between said upper and lower roller assemblies, each of said roller assemblies comprising an elongate tubular roller, bearing means engageable with the ends of each of said roller assemblies for rotatably journaling the ends of said roller with respect to said window opening, said web being scrolled onto and from said rollers as the latter

VOL 1093 ISS 5 AG 30 1988 UMI

are rotated about their respective longitudinal axes in one rotational direction or the other, and means for selectively driving each of said rollers in one rotational direction or the other so as to scroll and unscroll said web, said driving means comprising a gearmotor having an output shaft substantially coaxial with said gearmotor, said gearmotor being received within each said roller with said output shaft being substantially coaxial with said roller, said gearmotor being fixed against rotation relative to said frame, and means for maintaining said web taut as said web is scrolled and unscrolled from



one of said rollers onto the other of said rollers and while said web is stationary, this last said means comprising a torsional spring operatively connecting said output shaft of a respective said gearmotor and a respective said roller, with one end of said torsional spring being fixed with respect to said roller and with the other end of said torsional spring being fixed with respect to said output shaft, one of said torsional springs operatively associated with one of said roller assemblies being wound in one direction, and the other of said torsional springs associated with the other of said roller assemblies being wound in the opposite direction.

4,766,942

EVAPORATIVE PATTERN ASSEMBLY AND METHOD OF MAKING

Eric J. Wessman, Plymouth, and Charles R. Dysarz, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1987, Ser. No. 133,822
Int. Cl.[4] B22C *9/04*
U.S. Cl. 164—34 10 Claims



1. An evaporative pattern assembly for metal castings and associated cast metal feeding, comprising:
(a) a central upright sprue;
(b) a plurality of sprue branches integral with and extending radially away from said central sprue at each of at least two axial locations of the central sprue;
(c) at least two gating rails, each integrally connected with the extremities of at least two sprue branche extending from different axial locations of the central sprue, each rail being connected to different and independent sprue branches so as to be supported in circumferentially-spaced positions relative to each other about the sprue; and p1 (d) at least one pattern body integrally connected across two of said gating rails.

5. A method of making a low density pattern system, comprising:
(a) molding a first unitary body portion comprised of a central upright sprue and a plurality of sprue branches extending radially away from said central sprue at each of at least two axial locations of the central sprue;
(b) molding a plurality of second unitary body portions, each comprised of a casting pattern and a gating rail extending across projections of said casting pattern replica at at least two sides thereof; and
(c) bonding one rail of each second body portion to the extremities of at least two sprue branches extending from different axial locations of the central sprue and bonding the other of said rails of each pattern to the extremities of at least two sprue branches, at least one of which is independent from that connected to said first rail.

9. A method of using a low density pattern system comprising:
(a) suspending a low density system in a molding flask having an open mouth at its top, the system comprising a central upright sprue, a plurality of sprue branches extending radially away from said central sprue at each of at least two axial locations of the central sprue, at least two gating rails, each integrally connected with the extremities of at least two sprue branches extending from different axial locations of the central sprue, each rail being connected to different and independent sprue branches so as to be supported in radially spaced positions relative to each other, and pattern bodies integrally connected across two of said gating rails;
(b) filling said flask, with said low density system suspended therein, by settling loose, unbonded sand about said system, said settling taking place by introducing sand to the interior volume of the flask at one or more locations and causing said sand to rise in said flask along an angle of repose from the point of introduction.

4,766,943

EXPENDABLE DIE CASTING SAND CORE

Enno H. Page, San Lorenzo, Calif., assignor to Farley Metals, Inc., Chicago, Ill.

Continuation of Ser. No. 290,447, Aug. 6, 1981, Pat. No. 4,413,666, which is a continuation-in-part of Ser. No. 80,833, Oct. 1, 1979, abandoned. This application Oct. 3, 1983, Ser. No. 496,978
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.[4] B22C *3/00, 1/22, 9/10*
U.S. Cl. 164—72 18 Claims

1. A method for forming a die casting having an undercut region comprising:
(A) forming a die casting die having a casting surface that includes at least one expendable sand core that forms said undercut region, said sand core having good shake-out properties, good washout resistance, freedom from surface penetration, good shelf life, and a high core strength to withstand pressures in excess of several thousand psi, said core consisting essentially of:
(a) sand, and
(b) a binding agent comprising between about 1 and about 2% by weight of said sand, said binding agent consisting essentially of an acid curable resin and as oxidizing agent, said oxidizing agent comprising between about 20 and about 70% by weight of said resin, and a silane, said core being cured with sulphur dioxide; and
(c) a coating on said cured core consisting essentially of:
(1) between about 4 and about 30% by weight of a suspending agent comprising a clay,
(2) between about 60 and about 95% by weight of a particulate refractory material selected from the group consisting of graphite, coke, silica, aluminum oxide, magnesium oxide, zircon, mico, talc, and calcium aluminate particles, and
(3) between about 1 and about 10% by weight of a binding agent comprising an organic thermoplastic resin;
(B) injecting molten metal into said die casting die,
(C) permitting said injected molten metal to solidify to form said die casting having said undercut region, and
(D) removing said die casting from said die, and
(E) separating said expendable core from said undercut region within said die casting.

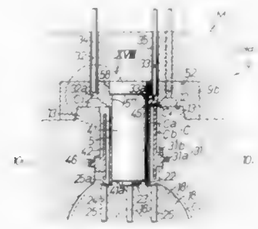
7. An expendable sand core having good shake-out properties, good washout resistance, freedom from surface penetration, good shelf life, and a high core strength to withstand pressures in excess of several thousand psi, said core adapted to define an undercut region in a die casting comprising:
(A) a base of:
(a) sand, and
(b) a binding agent comprising between about 1 and about 2% of weight of said sand, said binding agent consisting essentially of an acid curable resin and an oxidizing agent, said oxidizing agent comprising between about 20 and about 70% by weight of said resin, and a silane, said base being cured with sulphur dioxide, and
(B) a coating on said base consisting essentially of:
(a) between about 4 and about 30% by weight of a suspending agent comprising a clay,
(b) between about 60 and about 95% weight of a particulate refractory material selected from the group consisting of graphite, coke, silica, aluminum oxide, magnesium oxide, zircon, mica, talc, and calcium aluminate particles, and
(c) between about 1 and about 10% by weight of a binding agent comprising an organic thermoplastic resin.

4,766,944

PROCESS FOR CASTING FIBER-REINFORCED METAL BODY

Takeshi Sakuma, Tokyo; Nobuaki Takatori, Tokorozawa; Masuo Ebisawa, Kawagoe; Akio Hidaka, Sayama; Shigeo Kaiho, Oomiya; Akio Kawase, Ageo, and Masahiro Inoue, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1986, Ser. No. 876,577
Claims priority, application Japan, Jun. 21, 1985, 60-135499; Jun. 21, 1985, 60-135500; Jul. 4, 1985, 60-146999
Int. Cl.[4] B22D *17/00*
U.S. Cl. 164—97 15 Claims



1. A process for casting a fiber-reinforced metal body by placing a shaped fibrous article made of a reinforcing fiber into a cavity of a casting mold, charging a molten metal into said cavity to fill the shaped fibrous article with the molten metal and solidifying the metal, the process comprising the steps of:
pouring the molten metal into the cavity from a lower portion of the cavity while venting gas present in said cavity through a gas vent passage having a small opening opened to an upper portion of said cavity;
throttling said small opening of said gas vent passage during charging of the molten metal into the cavity so as to apply a back pressure to a surface of the molten metal being charged into the cavity and thereby suppress waving of the molten metal surface;
closing said gas vent passage; and
completely solidifying the molten metal under application of a higher pressure.

4,766,945

PROCESS AND APPARATUS FOR CASTING ROUNDS, SLABS, AND THE LIKE

Edmund Q. Sylvester, 22875 Canterbury La., Shaker Heights, Ohio 44122

Continuation-in-part of Ser. No. 261,762, May 8, 1981, abandoned, which is a continuation-in-part of Ser. No. 106,391, Dec. 26, 1979, abandoned. This application Aug. 15, 1984, Ser. No. 641,030
The portion of the term of this patent subsequent to Oct. 30, 2002, has been disclaimed.
Int. Cl.[4] B22D *35/00*
U.S. Cl. 164—136 18 Claims



1. A process of directly casting semi-finished products of a high-melting-point metal with constant cross sections in a permanent metal mold which has smooth sidewalls which form a casting cavity with a cross section corresponding to that of the products to be cast, comprising the steps of:
(a) attaching to a plunger a thin, resilient metal band which extends above the top of the plunger;
(b) disposing said plunger in the top portion of the casting cavity and placing the resilient metal band against the sidewalls of the mold so that the ends overlap;
(c) forming on top of the plunger inside of the metal band a solid refractory barrier which holds the metal band against the sidewalls of the mold, which withstands the impact of the high-melting-point molten metal being poured upon it, which insulates the molten metal from the plunger, and which compresses to compensate for the forces generated by thermal expansion;
(d) pouring molten metal of a high-melting-point into a reservoir disposed above the casting cavity and as the reservoir begins to fill, causing the plunger to descend relative to the mold toward the bottom of the cavity at a controlled rate of from ½ to 4 inches per second while keeping the reservoir supplied with molten metal, thereby causing molten metal to enter and fill the space being created above the plunger as it descends;

VOL 1093 ISS 5 AG 30 1988 UMI

(e) promptly after the plunger has completed its descent, and after the semi-finished metal product casting thus formed has cooled enough to have vertical strength, raising the plunger relative to the mold to lift the casting enough to break any adhesions with the sidewalls of the mold and prevent hanger cracks while maintaining the reservoir in communication with the casting so as to feed it as the metal solidifies and shrinks;

(f) allowing the casting to continue to cool and further solidify enough to be handled; and

(g) stripping the cast product from the mold without damaging the plunger so that the mold and plunger can be used again.

12. An apparatus for directly casting semifinished products of a high-melting-point metal of constant cross section which comprises:

(a) a metal mold with smooth vertical sidewalls which define a casting cavity having a constant cross section which corresponds to the cross section of the products to be cast;

(b) a plunger adapted to be lowered and raised in the casting cavity, the plunger having a cross section which is about the same as but slightly smaller than that of the casting cavity;

(c) a resilient metal band attached to the plunger with overlapped ends and with upstanding portions which extend substantially above the top of the plunger and are disposed against the vertical sidewalls of the mold to make a sliding seal with the sidewalls;

(d) a solid, slightly compressible, insulating refractory barrier on top of said plunger inside of said metal band which holds said band against the sidewalls of the mold but which, together with the shim band, has enough give to accommodate the thermal forces generated by expansion of said barrier and shim band so as to prevent binding up thereof within the mold;

(e) a reservoir for molten ferrous metal on the top of the mold over the casting cavity for supplying molten metal to the cavity over the plunger; and

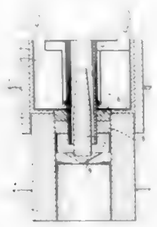
(f) means for lowering and raising the plunger.

4,766,946

COMBINATION OF CASTING NOZZLES FOR CASTING BAR AND TUBULAR PRODUCTS VERTICALLY UPWARDS

Timo Lohikoski, Pori, Finland, assignor to Vertic Oy, Helsinki, Finland

Filed Mar. 27, 1987, Ser. No. 32,069
Int. Cl.[4] B22D *11/10*
U.S. Cl. 164—421 6 Claims



1. A combination-use nozzle for continuous casting vertically upwards, comprising:

a solidification pipe;

a cooler about the solidification pipe so that one end of the solidification pipe projects from one end of the cooler;

a thermal shield abutting at least the one end of the cooler, the thermal shield being annularly spaced about the one end of the solidification pipe;

a melt-conduit pipe having one end abutting the thermal shield and surrounding the one end of the solidification pipe, the melt conduit pipe projecting farther than the one end of the solidification pipe projects from the cooler, the inside diameter of the melt-conduit pipe being larger than the external dimensions of the one end of the solidification pipe it is about, whereby to define an annular space therebetween;

a thermal-shield powder material in the annular space between the thermal shield and the one end of the solidification pipe and in the annular space between the melt-conduit pipe and the one end of the solidification pipe at least at the one end of the melt-conduit pipe; and

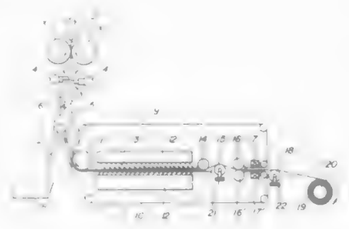
means for keeping the thermal-shield powder material in the annular spaces thereof.

4,766,947

METHOD AND APPARATUS FOR PRODUCING RAPIDLY SOLIDIFIED MICROCRYSTALLINE METALLIC TAPES

Kiyoshi Shibuya; Fumio Kogiku, and Michiharu Ozawa, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Continuation of Ser. No. 783,217, Oct. 2, 1985, abandoned. This application Jan. 30, 1987, Ser. No. 9,564
Claims priority, application Japan, Oct. 9, 1984, 59-210340
Int. Cl.[4] B22D *11/126, 11/06*
U.S. Cl. 164—460 5 Claims



1. A method of producing a rapidly solidified microcrystalline metallic tape by continuously pouring molten metal through a nozzle onto surfaces of a pair of cooling members rotating at a high speed to rapidly solidify it and then coiling the resulting rapidly solidified metallic tape, characterized by the steps of initially cutting an imperfect portion of the solidified tape with a cutting means installed in a vertical path just beneath said cooling rolls, catching a steady tip of the cut tape and transporting the tape through a cooling region, and coiling said tape into a roll.

4,766,948

PROCESS FOR CASTING ALUMINUM ALLOYS

Friedrich Behr, Essen; Heinrich Ballewski, Neukirchen-Vluyn, and Wolfgang Grossmann, Moers, all of Fed. Rep. of Germany, assignors to Thyssen Industrie AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 847,428, Apr. 2, 1986, abandoned. This application Oct. 15, 1987, Ser. No. 109,464
Int. Cl.[4] B22C *3/00*
U.S. Cl. 164—516 23 Claims

1. Process for casting aluminum alloys which contain more aluminum than corresponds to the eutectic with the other alloy constituents, in a ceramic mold having an inner wall, for obtaining improved strength values by reducing the spacing of the intervals between the secondary dendrite arms which are formed in the casting upon solidification of the alloy melt in the inner wall of the ceramic mold, comprising providing the inner wall of the ceramic mold with numerous micro-sized rough spots, and providing the resultant rough spot containing inner wall with a thin layer of a salt mixture having a liquidus temperature which is lower than the casting temperature of the aluminum alloy, and in which the cations of the salt mixture comprise substantially one or more alkali metals and/or one or more alkaline earth metals, and the anions comprise substantially anions of halogens, for thereby forming in the ceramic mold an aluminum alloy casting which contains more aluminum than corresponds to the eutectic with the other alloy constituents and which has secondary dendrite arms of reduced spacing intervals therebetween for obtaining improved strength values in the aluminum alloy casting.

4,766,949

HOT BOX PROCESS FOR PREPARING FOUNDRY SHAPES

Satish S. Jhaveri, Oakville, Canada; William R. Dunnavant, Columbus, and James T. Schneider, Dublin, both of Ohio, assignors to Ashland Oil, Inc., Russell, Ky.

Filed May 8, 1987, Ser. No. 48,097
Int. Cl.[4] B22C *1/22*
U.S. Cl. 164—526 16 Claims

1. A process for preparing a workable foundry shape comprising;

A. injecting a heat curable mixture comprising

1. a foundry aggregate, and

2. an effective binding amount of a binder comprising an aqueous basic solution of a phenolic resole resin wherein said aqueous basic solution has

a. a viscosity of less than about 850 centipoise at 25° C.;

b. a solids content of about 35 to about 75 percent by weight, said weight based upon the total weight of the basic solution; and

c. an equivalent ratio of base to phenol of about 0.2:1.0 to 1.1:1.0;

into a corebox heated to a temperature sufficient to cure said mixture; in the absence of a catalytic amount of an acid-generating curing catalyst

B. allowing said mixture to to harden into a workable shape;

C. removing said workable shape from the corebox.

4,766,950

CONTROLLER FOR AN AIR CONDITIONER OF VEHICLES

Kiichi Yamada; Akio Senoo, both of Okazaki; Jun Iimura, Aichi; Ryosaku Akimoto, Aichi, and Nakaji Kawauchi, Aichi, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Filed May 31, 1984, Ser. No. 615,958
Int. Cl.[4] F25B *29/00*
U.S. Cl. 165—17 1 Claim



1. In an air conditioner for a vehicle including a fan for sending air, a cooling unit having a compressor with a duty ratio of being turned on and off for cooling air sent by said fan, a heater for heating air sent by said fan, an air mix damper for adjusting the amount of air flowing through said heater, and an actuator for controlling an opening of said air mix damper in response to a cooling and heating load according to a command value having an amount in a cooling and heating range with an intermediate amount between the cooling and heating range, the improvement comprising:

a command value generating circuit (22) for generating a command value (b) which is dependent on a selected temperature selected for the vehicle (VRS);

a feedback circuit (23) for generating an amount of feedback (d) and (e) dependent on a position of the air mix damper (51) which is determined by said actuator (50), and dependent on the selection of an energy saving operation mode and a dehumidifying operation mode, said feedback circuit including a potentiometer (35) operatively connected to said damper (51) for changing its resistance dependent on the position of said damper, a fixed resistor (36) connected between said potentiometer and relay contacts (103*a*), said relay contacts connected to said fixed resistor for selectively connecting said fixed resistor in parallel with the resistance of said potentiometer;

an actuator control circuit (24) connected to said command value generating circuit and to said feedback circuit for receiving said command value and said feedback amount, said actuator control circuit being connected to said actuator (50) and including comparator means (40, 41) for comparing said command value with said feedback amount to control the operation of said actuator and thus control the position of said damper (51), said feedback amount and command value being selected so that said damper is opened during the energy saving operation mode and closed at the intermediate amount of the command value between the cooling and heating range thereof;

a fan control circuit (25) connected to said command value generating circuit for receiving said command value to control a speed of said fan (86);

a compressor control circuit (26) connected to said compressor for varying the duty ratio of turning said compressor on and off, said compressor control circuit being connected to said command value generating circuit for receiving said command value; and

a dehumidification control circuit (27) having a dry relay (103) operatively connected to said relay contacts (103*a*) of said feedback circuit for selectively connecting in parallel said fixed resistor (36) with the resistance of said potentiometer (35), said fixed resistor being open circuited when the dehumidifying operation mode is selected and being included when the energy saving operation mode is selected, said dehumidification control circuit being connected to said compressor control circuit so that during the dehumidifying operation mode the air mix damper is adjusted to effect an air conditioning operation and during the energy saving operation mode the duty ratio of the compressor is changed to effect the air conditioning operation.

4,766,951

RADIANT, LINEAR PANELS

Thomas R. Bergh, 851 Brown, Elmhurst, Ill. 60126

Continuation of Ser. No. 681,100, Dec. 13, 1984, abandoned. This application Dec. 24, 1986, Ser. No. 945,816
Int. Cl.[4] F24H *9/06;* F24D *19/02*
U.S. Cl. 165—56 7 Claims

1. A linear panel unit capable of radiant heating and cooling for use on walls and ceilings, the panel unit being mounted on carrier bars and comprising:

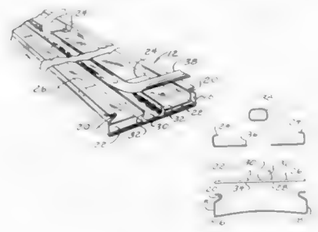
a panel shell having an upwardly deformed bottom portion and configured with recesses formed running longitudinally along each side of said panel shell, and mounted to and supported by the carrier bars;

a radiator panel resting in and in intimate thermal contact with the panel shell, the radiator panel having substantially an entire outward surface abutting against and in intimate thermal contact with the panel shell and an inward surface containing an integral longitudinal channel;

VOL 1093 ISS 5 AG 30 1988 UMI

clip means positioned between the recesses in the panel shell and the inward side of the radiator panel to secure contact between the outer side of the radiator panel and the panel shell;

the channel comprising two parallel, longitudinally extending walls projecting from the inward side of the radiator panel, wherein the panel shell has bilateral side walls, and wherein the clip means is wedged in place between one side wall of the panel shell and one channel wall;



a flow tube positioned in, conforming to, and in intimate thermal contact along generally the full circumference and substantially along the entire length of the longitudinal channel, the flow tube providing means for conveying liquid of varying temperature; and

the channel walls containing a groove near the intersection of the channel wall with the inward side of the radiator panel to hold one end of the clip means,

whereby heat will be transferred between a fluid contained in the flow tube and the panel shell.

4,766,952

WASTE HEAT RECOVERY APPARATUS

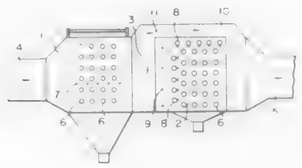
Kagetoshi Onodera, Chiba, Japan, assignor to The Furukawa Electric Co., Ltd., Japan

Filed May 9, 1986, Ser. No. 861,536

Claims priority, application Japan, Nov. 15, 1985, 60-175620[U]; Dec. 27, 1985, 60-200874[U]; Jan. 13, 1986, 61-1994[U]; Feb. 27, 1986, 61-27840[U]

Int. Cl.[4] F28G *1/02, 1/16*

U.S. Cl. 165—95 12 Claims



1. A waste heat recovery apparatus comprising:

a high-temperature unit including a high-temperature casing having an inlet through which an exhaust gas is introduced into the unit and an outlet through which the exhaust gas is discharged from the unit, a set of heat exchanger tubes arranged in the high-temperature casing, and a dry-type cleaner for removing dust on the heat exchanger tubes;

a low-temperature unit including a low-temperature casing having an inlet through which the exhaust gas is introduced into the unit and an outlet through which the exhaust gas is discharged from the unit, a set of heat exchanger tubes arranged in the low-temperature casing, and a flush-type cleaner for removing dust on the heat exchanger tubes by spraying flushing water on the tubes;

an intermediate duct connecting the outlet of the high-temperature unit and the inlet of the low-temperature unit so that the exhaust gas from the high-temperature unit is passed into the low-temperature unit through the intermediate duct;

an exhaust duct connected to the outlet of the low-temperature unit so that the exhaust gas is discharged from the low-temperature unit through the exhaust duct;

a by-pass duct connecting the intermediate duct and the exhaust duct;

first damper mean for controlling the flow of the exhaust gas from the intermediate duct to the low-temperature casing; and

second damper means for controlling the flow of the exhaust gas from the intermediate duct to the by-pass duct.

4,766,953

SHAPED TUBE WITH ELLIPTICAL CROSS-SECTION FOR TUBULAR HEAT EXCHANGERS AND A METHOD FOR THEIR MANUFACTURE

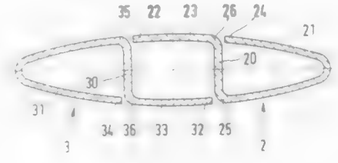
Hubert Grieb, Germering, and Werner Schlosser, Munich, both of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 24, 1987, Ser. No. 29,671

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610618

Int. Cl.[4] F28F *1/02*

U.S. Cl. 165—177 15 Claims



1. A shaped tube with an elliptical or lancet-shaped cross-section for tubular heat exchangers, formed from thin-walled sheet metal, comprising: at least two cross ribs passing through an interior space of said tube at a distance from one another and parallel to a minor ellipse axis of said tube, wherein said tube is formed by two metal strips bent into congruent profile semi-finished products, each said profile having approximately a shape of an isosceles triangle with rounded vertices and an elongated leg that is extended beyond a base of said triangle,

said congruent profile semi-finished products being placed against one another and joined to one another so that a free end of said one elongated leg of one semi-finished product abuts a triangle base edge of the other semi-finished product.

4,766,954

PROCESS FOR PRODUCING AN OPTICAL WAVEGUIDE

John D. Bierlein, Wilmington, Del.; Lothar H. Brixner, West Chester, Pa.; August Ferretti, and William Yang-Hsing Hsu, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 1,417, Jan. 8, 1987, Pat. No. 4,740,265. This application Dec. 11, 1987, Ser. No. 129,058

Int. Cl.[4] B01J *17/24;* B05D *5/06*

U.S. Cl. 156—624 14 Claims

1. A process for producing an optical waveguide comprising contacting at least one optically smooth surface of a single crystal of $K_{1-x}Rb_xTiOMO_4$ wherein x is from 0 to 1 and M is P or As with a molten salt or molten mixture of salts of at least one salt of Rb, Cs and Tl at a temperature of from about 200° C. to about 600° C. for a time sufficient to increase the surface index of refraction at least about 0.00025 with respect to the index of refraction of the starting crystal, and cooling the resulting crystal, with the provisos that

(a) when x is from 0 to 0.8, said molten salt is at least one selected from the group consisting of $RbNO_3$, $CsNO_3$, $TlNO_3$, and said molten mixture is at least one of $RbNO_3$, $CsNO_3$, $TlNO_3$ with at least one nitrate selected from the group of $Ca(NO_3)_2$, $Sr(NO_3)_2$ and $Ba(NO_3)_2$ or of RbCl with at least one chloride selected from the group of $ZnCl_2$ and LiCl; and

(b) when x is at least 0.8, said molten salt is at least one selected from the group consisting of $CsNO_3$ and $TlNO_3$ and said molten mixture is at least one of $CsNO_3$ and $TlNO_3$ with at least one nitrate selected from the group of $Ca(NO_3)_2$, $Sr(NO_3)_2$ and $Ba(NO_3)_2$.

4,766,955

WELLBORE FLUID SAMPLING APPARATUS

Steven G. Petermann, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 10, 1987, Ser. No. 36,727

Int. Cl.[4] E21B *49/08*

U.S. Cl. 166—167 18 Claims



1. An apparatus for capturing a sample of fluid from a wellbore characterized by:

an elongated generally tubular body member, said body member including means for connecting said apparatus to means for lowering said apparatus into a wellbore;

said body member including means defining a generally cylindrical bore and port means in said body member opening into said bore for conducting a flow of fluid to be sampled into said bore;

piston means disposed in said bore and dividing said bore into first and second chambers, said first chamber being operable to be in flow communication with said port means for receiving said fluid sample through said port means, and said second chamber being filled with a displacement fluid to prevent displacement of said piston means to increase the volume of said first chamber;

valve means in communication with said second chamber for selectively valving displacement fluid from said second chamber to permit said piston means to increase the volume of said first chamber; and

closure means for said first chamber for closing off communication of said first chamber with said port means when said first chamber has received said fluid sample.

4,766,956

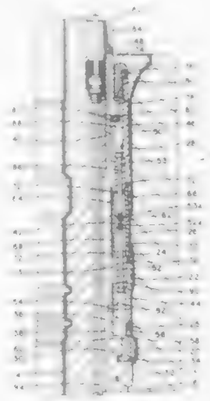
WELLHEAD ANNULAR SEAL

Jerry D. Smith, Houston, and Edward J. Szymczak, Spring, both of Tex., assignors to Cameron Iron Works USA, Inc., Houston, Tex.

Filed May 7, 1987, Ser. No. 47,171

Int. Cl.[4] E21B *33/03*

U.S. Cl. 166—182 8 Claims



1. An annular seal for sealing across the annular space between a wellhead housing and a hanger positioned within the housing comprising

an annular seal ring having a central ring with upper inner and outer rims and lower inner and outer rims, the upper inner and outer rims being spaced apart and the lower inner and outer rims being spaced apart,

an upper wedge ring having a portion thereof projecting into the space between the upper rims and being wider than such space so that when moved fully into the space between the rims it wedges the rims outwardly for sealing engagement with inner and outer surfaces,

a lower wedge ring having a portion thereof projecting into the space between the lower rims and being wider than such space so that when moved fully into the space between the rims it wedges the rims outwardly for sealing engagement with inner and outer surfaces,

the free outer diameter of the sealing portions of said outer rims having a diameter less than the outer diameter of said lower wedge rings,

means coacting with said seal ring and said wedge rings to retain said rings in assembled position,

an actuating ring interengaged with said upper wedge ring and movable to provide a relative movement between said wedge rings and said seal ring and also to provide movement of said wedge rings and said seal ring into their ultimate sealing positions, and

means for releasably securing said annular seal to said hanger until said rims are in their sealing position and then to release to allow movement of the annular seal on said hanger to position said rims against their respective sealing surfaces on said hanger and said wellhead housing.

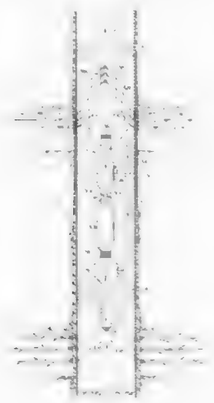
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,957

METHOD AND APPARATUS FOR REMOVING EXCESS WATER FROM SUBTERRANEAN WELLS

Jack W. McIntyre, 107 N. Overland Ave., Fort Stockton, Tex. 79735

Filed Jul. 28, 1987, Ser. No. 78,804
Int. Cl.[4] E21B *43/38, 43/40*
U.S. Cl. 166—265 8 Claims



1. The method of removing water from a subterranean hydrocarbon formation comprising the steps of:

drilling a well through the hydrocarbon producing formation and downwardly to a water absorbing formation;

running a casing string into the well through the hydrocarbon formation and downwardly to the water absorbing formation;

perforating the casing at a plurality of vertically spaced locations adjacent said hydrocarbon producing formation;

assembling a tool string including from the bottom up a tubular portion including a one-way flow valve, a tubing inlet port, a first blanking plug, a lower packer sealingly secured to said tubular portion; a fluid pump having a casing-tubing annulus intake and an output port, a pump output conduit communicating between the pump output and the tubing inlet port, a second blanking plug, a perforated nipple, and an upper packer spaced above the second blanking plug and above said casing perforations;

running the assembled tool string into the well to position the lower packer below said casing perforations and said upper packer above said casing perforations;

setting said packers; and

operating said pump to force fluid in the casing annulus below said casing perforations downwardly through said lower packer and said one-way flow valve to said water absorbing formation.

4,766,958

METHOD OF RECOVERING VISCOUS OIL FROM RESERVOIRS WITH MULTIPLE HORIZONTAL ZONES

David C. Faecke, Arlington, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 12, 1987, Ser. No. 2,589
Int. Cl.[4] E21B *43/24*
U.S. Cl. 166—269 9 Claims

1. A method of recovering viscous oil from a viscous oil-containing formation separated, by at least one horizontal layer having vertical permeability of at least about 1 md, into at least one upper zone and at least one lower zone, the formation being penetrated by at least one injection well and at least one spaced-apart production well, comprising the consecutive steps of:

(1) injecting through the injection well steam only into the lower zone until steam breakthrough occurs at the production well;



(2) thereafter injecting steam into both, the upper and the lower zones; and

(3) continuously injecting steam into the upper and the lower zones and recovering fluids, including oil, from the production well.

4,766,959

REDUCING PERMEABILITY OF HIGHLY PERMEABLE ZONES IN SUBTERRANEAN FORMATIONS

Joe D. Allison, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Apr. 13, 1987, Ser. No. 37,494
Int. Cl.[4] E21B *33/138, 43/22*
U.S. Cl. 166—295 12 Claims

1. A process for reducing the permeability of a subterranean formation traversed by a well bore which comprises:

(a) introducing into the formation via the well bore an aqueous solution of a water soluble polymer selected from the group consisting of polygalactomannan gums, hydroxyalkyl ethers of polygalactomannan gums, carboxy alkyl ethers of polygalactomannan gums, their depolymerized counterparts, polyvinyl alcohol and mixtures thereof, said polymer being in said solution in an amount of from about 1% to 10% by weight of said solution; and

(b) introducing into the formation via the well bore a slowly hydrolyzable alkoxy amine ester of boric acid having the formula



in which R_1, R_2 and R_3 are straight chain or branched alkylene groups having 2 to 5 carbon atoms and R_1, R_2 and R_3 may be the same or different, said ester being introduced in an amount of from about 1% to 200% by weight of said polymer, whereby said ester hydrolyzes to provide boric acid which is converted to borate ions at formation conditions, and whereby said borate ions cause crosslinking of said polymer to form a gel which reduces the permeability of said formation.

4,766,960

STANDING AND INJECTION VALVE

Jimmie R. Williamson, Jr., Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 849,125, Apr. 7, 1986, Pat. No. 4,691,777. This application Jul. 24, 1987, Ser. No. 77,634
Int. Cl.[4] E21B *34/10*
U.S. Cl. 166—321 11 Claims

1. A standing valve operable as an injection valve comprising:

(a) a housing having a longitudinal flow passage therethrough and at least one lateral flow passage through the housing wall communicating between said longitudinal flow passage and the housing exterior;

(b) annular valve means in said housing for controlling flow through said lateral passage including an annular valve member mounted within said housing and a longitudinally movable annular seat member sealingly engageable with said valve member;

(c) operator means connected to said seat member for moving said seat member between an open position, disengaging from said valve member and permitting flow between said housing passage and exterior, and a closed position, engaging wtih said valve member and preventing flow between said passage and said exterior;

(d) control means for controlling operator means pressure required to move said seat member to open position; and

(e) check valve means in said housing below said annular valve means permitting upward flow and preventing downward flow through said longitudinal passage.

10. An injection valve comprising:



(a) a housing having a longitudinal flow passage therethrough and at least one lateral flow passage through the housing wall communicating between said longitudinal flow passage and the housing exterior;

(b) annular valve means in said housing for controlling flow through said lateral passage including an annular valve member mounted within said housing and a longitudinally moveable annular seat member sealingly engageable with said valve member;

(c) operator means connected to said seat member for moving said said seat member between an open position, disengaging from said valve member and permitting flow between said housing passage and exterior, and a closed position, engaging with said valve member and preventing flow between said passage and said exterior;

(d) control means for controlling operator means pressure required to move said seat member to open position; and

(e) means in said housing below said annular valve means for preventing flow between said longitudinal passage and the housing exterior including a body sealed in said housing and a disc sealed in said body.

4,766,961

DECORATIVE QUICK RESPONSE SPRINKLER

Walter R. Macie, Yorktown Heights, N.Y., assignor to The Reliable Automatic Sprinkler Co., Inc., Mount Vernon, N.Y.

Filed Mar. 2, 1987, Ser. No. 20,520
Int. Cl.[4] A62C *37/10*
U.S. Cl. 169—38 6 Claims



1. A quick-response sprinkler comprising a hollow body member having an inlet end and an outlet end; valve means including a valve plug and a deflector supported from the hollow body member for limited motion between a closed position wherein the valve plug forms a fluid-tight seal within the outlet end of the hollow body member and an open position in which the valve plug is spaced from the outlet end so as to prevent obstruction of liquid emerging therefrom; the hollow body member having an internal groove spaced outwardly from the outlet end and outwardly from the deflector in the closed position of the valve means; locking means for holding the valve means in the closed position and for releasing the valve means in response to elevated temperature; the locking means having a surface normally retained in fixed abutting relation to a surface of the valve means to normally retain the valve means in the closed position and being completely separable from the hollow body member and the valve means and comprising a housing, a plurality of locking balls supported in the housing for motion toward and away from the internal groove in the body member; locking disc means movable in the axial direction within the housing and having an inclined surface engaging the locking balls; and temperature responsive means at the extremity of the sprinkler adjacent the outlet end, the temperature-responsive means normally supporting the locking disc means in a position holding the locking balls in the internal groove so as to retain the locking means housing in position with said surface in fixed abutting relation to the valve means surface but separable therefrom to hold the valve means in closed position to hold the valve plug in fixed position within the outlet end and responsive to an elevated temperature to release the locking disc means and the locking balls and permit the locking means to be separated from the sprinkler body and the valve means, thereby releasing the valve means from its closed position.

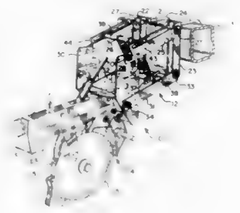
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,962

FURROW FORMING APPARATUS FOR ATTACHMENT TO A TOOL BAR

Roland J. Frase, Roselle, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 27, 1986, Ser. No. 923,280
Int. Cl.[4] A01B *39/22*
U.S. Cl. 172—624.5 8 Claims



6. A furrow forming apparatus for attachment to an associated tool bar of a mobile power source, comprising:

(a) means for mounting said apparatus on said associated tool bar;

(b) a frame and furrow forming means mounted on said frame;

(c) a parallel linkage including a pair of transversely spaced longitudinally extending upper links pivotally secured at first forward ends to said mounting means, and at second rearward ends to said frame, and a pair of transversely spaced longitudinally extending lower links pivotally secured at first forward ends to said mounting means, and at second rearward ends to said frame;

(d) an upper support member transversely extending between said upper links;

(e) a lower support member transversely extending between said lower links;

(f) down pressure spring means having an upper end received by said upper support member and a lower end received by said lower support member for spring loading said parallel linkage; and

(h) down pressure adjustment means for selectively adjusting pressure exerted on said furrow forming means by said down pressure spring means, said adjustment means comprising gear pinion means provided on at least one transverse end of said upper support member, and gear rack means provided on a respective one of said upper links with said pinion means in meshing engagement therewith, said pinion means having an exposed end portion extending beyond said rack means and being selectively engageable with said rack means along the length thereof so that said upper support member is selectively longitudinally positionable to adjust the pressure exerted by said down pressure springs means,

said adjustment means further comprising retaining means operatively associated with said gear pinion means and said gear rack means for selectively retaining said pinion means in a fixed position relative to said rack means for maintaining the selected pressure of said down pressure spring means.

4,766,963

HAND-HELD HAMMER TOOL

Carl S. M. Hartwig, Täby, and Karl G. B. Ragnmark, Kalmar, both of Sweden, assignors to Institut Cerac S.A., Ecublens, Switzerland

Continuation of Ser. No. 754,524, Aug. 13, 1985, abandoned, which is a continuation of Ser. No. 532,193, Sep. 14, 1983, abandoned. This application Apr. 15, 1987, Ser. No. 39,801
Claims priority, application Switzerland, Sep. 22, 1982, 5599/82
Int. Cl.[4] B23B *45/02*
U.S. Cl. 173—109 8 Claims



1. A hand-held hammer drill comprising: a housing (13); a drill (16) projecting into said housing (13); a single rotor-type electromotor (17) in said housing (13) incorporating a stator (19) and a rotor (18); a reciprocating hammer mechanism (14) and a rotary mechanism (15) in said housing (13) driven by a common rotor shaft (24) of said rotor (18), said hammer mechanism (14) including a connecting rod (43) connected to a drive piston (40) reciprocably movable in a cylinder (42) for driving a hammer piston (41) towards and away from said drill (16) via an air cushion (44) in a working chamber (45) located between said pistons (40,41) in said cylinder (42), said rotor (18) continuously driving crank means (34) mounted eccentrically on said rotor shaft (24) to rotate therewith and connected to said connecting rod (43) to move said drive piston (40) in a reciprocating manner within said cylinder (42) without any intermediate gear means, said rotary mechanism (15) including drill engaging means (46,47) for imparting a rotary motion to said drill (16) during the reciprocating movement of said drive piston (40); a drive shaft (37) in said rotary mechanism (15) drivingly connected to said drill engaging means (46,47) at one end thereof, the other end thereof being connected to a driving gear (36) on said rotor shaft (24) for transmitting a rotary movement to said drive shaft (37) a bowl-shaped inertial body (25) surrounding said electromotor (17), fixedly from the bottom of which said rotor shaft (24) extends centrally into and through said bowl-shaped body (25), said bowl-shaped body (25) while continuously rotating, being adapted to counterbalance by its flywheel momentun the load variations of said hammer mechanism (14) acting on said rotor shaft (24), the interior wall (27) of said bowl-shaped body (25) supporting the electromagnetically active parts (23,49) of said rotor (18) so as to rotatably surround the electromagnetically active parts (21,22) of said stator (19); and a tubular structure (20) of said housing (13) extending centrally into the bowl of said bowl-shaped body (25) for fixedly supporting on said structure (20), said active stator parts (21,22) and rotatably supporting said rotor shaft (24) in said structure (20).

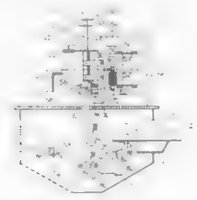
4,766,964

APPARENT DENSITY MEASURING DEVICE

Ryuichi Hirota, Miki, and Shinichi Inoue, Kobe, both of Japan, assignors to Yamato Scale Company, Limited, Japan

Filed Mar. 16, 1987, Ser. No. 26,174
Claims priority, application Japan, May 2, 1986, 61-102561
Int. Cl.[4] G01G *13/00, 19/52;* G01N *9/02*
U.S. Cl. 177—25 9 Claims

1. An apparent density measuring device for a weighing machine, comprising a bucket having a known loading volume, means for feeding product to be measured to said bucket in an amount sufficient to cause overflow therefrom, means for vibrating said bucket for a specific time during the feeding operation, and means for weighing the loaded bucket after completion of said feeding operation.



4,766,965

APPARATUS FOR DEPOSITING AND LIFTING OFF OF A REFERENCE WEIGHT IN AN ELECTRONIC SCALE

Paul Luchinger, Uster, Switzerland, assignor to Mettler Instrumente AG, Switzerland

Filed Nov. 19, 1987, Ser. No. 122,960
Claims priority, application Switzerland, Dec. 16, 1986, 5000/86
Int. Cl.[4] G01G *19/52, 19/00, 1/02;* G01L *25/00*
U.S. Cl. 177—50 10 Claims

1. An apparatus for depositing and lifting a reference weight in a precision scale having a scale base, lateral walls and a weighing mechanism comprising:

(a) at least one cam disc fixed on a rotatable, vertical cam shaft; and

(b) at least one lever, having a free end and a cam following portion opposite the free end, rotatable about a vertical shaft and cooperating with the cam disc, said free end movable, in response to rotation of said cam disc, between a first position for holding said reference weight in a disengaged position and a second position for depositing said reference weight.

4,766,966

APPARATUS AND METHOD OF CONTROLLING RATE OF FEEDING PRODUCT TO WEIGHER

Takeyoshi Nagao, Kakogawa; Toru Kohashi, Hyogo, and Mitsunobu Haraguchi, Kakogawa, all of Japan, assignors to Yamato Scale Company, Limited, Japan

Filed Feb. 17, 1987, Ser. No. 15,623
Claims priority, application Japan, Mar. 28, 1986, 61-71605
Int. Cl.[4] G01G *13/02*
U.S. Cl. 177—123 6 Claims

1. A method of controlling a rate of feeding product to a weigher, comprising a first step of feeding product at a relatively large flow rate until the weight of product in the weigher reaches a predetermined first reference value, a second step of feeding product at a medium flow rate until the weight of product in the weigher reaches a predetermined second reference value, and a third step of feeding product at a relatively small flow rate until the weight of product in the weigher reaches a predetermined third reference value, characterized in that, in said second step, said medium flow rate is controlled in proportion to a power greater than 0 and less than 1 of the difference between said second reference value and the current weight of product in the weigher.

4,766,967

OSCILLATION CONTROL SYSTEM FOR ELECTRIC MOTOR DRIVE

James M. Slicker, and Ahmad Sereshteh, both of Union Lake, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 27, 1985, Ser. No. 813,832
Int. Cl.[4] B60K *1/00*
U.S. Cl. 180—54.1 13 Claims



1. In combination with a drive comprising a controllable-output motive power source, at least one inertially-loaded traction wheel, and a torque-transmitting connection between the source and wheel, said connection and said wheel, in sum, exhibiting a torsional compliance susceptible of oscillatory dynamic responses to torque inputs:

input means connected to said source for producing torque commands;

sensor means for producing a signal representing an actual state of said drive; and

feedback means responsive to said signal for modifying said torque commands to reduce said oscillatory dynamic responses toward zero.

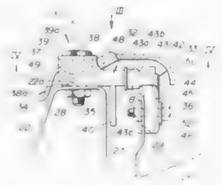
VOL 1093 ISS 5 AG 30 1988 UMI

4,766,968

MOUNT FOR AUTOMOBILE RADIATOR

Yukihiro Matsunaga, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Mar. 18, 1986, Ser. No. 840,750
Claims priority, application Japan, Mar. 20, 1985, 60-41296[U]
Int. Cl.[4] B60K *11/04*; F16F *15/08*
U.S. Cl. 180—68.4 19 Claims



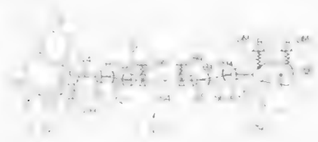
1. A mount for resiliently attaching a member to a fixed portion of a vehicle body, comprising:
an elastic body having a first end portion, an opposite second end portion, and an elongated middle portion;
first means for fixing said first end portion of said elastic body to the fixed portion of the vehicle body;
second means for fixing said opposite second end portion of said elastic body to the member;
said first fixing means including a pressure plate cooperating with the fixed portion to clamp therebetween said one end portion of said elastic body;
said second fixing means including a first wall and a second wall which cooperate with each other to clamp therebetween said opposite second end portion of said elastic body, said second fixing means further including an attachment fixed to the member and a bracket having an arm and a hollow rectangular portion integral with said arm, said hollow retangular portion including said first and second walls, said arm being fixed to said attachment.

4,766,969

THREE PART PROPELLER SHAFT ASSEMBLY INCORPORATING FOUR HOOKE JOINTS HAVING OPPOSED PHASES

Yasuhiko Mishio; Hidetoshi Shimizu; Takashi Matsuda, and Masaru Takeda, all of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Jan. 21, 1987, Ser. No. 5,831
Claims priority, application Japan, Jan. 30, 1986, 61-011967
Int. Cl.[4] B60K *17/22*
U.S. Cl. 180—75.2 1 Claim



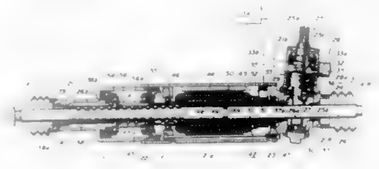
1. For a vehicle comprising a means for providing rotational power, a means for receiving rotational power and transmitting it to a road surface, and a body:
a three part type propeller shaft assembly, comprising:
a first propeller shaft element, a second propeller shaft element, and a third propeller shaft element, each shaft element having a first end and an opposite second end;
a first joint comprising a Hooke joint which rotationally couples said means for providing rotational power to said first end of said first propeller shaft element;
a second joint comprising a Hooke joint which rotationally couples said second end of said first propeller shaft element to said first end of said second propeller shaft element;
a third joint comprising a Hooke joint which rotationaly couples said second end of said second propeller shaft element to said first end of said thrid propeller shaft element;
a fourth joint comprising a Hooke joint which rotationally couples said second end of said third propeller shaft element to said means for receiving rotational power and transmitting it to a road surface; and
two means for elastically rotatably supporting said second propeller shaft element from said body, one means being disposed near each end of the first and second ends of said second propeller shaft element;
the phases of said first joint and said fourth joint being set to be the same as one another, while the phases of said second and said third joints are set to be the same as one another and to be opposite to said common phase of said first joint and said fourth joint.

4,766,970

MOTOR-OPERATED POWER STEERING APPARATUS WITH RACK AND PINION MECHANISM

Yasuo Shimizu, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1987, Ser. No. 105,556
Claims priority, application Japan, Oct. 9, 1986, 61-155263[U]
Int. Cl.[4] B62D *5/04*
U.S. Cl. 180—79.1 9 Claims



1. A rack-and-pinion type motor-operated power steering apparatus, comprising:
a pinion shaft having a pinion and adapted to be operatively coupled to a steering wheel;
a rack shaft having a rack and adapted to be operatively coupled to wheels;
a gear casing having first and second spaces therein, said pinion shaft being rotatably supported in said gear casing, said rack shaft being axially movably supported in said gear casing, said pinion and said rack being held in mesh with each other within said first space in said gear casing;
an electric motor for generating assistive power;
assistive-power transmitting means disposed in said second space around said rack shaft for converting rotative power of said electric motor to a force in an axial direction of said rack shaft and transmitting said force to said rack shaft; and
partition means disposed between said first and second spaces and isolating them from each other.

4,766,971

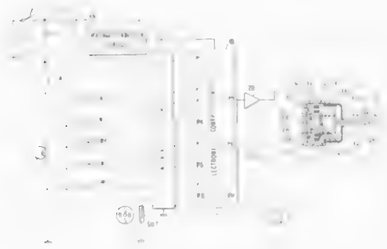
CONSTANT-SPEED RUNNING CONTROL DEVICE

Hitoshi Hyodo, Okazaki, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 10, 1986, Ser. No. 917,563
Claims priority, application Japan, Oct. 11, 1985, 60-227474
Int. Cl.[4] B60K *31/00*
U.S. Cl. 180—178 7 Claims

1. A constant-speed running control device comprising car

speed detecting means for detecting the current cap speed of a vehicle,
memory means for storing a given car speed,
an actuator for controlling a throttle valve,
setting means for causing said memory means to store the given car speed,
releasing means for releasing the control of said actuator,
electronic control means for controlling said actuator in such a direction as to cause the difference between the



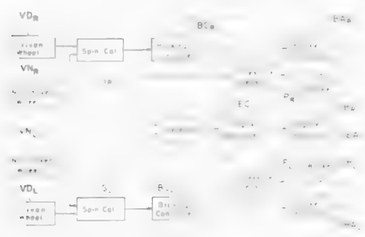
stored car speed held in said memory means and the current car speed detected by said car speed detecting means to disappear,
temperature detecting means, and
low-temperature release means for actuating said releasing means in response to the output of said temperature detecting means, wherein said low-temperature release means actuates said releasing means when the temperature detected by said temperature detecting means becomes lower than a predetermined level.

4,766,972

WHEEL SPIN CONTROL APPARATUS FOR USE IN AN AUTOMOBILE

Koji Takata, and Hideaki Fujioka, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 27, 1987, Ser. No. 113,156
Claims priority, application Japan, Oct. 30, 1986, 61-258867
Int. Cl.[4] B60K *31/00*; B60T *8/10*
U.S. Cl. 180—197 14 Claims



2. A wheel spin control apparatus for an automotive vehicle comprising:
first and second driven wheels;
means for applying output power of an engine of said vehicle to drive said first and second driven wheels;
first detector means for detecting the occurrence of an excessive first wheel spin of said first driven wheel;
first braking control means for applying a first braking force to said first driven wheel to suppress said excessive first wheel spin in response to the detecting of said excessive first wheel spin by said first detecting means and thereafter gradually weakening said first braking force;
second detector means for detecting the occurrence of an excessive second wheel spin in said second driven wheel;
second braking control means for applying a second braking force to said second driven wheel to suppress said excessive second wheel spin in response to the detection of said excessive second wheel spin by said detecting means and thereafter gradually weakening said second braking force;
first selecting means for selecting a smaller one of said first and second braking forces; and
torque control means for controlling an output power of an engine of said vehicle employed to drive said first and second driven wheels such that said engine output power is gradually decreased as the braking force selected by said first selecting means is gradually weakened so that the suppression of spin of at least one of said driven wheels, initially affected by said braking control means, is gradually taken over by said torque control means.

4,766,973

4WD VEHICLE TORQUE DISTRIBUTION DEVICE INCORPORATING FRICTION ENGAGING DEVICE PROVIDING MULTI MODE OPERATION, AND METHOD FOR OPERATION THEREOF

Yuji Kashihara, and Yutaka Taga, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 24, 1987, Ser. No. 42,241
Claims priority, application Japan, May 1, 1986, 61-102805; Jun. 5, 1986, 61-130957
Int. Cl.[4] B60K *17/34*
U.S. Cl. 180—249 6 Claims

1. For a four wheel drive vehicle with a front wheel propeller shaft for driving two front wheels, a rear wheel propeller shaft for driving two rear wheels, and an engine, rotational power from said engine being provided to the combination of the front wheels of said vehicle and also to the combination of the rear wheels of said vehicle, and further comprising friction engaging mechanism, which controls drive torque distribution to at least one of said front and said rear vehicle wheel combinations, and a servo device which receives an actuating hydraulic fluid pressure and which applies an engaging force to said friction engaging mechanism so as to cause said friction engaging mechanism to be endowed with torque transmission capacity, said engaging force for said friction engaging mechanism and the maximum torque transmission capacity of said friction engaging mechanism thus provided both increasing monotonically according to increase of said actuating hydraulic fluid pressure; said servo device comprising: a first piston which partially serves to define a first pressure chamber, and which when impelled by hydraulic fluid pressure in said first pressure chamber in the direction to increase the volume of said first pressure chamber, provides such engaging force for said friction engaging mechanism; and a second piston which partially serves to define a second pressure chamber, and which, when impelled by hydraulic fluid pressure in said second pressure chamber in the direction to increase the volume of said second pressure chamber, provides such engaging force for said friction engaging mechanism; and wherein, when said actuating hydraulic fluid pressure is supplied to a first combi-

VOL 1093 ISS 5 AG 30 1988 UMI

nation and to a second combination of said first pressure chamber and said second pressure chamber, the relationships between the magnitude of said engaging hydraulic fluid pressure and said engaging force for said friction engaging mechanism and the maximum torque transmission capacity of said friction engaging mechanism differ:

a torque distribution method, wherein when there exists a requirement for a first relationship between the magnitude of said engaging hydraulic fluid pressure and said engaging fore for said friction engaging mechanism and the maximum torque transmission capacity of said friction engaging mechanism, said actuating hydraulic fluid pressure is supplied to said first combination of said first pressure chamber and said second pressure chamber; while, when there exists a requirement for a second relationship between the magnitude of said engaging hydraulic pressure and said engaging force for said friction engaging mechanism and the maximum torque transmission capacity of said friction engaging mechanism, said second relationship being different from said first relationship, said actuating hydraulic fluid pressure is supplied to said second combination of said first pressure chamber and said second pressure chamber.

4,766,974

SEISMIC SIGNAL GENERATOR WITH A SELF-EXPANDING VIBRATOR SUPPORT BASE

Jack H. Cole, and Richard K. Thomson, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 30, 1986, Ser. No. 880,761
Int. Cl.[4] G01V *1/04*; H04R *1/02*
U.S. Cl. 181—113 **20 Claims**



1. A seismic signal generator that can be used on a hard surface, said apparatus comprising:

a reaction mass;

A pair of tread members interconnected to, and forming the sole means of support for, said reaction mass by means permitting lateral translational movement of said tread members with respect to said reaction mass without changing the relative vertical positions between said tread members and said reaction mass, said tread members having ground engaging portions;

means for inducing relative vibrational motion between said tread members and said reaction mass in order to transmit a seismic signal into a region through said hard surface solely by means of said tread members from an original location;

means for biasing said tread members laterally outwardly away from said reaction mass such that, should the coefficient of friction between the ground-engaging portions of said tread members and said hard surface in said original location be insufficient to prevent slippage during said vibrational motion, said biasing means will translate said tread members to a second more stable location laterally outward from said first location.

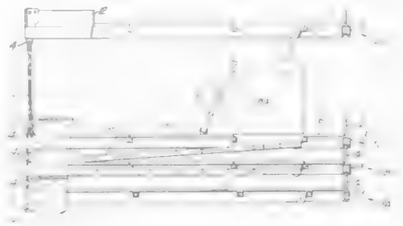
4,766,975

COLLAPSIBLE SCAFFOLDING

Frederick A. Whitson, 5433 Provence Pl., Riverside, Calif. 92506

Filed Sep. 8, 1987, Ser. No. 96,347
Int. Cl.[4] E04G *3/10*
U.S. Cl. 182—150 **5 Claims**

1. In a collapsible scaffolding comprising a number of platforms and flexible suspension means for suspending the platforms in vertical array, an outer support frame member for at least one platform comprising a box beam portion, a toe-plate



portion surmounting the box beam portion; the underside of the box beam portion having therein a channel for receiving the upper edge of the toe-plate portion of the next lower platform.

4,766,976

LADDER LEG EXTENDER AND LEVELER

Claude R. Wallick, Jr., Jefferson County, Ky., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 28, 1987, Ser. No. 90,754
Int. Cl.[4] E06C *7/44*
U.S. Cl. 182—201 **7 Claims**



1. A ladder leg extender and leveler comprising:

a longitudinally extending frame means having a side thereof adapted to be fixed with spaced portions of said frame side in flush face-to-face relation to the side of a ladder leg independent of the ladder rungs and with an intermediate portion of said frame side straddling rung fastener protrusions extending from the outer face of said leg so as to be uninterrupted thereby and yet minimize bending stresses;

a longitudinal extension leg slidably mounted relative said frame means; said extension leg having a first connection fitting fixed to the lower end thereof;

clamp means cooperatively mounted relative said extension leg to releasably lock said extension leg in a preselected fixed adjusted position relative said frame means and the ladder leg to which it is mounted;

a shoe plate having a second connection fitting fixed to the upper face thereof for pivotal coupling to said first connection fitting on said extension leg; and

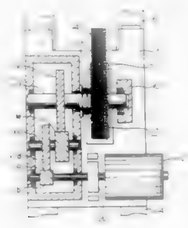
a shoe pad fastened to the lower face of said shoe plate.

4,766,977

LOAD DETECTING APPARATUS FOR ELEVATOR

Shinji Yamasaki, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 14, 1986, Ser. No. 918,266
Claims priority, application Japan, Oct. 15, 1985, 60-229055
Int. Cl.[4] B66B *11/08*
U.S. Cl. 187—20 **8 Claims**



1. A load detecting apparatus for an elevator comprising:

a traction sheave having a hoisting rope wound thereon, one end of the rope being fixed to an elevator cage and the other being attached to a counterweight so that the elevator cage and counterweight are at least partly balanced;

a rotary shaft disposed between said traction sheave and a controller which controls said traction sheave for transmitting a controlled force to said traction sheave; and

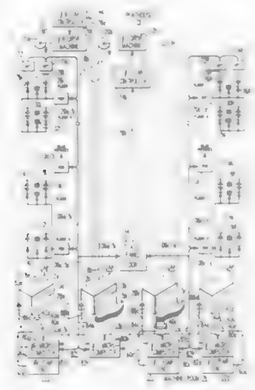
torsion detecting means responsive to the torsion applied to said rotary shaft while the cage is at rest for detecting the degree and direction of any inbalance between the cage and counterweight acting on said hoisting rope.

4,766,978

ELEVATOR SYSTEM ADAPTIVE TIME-BASED BLOCK OPERATION

Jeffrey W. Blain, Scenic Lakes Township, Sussex County, and Denis D. Shah, Union, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 16, 1987, Ser. No. 109,640
Int. Cl.[4] B66B *1/18*
U.S. Cl. 187—101 **10 Claims**



1. A method of controlling a plurality of elevator cars for protecting against an excessively restricted block operational mode of elevator service from each floor of a building, with each car communicating on a local area network from an electronic circuit located thereat and through a separate traveling cable to a remote controller,

each remote controller including a microprocessor based computer circuit individual to each car and with each remote controller normally capable of communicating corridor signal information on a local area network through a riser cable terminating in a set of floor control circuits distributed proximate to each floor,

each said microprocessor based computer circuit adaptively implementing successive failure control modes for a floor control strategy to assign the better car or cars into operation, based on communication network integrity, relative car travel positions and timing, to respond to the hall calls registered at the floors along said cable riser, and

each said remote controller repeatedly checking its operational capability and communication signal integrity for the corridor cable riser so as to respectively being implementing an adaptive block operation mode, with the least restrictive affect in the floor control strategy, should there be a communication failure affecting the respective remote controller from communicating on the cable riser, with the capacity for totally servicing the building in moving passengers to the bottom floor.

4,766,979

CALIPER BRAKE

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 17, 1987, Ser. No. 86,396
Claims priority, application Japan, Aug. 20, 1986, 61-127475[U]
Int. Cl.[4] B62L *1/02*
U.S. Cl. 188—24.12 **4 Claims**



1. A caliper brake comprising:

a fixing member;

a pair of brake arms pivoted to said fixing member and each carrying a brake shoe,

a return spring interposed between each of said brake arms and said fixing member, for biasing said brake arms in a direction of moving said brake shoes away from each other, said return spring having spring legs respectively engageable with said brake arms and

inversion members each comprising a first contact portion and a second contact portion for contacting with respective said brake arms and a fitting bore located at a position shifted from a center thereof between said first contact portion and said second contact portion closer to said first contact portion,

said spring legs being respectively fitted in the fitting bores of said inversion members, whereby each of said inversion members is capable of being pivoted around said fitting bore so as to change its position between a first position where said first contact portion makes contact with one of said brake arms and a second position where said second contact portion makes contact with one of said brake arms, such that said inversion members are inverted to adjust a spring reaction force of said return spring.

VOL 1093 ISS 5 AG 30 1988 UMI

4,766,980

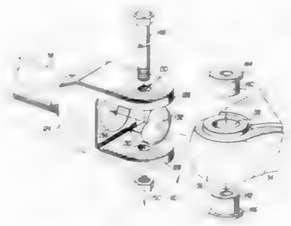
RAIL CAR BRAKE APPARATUS

Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Division of Ser. No. 776,762, Sep. 16, 1985, abandoned. This application Jan. 21, 1987, Ser. No. 99,610

Int. Cl.[4] B61H *13/34*

U.S. Cl. 188—52 8 Claims



1. In a brake rigging for a rail vehicle having at least one transverse axle; at least one brake beam extended in spaced, parallel relation to the axle and supported by the vehicle for movement longitudinally of the vehicle; a first pair of brake show carrying heads, one of said first pair mounted on each end of said brake beam, each of said first pair of brake shoe carrying heads comprising pivot means formed therewith; a pair of bell-crank levers each having a fulcrum and a pair of arms, one of said levers being mounted for rotation in each of said pivot means; and a fluid pressure operable brake actuator pivotably mounted at one end to one arm of one of said bell-crank levers and at the other end to one arm of the other of said bell-crank levers, the improvement comprising;

a pair of push rods each comprising at one end a clevis having a first axis of rotation, said clevis having arms with first bores spaced along said axis, a bearing member positioned between said arms, said bearing member having a concave spherical bearing surface with a center of curvature positioned on said axis, and means for retaining said bearing member between said clevis arms;

the other arm of each of said bell-crank levers having a convex spherical bearing surface and a second bore having a second axis extending through the center of curvature of said convex bearing surface;

bearing means extending into said second bore; and

means extending through said first bore and said bearing means for pivotably coupling said push rods to said bell-crank levers with said spherical bearing surfaces in contact.

4,766,981

DISC BRAKES

Anthony W. Harrison, Birmingham, England, assignor to Lucas Industries public limited company, Birmingham, England

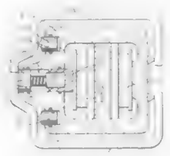
Filed Dec. 1, 1986, Ser. No. 936,591

Claims priority, application United Kingdom, Nov. 29, 1985, 8529474

Int. Cl.[4] F16D *55/00*

U.S. Cl. 188—170 19 Claims

1. A disc brake comprising a caliper supporting a service brake actuator and an auxiliary brake actuator arranged to apply opposed friction pads to opposite sides of a braking disc, the auxiliary brake actuator comprising a spring element which grips the caliper around an outer peripheral region thereof and applies spring force to said friction pads from the exterior of said caliper, said spring element being releasable by hydraulic



means such that the spring force of the spring element is then reacted through the caliper.

4,766,982

APPARATUS FOR SUPPORTING AND DRIVING WHEEL ANGULAR DECELERATION SENSOR

Tsutomu Hayashi, Tokyo; Takeshi Kawaguchi, and Tetsuo Tsuchida, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1985, Ser. No. 737,383

Claims priority, application Japan, May 26, 1984, 59-106918

Int. Cl.[4] B60T *8/34*

U.S. Cl. 188—181 A 7 Claims



1. An apparatus for supporting and driving a wheel angular deceleration sensor for a vehicle comprising:

a suspension device;

a wheel suspended on a body of the vehicle through said suspension device with a damping facility, wherein said suspension device includes: a vehicle body side member which constitutes together with the vehicle body a stationary supporting structure and a wheel side member movable in a manner following vertical vibration of said wheel during traveling of the vehicle, said wheel side member constituting together with said wheel a followingly movable structure that is movable relative to the stationary supporting structure, and wherein said stationary supporting structure supports an inertia type wheel angular deceleration sensor having a flywheel, said sensor being connected to said wheel by a transmission device connected between a drive shaft leading to said sensor and said wheel, said transmission device including means for absorbing the vertical vibration transferred from said wheel;

a hydraulic braking device for braking said wheel on the followingly movable structure;

a master cylinder for outputting braking oil pressure; and

an antilock control unit adapted for controlling the output oil pressure of said master cylinder in accordance with the decelerating state of said wheel sensed by said sensor and supplying an adjusted oil pressure to said brake device;

wherein said master cylinder and said antilock control unit are supported on said stationary supporting structure,

wherein an oil reservoir is supported on the stationary supporting structure, and wherein said antilock control unit is connected with said master cylinder, said oil reservoir, and said braking device through respective pipings.

4,766,983

MUFFLER FOR V-TYPE ENGINE

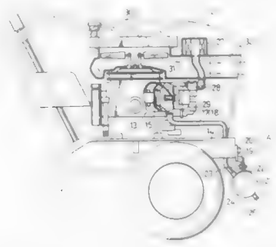
Shinichi Tamba, Kakogawa; Hitomi Miyake, Kobe, and Noboru Fukui, Kakogawa, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 898,379, Aug. 20, 1986, abandoned. This application Aug. 19, 1987, Ser. No. 88,462

Claims priority, application Japan, Sep. 2, 1985, 60-193427

Int. Cl.[4] F01N *7/10*

U.S. Cl. 181—240 2 Claims



1. A muffler for a V-type internal combustion engine employed in a work vehicle, said engine being of the type which includes a crankshaft, a pair of cylinders disposed symmetrically in a V-shape with respect to a horizontal plane defined perpendicularly with an axis of said crankshaft, and a pair of exhaust outlet ports provided at ends of said cylinders, comprising:

a pair of spaced inlet ports provided on opposite ends of said muffler and facing the engine compartment, for receiving exhaust gases from said exhaust ports;

a pair of exhaust pipes which extends forward and bend downward at a point adjacent to a front wall of said compartment and which is interconnected between said inlet ports and exhaust outlets, so that exhaust gases are directly discharged from the muffler to the atmosphere through a tailpipe having a substantially uniform cross-section throughout the entire length connected to the muffler; wherein the cylinder to muffler exhaust pipes are constructed into an equal length for increased cylinder performance and exhaust efficiency, and wherein

said muffler is supported horizontally on a plane defined perpendicularly with the axis of said crankshaft at either a front or rear of the vehicle outside an engine compartment in which said engine is housed, at a location away from an external surface of the vehicle in order to expose the entire external surface of said muffler to the atmosphere for cooling, and mounted such as to have an axis thereof extending at right angles with a center line of the vehicle.

4,766,984

NONLINEAR VIBRATION ABSORBER

Troy M. Gaffey; David L. Kidd, both of Arlington, and Michael L. Grimes, Fort Worth, all of Tex., assignors to Bell Helicopter Textron Inc., Fort Worth, Tex.

Continuation of Ser. No. 306,698, Sep. 29, 1981, abandoned. This application Nov. 21, 1983, Ser. No. 553,426

Int. Cl.[4] F16F *7/10*; B64C *27/00*; F16M *13/00*; B60G *11/52*

U.S. Cl. 188—380 7 Claims



1. A vibration absorber which comprises:

(a) a pendulum mounted on a frame for oscillation about an axis and having radially divergent surfaces relative to said axis on the end thereof opposite said axis;

(b) a first pair of springs mounted on said frame and in contact with said surfaces in preloaded opposed relation with respect to oscillation of said pendulum about said axis and to fix the resonant frequency of said pendulum; and

(c) a second pair of resilient members mounted on said frame to contact said pendulum only and oppose oscillation thereof beyond a predetermined limit to reduce accelerations of said frame at frequencies above said resonant frequency.

6. A vibration absorber which comprises:

(a) a wedge shaped pendulum adjusted to be pivotally mounted at its apex on an axis perpendicular to the direction of vibration of a host vibrating body;

(b) a rigid housing for said pendulum adjusted to be mounted on said body having fixed opposed faces interiorly confronting opposite radial faces of said pendulum;

(c) a first pair of resilient members mounted between each side of said pendulum contacting said pendulum and said housing in pre-loaded opposed relation with respect to oscillation of said pendulum about said axis, said pendulum being resonant at the frequency of said vibrations as mounted on said body; and

(d) a second pair of resilient members mounted on said housing to contact said pendulum on opposite faces thereof only upon oscillation in said housing of magnitude beyond a predetermined limit.

4,766,985

POWER CLUTCH SYSTEM

Enzo Brusasco, Turin, Italy, assignor to Roltra S.p.A., Turin, Italy

Filed Feb. 17, 1987, Ser. No. 15,072

Claims priority, application Italy, Feb. 21, 1986, 53014/86[U]

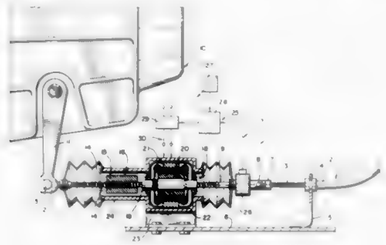
Int. Cl.[4] F16D *23/00*

U.S. Cl. 192—0.02 R 8 Claims

1. A power clutch system for vehicles, in particular for motor vehicles, comprising a clutch device having a control lever designed to move between two operating positions corresponding respectively to engagement and release; a control member connected to said lever and designed to move back and forth axially under the influence of an externally applied axial operating pressure for moving said lever between said two operating positions; and a power drive unit connected to said control member; characterized by the fact that said power drive unit comprises an electric motor with a hollow shaft; a

VOL 1093 ISS 5 AG 30 1988 UMI

screw-nut screw coupling on which said nut screw is integral with said hollow shaft and said screw constitutes a portion of said control member and extends through said hollow shaft;



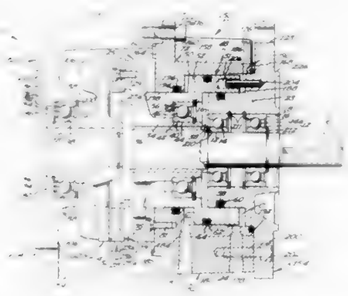
and, control means for activating said electric motor in such a manner as to permanently maintain the axial operating pressure exerted on said control member below a given preset value.

4,766,986

ROTATIONAL CONTROL APPARATUS

Leonid Dayen, Plymouth, and Charles D. Raines, Blaine, both of Minn., assignors to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Feb. 6, 1987, Ser. No. 11,778
Int. Cl.[4] F16D *67/04, 25/08*
U.S. Cl. 192—18 A 25 Claims



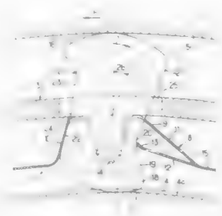
1. In an apparatus for providing rotational control of an output including an interface disc having first and second interface surfaces, a housing, a first interface member formed on an input for interfacing with the first interface surface of the interface disc, a second interface member formed on the housing for interfacing with the second interface surface of the interface disc, with the improvement comprising an improved housing and an improved interface disc, with the improved housing comprising, in combination: a cylindrical body portion; a first end having a generally circular shape; a second housing end; with the cylindrical body portion including an axially extending annular member having a free annular end, with the second interface member being integral with and extending radially inwardly of the axially extending annular member; a mounting flange extending radially outwardly of the axially extending annular member slightly offset from the second interface member; means for removably securing the first housing end to the free annular end of the axially extending annular member; and means accessible outside of the axially extending annular member of the cylindrical body portion for removably securing the second housing end to the mounting flange of the cylindrical body portion; and with the improved interface disc comprising, in combination: a first, flat ring portion including the first interface surface, a first face opposite to the first interface surface, and a radially inward axially extending opening; an interface element including a second ring portion and means for connecting the second ring portion for rotation with the output, with the second ring portion including the second interface surface and a second face opposite the second interface surface; circumferentially spaced webs upstanding from the second face of the interface element, with the webs having ends, with the second ring portion, the connecting means, and the webs being integrally cast as a single element; and means for removably securing the first, flat ring portion to the interface element with the first face abutting with the free ends of the webs and spaced from the second face of the interface element forming spaced cutouts for heat venting.

4,766,987

SPRING FOR A FREE-WHEEL DEVICE AND ASSEMBLY COMPRISING SUCH A SPRING

Olivier Message, Antony, France, assignor to SKF Compagnie d'Applications Mechaniques, Clamart, France

Filed Jun. 23, 1986, Ser. No. 877,648
Claims priority, application France, Jun. 24, 1985, 85 09583
Int. Cl.[4] F16D *41/07*
U.S. Cl. 192—41 A 18 Claims



1. A spring assembly for a free-wheel device, comprising,

a plurality of wedging cams which are positionable in an annular clearance having a maximum height and a minimum height, said clearance being defined between an inner track and an outer track which are eccentric relative to each other, each of said wedging cams having a front side with a substantially flat front surface portion and a rear side with a substantially flat rear surface portion, each wedging cam being tiltable, while the device is in a free-wheel condition and the cams are located between said tracks, in a first direction when said cam is near said maximum clearance height and in a second opposite direction when said cam is near said minimum clearance height, said spring assembly comprising:

a cut-out metallic strip means for retaining said wedging cams before and after the cams are inserted into a free-wheel device, said metallic strip having a plurality of apertures which each have a rear edge and a front edge, said cams passing through and being held in said apertures, each said rear edge having a substantially flat stop portion adapted to lie substantially flat against said substantially flat rear surface portion of a wedging cam before the cams and said metallic strip have been inserted into said free wheel device and when the cam is tilted in said first direction, thus limiting the movement of said cam in said first direction,

each said front edge having a substantially flat stop portion and a cam tilting tongue, said cam tilting tongue being engageable with the front side of the wedging cam, said flat stop portion at the front edge of the aperture being engageable with said substantially flat front surface portion of the wedging cam when the cam is tilted in said second direction, thus limiting the movement of said cam in said second direction, said tongue being elastically deformed by said cam when said cam is tilted in said second direction.

4,766,988

CIRCUIT ARRANGEMENT FOR CONTROLLING THE ENGAGEMENT AND DISENGAGEMENT OF A CLUTCH

Wolfram Seibert, Darmstadt, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 768,865, Aug. 23, 1985, abandoned.
This application Apr. 23, 1987, Ser. No. 45,171
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1984, 3430983
Int. Cl.[4] B60K *41/28*
U.S. Cl. 192—0.055 2 Claims

1. An automatic anti-slip free-wheeling system for an automotive vehicle having at least four wheels, comprising:

respective hydraulic brake means for applying braking pressure to each of said four wheels;

a hydraulic system for actuating said brake means;

engine and power transmission means;

hydraulically actuated free-wheel control means responsive to said hydraulic system for disconnecting said transmission means;

a source of hydraulic pressure connected to said hydraulically actuated free-wheel control means, including valve means for controlling the flow of hydraulic pressure to said free wheel control means;

respective wheel velocity transducer means for sensing the angular velocity of each of said four wheels;

engine speed transducer means for sensing the rotational velocity of said engine means;

throttle position transducer means for sensing the throttle valve position of said engine means;

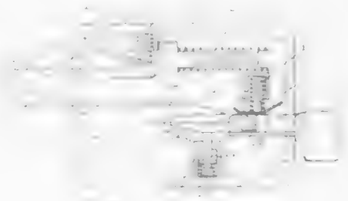
and anti-skid logic means responsive to all above said transducer means to actuate said valve means to cause said hydraulic system to disconnect said transmission means and to vary said brake pressure upon the occurrence of selected wheel rotational and drive-train torque conditions indicative of a wheel slip situation.

4,766,989

REMOVABLE ATTACHMENT DEVICE FOR SHOPPING CARTS AND THE LIKE

Robert Maloeuvre, 65, rue Jean Gutenberg, and Jean-Yves Loirat, 90, rue Jean Bart, both of F-44600 Saint-Nazaire, France

PCT No. PCT/FR85/00374, § 371 Date Oct. 2, 1986, § 102(e) Date Oct. 2, 1986, PCT Pub. No. WO86/04174, PCT Pub. Date Jul. 17, 1986
PCT Filed Dec. 26, 1985, Ser. No. 907,732
Int. Cl.[4] G07F *17/00*
U.S. Cl. 194—257 3 Claims



1. A removalbe attachment device for carts or the like comprising

a casing secured to the cart, the casing being adapted to receive a locking key, to receive and store a coin and to deliver the coin upon insertion of the said key;

a plunger reciprocally insertable into the casing,

the plunger having a coin receiving housing to receive a correctly sized coin therein,

the plunger being insertable into the casing only when a correctly sized coin is within the housing, the plunger being spring loaded by a return spring,

the insertable portion of the plunger comprising a cam and a stub member;

a spring-loaded lug positioned interiorly of the casing, the lug being positioned to be contacted by the plunger stub member, the lug engaging the plunger stub member to normally prevent removal of the plunger;

a key removably insertable into the casing, the key being provided with a retaining cavity,

the casing being equipped with a spring loaded peg and a peg release adapted to move the peg,

the peg being urged within the retaining cavity of the key when the key is inserted into the casing to retain the key in association with the casing,

the peg release being positioned to be contacted by the plunger cam when the plunger is inserted into the housing to lift the peg out of the retaining cavity to thereby allow removal of the key from the housing,

the key comprising a cam positioned to move the said spring-loaded lug upon insertion of the key to release the plunger; and,

a flexible coupling having two ends, one end of which is secured to the key, the other end of the flexible coupling being adapted to be secured in spaced location from the casing.

4,766,990

PEAR ORIENTING AND TRANSFER APPARATUS

John W. Colombo, Castro Valley, Calif., assignor to Atlas Pacific Engineering Company, Pueblo, Colo.

Filed Sep. 30, 1982, Ser. No. 429,061
Int. Cl.[4] B65G *47/24*
U.S. Cl. 198—383 16 Claims

1. A pear orienting apparatus comprising:

(a) a frame;

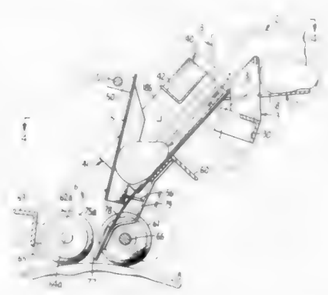
(b) a shaker pan reciprocably mounted on the frame and

VOL 1093 ISS 5 AUG 30 1988 UMI

having at least one singulation channel for supporting and conveying pears and having a slotted exit over which pears pass toward an open discharge end of the pan;

(c) an inclined delivery chute pivotally mounted adjacent to the slotted exit of each channel of the shaker pan and having an entrance end and a discharge end;

(d) a separate lifter reciprocable in the slotted exit of each channel of the shaker pan for gating a following pear in



said channel while simultaneously lifting onto the corresponding delivery chute each pear that overlies the slotted exit of said channel, and

(e) means for pivoting the entrance end of the delivery chute upwardly into a gating position with respect to the corresponding shaker pan channel as the lifter moves downward to permit the following pear to move into position overlying the slotted channel exit, said delivery chute remaining in a gating position until the lifter begins to rise.

4,766,991

DEVICE FOR FEEDING ROD-LIKE ARTICLES, PARTICULARLY FILTER PLUGS FOR FILTER-TIPPED CIGARETTES

Gian L. Gherardi, Medicina, Italy, assignor to SASIB S.p.A., Bologna, Italy

Filed Dec. 5, 1986, Ser. No. 938,717

Claims priority, application Italy, Dec. 13, 1985, 12623 A/85

Int. Cl.[4] B65G *47/12, 47/26*

U.S. Cl. 198—455 **8 Claims**



1. A feeding device for withdrawing rod-like articles, particularly filter plugs (B) in the manufacture of filter-tipped cigarettes, from a feeding hopper (1), and for singling the articles, the hopper having a bottom defining an outlet passage for the articles, said device comprising: a hopper wall (9) adjacent the outlet passage; a rotary drum (2) having a peripherl surface provided with flutes (102), said drum forming at least part of the bottom of the hopper (1) and extending out of the hopper bottom; a repelling roller (13) having a central axis, said roller (13) being rotatable about said central axis and being disposed between said hopper wall (9) and said drum (2) in the region where said drum (2) extends out of the hopper bottom; means for rotating said roller (13) about said central axis in the same angular direction as said drum (2) so as to push back the rod-like articles which are not contained in the flutes (102) and to prevent those rod-like articles from leaving the hopper or from becoming wedged between said hopper wall (9) and said drum (2); means supporting said roller (13) in a compliant manner and applying to said roller (13) a return force for urging said roller (13) toward a normal operative position, said roller (13) being displaceable against the return force toward a displaced position upon engagement of said roller (13) by one or more abnormal rod-like articles engaged in, and excessively protruding from, a said flute (102); and sensor means responsive to movement of said roller (13) to said displaced position for providing an indication of a fault condition; wherein said means supporting said roller (13) comprise a mechanism for causing the displacement of said roller (13) between the normal operative position and the displaced position to be constituted by movement of the central axis of said roller (13) along a path parallel to said peripheral surface of said drum (2) and in the direction of the circumference of said drum.

4,766,992

COAL CONVEYOR CONSTRUCTION

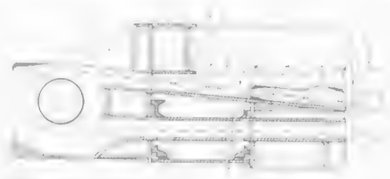
Gert Braun, and Ernst Braun, both of Essen-Heisingen, Fed. Rep. of Germany, assignors to Halbach & Braun Industrieanlagen, Fed. Rep. of Germany

Filed Dec. 2, 1986, Ser. No. 936,819

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544274

Int. Cl.[4] B65G *47/76*

U.S. Cl. 198—599 **2 Claims**



1. In an apparatus for hauling mined coal in a subsurface mining operation which includes a longwall conveyor, a drift conveyor, a cross frame for connection of the longwall conveyor with the drift conveyor, said longwall conveyor and said drift conveyor being chain scraper conveyors having a conveyor trough with a trough bottom and trough sidecheeks on respective sides of said bottom, a plurality of pushers guided in said sidecheeks, at least one pull chain, said pushers being connected to said chain at spaced locations along said chain and said pushers being guided in the longwall conveyor in said sidecheeks, said longwall conveyor chain running in the region of the conveyor trough center, the improvement comprising a plowshare type stripper on said cross frame extending into said drift conveyor in a direction of the conveyor trough of the longwall conveyor and crosswire to the conveyor trough, a lateral discharge on said longwall conveyor, said stripper being underrun by the chain and being underrun by the pushers of said longwall conveyor, said stripper transferring coal brought along by said longwall conveyor to said drift conveyor via said lateral discharge, an ascending guide rail continuing with the associated trough sidecheeks of said longwall conveyor, said pushers being guided on the side away from said lateral discharge in said ascending guide rail, a track-in device for said pushers of said longwall conveyor, said pushers having an arm running on the trough side cheek, said sidecheek having a track-in cutout at a location before said stripper, said track-in device comprising in the region of the track-in cutout a lowered trough bottom which leads via a trough sidecheek cutout into said drift conveyor, said guide rail connected between the longwall conveyor trough bottom and the level of the lowered trough bottom via a step, said stripper comprising an engaging element covering said lowered trough bottom adjacent said guide rail.

4,766,993

CONVEYING APPARATUS

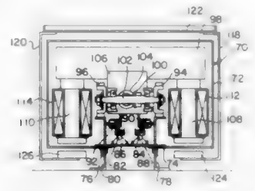
Tadao Kita, and Akihiro Okuno, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 10, 1986, Ser. No. 929,594

Claims priority, application Japan, Nov. 13, 1985, 60-254187

Int. Cl.[4] B65G *35/00*

U.S. Cl. 198—619 **5 Claims**



1. Conveying apparatus for dust-sensitive articles including:

a driving section and a conveying section;

said driving section including a pair of parallel track members, a truck portion including wheels engaging said track members and movable therealong and a non-magnetic retangular sleeve encompassing said truck portion and supported at its extremities from respective ones of said track members;

said conveying section including a pallet portion and a pair of yoke arms extending from opposite sides of said pallet around opposite sides of said non-magnetic rectangular sleeve and terminating below said sleeve in horizontal arm portions parallel to the bottom of said sleeve, said conveying section being movable with respect to said sleeve in the direction of the axis of said sleeve;

magnetic elements carried by said horizontal arm portions near the extremities thereof;

said truck portion carrying electromagnetic elements positioned, in operation, opposite said magnetic elements carried by said horizontal arm portions;

said magnetic elements and said electromagnetic elements being poled and operated in the attraction mode;

said truck portion including, in addition, an electrical motor coupled to said wheels for moving said truck along said track elements and magnetic control means for controlling the levitation of said conveying section with respect to said non-magnetic, rectangular sleeve;

and means for applying electrical current to said driving section for operation of said conveying apparatus.

4,766,994

CONVEYOR SYSTEM AND METHOD FOR TRANSPORTING MATERIALS

Murrell T. Miller, Portland, Oreg., assignor to Acravac, Portland, Oreg.

Filed Dec. 29, 1986, Ser. No. 947,041

Int. Cl.[4] B65G *17/36*

U.S. Cl. 198—711 **21 Claims**

1. A conveyor system for transporting materials which comprises:

a pair of generally parallel continuous cables having a substantially cylindrical cross-sectional configuration;

a continuous conveyor belt disposed between said continuous cables and adapted for transporting said materials;

a plurality of clip means each being attached at its inner end to the respective transverse sides of said belt for connecting said belt to said cables;

a plurality of drive means for engaging and directly driving said clip means, said clip means driving said continuous conveyor belt; and

each of said respective cables and belt being differentially movable one with respect to the other during use, at a differential relative rate of speed, for constant and automatic realignment of said cables and belt one with the other, thereby compensating for differences in the respective lengths of said belt and cables and in the configuration of the respective drive means,

each of said clip means including at its outer end means mounted on said cable for continuous, uninterrupted movement of said belt, while at the same time permitting



said respective cables and belt to move at a differential relative rate of speed,

each said coupling means including means defining a cylindrical aperture disposed parallel to the direction of travel of said belt and sized to substantially conform to the diameter of said cable for surroundingly receiving and retaining a segment of said cable within said aperture, and means defining a passageway at the outer end of said clip means for engaging and disengaging said cable within said aperture, said passageway having a width less than the cross-sectional diameter of said cable to allow said cables to yieldably pass through said passageway and into and out of said aperture, said passageway being oriented so that the cable will be inserted therein in a direction generally transverse to the plane of travel of said belt.

4,766,995

PUSHER-TYPE CONVEYOR CHAIN

Lester J. Sterwerf, Jr., Harrison, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio

Filed Sep. 3, 1986, Ser. No. 903,271

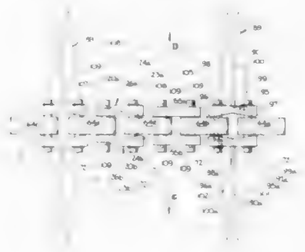
Int. Cl.[4] B65G *19/08*

U.S. Cl. 198—733 **12 Claims**

1. An improved pusher-type conveyor chain for a conveyor of the type comprising at least two elongated sections each having a bottom with an upper surface and parallel longitudinal edges with upstanding flanges extending along said edges, said conveyor sections being joined together end-to-end such that they can be shifted with respect to each other in lateral horizontal directions and vertical directions upwardly and downwardly, said pusher-type chain being continuous and being adapted to be driven in a conveying direction along each conveyor section bottom upper surface whereby to advance therealong material to be conveyed, said chain comprising a plurality of pusher elements normally extending substantially transversely of said conveying direction, adjacent pusher elements being joined together by a series of block-like links having transverse pintle holes near their ends and pairs of identical plate-like links having transverse pintle holes near

VOL 1093 ISS 5 AG 30 1988 UMI

their ends, said block-like links and said plate-like link pairs being arranged alternately with their adjacent pintle holes aligned and joined together by pintles passing through said aligned pintle holes, the improvement comprising the plate-like links of at least one pair thereof, located between each adjacent pair of pusher elements, having opposed inside surfaces with reliefs formed thereon, said plate-like links of said at least one relieved pair each comprises an elongated member having a long axis, first and second ends, inside and exterior surfaces, and first and second longitudinal edges, said first and second transverse pintle holes being near said first and second ends respectively, said inside surface of said link having a first relief surface portion adjacent said first end angled outwardly toward said first end, said first relief portion being followed by a second surface portion parallel to the long axis of said link, said second surface portion being followed by a third relief



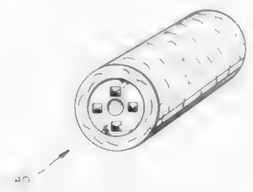
surface portion beginning at about that peripheral portion of said first pintle hole nearest said first end and angled therefrom toward said exterior surface of said link, said third relief surface portion terminating in a transition portion near said second pintle hole, said inside surface of said link having a fourth surface portion extending from said transition portion to said second link end and being coplanar with said second surface portion, one of said block-like links joined to said relieved pair of plate-like links is connected thereto by a pintle passing through said first pintle holes of said relieved pair of plate-like links and an elongated pintle hole in said last mentioned block-like link which is capable of horizontal articulation in both directions by virtue of said elongated pintle hole and said first and third relief surface portions on said plate-like links of said pair, whereby horizontal articulation of said chain is provided between its pusher elements at at least one selected pintle but not at all of said pintles.

4,766,996

ROLLERS WITH ORIENTED FIBER REINFORCEMENT AND METHOD

Christopher M. Gibson, Fountain Valley, Calif., assignor to Garrett Aerospace, Los Angeles, Calif.

Filed Sep. 30, 1983, Ser. No. 537,908
Int. Cl.[4] B65G *13/02*
U.S. Cl. 198—780 **10 Claims**



1. A roller for tractional driving of loads, comprising:

a cylindrical hub adapted to be rotatably driven; and

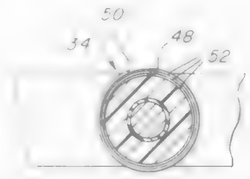
an elastomeric surface layer fixedly installed on said cylindrical hub, said elastomeric surface layer containing fiber strands dispersed therein in substantially circumferential orientation around said cylindrical hub, said elastomeric surface layer having a hardness not greater than 75 on the ASTM D 2240 type A durometer scale.

4,766,997

BEARING FOR A CONVEYOR CHAIN

Joseph R. Hannum, Norristown, Pa., assignor to The Budd Company, Troy, Mich.

Filed Dec. 24, 1986, Ser. No. 946,341
Int. Cl.[4] B65G *17/06, 17/38*
U.S. Cl. 198—853 **3 Claims**



1. In a conveyor system having a mechanical drive member for driving a chain,

(a) a plurality of interconnected links forming said chain and including a barrel shaped portion for frictionally contacting and driven by said mechanical drive member,

(b) removable high wear strips of a width substantially equal to the axial length of said barrel portions and preformed into coiled bearing bands, adapted to be wrapped around and tightly engage said barrel shaped portions to form bearings on said plurality of interconnected links, and

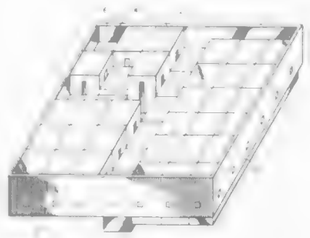
(c) each of said coiled bands having free ends and including radially overlapping layers.

4,766,998

STORAGE AND DISPLAY STRUCTURE

Ronald E. Russell, R.R. #2, Box 189, Sand Pond Rd., West Buxton, Me. 04093

Filed Aug. 20, 1987, Ser. No. 87,208
Int. Cl.[4] B65D *5/50, 55/00*
U.S. Cl. 206—45 **6 Claims**



1. A storage/display structure comprising:

a plurality of depressor elements arrayed in a group;

means for the depression of each of said depressor elements to form a cavity for receipt of an object to be displayed or stored;

means to retain each of said depressor elements in a selected lower mode at a selected depth;

means to release said depressor element to its original height when desired;

a plurality of slots defined in the sides of each of said depressor elements; and

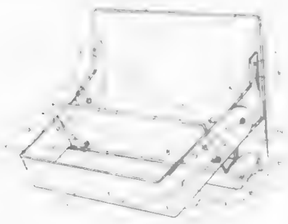
a grid adapted to receive a plurality of said depressor elements thereon with portions of said grid positioned within the slots of said depressor elements, said depressor elements adapted to move up and down on said grid.

4,766,999

LIBRARY CASE FOR THE DISKETTES

Lu Kin-Shou, No. 156, Si-Ning S. Road, Taipei, Taiwan

Filed Jun. 12, 1987, Ser. No. 61,103
Claims priority, application Taiwan, May 15, 1987, 76204450
Int. Cl.[4] B65D *85/57*
U.S. Cl. 206—45.13 **8 Claims**



1. A library case, which comprises:

a lid having a rear side and a pair of parallel lateral sides, and downwardly extending walls at its rear side and lateral sides;

a base having a front side, two parallel lateral sides, a base panel with a depth dimension slightly less than half the length of said lid, a rear edge, and upwardly extending walls at the front side and both lateral sides of said base, said lateral side walls of said base being longer than said base panel, and means pivotally connecting outer ends of said lateral side walls of said base to said lateral side walls of said lid, at least one of said lateral side walls of said base having inner radially extending stop means; and

a support positioned rearwardly of said base, said support having a depth dimension complementary to the depth dimension of said base panel so that the sum of said depth dimensions is approximately equal to the length of said lid, and having a leading edge overlapping said rear edge of said base and being restricted under said stop means, a vertical upwardly extending lug at each lateral rear end that freely and pivotally engages with said lid, and a snap notch along at least one lateral rim of at least one of said ends for cooperation with said stop means.

4,767,000

JEWELRY DISPLAY AND PACKAGING BOX AND BLANK THEREFOR

Abraham Ovadia, Little Falls, N.J., and Howard I. Finelt, New City, N.Y., assignors to Ovadia Corporation, Little Falls, N.J.

Filed Jul. 22, 1987, Ser. No. 76,319
Int. Cl.[4] B65D *25/02, 65/12, 65/24*
U.S. Cl. 206—45.14 **22 Claims**

1. A display and packaging box comprising:

a bottom wall;

first and second end walls extending upward from the bottom wall and defining with the bottom wall an upwardly open container, each end wall having an upper edge;

a cover flap pivotally connected to one of the upper edges for movement between a closed position in covering relation to the open container and an open position to permit access to the open container;

a display flap pivotally connected to the other of the upper edges for movement between a display position extending above the cover flap when the latter is in the closed position and a packaging position between the bottom wall and the cover flap;

said display flap including mounting means for securely mounting an object thereto such that said object is displayed when said display flap is in said display position



and is safely contained in the box when said display flap is in said packaging position;

maintaining means for maintaining said display flap in said display position; and

securing flap means connected to said bottom wall for releasably locking said cover flap in said closed position when said display flap is in said packaging position so as to package said object in said box for transport and for releasably locking said cover flap in said closed position when said display flap is in said display position to display said object.

4,767,001

GOLF BAG

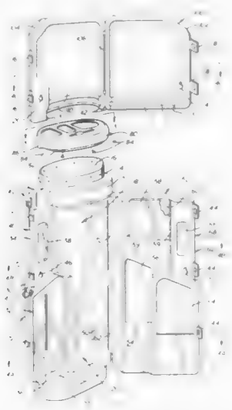
Young S. Kim, 22573 Woodridge Ct., Cupertino, Calif. 95014

Continuation-in-part of Ser. No. 866,477, Jun. 9, 1986, abandoned. This application Feb. 24, 1987, Ser. No. 17,904
Int. Cl.[4] A63B *55/00*
U.S. Cl. 206—315.3 **17 Claims**

1. A golf bag comprising a generally cylindrical lower portion and a generally cylindrical, rigid upper portion, said rigid upper portion comprising first and second halves vertically hinged along a side, latch means on an opposite side of said first and second halves from the vertically hinged side, a bottom end of said upper portion being configured to extend over a top end of said lower portion, there being a set of at least one mating projection and at least one recess between the bottom end of said upper portion and the top end of said lower portion,

VOL 1093 ISS 5 AG 30 1988 UMI

said mating at least one projection and recess fixedly attaching said rigid upper portion in place on said lower portion when



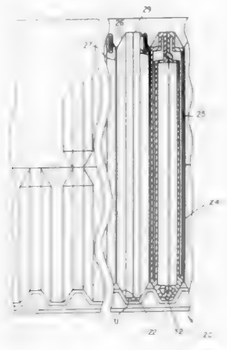
said latching means are closed to fasten the opposite side of said first and second halves together.

4,767,002

MULTIPLE CIRCUIT BOARD CARRIER/SHIPPER

Donald A. Malcolm, Roanoke Rapids, N.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 818,847, Jan. 14, 1986. This application Feb. 27, 1987, Ser. No. 20,294
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—328 6 Claims



1. An electrically conductive blow molded container comprising:
(a) a body portion;
(b) a cover portion;
(c) hinge means to permit opening and closing of the container;
(d) latching means for closing the container during storage; and
(e) the container when closed comprising:
(i) a pair of coplanar, rectangular walls spaced apart from each other;
(ii) top and bottom coplanar rectangular members spaced apart from each other, and coextensive with and perpendicular to the pair of walls;
(iii) a pair of side coplanar rectangular members spaced apart from each other, and coextensive with and perpendicular to the pair of walls; and
(iv) intermediate planar rectangular members coextensive with and connecting each wall to the top, bottom, and side members respectively, and disposed at an angle to both the walls and top, bottom, and side members, so that the intermediate members can be accommodated in contacting relationship by inclined sides of raised portions of a carrier means for transporting said containers.

4,767,003

TRANSPARENT, ELECTROSTATIC PROTECTIVE CONTAINER WITH READILY ACCESSIBLE IDENTIFICATION MEANS

Allyn B. Rice, Fullerton; Ronald L. Johnson, Placentia, and Milton J. Peterman, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 788,896, Oct. 18, 1985, abandoned. This application May 7, 1987, Ser. No. 51,223
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—328 28 Claims



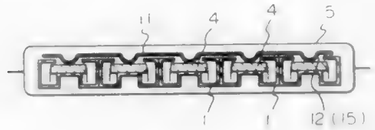
1. A container for shielding electronic components from electrostatic discharges, the container having an integral pocket for holding identification material, comprising:
first and second container members each of which is formed of a static protective material and is open at one end and closed at the opposite end, and having inside and outside surfaces, the members being shaped so that they may be joined together at their open ends to form a closed container, at least one of the first and second container members having a ridged top surface;
means for securing an electronic component in a predetermined position within the first and second container members;
a pocket container member interfacing the ridged top surface, the pocket container member having a peripheral edge and open at one end and closed at the opposite end and having inside and outside surfaces and having a side in which an opening is formed through which may be inserted and removed the identification material, the pocket container member further having a raised surface for the stacking of another container thereon, the raised surface being disposed on the outside surface of the closed end of the pocket container member, the pocket container member also having a plurality of protrusions that engage either the first or the second container member;
wherein the pocket container member is engaged with the outside surface of the closed end of one of the other container members to form a pocket therebetween; and
a tab covering the opening of the pocket to hold the inserted identification material within the pocket, the tab having a window through which the identification material may be viewed, the tab being moveable relative to the pocket container member.

4,767,004

METHOD OF PACKING ELECTRONIC PARTS AND A PACK PRODUCED BY THE METHOD

Michio Ishihara, Yokohama; Hiroshi Oishi, Aizuwakamatsu, and Makoto Kuboyama, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 915,880, Oct. 8, 1986, which is a continuation of Ser. No. 731,611, May 7, 1985, which is a continuation of Ser. No. 525,800, Aug. 24, 1983, abandoned, which is a continuation of Ser. No. 253,000, Apr. 10, 1981, abandoned. This application Dec. 21, 1987, Ser. No. 139,167
Claims priority, application Japan, Apr. 10, 1980, 55-47069
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—334 21 Claims



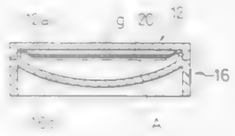
1. A method capable of packing under vacuum electronic parts having variations in thickness, the method comprising the steps of:
inserting said electronic parts into a hollow elongated electronic parts container, said hollow electronic parts container having an opening on the upper surface thereof and an inner space where said electronic parts are housed in a row along the longitudinal direction of the container, said opening being formed along the longitudinal direction of the container, and said inner space having a size allowing said electronic parts within the container to freely move along the longitudinal direction of the container;
juxtaposing a plurality of said electronic parts containers side by side;
disposing a single common pressing plate of flexible material over said plurality of electronic parts containers so as to cover said openings on said upper surfaces and for pressing against the electronic parts in the containers, wherein said pressing plate has integrally formed projections thereon with the same number of rows of projections as said plurality of electronic parts containers, each of said projection rows having a plurality of said projections and facing one of said openings of each of said containers, each of said projections being elongated in the longitudinal direction of each of said containers, and wherein the width of said pressing plate is less than that of each of said containers; and
packing said electronic parts containers and said pressing plate together in a sack under vacuum, wherein each of said electronic parts housed in said containers is pressed by at least one of said projections under the action of vacuum and wherein said pressing plate comprises flat portions between said projections in each projection row and between said projection rows so that the pressing plate can freely deform under vacuum action so that all of said electronic parts can be firmly pressed and held stationary even with variations in thickness of said electronic parts.

4,767,005

PACKAGING CONTAINER

Toshihide Onuma, and Shigeo Katsura, both of Saitama, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1987, Ser. No. 134,489
Claims priority, application Japan, Dec. 27, 1986, 61-310679
Int. Cl.[4] B65D *73/02*
U.S. Cl. 206—334 3 Claims



1. A packaging container for shipping and storing articles such as semi-conductor materials, devices and the like, comprising a first case member having a bottom wall, a second case member having an annular flange, and a supporting sheet having a thin flexible base film and an adhesive layer applied thereto, said adhesive layer being capable of tentatively adhering thereto an article to be packaged, said first and second case members being adapted to mate with each other in a sealed manner and to cooperate to define an internal space therebetween when mated together, said supporting sheet being placed in said first case member with the adhesive layer facing toward said second case member and with the peripheral margin of the supporting sheet held between the bottom wall of the first case member and the annular flange of the second case member.

4,767,006

HOLDER FOR ALLEN WRENCHES

Keith Wasem, 220 S. Spruce St., Nazareth, Pa. 18064

Filed Jan. 14, 1988, Ser. No. 143,839
Int. Cl.[4] B65D *85/20*
U.S. Cl. 206—377 14 Claims



1. A holder for allen wrenches, or the like devices, comprising:
(a) a hollow cylindrical housing including a longitudinal slot at least the length of the longest device to be stored therein and a generally circular thumb hole intermediate said slot's ends;
(b) an interior cylindrical tool-holding rod with a diameter less than the diameter of said housing, said rod rotatably received inside said housing, said rod including a plurality of longitudinal channels disposed around said rod's circumference, each said channel terminating in a bore into said rod, said rod including a circumferential groove intermediate said rod's ends and coaxial with said housing's thumb hole to provide finger access to said wrenches; and,
(c) means to rotate said rod within said housing,
whereby when a set of wrenches, or the like devices, is placed, one each in its correspondingly sized channel with

VOL 1093 ISS 5 AG 30 1988 UMI

its head retained in said bore, said rod may be rotated to expose each wrench in turn.

4,767,007

MAGNETIC TAPE CASSETTE

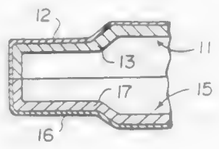
Kengo Oishi, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 21, 1987, Ser. No. 87,738

Claims priority, application Japan, Aug. 21, 1986, 61-127305[U]

Int. Cl.[4] B65D *85/672*

U.S. Cl. 206—387 2 Claims



1. A magnetic tape cassette comprising a magnetic tape, a pair of reel hubs and a cassette body for rotatably retaining said pair of reel hubs around which said magnetic tape is wound,

wherein said cassette body is fabricated of a plastic material or the like by injection molding and a protective layer fabricated of a non-woven fabric is formed on the surface of said cassette body by disposing said non-woven fabric in a cavity of an injection mold at the time said injection molding is to be conducted, and subsequently, unitedly connecting said non-woven fabric to said surface of the cassette body simultaneously with said injection molding of the cassette body, wherein said non-waven fabric comprises a non-woven fabric which has an antistatic effect.

2. A method of forming a cassette body having a protective layer comprising the steps of:

disposing a non-woven fabric in a cavity of an injection mold; and

injecting an injection molding material into said cavity of said injection mold such that said non-woven fabric adheres to a surface of said cassette body, to form a protective layer on the surface of said cassette body wherein said non-woven fabric comprises a non-woven fabric which has an anti-static effect.

4,767,008

INJECTION MONITOR APPLIANCE

Armand E. Warnecke, 542 59th St., Downers Grove, Ill. 60516, and Carl W. Metz, 803 S. 4th St., St. Charles, Ill. 60174

Filed Nov. 2, 1987, Ser. No. 115,342

Int. Cl.[4] B65D *85/20*

U.S. Cl. 206—570 14 Claims

1. A relatively safe, foolproof, light-weight, portable, durable and economical injection monitoring appliance adapted for use by injection-dependent individuals to maintain a daily monitoring of injections taken, comprising, in combination:

a relatively rigid container assembly having an upper closure member and a lower closure member, each respective member having bottom and side walls joined together and each member adapted to mate with the other to define a hollow space therebetween selectively sealable from external environment;

at least said lower closure member having a tray-receiving compartment therein;

a relatively semirigid tray adapted to securely fit within said tray-receiving compartment, said tray having an upper wall plane substantially parallel with and abutting with said bottom wall of said upper closure member when mated with said lower closure member with a minimal clearance between said tray upper wall plane and said bottom wall of the upper closure member;

a plurality of parallely-disposed, horizontally-extending, open-topped elongated slots located at a first area on said tray, each of said slots having a depth dimension extending from said tray upper wall plane toward a lower wall plane thereof and adapted to contain a select number of syringe assemblies therein, said slots being separated from each other by respective partition walls with a finger-tip receiving open groove located at a midpoint area of each partition wall;

first indicia means associated with each respective slots designating a select day of a week thereon;

a plurality of medication container-receiving depressions located on said tray at a second area thereof adjacent and spaced from said first area;



second indicia means associated with each respective depression designated a type of medication in the container within such depression;

a recess located on said tray at a third area thereof adjacent and spaced from said first and second areas thereof for snugly receiving a plurality of prewrapped alcohol swabs therein;

a well opening located on said tray at a fourth area thereof adjacent and spaced from said first, second and third areas thereof for receiving syringe needles therein; and

a cover member frictionally fitting within an upper peripheral area of said well opening, said cover member having a syringe-needle receiving aperture in a central area thereof to aid in breaking off needles from spent syringe assemblies.

4,767,009

MOLD PACKAGE WITH ARTICLE MOUNTING AND PAINT MEANS

Timothy Hornecker; Mustoe, Tracy J., and Judy C. Mustoe, all of Eugene, Oreg., assignors to Easy Art, Inc., Eugene, Oreg.

Filed May 30, 1986, Ser. No. 868,685

Int. Cl.[4] B65D *81/36*

U.S. Cl. 206—575 9 Claims



1. A mold package for creating molded articles of the type which harden from a substantially fluid state to a substantially solid state, said mold package comprising:

(a) a base;

(b) a cover, said cover including a plurality of recessed mold means for forming said molded articles therein;

(c) said base comprising receptacle means for receiving items therein;

(d) mounting means received in said base, for attaching said molded articles to other objects; and

(e) said mounting means including anchor means for being partially received within said molded articles when said molded articles are in a substantially fluid state and permanent magnet means, fixable to said anchor means, for mounting said molded articles to a ferromagnetic object.

4,767,010

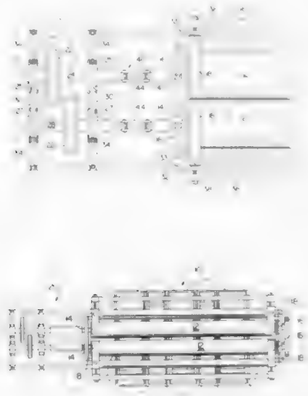
BEARING SORTING DEVICE

John R. Bost, P.O. Box 902, Laurens, S.C. 29360

Filed Oct. 2, 1986, Ser. No. 914,288

Int. Cl.[4] B01C *5/06*

U.S. Cl. 209—670 20 Claims



1. An apparatus for sorting round bearings according to their diameter, comprising:

(a) a pair of elongated cylinders, each of which is fixed to a support shaft which is floatingly mounted for rotation in a spaced pair of support shaft bearing blocks so that the longitudinal axes of said elongated cylinders diverge, thereby creating a sorting gap between the surfaces of said cylinders which increases from one end of said cylinders to the other end;

(b) a pair of driven shafts, each of which is supported for rotation in two spaced driven shaft bearing blocks;

(c) driven means affixed to each of said driven shafts between said driven shaft bearing blocks;

(d) means supporting said driven shaft bearing blocks, for movement transversely of the longitudinal axes of said driven shafts;

(e) means for driving said driven means to rotate said driven shafts in opposite directions; and

(f) flexible coupling means connecting each of said cylinder support shafts to a respective one of said driven shafts, whereby said elongated cylinders are rotated in opposite directions effectively eliminating fluctuating radial stresses present in the driven shafts from being transmitted to the support shafts of the elongated cylinders.

4,767,011

EARRING HOLDER

Susan M. Butler, Neptune Beach, Fla., assignor to Anna M. Johnson and Floyd T. Johnson, a part interest to each

Filed Aug. 17, 1987, Ser. No. 86,154

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—13 12 Claims



1. An earring holder adapted for holding stud, hoop and hook type of earrings comprising an open frame having a central aream a fiberglass flexible screen material loosely attached to said frame over said central area, said screen material having mesh openings larger than a stud, hoop or hook of an earring to be easily inserted therethrough without friction therebetween, said screen material overlying said central area in a generally loose condition with an edge of said screen adjacent said frame forming a central plane, said screen having a maximum dimension X, said screen at its center sagging naturally to a deflection D measured perpendicular to said plane, the porportion of D:X being 1:10 to 1:40, said screen being adapted to permit insertion of a hoop of an earring from one side of and through one opening of said material and easily back through an adjacent opening of said material without friction between a hoop and said screen material to positively detachably affix a hoop earring thereto.

4,767,012

STRIP HANGER

Harry Simmons, Chatsworth, Calif., assignor to Joseph Crowley, Northridge, Calif.

Continuation-in-part of Ser. No. 854,871, Apr. 23, 1986. This application Feb. 3, 1987, Ser. No. 10,330

Int. Cl.[4] A47F *7/00*

U.S. Cl. 211—89 9 Claims



1. A merchandise package strip hanger comprising:

an elongate strip base;

a plurality of clips spaced along a surface of said base;

said clips comprising a lever means having an operating end and a clamping end, said clamping end having a flange extending toward and being in opposition to the surface of said base;

fulcrum means attaching said lever means to said elongate base so that a downward force on said operating end of said lever means displaces said flanges end of said lever means away from said surface of said base;

said elongate strip base, said lever means and said fulcrum means being constructed of a synthetic material forming a homogeneous integral construction;

hanger means on an end of said elongate strip base for hanging said clip means with said clamping end downward;

VOL 1093 ISS 5 AG 30 1988 UMI

whereby a plurality of packages of merchanise can be displayed by hanging from said plurality of clip means on elongate strip base.

4,767,013

SWIVEL CURTAIN ROD

Mariette R. Bertelli, 16 Oak St., Great Barrington, Mass. 01230

Filed Dec. 2, 1986, Ser. No. 937,054
Int. Cl.[4] A47H *1/10*
U.S. Cl. 211—96 **1 Claim**



1. A swivel rod comprising:
a longitudinal curtain supporting member, said curtain supporting member having a longitudinal groove therein;
a connecting member fixed to one end of said curtain supporting member, said connecting member having an upper face and a lower face;
a pivot projection fixed to and extending from each of said upper and lower faces of said connecting member;
a single bracket member, said bracket member having upper and lower spaced supports, said upper and lower supports having a pivot recess for receiving said pivot projections fixed to said upper and lower faces of said connecting membr, respectively;
said connecting member pivotably mounted to said bracket member so that said pivot projections are pivotably fixed in said pivot recesses of said upper and lower spaced supports thereby permitting said longitudinal curtain supporting member to pivot with respect to said bracket member; and
a finial slidably attached to aid curtain supporting member for preventing a curtain from sliding off said curtan supporting member and for selectively positioning a curtain along said curtai supporting member, said finial having a pin extending through the surface of said finial and into said longitudinal groove in said curtain supporting member, said pin thereby preventing rotational movement of said finial with respect to said curtain supporting member.

4,767,014

SLEEVE AND BOTTOM-COVER FOR IN A MODULAR DISPLAY RACK WITH PAINTED ARMS AND PAINTED BOTTOM

Kenneth E. Vail, Sr., 2560 Los Lomitas Way, Covina, Calif. 91724, and Kenneth E. Vail, Jr., 758 Level Ave., Covina, Calif. 91723

Filed Jun. 2, 1987, Ser. No. 57,396
Int. Cl.[4] A47F *5/00*
U.S. Cl. 211—207 **1 Claim**

1. An improvement for use in a modular display rack which includes a plurality of painted bottoms, a plurality of painted arms, a plurality of painted base-members having a hole through which a screw securely fixes one of the painted arms thereto and a plurality of painted arm-supports and which is used for displaying and selling merchandise, said improvement comprising:
a. coupling means for slidably and telescopically coupling each of the painted arms to one of the painted bottoms; and
b. a plurality of plastic sleeves each of which has a slot which is aligned with the hole of one of the painted bottoms so that the shaft of the screw travels therewithin and



each of which protects one of the painted arms and one of the painted bottoms from being scratched when the modular display rack is either being set up or in use.

4,767,015

ANTI-SLIP PLASTIC GLASS

Alexander Ho, Taipei, Taiwan, assignor to Culver Glassware Co., Inc., Rahway, N.J.

Filed Jul. 20, 1987, Ser. No. 75,149
Claims priority, application Taiwan, Aug. 11, 1986, 75207502
Int. Cl.[4] A47G *19/22;* **B65D** *25/24*
U.S. Cl. 215—100 R **9 Claims**



1. An anti-slip container comprising a container including a base portion for supporting said container on a surface, groove means disposed in said base portion, a support member having a shape corresponding to the shape of said groove means whereby said support member can be disposed within said groove means, and an anti-slip member having a shape corresponding to said shape of said support member and having a size such that said anti-slip member can be retained between said support member and said groove means, said support member including aperture means and retention means at least partially blocking said aperture means, whereby at least a portion of said anti-slip member can project through said aperture means when said anti-slip member is retained between said support member and said groove means while said retention means can prevent the removal of said anti-slip member from said support member therethrough.

4,767,016

LIQUOR BOTTLE CAPPING ASSEMBLY

Harold Cook, Jr., Evergreen, and Bruce A. Moen, Golden, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Aug. 18, 1987, Ser. No. 86,567
Int. Cl.[4] B65D *55/02*
U.S. Cl. 215—230 **26 Claims**



1. A liquor bottle capping assembly for a liquor bottle having a threaded opening comprising:
perforated member means fixedly attachable to the liquor bottle in covering relationship with said threaded opening in the liquor bottle for preventing flame propagation into the liquor bottle;
wherein said perforated member means comprises a relatively thin member having a plurality of holes in a central portion thereof;
wherein said perforated member means holes comprise circular holes;
wherein said circular holes in said perforated member means comprise a diameter range of between 0.060 inches and 0.075 inches.

4,767,017

FILAMENT-WOUND PRESSURE VESSEL

Francis M. Logullo, Sr., Hockessin, Del.; Yun-Tai Wu, Newtown Square, Pa., and George E. Zahr, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 739,861, May 31, 1985, Pat. No. 4,678,821.
This application Apr. 16, 1987, Ser. No. 39,116
Int. Cl.[4] F25J *00/00*
U.S. Cl. 220—3 **3 Claims**

1. A filament-wound pressure vessel formed of a rigid composite comprising an epoxy resin matrix reinforced with continuous p-aramid filaments coated with from about 0.2 to 2 percent by weight of a solid adhesion modifier selected from the group consisting of 2-perfluoroalkyl ethyl ester, paraffin wax and mixtures thereof, wherein, said coated filaments when embedded in an epoxy matrix and tested in accordance with ASTM D2344-76 exhibit a short beam shear strength of between about 2.5 and 5.5 Kpsi.

4,767,018

AIR BREATHER DEVICE FOR A TANK

Takeshi Saito, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Aug. 8, 1986, Ser. No. 894,696
Claims priority, application Japan, Aug. 20, 1985, 60-127038
Int. Cl.[4] B65D *25/00*
U.S. Cl. 220—85 S **2 Claims**

1. An air breather system for an oil or fuel tank mounted in an engine space of a road vehicle, said breather system comprising an air breather pipe disposed substantially perpendicular and transversely to the fore and aft direction of a frame of the vehicle, said air breather pipe having a first horizontal pipe section extending transversely within, and towards only one lateral sidewall of said tank and opening at only one end thereof within the interior air space at a location adjacent to both a top wall and said one lateral sidewall of said oil or fuel tank, a second horizontal pipe section exterior of said tank extending transversely towards and beyond the opposite lateral sidewall of said tank and having an end thereof at a location adjacent to said opposite lateral sidewall of said tank, a substantially vertically extending pipe section passing through a top wall of said fuel tank and connecting said first and second



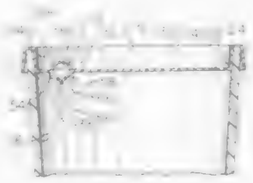
sections in flow communication with each other, and means providing a flow constricting opening within said vertically extending pipe section, whereby said normal air space is vented to the atmosphere through said air breather pipe when said tank is in substantially vertical position and when said tank is overturned towards its said opposite lateral sidewall, and said first pipe section opening is submerged in oil or fuel when said tank is overturned towards its said one lateral sidewall, and hose connected to said end of said second horizontal pipe section and extending to an open end thereof outside of said engine space.

4,767,019

SPLASH RESISTANT CUP LID

Tommy D. Horner, 3440 N. Beltline Rd., No. 1066, Irving, Tex. 75062

Filed Sep. 25, 1987, Ser. No. 101,353
Int Cl.[4] A47G *19/22*
U.S. Cl. 220—90.4 **11 Claims**



1. A spill resistant lid having a rim structure adapted to engage a lip around the mouth of a drinking container in a substantially leakproof manner comprising:
a. a canopy suspended from said rim structure for forming a shallow reservoir sized to fit into said mouth of said container; and
b. means for defining a vertical opening in said canopy.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,020

METAL TEAR-OPEN LID FOR CANS

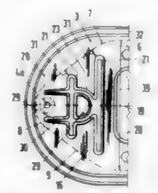
Wolfgang Peter, and Heinz Hacke, both of Cuxhaven, Fed. Rep. of Germany, assignors to Schmalbach-Lubeca AG, Braunschweig, Fed. Rep. of Germany

Filed Feb. 19, 1987, Ser. No. 17,187

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1986, 3607402

Int. Cl.[4] B65D *17/34*

U.S. Cl. 220—273 5 Claims



1. A cover for a can comprising:

a lid plane of sheet metal having a thickness of less than 0.24 mm having at least one major axis, and a pair of longitudinal edges and at least one end edge connecting said longitudinal edges, said lid plane being formed with a tear-open portion surrounded by a score line extending along said major axis, and said score line at said tear-open portion including;

two inclined sections converging toward said one end;

a curved starting section joining said inclined sections adjacent said end of said plane; and

further sections extending parallel to said longitudinal edges away from said end and respectively adjoining said inclined section, said sections defining a starting part portion of said tear-open portion, said starting part being formed with a plurality of generally linear downwardly projecting beads extending generally transverse to said axis and transversely spaced apart therealong, said linear beads extending toward said inclined sections and terminating at a distance therefrom equal substantially to the widths of said beads, and a U-shaped downwardly projecting bead located symmetrically about said axis, said U-shaped bead intersecting said linear formations, and having:

two legs generally parallel to said axis; and

curved webs linking said legs and bridged between said linear beads;

a rivet with a shank on the top of said starting part located at said end, said legs terminating along a line extending perpendicular to said axis and tangential to said shanks; and

a pull-ring overlying said beads and connected to said starting part, said pull-ring including:

a portion covering said legs;

a breaking nose lying on said starting part coextensive with said curved portion; and

a ring portion connected to said portion covering said legs and shaped to conform to said curved webs.

4,767,021

CONTAINER

Gunther Pies, Frechen-Freimersdorf, Fed. Rep. of Germany, assignor to Mauser-Werke GmbH, Bruhl, Fed. Rep. of Germany

Filed Oct. 27, 1987, Ser. No. 113,793

Int. Cl.[4] B65D *25/00*

U.S. Cl. 220—465 5 Claims

1. In a container having a shell and at least one bung in a top head with a central head surface arched inward and an outer head surface, adjoining the arched central head surface, tapering off obliquely to the shell of the container and forming a raised transition region between the central head surface and the outer head surface when the container is viewed in an upright position, the improvement comprising:

(a) a funnel-shaped elevation disposed in the top head in the transition region and connecting the bung to the central and outer head surfaces; and



(b) a drainage channel in said raised transition region, said drainage channel being depressed at a lower elevation relative to said transition region when said container is in an inverted position and having a continual downward slope beginning in a portion of the transition region farthest from the bung and emptying into the funnel-shaped elevation.

4,767,022

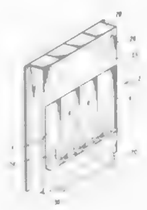
PACKET DISPENSER

Dennis Oldorf, P.O. Box 1883, Cedar Rapids, Iowa 52406

Filed Oct. 31, 1986, Ser. No. 925,355

Int. Cl.[4] B65H *1/00*

U.S. Cl. 221—92 16 Claims



1. Apparatus for dispensing generally flat articles comprising

a housing,

a plurality of vertically disposed magazines,

said magazines insertable within said housing,

each of said magazines being insertable in said housing independent of said other magazines,

each of said magazines comprising a sleeve and a tray member,

said sleeve and said tray member of each magazine cooperating to provide a port in each of said magazines at the front thereof,

each of said magazines having a shelf protruding from the port therein,

an opening in said housing providing access to said ports in said magazines,

said shelves of said magazines protruding from said opening of said housing,

said tray members having an open portion and an adjacent enclosed portion,

said shelves of said magazines depending from said tray members at the adjacency of said open portions and said enclosed portions thereof,

said sleeves overlay said open portion of said tray members,

said sleeves each having a wall and ends,

each of said sleeves having an opening in the wall thereof at an end of said sleeve,

said opening in said wall of each of said sleeves cooperating with the tray member overlaid by said sleeve to provide said port in said magazine,

each of said sleeves being provided with stop means to prevent passage of said sleeve past a predetermined position upon said tray member,

said stop means is a closed end of said sleeve,

4,767,023

DISPENSER FOR TABLETS

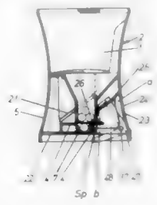
Ludger Hackmann, and Josef Wilken, both of Lohne/Oldbg., Fed. Rep. of Germany, assignors to Bramlage Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Apr. 18, 1986, Ser. No. 853,741

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1985, 3515302

Int. Cl.[4] B65D *83/04*

U.S. Cl. 221—152 17 Claims



1. A dispenser for dispensing tablets, said dispenser comprising

a housing defining a tablet storage compartment and having an outer wall;

a slide movably mounted within said housing;

an operating key disposed adjacent to said housing outer wall, said operating key being movable;

spring means resisting movement of said operating key in one direction;

said slide having a tablet dispensing portion;

said housing having a tablet discharge opening;

said operating key being effective when forced in said one direction to shift said slide to position said tablet dispensing portion in registry with said tablet discharge opening;

means for selectively blocking movement of said slide, said means for blocking comprising a detent mounted upon said housing and spaced from said operating key;

said detent being shiftable from a first position in which it engages and blocks said slide to a second position in which it is disengaged from said slide and permits movement thereof; and

spring means resisting movement of said detent to said second position.

4,767,024

BLOWING DEVICE FOR ELIMINATION OF COMPACTIONS IN BULK MATERIAL STORAGE SILOS

Albert Rappen, Mülheim/Ruhr, Fed. Rep. of Germany, assignor to VSR Engineering GmbH Fordertechnik, Fed. Rep. of Germany

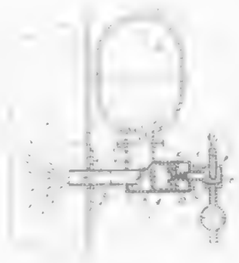
Filed Jan. 21, 1987, Ser. No. 5,758

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1986, 3602207

Int. Cl.[4] B67B *7/24*

U.S. Cl. 222—3 9 Claims

1. A blowing device for elimination of the compactions in bulk material in a storage silo using air blasts, comprising a compressed air storage container having a supply duct, a compressed air outflow duct connected to said storage silo and connected to said supply duct, the connection including a valve conduit having one end connected to said compressed air outflow duct and one end of said compressed outflow duct having an arc-shaped end disposed in said valve conduit, a rapid exit valve in said valve conduit, a valve closure member moveable in said valve conduit toward and away from said outflow duct arc-shaped end and being engageable and disengageable with said arc-shaped end to close and open said outflow duct, and said valve conduit forming an afflux cross-section for said valve closure member having a cross-section which is substantially greater than the cross-section of said air outflow duct and which said valve closure member includes a



miter cut, said afflux cross-section being approximately twice as large as the cross-section of said outflow duct, said rapid exit valve including a valve seat which is rounded to enhance flow, said outflow duct forming said valve seat and having said arc-shaped end and said outflow duct having a center line lying in the plane of a center line of said supply duct.

4,767,025

HAND TOOL FOR MIXING AND DISPENSING TWO-COMPONENT MASSES

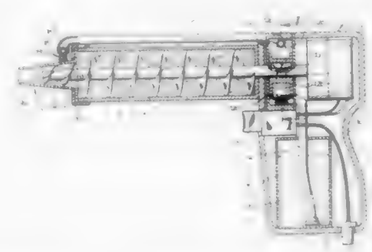
Ludwig Gebauer, Olching, and Peter Mauthe, Kleinberghofen, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft

Filed Dec. 1, 1986, Ser. No. 936,174

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1985, 3542522

Int. Cl.[4] B67D *5/52*; B05C *17/00, 11/10*

U.S. Cl. 222—135 8 Claims



1. Hand tool for mixing and metered dispensing of a two-component mass comprising a support member (**1**), an axially elongated container (**2**) having a first end and a second end spaced apart in the axial direction and mounted in said support member and arranged to hold a first component of the two-component mass, an axially elongated drive shaft (**7**) extending through said container in the axial direction thereof, means for rotating said drive shaft, a mixing chamber (**9***a*) mounted on the first end of and in coaxial relation with said container, a conveying helix (**8**) on said drive shaft within said container, a mixing worm (**11**) located within said mixing chamber and connected to said drive shaft for rotation therewith, a metering pump (**12**) mounted in said support member adjacent the second end of said container and powered by said drive shaft, a

VOL 1093 ISS 5 AG 30 1988 UMI

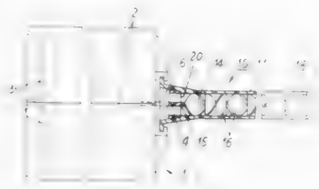
connecting line (17) interconnecting said metering pump and said mixing chamber and means for a second component to be delivered to said metering pump.

4,767,026

DISPENSING AND MIXING APPARATUS

Wilhelm A. Keller, Rebenweg 5, 6331 Huenenberg, Switzerland, and Sung J. Chen, 36 Algonquin Ave., Andover, Mass. 01810

Filed Jan. 16, 1987, Ser. No. 4,061
Int. Cl.[4] B67D *5/52*
U.S. Cl. 222—137 6 Claims



1. In a device for the simultaneous delivery of a plurality of separate fluids to a dispensing point downstream of which the fluids are to be admixed, the combination comprising:

a delivery orifice for said device for delivering said fluids to said delivery point;

a baffle in said orifice for separating said fluids upstream of said delivery point having a transverse radially extending downstream end;

a mixing tube having an inlet and an outlet end; a plurality of each of first and second stationary mixing elements in said tube;

said mixing elements substantially in the form of twisted ribbons spanning the interior diameter of said mixing tube and having transverse radially extending entrance and exit ends;

said mixing elements further comprising means for directing the flow of said fluids in helical paths around the axis of said tube, said first elements directing it in one direction and said second elements directing it in the opposite direction;

means for fixing said elements in said tube with the first and second elements alternating along the axis of said tube and with the entrance of each downstream element set at approximately right angles to the exit end of the next element upstream thereof;

means at the inlet end of said tube for releasably securing said tube to said orifice circumferentially sealing said orifice;

means for preventing cross contamination of the fluids comprising ribbon-like separation means affixed to said tube in the inlet end of said tube having a transverse, radially extending inlet end in abuttment with and sealing the downstream end of said baffle when said tube is secured to said orifice for maintaining the separation and integrity of said fluids each to itself for a substantial distance within said mixing tube downstream of the downstream end of said baffle; and

means in said tube for holding said separation means in abuttment with and at right angles to the entrance end of the next element downstream.

4,767,027

MULTI-FUNCTION SPOUT

Orest Lewinter, and Barbara Lewinter, both of 104 Homestead Ave., Albany, N.Y. 12203

Continuation-in-part of Ser. No. 859,416, May 5, 1986, abandoned. This application Nov. 26, 1986, Ser. No. 935,527
Int. Cl.[4] B65B *39/06;* G01F *19/00*
U.S. Cl. 222—158 4 Claims



1. A device for measuring fluid to be transferred into a container, for pouring fluid from the container, and for opening and closing the container, said device comprising:

(A) a hollow transparent tubular member having an upper pouring end and a lower end, said tubular member having a substantially vertical measuring position and a tilted pouring position;

(B) a cap having means thereon for attachment to a container;

(C) a plug on said cap, said plug having a curved upper surface and a hole therein for communication with the interior of the container;

(D) a pair of brackets attached to said device, said brackets having means thereon for pivotally mounting said tubular member thereto;

(E) cover means for closing said hole, said cover means being integral with and located adjacent to the lower end of said tubular member; and

(F) indicia means on said tubular member for indicating the amount of fluid therein when in said measuring position;

whereby, (a) when said tubular member is in said measuring position, the lower end is closed by said curved upper surface of said plug such that the tubular member serves as a measuring vessel, and said cover means closes said hole, and (b) when said tubular member is in said pouring position, the lower end is in fluid communication with said hole to allow fluid to be transferred from the tubular member to the container, and to allow fluid to be poured from the container through the tubular member.

4,767,028

ROTARY VALVE

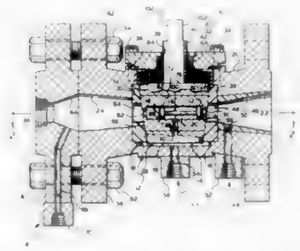
Raymond G. Rohlfing, and Donald D. Norwood, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 557,515, Nov. 2, 1983. This application Jan. 15, 1988, Ser. No. 144,368
Int. Cl.[4] G01F *11/22*
U.S. Cl. 222—219 11 Claims

1. A valve comprising:

valve body means defining a valve chamber and having an inlet port and an outlet port, each of said ports communicating between said valve chamber and the exterior of said valve body means;

valve member means being disposed within said valve chamber and being closely received between the inlet port and the outlet port, said valve member means having longitudinal axis within said valve chamber, said valve member means having an outer surface and first and second opposite ends with a transverse first passage extending diametrically through said valve member means, said transverse first passage having a first end and a second end each



opening onto the outer surface of the valve member means, said valve member means further having a generally longitudinally extending second passage which opens into the first passage between the first end and the second end thereof and a dumbbell shaped piston positioned in the transverse passage.

with respect to an axis of rotation of the respective agitator, said blade members each additionally including a plurality of radially extending rods longitudinally spaced from one another along the length of the respective agitator, said blade members each additionally including a longitudinally extending rod connected to each of the radially extending rods of the respective blade member and spaced from the axis of rotation of the respective agitator, said first pair of counterrotating agitators being disposed in said lower portion, the members of said first pair of counterrotating agitators each having two opposed conically shaped ends spaced from one another along an axis of rotation of the respective agitator, said conically shaped ends taking the form of rods inclined at an acute angle with respect to the axes of rotation of the respective agitators and connected at respective outer ends to a respective longitudinally extending rod.

4,767,029

FEEDER ASSEMBLY FOR HIGHLY VISCOUS PARTICULATE MATERIAL

Alexander S. Cascione, Yonkers, N.Y., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Jul. 10, 1986, Ser. No. 884,008
Int. Cl.[4] G01F *11/00, 11/20;* B01F *7/00*
U.S. Cl. 222—227 7 Claims



1. A feeder assembly for highly viscous particulate material, comprising:

receptacle means including a hopper for containing a supply of the viscous particulate material, said hopper having an outlet and a lower portion in the form of a truncated pyramid converging towards said outlet;

transport means disposed at said hopper for moving the viscous particulate material from said hopper through said outlet and for transporting the material away from said outlet;

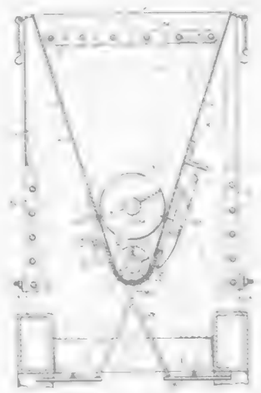
stirring means disposed in said hopper for agitating the viscous particulate material contained in said hopper to prevent the formation of tunnels in the contained material during operation of said transport means and for thereby facilitating transport of highly viscous particulate material from said hopper by said transport means, said stirring means including a first pair of counterrotating agitators disposed at said outlet and a second pair of counterrotating agitators disposed on a side of said first pair opposite said outlet, said agitators being each provided with a plurality of blade members, each of said blade members extending in a longitudinally and radially oriented plane

4,767,030

PARTICULATE FOOD DEPOSITOR

James A. Larson, Duluth, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

Filed Nov. 16, 1987, Ser. No. 121,691
Int. Cl.[4] B29C *47/00;* B05C *19/00*
U.S. Cl. 222—238 8 Claims



1. An apparatus for depositing particulate materials, said apparatus comprising: a hopper means having an inlet opening and a lower disposed outlet;

a perforate member positioned adjacent said outlet;

a plurality of feed screws positioned in said hopper means adjacent said outlet with the said plurality of screws being in generally superposed relationship, said plurality of screws including at least a first screw and a second screw with said first screw being positioned lower in said hopper than said second screw; and

drive means operably connected to said first and second screws to effect rotation thereof, said drive means being such as to automatically and intermittently reverse the direction of rotation of at least said first screw at preselected intervals.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,031

DOSING AND FILLING OF FLUID OR PASTY MASSES, IN PARTICULAR NUTRIENT MATERIALS WHICH ARE TO BE KEPT FREE OF CONTAMINANTS, SUCH AS MILK, YOGURT, PUDDING, DESSERT OR THE LIKE INTO CONTAINERS

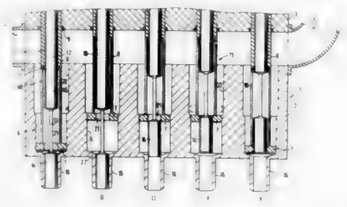
Wilhelm Pröpper, Langenfeld, Fed. Rep. of Germany, assignor to Benz & Hilgers GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 13, 1987, Ser. No. 72,824

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1986, 3623417

Int. Cl.[4] B67D *5/52*

U.S. Cl. 222—255 9 Claims



1. An improved dosing arrangement for dosing and filling fluid or pasty nutrient materials into containers which are to be maintained in a sterile condition, such as milk, yogurt, pudding, desserts or the like, having a housing which is provided with at least one dispensing mouthpiece and a materials inlet feed channel and at least one axially movable dosing piston in which an independently controlled coacting valve piston is movably mounted, the improvement comprising said housing having a common cylinder for each coacting dosing and valve pistons;

said dosing piston and valve piston being coaxially reciprocally movably mounted in said cylinder;

said dosing piston being at least partially hollow and said valve piston being movably mounted in a bore of said dosing piston; and

said valve piston having an upper and lower portion whose cross-sections have diameters that are substantially equal and correspond to the diameter of said bore; said upper and lower portions being connected to each other by an axially extending piston rod whose diameter is substantially smaller than the diameter of said upper and lower portions.

4,767,032

PASTE DISPENSER

Eugene W. Smith, Kalamazoo, Mich., assignor to L. Perrigo Company, Allegan, Mich.

Filed Sep. 2, 1986, Ser. No. 902,603

Int. Cl.[4] G01F *11/00*

U.S. Cl. 222—319 13 Claims

1. A paste dispenser comprising:

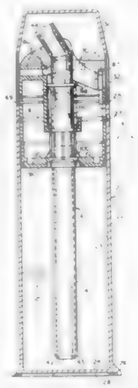
a generally cylindrical body for holding a supply of paste to be dispensed;

a dispensing assembly including a dispensing tube extending into said cylindrical body and movable for dispensing paste from one end thereof, said assembly including a piston and unidirectional motion means coupling said piston and tube such that said piston moves incrementally in said body from a starting position with successive strokes of said dispensing tube;

a head enclosing an upper end of said body, said head including aperture means through which said dispensing tube extends and integral socket means adjacent said aperture;

actuator means for moving said dispensing tube, said actuator means having a pivot end which is pivotally received in said socket means of said head; and

first and second spaced projection means extending between said tube and said actuator means such that as said actuator is manually actuated by a user, the physical contact between said actuator means and said tube transfers away from said pivot end as the contact transfers from said first



projection means to said second projection means a variable force is applied to said tube in response to a constant force applied by the user for moving said tube for dispensing a predetermined amount of paste.

4,767,033

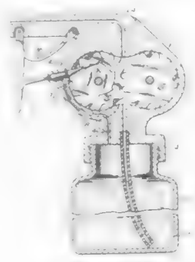
MANUALLY OPERATED GEAR PUMP SPRAY HEAD

Edward C. Gemperle, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 891,080, Jul. 31, 1986, abandoned. This application Jan. 6, 1988, Ser. No. 144,586

Int. Cl.[4] B05B *11/00*; B67D *5/42*

U.S. Cl. 222—383 1 Claim



1. A manually operated gear pump spray head for spraying the contents of a container to which said spray head is attachable, said container capable of being held in one hand, said spray head comprising:

a housing provided with a nozzle;

a pair of operatively engaged gears, each rotatable about a respective one of a pair of spaced axes transverse to the axis of said nozzle;

a manually activated trigger operable, with the same hand holding said container, between a neutral position and a depressed position for activating said spray head;

a ratchet wheel axially secured to one of said gears;

pawl means interposed between said trigger and said ratchet wheel for rotating the latter upon movement of said trigger toward its depressed position;

a spring means for returning said trigger to its neutral position;

vent tube means for providing a passage between the interior of said container and the ambient environment; and

a seal between said trigger and said pawl for closing said passage when said trigger is in its neutral position and for opening said passage when said trigger is in its depressed position.

4,767,034

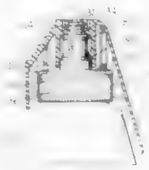
SCRUBBER CAP CLOSURE

Ronald G. Cramer, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 836,194, Feb. 25, 1986. This application Aug. 13, 1986, Ser. No. 896,038

Int. Cl.[4] B22D *37/00*

U.S. Cl. 222—525 3 Claims



1. A scrubber cap closure assembly of the push-pull type useful in dispensing a liquid from a container provided with a discharge neck comprising:

(a) a spout connected to said discharge neck of said container comprising

(1) a base portion having a means for connection to said container,

(2) an intermediate cylindrical portion extending upwardly from said base portion, said cylindrical portion having a peripheral indentation of substantial width having an upper lip and a lower shoulder, and

(3) an upper portion extending upwardly from said intermediate cylindrical portion of a lesser diameter than said intermediate cylindrical portion, said upper portion having a closed outer end and one or more discharge openings in the side of said upper portion; and

(b) a scrubber cap connected to said spout for frictional, longitudinal sliding adjustment thereon comprising

(1) a generally flat top having at least one discharge opening therein,

(2) a skirt which extends outwardly and downwardly from said top to overlie said spout,

(3) a plurality of steps constructed on the exterior of said skirt, said steps being constructed and arranged to serve as a scrubbing means, and

(4) an annular sleeve extending downwardly from said top, said sleeve having an annular ring extending inwardly from said sleeve and connected to an inverted cup for closing said discharge opening in said spout, said inverted cup having at least one discharge opening, said sleeve having an inwardly extending annular rib constructed and arranged beneath said inverted cup which projects into said peripheral indentation of said spout for frictional, longitudinal sliding engagement within said peripheral indentation between said upper lip and bottom shoulder of said peripheral indentation;

wherein when said scrubber cap is pulled up, liquid may be released from said spout through said scrubber cap and when said scrubber cap is pushed down, said annular ring and said inverted cup seat in said discharge opening of said spout to prevent release of liquid from said spout.

4,767,035

CONTAINER WITH DISCHARGE TUBE

Stephen V. Jacobi, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 16, 1986, Ser. No. 919,406

Int. Cl.[4] B67D *3/00*

U.S. Cl. 222—527 17 Claims



1. A container for fluent material in bulk quantity, said container having a top, a bottom, and at least one sidewall, means defining a portion of said one sidewall to be removed thereby to form an opening in the sidewall adjacent the bottom of the container, said sidewall portion being generally flush with the remainder of the sidewall, a flange around the opening on the inside of said at least one sidewall, and a side discharge tube of flexible sheet material attached at one end to the inside face of the flange, said tube initially being folded compactly on the inside of the container adjacent said sidewall portion to be removed and being accessible upon removal of said sidewall portion so that it may be pulled outwardly through said opening and unfolded for discharge of fluent materials from the container through the side discharge tube, the flange being disposed in overlapping relation to said means defining the portion of the sidewall to be removed whereby the flange is adapted to function as a backup member to prevent damage to the side discharge tube in the event the sidewall is cut or punctured to remove said sidewall portion.

4,767,036

APPARATUS AND METHOD FOR EMPTYING METALLURGICAL VESSELS CONTAINING METAL AND SLAG

Francois Schleimer; Jean Goedert; Ferdinand Goedert; Romain Henrion, all of Esch/Alzette; Fernand Thill, Kockelscheuer; Henri Klein, Niedercorn, and Jean-Francois Liesch, Luxembourg, all of Luxembourg, assignors to Arbed S.A., Luxembourg, Luxembourg

Filed Jun. 17, 1983, Ser. No. 505,293

Claims priority, application Luxembourg, Jun. 18, 1982, 84213

Int. Cl.[4] B22D *41/08*

U.S. Cl. 222—590 15 Claims

10. In the method of emptying molten metal from a metallurgical vessel through a flow hole, the vessel being equipped with a flow hole and at least one permeable refractory element unit in the wall of the vessel, said permeable refractory element being located adjacent to and exterior of the flow hole, the steps of:

delivering a first flow of inert gas through the permeable refractory element unit during processing of the molten metal; and

delivering a second flow of inert gas through the permeable refractory element unit during pouring, said second flow

VOL 1093 ISS 5 AG 30 1988 UMI

being higher in volume than said first flow, at least said second flow being directed along and inclined with respect to the axis of said flow hole to intercept the vortex above the flow hole.

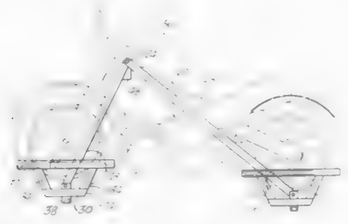


4,767,037

CYCLE CARRIER

Russell DeLellis, 202 N. A St., #13, Lake Worth, Fla. 33460

Filed Sep. 11, 1984, Ser. No. 649,490
Int. Cl.[4] B60R *9/06*
U.S. Cl. 224—42.03 B 13 Claims



1. A cycle carrier adapted to being attached to the side of a vehicle comprising:

a pair of buckets, each of which is sized to receive one tire of said cycle and each of which includes means for being attached to said vehicle at a separated distance equal to the wheelbase of said cycle;

A-frame means the base of which is connected to said buckets and the apex of which is positioned to be adjacent to the frame of said cycle when said cycle is received in said buckets; and

securing means for securing said A-frame means to said cycle frame.

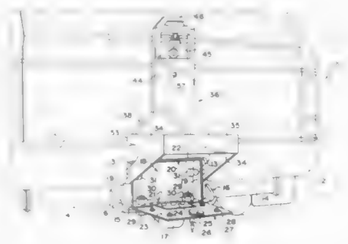
4,767,038

SUPPORT FOR A SPARE WHEEL OF A MOTOR VEHICLE

Cameron C. McVicar, 1-611 St. Annes Road, Winnipeg, Manitoba, Canada R2M 5K3

Filed Feb. 2, 1987, Ser. No. 9,700
Int. Cl.[4] B62D *43/00*
U.S. Cl. 224—42.06 16 Claims

1. A support device for a spare wheel of a motor vehicle comprising a box member including two upstanding sides, a transverse top, a transverse bottom, a hingedly mounted front cover movable from an open position exposing an interior of the box member to a closed position covering the box member and defining a front face thereof, attachment means on said box member for attachment of the box member to the motor vehicle, a first latch member extending upwardly from the box member, a support member having a pair of sides, each of said sides on a respective side of the box member means mounting for pivotal movement relative thereto substantially through 90° from a lowered position to a raised support position, said support member defining a cradle portion and an upstanding plate portion with the cradle portion having side members



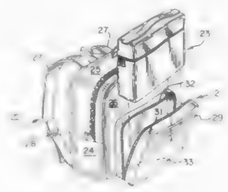
each arranged adjacent respective one of the sides of the box member and arranged such that said upstanding portion and cradle portion can receive and support a spare wheel and tire of the vehicle and a vertically slidable second latch member mounted of said upstanding portion and slidable to a position engaging a side of said first latch member to retain said support member in said raised position.

4,767,039

BACKPACK AND INSULATED CONTAINER

Jeffrey M. Jacober, Walmsly Ln., South Kingston, R.I. 02874

Continuation of Ser. No. 830,522, Feb. 17, 1986, abandoned, which is a division of Ser. No. 669,862, Nov. 8, 1984, abandoned.
This application Jun. 5, 1987, Ser. No. 59,250
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] A45C *15/00*
U.S. Cl. 224—151 13 Claims



1. A combination backpack removable insulated container, comprising:

a separate and complete backpack component and a separate and complete insulated container component;

said insulated container component including a plurality of pliable panels, said pliable panels including a bottom panel, side panels and end panels that are joined together at their respective edges into a shaped compartment having a body and a rectangular mouth opening, each of said panels having thermal insulation means, said insulated container component further including a rectangular and pliable cover member for selectively opening and closing said rectangular mouth opening;

closure means for securing said rectangular cover member to said body of the insulated container, said closure means selectively joining or disjoining less than the full periphery of the cover member to the body of the insulated container component, the remainder of said full periphery of the cover member being hingedly attached to said body of the insulated container;

said backpack component including a plurality of pliable fabric panels that are joined together to form a pliable backpack body; and

a sleeve component secured to at least one of said fabric panels of the backpack component, said sleeve component being rectangular in cross-section and having a rectangular mouth, said sleeve compartment and its mouth are sized and structured to closely receive, to hold and support said insulated container component, and to permit quick and easy removal of the insulated container as a unit from said sleeve, and said sleeve component is sized and is located on said backpack component for avoiding substantial reduction of said size of the backpack interior compartment.

4,767,040

SNAP-IN END CAP FOR ARTICLE CARRIERS

Dennis J. Miller, 5342 Carleton Rockwood, South Rockwood, Mich. 48179, and Leon W. Tylenda, 26228 Newport, Warren, Mich. 48089

Filed Apr. 9, 1987, Ser. No. 36,258
Int. Cl.[4] B60R *9/04*
U.S. Cl. 224—326 7 Claims



1. In an article carrier for an automotive vehicle, said carrier being of the type comprising a slat assembly adapted to be mounted on a body panel of said vehicle, said slat assembly including a slat having a base member and a pair of oppositely disposed, spaced side walls forming a channel, and including an end cap comprising a shank member extending into one end of said slat, and fastening means for securing said end cap to said slat and for securing said slat to said body panel, the improvement wherein said end cap and slat are preassembled for mounting as a unit on said body panel and said fastening means comprises:

said shank member having a cross-section which is slidably insertable into said one end of said slat,

means on said side walls for holding said shank member against said base member when said shank member is slidably inserted into said slat,

detent means coacting between said shank member and said base member for holding said end cap against withdrawal after insertion of said shank member to a predetermined position, said detent means including an element which is deflectable by sliding motion of said shank member,

and a fastener for securing said end cap to said body panel, said fastener being carried by and integral with said end cap and having a fastener shank adjacent the end of said base member after insertion of said shank member to said predetermined position.

4,767,041

LUGGAGE CARRIER WITH DETACHABLE SUSPENDED LOAD-BEARING RACK

Craig A. Stapleton, Port Huron, Mich., assignor to Huron/St. Clair Company, a division of Masco Industries, Inc., Port Huron, Mich.

Filed Jun. 19, 1986, Ser. No. 875,960
Int. Cl.[4] B60R *9/04*
U.S. Cl. 224—326 20 Claims

1. A luggage rack mountable to a vehicle body, said luggage rack comprising:

a fixed peripheral frame having a plurality of support stanchions fixedly mounting said frame to the vehicle body, said frame being supported in a plane in elevated spacial relationship to the vehicle body by said stanchions;

a detachable load-bearing rack suspended from said elevated frame between the vehicle body and the plane formed by said elevated frame, said rack supported by said frame in spacial relationship to said frame and the vehicle body, said rack having a plurality of suspension arms extending from said rack and detachably connected to said frame to



support said rack in spaced relation above the vehicle body; and

means for detachably securing said rack in suspended spacial relationship to said frame, said securing means including connecting means disposed at the upper end of said suspension arms and detachably engaging a slot extending through said fixed elevated frame;

wherein said suspended load-bearing rack is supported by said means for detachably securing said rack, said rack being manually detachable from said fixed elevated frame.

4,767,042

PAPER WEB HANDLING APPARATUS HAVING IMPROVED AIR BAR WITH FINE SCALE TURBULENCE GENERATORS

Robert A. Daane, Green Bay, Wis., assignor to Advance Systems Inc., Oneida, Wis.

Filed Jun. 11, 1987, Ser. No. 61,330
Int. Cl.[4] B65H *20/14*; F26B *13/20*
U.S. Cl. 226—97 3 Claims



1. An elongated, individually replaceable, hollow air bar having an interior for receiving pressurized air, said bar being for use with web drying apparatus for floatingly suspending a running web while the latter is being dried, said air bar having a pair of slot nozzles extending along its length with one nozzle adjacent each side thereof, and through which nozzles pressurized air can be directed from the inside of said bar and against a web for drying and floating of the latter, an air distributing member defining an air distributing chamber within said bar and having an outer wall located between said slot nozzles and spaced outwardly therefrom and defining an air bar face between said nozzles to provide an air pressure supporting surface for a web passing thereover, said distributing member also having a pair of opposed and inclined side walls which in part define said chamber, one side wall adjacent each of said slot nozzles, said inclined side walls having a plurality of small holes therethrough and along their length to provide fine scale air turbulence for air passing through said holes to said slot nozzles that produces a high heat transfer coefficient and reduced web flutter.

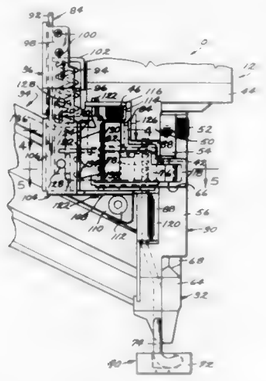
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,043

FASTENER DRIVING DEVICE WITH IMPROVED COUNTERSINK ADJUSTING MECHANISM

Prudencio S. Canlas, Jr., North Kingstown, R.I., assignor to Stanley-Bostitch, Inc., East Greenwich, R.I.

Filed Jul. 6, 1987, Ser. No. 70,025
Int. Cl.[4] B25C *1/04*
U.S. Cl. 227—8 13 Claims



1. In a portable power activated fastener driving device including a portable housing having means defining a drive track including a fixed nosepiece, power operated fastener driving means including a fastener driving element carried by said housing for movement within said drive track through successive cycles of operation each of which includes a fastener driving stroke wherein an end of said fastener driving element stops at a predetermined position extending outwardly of said fixed nosepiece and a return stroke, fastener magazine means carried by said housing for receiving a supply of fasteners and feeding successive fasteners into the drive track in a position to be driven into a workpiece during successive fastener driving strokes of said fastener driving means, power control means including an actuating member carried by said housing for movement from a normal inoperative position into an operative position for initiating the movement of said fastener driving means through a fastener driving stroke, a work contact assembly carried by said housing for movement from a normal inoperative position into an operative position in response to the movement of said device into cooperating engagement with a workpiece, a trigger member carried by said housing for manual movement from a normal inoperative position into an operative position, and enabling means enabling movement of said trigger member and said work contact assembly into their operative positions to effect movement of said actuating member into its operative position, the improvement which comprises

said work engaging assembly including a first structure having a portion extending from said nosepiece in the direction of extent of said drive track therefrom and a second structure having a portion operatively associated with said enabling means,

interengaging threaded means interconnecting said first and second structures for relative movement between a first position of adjustment wherein said first structure portion when said work contact assembly is in its operative position extends from said nosepiece a maximum extent and a fastener driven into a workpiece by said fastener driving element has a minimum countersunk relation and a second position of adjustment wherein said first structure portion when said work contact assembly is in its operative position extends from said fixed nosepiece a minimum extent and a fastener driven into a workpiece by said fastener driving element has a maximum countersunk relation,

said threaded means including manually engageable surface means for enabling the same to be manually turned to move said structures in a multiplicity of different positions between said first and second positions of adjustment, and

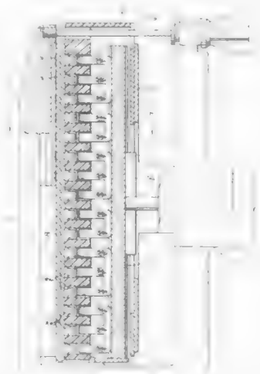
manually operable means for releasably locking said threaded means in any position into which it is manually turned.

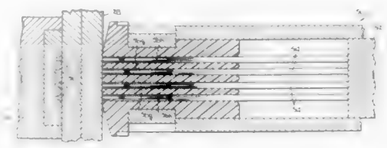
4,767,044

SURGICAL FASTENER APPLYING APPARATUS

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 662,679, Oct. 19, 1984, Pat. No. 4,580,712. This application Oct. 4, 1985, Ser. No. 782,732
The portion of the term of this patent subsequent to Apr. 8, 2003, has been disclaimed.
Int. Cl.[4] A61B *17/00*
U.S. Cl. 227—19 8 Claims





1. An apparatus for applying a plurality of surgical fasteners to body tissue comprising:

a fastener carrying means having a plurality of fasteners therein;

forming means opposite said fastener carrying means to form said fasteners after penetration through body tissue; and

drive means including a longitudinal shaft and a drive bar located on a distal end of said shaft applying a positive drive force to said fasteners to drive said fastener from said fastener carrying means through the body tissue and toward said forming means;

wherein at least one of said forming means and said drive means causes some of said fasteners to reach peak formation force before the remainder of said fasteners reach peak formation force.

6. In an apparatus for applying a plurality of surgical fasteners to body tissue, the combination comprising:

a plurality of fasteners;

a fastener-carrying means;

forming means opposite said fastener-carrying means to form said fasteners after penetration through body tissue;

drive means including a longitudinal shaft and a drive bar located on a distal end thereof applying a positive drive force to said fasteners to drive said fastener from said fastener carrying means simultaneously though the body tissue and towards said forming means;

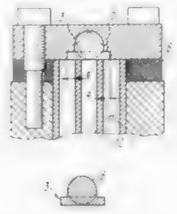
wherein some of said fasteners are longer than the remainder of said fasteners, said longer fasteners thereby contacting said forming means and reaching peak formation force before the remainder of said fasteners contact said forming means and reach peak formation force.

4,767,045

HAND-HELD FASTENING ELEMENT DRIVING TOOL

Boris G. Goldshtein, Moscow; Vitaly T. Boiko, Khimki; Antanas-Sharunas A. Maljukyavichus, Vilnius; Alexandr V. Gaidukov; Valery I. Kovalenko, both of Khimki; Arkady A. Buravtsov, and Vladimir A. Gordeev, both of Vilnius, all of U.S.S.R., assignors to Nauchno-Proizvodstvennoe Obiedinenie PO Mekhanizrovannomu Stroitelnomu Instrumentu I Otdelochnym Mashinam, Moscow, U.S.S.R.

Filed Jan. 5, 1987, Ser. No. 563
Int. Cl.[4] B25C *1/04*
U.S. Cl. 227—109 16 Claims



1. A hand-held fastening element driving tool, for driving a variety of preselected fastening elements and in particular a stem-shaped element having a head-shaped element and a staple-shaped element having a web as selected from said preselected fastening elements for use with either the stem-shaped element or the staple-shaped element, which comprises:

a body;

a reciprocating actuator accommodated in said body;

a barrel for feeding the fastening elements which is made fast to said body;

a magazine for holding the preselected fastening elements, said magazine being attached to said barrel;

a striker for driving the preselected fastening elements, which is movable in said barrel and made fast with said actuator, said striker consisting of two parts closely fitted to each other;

one part of said striker being a rectangular member whose cross-section follows the contour of the web of said staple-shaped preselected fastening element;

the other part being a member, together with the rectangular member, forming a figure circumscribing the head of said stem-shaped preselected fastening element; and

said barrel having a single inner channel with a cross-section and being made so as to suit the shape of the striker and the variety of fastening elements used.

4,767,046

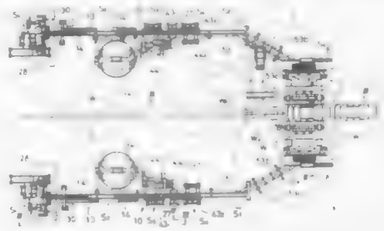
ASSEMBLY APPARATUS FOR MOTORCAR VEHICLE BODY

Kiyoshi Kumagai, and Hiroshi Okuyama, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1986, Ser. No. 937,279
Claims priority, application Japan, Dec. 3, 1985, 60-270832; Dec. 3, 1985, 60-270833; Dec. 17, 1985, 60-281960; Dec. 19, 1985, 60-286672; Dec. 28, 1985, 60-298429; Jan. 9, 1986, 61-1411
Int. Cl.[4] B23K *37/04*
U.S. Cl. 228—4.1 7 Claims

1. An assembly apparatus for a motorcar vehicle body of the type that a floor panel and a roof panel are conveyed from a set station into a vehicle body assembling station ahead of the set station through a conveying member which is reciprocatable between the two stations, and side panels on both left and right sides are welded to those floor and roof panels by means of a pair of welding jig means provided on both left and right sides of the assembling station, and the floor panel is charged into the set station from a transfer line for floor panel working extending rearwards from the set station, characterized in that a pair of working lines for the side panels are disposed on both left and right sides of the transfer line in parallel therewith so that the side panel on each side after being worked on while passing along the working line on each side may be conveyed to the welding jig means on each side through a conveying line on each side extending forwards from the working line on each side;

the working line on each side comprises a charging station on its rear end, a discharging station on its front end,



longitudinally disposed plural working stations intermediate therebetween, and shuttle hanger conveyor means for conveying said side panels from the charging station to the discharging station through the respective working stations, said hanger conveyor means having plural hangers and a conveying rail, each hanger being reciprocatable between adjacent stations; each of the hangers comprising a conveying bar supported on said conveying rail, a hanger main body hanging down from said conveying bar, at least one hook on said main body having a V-shaped recess portion for receiving an opening edge of the side panel, and at least one suppressing member adjacent said hook on said main body and movable upwardly and downwardly so as to be brought from the above into abutment with an upper edge of the side panel so that the side panel may be transferred between a working means provided on each of the working stations and each of the hangers.

4,767,047

DESOLDERING DEVICE

Richard I. Todd, Chelmsford, and Robert C. Claydon, Maldon, both of United Kingdom, assignors to The General Electric Company, p.l.c., London, United Kingdom

Filed Jan. 29, 1987, Ser. No. 8,000
Claims priority, application United Kingdom, Feb. 1, 1986, 8602504; Jul. 15, 1986, 8618240
Int. Cl.[4] B23K *3/00, 3/04*
U.S. Cl. 228—6.2 8 Claims



1. A device for removing a component from a substrate to which it is secured by solder including a moveable member

VOL 1093 ISS 5 AG 30 1988 UMI

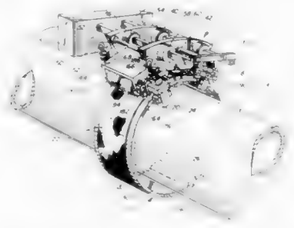
defining a space to which suction can be applied, the space having an opening which can be positioned against the component so as to hold the latter to the moveable member by suction; and means for applying heat to the solder to soften it, the moveable member being arranged such that the suction causes it to pull the component so as to remove it from the substrate when the solder is molten.

4,767,048

MOBILE ROBOTIC PLATFORM

Andrew G. Kimbrough, Simi Valley, and James C. Hammond, Moorpark, both of Calif., assignors to Kinetic Energy Corp., Simi Valley, Calif.

Filed Sep. 16, 1986, Ser. No. 908,029
Int. Cl.[4] B23K *37/02*
U.S. Cl. 228—29 14 Claims



1. A mobile robotic platform and guide means therefor including a carriage having at least one drive unit mounted thereon, said drive unit having a drive roller and a motor for rotating the drive roller and said guide means comprising a track mountable to a member and shaped to define a path of travel of the carriage relative to said member, the improvement comprising: a length of textured material extending lengthwise of the track and secured thereto; and said drive roller being comprised of a plurality of radially extending metal filaments embedded in a compliant material.

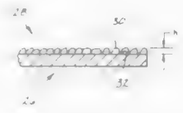
9. A mobile robotic platform having a carriage for support of at least one operative component, a track mounting the carriage for movement relative to a member on which an operation is to be performed by said component and having an inner side spaced from the member, and means on the carriage for guiding and propelling the carriage relative to the track comprising two or more spaced-apart tractor units, means pivotally mounting the tractor units individually to the carriage with the tractor units free to pivot during movement along the track, said tractor units each having a pair of drive rollers for rolling engagement with the track and which are spaced apart a sufficient distance to provide independent mechanical stability for a tractor unit, a pair of adjustable guide units one at each side of a tractor unit for engaging the edges and inner side of the track including a compressively-loaded member intermediate the driver rollers and engaging the inner side of the track for loading the drive rollers against the track, and a pair of drive motors one on each tractor unit, means for driving a plurality of the drive rollers, each of said drive rollers being formed of radial wire bristles embedded in a compliant material, and said track having a wire mesh material extending lengthwise thereof and secured thereto for coaction with the ends of said radial wire bristles.

4,767,049

SPECIAL SURFACES FOR WIRE BONDING

Sheldon H. Butt, Godfrey, Ill.; Julius C. Fister, Hamden, and Jacob Crane, Woodbridge, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 19, 1986, Ser. No. 864,662
Int. Cl.[4] B23K *20/24*; H01L *21/88*
U.S. Cl. 228—111 5 Claims



1. A process for forming an improved electrical connection comprising:

forming in situ a roughened substantially nondirectional surface having an irregular topography on a first copper base metal or metal alloy component by means of forming a metal oxide layer having a desired thickness on a surface of said first component by annealing said first component in an oxidizing atmosphere at a temperature in the range of from about 200° C. to about 500° C. for a time period in the range of from about 0.5 minutes to about 1000 hours; and

reducing said metal oxide layer to a relatively fresh metal layer having said irregular topography by heating said first component with said oxide layer in a reducing atmosphere at a temperature in the range of from about 200° C. to about 500° C. for a time period in the range of from about 0.5 minutes to about 1000 hours; and

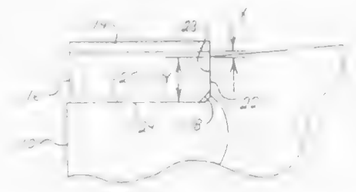
bonding a second metallic component to said surface of said first component, whereby the non-directionality and the irregular topography of said surface promotes development of an improved metallurgical bond between said components.

4,767,050

POCKETED STUD FOR POLYCRYSTALLINE DIAMOND CUTTING BLANKS AND METHOD OF MAKING SAME

Gary M. Flood, Canal Winchester, and Gary W. Smith, New Albany, both of Ohio, assignors to General Electric Company, Worthington, Ohio

Filed Mar. 24, 1986, Ser. No. 843,318
Int. Cl.[4] B23K *31/02*; E21B *10/46*
U.S. Cl. 228—122 11 Claims



1. In a method for fabricating a brazed implement comprised of a cemented carbide-supported composite compact having a layer of selfbonded abrasive particles infiltrated with a metal second phase, the support of said compact being bonded to a cemented carbide substrate by a brazing filler metal having a liquidus substantially above 700° C. and above the thermal degradation temperature of said compact, which method comprises brazing said compact support to said substrate while disposing the abrasive particle layer in thermal contact with a heat sink, the improvement which comprises:

providing said composite compact comprising a lower support surface opposite the support surface bonded to said abrasive particle layer, and having a mating surface; and

disposing said composite compact in a pocket disposed about the upper end of said substrate, said pocket comprising an interior face complementary in shape with said compact lower support surface and a land complementary in shape with said compact mating surface, said abrasive particle layer being spaced-apart from contact with said substrate a distance adequate to minimize thermal damage thereto during said brazing of the compact to the substrate yet is of sufficient depth to provide support for said compact.

10. An improved brazed implement comprising a composite compact having an abrasive particle layer bonded to a support and a substrate bonded to said support by a brazing filler metal having a liquidus substantially above 700° C. disposed therebetween, the improvement which comprises:

(a) said composite compact comprising a sectioned cylindrical composite compact having a lower support surface opposite the support surface bonded to said abrasive particle layer, and having a flat mating surface which is about one inch in length, said support being about 0.12 inch in thickness; and

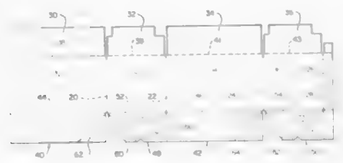
(b) said substrate about its upper end having a pocket comprising an interior face complementary in shape with said compact lower support surface and a land complementary in shape with said compact mating surface, said abrasive particle layer being spaced-apart from contact with said substrate a distance of between about 0.01 and 0.04 inch, said distance adequate to minimize thermal damage thereto during brazing of the compact to the substrate yet being of sufficient depth to provide support for said compact.

4,767,051

KNOCKDOWN CARTON WITH PRE-GLUED BOTTOM

Michael R. Single, Stockton, Calif., assignor to Willamette Industries, Inc., San Leandro, Calif.

Continuation of Ser. No. 708,329, Mar. 5, 1985, abandoned. This application Jul. 14, 1986, Ser. No. 883,473
Int. Cl.[4] B65D *5/36*
U.S. Cl. 229—41 R 4 Claims



1. A box formed from a single blank of foldable material and comprising

four side wall panels, each connected along at least one scored edge to an adjacent one of the side wall panels;

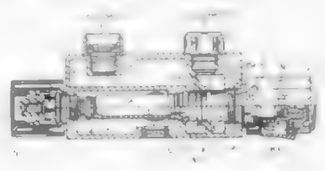
four bottom forming flaps hingedly connected to the side wall panels, the bottom forming flaps comprising two major and two minor flaps, each of said major flaps being rectangular in shape and integrally connected along an edge score line with one of said minor flaps; each of said minor flaps includes a pair of score lines defining an isosceles triangle whose base line is the score line which hingedly connects the minor flap to the side wall panel, the peak of the triangle being at the edge of the minor flap distant from said edge score line, the triangle thereby defining fold lines for each corner of the minor flap, each of said major flaps having a triangular corner flap defined by a score line drawn angularly across a corner of said major flap, each said triangular corner flap being fastened to an inner triangular portion of one of said minor flaps, and an overlapping grid pattern of glue lying between each said triangular corner flap of said major flap and said inner triangular portion of said minor flap, fastening said triangular corner and said inner triangular portion whereby a box having a bottom with gussetted corners is formed.

4,767,052

THERMOSTATICALLY SELF-REGULATING MIXING VALVE

Jan R. Kostorz, Menden, and Dieter Kahle, Iserlohn, both of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Apr. 17, 1987, Ser. No. 40,177
Claims priority, application Fed. Rep. of Germany, Apr. 17, 1986, 3612988
Int. Cl.[4] G05D *23/13*
U.S. Cl. 236—12.22 6 Claims



1. A self-regulating mixing valve comprising:

a main housing having hot- and cold-water inlets respectively connectable to pressurized hot- and cold-water lines and having an outlet, the housing being formed with respective compartments connected to the inlets and outlet and with hot- and cold-water seats bounding the respective inlet compartments;

a valve body displaceable axially in the housing between one end position engaging the hot-water seat, blocking flow from the hot-water inlet compartment to the outlet compartment, and out of engagement with the cold-water seat and permitting flow from the cold-water inlet compartment to the outlet compartment and

an opposite end position engaging the cold-water seat, blocking flow from the cold-water inlet compartment to the outlet compartment, and out of engagement with the hot-water seat and permitting flow from the hot-water inlet compartment to the outlet compartment, and through

intermediate positions permitting flow from both inlet compartments past the respective seats into the outlet compartment;

a fiting body fixed in the housing, defining a wall of the outlet compartment, and formed with a throughgoing hole opening into the outlet compartment;

a thermostat in the outlet compartment;

a tubular stem fixed to the thermostat and in the valve body and engaged through the hole of the fitting body, the stem being limitedly axially movable in the hole;

means for sealing the hole around the stem;

a spring braced between the fitting body and the stem outside the outlet compartment and inlet compartments and pulling the thermostat and valve body into solid engagement with the fitting body, the seal means preventing water in the compartments from leaking around the stem to the spring; and

a temperature-selecting mechanism including an axially displaceable rod engageable through the stem with the thermostat and operatively engageable via the thermostat with the valve body, the rod being shielded by the thermostat and stem from contact with water in any of the compartments.

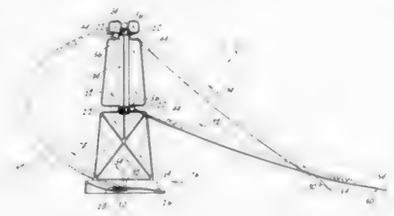
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,053

MULTIFUNCTION TOY STUNT SET

John Cook, Gardenia; George Soulakis, Hermosa Beach, and Keith Hippely, Manhattan Beach, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sep. 4, 1987, Ser. No. 94,470
Int. Cl.[4] A63H *18/02*
U.S. Cl. 238—10 R 7 Claims



1. A multifunction toy stunt set for use with toy vehicles comprising:

a base;

two tower members mounted on said base, said tower members having a plurality of engaging grooves;

a frame having a plurality of flexible sheet pieces, said frame being mounted between said tower members; and

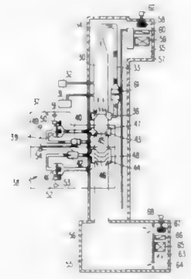
a flexible member having an engaging rod at one end thereof, said engaging rod capable of releasably engaging any one of said engaging grooves in order to form a loop and different ramps, said flexible member having another end thereof capable of (a) releasably engaging said base in order to form said loop and (b) supporting said flexible member on a supporting surface in order to form said different ramps.

4,767,054

APPARATUS FOR CHANGING ARTIFICIAL SNOW TO WET SNOW

Nagaichi Suga, and Shinichi Katayanagi, both of Tokyo, Japan, assignors to Suga Test Instruments Co., Ltd., Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,082
Int. Cl.[4] A01G *15/00*
U.S. Cl. 239—14.2 11 Claims



1. An artificial snow making apparatus including means for changing artificial snow generated therein to wet snow, comprising:

a vertical inner cylinder;

an outer tank around said inner cylinder;

an air velocity adjusting duct means connected between the top of said inner cylinder and an intermediate portion of said inner cylinder for causing air to flow from the top of said inner cylinder to said intermediate portion and to flow upwardly in said inner cylinder, said duct means including means therein for adjusting the velocity of the air flowing therethrough for thereby adjusting the velocity of the air flowing in said inner cylinder;

a cloud making machine and a seeding device connected directly to said vertical inner cylinder at positions between the top and said intermediate portion thereof;

a cooling unit disposed inside said outer tank for cooling air in said outer tank for cooling said inner cylinder;

a blower means connected to said outer tank for drawing air from said outer tank and adjusting the temperature thereof to the temperature of the air inside said inner cylinder and directing it downwardly into said inner cylinder below the intermediate portion thereof at which said duct means is connected to said inner cylinder;

a temperature/humidity control means connected to said outer tank for drawing air from said outer tank and adjusting the temperature and humidity thereof to a temperature and humidity higher than the temperature and humidity of the air in the upper part of said inner cylinder and directing it downwardly into said inner cylinder at a position below the position at which said blower means directs air into said inner cylinder, whereby convection is prevented between the air from said temperature/humidity control means and the air in the upper part of said inner cylinder and snow generated in said inner cylinder is changed to wet snow as it descends in said inner cylinder.

4,767,055

METHOD AND LINKAGE FOR POSITIONING A CONVERGENT FLAP AND COAXIAL ARC VALVE

Eric J. Ward, W. Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Mar. 27, 1987, Ser. No. 30,794
Int. Cl.[4] B64C *15/00*
U.S. Cl. 239—265.29 4 Claims



1. A method for positioning a semi-cylindrical arc valve, the valve being pivotable about a common axis with a convergent flap in a thrust vectoring gas turbine engine exhaust nozzle, the convergent flap being selectively pivotable between a first angular position directing substantially all of the engine exhaust aftward from the nozzle and a second angular position blocking substantially all aftward flow of engine exhaust, the arc valve being pivotable about the common axis for admitting engine exhaust into an alternate, thrust reversing flow passage, said method for opening the arc valve being responsive to the movement of the convergent flap between the first position and the second position, and comprising the steps of:

(a) maintaining the arc valve in a static, closed condition wherein no exhaust gas is admitted to the thrust reversing flow passage responsive to movement of the convergent flap in a first range between the first angular position thereof and a third intermediate angular position, the third intermediate position being spaced apart from a fourth position not disposed within said first range, the fourth angular position corresponding to an orientation of the convergent flap defining a minimum exhaust nozzle outlet flow area for stable operation of the gas turbine engine;

(b) angularly accelerating the arc valve about the common axis from the static condition into a full speed condition wherein the angular speed of the arc valve is both proportional to and greater than the current angular speed of the convergent flap as the convergent flap moves in a second range between the third intermediate angular position and the fourth angular position, the accelerating arc valve remaining closed against the flow of engine exhaust into the thrust reversing flow passage; and

(c) opening the arc valve at said full speed condition responsive to the movement of the convergent flap beyond the fourth angular position toward the second blocking angular position, the arc valve first opening to admit exhaust gases into the thrust reversing flow passage simultaneously with the convergent flap defining an aftward nozzle outlet flow area less than the minimum nozzle outlet flow area.

3. A linkage arrangement for pivoting a semi-cylindrical arc valve about a common axis with a pivotable convergent flap and responsive to the movement of said flap, comprising:

a cam race, disposed in said convergent flap structure and pivotable about the common axis therewith, the race including

a first dwell portion defining a path substantially equidistant and spaced apart from the common axis,

a second acceleration portion adjacent the first dwell portion and defining a curved path generally toward the common axis, and

a third action portion adjacent the second acceleration portion, and defining a path continuing generally toward the common axis;

a four bar linkage driven by a cam roller running in the cam race, including

an arc valve crank secured to the arc valve and extending radially from the common axis,

a drive link pivotably secured to the radially outer end of the arc valve drive crank at one end thereof and the cam roller at the other end thereof, the cam roller being received in the race for sequentially traversing the first, second, and third portions thereof, and

a slave link, extending between the roller and a pivot support secured to a surrounding static nozzle structure for forming therewith a four bar linkage driven by the roller in the race for positioning the arc valve via the drive link and arc valve crank.

4,767,056

SPRAY GUARD

Kris Demetrius, 1909 Elsie Way No. 1, Santa Barbara, Calif. 93109, and George Spector, 233 Broadway Rm. 3815, New York, N.Y. 10007

Filed Apr. 20, 1987, Ser. No. 40,271
Int. Cl.[4] B05B *1/28*
U.S. Cl. 239—288 4 Claims

1. A spray guard for a paint spray gun having an externally threaded spray nozzle, said spray guard comprising:

(a) a tension washer received about the spray nozzle;

(b) an adaptor being internally threaded to be received about the spray nozzle and detachably fixed thereto against said tension washer;

(c) a funnel shaped nozzle integrally part of said adaptor, said funnel shaped nozzle having an annular air passage extending about the spray nozzle, an inlet port for delivering pressurized air into said air passage and a series of small holes spaced around outer edge of said funnel shaped nozzle for delivering a shroud of pressurized air about a paint spray issuing from the spray nozzle;

(d) an adjustable flexible deflector slideable over said funnel shaped nozzle for controlling size of the shroud of pressurized air;



(e) said funnel shaped nozzle having a plurailty of spaced apart external detents to receive said deflector in various positions thereon; and

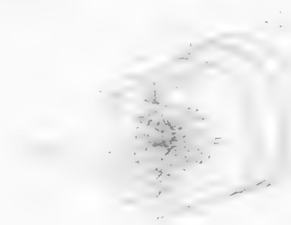
(f) an air closure on remote end of said deflector, said closure having a series of rearwardly extending small pins spaced around the remote and thereof to mate with said small holes in said funnel shaped nozzle when said deflector is at its most rearward position.

4,767,057

SPRAY NOZZLE

Gérard Degli, Uriage, and Roger Tholomé , La Tronche, both of France, assignors to Sames S.A., Meylan, France

Filed Feb. 19, 1987, Ser. No. 16,408
Claims priority, application France, Feb. 28, 1986, 8602801
Int. Cl.[4] B05B *1/28*
U.S. Cl. 239—296 9 Claims



1. Spray nozzle comprising a liquid passage, spray air passages adpated to create a divergent jet of sprayed liquid and shaping air passages for shaping said jet, said shaping air passages comprising first passages having axes subtantially coplanar with an axis of said liquid passage converging to form a divergent flattened jet substantially including said liquid passage axis and having a median plane substantially perpendicular to the plane containing said axes of said first passages and said liquid passage, and at least two pairs of second passages, each of said second passages having axes disposed symmetrically to each side of said plane and directed toward said me-

VOL 1093 ISS 5 AG 30 1988 UMI

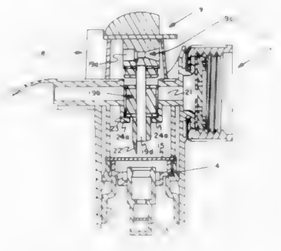
dian plane, with the passages of each pair disposed one on each side of said median plane, and wherein the axes of said second passages converge in pairs substantially in said median plane to either side of said liquid passage and downstream of said axes of said first passage relative to the propagation direction of said jet.

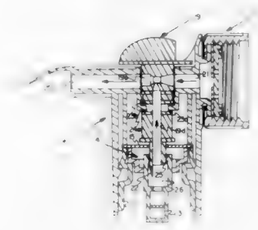
4,767,058

SPRAY HEAD COMPRISING CAP MEMBER WITH ROTATABLE/DEPRESSIBLE VALVE HELD BY FRANGIBLE LOCKING COLLAR

Joseph P. LaRosa, Danbury, and Michael H. Lombardi, Stamford, both of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Jun. 30, 1986, Ser. No. 880,366
Int. Cl.[4] B05B *7/30*; B67B *5/00*; B67D *5/32*
U.S. Cl. 239—309 5 Claims





1. A spray head for mixing pressurized water with a liquid held in a container with a seal to which the head is adapted to be attached and providing a spray thereof which comprises:

(a) a cap member having fluid conduit means therein which respectively are adapted to communicate with

(i) a source of the pressurized water; and

(ii) an outlet for the spray;

(b) a rotatable valve located in a bore between the fluid conduit means in the cap member which valve is adapted, upon rotation and movement towards the sealed container to unseal the container and also achieve intercommunication of the source of pressurized water and the outlet for the spray through the fluid conduit means in the cap member and an aligned fluid conduit means in the valve, which valve has additional conduit means connected to said aligned fluid conduit means, which also communicates with a fluid conduit for the liquid in the container to be contained in the spray, thereby allowing liquid to be aspirated into the valve from the container through a neck on the container to mix with the pressurized water and produce the spray when the fluid conduit means in the cap are intercommunicated with the aligned fluid conduit means in the valve; and

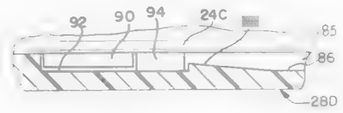
(c) a frangible locking collar holding and preventing the valve from both rotation and movement towards the container except after the collar has been broken and removed from the valve.

4,767,059

PISTON-POWERED DISPENSING SYSTEM

James R. Crapser, and Mark E. Wefler, both of Racine County, Wis., assignors to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 8, 1988, Ser. No. 153,737
Int. Cl.[4] B05B *7/24*
U.S. Cl. 239—314 7 Claims



1. A piston-powered dispensing system comprising:

an apertured base defining an apertured sleeve;

a hollow, elongated cylinder carrying the base at one end portion thereof and defining a hollow neck at an opposite end portion thereof;

an apertured piston defining a circumferential portion that is slidably engageable with the hollow cylinder substantially along the length of an inner surface thereof and disposed in the cylinder for dividing the cylinder into at least two chambers;

an orificed overcap defining an apertured throat, wherein the overcap throat is slidably engageable with an inner surface portion of the cylinder neck, whereby the throat aperture of the overcap throat provides fluid communication between one of the two cylinder chambers and a fluid-mixing region spaced from the dispensing system;

an elongated fluid passageway means disposed through the piston aperture in a fluid-tight manner, wherein the fluid passageway means provides fluid communication between a pressurized-fluid source and the fluid-mixing region via at least one orifice of the overcap;

an apertured, hollow extension in fluid communication with the one overcap orifice via the fluid passageway means and slidably engageable with an inner surface portion of the sleeve of the base, at least one aperture of the hollow extension being alignable with an aperture of the sleeve when the extension is disposed in the sleeve;

first valve means, carried by the base, for controllably affecting flow of a pressurized fluid from the pressurized-fluid source to the fluid passageway means;

second valve means, provided by movement of the extension aperture relative to the sleeve aperture, for controllably affecting flow of the pressurized fluid between the fluid passageway means and the other of the two cylinder chambers; and

third valve means, provided by movement of the overcap throat aperture relative to the inner surface of the cylinder neck, for controllably affecting flow between the other cylinder chamber and the fluid-mixing region.

4,767,060

NOZZLE

Joseph J. Shay, Waterbury, and John D. Daddio, North Branford, both of Conn., assignors to Specialty Packaging Licensing Company, Wilmington, Del.

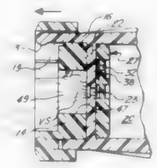
Filed Jun. 5, 1987, Ser. No. 58,392
Int. Cl.[4] B05B *7/10*
U.S. Cl. 239—401 8 Claims

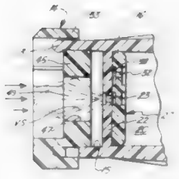
1. A nozzle for selectively dispensing a liquid as a foam or a spray, which nozzle comprises:

(a) a passage means through which the liquid to be dispensed can pass while under pressure;

(b) a transverse wall in the passage means having a swirl chamber communicating with the passage means, the chamber having a nozzle outlet orifice, said swirl chamber causing at least a portion of the liquid communicated to it through said passage means to be dispensed through said nozzle outlet orifice as a swirling conical sheet having sufficient angular velocity to form a substantially hollow conical vortex, which vortex aspirates air into said nozzle;

(c) a skirt circumposing the orifice and extending out from the wall but not far enough to be impinged by the vortex; and





(d) a sleeve which is in slideably telescoping relation with the skirt and is movable between a first position and a second position, said first position being located, with respect to said nozzle outlet orifice, whereby said vortex passes through said sleeve without substantial impingement on the inside of said sleeve, said second position being located, with respect to said nozzle outlet orifice, whereby the inside of the sleeve is substantially impinged upon by the vortex, thereby yielding a turbulent film of said liquid on the inside of said sleeve.

4,767,061

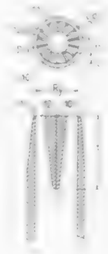
BLOWING NOZZLE FOR A HIGHLY PRESSURIZED GASEOUS FLUID

Stig Ingemansson, Mölndal, Sweden, assignor to Ingemanssons Ingenjorsbyra AB, Gothenburg, Sweden

PCT No. PCT/SE86/00263, § 371 Date Jan. 28, 1987, § 102(e) Date Jan. 28, 1987, PCT Pub. No. WO86/07289, PCT Pub. Date Dec. 18, 1986
PCT Filed Jun. 5, 1986, Ser. No. 16,383
Claims priority, application Sweden, Jun. 7, 1985, 8502825
Int. Cl.[4] B05B *1/14*
U.S. Cl. 239—566 15 Claims

1. A blowing nozzle for a highly pressurized gaseous fluid comprising:

at least two narrow exhaust passages each in the form of a slot having a closed, substantially rectangular cross-section having a longitudinal axis, a cross-sectional width insignificantly larger than the size of particles occurring in said fluid, a cross-sectional length of no more than ten times the average width of each slot, and a depth in the



direction of said longitudinal axis of at least five to ten times said length of said slot;

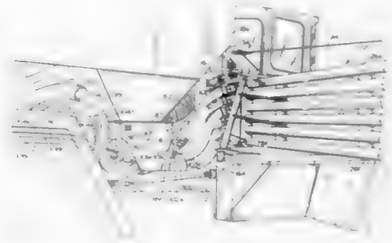
said longitudinal axes being substantially parallel.

4,767,062

AIR FERTILIZER SPREADER

Grant Fletcher, Box 261, Crossfield, Alberta, Canada T0M 0S0, assignor to Grant Fletcher, Alberta, Canada

Continuation of Ser. No. 744,536, Jun. 14, 1985, abandoned.
This application Feb. 17, 1987, Ser. No. 16,467
Int. Cl.[4] A01C *3/06*; B05B *1/28*
U.S. Cl. 239—655 11 Claims



1. An air fertilizer spreader system comprising:

a truck having a truck chassis means, a motor means, and a truck cab located on a forward portion of said truck chassis means;

fertilizer hopper means adapted to hold solid fertilizer particles located on a rear portion of said truck means;

right and left pivotally mounted boom means positioned between said fertilizer hopper means and said truck cab;

each of said right and left pivotally mounted boom means including a corresponding one of right and left pivot means, and means and first tube means;

each of said right and left first tube means extending between a corresponding one of said right and left pivot means and end means;

said right and left pivotally mounted boom means each having a stowed position and an outward position, whereby said each of said right and left boom means swings outwardly about its corresponding pivot means from a rear position of said truck chassis;

transfer means for transferring fertilizer from said hopper means to said right and left pivotally mounted boom means for subsequent spreading; and

said transfer means including second tube means communicating with said first tube means for conveying fertilizer to said first tube means and a source of air under sufficient pressure communicating with said second tube means for

VOL 1093 ISS 5 AUG 30 1988 UMI

moving said solid fertilizer particles into said first tube means at a sufficient velocity to maintain a fluidized mass of air and fertilizer particles.

4,767,063

ADAPTABLE MATERIAL SPREADING VEHICLE

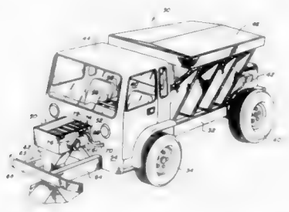
Albert J. Wall, Woburn, Mass., and James T. Wall, 137 Russell St., Woburn, Mass. 01801, assignors to James T. Wall, Woburn, Mass.

Continuation of Ser. No. 742,613, Jun. 7, 1985, abandoned. This application Jul. 6, 1987, Ser. No. 70,604

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] E01C *19/20*

U.S. Cl. 239—672 18 Claims



1. An adaptable material spreading vehicle comprising:
a vehicle body having a frame and front and rear wheels;
an engine mounted to said frame operably connected to said wheels;
an operator cab mounted to said frame at a forwardly positioned cab region centrally disposed between the wheels;
a removable hopper mounted to said frame rearward of said cab region;
a conveyor positioned in a channel passing through said cab region and extending from beneath said hopper to the forward end of said vehicle body, and wherein said channel passes through said cab region to permit visual inspection of dispensed material carried by said conveyor from said operator cab; and
a spreader attached to the end of said conveyor mounted to the forward end of said vehicle body and means for driving said conveyor and spreader.

4,767,064

METHOD AND APPARATUS FOR THE GRINDING OF EXPLOSIVES

Heribert Resch, Kaufering, Fed. Rep. of Germany, assignor to Messerschmitt-Bölkow-Blohm GmbH, Fed. Rep. of Germany

Filed Nov. 20, 1986, Ser. No. 934,179

Claims priority, application Fed. Rep. of Germany, Jan. 1, 1986, 3601593

Int. Cl.[4] B02C *23/18*

U.S. Cl. 241—21 7 Claims

1. A method of grinding explosives using a vessel having an agitator with agitator elements operable adjacent the bottom of the vessel and including a grinding mill adjacent the vessel, comprising reducing the explosive into smaller particles and directing water and the particles into the vessel to produce a water and explosive suspension mixture which has a predetermined ratio of water to explosive, and directing a portion of the suspension mixture into the grinding mill in an amount so as to insure that the level of the mixture does not fall below the level



of the agitator, and grinding the suspension mixture in the grinding mill.

4,767,065

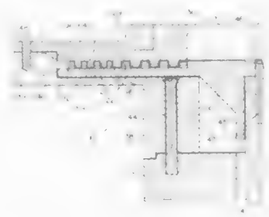
MATERIAL PULVERIZING APPARATUS

Jimmy J. Wray, Macon, Ga., assignor to JJW, Inc., Rockwall, Tex.

Filed Jan. 12, 1987, Ser. No. 2,645

Int. Cl.[4] B02C *7/04*

U.S. Cl. 241—152 A 20 Claims



1. In a comminuting apparatus including a stationary plate, a movable plate mounted adjacent to said stationary plate and movable in a first direction relative to said stationary plate, projection means extending from said stationary plate toward said movable plate and from said movable plate toward said stationary plate for comminuting material between said plates, and means for introducing material between said plates, the improvement wherein said projection means comprises:
a row of first teeth extending from said stationary plate and a row of second teeth extending from said movable plate, said rows of teeth sliding closely adjacent to one another during movement of said movable plate in the first direction,
each tooth of said rows defining a first face, the first faces on the row of second teeth facing the first faces on the row of first teeth as the movable plate moves in the first direction, the first faces of at least one of said rows of teeth defining a plurality of edges defined by intersection stepped surfaces which extend perpendicular to the first direction of movement of said movable plate.

4,767,066

DOWNDRAFT REVERSIBLE HAMMER MILL

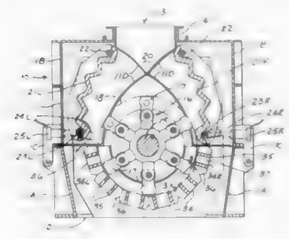
Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 899,806, Aug. 25, 1986, abandoned. This application Apr. 20, 1987, Ser. No. 40,101

Int. Cl.[4] B02C *13/288*

U.S. Cl. 241—27 9 Claims

1. In a reversible hammer mill having a casing with a material inlet and an outlet, a rotary hammer assembly in said casing between said inlet and outlet, a pair of breaker plates in said casing embracing said rotary hammer assembly from opposite sides and movable toward and away from adjacent the circular path of travel of said hammer assembly, and grate bars circumscribing said rotary hammer assembly from said casing outlet and having opposite end bar elements extending into cooperative relation with said breaker plates, the improvement comprising:
means for creating a negative pressure at the casing inlet from the fan effect of said rotary hammer assembly and a positive pressure at said outlet, said means including



breaker plate positioning means to advance one breaker plate toward said circular path of travel and to retract the second one of the pair of breaker plates from said circular path of travel; and said grate bar end bar elements having passages opening from said circular path of travel of said rotary hammer circle toward said casing outlet, the retracted one of said breaker plates opens said passage in said end bar and the advanced one of said breaker plates closes up to said other one of said pair of end bars for cooperating with said rotary hammers to pinch off the air flow in said other one of said end bars whereby a negative pressure is created at the casing inlet and a positive downdraft is created at the casing outlet.

4,767,067

METHOD OF AND AGRICULTURAL MACHINE FOR PRODUCING POWER FODDER

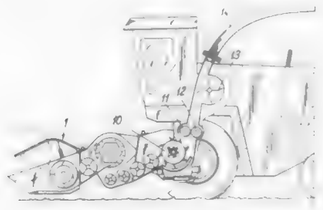
Dirk Bruer; Hermann Garbers, and Franz Heidjann, all of Harsewinkel, Fed. Rep. of Germany, assignors to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Continuation of Ser. No. 880,007, Jun. 30, 1986, Pat. No. 4,728,046. This application Sep. 15, 1987, Ser. No. 98,740

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1985, 3528638

Int. Cl.[4] B02C *19/12*

U.S. Cl. 241—81 6 Claims



1. An agricultural machine for producing a storable power fodder of grain and stalk product, comprising means for cutting a grain-containing stalk product; means for threshing the cut product; means for separating from the cut product during the threshing a part composed of stalk and leaf fraction; means for throwing the separated part onto a field; and means for comminuting the remaining part of the cut product composed only of grains and short straw.

4,767,068

DOMESTIC ICE SHAVER

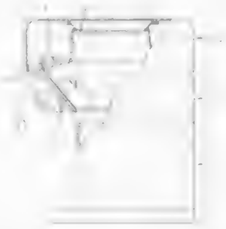
Toshio Ando, Kuwana, Japan, assignor to Chubu Industries, Inc., Mie, Japan

Filed May 29, 1987, Ser. No. 56,463

Claims priority, application Japan, Jun. 10, 1986, 61-88215[U]; Feb. 26, 1987, 62-27617[U]; Mar. 6, 1987, 62-33570[U]; Mar. 6, 1987, 62-33571[U]

Int. Cl.[4] B02C *18/00*

U.S. Cl. 241—84 6 Claims



1. A domestic ice shaver comprising:
a box-like base frame unit having a top surface beyond which a drive shaft rotated by a built-in motor protrudes;
a shaver case unit mounted on said base frame unit and having a shaved ice piece discharge port to which a shaving blade faces;
a rotary blade unit fixed to the upper end of said drive shaft within said shaver case unit and having, on its top, a cylindrical hopper; and
a cover unit mounted to said shaver case unit to cover an upper portion thereof and having a central openable lid, wherein there are provided an adjusting screw and on an outer surface of said shaver case unit a shaving blade support disposed adjacent said shaved ice piece discharge port and having a threaded hole for the adjusting screw, and there is provided an engaging projection strip disposed adjacent said shaving blade support and having an engaging recess formed in its top, and a shaving blade block is provided which has a front edge portion mounted with the shaving blade and an opening through which the adjusting screw passes so as to be screwed into said threaded hole, said shaving blade block having grooves and a tag which are respectively fitted on said engaging projection strip and fitted in said engaging recess when said adjusting screw is tightened, and said shaving block having a spring member interposed between a front bottom surface of said shaving blade block and an outer surface of said shaving block support for outwardly urging said shaving blade block.

4,767,069

MULTIPURPOSE PULVERIZER DEVICE

Chong S. Kim, #155-7 Shimkok 2-Dong, Bucheon City, Kyeonggi D., Rep. of Korea

Filed Apr. 9, 1987, Ser. No. 36,507

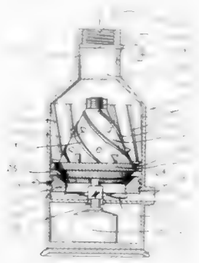
Int. Cl.[4] B02C *18/12*

U.S. Cl. 241—152 A 18 Claims

1. Multipurpose pulverizer device for pulverizing food, garbage and the like material, comprising:
housing means;
material inlet means at an upper part of the housing means for accommodating inflow of material to be pulverized;
material outlet means at a lower part of the housing means

VOL 1093 ISS 5 AG 30 1988 UMI

for accommodating outflow of material pulverized in the pulverizer devioe;
rotor shaft means disposed centrally of the housing means;
motor means for rotatably driving the rotor shaft means;
an upper movable pulverizing unit carried by the rotor shaft means for rotation therewith;
an upper fixed pulverizing unit disposed on the inside of the housing means and adjacent to the upper movable pulverizing unit for cooperating with the upper movable pulverizing unit to perform a first pulverizing operation on the material to be pulverized;
a set of movable second stage cutter teeth carried by the rotor shaft means and disposed below the upper pulverizing unit;
a set of fixed second stage cutter teeth disposed on the inside of the housing means and adjacent the movable second stage cutter teech for cooperating with the movable second stage cutter teeth to perform a second pulverizing operation on the material to be pulverized;
a set of movable third stage cutter teeth carried by the rotor shaft means and disposed below the second stage cutter teeth;
a set of fixed third stage cutter teeth disposed on the inside of the housing means and adjacent the movable third stage cutter teeth for cooperating with the movable third stage cutter teeth to perform a third pulverizing operation on the material to be pulverized;
discharge paddle means carried by the rotor shaft means and disposed below the third stage cutter teeth, said discharge paddle means serving to force the pulverized material out the material outlet means; and
third stage adjustment means for accommodating manual adjustment of the space between the movable and fixed third stage cutter teeth to thereby effectively selectively apply said third pulverizing operation.



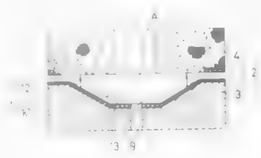
4,767,070

GRINDER FOR USE IN GRINDING APPARATUS

Masamichi Nagao, 87-302 Ikidanchi Nishi-ku, Fukuoka, and Masaaki Nagao, Nikko Nakadai-ryo A-1020, 3-1 Nakadai, Narita-shi, Chiba, both of Japan, assignors to Masamichi Nagao, Japan; Masaaki Nagao, Japan and Hitachi Techno Engineering Co. Ltd., Japan

Filed Jun. 6, 1986, Ser. No. 871,311
Claims priority, application Japan, Dec. 28, 1985, 60-298609; Apr. 9, 1986, 61-79982
Int. Cl.[4] B02C *7/08, 7/12*
U.S. Cl. 241—261.2 12 Claims

1. A grinder for use in a grinding apparatus, comprising:
a rotary disc rotated through a shaft by drive means and formed with a grinding surface and a stationary disc formed with a grinding surface;
said grinding surfaces of said discs facing each other with a small clearance being constantly defined therebetween;
the grinding surface of said rotary disc including microbits for cutting a material to be treated, said microbits being formed of superhard grinding particles arranged close together on said grinding surface of said rotary disc; and
the grinding surface of said rotary disc being formed to have



a grinding strength which is larger than that of the grinding surface of said stationary disc, to exhibit cutting force larger than that of said grinding surface of said stationary disc.

4,767,071

METHOD OF WINDING YARN AND DEVICE FOR CARRYING OUT THE SAME

Kazuyasu Hirai, Nagaokakyo, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kiyoto, Japan

Continuation of Ser. No. 808,557, Dec. 13, 1985, abandoned. This application Nov. 20, 1987, Ser. No. 124,342
Claims priority, application Japan, Dec. 19, 1984, 59-267740
Int. Cl.[4] B65H *54/38, 54/32*
U.S. Cl. 242—18.1 11 Claims



1. A method of winding a yarn on a bobbin to form a generally cylindrical package comprising the steps of:
(a) traversing a yarn with a yarn guide longitudinally in the direction of the axis of the package from a right returning position at one end of the package to a left returning position at the other end of the package,
(b) alternately varying the right returning position and the left returning position during the winding operation in a creeping motion,
(c) interrupting the creeping motion periodically in the winding operation, and
(d) reinstating the creeping motion after each interruption wherein the creeping motion is altered in respect to the axis of the package when resumed after interruption.

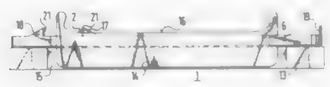
4. A yarn winding apparatus to form a generally cylindrical package having a central axis of rotation with a right returning position at one end of the package and a left returning position at the other end of the package comprising:
(a) a spiral drum having a plurality of different and spaced guide grooves consisting of differently spaced progressing grooves and returning grooves,
(b) a traverse guide member for traversing a yarn along the guide grooves in a reciprocating motion along the axis of the package,
(c) a first creeping cam means operatively connected to the guide member for imparting a creeping motion to the guide member to selectively vary the right and left returning position of the guide member, and
(d) means to disconnect the first cam means and the traverse guide member temporarily to shift the creeping motion of the guide member relative to the axis of the package upon resumption of the connection of the first cam means and the guide member.

4,767,072

ENDLESS YARN TRAVERSING BAND FOR A YARN TRAVERSING DEVICE IN A MACHINE FOR PRODUCING CROSS-WOUND BOBBINS

Heinz Kamp, Wegberg, and Rolf Becker, Moenchengladbach, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Fed. Rep. of Germany

Filed Aug. 12, 1987, Ser. No. 84,690
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1986, 3627516
Int. Cl.[4] B65H *54/28*
U.S. Cl. 242—43 A 13 Claims



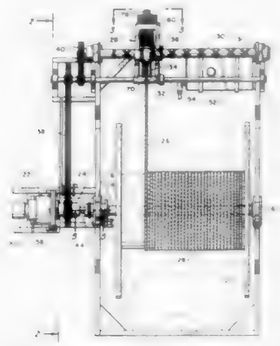
1. An endless yarn traversing band for a yarn traversing device in a machine for producing cross-wound bobbins, which band is provided with spaced yarn guiding means projecting from an edge of the band in a sawtoothed configuration, said yarn traversing band comprising fabric embedded in an elastomeric material and having said guiding means formed with leading edges covered by wear-resistant reinforcing means.

4,767,073

CABLE SPOOLING SYSTEM

Fred H. Malzacher, 5530 Rushmore St., Ventura, Calif. 93003

Division of Ser. No. 649,274, Sep. 10, 1984, Pat. No. 4,588,142, which is a continuation-in-part of Ser. No. 284,691, Jul. 20, 1981, abandoned. This application Feb. 20, 1986, Ser. No. 833,510
Int. Cl.[4] B65H *75/38*
U.S. Cl. 242—54 R 24 Claims



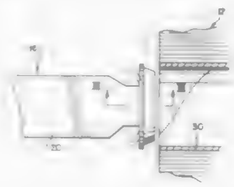
1. An electronic cable spooling system for spooling fragile electronic cables comprising;
frame means;
axle means for mounting a cable spool;
support means on said frame means for rotatably supporting said axle with said cable spool;
drive means for rotatably driving said axle and cable spool, said drive means comprising;
pressure compensated hydraulic pump means;
a hydraulic motor;
hydraulic valve means connecting said pressure compensated hydraulic pump means to said hydraulic motor;
said pressure compensated hydraulic pump means having preselected self-compensation of the rotational torque applied to said axle and cable spool;
cable guide means guiding an electronic cable onto said cable spool for storage;
whereby said drive means is carefully controlled to maintain a torque on an electronic cable substantially below a level which would cause damage; said drive means stalling when the torque required to wind said cable exceeds the preselected self-compensation of the rotational torque of said pressure compensating pump.

4,767,074

DISPENSING HOLDER

Glenister B. Bower, 12 Mills Street, Durbanville, South Africa 7550

Filed Sep. 16, 1985, Ser. No. 776,609
Claims priority, application South Africa, Sep. 17, 1984, 84/7291
Int. Cl.[4] B65H *19/00*
U.S. Cl. 242—55.2 1 Claim



1. A dispensing holder for holding a roll of sheet material, which roll has an open-ended tubular core having an inside diameter, the holder comprising:
a base;
an elongate roll support projecting cantilever fashion from the base, the roll support having a distal end remote from the base and being such as to be able to extend through said core from one end of the core to the other and thus to support the roll;
an elastomeric disk mounted on said roll support approximately at said distal end, the diameter of which disc, when in an unflexed condition, being slightly greater than the inside diameter of said core, and the elastomeric disc being mounted such that it is resiliently deflectable from the unflexed condition in a direction towards the base to enable said roll to be fitted onto the roll support; and
a stop element mounted on said roll support approximately at said distal end which stop element, by abutting against a side of the elastomeric disc facing away from the base, is effective to resist deflection of the disc from the unflexed condition in a direction away from the base, the transverse extent of the stop element being slightly less than the inside diameter of the core.

4,767,075

APPARATUS FOR FORMING A PLURALITY OF SUPPLY ROLLS CONSISTING OF RESPECTIVE WOUND STRIPS FORMED FROM A WIDE WEB BY SLITTING

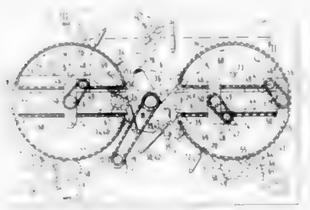
Rudolf Peters, Lengerich, and Rolf Kammann, Hagen, both of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Apr. 27, 1987, Ser. No. 43,131
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1986, 3614344; Oct. 28, 1986, 3636685
Int. Cl.[4] B65H *19/26, 19/28*
U.S. Cl. 242—56 A 16 Claims

1. Apparatus for winding web material successively onto separate winding cores comprising a main frame, a web guide roller mounted substantially centrally in the frame, left-and

VOL 1093 ISS 5 AG 30 1988 UMI

right-hand rotary frame means mounted in the main frame on opposite sides of the guide roller respectively, track means provided on each rotary frame means, first and second winding means mounted on each track means for independent movement therealong toward and away from the guide roller, each winding means including a winding shaft for receiving a wind-



ing core and a first drive means for rotating the winding shaft, second drive means for selectively moving the respective winding means along the respective track means, and third drive means for selectively rotating the rotary frame means to alternate the positions of the respective first and second winding means relative to the central guide roller.

4,767,076

MECHANISM FOR AUTOMATICALLY FEEDING COLLECTING ELONGATED CORE OF FABRICS

Keiko Tagawa, 14-1 Hon-machi 6-chome, Toyonaka-shi, Osaka-fu, Japan

Continuation of Ser. No. 566,388, Dec. 28, 1983, abandoned. This application Nov. 19, 1986, Ser. No. 933,329

Claims priority, application Japan, Dec. 19, 1982, 57-196668

Int. Cl.[4] B65H *19/12, 16/06, 16/10;* B65G *17/42*

U.S. Cl. 242—58.6 23 Claims



1. A mechanism for automatically feeding elongated cores having projecting portions at opposite ends thereof and having fabric rolled thereabout, to an unrolling machine for unrolling the fabric from the cores, and for automatically collecting the cores after the fabric has been unrolled therefrom, said mechanism comprising:

(a) first and second spaced, side-by-side, vertically extending frames, each having a forwardly extending upper portion for extending toward the unrolling machine and a lower portion below said upper portion having a back rearwardly facing side, a front forwardly facing side opposite said back side and a bottom side below and between said front and back sides;

(b) first and second endless chains respectively mounted on said first and second frames for synchronous continuous movement about the respective peripheries thereof;

(c) a first holding hook means and a second holding hook means, respectively mounted on said first and second chains for movement therewith, for supporting the respective projecting portions of one of the cores, such that the core is removable therefrom at said upper portions of said frames, said first and second hook means respectively including first holding hooks respectively mounted on said first and second chains so as to be pivotable about an axis extending perpendicularly to the direction of movement of said first and second chains, and second holding hooks respectively mounted on said first and second chains so as to be below said first hooks when positioned along said back sides of said frames, said second hooks respectively facing the first hooks respectively mounted on said first and second chains, peripheral surfaces of said upper and lower portions of said frames being engagable with said first hooks to block pivotal movement thereof along said upper portions of said frames, along said front sides and said back sides of said frames, and said back sides of said frames each having a respective clearance groove therein, said first hooks being pivotable into respective ones of said grooves;

(d) means, disposed on said back sides of said frames adjacent said grooves, for automatically supplying the core, with the fabric rolled thereabout, onto said second hooks with the projecting portions of the core supported by said second hooks between said first and second hooks, such that the core is shifted by gravity to be supported on said first hooks at said upper portions and said front sides of said frames, said supplying means being disposed so as to direct the core toward said first and second chains such that the projecting portions of the cores engage and pivot said first hooks into said respective grooves prior to being supplied onto said second hooks;

(e) means, including first and second guide rods, for guiding the core on said first and second guide rods onto said first hooks at said front sides of said first and second frames, said first and second guide rods extending rearwardly and downwardly from respective front ends to respective rear ends thereof, respectively toward said front sides of said first and second frames, said first and second guide rods being spaced so as to slidingly support the respective projecting portions of the core when the core is disposed thereon, such that when respective portions of the core are provided onto said first and second guide rods by the unrolling machine after the fabric has been unrolled from the core by the unrolling machine, said first and second guide rods slidingly guide the core to said rear ends of said guide rods for being received on said first hooks at said front sides of said frames; and

(f) means for automatically removing the core on said first and second hooks from said first and second hooks at said bottom sides of said frames.

4,767,077

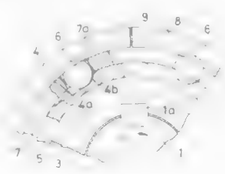
SUPPORT SHAFT FOR WINDING/UNWINDING SHEETS

Hiroshi Kataoka, 3686, Sangawacho, Iyomishima-shi, Ehime 799-04, Japan

Continuation of Ser. No. 825,645, Feb. 3, 1986, abandoned. This application Dec. 24, 1987, Ser. No. 140,920

Int. Cl.[4] B65H *75/24;* B23B *31/40*

U.S. Cl. 242—68.2 10 Claims



1. A support shaft for friction winding/unwinding sheets, said support shaft comprising:

(a) a drive shaft;

(b) a plurality of rings juxtaposedly and rotatably fitted on said drive shaft, each one of said plurality of rings having the upper periphery thereof formed with a plurality of circumferentially inclined grooves circumferentially spaced apart, each one of said inclined grooves having an inclined bottom;

(c) torque transmitting means for transmitting torque from said drive shaft to each one of said plurality of rings;

(d) rollers accommodated in said inclined grooves for rolling therein from a deep portion thereof toward a shallow portion thereof to progressively increase the extent of projection therefrom with a rotation of said plurality of rings;

(e) space holding means provided near said plurality of rings for holding said rollers spaced apart in the circumferential direction of said plurality of rings in engagement of said rollers during rolling thereof; and

(f) a plurality of outer rings, each one of said plurality of outer rings having a gap and at least one flange projecting therefrom radially inwardly along an end face of a corresponding one of said rollers, each one of said plurality of outer rings being fitted on a corresponding one of said plurality of rings to surround the outer surfaces of the associated ones of said rollers and being capable of being expanded by the urging force of said rollers.

4,767,078

BEARING FOR THE ROTATABLE MOUNTING OF A CONTROL DISC

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Dec. 16, 1986, Ser. No. 942,457

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1986, 8629087[U]

Int. Cl.[4] B65H *75/48*

U.S. Cl. 242—107.4 R 6 Claims



1. In an automatic safety belt retractor comprising a rotatable reel on which seat belt webbing is wound and blocking means for blocking rotation of the reel in the direction of withdrawal of the seat belt webbing, control means operatively associated with the blocking means for actuating the blocking means, said control means comprising:

a control disc rotatable with and relative to the reel and comprising a hub having opposite inner and outer end portions defining a central bearing opening therebetween, said central bearing opening having an enlarged portion at the outer end portion of said hub;

a bearing journal for supporting said control disc for rotation, said bearing journal being received in said central bearing opening and having an engagement flange for engaging and supporting the inner end portion of said hub for rotation, an axial end spaced from said engagement flange and an axial end face on the axial end of the bearing journal; and

an insert received in said enlarged portion of said central bearing opening and supporting said control disc and blocking axial movement of said control disc relative thereto, said insert having a bore for receiving said axial end of said bearing journal and an outer axial end face lying flush in a plane with the outer end face of the outer axial end portion of said hub, the axial end face of said axial end of said bearing journal being located in said plane, said bore being defined by a cylindrical surface engageable with said axial end of said bearing journal,

said bearing journal having a radial shoulder located within the axial extent of said hub, and said insert having at least one detent element engaging said radial shoulder to prevent axial movement of said outer axial face of said insert and thereby the outer end face of said hub outward of said plane.

4,767,079

ROLL FILM CARRIER FOR READER OR READER PRINTER

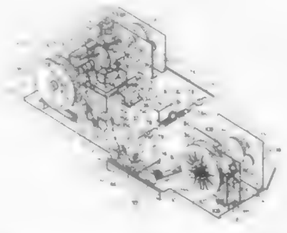
Takanori Saito, Kawasaki, and Osami Kato, Sagamihara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 4, 1986, Ser. No. 848,137

Claims priority, application Japan, Apr. 5, 1985, 60-73274; Apr. 10, 1985, 60-76096; Jun. 10, 1985, 60-125750; Jun. 10, 1985, 60-125751

Int. Cl.[4] G11B *15/32, 23/04;* G03B *1/04*

U.S. Cl. 242—197 7 Claims



1. A roll film carrier for a reader or a reader printer comprising:

cartridge holding means for holding either of a first type cartridge and a second type cartridge selectively at the same position, the shape of the first type cartridge being different from that of the second type cartridge;

detecting means for detecting whether either of the cartridges is mounted in the cartridge holding means;

judging means for judging the type of cartridge mounted to the cartridge holding means;

first feed-out means moveable between an operative position to feed a film from the first type cartridge into a transfer path and an inoperative position;

second feed-out means moveable between an operative position to feed a film from the second type cartridge into the transfer path and an inoperative position;

first control means for setting either of the first and second feed-out means in the operative position based on a signal from the judging means; and

second control means for operating the feed-out means which is in the operative position based on a signal from the detecting means.

5. A roll film carrier for a reader or a reader printer comprising:

cartridge holding means for holding either of a first type cartridge and a second type cartridge selectively at the same position, the shape of the first type cartridge being different from that of the second type cartridge;

detecting means for detecting whether either of the cartridges is mounted in the cartridge holding means;

a first reel drvie shaft moveable in an axial direction for transferring a drive force to a reel in the first type cartridge;

VOL 1093 ISS 5 AUG 30 1988 UMI

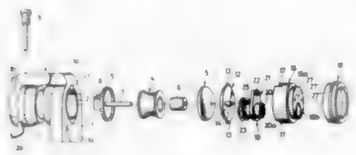
a second reel drive shaft provided coaxial with and moveable relative to the first reel drive shaft for transferring a drive force to a reel in the second type cartridge;
urging means for urging the second reel drive shaft to an extended position where an end of the second reel drive shaft extends from that of the first reel drive shaft; and
control means for inserting the first and second reel shafts into the mounted cartridge based on a signal from the detecting means.

4,767,080

ANGLE ADJUSTMENT MECHANISM FOR FISHLINE GUIDE ROLLER OF A SPINNING REEL

Kikuo Tsunoda, and Kenji Maruyama, both of Hiroshima, Japan, assignors to Ryobi, Ltd., Hiroshima, Japan

Filed Aug. 20, 1987, Ser. No. 87,350
Claims priority, application Japan, Aug. 21, 1986, 61-128082; Oct. 24, 1986, 61-164099
Int. Cl.[4] A01K *89/01*; G05G *5/08*
U.S. Cl. 242—84.2 G 5 Claims



1. An angle adjustment mechanism for a fishline guide roller of a spinning reel having a bail lever comprising:
a roller bearer means pivotally supported by the bail lever to be rotatable through a first arc;
a roller rotatably supported in said roller bearer means and adapted to have a fishline guided thereby;
rotatable cam means in contact with said roller bearer means such that rotation of said cam means moves said roller bearer to a different angular position within said first arc;
a plurality of stop projections circumferentially provided along said cam means in a second arc; and
projection receiving means in said rotatable cam means for singularly receiving said stop projections such that rotation of said cam means causes said projection receiving means to receive one of said stop projections along said second arc and maintain said roller bearer means in a corresponding position along said first arc.

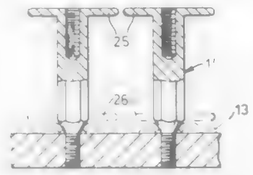
4,767,081

CONVERSION OF MOTOR VEHICLE WHEELS

Boon W. Lau, 203 Henderson Industrial Park 0309, Singapore, Singapore 0315

Filed Oct. 21, 1986, Ser. No. 921,094
Claims priority, application United Kingdom, Oct. 30, 1985, 8526755
Int. Cl.[4] B66D *3/00*
U.S. Cl. 242—95 3 Claims

1. A kit for adapting a motor vehicle wheel hub to wind a line, comprising:
a plurality of separate elongate members having first and second ends;
means on said first ends for screw-threadedly engaging the hub to space said second ends from the hub;
central portions of said elongate members between said first and second ends thereby forming a cage around which said line is to be wound; and
each of said elongate members comprising at said second end an individual radially outwardly extending substantially circular flange for forming by said plurality of members an array of separate substantially circular flanges spaced



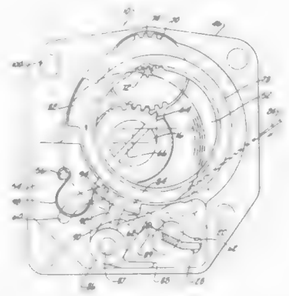
from said hub and disposed about the axis thereof, for retaining wound line on said cage.

4,767,082

DUAL MODE SEAT BELT RETRACTOR ASSEMBLY

Timothy J. Schmidt, Troy, and Ronald A. Heintzleman, Sterling Heights, both of Mich., assignors to General Safety Corporation, St. Clair Shores, Mich.

Continuation of Ser. No. 788,021, Oct. 16, 1987, Pat. No. 4,726,539. This application Sep. 15, 1987, Ser. No. 96,964
Int. Cl.[4] B60R *22/40*
U.S. Cl. 242—107.4 A 17 Claims



1. In a seat belt retractor of the type having a retractor frame, a spool carried by said frame defined by a belt support shaft and having at least one toothed sprocket, seat belt webbing connected to said spool, a locking bar carried by said frame and movable between an engaged position with said toothed sprocket, thereby inhibiting withdrawal of said webbing, to a disengaged position from said toothed sprocket, thereby permitting withdrawal of said webbing, said retractor further having an inertia sensitive actuator which acts upon said locking bar in response to deceleration forces above a predetermined level to urge said locking bar into said engaged position, the improvement for enabling said seat belt retractor to be operated either as an emergency locking retractor which prevents said seat belt webbing from being withdrawn when said retractor is subjected to deceleration above said predetermined level, or as an automatic locking retractor which permits retraction of said webbing but inhibits withdrawal of said webbing, comprising:
gear retainer means,
gear means disposed in said gear retainer, said gear means driven by rotation of said spool and including a ring gear,
said toothed sprocket being fixed to said shaft,
tab means on said ring gear,
a mode switching lever having a spring arm and being rotatable about a pivot means from an engaged position directly contacting said locking bar and resiliently urging

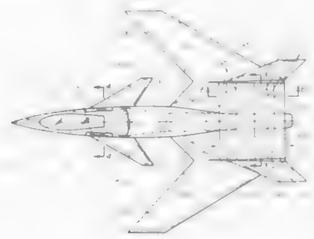
said locking bar into engagement with said toothed sprocket to a disengaged position from said locking bar,
spring means acting on a fixed point on said mode switching lever spring arm to exert an extension force between a mounting point and said mode switching lever spring arm wherein when said mode switching lever is in said engaged position said extension force is directed along one side of a line between said mounting point and said pivot means thereby biasing said mode switching lever in said engaged position, and wherein when said mode switching lever is in said disengaged position said extension force is directed along an opposite side of said line thereby biasing said mode switching lever in said disengaged position whereby rotation of said ring gear causes said tab means to engage said mode switching lever to move said mode switching lever between said engaged and disengaged positions whereby said retractor functions as an automatic locking retractor when said mode switching lever is in said engaged position or an emergency locking retractor when said mode switching lever is in said disengaged position.

4,767,083

HIGH PERFORMANCE FORWARD SWEPT WING AIRCRAFT

David G. Koenig, Sunnyvale; Kiyoshi Aoyagi, Mountain View; Michael R. Dudley, Los Altos, all of Calif., and Susan B. Schmidt, Pensacola, Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1986, Ser. No. 933,963
Int. Cl.[4] B64C *21/04*; B64D *29/02*
U.S. Cl. 244—12.3 9 Claims



1. A high performance aircraft comprising:
a fuselage;
forward swept wings connected to said fuselage;
at least one engine having an inlet for generating a pressurized gas;
thrust augmenting ejector means having an inlet located apart from said at least one engine inlet and responsive to said pressurized gas, said ejector means inlet located above and on an inboard portion of said wings for augmenting thrust, enhancing circulating lift, and stall control, and said ejector means including a number of nozzles arranged along the span of the wings, a variable-area inlet and a variable-area outlet.

4,767,084

AUTONOMOUS STATIONKEEPING FOR THREE-AXIS STABILIZED SPACECRAFT

Fred N. Chan, Atherton, and Wallace E. Reimche, Saratoga, both of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 18, 1986, Ser. No. 908,757
Int. Cl.[4] B64G *1/24*
U.S. Cl. 244—164 8 Claims



1. Apparatus for controlling a 3-axis stabilized spacecraft, comprising:
at least one momentum/reaction wheel mounted on board the spacecraft for maintaining the spacecraft's attitude with respect to an axis;
a set of thrusters mounted about the periphery of the spacecraft for desaturating the momentum/reaction wheel and for accomplishing change in velocity maneuvers;
coupled to the momentum/reaction wheel, means for determining when the momentum/reaction wheel reaches saturation; and
coupled to the determining means, means for performing any desired desaturation of the momentum/reaction wheel while automatically and simultaneously accomplishing a preselected compensation of the spacecraft's east-west position.

4,767,085

SYNTHETIC SPEED STABILITY FLIGHT CONTROL SYSTEM

Jean A. Boudreau, Long Beach, Calif.; Howard L. Berman, Commack, N.Y.; Jimmie Chin, Flushing, N.Y., and Romeo P. Martorella, Dix Hills, N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 27, 1986, Ser. No. 923,243
Int. Cl.[4] B64C *13/18*; G05D *1/00*
U.S. Cl. 244—182 11 Claims



1. A flight control system including an air data source for controlling the angle-of-attack stability of an aircraft having at least one control surface, comprising:
means for obtaining an equivalent airspeed signal of the aircraft from an air data source and generating a reference signal corresponding thereto;
means for processing the equivalent airspeed signal and the

VOL 1093 ISS 5 AUG 30 1988 UMI

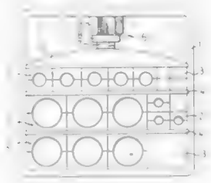
reference signal to generate a synthetic speed stability signal;
means for inputting the synthetic speed stability signal to actuators of said at least one control surface for maintaining the angle-of-attack stability of the aircraft in a substantially level flight;
means for sensing pitch angle of the aircraft and generating a signal corresponding thereto;
means for sensing roll angle of the aircraft and generating a signal corresponding thereto; and
wherein the processing means multiplies the pitch angle and the roll angle signals as well as the error between the reference equivalent airspeed and the equivalent aircraft speed signals to generate a composite synthetic speed stability signal to be input by the inputting means to the actuators for maintaining the angle-of-attack stability of the aircraft for all attitudes.

4,767,086

TIGHTENING DEVICE FOR CABLE BUSHINGS

Mikael Blomqvist, Karlskrona, Sweden, assignor to Lycab AB, Karlskrona, Sweden

Filed Apr. 16, 1987, Ser. No. 39,071
Claims priority, application Sweden, Apr. 28, 1986, 8601958
Int. Cl.[4] F16L *5/00*; H02G *3/22*
U.S. Cl. 248—56 4 Claims



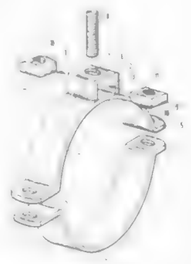
1. A tightening device for a cable bushing or lead-through arrangement, comprising:
a rigid frame structure having two opposite ends;
a plurality of packing pieces arranged in said frame structure in a plurality of rows each running generally parallel to said ends, in a series which extends in said frame in a direction generally normal to said ends;
at least one of said packing pieces having a cable-accommodating hole provided therein;
said rows of packing pieces partially filling said frame structure, beginning at one said end and ending short of an opposite said end, so as to leave a space in said frame structure between a respectively nearest row and said opposite end;
a pressure plate disposed in said space, between said opposite end and said nearest row;
a tightening element disposed in said space, between said opposite end and said pressure plate for urging said pressure plate against said nearest row of packing pieces so as to compress said rows of packing pieces in said direction against said one end of said frame structure;
said tightening element comprising a tightening screw extending in said direction, said tightening screw being connected at one end with said pressure plate and extending in said space from said pressure plate towards said opposite end of said frame structure and having an opposite end arranged for engaging said opposite end of said frame structure;
said tightening screw comprising at least three serially interconnected parts at least three of which are threadedly telescopically-interconnected screw-threaded parts, an end one of which is axially-immovably connected with said pressure plate and an opposite end one of which is positioned to engage said opposite end of said frame structure, whereby said rows of packing pieces may be compressed between said one end of said frame structure and said pressure plate, by rotating said screw-threaded parts relative to one another until said opposite end part of said telescoping screw engages said opposite end of said frame structure and further relative rotation of at least one of said telescopically-interconnected screw-threaded parts places said tightening screw in compression between said opposite end of said frame structure and said pressure plate.

4,767,087

PIPE CLAMP FOR THE ROCKING OR RIGID SUSPENSION OF PIPES

Hubert Combû, Lankwitzer Str. 39, D-1000 Berlin 42, Fed. Rep. of Germany

Filed Jun. 22, 1987, Ser. No. 65,845
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1986, 3621484
Int. Cl.[4] F16L *27/02*
U.S. Cl. 248—62 7 Claims



1. A pipe clamp for rocking or rigid suspension of pipes comprising first and second half-clamps and an internally threaded nut, each half-clamp having clamp lugs for joining together said half-clamps and having a rounded portion, said first half-clamp having a bridge-like connector for receiving a threaded rod, said bridge-like connector having a web, and having spaced apart legs connected to the rounded portion of the first half-clamp for supporting said web in a spaced apart relation to said rounded portion, said web having a bore through which the threaded rod may be passed, said nut having a dimension matching a connector dimension between said spaced apart legs, thereby locking the nut in the connector and establishing a non-twisting pipe suspension relation between said web and the rounded portion of the first half-clamp, said nut having a first contact face and said web having an interface surface, one of said first contact face and said interface surface being arcuate for allowing relative rocking motion between said first compact face and said interface surface in one configuration, with said nut, rod and connector having a second configuration precluding rocking motion.

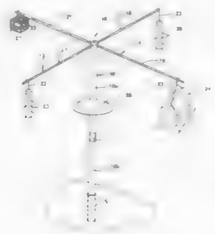
4,767,088

MULTISTATION BIRD FEEDER SUPPORT

Dennis C. Fielder, Middleburg Heights; Arthur J. Furman, Andover; Paul A. Miller, Independence, all of Ohio, and Blair E. Rogers, Linesville, Pa., assignors to Cardinal American Corporation, Cleveland, Ohio

Filed Jul. 7, 1987, Ser. No. 70,347
Int. Cl.[4] A01K *39/01*
U.S. Cl. 248—121 18 Claims

17. A bird feeder support comprising a pole, an elastic O-ring positioned on said pole intermediate its ends, said O-ring being stretched from its unstressed condition when positioned on said pole, and a disc-shaped squirrel guard formed with a central opening therein loosely fitting said pole supported by said O-ring, adjustment of said O-ring along the length of said pole providing adjustment of the position of said squirrel guard along the length of said pole, said squirrel guard being movable from a normal substantially horizontal position when a downward force is applied thereto at the periphery thereof, said squirrel guard providing a generally spherical portion extending from a location substantially adjacent to said pole to an outer spherical portion edge, said squirrel guard providing a planar flange extending from said outer spherical portion edge.

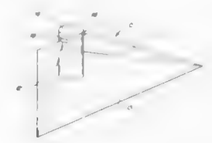


4,767,089

VESSEL STABILIZER

Carlin S. Self, 1164 Profanity La., Redding, Calif. 96003

Filed Apr. 3, 1987, Ser. No. 33,728
Int. Cl.[4] A47G *23/02*
U.S. Cl. 248—152 2 Claims



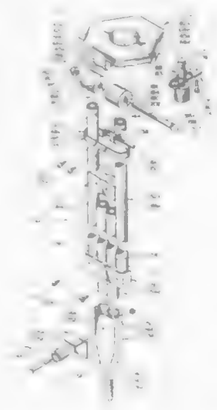
1. A vessel stabilizer for use in holding a vessel upright, comprising:
a substantially horizontal base having:
a front edge having a left end and a right end;
a back edge less than one-half the length of said front edge offset from and positioned substantially parallel to said front edge and having a left end and a right end;
a left edge extending from said left end of said front edge to said left end of said back edge;
a right edge extending from said right end of said front edge to said right end of said back edge;
a left flap attached to and extending substantially upward from said left edge of said substantially horizonal base, and
a right flap attached to and extending substantially upward from said right edge of said substantially horizontal base,
so that said vessel is held in a substantially upright position when said vessel is positioned on said base and said flaps are secured to said vessel by an adhesive means.

4,767,090

TRIPODS

Bruce A. Hartman, Everett; Michael R. Kardack, Lynnwood, and Ralph E. Ammendolia, Bellevue, all of Wash., assignors to Kar-Hart Productions, Inc., Everett, Wash.

Continuation-in-part of Ser. No. 663,872, Oct. 23, 1984, abandoned. This application Apr. 30, 1986, Ser. No. 857,711
Int. Cl.[4] F16M *11/38*
U.S. Cl. 248—168 3 Claims



1. A tripod which comprises: a head, three tripod legs, and means so fixing the upper ends of said legs to said tripod head at equiangularly spaced intervals therearound that said legs can be pivoted toward said head to collapse the tripod into a compact, easily handled configuration and away from the head to provide stable support for an instrument mounted on the tripod head, said head comprising a platform and flanges depending from said platform; there being bearing means incorporated in, and at, the upper ends of said legs; the means for fixing the upper ends of each of said legs to said head comprising a pivot member extending through one of the depending flanges and the bearing means at the upper end of the leg; said head having outwardly facing, arcuate bearing surfaces adjacent the depending, equiangulary spaced flanges at said equiangularly spaced intervals; said bearing means having complementary, convex surfaces contoured to match, and fit against, said bearing surfaces; wherein each of said legs comprises a pair of elongated, parallel, spaced apart posts, wherein said bearing means comprises a bearing member at the upper end of each of said posts; and wherein there are recesses in the bearing members and the upper ends of said posts are fitted into said recesses, and the recesses in the bearing members being offset toward one end of the member in which the recess is formed, whereby different spacings between the elongated posts of a tripod leg as aforesaid can be accommodated by turning said bearing members end for end.

4,767,091

ANTIFALL SAFETY DEVICE

Bernard G. Cuny, Saint Nizier d'Uriage, France, assignor to G.A.M.E.S., Saint Nizier d'Uriage, France

Filed Jan. 2, 1987, Ser. No. 174
Claims priority, application France, Jan. 3, 1986, 86 00065
Int. Cl.[4] A62B *35/00*; B66C *1/64*; E04G *17/18*
U.S. Cl. 248—228 39 Claims

1. Antifall safety device suitable for being mounted on a lengthwise portion of a beam section which comprises two opposed lengthwise edges, an external lengthwise surface connecting these lengthwise edges and two lengthwise surface

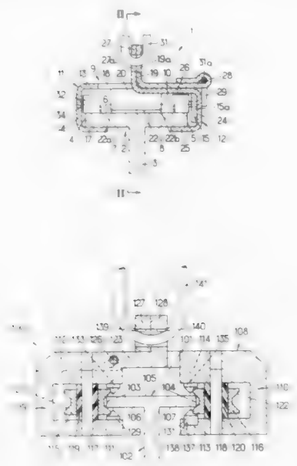
VOL 1093 ISS 5 AG 30 1988 UMI

portions opposed to this external surface and adjacent to said lengthwise edges, comprising

a body equipped with means for suspending a load and in which there is provided a C-shaped passage for receiving said lengthwise portion of said beam section,

said body having a middle portion facing and at a distance from said external lengthwise surface of said beam section and having two opposed side walls extending along the two lengthwise edges opposed to said beam section and two flanges facing said lengthwise surface portions of said beam section;

said body additionally comprising at least one projecting portion extending from its middle portion towards said external lengthwise surface of said beam section, said projecting portion having at its end at least one corner forming a punch situated between said side walls, said



corner producing a punch effect on said external lengthwise surface when under the pull of the load, a tilting of said body is produced together with a wedging effect of said lengthwise portion of said beam section in said passage,

said body comprising two longitudinal articulated portions, these portions comprising bearing surfaces and lugs,

so that, in closed position, said bearing surfaces are in contact with each other and are adjacent to said lugs and are provided with corresponding orifices for receiving an openable ring for suspending the load for locking said articulated portions and so that, in open position said articulated portions are pivoted around their longitudinal articulating axis in order to move away from said bearing surfaces and said lugs and to disengage at least one of said flanges.

4,767,092

CUP RETENTION APPARATUS

Jerry E. Weatherly, 3329 E. Seneca, Tucson, Ariz. 85716

Filed Dec. 1, 1987, Ser. No. 127,130
Int. Cl.[4] A47K *1/08*
U.S. Cl. 248—311.2 7 Claims

1. A cup retention apparatus for use in combination with the interior structural surfaces of a vehicle to support and engage different sized cups; wherein, the cup retention apparatus comprises:

an adjustable receptacle retention unit including a generally L-shaped receptacle receiving member having a pair of cooperating flexible arm members formed on the upper end of the receptacle receiving member; wherein, the flexible arm members are adapted to engage one another to frictionally engage the periphery of different sized cups;

a support arm unit comprising a partially flexible member having one end operatively associated with the upper portion of the receptacle retenion unit: wherein, the support arm unit also has a free end comprising an elongated generally rigid insert element that is adapted to engage



selected interior structural surfaces of the vehicle to provide support and suspension for the cup retention apparatus; wherein the support arm unit comprises: of the support unit is formed integrally with the upper portion of the receptacle retention unit and the lower portion is further provided with a plurality of reduced thickness segments which function as discrete flexible hinged elements; and,

a stiffening unit adapted to engage the flexible portion of the partially flexible member to impart rigidity to said flexible portion.

4,767,093

COPYHOLDER

Hwfa J. Jones, 47 Penkett Road, Wallasey, Wirral, Merseyside, England, assignor to Hwfa John Jones, Wirral; Robert T. Glynn, New Brighton and Joseph Barnes, Wirral, all of, England

Filed Mar. 17, 1987, Ser. No. 26,686
Claims priority, application United Kingdom, Mar. 17, 1986, 8606515
Int. Cl.[4] B41T *29/00*
U.S. Cl. 248—442.2 7 Claims



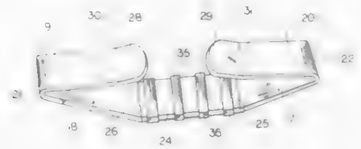
1. A copyholder for supporting at least one paper sheet adjacent an office machine comprising an elongated bladelike body of strip material, said body including first and second arm portions interconnected by a section twisted about the longitudinal axis of said body and configured to establish a preselected angular relationship between said first and second arms portions substantially along the longitudinal axis of said body, attachment means on one of said arm portions engageable with said office machine for securing said copyholder thereto, and holding means on the other of said arm portions for supporting said paper sheet thereon.

4,767,094

BOOK HOLDER

Francis Z. Brown, 254 E. Main St., Los Gatos, Calif. 95030

Filed Apr. 10, 1987, Ser. No. 36,981
Int. Cl.[4] A47B *97/04*
U.S. Cl. 248—448 3 Claims



1. A book holder comprising:

an elongated member with the ends folded back therealong towards each other at an acute angle with the elongated member and along fold lines spaced apart a distance greater than the width of the opened book to form the tabs such that the book can be placed in said holder with the elongated member extending along the back of the book and the pages held between the member and the tabs with the tabs contacting only the outer edges of the pages,

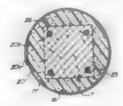
wherein the elongated member is made of a flat planar transparent material, including a non-skid surface on said elongated member.

4,767,095

CONCRETE COLUMN FORM

John M. Fitzgerald, 321 Signe Ct., Lake Bluff, Ill. 60044, and Gary L. Workman, 443 N. Joyce, Lombard, Ill. 60148

Continuation-in-part of Ser. No. 867,947, May 29, 1986, abandoned. This application Oct. 19, 1987, Ser. No. 110,224
Claims priority, application Canada, Dec. 23, 1986, 526198
Int. Cl.[4] E04G *13/02*
U.S. Cl. 249—48 10 Claims



1. A single-use concrete form for molding a concrete column, comprising, in combination, an inner elongate cylindrical member having, in cross section, a circular outer periphery and an internal opening to receive the poured concrete and which has a desired shape for the cross section of the concrete column, and a layer of thin plastic stretch film resiliently stretched at least about 75% of the film's initial length about the inner elongate cylindrical member to place the latter member in compression.

4,767,096

DEVICE FOR CONTROLLING DISPLACEMENT OF A MOVING MEMBER, SUCH AS A FLAP IN AN INSTALLATION FOR HEATING AND VENTILATING OR FOR AIR CONDITIONING A MOTOR VEHICLE

Jean-Francois Bouvot, Dampierre, France, assignor to VALEO, Societe anonyme francaise, Paris, France

Filed Feb. 3, 1987, Ser. No. 10,454
Claims priority, application France, Feb. 4, 1986, 86 01522
The portion of the term of this patent subsequent to May 19, 2004, has been disclaimed.
Int. Cl.[4] F16N *31/124;* F15B *9/10;* F16K *49/00*
U.S. Cl. 251—25 11 Claims



1. A device for controlling displacement of a moving member such as a flap in an installation for heating and ventilating or for air conditioning a motor vehicle, the device comprising slider or rotary knob control means, a fluid distributor actuated by the control means and connected firstly to a source of fluid under pressure and to an exhaust, and secondly to a single-acting actuator in order to connect said actuator to the source of fluid under pressure, to the exhaust, or to isolate it both from the source of fluid under pressure and from the exhaust, motion transmission means for transmitting motion between the actuator, the moving member, and the distributor, said distributor including at least one moving first element displaced by the control means, at least one moving second element displaced by the moving member or by the actuator, and including the improvement whereby it includes at least one fixed third element co-operating with said first and second elements and including means on said third element for providing fluid connection with the source of fluid under pressure, with the exhaust, and with the actuator to provide selective fluid communication between the fluid distributor and the source of fluid under pressure, the exhaust, and the actuator.

4,767,097

STACKED SERVOID ASSEMBLY

William F. Everett, 205 Mt. Vernon Dr., Goshen, Ind. 46526; Richard L. Dalton, Jr., 51040 Northfield Dr., Granger, Ind. 46530, and Randall L. Bixler, 1328 E. LaSalle Ave., South Bend, Ind. 46617, assignors to William F. Everett, Goshen; Richard L. Dalton, Jr., Granger and Randall L. Bixler, South Bend, all of, Ind.

Filed Mar. 27, 1987, Ser. No. 32,050
Int. Cl.[4] F16K *31/06*
U.S. Cl. 251—129.08 9 Claims

1. A valve actuating apparatus having a valve assembly and a proportional solenoid assembly, comprising:

a unitary housing having a fluid inlet, a fluid outlet and a fluid passageway therebetween, said housing also having a bore in communication with said fluid passageway;

said valve assembly being adjustably mounted within said fluid passageway for controlling fluid flow therethrough;

said solenoid assembly being mounted within said bore and having an armature member adjacent said valve assembly in said fluid passageway;

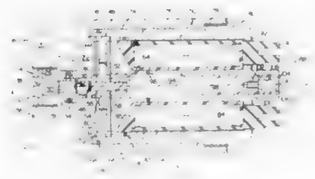
said valve assembly having a valve seat and valve element cooperatively associated therewith for restricting fluid flow past said valve seat, said valve element normally disposed in contact with said armature member;

said armature member including spring biasing means for

VOL 1093 ISS 5 AG 30 1988 UMI

normally retaining said armature member in contact with said valve element;

said spring biasing means being fixedly clamped at one edge with respect to said housing by said solenoid assembly and



being fixedly clamped at another edge with respect to said armature member; and

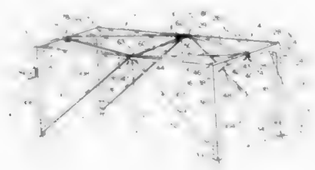
said solenoid assembly being actuatable to move said armature away from said valve element such that increased fluid flow is permitted past said valve seat.

4,767,098

CONTAINER LIFT ASSEMBLY

Douglas W. Stinson, South Langley, Canada, assignor to Stinson Containermate Mfg. Inc., Delta, Canada

Filed Apr. 6, 1987, Ser. No. 35,029
Int. Cl.[4] B66F 7/26
U.S. Cl. 254—45 23 Claims



1. A lift assembly, having a first end and a second end, for handling a container comprising:

(a) a plurality of sub-assemblies, which when connected together, form an open space frame adapted to receive the container wherein each sub-assembly includes a vertical post and a plurality of horizontal members, said post and members each having respective inner and outer ends, all of which intersect at their inner ends to form a rigid corner;

(b) connection means located at the outer ends of each of the horizontal members for hingedly connecting the sub-assemblies together;

(c) link means, connected to the sub-assemblies and adapted to cooperate with the container, for supporting the container above the ground; and

(d) lift means, cooperating with the sub-assemblies, for raising and lowering each sub-assembly, thereby permitting one or more of the sub-assemblies to be raised above the other, thus raising and lowering the container as required.

4,767,099

HOIST SYSTEM

R. Leonard Munks, 1141 W. March Point Rd., Anacortes, Wash. 98221

Filed May 18, 1987, Ser. No. 50,689
Int. Cl.[4] B66D 1/36; A61D 3/00
U.S. Cl. 254—336 3 Claims



1. In combination with an animal sling and an overhead support, a hoist system for lifting the sling and an animal carried therein comprising:

an elongate bar disposed below the overhead support and extending in a generally horizontal direction, said bar having a terminal pulley at at least one end thereof;

at least one intermediate pulley and a housing therefore, said housing being attached to the top side of said bar intermediate the ends thereof, said intermediate pulley housing having cable attachment means thereon;

fastening means connectable to said overhead support, including at least one downwardly extending fastening means pulley and a housing for said fastening means pulley, said housing having a hook at one end thereof for engaging the overhead support;

said hook, housing for fastening means and housing for intermediate pulley being constructed and arranged to lift an animal carried in the sling with the animal being relatively vertically close to the overhead support;

at least one come-along device mounted outboard of said terminal pulley at one end of said bar and extending downwards from said bar, said come-along including a winch drum and a length of cable having one end attached to said winch drum, the other end of said cable being trained, seriatim, over said terminal pulley, said intermediate pulley, said fastening means pulley and secured to said cable attachment means, said come-along being operable to reel in and pay out said cable, thereby to raise and lower said bar relative to the overhead support; and

connecting means for connecting said bar to the sling.

4,767,100

DRILLING RIG WITH HOIST TRANSPORTABLE BY A VEHICLE

Gearld Philpot, 1909 Woodland Dr., Ada, Okla. 74820

Filed Aug. 31, 1981, Ser. No. 298,066
Int. Cl.[4] B66D 1/08
U.S. Cl. 254—386 10 Claims

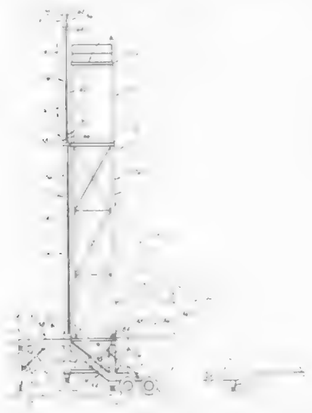
1. A hoist adapted for raising and lowering equipment relative to the ground, the hoist being transportable via a vehicle connected to a trailer having a trailer bed, the hoist comprising:

a base adapted to be supported from the ground;

a first and a second hydraulic cylinder disposed in a spaced apart relationship, each hydraulic cylinder having a cylinder base with opposite ends and a cylinder rod with opposite ends, one end portion of each cylinder rod being reciprocatingly disposed in one end of one of the cylinder bases and the opposite end portion of each cylinder rod extending a distance from the respective cylinder base and terminating with an upper end portion of the cylinder rods, each hydraulic cylinder being adapted for moving the cylinder rod reciprocatingly disposed therein in a raising direction generally away from the base to a raised position wherein the upper end portions of the cylinder rods extend a raised distance above the base and in a lowering direction generally toward the base to a lowered position wherein the upper end portions of the cylinder rods extend a lowered distance from the base, the end of each cylinder base generally opposite the end thereof having the cylinder rod reciprocatingly disposed therein being secured to the base;

means for moveably connecting at least a portion of the base to the trailer, a portion of the base with the first and the second hydraulic cylinders supported thereon being moveable to a transport position wherein the base and the first and the second hydraulic cylinders supported thereon are supported on the trailer bed for transporting the hoist from one location to another location and a portion of the base with the first and the second hydraulic cylinders supported thereon being moveable from the transport position to a working position wherein the base is disposed in a substantially horizontal plane spaced a distance above the ground;

means for supporting the base from the ground in the working position of the base comprising:



a plurality of support jacks, each support jack having one end portion connected to the base and an opposite end portion engageable with the ground, each support jack being moveable to a position wherein one end portion of each support jack engages the ground in the working position of the base for cooperatingly supporting the base for cooperatingly supporting the base in a substantially horizontal plane in the working position of the base, comprising:

a first cylinder support jack connected to the base generally under the first hydraulic cylinder and being adapted to cooperatingly support the base from the ground; and

a second cylinder support jack connected to the base assembly generally under the second hydraulic cylinder and being adapted to cooperatingly support the base from the ground, the first and the second cylinder support jacks cooperating to transmit the load carried by the first and the second hydraulic cylinders to the ground;

a cable assembly having one end portion anchored to the base and an opposite equipment end portion adapted for being attached to the equipment; and

means for movably connecting a portion of the cable assembly to the upper end portions of the cylinder rods of the first and second hydraulic cylinders, the cable assembly extending from the end portion anchored to the base, through the portion moveably connected to the upper end portions of the cylinder rods of the first and second hydraulic cylinders and to the opposite equipment end portion, the equipment end portion being positioned for supporting the equipment a distance above the base in the lowered position of the cylinder rods of the first and second hydraulic cylinders and the equipment end portion being positioned for supporting the equipment a greater distance above the base in the raised position of the cylinder rods of the first and second hydraulic cylinders, the equipment end portion of the cable assembly being moved in the raising direction as the cylinder rods of the first and second hydraulic cylinders are moved in the raising direction and the equipment end portion being moved in the lowering direction as the cylinder rods of the first and second hydraulic cylinders are moved in the lowering direction, the load of the equipment supported on the equipment end portion of the cable assembly being carried through the first and second hydraulic cylinders and through the first and second cylinder support jacks to the ground as the equipment is raised and lowered during the respective moving of the cylinder rods of the first and second hydraulic cylinders to the raised position and to the lowered position.

4,767,101

CABLE PULLEY

Anton Schweinberger, Aschau, Austria, assignor to Innoma Innovation-Marketing Patentverwertungs Ges.m.b.H., Seefeld, Austria

PCT No. PCT/AT86/00015, § 371 Date Oct. 27, 1986, § 102(e) Date Oct. 27, 1986, PCT Pub. No. WO86/04885, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 21, 1986, Ser. No. 928,223
Claims priority, application Austria, Feb. 26, 1985, A567/85
Int. Cl.[4] A62B 1/08; B66D 3/04
U.S. Cl. 254—391 11 Claims



1. A cable pulley arrangement comprising:

a pulley freely rotatably mounted on a suspension device;

a cable passing over the periphery of said pulley and having opposite runs of substantially equal length extending from opposite sides of said pulley, said cable runs having weighted ends;

means for releasably connecting one of said runs to said periphery of said pulley such that rotation of said pulley results in both of said runs being wound in the same direction on said pulley;

VOL 1093 ISS 5 AG 30 1988 UMI

lock means including a member which engages in a hole or recess in said pulley for preventing rotation of said pulley; and

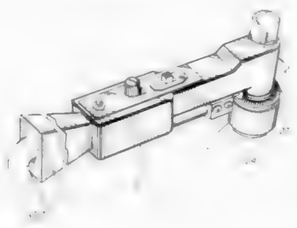
lock release means, operable from a location remote from said pulley, for releasing said lock means such that said pulley is rotatable and thereby for allowing said weighted ends of said cable to unwind said cable from said pulley.

4,767,102

THERMAL CUTTING TORCH

Mario Dubé, La Pocatière, Canada, assignor to Bombardier Inc., Canada

Filed Jan. 5, 1988, Ser. No. 141,084
Int. Cl.[4] B23K *7/10*
U.S. Cl. 266—48 **10 Claims**



1. A thermal cutting torch comprising:

a cutting torch nozzle or tip defining a longitudinal axis, a driving element surrounding said nozzle and drive means for rotating said driving element, said driving element including an annular surface for engagement with a template guide surface to interact therewith and upon rotation of said driving element to displace said nozzle along said template surface.

4,767,103

CONVERTOR PRESSURE CONTROL DEVICE IN A CONVERTOR WASTE GAS DISPOSING DEVICE

Nobuhiro Sakanashi, Fukuoka; Toru Yoshida; Yujiro Ueda, both of Osaka; Katsumi Hachiga, Kanagawa, and Shigeharu Kawai, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan and Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Jan. 27, 1986, Ser. No. 822,597
Claims priority, application Japan, Jan. 28, 1985, 60-12568
Int. Cl.[4] C21C *5/38*
U.S. Cl. 266—80 **6 Claims**



1. A converter pressure control device for use in a converter waste gas disposing device comprising:

means for detecting the difference between the pressure in the converter and atmospheric pressure and for generating a pressure differential signal corresponding thereto;

parameter determining means for calculating a control parameter in accordance with the values of a set of characteristic parameters;

calculating means for setting the values of said characteristic parameters in accordance with said pressure differential signal; and

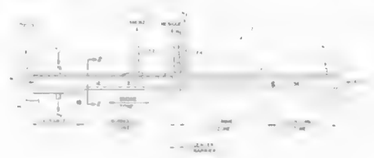
means for controlling the flow rate of waste gas produced in the converter according to said control parameter to establish the pressure in the converter at a selected value whereby the flow rate of waste gas is controlled as a function of the difference between the converter pressure and atmospheric pressure.

4,767,104

NON-PRECIOUS METAL FURNACE WITH INERT GAS FIRING

Boris Plesinger, Scottsdale, Ariz., assignor to Honeywell Bull Inc., Phoenix, Ariz.

Continuation of Ser. No. 796,672, Nov. 6, 1985, abandoned. This application Apr. 2, 1987, Ser. No. 33,869
Int. Cl.[4] C21B *7/22*
U.S. Cl. 266—144 **4 Claims**



1. A furnace for firing substrates on which substrates have been placed a paste, said paste including a non-precious metal and an organic material, said furnace comprising:

a tube shaped furnace enclosure having a definable length and a pair of ends, the interior of the enclosure forming a chamber;

means forming in one end of the enclosure an entrance into the chamber, and means forming in the other end of the enclosure an exit from the chamber, said chamber being defined by a substantially horizontal base wall, first and second substantially vertical side walls and wall means connecting the first and second side walls and forming a roof of the chamber;

means forming a center barrier dividing the chamber into a first zone and a second zone, the first zone being in communication with the entrance to the chamber and the second zone being in communication with the exit, said means forming a center barrier preventing gases from the first zone substantially from entering the second zone;

means for sparging a mixture of an inert gas and oxygen within the burn-out zone, the oxygen supporting first of the organic material of the paste and further wherein said means for sparging provides uniform coverage of the substrates with the mixture of the inert gas and oxygen to reduce disruptive gas flow within the first zone;

means for inserting an inert gas in the second zone in the chamber so that the non-precious metal of the paste is sintered in an inert atmosphere;

first exhaust means being placed in the roof of the furnace in an area of the first zone in which most of the smoke is produced as a result of the burn-out of organic material, for removing said smoke from the first zone;

means for preventing ambient atmosphere from entering the chamber through the entrance, and means for preventing ambient atmosphere from entering the chamber through the exit;

second exhaust means for removing gases from said first zone proximate the means forming a center barrier; and

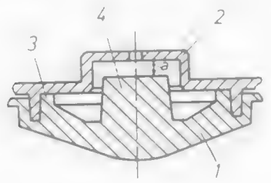
third exhaust means for removing gases from the second zone located proximate the means forming a center barrier.

4,767,105

RESILIENT FOOT FOR CONSUMER-ELECTRONICS EQUIPMENT

Johannes Caspers, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

PCT No. PCT/EP86/00342, § 371 Date Feb. 12, 1987, § 102(e) Date Feb. 12, 1987
PCT Filed Jun. 6, 1986, Ser. No. 25,290
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1985, 3522842
Int. Cl.[4] G11B *33/08*
U.S. Cl. 267—140 **3 Claims**



1. A resilient shock and vibration absorption foot for communications electronics equipment, comprising: a round rubber member with bowl-shaped crosss-section; at least one continuous lip-shaped portion on said member and surrounding said bow-shaped cross-section at an upper edge thereof for securing against said equipment, said lip-shaped portion having a height decreasing under load and changing shape resiliently; a plunger-shaped portion with resiliency and cast on said member and becoming effective after said member has been displaced relative to said equipment through a predetermined distance by an applied load, said plunger-shaped portion having a restoring force equal to the reciprocal of the resiliency of said plunger-shaped portion, said restoring force increasing constantly and substantially linearly with applied load after displacement through said predetermined distance; said foot and equipment having a resonance frequency dependent on the mass of said equipment and said resiliency and remaining substantially constant.

4,767,106

HYDROELASTIC SUPPORT, IN PARTICULAR FOR A VEHICLE ENGINE

Marcel Le Fol, Chateaugiron, France, assignor to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly, both of, France

Filed Feb. 25, 1987, Ser. No. 18,471
Claims priority, application France, Feb. 25, 1986, 86 02581
Int. Cl.[4] F16F *9/10*
U.S. Cl. 267—140.1 **11 Claims**



1. A hydroelastic support comprising a first fixing element and a second fixing element for fixing respectively to two assemblies to be insulated from each other, a mass of elastic material interposed between and separating said two elements and cooperating with said second fixing element to define a work chamber and an expansion chamber which are filled with liquid, and a communication passageway interconnecting said work and expansion chambers, said second fixing element including a housing and a cover which are fixed to each other, said support further comprising an outer armature and an intermediate armature, a single composite main unit including said first fixing element and said mass of elastic material, said mass forming a massive portion having a roughly frustoconical general shape disposed between said first fixing element and said intermediate armature, said mass further forming an annular membrane disposed between said intermediate armature and said outer armature, a peripheral portion of said main unit between said two armatures being gripped between said housing and said cover, said housing defining with said elastic mass said two chambers and said communication passageway, said expansion chamber being disposed annularly around said working chamber.

4,767,107

CENTRAL SUSPENSION HYDROELASTIC MOUNT, IN PARTICULAR FOR THE SUSPENSION OF A MOTOR-VEHICLE MOTOR-DRIVE UNIT

Marcel Le Fol, Chateaugiron, France, assignor to Automobiles Peugeot, Paris and Automobiles Citroen, Neuilly-sur-Seine, both of, France

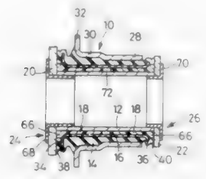
Filed Jan. 28, 1987, Ser. No. 7,475
Claims priority, application France, Jan. 30, 1986, 86 01309
Int. Cl.[4] B60G *11/62;* **F16M** *7/00, 1/02, 5/00*
U.S. Cl. 267—140.1 **7 Claims**



1. A hydroelastic mount for interposition between two units to be insulated from each other, for example a motor-drive unit and a structure of a motor vehicle, said mount comprising two carrying armatures, an elastic mass disposed between said armatures, means including a first elastic wall defining an annular work chamber and means including a second elastic wall defining an annular expansion chamber, a liquid filling said chambers, a communication passageway putting said chambers in communication with each other, the mount defining a central empty space, a connecting rod extending through said empty space for connecting one of said carrying armatures to a unit to which it is connected, an outer armature, an inner armature and an intermediate armature, one of the carrying armatures being directly attached to said intermediate armature to which there is bonded or otherwise adhered the elastic mass between said inner armature and said outer armature, the connecting rod being directly attached to the carrying armature which is directly attached to said intermediate armature, two annular discs separating said chambers, the second elastic wall including an elastic membrane which partly defines said expansion chamber being maintained with said annular discs by a setting operation effected on said inner and outer armatures.

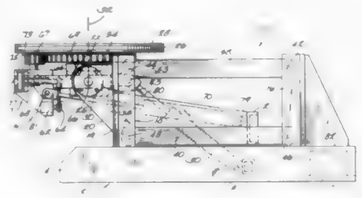
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,108
ELASTIC BUSHING ASSEMBLY
Toru Tanaka, Nagoya; Koji Sawada, Toyota, and Koji Shinohara, Kasugai, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Tokai Rubber Industries, Ltd., both of Aichi, Japan
Filed Jul. 17, 1986, Ser. No. 886,366
Claims priority, application Japan, Jul. 18, 1985, 60-110205[U]
Int. Cl.[4] F16F 15/10; F16C 33/74
U.S. Cl. 267—140.1 10 Claims



1. An elastic bushing assembly comprising:
an outer sleeve;
a rigid sleeve member disposed radially inwardly of said outer sleeve in co-axial relation with said outer sleeve, said rigid sleeve member having a radialy flange which extends radially outwardly from at least one of opposite axial ends of the sleeve member;
an elasic member interposed between said outer sleeve and said rigid sleve member in integrally fixed relation with said outer sleeve and said rigid sleeve member;
an inner sleeve diposed radially inwardly of said rigid sleeve member;
a sliding member interposed between said inner sleeve and said rigid sleeve member and slidable relative to one of siad inner sleeve and said rigid sleeve members, so as to reduce an effect of relative stiff circumferential spring characteristics of said elastic member;
a retainer member located at one of opposite axial ends of asi inner sleeve corresponding to said at least one of opposite axial ends of said rigid sleeve member; and
a sealing rubber member held in pressed abutting contact with an axially outer surface of said radial flange of said rigid sleeve member and a surface of said retainer member which faces said axially outer surface of said radial flange, so as to provide sealing between said retainer member and said rigid sleeve member;
said sealing rubber member comprising an outer annular sealing lip and an inner annular sealing lip spaced radially inwardly from said outer sealing lip in the unloaded condition;
said lips, in the uloaded condition, having diameters which increase in an axially outward direction of said rigid sleeve member away from said radial flange, said outer sealing lip having, in the unloaded condition, a distal end face wghich is tapered such that said distal end face has a diameter which decreased in said axially outward direction;
said outer and inner sealing lips being held under an axial compressive force between the rigid sleeve member and the corresponding retainer member and being elastically compressed radially outwardly and in abutting contact with the retainer member in the loaded condition.

4,767,109
POSITIONING APPARATUS
Milton F. Raketich, 421 Saratoga Ave., Kingsford, Mich. 49801
Filed Mar. 26, 1987, Ser. No. 30,884
Int. Cl.[4] B23Q 1/04
U.S. Cl. 269—61 22 Claims



1. An apparatus for positioning a load or workpiece, said apparatus comprising
a head frame,
a support table mounted on said head frame and including a surface for supporting the load,
means for supporting said head frame for generally vertical movement, said means for supporting said head frame including a first elongated member having a first longitudinal axis, said first member having one end mounted for pivotal movement about a generally horizontal first axis and an opposite end pivotally connected to said head frame for pivotal movement relative thereto about a second axis generally parallel to said first axis and spaced a fixed distance in the direction of said first longitudinal axis from said first axis, and a second elongated member having a second longitudinal axis, said second member extending generally parallel to said first elongated member, and said second elongated member having one end mounted for pivotal movement about a third axis generally parallel to said first axis and spaced from said first axis, and an opposite end pivotally connected to said head frame for pivotal movement relative thereto about a fourth axis generally parallel to said first axis and spaced said fixed distance in the direction of said second longitudinal axis from said third axis,
means for causing pivotal movement of said first member about said first axis,
means for selectively rotating said table relative to said head frame about a rotational axis generally perpendicular to said surface, and
means for selectively pivoting said table relative to said head frame about a pivot axis generally perpendicular to said rotational axis.

4,767,110
SERVO-CLAMPING DEVICE
Tai Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan
Division of Ser. No. 564,319, Dec. 22, 1983, Pat. No. 4,632,375.
This application Dec. 29, 1986, Ser. No. 947,509
Int. Cl.[4] B25B 1/24
U.S. Cl. 269—258 7 Claims

1. In a workbench having a table top adapted to support a workpiece thereon, the table top being formed as an integral vise and including a pair of cooperating elongated vise jaws, a first of which is movable, and means for moving said first vise jaw towards and away from a second vise jaw, the improvement thereupon comprising, in combination, one of said vise jaws having a pair of spaced-apart openings formed therein longitudinally thereof, and the other said vise jaw having at least one opening formed therein longitudinally thereof, each of said openings having a substantially straight edge portion running substantially parallel to the respective vise jaw, each of said openings further having a plurality of longitudinally-spaced cut-outs formed therein opposite to the straight edge portion thereof, and a clamping element associated with each respective opening in each vise jaw, such that at least three clamping elements are provided,
each of the clamping elements having a top portion resting on its respective vise jaw, and each of the clamping elements further having a shank portion extending through its respective opening and adapted to be received within one of the cut-outs therein, each shank portion having an axis which is substantially perpendicular to the plane having an axis which is substantially perpendicular to the plane of the table top, and each clamping element including at least one arcuate convex clamping surface formed thereon and at least one straight edge clamping surface formed thereon, each clamping surface adapted to be selectively clamped against the workpiece.



whereby each of the respective clamping elements may be independently moved out of a respective cut-out, slidably moved along the straight edge portion of its respective opening, and inserted into a different cut-out therein providing longitudinal adjustability of the clamping elements independent of the vise jaws, and whereby the clamping elements may rotate about the respective axes of their shanks providing individual angular adjustability of each respective clamping surface independently of one another and of the vise jaws, and further whereby either the convex or the straight edge clamping surface of each clamping element may be selectively oriented towards the workpiece, such that either the convex clamping surface or the straight edge clamping surface of each clamping element contact a respective portion of the workpiece, thereby clamping the workpiece therebetween.

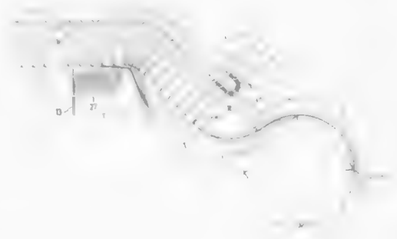
4,767,111
APPARATUS FOR FRAMING GARMENT PORTIONS IN HOOPS
Ruth P. Guenther, 1226 Prairie Dr., Racine, Wis. 53406
Continuation-in-part of Ser. No. 904,667, Sep. 8, 1986, abandoned. This application Nov. 16, 1987, Ser. No. 120,923
Int. Cl.[4] B23Q 3/00
U.S. Cl. 269—303 20 Claims

1. Apparatus for framing target portions of shirt-like garments comprising:
a base;
a workboard extending upwardly from the base at an angle from a proximal end to a distal end, the workboard mounted to the base by mounting means along the proximal end for independent support of the workboard which allows complete clearance all around the workboard from its distal end substantially to its proximal end;
garment-supporting means secured to the workboard at the distal end to simulate human shoulders, including opposed upwardly-converging angled upper edge portions;
a first hoop on the workboard;
an attachment member affixed to the first hoop for removably securing it to the workboard; and
hoop-engagement means on the workboard removably engaging the attachment member to position and secure the first hoop on the workboard at a predetermined position with respect to the shoulder form,



whereby garment hooping can be carried out quickly and accurately with the garment hanging in proper position by applying a mating hoop to the first hoop on an opposite side of the garment.

4,767,112
FOLDED COPY PRODUCT TRANSFER AND TRANSPORT APPARATUS
Ingo Köbler, Anhausen, Fed. Rep. of Germany, assignor to M.A.N. Roland Druckmaschinen, Augsburg, Fed. Rep. of Germany
Filed Feb. 3, 1987, Ser. No. 10,343
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1986, 3603781
Int. Cl.[4] B65H 39/02, 29/04
U.S. Cl. 270—54 10 Claims



1. Folded copy product transfer and transport apparatus to transfer folded copy products (3) at a transfer position or station (7) from a folding apparatus (1, 2, 4), having a feed element, to an endless transport means (8, 10),
said endless transport means (10), comprising
a plurality of gripper arms (9) secured, spaced from each other, to the transport means (10) and projecting laterally therefrom;
gripper elements (11) located on the gripper arms remote from the transport means;
a deflection pulley (26) having the transport means partly looped thereabout located in the vicinity of the transfer position (10) and positioned with respect to the copy products (3) being transferred from the folding apparatus (1, 2, 4) such that the gripper elements (11) describe an arcuate path (11') at a speed which is greater than the linear speed of the transport means,
said gripper elements gripping the folded products (3) at end

VOL 1093 ISS 5 AG 30 1988 UMI

edges for further transport by the transport means at the linear speed thereof;

reception means (**14**, **27**) receiving the transported folded copy products (**3**) from the transport means; and

wherein the feed element of the folding apparatus feeds said folded copy products at a speed which is slightly higher than the linear speed of the gripper elements at the transfer position (**7**) for insertion of the end edges of the folded copy products (**3**) into the gripper elements (**11**).

4,767,113

SHEET FILM FEEDER

Kiyoshi Hasegawa, Ootawara, and Yutaka Seko, Zama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 2, 1986, Ser. No. 936,743
Claims priority, application Japan, Dec. 2, 1985, 60-270901
Int. Cl.⁴ B65H *5/22*
U.S. Cl. 271—3 **9 Claims**



1. A sheet film feeder incorporated in an X-ray photographing apparatus for feeding a sheet film from an unphotographed film housing magazine to a sheet film holder located at a waiting position, said sheet film holder holding the sheet film and being moved between an X-ray photographing position for receiving the sheet film, and said unphotographed film housing magazine being oriented perpendicular to a moving direction of the sheet film holder and housing an unphotographed sheet film, the sheet film feeder comprising:

a suction mechanism having a suction section for sucking and holding the unphotographed sheet film;

transportation means for transporting said suction mechanism between first, second, and third linearly spaced positions, said suction mechanism being transported from the first position to the second position and stopped thereat and the sheet film in said unphotographed film housing magazine being sucked by said suction section while said suction section is at said second position, said suction mechanism then being transported from the second position to the third position and stopped thereat and suction of the sheet film by said suction mechanism being stopped and the sheet film being received by said sheet film holder while said suction section is at said third position, and said suction mechanism then being transported from the third position to the first position and stopped thereat; and

rotation means for orienting said suction mechanism so that said suction section faces the sheet film inside said unphotographed film housing magazine when said suction mechanism is transported from the first position to the second position and stopped thereat, and for rotating said suction mechanism approximately 90° as said suction mechanism is transported from the second position to the third position.

4,767,114

SHEET FEEDER

Kiyoshi Nishimoto, Oume, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 29, 1986, Ser. No. 890,279
Claims priority, application Japan, Jul. 30, 1985, 60-168026; Nov. 29, 1985, 60-268855
Int. Cl.⁴ B65H *29/20*
U.S. Cl. 271—3 **9 Claims**



1. A sheet feeder comprising:

a hopper where sheets to be supplied are stacked;

a feed roller which takes the sheets out of said hopper and transfers them between a print head and a platen;

a pair of a drive roller and a driven roller which rotate in opposite directions and seize the sheets therebetween, at least one of which contacts the printed face of the sheet being made of a material which is hard to be stained by ink when contacted to a printed sheet;

slip preventing means located adjacent the drive roller; and

a stacker which stacks printed sheets,

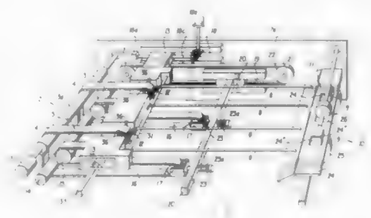
said slip preventing means comprising base means having a diameter which is smaller than that of said drive roller, and deformable means comprising tips projecting from the surface of said drive roller by a short length and bendable in contact with the sheet in a small area, when the sheet is located between said drive roller and said driven roller, whereby said deformable means transfers the sheet forcibly.

4,767,115

ADJUSTABLE ACCUMULATOR FOR PAPER SHEETS

Matthias Garthe, Friedberg, Fed. Rep. of Germany, assignor to Bell & Howell GmbH, Friedberg, Fed. Rep. of Germany

PCT No. PCT/EP86/00414, § 371 Date May 13, 1987, § 102(e) Date May 13, 1987, PCT Pub. No. WO87/00514, PCT Pub. Date Jan. 29, 1987
PCT Filed Jul. 14, 1986, Ser. No. 26,721
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1985, 3525057; Apr. 30, 1986, 3614694
Int. Cl.⁴ B65H *31/20*
U.S. Cl. 271—223 **15 Claims**



1. In an adjustable accumulator for accumulating paper sheets, including a plurality of movable carriages and a plural-

ity of supporting rollers and at least one conveyor belt, at least one of the supporting rollers of which is rotatably mounted on a first movable carriage, said first carriage movable in a direction that is parallel to the direction of conveyance of said paper sheets so that the distance between said first carriage and a stop is variable, the improvement comprising:

at least one additional supporting roller supporting said conveyor belt mounted rotatably on a second movable carriage, said first and second movable carriages being adapted to move in parallel, but opposite directions; and,

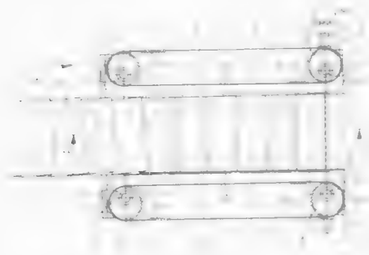
means interconnecting said first and second carriages so that, when said first carriage moves in a way to shorten the distance between said stop and said first carriage, said second carriage moves in a direction parallel, but opposite to, the direction of motion of said first carriage.

4,767,116

PAGE STRAIGHTENER

Jürg Eberle, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Sep. 10, 1986, Ser. No. 905,470
Claims priority, application Switzerland, Nov. 26, 1985, 05041/85
Int. Cl.⁴ B65H *9/00, 9/16, 1/02;* **B65G** *47/26*
U.S. Cl. 271—238 **8 Claims**



1. A method of operating an apparatus for straightening sheet-like articles in a scale stream carried on a conveyor surface moving at a predetermined speed of the type comprising first and second straightening units each comprising an elongated endless belt having a toothed inner surface and a smooth outer surface, and a pair of toothed, spaced pulleys engaging the inner surface of said belt; and means for mounting said straightening units on opposite sides of said conveyor and for driving said pulleys so that the portions of said pulleys engaging said belt and substantially flat portions of said outer surfaces of said belts synchronously translate toward each other and away from each other and toward and away from said scale stream while remaining substantially parallel, comprising

setting the speed of travel of said belts at a speed substantially equal to said predetermined speed of said conveyor when said belts are at their closest points by driving the belts from the same drive as is used to drive the conveyor.

4,767,117

AMUSEMENT RIDE AND GAME

Anthony M. Maio, 2053 Redfern Dr., Indianapolis, Ind. 46227

Continuation-in-part of Ser. No. 669,826, Nov. 9, 1984. This application Aug. 19, 1986, Ser. No. 897,868
Int. Cl.⁴ A63G *1/00*
U.S. Cl. 272—28 R **3 Claims**

1. An amusement ride and game, comprising:

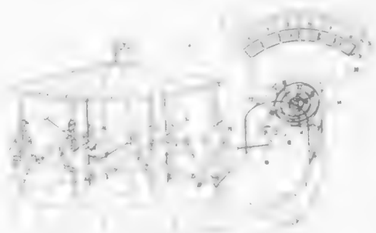
a ramp having a lower end and an elevated end;

a plurality of balls adapted to be rolled on said ramp;

a target associated with and located at the elevated end of said ramp, said target defining a plurality of apertures, each aperture being sized and adapted for receiving therethrough said plurality of balls;

tee means associated with said ramp for providing a ball of said plurality of balls in a teed condition proximate the lower end of said ramp;

a carousel associated with said ramp and having a plurality of player-carrying locations thereon, said carousel being



adapted to rotate about a substantially vertical axis such that each player-carrying location is intermittently rotated into proximity with said tee means; and

a plurality of mallets, one for each player, each mallet being configured to permit a player to strike a teed ball and direct said ball up said ramp toward said target when the player is in proximity to said tee means.

4,767,118

ANKLE EXERCISING DEVICE

Doak Ostergard, Apartment 5, 1842 Knox, Lincoln, Nebr. 68521

Filed Apr. 11, 1986, Ser. No. 850,969
Int. Cl.⁴ A63B *23/04*
U.S. Cl. 272—96 **3 Claims**



1. An ankle exercising device for use in water, comprising,

a support means adapted to be removably secured to a person's foot, said support means having rearward and forward ends, a movement resistance means secured to said support means positioned forwardly of the forward end of said support means for resisting the movement of the person's foot when the foot is immersed in water,

said movement resistance means comprising a plate having top and bottom surfaces, rearward and forward edges, and opposite side edges, and

upstanding wall means secured generally transversely and substantially from side edge to side edge on said plate,

VOL 1093 ISS 5 AG 30 1988 UMI

an elongated member secured to said support means and extending forwardly therefrom,

said movement resistance means being secured to the forward end of said elongated member.

4,767,119

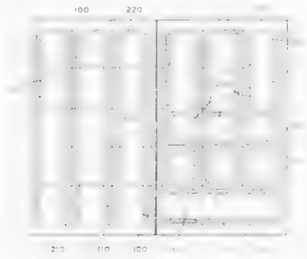
PEELABLY ADHESIVE GAME BOARD

Thomas A. Fadner, 1084-64th St., Apt. #6, LeGrange, Ill. 60525, and Nancy J. Linton, Rte. 1, Box 317, Vulean, Mich. 49892

Filed Dec. 11, 1986, Ser. No. 940,432

Int. Cl.[4] A63F *3/06*

U.S. Cl. 273—148 A **10 Claims**



1. A game board for holding a plurality of game cards fixedly in view of a player, comprising:

a plurality of rigid board elements, foldable together, having hinge means provided therebetween, and printed to illustrate advantageous positioning of game cards on the upper surfaces of said elements; and

a polymeric coating substantially coextensively applied to the printed surfaces of said elements;

said polymeric coating containing materials that adhesively coact with the game cards directly thereby adhering the game cards to the printed surfaces;

said adhesively coacting materials being selected to render the game cards peelably removable together with the adhesiveness that was coactively created, thereby rendering the surface of said board elements substantially unchanged from their original latently coactive adhesive condition and thereby providing multiple peelable affixation and reuse cycles of game cards to said board elements.

4,767,120

MECHANICAL PUZZLE

Thomas V. Ho, 14122 205th Ave. N.E., Woodinville, Wash. 98072

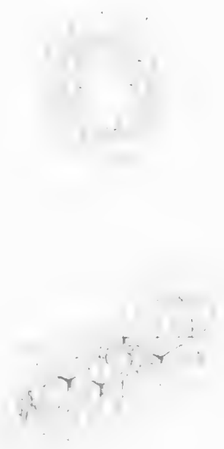
Filed Oct. 21, 1987, Ser. No. 111,815

Int. Cl.[4] A63F *9/08*

U.S. Cl. 273—153 S **11 Claims**

11. A manually operable puzzle, comprising:

an even number of pairs of members, including at least four of said pairs of members, each said member having an arm pivotally connected to an arm of another member for pivotal movement of each of said pivotally connected together members through a common pivot plane, said members of each said member pair further having an end connector positioned generally opposite said arm and rotatably connected to a mating end connector of the other member of said member pair for partial rotational movement of said members of said member pair relative to each other about a common rotational member axis generally parallel to said common pivot plane, each said member further having a pair of oppositely facing outward faces located between said arm and said end connector thereof, each said outward face having a face connector with an element selectively rotatably connected to each said outward face by a mating element connector, said members being selectively pivotable through said common pivot plane to bring selected pairs of said member pairs into position laterally adjacent each other to define a set of four members in a quadrant-like arrangement, one member of said one member pair being positioned laterally adjacent to one member of said other member pair to define one grouping and the other member of said one member pair being positioned laterally adjacent to the other member of said other member pair to define another grouping, one grouping of laterally adjacent members of said set members being selectively rotatable as a unit relative to the other grouping of laterally adjacent members of said set members about said rotational member axis to bring selected outward faces of said one grouping of laterally adjacent members into position in generally coplanar relation with selected outward faces of said other grouping of laterally adjacent members and to interchange connections of said end connectors of said one grouping of laterally adjacent members with said other grouping of laterally adjacent members, said elements connected to said coplanar outward faces of said set members defining one grouping of elements and being selectively rotatable as a unit relative to said coplanar outward faces about a common rotational element axis generally perpendicular to said common pivot plane to bring said one grouping of elements into position adjacent to selected ones of said set members and to interchange connections of said elements connectors of said one grouping of elements with said face connectors of said coplanar outward faces of said set members for connection of said element connector of each of said one grouping of elements with a corresponding face connector of said selected ones of said set members.



4,767,121

APPARATUS FOR SIMULATING PLAY ON A GOLF COURSE OR DRIVING RANGE

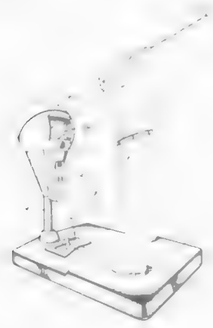
Peter S. Tonner, Saskatoon, Canada, assignor to Joytec Ltd., Saskatoon, Canada

Filed Dec. 3, 1985, Ser. No. 804,168

Claims priority, application United Kingdom, Dec. 5, 1984, 8430859

Int. Cl.[4] A63B *69/36*

U.S. Cl. 273—185 A **19 Claims**



1. A golf simulator comprising:

a movable ball means comprising a stem having a simulated golf ball connected to an outer end thereof,

means supporting said movable ball means for rotation about an axis from a first position to a second position in response to impact between said simulated golf ball and the head of a golf club being swung by a user, a plane of movement being defined by an imaginary plane which is normal to said axis and in which plane the simulated ball is located when in the first position;

at least one of (a) said movable ball means and (b) said means supporting said movable ball means being sufficiently resiliently deformable or deflectable that said simulated golf ball can be momentarily deviated to one side or the other of said plane of movement in response to at least the angle of impact of said club head with the simulated golf ball relative to said plane of movement,

sensor means including a first sensor and a second sensor,

said first sensor including means for sensing movement of the movable ball means away from the first position,

said second sensor including means for sensing impact thereon of the movable ball means on arrival at the second position and any deviation of the simulated golf ball from the plane of movement,

and means for computing distance and direction of ball travel from outputs of the first and second sensors.

4,767,122

THREE-DIMENSIONAL THERMAL TARGET SIMULATOR AND METHOD OF MAKING SAME

Gerald A. Rusche, Fairfax City, Va. 22030, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 25, 1987, Ser. No. 101,308

Int. Cl.[4] F41J *1/00*

U.S. Cl. 273—348.1 **6 Claims**

1. A thermal target simulator system including:

a thermal or visible simulator of said target including:

a scale model of said target;

thermographs of said target affixed to said model and having some regions opaque to visible light and other translucent thereto in correspondence to thermally emissive portions of said target;

a plurality of visible light sources in said model corresponding to said thermally emissive portions of said target and selectively variable in intensity, and wherein each source is placed with respect to said thermographs and baffled in accordance with the radiation pattern of the thermally emissive portion to which it corresponds;

a first filter material covering said thermographs and which transmits only a predetermined wavelength or band of wavelengths of said sources,

a visible-light television camera for observing said simulator and providing an output video signal;



a television receiver for receiving said signal and displaying a visible image of said target;

a second filter material interposable between said camera and said simulator and which is essentially opaque to said predetermined wavelength or band of wavelengths of said sources, whereby said simulator may be viewed as a simulated thermal target by said television camera in the absence of said second filter material, and by ambient light as a visible-light simulated target when said second filter material is interposed between said camera and said simulator.

4,767,123

DUAL RING PISTON-RING SYSTEM WITH SPRING RING BIAS MEANS

Gerhard Kiese, Cologne, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 28, 1986, Ser. No. 901,018

Claims priority, application European Pat. Off., Sep. 2, 1985, 85111059.3

Int. Cl.[4] F16J *9/06, 9/16*

U.S. Cl. 277—139 **20 Claims**



1. A piston-ring system, comprising:

two, equal-radius, coaxial, axially-contiguous sealing rings, each ring having a split circumferentially offset from the split in the other ring, each split being substantially Z-shaped in a plane normal to the axis of the rings to have a substantially-circumferential, overlappable middle portion; and

means for urging each ring at least at the middle portion of its split radially.

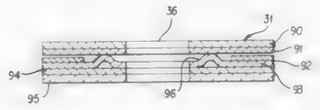
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,124

GASKET FOR AN INTERNAL COMBUSTION ENGINE

Tsunekazu Udagawa, Ichikawa, Japan, assignor to Ishikawa Gasket Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 936,866, Dec. 2, 1986, Pat. No. 4,711,456. This application Nov. 17, 1987, Ser. No. 121,440
Claims priority, application Japan, Jul. 29, 1986, 61-116114
Int. Cl.[4] F16J *15/12*
U.S. Cl. 277—235 B 14 Claims



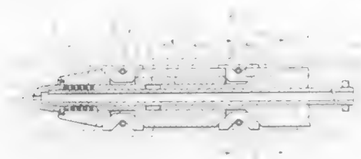
1. A gasket for an internal combustion engine with a plurality of through holes therein, comprising:
a main seal member formed of a plurality of steel plates stacked together, each steel plate having a plurality of openings corresponding to the through holes of the engine, said openings being slightly larger than the through holes, and at least one communicating portion situated between the adjacent two openings for providing communication between the two openings,
a sealing device having a plurality of cylindrical portions to be situated in the openings of the main seal member, and at least one intermediate portion to be situated in the communicating portion of the main seal member, said cylindrical portions and intermediate portion being connected together, and
means for substantially covering the sealing device and securely connecting the same to the main seal member.

4,767,125

EXPANSION CHUCK

Denis E. Barry, Worthington, and Jerry J. Miller, Whitehall, both of Ohio, assignors to Owens-Illinois Television Products Inc., Toledo, Ohio

Filed Jun. 25, 1986, Ser. No. 878,545
Int. Cl.[4] B23B *31/40*
U.S. Cl. 279—2 R 7 Claims



1. A chuck for grasping the interior of an elongate tube that has an axis of symmetry, said chuck including an actuating member positioned along the axial extent of said chuck, a support member that telescopes over at least a portion of said actuating member, a tubular spacer in telescopic arrangement with said actuating and said support members, an apertured collet positioned exteriorly of and in sliding arrangement with one end of said spacer, coupling means between the end of said actuating member and said collet, spring means positioned between the end of said actuating member and one end of said spacer, said collet, spacer, and support member each having cam surfaces thereon, a first circumferentially spaced array of segmented expansion inserts positioned around said spacer and in contact with the cam surfaces of said collet and said spacer, a second circumferentially spaced array of segmented expansion inserts positioned around said support member and in contact with the cam surfaces of said spacer and said support member, key means in contact with some of said inserts to prevent their rotation about the axis of the chuck, and resilient constriction means circumscribing each array of inserts to urge them in a radially inward direction.

4,767,126

MOTOR VEHICLE WITH A PNEUMATIC LEVELING UNIT

Wilhelm Bois, Schulstr. 2, 8074 Gaimersheim; Georg Sterler, Mozartstr. 20, 8071 Grobmehring, and Martin Dengler, Waldweg 3, 8079 Tauberfeld, all of Fed. Rep. of Germany

Filed Jan. 15, 1987, Ser. No. 3,522
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1986, 3601176
Int. Cl.[4] B62D *37/00*
U.S. Cl. 280—6 R 7 Claims



1. A motor vehicle comprising:
an internal combustion engine for providing power to said vehicle;
a pneumatic leveling unit;
an electrically operated compressor for energizing the leveling unit;
a trunk compartment with trunk lid;
a controller for controlling the operation of the compressor;
a trunk switch operable by said trunk lid;
said controller being electrically connected to said switch, said controller operating said compressor upon actuation of said trunk switch with the internal combustion engine not running and when a minimum level limit value is reached or exceeded, said controller operating said compressor so long as the trunk lid is open and the minimum limit value has not been exceeded.

4,767,127

ROLLER SKATE WITH A BINDING STRAP FITTING FROM THE REAR

Oliviero Olivieri, Montebelluna, Italy, assignor to Icaro Olivier & C. S.p.A., Montebelluna, Italy

Filed Jul. 2, 1986, Ser. No. 881,317
Claims priority, application Italy, Jul. 2, 1985, 21397 A/85
The portion of the term of this patent subsequent to Jan. 12, 2005, has been disclaimed.
Int. Cl.[4] A63C *1/18*
U.S. Cl. 280—11.33 15 Claims

1. A roller skate with a binding device for releasably securing a shod foot to a skate frame comprising:
slide means movable guided on said frame for sliding movement in a longitudinal direction thereof,
a strap disposed arcuately across said frame with the end portions thereof disposed adjacent said slide means on opposite sides thereof, respectively,
guide means on said frame for engaging said strap to prevent displacement of the strap ends in said longitudinal direction,
tensioning means for applying a reversible force to said strap ends for moving said strap into an out of a tensioned engagement with a shod foot and releasable locking means for maintaining the tensioned engagement of said strap with a shod foot,

said tensioning means including at least one cam guide formed on said slide means and at least one counter guide



complementary to said cam guide formed on at least one strap end in engagement with said at least one cam guide.

4,767,128

WHEELBARROW CONSTRUCTION

John J. Terhune, Cochise County, Ariz., assignor to T. Entrepreneur, Inc., Sierra Vista, Ariz.

Filed Jul. 27, 1987, Ser. No. 78,136
Int. Cl.[4] B62B *1/18, 1/24, 3/12*
U.S. Cl. 280—47.2 7 Claims



1. An improved wheelbarrow construction comprising:
a receptacle unit including an enlarged receptacle body;
a main load support unit operatively connected to said receptacle unit, and a first frame member having a pair of rearwardly extending support arms each provided with adjustable handle means;
a forward wheel assembly operatively connected to said main support unit;
a rear wheel trailer unit comprising a second frame member pivotally secured on one end to the main load support unit and provided on the other end with a pair of wheel assemblies; wherein each of said pair of wheel assemblies comprise: a caster wheel and axle operatively connected to a wheel support bracket having a hollow tubular caster swivel projecting upwardly therefrom;
an automatic brake unit associated with each of the said pair of wheel assemblies, and comprising an elongated brake plunger element including an elongated plunger shaft mounted for reciprocation within the hollow tubular caster shafts of said wheel assemblies, secured on one end to said first frame member; and provided on the other end with an enlarged brake pad, which is adapted to releasably engage the pair of wheel assemblies, wherein the automatic brake unit is disposed intermediate the main load support unit and the rear wheel trailer unit wherein, said first and second frame members comprise generally U-shaped frame members, wherein the pair of rearwardly extending support arms have outboard ends and a cross-piece element that extends between said outboard ends, and the second frame member is provided with a pair of forwardly extending support arms; and
a brake override means disposed intermediate the main load support unit and the rear wheel trailer unit, whereby the brake override means is adapted to hold the said elongated brake plunger element out of engagement with said pair of wheel assemblies to temperarily disable said automatic brake unit.

4,767,129

ACTUATOR FOR STEERING THE REAR WHEELS IN FRONT AND REAR WHEEL STEERING DEVICE FOR VEHICLE

Yoshimichi Kawamoto; Yoshimi Furukawa; Tetsuro Hamada, and Mitsuya Serizawa, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1986, Ser. No. 821,998
Claims priority, application Japan, Jan. 24, 1985, 60-011832; Jan. 24, 1985, 60-011833
Int. Cl.[4] B62D *9/00*
U.S. Cl. 280—91 3 Claims



1. An actuator for controlling a steering angle of rear wheels relative to front wheels in a front and rear wheel steering device for a vehicle which variably controls the steering angle of the rear wheels according to certain conditions, comprising:
drive means, drive force transmitting means for transmitting the drive force of the drive means to tie rods of the rear wheels for directly steering the rear wheels with the drive force, and control means for controlling the motion of the drive means in such a manner that the rear wheels are steered according to the certain conditions,
the drive force transmitting means comprising a mechanical element which transmits the drive force of the drive means to the rear wheels but frictionally prevents any external force acting on the rear wheels from being transmitted to the drive means.

4,767,130

FOLDABLE PEDICAB

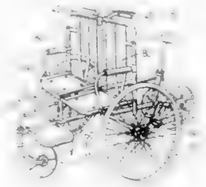
Wang Fu-Chao, 3rd Fl., No. 31, Chao Chou St., Taipei, Taiwan

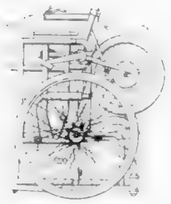
Filed Oct. 23, 1987, Ser. No. 112,818
Int. Cl.[4] A61G *5/00;* B62K *17/00*
U.S. Cl. 280—202 14 Claims

1. A foldable pedicab comprising:
a foldable assembly including:
a main frame,
two back frames, each connected hingedly to and above a tail end portion of said main frame, rotatable about a respective longitudinal axis to overlap each other so that they can be generally aligned with said main frame when said pedicab is folded,
two seat frames each normally connected hingedly to a lower end portion of said corresponding back frame and rotatable about a horizontal axis to overlap a side of said corresponding back frame when said pedicab is folded,
two armrest members each normally connected rotatably to an outer side of said corresponding back frame and rotatable about an axis to overlap opposite side of said corresponding back frame when said pedicab is folded,
a seat frame lock mechanism locking releasably said seat frames on said main frame,

VOL 1093 ISS 5 AG 30 1988 UMI

two armrest member lock mechanisms respectively locking releasably said armrest members on said seat frames,
two footrests each normally connected hingedly to a leading end portion of said main frame and rotatable about a horizontal axis to a generally vertical position when said pedicab is folded, and
two wheel shafts fixed on opposite sides of said foldable assembly;
two quick-release lock mechanisms;
two main wheels respectively connected removably and rotatably to an outer end of said corresponding wheel shaft by said quick-release lock mechanisms;

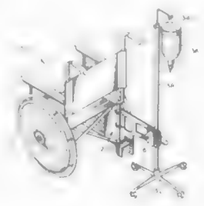




a swing wheel connected removably to another leading end portion of said main frame;
means for attaching said swing wheel to said foldable assembly when said pedicab is folded; and
means for attaching said main wheels to said foldable assembly when said pedicab is folded;
whereby, said foldable assembly can be folded into a compact portable unit which is subsequently connected between said main wheels, so that at least part of said compact portable unit does not extend out of said main wheels, thereby forming a wheeled small unit which can be conveniently pushed along the ground by hand.

4,767,131
UTILITY CLAMP
Thomas W. Springer, Landenberg; Raymond L. Slavinski, Birchrunville, and Ronald H. Laird, Lincoln University, all of Pa., assignors to SLS Products, Inc., Avondale, Pa.
Filed Apr. 21, 1987, Ser. No. 40,888
Int. Cl.[4] A47C *7/62*
U.S. Cl. 280—289 WC **8 Claims**

1. A clamp for attaching a utility pole having a wheeled leg to a patient transportation vehicle such that the pole and the vehicle are moveable in tandem when so attached, the clamp comprising:
mounting means for attaching the clamp to the vehicle, the mounting means having a pocket for enclosing the utility pole;
a cam rotatably mounted to the mounting means in cooperative relationship to the pocket such that the cam is rotatable from an open position in which the cam does not substantially restrict access to the pocket, and a closed position in which the pocket is substantially closed by the cam; and



leg guide means attached to said mounting means such that the wheeled leg of a utility pole is contained within the leg guide means when the utility pole is attached to the clamp.

4,767,132
ENCLOSED TRAILER FOR BOATS
W. Burl Avery, P.O. Box 256, Onalaska, Tex. 77360
Filed Aug. 31, 1987, Ser. No. 91,117
Int. Cl.[4] B60P *3/10*
U.S. Cl. 280—414.1 **8 Claims**



1. A boat trailer comprising:
a frame supporting a road wheel assembly and, at the forward end thereof, a trailer hitch;
a floor supported on said frame, said floor including a panel section extending forwardly from the rear end of said frame and symmetric about the longitudinal centerline thereof, means for moving said panel section between a rear position providing a closed floor and a forward position providing an opening in the floor at the rear of said trailer;
boat hull cradling means mounted on said floor and extending forwardly of said opening;
side and front walls extending upwardly from said frame;
a top wall spanning said side and front walls, said top wall including a forward, fixed section and a rear section longitudinally slidable between a rear position closing the top of said trailer and a forward position fully opening the rear portion of said trailer; and
a rear door constituting the back wall of said trailer.

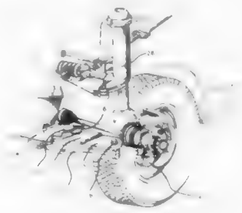
4,767,133
SUSPENSION MEANS FOR SMALL VEHICLES
Yoshitake Yamada, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Mar. 13, 1987, Ser. No. 25,406
Claims priority, application Japan, Mar. 14, 1986, 61-56410
Int. Cl.[4] B60G *11/22*
U.S. Cl. 280—716 **9 Claims**

1. A suspension system for a vehicle comprising a frame assembly, a suspension arm adapted to journal a wheel at one end thereof and being pivotally suspended upon said frame assembly at a pivot point spaced from said one end, an elastic block interposed between said frame assembly and said suspension arm contiguous to said pivot point and positioned to be engaged and deflected upon pivotal movement of said suspension arm for resiliently resisting said pivotal movement, said elastic block and said suspension arm being configured to present a progressively greater contact area upon increased



pivotal movement of said arm for progressively increasing the resistance to continued pivotal movement.

4,767,134
VEHICLE SUSPENSION SYSTEM WITH MULTIPLE OVERLAPPING COMPOSITE CONTROL ARM ELEMENTS
Benjamin V. Booher, 1721 Aldersgate, Leucadia, Calif. 92024
Continuation-in-part of Ser. No. 835,187, Mar. 3, 1986, abandoned, which is a continuation-in-part of Ser. No. 717,791, Mar. 29, 1985, abandoned, which is a continuation of Ser. No. 525,011, Aug. 22, 1983, Pat. No. 4,509,774. This application Mar. 9, 1987, Ser. No. 23,674
Int. Cl.[4] B60G *21/04*
U.S. Cl. 280—719 **20 Claims**



11. A cantilevered control arm assembly for a vehicle suspension system comprising:
an elongate flexible composite primary control arm element made of resin-impregnated glass fibers and having an inner end and an outer end;
an elongate flexible composite secondary control arm element made of resin-impregnated glass fibers and having an inner end and an outer end and a length less than that of the primary control arm element;
means for rigidity mounting the inner end of each of the primary and secondary control arm elements to a corresponding side of a vehicle frame for extending outward along an axis transverse to and substantially normal to a longitudinal axis of the frame for defining cantilevered control arms and for enabling controlled and guided upward and downward flexing of the control arm elements along their respective lengths;
a wheel hub assembly mounted to the outer end of the primary control arm element; and
shock absorber means connected between the wheel hub assemblies and the vehicle frame.

4,767,135
SCREW-TYPE CONDUIT FITTING
Hermann Holzmann, Salzäckerstrasse 59, D-7000 Stuttgart 60, Fed. Rep. of Germany
Filed Jan. 29, 1987, Ser. No. 8,317
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1986, 3604214
Int. Cl.[4] F16L *21/04*
U.S. Cl. 285—27 **8 Claims**



1. A screw-type connection for a cable and the like comprising an intermediate connector having an opening therethrough, and a plurality of circumferentially spaced clamping tongues about said opening and movable toward the center of said opening; a sealing member having a cable receiving passage therein in said opening adjacent said clamping tongues, a clamp nut having a surface adapted to engage said clamping tongues to move said tongues inwardly to press said sealing member against a cable received therethrough, said cap nut and intermediate connector having walls and complimentary formed threaded portions on said cap nut and said intermediate connector walls engageable with each other to connect together said cap nut and said intermediate member, whereby relative rotation therebetween causes said surface to engage and move said tongues, characterized in that flexible and resilient locking means extends radially from a wall of one of said cap and said connector, said locking means being positioned in advance of and immediately adjacent to said threaded portion and engageable with the threaded portion of the other of said connector and cap nut, whereby said locking means is initially deflected upon axial movement between said cap nut and said connector to permit engagement with the threads when said locking means returns to its normal position so that said nut and connector are initially connected by a pressing operation prior to said threaded connection.

4,767,136
TIGHT COUPLING DEVICE FOR TWO RIGID, FIXED PIPES
Jean Lehmann, Antony, France, assignor to Cogema, Compagnie Generale des Matieres Nucleaires, Velizy Villacoublay, France
Filed Jun. 18, 1987, Ser. No. 63,435
Claims priority, application France, Jun. 18, 1986, 86 08803
Int. Cl.[4] F16L *15/02*
U.S. Cl. 285—32 **10 Claims**

1. A device for the tight coupling of two rigid, fixed pipes, whereof the axes can suffer from alignment deficiencies, wherein it comprises two first flanges integral with the ends of said pipes, each of these flanges having an end surface and a bearing surface oriented in opposite directions with respect to said end surface; two coaxial tubular parts, one cylindrical end of a first of these parts being slidingly received in a threaded end of the second part, each of these parts having at its opposite end a second flange having an end surface which can be positioned facing the end surface of one of the first flanges, one of the end surfaces facing the first and second flanges being a spherical surface and the other surface being planar; two first O-rings placed between the facing end surfaces of the first and second flanges; retaining nuts for the O-rings screwed onto two threads respectively formed on said parts, in the vicinity of

VOL 1093 ISS 5 AG 30 1988 UMI

the second flange, each nut having a bearing surface able to come into contact with the bearing surface of the first flange; a tight coupling nut between said parts and screwed onto the threaded end of the second part; and a third O-ring, placed



around the cylindrical end of the first part, between two facing conical surfaces respectively formed at the end of the second part and on the coupling nut, the distance between said conical surfaces increasing radially inwards.

4,767,137

TUBE CONNECTING DEVICE

Hans Zinner, Dachau, and Hans Kaupp, Aichach-Klingen, both of Fed. Rep. of Germany, assignors to MTU MOTOREN-und Turbinen Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Mar. 18, 1987, Ser. No. 27,244
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610553; Oct. 7, 1986, 3634113
Int. Cl.[4] F16L *19/02*
U.S. Cl. 285—325 11 Claims



1. A tube connecting device for tubes having a central axis which tubes communicate at connecting tube ends and are coupled together by flanges in a fluid-tight manner, comprising:
- a first said tube end having a frame that is open on only one side, said frame having a circumferential groove;
- a second said tube end having a circumferential flange that is received in said circumferential groove;
- said circumferential flange having radial outer end faces substantially parallel to said axis;
- strip means for covering said open side of said frame and clamping said frame and said flange; and
- cord-like sealing means between radial outer end faces of said flange and corresponding matching faces of said frame and said strip means.

4,767,138

HUBLESS FLANGE

Paul J. Schafbuch, Melbourne, Iowa, assignor to Fisher Controls International, Inc., Marshalltown, Iowa

Continuation of Ser. No. 714,973, Mar. 22, 1985, abandoned, which is a continuation of Ser. No. 373,330, Apr. 23, 1982, abandoned. This application Aug. 2, 1985, Ser. No. 762,033
Int. Cl.[4] F16L *19/02*
U.S. Cl. 285—368 13 Claims



1. A hubless flange, that in use does not bear directly on a pipe and does not contact a mating mounting flange or surface of a pipe, having a central opening and an outer periphery, said hubless flange for use with a valve body or the like and having means for engaging the valve body or the like and having a substantially trapezoidal cross section, defined by two tapered sides, that increases as a function of distance from the center of the flange such that the tangential strain generated by forces acting on the flange parallel to the valve body or the like for displaced annular fibers of said flange is substantially equalized.

4,767,139

LATCH ASSEMBLY FOR RECREATIONAL VEHICLE DOORS

Ronald J. Hansing, Niles, Mich., assignor to Philips Industries Inc., Dayton, Ohio

Filed Nov. 16, 1987, Ser. No. 121,751
Int. Cl.[4] E05C *7/02*
U.S. Cl. 292—162 6 Claims



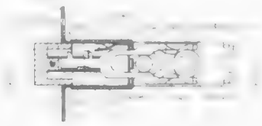
1. A latch assembly specifically adapted for use with the closure doors of a recreational vehicle in which a screen door is hinged about an axis in common with an outer vehicle closure door, and in which the screen door may be operated independently of the closure door or stored for movement concurrently with the closure door, comprising:
- a latch bolt,
- means adapted for mounting said latch bolt on a vertical stile of such a screen door,
- said latch bolt having an outer end engageable with a keeper plate on such a recreational vehicle in an extended position of said bolt,
- said latch bolt being movable to a retracted position clear of the keeper plate,
- spring means urging said bolt into said extended position,
- a latch bolt retainer,
- means adapted for mounting said retainer on such an outer closure door,
- said retainer having latch bolt-engaging portions which are proportional to engage said latch bolt when a closure door on which it is mounted is closed against such a screen door and operable to retract said bolt against said spring means to said retracted position,
- means on said latch bolt retainer capturing said latch bolt within said retainer in said retracted position, and
- said latch bolt being manually movable for disengagement from said retainer by retraction movement of said bolt against said spring means.

4,767,140

TUBULAR LOCK WITH AN ADJUSTABLE DEVICE FOR TWO-SIZE SETTING

Jui C. Lin, 297, Bor Ay Rd., Kaohsiung City, Taiwan 800

Filed Mar. 4, 1987, Ser. No. 21,676
Int. Cl.[4] E05B *9/00*
U.S. Cl. 292—337 5 Claims



1. A tubular lock with an adjustable device for two-size setting comprising,
- an inside cylinder having a U-shaped slot for a projected detent to fit and move in between front and back limbs of the slot, a hole at the bottom for moving parts to penetrate through, a notch at the bottom edge for an anti-burglar piece to be lodged in, and a faceplate to cover a dead bolt set therein,
- an outside cylinder having a projected detent to fit in said U-shaped slot of the inside cylinder, a bottom hole for fixing plates to be connected therewith, and two protrusions at the bottom for keeping said fixing plates separated at a certain distance therebetween,
- a dead bolt set consisting of a location tube which is combined with a dead bolt with a pin and has a further U-shaped slot disposed lengthwise with front and rear limbs and a vertical wall standing up adjacent the rear limb of said further U-shaped slot, a connecting tube which is placed lengthwise inside said location tube and has a groove for a hook of a moving plate to fit in, the moving plate having teeth for fitting in said further U-shaped slot, and an anti-burglar both beside said dead bolt for hooking up with an anti-burglar plate on which there is an anti-burglar piece pressed down by a plate spring,
- an operating assembly consisting of two fixing plates which are to be fixed steady at two walls of the bottom hole of the outside cylinder and have a round hole for combining with a revolving post with protrusions which can move the moving plate having teeth which can fit in the further U-shaped slot, and
- the lock having the characteristic that turning the outside cylinder can make the projected detent move along in the U-shaped slot of the inside cylinder between the respective front and back limbs and at the same time can move the teeth of the moving plate to enter the respective limbs of the further U-shaped slot of the location tube so as to change the lock size.

4,767,141

CRUMB SHOVEL

Arthur T. Martin, 7370 Dowdy St., Gilroy, Calif. 95020

Filed Jul. 10, 1987, Ser. No. 71,932
Int. Cl.[4] A01B *1/02, 1/22*
U.S. Cl. 294—50 3 Claims



1. A crumb shovel for removing spoil, gravel or soil from within deep trenches or the like, comprising;
- an elongated handle provided with a hollow core and having first and second ends,
- a cylindrical scoop attached substantially perpendicularly to said handle first end,
- dumping means operable to expel spoil from within said scoop,
- an uppermost, rearwardly facing arm fixedly attached to said handle second end,
- a forwardly facing arm fixedly attached to said handle below said uppermost arm, a lever mounted adjacent said forwardly facing arm,
- a rearwardly facing arm attached to said handle beneath said forwardly facing arm, releasable fastening means attaching said rearwardly facing arm to said handle to allow selective vertical positioning along said handle,
- said dumping means including a rectilinearly displaceable plate within said scoop, spring means within said scoop normally urging said plate to expel spoil from within the scoop, catch means operable to retain said spring means and plate in a retracted position within said scoop, and an actuating element within said handle core joining said lever and catch means, whereby
- manipulation of said lever actuates said catch means to release said spring means and plate to expel spoil from said scoop.

4,767,142

FORCEPS FOR SEMICONDUCTOR SILICON WAFER

Kiyoshi Takahashi, 17-25, Hirai 7-Chome, Edogawa-ku, and Kazuo Takahashi, 17-3, Higashi Kasai 2-Chome, Edogawa-Ku, both of Tokyo, Japan

Filed Mar. 25, 1987, Ser. No. 30,061
Claims priority, application Japan, Aug. 1, 1986, 61-181474
Int. Cl.[4] B25B *11/00;* B25J *15/06;* H01L *21/68*
U.S. Cl. 294—64.1 16 Claims



1. A vacuum-forceps comprising: a forceps body including first and second suction passages which coordinate with each

VOL 1093 ISS 5 AG 30 1988 UMI

other in a longitudinal directon and a valve chamber so disposed as to intersect said two suction passages, said forceps body being composed of anticorrosive material having a relatively low hardness;

a valve member formed of an anticorrosive material having a comparatively high hardness, said valve member being accommodated in said valve chamber;

a biasing means for biasing said valve member in one intersecting direction to maintain said valve member in a first terminal position;

an operating means for operating said valve member in a direction opposite the one intersecting direction to move said valve member to a second terminal position opposite to the first terminal position, resisting the biasing force of said biasing means; and

a communicating means for causing said first and second suction passages to communicate with each other only when said valve member is in one of the first terminal position and the second terminal position, said communicating means being provided in said valve member;

wherein an adsorptive member is connected to said first suction passage, and a suction tube for linking to a vacuum source is connected to said second suction passage wherein the forceps body includes a bypass between said valve chamber and said first suction passage for causing said first suction passage to communicate with the atmosphere when said valve member is situated in a closing position constituted by one of the first terminal position and the second terminal position where communication between said first suction passage and said second passage is shut off; and for shutting off the communication between said first suction passage and the atmosphere by closing said bypass with a side surface of said valve member when said valve member is situated in an open position constituted by the other of the first terminal position and the second terminal position where said first suction passage is allowed to communicate with said second suction passage.

4,767,143

ROBOT HAND

Leroy D. Michael, and Michael W. Green, both of King County, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 24, 1987, Ser. No. 17,449

Int. Cl.[4] B23Q *1/04;* B66C *1/02*

U.S. Cl. 294—65 16 Claims



1. An apparatus for grasping an object having a substantially planar face, comprising:

a base;

a plurality of arms extending outwardly from said base, said arms each having an inner and an outer end, each of said arms pivotably mounted on said base for rotation about an axis adjacent the inner end for rotating each said arm through an arc of a selected angle;

a plurality of vacuum cups, one of said cups being supported on each of said arms, each of said cups being oriented in the same direction and being radially movable relative to and along said pivotable arms to selected contact positions relative to the planar face of the object to be grasped;

a plurality of pivotal drive means, each of said pivotal drive means for pivoting a corresponding one of said arms;

a plurality of radial drive means, each of said radial drive means for moving a corresponding one of said cups relative to and along the length of said arms;

vacuum means for applying a vacuum to said plurality of vacuum cups; and

means for energizing said pivotal drive means, said radial drive means and said vacuum means whereby said vacuum cups are moved to said selected contact positions to grasp the object at spaced locations on the planar face of the object.

4,767,144

HOOK ASSEMBLY

Gunnar Hörnberg, Härdarvägen 20, S-730 60 Ramnäs, Sweden

PCT No. PCT/SE86/00252, § 371 Date Feb. 5, 1987, § 102(e) Date Feb. 5, 1987, PCT Pub. No. WO86/07582, PCT Pub. Date Dec. 31, 1986

PCT Filed May 30, 1986, Ser. No. 30,840

Claims priority, application Sweden, Jun. 19, 1985, 8503067

Int. Cl.[4] B66C *1/38;* A44B *13/00*

U.S. Cl. 294—82.36 18 Claims



1. A hook assembly comprising a lifting eye bolt (2) and a hook (4) mounted at opposite ends of a body (3), a combined latch-ejector unit (31) rotatably disposed on the hook (4) for adjustment between a first position in which the hook opening is closed and a second position in which the hook opening is uncovered and for releasing a load attached to the hook and an operating device (24, 30) for adjustment of the latch-ejector unit between the first and second positions, the hook (4) being firmly mounted at the lower end of the body (3) and the lifting eye bolt (2) being mounted in the upper end of the body (3) for limited movement towards and away from the hook (4), at least one energyaccumulating member (15) being operatively inserted between the body (3) and the lifting eye bolt (2) for storing energy therein during the movement of the lifting eye bolt (2) away from the hook when the hook assembly (1) is exposed to load, a locking and transmitting link System (12, 18, 19, 20, 21, 22) being provided for transmitting, upon relief of the load from the hook assembly after a preceding loading, the energy stored in the energyaccumulating member (15) to the operating device (24, 30) of the latch-ejector unit (31) for automatic adjustment of the latch ejector unit between the first and second positions thereof, and a damper (16) operatively inserted between the body (3) and the lifting eye bolt (2) to

delay, upon relief of the load from the hook assembly (1), the transmission of the accumulated energy of the energy-accumulating member (15) to the operating device (24, 30) of the latch-ejector unit (31) via the locking and transmitting link system (12, 18, 19, 20, 21, 22).

4,767,145

RUNNING AND PULLING TOOL

Roy P. Bullard, Grand Prairie, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 6, 1986, Ser. No. 916,024

Int. Cl.[4] E21B *23/00*

U.S. Cl. 294—86.18 14 Claims



13. A tool for releasably engaging an internal fishing neck comprising:

(a) an elongate mandrel;

(b) means slidably mounted on said mandrel for engaging and releasing the fishing neck including,

(i) a housing having an internal shoulder releasably positioned on said mandrel,

(ii) a skirt having an internal shoulder threadedly connected on said housing, and

(iii) at least two dogs slidably mounted in said skirt and extending therefrom, each said dog having an upper external shoulder and a lower lug engageable in an internal fishing neck,

(iv) releasable positioning means on said housing for moving said skirt internal shoulder into contact with said upper dog shoulders, and

(v) means locking said skirt in contacting position, and

(vi) means for manually moving said dogs to fishing neck release position;

(c) unlockable locking means for locking said engaging and releasing means in fishing neck engaging position on said mandrel;

(d) slidable connecting means for connecting to said locking means to unlock and move said engaging and releasing means to a position on said mandrel releasing said tool from said fishing neck; and

(e) means for moving said engaging and releasing means from fishing neck release position to fishing neck engaging position.

4,767,146

HOLDING TONGS

Peter Haase, Feucht, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Apr. 10, 1987, Ser. No. 36,881

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1986, 3612220

Int. Cl.[4] B66C *1/48*

U.S. Cl. 294—104 5 Claims



1. Holding tongs for clamping plates or plate-shaped objects to be suspended in and removed from galvanizing baths, comprising two halves having clamping projections and being biased by springs so that due to a spring action the clamping projections of said two halves press against a plate to be clamped, a first one of said halves being subdivided into two movable portions, a second one of said halves being fixed, each of said portions being pivotable relative to said fixed second half under said spring action, each of said movable portions having a clamping projection (13, 14), said fixed second half having two clamping projections (15, 16) each corresponding to a respective clamping projection of said movable portions and lying opposite thereto in a clamping position; and a pivot axle (9), said movable portions being pivotable about said pivot axis relative to said fixed half, each of said portions and said fixed half including a base wall and side walls (23, 18) extended from said base wall at right angles, each side wall having an opening receiving said pivot axle (9), each movable portion and said fixed half including arms laterally extended from said base wall towards said side walls, said arms (25, 20) supporting said clamping projections.

4,767,147

OPEN-TOP VEHICLE BODY

Takaharu Kobayakawa; Mikio Suehiro; Yosuke Saito, and Hiroshi Inoue, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Feb. 18, 1987, Ser. No. 16,008

Claims priority, application Japan, Feb. 18, 1986, 61-22356[U]

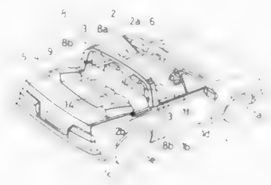
Int. Cl.[4] B62D *25/00*

U.S. Cl. 296—1 S 19 Claims

1. An open-top vehicle body including a body structure comprising a front section provided with a front windshield, a middle section provided with side panel structures having upper edges defining side belt lines and a rear section, said body structure having a front windshield and a rear compartment defined rearwards the front passenger compartment, shield means extending transversely between the front passenger compartment and the rear compartment for blocking an air stream which flows from said rear compartment toward the

VOL 1093 ISS 5 AG 30 1988 UMI

front passenger compartment in which said shield means has an upper end located higher than the belt line of the body but not



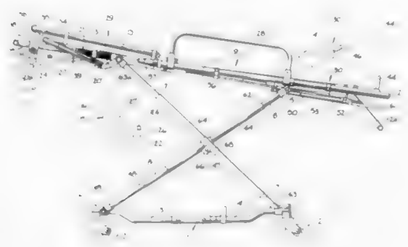
higher than a highest point of front seat means positioned in the front passenger compartment.

4,767,148

MULTIPLE LEVEL ROLL-IN COT

Richard H. Fernean, and Robert E. Dunn, both of Wilmington, Ohio, assignors to Ferno-Washington, Inc., Wilmington, Ohio

Filed Oct. 28, 1987, Ser. No. 114,214
Int. Cl.[4] A61G *1/02*
U.S. Cl. 296—20 16 Claims



1. An elevating cot adapted to be rolled into emergency vehicles having different floor heights, said cot comprising:

a rectangular undercarriage having a leading end and a trailing end, caster wheels affixed to said undercarriage,

a generally rectangular cot frame overlying said undercarriage, said cot frame having a leading end and a trailing end, and a pair of loading wheels mounted on the leading end of said cot frame,

coacting pairs of complementary cross-forming frame members extending between and interconnecting said cot frame and said undercarriage, each of said pairs of frame members comprising a first frame member of fixed length and a second frame member having an extensible section at its lowermost end, the frame members in each pair being pivotally connected together intermediate their opposite ends by pivot means which are offset with respect to a point of intersection of each of said respective pairs,

the first frame members of each pair being rotatably connected at their lowermost ends to opposite sides of said undercarriage at the trailing end thereof, the second frame members of each pair having their extensible sections rotatably connected at their lowermost ends to opposite sides of said undercarriage at the leading end thereof, the uppermost ends of said first frame members being rotatably connected to opposite sides of said cot frame toward the head end thereof, bracket means on the opposite sides of the cot frame toward the trailing end thereof, said bracket means extending lengthwise of the cot frame and each having an elongated slot therein, slot engaging means at the uppermost ends of said second frame members slidably mounting the second frame members to the cot frame, whereby as the cot frame is elevated relative to said undercarriage it will assume at least one elevated position in which the cot frame is inclined upward in the direction of its leading end so that the loading wheels on the cot frame may be positioned to enter an emergency vehicle having a high floor level,

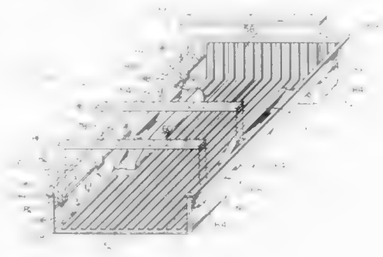
and latching means for selectively securing said cross-forming members in a plurality of predetermined positions of use.

4,767,149

PICKUP TRUCK BED LINER

Palle Rye, Reading, Pa., assignor to Brentwood Industries, Inc., Reading, Pa.

Filed Apr. 21, 1987, Ser. No. 40,957
Int. Cl.[4] B62D *33/00*
U.S. Cl. 296—39 R 17 Claims



1. A truck bed liner for use in lining a truck bed having substantially vertical opposed side bed walls, the liner having a front end and a rear end, the liner comprising a floor, opposed side walls having lower edges joining the floor, a front wall having side edges joining the side walls and a lower edge joining the floor, and support means comprising side wall portions extending inwardly within the liner and having a horizontal upper surface for supporting, independent of the side bed walls of the truck bed, a shelf member extending between the side walls within the liner above the floor.

4,767,150

TRAILER AND TAILGATE

Peter Hall, Asheville, N.C., assignor to Peco, Inc., Arden, N.C.

Filed Nov. 13, 1986, Ser. No. 929,900
Int. Cl.[4] B62D *25/00*
U.S. Cl. 296—50 1 Claim



1. An improved trailer comprising:

a flat bed;

first and second side walls and a front wall projecting upwardly from said bed;

the rear end of said trailer adapted to be selectively opened and closed;

a first pair of holes received in said bed near said rear end;

a tailgate; said tailgate selectively received near said rear end;

said rear end being substantially free from obstructions when said tailgate is not in place at said rear end;

said tailgate being formed with a substantially C-shaped cross-section having a substantially flat panel and top and bottom members extending from said panel;

a pair of cane-shaped rods located alongside said panel; said rods each having a straight end and a curved end; a portion of said straight end of each rod extending out of said bottom member; said portions of said straight ends received in said first pair of holes; said curved ends extending out of said top member; a second pair of holes in the tops of said side walls near the rear end of said trailer; portions of said curved ends received in said second pair of holes in said trailer; said cane-shaped rods firmly connected to said tailgate wherein said rods (i) enable attachment of said tailgate to the remainder of said trailer to (ii) act as handles for enabling the removal of said tailgate from the remainder of said trailer, (iii) providing strength for said tailgate and (iiii) adding strength to said side walls;

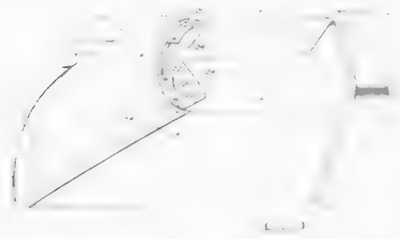
the inside surfaces of said side walls being substantially smooth making said trailer more readily unloadable; said rear end of said trailer being wider than said front end of said trailer whereby said trailer is tapered thereby making said trailer further more readily unloadable.

4,767,151

DEVICE TO ALLOW AN AUTOMOBILE SUN VISOR TO ACT AS AN AIR DEFLECTOR

Robert Agostini, 409 Baker St., Old Forge, Pa. 18518

Filed Oct. 14, 1987, Ser. No. 108,123
Int. Cl.[4] B60J *3/00*
U.S. Cl. 296—97 K 3 Claims



1. In combination, a sun visor of an open top automobile having a windshield, and rotatable in a vertical plane and a device holding said sun visor in an upwardly extending position, said combination comprising:

a. a one piece clip member having a first elongated leg member, a second elongated leg member and a third elongated leg member,

b. said first leg member having one of its ends integrally connected to one end of said second leg member, and said third leg member having one of its ends integrally connected to the other end of said second leg member,

c. said third leg member, said second leg member and a portion of said first leg member form a triangle,

d. the free end of said first leg member includes a portion which is bent towards said third leg member to form a hook,

e. the free end of said third leg member contacts said first leg member and is bent at an acute angle to said third leg member,

f. said sun visor extends within said triangle and is in contact with said second leg member, and

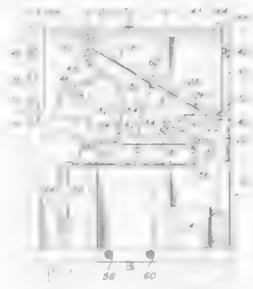
g. said hook on said free end of said first leg member is removably secured adjacent the top of the automobile windshield in a slot of a strip means attached to said windshield, whereby said sun visor acts as an air deflector to substantially reduce noise and vibration due to air turbulence when said automobile is driven.

4,767,152

TRAILER DOOR ACTUATING MECHANISM

Eugene F. Stluka, Haverford, and William J. Huber, Audubon, both of Pa., assignors to Florig Equipment Company, Inc., Conshohocken, Pa.

Filed Apr. 8, 1987, Ser. No. 35,971
Int. Cl.[4] B60P *7/02*
U.S. Cl. 296—100 19 Claims



1. Apparatus for actuating a trailer cover through an arc of approximately 270°, comprising:

(a) a trailer;

(b) a pair of doors, each of which is rotatably connected to a tap of said trailer along a respective longitudinal edge of said trailer;

(c) means for opening/closing said doors by rotating said doors through said arc, said means further including:

(i) a pair of opposed fluid actuated cylinders located at one end of said trailer, each cylinder having a free end and a fixed end, said fixed ends being rotatably connected to said trailer,

(ii) a first member and a second pivot member each rotatably attached to a respective one of said cylinder free ends, and each being further separately rotatably connected along a substantially common horizontal centerline through respective pivot means affixed to said trailer,

(iii) a pair of substantially identical door control members, each of said control members attached to one of said doors at said control member top end, and each of said control member bottom ends attached to one of said first pivot member and second pivot member, whereby distances between each of said control member bottom ends and a respective one of said pivot means are substantially equal; and

(d) a control mechanism for selectively operating said doors between opened and closed positions.

4,767,153

SAFETY STRUCTURE OF VEHICLE BODY ADJACENT INSTRUMENT PANEL

Tomoaki Kawasaki, Hatano, and Yoshinori Akiyama, Tokyo, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Jan. 8, 1987, Ser. No. 1,455
Claims priority, application Japan, Jan. 9, 1986, 61-1444[U]
Int. Cl.[4] B62D *25/08*
U.S. Cl. 296—194 8 Claims

1. A safety structure of a vehicle body adjacent an instrument panel, comprising:

an air box extending laterally of the vehicle body and having a longitudinally intermediate portion;

a vehicle floor;

VOL 1093 ISS 5 AG 30 1988 UMI

an instrument stay spanning between said intermediate portion of said air box and said vehicle floor;
vehicle equipment disposed forwardly of said instrument stay;
a front door hinge pillar located nearer to a front passenger seat; and



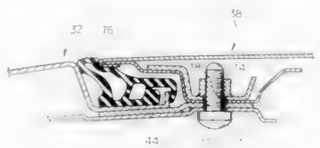
a detachable, elongated rigid stopper member spanning between said instrument stay and said front door hinge pillar to prevent rearward movement of said vehicle equipment toward an occupant of the front passenger seat.

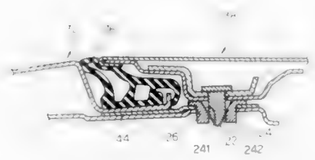
4,767,154

AUTOMOBILE ROOF STRUCTURE

Kazuo Okamoto, Toyota; Hiroshi Ohhashi, Okazaki, and Tokuichi Tatsumoto, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 13, 1987, Ser. No. 25,712
Claims priority, application Japan, Apr. 30, 1986, 61-100239
Int. Cl.[4] B60D *25/06*
U.S. Cl. 296—218 **20 Claims**





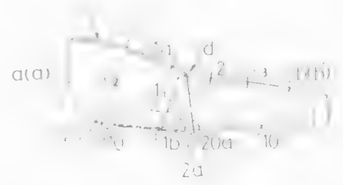
1. An automobile roof structure comprising:
a fixed roof section;
a bracket extending from said fixed roof section and having a hole therein extending between a first surface and a second opposite surface of said bracket;
a detachable roof section selectively mounted on the first surface of the bracket, said detachable roof section having an aperture;
fastening means comprising a first engaging member and a second engaging member, the first engaging member located adjacent the aperture of said detachable roof section, the second engaging member being selectively inserted into the hole of the bracket and the aperture of said detachable roof section, said second engaging member having a head portion adjacent the second surface of the bracket and an engaging portion projecting from the first surface of the bracket for selectively engaging the first engaging member; and
holding means having a first end and a second end, said first end being secured to said fixed roof section and said second end being secured to said second engaging member;
said holding means connecting said second engaging member to said fixed roof section and permitting withdrawal of the engaging portion of said second engaging member from said first surface of the bracket toward said second surface of the bracket to prevent said engaging portion from projecting from said first surface when said second engaging member is not engaged with said first engaging member.

4,767,155

SEAT FOR VEHICLES PROVIDING WITH A THIGH SUPPORTING DEVICE

Takayuki Kousaka, and Toshio Yoshizawa, both of Akishimashi, Japan, assignors to Tachikawa Spring Co., LTD, Tokyo, Japan

Filed Aug. 14, 1984, Ser. No. 640,788
Claims priority, application Japan, Aug. 19, 1983, 58-129110
Int. Cl.[4] A47C *31/00*
U.S. Cl. 297—219 **1 Claim**



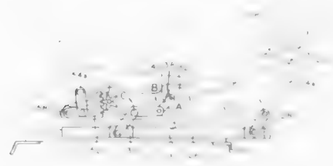
1. A vehicle seat with a thigh support device, comprising:
a seat frame having first and second side members;
a one piece moveable frame overlapping said seat frame and pivotally connected to said first and second side members, said movable frame being vertically moveable by means of a thigh support device;
a cushioning member made of foam material mounted on the moveable frame and seat frame, said cushioning member having a thigh support portion and a buttocks support portion, both of said support portions being integrally formed together and having a upper surface; and
a top cover member being continuous and covering said upper surface of said thigh and buttocks support portions in an uninterrupted manner
said top cover member having two separate side cover sections extending therefrom, a first side cover section for covering said thigh support portion and a second side cover section for covering said buttocks support portion, said side cover sections having edges where said moveable frame is rotatably and pivotally secured to said seat frame, said edge of said first side cover section extends progressively increasing the angle of its inclination from said top cover member towards and terminating at said seat frame adjacent said buttocks support portion, said terminating edge of said first side cover section being fixedly secured to said moveable frame, said edge of said second side cover extends progressively increasing the angle of its inclination from said top cover member towards and terminating at said seat frame adjacent said thigh support portion, said terminating edge of said second side cover section being fixedly secured to said seat frame.

4,767,156

VEHICLE SEAT HEIGHT AND INCLINATION CONTROL APPARATUS

Yukifumi Yamada, and Takami Terada, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 27, 1987, Ser. No. 30,599
Claims priority, application Japan, Mar. 31, 1986, 61-73332
Int. Cl.[4] A47C *1/025*
U.S. Cl. 297—313 **4 Claims**



1. A vehicle seat adjustment apparatus, comprising:
a seat;
support means mounted on a vehicle body;
frame means mounted on said support means for supporting said seat along substantially opposite sides thereof, said frame means including a first frame and pivot means for pivotally connecting a rearward portion of the seat to said frame means;
link means pivotally connecting said frame means to said support means for raising and lowering said frame means relative to said support means to adjust the height of said seat, said link means including a control link rotatably attached to said first frame and at least one support link, said control link being pivotally attached to said support means;
height control means for holding said link means in a selected pivotal position, said height control means being operative to rotate said control link in a first direction to raise said seat and to rotate said control link opposite said first direction to lower said seat, said height control means including adjustment means for selectively adjusting a rotational position of said control link relative to said support means, a cam plate rotatably mounted on said first frame, a pin eccentrically disposed on said cam plate, a connecting arm pivotally mounted on said pin and pivotally attached to said control link, and a control lever connected to said cam plate for rotation thereof; and
inclination control means mounted on said frame means for adjusting the inclination of said seat relative to said support means, said inclination control means including rotatable means rotatably mounted on said frame means and connection means operatively connecting said rotatable means and a forward portion of the seat, whereby rotation of said rotatable means pivots said seat about said pivot means to regulate the inclination of said seat.

4,767,157

SEAT LIFTER

Kenichi Kazaoka, Nagoya, and Hiroshi Okazaki, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 618,871, Jun. 8, 1984, abandoned. This application Feb. 3, 1987, Ser. No. 6,340
Claims priority, application Japan, Jun. 16, 1983, 58-106662; Jun. 17, 1983, 58-109072; Jun. 24, 1983, 58-114855; Jun. 27, 1983, 58-115496
Int. Cl.[4] A47C *1/032, 3/20*
U.S. Cl. 297—322 **6 Claims**

1. A seat lifting apparatus for a seat having a seat cushion and a seat back, said apparatus comprising:
bracket means adapted to be mounted on a floor;
first seat supporting means for supporting said seat cushion;
second seat supporting means having front and rear portions for supporting said first seat supporting means at corresponding front and rear portions thereof, said first seat supporting means being pivotally mounted thereon;
seat back supporting means for supporting said seat back adjacent said rear portion of said second seat supporting means;
link means pivotally connected at first pivot locations, on said link means, to said bracket means on opposite sides of said second seat supporting means, said link means including front link members and rear link members, said front portion of said second set supporting means being fixedly attached at second pivot locations to said front link members, said rear portion being fixedly attached at said second pivot locations to said rear link members, said second pivot locations being spaced a selected distance from said first pivot locations on said front and rear link members in a first selected direction for lifting said second seat supporting means and pivoting said first seat supporting means while moving said first and second seat supporting means in a forward direction upon rotation of said link means a selected angular distance about said first pivot location;



seat back support pivot means pivotally connecting said link means, at third pivot locations, to said seat back supporting means adjacent said front and rear portions on opposite sides of said supporting means, said third pivot locations being spaced a selected distance from said first pivot locations on said link means in a second selected direction for moving said seat back supporting means together with said first seat supporting means upon said rotation of said link means about said first pivot locations;
connecting means pivotally attached at one end to one of said rear link members and operatively connected at the other end to a spring coupler means mounted on the bracket means adjacent to one of said front link members; said
spring coupler means operatively connected to said connecting means and said link means for rotating said link means about said first pivot location said selected angular distance.

4,767,158

RECLINING MECHANISM

Seiki Satoh, Utsunomiya, Japan, assignor to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1987, Ser. No. 69,969
Claims priority, application Japan, Jul. 10, 1986, 61-106158[U]
Int. Cl.[4] A47C *1/00*
U.S. Cl. 297—367 **1 Claim**

1. In a reclining mechanism of the type in which a back bracket is swingably pivoted with a pivot pin to a seat bracket; a sector gear whose center coincides with the axis of said pivot pin is securely attached to said back bracket; and the angle of inclination of a back rest is adjusted by the engagement be-

VOL 1093 ISS 5 AG 30 1988 UMI

tween the toothed portion of said sector gear and the toothed portion of a locking pawl; the improvement comprising:

raised portions formed along the peripheral sides of the mounting surface remote from said locking pawl of said back bracket upon which is attached said sector gear in such a way that said raised portions abut against a portion of the circumferential surface of said sector gear;



means forming a rectangular opening in the surface of the sector gear between its center of rotation and the toothed portion thereof;

means forming a projection protruding from the back bracket, said projection engaging with the rectangular opening; and,

said sector gear and said back bracket being securely joined together with joint pins.

4,767,159

CHAIR HAVING SUPPORTING MEMBER FOR THE POSTERIOR AND THE SHINS, RESPECTIVELY, OF A CHAIR OCCUPANT

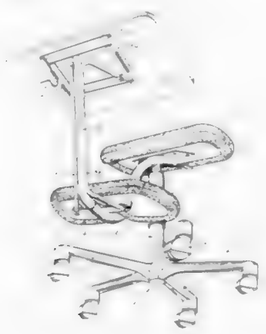
Peter Opsvik, Hogtunveien 12, N-1370 Asker, Norway

Continuation of Ser. No. 675,837, filed as PCT No. 84/00014 on Mar. 15, 1984, published as WO84/03614 on Sep. 27, 1984, abandoned.

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 8307879[U]; May 4, 1983, 8313203[U]

Int. Cl.⁴ A47C *7/50*

U.S. Cl. 297—423 **4 Claims**



4. A chair adapted to support a person occupying the chair in a kneeling-like, sitting position, which comprises:

a substantially vertical supporting column;

means mounted to and disposed below the column for supporting the column in an upright, vertical position;

a substantially flat seat support means for supporting an occupant's posterior and substantially flat knee support means for engaging an occupant's shins from below in a kneeling-like, sitting position;

means for interconnecting the seat support means and the knee support means so that each faces substantially upwardly with the knee support means below and forward of the seat support means, the knee support means and seat support means being relatively positioned so that the shins of a chair occupant who is seated on the seat support means in a kneeling-like position engage and rest upon the knee support means, said interconnecting means including an elongated frame member, the frame member having a first end and a second end opposite the first end, the knee support means being mounted on the frame member in proximity to the first end thereof, the seat support means being mounted on the frame member in proximity to the second end thereof, the frame member being rotatably mounted to the vertical supporting column;

said interconnecting means further including a first transverse member mounted transversely on the frame member and interposed between the frame member and the knee support means, and a second transverse member mounted transversely on the frame member and interposed between the frame member and the seat support means;

first and second resilient means respectively interposed between the first transverse member and the knee support means and the second transverse member and the seat support means;

means for simultaneously adjusting the height relative to said supporting column of the seat support means and knee support means so that the seat support means and knee support means move in unison upon adjustment of the height;

a table top;

a table top supporting column, the table top supporting column having a first end portion and a second end portion disposed opposite to the first end portion, the table top being mounted on the first end portion of the table top supporting column, the table top supporting column being fixedly secured at its second end portion to the seat and knee support interconnecting means, the table top supporting column including a central tube and first and second tubes extending axially adjacent to the central tube, each of the first and second tubes being mounted at one end thereof on the first transverse member, the central tube being mounted at one end thereof on the elongated frame member; and wherein the chair further comprises means for adjusting the position of the table top, the table top position adjusting means including a first frame part secured to the table top, and a second frame part secured to the table top supporting member, the first frame part engaging the second frame part and being selectively movable with respect to the second frame part to effect adjustment of the position of the table top.

4,767,160

DEVICE FOR USE IN A KNEELING-LIKE SITTING POSITION

Hans C. Mengshoel, Bygdoy Allé 12, N-0262 Oslo 2, and Peter Opsvik, Hogtunveien 12, N-1370 Asker, both of Norway

Filed Feb. 13, 1986, Ser. No. 829,537

Claims priority, application Norway, Feb. 18, 1985, 850641

Int. Cl.⁴ A47C *7/50*

U.S. Cl. 297—423 **3 Claims**



1. A furniture arrangement for use in a kneeling-like sitting position, comprising

a chair having a seat, a chair frame and a support column, said chair frame having at least four branches extending from a central portion of the chair frame and forming a single, unitary structure at said central portion, two of said branches having a length substantially longer than the length of the remaining of said at least four branches and defining two support frame arms each having a free end remote from said central portion;

supporting means to support the person's knee and calf area having at least one cushion, the cushion having engaging means, and being supported by said support frame arms at the free ends thereof and in such a way as to provide an adequate space for movement of the legs of the user, said two arms defining a substantial angle so that the central portion of the chair frame and said free end of each arm define a substantially elongated triangle to enhance the stability of the arrangement, and a receiving unit extending from each said free end of each arm to slidably receive said engaging means of the cushion, at least one rolling means being provided at each end free of said arms and at each free end of said remaining branches, said rolling means being rotatable relative to said free ends and along a surface of a floor supporting said arrangement.

4,767,161

SAFETY BELT ARRANGEMENT

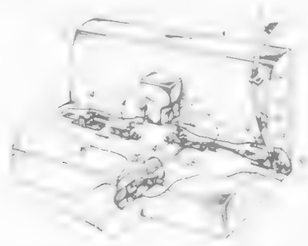
Gerhard Sedlmayr, Hamburg, and Jürgen Grassmuck, Pinneberg, both of Fed. Rep. of Germany, assignors to Autoflug GmbH & Co. Fahrzeugtechnik, Rellingen, Fed. Rep. of Germany

Filed May 21, 1986, Ser. No. 865,879

Claims priority, application Fed. Rep. of Germany, May 21, 1985, 3518121; May 21, 1985, 3518125

Int. Cl.⁴ B60R *21/10*

U.S. Cl. 297—472 **8 Claims**



1. A safety belt arrangement for installation in a vehicle having a bottom portion, including a safety belt system having therewith a lap belt as an integral portion of the belt system, said lap belt including two ends therewith as lap belt segments made taut by tightening in a pelvic belt ring configuration; said arrangement comprising:

a first anchoring member, which is operatively secured to said vehicle; said first anchoring member being in the form of a first guide element, with a first one of said ends of said lap belt being guided by said first guide element, while the other end of said lap belt is provided with a first belt buckle part;

a second guide element, which is also operatively secured to said vehicle;

a second anchoring member, which is in the form of a cable section, is guided by said second guide element, and is provided with a second belt buckle part that cooperates with said first belt buckle part of said lap belt; and

a tensioning mechanism that is movable relative to said first and second guide elements that interconnects said first end of said lap belt, on said side of said first guide element remote from said other end of said lap belt, and a portion of said second anchoring member that is remote from said second buckle part; said tensioning mechanism including an element movable therein and operating displaceable between said first and second guide elements when relative movement therebetween occurs in opposite directions, said first end of said lap belt, and that portion of said second anchoring member remote from said second buckle part, being respectively freely displaceable as movement in opposite directions occurs between their associated guide elements as positioned in an overhung arrangement with respect to each other, and being movable relative to one another only during cooperating engagement of said first and second belt buckle parts including therewith said first end of said lap belt connected with said first guide element and said other end of said lap belt connected to said second anchoring member for said first and second belt buckle parts to have a relative movement dependent as to direction in which resistance is less, in other words where pertaining belt slack is greater until a force equilibrium is achieved.

4,767,162

BLADE CONTROL SYSTEM FOR CONCRETE CUTTING APPARATUS

Charles W. Reed, III, Raytown, Mo., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jan. 23, 1987, Ser. No. 6,521

Int. Cl.⁴ E21C *25/16*

U.S. Cl. 299—1 **6 Claims**



1. A hydraulic control system for pavement cutting apparatus and the like, comprising:

a hydraulic cylinder having a piston for moving a tool into and out of contact with a working surface;

pump means for pressurizing said cylinder with hydraulic fluid in order to move said piston and said tool;

switch means operatively associated with said pump means for selectively energizing said pump means;

a proportional flow valve arranged in fluid communication with said cylinder for controlling flow rate of said fluid from said cylinder through said proportional flow valve; and

a valve actuator operatively connected to said proportional flow valve and operatively connected to said switch means such that movement of said actuator selectively operates said pump means and selectively operates said switch means and wherein movement of said actuator is substantially proportional to the flow rate of said hydraulic fluid from said cylinder through said proportional flow valve such that movement of said actuator is substantially proportional to the rate of movement of said piston so as to provide accurate control of tool movement.

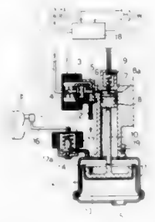
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,163

MOTOR VEHICLE BRAKING SYSTEM WITH A WHEEL ANTI-LOCKING FUNCTION WITH VACUUM SENSOR

Giuseppe Cotignoli, Collegno, Italy, assignor to Marelli Autronica S.p.A., Milan, Italy

Filed Dec. 28, 1987, Ser. No. 137,894
Claims priority, application Italy, Dec. 31, 1986, 67999 A/86
Int. Cl.[4] B60T *13/68, 13/46*
U.S. Cl. 303—61 3 Claims



1. A motor vehicle braking system with a wheel anti-locking function, in which, to re-apply the fluid operating pressure to the braking members of the wheels after an anti-locking operation has been carried out, there are provided:

pumping means driven by the subatmospheric pressure existing in the inlet manifold of the engine of the motor vehicle,

valve means interposed between the pumping means and the braking members, and

a device for controlling the valve means which can send to the valve means an opening command signal consisting of a train of pulses, wherein at least one vacuum sensor is provided for generating a monitoring signal whose level is indicative of the subatmospheric pressure existing in the inlet manifold of the engine, and said control device is connected to the at least one sensor to generate the opening command signal with a mean value (v_m) which is inversely proportional to the level of the monitoring signal.

4,767,164

FIBER OPTIC ROTATION RATE ENCODER

Peter C. Yeung, Glendale, Calif., assignor to Crane Co., New York, N.Y.

Continuation of Ser. No. 903,821, Sep. 2, 1986, abandoned, which is a continuation of Ser. No. 785,768, Oct. 9, 1985, abandoned. This application Feb. 18, 1987, Ser. No. 16,463
Int. Cl.[4] B60T *8/32;* G01D *5/34;* H01J *40/14*
U.S. Cl. 303—91 23 Claims

1. A reflective optical transducer system for measuring the rotational speed of a wheel comprising:

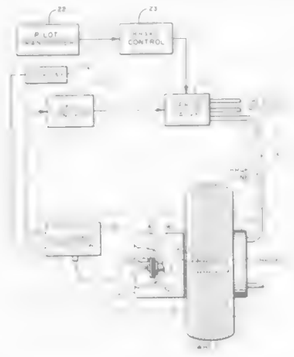
rotatable interrupter means having alternating reflective and nonreflective areas around its periphery;

means for turning the rotatable interrupter means at a rate that is a function of the angular velocity of the wheel;

stationary interrupter means, spaced from and adjacent to the rotatable interrupter means, and having alternating reflective and light transmissible areas around its periphery;

a light source located remotely from the rotatable and stationary interrupter means;

an optical fiber for transmitting light from the light source to the stationary interrupter means, and for receiving light reflected by the rotatable and stationary interrupter means, wherein the reflective areas of the stationary interrupter means reflect a bias level of light, and the reflective areas of the rotatable interrupter means reflect light passing through the transmissible areas of the stationary interrupter means, so that, when the rotatable interrupter means is turned, the amount of light received by the optical fiber will be modulated above the bias level and at a rate proportional to the angular velocity of the wheel; and



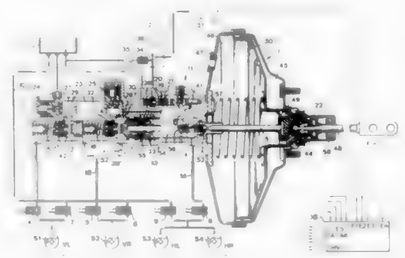
means, located remotely from the stationary and rotatable interrupter means, for converting the modulated light rate to an electrical signal proportional to the rotational speed of the wheel.

4,767,165

SLIP-CONTROLLED BRAKE SYSTEM

Jochen Burgdorf, Offenbach-Rumpenheim, Fed. Rep. of Germany, assignor to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 19, 1987, Ser. No. 16,227
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1986, 3605220
Int. Cl.[4] B60T *8/88*
U.S. Cl. 303—92 6 Claims



1. A slip-controlled brake system for automotive vehicles having one static brake circuit into which pressure fluid from a dynamic pressure fluid circuit can be introduced when a control action is performed, said system comprising a master cylinder assembly and a hydraulic booster (11), a hydraulic auxiliary-pressure supply system, wheel sensors and electronic circuits for determining the wheel rotational behavior and for generating electric braking-pressure control signals which serve to control pressure-fluid inlet valves and outlet valves inserted into the pressure fluid lines for the purpose of slip control, and a vacuum booster (1) connected upstream of said hydraulic booster (11), said vacuum booster (1) having a force-output member (51) which is in operative engagement with an articulated lever apparatus (41), whereby said vacuum booster (1) acts directly to generate braking pressure upon failure of said hydraulic booster.

4,767,166

SURGICAL CASE CART

Robert J. Cohn, Dallas, Pa.; Frank C. Olsson, East Lyme, Conn.; James W. Holzman, New Tripoli, and Paul Santarelli, Hudson, both of Pa., assignors to Metropolitan Wire Corporation, Wilkes-Barre, Pa.

Division of Ser. No. 752,099, Jul. 5, 1985, Pat. No. 4,678,214, which is a division of Ser. No. 354,762, Mar. 4, 1982, Pat. No. 4,550,956. This application Apr. 27, 1987, Ser. No. 43,485
Int. Cl.[4] A47B *77/06*
U.S. Cl. 312—229 1 Claim



1. A cart comprising:

an enclosed container having a front door with an outer surface and an inner surface;

said enclosed container having a top wall overlying said front door when said front door is in a closed position;

said top wall having a downwardly depending skirt portion at a forward end thereof, said skirt portion having a predetermined vertical length;

said skirt portion terminating in a free distal vertically extending edge, said distal vertically extending edge being positioned slightly above and forward of said outer surface of said front door when said front door is in said closed position so that liquid spilled onto said top wall can run down said skirt portion and drip from said distal vertically extending edge onto said outer surface of said front door when in said closed position without dripping into said container;

stop means for preventing said front door from moving into said container when said front door is in said closed position;

said stop means permitting liquid to drip therefrom when said container is being washed;

said stop means including a separate retaining member, said retaining member including a connecting section secured to an inner surface of said skirt portion along said vertical length thereof between said top wall and said distal vertically extending edge;

a downwardly sloping section of said retaining member extending rearwardly from a lower portion of said connecting section, said sloping section permitting the washing liquid to drip therefrom; and

a lip section of said retaining member extending vertically downwardly from a lower portion of said sloping section, said lip section being spaced rearwardly of said distal vertically extending edge, and said lip section having a lower portion extending below said distal vertically extending edge to engage said inner surface of said front door when said front door is in said closed position to provide a door stop for said front door.

4,767,167

ROTARY STORAGE AND SUSPENSION APPARATUS

Alvin B. Jeffries, 3708 Crestview Dr., Newberg, Oreg. 97132

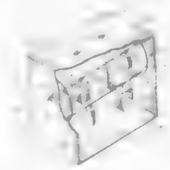
Filed Oct. 5, 1987, Ser. No. 104,030
Int. Cl.[4] A47F *5/02*
U.S. Cl. 312—268 5 Claims

1. A rotary storage and suspension apparatus in combination with a plurality of container units wherein the combination consists of:

a cabinet unit comprising a cabinet enclosure member having opposed side walls;

at least one axle unit comprising a pair of alaigned axle members disposed on the opposed side walls of said cabinet enclosure member;

a rotary unit operatively associated with said at least one axle unit;



a support means comprising a plurality of rod members operatively connected on their opposed ends at spaced locations around the periphery of said rotary unit; and,

a plurality of container units for different discrete items and articles, adapted to be releasably engaged, laterally translatable with respect to, and suspended from said support means; wherein, each of said plurality of container units comprises a hollow container member having a cap closure, wherein the cap closure is further provided with an integral hook element that is dimensioned to engage said support means.

4,767,168

HYBRID CONNECTOR CABLE SYSTEM

Mark E. Grandy, Port Huron, Mich., assignor to Prestolite Wire Corporation, Farmington Hills, Mich.

Filed Dec. 24, 1986, Ser. No. 946,308
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.2 11 Claims



1. A hybrid connector cable system for an automotive vehicle having a plurality of sensors generating sensor signals and a plurality of actuators responsive to actuator signals, comprising:

a control module for receiving said sensor signals and for generating actuator signals containing operating instructions for each of said plurality of actuators, said sensor signals and said actuator signals being multiplexed together to generate a multiplexed signal;

a plurality of actuator interface modules, one associated with

VOL 1093 ISS 5 AG 30 1988 UMI

at least one of said plurality of actuators, each of said actuator interface modules having a control circuit for extracting from said multiplexed signal the actuator signals for the actuator associated with that particular actuator interface module;

a plurality of sensor interface modules, each associated with at least one of said plurality of sensors, each of said sensor interface modules having a control circuit for adding the sensor signal generated by its associated sensor to said multiplexed signal; and

a plurality of hybrid connector cables serially connecting said sensor and actuator interface modules with each other and with said control module, each of said hybrid connector cables having means for optically transmitting said multiplexed signals and means for supplying electrical power to said sensor and actuator interface modules.

4,767,169

THIN FILM WAVEGUIDE ELECTROOPTIC MODULATOR

Chia-Chi Teng, Edison, and Dagobert E. Stuetz, Watchung, both of N.J., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Feb. 26, 1987, Ser. No. 19,369
Int. Cl.[4] G02B *6/10*; G02F *1/35*
U.S. Cl. 350—96.14 **39 Claims**



16. A thin film waveguide electrooptic intensity modulation device comprising (1) a transparent optical waveguiding thin film on a supporting substrate, wherein the thin film comprises an isotropic organic polymer medium which exhibits nonlinear optical response, and the waveguiding thin film is laminated between two cladding layers which have a lower index of refraction than the cladded thin film; (2) a pair of optical input-output coupling means which are structurally integrated with the waveguiding thin film for coupling linearly polarized coherent electromagnetic radiation to the said thin film, wherein the coupling means are in spaced positions such that an optical phase shift between transverse electric mode and transverse magnetic mode of waveguided electromagnetic radiation is an integral multiple of 2 π and the output radiation is linearly polarized; (3) a pair of elongated strip electrodes parallel to the waveguiding direction and situated in an intermediate zone between the positioned coupling means, and said electrodes are connected to a voltage source and are in a spaced proximity for application of a uniform electric field to the thin film waveguide: wherein the device is adapted to modulate waveguided radiation by refractive index change in the waveguide medium in accordance with the following equations:

$$\Gamma = \Gamma_o + \delta\phi$$

$$\frac{I_o}{I} = \sin\frac{2\Gamma}{2}$$

where Γ is the radiation phase retardation; Γ_o is the radiation phase retardation by the thin film waveguide medium; $\delta\phi$ is the radiation phase shift caused by the applied voltage; I is the input electromagnetic radiation signal; and I_o is the output electromagnetic radiation signal; and wherein the device is in combination with (4) a linearly polarized coherent electromagnetic radiation generating means; (5) a polarization-sensitive analyzer; and (6) a photodetector means.

4,767,170

OPTICAL DEFLECTOR DEVICE

Shuzo Mizutani; Kazunari Taki, both of Nagoya; Akihiro Suzuki, Nishio; Shoji Yamada, Aichi; Yumiko Watanabe, Gifu, and Makoto Suzuki, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Nov. 17, 1986, Ser. No. 931,039
Claims priority, application Japan, Nov. 20, 1985, 60-260708; Dec. 27, 1985, 60-299570
Int. Cl.[4] G02B *6/10*
U.S. Cl. 350—96.14 **10 Claims**



1. A solid optical deflector device comprising:

a substrate having a thermo-optic effect;

a two-dimensional optical waveguide formed on a surface of the substrate, for guiding a light beam therethrough in a plane parallel to said surface of the substrate in a direction of propagation along a length thereof; and

thermo-optic means for producing a temperature gradient in said two-dimensional optical waveguide in a direction which is parallel to said plane and which intersects said direction of propagation of the light beam, said thermo-optic means comprising a plurality of electrically resistive heat-generating elements disposed on said two-dimensional optical waveguide and spaced apart from each other by a predetermined distance in a direction perpendicular to said direction of propagation of the light beam, said thermo-optic means further comprising an electric power supply device for selectively supplying controlled amounts of electric power to respective heat-generating elements to change said temperature gradient, thereby changing an angle of deflection of said light beam by the deflector device.

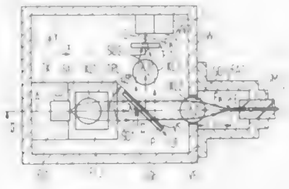
4,767,171

TRANSMISSION AND RECEPTION MODULE FOR A BIDIRECTIONAL COMMUNICATION NETWORK

Rudolf Keil, Munich; Franz Mayerhofer, Puchheim; Hans L. Althaus, Lappersdorf, and Ekkehard Klement, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Feb. 11, 1987, Ser. No. 13,639
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610404
Int. Cl.[4] G02B *6/32*
U.S. Cl. 350—96.18 **26 Claims**

1. In a transmission and reception module for a bidirectional optical communication network, particularly for a broad band ISDN, said module comprising a housing, an optical transmitter for the transmission of a first light wavelength on a first beam path being disposed in said housing, first and second lenses being arranged in succession on the first beam path with the first lens focussing a divergent light emitted by the transmitter and the second lens focussing the light from the first lens onto a focal point, a connector mounted on the housing and positioning an end face of an optical fiber at said focal point, said fiber emitting light of a second wavelength into the housing, a light beam splitter being arranged in the first beam path between the first and second lenses and being at least partially transmissive to the first wavelength and being at least partially reflective of light of the second wavelength to branch off a portion of the light of the second wavelength in a second beam path, a light detector sensitive to the light of the second wavelength being positioned on the second beam path to receive



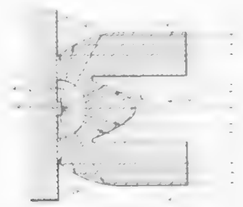
said light of the second wavelength, the improvements comprising the transmitter and the first lens being fixed on a common carrier member, said common carrier member being rigidly connectable to said housing so that the transmitter and first lens are positioned maladjustment proof relative to one another.

4,767,172

COLLECTOR FOR AN LED ARRAY

Virginia R. Nichols, Spencerport; Fred F. Hubble, III, Rochester, and James P. Martin, Dansville, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 461,779, Jan. 28, 1983, abandoned. This application Mar. 11, 1985, Ser. No. 709,973
Int. Cl.[4] G02B *6/32*; G03B *27/00*
U.S. Cl. 350—96.18 **3 Claims**



1. A molded light collector for collimating the light rays emitting from a relatively wide emission light source for coupling to an optical wave guide, the light source being an LED mounted on a substrate, the light collector enclosing the LED and forming a hemispherical cavity around the LED, a portion of the light collector being integrally secured to the substrate, the light collector comprising

an optical wave guide,

a lens portion for collimating the light exiting from the light source substantially perpendicular to the substrate, and

a reflecting portion attached to the substrate for collimating the light exiting from the light source substantially parallel to the substrate, the hemispherical cavity forming an air pocket between the LED and the light collector wherein the collimated light beams are combined and applied to the optical wave guide.

4,767,173

SUBMARINE TELECOMMUNICATION LINE WITH OPTICAL FIBERS

Paolo G. Priaroggia, Milan, Italy, assignor to Societa' Cavi Pirelli S.p.A., Milan, Italy

Filed Jun. 17, 1986, Ser. No. 875,305
Claims priority, application Italy, Jun. 26, 1985, 21300 A/85
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.20 **12 Claims**



1. A submarine, optical fiber, telecommunication line comprising:

a pair of optical fiber cables, each cable comprising a central rope for withstanding the tension forces applied to the cable, a watertight sheath around said rope and a plurality of optical fibers intermediate said rope and said sheath;

a watertight casing enclosing optoelectronic repeater components and having optical fibers extending therefrom in watertight relation thereto, said casing having a through cavity at its longitudinal axis;

a first length of tension-resistant rope in said through cavity and having opposite ends extending outwardly of said watertight casing;

a tubular box surrounding said watertight casing;

a pair of cylindrical bodies, each of said bodies comprising a second length of tension-resistant rope of stranded filaments surrounded by polymeric material in sealed relation thereto which, in turn, is surrounded by a metallic sheath in sealed relation to said polymeric material, at least one end portion of said second length of rope having any spaces therein filled with a metallic material and a plurality of optical fibers intermediate said second length of rope and said sheath and embedded in said polymeric material, the last-mentioned said optical fibers extending the length of and out of said body, one said body being disposed at one end of said box and having the optical fibers extending out of said one said body connected at one end to the optical fibers of one of said cables and connected at their opposite ends to the optical fibers extending from said watertight casing and the other said body being disposed at the other end of said box and having the optical fibers extending out of said other said body connected at one end to the optical fibers of the other of said cables and connected at their other ends to the optical fibers extending from said watertight casing and each said body being watertight;

first mechanical means mechanically connecting said sheath of said one said body to said box and to said sheath of said one of said cables in watertight relation thereto;

second mechanical means mechanically connecting one end of said second length of rope of said one said body to one end of said first length of rope and mechanically connecting the other end of the last-mentioned said second length of rope to said rope of said one of said cables;

third mechanical means mechanically connecting said sheath of said other said body to said box and to said sheath of the said other of said cables in watertight relation thereto; and

fourth mechanical means mechanically connecting one end of said length of rope to said other said body to the other end of said first length of rope and mechanically connecting the other end of the last-mentioned said second length of rope to said rope of said other of said cables;

whereby each optical fiber cable has one of said cylindrical bodies between it and the box, the sheath of each optical fiber cable is mechanically connected to said box by said sheath of one of said cylindrical bodies and the central rope of one said cable is mechanically connected to the central rope of the

VOL 1093 ISS 5 AG 30 1988 UMI

other said cable by the first length of rope and the second lengths of rope of said pair of cylindrical bodies whereby water tightness of said tubular box is assured even with the presence of water in the optical fiber cables.

4,767,174

PROCESS AND DEVICE FOR CONNECTING AN OPTICAL FIBRE AND AN INTEGRATED OPTICAL COMPONENT COMPRISING A WAVE GUIDE

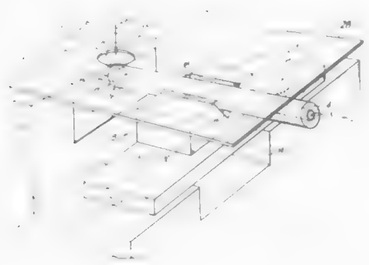
Alain Carenco, Bourg la Reine, and Luc Riviere, Meudon, both of France, assignors to L'Etat Francais represente par le Ministre des P.TT., Issy Les Moulineaux, France

Continuation of Ser. No. 610,615, May 16, 1984, abandoned. This application Feb. 27, 1987, Ser. No. 21,541

Claims priority, application France, May 17, 1983, 83 08141

Int. Cl.⁴ G02B *6/36;* **H01L** *39/02;* **B65H** *69/02*

U.S. Cl. 350—96.20 **12 Claims**



1. A process for connecting at least one optical fibre and an integrated optical component comprising at least one wave guide, the optical fibre and the wave guide each having an end adapted for connection, wherein it comprises in:

attaching the component to a main support,

attaching in a non-detachable way the fibre to a fibre support so that the end of the fibre extends beyond such fibre support, attaching the end of the fibre to the end of the wave guide so as to enable light to pass from the fibre to the wave guide and conversely, and then

rigidly connecting to one another the fibre support and the main support.

8. A device for connecting at least one optical fibre and an integrated optical component comprising at least one wave guide, the optical fibre and the wave guide each having an end intended for connection, wherein the device comprises a main support to which the component is attached, and a fibre support to which the fibre is attached, so that the end of the latter extends beyond the fibre support, and the fibre support is rigidly connected to the main support, the end of the fibre being previously attached to the end of the wave guide so as to enable light to pass from the fibre to the wave guide and conversely.

4,767,175

ROTARY DEVICE FOR TRANSMITTING LIGHT SIGNALS INCLUDING ANNULAR PHOTOELECTRIC TRANSDUCERS

Christian Böhner, Schlüsselfeld; Harold Gähr, and Gerhard Wohlhaupter, both of Frickenhausen, all of Fed. Rep. of Germany, assignors to Emil Wohlhaupter & Co., Frickenhausen, Fed. Rep. of Germany

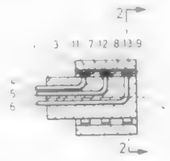
Filed Jul. 15, 1986, Ser. No. 886,026

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1985, 3526713

Int. Cl.⁴ G02B *6/36;* **H01J** *5/16*

U.S. Cl. 350—96.20 **11 Claims**

1. A device for transmitting light signals between two structural members rotating relative to one another about an axis of rotation, one of said members bearing a light emitter emitting light and the other bearing a photoelectric transducer placed opposite said light emitter so as to leave a gap therebetween, said transducer converting light signals received from said light emitter into electrical signals, characterized in that said light emitter (4,5,6) emits light through an emission opening (7,8,9) provided at a predetermined distance from said axis of rotation (2) of said structural members (1,3) and an annular photoelectric transducer (11,12,13) centered relative to said



axis of rotation faces said emission opening and is irradiated by the light emerging from said emission opening, that a plurality of annular transducers (11, 12, 13; 21,22,23) arranged concentrically or axially adjacent one another in relation to said axis of rotation (2) are simultaneously irradiated by a plurality of light emitters (4,5,6) and that each of said annular transducers consists of a plurality of individual photoelectric cells (31,32,33,34) placed next to one another without a gap in between and electrically connected in parallel.

4,767,176

DEVICE FOR FIXING FIBER-SHAPED LIGHT WAVEGUIDES IN A PLUG HOUSING

Peter Pohl, Stockdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 17, 1987, Ser. No. 85,203

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1986, 8622121

Int. Cl.⁴ G02B *6/36, 7/26*

U.S. Cl. 350—96.20 **15 Claims**



1. A device for securing fiber-shaped light waveguides in a plug housing which housing has a lead-through opening for conducting at least one light waveguide through, said device comprising a fixing member of elastic deformable material being provided with at least one channel for loosely receiving at least one light waveguide, said fixing member being insertable in the lead-through opening in a substantially relaxed condition, a recess being provided in the region of the fixing member extending parallel to the running direction of the light waveguide in the channel, and a stopper member composed of essentially an inelastic material being insertable in the recess to elastically deform the fixing member to cause each of the channels to grippingly engage the optical waveguide disposed therein.

4,767,177

METHOD FOR SECURING AN ELEMENT IN A BODY, PARTICULARLY AN OPTICAL FIBER

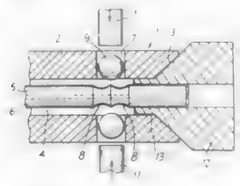
Jacques Cartier, Fontenay-Sous-Bois, France, assignor to Societe Anonyme Dite: Radiall Industrie, Rosny-Sous-Bois, France

Filed Mar. 30, 1984, Ser. No. 595,443

Claims priority, application France, Apr. 1, 1983, 83 05422

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.20 **17 Claims**



1. A method of mechanically locking an interior element in an opening of an outer body comprising, providing a hollow outer body having, in a transverse region thereof, a plurality of generally radial circumferentially spaced apart openings, positioning the interior element within the body in the region of the radial openings, placing at least one piece of malleable metal in each of said radial openings, and tools into said radial openings to mechanically deform the malleable metal through said openings and against the interior element into a space between the outer periphery of the interior element and the facing inner surface of the exterior body.

4,767,178

OPTICAL FIBER CONNECTOR HAVING STRUCTURE FOR ENSURING PREDETERMINED SPACING OF OPTICAL ELEMENTS

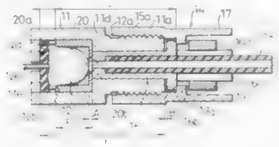
Hiroaki Sasaki, and Yoshinori Miyahara, both of Furukawa, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Apr. 9, 1986, Ser. No. 849,746

Claims priority, application Japan, Apr. 9, 1985, 60-52330[U]

Int. Cl.⁴ G02B *6/36*

U.S. Cl. 350—96.20 **6 Claims**



1. An optical fiber connector comprising:

a holding member having a front part for holding an end of an optical fiber therein and a collar part extending radially outward from the optical fiber, wherein a selected length is provided between a front end surface of said front part and said collar part;

a plug in which said holding member is disposed having an internal part extending radially inward toward the optical fiber which abuts against said collar part of said holding member to press it axially in an insertion direction, and an engaging part formed integrally with said internal part disposed toward a front end of said plug;

a plug engaging member having a receptacle portion in which an optical element is mounted, a front portion for receiving said front part of said holding member, wherein said front end surface of said holding member is to be disposed opposite the optical element in said plug engaging member by a predetermined distance, and an engaged part formed on said front portion which is removably engaged with said engaging part of said plug;

a spacer having a thickness corresponding to said predetermined distance and an optical path hole for light transmission therethrough and being interposed in abutting contact between said front end surface of said holding member and said optical element when said front part of said holding member is inserted in said front portion of said plug engaging member with said internal part of said plug abuttingly pressing said collar part of said holding member by a force of said engaging part of said plug engaged with said engaged part of said plug engaging member;

wherein said length of said holding member is selected such that when said holding member is inserted in said front portion of said plug engaging member to bring said front end surface of said front part of said holding member into abutting contact with said spacer, a gap is provided between said collar part of said holding member and said front portion of said plug engaging member which allows sufficient space in case of differences in tolerances of said parts such that said front portion of said plug engaging member does not abut against said collar part, in order to ensure that said front end surface of said holding member can be tightly pressed against said spacer by the force of engagement of said engaging part of said plug with said engaged part of said plug engaging member, whereby the optical fiber end is accurately spaced opposite the optical element by the thickness of said spacer.

4,767,179

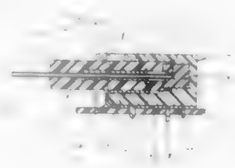
FIBER OPTIC CONNECTOR ASSEMBLY

Stephen A. Sampson, Downers Grove, and Kenneth J. Adamik, Westchester, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 20, 1982, Ser. No. 450,967

Int. Cl.⁴ G02B *6/36;* **H01J** *5/16*

U.S. Cl. 350—96.20 **5 Claims**



1. A fiber optic connector assembly including

an optoelectronic device for detecting light through a lens and producing an electrical signal in response thereto;

a housing to receive said optoelectronic device, said housing having an opening in alignment with said lens;

light transmitting means having an optic fiber for transmitting light therethrough and a plug secured to end thereof, said plug having a forward portion of substantially the same cross section of said opening which is selectively insertable into the housing through said opening in alignment with said lens; and

means for blocking said opening when the plug is not received therein; the improvement in said blocking means comprising:

a generally L-shaped member made of resilient sheet material having a first leg secured to a part of the housing and a second leg forming a light-tight door which is biased against the interior of the opening and pivotably moveable away from the opening towards the interior of the housing so as to lie in a direction substantially parallel to the direc-

VOL 1093 ISS 5 AG 30 1988 UMI

tion of insertion of said plug in response to the insertion of the plug,

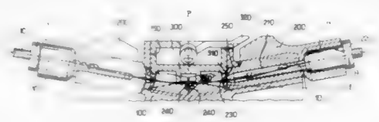
whereby the forward portion of the plug engages said door and moves it from the opening as it is inserted therethrough.

4,767,180

DEVICE FOR MAKING A NON-PERMANENT CONNECTION BETWEEN TWO OPTICAL FIBERS, MOBILE PLUG MEMBERS AND HOLDING DEVICE FOR SAME, AND APPROPRIATE METHOD OF PREPARING AN OPTICAL FIBER TERMINATION

Elie Zajac, Gagny; Roland Desmurs, Saint-Cloud, and Jean L. Pelletier, Paris, all of France, assignors to Radiall Industrie; Socapex and Souriau & Cie, all of, France

Filed Aug. 8, 1986, Ser. No. 894,803
Claims priority, application France, Aug. 13, 1985, 85 12336
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.21 15 Claims



1. A connecting device for making a non-permanent connection between two optical fibers each of which is fixed into a respective fiber holding device from which protrudes a bared end of the fiber, said connecting device comprising:

a socket member, a guide member on said socket member adapted to accommodate the aligned bared fiber ends, a clamp member in line with said guide member adapted to immobilize said bared fiber ends by clamping said bared fiber ends against said guide member, and two mobile plug members each adapted to interlock nesting fashion with said socket member one on each side of said guide member so that their axes are at a predetermined angle to said guide member, wherein each plug member comprises a front surface through which one plug member is adapted to come into an abutting and supporting relationship to the other plug member a central channel, a receptacle at a rear end of said channel for said fiber holding device, and an orifice at a front end of said channel slightly larger than the diameter of said bared fiber end, and the length of said central channel is sufficient to allow part of said bared fiber end to protrude through said orifice after said fiber holding device is fitted into said receptacle and the width of said central channel is sufficient to allow limited flexing of said bared fiber end in response to loads applied to said protruding part thereof, whereby plugging said plug members into said socket member brings the end surfaces of the two fibers into contact inside said guide member, flexing of the fiber in said central channel producing reaction forces to pressurize this contact and allowing displacement of the mating plane defined by the contacting end surfaces relative to the median plane of the device.

4,767,181

ELECTRICAL/LIGHTWAVE CONNECTION ARRANGEMENT

James R. McEowen, Holmdel, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y. and AT&T Information Systems Inc., Morristown, N.J.

Continuation of Ser. No. 552,610, Nov. 17, 1983, abandoned.
This application Mar. 26, 1987, Ser. No. 31,174
Int. Cl.[4] G02B *6/36*
U.S. Cl. 350—96.21 15 Claims



1. A connector arrangement comprising

a plug housing,

exactly two substantially parallel, electrically conductive blades extending from said housing, said blades each having a width substantially within a range of 0.240–0.260 inches and being spaced apart from one another by a distance substantially within a range of 0.495–0.505 inches, on center,

first and second electrical wires connected to respective ones of said blades,

a lightwave transmission line having a terminating portion having an end which is adapted to couple light signals into and out of said transmission line, and

exactly one post extending from said housing and substantially surrounding said terminating portion, said post being substantially parallel to said blades, spaced apart from each of said blades by a distance substantially within a range of 0.525–0.536 inches, on center, and having an outside diameter substantially within a range of 0.184–0.190 inches.

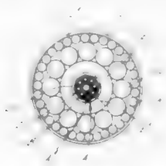
4,767,182

SUBMARINE CABLE

Colin S. Parfree, Southampton; Colin F. G. Smith, Winchester; Peter Worthington; Malcolm G. Marten, both of Southampton, and Norman S. Bliss, East Wellow, Nr Romsey, all of England, assignors to Standard Telephones & Cables, Public Limited Company, London, England

Continuation of Ser. No. 701,690, Feb. 14, 1985, abandoned.
This application Dec. 14, 1987, Ser. No. 133,219
Claims priority, application United Kingdom, Feb. 16, 1984, 8404083; Sep. 22, 1984, 8424044
Int. Cl.[4] G02B *6/44*
U.S. Cl. 350—96.23 12 Claims

1. An optical fibre cable comprising at least one optical fibre housed within a metallic core member of the cable, the core member comprising a first split metallic tube which has been closed around the optical fibres, and a second split metallic tube which has been closed around the first tube, which second tube is welded to provide an envelope around the fibre which is impermeable to hydrogen relative to other component parts of the cable, there being a small annular gap between the first and second tubes, which gap is filled with a water blocking material, and comprising a tensile strength member surrounding the welded second tube for sustaining the tensile loads which will in use be borne by the cable.

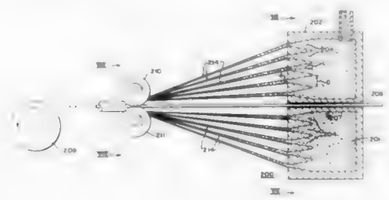


4,767,183

HIGH STRENGTH, HEAVY WALLED CABLE CONSTRUCTION

Frank E. Martin, Chester, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 12, 1986, Ser. No. 862,334
Int. Cl.[4] G02B *6/44;* H01B *3/00;* B05D *5/06;* B32B *27/00*
U.S. Cl. 350—96.23 7 Claims



1. A high strength protected cable comprising:

(A) an elongated core member for conduction of energy;

(B) an outer protective jacket for said core member;

(C) said outer protective jacket being of a liquid crystal polymer of the type which is thermoplastic and which forms rigid rod-like molecular aggregates in an overlapping orientable fashion at a point in its melt cycle, said rod-like aggregates being oriented in the direction of elongation of said core member;

(D) said protective jacket being formed of a plurality of individual layers of said liquid crystal polymer collectively surrounding said core member to a desired thickness.

4,767,184

WATERPROOF OPTICAL CABLE

Ichiro Ogasawara; Nobumasa Nirasawa, and Akira Nishimura, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 7, 1987, Ser. No. 35,424
Claims priority, application Japan, Apr. 21, 1986, 61-92514
Int. Cl.[4] G02B *6/44;* H02G *15/20*
U.S. Cl. 350—96.23 6 Claims

1. A waterproof optical cable, comprising:

a rodlike spacer having a plurality of spiral grooves on its peripheral surface;

stacks fitted into at least some of said grooves, each stack comprising a plurality of substantially flat optical conductors stacked together in a radial direction of said spacer and coating resin film layer containing a water swelling material coated on a surface of each of said optical conductors; and



a water absorbent filling any of said grooves not fitted with one of said stacks.

4,767,185

ROTATING MULTICOLORED AIR DRIVEN REFLECTOR

Terry B. Lyons, P.O Box 99, John Day, Oreg. 97845

Filed Dec. 15, 1986, Ser. No. 941,983
Int. Cl.[4] G02B *5/12;* G09F *11/02*
U.S. Cl. 350—99 11 Claims



11. A rotatable reflector assembly for bicycles, comprising:

a rotatable reflector comprising a cylindrical body having a reflective sidewall, an open end and a closed end, said closed end forming a frustoconical reflective face which includes a circular flat central portion circumscribed by a sloping shoulder with wind vanes therein, which shoulder connected said central portion to said cylindrical body, said reflector further comprising differently colored first and second semicylindrical portions;

a housing in which said reflector is rotatably mounted for rotation about an axis perpendicular to said reflective face, said housing enclosing a semicylindrical portion of said reflector;

a timing means carried within said cylindrical reflector for completely halting rotation of said reflector after a one-half rotation of said cylindrical body, said timing means comprising:

first and second closed chambers positioned in opposing relationship on either side of said central axis;

a fluid conduit extending perpendicularly through said central axis and interconnecting said first and second chambers;

restriction means in said conduit for impeding flow of a liquid therethrough;

a flexible diaphragm in each of said first and second chambers, each diaphragm dividing the chamber into a first section which fluidly communicates with said fluid conduit and a second sector which does not fluidly communicate with said fluid conduit, each of said diaphragms being movable between a constricted position and an expanded position, said first sector being of a greater volume when said diaphragm is in said ex-

VOL 1093 ISS 5 AG 30 1988 UMI

panded position than when said diaphragm is in said constricted position;

a pin carried by each of said diaphragms and extending out of each of said chambers such that movement of said diaphragms moves each of said pins between a retracted position when said diaphragm which carries said pin is in said constricted position and an extended position when said diaphragm which carries said pin is in said expanded position;

stationary pin engaging means for engaging a pin when it is extended by not when it is retracted; and

a liquid means in said fluid conduit which is movable through said conduit and restriction means in response to gravity for concomitantly moving a first of said diaphragm to said constricted position and a second of said diaphragms to said expanded position, and alternatively concomitantly moving said first diaphragm to said expanded position and a second of said diaphragms to said restricted position as said reflector rotates.

4,767,186

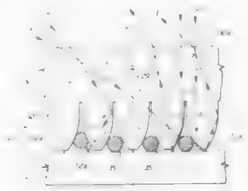
FRONT PROJECTION SCREEN WITH REAR LIGHT CONCENTRATING LENS ARRAY

Ralph H. Bradley, Jr., Kingsport, and William F. Guerinot, Knoxville, both of Tenn., assignors to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed Oct. 6, 1987, Ser. No. 107,087

Int. Cl.[4] G03B *21/60*

U.S. Cl. 350—128 **23 Claims**



1. Front projection screen having:

a light transmissive layer having a front surface and a rear surface defining a lenticular lens array comprising sequentially adjacent lens elements, each element having a tip portion and sidewall portions, the sidewall portions steeply inclined to direct light from a projection source by total internal reflection to the tip portions;

external light reflective means adjacent to at least the tip portions for reflecting the directed light back through the screen and into an audience field; and

light-absorbing means adjacent to at least the sidewall portions for absorbing ambient light.

4,767,187

DEVICE FOR OPTICALLY SCANNING AN INFORMATION CARRIER

Wilhelmus A. H. Gijzen; Petrus J. Blankers, and Petrus A. W. H. Van Vroenhoven, all of Eindhoven, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Filed Feb. 24, 1987, Ser. No. 17,503

Claims priority, application Netherlands, Feb. 21, 1986, [illegible]

Int. Cl.[4] G02B *7/04*

U.S. Cl. 350—247 **11 Claims**

1. A device for optically scanning an information carrier, comprising:

(a) a frame;

(b) a movable member movable with respect to said frame having a central axis and two bores extending parallel to said central axis and spaced symmetrically with respect to said central axis;

(c) means for allowing translation of said member along said central axis and rotation of said member about said central axis, and for preventing translation and rotation of said member in other directions;

(d) an optical objective having an optical axis for focusing light, onto said information carrier, said objective being secured in one of said bores with said optical axis parallel to said central axis;

(e) means for translating said movable member along said central axis comprising first and second translation elements which cooperate electromagnetically, said first translation element being secured to said frame and said second translation element being secured to said movable member; and



(f) means for rotating said movable member about said central axis comprisng first and second rotation elements which cooperate electromagnetically, said first rotation element being secured to said frame and said second rotation element being secured to said optical holder, the mass of said second rotation element being chosen to counterbalance the mass of said optical objective so that said movable member having said optical objective and said second rotation element secured thereon is balanced about said central axis; and

said first and second rotation elements being arranged with respect to said first and second translation elements so that said rotating means and said translating means are electromagnetically isolated from each other.

4,767,188

MULTI-DIMENSIONAL NANOMETRIC DISPLACEMENT POSITIONER

Jon H. Myer, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed May 29, 1987, Ser. No. 56,556

Int. Cl.[4] G02B *7/00*

U.S. Cl. 350—320 **15 Claims**

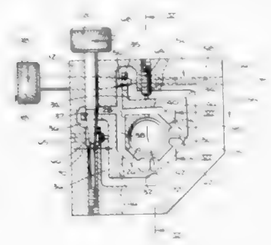
1. A multi-dimensional fine-adjustment linear displacement apparatus, comprising:

a monolithic housing having a main frame portion, and a support ring movable with respect to said frame portion, said support ring having a central aperture,

said monolithic housing further including:

at least one first lever forming a flexural connection with said support ring, said lever being integral with said housing; and

means for driving said first lever about said flexural connection including a tapered control shaft for displacing an arm of said first lever, and a spring plunger so as to nanometrically displace said support ring along a first linear



dimension relative to said frame portion, substantially without backlash.

4,767,189

TERMINAL CONNECTION STRUCTURE FOR A LIQUID CRYSTAL DISPLAY DEVICE

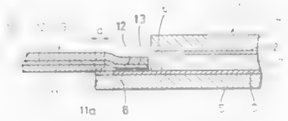
Yuzo Hayashi, and Yoshihiro Nagura, both of Iwaki, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 2, 1986, Ser. No. 902,757

Claims priority, application Japan, Sep. 6, 1985, 60-136573[U]

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—334 **2 Claims**



1. A connection structure for connecting a liquid crystal display device having a flat terminal surface and an end of a flexible flat cable having an electroconductive layer sandwiched between upper and lower cover films said upper cover film disposed on an upper side to the end of the flexible flat cable, comprising the improvement of said lower cover film disposed on a lower side facing the flat terminal surface having a portion removed from the end of the cable to expose said electroconductive layer on said lower side, an edge of said lower cover film disposed on a lower side facing the flat so as to ride on an edge of said terminal surface by a relatively short length, and the exposed portion of said electroconductive layer being fixed in electrical connection with said terminal surface.

4,767,190

TRANSIENT STATE LIQUID CRYSTAL IMAGE BAR WITH CONTRAST ENHANCEMENT

Gary A. Dir, Fairport, and Alain E. Perregaux, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 4, 1986, Ser. No. 937,806

Int. Cl.[4] G02F *1/13*

U.S. Cl. 350—339 R **6 Claims**

1. An improved transient state liquid crystal image bar for producing latent electrostatic images on a moving, precharged photoconductive member of an electrophotographic printer one line of pixels at a time, the image bar having a nematic liquid crystal cell configured as a single array of dot shutters individually energizable by the selective application of a single frequency driving voltage and having the polarizing axes of the polarizer and analyzer approximately crossed, the polarizing axis of the polarizer being at 45 degress with the liquid crystal molecules in their homogeneous relaxed state, and substantially perpendicular to the optical axis of the image bar, so that the image bar is non-transmissive when all of the dot shutters are energized, bursts of light for erasing pixels of precharged background area of the photoconductive member being passed by selected dot shutters through the interruption and reapplication of the voltage applied thereto, wherein the improvement comprises:

an optical compensating member being placed between the liquid crystal cell and either the polarizer or analyzer, the compensating member being oriented in a predetermined position relative to both the polarizing axis of the polarizer or analyzer and the molecules of the nematic liquid crystal material in their homogeneous non-energized state, so that the elliptically polarized light, generated by the incomplete homeotropic state or tilt of the energized liquid crystal molecules as the linearly polarized light enters and passes therethrough, is prevented from entering the analyzer, whereby the contrast between the transmissive and non-transmissive state of the image bar is increased and the driving voltage is concurrently reduced.

5. A transient state liquid crystal image bar for producing latent electrostatic images on a moving, precharged photoconductive member of an electrophotographic printer one line of pixels at a time through the selective passage of bursts of polarized light along an optical axis that is normal thereto, comprising:

a nematic liquid crystal cell configured as a single array of dot shutters individually energizable by the selective application of a single frequency driving voltage, the nematic liquid crystal material contained therein being of the type having its molecules in the homogeneous orientation when in the non-energized or relaxed state;

a polarizer and an analyzer being parallel to each other and having their polarizing axes approximately crossed, the polarizing axis of the polarizer being at 45 degrees with the liquid crystal molecules in their homogeneous relaxed state, and substantially perpendicular to the optical axis of the image bar, so that the image bar is non-transmissive when all of the dot shutters are energized, bursts of light for erasing pixels of precharged background area of the photoconductive member being passed by selected dot shutters through the interruption and reapplication of the voltage applied thereto; and

a relatively thin prism having a predetermined light deflection angle for light passing therethrough, the prism being positioned between the polarizer and the liquid crystal cell, the deflection angle for light passing through the prism being matched to the deflection angle of the light passing through the liquid crystal molecules in their homeotropic energized state, so that the elliptically polarized light, which would normally be generated by the incomplete homeotropic state or tilt of the energized liquid crystal molecules without the prism, does not occur, whereby the contrast between the transmissive and non-transmissive state of the image bar is increased and the driving voltage is concurrently reduced.

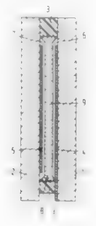
VOL 1093 ISS 5 AUG 30 1988 UMI

4,767,191

DISPLAY CELL

Hendrik A. Van Sprang; Henricus G. Koopman, and Franciscus J. M. Wortel, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 13, 1987, Ser. No. 37,478
Claims priority, application Netherlands, Nov. 14, 1986, [illegible]
Int. Cl.[4] G02F *1/137*
U.S. Cl. 350—341 7 Claims



1. A display cell comprising two closely-spaced parallel transparent substrate plates which are interconnected along their periphery by means of a seal, and which plates are provided with an electrode carrying an orientation layer on their facing surfaces, which orientation layer provides a tilted orientation to a liquid crystalline compound which is introduced into the space bounded by the plates and the seal, characterized in that the orientation layer is a polymer layer which essentially contains a cycloaliphatic polyether.

4,767,192

LIGHT ACTIVATED LIGHT VALVE WITH A SILICON CONTROL ELEMENT

Ifay F. Chang, Chappaqua, N.Y., and Eugene I. Gordon, Convent Station, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1986, Ser. No. 925,343
Int. Cl.[4] G02F *1/13;* H01L *27/14*
U.S. Cl. 350—342 10 Claims



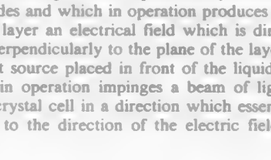
1. A light-activated light valve comprising:
a liquid crystal layer having first and second opposite sides;
a first electrode arranged on the first side of the liquid crystal layer;
a first diode having a pn junction formed by a region of a first conductivity type in contact with a region of a second conductivity type, the region of the first conductivity type being in electrical contact with the second side of the liquid crystal layer opposite a first part of the first electrode;
a second diode having a pn junction formed by a region of the first conductivity type in contact with a region of the second conductivity type, the region of the first conductivity type being in electrical contact with the second side of the liquid crystal layer opposite a second part of the first electrode, the first and second diodes being spaced from and electrically insulated from each other; and
means for applying an alternating voltage across the second conductivity type regions of the first and second diodes.

4,767,193

DISPLAY UNIT WITH BENT FLUORESCENT LAMP

Makoto Ota, Yokohama; Hiroshi Sawamura, Sagamihara; Masao Karino, Kamakura; Osamu Myodo, Kamakura; Makoto Yamanoshita, Kamakura, and Toyohiro Fujiwara, Sagamihara, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 24, 1985, Ser. No. 813,287
Claims priority, application Japan, Dec. 25, 1984, 59-200302[U]; Jul. 10, 1985, 60-105002[U]
Int. Cl.[4] G02F *1/13;* H02H *7/19;* H01J *1/62*
U.S. Cl. 350—345 5 Claims



1. A display unit, comprising:
an elongated display panel;
a fluorescent lamp disposed behind said elongated display panel, said fluorescent lamp including a middle section extending substantially parallel to said elongated display panel to face said elongated display panel from end to end, and end sections on both sides of said middle section, each end section having a base attached thereto; and
a case housing said elongated display panel and said fluorescent lamp therewithin, wherein
each end section of said fluorescent lamp is bent at a right angle with respect to said elongated display panel and extends away from said panel to form a pair of inner corners on a far side of the fluorescent lamp from the elongated display panel.

4,767,194

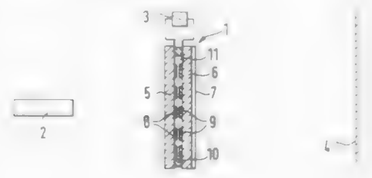
BLUE PHASE LIQUID CRYSTAL SYSTEM, METHOD OF OPERATION AND ITS USE

Gerd Heppke; Feodor Oestreicher; Heinz-Siegfried Kitzerow, and Michael Krumrey, all of Berlin, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation of Ser. No. 753,837, Jul. 11, 1985, abandoned. This application Jun. 8, 1987, Ser. No. 59,345
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425584
Int. Cl.[4] G02F *1/137*
U.S. Cl. 350—346 20 Claims

1. An optical system for modifying light transmitted therethrough comprising:
(1) a liquid crystal cell comprising (a) two polarizer-free carrier plates facing one another, each having on its surface facing the other, a patterned electrode, and (b) a liquid crystal layer enclosed between the carrier plates;
(2) an AC voltage source operationally connected to the electrodes and which in operation produces in the liquid crystal layer an electrical field which is directed essentially perpendicularly to the plane of the layer;
(3) a light source placed in front of the liquid crystal cell which in operation impinges a beam of light onto the liquid crystal cell in a direction which essentially corresponds to the direction of the electric field, said light

consisting essentially of a frequency or frequencies to which the liquid crystal layer is essentially transparent and has a field-dependent optical density; and
(4) an optical element utilizing the light transmitted through the liquid crystal layer,



wherein the liquid crystal layer is in a blue phase during operation of the system and does not selectively filter out wavelength components of the light passing through.

4,767,195

SYSTEM AND METHOD FOR ENCODING INFORMATION ONTO AN OPTICAL BEAM

David M. Pepper, Malibu, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 21, 1986, Ser. No. 842,344
Int. Cl.[4] G03H *1/02;* G02B *5/23;* G02F *1/01;* H01S *3/10*
U.S. Cl. 350—354 34 Claims



1. A system for encoding information onto an optical beam, comprising:
a body of photorefractive material adapted to receive an input optical beam,
means for establishing photorefractive gratings within said body to produce a phase conjugate output beam in response to an input optical beam,
means for establishing an alternating electric field within the body concurrently with said photorefractive gratings, and
means for modulating said electric field relative to said body to encode said phase conjugate output beam.

4,767,196

ASYMMETRIC OPTICAL LOGIC ELEMENT

Jack L. Jewell, Bridgewater, N.J., assignor to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 802,842, Nov. 27, 1985, abandoned. This application Dec. 14, 1987, Ser. No. 132,694
Int. Cl.[4] G02F *3/00, 1/015*
U.S. Cl. 350—354 14 Claims

1. An asymmetric radiant energy logic element comprising:
first and second reflecting devices;
a radiant energy nonlinear medium between and in contact with said first and second reflecting devices;
means for applying a radiant energy beam of a first wavelength to said reflecting devices;
means for applying at least one radiant energy beam of a second wavelength to said reflecting devices;
said first reflecting device being transmissive at said second radiant energy beam wavelength and reflective at said first radiant energy beam wavelength and said second



reflecting device being reflective at said first and second radiant energy beam wavelengths.

4,767,197

NONLINEAR OPTICAL MATRIX MANIPULATION

Pochi A. Yeh, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 25, 1987, Ser. No. 66,383
Int. Cl.[4] G02B *5/23;* G06G *7/16, 7/162, 9/00*
U.S. Cl. 350—354 25 Claims

1. A nonlinear optical matrix multiplier, comprising:
a nonlinear optical medium;
a first optical input beam impinging on the medium, the transverse spatial intensity of the first input beam being modulated by a first two dimensional matrix;
a second optical input beam impinging on the medium, the transverse spatial intensity of the second input beam being modulated by a second two dimensional matrix; and
an optical probe beam impinging on the medium, the first input beam, the second input beam, and the probe beam being oriented with respect to one another and with respect to the medium such that the beams interact within the medium by means of four-wave mixing, thereby producing a diffracted output beam which emerges from the medium, the transverse spatial intensity of the output beam being modulated by the product of the first and second matrices.

4,767,198

SAW/BAW BRAGG CELL

Leland P. Solie, Mahomet, Ill., and Joseph H. Labrum, W. Jordan, Utah, assignors to Unisys Corporation, Blue Bell, Pa.

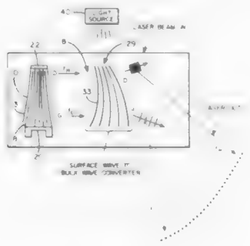
Filed Jun. 24, 1987, Ser. No. 65,983
Int. Cl.[4] G02F *1/11, 1/33*
U.S. Cl. 350—358 8 Claims

1. A Bragg cell modulator comprising
a surface acoustical wave (SAW) and bulk acoustical wave (BAW) conducting substrate in which Bragg cell modulation of light waves from an external source occurs,
a transducer formed of interdigital, electrode fingers located

VOL 1093 ISS 5 AUG 30 1988 UMI

on one surface of said substrate for launching SAW's wherein said fingers exhibit a variable separation along the length of said transducer, and

BAW generator means comprising a plurality of spaced-apart elongated elements positioned to intercept said SAW's and to generate BAW's in said substrate which modulate said light waves, wherein each of said elongated elements are spaced from each other by a distance that substantially matches the variation in spacing that exists



between said fingers of said transducer so that each frequency component of said SAW that is launched at a given area of said transducer generates substantially the same frequency components of said BAW at the area where said frequency component of said SAW is received by said elongated elements, and the frequency components of said modulated light waves are spatially dispersed in said substrate in a substantially linear manner between the highest frequency BAW modulated component and the lowest frequency BAW modulated component.

4,767,199

PROJECTION LENS

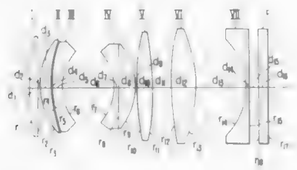
Yoshiharu Yamamoto, Toyonaka; Yasuo Nakajima, Ibaraki, and Shusuke Ono, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 21, 1986, Ser. No. 854,754

Claims priority, application Japan, Apr. 19, 1985, 60-82600

Int. Cl.[4] G02B *3/02, 9/64, 13/18*

U.S. Cl. 350—412 **4 Claims**



1. A projection lens for producing on a screen an enlargement of an image appearing on a cathode-ray tube (CRT), comprising: successively from the screen end, a Gauss type lens system, a positive lens unit contributing mainly to enlarging the aperture ratio and comprising at least one lens; and a negative lens unit contributing mainly to widening the field angle and having a strongly concave surface which faces the screen end, said projection lens satisfying the following conditions:

$$1.2f<f_{1\text{-}5}<1.6f \quad (1)$$

$$1.4f<f_6<1.7f \quad (2)$$

$$0.1f<d_{11}<0.3f \quad (3)$$

$$-1.4f<f_7<-f \quad (4)$$

where,

f: focal length of the overall system

$f_{1\text{-}5}$: focal length of the Gauss type lens system

f_6: focal length of the positive lens unit contributing mainly to enlarging the aperture ratio

f_7: focal length of the negative lens unit contributing mainly to widening the field angle

d_{11}: interplane spacing between the Gauss type lens system and the positive lens unit contributing mainly to enlarging the aperture ratio.

4,767,200

LENS MOUNTING

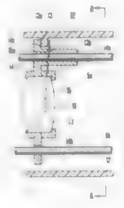
Hiroyoshi Inaba, and Kazuya Matsuda, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1987, Ser. No. 119,964

Claims priority, application Japan, Dec. 23, 1986, 61-197916[U]

Int. Cl.[4] G02B *7/11*

U.S. Cl. 350—429 **7 Claims**



1. A lens mounting comprising:

(a) a movable cam having a cam portion formed to a convex shape having two side surfaces;

(b) an axially movable member having a cam follower portion sliding on one of said two side surfaces of said convex cam portion of said cam in which a cam lift is formed;

(c) a lens arranged to move axially in response to axial movement of said axially movable member; and

(d) a leaf spring pressing the other side surface of said convex cam portion to urge said cam follower portion toward said one of said two side surfaces of said convex cam portion, said leaf spring having its pressing portion at a position of said convex cam portion and being fixed to said axially movable member at a position displaced to a direction almost perpendicular to the optical axis from said pressing portion.

4,767,201

WIDE ANGLE LENS

Hisao Fujita, Hino; Tomoko Wakabayashi, and Hiroyuki Yamazaki, both of Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1985, Ser. No. 741,895

Claims priority, application Japan, Jun. 7, 1984, 59-115556; Aug. 31, 1984, 59-180775

Int. Cl.[4] G02B *13/18, 9/34*

U.S. Cl. 350—432 **18 Claims**

1. A wide angle photographic lens consisting of a front lens unit which comprises, from an object side, a positive first lens, a negative second lens and a positive third lens, and a rear lens unit comprising a negative meniscus lens greatly curved toward an image side, wherein at least one surface of said positive lenses is a first aspheric surface and at least one surface of said rear lens unit is a second aspheric surface, and wherein the following conditions are satisfied:

$$0.45<f/|f_4|<2.5,\ f_4<0$$

$$1.7<N_2$$

where



f: combined focal length of the entire lens system

f_4: focal length of the rear lens unit

N_2: refractive index of a second lens (a negative lens in the front lens unit).

4,767,202

OBJECTIVE LENS SYSTEM FOR OPTICAL RECORDING TYPE DISKS

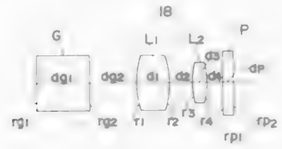
Kazuyoshi Hata, and Sachiko Takamura, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1985, Ser. No. 692,766

Claims priority, application Japan, Jan. 20, 1984, 59-9109; Jan. 23, 1984, 59-10728

Int. Cl.[4] G02B *13/18, 9/06*

U.S. Cl. 350—432 **5 Claims**



1. An objective lens system for optical recording type disks, comprising from a light source side to a disk side;

a first lens element of a positive refractive power; and

a second lens element of a positive refractive power, wherein the light source side surface of the first lens element is aspherical while all of the other surfaces are spheric, and wherein the lens system fulfills the following conditions:

$$\frac{1}{4}<\beta<\frac{1}{2}$$

$$0.70<f_1/f_2<1.50$$

$$0.47<d_1/f<1.25$$

wherein:

β represents the magnification of the whole lens system;

d_1 represents the axial thickness of the first lens element;

f_1 represents the focal length of the first lens element;

f_2 represents the focal length of the second lens element; and

f represents the focal length of the whole lens system.

4,767,203

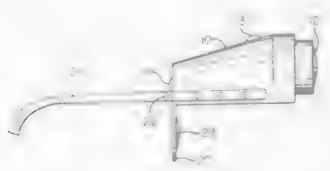
EYEGLASSES AND BINOCULARS COMBINATION

Anvar Zahir, 1417 Cabrillp Ave., Burlingame, Calif. 94010

Continuation-in-part of Ser. No. 624,258, Jun. 25, 1984. This application Dec. 22, 1986, Ser. No. 945,373

Int. Cl.[4] G02C *1/00*

U.S. Cl. 351—158 **2 Claims**



1. An eyeglass/binocular combination for normal viewing and for viewing distant objects which can be worn as a regular pair of eyeglasses, comprising:

an eyeglass frame,

adjustable focusable telescopic binoculars mounted at an upper position on the eyeglass frame, and

two corrective eyeglass lenses mounted in frame openings at a lower position on the eyeglass frame,

the eyeglass frame containing a total of four separate openings, two for the eyeglass lenses and two for vision through the binoculars, so that the binoculars may be used by the wearer tipping his head forward while keeping his eyes directed to the object to be viewed, and wherein the direct field of vision through the corrective eyeglass lenses is unobstructed by the binoculars.

4,767,204

STANDARD SLIT LAMP ADAPTED FOR PHOTOGRAPHIC DOCUMENTATION

Erich Blaha, Essingen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Mar. 3, 1986, Ser. No. 835,460

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1985, 3507571

Int. Cl.[4] A61B *3/10*

U.S. Cl. 351—214 **9 Claims**



1. The combination of a slit lamp having means for photographic documentation and an illumination unit, said combination comprising:

a slit-lamp unit for producing a slit-shaped bundle of rays and having a lowerable prism head; and, the illumination unit including:

a housing defining a light path;

VOL 1093 ISS 5 AG 30 1988 UMI

photo-illuminating light source means for generating an illuminating light;
collector means for directing an illuminating beam of light from said light source means down said light path;
an iris diaphragm arranged in said light path;
slit diaphragm means arranged in said light path for defining a plurality of slit widths thereby defining a slit plane;
an objective lens for forming an image of said slit plane in a predetermined plane; and,
optical deflecting means for deflecting said image into said predetermined plane; the housing of said illumination unit being mounted to the prism head of said slit lamp.

4,767,205

COMPOSITION AND METHOD FOR HIDDEN IDENTIFICATION

Abraham Schwartz, Durham, N.C., and Gary A. Woodward, Alexandria, Va., assignors to Flow Cytometry Standards Corporation, Research Triangle Park, N.C.

Filed Jan. 28, 1986, Ser. No. 823,208
Int. Cl.[4] G06K *9/74*
U.S. Cl. 356—71 **39 Claims**



1. A method for coded identification of a selected item comprising:
(a) making up a selected number of groups of highly uniform microbeads of a size of 2–20 microns and normally invisible to the naked eye, each group being made up of highly uniform microbeads of substantially the same uniform size, shape and color with the specific combination of size, shape and color in one group not being repeated in any other group;
(b) transferring highly uniform microbeads from a selected number of groups to the item to be identified such that the item to be identified is characterized by populations of highly uniform microbeads from the selected groups which are highly dispersed in the selected item or in a medium applied thereto, to encode such item according to the combination of size, shape and color of the highly dispersed microbeads transferred; and
(c) examining the item or applied medium comprising the transferred highly dispersed microbeads under light microscope magnification to verify the code established by the highly dispersed microbeads so transferred.

4,767,206

CALIBRATION METHOD FOR FLOW CYTOMETRY USING FLUORESCENT MICROBEADS AND SYNTHESIS THEREOF

Abraham Schwartz, Durham, N.C., assignor to Flow Cytometry Standards Corporation, Research Triangle Park, N.C.

Filed Dec. 24, 1984, Ser. No. 685,464
Int. Cl.[4] G01N *21/64*
U.S. Cl. 356—73 **3 Claims**

1. The method of establishing a standard reference for calibrating a flow cytometer, comprising the steps of:
(a) making up a first batch of microbeads to serve as standard microbeads, each said standard microbead comprising:
(i) a highly-uniform sized body substantially within the range of 3 to 15 microns in size, formed of hydrophobic polymeric material; and
(ii) fluorescent dye material covalently bonded to the surface of said body material via chemical functional groups and in such manner that the fluorescent spectra thereof remains unaltered;
(b) making up a second batch of microbeads to serve as primary microbeads, each said primary microbead comprising:
(i) a hydrophilic polymeric material; and
(ii) a fluorescent dye copolymerized within the microbead and made up of a material allowing free access of aqueous media throughout the microbead, and having a fluorescent spectra that remains unaltered after said copolymerization;
(c) determining that the excitation-emission spectra of the microbeads of both batches are substantially identical to each other, substantially identical to the same free dye



when in the same suspending solution and also substantially identical to a particle sample such as cells having the same known dye incorporated therein;
(d) based on the identities in step (c) being established, calibrating said second batch of microbeads against a sample of said free dye to determine the equivalent soluble fluorescent molecules per microbead;
(e) developing a calibration curve for said second batch of microbeads representing equivalent soluble fluorescent molecules per relative fluorescent channel of a flow cytometer; and
(f) measuring the fluorescent intensities of the highly uniform microbeads of said first batch with a flow cytometer to determine the relative fluorescent channel thereof and thereafter determining from step (e) the number of equivalent soluble fluorescent molecules per microbead in said first batch, thereby establishing said first batch of microbeads as a standard reference.

4,767,207

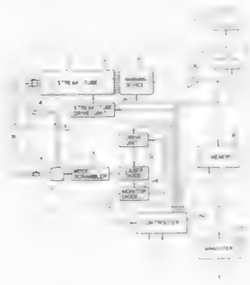
APPARATUS FOR MEASURING TRANSMISSION CHARACTERISTICS OF AN OPTICAL FIBER

Yoshihiro Takiguchi, Shizuoka, Japan, assignor to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Nov. 8, 1985, Ser. No. 796,206
Claims priority, application Japan, Nov. 9, 1984, 59-237348
Int. Cl.[4] G01N *21/84;* **G01D** *3/42*
U.S. Cl. 356—73.1 **10 Claims**

1. An apparatus for measuring transmission characteristics of an optical fiber comprising:
means for converting changes in the intensity of light incident upon a photoelectron-emitting surface thereof into an optical output signal indicating time-wise changes in the luminance of said light received by said photo-electron emitting surface, said electron-emitting surface having first and second portions;
means for generating short light pulses;
a spectrometer having an output connected to said photoelectron-emitting surface of said converting means, said spectrometer having an input for receiving said light pulses and for suplying in response thereto said said output

an optical spectrum having an intensity distribution with respect to wavelength;
a reference optical fiber having a first end connected to said input of said spectrometer to produce a first optical spectrum on said first portion, said reference optical fiber also having a second end;
an optical fiber under test having a first end connected to said input of said spectrometer to produce a second optical spectrum on said second portion, said optical fiber under test also having a second end; and



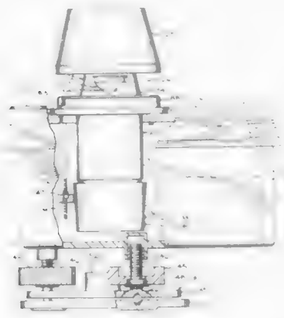
connector means connected to said generating means and to said second end of said reference optical fiber and said second end of said optical fiber under test to supply simultaneously said light pulses to said reference optical fiber and said optical fiber under test such that said optical output signal includes spatially separated representations of said first and second optical spectrums which indicate differences in the light transmission characteristics between said reference optical fiber and said optical fiber under test.

4,767,208

SELF LEVELING TRANSMITTER FOR LASER ALIGNMENT SYSTEMS

Gary L. Cain, New Carlisle, Ohio; Joseph F. Rando, Los Altos Hills, Calif.; Ted L. Teach; Lawrence J. Meyers, both of Dayton, Ohio, and Theodore J. Markley, Randolph, N.J., assignors to Spectra-Physics, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 788,800, Oct. 18, 1985, Pat. No. 4,679,937. This application Jul. 2, 1987, Ser. No. 69,480
Int. Cl.[4] G01B *11/26;* **G01C** *9/12*
U.S. Cl. 356—138 **20 Claims**



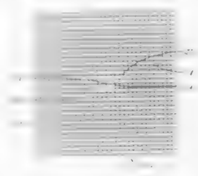
1. A transmitter for an alignment system in which a field of electromagnetic radiation is propagated, said transmitter comprising:
a chassis;
means for leveling the chassis;
a source fixed to the chassis for providing a beam of electromagnetic radiation;
an optical deflector having a reflecting surface which converges toward the source for redirecting the beam into an omni-directional reference field of radiation; and
flexible means having an omni-directional stiffness connected to the chassis for supporting the optical deflector within the beam in an aligned position relative to the beam with the chassis level, the beam being redirected omni-directionally by the deflector in the aligned position to define a reference field of radiation in a level orientation;
wherein an angular error in the orientation of the chassis from level results in the optical deflector deviating from the aligned position to maintain the reference field in the level orientation; and
wherein the support means includes a cantilever strand having a lower end secured to the optical deflector and an upper end secured to the chassis, the stiffness of the cantilever strand being omni-directional and of a magnitude to provide a deviation of the optical deflector from the aligned position to maintain the reference field in the level orientation.

4,767,209

LIMITED DIFFRACTION FEEDBACK LASER SYSTEM HAVING A COMPOSITE SENSOR

William M. Johnson, Sudbury, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Oct. 28, 1985, Ser. No. 792,057
Int. Cl.[4] G01B *11/26;* **H01S** *3/00*
U.S. Cl. 356—152 **9 Claims**



1. A multiple-function sensor, comprising:
a first wide field-of-view sensor sub-assembly of comparatively-large physical dimensions having a N×N array of comparatively low-bandwidth, light-responsive elements for providing a first sensing capability, where N is an integer greater than two;
a second narrow field-of-view sensor sub-assembly of comparatively-small physical dimension having a 2×2 array of comparatively high-bandwidth, light-responsive elements for providing a second sensing capability; and
means for superimposing said second sensor sub-assembly onto said first sensor sub-assembly in the same physical location.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,210
OPTICAL FIBRE INTERFEROMETER
Raman Kashyap, Ipswich, England, assignor to British Telecommunications plc, Great Britain
Continuation of Ser. No. 583,316, Feb. 24, 1984, abandoned. This application Mar. 10, 1987, Ser. No. 23,906
Claims priority, application United Kingdom, Feb. 24, 1983, 8305154; Mar. 11, 1983, 8306773; Mar. 11, 1983, 0306774
Int. Cl.[4] G01B 9/02
U.S. Cl. 356—345 9 Claims



1. An interferometric fibre optic sensing apparatus comprising a Michelson interferometer which comprises
a single optical fibre input arm having a first end, and also having a second end adapted for coupling to a light source and to a light detecting means;
an optical fibre sense arm having a first end, and also having a second end provided with a highly reflective coating;
an optical fibre reference arm having a first end, and also having a second end provided with a highly reflective coating; and
an optical fibre directional coupling means connected to and integral with said input arm first end, said sense arm first end, and said reference arm first end, for optically coupling said input arm, sense arm, and reference arm together, wherein the light reflected from said sense arm second end and from said reference arm second end is returned via said single input arm.

4,767,211
APPARATUS FOR AND METHOD OF MEASURING BOUNDARY SURFACE
Chusuke Munakata, Tokyo; Shinobu Hase, Hachioji, and Shigeharu Kimura, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 785,533, Oct. 8, 1985, abandoned. This application Aug. 20, 1987, Ser. No. 88,538
Claims priority, application Japan, Oct. 8, 1984, 59-209809
Int. Cl.[4] G01B 11/00
U.S. Cl. 356—375 17 Claims



1. An apparatus for measuring a boundary surface in a depth direction of a body, comprising:
a body to be measured;
first light source emitting a first light beam having a wavelength capable of penetrating said to-be-measured body to irradiate said to-be-measured body with said first light beam;
first focussing means for focussing said first light beam into a small light spot;
means for moving said to-be-measured body;
second focussing means for focussing a second light beam from said to-be-measured body;
light detection means for detecting both the light quantity of a first part of said second light beam which travels in the vicinity of the optical axis of said second beam, and the light quantity of a second part of said second light beam which is directed to a position deviating from said optical axis by a predetermined distance; and
means for calculating a ratio of one of the light quantity of said first part detected by said light detection means and the light quantity of said second part detected by said light detection means, to the other light quantity as an indication of a position of the boundary surface in the depth direction of said to-be-measured body.

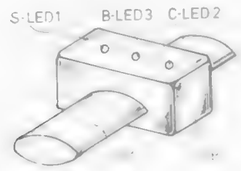
4,767,212
VOLUME DETERMINATION PROCESS
Tadahiro Kitahashi; Osami Saito, both of Toyohashi; Tadaaki Matsuno, Shiga, and Yoshihiro Nakamura, Kusatsu, all of Japan, assignors to Ishida Scales Mfg. Co., Ltd., Kyoto, Japan
Continuation of Ser. No. 14,212, Feb. 5, 1987, abandoned, which is a continuation of Ser. No. 777,732, Sep. 19, 1985, abandoned. This application Nov. 12, 1987, Ser. No. 120,170
Claims priority, application Japan, Sep. 19, 1984, 59-194782; Sep. 19, 1984, 59-194783; Oct. 12, 1984, 59-213372; Nov. 9, 1984, 59-236455; Nov. 9, 1984, 59-236456; Nov. 9, 1984, 59-236457; Nov. 9, 1984, 59-236458; Nov. 9, 1984, 59-236459; Nov. 9, 1984, 59-236460; Nov. 9, 1984, 59-236461
Int. Cl.[4] G01B 11/00
U.S. Cl. 356—379 12 Claims



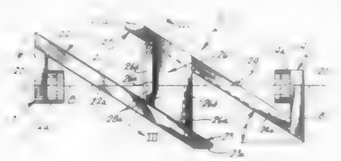
1. A method of determining the volume of an article having an upper surface based on the manner in which a linear pattern projected onto a surface of the article is curved, said method comprising the steps of:
projecting a split pattern obliquely downwardly onto the upper surface of the article;
imaging the upper surface of the article onto which the split pattern is projected with a television camera;
automatically computing the heights of slit positions on the article based on the image picked up by the television camera; and
automatically estimating the volume of the article based on the computed heights of the slit positions.

4,767,213
OPTICAL INDICATION AND OPERATION MONITORING UNIT FOR VACUUM CLEANERS
Karl Hummel, Stuttgart, Fed. Rep. of Germany, assignor to Interlava AG, Lugano, Switzerland
Filed Feb. 2, 1987, Ser. No. 9,741
Claims priority, application European Pat. Off., Feb. 5, 1986, 86 101509.7
Int. Cl.[4] G01N 21/53; A47L 9/19
U.S. Cl. 356—338 11 Claims

1. An optical indication and function monitoring unit for a vacuum cleaner of the type having a suction duct through which dust particles pass to a dust bag, comprising a housing adapted to be connected with the suction duct, optical dust detection means in said housing positioned to be traversed by the dust particles, a plurality of different indication lamps in said housing, amplifier means connecting said plurality of lamps to the output end of said dust detection means, a vacuum switch in said housing responsive to the value of the vacuum in the suction duct for connecting said unit to a source of power, said vacuum switch including adjustment means for adjusting said switch to disconnect the source of power from said unit when the suction falls to a preselected value corresponding to a predetermined level of dust in the dust bag, at least one of said plurality of indication lamps being connected in circuit with said switch to be illuminated thereby when said switch is operated to connect said unit to the power source.



4,767,214
MIXER FOR BAKING DOUGHS AND THE LIKE
Harry A. Fischer, Ada, and William G. Grutter, Grand Rapids, both of Mich., assignors to Baker Perkins North America Inc., Saginaw, Mich.
Filed Jan. 28, 1987, Ser. No. 7,517
Int. Cl.[4] B29B 1/04
U.S. Cl. 366—99 36 Claims



1. An agitator structure for mixers and the like, comprising: a pair of mutually-spaced hubs aligned with one another along an axis of rotation; a pair of mutually-spaced mixer blades, each such blade located on a different side of said axis from the other and extending generally longitudinally thereof but disposed at least partially along a different portion of such axis; each of said mixer blades disposed at a longitudinal angle with respect to said axis; support means coupling said mixer blades to said hubs for rotation therewith about said axis; each of said mixer blades comprising a generally planar member having a curved outer edge which lies substantially within the plane of its associated mixer blade; said curved outer edge of each of said mixer blades defining a cylindrical surface of revolution upon rotation of said blades around said axis, and the said cylindrical surface defined by each of said mixer blades adjoining that defined by the other to thereby form a generally continuous elongated cylindrical agitator envelope.

4,767,215
LENS CHARACTERIZATION APPARATUS AND METHOD
Yan Borodovsky, Portland, Oreg., assignor to Ateoq Corporation, Beaverton, Oreg.
Filed Jun. 9, 1986, Ser. No. 871,810
Int. Cl.[4] G01B 9/00
U.S. Cl. 356—124 24 Claims



1. An apparatus to characterize a performance of an optical lens comprising:
a beam of scanned light which scans across said lens;
a light sensor for receiving said beam after said beam passes through said lens, said sensor generating a signal which is proportional to an amount of said beam striking said sensor;
an encoder positioned between said lens and said sensor to encode said light passing through to said sensor, said beam travelling across a window having a transparent opening disposed on an opaque face of said encoder, said opening having a plurality of sawtooth shaped openings such that said amount of said beam penetrating through said opening to said sensor as said beam scans across said lens is made to vary due to said sawtooth shaped openings, said encoding provided by said beam transitioning between opaque and transparent regions of said face;
a means coupled to said sensor for determining a rate of change of said signal in respect to a scanning time of said beam travelling across said sawtooth shaped opening;
whereby distortion caused by said lens is determined.

4,767,216
CONTINUOUS MIXER
J. S. Gwinn, and Michael J. Miller, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Apr. 29, 1983, Ser. No. 489,991
Int. Cl.[4] B01F 7/08
U.S. Cl. 366—85 18 Claims



1. Apparatus comprising
(a) a housing defining a first generally cylindrical chamber and a second generally cylindrical chamber parallel to the first generally cylindrical chamber and laterally connected with the first generally cylindrical chamber, and a discharge orifice at a discharge end of said housing communicating with each of the first generally cylindrical chamber and the second generally cylindrical chamber;
(b) a first rotor positioned generally axially in the first generally cylindrical chamber and having a feed section and a

VOL 1093 ISS 5 AG 30 1988 UMI

mixing section, the mixing section having a feed end and a discharge end and comprising a first mixing portion and a second mixing portion with the second mixing portion being adjacent the discharge orifice, the feed section being formed by a shaft having a screw flight attached thereto twisting in a first direction at a first rotor screw flight twist length, the first mixing portion being formed with a generally elliptical cross section having generally opposed first and second rotor tips twisting in the first direction at a first rotor first mixing portion first tip twist length and a first rotor first mixing portion second tip twist length, respectively, and the second mixing portion being formed with a generally elliptical cross section having generally opposed first and second rotor tips twisting in a second direction at a first rotor second mixing portion first tip twist length and a first rotor second mixing portion second tip twist length, respectively, the first rotor tip of the first mixing portion connecting to the first rotor tip of the second mixing portion at a first apex positioned at a first distance from the discharge orifice, the second rotor tip of the first mixing portion connecting to the second rotor tip of the second mixing portion at a second apex generally opposed from the first apex and positioned at a second distance from the discharge orifice, and

(c) a second rotor positioned generally axially in the second generally cylindrical chamber and having a feed section and a mixing section, the mixing section comprising a first mixing portion and a second mixing portion with the second mixing portion being adjacent the discharge orifice, the feed section being formed by a shaft having a screw flight attached thereto twisting in a second direction at a second rotor screw flight twist length which is the same as or different from the first rotor screw flight twist length, the first mixing portion being formed with a generally elliptical cross section having generally opposed first and second rotor tips twisting in the second direction at a second rotor first mixing portion first tip twist length and a second rotor first mixing portion second tip twist length, respectively, the second mixing portion being formed with a generally elliptical cross section having generally opposed first and second rotor tips twisting in a first direction at a second rotor second mixing portion first tip twist length and a second rotor second mixing portion second tip twist length, respectively, the first rotor tip of the first mixing portion connecting to the first rotor tip of the second mixing portion at a third apex positioned at a third distance from the discharge orifice, the second rotor tip of the first mixing portion connecting to the second rotor tip of the second mixing portion at a fourth apex generally opposed from the third apex and positioned at a fourth distance from the discharge orifice, wherein at least one of the third distance and the fourth distance is substantially different from the first distance or the second distance.

outside and above said inlet chamber, a bearing assembly secured outside and above said inlet chamber and including first and second bearings located one above the other rotatably supporting said shaft, said shaft extending downwardly in suspended manner from said bearing assembly and freely projecting without any other support into the inlet and mixing



chambers, and seal means for sealing said shaft and said inlet chamber, said mixing chamber comprising a tubular wall of flexible material surrounding said blade means, and means for deforming said wall as said mixing shaft rotates to prevent accumulation of mixed material on said wall, said wall having a bottom outlet for discharge of mixed material.

4,767,217

MIXEF. APPARATUS AND METHOD FOR SANITARY MIXING OF SOLIDS WITH OTHER SOLIDS AND/OR LIQUIDS

Gilbert J. J. Van den Brink, Cranbury, N.J., and Koos Leemker, Lelystad, Netherlands, assignors to Schugi, Lelystad, Netherlands

Filed May 8, 1987, Ser. No. 47,747
Int. Cl.[4] B01F *15/02, 5/04*
U.S. Cl. 366—168 34 Claims

1. A mixer for mixing substances under sanitary conditions comprising a mixing chamber, a rotatable mixing shaft in said mixing chamber, said shaft extending vertically, blade means on said mixing shaft for mixing a product in said mixing chamber, an inlet chamber secured to said mixing chamber and including first inlet means for introducing solid particles into the inlet chamber, second inlet means for combining a second substance with the solid particles which have been introduced in the mixing chamber, said mixing shaft extending vertically

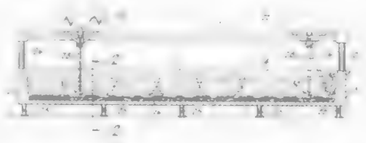
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4,767,218

MIXING PADDLE ASSEMBLY

Joseph J. Palus, and Robert E. Williams, both of Plymouth, Wis., assignors to Stoelting, Inc., Kiel, Wis.

Filed May 4, 1987, Ser. No. 45,821
Int. Cl.[4] B01F *13/00*
U.S. Cl. 366—261 21 Claims



1. In a mixing apparatus of the type described, and including a vat having a bottom surface for supporting media to be mixed in said vat, a carriage, means supporting the carriage for alternatively opposed horizontal movement in a plane generally parallel with the longitudinal plane of the said bottom surface, support means depending from said carriage in an oscillating movement relative to said vat and during said horizontal movement of the carriage; the combination therewith of an improved mixing paddle assembly comprising:

a stationary pivot support member;

paddle blade support means pivotally supported by said pivot support member for alternative rotation in opposed arcuate directions depending upon the direction of horizontal movement of said carriage;

rotational stop means for limiting rotation of said paddle blade support in said opposed arcuate direciton;

a first and a second scraper blade, each blade being fastened to and supported by said paddle blade support member

and laterally spaced from the pivot point defined by said pivot support member; and

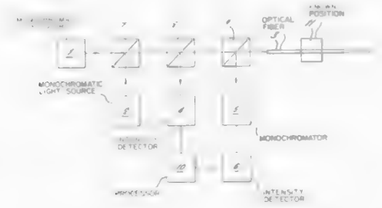
whereby, during horizontal movement of said carriage in a predetermined horizontal direction, forces exerted by said media against said paddle blade support means and said first scraper blade causes said first scraper blade to rest against the said bottom surface and wherein rotational motion of said paddle blade support means is restricted by said rotational stop means to cause lifting of media ingredients resulting in a vertical stirring action of the media, and wherein horizontal movement in an opposite direction causes the media to force and reverse the blade support means to rotate on its axis to present the second blade for scraping action against said bottom surface.

4,767,219

LIGHT SCATTERING TEMPERATURE MEASUREMENT

Geoffrey W. Bibby, Leatherhead, United Kingdom, assignor to Central Electricity Generating Board, England

Filed Jan. 29, 1986, Ser. No. 823,847
Claims priority, application United Kingdom, Feb. 1, 1985, 8502558
Int. Cl.[4] G01J *03/30, 05/60;* G01N *21/00*
U.S. Cl. 374—123 26 Claims



1. A method of measuring temperature sensed by a temperature sensing element comprising the steps of:

applying to said temperature sensing element input pulses of light at two different wavelengths λ_1 and λ_2 to obtain scattered light from said temperature sensing element;

detecting the scattered light;

deriving from the detected scattered light signals indicative of the intensity of light within the scattered light occurring at a third wavelength intermediate λ_1 and λ_2, λ_3 being chosen such that $1/\lambda_1 - 1/\lambda_3 = \nu$ where ν is the Stokes shift in wavenumber units of the scattered light for a light pulse of wavelength λ_1; and

processing the derived signals to provide a measurement of the temperature sensed by said temperature sensing element.

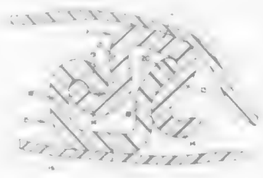
4,767,220

INTERLOCKING CLOSURE BAR FOR USE IN HIGH TEMPERATURE ENVIRONMENT

Ewald A. Kamp, Chicago, Ill., assignor to First Brands Corporation, Danbury, Conn.

Continuation of Ser. No. 783,117, Oct. 2, 1985, abandoned, which is a division of Ser. No. 567,242, Dec. 30, 1983, Pat. No. 4,561,108. This application Aug. 10, 1987, Ser. No. 85,319
Int. Cl.[4] B65D *33/24*
U.S. Cl. 383—63 75 Claims

1. A containers comprising two sidewalls and a closure fastening device, said fastening device comprising a first closure element and a second closure element; said first closure element having a general omega shape, comprising an apex portion and a profile portion extending from said apex portion, said profile portion comprising two inwardly curved arm portions terminating in two outwardly facing hook portions; said second closure element comprising an apex portion and a profile portion extending from said apex portion, said profile portion comprising first and second arm portions, wherein said first arm portion terminates in an inwardly curved hook portion adapted to engage in a hinging contact with one arm portion of said first closure element, and said second arm



portion is adapted to engage in a clamping contact with one arm portion of said first closure element and wherein said first closure element and said second closure element are adapted to engage and disengage each other by means of a torquing action.

4,767,221

COMPLIANT HYDRODYNAMIC GAS LUBRICATED THRUST BEARING

Guisuppe Paletta, deceased, late of Birmingham, and Angelo D. Paletta, legal representative, Orchard Lake, both of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Filed Jun. 11, 1987, Ser. No. 60,495
Int. Cl.[4] F16C *23/04*
U.S. Cl. 384—105 1 Claim



1. A self-pressurizing compliant hydrodynamic gas thrust bearing assembly comprising:

a shaft having a radially extending thrust plate thereon,

a shaft journal supporting said shaft having a radially extending face thereon, juxtaposed to the thrust plate on said shaft,

a plurality of U-shaped spring elements each of which has a bight portion and reentrantly secured to folded leg portions, the bight portion of each of said spring elements being secured to and extending radially of the end face of said shaft journal,

a plurality of pads secured to the leg portion of said spring elements, respectively, and

a flexible foil interposed between the pads on the end face of said journal and the thrust plate on said shaft, one end of said foil being secured to the end face of said shaft journal to preclude indexing of said foil.

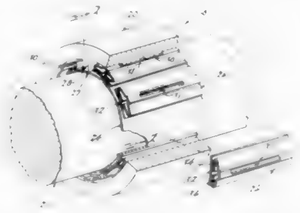
VOL 1093 ISS 5 AUG 30 1988 UMI

4,767,222

COMPLIANT HYDRODYNAMIC GAS LUBRICATED BEARING

Guiseppe Paletta, deceased, late of Birmingham, and Angelo D. Paletta, legal representative, Orchard Lake, both of Mich., assignors to Williams International Corporation, Walled Lake, Mich.

Filed Jun. 11, 1987, Ser. No. 60,494
Int. Cl.[4] F16C *25/04*
U.S. Cl. 384—106 2 Claims



1. A self-pressurizing compliant hydrodynamic gas bearing comprising

a shaft journal,

a plurality of spring elements secured to the inner periphery of said shaft journal,

a plurality of arcuate pads on said spring elements, respectively, and

a flexible foil disposed radially inwardly from said pads and positioned thereby, one end of said foil being secured to said shaft journal to preclude indexing thereof.

4,767,223

HYDRODYNAMIC JOURNAL BEARINGS

Michael J. Goodwin, Walton Stone, England, assignor to National Research Development Corporation, London, England

Filed Dec. 3, 1987, Ser. No. 128,215
Claims priority, application United Kingdom, Dec. 3, 1986, 8628956
Int. Cl.[4] F16C *32/06*
U.S. Cl. 384—114 6 Claims



1. A hydrodynamic journal bearing comprising:

a bearing bush;

a mass of fluid;

a journal presenting an axis of rotation and rotatable within and relative to said bearing bush, whereby in use an annular clearance filled with said fluid separates said journal from said bush;

said mass of fluid being isolated from any source of fluid power external to said bearing, whereby in use the load of said journal is supported by the force exerted upon it by said mass of fluid, substantially all that force being generated in steady stage running of the bearing by the relative motion of said journal, said bush, and said fluid;

an undriven fluid accumulator;

a conduit presenting a variable resistance to fluid flow, and connecting said annular clearance to said undriven fluid accumulator;

means to generate functions representing the relationship between the speed of said journal and the vibration of said bearing for at least two different stiffnesses of said support provided by said mass of fluid, and

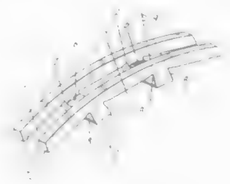
means responsive to the instantaneous speed of said journal to vary said resistance of said conduit so that said bearing operates according to said function in which said instantaneous speed of said journal correlates with the least said vibration.

4,767,224

WINDOW CAGE, PARTICULARLY FOR CYLINDRICAL ROLLER BEARINGS

Anton Bauer, Euerbach, and Siegbert Hahn, Geldersheim, both of Fed. Rep. of Germany, assignors to FAG Kugelfischer Georg Schafer (KGaA), Fed. Rep. of Germany

Filed Jul. 1, 1987, Ser. No. 69,410
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1986, 3624850
Int. Cl.[4] F16C *33/46*
U.S. Cl. 384—572 14 Claims



1. A window cage for a roller bearing,the cage comprising:

an annular cage member, which is generally U-shaped in cross section, the U-shape comprises axially opposite cage rings for engaging the opposite axial ends of the rollers of the bearing and comprises webs joining the cage rings, with a respective web being located to extend between adjacent bearing rollers;

each web having opposite sides facing circumferentially outward, opposing sides of two adjacent webs defining a pocket recess for a respective roller; the sides of the webs extend out of the pocket recesses; the opposite sides of each web converge in the direction into the pocket recess, so that in the direction out of the pocket recesses, the spaced apart, opposing sides of adjacent webs define converging surfaces for supporting a roller against a converging surface to prevent the roller from falling out of the respective pocket recess therefor;

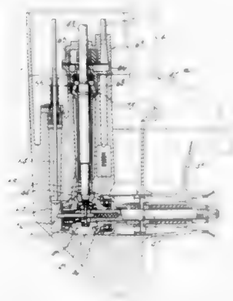
at the radial end of the web furthest out of the pocket recess and radially beyond the converging surfaces, the opposing sides of adjacent webs include generally parallel surfaces, and each parallel surface adjoins a respective converging surface, and the opposed generally parallel surfaces being spaced a distance apart which is slightly smaller than the largest diameter of the roller held in the respective pocket recess.

4,767,225

THRUST BEARING HOLDING STRUCTURE FOR OUTBOARD MOTORS

Takeshi Iio, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 432,811, Oct. 5, 1982, abandoned. This application May 17, 1984, Ser. No. 611,384
Claims priority, application Japan, Oct. 30, 1981, 56-172834
Int. Cl.[4] F16C *19/10*
U.S. Cl. 384—616 4 Claims



1. In a marine outboard drive, a lower housing, a drive shaft driven by an associated engine and passing through said lower housing, a housing containing a driven element affixed to said lower housing, said driven element being driven by said drive shaft, a propeller shaft journaled in said lower housing and driven by said drive shaft, said drive shaft having a flange formed thereon, and a thrust bearing having an inner race received around said drive shaft in proximity to said flange and an outer race, the improvement comprising said outer race being supported between said lower housing and said housing containing said driven element and shim means interposed between said inner race and said flange for axially locating said drive shaft relative to said lower housing.

4,767,226

PRINT HEAD WITH WIRES WHICH CONTINUOUSLY CONTACT THE TIP GUIDE

Atsuo Sakaida, Gifu; Masafumi Kawaura, Nagoya; Yasuji Chikaoka, Aichi; Hiroshi Iwata, Nagoya, and Kiyomitsu Asano, Musashino, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 659,728, Oct. 11, 1984, abandoned. This application Dec. 29, 1986, Ser. No. 946,680
Claims priority, application Japan, Oct. 20, 1983, 58-163205[U]
Int. Cl.[4] B41J *3/12*
U.S. Cl. 400—124 7 Claims



1. A print head for a printer which performs a printing operation with dots on a printing medium consisting of:

a plurality of actuator means each rockable about its own axis and having a free end defining an end surface, said actuator means extending in a given direction;

a plurality of print wires each being associated with a corresponding actuator means and constituting a print wire-actuator assembly with its associated actuator means, each of said print wires having a base end portion, first and second opposed side surfaces and a forward end portion, said base end portion being rigidly attached at the first side surface by soldering to the end surface of the free end of the corresponding actuator means and the forward end portion extending toward the printing medium in a direction substantially perpendicular to said given direction of the actuator means;

drive means acting on the actuator means to drive the print wire from a rest position toward the printing medium during a printing operation;

restoring means acting on the actuator means to return the print wire back to the rest position; and

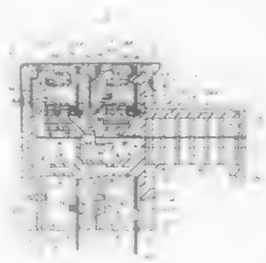
guide means for slidably guiding only respective forward end portion of all the print wires, said guide means including a plurality of guide slots, each guide slot being fixedly positioned adjacent to the printing medium and into which said forward end portion of a corresponding print wire is inserted, each guide slot being provided with a bearing side wall which faces said second surface of the corresponding print wire, each of said print wires being biased so that the forward end portion of the respective print wire is kept in positive engagement with the corresponding bearing side wall at the second side surface of the respective print wire at all times.

4,767,227

PRINT WIRE DRIVING DEVICE FOR WIRE TYPE DOT PRINTER

Akio Mitsuishi; Yasuhiko Nakazawa, and Takumi Sato, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Jan. 27, 1986, Ser. No. 823,167
Claims priority, application Japan, Jan. 25, 1985, 60-11854; Jan. 25, 1985, 60-11855; Jan. 25, 1985, 60-11856; Jan. 25, 1985, 60-11857; Jan. 25, 1985, 60-11858; Jan. 25, 1985, 60-8970[U]; Jan. 25, 1985, 60-8971[U]; Feb. 20, 1985, 60-31928; Feb. 20, 1985, 60-23356[U]; Feb. 20, 1985, 60-23357[U]
Int. Cl.[4] B41J *3/12*
U.S. Cl. 400—124 42 Claims



1. A print wire driving apparatus for a wire dot printer comprising:

a plate-like member, said member having slots therein, said member being positioned so as to extend laterally of a longitudinal axis of said apparatus, said member being formed of a magnetic material;

magnetic actuation means including a coil and a coil core defining magnetic poles positioned in facing relation to each said slot;

a driving lever means including at least one magnetic member disposed in each said slot;

a print wire coupled to each said driving lever means; and

support means, including a first plate like support member

VOL 1093 ISS 5 AG 30 1988 UMI

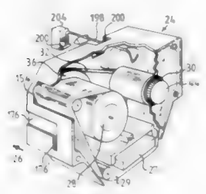
and a second plate like support member together holding a portion of both sides of the driving lever means therebetween, for pivotally supporting said driving lever means in said slots, said magnetic actuation means, plate-like member and driving lever means defining at least part of a magnetic circuit when said magnetic actuation means is actuated to pivotally displace said driving lever means to displace said print wire in the direction of the longitudinal axis of the apparatus.

4,767,228

RIBBON CASSETTES

Alan Harry, Royston, England, assignor to Francotyp-Postalia GmbH, Berlin, Fed. Rep. of Germany

Filed Jan. 14, 1986, Ser. No. 818,656
Claims priority, application United Kingdom, Jan. 19, 1985, 8501404
Int. Cl.[4] B41J *33/24*
U.S. Cl. 400—234 4 Claims



1. A printing ribbon cassette for printing on a workpiece comprising:

a ribbon supply spool;

a ribbon take-up spool;

a pulley driveably connected with each of said spools;

a printing ribbon wound on said supply spool and said take-up spool;

drive means disposed between said spools for engaging and directly driving only said ribbon and advancing said ribbon, and thereby applying an unwinding force to said supply spool to transfer ribbon therefrom;

on endless belt operatively coupling said pulleys of said supply and take-up spools for transmitting the unwinding force from the supply spool to the take-up spool;

where a transmission ratio of a belt drive comprised by said endless belt, said supply spool and said take-up spool is such that, at the beginning of and throughout ribbon transfer from the supply spool to the take-up spool, the take-up spool is wound at a speed greater than the ribbon unwinding speed of the supply spool, the tension of the belt drive being such as to impart a slipping drive from the supply spool to the take-up spool;

said supply spool incorporating a one-way clutch for permitting manual rotation of said take-up spool in order to take up slack in the ribbon without rotating said supply spool through said belt drive.

4,767,229

DRIP AND SPLATTER PROOF PAINT APPLICATOR

Edward Cha, 15 Marwood Rd. South, Port Washington, N.Y. 11050

Filed Oct. 16, 1987, Ser. No. 109,414
Int. Cl.[4] B05C *17/00, 17/02*
U.S. Cl. 401—208 3 Claims



1. A drip and splatter proof paint applicator which comprises:

(a) a housing having a hollow chamber, a filler neck on one side for receiving paint within the chamber, a collar positioned at a slight angle at rear end, and a recessed portion extending inwardly from front end into the chamber, the recessed portion having a plurality of holes extending across its width in various locations for allowing paint to exit from the chamber when said housing is placed in any position;

(b) a cap to attach to the filler neck of said housing for sealing the paint within the chamber;

(c) a handle attached at one end to the collar of said housing so that a person can grip said handle to manipulate said housing with respect to a flat surface to be painted;

(d) means for applying the paint from the chamber of said housing to the flat surface, said means being within the recessed portion and sized to extend somewhat partly outwardly from the front end of said housing for applying the paint therefrom, said paint applying means is a paint roller unit including a pair of spaced apart rollers each of which having shaft ends extending from opposite sides thereof, a pair of braces each of which extending between one of said shaft ends on said each of said pair of rollers for holding said pair of rollers apart and allowing said shaft ends of said pair of rollers to rotate thereabout, an endless belt extending around said pair of rollers and having a plurality of suction cups disposed thereon so that said suction cups pick up the paint and apply the paint directly to the flat surface when said housing is manually moved forward and backward without making a mess and thus eliminating the need for drop cloths, a guide roller spring biased onto said housing at the front end thereof to ride on said suction cups for smoothing out the paint after said suction cups apply the paint directly to the flat surface; and

(e) means for removably attaching said paint applying means within the recessed portion of said housing allowing said paint applying means to be disengaged from said housing so that the paint within said housing and on said paint applying means can be cleaned therefrom after each use of said applicator.

4,767,230

SHAFT COUPLING

Floyd S. Leas, Jr., Abington, Pa., assignor to Algonquin Co., Inc., Chestertown, Md.

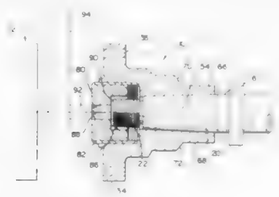
Filed Jun. 25, 1987, Ser. No. 66,256
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—16 11 Claims

1. A shaft coupling assembly securable to a shaft having a tapered end which terminates in a threaded free end, said shaft coupling comprising:

a shaft coupling hub having a central stepped hub portion;

a shaft coupling flange extending generally radially outwardly from a first end of said hub;

a central bore in said hub, said bore extending axially through said hub and being generally perpendicular to said coupling flange, said central bore including a shaft engagable taper bore segment and an internally threaded, jacking plug receivable enlarged bore segment; and



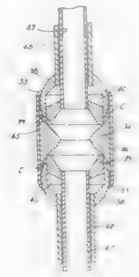
at least one inclined striking surface on an outer surface of said central stepped hub portion, said at least one inclined striking surface extending between a first outer hub surface at a second end of said hub and a first intermediate outer hub surface.

4,767,231

ADJUSTABLE ARM

Frederick A. Wallis, 9 Mosaic Street, Shelley, Western Australia, Australia

PCT No. PCT/AU85/00002, § 371 Date Aug. 28, 1985, § 102(e) Date Aug. 28, 1985, PCT Pub. No. WO85/03112, PCT Pub. Date Jul. 18, 1985
PCT Filed Jan. 3, 1985, Ser. No. 779,783
Claims priority, application Australia, Jan. 5, 1984, PG3080
Int. Cl.[4] F16C *11/06*
U.S. Cl. 403—56 3 Claims



1. An adjustable arm comprising a pair of spaced end sections and at least two intermediate sections, each section being adjustably connected to an adjacent section through a ball and socket connection, the ball and socket connection connecting adjacent intermediate sections to each other comprising a ball member affixed to one end of each of said joined intermediate sections, a housing member pivotally connected at its opposite sides to said jointed sectioned ends and having a recess receiving said ball members and a double ended rigid concave cup member slightly supported in said housing member recess and positioned between said ball members, a longitudinally extending cavity extending through each said jointed intermediate sections, and the ball member affixed thereto, a compression member slidably supported in each of said cavities and each engaging an opposite end of said concave cup member of said ball and socket joint, and means for applying a compressive force to said one of said compression members for urging said cup shaped member into frictional engagement with the other of said compression members for precluding pivotal movement of said joint.

4,767,232

HINGE JOINT FOR TUBULAR RAIL AND POST MEMBERS

Patrick A. Francis, Troy, Ohio, assignor to Superior Aluminum Products, Inc., Russia, Ohio

Filed May 7, 1987, Ser. No. 46,615
Int. Cl.[4] F16C *11/00*
U.S. Cl. 403—91 5 Claims



1. In a joint for connecting intersecting rail members to permit adjustment of the angular relation of such rail members in connecting inclined handrails, for stairways and the like, the improvement comprising:

a first joint member terminating in an extended hinge portion, the terminal end of said portion having a quarter-spherical surface formed on the end thereof,

means in said first member defining a quarter spherical socket adjacent said hinge portion,

a second generally cylindrical joint member also having an extended hinge portion terminating in a quarter-spherical end proportioned to be received in said socket of said first member, and further having means defining a quarter-spherical socket adjacent said extending portion,

said socket being proportioned to receive the quarter-spherical end of said first member,

transverse connector means extending through said respective extended hinge portions for joining said members together in interfitting relation with said ends thereof received in said sockets for tilting movement about said transverse connecting means.

4,767,233

IMPELLER MOUNTING APPARATUS

John W. Erickson, Huntington Beach, Calif., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 20, 1987, Ser. No. 28,358
Int. Cl.[4] B25G *3/00*
U.S. Cl. 403—318 4 Claims

1. Impeller mounting means for positioning an impeller having a hub portion on a rotating shaft for rotation therewith, said mounting means:

at least one radially oriented pin extending through said hub portion into said shaft;

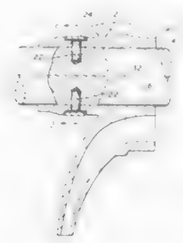
a generally circular, continuous, resilent band of metallic material encircling said hub portion radially outwardly of said pin in engagement with said pin for retaining said pin in said hub portion and shaft and engaging said hub portion for retaining said band on said hub portion, said band having an inside dimension smaller than an outside dimension of said hub portion;

a second radially oriented pin extending through said hub portion into said shaft, said second pin being diametrically opposite to said first mentioned pin;

VOL 1093 ISS 5 AG 30 1988 UMI

a recess in said hub portion having an outer dimension less than the inside dimension of said band; and,

surface means including a radially inwardly projecting em-



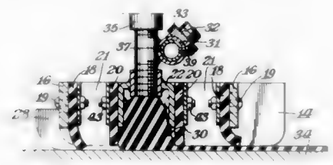
bossment on said band having sloping sides engageable with said hub portion for increasing the inside dimension of said band when being installed on said hub portion whereby said inside dimension is positioned in said recess.

4,767,234

HIGHWAY SEALANT APPLICATOR SYSTEM

Rudolph R. Rizzo, 1005 Thaxten La., Wilmington, Del.

Filed Nov. 4, 1987, Ser. No. 117,290
Int. Cl.[4] E01C *19/12*
U.S. Cl. 404—111 4 Claims





1. Apparatus for applying a sealing composition to a road surface comprising:

inlet means for supplying said composition leading to an applicator comprising

two rigid longitudinal vertical side walls, each having a leading edge and a trailing edge, said side walls separated by and affixed to two rigid vertical outer end walls, one end wall affixed to said leading edges of said side walls and one end wall affixed to said trailing edges of said side walls,

each said end wall having a vertically adjustable flexible doctor blade affixed to it extending across the width of said end wall and extending downwardly beyond the lower edge of said end wall,

said applicator having a pressure chamber formed therein comprising two vertically adjustable rigid transverse inner walls affixed to a transverse top bracket, the top bracket affixed at either end to said side walls, said inner walls and top bracket extending transversely between said side walls and being located between said end walls,

said top bracket having an opening therein and being connected to said inlet means via valve means, and

means affixed to said apparatus for propelling said apparatus over a road surface,

said apparatus having means for adjusting the spacing between the lower edge of said side walls and said road surface,

whereby, when said spacing between the lower edge of said side walls and said road surface is set at a desired distance, thereby setting the gap between the road surface and the lower edges of said rigid transverse inner walls to a desired distance, and when the sealing composition is supplied to said applicator, the composition is applied to the road surface to a uniform thickness across the width of said applicator.

4,767,235

PREFABRICATED COMPOSITE ELEMENT FOR THE BUILDING OF A SEA WALL

Giuseppe Caradonna, Recanati, and Antonio Ferruccio, 76 Via Gherarducci, I-62019 Recanati, both of Italy, assignors to Antonio Ferruccio, Recanati MC, Italy

Filed Jul. 28, 1987, Ser. No. 79,229
Claims priority, application Italy, Jul. 29, 1986, 48324 A/86
Int. Cl.[4] E02B *3/06*
U.S. Cl. 405—33 6 Claims



1. A reinforced concrete prefabricated composite element for building a breakwater sea wall, consisting of a pole to be driven down into the sea bed and a plurality of lateral breakwater arms, characterized in that:

(a) said pole has a horizontal cross section in the form of a regular poligon;

(b) each said breakwater arm is formed with a base having substantially horizontal upper and lower faces, with a bore through said faces, said bore having a profile similar to said cross section of the pole for threading said arm onto the pole;

a raised portion on said upper face embracing said bore;

a recess on the lower face complementary to said raised portion for receiving said raised portion of an underlying arm; and

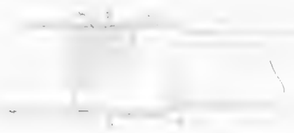
a wedge shaped elongated body integrally and laterally projecting from said base, said arms being assembled on the pole in overlying relationship and angularly offset by an angle equal to or a multiple of the angle distance of two adjacent vertexes of said poligonal cross section of the pole.

4,767,236

SEWER RENOVATION BY EXPANDING A LINER WITHIN THE SEWER AND PLACING A NEW PIPE WITHIN THE EXPANDED LINER

Nigel Rice, Epworth Grange, Beltoft, Epworth, Near Doncaster, DN9 1JD, England

Filed Jun. 22, 1987, Ser. No. 65,275
Claims priority, application United Kingdom, Jun. 23, 1986, [illegible]
Int. Cl.[4] F16L *1/00*
U.S. Cl. 405—154 10 Claims



1. A method of renovating a length of an existing underground pipe which comprises

introducing a plurality of radially expandable tubular members into the pipe so as to form a liner, radially expanding each member so that the liner engages with and then ruptures the pipe, and introducing a replacement pipeline into the liner.

4,767,237

MARKING TAPE WITH WIRE CONDUCTORS AND METHODS FOR USE

Armond D. Cosman, Austin, and Joe T. Minarovic, Georgetown, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 900,453, Aug. 26, 1986. This application Feb. 8, 1988, Ser. No. 153,513
Int. Cl.[4] F16L *57/00;* G01V *3/08*
U.S. Cl. 405—157 12 Claims



1. A marking tape for placement underground including:

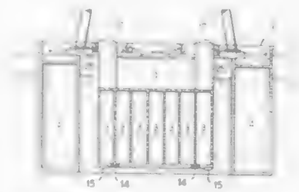
at least one pair of closely spaced, parallel, insulated conductors carried by and extending the length of the tape wherein the conductors are wires; and at least one other insulated conductor carried by and extending the length of the tape without any conductors similar to and positioned between said one pair of conductors and said other conductor, said other conductor positioned away from said one pair of conductors at a distance that is greater than the distance between the conductors of said pair of conductors.

4,767,238

METHOD OF ACCURATELY POSITIONING A PREFABRICATED STRUCTURE ON THE SEA BED OR ON A RIVER BED BY GROUNDING, AND A SEA OR A RIVER CONSTRUCTION OBTAINED BY SAID METHOD

Pierre Blanc, Aix-en-Provence, France, assignor to GTM-Entrepose, Nanterre, France

Filed Jan. 15, 1987, Ser. No. 3,490
Claims priority, application France, Jan. 15, 1986, 86 00482
Int. Cl.[4] E02B *17/02;* E01D *21/00*
U.S. Cl. 405—207 14 Claims



1. A method of installing a floating prefabricated structure in a sea or river bed at a desired site, the method comprising:

at least partially surrounding said prefabricated structure with a floating caisson;

maintaining a substantial gap between said caisson and said prefabricated structure;

towing said caisson and said prefabricated structure to said desired site;

grounding said caisson on said sea or river bed by ballasting said caisson so that said caisson is fixed on said sea or river bed and shelters said structure;

adjusting the location and orientation of said prefabricated structure with respect to the grounded caisson as a fixed reference; and

ballasting said prefabricated structure so that said structure is grounded on said sea or river bed.

4,767,239

METHOD AND APPARATUS FOR CONSTRUCTING AN ICE STRUCTURE

Richard E. Erwin, Cypress, Tex., assignor to Amoco Corporation, Chicago, Ill.

Filed Jan. 8, 1987, Ser. No. 1,287
Int. Cl.[4] E02B *17/02*
U.S. Cl. 405—217 3 Claims

1. A method for constructing an elevated ice structure formed on a sheet of naturally-occurring ice, comprising:

driving a vehicle on the sheet of ice;

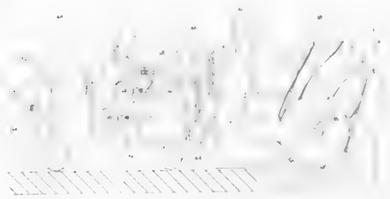
lowering a grinding wheel mounted to the vehicle onto the sheet of naturally-occurring ice;

collecting ice chips which are generated by the action of the wheel on the ice, such ice chips being collected on the vehicle;

mixing the collected ice chips with water to form a slurry of

VOL 1093 ISS 5 AUG 30 1988 UMI

solid ice particles and liquid water, such slurry being collected on the vehicle; and



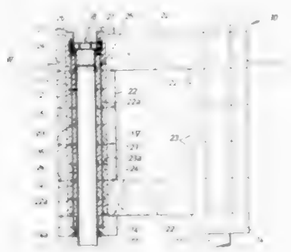
spraying the slurry from the vehicle onto the surface of the sheet of naturally-occurring ice to construct an elevated ice structure.

4,767,240

PILE-FRAMED STRUCTURE

Shigeaki Ohkawara, and Yukio Oka, both of Tokyo, Japan, assignors to Tobishima Corporation, Tokyo, Japan

Filed Oct. 27, 1986, Ser. No. 923,542
Claims priority, application Japan, Jul. 16, 1986, 61-165659
Int. Cl.[4] E02D *5/20, 5/34;* E02B *3/06*
U.S. Cl. 405—225 2 Claims



1. A pile-framed structure, comprising:

(a) four vertically oriented, elongate piles (**11**) driven into a seabed with tops thereof extending above the surface of the water (w), said piles being arranged in a rectangular grid pattern including two spaced and parallel rows and two spaced and parallel columns,

(b) a plurality of vertically spaced ribs (**12**) provided on and around the outer surface of each pile,

(c) four reinforcing cages (**13**) individually installed over and surrounding the piles, each cage including an upper suspension member (**18**) resting on top of an associated pile and including a central portion (**19**) and a plurality of arms (**20**) extending radially outwardly from said central portion and each supporting an upwardly extending inverted L-shaped reinforcing bar (**21**), an annular lower support block base (**14**) closely fitted around the pile and disposed below a lowermost one of the ribs, and bar members (**15**) extending between the suspension member and the support block base and peripherally spaced from the pile, the bar members of each cage being circumferentially spaced around the suspension member and support block base with the upper ends of the bar members extending through the radially extending arms to enable varying the lengths of the cages before their installation over the piles to compensate for differing heights of the piles such that the support block bases of the cages are all disposed at the same level, and further comprising a plurality of hoops (**16**) vertically spaced around and secured to the bar members,

(d) first and second pairs of elongate precast blocks (**22**) each having through holes (**22a**) at opposite ends thereof, said holes having roughened surfaces, the first pair of blocks being horizontally oriented and fitted over the suspension members and bar members of cages surrounding associated piles at opposite ends of said rows, and resting on the support block bases of said cages with said holes defining annular clearances surrounding the bar members and piles, and the second pair of blocks being horizontally oriented and similarly fitted over the cages and piles at opposite ends of said columns and resting on the first pair of blocks, and

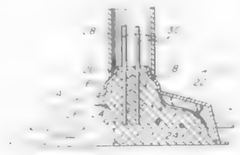
(e) concrete (c) poured into and filling the annular clearances defined by the first and second pairs of blocks, and embedding the reinforcing cages, the ribs and roughed surfaces therein to establish a rigid unitary structure.

4,767,241

METHOD FOR SIMULTANEOUS FORMING OF CONCRETE FOOTINGS AND PIERS

Gordon T. Wells, 27 School St., Northfield, Vt. 05663

Division of Ser. No. 797,502, Nov. 13, 1985, Pat. No. 4,673,157.
This application Apr. 3, 1987, Ser. No. 33,665
Int. Cl.[4] E02D *5/44, 7/00*
U.S. Cl. 405—239 2 Claims



1. A method of simultaneous forming of concrete footings and piers comprising:

(a) excavating a footing hole to the required size and depth;

(b) placing a one time use hollow imperforate footing form on the bottom of said excavation;

(c) inserting a hollow imperforate vertically extending pier form onto said footing form;

(d) backfilling around the thus assembled forms; and

(e) pouring concrete into the upper end of the pier form to fill both forms.

4,767,242

ROOF TRUSS SLING

Raymond J. McLaren, Tamworth, Australia, assignor to Gary I. Zamel, Randwick, Australia, a part interest

Filed Aug. 26, 1986, Ser. No. 901,051
Claims priority, application Australia, Sep. 3, 1985, PH02257
Int. Cl.[4] E21D *21/00*
U.S. Cl. 405—288 14 Claims



1. A roof truss sling for use in mines comprising: at least one flexible tension member adapted to engage at least two spaced mounting devices fixed in a mine roof, an open ended sleeve adapted to receive said flexible tension member, said sleeve being able to be distorted into a wave pattern by applying oppositely directed transverse bending forces of sufficient amplitude to provide the substantially simultaneous functions of: (1) engagement of said flexible tension member fixedly within said sleeve and (2) applying a tensile force between said mounting devices by tensioning said flexible tension member.

5. A method of trussing the roofs of mines comprising the following steps:

feeding at least one flexible tension member through an open ended sleeve,

engaging said flexible tension member with at least two spaced mounting devices fixed in a mine roof,

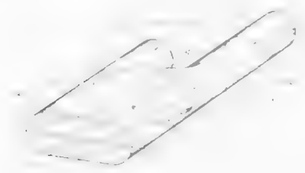
distorting said sleeve such that said tension member is fixedly engaged within said sleeve and the ends of said sleeve are drawn sufficiently closer together by said distortion having sufficient amplitude so as to apply a tensile force between said mounting device.

4,767,243

PNEUMATIC CONVEYING SYSTEM WITH DIRECTIONAL CHANGE OF A GAS/PARTICULATE MATERIAL STREAM

Roine Brännström, Finspong, Sweden, assignor to Asea Stal AB, Finspong, Sweden

Filed Feb. 26, 1986, Ser. No. 832,954
Claims priority, application Sweden, Feb. 26, 1985, 8500923
The portion of the term of this patent subsequent to Oct. 13, 2004, has been disclaimed.
Int. Cl.[4] B65G *53/04*
U.S. Cl. 406—193 8 Claims



1. Apparatus for providing at least part of a discharge system for conveying a mixture of gas and particulate material from a pressurized container to a collecting container or other place which is under lower pressure than the pressurized container, said apparatus comprising:

conduit means having a plurality of substantially parallel tube portions connected in series one after the other and including a first tube portion, a last tube portion downstream of said first tube portion, and a plurality of intermediate tube portions between said first tube portion and said last tube portion;

elongated overflow means connecting each upstream tube portion to a successive downstream tube portion, said upstream and successive downstream tube portions opening into said overflow means; and

means for discharging a continuous flow of said gas and particulate mixture from said pressurized container into said first tube portion;

said overflow means connecting each tube portion to the next successive tube portion being shaped to stop the particles or substantially reduce the speed of the particles, whereafter they are accelerated again such that substantial reductions in pressure are obtained at each of said overflow means;

said overflow means providing a blind space for accumulating an erosion preventing cushion taking up the impact of said particulate material at said overflow means;

and the number of said tube portions and overflow means and the cross-sectional area of each being such that a desired flow of said gas and particulate material is achieved and the pressure of said flow is reduced from the pressure of said pressurized container to said lower pressure;

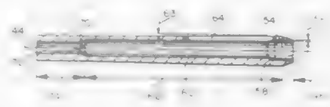
wherein the transition between an upstream and a downstream tube portion of the overflow means is formed with a double-curved surface facing inward towards the interior of the overflow means, said surface smoothly connecting with the inner surfaces of the said tube portions.

4,767,244

METHOD AND APPARATUS FOR BELT SPLICE PREPARATION

Paul J. Peterson, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 837,114, Mar. 7, 1986, Pat. No. 4,715,106.
This application Jul. 10, 1987, Ser. No. 71,946
Int. Cl.[4] B23B *51/00*
U.S. Cl. 408—204 4 Claims



1. A tool for cutting cylindrical cores in rubber comprising: a tubular body having an axis of rotation; a first annular section of said tubular body with a first co-axial bore therethrough and a sharp circular cutting edge forming one end of said first annular section; said first annular section being integrally connected to a second annular section of said tubular body at the end distal said cutting edge, said second annular section having a second bore coaxial with said first bore and separated therefrom by a first tapered shoulder, and a cutting slot extending axially from proximate said first shoulder and including a minority of the periphery of said second annular section, said cutting slot having a cutting edge extending axially along one edge of said cutting slot, a third section of said tubular body integral with said second annular section forming a shaft adaptable for gripping said tool.

4,767,245

ANNULAR HOLE CUTTER

Michihiro Shoji, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 793,515, Oct. 31, 1985, abandoned.
This application Jun. 19, 1987, Ser. No. 64,328
Claims priority, application Japan, Nov. 1, 1984, 59-229021
Int. Cl.[4] B23B *41/02*
U.S. Cl. 408—204 6 Claims



1. An annular hole cutter having a cylindrical annular wall provided with a plurality of cutting teeth spaced around the lower end thereof, said wall having a gullet and a spiral groove extending axially upwardly from the gullet on the outer side of the wall between each adjacent teeth, characterized in that the

VOL 1093 ISS 5 AG 30 1988 UMI

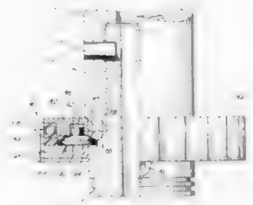
cutting edge of each of said teeth is defined by a downwardly and outwardly inclining back off surface and a downwardly and inwardly inclining back off surface intersecting each other in a V-form, said cutting edge being of generally equilateral triangle with the ridge line defined by the intersections between said back off surfaces intersecting at least the front face of said tooth with a central axis of said front face, said cutting teeth including high cutting teeth having back off surfaces the inclination angle of which is relatively steep and low cutting teeth having back off surfaces the inclination angle of which is relatively gentle, and high and low cutting teeth being alternately disposed.

4,767,246

QUICK-RELEASE TOOL HOLDING DEVICE

William J. Camloh, Lafayette, and Charles Alcott, Canastota, both of N.Y., assignors to Camloh Industries, Inc., Tully, N.Y.

Filed Dec. 5, 1986, Ser. No. 938,597
Int. Cl.[4] B23C *9/00*; B23B *31/12*
U.S. Cl. 409—234 14 Claims



1. Quick-release tool holding device comprising a tool holder adapted to have a tool attached at a distal side thereof and including a proximal male sleeve having a shank, and a shoulder having an undercut annular tapered surface on the distal side thereof, and

a tool holder retaining head including a sleeve portion having a cylindrical hole into which said shank fits with means permitting axial movement of said tool holder shank relative to said sleeve portion, but locking the same against mutual rotation, and a quick release retainer mechanism having an annular flange affixed onto the distal end of said sleeve member, a plurality of generally disk-like button members which releasably engage the tapered surface of said tool holder, an annular collar supported on said flange for rotation with respect thereto, and cam means mounted to turn with said collar for moving said button members radially between engaged and disengaged positions, respectively, in which engaged position said button member sloping surfaces are disposed against said tool holder tapered surface and in which disengaged position said button members are clear of the shoulder of said tool holder.

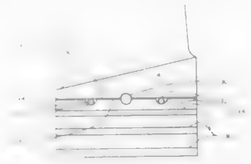
4,767,247

APPARATUS AND METHOD FOR PREVENTING RELATIVE BLADE MOTION IN STEAM TURBINE

Albert J. Partington, Winter Springs, Fla., and Anthony Hodgson, Charlotte, N.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 24, 1987, Ser. No. 18,321
Int. Cl.[4] F01D *5/32*
U.S. Cl. 416—193 A 25 Claims

1. In a steam turbine of the type having a rotor with a plurality of generally axially extending grooves disposed thereabout, a section of rotor between adjacent grooves defining steeples, a plurality of blades, each blade having a root in registration with one of the grooves and platform juxtaposed the steeples that are adjacent the groove with which the root registers, and means for locking each root in the groove with which it registers to prevent axial movement of the blade, an apparatus for preventing the root from rocking in the groove comprising wedge means disposed between each platform and



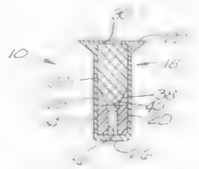
the steeples with which the platform is juxtaposed, there being an interference fit between the wedge means and the platform so that the wedge means urges the root radially outward against edges of the groove.

4,767,248

FASTENER FOR SECURING PANELS OF COMPOSITE MATERIALS

John D. Pratt, Rancho Cucamonga, Calif., assignor to Monogram Industries, Inc., Culver City, Calif.

Filed Mar. 18, 1986, Ser. No. 840,733
Int. Cl.[4] F16B *13/06*
U.S. Cl. 411—45 22 Claims



1. A fastener for mounting in aligned openings through two panels to connect them together in overlapped outer and inner relation and adapted to be set by a setting tool, said fastener comprising:

(a) a fastener body for receipt within the openings in the panels, said fastener body having,

a generally annular sidewall for projecting inwardly beyond the inner panel, and

an enlarged body head for engaging the outer panel;

(b) a deformable sleeve positioned within said fastener body adjacent to the inner surface of said sidewall and spaced from said body head; and

(c) means within said fastener body adjacent the top of said sleeve and between said sleeve and said body head for deforming said sleeve and said sidewall outwardly to a fully set condition in overlying contact with the outer surface of the inner panel when the top of the deformable sleeve moves toward the body head upon application of an axial force to both ends of the fastener.

4,767,249

SELF-BROACHING KEY

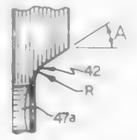
Robin W. Elcock, Torrance, and Belen A. Guevara, Wilmington, both of Calif., assignors to Rexnord Inc., Brookfield, Wis.

Filed Sep. 12, 1986, Ser. No. 906,705
Int. Cl.[4] F16B *39/06*
U.S. Cl. 411—110 4 Claims

1. In combination, a self-broaching key and a fastener assembly installed in a threaded passage of a carrier material, said key locking the fastener assembly in the passage and comprising:

an upper locking portion;

a lower tang portion formed continuous with said upper locking portion; and



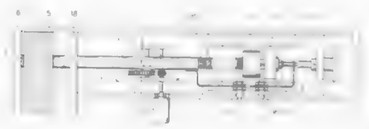
a cutting surface extending between said upper locking portion and said lower tang portion, said cutting surface defined by a radius and a substantially flat angled surface, wherein the cutting surface is substantially identical to a thread form radius and angled surface of the uppermost thread in the carrier material.

4,767,250

SYSTEM ON A BOOKBINDING MACHINE, TO PERMIT ACTUATOR-EFFECTED POSITIONING OF MACHINE ELEMENTS FOR BOOK BLOCK FORMAT CHANGING

Siemen Garlichs, Espelkamp, Fed. Rep. of Germany, assignor to Kolbus GmbH & Co. KG, Rahden, Fed. Rep. of Germany

Filed Apr. 13, 1987, Ser. No. 37,337
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613120
Int. Cl.[4] B42C *13/00, 13/04*; B65H *43/02*; B21J *15/28*
U.S. Cl. 412—11 20 Claims



1. Apparatus for generating signals commensurate with multiple processing parameters of a compressible solid product comprising:

adjustable clamp means for receiving and supporting a sample of the compressible product to be processed;

means for generating a first predetermined force;

means for generating a second predetermined force;

means for adjusting said clamp means by displacing at least a portion thereof, to apply an increasing compressive force against the sample;

means coupled to said means for adjusting, for sensing the displacement of said portion relative to a reference point and for generating a displacement signal commensurate therewith, said displacement corresponding to the magnitude of the compressive force applied by said clamp means against the sample;

means for sensing when an increasing compressive force applied by said clamp means exceeds said first predetermined force and for generating a first control signal commensurate therewith;

means for sensing when an increasing compressive force applied by said clamp means exceeds said second predetermined force and for generating a second control signal commensurate therewith; and

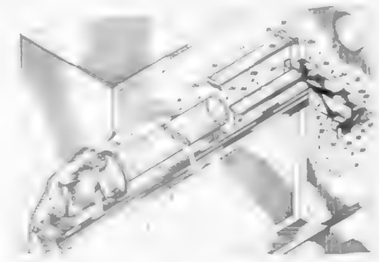
means responsive to said first and said second control signals and to said displacement signal for generating processing parameter command signals.

4,767,251

CANTILEVER APPARATUS AND METHOD FOR LOADING WAFER BOATS INTO CANTILEVER DIFFUSION TUBES

J. S. Whang, Scottsdale, Ariz., assignor to Amtech Systems, Inc., Tempe, Ariz.

Filed May 6, 1986, Ser. No. 860,661
Int. Cl.[4] F16B *39/24*; F27D *3/00*
U.S. Cl. 414—147 22 Claims



16. An apparatus for loading semiconductor wafers into a furnace tube, the apparatus comprising in combination:

(a) a cantilever diffusion tube having a longitudinal axis, a distal open end portion, and a proximal end portion supported in a cantilever fashion by means of a first carriage mechanism that moves the cantilever diffusion tube along a path in the direction of its longitudinal axis into a stationary furnace tube;

(b) means for carrying the wafers;

(c) a cantilever member having a distal end portion and a proximal end support portion for supporting the wafer carrying means;

(d) means attached to the proximal end support portion for supporting the cantilever member in aligned relationship with the distal open end portion of the cantilever diffusion tube;

(e) means for moving the first carriage mechanism to position the distal open end portion of the cantilever diffusion tube so as to surround the wafer carrying means, a portion of the cantilever member, and the wafers carried by the wafer carrying means; and

(f) means for causing the relative vertical movement between the cantilever member and the cantilever diffusion tube to, in effect, lower the wafer carrying means onto an inner bottom surface of the cantilever diffusion tube and produce clearance between the cantilever member and the wafer carrying means.

4,767,252

MANIPULATOR FOR AUTOMATICALLY SUPPLYING MACHINES FOR THE CENTRIFUGATION OF BOBBINS OF YARNS

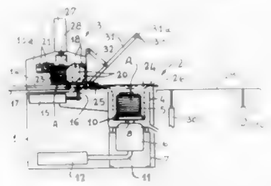
Maurice Pignal, Annoway, and Bernard Chapuis, Lyons, both of France, assignors to Robatel SLPI, Genas, France

Filed May 6, 1987, Ser. No. 46,397
Claims priority, application France, May 9, 1986, 86 06875
Int. Cl.[4] B65H *1/00*
U.S. Cl. 414—222 10 Claims

1. A manipulator apparatus for automatically conveying bobbins of material along a horizontal surface to centrifuge machines having at least one rotatable basket disposed below an opening in said surface in which basket the bobbins are subjected to centrifugal action and which basket includes a vertically movable plate for supporting the bobbins within the basket as the basket is rotated comprising a carriage horizontally reciprocally movable from a first position remote from the basket to a second position above the plate of the basket, said carriage including handling means for moving a bobbin

VOL 1093 ISS 5 AG 30 1988 UMI

from adjacent said first position to said second position to be received on the plate of the basket, and an articulated flap means movable between vertical and horizontal positions, means for moving said flap means into said horizontal position



covering the opening into the basket when the bobbins are rotated and means for moving said flap means transversely of the opening to push bobbins away from the basket after the bobbins have been rotated therein.

4,767,253

TUNNEL CLEANING TRAIN

Dieter G. Luck, Johannesburg, South Africa, assignor to General Mining Union Corporation Limited, South Africa

Filed Jan. 5, 1982, Ser. No. 337,163

Claims priority, application South Africa, Jan. 9, 1981, 81/0124; Sep. 4, 1981, 81/6142

Int. Cl.[4] E21F *13/00*

U.S. Cl. 414—339 4 Claims



1. A tunnel cleaning train comprising a plurality of rail cars adapted to carry particulate material and coupled together, each rail car having a pair of fixed rails mounted thereon in spaced parallel relation, connecting rail means between each of the corresponding rails of adjacent cars comprising a telescopic rail section and pivot means pivotally connecting each end of the telescopic rail section to the adjacent end of the corresponding rail section in the adjacent cars so as to provide a continuous articulated track extending on and between the plurality of cars, a particulate load distribution vehicle carried by the track including a load carrying body with an open top and at least one door at the bottom to permit transfer of particulate material from the vehicle to the rail cars, door drive means mounted on the vehicle for opening and closing the door, a plurality of wheel means mounted on the vehicle for rotation on substantially vertical axes to support the vehicle for rolling motion on the track, each wheel means having a substantially conical lower rail-engaging surface surrounding a central projection providing support for the vehicle on track portions having varying rail spacing, vehicle drive means mounted on the vehicle and connected to at least one of the wheel means for driving the vehicle on the track, a loading car carrying a ramp track which is pivotally connected at one end to the continuous articulated track carried by the rail cars, means for moving the ramp track between a horizontal position substantially aligned with the rails of the articulated track and another position in which at least a portion of the ramp track is below the level of the articulated track to permit loading of the vehicle, a pair of rails mounted on the vehicle and vehicle loading means moveable on the pair of rails when the vehicle is on the ramp track to convey particulate material to the body of the vehicle.

4,767,254

VEHICLE RESTRAINT HAVING AN UPWARDLY BIASED RESTRAINING MEMBER

Jonathan W. Kovach, Milwaukee, and Martin P. Hageman, Mequon, both of Wis., assignors to Kelley Company Inc., Milwaukee, Wis.

Filed Apr. 21, 1986, Ser. No. 854,386

Int. Cl.[4] B65G *67/02*

U.S. Cl. 414—401 9 Claims



8. In combination, loading dock means having a vertical face, a frame mounted on said dock means and including vertically extending guide means secured to said face, truck restraining means including a slide mounted for vertical linear movement on said guide means and also including a restraining member rigidly connected to said slide and extending outwardly therefrom, said truck restraining means being movable between a lower storage position and an upper operative position, biasing means interconnecting said frame and said restraining means and constructed and arranged to exert a vertical force of sufficient magnitude to move the restraining means in a substantially vertical linear path from said storage position to said operative position where said restraining member is engageable with an abutment on a truck, and power operated means interconnecting said restraining means and said frame and constructed and arranged to exert a downward vertical force of sufficient magnitude to overcome the force exerted by said biasing means to move said restraining means downwardly from the operative position to said lower storage position.

4,767,255

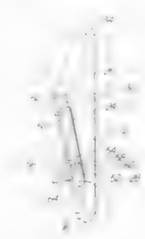
BACKHOE BOOM CYLINDER BLEED CIRCUIT

Roger D. Mickelson, W. Burlington, Iowa, and Thomas R. Brown, Plainfield, Ill., assignors to J.I. Case Company, Racine, Wis.

Filed Sep. 28, 1987, Ser. No. 101,719

Int. Cl.[4] E02F *3/42*

U.S. Cl. 414—695.5 1 Claim



1. In a backhoe arrangement including a boom pivotally mounted to support structure, a boom cylinder pivotally connected between said support structure and said boom, said boom cylinder having an extensible and retractable rod with a piston head on one end thereof, said piston head having a seal for defining a rod end portion of the cylinder and a head end portion of the cylinder, said boom cylinder further having a rod end port and a head end port, and a control valve connected to said rod end and head end ports for directing pressurized fluid to one or the other port, the improvement comprising:

a bleed port in said boom cylinder near said head end port, and a bleed line connecting said bleed port to said head end port;

said boom and boom cylinder movable to a working position where said piston head seal is located between said rod end and bleed ports for preventing fluid communication between the rod and head end portions of the cylinder;

said boom and boom cylinder movable to a generally over-center position in response to actuation of said control valve for directing fluid pressure through said rod end port wherein said piston head seal is located between said bleed and head end ports for permitting fluid pressure transmission between the rod and head end portions of the cylinder; and

said boom and boom cylinder movable to an over-center transport position in response to reverse actuation of said control valve for directing fluid pressure through said head end port wherein said piston head seal is located between said rod and head end ports.

4,767,256

METHOD OF OPERATING A BOOM

David J. Knight, Cheddleton, United Kingdom, assignor to J. C. Bamford Excavators Limited, Rocester, Great Britain

Continuation of Ser. No. 766,779, Aug. 16, 1985, abandoned. This application Sep. 30, 1987, Ser. No. 104,529

Claims priority, application United Kingdom, Aug. 18, 1984, 8411060

Int. Cl.[4] E02F *3/86*

U.S. Cl. 414—708 10 Claims



1. The method of operating a boom comprising an elongate member mounted on a base for pivotal movement about a first axis transverse to the axis of the elongate member, first fluid operated power means mounted between the base and the elongate member to control raising and lowering of the member about said first axis, an implement mounted at one end of the member, in an orientation relative to the base, for pivotal movement about a second axis transverse to the axis of the elongate member, second fluid operated power means comprising a double acting ram having a cylinder and plunger slidable therein, mounted between the implement and the member to control movement of the implement about the second axis, mean to feed fluid under pressure to and from the first fluid operated power means along first feed lines via a first operating valve, means to feed fluid under pressure to and from the second fluid operated power means along second feed lines via a second operating valve, a displacement means comprising a further double acting fluid operated ram having a cylinder and plunger slidable therein, the ram being connected between the member and the base so that the plunger is moved relative to the cylinder as the implement is raised and lowered on the elongate member so that the displacement means thus senses movement of the member about the first axis in response to both raising and lowering of the member, a first fluid line connecting one side of the plunger of the displacement means to one side of the plunger of the second fluid operated power means and a second fluid line connecting the other side of the plunger of the displacement means with the other side of the plunger of the second fluid operated means whereby the pressures on each of the sides of the plunger of the displacement means are proportional to the pressures on the corresponding sides of the plunger of the second fluid operated power means to which the respective sides of the plunger of the displacement means are connected, whereby upon movement of the elongate member by the first fluid operated power means, a signal is transmitted from the displacement means to the second fluid operated power means to cause the second fluid operated power means to operate to maintain the orientation of the implement relative to the base as the implement is raised and lowered by the member, the method comprising the step of increasing the pressure of fluid in said first fluid line between the displacement means and the second fluid operated power means during raising of the implement by the elongate member so that said displacement means contributes to the raising of said one end of the member while the displacement means senses movement of the member and causing the second fluid operated power means to maintain said orientation of the implement relative to the base in response to the sensed movement of the elongate member.

4,767,257

INDUSTRIAL ROBOT

Hisao Kato, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1986, Ser. No. 911,706

Claims priority, application Japan, Dec. 23, 1985, 60-287690; Dec. 23, 1985, 60-287691; Feb. 26, 1986, 61-39287; Feb. 26, 1986, 61-39288

Int. Cl.[4] B66C *23/00*

U.S. Cl. 414—744 A 10 Claims



1. An industrial robot, comprising: a vertically oriented main body (1, 2), robot arm means (3, 4) operatively connected to said main body and having a first joint portion (5) at one end housing a drive unit for moving said robot arm means with respect to said main body in a horizontal plane orthogonal to a longitudinal axis of said main body, a hand device (9) connected to another, opposite end of said robot arm means and movable with respect thereto by a drive unit housed in a second joint portion (7) thereof, and piping for supplying a control/drive medium from said main body to said hand device, said piping comprising a first pipe segment (13*a*) fixedly supported by said main body and extending vertically, a second pipe segment (13*b*, 13*c*) fixedly supported on said robot arm means and extending therealong, and a third pipe segment (13*d*) connected to said hand device, adjacent ones of said first, second and third pipe segments being connected by respective rotary joints (14*a*, 14*c*) individually disposed on said joint portions of said robot arm means with rotary axes of said

VOL 1093 ISS 5 AG 30 1988 UMI

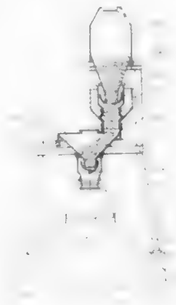
rotary joints being individually aligned with rotary centers of said joint portions of said robot arm means, each rotary joint comprising a first member fixedly connected to one of said adjacent pipe segments and a second member fixedly connected to another pipe segment and coaxially disposed with said first member for relative rotation thereto.

4,767,258

PROCESS AND APPARATUS FOR CHARGING A SHAFT FURNACE

Marc Solvi, 56 route des 3 Cantons, Ehlange s/Mess; Gilbert Bernard, 6 rue Robert Schuman, Helmdange, and Emile Lonardi, 30 rue de Schouweiler, Bascharage, all of Luxembourg

Filed May 7, 1986, Ser. No. 860,653
Claims priority, application Luxembourg, May 7, 1985, 85879; Mar. 4, 1986, 86340
Int. Cl.[4] B05G *65/00*
U.S. Cl. 414—786 6 Claims



1. A process for charging a shaft furnace having a charging installation comprising a rotary or oscillating spout, a hopper with a central discharge pipe above the spout, the discharge aperture of the discharge pipe being controlled by a dosing device operating symmetrically about the central axis of the furnace, the hopper being surmounted by at least one chamber, and a dosing device for regulating the rate of discharge to the hopper from the chamber including the steps of:

opening the dosing valve of the chamber in order to bring about the discharge of a sufficient quantity of material for the formation of a barrage of material above the discharge pipe of the hopper with the dosing valve of the hopper being closed until after the formation of said barrage;

separately weighting both the hopper and the chamber throughout the duration of the charging; and

producing signals which represent, respectively, the contents of the hopper, the contents of the chamber and the sum of the contents of the hopper and the chamber whereby the signals are compared to maintain the barrage of material above the discharge pipe of the hopper until the chamber is completely discharged of material.

4,767,259

COOLING AIR FLOW CONTROLLING APPARATUS FOR GAS TURBINE

Soichi Kurosawa, Hitachi, and Kazuhiko Kumata, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 22, 1986, Ser. No. 888,007
Claims priority, application Japan, Jul. 29, 1985, 60-165996
Int. Cl.[4] F04D *29/58*
U.S. Cl. 415—17 7 Claims

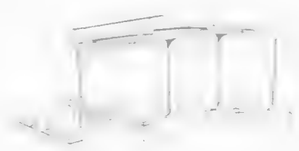
1. A cooling air flow controlling apparatus for a gas turbine comprising: an air compressor coupled directly with a gas turbine, a passage for introducing a portion of air discharged from said air compressor as cooling air flow into a hot gas section of said gas turbine, and a control valve for controlling cooling air flow disposed in said passage, a first means for detecting a discharge air pressure from said air compressor and for outputting a discharge air pressure signal, a second means for detecting an exhaust gas temperature of said gas turbine and for outputting an exhaust gas temperature signal, and a means having inputted therein relationships between an exhaust gas temperature of said gas turbine, a discharge air pressure of said air compressor, and a required cooling air flow amount through said control valve for calculating a required cooling air flow signal from said discharge air pressure signal of said first means and said exhaust gas temperature signal of said second means, whereby said required cooling air flow amount of said cooling air control valve is controlled by an output signal of said calculating means.

4,767,260

STATOR VANE PLATFORM COOLING MEANS

Douglas H. Clevenger, and Donald L. Deptowicz, both of Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 7, 1986, Ser. No. 928,236
Int. Cl.[4] F01D *9/04*
U.S. Cl. 415—115 1 Claim



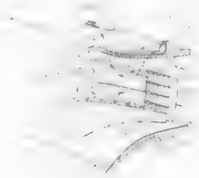
1. For a gas turbine engine having a turbine section including a stator vane, said stator vane comprising a plurality of circumferentially abutting segments defining an annular flow path, at least two airfoil members having a tip and base circumferentially spaced in each of said segments, each segment having an upper platform member and a lower platform member defining with adjacent segments an annular flow path for directing the engine's fluid working medium through the turbine section, a cooling air cavity for receiving air at a lower temperature than the temperature of the fluid working medium, one surface of said upper platform and said lower platform being exposed to said fluid working medium and the other surface of said upper platform and said lower platform being exposed to said cooling air in said cavity, a feather seal having opposing sides fitted into complementary slots formed in the abutting side edges of platforms of adjacent segments, said feather seal being dimensioned smaller than said complementary slots so as to be in slidable relation with said slots, means for flowing cooling air at a constant volume from said cavity through said feather seal to said fluid working medium for every position of said feather seal.

4,767,261

COOLED VANE

Colin Godfrey, and Rodney C. Webster, both of Derby, England, assignors to Rolls-Royce plc, London, England

Filed Jan. 27, 1987, Ser. No. 7,187
Claims priority, application United Kingdom, Apr. 25, 1986, 8610181
Int. Cl.[4] F01D *5/18*
U.S. Cl. 415—115 11 Claims



1. A cooled vane suitable for a gas turbine engine comprising:

an aerofoil cross-section portion having an internal chamber; and

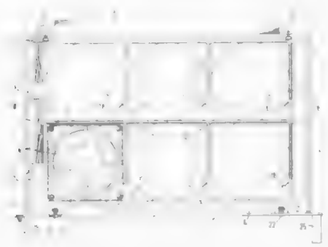
baffle means for dividing said chamber into first and second portions, which portions are in operation supplied with first and second cooling fluid flows respectively, the first cooling fluid flow being at a higher pressure than the second cooling fluid flow, said aerofoil portion having apertures defined therein to permit the exhaustion of cooling fluid from both of said chamber portions to facilitate the cooling of said aerofoil portion, said baffle means being configured to permit a limited flow of cooling fluid of higher pressure from said first chamber portion to said second chamber portion, which flow is insufficient to raise the cooling fluid pressure in said second chamber portion to a level which equals or exceeds the pressure of said second cooling fluid flow but which is sufficient to provide a cooling fluid flow in the region of said baffle means to provide cooling of said aerofoil portion in the region of said baffle means.

4,767,262

FAN SLIDE-IN UNIT

Peter Simon, Munich, Fed. Rep. of Germany, assignor to Knürr-Mechanik Für Die Elektronik Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 29, 1987, Ser. No. 79,136
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1987, 8705665[U]
Int. Cl.[4] H05K *7/20*
U.S. Cl. 415—119 16 Claims



1. A fan slide-in unit comprising:

a casing having an upper cover surface and a lower cover surface, at least two ventilation openings defined by said upper cover surface being aligned with at least two ventilation openings defined by said lower cover surface and between each of said at least two ventilation openings of said upper cover surface and said lower cover surface is an installation location for a fan, a fan extending between each of at least one of said at least two ventilation openings of said upper cover surface and said lower cover surface, and insert plates being fixable in substantially air-impermeable manner in any remaining ventilation openings to seal off said remaining ventilation openings.

4,767,263

LIQUID DRAINING DEVICE FOR A STEAM TURBINE

Shinya Ayano, Fujisawa, and Yasuo Ojiro, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 8, 1987, Ser. No. 105,613
Claims priority, application Japan, Oct. 14, 1986, 61-241955
Int. Cl.[4] F04D *29/70*
U.S. Cl. 415—121 A 18 Claims



1. A device for draining pressurized liquid from a steam turbine to a low pressure reservoir, the device comprising:

(a) an inlet container and an outlet container, each container having an upper part and a lower part;

(b) means for draining liquid from the steam turbine to the upper part of the inlet container;

(c) means for conveying liquid from the steam turbine to the upper part of the inlet container;

(d) first means for maintaining pressure in the inlet container higher than the pressure in the outlet container and for conveying liquid from the lower part of the inlet container to the upper part of the outlet container; and

(e) second means for maintaining pressure in the outlet container higher than the pressure in the low pressure reservoir and for conveying liquid from the lower part of the outlet container to the low pressure reservoir.

4,767,264

VANE LEVER ARM CONSTRUCTION

Douglas L. Kisling, Palm Beach Gardens, and John C. Jones, Jupiter, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 31, 1986, Ser. No. 925,847
Int. Cl.[4] F04D *29/36*
U.S. Cl. 415—156 3 Claims

1. For a stator/vane assembly for a gas turbine engine, a synchronous ring for synchronous movement of each of a plurality of stator vanes mounted about a circumference, a lever arm connected to said synchronous ring and each of said stators or vanes comprising a generally flat rectangularly shaped arm having at least one end embossed to form a thick-

VOL 1093 ISS 5 AG 30 1988 UMI

ened portion and a relatively thin intermediate portion, said lever arm being made from sheet metal, said embossed end having an opening for receiving a pin for being attached to said



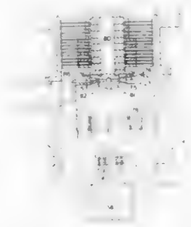
synchronous ring and the dimensions of said embossment and said intermediate portion of said lever arm being selected to allow twisting of said lever arm at said intermediate portion and no twisting at said embossed end.

4,767,265

TURBOMOLECULAR PUMP WITH IMPROVED BEARING ASSEMBLY

Gordon E. Osterstom, Evanston, Ill., assignor to Sargent-Welch Scientific Co., Skokie, Ill.

Continuation of Ser. No. 767,657, Aug. 20, 1985, Pat. No. 4,674,952, said Ser. No. 767,657, is a continuation of Ser. No. 539,977, Oct. 7, 1983, abandoned. This application Dec. 29, 1986, Ser. No. 946,987
Int. Cl.[4] F04D *29/04*
U.S. Cl. 415—170 R 9 Claims



1. In a single ended turbomolecular pump adapted to operate in the free molecular flow range in a thermally insulating vacuum, said pump including a rotor assembly driven by a motor and cooperatively associated with a stator assembly, said rotor assembly being mounted to a pump shaft in said motor, an improved bearing assembly for rotatively supporting the vertical pump shaft, said bearing assembly including a cylindrical journal and a bearing member disposed between said motor and said rotor-stator assemblies, said cylindrical journal comprising an enlarged portion of said pump shaft and having an outer substantially uniform surface having a given axial length and given diameter, said bearing member having a generally annular and substantially uniform inner working surface, concentrically disposed in a predetermined radial clearance with respect to the outer cylindrical surface of said journal portion, said generally annular inner working surface of said bearing member having an axial length which is substantially reduced with respect to the outer diameter of the substantially uniform outer surface of said cylindrical journal portion, wherein approximately the ratio of the axial length of said inner working surface of said bearing member to the outer diameter of said journal portion is from 1:20 to 3:10, and at least one of said bearing member and said journal portion having a port to admit lubricant from a lubricant source into said radial clearance for establishing a generally uniform and effective hydrodynamic lubricant film in said radial clearance between the uniform surfaces of said bearing member and said journal portion whereby the separation of said bearing member and said journal portion, a reduction of lubricant shear in said uniform lubricant film in said radial clearance and a corresponding reduction in heat build-up is obtained, enabling said pump rotor to be operated at higher rotational speeds.

4,767,266

SEALING RING FOR AN AXIAL COMPRESSOR

Robert G. Holz, Vert Saint Denis, and Georges Karadimas, Vanves, both of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA), Paris, France

Continuation of Ser. No. 696,468, Jan. 30, 1985, abandoned. This application Mar. 13, 1987, Ser. No. 24,864
Claims priority, application France, Feb. 1, 1984, 84 01530
Int. Cl.[4] F16J *15/447*; F01D *11/08*
U.S. Cl. 415—172 A 5 Claims



1. In an axial compressor having a longitudinal axis, a stationary casing and at least one rotor wheel the improvements comprising:

(a) a plurality of blades extending radially outwardly from the rotor wheel such that the rotor wheel is rotated about the longitudinal axis by gases passing across the blades from an upstream side to a downstream side in a direction generally parallel to the longitudinal axis, each of the blades defining a straight tip extending substantially parallel to the longiudinal axis; and

(b) a generally annular seal ring mounted on the casing, to seal between the casing and the straight tips of the blades, the seal ring having a generally cylindrical inner surface extending substantially parallel to the longitudinal axis adjacent the straight tips of the rotor blades, the inner surface having a greater dimension in the longitudinal direction than that of the rotor blades and defining a plurality of grooves extending around the seal ring and opening radially inwardly toward the rotor blades, said grooves each extending radially outwardly from said cylindrical inner surface, the cross section of each groove defined by a first side extending generally perpendicular to the longitudinal axis and a second side extending at an acute angle to the longitudinal axis, such that the first side of each groove is located downstream of the second side of the corresponding groove wherein the longitudinal distance between an upstream extremity of the second side of a first groove and a downstream extremity of a first side of a second groove is greater than the longitudinal dimension of the blade tips.

4,767,267

SEAL ASSEMBLY

Jonathan G. L. Salt; Ronald W. Korzun, both of Beverly, and David R. Abbott, Manchester, all of Mass., assignors to General Electric Company, Lynn, Mass.

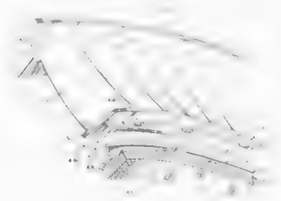
Filed Dec. 3, 1986, Ser. No. 937,634
Int. Cl.[4] F01D *11/02*
U.S. Cl. 415—174 22 Claims

1. In a gas turbine engine having an annular array of nozzle vanes secured to an annular platform disposed radially about a longitudinal axis of the engine, a seal assembly comprising:

an annular seal member;

an annular seal backing ring having a first radially inner circumferential surface fixedly secured to a radially outer surface of said seal member and a second radially outer circumferential surface facing a radially inner circumferential surface of the platform, said seal backing ring further including a plurality of circumferentially spaced tabs bendable between an initial axially aligned position and a radially extending position;

an L-shaped member fixedly attached to a radially inner surface of the annular platform, said L-shaped member having a radially depending first leg and an axially extending second leg;



a plurality of circumferentially spaced slots formed in said second leg of said L-shaped member, said slots being positioned for receiving said tabs when said tabs are in a radially extending position;

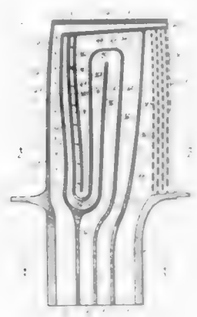
an attachment ring fixedly attached to said radially outer circumferential surface of said seal backing ring, said attachment ring having a radially outwardly extending portion adapted for abutting an axially facing surface of said first leg of said L-shaped member, said attachment ring being held against said facing surface by said tabs in said radially extending position, said abutting relationship between said attachment ring and said facing surface forming a gas seal.

4,767,268

TRIPLE PASS COOLED AIRFOIL

Thomas A. Auxier, Lake Park; Kenneth B. Hall, Jupiter, and Kenneth K. Landis, Tequesta, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 6, 1987, Ser. No. 82,403
Int. Cl.[4] F01D *5/18*
U.S. Cl. 416—97 R 7 Claims



1. A turbine blade comprising a root portion and wall means integral with said root portion defining an airfoil, said wall means including a pressure sidewall and a suction sidewall, joined together to define a forwardly located leading edge and a rearwardly located trailing edge of said airfoil and spaced apart to define a spanwise and chordwise extending coolant cavity within said airfoil, said root portion including root passage means therethrough for receiving coolant fluid from outside the blade and for directing said fluid into said airfoil cavity, wherein the improvement comprises:

rib means within said cavity forming two U-shaped channels within said cavity, a first of said U-shaped channels having forward and rearward spaced apart, spanwise extending legs interconnected to each other at their ends farthest removed from said root portion by a first chordwise extending leg, the second of said U-shaped channels having forward and rearward spanwise extending legs disposed between said forward and rearward legs of said first channel and separated therefrom and from each other by said rib means, said forward and rearward legs of said second channel being interconnected to each other at their ends farthest removed from said root portion by a second chordwise extending leg separated from said first chordwise extending leg by said rib means;

said rib means further forming a single, spanwise extending channel leg forward of said U-shaped channels and having an inlet at its end nearest said root portion, and;

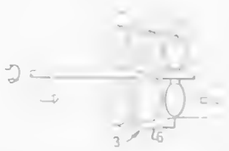
wherein the rearward leg of each of said U-shaped channels each has an inlet at its end nearest said root portion in communication with said root portion passage means for receiving coolant fluid therefrom, and the forward leg of each of said U-shaped channels each has an outlet at its end nearest said root portion, each of said outlets being in series fluid flow communication with said inlet of said single channel leg disposed forward thereof.

4,767,269

ROTOR SYSTEM, PARTICULARLY A BOAT PROPELLER SYSTEM

Lennart H. Brandt, Fjäras, Sweden, assignor to AB Volvo Penta, Gothenburg, Sweden

Filed Nov. 26, 1985, Ser. No. 802,217
Claims priority, application Sweden, Nov. 29, 1984, 8406040
Int. Cl.[4] B63H *5/10*
U.S. Cl. 416—124 6 Claims



1. An axial flow rotor device, comprising a first boat propeller unit non-rotatably joined to a propeller shaft and an idle axial flow second propeller unit having at least two propellers which are freely rotatably journalled on the propeller shaft and are disposed on either axial side of the first propeller unit, each propeller having a plurality of blades terminating outwardly in blade tips, and rigid connecting members extending across said first propeller unit and rigidly interconnecting the blade tips on one of said at least two propellers with the blade tips on another of said at least two propellers thereby to join said at least two propellers to each other for rotation at the same angular velocity as each other.

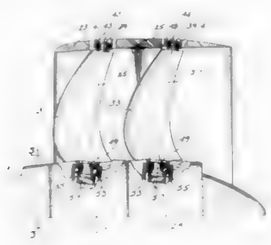
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,270

HOOP FAN JET ENGINE

Gerhard E. Seidel, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 16, 1986, Ser. No. 852,652
Int. Cl.[4] B64C *11/48*
U.S. Cl. 416—129 14 Claims



1. A hoop fan jet engine comprising:
(A) a turbojet engine; and,
(B) a hoop fan assembly surrounding said turbojet engine for receiving only air that bypasses said turbojet engine, said hoop fan assembly comprising:
(1) a hub mechanism mounted on said turbojet engine, said hub mechanism including first and second hubs located adjacent to one another and mounted on said turbojet engine so as to encircle a narrow region of said turbojet engine;
(2) a plurality of fan blades including first and second fan blade stages, said first stage fan blades being mounted on said first hub and radiating radially outwardly from said first hub and said turbojet engine and said second fan blades being mounted on said second hub and radiating radially outwardly from said second hub and said turbojet, each of said fan blades including a leading edge that, starting at the associated first and second hubs, first sweeps forwardly and then rearwardly with respect to the intake end of said turbojet engine;
(3) a hoop attached to selected ones of the tips of said fan blades and sized so as to encircle all of the fan blades of said first and second fan blade stages, said first and second hubs and said turbojet engine, said hoop forming a single aerodynamically shaped unit having a blunt nose and a feathered trailing end; and,
(4) pitch control means coupled to selected ones of said fan blades for controlling the pitch of said selected ones of said fan blades along axes that extend radially with respect to the hub associated with said selected ones of said fan blades and rearwardly with respect to the intake end of said turbojet engine.

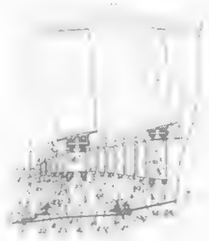
4,767,271

GAS TURBINE ENGINE POWER TURBINE

Ronald Catlow, Derby, England, assignor to Rolls-Royce plc, London, England

Filed May 14, 1987, Ser. No. 49,552
Claims priority, application United Kingdom, Jul. 2, 1986, 8616152
Int. Cl.[4] B64C *11/48*
U.S. Cl. 416—129 9 Claims

1. A power turbine suitable for a gas turbine engine comprising an annular array of radially extending turbine rotor blades, means journalled for rotation about the longitudinal axis of said power turbine, the radially inner extent of each of said turbine rotor blades being attached to said means journalled for rotation, an annular array of aerofoil propulsion blades, the radially outer extent of each of said turbine rotor blades being provided with attachment means attaching it to the radially inner extent of one of said aerofoil propulsion blades, a drum member, and at least one further annular array of turbine rotor blades carried by said drum member, said drum member being coaxially interposed between the arrays of said turbine rotor blades and aerofoil propulsion blades to operationally rotate therewith, said drum member having apertures to accommodate said



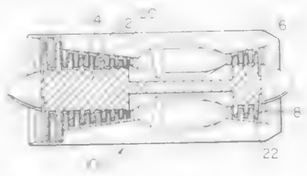
attachment means whereby relative radial movement is permitted between said turbine rotor blades and said drum member, said aerofoil propulsion blades and said drum member being interconnected in such a manner that limited relative radial movement is permitted between them up to a limit at which said drum member provides at least partial radial support for any of said aerofoil propulsion blades.

4,767,272

METHOD FOR REDUCING BLADE TIP VARIATION OF A BLADED ROTOR

Robert J. Kildea, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Oct. 14, 1987, Ser. No. 108,181
Int. Cl.[4] F04D *29/66*
U.S. Cl. 416—144 5 Claims



1. A method of selecting blade locations on a disk having slots receiving said blades with a Z plane establishing the radial positioning of each blade with respect to the disk, comprising:
(a) determining the Z plane radius (R_z) for each slot;
(b) determining the length (R_b) of each blade from its Z plane, and the moment weight (B_m) of each blade around its Z plane;
(c) establishing a total radius tolerance as a function of totalling the Z plane radius (R_z) for each slot and the radius of each blade (R_b) from the Z plane;
(d) for each slot, determining candidate blades which when placed in the slot fall within the total radius tolerance;
(e) starting with an extreme value of the slot Z plane radius R_z dedicating a specific blade to the slot if only one blade meets the tolerance criteria, dedicating the closest out of tolerance blade producing an under tolerance radius if no blade meets the criteria, and deferring selection of a blade if a plurality of blades meets the criteria, removing said dedicated blades from the candidate blades, and continuing the dedication and removal through the remaining slots;

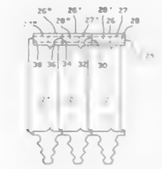
(f) calculating blade and disk unbalance using dedicated blades in the slots to which they are dedicated, and the extreme moment weight (B_m) blade of the candidate blades for the remaining slots, determining the location of the unbalance;
(g) selecting the current slot closest to the unbalance location;
(h) dedicating to said current slot the candidate blade for said slot having the extreme moment weight which tends to offset the calculated unbalance, and removing said dedicated blade from said candidate blades; and
(i) repeating the steps of calculating unbalance, selecting the current slot, dedicating blades, and removing dedicated blades until blades are dedicated to all slots.

4,767,273

APPARATUS AND METHOD FOR REDUCING BLADE FLOP IN STEAM TURBINE

Albert J. Partington, Winter Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 24, 1987, Ser. No. 18,322
Int. Cl.[4] F01D *5/22*
U.S. Cl. 416—191 17 Claims



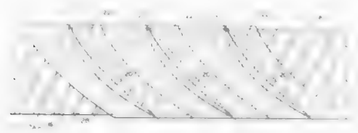
1. In a steam turbine of a type having a rotor with a plurality of generally axially extending grooves disposed therearound, a plurality of blades, each blade having a root at a proximal end thereof in registration with one of the grooves and a shroud disposed at a distal end, the shroud of each blade having a pair of faces that oppose faces of the shrouds of adjacent blades, an apparatus for reducing relative motion between blades comprising a plurality of pins, each pin being resiliently disposed between adjacent shrouds and extending into tangentially oriented holes in the opposing faces of adjacent shrouds, each hole extending completely through each shroud.

4,767,274

MULTIPLE LUG BLADE TO DISK ATTACHMENT

Jerry D. Walter, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 29, 1986, Ser. No. 947,348
Int. Cl.[4] F01D *5/30*
U.S. Cl. 416—193 A 4 Claims



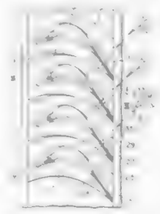
1. A rotor assembly comprising:
a plurality of rotor blades each having a blade chord line and each having at least three root lugs formed to a helical geometry and disposed along the blade essentially perpendicularly to said chord line; and
a rotor disk having at least three parallel slots extending from the front face to the rear face across the periphery of the disk for engaging said root lugs.

4,767,275

LOCKING PIN SYSTEM FOR TURBINE CURVED ROOT SIDE ENTRY CLOSING BLADES

Wilmott G. Brown, Winter Park, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 11, 1986, Ser. No. 884,826
Int. Cl.[4] F01D *5/32*
U.S. Cl. 416—220 R 4 Claims



1. A locking pin system for locking a plurality of free standing closing blades disposed in a circular array of curved side entry steam turbine blades disposed in a disc to form a row of rotating blades having curved root portions which are slidably received by the curved slots in the disc and each blade has a platform portion and an air foil portion respectively disposed radially outwardly from the root portion, the platform portion of each blade having four sides, an inlet side, on the side of the platform the steam enters the blade row, an outlet side on the side the steam exits the blade row, a forward arcuate side and a rear arcuate side, the latter two arcuate sides being relative to the direction of rotation of the blade row, the closing blade locking pin system comprising:
a plurality of closing blades with curved roots having a through hole extending through the platform portion thereof at an angle from the outlet side of the platform portion to the rear arcuate side of the platform portion;
all platforms adjacent the rear arcuate side of a platform which has a through hole in the platform portion having a blind hole disposed in the forward arcuate side;
the through hole and the blind hole being aligned when the closing blades are properly disposed in the curved slots in the disc;
a pin fitting tightly into the through hole of each closing blade and loosely into the blind hole in the adjacent blade platform with clearance on all sides of the pin in the blind hole to allow the adjacent blades to vibrate independently and yet prevent the closing blades from sliding out of the curved slots in the disc; and
means for locking the pin in the through hole in each closing blade, whereby the closing blades are locked into the blade row utilizing pins, which only engage the blade platforms.

4,767,276

RETAINER RING

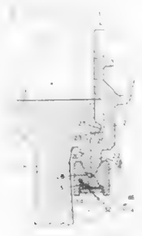
Thomas C. Barnes, Concord; David R. Abbott, Manchester, and Anthony S. Arrao, Belmont, all of Mass., assignors to General Electric Company, Lyan, Mass.

Filed Dec. 19, 1986, Ser. No. 943,393
Int. Cl.[4] F01D *5/32*
U.S. Cl. 416—221 13 Claims

1. An apparatus for a gas turbine engine, comprising:
a disc rotatable about an axis;
a plurality of blades attached to and extending radially outward from an outer periphery of said disc;
an annular plate rotatable about said axis and concentric with said disc for preventing axial displacement of said blades; and
a retainer ring having a slanted gap, said retainer ring being

VOL 1093 ISS 5 AG 30 1988 UMI

rotatable about said axis and being concentric with said disc for clamping said plate to said disc in an axial direction in response to the action of centrifugal force on said retainer ring upon rotation thereof, said retaining ring



further having an inner surface and a radially inward facing recess in said inner surface; and

a retention band disposed in said recess, said band exerting a radially outward directed force on said ring to reinforce the clamping action of said ring.

4,767,277

FIBER-FILLED POLYMER IMPELLER

Fredric W. Buse, Allentown, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Apr. 17, 1981, Ser. No. 255,151
Int. Cl.⁴ F04D *29/20*
U.S. Cl. 416—241 A **12 Claims**



1. An impeller prepared by molding a fiber-filled polymer impeller with a polygon hole having at least three sides, for receiving a shaft and forming grooves at the apexes of the polygon hole after the fiber-filled polymer impeller has set.

4,767,278

BOAT PROPELLER

Emmanuel X. Enderlein, Jr., 1144 Barbara Dr., Cherry Hill, N.J. 08003

Filed Oct. 6, 1981, Ser. No. 309,032
Int. Cl.⁴ F01D *5/28*
U.S. Cl. 416—241 B **25 Claims**

1. A screw propeller for use in the propulsion of power boats provided with a prime mover adapted to drive the propeller at speeds up to about 9,000 revolutions per minute, the propeller having a plurality of blades and an effective outside diameter when rotating and measured at the rotating blade tips varying between about four inches and twenty inches, the said blades when measured a substantial distance from the hub of the propeller having a maximum thickness varying from approximately ¼ inch for a four inch propeller to about one inch for a twenty inch propeller, the said blades having a desired initial pitch of about 8 to 30 degrees and the propeller being so constructed and designed whereby it may be immersed in water and driven by the said prime mover at speeds up to about 9,000 revolutions per minute without the blades noticeably losing their said initial pitch, the propeller being constructed from cast iron characterized by rounded graphite in a matrix structure selected from the group consisting of a ferritic matrix, pearlitic matrix, acicular matrix and admixtures thereof, and



the said cast iron having a composition consisting essentially of 2.0 to 4.5% carbon, 0.75 to 4.0% silicon, up to 2.0% manganese, up to 0.30% sulfur, up to 0.30% phosphorus, up to 0.12% magnesium, up to 1.0% chromium, up to 5.0% nickel, up to 2.0% copper, up to 1.00% molybdenum, up to 0.50% vanadium, up to 0.05% titanium, up to 0.30% tin, up to 0.03% rare earths, up to 0.30% bismuth, up to 0.004% boron, up to 0.004% tellurium, and the balance iron and residuals.

4,767,279

FLUID COMPOSITION AND VOLUMETRIC DELIVERY CONTROL

Theodore A. Dourdeville, Southborough, and David L. Trumper, Plainville, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jun. 20, 1987, Ser. No. 57,514
Int. Cl.⁴ F04B *49/00, 49/06*
U.S. Cl. 417—18 **27 Claims**



1. A pumping system for flow control which includes a motor driven pump for pumping fluid by pistons to a load comprising:

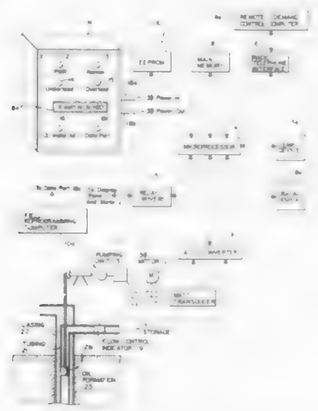
(a) control means for compensating for cyclical variations in the relation between the speed of the motor and volumetric flow of the pump to maintain essentially constant volumetric flow from the pump, said control means including means for adjusting to changing pump operating conditions throughout the course of pump operation independent of pump piston position by generating a flow signal proportional to the instantaneous volumetric flow of the pump and using the flow signal to vary a pressure reference signal which in turn controls the motor speed; said changing operating conditions resulting in modifications to the character of said cyclical variations.

4,767,280

COMPUTERIZED CONTROLLER WITH SERVICE DISPLAY PANEL FOR AN OIL WELL PUMPING MOTOR

Neil D. Markuson, P.O. Box 221, Williston, N. Dak. 58801, and Tim A. Wiens, 7906 Double Creek Court, Springfield, Va. 22153

Filed Aug. 26, 1987, Ser. No. 89,533
Int. Cl.⁴ F04B *49/06;* **G08B** *21/00*
U.S. Cl. 417—44 **4 Claims**



1. An oil well pump controller in combination with an oil pumping unit and oil well electrical pump motor for controlling and monitoring the operation of an oil well comprising,

microprocessor means for monitoring three-phase electrical power consumption of the electrical pump motor and for calculating real time demand power consumption of said motor,

power measuring means electrically connected to the three-phase electrical input of said motor for producing an analog signal indicative of power consumption,

conversion means connected to said power measuring means for converting said analog signal into a digital signal usable by said microprocessor means to calculate electrical power consumption,

relay means connected to and receiving signals from said microprocessor means indicative of detected power normal, power overload and power underload conditions, said relay means additionally providing circuitry to allow said microprocessor to selectively switch said motor on or off,

waterproof box means for housing the components of said oil well pump controller, said waterproof box including a service display panel,

overload display means, mounted on said service display panel, which is clearly visible from a distance, and connected to said relay means for indicating when power consumption of said motor has exceeded preprogrammed limits.

underload display means, mounted on said service display panel, which is clearly visible from a distance, and connected to said relay means for indicating when power consumption is below preprogrammed limits,

memory means connected to said microprocessor means for storing said preprogrammed limits and other data for use by said microprocessor means to allow it to determine when the power consumption has exceeded or is below said preprogrammed limits,

reprogramming means which may be selectively connected to said microprocessor means, for entering said data and said preprogrammed limits into said memory means via a reprogramming data port mounted on said service dispaly panel, and for downloading system parameter data which has been stored in said memory by said microprocessor,

alphanumeric display means, mounted on said service display panel, and connected to said microprocessor means for visually displaying various system parameter information including oil flow, temperature data, normal, overload, and underload real time demand power values, as well as displaying the total time that said motor has been in an said underload or overload condition, thus allowing service personnel at the well to more accurately determine when servicing of the well is required, said alphanumeric display means displaying said system parameter information in response to signals from said microprocessor,

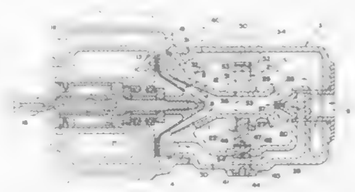
remote communication means connected to said microprocessor, for allowing said microprocessor to communicate with a remotely located central computer which may consist of a demand limit power control system to allow a power company to more efficiently utilize its energy resources, and to cause said microprocessor to switch said motor on or off via said relay means, as required.

4,767,281

CENTRIFUGAL PUMP SYSTEM WITH INLET RESERVOIR

Thomas Sailer, Amherst, Ohio, assignor to Lear Siegler, Inc., Elyria, Ohio

Filed Jun. 4, 1987, Ser. No. 58,237
Int. Cl.⁴ F04D *9/06*
U.S. Cl. 417—83 **24 Claims**



20. A pump system comprising pump means, liquid reservoir means upstream of said pump means providing for the separation of air or vapor from liquid entering said reservoir means, ejector pump means for inducing liquid flow from said reservoir means into said pump means, mixing tube means for receiving the liquid flow from said reservoir means and ejector pump means and directing same to said pump means, and a plurality of scavenge ejector means in said reservoir means for inducing air or vapor from different locations within said reservoir means for mixing of such air or vapor with the liquid flow through said mixing tube means.

4,767,282

FLUID PRESSURE BOOSTER

Tadashi Igarashi; Mikio Yamaji, and Naotake Oneyama, all of Soka, Japan, assignors to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 912,189, Sep. 25, 1986, Pat. No. 4,674,958, which is a continuation of Ser. No. 751,531, Jul. 3, 1985, abandoned. This application May 29, 1987, Ser. No. 55,304
Claims priority, application Japan, Aug. 2, 1984, 59-119912; Dec. 18, 1984, 59-191891
Int. Cl.⁴ F04B *17/00*
U.S. Cl. 417—225 **7 Claims**

1. A fluid pressure booster comprising:

(a) a casing internally defining a pair of cylinders coaxially on opposite sides of a central partition wall having an inlet

VOL 1093 ISS 5 AG 30 1988 UMI

port, an outlet port, two exhaust ports, and two output ports;

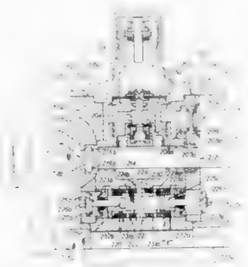
(b) a piston assembly including a pair of pistons slidably fitted in said cylinders and a shaft connecting said pistons and hermetically passed through said central partition wall, said pistons defining boosting chambers on the sides of said central partition wall and drive chambers on the opposite sides of said central partition wall, respectively;

(c) inlet passages formed in said central partition wall for each one of said boosting chambers being in communication with said inlet port, and each one of said inlet passages having an inlet check valve permitting fluid flow only into said each boosting chamber

(d) outlet passages formed in said central partition wall for each one of said boosting chambers being in communication with said outlet port, and each one of said outlet passages having an outlet check valve permitting fluid flow only out of said each boosting chamber;

(e) a switch valve comprising a valve body to be shifted between two positions by pressing push rods protruding into said boosting chambers from said central partition wall to communicate said drive chambers of said cylinders alternately with said inlet port and said exhaust port through outlet ports so as to drive said pistons toward the other stroke end upon reaching one stroke end thereof, and each protruding push rod being pushed by each piston when the piston closes to the central partition wall; and

(f) passages connecting each one of said output ports in said



central partition wall to a corresponding one of said drive chambers;

(g) a stall preventing means for discouraging said valve body from stopping at a neutral position between said two positions, CHARACTERIZED IN THAT said stall preventing means comprises;

(i) a pair of push rod springs each provided in association with said push rod protruding into said boosting chamber from said partition wall, said push rod springs preventing said valve body from being driven to the neutral position against the effort of said piston when the supply fluid pressure to said drive chamber drops below a predetermined level;

(ii) an idling gap provided between the inner end of each push rod and the opposite end face of said spool, permitting the inner end of said push rod to abut said end face of said valve body for driving said valve body when the pressing force of said piston based on the supply fluid pressure in said drive chamber reaches a predetermined pressing force; and

(iii) an inlet check valve spring provided in each one of the inlet check valves and having a predetermined biasing force for closing the inlet check valve to prevent a reverse flow from the boosting chamber,

(iv) whereby, when the valve body is positioned around the neutral position, said valve body is prevented from stopping at the neutral position, since said stall preventing means:

(A) restricts the valve body so as not to be pushed with the push rod by utilizing the biasing force of the spring until the valve body starts to move and

(B) helps the sliding movement of the valve body once the valve body starts to move.

4,767,283

SWASH PLATE TYPE COMPRESSOR

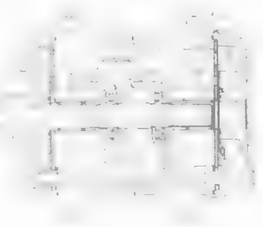
Hayato Ikeda; Hiroshi Onomura, and Satoshi Kitahama, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jul. 27, 1987, Ser. No. 78,417

Claims priority, application Japan, Jul. 28, 1986, 61-177415

Int. Cl.[4] F04B *1/16, 1/18;* F01M *1/04*

U.S. Cl. 417—269 5 Claims



1. A swash plate type compressor comprises:

a pair of front and rear cylinder blocks axially combined together to form an axially extending cylinder block means having at least one suction port for refrigerant to be compressed;

a pair of front and rear housings closing front and rear ends of said cylinder block means, said front and rear housings having formed therein a suction chamber for refrigerant gas before compression and a discharge chamber for refrigerant gas after compression, respectively;

a plurality of axially extending cylinder bores formed in said cylinder block means in parallel with one another, said cylinder bores being circumferentially equiangularly arranged so that respective centers of said plurality of cylinder bores are located on a predetermined circle defined about a center of said cylinder block means;

a swash plate chamber formed in said cylinder block means at an axially central position thereof whereat said pair of front and rear cylinder blocks are joined together, said swash plate chamber having a pair of axially opposed planar walls, a circumferentially extending cylindrical wall, and at least one opening in fluid communication with said suction port so as to introduce the refrigerant gas before compression from said suction port into said swash plate chamber;

a plurality of suction passageways formed in said cylinder block means for permitting the refrigerant gas before compression to flow from said swash plate chamber toward said suction chambers of said front and rear housings;

a drive shaft rotatably supported, via radial ball bearings, in said cylinder block means;

a circular swash plate rotatably arranged in said swash plate chamber, and having a central boss portion by which said swash plate is fixedly mounted on said drive shaft so as to rotate with said drive shaft;

thrust bearings arranged between said boss portion of said swash plate and said front and rear cylinder blocks;

a plurality of pistons slidably fitted in said plurality of cylinder bores, said pistons reciprocating within said plurality of cylinder bores for drawing the refrigerant gas before compression from said suction chambers into said cylinder bores, compressing the refrigerant gas within said cylinder bores, and discharging the refrigerant gas within said cylinder bores, and discharging the refrigerant gas after compression toward said discharge chambers, each of said pistons having a radial recess opening inwardly toward said swash plate chamber;

shoes arranged in said radial recess of said each of said plurality of said pistons in engagement with said swash plate for causing a reciprocatory movement of each of said plurality of pistons in respons to rotation of said swash plate;

circular refrigerant passageway means formed in said pair of axially opposed planar walls of said swash plate chamber for permitting the refrigerant within said swash plate chamber to flow circularly in said refrigerant passageway means along said predetermined circle defined about a center of said cylinder block means during rotation of said swas plate, said circular refrigerant passageway means including a plurality of arc-shaped recesses formed in said each of said pair of axially opposed planar walls of said swash plate chamber, and arranged along said predetermined circle defined about the center of said cylinder block means, each of said arc-shaped recesses being disposed between two neighboring cylinder bores of said plurality of cylinder bores; and,

blocking means for preventing the refrigerant within said swash plate chamber from flowing on said circumferentially extending cylindrical wall of said swash plate chamber during rotation of said swash plate.

4,767,284

SCREW VACUUM PUMP UNIT

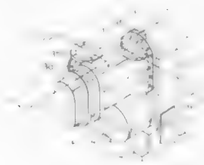
Kazuaki Shiinoki; Koutarou Naya, both of Ebina; Shinji Mitsuhashi, Yokohama; Tadashi Hayakawa, Ebina, and Riichi Uchida, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1987, Ser. No. 21,645

Claims priority, application Japan, Mar. 20, 1986, 61-60572

Int. Cl.[4] F04C *18/16*

U.S. Cl. 417—312 12 Claims



1. In a screw vacuum pump unit comprising a screw casing which defines a working chamber and which has suction ports and discharge ports communicating with the working chamber, a screw block having a male rotor and a female rotor that are rotatably received in the working chamber about horizontal axes and meshing with each other, a motor with a driving gear rotating about a horizontal axis, a speed change gear means directly engaging the driving gear and having transmission means for transmitting rotation of the motor directly to the rotors, and a casing for receiving the transmission means therein, wherein said screw block, said speed change gear means and said motor are mounted on one side of said screw casing, the axes of said male and female rotors and of said motor are arranged in a vertical plane between said suction ports and said discharge ports.

4,767,285

ELECTRIC BLOWER

Fumio Jyoraku, and Hisanori Toyosima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1987, Ser. No. 37,844

Claims priority, application Japan, Apr. 14, 1986, 61-84139; Aug. 13, 1986, 61-188509

Int. Cl.[4] F04B *17/00*

U.S. Cl. 417—366 21 Claims



1. An electric blower comprising:

a housing having axial one open end;

an end bracket having a peripheral wall and an end wall provided at axial one end of the peripheral wall, said end wall being provided therein with a central opening, said peripheral wall having the other axial end connected to the axial one open end of said housing, said end bracket cooperating with said housing to define an internal space;

an electric motor disposed within said internal space and including an output shaft having a portion thereof which extends out of said internal space through the central opening in the end wall of said end bracket;

an impeller including a shroud plate having formed therein a central opening, and a plurality of vanes arranged around the central opening in said shroud plate and fixed thereto, said portion of said output shaft extending through the central opening in said shroud plate;

mounting means for mounting said impeller on said portion of said output shaft extending out of said internal space, for rotation with said output shaft, wherein said mounting means is associated with the central opening in said shroud plate of said impeller, and has a recess which opens toward said internal space;

a tubular wall extending from the end wall of said end bracket into the central opening from the end wall of said end bracket into the central opening in said shroud plate, and surrounding said output shaft in concentric relation thereto; said tubular wall being received in said recess and having an outer peripheral surface cooperating with a peripheral surface of said recess to define a slight gap therebetween; and

bearing means disposed between an inner peripheral surface of said tubular wall and an outer peripheral surface of said output shaft, for rotatably supporting said output shaft.

4,767,286

ICE MACHINE PUMP ASSEMBLY

Vance L. Kohl, Manitowoc, and John J. Jaschinski, Two Rivers, both of Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Jun. 2, 1987, Ser. No. 57,381

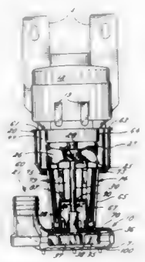
Int. Cl.[4] F04B *17/00*

U.S. Cl. 417—423 R 16 Claims

1. A pump assembly for use in circulating water from a reservoir to an ice forming mold in an ice making machine, said pump assembly comprising, in combination: an upvented, unit bearing electric motor having a downwardly extending drive shaft; a substantially cylindrical collar encircling the motor, said collar defining an annular passage alongside the motor; a

VOL 1093 ISS 5 AG 30 1988 UMI

pump comprising a housing having an inlet and an outlet, and an impeller secured to the drive shaft and disposed within said housing; a fan secured to the drive shaft between the motor and the pump housing; a support structure interconnecting the pump housing and the motor, said support structure including a cylindrical upper portion encircling the fan and having an upper edge which is adjacent the lower edge of the collar and spaced from the bottom of the motor to define an annular slot,



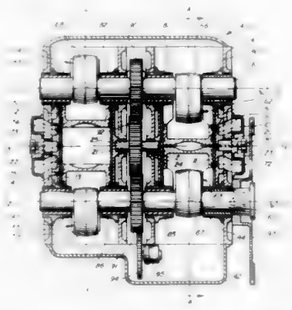
said annular slot cooperating with said annular passage to form an air flow channel extending alongside the motor, said support structure further including a lower portion with openings near the surface of the water in the reservoir through which cool air from near the surface of the water is drawn into the support structure, to be directed by the fan through the air flow channel alongside the motor to prevent the motor from overheating.

4,767,287

RECIPROCATING PISTON MECHANISM

David T. Marks, Birmingham, Mich., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Nov. 25, 1985, Ser. No. 801,590
Int. Cl.[4] F02B 59/00
U.S. Cl. 417—461 24 Claims



3. In a reciprocating opposed piston mechanism having a block housing at least one cylinder assembly, said cylinder assembly comprising: a cylinder symmetrical about a central longitudinal cylinder axis and having a trunnion means extending outwardly at its midpoint along a trunnion axis which intersects said cylinder axis at a 90° angle, said cylinder mounted by said trunnion means to said block to oscillate in rotary relation about said trunnion axis, two opposing pistons having opposing faces equidistant from said trunnion axis and reciprocally mounted within a cylinder chamber of said cylinder, each of said pistons having an eccentric bearing means mounted in its rear portion, an identical eccentric rotatably mounted in each said eccentric bearing means, each said eccentric fixedly mounted to an eccentric shaft, each said eccentric shaft rotatably mounted to said block and rotatable about an eccentric shaft axis parallel to and equally spaced in opposite directions from said trunnion axis, said eccentric shaft axes and said trunnion axis located on said cylinder axial center line when said pistons are in Dead Center Close and Dead Center Spaced positions, at least one central through port through the wall of said cylinder in the region between the faces of said pistons in said Dead Center Close position providing a first fluid flow communication to and from the central portion of said cylinder chamber to the exterior of said mechanism, end through ports through the wall of said cylinder in opposite end regions adjacent the face of each said piston in said Dead Center Spaced position providing a second fluid flow communication to and from opposite end portions of said cylinder chamber to the exterior of said mechanism; and timing means in force transmission relation to each said eccentric shaft to maintain said two eccentrics in each said cylinder assembly 180° out of rotary phase maintaining said piston opposing faces equidistant from said trunnion axis.

4,767,288

FUEL INJECTION PUMP

Max Straubel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,853
Claims priority, application Fed. Rep. of Germany, Jun. 11, 1981, 3123138
Int. Cl.[4] F04B 19/02; F02M 39/00
U.S. Cl. 417—462 2 Claims



1. A fuel injection pump having a pump work chamber enclosed by a pair of pump pistons in a cylinder, the chamber being connectable via at least one fuel supply conduit with a plurality of fuel injection locations in a rotating distributor and further connectable during a suction stroke with a fuel supply line via a plurality of fuel supply bores displaced realtive to each other in said rotating distributor, said plurality of bores being controlled by a control edge guided in synchronism with the rpm of said fuel injection pump, said fuel supply line having a supply source and a pressure regulator, each of said fuel supply bores having a fuel supply line controlled in alternation by an electrically controlled valve to meter fuel via said fuel supply bores, a control device which controls each electrically controllable valve whereby a limitation of the duration of the open communication between said pump work chamber and each fuel supply line can be created on the one hand by means of a switching process of each electrically controllable valve and on the other hand by means of one of the control processes of each control edge, and further wherein the opening times of each electrically controllable valve is variable by means of said control device for controlling said fuel injection quantity and the opening periods of each electrically controllable valve and of the opening of each fuel supply line controlled by each control edge arranged to overlap one another.

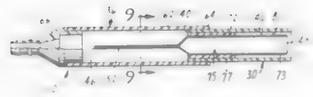
4,767,289

PERISTALTIC PUMP HEADER

Patti L. Parrott, Dexter, and James B. Howell, Ann Arbor, both of Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 31, 1986, Ser. No. 948,047
Int. Cl.[4] A61M 5/00; F04B 43/12
U.S. Cl. 417—477 9 Claims





1. An integral, one-way-flow, steriliable, pump header suitable for use in a peristaltic pump having a pump housing, an arcuate surface within said pump housing defining a stator, a driveshaft adapted to be motor driven and having a portion disposed within said housing, a rotor disposed within said housing and connected to said driveshaft and having a roller adapted to follow said stator when said driveshaft is driven by said motor, said pump header comprising:

A. a flexible outer tube having an inlet, an outlet and a passageway there between, said flexible outer tube being dimensioned to be received between said roller and said stator of said peristaltic pump;

B. a collapsible-expandable inner tube disposed within said passageway of said flexible outer tube, said inner tube including:

(1) a normally closed in cross section and openable in response to a positive fluid pressure, inlet portion extending outside said inlet of said flexible outer tube and terminating at an inlet;

(2) a normally closed in cross section and openable in response to a positive fluid pressure, outlet portion extending outside said outlet of said flexible outer tube and terminating at an outlet; and

(3) a passageway between said inlet and said outlet of said inner tube;

C. a pressure control valve member including:

(1) a housing receiving said normally closed in cross section and openable in response to a positive fluid pressure, inlet portion of said inner tube;

(2) an inlet portion connected to and in direct liquid communication with said inlet portion of said inner tube, so that positively-pressured fluid entering said inlet portion of said valve member enters said inlet of said inner tube and expands and opens said normally closed inlet portion of said inner tube; and

(3) an outlet portion connecting said flexible outer tube to said inner tube adjacent said inlet of said flexible outer tube;

D. a one-way flow valve member including:

(1) a housing receiving said outlet portion of said inner tube with said outlet of said inner tube disposed within said housing, so that positively-pressured fluid entering said outlet portion of said inner tube from said passageway of said inner tube expands and opens said normally closed outlet portion of said inner tube and exits said outlet of said inner tube within said housing;

(2) an inlet portion connecting said flexible outer tube to said inner tube adjacent said outlet of said flexible outer tube; and

(3) an outlet portion in liquid communication with said outlet of said inner tube, so that positively-pressured fluid within said housing can only pass from said outlet portion of said one-way flow valve member, thereby restricting fluid flow to one direction through said pump header;

E. a first resilient spacer having an inner wall affixed to said inner tube adjacent said inlet of said inner tube and an outer wall affixed to said inlet portion of said pressure control valve member; and

F. a second resilient spacer having an inner wall affixed to said inner tube and an outer wall affixed to said outer tube adjacent said inlet of said outer tube, so that said inlet portion of said inner tube is substantially isolated from the remainder of said inner tube, thereby greater ensuring that said pressure control valve member only responds to pressure changes at said inlet of said inner tube.

4,767,290

FLUID PUMP

Ellis O. Jones, Oakley Crescent, Thames, New Zealand

Filed Apr. 12, 1985, Ser. No. 722,857
Int. Cl.[4] F04B 47/00
U.S. Cl. 417—490 3 Claims



1. A self-priming pistonless lift pump, comprising:

a first tubular cylinder having an inlet opening at a lower end thereof and an outlet spaced therefrom and located at an upper end of said first cylinder;

a first valve associated with said lower end of said first tubular cylinder for limiting fluid flow into said first cylinder to a flow into said lower end of said first cylinder;

a second tubular cylinder loosely contained within said first tubular cylinder in co-axial relation therewith for sliding movement therein in the total absence of sealing contact between said first cylinder and said second cylinder and defining an annular space between said first and second cylinders;

said second cylinder having a lateral opening positioned in transverse alignment with the outlet opening of said first cylinder at the time said second cylinder is in a lowermost position of travel within said first cylinder;

a second valve associated with said second cylinder limiting the fluid flow into said second cylinder to flow into the lower end of said second cylinder; and

means for axially reciprocating said second cylinder with said first cylinder between said lowermost position and an upward position, whereby,

downward movement of said second cylinder will cause a first volume of fluid trapped in the lower end of said first cylinder to pass into said second cylinder and become trapped therein, and will also cause fluid to move upwardly in said annular space between said first and second cylinders;

upward movement of said second cylinder within said first cylinder will cause the fluid level in said first cylinder to be restored by passage of fluid into the lower end of said first cylinder through said valve controlled inlet opening of said first cylinder; and

VOL 1093 ISS 5 AG 30 1988 UMI

subsequent downward movement of said second cylinder will cause a second volume of fluid trapped within said first cylinder to pass into said second cylinder and become trapped therein, and also will cause fluid to move further upwardly in said annular space between said first and second cylinders in a step-wise manner;

continued upward and downward movement of said second cylinder within said first cylinder eventually resulting in the raising of the fluid level in said second cylinder to the level of the lateral opening in said second cylinder and completing priming of said pump;

subsequent downward movement of said second cylinder within said first cylinder then causing fluid within said second cylinder to flow out of the lateral opening of said second cylinder to raise the level of fluid in said annular space surrounding said second cylinder to the level of said outlet of said first cylinder, and then causing the volume of water exiting said second cylinder to exit the outlet of said first cylinder.

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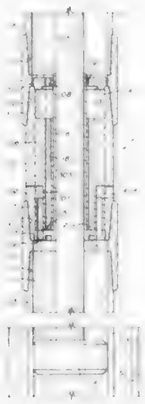
SINGLE VALVE PUMP

John E. Freeman, P.O. Box 2119, Big Spring, Tex. 79271-2119

Continuation of Ser. No. 3,241, Jan. 14, 1987, abandoned. This application Aug. 6, 1987, Ser. No. 82,228

Int. Cl.[4] **F04B** *21/00;* **G05D** *7/00*

U.S. Cl. 417—560 **17 Claims**



1. In a down-hole pump for insertion into an oil well on the lower end of a production tubing string for pumping liquids, the combination comprising:

(a) a housing connectable to the lower end of said production tubing string, said housing having inlet means and outlet means;

(b) a pump barrel connected to the lower end of said housing;

(c) a plunger piston disposed within said barrel for axial reciprocating movement therein, said barrel and said plunger defining a pumping chamber;

(d) connection rod means extending through said housing for connecting said plunger piston to reciprocating means located above said housing; and

(e) a single piston valve means disposed freely slidable within said housing, said valve means having at least one inlet port and one outlet port, said valve means having a top defining an upper surface, said upper surface having at least one outlet port, said valve means being operable in response to the flow of liquid within said pumping chamber and said housing such that when said pumping chamber begins to fill with liquid said inlet port aligns with said inlet means and when said plunger forces liquid from said pumping chamber into said housing, said outlet port aligns with said outlet means allowing liquid to flow into said production tubing string.

4,767,292

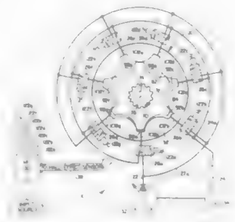
ELECTRICAL COMMUTATION APPARATUS

Mark R. Kinder, Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio

Filed Jul. 20, 1987, Ser. No. 75,445

Int. Cl.[4] **F01C** *1/10, 21/12;* **F03C** *2/08;* **F15B** *13/16*

U.S. Cl. 418—2 **17 Claims**



1. An electrical commutation apparatus for a hydraulic device having a rotor and a stator, the rotor and stator having a plurality of teeth that cooperate during relative movement to define a plurality of variable volume working chambers, said apparatus including:

an inlet chamber connectable to a source of pressurized fluid;

an outlet chamber connectable to a reservoir;

a plurality of electrically responsive valve means, each working chamber having an associated valve means which is individually controllable, each valve means being in fluid communication with the inlet chamber and the outlet chamber and its associated working chamber and being responsive to an associated electrical control signal to selectively provide, in one condition, fluid communication between the inlet chamber and its associated working chamber and, in a second condition, fluid communication between the outlet chamber and its associated working chamber.

4,767,293

SCROLL-TYPE MACHINE WITH AXIALLY COMPLIANT MOUNTING

Jean-Luc M. Caillat; Roger C. Weatherston, both of Dayton, and James W. Bush, Sidney, all of Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed Aug. 22, 1986, Ser. No. 899,003

Int. Cl.[4] **F01C** *1/04*

U.S. Cl. 418—55 **72 Claims**

1. A scroll-type machine comprising:

(a) a first scroll member including a first end plate having a first sealing surface thereon and a first spiral wrap disposed on said first sealing surface, the center axis of said first wrap being disposed generally perpendicular to said first sealing surface;

(b) a second scroll member including a second end plate having a second sealing surface thereon and a second spiral wrap disposed on said second sealing surface, the center axis of said second wrap being disposed generally perpendicular to said second sealing surface;

(c) a stationary body having means supporting said second scroll member for orbital movement with respect to said first scroll member, said second scroll member being positioned with respect to said first scroll member such that said first and second spiral wraps intermesh with one another so that orbiting of said second scroll member with respect to said first scroll member will cause said wraps to define moving fluid chambers, the edge of said first wrap spaced from said first end plate being in sealing engagement with said second sealing surface, the edge of said second wrap spaced from said second end plate being in sealing engagement with said first sealing surface; and

(d) axially compliant mounting means supported in a fixed position with respect to said body and connected to said first scroll member to permit axial movement other than that movement associated with distortion of said first scroll member while preventing rotational and radial movement of said first scroll member with respect to the orbital axis of said second scroll member, said mounting means being connected to said first scroll member at a point disposed generally at the mid-point between the respective planes of said first and second sealing surfaces.

40. A scroll-type machine comprising:

(a) a first scroll member having a spiral wrap thereon;



(b) a second scroll member having a spiral wrap thereon, said second scroll member being mounted with respect to said first scroll member such that said spiral wraps intermesh with one another so that orbiting of said second scroll member about a given axis with respect to said first scroll member will cause said wraps to define moving fluid chambers;

(c) a stationary body having means supporting said second scroll member for orbital movement with respect to said first scroll member;

(d) axially compliant mounting means supported in a fixed position with respect to said body and connected to said first scroll member to permit axial movement of said first scroll member, said movement being other than that movement associated with distortion of said first scroll member, while preventing rotational and radial movement thereof with respect to said axis; and

(e) biasing means for axially biasing said first scroll member toward said second scroll member.

4,767,294

POWER CONVERSION DEVICE

Dean J. Munt, III, Santa Ana, Calif., assignor to Pacific Power Systems, Inc., Estepona, Calif.

Continuation-in-part of Ser. No. 919,247, filed as PCT US85/02590, Dec. 31, 1985, published as WO86/04110, Jul. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 689,591, Jan. 7, 1985, abandoned. This application Jun. 24, 1987, Ser. No. 63,805

Int. Cl.[4] **F01B** *7/20;* **F04B** *19/02;* **F16K** *3/00*

U.S. Cl. 91—173 **44 Claims**

1. A power conversion unit comprising:

a housing; and

a piston assembly contained in said housing and including a piston plate mounted for orbital movement about a first axis, and two additional piston elements at opposite sides of said piston plate mounted to reciprocate in unison along a second axis essentially perpendicular to said first axis in correspondence with a component of said orbital movement;

said piston plate being slidably reciprocable relative to said two additional piston elements essentially perpendicular to said second axis in correspondence with a second component of said orbital movement;

said housing and piston assembly defining fluid chambers at different locations about the piston assembly which vary progressively in size as the piston plate moves orbitally and said additional elements reciprocate;

said two additional piston elements being free of direct rigid attachment to one another, and being retained against movement toward one another by said piston plate therebetween.

41. A power conversion unit comprising:

a housing; and

a piston assembly contained in said housing and including a piston plate mounted for orbital movement about an axis and additional piston means at opposite radially outer sides of said piston plate reciprocable transversely of said axis in correspondence with a component of said orbital movement;

said housing and piston assembly defining together fluid chambers at different locations about the piston assembly



each of which varies progressively in size in one direction as the piston plate moves orbitally and said additional piston means reciprocate;

said housing including a wall structure at a side of said piston assembly containing fluid inlet and outlet passages and having an inner face adjacent said piston plate containing valving ports;

said piston plate containing passages communicating with said chambers respectively, and having a side face adjacent said inner face of said wall structure containing ports communicating with said valving ports to alternately admit fluid to and discharge fluid from said chambers through said passages in the piston plate;

said valving ports in said inner face of the wall structure including, for each of said chambers, a first port and a second port one of which is an inlet for supplying fluid to the corresponding chamber and the other of which is an outlet for discharging fluid from the corresponding chamber;

said first and second valving ports being elongated in essentially the direction in which the corresponding chamber varies in size as said piston plate moves orbitally and said additional piston means reciprocate;

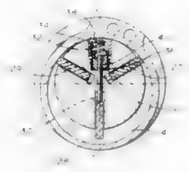
said first ports having a length dimension, in said direction in which the corresponding chamber varies in size, and a width dimension transversely of that direction and an area, greater than the corresponding length dimension, width dimension and area respectively of said second ports.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,295
DEACTIVATING ROTOR VANE KICK-OUT MECHANISM

Paul A. Biek, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 7, 1987, Ser. No. 83,512
Int. Cl.[4] F01C *1/344*
U.S. Cl. 418—151 10 Claims

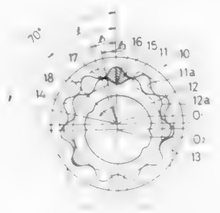


1. A radial vane motor, comprising:
a housing having a rotor cavity;
a rotor positioned within the rotor cavity, said rotor having a radial slot;
a vane slidably engaged in said slot;
forcing means operably and releasably engaged with said vane for forcing said vane radially outward from said rotor; and
deactivating means engaged with said forcing means for disengaging said forcing means from the vane when said rotor is rotating and generating a centrifugal force sufficient to force said vane out from said rotor without the force provided by said forcing means.

4,767,296
TROCHOIDAL TOOTHED OIL PUMP WITH THIN DISCHARGE CHANNEL COMMUNICATING WITH DISCHARGE CHAMBER

Atsushi Satomoto; Takashi Nakagawa; Junichiro Sakurai, all of Toyota, and Koji Morita, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 791,385, Oct. 25, 1985, abandoned.
This application Mar. 31, 1987, Ser. No. 32,958
Claims priority, application Japan, Oct. 31, 1984, 59-231066
Int. Cl.[4] F04C *2/10*
U.S. Cl. 418—171 5 Claims



1. A trochoidal oil pump comprising:
a housing defining an internal space;
an outer rotor fitted rotatably in the internal space of said housing and having internal teeth;
an inner rotor having outer teeth meshing with the internal teeth of said outer rotor to define a sealed space therebetween; and
suction and discharge chambers formed in said housing and opened into an internal space of the housing, wherein said discharge chamber is formed so as to begin at an angle l in the direction of forward rotation taken from the dedendum of said inner rotor and defined by the following relationship:

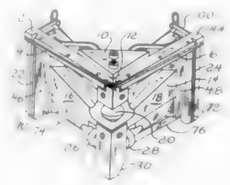
$$l_1 < l \leqq 70°$$

where l_1 designates an angle taken in the forward direction of rotation from the dedendum of said inner rotor to a first contact position at which a top portion of said teeth of said outer rotor and said inner rotor contact at said first position at which a maximum volume of said sealed space occurs; and
wherein said housing has an arcuate shaped thin channel formed therein communicating with said discharge chamber so as to extend in a reverse direction of rotation from the position of said angle l so as to communicate with said maximum volume of said sealed space for progressively releasing oil in said sealed space and for preventing said maximum volume of said sealed space from abruptly communicating with said discharge chamber so that a back flow of oil from said discharge chamber into said maximum volume of said sealed space can be blocked.

4,767,297
CORNER FINISHING TOOL

Morris F. Mower, Santa Clara, and Haim Cezana, S. San Francisco, both of Calif., assignors to Axia Incorporated, Oak Brook, Ill.

Filed Mar. 30, 1987, Ser. No. 31,763
Int. Cl.[4] B05C *17/10*
U.S. Cl. 425—87 7 Claims



1. An improved corner finishing tool for applying mastic material along a wall joint, comprising container means that is open in two convergent and substantially perpendicular planes and having walls in each of said planes that converge peripherally of said cavity, said controller means comprising;
a pair of retainer walls rigidly joined at one edge;
a pair of convergent frmae members secured to said pair of retainer walls, respectively, each frame member being movable relative to the other frame member;
a pair of blades mounted along intersecting edges of said convergent frame members; and
a wear pad mounted on said one edge of the retainer walls.

4,767,298
HEAT STAKING APPARATUS

Keith A. Bocchicchio, Middletown; David L. Hall, Hummelstown; Mark F. Jackson; Joseph R. Keller, both of Harrisburg, and Karl H. Letsch, Wyomissing, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 22, 1986, Ser. No. 945,434
Int. Cl.[4] B29C *65/02*
U.S. Cl. 425—112 7 Claims

1. Apparatus for joining components together by heat staking where a first component includes posts made of plastic material, which material may be subject to softening under application of sufficient heat, and a second component which includes holes through which said posts are inserted and heat staked to form an assembly of the first component to the second component, comprising:

a. means for fixturing said first and second components against relative movement vertically or horizontally;
b. a set of heat staking elements and means for heating said elements independently to a predetermined temperature;
c. first means for displacing said heating elements toward and away from said posts in a positive displacement;
d. second means for displacing said heating elements toward and away from said posts in a cushioned displacement having a first preset force level, where said second means

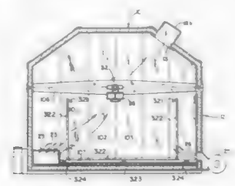


includes means to apply a second preset force level higher than that of said first level whereby to allow an application of a higher and lower cushioned displacement of said heating elements; and
e. control means for activating said first and second means sequentially whereby to drive said heating elements into contact and engagement under pressure with said posts to deform same, said second means precluding deformation prior to sufficient heat transfer to soften said posts.

4,767,299
ROTATIONAL MOLDING MACHINE

Peter Friesen, R.R. #1, Box 314, Group 24, Winkler, Manitoba, Canada R0G 2X0

Continuation-in-part of Ser. No. 822,020, Jan. 27, 1986. This application Jan. 20, 1987, Ser. No. 5,243
Int. Cl.[4] B29C *39/08, 39/44*
U.S. Cl. 425—135 9 Claims

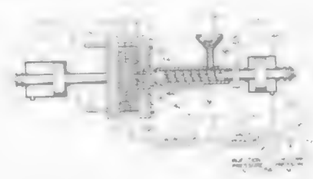


1. A machine for use in rotational molding of the type for receiving and processing a mold in a first step in which the mold is loaded with a plastics material to be molded, in a second step in which the mold is rotated while it is heated, a third step in which the mold is rotated while it is cooled, and a fourth step in which the mold is unloaded, the machine comprising an enclosed housing defining therein a single chamber for receiving said mold, said housing including a base having a base member, means for supporting said housing relative to a ground surface consisting of said base member such that said housing is maintained by said base member in fixed position on the ground surface, a plurality of base walls, fixed to said base member so as to be generally upstanding from said base member and a cover member, door means provided in said housing for allowing access thereto, a mold, heating means for supplying heat into said housing at a position exteriorly of said mold, fan means, duct means connected to said fan means, said duct means including a first duct portion arranged to direct air from said fan means into said housing, a second duct portion arranged to withdraw air from said housing for recirculation to said fan means and a third duct portion arranged to draw exterior air for directing cooling air through said fan means to said housing, and means for selecting for connection to said fan means one of said second and third duct means, spray means arranged to spray a cooling liquid onto the mold during said third step and a water collection pan at the base of the housing arranged to collect at least some of said cooling liquid, said pan having a base plate on which the liquid is collected and an outlet positioned at a distance above the base plate so as to retain a predetermined quantity of said liquid within said pan in said housing for evaporation.

4,767,300
APPARATUS FOR PRECISION VOLUMETRIC CONTROL OF A MOLDABLE MATERIAL IN AN INJECTION MOLDING PROCESS

Frederick J. Buja, Rochester; Alan B. Miller, Scottsville; William H. Sherwood, Victor, and James J. Wenskus, Jr., Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1987, Ser. No. 115,676
Int. Cl.[4] B29C *45/77, 45/80*
U.S. Cl. 425—140 8 Claims



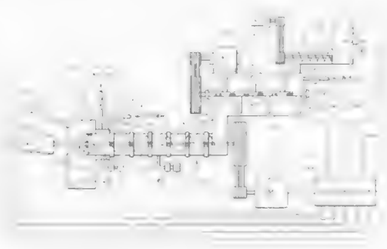
1. In a molding machine having a pair of separable mold elements forming a mold cavity therebetween, means for opening and closing the mold elements, and means for introducing a moldable material into said mold cavity at a first pressure and for exerting a second pressure on said moldable material as it cures in said cavity; the improvement comprising: means for controlling the molded product comprising:
means for measuring separation of the mold elements resulting from introduction of the moldable material into the mold cavity,
means for detecting a predetermined separation of said mold elements,
means for changing the pressure from said first pressure to said second pressure in response to said detection,
said separation measuring means arranged to measure the separation of the mold elements following changing the pressure,
means for sensing when the separation of the mold elements stops increasing,
means for determining whether the cessation of mold element separation increase occurs within a predetermined separation window,
means for generating a signal to indicate that the cycle has exceeded said window if said cessation is not within said window,
and means for continuing the cycle and maintaining said second pressure until the moldable material has cured if said cessation occurs within said window.

4. In an injection molding machine having a pair of separable mold elements forming a mold cavity therebetween and arranged for separation along a parting line for the removal of the molded article, means for opening and closing the mold elements, and injection means for injecting a moldable material into said mold cavity at a first pressure and for exerting a second pressure on said moldable material as it cures in said

VOL 1093 ISS 5 AG 30 1988 UMI

cavity, the improvement comprising means for controlling dimension, weight and stress in a molded article comprising:
means for measuring separation of said mold elements during the closing of the mold elements,
means for sensing a predetermined separation of said mold elements during the closing of the mold elements and for initiating a first timing cycle of a predetermined length in response thereto,
means for sensing the termination of relative closing movement between said mold elements,
means for determining whether or not said termination occurs during said first timing cycle,
means for generating a first signal to indicate that said mold elements have closed outside said first timing cycle if said termination does not occur within said timing cycle,
means for injecting a moldable material into said mold cavity at said first pressure if said termination does occur during said first timing cycle,
means for establishing a predetermined separation window after the start of the injection of moldable material into said mold cavity,
means for measuring the separation of the mold elements during the injection of the moldable material,
means for detecting a predetermined separation of said mold elements,
means for changing the injection pressure from said first pressure to said second pressure upon detecting said predetermined separation,
means for measuring the separation of the mold elements following changing the pressure,
means for sensing when the separation of the mold elements stops increasing,
means for determining whether the cessation of mold element separation increase occurs within said separation window,
means for generating a second signal to indicate that the cycle has exceeded said window if said cessation does not occur within said window, and
means for continuing the cycle and maintaining said second pressure until the thermoplastic material has cured if said cessation occurs within said window.

4,767,301
AUTOMATIC CONTROL FOR AN EXTRUDER
Joseph A. Volk, Jr., Creve Coeur, Mo., assignor to Beta Raven Inc., Earth City, Mo.
Filed Nov. 9, 1987, Ser. No. 118,434
Int. Cl.[4] B29C *47/78, 47/92*
U.S. Cl. 425—144 21 Claims



1. In a barrel-type extruder having means to pressurize a mixture of ingredients and produce pellets therefrom, and means to feed a supply of a mixture of a plurality of ingredients to the pellet producing means, the extruder including a plurality of barrel sections arranged substantially in a straight line, the end barrel section having a die covering the outer face thereof, the die having a plurality of holes through which the mixture is extruded, and means to cut said extrudate into pellets, the improvement comprising means to sense the temperature of the finished pellets as they are cut by said cutting means, and means to automatically control the extruder in response to said temperature sensor.

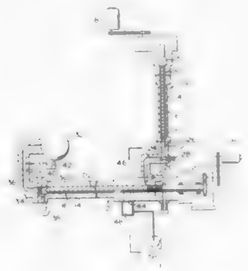
4,767,302
EXCHANGEABLE MULTIPLUNGER TRANSFER MOLDING DIE APPARATUS
Hiroyuki Okamoto; Takao Sagawa, and Yukio Shibata, all of Shizuoka, Japan, assignors to Yazaki Corporation, Japan
Filed Sep. 25, 1987, Ser. No. 101,196
Claims priority, application Japan, Sep. 26, 1986, 61-226259; Sep. 26, 1986, 61-226260; Sep. 29, 1986, 61-228088; Sep. 29, 1986, 61-228089
Int. Cl.[4] B29C *45/02*
U.S. Cl. 425—190 11 Claims



1. An exchangeable multiplunger transfer molding die apparatus which comprises:
(a) a first master die holder;
(b) a first chase block slidably and removably engaged with said first master die holder;
(c) a second master die holder associated with said first master die holder;
(d) a second chase block slidably and removably engaged with said second master die holder;
(e) a frame member for supporting said first and second master die holders;
(f) a plurality of plungers for pressurizing molding material put in plural material supply pots formed in each mate surface of said first and second chase blocks;
(g) a base member supported by a hydraulic cylinder movable up and down;
(h) a constant pressure applying member mounted on said base member, for supporting said plungers to supply a constant pressure to each plunger; and
(i) locating means attached to said base member, for adjustably locating and locking said constant pressure applying members on said base member according to changes in pitch of said plungers whenever said first and second chase blocks are exchanged.

4,767,303
EXTRUDING APPARATUS FOR EXTRUDING SYNTHETIC RESIN
Kazuaki Sakakura, Oosaka, and Minoru Takahashi, Saitama, both of Japan, assignors to Sumitomo Chemical Company, Ltd., Oosaka and Placo Co., Ltd., Saitama, both of, Japan
Filed Feb. 2, 1987, Ser. No. 9,527
Claims priority, application Japan, Feb. 12, 1986, 61-28182; Feb. 12, 1986, 61-28183; Feb. 13, 1986, 61-27891
Int. Cl.[4] A01J *17/00*
U.S. Cl. 425—203 24 Claims

18. An extruding apparatus comprising:
a cylinder
a supply port provided at a proximal end of said cylinder, and supplying a resin molding material into said cylinder;
a discharge port provided at a distal end of said cylinder, and discharging the resin molding material contained in said cylinder;
a screw shaft arranged inside said cylinder, and having a helical blade;
a motor connected to and driving said screw shaft;
a vent hole formed in a side wall portion of said cylinder which a distal end of the helical blade of said screw shaft opposes when said helical blade moves downward by rotation of said screw shaft, an axis of said vent hole having a predetermined angle with respect to a vertical line, so that an outer end of said vent hole is situated at a



higher level than its inner end and wherein the axis of said vent hole is inclined, with respect to a normal line of said screw shaft, at an angle within the range of from 30° to 90° in a direction opposite to a direction of rotation of said screw shaft;
an airtight vacuum chamber connected to said vent hole and mounted on the side wall portion of the cylinder of the extruder including a bottom cover, a top cover and side walls, wherein the vacuum chamber allows gas which is evolved from the semimolten resin molding material to readily be released under a reduced pressure prevalent within that chamber, while allowing that resin which enters a vent hole at the time of gas removal and is cured there to be collected within the chamber; and
a vacuum pump connected to said airtight vacuum chamber.

4,767,304
APPARATUS FOR SHAPING A SPHERICAL BODY
Yasunori Tashiro, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Japan
Filed May 26, 1987, Ser. No. 54,388
Claims priority, application Japan, May 26, 1986, 61-120494
Int. Cl.[4] A21C *11/10*
U.S. Cl. 425—308 2 Claims



1. An apparatus for shaping a spherical body consisting of an outer crust and an inner filling from a cylindrical body of said outer crust and inner filling which is continuously fed in a downward vertical direction along a feeding axis, comprising:
(a) a shaping assembly including at least three shaping members disposed circumferentially around said feeding axis and horizontally parallel with each other and defining an aperture therethrough centered on said feeding axis, said members being assembled in horizontal sliding relationship to one another so as to open and close said aperture;
(b) means for continuously feeding said cylindrical body to and through said aperture along said feeding axis; and
(c) means for moving all of said members slidingly together outwardly and inwardly to open and close said aperture,
wherein each of said members is formed with a first vertically oriented side surface, and a second vertically oriented side surface, said first and second side surfaces being at an angle with respect to one another and meeting at an end portion thereof in a vertical edge, wherein the first side surface of each of said members slides horizontally on the second side surface of an adjacent member so as to bring said members together inwardly to close said aperture, and wherein said end portion of each member tapers in vertical height from an outer height a to an inner preselected height a'' at the vertical edge thereof, whereby the end portions of said members are closed on said cylindrical body while reducing in vertical height along said feeding axis as said members are moved inwardly tapering to said preselected height a'' in order to push the outer crust over the inner filling to completely and evenly close each spherical body.

4,767,305
APPARATUS FOR SHAPING A SPHERICAL BODY
Yasunori Tashiro, Utsunomiya, Japan, assignor to Rheon Automatic Machinery Co., Ltd., Japan
Filed May 26, 1987, Ser. No. 54,387
Claims priority, application Japan, May 26, 1986, 61-120493
Int. Cl.[4] A21C *11/10*
U.S. Cl. 425—308 9 Claims



1. An apparatus for shaping a spherical body consisting of an outer crust and an inner filling from a cylindrical body of said outer crust and inner filling which is continuously fed in a downward vertical direction along a feeding axis, comprising:
(a) a shaping assembly including at least three shaping members disposed circumferentially around said feeding axis and horizontally parallel with each other and defining an aperture therethrough centered on said feeding axis, said members being assembled in horizontal sliding relationship to one another so as to open and close said aperture;
(b) means for continuously feeding said cylindrical body to and through said aperture along said feeding axis; and
(c) means for moving all of said members slidingly together outwardly and inwardly to open and close said aperture,
wherein each of said members is formed with a first vertically oriented side surface, and a second vertically oriented side surface, said first and second side surfaces being at an angle with respect to one another and meeting at a tapered end portion thereof having a top surface tapering to a vertical edge parallel to the feeding axis, wherein the first side surface of each of said members slides horizontally on the second side surface of an adjacent member so as to bring said members together inwardly to close said aperture, and wherein said top surface of said tapered end portion of each member is a curved surface having areas of different curve gradients arranged in the vertical direction, whereby the tapered end portions of said members

VOL 1093 ISS 5 AUG 30 1988 UMI

are closed on said cylindrical body while reducing in vertical height along said feeding axis as said members are moved inwardly in order to push the outer crust by said tapered end portions over the inner filling to completely and evenly close each spherical body.

4,767,306

INJECTION APPARATUS

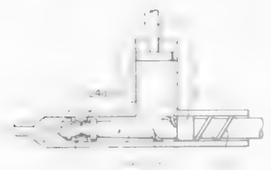
Toshiro Kawaguchi, Yamaguchi; Takefumi Sonoda, and Kiyoshi Hashimoto, both of Ube, all of Japan, assignors to UBE Industries, Ltd., Yamaguchi, Japan

Filed Apr. 16, 1986, Ser. No. 852,573

Claims priority, application Japan, Apr. 16, 1985, 60-79197; Jul. 31, 1985, 60-168898

Int. Cl.[4] B29C *45/23*

U.S. Cl. 425—382.4 6 Claims



1. An injection molding apparatus for injecting a thermosetting resin having glass fibers into a mold, comprising:

a cylindrical barrel having a central axis and a tapered first end forming an injection nozzle;

supply means for injecting a predetermined flow of the thermosetting resin into said cylindrical barrel, said supply means including an outlet port extending axially along said barrel;

plunger means disposed within said barrel for channeling the thermosetting resin toward said injection nozzle and for injecting the thermosetting resin through said injection nozzle, said plunger means including an elongated plunger and motor means connected to said plunger at a second end of said barrel for selectively rotating and reciprocating said plunger about the axis of said barrel, said plunger means including a plunger head at an end of said plunger facing said injection nozzle, groove means along the periphery of said plunger substantially adjacent said plunger head, and a check ring slidably and rotatably confined within said barrel along said groove means to admit the thermosetting resin into an expandable metering chamber extending between said injection nozzle and said plunger head, said check ring also preventing a backflow of the thermosetting resin from said metering chamber, said plunger having a peripheral portion between said groove means and said outlet port of said supply means sized to have a cross section narrower than the diameter of said cylindrical barrel, said peripheral portion and said barrel defining a continuous annular gap between said groove means and said outlet port to channel the thermosetting resin containing the glass fibers into said metering chamber; and

means for generating back pressure within said barrel to urge said plunger toward said second end further filling said metering chamber with the thermosetting resin, the metered resin being injected through axial movement of said plunger in the direction of said injection nozzle.

4,767,307

APPARATUS FOR THE PRODUCTION OF SPHERICAL PORTIONS OF ICE-CREAM

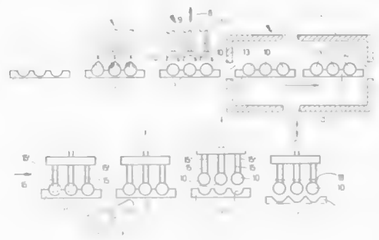
Richard Beer, Nuremberg, Fed. Rep. of Germany, assignor to Schöller Lebensmittel GmbH & Co. KG, Nuremberg, Fed. Rep. of Germany

Filed Aug. 27, 1986, Ser. No. 900,805

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1985, 3530682

Int. Cl.[4] B29C *33/42, 39/26;* A23G *9/22*

U.S. Cl. 425—394 8 Claims



1. An arrangement for the production of spherical portions of ice-cream, comprising:

(a) at least one hemispherical lower mould;

(b) at least one portion dispenser device for the creamy ice-cream mixture;

(c) at least one smoothing tool in the shape of a hemisphere with a segmented generatrix, which can be rotated and moved up and down;

(d) a deep-freezing installation through which the lower moulds are taken either step-by-step or continuously;

(e) at least one removal device for the finished ice-cream scoops.

4,767,308

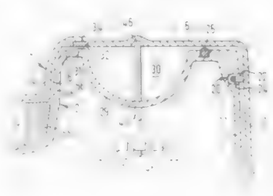
MOULD FOR MOULDING AN ARTICLE

Alfred A. Adams, Bungay, England, assignor to Group Lotus PLC, Norwich, England

Filed Jan. 21, 1986, Ser. No. 793,804

Int. Cl.[4] B29C *43/36, 43/56*

U.S. Cl. 425—405.1 18 Claims



1. A mould for moulding an article, said mould comprising:

first and second mould parts shaped to define a moulding cavity between the parts,

means allowing relative movement of said first and second mould parts so that, upon said movement, volume of said moulding cavity changes between a first, minimum volume and a second larger volume,

means for introducing flowable moulding material into said moulding cavity,

means defining a collection chamber located outwardly of said moulding cavity, said collection chamber communicating with said moulding cavity to receive any excess flowable moulding material during said relative movement of said mould parts,

means acting between said mould parts to restrict flow of said flowable moulding material into said collection chamber as said mould parts relatively move to a position corresponding to minimum moulding cavity volume,

sealing means operative to said said moulding cavity and said collection chamber against ambient atmosphere throughout said movement of said mould parts between said first and second positions, and

means for communicating said mould cavity with a vacuum source to effect said relative movement of said mould parts, said communicating means comprising a tube extending into said collection chamber with the tube opening above the level of the flowable moulding material in said chamber.

4,767,309

EXTRUDING DIE FOR FORMING FINNED CERAMIC HONEYCOMB STRUCTURES

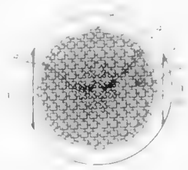
Hiroshige Mizuno, Tajimi, and Satoru Inoue, Aichi, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Jun. 4, 1987, Ser. No. 58,123

Claims priority, application Japan, Jun. 17, 1986, 61-139112

Int. Cl.[4] B28B *21/54;* B29C *47/12*

U.S. Cl. 425—461 9 Claims



1. An extruding die for forming finned ceramic honeycomb structures, including extruding forming grooves for extruding a ceramic material therethrough, said extruding forming grooves opening at a front surface of the extruding die and intersecting with each other in the form of a mesh corresponding to a sectional configuration of a ceramic honeycomb structure; and a plurality of material supply apertures for supplying the ceramic material into the extruding die, said material supply apertures opening at a rear surface of the extruding die and communicating with said extruding forming grooves at intersecting zones thereof, said extruding die comprising fin forming grooves branched from said extruding forming grooves for forming fins, said material supply aperture communicating with at least parts of said fin forming grooves.

4,767,310

BLOW MANDREL FOR EXTRUSION BLOW MOLDING WITH AGRESSIVE BLOW MEDIA

Horst Neumann, Kelkheim, and Manfred Busch, Sulzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

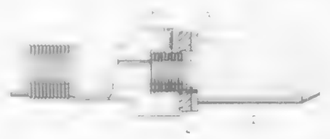
Filed Mar. 25, 1987, Ser. No. 30,456

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1986, 3610389

Int. Cl.[4] A01J *21/00*

U.S. Cl. 425—469 4 Claims

1. A blow mandrel for extrusion blow molding of a parison with a blow medium comprising a generally cylindrical structure including a cylindrical first piece having a parison engaging end and an internal passageway extending therethrough for passage of a blow medium, the structure also including a second piece with an internal passageway extending therethrough for passage of a blow medium and a threaded connection between the first and second pieces for releasably connecting them together, an outwardly extending annular sealing element lonitudinally movable on the outside of the cylindrical structure spaced from the parison engaging end of the cylindrical first piece and constructed and arranged to sealingly engage a parison when the engaging end of the cylindrical first piece is inserted into the parison for blow molding thereof, and a spring element, next to the sealing element between the pieces urging the sealing element and forming part of the connection.



4,767,311

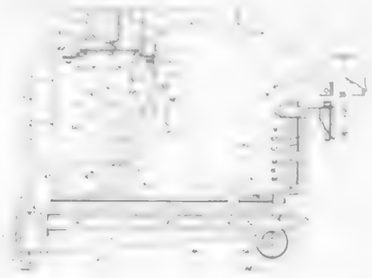
BLOW MOLDING APPARATUS WITH RESILIENT SKIRTED SPINDLE NOSE

Joseph F. Gibbemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 869,499, Jun. 2, 1986, Pat. No. 4,723,906, and a continuation-in-part of Ser. No. 900,947, Aug. 27, 1986, Pat. No. 4,678,425. This application Jul. 6, 1987, Ser. No. 70,000

Int. Cl.[4] B29C *49/28, 49/38*

U.S. Cl. 425—526 8 Claims



1. Apparatus for blow molding hollow preforms, the apparatus including a combination of a conveyor for conveying hollow preforms having a finish on an open end internally engaged to the conveyor, the preforms being conveyed from a preform transfer station through a blow station spaced apart in the direction of movement where the preforms are received in blow molds and converted to expanded hollow products therein, and then to an eject station where such products are ejected, the apparatus comprising:

a pair of roller chain sprockets, one being a drive sprocket, disposed on vertical shaft axes;

a roller chain disposed in a horizontal plane with its pins vertical and about said sprockets;

a plurality of groups of preform holder assemblies supported in succession on said chain, the preform holder assemblies in each group being spaced the same as the blow molds are spaced so the preforms thereon may be presented aligned with respective blow molds, each preform holder assembly having

a rigid cantilever support member with an inner end and an outer end and supported at its inner end from the bottom of said chain from the pin link plate thereof, with the outer end extending outboard of the chain pitch line; and

a holder means attached to the said cantilever member

VOL 1093 ISS 5 AG 30 1988 UMI

outer end and extending generally horizontally therefrom and comprising a spindle nose depending from said cantilever member for engaging the inside of the finish on the open end of the preform, said spindle nose having

a base having a top side and a bottom side;

a flexible annular skirt extending from the bottom side of said base, said skirt being sufficiently resilient to maintain sealing engagement with the inside diameter of the preform finish during blow molding; said base and skirt being of material which presents a low friction surface at those places where the nose connects to said preforms; and

an air passage that extends completely through said base and skirt region; and

an intermittent drive means to rotate one of the sprockets periodically an amount sufficient to move the chain an amount to remove an entire group of holder assemblies with products from said blow molds to the eject station and to replace same with the next succeeding group of holders.

4,767,312

ARRANGEMENT FOR PRODUCING SYNTHETIC PLASTIC MOLDED PARTS

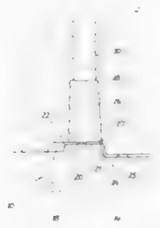
Manfred Hüttner, Notzingen, Fed. Rep. of Germany, assignor to Pebra GmbH Paul Braun, Esslingen, Fed. Rep. of Germany

Filed Apr. 6, 1987, Ser. No. 34,545

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1986, 3611249; European Pat. Off., Mar. 9, 1987, 87103333.8

Int. Cl.[4] B29C *45/38*

U.S. Cl. 425—543 17 Claims



1. An apparatus for producing synthetic plastic molded parts, comprising

means for forming a sprue passage through which a reaction mixture formed by mixing of two reaction components passes in a liquid state and in which a sprue part is formed;

a molding tool having an upper part and a lower part and a mold nest which communicates with said sprue passage so that the reaction mixture is injected via said sprue passage into said mold nest in a flow direction, so as to form a molded part in said molded nest;

one limiting member located in a region between said sprue passage and said mold nest so as to limit one side of a sprue gap formed between said sprue passage and said mold nest, said one limiting member having a predetermined width and length;

means for separating the sprue part from the molded part, and including one blocking member which is located in the region between said sprue passage and said mold nest and formed as one displacing slider,

said one displacing slider having an end surface which limits another side of said sprue gap, and has a width and length corresponding to the width and length of said one limiting member, said one displacing slider being movable relative to said one limiting member so as to close said sprue gap, said one displacing slider being formed simultaneously as a mold opening member which is displaceable beyond a respective one of said parts of said molding tool.

4,767,313

PULSE COMBUSTION ENERGY SYSTEM

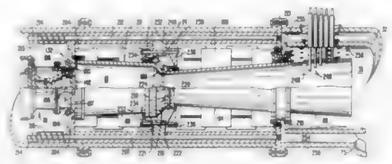
Hanford N. Lockwood, Jr., San Mateo, Calif., assignor to NEA Technologies, Inc., San Francisco, Calif.

Division of Ser. No. 852,854, Apr. 16, 1986, Pat. No. 4,708,159.

This application Apr. 23, 1987, Ser. No. 41,805

Int. Cl.[4] F23C *11/04*

U.S. Cl. 431—1 20 Claims



1. A pulse combustor comprising:

a first tubular portion defining a combustion chamber;

means for flowing relatively high frequency pulses of a fuel and an oxidizer into the combustion chamber;

means for combusting the fuel for establishing high frequency hot gas pulses;

a second tubular portion downstream of and in fluid communication with the combustion chamber through which the hot gas pulses propagate; and

means for coupling the first and second tubular portions by longitudinally compressing them over substantially their entire lengths towards each other.

4,767,314

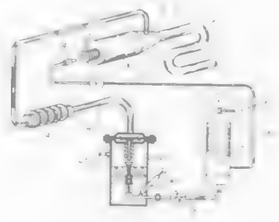
PULSE JET ENGINE ASSEMBLY

Paul A. Mutchler, St. Louis County, Mo., assignor to Engineered Air Systems, Inc., St. Louis, Mo.

Filed Jun. 8, 1987, Ser. No. 59,611

Int. Cl.[4] F23C *11/04*

U.S. Cl. 431—1 14 Claims



1. A pulse jet engine assembly comprising: a combustion chamber having a fuel inlet for admitting a combustible fuel into said chamber;

a combustible fuel supply reservoir;

a fuel connected to said fuel supply reservoir and said combustion chamber fuel inlet; and

motive means operatively responsive to combustion gas pressure fluctuations within said combustion chamber to drive said fuel pump to deliver a supply of fuel under pressure to said combustion chamber fuel inlet, said motive means including an enclosed chamber having a flexible diaphragm extending thereacross to provide driving and driven subchambers with said driving subchamber connected to said combustion chamber and said driven subchamber connected to said fuel pump to operate said fuel pump.

4,767,315

METHOD OF CONTROLLING THE DEPTH OF A FLUIDIZED BED IN A POWER PLANT AND A POWER PLANT WITH MEANS FOR CONTROLLING THE BED DEPTH

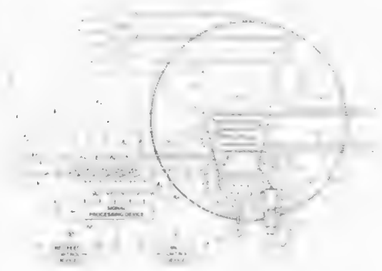
Roine Brännström, Finspong; Lars-Erik Karlsson, Åby, and Martin Mansson, Finspong, all of Sweden, assignors to Asea Stal Aktiebolag, Västerås, Sweden

Filed Oct. 10, 1986, Ser. No. 917,649

Claims priority, application Sweden, Oct. 22, 1985, 8504961

Int. Cl.[4] F23D *3/40*

U.S. Cl. 431—7 14 Claims



1. A method of controlling the depth of a fluidized bed in a fluidized bed power plant in which sulfur-containing fuel is burned, the bed being located in a combustion chamber which is provided with nozzles for the supply of air for fluidizing of a bed of particulate sulfur-absorbing material and sulfur-containing fuel supplied to the bed, at least one conduit for supplying the bed with fuel and bed material, and a compressor for supplying the nozzles with air for the fluidization and fuel combustion, said method depending on the difference between a predetermined depth value and an actual measured depth value, said controlling comprising the steps of:

supplying fresh bed material to the bed and removing a portion of bed material from the bed by feeding bed material to crushing means directly connected to the combustion chamber by an outlet means;

returning crushed bed material from the crushing means directly to the bed through a return conduit;

controlling the flow of bed material through the crushing means in dependence on said difference between the predetermined value and the actual value of the bed depth;

removing crushed bed material from the combustion chamber with combustion gases;

separating the crushed bed material from the combustion gases in a cleaning means for separating dust from combustion gases.

4,767,316

FUEL SUPPLY SYSTEM FOR OIL BURNER

Kazuharu Nakamura; Motoki Matsumoto; Osamu Niwa, and Yoshimasa Tsuboi, all of Aichi, Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Jan. 20, 1987, Ser. No. 4,400

Claims priority, application Japan, Jan. 29, 1986, 61-011339[U]

Int. Cl.[4] F23D *14/50*

U.S. Cl. 431—121 11 Claims

1. A fuel supply system for an oil burner which includes an oil reservoir, a combustion section, an air passage and an air fan for forcibly supplying combustion air through said air passage to said combustion section, comprising:

a fuel supply pipe connected between said oil reservoir and said combustion section to feed fuel oil from said oil reservoir to said combustion section therethrough;

a pumping means for drawing fuel oil from said oil reservoir to said fuel supply pipe; and

an air pipe connected at one end thereof to said fuel supply pipe through a connection therebetween and at the other end thereof to an inlet side of said air passage;

said air pipe being provided with an elevation positioned above any portion of said fuel supply pipe, and said connection between said air pipe and said fuel supply pipe providing open fluid communication therebetween.



4,767,317

APPARATUS FOR MIXING A GAS MAIN FLOW WITH AT LEAST ONE GAS SUBFLOW

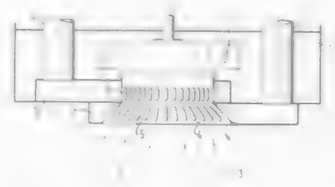
Carl Kramer, Am Chorusberg 8, D-5100 Aachen, Fed. Rep. of Germany

Filed Jan. 24, 1986, Ser. No. 822,165

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1985, 3502648

Int. Cl.[4] F23C *5/32*

U.S. Cl. 431—173 13 Claims



1. Apparatus for mixing a gas main flow with at lease one gas subflow, said apparatus comprising:

a round inlet region having the gas main flow entering, said round inlet region tapering in the flow direction, and being an intake opening of a fan;

influx openings having a gas subflow emerge therethrough, said influx openings being distributed at least over a periphery of the inlet region;

at least two chambers arranged in series in the flow direction, at least one of said chambers surrounding said round inlet region, said at least two chambers having said at least one gas subflow flow thereinto, said at least two chambers supplying said gas subflows to said influx openings, said influx opening of said chambers being arranged in series in the flow direction of the main gas flow.

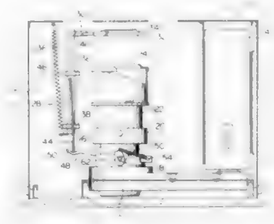
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,318

CATALYST MOVING STRUCTURE FOR OIL BURNER

Yutaka Nakanishi; Toshihiko Yamada, and Shigeo Gamou, all of Aichi, Japan, assignors to Toyotomi Kogyo Co., Ltd., Aichi, Japan

Filed Mar. 6, 1987, Ser. No. 23,163
Claims priority, application Japan, Mar. 11, 1986, 61-053496
Int. Cl.[4] F23D *3/28*
U.S. Cl. 431—304 9 Claims



1. A catalyst moving structure for an oil burner having a housing, a burner body received in said housing, a wick for burning oil in said burner body, and means for raising and lowering said wick including a rotatable wick operating shaft, said structure comprising:

a catalyst means;

a catalyst support means arranged opposite to a combustion gas discharge opening of said oil burner, said catalyst support means supporting said catalyst means and having a shape sufficient to cover said opening and cause combustion gas from said oil burning in said burner body to be passed from said covered opening through said catalyst means;

a moving means comprising a moving mechanism and mounting means for movably mounting said moving mechanism on said housing, said catalyst support means being mounted on said moving mechanism to be approachably moved with respect to said opening when said moving mechanism is moved; and

a movement transmission mechanism arranged on said burner body of said oil burner and operatively connected between said moving mechanism and said wick operating shaft oil burner, said movement transmission mechanism transmitting rotations of said wick operating shaft in both wick raising and lowering directions to said moving mechanism to move said moving mechanism so that said catalyst support means is spaced from said opening and covers said opening, respectively.

4,767,319

DUCT BURNER

Ralph R. Vosper, Somerset, Calif., assignor to Coen Company, Burlingame, Calif.

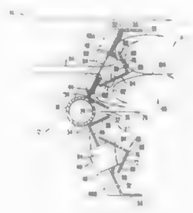
Filed Mar. 27, 1987, Ser. No. 32,143
Int. Cl.[4] F23D *14/46*
U.S. Cl. 431—350 13 Claims

1. A burner for placement in an airstream that flows in a downstream direction through a duct comprising:

a flame retainer having an air impervious surface facing in the downstream direction and having a gas passage therethrough;

means disposed upstream of the flame retainer for directing a gas jet toward and through the gas passage;

a rigid member connected to the flame retainer, extending away from the gas jet, and having an air-impervious surface downstream thereof; and



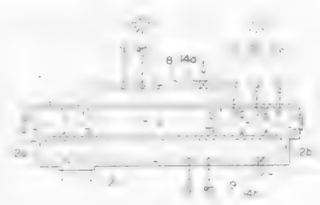
means connected to the rigid member for directing a portion of the airstream to flow on the side of and generally parallel to the downstream surface of the rigid member.

4,767,320

AUTOMATICALLY FLOW CONTROLLED CONTINUOUS HEAT TREATING FURNACE

Hirofumi Sasaki, Osaka, and Yoshinaga Miyabe, Nishinomiya, both of Japan, assignors to Chugai Ro Co., Ltd., Osaka, Japan

Filed Oct. 29, 1987, Ser. No. 114,070
Int. Cl.[4] F27B *9/28*
U.S. Cl. 432—59 2 Claims



1. In a heat-exchanging type continuous heat treating furnace having a high-temperature treating zone internally provided with heating means, a pre-heating zone connectively disposed at one end of the high-temperature treating zone and a cooling zone connectively disposed at the other end thereof, the pre-heating and cooling zones being partitioned into a plurality of compartments each provided on its ceiling portion with a convection fan, an automatic flow control system comprising:

a first duct means for communicating a terminal compartment of the pre-heating zone and a first compartment of the cooling zone;

a second duct means for communicating a terminal compartment of the cooling zone and a first compartment of the pre-heating zone;

a first flow regulating means disposed in the course of said first duct means to regulate a flow rate of atmosphere gas flowing in said first duct means; and

a second flow regulating means disposed in the course of said second duct means to regulate the flow rate of the atmosphere gas flowing in said second duct means;

whereby the flow rate of the atmosphere gas introduced into the pre-heating zone and that introduced into the cooling zone are automatically regulated to coincide with each other.

4,767,321

OVEN FOR HEATING AND STACKING THERMOPLASTIC FIBER REINFORCED RESIN SHEETS

Timothy E. Chilva, Utica, Mich., assignor to Azdel, Inc., Shelby, N.C.

Division of Ser. No. 937,798, Dec. 4, 1986, abandoned. This application Jun. 5, 1987, Ser. No. 58,720
Int. Cl.[4] F27B *9/28*
U.S. Cl. 432—59 2 Claims



1. An oven for heating and stacking sheets of fiber reinforced thermoplastic resin comprising:

an enclosed chamber;

at least two continuous conveyors in said chamber positioned one above the other;

the lower of said continuous conveyors traversing the oven from one end to the other;

the upper continuous conveyor terminating short of one end of said oven and the end of the lower continuous conveyor;

means to move said continuous conveyors in said oven from one end toward the opposite end, providing a sloped surface on the end of said upper continuous conveyor to thereby cause any sheets of material resting thereon to be forced in a downward direction at the end of the upper continuous conveyor;

said sloped surface of the upper continuous conveyor terminating at a point close to but above the surface of the lower continuous conveyor;

means to circulate gas through said oven downwardly and upwardly to all surfaces of said continuous conveyors to thereby heat all sheets carried by said continuous conveyors on both sides thereof to a desired temperature;

means to heat said gases to temperature sufficient to cause any thermoplastic resin sheet on the surfaces of said continuous conveyor to reach a molten state, and means to recirculate said heated gases continuously after contact with said surfaces while sheets are being conveyed through said enclosed chamber by passing them in sequence through a filter, said heating means, and said circulation means.

4,767,322

APPARATUS FOR CHARGING A SHAFT FURNACE

Ulrich Beckenbach, Fontanestr. 13; Helmuth Beckenbach, An den Linden 47, both of 4005 Meerbusch 1, and Werner Hergarten, Bedburger Str. 6, 4000 Düsseldorf, all of Fed. Rep. of Germany

Continuation of Ser. No. 898,104, Aug. 20, 1986, abandoned. This application Nov. 17, 1987, Ser. No. 122,585
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1985, 85110485
Int. Cl.[4] F27D *1/08*
U.S. Cl. 432—98 3 Claims

1. An apparatus for charging a shaft furnace for calcining and sintering material in lump form with granular bulk material, said apparatus having a charging bunker (1) arranged above the furnace shaft which has a substantially circular cross-section, said bunker containing a substantially homogeneously mixed bulk material (2) and said charging bunker having an outlet (9) for supplying the bulk material (2) onto the surface (3) of the bulk material column to be covered in the furnace shaft in a distribution controllable over the shaft diameter, characterized by a substantially circulate plate (10) spaced below the charging bunker outlet (9) in a substantially horizontal position and having a diameter smaller than the internal diameter of the furnace shaft and larger than the diameter of the opening of the charging bunker outlet (9), rotary ring box means (12) concentric to the plate (10), motor means for driving the ring box (12) in a controlled manner and a plurality of strippers (11) fitted thereto which penetrate the bulk material (2) on plate (10) and guide chutes (4) associated with each of the strippers, said chutes terminating at different distances



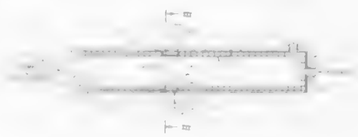
from the median longitudinal axis of the furnace shaft, wherein at least one of the guide chutes (14) slopes downwards in the direction of the inner wall of the furnace shaft from a plate (10) or ring box (12) and at least one of the guide chutes passes in the direction of the surface (3) to be occupied and wherein the guide chutes (14) have terminal end which is spaced above the upper edge of the furnace shaft, wherein the strippers (11) project within the circumference of the ring box at an angle differing from the radial direction.

4,767,323

LIME KILN AND METHOD OF RETARDING FORMATION OF SLAG RING THEREIN

James A. Dilmore, Irwin; William E. Young, Churchill Boro; Wesley M. Rohrer, Jr., Pittsburgh, and Abner B. Turner, Hempfield Township, Westmoreland County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

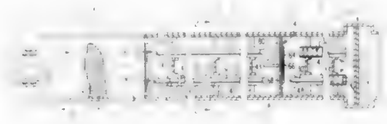
Filed Jun. 22, 1987, Ser. No. 64,722
Int. Cl.[4] F27B *7/38*
U.S. Cl. 432—116 26 Claims



1. In a rotary kiln for the calcination of limestone to form lime, having a refractory lined inner wall forming a calcining chamber, and an inlet end for limestone and an outlet end for lime formed therein, where a coal combustion chamber is provided adjacent the outlet end, with hot combustion gases and dispersed molten slag formed in the combustion chamber entering the kiln adjacent the outlet end thereof for countercurrent flow through said kiln relative to the limestone charged and lime produced; and wherein said dispersed molten slag enters the rotary kiln, and contacts the inner wall at a predetermined location spaced from the outlet end and solidifies thereon and tends to form a solid residue slag ring; the improvement wherein a means for cooling said inner wall is provided at said predetermined location spaced from the outlet end so as to cool said dispersed molten slag prior to contact thereof with said inner wall whereby said dispersed molten slag is cooled sufficiently, prior to contact with said inner wall, so as to retard formation of said solid residue slag ring on said inner wall.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,324
TRANSITION SECTION FOR MUFFLE FURNACE
Thomas T. Hitch, Lawrenceville, N.J., assignor to General Electric Company, Schenectady, N.Y.
Filed May 26, 1987, Ser. No. 53,898
Int. Cl.[4] F27B *19/00*
U.S. Cl. 432—171 13 Claims



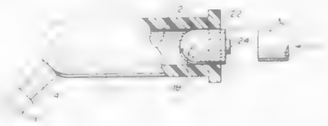
1. A removable transition section for an elongated muffle, extending in a given direction and having a removable sparger, said section for preserving a temperature gradient between two successive stages of the muffle and for substantially inhibiting gas migration from one stage to the other through a transition region formed by the transition section, said section comprising:
a baffle plate adapted to be secured to the sparger and mate with and be releasably secured to the muffle at said region, said plate having an edge adjacent to and facing said transition region, said baffle plate serving effectively as a heat and gas barrier between said successive stages; and
a gas barrier tube secured to the baffle plate extending along said edge transversely said given direction, said tube including aperture means along the length thereof for directing a barrier gas into said transition region, said tube including means adapted to be releasably secured to a source of said barrier gas external to said muffle.

4,767,325
DENTAL COMPOSITE CARRIER AND COMPOSITE PACKAGE
Thomas V. Kopunek, Lewes, Del., and Douglas D. Bennett, Cambridge, Md., assignors to Dentsply Research & Development Corp., Milford, Del.
Filed Apr. 7, 1987, Ser. No. 35,574
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—90 13 Claims



1. A dental composite carrier comprising:
(a) an elongated handle for carrying filling material to a tooth and depositing said material in said tooth;
(b) a lever pivotally attached at one end of said handle, said lever having an end oriented over said handle and a notched and grooved end extending beyond the end of said handle, said notched and grooved end comprising a jaw adapted to pick up and hold an ampule, in which said jaw in said lever comprises adjacent J bars in said lever, said adjacent J bars being adapted to hold a collar on an ampule comprising a reservoir and a piston, and
(c) ram means associated with said handle which contact and press a piston in said reservoir when said reservoir is held against an object and said lever is pressed, thereby forcing said piston into said reservoir and said filling material out of said reservoir.

4,767,326
CARTRIDGE CONTAINER AND EJECTOR PISTON THEREFOR
Douglas D. Bennett, Cambridge, Md., and Earl C. Francis, Milford, Del., assignors to Dentsply Research & Development Corp., Milford, Del.
Filed Nov. 25, 1986, Ser. No. 934,777
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—90 4 Claims



1. A cartridge adapted to be operated by being mounted upon an ejector-type holder and comprising in combination, a hollow cartridge body having an elongated uniformly cylindrical inner wall of constant diameter and open at one end to receive a piston, the opposite end of said body being closed by an end integral therewith and having a discharge opening therein, and a piston having an operative pressure end nearest the closed end of the said body, said piston also having a thin cylindrical sleeve extending integrally with and axially from said pressure end of said piston and said cylindrical sleeve having an outer diameter no less than the diameter of said cylindrical inner wall of said body and adapted to closely and slidably engage the inner wall of said body when said piston is moved inwardly toward the closed end of said body, and a piston post positioned co-axially within said thin cylindrical sleeve of said piston and integral at one end with the pressure end of said piston and adapted to be engaged by an operating pressure rod of said ejector-type holder wherein all members of said piston are injection molded from plastic material of limited flexibility and said piston post is substantially less in diameter than the inner diameter of said thin cylindrical sleeve of said piston and said piston post having stiffening means extending integrally between said post and the interior of said thin cylindrical sleeve of said piston and said stiffening means comprises an integral rib extending radially between said piston post and inner surface of said cylindrical sleeve of said piston.

4,767,327
DENTAL PATIENT CONTROL MECHANISM
Richard J. Smithwick, Peekskill Hollow Rd., Carmel, N.Y. 10512, and George Spector, 233 Broadway Rm 3815, New York, N.Y. 10007
Filed Sep. 15, 1986, Ser. No. 907,835
Int. Cl.[4] A61C *1/02*
U.S. Cl. 433—98 7 Claims



1. A patient control mechanism for an air operated dental system having a main conduit having a dental unit, a foot control and a compressed air source, said mechanism being connected to said main conduit with a parallel conduit and including:
(a) a first valve disposed within said main conduit between said dental unit and said foot control;
(b) a valve actuator having means for actuating said first valve wherein said means is responsive to air pressure in said parallel conduit;
(c) a third valve disposed within said parallel conduit between said dental unit and said means so that a patient can manually control said third valve to send an air signal to said means which operates said first valve closing flow in said main conduit and deactivating said dental unit if pain is felt by said patient.

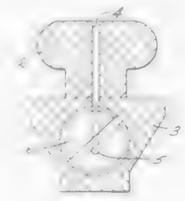
4,767,328
DEVICE FOR SECURING A PLURALITY OF TEETH
Per-Ingvar Branemark, Ändergatan, Sweden, assignor to The Institute for Applied Biotechnology, Gothenburg, Sweden
Filed Jul. 21, 1986, Ser. No. 887,498
Claims priority, application Sweden, Jul. 24, 1985, 8503580
Int. Cl.[4] A61C *13/02*
U.S. Cl. 433—168.1 7 Claims



1. A device for securing a plurality of teeth to the alveolar bone, comprising,
a plurality of implant attachment elements capable of being attached to the alveolar bone,
an essentially rigid splint having an arc shape to fit the curve of the alveolar bone and being attachable to said plurality of implant attachment elements,
a plurality of attached false teeth,
an assembly means for removably attaching said plurality of attached false teeth to said splint, wherein said rigid splint functions as a force distribution means during use.

4,767,329
T-ATTACHMENT FOR THE DETACHABLE FASTENING OF DENTAL PROSTHESES
Harry Schiwiora, Pforzheim; Willi Ahr, Birkenfeld, and Alfred Schart, Olbronn/Dürrn, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Apr. 3, 1987, Ser. No. 33,702
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1986, 3611322
Int. Cl.[4] A61C *13/225*
U.S. Cl. 433—181 5 Claims

1. A T-attachment for the detachable fastening of dental prostheses and bridges to the residual denture, comprising a matrix (1), a patrix (2) received within said matrix and an activation part (3) attached to the side of the patrix externally of said matrix, the patrix having a generally T-shaped horizontal cross section and having a continuous vertical slot (4) which divides the patrix into two portions, each having a generally L-shaped horizontal cross section, the slot (4) extending into, but ending in the activation part (3) to form a vertical slot end (5), and a screw (6) having a conical portion (9), introduced vertically into the slot (4) within the activation



part (3), parallel to the slot end (5), the conical portion (9) of the screw being located in the shaft area of the screw (6), said screw activating said patrix into frictional engagement within said matrix.

4,767,330
APPARATUS FOR FABRICATING TOOTH ARRANGEMENT MODELS
Bernd Burger, Alling, Fed. Rep. of Germany, assignor to ESPE GmbH Fabrik pharmazeutischer Präparate GmbH, Seefeld, Fed. Rep. of Germany
Filed Apr. 30, 1986, Ser. No. 857,930
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1985, 3515510
Int. Cl.[4] A61C *11/00*
U.S. Cl. 433—213 12 Claims



1. An apparatus for the fabrication of models of teeth and their arrangement, comprising:
a base plate;
a tooth arrangement and support, the latter being detachably connected and held together with said base plate; and
rigid magnetic tooth arrangement carrier means that provide magnetic forces essentially to hold said tooth arrangement therewith without any dowel-pin problematic arrangment therebetween.

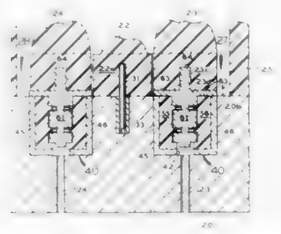
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,331

DENTAL CROWN MANUFACTURING APPARATUS

Khin A. Hoe, 1501 SE. 23rd Ave., Pompano Beach, Fla. 33062

Filed May 28, 1987, Ser. No. 55,018
Int. Cl.[4] A61C *11/00*
U.S. Cl. 433—213 17 Claims



1. In a dental model for use in manufacturing a dental crown for a patient, said model including:

a rigid base;

a rigid pedestal on said base substantially duplicating the patient's gum;

and a plurality of artificial teeth attached to said pedestal on the opposite side of the pedestal from said base, said artificial teeth substantially duplicating the patient's teeth along said gum and including a first artificial tooth which is to be fitted with a dental crown, said pedestal including a first gum segment between said first artificial tooth and said base which is separate from the base and from the rest of the pedestal, said first tooth and said first gum segment constituting an integral crown tooth unit in the dental model;

and pin-and-socket locating means on said base and said first gum segment to position said first artificial tooth at the precise location of the corresponding tooth in the person's mouth, said locating means permitting the slidable removal of said crown tooth unit substantially perpendicularly away from said base;

the improvement wherein:

said pedestal has a neighbor gum segment next to said first gum segment which is separate from the rest of the pedestal and from the base, said neighbor gum segment carrying an artificial neighbor tooth which is next to said first artificial tooth, said neighbor tooth and said neighbor gum segment constituting an integral neighbor tooth unit in the dental model;

and said model presents a gap between said neighbor tooth unit and the next tooth and the corresponding gum segment of the pedestal;

and further comprising:

positioning means acting between said base and said neighbor gum segment of said neighbor tooth unit for selectively positioning said neighbor tooth unit on said base either (1) at a normal location in which said neighbor tooth is at the precise location of the corresponding tooth in the patient's mouth or (2) at a displaced location extending into said gap and positioning said neighbor tooth farther from said first tooth, thereby making room for the addition of wet porcelain to a crown on said first tooth and facilitating the slidable removal of said crown tooth unit from the base.

4,767,332

THREADED DENTAL ANCHOR

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 361,522, Mar. 23, 1982, abandoned, and a continuation-in-part of Ser. No. 326,851, Dec. 3, 1981. This application Jul. 25, 1983, Ser. No. 517,006
Int. Cl.[4] A61C *5/04*
U.S. Cl. 433—225 14 Claims



1. A dental anchor for insertion in a blind channel extending from an excavated surface of a tooth, the channel being confined within the tooth and having a major diameter of approximately 0.021 inches and a tapered seat portion of approximately 118 degrees, said dental anchor comprising at least one anchoring section having a manipulating end section at a proximal end thereof for permitting coupling thereof to a cooperating driving tool, said anchoring section having a major diameter of approximately 0.024 inches, said anchoring section including a plurality of self-threading buttress type threads having approximately a 0.010 inch pitch with adjacent crests of said threads being spaced apart by a distance greater than height of the threads, said anchoring section having a minor diameter of approximately 0.020 inches to provide a threaded height of approximately 0.0020 inches, said anchoring section having approximately 16 to 18 threads thereon, said anchoring section having a distal pilot end portion elongated in the axial direction, means for reducing stress at the seat portion of the channel by providing a minimum of contact between said anchoring section and the seat portion, said means including providing said pilot end portion with an elongated length approximately equal to said thread pitch to substantially space said threads from the seat portion and with an approximately 20 degree taper thereon downwardly from said anchoring section to reduce contact with channel walls, whereby said thread pitch provides for fast insertion of said dental anchor with minimal torque, and provides for a retention with reduced stresses, and said anchoring section including stop means disposed approximately midway along its length for limiting the depth of insertion thereof into the channel extending from the excavated surface of the tooth, so that the distal pilot end portion is prevented from engaging in the seat portion of the channel.

4,767,333

LASER EVOLVED MODELS

Grant R. Born, 2687 44th St., SE., Grand Rapids, Mich. 49508

Filed Aug. 17, 1987, Ser. No. 85,565
Int. Cl.[4] G09B *23/28*
U.S. Cl. 434—262 41 Claims

1. A laser surgery instructional system, comprising:

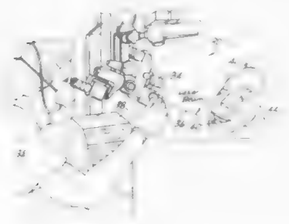
a laser adapted for laser surgery, provided with appropriate controls governing spot size and power level of a laser beam produced therefrom;

a micromanipulator, optically coupled to said laser, providing means for controlling transverse lateral positioning of said laser beam; and

a plurality of substantially laser-impervious models providing a multiplicity of laser target areas of increasing difficulty of laser surgical techniques and procedures.

38. A method for teaching a neophyte practitioner in the skills, techniques, and procedures of laser surgery, comprising the steps of:

(1) demonstrating the appropriate laser beam spot size and power level control settings of a surgical laser, impinging said laser beam sequentially upon the elements of an array of circular laser vaporizable markings imprinted upon a portion of a first planar surface of a generally rectangular planar laser evolved model element formed of a substantially laser impervious material; having said student practitioner repetitively perform said spot size and power level laser control setting exercises, using said array of circular markings, until proficiency is attained; demonstrating the appropriate operation and control of a micromanipulator associated with said surgical laser, impinging said laser beam sequentially upon the elements of a second array of irregularly shaped laser vaporizable markings imprinted on a remaining portion of said first planar surface, and on a second planar surface obverse thereto, of said generally rectangular planar laser evolved model element, said micromanipulator controls being so exercised as to translate said laser beam across and around each of said ele-



ments of said second array; and having the student practitioner repetitively perform said micromanipulator control exercises, using said second array of irregularly shaped markings, until proficiency is attained in vaporizing each of said markings without signficantly impinging said laser beam upon unmarked adjacent areas of said planar surfaces of said laser evolved model element;

(2) providing the student practitioner with a set of laser evolved anatomical models, each having appropriately distributed indentations, pre-formed therein, simulating a variety of lesion volumes as to their sizes, shapes, depths, and general anatomical locations; further providing the student practitioner with an appropriate supply of a suitable laser vaporizable material; having the student practitioner fill a plurality of said indentations with portions of said laser vaporizable material; permitting the student practitioner to operate said laser and micromanipulator so as to vaporize said laser vaporizable material from each of the filled lesion locations; and repeating said procedure of filling said indentations and laser vaporizing said material therefrom until proficiency is attained in so treating each of said lesion site indentations on each of said laser evolved anatomical models; and

(3) providing direct supervision of the student practitioner, by an experienced laser surgeon, while said student practitioner performs appropriate laser surgical procedures on volunteer patients, said direct supervision to continue until said student practitioner exhibits proficiency.

4,767,334

EDUCATIONAL AND RECREATIONAL TOY VEHICLE

Hugh C. Thorne, Box 22843 U. P. R. Sta., San Juan, P.R. 00931; Guillermo Sosa, 1890 Fco. Quindos St., Fairview, Rio Piedras, P.R. 00926, and José F. Irizarry, Box 1267, Mayaguez, P.R. [redacted]

Filed Nov. 19, 1985, Ser. No. 799,485
Int. Cl.[4] A63C *31/16*
U.S. Cl. 434—29 10 Claims



1. A toy craft intended for both amusement and educational purposes and adapted to assume a plurality of distinctive craft forms, comprising:

a cocoon-like, full enclosure member having an interior and having external attachment means for the reception and detachment of sets of molded features, with each component of each of said sets being of a shape which, when in attachment with said enclosure member, gives the appearance of one of said distinctive craft forms, said enclosure member including a first portion and a second portion and attachment members for releasably securing said first portion to said second portion;

an access door forming a portion of said enclosure member and permitting access between the outside of said enclosure member and said enclosure member interior,

a seat within said enclosure member interior and fully adjustable with respect to said enclosure member;

foot control means adjustably secured to the floor of said enclosure member interior;

hand control means adjustably fixed within the interior of said full enclosure member;

an external vision apparatus secured to the top of said enclosure member and having a first end extending into said enclosure member interior and a second end extending away from said enclosure member;

a plurality of attitudinal instruments for providing attitudinal displays, said attitudinal instruments being within said enclosure member interior; and

analog computer means interacting with said foot control means, said hand control means and said attitudinal instruments, such that manipulation of said hand and foot control means results in coordinated changes taking place in said attitudinal instruments.

4,767,335

COMPUTERIZED ACADEMIC QUIZ CONTROLLER SYSTEM

Walter M. Curt, Harrisonburg, Va., assignor to ComSonics, Inc., Harrisonburg, Va.

Filed Jul. 24, 1987, Ser. No. 77,173
Int. Cl.[4] G09B *5/00*
U.S. Cl. 434—352 9 Claims

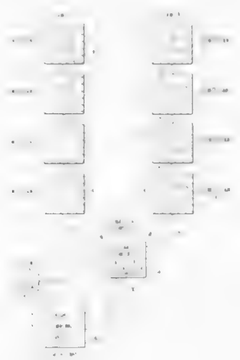
1. An academic quizzer system comprising:

a first plurality of response stations and a second plurality of response stations, each of said response stations being identical and interchangeable and including a switch and an indicator light activated by pressing said switch, and first and second female portions of modular jacks for connecting to telephone wire, said first plurality of re-

VOL 1093 ISS 5 AUG 30 1988 UMI

sponse stations being connectable by means of telephone wire and said modular jacks into a first series string of response stations and said second plurality of response stations being connectable by means of telephone wire and said modular jacks into a second series string of response stations;

a control console including a microprocessor, a timer, a plurality of indicators, one for each of said response stations, a start switch and a mode switch, said master console including a first and second female portions of modular jacks for connecting to telephone wire, said first and second strings of response stations being connectable respectively to said first and second female portions of said modular jacks of said master console by means of telephone wire, said microprocessor being responsive to the switches of said first and second pluralities of response stations and to said start switch and said mode switch of



said control console and being operative to control said system in a plurality of modes of operation including a learn mode which, upon power up, recognizes the configuration of the system including the locations of each of the individual response stations, a directed question mode in which contestants from one or the other of two teams are asked a question, the start switch of said master console is pressed and a first predetermined period of time is counted, and a toss-up question mode in which any constestant from either team may press their switch in their response station and a second predetermined period of time less than said first predetermined period of time is counted, said microprocessor further being operative to lockout all other contestants but the first to press their switch or to lockout all contestants of one team when a question is answered incorrectly by a contestant of that team.

4,767,336

METHOD OF MAKING SEMICONDUCTOR PHOTOELECTRIC CONVERSION DEVICE

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Japan

Continuation of Ser. No. 800,695, Nov. 22, 1985, abandoned, which is a continuation of Ser. No. 586,699, Mar. 6, 1984, Pat. No. 4,599,482. This application Sep. 14, 1987, Ser. No. 96,783

Claims priority, application Japan, Mar. 7, 1983, 58-36850; Oct. 18, 1983, 58-194878

Int. Cl.[4] H01L *31/18*

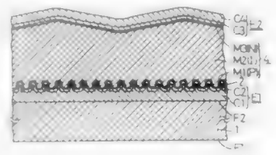
U.S. Cl. 437—2 6 Claims

1. A method of manufacturing a multi-layered semiconductor device comprising the step of forming conductive and semiconductor layers on a substrate in the reaction chamber of a CVD apparatus with the surface of at least one layer having a number of convexities, said method characterized in that, on the surface of the at least one layer having said convexities, a silicon carbide semiconductor layer doped with impurity is formed using methyl silane which is expressed by the formula $SiH_{4-n}(CH_3)_n$, where n=1 to 3, or $Si_2H_{6-n}(CH_3)_n$, where n=1 to 5, wherein said forming step comprises:

forming a first electrode with said convexities on said substrate;

inputting said methyl silane and dopant gas for a first conductivity type into said reaction chamber;

depositing said impurity silicon carbide semiconductor layer on the surface of said first electrode with said convexities



therebetween by applying electric power to said methyl silane and said dopant gas, said electric power being so low that the destructive effect on said convexities due to this deposition becomes substantially negligible;

forming an intrinsic semiconductor layer on said impurity semiconductor layer;

forming a second impurity semiconductor layer of the second conductivity type on said intrinsic semiconductor layer; and

forming a second electrode on said second impurity semiconductor layer, wherein said CVD is a plasma CVD.

4,767,337

POWER-CONNECTION/CAR-MOUNTING DEVICE

Nobuhiko Kawasaki, Nara; Kouichi Ikeda, Kashiwara, and Shinichi Kimura, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 18, 1986, Ser. No. 875,583

Claims priority, application Japan, Jun. 18, 1985, 60-93264[U]; Sep. 10, 1985, 60-138938[U]; Sep. 10, 1985, 60-138939[U]; Sep. 12, 1985, 60-140215[U]; Mar. 25, 1986, 61-44604[U]

Int. Cl.[4] H01R *13/639*

U.S. Cl. 439—34 24 Claims



1. A mechanical coupling device comprising:

a male part having a projection on its external surface with a first hole extending partially along its length and a second hole extending from said first hole along the remaining length of said male part, said male part having a larger inner diameter at said first hole than at said second hole;

a bolt with a shaft and a head, said head having a diameter greater than said second hole and being disposed within said first hole of said male part, said shaft extending through said second hole in said male part;

a nut for fastening the free end of said bolt for securing said male part to a first substrate;

a spring provided about said shaft and disposed within said first hole in said male part, said spring having a diameter greater than the inner diameter of said male part at said second hole and having a diameter less than the diameter of said head for biasing said male part into engagement with the first substrate; and

a female part having engaging means for releasably coupling with said male part and connectable to a second substrate for stably maintaining a satisfactory connection between the substrates.

4,767,338

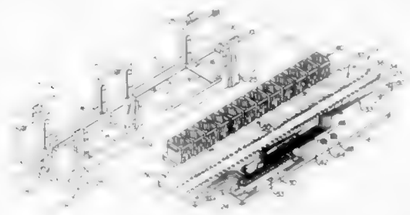
PRINTED CIRCUIT BOARD TELEPHONE INTERFACE

Melburn W. Dennis, P.O. Box 70, Alexander Rd, Ashville, N.Y. 14710, and Gene A. Long, 8561 Falls Rd., West Falls, N.Y. 14170

Filed Apr. 20, 1987, Ser. No. 40,348

Int. Cl.[4] H01R *9/09*

U.S. Cl. 439—55 35 Claims



1. A pre-wired telephone interface system comprising a telephone interface mounted to a telephone mounting bracket, said telephone interface including a printed circuit board having an outer configuration conforming in part to a mounting surface of said mounting bracket, a first telephone receptacle and a second telephone receptacle mounted on said printed board and spaced apart from each other, said telephone receptacles each having a plurality of pins electrically connected to corresponding mounting plugs of said printed circuit board, and a plurality of electrical traces extending along at least one surface of said printed surface board and electrically connecting mounting plugs associated with said first telephone receptacle to mounting plugs associated with said second telephone receptacle, with the electrical traces arranged in a predetermined pattern whereby the pins of said first telephone receptacle are connected to the pins of said second telephone receptacle in a predetermined electrical circuit arrangement.

4,767,339

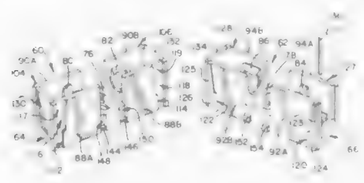
MODULAR FUSEBLOCK

Joseph D. Comerci, Elmhurst, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.

Filed Mar. 10, 1987, Ser. No. 24,393

Int. Cl.[4] H01R *9/26*

U.S. Cl. 439—716 18 Claims



1. A modular fuseblock for retaining a fuse therein and adapted to be joined with other like modular fuseblocks in side-by-side relationship, said modular fuseblock comprising:

A. a body of insulating material including a base having a top surface and a pair of side walls upstanding from alongside said base;

B. a pair of fuse clips secured to said top surface of said body between said pair of side walls; and

C. joint means open to the top and bottom of said body for joining together plural like fuseblocks in side-by-side relationship from the top on both sides of said body, said joint means including at least two dovetail grooves vertically arranged on one of said side walls and at least two dovetail ridges vertically arranged on the other of said side walls, said dovetail grooves and ridges being aligned so that the dovetail ridges on one fuseblock will engage with the dovetail grooves on an adjoining fuseblock by vertically sliding selectively in an upward or downward direction therein to join together the two fuseblocks, and said dovetail grooves and ridges being accessible from both the top and bottom of said body to facilitate downward joining of one fuseblock on another fuseblock at both side walls of the fuseblocks.

4,767,340

CONNECTING CLAMP FOR ELECTRICAL CONDUCTORS

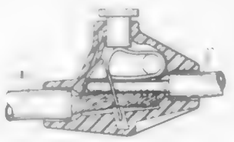
Wolfgang Hohorst, Minden, Fed. Rep. of Germany, assignor to WAGO Verwaltungsgesellschaft mbH, Minden, Fed. Rep. of Germany

Filed Apr. 10, 1986, Ser. No. 850,284

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1985, 3514097

Int. Cl.[4] H01R *13/05*

U.S. Cl. 439—729 5 Claims



1. A connecting clamp for electrical conductors, comprising an insulating housing having a front portion that is formed with a first conductor guide channel for receiving a first conductor therein and a rear portion that is formed with a second conductor guide channel for receiving a second conductor therein, a clamping spring located in said housing formed of a flat, flexible material, said clamping spring including a first leg that is located adjacent to the front portion of said housing and having an opening formed therein defined by an upper edge and a lower edge, a second leg joined to said first leg and being bent relative thereto to form a spring loop having a closed face that is located adjacent to the rear portion of said housing, said second leg of said clamping spring including a free end that extends through said opening in said first leg, both said first and second conductors extending through said opening in the first leg of said clamping spring in parallel relation but in opposite directions relative thereto, said conductors being disposed one on top of the other in electrical engaging relation, said second guide channel including means for positively locating said second conductor therein, wherein said second conductor is exposed to said second leg along its upper surface thereof and is also exposed to said first conductor along its lower surface to form an electrical contact with the first conductor, the free end of said second leg of said clamping spring engaging the upper surface of said second conductor to secure said second conductor against pullout forces if applied to the second conductor, the lower edge of said opening in said first

VOL 1093 ISS 5 AG 30 1988 UMI

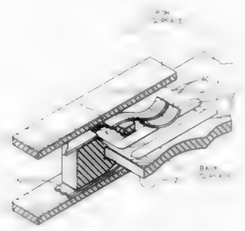
leg of said clamping spring urging said first conductor into direct and firm electrical contact with said second conductor.

4,767,341

PRINTED CIRCUIT CARD RESET SWITCH

Mark D. Land, Vancouver, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 18, 1987, Ser. No. 121,975
Int. Cl.[4] H01R 9/09
U.S. Cl. 439—60 2 Claims



2. A printed circuit card for causing a momentary shorting together of two adjacent receptacle contacts within a mating receptacle connector whenever said printed circuit card is plugged into or removed from said mating receptacle connector, the printed circuit card comprising:

edge connector means comprising a plurality of generally parallel elongated finger contacts located at a plurality of finger contact positions adjacent a connector edge of said printed circuit card for separately contacting a corresponding plurality of receptacle contacts within said mating receptacle connector;

a modified finger contact spanning a selected finger contact position and an immediately adjacent finger contact position, said modified finger contact being formed to comprise an elongated member and a connected leg member extending outwardly from said elongated member at an end of said elongated member that is nearest said connector edge of said printed circuit card, said leg member extending into an area defined by said immediately adjacent finger contact position, whereby said leg member momentarily contacts two adjacent receptacle contacts within said mating receptacle connector corresponding to said selected finger contact position and said imediately adjacent finger contact position when said printed circuit card is plugged into or removed from said mating receptacle connector.

4,767,342

ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARD

Kensaku Sato, Tokyo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1987, Ser. No. 129,305
Int. Cl.[4] H01R 9/09
U.S. Cl. 439—78 4 Claims

1. An electrical connector for a printed circuit board, which comprises:

a housing having a body section and a post section extending downwardly from a rear end of said body section to form a L-shaped cross-section;

said body section having a plurality of receiving apertures with front and rear openings and a bottom cut along its length;

said post section having a longitudinal groove communicating with said bottom cut at its upper end;

a plurality of female contacts each fitted into each of said receiving apertures and having openings at opposite ends, either of which is able to receive a male contact;

each of said female contact having a contacting section received in said receiving aperture and a wiring section



extending downwardly from said contacting section so as to fit into said longitudinal groove; and

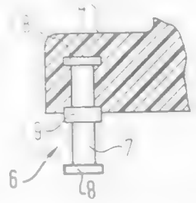
a free end of said wiring section projecting from said post section for soldering to a printed circuit of said printed circuit board.

4,767,343

ELECTRICAL CONNECTION PIN FOR SURFACE-MOUNTABLE ELECTRICAL COILS

Roland Ehrgott, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 13, 1987, Ser. No. 72,765
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1986, 3627210
Int. Cl.[4] H01R 9/09, 4/02
U.S. Cl. 439—83 7 Claims



1. An electrical connection pin for surface-mountable electrical coils which has its one end embedded in a coil member web and has its other free end connected to a circuit board, the connection pin being fashioned with flat end faces and being symmetrical in reference to a plane perpendicular to the longitudinal axis of the connection pin and passing through a longitudinal center of the connection pin, and the connection pin end faces each being fashioned as a flange.

4,767,344

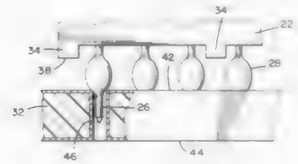
SOLDER MOUNTING OF ELECTRICAL CONTACTS

Rocco Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Continuation of Ser. No. 899,503, Aug. 22, 1986, abandoned.
This application Sep. 28, 1987, Ser. No. 101,728
Int. Cl.[4] H01R 23/72
U.S. Cl. 439—83 10 Claims

1. An electrical component with an insulation housing comprising:

at least one elongated electrically conductive pin contact attached to the housing and having a terminal end extending outwardly therefrom adapted for reception in a mating hole of a second component, said pin contact having a hardened bead of solder of predetermined magnitude and defined shape laterally formed thereon and adhering thereto completely encircling said pin contact and envelopoing a predetermined region along the length of said pin contact spaced from said terminal end, said pin contact assuming an initial position with said bead of solder being engageable with the second component at the hole, positioning said pin contact centrally thereof, said pin contact being movable to a final position when molten solder from said solder bead is heated past the melting temperature



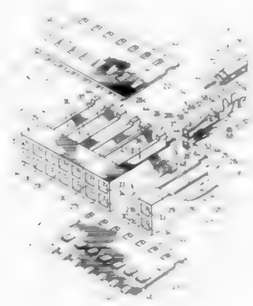
and is caused to flow along and around said pin contact toward said terminal end and into the hole of the second component thereby mechanically joining said pin contact to the second component, the predetermined magnitude being the precise amount of solder needed to completely fill the hole and form a meniscus at each interface between said pin contact and the second component, the solder bead being located on said pin contact to space said housing away from the second component and so that, upon being heated to fill the hole, said housing is drawn into engagement with the second component.

4,767,345

HIGH-DENSITY, MODULAR, ELECTRICAL CONNECTOR

David H. Gutter, and Walter C. Shatto, Jr., both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 27, 1987, Ser. No. 31,492
Int. Cl.[4] H01R 4/66
U.S. Cl. 439—92 33 Claims



1. An electrical connector for terminating discrete wire coaxial cables, said discrete wire coaxial cables including a center signal-carrying conductor, an outer conductive foil for shielding, and a drain wire electrically connected to the foil for maintaining the foil at a reference potential, said connector including:

a termination member mounted to each of one or more of said cables, and a connector housing for receiving said one or more termination members, each of said termination members including:

a dielectric support having opposed first and second sides;

a first, signal contact supported on the first side of said support; and

a second, ground contact supported on the second side of said support, said first and second contacts including first and second cable termination portions adapted to be electrically attached to the center conductor and drain wire, respectively, of said cable, said first and second cable termination portions being positioned substantially in alignment with one another and with the cable and comprising first and second electrical connections adapted to be connected to said center conductor and said drain wire, respectively, of said cable, said second connection comprising an O-crimp crimped around said cable for capturing said drain wire therein, and wherein said termination member further includes means for providing a solder bond between said O-crimp of said ground contact and said drain wire.

2. The connector of claim 1 wherein said cable includes an outer protective jacket and wherein said second, ground contact further includes means for attaching said second contact to the outer jacket of said cable.

3. The connector of claim 2 wherein said jacket-attaching means comprises a crimp adapted to be crimped around said outer jacket of said cable, said crimp being substantially aligned with said first connection and said O-crimp.

4,767,346

PRESSURE SEAL GROUNDED POTENTIAL BUSHING FOR CABLE FITTINGS

Wolfgang Giebel, Planegg, and Dieter Kunze, Neuried, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 30, 1986, Ser. No. 913,346
Claims priority, application Fed. Rep. of Germany, Oct. 3, 1985, 3535387
Int. Cl.[4] H01R 13/46; F16K 15/06
U.S. Cl. 439—95 7 Claims



1. A pressure-tight grounded potential device for a sealed cable fitting which has an outer wall and which contains ressurized gas comprising, a metal bushing mounted in said outer wall of said cable fitting and said bushing formed with a conical-shaped threaded lead-through opening which extends through said outer wall, an excess pressure safety device which has an extending threaded conical-shaped portion with a flow-through channel that is threadedly received into said metal bushing such that said flow-through channel in said conical-shaped portion communicates with said lead-through opening of said bushing, said excess pressure device having an inner opening into which said flow-through channel communicates, a seat member mounted in said excess pressure device so as to close said inner opening, a spring mounted in said excess pressure device to hold said seat member is the closed position, a discharge opening fomred in said excess pressure device, a rubber like resilient protective sealing element mounted to said excess pressure device to allow gas to escape from said discharge opening of said pressure device and to prevent dirt from reaching said spring, an end of said excess pressure device bears against an end of said spring, and a ground potential terminal mounted on said excess pressure device.

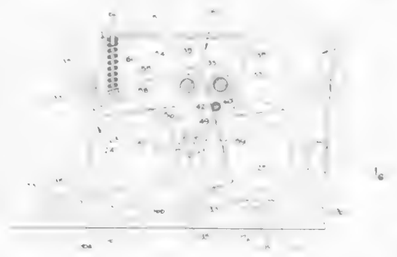
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,347

ELECTRICAL PANEL ASSEMBLY

David C. Kamp, and Albert P. Newman, both of Cincinnati, Ohio, assignors to Cam-Lok Inc., Cincinnati, Ohio

Filed Jun. 25, 1987, Ser. No. 67,239
Int. Cl.[4] H01R *13/453*
U.S. Cl. 439—133 18 Claims



1. An electrical panel assembly for use with cable connectors, said panel assembly comprising a front panel element and at least two receptacles, means to mount said receptacles behind said front panel element arranged in a side-by-side row, said front panel element having an opening therethrough for each receptacle and coaxial therewith through which a cable connector can extend for mating with said receptacle, the receptacle at one end of said row and its front panel element opening comprising the first receptacle and the first front panel element opening respectively, the receptacle at the other end of said row and its front panel element opening comprising the last receptacle and last front panel element opening respectively, locking means provided in association with each front panel element opening except said first front panel element opening, each locking means being shiftable between a normal locking position wherein it prevents entrance of a connector in its respective front panel element opening for connection to its respective receptacle, and an unlocking position permitting entrance of a connector in its respective front panel element opening for connection to its respective receptacle and preventing disconnection of a connector from the preceding receptacle and removal thereof from the preceding front panel element opening, means biasing each of said locking means to its normal locking position, a latch means for each front panel element opening, except the first front panel element opening, each latch means having a latching position latching the locking means for its respective front panel element opening in its normal locking position and an unlatching position releasing its respective locking means, means biasing each latch means to its latching position and being shiftable to its unlatching position by insertion of a connector into the preceding front panel element opening and connection of said last mentioned connector to the receptacle thereof, whereby connectors must be connected to said receptacles in order from said first receptacle to said last receptacle and must be disconnected from said receptacles in order from said last receptacle to said first receptacle.

4,767,348

EXTERNAL MEMORY PACK HAVING AN OPENING AND A SLIDEABLE SHUTTER

Osamu Murakami, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 704,921, Feb. 25, 1985, abandoned.
This application Sep. 29, 1986, Ser. No. 912,666
Claims priority, application Japan, Feb. 28, 1984, 59-35202
Int. Cl.[4] H01R *13/453, 23/70*
U.S. Cl. 439—140 7 Claims

1. In combination, an external memory pack and a connector, said external memory pack being detachably loaded into said connector and comprising:

a circuit board having a plurality of electrical contacts adapted to deliver and receive a signal to and from an electronic equipment body and having a hole formed therein for receiving a latch pin of said connector for latching said external memory pack to said connector;

case means for covering said circuit board and having an opening for exposing all of said electrical contacts and said hole of said circuit board; and



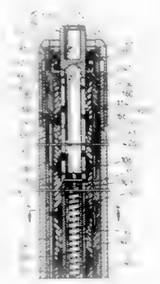
shutter means mounted between said circuit board and a wall of said case means so as to be slidable, relative to said case means, in the direction in which said case means is loaded into said connector to open and close said opening and having a projection which projects from said case means for slidably moving said shutter.

4,767,349

WET ELECTRICAL CONNECTOR

Alain P. Pottier; James J. Walulik, both of Houston, and Ralph L. Simmons, Pearland, all of Tex., assignors to Schlumberger Technology Corporation, Houston, Tex.

Continuation of Ser. No. 565,795, Dec. 27, 1983, abandoned.
This application Nov. 25, 1986, Ser. No. 935,143
Int. Cl.[4] H01R *4/60*
U.S. Cl. 439—191 11 Claims



1. A connector assembly for effecting the connection of a plurality of electrical conductors in a fluid medium comprising:

a male connector having an elongated pin member extending along the longitudinal axis of said male connector and terminating with a free distal end, first electrical contacts arranged at longitudinally-spaced intervals along said pin member, and first electrical insulators cooperatively arranged on said pin member for electrically isolating said first electrical contacts from said pin member and one another;

a female connector having a housing with an open end portion for receiving said elongated pin member upon movement of said connectors into coupling engagement, second electrical contacts respectively arranged at longitudinally-spaced intervals in said housing for cooperatively engaging said first electrical contacts upon coupling engagement of said connectors, and second electrical insulators cooperatively arranged within said housing for electrically insulating each of said second electrical contacts from said housing and one another; and

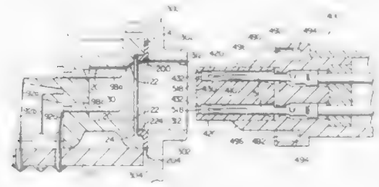
means on said female connector operable upon movement of said connectors into coupling engagement for fluidly isolating said second electrical contacts including a plurality of tubular sealing elements coaxially disposed at longitudinally-spaced intervals within said housing and alternately arranged therein between said second electrical contacts for defining a fluid-tight annular space within said housing around said sealing elements and an axial bore within said sealing elements for receiving said pin member, an actuating member coaxially arranged within said housing for moving longitudinally through said axial bore between an extended position where one end of said actuating member is disposed on one side of said second electrical contacts and a telescoped position where said one end of said actuating member is disposed further within said housing on the other side of said second electrical contacts, means arranged on said one end of said actuating member for engaging said distal end of said pin member so that once said connectors have moved into coupling engagement, said actuating member will be moved from its said extended position to its said telescoped position, and means operable upon movement of said actuating member from its said extended position to its said telescoped position for supplying a pressured fluid to said fluid-tight annular space to constrict said sealing elements around said pin member for wiping said pin member and said first electrical contacts as said connectors are moved into coupling engagement.

4,767,350

RECEPTACLE AND PLUG ASSEMBLY

Ralph M. Cooper, Clemmons; Earl J. Hayes, Advance, both of N.C., and Keith R. Denlinger, Lancaster, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 20, 1986, Ser. No. 876,549
Int. Cl.[4] H01R *13/74*
U.S. Cl. 439—271 21 Claims



1. A vibration resistant connector assembly for interconnecting a plurality of conductors, the assembly being mountable to a bulkhead wall having an opening therethrough, the bulkhead wall having a plurality of receptacle mounting apertures and plug mounting apertures therethrough, the assembly comprising:

a receptacle including a housing having a mating face and a receiving cavity extending inwardly from the mating face to a back wall with a plurality of pin terminals extending from the back wall into the receiving cavity, the mating face including receptacle mounting means alignable with said receptacle mounting apertures and plug mounting means alignable with said plug mounting apertures;

a gasket locatable between said bulkhead wall and said mating face of said receptacle, the gasket having a cutout portion profiled as the opening in said bulkhead wall;

a plug member having a plurality of socket contacts mounted therein, the plug member including a forward portion profiled to be received through said opening in said bulkhead wall and into said receptacle, the forward portion including apertures in communication with the socket contacts and aligned as said pin terminals, and a flange means extending around the plug member having holes alignable with the plug mounting apertures;

fastener means extendable through the receptacle mounting apertures and into the receptacle mounting means for fastening said receptacle against said gasket and to said bulkhead wall; and

fastener means extendable through the holes in the plug member, through the plug mounting apertures in the bulkhead wall, and into the plug mounting means for fastening said receptacle and plug member together

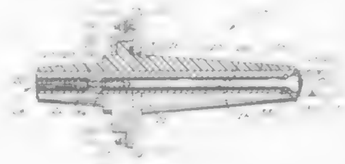
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4,767,351

HIGH VOLTAGE EXTERNALLY-SEPARABLE BUSHING

Janak R. Patel, Indianhead Park, and Robert J. Wilk, Oak Forest, both of Ill., assignors to G & W Electric Company, Blue Island, Ill.

Filed Aug. 13, 1986, Ser. No. 896,529
Int. Cl.[4] H01R *13/627*
U.S. Cl. 439—363 13 Claims



1. A bushing, having an elongated conductor substantially encased in insulating material, which extends in sealing relationship through an aperture in a sealed enclosure encasing an electrical apparatus, comprising:

said conductor having two parts, a first generally cylindrical rod part which is fixed at its proximal end to the electrical apparatus and which extends therefrom toward the aperture, and a second sleeve part having a generally annular passage disposed to circumferentially engage the first rod part and thereby provide a conductive path therebetween;

a one-piece insulator sealingly attached to and substantially encasing the sleeve part of the conductor;

means for threadably connecting the two parts of the conductor such that connection and disconnection can be accomplished from outside the enclosure, thereby enabling disconnection of the sleeve part and the one-piece insulator from the electrical apparatus without dismantling the enclosure, said connecting means comprising a screw, a circumferential shoulder within the passage of the sleeve part of the conductor for seating a head of the screw, and a threaded bore in a distal end of the rod part of the conductor for receiving a threaded end of the screw; and

means for sealing the junction of the two parts of the conductor so as to maintain the environment within the enclosure

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4,767,352

INTEGRALLY MOLDED CABLE TERMINATION ASSEMBLY, CONTACT AND METHOD

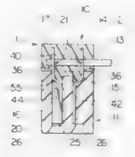
David A. Pretchel, Madison, Ohio, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 28, 1986, Ser. No. 900,909
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—395 9 Claims

1. A cable termination assembly, comprising an electrical cable including at least one conductor, at least one electrical contact, support body means for supporting said electrical contact, and strain relief body means directly molded to at least part of said cable, said electrical contact and said support body

VOL 1093 ISS 5 AG 30 1988 UMI

means to form an integral structure therewith; said electrical contact having a connection portion for connecting with a said conductor to form a junction therewith, a contacting portion for contacting with an external member when in engagement therewith, and a base portion between said connection and contacting portions; said support body means including wall means for defining a chamber for said contacting portion, external opening means for permitting insertion of an external member into said chamber for electrical connection with said



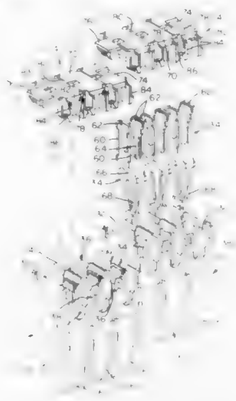
contacting portion, land means for supporting said base portion and positioning means for cooperating with said contact to position said contacting portion of said electrical contact properly in said chamber; said base portion of said contact including offset means of a width and length sufficient to cooperate with said land means in said support body for closing an end of said chamber opposite said external opening means; and said strain relief body means being molded against said offset means at a side thereof opposite said external opening means and over said connection portion and said junction.

4,767,353

TWO PART CONNECTOR HOUSINGS IN STRIP FORM

Donald W. K. Hughes, Mechanicsburg, and Donald L. Metzger, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 29, 1983, Ser. No. 526,945
Int. Cl.[4] H01R *13/502*
U.S. Cl. 439—398 3 Claims



1. A multi-contact electrical connector assembly of the type comprising a connector housing and end closure members, the housing having a mating face and a wire-receiving face which faces oppositely with respect to the mating face, oppositely facing housing sidewalls and oppositely facing housing endwalls extending from the mating face to the wire-receiving face, a plurality of cavities extending through the housing from the wire-receiving face to the mating face, the cavities being side-by-side in a row which extends between the housing endwalls, each of the cavities having an electrical contact terminal therein of the type having a wire receiving slot adjacent to the wire-receiving face, at least one of the housing sidewalls having wire admitting slots therein at the wire-receiving face which are in alignment with the terminals so that wires can be moved laterally of their axes and inserted into the wire-receiving slots and the inserted wires will then extend through the wire-admitting slots, the end closure members being dimensioned for insertion into the cavities at the wire receiving face to retain the wires in the slots in the terminals, the connector assembly being characterized in that:

the housing comprises a plurality of individual housing cells, the cells being connected to each other by integral connecting cell webs which extend between the cells at the wire-receiving face, the cells having a predetermined pitch,

the end closure members are in strip form being connected to each other by closure webs,

the cell webs and the closure webs being in alignment when the closures are inserted into the cavities, the cell webs and the closure webs being severable without removal of material upon relative movement of a severing blade through the cell webs and the closure webs and,

the assembly has one juxtaposed pair of cells which are connected to each other by interengaged latches which are provided in the juxtaposed pair of cells at the wire-receiving face of the connector, the pitch of the one juxtaposed pair of cells being the same as the pitch of the remaining cells of the connector assembly, the interengaged latches being severable without removal of material upon relative movement of a severing blade through the interengaged latches.

4,767,354

SELF-STRIPPING ELECTRICAL CONNECTOR

Yves Saligny, Thyez Les Pochons, France, assignor to Carpano & Pons, Cluses, France

Filed May 6, 1987, Ser. No. 47,339
Claims priority, application France, May 6, 1986, 86 06724
Int. Cl.[4] H01R *4/24*
U.S. Cl. 439—413 9 Claims



1. A self-stripping electrical connector comprising:

a grounded bar formed with at least one threaded bore;

a dielectric lower support part secured to the bar over the bore and formed with two adjacent outwardly open lower guide passages;

a pair of generally parallel and electrically conductive lower tubes having lower ends formed with slots aligned with the respective lower passages and upper ends also formed with slots;

guides on the lower support part carrying the tubes for movement toward and away from the bar with the lower-end slots aligned with the respective lower passages;

a dielectric upper support part overlying the lower part and formed with two adjacent outwardly open upper guide passages aligned with the upper-end slots of the respective tubes;

means including a screw engageable through both of the parts and into the bore of the bar for pressing the upper part down on the lower part and for pressing the tubes down in the lower part and thereby wedging wires in the passages and aligned with the respective slots into the tubes.

4,767,355

JACK AND CONNECTOR

Walter M. Phillipson, Woodside; Robert J. Brennan, Ossining, and Terrence Meighen, Stormville, all of N.Y., assignors to Stewart Stamping Corp., Yonkers, N.Y.

Division of Ser. No. 655,696, Sep. 28, 1984, Pat. No. 4,653,837, which is a continuation-in-part of Ser. No. 612,722, May 21, 1984, Pat. No. 4,641,901, which is a continuation-in-part of Ser. No. 570,806, Jan. 16, 1984, Pat. No. 4,537,459. This application Sep. 25, 1986, Ser. No. 911,445
Int. Cl.[4] H01R *13/648, 4/24*
U.S. Cl. 439—425 23 Claims



1. A modular plug connector for terminating a shielded cord, the cord having a plurality of insulated conductors enclosed within an outer jacket and a conductive shield situated between the jacket and conductors and surrounding the latter, comprising: a dielectric housing having a top wall, an opposed terminal-receiving bottom wall and a pair of opposed side walls, said walls having respective outer surfaces, a forward free end and a rearward cord receiving end having a cord entrance opening formed therein opening into a cord-receiving cavity formed within the housing, said cord-receiving cavity having a forward conductor-receiving portion and a rearward jacket-receiving portion, a plurality of contact terminal-receiving slots formed in said terminal-receiving bottom wall communicating with said conductor-receiving portion of said cord-receiving cavity for receiving flat contact terminals adapted to electrically engage respective ones of the cord conductors; and

shield terminating contact means for electrically engaging said cord shield and adapted to come into electrical engagement with a part of a jack formed of electrically conductive material upon insertion of the modular plug connector into the jack, said shield terminating contact means including a member formed of electrically conductive sheet material including an outer portion overlying a region of the outer surface of at least one of said top, bottom and side walls, and a contact portion integral with said outer portion extending into said cord-receiving cavity through opening means formed in one of said housing side walls.

4,767,356

ELECTRICAL CONNECTORS, PARTICULARLY CONNECTORS FLUID-TIGHT ON IMMERSION IN A LIQUID

René Grappe, Paris, France, assignor to Souriau & Cie, Boulogne Billancourt, France

Filed Nov. 3, 1986, Ser. No. 926,109
Claims priority, application France, Nov. 8, 1985, 85 16573
Int. Cl.[4] H01R *13/58*
U.S. Cl. 439—455 10 Claims



1. An electrical connector, particularly a fluid-tight connector on immersion in a liquid, comprising two elongate connector elements each having respective electrical contacts at a forward end thereof, said connector elements coupleable mechanically with one another, to cause the mechanical and electrical cooperation in pairs of said electrical contacts, at least one of the connector elements comprising an insulating body which is pierced by longitudinal housings shielding the contacts respectively and which is itself retained and shielded, at least in part, in an outer casing, clamping means for clamping the rear end of the connector element to an electrical cable having an outer sheath and joined electrically to the contacts being provided in addition, characterized in that said clamping means comprise:

at least one collar gripping the outer sheath of the cable, said collar having at least two radial diametrically or approximately diametrically opposite radial projections,

at least two half-clamps having an outer surface and engirdling the rear end of the insulating body and a neighboring zone of the cable, including here the collar gripping the cable, each projection of the collar being engaged in two respective inner recesses of the two half-clamps, said recesses and said collar projections being so shaped and dimensioned that the collar projections are closely surrounded by the recess walls so that the collar and the half-clamps, and consequently also the insulating body, are mutually interlocked axially and in rotation, wherein said half-clamps have respective, mutual abutting supporting edges and, along at least a portion of their mutual supporting edge, the half-clamps have a rim projecting outwardly,

and assembly means associated with the two half-clamps to maintain the latter assembled one against the other and said assembly means comprising clips which straddle the half-clamps and which, in a corresponding zone thereof that is situated facing the rims abutting the half-clamps, each clip possesses a channel gripping the two abutted rims of the two half-clamps.

4,767,357

DAISY CHAIN CONNECTOR

Alexander W. Hasircoglu, Lancaster, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 10, 1987, Ser. No. 60,345
Int. Cl.[4] H01R *13/00*
U.S. Cl. 439—499 17 Claims

1. A connector for forming a daisy chain interconnection comprising:

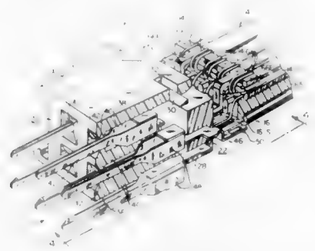
a housing;

a plurality of terminal members mounted within the housing,

VOL 1093 ISS 5 AG 30 1988 UMI

each terminal member having a mating end and a tail end provided thereon, each terminal member being mounted in the housing to define an array of stacked pairs of terminal mating ends;

the tail end of each terminal member projecting from the housing, the tail ends of the terminal members being



aligned to form a linear array of tail ends with linearly adjacent pairs of tail ends corresponding to stacked pairs of mating ends;

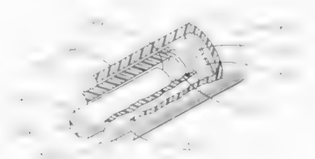
each tail end having a first and a second mounting surface thereon, each mounting surface being able to receive a conductor thereon.

4,767,358

BATTERY ADAPTER FOR C AND D SIZE APPLICATIONS

Richard Nullmeyer, 2715 Killdeer Ct., Union City, Calif. 94587, and John Nullmeyer, 5292 Falmouth Pl., Newark, Calif. 94560

Filed Jun. 12, 1987, Ser. No. 62,111
Int. Cl.[4] H01M *2/10*
U.S. Cl. 439—500 3 Claims



1. An adapter for allowing a device requiring a standard D size battery to use a second smaller standard C size battery, comprising:

a one piece molded non-conductive plastic cylindrical means having an outside surface whose diameter is consistently equivalent to the diameter of a standard D size battery, and having an external body length equal to the length of the body of said standard D size battery, not including the length of the positive terminal which protrudes beyond the body of said standard D size battery,

a cavity extending into one end of said cylindrical means whose inside circumference is consistently concentric with the outside surface of said cylindrical means, said cavity having a diameter slightly greater than the outside diameter of said standard C size battery so that said standard C size battery will easily but not loosely enter said cavity, said cavity having a depth slightly greater than the length of the body of said standard C size battery, not including the length of the positive terminal which protrudes beyond the body of said standard C size battery,

a floor at the second end of said cylindrical means formed between the longer external length of said cylinder and the shorter internal depth of said cavity, said floor being integrally molded with slots,

a disk-shaped electrically conductive contact means comprising a contact disk and fingers attached to the periphery thereof to attach said contact disk to said floor by passing said fingers through said slots and folding them flat against the internal surface of said floor to provide firm attachment to said floor and to provide an electrical contact surface perpendicular to the longitudinal axis of said cavity whereby upon insertion of a standard C size battery into said cavity, said fingers will provide electrical contact through said floor to the external surface of said disk, the diameter of said disk being equivalent to the diameter of the negative contact of a standard D size battery, said disk having a flat continuous surface,

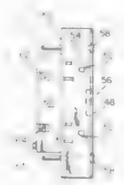
said floor having a thickness such that the combination of its thickness, the thickness of said contact means, the thickness of said fingers when folded flat against said floor, and the length of a standard C size battery including its positive terminal, equals the total length of a standard D size battery including its positive terminal.

4,767,359

SAFETY ELECTRICAL WALL OUTLET

Gregg Martell, 8644 Cavel St., Downey, Calif. 90242

Division of Ser. No. 889,696, Jul. 28, 1986, abandoned. This application Jun. 12, 1987, Ser. No. 61,324
Int. Cl.[4] H01R *19/44*
U.S. Cl. 439—535 4 Claims



1. A safety electrical wall plug connector adapted to replace a conventional duplex wall receptacle and of the type having a built in circuit breaker protection device, comprising:

a sealed box having a substantially flat front surface and rear surface and a plurality of electrical receptacles having three sockets each on the periphery of said box separating said front and rear surfaces,

said front containing a circuit breaker reset button adapted to control the built-in circuit breaker,

three terminals located on said rear surface adapted to be directly electromechanically connected to external house wiring,

said rear surface of said connector adapted to fit within an empty standard double outlet box of the type attached to building studs and containing house wiring, and

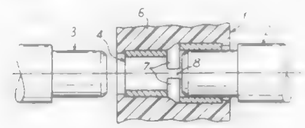
a pair of screws extending through said front surface and said rear surface and adapted to engage screw openings located in said empty outlet box.

4,767,360

ELECTRIC CONTACT SOCKETS

Francois R. Bonhomme, 6 Parc de Béarn, 92 210 Saint Cloud, France

PCT No. PCT/FR86/00324, § 371 Date May 11, 1987, § 102(e) Date May 11, 1987, PCT Pub. No. WO87/02196, PCT Pub. Date Apr. 9, 1987
PCT Filed Sep. 24, 1986, Ser. No. 56,820
Claims priority, application France, Sep. 25, 1985, 85 14174
Int. Cl.[4] H01R *13/44*
U.S. Cl. 439—593 8 Claims



1. An electric contact socket which is open at its two longitudinal ends so as to be capable of receiving two aligned contact plugs respectively inserted through these two ends, and thus electrically connecting conductors attached to these two plugs and which is essentially constituted by a metallic sleeve provided with at least one longitudinal slot and encompassed by an elastic element, characterized in that the or each longitudinal slot of the sleeve extends from one longitudinal end to the other of said sleeve; in that the sleeve is further provided with transverse slots extending from the or each longitudinal slot at least approximately midway along the length of the sleeve and so dimensioned that they leave, in the material of the sleeve, at least one continuous strip extending from one to the other of the longitudinal ends of the sleeve and in that the elastic element encompassing the sleeve is made from a hollow body of insulating elastomer, the inner surface of said hollow body of insulating elastomer being in contact with substantially the entire outer surface of said sleeve whereby, upon insertion of a plug into an open end of said sleeve, deformation of said sleeve caused by insertion of said plug into said open end of said sleeve causes an elastic deformation of the neighboring area of said hollow elastomer body and whereby, on removal of said plug from said open end of said sleeve, elasticity of the hollow elastomer body causes the deformed portion of the sleeve and the neighboring area of the hollow elastomer body to return to their undeformed condition.

4,767,361

CONNECTOR

Teruaki Hoshino, Higashiyamato, and Koichi Kamiji, Utsunomiya, both of Japan, assignors to Japan Aviation Electronics Industry Limited and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Continuation of Ser. No. 880,526, Jul. 1, 1986, abandoned. This application Dec. 21, 1987, Ser. No. 135,469
Claims priority, application Japan, Jul. 8, 1985, 60-103677[U]
Int. Cl.[4] H01R *13/426, 13/436*
U.S. Cl. 439—596 7 Claims

1. A connector comprising:

a connector body formed of a synthetic resinous material and having a plurality of spaced elongated socket contact housing holes bored therethrough in parallel relation to one another, said connector body also having an aperture in one side thereof in communication with said socket contact housing holes;

a plurality of socket contacts respectively inserted into said contact housing holes of the connector body;

a contact locking member molded integrally with the connector body to be pivotally connected thereto at one end of said locking member through a hinge that defines an axis of rotation parallel to the directions of elongation of said contact housing holes, said contact locking member having a blocking projection formed integrally therewith to be inserted into said aperture of the connector body so as to project out of the aperture and into the contact housing holes to lock into place the socket contacts in said contact housing holes, said contact locking member having at its other end a hooked portion formed integrally therewith for locking engagement with a slot made in an exterior side of the connector body that is comparatively widely spaced from said hinge to thereby hold the blocking projection in the aperture;

further locking means provided on the connector body and the contact locking member for retaining said blocking projection in said aperture, said further locking means comprising an elastically displaceable engaging piece provided on one of said connector body and said contact



locking member closely adjacent to said hinge, said elastically displaceable engaging piece projecting in the same direction as the hooked portion and having a hook thereon and a locking portion on the other of said connector body and said contact locking member for locking engagement with said hook in the direction in which the engaging piece projects; and

a guide hole formed in said connector body in communication with said slot in the exterior side of the connector body, said guide hole being in alignment with said hooked portion of said contact locking member when said hooked portion is in locking engagement with said slot, whereby a pin can be inserted via said guide hole into abutment with said hooked portion to release the locking engagement between said hooked portion and said slot.

4,767,362

ELECTROMAGNETIC WAVE INTERFERENCE PREVENTION DEVICE FOR MULTIELECTRODE CONNECTOR

Eirou Moji, 219, Iguchi, Mitaka-shi, Tokyo, Japan

Filed May 5, 1987, Ser. No. 46,900
Int. Cl.[4] H01R *13/658*
U.S. Cl. 439—610 1 Claim



1. In a multielectrode connector including a cylindrical outer sleeve made of a metal member, a molding fitted in said outer sleeve and consisting of a synthetic resin material in the form of a plug and a plurality of contacts held in said molding, core wires of a plurality of cord lines of a cord covered by an outer cover and shield wires, an electromagnetic wave inter-

VOL 1093 ISS 5 AG 30 1988 UMI

ference prevention device for a multielectrode connector comprising said cylindrical outer sleeve having axial butt faces and first engagement pawls at a rear end thereof, a cord clamp consisting of a metal member having a cylindrical portion and a flange portion formed integrally with said cylindrical portion in the form of a lid closing a rear open end of said outer sleeve, said flange portion having second engagement pawls on an outer periphery thereof without joint or crack portion, said second engagement pawls being closely engaged in gaps between said first engagement pawls, respectively, said cord clamp being fitted on the outer periphery of an end portion of the outer cover of said cord and integrally coupled to said cord, said cord clamp being integrally assembled to a rear end of the outer sleeve such as to close the rear open end of said outer sleeve.

4,767,363

CONTROL DEVICE FOR MARINE ENGINE

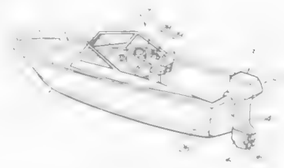
Tatsuki Uchida, and Katsumi Torigai, both of Hamamatsu, Japan, assignors to Sanshin Koygo Kabushiki Kaisha, Hamamatsu, Japan

Continuation-in-part of Ser. No. 906,329, Sep. 11, 1986. This application Dec. 1, 1986, Ser. No. 936,336

Claims priority, application Japan, Nov. 30, 1985, 60-268285

Int. Cl.[4] B63H *23/00*

U.S. Cl. 440—1 **17 Claims**



1. In a watercraft having a drive carrying propulsion means and supported for pivotal movement about a steering axis, an engine for driving said propulsion means, means for sensing the acceleration of said watercraft, and means for limiting the degree of acceleration of said watercraft when said drive is steered through greater than a predetermined angle.

4,767,364

ADVANCED STEERING AND PROPULSION SYSTEM FOR SHIPS

Erwin Lenz, 180 Cabrini Blvd., Apt. 114, New York, N.Y. 10033

Filed Jan. 14, 1987, Ser. No. 3,364

Int. Cl.[4] B63H *11/00*

U.S. Cl. 440—38 **3 Claims**



1. A steering and propulsion system for ships comprising, in combination, a pair of side-by-side assemblies, each said assembly comprising an inboard power producing unit, an exterior ship driving unit and fluid flow connecting means therebetween;

each of said power-producing units comprising a fluid flow producing means designed to produce a pressurized fluid;

each of said ship driving units comprising a pipe mounted adjacent an exterior underside of said hull and extending from a bow to a stern of said hull, the ends of the pipe being open; an enlarged housing means secured to the stern end of said pipe, the housing defining an internal chamber open to fluid-flow connection at a front end with the stern of the pipe and at a rear end with the environment, the chamber having a double taper, such that the internal diameter of the chamber is the smallest at the two ends so as to form a venturi at each end, a central portion of the chamber intermediate the two venturi having a substantially constant internal diameter; and a pair of injector nozzles within the chamber, in back-to-back relationship, such that one nozzle opening faces forwardly and the second nozzle opening faces rearwardly, each nozzle opening facing directly into the venturi at the respective end of the chamber, such that any fluid passing out from the nozzle is injected substantially directly into a venturi;

the fluid-flow connecting means comprising a pair of tubes, each tube extending at one end into the housing and being in fluid-flow connection at that end to a nozzle and at the second end in fluid-flow connection to the power-producing unit; and valve means located intermediate the power-producing means and each nozzle to alternately permit or close off fluid flow into such nozzle, the fluid-flow connecting tubes extending above and around the stern end of the hull of the ship.

4,767,365

SHIFTING DEVICE FOR INBOARD-OUTBOARD DRIVE

Ryoji Nakahama, and Naoyoshi Kuragaki, both of Hamamatsu, Japan, assignors to Shanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Feb. 17, 1987, Ser. No. 16,184

Claims priority, application Japan, Mar. 14, 1986, 61-56707

Int. Cl.[4] B63H *23/06, 23/30*

U.S. Cl. 440—75 **21 Claims**



1. A marine outboard drive having an outer housing containing a first shaft adapted to be continuously driven at one end thereof by an engine during engine operation, a second shaft, said first and said second shafts being coaxial and telescopic relative to each other with one of said first and second shafts comprising a quill shaft, a selectively operable friction clutch at the other end of said first shaft for selectively coupling said second shaft for rotation with said first shaft, a propeller shaft for driving a propeller and a constant mesh change speed transmission including positive coupling means for selectively coupling said second shaft with said propeller shaft for driving said propeller shaft in selected speed ratios from said second shaft.

4,767,366

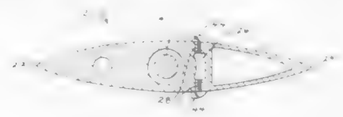
WATER RAM SCOOP FOR COOLING WATER INTAKE

William P. Lang, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Apr. 6, 1987, Ser. No. 35,039

Int. Cl.[4] B63H *21/38*

U.S. Cl. 440—76 **8 Claims**



1. In a marine propulsion system having a depending gear case with one or more water inlet openings on the side of said gear case for supplying water to a water pump, water intake means protruding from said gear case and having a water-receiving opening spaced outwardly therefrom adapted to receive water as it flows past said gear case and to direct such water inwardly into one or more of said water inlet openings for increasing water flow to said water pump, said water intake means having a shank portion through which said received water flows, said shank portion extending into said gear case for attaching said water intake means thereto.

4,767,367

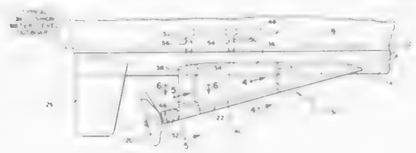
INTEGRATED COMBINATION PROPELLER DRIVE SHAFT FAIRING AND WATER INTAKE SEA CHEST ARRANGEMENT, FOR HIGH SPEED OPERATING MARINE CRAFT

Robert A. Stringer, Slidell, La., assignor to Textron Inc., Providence, R.I.

Filed Apr. 27, 1987, Ser. No. 42,674

Int. Cl.[4] B63H *21/10*

U.S. Cl. 440—88 **10 Claims**



1. A water-cooled engine driven high speed marine surface craft of the type which is pilot controlled and operative by means of a craft operation control system in both ahead and reverse directions by means of an under water propeller carried at the rear end of an engine power driven shaft extending rearwardly and downwardly at an inclined angle from the hull of said craft, the improvement comprising:

the portion of said drive shaft between its propeller and said hull being enclosed by means of an internally partitioned fairing-shaped shroud extending from said hull;

said shroud being formed with water inlet apertures at both the forward and rear ends thereof, thereby providing a pair of sea chests internally thereof surrounding said shaft;

engine cooling water pump intake means comprising a conduit having separate branches thereof extending from said hull into said sea chests;

each of said branches having included therein an off/on water flow control valve; and

means for differentially actuating said branch water flow control valves automatically in accordance with adjustments of said craft operation control system.

4,767,368

SWIM FIN WITH HINGED, SPRING-BIASED BLADE DISPLACED FROM TOE OF FOOT POCKET

Stephen S. Ciccotelli, P.O. Box 1414, Deming, N. Mex. 88031

Continuation of Ser. No. 911,798, Sep. 26, 1986, abandoned, which is a continuation-in-part of Ser. No. 842,282, Mar. 21, 1986, Pat. No. 4,657,515. This application Oct. 27, 1987, Ser. No. 115,660

Int. Cl.[4] B63H *5/12*

U.S. Cl. 441—64 **10 Claims**



1. A swim fin comprising in combination:

(a) a foot pocket having a toe end;

(b) a rigid blade having a leading edge and a trailing edge;

(c) a generally U-shaped wire form having first and second legs and a cross-member;

(d) means for attaching the first and second legs of the U-shaped wire form to the foot pocket so that the cross-member of the U-shaped wire form is spaced from the toe end of the foot pocket;

(e) means for pivotally attaching the leading edge of the blade to the cross-member of the wire form;

(f) a rigid member having first and second ends, the first end being attached to the blade; and

(g) means including a first extension spring having a first end connected in fixed relationship to the foot pocket and a second end connected to the second end of the rigid member for continuously resiliently resisting pivoting of the blade about a neutral position to produce a finning action producing forward thrust forces against the foot pocket during transverse displacement of the foot pocket during swimming, thereby propelling the swimmer forward.

4,767,369

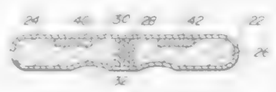
WATER SKI

Howard E. Snyder, P. O. Box 2278, New Smyrna Beach, Fla. 32070-2278

Filed Oct. 16, 1986, Ser. No. 919,269

Int. Cl.[4] B29D *27/04*

U.S. Cl. 441—68 **5 Claims**



1. A method of constructing a water ski having a core and an outer skin enveloping the core, the core including first and second transversely spaced longitudinal core members, and a longitudinal stringer interposed between the core members, the core members and stringer defining a top surface and a bottom surface, the water ski further including at least one

VOL 1093 ISS 5 AG 30 1988 UMI

longitudinal strut adjacent the top surface, the strut being adapted for supporting foot bindings, the method comprising the steps of:

providing a jig defining the shape of a ski;

placing the first core member in the jig;

placing the stringer in the jig and bonding the stringer to the first core member;

placing the second core member in the jig and bonding the second core member to the stringer;

removing the first core member, the stringer and the second core member from the jig;

bonding the strut to the top surface; and

enveloping the first core member, stringer, strut and second core member with the outer covering.

4,767,370

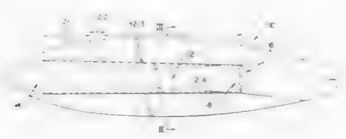
SAILBOARD WATERCRAFT

Brian C. Campbell, P.O. Box 4091, George East, 6539 Cape Province, South Africa

Filed Jan. 30, 1987, Ser. No. 9,207

Int. Cl.[4] A63C *15/05*

U.S. Cl. 441—74 13 Claims



1. An elongated hull for a water craft such as a sailboard which has a front end and a rear end and which has length, width, and an underside and which has an elongated enclosed air passage which has length and depth, and a width which varies along the length of the passage, the passage being formed on the underside of the hull by an elongated longitudinal inverted channel recess and by a panel covering the channel recess along part of its length intermediate its ends, the panel having a leading edge and a trailing edge and serving as a floor for the passage, the passage having a maximum width which is eight to fourteen times its depth, and extending longitudinally for at least three-fifths of the length of the hull from a front air inlet opening which is on the underside in the front one-fourth of the length of the hull, to a rear air outlet, opening on the underside of the hull in the rear one-third of the length of the hull, the width of the air passage being defined by sides which converge rearwardly from the front air inletopening to a throat and which diverge again rearwardly away from the throat to the rear air outlet opening.

4,767,371

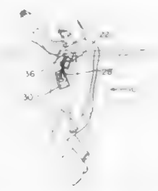
INFLATABLE BUOYANCY OILSKIN JACKET

Michael A. Jackson, 27670 Lofall Ct., Poulsbo, Wash. 98370

Continuation of Ser. No. 915,950, Oct. 3, 1986, abandoned, which is a continuation of Ser. No. 638,036, Aug. 6, 1984, abandoned. This application Aug. 27, 1987, Ser. No. 90,390

Int. Cl.[4] B63C *9/16*

U.S. Cl. 441—94 2 Claims



2. An inflatable buoyancy garment intended to be worn on an upper body of the wearer as a jacket, wherein a U-shaped air chamber is securely attached to the inside of said garment; and comprising, in addition:

(a) an inflator assembly securely positioned to the outside of the said garment at a breast pocket location thereof, and depending from the said U-shaped air chamber, and communicating with the inside of the said U-shaped chamber, having a pressurized gas filled cylinder to discharge gas into the said U-shaped air chamber, and a lever arm, having in turn one piercing end to pierce the said gas filled cylinder, and another end to receive a lanyard, and a coilable and extendable said lanyard having one end secured to the said lever arm and another end for subsequent securement, and having an oral inflation tube and valve thereof communicating with the inside of the said U-shaped air chamber for alternate use in inflating the U-shaped air chamber; and

(b) an exterior removable pocket flap cover, adapted and located to be easily removed with either hand of the wearer, removably secured to the said garment, having portions of fasteners such as snaps or hook and loop fabric, to complementary interfit with snaps or hook and loop fabric secured to the said garment, wherein this said exterior removable pocket flap cover is so secured to said garment along the bottom and side edges forming an open top chest pocket on the said garment, having an upper edge and having a top flap secured to the said garment along the top and side edges forming an open bottom to receive and to protect the said upper edge, while allowing the seagoing person's hand to reach in and grasp the said upper edge of the said exterior removable pocket flap cover, which covers the said inflator assembly, and this said exterior removable pocket flap cover is secured to the other end of the said coilable and extendable lanyard, whereby upon the intentional pulling away of this said exterior removable pocket flap cover by the wearer using his or her left or right hand, the said lanyard is uncoiled, extended and pulled to move the said lever arm, to in turn pierce the said gas filled cylinder, to in turn inflate the said U-shaped chamber, and if that fails, to expose the said oral inflation tube and valve thereof for alternate use in inflating the said U-shaped air chamber.

4,767,372

PROCESS FOR THE PRODUCTION OF A POROUS PRESSED PART

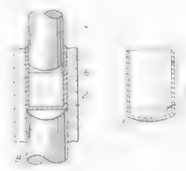
Frank Bossert, Ulm, and Manfred Hacker, Illerkirchberg, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Jan. 9, 1987, Ser. No. 1,586

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1986, 3600480

Int. Cl.[4] H01J *9/04*

U.S. Cl. 445—50 21 Claims



1. A process for producing a porous matrix which may be soaked in emission material having opposite concave and convex surface, comprising precompressing a powder to form a precompressed part with opposite flat parallel surfaces, thereafter compressing the pre-compressed part by applying a first die with a concave face against one of the flat surfaces and a second die with a convex face against the other flat surface and pressing the first and second dies together to provide a uniform thickness.

4,767,373

TOY WINDMILL WITH CONVENIENT ASSEMBLY FEATURES

Jorge E. Antonio, Estrada Olina Ellis 92, Campo Grande, Rio de Janeiro, Brazil

Filed Mar. 5, 1986, Ser. No. 836,669

Claims priority, application Brazil, Sep. 19, 1985, 8504587

Int. Cl.[4] A63H *33/40, 33/00*

U.S. Cl. 446—217 1 Claim



1. Toy windmill comprising:

a fixed shaft;

at least one sheet of material having a central orifice for receiving said shaft and being cut to define a plurality of blades having ends, each of said ends having a mounting orifice; and

a fixing means for supporting said ends for rotation about said fixed shaft, said fixing means comprising snap-fitting male and female parts, said male part comprising a generally planar first base portion having a central orifice for receiving said shaft and a first cylindrical sleeve portion upstanding from said first base portion around said first central orifice, said female part comprising a second substantially planar base portion with a second central orifice for receiving said shaft and a second sleeve portion around said second central orifice, said second sleeve portion press-fittingly receiving said first sleeve portion and said first and second planar base portions retaining said blade ends therebetween.

4,767,374

SYNCHRONIZED DRIVE DEVICE FOR THE MOUTH OF A DOLL

Tai-Cheng Yang, 14, Lane 616, Cheng-Teh Rd., Taipei, Taiwan

Filed Jan. 27, 1987, Ser. No. 6,684

Int. Cl.[4] A63H *3/28;* G09F *13/00*

U.S. Cl. 446—301 6 Claims



1. A drive device for driving a pair of lips of a doll to move in response to an electrical signal from within the doll, comprising:

electrically operated means for generating sound, the sound generating means being designed for being disposed within the doll; a control box connected with the sound generating means;

a frame having an internal structure for receiving and for holding the control box in position with the lips projecting out of the control box;

a motor at the control box for being driven to rotate in a first and a second direction with respect to the control box; means responsive to an electrical signal which operates the sound generating means and connected with the motor at the control box for operating the motor to rotate in one of the first and the second directions;

a first and a second separately pivotable drive rod and a respective pivot for the drive rods on the device, each drive rod being connected with the motor for being moved by the motor to pivot around its respective pivot; a respective lip of the pair of lips connected to each of the pivotable drive rods such that pivoting of the rods moves the rods and therefore the lips alternatively together and apart;

and switch means for selectively switching the motor to rotate in the first direction for moving the pivotable rods to move the lips apart and for halting in the second direction the operation of the motor when the lips have moved predetermined distance apart and for operating the motor for moving the pivotable rods to move the lips together and for halting the operation of the motor once the lips have moved together.

4,767,375

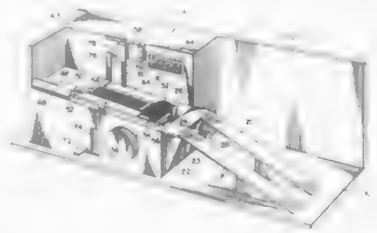
TOY AUTO GARAGE

Arnold Fassman, 40 Oak St., Westport, Conn. 06880

Filed Feb. 11, 1987, Ser. No. 13,540

Int. Cl.[4] A63H *17/44;* G01G *3/08*

U.S. Cl. 446—423 4 Claims



1. A toy vehicle diagnostic center for performing simulated vehicle measurements and tests on a toy vehicle comprising:

forwardly inclined downward deck means providing a diagnostic position for receiving toy vehicles to perform multiple measurements on the vehicles;

inclined ramp means secured to the deck means whereby a toy vehicle may be manually directed to the deck means;

retractable stop means located at the deck means having an extended position to maintain a toy vehicle in the said diagnostic position on the deck means and a retracted position to permit the toy vehicle to be rolled on to and off of the deck means;

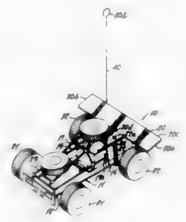
means to manually move the retractable stop means to the said extended and retracted positions;

means located at the deck means to perform a plurality of measurements on a toy vehicle located in a fixed position on the deck means, which measurements simulate measurements that are performed on real vehicles in real diagnostic centers; and

said means to perform a plurality of measurements including numerical indicia means to indicate the results of the said measurements.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,376
TOY VEHICLE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Hanzawa Corporation, Tokyo, Japan
Filed Oct. 27, 1986, Ser. No. 923,628
Claims priority, application Japan, Oct. 29, 1985, 60-165175
Int. Cl.[4] A63H *29/00, 29/20*
U.S. Cl. 446—457 13 Claims



5. In a toy vehicle having a pair of rear driving wheels rotatably supported on vehicle body means, the combination comprising:

motor means coupled to the vehicle body means for providing rotational power to both rear driving wheels of the toy vehicle;

an air-spoiler-like attitude restoration plate member attached to and located at the upper rear area of the vehicle body means, said attitude restoration plate member being located above said drive wheels and extending beyond the outer limits of the left and right rear wheels in the directions lateral to the longitudinal centerline of the vehicle; and

a car-radio-antenna-like attitude restoration spring wire member, extending upwardly from the rear portion of said vehicle body means, each of said attitude restoration members being arranged and positioned for assisting in restoring the vehicle to a normal operational attitude under force of the rotational power of said driving wheels in the event the vehicle assumes an attitude other than normal.

4,767,377
BRASSIERE
Gloria M. Falla, Demarest, N.J., assignor to Warnaco, Inc., Bridgeport, Conn.
Filed Oct. 2, 1987, Ser. No. 104,441
Int. Cl.[4] A41C *3/00*
U.S. Cl. 450—65 13 Claims

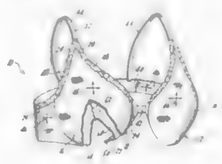
1. In a brassiere comprising

(A) two bra cups, each including an inner cup and an outer cup peripherally joined together to form upper, lower, inner side and outer side margins;

(B) back band means for connecting said outer side margins of said bra cups about the back of the wearer; and

(C) chest band means for connecting said inner side margins of said bra cups in the front of the wearer;

the improvement wherein each of said outer cups is formed of elastic material and each of said inner cups comprises a segment formed of non-elastic material extending upwards from said lower margin and a yoke formed of elastic material connecting the top and sides of said non-elastic segment to said upper, inner side and side outer margins; whereby said elastic yoke of said inner cup permits said outer cupto accommodate to the breast of the wearer





while said non-elastic segment of said inner cup provides support in the medial region thereof.

4,767,378
FRONTAL MAGNET COUPLING WITH INTEGRATED MAGNETIC BEARING LOAD RELIEF
Peter Obermann, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Jul. 29, 1986, Ser. No. 891,451
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1985, 3527687
Int. Cl.[4] H02K *49/10;* F16C *39/06;* A61M *5/16*
U.S. Cl. 464—29 19 Claims



1. A frontal magnetic coupling provided with at least one magnet for the transmission of torques or forces from a first to a second enclosure of a housing, said enclosures being separated from each other by means of an isolating wall, comprising:

a driving element coupled for rotation in said first enclosure;

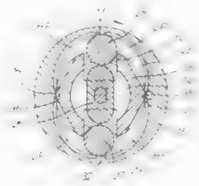
a driven element coupled for rotation in said second enclosure and axially aligned with said driving element;

a magnet having a contact surface mechanically coupled to one of said driving and said driven elements;

an element of magnetizable material coupled to the other one of said driving and said driven elements; and

a stationary plate of magnetizable material spaced above the contact surface of said magnet so as to form an air gap therebetween, said plate providing a return path for the magnetic flux of said magnet and thereby providing axial magnetic forces across said air gap which compensates and provides a magnetic bearing load relief of axial magnetic forces between said magnet and said element of magnetizable material.

4,767,379
HYDRAULIC TORQUE IMPULSE GENERATOR
Knut C. Schoeps, Tyresö , Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sep. 30, 1987, Ser. No. 103,355
Claims priority, application Sweden, Oct. 3, 1986, 8604208
Int. Cl.[4] B25B *21/02;* B25D *15/00*
U.S. Cl. 464—25 8 Claims



1. In a hydraulic torque impulse generator, comprising a drive member (10) connected to a rotation motor, a cylindrical fluid chamber (11) in said drive member (10) partly defined by a circumferential wall (23) of a non-constant radius, an output spindle (12) rotatably supported in a coaxial relationship with said drive member (10) and comprising a rear portion (13) which extends into said fluid chamber (11), said rear spindle portion (13) having at least one radial slot (29, 30) each supporting a radially movable seal element (27, 28) for sealing cooperation with seal lands (32, 33) on the fluid chamber wall (23), and at least one seal ridges (36, 37) on said rear spindle portion (13) for sealing cooperation with seal ridges (34, 35) on said fluid chamber wall (23), thereby dividing said fluid chamber (11) into at least one high pressure compartment (H.P.) and at least one low pressure compartment (L.P.) during short intervals of the relative rotation between said drive member (10) and said output spindle (12),

the improvement wherein:

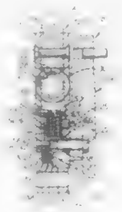
said rear spindle portion (13) comprises a coaxial bore (14) which partly coincides with said radial slots (29, 30),

a cam element (26) is rotatably supported in said bore (14), and

said cam element (26) being non-rotatably connected to said drive memeber (10) and being arranged to engage positively said seal elements (27, 28) for moving said seal elements (27, 28) outwardly toward said fluid chamber wall (23) during rotation of said drive member (10) relative to said output spindle (12).

4,767,380
DAMPER-TYPE FLYWHEEL SUITABLE FOR AUTOMOBILE TRANSMISSIONS
Gustave Chasseguet, Taverny, and Jacques Paquin, Villeneuve La Garenne, both of France, assignors to Valeo, Paris, France
Filed Feb. 4, 1987, Ser. No. 10,727
Claims priority, application France, Feb. 5, 1986, 86 01560
Int. Cl.[4] F16D *3/12*
U.S. Cl. 464—68 11 Claims

1. A damper type flywheel comprising first and second coaxial flywheel parts mounted for angular displacement relative to each other, said first flywheel part including two axially spaced annular flanges and said second flywheel part having a flange assembly fixed for rotation therewith and disposed axially between said flanges of said first flywheel part, circumferentially acting spring means and friction means operably disposed between said first and second flywheel parts, said friction means including an annular collar fixed for rotation with said flange assembly and at least one friction ring operably disposed axially between said flange assembly and said annular collar, and lost motion circumferentially engagement



means operative between said friction ring and one of said annular flanges of said first flywheel part.

4,767,381
BOOT RESTRAINT FOR PLUNGING UNIVERSAL JOINT
Danny D. Brown, Livonia; Daniel W. Hazebrook, Detroit, and Francis L. Fillmore, Birmingham, all of Mich., assignors to GKN Automotive Components Inc., Auburn Hills, Mich.
Continuation of Ser. No. 814,920, Dec. 30, 1985, abandoned.
This application Jun. 12, 1987, Ser. No. 61,010
Int. Cl.[4] F16D *3/21*
U.S. Cl. 464—146 32 Claims



13. A puncture-resistant elastically distortable boot restraint in combination with a rotatable torque transmitting mechanical joint of the plunging type having a driving joint member and a driven joint member, said driven joint member having an outside diameter, said puncture-resistant elastically distortable boot restraint comprising:

an annular sealing member formed from a flexible organic material, said annular sealing member having a predetermined outside diameter first end portion that is sealingly mounted to said outside diameter of said driven joint member and a second end that is sealingly mounted to said driving joint member; and

an elastically distortable annular retaining member having a first end portion; and a second end portion adjacent said first end portion, one of said first end portion and said second end portion having a generally cylindrical annular portion being mounted to said predetermined outside diameter first end portion of said annular sealing member, said generally cylindrical annular portion having a predetermined inside diameter terminating in a generally radially inwardly extending rib, said radially inwardly extending rib contiguous said annular sealing member having a second predetermined inside diameter, said second predetermined inside diameter being normally less than said outside diameter of said annular sealing member such that said one of said first end portion and said second end portion of said elastically distortable boot restraint mounted to said annular sealing member is retained by the interference between said second predetermined inside diameter of said radially inwardly extending rib and said

VOL 1093 ISS 5 AG 30 1988 UMI

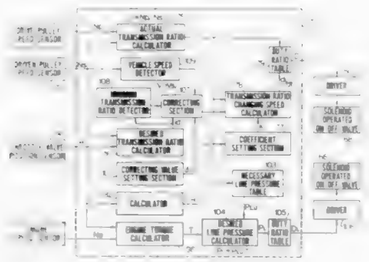
predetermined outside diameter first end portion of said annular sealing member to preserve the sealed mounting of said annular sealing member sealed to said driven joint member.

4,767,382

TRANSMISSION RATIO CONTROL SYSTEM FOR A CONTINUOUSLY VARIABLE TRANSMISSION

Kazunari Tezuka, Asaka, and Hiroshi Tanaka, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1987, Ser. No. 16,677
Claims priority, application Japan, Feb. 18, 1986, 61-33331
Int. Cl.[4] F16H *11/02*; B60K *41/12*
U.S. Cl. 474—28 9 Claims



1. In a control system for a continuously variable transmission for transmitting the power of an internal combustion engine to driving wheels of a motor vehicle through a clutch, the transmission having a drive pulley including a hydraulically shiftable disc and a first hydraulic cylinder for shifting the disc, a driven pulley including a hydraulically shiftable disc and a second hydraulic cylinder for operating the disc of the driven pulley, and a belt engaged with both pulleys, the control system including a transmission ratio control valve having ports and a shiftable spool, a first hydraulic circuit having a pump for supplying oil to the second hydraulic cylinder and to the first hydraulic cylinder through the transmission ratio control valve, the improvement in the system comprising:

first detecting means for detecting load on the engine and for producing a load signal;

first means responsive to the load signal for producing a desired transmission ratio signal, said desired transmission ratio signal including from time to time a desired overdrive transmission ratio signal;

second means responsive to the desired transmission ratio signal for shifting the spool of the transmission ratio control valve so as to provide a corresponding desired transmission ratio of the transmission;

second detecting means for detecting speed of the vehicle and producing a vehicle speed signal when the vehicle speed is in a low vehicle speed range which is lower than a predetermined speed;

third means responsive to the desired overdrive transmission ratio signal and to the vehicle speed signal for producing a corrected desired overdrive transmission ratio signal for the low vehicle speed range as the desired transmission ratio signal for the second means for shifting the spool of the transmission ratio control valve so as to provide a corresponding desired transmission ratio of the transmission, the corrected desired overdrive transmission ratio signal being larger in value than the desired overdrive transmission ratio signal.

4,767,383

ADJUSTABLE TENSIONER FOR BELT AND CHAIN DRIVES

Richard C. St. John, 731 Bachtel St., SE., N. Canton, Ohio 44720

Filed Nov. 3, 1986, Ser. No. 926,341
Int. Cl.[4] F16H *7/12*
U.S. Cl. 474—133 20 Claims



1. A method of maintaining proper tension in belt or chain drive systems comprising the steps of:

(A) providing a tensioning assembly, one end of which is attached to a mounting surface and the other end of which is disposed adjacent the belt or chain;

(B) attaching the said one end on the mounting surface loosely to permit unrestrained pivotal movement about a central axis but negligible axial movement;

(C) applying a torquing tool to the mounting point and rotating the tensioning assembly about the central axis until said other end engages the belt or chain;

(D) continuing rotation about the central axis until a predetermined torque value is attained; and

(E) locking said tensioning assembly against further rotation.

4. A pivoted arm belt or chain tensioner having an elongate arm, comprising:

(A) pivotable mounting means about one end of said elongate arm for affixing said tensioner to a mounting base;

(B) a tensioner idler pulley attached to the opposing end of said elongate arm for engagement with the belt and for application of a predictable tension thereto;

(C) torquing means carried by said arm;

(D) locking means carried by said arm prohibiting any apparent axial motion yet permitting said arm to pivot about said mounting, and

(E) tension measuring means for measuring the predetermined design condition of the tensioner.

4,767,384

FLUID PRESSURE AMPLIFIER FOR AN INFINITELY VARIABLE DRIVE

Richard D. Moan, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 6, 1987, Ser. No. 34,249
Int. Cl.[4] F16H *11/02*
U.S. Cl. 474—28 5 Claims

1. In an infinitely variable belt drive comprising

driving and driven adjustable sheave assemblies and a torque transmitting belt between the sheave assemblies, each sheave assembly having relatively movable sheave portions with friction surfaces adapted to engage said belt;

one sheave portion of each sheave assembly being secured to a clamping servo cylinder and the other sheave portion thereof being movable axially relative to said one sheave portion and having secured thereto a clamping piston received in said cylinder;

a ratio control servo comprising a cylinder secured to said other sheave portion of one of said sheave assemblies and a ratio control piston in said cylinder of said ratio control servo secured to said one sheave portion of said one servo

assembly, the diameter of said clamping piston being greater than the diameter of said ratio control servo;

the clamping piston of each servo cooperating with their respective clamping servo cylinders to define a high pressure chamber;

a high pressure fluid passage means connecting said high pressure chambers together and with a common high fluid pressure source whereby the decrease in volume of said one chamber during a ratio change causes displacement of fluid approximately equal in volume to the corresponding



increase in volume of said other chamber whereby the fluid volume delivered by said high pressure source is minimal; and

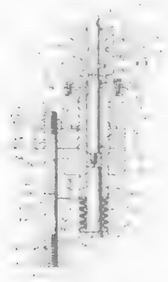
said ratio control servo cylinder being secured to said clamping piston, said ratio control servo piston and cylinder defining opposed ratio control pressure chambers on either side of said ratio control piston, a source of control pressure, and ratio control fluid passage means including a ratio control valve connecting said control pressure source to said ratio control pressure chambers.

4,767,385

BELT TENSIONING MEANS

Leslie B. Wilson, Reeds Spring, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 296,694, Aug. 27, 1981, Pat. No. 4,696,664.
This application May 29, 1987, Ser. No. 55,575
The portion of the term of this patent subsequent to Sep. 29, 2004, has been disclaimed.
Int. Cl.[4] F16H *7/12*
U.S. Cl. 474—138 20 Claims



1. In the combination of a power transmission belt that is adapted to be operated in an endless path and a tensioner for said belt, said tensioner comprising a support means fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, and mechanical spring means operatively associated with said belt engaging means relative to said support means in a belt tensioning direction and against said belt with a force to tension said belt, the improvement wherein said tension has means causing said spring means to increase its urging force on said belt engaging means as said belt engaging means moves in said belt tensioning direction relative to said support means throughout the entire normal tensioning range of movement of said belt engaging means relative to said support means.

4,767,386

FLEXIBLE-ELEMENT TRANSMISSION UNIT FOR DRIVING ROTARY MEMBERS IN GENERAL

Alessandro Spaggiari, Correggio, Italy, assignor to SPAL S.r.l., Correggio, Italy

Filed Apr. 22, 1986, Ser. No. 854,486
Claims priority, application Italy, Apr. 23, 1985, 34849/85[U]
Int. Cl.[4] F16H *7/00, 7/18*
U.S. Cl. 474—148 6 Claims



1. A transmission unit comprising, in combination, an endless flexible element in the form of a flexible metal wire on which a plurality of small equidistant coaxial cylindrical bodies are fixed, a first sprocket wheel in a first casing, means for rotatable mounting said first sprocket wheel in said first casing for rotation about an axis on said first casing, a second sprocket wheel in a second casing, means for rotatable mounting said second sprocket wheel in said second casing for rotation about an axis on said second casing, first and second flexible sheaths extending between said casings and having opposite ends thereof fixed respectively to said casings, said flexible element passing at least partly about each sprocket wheel and having respective lengths thereof extending through said flexible sheaths, for driving one of said sprocket wheels in response to rotation of the other of said sprocket wheels, said flexible sheaths comprising means for guiding said flexible element in different curved configurations thereof, so that said casings can be mounted at different orientations relative to each other.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,387

GROOVED PULLEY AND MANUFACTURING METHOD THEREFOR

Ken Matsuoka, Toyohashi, and Masanobu Yamazaki, Kosai, both of Japan, assignors to Fuji Kiko Company, Limited, Tokyo, Japan

Continuation of Ser. No. 612,341, May 21, 1984, abandoned. This application May 21, 1986, Ser. No. 865,462
Claims priority, application Japan, May 23, 1983, 58-90403; Apr. 13, 1984, 59-74525; Apr. 13, 1984, 59-74526
Int. Cl.[4] F16H *55/49*
U.S. Cl. 474—168 7 Claims



1. An idler pulley made from a substantially flat metal blank, comprising:

a substantially annular web section;

a bearing rest integrally formed with said web section by bending, said bearing rest having an axially extending first section for setting a bearing and a radially extending second section inwardly extending from said first section for restricting axial displacement of said bearing, said bearing rest being formed along an inner peripheral edge of said web section; and

an outer cylindrical section formed by slitting an outer peripheral edge of said metal blank, widening and thickening the slitted peripheral edge for forming an annular flange section having an axial center and extending along an outer peripheral edge of said web, wherein said web joins said annular flange section of the axial center of said annular flange section, and cold-rolling a plurality of grooves in said annular flange.

4,767,388

CHAIN BELT

Yuudai Tatara, Susono; Susumu Okawa, Aichi; Shigeru Okuwaki, Susono, and Yasunobu Jufuku, Gotenba, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

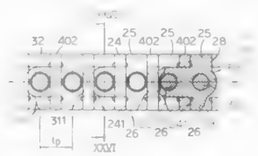
Filed Feb. 5, 1987, Ser. No. 11,336
Claims priority, application Japan, Jun. 25, 1986, 61-149118
Int. Cl.[4] F16G *1/24*
U.S. Cl. 474—245 5 Claims

1. A chain belt comprising:

a plurality of V-shape blocks, each of said V-shape blocks having a pair of lateral side surfaces, a first contacting surface and a second contacting surface, said first and second contacting surfaces extending between the pair of lateral side surfaces on opposite sides of the V-shape block, said V-shape block having an opening therein which extends through the first and second contacting surfaces;

means for connecting the V-shape blocks to each other and forming a continuous loop, the continuous loop formed by the V-shape blocks and the connecting means spanning between two pulleys, some of the V-shape blocks being in contact with each of two pulleys, the other V-shape blocks being apart from the two pulleys, said connecting means comprising: a plurality of links positioned within said V-shape blocks such that at least one link is positioned within each V-shape block, each of said links having a first end with a first aperture therethrough, a second end with a second aperture therethrough, an intermediate portion between said first and second ends, and at least one outer projection laterally extending from one of the ends thereof, said outer projection having a first contacting edge and a second contacting edge located on opposite sides thereof, the first contacting edge being parallel with the second contacting edge; and a plurality of pins for fastening the links to each other, said pins being inserted in the apertures in the ends of the links;

wherein said links are positioned within said V-shape blocks such that the intermediate portion of each link is located in the opening of one V-shape block and the ends are located on opposite sides of the V-shape block, and said V-shape blocks are connected such that the first contacting surface of one V-shape block contacts with the first contacting





edge of the outer projection of the link, and the second contacting surface of an adjacent V-shape block contacts with the second contacting edge of the outer projection of the link when adjacent V-shape blocks are positioned between and apart from the two pulleys, and the first contacting surface of one V-shape block is juxtaposed with the second contacting surface of an adjacent V-shape block;

whereby contact between the first and second contacting edges of the outer projections of the links and the first and second surfaces of the V-shape blocks prevents a portion of the continuous loop of the chain belt, which is positioned between and apart from the two pulleys, from bending downwardly.

4,767,389

DRIVING BELT

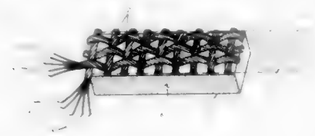
Fernand Habegger, Biel-Benken; Niklaus Polt, Basel, and Kurt Gröbli, Münchenstein, all of Switzerland, assignors to Habasit AG, Reinach, Switzerland

Filed Apr. 1, 1987, Ser. No. 32,717
Claims priority, application Switzerland, Apr. 8, 1986, 1381/86
Int. Cl.[4] F16G *1/10*
U.S. Cl. 474—266 18 Claims

1. A driving belt comprising:

a textile supporting element composed of multifunctional threads or yarns each including plastic fibers of high breaking strength and heat-resistant natural fibers;

a non-crosslinked plastic covering connected to said textile supporting element; and



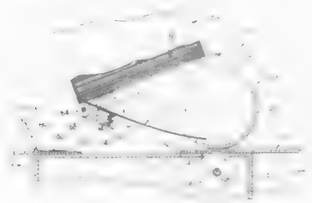
electrically conductive means, integral with at least said textile supporting element, for imparting anti-static properties to said driving belt.

4,767,390

APPARATUS FOR AND METHOD OF APPLYING HANDLE TO CARTON CLOSURE FLAP

Jack G. Herring, Anaheim, Calif., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Jan. 27, 1987, Ser. No. 7,085
Int. Cl.[4] B31B *1/86;* B32B *31/12;* B65H *3/08, 5/06*
U.S. Cl. 493—88 12 Claims



1. An applicator for applying elongated strip members to a moving member, said applicator comprising a hopper having an upstream end and a downstream end, moving means for moving a member along a predetermined path, a rotating combined guide and presser member at the downstream end of said hopper overlying said predetermined path,

and picker means at the upstream end of said hopper for removing an elongated strip member from said hopper and holding a removed elongated strip member adjacent one end of such elongated strip member while engaging an opposite end of such strip member in guided relation with said combined guide and presser member, and utilizing said combined guide and presser member to first laterally guide the strip member as it moves towards the moving member and then to press the strip member against the moving member.

4,767,391

APPARATUS FOR THE MANUFACTURE OF BLOCK-SEALED SIDE-GUSSETTED BAGS

Harold A. Jensen, 31 Annadea Rd., Brockton, Mass. 02402

Continuation-in-part of Ser. No. 879,899, Jun. 30, 1986. This application Dec. 17, 1986, Ser. No. 942,605
The portion of the term of this patent subsequent to Dec. 17, 2002, has been disclaimed.
Int. Cl.[4] B31B *23/80, 27/24*
U.S. Cl. 493—196 2 Claims

1. An apparatus for forming a sectioning operation on a continuous tubular film for forming bags which comprises:

a first vacuum plate having a die for cutting a tab in the film secured thereto;

a second vacuum plate spaced apart from the first vacuum plate to define a passage there between through which the film travels;

airstream means downstream of the vacuum plates to introduce an airstream into the continuous tubular film to billow the same; means to control the vacuum plates and the airstream means whereby when the film is billowed it contacts and is temporarily held by the first and second vacuum plates and the portion of the film contacting the



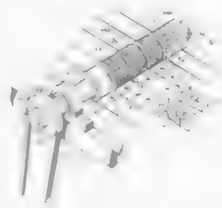
die is cut by the die to form a tab in the film and subsequent to the cutting the introduction of air is ceased; and means to seal the film from one edge to the other along a first seal line and to cut the film from one edge to the other along a second line spaced apart from the first line to form a bag.

4,767,392

UNIVERSAL ROLLER FOR GLUE APPLYING FOLDING MACHINES

Richard J. Moll, c/o Dick Moll & Sons, Warminster, Pa. 18974

Continuation-in-part of Ser. No. 703,726, Feb. 21, 1985, Pat. No. 4,650,454. This application Mar. 17, 1987, Ser. No. 26,863
The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.
Int. Cl.[4] B05C *1/00*
U.S. Cl. 493—331 7 Claims



1. In a paper folding machine which uses rollers that are fixedly and transversely mounted between bearing blocks, which rollers advance the paper to be folded and wherein apparatus is provided for dispensing at least one glue line onto a sheet of paper prior to folding, said apparatus including a transversely mounted adjustable glue head, and wherein at least one of the rollers comprises

a shaft mounted in said bearing blocks,

a plurality of roller elements detachable mounted to said shaft in fixed non-rotational relation,

each of said roller elements having individual transverse adjustment means cooperating with said shaft to provide unlimited transverse adjustments while said shaft is in said machine,

at least one of said roller elements is spaced from the other roller elements to provide a space therebetween so that a sheet of paper with at least one glue line thereon may be gripped and advanced by said roller,

said roller elements each including

a collar, and

an outer surface for engagement with said sheets of paper.

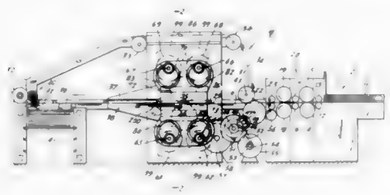
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,393

HIGH SPEED PLATEN-TYPE DIE CUTTER

Edwin K. Smith, 330 Lake Shore Dr., Haworth, N.J. 07641

Continuation of Ser. No. 516,289, Jul. 22, 1983, abandoned. This application Dec. 8, 1986, Ser. No. 939,114
Int. Cl.[4] B31B *1/20, 1/25*
U.S. Cl. 493—342 19 Claims



1. A cutting and creasing press for sheet material including a frame, flat platen-type die means, eccentric shaft means rotatably mounted to said frame and said die means, closed loop conveyor means, sheet gripping means carried by said conveyor means and including sections equally spaced along the path of movement for the conveyor means, said conveyor means having a generally horizontal flight for carrying said gripping means in a feed direction along a generally horizontal feed path extending through a sheet loading station, a sheet unloading station, and a cutting station having said die means positioned thereat said die means having means for full cutting sheet material, said cutting station being positioned between said sheet loading and unloading stations, sheet feeding means for delivering sheets one at a time to said gripping means while the latter moves through said loading station, drive means operatively connected to said eccentric shaft means for rotating the latter at uniform cyclic speed to translate said die means along a circular path positioned for said die means to operatively engage and thereby full cut a sheet moving along said feed path through said cutting station, said drive means also being operatively connected to said conveyor means for moving the latter continuously at a uniform speed that coincides generally with a horizontal component of motion for said die means while the latter is engaged with a sheet moving along said feed path, and sheet support means disposed at said cutting station and means for moving said sheet support means between operative and retracted positions during operation of said drive means, said sheet support means when in said operative position supporting a sheet from below while the latter is not being cut.

4,767,394

METHOD FOR MAKING AXIAL-FLOW FILTERS AND APPARATUS THEREFOR

Yuuji Ito, Anjo; Tadahiko Shibata, Nukata; Masahiko Sakai, Takahama; and Harukazu Matuyama, Takahama, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 690,757, Jan. 11, 1985, Pat. No. 4,659,323. This application Feb. 6, 1987, Ser. No. 11,874
Claims priority, application Japan, Feb. 20, 1984, 59-29710; Apr. 24, 1984, 59-82488
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.[4] B31B *1/00*
U.S. Cl. 493—409 2 Claims

1. A reshaper for an annular filter made of a sectorial-shaped sheet of filter material having parallel curved ends, converging straight sides and curved corrugations defining ridge and valley portions extending between the sides parallel to the ends, the sheet having been rounded and constricted by a belt engaged with the longer curved end to bring its straight sides into substantially abutting relation and to form the sheet into a substantially annular configuration having a central hole therein, said reshaper being adapted to reshape the ridge and valley portions of the annular sheet adjacent the abutting sides thereof after the belt is disengaged from the sheet comprising:

a set of curved blades corresponding to the valleys in one side of the annular sheet and adapted to be positioned in and to engage the bottoms of those valleys, said blades



being of lesser length arcuately than the arcuate length of the corresponding valleys; and

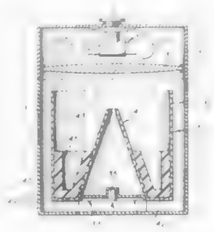
means for rotating said blades about the axis of the annular sheet to and adjacent the straight abutting sides of the annular sheet to reshape the valleys at said portions into precise curved configurations about the axis.

4,767,395

CENTRIFUGAL GREASE REMOVER/ABSORBER FOR FOODS

Richard G. Mellert, 1161 Maurice Ave., Clark, N.J. 07066

Filed Dec. 24, 1987, Ser. No. 137,741
Int. Cl.[4] B04B *15/02*
U.S. Cl. 494—13 7 Claims



1. An improved separation device comprising:

(a) a housing having an opening closeable by a cover;

(b) a chamber in said housing having rotatably mounted therein a basket having a subchamber therein;

(c) heating means for heating said chamber; and

(d) an absorbent pad removably placed in said basket.

4,767,396

METHOD AND APPARATUS FOR PROCESSING BIOLOGICAL FLUIDS

Edward T. Powers, Medfield, Mass., assignor to Haemonetics Corporation, Braintree, Mass.

Filed Mar. 3, 1987, Ser. No. 21,338
Int. Cl.[4] B04B *9/00, 7/02*
U.S. Cl. 494—60 19 Claims

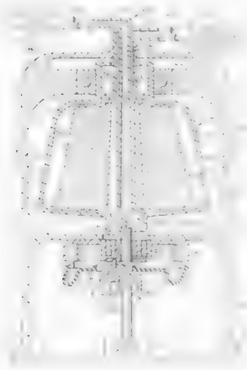
1. Apparatus for processing biological fluids by centrifugal separation comprising:

(a) a fluid processing container having a driven member affixed thereto and adapted to rotate about an axis when driven by a drive member;

(b) an enclosure about said container; said enclosure comprising:

(i) a fixed member;

(ii) an opening in said fixed member through which said driven member is driven;



(iii) coupling means for mechanically coupling external rotary motion to the driven member, said coupling means being non-rotationally translatable about said axis;

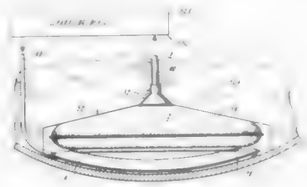
(iv) sealing means for providing a fluid-tight seal between the fixed member and coupling means thereby enclosing said opening.

4,767,397

APPARATUS FOR LIQUID SEPARATION

Rudolph Hohenberg, Wellesley, Mass.; Carl G. Figdor, and Willy S. Bont, both of Amsterdam, Netherlands, assignors to Damon Corporation, Needham Heights, Mass.

Filed Mar. 9, 1987, Ser. No. 23,436
Int. Cl.[4] B04B *7/00*
U.S. Cl. 494—85 16 Claims



1. Container apparatus for containing liquid during centrifugal fractionation and component-isolation, said apparatus having the improvement comprising

A. means forming a flexible container front wall having a first peripheral edge contour,

B. means forming a liquid-funneling port on said front wall substantially centrally within said periphery, and

C. means forming a container back wall having a second peripheral edge contour, said back wall being substantially opposite and coextensive with said front wall,

(1) said back wall means having a flexible peripheral portion bordering a substantially noncompliant inner portion,

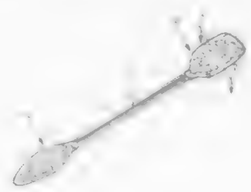
(2) said inner portion being opposite said funneling port and having an area larger than the area of said port at said front wall for extending on said back wall laterally beyond the lateral extent of said port at said front wall.

4,767,398

SWAB APPLICATOR COMPRISING A FLOCK SWAB TIP

William G. Blasius, Jr., Higganum, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Apr. 25, 1986, Ser. No. 855,669
Int. Cl.[4] P61F *2/06*
U.S. Cl. 604—1 8 Claims



1. A swab applicator comprising an applicator stick having mounted on at least one end thereof a one-piece swab formed of a fibrous non-woven material having an outer flock surface.

4,767,399

VOLUMETRIC FLUID WITHDRAWAL SYSTEM

Stephen J. Bollish, San Diego, Calif., assignor to Fisher Scientific Group Inc. dba IMED Corporation, San Diego, Calif.

Filed Dec. 5, 1986, Ser. No. 938,622
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—5 11 Claims



1. A system for volumetric withdrawal of fluid from a patient which comprises:

an assembly having a porous filter and formed with a venous port, an arterial port and a filtrate formed with a venous port, an arterial port and a filtrate port;

a volumetric pump having a fluid chamber of predetermined volume, said chamber having an inlet and an outlet with said inlet connected for fluid communication with said filtrate port to provide a direct effect on the filtering process by said pump and, said pump having a piston slidably received in said chamber to vary the volume of said chamber; and

control means operatively connected with said piston to alternatingly draw fluid from said filter into said chamber

VOL 1093 ISS 5 AG 30 1988 UMI

at a predetermined rate compatible with the capacity of said filter and empty fluid from said chamber through said outlet.

4,767,400

POROUS VENTRICULAR CATHETER

Sandra L. Miller, North Miami, and Leonard Pinchuk, Miami, both of Fla., assignors to Cordis Corporation, Miami, Fla.

Filed Oct. 27, 1987, Ser. No. 113,884
Int. Cl.[4] A61M *25/00*
U.S. Cl. 604—8 **29 Claims**



1. A method for manufacturing a biocompatible ventricular catheter, comprising:

providing a non-porous portion of polymeric tubing having a selected outer diameter;

providing a porous portion of polymeric tubing having a selected outer diameter, said porous portion providing step including extruding a fiber forming biocompatible polymeric material through an orifice to form an elongated fiber, winding said fiber on a mandrel such that the continuous fiber forms a plurality of windings, said windings defining a non-woven cylinder having overlying fibers that contact one another to form a porous outer surface that is resistant to in vivo blockage, and removing said non-woven cylinder from said mandrel;

bonding an open end of said non-porous portion to an open end of said porous portion; and

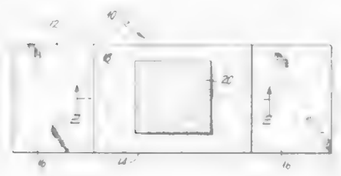
closing and sealing the remaining open end of said porous portion.

4,767,401

IONTOPHORETIC ADMINISTRATION OF IONIZABLE OR POLAR MEDICAMENTS TO A MAMMALIAN BODY

Maurice Seiderman, 3306 Deronda Dr., Hollywood, Calif. 90068

Continuation of Ser. No. 128,715, Mar. 10, 1980, abandoned, which is a continuation of Ser. No. 006,363, Jan. 25, 1979, abandoned, which is a continuation of Ser. No. 896,435, Apr. 14, 1978, abandoned, which is a continuation of Ser. No. 758,774, Jan. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 570,384, Apr. 22, 1975. This application Aug. 26, 1982, Ser. No. 411,657
Int. Cl.[4] A61N *1/30*
U.S. Cl. 604—20 **22 Claims**



1. A bandage for iontophoretically administering a topical or systemic ionizable or polar medicament to a mammalian body having a wound, lesion, or the like thereon, comprising:

(a) a substrate

(b) an ionizable or polar medicament borne on said substrate, which medicament is responsive, in terms of migration to an electric field; and

(c) a single electrode of an electrochemically-active material in electrically cooperative relationship with said medicament, for generating an iontophoretically effective, localized electric current between said medicament and the mammalian body to which the bandage is applied, to thereby cause the medicament to migrate deeply within said wound, lesion, or the like upon activation of the bandage by electrolytic fluids.

4,767,402

ULTRASOUND ENHANCEMENT OF TRANSDERMAL DRUG DELIVERY

Joseph Kost, Omer; Drora Levy, Herzlia, both of Israel, and Robert S. Langer, Somerville, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jul. 8, 1986, Ser. No. 883,111
Int. Cl.[4] A61B *17/20*
U.S. Cl. 604—22 **12 Claims**

1. A method for enhancing and controlling transdermal infusion of molecules comprising:

(a) selecting the molecules having a low rate of permeability through the skin to be infused;

(b) applying to the skin said molecules in a medium with an absorption coefficient similar to that of water;

(c) applying ultrasound to said molecules in said medium at a frequency of between 20 kHz and 10 MHz and an intensity of between 0 and 3 W/cm^2; and

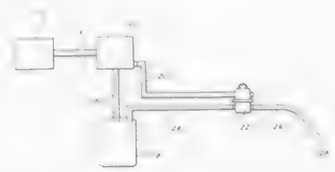
(d) varying the frequency and intensity over time to transdermally infuse said molecules at an optimal rate into the circulatory system without delay or damaging the skin, wherein the optimal rate is determined by measurements of a physiological fluid.

4,767,403

POSITIVE PULSE DEVICE AND SYSTEM

Colin G. Hodge, Columbia, Md., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Feb. 9, 1987, Ser. No. 12,520
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—35 **14 Claims**



1. A positive pulse device for use in a system for withdrawing fluids from a patient cavity and for selectively returning a portion of the withdrawn fluids back toward the patient cavity to clear obstructions, said device comprising;

(a) a housing, a patient catheter said housing having an inlet for connection to a regulated vacuum source and an outlet means for connection to said a patient catheter in place in a patient cavity,

(b) valve means in said housing intermediate said inlet and said outlet means, said valve means being normally closed,

(c) a reflux chamber within said housing formed between said valve means and said outlet means,

(d) means to expand said reflux chamber at predetermined intervals to withdraw fluid from said outlet and to draw a vacuum at said outlet means,

(e) means to initially open said valve means a predetermined distance at or prior to the vacuum level at said outlet means reaching a predetermined amount to allow vacuum from the regulated source of vacuum to reach the patient cavity,

(f) means to close said valve means after a predetermined period of time,

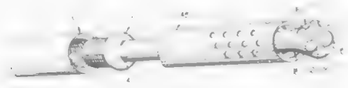
(g) means to collapse said reflux chamber after closing said valve means to force fluid contained in said reflux chamber back through said outlet to the patient cavity.

4,767,404

SURGICAL SUCTION DEVICE HAVING A PERFORATED SLEEVE

Derric Renton, Louisville, Ky., assignor to R & S Associates Co., Louisville, Ky.

Filed Jul. 14, 1986, Ser. No. 885,447
Int. Cl.[4] A61M *31/00*
U.S. Cl. 604—48 **11 Claims**



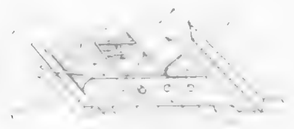
1. A suction device for attachment to a vacuum source for removal of surgical debris comprising: an elongated section containing a hollow central suction conduit and having a first end opposite a perforate end section extending outwardly from said elongated section and through which said central suction conduit continues, the perforations in the surface of said perforate end section forming suction port openings which communicate with said central suction conduit via suction port conduits through said perforate end section; said perforate end section having a first surface portion with at least one suction port opening thereon extending from the end of said elongated section to the widest part of said end section, which is wider than said elongated section, and a second surface portion with at least one suction port opening thereon extending from the widest part of said end section to the distal end of said end section; and a perforated sleeve disposed coaxially with the elongated section extending from the widest part of the perforate end section to the first end of the elongated section.

4,767,405

STERILE CASSETTE

Oddvin Lokken, 131 Forest Ave., Rye, N.Y. 10580

Filed Apr. 3, 1987, Ser. No. 34,787
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—51 **12 Claims**



1. A cassette assembly, which comprises first sterile packaging enclosing

A. a sterile cassette comprising an elongated flexible support having top and bottom surfaces, an outer edge defining the boundary of said support, an inner edge defining an opening in said support, and means for attaching said bottom surface to the skin of a patient;

elongated wall means projecting from said top surface of said support and extending around said inner edge, said wall means having an inner surface enclosing said opening, said wall means further having an open top, an open bottom, and an entrance at one end;

a flexible transparent bag having opposed open and closed ends connected at its open end to said wall means and closing said entrance, said entrance providing free communication between the interior of said bag and the interior of said wall means;

tubing sealed to and passing through said bag with one end inside and the other end outside said bag;

a needle assembly support carried by said wall means adjacent said entrance and projecting into the interior of said wall means;

a needle assembly comprising a needle having a hub at one end and a point at the other, and a cannula removably telescoped over said needle with said pointed end exposed, said needle assembly being supported inside said needle assembly support with said hub projecting away from said needle assembly support and into said bag;

said needle assembly support including means for removably holding said needle with or without said cannula telescopically mounted thereon;

cover members for removably adhesively closing said open top and open bottom of said wall means; and

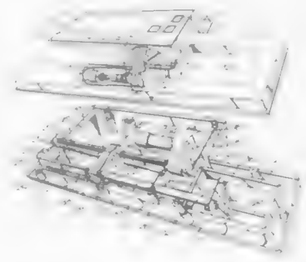
B. a sterile transparent cover means packaged within a second sterile packaging.

4,767,406

SYRINGE PUMPS

Paul Wadham, Winchester; Walter H. Cox, Weybridge, and Ching B. Lim, Basingstoke, all of Great Britain, assignors to Vickers Plc., London, Great Britain

Filed Oct. 10, 1986, Ser. No. 917,712
Claims priority, application United Kingdom, Oct. 11, 1985, 1511[illegible]
Int. Cl.[4] A61M *37/00*
U.S. Cl. 604—155 **14 Claims**



1. A syringe pump for actuating a syringe having a plunger element which comprises:

(a) a casing;

(b) within said casing, a motor;

(c) an externally screw-threaded drive rod connected at one end thereof to said motor so that, in use, the motor can rotate the drive rod about its axis, the other end of said drive rod being free to rotate in a journal bearing;

(d) a carriage mounted for sliding movement within said casing and driveably mounted on said drive rod in engagement with the external screw-thread thereof said carriage actuating said plunger element;

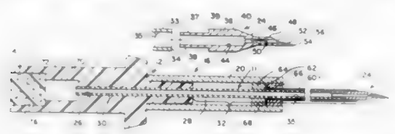
(e) a strain gauge operatively connected to measure the torque reaction between said motor and said carriage when the carriage acts, in use, against the plunger element of the syringe to expel fluid from the syringe;

(f) means located externally of the main body of the casing for holding the syringe in position on the syringe pump;

VOL 1093 ISS 5 AG 30 1988 UMI

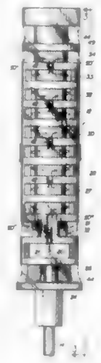
(g) means for sensing the position of said carriage with respect to the ends of said drive rod;
(h) a microprocessor arranged to receive input signals from said string gauge and said carriage position sensing means and to derive therefrom (when the syringe pump is in use) firstly the fluid delivery rate and secondly the fluid delivery pressure; and
(i) a control system, acting through said microprocessor, to input operating commands to the syringe pump.

4,767,407
HYPODERMIC NEEDLE, CATHETER AND METHOD
Scot J. Foran, 246 S. Maple, #3W, Oak Park, Ill. 60302
Filed Jul. 14, 1986, Ser. No. 885,430
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—164 12 Claims



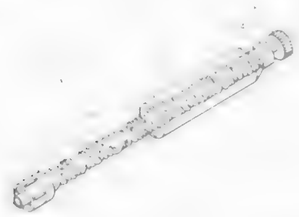
1. An improved hypodermic needle assembly for intravenous use in positioning a catheter within a vein, said needle assembly comprising, in combination, a principal needle portion and a proximal tip assembly portion, said principal needle portion comprising a cannula and means at the distal end of said cannula for attachment to a needle hub portion, said cannula having a proximal end opposite said distal end; a cylindrical exterior shank or gauge portion of a given diameter, a central bore or lumen portion of a given diameter and an annular end face at said proximal end of the cannula, said cannula at its proximal end receiving and positioning said proximal tip assembly portion, said tip assembly portion comprising a tip body having a first tip body gauge portion of substantially the same diameter as said gauge portion of said cannula, and a tip body rear extension, said rear extension having a gauge portion of a reduced diameter in relation to the diameter of said first body portion and a radial shoulder extending between said tip body rear extension and said first tip body gauge portion, said tip body shoulder engaging said proximal annular end face of said cannula, said tip assembly further including a major diameter passage or lumen extending through said rear extension gauge portion and at least a part of said tip body, with said tip assembly further including a generally frustoconical tip body bevel extending from said first tip body gauge portion, a proximal or exposed tip gauge portion of reduced diameter relative to the diameter of said cannula gauge portion extending from said body bevel, said tip assembly further including a pointed tip portion at the proximal end of said exposed tip gauge portion said pointed tip portion comprising a tip heel portion, a tip bevel and a pointed end said tip bevel extending between said pointed end and said tip heel portion, the proximal end of said tip body having a reduced diameter passage or lumen extending axially therethrough and communicating at its remote end with the interior of said major diameter lumen, the remote end of said reduced diameter lumen lying within said tip body, wherein a catheter is slidably receivable over said needle assembly such that a proximal end of the catheter is in substantially close proximity with said generally frustoconical tip body bevel, and whereby the proximal end of the catheter is adapted to be positioned within a vein when said tip body bevel is inserted into the same vein such that the catheter will remain in the vein when the needle assembly is removed from the vein.

4,767,408
FLASHBACK STRUCTURE
Richard H. McFarlane, Geneva, Ill., assignor to Taut, Inc., Geneva, Ill.
Continuation-in-part of Ser. No. 843,493, Mar. 24, 1986, Pat. No. 4,710,173. This application Nov. 27, 1987, Ser. No. 128,004
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—168 8 Claims



1. A flashback structure of the type used to determine proper placement of a needle tip within a blood vessel, such as when placement of a catheter assembly within the blood vessel is being attempted, said structure comprising:
(a) a base having an elongated configuration and an outer surface comprising a substantially elongated cylindrical configuration and including a needle extending outwardly from one end of said base, said needle terminating in a sharpened tip at a distal end thereof,
(b) said needle comprising a hollow interior portion extending along the length thereof from said tip to a proximal end of said needle, said proximal end secured on the interior of said base, whereby blood travels along said needle into said base when said tip is located within said blood vessel,
(c) a flow channel integrally formed on said outer cylindrical surface of said base and disposed in fluid communication with said needle at substantially one end of said base and a vent means at the opposite end of said flow channel relative to said needle,
(d) said vent means formed at least in part on said cylindrical outer surface of said base for the exiting of air from said flow channel as blood enters therein from said needle,
(e) said flow channel comprising a groove structure extending along at least a portion of the length of said base and comprising a plurality of groove segments,
(f) said plurality of groove segments integrally formed in said cylindrical outer surface in spaced relation to one another and collectively extending between and in fluid communication with said proximal end of said needle and said vent means,
(g) each of said groove segments comprising a curvilinear configuration disposed transversely to the length of said base in at least partially surrounding relation thereto and extending into said base a sufficient depth to allow a free flow of blood therealong,
(h) cover means being at least partially transparent and mounted in engaging and surrounding relation to said cylindrical outer surface of said base and in covering, fluid retaining relation to said plurality of groove segments and said vent means,
(i) at least one supplementary chamber formed in said cylindrical outer surface in spaced relation to an endmost groove segment at one end of said flow channel, said supplementry chamber being covered by said cover means and adapted to be in fluid communication with said flow channel between an inner surface of said cover means and said cylindrical outer surface in the event there is an imperfection on the cylindrical outer surface, and
(j) whereby blood inadvertently leaking from said one end of said flow channel beneath said cover means will be retained within said supplementary receiving chamber.

4,767,409
CATHETER PROTECTIVE SHIELD
Frederick C. Brooks, Athens, Tex., assignor to Edward Weck Incorporated, Princeton, N.J.
Filed May 23, 1983, Ser. No. 497,324
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—171 7 Claims



1. A catheter protective shield for an indwelling catheter comprising:
(a) front and rear hubs having central passages, said passages each being sized an indwelling permit movement of said catheter through said hubs;
(b) a flexible protective sleeve interconnecting the two hubs, said protective sleeve providing a continuous, protective covering for a catheter which extends between said hubs;
(c) an external support tube adapted to interconnect said hubs, said external support tube having a length which is substantially shorter than the length of said flexible protective sleeve, whereby said flexible protective sleeve is enclosed by said external support tube when said external support tube interconnects said hubs.

4,767,410
IMPLANTABLE INFUSION PORT
James R. Moden, Bristol; Michael D. Caldwell, East Greenwich, and Robert D. Moden, Barrington, all of R.I., assignors to Surgical Engineering Associates, Inc., Bristol, R.I.
Division of Ser. No. 809,773, Dec. 16, 1985, Pat. No. 4,710,174. This application Jun. 19, 1987, Ser. No. 65,643
Int. Cl.[4] A61M *5/00*
U.S. Cl. 604—175 4 Claims



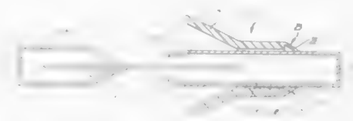
1. An implantable infusion port for dispensing medication in the body of a patient comprising a septum having a base portion, a side wall portion and a top wall portion which cooperate to define an enclosed cavity in said septum, said side wall portion being made of a material which is penetrable by a hypodermic needle or the like for introducing medication into said cavity but which is substantially self-sealing upon removal of said needle therefrom, catheter means providing communication between said cavity and the exterior of said septum for dispensing said medication in the body of said patient, and needle shield means embedded in said side wall portion for guiding the tip of a needle inserted into said side wall portion so that it passes into said cavity.

4,767,411
PROTECTIVE CATHETER SLEEVE
L. Henry Edmunds, 130 N. Roberts Rd., Bryn Mawr, Pa. 19010
Filed Jul. 14, 1987, Ser. No. 72,913
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—180 17 Claims



1. A protective catheter sleeve, comprising:
a flexible boot having a surrounding side wall, a open bottom end, and an open top end for receiving the catheter therethrough;
means for adhesively securing the bottom end of said boot about a catheter puncture site in the skin of a patient;
means for securing the top end of said boot in sealing engagement about the catheter to define a chamber enclosing adjacent portions of the catheter and skin at the puncture site; and
means defining a needle access port in the wall of said boot for selectively injecting and withdrawing antiseptic solution therein.

4,767,412
FINGER GUARDS
Victor Hymanson, Whitefield, United Kingdom, assignor to Seldoren Limited, Bury, United Kingdom
Filed Feb. 3, 1987, Ser. No. 10,331
Claims priority, application United Kingdom, Jun. 10, 1986, 8614029; Jul. 2, 1986, 8616190; Jan. 13, 1987, 8700707
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—192 8 Claims



1. A finger guard for use with a storage tube for a hypodermic needle, said guard comprising a body having a through bore therein and being adapted to fit securely yet removably around said storage tube when the latter is received in said bore, said body having a finger grip portion, a guard portion

VOL 1093 ISS 5 AG 30 1988 UMI

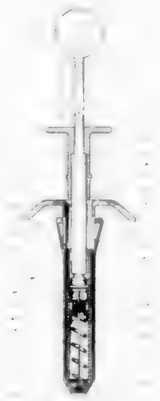
disposed in front of and projecting transversely beyond said finger grip portion, and a tube gripping portion comprising flap means extending radially inwardly of said body into said through bore and deformable axially thereof by a storage tube when received in said bore, whereby said flap means resiliently grips said storage tube.

4,767,413

DENTAL SYRINGE HAVING AN AUTOMATICALLY RETRACTABLE NEEDLE

Terry M. Haber, Lake Forest; William H. Smedley, Lake Elsinore, and Clark B. Foster, El Toro, all of Calif., assignors to Habley Medical Technology Corporation, Laguna Hills, Calif.

Filed Apr. 20, 1987, Ser. No. 39,715
Int. Cl.[4] A61M *5/32*
U.S. Cl. 604—198 **26 Claims**



1. A syringe including a hollow cylinder having an open proximal end and a substantially closed distal end, a pre-filled ampule loaded into said cylinder through the proximal end thereof, said ampule having a sealed cap at one end thereof, and a double ended hypodermic needle loaded into said cylinder ahead of said ampule and arranged in spaced axial alignment with said ampule, said syringe also including:

means for advancing said ampule axially and distally through said cylinder so that a proximal end of said needle penetrates the end cap of said ampule and a distal end of said needle projects outwardly from said cylinder past the distal end thereof; and

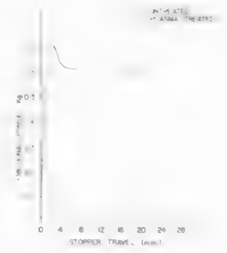
locking means for releasably retaining said ampule at the distally advanced position within said cylinder, said locking means including at least one locking arm being pivotally connected to said syringe cylinder so as to be rotatable inwardly through an opening in said cylinder and towards said ampule to retain said ampule at said distally advanced position, said locking arm also being rotatable outwardly and away from said ampule for releasing said ampule from the distally advanced position.

4,767,414

IONIZING PLASMA LUBRICANT METHOD

Joel L. Williams, Cary; David A. Martin, Raleigh, and David B. Montgomery, Cary, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 734,438, May 16, 1985. This application Apr. 10, 1987, Ser. No. 36,733
Int. Cl.[4] A61M *5/315*
U.S. Cl. 604—230 **9 Claims**



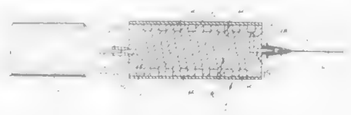
1. An article having reduced breakout and sustaining forces comprising a plasma-treated surface, a second surface slidably engaged therewith and a plasma-treated lubricant at the interface of said surface.

4,767,415

SYRINGE AND NON-LINEAR PASSAGEWAY RESERVOIR FOR USE THEREWITH

George J. Duffy, Foxrock, Ireland, assignor to Institute for Industrial Research and Standards, Dublin, Ireland

Continuation of Ser. No. 706,423, Feb. 27, 1985, abandoned. This application Apr. 1, 1987, Ser. No. 32,697
Claims priority, application Ireland, Mar. 2, 1984, 504/84; Jan. 30, 1985, 216/85
Int. Cl.[4] A61M *5/18*
U.S. Cl. 604—232 **8 Claims**



1. A device for storing a discrete quantity of liquid for use with a medical syringe (2) and a needle (3), the syringe having a reservoir (5), the device comprising:

(a) a body member (10) comprising:

a sleeve (12) having a bore of circular cross sectional area, and

a core member (11) of circular cross sectional area for tightly fitting in the bore of the sleeve, and the core member (11) having a helical groove formed around the periphery thereof for defining with the sleeve a helical passageway (15) for storing the discrete quantity of liquid, wherein the passageway (15) has a first open end and a second open end, the first open end being disposed adjacent one end of the body member, and the second open end being disposed adjacent the other end of the body member,

(b) a first connecting member (17), integrally attached to the body member and extending therefrom, for rigidly attaching the body member to the syringe, the first connecting member having a bore therethrough for communicating the first open end of the passageway with the reservoir, and

(c) a second connecting member (18), integrally attached to the body member and extending therefrom, for rigidly attaching the body member to the needle, the second connecting member having a bore therethrough for communicating the second open end of the passageway with the needle.

4,767,416

SPRAY NOZZLE FOR SYRINGE

Stephen J. Wolf, Manville, and James P. Dellas, East Brunswick, both of N.J., assignors to Johnson & Johnson Patient Care, Inc., New Brunswick, N.J.

Filed Dec. 1, 1986, Ser. No. 936,534
Int. Cl.[4] A61M *5/325*
U.S. Cl. 604—239 **5 Claims**



1. A spray syringe comprising, in combination, a hypodermic syringe having a luer fitting and a tubular member terminating in a liquid spray orifice, means for attaching said tubular member directly to said fitting and said tubular member includes a flexible conduit section between said fitting and said liquid spray orifice.

4,767,417

DRAINAGE DEVICE FOR COLLECTING LIQUIDS FROM A BODY CAVITY

John R. Boehringer, Wynnewood; John Karpowicz, Havertown, and Steven T. Sutter, Blue Bell, all of Pa., assignors to Boehringer Laboratories, Wynnewood, Pa.

Filed Feb. 18, 1986, Ser. No. 830,577
Int. Cl.[4] A61M *1/00*
U.S. Cl. 604—31 **35 Claims**

1. A drainage apparatus for collection of matter including liquids and any solids carried therewith from a body cavity of a mammal when in normal, upstanding disposition, said apparatus comprising:

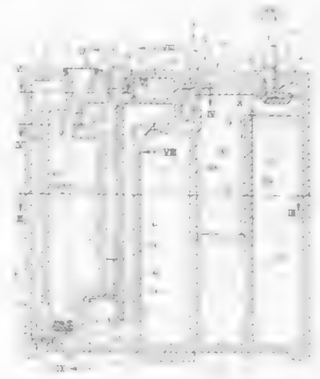
(a) a vacuum opening,

(b) a collection chamber having an inlet opening adapted to be placed in communication with the cavity to be drained, with said chamber being in fluid communication with the vacuum opening,

(c) a sampling collection means in the apparatus at the inlet opening to the collection chamber for accumulating a specimen of recent inlet matter therein, and an openable access means to the sampling collection means from outside the apparatus for sampling a specimen from the collection means,

(d) a means vacuum line for regulating the vacuum drawn on the collection chamber, and

(e) a gas permeable, liquid impermeable one way valve means for allowing gas flow between said collection chamber and the vacuum opening only from the collection chamber to the vacuum opening when the apparatus is in said normal, upstanding disposition, and said valve means being constructed so as to act as a seal when the chamber is upset.

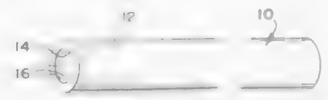


4,767,418

LUMINAL SURFACE FABRICATION FOR CARDIOVASCULAR PROSTHESES

William D. Deininger, Pasadena, and Stephen B. Gabriel, La Crescenta, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Feb. 13, 1986, Ser. No. 829,278
Int. Cl.[4] A61F *2/04, 2/06*
U.S. Cl. 623—1 **4 Claims**



3. A synthetic blood vessel comprising:

a tubular structure having an internal surface and forming a multiplicity of blind holes in said surface, each of said holes having a width on the order of 10 micrometers and the holes having walls substantially perpendicular to said internal surface along most of the depths of said holes.

VOL
1093
ISS
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AG
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1988
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4,767,419

PROTECTIVE PAD FOR CRIB RAIL

Mary E. Fattore, 231 Chestnut St., Turnersville, N.J. 08012

Filed Sep. 28, 1987, Ser. No. 101,469
Int. Cl.[4] A47D *15/00*
U.S. Cl. 5—508 8 Claims



1. A protective pad for a crib rail having a plurality of spaced slats connected thereto comprising:

an inverted U-shaped body of soft resilient material extending over the top and sides of the rail;

a thin flexible sheet-like material covering said resilient material;

a plurality of fastener means carried on opposed edges of said pad, said fastener means, when fastened, extending between adjacent slats to detachably maintain said body in said U-shape, and

a pneumatic noisemaker including an elongated air-filled tube having a reed adjacent one end thereof, said noisemaker being located within said body so as to overlie said rail when said pad is in place whereby said noisemaker emits a noise whenever a force is applied to said pad.

4,767,420

TRANSFER PRINTING SHEET WITH IMPREGNATING AGENTS AND TWO-COMPONENT ELECTROPHOTOGRAPHIC TONER AND TRANSFER PRINTING OF TEXTILE MATERIALS OF COTTON

Wolfgang Mehl, Geneva, and Albert Amon, Lausanne, both of Switzerland, assignors to Sicpa Holding S.A., Switzerland

Division of Ser. No. 681,832, Dec. 14, 1984, Pat. No. 4,664,670.
This application Jan. 23, 1987, Ser. No. 6,729
Claims priority, application Switzerland, Dec. 16, 1983, 6715/83
Int. Cl.[4] B41M *5/02;* C09D *11/02;* C03G *9/08;* D06P *1/44*
U.S. Cl. 8—470 15 Claims

1. In a process for the preparation of a transfer printing support in sheet or web form for the thermoprinting of hydroxyl group or nitrogen containing textile fiber materials, comprising the steps of:

(a) providing an electrophotographic toner of the two-component type by blending finely divided toner particles having a particle size of from 5 to 20 micrometers containing at least one dyestuff and a polymeric binder, with a particulate carrier, the carrier particles being coarser than the toner particles,

(b) providing a latent electrostatic image on a photoconductor surface by electrophotography,

(c) developing said latent electrostatic image of step (b) by means of the toner of step (a),

(d) transferring said developed image of step (c) onto a flat flexible transfer printing substrate, and

(e) fixing said transferred image obtained in step (d) on said transfer printing substrate by at least one means selected from heat and pressure, the improvements comprising:

(1) using dyestuff in step (a) which is not substantially water soluble at leasat at neutral pH, which doess not visibly sublime under the conditions of sublimation transfer printing and which is capable of thermosoling,

(2) using in step (d) a flat flexible transfer printing substrate which has been coated with a mixture of at least one impregnating agent which is a non-toxic organic substance containing at least one nitrogen atom in its molecule, which is solid up to 60° C. and has a melting temperature in the range from 60° C. to 230° C., which is liquid up to at least 230° C. and substantially colorless, and which is not a film-forming polymer wherein the impregnating agent is selected from the group consisting of caprolactam, nicotinic amide, isonicotinic amide, propylene urea, ethylene urea, glyoxal monurein, urea, 5,5-dimethyl hydantoin, imidazol, 2-methyl imidazol, N-methyl pyrrolidone, N-hydroxy succinimide, biuret, dimethylol urea, dimethylol hydroxyethylene urea, dimethylol ethylene urea, and mixtures thereof; and a polymeric binder,

(3) said dyestuff of step (1) and said impregnating agent of step (2) being selected such that the impregnating agent in its liquid state but not in its solid state has solvent properties for said dyestuff.

4,767,421

METHOD OF MANUFACTURING A WATER-INSOLUBLE DYE LAYER ON A SUBSTRATE AND SUBSTRATE COMPRISING A DYE LAYER OF A CATIONIC DYE OR AN ANIONIC DYE ION EXCHANGED WITH AN OPPOSITE ION

Jan van der Vees; Dirk J. Gravesteijn, both of Eindhoven, and Cornelis J. Schoot, Leende, all of Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 797,557, Nov. 13, 1985, abandoned.
This application Jun. 2, 1987, Ser. No. 57,726
Claims priority, application Netherlands, Nov. 28, 1984, 8403617
Int. Cl.[4] B05D *3/10;* C03C *17/28;* B01J *41/02;* B32B *17/06*
U.S. Cl. 8—523 5 Claims



1. A method of manufacturing a water-insoluble dye layer on a solid substrate formed of glass or a synthetic resin in which a layer of a solution of a cationic or an anionic dye in an organic solvent inert to said substrate is provided on the substrate and the solvent is removed by evaporation, characterized in that after removing the solvent, the layer is treated with an aqueous solution of a salt the cation of which forms with said layer of said anionic dye a water-insoluble dye, in which the cation of the anionic dye is exchanged for the cation of the salt and a water-insoluble dye layer is obtained, or the layer is treated with an aqueous solution layer of a salt or an acid the anion of which forms with said layer of said cationic dye a water-insoluble dye layer in which the anion of the cationic dye is exchanged for the anion of the salt or the acid and a water-insoluble dye layer is also obtained.

4,767,422

COMPOSITE SEPARATION MEMBRANES AND THE PREPARATION AND USE THEREOF

Benjamin Bikson, Brookline; Salvatore Giglia, Norwood, and Gregory Kharas, Chelmsford, all of Mass., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 8, 1987, Ser. No. 35,783
Int. Cl.[4] B01D *53/22*
U.S. Cl. 55—16 28 Claims

17. A post-treated composite membrane suitable for gas, pervaporation or prestructure separations comprising a separation layer that determines the separation characteristics of the membrane and a porous support layer, said separation layer containing imperfections that are plugged by minute amounts

VOL 1093 ISS 5 AG 30 1988 UMI

of additives, said composite membrane having been post-treated for the repair of said imperfections by a process consisting essentially of:

(a) contacting said separation layer with a volatile post-treatment solution system comprising a volatile solvent having essentially non solvent or mild swelling characteristics with respect to the composite membrane materials, said solvent containing minute amounts of non-volatile additives as it contacts and fills said imperfections; and

(b) evaporating said volatile solvent from the composite membrane, said minute amounts of additives remaining in and serving to plug preferentially and essentially said imperfections only, whereby the post-treatment process serves to repair the separation layer of the composite membrane, enhancing the selectivity thereof and enabling advantageous combinations of selectivity and permeability to be achieved by the use thereof.

22. An improved process for the separation of a more permeable component of a fluid feed mixture from a less permeable component thereof by gas, pervaporation or perstructure separations, including contacting said feed mixture with the feed side of a composite membrane suitable for gas, pervaporation or prestructure separation operations, and separately withdrawing said more permeable component as a permeate stream and said less permeable component as a non-permeate stream, said composite membrane having a separation layer that determines the separation characteristics of the membrane and a porous support layer, said composite membrane having been post-treated by a process consisting of:

(a) contacting said separation layer with a volatile post-treatment solution system comprising a volatile solvent having essentially non-solvent or mild swelling characteristics with respect to the composite membrane materials, said solvent containing minute amounts of non-volatile additives as it contacts and fills said imperfections; and

(b) evaporating said volatile solvent from the composite membrane, said minute amounts of additives remaining in and serving to plug preferentially and essentially said imperfections only, whereby the post-treatment process serves to repair the separation layer of the composite membrane, enhancing the selectivity thereof and enabling advantageous combinations of selectivity and permeability to be achieved in said separation process.

4,767,423

VARIABLE INTENSITY RAPPING

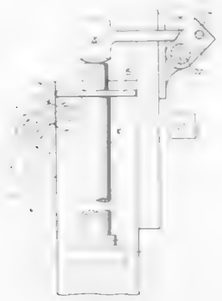
Alan P. Baylis, Walsall, England, assignor to Dresser U.K. Limited, A British Company, London, England

Filed Jan. 27, 1987, Ser. No. 7,208

Claims priority, application United Kingdom, Jan. 30, 1986, [redacted]

Int. Cl.[4] B03C *3/76*

U.S. Cl. 55—112 7 Claims



1. An improved rapping mechanism for use in an electrostatic precitator which includes an electrode support therefore, a drop rod having a collar near the upper end thereof, means engageable with the collar for raising and dropping the rod to strike the support applying a rapping impact to the electrode, the improvement comprising means engageable with the drop rod for movement with the drop rod for increasing the impact force applied by the drop rod independently of the amount by which the drop rod is raised.

4,767,424

COLUMN FOR REMOVING LIQUID FROM A GAS

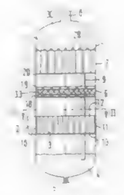
Malcolm W. McEwan, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 5, 1986, Ser. No. 836,371

Claims priority, application Netherlands, Mar. 5, 1985, [redacted]

Int. Cl.[4] B01D *19/00*

U.S. Cl. 55—184 11 Claims



1. In a column for removing liquid from a gas within a vertical column which contains a centrifugal liquid separator means, a horizontal coalescer, a gas inlet, a gas outlet and a liquid outlet, an improvement in which:

the horizontal coalescer is located above the gas inlet and extended over the whole cross section of the vertical column;

above the horizontal coalescer and also extended over the whole cross section of the column, the centrifugal liquid separator which consists of upper and lower horizontal trays between which a plurality of vertical swirl tubes which extend from an opening in the lower horizontal tray to some distance below a coaxial opening in the upper horizontal tray;

each vertical swirl tube being provided with a means for the discharge of secondary gas and of liquid from the space between the upper and lower horizontal trays outside the vertical swirl tubes and the lower part of each vertical swirl tube containing a means to impart to the gas a rotary movement about a vertical axis;

a means for the discharge of liquid from the space between the upper and lower horizontal trays in communication with the liquid outlet; and

the liquid outlet is located below the gas inlet and the gas outlet is located above the centrifugal liquid separator.

4,767,425

ASPIRATOR MECHANISM FOR TURBINE ENGINE AIR CLEANER

Harry R. Camplin, Marine, and Donald R. Monson, St. Paul, both of Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 6, 1987, Ser. No. 70,752

Int. Cl.[4] B01D *45/04*

U.S. Cl. 55—306 20 Claims

1. In a military vehicle, a turbine engine comprising an elongated structure having an air intake opening at one of its ends and a horizontally oriented exhaust opening at its other end for discharging combustion gases vertically and upwardly; an elongate exhaust duct connected to said exhaust opening for conducting combustion gases from the engine to a point outside the vehicle; said exhaust duct extending generally horizontally away from the engine in a plane above the plane of the exhaust opening; an air cleaner box having a first end and a second end; clean air passage means extending from said first end of the box to the engine air intake opening, and dirt-laden air passage means extending from the second end of the box:

the improvement comprising an elbow section in the exhaust duct, the elbow section communicating directly with the exhaust opening for turning the upflowing gases horizontally as said gases move out of the exhaust opening; and an aspirator means connected to said dirt-laden air passage means for introducing the dirt-laden air to the gas stream flowing through said exhaust duct; said aspirator means including a chamber means underlying the exhaust duct, and means connecting the defined chamber to the interior of the exhaust duct; the connecting means defining a slot-like orifice located in a lower portion of the exhaust duct immediately downstream from the gas-turning zone defined by the aforementioned elbow section.



4,767,426

MEMBRANE FILTER TUBE AND METHOD OF PREPARATION

Robert Daly, Haverhill, Mass., and Paul E. Rebe, Derry, N.H., assignors to Whatman Reeve Angel plc, Maidstone, England

Filed Oct. 5, 1987, Ser. No. 103,015

Int. Cl.[4] B01D *50/00*

U.S. Cl. 55—487 33 Claims



1. A membrane filter which membrane filter comprises in combination:

(a) a cylindrical porous prefilter tube for the filtration of fluids having an exterior and an interior surface and having a one and an other end and of defined edge thickness at the one and other end, the filter tube being a self-supporting, end axially-compressible, self-gasketing filter tube; and

(b) a microporous cylindrical membrane in a close fitting, snug, secure relationship about the exterior surface of the filter tube and across the full edge width of the filter tube, at each end of the filter tube, to provide a membrane filter which is capable of sealing against a housing surface by axial compression across the edge width containing the microporous membrane.

4,767,427

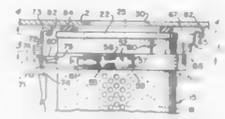
CARTRIDGE FILTER MOUNTING APPARATUS

Joseph A. Barabas, Pen Argyl; Norman D. Phillips, Bethlehem, and Joseph G. Polacer, Allentown, all of Pa., assignors to Fuller Company, Bethlehem, Pa.

Filed Oct. 30, 1987, Ser. No. 115,222

Int. Cl.[4] B01D *46/42*

U.S. Cl. 55—493 11 Claims



1. Apparatus for filtering a gas stream comprising a housing having a tube sheet dividing the housing into a dirty gas chamber having an inlet for dirty gas to be filtered and a clean gas chamber having an outlet for filtered gas; said tube sheet having at least one opening therethrough providing communication between the dirty gas chamber and the clean gas chamber; at least one filter element operatively associated with the opening through the tube sheet whereby gas to be filtered enters the dirty gas chamber, flows through the filter element and the opening in the tube sheet to the clean gas chamber and particulate material in the gas stream is collected on the surface of the filter element; and means for securing the filter element to the tube sheet including a removable clamping band surrounding the filter element, a plurality of circumferentially spaced apart support clips secured to the tube sheet and surrounding the opening in the tube sheet and a plurality of latch means mounted on said clamping band; each cooperating with one of said support clips.

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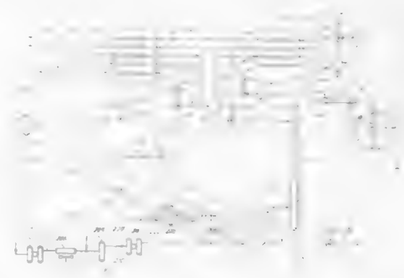
NITROGEN REMOVAL SYSTEM

Fred Apffel, Houston, Tex., assignor to Flexivol, Inc.

Continuation-in-part of Ser. No. 598,051, Apr. 9, 1984, Pat. No. 4,597,788, which is a division of Ser. No. 356,918, Mar. 10, 1982, Pat. No. 4,456,460. This application Apr. 4, 1986, Ser. No. 848,381

Int. Cl.[4] F25J *3/02*

U.S. Cl. 62—24 7 Claims



1. A process for separating a nitrogen rich hydrocarbon stream, comprising:

A. Cooling the nitrogen rich hydrocarbon stream in an

VOL 1093 ISS 5 AG 30 1988 UMI

indirect heat exchanger with a mixed component refrigerant having at least three components:

B. Separating heavier naturally occurring hydrocarbons in the nitrogen rich hydrocarbon stream from the rest of the nitrogen rich hydrocarbon stream;

C. Cooling the lighter components remaining stream in an indirect heat exchange with cooled components of the lighter components remaining stream; and

D. Multi-stage flash separating heavier portions of the lighter components remaining stream into a first product stream which is a nitrogen rich, low heating value stream and a second product stream which is a predominately methane gas stream of approximately 1000 BTU content.

4,767,429

GLASS BODY FORMED FROM A VAPOR-DERIVED GEL AND PROCESS FOR PRODUCING SAME

James W. Fleming, Fanwood, and Sandra A. Pardenek, Westfield, both of N.J., assignors to American Telephone & Telegraph Co., AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 11, 1986, Ser. No. 940,393

Int. Cl.[4] C03B *37/00*; C03C *25/02*

U.S. Cl. 65—3.11 **21 Claims**



1. A method of producing a silica-containing glass body, the method comprising

(a) forming a silica-containing gel by a process that comprises introducing a gas stream into an aqueous liquid medium, the gas stream comprising an effective concentration of gaseous silicon halide, such that the silica-containing gel is formed; and

(b) producing at least a portion of the silica-containing glass body from the gel.

20. Method of producing an optical fiber comprising

(i) producing an optical fiber preform by a process that comprises

(a) introducing a gas stream into an aqueous liquid medium, the gas stream comprising an effective concentration of a gaseous silicon halide, such that a silica-containing gel is formed from the aqeous liquid medium;

(b) producing substantially dry particles from the gel; and

(c) fusing the particles to a glass rod comprising a core region of relatively higher refractive index and a cladding region of relatively lower refractive index surrounding the core region; and

(ii) drawing the optical fiber from the preform.

4,767,430

OPTICAL FIBER-DEVICE INTERCONNECTION AND METHOD

Charles W. Deneka, Painted Post, and Donald B. Keck, Big Flats, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 15, 1985, Ser. No. 765,654

Int. Cl.[4] C03C *25/06*

U.S. Cl. 65—4.2 **8 Claims**

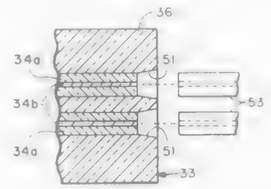
1. A method of making an optical device having a well that is adapted to receive a corresponding protrusion on another optical device, said method comprising the steps of

providing an optical device formed of a matrix glass that is resistant to dissolving in a given solvent, said device having at least one optical waveguide extending longitudinally therethrough and intersecting at least a first surface of said optical device, said at least one optical waveguide comprising an elongated glass core surrounded by a layer of cladding glass that is soluble in said given solvent, and

immersing in a bath of said solvent at least that end of said device having said surface to remove that portion of said cladding glass which is exposed to said solvent to a depth sufficient to form a well the dimensions of which accommodate said protrusion.

5. A method of aligning an optical fiber with respect to an optical device comprising the steps of

providing an optical device formed of a matrix glass that is resistant to dissolving in a given solvent, said device having at least two optical waveguides extending longitudinally therethrough, each of said optical waveguides comprising an elongated glass core surrounded by a layer of cladding glass that is soluble in said given solvent,



immersing at least one end of said device into a bath of said solvent to remove that portion of said cladding glass which is exposed to said solvent and thereby form in said at least one end a well at the end of each optical waveguide, the step of immersing being continued until said wells are sufficiently deep that the ends of optical fibers can be inserted therein,

providing a plurality of optical fibers, and

inserting one of said optical fibers into each of said wells.

7. A method in accordance with claim 5 wherein the step of providing a device comprises forming a coupler preform having a plurality of glass optical fiber preform rods extending longitudinally through said matrix glass, heating and stretching said preform to form a glass rod, severing said rod into a plurality of units in which the fibers are flush with the endfaces thereof, applying heat to the central region of each of said units, and pulling one end of each of said units relative to the other to elongate and taper inwardly the heated central region thereof, whereby the cores of said unit are more closely spaced and are of smaller diameter at said central region than they are at the ends of said units.

4,767,431

PRODUCTION OF MICRO GLASS FIBERS

Albert Lewis, Covina, Calif., and Cenek A. Kottnauer, West Vancouver, Canada, assignors to Glass Incorporated International, Chino, Calif.

Filed Feb. 26, 1987, Ser. No. 19,237

Int. Cl.[4] C03B *37/04*

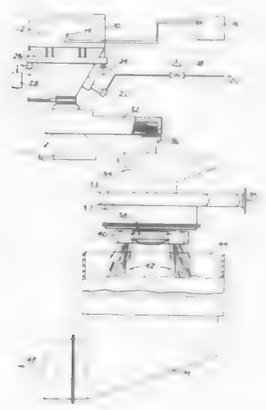
U.S. Cl. 65—6 **11 Claims**

1. A method for producing glass fibers comprising:

conveying glass material in the form of pellets to the interior of a rapidly rotating spinner disc wherein the temperature of the disc is such as to maintain the glass material in a semi-solid state;

extruding the glass material by centrifugal force through a plurality of orifices in the peripheral wall of the rotating spinner disc with the glass material still in the semi-solid state while within the orifices;

subjecting the extruded glass material immediately after it has left the orifices to a relatively high velocity gas flow at



a temperature in excess of the liquidus temperature of the glass such that the gas flow acts to stretch out the heated and softened extruded glass material into fibers thereby attenuating the diameter of the extruded fibers; and

collecting and cooling the glass fibers.

4,767,432

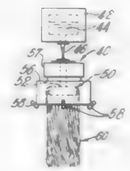
CORROSION RESISTANT COBALT-BASE ALLOY CONTAINING HAFNIUM AND A HIGH PROPORTION OF CHROMIUM

David J. Gaul, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 746,158, Jun. 18, 1985, abandoned. This application Feb. 7, 1986, Ser. No. 827,135

Int. Cl.[4] C03B *37/04*

U.S. Cl. 65—8 **13 Claims**



1. As a composition of matter a glass corrosion resistant, high-strength alloy consisting essentially of the following elements in amounts expressed in weight percent:

Element	Approximate Composition, Weight %
Chromium	About 34 to less than about 40
Nickel	About 5 to about 15
Wolfram	About 5 to about 10
Tantalum	About 1.5 to about 4
Zirconium	About 0.01 to about 0.5
Silicon	About 0.01 to about 0.2
Carbon	About 0.4 to about 0.7
Boron	About 0.005 to about 0.5
Hafnium	About 0.15 to about 1.6
Cobalt	Balance

the weight ratio of wolfram to tantalum being within the range of from about 1.2 to about 6.6 and the weight ratio of zirconium to boron being within the range of from about 0.02 to about 100.

11. In a method of making mineral fibers comprising passing molten mineral material through a foraminous wall of a metal alloy to form such fibers, the improvement wherein the alloy is the composition of matter of claim 1.

4,767,433

SPHERICAL SILICA GLASS POWDER PARTICLES AND PROCESS FOR THEIR PRODUCTION

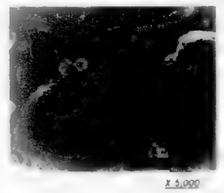
Jun-ichi Iura, Yokohama, and Toshiyasu Kawaguchi, Atsugi, both of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed May 20, 1987, Ser. No. 51,769

Claims priority, application Japan, May 22, 1986, 61-116129; Oct. 31, 1986, 61-258549

Int. Cl.[4] C03B *19/06, 19/10*

U.S. Cl. 65—21.1 **7 Claims**



1. A process for producing spherical silica glass powder particles having projections of network pattern on their surface, which comprises hydrolyzing a silicon alkoxide with water in an amount of from 0.7 to 1.3 mols of water per mol of the silicon alkoxide in the presence of an acid and an alcohol, to form a sol of a partially condensed product of the silicon alkoxide; removing the alcohol from the sol to obtain a water-insoluble partially condensed product of the silicon alkoxide; dispersing the water-insoluble partially condensed product in water; treating the dispersion with a gelling agent to precipitate silica gel; and baking the precipitated silica gel for sufficient time and at sufficient temperature to thereby provide said spherical glass powder particles.

4,767,434

HORIZONTAL PRESS BENDING PICKUP AND DELIVERY SYSTEM

James H. Schwartz, Gibsonia; Thomas L. Waterloo, Allison Park, and George R. Claassen, New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 29, 1987, Ser. No. 102,443

Int. Cl.[4] C03B *23/03*

U.S. Cl. 65—29 **18 Claims**

1. An apparatus for shaping heat softened sheet material comprising:

means to heat said sheet to be shaped to its heat softening temperature;

a shaping qtation having horizontally stationary, vertically aligned upper and lower shaping molds;

means to convey said sheet through at least a portion of said heating means;

a vacuum pickup with a downwardly facing sheet engaging surface to engage an upper major surface of said sheet within said heating means;

VOL 1093 ISS 5 AG 30 1988 UMI

means to move said pickup with said sheet engaged thereagainst to said shaping station and between said upper and lower shaping molds; and

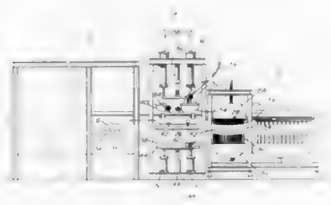
means to synchronize movement of said pickup relative to said sheet such that there is no relative horizontal movement between said pickup and said conveyed sheet as said pickup engages said sheet.

11. A method of shaping heat softened sheet material comprising:

conveying said sheet through a heated cavity;

heating said sheet to its heat softening temperature;

positioning a vacuum pickup within said heated cavity such that a sheet engaging surface of said pickup is in facing relation to an upper major surface of said sheet as said sheet is conveyed therethrough;



engaging said upper major surface of said sheet with said downwardly facing surface of said vacuum pickup;

drawing a vacuum through said downwardly facing surface of said pickup to hold said sheet thereagainst;

synchronizing movement of a pickup moving means with said sheet such that there is no relative horizontal movement between said pickup and said sheet during said engaging step;

transferring said sheet and said pickup to a shaping station;

releasing said sheet from said vacuum pickup to deposit said sheet between horizontally stationary, vertically aligned upper and lower shaping molds at said shaping station; and

pressing said sheet between said molds to shape said sheet.

4,767,435

PROCESS FOR PRODUCING TRANSPARENT GLASS PRODUCT HAVING REFRACTIVE INDEX GRADIENT

Shigeaki Omi, Saitama; Yoshiyuki Asahara, Tokyo; Seiichi Shingaki, Tokyo; Shin Nakayama, Tokyo; Kenji Nakagawa, Saitama; Tetsuro Izumitani, and Hiroyuki Sakai, both of Tokyo, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Continuation of Ser. No. 699,422, Feb. 7, 1985, abandoned. This application Dec. 2, 1986, Ser. No. 937,468

Claims priority, application Japan, Feb. 14, 1984, 59-24304

Int. Cl.[4] C03C *15/00, 17/00, 23/00, 25/00*

U.S. Cl. 65—30.13 **5 Claims**

1. A process for producing a transparent glass product free from bluish white turbidity having a refractive index gradient comprising the steps of:

(a) permeating a solution of thallium nitrate or thallium nitrite into the micropores of a porous glass product;

(b) leaching out a part of the thallium nitrate or thallium nitrite in the micropores to form a concentration gradient thereof in the porous glass product;

(c) precipitating the thallium nitrate or thallium nitrite remaining in the mircopores;

(d) drying the porous glass product;

(e) heating the dried porous glass product to the temperature region of 350° to 550° C. at a temperature-rising rate of 25° to 150° C./hour in a reducing gas atmosphere whereby the thallium is present as monovalent thallium; and

(f) heat treating the porous glass product above 550° C. in an inert gas atmosphere to collapse the micropores thereby producing a transparent glass product free from bluish white turbidity having a refractive index gradient.

4,767,436

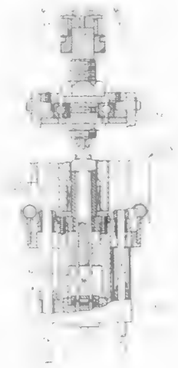
APPARATUS AND METHOD FOR MANUFACTURING A MOLDED GLASS STEM

John R. Hale, East Hempfield Township, Lancaster County, Pa., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Oct. 29, 1987, Ser. No. 114,356

Int. Cl.[4] C03B *23/07, 23/217;* **C03C** *27/02*

U.S. Cl. 65—59.27 **3 Claims**



1. In a stem mold for manufacturing a glass stem for an electron tube having at least two lead-in conductors of different internal lengths, said stem mold comprising a first mold assembly and a second mold assembly, said first mold assembly including a plurality of lead-weights and a first mold block having a first surface and an oppositely disposed second surface with a cavity formed in said second surface of said mold block, said first surface having a plurality of fillet recesses therein, wherein the improvement comprises:

each of said fillet recesses in said first mold block communicating with a buffer-pin-well opening into said cavity,

a lead-weight translator disposed within said cavity, said translator having a first surface and a second surface with a translator recess formed in one of said surfaces and a plurality of lead-weight apertures extending from said recess through the other surface of said translator,

a pin holder disposed within said translator recess, said pin holder having a plurality of pin apertures therethrough, and

a plurality of lead-in-conductor-buffer-pins disposed within said pin apertures and extending into said pin wells in said first mold block, said buffer pins providing means for accommodating said lead-in conductors of different internal lengths, said buffer pins being in contact with said lead-weights extending through said lead-weight apertures in said translator.

4,767,437

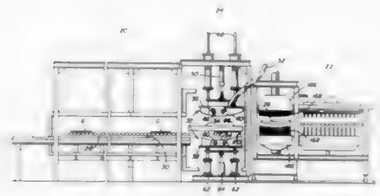
HORIZONTAL PRESS BENDING USING A SPLITTING VACUUM/PRESSURE PICKUP

DeWitt W. Lampman, Hampton Township, Allegheny County; George R. Claassen, New Kensington, and Michael T. Fecik, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1987, Ser. No. 30,022

Int. Cl.[4] C03B *23/033*

U.S. Cl. 65—104 **30 Claims**



1. An apparatus for shaping a glass sheet comprising:

means to heat said glass sheet to its heat softening temperature;

a shaping station including vertically aligned mold means;

a shuttling vacuum/pressure pickup with a downwardly facing glass sheet supporting surface;

means to move said pickup from between a first position between said aligned mold means to a second position adjacent said mold means;

means to transfer said glass sheet from said heating means to said shuttling vacuum/pressure pickup;

means to support said glass sheet from said pickup including means to direct pressurized gas to said supporting surface and means to draw a vacuum along said supporting surface such that said pickup supports said heat softened glass sheet by vacuum from above while said pressurized gas prevents contact between said glass sheet and said supporting surface;

means to deposit said sheet from said pickup to between said mold means while said pickup is at said first position; and

means to shape said glass sheet between said aligned mold

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18. A method of shaping a glass sheet comprising:

heating said glass sheet to its heat softening temperature;

positioning a movable holder at a first position between vertically aligned mold means;

transferring said heat softened sheet to said movable holder while said holder is at said first position;

supporting said heat softened glass sheets from above with said holder in substantially non-contacting engagement therewith;

depositing said glass sheet at said mold means;

moving said holder from said first position between said mold means to a second position adjacent to said mold means; and

shaping said glass sheet between said mold means.

4,767,438

APPARATUS FOR CLEANING MATERIAL TRANSPORTING ROLLERS

William G. Bates, Sellersville, Pa., assignor to Mroczek, Inc., Sellersville, Pa.

Filed Dec. 23, 1987, Ser. No. 138,448

Int. Cl.[4] C03B *13/18*

U.S. Cl. 65—168 **12 Claims**

1. Apparatus for cleaning a series of material handling rollers which are rotatably mounted side-by-side on parallel axes with each roller being separated from each adjacent roller by a similar predetermined distance, said apparatus comprising:

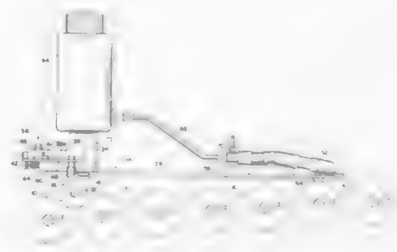
(a) a frame;

(b) a hone mounted on said frame;

(c) a pair of wheels mounted on said frame, and having rolling axes about which they rotate, said wheels having a diameter which permits them to contact both of a pair of adjacent rollers when placed therebetween;

(d) said wheels being separated from and oriented relative to said hone such that when said wheels are placed in an operative position between an adjacent pair of said rollers said hone is positioned on another one of said rollers;

(e) said wheels normally being oriented in a first position where said rolling axes are parallel with one another and are angled with respect to the axes of said rollers so that when said wheels are placed in said operative position and said rollers are rotated said frame will translate across said rollers.



10. Apparatus for cleaning a series of material handling rollers which are rotatably mounted side-by-side on parallel axes with each roller being separated from each adjacent roller by a similar predetermined distance, said apparatus comprising:

(a) a frame;

(b) a hone mounted on said frame;

(c) a pair of wheels mounted on said frame and having a diameter which permits them to contact both of a pair of said adjacent rollers when placed therebetween;

(d) said wheels being separated from and oriented relative to said hone such that when said wheels are placed in an operative position between an adjacent pair of said rollers said hone is positioned on another one of said rollers;

(e) means for distributing water onto the roller said hone is positioned on, adjacent to said hone.

4,767,439

FLOW BARRIER IN THE ANNEALING SECTION OF A GLASS TEMPERING APPARATUS

Pauli Reunamäki, Tampere, Finland, assignor to O/Y Kyro A/B Tamglass, Tampere, Finland

Filed Oct. 28, 1987, Ser. No. 113,473

Claims priority, application Finland, Oct. 29, 1986, 864394

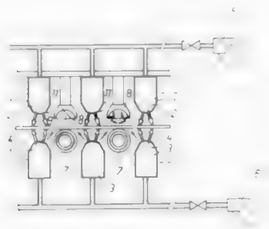
Int. Cl.[4] C03B *27/04*

U.S. Cl. 65—351 **7 Claims**

1. A flow barrier in the annealing section of a glass tempering apparatus, said annealing section being provided with glass sheet supporting rollers (7) and cooling air blow boxes (1, 3) disposed above and below a glass sheet and, furthermore, above the glass sheets are mounted "false rolls" (8) in the form of a downward open trough, extending crosswise relative to

VOL 1093 ISS 5 AG 30 1988 UMI

the traveling direction of glass sheets, characterized in that said trough (8) is provided with longitudinally spaced partitions (9)



for stopping the flow of cooling air longitudinally of the trough.

4,767,440

POTTING MEDIA

Sotero S. Salac, Lincoln, Nebr., assignor to The Board of Regents of the University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 251,381, Apr. 6, 1981, abandoned, which is a division of Ser. No. 46,783, Jun. 11, 1979, abandoned. This application Dec. 10, 1984, Ser. No. 680,148

Int. Cl.[4] C05F *11/00*

U.S. Cl. 71—23 11 Claims

1. A growing medium comprising:
pulverized alfalfa hay;
pulverized wheat straw; and
said alfalfa hay and wheat straw being mixed together in substantially equal volumes wherein a mixture having a ratio of carbon-to-nitrogen of substantially seventeen to one by weight is formed.

4,767,441

METHOD FOR THE PREPARATION OF MYCOHERBICIDE-CONTAINING PELLETS

Harrell L. Walker, Ruston; William J. Connick, Jr., New Orleans, both of La., and Paul C. Quimby, Jr., Leland, Miss., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 773,264, Sep. 6, 1985, Pat. No. 4,718,935, which is a continuation-in-part of Ser. No. 506,952, Jun. 22, 1983, abandoned. This application Sep. 18, 1987, Ser. No. 98,174

Int. Cl.[4] A01N *63/04, 37/18*

U.S. Cl. 71—79 6 Claims

1. A method for controlling weeds in an agricultural field comprising:
applying living fungus-containing alginate gel pellets to an agricultural field wherein said living fungus can sporulate, produce living fungus conidia, and control specific weeds, said living fungus selected from the group consisting of *Alternaria cassilae, Fusarium lateritium, Alternaria macrospora, Collectotrichum malvarum,* and Phyllosticta sp. NRRL #15549.

4,767,442

INCREASING THE YIELD OF CEREALS BY MEANS OF BRASSINOLIDE DERIVATIVES

Tetsuo Takematsu, Utsunomiya; Nobuo Ikekawa, Musashino, and Atsuhiko Shida, Koga, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

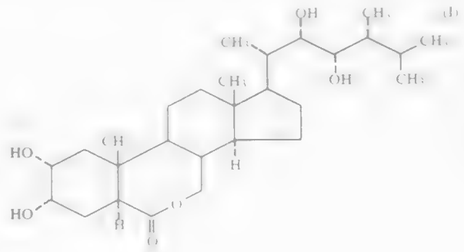
Filed Sep. 12, 1986, Ser. No. 906,378

Claims priority, application Japan, Sep. 19, 1985, 60-208140

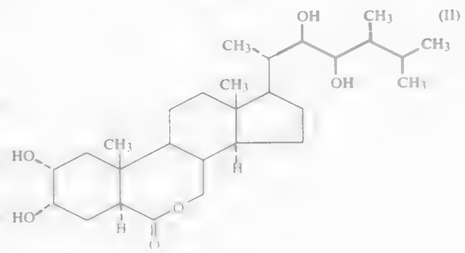
Int. Cl.[4] A01N *43/04*

U.S. Cl. 71—88 2 Claims

1. A method for increasing the yield of cereals which comprises applying to said plant an effective amount of at least one selected from the group consisting of a brassinolide derivative of the formulae:



(I)



(II)

at about the time of flowering.

4,767,443

ANTIFUNGAL AND ANTIBACTERIAL DIAZINE DERIVATIVES COMPOSITIONS, INTERMEDIATES, AND METHOD OF USE THEREFOR

Helmut Zondler, Bottmingen, Switzerland; Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, and Robert Nyfeler, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

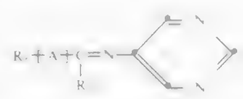
Filed Sep. 13, 1985, Ser. No. 775,972

Claims priority, application Switzerland, Sep. 20, 1984, 4496/84; Aug. 8, 1985, 3405/85

Int. Cl.[4] A61K *43/54;* C07D *239/42*

U.S. Cl. 71—90 26 Claims

1. A compound of the formula I



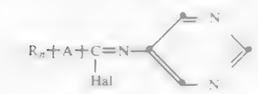
(I)

wherein
A is phenyl, naphthyl, biphenyl, phenoxyphenyl or phenylthiophenyl,
R is halogen, cyano, nitro, C_1–C_4-alkyl, C_1–C_4-alkoxycarbonyl, hydroxyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-haloalkyl or di(C_1–C_4-alkyl)amino, n is 0, 1, 2, 3, 4 or 5,
R_1 is one of the groups OR_2, SR_2 or $N(R_3)(R_4)$, in which
R_2 is C_1–C_8-alkyl, C_3–C_8-alkenyl, C_3–C_8-alkynyl, or a C_1–C_8-alkyl group monosubstituted by R, or a radical from the group consisting of phenyl, phenalkyl (C_1–C_4), C_3–C_7-cycloalkyl and furfuryl, which is unsubstituted or mono- to trisubstituted by R, and
R_3 and R_4 independently of one another are each hydrogen or C_1–C_4-alkyl, or when A is phenyl or phenoxyphenyl, R_3, and R_4, together with the amine nitrogen form a saturated, five- or six-membered heterocycle which contains as hetero atom either just the amine nitrogen or a further hetero atom N, 0 or S.

18. A composition for controlling or preventing infestation by fungi or bacteria, which composition contains a fungicidally or bactericidally effective amount of at least one compound according to claim 1 and inert carrier.

22. A process for controlling or preventing an infestation of cultivated plants by phytopathogenic fungi or bacteria, which process comprises applying to the plants or to the locus thereof a fungicidally or bactericidally effective amount of a compound claim 1.

26. A compound of the formula II



(II)

wherein R_n and A have the meanings defined in claim 1, and Hal is halogen.

4,767,444

HERBICIDAL AND MICROBIOCIDAL 2-TRIFLUOROMETHYL-BENZIMIDAZOLES

Gerhard Heywang, Bergisch Gladbach; Bernd Bassner; Albrecht Marhold, both of Leverkusen; Ernst Kysela, Bergisch Gladbach; Michael Schwamborn, Cologne; Gerd Hänssler, Leverkusen; Wilfried Paulus, Krefeld; Hans-Joachim Santel, Leverkusen; Robert R. Schmidt, Bergisch Gladbach, and Hans-Georg Schmitt, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

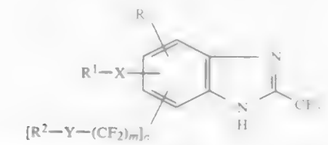
Filed Jun. 4, 1987, Ser. No. 58,062

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1986, 3621301

Int. Cl.[4] A01N *43/52;* C07D *491/05, 235/10*

U.S. Cl. 71—92 12 Claims

1. A 2-trifluoromethyl-benzimidazole of the formula in which



R^1 represents halogenoalkyl having 1 to 6 carbon atoms and 1 to 13 identical or different halogen atoms,
R^2 represents alkyl having 1 to 6 carbon atoms which is optionally substituted by fluorine, chlorine and/or bromine, or
R^1 and R^2 together represent alkylene having 1 to 4 carbon atoms which is optionally substituted by fluorine, chlorine and/or bromine, and
R^3 represents hydrogen or alkyl having 1 to 6 carbon atoms
x and y independently of one another represent oxygen and sulphur m represents 0 or 1, and n represents 0 or 1.

9. A method of combating unwanted vegetation which comprises applying to said vegetation or to a locus from which it is desired to exclude such vegetation a herbicidally effective amount of a compound according to claim 1.

4,767,445

HERBICIDAL ORTHO-(AZINYL)-BENZENESULFONAMIDES

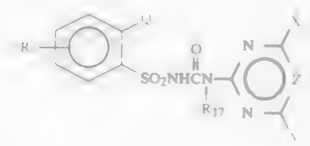
Rafael Shapiro, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 858,760, May 2, 1986, Pat. No. 4,693,744, which is a division of Ser. No. 667,600, Dec. 3, 1984, Pat. No. 4,606,754, which is a division of Ser. No. 437,325, Oct. 28, 1982, Pat. No. 4,494,980. This application Jan. 10, 1987, Ser. No. 60,211

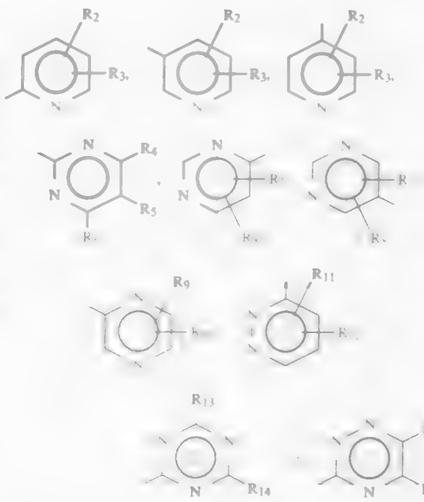
Int. Cl.[4] C07D *251/52, 401/12, 403/12;* A01N *43/66*

U.S. Cl. 71—93 14 Claims

1. A compound of the formula:



wherein
Q is



R_1 is H, F, Cl, CH_3 or OCH_3;
R_2, R_3, R_5, R_9, R_{10}, R_{11}, R_{12} and R_{17} are independently H or CH_3;
R_7, R_8, R_4 and R_6 are independently H, CH_3 or OCH_3;
R_{13}, R_{14}, R_{15} and R_{16} are independently CH_3 or OCH_3;
X is CH_3 or OCH_3;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$ NH_2, $NHCH_3$ or $N(CH_3)_2$;
Z is N;
provided that when R_1 is CH_3, it is in the 3-, 4- or 5-position of the benzene ring;
and their agriculturally suitable salts.

9. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid inert diluent.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,446

TRIFLUOROMETHANESULFONANILIDES, AND THEIR PRODUCTION AND USE

Hiroyuki Konishi; Shunichi Hashimoto, and Hiromichi Oshio, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 404,705, Aug. 3, 1982, abandoned. This application Mar. 25, 1985, Ser. No. 715,295

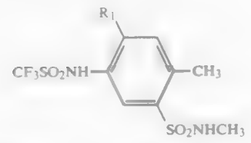
Claims priority, application Japan, Aug. 10, 1981, 56-125447; Jan. 21, 1982, 57-8529; Jan. 22, 1982, 57-9236

The portion of the term of this patent subsequent to Jan. 14, 2003, has been disclaimed.

Int. Cl.[4] A01N *41/00*

U.S. Cl. 71—103 21 Claims

1. A compound of the formula:



wherein R_1 is a C_1–C_4 alkyl group.

4,767,447

CERTAIN 2-(SUBSTITUTED BENZOYL)-5-(SUBSTITUTED OR UNSUBSTITUTED PHENYL)-1,3-CYCLOHEXANEDIONES

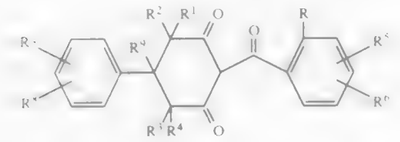
David L. Lee, Martinez, and William J. Michaely, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 12, 1986, Ser. No. 906,461

Int. Cl.[4] A01N *31/08*

U.S. Cl. 71—103 12 Claims

1. Compounds of the formula



wherein

R is halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; trifluoromethoxy or difluoromethoxy; nitro; cyano; C_1–C_2 haloalkyl; R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl, trifluoromethyl or difluoromethyl;

R^1 is C_1–C_4 alkyl;

R^2 is hydrogen or C_1–C_4 alkyl; or

R^1 and R^2 together are C_2–C_5 alkylene;

R^3 is hydrogen or C_1–C_4 alkyl;

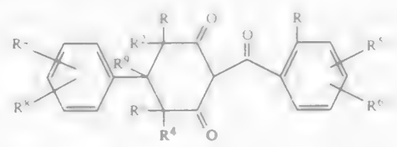
R^4 is hydrogen or C_1–C_4 alkyl; or

R^3 and R^4 together are C_2–C_5 alkylene;

R^5, R^6, R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) —NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined; and

R^9 is hydrogen or C_1–C_4 alkyl, and their salts.

7. A herbicidal composition comprising an herbicidally active 2-benzoyl-5-phenyl-1,3-cyclohexanedione compound of the formula



wherein

R is halogen; C_1–C_2 alkyl; C_1–C_2 alkoxy; trifluoromethoxy of difluoromethoxy; nitro; cyano; C_1–C_2 haloalkyl; R^aSO_n— wherein n is 0 or 2 and R^a is C_1–C_2 alkyl, trifluoromethyl or difluoromethyl;

R^1 is C_1–C_4 alkyl;

R^2 is hydrogen or C_1–C_4 alkyl; or

R^1 and R^2 together are C_2–C_5 alkylene;

R^3 is hydrogen or C_1–C_4 alkyl;

R^4 is hydrogen or C_1–C_4 alkyl; or

R^3 and R^4 together are C_2–C_5 alkylene;

R^5, R^6, R^7 and R^8 independently are (1) hydrogen; (2) halogen; (3) C_1–C_4 alkyl; (4) C_1–C_4 alkoxy; (5) trifluoromethoxy; (6) cyano; (7) nitro; (8) C_1–C_4 haloalkyl; (9) R^bSO_n— wherein n is the integer 0, 1 or 2; and R^b is (a) C_1–C_4 alkyl; (b) C_1–C_4 alkyl substituted with halogen or cyano; (c) phenyl; or (d) benzyl; (10) -NR^cR^d wherein R^c and R^d independently are hydrogen or C_1–C_4 alkyl; (11) $R^eC(O)$— wherein R^e is C_1–C_4 alkyl or C_1–C_4 alkoxy; or (12) —$SO_2NR^cR^d$ wherein R^c and R^d are as defined; and (13) —$N(R^c)C(O)R^d$ wherein R^c and R^d are as defined; and R^9 is hydrogen or C_1–C_4 alkyl, and their salts and an inert carrier therefor.

4,767,448

HERBICIDAL COMPOSITIONS COMPRISING PHENYL CARBAMATES AND OTHER HERBICIDES

Erik Nielsen, Greve Strand, Denmark, assignor to Kemisk Vaerk Koge A/S, Koge, Denmark

Filed Sep. 20, 1984, Ser. No. 652,620

Claims priority, application Denmark, Feb. 29, 1984, 1486/84; Jun. 18, 1984, 2978/84

Int. Cl.[4] A01N *37/44*

U.S. Cl. 71—111 13 Claims

1. A stabilized liquid herbicidal composition comprising as an active ingredient a herbicidally effective amount of phenmedipham and/or desmedipham in which the active ingredient in a finely ground state is dispersed in an acidic liquid phase which comprises at least one oily component in an amount of 5–75% by weight, and at least one surfactant in an amount of 5–60% by weight, said oily component and surfactant may be able to form a stable solution which is capable of effectively suspending the active ingredient and said oily component being a mixture comprising a mineral oil, a chlorinated mineral oil or a vegetable oil in combination with at least one lower carboxylic acid ester of a monoalcohol or polyalcohol.

4,767,449

PROCESS FOR AGGLOMERATING ORE CONCENTRATE UTILIZING CLAY AND DISPERSIONS OF POLYMER BINDERS OR DRY POLYMER BINDERS

Meyer R. Rosen, Bedminister; Gregory J. Dornstauder, Piscataway, and Lawrence Marlin, Bridgewater, all of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 903,968, Sep. 5, 1986, which is a continuation-in-part of Ser. No. 736,237, May 21, 1985, abandoned, and a continuation-in-part of Ser. No. 875,250, Jun. 17, 1986, which is a continuation of Ser. No. 773,700, Sep. 9, 1985, abandoned. This application Jun. 19, 1987, Ser. No. 63,990

Int. Cl.[4] C22B *1/08*

U.S. Cl. 75—3 66 Claims

1. A process of agglomerating a particulate material, comprising:

commingling said particulate material with at least two binder system components;

(i) a first component being a binding amount of a water-soluble, binding polymer, said polymer being applied to said particulate material as a dispersion in a non-aqueous dispersion medium; and

(ii) a second component being a clay, said clay being applied to said particulate material in an amount up to about 12 pounds per tonne of said particulate material.

4,767,450

PROCESS FOR PRODUCING THE RARE EARTH ALLOY POWDERS

Naoyuki Ishigaki, Otsu; Takaki Hamada, Takatsuki, and Setsuo Fujimura, Kyoto, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Nov. 25, 1985, Ser. No. 801,321

Claims priority, application Japan, Nov. 27, 1984, 59-248797; Nov. 27, 1984, 59-248798; Dec. 10, 1984, 59-260479; Dec. 10, 1984, 59-260480

The portion of the term of this patent subsequent to Sep. 6, 2005, has been disclaimed.

Int. Cl.[4] C22C *1/04*

U.S. Cl. 75—0.5 BA 17 Claims



1. A process for producing a rare earth-iron-boron alloy powder comprising the steps of:

providing a starting mixed powdery material by formulating at least one rare earth oxide of the rare earth elements specified below, an iron powder and at least one powder selected from the group consisting of a boron powder, a ferroboron powder and a boron oxide powder in such a manner that the resulting alloy has an alloy composition consisting essentially of:

12.5 to 20 at % R wherein R_1 is 0.05 to 5 at %,

4 to 20 at % B, and 60 to 83.5 at % Fe,

wherein R_1 is at least one heavy rare earth element selected from the group consisting of Gd, Tb, Dy, Ho, Er, Tm and Yb, 80 to 100 at % of the R_2 consists of Nd and/or Pr, the balance in the R_2 being at least one element selected from the group consisting of rare earth elements including Y and except for R_1, and $R = R_1 + R_2$ by atomic %;

mixing said starting mixed powdery material with metallic calcium and/or calcium hydride in an amount of 1.2 to 3.5 times by weight of the stoichiometric amount required for reduction with respect to the amount of oxygen contained in said starting mixed powdery material, and with calcium chloride in an amount of 1 to 15% by weight of said rare earth oxides;

reducing the resulting mixture at a temperature of 950° to 1200° C. in an inert atmosphere;

putting the resultant reaction product into water to provide a sluried state, and

treating the resultant slurry with water by stirring the slurry and removing water to recover a resultant alloy powder having a major phase of a tetragonal structure amounting to at least 80 vol % of the entire alloy until the alloy powder reaches a calcium content not exceeding 2000 ppm.

4,767,451

METHOD OF OPERATING AN ELECTRIC ARC FURNACE

Donald G. Bergman, Hudson, Ohio, and Emil A. Elsner, Sinzheim-Vormberg, Fed. Rep. of Germany, assignors to Doncar Incorporated, Parkman, Ohio

Filed Jan. 13, 1987, Ser. No. 2,725

Int. Cl.[4] C22B *4/00*; C21C *5/52*

U.S. Cl. 75—10.61 12 Claims

1. In the method of producing steel by providing a vessel containing ferrous metal to be melted and passing electric current into said metal to melt the same by means of at least one electrode connected to an exterior source of electrical power, the improvement which comprises:

positioning an arc stabilizer material in close proximity to said metal whereby as electric current is passed from said electrode into said metal said arc stabilizer material forms a reaction product which aids in the efficient operation of said electric arc, with said arc stabilizer material being an effective amount of a synthetic polymeric material having a low sulfur content.

4,767,452

PROCESS FOR SEPARATING METALS BY DISTILLATION AND CONDENSATION

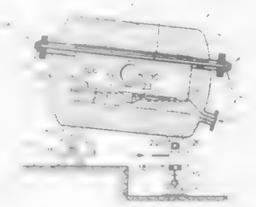
Otto Stenzel, Grundau, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 3, 1986, Ser. No. 881,636

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1985, 3536277

Int. Cl.[4] C22B *19/04, 19/18*

U.S. Cl. 75—63 3 Claims



1. Process for separating molten metals comprising continuously heating and moving a metal melt in a melt vessel over at least one obstruction means which projects upward from a bottom the melt vessel, wherein said metal melt is kept in continuous motion by means for effecting a rocking motion of the melt vessel, distilling a desired metal from said molten melt, drawing said distilled metal from said melt vessel by a drawing off means and condensing said distilled metal in a condenser

VOL 1093 ISS 5 AG 30 1988 UMI

means secured to the melt vessel, said condenser means having a rocking motion which is the same as that of the melt vessel.

4,767,453

PROCESS FOR CREATING THE FLOW PROPERTIES TO SODIUM-PRODUCTION FILTER RESIDUES

Walter Hinrichs, Bruehl; Herbert Hovestadt, Erftstadt; Ludwig Lange, Bruehl; Kurt A. Ruppert, Langenselbold, and Erich Spiett, Huerth-Berrenrath, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jan. 15, 1988, Ser. No. 144,347

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1987, 3702053

Int. Cl.[4] C22B *26/10*; C25C *3/06*; C21C *7/00*; C21B *3/04*

U.S. Cl. 75—66 2 Claims

1. A process for converting filtration residues from the filtration of crude sodium obtained by fusion electrolysis, which are viscous-to-hard at temperatures above the melting point of sodium into a material of thin-fluid consistency, comprising subjecting crude sodium filtration residues to agitation under an inert gas for 2–6 hours at temperatures in the range of 300°–600° C., and recovering the sodium containing residues of improved consistency.

4,767,454

PROCESS FOR THE PREPARATION OF FINELY PARTICULATE CHROMIUM METAL POWDER HAVING A LOW OXYGEN CONTENT

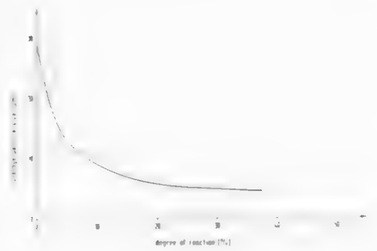
Horst Eggert, Essen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Continuation of Ser. No. 677,213, Dec. 3, 1984, abandoned. This application Feb. 5, 1987, Ser. No. 11,385

Claims priority, application Fed. Rep. of Germany, Dec. 6, 1983, 3343989

Int. Cl.[4] C22B *34/32*

U.S. Cl. 75—84 29 Claims



1. A process for the preparation of a chromium metal powder having a low oxygen content of ≦ 0.1% by weight and an average particle size not greater than 20 μm, comprising calcining a mixture of chromium oxide and calcium oxide in a molar ratio of 1:0.5 to 1:2 at temperatures from 650 to 1,200° C., in the presence of oxygen up to a weight increase of 1 to 6 g of oxygen per mole of chromium oxide, comminuting the calcined product to a particle size not greater than 100 μm and then metallothermally reducing the product with calcium in a reactor to which access of oxygen is prevented at temperatures of 1,000° to 1,250° C. and an initial pressure of not more than 10^{-3} bar at room temperature.

4,767,455

PROCESS FOR THE PREPARATION OF PURE ALLOYS BASED ON RARE EARTHS AND TRANSITION METALS BY METALLOTHERMY

Alex Jourdan, Narboane, France, assignor to Comurhex Societe Pour la Conversion de l'Uranium en Metal et Hexafluorure, Courbevoie, France

Filed Nov. 24, 1987, Ser. No. 124,574

Claims priority, application France, Nov. 27, 1986, 86 16948

Int. Cl.[4] C22C *1/00, 1/02*

U.S. Cl. 75—84.4 22 Claims

1. A process for obtaining, high purity ingots of master alloy based on at least one rare earth and at least one transition metal by metallothermic reduction of a compound of said rare earth by means of a reducing agent selected from the group consisting of alkali and alkaline earth metals contained in a starting reaction mixture, which process comprises the steps of:

(a) preparing the starting reaction mixture by admixing the transition metal, at least in part in the form of a compound of which the anion differs from that of the rare earth compound, the rare earth compound, and the reducing agent, in an amount sufficient to reduce the rare earth compound;

(b) introducing the reaction mixture thus formed into a reaction vessel;

(c) triggering the metallothermic reduction reaction by effecting heating of the reaction mixture to a moderate temperature generally not exceeding about 300° C.

4,767,456

CORROSION AND WEAR RESISTANT METAL ALLOY HAVING HIGH HOT HARDNESS AND TOUGHNESS

Ronald F. Spitzer, Jamestown, N.Y., assignor to MRC Bearings Incorporated, Jamestown, N.Y.

Continuation-in-part of Ser. No. 835,981, Mar. 4, 1986, abandoned, which is a continuation of Ser. No. 625,439, Jun. 28, 1984, abandoned. This application Mar. 26, 1987, Ser. No. 30,431

Int. Cl.[4] C22C *29/00*

U.S. Cl. 75—246 13 Claims

1. A corrosion resistant, high hardness and wear resistant alloy having a density of at least a 99.9 percent of theoretical density, comprising, in weight percent from about 13 to about 17 percent chromium; from about 5.5 to about 8.5 percent molybdenum; from about 1.2 to about 1.65 percent carbon; and from about 1.25 to about 2.5 percent vanadium.

4,767,457

PLASTER, RENDERS, MASONRY PAINTS, INTERIOR PAINTS AND GLAZES CONTAINING AN AQUEOUS DISTEARYLDIKETENE EMULSION AS A WATER REPELLENT

Gregor Ley, Wattenheim; Michael Melan, Wachenheim, and Eckehardt Wistuba, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pflaz, Fed. Rep. of Germany

Filed Oct. 30, 1986, Ser. No. 924,766

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1985, 3540042

Int. Cl.[4] C09K *3/18*

U.S. Cl. 106—2 2 Claims

1. A dispersion-based coating material, synthetic resin-bonded render, cement-containing plaster or cement-free plaster, containing from 0.5 to 10% by weight of a distearyldiketene emulsion consisting of

(a) from 3 to 40 parts by weight of distearyldiketene,

(b) from 10 to 70 parts by weight of a solvent,

(c) from 5 to 50 parts by weight of water and

(d) from 0.5 to 5 parts by weight emulsifier, as a water repellent.

4,767,458

WOOD PRESERVATIVE COMPOSITION AND USE THEREOF

Frank Moewius; Manfred Meisel; Herbert Grunze; Lothar Kolditz, all of Berlin; Marina Zeibig, Wernsdorf; Walfried Oese; Dietmar Standfuss, both of Dohna; Horst Kirk, Eberswalde-Finow; Reiner Hesse, Eberswalde-Finow; Horst Goetze, Eberswalde-Finow, and Wibke Unger, Eberswalde-Finow, all of German Democratic Rep., assignors to Desowag Materialschutz GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 15, 1987, Ser. No. 96,492

Claims priority, application German Democratic Rep., Sep. 15, 1986, 294408; Dec. 5, 1986, 297085

Int. Cl.[4] C09D *5/14*; B05D *7/06*; B27K *3/32*; A01N *59/26*

U.S. Cl. 106—18.31 19 Claims

1. A wood preservative composition protection of wood and wood materials against wood-damaging insects and fungi, including wood-rot fungi, comprising:

an aqueous solution of an active ingredient selected from

(A) 0.5 to 20% by weight of a copper (II), zinc, nickel, cobalt, iron, magnesium and/or manganese salt of monofluorophosphoric acid H_2PO_3F; or

(B) an alkali metal salt and/or ammonium salt of monofluorophosphoric acid in the presence of a zinc, nickel, cobalt, iron, magnesium and/or manganese salt of hydrochloric, nitric or sulfuric acid; or

(C) an alkali metal salt and/or ammonium salt of monofluorophosphoric acid in the presence of a Cu(II) salt of hydrochloric, nitric or sulfuric acid in a $Cu^{2+}:PO_3F^{2-}$ ratio of from about 0.5 to 2:1, and one or more members of the group comprising ammonia, hydrochloric acid, nitric acid, sulfuric acid, hydrofluoric acid, alkali metal hydrogen fluoride and ammonium hydrogen fluoride the content of the active ingredient alkali metal salt and/or ammonium salt of monofluorophosphoric acid and copper (II), zinc, nickel, cobalt, iron, magnesium, and/or manganese salt of a hydrochloric, nitric or sulfuric acid being between about 1 to 30% by weight.

4,767,459

INK

David Greenwood, Oldham, and John E. Presgrave, Bacup, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Filed Sep. 16, 1987, Ser. No. 97,176

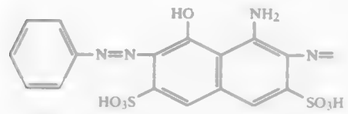
Claims priority, application United Kingdom, Oct. 10, 1986, 8624370

Int. Cl.[4] C09D *11/02*

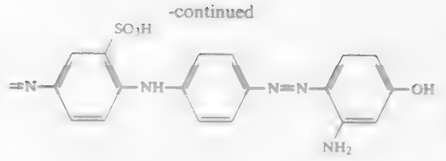
U.S. Cl. 106—22 6 Claims



1. An ink comprising the water-soluble dye which, in the form of the free acid, has the formula:



-continued



4,767,460

CEMENT COMPOSITIONS FOR CEMENTING OF WELLS ENABLING GAS CHANNELLING IN THE CEMENTED ANNULUS TO BE INHIBITED BY RIGHT-ANGLE SETTING

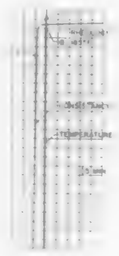
P. Parcevaux, St. Etienne; B. Plot, Clamart, both of France, and P. Sault, Beverwijk, Netherlands, assignors to Dowell Schlumberger Incorporated, Tulsa, Okla.

Filed Jan. 17, 1986, Ser. No. 820,487

Claims priority, application France, Jan. 29, 1985, 85 01393

Int. Cl.[4] C04B *24/20*; E21B *33/13*

U.S. Cl. 106—90 8 Claims



1. An aqueous cement slurry composition for cementing oil, gas, and geothermal wells, comprising:

cement, water and about 0.5 to 2% by weight of cement of an ammonium salt of a sulfated nonylphenoxypoly(ethyleneoxy) ethanol to produce an aqueous cement slurry having a right-angle set property,

said right-angle set property permitting said aqueous cement slurry to go directly from a state where hydrostatic pressure of said aqueous cement slurry is transmitted by a slurry column directly to a state where gas migration is effectively prevented by setting of said cement.

5. A method of preventing gas channelling or gas migration in an oil, gas or geothermal well annulus, comprising cementing said well annulus with an aqueous cement slurry composition as set forth in claim 1.

4,767,461

METHOD FOR MANUFACTURING CONCRETE

Kazumi Tamura, and Hideo Fujita, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1986, Ser. No. 883,536

Claims priority, application Japan, Aug. 9, 1985, 60-174275

Int. Cl.[4] B28C *7/04*

U.S. Cl. 106—98 12 Claims

1. A method for manufacturing a concrete which comprises the steps of:

mixing 20 to 100% of the total weight of the cement to be used in the method with water in an amount of 20 to 50%, based on the total weight of the cement to be used, in order to prepare a stiff-consistency cement paste;

mixing the thus prepared cement pase with a coarse aggre-

VOL 1093 ISS 5 AG 30 1988 UMI

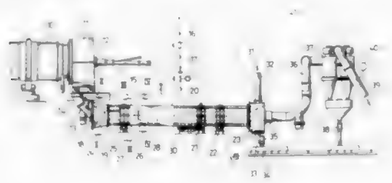
gate to cause the prepared cement paste to adhere to the coarse aggregate;
further adding 80 to 0% of the total amount of the cement to be used together with sand; and
mixing therewith additional water in an amount necessary to harden the total cement composition to manufacture said concrete.

2. A method for manufacturing a concrete which comprises the steps of mixing 20 to 100% of the total weight of the cement to be used in the method with water in an amount of 20 to 50%, based on the total weight of the cement to be used, and a coarse aggregate, so that a stiff-consistency cement paste is prepared and caused to adhere to the coarse aggregate;



further adding 80 to 0% the total amount of the cement to be used together with sand; and
mixing therewith additional water in an amount necessary to harden the total cement composition to manufacture said concrete.

4,767,462
METHOD AND APPARATUS FOR COOLING AND FOR FURTHER TREATMENT OF HOT WHITE CEMENT CLINKER
Joaquin Pons de Vinals, Valencia, Spain, assignor to Cia. Valenciana de Cementos Portland S.A., Spain
Filed Jun. 26, 1986, Ser. No. 878,823
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1985, 3522839
Int. Cl.[4] C04B 7/47
U.S. Cl. 106—101 11 Claims



1. An apparatus for the cooling and treatment of hot white cement clinker comprising in combination:
a first chamber located to receive clinker discharged from a kiln with the chamber being closed to exclude air for the treatment of the clinker in an oxygen-free atmosphere;
means for delivering water spray to the clinker in said chamber;
a drying chamber connected to receive the clinker and through which the clinker is passed after the first chamber;
and means for delivering a drying air through the drying chamber to receive vapor picked up from the clinker,
said first chamber being inclined downwardly for receiving and conveying the white clinker, and said water spray means being in the form of plural sprays at the upper portion of said first chamber.

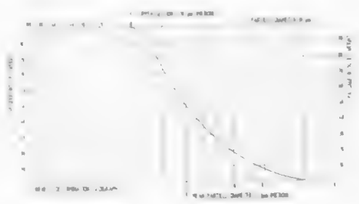
9. A method for the cooling and treatment of hot white cement clinker received from a calcining kiln comprising the steps:
passing hot white cement clinker through a first chamber from a kiln with the first chamber being closed to provide an oxygen-free atmosphere;
spraying a controlled quantity of water spray onto the clinker and providing a shock cooling of the clinker in the first chamber;
passing the clinker from the first chamber to a second chamber and tumbling the clinker in the second chamber to cause the clinker to mix, and to mix with water in the second chamber;
retaining surplus water within the second chamber;
passing the clinker from the second chamber to a drying chamber;
tumbling the clinker in the drying chamber;
passing a drying air over the clinker in the drying chamber in a direction counter to the movement of the clinker;
preheating the drying air;
and removing the drying air from the drying chamber.

4,767,463
GLYCOSAMINOGLYCAN AND CATIONIC POLYMER COMBINATIONS
George L. Brode, Bridgewater, N.J.; Philip A. Band, Brooklyn, N.Y.; Errol D. Goddard, Somerville, N.J.; Arminda G. Barbone, Union, N.J.; Adolf Leshchiner, Fairview, N.J.; Joseph P. Pavlichko, Helmetta, N.J.; Emmett M. Partain, III, Bound Brook, N.J., and Pak S. Leung, Highland Mills, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.
Filed Apr. 15, 1987, Ser. No. 38,836
Int. Cl.[4] C08L 1/00; A61K 7/09
U.S. Cl. 106—162 23 Claims

1. A combination comprising:
(1) glycosaminoglycan; and
(2) cationic polymer selected from the group consisting water-soluble of cationic derivatives of cellulose ethers, galactomannan, homo- and copolymers of ethylenically unsaturated compounds and poly(N-acylalkyleneimines);
which combination provides modification of the glycosaminoglycan properties due to the presence of the cationic polymer

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4,767,464
CARBONATE-CONTAINING MINERAL FILLERS, PIGMENTS AND SIMILAR MATERIALS
Dieter Strauch, Zofingen; Peter Belger, Mühlethal; Heiner Hofer, Langenthal, and Martin Merz, Zunzgen, all of Switzerland, assignors to Pluss-Staufer AG, Switzerland
Filed May 6, 1987, Ser. No. 46,540
Claims priority, application Fed. Rep. of Germany, May 22, 1986, 3617169
Int. Cl.[4] C04B 14/00
U.S. Cl. 106—464 38 Claims



1. Carbonate-containing mineral fillers, pigments and similar materials, having a mean particle-diameter of 0.5 to 2.5 μm and the following further physical properties:
(a) a contrast factor of 1.2 to 2.1.
(b) a fraction of 30 to 98% by weight of particles in particle diameter range 0.5 to 1.8 μm, and
(c) a dispersibility, expressed in particle fineness according to DIN 53203, of 5 to 25 μm.

4,767,465
PIGMENT COMPOSITION
Michiel Nakamura, Soka; Hitoshi Takeuchi, Showa; Tetsujiro Takahashi, Koshigaya; Yoshitake Kori, Ageo; Minoru Takizawa, Koshigaya; Takamitsu Shinoda, Kashiwa, and Shojiro Horiguchi, Omiya, all of Japan, assignors to Dainichiseika Color & Chemicals Mfg. Co., Ltd., Tokyo, Japan
Filed Aug. 12, 1987, Ser. No. 84,192
Claims priority, application Japan, Aug. 20, 1986, 61-192918
Int. Cl.[4] C09C 3/00
U.S. Cl. 106—308 M 3 Claims

1. A pigment composition containing a pigment and a dispersant, characterized in that said dispersant is a wax, paste or liquid polyester compound which contains, per molecule, a residuum of at least two benzene rings coupled together, an aromatic ring, said ring having at least 8 carbon atoms or a heterocyclic ring, said ring having at least 8 carbon atoms and at least one ester bond as a principal bond.

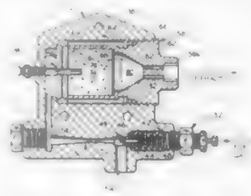
4,767,466
BULKING PIGMENTS
Saad Nemeh, West Long Branch, and Richard A. Slepetys, Brick Township, Ocean County, both of N.J., assignors to Engelhard Corporation, Menlo Park, N.J.
Filed Sep. 16, 1986, Ser. No. 908,439
Int. Cl.[4] C04B 14/10
U.S. Cl. 106—487 15 Claims

1. A method for preparing a heat stable aqueous slurry of a bulking pigment suitable for use in coating or filling paper which comprises preparing a fluid aqueous suspension of particles of kaolin clay, adding thereto a water-soluble cationic polyelectrolyte, the amount of said cationic polyelectrolyte being sufficient to substantially thicken and flocculate said fluid suspension, acidifying the resulting flocculated clay suspension, bleaching the clay in said suspension with a hydrosulfite salt, filtering said acidified suspension to recover bulked clay, washing the filtered clay and adding minimal amounts of a sodium polyacrylate and a nonionic surfactant to the recovered bulked clay to provide a fluid suspension of bulked clay.

10. A method for preparing a heat stable aqueous slurry of a bulking pigment suitable for use in coating or filling paper which comprises preparing a fluid aqueous suspension of particles of kaolin clay, adding thereto a water-soluble cationic polyelectrolyte, the amount of said cationic polyelectrolyte being sufficient to substantially thicken and flocculate said fluid suspension, acidifying the resulting flocculated clay suspension, filtering said acidified suspension to recover bulked clay, washing the filtered clay and adding minimal amounts of a sodium polyacrylate and a nonionic surfactant to the recovered bulked clay to provide a fluid suspension of bulked clay.

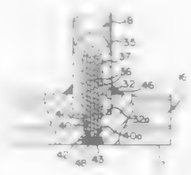
4,767,467
APPARATUS AND METHOD FOR USE IN THERMOELECTRIC POWER GENERATION
Gary V. Holland, and George C. Tillett, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 699,287, Feb. 7, 1985, Pat. No. 4,633,029.
This application May 12, 1986, Ser. No. 861,950
Int. Cl.[4] H01L 35/28, 35/34
U.S. Cl. 136—217 3 Claims

1. A thermoelectric generator comprising:
a hollow member which defines a combustion chamber therein, wherein said chamber contains a catalyst;
a means capable of introducing into said chamber a mixture of a combustible fuel and air having an air/fuel ratio less than the stoichiometric ratio for methane;



at least one thermoelectric element positioned to receive heat generated in said chamber.

4,767,468
THERMOCOUPLE ASSEMBLY
Philip F. Finney, 425 East Washington, Villa Park, Ill. 60181
Filed Jul. 2, 1984, Ser. No. 626,969
Int. Cl.[4] H01L 35/02
U.S. Cl. 136—233 17 Claims



1. A thermocouple assembly for measuring the temperature of a heat exchanger tube subjected to high temperature combustion gases and flame having a hot junction at the tube and a cold junction remotely located and connected to a readout instrument comprising, an elongated thermocouple head having an elongated heat transmitting surface adapted to be in engagement with the tube and a plurality of weld faces adjacent said surface that are adapted to be welded to the tube, and a sheathed thermocouple conductor assembly fixed to said head, said thermocouple assembly having a sheath, a pair of thermocouple conductors therein and means insulating the conductors from each other and from the sheath, said head having a sheath assembly entry opening into which the sheath extends, an opening through said surface in communication with said entry opening, a weldment filling said opening in said surface and welding the ends of the conductors together and in place and defining the hot junction at said surface, whereby the hot junction is thereby disposed at said surface of the tube.

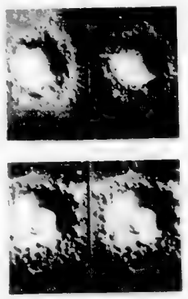
4,767,469
ELECTRICAL DISCHARGE SCRIBING FOR IMPROVING CORE LOSS OF GRAIN-ORIENTED SILICON STEEL
James A. Salsgiver, Sarver; Eugene W. Bartel, Robinson Township, and Rowland C. Rudolf, III, Ben Avon, all of Pa., assignors to Allegheny Ludlum Corporation, Pittsburgh, Pa.
Filed May 8, 1987, Ser. No. 47,967
Int. Cl.[4] H01F 1/04
U.S. Cl. 148—111 13 Claims

1. A method for improving the core loss by domain space refinement of texture annealed and insulation coated grain-oriented silicon steel sheet or strip, said method comprising:
contacting the insulated steel surface to be scribed with a discharge electrode;
moving the electrode along the insulated steel surface in a

VOL 1093 ISS 5 AG 30 1988 UMI

direction substantially transverse to the rolling direction while essentially maintaining contact therewith;

separately providing both a high voltage-low current to the electrode to break down insulation on the steel surface and a low voltage-high current to the electrode to work the steel surface, said high voltage-low current providing



between 200 to 1000 volts and a current of 0.1 to 5 amperes, said low voltage-high current providing between 30 to 100 volts and a current of 10 to 100 amperes; and

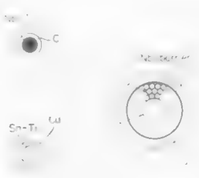
marking the steel surface with a plurality of indentations generally aligned across the steel surface by providing a plurality of electrical discharges between the electrode and the steel as the electrode traverses the steel.

4,767,470

PROCESS FOR PRODUCING TI-CONTAINING NB_3SN COMPOSITE SUPERCONDUCTOR

Kyoji Tachikawa, Tokyo; Hisashi Sekine, Toride, and Shoji Miyashita, Sagamihara, all of Japan, assignors to National Research Institute for Metals, Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,056
Claims priority, application Japan, Jan. 25, 1986, 61-13015
Int. Cl.[4] H01L *39/00*
U.S. Cl. 148—11.5 F 10 Claims



1. A process for producing a Ti-containing Nb_3Sn composite superconductor which comprises working a composite composed of a Cu matrix, a Sn core placed centrally of the matrix and Nb cores disposed around the Sn core and heat-treating the worked composite, said Sn core containing 2 to 15 atomic % of Ti and said Nb cores containing 0.1 to 5 atomic % of Ti on an average.

4,767,471

DELAYED REFLOW ALLOY MIX SOLDER PASTE

Neil R. McLellan, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 3, 1986, Ser. No. 915,218
Int. Cl.[4] B23K *35/34*
U.S. Cl. 148—24 18 Claims

1. A solder paste mixture for delaying solder melt and minimizing solder joint voids, comprising:

a plurality of particles of a first alloy, and

a plurality of particles of a second alloy differing from the first alloy,

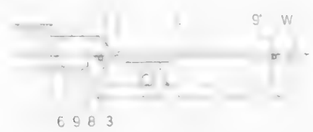
wherein the first alloy includes tin and the second alloy includes lead.

4,767,472

METHOD FOR THE TREATMENT OF STEEL WIRES

Golfried Vanneste, Ingelmunster, Belgium, assignor to N. V. Bekaert S.A., Zwevegem, Belgium

Continuation of Ser. No. 903,232, Sep. 3, 1986, abandoned. This application May 29, 1987, Ser. No. 56,285
Claims priority, application United Kingdom, Sep. 27, 1985, [redacted]
Int. Cl.[4] C21D *9/52*
U.S. Cl. 148—156 16 Claims



6 9 8 3

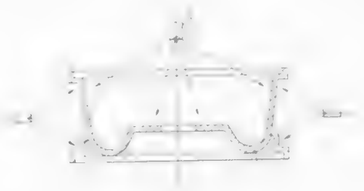
1. A method of controlled cooling of previously heated steel wire to a predetermined temperature range, wherein said wire is transported continuously through a coolant bath containing substantially pure water of at least 80° C. and is immersed in said bath so as to effect a required decrease in wire temperature, said wire being subjected to uniform and stable film-boiled cooling along its entire immersion length by contacting said wire with a continuous non-turbulent flow of said substantially pure water.

4,767,473

METHOD FOR IMPROVING THE DYNAMIC STRENGTH OF WHEEL DISKS OF VEHICLE WHEELS MADE OF HEAT-TREATABLE ALUMINUM ALLOYS

Otto Berg, Asker, Norway, assignor to Ardal Og Sunndal Verk A.S., Oslo, Norway

Filed Nov. 26, 1985, Ser. No. 802,219
Claims priority, application Fed. Rep. of Germany, Nov. 27, 1984, 3443226
Int. Cl.[4] C22F *1/04*
U.S. Cl. 148—159 3 Claims



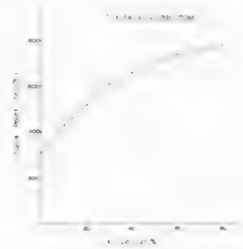
1. In a method of treating a vehicle wheel formed of a heat-treatable aluminum alloy and including an axially center area and axially end areas on opposite sides of said center area, wherein said wheel is subjected to a solution heat treatment and then is cooled, the improvement comprising improving the dynamic strength of said wheel by conducting said cooling such that said center area is cooled faster than said end areas.

4,767,474

ISOTROPIC MAGNETS AND PROCESS FOR PRODUCING SAME

Setsuo Fujimura, Kyoto; Masato Sagawa, Nagaokakyo, and Yutaka Matsuura, Ibaraki, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Filed Dec. 30, 1983, Ser. No. 567,008
Claims priority, application Japan, May 6, 1983, 58-79097; May 6, 1983, 58-79099
The portion of the term of this patent subsequent to Jul. 22, 2003, has been disclaimed.
Int. Cl.[4] H01F *1/04*
U.S. Cl. 148—302 23 Claims



1. A powder metallurgically sintered, isotropic permanent magnet having a mean crystal grain size of 1–80 microns and consisting essentially of, by atomic percent, 12–20 percent R wherein R is at least one element selected from the group consisting of Nd, Pr, La, Ce, Tb, Dy, Ho, Er, Eu, Sm, Gd, Pm, Tm, Yb, Lu and Y and wherein at least 50% of R consists of Nd and/or Pr, 5–18 percent B, and at least 62 percent Fe in which Fe amount Co is substituted for Fe in an amount greater than zero and not exceeding 25 percent of the magnet and at least 50 vol % of the entire magnet is occupied by a ferromagnetic compound having a an (Fe,Co)-B-R-type tetragonal crystal structure which has a higher Curie temperature than a corresponding ferromagnetic Fe-B-R base compound containing no Co, the magnet having a maximum energy product of at least 4 MGOe and an intrinsic coercivity of at least 1 kOe.

2. A powder metallurgically sintered, isotropic permanent magnet having a mean crystal grain size of 1–80 microns and consisting essentially of, by atomic percent, 12–20 percent R wherein R is at least one element selected from the group consisting of Nd, Pr, La, Ce, Tb, Dy, Ho, Er, Eu, Sm, Gd, Pm, Tm, Yb, Lu and Y and wherein at least 50% of R consists of Nd and/or Pr, 5–18 percent B, at least one additional element M selected from the group given below in the amounts not exceeding the atomic percentages specified below, wherein the sum of M does not exceed the maximum value of any one of the values specified below for M actually added and at least 62 percent Fe in which Fe amount Co is substituted for Fe in an amount greater than zero and not exceeding 25 percent on the magnet:

7.3% Al,	3.6% Ti,	7.3% V,	6.8% Cr,
6.6% Mn,	4.4% Zr,	4.2% Hf,	9.5% Nb,
8.2% Ta,	7.5% Mo,	4.7% Ge,	1.9% Sb,
3.0% Sn,	3.8% Bi,	3.6% Ni,	and 7.9% W,

in which a ferromagnetic compound having a an (Fe,Co)-B-R type tetragonal crystal structure and having a higher Curie temperature than a corresponding ferromagnetic Fe-B-R base compound containing no Co occupies at least 50 vol % of the entire magnet, said permanent magnet having a maximum energy product of at least 4 MGOe and an intrinsic coercivity of at least 1 kOe.

4,767,475

WEAR RESISTANT RAILS HAVING CAPABILITY OF PREVENTING PROPAGATION OF UNSTABLE RUPTURE

Kozo Fukuda; Tsunemi Wada; Shinichi Nagahashi; Yoshio Saito; Masahiro Ueda, and Minoru Tanaka, all of Tokyo, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 15, 1986, Ser. No. 919,059
Claims priority, application Japan, Oct. 24, 1985, 60-236383
Int. Cl.[4] C22C *38/02, 38/04*
U.S. Cl. 148—33 16 Claims



1. A wear resistant rail comprising a head and a foot interjoined by a web, said rail consisting essentially of 0.50 to 0.85 wt.% of C, 0.10 to 1.0 wt.% of Si, 0.50 to 1.50 wt.% of Mn, less than 0.035 wt.% of P, less than 0.035 wt.% of S, less than 0.050 Wt.% of Al, and the balance iron and inevitable impurities, the web of said rail having a high toughness tempered bainite structure, and the head of said rail having a high strength fine pearlite structure, and the foot of said rail having a structure selected from the group consisting of (i) tempered bainite, (ii) tempered mixed structure of bainite and martensite and (iii) pearlite, said rail having the characteristic of preventing propagation of an unstable destructive crack.

4,767,476

METHOD OF AND DEVICE FOR STORING LIQUID EXPLOSIVES IN THE FORM OF AN EMULSION IN WATER

Hans-Jürgen Gebauer, Troisdorf, Fed. Rep. of Germany, assignor to Josef Meissner GmbH & Co., Cologne, Fed. Rep. of Germany

Filed Dec. 3, 1987, Ser. No. 128,137
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1986, 3641207
Int. Cl.[4] D03D *23/00*
U.S. Cl. 149—109.6 12 Claims



1. A method of storing and removing a liquid explosive in the form of an emulsion in water, comprising introducing water to a predetermined level into the two parts of a container which communicate with each other through a gap, one part constituting the emulsion end and the other part the concentration end, circulating water in the emulsion end of the container, introducing a predetermined amount of the explosive or

VOL 1093 ISS 5 AG 30 1988 UMI

of an emulsion of the explosive in water into the emulsion end, continuing the circulation of water until enough of the emulsion has concentrated to a prescribed level in the concentration end of the container, and removing concentrated emulsion from the concentration end in the vicinity of its floor while supplying an equal volume of (a) water to the concentration end and/or (b) an equal volume of explosive or of the emulsion of explosive in water to the emulsion end.

4,767,477

METHOD FOR MANUFACTURING "NEON LOOK" LIGHTING

Barbara Danjell, Columbus, Ohio, assignor to Danjell Creations, Inc., Columbus, Ohio

Continuation-in-part of Ser. No. 782,978, Oct. 1, 1985, Pat. No. 4,711,044. This application Nov. 5, 1987, Ser. No. 117,692

Int. Cl.⁴ B44F *1/00;* **C09K** *11/00;* **B24B** *1/00;* **B29C** *37/00*

U.S. Cl. 156—67 **12 Claims**



1. A method of making a lamp simulating the appearance of a neon glow tube consisting of:

(1) providing a base panel;

(2) etching an abraded pattern in said base panel corresponding to an area of the panel in which it is desired that a neon glow be simulated;

(3) casting upon said pattern a polymeric gel material containing a fluorescent pigment and curing said gel material so that said gel material solidifies in a three dimensional form and intrinsically bonds to the surface of the base panel in the areas etched; and

(4) mounting the panel having the cured material thereon adjacent to an activating lamp.

4,767,478

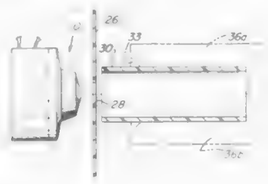
ATTACHING A PLASTIC TUBE TO A WEB OF PLASTIC

William C. Christine, Catasauqua, Pa., assignor to Triparte Ltd., Nazareth, Pa.

Filed Sep. 16, 1986, Ser. No. 908,057

Int. Cl.⁴ B32B *31/20*

U.S. Cl. 156—69 **6 Claims**



1. A method for welding a web of flexible, weldable plastic to a flexible, weldable flangeless plastic tube comprising the steps of:

(a) providing a tool having an axis, the tool being generally cylindrical, adapted for welding, and adapted for moving back and forth along the axis of the tool;

(b) coaxially aligning the axis of the tool and an axis of the flangeless tube;

(c) placing the web perpendicular to the axis of the tube and between the tool and the flangeless tube;

(d) moving the tool into the flangeless tube;

(e) welding the web to the internal surface of the flangeless tube; and

(f) removing the tool from the flangeless tube.

4,767,479

METHOD FOR BONDING CERAMIC CASTING CORES

T. Arnold Ferguson, Manchester, and Linda L. Seaver, Bristol, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Sep. 21, 1987, Ser. No. 99,272

Int. Cl.⁴ B32B *18/00*

U.S. Cl. 156—89 **4 Claims**

1. A method for bonding the surfaces of two green ceramic casting cores to each other, each core containing ceramic particles and thermoplastic binder, comprising the steps of: softening the binder at the surface of each core; applying a layer of ceramic particles to said surface of at least one core; while the binder is soft, assembling said surfaces of each core together; and heating the assembled cores to volatilize the binder and to sinter the ceramic particles to each other.

4,767,480

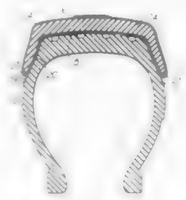
COLD RECAPPING METHOD FOR TIRES UTILIZING UNCURED RUBBER AND SECTIONED MOLD

Leon C. Goldstein, Atlanta, Ga., assignor to Long Mile Rubber Company, Dallas, Tex.

Continuation-in-part of Ser. No. 411,883, Aug. 26, 1982, Pat. No. 4,571,277, which is a continuation-in-part of Ser. No. 361,403, Mar. 24, 1982, Pat. No. 4,500,375. This application Sep. 28, 1984, Ser. No. 655,940

Int. Cl.⁴ B29D *30/58*

U.S. Cl. 156—96 **11 Claims**



1. A cold tire recapping method utilizing uncured rubber and a prepared tire carcass, comprising the steps of:

(a) preparing a flexible final female rubber mold having a negative tread pattern and having a diameter greater than the diameter of the tire carcass;

(b) sectioning the final female mold into at least one section;

(c) placing a plurality of registration pins in at least one edge of at least one section of said final female mold;

(d) forming a plurality of registration receptacles in at least one edge of at least one section of said final female mold, each receptacle for receiving one of the pins;

(e) mounting at least one connector to at least one of the sections, each connector for fastening the edges together;

(f) mounting at least one fastener to at least one of the sections, each fastener for receiving one of the connectors;

(g) applying a layer of uncured rubber to the running surface of the prepared tire carcass, fitting the final female mold sections about the layer of uncured rubber;

(h) joining the ends of the final female mold together in an edge abutting relationship interengaging the respective registration pins and receptacles;

(i) connecting together the fastener and the connector to maintain the section edges joined in said abutting relationship throughout the recapping process;

(j) applying a radial compressive force to the flexible female mold so that the mold is pressed against the layer of rubber to thereby impress the mold tread pattern into the layer of rubber; and

(k) molding, curing and bonding the layer to the carcass in the final female mold.

4,767,481

PROCESS FOR MAKING A TIRE HAVING DECORATIVE APPLIQUE

Lynn A. Bryant, Canton, and Thomas W. Bell, Mogadore, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Aug. 16, 1985, Ser. No. 766,227

Int. Cl.⁴ B29B *17/00*

U.S. Cl. 156—116 **4 Claims**



1. The process of imparting a decorative applique to a tire, comprising the steps of:

depositing and solidifying a coating of a single homogeneous layer of a thermoplastic elastomer on selected areas of a substrate to form a decal assembly, said single homogeneous layer being the only layer on said substrate;

subsequently placing said decal assembly in a tire mold receiving therein a green tire for curing;

closing said mold and thereby bringing said coating of said decal assembly into contacting engagement with said green tire; and

maintaining said tire and decal assembly within said closed mold at an elevated temperature and pressure for a period of time sufficient to cure said green tire and thereby adhering said coating to said tire.

4,767,482

APPARATUS FOR SEVERING AND HEAT SEALING SHEETS OF THERMOPLASTIC MATERIAL

Werner Diez, Frickenhausen, and Peter Gottwald, Metzingen, both of Fed. Rep. of Germany, assignors to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Jul. 3, 1985, Ser. No. 752,256

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1984, 3425430

Int. Cl.⁴ B31B *1/16*

U.S. Cl. 156—163 **8 Claims**



1. Apparatus for simultaneous severing and heat sealing of thermoplastic sheets, comprising a sheet supporting anvil having a flat sheet supporting surface; a hold-down device arranged to urge the sheets against the supporting surface of the anvil in the course of a combined severing and heat sealing operation, said device having a core and a heat-resistant outer layer surrounding at least a portion of the core and arranged to contact the sheets in the course of said operation; a combined severing and heat sealing tool movable into engagement with sheets which are supported by said surface of the anvil and are held by said heat-resistant layer, said tool comprising a blade having a predetermined thickness and said core including two plate-like members whose thickness matches or approximates said predetermined thickness and which flank said blade, said layer including a discrete elastic section for each of said plate-like members and each of said sections having an end face including an edge which is arranged to contact a sheet in the course of the combined severing and heat sealing operation, the end face of at least one of said sections sloping away from the surface of said anvil and toward the respective side of said blade and said sections being arranged to undergo deformation in response to engagement with a sheet which is supported by said surface of the anvil so as to stretch the sheet between said edges; and means for heating said tool.

4,767,483

METHOD OF MANUFACTURING A MAGNETIC RECORDING MEDIUM

Teruhiko Itami; Toshifumi Kimoto; Akira Yamasawa, and Koichi Saitoh, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 555,887, Nov. 28, 1983, abandoned. This application Nov. 12, 1986, Ser. No. 929,355

Claims priority, application Japan, Nov. 29, 1982, 57-207571

Int. Cl.⁴ B32B *31/00*

U.S. Cl. 156—154 **10 Claims**



1. A method of manufacturing a magnetic recording medium comprising the steps of:

forming a first laminated body by coating a first magnetic layer on one surface of a first base member;

forming a repetitive magnetization pattern in said first magnetic layer;

forming a second laminated body by coating a second magnetic layer on one surface of a second base member, said second magnetic layer being comprised of a material that will retain magnetization when heated and then cooled in the presence of a magnetic flux;

orienting the magnetic particles in said second magnetic layer in a predetermined direction;

bonding said first magnetic layer of said first laminated body to said second magnetic layer of said second laminated body through an intermediate layer; and

removing at least part of said second base member to form a magnetic recording medium having magnetic flux from

VOL 1093 ISS 5 AG 30 1988 UMI

said first magnetic layer being applied to said second magnetic layer.

4,767,484

METHOD OF ATTACHING STRAIN GAUGES TO VARIOUS MATERIALS

Timothy D. Schott, Hampton; Robert L. Fox, Hayes, and John D. Buckley, Newport News, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Adminstration, Washington, D.C.

Continuation-in-part of Ser. No. 831,372, Feb. 20, 1986, abandoned. This application Jul. 17, 1987, Ser. No. 74,792

Int. Cl.[4] B44C *1/14;* B32B *31/12, 31/20, 31/26*

U.S. Cl. 156—233 12 Claims



1. A method for bonding a strain gauge to a high reluctance, poorly thermally conductive material comprising the following steps:

placing a tape with an adhesive backing across the inside of a fixture frame;

placing a strain gauge, pad side down, flatly against said adhesive backing;

coating said strain gauge with a thin, uniform layer of adhesive;

removing said tape with said placed strain gauge from said fixture frame;

placing said tape onto an outer surface of a high reluctance, poorly thermally conductive material so that said adhesively coated strain gauge contacts said outer surface;

placing an inductive heating source which generates frequencies from approximately fifty to sixty kilocycles flatly upon said placed tape;

providing approximately five pounds per square inch of pressure upon said placed tape;

energizing said inductive heating source to locally heat said outer surface beneath said placed tape for approximately two minutes, thereby also curing said layer of adhesive;

removing said inductive heating source from said tape after approximately one minute to allow cooling, thereby allowing the bonding of said strain gauge to said outer surface;

removing said tape;

attaching leads to said bonded strain gauge to allow standard strain gauge testing;

whereby said strain gauge is quickly bonded to said high reluctance, poorly thermally conductive material.

4,767,485

HIGH SPEED EXTRUSION COATING WITH ETHYLENE COPOLYMERS

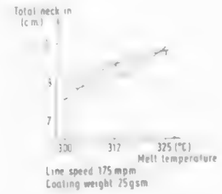
Dirk J. M. Michiels, Zwijndrecht, Belgium, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 655,276, Sep. 26, 1984, abandoned. This application May 6, 1986, Ser. No. 861,113

Claims priority, application United Kingdom, Sep. 30, 1983, 8326277

Int. Cl.[4] B29C *47/78*

U.S. Cl. 156—244.11 9 Claims



1. A method of extrusion coating a substrate with a layer of a low density ethylene copolymer comprising extruding a layer consisting essentially of low density ethylene copolymer containing less than 3% by weight of a comonomer selected from vinyl esters, acrylic acids, or methacrylic acids, acrylates or methacrylates and unsaturated alcohols from an extruder onto the substrate at a temperature in the range of $T_D \pm 15°$ C. where T_D is the degradation temperature in °C. of the copolymer, defined as the minimum temperature at which chemical breakdown occurs with the extruder operating at minimum output.

4,767,486

METHOD OF MANUFACTURING AN ELECTROSTATIC CAPACITANCE TYPE INFORMATION SIGNAL RECORDING MEDIUM

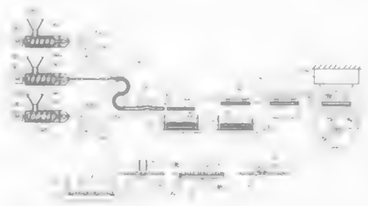
Hiroshi Nakajima, Zama; Yoshihito Nakane, Yokohama; Toshikazu Goshima, Sagamihara; Osamu Narita, Yokohama, and Koji Akita, Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa, Japan

Continuation of Ser. No. 686,156, Dec. 26, 1984, abandoned. This application Oct. 20, 1986, Ser. No. 922,815

Claims priority, application Japan, Dec. 30, 1983, 58-246611

Int. Cl.[4] B32B *31/00*

U.S. Cl. 156—244.11 10 Claims



1. A method of manufacturing an electrostatic capacitance type information signal recording disc, said method comprising the steps of:

(a) simultaneously but separately extrusion forming first and second sheets, said first sheet being a continuous sheet made of a non-conductive material, said second sheet being a continuous sheet made of a conductive material and having a thickness of approximately 0.01 mm to 0.05 mm;

(b) binding said second sheet on at least one surface of said first sheet by use of binding means, said binding means comprising heating rollers for heating said first and second sheets up to a predetermined temperature and binding said first and second sheets with a predetermined pressure so as to obtain a continuous laminated sheet, said first sheet being used as a core material and having a thickness which is approximately 100 to 23 times the thickness of said second sheet so that said continuous laminated sheet has a predetermined thickness, said heating rollers being directly supplied with said first and second sheets which are formed in said step (a);

(c) cutting said laminated sheet into a plurality of laminated plates having a predetermined size which corresponds to the size of said electrostatic capacitance type information signal recording disc;

(d) pre-heating each of said laminated plates so as to obtain a pre-heated laminated plate; and

(e) compression molding variations in geometrial configuration, in accordance with information signals which are to be recorded, on a recording part of said second sheet of said pre-heated laminated plate supplied.

4,767,487

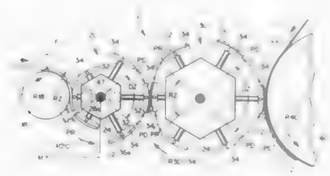
METHOD FOR REPOSITIONING DISCRETE ARTICLES

James E. Tomsovic, Jr., Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 788,898, Oct. 18, 1985, Pat. No. 4,726,876. This application Aug. 10, 1987, Ser. No. 83,493

Int. Cl.[4] B65G *47/31*

U.S. Cl. 156—256 7 Claims



1. A method for changing the spacing between articles of a moving array of discrete articles, comprising the following steps:

moving the articles along at least two sequentially positioned closed, non-circular orbital paths, each path passing through (i) a respective receiving zone in which the articles are maintained in the respective receiving zone orbital radius and (ii) a respective discharge zone in which the articles are maintained in the respective discharge zone orbital radius which is different from the receiving zone orbital radius, with the orbital path distance between adjacent articles in each receiving zone being different from the orbital path distance between adjacent articles in each respective discharge zone;

in the receiving zone of a first positioned closed, non-circular orbital path, transferring discrete articles from a first array of inbound discrete articles to the orbital path and, in the discharge zone of a last positioned closed, non-circular orbital path, transferring the discrete articles from the orbital path to a second array of outbound articles, whereby the linear spacing between adjacent discrete articles deposited in the second array of articles is different from the linear spacing between adjacent discrete articles in the first array of articles.

4,767,488

METHOD AND APPARATUS FOR THE MANUFACTURE AND STRETCHING OF A LAMINATE

Ole-Bendt Rasmussen, Forchwaldstrasse 23, CH-6318 Walchwil/Zug, Switzerland

Filed Oct. 6, 1986, Ser. No. 915,988

Claims priority, application Denmark, Oct. 4, 1985, 4553/85

Int. Cl.[4] B29C *69/00, 31/00*

U.S. Cl. 156—344 2 Claims



1. A method of forming and stretching a laminate comprising at least two films of a polymeric material, said method comprising pressing the films together, along lines extending substantially in the longitudinal direction of the films and simultaneously stretching the films in the transverse direction, thereby forming a laminate having a configuration of temporarily substantially even distributed substantially longitudinal pleats, characterized in forming and stretching at least two such laminates together, one on top of the other, from a total of at least four films, to form a composite of the laminates, and subsequently peeling apart the individual laminates of said composite to form separate laminates.

4,767,489

COMPUTER AIDED PRINTER-ETCHER

Frederick H. Lindner, Canaan, N.H., assignor to PC Proto, Inc., Hanover, N.H.

Filed Mar. 25, 1987, Ser. No. 29,923

Int. Cl.[4] C23F *1/02;* B44C *1/22;* C03C *15/00;* G06F *15/606*

U.S. Cl. 156—345 21 Claims



1. A computer aided printer-etcher for controlled printing of a resist pattern on a metalized film and subsequent etching of the metalized surface thereof, said printer etcher utilizing:

a computer having a keyboard, a memory and a display panel,

said printer-etcher comprising; a cabinet, an upright etching chamber within said cabinet, a metalized film conveyor within said cabinet defining a conveyor film path leading into, through and out of said cabinet for said metalized film, said conveyor path including a vertically oblique portion within said etching chamber, a high speed printer

VOL 1093 ISS 5 AG 30 1988 UMI

along said conveyor film path upstream of said etching chamber including means for printing a resist ink pattern onto said metalized surface of said metalized film, liquid applicator means along said conveyor film path and within said etching chamber and facing the metal surface of said metalized film for applying, in sequence, an etching liquid and a rinse liquid onto the metalized face of said metalized film, an etchant liquid holding tank having an etching liquid therein and a rinse liquid holding tank having a rinse liquid therein within said cabinet, and means for selectively pumping said etching liquid and said rinse liquid from respective holding tanks to said liquid applicator means for application of etching liquid and rinse liquid in sequence to said metal surface of said metalized film for passage over said metalized film and means for returning said etching liquid and said rinse liquid to respective etchant liquid and rinse liquid holding tanks, and control means responsive to signals from said computer keyboard and/or said memory for controlling operation of and power supply to said conveyor, said high speed printer, said pump means and said return means.

4,767,490

APPARATUS AND METHOD FOR PERMANENTLY JOINING SCREW CONVEYOR MODULES

Peter G. Weber, LaPlace; Michael K. Tan, and Charles Dzuong, both of Metairie, all of La., assignors to The Laitram Corporation, Harahan, La.

Filed Apr. 6, 1987, Ser. No. 34,730
Int. Cl.[4] B29C *65/02, 65/20*
U.S. Cl. 156—499 **22 Claims**



1. Apparatus for permanently joining one end of the axial member of a first plastic screw conveyor module having an aperture extending through said axial member from a first end to a second end to one end of the axial member of a second plastic screw conveyor module also having an aperture extending from the first end to a second end through its axial member, said apparatus comprising:

a support stand;

a support means for supporting said first module in a position such that its axial member is aligned along a longitudinal axis;

holding means comprising at least two bars mounted on said support stand and parallel to said longitudinal axis for supporting said second module in a position such that its axial member is aligned with the axial member of said first module, said bars extending into the aperture of said second module and being spaced apart to provide a sliding fit;

first brake means supported by said support stand for restricting movement of said first module along said longitudinal axis;

means for partially melting one of said first and second ends of said axial member of said first module and one of said first and second ends of said axial member of said second module; and

means mounted to said support stand and connected to one of said holding means and brake means for pressing together and holding under pressure said partially melted ends of said first and second modules while said support means and said holding means maintain said axial members of said first and second modules in axial alignment until said partially melted ends solidify such that said first and second modules are bonded and form a unitary screw conveyor.

4,767,491

DEVICE FOR THE CONTINUOUS PRODUCTION OF MANUFACTURED ARTICLES REINFORCED WITH MIXTURES OF HYDRAULIC BINDERS

Andrea Vittone, Milan; Giuseppe Chiappini, Albiano Magra, and Massimo Di Paola, Rapallo, all of Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Feb. 14, 1986, Ser. No. 829,101
Claims priority, application Italy, Feb. 15, 1985, 19535A/85
Int. Cl.[4] B32B *31/08*
U.S. Cl. 156—500 **16 Claims**



1. A device for the continuous production of reinforced manufactured articles comprising a series of alternating successions of layers of hydraulic binders and open-net layers of fibrilled synthetic films, characterized in that said device comprises, in the given order:

(a) a conveyor belt comprising porous material, for the forward feeding and advancing of reinforced net and of mix to various processing stations of the device;

(b) a plurality of stations for the formation of superimposed, thin and uniform layers of hydraulic binder mix/net, each staton comprising:

a feeder for the reinforcing net;

means for impregnating and preliminarily degassing the reinforcing net;

a metering device means for dosing the hydraulic binders mix on the conveyor belt and for creating a thin layer of mix of a determined thickness, the metering device means is positioned above the conveyor belt;

a system for the feeding and deposition of the reinforcing net onto the thin mix layer resting on the conveyor belt;

compacting elements for the impregnation of the net in the hydraulic binder mix and for the ejection of residual air, and a subsequent doser means for the hydraulic binder mix;

(c) one or more stations for the levelling-sizing of the surface of obtained reinforced plate;

(d) stations for extraction of excess water;

(e) at least one station for pressing the reinforced plate;

(f) stations for the longitudinal and cross cutting of the reinforced plate, and

(g) a station for gathering the produced plates.

4,767,492

ULTRASONIC FUSE-BONDING SEALING APPARATUS WITH IMPROVED CONTACT SURFACES

Syoji Fukusima, Shizuoka; Motosaburo Kato, Yaizu, and Takashi Mochizuki, Shimizu, all of Japan, assignors to Pola Chemical Industries, Inc., Shizuoka, Japan

Filed Nov. 24, 1986, Ser. No. 933,882
Claims priority, application Japan, Apr. 18, 1986, 61-89515; Apr. 18, 1986, 61-89516
Int. Cl.[4] B29C *65/08*
U.S. Cl. 156—580.2 **6 Claims**



5. An ultrasonic sealing apparatus, for fuse-bonding a bottom portion of a thermoplastic tubular container by frictional heat generated by ultrasonic vibration, comprising:

(a) horn means, having a contact surface in contact with said bottom portion;

(b) anvil means, having a contact surface in contact with said bottom portion,

said bottom portion being held between said horn and anvil means, and a position of said anvil means being displaceable relative to said horn means, said contact surfaces of said horn and anvil means being formed with grooves to provide a plurality of protrusions, said grooves providing a bending pattern, each of said protrusions having a flat upper surface and slanted side surfaces so that each of said protrusions has a trapezoidal shape in cross-section, said protrusions being arranged such that said grooves extend from one end to the other end of each of said contact surfaces in zig-zag fashion, said flat upper surfaces of said protrusions having an octagonal shape, said bottom portion having fuse-bonding surfaces and at least one of said horn and anvil means providing ultrasonic vibration in a direction oblique to said fuse-bonding surfaces;

(c) conveyor means adapted to position said bottom portion between said horn and anvil means when they are opened; and

(d) guide means adapted to flatten said bottom portion and to introduce said bottom portion into a space defined between said contact surfaces of said horn and anvil means.

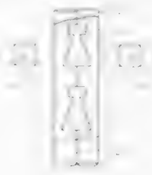
4,767,493

METHOD FOR HEAT-TREATING METAL

Kazuaki Mino, Chiba, Japan, assignor to Director General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 27, 1986, Ser. No. 923,606
Claims priority, application Japan, Oct. 30, 1985, 60-241570
Int. Cl.[4] C30B *1/06;* **B22D** *23/04*
U.S. Cl. 156—603 **3 Claims**

1. A method for heat-treating a metal or alloy part comprising inserting said part into a mold having an inner surface formed to receive the part in close spacing therewith, said mold having an outer surface which is substantially continuous in an axial direction, heating said mold and, simultaneously, said part through said mold until all of said part is at its heat treatment temperature, and controlling the heat treatment temperature of said part as a function of the spacing of said part



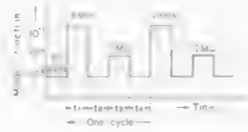
and the inner surface of the mold and also as a function of the difference in thermal characteristics of said part and said mold.

4,767,494

PREPARATION PROCESS OF COMPOUND SEMICONDUCTOR

Naoki Kobayashi, Iruma; Toshiki Makimoto, Tokorozawa, and Yoshiji Horikoshi, Akishima, all of Japan, assignors to Nippon Telegraph & Telephone Corporation, Tokyo, Japan

Filed Sep. 19, 1986, Ser. No. 909,287
Claims priority, application Japan, Jul. 4, 1986, 61-156260; Jul. 29, 1986, 61-176611
Int. Cl.[4] C30B *25/02*
U.S. Cl. 156—606 **26 Claims**



1. A process for preparing compound semiconductor thin films in which an organometallic compound cotaining an element of Group III or II and a hydride containing an element of Group V or VI are transported over a heated substrate and are subjected to thermal decomposition, whereby a III-V or II-VI compound semiconductor is grown over said heated substrate, the process comprising:

repeating a cycle consisting of the following steps, whereby a III-V or II-VI compound semiconductor is grown over said heated substrate by forming alternating layers of an element of Group III or II and an element of Group V or VI, respectively:

(a) introducing over said heated substrate a carrier gas comprising a hydride containing an element of Group V or VI and present in a first concentration, said carrier gas further comprising at least one organometallic compound containing an element of Group III or II and present in a concentration, to thermally decompose the organometallic compound and form a layer of at least one element of Group III or II, wherein said first concentration of said hydride is a molar fraction ranging from a value which corresponds to the equilibrium molar fraction of said element of Group V or VI on said III-V or II-VI compound semiconductor at the temperature of said heated substrate up to a value at which said element of Group V or VI is not substantially incorporated into said layer of at least one element of Group III or II;

(b) interrupting the introduction of said organometallic compound;

(c) introducing over said heated substrate a carrier gas comprising a hydride containing an element of Group V or VI and present in a second concentration, which second

VOL 1093 ISS 5 AG 30 1988 UMI

concentration is higher in hydride than said first concentration, to thermally decompose the hydride and form a layer of an element of Group V or VI on top of said layer of an element of Group III or II; and

(d) interrupting the introduction of said hydride at said second concentration.

4,767,495

METHOD FOR DETECTING TIME FOR TERMINATION OF SURFACE LAYER REMOVAL PROCESSING

Kentaro Nishioka, Hikone, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan

Filed Dec. 9, 1987, Ser. No. 130,472
Claims priority, application Japan, Dec. 10, 1986, 61-294205
Int. Cl.[4] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 9 Claims



1. A method of detecting a termination time for surface layer removal processing to remove a surface layer provided on a base substrate of an object to be processed, said method comprising the steps of:

finding a wavelength of light transmissible through said surface layer;

predetermining a reference time period required for a decrease in thickness of said surface layer by one-half said wavelength through said surface layer removal processing;

applying said light at said wavelength to said object while performing said surface layer removal processing;

detecting the intensity of reflected light from said object or transmitted light through said object to provide an intensity detection signal;

obtaining first data expressing a time change of said intensity detection signal;

obtaining first data expressing a time change of said intensity detection signal;

obtaining a time difference value of said first data for each time interval proportional to said reference time period thereby to extract a component of said first data which changes periodically in a cycle time period proportional to said reference time period;

obtaining second data expressing a time change of said time difference value; and

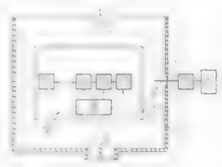
comparing a value of said second data with a prescribed threshold value to detect said termination time on the basis of a moment of time at which a magnitude relationship between said value of said second data and said threshold value is inverted.

4,767,496

METHOD FOR CONTROLLING AND SUPERVISING ETCHING PROCESSES

Konrad Hieber, Bernau, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 29, 1987, Ser. No. 113,829
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1986, 3643379
Int. Cl.[4] B44C *1/22*; C23F *1/02*
U.S. Cl. 156—627 7 Claims



1. A method for controlling and supervising an etching process, comprising:

identifying an etching rate and a final point of material erosion with a reference substrate having a defined specimen geometry with low-impedence contacts, including measuring electrical resistance of the reference substrate dependent on layer thickness;

transmitting measured data in a non-contacting fashion by pulse-code-modulation of electromagnetic radiation; and

using a telemetric metrology system which is mounted at a moveable substrate holder as an independent unit.

4,767,497

PROCESS OF FORMING ENHANCED HEAT TRANSFER SURFACES

Walter J. Shattes, Bloomfield; Nikhiles Bandyopadhyay, Somerset, and Paul C. Krueger, Warren, all of N.J., assignors to The BOC Group, Inc., Montvale, N.J.

Filed Apr. 1, 1987, Ser. No. 32,671
Int. Cl.[4] C23F *1/00*; B44C *1/22*
U.S. Cl. 156—665 8 Claims



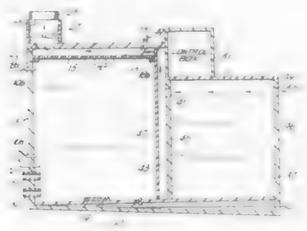
1. A process for enhancing the heat transfer properties of the surface of an aluminum alloy containing a pre-existing precipitate comprising subjecting said aluminum alloy to an etching composition for said precipitate for an effective period of time such that pits having an average size of from about 0.5 to 5 microns are formed in the surface, wherein prior to etching, the alloy is heating to a temperature sufficient to dissolve precipitates which, when subjected to said etching composition would form pits smaller than about 0.5 micron and quenched so that said precipitates do not reform, thereby minimizing the formation of pits smaller than about 0.5 micron.

4,767,498

METHOD OF REDUCING WASTE VOLUME AND AN APPARATUS THEREFOR

Lawrence M. Kreisler, 23 Woodleigh Ct., Holbrook, N.Y. 11741

Filed Aug. 20, 1987, Ser. No. 87,396
Int. Cl.[4] B01D *1/16, 19/00*
U.S. Cl. 159—47.3 15 Claims



1. A method of reducing the volume of waste in a waste solution which comprises:

(a) Introducing said waste solution into a waste treatment vessel;

(b) maintaining said waste solution at a temperature of from about 120° F. to about 140° F. in said waste treatment vessel;

(c) spraying said waste solution across a perforated plate disposed above the level of the waste solution in said waste treatment vessel;

(d) passing air across said perforated plate in said treatment vessel to contact said waste solution and thereby become supersaturated with the liquid in said solution;

(e) permitting said waste solution to drip through said perforated plate back into said treatment vessel while discharging the supersaturated air from said vessel, and

(f) withdrawing a concentrated waste solution as a slurry from said treatment vessel.

13. An apparatus for reducing waste contained in a waste solution said apparatus comprising a treatment vessel having a substantially horizontal top, an inclined bottom, two spaced parallel walls defining an air flow channel on one side of said vessel and an opposed parallel wall on the other side of said vessel; a perforated plate disposed below the top of said vessel and defining a horizontal channel therewith; means for spraying waste solution across said perforated plate; means for maintaining said waste solution at a temperature of from about 120° F. to about 140° F. in said treatment vessel, entrance port for introducing air to flow across said perforated plate; exit port at the top of said vessel for venting supersaturated air to the atmosphere, and means for removing concentrated waste solution from the bottom of said treatment vessel.

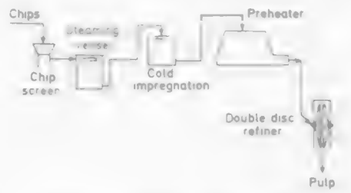
4,767,499

METHOD FOR THE PRODUCTION OF FIBER PULP BY IMPREGNATING LIGNOCELLULOSIC MATERIAL WITH A SULPHONATING AGENT PRIOR TO REFINING

Rune G. W. Simonson, Sotenäsvägen 64, S-433 64 Partille, and Per O. Axelson, Bordsvägen 29, S-122 46 Enskede, both of Sweden

Continuation of Ser. No. 601,709, Apr. 18, 1984, abandoned, which is a continuation-in-part of Ser. No. 363,573, Apr. 30, 1982, abandoned. This application Aug. 13, 1987, Ser. No. 85,221
Claims priority, application Sweden, Apr. 3, 1981, 8102138
Int. Cl.[4] D21C *3/06*; D21B *1/16*
U.S. Cl. 162—25 12 Claims

1. A method for the production of fiber pulps of high strength from a lignocellulosic starting material, comprising the steps of lignin softening and mechanical defibration, said lignocellulosic starting material being selected from the group consisting of spruce, spruce-like wood materials and mixtures of lignocellulosic materials, said mixtures containing at least 70% spruce or spruce-like wood materials, and said step of lignin softening comprising impregnating, before said defibration, said starting material with a dilute aqueous solution of a sulfite containing lignin softening agent, in a sufficient amount to provide in the fiber pulp after said step of mechanical defibration an absorbed and bonded amount of sulfonate groups within the range of from 0.06 to 0.75 wt. %, calculated as Na_2SO_3 and based on the dry pulp weight, said absorbed and bonded amount being balanced to the composition of the starting material and the temperature-pressure conditions in the defibration step to provide a pulp of maximum tensile strength.

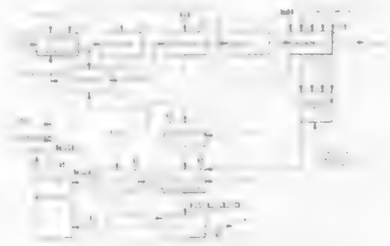


4,767,500

SULFITE COOKING METHOD FOR THE PRODUCTION OF CELLULOSE FROM MATERIALS CONTAINING LIGNOCELLULOSE WITH RECOVERY OF THE COOKING CHEMICALS

Rudolf Patt, Reinbek, and Othar Kordsachia, Oststeinbek, both of Fed. Rep. of Germany, assignors to Kraftanlagen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 864,010, May 16, 1986, abandoned. This application Aug. 27, 1987, Ser. No. 93,086
Claims priority, application Fed. Rep. of Germany, May 18, 1985, 3518005
Int. Cl.[4] D21C *3/20, 11/02*
U.S. Cl. 162—32 19 Claims



3. A sulfite cooking process for the production of pulp from lignocellulosic materials including cooking, blowing, pulp washing, and bleaching steps comprising:

(A) cooking said lignocellulosic materials with a cooking solution containing at least one water-soluble alkaline sulfite compound, an alcohol, and a quinone compound redox catalyst, to form a pulp cooking liquor wherein said alcohol comprises about 10 to 60% of said cooking solution;

(B) washing said cooking liquor and thereby separating said pulp cooking liquor into a pulp component and a black liquor component;

(C) evaporating said black liquor to form a concentrated black liquor, and an alcohol for recycling into said cooking solution of step A;

(D) thermally degrading said concentrated black liquor in a reducing atmosphere to form a solid residue;

VOL 1093 ISS 5 AG 30 1988 UMI

(E) leaching said solid residue to form an alkali carbonate, and an alkali sulfite compound for recycling into said cooking solution of step A; and

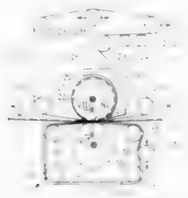
(F) sulfiting said alkali carbonate with sulphur dioxide to form an alkali sulphite compound for recycling into said cooking solution of step A.

4,767,501

METHOD FOR EQUALIZING COMPRESSION PRESSURE IN A PRESS NIP OF A PAPER MACHINE

Jorma Laapotti, Palokka, Finland, assignor to Valmet Oy, Finland

Filed Jan. 6, 1986, Ser. No. 816,315
Claims priority, application Finland, Jan. 8, 1985, 850087
Int. Cl.[4] D21F 3/02
U.S. Cl. 162—205 9 Claims



1. A method in a press section of a paper machine for equalizing compression pressure acting on a web passing through a press nip formed by two opposed press rolls and through which at least one water-receiving press fabric passes having a surface directly contacting a surface of the web for receiving water pressed from the web in said press nip, comprising the steps of:

equalizing small size variations in the compression pressure acting on the web, small-size variations being in the range of up to about 6 mm, by passing at least one resilient loop component through said press nip, said resilient loop component having a thickness and an outer surface layer facing the web, and wherein said outer surface layer of said resilient loop component facing the web has a hardness in the range of between about 10 to 80 P & J, and

equalizing larger variations in the compression pressure acting on the web, said larger variations being greater than about 6 mm, by providing said resilient loop component with a framework layer within the thickness thereof, said framework layer of said resilient loop component having a thickness greater than 50% of the thickness of said resilient loop component and a hardness substantially greater than the hardness of said outer surface layer of said resilient loop component facing the web, said framework layer hardness being in the range of between 5 to 30 P & J.

4,767,502

STEAM GENERATOR IN A MULTI-STAGE DISTILLING APPARATUS

Lauri Santasalo, and Esko Santasalo, both of Helsinki, Finland, assignors to Oy Santasalo-Sohlberg AB, Finland

Filed May 20, 1987, Ser. No. 52,452
Claims priority, application Finland, May 26, 1986, 862213
Int. Cl.[4] B01D 1/26
U.S. Cl. 202—174 8 Claims

1. A steam generator forming a first stage of a multi-stage distilling apparatus, comprising:

a housing defining a steam generating space therewithin;

a plurality of discrete, separate, tubular members defining tubular spaces for receiving incoming feed liquid;

feed means for conducting feed liquid into said tubular spaces, said feed means comprise;

a feed line;

a plurality of branch lines for feeding the feed liquid into said steam generating space, said branch lines each connected with said feed line and a respective tubular space;

means for heating the feed liquid to generate the steam, comprising electrodes situated in said tubular members;

a separating space situated in a lower part of said steam generating space;



a droplet separator communicating with said separating space and through which the generated steam is disposed to flow from said separating space, whereby liquid separated from the steam in said droplet separator collects in said separating space;

a steam outlet connected with said droplet separator;

a second stage of said distilling apparatus, with said steam outlet connected with said second stage, whereby the steam generated in said first stage constitutes feed steam for said second stage; and

a heat exchanger disposed in said feed line for preheating the feed liquid.

4,767,503

REMOVAL OF LIGHT IMPURITIES FROM CAPROLACTAM BY DISTILLATION WITH WATER

Lamberto Crescentini, Chester; Joseph D. DeCaprio, Hopewell; William B. Fisher, Chester, and Roy J. Lilley, Jr., Richmond, all of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 29, 1983, Ser. No. 527,044
Int. Cl.[4] B01D 3/14, 3/38
U.S. Cl. 203—48 7 Claims



1. In a method to purify crude caprolactam, the improvement consisting essentially of

(a) taking a water content below 10% stream of crude caprolactam having impurities,

(b) adding water to said stream, and

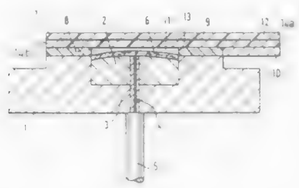
(c) distilling said stream by fractional distillation into an overhead containing water and low boiling impurities and a bottoms of caprolactam with water content below 10%.

4,767,504

METHOD FOR CONDITIONING A GAS SENSOR

Mihail Lungu, Reinfeld, and Bernd Rogge, Scharbeutz, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 833,357, Feb. 25, 1986, Pat. No. 4,689,135.
This application Jun. 3, 1987, Ser. No. 56,970
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1985, 3506688
Int. Cl.[4] G01N 27/46
U.S. Cl. 204—1 T 3 Claims



1. A method for conditioning a gas sensor such as for measuring the CO_2 partial pressure, the gas sensor having an electrode arrangement surrounded by an electrolyte and a gas-permeable membrane for partitioning the electrode arrangement from the atmosphere, the method comprising the steps of:

covering only the membrane of said gas sensor with a gas-tight and water-vapor-tight overlay containing a metal foil to prevent gas from being transmitted between the electrolyte and the ambient; and,

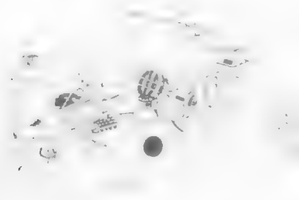
generating and maintaining an isotonic equilibrium by means of the gas diffusing from the electrolyte through the membrane to the overlay.

4,767,505

METHOD OF ROTATIONALLY MOLDING A SYNTHETIC RESIN DOLL

Yasuta Satoh, Tokyo; Hiroshi Tsuchihashi, Funabashi, and Saburo Tani, Tokyo, all of Japan, assignors to Takara Co., Ltd., Tokyo, Japan

Division of Ser. No. 749,578, Jun. 27, 1985, Pat. No. 4,629,409.
This application Aug. 13, 1986, Ser. No. 896,389
Claims priority, application Japan, Oct. 17, 1984, 59-216271
Int. Cl.[4] B29C 41/04, 41/52
U.S. Cl. 264—39 4 Claims



1. A method of automatically molding a hollow synthetic resin product from a plurality of molds having a cover and connected to means for charging, heating and cooling the mold and moving the mold through the various process steps, which comprises the steps of:

processing each molded product from at least four stations positioned along a multi-sided perimeter;

sequentially detecting the molding release of each mold, the step of detecting occurring at a first station;

blowing air into the inside of the mold to clean it, the step of blowing occurring at the first station;

charging a certain amount of the raw moldable material into the mold in a solid state, the step of charging occurring at the first station;

closing the cover of the mold, the step of closing occurring at the first station;

inserting the mold into a single heating furnace at a second station opposite the first station;

rotating the mold in a rotational manner to form a synthetic resin melted skin layer on the inner wall of the mold;

moving the mold into one of two cooling chambers located at a third station and a fourth station opposite each other; alternately heating another mold in the single heating furnace and then cooling the mold in an unoccupied cooling chamber;

cooling the synthetic resin melted skin layer of the cooling chamber while rotating the mold;

moving the mold from the cooling chamber to a molding release unit located at the first station;

opening the cover of the mold, the step of opening occurring at the first station;

removing the molding from the mold whereby each mold is sequentially subject to the same steps, the step of removing occurring at the first station; and

automatically moving the molds among at least the first, second, third, and fourth stations.

4,767,506

ELECTROSTATIC TREATMENT OF MILLED CRUDE POTASH SALTS CONTAINING KIESERITE

Günter Fricke, Bad Hersfeld, Fed. Rep. of Germany, assignor to Kali und Salz Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Continuation of Ser. No. 792,832, Oct. 25, 1985, abandoned.
This application Aug. 3, 1987, Ser. No. 81,525
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3439042
Int. Cl.[4] B03B 1/04
U.S. Cl. 204—127.4 4 Claims



1. A process for the electrostatic separation of a crude potash salt containing kieserite, sylvite and rock salt to produce a concentrate having a magnesium oxide content of 7 to 11% and a potassium oxide content of 23 to 33%, which comprises the steps of:

(a) milling the crude potash salt to a grain size of 1 to 2 mm;

(b) admixing the milled crude salt with about 30 to 60 g/ton

VOL 1093 ISS 5 AG 30 1988 UMI

of an ortho-hydroxy-aromatic carboxylic acid conditioning agent;
(c) triboelectrically charging the milled crude salt treated in step (b) at a relative humidity of 5 to 13% to charge the kieserite and the sylvite negatively and the rock salt positively;
(d) treating the milled crude salt triboelectrically charged in step (c) with an auxiliary conditioning agent comprising a C_6 to C_{14} fatty acid or a mixture of C_6 to C_{14} fatty acids, in an amount of 20 to 60 g/ton of milled crude salt; and
(e) feeding the milled crude salt treated in step (d) to a free fall separator to form the product concentrate wherein kieserite and sylvite are concentrated on the positive electrode in controlled proportions and rock salt is concentrated on the negative electrode in a controlled proportion.

4,767,507

GOLD ELECTROPLATING BATH

Peter Wilkinson, Coleford, England, assignor to Engelhard Corporation, Menlo Park, N.J.

Continuation of Ser. No. 37,766, Apr. 13, 1987, abandoned. This application Jan. 11, 1988, Ser. No. 144,607
Claims priority, application United Kingdom, May 21, 1986, 8612361
Int. Cl.[4] C25D *3/48, 3/62*
U.S. Cl. 204—44.3 **7 Claims**

1. An acid gold electroplating bath comprising gold in electrodepositable form and one or more additives selected from 3-(3-pyridyl) acrylic acid, 3-(3-quinolyl) acrylic acid, and salts thereof.

4,767,508

STRIKE PLATING SOLUTION USEFUL IN APPLYING PRIMER PLATING TO ELECTRONIC PARTS

Yasuhiro Arakida, and Kazuhiko Fukamachi, both of Kanagawa, Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Feb. 20, 1987, Ser. No. 16,942
Claims priority, application Japan, Feb. 27, 1986, 61-40297; Feb. 27, 1986, 61-40298; Feb. 27, 1986, 61-40299
Int. Cl.[4] C25D *3/56*
U.S. Cl. 204—44.5 **2 Claims**

1. An electroplating solution suitable for applying a cobalt-nickel alloy strike plating, which comprises about 5 g/l–300 g/l of nickel chloride, about 5 g/l–300 g/l of cobalt chloride and about 30 g/l–300 g/l of hydrochloric acid.

4,767,509

NICKEL-PHOSPHORUS ELECTROPLATING AND BATH THEREFOR

Rodger L. Gamblin, Dayton; Nancy E. Myers, and David J. Sugg, both of Kettering, all of Ohio, assignors to Burlington Industries, Inc., Greensboro, N.C.

Continuation-in-part of Ser. No. 732,277, May 9, 1985, Pat. No. 4,673,468, and Ser. No. 609,137, May 11, 1984, abandoned, which is a continuation-in-part of Ser. No. 458,461, Jan. 17, 1983, abandoned, and Ser. No. 499,515, May 31, 1983, abandoned, which is a continuation-in-part of Ser. No. 464,101, Feb. 4, 1983, Pat. No. 4,528,070. This application Jun. 16, 1987, Ser. No. 62,641
Int. Cl.[4] C25D *3/58*
U.S. Cl. 204—44.7 **19 Claims**

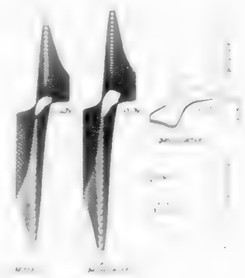
8. A method of electrolytically plating a nickel phosphorus alloy on a substrate comprising the steps of:
(a) providing a bath comprising 0.7–1.3 molar Ni^+, 1–2 molar Cl^-, and 1–3 molar HPO_3^{+2}, and minimal amounts of sulfate;
(b) immersing a substrate as a cathode in the bath;
(c) immersing an anode in the bath; and
(d) applying an electrical potential across the anode and cathode so as to effect electrodeposition of nickel phosphorus alloy on the substrate, with increased cathode efficiency, increased conductivity, and minimal unwanted precipitates, compared to the results of the use of baths containing significant amounts of sulfate.

4,767,510

ELECTROLYTIC PROTECTION OF CHLORINE DIOXIDE

Marek Lipsztajn, Rexdale, Canada, assignor to Tenneco Canada Inc., Islington, Canada

Filed Jun. 3, 1987, Ser. No. 57,107
Int. Cl.[4] C25B *1/00*
U.S. Cl. 204—101 **14 Claims**



1. An electrochemical process for the production of chlorine dioxide, which comprises:
passing a cathodic electrical current through an aqueous acidity solution of chlorate ions having a total acid greater than that of about 7 normal sulphuric acid and containing dissolved chlorine dioxide having a concentration of dissolved chlorine dioxide in the range of about 0.01 to about 15 gpl, using a cathode constructed of an electrochemically-active material which is also chemically inert and non-catalytic with respect to the production of chlorine dioxide from said aqueous acid solution; and
removing generated chlorine dioxide from the aqueous acid solution while maintaining said range of dissolved chlorine dioxide concentration in said aqueous acid solution.

4,767,511

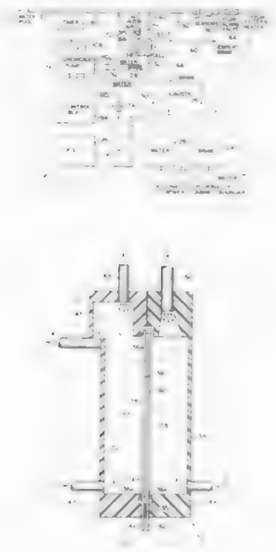
CHLORINATION AND PH CONTROL SYSTEM

Pedro J. Aragon, 306 Highpoint Dr., Wadsworth, Ohio 44281

Filed Mar. 18, 1987, Ser. No. 27,610
Int. Cl.[4] C25B *1/00*
U.S. Cl. 204—128 **15 Claims**

1. A system for chlorination and pH control of a body of water having a recirculation line, said system comprising:
(a) sources of brine and water;
(b) conduits for said brine and water connected to the respective sources;
(c) an electrolytic cell for generation of chlorine and caustic soda from said brine and water, said cell comprising:
(1) an assembly comprising a porous separator, a perforated anode and a perforated cathode, said anode and said cathode being in engagement with said separator on opposite sides thereof, said separator dividing said cell into anolyte and catholyte compartments and forming the sole barrier between said compartment
(2) said anolyte compartment including said anode, an inlet for said brine, a chlorine gas-spent brine separation chamber at the top thereof, and separate outlets for spent brine and chlorine;
(3) said catholyte compartment including said cathode, an inlet for said water, and a single outlet at the top thereof for sodium hydroxide and hydrogen, said single outlet being the only outlet from said catholyte compartment;

(d) a recirculation conduit for recirculating spent brine from said anolyte compartment to said source of brine;
(e) a gas feed conduit for conveying chlorine gas from said anolyte compartment to said body of water;
(f) an alkali feed conduit for conveying sodium hydroxide and hydrogen as a single stream from said catholyte compartment to said body of water;
(g) a source of acid;
(h) a conduit for supplying acid from said source of acid to said body of water;



(i) oxidation-reduction potential and pH control means, said control means including means for sensing the oxidation-reduction potential of water in said body for activating said electrolytic cell when the oxidation-reduction potential is below a predetermined value; and means for sensing the pH in said body of water and causing said acid to be fed to said body when the pH is above a predetermined value, said means for sensing said oxidation-reduction potential and said pH being at locations remote from the streams of chlorine, sodium hydroxide and acid supplied to said body of water.

4,767,512

PROCESS AND APPARATUS FOR PREVENTING OXIDATION OF METAL BY CAPACTIVE COUPLING

George Cowatch, and George Cowatch, Sr., both of Colerain St., Sligo, Pa. 16255

Filed Dec. 3, 1986, Ser. No. 937,218
Int. Cl.[4] C23F *13/00*
U.S. Cl. 204—147 **20 Claims**

1. A process of reducing the rate of oxidation of a metal object comprising the steps of
attaching a capacitive coupling to said metal object, wherein said capacitive coupling comprises a dielectric material attached to said metal object and a positive plate attached to said dielectric material and said metal object is not a negative plate of a conventional capacitor,
attaching the positive output of a means for providing pulses of direct current to said positive plate, and attaching the negative output of said pulse providing means to said metal object, and



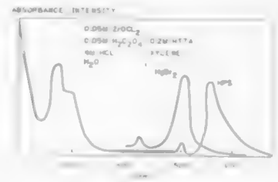
activating said pulse providing means whereby a current sufficient to provide electrons to reducing chemicals in the environment immediately surrounding said metal object is impressed in said metal object.

4,767,513

ZIRCONIUM ISOTOPE SEPARATION PROCESS

Steven H. Peterson, Murrysville, and Edward J. Laboda, Edgewood Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 10, 1987, Ser. No. 24,208
Int. Cl.[4] B01D *59/34, 11/00;* **C01G** *25/00*
U.S. Cl. 204—157.21 **12 Claims**



1. A process for reducing the amount of zirconium 91 isotope in zirconium comprising:
forming a first solution of (a) a first solvent, (b) a scavenger, and (c) a zirconium compound which is soluble in said first solvent and reacts with said scavenger when exposed to light of a wavelength of 220 to 600 nm;
irradiating said first solution with light at said wavelength for a time sufficient to photoreact a disproportionate amount of said zirconium compound containing said zirconium 91 isotope with said scavenger to form a reaction product in said first solution;
contacting said first solution, while effecting said irradiation, with a second solvent
which is immiscible with said first solvent, which said second solvent is a preferential solvent for said reaction product relative to said first solvent, such that at least a portion of said reaction product is transferred to said second solvent to form a second solution; and
separating said second solution from said first solution after said contacting.

4,767,514

APPARATUS AND METHOD FOR REMOVING LIQUID FROM LIQUID BEARING MATERIAL

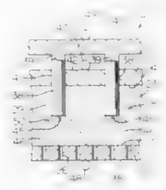
James T. Candor, 5440 Cynthis La., Dayton, Ohio 45429

Filed Mar. 31, 1987, Ser. No. 32,746
Int. Cl.[4] B01D *57/02;* **B03C** *5/02*
U.S. Cl. 204—183.1 **18 Claims**

10. In a method for removing liquid from liquid bearing material and comprising the steps of providing a pair of spaced apart electrodes so as to be disposed on opposite sides of said

VOL 1093 ISS 5 AG 30 1988 UMI

material, disposing said material between said electrodes, creating an electrostatic field between said electrodes so as to act through said material to remove liquid from said material, disposing a plurality of needle-like projections in said material between said electrodes to assist in removing liquid from said liquid bearing material, forming one of said electrodes with a plurality of opening means passing therethrough, and disposing



said projections respectively through said opening means so that said projections project into said material [between said material] between said electrodes, the improvement comprising the step of moving said projections through said opening means of said one electrode to different positions thereof relative to said material between said electrodes and relative to said one electrode.

4,767,515

SURFACE AREA GENERATION AND DROPLET SIZE CONTROL IN SOLVENT EXTRACTION SYSTEMS UTILIZING HIGH INTENSITY ELECTRIC FIELDS

Timothy C. Scott, Knoxville, and Robert M. Wham, Oak Ridge, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 30, 1987, Ser. No. 79,390
Int. Cl.[4] B03C *5/00*
U.S. Cl. 204—186 8 Claims



1. A method for solvent extraction comprising the steps of:
introducing droplets of a dispersed phase to a counter-current flow of a continuous phase which droplets have a first surface area and are allowed to free-fall through said continuous phase;
applying a constant high-intensity-pulsed electric field to said original droplets of said dispersed phase so as to shatter said droplets into many smaller droplets to form an emulsion of said smaller droplets in said continuous phase, said smaller droplets having a combined total surface area which is greater than a total surface area of said original droplets;
substantially simultaneously coalescing a plurality of said smaller droplets to reform larger droplets, said larger droplets being stable in said electric field; and
separating said reformed droplets from said emulsion to form a separate phase of said dispersed material.

4,767,516

METHOD FOR MAKING MAGNETIC RECORDING MEDIA

Yoshio Nakatsuka, Uji; Minoru Kume, Nara, and Daisuke Kishimoto, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed May 19, 1986, Ser. No. 864,357
Claims priority, application Japan, May 20, 1985, 60-107762; Sep. 20, 1985, 60-209378; Oct. 3, 1985, 60-220770
Int. Cl.[4] C23C *14/36*
U.S. Cl. 204—192.14 16 Claims



1. A method for making magnetic recording media comprising the steps of:
a first depositing step for depositing, through a sputtering process, a seed layer defined by crystalline columns of magnetic material densely and perpendicularly formed on a substrate at a first deposition station; and
a second depositing step for depositing an extended layer defined by extended crystalline columns over said crystalline columns of said seed layer through self-epitaxial growth at a second deposition stations, wherein;
(a) the second deposition step is carried out by the use of a vacuum deposition technique,
(b) the initial incident angle employed during the performance of the sputtering process referred to in the first deposition step, is smaller than 20° and, a shield is used to define the particular angle,
(c) both of the seed layer and the extended layer are formed of the same ferromagnetic metal.

4,767,517

PROCESS OF DEPOSITING DIAMOND-LIKE THIN FILM BY CATHODE SPUTTERING

Akio Hiraki, Nishinomiya, and Tatsuro Miyasato, Toyonaka, both of Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Continuation of Ser No. 675,417, Nov. 27, 1984, abandoned. This application Mar. 2, 1987, Ser. No. 20,226
Claims priority, application Japan, Nov. 28, 1983, 58-222218; Jun. 19, 1984, 59-124392
Int. Cl.[4] C23C *14/34*
U.S. Cl. 204—192.25 8 Claims



1. A method of making a diamond-like thin film within a sputtering apparatus having a metal supporter electrode mounted with a graphite target and an opposite counter electrode mounted with a substrate in a vacuum chamber, comprising the steps of:
(a) evacuating said vacuum chamber to a pressure of about 13.33 μPa (1×10^{-7} torr);
(b) introducing a hydrogen gas into said vacuum chamber and maintaining the hydrogen pressure at 0.1333 Pa to 666.5 Pa (10^{-3} torr to 5 torr);
(c) applying electric power to said opposite metal and counter electrodes and flowing a plate current of a density which is a ratio of a plate current value to an area of graphite target on the metal supporter electrode between 4.52 and 9.05 mA/cm^2, to produce a hydrogen plasma including an excited hydrogen and hydrogen ion which impinge on said graphite target and produce plasma seeds composed of half-bonded carbons and hydrogens; and
(d) depositing said plasma seeds on the substrate and forming said diamond-like film composed of an accumulation of polycrystal diamond particles of 5 nm to 400 nm size enclosed with alkyl radicals whose carbon number is 3 or less.

4,767,518

CERMET ELECTRODE

Nicholas J. Maskalick, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 11, 1986, Ser. No. 872,981
Int. Cl.[4] G01N *27/46*
U.S. Cl. 204—242 5 Claims



1. A cermet electrode comprising:
(A) metal particles selected from the group consisting of nickel, cobalt, iron, and mixtures thereof;
(B) zirconia stabilized with yttria in cubic form immobilizing said metal particles; and
(C) discrete deposits of an oxide selected from the group consisting of praseodymium oxide, dysprosium oxide, terbium oxide, and mixtures thereof, where the amount of praseodymium, dysprosium, and terbium in said discrete deposits is from about 0.1% to about 5% by weight of the weight of said cermet electrode.

4,767,519

MONOPOLAR AND BIPOLAR ELECTROLYZER AND ELECTRODIC STRUCTURES THEREOF

Oronzio de Nora, Milan, Italy, assignor to Oronzio de Nora Impianti Elettrochimici, Milan, Italy

PCT No. PCT/EP86/00120, § 371 Date Oct. 17, 1986, § 102(e) Date Oct. 17, 1986, PCT Pub. No. WO86/05216, PCT Pub. Date Sep. 12, 1986
PCT Filed Mar. 7, 1986, Ser. No. 10,889
Claims priority, application Italy, Mar. 7, 1985, 19798 A/85
Int. Cl.[4] C25B *9/00, 11/03, 15/08*
U.S. Cl. 204—255 24 Claims

1. An electrolyzer including two electrodic end-structures, at least an intermediate electrodic structure interposed between said electrodic end-structures, porous diaphragm or ion exchange membrane constituting a separator on each side of said intermediate electrodic structure to divide the electrolyzer into anode and cathode compartments, means for impressing electrolysis current to the electrolyzer and means for feeding electrolytes to, and withdrawing electrolysis products from the electrolyzer compartments, said intermediate electrodic structure comprising:
(a) a current conducting and distributing core (1) including at least one thin sheet of highly conducting metal provided with a plurality of substantially parallel, outwardly projecting ribs forming together with said core a substantially channel-like structure;
(b) a pair of liners (3), one at each side of said core, made of a corrosion resistant metal, said liners being provided with a plurality of corresponding outwardly projecting ribs (13, 14) dimensioned to fit over said core ribs (2, 10), and having peripheral projecting flanges (4);



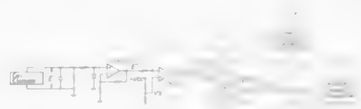
(c) substantially planar electrode screens (6) electrically connected to said liners (3);
said core (1), said core ribs (2, 10), said liners (3), said liner ribs (13, 14), and said electrode screens (6) electrically connected to each other; and a frame element (5) interposed between the peripheral flanges (4) of each liner (3) and the peripheral area of the core (1).

4,767,520

DEVICE FOR DETECTING AIR-FUEL RATIO OF ENGINE

Masahiko Asakura, Saitama; Tomohiko Kawanabe, Tochigi, and Noritaka Kushida, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1986, Ser. No. 865,556
Claims priority, application Japan, May 27, 1985, 60-113406
Int. Cl.[4] G01N *27/58*
U.S. Cl. 204—406 2 Claims



1. A device for detecting an air-fuel ratio of an engine by measuring an oxygen concentration of an exhaust gas by means of an oxygen sensor including a pair of oxygen-ion conductive solid electrolyte materials arranged in the gas to be measured, said solid electrolyte materials having electrodes formed on the surfaces thereof and being arranged in confronting relation with each other, with a predetermined restricted region formed therebetween, one of said solid electrolyte materials constituting an oxygen pump element and the other constituting a cell element that develops an electromotive force for measuring an oxygen concentration ratio, said device comprising means for applying a variable electromotive current to the oxygen pump element in response to variations in oxygen

VOL 1093 ISS 5 AG 30 1988 UMI

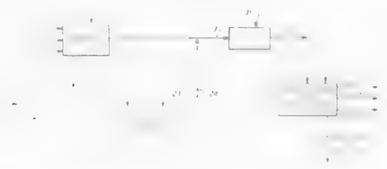
concentration for causing the cell element to generate a constant predetermined reference voltage, means for producing an output signal of the oxygen sensor related to the electromotive current applied to the oxygen pump, said output signal being subject to hunting variations in response to pulsations in the exhaust gas, and a filter circuit for receiving and smoothing the output signal of the oxygen sensor for producing the value of the detected air-fuel ratio, said filter circuit having a time constant which is variably set so that it is in proportional relation with respect to the number of revolutions per unit of time of the engine.

4,767,521

TREATMENT OF FEED FOR HIGH SEVERITY VISBREAKING

Robert J. Feldman, Passaic; James M. Chen, Edison; Andrei Rhoe, Wyckoff; Roger P. Van Driesen, Titusville; C. Bertil Fogman, Kinnelon, and Donald P. Satchell, Summit, all of N.J., assignors to Lummus Crest, Inc., Bloomfield, N.J.

Filed Dec. 18, 1986, Ser. No. 943,175
Int. Cl.[4] C10G *55/04*
U.S. Cl. 208—85 19 Claims



1. A process for upgrading a viscous feed, comprising:

prior to visbreaking, treating at least a portion of a viscous visbreaking feed including a 650° F.+ fraction to separate a heavy phase containing an asphaltene portion thereform and provide a treated viscous feed; and subjecting treated viscous feed to visbreaking at a severity which in the absence of said treating produces a visbreaking product having a Shell Hot filtration Number of Y and which is greater than 0.25, during said treating separating the heavy phase in an amount no greater than 15%, by weight, based on the 650° F.+ fraction of the viscous visbreaking feed and which produces a visbreaking product from the visbreaking of the treated viscous feed which has a Shell Hot Filtration Number of no greater than 0.75 Y.

4,767,522

DISTILLATE DEWAXING PROCESS WITH MIXED ZEOLITES

Jeffrey H. Yen, Swedesboro, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 675,496, Nov. 28, 1984, abandoned.
This application Jul. 6, 1987, Ser. No. 70,084
Int. Cl.[4] C10G *45/64*
U.S. Cl. 208—111 17 Claims

1. A process for catalytically dewaxing a gas oil feedstock to gasoline and dewaxed distillate products, comprising contacting said feedstock in the presence of hydrogen and at a temperature from 450° to 750° F. with a catalyst comprising a crystalline silicate medium pore zeolite having a Constraint Index between 2 and 12, 5 to 60 weight percent zeolite beta and a hydrogenation component, to produce a higher yield of distillate products relative to the use of the medium pore zeolite and a lower temperature relative to the use of the zeolite beta for the same distillate product pour point.

4,767,523

TREATED ALUMINA MATERIAL FOR FIXED HYDROFINING BEDS

Simon G. Kukes, and Karlheinz K. Brandes, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 11, 1987, Ser. No. 24,756
Int. Cl.[4] C10G *45/04*
U.S. Cl. 208—217 30 Claims

1. A hydrotreating process comprising the step of contacting a substantially liquid hydrocarbon-containing heavy oil feed stream, which also contains compounds of sulfur and metals, with a free hydrogen containing gas in the presence of a fixed catalyst bed comprising

(a) at least one layer of impregnated, substantially spherical alumina-containing particles,

under such hydrotreating conditions as to obtain at least one liquid hydrocarbon-containing product stream having lower concentrations of sulfur and metals than said hydrocarbon-containing heavy oil feed stream;

wherein said impregnated, substantially spherical alumina-containing particles in catalyst layer (a) have been prepared by a process comprising the steps of

(A) impregnating (i) a starting material of substantially spherical alumina-containing particles, which have an initial average particle diameter of at least about 0.05 inch, an initial BET/N_2 surface area of at least about 20 m^2/g, an initial Hg intrusion pore volume of at least about 0.1 cc/g, an initial crush strength of at least about 100 lb. per inch diameter per particle, and an initial content of Al_2O_3 of at least about 80 weight-%, with (ii) a solution comprising dissolved ammonium sulfate; and

(B) heating the material obtained in step (A) at a temperature in the range of from about 500° to about 900° C. for a period of time of at least 10 minutes, under such heating conditions as to obtain a material having a higher retention of crush strength than said starting material, wherein said crush strength is measured after exposure for about 100 hours to a liquid hydrocarbon-containing heavy oil stream which contains at least about 0.5 weight-% sulfur, under hydrotreating conditions at about 2250 psig total pressure, about 400 psig partial pressure of steam and about 700° F.

4,767,524

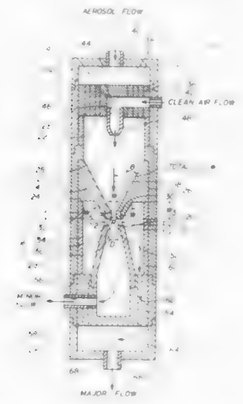
VIRTUAL IMPACTOR

Hsu-Chi Yeh; Bean T. Chen; Yung-Sung Cheng, and George J. Newton, all of Albuquerque, N. Mex., assignors to Lovelace Medical Foundation, Albuquerque, N. Mex.

Filed Aug. 5, 1987, Ser. No. 81,928
Int. Cl.[4] B07B *7/00*
U.S. Cl. 209—143 16 Claims

1. In a virtual impactor for separating solid or liquid particulate matter in an aerosol flow into a coarse particle flow and a fine particle flow, the virtual impactor having an acceleration nozzle and a collection probe, each aligned about a predetermined linear axis, and a flow separation region therebetween; said acceleration nozzle comprising an inlet, a substantially narrower outlet orifice, and a flow focusing portion therebetween formed with an inner wall surface for flow of said aerosol adjacent thereto and shaped for converging said aerosol flow from said inlet toward the linear axis whereby said converged aerosol flows through said outlet orifice through said flow separation region; said collection probe having an inlet impaction opening centered on said linear axis; the improvement comprising:

means for flowing gas of near zero or zero aerosol content into the center of said aerosol flow as a core of gas that converges with said aerosol flow and flows therewith through the outlet orifice of said nozzle encased by said aerosol while maintaining aerosol flow adjacent the inner wall surface of said focusing portion.



4,767,525

CLEAN WATER SYSTEM

Robert J. Campbell, Cedar Rapids, Iowa, and Peter C. Jacobs, Boulder, Colo., assignors to American Ozone Technology, Marion, Iowa

Filed Aug. 3, 1987, Ser. No. 81,010
Int. Cl.[4] C02F *1/78*
U.S. Cl. 210—87 9 Claims



1. An air drying system for an ozone generator which is mounted in an air sealed case comprising, a predrier which receives ambient air, said air sealed case of said ozone generator connected to receive output air from said predrier, a primary drier connected to receive output air from said case, a sensor connected to the output air of said primary drier, a reserve drier connected to receive the output air of said primary drier and to supply input air to said ozone generator which converts a portion thereof to ozone and an ozone injector connected to said ozone generator to receive said ozone and to inject it into a water supply.

4,767,526

ARTIFICIAL KIDNEY WITH AUTOMATIC REGULATION OF THE PRESSURE OF THE DIALYSLATE AS A FUNCTION OF WITHDRAWAL OF ULTRAFILTRATE

Georges Vantard, Gournay sur Marne, France, assignor to Hospal Industrie, Meyzieu, France

Continuation of Ser. No. 488,134, Apr. 25, 1983, abandoned, which is a continuation of Ser. No. 278,598, Jun. 29, 1981, abandoned. This application Feb. 21, 1985, Ser. No. 703,697
Claims priority, application France, Aug. 1, 1980, 80 17326
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—128 6 Claims



1. In a hemodialysis apparatus for treating blood of a patient by dialysis and by withdrawing from blood appropriate amounts of ultrafiltrate through a semipermeable membrane dividing a hemodialyzer into two compartments respectively for blood and dialysis liquid, the hemodialysis apparatus comprising a circuit for the dialysis liquid including the hemodialyzer and one circulating pump, the circuit being formed as a loop of constant volume, being open to the atmosphere and provided with means for drawing off predetermined amounts of dialysis liquid from the circuit corresponding to equal amounts of ultrafiltrate to be withdrawn from the blood of a patient and means for measuring the amount of dialysis liquid drawn off, a float supported by dialysis liquid in said circuit, and provided in the circuit downstream of the hemodialyzer with an automatic variable hydraulic resistance means consisting of an obturator operable to resist flow through said circuit and having a movable part joined to said float for controlling operation of said obturator, the obturator maintaining an essentially constant level of dialysis liquid in the circuit and regulating positive pressure of the dialysis liquid in the hemodialyzer as a function of the amounts of ultrafiltrate withdrawn from the blood.

4,767,527

APPARATUS FOR WASTE WATER PURIFICATION

Nicolaos Iniotakis, Jülich; Werner Fröhling, Düren; Georg Kalawrytinos, am Steinbruch 2, D-5190 Stolberg, and Claus-Benedict von der Decken, Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich and Georg Kalawrytinos, Stolberg, both of, Fed. Rep. of Germany

Division of Ser. No. 660,942, Oct. 15, 1984, Pat. No. 4,643,832.
This application Oct. 20, 1986, Ser. No. 921,591
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1983, 3337360
Int. Cl.[4] B01D *1/00, 21/00*
U.S. Cl. 210—137 4 Claims

1. A waste water purification apparatus comprising:

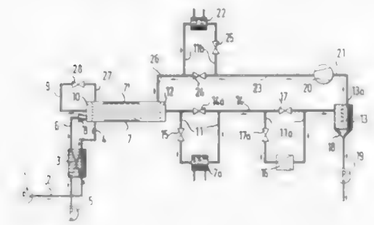
fluid divider means for introducing finely-divided waste water having solid particles therein into a current of entrainment gas to form a mixture of entrainment gas and waste water, said fluid divider means having means for introducing gas and means for introducing waste water thereinto;

evaporator means connected in fluid communication with

VOL 1093 ISS 5 AG 30 1988 UMI

said fluid divider means for receiving said mixture, from said fluid divider means, and for heating said mixture to a temperature which is above the saturation temperature of water vapor which is formed during the heating of said mixture to provide a water vapor, solid particles and entrainment gas mixture, resulting from said heating, substantially free of water droplets;

separator means connected in fluid communication with said evaporator means to receive the heated mixture, said separator means being for separating the solid particles from the heated mixture, said separator means having a



first outlet for extracting a purified mixture of entrainment gas and water vapor from said separating means, and said separator means further having a second outlet for removing matter other than a purified mixture of entrainment gas and water vapor; and

pressure regulator means disposed between said separator means and said evaporator means and connected for receiving said entrainment gas and water vapor current from said first outlet of said separator means and for delivering said fluid divider means to said evaporator means for setting a pressure of said entrainment gas current into which the finely divided waste water is introducible.

4,767,528

DRINKING WATER PURIFYING APPARATUS

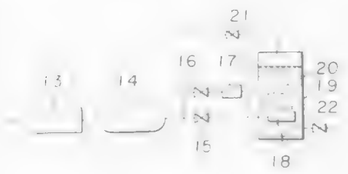
Toshihiko Sasaki, Kobe; Keisuke Namba, Amagasaki; Naotoshi Matsunaga, Kobe; Masayuki Tanaka, Kobe; Norimitsu Ezaki, Kobe; Masaru Tanaka, Kobe; Hisashi Tonegawa, Kobe; Naomichi Mikajiri, Kobe; Hideo Motooka, Kobe, and Toshikazu Honda, Kobe, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 828,709, Feb. 12, 1986, abandoned. This application Oct. 23, 1987, Ser. No. 112,045

Claims priority, application Japan, Feb. 13, 1985, 60-27628; Feb. 13, 1985, 60-27627; Feb. 13, 1985, 60-27630; Feb. 13, 1985, 60-27629; Feb. 13, 1985, 60-27625

Int. Cl.[4] C02F *1/78*

U.S. Cl. 210—177 13 Claims



1. A drinking water purifying apparatus comprising:

means for producing an ozonized gas;

means for contacting said ozonized gas with water to be treated, whereby said ozonized gas reacts with said water so as to purify said water; and

means positioned between said ozone gas purifying means and said connecting means for converting said ozonized gas to a sterilized gas having a low ozone concentration and for contacting said purified water with said sterilized gas having a low ozone concentration.

4,767,529

NITRO-MODIFIED CHROMATOGRAPHIC SUPPORT MATERIALS

Karl S. Boos, Paderborn/Marienloh; Bernd Wilmers, Bestwig; Richard Sauerbrey, Hanover, and Eckhard Schlimme, Rastof, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft Mit Beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

Filed May 26, 1987, Ser. No. 53,664

Claims priority, application Fed. Rep. of Germany, May 27, 1986, 3617805

Int. Cl.[4] B01D *15/08*

U.S. Cl. 210—198.2 5 Claims

1. A chromatographic support material modified with 1-((2'-nitro-5'-boric acid)phenyl-amino)-2-hydroxy-3-O-propyl groups.

4,767,530

QUICK CHANGE OIL FILTER SYSTEM

Julius C. Gilliam, 11575 SW. 112th Ave., Miami, Fla. 33176, and Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Continuation-in-part of Ser. No. 870,989, Jun. 5, 1986, abandoned. This application May 5, 1987, Ser. No. 46,165

Int. Cl.[4] B01D *27/08, 29/38*

U.S. Cl. 210—232 20 Claims



1. A quick-change fluid filter system for improved replacement of a filter assembly upon a filter support means with a sealing gasket, said filter assembly having integral fluid inlet and outlet means and said filter support means adapted for mounting on an engine and having inlet and outlet means connectable to said engine, comprising:

a filter assembly means with integral base plate means, said base plate means including fluid inlet and outlet means;

a filter flange means connected to, and coextensive with, said base plate means;

support plate means connected to said filter support means, said support plate means including fluid inlet and outlet means corresponding to, and adapted to connect to, said inlet and outlet means of said base plate means;

a support plate flange means connected to, and coextensive with, said support plate means;

a filter-engaging band means, said band means including a filter flange means engaging surface and a support plate flange means engaging surface;

a band closure means attached to said band means for reducing the diameter of said band means in a first, closed position and for increasing the diameter of said band means in a second, open positon of said band closure means;

said filter flange means engaging surface of said band means engaging said filter flange means as said band means is reduced in diameter and disengaging said filter flange means as said band means is increased in diameter;

said support plate flange means engaging surface of said band means having a sloped surface and said support plate flange means having a band engaging surface of substantially the same slope, said slope being such that reducing the diameter of said band means by said band closure means causes the sloping surface of said band means to move along the sloping surface of said plate flange means and forces the filter flange means engaging surface down upon the filter flange means, forcing said filter plate means tightly against said support plate means to compress said sealing gasket therebetween; and

wherein said band means is captively held by said support plate flange means interposed between said engaging surfaces of said band means by said second, open position providing said band means with the inside diameter of both said flange means engaging surfaces smaller than the outside diameter of said support plate flange means and wherein said filter assembly is freely removable in said second, open position by said second position providing said inside diameter of said filter flange means engaging surface greater than said filter flange means.

4,767,531

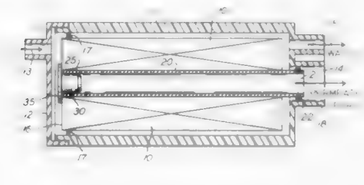
RETRACTOR FOR PERMEATOR OR FILTER MODULE

Joseph C. Holzer, Liverpool, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 902,735, Sep. 2, 1986, abandoned. This application Nov. 2, 1987, Ser. No. 117,409

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—238 6 Claims



1. In a permeator module of the type adapted to be mounted within a filtration-system housing and of the type having a membrane wound on a core having an open-end region, a plug-retractor device comprising:

(a) a plug having a body tightly fitted within said open-end region of said core to secure it to said core sufficient to withstand the force required to remove the module from said housing; and

(b) a retraction handle formed as a ring integrally attached to a head of said plug, the arrangement being such that, when sufficient force is applied to said handle, said module is removed from said housing.

4,767,532

APPARATUS FOR REMOVING GRIT

Frank G. Weis, Kansas City, Mo., assignor to Smith & Loveless, Inc., Lenexa, Kans.

Filed May 21, 1987, Ser. No. 53,078

Int. Cl.[4] B01D *21/24, 21/26*

U.S. Cl. 210—257.1 10 Claims

1. Apparatus for separating grit from a liquid stream while retaining organic solids therein, comprising: means defining a cylindrical settling chamber; means defining a cylindrical grit storage chamber having a smaller diameter than said settling chamber, and disposed immediately below said settling chamber; a transition surface separating said settling chamber and said storage chamber, said transition surface including means defining a centrally disposed opening therethrough permitting communication between said settling chamber and said storage chamber; an influent flume for introducing an influent liquid stream directly into a lower portion of said settling chamber along the outer periphery thereof; an effluent flume for removing an effluent liquid stream from an upper portion of said settling chamber along the outer periphery thereof, said effluent flume being spaced from said influent flume by a distance equal to at least a substantial portion of the circumference of said settling chamber in the direction of liquid flow; a baffle means positioned within said settling chamber for directing the influent liquid stream entering said settling chamber outwardly towards a lower portion of the periphery of said settling chamber and preventing the spreading thereof across said transition surface; and propeller means mounted within said settling chamber above said transition surface for rotation about a substantially vertical axis in the same direction as liquid flow within said settling chamber at a sufficient rate to cause a radial flow pattern across said transition surface of increased velocity so as to cause heavier particles to pass through said opening into said grit storage chamber and lighter particles to be lifted upwardly within a center portion of said settling chamber



4,767,533

METHOD OF MAKING A FAMILY OF BLENDED FIBER FILTRATION DEVICES

Jerry D. Fisher, and Susan C. Molthop, both of Mundelein, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Mar. 13, 1987, Ser. No. 25,468

Int. Cl.[4] B01D *13/00*

U.S. Cl. 210—321.64 6 Claims



1. A method of making a family of blended fiber filtration devices having differing filtration factors but each having a housing with the same predetermined crossection, the housing having at least input and output ports for the fluid being filtered, the method comprising the steps of:

(a) specifying at least first and second fiber members with first and second filtration factors to be blended;

(b) specifying the differing filtration factors desired for the family, each filtration factor being defined as a range of the desired filtration factor;

(c) determining the numbers of each fiber member which will fit into the housing;

(d) selecting the smaller of the numbers of the fiber members determined during step (c);

VOL 1093 ISS 5 AG 30 1988 UMI

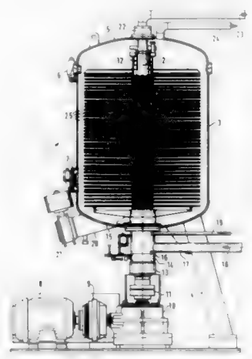
(e) determining the percent the smaller number of fiber members is of the larger;
(f) selecting for each range of the desired filtration factor a predetermined quantity of the larger number of fiber members;
(g) determining the corresponding quantity of the smaller number of fiber members based on the percent value;
(h) comparing the two determined quantities of fiber members to the available crossection of the housing to determined whether the two determined quantities of fiber members will fit into the housing;
(i) determining the filtration factor, if in step (h) the determined quantities of fiber members will fit into the housing;
(j) comparing the determined filtration found in step (i) factor to the range of the specified filtration factor specified in step (b) to determine whether the filtration factor falls within the specified range;
(k) assembling the two quantities of fibers in the housing if the determined filtration factor falls within the specified range; and
(l) repeating steps (f) to (k) for each of the specified ranges of desired filtration factors.

4,767,534

PLATE FILTER FOR FILTERING LIQUIDS

Josef Ziller, Waldstetten, Fed. Rep. of Germany, assignor to Schenk Filterbau Gesellschaft mit beschränkter Haftung, Waldstetten, Fed. Rep. of Germany

Filed Aug. 13, 1986, Ser. No. 896,385
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1985, 3529706
Int. Cl.[4] B01D *33/26*
U.S. Cl. 210—331 **19 Claims**



1. In a plate filter rotatable about a vertical axis for filtration of suspensions including a tank in which plate-like filter elements are disposed one above the other in a filter packet, a hollow shaft that has a vertical axis and extends through the center of said filter elements, and at least one vertical feed line from which feed channels branch off to each of said filter elements,

the improvement wherein a given feed line for the suspension extends substantially parallel to said vertical axis of said hollow shaft and is provided in a radially inner region of said filter elements, and wherein said feed channels are respectively arranged in a symmetrically-distributed branched configuration directed in radially extending manner relative to said filter elements, with each of said feed channels extending radially outwardly from a given feed line toward said filter elements; and

said filter elements comprising means therewith forming upper and lower plates, said plates having an outwardly directed distribution chamber formed therebetween as well as having flow connection therewith for outwardly directed distribution via said feed channels, said distribution chamber being located below said filter elements and having at least one outlet opening for uniform spreading and distribution of the suspension upon the filter element located therebelow.

4,767,535

MEMBRANES OF DIISOCYANATE ADDITION POLYMERS FOR HEMODIALYSIS AND/OR HEMOFILTRATION

Peter Hentschel, Laudenbach; Christof Josefiak, Erlenbach, and Werner Klostermeier, Klingenberg, all of Fed. Rep. of Germany, assignors to Akzo NV, Arnhem, Netherlands

Continuation of Ser. No. 692,953, Nov. 16, 1984, abandoned. This application Aug. 25, 1986, Ser. No. 899,932
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1983, 3341847
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—500.38 **6 Claims**

1. Membrane of diisocyanate addition polymer, comprising means for hemodialysis or hemofiltration including, an addition product of aliphatic open-chain or aliphatic cyclic diisocyanate and at least one compound selected from the group consisting of hydrazine, ethylene diamine and propylene diamine, said addition product having a molar ratio of soft segment to hard segment from 0 to 0.20, said membrane having an ultrafiltration rate from 0.5 to 100 ml/h.Torr, a dialytic permeability for vitamin B 12 from 0.5 to 20.10^{-3} cm/min and an isotropic, homogeneous structure when examined visually.

4,767,536

GAS EXTRACTION OUTLET FOR WASTEWATER SETTLING TANK

John Roley, Warrington, Pa., assignor to Warminster Fiberglass Company, Southampton, Pa.

Filed Aug. 27, 1987, Ser. No. 90,147
Int. Cl.[4] B01D *21/02*
U.S. Cl. 210—532.1 **9 Claims**



1. A settling tank for clarifying wastewater, said tank having an outer wall for containing a pool of wastewater so that the water at the surface of the pool is clarified, an outlet in said tank comprising:

A. an effluent trough supported at a raised position in the pool against the outer wall of the tank, said trough having a side wall parallel to the tank wall and lying somewhat below the surface of the pool;

B. a weir supported on the side wall and extending upwardly therefrom to permit clarified water from the pool to spill over into the trough; and

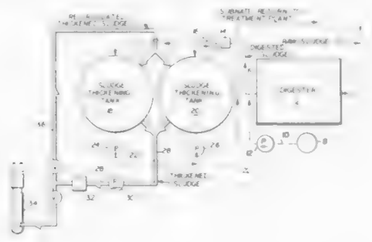
C. a flat walk plate overlying the trough and the weir and including a hatch cover section providing access to the weir, said walk plate extending horizontally from the tank wall to the upper edge of a vertical sidewall that extends downwardly into the pool, said walk plate and said vertical sidewall together acting to confine noxious gases emitted into the region above the trough and the weir to prevent their discharge into the atmosphere.

4,767,537

DEWATERING OF SLUDGE USING NITRATE

H. Forbes Davis, Tallevast, Fla., assignor to DAVCO, Thomasville, Ga.

Filed Mar. 30, 1987, Ser. No. 31,662
Int. Cl.[4] C02F *3/28*
U.S. Cl. 210—608 **7 Claims**



1. A process for increasing the solids content of sludge produced from biological treatment of domestic or industrial waste water without, at any time, dissolving air under pressure in the sludge, comprising the steps of:

(a) feeding raw sludge to a digester;
(b) adding nitrate ions to the sludge after the sludge exit the digester;
(c) feeding the digested sludge with nitrate ions to at least one sludge thickening tank;
(d) maintaining the sludge in said at least one thickening tank for a time sufficient to permit bacteria present in the sludge to react with said nitrate ions so as to produce nitrogen gas bubbles which adhere to sludge floc particles to reduce the bulk density therof, and thereby cause the sludge floc particles to float and form a thickened layer of sludge at top of said at least one thickening tank;
(e) removing free water or subnate from said at least one thickening tank; and
(f) removing thickened sludge from the said at least one tank.

4,767,538

WASHING OF SEMIPERMEABLE MEMBRANE

George M. Jakubowski, Chicago; Susan C. Molthop, Mundelein, and Milo Eldridge, Ringwood, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 554,874, Nov. 25, 1983, abandoned, and a continuation-in-part of Ser. No. 458,107, Jan. 14, 1983, abandoned. This application Nov. 25, 1985, Ser. No. 801,529
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—636 **8 Claims**

1. A method of preparing a dialyzer unit that has a plurality of coextensively oriented, hollow, fluid conducting, porous, ultrafiltrating lumens, the method including:

washing interior surfaces of the lumens with a selected mixture of acid and water so as to remove impurities therefrom as well as to substantially enlarge and expand the physical dimensions of the porous structure of each lumen;

flushing the acid mix from the interior surfaces using a selected organic polyol solution while simultaneously providing for absorption of substantial quantities thereof by each lumen so as to retain the expanded physical dimensions thereof;

removing the flushing solution leaving only the absorbed polyol in the lumens; and

sterilizing the polyol filled lumens without any substantial reduction in the ultrafiltrating characteristics thereof.

4,767,539

CLEANING OF HOLLOW FIBER FILTERS UTILIZED IN LUMENAL GAS FLOW

Douglas L. Ford, Eastwood, Australia, assignor to Memtec Limited, New South Wales, Australia

Continuation of Ser. No. 755,327, filed as PCT AU84/00192, Oct. 2, 1984, published as WO85/01449, Apr. 11, 1985, abandoned.
This application Jun. 3, 1987, Ser. No. 56,908
Claims priority, application Australia, Sep. 30, 1983, PG1662
Int. Cl.[4] B01D *13/00, 29/38*
U.S. Cl. 210—636 **24 Claims**

1. A method comprising cleaning a filter for filtering liquid suspension feedstocks, having a plurality of elastic, porous hollow fibers with lumens within a shell or housing in which filtration is carried out by applying a liquid suspension feedstock to the outer surface of the fibers by passing a portion of the feedstock through the walls of the fibers to be drawn from the fiber lumens as a filtrate or permeate, and by retaining a portion of the solids in the feedstock on or in the pores of the fibers, with the non-retained solids being removed from the shell or housing with the remainder of the feedstock, by introducing a pressurized gas at pressure of at least 10 KPA into the fiber lumens which passes through the walls of the fibers for a time sufficient to dislodge a substantial portion of the retained solids, the pressures being sufficient to overcome the effect of the surface tension of the continuous phase of the feedstock within at least the larger pores of the membrane.

4,767,540

POLYMERS CONTAINING HYDROXAMIC ACID GROUPS FOR REDUCTION OF SUSPENDED SOLIDS IN BAYER PROCESS STREAMS

Donald P. Spitzer, Riverside, and Wei S. Yen, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Feb. 11, 1987, Ser. No. 13,491
Int. Cl.[4] B01D *21/01*
U.S. Cl. 210—728 **18 Claims**

1. A process for removing suspended solids from the Bayer alumina process, the improvement comprising contacting and efficiently mixing a Bayer process stream with a water-soluble polymer containing pendant hydroxamic acid or salt groups in an amount effective to flocculate and settle the suspended solids therein, said polymer having a molecular weight ranging from about 1×10^4 to about 3×10^7 and removing flocculated and settled suspended solids from said process stream.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,541

METHOD OF REMOVING PLATELETS AND WHITE CELLS FROM A RED CELL CONCENTRATE

Leonard A. Wisdom, Balgowlah, Australia, assignor to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 385,167, Jun. 4, 1982, Pat. No. 4,596,657.
This application May 19, 1986, Ser. No. 864,229
Int. Cl.[4] B01D *21/26, 36/00*
U.S. Cl. 210—749 5 Claims



1. A method for removing platelets and white blood cells from a red cell concentrate which comprises red blood cells, white blood cells and platelets, the method comprising the steps of—

(a) Collecting the red cell concentrate into the first blood bag of a multiple blood bag system comprising a first bag and a second bag, the second bag containing a red cell storage solution, the system including a filtering means integrally disposed between the two bags;

(b) introducing the solution through the filtering means into the first bag containing the red cell concentrate; and then

(c) passing the red cell concentrate and solution through the filtering means from the first bag to the second bag under conditions sufficient to remove white blood cells and platelets from the red cell concentrate.

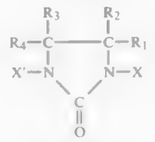
4,767,542

METHOD FOR DISINFECTING AQUEOUS MEDIUM WITH N,N'-DIHALO-2-IMIDAZOLIDINONES

Shelby D. Worley, Auburn, Ala., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 15,480, Feb. 17, 1987, abandoned, which is a division of Ser. No. 846,767, Mar. 31, 1986, Pat. No. 4,681,948. This application Oct. 28, 1987, Ser. No. 113,941
Int. Cl.[4] C02F *1/50*
U.S. Cl. 210—755 33 Claims

1. A method for disinfecting an aqueous medium containing undesired halogen-sensitive microorganism, which comprises treating the aqueous medium with a biocidally effective amount of N,N'-dihalo-2-imidazolidinone represented by the graphic formula:



wherein X and X' are each halogen selected from the group chlorine and bromine, R_1, R_2, R_3 and R_4 are each selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy and substituted phenyl, said phenyl substituents each being selected from the group C_1–C_4 alkyl, C_1–C_4 alkoxy, and hydroxy, provided that not more than one of the substituents R_1–R_4 is hydrogen.

4,767,543

OXIDATION OF WASTEWATERS

Esteban Chornet, Sherbrooke, and Line Jaulin, Ste-Foy, both of Canada, assignors to Universite de Sherbrooke, Sherbrooke, Canada

Filed Nov. 13, 1986, Ser. No. 929,774
Int. Cl.[4] C02F *1/72*
U.S. Cl. 210—759 6 Claims



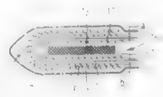
1. In a process for the wet oxidation of water soluble organic pollutants or an aqueous suspension of organic pollutants, the improvement which comprises forming a fine mist of a polluted aqueous phase in the presence of an oxidizing gas, thereby increasing the interfacial area between the gas and the polluted aqueous phase, introducing the formed mist into a heated reaction chamber under pressure, thereby enhancing the rate of the destructive oxidation of the organic pollutant by the increase in mass transfer between the gaseous phase and the aqueous mist, the reaction temperature being selected to favor rapid destruction of the pollutant without the formation of stable intermediate reaction products and after destruction of the pollutant allowing the reaction mixture to flash off at a pressure lower than the reaction pressure.

4,767,544

ORALLY OPERABLE WATER FILTER

Michael J. Hamblin, East Markham, England, assignor to Rig Design Sevices, Limited, London, England

Filed Oct. 29, 1986, Ser. No. 924,322
Claims priority, application United Kingdom, Nov. 1, 1985, 8526976
Int. Cl.[4] B01D *13/00*
U.S. Cl. 210—767 6 Claims



6. A method of obtaining a supply of drinking water comprising:

(1) providing an orally operable water filter, comprising,

an outer covering formed of a flexible water impervious material, and defining an elongate enclosure,

a flexible microporous filter membrane, having a pore size of not more than one micron, disposed within the elongate enclosure, and dividing the enclosure into respective fluid inlet and fluid outlet compartments,

means defining a fluid inlet formed in the elongate enclosure and disposed proximate a first end of the enclosure,

means defining a fluid outlet for the outlet compartment formed in the elongate enclosure and disposed proximate a second end of the enclosure, such that the outlet may be placed in the mouth of a user and the fluid inlet contacted with a source of water, to be filtered, and fluid drawn through the filter by oral suction, and

flexible separator means, disposed at least in the outlet compartment, for preventing the blocking of fluid flow over the surface of the filter membrane;

(2) immersing the said fluid inlet in water which it is desired to filter,

(3) inserting the said fluid outlet in the mouth of the user, and

(4) applying oral suction to draw filtered water through the filter and into the mouth of the user.

4,767,545

USE OF ORGANIC FLUOROCHEMICAL COMPOUNDS WITH OLEOPHOBIC AND HYDROPHOBIC GROUPS IN CRUDE OILS AS ANTIDEPOSITION AGENTS, AND COMPOSITIONS THEREOF

Athanasios Karydas, Brooklyn; Thomas W. Cooke, Mahopac, and Robert A. Falk, New City, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 31, 1986, Ser. No. 892,212
Int. Cl.[4] E21B *37/06*
U.S. Cl. 252—8.3 7 Claims

1. A method of inhibiting deposition of paraffin wax, asphaltene, or mixtures thereof in a crude oil contaminated with paraffin wax, asphaltene, or mixtures thereof and susceptible to such deposition comprising incorporating into said crude oil a solution or semiliquid containing, in a liquid organic oil soluble carrier, an effective deposition inhibiting amount of an,oil soluble compound of the formula

$$[R_f)_nR']_mZ$$

wherein

R_f is an inert, stable, oleophobic and hydrophobic fluoroaliphatic group having 4 to 20 carbon atoms;

n is an integer from 1 to 3;

R', is a direct bond or an organic linking group having a valency of n+1 and is covalently bonded to both R_f and Z; and

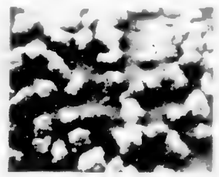
Z is a hydrocarbyl containing residue having a valency of m and being sufficiently oleophilic so as to impart an oil solubility to said compound of at least 10 parts by weight per million parts of said crude oil.

4,767,546

FABRIC SOFTENING BENTONITE AGGLOMERATES FOR USE IN LAUNDRY DETERGENTS

Barry M. Weinstein, Old Bridge, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

Continuation of Ser. No. 646,981, Sep. 4, 1984, abandoned, which is a continuation of Ser. No. 366,587, Apr. 8, 1982, Pat. No. 4,488,972. This application Apr. 7, 1986, Ser. No. 849,241
The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.
Int. Cl.[4] C11D *3/08, 3/14, 11/00;* D06M *11/06*
U.S. Cl. 252—8.6 11 Claims



1. A particulate agglomerated bentonite fabric softener, suitable for incorporation in detergent compositions for softening laundry washed with such detergent composition, which agglomerated bentonite fabric softener consists essentially of agglomerates of finely divided bentonite only, and sodium silicate, as a binder to assist in maintaining the integrity of the agglomerates until they are added to water, in which they disintegrated and disperse quickly, said finely divided bentonite being of particle sizes such that essentially all thereof pass through a No. 325 sieve, and said agglomerated bentonite fabric softener being irregular in shape, craggy in appearance and of sizes essentially in the range of Nos. 30–100 sieves, of a bulk density in the range of 0.75 to 0.9 g./ml., of a moisture content in the range of 11 to 13%, and of a frangibility less than 25, and containing 2 to 4% of sodium silicate.

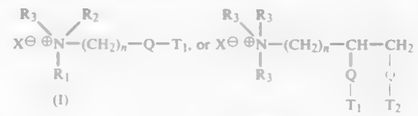
4,767,547

BIODEGRADABLE FABRIC SOFTENERS

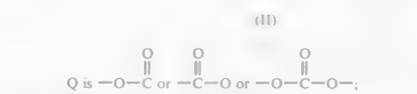
Theodericus J. Straathof, Breda, Netherlands, and Axel König, Wemmel, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 26, 1987, Ser. No. 31,080
Claims priority, application United Kingdom, Apr. 2, 1986, [redacted]
The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.
Int. Cl.[4] D06M *11/00*
U.S. Cl. 252—8.8 12 Claims

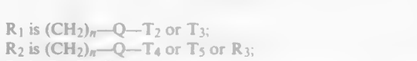
1. An aqueous fabric softening composition with excellent hydrolytic stability on storage, containing a .apidly biodegradable quaternary ammonium softening agent of the formula:



(I)



(II)



R_1 is $(CH_2)_n$—Q—T_2 or T_3;

R_2 is $(CH_2)_n$—Q—T_4 or T_5 or R_3;

R_3 is C_1–C_4 alkyl;

T_1, T_2, T_3, T_4, T_5 are (the same or different) C_{12}–C_{22} alkyl or alkenyl;

n is an integer from 1 to 4; and

$X^{\ominus}$ is a softener-compatible anion, the composition having a pH, at 20° C., of from 2.5 to 4.2 upon dilution, in de-ionized water, to a concentration of 0.5% to 1% of said rapidly biodegradable quaternary ammonium.

4,767,548

ARTICLES FOR CONDITIONING FABRICS IN A LAUNDRY DRYER

Kenneth A. Kasprzak, Saginaw Township; Terence J. Swihart, Essexville, and Andrew H. Ward, Sanford, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 6, 1986, Ser. No. 893,752
Int. Cl.[4] D06M *11/15, 13/46, 13/52, 15/643*
U.S. Cl. 252—8.8 6 Claims

1. An article of manufacture adapted for providing fabric conditioning within an automatic laundry dryer, the article consisting essentially of a flexible substrate having affixed thereto a fabric conditioning amount of a conditioning composition having a melting point above about 38° C. and being flowable at dryer operating temperatures, the composition comprising

(A) a cationic, fabric-softening agent and

(B) from about 0.2 to 11 percent by weight based on the fabric softening agent of a polydiorganosiloxane component having a viscosity from 80 to 2,000 cSt at 25° C. and

VOL 1093 ISS 5 AG 30 1988 UMI

selected from the group consisting of unsubstituted polydimethylsiloxane and unsubstituted polyphenylmethylsiloxanes,

said composition being affixed to the substrate in a manner which provides for release of the conditioning composition within an automatic laundry dryer at dryer operating temperatures.

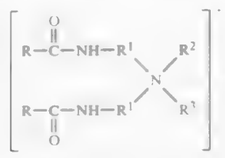
4,767,549

DISPERSANT COATED MINERAL FIBER IN A DRILLING FLUID

Terence D. McEwen, Evanston, and John D. Hansen, Mundelein, both of Ill., assignors to USG Interiors, Inc., Chicago, Ill.

Division of Ser. No. 908,062, Sep. 16, 1986, abandoned. This application Jan. 4, 1988, Ser. No. 143,268
Int. Cl.[4] C09K *3/00*
U.S. Cl. 252—8.514 7 Claims

1. An oil well drilling fluid comprising a mineral fiber having its surface coated by a dispersant selected from the class consisting of an alkoxylated fatty amine and an alkoxylated quaternary ammonium salt having the formula:



wherein R is an aliphatic radical, R′ is an alkylenyl radical, R^2 is an alykl radical, R^3 is a hydroxyalkyl radical, and Y is Cl or R^4X in which R^4 is the same or different alkyl radical as R^2 and X is SO_4.

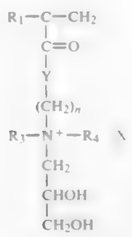
4,767,550

VICINAL DIOL CONTAINING MONOMERS AND POLYMERS AND METHODS OF TREATING A SUBTERRANEAN FORMATION

David Hanlon; Marlin Holtmyer; Mike Conway, and Charles Hunt, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation of Ser. No. 818,834, Jan. 14, 1986, abandoned. This application Mar. 31, 1987, Ser. No. 32,917
Int. Cl.[4] C09K *7/02*
U.S. Cl. 252—8.551 6 Claims

1. A method of treating a high temperature subterranean formation comprising contacting said formation with a highly viscous gel formed of an aqueous fluid, a water soluble polymer containing crosslinkable vicinal diol groups and a crosslinking agent selected from the group consisting of water soluble salts and complexes of multivalent cations, said water soluble polymer comprising a copolymer containing a monomer having the structural formula:



wherein

R_1 is hydrogen or methyl;

Y is oxygen of NH;

R_3 and R_4 are independently methyl or ethyl;

n is 2 or 3; and X^- is a halogen, sulfate, CH_3SO_4 or CH_3COO^-.

4,767,551

METAL-CONTAINING LUBRICANT COMPOSITIONS

Mack W. Hunt, and Steven Kennedy, both of Naperville, Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 803,589, Dec. 2, 1985, Pat. No. 4,664,822. This application Nov. 10, 1986, Ser. No. 929,628
The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.
Int. Cl.[4] C10M *137/10, 139/00*
U.S. Cl. 252—32.7 E 16 Claims

1. A lubricating oil composition comprising: (a) a major amount of a lubricating oil; (b) from 0 to 10 (wt) % of an ashless dispersant compound; (c) from 0 to 10 (wt) % of at least one viscosity index improver selected from the group consisting of a nitrogen-containing polymeric viscosity index improver dispersant, an ester-containing polymeric viscosity index improver dispersant, and a non-dispersant viscosity index improver; and (d) from 0.01 to 10.0 parts by weight per 100 parts of said lubricating oil composition of zinc dialkyldithiophosphate and characterized in that the lubricant oil composition further contains from 0.1 to 5.0 (wt) % of a dispersant/detergent, antioxidant, and corrosion inhibitor comprising at least one overbased copper metal-containing compound selected from the group consisting of an overbased copper magnesium sulfonate, an overbased copper calcium sulfonate, an overbased copper sodium sulfonate, and an overbased copper calcium phenate.

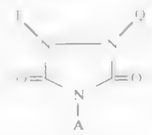
4,767,552

URAZOLE COMPOSITIONS USEFUL AS ADDITIVES FOR FUNCTIONAL FLUIDS

Roger L. Sowerby, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Jun. 23, 1986, Ser. No. 877,637
Int. Cl.[4] C10M *133/44*
U.S. Cl. 252—46.3 15 Claims

1. A lubricating composition comprising a major amount of an oil or lubricating viscosity and about 0.05 to 20 percent by weight of an additive defined by the formula:



(I)

wherein T and Q may be the same or different and represent hydrogen, hydrocarbyl, sulfur, phosphorus, boron, a metal cation, acyloxy hydrocarbyl, imido hydrocarbyl, hydrocarbyl repeating units, hydrocarbyl urazole (I) containing repeating units, an acyl urazole repeating units, an acyl group, or hydrocarbyl acyl containing group, a repeating unit of an acyl group, a repeating unit of a hydrocarbyl acyl containing group, or together form a pi bond between the two nitrogen atoms and A is hydrogen, hydrocarbyl, a hydrocarbyl urazole (I) group, a repeating unit of a hydrocarbyl containing acyl group or a repeating unit of a hydrocarbyl containing acyl group which is bonded directly to or through a hydrocarbyl group to another urazole (I) group.

4,767,553

LUBRICATING OIL CONTAINING DISPERSANT VISCOSITY INDEX IMPROVER

William P. Hart, Freehold, N.J.; Maria M. Kapuscinski, Carmel, and Christopher S. Liu, Poughkeepsie, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 24, 1986, Ser. No. 945,982
Int. Cl.[4] C10M *145/14*
U.S. Cl. 252—47.5 8 Claims

1. An antioxidant/dispersant lubricating oil composition comprising a major portion of a lubricating oil and a minor effective viscosity index improving portion of, as additive, a functionalized polymer comprising moieties derived from (i) first monomer containing a copolymerizable ethylenically unsaturated carbon-carbon double bond and a dicarboxylic acid anhydride moiety and (ii) second monomer which is an acrylate or a methacrylate the polymer backbone bearing at least two pendant side chains containing dicarboxylic acid anhydride moieties, having been functionalized with first functionalizing agent phenothiazine, and a second portion of said side chains containing anhydride moieties having been functionalized with, as second functionalizing agent, a primary or secondary heterocyclic amine.

4,767,554

POLYCARBOXYLIC ACID ESTER DRAWING AND IRONING LUBRICANT EMULSIONS AND CONCENTRATES

John T. Malito, Oswego; Richard D. Wintermute, Glen Ellyn; Scott F. Ross, Chicago, and John M. Ferrara, Palos Heights, all of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 18, 1987, Ser. No. 98,438
The portion of the term of this patent subsequent to Dec. 30, 2003, has been disclaimed.
Int. Cl.[4] C10M *173/00*
U.S. Cl. 252—49.5 7 Claims

1. A concentrate of the type useful for preparing an oil-in-water emulsion lubricant used in the drawing and ironing of ferrous and non-ferrous metals comprising:

Ingredient	% by Weight
A carboxylic acid ester from the group consisting of:	60–90
(a) Dibasic acid having at least 70% by weight of its carboxylic acid groups esterified with a C_4–C_{30} monohydric alcohol	
(b) A C_8–C_{22} mono carboxylic acid ester of a polyhydric alcohol	
Water-in-oil emulsifying agent, which is free of unsaturated and soap-forming groups	.5–30
Polyglycol co-emulsifier	2–4
Phosphate corrosion inhibitor	0.5–2
Copper corrosion inhibitor	0.2–1
Thickener	0–10

the improvement which comprises said composition having an Iodine number not greater than 5.

4,767,555

HYDROPHOBIC EPOXIDE MODIFIED POLYOXYALKYLENE DIAMINES AND THICKENED AQUEOUS FLUIDS

Edward C. Y. Nieh, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 10, 1987, Ser. No. 36,637
Int. Cl.[4] C10M *173/02*
U.S. Cl. 252—73 9 Claims

1. An aqueous fluid comprising an effective thickening amount of a thickener comprising the reaction product of:

a. a polyoxyalkylene diamine of the formula:

$$H_2NCH(CH_3)CH_2O(CH_2CH(R)O)_xCH_2CH(CH_3)NH_2$$

wherein: from 1% to 30% of R is methyl and the remaining R is hydrogen, and x is a number such that the molecular weight of the polyoxyalkylene diamine ranges from 3000 to 9000; with

b. a mixture of a hydrophobic monoepoxide comprising a C_8 to C_{22} alpha olefin of alkyl glycidyl ether and a hydrophobic diepoxide

wherein: the ratio amine equivalent: monoepoxide: diepoxide in the range of 1:0.25:0.25 to 1:1.4:1.

4,767,556

LOW-SLING FIBER LUBRICANT COMPRISING SHEAR-REDUCED, HIGH MOLECULAR WEIGHT POLYISOBUTYLENE

John T. Childers, Monroe, and Issac D. Fleming, Charlotte, both of N.C., assignors to Henkel Corporation, Ambler, Pa.

Filed Aug. 25, 1986, Ser. No. 900,016
Int. Cl.[4] D06M *15/227*
U.S. Cl. 252—8.6 24 Claims

1. A low-sling, high tack fiber lubricant having a final viscosity of from about 50 SUS to about 200 SUS and consisting essentially of:

(a) a mineral oil vehicle having a viscosity from about 40 to 200 SUS in an amount of from about 78 to 90% by weight based on the weight of the lubricant;

(b) an ultra-high molecular weight polyisobutylene additive comprising a mixture of isobutylene polymers ranging in number average mw from about 2,000,000 to 6,000,000, said additive having a number average molecular weight of at least about 4,500,000, in an amount of from about 0.05% to about 0.15% by weight based on the weight of the lubricant; and

(c) an emulsifier or mixture of emulsifiers in an amount sufficient to stabilize and homogenize the lubricant and to render the lubricant scourable;

wherein said lubricant is prepared by a process consisting essentially of steps (a), (b), and (c);

(a) selecting a mineral oil vehicle having a viscosity of from about 5 to 50 SUS lower than the final viscosity of the lubricant,

(b) admixing the selected vehicle, the emulsifier, and the ultra-high molecular weight polyisobutylene additive, to provide an admixture having a viscosity of from about 10 to 30 SUS above the final viscosity of the lubricant, and

(c) applying controlled low shear forces to the admixture containing the polyisobutylene additive to reduce viscosity of the admixture to the final viscosity of the lubricant while substantially maintaining polymer integrity; and

wherein all viscosity measurements are in SUS at 100° F.

4,767,557

DRY BLEACH AND STABLE ENZYME GRANULAR COMPOSITION

Robert W. Herdeman, Loveland, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 750,569, Jun. 28, 1985, abandoned. This application Dec. 9, 1987, Ser. No. 131,294
The portion of the term of this patent subsequent to Nov. 17, 2004, has been disclaimed.
Int. Cl.[4] C11D *3/386, 3/39*; C12N *9/96, 9/98*
U.S. Cl. 252—91 21 Claims

1. A storage stable granular composition comprising:

(I) a low dust enzyme granulate including a homogeneous mixture of 0.5% to 20% raw enzyme selected from amylases and proteases and mixtures thereof, 3% to 97.5% alkaline buffer salt material selected from the group con-

VOL 1093 ISS 5 AUG 30 1988 UMI

sisting of potassium bicarbonate, potassium carbonate, sodium bicarbonate, and mixtures thereof, an antioxidant inorganic salt selected from the group consisting of sodium sulfite, sodium bisulfite, sodium thiosulfate, and mixtures thereof, 2% to 40% cellulosic filler and binder, with said raw enzyme having an activity of about 0.25–10 Au/gram, said binder selected from nonwaxy polyvinyl pyrrolidone, dextrina, polyvinylalcohol, cellulose derivatives, and mixtures thereof; and

(II) a peroxyacid bleach granulate,

wherein said (I) and (II) have a weight ratio of from about 1:1 to about 1:1500;

wherein said alkaline buffer salt material has a pH of above 7 to about 11;

wherein said raw enzyme and said alkaline buffer salt material have a weight ratio of from 1:4 to 1:200;

wherein said cellulosic filler and binder of said (I) have a weight ratio of about 1:1 to 10:1;

wherein said enzyme granulate (I) is made with a granulating agent selected from a waxy substance and water, said waxy substance having a melting point of from about 30° C. to about 100° C., said granulating agent being used at a level of from about 5% to about 70% by weight of dry substances, and wherein a maximum of waxy substance used is 40%.

4,767,558

LOW PHOSPHATE OR PHOSPHATE FREE NONAQUEOUS LIQUID NONIONIC LAUNDRY DETERGENT COMPOSITION AND METHOD OF USE

T. Ouhadi, Liege, and L. Dehan, Seraing, both of Belgium, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 762,165, Aug. 5, 1985, abandoned. This application Feb. 19, 1986, Ser. No. 830,821

Int. Cl.[4] C11D *1/78, 3/075, 3/39, 3/43*

U.S. Cl. 252—99 29 Claims

15. A low polyphosphate detergent builder nonaqueous liquid heavy duty laundry detergent composition which is pourable at temperatures as low as about 5° C. and which consists essentially of

Liquid nonionic [Nonionic] surfactant in an amount of about	30–40%
Polycarboxylic acid terminated surfactant in an amount of about	4–10%
Trisodium citrate in an amount of about	25–35%
Copolymer of methacrylic acid and maleic anhydride sodium salt in an amount of about	3–5%
Diethylene glycol monobutylether in an amount of about	8–12%
A polyphosphate detergent builder in an amount of about	5–15%
C_{16} to C_{18} alkanol ester of phosphoric acid in an amount of about	0.1 to 0.5%
Sodium perborate monohydrate bleaching agent in an amount of about	8–12%
Tetraacetylethylene diamine (TAED) bleach activator in an amount of about	3.5–5.5%

4,767,559

PROCESS FOR PRODUCING CONTACT LENS CLEANING TABLETS WITH A DISINFECTING ACTION FOR ONE-STEP CLEANING

Hans Kruse, Korschenbroich; Jochen Jacobs, Wuppertal; Klaus-Dieter Wisotzki, Erkrath, and Jutta Thul, Hilden, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Apr. 8, 1987, Ser. No. 35,848

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1987, 3701129

Int. Cl.[4] C11D *7/42, 7/54;* A61L *2/16*

U.S. Cl. 252—106 32 Claims

1. A method for producing a contact lens one-step cleaning and disinfecting tablet designed to be dissolved in water comprising:

(A) preparing a tablettable neutralizing core mixture consisting essentially of at least one biocompatible reducing agent, and/or at least one biocompatible catalyst, and at least one first buffering agent;

(B) forming a core tablet from the mixture of step (A);

(C) preparing a jacket mixture consisting essentially of a biocompatible cleaning and disinfecting agent which is a hydrogen peroxide generating compound and at least one alkylglucoside of the general formula $R_1O(C_nH_{2n}O)_y(Z)_x$ wherein

R_1 is a C_{8-18} alkyl,

n is 2 or 3,

y is 0–10,

Z is glucose, and

x is 1–10,

and a second buffering agent; and

(D) enveloping the core tablet of step (B) with the jacket mixture of step (C) so that it is completely surrounded by a stable outer layer thereof.

4,767,560

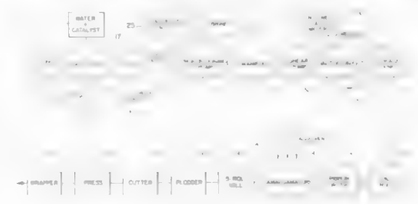
TOILET SOAP BARS MADE FROM TOPPED, DISTILLED COCO FATTY ACID AND PROCESSES FOR MANUFACTURE THEREOF

Gregorio C. Gervasio, Las Pinas Metro Manila, Philippines, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Oct. 2, 1986, Ser. No. 914,691

Int. Cl.[4] C11D *15/00*

U.S. Cl. 252—108 3 Claims



1. A process for manufacturing a toilet soap bar of improved cold water lathering properites, improved stability on storage and improved plasticity, which is mild to the skin and which does not slough excessively when deposited wet on a soap dish, which bar comprises at least 70% of sodium soap of topped, distilled coco fatty acid from which all caproic and caprylic acids have been removed, and in which fatty acid the capric content is less than 2%, 4 to 14% of such topped, distilled free coco fatty acid, 6 to 16% of water and no more than 8% of adjuvant(s), which manufacturing process comprises pre-heating the topped, distilled coco fatty acid, caustic soda solution and brine solution, separately feeding the heated topped, distilled coco fatty acid, caustic soda solution and brine solution to a proportioning pump, discharging them from said proportioning pump to a shear pump in which they are initially intimately mixed and the coco fatty acid and caustic soda are reacted, heating the mixture in an autoclave, recycling a high proportion of the reaction mixture back to such autoclave, while feeding to such autoclave a low proportion of previously unrecycled material discharged from the shear pump, removing the resulting superfatted soap from the autoclave, drying it to a moisture content in the range of 6 to 16%, mixing it with no more than 8% of adjuvant(s), plodding such mixture to bar form, cutting the bar to lengths and pressing such lengths to final bar or cake form.

4,767,561

AZEOTROPE OR AZEOTROPE-LIKE COMPOSITION OF TRICHLOROTRIFLUOROETHANE, METHANOL AND 1,2-DICHLOROETHYLENE

Robert A. Gorski, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 23, 1987, Ser. No. 100,220

Int. Cl.[4] C11D *7/50*

U.S. Cl. 252—171 7 Claims

1. An azeotrope or azeotrope-like composition comprising about 64 to 72 weight percent 1,1,2-trichloro-1,2,2-trifluoroethane, about 5 to 7 weight percent methanol and about 23 to 29 weight percent trans-1,2-dichloroethylene.

4,767,562

ENZYMATIC LIQUID DETERGENT COMPOSITION

Alan J. Fry, Ellesmere Port, Great Britain, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 3, 1986, Ser. No. 937,260

Claims priority, application United Kingdom, Dec. 6, 1985, 8530188

Int. Cl.[4] C11D *3/28, 3/34, 3/386, 3/48*

U.S. Cl. 252—174.12 1 Claim

1. An enzymatic liquid detergent composition comprising from 5–70% by weight of a detergent-active material selected from the group consisting of soaps, anionic, nonionic, cationic, zwitterionic synthetic detergents and mixtures thereof and from 0.001–10% by weight of an enzyme selected from the group consisting of proteases, amylases, lipases, cellulases and mixtures thereof, and from 0.001–0.1% by weight of 1,2-benzisothiazolin-3-one, the balance being an aqueous medium.

4,767,563

LIQUID SCOURING CLEANSERS CONTAINING SOLVENT SYSTEM

Francesco de Buzzaccarini, Brussels, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 769,811, Aug. 23, 1985, abandoned, which is a continuation of Ser. No. 595,794, Apr. 2, 1984, abandoned. This application Apr. 6, 1987, Ser. No. 35,204

Claims priority, application United Kingdom, Apr. 19, 1983, 8310538; Sep. 20, 1983, 8325162

Int. Cl.[4] C11D *15/00*

U.S. Cl. 252—174.25 9 Claims

1. An aqueous liquid scouring cleanser composition comprising at least 0.1% by weight terpene or terpene derivative, at least 0.1% by weight benzyl alcohol, from 1–50% by weight of a water-insoluble abrasive having a Mohs hardness of 3, or below, the abrasive being selected from calcium carbonate, diatomaceous earth and polyvinyl chloride; and mixtures thereof; said abrasive having a particle size of from about 5 to about 150 microns; wherein said composition in addition contains from 1% to 20% by weight of a detersive surfactant selected from ethoxylated alcohols, alkyl benzene sulfonates, paraffin sulfonates, and mixtures thereof.

4,767,564

CHEMICAL COMPOSITION FOR THE DESTRUCTION OF MICROFILM PRODUCTS

Judith F. Kitchens, Haymarket; Carl H. Culp, Sr., Vienna, both of Va., and Anthony T. Shemonski, Columbia, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 4, 1980, Ser. No. 116,132

Int. Cl.[4] C09K *3/00*

U.S. Cl. 252—187.26 2 Claims

1. A chemical destruct solution especially adapted for destroying microform products which comprises a mixture of about 10 to 40 volume percent 4-butyrolactone, about 10 to 40 volume percent ethylene glycol monomethyl ether acetate, about 37 volume percent of a 12.5 percent sodium hypochlorite solution, and about 13 volume percent water.

4,767,565

SWITCHING TIME SHORTENING DOPANTS FOR LIQUID CRYSTALLINE MIXTURES

Dietrich Demus, Halle; Anton Hauser, Wettin, and Michael Keil, Etzdorf, all of German Democratic Rep., assignors to VEB Werk fuer Fernsehelektronik im VEB Kombinat Mikroelektronik, Berlin, Fed. Rep. of Germany

Continuation of Ser. No. 810,467, Dec. 18, 1985, abandoned. This application Oct. 5, 1987, Ser. No. 106,981

Claims priority, application German Democratic Rep., Jan. 28, 1985, 272798

Int. Cl.[4] C09K *19/54;* G02F *1/13*

U.S. Cl. 252—299.5 5 Claims

1. A composition comprising at least one nematic liquid crystalline compound and at least one dopant compound of the general formula C_mH_{2m+2}, in which m is an integer from 20 to 24, in an amount sufficient to reduce the rotational viscosity of the nematic liquid crystalline compound.

4,767,566

PROCESS FOR PRODUCING LUMINOUS MATERIAL BASED ON MANGANESE ACTIVATED CADMIUM BORATE

Akos Kiss, Aschaffenburg; Peter Kleinschmit, Hanau; Werner Völker, Bad Vilbel, and Günter Halbritter, Schöllkrippen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 730,578, May 6, 1985, abandoned. This application Jan. 20, 1987, Ser. No. 5,304

Claims priority, application Fed. Rep. of Germany, May 12, 1984, 3417626

Int. Cl.[4] C09K *11/64*

U.S. Cl. 252—301.6 F 8 Claims

1. A process for producing a luminescent material containing manganese activated cadmium borate comprising the steps of:

(1) forming a mixture in comminuted form corresponding to the formulation of

(a) 1 to 80 mole % cadmium oxide (CdO),

(b) 1 to 50 mole % boron oxide (B_2O_3),

(c) 0.2 to 1.3 mole % manganese oxide (MnO),

(d) 0 to 10 mole % of an oxide selected from the group potassium oxide, calcium oxide, magnesium oxide, barium oxide, strontium oxide, nickel oxide, cobalt oxide, chromium oxide, titanium oxide, and zirconium oxide,

(e) 0.1 to 22.5 mole % sodium oxide (Na_2O),

(f) 0.3 to 23.8 mole % aluminum oxide (Al_2O_3),

(g) 0.5 to 47.5 mole % silica (SiO_2); wherein materials (a), (b) and (d) are oxides or compounds which are converted into oxides under the calcining conditions employed in step (3) and materials (c), (e), (f) and (g) are in the form of a manganese loaded zeolite-A;

(2) lightly pressing the mixture of step (1); and

(3) calcining in air the lightly pressed mixture of step (2) at 650° C. to 900° C. for 0.5 to 6 hours.

4,767,567

PROCESS FOR PRODUCING LUMINOUS MATERIAL BASED ON MANGANESE ACTIVATED ZINC SILICATE

Akos Kiss, Aschaffenburg; Peter Kleinschmit, Hanau; Werner Völker, Bad Vilbel, and Günter Halbritter, Schöllkrippen, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 719,955, Apr. 4, 1985, abandoned. This application Jan. 29, 1987, Ser. No. 9,031

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1984, 3414124

Int. Cl.[4] C09K *11/64*

U.S. Cl. 252—301.6 F 8 Claims

1. A process for forming a luminescent material containing manganese-activated zinc silicate (Zn_2SiO_4:Mn) comprising the steps of:

VOL 1093 ISS 5 AG 30 1988 UMI

(1) forming a mixture in comminuted form corresponding to the formulation of
(a) 1.5 to 94.8 mole % of zinc oxide (ZnO),
(b) 1 to 90 mole % of silicon dioxide (SiO_2),
(c) 0.2 to 1.3 mole % of manganese oxide (MnO),
(d) 0.1 to 25 mole % of at least one member of the group consisting of alkali oxide, alkaline earth oxide, titanium dioxide, zirconium dioxide, chromium oxide (Cr_2O_3) and lead oxide (PbO),
(e) 0.1 to 23.8 mole % of sodium oxide (Na_2O),
(f) 1.3 to 24 mole % of aluminum oxide (Al_2O_3), and
(g) 2.5 to 48 mol. % of silicon dioxide (SiO_2), and wherein materials (a), (b), and (d) are oxides or compounds which are converted into oxides under the calcining conditions of step (3), and wherein materials (c), (e), (f) and (g) are in the form of a maganese loaded -A- zeolite;
(2) lightly compacting the mixture of step (1); and
(3) calcining in air the lightly compacted mixture of step (2) at 850° C. to 1400° C. for from 0.5 to 6 hours.

4,767,568

FOAM INHIBITORS FOR AQUEOUS SYSTEMS AND USE THEREOF

Heinz Abel, Reinach, and Rosemarie Töpfl, Dornach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 19, 1986, Ser. No. 876,133

Claims priority, application Switzerland, Jun. 27, 1985, 02719/85

Int. Cl.⁴ B01D *19/04*

U.S. Cl. 252—321 **20 Claims**

1. A foam inhibitor for aqueous systems, which comprises
(1) 6 to 12% by weight of (A) a reaction product of a polyol, an anhydride of an aliphatic dicarboxylic acid of 2 to 10 carbon atoms and an adduct of a polyalkylene glycol and a fatty acid, or (B) a reaction product of a polyol, an anhydride of an aliphatic dicarboxylic acid of 2 to 10 carbon atoms, a higher aliphatic alcohol and a polyethylene glycol,
(2) 20 to 50% by weight of a dialkyl ester of an unsaturated dicarboxylic acid,
(3) 20 to 50% by weight of a mineral oil,
(4) 5 to 10% by weight of a nonionic emulsifier,
(5) 5 to 10% by weight of an anionic emulsifier, and
(6) 0.5 to 1.5% by weight of an alkylene diamide.

4,767,569

PROCESS FOR PRODUCING SYNTHESIS GAS BY PARTIAL COMBUSTION OF HYDROCARBONS

John H. Brophy, Camberley, and Felix J. Weinberg, London, both of England, assignors to The British Petroleum Company p.l.c., London, England

Continuation of Ser. No. 800,124, filed as PCT GB85/00141, Apr. 2, 1985, published as WO85/04647, Oct. 24, 1985, abandoned.

This application Jul. 6, 1987, Ser. No. 70,644

Claims priority, application United Kingdom, Apr. 5, 1984, [illegible]

Int. Cl.⁴ C01B *3/28, 3/30*

U.S. Cl. 252—373 **20 Claims**

1. A process for the production of hydrogen and carbon monoxide containing synthesis gas and higher hydrocarbons in which (a) a saturated hydrocarbon and an oxygen containing gas having a ratio of hydrocarbon to oxygen of greater than the stoichiometric ratio for complete combustion are introduced into a bed of an inert particulate material, (b) the upward flow rate of the hydrocarbon/oxygen containing gas stream being sufficient to produce a spouting action of the bed material, whereby at least a part of the particulate material is thrown up above the bed surface and subsequently falls back into the bed, (c) the hydrocarbon and oxygen containing gas being ignited and reacted together, and (d) the products of the reaction being withdrawn.

4,767,570

SODIUM TRIPOLYPHOSPHATE CARRIER PARTICLES CONTAINING A SODIUM HYDROGEN ORTHO ON PYRO-PHOSPHATE

Daniel Joubert, Trevoux, France, assignor to Rhone-Poulenc Chimie de Base, Courbevoie, France

Filed Jul. 15, 1986, Ser. No. 885,677

Claims priority, application France, Jul. 15, 1985, 85/10798

Int. Cl.⁴ C09K *3/00;* **C11D** *7/16, 9/36, 17/06*

U.S. Cl. 252—540 **19 Claims**

1. A composition of matter adapted as a carrier for liquid component materials, comprising (i) 54–67% by weight sodium tripolyphosphate, and (ii) 12–23% by weight sodium hydrogen orthophosphate, sodium hydrogen pyrophosphate, or admixture thereof, wherein said sodium tripolyphosphate fraction comprises at least 50% of phase 1 and is formed by spraying.

10. An antifoaming formulation comprising a liquid component antifoaming agent and, as a carrier material therefor, the composition of matter as defined by claim 1.

4,767,571

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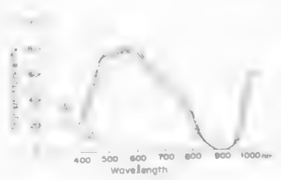
Yoshiaki Suzuki, and Gouichi Hayashi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 21, 1985, Ser. No. 747,422

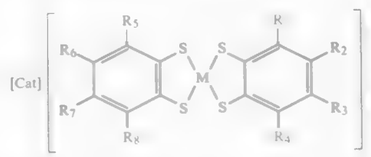
Claims priority, application Japan, Jun. 27, 1984, 59-132495; Jul. 24, 1984, 59-152045; Aug. 4, 1984, 59-163980

Int. Cl.⁴ F21V *9/04*

U.S. Cl. 252—587 **30 Claims**



1. A compound having the formula:



wherein:
M represents copper, cobalt, nickel, palladium or platinum; cat represents a cation to neutralize a complex; R_1 to R_8 each independently represents a member selected from the group consisting of a hydrogen atom, alkoxy group, amino group, halogen atom, cyano group, hydroxyl group, alkyl group, aryl group and heterocyclic group, said heterocyclic group being a 5-membered or a 6-membered ring containing at least one nitrogen, oxygen or sulfur atom as a hetero atom therein, said alkyl, aryl or heterocyclic group optionally being bonded through a divalent connecting group, which may be the same or different, to a benzene ring with the proviso that at least one of said R_1 to R_8 is an electron donating group when said Cat is a cation other than a quaternary phosphonium or iminium cation.

4,767,572

METHOD OF MAKING RADIATION SHIELDING ELEMENTS FOR USE IN NUCLEAR TECHNOLOGY

Manfred Sappok, Tönisvorst, Fed. Rep. of Germany, assignor to Siempelkamp Giesserei GmbH & Co., Krefeld, Fed. Rep. of Germany

Continuation of Ser. No. 840,423, Mar. 17, 1986, abandoned. This application Oct. 22, 1987, Ser. No. 113,338

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1985, 3527319

Int. Cl.⁴ G21F *9/16, 5/00;* **G21C** *19/00, 9/00*

U.S. Cl. 252—628 **11 Claims**

1. A method of making a radiation shielding structure for a nuclear installation which comprises the steps of:
(a) deriving a radioactive residue having a cobalt 60 equivalent specific activity between 50 Bq/g and 100 Bq/g from a nuclear reactor installation;
(b) incorporating said radioactive residue in a composition; and
(c) forming said composition into a radiation shielding solid structure.

4,767,573

PROCESS FOR THE PREPARATION OF A MIXTURE OF 1-AMINO-2-CHLORO-4-HYDROXYANTHRAQUINONE AND 1-AMINO-2-BROMO-4-HYDROXYANTHRAQUINONE

Rolf Müller, Aesch, Switzerland, and Bernd Dill, Rheinfelden, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 10, 1987, Ser. No. 60,712

Claims priority, application Switzerland, Jun. 16, 1986, 2421/86

Int. Cl.⁴ C07C *97/26*

U.S. Cl. 260—380 **11 Claims**

1. A process for the preparation of a mixture of 1-amino-2-chloro-4-hydroxyanthraquinone and 1-amino-2-bromo-4-hydroxyanthraquinone, which mixture contains a high proportion of 1-amino-2-chloro-4-hydroxyanthraquinone, which process comprises chlorinating 1-aminoanthraquinone, in an inert organic solvent, until 60 to 90% of 1-amino-2,4-dichloroanthraquinone is present in the reaction mixture, brominating the resultant reaction mixture until it contains less than 2% of starting material and monohalogenated compound, subsequently reacting the products so obtained with concentrated or fuming sulfuric acid to give 1-amino-2-chloro-4-hydroxyanthraquinone and 1-amino-2-bromo-4-hydroxyanthraquinone, and isolating the mixture so obtained.

4,767,574

CARBONYLATION OF ALLYLIC ETHERS TO ESTERS

Ronnie M. Hanes, Milford, and Thomas S. Brima, Cincinnati, both of Ohio, assignors to National Distillers and Chemical Corporation, Cincinnati, Ohio

Filed Oct. 3, 1985, Ser. No. 783,884

Int. Cl.⁴ C09F *5/08*

U.S. Cl. 260—410 **28 Claims**

1. A method for the production of esters comprising reacting an allylic ether with carbon monoxide to obtain an ester said reaction being conducted in the presence of a catalytically effective amount of a catalyst comprising a halide of a Group VIII noble metal and a halide compound selected from the group consisting of hydrogen halides, carbonyl halides, acyl halides and mixtures thereof said halide compound present in an amount sufficient to prevent said halide of a Group VIII noble metal from being converted into said Group VIII noble metal during said reaction.

4,767,575

MELT-PHASE SYNTHESIS OF DIBASIC ORGANO-LEAD COMPOUNDS

Kurt Worschech; Peter Wedl, both of Loxstedt; Erwin Fleischer, Bremerhaven-Spaden, and Fridо Loeffelholz, Bremerhaven-Surheide, all of Fed. Rep. of Germany, assignors to Neynaber Chemie GmbH, Loxstedt, Fed. Rep. of Germany

Filed Dec. 5, 1985, Ser. No. 806,247

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1984, 3444261

Int. Cl.⁴ C07F *7/24;* **C11C** *1/00*

U.S. Cl. 260—414 **26 Claims**

1. A method for the synthesis of dibasic lead-fatty acid salts of the formula $2PbO.Pb(\text{fatty acid residue})_2$ in a melt reaction comprising:
melting at least one fatty acid capable of forming a lead-fatty acid salt;
charging thereto plumbous oxide in an amount effective to form a given amount of said dibasic lead-fatty acid salt; and
admixing a catalyst/initiator consisting essentially of at least one magnesium, calcium or aluminum compound in an amount of at least sufficient to effectuate said synthesis; said charging and admixing being in any order and repeatable.

4,767,576

NEBULIZER WITH AUXILIARY GAS INPUT

James T. Bagwell, Anaheim, Calif., assignor to CIMCO, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 661,149, Oct. 15, 1984, Pat. No. 4,629,590. This application Nov. 6, 1986, Ser. No. 927,812

Int. Cl.⁴ B01F *3/04;* **A61M** *11/02*

U.S. Cl. 261—16 **4 Claims**



1. A nebulizer for inhalation therapy comprising a mixer housing having a mixing chamber therein with an open end, said housing having first and second input ports,
a venturi tube mounted in said open end, said venturi tube including an input end having an entrance surface tapering inwardly toward the axis of said tube and toward said open end,
nozzle means in said chamber connected to said first port for projecting a first stream of high velocity oxygen from said first port along a first axis in said chamber,
an aspirating conduit having an end in said chamber adjacent said nozzle means and adapted to be connected to a body of liquid for flowing liquid to said first stream at a point adjacent said nozzle means, thereby entraining liquid in said first stream,

VOL 1093 ISS 5 AG 30 1988 UMI

means for projecting a second stream of compressed air into said chamber in proximate relation to said nozzle means,

deflector means in the path of said second stream and being configured and arranged for deflecting said second stream in a downwardly swirling path toward said entrance surface in a direction substantially parallel to said first stream and along a second axis adjacent the axis of said first stream, whereby said first and second streams are mixed with fluid in said chamber to provide a moisturized oxygen enriched air mixture, and,

means for discharging said moisturized mixture from said chamber,

said deflector means being oriented to direct said second stream along an axis intersecting said entrance surface of the venturi tube,

said deflector means including an input fitting for said second stream having an axis transverse to said first mentioned axis, and means on said deflector means for redirecting air from said input fitting,

said deflector means comprising a channel-shaped member having a web in proximate relation to said nozzle means and first and second side walls, said web and side walls being configured to redirect said second stream in said downwardly swirling path toward said entrance surface.

4,767,577

PROCESS AND APPARATUS FOR PRODUCING PLASTIC-BOUND PROPELLANT POWDERS AND EXPLOSIVES

Dietmar Müller, Heinrich-Bilienfeinweg 2, D-7500, Karlsruhe 41, Fed. Rep. of Germany, and John E. Stewart, 182 Mckinley Pl., Ridgewood, N.J. 07450

Filed Oct. 1, 1986, Ser. No. 914,072

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1985, 3535281

Int. Cl.[4] C06B *21/00, 45/00;* B29D *7/16*

U.S. Cl. 264—3.3 10 Claims



1. A process for producing plastic-bound propellant powders and explosives by an extruder comprising a casing with at least one draw or feed opening, optionally a solvent supply opening and at least one extruder shaft with kneading and conveying segments, the casing having at least one section transparent to UV/VIS or X-rays provided by a radiation source means, the process comprising the steps of supplying a plastic binder polymerizable under the UV/VIS or X-rays through the feed opening until segments of the at least one extruder shaft "float" without wall friction in the plastic binder, subsequently adding the components of the propellant powder or explosive material in crystalline form, initiating the polymerization within the extruder by the radiation source means arranged around the casing, controlling at least one of the radiation intensity and wavelength of the radiation source means as a function of a pressure difference present over a clearly defined path in a terminal compression zone of the extruder, in such a manner that the propellant or explosive strand or strands exit the extruder in a dimensionally stable and cuttable manner.

4,767,578

METHOD AND DEVICE FOR THE CONTINUOUS STRETCHING OF A PLASTICS MATERIAL FILM

Hubert A. Thimon, Aix les Bains, France, assignor to Newtec International, Aix les Bains, France

Filed Oct. 10, 1985, Ser. No. 786,197

Claims priority, application France, Oct. 11, 1984, 84 15587

Int. Cl.[4] B29C *55/06;* B29D *7/01*

U.S. Cl. 264—40.1 38 Claims

1. A method for continuously stretching plastic material, comprising the steps of:

rotating at least three rollers at respectively increasing tangetial speeds; and

automatically and selectively engaging at least two of the rollers with a stretchable plastic material to control the rate of stretching for the plastic material, said rollers being driven by a single-speed transmission.

9. Device for continuously stretching a plastic material film comprising:

at least two successive rollers with successive drives;

a third roller, the three rollers being driven at the same tangetial speed V; and

means for automatically and selectively engaging any number of rollers with the film to be stretched.

4,767,579

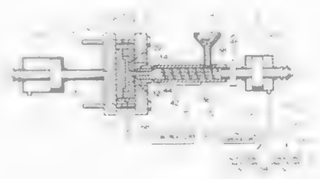
METHOD OF PRECISION VOLUMETRIC CONTROL OF A MOLDABLE MATERIAL IN AN INJECTION MOLDING PROCESS

Frederick J. Buja, Rochester; Alan B. Miller, Scottsville; William H. Sherwood, Victor, and James J. Wenskus, Jr., Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 2, 1987, Ser. No. 115,675

Int. Cl.[4] B29C *45/57*

U.S. Cl. 264—40.5 8 Claims



1. In a molding method utilizing a molding machine having a pair of separable mold elements forming a mold cavity therebetween, means for opening and closing the mold elements, and means for introducing a moldable material into said mold cavity at a first pressure and for exerting a second pressure on said moldable material as it cures in said cavity; the method of controlling the molded product comprising the steps of closing said mold elements, introducing a moldable material into said mold cavity, measuring the separation of the mold elements resulting from the introduction of the moldable material into the mold cavity, detecting a predetermined separation of said mold elements, changing the pressure from said first pressure to said second pressure in response to said detection, measuring the separation of the mold elements following changing the pressure and sensing when the separation of the mold elements stops increasing, determining whether the cessation of mold element separation increase occurs within a predetermined separation window and if not within said window generating a signal to indicate that the cycle has exceeded the product limit, if said cessation occurs within said window then continuing the cycle and maintaining said second pressure until the moldable material has cured, and opening said mold elements.

4,767,580

PROCESS FOR PREPARATION OF POROUS SHEETS

Kaneko Shingo, Houfu; Shunichi Nakamura, Hikari, and Hisashi Nakanishi, Tokuyama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Dec. 1, 1986, Ser. No. 936,357

Claims priority, application Japan, Nov. 29, 1985, 60-268897

Int. Cl.[4] C08J *9/00;* B29C *67/20, 55/02*

U.S. Cl. 264—41 7 Claims

1. A process for the preparation of porous sheets, which comprises providing a composition comprising 100 parts by weight of a polyolefin resin, 50 to 400 parts by weight of a filler and 0.1 to 10 parts by weight of a silicone oil; forming said composition into a sheet; and drawing said sheet to form a porous sheet.

4,767,581

BUILDING CONSTRUCTION ELEMENT AND THE MACHINE AND METHOD FOR ITS MANUFACTURE

Eugene R. Tippmann, 4221 Boca Trail, Fort Wayne, Ind. 46815

Filed Sep. 30, 1986, Ser. No. 913,455

Int. Cl.[4] B29C *67/22, 39/10;* B29B *11/00;* B26D *3/08*

U.S. Cl. 264—46.4 5 Claims



1. A method of making a building element comprising the steps of:

(a) providing an elongated strip of polymeric material having an inner and an outer surface,

(b) cutting out a plurality of individual, spaced-apart projections from the (on said) inner surface side of said strip, and

(c) forming (disposing) a layer of low density plastic material over substantially (substrantially) the entire inner surface of said strip to thereby embed said projections in said foam material.

4,767,582

METHOD OF MANUFACTURING VOLTAGE NONLINEAR RESISTANCE ELEMENTS

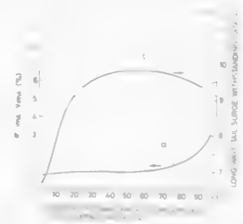
Satoshi Maruyama; Kazuo Mukae, and Ikuo Nagasawa, all of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd. and Fuji Electric Corporate Research and Development Ltd., both of Kanagawa, Japan

Filed Dec. 19, 1986, Ser. No. 943,803

Int. Cl.[4] C04B *35/50*

U.S. Cl. 264—61 2 Claims

1. A method of manufacturing a voltage nonlinear resistance element comprising the steps of providing a mixture of a main component ZnO and auxiliary components of at least a rare earth element, Co and B in a mold, placing the mold in a sheath box having openings in the surfaces thereof, the ratio of openings with respect to the total surface area of the sheath box



being in the range of 10%–90%, and baking the mold in the sheath box.

4,767,583

METHOD OF MANUFACTURING MOLDED BODIES FROM HYDROXYPHOSPHATE

Aant B. D. van der Meer, and Petrus H. Swaanen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 19, 1986, Ser. No. 876,046

Claims priority, application Netherlands, Jun. 27, 1985, 8501841

Int. Cl.[4] C04B *35/64*

U.S. Cl. 264—63 4 Claims

1. A method of manufacturing molded bodies of a granulate from calcium hydroxyphosphate by sintering a shaped starting material consisting essentially of a mixture of said phosphate and a dispersed organic bonder, in a water-vapor containing atmosphere at a temperature of between 1200° and 1300° C., characterized in that the sintering operation is carried out in an atmosphere consisting essentially of an inert gas in which free oxygen is present in a concentration of maximally 0.005%, and having a moisture content which, dependent upon the selected sintering temperature, ranges from 1.66 to 72.6 mm Hg.

4,767,584

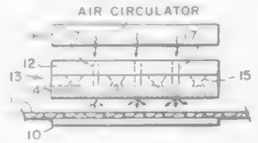
PROCESS OF AND APPARATUS FOR PRODUCING DESIGN PATTERNS IN MATERIALS

Todd L. Siler, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 3, 1985, Ser. No. 719,408

Int. Cl.[4] B29C *59/00;* D06P *7/00*

U.S. Cl. 264—78 44 Claims



1. A process for producing a design pattern in a material comprising the steps of

applying a selected medium to selected portions of an exposed surface of a material in which said design pattern is to be produced;

positioning said material adjacent to a surface of a template having selected surface characteristics either before or after said medium has been applied to said material; and

holding said material against said template surface, at a selected pressure provided either by the weight of said

VOL 1093 ISS 5 AG 30 1988 UMI

material or by an externally applied controllable pressure and for a selected time period, to bring at least a portion of said material and said medium into contact with said template surface, different pressures and time periods being selected so as to produce different design patterns on the surface of said material, which patterns differ from the surface characteristics of said template and wherein said different design patterns are produced as a result of at least said different selected pressures and time periods.

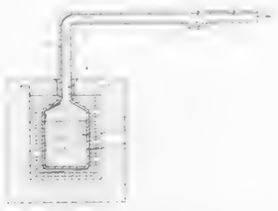
9. A system for producing a design pattern in a material, which pattern differs from the surface characteristics of a template means, comprising means for applying a selected medium to selected portions of an exposed surface of a material in which said design pattern is to be produced and which material is to be positioned adjacent to said template means; template means having selected surface characteristics formed on a surface thereof so that, when said material is positioned adjacent to and held against the surface of said template means, patterns can be produced on the surface of said material; means for positioning said material adjacent said surface of said template means either before or after said medium has been applied to said material; and means for holding said material against said template surface, at a selected pressure provided either by the weight of said material or by an externally applied controllable pressure and for a selected time period, to bring at least a portion of said material and said medium into contact with said template surface, different pressures and time periods being selected so as to produce different patterns on the surface of said material, which patterns differ from the surface characteristics of said template means and wherein said different design patterns are produced as a result of at least said selected pressures and time periods.

4,767,585

PROCESS FOR PRODUCING MOLDED BODIES FROM GRANULAR MATERIAL OF SILICON, GERMANIUM OR MIXED CRYSTALS OF THESE ELEMENTS

Claus Holm, Stammham; Erhard Sirtl, Markt1; Josef Dietl, Neuötting, and Franz Hölzlwimmer, Gumpersdorf, all of Fed. Rep. of Germany, assignors to Heliotronic GmbH, Burghausen, Fed. Rep. of Germany

Filed Apr. 8, 1987, Ser. No. 36,352
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613778
Int. Cl.[4] B29C *39/02, 39/38*
U.S. Cl. 264—82 10 Claims



1. A process for producing molded bodies of granular material of silicon, germanium, or mixed crystals of said elements, comprising the steps of:

filling a three dimensional mold with the granular material selected from the group consisting of silicon, germanium, and mixed crystals thereof;

establishing in the said filled mold a chemical gas phase transport reaction transporting silicon or germanium between the particles of the granular material disposed in said mold; and

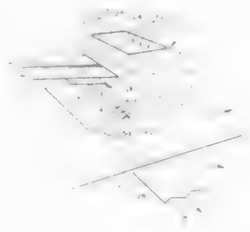
maintaining these conditions until adjacent particles of granular material are bonded to each other and consolidated into a molded body within the three dimensional mold.

4,767,586

APPARATUS AND METHOD FOR FORMING A MULTICOMPONENT INTEGRAL LAID FIBROUS WEB WITH DISCRETE HOMOGENEOUS COMPOSITIONAL ZONES, AND FIBROUS WEB PRODUCED THEREBY

Fred R. Radwanski, Norcross, and Raymond Chung, Roswell, both of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jan. 13, 1986, Ser. No. 818,440
Int. Cl.[4] D04H *1/04*
U.S. Cl. 264—113 26 Claims



1. An apparatus for forming an integral laid fibrous web having multiple compositional therein, comprising:

a cylindrical housing having in its outer cylindrical surface (i) longitudinally extending inlet means for introduction of fiberizable materials into said housing, said inlet means including a first inlet slot and a second inlet slot, and (ii) a longitudinally extending exit means generally longitudinally coextensive with and circumferentially spaced from said inlet means, for discharge of fiberized materials from said housing;

a rotatable cylindrical body concentrically positioned in said housing for rotation therewith about its cylindrical axis and having a plurality of radially extending circumferentially spaced-apart blades on its outer cylindrical surface, said blades having a radial extent defining a first radial dimension, with said cylindrical body and cylindrical housing having an annular space therebetween defining a second radial dimension not substantially larger than said first radial dimension;

means for feeding a first fiberizable component to said first inlet slot;

means for feeding a second fiberizable component to said second inlet slot with said second fiberizable component positioned at least partially axially isolated from said first fiberizable component;

a translatable foraminous forming surface positioned for receipt of the fiberized materials discharged from said cylindrical housing through said exit means; and

drive means for rotating said rotatable cylindrical body in said cylindrical housing, at a rotational speed sufficient to substantially avoid lateral, axial interdispersion between said first and second components therein,

whereby the fiberized components discharged from said cylindrical housing onto said foraminous forming surface during translation thereof are laid thereon to form generally discrete homogenous compositional zones contituted within the integral laid fibrous web.

16. A method for forming an integral laid fibrous web having multiple compositional zones therein, comprising the steps of:

providing a housing having in its outer surface (i) inlet means for introduction of fiberizable materials into said housing and (ii) exit means generally laterally coextensive with and translationally spaced from said inlet means, for discharging fiberized materials from said housing, said lateral dimension extending along said housing in a longitudinal direction which is transverse to the direction of introduction of said fiberizable materials into said housing;

providing a translatable body positioned in said housing for movement therein and having a plurality of blades on its outer surface, with the outer surface of said translatable body and said housing having space therebetween wherein said blades travel during movement of said translatable body;

translating a foraminous forming surface positioned for receipt of the fiberized materials discharged from the housing through said discharge means;

feeding a first fiberizable component to said inlet means;

feeding a second fiberizable component to said inlet means, at least partially laterally isloate from said first fiberizable component;

translating said translatable body in said housing at a translational speed sufficient to substantially avoid lateral dispersion between the first and second components therein; and

discharging fiberized material from the housing through said exit means onto said foraminous forming surface during translation thereof,

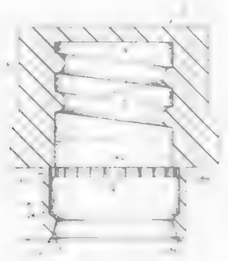
whereby the fiberized components discharged from said housing onto said foraminous forming surface during translation thereof are laid thereon to form generally discrete homogeneous compositional zones of the integral laid fibrous web.

4,767,587

METHOD FOR MAKING A BREAK-AWAY CONTAINER CLOSURE

Edward J. Towns, Summit, and Edward M. Brown, Livingston, both of N.J., assignors to TBL Development Corporation, Livingston, N.J.

Continuation-in-part of Ser. No. 697,962, Feb. 4, 1985, abandoned. This application Apr. 17, 1986, Ser. No. 851,741
Int. Cl.[4] B65D *41/34;* B29C *45/04*
U.S. Cl. 264—318 10 Claims



1. A method for making a generally cylindrical break-away closure having an upper interiorly threaded portion, a frangible section depending from said upper portion and a separable portion depending axially from said frangible section, said method comprising the steps of:

(a) defining a first mold cavity conforming to the exterior of said closure upper portion;

(b) defining a second mold cavity conforming to the exterior of said closure frangible section and separable portion;

(c) configuring a core with exterior surface forming such interior thread, forming ribs and open spaces between said ribs in said frangible section and forming said separable portion, such core surface being shaped to provide said separable portion with an axial extent and a radially interiorly extending ledge inclined relative to the axis of said closure and adapted to interfere with a container;

(d) disposing said core in said first and second mold cavities;

(e) injecting closure-forming matter into said first and second mold cavities to form a closure on said core;

(f) creating free space in said second mold cavity radially outwardly of the frangible section and separable portion of a formed such closure; and

(g) stripping said closure from said core in part by displacing said axial extent of said separable portion into said free space created in said step (f) upon radially outward displacement of said ledge by said core.

4,767,588

VEHICLE CONTROL SYSTEM FOR CONTROLLING SIDE SLIP ANGLE AND YAW RATE GAIN

Ken Ito, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed Apr. 11, 1986, Ser. No. 850,665
Claims priority, application Japan, Apr. 13, 1985, 60-77534; Apr. 15, 1985, 60-78533; Apr. 15, 1985, 60-78532
Int. Cl.[4] B62D *5/04*
U.S. Cl. 364—424 17 Claims



1. A steering control system for a controlled vehicle, comprising:

means for sensing a steering wheel angle of said controlled vehicle,

means for sensing a vehicle speed of the controlled vehicle,

means for determining a desired value of a steady state steering response gain corresponding to a sensed value of the vehicle speed in accordance with a desired steering characteristic,

means for determining a target value of an overall steering ratio between the steering wheel angle and a front wheel steer angle corresponding to the desired value of the steady state steering response gain, a predetermined desired value of a steady state side slip angle and the sensed value of the vehicle speed in accordance with a first relation determined by values of parameters characterizing the controlled vehicle,

means for determining a target value of a rear wheel steer angle corresponding to the sensed value of the vehicle speed and a sensed value of the steering wheel angle in accordance with a second relation determined by the values of the parameters characterizing said controlled vehicle and said target value of the overall steering ratio,

steering ratio varying means for varying an actual overall steering ratio of the controlled vehicle so that the actual overall steering ratio remains equal to the target value of the overall steering ratio, and

rear wheel steering means for varying an actual rear wheel steering angle of the controlled vehicle so that the actual rear wheel steer angle remains equal to the target value of the rear wheel steer angle.

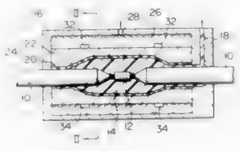
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,589

METHOD FOR JOINTING CV CABLES

Michio Takaoka, Chiba; Tsuneaki Motai, Yachiyo; Motoyuki Ono, Sakura; Isao Kaji, Ichikawa; Masakazu Hasegawa, Funabashi; Masayuki Tan, Chiba, and Masaru Kurata, Tokyo, all of Japan, assignors to Fujikura Ltd., Tokyo, Japan

Division of Ser. No. 851,777, Apr. 14, 1986, Pat. No. 4,701,117.
This application Apr. 10, 1987, Ser. No. 36,783
Int. Cl.[4] B29C *35/02, 33/20*
U.S. Cl. 264—500 23 Claims



1. A method of jointing cables, comprising:

placing joint portions of CV cables which are to be jointed together into a single mold for molding an insulating member for covering said joint portions of said cables to be jointed together, said mold being provided with a split portion along the axial direction thereof, and said mold being openable at said split portion along said axial direction;

locking said split portion of said mold in a closed position by means of a lock mechanism on said split portion to lockingly close said mold during molding of said insulating member;

introducing an insualting material into said mold when said mold is in said locked condition for molding said insulating material around said joint portions to thereby form said insulating member;

automatically unlocking said lock mechanism to permit opening of said mold along said split portion during heating and crosslinking of said insulating member;

accommodating said mold and said lock mechanism in a container; and

introducing a high-pressure fluid into said container, after said insulating material is introduced into said mold, for applying a closing force to said mold when said lock mechanism is automatically unlocked to thereby press against said insulating member during crosslinking of said insulating member.

4,767,590

ANOMALOUS - VISCOSITY CURRENT DRIVE

Thomas H. Stix, Princeton, and Masayuki Ono, Princeton Junction, both of N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 25, 1986, Ser. No. 855,568
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—133 19 Claims

1. In a tokamak, which includes a toroidal vacuum chamber and a magnetically confined main plasma disposed therein, and a scrape-off region disposed between said main plasma and said vacuum chamber, said main plasma having an edge region and a main current, wherein the improvement comprises:

means for generating and maintaining an electric current having a current density greater than the average current density of said main current, in the edge region of said main plasma, said edge current being maintained in a direction parallel to said main current for a period of the order of one edge current decay time, wherein said edge current flowing in the direction of said main current, will



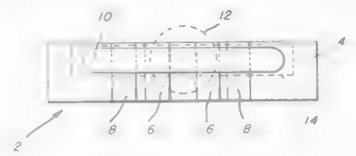
penetrate radially into said main plasma thereby augmenting and maintaining said main current.

4,767,591

RESISTANCE PROBE FOR ENERGETIC PARTICLE DOSIMETRY

William R. Wampler, Albuquerque, N. Mex., assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Feb. 23, 1983, Ser. No. 468,930
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—143 15 Claims



1. A probe for determining the energy and flux of particles in a plasma, comprising:

a thin annealed carbon film adapted to be brought into contact with a plasma, said film having an electrical resistance which is related to the number of plasma particles impacting said film;

means for passing an electrical current through said film; and

means for determining the electrical resistance of said film to the current therethrough.

4,767,592

PROTECTIVE INTERIOR WALL AND ATTACH8ING MEANS FOR A FUSION REACTOR VACUUM VESSEL

Richard D. Phelps, Greeley, Colo.; Gerald A. Upham, Valley Center, and Paul M. Anderson, San Diego, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 1, 1985, Ser. No. 707,359
Int. Cl.[4] G21B *1/00*
U.S. Cl. 376—150 20 Claims

1. A protective wall for the interior surface of a fusion reactor vessel wall comprising:

an array of plates, each plate of said array including a main body section, a pair of edge sections bent at an angle with respect to said main body section, and a pair of flange-like end sections each having a plurality of protruding sections with cut-aways therein, said protruding sections of said flange-like end sections extending in a direction substantially parallel to said main body section; and



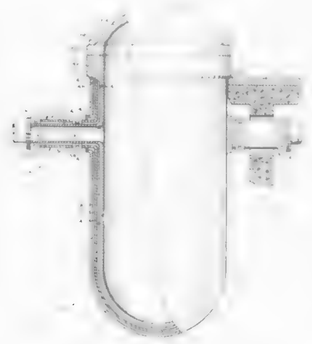
means operatively associated with said protruding sections of said flange-like end sections of said plates for mounting said array of plates to an associated vessel wall to be protected.

4,767,593

MULTIPLE SHELL PRESSURE VESSEL

Bendt W. Wedellsborg, 552 Maureen La., Pleasant Hill, Calif. 94523

Filed Jun. 15, 1987, Ser. No. 62,788
Int. Cl.[4] G21C *13/04*
U.S. Cl. 376—294 16 Claims



1. A method of fabricating a pressure vessel comprising the steps of

attaching a first inner presure vessel having means defining inlet and outlet openings to a top flange,

placing a second inner pressure vessel, having means defining inlet and outlet opening, concentric with and spaced about said first inner pressure vessel and attaching said second inner pressure vessel to said top flange,

placing an outer pressure vessel, having inlet and outlet openings, concentric with and spaced apart about said second inner pressure vessel and attaching said outer pressure vessel to said top flange,

attaching a generally cylindrical inner inlet conduit and a generally cylindrical inner outlet conduit respectively to said inlet and outlet openings in said first inner pressure vessel,

attaching a generally cylindrical outer inlet conduit and a generally cylindrical outer outlet conduit respectively to said inlet and outlet opening in said second inner pressure vessel,

heating the assembled pressure vessel to a temperature above the melting point of a material selected from the group, lead, tin, antimony, bismuth, potassium, sodium, boron and mixtures thereof,

filling the space between said first inner pressure vessel and said second inner pressure vessel with material selected from said group,

filling the space between said second inner pressure vessel and said outer pressure vessel with material selected from said group, and

pressurizing said material filling said spaces between said pressure vessels to a predetermined pressure, said step comprising

pressurizing said spaces to a pressure whereby the wall of said first inner pressure vessel is maintained in compression during steady state operation of said pressure vessel.

4,767,594

CONTROL OF REACTOR COOLANT FLOW PATH DURING REACTOR DECAY HEAT REMOVAL

Anstein N. Hunsbedt, Los Gatos, Calif., assignor to General Electric Company, San Jose, Calif.

Filed May 19, 1987, Ser. No. 51,332
Int. Cl.[4] G21C *15/18*
U.S. Cl. 376—299 7 Claims



1. In a sodium cooled reactor of the type having a reactor hot pool, a slightly lower pressure reactor cold pool and a reactor vessel liner defining a reactor vessel liner flow gap separating said hot pool and said cold pool along the reactor vessel sidewalls and wherein the normal sodium circuit in the reactor includes main sodium reactor coolant pumps having a suction on said lower pressure sodium cold pool and an outlet to a reactor core; said reactor core for heating the sodium and discharging the sodium to said reactor hot pool; a heat exchanger for receiving sodium from said hot pool, and removing heat from the sodium and discharging the sodium to said lower pressure cold pool; the improvement across said reactor vessel liner comprising: a jet pump having a venturi installed across said reactor vessel liner, said jet pump having a lower inlet from said reactor vessel cold pool across said reactor vessel liner and an upper outlet to said reactor vessel hot pool;

a pumping fluid inlet from the high pressure discharge of said main sodium reactor coolant pumps, said inlet having a high velocity outflow to said jet pump venturi whereby upon normal operation of said main sodium reactor coolant pumps, the jet pump maintains a pressure differential from said lower pressure cold pool to said hot pool and upon failure of said main sodium reactor coolant pump, the jet pump permits immediate sodium backflow from the hot pool to the lower pressure cold pool across the reactor vessel liner flow gap to establish immediate cooling of residual reactor heat through the reactor vessel wall

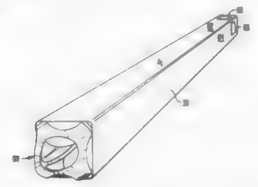
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,595

REPOSITIONED FUEL ASSEMBLY

Richard A. Wolters, Jr.; Mark J. Colby, and Robert B. Elkins, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 15, 1987, Ser. No. 49,897
Int. Cl.[4] G21C *15/00, 7/00*
U.S. Cl. 376—353 3 Claims



1. In a nuclear reactor having a core with discrete replaceable identical fuel assemblies, said fuel assemblies being supported on a lower core plate and held in vertically upstanding relation at an upper top guide, each fuel assembly including, a lower tie plate for support from said core plate, an upper tie plate, a plurality of fuel rods between said upper and lower tie plates, and a square section fuel channel surrounding said lower tie plate, said fuel rods and said upper tie plate;

a first group of four of said fuel assemblies mounted adjacent one another with said fuel assemblies spring biased away one from another to define at their juxtaposed channels first spatial intervals together having a cruciform shaped interstice between said channels;

a complementary cruciform shaped control rod, said control rod for excursion into and out of said cruciformed shaped interstitial volume defined by said first spatial intervals between said four fuel assemblies;

a second group of fuel assemblies immediately surrounding said first four fuel assemblies, said second group fuel assemblies further defining second spatial intervals around said first group of fuel assemblies, said second spatial interval being less than said first spatial intervals; said second spatial interval having no control rod for penetration into and out of said second spatial intervals;

an improved fuel assembly for refueling replacement with said first group of fuel assemblies, said improved fuel assembling being identical to said fuel assemblies in said first group and additionally including at least first and second nonresilient plate means on the outside of said nuclear fuel assembly adjacent said top guide for contact therewith for displacing said assemblies against said spring bias to and towards said control rod cruciformed section interstitial volume; and, a lower tie plate having an eccentric mounting for displacing the lower portion of said fuel assembly to and toward said control rod cruciformed section interstitial volume whereby the top and bottom of said fuel assembly is displaced towards said cruciformed section control rod interstitial volume without otherwise altering said reactor.

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Patent Not Issued For This Number

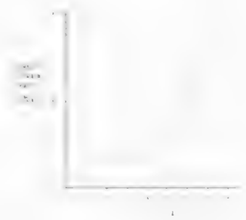
4,767,597

HEAT-RESISTANT ALLOY

Kazuaki Nishino, Aichi; Takuo Ito, Gifu; Satosi Kato, and Hidenori Yamaoka, both of Aichi, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi, Japan

Filed May 2, 1985, Ser. No. 729,782
Claims priority, application Japan, May 2, 1984, 59-89100
Int. Cl.[4] C22C *19/05*
U.S. Cl. 420—443 14 Claims

1. A heat-resistant alloy consisting essentially of not more than 0.10% by weight C, not more than 2.0% by weight Si, not more than 2.0% by weight Mn, from 35 to 50% by weight Ni, from 17 to 25% by weight Cr, from 3.2 to 5% by weight Mo, from 2.0 to 3.2% by weight Ti, from 0.5 to 1.5% by weight Al, with the balance consisting essentially of Fe, wherein the weight ratio of Ti/Al is not more than 5/1.



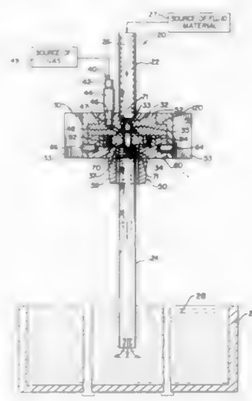
4. A heat-resistant alloy according to claim 1, additionally containing at least one of from 0.0005 to 0.01% by weight B, from 0.0005 to 0.02% by weight Ca, and from 0.0005 to 0.02% by weight Mg.

4,767,598

INJECTION APPARATUS FOR INTRODUCTION OF A FLUID MATERIAL INTO A MOLTEN METAL BATH AND ASSOCIATED METHOD

Michael J. Kinosz, Apollo, and Alan P. Mitchell, Templeton, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 22, 1986, Ser. No. 910,450
Int. Cl.[4] C22B *21/04*
U.S. Cl. 420—528 20 Claims



1. An injection apparatus for introduction of a fluid material into a molten metal bath comprising:

a body assembly having a chamber defined therein;

inlet and outlet passageways communicating with said chamber;

said inlet and outlet passageways being demountably secured to said body assembly, whereby said passageways may readily be separated from said body assembly,

said body assembly having a seal plate through which a portion of said chamber passes,

means for introducing a purging gas into said chamber for mixing with said fluid material therein and to facilitate movement of said fluid material into said molten metal bath, and

said purging gas introducing means having a gas inlet conduit in communication with said chamber.

4,767,599

SILICATE-CONTAINING ANTIFREEZE WITH CARBOXY-SUBSTITUTED ORGANOSILICON STABILIZER

Paul H. Mohr, Chappaqua, and Enrico J. Pepe, Amawalk, both of N.Y., assignors to First Brands Corporation, Danbury, Conn.

Continuation of Ser. No. 855,380, Apr. 24, 1986, Pat. No. 4,701,277, which is a continuation-in-part of Ser. No. 781,985, Sep. 30, 1985, abandoned. This application Oct. 16, 1987, Ser. No. 109,575
Int. Cl.[4] C23F *14/02*
U.S. Cl. 422—13 43 Claims

1. A method for protecting an internal combustion engine cooling system with an antifreeze concentrate diluted by addition of from about 25 to about 90 percent by weight water by introduction into an internal combustion engine cooling system wherein the antifreeze concentrate having a selected pH comprises:

(a) an alcohol,

(b) a buffer in an amount to maintain said pH for the antifreeze,

(c) a silicate in a corrosion-inhibiting amount, and

(d) an organosilicon carboxylate having the formula:

$$[MOC(C_nH_{2n}O)_a(C_mH_{2m})]_bSiZ_{4-(b+c)}R^1_c$$

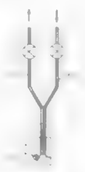
wherein a is from 0 to 20, b is 1 or 2, c is 0 or 1, n is an integer of 2 to 4, m is from 3 to 15, M is a monovalent metal cation, R^1 is selected from the group consisting of hydrogen, monovalent hydrocarbon radicals and substituted monovalent hydrocarbon radicals, and Z is a hydrolyzable moiety attached to silicon, with the proviso that when a is 0, m is from about 7 to about 15, said carboxylate being present in an amount sufficient to stabilize the silicate.

4,767,600

EQUIPMENT FOR RAPID, AUTOMATIC CHEMICAL-CLINICAL ANALYSIS

Guido Vicario, Milan, Italy, assignor to Finbiomedica S.r.l., Milan, Italy

Filed Jun. 19, 1985, Ser. No. 746,583
Claims priority, application Italy, Jun. 19, 1984, 21496 A/84
Int. Cl.[4] G01N *35/02*
U.S. Cl. 422—65 4 Claims



1. Apparatus for carrying out chemical-clinical analyses of a plurality of chemical reactions, said apparatus comprising: a row of integral receptacles for receiving samples to be analyzed; an actuating device for continuously repetitively moving the receptacles back and forth along a horizontal path of oscillatory movement; a detector means, such that the samples in the receptacles can be sequentially, repeatedly and continually subjected to a field of the detector means by the actuating device; and processor means to process and store data received from the detector means wherein values for each of said plurality of reactions may be detected at predetermined intervals for a predetermined length of time and recorded in a memory device, for use with solid carriers, said apparatus further comprising a motor for shaking said receptacles, and means for continuously washing solid carriers contained in said receptacles with liquid washing solutions, said receptacles being designed in a U-shape with a curved bottom and having an 8-shape cross section over a substantial height such that said receptacles contain two circular portions, said portions being side by side, and which communicate to enclose a single total volume.

4,767,601

APPARATUS FOR THE MONITORING AND REGULATION OF MATERIAL CONCENTRATIONS IN CHEMICAL PROCESSES (I)

Karl Kuerzinger, Hanau, and Peter Wachendoerfer, Frankfurt, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellshaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 19, 1986, Ser. No. 897,945
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1985, 8527071
Int. Cl.[4] G01N *27/00, 25/20*
U.S. Cl. 422—68 8 Claims



1. An apparatus for monitoring and regulating reactant concentrations in a liquid reaction medium, said reactant reacting to completion in an exothermal reaction with a reacting substance, tne apparatus being capable of measuring the temperature rise in said exothermal reaction, said apparatus comprising a measuring cell adapted for connection with a supply line for the reaction medium, a supply line for the reacting substance, a discharge line and at least two temperature sensors, wherein said measuring cell comprises a pipe section for connection to, and of approximately the same diameter as, said supply line for transporting the reaction medium, said cell being provided at each of its ends with a mounting device for connection of said cell at one end to said supply line for transporting the reaction medium and connection of said cell at its other end to said discharge line, said measuring cell having axially positioned within said pipe section a smaller diameter pipe section having a first open end and a second open end, with said supply line for the reacting substance projecting into the first open end of said smaller diameter pipe section, and said smaller diameter pipe section having an internal diameter which is larger than the outer periphery of that portion of said supply line which projects into the first open end, such that the reaction medium can flow around the outer periphery of said supply line and into the first open end so as to come in contact with the reacting substance which is flowing in the same direction within said smaller diameter pipe section; wherein said at least two temperature sensors comprise a first temperature sensor one end of which extends into the second open end of said smaller diameter pipe section, said first temperature sensor being provided for measuring the temperature rise of the

VOL 1093 ISS 5 AUG 30 1988 UMI

chemically reacting mixture of reacting substance and reaction medium flowing therein and a second temperature sensor for measuring the temperature of the reaction medium before the reaction medium comes in contact with the reacting substance.

4,767,602

APPARATUS FOR REDEPOSITING PARTICULATE MATTER

David L. Johnson, Syracuse, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,701
Int. Cl.[4] C01N *33/48*
U.S. Cl. 422—101 11 Claims



1. A redeposition spot sampler comprising:

(a) A fluid reservoir having a fluid inlet, a central opening and a base portion, said base portion comprising an exterior surface for seating a first porous substrate with particle deposits and an aperture communicating with said central opening, the cross-sectional area of the aperture being smaller than the cross-sectional area of the base portion for providing fluid contact only with that portion of the substrate in alignment with said aperture and preserving the particle deposits in that portion of the substrate not aligned with said aperture,

(b) substrate support means positioned axially to the base portion of the reservoir, said support means being equipped with a surface for seating a second porous substrate for receiving particles from the first substrate, said support means including an aperture axially aligned with the aperture in the base portion of the reservoir forming a fluid outlet for the device,

(c) substrate separator means for separating the first and second porous substrates disposed between the exterior surface of the base portion of the reservoir and the seating surface of the substrate support, said substrate separator means having aperture means axially aligned with the apertures in the base portion of the reservoir and substrate support means for allowing free passage of particles from the first substrate to the second substrate, and

(d) means for holding the fluid reservoir, substrate support means and substrate separator means in axial alignment without loss of fluid or particles

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4,767,603

PIG FOR A FLUID CONDUCTING SYSTEM

Audis C. Byrd, Duncan, and Robert J. Morris, Lawton, both of Okla., assignors to Halliburton Company, Duncan, Okla.

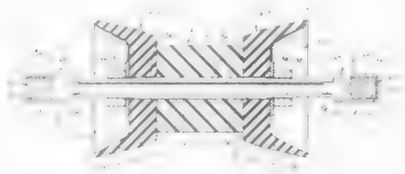
Filed Jan. 14, 1986, Ser. No. 818,851
Int. Cl.[4] B01J *14/00;* C07B *61/00*
U.S. Cl. 422—119 3 Claims

1. In combination a continuous reactor system and a pig for separating a first fluid from a second fluid in said continuous reactor system, said system having a reactor tube with an interior wall defining a volume wherein a polymer is reacted and rejected, said polymer being formed from said first fluid and said second fluid when in said reactor tube, said pig comprising a sealing body, said sealing body including:

a support member;

a first rim, extending substantially longitudinally from an end of said support member, said first rim including a side wall having a smooth outer surface, flaring outwardly relative to said support member so that an outwardly expanding contour is defined, said outwardly expanding contour extending substantially longitudinally away from said support member in a first direction, said side wall of said first rim terminating at its outermost portion in a flexible circumferential lip sealingly, scrapingly engaging a portion of said interior wall of said reactor tube of said continuous reactor system by folding radially outwardly and longitudinally back when said sealing body of said pig is moving therethrough in a first direction to remove by wiping said polymer which has been reacted from said first fluid from said interior wall of said reactor tube of said continuous reactor system as said pig moves therethrough in said first direction;

a second rim, extending substantially longitudinally from an opposite end of said support member, said second rim including another side wall having a smooth outer surface, flaring outwardly relative to said support member so that another outwardly expanding contour is defined, said another outwardly expanding contour extending substantially longitudinally away from said first support member in a second direction opposite said first direction, said another side wall of said second rim terminating at its outermost portion in another flexible circumferential lip sealingly engaging a portion of said interior wall of said reactor tube of said continuous reactor system by folding radially outwardly and longitudinally back when said sealing body of said pig is moving therethrough in a second direction to remove by wiping said polymer which has been reacted from said second fluid from said interior wall of said reactor tube of said continuous reactor as said pig moves therethrough in said second direction,



wherein said pig maintains initial rotational orientation during movement through said reactor tube; and

signalling means, connected to said sealing body, of said pig in spaced relation from said interior wall of said reactor tube of said continuous reactor system when said sealing body of said pig is disposed in said reactor tube of said continuous reactor system, for producing a characteristic from which the location of said sealing body of said pig in said reactor tube of said continuous reactor system is detectable, said signaling means including:

first actuating means, connected to said support member adjacent said first rim, for actuating a first location signal indicating that said sealing body of said pig has reached a predetermined location in said reactor tube of said continuous reactor system; and

second actuating means, connected to said support member adjacent said second rim, for actuating a second location signal indicating that said sealing body of said pig has reached a predetermined location in said reactor tube of said continuous reactor system.

4,767,604

INTEGRATED REACTOR SYSTEM FOR CONVERTING OXYGENATES TO ALKYLATED LIQUID HYDROCARBONS

Hartley Owen, Belle Mead; Samuel A. Tabak, Wenonah, and Bernard S. Wright, E. Windsor, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 779,363, Sep. 23, 1985, Pat. No. 4,628,135, and Ser. No. 779,369, Sep. 23, 1985, Pat. No. 4,634,798. This application Oct. 15, 1986, Ser. No. 919,151
Int. Cl.[4] C07C *1/20*
U.S. Cl. 422—190 13 Claims



1. An integrated continuous system for converting oxygenated organic feedstock to liquid hydrocarbons comprising:

first reactor means for contacting feedstock with zeolite catalyst in a primary catalyst stage at elevated temperature to convert at least a portion of the feedstock oxygenate predominantly to C_2–C_4 olefins and a minor liquid fraction containing C_5^+ liquid hydrocarbons;

first separator means for cooling and separating effluent from the first reactor means to provide an aqueous liquid byproduct stream, a C_5^+ liquid hydrocarbon stream and a light hydrocarbon vapor stream rich in C_2–C_4 olefins;

means for compressing at least a portion of the olefinic light hydrocarbon stream to condense a C_3^+ liquid olefin hydrocarbon stream rich in C_3–C_4 olefins and recovering an ethene-rich gaseous stream;

adsorption means for contacting the ethene-rich gaseous stream from compressing means with a liquid hydrocarbon sorbent stream in a sorption tower under conditions to selectively sorb the major amount of C_3^+ hydrocarbon components from said gaseous stream to provide a C_3^+ sorbate stream rich in C_3–C_4 olefins and a recycle gas stream containing ethene;

means for fractionating C_3^+ sorbate to provide C_5^+ gasoline and a C_3–C_4 olefin stream;

second reactor means for reacting the C_3–C_4 olefin stream from fractionation means with excess C_4–C_5 isoparaffin in a secondary alkylation stage with liquid phase acid catalyst to convert at least a portion of C_3–C_4 olefins to a heavier C_7^+ liquid hydrocarbon;

second separation means for separating reactor effluent from the secondary stage to provide a C_7^+ liquid hydrocarbon product stream comprising alkylate gasoline and an excess C_4–C_5 isoparaffin liquid stream;

means for passing the recycle gas stream containing ethene to the primary catalytic stage; and

means for recycling at least a portion of at least one of the alkylate, isoparaffin liquid or C_5^+ liquid hydrocarbon coproduced with the olefins for use as lean sorbent to the sorption means.

4,767,605

METHOD FOR SEPARATION OF ACID POLLUTION GAS

Ralf Lindbauer, and Alfred Glasner, both of Graz, Austria, assignors to Waagner-Biro Aktiengesellschaft, Austria

Filed Dec. 2, 1985, Ser. No. 803,587
Claims priority, application Austria, Nov. 30, 1984, 3800/84; Jan. 29, 1985, 233/85
Int. Cl.[4] B01J *8/00;* C01B *17/00, 7/00;* C01P *7/00*
U.S. Cl. 423—239 30 Claims

1. Method of separating at least one harmful substance selected from the group consisting of SO_2, HCl and NO_x, wherein x is 1 or 2, from combustion exhaust gas containing the same, which comprises

contacting said exhaust gas at a temperature below 400° C. with at least one substantially dry particulate adsorbent including $NaHCO_3$ which, at said temperature, releases carbon dioxide and forms an activated adsorbent,

which released substance reacts with the harmful substance,

said substantially dry particulate adsorbent being present in an amount such that the release substance and the activated adsorbent therefrom are sufficient to remove the harmful substance from said exhaust gas,

whereby the amount of harmful substance in said exhaust gas is reduced,

additionally comprising

removing a portion of the exhaust gas containing the carbon dioxide after contact with said adsorbent, and

introducing aqueous ammonia solution into the removed portion of the exhaust gas, to produce an NH_4-containing adsorbent.

4,767,606

PROCESS AND APPARATUS FOR PRODUCING NITROGEN

John C. Trocciola, Glastonbury, and Leslie L. VanDine, Manchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1986, Ser. No. 930,827
Int. Cl.[4] C01B *21/04*
U.S. Cl. 423—351 1 Claim



1. A process for the production of nitrogen from air, comprising:

(a) feeding a gas consisting essentially of air to the cathode of a fuel cell, said fuel cell producing electrical energy, water and an oxygen depleted, nitrogen rich cathode exhaust stream,

(b) feeding the oxygen depleted, nitrogen rich cathode exhaust stream to a gas liquefaction apparatus, said liquefaction apparatus producing a mixture of liquid nitrogen and liquid oxygen,

(c) feeding the mixture of liquid nitrogen and liquid oxygen to a fractionating apparatus, said fractionating apparatus separating the mixture to produce a stream of nitrogen product and a stream of oxygen byproduct, such process resulting in enhanced energy efficiency in the production of nitrogen.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,607

METHOD FOR PRODUCTION OF HIGH PURITY ALUMINUM NITRIDES

Donald M. Schleich, Brooklyn, N.Y., assignor to The Polytechnic University, Brooklyn, N.Y.

Filed Sep. 2, 1987, Ser. No. 92,329
Int. Cl.[4] C01B *21/06*
U.S. Cl. 423—412 10 Claims

1. A method for the preparation of aluminum nitride comprising the steps of:

(1) forming a mixture of

(a) $(R_1)_3Si-N-Si(R_2)_3$ (H)

where R_1 and R_2 are each alkyl groups containing 1 to 4 carbon atoms, and

(b) $AlCl_3$;

(2) reacting the mixture formed in step (1) at a temperature of from 0° C. to 150° C. and thereby forming a mixture of $Cl_2—Al—NH—Si—(R_1)_3$, $Cl_2—Al—NH—Si—(R_2)_3$, $(R_1)_3—Si—Cl$, and $(R_2)_3—Si—Cl$;

(3) converting the compounds formed in step (2) at elevated temperatures to $(R_1)_3—Si—Cl$, $(R_2)_3—Si—Cl$, H_2, Cl_2, and AlN; and

(4) separating the H_2, Cl_2, and AlN from the mixture converted.

4,767,608

METHOD FOR SYNTHESIZING DIAMOND BY USING PLASMA

Seiichiro Matsumoto; Mototsugu Hino; Yusuke Moriyoshi; Takashi Nagashima, and Masayuki Tsutsumi, all of Ibaraki, Japan, assignors to National Institute for Research in Inorganic Materials, Ibaraki, Japan

Filed Oct. 19, 1987, Ser. No. 109,509
Claims priority, application Japan, Oct. 23, 1986, 61-252391
Int. Cl.[4] C01B *31/06;* C30B *25/10*
U.S. Cl. 423—446 14 Claims



1. A method for synthesizing diamond, which comprises:

(a) generating a plasma by electric discharge in a gas selected from the group consisting of a hydrocarbon gas, a hydrogen gas, an inert gas and a mixture thereof,

(b) decomposing a carbon source by the plasma to form a plasma gas containing carbon ions or carbon radicals, and

(c) effecting adiabatic expansion of the plasma gas to precipitate diamond.

4,767,609

THERAPEUTIC AND DIAGNOSTIC PROCESSES USING ISOTOPE TRANSFER TO CHELATOR-TARGET RECOGNITION MOLECULE CONJUGATE

Jannis G. Stavrianpoulos, New York, N.Y., assignor to Enzo Biochem, Inc., New York, N.Y.

Division of Ser. No. 575,397, Jan. 30, 1984. This application Jan. 23, 1987, Ser. No. 6,818
Int. Cl.[4] A61K *43/00, 49/00*
U.S. Cl. 424—1.1 27 Claims

1. An in vivo diagnostic method, which comprises:

(1) forming a diagnostic agent labeled with a radioactive metal ion by contacting

(i) an unlabeled diagnostic agent comprising

(a) a molecularly recognizable portion attached to

(b) a chelating portion capable of substantially chelating with said radioactive metal ion, wherein said chelating portion is not a part of said molecularly recognizable portion, with

(ii) an ion transfer material having said radioactive metal ion bound thereto and having a binding affinity for said radioactive metal ion less than the binding affinity of said chelating portion for said radioactive metal ion.

wherein, prior to said contacting, said chelating portion is unchelated or is chelated with a second metal having a binding affinity with said chelating portion less than the binding affinity of said radioactive metal ion, whereby a radiolabeled diagnostic agent is formed by said contacting; and

(2) separtating, if necessary, said ion transfer material from said radiolabeled diagnostic agent;

(3) administering said agent to a human or animal; and

(4) detecting radiation emitted by said radioactive metal ion.

4,767,610

METHOD FOR DETECTING ABNORMAL CELL MASSES IN ANIMALS

David M. Long, El Cajon, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed Oct. 19, 1984, Ser. No. 662,728
Int. Cl.[4] A61K *49/04*
U.S. Cl. 424—5 17 Claims

1. A method for enhancing the detection of tumor cell mass in animals, comprising the steps of:

forming an emulsion consisting of a radiopaque fluorocarbon at a concentration of about 10–50%, a lysophosphatide, said lysophosphatide being at a concentration of about 0.05–0.5%, and a phosphoglyceride at a concentration of about 1–5%;

administering said emulsion in an amount sufficient to cause said emulsion to contact said tumor cell mass; and

visualizing said tumor cell mass.

4,767,611

METHOD FOR AFFECTING INTRACELLULAR AND EXTRACELLULAR ELECTRIC AND MAGNETIC DIPOLES

Robert T. Gordon, 4936 W. Estes, Skokie, Ill. 60077

Filed Jul. 3, 1984, Ser. No. 627,536
Int. Cl.[4] A61K *49/00*
U.S. Cl. 424—9 33 Claims

1. A process for the treatment of diseased cells in at least one region in the tissue of a host organism containing said diseased cells and living normal cells without substantially damaging said living normal cells comprising:

providing to said host organism minute particles less than about 1 micron capable of being taken up by said diseased cells,

allowing said particles to effect at least one event comprising intracellular events and membrane events in said tissue,

subjecting said organism to relatively low frequency alternating, oscillating, or pulsed electromagnetic field to provide energy to said diseased cells and selectively heat said diseased cells wherein said particles are selected from the group consisting of:

(a) cobalt, zinc, iron, chromium, nickel, platinum, rare earth metals and compounds selected from the group consisting of dysprosium, erbium, europium, gadolinium, holmium, samarium, terbium, thulium, ytterbium, yttrium; dysprosium sulfate, erbium sulfate, euorpium oxide, europium sulfate, gadolinium oxide, gadolinium sulfate, holmium oxide, samarium sulfate, terbium sulfate, thulium oxide, ytterbium sulfide, yttrium oxide, yttrium sulfate, yttrium ferrioxide ($Y_3Fe_5O_{12}$), yttrium oxide ($Y3Al_5O_{12}$), dysprosium-nickel, dysprosium-cobalt, gadolinium-iron, ytterbrium-iron, cobalt-samarium, gadolinium-ytterbium, dysprosium-gallium, and actinide series elements and compounds thereof:

(b) dextran metal complexes wherein said metal is selected from the group consisting of cobalt, zinc, chromium, iron, gallium, manganese, nickel, platinum, dysprosium, erbium, europium, gadolinium, holmium, samarium, terbium, thulium, ytterbium, yttrium, dysprosium-nickel, dysprosium-cobalt, gadolinium, iron, ytterbium, iron, cobalt-samarium, gadolinium-yttrium, and dysprosium-gallium:

(c) iron transporting and chelating compounds selected from the group consisting of ferric ammonium citrate, enterochelin, transferrin, metallothionein, hydroxamates, phenolates, ferrichromes, desferriferrichromes, ferritin, ferric mycobactins, ferredoxin and rubredoxin:

(d) porphyrins selected from the group consisting of etioporphyrins, meso-porphyrins, uroporphyrins, coproporphyrins, protoporphyrins, dicarboxylic acid containing porphyrins, tetraphenylporphyrin sulfonate, hematoporphyrins, chlorophylls, and cytochromes:

(e) and combinations of the materials of said sub-paragraphs (a), (b), (c) and (d).

4,767,612

TRIAMCINOLONE ACETONIDE FOR THE TREATMENT OF ALLERGIC RHINITIS

Nicholas S. Hagen, Doylestown, and Kim D. Lamon, Maple Glen, both of Pa., assignors to Rorer Pharmaceutical Corporation, Fort Washington, Pa.

Filed Jan. 23, 1987, Ser. No. 6,397
Int. Cl.[4] A61K *9/12, 31/01, 47/00*
U.S. Cl. 424—45 2 Claims

1. A method for the control and treatment of allergic rhinitis in a patient having the symptoms of rhinorrhea, nasal itching, sneezing, congestion and postnasal drip comprising the administration into the nasal cavity of said patient a nasal spray from an aerosol dispenser, said nasal spray consisting essentially of by weight:

3.75 to 30.0 mg of micronized triamcinolone acetonide;

123.75 to 97.5 mg of anhydrous ethanol;

9.75 gm of dichlorodifluoromethane; and

0 to 10 mg of sorbitan trioleate.

4,767,613

TERPOLYMERS, THEIR USE IN HAIR TREATMENT AGENTS AND HAIR TREATMENT AGENTS CONTAINING THESE TERPOLYMERS

Adolf Nuber, Boehl-Iggelheim; Axel Sanner, Frankenthal; Ferdinand Straub, Hockenheim, and Friedrich Vogel, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland-Pfalz, Fed. Rep. of Germany

Filed Jul. 23, 1987, Ser. No. 76,874
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1986, 3627970
Int. Cl.[4] B05D *3/14;* C08F *26/08*
U.S. Cl. 424—47 5 Claims

1. A terpolymer which is obtained by free radical polymerization of a monomer mixture consisting of

from 20 to 50% by weight vinylpyrrolidone,

from 40 to 70% by weight of t-butyl acrylate or t-butyl methacrylate, and

from 2–15% by weight of acrylic acid or methacrylic acid and, if necessary, from 5 to 100% of whose carboxyl groups have been neutralized by an organic amine and which has a K value of from 10–60, said terpolymer being capable of being formulated as a hairspray formulation which has a propellant gas compatibility of at least 60% and a curl retention of at least 50%.

4,767,614

MODIFIED DEXTRANS IN A DENTAL HEALTH METHOD DEACTIVATING GLUCOSYLTRANSFERASE ENZYMES

Ioannis S. Scarpa, Chicago; Andrew M. Chludzinski, Westmont, and Milan D. Janic, River Forest, all of Ill., assignors to Wm. Wrigley Jr. Company, Chicago, Ill.

Continuation of Ser. No. 584,824, Feb. 29, 1984, abandoned. This application Dec. 16, 1986, Ser. No. 942,961
Int. Cl.[4] A61K *9/68, 7/16, 31/73, 31/735*
U.S. Cl. 424—48 22 Claims

1. A method for reducing dental plaque formation comprising the step of contacting the oral cavity with a dextran compound consisting of glucose units, a plurality of which are modified at the 3-position ring carbon thereof by replacement of the 3-position —OH group with a group selected from the class consisting of amino, halo, benzyl, alkyl, sulfonyl, carboxyl and hydrogen, while leaving the ring of the glucose unit intact.

4,767,615

DENTAL THERAPY BY VESICLE DELIVERY

W. Blair Geho; Joseph Jacob, and John R. Lau, all of Wooster, Ohio, assignors to Technology Unlimited, Inc., Wooster, Ohio

Continuation-in-part of Ser. No. 606,714, May 3, 1984, Pat. No. 4,603,044. This application Jun. 24, 1986, Ser. No. 877,862
The portion of the term of this patent subsequent to Jul. 29, 2003, has been disclaimed.
Int. Cl.[4] A61K *7/16*
U.S. Cl. 424—57 2 Claims

1. A composition of matter for prolonged oral administration to a warm blooded animal of dental therapy and oral cavity breath freshener chemicals, comprising:

a first component which is a tooth structure protective and therapeutic chemical or cosmetic breath freshener, said first component being encapsulated in or associated with;

a second component which comprises lipid membrane structures in the form of vesicles; and

a third component which is a molecule having a fatty substituent attached to the vesicle wall and a target substituent selected from the class consisting of chemicals which are classed biologically as having affinity for hydroxyapatite.

4,767,616

RESIN COMPOSITIONS HAVING HAIR-CONDITIONING PROPERTY

Ikuo Kubota, Tokyo; Kazuhide Hayama, and Kanji Narazaki, both of Mie, all of Japan, assignors to Mitsubishi Yuka Fine Chemicals Co., Ltd., Tokyo, Japan

Filed May 2, 1986, Ser. No. 858,646
Claims priority, application Japan, May 10, 1985, 60-99350
Int. Cl.[4] A61K *7/075*
U.S. Cl. 424—70 4 Claims

1. A hair-conditioning resin composition prepared by modifying a copolymer resin with a zwitterionizing agent, said copolymer resin being prepared by copolymerizing in a hydrophilic solvent a polymerizable mixture containing

(A) 65–90% by weight of a polymereizable vinyl monomer having the general formula (I)

VOL 1093 ISS 5 AG 30 1988 UMI



(I)

wherein R_1 represents a hydrogen atom or a methyl group, R_2 represents an alkylene group having from 1 to 4 carbon atoms, R_3 and R_4 each represents an alkyl group having from 1 to 4 carbon atoms, and A represents an oxygen atom or an NH group,

(B) 10–35% by weight of polymerizable weight monomers having the general formual (II)



(II)

wherein R_5 represents a hydrogen atom or a methyl group, and R_6 represents a saturated or unsaturated alkyl group having from 12 to 24 carbon atoms, and

(c) 0–25% by weight of other polymerizable vinyl monomers, said copolymer resin having a numerical average molecular weight of from 30,000 to 500,000, said zwitterionizing agent having the general formula (III)

$$XR_7COOB \quad \text{(III)}$$

wherein R_7 represents an alkylene group having from 1 to 4 carbon atoms, X represents a bromine, chlorine or iodine atom, and B represents an alkali metal ion, an ammonium salt or an amine salt and being present in an amount of 0.7–1.3 mol per mole of monomer (I) and/or the other monomers.

4,767,617

OPACIFYING COMPOSITION AND HAIR TREATING COMPOSITION WITH PROCESS OF USING SAME

Albert Shansky, Norwalk, Conn., and Prakash C. Purohit, Minneapolis, Minn., assignors to A-Veda Corporation, Minneapolis, Minn.

Filed Jul. 31, 1986, Ser. No. 892,130
Int. Cl.[4] A61K *7/09;* A45D *7/00*
U.S. Cl. 424—71 2 Claims

1. In a hair treating composition selected from the group consisting of permanent wave and permanent wave neutralizer compositions containing an effective opacifying amount of an opacifier, the improvement wherein said opacifier is an opacifier composition on a weight basis consisting of:

(a) from 8–30% of a methyl ester of hydrogenated rosin acids,

(b) from 0.8–3.0% of 2-ethyl-1,3-hexane diol,

(c) a mixture of nonionic surfactants of:

(1) 1.5–6% of a polyoxyethylene ether of lauryl alcohol having an HLB of about 10 and,

(2) 1.5–6% of a polyoxyethylene ether of lauryl alcohol having an HLB of about 17 so as to provide a hydrophilic-lipophilic balance of about 13–14, and,

(d) the remainder being water.

4,767,618

COSMETIC COMPOSITIONS FOR THE TREATMENT OF THE HAIR AND SKIN CONTAIN IN THE FORM OF A POWDER PARTICLES RESULTING FROM THE PULVERIZATION OF AT LEAST ONE PLANT SUBSTANCE AND A COHESION AGENT

Jean-Francois Grollier, Paris; Josiane Allec, Pierrefitte; Chantal Fourcadier, Paris; Georges Rosenbaum, Asnieres, and Patrick Darmenton, Villejuif, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 352,104, Feb. 25, 1982, Pat. No. 4,569,839.
This application Oct. 22, 1985, Ser. No. 790,145
Claims priority, application Luxembourg, Feb. 27, 1981, 83173
The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.
Int. Cl.[4] A61K *7/06, 35/78, 7/00*
U.S. Cl. 424—74 4 Claims

1. A cosmetic composition for the hair or skin comprising from 5 to 30 percent by weight based on the total weight of said composition of pulverized particles of a plant having skin emollient and hair softening properties, said plant being selected from the group consisting of cornflower, fenugreck, barbary fig and linen, said particles having a granulometry equal to or lower than 80 microns and a cohesion agent present in an amount sufficient to maintain the homogeneity of said composition, said cohesion agent being a solvent, a fatty body, a thickening agent, an emulsifier, an emulsion or a mixture thereof.

4,767,619

BURN WOUND DRESSING MATERIAL

Douglas G. Murray, Willowdale, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government, Canada

Division of Ser. No. 796,759, Nov. 12, 1985, Pat. No. 4,659,572, which is a continuation-in-part of Ser. No. 722,435, Apr. 15, 1985, abandoned, which is a continuation of Ser. No. 456,446, Jan. 7, 1983, abandoned, which is a continuation-in-part of Ser. No. 406,523, Aug. 9, 1982, abandoned. This application Aug. 11, 1986, Ser. No. 895,380
Claims priority, application Canada, Sep. 14, 1981, 385860; Jun. 10, 1982, 404843
The portion of the term of this patent subsequent to Apr. 21, 2004, has been disclaimed.
Int. Cl.[4] A61K *31/74*
U.S. Cl. 424—78 23 Claims

1. A burn wound-adherent dressing material in the form of a continuous, wound-adherent, preformed film comprising a complex of gelatin of a Bloom # of 80 to 350 and a water-soluble polyethylenimine of molecular weight of 10,000 to 100,000, in a weight ratio of gelatin to polyethylenimine of 9:1 to 3:7.

12. A method for making a continuous burn wound-adherent preformed film dressing material, comprising the steps of:

(a) dissolving gelatin of a Bloom # of 80 to 350 and an aqueous solution of polyethlenimine of molecular weight of 10,000 to 100,000 in distilled water and mixing to form a gelatin/polyethylenimine complex in a weight ratio of gelatin to polyethylenimine of 9:1 to 3:7;

(b) adjusting the pH of the resulting aqueous solution by adding a suitable acid to lower the pH of the solution to 7–9.5;

(c) pouring the solution onto a flat surface; and

(d) drying in air at room temperature to form a gelatin/-polyethylenimine complex continuous, burn wound-adherent preformed film.

4,767,620

CROSSLINKED POLYMERS WITH CARBONATE ESTER GROUPS, AND A PROCESS FOR THEIR PREPARATION

Otto Mauz, Liederbach; Siegfried Noetzel, Kelkheim, and Klaus Sauber, Schwalbach am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 26, 1987, Ser. No. 89,439
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1986, 3629176
Int. Cl.[4] A61K *31/74;* B32B *5/16;* C08F *26/02, 18/24*
U.S. Cl. 424—78 11 Claims

1. A crosslinked polymer substantially composed of (A) 1 to 99% by weight of units derived from at least one component selected from the group consisting of glycerol carbonate methacrylate, glycerol carbonate acrylate, glycerol carbonate vinyl ether and glycerol carbonate allyl ether, (B) 99 to 1% by weight of units derived from N,N'-divinylethyleneurea, N,N'-divinylpropyleneurea or both, with the total of the units always being 100% by weight, and with the polymer particles having substantially a spherical shape, a mean particle size of 10 to 600 μm and a mean pore diameter of 5 to 1,000 nm.

4,767,621

DRUGS COMPRISING IN ASSOCIATION AT LEAST ONE IMMUNOTOXIN AND AT LEAST ONE MONOVALENT CARBOXYLIC IONOPHORE

Franz Jansen, Assas, and Pierre Gros, Montpellier, both of France, assignors to Sanofi, Paris, France

Continuation of Ser. No. 548,854, filed as PCT FR83/00025, Feb. 4, 1983, published as WO83/02725, Aug. 18, 1983, abandoned. This application Sep. 14, 1984, Ser. No. 650,570
Claims priority, application France, Sep. 2, 1982, 82 02091
Int. Cl.[4] A61K *39/00;* C07K *13/00*
U.S. Cl. 424—85 2 Claims

1. A cytotoxic composition comprising a cytotoxic amount of an immunotoxin and a potentiating amount of a monovalent carboxylic ionophore selected from the group consisting of monensin, nigericin, grisorixin and lasalocide, said immunotoxin comprising the A chain of ricin covalently bonded to an antibody, or antibody fragment directed against an antigen carried by the cells to be destroyed.

4,767,622

METHOD AND MATERIALS FOR DEVELOPMENT OF IMMUNOLOGICAL RESPONSES PROTECTIVE AGAINST MALARIAL INFECTION

Miodrag Ristic, and Mary L. Chilbert, both of Urbana, Ill., assignors to University of Illinois, Urbana, Ill.

Filed Aug. 19, 1983, Ser. No. 524,919
Int. Cl.[4] A61K *39/00;* C12P *21/00;* C07G *7/00*
U.S. Cl. 424—88 6 Claims

1. A vaccine composition for use in developing a protective immune response in a vertebrate animal susceptible to infection by *Plasmodium flaciparum* parasites, said composition comprising:

(1) an immunologically effective amount of one or more water soluble proteinaceous immunogens having respective molecular weights within the range of about 35,000 and about 85,000, as determined by SDS-PAGE, produced in the course of the in vitro cultured growth and proliferation of *Plasmodium falciparum* parasites in a susceptible host erythrocyte cell culture and isolated from the host and parasite cell and cell fragment-free medium of such growth or host and parasite cell and cell fragment-free washes of infected host cells in such culture; and

(2) an immunologically effective amount of immunologically acceptable carrier and adjuvant materials.

4,767,623

METHOD OF BINDING MICROFLORA AND PREPARATIONS THEREFOR

Patricia Conway, and Staffan Kjelleberg, both of Södra Vägen, Sweden, assignors to Chemical Dynamics Sweden AB, Skara, Sweden

PCT No. PCT/SE85/00431, § 371 Date Jul. 8, 1986, § 102(e) Date Jul. 8, 1986, PCT Pub. No. WO86/02837, PCT Pub. Date May 22, 1986
PCT Filed Nov. 5, 1985, Ser. No. 882,897
Claims priority, application Sweden, Nov. 8, 1984, 8405587
Int. Cl.[4] A61K *37/00*
U.S. Cl. 424—93 11 Claims

1. A method for increasing the specific adhesion of lactic acid bacteria to the stomach and intestines of humans and animals, and promoting the colonization of said bacteria therein, comprising administering the bacteria in the presence of effective amounts of an adhesive promoting protein.

4,767,624

DECUBITAL REMEDY

Shinichi Okuyama, 15-38 Nakayama 3-chome, Sendai-shi, Miyagi Prefecture; Kazumaro Furuse, 3-5, Inogashira 2-chome, Mitaka-shi, Tokyo, and Shigemitsu Ohsawa, 2286-12, Suehiro-cho, Honjyo-shi, Saitama Prefecture, all of Japan

Filed Mar. 11, 1986, Ser. No. 838,559
Claims priority, application Japan, Mar. 15, 1985, 60-50543
Int. Cl.[4] A61K *37/48*
U.S. Cl. 424—94.1 1 Claim

1. A method for the treatment of decubitus which comprises cutaneously applying to an affected area of a patient suffering therefrom an effective amount of ubidecarenone.

4,767,625

LAMELLA TYPE SINGLE PHASE LIQUID CRYSTAL COMPOSITION AND OIL-BASE COSMETIC COMPOSITIONS USING THE SAME

Yuichiro Mitsuno, Sakura; Keiko Nomaguchi, Tokyo, and Toshiyuki Suzuki, Ichikawa, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 14, 1986, Ser. No. 896,457
Claims priority, application Japan, Sep. 2, 1985, 60-193426; Oct. 24, 1985, 60-238165
Int. Cl.[4] C09K *19/52;* A61K *9/02, 7/00;* B01J *13/00*
U.S. Cl. 424—95 7 Claims

1. A lamella type, single phase liquid crystal composition for cleansing human skin, comprising:

(A) 10 to 20 wt % of one or more hydrophilic nonionic surfactants having an HLB value of 10 to 40,

(B) 5 to 15 wt % of one or more water-soluble substances having at least one hydroxyl group,

(C) 30 to 80 wt % of at least one oil substance which is liquid at normal temperature, and

(D) 5 to 30 wt % of water

4,767,626

REMEDY FOR ANEMIA AND ARTHRITIS

Theodore Cheng, 1209 W. Wynnewood Rd., Wynnewood, Pa. 19096

Continuation-in-part of Ser. No. 710,628, Mar. 11, 1985, abandoned. This application Feb. 27, 1986, Ser. No. 836,204
Int. Cl.[4] A61K *35/78, 31/56, 31/335, 31/34*
U.S. Cl. 424—195.1 4 Claims

1. A method for the treatment of anemia associated with viral and bacterial infection in a patient wherein symptoms of rheumatoid arthritis are present which comprises administering to said patient an effective amount of a fat soluble alkaloid extract from Zanthoxylum Simulans.

VOL 1093 ISS 5 AUG 30 1988 UMI

4,767,627

DRUG DELIVERY DEVICE WHICH CAN BE RETAINED IN THE STOMACH FOR A CONTROLLED PERIOD OF TIME

Larry J. Caldwell; Colin R. Gardner, and Robya C. Cargill, all of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 738,633, May 29, 1985, abandoned. This application May 1, 1987, Ser. No. 44,539

Int. Cl.[4] A61K *9/00, 9/20, 9/48*

U.S. Cl. 424—426 12 Claims

1. A gastric retention device comprising a gelatin capsule having squeezed together and compressed therein a hollow limbed 4-lobed planar cross figure prepared from at least one erodible polymer, selected from the group consisting of soluble cellulosic materials, ethylene vinyl alcohol, elthylene maleic anhydride copolymer, polyacrylates, polycaprolactones, inorganic glass based on polyphosphates and fused salts, polyanhydrides, poly(ortho)esters, biodegradable polyurethanes, polyvinyl pyrrolidone, polyactones, polyamides and polypeptides, gelatin and derivatives, polyacrylonitriles, polyesters and combinations thereof; said device having a biological active drug dispersed as a solution or suspension incorporated therein or in a module attached to the retention device, consisting of a frame work having a maximum dimension of 1.6 cm before deployment and presenting a minimum diameter of 1.6 cm and a maximum diameter of 5 cm after deployment into the stomach of man and non-ruminant mammals, composed in a manner such that the frame work will not pass the stomach having a pyloric valve with a 3–5 cm maximum inner circumference between the stomach and the intestine, said figure having the following properties:

(a) compressible to a size suitable for swallowing;

(b) expandable to size which will prevent passage through a pylorus for a predetermined time;

(c) sufficiently resistant to a simultaneous force in two directions by a stomach to prevent passage through a pylorus for a predetermined time; and

(d) erodible in the presence of gastric juices so that said device after a predetermined time is no longer able to retain or attain the expanded configuration defined in (b) above and/or resist a simultaneous force in two directions as defined in (c) above.

4,767,628

CONTINUOUS RELEASE PHARMACEUTICAL COMPOSITIONS

Francis G. Hutchinson, Lymm, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 640,855, Aug. 15, 1984, abandoned, which is a continuation of Ser. No. 344,722, Feb. 1, 1982, abandoned. This application Jun. 29, 1987, Ser. No. 68,760

Claims priority, application United Kingdom, Feb. 16, 1981, 8104734

Int. Cl.[4] A61K *9/26, 9/32*

U.S. Cl. 424—426 17 Claims

1. A pharmaceutical composition comprising (a) from 50% to 99.999% of a polylactide which is a polymer of lactic acid alone, a copolymer of lactic acid and glycolic acid wherein the ratio of glycolide to lactide units is from 0 up to 3:1, a mixture of such polymers, a mixture of such copolymers, or a mixture of such polymers and copolymers, the lactic acid being either in racemic or in optically active form, and such polyactide being either soluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml. in chloroform) to 0.5 (1 g. per 100 ml. in benzene), or insoluble in benzene and having an inherent viscosity of from 0.093 (1 g. per 100 ml in chloroform) to 4 (1 g. per 100 ml in chloroform or dioxan), and (b) from 0.001% to 50% of a pharmacologically active polypeptide which has a molecular weight at least about the same as the molecular weight of tetragastrin, which is not significantly hydrolized under the conditions encountered within the composition during the period of use envisioned, and which contains four or more amino acid residues, said polypeptide being uniformly dispersed in said polylactide, which composition, when placed in an aqueous physiological-type environment absorbs water and exhibits two successive phases of release of polypeptide, the first phase being release by initial diffusion through aqueous polypeptide domains communicating with the exterior surface of the composition, and the second phase being release consequent upon degradation of the polylactide, characterized in that the diffusion phase and the degradation-induced phase overlap in time, said composition being further characterized by the fact that, when placed in an aqueous physiological type environment, water diffuses into the matrix and is partitioned between polypeptide and polylactide to form aqueous polypeptide domains, the said domains increasing with increasing absorption of water until the continuity of the said domains reaches a sufficient level to communicate with the exterior surface of the composition, whereupon polypeptide starts to be released from said composition by diffusion through aqueous polypeptide channels formed from said domains, which second phase continues until substantially all of the remaining polypeptide is released

4,767,629

METHOD FOR PREPARING CURED SAUSAGE AND HAM

Manuel A. Iglesias, Tabera, 50, and Jose V. Arago, Infanta Carlota, 23, both of, Barcelona, Spain

Continuation-in-part of Ser. No. 790,260, Oct. 22, 1985, abandoned. This application Oct. 15, 1987, Ser. No. 108,782

Claims priority, application Spain, Oct. 22, 1984, 537,247

Int. Cl.[4] A22C *11/00;* G01N *21/80*

U.S. Cl. 426—55 22 Claims



1. In a method for preparing cured sausage, said method comprising the steps of

drying a piece of sausage at a high temperature,

monitoring at least one of pH, rate of change of pH, contraction of the piece, and rate of contraction of the piece, during the drying step,

drying the dried and monitored piece at a temperature lower than said high temperature,

monitoring at least one of the contraction and rate of contraction of the piece during the subsequent drying step, and

adjusting at least one of temperature and relative humidity of surroundings in accordance with the two monitoring steps during the two respective drying steps,

the improvement comprising the steps of

automatically carrying out the respective monitoring steps and the adjustment step with a microcomputer by

sending signals corresponding to the respective monitorings to the microcomputer,

pre-disposing an instructional program within the microcomputer, and

transmitting instructions from the microcomputer for the adjustment of at least one of the temperature and the relative humidity,

whereby corrective adjustment takes place much more frequently than in conventional manual methods, and optimum quality of product is produced with minimization or prevention of human error in judgment, manipulation, and monitoring.

4,767,630

FRUIT CHIP PRODUCT AND PROCESS FOR MAKING SAME

Myron E. Silver, Lewisville, and Lawrence W. Wisdom, Dallas, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Continuation of Ser. No. 556,850, Dec. 1, 1983, Pat. No. 4,547,376. This application Aug. 29, 1985, Ser. No. 771,228

The portion of the term of this patent subsequent to Oct. 15, 2002, has been disclaimed.

Int. Cl.[4] A23B *7/14, 7/16, 7/156*

U.S. Cl. 426—102 13 Claims

1. A method for continuously and economically producing crisp and dry fruit or vegetable slices comprising the steps of:

(a) slicing whole fruit or vegetable pieces into thin, wafer-like slices;

(b) monolayering the slices with the planar surfaces of the slices in substantially the same plane and without substantial overlap of the slices;

(c) sequentially applying aqueous films, each comprising a solution of an anti-browning agent, a sweetening carbohydrate, or an acid, each aqueous film substantially covering at least one surface of the monolayered slices, wherein the titratable acidity of the slices is adjusted to alter the tartness of the slices; and

(d) rapidly drying the slices, while the slices are monolayered for at least a portion of the drying, the drying being continued to produce dried crisp slices.

4,767,631

PROCESS FOR SWEETENING BAKED COMESTIBLE AND PRODUCT PRODUCED THEREBY

Thomas P. Calandro, Paterson, and Jan Karwowski, Franklin Lakes, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation of Ser. No. 673,788, Nov. 21, 1984, Pat. No. 4,719,155. This application Oct. 31, 1986, Ser. No. 925,555

The portion of the term of this patent subsequent to Jan. 12, 2005, has been disclaimed.

Int. Cl.[4] A23P *1/08*

U.S. Cl. 426—103 16 Claims

1. A sweetened dry, baked comestible of predetermined shape and thickness comprising open pores on the surface thereof and a sweetened surface layer less than one-half of said thickness, and a sweetening amount of an L-aspartic acid sweetening derivative in said pores, said sweetening derivative being applied to said pores as an aqueous solution having a pH in the range of from about 1.5 to 4.0 and substantially all of said sweetening derivatives being dissolved in the water of said solution, said sweetening derivative being confined to said surface layer and defining the same to provide an uncoated, nondusted, natural appearance to the sweetened comestible.

4,767,632

METHOD FOR THE PREPARATION OF COFFEE

Hermann Meier, Döttingen, Switzerland, assignor to Cafina AG, Hunzenschwil, Switzerland

Filed Feb. 25, 1987, Ser. No. 18,606

Claims priority, application Fed. Rep. of Germany, May 5, 1986, 3615158

Int. Cl.[4] A23F *5/24*

U.S. Cl. 426—231 14 Claims

1. A method of preparing coffee comprising cyclically repeated steps of:

feeding coffee beans to a coffee bean milling means;

milling the coffee beans to a coffee powder having a selected average grain size;

adding a selected amount of the coffee powder into a brewing chamber;

displacing a piston into the interior of the brewing chamber and thereby reducing the internal volume of the brewing chamber containing the coffee powder until a preselected pressure is exerted on the coffee powder;

supplying a preselected amount of hot water into the brewing chamber and forcing the hot water through the compressed coffee powder to prepare coffee;

collecting the prepared coffee;

measuring the length of the displacement path of the piston required to exert the preselected pressure on the coffee powder, and recording the measurement value in a microprocessor having a memory with a reference value stored therein and corresponding to the calculated length of the displacement path of the piston required to exert the preselected pressure on the coffee powder in the brewing chamber;

retrieving from the microprocessor memory the reference value stored therein;

comparing the measurement value and the reference value and generating a comparison signal; and

altering the amount of coffee powder fed into the brewing chamber during a subsequent cycle in response to the magnitude of the comparison signal deviating from a predetermined magnitude.

6. A method of preparing coffee comprising cyclically repeated steps of:

feeding coffee beans to a coffee bean milling means;



milling the coffee beans to a coffee powder having a selected average grain size;

adding a selected amount of the coffee powder into a brewing chamber;

displacing a piston into the interior of the brewing chamber and thereby reducing the internal volume of the brewing chamber containing the coffee powder until a preselected pressure is exerted on the coffee powder;

supplying a preselected amount of hot water into the brewing chamber and forcing the hot water through the compressed coffee powder to prepare coffee;

collecting the prepared coffee;

measuring the length of the displacement path of the piston required to exert the preselected pressure on the coffee powder, and recording the length measurement value in a microprocessor having a memory with a length reference value stored therein and corresponding to the calculated length of the displacement path of the piston required to exert the preselected pressure on the coffee powder in the brewing chamber;

retrieving from the microprocessor memory the length reference value stored therein;

comparing the length measurement value and the length reference value and generating a length comparison signal;

altering the amount of coffee powder fed into the brewing

VOL 1093 ISS 5 AG 30 1988 UMI

chamber during a subsequent cycle in response to the magnitude of the length comparison signal deviating from a predetermined magnitude;

measuring the time required for the preselected amount of hot water to pass through the coffee powder in the brewing chamber and recording the time measurement value in the microprocessor having a time reference value corresponding to a calculated amount of time required for the preselected amount of hot water to pass through the coffee powder in the brewing chamber stored in the memory thereof;

retrieving from the microprocessor memory the time reference value stored therein;

comparing the time measurement value and the time reference value and generating a time comparison signal; and

altering the degree of milling of the coffee means to thereby change the average grain size of the coffee powder fed into the brewing chamber in response to the magnitude of the time comparison signal deviating from a predetermined magnitude.

4,767,633

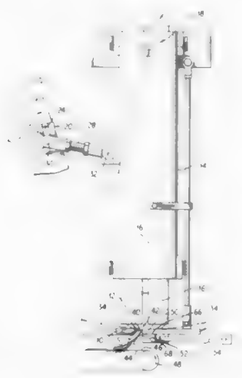
METHOD AND APPARATUS FOR HANDLING AND PROCESSING FOOD PIECE SLICES

David P. Fowler, Irving, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 713,896, Mar. 20, 1985, which is a continuation-in-part of Ser. No. 544,971, Oct. 24, 1983, abandoned. This application Jun. 27, 1986, Ser. No. 879,428

Int. Cl.⁴ A23L *1/27*

U.S. Cl. 426—270 10 Claims



1. A food piece slicing and handling method, comprising:

(a) forming an elongate moving curtain of liquid at least a portion of which is free-falling unsupported by a surface and free from surface contact;

(b) serially forming separate slices of a food piece by moving the food piece against a sliding blade;

(c) capturing a serially formed slice with the moving curtain of liquid so that the slice first contacts the liquid in the free-falling unsupported portion thereof;

(d) carrying the slice with the moving curtain of liquid during free-fall of the liquid under influence of gravity to a moving porous conveyor belt; and

(e) depositing the slice on the moving conveyor belt with the liquid.

8. An apparatus for slicing and handling a food piece comprising:

a slicing blade;

means for moving a food piece against the slicing blade to serially form separate slices of the food piece;

means for forming an elongate moving curtain of liquid at least a portion of said curtain is free-falling unsupported by a surface and free from surface contact, including a linear, longitudinal slot positioned beneath the slicing blade; a chamber means for connecting said slot with a source of liquid; baffle means in the chamber for stabilizing flow of liquid through the slot to form a substantially uniform curtain of liquid exiting the slot; and a moving porous conveyor belt on which the slices are deposited and monolayered; wherein the free-falling unsupported portion of the liquid curtain is positioned adjacent the cutting blade so as to capture the serially formed slices such that the slices first contact the liquid in the free-falling unsupported portion thereof, and wherein the slices are carried with the moving curtain of liquid, during free-fall of the liquid under influence of gravity, to said moving conveyor belt.

4,767,634

COFFEE DECAFFEINATION WITH CAFFEIC ACID

William W. Kaleda, Westwood, N.J.; Fouad Z. Saleeb, Pleasantville, and Bary L. Zeller, Mahopac, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 3, 1986, Ser. No. 870,197

The portion of the term of this patent subsequent to Jun. 4, 2002, has been disclaimed.

Int. Cl.⁴ A23F *5/22*

U.S. Cl. 426—271 21 Claims

1. A method of decaffeination which comprises:

(a) contacting a caffeine-containing coffee extract solution with caffeic acid in the presence of water wherein the caffeine and caffeic acid form an insoluble caffeine/caffeic acid complex;

(b) growing crystals of the insoluble caffeic acid/caffeine complex which can be separated from the liquid; and

(c) separating the caffeine/caffeic acid complex from the coffee extract solution.

4,767,635

METHOD FOR THE PREPARATION OF FLAVORED POPPING CORN

Carleton G. Merritt, Phoenix, and Stephen R. Gillmore, Cato, both of N.Y., assignors to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 691,831, Jan. 16, 1985, abandoned. This application Feb. 18, 1986, Ser. No. 831,075

Int. Cl.⁴ A23L *1/36*

U.S. Cl. 426—272 17 Claims

1. A method for preparing a substantially fat and oil free flavored unpopped popcorn which retains its flavor upon popping in a hot air popper comprising the steps of treating an unpopped popcorn with an alkali solvent for the cellulose in the corn hull for a period of time sufficient to produce a soluble adhesive cellulosic hull surface and thereafter mixing the resulting soluble cellulosic corn hull with an acid solution to neutralize the pH of the treated hull; mixing the resulting unpopped popcorn with flavorants and then drying to a moisture content of about 12% by weight-unpopped corn to give an unpopped corn having a substantially uniformly adhered flavorant coating thereon which will remain adhered to the hull of the popcorn after the popping in a hot air popper.

4,767,636

METHOD FOR ADHERING SPICES ON THE SURFACE OF RICE

Hector V. Ramos, Cranbury; Kenneth W. Fagan, Jr., Mt. Holly; Joan R. Rothenberg, East Windsor, and David L. Smith, Trenton, all of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Oct. 3, 1986, Ser. No. 915,169

Int. Cl.⁴ A23L *1/36*

U.S. Cl. 426—291 6 Claims

1. A continuous process for preparing a non-segregating, free-flowing, dried instant rice and sauce dish comprising the steps of:

(a) conveying dried instant rice to a coating reel rotating at from 5 to 9 revolutions per minute at a rate of 1,000 to 4,000 lbs./hr. and wherein said coating reel is positioned at an angle ranging from 10° to 30° from the horizontal;

(b) coating the rice with oil to levels ranging from 6.5% to 30% by weight of the rice;

(c) coating the oil coated rice with dry sauce producing ingredients in amounts ranging from 5% to 20% by weight of the rice;

(d) applying a second coat of oil to the rice coated with dry ingredient to levels ranging from 3.0% to 6.5% by weight of the rice; and

(e) applying a third coat of oil to the oil coated rice of step (d) to levels ranging from 3.0% to 6.5% by weight of the rice

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4,767,637

PREPARATION OF A FOOD COATING

Kurt L. Ek, Ekeby, Sweden, assignor to Nestec S. A., Vevey, Switzerland

Filed Aug. 21, 1986, Ser. No. 899,307

Claims priority, application European Pat. Off., Sep. 12, 1985, 85111524.6

Int. Cl.⁴ A23L *1/176*

U.S. Cl. 426—291 16 Claims

1. A process for the production of a crumb coating comprising applying and drying a layer of liquid batter on a heated surface for forming a coherent sheet of gelified and coagulated batter, detaching the coherent sheet of dried batter from the heated surface, deep-fat frying the dried batter, drying the fried batter and finally milling the dried fried batter to crumbs.

4,767,638

APPARATUS AND METHOD FOR TWISTING PASTRY DOUGH AND THE LIKE

Martin Uhrovic, Hauppauge, N.Y., assignor to Entenmann's, Inc., Bay Shore, N.Y.

Filed Jul. 28, 1987, Ser. No. 78,347

Int. Cl.⁴ A21C *3/08*; A21D *6/00*

U.S. Cl. 426—500 13 Claims



9. A method of imparting twist to an elongate dough piece comprising:

providing first conveyor means comprising a first set of conveyor belts, the conveyor belts of the first set being disposed such that portions of the belts move in laterally spaced-apart parallel adjacency, the belt portions together forming a first conveying surface;

providing second conveyor means comprising a second set of conveyor belts, the conveyor belts of the second set being disposed such that portions of the belts move in laterally spaced-apart parallel adjacency, the belt portions together forming a second conveying surface;

mounting the first and second conveyor means such that the first and second conveyor surfaces are substantially parallel to one another and in juxtaposition whereby a dough piece-conveying passageway is formed between the juxtaposed first and second conveyor surfaces, the passageway having an inlet end for introducing an elongate dough piece into the passageway and a discharge end for discharging an elongate dough piece from the passageway, the first and second sets of belts being mounted such that each belt of the first set of belts is in juxtaposition with a respective belt of the second set of belts, whereby a plurality of pairs of belts is formed, each pair of belts comprising a belt of the first set of belts and a respective juxtaposed belt of the second set of belts;

introducing an elongate dough piece into the inlet end of said passageway with its longitudinal axis transverse to the conveying direction such that the dough piece extends across said first and second sets of belts;

moving a first belt in the first set of belts at a relatively higher velocity than that of a further, adjacent, belt in the first set of belts;

moving a first belt in the second set of belts at a relatively higher velocity than that of a further, adjacent, belt in the second set of belts, the first belt of the first set of belts being in juxtaposition with the further belt of the second set of belts and forming therewith a first pair of belts, the first belt of the second set of belts being in juxtaposition with the further belt of the first set of belts and forming therewith a second pair of belts;

the velocity of the belts of each of the first and second pairs of belts being such that the net velocity of an elongate dough piece conveyed along said passageway is the same at each pair of belts, whereby said dough piece is twisted as it is conveyed along said passageway by being rolled between the belts of at least one of said first and second pairs of belts, the extent of the twisting being dependent on the difference in speed of the belts in each of the first and second pairs of belts and on the difference in speed between the first and further, adjacent, belts in each set of belts, and whereby the twisting is effected without causing canting of the dough piece.

4,767,639

BAKING APPARATUS AND PROCESS

Masaru Orii, Tokyo, Japan, assignor to Kabushikigaisha Orii, Kanagawa, Japan

Filed Aug. 7, 1987, Ser. No. 83,637

Claims priority, application Japan, Aug. 11, 1986, 61-188188

Int. Cl.⁴ A23C *3/00*; A21B *1/00*

U.S. Cl. 426—523 9 Claims



1. A process for baking dough arranged on a series of horizontally oriented pans which travel in series through an oven and having a plurality of vertically arranged stationary baking platforms therein, said process comprising:

introducing said pans in series in a first horizontal direction onto a first of said plurality of stationary vertically aligned baking platforms;

moving said pan off said first stationary baking platform by the movement in said first horizontal direction of the immediately following pan in series onto said first baking platform;

vertically moving said pan into horizontal alignment with a second of said plurality of vertically aligned stationary baking platforms;

VOL 1093 ISS 5 AG 30 1988 UMI

moving said pan in a second horizontal direction parallel to said first direction onto said second platform of said plurality of vertically aligned baking platforms;

moving said pan off said second baking platform by the movement in said second horizontal direction of the immediately following pan in series onto said second baking platform;

moving said pans vertically in series to be horizontally aligned with each of said plurality of baking platforms whereby the horizontal movement in said first and second horizontal directions moves each of said pans in series onto said plurality of stationary baking platforms and whereby each succeeding pan moves in series each preceding pan off of said baking platform;

baking said pans on each of said plurality of baking platforms with heat sources associated with each of said plurality of baking platforms for a predetermined time whereby the combined time spent by each pan on each of said baking platforms thereby produces a properly baked dough; and

moving each of said pans in series in one horizontal direction across the last of said plurality of stationary baking platforms whereby the horizontal movement in series of each of said baking pans causes a preceding pan to exit from said oven.

4,767,640

LIGHT STABLE HOP EXTRACTS AND METHOD OF PREPARATION

Henry Goldstein; Patrick L. Ting, both of Brookfield; Etzer Chicove, Milwaukee; Gary Goetzke, New Berlin, and John M. Cowles, Whitefish Bay, all of Wis., assignors to Miller Brewing Company, Milwaukee, Wis.

Continuation-in-part of Ser. No. 792,340, Oct. 29, 1985, abandoned. This application Apr. 11, 1987, Ser. No. 48,081

Int. Cl.[4] C12C *3/00*

U.S. Cl. 426—600 4 Claims

1. A method of preparing a hopping preparation of superior light stability from a hop product consisting essentially of reduced isohumulones, less than about 0.5% unreduced isohumulones and non-isohumulone light unstable products, said method comprising adding an effective amount of aqueous alkali to the hop product to adjust the final pH to about 6.0 to about 7.5; heating the resulting mixture of about 40° C. to about 80° C. for about one hour to form an aqueous phase containing the reduced isohumulones and unreduced isohumulones and an oil phase containing the non-isohumulone light unstable products; and then, isolating the aqueous phase which is a hopping preparation of superior light stability.

4,767,641

PLASMA TREATMENT APPARATUS

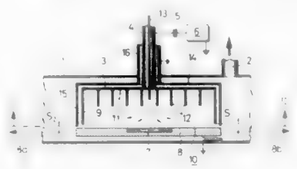
Jörg Kieser, Albstadt; Michael Sellschopp, Hammersbach, and Michael Geisler, Wächtersbach, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Jul. 3, 1986, Ser. No. 881,706

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1986, 3606959

Int. Cl.[4] C23C *14/00, 16/00*

U.S. Cl. 427—38 11 Claims



1. Device for plasma treatment of a substrate in a high frequency excited plasma discharge between two electrodes which face each other supplied by a high frequency source, said device comprising:

(a) a first electrode constructed as a hollow anode, said first electrode containing a wall area and at least one edge, said edge drawn in the direction of a second electrode, wherein said edge and said wall area define a hollow space of said first electrode, said edge and said hollow anode having the same potential, said wall area having disposed thereon a plurality of projections which extend into said hollow space to increase its internal surface area, and

(b) a second electrode for carrying said substrate, said second electrode facing said first electrode and in front of said hollow space, wherein said edge and said second electrode form a gap of maximum width 10 mm.

11. Method for plasma treatment of a substrate in a high frequency excited plasma discharge between two electrodes supplied by a high frequency source, comprising placing a substrate on the second electrode of the device of claim 1 and supplying a reactive gas to said device to produce a layer for deposit on said substrate.

4,767,642

METHOD FOR PREVENTION OF RESIN PLATE SURFACE STICKING

Takaaki Shimizu, Ebina; Katsuyuki Ota, Atsugi; Toshimi Aoyama, Fujisawa, and Setsuo Nojima, Atsugi, all of Japan, assignors to Photopoly Ohka Co., Ltd., Kanagawa, Japan

Filed Feb. 10, 1987, Ser. No. 14,372

Claims priority, application Japan, Feb. 10, 1986, 61-025737

Int. Cl.[4] B05D *3/06;* **G03F** *7/00*

U.S. Cl. 427—54.1 19 Claims

1. A process for preventing stickiness on a resin plate the surface of which is coated with a photosensitive resin comprised of a binder, a photopolymerizable monomer and a photopolymerization initiator in which a relief image was previously formed by a photomechanical process comprising coating said surface to a thickness of 0.05 μm to 0.50 μm with a solution that contains an organic solvent, a binder and a photopolymerizable monomer, drying said coating, and/or exposing said coating to polymerizing radiation.

4,767,643

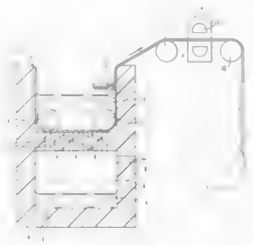
METHOD OF CONTINUOUSLY VACUUM IMPREGNATING FIBROUS SHEET MATERIAL

Dean C. Westervelt, Bullskin, and Wei-Fang A. Su, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 22, 1986, Ser. No. 888,292

Int. Cl.[4] B05D *3/06, 3/00;* **C23C** *14/00*

U.S. Cl. 427—54.1 6 Claims



1. A method of vacuum-impregnating a flexible, porous sheet material with resin comprising the steps:

(A) passing a flexible, porous sheet material, necessarily containing air in its interstices, into a resin applicator comprising: (1) a resin chamber containing liquid, organic, termosettable impregnating resin, and (2) a vacuum chamber; which resin chamber has openings communicating to the vacuum chamber, where no vacuum-tight seals are necessary for passing the sheet material through the resin applicator,

(B) passing the porous sheet material through the liquid resin in the resin chamber, so that liquid resin enters the sheet,

(C) passing the resin-containing sheet next to the resin chamber openings and providing a subatmospheric pressure on the side of the sheet facing the openings to draw resin and trapped air through the sheet and through the resin chamber openings so that the sheet is completely filled with the resin, and where substantially all the air initially in the sheet is removed,

(D) collecting liquid resin drawn off through the resin chamber openings in a reservoir in the vacuum chamber, and

(E) advancing the resin-containing sheet to the B-stage of cure, to provide a resin-impregnated prepreg.

4,767,644

METHOD OF MAKING ABRASIVE TAPE

Nobutaka Yamaguchi; Masaaki Fujiyama, and Masami Suzuki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 20, 1987, Ser. No. 39,841

Claims priority, application Japan, Apr. 18, 1986, 61-90540

Int. Cl.[4] B05D *3/02*

U.S. Cl. 427—385.5 14 Claims

1. A method of making an abrasive tape comprising:

(1) preparing an abrasive composition at least from abrasive grains and a binder,

(2) applying the abrasive composition onto a flexible substrate, and

(3) drying the applied abrasive composition,

wherein the step of preparing said abrasive composition comprises kneading processing, which is carried out while the abrasive composition being kneaded has a viscosity of at least 100 poise, and attritor dispersion processing, said kneading processing and attritor dispersion processing being carried out on at least 10% of an overall amount of said abrasive grains and at least a part of said binder and providing that said steps of kneading processing and attritor dispersion processing can be carried out in either order.

4,767,645

COMPOSITE MEMBRANES USEFUL FOR THE SEPARATION OF ORGANIC COMPOUNDS OF LOW MOLECULAR WEIGHT FROM AQUEOUS INORGANIC SALTS CONTAINING SOLUTIONS

Charles Linder, Rehovot; Mara Nemas, Neve Monoson; Mordechai Perry, Petach-Tikva, and Reuven Kotraro, Rishon-Letzion, all of Israel, assignors to Aligena AG, Basel, Switzerland

Filed Apr. 17, 1987, Ser. No. 39,421

Claims priority, application United Kingdom, Apr. 21, 1986, 8609653

Int. Cl.[4] B05D *1/18*

U.S. Cl. 427—386 23 Claims

1. A process for the preparation of a semipermeable composite membrane suitable for separating organic compounds of low molecular weight from aqueous, inorganic salts containing solutions, which process comprises the steps of

(a) coating one side of a membrane support with an aqueous solution containing dissolved therein an organic, film-forming, hydrophilic polymer, a cross-linking agent (1) and optionally a monomeric ionic compound to form at least one polymer layer,

(b) contacting the still wet polymer layer interfacially with an organic solution of at least one cross-linking agent (2), containing at least two functional groups,

(c) drying the product of step (b) for a time sufficient to form the composite membrane comprising the membrane support and an asymmetrical coating consisting of at least one polymer layer and a thin semipermeable cross-linked film, containing ionic groups resting on the top of said polymer layer and being integrally attached thereto,

(d) optionally treating the membrane of step (c) with an aqueous solution containing cross-linking agents (3) capable of reacting with the polymer and/or unreacted groups of the monomeric compound, at least one of said hydrophilic polymer, monomeric ionic compound and cross-linking agents (1) to (3) used in this process containing cationic, amphoteric, or anionic groups or groups transferable into anionic groups, and

(e) optionally curing the membrane of step (d) at elevated temperature

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4,767,646

WET ABRASION RESISTANT YARN AND CORDAGE

Colleen W. Cordova, Midlothian, and Robert M. Marshall, Chester, both of Va., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 24, 1985, Ser. No. 791,007

Int. Cl.[4] B32B *9/00*

U.S. Cl. 427—387 19 Claims

1. A method of producing a wet abrasion resistant cordage from yarn comprising:

treating the yarn after drawing with an effective amount of an aqueous overfinish composition having an oil portion which comprises about 20 to 80 weight percent of an oxidized polyethylene emulsified with a non-nitrogen nonionic emulsifier and neutralized with an alkali hydroxide; and about 80 to 20 weight percent of a compound selected from the group consisting of a siloxane of the comonomers dimethyl and 3-[(2-aminoethyl)aminopropyl], and an amide melamine wax then forming said cordage

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4,767,647

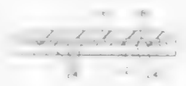
DECORATIVE EMBLEM

Charles E. Bree, Delaware, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Division of Ser. No. 103,963, Dec. 17, 1979, Pat. No. 4,481,160. This application Feb. 15, 1984, Ser. No. 580,326

Int. Cl.[4] A47G *35/00*

U.S. Cl. 428—14 5 Claims



1. A decorative emblem comprising:

a bezel having a cavity formed by a generally flat base and vertically upstanding peripheral sidewalls,

a generally flat, embossed, and decorated foil shape located within said cavity in said bezel and spaced from 0.01 to 0.02 inches from said sidewalls, and

a void-free, cured plastic lens cap contiguous with the peripheral edge of said upstanding sidewalls, filling said cavity of said bezel,

said plastic lens cap being formed by casting a measured amount of fluent plastic material over said foil shape, the fluent plastic material migrating around the edges of said foil shape and between the space between said foil shape and said sidewalls of said bezel, and flowing underneath said foil shape on all sides, at least partially encapsulating said foil shape and permanently bonding it with said bezel.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,648

METHOD OF ACCOMPLISHING RAPID AND DURABLE FRENCH MANICURE

Yosh Hokama, Torrance, and Luis Romero, Lawndale, both of Calif., assignors to Spencer R&D Inc., Gardena, Calif.

Filed Jun. 25, 1987, Ser. No. 66,267
Int. Cl.[4] A01N *1/00*; A45D *31/00*
U.S. Cl. 428—15 19 Claims



1. The method of rapidly accomplishing a durable french manicure, employing nail polish, that includes the steps:
(a) providing a flexible tab having a white or near-white upper surface that is compatible to nail polish, the tab having the shape of an over-sized fingernail forward tip portion,
(b) applying and adhering the tab to the fingernail forward tip portion so that the tab has extent beyond the forward edge of the fingernail forward tip portion,
(c) then trimming off said tab extent beyond the forward edge of the fingernail forward tip portion,
(d) then applying translucent liquid nail polish to the fingernail upper surface and to cover said tab upper surface, and allowing the polish to dry,
(e) whereby the fingernail has a glossy upper surface that is white or near-white only at it's forward tip portion.

14. The method of claim 1 wherein the fingernail is a artificial fingernail.

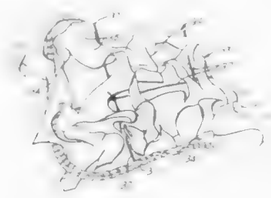
16. The product produced by the method of claim 14.

4,767,649

BROAD SPECTRUM CAMOUFLAGE MAT AND SCREEN

Jorgen Birch, 923 7th St., Apt. E, Santa Monica, Calif. 90403

Continuation-in-part of Ser. No. 796,847, Nov. 12, 1985, Pat. No. 4,659,602. This application Nov. 10, 1986, Ser. No. 928,991
Int. Cl.[4] F41H *3/00*
U.S. Cl. 428—99 12 Claims



1. A light-penetrable camouflage system for positioning over an object to be concealed from remote detection, comprising an apertured sheet of garnish material made of plastic, the plastic integrally embodying additives providing selected camouflage properties with respect to nonvisual wavelengths.

4,767,650

FABRIC ROSES AND METHOD FOR THE PRODUCTION THEREOF

John D. Little; Lorianne C. Little, both of 26131 Tono, Mission Viejo, Calif. 92692, and John Wood, Chico, Calif., assignors to John Douglas Little and Lorianne Clark Little, both of Newport Beach, Calif.

Division of Ser. No. 865,538, May 21, 1986, Pat. No. 4,708,893. This application Aug. 3, 1987, Ser. No. 81,320
Int. Cl.[4] A41G *1/00*
U.S. Cl. 428—26 5 Claims



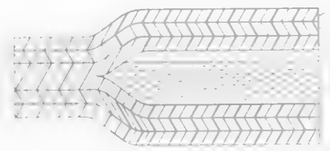
1. An artificial flower comprising:
an elongated strip of flexible material arranged in a longitudinally convoluted configuration in which a first longitudinal portion of said strip defines a center portion of the flower, and a second longitudinal portion of said strip is laterally twisted about itself and defines petal portions of the flower that circumscribe said center portion thereof; and
fusing means for intersecuring adjacent portions of said first longitudinal portion and said second longitudinal portion to hold said strip in said longitudinally convoluted configuration.

4,767,651

MULTIPLE LAYER FILM AND CONTAINERS MADE THEREFROM

John F. Starczewski, Appleton; Joseph C. Hsu, Neenah; Robert J. Blemberg, Appleton; Kevin J. Curie, and Jerry F. Jesse, both of Neenah, all of Wis., assignors to American National Can Company, Chicago, Ill.

Continuation-in-part of Ser. No. 830,412, Feb. 18, 1986, Pat. No. 4,687,688. This application Jul. 27, 1987, Ser. No. 77,830
Int. Cl.[4] B65D *65/40*; B32B *27/32*; B65B *31/00*
U.S. Cl. 428—35 23 Claims



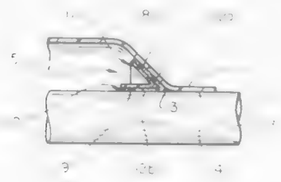
1. A multiple layer film, comprising:
(a) a first layer, the composition of said first layer being selected from the group consisting of nylon 6,6 and combinations of nylon 6,6 with nylon 6 wherein said combinations have melting point temperatures greater than the melting point temperature of the corresponding nylon 6;
(b) a second layer, the composition of said second layer comprising linear low density polyethylene, and 0% to 50% by weight low density polyethylene in blend composition; and
(c) a third layer of an adhesive polymer, said third layer being disposed between said first and second layers and adhering said first and second layers to each other.

4,767,652

PRESSURE RETAINING ENCLOSURE

Marc Willie, Baal; Rik Verhoeven, and Rik Van Emelen, both of Kessel-lo, all of Belgium, assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 689,623, Jan. 8, 1985, Pat. No. 4,614,557. This application Sep. 17, 1986, Ser. No. 908,487
Int. Cl.[4] H02G *15/18*
U.S. Cl. 428—36 9 Claims



1. A kit for forming a pressurizable enclosure around a substrate, which comprises:
(a) a recoverably sleeve; and
(b) a flexible sealing strip for positioning around the substrate between the substrate and the sleeve, the sealing strip having two arms for contacting respectively the sleeve and the substrate around its perimeter, the arms being joined together along the length of the strip and the strip having at least one open end.

4,767,653

SPLICEABLE SHEET MATERIAL

Richard L. Renstrom, South St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 592,620, Mar. 23, 1984, abandoned. This application Nov. 12, 1985, Ser. No. 796,702
Int. Cl.[4] B32B *3/06*
U.S. Cl. 428—40 9 Claims

1. A spliceable sheet material for use in the fabrication of lapped-seam membrane roofing, comprising in combination:
a rubbery water-impermeable membrane consisting essentially of thermoset olefin polymer, said membrane having on one side, in a border area along one edge, a thin layer of firmly bonded heat-sealable high molecular weight, thermoplastic adhesive that wets the thermoset olefin polyolefin polymer and that has a softening point of at least about 80° C. and less than about 250° C., said heat-sealable adhesive having a melt index of at least 0.5, said membrane also having on the opposite side in a border area along the opposite edge, a thin layer of the same adhesive, whereby when splicing is effected by overlapping adjacent strips of said sheet material so that the adhesive-coated surfaces are in contact and heat and pressure is applied to the overlapped area, the T-peel values of the spliced borders are at least 17.5 N/cm, the dynamic shear is at least 17.5 N/cm, the static shear is at least 24 hours, and the low temperature flexibility requirements are satisfactory, all as measured in accordance with the tests described herein.

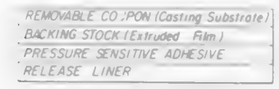
4,767,654

DETACHABLE COUPON LABEL

James H. Riggsbee, North Augusta, S.C., assignor to United Merchants & Manufacturers, Inc., New York, N.Y.

Filed Oct. 18, 1985, Ser. No. 788,787
Int. Cl.[4] A61F *13/02*; C09J *7/02*
U.S. Cl. 428—40 18 Claims

1. A removable coupon label structure comprising
(a) a casting substrate;
(b) a thermoplastic resin film attached to the casting substrate by means comprising attraction forces between the resin film and casting substrate to form a composite web: and
(c) an adhesive situated on the resin film side of the composite web, opposite the casting substrate,



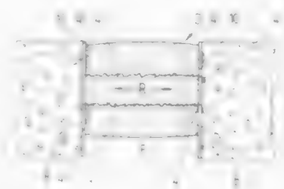
whereby the composite web is suitable for mounting on a backing substance and the casting substrate may be separated from the resin film at a release force that effectuates such separation.

4,767,655

SEALING STRIP

Rolf Tschudin-Mahrer, Lausen, Switzerland, assignor to Irbit Research & Consulting AG, Switzerland

Filed Dec. 12, 1986, Ser. No. 942,000
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1985, 3544277
Int. Cl.[4] B32B *3/00, 3/26, 7/04*
U.S. Cl. 428—57 8 Claims



1. A joint between two spaced walls, said joint comprising a sealing strip disposed between said walls, said sealing strip being formed of open-cell, compressed foam material with retarded restoring capability, said sealing strip comprising two layers of said foam material, an intermediate layer of stretchable foil, said intermediate layer having corrugations extending transversely to the restoring direction of said foam layers, said foil being bonded to at least one of said foam layers, the length of said corrugated foil when expanded in the restoring direction of said foam layers corresponding to the outer dimension of said maximally restored sealing strip, the ends of said foil engaging said joint walls and being adhesively secured thereto.

4,767,656

COMPOSITE MATERIAL STRUCTURE WITH INTEGRAL FIRE PROTECTION

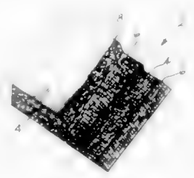
Wan T. Chee, Bellevue; Douglas McLaren, Seattle, both of Wash., and Keith E. Therrien, Wausau, Wis., assignors to The Boeing Company, Seattle, Wash.

PCT No. PCT/US84/00023, § 371 Date Jan. 9, 1984, § 102(e) Date Jan. 9, 1984
PCT Filed Jan. 9, 1984, Ser. No. 573,976
Int. Cl.[4] B32B *3/12*
U.S. Cl. 428—116 14 Claims

1. A load-bearing composite material structure with integral thermal and flame protection, said structure comprising a plurality of layers of composite material; said layers including a plurality of inner layers, and an outer layer on an outer surface of said structure; said outer layer and each of said inner layers including a matrix material that maintains its structural integrity at temperatures of about 1200° F. for at least about 5 minutes; said outer layer including a reinforcing fibrous flame

VOL 1093 ISS 5 AG 30 1988 UMI

barrier that is embedded in said matrix material and that is sufficiently flame resistant to prevent penetration of a flame with a temperature of about 2000° F. for at least about 15 minutes when said outer surface is directly exposed to a fire; and each of said inner layers including a reinforcing fibrous



material that is embedded in said matrix material and that is sufficiently strong to provide predetermined load-bearing characteristics;

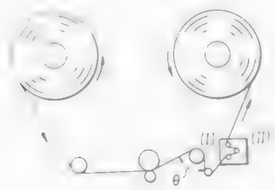
wherein all of the layers are bonded together to form a single, integral load-bearing and substantially fireproof structure.

4,767,657

POLYESTER FILMS SUITABLE FOR USE IN MAGNETIC TAPES

Seiji Sakamoto, and Yoshio Meguro, both of Yokohama, Japan, assignors to Diafoil Company, Limited, Tokyo, Japan

Continuation of Ser. No. 765,188, Aug. 13, 1985, abandoned, which is a continuation of Ser. No. 183,277, Sep. 2, 1980, abandoned. This application Jul. 7, 1986, Ser. No. 883,285
Claims priority, application Japan, Sep. 11, 1979, 54-116315
Int. Cl.[4] B32B *27/18*
U.S. Cl. 428—143 8 Claims



1. A polyester film suitable for use in magnetic tapes having the surface roughness characteristics represented by the following equations:

$$N_1\bar{h} \leqq 2.3 \quad \text{(i)}$$

$$0.4 \leqq \bar{\theta}\sqrt{\overline{H^2}} \quad \text{(ii)}$$

$$n \leqq 1.5979 \quad \text{(iii)}$$

wherein

N_1 is the number of peaks of surface projections per millimeter;

$\bar{h}$ is the average height in μm of the surface projections;

$\bar{\theta}$ is the average steepness in degree of the surface projections;

$\overline{H^2}$ is the mean square height in μm^2 of the surface projections; and

$\bar{n}$ is the average refractive index, the surface roughness of the film being imparted to said film by the precipitation of inert fine particles in said polyester.

4,767,658

RUBBER SHEETING WITH INTEGRAL ADHESIVE EDGE

Harold K. Lorenz, Marion, Mass., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 715,554, Mar. 25, 1985, abandoned. This application Jan. 20, 1987, Ser. No. 6,274
Int. Cl.[4] B32B *3/00*
U.S. Cl. 428—192 10 Claims



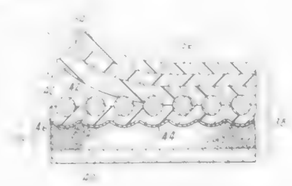
1. An ethylene-propylene rubber membrane for application to roof structures comprising: A cured ethylene-propylene rubber sheet with an upper surface and a lower surface and at least one strip of a thermoplastic, heat activatable adhesive of a copolymer of ethylene and 1-butene having a softening point between 105° C. and 150° C., adhered to the upper surface adjacent to a first lateral edge of the rubber sheet, said thermoplastic adhesive being applied to the rubber sheet prior to vulcanization of the rubber sheet and permeanently adhered to the sheet during vulcanization.

4,767,659

ENCLOSED-LENS RETROREFLECTIVE SHEETING HAVING TOUGH, WEATHER-RESISTANT, TRANSPARENT COVER FILM

Terry R. Bailey, Woodbury, Minn., and Dale H. Haunschild, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 799,100, Nov. 18, 1985, Pat. No. 4,664,966. This application Oct. 10, 1986, Ser. No. 917,539
The portion of the term of this patent subsequent to May 12, 2004, has been disclaimed.
Int. Cl.[4] G02B *5/128*
U.S. Cl. 428—203 14 Claims



1. Enclosed-lens retroreflective sheeting comprising substantially a monolayer of lenses anchored in a binder layer, a specularly reflective layer underlying and spaced from the lenses by transparent material, and a weather-resistant, transparent cover film, wherein the improvement comprises:

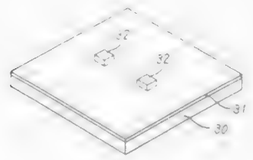
the cover film comprises extruded, substantially thermoplastic polymer selected from polyolefins and has an elongation of at least 50 percent and a tensile relaxation force from 50 percent elongation after five minutes relaxation of no more than 2300 N/m width.

4,767,660

TESTING MEMBER CAPABLE OF SELECTING A REFLECTION FACTOR

Keiji Hosoda, and Masaaki Ozeki, both of Yamanashi, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Feb. 24, 1987, Ser. No. 17,525
Claims priority, application Japan, Feb. 18, 1986, 61-33329
Int. Cl.[4] G01J *1/02;* B32B *3/00;* B44C *1/22;* C23F *1/02*
U.S. Cl. 428—209 10 Claims



1. A calibration member comprising:

a substrate having a first principal surface;

a first shading layer which is adjacent to said first principal surface and which is resistant against a predetermined etchant; and

a predetermined pattern farther from said first principal surface than said first shading layer and formed from a second shading layer which is not resistant against said predetermined etchant.

4,767,661

COPPER ETCHING PROCESS AND PRODUCT

James F. Battey, Los Altos; Norvell J. Nelson, Palo Alto, and Daniel J. Barnett, San Jose, all of Calif., assignors to PSI Star, Fremont, Calif.

Continuation-in-part of Ser. No. 27,740, Mar. 19, 1987, which is a continuation-in-part of Ser. No. 907,078, Sep. 16, 1987, Pat. No. 4,695,348. This application Aug. 11, 1987, Ser. No. 84,632
The portion of the term of this patent subsequent to Sep. 22, 2004, has been disclaimed.
Int. Cl.[4] B44C *1/22;* C23F *1/02*
U.S. Cl. 428—209 66 Claims

4. A circuit board manufactured by the steps of: selecting a copper foil having a top surface crystal structure which is etched anisotropically and with a vertical-to-lateral etching ratio greater than 1:1 by a liquid etchant, bonding the copper foil to a substrate, and exposing a portion of the copper foil to the liquid etchant to remove that portion of the foil from the substrate.

4,767,662

COPPER ETCHING PROCESS AND PRODUCT

James F. Battey, Los Altos; Norvell J. Nelson, Palo Alto, and Daniel J. Barnett, San Jose, all of Calif., assignors to PSI Star, Fremont, Calif.

Continuation-in-part of Ser. No. 907,078, Sep. 15, 1986, Pat. No. 4,695,348. This application Mar. 19, 1987, Ser. No. 27,740
The portion of the term of this patent subsequent to Sep. 22, 2004, has been disclaimed.
Int. Cl.[4] C23F *1/02;* B44C *1/22;* B32B *3/00, 7/00*
U.S. Cl. 428—209 33 Claims

3. A circuit board manufactured by the steps of: selecting a copper foil having a top surface crystal structure with predominantly (111) and (200) orientations which is etched anisotropically and with a vertical-to-lateral etching ratio of at least 10:1 by a liquid etchant, bonding the copper foil to a substrate, and exposing a portion of the copper foil to the liquid etchant comprising an aqueous solution of hydrogen peroxide, sulfuric acid, a polymer and a surfactant to remove that portion of the foil from the substrate.

4,767,663

HEAT-MELTABLE TRANSFER RECORDING MEDIUM

Suekichi Shimizu, Takatsuki; Masatsugu Inaba, Settsu, and Yasuyuki Ohtomo, Suita, all of Japan, assignors to Fuji Kagakushi Kogyo Co., Ltd., Osaka, Japan

PCT No. PCT/JP86/00067, § 371 Date Oct. 14, 1986, § 102(e) Date Oct. 14, 1986, PCT Pub. No. WO86/04859, PCT Pub. Date Aug. 28, 1986
PCT Filed Feb. 13, 1986, Ser. No. 931,466
Claims priority, application Japan, Feb. 15, 1985, 60-28931
Int. Cl.[4] B41M *5/025, 5/26*
U.S. Cl. 428—212 1 Claim

1. A heat-meltable transfer recording medium comprising a foundation and a transferable ink layer provided on the surface of the foundation,

said transferable ink layer comprising a colored layer containing a coloring agent and a vehicle, and a heat-meltable adhesive layer containing no coloring agent provided on the surface of the colored layer,

said colored layer having a viscosity of not less than 8×10^2 poises at 110° C. when measured with a rotary viscometer or being semi-solid or solid at 110° C. and being capable of forming a network structure having minute pores when heated for printing or lift-off of an image,

the vehicle of said adhesive layer comprising a resin and as its main component a wax, each of which is solid at ordinary temperatures and softened or melted upon heating with a heating head, the resin being present in an amount of 0.01 to 4.5 parts by weight per 10 parts by weight of said adhesive layer,

the vehicle of said adhesive layer and that of said colored layer being incompatible or hardly compatible with each other, and the viscosity of said adhesive layer at 110° C. being lower than that of said colored layer by 0.1 poise or more.

4,767,664

PROCESS FOR PREPARATION OF POLYURETHANE FOAM HANDLE HAVING WOODGRAIN FINISH

Takeshi Oike, Kiryu, Japan, assignor to Izumi Jidousha K.K., Tokyo, Japan

Filed May 27, 1986, Ser. No. 867,584
Claims priority, application Japan, May 28, 1985, 60-115142
Int. Cl.[4] C08J *9/34, 9/40;* C08G *18/72*
U.S. Cl. 428—318.8 10 Claims



1. A process for the preparation of polyurethane foam handle having a woodgrain finish, which commprises injecting a composition comprising a polyol, a polyisocyanate, a corss-linking agent, a catalyst, a foam stabilizer and a blowing agent into a mold having a shape of a handle, and blowing and curing the composition, wherein (a) polyol comprising 50 to 100 parts by weight of polyether polyol having at least two OH groups in the molecule and having a molecular weight of 1,000 to 10,000 and 0 to 50 parts by weight of a polymer polyol having a hydroxyl number of 20 to 50 which is formed by graft-polymerizing a vinyl compound onto a polyether polyol, is used as the polyol, and (b) 10 to 30 parts by weight of a polyol having 2 to 4 OH groups in the molecule and having a hydroxyl number of 800 to 2,000 is used as the crosslinking agent, and

VOL 1093 ISS 5 AG 30 1988 UMI

wherein the amount of blowing agent is adjusted to provide a thick skin and a density of about 0.3 to 1.0.

2. A process according to claim 1, further comprising applying a woodgrain finish coating on the formed handle.

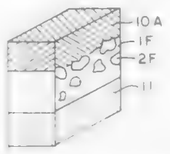
7. A product obtained by the process of claim 2 and having a hard surface.

4,767,665

ARTICLE FORMED BY ELECTROLESS PLATING

Richard E. Seeger, Captains Way, Kittery Point, Me. 03905

Filed Sep. 16, 1985, Ser. No. 776,464
Int. Cl.[4] B32B *15/08, 5/00;* B05D *3/10*
U.S. Cl. 428—328 16 Claims



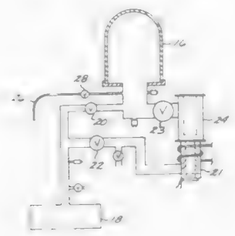
1. An article of manufacture formed by an electroless plating process, the article comprising a formed, non-conductive self-sustaining substrate, the substrate comprising a non-conductive organic resin and a particulate metallic phosphide compound distributed through the organic resin, the particulate metallic phosphide rendering the substrate more easily directly electrolessly platable while maintaining the substrate electrically non-conductive, and a layer of metal plated directly on at least one of the surfaces of the substrate.

4,767,666

WAFER BASE FOR SILICON CARBIDE SEMICONDUCTOR DEVICE

Rointan F. Bunshah, Playa Del Rey; James D. Parsons, Newbury Park, and Oscar M. Stafsudd, Los Angeles, all of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed May 23, 1985, Ser. No. 737,367
Int. Cl.[4] B32B *7/02, 15/04*
U.S. Cl. 428—334 8 Claims



1. A semiconductor device wafer base, comprising:
a single crystal titanium carbide substrate; and
a beta silicon carbide overlay layer epitaxially related to said substrate, said overlay layer being unpolytyped, single crystals, uncracked, without twins, and of integrated circuit quality surface morphology.

4,767,667

FURNITURE LAMINATE SHEET OR WEB

Manfred Schneider, Munich; Heinrich Heitz, Germering; Dieter Schlenz, Neufahrn, and Egon Ewald, Munich, all of Fed. Rep. of Germany, assignors to Alkor GmbH Kunststoffe, Munich, Fed. Rep. of Germany

Filed Aug. 22, 1986, Ser. No. 899,037
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1985, 3530290
Int. Cl.[4] B32B *15/00*
U.S. Cl. 428—336 22 Claims



1. A multi-layer laminate web for furniture comprising:
a polyolefin web comprising an admixture of from 70 to 97.5 parts by weight of a first polymer material selected from the group consisting of propylene homopolymers and propylene copolymers, and from 5 to 30 parts by weight of a second polymer material selected from the group consisting of low pressure polyethylene, polyvinylalcohol, ethylene-vinylalcohol copolymers, ethylene-acrylic acid copolymers, ethylene-acrylate ester-acrylic acid copolymers and terpolymers, polycaprolactone, and mixtures and blends of low pressure polyethylene with at least one of the foregoing materials, and per 100 parts by weight of said first and second polymer material admixture, from 50 to 150 parts by weight of at least one finely divided mineral filler material, of which more than 60% includes a reactive material containing at least one polar group and at least one non-polar group, said reactive material being present in an amount from 0.5 to 10 weight percent based on the weight of the filler, and
a surface layer of a transparent or nearly transparent synthetic plastic material or a transparent synthetic polymer coating having an average thickness from 3 to 30 microns disposed on top of said polyolefin web.

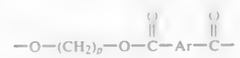
4,767,668

ELECTRIC WIRE AND CABLE

Timothy S. Smith, Trowbridge, and David W. M. Thornley, Malmesbury, both of England, assignors to Raychem Limited, London, England

PCT No. PCT/GB85/00517, § 371 Date Jul. 10, 1986, § 102(e) Date Jul. 10, 1986, PCT Pub. No. WO86/03049, PCT Pub. Date May 22, 1986
PCT Filed Nov. 15, 1985, Ser. No. 887,160
Claims priority, application United Kingdom, Nov. 16, 1984, [illegible]
Int. Cl.[4] B32B *27/06, 27/36*
U.S. Cl. 428—379 10 Claims

1. An article of manufacture comprising an electrical wire or cable having a layer of insulating or jacketing material which comprises an intimate mixture of:
(1) a polyester in which at least 70 mole % of the repeating units are tetramethylene terephthalate units; and
(2) from more than 40% to 100% by weight, based on the weight of the polyester (1), of a block copolymer in which one of the blocks is composed of repeating units which have the formula



$$-O-(CH_2)_p-O-\overset{O}{\overset{\|}{C}}-Ar-\overset{O}{\overset{\|}{C}}-$$

in which p is an integer of at least 2 and Ar represents an unsubstituted or substituted aryl group, and the other of the blocks comprises a polyalkylene ether; the block copolymer having a flex modulus of at least 172 MPa.

4,767,669

MELT SIZE COMPOSITIONS CONTAINING SURFACTANTS

Delano M. Conklin, Burlington; John H. Hansen, Greensboro; Norbert W. Burske, Guilford, and Robert C. Malpass, High Point, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Apr. 21, 1987, Ser. No. 40,588
Int. Cl.[4] D06M *15/19, 15/263;* C08L *23/08, 33/08*
U.S. Cl. 428—394 8 Claims

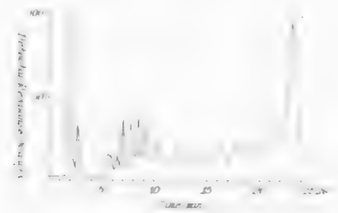
1. A quick-setting, nonaqueous, readily water-extractable textile melt size composition comprising an intimate mixture of:
about 42 to about 58 weight percent of substantially 80/20 ethylene/acrylic acid copolymer,
about 32 to about 57 weight percent of a wax derived by full hydrogenation of animal and plant tallows and oils, excluding castor wax, and
from about 1 weight percent to about 10 weight percent of nonionic surfactant that is an ethylene, propylene or ethylene and propylene oxide adduct of a C_{10}–C_{18} alcohol,
said size capable of being applied as a melt to textile yarns, with quick setting when exposed to ambient conditions, and capable of being removed from the yarns by aqueous or alkali extraction.

4,767,670

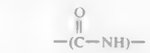
CHROMATOGRAPHIC SUPPORTS FOR SEPARATION OF OLIGONUCLEOTIDES

Geoffrey B. Cox, Wilmington, Del.; Anthony Atkinson, Salisbury, United Kingdom; Peter A. D. Edwardson, Salisbury, United Kingdom, and Michael D. Scawen, Salisbury, United Kingdom, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 21, 1987, Ser. No. 11,328
Int. Cl.[4] B32B *9/00;* B01D *15/08;* B01J *20/00*
U.S. Cl. 428—403 16 Claims



1. A packing for chromatographic separations comprising inert support particles with a silane bonded phase wherein the bonded phase contains (a) a weak anion exchange group consisting of either —(NH)— or



$$-(\overset{O}{\overset{\|}{C}}-NH)-$$

and at least two polar non-ionic groups each within three backbone chain atoms of the weak anion exchange group, (b) contains hydrophobic regions, and (c) the silane surface coverage of the particle is more than about 0.9 micromole/m2.

4,767,671

COATED ARTICLES AND METHODS FOR THE PREPARATION THEREOF

Robert S. R. Parker, Bishop's Stortford, and John G. B. Howes, Hertford Heath, both of United Kingdom, assignors to Smith and Nephew Associated Companies, P.L.C., England

PCT No. PCT/GB86/00497, § 371 Date Apr. 15, 1987, § 102(e) Date Apr. 15, 1987, PCT Pub. No. WO87/01111, PCT Pub. Date Feb. 26, 1987
PCT Filed Aug. 20, 1986, Ser. No. 49,292
Claims priority, application United Kingdom, Aug. 20, 1985, 8520838; Aug. 20, 1985, 8520839
Int. Cl.[4] A61F *1/16*
U.S. Cl. 428—412 4 Claims

1. A plastics substrate which in use is susceptible to misting which has on at least one surface thereof an antimist coating of a hydrophilic polymer in which the coating is formed from a hydrophilic polyurethane which contains from 35 to 60% by weight of water when hydrated and has a thickness of 3 μm to 50 μm in its anhydrous state.

4,767,672

PROCESS FOR PREPARATION OF GLAZED CERAMIC SUBSTRATE AND GLAZING COMPOSITION USED THEREFOR

Hiroshi Fujinaka, and Masami Terasawa, both of Kokubu, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 833,554, Feb. 27, 1986, abandoned, which is a division of Ser. No. 775,859, Sep. 13, 1985, Pat. No. 4,632,846. This application Nov. 3, 1986, Ser. No. 926,854
Claims priority, application Japan, Sep. 17, 1984, 59-195333; Sep. 21, 1984, 59-199133; Sep. 21, 1984, 59-199134; Sep. 21, 1984, 59-203175
Int. Cl.[4] B05D *5/12;* C03C *8/00, 8/02*
U.S. Cl. 428—446 2 Claims



1. A glazed ceramic substrate which comprises a ceramic substrate having through holes, a metallized metal portion embedded in said through holes and a glazing layer melt-bonded to the surface of the ceramic substrate exclusive of the metallized metal portion, wherein said glazing layer is formed from a composition consisting of 60 to 80% by weight of SiO_2, 10 to 25% by weight of B_2O_3, 2 to 20% by weight BaO, 0.5 to 10% by weight of Al_2O_3 and 1 to 15% by weight of an alkali metal oxide, said metallized metal portion being composed of molybdenum or tungsten, and said glazing composition having a repellency to the metallized metal portion when said glazing composition is in a molten state.

4,767,673

LAMINATES AND FORMINGS MADE FROM THE SAME

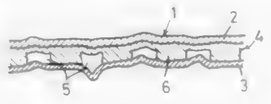
Toshihiko Nakano; Fumiaki Nagase, Kashiwara; Eiichi Takeuchi, Osaka; Mamoru Kamada, Naka, and Hideyo Shigematsu, Nara, all of Japan, assignors to Toyo Aluminium Kabushiki Kaisha, Osaka, Japan

Filed Oct. 27, 1986, Ser. No. 923,548
Claims priority, application Japan, Oct. 28, 1985, 60-242454; Feb. 24, 1986, 61-39393; Apr. 8, 1986, 61-82463; Jul. 3, 1986, 61-158312
Int. Cl.[4] B32B *15/08, 31/00*
U.S. Cl. 428—458 12 Claims

1. A laminate produced by laminating at least one film of a

VOL 1093 ISS 5 AUG 30 1988 UMI

heat-shrinkable synthetic resin to at least one side of a metallic foil through a solid bonding layer to form a laminate, and subjecting said laminate to heat shrinkage at a heat shrinkage temperature, characterized in that said solid bonding layer is a composite layer comprising (1) a discontinuous patterned design of a synthetic resin which is in contact with portions of at least one of the two surfaces joined by the solid bonding



layer and (2) an adhesive which is in contact with at least portions of both surfaces joined by the solid bonding layer, wherein said synthetic resin flows at said heat-shrinkage temperature and said adhesive maintains its adhesive strength at the heat-shrinkage temperature, and wherein said discontinuous patterned design of synthetic resin and said adhesive form together a solid continuous bonding layer.

4,767,674

METAL CORED BOARD AND METHOD FOR MANUFACTURING SAME

Hidenki Shirai; Kimio Chiba; Koji Okawa; Hiroshi Ishibashi; Akihiro Ishii; Hirotaka Itoh; Hirokazu Kuzushita; Michihiko Yoshioka, and Michio Hirose, all of Amagasaki, Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki, Japan

Filed Jul. 26, 1985, Ser. No. 759,209

Claims priority, application Japan, Jan. 27, 1984, 59-14042; Feb. 15, 1984, 59-21169; Jul. 30, 1984, 59-118200; Jul. 30, 1984, 59-118196; Dec. 22, 1984, 59-271426; Dec. 22, 1984, 59-271425

Int. Cl.[4] B32B *15/04*

U.S. Cl. 428—461 7 Claims



1. A metal cored board which comprises an electrically conductive layer at least one surface of which is composed of a hardly oxidizable metal, an insulating organic polymer layer baked on the surface of the hardly oxidizable metal, and a metal core adhered on the insulating organic polymer layer.

4,767,675

ORIENTED OPAQUE FILMS CONTAINING ALKENYLAROMATIC POLYMERS

Patricia A. Cyr, 5797 Clovermeadow Dr., Farmington, N.Y. 14425, and John R. Wagner, Jr., 300 Ashley Dr., Rochester, N.Y. 14620

Filed Nov. 21, 1986, Ser. No. 933,497

Int. Cl.[4] C08L *23/04*

U.S. Cl. 428—515 9 Claims

1. A white opaque biaxially oriented melt extruded film comprising a continuous phase of a first C_2–C_8 polyolefin polymer and a discontinuous dispersed phase of a finely divided deformable second aromatic polymer incompatible with said first polymer and comprising a polyalphamethylstyrene and dispersed therein in a minor cavitating amount ranging from about 5 to about 25 wt % based on the total weight of the composition.

4,767,676

DECORATIVE BODY MADE OF GLASS

Daniel Swarovski, and Kurt Schwab, both of Wattens, Austria, assignors to D. Swarovski & Co., Wattens, Austria

Filed Oct. 14, 1986, Ser. No. 918,381

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1985, 3536366

Int. Cl.[4] B44F *1/02*; B44C *1/28*; A47G *35/00, 19/12*

U.S. Cl. 428—542.2 10 Claims



1. The combination comprising a decorative body made of glass; said decorative body having a concave inner surface; a plurality of discrete decorative elements secured to said concave inner surface; each of said decorative elements being formed of glass and having a convex underside; each of said decorative elements having a flat or faceted upper side; said decorative elements being arranged on said concave inner surface whereby said decorative body concave inner surface is faceted by means of the upper sides of said decorative elements.

4,767,677

MULTI-LAYER CYLINDRICAL BEARING

Yukio Kuwayama, Yachiyo, Japan, assignor to NDC Co., Ltd., Chiba, Japan

Filed Sep. 16, 1987, Ser. No. 97,623

Claims priority, application Japan, Sep. 17, 1986, 61-141353[U]; Apr. 24, 1987, 62-61341[U]

Int. Cl.[4] B22F *3/00*

U.S. Cl. 428—551 7 Claims



1. A multi-layer cylindrical bearing comprising a cylindrical multi-layer sheet comprising

an outer backing layer of stainless steel,

an intermediate layer of porous copper alloy and

an inner bearing layer of synthetic resin, said synthetic resin being impregnated into said intermediate layer,

said bearing including a joint where two edges of said sheet abut.

4,767,678

CORROSION RESISTANT MAGNESIUM AND ALUMINUM OXALLOYS

Ronald L. Yates, and Patrick L. Hagans, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 574,212, Jan. 26, 1984, Pat. No. 4,613,386. This application Feb. 18, 1986, Ser. No. 830,293

Int. Cl.[4] C22C *23/00, 27/12, 21/00*

U.S. Cl. 428—632 24 Claims

1. An oxalloy consisting essentially of

about 5 to about 57 weight percent magnesium or aluminum;

about 0.5 to about 10 weight percent of one or more alloying materials selected from the group consisting of B, Si, Ti, V, Mn, Fe, Co, Ni, Cu, Zn, Ge, As, Zr, Nb, Mo, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Hf, Ta, W, Re, Os, Ir, Pt, Au, Tl, Pb, Bi, Th, Ga, and rare earths; and

the remainder oxygen.

4,767,679

THIN FILM EL PANEL

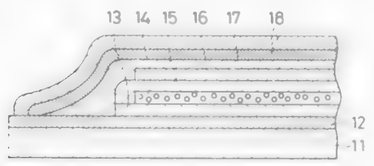
Kazuhiko Kawachi, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Aug. 17, 1987, Ser. No. 86,373

Claims priority, application Japan, Oct. 22, 1986, 61-250983

Int. Cl.[4] B32B *9/00*; H01J *1/62*

U.S. Cl. 428—690 2 Claims



1. In a thin film EL panel including at least a transparent electrode, an EL luminescent layer, an insulating layer and an opposite electrode laminated on one side of a transparent insulating substrate,

the improvement wherein said electrodes and layers of said thin film EL panel are encapsulated in an inner layer made of a thermoplastic resin, and sealed by an outer, moisture-proof film made of a metal laminate formed thereover having its periphery press-bonded to said substrate.

4,767,680

FUEL CELL

Akemi Hijikata; Masaaki Matsumoto; Taesuke Nakayama; Yasuyuki Hamazaki, and Kenji Katsoka, all of Kobe, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 13, 1987, Ser. No. 72,756

Claims priority, application Japan, Jul. 16, 1986, 61-168725; Jul. 16, 1986, 61-168726; Jul. 16, 1986, 61-168728; Jul. 28, 1986, 61-178120; Jul. 28, 1986, 61-178121; Jul. 28, 1986, 61-178122; Aug. 4, 1986, 61-183841

Int. Cl.[4] H01M *8/04*

U.S. Cl. 429—39 21 Claims



1. A fuel cell which is fabricated by piling a plurality of fuel cell units, each unit comprising:

an electrolyte matrix layer;

a pair of electrode layers each made of a catalyst layer, which sandwich both faces of said matrix layer;

gas separators which are disposed adjacent to outer faces of said electrode layers, each of said gas separators comprising:

a gas impermeable dense layer; and

porous portions which are disposed on both faces of said dense layer for storing an electrolyte.

4,767,681

Patent Not Issued For This Number

4,767,682

METHOD FOR ASSEMBLING A CELL EMPLOYING A COILED ELECTRODE ASSEMBLY

Joseph D. Dorogi, Rocky River; Imre A. Pattantyus, North Olmstead, and Christopher S. Pedicini, Brunswick, all of Ohio, assignors to Eveready Battery Company, St. Louis, Mo.

Filed Sep. 11, 1987, Ser. No. 97,552

Int. Cl.[4] H01M *2/26, 2/30*

U.S. Cl. 429—94 32 Claims



22. An electrochemical cell comprising a coiled electrode assembly and electrolyte solution assembled in a housing, said housing comprising a tube closed at each end by a cover; said coiled electrode assembly comprising a first electrode strip superimposed on and overlapping a second electrode strip and a separator disposed between said first electrode strip and said second electrode strip; said first electrode strip, said second electrode strip and said separator wound into a coiled electrode assembly such that said first electrode strip is electronically insulated from said second electrode strip by said separator and the edge of said first electrode strip protrudes from one end of the coiled electrode assembly and the edge of said second electrode strip protrudes from the opposite end of the coiled electrode assembly; a first conductive tab having an opening at the center and being in electronic contact with and secured to the edge of the first electrode strip; a first cover secured to one end of the tube and having a centrally disposed opening, said first cover electronically in contact with and secured to said first tab thereby adapting said first cover as the first electrode terminal; a second conductive tab in electronic contact with and secured to the edge of the second electrode strip; a second conductive closure secured to the opposite end of the tube and having at least a central conductive portion in

VOL 1093 ISS 5 AG 30 1988 UMI

electronic contact with and secured to said second tab thereby adapting the central conductive portion of said second conductive closure as the second electrode terminal; and said opening in the first conductive cover closed by a plug.

4,767,683

NON-AQUEOUS ELECTROCHEMICAL CELL

Shuji Yamada; Takahisa Ohsaki; Kiyoshi Mi[illegible]uyasu, all of Yokohama; Yuichi Sato, Kanagawa; Yoshiyasu Aoki, and Kazuya Hiratsuka, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha and Toshiba Battery Co., Ltd., both of Kawasaki, Japan

Continuation of Ser. No. 829,870, Feb. 18, 1986, abandoned, which is a continuation of Ser. No. 567,931, Jan. 3, 1984, abandoned. This application Dec. 7, 1987, Ser. No. 129,902

Claims priority, application Japan, Jan. 14, 1983, 58-4537; Jan. 14, 1983, 58-4538; Mar. 17, 1983, 58-45123; Jul. 19, 1983, 58-130154

Int. Cl.[4] H01M *10/36*

U.S. Cl. 429—101 **5 Claims**



1. A non-aqueous electrochemical cell, comprising:

an anode consisting of an element selected from the group consisting of lithium, sodium and aluminum;

a cathode consisting of a porous carbon body and a current collection; and

an electrolyte containing an oxyhalide, wherein the porous carbon body contains 50 to 80% by weight of a carbon black having a chain-like structure and 20 to 50% by weight of an acetylene black, and has a porosity of at least 70%, the volume of pores having a pore size of 0.1 to 2 μm occupies not less than 30% of the total pore volume, and a thin layer of graphite crystals is formed on the surface of each of said carbon black particles having a chain-like structure.

4,767,684

METHOD OF CHARGEABILITY IMPROVEMENT AND REDUCED CORROSION FOR SODIUM-SULFUR CELLS

Carl R. Haibach, Costa Mesa, Calif., assignor to Ford Motor Company, Dearborn, Mich.

Filed Aug. 19, 1987, Ser. No. 87,265

Int. Cl.[4] H01M *10/39*

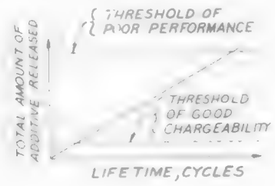
U.S. Cl. 429—103 **7 Claims**

1. In a cell comprising:

(A) one or more anodic reaction zones containing a molten alkali metal reactant-anode in electrical contact with an external circuit;

(B) one or more cathodic reaction zones containing (a) a cathodic reactant comprising a liquid electrolyte selected from sulfur or a mixture of sulfur and sulfur saturated polysulfide of said molten alkali metal reactant which is electrochemically reversibly reactive with said anodic reactant and (b) an electrode of porous conductive material which is at least partially immersed in said cathodic reactant; and

(C) a cation-permeable barrier to mass liquid transfer interposed between and in contact with said anodic and cathodic reaction zones, said porous conductive material being in electrical contact with both said cation-permeable barrier and the external circuit; the improvement comprising increasing the charge/discharge capacity of said cell by including in said cathodic reaction zone a device which provides a continuous release of an additive in an amount between about 0.01 and about 100 ppm/cycle of operation



of said cell based on the initial weight of said cathodic reactant, and said additive being selected from:

i. metals selected from the group consisting of (a) metals from Groups I, II and III of the Periodic Table of Elements, (b) Transition Series Metals, and (c) antimony, lead, tin and bismuth;

ii. alloys comprising the metals of (i);

iii. salts of the metals of (i);

iv. oxides of the metals of (i);

v. phosphides, arsenides, antimonides, carbides and nitrides of the metals of (i); and

vi. mixtures of any of (i) through (v).

4,767,685

ELECTROCHEMICAL STORAGE CELL

Stefan Mennicke, Leimen, and Karl Reiss, Mülhausen-Rettigheim, both of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Fed. Rep. of Germany

Continuation of Ser. No. 836,087, Mar. 4, 1986, abandoned. This application May 22, 1987, Ser. No. 56,337

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1985, 3507697

Int. Cl.[4] H01M *4/36*

U.S. Cl. 429—104 **1 Claim**

1. Electrochemical storage cell based on sodium and sulfur with an anode space and a cathode space which are separated from each other by a solid electrolyte and are bounded, at least in some places, by a metallic housing, a sulfur electrode formed of a fiber-like material impregnated with sulfur arranged within the cathode space, the improvement comprising an auxiliary substance which is sodium thiochromate-III disposed in the cathode space and applied to the entire surface of the sulfur electrode directly adjoining the solid electrolyte, said sodium thiochromate-III produced as a powder formed by melting a mixture of chromium, sodium carbonate and sulfur at 700° C. is sprinkled-on or applied to the surface of the fiber-like material of the sulfur electrode by vapor deposition, sputtering or CVD method in the region adjoining the solid electrolyte, said auxiliary substance is characterized by the property when

disposed in the cathode space of decomposing during charging of the cell into sodium sulfide and a chromium sulfide, and



during the discharging of the cell the reverse reaction takes place to form said auxiliary substance.

4,767,686

BATTERY CABLE TERMINATION

Lanny J. Frawley, St. Charles, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Continuation of Ser. No. 888,820, Jul. 22, 1986, abandoned. This application Sep. 8, 1987, Ser. No. 97,355

Int. Cl.[4] H01M *2/30;* **H01R** *11/26*

U.S. Cl. 429—122 **3 Claims**



1. A battery cable terminal for mechanically and electrically connecting an electrical cable to a post of a battery, said terminal comprising:

a metallic contact element including a ferrule for receiving an end of said cable from which insulation has been removed, and a contact portion for engaging said post; and

a resilient, one-piece plastic clamp means having a pair of arms at least partially defining an opening for receiving said post, said clamp means holding said element so that said contact portion engages said post when said post is received by said arms, said arms having facing distal ends defining a constricted throat for said opening with the facing end of each arm having a bearing surface so that the facing ends can be pried apart to increase the size of said opening, said arms being spreadable relative to each other from an as-formed condition wherein said opening with said clamp means holding said element has a dimension less than a corresponding dimension of said post, to a spread condition wherein said dimension of said opening is greater than the corresponding dimension of said post so that said arms can be inserted over said post without substantial interference from said post, said arms returning toward their as-formed condition to firmly hold said post upon release of said arms from their spread condition, said arms forming a split ring, said clamp means further comprising a collar molded about a component of said metallic contact element, said collar being connected to and extending outwardly from said ring, said arms having connected ends and said arms extending from said collar, one of said arms being longer than the other arm so that the axis of said throat is transverse to the axis of said collar, said one arm progressively decreasing in thickness from its connected end to its distal end so that the flexibility of said one arm increases as a function of distance from its connected end.

4,767,687

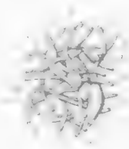
BATTERY SEPARATOR

Robert J. LaBonte, Rochester, N.H., assignor to Lydall, Inc., Manchester, Conn.

Filed Dec. 22, 1987, Ser. No. 136,334

Int. Cl.[4] H01M *2/16*

U.S. Cl. 429—206 **19 Claims**



1. In an alkaline dry cell battery separator being a laid mat of non-dissolvable polyvinyl alcohol fibers held together by a matrix of dissolved or partially dissolved dissolvable polyvinyl alcohol fibers, the improvement comprising the mat having up to 85% of cellulosic fibers relatively uniformly distributed in and among the non-dissolvable polyvinyl alcohol fibers and held therein by said matrix.

4,767,688

CHARGE CONTROLLING METHOD AND DEVELOPERS CONTAINING A CHARGE-EXCHANGE CONTROL AGENT COMPRISING ORGANIC BORON COMPOUND

Ken Hashimoto; Masayuki Maruta; Hidehiko Soyama, and Yukihiro Ishii, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

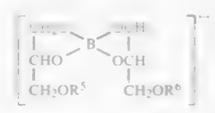
Filed Mar. 9, 1987, Ser. No. 23,415

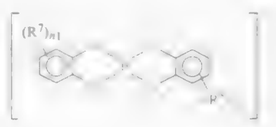
Claims priority, application Japan, Mar. 7, 1986, 61-48439

Int. Cl.[4] G03G *9/08*

U.S. Cl. 430—110 **18 Claims**

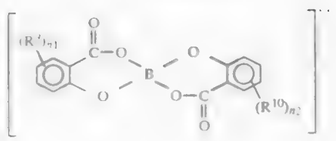
1. A method for controlling charging of toner particles by adding in the toner particles or in a charge-imparting material which is brought into contact with the toner particles and which has electrical influences on the toner particles upon contact therewith, or mixing with the toner particles externally an organic boron compound, as a charge-exchange control agent, composed of a boron-containing organic anion component selected from those represented by formulae (I)-1 to (I)-8



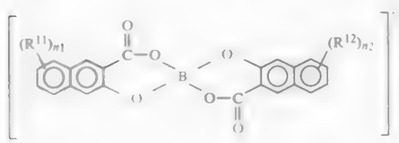


VOL 1093 ISS 5 AG 30 1988 UMI

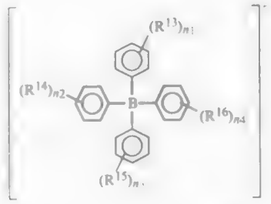
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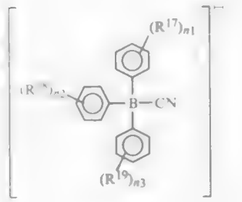
(I)-3



(I)-4



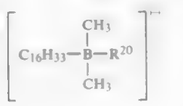
(I)-5



(I)-6



(I)-7



(I)-8

wherein R^5 to R^{19} each represents a halogen atom, an alkyl group, a haloalkyl group, an aralkyl group, or an aryl group, R^{20} represents a hydrogen atom or an atom or group as defined for R^5 to R^{19}, and n_1 to n_4 each represents 0, 1, or 2, and a cation component selected from the group consisting of H^+, alkali metal cations, alkaline earth metal cations, ammonium, quinolinium, imidazolium, sulfonium cations.

4,767,689

ELECTROSTATIC COLOR PRINTING METHOD

Andreas Bibl, Los Altos; Gene F. Day, Cupertino, and John A. Higginson, Santa Clara, all of Calif., assignors to Precision Image Corporation, Redwood City, Calif.

Division of Ser. No. 861,522, May 9, 1986, Pat. No. 4,706,605, which is a continuation-in-part of Ser. No. 796,872, Nov. 12, 1985, Pat. No. 4,655,165, which is a continuation-in-part of Ser. No. 763,040, Aug. 6, 1985. This application Sep. 16, 1987, Ser. No. 97,848

Int. Cl.[4] G03G *13/01*; G01D *15/06*

U.S. Cl. 430—45 **11 Claims**

1. A method of printing a color image comprising,
(a) supporting a charge sensitive sheet on a drum,
(b) creating a color electrostatic latent image overlay corresponding to a single particular color on said sheet by helically scanning said sheet with an electrostatic head in a pattern of abutting areawise stripes,
(c) sequentially applying fluid developer of said particular color to each stripe of said sheet in a clearly defined region-to-region manner,
(d) repeating steps (b) and (c) until a color image is formed.

4,767,690

LIGHT-SENSITIVE MATERIAL CONTAINING SILVER HALIDE, REDUCING AGENT AND POLYMERIZABLE COMPOUND

Soichiro Yamamoto, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 8, 1987, Ser. No. 70,860

Claims priority, application Japan, Jul. 8, 1986, 61-160592

Int. Cl.[4] G03C *1/06*

U.S. Cl. 430—138 **9 Claims**

1. A light-sensitive material comprising a light-sensitive layer which contains silver halide grains, a reducing agent and a polymerizable compound provided on a support, said polymerizable compound being in the form of oil droplets which are dispersed in the light-sensitive layer and said oil droplets containing the silver halide grain therein, wherein the total amount of oil droplets containing at least five silver halide grains is not less than 50 weight % of the total amount of the oil droplets dispersed in the light-sensitive layer.

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PHOTOGRAPHIC FILM ASSEMBLAGE

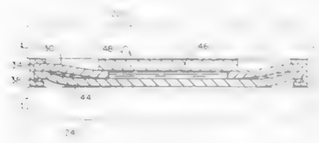
Michael Berger, Chestnut Hill; Robert Cavallaro, Norwood, both of Mass., and Frank M. Czumak, Salem, N.H., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 4, 1987, Ser. No. 45,445

Int. Cl.[4] G03C *5/54, , 3/00*; G03D *5/02*

U.S. Cl. 430—210 **11 Claims**

1. A photographic film assemblage of the self-developing type comprising: first and second superposed sheets secured to each other along peripheral margins so as to define a chamber having an open end, said first sheet including means defining an aperture therein; a rupturable container of processing liquid mounted adjacent one end of said first and second sheets, said container having means defining a discharge side located in communication with said open end of said chamber; a film chip having an area slightly larger than said aperture and substantially smaller than the area of said first sheet, said film chip being located in superposed alignment with said aperture on a surface of said first sheet most remote from said second sheet, said film chip comprising a plurality of superposed layers including at least a photosensitive layer and an image-receiving layer; and means for releasably securing said image-receiving



layer to said first sheet, whereby, subsequent to the photographic exposure of said photosensitive layer, and the rupturing of said container and the spreading of its contents between said first and second sheets and between said film chip and said second sheet to initiate the formation of a visible image in said image-receiving layer, said image-receiving layer may be stripped from said first sheet.

4,767,692

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Yoshio Inagaki; Morio Yagihara, and Shigeo Hirano, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

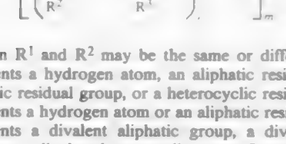
Filed Jan. 5, 1987, Ser. No. 484

Claims priority, application Japan, Jan. 9, 1986, 61-2708

Int. Cl.[4] G03C *1/42, 1/485*

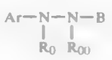
U.S. Cl. 430—264 **4 Claims**

1. A silver halide photographic material comprising a support and at least one silver halide photographic emulsion layer formed thereon, and containing in said photographic emulsion layer or at least one hydrophilic colloid layer a compound represented by formula (I):



(I)

wherein R^1 and R^2 may be the same or different and each represents a hydrogen atom, an aliphatic residual group, an aromatic residual group, or a heterocyclic residual group; R^3 represents a hydrogen atom or an aliphatic residual group; L_1 represents a divalent aliphatic group, a divalent aromatic group, or a divalent heterocyclic group; L_2 represents—O—, —CONR—, —NRCO—, —SO_2NR—, —NRSO_2—, —OCO—, —COO—, —S—, —NR—, —CO—, —SO—, —SO_2—, —OCOO—, —NRCONR′—, —NRCOO—, —OCONR— or —NRSO_2NR′—(in which R and R′ each represents a hydrogen atom, an alkyl group or an aryl group); ? and m each represents an integer of 1 or 2; n represents an integer of 0 or 1; and A represents a residual group which is obtained by removing hydrogen atoms from Ar or B in a compound represented by formula(II), provided that when m=1, one hydrogen atom is removed; when m=2, two hydrogen atoms are removed:



(II)

wherein Ar represents an aryl group; B represents a formyl group, an acyl group, an alkyl or arylsulfonyl group, an alkyl or arylsulfinyl group, a carbamoyl group, a sulfamoy group, an alkoxy or aryloxycarbonyl group, a sulfinamoyl group, an alkoxysulfonyl group, a thioacyl group, a thiocarbamoyl group, or a heterocyclic group; and R_0 and R_{00} each represents a hydrogen atom or one of R_0 and R_{00} represents a hydrogen atom and the other represents a substituted or unsubstituted alkyl-sulfonyl group, a substituted or unsubstituted aryl-sulfonyl group or a substituted or unsubstituted acyl group, with the proviso that B, R_{00} and the nitrogen atom to which B and R_{00} are bonded may form a partial structure of hydrazone (—N=C<),

wherein A represents a group which is bonded with a nitrogen atom through a carbon atom of A, with the proviso that the compound represented by formula (I) does not contain a mercapto group.

4,767,693

OPTICAL INFORMATION RECORDING MEDIUM

Hideaki Oba; Yutaka Ueda; Tsutomu Sato; Masaakira Umehara; Michiharu Abe, all of Yokohama; Hitoshi Funakoshi, and Seiko Kobayashi, both of Okayama, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

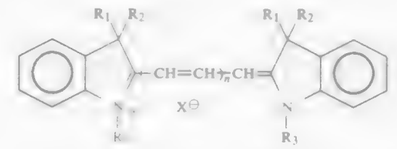
Filed Oct. 2, 1987, Ser. No. 105,512

Claims priority, application Japan, Aug. 13, 1984, 59-167892; Nov. 2, 1984, 59-230300

Int. Cl.[4] G03C *1/00*

U.S. Cl. 430—270 **64 Claims**

1. An optical information recording medium capable of recording and regenerating information with a laser beam, comprising: a substrate, a recording layer on said substrate, said recording layer having a thickness of from 100–1000 Angstroms and containing a cyanine dye represented by the general formula:



wherein R_1 and R_3 may be the same or different and each stands for a substituted or unsubstituted alkyl group; R_3 is substituted alkyl, unsubstituted alkyl or benzyl; X stands for perhalogenate ion, a toluenesulfonate ion or an alkylsulfate ion; n stands for an integer of 0 or 1–3; a first halogen atom is present in at least one of the 4, 6 and 7-positions of both of the indole and indolenine rings; a second halogen atom may optionally be present in the 5-position of both of said rings; and at least one substituent group selected from the group consisting of alkyl, alkoxy, hydroxy, carboxy, alkyl and alkylcarbonyl may optionally be present in at least one of the 4, 5, 6 and 7-positions of both of said rings wherein said recording contains no binder.

24. An optical information recording medium according to claim 1, in which said recording layer contains a transition metal complex or a salt of said complex with a cation.

4,767,694

METHOD OF PREPARING A BLANKET WITH RESERVED SPACES UTILIZING PHOTOCOPYING PROCEDURE

Johannes M. Schubert, Mainhausen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 31, 1986, Ser. No. 948,332

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1986, 3600918

Int. Cl.[4] G03F *1/00, 7/00*

U.S. Cl. 430—300 **21 Claims**

1. A method for preparing a blanket for in-line varnishing with dispersion varnishes on an aqueous base or in association with UV-varnish-resistant blankets for the application of low-viscosity UV-varnish in rotary offset presses, comprising:

VOL 1093 ISS 5 AG 30 1988 UMI

(a) pretreating a blanket suitable for offset printing to increase the adherence of a photo-sensitive copying layer to said blanket,
(b) applying a photo-sensitive copying layer to the surface of said blanket,
(c) forming a reference copy on said blanket by exposing a positive or negative original which is in contact with said photo-sensitive copying layer,
(d) removing the top layer of the unexposed portion of said blanket which is not to receive varnish, whereby said method provides for the pre-location of varnish-free areas prior to mounting said blanket on a rotary offset press, and said pre-location allows the simultaneous mounting and alignment of said blanket and a printing plate on said rotary offset press relative to each other and to the varnish recipient.

4,767,695

NONPLANAR LITHOGRAPHY AND DEVICES FORMED THEREBY

Edith T. T. Ong, New Providence; King L. Tai, and Yiu-Huen Wong, both of Berkeley Heights, all of N.J., assignors to American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 665,970, Oct. 29, 1984, abandoned.
This application May 28, 1987, Ser. No. 57,682
Int. Cl.[4] G03C *5/00*
U.S. Cl. 430—311 7 Claims

1. A method for fabricating a device, comprising the steps of:
forming an energy sensitive material on a substrate surface;
exposing selected portions of said energy sensitive material to energy;
treating said energy sensitive material with a developing agent; and
completing the fabrication of said device, characterized in that said substrate surface is nonplanar and includes at least one depression or at least one step having a depth or height greater than or equal to about 5 μm,
said forming step includes the step of depositing said energy sensitive material onto said surface from a vapor or from a mist, and
said energy sensitive material substantially conformably coats said substrate surface, the average thickness of said material being less than about the larger of the depth of the deepest depression or the height of the highest step on the portion or portions of said nonplanar substrate surface to be coated.

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LASER INFORMATION RECORDING MEDIUM HAVING AN IMPROVED RECORDING LAYER

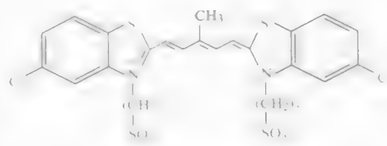
Coe Ishimoto, Tokyo; Junetsu Seto, Kanagawa, and Hiroshi Tomimuro, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 14, 1986, Ser. No. 918,152
Claims priority, application Japan, Oct. 11, 1985, 60-226403; Jan. 20, 1986, 61-009460
Int. Cl.[4] G11B *7/24*; G01D *9/00*; G03C *1/72, 5/16*
U.S. Cl. 430—495 3 Claims

1. A laser information recording medium comprising:
a substrate,
a reflective layer, and
a recording layer, said recording layer consisting of at least one of the following compositions: (1) cumulated sub-layers of J-aggregates formed from a cyanine dye of the following formula:

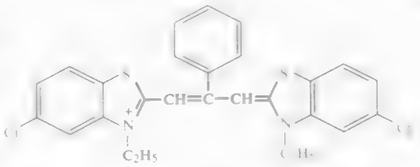


(II)



and at least two film-forming materials from the group consisting of dioctadecyldimethylammonium chloride, methyl stearate and octadecylamine, or (2) cumulated sub-layers of J-aggregates formed from a cyanine dye of the following formula:

(III)



and a film forming material consisting of arachic acid.

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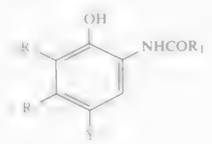
SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Makoto Umemoto; Yoshio Seoka, and Masakazu Morigaki, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 21, 1986, Ser. No. 820,387
Claims priority, application Japan, Jan. 21, 1985, 60-8755
Int. Cl.[4] G03C *7/34*
U.S. Cl. 430—546 19 Claims

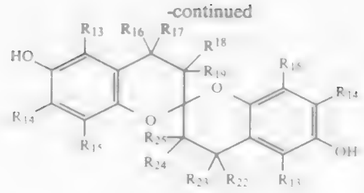
1. A color photographic material which comprises a support having thereon at least one silver halide emulsion layer having associated therewith at least one cyan dye forming coupler represented by formula [I], at least one coupler solvent having a melting point higher than 25° C., and at least one compound represented by formula [VI]:

[I]



-continued

[VI]



wherein:
R_1 represents a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aromatic group or a substituted or unsubstituted heterocyclic group;
R_2 represents a substituted or unsubstituted aliphatic group;
R_3 represents a hydrogen atom, a halogen atom, a substituted or unsubstituted aliphatic group, a substituted or unsubstituted aromatic group or a substituted or unsubstituted acylamino group;
Y_1 represents a hydrogen atom, or a group or atom capable of being eliminated by a coupling reaction with an oxidized developing agent;
said compound represented by formula (I) may form a dimeric, oligomeric or polymeric coupler by means of groups R_2, R_3 and Y_1;
R_{13}, R_{14} and R_{15}, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an alkylamino group or an acylamino group, a halogen atom, an acyl group, an alkoxy-carbonyl group, an aryloxycarbonyl group, an acyloxy group, a sulfonyl group, a sulfamoyl group, a sulfonamide group or a heterocyclic group, and two groups located at an adjacent position to each other among the groups R_{13}, R_{14} and R_{15} may be connected to each other to form a 5 to 7 membered cycloaliphatic, aromatic, heterocyclic or heteroaromatic ring;
R_{16}, R_{17}, R_{18}, R_{19}, R_{22}, R_{23}, R_{24}, and R_{25}, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkenyl group, an aryl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxy-carbonyl group, an amide group, a hydroxyl group, or a halogen atom and any two groups selected from R_{16} through R_{19} may form a 5 or 6 membered ring.

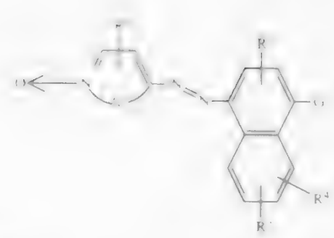
4,767,698

PHOTOGRAPHIC MATERIAL CONTAINING A PYRIDINE AZO OR PYRIDAZINE AZO CYAN DYE RELEASING COMPOUND

Peter Bergthaller, Bergisch Gladbach; Rudolf Stolzenburg, Langenfeld, and Paul Marx, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 13, 1987, Ser. No. 37,732
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1986, 3613621
Int. Cl.[4] G03C *5/54, 7/26*
U.S. Cl. 430—562 3 Claims

1. A colour photographic recording material for the production of colour images by the dye diffusion transfer process, comprising a non-diffusible, colour providing compound (dye releasing compound) associated with at least one light-sensitive silver halide emulsion layer, from which compound a diffusible azo dye is released under the conditions of alkaline development as a function of the development of the silver halide emulsion layer, wherein the azo dye corresponds to the following formula I



wherein
Q denotes a group for completing a pyridine or pyridazine ring on which a carbocyclic or heterocyclic aromatic ring may be condensed;
G denotes OH or NH-SO_2-R^5;
R^1 denotes H or one, two or three substituents selected from halogen, alkyl, aryl, carboxyl, alkoxycarbonyl, carbamoyl, cyan, alkoxy, alkylthio, alkylsulphonyl, arylthio and arylsulphonyl;
R^2 denotes H or a group with an electron acceptor character arranged in an ortho-position to G;
R^3 denotes H, acylamine or a group G' having the same definition as G;
R^4 denotes H, SO_2-NR^6-R^7 or NH-SO_2-R^5;
R^5 denotes alkyl, aralkyl, aryl or NR^6-R^7;
R^6 denotes H, alkyl, aralkyl or a group which together with R^7 and the nitrogen atom forms the residue of a cyclic amino group;
R^7 denotes H, alkyl, aralkyl, aryl or a group which together with R^6 and the nitrogen atom forms the residue of a cyclic amino group.

4,767,699

DIAGNOSTIC REAGENT, KIT AND METHOD EMPLOYING POLYNUCLEOTIDE DISPLACEMENT, SEPARATION, ENZYMATIC CLEAVAGE AND ADENOSINE PHOSPHATE DETECTION

Calvin P. H. Vary, Califon; Steven E. Diamond, Springfield, both of N.J., and Neil M. Wolfman, Brookline, Mass., assignors to Allied Corporation, Morristown, N.J.

Filed May 2, 1985, Ser. No. 729,503
Int. Cl.[4] C12Q *1/68*; G01N *33/53, 33/566*
U.S. Cl. 435—6 27 Claims



16. A method for determining the presence of a predetermined DNA target nucleotide sequence in the nucleic acid of a biological sample which comprises the steps:
(a) providing a reagent complex of (i) a probe polynucleotide which is capable of base pair binding via hydrogen bonds of purine/pyrimidine bases to the target nucleotide sequence, and (ii) a signal strand polynucleotide which is bound by base pair binding via hydrogen bonds of purine/pyrimidine base pairs to the probe polynucleotide in a region of the probe polynucleotide at least partially coex-

VOL 1093 ISS 5 AUG 30 1988 UMI

tensive with the region in which the probe polynucleotide is capable of binding to the target nucleotide sequence, the signal strand polynucleotide containing cleavable riboadenosine nucleotides;

(b) contacting the reagent complex with a sample under conditions in which the target nucleotide sequence, if present, binds to the probe polynucleotide and displaces signal strand polynucleotide from the complex;

(c) separating a first phase containing displaced signal strand polynucleotide from a second phase containing reagent complexes;

(d) digesting the displaced signal strand polynucleotides in the second phase to produce ribonucleoside phosphates including riboadenosine phosphates; and

(e) detecting the riboadenosine phosphate monomers in the ribonucleoside phosphates.

4,767,700

DETECTION OF PARTICULAR NUCLEOTIDE SEQUENCES

R. Bruce Wallace, Freiburg, Fed. Rep. of Germany, assignor to Beckman Research Institute of the City of Hope, Duarte, Calif.

Filed Feb. 15, 1985, Ser. No. 702,099
Int. Cl.[4] C12Q *1/68*
U.S. Cl. 435—6 9 Claims

1. A process for the detection of a particular polynucleotide sequence in a polynucleotide-containing test sample consisting essentially of forming an agarose gel having a depression therein, adding the test sample to said depression, putting agarose solution in the depression and permitting it to gel thereby encasing the test sample in agarose gel, denturing the polynucleotide in the test sample within the agarose gel, contacting the test sample-containing gel with an oligonucleotide or polynucleotide probe having a sequence complementary with a sequence for which the sample is being tested under hybridization conditions, said probe having at least 23 nucleotides, said probe carrying a readable label, and determining the extent of hybridization, the extent of hybridization being determined by reading the label and, wherein after hybridization the gel is washed to remove non-hybridized probe.

4,767,701

POLY I:C COVALENTLY BONDED TO POLYMER FOR DIAGNOSTIC PURPOSES

Krister Holmberg, Mölndal, and Holger Hyden, Gothenburg, both of Sweden, assignors to Berol Kemi AB, Stenungsund, Sweden

Filed Sep. 3, 1985, Ser. No. 771,679
Int. Cl.[4] G01N *33/545, 33/554*
U.S. Cl. 435—7 17 Claims

1. A carrier of carboxyl group-containing polymer with covalently immobilised biologically active Poly I:C.

10. A method of testing an immunosystem by contacting a blood sample with the carrier as claimed in claim 1, for diagnostic purposes.

11. The method as claimed in claim 10, including determining T-lymphocytes in said blood sample.

4,767,702

PAPER STRIP ASSAY FOR NEISSERIA SPECIES

Menashi A. Cohenford, 1 Cold Spring Dr., W. Warwick, R.I. 02893

Filed Feb. 6, 1986, Ser. No. 826,546
Int. Cl.[4] C12Q *1/36*
U.S. Cl. 435—24 13 Claims

1. An assay test strip comprising an absorbent solid support, said solid support bearing indicator means for the enzymes prolylamino peptidase (PAP), gamma-glutamylamino peptidase (GAP), and beta-D-galactosidase (BDG), said enzyme being produced by oxidase positive, Gram negative diplococci from primary selective media growth.

9. A filter paper assay test strip for the identification of Neisseria species selected from *N. gonorrhoeae, N. meningitidis,* and *N. lactamica,* said test strip comprising in combination:

(a) a filter paper strip;

(b) a separator attached to and effectively sealing one side of said filter paper strip, said separator being provided with three openings which expose said filter paper strip; and

(c) a support member located on the remaining side of said filter paper strip, sealing said strip;



said filter paper exposed by the openings in said separator each containing an effective amount of one of the substrates specific for enzymes selected from the group consisting of prolylamino peptidase (PAP), gamma-glutamylamino peptidase (GAP), and beta-D-galactosidase (BDG), with the proviso that substrates for all three enzymes are represented on the filter paper strip.

4,767,703

METHOD FOR ASSESSING THE FERTILITY OF MALE MAMMALS

Roy L. Ax, Mazomanie, Wis., and Richard W. Lenz, Tunkhannock, Pa., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 3, 1984, Ser. No. 596,327
Int. Cl.[4] C12Q *1/02*
U.S. Cl. 435—29 9 Claims

1. A method for evaluating the fertility of a first male mammal with reference to the fertility of at least one reference male mammal comprising the steps of:

(a) obtaining a semen sample from the first male mammal;

(b) separating the sperm from the seminal plasma of the semen sample;

(c) isolating at least one test portion and a control portion of the sperm;

(d) incubating the portions of sperm, exposing the test portion to a glycosaminoglycan in a concentration effective to induce an acrosome reaction in sperm;

(e) counting a representative sample of incubated sperm from each portion to measure the increase characteristic of the first male mammal in acrosome reaction in the test portion as compared to the control portion;

(f) obtaining a semen sample from the reference male mammal and subjecting it to the same steps of separating, isolating, incubating, and counting to which the semen sample of the first male mammal was subjected to measure the increase characteristic of the reference male mammal in acrosome reaction in the test portion as compared to the control portion of the sperm of the reference male mammal; and

(g) comparing the increase in acrosome reaction characteristic of the first male mammal with the increase in acrosome reaction characteristic of the reference male mammal, whereupon the fertility of the first male mammal may be determined to be greater or lesser than that of the reference male mammal as the increase in acrosome reaction characteristic of the first male mammal is found to be greater or lesser than the increase in acrosome reaction characteristic of the reference male mammal.

3. The method of claim 1 wherein the glycosaminoglycan is selected from the group consisting of heparin, heperan sulfate, chondroitin sulfate A, chondroitin sulfate B, chondroitin sulfate C, hyaluronic acid, and any mixture thereof.

4,767,704

PROTEIN-FREE CULTURE MEDIUM

William L. Cleveland, New York, and Bernard F. Erlanger, Whitestone, both of N.Y., assignors to Columbia University in the City of New York, New York, N.Y.

Filed Oct. 7, 1983, Ser. No. 539,954
Int. Cl.[4] C12P *21/00;* C12N *5/00, 5/02;* C12R *1/91*
U.S. Cl. 435—68 23 Claims

1. In a protein-free chemically defined tissue culture medium wherein the improvement comprises a combination of a basal medium and a trace element mixture, said trace element mixture comprising a bromine salt, a fluorine salt, and an iodine salt, and, as metal salt other than positive metal ions selected from Group IA and IIA of the Periodic Table of the Elements, said mixture containing only at least one species selected from each member of the group consisting of copper salts, iron salts, zinc salts, manganese salts, silicon salts, molybdenum salts, vanadium salts, nickel salts, tin salts, aluminum salts, silver salts, barium salts, cadminum salts, cobalt salts, chromium salts, germanium salts, rubidium salts, zirconium salts and selenium salts.

4,767,705

APPLE POMACE AS SUBSTRATE FOR MICROBIAL PRODUCTION OF CITRIC ACID

Yong D. Hang, Geneva, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Nov. 19, 1984, Ser. No. 672,530
Int. Cl.[4] C12P *7/48;* C12N *1/14;* C12R *1/685*
U.S. Cl. 435—144 4 Claims

1. A fermentation process for producing citric acid which comprises fermenting apple pomace in the presence of a citric acid producing amount of *Aspergillus niger* NRRL 567 in the presence of a citric acid production stimulating amount of methanol at a temperature and for a time sufficient to produce citric acid and recovering citric acid.

4,767,706

FIXATION OF ENZYMES WITH BIS-DITHIOESTERS

Guy Levesque, Thaon, and Jean-Louis Seris, Jurancon, both of France, assignors to Societe Nationale Elf Aquitaine, France

Filed Apr. 18, 1986, Ser. No. 853,639
Claims priority, application France, Apr. 19, 1985, 85 05939
Int. Cl.[4] C12N *11/14, 11/06*
U.S. Cl. 435—176 16 Claims

1. Process of fixation of an enzyme on a carrier comprising attaching the enzyme to the carrier with a bis-dithioester capable of combining both with the enzyme and with the carrier, said bisdithioester having the formula



where R and R′ are aliphatic, cycloaliphatic or aryl hydrocarbon groups, which can carry substituents, X being an active group capable of reacting with an amine function.

4,767,707

IMMOBILIZATION OF ENZYMES WITH A WATER-SOLUBLE GLYCIDYL ETHER

Stefan Marcinowski, Ludwigshafen; Axel Sanner, Frankenthal; Chung-Ji Tschang, Bad Durkheim; Wolfgang Ladner, Ludwigshafen, and Norbert Greif, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 25, 1986, Ser. No. 889,392
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1985, 3527014
Int. Cl.[4] C12N *11/04, 11/08*
U.S. Cl. 435—182 6 Claims

1. A process for immobilizing an enzyme or microorganism consisting essentially of mixing the following components with one another in aqueous solution:

(a) an enzyme or a dispersed microorganism,

(b) a water-soluble glycidyl ether, prepared by subjecting from 1 to 30 equivalents of an epoxide of the formula I



(I)

where R^1, R^2 and R^3 are hydrogen, methyl or ethyl, to an addition reaction with 1 equivalent, based on OH groups, of a polyfunctional alcohol of 2 to 6 carbon atoms or of a mono- or disaccharide to produce an adduct, reacting the adduct with epichlorohydrin to give the glycidyl ether, and

(c) a water-soluble amine possessing to or more NH groups and allowing the mixture thus obtained to gel.

4,767,708

ENZYME AMPLIFICATION AND PURIFICATION

Edwin G. Minkley, Jr., and William E. Brown, both of Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Aug. 7, 1984, Ser. No. 638,638
Int. Cl.[4] C12N *1/20, 5/00, 9/12, 21/00, 21/02, 15/00*
U.S. Cl. 435—194 45 Claims



1. A recombinant plasmid containing a cloned complete structural gene coding region isolated from a bacterial source for the expression of DNA polymerase I, under operable control of a conditionally controllable foreign promoter functionally linked to said structural gene coding region, said foreign promoter being functional to express said DNA polymerase I in a suitable bacterial or yeast host system.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,709

GROWTH-RELATED HORMONES

Daniel Nathans, and Daniel I. H. Linzer, both of Baltimore, Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Jun. 28, 1984, Ser. No. 625,499
Int. Cl.[4] C12N *5/00, 1/20, 1/00;* C07H *21/00*
U.S. Cl. 435—240.2 18 Claims



1. A DNA molecule containing a coding sequence free of introns for the amino acid sequence of mammalian proliferin.

4,767,710

CELL LINES FOR THE PRODUCTION OF MONOCLONAL ANTIBODIES TO HUMAN GLYCOPHORIN A

William L. Bigbee, Livermore; Stella S. N. Fong, Del Mar; Ronald H. Jensen, Livermore; Martin Vanderlaan, San Ramon, and Richard G. Langlois, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 450,694, Dec. 17, 1982, abandoned.
This application May 15, 1985, Ser. No. 734,312
The portion of the term of this patent subsequent to Jun. 21, 2005, has been disclaimed.
Int. Cl.[4] C12N *5/00, 15/00;* C12P *21/00;* C07K *15/04*
U.S. Cl. 435—240.27 2 Claims

1. A hybridoma selected from the group consisting of HB 8159, HB 8160, HB 8161 and HB 8162.

4,767,711

BOVINE PLACENTAL LACTOGEN GENE

Linda A. Schuler, Madison; Jack Gorski, Middleton, both of Wis.; Walter L. Hurley, Urbana, Ill.; Robert D. Bremel, Madison, Wis., and Fritz M. Rottman, Pepper Pike, Ohio, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Mar. 28, 1985, Ser. No. 717,078
Int. Cl.[4] C12N *1/00, 15/00, 5/00, 1/20;* C12P *21/00, 21/02, 21/04, 19/34;* C07H *21/04*
U.S. Cl. 435—243 7 Claims

1. A recombinant vector, comprising:
a vector; and
a foreign cDNA sequence coding for bovine placental lactogen which has been inserted into said vector.

4,767,712

ASSAY METHOD USING NAD SYNTHETASE AND A PROCESS FOR PRODUCTION OF THE ENZYME

Hideo Misaki; Hidehiko Ishikawa, and Kazuo Matsuura, all of Shizuoka, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

Filed Apr. 25, 1984, Ser. No. 603,710
Claims priority, application Japan, Apr. 25, 1983, 58-71513
Int. Cl.[4] C12N *1/20;* C12R *1/10*
U.S. Cl. 435—253 1 Claim

1. A biologically pure culture of *Bacillus licheniformis* B-0844 FERM P-6809.

4,767,713

PURE CULTURE OF *BREVIBACTERIUM ACETYLICUM* AT-6-7, ATCC 39311

Tetsuro Fujishima, and Shinji Sakata, both of Choshi, Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Division of Ser. No. 479,979, Mar. 29, 1983, Pat. No. 4,594,321.
This application Feb. 28, 1986, Ser. No. 834,360
Claims priority, application Japan, Apr. 1, 1982, 57-55078
The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.
Int. Cl.[4] C12N *1/20, 9/12;* C12R *1/13*
U.S. Cl. 435—253 3 Claims

1. A microbiologically pure culture of a microorganism of *Brevibacterium acetylicum* AT-6-7, ATCC 39311 or a mutant thereof which has a nucleoside phosphorylase activity.

4,767,714

METHOD FOR THE PREPARATION OF YEAST CHROMATIN FOR ISOLATION OF P20 POLYPEPTIDE

Channa Shalitin, Haifa, Israel, assignor to Technion Research & Development Foundation Ltd., Haifa, Israel

Filed Jul. 11, 1985, Ser. No. 753,963
Claims priority, application Israel, Jul. 19, 1984, 72452
Int. Cl.[4] C07K *3/12*
U.S. Cl. 435—272 14 Claims

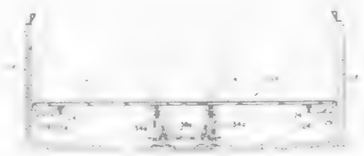
1. A method for the preparation of pure yeast chromatin for isolation of p20 peptide, which comprises the steps of:
(a) breaking yeast cells in a solution of a buffer comprising phenylmethylsulfonyl fluoride, and centrifugation of the resultant slurry whereby a pellet of chromatin is precipitated;
(b) purifying the precipitated pellet of chromatin by centrifugation through a sucrose solution buffered with 2-mercaptoethanol and phenylmethylsulfonyl fluoride and then washing with a buffer comprising 2-mercaptoethanol and phenylmethylsulfonyl fluoride;
(c) solubilizing the resultant precipitate from step (b) by enzymatic digestion using a nuclease enzyme capable of digesting said precipitate;
(d) loading the supernatant solution from the solubilized mass of step (c) on a linear sucrose gradient of 5–30% in a buffer solution containing 2-mercaptoethanol and phenylmethylsulfonyl fluoride, and
(e) extracting the p20 polypeptide from the sucrose gradient fraction by a buffered solution comprising sodium chloride at a concentration in the range of 0.15–5M, and sodium bisulfite and phenylmethylsulfonyl fluoride at protease inhibiting concentrations.

4,767,715

GERMINATION FLOOR SYSTEMS

Norman H. Andreasen, 1522 Norwood Ave., Itasca, Ill. 60143

Continuation-in-part of Ser. No. 687,598, Dec. 31, 1984, Pat. No. 4,698,309. This application Oct. 2, 1987, Ser. No. 103,597
Int. Cl.[4] C12C *1/06*
U.S. Cl. 435—302 3 Claims



1. A germination floor apparatus comprising

floor means having a top side for carrying a load of grain and an underside; said floor means including a plurality of tray assemblies arranged in a plurality of rows extending along the length of said floor means;
support means positioned beneath said plurality of tray assemblies for carrying said tray assemblies in an elevated position;
pivot means supported on said support means and said pivot means having tube means for carrying said tray assemblies in said plurality of rows for pivotal movement about an axis extending along the length of each of said plurality of rows;
said tray assemblies being movable about said axis extending along the length of each of said rows of said plurality of rows, said tray assemblies being moveable between a horizontal position for carrying the load of grain and an upright position to permit access to the underside of said floor means for cleaning;
said tray assemblies each having a frame formed by a pair of side members interconnected with a pair of end members being disposed in parallel relationship to said axis, said side members each having an upper surface, an outer side surface, and a bottom surface:
a perforated tray sheet being affixed to each of said tray frames;
said tray sheets having at least an edge portion being bent over said top surface into contact with said outer side surface of one of siad side members, and
means for affixing said edge portion to said outer side surface of said side members,
said side members are a pair of flat bar members,
a plurality of rigid cross members, said cross members having a pair of end portions being respectively affixed to said bottom surface of said side members,
said end members are angle members having an outward lip portion to overlap the lip portion of an adjacent tray frame, and
said lip portion of the tray assembly of one of said rows of tray assemblies is disposed above the lip portion of an adjacent row or tray assemblies in horizontal alignment with said top side of said floor means.

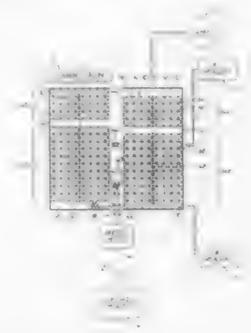
4,767,716

METHOD OF PERFORMING AUTOMATIC CHEMICAL ANALYSIS

Takeshi Sakamaki, Yaita, and Fumio Watanabe, Hachioji, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 725,792, Apr. 22, 1985, Pat. No. 4,675,162.
This application Feb. 27, 1987, Ser. No. 19,661
Claims priority, application Japan, Apr. 21, 1984, 59-80795
Int. Cl.[4] G01N *35/04*
U.S. Cl. 436—47 3 Claims

1. A method of performing automatic chemical analysis comprising:
providing a cuvette assembly including two opposed rows of sample magazines, each of said rows including two segments arranged along a common line such that each segment of each row is arranged opposite a corresponding segment of the other row, each magazine including a reaction tube;
providing a first circuit formed from a first pair of the opposed segments of said rows, said first circuit serving as a preparation channel and including a sample dispensing station at which a sample is added to said at least one reaction tube;
providing a second circuit formed from a second pair of the opposed segments of said rows, said second circuit serving as a reaction channel and including a reagent dispensing station at which a reagent is added to said at least one reaction tube;
advancing said magazines in the first circuit including transferring magazines station to station in each row segment of the first circuit and transferring magazines between row segments of the first circuit;
advancing said magazines in the second circuit independently of advancing said magazines in the first circuit, including transferring magazines from station to station in each row segment of the second circuit and transferring magazines between row segments of the second circuit;



analyzing the sample added to said at least one reaction tube at a testing station during advancing of said magazines between row segments of the second circuit;
transferring magazines from said second circuit to said first circuit after completion of said analyzing step; and
transferring magazines from said first circuit to said second circuit for testing of a substance added to the reaction tubes of the magazines transferred from the said first circuit to said second circuit.

4,767,717

METHOD OF DETECTING AND QUANTITATING CELL MALIGNANCY IN BIOLOGICAL TISSUE

C. Robert Baisden, 3227 Ramsgate Rd., Augusta, Ga. 30909

Filed May 2, 1985, Ser. No. 729,621
Int. Cl.[4] G01N *33/48*
U.S. Cl. 436—64 15 Claims

1. A method of detecting cell malignancy in biological tissue including the steps of:
(a) providing a tissue sample having a substantially constant thickness;
(b) impinging said tissue sample with electromagnetic energy within a predetermined electromagnetic energy bandwidth, said predetermined electromagnetic energy bandwidth being defined by optical filters having a specified approximating bandwidth of 255 to 265 nm;
(c) measuring the amount of electromagnetic energy within said predetermined bandwidth absorbed by a substantially constant volume portion of the nucleate from each of a plurality of individual cells within said tissue sample.
(d) quantifying said amount of electromagnetic energy within said predetermined bandwidth absorbed by said constant volume portions of said nucleate from each of said plurality of individual cells within said tissue sample, said quantification producing statistical data sets of both a mean and a standard deviation for said electromagnetic energy absorbed; and,
(e) comparison of said statistical data sets produced form said quantification of said absorbed electromagnetic energy by said constant volume portions of said nucleate of said cells within said tissue sample with statistical data sets obtained from tissue samples predetermined to be non-malignant, said comparison providing the means to detect said cell malignancy.

VOL 1093 ISS 5 AUG 30 1988 UMI

4,767,718

FLUORESCENT OPIOID REAGENTS AND METHODS OF USE THEREOF IN THE DETECTION OF OPIOID RECEPTORS

Vera K. Meyers, Carbondale, Ill., assignor to Southern Illinois University Foundation, Carbondale, Ill.

Filed Jun. 18, 1984, Ser. No. 621,384
Int. Cl.[4] G01N *33/94*
U.S. Cl. 436—501 36 Claims

1. A fluorescent reagent useful as a receptor probe in the detection and quantification of tissue, cells, and subcellular particles containing opioid receptors, said reagent corresponding to the formula:



(I)

or



(IA)

where Fl is a fluorescent moiety that emits visible light at a frequency different from any frequency at which light is emitted by any fluorescent moiety endogenous to human brain tissue, and R is a nonpeptide opioid moiety having a morphine or morphinan structure.

11. A fluorescent reagent useful as a receptor probe in the detection and quantification of tissue, cells, and subcellular particles containing opioid receptors, said reagent corresponding to the formula:

(III)



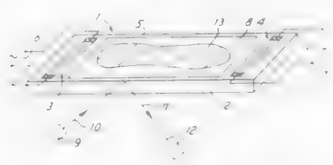
where R is a nonpeptide opioid moiety having a morphine or morphinan structure.

4,767,719

ASSAY APPARATUS HAVING PIEZOELECTRIC SLAB GENERATING EFFECTIVE DIFFRACTION GRATING IN APPLIED ANALYTE-SPECIFIC FILM

Martin F. Finlan, Little Chalfont, England, assignor to Amersham International plc, Little Chalfont, England

Filed May 20, 1987, Ser. No. 51,582
Claims priority, application United Kingdom, May 20, 1986, 8612221
Int. Cl.[4] G01N *21/17, 33/53*
U.S. Cl. 436—501 14 Claims



10. Apparatus for assaying a species in a liquid sample, said apparatus comprising a slab of piezoelectric material having applied thereto a thin film of a material capable of binding a species to the assayed, means for energising said piezoelectric material in such a way as to generate vibrations which are coupled into the thin film to thus define an effective diffraction grating, a source of electromagnetic radiation for applying to the thin film a beam of radiation, and detector means for detecting either radiation diffracted by the grating, or energy in the form of a plasmon wave coupled into the piezoelectric material when the electromagnetic radiation is incident on the thin film.

4,767,720

ANTIDIGOXIN ANTIBODIES

Clifford A. Lingwood, Toronto, Canada, assignor to HSC Research Development Corporation, Toronto, Canada

Filed Sep. 10, 1985, Ser. No. 774,370
Int. Cl.[4] G01N *33/534, 33/566*
U.S. Cl. 436—536 29 Claims

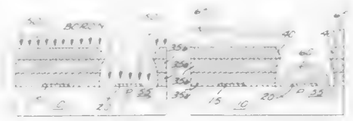
1. A digoxin derivative/immunogenic protein conjugate, said digoxin derivative having a lactone ring at C17 of digoxin opened at a double bond between C20 and C23 of said lactone ring, said digoxin derivative having the same carbohydrate moiety as digoxin, said immunogenic protein being coupled to the C23 of said opened lactone ring without altering said carbohydrate.

4,767,721

DOUBLE LAYER PHOTORESIST PROCESS FOR WELL SELF-ALIGN AND ION IMPLANTATION MASKING

Kuan Y. Liao, Irvine, and William W. Y. Lee, Saratoga, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 10, 1986, Ser. No. 827,140
Int. Cl.[4] H01L *21/308, 21/265*
U.S. Cl. 437—34 25 Claims



1. A process for forming closely aligned wells or tubs in a semiconductor substrate comprising:

(a) providing a semiconductor substrate and depositing a resist mask thereon comprising a lower layer of a first photoresist material and an upper layer of a second photoresist layer, with an opening defining the lateral extent of a first well, said resist mask defining an overhang structure around the periphery of said opening, the thickness of said resist mask being sufficient to withstand ion bombardment;

(b) implanting ions through said opening to form a first well;

(c) depositing discontinuous metal over said resist mask and opening to thereby cover said first well, the thickness of said metal covering said first well being sufficient to withstand ion bombardment;

(d) removing said resist mask and metal thereon, leaving in place the metal covering said first well; and

(e) implanting ions into said substrate adjacent the metal covering said first well to thereby form a second well directly adjacent said first well, whereby adjacent twin wells are formed in a relatively high yield process requiring a relatively low number of individual process steps.

4,767,722

METHOD FOR MAKING PLANAR VERTICAL CHANNEL DMOS STRUCTURES

Richard A. Blanchard, Los Altos, Calif., assignor to Siliconix incorporated, Santa Clara, Calif.

Filed Mar. 24, 1986, Ser. No. 843,454
Int. Cl.[4] H01L *21/38, 21/425*
U.S. Cl. 437—41 11 Claims

10. A method for making a semiconductor device comprising the steps of:

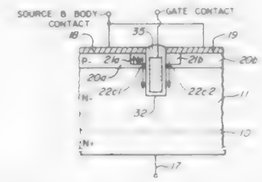
providing a first region of semiconductor material of a first conductivity type;

forming a second region of semiconductor material of a second conductivity type on said first region;

forming a plurality of semiconductor regions of said first conductivity type within said second region;

etching a plurality of grooves so that each groove extends through an associated one of said regions within said plurality of semiconductor regions, through said second region and into said first region;

lining said plurality of grooves with an insulating layer;



filling the bottom portion of said grooves with conductive material, said conductive material serving as a gate;

forming an insulating layer on said conductive material so that the top surface of said semiconductor device is planar; and

electrically contacting the bottom surface of said first region and the top surface of said plurality of semiconductor regions,

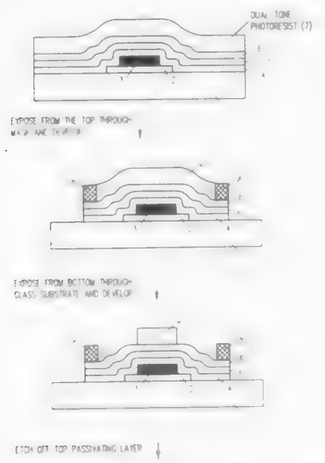
wherein said plurality of semiconductor regions, first region, second region, and the conductive material in said plurality of grooves serve as a plurality of cells of a vertical transistor.

4,767,723

PROCESS FOR MAKING SELF-ALIGNING THIN FILM TRANSISTORS

William D. Hinsberg, III, Fremont, Calif.; Webster E. Howard, Yorktown Heights, N.Y., and Carlton G. Willson, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1987, Ser. No. 115,470
Int. Cl.[4] H01L *21/265, 21/465, 21/44, 21/48*
U.S. Cl. 437—41 3 Claims



1. A process for making a self-aligned thin film transistor, said process comprising the steps of:

(1) providing a gate which comprises a glass substrate, a transparent electrode on top thereof, and a metal electrode on top of said transparent electrode,

(2) forming a stack by depositing over said gate a triple layer structure consisting of gate dielectric material, active material and a top passivating dielectric,

(3) coating the top of said triple layer with a dual-tone photoresist,

(4) exposing said photoresist from the top through a mask having transparent areas, opaque areas and areas transparent to selective wavelengths, using broad band UV light,

(5) developing the photoresist by treatment with a solvent,

(6) etching the stack with a liquid etchant through to the glass substrate,

(7) exposing the photoresist from the bottom through the glass substrate using near-UV light,

(8) developing the photoresist with a solvent, and

(9) etching off the top passivating layer of the stack.

4,767,724

UNFRAMED VIA INTERCONNECTION WITH DIELECTRIC ETCH STOP

Manjin J. Kim; Bruce F. Griffing, both of Schenectady, and David W. Skelly, Burnt Hills, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1986, Ser. No. 845,110
Int. Cl.[4] H01L *21/441*
U.S. Cl. 437—194 5 Claims



1. A method for forming via openings in the fabrication of integrated electric circuit devices, said method comprising the steps of:

depositing and patterning a first conductive metal layer overlying an insulative substrate;

depositing a first dielectric layer covering said patterned conductive layer;

planarizing said first dielectric layer, at least down to the level of said conductive layer;

depositing a layer of insulative metal oxide over said first dielectric layer and portions of said conductive layer exposed by said planarizing;

depositing and patterning a second dielectric layer on said insulative metal oxide layer, with openings in said second dielectric layer at least partially overlying portions of said patterned conductive layer and extending down to said insulative metal oxide layer; and

removing insulative metal oxide material exposed through said openings in said second dielectric layer.

4,767,725

CRYSTALLIZED GLASS-CERAMIC MOLDED PRODUCT AND METHOD OF MANUFACTURING

Toyonobu Mizutani, Seto; Masao Yoshizawa, No. 6-6, 5-chome, Higashikaigan-Kita, Chigasaki-shi, Kanagawa-ken, and Toichiro Izawa, Matsudo, all of Japan, assignors to Masao Yoshizawa, Kanagawa, Japan

Filed Dec. 31, 1985, Ser. No. 815,107
Claims priority, application Japan, Dec. 31, 1984, 59-276392
Int. Cl.[4] C03C *10/16, 1/06*
U.S. Cl. 501—3 11 Claims

3. A method of manufacturing a crystallized glass-ceramic molded product of different colors comprising the steps of, mixing constituent materials for producing at least one kind of glass, constituent materials for producing at least a first kind of fluormica and constituent materials for producing calcium compounds, the calcium compounds being mainly calcium fluoride; heating the mixture to melt the constituents; cooling and solidifying the melt to form a frit; crushing the frit to form frit particles of a first color; repeating the above steps using the

VOL 1093 ISS 5 AG 30 1988 UMI

constituent materials for producing a second kind of fluormica to form frit particles of a second color; charging the frit particles of the first color and the frit particles of the second color ment and a crystallizing heat-treatment so that there is formed a crystallized glass-ceramic molded product of different colors comprising a glass-matrix and, disposed therein, crystallized calcium fluoride and crystals of fluormicas of different colors.

4,767,726

GLASS MICROBUBBLES

Harry J. Marshall, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 12, 1987, Ser. No. 2,637
Int. Cl.[4] C03C *11/00, 12/00, 14/00, 3/089*
U.S. Cl. 501—33 18 Claims

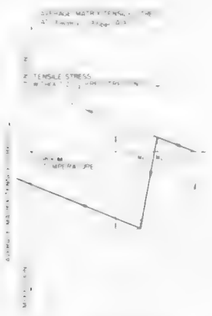
1. Microbubbles of glass having an alkaline earth metal oxide:alkali metal oxide weight ratio in the range of 1.2:1–3.0:1; at least 97% of the glass weight consisting essentially of 70–80% SiO_2, 8–15% CaO, 3–8% Na_2O, and 2–6% B_2O_3.

4,767,727

FIBRE-STRENGTHENED CERAMIC FORMED BODIES

Nils Claussen, Leonberg, and Günter Petzow, Leinfelden-Echterdingen, both of Fed. Rep. of Germany, assignors to Max-Planck-Gesellschaft Zur Foerderung Der Wissenschaften E.V., Goettingen, Fed. Rep. of Germany

Filed May 23, 1986, Ser. No. 867,461
Claims priority, application Fed. Rep. of Germany, May 24, 1985, 3518844
Int. Cl.[4] C04B *35/80, 35/10, 35/48, 35/56*
U.S. Cl. 501—87 12 Claims



1. A fibre-strengthened ceramic formed body with improved mechanical strength comprising at least 15% by volume of zirconium dioxide, hafnium dioxide or zirconium dioxide/hafnium dioxide composition in the form of monoclinic crystals and an amount of inorganic fibres sufficient for increasing the strength, in a ceramic matrix material, said formed body being formed by hot pressing the mixture of ceramic matrix material, at least 15% by volume of tetragonal zirconium dioxide, hafnium dioxide or zirconium dioxide/hafnium dioxide composition particles and the fibres, at a temperature above the tetragonal→monoclinic transition temperature.

4,767,728

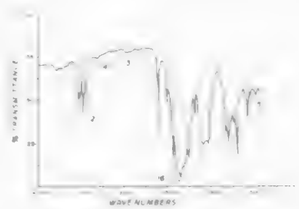
BORON-CONTAINING ORGANOSILANE POLYMERS AND CERAMIC MATERIALS THEREOF

Salvatore R. Riccitiello; Ming-Ta S. Hsu, and Timothy S. Chen, all of San Jose, Calif., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 30, 1986, Ser. No. 890,577
Int. Cl.[4] C04B *35/56*
U.S. Cl. 501—91 21 Claims

1. A process for the preparation of a ceramic material, which process comprises:

pyrolyzing at a temperature above 600° C. in an inert atmosphere a polyorganoborosilane ceramic precusor polymer comprising a plurality of repeating units of the formula:



[A]



the polymer unit being linked together by second units of the formula:

(D)



wherein R^1 is selected from lower alkyl, vinyl, cycloalkyl, phenyl, or

(E)



wherein:

R^2 and R^3 are each independently selected from halogen, lower alkyl, vinyl, cycloalkyl, or phenyl;

n is an integer between 1 and 100;

p is an integer between 1 and 100; and

q is an integer between 1 and 100.

4,767,729

PROCESS FOR THE PREPARATION OF A VOLTAGE-DEPENDENT CERAMIC RESISTANCE BASED ON ZNO, AND A RESISTANCE PRODUCED BY THE PROCESS
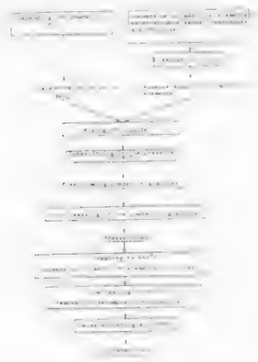
Maged A. Osman, Zürich; Roger Perkins, Baden-Rütihof; Friedrich Schmückle, Mellingen, and Claus Schüler, Widen, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Apr. 29, 1986, Ser. No. 857,062
Claims priority, application Switzerland, Apr. 29, 1985, 1808/85
Int. Cl.[4] C04B *35/02*
U.S. Cl. 501—94 6 Claims

1. A process for the preparation of a voltage-dependent ceramic resistance based on ZnO and other oxides selected from the group of addition elements Co, Mn, Cr, Ni, Ba, Bi, Sb, rare earths, Al, B, Si, Ga, Ti comprising the steps of

(i) first suspending the ZnO in powder form in an aqueous solution and directly treating the ZnO with the particular addition element in the form of an organic salt or complex compound dissolved in water in the case of the elements Co, Mn, Cr, Ni, Al, Ba, Bi, Sb, Ga, Ti and rare earths, and in the form of an acid or the ammonium salts thereof or alkyl esters dissolved in water in the case of the elements Cr, Si and B, the treating of the suspended ZnO with the particular addition element resulting in a suspension of ZnO in an aqueous solution of the addition element;

(ii) immediately drying the step (i) suspension of ZnO in the



aqueous solution of the addition element in a spray dryer in the presence of air to a powder or granules;

(iii) uniaxially, two-dimensionally radially or isostatically cold pressing this powder or these granules and subsequently heating the press body for the purpose of sintering in stages to a temperature of 650° C., 900° C. and then 1100° to 1300° C.; and

(iv) cooling the sintered body prepared in this manner to room temperature.

4,767,730

CERAMIC SHAPE MEMORY ELEMENT

Takao Soma, and Minoru Matsui, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 631,103, Jul. 16, 1984, abandoned. This application Sep. 19, 1986, Ser. No. 910,257
Claims priority, application Japan, Jul. 21, 1983, 58-131818
Int. Cl.[4] C04B *35/48*
U.S. Cl. 501—103 17 Claims



1. A method of inducing a shape memory effect in a ceramic article, comprising the steps of bringing a zirconia ceramic article into contact under pressure with a shaping member having a predetermined shape, said zirconia ceramic article comprising as a main component thereof, tetragonal zirconia which is in a thermally metastable phase, subjecting the ceramic article to a temperature of 0° to 400° C. and an external stress of 50 to 3,000 MPa to subject said ceramic article to reversible direction plastic deformation in a reversible direction by utilizing phase transformation from said tetragonal zirconia to a monoclinic zirconia which exists as a stable phase at a temperature of 0 to 400° C., at which temperature the tetragonal zirconia exists as a metastable phase, thereby imparting a shape memory effect in the ceramic article.

4,767,731

ALUMINUM TITANATE-MULLITE BASE CERAMICS

Seiichi Asami, Okazaki; Toshiyuki Hamanaka, Suzuka, and Takashi Harada, Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jul. 17, 1986, Ser. No. 886,365
Claims priority, application Japan, Jul. 22, 1985, 60-161712
Int. Cl.[4] C04B *35/10*
U.S. Cl. 501—128 10 Claims



1. A sintered aluminum titanate-mullite base ceramic consisting essentially of:

a chemical composition of not greater than 0.8% of MgO, 53 to 74% of Al_2O_3, 14 to 33% of TiO_2, 1.2 to 5% of Fe_2O_3, 6 to 20% of SiO_2, and $(CaO+Na_2O+K_2O)$ in an amount not greater than 0.3%, and an amount of glass in mullite base matrices of the sintered ceramic being not greater than 5% when measured at a section of a body of said sintered ceramic;

said sintered aluminum titanate-mullite base ceramic being formed by compounding 40 to 65% of a raw material of aluminum titanate consisting essentially of 45 to 62% of Al_2O_3, 34 to 50% of TiO_2, 3 to 7% of Fe_2O_3, not greater than 1% of SiO_2 and $(CaO+Na_1O+K_2O)$ in an amount not greater than 0.3%, with 35 to 60% of a raw material of mullite consisting essentially of 18 to 32% of SiO_2, 68 to 82% of Al_2O_3, and $(Fe_2O_3+TiO_2+CaO+MgO+Na_2O+K_2O)$ in an amount not greater than 0.8%, at least one of said aluminum titanate raw material and said mullite raw material being preliminarily fired at a temperature which is not less than 1550° C., molding a resulting mixture of the raw materials, and subsequently firing a thus obtained molding at 1,550° to 1,700° C. in an oxidizing atmosphere resulting in a sintered aluminum titanate-mullite base ceramic article;

said article having an average coefficient of thermal expansion at a temperature range of 40° to 800° C. of -2.0×10^{-6}/°C. to 2.0×10^{-6}/°C.;

said article having an increment in a linear dimension which is not greater than 1.0% after said article has been exposed forty times to a thermal cycling at a temperature rising from 40° C. to 1,260° C. in a time of 6 minutes and cooling from 1,260° C. to 40° C. in a time of 5 minutes; and

said article having a maximum difference value between a value on a thermal expansion curve during heating and a value on a thermal expansion curve during cooling at an identical temperature which is not greater than 0.18%.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,732

HIGH DIELECTRIC CONSTANT CERAMIC MATERIAL AND METHOD OF MANUFACTURING THE SAME

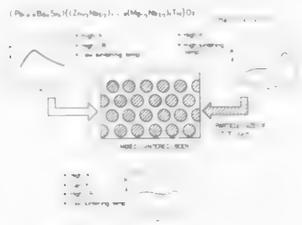
Osamu Furukawa, Sagamihara; Seiichi Yoshida, Katsushika; Motomasa Imai, Inagi, and Mitsuo Harata, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1987, Ser. No. 90,605

Claims priority, application Japan, Aug. 28, 1986, 61-199963; Jul. 6, 1987, 62-167034

Int. Cl.[4] C04B *35/46*

U.S. Cl. 501—137 11 Claims



1. A high dielectric constant ceramic material, consisting essentially of a composition expressed by the following formula

$$(1-x)(Pb_{1-a-b}Ba_aSr_b)$$

$$\{(Zn_{\frac{1}{3}}Nb_{\frac{2}{3}})_{1-c-d}(Mg_{\frac{1}{3}}Nb_{\frac{2}{3}})_cTi_d\}O_3.xBaTiO_3$$

where

$0 \leqq a \leqq 0.35$
$0 \leqq b \leqq 0.35$
$0.01 \leqq a + b \leqq 0.35$
$0 \leqq c \leqq 0.9$
$0 < d \leqq 0.5$
$0 < c + d < 1.0$
$0.3 \leqq x \leqq 0.65$

4,767,733

AMORPHOUS REFRACTORY COMPOSITION

Arthur W. Chester, Cherry Hill, and Garry W. Kirker, Washington Township, Gloucester County, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 18, 1987, Ser. No. 50,445

Int. Cl.[4] B01J *21/04, 23/10, 27/18*

U.S. Cl. 502—65 21 Claims

1. A refractory composition comprising an amorphous, solid, combination of rare earth oxide, aluminum oxide and aluminum phosphate characterized after calcination by a surface area of from about 50 m^2/g to about 500 m^2/g, a pore volume of from about 0.3 cc/g to about 1.5 cc/g, and Equilibrium Sorption capacities of greater than about 10 wt.% for the water vapor, greater than about 6 wt.% for cyclohexane vapor and greater than about 5 wt.% for n-hexane vapor, said rare earth oxide, aluminum oxide and aluminum phosphate being present in the combination refractory composition, by weight, at from about 10:20:70 to about 90:5:5.

4,767,734

HYDROCARBON CONVERSION PROCESS AND CATALYST FOR SELECTIVELY MAKING MIDDLE DISTILLATES

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 793,567, Oct. 31, 1985, abandoned, which is a continuation-in-part of Ser. No. 699,919, Feb. 8, 1985, Pat. No. 4,610,973, which is a continuation of Ser. No. 531,924, Sep. 13, 1983, Pat. No. 4,517,074, which is a division of Ser. No. 84,761, Oct. 15, 1979, Pat. No. 4,419,271.

This application Nov. 26, 1985, Ser. No. 801,922

Int. Cl.[4] B01J *29/10, 29/16*

U.S. Cl. 502—66 27 Claims

14. A catalyst composition prepared by a process comprising:

(a) calcining a crystalline aluminosilicate Y zeolite having cracking activity in the presence of added steam at a water vapor partial pressure greater than about 5.0 p.s.i.a. under conditions such that the unit cell size of said zeolite is reduced to a value between about 24.32 and 24.45 Angstroms and the sorptive capacity of said zeolite for water vapor is reduced to a value between about 5 and about 15 weight percent of said zeolite at 25° C. and a p/p° value of 0.10;

(b) extruding a mixture of said steam calcined aluminosilicate Y zeolite and a porous, inorganic refractory oxide component to form extrudates;

(c) calcining said extrudates in the presence of added steam at a water vapor partial pressure greater than about 5.0 p.s.i.a. under conditions such that the unit cell size of the steamed calcined aluminosilicate zeolite formed in step (a) is further reduced to a value in the range between about 24.20 and about 24.32 Angstroms, and wherein the water vapor partial pressure of the added steam in step (c) and the temperature and time of the calcination in step (c) are such that, if said zeolite formed in step (a) was calcined in steam alone without first being mixed and extruded with said refractory oxide component, the water vapor sorptive capacity of the aluminosilicate zeolite formed in step (a) would be less than about 5 weight percent of said zeolite at 25° C. and a p/p° value of 0.10; and

(d) impregnating said calcined extrudates with at least one hydrogenation component selected from the group consisting of Group VIA metal components and Group VIII metal components.

15. A catalyst composition as defined by claim 14 wherein said porous, inorganic refractory oxide component comprises a dispersion of silica-alumina in gamma alumina.

4,767,735

CATALYST PRETREATMENT PROCESS

John A. Ewen, and Alan H. Bitzer, both of Houston, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Feb. 2, 1987, Ser. No. 9,712

Int. Cl.[4] C08F *4/64*

U.S. Cl. 502—109 16 Claims

1. In a process for supply of a pretreated Ziegler-type catalyst to an olefin polymerization reactor, the steps comprising:

(a) establishing a fluid carrier stream containing said catalyst;

(b) adding olefin monomer to said carrier stream containing said catalyst;

(c) flowing said carrier stream containing said olefin monomer and said catalyst through an elongated tubular reactor at a flow rate sufficient to provide a residence time in said tubular reactor of less than one minute under temperature conditions to prepolymerize said catalyst with said monomer within said tubular reactor without plugging of said tubular reactor; and

(d) passing said carrier stream to the polymerization reactor.

4,767,736

POLYURETHANE FOAM CATALYSTS THAT ELIMINATE POLYUREA-CONTAINING POLYOL BASED MASTERBATCH CURE DRIFT

Robert G. Petrella, Allentown, and Michael Scarpati, Lehighton, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 14,504, Feb. 13, 1987, Pat. No. 4,707,501.

This application Oct. 16, 1987, Ser. No. 109,544

Int. Cl.[4] C08G *18/20*

U.S. Cl. 502—164 13 Claims

1. In a polyurea dispersion-containing polyol based masterbatch composition also containing an amine urethane catalyst for use in the preparation of a high resiliency polyurethane foam, the improvement which comprises a catalyst composition consisting essentially of

(a) 5 to 15 wt % triethylenediamine,

(b) 20 to 35 wt % 4-(2-dimethylaminoethyl) morpholine,

(c) 20 to 35 wt % N,N,N',N'-tetramethyl-1,2-diamino-2-methylpropane,

(d) 10 to 25 wt % bis(N,N-dimethylaminoethyl) ether, and

(e) 5 to 40 wt % of a N-hydroxyalkyl quaternary ammonium acid salt prepared by reacting an amine of the formula



where

R, R_1 and R_2 are independently alkyl or hydroxyalkyl groups of 1–20 carbon atoms, cycloalkyl groups of 3–8 carbon atoms, aralkyl, aryl, alkenyl groups of 2–20 carbon atoms or alkynyl groups of 2–6 carbon atoms, or

R, R_1 and R_2 together with a nitrogen atom form an N-substituted heterocyclic 5–7 atoms ring structure, with an alkylene oxide having 2–22 carbon atoms in the presence of an acid.

4,767,737

METHOD FOR MAKING CARBONACEOUS MATERIALS

Edward F. Brooks, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 620,996, Jun. 15, 1984, Pat. No. 4,650,657, which is a continuation-in-part of Ser. No. 339,778, Jan. 15, 1982, abandoned, which is a continuation of Ser. No. 188,201, Sep. 18, 1980, abandoned. This application Jul. 21, 1986, Ser. No. 887,724

The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.

Int. Cl.[4] B01J *21/18, 20/20;* C01B *31/02;* C10K *3/04*

U.S. Cl. 502—185 34 Claims

1. A method for preparing a fibrous carbonaceous/ferrous group metal material comprising the steps of:

(a) introducing a feed gas containing carbon monoxide into a reaction zone having a bed containing particulate material to form a fluidized bed, the particulate material comprising a discrete abradant and a discrete catalyst containing ferrous metal, the abradant constituting at least ⅓ of the weight of the particulate material, the catalyst catalyzing the disproportionation of at least a portion of the carbon monoxide to form (i) a reacted gas stream and (ii) a fibrous carbonaceous/ferrous metal material that forms on the surface of the catalyst, the abradant being non-catalytic to carbon deposition and abrading the fibrous carbonaceous/ferrous metal material from the surface of the catalyst, wherein the feed gas is introduced into the reaction zone (i) at a temperature at least 50° C. lower than the temperature of the reaction zone and (ii) at a sufficient velocity for fluidizing the particulate material and so that the reacted gas stream elutriates abraded fibrous carbonaceous/ferrous metal material from the fluidized bed at a rate such that the bed turnover time for carbon is from 2 to 50 hours;

(b) maintaining the temperature in the reaction zone from 300° to 700° C.;

(c) maintaining the pressure in the reaction zone from about 1 to about 10 atmospheres;

(d) withdrawing elutriated fibrous carbonaceous/ferrous



material from the reaction zone, the withdrawn material comprising at least 2% by weight ferrous metal and at least 70% weight carbon, the withdrawn material having a weight average particle size of from about 1 to about 50 microns; and

(e) introducing catalyst to the reaction zone for replenishing the ferrous metal withdrawn from the reaction zone as part of the fibrous carbonaceous/ferrous metal material.

4,767,738

LEAD ALUMINUM BORATE

John L. Meiquist, Naperville, and Melvin L. Luetkens, Jr., Lisle, both of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Nov. 20, 1986, Ser. No. 932,880

Int. Cl.[4] B01J *21/02, 27/24;* C01B *15/12, 35/00*

U.S. Cl. 502—202 6 Claims

1. A crystalline lead aluminum borate composition consisting essentially of lead, aluminum, and boron oxides and having the general formula (x) PbO. (y) 24 $.Al_2O_3$. (z) B_2O_3 where x, y, and z are numbers representing molar amounts such that the mole fraction of PbO calculated as $x/(x+y+z)$, is within the range of about 0.5 to about 0.8; the mole fraction of AL_2O_3 calculated as $y/(x+y+z)$ is within the range of about 0.05 to about 0.3; and the mole fraction of B_2O_3 calculated as $z/(x+y+z)$ is within the range of about 0.05 to about 0.25 and said composition having the significant x-ray diffraction lines of Table A.

4,767,739

CATALYST SYSTEM FOR AMMOXIDATION OF PARAFFINS

Linda C. Glaeser, Cleveland Heights; James F. Brazdil, Jr., Mayfield Village, and Mark A. Toft, Lakewood, all of Ohio, assignors to The Standard Oil Company, Ohio

Filed Apr. 20, 1987, Ser. No. 39,859

Int. Cl.[4] B01J *23/18, 23/22, 27/198*

U.S. Cl. 502—209 6 Claims

1. A catalytic mixture suitable for the ammoxidation of propane to acrylonitrile, which comprises an intimate particulate mixture of a first catalyst composition and a second catalyst composition, said first catalyst composition being 10–99

VOL 1093 ISS 5 AUG 30 1988 UMI

weight percent of a diluent/support and 90-1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$$VSb_mA_aB_bC_cT_fO_x, \qquad \text{formula (1)}$$

where

A is one or more of W, Sn, Mo, B, P and Ge;

B is one or more of Fe, Co, Ni, Cr, Pb, Mn, Zn, Se, Te, Ga, In and As;

C is one or more of an alkali metal and Tl;

T is one or more of Ca, Sr and Ba; and

where m is from 0.01 and up to 20; a is 0.2–10; b is 0–20; c is 0–1; t is 0–20; the ratio $(a+b+c+t):(1+m)$ is 0.01–6; wherein x is determined by the oxidation state of other elements; A includes at least 0.2 atoms of W per atom of V, the antimony has an average valency higher than +3 and the vanadium has an average valency lower than +5, and wherein said support for the catalyst of formula (1) is selected from silica-alumina and alumina having 20–100 weight percent alumina; silica-titania and titania having 20–100 weight percent titania; silica-zirconia and zirconia having 80–100 weight percent zirconia; and silica-niobia and niobia having 30–100 weight percent niobia (Nb_2O_5),

said second catalyst composition being 0–99 weight percent of a diluent/support and 100–1 weight percent of a catalyst having the components in the proportions indicated by the empirical formula:

$$B_{i_k}Fe_eMo_{12}D_dE_eF_fG_gO_x \qquad \text{formula (2)}$$

where

D is one or more of an alkali or alkaline earth metal, Sm, Ag

E is one or more of Mn, Cr, Cu, V, Zn, Cd, La,

F is one or more of P, As, Sb, Te, W, B, Sn, Pb, Se

G is one or more of Co, Ni and

k is 0.1–12, l is 0.01–12, d is 0–0.5, e is 0–10,

f is 0–10, g is 0–12, $k+l+d+e+f+g \leqq 24$, and x is a number determined by the valence requirements of the other elements present, and wherein the weight ratio in said mixture of said first catalyst composition to said second catalyst composition is in the range of 0.001 to 2.5.

4,767,740

METALLIC SUPPORT FOR EXHAUST GAS CATALYSTS OF OTTO-ENGINES AND METHOD FOR MAKING THE SUPPORT

Joerg Abthoff, Pluederhausen; Hans-Dieter Schuster, Schorndorf, and Karlwalter Schmidt, Weinstadt, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 2, 1987, Ser. No. 69,232

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1986, 3622115

Int. Cl.⁴ B01J *32/00*

U.S. Cl. 502—439 **10 Claims**

1. A support structure for exhaust gas catalysts produced by the process comprising:

applying a separating agent in a pattern on a plurality of metallic members such that given areas are devoid of separating agent;

stacking said plurality of metallic members;

welding together said plurality of stacked metallic members in areas devoid of said separating agent by applying pressure thereto thereby forming a partial composite body; and

forming channels in said partial composite body in said areas including separating agent applied thereto by inflating said welded together stacked metallic members.

4,767,741

TWO-PHASE LIQUID COSMETIC AND METHOD OF PREPARING SAME

Joseph A. Komor, Ramsey; Philip Franco, Paramus; Lorraine P. Nangle, Clifton, and William H. Koelle, Morris Plains, all of N.J., assignors to Avon Products, Inc., New York, N.Y.

Filed Aug. 15, 1986, Ser. No. 896,708

Int. Cl.⁴ A61K *7/46, 7/00*

U.S. Cl. 512—3 **9 Claims**

1. A liquid cosmetic composition comprising:

up to about 95% by weight of an organic liquid phase comprised of at least one member selected from the group consisting of monohydric alcohols having carbon atoms of no greater than 5, polyhydric alcohols having carbon atoms of no greater than 6, polyethylene glycol having carbon atoms of no greater than 50, ethers having carbon atoms of no greater than 6, and ketones having carbon atoms of no greater than 6;

up to about 80% by weight of an oil phase in the form of stable spheres or droplets dispersed in said organic liquid phase, said oil phase being comprised of at least one member selected from the group consisting of mineral oil, liquid paraffin, squalane, 2-hexyldecyl palmitate, 2-octylododecyl myristate, di-2-hexyldecyl adipate, di-2-ethylhexyl sebacate, olive oil, tsubaki oil, mink oil, isostearic acid, oleic acid, oleyl alcohol and a polypropyeneglycol butyl ether having a polymerization degree of approximately 40; and

not greater than approximately 25% by weight of finely divided solid particles insoluble in said organic liquid phase and said oil phase, said solid particles comprising one or more precipitated salts selected from the group consisting of the reaction products of soluble alginate, phosphate or sulfate with calcium chloride;, of zinc salts with sodium stearate; of carboxymethylcellulose with zinc chloride; of calcium chloride with sodium silicate; and of calcium chloride with sodium dodecylbenzenesulfonate.

6. The composition of claim 1 wherein said organic liquid phase comprise ethanol and at least one cosmetic ingredient.

7. The composition of claim 6 wherein said cosmetic ingredient is a fragrance compound.

4,767,742

HIRUDIN-PA AND ITS DERIVATIVES, PROCESS FOR MANUFACTURING THESE AND THE USE OF THESE SUBSTANCES

Johannes Dodt; Ursula Seemuller, both of Munich; Hans Fritz, Hohenbrunn, and Ernst Fink, Westerstede-Geissbelhorst, all of Fed. Rep. of Germany, assignors to Plantorgan-Werk Heinrich G. F. Christensen, KG, Bad Zwischenahn, Fed. Rep. of Germany

PCT No. PCT/EP85/00701, § 371 Date Aug. 6, 1986, § 102(e) Date Aug. 6, 1986, PCT Pub. No. WO86/03493, PCT Pub. Date Jun. 19, 1986

PCT Filed Dec. 12, 1985, Ser. No. 897,610

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1984, 3445532

Int. Cl.⁴ A61K *37/43;* **C07K** *7/10*

U.S. Cl. 514—12 **11 Claims**

1. A hirudin-PA compound of the formula I:

```
                10                  20
ITYTDCTESGQNLCLCEGSN

                30                  40
VCGKGNKCILGSQGKDNQCV

                50                  60
TGEGTPKPQSHNQGDFEPIP

                .
EDAYDE
```


in which the above letters represent proteinogenic amino acids corresponding to the IUPAC nomenclature, said amino acids being peptidically bonded, and in which Y^* is tyrosin, tyrosin-O-sulfate, or derivatives thereof, shortened by up to 2 amino acids at the N-terminus, and the amino acid chain at the C-terminus is shortened by the sequence

```
QSHNQGDFEPIPEDAY* DE,
EPIPEDAY* DE,
PIPEDAY* DE,
EDAY* DE, or
AY* DE,
```

or, if Y^* is tyrosin, the amino acid chain is shortened by the sequence D E or E at the C-terminus,

or a pharmaceutically useful salt thereof.

4,767,743

PEPTIDE IMMUNOSTIMULANTS

James P. Rizzi, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Aug. 27, 1986, Ser. No. 900,934

Int. Cl.⁴ C07K *5/08;* **A61K** *37/02*

U.S. Cl. 514—18 **31 Claims**

1. A compound of the formula

and pharmaceutically acceptable base salt thereof, wherein R_1 is selected from the group consisting of cycloalkyl having four to seven carbon atoms, alkyl having two to ten carbon atoms and cycloalkylmethyl having from six to eight carbon atoms; R_2 is hydrogen; R_3 is a D-amino acid residue of the formula

wherein X is selected from the group consisting of hydrogen, alkyl having one to two carbon atoms and hydroxymethyl, and n is an integer of 0 to 4; and R_4 and R_5 are each selected from the group consisting of hydrogen, alkyl having one to six carbon atoms, cycloalkylmethyl having six to eight carbon atoms and benzyl.

4,767,744

SUBSTITUTED TYROSYL METHIONYL DIPEPTIDE AMIDES

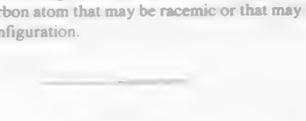
Donald W. Hansen, Jr., Chicago; Daniel R. Pilipauskas, Glenview, and Michael Clare, Skokie, all of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 882,796, Jul. 14, 1986, which is a continuation-in-part of Ser. No. 829,398, Feb. 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 765,885, Aug. 14, 1985, abandoned. This application Feb. 13, 1987, Ser. No. 14,329

Int. Cl.⁴ A61K *37/02;* **C07K** *5/06;* **C07C** *103/20;* **C07D** *207/00*

U.S. Cl. 514—19 **10 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable addition salts thereof, wherein R_1 is —OH or —OCH_3; wherein R^2 and R^3 may be the same or different and represent straight or branched chain lower alkyl of 1–6 carbon atoms; wherein R^4, R^5 and R^9 may be the same or different and represent hydrogen or straight or branched chain lower alkyl having 1–6 carbon atoms; wherein R^6 represents hydrogen, or straight or branched chain lower alkyl of 1–6 carbon atoms, or R^6 may act together with N^6, C^w and either R^7 or R^8 to form a cycloamine of the formula:



such that between R^7 and R^8, when one acts to form said cycloamine, the other is hydrogen, or straight or branched chain lower alkyl of 1–6 carbon atoms; wherein when neither R^7 nor R^8 is acting to form said cycloamine, then R^7 and R^8 act together with C^w to form a cycloalkyl of the formula:

where n=3, 4, 5; wherein C^w represents an asymmetric carbon atom when R^7 and R^8 are not the same and may be racemic or have the D or L configuration; and wherein C^y represents an asymmetric carbon atom that may be racemic or that may have the D or L configuration.

4,767,745

CONJUGATES OF LEUKOTRIENES WITH PROTEINS

Robert N. Young, Senneville; Joshua Rokach, Chomedey-Laval, both of Canada, and Edward C. Hayes, Lincroft, N.J., assignors to Merck Frosst Canada, Inc., Kirkland, Canada and Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 665,596, Oct. 29, 1984, abandoned, which is a continuation-in-part of Ser. No. 565,263, Dec. 17, 1983, abandoned, which is a continuation-in-part of Ser. No. 370,229, Apr. 20, 1982, abandoned, and a continuation-in-part of Ser. No. 560,663, Dec. 12, 1983, abandoned. This application May 5, 1986, Ser. No. 859,971

Int. Cl.⁴ A61K *37/02;* **C07K** *17/00*

U.S. Cl. 514—21 **8 Claims**

1. The conjugate compound of LTC_4, LTD_4, or LTE_4 coupled via a free amino group with either KLH, BSA, human serum albumin, tetanus antigen, diphtheriae toxoid, or CRM 197, through the coupling agents 1,5-difluoro-2,4-dinitrobenzene or 6-N-maleimido-alkanoic acid chloride, wherein alkanoic means 2 to 8 carbon atoms.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,746

METHOD FOR ENHANCEMENT OF HEALING OF EPITHELIAL WOUNDS IN MAMMALS

Nicholas Catsimpoolas, Newton Centre, Mass., and Robert S. Sinn, New York, N.Y., assignors to Trustees of Boston University, Boston, Mass. and Angio-Medical Corporation, New York, N.Y.

Filed Dec. 4, 1985, Ser. No. 805,206
Int. Cl.[4] A61K *31/70, 31/715, 31/20*
U.S. Cl. 514—25 13 Claims

1. Method for enhanced wound epithelialization in mammals having epithelial wounds which comprises:

treating epithelial wounds systemically or topically with pharmacologically active doses of mammalian omental lipid fractions capable of promoting angiogenic activity and comprising ganglioside.

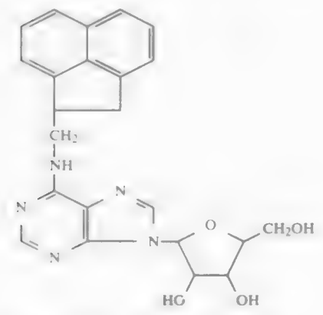
4,767,747

METHOD FOR TREATING CONGESTIVE HEART FAILURE WITH N[6]-ACENAPHTHYL ADENOSINE

Harriet W. Hamilton, Chelsea, and Robert P. Steffen, Saline, both of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 28, 1986, Ser. No. 901,107
Int. Cl.[4] A61K *31/70;* C07H *19/16*
U.S. Cl. 514—46 3 Claims

1. A method for treating congestive heart failure which comprises administering a therapeutically effective amount of a compound in unit dosage form having the structural formula



or a pharmaceutically acceptable salt thereof, to a mammal in need of said treatment.

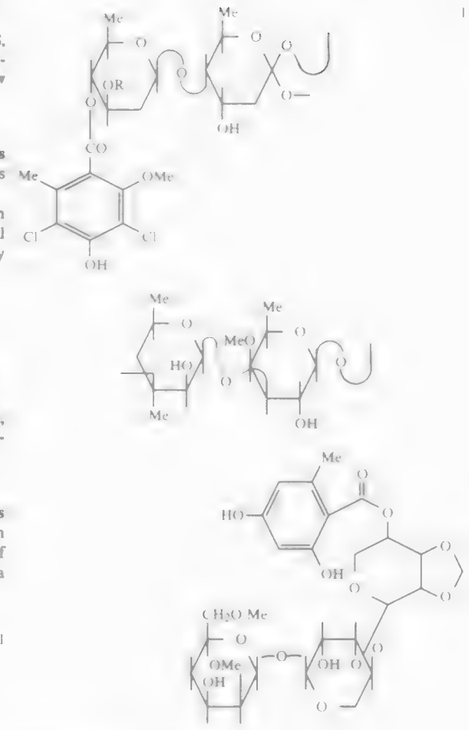
4,767,748

SUBSTITUTED OLIGOSACCHARIDE ANTIBODIES

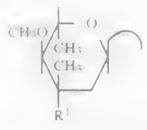
Ashit K. Ganguly, Upper Montclair; Olga Sarre, Verona, and Vyyoor M. Girijavallabhan, Parsippany, all of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 787,405, Oct. 15, 1985, Pat. No. 4,622,314. This application Aug. 27, 1986, Ser. No. 900,873
The portion of the term of this patent subsequent to Nov. 11, 2003, has been disclaimed.
Int. Cl.[4] C07H *15/24, 15/00;* A61K *21/00, 35/74*
U.S. Cl. 514—54 11 Claims

7. A method of eliciting an antibacterial effect in a warm-blooded animal having a susceptible gram-positive or gram-negative bacterial infection which comprises administering to said animal an anti-bacterially effective amount of a compound represented by the formula



wherein R is hydrogen, or



wherein R_1 is N-acylamino, N-alkylamino, N,N-dialkylamino or N-acyl-N-hydroxylamino or the pharmaceutically acceptable salts thereof.

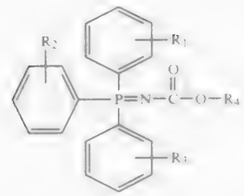
4,767,749

ESTER OF (TRIARYLPHOSPHORANYLIDENE)CARBAMIC ACID HAVING DIURETIC AND ABILITY TO LOWER PLASMA RENIN PROPERTIES

Andrew S. Tomcufcik, Old Tappan; John E. Emma, New City; Nancy H. Eudy, Cornwall-on-Hudson; Joseph W. Marsico, Pearl River, and Howard Newman, Monsey, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jul. 23, 1986, Ser. No. 888,613
Int. Cl.[4] C07C *125/06;* A61K *31/66*
U.S. Cl. 514—137 13 Claims

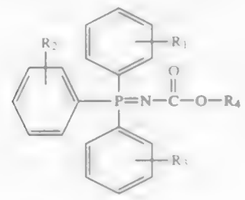
1. A compound selected from those of the formula:



(I)

wherein R_1, R_2 and R_3 are each at the ortho or meta position, represent mono- or disubstituents selected from the group consisting of hydrogen, alkyl(C_1–C_3), alkoxy(C_1–C_3), trifluoromethyl and halogen; and R_4 is selected from the group consisting of alkyl(C_1–C_3), alkenyl(C_2–C_3), alkynyl(C_2–C_4), cycloalkyl(C_3–C_5), cycloalkyl(C_3–C_6)methyl, 4-oxopentyl, 2,3-dihydro-1H-inden-1-yl, 1-alkyl(C_1–C_3)cyclopentyl, trans-2-alkyl(C_1–C_3)cyclopentyl, trans-2-alkoxy(C_1–C_3)cyclopentyl, 1-cyclopropylethyl, 2-methylcyclopropylmethyl, dicyclopropylmethyl, 2-cyclopenten-1-yl, and cis and trans-2-methoxycyclohexyl; with the proviso that when R_4 is alkyl(C_1–C_3), two of R_1, R_2 and R_3 are not hydrogen.

10. A method for effecting diuresis in a mammal which comprises administering to said mammal a diuretic effective amount of a compound selected from those of the formula:



wherein R_1, R_2 and R_3 are each at the ortho or meta position, represent mono- or disubstituents selected from the group consisting of hydrogen, alkyl(C_1–C_3), alkoxy(C_1–C_3), trifluoromethyl and halogen; and R_4 is selected from the group consisting of alkyl(C_1–C_3), alkenyl(C_2–C_3), alkynyl(C_2–C_4), cycloalkyl(C_3–C_5), cycloalkyl(C_3–C_6)methyl, 4-oxopentyl, 2,3-dihydro-1H-iden-1-yl, 1-alkyl(C_1–C_3)cyclopentyl, trans-2-alkyl(C_1–C_3)cyclopentyl, trans-2-alkoxy(C_1–C_3)cyclopentyl, 1-cyclopropylethyl, 2-methylcyclopropylmethyl, dicyclopropylmethyl, 2-cyclopenten-1-yl, and cis and trans-2-methoxycyclohexyl.

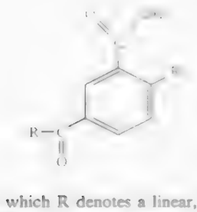
4,767,750

TOPICAL COMPOSITIONS INTENDED FOR SKIN TREATMENT CONTAINING SALICYLIC ACID DERIVATIVES

Bernard Jacquet, Antony; Jean L. Leveque, Montfermeil; Michel Hocquaux, and Didier S. Leger, both of Paris, all of France, assignors to L'Oreal, Paris, France

Filed May 7, 1986, Ser. No. 860,434
Claims priority, application France, May 7, 1985, 85 06953
Int. Cl.[4] A61K *31/60*
U.S. Cl. 514—159 11 Claims

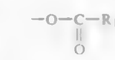
1. Topical dermopharmaceutical and/or cosmetic composition in the form of a cream, milk, gel, lotion, stick or beauty mask with a keratolytic and/or comedolytic effect, containing in a carrier which is suitable for application to skin, an effective amount of at least one compound corresponding to the formula I



(I)

in which R denotes a linear, branched or cyclized saturated aliphatic chain containing from 3 to 11 carbon atoms, an unsaturated chain containing from 3 to 17 carbon atoms, and containing one or more conjugated or unconjugated double bonds, the above mentioned chains being unsubstituted or substituted by one or more halogen atoms, by one or more trifluoromethyl groups, by one or more hydroxyl groups in free form or esterified with an acid containing from 1 to 6 carbon atoms or by a carboxy group, free or esterified with a lower alcohol containing from 1 to 6 carbon atoms,

R' denotes a hydroxyl group or an ester group of formula:



(II)

where R_1 denotes a saturated or unsaturated aliphatic group containing from 1 to 18 carbon atoms.

4,767,751

TOPICAL DRUG RELEASE SYSTEM

Adrian F. Davis, Dorking, England, assignor to Beecham Group p.l.c., England

Filed Jan. 23, 1985, Ser. No. 693,770
Claims priority, application United Kingdom, Jan. 25, 1984, 8401965
Int. Cl.[4] A61K *31/56*
U.S. Cl. 514—179 17 Claims

1. A pharmaceutical composition for topical application, comprising a first liquid phase and a second liquid phase different from the first phase but miscible with the first phase upon admixture therewith, at least one of said phases comprising a drug dissolved therein, the concentration of said drug in each phase in which said drug is present and the composition of the phases being such that, on admixture of the phases, the total drug concentration in the initially formed resultant mixture is greater than the saturated drug solubility in said initially formed resultant mixture, whereby said resultant mixture is supersaturated with the drug.

4,767,752

IMIDAZOLYL OR TRIAZOLYL SUBSTITUTED PROPIONATE DERIVATIVE AND NONMEDICAL FUNGICIDE CONTAINING THE SAME

Teruhiko Ishii; Haruaki Ito; Takashi Bando; Toshiro Yasue; Masatoshi Motoyoshi; Matsutaro Yamaguchi; Yutaka Wakatsuki, and Nobuko Saito, all of Tokyo, Japan, assignors to S.D.S. Biotech K.K., Tokyo, Japan

Filed Mar. 17, 1986, Ser. No. 840,183
Claims priority, application Japan, Mar. 18, 1985, 60-52533; Feb. 10, 1986, 61-25694
Int. Cl.[4] A01N *43/50, 43/653;* C07D *233/60, 249/08*
U.S. Cl. 514—184 10 Claims

1. A propionate derivative having the general formula (I):



(I)

wherein R^1 is phenyl which may be substituted with one or

VOL 1093 ISS 5 AG 30 1988 UMI

more of the same or different substituents selected from the group consisting of halogen, methyl, methoxy, and nitro, R^2 is C_1–C_6 alkyl, C_3–C_7 cycloalkyl, or C_3–C_6 alkenyl, R^3 is C_1–C_6 alkylthio, C_3–C_7 cycloalkylthio, C_3–C_6 alkenylthio, phenylthio, or benzylthio group which may be substituted with halogen or methyl, and R^4 is imidazol-1-yl or 1,2,4-triazol-1-yl; or the acid addition salt thereof or the metal complex thereof.

7. A nonmedical fungicide comprising, as an effective ingredient, a propionate derivative having the general formula (I) or an agriculturally acceptable salt thereof:



(I)

wherein R^1 is phenyl which may be substituted with one or more of the same or different substituents selected from the group consisting of halogen, methyl, methoxy, and nitro, R^2 is C_1–C_6 alkyl, C_3–C_7 cycloalkyl, or C_3–C_6 alkenyl, R^3 is C_1–C_6 alkylthio, C_3–C_7 cycloalkylthio, C_3–C_6 alkenylthio, phenylthio, or benzylthio group which may be substituted with halogen or methyl and R^4 is imidazol-1-yl or 1,2,4-triazol-1-yl; or the acid addition salt thereof or the metal complex thereof.

4,767,753

METHODS AND COMPOSITIONS FOR PREVENTING ULCERS

Loren R. Pickart, Bellevue, Wash., assignor to ProCyte Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 699,824, Feb. 8, 1985, Pat. No. 4,665,054. This application May 11, 1987, Ser. No. 48,276

Int. Cl.[4] A61K *37/02*

U.S. Cl. 514—18 12 Claims



1. A method for reducing the secretion of stomach acid in warm-blooded animals, comprising:

administering to the animal a therapeutically effective amount of a composition comprising glycyl-L-histidyl-L-lysine

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4,767,754

CEPHALOSPORINS

Rolf Angerbauer; Michael Boberg; Karl G. Metzger, all of Wuppertal, and Hans-Joachim Zeiler, Velbert, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

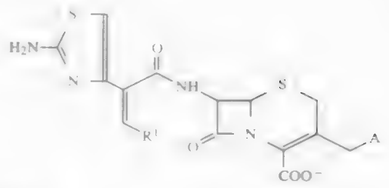
Division of Ser. No. 673,246, Nov. 20, 1984. This application Oct. 30, 1986, Ser. No. 926,027

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1983, 3343208

Int. Cl.[4] C07D *501/34;* A61K *31/545*

U.S. Cl. 514—202 9 Claims

1. A compound of the formula



in which

R_1 represents C_1–C_5-alkyl, and

A is pyrazinium or pyridazinium radical which is substituted by C_1–6-alkyl, hydroxy-C_1–C_4-alkyl, carboxy C_1–C_4-alkyl, C_1–C_4-alkoxycarbony-C_1–C_4-alkyl, formyl-C_1–C_4-alkyl, C_1–C_4-alkylcarbonyl-C_1–C_4-alkyl, C_1–C_4-alkylcarbonyl-C_1–C_4-alkyl substituted by hydroxyl, carbamoyl-substituted C_1–C_4-alkyl, carbamoyl-substituted C_1–C_4-alkyl substituted on the nitrogen by hydroxyl, sulpho-C_1–C_4-alkyl, 1-hydroxy-1-sulphomethyl, C_1–C_4-alkoxy-C_1–C_4-alkyl, C_1–C_4-alkoxy-C_1–C_4-alkyl substituted by hydroxyl, C_1–C_4-alkylthio-C_1–C_4-alkyl, C_1–C_4-alkylsulphinyl-C_1–C_4-alkyl, C_1–C_4-alkylsulphonyl-C_1–C_4-alkyl, C_3-alkenyloxy-C_1–C_4-alkyl, C_3-alkenylthio-C_1–C_4-alkyl, C_3-alkenylsulphinyl-C_1–C_4-alkyl, C_3-alkenylsulphonyl-C_1–C_4-alkyl, cyano-C_1–C_3-alkyl, epoxy-C_2–C_3-alkyl, trifluoromethyl hydroximinomethyl, C_1–C_3-alkyloximinomethyl, C_3–C_4-alkenyl, C_3–C_4-alkenyl substituted by hydroxyl, C_3-alkinyl, C_3–C_6-cycloalkyl, and C_3–C_6-cycloalkyl-methyl, C_3–C_6-cycloalkyl-methyl substituted on the ring by hydroxyl, by halogen, or by carboxyl, C_1–C_4-alkoxycarbonyl, cyano, C_5–C_6-cycloalkenyl, C_1–C_4-alkoxy, C_1–C_4-alkoxy substituted by hydroxyl, carboxyl or C_1–C_4-alkoxycarbonyl, epoxy-C_2–C_3-alkoxy, C_3-alkenyloxy, C_3-alkinyloxy, aryloxy, amino, C_1–C_5-alkylamino, C_1–C_4-dialkylamino, C_1–C_4 -alkoxycarbonylamino, C_1–C_4-alkylcarbonylamino, N-C_1–C_4-alkyl- and dialkylcarbamoylamino, C_1–C_4-alkylsulphonylamino, hydroxyl, C_1–C_4-alkylthio, C_1–C_4-alkylthio substituted by hydroxyl, C_1–C_4-alkylsulphinyl, C_1–C_4-alkylsulphinyl substituted by hydroxyl, C_1–C_4-alkylsulphonyl, C_1–C_4-alkylsulphonyl substituted by hydroxyl, carboxymethylthio and C_1–C_4-alkoxycarbonylmethylthio, C_1–C_4-alkoxycarbonylmethyl-sulphinyl and -sulphonyl, C_3-alkenylthio, C_3-alkenylsulphinyl, C_3-alkenylsulphonyl, phenyl, benzyl, and benzyl substituted by halogen, 2'-thienyl and 3'thienyl, formyl, C_1–C_4-alkylcarbonyl, C_1–C_4-alkylcarbonyl substituted by hydroxyl, benzoyl, C_1–C_4-alkylcarbonylamino, formylamino, carboxyl, C_1–C_4-alkoxycarbonyl, and C_1–C_4-alkoxycarbonyl onto which is fused a 5-membered or 6-membered ring containing up to two hetero-atoms and up to two double bonds, or a pharmaceutically acceptable salt thereof or ester thereof which can be split under physiological conditions.

4,767,755

3-(ACYLAMINOMETHYL)IMIDAZO[1,2-A]PYRIDINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Pascal George, Vitry Sur Seine; Claudie Giron, Antony, and Jacques Froissant, Moree, all of France, assignors to Synthelabo, Paris, France

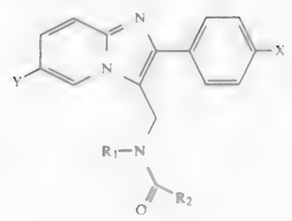
Filed Feb. 4, 1987, Ser. No. 10,703

Claims priority, application France, Feb. 5, 1986, 86 01553

Int. Cl.[4] A61K *31/44, 31/535;* C07D *471/04*

U.S. Cl. 514—212 3 Claims

1. A compound which is a 3-(acylaminomethyl)imidazo[1,2-a]pyridine derivative of formula (I)



(I)

in which R_1 denotes hydrogen; linear or branched C_1–C_4 alkyl; or benzyl: R_2 denotes linear or branched C_1–C_6 alkyl; cyclohexyl; trichloromethyl; 1-propenyl; allyl; phenyl; 4-chlorophenyl; or benzyl: or R_1 and R_2 together denote a C_3–C_5 aliphatic chain: X denotes halogen; C_1–C_3 alkyl; methylthio; trifluoromethyl; optionally esterified carboxy of formula —COOR in which R denotes hydrogen or C_1–C_6 alkyl; cyano; or optionally mono- or dialkylated aminocarbonyl of formula —$CONR_3R_4$ in which R_3 and R_4 independently denote hydrogen or C_1–C_4 alkyl or together denote a chain of formula —$(CH_2)_2$—Z—$(CH_2)_2$— in which Z denotes a direct bond, oxygen, sulphur, or a divalent group of formula —CH_2—, —NH— or —N(C_1–C_4 alkyl)—; alkylamino of formula NHR_5 in which R_5 denotes C_2–C_6 alkyl; or dialkylamino of formula —NR_6R_7 in which R_6 and R_7 independently denote C_2–C_6 alkyl or together denote a chain of formula —$(CH_2)_2$—Z—$(CH_2)_2$— in which Z denotes a direct bond, oxygen, sulphur, or a divalent group of formula —CH_2—, —NH— or —N(C_1–C_4 alkyl)—: and Y denotes optionally esterified carboxy of formula —$COOR_8$ in which R_8 denotes hydrogen or C_1–C_6 alkyl; cyano; or optionally mono- or dialkylated aminocarbonyl of formula —$CONR_9R_{10}$ in which R_9 and R_{10} independently hydrogen or C_1–C_4 alkyl; or a pharmacologically acceptable acid addition salt.

3. A pharmaceutical composition comprising a compound according to claim 1 and a pharmaceutically suitable excipient.

4,767,756

3-SUBSTITUTED BENZAZEPINES

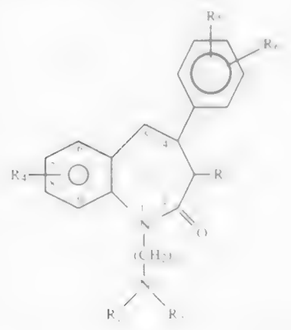
Jagabandhu Das, Hamilton Square, and David M. Floyd, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jul. 17, 1987, Ser. No. 74,734

Int. Cl.[4] A61K *31/55;* C07D *401/04, 401/06, 401/14, 403/04, 403/06, 403/14, 413/04, 413/06, 413/14, 417/04, 417/06, 417/14*

U.S. Cl. 514—213 20 Claims

1. A compound having the formula



including pharamceutically acceptable salts thereof, wherein R_1 is

(I)

in which R_1 denotes hydrogen; linear or branched C_1–C_4 alkyl; or benzyl: R_2 denotes linear or branched C_1–C_6 alkyl; cyclohexyl; trichloromethyl; 1-propenyl; allyl; phenyl; 4-chlorophenyl; or benzyl: or R_1 and R_2 together denote a C_3–C_5 aliphatic chain: X denotes halogen; C_1–C_3 alkyl; methylthio; trifluoromethyl; optionally esterified carboxy of formula —COOR in which R denotes hydrogen or C_1–C_6 alkyl; cyano; or optionally mono- or dialkylated aminocarbonyl of formula —$CONR_3R_4$ in which R_3 and R_4 independently denote hydrogen or C_1–C_4 alkyl or together denote a chain of formula —$(CH_2)_2$—Z—$(CH_2)_2$— in which Z denotes a direct bond, oxygen, sulphur, or a divalent group of formula —CH_2—, —NH— or —N(C_1–C_4 alkyl)—; alkylamino of formula NHR_5 in which R_5 denotes C_2–C_6 alkyl; or dialkylamino of formula —NR_6R_7 in which R_6 and R_7 independently denote C_2–C_6 alkyl or together denote a chain of formula —$(CH_2)_2$—Z—$(CH_2)_2$— in which Z denotes a direct bond, oxygen, sulphur, or a divalent group of formula —CH_2—, —NH— or —N(C_1–C_4 alkyl)—: and Y denotes optionally esterified carboxy of formula —$COOR_8$ in which R_8 denotes hydrogen or C_1–C_6 alkyl; cyano; or optionally mono- or dialkylated aminocarbonyl of formula —$CONR_9R_{10}$ in which R_9 and R_{10} independently hydrogen or C_1–C_4 alkyl; or a pharmacologically acceptable acid addition salt.

3. A pharmaceutical composition comprising a compound according to claim 1 and a pharmaceutically suitable excipient.

4,767,756

3-SUBSTITUTED BENZAZEPINES

Jagabandhu Das, Hamilton Square, and David M. Floyd, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

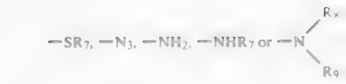
Filed Jul. 17, 1987, Ser. No. 74,734

Int. Cl.[4] A61K *31/55;* C07D *401/04, 401/06, 401/14, 403/04, 403/06, 403/14, 413/04, 413/06, 413/14, 417/04, 417/06, 417/14*

U.S. Cl. 514—213 20 Claims

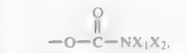
1. A compound having the formula

including pharamceutically acceptable salts thereof, wherein R_1 is



R_2 and R_3 are each independently hydrogen, alkyl, cycloalkyl or arylalkyl, or R_2 and R_3 together with the nitrogen atom to which they are attached are pyrrolidinyl, piperidinyl, or morpholinyl;

R_4, R_5 and R_6 are each independently hydrogen, halogen, alkyl, alkoxy, aryloxy, arylalkoxy, diarylalkoxy, arylalkyl, cyano, hydroxy, alkanoyloxy,



fluoro substitttuted alkoxy, fluoro substituted alkyl, (cycloalkyl)alkoxy,

—NO_2, —NX_3X_4, —$S(O)_m$alkyl, —$S(O)_m$aryl,



and R_5 and R_6 can be present in the ortho, meta or para positions;

R_7 is carboxylic acid acyl, alkyl, aryl, or arylalkyl;

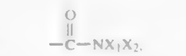
R_8 and R_9 are each independently hydrogen, alkyl, aryl, cycloalkyl or arylalkyl;

n is 2 or 3;

m is 0, 1 or 2;

X_1 and X_2 are each independently hydrogen, alkyl, aryl or heteroaryl, or X_1 and X_2 together with the nitrogen atom to which they are attached are pyrrolidinyl, piperidinyl or morpholinyl;

X_3 and X_4 are each independently hydrogen, alkyl, alkanoyl, arylcarbonyl, heteroarylcarbonyl, or



X_5 is hydroxy, alkoxy, aryloxy, amino, alkylamino or dialkylamino; and

X_6 is akyl, alkoxy or aryloxy; with the proviso that if R_4 is a 7-alkyl group, it must have a tertiary carbon atom bonded to the ring; and further wherein

the terms "alkyl" and "alkoxy", by themselves or as part of another group, refer to both straight and branched chain groups having 1 to 10 carbon atoms;

the term "alkenyl", by itself or as part of another group, refers to both straight and branched chain groups having 2 to 10 carbon atoms;

the term "aryl", by itself or as part of another group, refers to phenyl and phenyl substituted with 1, 2 or 3 groups independently selected from amino, alkylamino, dialkylamino, nitro, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkanoyloxy, carbamoyl, or carboxyl;

the term "alkanoyl", by itself or as part of another group, refers to groups having the formula alkyl



having 2 to 11 carbon atoms;

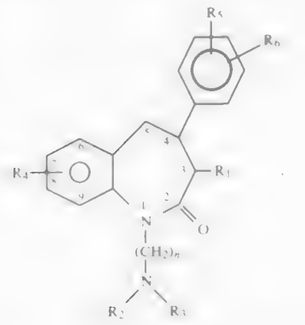
the term "heteroaryl" refers to pyridinyl, pyrrolyl imidazolyl, furyl, thienyl and thiazolyl;

VOL 1093 ISS 5 AG 30 1988 UMI

the term "cycloalkyl" refers to groups haing 3, 4, 5, 6 or 7 carbon atoms; and,

the terms "fluoro substituted alkyl" and "fluoro substituted alkoxy", by themselves or as part of another group, refer to said alkyl and said alkoxy groups in which one or more hydrogens have been replaced by fluorine atoms.

16. A composition useful in reducing blood pressure in a mammal comprising a pharmaceutically acceptable carrier and an anti-hypertensively effective amount of a compound or pharmaceutically acceptable salt thereof of the formula



wherein R_1, R_2, R_3, R_4, R_5, R_6 and n are as defined in claim 1.

4,767,757

ACYLOXYTHIOPHENE-CARBOXAMIDE FUNGICIDES, COMPOSITIONS AND USE

Werner Daum, Krefeld, and Gerd Hänssler, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

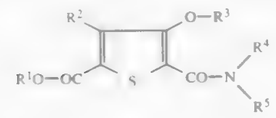
Filed Mar. 19, 1987, Ser. No. 27,755

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1986, 3610711

Int. Cl.[4] A01N *43/10, 43/84;* **C07D** *333/40, 413/02*

U.S. Cl. 514—231.5 **11 Claims**

1. An acyloxythiophene-carboxamide of the formula



in which

R^1 represents alkyl, alkoxyalkyl, alkylthioalkyl, fluoroalkyl, cyanoalkyl, alkenyl, alkinyl or cycloalkyl,

R^2 represents alkyl or optionally substituted phenyl,

R^3 represents the —OC—Q radical, in which

Q represents pyridyl; monoalkylamino, the alkyl part being optionally substituted by halogen, cyano, alkoxycarbonyl, dialkylaminocarbonyl, alkanyleneaminocarbonyl or oxaalkanyleneaminocarbonyl; 1-cyanocycloalkylamino; dialkylamino; alkanyleneamino; oxaalkanyleneamino; N-alkyl-N-phenylamino or phenylamino, in which the phenyl radical in each is optionally identically or differently substituted by halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio, halogenoalkylthio, alkylsulphonyl, halogenoalkylsulphonyl, alkanylenedioxy, halogenoalkanylenedioxy or by —O—$CHal_2$—O—$CHal_2$—, or alkoxycarbonylamino,

R^4 represents alkyl, alkoxyalkyl, alkylthioalkyl, cyanoalkyl, fluoroalkyl, alkenyl, alkinyl, cycloalkyl or alkoxy,

R^5 represents hydrogen, alkyl, alkoxyalkyl, alkylthioalkyl, fluoroalkyl, cyanoalkyl, alkenyl, alkinyl or cycloalkyl,

R^4 and R^5, together with the adjacent nitrogen atom represent an optionally substituted heterocycle which can be substituted, in the alkylene chain, by further heteroatoms.

9. A fungicidal composition comprising a fungicidally effective amount of a compound according to claim 1 and a diluent.

4,767,758

PHARMACEUTICAL COMPOSITIONS CONTAINING THIOPHENE COMPOUNDS, AND NEW THIOPHENE COMPOUNDS

Alberto Breccia, and Adamo Fini, both of Bologna, Italy, assignors to Consiglio Nazionale Delle Ricerche, Rome, Italy

Continuation of Ser. No. 813,787, Dec. 27, 1985, abandoned. This application Feb. 26, 1987, Ser. No. 20,162

Claims priority, application Italy, Dec. 28, 1984, 24283 A/84

Int. Cl.[4] A61K *31/38, 31/45*

U.S. Cl. 514—231.5 **4 Claims**

1. A method for radiosensitizing cells which comprises administering to a patient in need thereof a radiosensitizing effective amount of a composition containing as an active ingredient a compound of the formula



wherein

R_1 is hydrogen, p-nitrophenoxy, halogen, carboxy, $CON(R_5, R_6)$, $CONH(CHR_9)_n$—COOH, CH_2NHR_8, $NH(CHR_9)_nAR_{10}$, CH=NOH, NO_2, CHO, OR_7, and wherein R_5 and R_6 are the same or different, and represent hydrogen, a straight or branched alkyl having 1–8C atoms, a heterocyclic ring selected from the group comprising thiophene and imidazole, ascorbyl, peptidyl having up to 5 amino acids or a sugar radical; or R_5 and R_6, together with the nitrogen atom to which they are linked, are groups necessary for forming a 5-membered heterocyclic ring which may contain other heteroatoms selected from the group consisting of O and N; R_7 has the meaning indicated for R_5 and R_6 above; R_8 is an acyl of an aliphatic carboxylic acid having 1–4C atoms; R_9 is hydrogen or methyl; R_{10} is methyl or phenyl; n is 1, 2, 3 or 4; and A is CO or SO_2;

R_2 is hydrogen, NO_2, halogen, $CH(COOH)_2$, OH, $(CH_2)_nCOOH$ wheren n is 0, 1, 2, 3 or 4;

R_3 is hydrogen, NO_2, OH:

R_4 is hydrogen, NO_2, halogen, SO_2CH_3, OH, $N(R_5, R_6)$ wherein R_5 and R_6 have the meaning above,

provided however that at least two of the substituents R_1, R_2, R_3 and R_4 are not hydrogen;

or an addition salt thereof with pharmaceutically acceptable acids or bases, together with a pharmaceutically acceptable diluent.

4,767,759

PIPERAZINYL AND MORPHOLINYL SUBSTITUTED 1-(BENZYL OR PYRIDYLMETHYL)-4-OR-5-AMINOMETHYL-PYRROLIDIN-2-ONES AND THEIR NOOTROPIC USE

Karl-Heinz Weber, Gau-Algesheim; Gerhard Walther, Bingen/-Rhein; Claus Schneider, Ingelheim/Rhein; Dieter Hinzen, Bingen/Rhein; Franz J. Kuhn, Gau-Algesheim, and Erich Lehr, Waldalgesheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

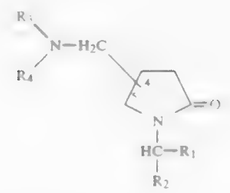
Continuation-in-part of Ser. No. 657,219, Oct. 3, 1984, abandoned. This application Jun. 26, 1986, Ser. No. 878,828

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1983, 3336024

Int. Cl.[4] C07D *413/06, 403/06;* **A61K** *31/495, 31/535*

U.S. Cl. 514—235.5 **9 Claims**

1. A compound of the formula



wherein

R_1 is hydrogen or alkyl of 1 to 4 carbon atoms;

R_2 is 2-,3- or 4-pyridyl, phenyl or mono- or di-substituted phenyl, where the substituents are each inivually alkoxy of 1 to 2 carbon atoms, fluorine, chlorine, bromine, trifluoromethyl, alkyl of 1 to 4 carbon atoms, hydroxyl or nitro; and

R_3 and R_4, together with each other and the nitrogen atom to which they are attached, form an unsubstituted or methyl-substituted, saturated 6-membered heterocycle which contains an additional oxygen or nitrogen heteroatom;

wherein the aminomethyl substituent is attached to the 4- or 5-position of the pyrrolidine ring, or a non-toxic, pharmacologically acceptable acid addtion salt thereof.

8. The method of alleviating conditions of impaired cerebral performance in a warm-blooded animal in need thereof, which comprises perorally or parenterally administering to said animal an effective nootropic amount of a compound of claim 1.

4,767,760

ANTI-PROTOZOAL 5,6-DIHYDRO-2-(SUBSTITUTED PHENYL)-1,2,4-TRIAZINE-3,5(2H,4H)-DIONE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE THEREFOR

Gustaaf M. Boeckx, Oud-Turnhout; Alfons H. M. Raeymaekers, Beerse, and Victor Sipido, Merksem, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

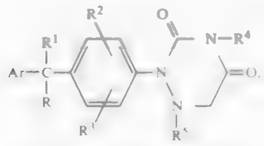
Filed Jan. 21, 1987, Ser. No. 5,550

Claims priority, application United Kingdom, Jan. 30, 1986, [illegible]

Int. Cl.[4] A61K *31/53;* **C07D** *253/06*

U.S. Cl. 514—242 **15 Claims**

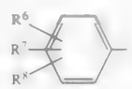
1. A chemical compound having the formula



(I)

a pharmaceutically acceptable acid-addition, metal or amine substitution salt, or a stereochemically isomeric form thereof, wherein:

Ar is thienyl, halo substituted thienyl, naphthalenyl or a radical of formula



(a)

R is hydrogen, C_{1-6} alkyl, cyclo C_{3-6} alkyl, aryl or (aryl)C_{1-6} alkyl;

R^1 is cyano or a radical of formula —C(=X)—Y—R^9;

said

X being O or S,

Y being O, S, NR^{10} or a direct bond;

R^9 being hydrogen, aryl, C_{3-6} cycloalkyl or C_{1-6} alkyl optionally substituted with aryl, hydroxy, amino, mono- and di(C_{1-6} alkyl)amino, and where Y is a direct bond, R^9 may also be halo;

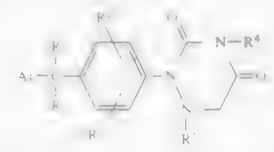
R^{10} is hydrogen, C_{1-6} *alkyl or (aryl)* C_{1-6} alkyl;

R^2, R^3, R^6, R^7 and R^8 are each indpendently hydrogen, halo, trifluoromethyl, C_{1-6} alkyl, hydroxy, C_{1-6} alkyloxy. C_{1-6} alkylcarbonyloxy, mercapto, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, (trifluoromethyl)-sulfonyl, cyano, nitro, amino, mono- and di(C_{1-6} alkyl)amino, or (C_{1-6} alkylcarbonyl)amino;

R^4 and R^5 are each independently hydrogen, aryl, cyclo C_{3-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, (aryl)C_{2-6} alkenyl or C_{1-6} alkyl optionally substituted with aryl, hydroxy, amino, mono- and di(C_{1-6} alkyl)amino,

wherein aryl is phenyl, optionally substituted with up two 3 substituents each independently selected from the group consisting of halo, C_{1-6} alkyl, C_{1-6} alkyloxy, trifluoromethyl, hydroxy, mercapto. C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, trifluoromethylsulfonyl, cyano, nitro, amino, mono- and di(C_{1-6} alkyl)amino and (C_{1-6} alkylcarbonyl-)amino.

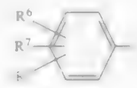
6. An anti-protozoal composition comprising an inert carrier and an active ingredient an anti-protozoal effective amount of a compound having the formula



(I)

a pharmaceutically acceptable acid-addition, metal or amine substitution salt, or a stereochemically isomeric form thereof, wherein:

Ar is thienyl, halo substituted thienyl, naphthalenyl or a radical of formula



(a)

R is hydrogen, C_{1-6} alkyl, cyclo C_{3-6} alkyl, aryl or (aryl)C_{1-6} alkyl;

R^1 is cyano or a radical of formula —C(=X)—Y—R^9;

said

X being O or S,

Y being O, S, NR^{10} or a direct bond;

R^9 being hydrogen, aryl, C_{3-6} cycloalkyl or C_{1-6} alkyl optionally substituted with aryl, hydroxy, amino, mono- and di(C_{1-6} alkyl)amino, and where Y is a direct bond, R^9 may also be halo;

R^{10} is hydrogen, C_{1-6} alkyl or (aryl) C_{1-6} alkyl;

R^2, R^3, R^6, R^7 and R^8 are each independently hydrogen. halo, trifluoromethyl, C_{1-6} alkyl, hydroxy, C_{1-6} alkyloxy, C_{1-6} alkylcarbonyloxy, mercapto, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, (trifluoromethyl)-sulfonyl, cyano, nitro, amino, mono- and di(C_{1-6} alkyl)amino, or (C_{1-6} alkylcarbonyl)amino;

R^4 and R^5 are each independently hydrogen, aryl, cyclo C_{3-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, (aryl)C_{2-6} alkenyl or C_{1-6} alkyl optionally substituted with aryl, hydroxy, amino, mono- and di(C_{1-6} alkyl)amino,

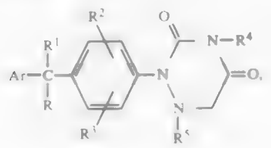
and R^5 may also be C_{1-6} alkylcarbonyl, C_{1-6} alkyloxycarbonyl, (aryl)C_{1-6} alkyloxycarbonyl or (aryl)carbonyl;

wherein aryl is phenyl, optionally substituted with up two 3 substituents each independently selected from the group

VOL 1093 ISS 5 AG 30 1988 UMI

consisting of halo, C_{1-6} alkyl, C_{1-6} alkyloxy, trifluoromethyl, hydroxy, mercapto, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, trifluoromethylsulfonyl, cyano, nitro, amino, mono- and di(C_{1-6} alkyl)amino and (C_{1-6} alkylcarbonyl-)amino.

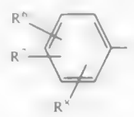
11. A method of destroying or preventing the growth of Protozoa in subjects suffering from such Protozoa by the administration of an anti-protozoal effective amount of a compound having the formula



(I)

a pharmaceutically acceptable acid-addition, metal or amine subsitution salt, or a stereochemically isomeric form thereof, wherein:

Ar is thienyl, halo substituted thienyl, naphthalenyl or a radical of formula



(a)

R is hydrogen, C_{1-6} alkyl, cyclo C_{3-6} alkyl, aryl or (aryl)C_{1-6} alkyl;

R^1 is cyano or a radical of formula —C(=X)—Y—R^9;

said

X being O is S,

Y being O, S, NR^{10} or a direct bond;

R^9 being hydrogen, aryl, C_{3-6} cycloalkyl or C_{1-6} alkyl optionally substituted with aryl, hydroxy, amino, mono- and di(C_{1-6} alkyl)amino, and where Y is a direct bond, R^9 may also be halo;

R^{10} is hydrogen, C_{1-6} alkyl or (aryl) C_{1-6} alkyl;

R^2, R^3, R^6, R^7 and R^8 are each independently hydrogen, halo, trifluoromethyl, C_{1-6} alkyl, hydroxy, C_{1-6} alkyloxy, C_{1-6} alkylcarboxyloxy, mercapto, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, (trifluoromethyl)-sulfonyl, cyano, nitro, amino, mono- and di(C_{1-6} alkyl)amino, or (C_{1-6} alkylcarbonyl)amino;

R^4 and R^5 are each independently hydrogen, aryl, cyclo C_{3-6} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, (aryl)C_{2-6} alkenyl or C_{1-6} alkyl optionally substituted with aryl, hydroxy, amino, mono- and di(C_{1-6} alkyl)amino,

and R^5 may also be C_{1-6} alkylcarbonyl, C_{1-6} alkyloxycarbonyl, (aryl)C_{1-6} alkyloxycarbonyl or (aryl)carbonyl;

wherein aryl is phenyl, optionally substituted with up two 3 substituents each independently selected from the group consisting of halo, C_{1-6} alkyl, C_{1-6} alkyloxy, trifluoromethyl, hydroxy, mercapto, C_{1-6} alkylthio, C_{1-6} alkylsulfonyl, C_{1-6} alkylsulfinyl, trifluoromethylsulfonyl, cyano, nitro, amino, mono- and di(C_{1-6} alkyl)amino and (C_{1-6} alkylcarbonyl-)amino.

4,767,761

ORNITHINE DERIVATIVES AND THEIR USE AS METHOTREXATE-RESISTANT CELL INHIBITORS

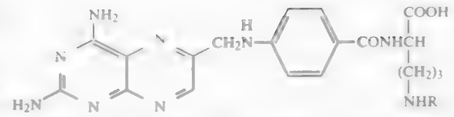
Andre Rosowsky, Needham, Mass., assignor to Dana-Farber Cancer Institute, Inc., Boston, Mass.

Filed Nov. 4, 1987, Ser. No. 117,212

Int. Cl.[4] A61K *31/495;* **C07D** *475/08*

U.S. Cl. 514—249 **10 Claims**

1. A compound having the structure



in which R is —OC—Ar—$COOR_1$ where Ar is phenylene or phenylene containing as additional substituent groups only chlorine, hydroxy, or lower alkoxy having 1 to 5 carbon atoms, and R_1 is hydrogen or lower alkyl having 1 to 5 carbon atoms.

6. A therapeutic composition exhibiting activity against the growth of methotrexate-resistant cells, said composition consisting essentially of a pharmaceutically acceptable non-toxic carrier and an effective amount of a compound as claimed in claim 1.

4,767,762

TRICYCLIC QUINOLINE AND NAPHTHYRIDE ANTIBACTERIALS

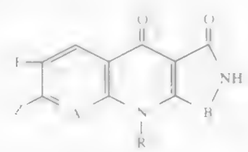
Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 812,663, Dec. 23, 1985, abandoned. This application Dec. 11, 1986, Ser. No. 937,601

Int. Cl.[4] C07D *401/14, 471/12*

U.S. Cl. 514—254 **51 Claims**

1. A compound having the formula:



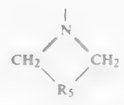
wherein B is selected from oxygen and sulfur; A is a nitrogen atom or a carbon atom substituted with a hydrogen or a halogen; R is selected from (a) C_1 to C_4 alkyl, (b) lowercycloalkyl, (c) C_1 to C_4 alkylamino, (d) a phenyl group having the formula:



wherein R_1 represents three substituents which are each fluorine atoms; or R_1 represents one or two substituents independently selected from hydrogen, fluorine, chlorine, bromine, C_1 to C_2 alkyl, methylenedioxy, and —OR_2 wherein R_2 is hydrogen or C_1 to C_4 alkyl, (e) a group consisting of a substituted or unsubstituted aromatic heterocyclic ring selected from thiazolyl, pyridyl, pyrazinyl, furyl and thienyl, wherein the substituents are selected from C_1 to C_4 alkyl and halogen; and Z is selected from (a) an amino group of the formula:



wherein R_3 and R_4 are independently selected from hydrogen, C_1 to C_4 alkyl, C_1 to C_4 alkylamino, hydroxy-substituted C_1 to C_4 alkyl, and NH_2; (b) an aliphatic heterocyclic ring having the structure:



wherein R_5 is selected from —$(CH_2)_n$— where n is 2 or 3 and —$(CH_2)_n$—R_6—CH_2— wherein n is 1 or 2 and R_6 is selected from the group consisting of —S—, —O— and —N—; and (c) said aliphatic heterocyclic ring substituted with one, two or three substituents independently selected from C_1 to C_4 alkyl, amino, C_1 to C_4 alkylamino, hydroxy-substituted C_1 to C_4 alkyl, hydroxy, C_1 to C_4 alkylaminoalkyl, halogen, and alkanoylamino; or pharmaceutically acceptable salts thereof.

4,767,763

COMPOSITION FOR ACHIEVING TUMOR REVERSION AND ITS USE IN CANCEROLOGY FOR DOGS

Roger L. E. Bocquet, 17 rue Chartran, 92200 Neuilly sur Seine, France

Continuation of Ser. No. 694,898, Jan. 25, 1985, abandoned, which is a continuation of Ser. No. 458,906, Jan. 18, 1983, abandoned. This application Jul. 7, 1986, Ser. No. 883,300

Claims priority, application France, Jan. 29, 1982, 82 01397

Int. Cl.[4] A61K *31/52, 31/10, 31/74*

U.S. Cl. 514—264 **2 Claims**

1. A composition for treating skin neoformations and sarcomas in dogs, containing by weight percent, in distilled water:

8–22% of polyethylene glycol having a molecular weight within the range of 1000 to 6000,

10–30% of dimethyl sulfoxide,

2.5–7.5% of theophylline.

4,767,764

ALKOXYALKYL AND ALKYLMERCAPTOALKYL SUBSTITUTED BRIDGED BENZOFUROISOQUINOLINES HAVING OPIOID ANTAGONIST AND/OR APPETITE-CONTROLLING PROPERTIES

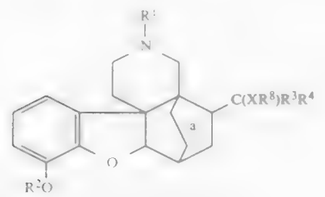
Engelbert Ciganek, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 27, 1986, Ser. No. 867,157

Int. Cl.[4] A61K *31/47;* **C07D** *491/08*

U.S. Cl. 514—282 **39 Claims**

1. A compound having the formula:



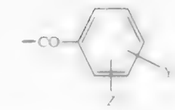
II

or an acid addition salt thereof, wherein

a is a single or double bond;

R^1 is n-propyl or CH_2R^5;

R^2 is H, alkyl of 1–2 carbons, C_{2-12} acyl an alkanoic acid, or



R^3 is H or alkyl of 1–8 carbons;

R^4 is H, alkyl of 1–8 carbons; alkenyl of 1–8 carbons, cycloalkyl of 3–8 carbons, or $(CH_2)_mC_6H_5$ in which m is 0–4 inclusive;

R^5 is CH=C(R^6)(R^7), C≡CH, or cyclopropyl provided that when R^5 is cyclopropyl, then R^2, R^3 and R^4 are independently H, and R^8 is CH_3 or $(CH_2)_nC_6H_5$ in which n is 3–4;

R^6 and R^7 independently are H, CH_3 or Cl;

R^8 is alkyl of 1–8 carbons, alkenyl of 1–8 carbons, cycloalkyl of 3–8 carbons, or $(CH_2)_nC_6H_5$ in which n is 3–4;

X is O or S;

Y and Z independently are H, OR^9, NHR^9, or NR^9R^{10}, provided at least one of Y or Z is OR^9, NHR^9, or NR^9R^{10};

R^9 is H, alkyl of 1–4 carbons, or COR^{11};

R^{10} is alkyl of 1–4 carbons, or COR^{11}; and

R^{11} is H or alkyl of 1–4 carbons.

14. A pharmaceutical composition comprising a suitable pharmaceutical carrier and an effective narcotic antagonist or appetite-controlling of at least one compound of claim 1.

27. A method for alleviating the effect of an opioid drug, or exerting an appetite-controlling effect in a mammal comprising administering to the mammal an effective amount of at least one compound of claim 1.

4,767,765

N-SUBSTITUTED-N-[3-(1,2,4-TRIAZOLO-[4,3-B]PYRIDAZIN-6-YL)PHENYL]ALKANAMIDES, CARBAMATES AND UREAS

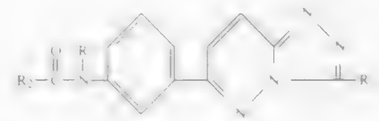
Jay D. Albright, Nanuet, N.Y.; Dennis W. Powell, Greenwich, Conn., and John P. Dusza, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 793,437, Oct. 31, 1985, Pat. No. 4,654,343. This application Mar. 27, 1987, Ser. No. 31,331

Int. Cl.[4] A61K *31/50;* **C07D** *487/04, 237/12, 237/14*

U.S. Cl. 514—248 **12 Claims**

2. A method of inducing sedation or hypnosis in a mammal which comprises administering to said mammal a pharmacologically effective amount of a compound of the formula:



wherein R_1 is hydrogen, alkyl(C_1–C_3), amino, monoalkyl(C_1–C_3)amino, dialkyl(C_1–C_3)amino, —NHCOalkyl(C_1–C_3) or N-alkyl(C_1–C_3)—CO-alkyl(C_1–C_3); R_2 is hydrogen, alkyl(C_1–C_6), cycloalkyl(C_3–C_6), —O-alkyl(C_1–C_6), —NH-alkyl(C_1–C_3), —N-dialkyl(C_1–C_3), —$(CH_2)_n$—O-alkyl(C_1–C_3), —$(CH_2)_n$—NH-alkyl(C_1–C_3) or —$(CH_2)_n$—N-dialkyl(C_1–C_3), where n is an integer from 1 to 3 inclusive; and R_3 is alkyl(C_1–C_6), alkenyl(C_2–C_6), —CH_2C=CH, cycloalkyl(C_3–C_6)methyl, —CH_2OCH_3 or —$CH_2CH_2OCH_3$.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,766

DERIVATIVES OF 3-HYDROXYAZABENZO(B)THIOPHENE USEFUL AS 5-LIPOXYGENASE INHIBITORS

Robert K. Baker; Kathleen M. Rupprecht, both of Cranford; Arsenio A. Pessolano, Colonia, and Philippe L. Durette, New Providence, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 30, 1987, Ser. No. 8,881
Int. Cl.[4] A61K *31/435;* **C07D** *495/04*
U.S. Cl. 514—301 4 Claims

1. A compound which is
3-acetoxy-2-(4-methoxyphenyl)-4-azabenzo[b]thiophene.

4,767,767

2-PYRROLIDINYLETHYL-2-(7-TRIFLUOROMETHYL-4-QUINOLYL-AMINOBENZOATE HAVING ANALGESIC, ANTIPYRETIC AND ANTI-INFLAMMATORY ACTIVITIES

Rafael Foguet, Barcelona; Ernesto Forné ; José Ortiz, and Aurelio Sacristán, all of Barcelona, Spain, assignors to Ferrer Internacional S.A., Barcelona, Spain

Continuation of Ser. No. 860,687, May 2, 1986, abandoned, which is a continuation of Ser. No. 492,161, May 6, 1983, abandoned. This application Jul. 17, 1987, Ser. No. 59,911
Claims priority, application Spain, Jun. 5, 1982, 512605; Jun. 18, 1982, 514341
Int. Cl.[4] A61K *31/47, 31/55;* **C07D** *215/44, 405/12*
U.S. Cl. 514—313 2 Claims

1. 2-Pyrrolidinylethyl-2-(7-trifluoromethyl-4-quinolyl-aminobenzoate or a pharmacologically acceptacle acid addition salt thereof.

2. A pharmaceutical composition having analgesic, antipyretic and anti-inflammatory activities which comprises a therapeutically effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier thereof.

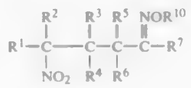
4,767,768

NITRO ALIPHATIC COMPOUNDS, PROCESS FOR PREPARATION THEREOF AND USE THEREOF

Masanori Okamoto, Osaka; Morita Iwami, Takarazuka; Shigehiro Takase, Nishinomiya; Itsuo Uchida, Kyoto; Kazuyoshi Umehara, Ashiya; Masanobu Kohsaka, Sakai, and Hiroshi Imanaka, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Dec. 8, 1983, Ser. No. 559,260
Claims priority, application United Kingdom, Dec. 31, 1982, 8237068
Int. Cl.[4] A61K *31/445, 31/215;* **C07C** *103/34, 103/22*
U.S. Cl. 514—315 14 Claims

1. A pharmaceutical antithrombic and antihypertensive composition comprising an effective amount of a compound of the formula:



wherein
R^1 is hydrogen, lower alkyl or lower alkoxyphenyl,
R^2 is hydrogen or lower alkyl,
R^3 and R^5 are each hydrogen, or together form a bond yielding a group of the formula:



wherein R^4 and R^6 are each as defined below,
R^4 is lower alkyl,
R^6 is hydrogen or lower alkyl,
R^7 is hydrogen, hydroxyiminomethyl, cyano, formylpiperazinecarbonyl, alkanoyl, esterified carboxy, lower alkyl which may have hydroxy or lower alkanoyloxy, or a group of the formula:



wherein R^8 and R^9 are each hydrogen, lower alkyl which may have one or more substituents selected from carboxy, esterified carboxy, hydroxy and phenyl, or R^8 and R^9 together form a piperidine ring, and
R^{10} is hydrogen or lower alkyl which may have carboxy or esterified carboxy or its pharmaceutically acceptable salt.

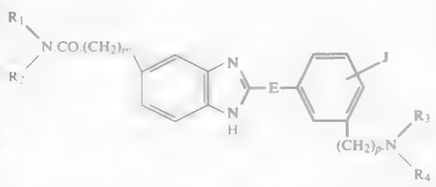
4,767,769

ANTIULCER BENZIMIDAZOLE DERIVATIVES

Michael H. Hockley, Derbyshire, and Roger B. Titman, Nottingham, both of England, assignors to The Boots Company PLC, England

Continuation of Ser. No. 751,616, Jul. 2, 1985, abandoned. This application Jun. 23, 1987, Ser. No. 65,363
Claims priority, application United Kingdom, Jul. 5, 1984, 8417194
Int. Cl.[4] A61K *31/445;* **C07D** *401/10*
U.S. Cl. 514—322 32 Claims

17. A method of treating peptic ulceration or other diseases caused by or exacerbated by gastric acid in humans which comprises administering to a human in need thereof a therapeutically effective amount of a compound of the formula I:



I

or a pharmaceutically acceptable acid addition salt thereof in which R_1 and R_2, which are the same or different, and each is hydrogen, alkyl of up to 3 carbon atoms or R_1 and R_2 together with the nitrogen to which they are attached form a pyrrolidinyl piperidino, hexamethyleneimino, tetrahydropyridyl, piperazinyl, morpholino, thiomorpholino, methylpyrrolidinyl, methylpiperazinyl, methylpiperidino or azetidinyl ring; R_3 is hydrogen, alkyl of 1 to 3 carbon atoms or cycloalkyl of 3 to 6 carbon atoms and R_4 is alkyl of 1 to 3 carbon atoms or cycloalkyl of 3 to 6 carbon atoms, or R_3 and R_4 together with the nitrogen to which they are attached form a pyrrolidinyl, piperidino, hexamethyleneimino, tetrahydropyridyl, piperazinyl, morpholino, thiomorpholino, methylpyrrolidinyl, methylpiperazinyl, methylpiperidino or hydroxypiperidino ring; E is $-(CH_2)_2-S-CH_2-$, $-(CH_2)_3-S-$ or $-(CH_2)_n-O-$, in which n is 3, 4 or 5; J is hydrogen, halo or nitro; m is 0, 1 or 2; p is 0, 1 or 2 in combination with a pharmaceutically acceptable carrier.

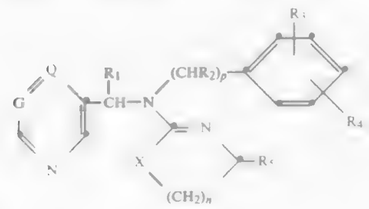
4,767,770

METHOD OF INHIBITING AROMATASE

Kenneth S. Hirsch, New Palestine, and Harold M. Taylor, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 18, 1984, Ser. No. 621,416
The portion of the term of this patent subsequent to Nov. 12, 2002, has been disclaimed.
Int. Cl.[4] A61K *31/44, 31/54, 31/495, 31/505*
U.S. Cl. 514—342 16 Claims

1. A method of inhibiting aromatase in a mammal which comprises administering to said mammal an aromatase inhibiting amount of a compound of the formula



where
G and Q are independently CH or N, provided that they may not both be N at the same time;
R_1 is hydrogen or methyl;
is 0, 1, or 2;
each R_2 is independently hydrogen or methyl;
R_3 and R_4 are independently hydrogen, halo, trifluoromethyl, nitro, C_1–C_4 alkyl, or (C_1–C_4 alkyl)-Z-, where Z is oxygen or sulfur;
X is O or S;
R_5 is hydrogen or methyl; and
n is 1 or 2,
or a pharmaceutically acceptable salt thereof.

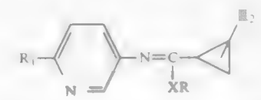
4,767,771

FUNGICIDAL PYRIDYL IMIDATES

Don R. Baker, Orinda, and Keith H. Brownell, San Jose, both of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

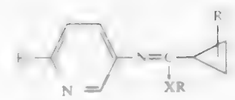
Continuation-in-part of Ser. No. 944,170, Dec. 22, 1986, abandoned, which is a continuation of Ser. No. 859,153, May 2, 1986, abandoned. This application Apr. 15, 1987, Ser. No. 36,543
Int. Cl.[4] C07D *213/64, 213/74;* **A01N** *43/40*
U.S. Cl. 514—346 7 Claims

1. A compound having the structural formula



wherein R is selected from the group consisting of C_1–C_{16} alkyl, C_3–C_8 cycloalkyl, C_2–C_8 alkenyl, phenyl, phenylalkyl having C_1–C_3 alkyl, substituted phenyl or phenylalkyl wherein the substituents are —Cl, —Br, —F or $—NO_2$, R_1 is selected from the group consisting of halogen, C_1–C_3 alkoxy and C_1–C_3 haloalkoxy, R_2 is hydrogen, and X is S or O; or fungicidally acceptable organic or inorganic salt thereof.

5. The method of controlling fungi comprising applying to the area where control is desired, a fungicidally effective amount of a compound having the formula



wherein R is selected from the group consisting of C_1–C_{16} alkyl, C_3–C_8 cycloalkyl, C_2–C_8 alkenyl, phenyl, phenylalkyl having C_1–C_3 alkyl, substituted phenyl or phenylalkyl wherein the substituents are —Cl, —Br, —F or $—NO_2$, R_1 is selected from the group consisting of halogen, C_1–C_3 alkoxy and C_1–C_3 haloalkoxy, R_2 is hydrogen, and X is S or O; or fungicidally acceptable organic or inorganic salt thereof.

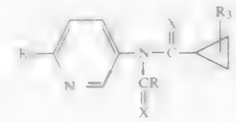
4,767,772

FUNGICIDAL PYRIDYL CYCLOPROPANE CARBOXIMIDES

Don R. Baker; Charles Kezerian, both of Orinda, and Keith H. Brownell, San Jose, all of Calif., assignors to Stauffer Chemical Co., Westport, Conn.

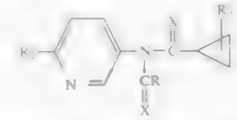
Continuation-in-part of Ser. No. 29,103, Mar. 23, 1987, abandoned, which is a continuation of Ser. No. 859,169, May 2, 1986, abandoned. This application Apr. 15, 1987, Ser. No. 36,545
Int. Cl.[4] C07D *213/75;* **A01N** *43/40*
U.S. Cl. 514—346 9 Claims

1. A compound having the structural formula



wherein R is selected from the group consisting of cyclopropyl, hydrogen, methyl, phenyl and 2,4-dichlorophenyl, R_2 is selected from the group consisting of halogen, C_1–C_3 alkoxy propoxyethoxy and C_1–C_3 haloalkoxy, R_3 is selected from the group consisting of hydrogen and methyl, X is —O or —S and Y is —O or —S; or a fungicidally acceptable organic or inorganic salt thereof.

9. The method of controlling fungi comprising applying to the area where control is desired, a fungicidally effective amount of a compound having a formula



wherein R is selected from the group consisting of cyclopropyl, hydrogen, methyl, phenyl and 2,4-dichlorophenyl, and R_2 is selected from the group consisting of halogen, C_1–C_3 alkoxy, propoxyethoxy and C_1–C_3 haloalkoxy, R_3 is selected from the group consisting of hydrogen and methyl, X is —O or —S and Y is —O or —S; or a fungicidally acceptable organic or inorganic salt thereof.

4,767,773

SYNERGISTIC INSECTICIDAL COMPOSITIONS

Hafez M. Ayad, Cary, N.C., assignor to Rhone-Poulenc Nederland B.V., Amstelveen, Netherlands

Continuation of Ser. No. 393,554, Jun. 30, 1982, abandoned. This application Jan. 3, 1986, Ser. No. 830,898
Int. Cl.[4] A01N *43/08, 43/40, 47/28*
U.S. Cl. 514—351 2 Claims

1. A synergistic insecticidal composition comprising N-(2,6-

VOL 1093 ISS 5 AG 30 1988 UMI

difluorobenzoyl)-N-[3,5-dichloro- 4-(3-chloro-5-trifluoromethylpyridyl-2-oxy)phenyl]urea and 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate wherein the weight proportion ratio of N-(2,6-difluorobenzoyl)-N-[3,5-dichloro-4-(3-chloro-5-trifluoromethylpyridyl-2-oxy)phenyl]urea to 2,3-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate is from 1:0.5 to 1:1000.

4,767,774

SYNERGISTIC FUNGICIDAL COMPOSITION EMPLOYING SUBSTITUTED CARBOXAMIDOTHIAZOLES AND IMIDAZOLES

Digby H. Bartlett, Battenhall, England, assignor to Uniroyal Chemical Limited, Edinburgh, Scotland

Filed May 28, 1986, Ser. No. 868,220

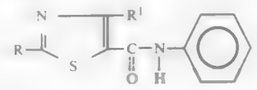
Claims priority, application United Kingdom, Jun. 5, 1985, 8514217; Apr. 30, 1986, 8610541

Int. Cl.[4] A01N *43/50, 43/78*

U.S. Cl. 514—365 **8 Claims**

1. A fungicidal composition comprising:

(A) a compound of the formula:



wherein R and R^1 are the same or different and are hydrogen or C_1–C_8 alkyl; and

(B) an imidazole selected from the group consisting of 1-[2-(2,4-dichlorophenyl)-2-(2-propenyloxy)ethyl]-1H-imidazole, 1-N-propyl-N-[2-(2,4,6-trichlorophenoxy)ethyl]carbamoylimidazole and 2-(4-thiazolyl)-1H-benzimidazole;

wherein the weight ratio of compound (A) to compound (B) is between about 75:1 and about 1.8:1.

4,767,775

SUBSTITUTED PYRAZOLIN-5-ONES, COMPOSITION CONTAINING THEM, AND METHOD OF COMBATING FUNGI OR BACTERIA

Klaus Jelich, Wuppertal; Wilhelm Brandes, Leichlingen; Gerd Hänssler, and Paul Reinecke, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

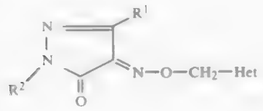
Filed Jul. 24, 1986, Ser. No. 890,245

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1985, 3528753

Int. Cl.[4] A61K *43/56, 43/82;* **C07D** *403/12, 419/12*

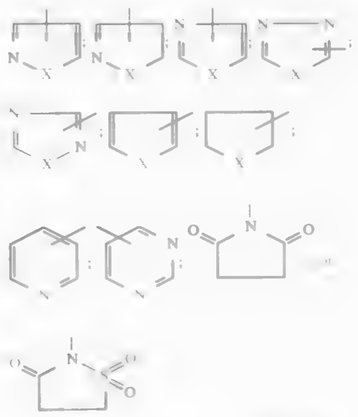
U.S. Cl. 514—379 **11 Claims**

1. A substituted pyrazolin-5-one of the formula



in which

R^1 and R^2 independently of one another in each case represent hydrogen, methyl, ethyl, n- or i-propyl, n-, i-, or t-butyl, allyl, butenyl, propargyl, cyanomethyl, cyanoethyl, hydroxymethyl, hydroxyethyl, methoxymethyl, methoxyethyl, ethoxymethyl, ethoxyethyl, methylthiomethyl, methoxycarbonyl, ethoxycarbonyl, hydroxycarbonylmethyl, hydroxycarbonylethyl, methoxycarbonylmethyl, methoxycarbonylethyl, ethoxycarbonylmethyl, ethoxycarbonylethyl, aminocarbonylmethyl, methylaminocarbonylmethyl, ethylaminocarbonylmethyl, dimethylaminocarbonylmethyl, diethylaminocarbonylmethyl, aminocarbonylethyl, oxiranylmethyl or oxiranylethyl, or represent 1,1-dioxotetrahydrothien-3-yl, or represent phenyl or benzyl which is optionally mono-, di- or trisubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, iodine, cyano, nitro, hydroxyl, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy, dioxymethylene, dioxyethylene, methylthio, ethylthio, acetoxy and propionyloxy, chloromethyl, dichloromethyl, trichloromethyl, trifluoromethyl, dichlorofluoromethyl, chlorodifluoromethyl, trifluoromethoxy, trifluoromethylthio and phenyl and Het represents a heterocyclic radical of the formula



which is optionally mono-, di- or trisubstituted by identical or different substituents and optionally benzo-fused, when present the substituents in each case being: fluorine, chlorine, bromine, methyl, ethyl, n- or i-propyl, n-, i-, s- or t-butyl, methoxy, ethoxy, trifluoromethyl and phenyl which is optionally mono-, di- or trisubstituted by identical or different substituents from the group consisting of chlorine, nitro, methyl and/or methoxy and wherein

X in each case represents oxygen or sulphur.

9. A fungicidal and bactericidal composition comprising a fungicidally and bactericially effective amount of a compound according to claim 1 and a diluent.

4,767,776

N-1H-TETRAZOL-5-YL-2-NAPHTHALENE CARBOXAMIDES AND THEIR USE AS ANTIALLERGY AND ANTIINFLAMMATORY AGENTS

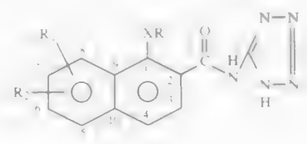
David T. Connor; Paul C. Unangst, both of Ann Arbor, Mich., and Robert J. Weikert, Santa Clara, Calif., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Feb. 20, 1987, Ser. No. 16,811

Int. Cl.[4] C07D *257/04;* **A61K** *31/41*

U.S. Cl. 514—381 **14 Claims**

1. A compound of the formula (I)



wherein

X is oxygen or sulfur;

R_3 is alkyl of from one to twelve carbons; and

R_1 and R_2 are independently hydrogen, lower alkyl, lower alkoxy, mercapto, halogen, trifluoromethyl, lower alkylthio, lower alkylsulfinyl, lower alkylsulfonyl, hydroxy, nitro, amino, mono loweralkyl or di loweralkyl amino, or taken together are methylenedioxy, with the proviso that S cannot have mixed oxidation states; and pharmaceutically acceptable salts thereof.

14. A method of treating mammals to inhibit histamine release from basophils which comprises administering to mammals which have an advantageous effect therefrom a compound of claim 1 in unit dosage form.

4,767,777

TRIAZOLE ANTIFUNGAL AGENTS

Robert J. Bass, Birchington; Kelvin Cooper, Ramsgate, and Kenneth Richardson, Canterbury, all of England, assignors to Pfizer Inc., New York, N.Y.

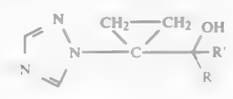
Filed Nov. 14, 1985, Ser. No. 797,737

Claims priority, application United Kingdom, Nov. 27, 1984, 8429911

Int. Cl.[4] A61K *31/41;* **C07D** *249/08*

U.S. Cl. 514—383 **8 Claims**

1. A compound of the formula:



or a pharmaceutically or agriculturally acceptable acid addition salt thereof, wherein R is selected from the group consisting of difluorophenyl, dichlorophenyl, fluorophenyl and chlorophenyl; and R' is selected from the group consisting of fluorophenyl and chlorophenyl.

4,767,778

PHARMACEUTICAL COMPOSITIONS AND METHODS FOR STIMULATING H_3 HISTAMINE RECEPTORS

Jean-Michel Arrang, Gif; Monique Garbarg, Paris, both of France; Walter Schunack, Berlin, Fed. Rep. of Germany; Jean-Charles Schwartz, Paris, France, and Ralph O. Lipp, Berlin, Fed. Rep. of Germany, assignors to Institut National de la Sante et de la Recherche Medicale (INSERM), Paris, France

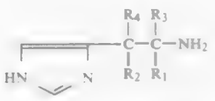
Filed Aug. 29, 1986, Ser. No. 901,750

Claims priority, application France, Sep. 2, 1985, 85 13024

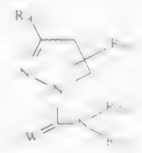
Int. Cl.[4] A61K *31/415*

U.S. Cl. 514—397 **9 Claims**

1. A method of selectively stimulating H_3 histamine receptors in a patient in need thereof, comprising administering to said patient an effective amount of a compound of the formula



in which R_1, R_2, R_3 and R_4 are each hydrogen or methyl, and at least one but not more than two of R_1, R_2, R_3 and R_4 are methyl, or two of R_1, R_2, R_3 and R_4 are together methylene, said amount being effective to selectively stimulate H_3 histamine receptors.



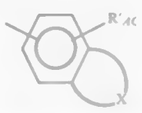
wherein

R_A is of the formula



(I)

in which R'_A is selected from hydrogen, halogen, lower alkyl, lower alkoxy, lower haloalkoxy, lower alkynyloxy and lower haloalkyl; or R_A is of the formula



(II)

in which X is a bridge of the formula

$$—O—(CR'_{AA}R'_{AB})_a—O_{a'}$$

wherein a is 1–3, a' is 0 or 1, a+a' is at least 2 but no greater than 3, R'_{AA} and R'_{AB} are independently selected from hydrogen, halogen and lower alkyl, and R'_{AC} is selected from hydrogen, halogen, lower alkyl, lower alkoxy, lower haloalkoxy, and lower haloalkyl;

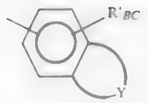
R_B is a 4- or 5-substituent of the formula



(III)

in which R'_B is selected from hydrogen, halogen, lower alkyl, lower alkoxy, and lower haloalkyl; or R_B is of the formula

VOL 1093 ISS 5 AG 30 1988 UMI



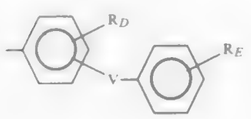
(IV)

in which Y is a bridge of the formula

$$—O—(CR'_{BA}R'_{BB})_b—O_{b'}$$

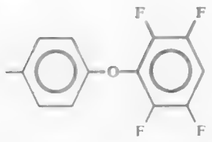
wherein b is 1–3, b′ is 0 or 1, b+b′ is at least 2 but no greater than 3, R'_{BA} and R'_{BB} are independently selected from hydrogen, halogen and lower alkyl, and R'_{BC} is selected from hydrogen, halogen, lower alkyl, lower alkoxy, lower haloalkoxy, and lower haloalkyl;

R_C is of the formula

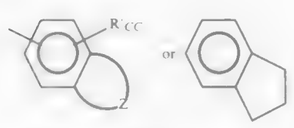


(V)

or



in which R_D is selected from hydrogen and lower alkyl; R_E is selected from halogen, alkoxy, containing 1–4 carbon atoms, lower haloalkoxy, lower haloalkyl, cyano, nitro, phenyl, phenoxy, benzoyl, benzoyloxy, $—NR_FR_G$ wherein R_F and R_G are independently lower alkyl, and $—SO_nR_H$ wherein R_H is lower alkyl and n is 0–2; or R_C is of the formula



(VI)

in which Z is a bridge of the formula

$$—O—(CR'_{CA}R'_{CB})_c—O_{c'}—$$

wherein c is 1–3, c′ is 0 or 1, c+c′ is at least 2 but no greater than 3, R'_{CA} and R'_{CB} are independently selected from hydrogen, halogen and lower alkyl, with the proviso that R'_{CA} and R'_{CB} are not both hydrogen when c is 1 and c′ is 1, and R'_{CC} is selected from hydrogen, halogen, lower alkyl, lower alkoxy, lower haloalkoxy, and lower haloalkyl; provided that when R_A is a compound of group I and R_B is a compound of group III, R_C is not a compound of group V;

R_N is hydrogen or lower alkyl; and

V and W are independently oxygen or sulfur.

33. A method for controlling insects which comprises applying to the locus where control is desired an insecticidally effective amount of a compound of claim 1.

4,767,780

BENZENE-FUSED HETEROCYCLIC COMPOUND AND THEIR USE AS DIURETICS

Ikuo Ueda, Uenohigashi; Youichi Shiokawa, Ibaraki; Takashi Manabe, Kawanishi, and Yousuke Katsura, Uenonishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

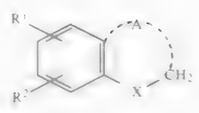
Filed Apr. 24, 1987, Ser. No. 42,299

Claims priority, application United Kingdom, Oct. 26, 1984, 8427124; May 28, 1985, 8513399

Int. Cl.[4] A61K *31/35*; C07D *487/04*

U.S. Cl. 514—406 9 Claims

1. A compound of the formula:



(I)

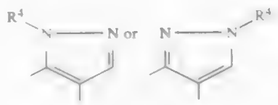
wherein

R^1 is halogen, nitro, amino, lower alkyl, lower alkoxy substituted by carboxy or alkoxycarbonyl, acylamino which may have lower alkyl on the amino moiety, or aryloxy which may have halogen,

R^2 is hydrogen or halogen,

X is —O—,

A is a group of the formula:



in which R^4 is hydrogen, lower alkenyl, lower alkynyl or alkyl which may have one or more substituents selected from the group consisting of hydroxy, acyl, lower alkoxy, di(lower) alkylamino carboxy, alkoxycarbonyl and aryl; and pharmaceutically acceptable salt thereof,

wherein acyl is selected from the group consisting of alkanoyl which may have lower alkoxy, lower cycloalkylcarbonyl, lower alkoxycarbonyl, lower alkanesulfonyl and lower alkylcarbamoyl, and wherein aryl and aryl of aryloxy is selected from the group consisting of phenyl, tolyl, xylyl, and naphthyl.

4. A diuretic pharmaceutical composition comprising a diuretically effective amount of the compound of claim 1 or pharmaceutically acceptable salt thereof in admixture with a pharmaceutically acceptable carrier.

4,767,781

DERIVATIVES OF BETA-AMINO-GAMMA-TRIMETHYLAMMONIO-BUTYRATE AND THEIR PRODUCTION AND USE

Susumu Shinagawa; Tsuneo Kanamaru, both of Osaka, and Setsuo Harada, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 830,986, Feb. 19, 1986, which is a continuation of Ser. No. 613,413, May 24, 1984, abandoned, which is a continuation-in-part of Ser. No. 442,368, Nov. 17, 1982, Pat. No. 4,521,432. This application Dec. 8, 1986, Ser. No. 939,152

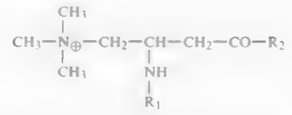
Claims priority, application Japan, May 25, 1983, 58-93179; May 15, 1984, 59-96773; PCT Int'l Appl., Nov. 26, 1981, PCT/JP81/00355; Jul. 28, 1982, PCT/JP82/00291; Oct. 15, 1982, PCT/JP82/00409

Int. Cl.[4] A61K *31/24, 31/195*; C07C *87/30*

U.S. Cl. 514—513 7 Claims



1. A compound of the formula:



wherein R_1 is alkyl of one to 6 carbon atoms, the alkyl being unsubstituted or substituted by lower alkoxy, halogen, hydroxy, nitro, amino, cyano, sulfo, aryl or aralkyloxy; R_2 is hydroxy, alkoxy of one to 6 carbon atoms or amino; or a pharmaceutically acceptable salt thereof.

4,767,782

PROPARGYL CINNAMATES, THEIR PREPARATION AND THEIR USE FOR CONTROLLING PESTS

Wolfgang Seppelt, Bobenheim-Roxheim; Hans-Juergen Neubauer, Mannheim; Heinrich Adolphi, Limburgerhof, and Peter Hofmeister, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

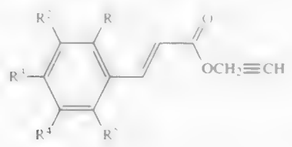
Filed Feb. 20, 1987, Ser. No. 17,242

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1986, 3606068

Int. Cl.[4] A01N *37/10*

U.S. Cl. 514—543 17 Claims

1. A propargyl cinnamate of the formula (I)



where R^1, R^2, R^3, R^4 and R^5 are identical or different and independently of one another are each H, F, Cl, Br, branched or straight-chain alkyl or alkenyl of not more than 4 carbon atoms, alkoxy or alkenyloxy of not more than 4 carbon atoms which may be substituted by halogen, and R^2 and R^3 together may form the moiety $—O—CH_2—O—$, or are each phenyl or phenoxy which may be substituted in the 3-position, 4-position or the 3- and 4-position by halogen, alkyl or alkoxy of not more than 3 carbon atoms or by the moiety $—O—CH_2—O—$, provided that when each of R_1, R_2, R_3, R_4 and R_5 are identical they are not H.

4,767,783

GALLSTONE DISSOLVER

Kenji Hara, Utsunomiya, and Jhoshin Okada, Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Continuation of Ser. No. 640,122, Aug. 13, 1984, abandoned. This application Aug. 13, 1986, Ser. No. 896,319

Claims priority, application Japan, Aug. 19, 1983, 58-151418; Feb. 17, 1984, 59-28168; Feb. 17, 1984, 59-28171

Int. Cl.[4] A61K *31/22, 31/23, 31/015*

U.S. Cl. 514—546 10 Claims

1. A gallstone dissolver which comprises the following ingredients (A) and (B):

(A) 20 to 40 percent by volume of a fatty acid monoglyceride selected from the group consisting of monoglyceride hexanoate, monoglyceride heptanoate, monoglyceride octanoate, monoglyceride nonanoate, monoglyceride decanoate, monoglyceride undecanoate, mooglyceride dodecanoate, and

(B) 80 to 60 percent by volume of a monoterpene selected from the group consisting of limonene, pinene, dipentene, terpineol, phellandrene, perilaldehyde, carvone, and menthone.

4,767,784

NOVEL CRYSTALLINE SALTS OF ARYLOXY-PROPANOLAMINES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Gerhard Zölss, Ziegeleistrasse 72/2, A-4020 Linz, and Gerhard Pfarrhofer, Schumpeterstrasse 15, A-4040 Linz, both of Austria

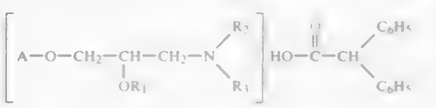
Filed Nov. 28, 1986, Ser. No. 935,917

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544172

Int. Cl.[4] A61K *31/17*; C07C *127/19, 101/00*

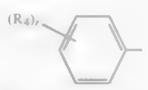
U.S. Cl. 514—554 4 Claims

1. A salt of an aryloxy-propanolamine with diphenylacetic acid, of the formula



(I)

in which A denotes (a) a substituted phenyl radical of the general formula



(II)

in which n represents an integer from 1 to 4, the substituents R_4 are either identical or different and independently of one another represent lower alkyl, C-2- or C-3-lower alkenyl, C_5 or C_6-cycloalkyl, lower alkoxy, C-2- or C-3-lower alkenoxy, cycloalkylalkoxy, lower alkoxy-lower alkyl, lower alkanoyl,

VOL 1093 ISS 5 AG 30 1988 UMI

halogen, hydroxyl, cyano, carboxamido, acyloxy or radicals of the formula

$$-O-CH_2-X \quad III$$

or

$$-(CH_2)_m-X \quad IV,$$

in which X in the formulae III and IV in turn represents carbamoyl, alkylcarbamoyl, dialkylcarbamoyl, ureido, N'-alkylureido, N'-cycloalkylureido, N,N'-dialkylureido, N',N'-dialkylureido or alkoxycarbonylamino and m in the formula IV represents zero or an integer from 1 to 3, (b) a fused-on polynuclear aromatic or hydroaromatic radical which can be mono- or polysubstituted by hydroxyl and/or can contain one or more oxo groupings, R_1 denotes hydrogen or a straight-chain or branched C_2 to C_5-alkanoyl or aroyl radical, R_2 denotes hydrogen and R_3 denotes a branched C_3 to C_6-alkyl radical, a phenyl-lower alkyl radical which is straight-chain or branched and is unsubstituted or substituted by hydroxyl or alkoxy, or a radical of the formula

$$-(CH_2)_l-Y \quad V,$$

in which, in formula V, l represents the integer 1 or 2 and Y represents an N'-phenylureido, N'-pentamethyleneureido, N'-3''-oxapentamethyleneureido or unsubstituted or substituted phenylacetyl-amino radical.

4,767,785

HYPOCALORIC PREPARATION AND INTRAVENOUS METHOD FOR HYPOCALORIC TREATMENT OF PATIENTS

Michael Georgieff, 22 Gleiwitzer Str., Hemsbach, Fed. Rep. of Germany 6944

Continuation of Ser. No. 712,275, Mar. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 572,215, Jan. 18, 1984, abandoned. This application Nov. 26, 1986, Ser. No. 935,120

Int. Cl.[4] A61N *31/195*

U.S. Cl. 514—561 3 Claims

1. A method of treating a human patient suffering from renal failure to preserve human lean body mass comprising the peripheral venous infusion of an isotonic hypocaloric sterile aqueous preparation containing 10 to 80 grams/liter of xylitol to said human patient.

4,767,786

DISINFECTANT AND CLEANSING COMPOSITION

James H. Farrish, Houston, Tex., assignor to Fhj Amino Acid Formula Trust, Santa Rosa Beach, Fla.

Continuation of Ser. No. 805,024, Dec. 5, 1985, abandoned, which is a continuation of Ser. No. 667,313, Nov. 1, 1984, abandoned, which is a continuation of Ser. No. 563,471, Dec. 20, 1983, abandoned, which is a continuation of Ser. No. 397,380, Jul. 12, 1982, abandoned, which is a continuation of Ser. No. 280,030, Jul. 2, 1981, abandoned, which is a continuation of Ser. No. 160,337, Jun. 17, 1980, abandoned, which is a continuation of Ser. No. 15,554, Feb. 26, 1979, abandoned. This application May 22, 1987, Ser. No. 53,575

Int. Cl.[4] A61K *31/195;* C11D *3/26*

U.S. Cl. 514—561 6 Claims

1. A method for disinfecting and cleansing, wherein said method comprises:

topically applying to external animal tissue having bacteria or fungi thereon a composition in an amount sufficient to kill the bacteria or fungi;

wherein the composition consists essentially of an aqueous solution comprising sodium dihydroxyethyl glycine in a disinfecting amount against bacteria or fungi;

wherein said sodium dihydroxyethyl glycine has been pretreated at a temperature and for a time sufficient to remove free amines by volatilization to reduce toxicity of the composition to animal tissue.

4,767,787

SHEET-SHAPE ADHESIVE PREPARATION

Terushige Kawata, and Shinsuke Yamashita, both of Tokushima, Japan, assignors to Kaken Pharmaceutical Co., Ltd.; Teikoku Seiyaku Kabushiki Kaisha and Nippon Kayaku Kabushiki Kaisha, all of Tokyo, Japan

Division of Ser. No. 530,070, Sep. 7, 1983, Pat. No. 4,594,240. This application Mar. 24, 1986, Ser. No. 842,926

Claims priority, application Japan, Sep. 10, 1982, 57-158588

Int. Cl.[4] A61K *31/557*

U.S. Cl. 514—573 3 Claims

1. A method for promoting tooth-movement in orthodontics which comprises applying until the teeth move, usually in about 20 hours to 60 days, to effectively move the teeth, prior to moving the teeth to obtain the desired correction of irregularity of the teeth and malocclusion in orthodontics, an effective tooth-moving amount of a prostaglandin to the mucous membrane of labial or distal gingiva on the labial or distal side of the teeth, or dental arch.

4,767,788

GLUTARIC ACID VIRUCIDAL PROCESSES AND COMPOSITIONS

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 185,149, Sep. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 933,602, Aug. 14, 1978, abandoned. This application Mar. 29, 1982, Ser. No. 362,633

Int. Cl.[4] A61K *31/19*

U.S. Cl. 514—574 8 Claims

1. The process of inactivating or destroying a susceptible virus which comprises contacting the virus or a locus of the virus with a virucidally effective amount of glutaric acid.

4,767,789

SPRAY DRIED ACETAMINOPHEN

Robert G. Blank, Vineland; Dhiraj S. Mody, Hammonton; Gary R. Agism, Cherry Hill Camden, and Richard J. Kenny, Somerset, all of N.J., assignors to American Home Products Corporation (Del.), New York, N.Y.

Filed Oct. 21, 1986, Ser. No. 921,556

The portion of the term of this patent subsequent to Jul. 26, 2005, has been disclaimed.

Int. Cl.[4] A61K *31/74*

U.S. Cl. 514—629 6 Claims

1. A therapeutic taste neutral powder form of spray-dried acetaminophen which consists essentially of, based upon the weight of the powder, about 60% to 76% by weight acetaminophen and about 24% to 40% by weight ethyl cellulose, the powder having been spray dried from a suspension of the acetaminophen in a solution of the ethylcellulose in an organic solvent selective for the ethylcellulose having a solids content of at least about 14% by weight.

4,767,790

THERAPEUTIC AGENTS

James E. Jeffery; Antonin Kozlik, and Eric C. Wilmshurst, all of Nottingham, Great Britain, assignors to The Boots Company plc, England

Continuation of Ser. No. 365,285, Apr. 5, 1982, Pat. No. 4,522,828. This application Apr. 19, 1985, Ser. No. 725,129

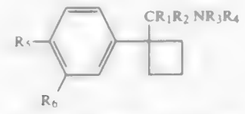
Claims priority, application United Kingdom, Apr. 6, 1981, 8110709

The portion of the term of this patent subsequent to Jun. 11, 2002, has been disclaimed.

Int. Cl.[4] C07C *87/50*

U.S. Cl. 514—646 22 Claims

1. A compound of formula III



III

or a pharmaceutically acceptable salt thereof in which R_1 is methyl or ethyl, R_2 is H or methyl, R_3 and R_4 are each selected from the group consisting of H, methyl and ethyl, or R_3 is a cycloalkyl group containing 3 to 6 carbon atoms and R_4 is H, or R_3 and R_4 together with the nitrogen atom to which they are attached form a pyrrolidinyl ring, and R_5 and R_6 together with the phenyl ring to which they are attached form a 4-chlorophenyl, 4-bromophenyl, 4-iodophenyl, 3-chlorophenyl, 3-bromophenyl, 3,4-dichlorophenyl, 4-chloro-3-fluorophenyl, 4-chloro-3-trifluoromethylphenyl, 4-biphenylyl, 2-naphthyl or 2-phenanthryl group.

4,767,791

PROCESS FOR SYNTHESIZING METHANOL WITH AN OPTIMAL TEMPERATURE PROFILE USING A CONCENTRIC PIPE REACTOR

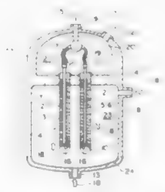
Yoshimitsu Nakajima; Kensuke Niwa; Kazuhiro Morita, all of Tokyo, and Hiroshi Makihara, Hiroshima, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Japan

Continuation of Ser. No. 670,339, Nov. 9, 1984, abandoned. This application Nov. 6, 1986, Ser. No. 928,665

Claims priority, application Japan, Nov. 14, 1983, 58-213724

Int. Cl.[4] C07C *27/06*

U.S. Cl. 518—712 2 Claims



1. A process for exothermically reacting a starting fluid comprising hydrogen and carbon oxides and which is poor in methanol in a catalyst bed to form a product fluid which is rich in methanol and using an exothermic reactor having a coolant shell, an outer pipe spaced inwardly of said shell and defining a cooling space within said shell, said outer pipe having an upper open end and a lower open end, an inner pipe extending in said outer pipe and defining an annular space with said outer pipe, said inner pipe having an upper open end and a lower open end, sealing means enclosing and communicating with said lower open ends of said inner and outer pipes, a catalyst bed in said annular space between said inner and outer pipes, said catalyst bed being spaced upwardly from said sealing means and having an inlet at a lower end of said annular space, said catalyst bed having an outlet at an upper end of said annular space, a starting fluid inlet tube connected to said upper open end of said inner pipe, and a closing plate connected between said coolant shell and said outer pipe near said upper open end of said outer pipe, said closing plate defining an upper end of said coolant space, the process comprising supplying the starting fluid to said starting fluid inlet tube for passing downwardly through said inner pipe in a first direction and then into said inlet of said catalyst bed, said starting fluid passing upwardly in a second direction through said catalyst bed to form the product fluid in an exothermic reaction in said catalyst bed, supplying said product fluid out of said upper open end of said outer pipe and through said catalyst bed outlet above said closing plate, supplying boiling water as a coolant to a lower end of said coolant space through a coolant inlet in said coolant shell and at a location near said inlet of said catalyst bed and near said lower open ends of said inner and outer pipes, the coolant passing upwardly in said second direction through said coolant space, and removing coolant from said coolant space through a coolant outlet in said coolant shell at a location near an upper end of said coolant space and near said outlet of said catalyst bed, the starting fluid being exothermically reacted in the catalyst between the catalyst bed inlet and the catalyst bed outlet, part of the reaction heat being used as latent heat for evaporating said boiling water, employed as a coolant, the exothermic reaction having a characteristic minimum reaction rate line which is plotted on a graph relating the concentration of methanol to the temperature of the starting and product fluids during the reaction, the maximum reaction rate line having a high temperature at a low concentration for methanol and a low temperature at a high concentration of methanol, the process including supplying the starting fluid at a lower temperature than the lower temperature of the maximum reaction rate line, the starting fluid being heated as it moves along the inner pipe to the higher temperature of the maximum reaction rate line so as to cool the catalyst bed to form a temperature distribution along the inner pipe between the upper and lower temperatures of the maximum reaction rate line, the coolant cooling the catalyst bed between the catalyst bed inlet and the catalyst bed outlet, so as to maintain the temperature distribution along the catalyst bed.

4,767,792

PROCESS FOR CATALYTICALLY CONVERTING A CARBON MONOXIDE-AND HYDROGEN-CONTAINING FEED STREAM INTO HYDROCARBONS

Bruce G. Baker, Torrens Park; Neville J. Clark; Hamish McArthur, both of Bellevue Heights, and Edward Summerville, Everard Park, all of Australia, assignors to The Flinders University of South Australia, Bedford Park, Australia

Division of Ser. No. 831,553, Feb. 20, 1986, Pat. No. 4,666,880, which is a continuation of Ser. No. 604,655, filed as PCT AU83/00110, Aug. 19, 1983, published as WO84/00702, Mar. 1, 1984, Pat. No. 4,610,975. This application Feb. 19, 1987, Ser. No. 16,353

Claims priority, application Australia, Aug. 19, 1982, PF5478

Int. Cl.[4] C07L *1/04*

U.S. Cl. 518—721 3 Claims

1. A process for converting a feed stream comprising carbon monoxide and hydrogen into hydrocarbons, said process comprising passing said feed stream over a catalyst such that a significant proportion of the hydrocarbons formed are 1-alkenes having carbon numbers between 3 and 8 and greater than 90% of the hydrocarbons formed have carbon numbers between 2 and 8 and less than 6% of the hydrocarbons formed comprise methane, said catalyst comprising:

as a support, a heat-treated alumina material having a crystallographic structure predominantly indicative of α-alumina, and a surface area intermediate γ-alumina and α-alumina, said material exhibiting basic properties at the surface thereof,

an active component comprising iron deposited on the support for catalyzing the reaction in said feed stream to produce said hydrocarbons, and

a modifier component comprising a rare earth metal depos-

VOL 1093 ISS 5 AG 30 1988 UMI

ited on the support to modify the catalytic behavior of the active component to control the length of hydrocarbon chains formed by the reaction.

4,767,793

METHOD OF PRODUCING A FOAM FROM A RADIATION-CURABLE COMPOSITION

Robert C. Schisler, Akron, and Raymond E. Downey, Copley, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 797,358, Nov. 12, 1985. This application Jan. 7, 1987, Ser. No. 1,066

Int. Cl.[4] C08F 2/46, 2/48, 2/50; C08J 9/30

U.S. Cl. 521—50.5 16 Claims

1. A process for producing a cured foamed polymeric composition comprising:

(a) homogeneously and uniformly dispersing a frothing gas into a photocurable liquid composition by mechanical means to form a dispersion and;

(b) exposing the dispersion to a source of actinic radiation.

4,767,794

LOW DENSITY SILICONE FOAM

Frank J. Modic, Scotia; Richard A. Striker, Troy; Wayne L. Delker, Ballston Lake, all of N.Y., and Richard K. Sammel, Sinking Spring, Pa., assignors to General Electric Company, Waterford, N.Y.

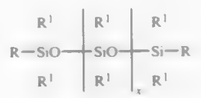
Filed Oct. 26, 1987, Ser. No. 113,292

Int. Cl.[4] C08J 9/02

U.S. Cl. 521—82 40 Claims

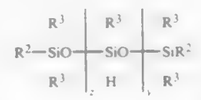
1. A foamable composition comprising:

(a) 100 parts by weight of a vinyl-containing polysiloxane of the formula:



where R and R^1 are selected from substituted or unsubstituted hydrocarbon radicals of from 1 to 20 carbon atoms, such that the polymer contains from 0.0002 to 3% by weight vinyl and x varies such that the viscosity of the polymer varies from 100 to 1,000,000 centipoise at 25° C.;

(b) from 1 to 50 parts by weight of a hydride polysiloxane of the formula:



where R^2 is selected from the group consisting of independently, hydrogen, alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 1 to 8 carbon atoms, haloalkyl radicals of 3 to 8 carbon atoms and simultaneously, a single —O— to form a cyclic polymer and R^3 is selected from the group consisting of alkyl radicals of from 1 to 8 carbon atoms, aryl radicals of from 1 to 8 carbon atoms, and fluoroalkyl radicals of 3 to 8 carbon atoms, where the hydride polysiloxane has a hydrogen content varying from 0.3 to 1.6% by weight and z and y vary such that the polymer has a viscosity varying from 1 to 500 centipoise at 25° C.;

(c) a hydroxyl source selected from the group consisting of water, organic alcohol, hydroxylated siloxane, and combinations thereof in an amount to provide a molar ratio of from about 0.02/1 to about 5/1 of hydroxyl radicals to silicon-bonded hydrogen atoms of component (b);

(d) from about 1 to about 250 parts per million of platinum catalyst; and

(e) an amount of amine compound effective to lower foam density of the formula:

NR_3^4

wherein R^4 is selected from the group consisting of hydrogen, hydroxy, substituted or unsubstituted alkyl of 1 to 18 carbon atoms substituted or unsubstituted aryl of 1 to 18 carbon atoms, and a substituted or unsubstituted silyl.

4,767,795

POLYOL COMPOSITION AND A PROCESS FOR THE PREPARATION OF FLAME-RESISTANT POLYURETHANE FOAMS THEREFROM

Norbert Adam, Cologne; Reinhard Kaufung, Leverkusen, and Rolf Wiedermann, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 17, 1987, Ser. No. 63,185

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1986, 3622594; Aug. 29, 1986, 3629390

Int. Cl.[4] C08G 18/14

U.S. Cl. 521—99 14 Claims

1. A polyol composition comprising:

(a) at least 10 wt. % of a polyether having an OH number of from 400 to 520 containing at least two hydroxyl groups which is produced by adding an alkylene oxide to 2,3- and/or 3,4-tolylene diamine,

(b) at least 20 wt. % flame retardant containing phosphorus and/or halogen,

(c) 5–10 wt. % chain lengthening/crosslinking agent having at least two Zerewitinoff-active hydrogen atoms and a molecular weight of from 32 to 299,

(d) 0.1 to 2.0 wt. % surface active agent,

(e) 0 to 2 wt. % water and

(f) 0 to 30 wt. % of a polyhydroxyl compound different from (a) having a molecular weight of from 300 to 10,000.

4,767,796

HARD SEGMENT CONTAINING PREPOLYMERS FROM CYCLOALKANE DIOLS

Dolunay I. Cortelek, Meriden, and James R. Pritchard, Wallingford, both of Conn., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 17, 1987, Ser. No. 134,140

Int. Cl.[4] C08G 18/14

U.S. Cl. 521—155 11 Claims

1. An isocyanate composition which is a storage stable liquid at ambient temperatures equal to or above about 20° C. which composition comprises the product obtained by heating a liquefied methylenebis(phenyl isocyanate) with from about 0.02 to about 0.5 equivalent of at least one cycloalkane diol per equivalent of said liquefied methylenebis(phenyl isocyanate).

4,767,797

PHOTOCURABLE COMPOSITIONS OF POLY(ETHYNYLPHENYL)ACETYLENE, ITS COPOLYMER AND COMPOSITION THEREOF

Hideo Ai; Yohsuke Koizumi, and Naohiro Tsuruta, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

Division of Ser. No. 621,362, Jun. 15, 1984, abandoned. This application Aug. 25, 1986, Ser. No. 899,650

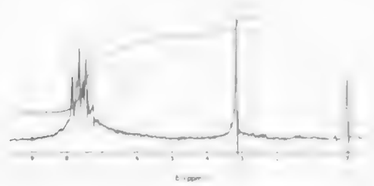
Claims priority, application Japan, Jun. 20, 1983, 58-109321; Aug. 29, 1983, 58-157428; Oct. 19, 1983, 58-194351

Int. Cl.[4] C08F 2/50, 281/00

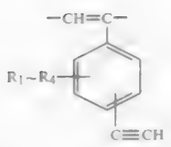
U.S. Cl. 522—8 29 Claims

1. A resin composition consisting essentially of (i) a linear

polymer having a recurring unit represented by the formula (I):



(I)



wherein

R_1, R_2, R_3 and R_4 each independently is a hydrogen atom, a C_{1-10} alkyl group, a C_{6-10} cycloalkyl group, an aryl group, or a halogen atom and the ethynyl group is in either meta position or para position to the main polymer chain; and a weight-average molecular weight of 1,000 to 1,000,000 or a linear copolymer having a weight-average molecular weight of 1,000 to 1,000,000 consisting of a recurring unit represented by the formula (I) and a recurring unit represented by the formula (II):



(II)

wherein

X and Y each independently is a C_{6-20} aryl group, a C_{1-10} alkyl group, a C_{6-10} cycloalkyl group, a silyl group having a C_{1-10} alkyl group or a C_{6-10} aryl group, a hydrogen atom or a halogen atom, and the ethynyl group of the unit (I) is in either meta position or para position to the main polymer chain; and the weight ratio of the unit (I) to the unit (II) ranges from 1/99 to 99.5/0.5 and (ii) at least one agent selected from the group consisting of (a) an improvement agent for casting and molding property in an amount of about 3 to about 50 % by weight based on the weight of the polymer; (b) an adhesive agent in an amount of about 1 to about 5 % by weight based on the weight of the polymer, and (c) a photocrosslinking initiator in an amount of about 0.1 to about 20 % by weight baed on the weight based on the weight of the polymer.

4,767,798

POLYMERIZABLE RADIOPAQUE DENTAL COMPOSITION

Oswald Gasser, Seefeld, and Klaus Ellrich, Wörthsee, both of Fed. Rep. of Germany, assignors to ESPE Stiftung & Co. Produktions- und Vertriebs KG, Seefeld, Fed. Rep. of Germany

Filed Mar. 18, 1987, Ser. No. 27,326

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1986, 3609038

Int. Cl.[4] C08K 3/10; A61K 6/08

U.S. Cl. 523—117 6 Claims

1. A polymerizable, radiopaque dental composition, comprising:

at least one ethylenically unsaturated, polymerizable substance selected from the group consisting of monomers and polymers; and YF_3 in a range of 5–30% by weight of the total composition.

4,767,799

RADIO FREQUENCY ENERGY SENSITIZED COMPOSITIONS AND METHOD FOR SENSITIZING COMPOSITIONS TO RADIO FREQUENCY ENERGY

Agmund K. Thorsrud, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 707,613, Mar. 4, 1985, Pat. No. 4,661,299. This application Jan. 30, 1987, Ser. No. 8,815

Int. Cl.[4] C08J 3/28; C08K 3/34

U.S. Cl. 523—137 26 Claims

1. A composition comprising ultra-high molecular weight polyethylene suitable for enhancement of radio frequency sensitivity and a radio frequency sensitizing amount of a crystalline or amorphous alkali or alkaline earth metal aluminosilicate treated essentially to remove absorbed water and/or other volatiles.

4,767,800

EXOTHERMIC COMPOSITIONS

Max G. Nee, Lichfield, and Michael J. Gough, Gnosall, both of England, assignors to Foseco International Limited, Nechells, England

Filed Apr. 7, 1987, Ser. No. 35,458

Claims priority, application United Kingdom, May 1, 1986, 8611730

Int. Cl.[4] C21B 7/00

U.S. Cl. 523—141 15 Claims

1. An exothermic composition comprising a particulate readily oxidisable metal, and an oxidising agent for the metal, and an organic fluorine-containing compound, said organic fluorine-containing compound being polytetrafluoroethylene, polyhexafluoropropylene, polychlorofluoroethylene or polyvinyl fluoride, said oxidising agent being one or more of iron oxide, manganese dioxide, sodium nitrate, potassium nitrate, sodium chlorate or potassium chlorate.

4,767,801

MOLDING MATERIAL AND MOLD

Takatoshi Suzuki; Yasuo Takada; Yuji Sakakibara; Masahiro Sugiura; Hiroaki Hayashi, and Osami Kamigaito, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Yokomichi, Japan

Division of Ser. No. 896,199, Aug. 14, 1986, Pat. No. 4,691,756. This application Mar. 23, 1987, Ser. No. 29,180

Claims priority, application Japan, Aug. 22, 1985, 60-184550; Dec. 2, 1985, 60-271192

Int. Cl.[4] C08K 3/34

U.S. Cl. 523—145 11 Claims

1. A molding material for shell molds comprising thermosetting resin coated casting sand and hydrous magnesium silicate clay mineral, wherein the clay mineral is mixed in a ratio of 0.5 to 45 parts by weight per 100 parts by weight of the resin-coated casting sand, thereby minimizing generation of smoke and irritating gases at the time of mold making.

4,767,802

EPOXY RESIN COMPOSITION

Toshimori Sakakibara, Shiga, and Hirohide Tomoyasu, Moriyama, both of Japan, assignors to Sunstar Giken Kabushiki Kaisha, Takatsuki, Japan

Filed Oct. 20, 1987, Ser. No. 110,271

Claims priority, application Japan, Oct. 20, 1987, 61-249827

Int. Cl.[4] C08K 3/36, 3/35, 3/26, 3/04

U.S. Cl. 523—204 12 Claims

1. An epoxy resin composition comprising a uniform mixture of an epoxy resin and fine particles of a rubber adhered uniformly on the surface thereof with fine particles of an inorganic material, said fine particles of a rubber being prepared by

VOL 1093 ISS 5 AG 30 1988 UMI

dispersing uniformly fine particles of an inorganic material in a rubber latex and drying the dispersion.

4,767,803

METHOD OF PRODUCING COAGULATED COLLOIDAL PARTICLES

Hideo Yasui, Kobe; Yasuhiro Miki, Himeji, and Wataru Okada, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 2, 1986, Ser. No. 881,294

Claims priority, application Japan, Jul. 3, 1985, 60-147316; Jul. 3, 1985, 60-147317

Int. Cl.[4] C08J *3/02, 3/16*

U.S. Cl. 523—335 11 Claims

1. Method of producing densely packed coagulated colloidal particles which comprises the following steps:

(A) adding a coagulant to an aqueous dispersion of primary colloidal particles which can be coagulated by addition of said coagulant, at a temperature lower than the temperature at which said colloidal primary particles begin to fuse, under such conditions that said coagulant is present in discrete coagulant units in the dispersion before said coagulant is brought into solution by diffusion;

(B) allowing molecules of coagulant to diffuse from said coagulant units into the surrounding dispersion, thereby causing primary colloidal particles to coagulate on the surface of each coagulant unit and causing the coagulated particles to grow from inside to outside of each unit to produce coagulated particles having a desired size and comprising primary colloidal particles regularly arranged in a crystal-like structure;

(C) separating the coagulated particles thus formed from the dispersion; and (D) drying, or heating in an aqueous phase, the coagulated particles separated above at a temperature lower than the softening point of said primary colloidal particles.

4,767,804

CONTROL OF TRANSFORMATIONS WITHIN POLYMERS AND PRODUCTS THEREOF

Bryan G. Willoughby, Telford, England, assignor to Rubber Bands and Plastic Research Association of Great Britain, Great Britain

Continuation of Ser. No. 635,514, Jul. 30, 1984, abandoned. This application Sep. 4, 1986, Ser. No. 903,838

Claims priority, application United Kingdom, Aug. 3, 1983, 8320904

Int. Cl.[4] C08J *3/22, 5/06;* C08K *9/04*

U.S. Cl. 523—351 20 Claims

1. A process for the production of a non-aqueous polymer product which comprises (1) reacting a lower molecular weight polymer having reactive terminal carboxyl or thiol groups and a number average molecular weight of less than 20,000, measured in terms of polystyrene equivalents, in solution in a solvent for said polymer, with a metal salt in a ratio of metal ions in said metal salt to carboxyl or thiol groups in said lower molecular weight polymer of not more than about 1.5:1, respectively, to form a mobile or thermoplastic metal containing polymer, and (2) incorporating said metal-containing polymer into a higher molecular weight polymer.

4,767,805

INTERMEDIATE FOR COMPOSITE MATERIALS

Hisashi Tada; Akira Agata, and Yasuaki Ii, all of Aichi, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

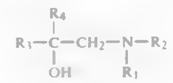
Continuation-in-part of Ser. No. 763,180, Aug. 7, 1985, abandoned. This application Feb. 9, 1987, Ser. No. 12,236

Claims priority, application Japan, Aug. 7, 1984, 59-164249; Aug. 7, 1984, 59-164250; Aug. 7, 1984, 59-164251

Int. Cl.[4] C08K *3/04;* C08G *59/64;* C08J *5/24*

U.S. Cl. 523—468 19 Claims

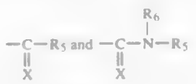
1. An intermediate for a composite material, which intermediate comprises carbon fibers impregnated with an epoxy resin composition containing epoxy resin and at least one of compounds represented by the formula (I):



(I)

wherein

R_1 and R_2, which may be the same or different, each represents a substituted or unsubstituted, saturated alicyclic group having 5 to 17 carbon atoms, a substituted or unsubstituted aromatic group having 6 to 17 carbon atoms, or a substituted or unsubstituted, saturated or unsaturated 5- or 6-membered heterocyclic group containing N, O or S as hetero atoms or a group of formula



wherein R_5 and R_6, which may be the same or different, each represents a hydrogen atom or a substituted or unsubstituted, saturated aliphatic group having 1 to 17 carbon atoms, a substituted or unsubstituted, saturated alicyclic group having 5 to 17 carbon atoms, an aromatic group having 6 to 17 carbon atoms, or a substituted or unsubstituted, saturated 5- or 6-membered heterocyclic group containing N, O or S as hetero atoms;

R_3 and R_4, which may be the same or different, each has the same meaning as defined for R_1 and R_2, or a group of the formula $R—OCH_2—$ wherein R has the same meaning as defined for R_1 and R_2; and

X represents an oxygen atom, a sulfur atom or $N—R_7$ wherein R_7 represents a hydrogen atom or has the same meaning as defined for R_1 and R_2.

4,767,806

CARBOXYL MODIFIED OLEFINIC COPOLYMER COMPOSITION

Frank C. Cesare; William P. Whelan, Jr., both of Woodbury; Henno A. Petersen, Sandy Hook, all of Conn.; Thomas S. Coolbaugh, Arlington, Mass., and Robert G. Davis, Naugatuck, Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Jan. 5, 1987, Ser. No. 606

Int. Cl.[4] C08L *67/06, 67/02*

U.S. Cl. 523—514 16 Claims

1. A curable molding composition comprising:

(a) a curable polyester resin, and

(b) a liquid carboxyl modified polyolefin added in an amount effective to reduce shrinkage of the polyester resin during curing, said polyolefin being a liquid reaction product of a low molecular weight ethylene/alphaolefin copolymer with a carboxylic acid or anhydride containing three or more carbon atoms and one or more acid or anhydride groups, said alphaolefin having a formula $H_2C═CHR$ wherein R is an alkyl radical containing from 1 to 10 carbon atoms, the copolymer having a number average molecular weight ranging from 250 to 15,000.

4,767,807

COLORING AGENT FOR DOPE-DYEING VISCOSE RAYON

Iwao Fujikawa, Otsu; Mitsuo Kushino, Minoo, and Yasuhiro Yamamoto, Sakai, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co. Ltd., Osaka, Japan

Filed Aug. 18, 1986, Ser. No. 897,347

Claims priority, application Japan, Aug. 21, 1985, 60-181822

Int. Cl.[4] C08K *7/00;* C08L *1/24*

U.S. Cl. 524—36 10 Claims

1. A dope-dyeing viscose rayon spinning composition, produced by incorporating in the viscose 0.1 to 10 parts by weight, based on 100 parts by weight of the viscose, of a coloring agent comprising minute spherical cured particles of an amino resin produced from formaldehyde and at least one amino compound selected from the group consisting of benzoguanamine, melamine, and urea and colored with a dye.

4,767,808

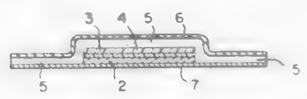
ARTICLE USEFUL FOR ADMINISTRATION OF PHARMACOLOGICALLY-ACTIVE SUBSTANCES TRANSDERMALLY, ORALLY, OR BY MEANS OF IMPLANT

Agis Kydonieus, Kendall Park; Kishore R. Shah, Bridgewater, both of N.J., and Bret Berner, Ardsley on Hudson, N.Y., assignors to Hercon Laboratories Corporation, S. Plainfield, N.J.

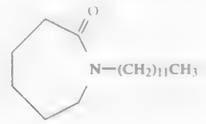
Division of Ser. No. 847,635, Apr. 3, 1986, which is a continuation-in-part of Ser. No. 657,911, Oct. 5, 1984, abandoned, which is a continuation-in-part of Ser. No. 413,658, Sep. 1, 1982, abandoned. This application Nov. 19, 1987, Ser. No. 122,862

Int. Cl.[4] C08J *5/34*

U.S. Cl. 524—98 2 Claims



1. A composition of matter comprising a polyvinyl chloride resin intimately admixed with a plasticizing quantity of the compound having the structure:



4,767,809

ELASTOMERIC COMPOSITION HAVING IMPROVED CUT GROWTH RESISTANCE

Donald E. Wingrove, Cheshire, Conn., assignor to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Oct. 14, 1986, Ser. No. 918,941

Int. Cl.[4] C08K *5/18*

U.S. Cl. 524—255 19 Claims

1. A composition having improved cut growth resistance produced by curing a blend of components comprising:

(A) at least one highly unsaturated rubber;

(B) at least one saturated rubber;

(C) a para-phenylenediamine antiozonant compound; and

(D) an effective amount of a curing agent comprising:

(i) sulfur or a sulfur donor compound;

(ii) at least one sulfur cure accelerator; and

(iii) at least one peroxide curative;

wherein between about 1 and about 10 parts by weight of component (C) per 100 parts by weight of components (A) plus (B) is present, said composition having cut growth resistance as determined by ASTM D430 superior to said compositions without any one of said components (A), (B), (C), (D) (i), (D) (ii), or (D) (iii).

4,767,810

BLENDS OF COPOLYESTER-CARBONATE AND POLYESTER RESINS EXHIBITING IMPROVED COLOR PROPERTIES

Linda H. Nelson, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 22, 1986, Ser. No. 944,033

Int. Cl.[4] C08L *67/02*

U.S. Cl. 524—56 35 Claims

1. A resinous composition consisting essentially of:

(i) at least one aromatic copolyester-carbonate resin;

(ii) at least one polyester resin; and

(iii) from about 0.01 to about 5 weight percent, based on the total amounts of (i)–(iii) present of at least one polyol of the formula

$R^4—(OH)_r$

wherein

R^4 is selected from aliphatic hydrocarbon moieties, substituted aliphatic hydrocarbon moieties, aliphatic aromatic hydrocarbon moieties, or substituted aliphatic aromatic hydrocarbon moieties, with the proviso that if R^4 is an aliphatic aromatic or substituted aliphatic aromatic moiety the hydroxy groups are bonded only to the aliphatic portion thereof; and

r is a positive integer having a value of from 2 up to the number of replaceable hydrogen atoms present on R^4.

4,767,811

THERMOPLASTIC POLYAMIDE MOULDING MATERIAL HAVING REDUCED WATER UPTAKE CONTAINING EPOXY COMPOUND

Hans D. Torre, Domat/Ems, and Manfred Hoppe, Chur, both of Switzerland, assignors to Ems-Inventa A.G., Switzerland

Continuation of Ser. No. 863,619, May 15, 1986, abandoned. This application Aug. 5, 1987, Ser. No. 82,936

Claims priority, application Switzerland, May 15, 1985, [redacted]

Int. Cl.[4] C08G *69/46*

U.S. Cl. 524—114 11 Claims

1. A thermoplastic polyamide 6 molding material having reduced water uptake which comprises, per 100 parts by weight of polyamide, from 0.3 to 15 parts by weight of an epoxide compound containing at least one oxirane group of the formula



(I)

in which R_1 is hydrogen, alkyl, aralkyl or aryl, and R_2 is hydrogen, alkyl, aralkyl, aryl, or a group of the formula

$R_3—X—CH_2-$ (II)

in which X is oxygen, and R_3 is independently hydrogen or alkyl substituted or unsubstituted aromatic, cycloaliphatic, araliphatic or aliphatic groups or such groups containing oxirane groups or such groups interrupted by other groupings.

VOL 1093 ISS 5 AUG 30 1988 UMI

4,767,812

ARTICLE COMPRISING AN ELASTOMERIC CONTROLLED RELEASE INSECTICIDE

John T. Chapin, Alpharetta, and Raffaele A. Sabia, Atlanta, both of Ga., assignors to American Telephone and Telegraph Company, AT&T Laboratories, Murray Hill, N.J.

Continuation-in-part of Ser. No. 729,267, May 1, 1985, Pat. No. 4,594,380. This application Apr. 28, 1986, Ser. No. 856,183
The portion of the term of this patent subsequent to Jun. 10, 2003, has been disclaimed.
Int. Cl.[4] C08L 75/04
U.S. Cl. 524—144 7 Claims

1. An article comprising:
(a) a container;
(b) an elastomeric matrix and at least one insecticide contained in the matrix, the matrix material having a modulus between about 10^4 Pa and about 10^8 Pa at 23° C. and a glass transition temperature T_g less than 0° C., the matrix comprising polyurethane formed by a process comprising reacting a polyol with an isocyanate, the polyol consisting substantially of at least one member of the group consisting of hydroxyl-terminated polybutadiene and polyisoprene, the polyol having an average molecular weight in the range 400–10,000, and an average functionality in the range 2.0–3.0, the isocyanate consisting substantially of isocyanate selected from the group consisting of 4,4′ diphenylmethane diisocyanate and the oligomers thereof, the isocyanate having an average molecular weight in the range 80–1000 and an average functionality between about 2 and about 3, the NCO/OH ratio of polyol and isocyanate being in the range of 0.8 to 1.2, the insecticide comprising 2,2′ dichlorovinyl dimethyl phosphate, the insecticide-containing matrix being within the container;
(c) means for activating the article; the article being adapted for substantially preventing, prior to activation of the article, release of the insecticide into the air surrounding the article, and for permitting, subsequent to activation of the article, sustained release of the insecticide into the air surrounding the article.

4,767,813

HIGH SOLIDS PSA COMPOUNDS

William T. Evitt, Chattanooga, Tenn., assignor to Polysar Financial Services S.A., Fribourg, Switzerland

Filed Mar. 23, 1987, Ser. No. 28,912
Int. Cl.[4] C08J 23/00, 5/09
U.S. Cl. 524—271 11 Claims

1. A process for preparing an aqueous based pressure sensitive adhesive consisting of:
per 100 parts by weight of water,
from about 80 to 120 parts by weight of a mixture comprising
from about 85 to 15 parts by weight of one or more synthetic polymers; and
from about 15 to 85 parts by weight of one or more water insoluble tackifier resins having a Tg greater than about 10° C.;
from about 2.0 to about 6.0 parts by weight of one or more plasticizers;
from about 0.4 to about 1.2 parts by weight of one or more emulsifiers;
from about 0.2 to about 0.6 parts by weight of one or more alkali metal hydroxides; and
from about 0.5 to 0.15 parts by weight of a non silicone defoamer,
from about 1 to 2 parts by weight of a dispersant which comprises heating said tackifier resin above its Tg and adding thereto said plasticizer and said emulsifier; compounding an emulsion of about 60 to 40 percent by weight of said polymer, said alkali metal hydroxide, dispersant and said defoamer; blending said compound with the mixture of said hot tackifier, plasticizer and emulsifier under conditions of very high shear and cooling the resulting aqueous based pressure sensitive adhesive to room temperature under mild agitation.

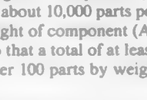
4,767,814

MOISTURE-CURABLE HALOSILANE-SUBSTITUTED POLYMER COMPOSITION

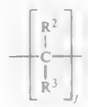
Dong-Hak Bae, The Woodlands, Tex.; William D. Sigworth, Naugatuck, and William Cummings, Woodbury, both of Conn., assignors to Uniroyal Chemical Company, Inc., Middlebury, Conn.

Filed Sep. 11, 1986, Ser. No. 906,123
Int. Cl.[4] C08K 5/09
U.S. Cl. 524—284 9 Claims

1. A sealant composition comprised of
(A) An amorphous polymer comprising a saturated carbon backbone having substituted thereon one or more halosilane moieties of the formula:

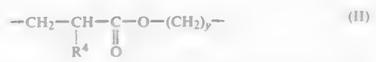


wherein:
X is halogen;
n is 1, 2 or 3;
a is 0, 1 or 2;
b is 0, 1 or 2;
with the proviso that a+b=3−n;
R and R^1 are each independently selected from the group consisting of hydrogen, C_1–C_{12} alkoxy, C_1–C_{12} alkyleneoxy, C_4–C_{12} alkoxyalkoxy, C_5–C_6 cycloalkoxy, C_2–C_{13} alkylcarbonyloxy, C_1–C_{12} alkylamino, C_1–C_{12} alkyl, C_4–C_{12} alkoxyalkyl, C_5–C_6 cycloalkyl and C_7–C_9 aralkyl; and
Q is C_2–C_6 alkenylene, C_5–C_8 cycloalkylene, C_5–C_8 cycloalkenylene or of the formula:



(I)

or



(II)

wherein j is a whole number between 0 and 6 inclusive; R^2 and R^3 are each independently hydrogen of C_1–C_3 alkyl; R4 is hydrogen or methyl; and y is an integer between 2 and 5 inclusive; with the proviso that j can be 0 or 1 only if the saturated carbon backbone had pendent unsaturation prior to being substituted with such halosilane moiety;
said polymer having a viscosity average molecular weight of between about 500 and about 20,000;
(B) between 0 and about 300 parts percent by weight, per 100 parts by weight of component (A), of a filler; and
(C) between 0 and about 10,000 parts percent by weight, per 100 parts by weight of component (A), of an inert diluent;
with the proviso that a total of at least 1 part by weight of (B) plus (C) per 100 parts by weight of component (A) is present;
wherein, in component (A), between about (i) 0.5 and about 5.0 silane moieties in total, and (ii) between about 0.05 and about 0.35 silane moieties per 1000 viscosity average molecular weight based upon the viscosity molecular weight of said polymer, are present.

4,767,815

GUERBET ALCOHOL ESTERS

Anthony J. O'Lenick, Jr., Lilburn, Ga., assignor to GAF Corporation, Wayne, N.J.

Filed Nov. 9, 1987, Ser. No. 118,419
Int. Cl.[4] C08K 5/11
U.S. Cl. 524—317 5 Claims

1. A polycarbonate resin composition containing an effective mold releasing amount of an ether-ester derived from the reaction of (a) a guerbet alcohol having from 16 to 40 carbon atoms with (b) a butyrolactone selected from the group consisting of butyrolactone, methylbutyrolactone, dimethylbutyrolactone, ethylbutyrolactone and diethylbutyrolactone.

4,767,816

POLYVINYL ALCOHOL-STABILIZED VINYL CHLORIDE-ETHYLENE-HYDROXYETHYL ACRYLATE COPOLYMER EMULSIONS HAVING ENHANCED WATER AND SOLVENT RESISTANT PROPERTIES

John G. Iacoviello; William J. Hook, both of Allentown, and Bheema R. Vijayendran, Emmaus, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 24, 1987, Ser. No. 65,796
Int. Cl.[4] C08F 2/16; C08K 3/20
U.S. Cl. 524—459 12 Claims

1. In an aqueous polyvinyl alcohol-stabilized vinyl chloride-ethylene copolymer emulsion, the improvement which comprises the copolymer also containing up to 10 wt % of a C_2–C_4 hydroxyalkyl (meth)acrylate, based on vinyl chloride.

4,767,817

MECHANICALLY COMPATIBLE, POLYPHASE BLEND OF POLY(VINYL CHLORIDE), CHLORINATED POLYOLEFIN, POLYOLEFIN, AND GRAFT COPOLYMER OF POLYOLEFIN, AND RIGID FIBER-REINFORCED COMPOSITE THEREOF

Biing-Lin Lee, Broadview Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 9, 1987, Ser. No. 23,186
Int. Cl.[4] C08K 7/14; C08L 51/00, 51/04
U.S. Cl. 524—494 15 Claims

1. A thermoformable polyphase polyblend composition having distinct first, second and third phases without miscibility but with mechanical compatibility, the polyblend consisting essentially of (i) from 10 to 40 parts by weight of olefin polymer (PO), (ii) from 20 but less than 40 parts of a graft copolymer of olefin polymer (PO-G), the graft copolymer having a melt index in the range from about 2 to 40 grams/10 min under condition G of ASTM test D 1238-73, (i) and (ii) forming the first phase; (iii) from more than 40 to about 70 parts of poly(vinyl chloride) (PVC) forming the second phase, and (iv) from 10 to 30 parts chlorinated polyethylene (CPE) at least 5 parts of which has a Cl content sufficient substantially to maintain its crystallinity, forming the third phase; the amount of PVC, PO and PO-G being chosen so that there is more PVC than PO, and at most an equal amount by weight of PO and PO-G so as to provide the continuous first phase in a substantially rigid blend, and PVC and CPE the dispersed phases.

4,767,818

LOW GLOSS, FLAME RETARDANT POLYCARBONATE COMPOSITIONS

Omar M. Boutni, Mt. Vernon, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Mar. 23, 1987, Ser. No. 29,129
Int. Cl.[4] C08K 5/42; C08L 53/02
U.S. Cl. 524—505 20 Claims

1. A composition comprising an aromatic polycarbonate having a number average molecular weight of from about 6,000 to about 10,000 in admixture with
(a) at least 3 weight percent of a polymer selected from the group consisting of a random block copolymer having polycarbonate block(s) and diorganosiloxane block(s); and a block copolymer of a vinylaromatic and an alkadiene;
(b) a flame retardant combination comprising a flame retardant salt, said combination in quantities sufficient to achieve V_0 or V_1 in a part 93 mils thick; and
(c) said composition having an exterior gloss of less than about 80 as measured by a Gardner Glossmeter at 60° gloss.

4,767,819

ULTRA-HIGH-MOLECULAR-WEIGHT POLYETHYLENE SOLUTION

Shigeki Yokoyama, Yokohama; Michiaki Torii; Kazuo Matsuura, both of Tokyo, and Akira Sano, Kawasaki, all of Japan, assignors to Nippon Petrochemicals Co., Ltd., Japan

Filed Jul. 7, 1987, Ser. No. 70,545
Claims priority, application Japan, Jul. 8, 1986, 61-160568
Int. Cl.[4] C08L 23/06
U.S. Cl. 524—587 4 Claims

1. An ultra-high-molecular-weight polyethylene solution which is produced by the steps of subjecting a kerosene fraction having a boiling point of 160°0 to 300° C. to a nucleus hydrogenation treatment at a pressure of 30 to 100 kg/cm^2 at a temperature of 100° to 300° C. in the presence of a metallic catalyst for nucleus hydrogenation of aromatic nuclei; separating and removing at least a part of n-paraffins present in said kerosene therefrom by the use of a molecular sieve made up of a synthesized zeolite in order to obtain a residual oil; fractionating the latter by a rectification apparatus to obtain a hydrocarbon mixture fraction which has a boiling point of 180° to 250° C. and which is substantially free from naphthalene and biphenyl; and dissolving, in said hydrocarbon mixture fraction, an ultra-high-molecular-weight polyethylene having an intrinsic viscosity of 8 or more in decalin at 135° C.

4,767,820

COMPOSITIONS OF A RELATIVELY WATER-STABLE THERMOPLASTIC POLYMER AND TETRAMETHYL TITANATE DISPERSED IN AN ALKYLENE-ALKYL ACRYLATE COPOLYMER MATRIX

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 767,642, Aug. 20, 1985, abandoned, which is a continuation-in-part of Ser. No. 669,754, Nov. 9, 1984, Pat. No. 4,579,913, which is a continuation-in-part of Ser. No. 534,354, Sep. 23, 1983, Pat. No. 4,526,930. This application Feb. 2, 1987, Ser. No. 9,881
Int. Cl.[4] C08L 51/06
U.S. Cl. 525—72 8 Claims

1. A composition of matter comprising a preformed, thermoplastic polymer, said polymer being a homopolymer or interpolymer of one or more monoolefins or diolefins and having pendant silane moieties of the formula:



wherein R is a straight or branched chain hydrocarbon radical having a minimum of 4 carbon atoms attached to the oxygen atom through an external carbon or a hydrocarbon radical having a minimum of 3 carbon atoms attached to the oxygen atom through an internal carbon, and each V is a hydrocarbon radical having 1 to 18 carbon atoms or an —OR radical wherein R is as previously defined; and, dispersed in a normally solid alkylene-alkyl acrylate copolymer matrix wherein the alkylene moiety has 2 to 8 carbon atoms, the reaction product of tetramethyl titanate and the matrix, said reaction product being formed at a temperature sufficient for the titanate to react with the matrix wherein the tetramethyl titanate

VOL 1093 ISS 5 AG 30 1988 UMI

is present in an amount sufficient to ester exchange one ester group of the titanate for one ester group of the silane.

4,767,821

POLYMER POWDER COMPOSITIONS CONTAINING TETRAFLUOROETHYLENE POLYMERS

Christian Lindner, Cologne; Horst Peters, Leverkusen, and Bernd Urbanneck, Monchen-Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Continuation of Ser. No. 735,041, May 17, 1985, abandoned. This application Jul. 18, 1986, Ser. No. 888,025

Claims priority, application Fed. Rep. of Germany, May 29, 1984, 3420002

The portion of the term of this patent subsequent to Apr. 1, 2003, has been disclaimed.

Int. Cl.[4] C08L *51/04, 55/02, 27/18;* C08J *3/16*

U.S. Cl. 525—72 5 Claims

1. A process for the production of a powder form polymer mixture which contains

(A) a thermoplastic graft polymer of monomer selected from styrene, α-methylstyrene, p-methylstyrene, a halostyrene, acrylonitrile, methacrylonitrile, an alkyl acrylate, an alkyl methacrylate, maleic anhydride, an N-substituted maleinimide, vinyl acetate, vinyl chloride, vinylidene chloride or mixtures thereof on a rubber substrate having a rubber glass transition temperature below 0° C., the graft polymer having a rubber content of 8 to 80% by weight and

(B) a highly disperse particulate tetrafluoroethylene polymer having a fluorine content of 65–76% by weight which comprises the steps:

(I) mixing a dispersion of graft polymer (A) having an average particle diameter (d_{50}) of 0.05 to 30 μm and a solids content of 20 to 60% by weight with a dispersion of a tetrafluoroethylene polymer (B) having an average particle diameter (d_{50}) of 0.05 to 30 um and a solids content of 30 to 70% by weight in such a way that no appreciable agglomeration of the particles in the dispersion takes place to form a mixed dispersion containing 0.01 to 40% by weight of tetrafluoroethylene polymer and 99.99 to 60% by weight of organic substrate polymer,

(II) coagulating the mixed dispersion from step (I) in a temperature range of 20° to 120° C. and at a pH value from 7 to 2 with the formation of a composition of powder particles whereby substantially all tetrafluoroethylene polymer powder particles formed during coagulation have a particle size of 30 μm or less, and

(III) drying the coagulate formed in step (II) at a temperature of 50° to 150° C. to form a powder composition containing highly disperse tetrafluoroethylene polymer.

4,767,822

METHOD OF FORMING A NONAQUEOUS STABLE EMULSION OF RUBBER IN POLYMERIZABLE MONOMER, AND THE POLYMERIZATION PROCESS AND THERMOPLASTIC COPOLYMERS PRODUCED THEREBY

Wen B. Shyu, Chagrin Falls, Ohio; David A. Woodhead, Llantwit Major, Wales, and Vincent P. Quigley, Maple Heights, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Division of Ser. No. 741,913, Jun. 6, 1985, Pat. No. 4,698,389, which is a division of Ser. No. 705,266, Feb. 25, 1985, Pat. No. 4,552,921. This application Aug. 28, 1987, Ser. No. 90,817

Int. Cl.[4] C08L *51/04, 53/00*

U.S. Cl. 525—99 11 Claims

1. A rubber-modified thermoplastic copolymer composition comprising a monoalkenyl aromatic monomer, an unsaturated dicarboxylic acid anhydride monomer, an acrylonitrile monomer, a rubber, and a block copolymer having at least one component miscible with said rubber, wherein said rubber modified copolymer is prepared by polymerizing a single nonaqueous emulsion feedstock comprising each said monomer, said rubber and said block copolymer.

4,767,823

HALOGENATED ETHYLENE POLYMERS WITH IMPROVED RESISTANCE TO AGGLOMERATION

Edward Jones; Larry A. Meiske, and Warren L. Young, all of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 678,442, Dec. 5, 1984, abandoned. This application Aug. 1, 1986, Ser. No. 894,441

Int. Cl.[4] C08F *8/20*

U.S. Cl. 525—334.1 16 Claims

1. An agglomeration-resistant, halogenated derivative of polyethylene, said derivative (a) having (1) a neat wedge blocking value of from about 0 to about 60 kilograms, (2) a weight-based median particle size of from about 200 to about 900 microns and (3) a chemically combined halogen content of from about 26 to about 42 percent by weight of derivative; and (b) being prepared by halogenating a polyethylene resin in an aqueous slurry consisting essentially of water and the resin, and, after terminating chlorination and without adding a mixture of talc and one or more fixing agents thereto, separating the halogenated derivative from the slurry, washing the separated derivative with water and drying said washed, separated derivative, the polyethylene resin, prior to halogenation, having (1) a weight-based particle median particle size of from about 120 to about 600 microns, (2) a weight-based median particle size such that more than about 60 percent of the particles have a particle size of from about 130 to about 850 microns, (3) a bulk density of from about 0.26 to about 0.56 grams per cubic centimeter and (4) a density of from about 0.958 to about 0.965 grams per cubic centimeter.

4,767,824

PROCESS FOR POLYMERIZING ACRYLIC MONOMERS AND POSSIBLY NON-ACRYLIC CO-MONOMERS

Trazollah Ouhadi; Rosalia Forte, both of Liege; Robert E. Jerôme, Tilff; Roger M. Fayt, and Philippe J. Teyssié, both of Neuville-en-Condroz, all of Belgium, assignors to Compagnie Internationale de Participation, Luxembourg, Luxembourg

Filed Nov. 5, 1985, Ser. No. 795,062

Claims priority, application Luxembourg, Nov. 5, 1984, 85627

Int. Cl.[4] C08F *8/34, 4/46*

U.S. Cl. 525—343 9 Claims

1. A process for polymerizing acrylic monomers or for polymerizing acrylic monomers with comonomers selected from the group comprising acrylic, vinyl, diene and cyclosiloxane comonomers, in which the polymerization reaction is carried out in at least one organic solvent at a temperature between −78° C. and room temperature and in the absence of humidity and oxygen, by means of butyl-lithium as an initiating agent, said polymerization or copolymerization being effected in the presence of a lithium chloride or additive, said at least one organic solvent being selected so that said monomers or said comonomers, said initiating agent, said additive and polymers or copolymers resulting from said polymerization reaction are dissolved in said at least one organic solvent during the polymerization reaction, the amount of said monomers or said comonomers and/or the amount of said initiating agent being adjusted so as to obtain a polymer or copolymer having a predetermined number average molecular weight which is proportional to the amount of monomers or comonomers used in said polymerization reaction, and inversely proportional to the amount of said initiating agent used in said polymerization reaction.

4,767,825

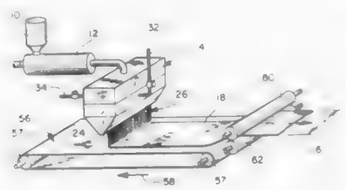
SUPERABSORBENT THERMOPLASTIC COMPOSITIONS AND NONWOVEN WEBS PREPARED THEREFROM

Jose F. Pazos, Roswell; Sharon L. Greene, Alpharetta, and Augusto Rodriguez, Roswell, all of Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 22, 1986, Ser. No. 945,405

Int. Cl.[4] C08L *71/02, 77/00*

U.S. Cl. 525—408 23 Claims



1. A superabsorbent, thermoplastic polymeric composition comprising:

(A) from about 86 to about 98 percent by weight, based on the total weight of the composition, of a poly(oxyethylene) soft segment having a weight average molecular weight in the range of from about 5,000 to about 50,000; and

(B) from about 2 to about 14 percent by weight, based on the total weight of the composition, of a hard segment which has a melting point above ambient temperature and below the temperature at which decomposition of either the composition or the soft segment takes place, is essentially insoluble in water, and phase separates from the soft segment, said hard segment being selected from the group consisting of polyurethanes, polyamides, polyesters, polyureas, and combinations thereof;

wherein the soft and hard segments are covalently bound together by means of urethane, amide, ester, or secondary urea linkages or combinations thereof.

4,767,826

RADIATION-SENSITIVE POLYMERS

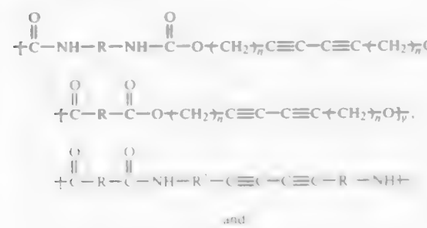
Rong-Chang Liang, Briarwood, N.Y.; Subhash Narang, Menlo Park, Calif., and Arnost Reiser, Brooklyn, N.Y., assignors to Polytechnic Institute of New York, Brooklyn, N.Y.

Filed Jul. 18, 1985, Ser. No. 756,354

Int. Cl.[4] C80F *283/04*

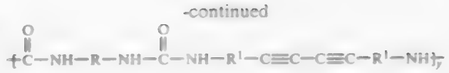
U.S. Cl. 525—421 10 Claims

1. A radiation sensitive linear block copolymer suitable for providing a solvent-insoluble product, said linear block copolymer comprising at least two types of segments, A and B, wherein segment A is a rigid and radiation sensitive segment comprising a prepolymer containing diacetylene groups, segment A being one selected from the group consisting of

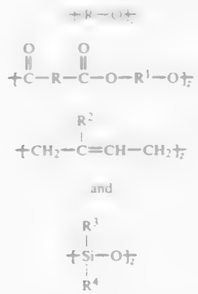


and

-continued



and wherein segment B is a soft rubbery segment comprising a prepolymer, segment B being one selected from the group consisting of



wherein

R, R^1 are the same or different and are selected from the group consisting of aliphatic, cycloaliphatic, and aromatic divalent groups of from 2 to 20 carbon atoms,

R^2 is H, or lower alkyl (C_1–C_6),

R^3, R^4 are lower alkyl (C_1–C_4),

n is an integer in the range of 1 to 10,

y is an integer in the range of 1 to 50, and

z is an integer in the range 2 to 100,

and wherein segments A and B are in a weight ratio of segment A to segment B of from 2:98 to 90:10.

4,767,827

ARTIFICIAL HAIR COMPRISING POLY ALPHA AMINO ACID HAVING PENDANT MERCAPTO OR DISULFIDE GROUPS

Makoto Iwatsuki; Masao Honma, and Mikio Kayama, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Nov. 10, 1986, Ser. No. 928,462

Claims priority, application Japan, Nov. 8, 1985, 60-250336

Int. Cl.[4] C08G *69/48*

U.S. Cl. 525—420 13 Claims

1. Artificial hair comprising a poly-α-amino acid having a degree of polymerization of 50–10,000, and having pendant mercapto or disulfide groups.

4,767,828

POLYESTER-BASED SPANDEX FILAMENT

Gary A. Lodoen, Fishersville, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 913,406, Sep. 30, 1986. This application Jul. 27, 1987, Ser. No. 78,153

Int. Cl.[4] C08G *63/76*

U.S. Cl. 525—440 5 Claims

1. A process for making a spandex filament or film, wherein in the presence of an inert organic solvent

2,2-dimethyl-1,3-propane diol is reacted with 1,12-dodecanedioic acid to form a hydroxyl-terminated polyester having a molecular weight in the range of 2,200 to 2,700 and a glycol acidity of no more than 15 meq/kg,

the thusly formed polyester is reacted with an organic diisocyanate to form an isocyanate-terminated polyester having an isocyanate end-group content in the range of 2.2 to 3.3%,

the isocyanate-terminated polyester is then chain-extended

VOL 1093 ISS 5 AUG 30 1988 UMI

with an aliphatic diamine to provide a viscous spandex polymer solution having a relative viscosity in the range of 1.5 to 1.9, and
the polymer solution is formed into filaments or film.

4,767,829

THERMOSETTING COATING COMPOSITION COMPRISING A HYDROXY-FUNCTIONAL EPOXY-POLYESTER GRAFT COPOLYMER

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Grosse Pointe Farms, and Dennis J. Grebur, Mt. Clemens, all of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 798,079, Nov. 14, 1985, Pat. No. 4,698,399.
This application Jun. 11, 1987, Ser. No. 62,498
Int. Cl.[4] C08G *63/60, 63/08;* **C08L** *67/04, 63/02*
U.S. Cl. 525—449 **14 Claims**

1. An organic solvent based, thermosetting coating composition comprising:

(I) hydroxy functional epoxy-polyester graft copolymer having a number average molecular weight ($\overline{M}_n$) of between about 2,000 and about 20,000, said copolymer being the product of polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor having a number average molecular weight ($\overline{M}_n$) of between about 1,000 and about 4,000, said precursor being the reaction product of diepoxide with dicarboxylic acid in chain extension reaction and acid component in chain termination reaction, in approximately a 1 to 1 equivalent ratio with the chain extended reaction product said acid component comprising primary hydroxy functional acid, wherein said polymerization of said lactone monomers is carried out at a temperature between about 50° C. and about 300° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 90 and about 20 weight percent said lactone monomers; and

(II) blocked polyisocyanate crosslinking agent comprising at least two isocyanate groups which have been blocked by reaction with an active hydrogen bearing blocking agent, said blocked polyisocyanate crosslinking agent being included in an amount such that upon de-blocking of the blocked is ocyanate groups thereof at the cure temperature of the composition, said crosslinking agent provides between about 0.5 and about 1.6 reactive isocyanate groups per reactive group on said hydroxy functional epoxy-polyester graft copolymer.

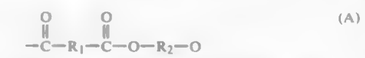
4,767,830

PROCESS FOR PREPARATION OF COPOLYESTER

Yukihiko Kageyama, Fujinomiya; Toshio Nakane, Fuji, and Kenji Hijikata, Mishima, all of Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Sep. 22, 1987, Ser. No. 99,891
Claims priority, application Japan, Sep. 26, 1986, 61-227631
Int. Cl.[4] C08G *63/02*
U.S. Cl. 525—450 **8 Claims**

1. A process for the preparation of a coplyester which shows anisotropy when molten, characterized by reacting a polyester having as the main recurring units dicarboxylic acid-diol units represented by the following general formula (A):



(A)

wherein R_1 stands for an aromatic divalent radical having 6 to 20 carbon atoms or an aliphatic divalent radical having 4 to 20 carbon atoms, and R_2 stands for at least one radical selected from the group consisting of aromatic divalent radicals having 6 to 20 carbon atoms and aliphatic divalent radicals having 2 to 20 carbon atoms.
with at least one hydroxy carboxylic acid ester represented by the following general formula (B):



(B)

wherein R_3 stands for an aliphatic hydrocarbon, aromatic hydrocarbon or hydroxy-substituted aliphatic hydrocarbon radical having 2 to 20 carbon atoms, R_4 stands for a hydrogen atom, a halogen atom or an aliphatic hydrocarbon or alkoxyl radical having 1 to 4 carbon atoms, and X stands for a radical of a compound having at least one aromatic ring having 5 to 20 carbon atoms, and subjecting the obtained transesterification product to polymerization to obtain a high polymer.

4,767,831

PROCESS FOR PREPARING CERAMIC MATERIALS

Donald M. Bartos, and John H. Gaul, Jr., both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation of Ser. No. 868,177, May 23, 1986, Pat. No. 4,631,260, which is a continuation of Ser. No. 748,109, Jun. 24, 1985, abandoned. This application Oct. 7, 1986, Ser. No. 916,435
Int. Cl.[4] C08F *283/00*
U.S. Cl. 525—474 **35 Claims**

1. A method of preparing a preceramic material, which method comprises (1) treating a preceramic silazane polymer with steam at a temperature in the range of about 35° C. to 200° C. for a time sufficient to render the preceramic silazane polymer infusible wherein the treatment temperature is sufficiently low so that the preceramic silazane polymer remains unfused during the treatment step.

4,767,832

PHENOLIC CURING AGENTS FOR EPOXY RESINS

Edward J. Marx, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 29, 1987, Ser. No. 55,653
Int. Cl.[4] C08G *59/62, 59/68, 81/00*
U.S. Cl. 525—523 **15 Claims**

1. A composition comprising:
(a) a linear phenolic hydroxyl-terminated resin having a phenolic equivalent weight within the range of about 650° to about 8,000;
(b) a dihydric phenol present in the composition in an amount such that the weight per phenolic of a mixture of (a) and (b) is within the range of about 240 to about 280; and
(c) an imidazole compound present in an amount of at least about 2 weight percent, based on the weight of the composition.

14. A powder coating composition comprising the composition of claim 1.

4,767,833

TRANSPARENT, IMPACT-RESISTANT, THERMOPLASTIC RESIN COMPOSITION HAVING EXCELLENT CHEMICAL RESISTANCE AND PROCESS FOR PRODUCING SAME

Tsunemasa Yumoto; Yoshio Nakanishi; Kazuki Iwai, all of Yokkaichi, and Tadahiko Itoh, Tsu, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1986, Ser. No. 911,875
Claims priority, application Japan, Oct. 9, 1985, 60-223648
Int. Cl.[4] C08F *257/02, 279/06*
U.S. Cl. 525—193 **19 Claims**

1. A thermoplastic resin composition obtained by graft-polymerizing 95 to 50 parts by weight of a monomer mixture consisting essentially of styrene or a styrene-α-methyl styrene mixture and methyl methacrylate in the presence of 5 to 50 parts by weight of a rubbery substance consisting of styrene-butadiene copolymers, wherein said rubbery substance comprises (A) 40 to 80% by weight of a styrene-butadiene copolymer having a number-average particle diameter of at least 0.05 and less than 0.2 μm, a gel content of 30–100% by weight and a bound styrene content of 10–40% by weight and (B) 60–20% by weight of a styrene-butadiene copolymer having a number-average particle diameter of 0.2–3 μm, a gel content of 10–80% by weight and a bound styrene content of 10–40% by weight; the total content of the components (A) and (B) in the rubbery substance is at least 80% by weight, and the difference between the refractive index of the rubbery substance and the refractive index of the copolymer of the monomer mixture grafted on the rubbery substance is 0.005 or less.

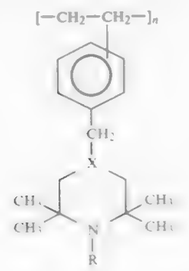
4,767,834

VINYL BENZYL 2,2,6,6-TETRAMETHYL PIPERIDINES

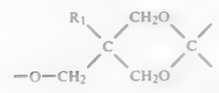
William E. Leistner, Atlantic Beach, N.Y.; Yutaka Nakahara, Okegawa, Japan; Bunji Hirai, and Mitsuharu Kanai, both of Kuki, Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa City, Japan

Division of Ser. No. 806,251, Dec. 5, 1985, Pat. No. 4,692,485.
This application Mar. 19, 1987, Ser. No. 28,164
Int. Cl.[4] C08F *26/06, 114/02*
U.S. Cl. 526—265 **2 Claims**

1. An addition polymer of vinyl benzyl 2,2,6,6-tetramethyl piperidine having the formula:



wherein:
n is the number of vinyl benzyl 2,2,6,6-tetramethyl piperidinyl units in the polymer and is a number within the range from 2 to about 10,000;
R is selected from the group consisting of hydrogen; oxyl; acyl and alkyl having from one to about eighteen carbon atoms;
X is —Y—CH or



in which Y is —O— or —N(R2)—, R_1 is alkyl having from one to about eighteen carbon atoms and R_2 is hydrogen or alkyl having from one to about eighteen carbon atoms.

4,767,835

POLYAMIDE-MODIFIED METAL RESINATES AND THEIR USE IN PUBLICATION GRAVURE PRINTING INKS

Edward G. Janusz, Wallington, N.J., assignor to San Chemical Corporation, Fort Lee, N.J.

Division of Ser. No. 718,530, Apr. 1, 1985, Pat. No. 4,690,712.
This application Aug. 12, 1987, Ser. No. 85,404
Int. Cl.[4] C09F *1/00*
U.S. Cl. 527—600 **2 Claims**

1. An amine-reactive polyamide-modified metal resinate.

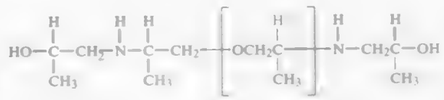
4,767,836

STORAGE STABLE POLYURETHANE COATING

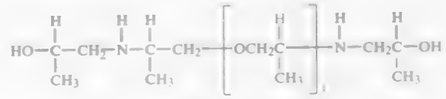
Michael Cuscurida, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed May 18, 1987, Ser. No. 50,444
Int. Cl.[4] C08G *18/80, 18/32, 18/08*
U.S. Cl. 528—45 **3 Claims**

1. A storage stable, heat curable polyurethane coating comprising a blocked isocyanate and a curing agent comprising a partially alkoxylated polyoxyalkylene amine of the general formula:



3. A storage stable, heat curable polyurethane coating comprising a blocked isocyanate and a curing agent comprising a partially alkoxylated polyoxyalkylene amine wherein the isocyanate is a prepolymer and the partially alkoxylated polyoxyalkylene amine is of the general formula:



4,767,837

METHOD FOR PREPARING POLY(ARYL ETHER KETONES)

Viktors Jansons, Los Gatos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 29, 1986, Ser. No. 823,715
Int. Cl.[4] C08G *8/02, 14/00*
U.S. Cl. 528—125 **12 Claims**

1. A method of preparing a poly(aryl ether ketone) having a repeat unit of the formula

—CO—Ar—CO—Ar′—

where Ar and Ar′ are aromatic moieties at least one of which contains a diaryl ether linkage forming part of the polymer backbone, where Ar and Ar′ are covalently linked to the carbonyl groups through aromatic carbon atoms, and where Ar and Ar′ are independently selected from substituted and unsubstituted phenylene and substituted and unsubstituted polynuclear aromatic moieties, which method comprises heating a monomer system selected from the group consisting of

(a) at least one alkali metal salt of a halogenated aromatic ketophenol having one halogen bonded to an aromatic carbon and activated by an electron withdrawing group situated ortho or para,

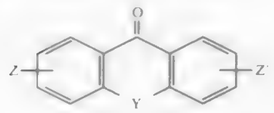
(b) substantially stoichiometric amounts of at least one alkali metal bis-salt of a dihydric phenol and at least one aromatic

VOL 1093 ISS 5 AG 30 1988 UMI

dihalide in which each aromatic halogen is bonded to an aromatic carbon atom and is activated by an electron withdrawing group situated ortho or para, provided that at least one from among the bis-salt and dihalide compounds contains a diaryl ketone group, and

(c) combinations of the above

in the presence of a solvent comprising an aromatic ketone selected from the the group consisting of xanthone, fluorenone, thioxanthen-9-one, and anthraquinone



4,767,838

CHAIN-EXTENDED POLY(ARYL ETHER KETONES)

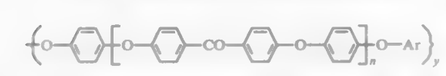
Robert A. Clendinning, New Providence, and George T. Kwiatkowski, Green Brook, both of N.J., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 743,957, Jun. 12, 1985, abandoned, and a continuation of Ser. No. 881,565, Jul. 3, 1986, abandoned. This application Feb. 9, 1987, Ser. No. 12,630

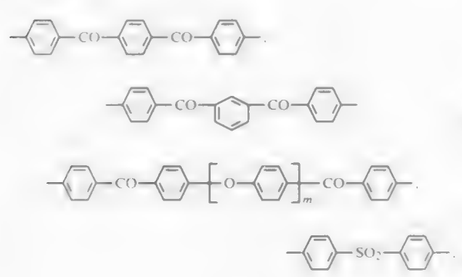
Int. Cl.[4] C08G *8/02, 14/00*

U.S. Cl. 528—125 8 Claims

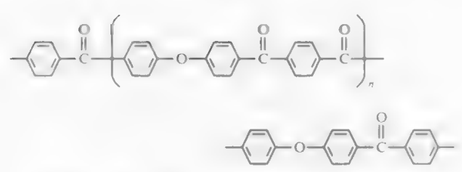
1. A poly(aryl ether ketone) of the following formula:



y is greater than one, and Ar is a residue of an activated dihalo or dinitro aromatic compound selected from one or more of the following:



and



or mixtures thereof, and wherein m is 1 to 3, and each n is independently at least 2.

3. A process for preparing the chain-extended poly(aryl ether ketone) of claim 1 which comprises:

(a) reacting an excess of hydroquinone with 4,4'-dihalo or dinitro benzophenone in a mole ratio of from 1.5:1 to 1.02:1 in an aprotic solvent at a temperature of from about 100° C. to about 400° C. to yield a hydroxyl-terminated intermediate, and

(b) further chain-extending the intermediate obtained in step (a) with from 1 to 1.05 times an equimolar amount of an activated aromatic dihalo or dinitro compound which is different from 4,4'-dihalo or dinitro benzophenone.

4,767,839

ALTERNATING ALIPHATIC-AROMATIC POLY(ESTERAMIDE)

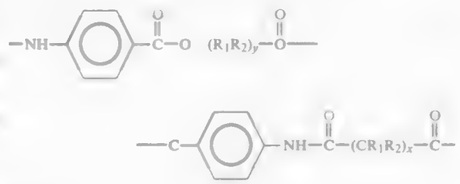
Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Jul. 6, 1987, Ser. No. 70,273

Int. Cl.[4] C08G *63/44, 69/44*

U.S. Cl. 528—184 10 Claims

1. Thermotropic polymorphic poly(esteramides) characterized by the repeating structure



where:

x=integers from 1 to 14

y=integers from 3 to 9

R_1, R_2=H.

4,767,840

CYCLIC MONOCARBONATE BISHALOFORMATES, METHOD FOR THEIR PREPARATION, AND USES THEREOF

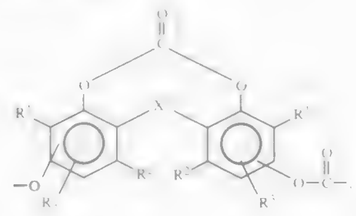
Thomas G. Shannon, Schenectady, and Daniel J. Brunelle, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 24, 1987, Ser. No. 29,515

Int. Cl.[4] C08L *69/00*

U.S. Cl. 528—196 10 Claims

1. A polycarbonate comprising cyclic carbonate structural units of the formula



(IV)

wherein:

X^1 is R^3CH, S, SO or SO_2;

R^1 is C_{1-4} alkyl or halo;

each of R^2 and R^4 is independently hydrogen, C_{1-4} alkyl or halo; and

R^3 is hydrogen or an alkyl, cycloalkyl or aryl radical.

4,767,841

ARYLENE SULFIDE POLYMER PREPARATION FROM DEHYDRATED ADMIXTURE COMPRISING SULFUR SOURCE, CYCLIC AMIDE SOLVENT AND WATER

Kenneth D. Goetz; Afif M. Nesheiwat, both of Bartlesville, Okla.; Guy Senatore, Borger, Tex.; Wei-Teh W. Shang, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 24, 1987, Ser. No. 17,949

Int. Cl.[4] C08G *75/14*

U.S. Cl. 528—388 12 Claims

1. A process for preparing arylene sulfide polymers having an extrusion rate of at least about 100 g/10 min. comprising the steps of:

(a) dehydrating an aqueous admixture comprising at least one sulfur source and at least one cyclic organic amide thereby forming a dehydrated admixture;

(b) admixing at least one dihalo-substituted aromatic compound with said dehydrated admixture to produce a polymerization mixture wherein the molar ratio of sulfur source to said cyclic organic amide is 0.42:1 to 0.465:1;

(c) subjecting said polymerization mixture to polymerization conditions effective to produce products comprising said arylene sulfide polymer; and

(d) recovering said arylene sulfide polymer.

4,767,842

ANTIGENIC MODIFICATION OF POLYPEPTIDES

Vernon C. Stevens, Dublin, Ohio, assignor to The Ohio State University, Columbus, Ohio

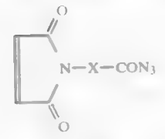
Division of Ser. No. 667,863, Nov. 2, 1984, Pat. No. 4,691,006, which is a continuation-in-part of Ser. No. 472,190, Mar. 4, 1983, Pat. No. 4,526,716, and a continuation-in-part of PCT US83/00777, May 18, 1983, which is a continuation-in-part of Ser. No. 323,690, Nov. 20, 1981, Pat. No. 4,384,995, which is a continuation-in-part of Ser. No. 112,628, Jan. 16, 1981, Pat. No. 4,302,386, which is a division of Ser. No. 936,876, Aug. 25, 1978, Pat. No. 4,201,770, which is a continuation-in-part of Ser. No. 622,031, Oct. 14, 1975, abandoned, which is a continuation-in-part of Ser. No. 462,955, Apr. 22, 1974, abandoned, which is a continuation-in-part of Ser. No. 406,821, Oct. 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 357,892, May 7, 1973, abandoned. This application Jul. 15, 1987, Ser. No. 73,570

Int. Cl.[4] C07K *7/10*

U.S. Cl. 530—324 19 Claims

1. A process for preparing an isoimmunogen for controlling biological action in an animal which comprises:

activating under neutral or acid conditions a carrier not having a sulfhydryl group but having an amino group with an activator of the structure



where X represents a non-reacting group comprising substituted or unsubstituted phenyl or C_{1-10} alkylene moieties, or a combination thereof, or an amino acid chain, so as to cause reaction of the activator with such amino group, said carrier being biologically foreign to said animal and selected having a size sufficient to elicit antibody response following the administration thereof into the body of said animal; and

treating the resulting activated carrier with a hormone endogenous to said animal, non-hormonal polypeptide endogenous to said animal, natural or synthetic fragment of either or a peptide having a sequence analogous to at least a portion of said hormone or non-hormonal polypeptide, having a sulfhydryl group.

4,767,843

MONOCLONAL ANTIBODY TO CARDIAC MYOSIN HEAVY CHAIN

Yoshio Yazaki, Tokyo, and Masahito Sugi, Choshi, both of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

Filed Jul. 2, 1984, Ser. No. 626,918

Claims priority, application Japan, Jul. 6, 1983, 58-122579

Int. Cl.[4] A61K *39/00, 43/00, 49/02*

U.S. Cl. 530—387 2 Claims

1. A monoclonal antibody which has specificity to an isozyme of a human cardiac myosin heavy chain α-type but does not recognize an isozyme of a human cardiac myosin heavy chain β-type.

2. A monoclonal antibody which has specificity to an isozyme of a human cardiac myosin chain β-type, but does not recognize an isozyme of a human cardiac myosin heavy chain α-type.

4,767,844

AZO LAKE PIGMENTS

Hirohito Ando, Itako; Zenji Takada; Shigeto Aoki, both of Kamisu, and Yuko Shigeta, Choshi, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

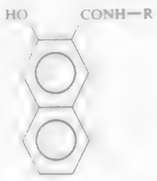
Division of Ser. No. 866,065, May 20, 1986, abandoned. This application Aug. 21, 1987, Ser. No. 88,975

Claims priority, application Japan, May 20, 1985, 60-105975

Int. Cl.[4] C09B *63/00*; C09D *5/00, 11/02*

U.S. Cl. 534—573 7 Claims

1. An azo lake pigment obtained by laking a dye with an alkaline earth metal salt or a manganese salt, said dye being obtained by coupling an aromatic diazo component having a sulfonic acid group with a mixture of 2-hydroxy-3-naphthoic acid and a 2-hydroxy-3-naphthoic acid derivative represented by the formula (I)



(I)

wherein R represents hydrogen, naphthalene, cyclohexyl, or a group of the formula



in which each of X, Y and Z, independently, represents hydrogen, lower alkyl, lower alkoxy trifluoromethyl, halogen, acetylamino, benzoylamino, carbamoyl or phenylcarbamoyl, or X and Y together form a cyclized benzimidazolone, benzothiazole or benzoxazole.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,845

SYNTHESIS OF TUMOR ANTIGENIC DETERMINANT

Raymond U. Lemieux; Robert M. Ratcliffe, both of Edmonton, Canada, and Donald A. Baker, Castro Valley, Calif., assignors to Chembiomed, Ltd., Edmonton, Canada

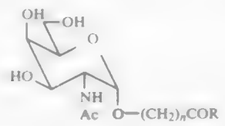
Division of Ser. No. 918,935, Oct. 15, 1986, which is a continuation of Ser. No. 277,680, Jun. 26, 1981, abandoned. This application Aug. 17, 1987, Ser. No. 86,357

Claims priority, application Canada, Jun. 26, 1981, 382306; European Pat. Off., Jul. 7, 1981, 81303087; Japan, Jul. 10, 1981, 56-107178

Int. Cl.[4] C07H *15/00, 15/06*

U.S. Cl. 536—18.2 15 Claims

1. The α-glycoside product having the structure



where n=3–19 and R is an alkoxy, aryloxy, $NHNH_2$, OH or N_3 group.

4,767,846

PRODUCTION OF POLYMERIC POLYOLS

Robert F. T. Stepto, Poynton; Richard H. Still, Disley, both of England, and Yoji Hirasawa, Yawata, Japan, assignors to Nippon Paint Company Limited, Osaka, Japan and The University of Manchester Institute of Science and Technology, Manchester, England

Continuation of Ser. No. 619,403, Jun. 12, 1984, abandoned, which is a continuation of Ser. No. 393,943, Jun. 30, 1982, abandoned. This application Dec. 2, 1985, Ser. No. 941,783

Claims priority, application United Kingdom, Jul. 4, 1981, 8120726

Int. Cl.[4] C07H *1/00*

U.S. Cl. 536—18.6 12 Claims

1. In a process of producing a polymeric polyol in an aqueous reaction system in the presence of an alkali metal hydroxide catalyst, the improvements to produce a polymeric polyol of high molecular weight, low unsaturation and high functionality with reduced by-product in a single stage of reaction which comprises reacting in a single stage of reaction only one kind of a polyhydroxy compound having at least three hydroxyl groups in its molecule and being selected from the group consisting of tetrols, pentols, hexols, and monosaccharide, disaccharide and trisaccharide sugars with ethylene oxide, propylene oxide or a mixture thereof in the presence of an alkali metal hydroxide catalyst used in an amount of 10% to 20% by mole based on the molar amount of polyhydroxy compound, said reaction being carried out in the presence of a liquid medium essentially consisting of water alone as a solvent or dispersing medium and at a temperature of 90° C. to 100° C.

4,767,847

NOBAMYCIN ITS ANALOGS AND PROCESS THEREFORE

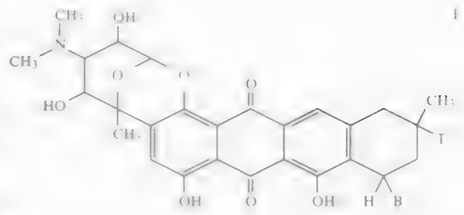
Paul F. Wiley, and David W. Elrod, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 60,326, Jul. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 32,614, Apr. 23, 1979, abandoned. This application May 11, 1981, Ser. No. 262,019

Int. Cl.[4] C07G *11/00;* C07H *15/00, 17/00;* C07D *319/02*

U.S. Cl. 536—16.8 21 Claims

1. An essentially pure compound having the following structure:



wherein B is a biologically acceptable nucleophile with the proviso that B is not —O—alkyl or —S—alkyl, and T is hydroxyl such that B and T are attached to the ring system of compound I in a con configuration and biologically acceptable acid addition salts thereof.

4,767,848

CROSS-LINKED MICROFIBRILLATED CELLULOSE PREPARED FROM PORE GENERATING PARTICLES

Kambiz B. Makoui, Menasha, Wis., and Pronoy K. Chatterjee, Spotswood, N.J., assignors to Personal Products Company, Milltown, N.J.

Filed Jul. 22, 1985, Ser. No. 757,568

Int. Cl.[4] C08B *1/00*

U.S. Cl. 536—56 9 Claims

1. A process for preparing a highly absorbent retentive cellulose pulp, said pulp being capable of retaining good absorbency even after having been highly compressed to a sample density of at least about 0.1 g/cm^3, said process comprising:

(a) providing a slurry of cellulose fibers in a first liquid medium, said fibers having been extensively beaten to a degree such that at least the outermost of the secondary walls of said cellulose fibers are essentially completely disintegrated into microfibrillar form;

(b) adding to said slurry, dispersible pore generating particles having a particle size range of between 0.1 and 5 mm equivalent spherical diameter which are insoluble in said liquid medium, and subsequently dispersing said pore generating particles;

(c) adding a cross-linking agent to said cellulose fibers during said process and then cross-linking said cellulose fibers and drying the resulting product.

4,767,849

STARCH OF THE WXSH1 GENOTYPE AND PRODUCTS PRODUCED THEREFROM

Robert B. Friedman, Chicago, Ill.; David J. Gottneid, Griffith, Ind.; Eugene J. Faron, Schererville, Ind.; Frank J. Pustek, Munster, Ind., and Frances R. Katz, Crown Point, Ind., assignors to American Maize-Products Company, Stamford, Conn.

Filed Jul. 2, 1987, Ser. No. 69,270

Int. Cl.[4] A23L *1/195, 1/187*

U.S. Cl. 536—102 16 Claims

1. A substantially pure starch extracted from a starch bearing plant having a waxy shrunken-1 genotype.

4,767,850

PROCESS FOR THE PURIFICATION OF ACARBOSE WITH POLYMERS

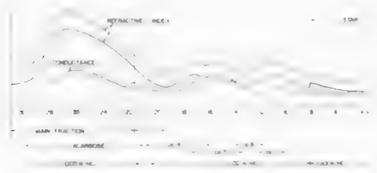
Peter M. Lange, Leverkusen, and Erich Rauenbusch, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 786,263, Oct. 10, 1985, Pat. No. 4,666,776. This application May 29, 1986, Ser. No. 868,403

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1984, 3439008

Int. Cl.[4] C07H *1/06*

U.S. Cl. 536—127 6 Claims



1. In the purification of acarbose by contacting an acarbose-containing solution with a cation exchanger to adsorb the acarbose, eluting the ion exchanger and collecting an eluate fraction enriched in purified acarbose, the improvement wherein the cation exchanger is a polymer obtained by polymerizing an aromatic compound possessing at least one vinyl group and at least one hydrophilic monomer in the presence of a free-radical catalyst in a suspension to which there is added a solvent for the monomer which solvent is a precipitant for the polymer being formed, isolating the polymer, and sulphonating the polymer in the presence of a swelling agent.

4,767,851

PROCESS FOR THE PREPARATION OF 7-AMINO AND 7-SUBSTITUTED AMINO-DESACETOXYCEPHALOSPORINS

Alberto Palomo-Coll, Barcelona, Spain, assignor to Gema, S.A., Barcelona, Spain

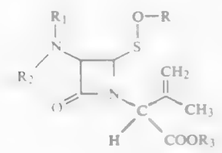
Filed Jul. 8, 1985, Ser. No. 752,897

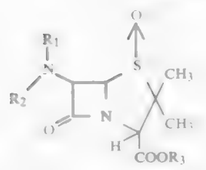
Claims priority, application Spain, Jul. 16, 1984, 534,339; Jul. 16, 1984, 534,340; Jul. 27, 1984, 534,646

Int. Cl.[4] C07D *205/08;* A61K *31/545*

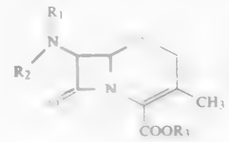
U.S. Cl. 540—218 11 Claims

1. A process for the preparation of 7-amino and 7-substituted aminodesacetoxycephalosporins which comprises reacting an azetidine of Formula I or a penicillin sulphoxide of Formula II:





with a salt of an heterocyclic compound selected from the group consisting of pyridine carboxylic acids pyrimidine, pyrimidine carboxylic acids or diazine carboxylic acids in an inert solvent at a temperature ranging from about 60° C. to about 130° C. in the presence of a sufficient amount of an alkylsilyl sulphamide or an alkylsilyl sulphamoyl to effect the silylation of said salt, and forming the 7-acylamino-desacetoxycephalosporanic acid of the Formula III:



wherein R is an alkylsilyl, a C_1–C_6 alkyl or a C_2–C_5 acyl group, R_1 is hydrogen or a group bound to the nitrogen atom by an atom of carbon or sulphur and optionally with substituents, R_2 is hydrogen or an acid residue having two to ten atoms of carbon, which may include atoms of oxygen, sulphur or nitrogen and R_1 and R_2 together may be a phthalimido, oxazolidinyl, imidazolidinyl, formylidene, benzylidene or hydroxybenzylidene, and R_3 is hydrogen or a group selected from among methyl, tert-butyl, benzyl, phenyl, 5-indanyl, phthalidyl, 2-tetrahydropyranyl and trialkylsilyl having three to ten carbon atoms, or an easily chemically hydrolizable group obtained from the reaction of the penicillin-sulphoxide with a compound selected from the group consisting of trimethylbromosilane, trimethylchlorosilane, thionyl chloride, thionyl bromide, acetyl bromide, or pivaloyl chloride.

4,767,852

NEW PROCESS FOR PRODUCING CEPHALOSPORIN ANTIBIOTICS, AND NOVEL INTERMEDIATES FOR USE IN SUCH PROCESS AND THEIR PRODUCTION

Gerd Ascher, Wörgl, Austria, assignor to Biochemie, Tyrol, Austria

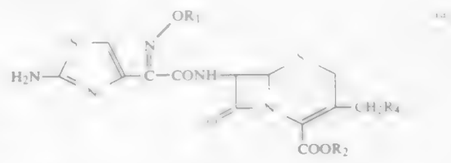
Continuation of Ser. No. 427,199, Sep. 29, 1982, abandoned, which is a continuation of Ser. No. 248,609, Mar. 27, 1981, abandoned. This application Nov. 19, 1986, Ser. No. 932,759

Claims priority, application Austria, Mar. 28, 1980, 1680/80

Int. Cl.[4] C07D *501/22, 501/56*

U.S. Cl. 540—222 2 Claims

1. In the process for the production of a syn-isomer of the formula Ia,



in which

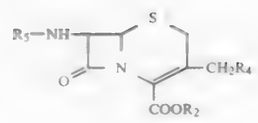
R_1 is hydrogen, alkyl, phenalkyl, carbalkoxyalkyl, acyl or carboxyalkyl,

R_2 is hydrogen, pivaloyloxymethyl or a carboxy protecting group, and

R_4 is hydrogen, acetoxy, carbamoyloxy or —S—Y, in which Y is a heterocyclic ring which may be substituted;

or a pharmaceutically acceptable salt form thereof, which process comprises acylating a compound of formula III,

VOL 1093 ISS 5 AUG 30 1988 UMI

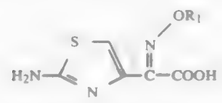


III

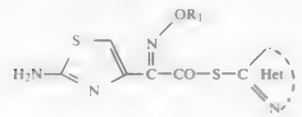
in which

R_2 and R_4 are as defined above, and

R_5 is hydrogen or an amino protecting group, with a reactive derivative of the acid of the formula,



wherein R_1 is as defined above; and effecting any subsequent disprotecting steps and interconversion of the free acid in which R_2 is hydrogen and salts thereof required to obtain a syn-isomer of formula Ia or a pharmaceutically acceptable salt form thereof, the improvement which comprises employing as said reactive derivative a syn-isomer of the formula IIa:



IIa

where R_1 is as defined above, and



is 2-benzthiazolyl.

4,767,853

SYNTHESIS OF 1-(ALLYLOXYCARBONYL)-METHYL-3-(HYDROXYETHYL)-4-BETA-NAPHTHOXYTHIOCARBONYLTHIO-2-AZETIDINONES AND HYDROXY PROTECTED ANALOGS THEREOF

Donald Hou, Verona, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jul. 21, 1986, Ser. No. 887,394

Int. Cl.[4] C07D *205/08, 513/04, 403/12;* C07F *7/18*

U.S. Cl. 540—357 5 Claims

1. A process for producing 1-(allyloxycarbonyl)-methyl-3-(1-hydroxyethyl)-4-betanaphthoxythiocarbonylthio-2-azetidinones, stereoisomers thereof or hydroxy protected analogs thereof, comprising the steps:

(a) reacting 3,7-dioxo-6-(1-protected hydroxyethyl)-2-(1-methylethylidene)-4-thia-1-azabicyclo[3.2.0]heptane with ozone;

(b) reacting the product of step (a) with triloweralkyl phosphite;

(c) adding water to the reaction mixture of step (b);

(d) reacting the product of step (c) with allyl alcohol and either a mineral acid or silver imidazolate;

(e) reacting either the product of step (d) produced by the reagents allyl alcohol and a mineral acid with O-2-naphthalenylcarbonochloridothioate to produce 1-(allyloxycarbonyl)methyl-3-(1-hydroxyethyl)-4-beta-napthoxythiocarbonylthio-2-azetidinone or the product of step (d) produced by the reagents allyl alcohol and silver imidazolate with O-2-naphthalenylcarbonochloridothioate to produce 1-(allyloxycarbonyl)methyl-3-(1-protected hydroxyethyl)-4-beta-naphthoxythiocarbonylthio-2-azetidinone.

4,767,854

SEPARATION OF RDX AND HMX

Jerry W. Lewicki, Kingsport, Tenn., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1986, Ser. No. 928,774

Int. Cl.[4] C07D *257/02, 251/06*

U.S. Cl. 540—475 4 Claims

1. A method of separating a mixture initially containing between about 60 and 95 parts by weight by RDX and between about 5 and 40 parts by weight of HMX to recover essentially pure RDX and essentially pure HMX which consists essentially of:

(a) agitating said mixture with a sufficient amount of water and dimethyl sulfoxide at about 30° C. for about 1 hour, said dimethyl sulfoxide and water being a cosolvent for RDX and HMX having a cosolubility constant preference for HMX to dissolve essentially all the HMX present;

(b) filtering the essentially pure undissolved RDX from the slurry resulting from step (a);

(c) precipitating the filtrate from step (b) by saturating said filtrate with water to recover a solid having as a major component HMX and as a minor component RDX;

(d) agitating the precipitate of step (c) with cyclohexanone at a temperature of about 30° C. for about 1 hour to dissolve essentially all of the RDX present, said cyclohexanone being a solvent for HMX and RDX having a cosolubility constant preference for RDX; and

(e) filtering the essentially pure undissolved HMX from the mixture resulting from step (d) at a temperature of about 30° C.

4,767,855

PROCESS FOR THE PREPARATION OF VINCRISTINE

Roger Tarroux, Castres; Jacques Fahy, Labruguiere, and Philippe Hatinguais, Castres, all of France, assignors to P. F. Medicament, Paris, France

Filed Jun. 2, 1986, Ser. No. 869,433

Claims priority, application France, Jun. 3, 1985, 85 08333

Int. Cl.[4] C07D *519/04*

U.S. Cl. 540—478 7 Claims

1. A process for the semisynthesis of vincristine, which comprises oxidizing vinblastine or its salts with chromic acid or its salts, in a reaction medium of ethyl acetate at a low temperature.

4,767,856

PREPARATION OF CAPROLACTAM FROM 6-AMINOCAPROIC ACID, ESTERS AND AMIDES

Toni Dockner, Meckenheim; Manfred Sauerwald, Roedersheim-Gronau; Rolf Fischer, Heidelberg; Hans-Martin Hutmacher, Ludwigshafen; Claus-Ulrich Priester, Meckenheim, and Uwe Vagt, Speyer, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 15, 1987, Ser. No. 133,274

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1986, 3643011

Int. Cl.[4] C07D *201/08*

U.S. Cl. 540—538 10 Claims

1. An improved process for preparing caprolactam by heating 6-aminocaproic acid, an ester or amide thereof, or a mixture thereof, in the presence of an inert reaction medium which is liquid under the reaction conditions and has a boiling point above that of caprolactam, wherein the improvement comprises using as the reaction medium a hydrocarbon, maintaining a temperature of from 150° to 350° C., charging the 6-aminocaproic acid, ester, amide or mixture thereof at a rate commensurate with the rate of conversion, and separating caprolactam from the reaction mixture at a rate commensurate with its rate of formation.

4,767,857

PREPARATION OF CAPROLACTAM

Franz Merger, Frankenthal; Claus-Ulrich Priester, Meckenheim; Rolf Fischer, Heidelberg, and Manfred Sauerwald, Roedersheim-Gronau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Dec. 16, 1987, Ser. No. 133,735

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1986, 3643010

Int. Cl.[4] C07D *201/08*

U.S. Cl. 540—538 7 Claims

1. A process for preparing caprolactam by heating a 6-aminocaproic ester at 100°–320° C. in the presence of a reaction medium comprising an inert aromatic hydrocarbon which is liquid under reaction conditions and has a boiling point from 80° to 240° C., and isolating caprolactam from the reaction medium.

4,767,858

ANTI-ARTHRITIC PYRAZOLO-TRIAZINE DERIVATIVES

Sun H. Kim, Chestnut Hill, Mass., assignor to Biomeasure, Incorporated, Hopkinton, Mass.

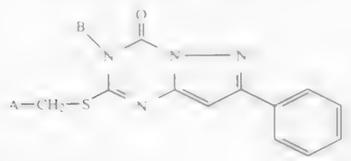
Division of Ser. No. 907,039, Sep. 12, 1986, Pat. No. 4,734,414.

This application May 14, 1987, Ser. No. 50,195

Int. Cl.[4] C07D *417/14, 513/14, 487/04*

U.S. Cl. 544—34 10 Claims

1. The compound having the formula

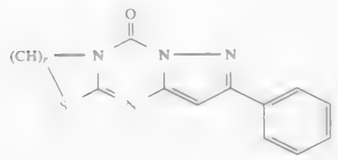


wherein A is H; and B is



said compound having the name 3-carbethoxymethyl-2-methylthio-7-phenylpyrazolo [1,5-a]-1,3,5-triazine-4-one; or a pharmaceutically acceptable salt thereof.

9. A compound having the formula



wherein r is an integer between 2 and 4, inclusive.

4,767,859

PROCESS FOR THE PREPARATION OF PTERIDINE DERIVATIVES

Pierre Zimmermann, Chaponnay, France, assignor to Rhone-Poulenc Sante, Courbevoie, France

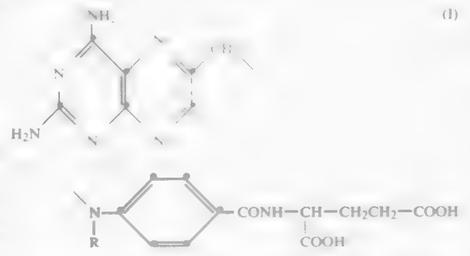
Filed Nov. 17, 1986, Ser. No. 931,053

Claims priority, application France, Nov. 19, 1985, 85 17057

Int. Cl.[4] A61K *31/495;* C07D *475/04, 475/08*

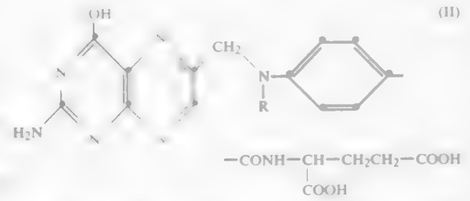
U.S. Cl. 544—258 10 Claims

1. A process for the preparation of a pteridine derivative of formula:



(I)

in which R represents hydrogen or methyl, which comprises 5 reacting a pteridine of formula:



(II)

in which R is defined as above, with a silazane in an organic solvent at a temperature from 60 to 180° C., the said solvent being a tertiary amine organic solvent, or, if a catalyst which is acid in nature is present, a basic organic solvent or acetonitrile, and in the absence of ammonia.

4,767,860

PREPARATION OF N-SUBSTITUTED PIPERAZINONES

Gordon C. Dunmore, Fort Saskatchewan; Kevin C. Taylor, Ottawa, both of Canada, and Brian W. S. Kolthammer, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 14, 1986, Ser. No. 917,861

Int. Cl.[4] C07D *241/08*

U.S. Cl. 544—384 11 Claims

1. A process comprising contacting an N-substituted ethylenediamine with a 2-oxoaldehyde in proportions and under reaction conditions sufficient to form an N-substituted piperazinone.

4,767,861

RECOVERY OF BENZO-C-PHENANTHRIDINE ALKALOIDS

Richard Boulware, Ft. Collins, Colo., assignor to Vipont Laboratories, Fort Collins, Colo.

Continuation of Ser. No. 822,967, Jan. 28, 1986, abandoned, which is a continuation of Ser. No. 596,589, Apr. 4, 1984, abandoned. This application Aug. 4, 1987, Ser. No. 81,704

Int. Cl.[4] C07D *221/18, 491/056, 491/153*

U.S. Cl. 546—41 5 Claims

1. A method for extracting benzo-c-phenanthridine alkaloids

VOL 1093 ISS 5 AG 30 1988 UMI

from plants of the families Papaveracease, Fumariaceae, and Berberidaceae, comprising

grinding the plant, extracting the ground plant with acidulated methanol, precipitating the extract with a zinc salt which is soluble in methanol, redissolving the precipitated salt in water, adding sufficient acid to from a precipitate, and collecting the precipitate so formed.

4,767,862

SUBSTITUTED TETRAHYDRO ISOQUINOLINE INTERMEDIATES

Carl Kaiser, Haddon Heights, and Lawrence I. Kruse, Haddonfield, both of N.J., assignors to SmithKline Beckman Corporation, Philadelphia, Pa.

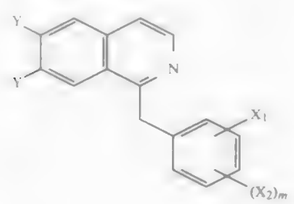
Division of Ser. No. 877,932, Jun. 24, 1986, Pat. No. 4,707,485. This application Aug. 24, 1987, Ser. No. 88,624

Claims priority, application United Kingdom, Jul. 23, 1985, 8518634

Int. Cl.[4] C07D *217/20*

U.S. Cl. 546—149 **3 Claims**

1. A compound of structure (II)



in which:

Y is halogen;

X_1 is C_{1-4} alkoxy;

m is 0 to 4; and

X_2 is C_{1-4} alkoxy, halogen or C_{1-4} alkyl, provided that

(1) when m is 1, 3, or 4, each X_2 is C_{1-4} alkoxy; and

(2) when m is 2, at least one X_2 is C_{1-4} alkoxy.

4,767,863

ISOXAZOLINE INTERMEDIATES

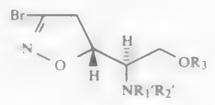
Dolatrai M. Vyas; Terrence W. Doyle, both of Fayetteville, and Yulin Chiang, Clay, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 737,752, May 28, 1985, which is a continuation of Ser. No. 368,180, Apr. 14, 1982, abandoned. This application Jun. 25, 1987, Ser. No. 66,289

Int. Cl.[4] C07D *215/16, 321/00, 261/02, 231/00*

U.S. Cl. 546—178 **21 Claims**

1. An intermediate of the formula



wherein R_3 is hydrogen or



and either (a) R_1' and R_2' are both hydrogen, (b) R_1' is hydrogen and R_2' is a conventional amino-protecting group or (c) R_1' and R_2' when taken together with the nitrogen to which they are attached represent a conventional amino-protecting group, providing that when R_3 is

R_1' is hydrogen and R_2' is trichloroacetyl, or an acid addition salt thereof when R_1' and R_2' are both hydrogen.

2. An intermediate of claim 1 wherein either (a) R_1' is hydrogen and R_2' is formyl, acetyl, trifluoroacetyl, trichloroacetyl, benzoyl, benzyloxycarbonyl, 2,2,2-trichloroethoxycarbonyl, isobutyloxycarbonyl, cyclopentyloxycarbonyl, cyclohexyloxycarbonyl, 1-adamantyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 4-nitrobenzyloxycarbonyl, 3,4-dimethoxycarbonyl, 4-chlorobenzyloxycarbonyl, 4-bromobenzyloxycarbonyl, allyloxycarbonyl, 4-phenylazobenzyloxycarbonyl, 4-(4-methoxyphenylazo)benzyloxycarbonyl, isopropoxycarbonyl, tert-butoxycarbonyl, 3-iodopropoxycarbonyl, 2-furfuryloxycarbonyl, trimethylsilylethoxycarbonyl, 8-quinolyloxycarbonyl, benzyl, trityl, p-toluenesulfonyl, benzenesulfonyl, 2-nitrophenylsulfenyl or phenylthiocarbonyl, or (b) R_1' and R_2' taken together with the nitrogen to which they are attached represent a phthalimido or succinimido group.

4,767,864

PROCESS FOR THE PREPARATION OF NITROMETHYLENE DERIVATIVES

Hans-Ludwig Elbe, Wuppertal, and Bernd Baasner, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

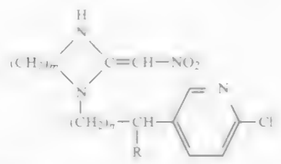
Filed Jan. 13, 1987, Ser. No. 2,837

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1986, 3603100

Int. Cl.[4] C07D *401/08*

U.S. Cl. 546—278 **15 Claims**

1. A process for the preparation of a nitromethylene derivative of the formula (I)



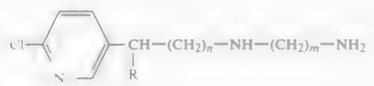
(I)

in which

R represents hydrogen or lower alkyl,

m represents the numbers 2, 3 or 4, and

n represents the numbers 0, 1, 2 or 3, comprising reacting a diamine of the formula (II),



(II)

in which

R, m and n have the abovementioned meanings, with a fluoronitroethane derivative of the formula (IV)

$$CFX^1X^2—CH_2—NO_2 \quad (IV)$$

in which

X^1 and X^2, independently of one another, represent fluorine or chlorine, in the presence of a base at temperatures between −10° C. and +100° C.

4,767,865

3'-PYRIDINYLALKYLINDEN- AND 3'-PYRIDINYLALKYLINDOL-2-CARBOXYLIC ACIDS AND ANALOGS

Roy A. Johnson, Kalamazoo, and Chia-Hong Lin, Portage, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

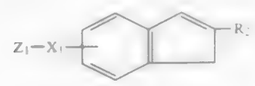
PCT No. PCT/US86/02157, § 371 Date Jun. 29, 1987, § 102(e) Date Jun. 29, 1987, PCT Pub. No. WO87/02664, PCT Pub. Date May 7, 1987

PCT Filed Oct. 14, 1986, Ser. No. 85,103

Int. Cl.[4] C07D *213/63, 213/65, 233/70*

U.S. Cl. 546—342 **7 Claims**

1. A compound of the formula I



I

wherein Z_1 is:

(a) 4-pyridinyl,

(b) 3-pyridinyl, or

(c) 1-imidazolyl;

wherein X_1 is:

(a) $—(CH_2)_n—$,

(b) —O—,

(c) $—CH_2O—$, or

(d) $—OCH_2—$;

wherein R_2 is:

(a) $—COOR_1$,

(b) $—CH_2OH$,

(c) $—CON(R_3)_2$,

(d) —CN, or

(e) $—CH_2N(R_3)_2$;

wherein R_1 is:

(a) hydrogen,

(b) a pharmacologically acceptable cation, or

(c) $(C_1–C_{12})$alkyl;

wherein R_3 is:

(a) hydrogen, or

(b) $(C_1–C_4)$alkyl;

wherein n is an integer from 0–2; or a pharmacologically acceptable salt thereof.

4,767,866

3-PHENYL-3-(1H-1,2,4-TRIAZOL-1-YLMETHYL)-2-METHYL-5-ALKYLISOXAZOLIDINES

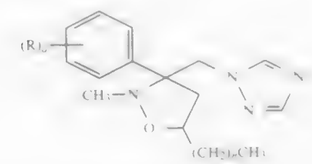
Vassil S. Georgiev, Rochester, and George B. Mullen, Avon, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 10, 1987, Ser. No. 36,831

Int. Cl.[4] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 548—240 **5 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, in the form of their enantiomers or mixtures of their enantiomers including diastereoisomeric pairs of such enantiomers, wherein;

a=1 or 2,

R is selected from hydrogen, lower alkyl, lower alkoxy, halogen, and combinations thereof, provided that the ortho position is hydrogen, and

the alkyl moiety $(CH_2)_n$ represents a chain where n=1 to 18.

4,767,867

5-(ALKOXYALKYL)-3-PHENYL-3-(1H-IMIDAZOL-1-YLMETHYL)-2-METHYLISOXAZOLIDINES

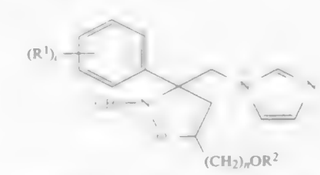
Vassil S. Georgiev, Rochester, and George B. Mullen, Avon, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 10, 1987, Ser. No. 36,832

Int. Cl.[4] A01N *43/52;* **C07D** *233/60*

U.S. Cl. 548—240 **12 Claims**

1. A compound of the formula:



or a pharmaceutically acceptable acid addition salt thereof, in the form of their enantiomers, or mixtures of their enantiomers including diastereoisomeric pairs of such enantiomers, wherein,

a=1 or 2,

R^1 is selected from hydrogen, lower alkyl, lower alkoxy, halogen and combinations thereof, provided that the ortho position is hydrogen,

R^2 is selected from hydrogen, lower alkyl, mono- or dihydroxy-substituted lower alkyl, allyl, cyclohexyl, lower alkyl-substituted cyclohexyl, methanesulfonyl and (halophenyl)methyl, and

the alkyl moiety $(CH_2)_n$ represents a chain where n=1 to 4.

4,767,868

3-PHENYL-3-(1H-IMIDAZOL-1-YLMETHYL)-2-METHYL-5-[(PHENYLAMINO)METHYL]ISOXAZOLIDINES

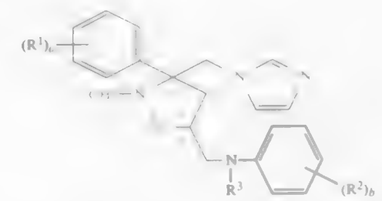
Vassil S. Georgiev, Rochester, and George B. Mullen, Avon, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 10, 1987, Ser. No. 36,830

Int. Cl.[4] A01N *43/52;* **C07D** *233/60*

U.S. Cl. 548—240 **8 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof, in the form of their enantiomers or mixtures of their enantiomers including diastereoisomeric pairs of such enantiomers.

wherein,

a=1 or 2,

b=1 or 2,

R^1 is selected from hydrogen, lower alkyl, lower alkoxy,

VOL 1093 ISS 5 AG 30 1988 UMI

halogen, and combinations thereof, provided that the ortho position is hydrogen,

R^2 is selected from hydrogen, lower alkyl, lower alkoxy, halogen, nitro, and combinations thereof,

R^3 is selected from hydrogen, lower alkyl and benzyl.

4,767,869

PROCESS FOR THE PRODUCTION OF GAMMA-BUTYROLACTONE

George E. Harrison, Billericay, and Norman Harris, Norton, both of England, assignors to Davy McKee Limited, London, England

Filed Jul. 31, 1987, Ser. No. 80,059

Claims priority, application United Kingdom, Aug. 1, 1986, 8618990

Int. Cl.[4] B01D *3/34*; C07D *307/02*

U.S. Cl. 549—295 20 Claims



1. A process for the production of substantially pure gamma-butyrolactone from a feed mixture containing a major molar amount of gamma-butyrolactone and a minor molar amount of diethyl succinate which comprises fractionally distilling the mixture in a fractionation zone in the presence of added diethyl maleate and recovering from the fractionation zone an overhead vaporous product comprising gamma-butyrolactone which is substantially free from diethyl succinate and a liquid bottom product comprising diethyl maleate and diethyl succinate in admixture one with another.

4,767,870

METHOD OF PURIFYING L-ASCORBIC ACID

Yoshitaka Fujiwara, and Tetsuji Kaizu, both of Yamaguchi, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 1, 1986, Ser. No. 880,820

Claims priority, application Japan, Jul. 5, 1985, 60-148923

Int. Cl.[4] C07D *307/62*

U.S. Cl. 549—315 6 Claims

1. A method of purifying L-ascorbic acid which comprises: subjecting an aqueous solution of L-ascorbic acid which contains alkali salts of an inorganic acid selected from sodium chloride, sodium bromide, and potassium chloride to electrodialysis to remove the salt therefrom.

4,767,871

PYRAZOLIDINIUM YLIDES

Richard E. Holmes, and Louis N. Jungheim, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

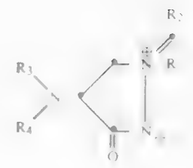
Continuation of Ser. No. 862,912, May 14, 1986, abandoned, which is a continuation-in-part of Ser. No. 728,733, Apr. 30, 1985, abandoned. This application Apr. 30, 1987, Ser. No. 45,011

Claims priority, application European Pat. Off., Apr. 28, 1986, 86303177.9

Int. Cl.[4] C07D *231/50*, *403/04*

U.S. Cl. 548—365 17 Claims

1. A compound of the formula:



wherein:

R_1 and R_2 are the same or different and are hydrogen, C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} arylalkyl, C_7 to C_{12} substituted arylalkyl, phenyl, substituted phenyl, or a group of the formula



Wherein R_5 is C_1 to C_6 alkyl, C_1 to C_6 substituted alkyl, C_7 to C_{12} arylalkyl, C_7 to C_{12} substituted arylalkyl, phenyl, substituted phenyl, a carboxy protecting group, or a non-toxic, metabolically-labile ester-forming group; and

R_3 and R_4 are

(1) taken together to form a phthalimido group; or

(2) either R_3 or R_4 is hydrogen and the other of R_3 or R_4 is an amino-protecting group.

4,767,872

EPOXIDE DERIVATIVES

Alain Doutheau, Lyons; Jacques Gore, Caluire; Gerard A. Quash, Francheville, and Bernard Didier, Lyons, all of France, assignors to Centre National de la Recherche Scientifique (CNRS) and Institut National de la Sante et de la Recherche Medicale (INSERM), both of Paris, France

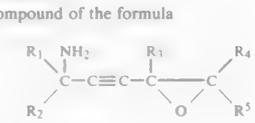
Filed Jan. 31, 1986, Ser. No. 824,871

Claims priority, application France, Feb. 1, 1985, 85 01426

Int. Cl.[4] C07D *303/36*

U.S. Cl. 549—551 1 Claim

1. A compound of the formula



(I)

wherein

R_1 and R_2 each independently represent alkyl having 1–5 carbon atoms, or R_1 and R_2 taken together represent pentamethylene,

R_3 represents hydrogen, alkyl having 1–5 carbon atoms or phenyl;

R_4 and R_5 represent hydrogen, or one of said R_4 and R_5 represents hydrogen and the other represents alkyl having 1–5 carbon atoms, and the acid addition salts thereof.

4,767,873

HELICAL METALLOCENE OLIGOMERS AND A METHOD FOR THEIR PREPARATION

Thomas J. Katz, New York, N.Y., and Anantha Sudhakar, Madison, Wis., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Continuation-in-part of Ser. No. 775,761, Sep. 13, 1985, abandoned. This application Sep. 10, 1986, Ser. No. 905,930

Int. Cl.[4] C07F *15/06*, *15/00*, *13/00*, *11/00*

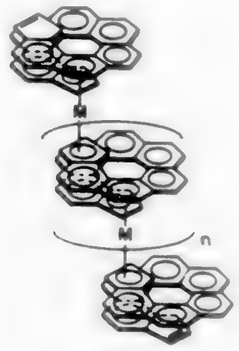
U.S. Cl. 556—42 19 Claims

1. A helicene compound having the structure:



which contains seven six-membered conjugated aromatic rings capped by two five-membered rings which do not superimposed on each other.

2. A helical metallocene oligomer capped by unsaturated five-membered rings, having the structure:



wherein M is a first row transition metal halide and n=1 to 100.

4,767,874

STABLE FREEZE-DRIED PREPARATIONS OF AN ANTICANCER PLATINUM COMPLEX

Kazuhiro Shima, Osaka; Takayuki Tsukada, Hyogo, and Hirotane Kagawa, Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Sep. 10, 1986, Ser. No. 905,456

Claims priority, application Japan, Sep. 25, 1985, 60-213180

Int. Cl.[4] C07F *15/00*

U.S. Cl. 556—137 11 Claims

1. A freeze-dried preparation of glycolato-cis-diammine-platinum (II) as the active ingredient containing at least one member selected from the group consisting of glucan, water-soluble vinyl polymer, and polyethylene glycol as a stabilizer.

4,767,875

PROCESS FOR SYNTHESIS OF ALUMINUM COORDINATIONS COMPOUNDS

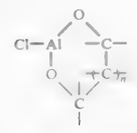
Paul J. Vincenti, Parsippany, N.J., and James D. Warren, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 9, 1985, Ser. No. 762,084

Int. Cl.[4] C07F *5/06*

U.S. Cl. 556—175 5 Claims

1. A method for producing a chemical compound having the formula:



where n is an integer from 0 to 1, the unsatisfied valences in the above formula being attached to at least one member of the group consisting of hydrogen atoms, hydroxyl groups, and alkyl radicals containing up to 3 carbon atoms and the linkage —C—(C)n—C— is a residue of an aliphatic polyhydric alcohol containing from 3 to 6 carbon atoms per molecule which comprises conducting a reaction between aluminum chloride with an aliphatic polyhydric alcohol having from 2 to 6 carbon atoms and having hydroxyl groups on carbon atoms which are spaced apart by no more than one intervening carbon atom, and subsequently heating the product of said reaction at elevated temperature.

4,767,876

METHOD FOR CONVERTING ORGANOSILICON POLYMERS CONTAINING SIH REPEAT UNITS AND ORGANOPOLYSILAZANE PRECURSORS TO NEW AND USEFUL PRECERAMIC POLYMERS AND SILICON NITRIDE ENRICHED CERAMIC MATERIALS

Dietmar Seyferth, Lexington; Joanne M. Schwark, Cambridge, both of Mass., and Yuan-Fu Yu, Dayton, Ohio, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 781,934, Sep. 30, 1985, Pat. No. 4,656,837. This application Oct. 7, 1986, Ser. No. 916,109

The portion of the term of this patent subsequent to Mar. 17, 2004, has been disclaimed.

Int. Cl.[4] C07F *7/08*, *7/10*

U.S. Cl. 556—410 44 Claims

1. A method for preparing preceramic organosilicon polymers, wherein the method comprises:

(a) mixing an organosilicon polymer containing Si—H repeat units with at least a catalytic amount of an alkali metal amide or a silylamide in an organic solvent;

(b) allowing the mixture of step (a) to react at room temperature or above; and

(c) quenching the reaction mixture with a reactive electrophile, thereby forming said preceramic organosilicon polymer.

4,767,877

NITROGEN-CONTAINING BISPHENOL COMPOSITIONS

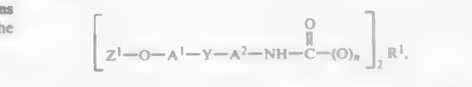
Thomas G. Shannon, Schenectady, and Daniel J. Brunelle, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 28, 1986, Ser. No. 890,054

Int. Cl.[4] C07C *125/04*

U.S. Cl. 558—281 14 Claims

1. A nitrogen-containing bisphenolic compound having the formula



wherein:

each of A^1 and A^2 is a divalent unsubstituted or alkyl-, alkenyl-, halo-, nitro- or alkoxy-substituted phenylene radical;

Y is a single bond, a hydrocarbon radical in which one or two atoms separate A^1 from A^2, 2,2-dichloroethylidene, carbonyl, oxy, sulfide, sulfoxy or sulfone;

Z^1 is hydrogen or

R^1 is a divalent hydrocarbon radical;

X is chlorine or bromine; and

n is 0 or 1.

VOL 1093 ISS 5 AUG 30 1988 UMI

4,767,878

PROCESS FOR THE MANUFACTURE OF ACRYLONITRILE AND METHACRYLONITRILE

Robert K. Grasselli, Garfield, and Harley F. Hardman, Lyndhurst, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 433,584, Oct. 12, 1982, abandoned, which is a continuation of Ser. No. 212,787, Dec. 3, 1980, abandoned, which is a continuation of Ser. No. 761,828, Jan. 24, 1977, abandoned, which is a continuation of Ser. No. 112,780, Feb. 4, 1971, abandoned. This application Jul. 7, 1986, Ser. No. 882,436

Int. Cl.[4] C07C *120/14*

U.S. Cl. 558—324 14 Claims

1. In the process for the conversion of an olefin selected from the group consisting of propylene, isobutylene and mixtures thereof, to acrylonitrile, methacrylonitrile and mixtures thereof respectively by reacting in the vapor phase at a temperature of from about 500° to 1100° F. and at a pressure of from about 0.5 to 5 atmospheres said olefin with a molecular oxygen-containing gas and ammonia in the presence of an oxide catalyst, the improvement comprising:

conducting the reaction in the presence of a catalyst selected from the group of those catalysts having atomic ratios described by the empirical formula:

$$A_aB_bC_cD_dFe_eBi_fMo_gO_x$$

wherein

A is an alkali metal;

B is one or more of the elements selected from the group consisting of nickel and cobalt;

C is phosphorus or arsenic or both; and

D is Mg; and

wherein

a is a number greater than 0 to less than 0.1;

b is a number from 0 to 12;

c is a number from 0 to 3;

d is a number from 0.1 to 10;

e and f are each a number from 0.1 to 6;

g is a number from 8 to 16; and

x is a number determined by the valence requirements of the other elements present,

said catalyst being formed by calcining a precipitate or gel containing the elements of said catalyst at elevated temperature, said elevated temperature being below a temperature deleterious to the catalyst.

4,767,879

COMPOUNDS AND COMPOSITIONS

Keith G. Watson, Box Hill North; Lynette A. Garson, Parkville; Graham J. Bird, North Melbourne; Lindsay E. Cross, Maribyrnong, and Graeme J. Farquharson, Reservoir, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

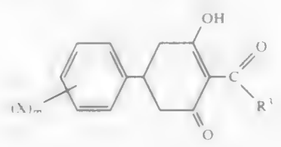
Division of Ser. No. 460,854, Jan. 25, 1983, Pat. No. 4,666,510. This application Dec. 17, 1986, Ser. No. 942,827

Claims priority, application Australia, Jan. 29, 1982, PF2489; Jul. 14, 1982, PF4865

Int. Cl.[4] C07C *121/34*

U.S. Cl. 558—412 2 Claims

1. A compound of formula XIII



XIII

wherein:

X is selected from the group consisting of: halogen; nitro; cyano; C_1 to C_4 alkyl; C_1 to C_4 alkyl substituted with C_1 to C_4 alkoxy; C_1 to C_4 alkoxy; C_2 to C_6 alkanoyl; (C_1 to C_6 alkoxy)carbonyl; C_1 to C_4 alkylsulfinyl; C_1 to C_4 alkylsulfonyl; sulfamoyl; N-(C_1 to C_6 alkyl)sulfamoyl; and N,N-di(C_1 to C_6 alkyl)sulfamoyl; and at least two of X are methyl and at least one of X is not selected from the group consisting of halogen, C_1 to C_4 alkyl and C_1 to C_4 alkoxy;

R^3 is C_1 to C_6 alkyl; and

m is an integer chosen from 3 to 5.

4,767,880

PROCESS FOR RACEMIZING OPTICALLY ACTIVE ALPHA-PHENOXYPROPIONIC ACID AND DERIVATIVES THEREOF

Dieter Wullbrandt, Hofheim am Taunus, and Merten Schlingmann, Königstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

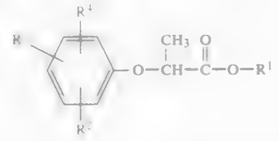
Filed Jun. 26, 1987, Ser. No. 66,570

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1986, 3621835

Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—061 8 Claims

1. A process for racemization of optically active enantiomers, wherein the compound of the formula I,



I

in which

(a) R^1 denotes an alkyl group, having up to 8 carbon atoms, which can in each case be substituted by hydroxyl, halogen, alkyl and/or nitro, or a cyclic alkyl group having up to 6 carbon atoms and

(b) R^2 denotes hydrogen, hydroxyl, or an alkoxy group or an aryloxy group or an oxygen-bound, heterocyclic ring system, in each case having up to 10 carbon atoms, and

(c) R^3 and R^4, independently of one another, denote hydrogen or halogen,

is racemized with the aid of an alkali metal (C_1–C_5) alcoholate, an alkali metal hydroquinone, an alkali metal phenolate and/or an alkali metal hydroxyphenoxypropionate or derivatives thereof which carry substituents on the aromatic ring.

4,767,881

SYNTHESIS OF DIPHENYL PHTHLATES

A. Lee Stautzenberger, Nueces, Tex. 78411, assignor to Hoechst Celanese Corporation, Chatham, N.J.

Filed Jul. 13, 1987, Ser. No. 72,314

Int. Cl.[4] C07C *67/08*

U.S. Cl. 560—86 5 Claims

1. In a method for reacting a phenol with an aromatic carboxylic acid under conditions of esterification to form the phenolic ester thereof, the improvement of carrying out the esterification reaction in the presence of an effective amount of a zirconium alkoxide catalyst, and thereafter recovering a phenolic ester having improved color properties.

4,767,882

TETRAHYDRONAPHTHALENE DERIVATIVES AND THEIR PRODUCTION

Gohfu Suzukamo, and Yoji Sakito, both of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

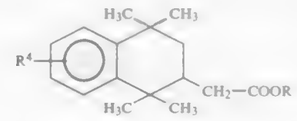
Continuation of Ser. No. 387,473, Jun. 11, 1982. This application Aug. 26, 1986, Ser. No. 902,063

Claims priority, application Japan, Jun. 11, 1981, 56-90657; Jun. 15, 1981, 56-92671; Jun. 16, 1981, 56-93313; Jun. 18, 1981, 56-95075; Jun. 23, 1981, 56-97843; Jul. 8, 1981, 56-107331; Aug. 12, 1981, 56-127224; Aug. 12, 1981, 56-127225

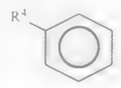
Int. Cl.[4] C07C *69/76*

U.S. Cl. 560—100 37 Claims

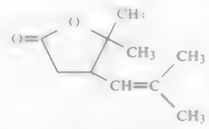
1. A process for preparing a compound of the formula:



wherein R is hydrogen or C_1–C_4 alkyl and R^4 is hydrogen, C_1–C_4 alkyl or C_1–C_4 alkoxy present at either one of the 6-or 7-positions, which comprises (a) reacting a benzene compound of the formula:



wherein R^4 is as defined above with pyrocine of the formula:



in the presence of a Friedel-Crafts catalyst or (b) reacting said benzene compound with said pyrocine in the presence of an acid catalyst and treating the resultant product with a Friedel-Crafts catalyst.

4,767,883

POLYMERIZABLE CYCLOHEXYLENEOXYALKYL ACRYLATES

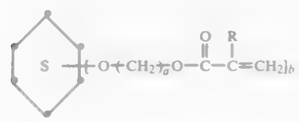
Michel F. Molaire, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 24, 1987, Ser. No. 77,712

Int. Cl.[4] C07C *69/52*

U.S. Cl. 560—220 5 Claims

1. A monomer having the structural formula



wherein

R is H or CH_3,

a is an integer of from 1 to 10 and

b is 1 or 2.

4,767,884

REDUCTION OF SULFONIC ACID TO THIOL

Stanley B. Mirviss, Stamford, Conn., assignor to Akzo America Inc., New York, N.Y.

Filed Sep. 17, 1987, Ser. No. 97,881

Int. Cl.[4] C07C *148/00*

U.S. Cl. 568—68 8 Claims

1. A process for the reduction of a sulfonic acid to a thiol which comprises heating the sulfonic acid, under pressure, at elevated temperature in the presence of carbon monoxide and a catalytically effective amount of a rhodium carbonyl to form the thiol.

4,767,885

STERICALLY HINDERED BINIFERS TELECHELIC POLYMERS MADE THEREFROM

Joseph P. Kennedy, Akron, Ohio, assignor to University of Akron, Akron, Ohio

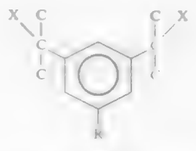
Filed Aug. 6, 1984, Ser. No. 638,034

Int. Cl.[4] C07C *21/24*

U.S. Cl. 570—185 9 Claims

1. A sterically hindered binifer comprising:

the binifer having the formula



where R is an alkyl having from 1 to 5 carbon atoms, or a cycloalkyl having from 4 to 8 carbon atoms, and where X is chlorine or bromine.

4,767,886

METHOD FOR PREPARING LOWER OLEFINS

Kichinari Kawamura; Yasuo Kono; Hideo Okado; Hiroyuki Hagiwara, and Haruo Takaya, all of Ibaraki, Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 5, 1987, Ser. No. 22,222

Claims priority, application Japan, Mar. 6, 1986, 61-49367

Int. Cl.[4] C07C *1/00*

U.S. Cl. 585—640 9 Claims

1. A method for preparing lower olefins which comprises bringing methanol and/or dimethyl ether into contact with an alkaline earth metal-containing zeolite in the gaseous phase, said method being characterized by performing the gaseous phase reaction in the presence of an alkaline earth metal-modified alkaline earth metal-containing zeolite catalyst; said alkaline earth metal-modified alkaline earth metal-containing zeolite catalyst being prepared by subjecting, to a hydrothermal treatment at a temperature of 80° to 250° C., a raw material which satisfies the composition conditions of an SiO_2/Al_2O_3 molar ratio=12 to 3,000, an SiO_2/B_2O_3 molar ratio=1 to 1,000, an OH^-/SiO_2 molar ratio=0.02 to 10, an H_2O/SiO_2 molar ratio=1 to 2,000, a tetrapropylammonium compound-/SiO_2 molar ratio=0.01 to 3, and an alkaline earth metal/Al gram-atom ratio=0.03 to 300, in order to form an alkaline earth metal-containing aluminoborosilicate having a composition of

$$aM^1{}_2O.bM^2O.Al_2O_3.B_2O_3.cSiO_2.nH_2O$$

wherein M^1 is an alkali metal and/or a hydrogen atom, M^2 is an alkaline earth metal, a is a value of 0 to 2, b is a value of 0.1 to 100, c is a value of 12 to 3,000, and n is a value of 0 to 30; and modifying the thus formed alkaline earth metal-containing aluminoborosilicate with an alkaline earth metal compound in solid or solution form so that said alkaline earth metal in an

VOL 1093 ISS 5 AG 30 1988 UMI

amount of at least 0.25% by weight in terms of the metal may be mixed with or supported in said zeolite.

4,767,887
YENSEN 1A
Nicholas P. Yensen, Tucson, Ariz., assignor to Salt Weeds, Tucson, Ariz.
Filed Sep. 29, 1986, Ser. No. 912,223
Int. Cl.[4] A01H *1/02*
U.S. Cl. 800—1 3 Claims

1. A new and distinct plant, Yensen 1*a*, a variety of *Distichlis palmeri*, which is principally characterized by vigorous growth, high grain yield and ideal form for harvesting.

4,767,888
PRODUCTION OF COLE CROPS WHICH EXHIBIT TRIAZINE TOLERANCE
Renald R. Ayotte; Patricia M. Harney, and Vincent S. Machado, all of Guelph, Canada, assignors to University of Guelph, Guelph, Canada
Filed Feb. 24, 1987, Ser. No. 17,595
Int. Cl.[4] A01H *1/02, 5/00*
U.S. Cl. 800—1 36 Claims

1. An improved process for producing a cole crop in the substantial absence of unwanted broadleaf weeds while growing in a planting area which normally would have the propensity to form such broadleaf weeds comprising:

(a) growing *Brassica oleracea* plants in said planting area which are fully male and female fertile, possess 18 chromosomes, and exhibit cytoplasmic triazine tolerance,

(b) contacting said planting area with triazine in an amount sufficient to substantially destroy broadleaf weeds while maintaining said *Brassica oleracea* plants substantially intact, and

(c) harvesting the cole crop.

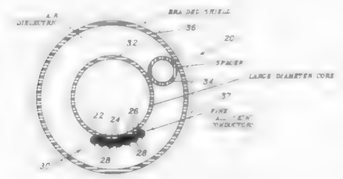
15. *Brassica oleracea* seeds which upon growth yield fully male and female fertile plants possessing 18 B chromosomes which exhibit cytoplasmic triazine tolerance when atrazine is applied as a foliar spray at a rate of 1.5 kilograms per hectare.

26. *Brassica oleracea* plants which are fully male and female fertile, possess 18 chromosomes, and exhibit cytoplasmic triazine tolerance when atrazine is applied as a foliar spray at a rate of 1.5 kilograms per hectare.

4,767,889
YENSEN 2A
Nicholas P. Yensen, Tucson, Ariz., assignor to Salt Weeds, Tucson, Ariz.
Filed Sep. 29, 1986, Ser. No. 912,225
Int. Cl.[4] A01H *1/02*
U.S. Cl. 800—1 3 Claims

1. A new and distinct grain variety, Yensen 2a, a variety of *Distichlis palmeri*, which is principally characterized by a pleasing coloration of the grain that may grade from light brown posteriorly to dark brown anteriorly, reduced shatter characteristics, high grain fertilization rate, and a grain form suitable for harvest.

4,767,890
HIGH FIDELITY AUDIO CABLE
David L. Magnan, 1251 Dara St., Camarillo, Calif. 93010
Filed Nov. 17, 1986, Ser. No. 931,251
Int. Cl.[4] H01B *11/00*
U.S. Cl. 174—28 18 Claims



17. A signal-carrying cable having no delay from end to end as a function of the frequency of audio-range signals conducted therethrough comprising:

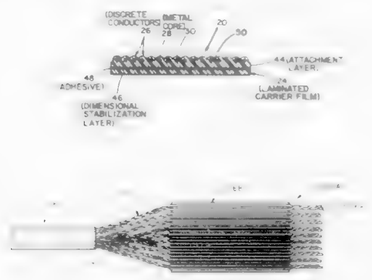
(a) means for defining an elongated cylindrical conductor with all "skin" and no central inner conducting capability, said means comprising

a(1) an elongated cylindrical core member of a flexible insulating material extending between the ends of the cable; and,

a(2) a plurality of fine strands of an electrical conducting material comprising a mixture of 34-gage, 37-gage and 40-gage conductors longitudinally disposed between the ends of the cable along the outer surface of said core member, said strands being electrically insulated from one another, the diameter of said cylindrical core member being sufficiently large with respect to the gage of said strands that said strands are effectively only skin conductors; and,

(b) means for concentrically supporting an elongated cylindrical shield about said cylindrical conductor in insulated spaced relationship thereto.

4,767,891
MASS TERMINABLE FLAT CABLE AND CABLE ASSEMBLY INCORPORATING THE CABLE
Robert J. Biegon, Aurora; Grigory Mea, Naperville, both of Ill.; Lester T. Turner, Tompkinsville, Ky.; Douglas Lindstrand, Elburn, Ill., and Albert R. Cox, Plymouth, Ind., assignors to Cooper Industries, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 798,997, Nov. 18, 1985, abandoned. This application May 19, 1987, Ser. No. 51,933
The portion of the term of this patent subsequent to Nov. 25, 2003, has been disclaimed.
Int. Cl.[4] H01B *11/02, 7/08*
U.S. Cl. 174—34 27 Claims



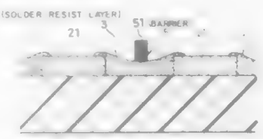
1. A flat cable for use with a mass termination connector having a plurality of regularly spaced terminal elements, said cable comprising:

a plurality of discrete conductors extending throughout the length of said cable, each conductor having an insulative jacket made of a thermoplastic material;

said cable having a plurality of spaced first cable sections in which said conductors are held in regularly spaced parallel relationship, said cable further having a plurality of spaced second cable sections in which said conductors are not held in regularly spaced parallel relationship, with adjacent first cable sections being spaced by a second cable section;

each first cable section comprising a laminated carrier film holding said conductors, said carrier film including an attachment layer of thermoplastic insulation having a melting temperature similar to that of the jacket material, and a dimensional stabilization layer made of an insulative material having a melting temperature higher than those of the attachment layer and the jacket material and displaying dimensional stability at the melting temperatures of the attachment layer and jacket material, the jackets of said conductors being fused to said attachment layer and said attachment layer being held by said stabilization layer.

4,767,892
PRINTED-WIRING BOARD
Tadaomi Kobari, Iwaki, Japan, assignor to Alpine Electronics Inc., Japan
Filed Feb. 10, 1987, Ser. No. 12,945
Claims priority, application Japan, May 16, 1986, 61-73828[U]
Int. Cl.[4] H05K *1/00*
U.S. Cl. 174—68.5 5 Claims



1. In a printed-wiring board made up of an insulating board, a conductor pattern formed on a surface thereof including a plurality of lands having a certain height above the surface of the insulating board, and a solder-resist layer made of resin formed on the conductor pattern except for the lands, so that solder can be selectively applied on the lands,

the improvement comprising protruding barriers formed, as a second solder-resist layer, by quick-setting, silk ink screen printed on the first-mentioned solder-resist layer in between adjacent lands, wherein said protruding barriers are built to a height at a substantially higher level of 5–65 μm higher than the height of the lands and with a thickness substantially greater than that of the first mentioned layer so as to prevent solder bridging between the adjacent lands.

3. In a method of forming a printed-wiring board made up of an insulating board, a conductor pattern formed thereon including a plurality of lands having a certain height above the surface of the insulating board, and a solder-resist layer made of resin formed on the conductor pattern except for the lands, so that solder can be applied on the lands,

the improvement comprising the step of forming protruding barriers, as a second solder-resist layer, by silk screen printing with a high viscosity, quick-setting silk ink on the first-mentioned solder-resist layer in between adjacent lands, so that said protruding barriers are built to a height at a substantially higher level of 5–65 μm higher than the

VOL 1093 ISS 5 AG 30 1988 UMI

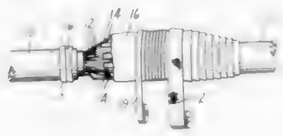
height of the lands and with a thickness substantially greater than that of the first mentioned layer so as to prevent solder bridging between the adjacent lands.

4,767,893

CABLE CLOSING

James H. Ball, St. Paul, and William J. Seim, Little Canada, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 17, 1984, Ser. No. 651,241
Int. Cl.[4] H02G 15/08
U.S. Cl. 174—84 R 14 Claims



1. An electrical cable closing method for a cable including an outer waterproof sheath, comprising:
enclosing the cable area to be closed with a flexible waterproof enclosure,
wrapping the cable with a water activatable urethane resin impregnated cloth to span the area enclosed by the flexible waterproof enclosure,
wetting the water activatable urethane resin impregnated cloth to activate the resin, and
permitting the urethane resin to cure.

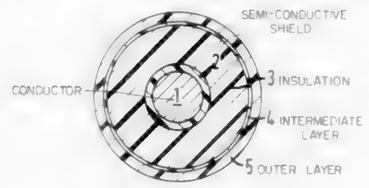
8. An electrical cable closing in a cable including an outer waterproof sheath, comprising:
a flexible waterproof enclosure enclosing an opening in the cable, and
a water activated urethane resin impregnated cloth wrapped around the cable to span the area surrounded by the waterproof enclosure, said urethane resin having been wetted and having been cured after said cloth is wrapped around the cable.

4,767,894

LAMINATED INSULATED CABLE HAVING STRIPPABLE LAYERS

Jacques Schombourg, Commungy, Switzerland, assignor to BP Chemicals Limited, London, England

PCT No. PCT/GB85/00592, § 371 Date Aug. 6, 1986, § 102(e) Date Aug. 6, 1986, PCT Pub. No. WO86/03880, PCT Pub. Date Jul. 3, 1986
PCT Filed Dec. 19, 1985, Ser. No. 905,580
Claims priority, application United Kingdom, Dec. 22, 1984, [illegible]
Int. Cl.[4] H01B 9/02
U.S. Cl. 174—106 SC 18 Claims



1. An insulated cable comprising an electrical core conductor (1) and arranged substantially coaxially about the electrical core conductor at least three extruded layers of polymer-based material (3, 4, 5) comprising (a) a first layer (3) which is an inner layer of insulating material, (b) a second layer (5) which is an outerlayer of a semi-conductive shielding material and (c) an intermediate layer (4) between the first layer (3) and the second layer (5) which intermediate layer (4) is strippable bonded to the first layer (3) and fully bonded to second layer (5) such that the second layer (5) together with substantially all of the intermediate layer (4) is readily strippable from the first layer (3), the intermediate layer cleanly peeling from the first layer.

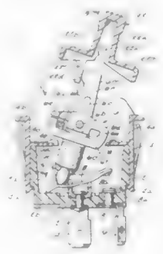
11. A process for the production of an insulated cable which cable comprises an electrical core conductor (1) and arranged substantially coaxially about the electrical core conductor at least three layers of polymber-based material (3, 4, 5) comprising an intermediate layer (4) between a first layer (3) and a second layer (5), the intermediate layer (4) being strippably bonded to the first layer (3) and fully bonded to the second layer (5) such that the second layer (5) together with substantially all of the intermediate layer (4) is readily strippable from the first layer (3) the intermediate layer cleanly peeling from the first layer, which method comprises extruding about the electrical core conductor in sequential order (A) a first layer which is an insulating material, (B) an intermediate layer and (C) a second layer (5) which is a semi-conductive shielding material, at least one of the first layer and second layer being a cross-linkable polymeric material and containing a curing agent, and then curing the cable.

4,767,895

REMOVABLE KEY OFF-LOCK SWITCH HAVING IMPROVED LOCKING ACTUATOR

Timothy L. Parrish, Kenly, N.C., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 27, 1987, Ser. No. 114,325
Int. Cl.[4] H01H 27/00
U.S. Cl. 200—43.04 16 Claims



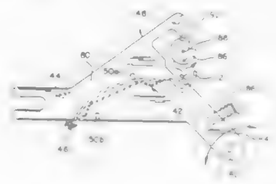
1. An electric switch comprising, in combination:
an insulating housing having an opening therein and a pair of spaced projections at opposite sidewalls within said opening;
switch contacts within said housing;
an actuator pivotally supported within said opening for movement between first and second positiions for actuating said switch contacts between first and second conditions, respectively, said actuator comprising locking members at opposite sides juxtaposed said sidewalls, said members being aligned with said projections when said actuator is in said second position blocking movement of said actuator to said first position;
an operator removably attached to said actuator, said operator having depending key portions camming said locking members inwardly away from said sidewalls clear of said projections permitting unrestricted movement of said actuator between said first and second positions when said operator is attached to said actuator, and
wherein said locking members bear against inner surfaces of said projections for sliding movement therealong when said operator is removed from said actuator in said first position, said actuator thereafter being movable to said second position with said operator removed, and means for returning said locking members to positions juxtaposed said sidewalls and in alignment with said projections, said locking members blocking subsequent movement of said actuator to said first position while said operator is removed.

4,767,896

STAMPED CIRCUITRY ASSEMBLY

Daniel Nigg, Rolling Meadows; Robert DePoss, Naperville; Edward Sommer, Addison; Jack D. Raymer, II, Lisle, and Burbe Crane, Bloomingdale, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Division of Ser. No. 771,858, Sep. 3, 1985, Pat. No. 4,659,157.
This application Jun. 26, 1986, Ser. No. 878,901
Int. Cl.[4] H01H 21/04
U.S. Cl. 200—67 DA 2 Claims



1. A stamped circuitry assembly including an integral metal stamping having a plurality of discrete conductive paths, a dielectric substrate having complementary recesses for receiving said conductive paths,
the improvement comprising:
said stamping also including an integrally formed snap action switch having an elongated resilient spring plate with two parallel elongated spaced-apart slots therein forming two outside support arms each including a pair of spaced offset portions all extending in the same direction transverse to said spring plate and an intermediate flexing arm, a first mounting end and an opposed second free end, contact carrying means at said second free end,
the switch further including actuator means deflecting a medial portion of the plate to displace the contact carrying means between first and second bistable positions, and
said actuator means displacing said flexing arm in first and second directions generally transverse to the spring plate, to cause differential bowing between said flexing arm and said support arms, whereby said contact carrying means is displaced in said first and said second directions.

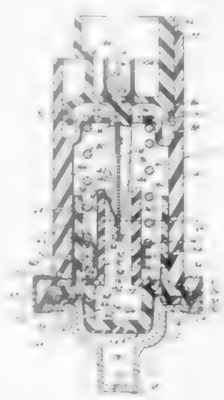
4,767,897

CONDUCTOR STRUCTURE FOR TRANSDUCER SWITCH

Joseph T. Betterton, Arab; Alfred H. Glover, Decatur; Ranald L. Griffin, Huntsville, all of Ala., and Anthony J. Kerstiens, El Paso, Tex., assignors to Chrysler Motors Corporation, Highland Park, Mich.

Filed Nov. 3, 1987, Ser. No. 116,610
Int. Cl.[4] H01H 35/34
U.S. Cl. 200—83 J 5 Claims

1. An improved switching device operated in response to pressure changes of a fluid such as oil in an internal combustion engine, comprising: generally hollow and elongated enclosure means defining an interior, one end of the enclosure being adapted to receive pressurized fluid, a second opposite end of which is configured for transmitting pressure related output; diaphragm means in the interior and having a peripheral edge and a flexible mid portion, the peripheral edge being supported by the enclosure means with the mid portion separating the enclosure interior into first and second spaces, the first space closest to the first end of the enclosure receiving pressurized fluid therein and the second space being exposed to atmospheric pressure, whereby a resultant pressure force balance acting on the diaphragm tends to move the mid portion axially in the elongated enclosure; a piston member operably attached to the mid portion of the diaphragm for movements therewith in the axial direction of the enclosure; a switch assembly housed by the enclosure radially outward from the piston, the switch including an axially movable contact bar member; a radially outwardly projecting arm of the piston extending in overlying relation to the contact bar member at least one elongated conductor supported by the enclosure structure in a substantially axial direction and having an end portion adjacent the contact bar and engaging the contact bar when the switch is in a first operative position, whereby the arm of the piston is positioned to engage the contact bar and move it to a second operative switch position disconnected from the end portion of the conductor as near zero fluid pressure causes the piston to



be moved in the enclosure; the opposite end portion of the conductor remote from the contact bar having an exposed surface; the second end portion of the enclosure defining a recess forming wall including the exposed surface portion of the conductor; a terminal support member insertably housed in the recess of the enclosure and carrying at least one electrically conductive terminal in circuit with the switch assembly, the terminal including a portion extending generally radially and outwardly through the support member toward the recess forming wall of the enclosure and particularly the exposed surface of the conductor, an outer end portion of the terminal adjacent the recess forming wall of the enclosure being formed generally in an axial direction of the enclosure and in sliding contact relation to the exposed surface of the conductor, whereby the terminal support member may be axially moved within the recess forming wall of the enclosure while still maintaining good electrical contact between the conductor and the terminal.

4,767,898

PRESSURE RESPONSIVE SWITCH WITH AN AIR FILTER

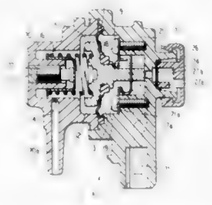
Keiji Yasuda, Handa, and Yukihisa Oda, Chiryu, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 28, 1987, Ser. No. 78,624
Claims priority, application Japan, Jul. 29, 1986, 61-116127[U]
Int. Cl.[4] H01H 35/34
U.S. Cl. 200—83 R 4 Claims

1. A pressure switch comprising a housing including a first portion, a second portion and diaphragm means secured be-

VOL 1093 ISS 5 AG 30 1988 UMI

tween said first and second portions to define first and second chambers within said housing, said first housing portion having an air passage communicating said first chamber with the atmosphere and said second housing portion having an air passage for communicating said second chamber with a pressure source, position detecting means mounted in said first chamber for detecting the displacement of said diaphragm means, said first housing portion having a substantially cylindrical external projection surrounding said air passage therein,



a porous filter disposed within said cylindrical projection and a resilient cap having resilient connecting means securing said cap to said cylindrical projection and an annular projection defining an air passage extending into said cylindrical projection on said first housing portion, said annular projection in resilient engagement with said porous filter about the entire periphery thereof whereby the peripheral portion of the filter is compressed to provide a seal while the central portion of the filter remains porous.

4,767,899

MAKE BEFORE BREAK ELECTRICAL SWITCH

Richard W. Sorenson, Avon, and Milton N. Ives, Wolcott, both of Conn., assignors to Carlingswitch, Inc., West Hartford, Conn.

Filed Mar. 19, 1987, Ser. No. 27,738
Int. Cl.[4] H01H *33/04*
U.S. Cl. 200—144 R 4 Claims



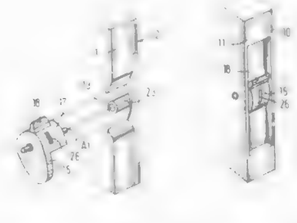
1. An electric make before break switch comprising a housing with a bottom wall, fixed contacts provided in longitudinally spaced relationship in said bottom wall, a center one of said fixed contacts provided intermediate two outside fixed contacts, a movable contact lever supported by said fixed center contact for pivotal movement between opposed limit positons and for limited movement toward and away from said housing bottom wall, said movable contact lever having opposed ends adapted to abut said other fixed contacts, actuator means including a contact lever engaging portion, said actuator means pivotably mounted in said housing for movement between opposed limit positions corresponding to opposed contact lever positions wherein the opposed ends of said lever selectively engage said other fixed contacts, said actuator means including first spring biasing means for acting on said lever engaging portion to urge said portion into sliding engagement with a selected region of said lever during such actuator means movement, and secondary spring biasing means acting upon said contact lever to urge said lever upwardly, said secondary biasing means exerting an upwardly directed force on said contact lever that is overcome by the downward force of said first biasing means acting on said lever engaging portion at least when said lever engaging portion is positioned intermediate said opposed limit positions.

4,767,900

ELECTRIC APPARATUS WITH A MANUAL CONTROL SWITCH WITH INDICATION OF THE "ON" AND "OFF" POSITIONS

Dominique Beurdeley, Dijon, and Lucien Sauthier, Moissey, both of France, assignors to La Telemecanique Electrique, France

Filed Aug. 21, 1987, Ser. No. 87,935
Claims priority, application France, Aug. 27, 1986, 86 12114
Int. Cl.[4] H01H *9/16*
U.S. Cl. 200—308 2 Claims



1. An electric apparatus having a case with a front face provided with a manual control switch capable of being moved between first and second endmost "on" and "off" positions, said switch extending overlappingly on a support element which is fixed with respect to the case, said switch having a first position mark comprising a vertical rectilinear opening indicating the "on" position and a second position mark comprising a circular opening indicating the "off" position, said first and second position marks being positioned with respect to each other so that a single one of them appears in each of said first and second positions of the switch, said switch and said support element being of contrasting colors and the underlying support element appearing through each of said first and second openings, said support element being formed by a shaft provided in said case and said control switch being in the form of a rocker actuator mounted for pivoting about said shaft, said shaft having such a diameter that each of the first and second openings stands out entirely against said shaft respectively when the control switch is in the first and second respective positions.

4,767,901

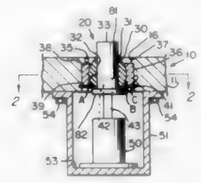
PROCESS FOR MAKING AN ENCLOSURE OUTLET CONNECTION DEVICE

Wynand M. Goyarts, Abingdon, Va., assignor to Simmons-Rand Corporation, Bristol, Va.

Continuation of Ser. No. 684,943, Dec. 21, 1984, abandoned.
This application May 4, 1987, Ser. No. 52,173
Int. Cl.[4] H01H *9/14, 9/30*
U.S. Cl. 200—306 9 Claims

1. A process of using a self-aligning bearing assembly having a ball and socket assembly mounted in an opening in an enclosure, said enclosure is defined by walls so as to have an inside and an outside and containing electrical equipment which may generate arcing, said ball and socket assembly having an annular opening adapted to receive a shaft within said annular opening, and a shaft passing through the annular opening in a tightly receiving relationship to transfer motion along the shaft

and said ball and socket assembly, said shaft and said opening of said enclosure defining abutting surfaces, said assembly having a thickness selected to provide a minimum flame path length able to extinguish arcing along said abutting surfaces of the bearing assembly, said process comprising mounting said



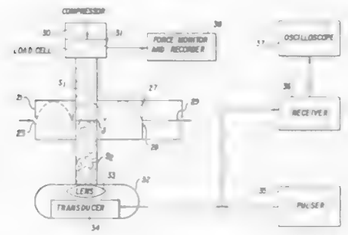
bearing assembly in said opening of said enclosure containing electrical equipment to enable transfer of motion by movement of the shaft from outside to inside the enclosure whereby any arcing generated by said electrical equipment is extinguished by passing along said abutting surfaces.

4,767,902

METHOD AND APPARATUS FOR THE MICROWAVE JOINING OF CERAMIC ITEMS

David E. Palaith, Washington, D.C., and E. Laurence Libelo, College Park, Md., assignors to QuesTech Inc., McLean, Va.

Filed Sep. 24, 1986, Ser. No. 910,984
Int. Cl.[4] H05B *6/64*
U.S. Cl. 219—10.55 M 22 Claims



1. A method for joining together two items, comprising the steps of:
   a. radiating microwaves onto a joint being formed between the two items;
   b. simultaneously applying compressive force to press the two items together at the joint; and
   c. nondestructively and automatically monitoring continuously the joint being formed between the two items.

4,767,903

PROCESS AND APPARATUS FOR DETERMINING THE ELECTROEROSIVE COMPLETION OF A STARTING HOLE

Boris Sciaroni, Locarno, Switzerland, assignor to AG Fur Industrielle Elektronik AGIE, Losone, Switzerland

Filed Dec. 24, 1985, Ser. No. 813,109
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1984, 3447870
Int. Cl.[4] B23H *7/26*
U.S. Cl. 219—69 M 10 Claims

1. In the spark erosive machining of a drill hole through a workpiece on an electroerosion machine by the use of a starter electrode, a process for determining the completion of the drill hole comprising the steps of automatically sensing the state of a preselected process parameter during the machining of the drill hole and sensing a sudden change in the process parameter, wherein a rigid stop is provided substantially adjacent to



and behind the workpiece in the machining direction, and the completion of the drill hole is determined by contact between the tip of the starter electrode and the stop.

4,767,904

STRUCTURE AND METHOD OF INCREMENTAL ORBITAL ELECTRICAL DISCHARGE MACHINING

Donald E. Braden, Clinton; Nick T. Sharoian, Westland, and Tony L. Mansour, Clawson, all of Mich., assignors to Edmund, Inc. (Subsidiary of Nelson Liquid Drive), Brighton, Mich.

Filed Feb. 11, 1986, Ser. No. 828,368
Int. Cl.[4] B23H *7/28*
U.S. Cl. 219—69 V 12 Claims



1. An attachment for an electrical discharge machine comprising electrode mounting means supporting an electrode and rotating it about the electrode axis of rotation extending through the electrode, and a spindle having an axis of rotation, drive means for rotating the spindle about its axis of rotation and an arm secured to the spindle for rotation therewith and for mounting the electrode with the axis of rotation parallel and in spaced relation to the axis of the spindle, said arm supporting and orbiting the electrode mounting means around the axis of said spindle and about an orbital axis parallel and in transverse spaced relation to the electrode axis of rotation and means for linearly translating the electrode mounting means along the electrode axis.

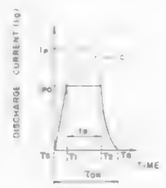
VOL 1093 ISS 5 AG 30 1988 UMI

4,767,905

EDM METHOD AND APPARATUS WITH TRAPEZOIDIZED SHORT-DURATION PULSES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawa, Japan

Continuation of Ser. No. 633,186, Jul. 23, 1984, Pat. No. 4,672,161. This application Sep. 10, 1986, Ser. No. 905,853
Claims priority, application Japan, Jul. 24, 1983, 58-134889
The portion of the term of this patent subsequent to Jun. 9, 2004, has been disclaimed.
Int. Cl.[4] B23H *1/02, 3/02*
U.S. Cl. 219—69 P 4 Claims



2. An apparatus for machining an electrically conductive workpiece with a tool electrode by passing a succession of electroerosive machining pulses with a predetermined current level and of a short pulse duration not in excess of 10 microseconds between the tool electrode and the workpiece across a machining gap flooded with a fluid medium, the apparatus comprising:

a DC source;

pulse forming means for pulsing an output of the DC source to produce a succession of discrete, time-spaced, essentially unidirectional current pulses of a said short pulse duration for passage through said machining gap, each of said discrete current pulses having an essentially sinusoidally rising and falling current-time characteristic and a peak current in excess of said predetermined level; and

pulse reforming means including a network connected in shunt across said workpiece and said electrode for clipping a peak current portion of each of said essentially sinusoidal current pulses beyond said predetermined level so that the resulting current pulse has substantially a pair of steep flanks bridged by a plateau and has substantially said predetermined current level within said short duration, and passing said resulting current pulses in succession, constituting said succession of electroerosive machining pulses, between the tool electrode and the workpiece.

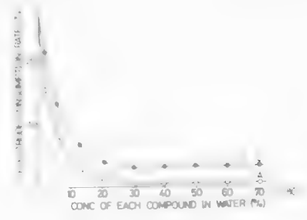
4,767,906

EDM WATER-BASED DIELECTRIC FLUID

Nobuyuki Takahashi, Yokohama, and Shigeo Mori, Kyoto, both of Japan, assignors to Sodick Co., Ltd., Kyoto, Japan

Filed Oct. 17, 1986, Ser. No. 920,085
Claims priority, application Japan, Oct. 18, 1985, 60-234324; Apr. 2, 1986, 61-76935
Int. Cl.[4] B23H *1/08*
U.S. Cl. 219—69 D 13 Claims

1. In an electric discharge machining method which comprises inducing an intermittent spark discharge between a machining electrode and a conductive electrode in an aqueous insulating medium which is an electrical discharge machining medium, the improvement which comprises employing an insulating medium which reduces electrode consumption and which consists essentially of an amount from 0.5 to 65 weight % of (a) a water-soluble compound of the following general formula



$$R_1—O—(CH_2CHO)_n—H$$
(with R_2 on the CHO unit)

wherein R_1 is an alkyl group containing 1 to 6 carbon atoms; R_2 is a hydrogen atom, a methyl group or an ethyl group; n is an integer of 4 to 100, inclusive; or (b) a compound which contains at least one oxygen-containing hydrocarbon chain of the general formula R-(O—A—H)$_m$ wherein A is a recurring oxyethylene group or a mixture of oxyethylene and one or both of oxypropylene and oxybutylene groups which do not interfere with the solubility of the compound; R is a hydrogen chain containing 3 to 8 carbon atoms; O is an oxygen atom forming an ether bond with a carbon atom constituting R; and m is an integer from 3 to 6, inclusive; which compound contains at least two groups of the formula —CH_2CH_2O—, has an average molecular weight not exceeding 5000, and is and remains liquid during machining, or (c) a mixture of compounds (a) and (b).

4,767,907

METHOD OF IGNITING ARCS BY PROJECTION OF IGNITION-PLASMA TO THE CATHODE

Tadayuki Otani; Taizo Nakamura, and Tohru Saito, all of Sagamihara, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 25, 1986, Ser. No. 855,650
Claims priority, application Japan, Apr. 27, 1985, 60-91985; Sep. 9, 1985, 60-199225; Sep. 20, 1985, 60-207976; Nov. 6, 1985, 60-248441; Nov. 6, 1985, 60-248443; Nov. 27, 1985, 60-266924; Dec. 6, 1985, 60-274575
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121.56 4 Claims



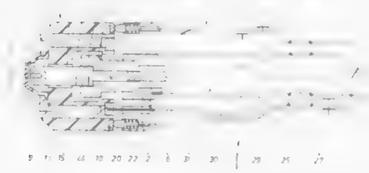
1. A method of igniting an arc between at least one electrode having an electrode tip and a workpiece on which work is to be performed comprising the steps of: forming an electric field in the vicinity of said at least one electrode and workpiece; and projecting an ignition-plasma against a cathode to thereby form an arc, wherein said step of forming an electric field comprises arranging said electrode and electrode tip for the electrode in a manner to face said workpiece on which an operation is to be performed, connecting said electrode through said electrode tip to a negative terminal of a D.C. power source for performing the operation on the workpiece while connecting said workpiece to a positive terminal thereof, arranging fixedly an auxiliary electrode in a manner to face the side surface of said electrode or the side surface of said electrode tip and electrically connecting the auxiliary electrode and the workpiece so as to obtain the same electric potential and so as to direct the electric field from the auxiliary electrode toward the electrode or electrode tip, and said step of projecting an ignition-plasma into the electric field comprises projecting an ignition-plasma into the electric field from the vicinity of said auxiliary electrode against the electrode or the electrode tip to form a cathode spot on the electrode or the electrode tip, first forming an arc between the electrode or the electrode tip and the auxiliary electrode so as to form an anode spot on the auxiliary electrode and then transferring said cathode spot to the forward end of the electrode depending on the flow rate of shield gas and/or the shape of the electric field so as to transfer the anode spot of said auxiliary electrode whereby an arc is ignited between the electrode and the workpiece.

4,767,908

PLASMA ARC WELDING AND CUTTING TORCH DESIGNED FOR NON-TRANSFERRED AND TRANSFERRED ARC OPERATION

Silvano Dallavalle, Castel S. Pietro, and Raffaele Ansaloni, S. Lazzaro di Savena, both of Italy, assignors to Cebora S.p.A., Italy

Filed Feb. 13, 1987, Ser. No. 14,486
Claims priority, application Italy, Feb. 27, 1986, 3344 A/86
Int. Cl.[4] B23K *9/00*
U.S. Cl. 219—121.5 8 Claims



1. A plasma arc welding and cutting torch comprising:

a hollow grip connected to a source of plasma-forming gas;

a fixed electrode, fitted axially to said grip;

an electrical power supply having a negative pole wired to said fixed electrode and a positive pole;

a nozzle assembly, fitted to said grip coaxially, detachable therefrom, and comprising a cap wired to said positive pole of said power supply, said nozzle assembly being axially slidable with respect to said electrode so as to permit said cap and electrode to be brought into contact, said cap having an exit opening through which said plasma gas is projected;

auxiliary control means, including an operator controlled switch, for energizing said electrical power supply; and

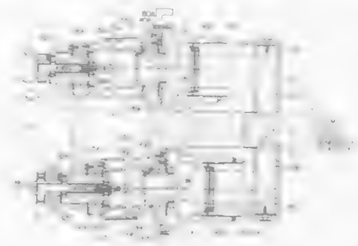
security means, associated with said nozzle assembly and disposed electrically in series in said auxiliary control means for connecting or opening said auxiliary control means when said nozzle assembly is respectively fitted to or removed from said grip.

4,767,909

METHOD FOR PERFORATING A SHEET-SHAPED MATERIAL AND PERFORATING APPARATUS UTILIZING PULSED LASER BEAMS

Yutaka Okumoto, Tokyo, Japan, assignor to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 23, 1987, Ser. No. 137,371
Claims priority, application Japan, Jan. 30, 1987, 62-18224
Int. Cl.[4] B23K *26/00*
U.S. Cl. 219—121.7 19 Claims



1. A method for perforating a sheet-shaped material, comprising the steps of:

generating a single pulsed laser beam having a substantially circular shape;

beam-slitting said single pulsed laser beam of the substantially circular shape into first and second pulsed laser beams by utilizing a beam splitting prism;

beam-splitting each of said first and second pulsed laser beams into a plurality of split pulsed laser beams having substantially equal focusing points by utilizing each of first and second mirror polygons; and

perforating the sheet-shaped material by use of said plurality of split pulsed laser beams having the substantially equal focusing points while transporting the sheet-shaped material.

4,767,910

RAPID ROBOTIC ASSEMBLY CHANGE SYSTEM

Raymond R. Stevens, Jr., Vincentown, N.J.; Stanley E. Gondek, Philadelphia, Pa.; Dennis D. Cush, Oreland, Pa.; Robert Grimes, Jr., Telford, Pa.; Roberts L. Niner, Norristown, Pa., and Francis I. Connor, Jr., Plymouth Meeting, Pa., assignors to The Budd Company, Troy, Mich.

Filed Dec. 30, 1986, Ser. No. 947,652
Int. Cl.[4] B23K *9/12*
U.S. Cl. 219—125.1 9 Claims

1. A programmed welded control system for welding different welding patterns on different assemblies of parts comprising:

a. a rotary table indexed to be moved between home and welding stations;

b. said rotary table being adapted to receive different fixtures for receiving different assemblies of parts;

(c) a light assembly at said home station to detect the presence of an assembly on said rotary table;

(d) electrical devices including a mat to detect the presence of an operator in the loading area of said assembly at said home station;

(e) means on said fixtures to identify at said home station a particular assembly of parts and the welding pattern to be subsequently used on said particular assembly at said welding station.

(f) means for rotating said table from said home station to said welding station,

(g) welding means at said welding station to weld a weld pattern on the assembly of parts identified at said home station, and

VOL 1093 ISS 5 AG 30 1988 UMI

(h) a second light assembly for generating signals when an assembly is on said rotary table at said home station and



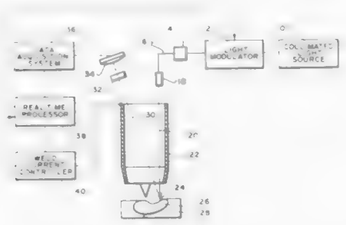
said operator is away from said loading area to cause said rotary table to be rotated from said home station to said welding station.

4,767,911

OPTICAL WELD CONTOUR MONITOR FOR PENETRATION CONTROL

Jonathan M. Maram, Tarzana, and Matthew A. Smith, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 26, 1987, Ser. No. 19,269
Int. Cl.[4] B23K *9/10*
U.S. Cl. 219—130.01 31 Claims



1. An apparatus for real-time determination of weld quality, comprising:

means for generating and directing light incident to at least one point on a molten, specularly reflecting weld pool surface, said weld pool surface reflecting a portion of said incident light, said portion of said light being reflected having a specular component thereof;

light beam position detecting means for measuring the direction of said specular component; and

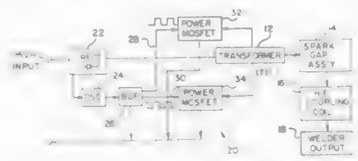
electronic means for analyzing said measurement for determining changes in angles of said weld pool surface for real time indications of the state of penetration of the weld pool.

4,767,912

HIGH FREQUENCY ARC STABILIZER

Richard Eldridge, Chicago Ridge, Ill., assignor to ESAB Welding Products, Inc., Chicago, Ill.

Filed Aug. 25, 1986, Ser. No. 900,166
Int. Cl.[4] B23K *9/06*
U.S. Cl. 219—130.4 6 Claims



1. A high frequency arc stabilizer for a welder having a high frequency spark gap oscillator coupled to a welding electrode with a variable output voltage having a predetermined period and applicable to the electrode, the stabilizer comprising:

free-running oscillator means for continuously generating a varying electrical waveform of a selected frequency with two voltages of differing values wherein transitions from one of said voltages to the other of said voltages occur substantially instantaneously;

means, coupled to said oscillator means, for forming two electrical pulse trains, each having a frequency substantially equal to said selected frequency with one of said pulse trains inverted with respect to the other and with both of said pulse trains simultaneously having a selected common value during predetermined time intervals;

means for detecting when the variable output voltage is approaching a zero crossing; and

means for coupling said two pulse trains to the spark gap oscillator for a predetermined interval of time, substantially less than said period, only in response to said detected zero crossing such that an intermittant high frequency output signal, initiated substantially when said approaching zero crossing is detected and extending for said predetermined time interval, is generated by the spark gap oscillator.

4,767,913

AUTOMATIC GAS DETECTOR FOR ARC WELDER

Bruce W. Weber, Portage; Caroll E. Gustafson, Chesterton, both of Ind., and James A. Bice, Santa Ana Heights, Calif., assignors to Amoco Corporation, Chicago, Ill.

Filed May 15, 1986, Ser. No. 863,346
Int. Cl.[4] B23K *9/10*
U.S. Cl. 219—130.21 9 Claims



9. An arc welder and gas detector assembly comprising: an alternating current power supply;

an arc welder;

a control coil;

a contactor having normally open contacts connected to said power supply and to circuitry of said arc welder to selectively supply alternating current to said arc welder when said control coil mechanically coupled to said contactor is energized;

a combustible gas detector mounted up wind of said arc welder, said gas detector providing a gas signal when combustible gas is detected;

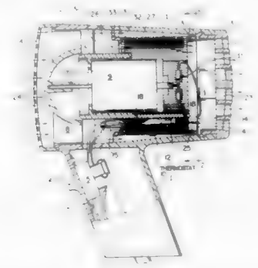
an interrupter circuit connected to said gas detector and said contactor, said interrupter circuit including a normally closed interrupter contact which is connected in series with said control coil of said contactor, said interrupter circuit, on receipt of said gas signal, causing said interrupter contact to open and interrupt the supply of power to said arc welder.

4,767,914

ELECTRIC HAIRDRYER HAVING A CAGE-SHAPED HEATER ELEMENT

Dov. Z. Glucksman, 462 Boston St., Topsfield, Mass. 01983

Filed Sep. 16, 1986, Ser. No. 907,994
Int. Cl.[4] H05B *1/02, 3/00;* A45D *20/10, 20/38*
U.S. Cl. 219—370 7 Claims



1. An electric hair dryer comprising an elongated casing of circular cross section having a rear end perforated by air inlet ports and a front end perforated by air outlet ports, said casing containing:

an electric motor having a rearwardly extending shaft, a motor cradle supporting said motor, an axial fan impeller on the shaft of said motor, an electric heater element in the shape of at least one hollow cylindrical open-ended cage comprising a plurality of parallel, spaced-apart, electrically heatable metal strips connected in series at alternate ends by bridging portions, said strips being inclined to the ideal circumference of said at least one cage, so as to form air guide vanes;

said at least one cage having its ends facing the front and rear ends, respectively, of said casing, and being mounted on end rings of a non-conductive material;

and electric switching and controlling means carried by said casing and operatively connected to the at least one heater element and to said motor for controlling energization thereof;

the hair dryer being characterized by the front portion of said casing tapering towards its front end;

that said electric motor is of smaller diameter than said cage and partly extends into the inner space of said cage;

that said impeller is mounted on the rearwardly extending shaft of said motor upstream of said cage;

that said at least one cylindrical cage is positioned said casing in coaxial alignment therewith and between said casing and said motor thereby creating an outer annular space between said casing interior and said at least one cage having a cross section gradually decreasing towards the front of said casing where it is closed by contact of said front end ring with the inside of said casing, thus forming a duct for conveying a portion of the air delivered by said impeller through said heated air guide vanes of said at least one cage into said at least one cage interior, and forming an inner space between said at least one cage and said motor for conveying the remaining air volume direct into said at lease one cage interior, while cooling said motor surface; and

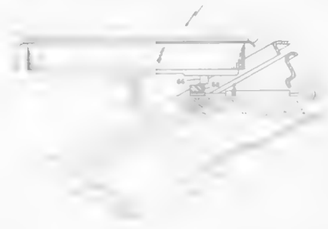
that said motor is located inside said at least one cage in a manner creating a space downstream of said motor for mixing the air volume heated by passage through said heated strips of said at least one cage with the cooler air volume conveyed through said inner space.

4,767,915

SOLID PLATE PLUG-IN HEATING ELEMENT

James E. Hurley, Allentown, Pa., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 30, 1987, Ser. No. 31,814
Int. Cl.[4] H05B *3/70*
U.S. Cl. 219—459 10 Claims



1. A solid plate plug-in surface heating element adapted for interchangeably plugging into a receptacle for a single open coil plug-in surface heating element, comprising:

a solid plate top;

a resistive heating wire positioned under said solid plate top for generating heat for conduction through said solid plate top;

a pan mounted to an underside of said solid plate top for shielding ends of said resistive heating wire, said pan having a side with at least one hole; and

a plug-in adaptor for interconnecting said ends of said resistive heating wire to said receptacle, said adaptor comprising a pair of rigid conductors each having a region surrounded by a coaxial insulator, said adaptor further comprising a brace plate having a pair of apertures, each of said rigid conductors being inserted through a respective one of said apertures with said insulated region being clamped by said respective aperture for holding said rigid conductors in substantially parallel alignment, said brace being mounted to said side of said pan with said rigid conductors extending substantially horizontally outwardly through said at least one hole in said pan, said pair of conductors having inward and outward ends, the inward ends of said pair of conductors respectively being electrically connected to said ends of said resistive heating wire, each of the outward ends of said pair of conductors having a plug-in terminal adapted for plugging into a receptacle for a single open coil plug-in surface heating element.

VOL 1093 ISS 5 AG 30 1988 UMI

4,767,916

VERY HIGH TEMPERATURE HEATING ELEMENT

Robert Curtila, St. Martin le Vinoux, and Daniel Tollens, Sassenage, both of France, assignors to Commissariat a l'Energie, Atomique, Paris, France

Filed Jul. 1, 1987, Ser. No. 68,883
Claims priority, application France, Jul. 8, 1986, 86 10239
Int. Cl.[4] H05B 3/10
U.S. Cl. 219—552 8 Claims



1. A heating element for producing a very high temperature using the Joule effect, comprising:

(a) a β-alumina bar having at least one recess; and

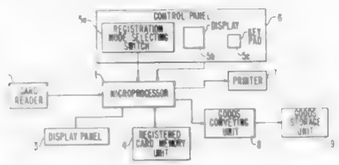
(b) at least one sodium salt disposed within said recess whereby said sodium salt acts as a reverse for sodium ions when said heat element is operating at very high temperatures.

4,767,917

AUTOMATIC VENDING MACHINE

Kohei Ushikubo, Isesaki, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Mar. 24, 1986, Ser. No. 842,999
Claims priority, application Japan, Mar. 22, 1985, 60-56098
Int. Cl.[4] G06F 7/08
U.S. Cl. 235—381 7 Claims



1. A method of operating a vending machine comprising the steps of:

operating the vending machine in a registration mode such that a plurality of user's key cards may be registered therewith;

reading unique key card identification information from the user's key card to be registered while the machine is operating in the registration mode;

registering the user's key card with the machine by storing the unique key card identification information read therefrom in a registered card memory unit of the vending machine;

operating the vending machine in a sale mode such that goods may be dispensed;

entering the unique card identification information which identifies a particular key card while the machine is operating in the sale mode;

determining whether the particular key card has been registered by determining whether the entered information has been previously stored in the registered card memory unit of the vending machine during a registration mode; and

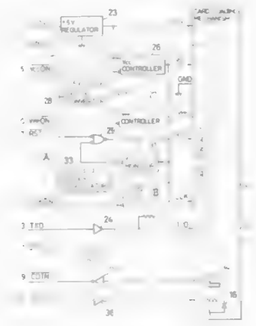
authorizing a sale such that goods may be provided if the particular key card has been registered with the machine.

4,767,918

READING AND WRITING APPARATUS FOR PORTABLE RECORDING MEDIUM

Hidekiyo Kushima, Kanagawa, and Tsutomu Tanaka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 12, 1987, Ser. No. 14,017
Claims priority, application Japan, Mar. 31, 1986, 61-71064
Int. Cl.[4] G06K 7/06
U.S. Cl. 235—441 9 Claims



1. A reading and writing apparatus for a portable recording medium, having a recording medium loading section and a contact section to connect external terminals of the loaded recording medium to an external control unit for controlling the recording medium, which comprises:

(a) clock oscillator means for generating an operation clock to be supplied to the portable recording medium through the contact section; and

(b) logic circuit means responsive to a binary logic signal supplied from the external control unit, for selectively supplying the operation clock from said clock oscillator means to the recording medium.

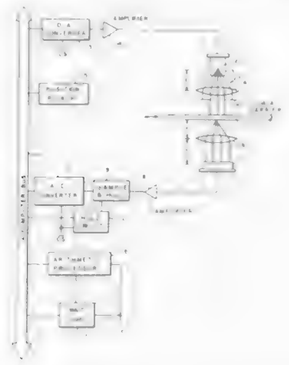
4,767,919

METHOD FOR THE DETECTION OF AUTHENTICITY IN A DATA CARRIER AND APPARATUS FOR APPLYING SAID METHOD

Hermann Stockburger, Kirnachweg 7, D-7742 Georgen, and Siegfried Bauer, Kussenhofstr. 16, D-7743 Burtwangen, both of Fed. Rep. of Germany

Continuation of Ser. No. 308,500, Oct. 5, 1981, Pat. No. 4,650,979. This application Mar. 21, 1986, Ser. No. 842,633
Claims priority, application Fed. Rep. of Germany, Oct. 13, 1980, 3038602
Int. Cl.[4] H01Q 9/00
U.S. Cl. 235—455 4 Claims

1. A system for the detection of the authenticity of a data carrier formed of a card like material, said card like material having coded information stored thereon representative of the inherent translucency of said material, said system comprising first means for directing light at the material and receiving light passing through the material to determine the inherent translucency thereof, second means for generating coded information from said received light, fourth means for comparing the coded information stored on said material and said generated coded information to determine the authenticity of the data carrier, and fifth means for adjusting said first means



to compensate for variations of each data carrier each time a data carrier is to be to authenticated.

4,767,920

READER AND WRITER FOR AN IC CARD

Kenichi Kitta, Tokyo; Touru Shinagawa, Ibaragi, and You Takamori, Kokubunji, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed May 16, 1986, Ser. No. 863,790
Claims priority, application Japan, May 18, 1985, 60-104939
Int. Cl.[4] G06K 19/06
U.S. Cl. 235—492 6 Claims



1. An integrated circuit (IC) card reader and writer for transferring data between a host computer and an IC card inserted in the IC card reader and writer, said IC card containing memory means for storing data indicating a write-in voltage level to be used in the transfer of data to said IC card, comprising:

means for determining the write-in voltage level of the IC card inserted in said reader and writer from said data stored in said memory means; and

power supply means for providing a write-in voltage corresponding to the voltage level determined by said means for determining.

4,767,921

OPTICAL PICKUP DEVICE WHEREIN THE ASTIGMATIC CONVERGED BEAM SPOT IS ALIGNED ALONG THE DIVIDING LINES OF THE FOUR-DIVISION PHOTO-DETECTOR

Ryoichi Kawasaki, Sawa; Noriyoshi Ooyama, Nitta; Masami Shimizu, Oota, and Kouzou Suzaki, Ohra, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan

Filed Jun. 30, 1987, Ser. No. 68,909
Claims priority, application Japan, Jul. 1, 1986, 61-154814
Int. Cl.[4] G01J 1/20
U.S. Cl. 250—201 4 Claims



1. An optical pickup device which comprises a light source (12,30), and optical member (14,32) for leading at least part of a light beam emitted from the light source onto the surface of a record medium (17) and at least another part of the light beam reflected by the surface of the record medium onto a photo-detector (19,36) divided into four sensing portions separated symmetrically by two dividing lines (D1*a*), and also for introducing astigmatism into the reflected light beam led into said four-division photo-detector (19,36), and objective lens (16,34) which converges the emitted light beam led by said cptical member (14,32) onto the surface of the record medium as a light spot, and a control means for controlling positions of the converged spot with respect to the surface (17*a*) of the record medium (17) by driving said objective lens (16,34), said four-division photo-detector being so disposed that, upon displacement of said converged light spot in a diametrical direction of said record medium by said control means, the direction of displacement of the reflected light beam on said four-division photo-detector (19,36) is aligned with the direction of one of said two dividing lines (D1*a*) of said four-division photo-detector (19,36), said optical member (14,32) being so disposed that the direction of the astigmatism produced on said four-division photo-detector in response to variation of a distance between said objective lens (16,34) and said record medium surface is aligned with a direction which bisects an angle formed between said two dividing lines (D1*a*).

4,767,922

HAND PRESENCE ACTIVATED WATER FAUCET CONTROLLER

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 25, 1986, Ser. No. 900,464
Int. Cl.[4] G01V 9/04
U.S. Cl. 250—221 7 Claims

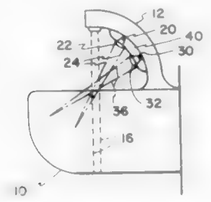
1. Apparatus for detecting the presence of hands at a predetermined location in a sink so as to activate a water supply and to deactivate the water supply upon removal of the hands comprising:

a source of radiation;

cylindrical lens means directing radiation from the source to produce a band of radiation proximate to the predetermined location in the sink such that in the presence of hands at the predetermined location, radiation is reflected from the hands along a first axis but upon the removal of hands from the predetermined location the reflection of radiation along the first axis ceases; and

VOL 1093 ISS 5 AG 30 1988 UMI

control means positioned along the first axis to detect reflected radiation and operable in accordance therewith to



produce a control signal to activate and deactivate the water supply.

4,767,923

HAND-HELD IMAGE READING APPARATUS WITH POSITION TRACKER

Toshiaki Yuasa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1986, Ser. No. 897,427
Claims priority, application Japan, Aug. 21, 1985, 60-181827
Int. Cl.[4] G01V 9/04
U.S. Cl. 250—221 11 Claims



1. An image reading apparatus comprising:

a housing;

a plurality of two-dimensional position detection means contained in said housing, each of said position detection means having means for enabling said housing to move freely on a plane and each of said position detection means generating a signal in response to movement of said housing; and

image reading means contained in said housing for generating an image signal corresponding to the signals from said position detection means,

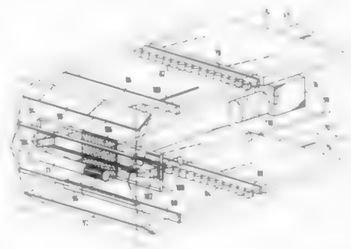
said plurality of two-dimensional position detection means being so arranged as to cooperate with each other in such a manner that the signals from said plurality of position detection means provide more information regarding the position and/or orientation of said image reading means than is provided by one of said position detection means alone.

4,767,924

APPARATUS FOR OPTICAL MONITORING WITH A HIGH PRESSURE LAMP CONNECTED TO A FIBER OPTIC CABLE

Hayo Giebel, Traubing; Viktor Baumgartner, Taufkirchen; Ralf-Dietrich Tilgner; Hans Heinold, both of Munich; Manfred Kühne, Furtwangen; Hartmut Federle, Ahrensburg; Rüdiger Arnold, Pegnitz, and Werner Rech, Heinersreuth, all of Fed. Rep. of Germany, assignors to B.A.T. Cigarettenfabriken GmbH, Hamburg, Fed. Rep. of Germany

Filed Aug. 19, 1987, Ser. No. 87,565
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1986, 3628088
Int. Cl.[4] G01N 9/04
U.S. Cl. 250—223 R 16 Claims



1. In an apparatus for optical checking or monitoring of the surface of rod-shaped smoking articles and/or filter rods for the tobacco industry

(a) comprising a conveying means transporting the rods perpendicularly to their longitudinal direction,

(b) a light source for irradiating the surface of a rod disposed in the test location,

(c) a row of photoelectric transducers which simultaneously scan a line-shaped surface region in the longitudinal direction of the rod and

(d) an arrangement controlled by the production cycle for the detection, made by comparison, of surface faults from the output signals of the photoelectric transducer dependent on the reflection capacity of the line-shaped region of the surface, the improvement

wherein

(e) the light source comprising a single high-pressure lamp is connected via an optical fibre cable to a sensor block which contains

(e1) a further optical system directing the light rays emerging from the optical fibre cable onto the line-shaped region of the surface of the rod as well as

(e2) the row of photoelectric transducers; and

(f) the optical fibre cable is divided among at least two cross-section transformers with strip-shaped light exit regions, the light beams of which are directed from above and below respectively onto the line-shaped region of the surface of the rod.

4,767,925

OPTICAL TYPE RELATIVE ROTATION MEASUREMENT APPARATUS

Mutumi Kawamoto, Tokyo, Japan, assignor to Aisin-Warner Kabushiki Kaisha, Aichi and Kabushiki Kaisha Shinsangyokaihatsu, Tokyo, both of, Japan

Filed Dec. 29, 1986, Ser. No. 947,255
Claims priority, application Japan, Dec. 28, 1985, 60-298302
Int. Cl.[4] G01D 5/34
U.S. Cl. 250—231 SE 20 Claims

1. An optical rotary encoder, comprising:

at least two opposing disks which rotate relative to each other, wherein each disk is provided with slits;

a first set of light-emitting and light-receiving elements arranged with the disks interposed therebetween for generating an output relative to the rotation of said disks; and

a second set of light-emitting and light-receiving elements for light intensity compensation,



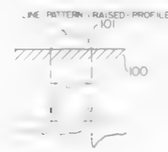
wherein a corrective reference voltage is obtained in response to an output from the second set of light-emitting and light-receiving elements and the output from the first set of light-emitting and light-receiving elements is compensated by the corrective reference voltage for determining the relative rotation of the disks.

4,767,926

ELECTRON BEAM METROLOGY SYSTEM

Hisaya Murakoshi, Hachioji; Mikio Ichihashi, Kodaira, and Kenichi Yamamoto, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 26, 1986, Ser. No. 911,791
Claims priority, application Japan, Sep. 30, 1985, 60-214715
Int. Cl.[4] H01J 37/22, 37/28
U.S. Cl. 250—310 2 Claims



1. An electron beam metrology system for measuring the width of a pattern on a specimen by scanning the specimen with a deflected electron beam, detecting a pattern image signal provided by secondary radiation emitted from the specimen, and measuring the pattern width on the specimen on the basis of the pattern detection signal, said system comprising signal detecting means including at least one set of two detectors disposed toward the scanning direction of the electron beam in a relation symmetrical with respect to the optical axis of the electron beam for detecting pattern image signals independently of each other, means for recognizing surface topography of the pattern using an output signal of said signal detecting means, and means for measuring the pattern width while discriminating as to whether the pattern is a raised-profile pattern of a hollow-profile pattern, said means for recognizing the surface topography of the pattern including means for generating a diference signal representing the difference between the two pattern image signals detected independently by said signal detectors in the course of scanning with the electron beam so as to enable identification of the inclined directions of edges of the pattern, and said pattern width measuring means including means for converting said difference signal into a normalized pulse signal including a positive pulse and a negative pulse indicative of the inclined directions of the edges of the pattern, means for differentiating said difference signal to generate a signal bearing the information of peak positions of said difference signal, and means for multiplying said peak position information signal by said normalized pulse signal so as to discriminate whether the pattern is a raised-profile pattern or a hollow-profile pattern.

4,767,927

APPARATUS FOR READING RADIATION IMAGE INFORMATION STORED IN IMAGING PLATE

Yoshirou Ohyama, and Kazuhiro Iinuma, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 13, 1985, Ser. No. 765,243
Claims priority, application Japan, Aug. 16, 1984, 59-171205; Aug. 22, 1984, 59-173369; Aug. 22, 1984, 59-173370
Int. Cl.[4] G03C 5/16
U.S. Cl. 250—327.2 25 Claims



1. An apparatus for reading a radiation image recorded on an image recording member comprising:

white light source means operative to generate an exciting white light having a beam width dimension corresponding substantially to a width dimension of one entire line of a recording area of the image recording member for irradiating in succession, an entire line at a time, each individual line of a plurality of lines constituting said recording area, said white light source means including means operative to illuminate said plurality of lines with exciting white light having a substantially constant intensity of illumination;

means for performing a relative displacement between said image recording member and said white light source, and for changing a position of said irradiated line of said image recording member with respect to said white light;

collecting means responsive to the irradiation of each said individual line for collecting form each respective line accelerated phosphorescence emitted therefrom; and

line sensor means responsive to each individual line of said collected accelerated phosphorescence for deriving, in time sequence, information relating to each said line of radiation in accordance with the recorded radiation image.

4,767,928

HIGH RESOLUTION BREAST IMAGING DEVICE UTILIZING NON-IONIZING RADIATION OF NARROW SPECTRAL BANDWIDTH

Robert S. Nelson, 25511 El Conejo La., Laguna Hills, Calif. 92653, and Reuven D. Zach, 27572 Santa Clarita Rd., Saugus, Calif. 91350

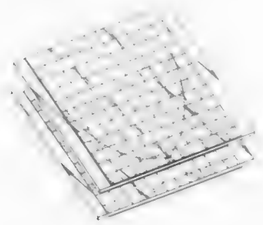
Continuation-in-part of Ser. No. 624,467, Aug. 27, 1984, Pat. No. 4,649,275. This application Dec. 29, 1986, Ser. No. 946,865
Int. Cl.[4] G01N 21/59
U.S. Cl. 250—341 11 Claims

11. An apparatus for obtaining mammography images via optical computed tomography using non-ionizing radiation including:

a source of non-ionizing radiation of relatively narrow bandwidth disposed such that the radiation will be incident on a breast,

VOL 1093 ISS 5 AG 30 1988 UMI

an optical detector disposed so as to detect the radiation after having passed through breast, and



means of collimation such as air gaps, fiber optics, light pipes or mechanical apertures so as to reduce the detected intensity of radiation scattered by the breast.

4,767,929

EXTENDED RANGE RADIATION DOSE-RATE MONITOR

Kenneth H. Valentine, Knoxville, Tenn., assignor to The United States of America as represented by the United State Department of Energy, Washington, D.C.

Filed Oct. 6, 1986, Ser. No. 915,841
Int. Cl.[4] G01T *1/24*
U.S. Cl. 250—370.07 5 Claims



1. An extended range counter system for measuring ionizing radiation dose-rates up to at least 1000 R/h, comprising:

an ionizing radiation detector means for producing current pulses at a rate corresponding to the photon interaction rate of ionizing radiation to be detected and having an amplitude proportional to the charge deposited by each photon of radiation detected;

an amplifier means responsive to each of said current pulses for generating fixed width voltage pulses at an output thereof having an amplitude proportional to the amplitude of said current pulses;

a comparator means having a signal input connected to the output of said amplifier means and a reference voltage input for generating a logic pulses at an output thereof for each input pulse from said amplifier means which exceeds the comparator means threshold determined by a reference voltage level applied to said reference voltage input of said comparator means;

an integrator means connected to the output of said comparator means for integrating said logic pulses to provide an output signal proportional to the rate of logic pulses applied to the input thereof;

a signal feedback means for feeding back a selected portion of the output signal from said integrator means to said reference voltage input of said comparator means to vary the comparator means threshold so that as the radiation dose-rate detected by said detector means increases the comparator means threshold increases to extend the sensitive dynamic range of the system up to at least 1000 R/h; and

a meter connected to the output of said integrator means and calibrated to indicate measured radiation dose-rate in response to the output signal of said integrator means.

4,767,930

METHOD AND APPARATUS FOR ENLARGING A CHARGED PARTICLE BEAM

Volker Stieber, and Franz Krispel, both of Walnut Creek, Calif., assignors to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Mar. 31, 1987, Ser. No. 33,133
Int. Cl.[4] G21K *1/08*
U.S. Cl. 250—396 ML 13 Claims



1. A method of irradiating a circular area with a charged particle beam, comprising the steps of:

(a) generating a pencil-like charged particle beam having a cross section which is smaller than said circular area;

(b) directing the charged particle beam along a beam axis;

(c) spreading the charged particle beam along a fan axis perpendicular to the beam axis; and

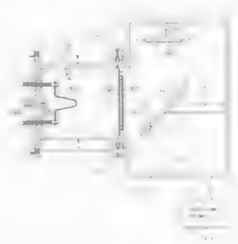
(d) rotating the fan axis around the beam axis with a predetermined frequency.

4,767,931

ION BEAM APPARATUS

Tadashi Sato, Mito; Tomoe Kurosawa; Shigetaka Fujiwara, both of Hitachi, and Masaru Higaki, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 17, 1986, Ser. No. 942,711
Int. Cl.[4] H01J *7/24*
U.S. Cl. 250—423 R 9 Claims



1. An ion beam apparatus for use in processing a target or

manufacturing a thin film through irradiation of a target with an ion beam of about 200 to 5000 eV, comprising:

a plasma producing vessel accommodating cathode electrode means for generating plasma by ionizing a neutral gas;

ion extracting electrode means for extracting ions from said plasma in the form of an ion beam;

a vacuum vessel including target holding means for nolding a target to be irradiated with said ion beam; and

permanent magnets provided on the outer surface of said plasma producing vessel with magnetic poles of different polarities being alternately disposed;

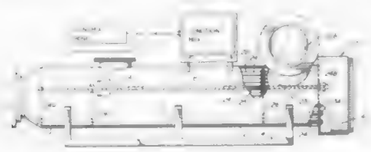
wherein said plasma producing vessel is made of a nonmagnetic material and comprises an anode electrode.

4,767,932

ULTRAVIOLET PURIFICATION DEVICE

Sidney Ellner, Bedford, N.Y., assignor to Ultraviolet Purification System, Inc., Bedford Hills, N.Y.

Filed Sep. 26, 1986, Ser. No. 911,716
Int. Cl.[4] G01N *21/01*
U.S. Cl. 250—435 18 Claims



1. An ultraviolet purification system for irradiating liquids with ultraviolet radiation comprising,

a means for channeling the liquid to be treated,

a source of ultraviolet radiation disposed in said channeling means,

said source of ultraviolet radiation including,

at least one jacket disposed in fluid flow relationship to the liquid to be treated,

said jacket being opened at one end and closed at the other end thereof, said open end being sealed off from the liquid to be treated, and said closed end being disposed in the free flow of the liquid to be treated,

an ultraviolet lamp disposed in said jacket,

said lamp comprising a glass envelope having an electrode disposed at each end of said glass envelope,

an electrical conductor electrically connected to the electrode remotely disposed relative to the open end of the jacket containing said lamp,

said electrical conductor being sufficiently long to extend to the other end of said lamp,

a source of electrical energy,

and means for connecting said lamp in circuit with said electrical energy source whereby the lamp can be readily replaced from said open end of said jacket.

4,767,933

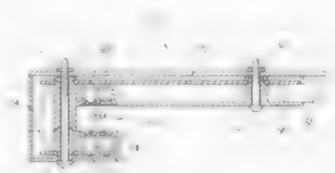
OPTICAL RIBBON EDGE SENSOR HAVING MEANS FOR ADJUSTING THE SWITCH SENSITIVITY TO THE SELECTED INK COLOR

Andrew J. French, Palm Bay; James Ford; Thomas Flenner, both of Melbourne; Thomas Kleinochnitz, Palm Bay, and Robert Comstock, Sarasota, all of Fla., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 21, 1987, Ser. No. 76,060
Int. Cl.[4] G01N *21/86*
U.S. Cl. 250—548 16 Claims

1. An improved optical ribbon edge sensor for a highspeed line printer having a towel ribbon mounted for substantially linear movement between a pair of parallel, spaced-apart ribbon spools, wherein the towel ribbon comprises a web impregnated with a selected color of ink, the improvement comprising in combination therewith:

means for housing the sensor adjacent the ribbon, said housing means including a pair of spaced-apart leg portions defining therebetween a throat portion adapted to receive an edge of the ribbon;



photoelectric switch means mounted within said housing means; and

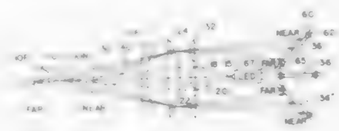
circuitry means, coupled to said photoelectric switch means, for adjusting the sensitivity of said photoelectric switch means to the selected color of ink.

4,767,934

ACTIVE RANGING SYSTEM

Norman L. Stauffer, Arapahoe, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 2, 1986, Ser. No. 881,428
Int. Cl.[4] G01C *3/08*
U.S. Cl. 250—561 15 Claims



10. A surface position sensor comprising:

energy responsive detector means comprising at least one single elongated detector having a length and having an output indicative of the position that energy is received along its length;

first means directing energy along an axis to a remote surface and directing reflected energy back along the axis to the detector means, the detector means receiving the reflected energy along its length at a position which varies with the distance to the remote surface so that the output is indicative of the distance to the remote surface.

4,767,935

SYSTEM AND METHOD FOR MEASUREMENT OF TRAVELING WEBS

Leonard M. Anderson, San Jose; Mathew G. Boissevain, Los Altos Hills, and M. Kent Norton, Saratoga, all of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Filed Aug. 29, 1986, Ser. No. 902,225
Int. Cl.[4] G01N *21/85*
U.S. Cl. 250—571 22 Claims

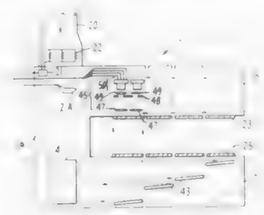
1. A system for providing measurments, such as dry basis weight, of traveling webs of sheet material comprising:

(a) illuminating means for directing substantially parallel rays of light substantially perpendicularly onto one surface of a traveling web simultaneously across substantially the entire width of the web;

(b) a plurality of light detecting means to detect substantially

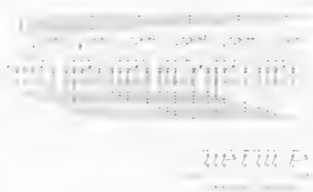
VOL 1093 ISS 5 AG 30 1988 UMI

parallel rays of said light emerging from the web perpendicular to the web surface;
(c) enclosure means that environmentally isolate the illuminating means and the detecting means; and



(d) signal processing means connected to the light detecting means for generating signals indicative of the quantity of light detected.

4,767,936
ELECTRONIC DEVICE OF ELEMENT ROW TYPE AND WIRING METHOD OF ITS ELECTRODE PATTERN
Hiroki Murakami, and Takashi Ozawa, both of Ebina, Japan, assignors to Fuji-Xerox Company Ltd., Tokyo, Japan
Filed Jul. 11, 1986, Ser. No. 884,805
Claims priority, application Japan, Jul. 16, 1985, 60-156711
Int. Cl.[4] H01J *40/14*
U.S. Cl. 250—578 20 Claims



1. An electronic device of an element row type, comprising:
a plurality of elements arranged in a longitudinal array and divided into a plurality of blocks;
first and second driver devices for driving said plurality of elements;
a first wiring pattern, for connecting the elements in odd-numbered blocks to said first driver device, including a first section extending in a direction perpendicular to the longitudinal extent of said longitudinal array of said elements, and a second section extending in a direction parallel to said longitudinal extent of said element array so as to define a first region having a predetermined width dimension for said first wiring pattern; and
a second wiring pattern, for connecting the elements in even-numbered blocks to said second driver device, including a third section extending in a direction perpendicular to said longitudinal extent of said longitudinal element array, and a fourth section extending in a direction parallel to said longitudinal extent of said element array so as to define a second region having a predetermined width dimension for said second wiring pattern which is substantially the same as said first predetermined width dimension of said first width region of said first wiring pattern;
said first and second wiring patterns being provided upon a substrate in the form of overlapping multi-layers in which said second and fourth sections are provided in mutually different ones of said overlapping multi-layers wherein said first and second width regions are disposed in overlapping relationship so as to define a composite width region having a width dimension which is substantially the same as said first and second width dimensions of said first and second width regions.

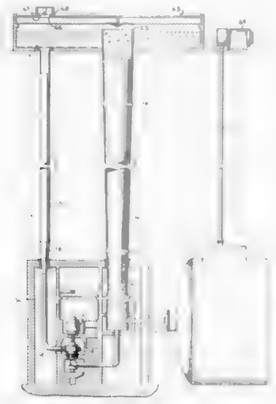
4,767,937
SCANNING SYSTEM WITH LOW SCAN RATE AND HIGH EFFECTIVE FRAME RATE
Keith H. Norsworthy, Bellevue, Wash., assignor to The Boeing Company, Del.
Filed Dec. 30, 1986, Ser. No. 947,858
Int. Cl.[4] H04N *1/10*
U.S. Cl. 250—578 14 Claims



1. A scanning sensor system, comprising:
a detector array including a plurality of detector elements each adapted when sampled to produce a detector output signal representative of the integrated energy of radiation applied to said detector element since said detector element was last sampled;
means for sampling said detector elements;
means coupled to each of said detector elements for producing a composite output signal representative of said detector output signals; and
means for scanning said array across a desired field of view, said scanning means scanning said array a first distance across said field of view in a first direction at a first rate and scanning said array a second distance across said field of view in a direction parallel to said first direction at a second rate higher than said first rate.

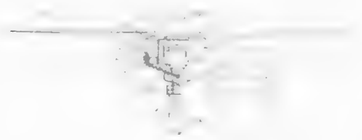
4,767,938
FLUID DYNAMIC ENERGY PRODUCING DEVICE
Dale R. Bervig, 10235 Oakmont Clr., Lenexa, Kans. 66215
Continuation of Ser. No. 771,146, Aug. 29, 1985, abandoned, which is a continuation of Ser. No. 636,320, Jul. 31, 1984, abandoned, which is a continuation of Ser. No. 558,162, Dec. 5, 1983, abandoned, which is a continuation of Ser. No. 320,219, Nov. 12, 1981, abandoned, which is a division of Ser. No. 217,654, Dec. 18, 1980, Pat. No. 4,392,062. This application Sep. 12, 1986, Ser. No. 908,921
The portion of the term of this patent subsequent to Jul. 5, 2000, has been disclaimed.
Int. Cl.[4] F01K *25/04;* **F04F** *1/18*
U.S. Cl. 290—54 6 Claims

3. A method for producing electrical energy comprising the steps of:
(a) compressing a gas with a gas compressor;
(b) placing a liquid in a loop having first and second generally vertically aligned legs, said legs being interconnected near a lower end thereof; said loop including a hydrodynamic-type generator adapted to generate electricity upon flow of said fluid through said loop;
(c) injecting said compressed gas into said second leg at a location whereat the cross-sectional area of said second leg increases substantially and such that the density of the fluid above the location of gas injection is at most 30 percent of the normal density of the fluid; whereby fluid flows in said loop from said first leg to said second leg motivating said generator to produce electricity;



(d) utilizing a portion of said produced electricity to operate said compressors; and
(e) removing excess produced electricity.

4,767,939
WIND DRIVEN ELECTRIC CURRENT PRODUCER
David G. Calley, Rte. 8, Box 51, LRB, Flagstaff, Ariz. 86004
Filed Jun. 9, 1987, Ser. No. 60,024
Int. Cl.[4] H02P *9/04;* **F03D** *9/00*
U.S. Cl. 290—55 12 Claims



1. A wind-driven electric current-producing apparatus comprising: a swivel frame adapted to swivel about a substantially vertical axis and having a front portion for extending forwardly into the wind and a rear portion for extending rearwardly downwind from said front portion; a guide vane connected to said swivel frame for guiding said swivel frame with respect to the direction of wind flow; an alternator carried on said swivel frame and having a rotor shaft; a magnetic field producing rotor supported on said shaft for rotation about a rotor axis; a wind turbine blade mounted at one end of said rotor shaft to directly drive said rotor; control means for variably limiting the rotational speed of said magnetic field; said alternator further including an aluminum front end bell disposed adjacent to said wind turbine blade, an aluminum rear end bell disposed adjacent the end of said rotor shaft remote from said wind turbine blade, and a bearing assembly disposed in and supported by each of said end bells for rotatably supporting said rotor shaft; and a centrifugal blower mounted on said rotor shaft for rotation with said rotor shaft and disposed axially intermediate said front end bell and said wind turbine blade for drawing cooling air through said alternator in a direction opposite to the wind passing said wind turbine blade and over the exterior of said alternator.

4,767,940
ELECTRONIC SENSING AND CONTROL CIRCUIT
William C. Tuttle, Marietta, Ga., assignor to Peachtree Patient Center, Inc., Atlanta, Ga.
Filed Oct. 2, 1987, Ser. No. 104,825
Int. Cl.[4] H02P *7/68*
U.S. Cl. 307—116 41 Claims



1. An electronic circuit for sensing the distance to an object, comprising:
a single sensing plate spaced from said object;
means for charging said sensing plate to a value dependent upon a capacitance existing between said sensing plate and said object, said capacitance varying with the position of said object relative to said sensing plate;
means for sampling the charging current of said sensing plate;
means for outputting said sampled current, said output current being proportional to said capacitance and varying with the distance between said sensing plate and said object; and
means for providing an opposing current flow equal to any current flow attributable to any residual capacitance of the electronic circuit so that it is only necessary to detect the change of capacitance involved in distance measuring.

4,767,941
METHOD FOR ERROR-PROTECTED ACTUATION OF THE SWITCHING DEVICES OF A SWITCHING STATION AND AN APPARATUS THEREOF
Klaus-Peter Brand, Wettingen; Jürgen Kopainsky, Brugg, and Wolfgang Wimmer, Untersiggenthal, all of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Switzerland
Filed Nov. 13, 1986, Ser. No. 930,643
Claims priority, application Switzerland, Nov. 14, 1985, 4880/85
Int. Cl.[4] H01H *47/00;* **H04M** *3/22*
U.S. Cl. 307—43 5 Claims

1. A method for carrying out error protected switching operations for a switching station having a plurality of nodes and switching devices between adjacent nodes, comprising the steps of:
storing data signals which contain information relating to all the nodes, and, for each node, the electrical state of bordering nodes which border on said each node;
establishing a topological configuration for the switching station;
storing a set of error-protected-switching interlocking rules which are based on and applicable to a basic set of topological elements and which are effective for establishing all operating states of any switching station of any arbi-

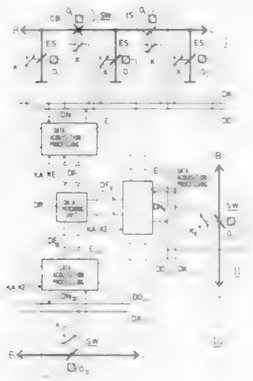
VOL 1093 ISS 5 AG 30 1988 UMI

trary configuration, said interlocking rules being independent of said topological configuration of said switching station;

repeatedly interrogating position indicating contacts associated with said switching devices for determining the contact status of said switching devices;

temporarily storing signals received from the interrogation of said position indicating contacts;

logically combining said stored signals of said position indicating contacts with data signals which represent said topological configuration of said switching station and generating from said combination topological elements which belong to a basic set of topological elements and establishing an operating state for said switching stations;



temporarily storing said topological elements;

interrogating said stored error-protected-switching interlocking rules on the basis of said temporarily stored topological elements and generating from said interrogation a release pattern indicating a releasing or blocking status for each of said switching devices;

temporarily storing said release pattern; and

interrogating said temporarily stored release pattern by and with a requested switching operation command and releasing or blocking said requested switching operation command based thereon in order to generate an error-free-switching operation command.

4,767,942

CURRENT MIRROR AMPLIFIER CIRCUIT

Hiroshi Minami, and Koreaki Fujita, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed May 6, 1987, Ser. No. 46,509

Claims priority, application Japan, May 7, 1986, 61-104292

Int. Cl.[4] H03K *3/01, 3/353;* **H03F** *3/45, 3/04*

U.S. Cl. 307—304 **10 Claims**

1. A MOS transistor circuit, comprising:

first and second power supply lines,

first and second input signal lines,

first and second output signal lines,

first and second current mirror circuits, each comprising:

a first MOS semiconductor element of a first channel type

having a first main electrode connected to the first power supply line, and

having a second main electrode and a gate electrode connected to each other,

a second MOS semiconductor element of the first channel type

having a first main electrode connected to the first power supply line,

having a gate electrode connected to the second main electrode of the first MOS semiconductor element, and

having a second main electrode,

a third MOS semiconductor element of a second channel type

having a first main electrode connected to the second electrode of the first MOS semiconductor element, and

having a second main electrode connected to the second power supply line, and

a fourth MOS semiconductor element of the second channel type

having a first main electrode connected to the second electrode of the second MOS semiconductor element, and

having a second main electrode connected to the second power supply line,

the third MOS semiconductor element of the first current mirror circuit and the fourth MOS semiconductor element of the second current mirror circuit having their gate electrodes connected to the first input signal line,



the third MOS semiconductor element of the second current mirror circuit and the fourth MOS semiconductor element of the first current mirror circuit having their gate electrodes connected to the second input signal line,

the first main electrode of the fourth MOS semiconductor element of the first current mirror circuit being connected to the first output signal line,

the first main electrode of the fourth MOS semiconductor element of the second current mirror circuit being connected to the second output signal line,

a first capacitor coupling the first output signal line to the gate electrodes of the first and the second MOS semiconductor elements of the second current mirror circuit that are connected to each other, and

a second capacitor coupling the second output signal line to the gate electrodes of the first and the second MOS semiconductor elements of the first current mirror circuit,

whereby said capacitors provide feedback from the first and the second output signal lines and to the gate electrodes of the first and the second MOS semiconductor elements of the second and the first current mirror circuits.

4,767,943

SWITCH ARRANGEMENT

Bernhard Adler, Rastatt, and Hermann Kieferle, Ettlingen, both of Fed. Rep. of Germany, assignors to Stierlen-Maquet AG, Fed. Rep. of Germany

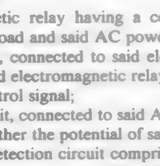
Filed Jan. 7, 1987, Ser. No. 1,146

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1986, 3601363

Int. Cl.[4] H01H *35/00, 13/64*

U.S. Cl. 307—119 **1 Claim**

1. A switch arrangement for switching electrical functions with at least two switches having electrical contact elements, said switch arrangement comprising a first switch having a flexible base foil carrying a first contact element and also having a switch foil carrying a second contact element, said switch foil being elastically deflectable toward said base foil to bring said first and second contact elements into engagement with one another, and a second switch arranged behind said base foil of said first switch in the keying direction so that said second switch is operable by an operating pressure on said switch foil of said first switch which exceeds the pressure necessary to bring said first and second contact elements of said first switch into engagement, first and second conductors,



said first switch being connected in said first conductor to open and close said first conductor and said second switch being connected in said second conductor to open and close said second conductor, and an AND-gate having two input terminals, said first conductor being connected to one of said input terminals and said second conductor being connected to the other of said input terminals.

4,767,944

HYBRID RELAY CIRCUIT HAVING ELECTROMAGNETIC RELAY FOR SWITCHING AC POWER SUPPLY

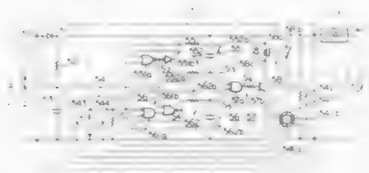
Hiroto Takeuchi, Komoro, and Masahiro Hishimura, Saku, both of Japan, assignors to Takamisawa Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 830,790, Feb. 19, 1986, abandoned. This application Jul. 20, 1987, Ser. No. 75,272

Claims priority, application Japan, Feb. 20, 1985, 60-030498; Jul. 24, 1985, 60-161784; Jul. 24, 1985, 60-161785; Jul. 24, 1985, 60-161786

Int. Cl.[4] H01H *47/32*

U.S. Cl. 307—132 E **22 Claims**



18. A hybrid relay circuit for supplying current to a load with a AC power supply in accordance with an input control signal, comprising:

an electromagnetic relay having a contact connected in series to said load and said AC power supply;

a driving circuit, connected to said electromagnetic relay, for driving said electromagnetic relay in accordance with said input control signal;

a detection circuit, connected to said AC power supply, for detecting whether the potential of said AC power supply is zero, said detection circuit comprising

a current transformer connected to said AC power supply, said current transformer having first and second windings,

a current limiting resistor associated with said second winding of said current transformer, linked between the terminals of said contact,

a rectifier bridge circuit having two pairs of diagonal terminals, one pair of said diagonal terminals being connected to said first winding of said current transformer, and

a resistor connected to the other pair of diagonal terminals of said rectifier bridge circuits;

a closing timing control circuit, connected to said driving circuit, for turning ON said driving circuit after receiving said input control signal which is turned ON, so that said contact is closed when the potential of said AC power supply becomes approximately zero; and

an opening timing control circuit, connected to said driving circuit, for turning ON said driving circuit after receiving said input control signal which is turned OFF, so that said contact is opened when the potential of AC power supply becomes approximately zero.

4,767,945

ANALOG SIGNAL MULTIPLEXER

Patrick A. Quinn, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 14, 1986, Ser. No. 917,868

Int. Cl.[4] H03K *17/56, 19/08, 5/22*

U.S. Cl. 307—241 **8 Claims**



1. An analog signal multiplexer channel comprising:

first and second differential amplifiers for receiving a differential input signal, each differential amplifier having a pair of transistors, each transistor having first and second emitters, the first emitters of the transistors within each differential amplifier being coupled together, the second emitters of the transistors of said first differential amplifier being cross coupled to the second emitters of the transistors of said second differential amplifier, thereby forming a pair of cross coupled second emitters;

means for selecting one of a plurality of modes of operation of the analog signal multiplexer channel having:

a first selectable current source for biasing the first emitters of the transistors of said first differential amplifier,

a second selectable current source for biasing the first emitters of the transistors of said second differential amplifier,

a third selectable current source for biasing one of the pair of cross coupled second emitters, and

a fourth selectable current source for biasing the other of the pair of cross coupled second emitters; and

a pair of output transistors for producing a differential output signal responsive to said input signal, each output transistor respectively coupled to said first and second differential amplifiers.

4,767,946

HIGH-SPEED SUPPLY INDEPENDENT LEVEL SHIFTER

Stewart S. Taylor, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 12, 1987, Ser. No. 2,082

Int. Cl.[4] H03K *5/02, 5/08*

U.S. Cl. 307—264 **16 Claims**

1. A high speed level shifting circuit, comprising:

level shifting means including a first transistor having a

VOL 1093 ISS 5 AG 30 1988 UMI

control electrode defining a signal input and first and second controlled electrodes, the first controlled electrode connected to a first reference voltage to define a first voltage potential V_1 between the signal input and the first reference voltage, and the second controlled electrode connected to a first resistor;

first conducting means coupling the first transistor and first resistor in series to a second reference voltage for conducting a first current through the first resistor and a first intermediate voltage node at a potential between the first and second reference voltages;

a second resistor and second conducting means for conducting a second current through the second resistor and coupling the second resistor between the second reference voltage and a second intermediate voltage node at a potential between the first and second reference voltages in parallel with the first current;

output means for coupling the first intermediate voltage node to a signal output having a second voltage potential V_2 with respect to the second reference voltage; and



replicating means for establishing a predetermined relationship between the first and second currents through the first and second resistors such that variations in the second current due to variations in either or both of the reference voltages are replicated in the first current, said means including a coupling means for coupling said first and second conducting means; and

biasing means defining a floating reference voltage potential V_3 in series with the second resistor;

the first and second conducting means each including parallel voltage dropping means for providing a voltage drop V_4 between the coupling means and the second reference voltage;

the values of the first and second resistors and the reference voltage potential V_3 being set in accordance with an additive function comprising the sum of V_1, V_2 and V_{C1}, less V_4, where V_{C1} is the difference of the voltage at the control electrode and the voltage at the second controlled electrode.

4,767,947

CONSTANT PULSE WIDTH GENERATOR

Ashwin H. Shah, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 528,374, Aug. 31, 1983, Pat. No. 4,685,087.
This application Jul. 11, 1986, Ser. No. 884,688
Int. Cl.[4] H03K *3/017, 3/284*
U.S. Cl. 307—265 6 Claims

1. A constant pulse width generator comprising:

a first switch means for receiving an input signal having first and second logic levels, said first switch means normally being disposed in an "on" state in response to the input signal being at the first logic level but changing to its "off" state when the input signal is at the second logic level;

output means from which an output signal having first and second logic levels is provided;

first inverting delay means coupled to said output means for delaying said output signal provided therefrom and inverting the logic level of said output signal to produce an inverted output signal;

a second switch means alternatively disposable in "on" and "off" states, said second switch means being respectively coupled to said first switch means and said output means and interposed therebetween, said second switch means being responsive to a predetermined condition of the delayed and inverted logic level of said output signal to operate in an inverted relation to the logic level of the output signal provided from said output means such that said second switch means is disposed in its "off" state after a delay when said output signal is at the first logic level and is disposed in its "on" state when said output signal is at the second logic level;



second inverting delay means coupled to the output of said first inverting delay means for providing a second delay of the output signal and inverting the logic level of said inverted output signal to return to the original logic level of the output signal; and

a third switch means alternatively disposable in "on" and "off" states, said third switch means being coupled to said output means and to a predetermined reference signal and responsive to the output of said second inverting delay means for imparting said reference signal to said output means when disposed in its "on" state, said reference signal corresponding to said second logic level;

said output means having a periodic pulse at the first logic level provided therefrom as the output signal having a width determined by the delay imparted by said first and second inverting delay means.

4,767,948

METHOD AND DEVICE FOR DRIVING SEMICONDUCTOR POWER COMPONENTS

Rainer Marquardt, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 18, 1986, Ser. No. 840,696
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1985, 3513170
Int. Cl.[4] H03K *17/60, 3/01*
U.S. Cl. 307—270 12 Claims



1. A device for driving a semiconductor power component comprising:

a. means for impressing the control information for the component on a pulse sequence containing control power for the component;

b. means for transmitting the pulse sequence from the means for impressing to the component to drive the component and for separating respective potentials of the control power and control information; and

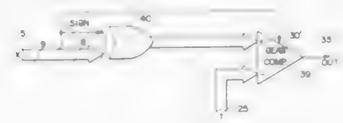
c. means for recovering the control information from the pulse sequence after the potential-isolated transmission via the means for transmitting and separating and delivering the control information to the component.

4,767,949

MULTIBIT DIGITAL THRESHOLD COMPARATOR

William T. Mayweather, III, Stone Mt., Ga., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed May 1, 1987, Ser. No. 44,611
Int. Cl.[4] H03K *5/24;* G05B *1/03;* G06F *7/02*
U.S. Cl. 307—362 10 Claims



1. A multibit digital threshold comparator, comprising:

a source of a multibit digital input signal representing a signed arithmetic value;

a source of a threshold signal;

means for producing a magnitude representative signal selectively having the value of said input signal or the value of the ones complement of said input signal in response to the sign of the arithmetic value of said input signal; and

comparator means for generating an output signal having a first state when:

(a) the value of said input signal is of a first sign and the value of said magnitude representative signal is greater than the value of said threshold signal, or

(b) the value of said input signal is of a second sign and the value of said magnitude representative signal is greater than or equal to the value of said threshold signal,

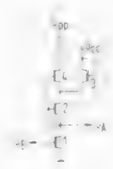
and having a second state otherwise.

4,767,950

MOS INVERTER CIRCUIT HAVING TWO DIFFERENT SUPPLY VOLTAGES

Hartmut Schrenk, Haar, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 640,017, Aug. 10, 1984, abandoned.
This application Jul. 7, 1986, Ser. No. 883,003
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1983, 3329874
Int. Cl.[4] H03K *17/687, 17/10, 19/094;* G11C *11/40*
U.S. Cl. 307—450 7 Claims



1. MOS inverter circuit having MOS FET transistors, each having a source, drain and a gate comprising a first supply voltage source, a second supply voltage source being higher than said first supply voltage source, a control MOS FET of the enhancement type being connected at its gate to an input voltage, a first MOS FET being a load MOS FET of the depletion type being connected at its source to the drain of said control MOS FET, forming a first node for supplying an output voltage, a second MOS FET being a load MOS FET, also of the depletion type and a third MOS FET of the enhancement type, said second and third MOS FET being connected together at their respective soruce to source forming a second node and forming a two-transistor circuit, the second node being connected with the drain of said first MOS FET, the gates of said first and second MOS FET being connected to said first node, said third MOS FET having a controlled path, and being connected with its drain and gate as a diode to said first supply voltage source, and said first and second MOS FET's having their controlled drain-source paths interconnected in series and connected at the drain of the second MOS FET to said second supply voltage source.

4,767,951

ECL TO NMOS CONVERTER

Eldon C. Cornish, and Rodney H. Orgill, both of Colorado Springs, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 30, 1987, Ser. No. 68,384
Int. Cl.[4] H03K *19/094*
U.S. Cl. 307—475 4 Claims



1. A circuit for coupling an ECL logic input signal to MOS logic levels, the circuit comprising:

a first enhancement MOS transistor having its gate connected to its drain, and having its source coupled to the ECL logic input signal;

a first load connected between a power supply and the drain of the first MOS transistor,

a second enhancement MOS transistor whose gate is coupled to the junction of the first load and the first MOS transistor, whose source is coupled to a reference voltage representing the mean of the logic levels of the ECL logic input signal, and whose drain is connected to the second load recited below; and

a second load connected between the drain of the second MOS transistor and the power supply, the output of the circuit being the junction of the second load and the drain of the second MOS transistor.

4,767,952

HIGH SPEED CONTROL CIRCUIT FOR POWER FIELD EFFECT TRANSISTORS

Michel Nollet, Noisy Le Roi, France, assignor to Thomson-Lgt Laboratoire General des Telecommunications, Conflans Sainte Honorine, France

Filed Dec. 3, 1986, Ser. No. 937,356
Claims priority, application France, Dec. 13, 1985, 85 18526
Int. Cl.[4] H03K *17/687, 3/01*
U.S. Cl. 307—571 6 Claims

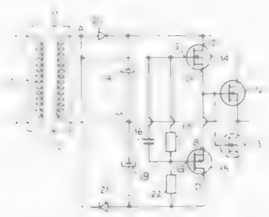
1. A high speed control circuit, comprising:

a transformer having a primary winding coupled to receive an input signal and a secondary winding which produces at least one control signal based on said input signal;

VOL 1093 ISS 5 AG 30 1988 UMI

energy storage means, coupled to said secondary winding of said transformer, for storing energy during at least one inactive phase of said at least one control signal;

electronic network means, coupled to said secondary of said transformer and to said energy storage means, for receiving said control signals, and producing output signals which are powered substantially only by energy stored in



said energy storage means, said output signals being produced during an active phase of said at least one control signal, and being isolated from said secondary of said transformer during said active phases of said at least one control signal; and

at least one transistor, having a gate terminal coupled to receive said at least one control signal.

4,767,953

ELECTRODE DEVICE FOR ELECTROMAGNETIC FLUID FLOW APPARATUS

Nagakazu Furuya, No.4-3-31, Ohte 2-chome, and Satoshi Motoo, No.5-24, Takeda 3-chome, both of Kofu-shi, Yamanashi, Japan, assignors to Tanaka Kikinzoku Kogyo K.K.; Nagakazu Furuya and Satoshi Motoo, all of, Japan

Filed Apr. 3, 1987, Ser. No. 34,437
Int. Cl.[4] H02K *44/00*
U.S. Cl. 310—11 11 Claims



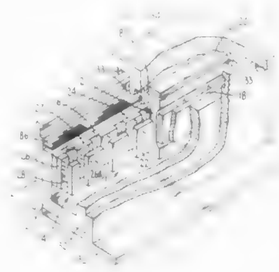
1. In an electrode device for an electromagnetic fluid flow apparatus, comprising a pair of electrodes electrically connected to an electric power source, which are arranged at a certain distance away from each other, facing a pathway of an electrical conductive fluid, and a magnet which is arranged between the electrodes, facing the pathway, and effects a magnetic field in the direction perpendicular to the flow direction of the electrical conductive fluid and to a straight line connecting the pair of electrodes, the improvement wherein the electrodes are made of a hydrophobic porous carrier with pores of at most 1 μm pore size, having electrical conductivity, gas permeability and liquid impermeability, and said device being capable of discharging a gas generated from a portion of said electrodes to the outside therefrom without releasing the gas into the electrical conductive fluid and obtaining high current density.

4,767,954

SOLID STATE COMMUTATED LINEAR MOTOR WITH AN IRONLESS MULTIPHASE ARMATURE

Edward H. Phillips, Middletown, Calif., assignor to Compact Spindle Bearing Corporation, Middletown, Calif.

Filed Apr. 11, 1986, Ser. No. 850,964
Int. Cl.[4] H02K *41/00*
U.S. Cl. 310—12 45 Claims



1. Linear motor apparatus for driving a machine slide with respect to a machine frame comprising:

means for supporting and guiding the machine slide for movement with respect to the machine frame along a first axis;

magnetic field array means disposed along the first axis and fixedly located with respect to the machine frame for providing a plurality of magnetic poles which generate a magnetic field of periodic alternating polarity, where the distance between adjacent poles of the plurality of magnetic poles is equal to an inter-pole distance L, and further wherein the magnetic field array means provide magnetic field lines parallel to a second axis which is orthogonol to the first axis; and

a multiphase armature also disposed along the first axis but fixedly located with respect to the machine slide, said multiphase armature having a plurality of phases which are spaced successively along the first axis,

wherein each phase is formed of at lease a first coil, said first coil having first and second active portions with center lines that are separated from one another by a distance substantially equal to the inter-pole distance L, and further wherein the first and second active portions extend across the magnetic field array means in a direction parallel to a third axis such that they are encompassed by the magnetic field lines of the magnetic field array means, said third axis being orthogonal to the second axis, and

further wherein, the first active portion of any one of the phases is located relative to the first active portion of a successively positioned phase at a distance equal to the inter-pole distance L divided by the number of phases present in the multiphase armature and

further wherein any additional coils used in forming a phase are located, with respect to the other coils that form the phase, at the inter-pole spacing L.

4,767,955

LINEAR ACTUATOR MOTOR

Michael A. McDaniel, Bend, Oreg., assignor to Precise Flight, Inc., Bend, Oreg.

Filed Aug. 5, 1987, Ser. No. 81,795
Int. Cl.[4] H02K *7/06*
U.S. Cl. 310—20 13 Claims

1. A rotary drive motor comprising:

(a) at least one linear actuator having an actuation element which is movable between extended and retracted positions;

(b) a first shaft;

(c) means for causing said first shaft to rotate in a counterclockwise direction when said actuation element is moving in a first direction;

(d) a second shaft;



(e) means for causing said second shaft to rotate in a clockwise direction when said actuation element is moving in the opposite direction;

(f) means for operatively coupling said first and second shafts together in a manner such that they always rotate counter to one another; and

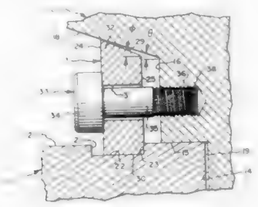
(g) means for coupling one of said first and second shafts to an output shaft.

4,767,956

TRANSDUCER CLAMP

Thomas R. Cimato, Orchard Park, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Jan. 20, 1988, Ser. No. 145,896
Int. Cl.[4] H02K *5/22, 19/36*
U.S. Cl. 310—91 12 Claims



1. In a motor having a housing to which a transducer body is to be mounted along an axis, said housing having an inwardly-facing surface surrounding a portion of said body, said body having an outwardly-facing surface arranged in spaced facing relation to said housing surface, the improvement which comprises:

a clamp operatively positioned between said body and housing, said clamp having one portion engaging said housing surface and having another portion engaging said body surface, one of said housing and body surfaces being inclined with respect to the other of said housing and body surfaces in one axial direction such that when said clamp is moved in said one axial direction relative to said housing the radial force exerted by said clamp on said body will be greater than the axial force exerted by said clamp on said body; and

displacement means for selectively moving said clamp in said one axial direction relative to said body and housing;

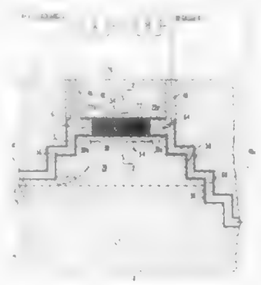
whereby said body may be effectively clamped against axial and rotative movement relative to said housing.

4,767,957

LIQUID METAL COLLECTOR FOR ACYCLIC GENERATOR

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 8, 1986, Ser. No. 939,501
Int. Cl.[4] H02K *31/00*
U.S. Cl. 310—178 8 Claims



1. A current collector for an acyclic generator having a stator and a rotor mounted for rotation about an axis, said current collector comprising, in combination:

A. an annular stator collector surface formed in said stator.

B. an annular rotor collector surface formed on said rotor for rotation coaxially relative to said stator collector surface, said rotor collector surface spaced from said stator collector surface to define an annular collector gap therebetween;

C. a quantity of liquid metal filling said collector gap; and

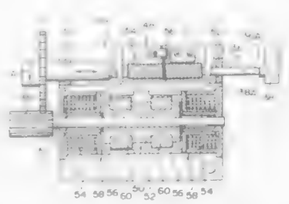
D. a plurality of barriers mounted by one of said stator and rotor for projection into said collector gap at angularly spaced locations about the circumference thereof, said barriers being of an axial extent corresponding to the axial extent of the path of current transport across said collector gap, whereby said barriers substantially impede counter-rotational movement of said liquid metal in said collector gap in response to magnetohydrodynamic circumferential pumping forces exerted on said liquid metal in said collector gap while permitting axial flow of said liquid metal between said barriers.

4,767,958

STEPPING MOTOR ACTUATOR WITH TWO INTERPOSED POLE TOOTH PAIRS

Hidemi Sasaki, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 19, 1987, Ser. No. 63,942
Int. Cl.[4] H02K *7/10*
U.S. Cl. 310—257 3 Claims



1. A motor unit for converting a rotational movement into a linear movement, comprising:

VOL 1093 ISS 5 AG 30 1988 UMI

a rotary shaft disposed in a block forming said motor unit;
a magnet rotor comprising a core member fixed substantially to a central portion of said rotary shaft, first and second annular magnets disposed in parallel with each other on the circumferences of said core member, each of said annular magnets being provided with alternately arranged north or south poles on the outer peripheral surface thereof;
first and second excitation coils respectively wound in a cylindrical manner and disposed adjacent to said first and second annular magnets, said rotating shaft having end journal portions extending through central portions of said first and second excitation coils, respectively;
a first yoke comprising inner and outer yoke members each having a number of pole teeth corresponding to the number of said north or south poles of said annular magnet and fixed within said block such that said first yoke inner and outer yoke members surround said first excitation coil, said pole teeth of said first yoke inner and outer yoke members alternating circumferentially and extending out in the direction of said first annular magnet to surround the outer periphery of said first annular magnet;
a second yoke comprising inner and outer yoke members each having a number of pole teeth corresponding to the number of said north or south poles of said annular magnet and fixed within said block such that said second yoke inner and outer yoke members surround said second excitation coil, said pole teeth of said second yoke inner and outer yoke members alternating circumferentially and extending out in the direction of said second annular magnet to surround the outer periphery of said second annular magnet;
a lead screw located in parallel with said rotary shaft, having a threaded portion in a central portion thereof, and disposed within said block such that it is free to slide in the axial direction thereof;
a member fixed within said block and engageable with said threaded portion of said lead screw; and
power transmission means for transmitting the rotational movements of said rotary shaft to said lead screw.

4,767,959
METHOD AND APPARATUS FOR DRIVING CAPACITIVE-TYPE LOAD
Yasuyuki Sakakibara, Nishio; Toshihiko Igashira, Toyokawa; Kiyonori Sekiguchi; Masahiro Takigawa, both of Nukata, and Yoshimi Natsume, Toyokawa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan
Filed Sep. 9, 1987, Ser. No. 94,738
Claims priority, application Japan, Sep. 17, 1986, 61-217309
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—317 **15 Claims**



1. A method for driving a capacitive-type load in an apparatus including a direct current power source; a capacitive-type load expanding and contracting when charged and discharged, respectively; a charging circuit having a first coil and a first switching element which are connected in series with said capacitive-type load from said direct current power source; a discharging circuit having a second coil and a second switching element which are connected in parallel with said capacitive-type load; a third coil electromagnetically coupled with at least one of said first coil and said second coil; and a third switching element provided in series with said third coil and said direct current power source; comprising the following steps of:
closing the switching element connected to the coil electromagnetically coupled with said third coil and flowing electric current therethrough to that coil;
opening the switching element closed by said closing step before the electric current flowing therethrough becomes zero; and
closing said third switching element and restoring fly-back energy which is generated at the coil when the switching element is opened by said opening step, to said direct current power source through said third coil and said third switching element.

4,767,960
CYLINDER PRESSURE TRANSMITTER FOR AN INTERNAL COMBUSTION ENGINE
Stephen J. Strobel, Providence, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Dec. 15, 1983, Ser. No. 561,757
Int. Cl.[4] H01L *41/08*
U.S. Cl. 310—338 **2 Claims**



1. A cylinder pressure transmitter comprising a metal body having a chamber open at opposite ends, the metal body being adapted to be mounted on a cylinder of an internal combustion engine with one of the chamber openings disposed in sealed relation to the cylinder,
a stiffly flexible metal diaphragm secured to the body over said one chamber opening so that one side of the diaphragm is adapted to be exposed to a pressure force from pressure within the engine cylinder to be movable in response to variations in pressure in the cylinder,
piezeoelectric means mounted in the chamber against the diaphragm electrically connected at one end of the diaphragm,
support means adjustably mounted within the chamber electrically engaging an opposite end of the piezoelectric means holding the piezoelectric means against the diaphragm to be responsive to movement of the diaphragm for providing an initial electrical signal representative of pressure in the cylinder during engine operation,
electronic means operable at temperatures likely to be enountered adjacent an engine cylinder mounted in the body chamber and electromagnetically shielded in the chamber with the piezoelectric means to amplify said initial electrical signal for transmission to a location remote from the piezoelectric means,
said suppport means being threadedly mounted within the body chamber to be rotated therein for advancing the support means into selected pressing engagement with the piezoelectric means,
said piezoelectric means comprising a conductor disc and a pair of ceramic piezoelectric disc elements which are arranged with oppositely disposed polarization directions on a common pole axis on respective opposite sides of the conductor disc so that one side of each element is electrically engaged with the common conductor, lead means being electrically connected to the conductor disc and the support means having a slot therein permitting the lead means to extend through the slot for electrically connecting the conductor disc to the electronic means,
the metal body having a shoulder disposed around said one chamber opening, the diaphragm having a perimeter portion thereof disposed against the shoulder, a sleeve with internal and external threads having the external threads thereof threadedly engaged with a metal body inside the body chamber holding the perimeter portion of the diaphragm against said shoulder for securing the diaphragm over said one chamber opening, and the support means being threadedly engaged with the internal threads of said sleeve for pressing the piezoelectric means against the diaphragm with a selected preload compressive force.

4,767,961
X-RAY GENERATOR COOLING SYSTEM
Thomas J. Koller, Shelton, and John D. Weaver, Sr., Trumbull, both of Conn., assignors to The Machlett Laboratories, Inc., Stamford, Conn.
Continuation of Ser. No. 235,186, Feb. 17, 1981. This application Oct. 3, 1983, Ser. No. 537,546
Int. Cl.[4] H01J *35/16, 1/10*
U.S. Cl. 313—12 **11 Claims**



1. An electron tube apparatus comprising:
an electron tube enclosure having therein a pair of member means spaced apart for producing an electrical potential difference therebetween; and
fluid means connected to said enclosure for directing a flow of dielectric liquid therethrough, a portion of said dielectric liquid being disposed between said member means;
said fluid means including suction means for selectively withdrawing said portion of said liquid from between said member means and venting means for purging gaseous matter in said withdrawn portion of said liquid.

4,767,962
COLOR CATHODE RAY TUBE AND TENSIBLE SHADOW MASK BLANK FOR USE THEREIN
Robert Adler, Northfield, and Charles J. Prazak, III, Elmhurst, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.
Filed Jul. 2, 1986, Ser. No. 881,169
Int. Cl.[4] H01J *9/18*
U.S. Cl. 313—402 **5 Claims**

5. For use in the manufacture of a tension mask color cathode ray tube, a rectangular, selectively weakened metal shadow mask blank adapted to be expanded and secured under tension to a mask support structure in spaced adjacency to the screen of said tube, said blank comprising:
a central field of electron-beam-passing apertures for color selection consonant in dimensions with said screen;
a peripheral outer band adapted to be gripped during the expanding and mounting of said mask blank on said mask support structure;
an inner band peripheral to said central field for mounting said blank on said support structure and securing it thereto;
at least one field of stress-equalizing perforations between said outer band said inner band;
discrete, radially extending bands of unweakened metal linking said inner band and said outer band in each corner of said blank, said radially extending bands having a width dimension many times the pitch of of said stress-equalizing perforations;



whereby said radially extending bands are effective to selectively strengthen weakened areas, and said field of perforations is effective to equalize stress to prevent wrinkling of said blank under electron beam heating when said blank is expanded and secured to said mask support structure.

4,767,963
SHADOW MASK COLOR CRT WITH ENHANCED RESOLUTION AND/OR BRIGHTNESS
Brian D. Chase, and Andrew Paton, both of Eastleigh, England, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 20, 1986, Ser. No. 876,530
Claims priority, application European Pat. Off., Jun. 28, 1985, 85304638.1
Int. Cl.[4] H01J *29/07*
U.S. Cl. 313—408 **8 Claims**



1. A color CRT having a plurality of guns each gun adapted to produce an electron beam to stimulate a different associated group of color phosphors areas, on the face of the CRT, the relative areas of the different groups of color phosphors on the CRT faceplate are inversely proportional, or substantially inversely proportional, to their light emission efficiencies in order to produce a color balance which gives an acceptable white color point when all the guns are driven with the same value of beam current, the improvement comprising: a masking arrangement for the CRT with a double shadow mask combination comprised of first and second spaced apart shadow

VOL 1093 ISS 5 AUG 30 1988 UMI

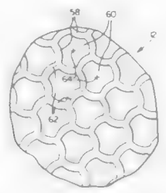
masks, each of said masks having a corresponding pattern of apertures therethrough, the construction and arrangement of said masks is such that the widths of the portions of the electron beams emerging from said masks all match, or substantially match, the areas of the associated group of color phosphors on the faceplate on which they land.

4,767,964

IMPROVED MESH FOR CRT SCAN EXPANSION LENS AND LENS FABRICATED THEREFROM

J. Kirk McGlothlan, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 4, 1987, Ser. No. 11,082
Int. Cl.[4] H01J *3/26, 29/70*
U.S. Cl. 313—421 9 Claims



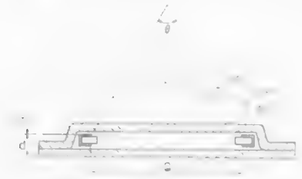
1. A deformable mesh for fabricating a scan expansion mesh lens for use in an electron discharge tube, said mesh comprising a multitude of interconnected webs forming an array of apertures, each web having opposing ends and a midline extending between the ends, the mesh being configured so that each aperture of the array is formed by a set of webs interconnected at their ends, and the mesh being further configured so that, in its undeformed state, the midlines of at least some of the interconnected webs define bent lines.

4,767,965

FLAT LUMINESCENT LAMP FOR LIQUID CRYSTALLINE DISPLAY

Masaru Yamano, Hirakata; Katsuhiro Hinotani, Shijonawate; Hajime Hayama, Nara; Shunichi Kishimoto, Kaizuka; Nobutake Kawamori, Moriguchi; Katsumi Terada, and Kazuhiro Kono, both of Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 7, 1986, Ser. No. 928,133
Claims priority, application Japan, Nov. 8, 1985, 60-172540[U]; Mar. 12, 1986, 61-54194
Int. Cl.[4] H01J *61/067, 61/30*
U.S. Cl. 313—491 18 Claims



1. A flat luminescent cold cathode type lamp for a liquid crystalline display panel comprising:
a lower glass panel of rectangular shape having a luminescent layer covering substantially all of its upper surface,
an upper glass panel of rectangular shape having a luminescent layer covering substantially all of its lower surface and sealingly connected to the periphery of the lower glass panel by means of side glass walls provided between both panels so as to form a flat rectangular cavity for an electric discharge between the upper and lower panels,
the side glass walls having an exhaust tube projecting outwardly,
a single pair of parallel electrode plates of the cold cathode type having a concave cross section, one of said electrodes being positioned at each end of the cavity, the electrode plates each having auxiliary electrodes formed at both terminations of the electrode plate extending toward the other electrode plate,
a restraining piece mounted at its inner termination to each electrode plate and having its outer termination being held between the edge face of the side wall and the lower glass panel, and
each electrode plate having a lead plate mounted at its inner termination to the electrode plate extending outwardly in the same direction as the exhaust tube but in the opposite direction to the restraining piece, the lead plate being pinched between the edge face of the side wall and the lower glass panel and projecting outwardly from the side glass wall, at least one of the restraining piece and the lead plate of each electrode plate being bent in its length at a position between the electrode plate and the side glass wall so as to deform resiliently when the upper and the lower glass panels are cooled to room temperature from an elevated temperature used for connection of the upper and lower glass panels, said pair of electrode plates forming a substantially uniform electric discharge throughout said flat rectangular cavity so as to evenly illuminate said luminescent layers.

4,767,966

ELECTROLUMINESCENT PANELS

Nicholas T. Simopoulos; George N. Simopoulos, and Gregory N. Simopoulos, all of Dayton, Ohio, assignors to Luminescent Electronics, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 801,511, Nov. 25, 1985, Pat. No. 4,647,337, which is a continuation of Ser. No. 677,645, Dec. 4, 1984, abandoned. This application Mar. 17, 1986, Ser. No. 840,630
Int. Cl.[4] H05B *33/06, 33/14*
U.S. Cl. 313—509 2 Claims



1. An improved electroluminescent lamp having a surface and designated lighted area which occupies a portion of the surface of said panel, comprising a base, said base including a sheet of flexible transparent polyester material, a transparent electrode on said base formed in a pattern corresponding to said lighted area, a phosphor layer on said base including phosphor particles in a polymer carrier, said phosphor layer formed in said pattern in superimposition to said transparent electrode, a dielectric pigment layer covering said phosphor layer, said dielectric layer including particles of pigment in a polymer carrier compatible with the carrier of said phosphor layer, a second electrode layer including particles of metallic conductor in a polymer carrier compatible with the carrier of said dielectric layer, and formed in a pattern corresponding to said lighted area, a conformal sealing layer covering said second electrode layer, and each said polymer carrier comprising a casting polyester resin activated by a small quantity of toluene diisocyanate in which said toluene diisocyanate does not exceed more than 5% by weight of said resin.

4,767,967

HIGH VOLTAGE GENERATING DEVICE

Takeshi Tanaka, Toyohashi; Hiroshi Yorita, Nishio; Masahiro Tomita, Anjo, and Toshihiko Igashira, Toyokawa, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 4, 1985, Ser. No. 741,224
Claims priority, application Japan, Jun. 5, 1984, 59-113865; Jun. 19, 1984, 59-124440; Nov. 28, 1984, 59-252745; Mar. 15, 1985, 60-50643
Int. Cl.[4] H01T *13/00*
U.S. Cl. 315—55 8 Claims



1. A high voltage generating device comprising:
piezoelectric element means including at least two columnar-shaped piezoelectric elements having substantially the same resonance periods as one another, connected in series with one another;
an elastic conductive member for applying a pressure to one of said piezoelectric elements;
energizing means, connected electrically with a surface of one of said piezoelectric elements, for supplying said piezoelectric elements with a periodic electric signal having a frequency which is an inherent resonance frequency of said piezoelectric elements; and
a capacitive load connected with a surface of the other of said piezoelectric elements.

4,767,968

SYSTEM FOR CONTROLLING THE OPERATION OF ELECTRICALLY POWERED APPARATUS

Michael Geanous; Richard G. Confer, and Richard C. Bainbridge, all of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Oct. 18, 1984, Ser. No. 662,230
Int. Cl.[4] H05B *39/10*
U.S. Cl. 315—90 6 Claims



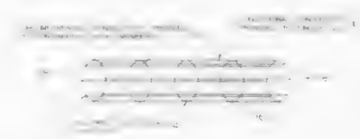
1. A system for providing bidirectional communication between an electric light having at least two sources of visible light which can be individually energized and a controller located remotely with respect to said electric light, said system comprising:
a source of voltage located at said controller for producing a voltage suitable for energizing said light sources;
a pair of electrical conductors for applying said energizing voltage to the electric light;
switch means located at the electric light for receiving said applied energizing voltage and energizing a light source in response thereto;
means located at the controller for providing an indication in response to an interruption of current flowing between said source of voltage and said energized light source;
first means located at the electric light for monitoring the integrity of said energized light source; and
second means located at the electric light for monitoring the integrity of said de-energize light source,
said switching means being responsive to said first means for monitoring such that upon failure of said energized light source energizing voltage is applied to the de-energized light source and said indicator means indicates the failure of said light source, and upon failure of the de-energized light source said energizing voltage is applied to the de-energized light source whereby said first means for monitoring causes said energizing voltage to be switched back to the good light source and said indicator means indicates the failure of said light source.

4,767,969

RF EMISSION SHIELD FOR CRT DISPLAYS

Joseph A. Green, Prince Georges County, Md., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed May 26, 1987, Ser. No. 53,763
Int. Cl.[4] H01J *1/52*
U.S. Cl. 315—85 6 Claims



1. A radio frequency emissions shield for inhibiting electromagnetic energy in the radio frequency range from being transmitted through the display face of a cathode ray tube, said shield being coaxial with the neck of said tube and comprising:
a plurality of parallel, spaced, longitudinal conductive elements which support the transverse magnetic guide mode, each of said longitudinal conductive elements having a first end and a second end;
a plurality of spaced, circular conductive elements which support the transverse electric guide mode, said circular conductive elements being orthogonal to said longitudinal conductive elements; and
said circular conductive elements being mechanically connected to a single longitudinal conductive element of said plurality of longitudinal conductive elements which give mechanical support and facilitate the RF emission shield's fabrication, said plurality of longitudinal conductive elements being electrically connected at either said first end or said second end.

4,767,970

DYNAMIC BRAKE CONTROL FOR A TAPE DRIVE SYSTEM

David R. Rodal, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

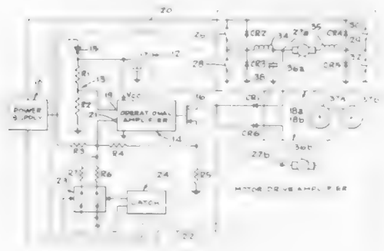
Filed Dec. 22, 1986, Ser. No. 945,734
Int. Cl.[4] H02P *3/12*
U.S. Cl. 318—375 18 Claims

1. A circuit for controlling the dynamic braking of an electromechanical apparatus actuated by a power supply, comprising:
means coupled to the power supply for storing electrical

VOL 1093 ISS 5 AG 30 1988 UMI

energy when said power supply is operative and for supplying the stored electrical energy when said power supply fails;

a control circuit including an operational amplifier coupled to the storing means for providing a brake control signal when said power supply fails;



a first voltage divider coupled from the storing means to a first input of said operational amplifier, for providing a reference voltage to said first input; and

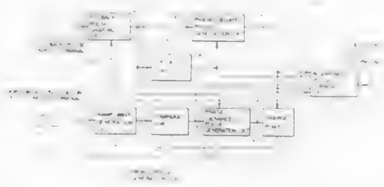
switch means electrically coupled between the control circuit and the electromechanical apparatus for initiating a separate conductive path for a braking signal in response to the brake control signal to dynamically brake the electromechanical apparatus to a stop.

4,767,971

HORIZONTAL BLANKING PULSE GENERATION CIRCUIT USED FOR DISPLAY UNIT WITH CATHODE-RAY TUBE

Makoto Onozawa; Kouji Kitou, both of Yokohama, and Michitaka Osawa, Fujisawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 18, 1987, Ser. No. 122,341
Claims priority, application Japan, Nov. 19, 1986, 61-274198
Int. Cl.[4] H01J *29/52*
U.S. Cl. 315—384 7 Claims



1. A horizontal blanking pulse generation circuit used for a display unit having a cathode-ray tube, comprising:

(a) a flyback pulse shaping circuit for receiving a flyback pulse and shaping said flyback pulse at a predetermined voltage thereby to generate a rectangular wave signal,

(b) a rear pulse generation circuit connected to the flyback pulse shaping circuit and supplied with a rectangular wave signal from said flyback pulse shaping circuit for producing a pulse delayed in phase behind the rectangular wave signal,

(c) a front pulse generation circuit including a ramp wave signal generation circuit for receiving a horizontal oscillation pulse and converting said horizontal oscillation pulse into a ramp wave signal, a charge pump circuit connected to the rear pulse generation circuit for receiving a phase-delayed pulse, a comparator circuit connected to the ramp wave signal generation circuit and the charge pump circuit for comparing the voltage value of the ramp wave signal with the voltage value of an output signal of the charge pump circuit and generating a front pulse when said two signals coincide with each other, and a phase-advanced pulse generation circuit supplied with a signal synchronous with the output signal of the comparator circuit and the rectangular wave signal of the flyback pulse shaping circuit for producing a phase-advanced pulse having a duration corresponding to the phase difference between the synchronous signal and the rectangular wave signal, said charge pump circuit producing the output signal proportional to the difference between the duration of the phase-delayed pulse of the rear pulse generation circuit and the duration of the phase-advanced pulse of the phase-advanced pulse generation circuit and supplying the output to the comparator circuit, and

(d) a blanking pulse generation circuit connected to the front pulse generation circuit and the rear pulse generation circuit for generating a blanking pulse starting with the front edge of a front pulse generated by the front pulse generation circuit and ending with the rear edge of a rear pulse generated by the rear pulse generation circuit.

4,767,972

NUMERICAL CONTROL EQUIPMENT

Hayao Hirai, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1986, Ser. No. 906,716
Claims priority, application Japan, Dec. 2, 1985, 60-270933
Int. Cl.[4] G06F *13/00*
U.S. Cl. 318—565 7 Claims



1. A numerical control equipment, comprising:

a numerical control portion including a central processing unit, a storage means for storing a program, arithmetic logic means for performing operations according to said program, said program being read out by said central processing unit, an input interface, an output interface, and switching means responsive to an instruction from said central processing unit to selectively supply image informations from said central processing unit and from said input interface to said output interface, said central processing unit being adapted to produce a synchronizing signal;

external image means connected to said input interface for supplying an image signal thereto, and connected to said central processing unit for receiving said synchronizing signal such that a synchronized image signal is supplied from said external image means to said input interface; and

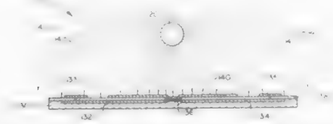
display means connected to said output interface, said display means being adapted to display, selectively, said image informations from said central processing unit and said input interface, said display means being connected to said central processing unit for receiving said synchronizing signal such that said display means is driven according to said synchronizing signal.

4,767,973

SYSTEMS AND METHODS FOR SENSING POSITION AND MOVEMENT

Stephen C. Jacobsen; Richard P. Phillips, and John E. Wood, all of Salt Lake City, Utah, assignors to Sarcos Incorporated, Salt Lake City, Utah

Filed Jul. 6, 1987, Ser. No. 70,349
Int. Cl.[4] G01R *29/12*; H04R *19/00*
U.S. Cl. 318—652 44 Claims



1. A sensor system for detecting the position and movement of an object, the system comprising:

means for producing an electric field which emanates from the object;

a field-effect transistor positioned in the vicinity of the object so as to be located directly within said electric field, the field-effect transistor having a source region, a drain region, and a channel region, the source and drain regions being separated by the channel region; and

means for detecting variations caused by said electric field in the conductivity of the channel region of the field-effect transistor, whereby information about the position and movement of the object relative to the channel region of the field-effect transistor can be obtained.

4,767,974

AUTOMATIC UNIVERSAL HEAD

Tsuneaki Kadosawa, Ninomiya, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1986, Ser. No. 897,426
Claims priority, application Japan, Aug. 29, 1985, 60-190473
Int. Cl.[4] G05B *1/06*
U.S. Cl. 318—663 1 Claim



1. A universal head for mounting a camera and rotating the camera in a designated direction comprising:

(a) motor means for rotating the camera;

(b) position detecting means for detecting a rotating position of the camera, and for outputting a position signal of the camera;

(c) an instruction signal generator for setting a rotating position where the camera should be rotated, and for generating a position instruction signal to be instructed;

(d) a difference signal generator for generating a difference signal concerning a difference between the position signal and the position instruction signal to supply power to said motor means;

(e) delay circuit means for outputting a delay signal which is made by delaying the position instruction signal for a predetermined time; and

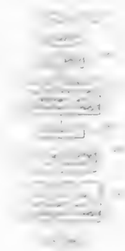
(f) a comparator for outputting a coincident signal when the position instruction signal coincides with the delay signal and prohibiting the difference signal from being supplied to said motor means.

4,767,975

CONTROLLER FOR INDUCTION MOTORS

Peter J. Unsworth, Lewes, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 649,715, Sep. 12, 1984, abandoned. This application Aug. 4, 1986, Ser. No. 894,500
Claims priority, application United Kingdom, Sep. 15, 1983, [redacted]
Int. Cl.[4] H02P *5/40*
U.S. Cl. 318—729 20 Claims



1. A power controller for an induction motor which operates from an alternating current supply having at least two phases, comprising:

a first SCR device connected between one phase of said alternating current supply and said induction motor;

a second SCR device connected between a second phase of said alternating current supply and said induction motor;

SCR firing current control means, connected to control inputs of each of the SCR devices, for supplying firing signal thereto;

sampling means, coupled to at least one phase of supply to said motor, for periodically sampling a back e.m.f. of said at least one phase of the motor;

means, coupled to said sampling means, for detecting said sampled back e.m.f. falling below a predetermined value as an indication of stalling;

counting means, connected to said detecting means, for maintaining a stall count, said counting means controlled to increment said stall count whenever said back e.m.f. falls below said predetermined value;

reset means, coupled to said counting means, for resetting said timer to a zero count at predetermined intervals;

current/voltage determining means, coupled to said at least one phase of supply to said motor, for determining a current and a voltage in said at least one phase of supply to the motor;

phase lag determining means, coupled to said current/voltage determining means, for determining a phase lag of said determined voltage behind said determined current in said at least one phase of supply to the motor;

controlling means, coupled to said SCR firing current control means, for controlling said SCR firing current control means to generate phase angles variable in dependence on said phase lag of voltage to current; and

means for adjusting said phase angles dependent on said stall count signal, said angles being adjusted such that a single stall count signal causes less than a full on condition of said motor.

VOL
1093
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4,767,976

CONTROL SYSTEM FOR PWM INVERTER

Nobuyoshi Mutoh, Katsuta; Akiteru Ueda, Ibaraki; Motonobu Hattori, Chiba; Satoshi Ibori, Funabashi; Hideyuki Shimonabe, Chiba, and Kenji Nandoh, Matsudo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1987, Ser. No. 37,853
Claims priority, application Japan, Apr. 14, 1986, 61-84130
Int. Cl.[4] H02P 5/40
U.S. Cl. 318—808 9 Claims



1. A control system for a PWM inverter which drives an induction motor, said control system comprising:
a PWM inverter of the constant V/f ratio type;
current component detecting means for detecting an effective current from the motor current of the induction motor, said effective current being proportional to a load applied to said induction motor;
frequency setting means for setting the output frequency of said inverter;
flux setting means for setting the amount of magnetic flux generated in said induction motor;
correcting-frequency calculating means for calculating a frequency correcting quantity proportional to said effective current;
correcting-flux calculating means for calculating a flux correcting quantity proportional to said effective current;
comparator means for comparing the detected effective current with a predetermined value;
frequency command forming means for forming a frequency command signal for said inverter by adding said frequency correcting quantity to said set output frequency, when it is judged by said comparator means that said effective current is less than said predetermined value;
voltage command forming means for forming a voltage command signal for said inverter by producing the sum of said set amount of magnetic flux and said flux correcting quantity and by producing the product of said sum and said frequency command signal, when it is judged by said comparator means that said effective current is less than said predetermined value; and
inverter control means for controlling said inverter on the basis of said frequency command signal from said frequency command forming means and said voltage command signal from said voltage command forming means.

4,767,977

BATTERY CHARGER

Kenneth R. Fasen, San Diego; Kim R. Rogers, Vista, and Lee J. Schwartz, San Diego, all of Calif., assignors to HM Electronics, Inc., San Diego, Calif.

Filed Jan. 8, 1987, Ser. No. 1,654
Int. Cl.[4] H02J 7/00
U.S. Cl. 320—20 29 Claims

1. A battery charger for charging a battery, comprising:
a fast charge line, connected to the battery, for providing a constant high charging current thereto, and for causing the battery to be charged in a high charge mode;
a trickle charge line, connected to the battery, for providing a constant low charging current thereto simultaneously with the high charging current, and for causing the battery to be charged in a trickle charge mode;
a current regulating means, connected to said fast charge line, for regulating the high charging current flowing therein;
a slope detecting means, responsive to the battery being charged, for generating a battery voltage peal indicating



signal, when the voltage starts to decrease following the peak charging voltage of the battery;
said slope detecting means including means for following the battery voltage and retaining it for predetermined periods of time;
said slope detecting means including means for comparing the retained voltage and the present voltage to generate said peak indicating signal when the present battery voltage is less than the retained battery voltage; and
a peak holding means, responsive to said peak indicating signal, to cause the charger to switch abruptly from the high charge mode to the low trickle charge mode.

4,767,978

HYBRID SWITCHING CIRCUIT IN A DC TO DC CONVERTER

Starlin M. Reid, Porter, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 25, 1986, Ser. No. 855,569
Int. Cl.[4] G05F 1/56
U.S. Cl. 323—282 11 Claims



1. For use in a well logging sonde lowered on a logging cable, a high temperature DC to DC converter comprising:
(a) a transformer having two separate windings, the windings being
(1) a primary winding with two terminals, and
(2) a secondary winding with two terminals;
(b) a full wave rectifier bridge having

(1) a pair of input terminals connected to the two terminals of said transformer secondary winding, and
(2) a pair of output terminals for forming thereacross a DC output voltage having an AC ripple component thereon resulting from rectifying action of said rectifier bridge;
(c) an output circuit having an output means connected to one of the pair of output terminals of said rectifier bridge to obtain a DC voltage having a polarity determined by selection of the output terminals of said rectifier bridge; and
(d) wherein one of said transformer primary terminals is connected to a chopped DC supply source for said transformer, and the opposite primary terminal is connected for feedback from said output means thereby reducing flyback voltage in the transformer circuit and reducing transformer power dissipation.

4,767,979

SWITCHING CIRCUIT DEVICE USING CURRENT MIRROR CIRCUITS

Hiroshi Tanigawa, Saitama, Japan, assignor to Toko, Inc., Japan

Filed Jul. 1, 1987, Ser. No. 68,523
Claims priority, application Japan, Jul. 10, 1986, 61-105753
Int. Cl.[4] G05F 3/26
U.S. Cl. 323—316 2 Claims



1. A switching circuit device using current mirror circuits for selecting any desired one of a plurality of signal currents, comprising:
a first current mirror circuit for providing a predetermined mirror current at a signal input stage;
a first group of current mirror circuits for causing signal currents to be superimposed upon said predetermined mirror current so that currents resulting from said superimposition are derived as mirror currents;
a second group of current mirror circuits to which the mirror currents derived from said first group of current mirror circuits are supplied;
a second current mirror circuit connected at a common point to output stages of said second group of current mirror circuits and adapted to supply to said common point a mirror current equal to said mirror current provided by said first current mirror circuit;
a group of switches adapted to render operative one of said second group of current mirror circuits;
an output terminal led out of the connection point between said common point and the output stage of said second current mirror circuit, wherein any one current mirror circuit in said second group of current mirror circuits is rendered operative by operating said group of switches so that a desired one of said plurality of signal currents is selected and derived from said output terminal.

4,767,980

INDUCTANCE MULTIPLIER CIRCUIT

William I. H. Chen, Bedford; Philip Dillon, Arlington, and Glenn Yancey, Burleson, all of Tex., assignors to Reliance Comm/Tec Corporation, Chicago, Ill.

Filed Oct. 22, 1987, Ser. No. 111,215
Int. Cl.[4] H01F 27/42
U.S. Cl. 323—356 18 Claims



1. An inductance multiplier circuit comprising:
(a) a transformer having inductively coupled first, second and third windings;
(b) first and second inputs connected respectively to first terminals of said first and second windings such that said first and second windings induce a voltage signal in said third winding only when said first and second windings are excited by a differential signal having an AC component appearing at said inputs;
(c) means connected to respective second terminals of said first and second windings for detecting only said AC component of said differential signal after said differential signal has passed through said first and second windings and producing therefrom a corresponding detected signal; and
(d) current source means connected to said third winding and responsive to said detected signal for producing a corresponding current signal which is provided to said third winding in a manner so as to oppose current flow therein due to said voltage signal induced in said third winding, thereby reducing current flow in said first, second and third windings, and providing a greater apparent inductance to said differential signal at said first and second terminals than the actual inductance of said transformer.

4,767,981

MOISTURE CONTENT DETECTOR
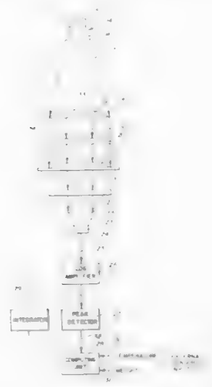
Ivars E. Pakulis, Elgin, Ill., assignor to Advanced Moisture Technology, Inc., Buffalo Grove, Ill.

Filed Jun. 2, 1986, Ser. No. 869,303
Int. Cl.[4] G01R 2704
U.S. Cl. 324—58.5 A 13 Claims

1. A moisture content detector comprising:
generating means for generating and transmitting a beam of microwave radiation having a first preselected cross-sectional area;
means for collimating said beam;
receiving means for receiving only a preselected portion of said beam having a second preselected cross-sectional area less than said first crosssectional area;
conveying means for disposing objects seriatim in said beam between said generating means and said receiving means, said beam portion being preselected to be of lesser cross-

VOL 1093 ISS 5 AG 30 1988 UMI

sectional area of the individual objects to be disposed in said beam portion; and



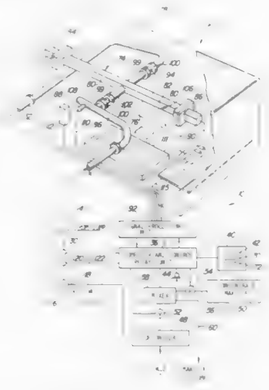
attenuation determining means for determining an attenuation of said beam portion caused by the objects corresponding to the moisture content thereof.

4,767,982

CONCENTRATION DETECTION SYSTEM

H. Keith Florig, and David A. Purta, both of Pittsburgh, Pa., assignors to Master Chemical Corporation, Perrysburg, Ohio

Filed Jun. 1, 1987, Ser. No. 56,543
Int. Cl.[4] G01R *27/04*
U.S. Cl. 324—58.5 A 28 Claims



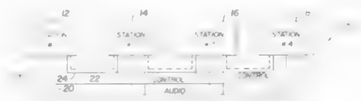
1. A system for measuring the concentration of each component of a two component liquid comprising, in combination:
a longitudinally extending metal microwave wave guide;
a transmitting source located at one end of said wave guide for transmitting a microwave signal through said wave guide;
a microwave detector located at the other end of said wave guide for receiving said microwave signal;
a measuring tube extending transversely through said wave guide intermediate its ends;
means for flowing said liquid through said measuring tube;
said detector generating an electrical signal which is a function of the microwave signal received from said source through said wave guide, measuring tube and liquid;
and computer means connected to said microwave detector for computing the concentration of each component in said liquid as a function of said electric signal.

4,767,983

TEST FIXTURE FOR ELECTRONIC DEVICE PACKAGES

Wayne K. Pfaff, 309 Steeplechase, Irving, Tex. 75062

Filed Jan. 5, 1987, Ser. No. 421
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—158 F 10 Claims



1. A test fixture for supporting electronic device packages comprising:
(a) a test fixture housing having a longitudinal axis and an upper surface defining an opening, a side surface defining an opening, and a cavity communicating with said upper opening and said side opening;
(b) a first printed circuit board mounted in said cavity parallel with said longitudinal axis supporting a first circuit having a plurality of spaced conductive lands along at least a portion of a longitudinal edge of one surface thereof;
(c) a plurality of sockets mounted on the upper surface of said first printed circuit board electrically connected to said first circuit;
(d) a second printed circuit board mounted in said cavity substantially parallel with said first printed circuit board shiftable along said longitudinal axis between a first position and a second position with respect to said housing and supporting a second circuit having a plurality of spaced conductive lands along at least a portion of the longitudinal edge of the surface thereof facing said one surface of said first circuit board, said second circuit including an edge connector accessible through said side opening; and
(e) contact means mounted intermediate said first printed circuit board and said second printed circuit board having a plurality of conductive contact members mounted therein providing electrical communication between lands on said first printed circuit board and lands on said second printed circuit board only when said second printed circuit board is in a first position.

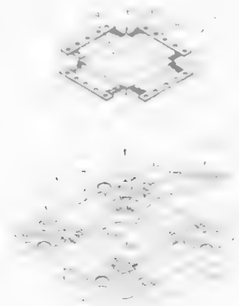
4,767,984

PROTECTIVE FIXTURE FOR CHIP CARRIER

Roel J. Bakker, York, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 784,917, Oct. 4, 1985, abandoned. This application Dec. 21, 1987, Ser. No. 139,173
Int. Cl.[4] G01R *31/02;* B23P *19/00;* B65D *85/30*
U.S. Cl. 324—158 F 15 Claims

1. A protective fixture for a chip carrier, the chip carrier being of the type comprising a flat carrier body having oppositely facing major surfaces and circumferential carrier edge portions, electrical leads extending from the carrier edge portions in side-by-side spaced-apart relationship, the protective fixture comprising a fixture body of insulating material having oppositely facing first and second major surfaces and circumferential fixture edge portions, a centrally located carrier mounting zone on the first major surface, carrier locating means for locating the carrier body in the mounting zone with the electrical leads extending towards the fixture edge portions, the protective fixture being characterized in that:
a plurality of tool clearance openings extend through the fixture body from the first major surface to the second major surface, the tool clearance openings being between the fixture edge portions and the carrier edge portions of a chip carrier positioned in the carrier mounting zone, the tool clearance openings being in surrounding relationship to the carrier mounting zone, and
chip carrier retention means are provided for clamping a chip carrier in the carrier mounting zone to the fixture, the carrier retention means being between adjacent tool clearance openings such that each chip carrier retention means cooperates with a respective corner of the chip carrier, each chip carrier retention means having an end portion which is movable from a first position to a second position, the second position being defined such that the end of the chip carrier retention means is not positioned in the mounting zone, thereby allowing the chip carrier to be



positioned in the carrier mounting zone under zero insertion force conditions, the first position being such that the respective ends of the carrier retention means are positioned in the carrier mounting zone in engagement with the chip carrier when the chip carrier is inserted therein, so that the chip carrier is maintained in the mounting zone of the fixture whereby,
the leads extending from a chip carrier clamped in the carrier mounting zone will extend over the lead-supporting surfaces, towards the circumferential fixture edge portions and at least partially across the tool clearance openings so that operations, such as lead trimming and lead forming operations, can be performed on the leads and the fixture can be used as a connector for connecting the leads to terminals in a testing apparatus.

4,767,985

CLAW GRIP CONTACT PROBE FOR FLAT PACKS

Joseph W. Shearer, Jr., Ellicott City, and Sylvio T. Phaneuf, Annapolis, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 779,402, Sep. 24, 1985, abandoned. This application Dec. 8, 1987, Ser. No. 131,299
Int. Cl.[4] G01R *1/06, 31/02*
U.S. Cl. 324—158 P 9 Claims



1. A probe holding device for attachment to a multi-lead electrical flat pack soldered to a printed circuit board to permit testing thereof, said probe holding device comprising:
(a) a generally rectangular unitary body having at each corner gripping means for clamping said unitary body to said electrical flat pack;
(b) an outwardly extending flared portion defined on each of said gripping means;
(c) sliding plate means having two oval cavities extending therethrough, each oval cavity surrounding a pair of said gripping means and free to relatively move along said gripping means for exerting lateral pressure on said flared portion of said gripping means to maintain said unitary body in a clamped relationship with said electrical flat pack; and,
(d) contact probe holding means defined on said sliding plate means for holding a plurality of contact probes.

4,767,986

OSCILLATING TRANSDUCERS FOR MONITORING THE SURFACE OF ELONGATED OBJECTS

Bengt H. Törnblom, Vikhus Rytterne, S-725 90 Västerås, Sweden

Filed Nov. 24, 1986, Ser. No. 933,903
Claims priority, application Sweden, Nov. 25, 1985, 8505541
Int. Cl.[4] G01N *27/82*
U.S. Cl. 324—227 16 Claims



1. A device for monitoring the surface of an elongated test object for a discontinuity, comprising:
at least two transducers with drive means drivably connected thereto, for causing said at least two transducers to move relative to said surface;
said at least two transducers having different rotation centers and rotating in respective curved paths;
said centers being displaced relative to each other in the longitudinal direction of said test object; and
said respective curved paths at least partially covering the surface of said test object in longitudinally and laterally overlapping scanning paths.

4,767,987

METHOD AND APPARATUS FOR MONITORING FILM THICKNESSES BY SENSING MAGNETIC INTERACTION BETWEEN MEMBERS MOVABLE TO A FILM THICKNESS DISTANCE

Robert M. Montgomery, Indialantic, Fla., assignor to Harris Graphics Corporation, Melbourne, Fla.

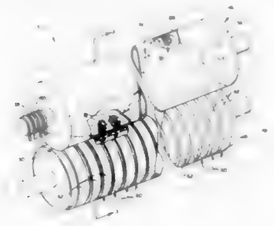
Continuation of Ser. No. 560,324, Dec. 12, 1983, Pat. No. 4,661,774. This application Dec. 4, 1986, Ser. No. 938,047
The portion of the term of this patent subsequent to Apr. 28, 2004, has been disclaimed.
Int. Cl.[4] G01B *7/10;* G01R *33/12*
U.S. Cl. 324—231 8 Claims

1. An apparatus for monitoring the thickness of a film, said apparatus comprising:
a first member made from a material having a relatively high magnetic permeability, said first member being located on one side of the film;

VOL 1093 ISS 5 AG 30 1988 UMI

magnetic means for providing a magnetic field having a flux density and a substantially constant magnetomotive force, said magnetic means being located on the other side of the film;

means, independent of the film, for effecting relative movement between said magnetic means and said first member such that said magnetic means and said first member periodically move to and away from a distance which is a function of the film thickness, said magnetic field of said



magnetic means interacting with said first member such that the flux density of said magnetic field varies in accordance with the spatial separation between said magnetic means and said first member; and

sensor means for sensing variations in the flux density of said magnetic field during said relative movement and for generating a signal indicative thereof, the generated signal when said first member and said magnetic means are at said distance which is a function of the film thickness being indicative of the film thickness.

4,767,988

PRECISION MAGNETOMETER ORIENTATION DEVICE

Harold S. Wilson, Victoria, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Jun. 13, 1986, Ser. No. 877,646

Claims priority, application Canada, Jun. 20, 1985, 484692

Int. Cl.[4] G01C *17/28;* **G01V** *3/40;* **G05D** *1/00*

U.S. Cl. 324—247 **11 Claims**



1. Apparatus for determining the orientation of a moving platform with respect to a magnetic field vector comprising:

a three component magnetic field sensor mounted on said platform, said sensor having a first plurality of vector output signals corresponding to said magnetic field vector at various moments of time; and

computer means programmed for receiving and averaging said first plurality of output signals to obtain a time-average vector;

subtracting said time average vector from each of said vector output signals to obtain a second plurality of normalized vectors;

selecting pairs of said normalized vectors;

calculating the cross products of each of said pairs of normalized vectors to obtain third and fourth pluralities of vectors, said third plurality being generally parallel to the direction of said magnetic field vector and said fourth plurality being generally antiparallel to the direction of said magnetic field vector;

averaging said third plurality of vectors to obtain a first vector which is closely parallel to said magnetic field vector.

4,767,989

MOUNTING ARRANGEMENT FOR MAGNETIC FIELD DETECTOR

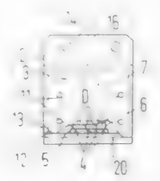
Hans P. Meyer, and Helmut Becker, both of Nuremberg, Fed. Rep. of Germany, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Dec. 24, 1985, Ser. No. 813,112

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1984, 3447327

Int. Cl.[4] G01R *33/06;* **H01L** *43/08;* **H05K** *5/00*

U.S. Cl. 324—252 **11 Claims**



9. In a magnetic field detector including a housing having at least an end wall and a plurality of side walls extending from said end wall, a support having a plurality of magnetic field dependent resistors on one surface thereof which is disposed against said end wall of said housing, a plurality of electrical contact members which are connected with said resistors within said housing and which extend through one of said side walls of said housing, and a permanent magnet disposed in said housing and having one pole face which extends in the direction of said surface of said support and which lies against said support; the improvement wherein: said side walls are arranged such that said housing is open on one side; said permanent magnet is disposed in said housing such that a space is provided within said housing between at least one side of said permanent magnet and an adjacent one of said side walls; the portions of said contact members within said housing are provided in said space adjacent, but spaced from, said magnet; and said contact members are connected with said magnetic field dependent resistors via respective wires disposed in said housing.

4,767,990

NUCLEAR MAGNETIC RESONANCE EXAMINATION METHOD

Michael H. Kuhn, Hamburg, and Dietmar W. Kunz, Quickborn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 27, 1986, Ser. No. 879,701

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1985, 3524682

Int. Cl.[4] G01R *33/20*

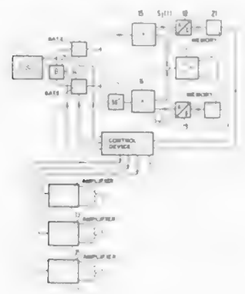
U.S. Cl. 324—309 **8 Claims**

1. A nuclear magnetic resonance examination method for selective excitation of a limited volume of a body, comprising the steps of

exposing the body to a homogeneous static magnetic field;

exposing said body to a high frequency magnetic field, said high frequency magnetic field being perpendicular to said static magnetic field, wherein said high frequency magnetic field provides at least three successive pulses, wherein a first pulse of said three pulses flips nuclear magnetization through at least approximately 90°, wherein a second pulse of said three pulses consists of a 180° pulse, and wherein a third pulse of said three pulses flips said nuclear magnetization through at least approximately 90° with a phase position being selected to flip said nuclear magnetization into one of a direction of said static magnetization field or an opposite direction; and

exposing said body to at least one gradient magnetic field in the direction of said static magnetic field during at least



one of said three pulses, wherein at least one of said three pulses is frequency modulated during said at least one gradient magnetic field, and wherein a time interval from the center of said first pulse to the center of said second pulse is equal to the time interval from the center of said second pulse to the center of said third pulse.

4,767,991

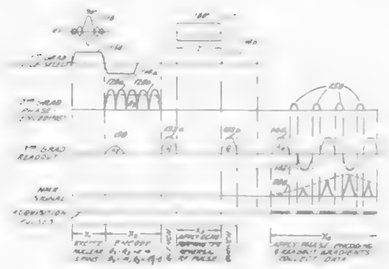
METHOD OF HIGH SPEED IMAGING WITH IMPROVED SPATIAL RESOLUTION USING PARTIAL K-SPACE ACQUISITIONS

Richard R. Rzedzian, Lexington, Mass., assignor to Advanced NMR Systems, Inc., Woburn, Mass.

Continuation-in-part of Ser. No. 937,529, Dec. 3, 1986, Pat. No. 4,740,748. This application Aug. 17, 1987, Ser. No. 85,568

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—312 **11 Claims**



1. A method of deriving image information at high speed from an object using nuclear magnetic resonance signals in which only a portion of the spatial frequency domain (k-space) is sampled, comprising the steps of:

(a) subjecting an object to continuous static magnetic field along an axis, said magnetic field having a strength between about 0.5 and 5 Tesla;

(b) exciting nuclear spins in a selected plane of the object by applying to the object a first radio frequency pulse together with a first magnetic field gradient perpendicular to said plane comprising a slice selection gradient, such that free induction decay signals are produced by said excited nuclear spins in said plane;

(c) applying to the object an encoding sequence comprising a second magnetic field gradient of predetermined magnitude having a direction parallel to said plane together with a third magnetic field gradient of predetermined magnitude having direction also parallel to said plane and perpendicular to said second gradient.

(d) applying a second radio frequency pulse to the object;

(e) applying to said object a further slice-selection gradient such that the total dephasing effect of the slice selection gradient applied in step (b) is as close to zero as possible;

(f) applying a sequence comprising a series of applications to the object of said second magnetic field gradient defining phase encoding gradients and said third magnetic field defining readout gradients, said sequence of second and third magnetic field gradients being completed within a period of time less than about 100 milliseconds and resuling in a trajectory through only a portion of k-space based on the pre-determined magnitude of said second and third magnetic field gradients applied during said encoding sequence.

(g) acquiring data to form a magnetic resonance image by sampling nuclear magnetic resonance signals output from said object during the application of said readout gradients to form a series of data values in the time domain, formatting said time domain data into modified data estimating the spatial frequencies of the object and transforming said modified data into spatial domain data for presentation as an image of the object.

4,767,992

MAGNETIC RESONANCE IMAGING SYSTEM

Akihide Ueyama, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1987, Ser. No. 101,400

Claims priority, application Japan, Sep. 29, 1986, 61-228235

Int. Cl.[4] G01R *33/20*

U.S. Cl. 324—313 **8 Claims**



1. In a magnetic resonance imaging system including means for developing a static magnetic field, means for developing a gradient magnetic field to be applied to said static magnetic field, means for applying to an object to be examined a high frequency excitation pulse to excite a magnetic resonance, means for detecting the magnetic resonance generated in the object, means for controlling said static magnetic field developing means, gradient magnetic field developing means, excitation pulse generating means and detecting means so that the gradient magnetic field and excitation pulse are applied in the object placed in the static magnetic field at predetermined timings, and a magnetic resonance signal generated in the object is detected; and image processing means for obtaining magnetic resonance image data on the basis of the magnetic resonance signal as detected by said detecting means;

the improvement wherein said control means includes multi-slice control means for sequentially exciting a plurality of slices by a plurality of excitation pulses of different carrier frequencies in a common static magnetic field and a gradi-

VOL 1093 ISS 5 AG 30 1988 UMI

ent magnetic field, to obtain magnetic resonance data of the plurality of slices during one excitation repetition period, and for effecting a multi-slice imaging by a predetermined number of repetitive excitations, and adjustment-/control means for operating said multi-slice control means in order to adjust the adjustment-required parameters of the magnetic resonance imaging system, and for causing said adjustment/control means to execute the adjustment of the adjustment-required parameters different with said slices subject to the imaging, in connection with the multi-slice imaging.

4,767,993

COIL SYSTEM FOR MAGNETIC RESONANCE IMAGING

Masatoshi Hanawa, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 20, 1987, Ser. No. 75,758
Claims priority, application Japan, Jul. 24, 1986, 61-172744
Int. Cl.[4] G01R *33/20*
U.S. Cl. 324—318 11 Claims



1. A coil system for magnetic resonance imaging in a magnetic resonance imaging system for applying a predetermined excitation pulse to an object to be examined arranged in a predetermined magnetic field to generate a magnetic resonance phenomenon, and for detecting and acquiring magnetic resonance signals generated by the magnetic resonance phenomenon to reconstruct a magnetic resonance image of the object, said coil system transmitting the excitation pulse and receiving the magnetic resonance signals, and comprising:

first coil means for transmitting the predetermined excitation pulse;

second and third coil means, arranged on a propagation path of the magnetic resonance signal at a position closer to the object than said first coil means in directions orthogonal to each other, for receiving the magnetic resonance signals; and

a pair of tuning means, respectively provided in association with said second and third coil means, for tuning said second and third coil means slightly offset from accurate tuning points so that voltage phases of the magnetic resonance signals received through said second and third coil means coincide with each other.

4,767,994

MULTI-PURPOSE VOLTAMETRIC ANALYZER

Thomas R. Hopkins, and James F. Stewart, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 10, 1986, Ser. No. 905,435
Int. Cl.[4] G01N *27/46*
U.S. Cl. 324—438 9 Claims

1. Apparatus for measuring the concentration of a substance in a solution wherein the concentration of the substance in solution can be directly correlated with the depletion of oxygen in an enzymatically catalyzed reaction of the substance, said apparatus comprising:

(a) an enzyme sensor comprising:

(i) an oxygen detector having two electrodes enclosed in a probe and having a sensitive area on the probe tip, said oxygen detector effectively producing a detector output current signal representative of the dissolved oxygen contacting said sensitive area;

(ii) a layer of at least one oxidase enzyme held against said sensitive area on the probe tip, wherein said oxidase enzyme effectively catalyzing the reaction of the substance with oxygen;

(b) electronic signal conditioning circuitry connected to said oxygen detector comprising:

(i) circuit means, having an input and an output, for converting a current signal to a voltage signal;

(ii) means for conducting said detector output current signal to the input of said circuit means wherein said detector output current signal is converted to a detector voltage signal;

(iii) means for establishing a first measurement signal at



the output of said circuit means wherein said first measurement signal is representative of the concentration of dissolved oxygen contacting said sensitive area in the absence of the enzymatically catalyzed reaction of the substance with oxygen;

(iv) means for establishing an offset correction current for said detector output current which nulls said first measurement signal; and

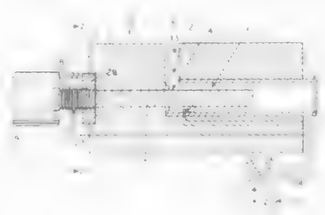
(v) means for establishing a second measurement signal at the output of said circuit means wherein said second measurement signal is representative of the concentration of dissolved oxygen contacting said sensitive area in the presence of the enzymatically catalyzed reaction of the substance with oxygen and is thereby representative of the concentration of the substance in the solution.

4,767,995

CONDUCTIVITY CELL WITH ADJUSTABLE CONCENTRIC ELECTRODES

William J. Berry, Jr., Post Office Box 2993, Durham, N.C. 27705

Filed Dec. 11, 1986, Ser. No. 940,347
Int. Cl.[4] G01N *27/07*
U.S. Cl. 324—447 5 Claims



1. A conductivity cell comprising: a solid, unitary inner electrode and an outer electrode, said outer electrode surrounding said inner electrode, a fluid passageway, said passageway formed between said inner and outer electrodes for directing fluid between, a conduit, said conduit having a fluid inlet and a fluid outlet, said conduit in communication with said passageway, temperature sensing means, said sensing means positioned within said passageway between said electrodes to respond to fluids therein, said inner electrode adjustably mounted within said outer electrode, a meter, said meter communicating with said sensing means and with said inner and outer electrodes, said meter to provide conductivity values of fluid within said conduit.

4,767,996

FAULT CURRENT DETECTION DEVICE FOR A D.C. NETWORK

Toshimasa Jinzenji, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 20, 1987, Ser. No. 4,430
Claims priority, application Japan, Jan. 20, 1986, 61-9090; Jan. 20, 1986, 61-9091; Mar. 6, 1986, 61-49163
Int. Cl.[4] G01R *31/02*
U.S. Cl. 324—522 7 Claims



1. A fault current detection device for a d.c. network, comprising:

sampling means for obtaining a series of sample values by sampling, every sampling period, a current flowing through the d.c. network;

first comparator means for comparing a current sample value I_n obtained currently by said sampling means with a preceding sample value I_{n-1} to determine a sign of a deviation $\Delta I = I_n = I_{n-1}$;

calculation means for calculating a variable ΔI_n representative of an amount of current variation with respect to said current sample value I_n on the basis of a difference $I_n - J_{n-1}$ between said current sample value I_n and a parameter J_{n-1} obtained by correcting, every sampling period, and weighting sample values within a preceding constant time period when said deviation ΔI is positive and on the basis of a difference $I_n - J_{n-1}$ between said current sample value I_n and a new parameter J_{n-1} obtained by substituting said parameter J_{n-1} for said current sample value I_n when said deviation ΔI is negative; and

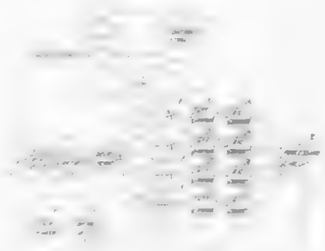
second comparator means for comparing said variable ΔI_n with a preset value ΔI_r to provide a fault current detection signal when $\Delta I_n > \Delta I_r$.

4,767,997

CIRCUIT ARRANGEMENT FOR PROCESSING SIGNALS FROM A NUCLEAR DETECTOR

Henrik K. Nielsen, Copenhagen N, Denmark, assignor to Forsogsanlaeg Riso, Denmark

Filed Jun. 17, 1986, Ser. No. 875,163
Claims priority, application Denmark, Jun. 19, 1985, 2784/85
Int. Cl.[4] H03K *5/01, 5/15*
U.S. Cl. 328—108 2 Claims



1. A circuit for processing randomly occurring pulse-shaped signals comprising:

(a) signal delaying means;

(b) signal input means for receiving pulse-shaped signals and applying such received signals to said signal delaying means;

(c) signal processing means;

(d) at least three signal modifying paths coupling said signal delaying means to said signal processing means, each signal modifying path including:

(i) a signal modifying device for receiving a pulse-shaped signal from said signal delaying means, modifying such signal to produce a digital signal and applying such digital signal to said signal processing means independently of signal modification by the signal modifying devices in the other signal modifying paths; and

(ii) an electronic switch normally isolating the associated signal modifying device from said signal delaying means and operative to selectively connect the associated signal modifying device to said signal delaying means for receipt of a delayed pulse-shaped signal therefrom, each signal modifying device requiring a time period for modifying a pulse-shaped signal that is greater than the minimum interval between consecutive pulse-shaped signals received by said signal input means;

(e) a signal discriminator connected to said signal input means for detecting a received signal before passage thereof by said signal delaying means and generating a discrimination signal in response to the received signal; and

(f) control means responsive to the discrimination signal for making one of said electronic switches operative for a predetermined period at least as long as the duration of the received signal detected by said discriminator.

4,767,998

ACTIVE FILTER USING LOW GAIN AMPLIFICATION STAGES

Arthur D. Delagrange, Mt. Airy, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

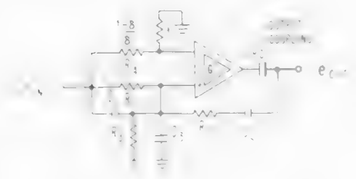
Filed Feb. 19, 1987, Ser. No. 16,694
Int. Cl.[4] H03F *1/34*
U.S. Cl. 330—107 7 Claims

1. A high frequency active filter comprising:

an amplifier having an open loop gain consisting of between

VOL 1093 ISS 5 AG 30 1988 UMI

one and three, said amplifier having a positive input terminal, a negative input terminal, and an output terminal, the impedance between the negative input terminal and the output terminal being infinite, and



means connected to said terminals for frequency filtering signals inputted at the input terminals and outputted at the output terminal,

said filter being configured according to the transfer function as follows:

$$\frac{e_{out}}{e_{in}} = \frac{S^2 + \frac{[(\beta-\delta)R_1C_1+(\alpha-\delta)R_2C_2-\delta R_1C_2]}{(\beta-\delta)R_1R_2C_1C_2}S + \frac{(\alpha-\delta)}{(\beta-\delta)R_1R_2C_1C_2}}{S^2 + \frac{[R_1C_1+R_2C_2+(1-G)R_1C_2]}{R_1R_2C_1C_2}S + \frac{1}{R_1R_2C_1C_2}}$$

wherein:

amplifier circuit input e_{in} and amplifier circuit output e_{out} are terminals of an amplifier circuit which comprises the amplifier,

α is an attenuator connected between the circuit input e_{in} and, through resistor R_1, to the positive input terminal of the amplifier,

β is an attenuator connected between the circuit input e_{in} and through capacitor C_1, to the positive input terminal of the amplifier,

δ is an attenuator connected between the circuit input e_{in} and the negative input terminal of the amplifier,

R_2 and C_2 comprise feedback from the circuit output e_{out} to the positive input terminal of the amplifier, and

G is the open loop gain of the amplifier.

4,767,999

METHOD OF AND APPARATUS FOR RADIO-FREQUENCY GENERATION IN RESONATOR TANK CIRCUITS EXCITED BY SEQUENTIAL PULSES OF ALTERNATELY OPPOSITE POLARITY

Peter VerPlanck, Sudbury, Mass., assignor to Megapulse, Inc., Bedford, Mass.

Filed Nov. 12, 1986, Ser. No. 929,754
Int. Cl.[4] H03B *3/00*
U.S. Cl. 331—166 **11 Claims**

1. A method of exciting a resonant circuit to generate radio-frequency oscillations, that comprises, generating spaced half-cycle pulses to a resonator circuit to excite radio-frequency oscillations therein, tuning the frequency of the resonant circuit to have a period 1/N that of the period between successive similar polarity pulses, where N is an odd integer greater than 1, so as to generate oscillations at the Nth harmonic of what would be a full period of said pulses, and adjusting the value of N and the fixed width and amplitude of the pulses to provide appropriate harmonic relationships of pulse repetition frequency and the harmonic oscillation frequency excited in the resonant circuit void of the constraint of a relationship between pulse and resonant circuit half cycles, the energy applied to the resonant circuit substantially compensating for an



amount of dissipation of harmonic oscillation previously excited in the resonant circuit.

4,768,000

MONOLITHIC DOUBLE BALANCED SINGLE SIDEBAND MODULATOR

Anthony M. Pavio, Jr., and Scott D. Thompson, both of Collin, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 13, 1987, Ser. No. 37,770
Int. Cl.[4] H03C *1/42, 1/60*
U.S. Cl. 332—31 T **20 Claims**



1. A modulator, comprising:

(a) a first pair of semiconductor devices, each device having gate, source and drain electrodes, each said drain being coupled to a first predetermined reference voltage source and a current generator coupled between both source electrodes of said first pair and a second predetermined reference voltage source lower than said first voltage source,

(b) a second pair of semiconductor devices, each device having gate, source and drain electrodes, each said drain being coupled to said first predetermined reference voltage source and a current generator coupled between both source electrodes of said second pair and said second predetermined reference voltage source,

(c) means coupled to one of said gate electrodes of said first pair and one of said gate electrodes of said second pair to provide a signal of a first frequency to each of said one gate electrodes having a ninety degree phase difference,

(d) means coupled to the other of said gate electrodes of said first pair and the other of said gate electrodes of said second pair to provide a signal of a second frequency to each of said other gate electrodes having a ninety degree phase difference, and

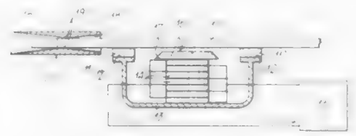
(e) output means coupled to said first source of voltage.

4,768,001

MICROWAVE PHASE SHIFTER WITH PIEZOELECTRIC CONTROL

Bernard Chan-Son-Lint, St Orens De Gameville; Pierre Borderies, and Christian J. Pouit, both of Toulouse, all of France, assignors to Office National d'Etudes et de Recherches Aerospatiales (ONERA), Chatillon, France

Filed Apr. 29, 1986, Ser. No. 857,767
Claims priority, application France, Apr. 30, 1985, 85 06536
Int. Cl.[4] H01P *1/18;* **H01Q** *3/26, 3/32, 13/00*
U.S. Cl. 333—159 **25 Claims**



1. A microwave phase shifter comprising

a dielectric waveguide having a flat side and periodic spaced perturbations for transforming said waveguide into an antenna,

a moving conductor plane member substantially parallel to said flat side of said waveguide and movable in relation to an area in said waveguide containing said perturbations,

means for moving said plane member in relation to said waveguide between a remote position from said waveguide side and another position substantially in contact with said waveguide side,

said moving means including a piezoelectric means carrying said conductor plane member, and

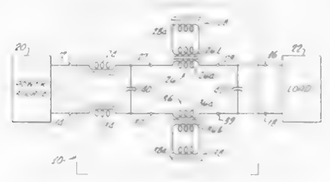
variable power means supplying said piezoelectric means for varying at least a dimension of said piezoelectric means.

4,768,002

POWER FILTER RESONANT FREQUENCY MODULATION NETWORK

Donald L. Cronin, Anaheim, Calif., assignor to Triad Microsystems, Inc., Orange, Calif.

Filed Feb. 24, 1987, Ser. No. 17,718
Int. Cl.[4] H03H *7/01, 7/09*
U.S. Cl. 333—177 **15 Claims**



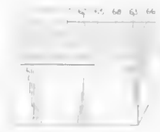
1. In combination with a power source of variable voltage direct current for providing power to a load circuit and having alternating current components of different frequencies within a range of frequencies superimposed thereon due to load devices or radio frequency equipment or the like, a filter network for interposition between said power source and said load circuit, said filter network comprising first and second inductor means in series relation between said power source and said load circuit, at least one of said inductor means including saturable reactor means electromagnetically coupled thereto and being responsive to frequency and voltage for enabling periodic saturation of said saturable reactor means, said saturable reactor means having the firing angle thereof varying in direct relation to the voltage and in inverse relation to the frequency of the alternating current component for providing inductance changes of said at least one inductor means within said filter network within the range of frequencies.

4,768,003

MICROWAVE FILTER

Izumi Kawakami; Tomokazu Komazaki; Katuhiko Gunzi, and Norio Onisi, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 780,649, Sep. 26, 1985, abandoned. This application Jul. 17, 1987, Ser. No. 74,640
Claims priority, application Japan, Sep. 28, 1984, 59-201455; Oct. 2, 1984, 59-205616
Int. Cl.[4] H01P *1/202, 1/208, 7/04*
U.S. Cl. 333—202 **9 Claims**



1. A microwave filter having an input means and an output means therein, comprising:

a rectangular solid-shaped dielectric block having a plurality of parallel holes extending from the top surface to the bottom surface thereof, the interior surfaces of said holes being covered with a conductive material;

conductive flat areas provided relative to all the respective holes and spatially disposed on said top surface of said dielectric block to surround the opening ends of said holes, each of said conductive flat areas being connected with said conductive material of a corresponding hole and having a configuration that is adjustable;

a conductive layer provided on the bottom surface of said block for electrically connecting all the conductive materials of said holes together; and

at least one further conductive area disposed on said top surface of said dielectric block between adjacent conductive flat areas associated with said holes, the at least one further conductive area having a configuration that is adjustable,

whereby the characteristic of the filter is adjustable by means of selecting the configuration of the conductive flat areas or said at last one further conductive area.

4,768,004

ELECTRICAL CIRCUIT INTERCONNECT SYSTEM

William J. Wilson, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 9, 1986, Ser. No. 917,140
Int. Cl.[4] H01P *5/00*
U.S. Cl. 333—246 **14 Claims**

1. An interconnection assembly for mounting a component to an electrical circuit, the circuit comprising at least one conductor on a first surface of an insulating substrate and a ground conductor over a second surface of the insulating substrate opposite said first surface, the assembly comprising:

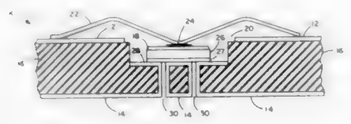
(a) means forming a recess in the first substrate surface;

(b) a component disposed at least partially within said recess, the component including an external ground surface in electrical contact with said recess;

(c) conductive plating on said first substrate surface at the

VOL 1093 ISS 5 AG 30 1988 UMI

base of said recess in contact with said component external ground surface; and



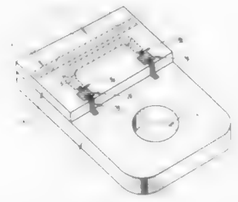
(d) a low-impedance conductive path between said conductive plating and said circuit ground conductor extending through said insulating substrate.

4,768,005

CAPACITORLESS DC BIAS LINES FOR USE WITH R.F. SIGNAL PROCESSING APPARATUS

Kenneth N. Kawakami, Sunnyvale, Calif., assignor to Microwave Technology, Inc., Fremont, Calif.

Filed Mar. 25, 1987, Ser. No. 30,206
Int. Cl.[4] H01P 3/08; H03F 3/60
U.S. Cl. 333—246 7 Claims



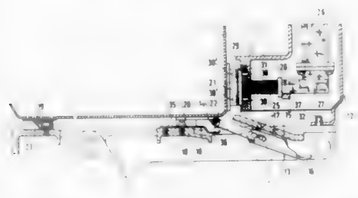
1. A capacitorless DC bias line module for use with an r.f. signal processing system comprising:
a DC bus line to which direct current only is applied;
an r.f. line coupled electromagnetically to said DC bus line; and
terminating resistor means connected directly to said r.f. line and to ground, said module being structured without capacitors.

4,768,006

ELECTRICAL AND MECHANICAL COUPLING FOR COUPLING A MICROWAVE CASE BOTH TO ITS SOURCE AND TO ITS SUPPORT, AND A METHOD OF USING SUCH A COUPLING

Olivier Trift, Tremblay Les Gonesse, and Alain Multon, Asnieres, both of France, assignors to Alcatel Thomson Faisceaux Hertziens, Levallois Perret Cedex, France

Filed Mar. 30, 1987, Ser. No. 31,724
Claims priority, application France, Mar. 28, 1986, 86 04515
Int. Cl.[4] H01P 1/00, 5/00
U.S. Cl. 333—255 11 Claims



1. An electrical and mechanical coupling for electrically coupling a microwave head case to its microwave source and mechanically to its support,
wherein the support includes:
a fixed back stop;
source-positioning pegs;
a toggle fastener system mounted on one face of said support, said toggle fastener system including a draw-bar, a fixing portion, and an operating lever; and
a blade-shaped return spring having one end fixed to the support and having a free end, and being situated so as to enable the draw-bar to rest on the free end of the spring when the operating lever is pushed back;
wherein the microwave source includes a body:
means for engaging said source-positioning pegs to locate said source body relative to said support;
a flexible metal waveguide having a free end face;
a special flange disposed on the free end face of the flexible waveguide and having an opening therethrough;
two centering pegs disposed on the special flange and projecting towards said case; and
a damper disposed between the special flange and the body of the source; and
wherein the microwave head case includes:
an assembly flange on a first face thereof facing said special flange of said free end face of said flexible waveguide, said assembly flange including an opening for alignment with said opening through the special flange;
said assembly flange including two peg-receiving orifices aligned with said centering pegs, respectively to receive said centering pegs; and
a second face including a hook positioned to engage the draw-bar and a moving backstop engageable with the fixed backstop of the support.

4,768,007

CURRENT BREAKING DEVICE WITH SOLID-STATE SWITCH AND BUILT-IN PROTECTIVE CIRCUIT [BREAKER]

Jean-Luc Mertz; Michel Lazareth, both of Grenoble, and Hubert Guerin, Meylan, all of France, assignors to Merlin Gerin, Grenoble Cedex, France

Filed Feb. 25, 1987, Ser. No. 19,140
Claims priority, application France, Feb. 28, 1986, 86 02967; Feb. 28, 1986, 86 02968
Int. Cl.[4] H01H 9/02, 13/04
U.S. Cl. 335—202 6 Claims



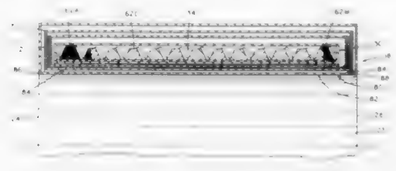
1. A low voltage current breaking device with a modular case having a front face, two large parallel side faces, and two small side faces, each presenting a shoulder to house a pair of power terminals and at least one control terminal, said shoulders being located opposite the front face towards the rear part of the case, within said case being housed and connected in series a solid-state switch and a pair of separble contacts actuated by a mechanism having an operating toggle, located on said front face, and a trip unit causing the contacts to separate when a fault occurs thus protecting the solid-state switch, said case including in its rear part a first housing confined by an external metal plate forming the base of the case and an intermediate separating partition of a second housing, only the solid-state switch being located in said first housing in thermal contact with the metal plate, said separable contacts, mechanism and trip unit being located in the second housing, whereby said first housing is thermally isolated from said second housing;
said breaking device further comprising a shunting circuit of the solid state switch including an arc guiding horn located in proximity to one of said pair of contacts, said horn being shaped so that as soon as the contacts separate, the distance between the horn and the other of said pair of contacts is smaller than the distance separating the pair of contacts, whereby an arc drawn when the pair of contacts separate is transferred to said shunting circuit avoiding flashover between said pair of contacts and protecting the solid state switch from a fault current.

4,768,008

MRI MAGNET SYSTEM WITH VESSEL HAVING COMPOSITE FIRST WALL

John R. Purcell; Bruce C. Breneman, both of San Diego, and Sibley C. Burnett, Cardiff, all of Calif., assignors to General Atomics, San Diego, Calif.

Filed Jul. 31, 1987, Ser. No. 80,020
Int. Cl.[4] H01F 7/22
U.S. Cl. 335—216 11 Claims



1. A magnet system for providing a localized, substantially homogeneous magnetic field for use in magnetic resonance imaging, said magnet system comprising:
a vacuum vessel including a first wall assembly defining a bore for receiving the subject of the imaging and a pair of spaced metallic end plates welded to the ends of said first wall assembly;
a cryogenic containment vessel supported within said vacuum vessel; and
a coil disposed within said containment vessel for providing said magnetic field, said first wall assembly including a weldable metallic cylindrical shell disposed intermediate said end plates and having a thickness insufficient, without reinforcement, to provide structural integrity during operation of said vacuum vessel, said first wall assembly further including a reinforcement layer of a non-metallic material disposed about said metallic shell, whereby signals provided by gradient coils disposed inside said bore can more quickly penetrate said first wall assembly than if said metallic shell had sufficient thickness, without reinforcement, to provide said structural integrity.

4,768,009

COIL ARRANGEMENT FOR CORRECTION OF MAGNETIC FIELD

Mamoru Shimada, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 5, 1987, Ser. No. 46,181
Claims priority, application Japan, May 7, 1986, 61-104193
Int. Cl.[4] H01F 5/00
U.S. Cl. 335—299 7 Claims

1. A coil arrangement for correction of a fundamental magnetic field directed along the Z axis of the Cartesian coordinate system, including a coil arrangement with at least one pair of ring-shaped coils for correcting error magnetic field components with respect to said Z axis included in said fundamental magnetic field, one of the two ring-shaped correction coils of each pair being coaxially disposed symmetrically on the both sides, respectively, of a Z axis reference point taken as the center of the said Z axis,



the improvement wherein when the maximum order of said error magnetic field components to be corrected with respect to said Z axis is assumed as N_m, said maximum order N_m being even, $(1+N_m/2)$ pairs of ring-shaped correction coils being positioned along the Z axis where (N_m+2)th order error magnetic field components are not produced.

4,768,010

LATCH AND PIVOT MECHANISM FOR ELECTRONIC SECTIONALIZER MOUNTING STRUCTURE

Robert A. Brown, and Daren A. Clark, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Sep. 11, 1987, Ser. No. 95,548
Int. Cl.[4] H01H 71/20
U.S. Cl. 337—169 12 Claims



1. A sectionalizer assembly comprising:
mounting structure including an upper electrical contact and a lower electrical contact spaced from said upper contact;
an upright tube assembly having an upper electrical terminal in releasable engagement with said upper contact;
a pivot mechanism interconnecting said tube assembly and said lower contact,
said mechanism including a member pivotally coupled to said lower contact and means pivotally connecting said member to said tube assembly for swinging movement of said member relative to said tube assembly during simultaneous pivoting of said member relative to said lower contact,
latch means normally retaining said member in fixed relation relative to said tube assembly; and
an actuator for selectively moving said member relative to said tube assembly,
said actuator being mounted on one of said tube assembly and said member and being operable to exert a force directly onto the other of said tube assembly and said member to urge said tube assembly and said member away from each other.

VOL 1093 ISS 5 AG 30 1988 UMI

said actuator being positioned below said pivotal connecting means and above the location where said member is pivotally coupled to said lower contact to thereby enable the force exerted by actuator to immediately initiate downward movement of said tube assembly as said member pivots relative to said tube assembly and to said lower contact for immediate drop-out of said tube assembly from said upper contact.

4,768,011

JOINT STRUCTURE FOR DIAMOND BODY AND METALLIC BODY

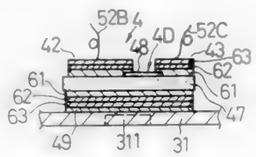
Yutaka Hattori, Takatsuki; Novuei Ito, Okazaki; Kazuhiro Inoguchi, Okazaki, and Tadashi Hattori, Okazaki, all of Japan, assignors to Nippon Soken, INC., Nishio, Japan

Filed Dec. 24, 1986, Ser. No. 946,478

Claims priority, application Japan, Dec. 24, 1985, 60-291194; Dec. 24, 1985, 60-291193; Dec. 26, 1985, 60-295813

Int. Cl.[4] G01L *1/22*

U.S. Cl. 338—5 **27 Claims**



1. A diamond-to-metal joint structure, comprising:
a diamond body;
a titanium film formed on said diamond body;
a gold film formed on said titanium film; and
a metallic body to which said gold film is joined.

4,768,012

SENSORS

David E. Williams, Abingdon, and Peter McGeehin, Newbury, both of England, assignors to United Kingdom Atomic Energy Authority, England

Continuation of Ser. No. 730,824, May 6, 1985, abandoned. This application Oct. 29, 1987, Ser. No. 115,563

Claims priority, application United Kingdom, May 10, 1984, 8411981

Int. Cl.[4] H01L *7/00*

U.S. Cl. 338—34 **19 Claims**



1. A moisture sensor which sensor includes a moisture sensitive material and electrodes in communication with the moisture sensitive material, the moisture sensitive material comprising a first, substantially electrically insulating porous ceramic substance derived from a colloidal dispersion and, distributed throughout the first substance, a second, finely divided electrically conducting substance.

4,768,013

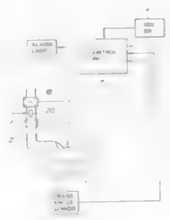
METHOD AND APPARATUS FOR DIAGNOSING FAILURE IN IDLE SWITCH FOR INTERNAL COMBUSTION ENGINES

Takashi Aramaki, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 1, 1987, Ser. No. 68,492

Int. Cl.[4] B60Q *1/00;* **F02M** *51/00*

U.S. Cl. 340—52 R **13 Claims**



1. An apparatus, comprising:
(a) first means for detecting whether an internal combustion engine has started;
(b) second means for counting the number of times the engine has started on the basis of detections by the first means, the second means being cleared in response to an activation signal of an idle switch indicating that an engine speed adjusting mechanism of the engine causes the engine in an idle state;
(c) third means for comparing the counted value of the second means with a predetermined value; and
(d) fourth means for determining that the idle switch has failed on the basis of the results of the comparison made by the third means.

4,768,014

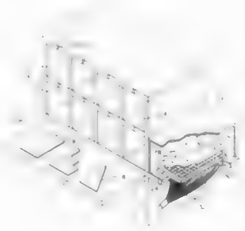
NON-VERBAL COMMUNICATION SYSTEM FOR WORK STATIONS

Michael C. Pettit, Arden, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1986, Ser. No. 926,294

Int. Cl.[4] G08B *5/00*

U.S. Cl. 340—332 **3 Claims**



1. A non-verbal communication system for the assembly of a specific set of parts into a workpiece and comprising:
(a) a work station for the assembly of various parts into a workpiece;
(b) a plurality of bins for storage of various parts in several bins adjacent to the work station;
(c) a light source;
(d) a plurality of fiber-optic cables having first terminal ends disposed to transmit light from the light source to second terminal ends;
(e) the first terminal ends disposed in juxtaposed columns and juxtaposed rows of separate aperture areas in an apertured plate and spaced from the source of light;
(f) the second terminal ends being arranged in the several parts bins;
(g) the space between the source of light and the apertured plate having a peripheral opening being adapted for manual insertion and removal of replaceable punch cards having columns and rows of apertures alignable with the separate aperture areas with selectively determined punched out apertured areas for enabling the transmission of light through a punch card to illuminate corresponding first terminal ends of the fiber-optic cables; and
(h) the second terminal ends of the fiber-optic cables being visible at the several parts bins so as to indicate to an assembly operator which parts to select for assembly of a particular workpiece.

4,768,015

A/D CONVERTER FOR VIDEO SIGNAL

Tatsuyuki Amano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 8, 1987, Ser. No. 93,834

Claims priority, application Japan, Sep. 5, 1986, 61-210226

Int. Cl.[4] H03M *1/36*

U.S. Cl. 340—347 AD **20 Claims**



1. An A/D converter comprising a first reference voltage source generating a first group of reference voltages distributed in a first voltage range, a first A/D converting circuit connected to receive an analog signal and the first group of reference voltages for generating a first digital signal, a second reference voltage source having a bias input receiving a bias voltage and generating a second group of reference voltages which are distributed in a second voltage range smaller than the first voltage range and which are biased by a bias voltage inputted to the bias input, a second A/D converting circuit connected to receive the analog signal mentioned above and the second group of reference voltages for generating a second digital signal, a calculator receiving the first and second digital signals for generating a third digital signal having a resolution higher than that of the first digital signal, and a bias voltage generator receiving the third digital signal for generating an analog bias voltage to the bias input of the second reference voltage source.

4,768,016

TIMING AND CONTROL CIRCUITRY FOR FLASH ANALOG TO DIGITAL CONVERTERS WITH DYNAMIC ENCODERS

Sow T. Chu, Nuenen, Netherlands, and Kenneth W. Rohling, Burnt Hills, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 17, 1987, Ser. No. 85,922

Int. Cl.[4] H03M *1/06*

U.S. Cl. 340—347 AD **5 Claims**



1. An analog to digital converter circuit for receiving an analog input signal and for generating a plurality of digital signals representing a binary coded form of said analog signal, said converter circuit comprising:
means for providing a plurality of analog reference levels;
comparator means for comparing said analog input signal with said analog reference levels so as to generate a unique signal on at least one line of a set of word output lines from said comparator means;
encoder means for receiving signals from said word output lines from said comparator means and for generating a plurality of digital signals on bit output lines, said digital signals representing a binary coded form of said analog input signal; and
output buffer means for storing signals occurring on said bit output lines;
said encoder means including a dummy bit line which exhibits a bit line delay which is used to derive timing signals to control storage of said bit output line signals in said output buffer.

4,768,017

CIRCUIT FOR PROVIDING HIGH SAMPLING RATE RESOLUTION USING SLOW SAMPLING RATE

James H. Gordon, Fairfax, Va., assignor to Sonotek, Inc., Springfield, Va.

Filed Jul. 22, 1987, Ser. No. 76,267

Int. Cl.[4] H03M *1/12*

U.S. Cl. 340—347 SH **21 Claims**



1. A converter system for sampling a repetitive series of pulses which comprises, in combination:

VOL 1093 ISS 5 AG 30 1988 UMI

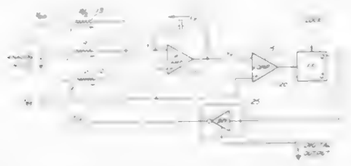
(a) clock means for producing a series of equally spaced clock signals;
(b) trigger means responsive to a predetermined start signal and a said clock signal for providing a trigger signal;
(c) controllable repeatable variable delay means including means to control the amount of delay in a regular pattern for delaying said clock signals for a predetermined delay period as determined by said means to control the amount of delay; and
(d) an analog to digital converter having predetermined maximum sampling rate, controlled by said delayed clock signals, for receiving input signals initiated by said trigger signal.

4,768,018

ANALOG TO DIGITAL CONVERTER FOR AN ELECTRONIC CIRCUIT BREAKER WITH OUT-OF-SUPPLY-RANGE INPUT SIGNALS

Sharbel E. Noujaim, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 74,103, Jul. 16, 1987, abandoned. This application Dec. 7, 1987, Ser. No. 129,616
Int. Cl.[4] H03M *1/12*
U.S. Cl. 340—347 AD 6 Claims



1. An analog to digital converter comprising:
a set of three two-terminal resistive elements having a first terminal of each element connected to a common electrical node, wherein the first two of said resistive elements have the same resistance value and the third of said resistive elements has a resistive value of half of either of the first two resistive elements;
analog integrator means having inverting and non-inverting inputs, said inverting input being connected to said common electrical node with said three two terminal resistive elements;
analog comparator means also having inverting and non-inverting input nodes, said inverting input node of said comparator means being connected to the output of said integrator means;
single bit clocked flip-flop means operating to change output states in response to the output of said comparator means;
inverting means connected at its input to the non-inverted output of said flip-flop means and connected at its output to the second terminal of said second resistive element;
means for supplying a voltage V_{DD} to the second terminal of said third resistive means;
means for supplying a voltage $V_{DD}/2$ to the non-inverting nodes of said integrator means and said comparator means,
whereby an analog signal applied to the second terminal of said first resistive element is converted to a serial binary signal from said flip-flop means in which the number of bits is representative, over a period of time, of the level of said analog signal.

4,768,019

ANALOG-TO-DIGITAL CONVERTER

William J. Linder, Hennepin, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 25, 1987, Ser. No. 101,109
Int. Cl.[4] H03M *1/50*
U.S. Cl. 340—347 NT 36 Claims



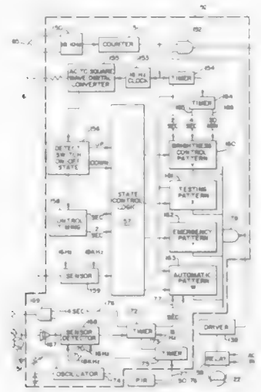
1. An analog-to-digital converter system switchable between operating modes during a conversion, said conversion system having a first signal input region for receiving a first analog signal, and having a first plurality of signal output regions each for providing a digit signal of a selected value to thereby provide a first plurality of digit signals to represent selected values of a selected version of said first analog signal, said converter system comprising:
a first signal amplifier having an inverting input region which exhibits a relatively high circuit impedance, and having an output region which exhibits a relatively low circuit impedance, said first signal amplifier being capable of providing at said output region thereof a signal in a first magnitude direction substantially similar to a signal provided at said inverting input region thereof in a second magnitude direction but of a greater magnitude in said first magnitude direction;
first, second and third switching means each having first and second terminating regions and having a control region by which it is capable of being directed to provide a conductive path between its first and second terminating regions, said first switching means first terminating region being electrically connected to said converter system first signal input region and said first switching means second terminating region being electrically connected to said first signal amplifier inverting input region;
a first electrical energy storage means having first and second terminating regions and being capable of storing electrical energy therebetween, said first electrical energy storage means first terminal region being electrically connected to said first signal amplifier inverting input region, said second switching means first terminating region being electrically connected to said first electrical energy storage means second terminal region, and said second switching means second terminating region being electrically connected to said first signal amplifier output region;
a controlled reference signal generator having a plurality of control signal input regions and having an output region, said controlled reference signal generator being capable of providing reference signals of different values on said controlled reference signal generator output region in response to different combinations of values of input signals being provided on said controlled reference signal generator plurality of control signal input regions, said third switching means first terminating region being electrically connected to said first electrical energy storage means second terminal region, and said third switching means second terminating region being electrically connected to said controlled reference signal generator output region; and
a multiple signal generator having a plurality of output regions at which output signals of different combinations of signal values can be provided, said multiple signal generator plurality of output regions having signals occurring thereat being electrically transferable to said controlled reference voltage generator plurality of control signal input regions and further being electrically transferable to said converter system first plurality of signal output regions.

4,768,020

HOT BODY INTRUSION ACTIVATED LIGHT CONTROL UNIT WITH DAYLIGHT PHOTOCELL DEACTIVATION OVERRIDE

Wen-Chin Chen, Taipei, Taiwan, assignor to Paul E. Yarbrough, Jr., Arlington, Tex.

Filed May 15, 1986, Ser. No. 863,343
Claims priority, application Taiwan, Dec. 24, 1985, 74210976
Int. Cl.[4] G08B *13/18*
U.S. Cl. 340—567 8 Claims



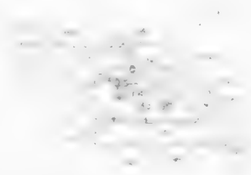
1. A hot body intrusion activated light control unit with daylight sensing photocell deactivation override comprising: passive electromagnetic wave infrared detector means in an infrared radiation detector circuit; electromagnetic light wave sensing photocell means in photocell circuit means; illumination means; signal pattern selecting controller means having single key operation synthesizing the output of said infrared radiation detector circuit and the output of said photocell circuit means in function selecting control as an illumination control circuit for illumination control of said illumination means; relay switch means and relay driver means connected for on-off control of said illumination means connected to a controlling output of said signal pattern selecting controller means as a function selecting controller; test pattern detection and adjustment means adjusted for said infrared radiation detector circuit and including emergency pattern circuit means selecting various patterns one by one, and state control logic means with the power input to said emergency pattern circuit means including switch means in the power path to said emergency pattern circuit means that generate time signals fed to a signal waveform pulse edge detector with said time signals divided into two positive pulse outputs; ascending and descending waveform pulse edge detection by said signal waveform pulse edge detector detecting the activation number of said switch means, control input to said state control logic means with signal control of flip-flop means and logic gate circuit means for generating signal pulses for selection of an output from four outputs dependent on the number of pulses and activation of an output waveform sign determining the continuing pattern as a selection by the number of switch activations in a sequence of switching of said signal pattern selecting controller means.

4,768,021

SAFE FOR LOADED HAND GUN

Michael P. Ferraro, 96 Westminster St., New Haven, Conn. 06513

Filed Sep. 18, 1987, Ser. No. 99,334
Int. Cl.[4] G08B *13/00*
U.S. Cl. 340—568 11 Claims



1. A safe for a loaded hand gun, said safe comprising a box including a receptacle for containing the gun, said receptacle having a bottom providing a mounting surface, a lid hingedly mounted on said box and movable between a closed position covering said receptacle and an open position in which the gun is accessible, a locking device for normally holding said lid in its said closed position, means for releasing said locking device when access to the gun is desired, said releasing means being operable without a key and solely by authorized personnel, said mounting surface having a mounting hole for use in attaching said safe to another structure, a pressure sensitive pad affixed to said mounting surface at said mounting hole and positioned to be overlapped by the head of a mounting screw, and an alarm system actuatable by said pad in the event of unauthorized attempted forcible removal of said safe from the other structure which will cause the head of the mounting screw to apply a squeezing pressure to said pad.

4,768,022

APPARATUS FOR GENERATING AUDITORY INDICATORS

Roy D. Patterson, Great Shelford, England, assignor to National Research Development Corporation, London, England

Division of Ser. No. 515,501, Jul. 20, 1983, Pat. No. 4,644,327. This application Oct. 10, 1986, Ser. No. 917,685
Claims priority, application United Kingdom, Jul. 30, 1982, 8222029
The portion of the term of this patent subsequent to Feb. 17, 2004, has been disclaimed.
Int. Cl.[4] G08B *3/00*
U.S. Cl. 340—384 E 22 Claims



1. An apparatus for producing an audible warning comprising:
memory means for storing a plurality of information representing plural different distinctive sounds respectively associated with plural different predetermined conditions, each said information including:

VOL 1093 ISS 5 AG 30 1988 UMI

(a) data representing at least four frequency components, each of said frequency components having frequency in the range of plus or minus 10 percent of an integer multiple of a fundamental frequency within the range of 150 Hz and 1000 Hz, and

(b) data representing a power level for each component within a power level range of between 15 to 30 decibels above an expected background noise threshold level and below 110 dB standard pressure level;

sensing means for sensing an existence of one of said plural predetermined conditions;

processing means, coupled to said sensing means and said memory means, for fetching information representing the one of said sounds associated with a predetermined condition from said memory means when such predetermined condition is sensed by said sensing means; and

sound generating means coupled to said processing means, for generating sound in response to the information fetched by said processing means, including means for simultaneously producing the four frequency components of said sound associated with said sensed predetermined condition at frequencies represented by said component-representing data and at power levels represented by said power-level representing data.

4,768,023

DIAPER WETNESS SIGNALLING SYSTEM

Alex J. Xie, 89-24 120th St., Richmond Hill, N.Y. 11418

Filed Mar. 12, 1987, Ser. No. 25,186

Int. Cl.[4] G08B *23/00*

U.S. Cl. 340—573 9 Claims



1. A disposable diaper adapted to detect and signal wetness, said diaper having an inner sheet, an absorbing sheet, and an outer sheet, and also including:

(a) a pair of spaced electrodes embedded longitudinally in a major part of said diaper with one end of each one of said electrodes extending out through a respective one of two apertures on said outer sheet terminated on the outer surface of said outer sheet by

(b) a pair of spaced electrically conductive tapes, coated with an electrically conductive adhesive coating, acting as two terminals of said pair of electrodes, to which a signalling means contained in a housing with a pair of conductive contacts on the housing can be attached in such a way that each one of said pair of tapes is electrically connected to a respective one of said pair of contacts when said diaper is in use; and

(c) a backing sheet coated with an anti-adhesive coating normally covering said pair of conductive tapes, said backing sheet being adapted to be peeled off in order to allow adherence of said signalling means to said tapes when said diaper is to be used with said signalling means.

4,768,024

APPARATUS FOR MONITORING FIRE HAZARDS IN A BUILDING

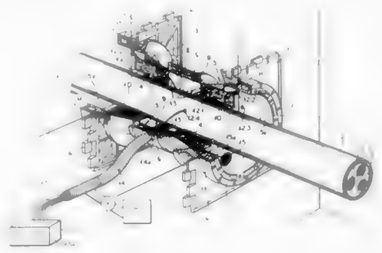
Werner Hauff, Herlsbühlstr. 19, D-7925 Ballmertshofen, Fed. Rep. of Germany

Filed Jul. 15, 1986, Ser. No. 885,863

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1985, 3525644

Int. Cl.[4] G08B *17/00*

U.S. Cl. 340—584 12 Claims



1. An apparatus for monitoring fire hazard in a building comprising:

at least one duct for at least one cable, particularly an electrical cable, extending through a wall opening in a wall of said building, said duct having two sealing members sealing said wall opening on opposite sides of said wall against said cable and the interior of said wall opening to form a fire retardant seal through which said cable passes between different fire zones of said building separated by said wall from each other and which retards the spread of fire between said fire zones;

at least one electrical temperature sensor mounted inside of said duct; and

at least one electrical connecting conductor connecting said at least one temperature sensor with a detection device for direct detection of a sensor signal from said at least one temperature sensor which is guided from the interior of said duct into said wall and is fire protected in said wall.

4,768,025

CIRCUIT BREAKER INDICATOR

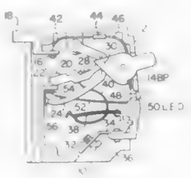
Oscar Vila-Masot, Complejo Turistico "El Morro" , Puerto La Cruz, Venezuela

Continuation-in-part of Ser. No. 654,156, Sep. 25, 1984, Pat. No. 4,652,867. This application Mar. 6, 1987, Ser. No. 22,713

The portion of the term of this patent subsequent to Mar. 24, 2004, has been disclaimed.

Int. Cl.[4] G08B *21/00*

U.S. Cl. 340—638 16 Claims



1. In a conventional circuit breaker provided with a first fixed contact connected to an input terminal, a movable contact provided on a contact arm movable between a closed position directly contacting said first fixed contact and an open position away from said first fixed contact, a load terminal connected to a load through said first fixed and said movable contact during normal operation and disconnected from said first fixed contact during overload operation, sensing means for sensing the presence of a overload condition across the circuit breaker, said sensing means connected to said load terminal, and a tripping means sensitive to the movement of said sensing means, said tripping means acting to contact a second fixed contact when said sensing means senses an overload condition, the improvement comprising:

an indicator circuit in parallel with said input terminal and said load terminal and in series with said second fixed contact and said tripping means, said indicator circuit including a light-emitting diode connected in series to a single capacitor, said capacitor having a value less than or equal to 11,000 picofarads, wherein said illumination device operates when an overload condition is sensed.

4,768,026

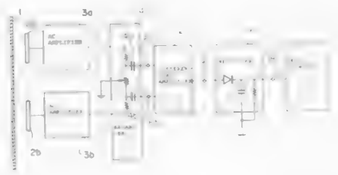
YARN BREAK DETECTOR FOR SPINNING AND WEAVING MACHINES

Syozaburo Makino, 441 Imaiminamicho, Nakahara-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Jun. 17, 1987, Ser. No. 63,645

Int. Cl.[4] G01R *29/12;* G08B *21/00*

U.S. Cl. 340—677 1 Claim



1. A yarn break detector for spinning and weaving machines comprising a pair of detection electrodes formed as a printed circuit at the substantially equal areas on a base plate, said detection electrodes being disposed in correspondence to the running yarn and adapted to induce an electric charge on the yarn, a pair of AC amplifiers of high input impedance for amplifying the electric potentials induced by said pair of detection electrodes to which said AC amplifiers are electrically connected via lead wires electrostatically shielded by a shield en bloc, a balancer for balancing the output signals from said pair of AC amplifiers in an in-phase and synchronized fashion, a differential amplifier for differentially amplifying the output signals from said balancer, a rectifier for converting the output signals form said differential amplifier into a DC signal, a comparator which compares the output voltage of said rectifier and regulated comparison voltage and issues an output when the output voltage of said rectifier is lower in potential than the comparison voltage, and a relay circuit which is actuated by the output signal from said comparator, wherein in the event of yarn break or stoppage of yarn run, said relay circuit is activated to issue an output signal as yarn break signal to inform of the yarn break or stoppage of yarn run.

4,768,027

DEVICE FOR INDICATING UNAUTHORIZED USE OF A VEHICLE

William Benjamin, 88 Underhill Road, Dulwich, London SE2; Ricky Kadoo, 55 Beadnell Road, Forest Hill, London SE23 1AA, and Martin Gosling, Hurd Cottage, Cricket Hill, Yateley, Surrey GU17, all of Great Britain

PCT No. PCT/GB86/00530, § 371 Date May 22, 1987, § 102(e) Date May 22, 1987, PCT Pub. No. WO87/01344, PCT Pub. Date Mar. 12, 1987

PCT Filed Sep. 8, 1986, Ser. No. 48,092

Claims priority, application United Kingdom, Sep. 6, 1985, 8522180

Int. Cl.[4] B60R *25/10;* G09F *11/10*

U.S. Cl. 340—691 5 Claims



1. A display arrangement comprising a display which is mounted or mountable on a vehicle and which has a plurality of alphanumeric character displaying regions, each capable of displaying selectively one of at least two characters; and control means for activating the display to display normally the registration number of the vehicle and, in response to an alarm signal, to display alternately said registration number and an arrangement of characters indicative of unauthorised use.

4,768,028

DISPLAY CONTROL APPARATUS HAVING A CURSOR

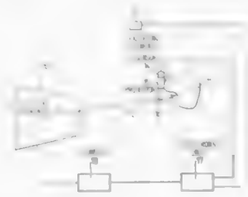
Ian T. B. Blackie, Edinburgh, Scotland, assignor to Ferranti plc, Cheshire, England

Filed Mar. 28, 1986, Ser. No. 845,578

Claims priority, application United Kingdom, Mar. 29, 1985, 8508327

Int. Cl.[4] G09G *1/00*

U.S. Cl. 340—705 17 Claims



1. Display control apparatus which includes alignment means for determining the direction of a sight-line extending from observer to a display surface, projection means for introducing an image of a graticule into the sight-line for movement therewith, and control means responsive to said alignment means and operable to cause a movable cursor to be displayed and positioned on the display surface at the intersection of the sight-line and the display surface and to remove the image of the graticule when the cursor is displayed whereby said control means causes the display of said movable cursor on said

VOL 1093 ISS 5 AG 30 1988 UMI

display surface when said alignment means determines that the observer's line of sight intersects said display surface.

4,768,029

VIDEO DISPLAY SYSTEM WITH GRAPHICAL CURSOR

James E. Burrows, Alsager, Great Britain, assignor to International Computers Limited, London, England

Filed Jun. 1, 1987, Ser. No. 56,588
Claims priority, application United Kingdom, May 28, 1986, 8612930
Int. Cl.[4] G09G 1/16
U.S. Cl. 340—799 18 Claims



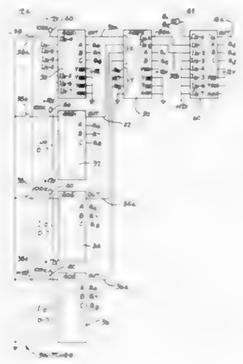
1. A video display system comprising:
(a) a store holding a first bit map defining an image and a second bit map defining a cursor to be superimposed on the image;
(b) a raster-scanned display device;
(c) means operable during a line-blanking interval of the display device for reading out of the store cursor data representing a portion of the cursor bit map corresponding to the next raster line of the image, and storing that data in a fast memory; and
(d) means operable during scanning of that next raster line, for reading out of the store image data representing the portion of the image bit map corresponding to that raster line and combining it with the contents of the fast memory to produce an output video signal.

4,768,030

SWITCH INTERFACE METHOD AND APPARATUS

William L. Frederich, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1986, Ser. No. 931,316
Int. Cl.[4] H04Q 9/00, 1/39; H04J 3/06
U.S. Cl. 340—825.06 4 Claims



1. Apparatus for generating a communications signal corresponding to one or more switch settings comprising:
conversion means electrically coupled to a plurality of switches to monitor the switch setting of said plurality of switches and convert each of said setting into a data sequence, said data sequence including a first binary sequence corresponding to a binary output of one switch of said plurality of switches and a second binary sequence designating said one switch;
said conversion means including a control input to control transmission of data from an input of said conversion means to an output of said conversion means;
timing means to coordinate a timing of data transfer from the conversion means input to its output; and
control means having a clock input coupled to the timing means and a control means output responsive to the clock input, said control means output coupled to the conversion means to direct said conversion means to generate a start bit, a binary data sequence corresponding to the switch settings, and an end of data signal, said switches through said switch multiplexer.

4,768,031

RADIO PAGING RECEIVER HAVING A MESSAGE PROTECTION CAPABILITY

Toshihiro Mori, and Shinjiro Umetsu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 10, 1986, Ser. No. 939,977
Claims priority, application Japan, Dec. 10, 1985, 60-278360
Int. Cl.[4] H04Q 7/00; G08B 5/22
U.S. Cl. 340—825.44 6 Claims



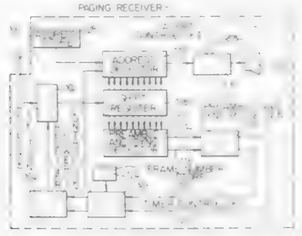
1. A radio paging receiver capable of responding to a message signal specific to said receiver when said receiver is supplied with electric power from a power source, said receiver including storing means for storing said message signal as a stored signal when said storing means is supplied with said electric power, and switching means having an on state and an off state for switching said electric power to energize and deenergize said power source in said on state and said off state, respectively said radio pager comprising:
monitoring means coupled to said storing means and to said switching means for monitoring read-out of said stored signal to produce a drive signal when said stored signal has not been read out;
manually operable read-out means, coupled to said monitoring means, for reading out said stored signal when said read-out means is in a first position: and
holding means coupled to said switching means, said storing means, said monitoring means, and said manually operable read-out means, and responsive to said drive signal for holding said stored signal in the presence of said drive signal without said read-out of the stored signal as long as said manually operable read-out means is not in said first position even in said off state of said switching means.

4,768,032

PAGER DECODING SYSTEM

Anthony K. Sharpe, Teversham, and Andrew D. McPherson, Cambridge, both of England, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 816,671, Dec. 30, 1985, abandoned, which is a continuation of Ser. No. 582,423, Feb. 22, 1984, abandoned. This application Mar. 23, 1987, Ser. No. 29,361
Claims priority, application United Kingdom, Feb. 25, 1983, 8305294
Int. Cl.[4] H04Q 1/00
U.S. Cl. 340—825.47 3 Claims



1. A pager decoding system for decoding information transmitted in a binary coded signal format involving transmission of a preamble signal followed immediately by transmission of a sequence of batches of code words, wherein a code word consists of m bits, and a batch consists of n code words, the first code word of a batch being a given synchronization code word, said preamble comprising a repeating pattern at least m (n+1) bits in length, and said preamble being repeated only after transmission of at least one said batch of code words, comprising:
means for receiving transmitted binary coded information, including a pager receiver section,
timing means for switching said receiver section on for a duration corresponding to m bits, at intervals corresponding to (n+1) code words,
shift register means, coupled to said receiver section output, for storing data received during m consecutive bit periods, said shift register having an m stage parallel output, data stored in said shift register being concatenated onto data received in a previous interval, and
means for detecting presence of a preamble pattern at said register output, and in response to detection of said pattern setting said timing means to maintain said receiver section switched on until detecting of a synchronization code word,
means for detecting presence of a synchronization code word at said register output, and in response to detection of a synchronization code word to reset said timing means to an off state for a predetermined time period, and then to switch said receiver section on for a second predetermined time period.

4,768,033

CALLSIGN DISPLAY FOR TRANSCEIVER

Shigeru Sakai, and Kazunori Kudo, both of Tokyo, Japan, assignors to Trio Kabushiki Kaisha, Japan

Continuation of Ser. No. 744,574, Jun. 14, 1985, abandoned. This application Sep. 17, 1987, Ser. No. 97,730
Claims priority, application Japan, Jun. 16, 1984, 59-122946; Jun. 16, 1984, 59-88858[U]; Jun. 20, 1984, 59-90800[U]
Int. Cl.[4] H04B 7/26; H04Q 7/00
U.S. Cl. 340—825.440 9 Claims

1. A callsign display device which displays a callsign by receiving a data Hagelbarger-coded and including a frame sync data and at least a callsign data following said frame sync data comprising:
a frame sync data detector circuit for detecting a supplied frame sync data;
a first shift register to which said data Hagelbarger-coded and following said frame sync data is supplied;
an input switching circuit for introducing to said first shift register said data Hagelbarger-coded and following said frame sync data in response to the output from said frame sync data detector circuit;
a decoding circuit for decoding in cooperative association with said first shift register said data Hagelbarger-coded and following said frame sync data;



a second shift register which is supplied with the decoded data from said first shift register;
a third shift register which is supplied only with data bits in said second shift register;
a data latch circuit for latching a callsign data in said third shift register; and
a display for decoding and displaying the content of said data latch circuit.

4,768,034

RADAR SYSTEM FOR MULTIPLE OBJECT TRACKING AND DISCRIMINATION

Fritz K. Preikschat, 16020 Lake Hills Blvd., Bellevue, Wash. 98008, and Ekhard Preikschat, 9048 NE. 41st St., Bellevue, Wash. 98004

Filed Mar. 26, 1984, Ser. No. 593,555
Int. Cl.[4] G01S 13/00, 5/02
U.S. Cl. 342—80 22 Claims



1. A radar system for tracking a plurality of individual moving objects that form a cluster, comprising:
a transmitter including means for transmitting a series of pulses of radiant energy toward the cluster such that each reflective object responds to each transmitted pulse by producing a return pulse;
receiver means comprising a plurality of receivers positioned to receive the return pulses, the receivers including means for determining the relative phase and the relative arrival time of each return pulse and means for producing pulse phase data and pulse time data corresponding respectively thereto;
cluster tracking means for producing in real time reference information indicative of the position of a moving reference point associated with the mean position of the objects; and
processing means for receiving the pulse phase data, pulse time data and reference information, and for producing in real time displacement information indicative of the relative position of each object with the respect to a moving

VOL 1093 ISS 5 AG 30 1988 UMI

coordinate system defined with respect to the receivers and to the reference point.

4,768,035

COHERENT RADAR DIGITAL DATA COLLECTOR AND SAMPLING TECHNIQUE FOR NONCOHERENT TRANSMITTER RADARS

Robert E. Thurber, Glenn Dale; Richard J. Prengaman, Severna Park; Joe Phipps, Westminster, and Russell Rzemien, Hanover, all of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Apr. 18, 1985, Ser. No. 724,850
Int. Cl.⁴ G01S *7/40*
U.S. Cl. 342—194 **4 Claims**



1. A processor for extracting Doppler data from a noncoherent radar system having a return signal receiver producing an intermediate frequency (IF) signal, the processor comprising:

one analog to digital (A/D) converter means for converting samples obtained from the IF signal to digital values;

one sample and hold circuit means connected to said A/D converter means and the return signal receiver, wherein said sample and hold circuit means in response to timing signals precisely phased locked to a transmitted pulse of the radar system samples the IF signal at two points separated by 90 electrical degrees in order to obtain an in-phase (I) data sample and quadrature (Q) data sample, said sample and hold circuit means temporarily holds the I and Q samples and provides the I and Q samples to said A/D converter means;

moving target indication (MTI) filtering means connected to the A/D converter means for receiving and filtering the digital values representing the I and Q samples output by the A/D converter means;

timing means connected to the sample and hold circuit means and the A/D converter means and the MTI filtering means, wherein said system timing means provides timing signals precisely phase locked to a transmitted pulse of the radar system to said sample and hold circuit means and said A/D converter means for controlling the sampling and A/D conversion of the IF signal and said timing means provides timing signals precisely phase locked to a transmitted pulse of the radar system to said MTI filtering means for regulating the filtering of the I and Q samples; and

detector means connected to said timing means for precisely phase locking said timing means to a transmitted pulse of the radar system.

4,768,036

COLLISION AVOIDANCE SYSTEM

George B. Litchford, Northport, and Burton L. Hulland, Glenwood Landing, both of N.Y., assignors to Litchstreet Co., Northport, N.Y.

Continuation of Ser. No. 787,977, Oct. 16, 1985, abandoned.
This application Nov. 6, 1987, Ser. No. 117,547
Int. Cl.⁴ G01S *3/02*; G08G *7/02*
U.S. Cl. 342—455 **14 Claims**

1. Apparatus for determining the positions of an Own station and an Other transponder-equipped station within the overlapping service area of two or more SSRs at known locations, including at the Own station:

a. means for receiving the interrogations transmitted by said SSRs,

b. means for identifying said SSRs based on their pulse repetition characteristics, and beam rotation periods,

c. means for storing and retrieving the geographical locations of said identified SSRs,

d. means for receiving replies transmitted from said Other station in response to said interrogations,

e. means for identifying said Other station from its replies,



f means for identifying the SSR eliciting each such reply from the pulse repetition characteristic thereof,

g. means for determining from the time relationships between said received interrogations and replies data defining the position of said Other station with respect to the Own station in coordinates of differential azimuth (A) and differential time of arrival (T), and

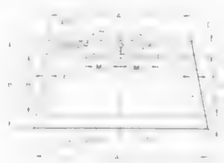
h. means for computing, from said data and the known positions of said SSRs, the positions of said Own and Other stations.

4,768,037

VEHICLE WINDOW GLASS ANTENNA USING TRANSPARENT CONDUCTIVE FILM

Hiroshi Inaba; Masao Shinnai; Kazuya Nishikawa; Tamotsu Saitoh, and Tokio Tuskada, all of Matsusaka, Japan, assignors to Central Glass Company, Limited, Ube, Japan

Filed Dec. 17, 1987, Ser. No. 134,096
Claims priority, application Japan, Dec. 19, 1986, 61-301415; Dec. 19, 1986, 61-301416
Int. Cl.⁴ H01Q *1/32*
U.S. Cl. 343—713 **12 Claims**



1. A vehicle window glass antenna, comprising:

as a principal element of the antenna a transparent and conductive film which is attached to a window glass for a vehicle and is in the shape of a quadrilateral having a substantially horizontal upper side, the film being disposed so as to occupy a major and central area of the window glass at a distance of at least 15 mm from each edge of the window glass;

a feeding bar which is a strip of a conductive material lower in resistivity than the material of said conductive film and is attached to said conductive film so as to extend substantially horizontally along at least a portion of the upper side of said conductive film; and

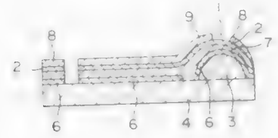
a lead which extends from a point on said feeding bar to a feeding point provided on the window glass.

4,768,038

THERMAL PRINTHEAD INTEGRATED CIRCUIT DEVICE

Takuji Shibata, Hachioji, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 13, 1986, Ser. No. 862,617
Claims priority, application Japan, May 17, 1985, 60-104066; May 17, 1985, 60-104067
Int. Cl.⁴ G01D *15/10*; H01C *1/012*; H05B *1/00*; B05D *5/12*
U.S. Cl. 346—76 PH **4 Claims**



1. A thermal printing head having an end face adjacent a surface to be printed, a plurality of electrodes disposed on an insulation substrate in at least an upper layer and a lower layer with an inner layer of insulation therebetween, a first electrode in said upper layer comprising an upper common electrode and a plurality of individual electrodes, a second electrode in said lower layer comprising a lower common electrode, a heat generating layer between said inner layer and said first electrode and adjacent said end face, said inner layer extending to said substrate between a first portion of said lower common electrode adjacent said end face and a second portion of said lower common electrode remote from said end face.

4,768,039

HEAT TRANSFER RECORDING WITH AUTOMATIC RIBBON TAKE-UP POSITIONING/DRIVING MEANS

Hiroshi Akutagawa, and Koji Takeuchi, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 28, 1987, Ser. No. 55,155
Claims priority, application Japan, May 30, 1986, 61-126987
Int. Cl.⁴ G01D *15/10*
U.S. Cl. 346—76 PH **9 Claims**

1. A heat transfer recording apparatus for use with a cassette accommodating an ink material between a feed roll and a take-up roll, wherein the ink material and a recording sheet overlapped thereto are passed between a platen and a thermal head pressed thereagainst for thermally transferring an ink image to the recording sheet, the apparatus comprising:

a cassette loading portion for removably loading the cassette therein, the loading portion having holding means for bringing the platen into and out of contact with the thermal head to render the cassette removably loadable and for holding the cassette in position for use when holding the platen in pressing contact with the thermal head,

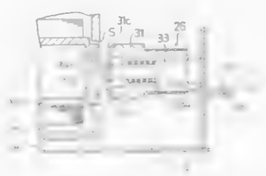
take-up means for driving the take-up roll, the take-up means being mounted on the loading portion and connectable to and disconnectable from the take-up roll when the cassette is in position for use, wherein the take-up means is biased toward the disconnectable position,

connecting means having a pushing member movable directly in response to the movement of the cassette in the loading portion toward the position for use, whereby the take-up means is shifted to the connected position against the biasing action by the responsive movement of the pushing member.

5. A heat transfer recording apparatus for use with a cassette accommodating an ink material between a feed roll and a take-up roll, wherein the ink material and a recording sheet overlapped thereto are passed between a platen and a thermal head pressed thereagainst for thermally transferring an ink image to the recording sheet, the apparatus comprising:

a cassette loading portion for removably loading the cassette therein, the loading portion having holding means for bringing the platen and out of contact with the thermal head to render the cassette removably loadable and for holding the cassette in position for use when holding the platen in pressing contact with the thermal head,





take-up means for driving the take-up roll, the take-up means being mounted on the loading portion and connectable to and disconnectable from the take-up roll when the cassette is in position for use, wherein the take-up means is biased toward the connected position,

connecting means which connects the movement of the holding means and the take-up means in responsive movement, whereby the take-up means is shifted to the disconnected position by the connecting means against the biasing action in response to the movement of the holding means to move the platen away from the thermal head and release the cassette from its position for use.

4,768,040

HAND-HELD MARKING DEVICE IN COMBINATION WITH A COUNTER

David J. Pipkin, 2323 Selby Ave., Los Angeles, Calif. 90067, and John S. Marzich, 2808 Fisk La., Redondo Beach, Calif. 90278

Filed Oct. 29, 1986, Ser. No. 925,005
Int. Cl.⁴ G01D *9/00, 15/16*; B43K *29/00*
U.S. Cl. 346—14 R **4 Claims**



1. A hand-held marking device for marking in order to mark and count each of a plurality of items in a set and to automatically record the count, said hand-held marking device comprising:

a. a casing;

b. marking means for marking off each of the plurality of

VOL 1093 ISS 5 AG 30 1988 UMI

items, said mixing means being mechanically coupled to said casing;

c. counting means for counting the number of marked items said counting means being mechanically coupled to said casing;

d. switching means for providing an input pulse to said couting means, said switching means being mechanically coupled to said counting means;

e. a circuit board which has a first terminal, which is electrically coupled to said counting means, and a second terminal, which is electrically coupled to said switching means, and which is disposed within and mechanically coupled to said casing.

f. displaying means for displaying the number of counted items, said displaying means being electrically coupled to said counting means and mechanically coupled to said casing;

g. resetting means for resetting said counting means, said resetting means being mechanically coupled to said casing and also being electrically coupled to said counting means whereby said hand-held marking device counts each item from the set and displays the number of items counted.

4,768,041

RECORDING APPARATUS

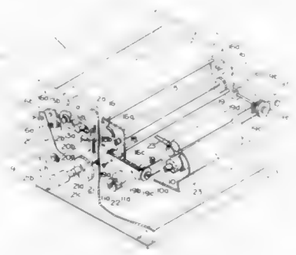
Tadashi Sato, Kokubunji, and Yasuyuki Tamura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1986, Ser. No. 938,021

Claims priority, application Japan, Dec. 9, 1985, 60-275084; Dec. 9, 1985, 60-275085; Dec. 9, 1985, 60-275086; Dec. 9, 1985, 60-275087; Dec. 9, 1985, 60-275088; Dec. 9, 1985, 60-275089; Dec. 9, 1985, 60-275090; Dec. 9, 1985, 60-275091; Dec. 23, 1985, 60-287831; Dec. 23, 1985, 60-287832; Dec. 23, 1985, 60-287833; Dec. 23, 1985, 60-287834; Dec. 23, 1985, 60-287835; Dec. 23, 1985, 60-287836; Dec. 23, 1985, 60-287837; Dec. 23, 1985, 60-287838

Int. Cl.[4] G01D *15/10*

U.S. Cl. 346—76 PH 34 Claims



1. A recording apparatus for recording an image on a record medium, comprising:

a transfer medium transferable on the record medium to record the image;

drive means for rotating said transfer medium;

recording means for effecting a recording position of said transfer medium in response to image information, and setting said transfer medium in a transferable condition to record the image;

pressing means for pressing the record medium to said transfer medium in a transferring position so as to transfer said transfer medium onto the record medium; and

maintaining means for maintaining a substantially constant distance between the recording position of said recording means and the transferring position of said pressing means regardless of a variation in size of said transfer medium.

4,768,042

THERMOSENSITIVE GRADATION PRINTER

Hiroyoshi Zama, Soma, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Feb. 2, 1987, Ser. No. 9,792

Claims priority, application Japan, May 6, 1986, 61-104430

Int. Cl.[4] G01D *15/10*; H04N *1/23*

U.S. Cl. 346—76 PH 1 Claim





1. In a gradation printer of the type having:

at least one thermal element for printing successive dots on a heat sensitive paper which is moved in a sheet feeding direction with respect to said at least one thermal element,

feeding means for feeding the heat sensitive paper at a constant speed in the sheet feeding direction in contact with said thermal element, and

current applying means for applying current for a selected heating time t_i to said thermal element while the paper is fed at a constant speed by said feeding means so as to form a dot which is colored over an area extending a length in the sheet feeding direction which corresponds to the length of time t_i of heating of said the thermal element on the heat sensitive paper, whereby the coloring area for each dot position can be varied over a plurality N of colored area gradations by N different lengths of heating times t_i extending from 0 to a maximum time T in increments of T/(N−1),

the improvement comprising:

control means for controlling the onset and end of each of the heating times t_i such that each corresponding colored area is substantially centered on the paper relative to a position corresponding to the time T/2 in the sheet feeding direction, whereby a succession of differently graded dots formed by said at least one thermal element in the sheet feeding direction can be more clearly distinguished from each other, thereby resulting in an improved gradation printing.

4,768,043

OPTICAL SYSTEM FOR CHANGING LASER BEAM SPOT SIZE DURING SCANNING OF SCANNING LINE

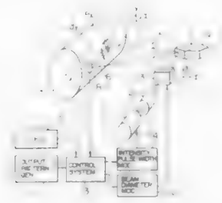
Susumu Saito, Hachioji, and Akira Arimoto, Musashimurayama, both of Japan, assignors to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of Tokyo, Japan

Filed May 22, 1987, Ser. No. 52,883

Claims priority, application Japan, May 23, 1986, 61-117390

Int. Cl.[4] G01D *9/42, 15/14*; H04N *1/21*

U.S. Cl. 346—108 10 Claims



1. A recording optical system comprising:

a laser light source;

means for modulating an intensity of a laser beam emitted from said light source;

means for shaping a cross sectional shape of the laser beam;

means for controlling said modulating means and said shaping means; and

deflecting and focusing means for focusing and scanning the shaped laser beam onto a scanning surface along a scanning line,

wherein said shaping means enables variation of a laser beam size in a direction (sub-scanning direction) perpendicular to a scanning direction on the scanning surface during scanning of the scanning line.

4,768,044

PRINTING DEVICE

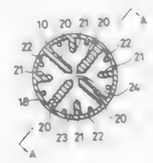
Masashi Shimosato, and Shigeru Okuno, both of Mishima, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

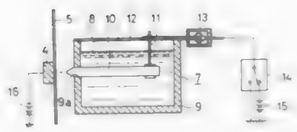
Filed Aug. 20, 1987, Ser. No. 87,214

Claims priority, application Japan, Aug. 27, 1986, 61-200392

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R 11 Claims





1. A printing device, comprising:

a conductive recording electrode having formed at the center of the section along the entire length thereof a narrow hole for supplying ink to a front end portion of said recording electrode by a capillary phenomenon, said recording electrode further having a through-hole formed therein along the direction of the length thereof, said through-hole communicating with said narrow hole and a rear end portion of said recording electrode; and

an opposing electrode located in an opposing relationship to said recording electrode with a record medium interposed therebetween.

4,768,045

INK DROPLET DETECTING APPARATUS

Haruhiko Koto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Oct. 9, 1986, Ser. No. 917,641

Claims priority, application Japan, Oct. 9, 1985, 60-225750; Oct. 14, 1985, 60-228315

Int. Cl.[4] G01D *15/16*

U.S. Cl. 346—140 R 23 Claims



1. An ink droplet detecting apparatus for use in an ink-on-demand jet printer haaving a nozzle for ejecting an ink droplet comprising, a first electrode disposed at a predetermined distance from and facing said nozzle; a second electrode positioned so that an ink droplet reaching the first electrode changes the impedance value between the first and second electrodes; and a detection means for detecting changes in impedance between the first electrode and second electrodes, whereby ink flight condition is detected.

4,768,046

DOT PRINTER WITH TONER CHARACTERISTIC COMPENSATION MEANS

James C. Minor, and Orville C. Rodenberg, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 23, 1987, Ser. No. 111,946

Int. Cl.[4] G01D *15/00*

U.S. Cl. 346—160.1 5 Claims



1. A dot printer apparatus for producing a series of electro-

VOL 1093 ISS 5 AUG 30 1988 UMI

static latent images on a recording member, said apparatus comprising:

an array of discrete elements for dot recording on the recording medium;

driving means for selectively enabling the elements for predetermined periods of time during a cycle of operation to form an electrostatic latent image on the recording member;

means for developing the latent image with toner particles;

means for producing a control signal representative at least in part of the charge-to-mass ratio of the toner particles and

means responsive to said control signal for determining the enablement time of the elements during each cycle of operation according to the charge-to-mass ratio of the toner particles.

4,768,047

PHOTOGRAPHIC CAMERA

Nobuyuki Taniguchi, Nishinomiya; Takeo Hoda, Kawachinagano; Yoshiaki Hata, Nishinomiya; Manabu Inoue, Kobe; Yoshinobu Kudo, Sakai, and Hiroshi Ueda, Toyokawa, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 3, 1986, Ser. No. 937,509

Claims priority, application Japan, Dec. 4, 1985, 60-271630; Dec. 4, 1985, 60-271631; Dec. 16, 1985, 60-281051

Int. Cl.[4] G03B 7/099

U.S. Cl. 354—195.1 6 Claims



1. A photographic camera having a real focal length photographing mode and a pseudo focal length photographing mode to thereby specify a scope for printing narrower than the scope in said real focal length photographing mode, said photographic camera comprising:

a mode selecting means for selecting either of said real focal length photographing mode and said pseudo focal length photographing mode;

a calculating means for calculating a proper exposure value in accordance with a brightness of an object and a sensitivity of a film loaded in the camera, and capable of rectifying the exposure value to be calculated in said pseudo focal length photographing mode to an over-exposure side relative to the proper exposure value to be calculated in case of said real focal length photographing mode; and

a control means responsive to said calculating means for controlling the exposure in accordance with the calculated exposure value.

4,768,048

CAMERA HAVING PARTIALLY RETRACTABLE TAKING OPTICAL SYSTEM

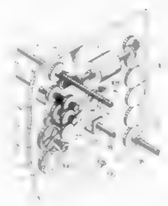
Hiroshi Wakabayashi, Yokohama, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Division of Ser. No. 677,516, Dec. 3, 1984, Pat. No. 4,669,848. This application Jan. 29, 1987, Ser. No. 8,321

Claims priority, application Japan, Dec. 7, 1983, 58-230883; Dec. 7, 1983, 58-230884; Dec. 15, 1983, 58-237014; Feb. 17, 1984, 59-29050; Feb. 21, 1984, 59-31141; Mar. 23, 1984, 59-55786; Apr. 16, 1984, 59-75991; Apr. 19, 1984, 59-79062

Int. Cl.[4] G03B 3/00, 13/12

U.S. Cl. 354—195.12 8 Claims





1. A camera comprising:

(a) photographing optical means having an optical system capable of altering the focal length of said photographing optical means;

(b) viewfinder means having an optical system capable of altering magnifying power of said viewfinder means corresponding to the focal length of said photographing optical means;

(c) an electric motor;

(d) first transmission means adapted for the connection of said motor to said photographing optical means;

(e) second transmission means adapted for the connection of said motor to said viewfinder means, said second transmission means including means for separating the connection of said motor to said viewfinder means during focusing of said photographing optical means; and

(f) control means including circuit means for actuating said motor, the control means causing said motor to simultaneously drive said first and second transmission means for altering the focal length of said photographing optical means and for altering the magnifying power of said viewfinder means.

3. A camera comprising:

(a) photographing optical means capable of switchover between first and second focal lengths;

(b) viewfinder optical means capable of effecting switchover between first and second magnifications corresponding to said first and second focal lengths, respectively, of said photographing optical means, the viewfinder optical means including a finder optical path, a first movable optical system which is inserted in said finder optical path for making said first magnification and retracted from said finder optical path for making said second magnification, and a second movable optical system disposed near said first movable optical system; and

(c) means for driving said photographing optical means and said first and second movable optical systems in synchronism with one another, said second movable optical system being displaced from the path of said first movable optical system during the movement of said first movable optical system;

said driving means including means for rotating said second movable optical system around an axis substantially normal to said finder optical path, and means for moving said second movable optical system along said finder optical path.

4,768,049

STEREOSCOPIC CAMERA SLIDE BAR

Edward A. Barrett, Finleyville; Marion B. Molchen, Washington, and Henry J. Kellner, West Mifflin, all of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Jan. 12, 1987, Ser. No. 2,595

Int. Cl.[4] G03B 17/00

U.S. Cl. 354—294 9 Claims



1. A slide bar apparatus for taking three dimensional slides comprising:

a first horizontally disposed member;

means on said first member for attaching said first member to a tripod;

a slide bar, at least a top portion of said slide bar being horizontally disposed;

means for attaching said slide bar to said first member in a position above said first member;

slide bar assembly means operably attached to said slide bar for movement between a first position and a second position thereof, said slide bar assembly having a bore disposed therein;

means for selectively and releasably holding said slide bar assembly means in the first or the second position thereof, said holding means comprising a first and second depression on said slide bar assembly means and a detent member reciprocally disposed in said bore in the slide bar assembly means, means for biasing said detent member toward said slide bar, said slide bar assembly means having a first position wherein said detent member is disposed in said first depression and a second position wherein said detent member is disposed in said second depression whereby said slide bar assembly means will be held securely in either said first or second position and can quickly and easily be moved between said first and second positions thereof; and

means for selectively and releasably attaching a camera to said slide bar assembly means.

4,768,050

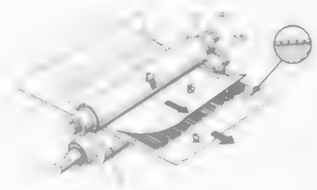
PRESSURE DEVELOPMENT APPARATUS FOR IMAGING SHEETS EMPLOYING PHOTOSENSITIVE MICROCAPSULES

Jack Beery, Miamisburg, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Apr. 16, 1987, Ser. No. 39,393

Int. Cl.[4] G03D 9/02; G03C 1/72

U.S. Cl. 354—304 10 Claims



1. In a roll-type pressure developer in which an image on sheet material is developed by passing the sheet material between the nip of first and second cylindrical pressure rolls to exert a high localized pressure on the sheet material across a zone corresponding to the width of said material and in which the pressure rolls have a length which exceeds the width of said zone, the improvement for the uniform loading of the pressure rolls, comprising:

said first pressure roll being hollow and having an inside surface,

a loading shaft extending generally through said first pressure roll and joined with said roll at the axial central region of said roll and extending axially outwardly from each side of said central region in non-contacting relation to said roll,

means journalling said loading shaft at the ends thereof outwardly of said first roll in nip-forming relation with said second roll,

force means acting on the journalled ends of said shaft for pressure-loading said rolls together, and

internal relief means in one of said rolls axially outwardly of said zone for substantially relieving pressure between said rolls at regions thereof axially outwardly of said zone.

4,768,051

ELECTRIC DRIVING DEVICE

Saburo Sasaki, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 7, 1987, Ser. No. 35,513

Claims priority, application Japan, Apr. 7, 1986, 61-50921[U]; Apr. 19, 1986, 61-90950; Apr. 30, 1986, 61-100388; Apr. 30, 1986, 61-100389

Int. Cl.[4] G03B 3/10, 15/05, 9/08

U.S. Cl. 354—400 3 Claims

1. An electric driving device for a camera in which various actuation members for photographing operation are driven by a motor, comprising:

a driving plate rotationally driven by a motor capable of forward and backward rotation and having driving means comprising a plurality of driving elements including an engaging protrusion and a pin at an outer surface thereof,

a strobo actuation member driven by said driving means when said driving plate is rotated by a predetermined amount from an initial position in a first direction for protruding a strobo member from a stowed position to an operating position,

a lens actuation member driven by said driving means when

VOL 1093 ISS 5 AG 30 1988 UMI

said driving plate is rotated by a predetermined amount from the initial position in a second direction opposite to said first direction for displacing a lens to a focus-adjusted position,

a shutter actuation member driven by said driving means when said driving plate is rotated from the initial position



in said first direction followed by a rotation toward said initial position for opening and closing a shutter and

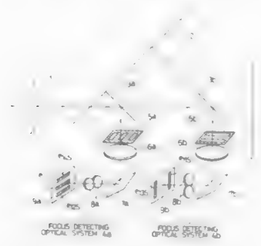
control means for controlling a rotational direction and amount of rotation of said motor in order that said driving plate is rotated in the first direction and in the second direction relative to the initial position.

4,768,052

FOCUS DETECTING DEVICE

Masataka Hamada, Minamikawachi; Toshihiko Karasaki, Sakai; Toru Matsui, Sakai, and Yukio Maekawa, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1987, Ser. No. 85,410
Claims priority, application Japan, Aug. 18, 1986, 61-191682
Int. Cl.[4] G03B *3/00*
U.S. Cl. 354—402 10 Claims



1. A focus detection device for use in a camera system including an objective lens, comprising:

means for measuring the luminance distribution of a plurality of divided areas of an objective field to be photographed to produce a plurality of luminance distribution signals in correspondence to said areas;

means for producing a plurality of correction data signals each relating to aberrations of the objective lens in each areas;

means for determining the weights of the plurality of correction data signals to produce a plurality of weight signals; and

means for performing a focus detection calculation on the basis of the plurality of luminance distribution signals, the plurality of correction data signals, and the plurality of weight signals to produce a resultant focus detection signal.

4,768,053

DISTANCE MEASURING APPARATUS

Motonobu Matsuda, Kawachinagano; Yoshihiro Tanaka, Osaka; Motohiro Nakanishi, Kobe; Nobuyuki Taniguchi, Nishinomiya, and Hiroshi Ootsuka, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 23, 1986, Ser. No. 945,500
Claims priority, application Japan, Dec. 25, 1985, 60-297061
Int. Cl.[4] G03B *3/00*; G01C *3/08*
U.S. Cl. 354—403 27 Claims



1. A distance measuring apparatus for determining a distance to an object, comprising:

light emitting means for projecting light toward a direction for detecting a distance, said light emitting means having difference in quantities of light to be projected dependent on angles of projection;

light receiving means for receiving reflected light obtained when said light projected from said light emitting means is reflected on said object existing in the light projecting direction, said light receiving means comprising a converging lens for converging said reflected light and photoelectric converting means for receiving said reflected light converged by said converging lens and providing an electric signal dependent on the quantity of received light, said converging lens having difference in light transmittivity values among the central portion thereof and peripheral portions thereof;

compensating means for compensating the difference in quantities of projected light dependent on the projecting angles of said light emitting means together with the difference in light transmittivity values of said converging lens thereby making said electric signal constant whenever a distance to said object within a range to be measured is constant, irrespective of the difference in the quantities of projected light and the difference in light transmittivity values; and

distance determining means for determining said distance to said object based on said electric signal provided from said photoelectric converting means.

4,768,054

FOCUS CONDITION DETECTING DEVICE

Toshio Norita, Sakai; Tokuji Ishida, Daito; Masataka Hamada, Osaka; Toshihiko Karasaki, Sakai, and Nobuyuki Taniguchi, Nishinomiya, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 13, 1987, Ser. No. 14,923
Claims priority, application Japan, Feb. 14, 1986, 61-31392; Mar. 5, 1986, 61-49060; Mar. 5, 1986, 61-49061; Mar. 5, 1986, 61-49062
Int. Cl.[4] G03B *3/10*
U.S. Cl. 354—408 10 Claims

1. An automatic focusing device, comprising:

(a) an objective lens;

(b) sensing means for sensing light intensity distributions within first and second areas of the field of view of said objective lens to generate first and second light intensity distribution signals, respectively, said light intensity distributions varying with the focus condition of said objective lens relative to an object;

(c) first and second focus detection means selectively activated for detecting the focus condition of said objective lens in accordance with said first and second light intensity distribution signals, respectively;

(d) drive means for driving said objective lens for focusing in accordance with the focus condition detected by activating one of said first and second focus detection means;



(e) inhibiting means for inhibiting the lens drive operation of said drive means when said objective lens has been brought into an in-focus condition as a result of the lens drive operation of said drive means;

(f) mode change-over means for changing-over the operation mode of said automatic focusing device between first and second modes wherein said first mode is a one-shot autofocus mode while said second mode is a continuous autofocus mode; and

(g) control means for selectively activating one of said first and second focus detection means in response to the change-over of the operation mode of said automatic focusing device, so that said first focus detection means is activated in said first mode while said second focus detection means is activated in said second mode.

4,768,055

IMAGE FORMING MACHINE HAVING A TONER RECYCLING UNIT

Junichi Takamatsu, Osaka, and Kazunori Akiyama, Suita, both of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jun. 5, 1987, Ser. No. 58,955
Claims priority, application Japan, Jun. 17, 1986, 61-139272; Jun. 30, 1986, 61-151660; Jul. 9, 1986, 61-106092[U]; Sep. 16, 1986, 61-215938
Int. Cl.[4] G03G *15/00, 21/00*
U.S. Cl. 355—3 R 32 Claims

1. An image forming machine comprising:

an image bearing member having a photosensitive material thereon;

a developing device for developing a latent electrostatic image formed on a surface of the photosensitive material, said developing device including a developing chamber, applicator means disposed in said developing chamber for applying toner to the latent electrostatic image, and a toner holding chamber communicating with said developing chamber through a toner discharge opening;

a cleaning device for removing residual toner remaining on the surface of the photosensitive material, said cleaning device including toner removing means for acting on the surface of the photosensitive material and removing the residual toner, and a toner recovery chamber for recovering the residual toner removed by said toner removing means; and

toner feed means for conducting the toner in said cleaning device to said developing device, said toner feed means including a hollow cylindrical member connecting said cleaning device to said developing device and permitting communication between said toner recovery chamber and said toner holding chamber, and toner transfer means disposed within said hollow cylindrical member for transferring the toner in said toner recovery chamber to said toner holding chamber through said hollow cylindrical member, said hollow cylindrical member having a transparent or semitransparent portion.

19. An image forming machine comprising:

an image bearing member having a photosensitive material thereon;

a developing device for developing a latent electrostatic image formed on a surface of the photosensitive material,





said developing device having a developing chamber and applicator means disposed in said developing chamber for applying toner to the latent electrostatic image;

a cleaning device for removing residual toner remaining on the surface of the photosensitive material, said cleaning device having toner removing means for acting on the surface of the photosensitive material and removing the residual toner and a toner recovery chamber for recovering the toner removed said toner removing means, wherein unused toner is sealed in said toner recovery chamber; and

toner feed means for feeding the toner in said toner recovery chamber to said developing chambe..

4,768,056

IMPACT PRINTER AND COPIER

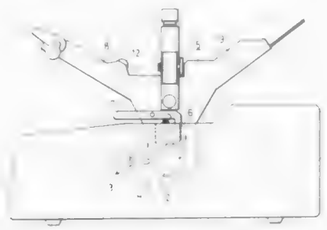
Makoto Tomoyori, Iwate, and Sunao Hatanaka, Takizawa, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 21, 1987, Ser. No. 98,789
Claims priority, application Japan, Nov. 27, 1986, 61-280714
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 R 9 Claims

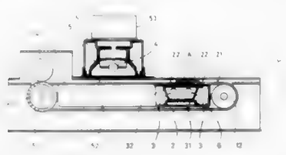
1. A printer of the type which includes a printer body in which a print head is located in an opposing relationship to a platen, and a paper transport device mounted on said printer body and including a paper supply section for supplying one of paper sheets of a predetermined width stored in a pile on a supply paper tray to a print position between said print head and said platen in said printer body, and a paper discharging section for discharging a paper sheet from the print position onto a discharge paper tray, said printer comprising a developing unit located between said paper supply station and said paper discharging station of said paper transport device and including a latent image forming means in the form of a belt

VOL 1093 ISS 5 AG 30 1988 UMI

having a smaller width than the width of the paper sheets, a transfer station for transferring a toner image formed on said latent image forming means to a paper sheet, and means defining a paper path for passing a paper sheet through said transfer station, and a fixing device located outside said developing unit for fixing a toner image on a paper sheet discharged from said developing unit to a surface of the paper sheet.



4,768,057
FLASH FIXING APPARATUS
Toyohiko Kumada, and Tatsuo Horiuchi, both of Tatebayashi, Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 6, 1986, Ser. No. 927,436
Claims priority, application Japan, Dec. 13, 1985, 60-191048[U]
Int. Cl.[4] G03G *15/00*
U.S. Cl. 355—3 FU 12 Claims



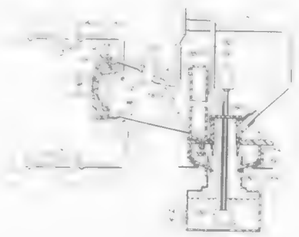
1. A flash fixing apparatus for fixing an unfixed toner image on an upper surface of a base sheet comprising:
a flash lamp for radiating light toward said unfixed toner image as said base sheet is conveyed past said flash lamp;
a conveyor mechanism for conveying said base sheet past said flash lamp, said conveyor mechanism including a negative pressure compartment having an upper board containing a plurality of suction holes and a plurality of conveyor belts for moving said base sheet along the upper surface of said upper board;
an auxiliary heating system including at least one halogen incandescent lamp and a reflector for directing light radiated from said incandescent lamp toward said upper board to heat said upper board and thereby heat the lower surface of said base sheet to preheat said base sheet and improve the fixing of said toner image by said flash lamp; and,
wherein said auxiliary heating system is located within said negative pressure compartment in order to provide for the preheating of said base sheet while maintaining the size of said flash fixing apparatus at a minimum.

4,768,058
REPRODUCTION APPARATUS WITH EVERTING BELLOWS
Gregory L. Kowalski, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 11, 1987, Ser. No. 95,197
Int. Cl.[4] G03G *15/00, 15/26*
U.S. Cl. 355—8 2 Claims



1. A reproduction apparatus comprising:
means for supporting a radiation sensitive member for exposure;
optical means including one or more optical elements for forming an image on said radiation sensitive member;
means for supporting an optical member of said optical means in each of at least two positions in both of which positions the optical member is positioned in an optical path for forming an image upon the radiation sensitive member;
a bellows coupled to said optical member; and
means for supporting said bellows such that the orientation of the bellows is everted when in one of said at least two positions versus its orientation in the other of said at least two positions.

4,768,059
DEVELOPING METHOD FOR ELECTROPHOTOGRAPHIC APPARATUS
Kazuo Takahashi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 9, 1987, Ser. No. 106,290
Claims priority, application Japan, Oct. 9, 1986, 61-240231
Int. Cl.[4] G03G *15/10*
U.S. Cl. 355—10 13 Claims



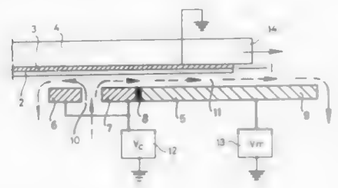
7. A developing method for use in an electrophotographic apparatus of the type having a processing head designed for conducting various types of processing on an electrophotographic film and equipped with a developing chamber defined by a protruding frame, said developing chamber being adapted to be supplied with a developer so as to develop an image on said electrophotographic film brought into said developing chamber, said developing method comprising the steps of:
(a) pressing said electrophotographic film onto said frame;
(b) supplying said developer into said developing chamber; and
(c) supplying a seal section provided around said frame defining said developing section with a seal gas of a pressure higher than the pressure in said developing section, in such a manner as to allow said seal air to flow from said seal section into said developing section thereby stirring said developer in said developing section during development.

4,768,060
PUSH-PULL LIQUID DEVELOPMENT METHOD AND APPARATUS
Benzion Landa, Edmonton, Canada, and Yakov Krumberg, Rehovot, Israel, assignors to Savin Corporation, Stamford, Conn.
Filed Mar. 5, 1987, Ser. No. 22,246
Int. Cl.[4] G03G *15/10*
U.S. Cl. 355—10 3 Claims



1. An electrostatic apparatus for forming an image having a photoconductor, a push development electrode and a pull development electrode, wherein said photoconductor has a charge having a polarity,
means for applying an electrical potential to said push electrode, wherein an electrical potential having a polarity opposite to said polarity of said photoconductor charge is applied to said push development electrode.

4,768,061
DEVICE FOR THE DEVELOPMENT OF A LATENT ELECTROSTATIC IMAGE, APPARATUS FOR PRODUCING PRINTS BY ELECTROPHOTOGRAPHIC MEANS AND METHOD FOR DEVELOPING A LATENT ELECTROSTATIC IMAGE
Antonius B. T. M. Koenders, Zeddam; Theodorus P. S. Louwers, Boxmeer, both of Netherlands, and Julia M. Alston, Myrtle Bank, Australia, assignors to Coulter Stork Patents B.V., Amsterdam, Netherlands
Filed Feb. 24, 1987, Ser. No. 17,619
Claims priority, application Netherlands, Feb. 25, 1986, 8600473; Australia, Oct. 23, 1986, PH8649
Int. Cl.[4] G03G *15/06*
U.S. Cl. 355—14 D 9 Claims



1. Device for developing a latent electrostatic image, situated on a surface, by means of particulate developer, in which the device and image can move relatively with respect to each other and comprising at least developer supply means for the uniform application of developer, a development electrode fitted in an electrically insulated manner and developer removal means, wherein the development electrode comprises several regions which are electrically insulating with respect to each other and means present to make it possible to supply electrical potentials, independent of each other, to said regions in which the regions are formed by one or more regions of a first type having relatively large size when measured parallel to the direction of relative movement and one or more regions of a second type having relatively small size when measured parallel to the direction of relative movement, both types of regions extending over the full width of the development electrode and perpendicular to the direction of relative movement, said developer supply means comprising a supply slit which is surrounded by regions of the first and/or second type and whose largest dimension is perpendicular to the direction of the relative movement of the device; said first and second type regions being independently energizable to a preselected voltage and polarity in order to improve developer density uniformity, prevent background density and control contrast.

4,768,062
CLEANING DEVICE
Misao Tanzawa, Kawasaki, and Shuichi Endo, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Oct. 30, 1986, Ser. No. 924,830
Claims priority, application Japan, Oct. 30, 1985, 60-241299; Oct. 30, 1985, 60-165786[U]
Int. Cl.[4] G03G *21/00*
U.S. Cl. 355—15 10 Claims



1. A cleaning device characterized by comprising a blade adapted to be in contact with an image carrier on the trailing side thereof for removing residual toner on a surface of said image carrier, a blade holder for rotatably supporting said cleaning blade and a polygonal member rotatable for moving toner scraped from said surface of said image carrier to a toner recovery means, a rotation center of said blade holder being coincident with a rotation center of said polygonal member, said blade being in contact with said image carrier at a contact point, and said rotation center of said blade holder being arranged in the vicinity of a line tangential to a surface of said image carrier and passing through said contact point, wherein said rotation center is located downwardly from said contact point.

VOL 1093 ISS 5 AG 30 1988 UMI

4,768,063

SHEET MATERIAL RECEIVING DEVICE

Toshiaki Kunishima; Takeshi Ikeda, both of Yokohama; Michio Kasuya, Fuchu; Hiroaki Matsumoto, and Masakatsu Iwata, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 591,189, Mar. 19, 1984, abandoned.
This application May 12, 1986, Ser. No. 862,153
Claims priority, application Japan, Mar. 28, 1983, 58-50535; Mar. 28, 1983, 58-50536; Jul. 6, 1983, 58-121650; Jul. 22, 1983, 58-134175; Jul. 22, 1983, 58-134176; Jul. 22, 1983, 58-114088[U]; Jul. 27, 1983, 58-135868; Aug. 3, 1983, 58-142062; Aug. 3, 1983, 58-120909[U]; Aug. 9, 1983, 58-145543; Aug. 9, 1983, 58-123663[U]
Int. Cl.[4] G03B *24/00*; B26D *7/06, 7/00*
U.S. Cl. 355—29 19 Claims



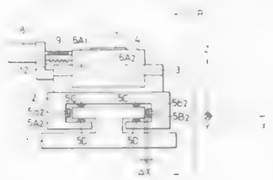
1. In combination, a sheet material receiving device and an image forming apparatus, comprising:
sheet material grip means for gripping a front end side of a sheet material conveyed thereto;
a discharge port for discharging therefrom a rear end side of the sheet material gripped by said sheet material grip means; and
a support member for supporting the sheet material the front end side of which is gripped and the rear end side of which is discharged, said support member being located substantially vertically above the sheet material grip means,
wherein said grip means is disposed inside of said image forming apparatus, and wherein said support member is openable and closable and constitutes a portion of an outer wall of said image forming apparatus when closed.

4,768,064

CONVEYOR DEVICE FOR ALIGNMENT

Junji Isohata; Mikio Nakasugi, both of Tokyo, and Takao Yokomatsu, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 80,194, Jul. 31, 1987, abandoned, which is a continuation of Ser. No. 898,803, Aug. 21, 1986, abandoned, which is a continuation of Ser. No. 627,522, Jul. 3, 1984, abandoned. This application Dec. 28, 1987, Ser. No. 139,114
Claims priority, application Japan, Jul. 13, 1983, 58-126085
Int. Cl.[4] G03B *27/42*
U.S. Cl. 355—53 3 Claims



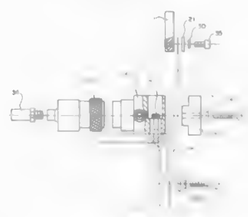
1. A positioning apparatus for positioning a stage, used in a semiconductor manufacturing process, relative to a reference portion, comprising:
a guide surface provided on said reference portion for guiding said stage in a predetermined direction;
a fluid ejecting member provided on said stage for ejecting fluid toward said guide surface so as to support said stage relative to said reference portion; and
displacement means for changing the distance between said fluid ejecting member and said stage so as to displace said stage in a direction perpendicular thereto with respect to said reference portion.

4,768,065

TABLE STABILIZATION ASSEMBLY

Russell N. Wells, II, Santa Clara, Calif., assignor to General Signal Corp., Stamford, Conn.

Filed Oct. 1, 1986, Ser. No. 914,036
Int. Cl.[4] G03B *27/52*
U.S. Cl. 355—43 4 Claims



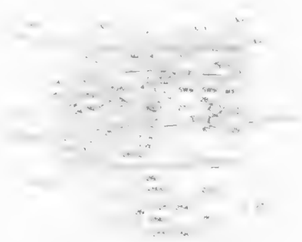
1. Apparatus for use in a microlithography system, said apparatus comprising
a table for supporting a movable stage,
frame support means for supporting said table,
brake leaf means having engageable brake leaf members attached between said table and said support means, respectively,
means for clamping said brake leaf members together when said stage is moved in order to stabilize said table.

4,768,066

COPYING MACHINE

Masazumi Ito, Toyohashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 787,970, Oct. 16, 1985, abandoned.
This application Mar. 6, 1987, Ser. No. 22,978
Claims priority, application Japan, Oct. 17, 1984, 59-217560
Int. Cl.[4] G03B *27/52*
U.S. Cl. 355—55 9 Claims



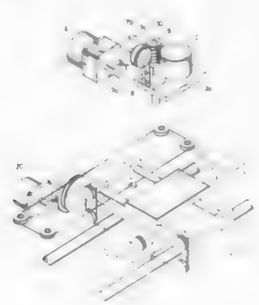
1. A copying machine for producing copies of variable magnification comprising:
means for inputting arbitrary numerical values;
means for alternatively selecting a linear magnification mode wherein the numerical value is handled as a linear magnification and an area magnification mode wherein the numerical value is handled as an area magnification;
lower limit means for changing the input numerical value to a first lower limited value when the input numerical value is smaller than the first lower limited value in the linear magnification mode, and for changing the input numerical value to a first upper limited value when the input numerical value is smaller than the second lower limited value in the area magnification mode;
upper limit means for changing the input numerical value to a first upper limited value when the input numerical value is larger than the first upper limited value in the linear magnification mode, and for changing the input numerical value to a second upper limited value when the input numerical value is larger than the second upper limited value in the area magnification mode;
means for storing the input numerical value or the changed numerical value, and
means for producing copies on the magnification corresponding to the stored numerical value.

4,768,067

REPRODUCING CAMERA FOCUS CONTROL METHOD

Koji Shiga, and Tatsunari Arito, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1984, Ser. No. 573,758
Claims priority, application Japan, Jan. 25, 1983, 58-10237
Int. Cl.[4] G03B *27/34, 27/40*
U.S. Cl. 355—56 3 Claims



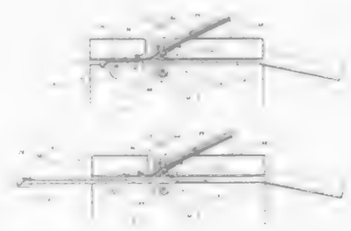
1. A method for controlling the focusing position of an objective lens of a reproducing camera system in which images are to be recorded at a plurality of image positions in one plane on a photosensitive material supported by a supporting base which has a position which deviates from a reference position in accordance with said image position, comprising the steps of:
storing values, for a plurality of said image positions, each indicative of said deviation in the position of said supporting base at each of said image positions, said value being related to the distance between the position of said supporting base and said reference position;
for each image position being recorded, reading out the corresponding one of said values; and
positioning said lens of said camera in accordance with the read-out value so as to provide correct focusing for each of said image positions.

4,768,068

DOCUMENT FEEDER AND FLATTENER FOR MOVING PLATEN COPIERS

Stephen R. Partilla, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 20, 1987, Ser. No. 75,479
Int. Cl.[4] G03G *21/00*; G03B *27/62*
U.S. Cl. 355—75 9 Claims



1. In a document handling system for a copier with a moving platen imaging system, wherein the imaging platen of the copier is integral a moving platen unit reciprocally driven relative to the stationary body of the copier in a non-imaging movement and an imaging movement, for imaging a document sheet on said platen moving with said platen during said imaging movement at a stationary narrow scanning imaging station underlying said platen, the improvement comprising:
document registration and clamping means adjacent one end of said moving platen unit and moving therewith;
means for opening and closing said document registration and clamping means to receive and clamp one end of the document sheet at a registration position;
document sheet input means for guiding the document sheet into said document registration and clamping means while it is so opened, and into a copying position overlying said platen;
narrow imaging backing plate means, not moving with said moving platen unit, and movable relative to said platen into an imaging position closely and stationarily overlying only a minor portion of said platen at said imaging station for ironing the document at the imaging station;
said imaging backing plate means providing a light reflective imaging background surface optically overlying said imaging station in said imaging position;
said imaging backing plate means being adapted to allow a document sheet on said platen to be pulled under said imaging backing plate means by said imaging movement of said moving platen unit;
wherein said imaging backing plate means in said imaging position flattens the document sheet pulled thereunder for improved document imaging;
said imaging backing plate means further including lifting means for automatically lifting said imaging backing plate means away from said platen during said non-imaging movement of said moving platen unit;
and means for automatically removing the document sheet from said platen, after it has been copied.

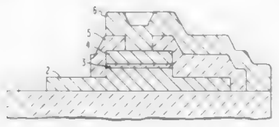
VOL 1093 ISS 5 AG 30 1988 UMI

4,768,069

SUPERCONDUCTING JOSEPHSON JUNCTIONS

John J. Talvacchio, Churchill Boro; Alexander I. Braginski, Pittsburgh; Michael A. Janocko, Edgewood Boro, and John R. Gavaler, Penn Hills Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 23, 1987, Ser. No. 30,003
Int. Cl.[4] H01L *39/22*
U.S. Cl. 357—5 13 Claims



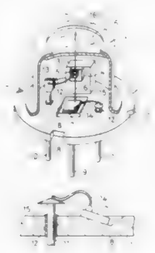
1. A superconducting Josephson junction comprising:
(A) a layer of NbN on a substrate;
(B) a solid solution of an epitaxial layer of a pseudo-binary compound on said layer of NbN, said solid solution lying between about 3 atomic % MgO and 97 atomic % CaO, and about 97 atomic % MgO and 3 atomic % CaO; and
(C) an epitaxial layer of NbN on said layer of pseudo-binary compound.

4,768,070

OPTOELECTRONICS DEVICE

Yasushi Takizawa; Atsushi Sasayama, both of Komoro; Yoshihiko Kobayashi, Tateshina; Yukio Takahashi, and Yuuji Kakegawa, both of Komoro, all of Japan, assignors to Hitachi, Ltd, Tokyo and Hitachi Tobu Semiconductor, Ltd., Saitama, both of, Japan

Filed Feb. 17, 1987, Ser. No. 15,716
Claims priority, application Japan, Mar. 20, 1986, 61-60582; Mar. 20, 1986, 61-60583
Int. Cl.[4] H01L *31/12*
U.S. Cl. 357—17 20 Claims



1. In an optoelectronics device having a stem, a light-receiving element which serves as a monitor light receiver, and a semiconductor laser having a light emitting surface parallel with a surface of the stem which generates a laser beam, said light-receiving element having a light-receiving surface inclined at an acute angle with respect to the light-emitting surface of said semiconductor laser and the surface of the stem for measuring an output power of a beam of light emitted from said semiconductor laser,

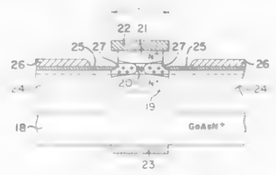
the improvement comprising a bonding surface of said light-receiving element inclined at the acute angle relative to the surface of the stem, and a lead extending through the stem and having at an end thereof a bonding surface adapted to be electrically connected to said light-receiving element, wherein said bonding surface of said light-receiving element and the bonding surface of the lead are parallel with each other and at the acute angle to the surface of the stem so that a bonding tool can be brought into perpendicular contact with both bonding surfaces and a wire to be bonded thereto.

4,768,071

BALLISTIC TRANSPORT MESFET

Patrick Etienne, and Trong Linh Nuyen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Oct. 13, 1981, Ser. No. 312,258
Claims priority, application France, Oct. 31, 1980, 80 23385
Int. Cl.[4] H01L *29/80, 29/08, 29/56*
U.S. Cl. 357—22 6 Claims



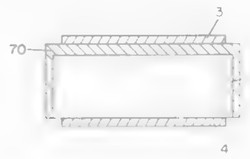
1. In a field effect transistor with ultrashort gate, comprising, supported by a heavily doped N+ type substrate, a first N+ type epitaxial layer doped to the level of about 10^{18} at. cm^{-3}, a second N type active epitaxial layer doped to about the level of $\leqq 10^{15}$ at. cm^{-3}, and a third N+ type epitaxial layer doped to the level of about 10^{18} at. cm^{-3}, as well as two electric source and drain contacts, the first contact deposited on the third layer, the second contact deposited on the free face of the substrate, and a gate contact, the thickness of the active layer being less than the mean free path of the electrons in said active layer, and the thickness of said gate contact being smaller than that of said active layer.

4,768,072

MULTILAYER SEMICONDUCTOR DEVICE HAVING AN AMORPHOUS CARBON AND SILICON LAYER

Yasakazu Seki, Tokyo; Noritada Sato, Yokosuka, and Masaya Yabe, Kanagawa, all of Japan, assignors to Fuji Electric Corporate Research and Development Co., Ltd. and Fuji Electric Co. Ltd., both of, Japan

Continuation of Ser. No. 661,676, Oct. 17, 1984, abandoned.
This application Oct. 2, 1986, Ser. No. 914,501
Claims priority, application Japan, Jan. 20, 1984, 59-8800
Int. Cl.[4] H01L *27/14*
U.S. Cl. 357—29 2 Claims



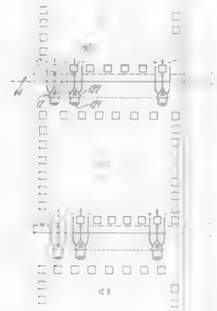
1. A device comprising:
(a) a single crystal silicon substrate of a first conductivity type;
(b) an amorphous layer comprising carbon and silicon contiguous with at least one major surface of the substrate, wherein the composition of the amorphous layer is such that said amorphous layer has a larger mobility band gap and a higher resistivity than an undoped amorphous silicon film;
(c) a first electrode overlying the amorphous layer; and
(d) a second electrode contiguous with the major surface of the substrate opposite said amorphous layer and making electrical contact with the substrate.

4,768,073

TESTING INTEGRATED CIRCUITS

Garry R. Adams, Great Dunmow, Great Britain, assignor to ITT Gallium Arsenide Technology Center, A Division of ITT Corporation, Roanoke, Va.

Filed Jun. 30, 1986, Ser. No. 880,406
Claims priority, application United Kingdom, Jul. 5, 1985, 8517067
Int. Cl.[4] H01L *27/14, 31/12, 27/02*
U.S. Cl. 357—30 8 Claims



1. A processed semiconductor wafer including an array of integrated circuits, said array comprising a first integrated circuit and a second integrated circuit adjacent said first integrated circuit on said wafer each of which first and second integrated circuits incorporates one or more photoreceivers and means whereby input signals to said first integrated circuit may be coupled from said first integrated circuit to said second integrated circuit of the array.

4,768,074

HETEROJUNCTION BIPOLAR TRANSISTOR HAVING AN EMITTER REGION WITH A BAND GAP GREATER THAN THAT OF A BASE REGION

Jiro Yoshida, and Makoto Azuma, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 799,111, Nov. 18, 1985, abandoned.
This application Oct. 13, 1987, Ser. No. 110,042
Claims priority, application Japan, Nov. 20, 1984, 59-244809; Jun. 20, 1985, 60-132918
Int. Cl.[4] H01L *29/72*
U.S. Cl. 357—34 5 Claims

1. A heterojunction bipolar transistor comprising:
a base region of a first conductivity type formed of GaAs;
an emitter region of a second conductivity type formed of $Ga_nAl_{1-n}As$ which has a band gap greater than that of GaAs and a smaller electron affinity;
a transition region formed between the base region and the emitter region and formed of a plurality of semiconductor layers with band gaps sequentially increasing in a stepped fashion from the semiconductor layer adjacent to the base region to the semiconductor layer adjacent to the emitter region, the respective semiconductor layer having an intermediate composition between the composition of GaAs and that of $Ga_nAl_{1-n}As$ and having a sufficient



thickness to generate potential barriers in a conduction band and a valence band; and
a collector region formed adjacent to said base region.

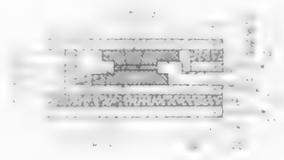
4,768,075

POWER SEMICONDUCTOR MODULE

Bruno Broich, Baden; Jens Gobrecht, Gebenstorf, and Peter Roggwiller, Riedt-Neerach, all of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Oct. 30, 1986, Ser. No. 924,739
Claims priority, application Switzerland, Nov. 15, 1985, 4897/85
Int. Cl.[4] H01C *29/74*
U.S. Cl. 357—38 10 Claims



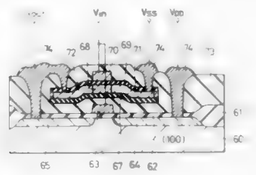


1. A semiconductor power module for current control with first and second main terminals and at least one control terminal, comprising:
a controllable bipolar power semiconductor device having an anode, a cathode and a first gate;
a power MOS field-effect transistor having a source, a drain and a second gate, said bipolar power semiconductor device connected in series with said power MOS field-effect transistor with said cathode connected to said source, said first gate connected to said drain, and said anode, said drain and said second gate connected to said first and second main terminals and said at least one control terminal, respectively;

VOL 1093 ISS 5 AG 30 1988 - UMI

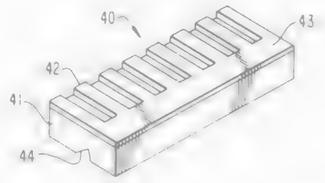
a metallic carrier plate having first and second surfaces;
an insulating substrate mounted on and covering only part of said first surface of said carrier plate, said insulating substrate having a metallized surface on which said bipolar power semiconductor device is mounted and to which said bipolar power semiconductor is electrically connected;
said power MOS field-effect transistor disposed beside said bipolar power semiconductor device directly on said metallic carrier plate;
contact bridge element means for making electrical connections between said bipolar power semiconductor device and said power MOS field-effect transistor; and
said second surface of said metallic carrier plate provided to thermally contact cooling means;
said contact bridge element means comprising a first contact bridge element for connecting said cathode and said source directly to one another;
said anode of said bipolar power semiconductor device directly connected to said first main terminal of said module;
said contact bridge element means comprising a second contact bridge element disposed below said first contact bridge element and spaced apart from said first contact bridge element, said second contact bridge element connecting said first gate of said bipolar power semiconductor device to said carrier plate, said carrier plate serving as said second main terminal of said module; and
said second gate of said power MOS field-effect transistor connected to said control terminal of said module.

4,768,076
RECRYSTALLIZED CMOS WITH DIFFERENT CRYSTAL PLANES
Masaaki Aoki, Minato; Toshiaki Masuhara; Terunori Warabisako, both of Nishitama; Shoji Hanamura, Kokubunji; Yoshio Sakai, Tsukui; Seiichi Isomae, Sayama; Satoshi Meguro, Nishitama, and Shuji Ikeda, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 11, 1985, Ser. No. 774,705
Claims priority, application Japan, Sep. 14, 1984, 59-191542; Dec. 12, 1984, 59-260698
Int. Cl.[4] H01L *27/04*
U.S. Cl. 357—42 12 Claims



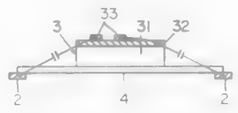
7. A semiconductor device comprising:
a semiconductor substrate which has a first substantially flat surface lying substantially parallel to a (100) plane;
an insulating film formed on said substantially flat surface;
a semiconductor layer, which is deposited on said insulating film and recrystallized, and which has a second substantially flat surface lying substantially parallel to a (110) plane; and
source and drain regions of a n-channel MOS transistor formed at said first substantially flat surface of said semiconductor substrate, and source and drain regions of a p-channel MOS transistor formed at said second substantially flat surface of said semiconductor layer.

4,768,077
LEAD FRAME HAVING NON-CONDUCTIVE TIE-BAR FOR USE IN INTEGRATED CIRCUIT PACKAGES
Jeremy D. Scherer, South Dartmouth, Mass., assignor to Aegis, Inc., New Bedford, Mass.
Filed Feb. 20, 1986, Ser. No. 870,949
Int. Cl.[4] H01L *23/48, 23/14*
U.S. Cl. 357—70 30 Claims



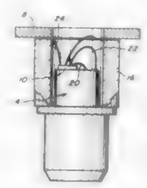
1. A lead frame for use in integrated circuit packages, the lead frame including a plurality of parallel metallized leads, each lead spaced a predetermined spacing from each other and having a predetermined width, and a tie-bar attached to the leads near the extremity of the leads, said tie-bar comprising:
an electrically non-conductive base;
a plurality of parallel metallized segments attached to the top of said base, said segments substantially corresponding to the predetermined spacing and width of the leads; and
a metallized connective strip attached to the top of said base in a direction perpendicular to the direction of said segments, electrically connecting said segments to each other.

4,768,078
PLASTIC-MOLDED SEMICONDUCTOR DEVICE
Shigeru Tanaka, Fujisawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Aug. 15, 1984, Ser. No. 640,875
Claims priority, application Japan, Aug. 31, 1983, 58-160124
Int. Cl.[4] H01L *23/28*
U.S. Cl. 357—72 1 Claim



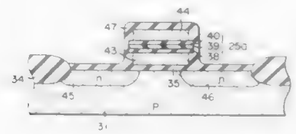
1. A plastic-molded semiconductor device comprising:
a semiconductor pellet having an insulating substrate,
an integrated circuit formed on a first surface of said insulating substrate,
a pellet mounting member on which said semiconductor pellet is mounted, said pellet mounting member having an insulating plate supporting a second surface of said insulating substrate of said semiconductor pellet, said insulating plate having a periphery along an outer edge of said insulating plate; and
a conductive support means for supporting said insulating plate in a manner which produces a reduced parasitic capacitance by contacting said insulating plate only along said periphery of said insulating plate; and
an inner lead, wherein said conductive support means is in the shape of a substantially rectangular ring and said conductive support means is connected to said inner lead.

4,768,079
FIELD EFFECT TRANSISTOR DEVICE
Pramode Kandpal, Billerica, Mass.; Jean C. Colinet, Scottsdale, Ariz.; Bernhard A. Ziegner, Westford, and James A. Bowen, Andover, both of Mass., assignors to M/A Com, Inc., Burlington, Mass.
Continuation of Ser. No. 638,637, Aug. 7, 1984, abandoned. This application Oct. 13, 1987, Ser. No. 107,954
Int. Cl.[4] H01L *23/50, 29/76;* H03B *9/14*
U.S. Cl. 357—74 13 Claims



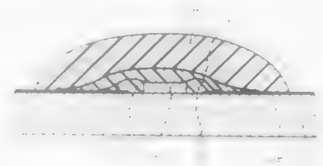
1. A two-terminal field effect transistor circuit comprising, a field effect transistor having drain, source, and gate electrodes, means defining a first circuit terminal, means conductively coupling the drain electrode to the first circuit terminal, means defining a second circuit terminal, means coupling the gate electrode to the second circuit terminal, and means coupling the source electrode to the second circuit terminal including inductive means of relatively small but sufficient value to enable circuit instability to enable circuit oscillation when mounted in a microwave cavity, said inductive means comprising an inductive element having an inductance in the range of 0.4–1.0 nanoHenry, said means coupling the gate electrode including a length of wire dimensioned to provide an inductance at least an order of magnitude less than the inductance of said inductive element, said gate wire having an inductance on the order of 0.01 nanoHenry, in combination with, package means and circuit support means, said circuit support means comprising a pedestal having said field effect transistor supported thereon and having defined thereon said second circuit terminal, said package means comprising at least an insulating member and conductive member having defined thereat said first circuit terminal.

4,768,080
SEMICONDUCTOR DEVICE HAVING FLOATING AND CONTROL GATES
Masaki Sato, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 6, 1985, Ser. No. 805,628
Claims priority, application Japan, Dec. 7, 1984, 59-258515
Int. Cl.[4] H01L *29/78, 29/34, 29/04*
U.S. Cl. 357—54 7 Claims



1. A semiconductor device comprising: source and drain regions between which a channel region is formed, a gate insulating layer provided on said channel region, a floating gate provided on said gate insulating layer, a composite insulating layer provided on said floating gate and including a plurality of insulating layers which are different from one another in their properties, and a control gate provided on said composite insulating layer, wherein said floating gate, said control gate, and said composite insulating layer are self-aligned by etching using a single mask, wherein the widths of said floating and said control gates are substantially the same in the length direction of said channel region, and wherein the end portions of said composite insulating layer extend in the length direction of said channel region beyond the end portions of said floating and control gates.

4,768,081
PROCESS FOR ENCAPSULATING MICROELECTRONIC CIRCUITS WITH ORGANIC COMPONENTS
Werner Moeller, Ulm, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm GmbH, Ottobrunn, Fed. Rep. of Germany
PCT No. PCT/DE85/00473, § 371 Date Jul. 16, 1986, § 102(e) Date Jul. 16, 1986, PCT Pub. No. WO86/03056, PCT Pub. Date May 22, 1986
PCT Filed Nov. 18, 1985, Ser. No. 908,687
Claims priority, application Fed. Rep. of Germany, Nov. 17, 1984, 3442132
Int. Cl.[4] H01L *23/28*
U.S. Cl. 357—72 5 Claims



1. A microelectronic component, comprising a housing and an extremely fine grained powder mixture of zirconium metal and zirconium hydride dispersed as a getter material in a gas permeable inert silicone rubber in said housing for binding corrosive gases.

4,768,082
METHODS OF COMPRESSING AND REPRODUCING COLOR IMAGE DATA
Seiichiro Hiratsuka, and Masahiko Matsunawa, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
Filed Feb. 10, 1987, Ser. No. 12,832
Claims priority, application Japan, Feb. 24, 1986, 61-38492
Int. Cl.[4] H04N *1/46*
U.S. Cl. 358—13 10 Claims



1. A method for converting halftone color image signals of a color image into binary image signals, and then generating restored color image signals from the binary image signals to reproduce said color image, comprising the steps of:
(a) converting halftone primary color signals of picture elements in a digital color image into halftone luminance signals and halftone component color signals;
(b) converting the halftone luminance signals and halftone

VOL 1093 ISS 5 AG 30 1988 UMI

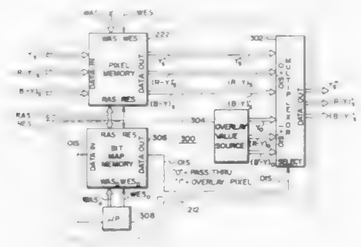
component color signals, respectively, into binary luminance signals and binary component color signals;
(c) transmitting the binary luminance signals and binary component color signals;
(d) generating received binary luminance signals and received binary component color signals;
(e) producing inferred halftone luminance signals from the received binary luminance signals and inferred halftone component color signals from the received binary component color signals by
(i) designating a group of scanning apertures to be individually and selectively scanned over said picture elements,
(iii) scanning said picture elements with each of the group of scanning apertures to obtain, for at least one picture element associated with application of a scanning aperture, scanning data for the received binary luminance signals and the received binary component color signals,
(iii) selecting one of said group of scanning apertures as an identified aperture for said associated at least one picture element on the basis of a defined relationship established to identify the scanning aperture with the largest area of said group of scanning apertures which does not appreciably change levels of the received luminance signals and said received color component signals, and
(iv) assigning an inferred halftone value to luminance signals and component color signals of said associated at least one picture element related to the scanning data obtained with the identified scanning aperture; and
(f) converting the inferred halftone luminance signals and inferred halftone component color signals into restored primary color signals to reproduce said color image.

4,768,083

DIGITAL TV HAVING ON-SCREEN DISPLAY FEATURE

Eric D. Romesburg, Indianapolis, Ind., assignor to RCA Licensing Corporation, Princeton, N.J.

Filed Apr. 29, 1987, Ser. No. 43,770
Int. Cl.[4] H04N 5/262, 5/268
U.S. Cl. 358—22 8 Claims



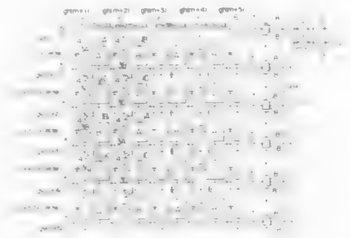
1. A television system including a source for providing a multibit digital video signal including a synchronizing signal in response to a system clock signal; said system comprising:
a first memory portion for storing a representation of at least one field of said multibit digital video signal;
means for generating a digital overlay indication signal representative of pixel address locations defining a desired indicia on the television screen;
a second memory portion for storing said digital overlay indication signal;
a source for supplying a digital overlay display value; and
multiplexing means coupled for receiving said multibit digital video signal and said overlay display value, and responsive to said overlay indication signal, for applying to an output port thereof (1) said overlay display value when said overlay indication signal is in a first state, and (2) said multibit video signal when said overlay indication signal is in a second state.

4,768,084

SOLID-STATE IMAGING DEVICE WITH TWO-ROW MIXING GATES

Masaru Noda, Kanagawa, and Takuya Imaide, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 25, 1986, Ser. No. 911,418
Claims priority, application Japan, Sep. 28, 1985, 60-213673
Int. Cl.[4] H04N 9/07
U.S. Cl. 358—44 6 Claims



1. A solid-state imaging device having a number of two-dimensionally arranged pixels of photo-electric conversion elements for producing a video signal by sequentially reading photo-electrically converted charges from the pixels, comprising:
horizontal signal lines arranged in correspondence with each row of pixels;
horizontal gates and vertical gates connected between the pixels of each row and the corresponding horizontal signal line and controlled by gate signals; and
mixing gates connected between adjacent pixels of each column of pixels,
wherein respective ones of said vertical gates connected to diagonally adjacent pixels of two adjacent rows and the mixing gates connected between vertically adjacent pixels of said two adjacent rows are simultaneously turned on such that the signal charges of two vertically adjacent pixels of said two adjacent rows are combined into one signal.

4,768,085

IMAGE SENSING APPARATUS

Seiji Hashimoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1985, Ser. No. 813,509
Claims priority, application Japan, Dec. 28, 1984, 59-274902; Dec. 28, 1984, 59-274903; Dec. 28, 1984, 59-274904
Int. Cl.[4] H04N 9/077
U.S. Cl. 358—48 35 Claims

20. An image sensing apparatus comprising:
(a) image sensor means having a plurality of photoelectric conversion elements disposed in row and column directions, said photoelectric conversion elements being arranged to convert an optical image into an electrical signal
(b) readout means for simultaneously reading the electrical signals of said plurality of photoelectric conversion elements corresponding to a plurality of rows, a combination of the plurality of rows to be read out being changed field by field in an interlacing manner;
(c) image signal forming means for forming an image by using said electrical signals corresponding to a plurality of rows, read by said readout means; and
(d) refreshing means for clearing, after reading, the signals

corresponding to a plurality of rows read by said readout means, said refreshing means refreshing the same combi-



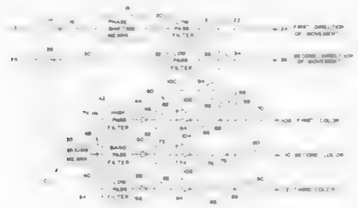
nation of rows as the combination of rows to be read out in a next succeeding field.

4,768,086

COLOR DISPLAY APPARATUS FOR DISPLAYING A MULTI-COLOR VISUAL PATTERN DERIVED FROM TWO AUDIO SIGNALS

Roger M. Paist, 11400 - 4th Street N. #606, St. Petersburg, Fla. 33702

Continuation of Ser. No. 714,026, Mar. 20, 1985, abandoned. This application May 19, 1987, Ser. No. 51,925
Int. Cl.[4] H04N 9/00; A63J 17/00; G09G 1/28
U.S. Cl. 358—81 14 Claims



1. An apparatus for use with a display means for displaying a multi-color visual pattern on a viewing screen, the display means positioning an apparent spot having a first, second and third color component on the viewing screen and with the pattern being derived from a first and a second audio input signal, comprising:
a first input terminal for receiving the first audio input signal;
a second input terminal for receiving the second audio input signal;
first filtering means connected to said first input terminal for filtering the first audio signal to produce a first filtered audio signal;
second filtering means connected to said second input terminal for filtering the second audio signal to produce a second filtered audio signal;
positioning means for controlling the position of the spot in a first and a second direction on the viewing screen;
means connecting said first filtered audio signal of said first filtering means to said positioning means for positioning the spot on the viewing screen in said first direction;
means connecting said second filtered audio signal of said second filtering means to said positioning means for positioning the spot on the viewing screen in said second direction;
first, second and third color driver means for producing a first second and third color driver signal to control the intensity of the first, second and third color component of the spot on the viewing screen, respectively;
means connecting at least one of said first and second terminals to said first, second and third color driver means for controlling the intensity of the first, second and third color component of the spot on the viewing screen in accordance with at least one of said first and said second audio signals;
color intensity control means comprising a comparator;
means for generating a combined driver output signal representing a combination of said first, second and third color driver signals;
said comparator comparing said combined driver output signal and a reference level for providing a comparator output signal in accordance with the difference therebetween; and
means for applying said comparator output signal to said first, second and third color driver means for controlling said combined driver output signal to ensure that the magnitude of said combined driver output signal is driven toward said reference level

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4,768,087

EDUCATION UTILITY

Jack R. Taub, Vienna, Va., and Michael T. Hills, Silver Spring, Md., assignors to National Information Utilities Corporation, Vienna, Va.

PCT No. PCT/US83/01579, § 371 Date Jun. 6, 1985, § 102(e) Date Jun. 6, 1985, PCT Pub. No. WO85/01854, PCT Pub. Date Apr. 25, 1985
PCT Filed Oct. 7, 1983, Ser. No. 748,037
Int. Cl.[4] H04N 17/06
U.S. Cl. 358—84 39 Claims



26. A method of distributing information in digital form to a plurality of sites comprising:
(a) transmitting the information from a central location;
(b) simultaneously receiving said information at a plurality of sites and storing said information in a storage area at each site; and
(c) subsequently providing simultaneous access to said stored information upon request by one or more user terminals.

4,768,088

APPARATUS FOR COMMANDING ENERGIZATION OF ELECTRICAL DEVICE

Mitsuhiro Ando, Tokyo, Japan, assignor to Aisin Seiki Kabushikikaisha, Aichi, Japan

Filed Dec. 2, 1986, Ser. No. 937,154
Claims priority, application Japan, Dec. 4, 1985, 60-272793
Int. Cl.[4] H04N 7/18, 7/00
U.S. Cl. 358—93 13 Claims

1. An apparatus for commanding an energization of an electrical device comprising:
illumination means for illuminating an object;
camera means for converting an optical image of the object into a video signal;
memory means for storing at least one frame of the video signal;

VOL 1093 ISS 5 AG 30 1988 UMI

output means for delivering an on/off command signal to an electrical device;

video signal processing means which operates

(a) to write the video signal into the memory means;

(b) to read the video signal from the memory means and to detect at least part of an outer profile of the object within an image frame and to detect the location of the part;

(c) on the basis of the location detected, to detect a particular area of the object which is located within the outer profile of the object as well as its location;

(d) to calculate a window region which is greater in size than the particular area and less in size than the image frame and centered about the particular area;
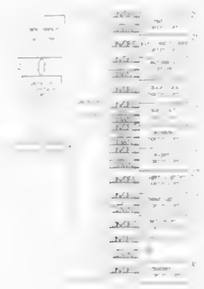
(e) to write at least one fresh frame of video signal into the memory means;

(f) to read the video signal located within the window region from the memory means, to detect the particular area and the location thereof on the basis of the video signal which is read from the memory means, and to calculate a fresh window region which is centered about the location detected;

(g) to repeat the steps (e) and (f) to detect any change in a given status of the particular area; and

(h) to command the output means to feed an on/off command signal in response to a given change in the status,

illumination control means for adjusting the brightness



achieved by the illumination means, whrein the memory means includes halftone video signal memory means which stores halftone data and bi-level data, and wherein the video signal processing means writes halftone data which is obtained by an A/D conversion of the video signal into the halftone video signal memory means, determines the brightness of an object based on the halftone data which is written into and to provide a command to increase or decrease the brightness level to the illumination control means when the brightness level is low or high, respectively, thus establishing the brightness level of an illumination lamp, writes the halftone data which is obtained by an A/D conversion of the video signal which is obtained at the established brightness level into the halftone video signal memory means and then reads the halftone data written into the memory means therefrom and convert it into bi-level data which is then written into the bi-level video signal signal memory means during the step (a), the video signal processing means reading the bi-level data from the bi-level video signal memory means during the step (b),

the video signal processing means writing halftine data which is obtained by an A/D conversion of fresh video data into the halftone video signal memory means, reads the halftone data from the memory means and converts is into bi-level data which is then written into the bi-level video signal memory means during the step (e), the video signal processing means reading the bi-level data from the bi-level video signal memory means during the step (f).

4,768,089

ENDOSCOPIC SYSTEM

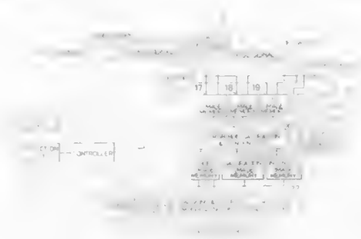
Haruo Kato, Kuroiso, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 24, 1987, Ser. No. 100,413

Claims priority, application Japan, Sep. 25, 1986, 61-224933

Int. Cl.[4] A61B *1/04, 1/06*

U.S. Cl. 358—98 6 Claims



1. An endoscopic system for photographing and displaying an object having a portion whose color is changed by a contrast medium injected in the object on a display unit, comprising:

photographing means for photographing the object having the color changed portion, and for outputting data of three primary color images of said object;

image converting means for converting the data of three primary color images from said photographing means into data of three property spaces of hue, saturation and intensity, and for regenerating data of three primary color images from the data of three property spaces;

supplying means for supplying modulating function data corresponding to the injected contrast medium; and

color modulating means for carrying out an enhancement process on the data of three property spaces converted by said image converting means, according to the modulating function data from said supplying means so as to enhance a color of the color changed portion of said object, said data of three property spaces so enhanced being regenerated as data of three primary color images by said image converting means and supplied to the display unit.

4,768,090

SURVEILLANCE DEVICE USING VIDEO CAMERA

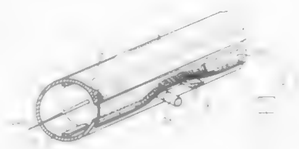
Robert Camps, Paris, and Saïd Moudir, Geneve, both of France, assignors to Compagnie Generale D'Automatisme CGA-HBS, Paris, France

Filed Sep. 8, 1987, Ser. No. 93,672

Claims priority, application France, Sep. 8, 1986, 86 12729

Int. Cl.[4] H04N *7/18;* G08B *13/00, 15/00*

U.S. Cl. 358—108 4 Claims



1. Surveillance device using a surveillance unit such as a video camera, the signals from which are received by a detection unit, mounted on a mobile chassis driven by propulsion means inside a cylindrical tube equipped with a longitudinal window through which passes the transverse axis of sight of the surveillance unit, wherein the window is covered by a longitudinal elastic flap one side of which is attached to the cylindrical tube, the other side remaining free, shaped elements attached to the chassis raising the longitudinal flap on either side of the axis of sight and beyond this axis.

4,768,091

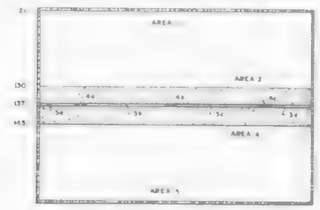
TESTING APPARATUS FOR DISPLAYING SCANNING BEAM SPOT SIZE AND LINE FOCUS ON A CRT VIDEO SCREEN

Robert E. Pooler, and William R. Kaylor, both of Knoxville, Tenn., assignors to North American Philips Corp., New York, N.Y.

Filed Oct. 19, 1987, Ser. No. 110,251

Int. Cl.[4] H04N *17/04*

U.S. Cl. 358—139 9 Claims



1. Testing apparatus for a cathode ray tube in which a scanning electron beam produces a scanning line raster on the video screen of such tube, such apparatus generating a composite video signal for such tube which produces a display of the scanning beam spot size and scanning line focus on such screen, such apparatus comprising:

first pulse generating means for producing a first video pulse signal of constant high luminance level in an upper and a lower area of said raster, such first video pulse signal being of minimum luminance level during an intermediate area of said raster between the upper and lower areas thereof;

second pulse generating means for producing a second video pulse signal of said high luminance level during successive segments of a selected scanning test line which is within said intermediate area of said raster, such second video pulse signal being at the black luminance level during portions of such test line between said high luminance segments thereof, the width of each of such black portions of said test line being approximately three times the width of the scanning beam spot on said video screen;

third pulse generating means for producing a third video pulse signal of said high luminance level in regions of said selected scanning line centered within each of said black portions thereof, the width of each of such high luminance regions being approximately equal to that of the scanning beam spot on said video screen; and

video multiplexing circuit means connected to each of said first, second and third pulse generating means for combining the first, second and third video pulse signals produced thereby so as to form said composite video test signal.

4,768,092

IMAGE SIGNAL CONVERSION DEVICE

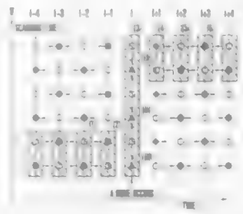
Hisashi Ishikawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1987, Ser. No. 76,132

Claims priority, application Japan, Jul. 23, 1986, 61-173434; Jul. 23, 1986, 61-173435; Jul. 23, 1986, 61-173436; Jul. 23, 1986, 61-173437

Int. Cl.[4] H04N *7/01*

U.S. Cl. 358—140 26 Claims



1. An image signal conversion device for handling an interlaced image signal, whereby one frame picture plane is formed by multiplexing, in a time sharing manner, a plurality of field image signals corresponding to a plurality of field picture planes consisting of horizontal scanning lines located in different positions from each other on a picture plane, said device being arranged to form a high resolution image signal by increasing the number of horizontal scanning line signals constituting each of the field image signals, said device comprising:

(a) inner-field interpolation signal forming means arranged to receive said interlaced image signal and, with a given field image signal of said interlaced image signal assumed to be a first field image signal, to use said first field image signal for forming an inner-field interpolation signal for the first field image signal;

(b) inter-field interpolation signal forming means arranged to receive said interlaced image signal and to form an inter-field interpolation signal for said first field image signal by using at least a second field image signal which is received prior to said first field image signal within said interlaced image signal and is adjacent to said first field image signal;

(c) selective output means arranged to select and produce either said inner-field interpolation signal formed by said inner-field interpolation signal forming means or said inter-field interpolation signal formed by said inter-field interpolation signal forming means;

(d) control means for controlling said selective output means by using at least said first and second field image signals; and

(e) image signal forming means for forming a high resolution image signal b interpolating said interlaced image signal with said interpolation signal produced from said selective output means.

4,768,093

VERTICAL PRE-FILTER FOR PIP TELEVISION RECEIVERS

Richard S. Prodan, Peekskill, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Jun. 5, 1986, Ser. No. 871,188

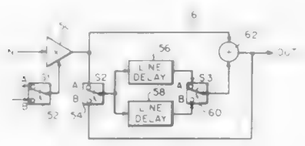
Int. Cl.[4] H04N *5/14*

U.S. Cl. 358—160 1 Claim

1. A vertical filter comprising a multiplier having a first input for receiving each line in a digital television signal and a second input for receiving respective filter coefficients for each line applied to the first input of the multiplier, a first switch having a first and a second input for receiving, respectively, a first and a second set of said filter coefficients and an output coupled to said second input of said multiplier, a second

VOL 1093 ISS 5 AG 30 1988 UMI

switch having a first input coupled to an output of said multiplier, and an output coupled to, respectively, a first and a second line delay circuit, a third switch having a first and a second input coupled to said first and second line delay cir-



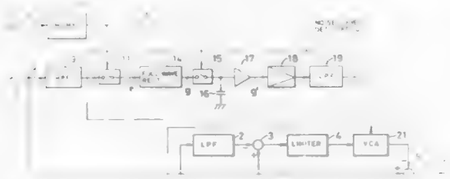
cuits, respectively, and an adder circuit having a first input coupled to the output of said multiplier and a second input coupled to an output of said third switch, an output of said adder circuit being coupled to a second input of said second switch and forming an output of said vertical filter.

4,768,094

NOISE SUPPRESSING CIRCUIT WITH GAIN CONTROL

Yutaka Ichinoi, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 2, 1986, Ser. No. 902,842
Claims priority, application Japan, Aug. 30, 1985, 60-192343
Int. Cl.[4] H04N *5/21*
U.S. Cl. 358—167 **15 Claims**



1. A noise suppressing circuit for a video signal, comprising:
(a) a switching signal generating means for generating a switching signal in response to a sync signal derived from the video signal;
(b) noise level detecting means responsive to said switching signal for detecting magnitude of noise included in said video signal within a blanking period;
(c) noise subtracting means having an in-line noise suppressing circuit including a low pass filter, a first subtractor for subtracting the output of said low pass filter from said video signal, and a limiter coupled to said first subtractor, for obtaining high frequency small amplitude components of said video signal, and further having a second subtractor for subtracting said high frequency small-amplitude components from said video signal to produce a noise-suppressed output video signal; and
(d) means incorporated with said noise subtracting means for controlling magnitude of said high frequnecy small-amplitude components in accordance with an output signal from said noise level detecting means before said high frequency small-amplitude components are subtracted from said video signal thereby producing said noise-suppressed output video signal.

4,768,095

APPARATUS FOR PROCESSING IMAGE

Ryukichi Wada, and Yoshinori Ishii, both of Kyoto, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

PCT No. PCT/JP86/00306, § 371 Date Feb. 2, 1987, § 102(e) Date Feb. 2, 1987
PCT Filed Jun. 18, 1986, Ser. No. 26,850
Claims priority, application Japan, Jun. 26, 1985, 60-139489
Int. Cl.[4] H04N *5/262*
U.S. Cl. 358—183 **5 Claims**



1. Apparatus for processing an image of the type having an image memory and a display device for display the signal read out of said image memory, which comprises:
sampling means having a first sampling mode in which an image signal is sampled with the number of pixels corresponding to the number of all the addresses of said image memory and a second sampling mode in which an image signal is sampled with the number of pixels corresponding to the number of addresses in a specified area of said image memory;
first addressing means for designating all the addresses of said image memory;
second addressing means for designating the addresses in said specified area of said image memory;
control means for controlling said sampling means, first and second addressing means, and image memory, said control means adapted to set said sampling means in said first sampling mode and said image memory in the write mode and make said first addressing means designate all the addresses of said image memory for writing an image to provide a still picture, and then set said sampling means in the second sampling mode and make said second addressing means sequentially write said signal sampled to said specified area of said image memory to provide a motion picture, while it is adapted to set said image memory in the readout mode in the period other than said motion picture writing period and put said first addressing means in operation to read all the image memory contents including both still and motion pictures for display in said display device.

4,768,096

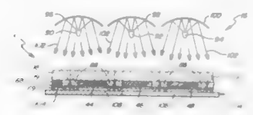
CONTACT-TYPE PORTABLE DIGITIZING WAND FOR SCANNING IMAGE-BEARING SURFACES

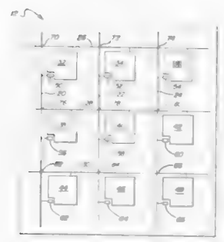
Vincent D. Cannella, Birmingham, and Zvi Yaniv, Farmington Hills, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 924,729, Oct. 30, 1986, Pat. No. 4,746,989, which is a continuation-in-part of Ser. No. 912,477, Sep. 29, 1986, Pat. No. 4,691,244, which is a continuation-in-part of Ser. No. 607,153, May 4, 1984, Pat. No. 4,660,095. This application Oct. 22, 1987, Ser. No. 111,234
Int. Cl.[4] H04N *1/024*
U.S. Cl. 358—294 **20 Claims**

1. Portable wand means adapted to provide electrical signals representative of an image on an image-bearing surface, said wand means including an array of photosensitive elements fabricated from thin film semiconductor alloy material; each of said elements being non-light transmissive, non-apertured,

continuous and adapted to receive light from a corresponding small area portion of an image-bearing surface and generate a detectable electrical signal representative of the amount of received light; the improvement comprising, in combination:
said array including at least one column of photosensitive elements operatively disposed so as to cover at least a portion of at least one dimension of an image-bearing surface;





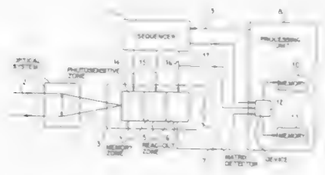
spacing means for closely positioning said photosensitive elements in juxtaposed relation relstive to an image-bearing surface so as to proximity focus light onto said photosensitive elements from corresponding small area portions of said surface; and
said portable wand means sized and shaped so as to provide for manual movement across the image on said image-bearing surface.

4,768,097

ELECTRO-OPTICAL PICK UP HAVING A CHARGE COUPLED SEQUENCER

Gilles Grenier, L'Hay-les-Roses; Jean-Pierre Merle, Orsay, and Robert Zribi, Paris, all of France, assignors to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Feb. 3, 1987, Ser. No. 10,541
Claims priority, application France, Feb. 7, 1986, 86 01714
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213.26 **4 Claims**



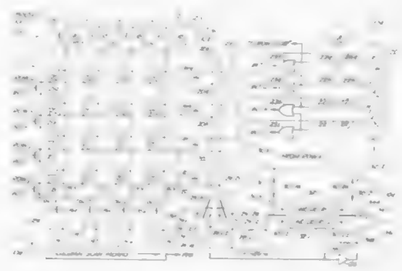
1. In an opto-electronic pickup incorporating a charge coupled device, comprising:
an optical system for forming an optical image;
a photosensitive CCD matrix detector of the frame transfer type, comprising:
a photosensitive zone, constituted by a plurality of lines of photosensitive elements totally illuminated by said optical system and generating an electric image by integration of the electric charges generated by the photons received by said photosensitive elements, said electric image being constituted by a plurality of lines of electric image information;
an intermediate memory zone, constituted by a plurality M of lines of memory elements and in which said electric image information contained in the lines of said photosensitive zone are transferred line to line; and
a readout register in which the electric image information corresponding to lines of the intermediate memory zone are transferred in parallel, said readout register generating a series video signal representative of the optical image received by said photosensitive zone;
memory means outside said matrix detector; and
a sequencer controlling the acquisition of said electric images by said photosensitive zone and capable of managing in independent manner the transfers of the lines of electric information within said photosensitive zone, within said intermediate memory zone and within said readout register, and therefore the transfers between said photosensitive zone and said intermediate memory zone, between said intermediate memory zone and said readout register and between said readout register and said outside memory means, said sequencer:
controls the successive acquisition by said photosensitive zone of a plurality n of images;
transfers into said intermediate memory zone, after formation of each of said images, a part of this image constituted by a number of lines m less than or at the most equal to the ratio M/n between the number M of lines of said intermediate memory zone and said number n of said images;
accumulates said partial images in said intermediate memory zone; and
controls, via said readout register, the complete transfer of said partial images from said intermediate memory zone into said outside memory means, as well as the distribution of said partial images in said outside memory means.

4,768,098

CID IMAGER WITH REDUCED CROSSTALK AND METHOD FOR OPERATION THEREOF

Thomas L. Vogelsong, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 31, 1987, Ser. No. 91,468
Int. Cl.[4] H04N *3/14*
U.S. Cl. 358—213.31 **19 Claims**



11. A solid-state imager having reduced crosstalk in a charge injection device with a multiplicity of pixels each for storing charge responsive to photons impingent thereon after injection of charge therefrom, the pixels being arranged in a two-dimensional array having R rows each with a plurality of pixels, said imager comprising:
means for cyclically and consecutively reading the stored charge sequentially from each pixel of each g-th row, where $1 \leqq g \leqq R$, as a first video signal;
means for storing the first video signal read from each g-th row;

VOL 1093 ISS 5 AG 30 1988 UMI

means for then injecting the charge stored in all of the pixels of the g-th row after the reading means has caused the stored charge to be read from the pixels of a (g+1)-st row into the storing means as a second video signal;

said reading means then operating to again read, as a third video signal, the stored charge sequentially from each pixel of the g-th row; and

means for subtracting the third video signal from the first video signal to provide for the g-th row an imager output signal substantially free of injected crosstalk.

4,768,099

METHOD OF STORING AND REPRODUCING A MEDICAL IMAGE IN WHICH IMAGE DATA IS STORED WITH CORRESPONDING INFORMATION REPRESENTING IMAGE PROCESSING CONDITIONS

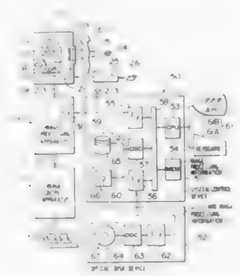
Hachiro Mukai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1987, Ser. No. 67,177

Claims priority, application Japan, Jun. 27, 1986, 61-150711

Int. Cl.⁴ H04N *1/32, 1/00, 1/40*

U.S. Cl. 358—257 **4 Claims**



1. In a medical image filing and reproducing system for feeding image signals representing a medical image to an image processing apparatus and an image filing apparatus, reproducing the medical image as a visible image by feeding the image signals processed in the image processing apparatus to an image output apparatus and, also, filing the image signals fed to the image filing apparatus on a recording medium in the image filing apparatus so that the filed image signals are retrievable and transferable to the image output apparatus,

a method of filing and reproducing a medical image, which comprises the steps of:

(i) feeding image processing information representing image processing conditions in said image processing apparatus to said image filing apparatus and storing said image processing information on said recording medium in conformity with said image signals which are to be processed by use of said image processing conditions, and

(ii) in the course of reading out said image signals from said recording medium and feeding said image signals to said image output apparatus, sending said image signals to said image processing apparatus, reading out said image processing information stored in conformity with said image signals, and setting the image processing conditions, which said image processing information represents, in said image processing apparatus.

4,768,100

IMAGE PROCESSING APPARATUS

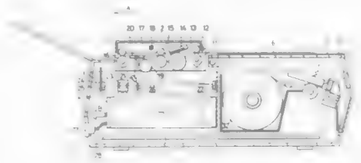
Toshiaki Kunishima; Takeshi Ikeda, both of Yokohama; Michio Kasuya, Fuchu; Hiroaki Matsumoto, and Masakatsu Iwata, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 9, 1984, Ser. No. 628,854

Claims priority, application Japan, Jul. 22, 1983, 58-132799; Jul. 22, 1983, 58-132800; Jul. 22, 1983, 58-132801; Jul. 22, 1983, 58-123802; Jul. 22, 1983, 58-123803; Aug. 3, 1983, 58-142063

Int. Cl.⁴ H04N *1/04*

U.S. Cl. 358—285 **18 Claims**



1. An image processing apparatus comprising:

a recording system unit for recording;

an enclosing member for enclosing recording material and a recording head for recording on the recording material, said enclosing member and said recording head being arranged in said recording system unit;

a placing section for placing an original thereon;

an original feeding system unit, arranged on a downstream side of said placing section in a direction in which the original is fed, for feeding the original; and

a reading optical system unit, arranged below said original feeding system unit, for reading image information from the original,

wherein said placing section is arranged over at least said enclosing member and horizontally receives the original thereon and wherein said placing section can be freely opened and closed independently of said original feeding system unit and said reading optical system unit.

4,768,101

HALF-TONE REPRODUCTION METHOD EMPLOYING OVERLAPPING SCAN LINES

Graham Webb, Hertfordshire, England, assignor to Crosfield Electronics (USA) Limited, London, England

Filed May 21, 1987, Ser. No. 52,329

Claims priority, application United Kingdom, May 30, 1986, 8613223

Int. Cl.⁴ H04N *1/21*

U.S. Cl. 358—298 **4 Claims**



1. A method of generating a half-tone representation of an image from digital data defining the colour content of pixels of said image arranged in a series of substantially parallel, overlapping input scan lines, the method comprising exposing at least one record medium to an exposing beam in a series of substantially parallel, overlapping output scan lines each corresponding to a respective one of said input scan lines, said exposing beam being modulated under the control of said digital data and half-tone information, and the intensity of said exposing beam and the nature of said record medium being such that an area of said record medium will only record a half-tone dot or a portion of a half-tone dot after all said output scan lines passing through the said area have been exposed.

4,768,102

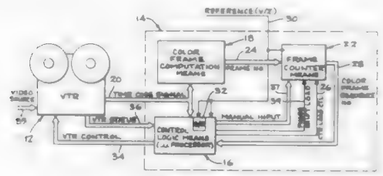
METHOD AND APPARATUS FOR SYNCHRONIZING A CONTROLLER TO A VTR FOR EDITING PURPOSES

David C. O'Gwynn, Colorado Springs, Colo., assignor to Ampex Corporation, Redwood City, Calif.

Filed Oct. 28, 1986, Ser. No. 924,074

Int. Cl.⁴ H04N *9/87, 9/64*

U.S. Cl. 358—311 **23 Claims**



1. A system within a video tape recorder controller for determining the position in a color sequence of a selected frame in a color video reference signal, comprising:

frame counter means within the controller;

means for clocking the frame counter means once each frame in the color video reference signal;

means for supplying a time code number which is synchronized to the color video reference signal;

means coupled to the supplying means for determining a value corresponding to the position in the color sequence of the time code number;

means for processing the value in the frame counter means to provide a color frame sequence number which synchronizes the controller with the color video reference signal, including means for modifying the value processed in the frame counter means when the color frame sequence number fails to synchronize the controller; and

control logic means for selectively loading into the frame counter means said value corresponding to the position in the color sequence to synchronize the controller with the color video reference signal.

4,768,103

WRITE CLOCK GENERATOR FOR TIME BASE CORRECTOR INCLUDING FREQUENCY FLUCTUATION AND WRITE CLOCK DIFFERENCE SIGNAL REDUCTION

Yoshiyuki Nakamura, Tokyo, and Tsutomu Takamori, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 12, 1986, Ser. No. 838,950

Claims priority, application Japan, Mar. 25, 1985, 60-060273

Int. Cl.⁴ H04N *5/95*

U.S. Cl. 358—337 **5 Claims**

1. A write clock generator for a time base corrector for reducing time base fluctuations involved in a reproduced video signal, which comprises:

(a) means for generating a write clock signal in response to a burst signal included in the reproduced video signal, an initial phase of the write clock signal being synchronized with a phase of the burst signal;

(b) means for generating a frequency fluctuation signal in response to a horizontal synchronizing signal included in the reproduced video signal;

(c) means including a frequency discriminating circuit for detecting a difference in frequency between the write clock signal and the frequency fluctuation signal and generating a frequency difference signal; and

(d) means connected to said write clock signal generating means, for controlling a frequency of the write clock signal in response to said frequency difference signal so that the difference in frequency between the write clock signal and the frequency fluctuation signal is reduced to zero and the write clock signal includes frequency fluctuations of the frequency fluctuation signal, wherein said frequency difference detecting means comprises:



(e) the frequency discriminating circuit for generating a first discrimination signal having an amplitude varying according to a frequency of the write clock signal and a second discrimination signal having an amplitude varying according to a frequency of the frequency fluctuation signal, separately;

(f) a first holding circuit for holding the first discrimination signal;

(g) a second holding circuit for holding the second discrimination signal; and

(h) a differential voltage detector for detecting a voltage difference between the first and second discrimination signals, the voltage difference being applied to said write clock signal frequency controlling means to reduce the voltage difference to zero.

4,768,104

VIDEO DISK RECORDER AND PLAYBACK UNIT

Hitoshi Kanamaru, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 12, 1986, Ser. No. 828,798

Claims priority, application Japan, Feb. 13, 1985, 60-27250

Int. Cl.⁴ H04N *5/781*

U.S. Cl. 358—342 **32 Claims**



1. In a video disk recorder for a video disk having recorded thereon a frequency-division-multiplexed combination of a television video signal and a digital data signal on the same track, an improvement comprising: means for dividing said digital data signal into blocks, each said block having a predetermined fixed number of bits and a length after interleaving

VOL 1093 ISS 5 AG 30 1988 UMI

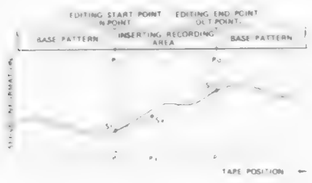
longer than one field of said video signal but shorter than one frame of said video signal, at least one of said blocks corresponding to one frame or field of said video signal; means for detecting a last vertical synchronizing signal in said frame or field corresponding to said at least one block; means for producing a digital block signal from said blocks in such a manner than an end portion of said at least one block after interleaving is at a position close to a position corresponding to the detected last vertical synchronizing signal and positioned on the basis of said frame or field corresponding to said at least one block; means for adding said video signal and said digital block signal; and means for recording the resulting sum of said video signal and said digital block signal on said video disk.

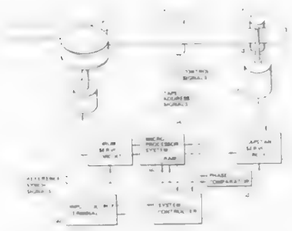
4,768,105

APPARATUS FOR EDITING A VIDEO SIGNAL

Shinji Aoki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 6, 1986, Ser. No. 871,293
Claims priority, application Japan, Jun. 10, 1985, 60-125709
Int. Cl.[4] H04N *5/782;* **G11B** *27/02*
U.S. Cl. 360—14.1 **3 Claims**





1. An apparatus for editing a video signal on a tape in which a new video signal is recorded within an existing video signal previously recorded on the tape, comprising:

means for controlling the running of the tape and the rotation of a magnetic head adapted for recording or reproducing the video signal on or from said tape;

means for determining an editing start point on said tape at which recording of the new video signal is to be commenced and an editing end point on said tape at which recording of the new video signal is to be terminated;

means for detecting servo data from said controlling means at said editing start point and end point, respectively;

means for deriving editing servo data for an arbitrary point between said editing start point and end point from said servo data detected at said editing start point and said end point; and

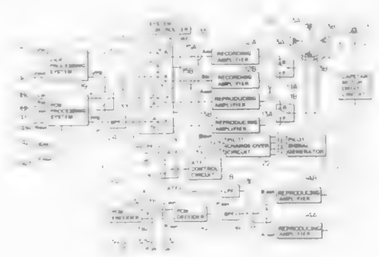
means for driving said controlling means in accordance with said derived editing servo data during the time said new video signal is recorded on the tape.

4,768,106

APPARATUS FOR RECORDING VIDEO AND PCM AUDIO SIGNALS WITH INSERT EDITING USING AXIALLY DISPLACED HEADS

Yuji Ito, Kanagawa, and Hiroshi Okada, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 1, 1987, Ser. No. 44,840
Claims priority, application Japan, May 23, 1986, 61-118699
Int. Cl.[4] H04N *5/782*
U.S. Cl. 360—14.1 **13 Claims**



1. Apparatus for recording video and audio signals in a plurality of successive tracks on a recording medium, comprising:

first audio signal processing means receiving an original audio signal for converting the same to an original encoded digital audio signal;

video signal processing means for providing a video signal;

means for transporting said record medium in a transporting direction;

at least first and second main rotary heads for recording signals supplied thereto in respective ones of said successive tracks on said recording medium;

first switch means for selectively supplying said video signal and a recordable digital audio signal to said main rotary heads;

control means for controlling said first switch means so that said video signal is supplied to said main rotary heads for recording in a main section of each of said tracks and said recordable digital audio signal is supplied to said main rotary heads for recording in an overscan section of each of said tracks;

at least first and second auxiliary rotary heads disposed for reproducing the digital audio signal recorded in respective tracks which are positioned upstream, considered in respect to said transporting direction, relative to tracks to be next scanned by said first and second main rotary heads, respectively;

second audio signal processing means for at least decoding the signals reproduced by said auxiliary rotary heads to a decoded reproduced audio signal;

audio signal inserting means having inputs for receiving a new decoded audio signal and said decoded reproduced audio signal and selectively combining the same to provide a decoded composite audio signal;

third audio signal processing means for encoding said composite audio signal to a new encoded digital audio signal; and

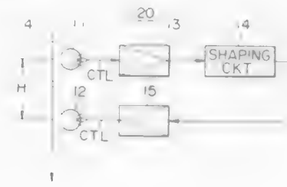
second switch means operable by said control means for supplying a selected one of said new encoded digital audio signal and said original encoded digital audio signal to said first switch means for supplying by the latter as said recordable digital audio signal to said main rotary heads.

4,768,107

HIGH-SPEED CONTACT PRINTING SYSTEM WITH CONTROL SIGNAL WAVEFORM REFINEMENT

Toshiharu Kobayashi; Takumi Okane, both of Tokyo, and Toshio Shirai, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 29, 1986, Ser. No. 867,925
Claims priority, application Japan, May 29, 1985, 60-116215
Int. Cl.[4] G11B *5/86*
U.S. Cl. 360—17 **7 Claims**



1. A high-speed contact printing system for printing video information including a control signal recorded on a sub-master tape onto a slave tape, comprising:

first means defining a first path along which said sub-master tape runs;

second means defining a second path along which said slave tape runs, said second path having a section substantially overlapping a corresponding section of said first path so as to establish close contact between said sub-master tape and said slave tape and to cause printing of said video information and said control signal onto said slave tape;

third means for applying a printing bias to said sub-master tape at said section of close contact between said sub-master tape and said slave tape;

fourth means, arranged along said second path at a point beyond said third means in a tape travel direction, for reproducing said control signal of the video information printed on said slave tape; and

fifth means, arranged along said second path at a point beyond said forth means in the tape travel direction and being separated from said fourth means along said second path by a distance that is an integral multiple of both control signal pulse spacing in a B-system and control signal pulse spacing in a VHS system and receiving said control signal reproduced by said fourth means, for processing said reproduced control signal and recording a shaped control signal on said slave tape such that spacing between pulses of said control signal recorded on said slave tape by said fifth means substantially corresponds to the pulse spacing in respective control signals both for the B-system video information and for the VHS system video information.

4,768,108

MAGNETIC RECORDING AND REPRODUCING SYSTEM

Seiji Higurashi, Chiba, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Feb. 24, 1987, Ser. No. 18,153
Claims priority, application Japan, Feb. 24, 1986, 61-38929
Int. Cl.[4] A04N *5/782;* **G11B** *20/10*
U.S. Cl. 360—19.1 **12 Claims**

1. A magnetic recording and reproducing system comprising:

first video signal processing means for subjecting an input video signal in conformance with a standard television system to a predetermined signal processing and for producing a video information signal having a predetermined signal format suited for magnetic tape recording and reproduction;

first recording and reproducing means for recording and reproducing the video information signal on and from tracks formed obliquely to a longitudinal direction of a magnetic tape;

second video signal processing means for subjecting the video information signal reproduced by said first recording and reproducing means to a predetermined signal processing and for producing a reproduced video signal in conformance with said standard television system;

analog-to-digital converting means for sampling an input analog audio signal and for producing a digital audio signal;

odd/even sample separating means for separating samples constituting said digital audio signal into odd numbered samples and even numbered samples within each field of said input video signal by assigning sequential numbers to the samples which are sequentially obtained by the sampling in said analog-to-digital converting means;

first delay means for delaying one of a first sample group made up of the odd numbered samples and a second sample group made up of the even numbered samples by a predetermined time;

encoding means for encoding delayed samples obtained from said first delay means and undelayed samples obtained from said odd/even sample separating means for every one field and for producing an encoded digital audio signal, said delayed samples being the samples making up said one of the first and second sample groups and having been delayed by said first delay means, said undelayed samples being the samples making up the other one of the first and second sample groups and being obtained directly from said odd/even sample separating means;



second recording and reproducing means for recording and reproducing the encoded digital audio signal on and from the tracks of the magnetic tape, each of said tracks being recorded with the video information signal and the encoded digital audio signal respectively amounting to one field of said input video signal;

decoding means for decoding the encoded digital audio signal reproduced by said second recording and reproducing means and for producing the delayed samples and the undelayed samples;

second delay means for delaying the undelayed samples from said decoding means by said predetermined time; and audio signal producing means comprising means for producing a reproduced digital audio signal from the delayed samples obtained from said decoding means and delayed samples obtained from said second delay means and means for producing a reproduced analog audio signal by subjecting the reproduced digital audio signal to a digital-to-analog conversion.

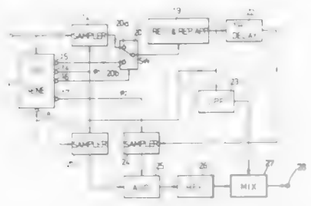
VOL
1093
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1988
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4,768,109

VIDEO SIGNAL RECORDING AND/OR REPRODUCING APPARATUS

Yasutoshi Matsuo, Kawasaki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 21, 1984, Ser. No. 684,863
Claims priority, application Japan, Dec. 24, 1983, 58-251843; Dec. 24, 1983, 58-251844; Dec. 28, 1983, 58-247455
Int. Cl.[4] A04N 5/92
U.S. Cl. 360—33.1 7 Claims



1. A video signal recording and reproducing apparatus comprising:

sampling means for sampling an input video signal such as a luminance signal by a signal having a frequency f_s, said frequency f_s being lower than twice an upper limit frequency of said input video signal and being higher than the upper limit frequency, said frequency f_s being described by an equation $f_s=(\frac{1}{2})\cdot(2n+1)\cdot f_H$, where n is a natural number and f_H represents a horizontal scanning frequency of said input video signal;

multiplexed signal obtaining means for obtaining a multiplexed signal by multiplexing a reference burst signal to an output sampled signal of said sampling means for every predetermined time period, said reference burst signal being obtained by frequency-dividing said signal having the frequency f_s;

recording means for recording the output multiplexed signal of said multiplexed signal obtaining means on a recording medium;

reproducing means for reproducing the recorded multiplexed signal from said recording medium;

reproduced sampled signal obtaining means comprising a delay circuit for obtaining from the output reproduced multiplexed signal of said reproducing means first and second reproduced sampled signals having a relative time difference of one horizontal scanning period;

sampling pulse generating means for generating first and second sampling pulses having the frequency f_s and having phases which mutually differ by 180° in phase synchronism with said reference burst signal which is separated from the output reproduced multiplexed signal of said reproducing means;

re-sampling means for obtaining a first re-sampled signal by re-sampling said first reproduced sampled signal by said first sampling pulse and for obtaining a second re-sampled signal by re-sampling said second reproduced sampled signal by said second sampling pulse; and

reproduced video signal producing means for at least adding the output first and second re-sampled signals of said re-sampling means so as to produce a reproduced video signal which is essentially sampled at a frequency $2f_s$,

said sampling pulse generating means comprising a pulse generating circuit for generating a pulse having the frequency f_s in phase synchronism with the horizontal synchronizing signal between the horizontal and vertical synchronizing signals which are separated from the output reproduced multiplexed signal of said reproducing means, a circuit for separating said reference burst signal from the reproduced multiplexed signal, a sampling pulse generating circuit supplied with the separated horizontal and vertical synchronizing signals for generating a sampling pulse in correspondence with the phase of the separated reference burst signal, a variable delay circuit for delaying the output pulse of said pulse generating circuit by a delay time responsive to a control signal so as to produce said first sampling pulse having the frequency f_s, delay time control means for comparing the phase of a signal which is obtained by at least frequency-multiplying the separated reference burst signal with the phase of the output pulse of said pulse generating circuit having the frequency f_s and for obtaining a phase error signal, said delay time control means supplying a signal obtained by sampling and holding the phase error signal by the output sampling pulse of said sampling pulse generating circuit to said variable delay circuit as said control signal so that said first sampling pulse produced from said variable delay circuit has a phase in correspondence with the phase of said signal having the frequency f_s at the time of the recording, and means for shifting the phase of the output first sampling pulse of said variable delay circuit by 180° so as to obtain said second sampling pulse.

4,768,110

VIDEO CASSETTE RECORDER HAVING DUAL DECKS FOR SELECTIVE SIMULTANEOUS FUNCTIONS

Robert T. Dunlap, and Richard A. Lang, both of Scottsdale, Ariz., assignors to Go-Video, Inc., Scottsdale, Ariz.

Continuation of Ser. No. 652,820, Sep. 20, 1984, abandoned. This application May 6, 1987, Ser. No. 48,521
Int. Cl.[4] H04N 5/782, 5/268; G11B 5/86
U.S. Cl. 360—33.1 4 Claims



1. A dual deck video cassette system comprising:

(a) means defining a tuner for connection to a receiving antenna and constructed and arranged to demodulate the signal received by said antenna to extract a video-audio signal therefrom,

(b) means defining a first video cassette deck with record and playback capability,

(c) means defining a second video cassette deck with record and playback capability,

(d) means defining common housing of the two means defining video cassette decks,

(e) the first and second means defining video cassette decks being independently operable,

(f) means defining an output jack of the common housing connectable to a television receiver's reception port and comprising, at said output jack an R.F. modulator to reestablish a simulation of an on-the-air video-audio,

(g) switching means within said housing for selectively connecting: (1) the extracted off-the-air video-audio to one or the other of said decks and independently connecting the other of said decks to the television receiver via said modulator and output jack, (2) one deck to the other directly for dubbing a played out recorded video-audio of a source cassette in one of said decks directly to a target cassette in the other of said decks without passing the source signal through an R.F. modulator in the course of dubbing, while independently allowing direct transmission of an antenna signal of the system to said television receiver via the housing without passage through the tuner and modulator within said housing or with passage of such antenna signal or of the source signal through the modulator within said housing, (3) auxiliary input or output jacks to one or the other of said decks while allowing the other of said decks to be connected to another one of said auxiliary jacks or to the television receiver via said modulator; (4) the extracted video-audio from the off-the-air signal simultaneously to said receiver and, as extracted, one or the other of said decks which is connected to an active auxiliary jack, or (5a) the extracted video-audio from the off-the-air signal to both said decks for simultaneous copying onto cassettes located in both said decks and, selectively, the extracted video-audio, via said modulator, or the off-the-air signal directly to said receiver, or (5b) either of said decks to the receiver.

4,768,111

CIRCUIT ARRANGEMENT FOR SHAPING AN ANALOG READ OUTPUT SIGNAL IN A ROTATING MASS MEMORY

Johann Kranabetter, Rosenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 1, 1986, Ser. No. 891,941
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1985, 3529797
Int. Cl.[4] G11B 15/12
U.S. Cl. 360—62 7 Claims



1. A circuit arrangement for shaping an analog read output signal in a rotating mass memory which has a plurality of rotating storage disks and a plurality of read/write heads each assigned to the storage disks and a plurality of selectively activatable preamplifiers each connected to a respective head, said circuit arrangement comprising:

a signal shaping device including an input stage connected to each of said preamplifiers for receiving the read signal of an activated preamplifier, said input stage including a pair of outputs;

a pair of output lines;

a pair of coupling capacitors respectively connecting said outputs of said input stage to said output lines;

a pair of first analog switches each connected between an operating voltage and a respective coupling capacitor;

a pair of second analog switches each serially connected in a respective output line; and

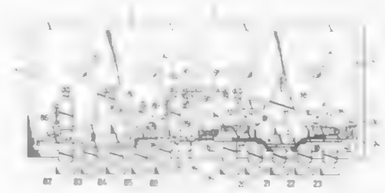
control means including first and second outputs respectively connected to said first and second analog switches and an input for receiving a static read/write status signal, said control means responsive to change of the read/write status signal to briefly close said first analog switches and cause rapid recharging of said coupling capacitors and to subsequently close said second analog switches and through-connect said pair of output lines.

4,768,112

INTERLOCKED REVERSE MODE CHANGE-OVER MECHANISM FOR DUAL CASSETTE TAPE RECORDER

Kunio Kido, Wako, Japan, assignor to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1986, Ser. No. 937,487
Claims priority, application Japan, Jun. 30, 1986, 61-100410[U]
Int. Cl.[4] G11B 15/18
U.S. Cl. 360—69 2 Claims



1. A tape recorder device, comprising a first tape driving mechanism having at least a reproducing function and normally capable of performing reproducing operation in a repetitive reversing mode, a second tape driving mechanism having at least a reproducing function, a first reproduction operating member for bringing said first tape driving mechanism into a reproduction operating condition, a second reproduction operating member for bringing said second tape driving mechanism into a reproduction operating condition, first arresting means for arresting said first reproduction operating member to its actuated position, second arresting means for arresting said second reproduction operating member to its actuated position, a reciprocally movable member mounted for back and forth reciprocal movement and operable to move back or forth when a tape comes to its end during reproducing operation of said first tape driving mechanism, a selectively engageable member having a disengaging position to which said selectively engageable member is normally held and in which said selectively engageable member cuts an interlocking relationship between said reciprocally movable member and said first arresting means and an engaging position in which said selectively engageable member allows the interlocking relationship between said reciprocally movable member and said first arresting means and transmits movement of said reciprocally movable member to said first arresting means to release the arrested condition of said first reproduction operating member by said first arresting means, a change-over operating member for bringing said second tape driving mechanism into a pause condition and simultaneously moving said selectively engageable member to the engaging position, and third arresting means operable for arresting said change-over operating member to its actuated position and for releasing said change-over operating member from its arrested condition to allow said change-over operating member to return to its non-actuated position in response to returning movement of said first reproduction operating member from its actuated to its non-actuated position.

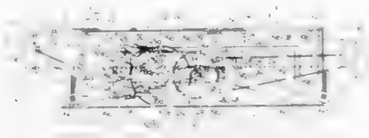
VOL 1093 ISS 5 AG 30 1988 UMI

4,768,113

TAPE CASSETTE LOADING AND UNLOADING APPARATUS HAVING A LOCK MECHANISM FOR LOCKING A TAPE CASSETTE IN A LOADING POSITION

Manabu Sato, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jan. 28, 1986, Ser. No. 823,381
Claims priority, application Japan, Jan. 29, 1985, 60-10704[U]
Int. Cl.[4] G11B *15/675*
U.S. Cl. 360—96.5 5 Claims



1. A tape cassette loading and unloading apparatus comprising:

a frame;

a holder provided within said frame for receiving and moving a tape cassette which is inserted into said holder;

guide means provided on said frame for guiding said holder so that said holder moves horizontally between a cassette receiving position where the tape cassette is received and an insertion completion position and moves vertically between said insertion completion position and a predetermined loading position;

a motor which rotates in a first direction during a tape cassette loading mode and rotates in a second direction during a tape cassette unloading mode, said second direction being opposite to said first direction; and

transmitting means coupled to said motor for transmitting a rotational driving force of said motor to said holder so that said holder is moved to said predetermined loading position via said insertion completion position during the tape cassette loading mode and said holder is moved to said cassette receiving position via said insertion completion position during the tape cassette unloading mode,

said transmitting means comprising a first rotary member rotatably supported on said frame and driven by said motor, a second rotary member rotatably supported on said frame and coupled to said first rotary member, and a third rotary member rotatably supported on said frame and coupled to said second rotary member and to said holder, said second rotary member transmitting the rotational driving force of said motor from said first rotary member to said third rotary member so that said third rotary member drives said holder,

said first rotary member locking said second rotary member in a non-rotatable state when said holder reaches said predetermined loading position in the tape cassette loading mode, so that said holder is immovably locked in said predetermined loading position,

said first rotary member comprising a first toothed wheel having a first engaging part and an untoothed part,

said second rotary member comprising a second toothed wheel meshing with said first toothed wheel, a third toothed wheel, and a second engaging part,

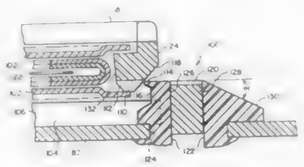
said third rotary member comprising a fourth toothed wheel meshing with said third toothed wheel, for transmitting the rotational driving force of said motor transmitted from said third toothed wheel to said holder, said fourth toothed wheel being coaxially provided with respect to said first toothed wheel, said untoothed part of said first wheel opposing said second toothed wheel immediately before said holder reaches said predetermined loading position, thereby stopping said second toothed wheel from rotating so that said first engaging part engages said second engaging part and locks said second rotary member in the non-rotatable state.

4,768,114

DISK CASSETTE LOADING/UNLOADING MECHANISM WITH RIGID SHUTTER OPENING DEVICE

James D. Harney, Rochester, and Thomas D. Jensen, Himrod, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 31, 1986, Ser. No. 925,434
Int. Cl.[4] G11B *5/012*
U.S. Cl. 360—97 9 Claims



1. A disk cassette loading/unloading mechanism for use in a disk cassette recorder or the like having upper and lower magnetic heads and a disk-drive mechanism, wherein the disk cassette includes a record disk within the cassette, a leading end portion of the cassette having front and rear edges, an aperture in the cassette extending to the front edge for insertion therethrough of the magnetic heads, and a shutter blade associated with the aperture and movable between an aperture-open position and an aperture-closed position, comprising:

a support plate;

a disk cassette holder lying in a plane and mounted on the support plate for movement between a loading/unloading position in which a cassette is inserted into the holder to a loaded position or unloaded from the holder from the loaded position, and a recording position in which the disk in the cassette can be drivingly engaged by the disk-drive mechanism; and

an abutment member mounted on the disk cassette holder across which the leading end portion of the cassette is moved upon insertion of the cassette into the holder to its loaded position, the abutment member having a leading lip for engaging and moving the shutter blade to its aperture-open position upon such insertion of the disk cassette into the holder to its loaded position, the abutment member further having a top surface and a trailing inclined surface engageable with the rear edge of the leading end portion of the cassette for guiding the rear edge over the abutment member, thereby preventing the abutment member from catching on the rear edge of the leading end portion of the cassette, and preventing further removal of the cassette from its loaded position.

4,768,115

STEPPER MOTOR MAGNETIC HYSTERESIS CORRECTION USING A STEPPING ALGORITHM

James N. Krause, Santa Clara County, Calif., assignor to Seagate Technology, Scotts Valley, Calif.

Filed Aug. 14, 1987, Ser. No. 85,118
Int. Cl.[4] G11B *5/55, 21/08;* G05B *19/40*
U.S. Cl. 360—78 7 Claims

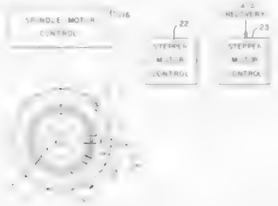
1. A computer disc drive system comprising at least one disc having a plurality of concentric data tracks thereon,

means for rotatably supporting said disc,

means comprising an actuator for supporting a transducer over said disc for reading and writing digital information on said disc tracks, said system having positioning means for selectively positioning said transducer relative to said data tracks and said rotating disc,

open loop position means coupled to said actuator comprising a multi-phase stepper motor for moving said actuator and thereby said transducer from track to track, and

sequence control means for energizing the phases of the motor in a sequence that will erase magnetic memory error to move the transducer from an initial track x to a target track x+1, comprising power means for accelerating said transducer from initial track x past said target track x+1, brake means for braking said transducer to returning it to a position between initial track x and target



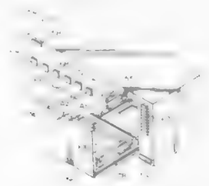
track x+1, damping means for damping movement of said transducer while directing movement again past target track x+1, and for finally seeking said transducer to said target track x+1, said control means further comprising means for energizing a plurality of said phases to hold said transducer at initial track x and for de-energizing one of said phases to hold said transducer at target track x+1, said power means comprising means for reversing the energization of said one phase which is to be de-energized at target track x+1, whereby the ability to establish the magnetic memory of the de-energized phase is established.

4,768,116

DEVICE FOR AUTOMATICALLY CHANGING MAGNETIC DISC PACK

Yoshiyuki Watanabe, Ashigarakami, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagwa, Japan

Filed Apr. 15, 1986, Ser. No. 852,727
Claims priority, application Japan, Apr. 19, 1985, 60-84337; Apr. 19, 1985, 60-84338; Apr. 19, 1985, 60-84339; Apr. 19, 1985, 60-84340; Apr. 19, 1985, 60-84998; Apr. 19, 1985, 60-84999; Apr. 20, 1985, 60-84757
Int. Cl.[4] G11B *5/012, 23/02*
U.S. Cl. 360—98 5 Claims



1. A device for automatically changing a magnetic disc pack, wherein a magazine loaded with a plurality of magnetic disc packs is inserted in said device, and each magnetic disc pack contains a magnetic disc, said device withdrawing a selected magnetic disc pack from said plurality of magnetic disc packs out of said magazine in accordance with a predetermined reproduction order and setting said selected magazine disc pack in a reproducing section within said device for reproduction of an image stored on said disc, said device for automatic change comprising:

a main body having an axis defining an axial direction;

a magazine reciprocation means for inserting and withdrawing said magazine through an opening formed in a front surface of said main body to reciprocate said magazine in the axial direction of said main body;

a random access means cooperating with said magazine reciprocation means for reciprocating said magazine in the main body in a transverse direction perpendicularly intersecting the axial direction and moving the magnetic disc pack selected in accordance with a predetermined reproduction order to a position adjacent a holder within said main body;

a magnetic disc pack carrying means reciprocatingly movable in the axial direction, for withdrawing from said magazine said selected disc pack to a position opposed to said holder of the random access mechanism and inserting said magnetic disc pack into said magazine after reproduction;

a shutter opening-closing means for opening and closing a shutter of said magnetic disc pack relative to insertion and withdrawal of said magnetic disc pack; and

a magnetic disc pack loading means cooperating with said holder for reciprocatingly moving said magnetic disc pack in said holder in the transverse direction perpendicularly intersecting the axial direction, and for guiding said magnetic disc pack to and from a reproduction position where said magnetic disc pack is mounted onto a driving shaft of said reproducing section.

4,768,117

TAPE GUIDE DRUM APPARATUS HAVING MAGNETIC HEADS MOUNTED AT DIFFERENT HEIGHT POSITIONS

Masato Mihara, Hiratsuka, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 25, 1986, Ser. No. 890,758
Claims priority, application Japan, Jul. 29, 1985, 60-116048[U]
Int. Cl.[4] G11B *5/53, 5/56, 21/24*
U.S. Cl. 360—109 4 Claims



1. A tape guide drum apparatus comprising;

a rotary body; and

at least one magnetic head unit mounted on said rotary body,

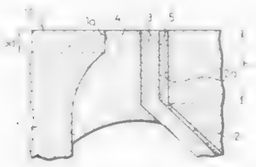
said magnetic head unit comprising a single support plate, first and second magnetic heads, a first base mounted on an upper surface of said support plate by first fastening means, said first magnetic head being fixed to said first base, a second base mounted on a lower surface of said support plate by second fastening means, said second magnetic head being fixed to said second base, first and second height adjusting screws respectively provided on said first and second bases for adjusting the height positions of said first and second magnetic heads relative to the upper and lower surfaces of said support plate, respectively, adjusting holes provided in said support plate so that a relative displacement of said first and second magnetic heads along the upper and lower surfaces of said support plate is adjusted by use of an eccentric pin inserted therein and turned appropriately,

said first and second magnetic heads recording and/or reproducing signals on and/or from a magnetic tape in

VOL 1093 ISS 5 AG 30 1988 UMI

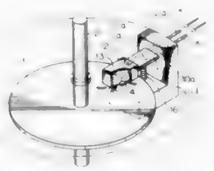
respective recording regions separated in a width direction of the magnetic tape.

4,768,118
FLOATING-TYPE MAGNETIC HEAD
Toshihiro Kuriyama, Nagaoka, Japan, assignor to Alps Electric Co., Ltd., Japan
Filed Aug. 28, 1987, Ser. No. 90,611
Claims priority, application Japan, Oct. 28, 1986, 61-258029
Int. Cl.[4] G11B *5/133, 5/147, 5/265*
U.S. Cl. 360—121 3 Claims



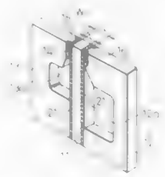
1. A floating-type magnetic head comprising:
a leading magnetic core;
a trailing magnetic core disposed behind the leading core in the direction of movement of a magnetic recording medium with which the magnetic head makes a sliding contact;
a first magnetic gap consisting of a thin nonmagnetic film of a given thickness, the film being located adjacent to the end surface of the leading core, the depth of the end surface of the leading core as measured from the surface of the head that makes contact with the magnetic recording medium being set to a value less than 10 microns;
a thin layer of a magnetic material located adjacent to the first magnetic gap and having a given thickness; and
a second magnetic gap formed between the thin layer of the magnetic material and the end surface of the trailing core, the depth of the end surface of the trailing core as measured from the surface of the head that makes contact with the magnetic recording medium being set to a value exceeding 100 microns.

4,768,119
NON-CONTACT HEAD WITH VARIABLE CLEARANCE COMPENSATING MEANS
Kenzaburou Iijima; Kazuo Kurahashi, and Yoshinori Hayashi, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Mar. 3, 1987, Ser. No. 21,179
Claims priority, application Japan, Mar. 5, 1986, 61-47760; May 28, 1986, 61-121127; Jun. 20, 1986, 61-144173
Int. Cl.[4] G11B *5/12, 5/10, 5/48*
U.S. Cl. 360—103 7 Claims



1. An improved non-contact type rotary encoder comprising:
(a) a rotary shaft;
(b) a planar recording medium mounted on said rotary shaft and having a magnetized pattern recorded thereon;
(c) a detection head including a detecting element; and
(d) means for holding said detection head at a location that will cause said detecting head to be spaced from and to face said recorded pattern on said recording medium, said means comprising:
(1) a fixed bracket;
(2) a flexible supporter plate mounted at its proximal end to said bracket and carrying at its free end said detecting head;
(3) spring means for urging said supporter plate, and therefore said detecting head toward said recording medium; and
(4) means for ejecting air via said flexible support plate and said detection head against said recording medium so as to counter the force of said spring means and cause said detecting head to remain a constant distance from said recording medium.

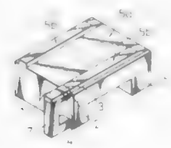
4,768,120
COMPLEX MAGNETIC HEAD HAVING NON-MAGNETIC CENTER CORE
Takashi Hatanai, Nagaoka, Japan, assignor to Alps Electric Co., Ltd., Japan
Filed Aug. 3, 1987, Ser. No. 81,307
Claims priority, application Japan, Sep. 8, 1986, 61-211234
Int. Cl.[4] G11B *5/12, 5/251, 5/27*
U.S. Cl. 360—121 1 Claim



1. In a complex magnetic head having a medium-contacting surface facing in a vertical direction toward a recording medium, of the type including a center core provided between a recording and reproducing core and an erasing core disposed on opposite side surfaces thereof in a lateral direction perpendicular to the vertical direction, wherein a recording and reproducing gap is defined between the side surfaces of the recording and reproducing core and the center core, and an erasing gap is defined between the side surfaces of the erasing core and the center core,
the improvement wherein said center core is formed as a single block of non-magnetic material and has a magnetic film made from a metallic magnetic material formed on each of its opposite side surface facing the recording and reproducing gap and the erasing gap, respectively.

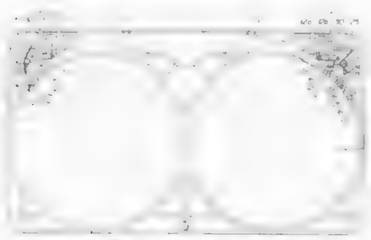
4,768,121
MAGNETIC HEAD FORMED BY COMPOSITE MAIN POLE FILM AND WINDING CORE FOR PERPENDICULAR MAGNETIC RECORDING
Keishi Nakashima; Tetsuya Iwata; Yasuo Tanaka, and Toshiaki Hashidate, all of Nagaoka, Japan, assignors to Alps Electric Co., Ltd., Japan
Filed Dec. 31, 1986, Ser. No. 948,024
Claims priority, application Japan, Feb. 19, 1986, 61-34117
Int. Cl.[4] G11B *5/12, 5/60, 15/64*
U.S. Cl. 360—125 2 Claims

1. A main pole excitation type magnetic head for perpendicular magnetic recording on tracks of a recording medium moving in a horizontal direction in contact therewith, comprising:
a slider having a horizontal medium-contacting surface on one side thereof;
a magnetic head formed as a thin film composite of a non-magnetic substrate layer, a main pole film layer for perpendicular magentic recording having a predetermined width corresponding to the width of tracks to be recorded, and a protective film layer, said thin film magnetic



head being oriented in parallel with the horizontal direction of the recording medium with the protective film layer on a leading end relative to a moving direction of the recording medium;
a winding core formed separately from said magnetic head of a magnetic material, said winding core being secured to the slider with an adhesive and having said thin film magnetic head pasted to an end surface thereof in horizontal alignment with said medium-contacting surface of said slider.

4,768,122
MOVEABLE LID FOR TAPE CASSETTE
Hideaki Kawada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 23, 1985, Ser. No. 757,880
Claims priority, application Japan, Jul. 23, 1984, 59-111225; Sep. 10, 1984, 59-136917
Int. Cl.[4] G11B *23/02*
U.S. Cl. 360—132 4 Claims



1. A tape cassette comprising a pair of tape reels around which is placed a magnetic tape that extends from reel to reel;
a body member consisting of an upper half and a lower half forming a front wall section of predetermined length, and said body member being adapted for enclosing said pair of tape reels rotatably mounted therein;
a threading area arranaged at a front side of said body member and including an opening in said front wall section through which the magnetic tape is exposed to the outside of said body member, end portions of said front wall section of said body member extending on either side of said opening;
a lid adapted for selectively covering said opening in said threading area and, when in a covering position, overlying and protecting said magnetic tape in said opening;
said lid comprising a front wall section having a length substantially equal to a length of said opening and being less than the length of said front wall section of said body member and being adapted in said covering position to overlie said opening in said threading area, side part sections contiguous to both sides of the front wall section of said lid and being arranged substantially perpendicularly thereto and extending into said front wall section of said body member, said side part sections being substantially parallel with side wall sections of said body member, and rotary shafts for the lid formed in said side part sections; and
said lid being mounted for selectively covering said opening in said threading area with said rotary shafts supported by bearing means formed in said body member and arranged inwardly of said side wall sections of said body member, whereby said lid being substantially less in length than the length of said front wall section of said body member causes end portions of said front wall section of said body member to extend beyond the ends of said lid.

4,768,123
MAGNETIC DISK CARTRIDGE AND PRODUCING METHOD THEREFOR
Michio Iizuka, Saku, and Haruo Shiba, Komoro, both of Japan, assignors to TDK Corporation, Tokyo, Japan
Continuation of Ser. No. 731,582, May 7, 1985, abandoned. This application Dec. 11, 1987, Ser. No. 131,763
Claims priority, application Japan, May 8, 1984, 59-66723[U]
Int. Cl.[4] G11B *23/03*
U.S. Cl. 360—133 20 Claims



1. A magnetic disk cartridge for rotatably containing a magnetic disk therein, in which the magnetic disk is rotated by disk drive means having a pivot shaft, comprising
a hard case which is composed of a cover member and a bottom member;
a magnetic disk having a hole in its center, which is rotatably contained in the hard case; and
an anti-abrasion chip consisting of a polygon shape including a triangle, which is attached to the inside of the case and which receives a free tip of the pivot shaft of the disk drive means in contact therewith, the pivot shaft being inserted in the central hole of the magnetic disk.

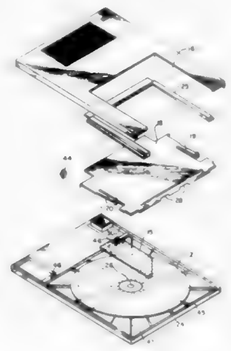
4,768,124
RECORD DISK CARTRIDGE WITH FLEXIBLE PAD
Randall C. Bauck, Davis County; Anton J. Radman, Weber County; Roy Thornock, Weber County; Robert D. Freeman, Weber County; Peter Kleczkowski, Weber County; Paul D. Losee, Davis County, and Michael Lyon, Weber County, all of Utah, assignors to Iomega Corporation, Roy, Utah
Continuation of Ser. No. 440,336, Nov. 9, 1982, Pat. No. 4,658,318, which is a continuation-in-part of Ser. No. 256,320, Apr. 22, 1981, Pat. No. 4,400,748. This application Dec. 30, 1986, Ser. No. 947,632
The portion of the term of this patent subsequent to Apr. 14, 2004, has been disclaimed.
Int. Cl.[4] G11B *23/03, 5/012*
U.S. Cl. 360—133 13 Claims
1. A disk cartridge for use with a disk drive of the type

VOL 1093 ISS 5 AUG 30 1988 UMI

having a fixed plate against which a disk is rotated in read/-write relationship with a head, said cartridge comprising:

an enclosure containing said disk; and

a flexible pad disposed between said plate and said disk when



said cartridge is inserted into said disk drive, said pad being fabricated of a soft, moisture-absorbent material which is co-extensive with a portion of the surface of said disk, said pad preventing said disk from clinging closely to said plate.

4,768,125

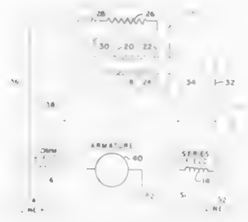
PROTECTIVE DEVICE FOR AN ELECTRIC MOTOR

Timothy K. Byrne, 15 N. Huffman St., Naperville, Ill. 60540

Continuation of Ser. No. 945,227, Dec. 23, 1986, abandoned, which is a continuation of Ser. No. 691,143, Jan. 14, 1985, abandoned. This application Nov. 18, 1987, Ser. No. 122,527

Int. Cl.[4] H02H *7/09*

U.S. Cl. 361—33 1 Claim



1. A device for protecting a D.C. series motor when the series field winding and the commutating field winding therein collapse comprising first resistance means and second resistance means for dissipating the voltage surge produced by the series field winding and the commutating field winding upon the collapse thereof, said first resistance and second resistance means each having a fixed resistance value, said first resistance and second resistance means for connecting in parallel with the series field winding and the commutating field winding, respectively.

4,768,126

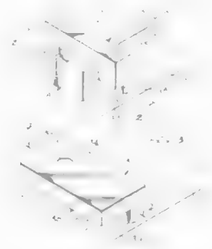
SELF-CONTAINED DEVICE FOR REMOVING STATIC CHARGE, DUST AND LINT FROM SURFACES

Allan D. Le Vantine, 18225 Rancho St., Tarzana, Calif. 91356

Filed Jul. 30, 1987, Ser. No. 79,720

Int. Cl.[4] H05F *3/06*

U.S. Cl. 361—213 3 Claims



1. A static charge and dust and lint removing device comprising:

a housing means for enclosing and supporting the elements of the device, said housing means being made of electrically non-conductive material and being generally rectangular in shape and of sufficient depth to enclose the components of the device, said housing means having an inlet opening to allow air to flow into the device and an outlet opening to allow air to flow out of the device,

an impeller means within the housing means to receive air from the inlet opening and for accelerating the air to high velocities, said impeller means comprising a circular disc of finite thickness with a central hub for attachment to a rotation means and with veins perpendicular to the plane of the circular disc extending radially from a central region to the circumference of the disc,

a rotation means comprising a motor means affixed to the housing means with the motor shaft anchored in the hub of the impeller means such that the motor means will drive the impeller means about its axis of rotation,

a scroll means within the housing means for surrounding the impeller means so as to collect and channel the air from the impeller means to a duct means,

a duct means within the housing means to provide a passageway for the air to flow from the scroll means to an ionizing section, said duct means comprising two separate passageways each passageway entering the ionizing section at a separate location,

an ionizing section for the positioning of emitters in the air flow, said ionizing section comprising a cylindrical vortex chamber with the duct inlets each entering the chamber at one end tangentially at diametrically opposite locations of the cylinder and with means for the location of the emitters within the duct inlets to the vortex chamber and with the opposite end of the cylindrical vortex chamber open to allow for the exit of the air flow,

an emitter means mounted within the ionizing section for inducing an ionized charge to the air passing therethrough, said emitter means consisting of a plurality of fine wires, each less than one ten thousandth of an inch in diameter, formed into a brush and metallically bonded to a supporting means which is also an electrical conductor for providing connection to a high voltage source,

a nozzle or directing means affixed to the outflow opening of the ionizing section for directing the air out of the device and to the work area,

an electrical high voltage source means comprising both a positive direct current high voltage source and a negative direct current high voltage source, the positive high voltage source being connected to one emitter by an electrical conduction means and the negative high voltage source being connected to the other emitter by an electrical conduction means.

4,768,127

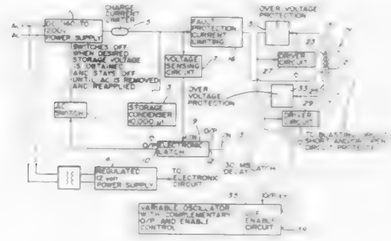
IGNITION SYSTEM

Louis-Georges Desrochers, Longueuil, Canada, assignor to C-I-L Inc., North York, Canada

Continuation of Ser. No. 865,354, May 21, 1986, abandoned. This application Oct. 5, 1987, Ser. No. 104,295

Int. Cl.[4] F23Q *7/00*

U.S. Cl. 361—251 4 Claims



1. In an ignition system for firing a plurality of electromagnetically-coupled electric blasting caps, said ignition system comprising in combination a transformer having a primary winding and a secondary winding, and means connecting said secondary winding to the resistive elements of said blasting caps;

a storage capacitor for storing a D.C. voltage and including means for charging said storage capacitor to a predetermined voltage level; and

means for permitting discharge of said storage capacitor at predetermined intervals through said primary winding, said discharge means comprising driver circuit means comprising a parallel arrangement of a plurality of electronic switch means, and means for activitating the electronic switch means at said predetermined intervals whereby to produce a pulse train in said primary winding which is transmitted, through said secondary winding to said resistive elements to thereby fire said blasting caps;

the primary winding having a center jpoint, a first half of said primary winding extending from said center point at one end of said first half in one direction to the other end of said first half, a second half of said primary winding extending from said center point at the other end of said second half in the opposite direction to the other end of said second half;

one end of said storage capacitor being connected to said center point and the other end of said storage capacitor being connected to a point of common potential;

said driver circuit means comprising a first driver circuit and a second driver circuit;

said first driver circuit being connected between the other end of siad first half and said point of common potential;

said second driver circuit being connected between the other end of said second half and said point of common potential, each of the said first and second driver circuits comprising at least eight field effect transistors (FETs) connected in parallel arrangement;

said means for activating said switch means being connected to the gate terminals of all of said FETs, the said means for activating comprising a flip-flop having a first output and a second output, said first output being connected to the gate terminals of said FETs of said first driver circuit, and said second output being connected to the gate terminals of said FETs of said second driver circuit;

the said means for charging said storage capacitor to said predetermined level comprising:

a D.C. power supply having an output connected to said one end of said storage capacitor, and also having an ON/-OFF terminal;

a voltage sensing circuit having an input connected to said one end of said capacitor and also having an output;

a first latch means having an input connected to the output of said voltage sensing circuit and also having a first and a second output;

switch means having an input connected to the first output of said first latch means and also having an output connected to the ON/OFF terminal of said D.C. power supply;

whereby, said D.C. power supply charges said storage capacitor to increase the D.C. level of said storage capacitor and, when said D.C. level reaches said predetermined level, said first latch means is tripped to activate said switch means to turn off said power supply.

4,768,128

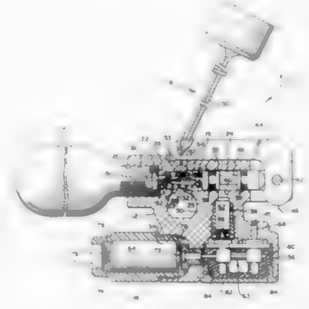
WATER ACTIVATED PRESSURIZED GAS RELEASE DEVICE

Roman Jankowiak, Cheektowaga, N.Y., and John A. Latocka, Jr., Seminole, Fla., assignors to Conax Florida Corporation, St. Petersburg, Fla.

Continuation-in-part of Ser. No. 817,026, Jan. 8, 1986, abandoned. This application May 5, 1987, Ser. No. 47,016

Int. Cl.[4] F23Q *7/02*

U.S. Cl. 361—251 9 Claims



1. A water activated pressurized gas release device comprising:

a one-piece housing formed of an electrically conductive material and provided with a longitudinally extending threaded bore, a piercing pin receiving bore coaxial with the threaded bore and open thereto, a transverse hole to one side of the piercing pin receiving bore, a gas passageway between the piercing pin receiving bore and the transverse hole, a cavity for receipt of electrical circuit means, and a stepped bore extending between the cavity and the piercing pin receiving bore;

an exposed electrically conductive first contact carried by said housing;

a container of pressurized gas having a threaded end portion disposed within the threaded bore and a pierceable closure disposed within said threaded end portion;

a piercing pin disposed within said piercing pin receiving bore and shiftable from a first position to a piercing position;

a primer disposed within the stepped bore and when ignited being capable of causing the piercing pin to be shifted from its first portion to its piercing position;

electrical circuit means received within the cavity and oper-

VOL 1093 ISS 5 AG 30 1988 UMI

atively associated with said primer and being capable of igniting the primer when said device is placed in an electrically conductive fluid, the electrical circuit means being in electrical contact with a portion of said electrically conductive housing and also having a battery contact;

a cover closing said cavity, said cover being provided with an undercut portion;

potting compound disposed about said electrical circuit means and engaging the undercut portion of the cover to firmly maintain the cover in place; and

battery mounting means capable of maintaining one terminal of a battery in contact with said battery contact, the battery mounting means also being capable of establishing an electrical path to the other terminal of said battery when said device is placed in an electrically conductive fluid.

4,768,129

THROUGH TYPE TWIN CAPACITOR

Setsuo Sasaki; Mutsuo Koganebuchi, and Teruo Taguchi, all of Akita, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jan. 14, 1987, Ser. No. 3,136

Claims priority, application Japan, Jan. 17, 1986, 61-4760[U]; Feb. 5, 1986, 61-15583[U]; Apr. 14, 1986, 61-55916[U]

Int. Cl.⁴ H01G *4/42*

U.S. Cl. 361—302 **4 Claims**



1. A through type twin capacitor comprising:

a ground conductor having a plate portion and an elevated portion elevated from the plate, the elevated portion having a through hole,

a column shaped ceramic bosy having a pair of separated electrodes deposited on the upper surface of the ceramic body as well as a common electrode deposited on the lower surface thereof, the ceramic body and the electrodes having two common through holes in their thickness direction, the ceramic body being mounted on the elevated portion of the ground conductor so that the common electrode faces the elevated portion,

a pair of metallic caps each of which has a through hole and is mounted on the corresponding separated electrode,

a pair of conductive rods penetrating the through holes of the caps, the common through holes of the ceramic body and the through hole of the elevated portion of the ground conductor,

a first insulating cover of a hollow column shape attached below the ground conductor,

a second insulating cover of a hollow column shape attached above the ground conductor,

a pair of insulating tubes on the respective conductive rods, said tubes covering said rods from where they emerge from the bottom of said caps to a position beyond the end of the first cover, the distance d_2 by which the ends of said tubes extends beyond the end of the first cover being at least larger than the distance d_1 between the wall of the first cover and the surface of the tube opposite the wall, so as to provide extra discharge protection, and

insulating fillers individually injected into the first and second covers.

4,768,130

CAPACITOR OF THE POLYMER FILM TYPE WITH STABILITY AT HIGH TEMPERATURES

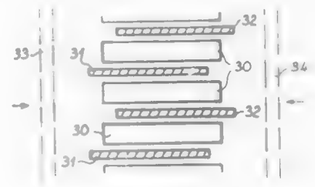
Gilles Bernard, Seurre; Jean-Marc Bureau, Villebon sur Yvette; Jean-Claude Dubois, Magny-les-Hameaux, and Jean-Luc Zattara, Dijon, all of France, assignors to Compagnie Europeenne de Composants Electroniques, Courbevoie, France

Filed Oct. 9, 1987, Ser. No. 106,255

Claims priority, application France, Oct. 10, 1986, 86 14151

Int. Cl.⁴ H01G *3/175*

U.S. Cl. 361—323 **9 Claims**



1. A capacitor of the polymer film type, wherein the said polymer is a polyphenylquinolaxine or a polyhydantoin.

4,768,131

PULL-OUT FRAME WITH A GUIDE RAIL FOR ELECTRIC SWITCHGEAR

Rosemarie Schultz, and Fred Sinnig, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 4, 1986, Ser. No. 937,966

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1985, 3544664

Int. Cl.⁴ H02B *11/12*

U.S. Cl. 361—338 **9 Claims**



1. Apparatus for receiving a draw-out switchgear including a frame and two guide rails for supporting the switchgear in a drawn-out position thereof, wherein the guide rails are pivotably fastened to the frame by cooperating connecting means disposed on the guide rails and the frame and stop means are provided limiting pivotable movement of each guide rail from

a vertical resting position to a horizontal operating position whereby in the horizontal operating position the switchgear received by the apparatus can be moved into its drawn-out position, the connecting means being effective to fasten the guide rails under the influence of gravity to the frame and the connecting means being disengageable by lifting the guide rails in a direction opposite to the force of gravity, the connecting means comprising a cylindrical bolt provided with a collar, and a keyhole-like opening, the diameter of the bolt being designed to be closely received in a narrow part of the opening, and the diameter of the collar being designed so that said collar can pass through a wide part of the opening.

4,768,132

DISCONNECT CONTACT ARRANGEMENT FOR SWITCHGEAR MOVABLY ARRANGED AT GUIDES

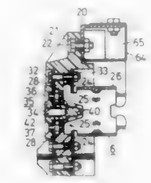
Günter Prietzel, and Rosemarie Schultz, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 26, 1986, Ser. No. 935,041

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1985, 3542747

Int. Cl.⁴ H02B *1/04*

U.S. Cl. 361—342 **10 Claims**



1. A disconnect contact arrangement receiving a switchgear wherein the switchgear is arranged movably on guide means and wherein the switchgear comprises a plurality of rigid conductor sections for each pole of the switchgear comprising electrical terminals and further comprising disconnect contact blocks cooperating with the electrical terminals of the switchgear, the disconnect contact blocks associated with the terminals of the same pole of the switchgear being received partially between two insulating support bars so as to have limited mobility with respect to the electrical terminals of the switchgear for compensation of tolerances occurring between the electrical terminals and the disconnect contact blocks, the support bars being fastened to the guide means and wherein each support bar for the disconnect contact blocks of a pole has a recess partially receiving the corresponding disconnect contact block, and further wherein at least one inner clamping piece which rests on a deposition surface of said recess is fastened to both support bars engaging the lateral parts of a disconnect block.

4,768,133

LIGHTING DEVICE

Ronald H. Simons, Bishops Stortford; Basil S. Wilkinson, Goffs Oak, and Ivor C. Henry, Enfield, all of Great Britain, assignors to Thorn EMI plc, London, England

Filed Feb. 12, 1987, Ser. No. 13,942

Claims priority, application United Kingdom, Feb. 13, 1986, 8603507

Int. Cl.⁴ F21V *8/00*

U.S. Cl. 362—32 **11 Claims**

1. A lighting device comprising a housing and an optical assembly in the housing, wherein the optical assembly includes a light pipe having a first end and a second end opposite said first end and a longitudinal axis between said first end and said second end; a light source for producing a beam of light, the light source being positioned at said first end of said light pipe, the light pipe being arranged to guide said beam parallel to said longitudinal axis of the light pipe; a dichroic filter interposed between said first end of the light pipe and the light source; and



an end arrangement positioned at said second end of the light pipe, said end arrangement being effective to direct light, emergent from said second end, in a predetermined direction away from said longitudinal axis.

4,768,134

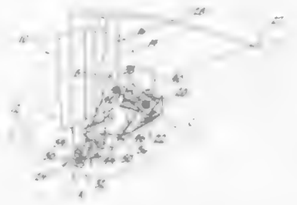
ACTUATOR MECHANISM FOR A CONCEALABLE HEADLAMP ASSSEMBLY

Bartley A. Haydu; Steven F. Tregilgas, and William E. Carrell, all of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1987, Ser. No. 91,090

Int. Cl.⁴ B60Q *1/06*

U.S. Cl. 362—65 **6 Claims**



1. An actuator mechanism for rotating a member from a first position to a second position, said actuator mechanism comprising drive means having a rotatable output shaft, a drive crank rigidly mounted on said output shaft for rotation therewith, a driven crank rigidly mounted on said member, a link pivotally interconnecting said drive crank to said driven crank, a pin fixed in position adjacent said link, and a positioner means formed in said link for engaging said pin, said pin and positioner means cooperating at one point during the movement of said member between said first position and said second position to ensure that said link is properly positioned for transmitting a drive force from said driver crank to said driven crank for driving said driven crank in the proper direction of rotation.

4,768,135

HEADLIGHT ARRANGEMENT FOR VEHICLES

Heinz Kretschmer, Bönnigheim, Fed. Rep. of Germany; Christian Lietar, Morges, Switzerland; Gerhard Lindae, Leonberg; Richard Loewe, Gerlingen, both of Fed. Rep. of Germany; Jean-Francois Longchamp, Lausanne, Switzerland; Rainer Neumann, Frankfurt am Main, Fed. Rep. of Germany; Eckhard Noelte, Weil der Stadt, Fed. Rep. of Germany, and Peter Perthus, Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 21, 1986, Ser. No. 933,794

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1986, 3601388

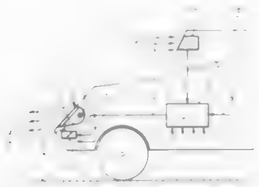
Int. Cl.⁴ B60Q *1/06*

U.S. Cl. 362—66 **12 Claims**

1. A headlight arrangement for vehicles, particularly for power vehicles, comprising a light source with a light reflector

VOL 1093 ISS 5 AG 30 1988 UMI

forming a light beam which illuminates a roadway with a predetermined light distribution; means for sensing a traffic situation forwardly of a vehicle and including at least one



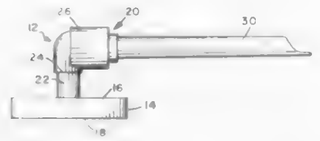
sensor with a receiving optical element; means for comparing the sensed traffic situation with at least one predetermined parameter and thereby forming a signal; and an element for changing the light distribution, controlled by said signal.

4,768,136

AIRCRAFT LANDING ZONE MARKER

William Tashjian, 48 Church St., Westboro, Mass. 01581

Filed Dec. 12, 1986, Ser. No. 940,778
Int. Cl.[4] T21K *2/00*
U.S. Cl. 362—84 13 Claims



1. A landing zone marker for aircraft landings under law light conditions, said landing zone marker comprising:

(a) a compact supporting base which has a top surface and a bottom surface for resting on a supporting surface of a landing zone, said base being sufficiently heavy and dense relative to the marker as a whole to resist natural wind and artificial wind which is created by landing aircraft for maintaining the landing zone marker in a set position in (or) the landing zone,

(b) a holding fixture which is fixed to and extends upwardly from said top surface, said fixture having a socket, and

(c) a lightstick having chemiluminescent properties and which is adapted to be removably inserted into said socket.

4,768,137

SCREWDRIVER STRUCTURE WITH ILLUMINATING FUNCTION

Hong L. Hwaw, No. 569 Lan-Mei Rd.; Huo M. Chen, and Tu C. Chen, both of No. 37 Chang-Hsin Rd., all of Chang-Hwa, Taiwan

Filed Aug. 4, 1987, Ser. No. 81,244
Int. Cl.[4] F21V *33/00*; B25B *23/18*
U.S. Cl. 362—120 1 Claim

1. A screwdriver with illuminating function, comprising:

a grip handle having an opening therein for accommodating a battery, a guide slot being provided in an upper part of said grip handle, a pair of opposing holes being provided in said grip handle;

a conducting member disposed in the opening in the grip handle, one end of the conducting member being formed as a spring for making electrical contact with a battery accommodated in said opening, another end of said conducting member being formed as a flange;

a transparent receptacle body having an opening therein and a notched mouth portion forming an inserting member, a guide slot being formed in said receptacle body, and with a pair of opposing legs protruding from said receptacle body having ends thereof formed with hooks, said hooks being engageable in said holes in said grip handle for securing the body receptacle to the grip handle;

a bulb disposed in the opening in the body receptacle and in electric contact with the battery, said bulb having an annular block;



a screwdriver blade having an inserting part formed with a lug and insertable in the inserting member of the body receptacle; and

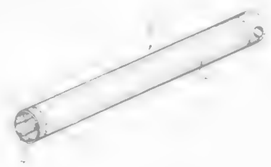
a spacer block having a sliding block portion and an urging block portion, the spacer block being slidable in the guide slots of the grip handle and body receptacle for urging the flange end of the conducting member into electrical contact with the bulb for closing an electric circuit with said bulb and battery for illuminating said lamp.

4,768,138

FLASHLIGHT

Norbert Leopoldi, Chicago, and William P. Heinrich, McHenry, both of Ill., assignors to The Cloverline, Inc., Chicago, Ill.

Filed Aug. 5, 1987, Ser. No. 81,684
Int. Cl.[4] F21L *7/00*
U.S. Cl. 362—189 1 Claim



1. A squeeze-on flashlight, comprising;

a hollow main housing;

a first battery housed within said housing;

bulb means mounted at one end of said housing, said bulb means having a threaded cap means for mounting purposes;

means urging said first battery toward said cap means for providing electrical connection therebetween;

said first battery comprising an outer, exposed cover of metal;

switch means for mounting said cap means and for effecting the energization of said bulb means, said means for mounting comprising a spiral means comprising at least two

loops thereof, each of said loops having an inner diametric extension for threadingly receiving therein the threads of said threaded cap means, said means for mounting further comprising two elongated flexible coil-wire finger elements integrally connected with and projecting from said at least two loops, one said finger element projecting from one said loop, and another said finger element projecting from another said loop;

each said finger element extending substantially along the length of said housing and defining a free end portion juxtapositioned adjacent a first end portion of said first battery for movement toward and away from said first battery;

an annular spacing ring circumscribing a second end portion of said first battery for normally spacing each said free end portion from the outer cover of said first battery;

said housing being made of flexible electrically-insulating material, whereby upon the squeezing of said housing, said flexible finger elements are caused to touch the outer metallic cover of said first battery to close a circuit in series with the bulb means;

a second battery mounted in series with said first battery in said housing having an outer electrically-insulating cover, said second battery being mounted closer to said cap means than said first battery;

said spacing ring being positioned about said second end portion of said first battery adjacent said second battery;

said second battery having a diametric extension greater than that of said first battery;

said two finger elements being arcuately spaced about said first and second batteries along substantially the entire lengths of both.

4,768,139

LIGHTING FIXTURE

Charles B. Poppenheimer, LaCanada, Calif., assignor to GTY Industries, Sylmar, Calif.

Filed Apr. 27, 1987, Ser. No. 42,762
Int. Cl.[4] F21V *7/00*
U.S. Cl. 362—302 5 Claims



5. A lighting fixture comprising:

a ground stake having a channel-like cross section and a pair of spaced apart arms at one end thereof;

a lamp socket pivotally mounted on said stake between said arms, said lamp socket including a socket housing containing a lamp holder formed of two substantially identical semi-cylindrical lamp cores, each core having a rounded outer surface and a generally planer inner surface, a base, and a neck, with a generally U-shaped groove formed in the inner surface of said base, the inner surfaces of the lamp cores aligned and alongside each other such that the grooves in said cores are aligned and form a U-shaped passage through said lamp holder having a rectangular cross section;

a power cable of substantially rectangular cross section having opposing wide and narrow sides with a loop segment secured within the U-shaped passage;

a contact within each core extending from said neck thereof to the groove in said base thereof, each contact having a spike protruding into the groove of its respective core in a direction generally perpendicular to the inner surface thereof, such that with said cores aligned to form said lamp holder, said spikes protrude into the narrow sides of said cable to engage conductors within the cable;

a lamp element having contact pins slideably engageable over said neck of said lamp holder, with said contact pins connectable to said contacts; and

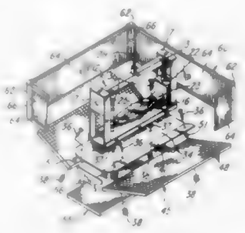
a reflector assembly releasably attachable to said lamp element.

4,768,140

INDOOR LIGHT FIXTURE FOR HIGH INTENSITY LAMP

Roman Szpar, 2685 Culver Ave., Dayton, Ohio 45429

Filed May 19, 1987, Ser. No. 51,403
Int. Cl.[4] F21V *7/20*
U.S. Cl. 362—342 12 Claims



1. An improved light fixture for obtaining efficient indirect illumination within a room of a building and adapted to use a high pressure sodium light source, said fixture comprising a frame including a generally horizontal reflector plate, a lamp socket mounted on said frame directly above said reflector plate and having a generally horizontal axis, an elongated lamp extending into said socket and having a generally horizontal high intensity light source spaced above said reflector plate, means for supporting said frame to position said lamp below the ceiling of the room, a generally square open grid-type light reflector panel assembly of rigid plastics material and having spaced walls defining a pattern of open cells therebetween, said panel assembly including a horizontal open grid-type reflector panel, means connected to said reflector plate and supporting said horizontal reflector panel directly below said light source and said reflector plate, said walls of said reflector panel assembly being positioned to reflect all of the light rays received by said panel assembly from said light source downwardly and to prevent direct viewing of said light source through said panel assembly, the space between said reflector panel assembly and the ceiling being open to provide for a flow of air upwardly through said panel assembly as air is heated by said light source, said reflector plate being positioned to prevent overheating of said horizontal reflector panel by said light source, a generally square open bottom and open top translucent shade surrounding said frame and reflector panel assembly and removably supported by said panel assembly, and said reflector plate and said reflector panel assembly cooperating with said shade and the ceiling to obtain full reflection of the light rays emanating from said light source to produce only indirect lighting of the room.

VOL 1093 ISS 5 AG 30 1988 UMI

4,768,141

D.C.-A.C. CONVERTER HAVING AN ASYMMETRIC HALF-BRIDGE CIRCUIT

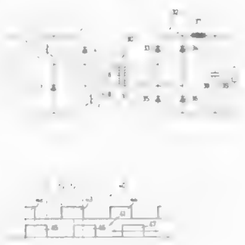
Guido Hubertus, Portlandstrasse 20, D-6500, Mainz; Freidrich-Werner Thomas, Schwarzwaldweg 2, D-6460, Gelnhausen 2; Wolfgang Sperzel, Heimatfriedergasse 3, D-6560, Gelnhausen-Haile, and Johann Stürmer, Pestalozzistrasse 8, D-6465, Freigericht 1, all of Fed. Rep. of Germany

Filed Jan. 27, 1987, Ser. No. 7,404

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1986, 3603071

Int. Cl.[4] H02M *3/335*

U.S. Cl. 363—16 21 Claims



1. A d.c.-a.c. converter comprising:

an asymmetric half-bridge circuit having first and second branches, said branches each comprising a controllable switching means connected to a rectifier means, said controllable switching means in each of said branches being connected to said rectifier means in the other of said branches, and

an energy storage means having two terminals, each of which is connected between said rectifier means and said controllable switching means of one of said branches,

said controllable switching means driven by phase-shifted control pulses of substantially 180° pulse width, said control pulses partly overlapping in time.

4,768,142

POWER-SUPPLY CIRCUIT

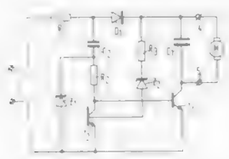
Andries C. Pasma, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 22, 1986, Ser. No. 910,102

Claims priority, application Netherlands, May 15, 1986, 8601241

Int. Cl.[4] H02M *7/155*

U.S. Cl. 363—89 22 Claims



1. A power-supply circuit for energizing a load, comprising:

two input terminals for the application of an input voltage to the circuit, means coupling a rectifier, a first capacitor having terminals for the connection of the load and a first controlled transistor switch to said two input terminals, a second transistor switch for turning off the first transistor switch when a rectified input voltage exceeds a specific value, and means coupling a control electrode of the first transistor switch to one input terminal via a second capacitor and to the other input terminal via at least one diode, the second capacitor being periodically discharged via the one diode.

4,768,143

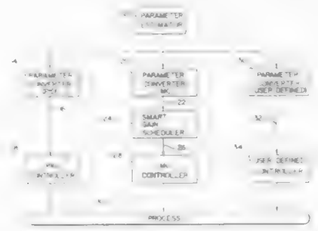
APPARATUS AND METHOD USING ADAPTIVE GAIN SCHEDULING ALGORITHM

John D. Lane, Fairfax, Va., and Thomas J. Scheib, Chesterland, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Oct. 9, 1986, Ser. No. 916,775

Int. Cl.[4] G05B *13/00*

U.S. Cl. 364—157 6 Claims



1. A self-tuning system for controlling a process in response to three independent control paths having at least one measured parameter common to all three control paths comprising:

a modular parameter estimator receiving the measured parameter and for heuristicly calculating an estimated parameter using an estimation algorithm;

a modular PID parameter converter connected to said estimator for applying a proportional plus intergral plus derivative algrithm to the estimated parameter to produce a PID control signal;

a PID controller connected to said PID parameter converter for controlling the process in a conventional manner;

a modular IMC parameter converter containing an internal model algorithm and connected to the estimator for utilizing the internal model algorithm of the converter by the estimated parameter to generate an interm model control signal;

gain scheduling means connected to the modular IMC parameter converter for receiving the internal model control signal to generate a gain scheduled control signal;

an IMC controller connected to said gain scheduling means for receiving the gain scheduled control signal for controlling the process through a compensation control signal aiding said conventional process control;

a modular user defined parameter converter connected to the estimator for receiving the estimated parameter and for generating an estimated parameter control signal; and

a user defined controller connected to said user defined parameter converter for receiving the user defined control signal to control the process through a user applied control signal.

4,768,144

METHOD AND APPARATUS FOR RETRIEVING INFORMATION DISTRIBUTED OVER NONCONSECUTIVE PAGES

Peter M. Winter, Elk Grove Vlg.; Neil L. Holman, Buffalo Grove, and Anthony B. Kram, Rolling Meadows, all of Ill., assignors to Keycom Electronic Publishing, Inc., Chicago, Ill.

Continuation of Ser. No. 545,124, Oct. 25, 1983, abandoned.

This application Oct. 20, 1986, Ser. No. 904,969

Int. Cl.[4] G06F *9/00*

U.S. Cl. 364—200 9 Claims

1. A videotex information retrieval system, comprising,

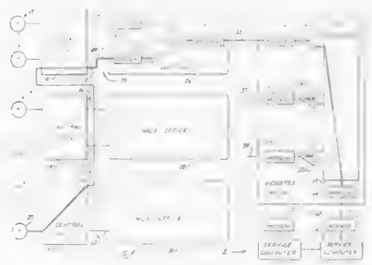
a host computer including database means for storing information and organizing said information into a series of numbered pages, each of which incorporates page number data designating said pages by consecutive page numbers in said series, and pointer data designating the number of a next page in a non-numerical browse order;

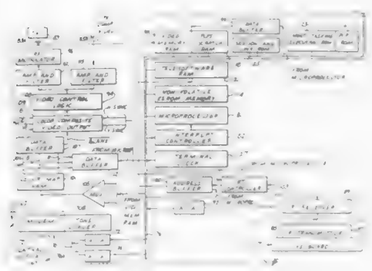
said browse order specifying a sequence of various ones of said pages, each one of the pages in the sequence having a common categorical level according to a system of categories of subject matter assigned to said pages;

a plurality of service computer means located remotely of said host computer;

a plurality of terminal means including display means for displaying said pages one at a time;

communication means for transmitting said pages to said terminal means for display thereby pertaining to a selected service computer for establishing a communication path to a selected one of said terminal means, and for extending the communication path over a gateway path between said host computer and a selected one of said service computers;





said terminal means including consecutive page number request for requesting said pages to be displayed sequentially in said consecutive page numbers in said series;

said terminal means including browse request means for requesting said pages to be displayed sequentially in said browse order;

means operating in response to said browse request means to consult said pointer data of the currently displayed page for the purpose of determining the next page number in said browse sequence and to cause said communication means to transmit the page so numbered to said terminal for display thereby;

said database means further organizing said pages hierarchically into groups, one or more pages of each group being designated as the first level for that group, and any remaining pages of each group being designated as one or more sublevels for that group, said sublevels of each group having a designated order in said hierarchy; and

said pointer data arranged so that said browse sequence reaches said groups in a designated order, reaches those pages which are at any given level or sublevel of any of said groups in said designated order by groups, reaches any of said first level pages of any of said groups before any of said sublevel pages of any of said groups, and reaches said sublevel pages of any of said groups before any lower order sublevel pages of any of said groups according to hierarchical order.

4,768,145

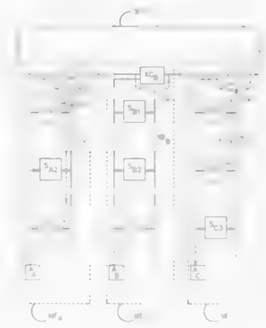
BUS SYSTEM

Lynn M. Wheelwright; William B. Harmon, and James W. Coffron, all of Santa Rosa, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 28, 1984, Ser. No. 675,800

Int. Cl.[4] G06F *13/42*

U.S. Cl. 364—200 8 Claims



1. A bus system comprising a mainframe having

a parallel internal bus,

a group of stations each having an internal transmitter for placing the words of a message on said bus when enabled and having internal data transfer means for receiving messages on said bus, each of said stations having an address,

an input,

an external transmitter for placing words at said input on said internal bus in order when enabled to do so,

an output,

an external data transfer means for transferring words from said internal bus to said output,

all of said transmitters having means for asserting a request-to-send signal when they have a message to send,

an arbitrator,

first individual lines respectively connected between said transmitters and said arbitrator for conveying request-to-send signals to said arbitrator from said transmitters,

means in each transmitter for placing a request-to-send signal on its first individual line when it has a message to send,

second individual lines for conveying clear-to-send signals from said arbitrator to said transmitter,

said arbitrator having means for sending clear-to-send signals in sequence via said second individual lines to those of said transmitters including said external transmitter that have asserted a request-to-send signal so as to enable them to respectively start placing words of a message on said internal bus,

said transmitters having means, when enabled, for placing words on said bus to the order of: a TO word that is the address of the station to which the message is to go; a FROM word that is the address of the station sending the message; and a plurality of data words,

first and second control lines respectively connected to said

VOL 1093 ISS 5 AG 30 1988 UMI

arbitrator, said stations and said external data transfer means,

said stations having means for asserting a signal on said first control line when a TO word on said internal bus is its address and means, when the station is addressed, for asserting a signal on said second control line before all the words of a message have been placed on said internal bus if it is not ready to receive a message,

said stations having means for terminating the placement of words on said internal bus when a signal is asserted on said second control line,

said arbitrator having means for asserting a signal on said second control line after any transmitter has placed a given maximum number of words on said bus, and

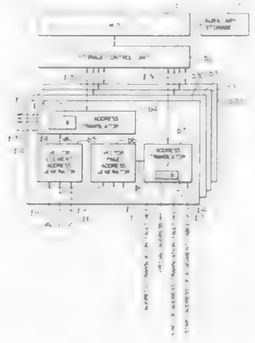
said external data transfer means having means for conveying words on said internal bus to said output when no signals are asserted on said first and second control lines prior to the assertion of a signal on said second control line by said arbitrator.

4,768,146

VECTOR DATA REFER CIRCUIT WITH A PRECEDING PAGING CONTROL FOR A VECTOR PROCESSOR APPARATUS THEREFOR

Shigeo Nagashima, Hachioji; Koichiro Omoda, Sagamihara, and Yasuhiro Inagami, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 5, 1986, Ser. No. 859,373
Claims priority, application Japan, May 7, 1985, 60-95440
Int. Cl.[4] G06F *9/00*
U.S. Cl. 364—200 **3 Claims**



1. A vector data refer circuit in a data processor having a main storage and an auxiliary storage in which, when a data item specified by a virtual address is missing in the main storage, a page of data is paged out from the main storage to the auxiliary storage and a page including a store area of the specified data is paged in to the main storage in place of the paged out data, said vector data refer circuit comprising:

element address generate means, responsive to a virtual address of an initial element of vector data to be accessed, an element address increment, and a total number of elements of the vector data, for sequentially generating virtual addresses of a plurality of elements of the vector data;

translate means connected to said element address generate means and the main storage and operative in response to a virtual address sequentially generated for each element of the vector data by said element address generate means for generating a real address of each element to access the main storage;

page address generate means, responsive to the virtual address of the initial element of the vector data to be accessed, the element address increment, and the total number of elements, for generating the addresses of the pages including the elements of the vector data to be accessed, while the virtual addresses of the elements are being generated by said element address generate means; and

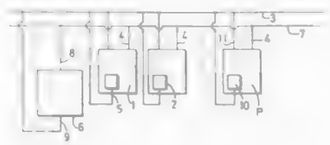
means connected to said page address generate means for determining whether or not a respective page associated with a respective generated page address has already been stored in the main storage and for outputting a signal, when there exists a page determined not to have been stored in the main storage, to indicate a page-in for the page, so that the page is paged in before a real address of an element associated with the page is generated by said address translate means.

4,768,147

ELECTRIC POWER SUPPLY DEVICE FOR MICROPROCESSORS

Sylves Lamiaux, Yerville, France, assignor to Societe d'Applications Generales D'Electricite, Paris, France

Filed Oct. 7, 1985, Ser. No. 784,774
Claims priority, application France, Oct. 15, 1984, 84 15758
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—200 **6 Claims**



1. An electric supply device for microprocessors connected to a series data connection bus having characters within character frames flowing thereover and each microprocessor having a supply input and an initialization input, said device comprising at least one power supply source having a supply output and an initialization output for transmitting an initialization signal, said supply output being connected to said supply input of each of said microprocessors, said initialization output being connected to said bus, each said microprocessor having an associated recognition means connected to said bus for recognizing an initialization signal transmitted over said bus from among said characters, said initialization input of each of said microprocessors being connected to said recognition means.

4,768,148

READ IN PROCESS MEMORY APPARATUS

James W. Keeley, Nashua, N.H., and George J. Barlow, Tewksbury, Mass., assignors to Honeywell Bull Inc., Waltham, Mass.

Filed Jun. 27, 1986, Ser. No. 879,856
Int. Cl.[4] G06F *13/00*; G11C *7/00*
U.S. Cl. 364—200 **29 Claims**

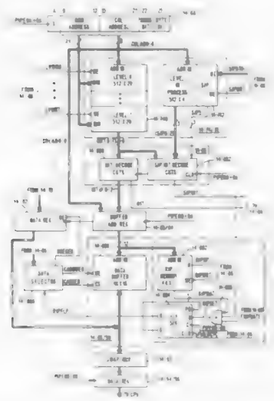
1. A multiprocessing system comprising a plurality of processing units and a main memory coupled in common to an asynchronous system, each processing unit including a cache unit for providing high speed access to coherent main memory data in response to requests and data transmitted on said system bus by said processing units, each request containing first and second address portions of a cache memory address generated by one of said processing units, said cache unit comprising:

a first stage including directory store means organized into a plurality of levels containing groups of storage locations, each location for storing said first address portion of a memory read request generated by said processing unit associated therewith and each different group of locations within said directory store levels being defined by a different one of said second address portions;

a second stage including data store means organized into the same number of levels of said groups of locations as in said directory store means and each different group of locations within said data store levels being accessed by a different one of said second address portions;

read in process (RIP) memory means included in one of said first and second cache stages, said RIP memory means including a plurality of locations, each location being accessed by a different one of said second address portions;

decode and control means coupled to said directory store means, to said RIP memory means and to said data store means, said decode and control means being operative during a cache allocation cycle in response to each request received from said processing unit for data not stored in said data store means to generate signals for placing the



location specified by said second address portion in said RIP memory means in a predetermined state for identifying the data store location which has been preallocated; and

control means coupled to said RIP memory means and to said decode and control means, said control means being conditioned by said decode and control means during a cache update cycle to switch to said predetermined state when said RIP memory means signals that a portion of the contents of said data store location which has been preallocated is being updated to maintain coherency prior to the receipt of the requested data and

said control means being operative to condition said store means for transferring the most recent version of said requested data to said processing unit.

4,768,149

SYSTEM FOR MANAGING A PLURALITY OF SHARED INTERRUPT HANDLERS IN A LINKED-LIST DATA STRUCTURE

Bradly J. Konopik, Gaithersburg, Md.; David J. Bradley, Boca Raton, Fla.; Martin A. Reed, Rockville; Alan R. Tannenbaum, Washington Grove, both of Md., and Michael R. Turner, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 29, 1985, Ser. No. 770,541
Int. Cl.[4] G06F *9/46*
U.S. Cl. 364—200 **14 Claims**

1. In a microcomputer including a central computing means, a memory and a plurality of I/O devices connected together by a bus, each of said I/O devices having an output connected to a common interrupt line, for transmitting a corresponding interrupt signal on said interrupt line, and each of said I/O devices having an input connected to said common interrupt line, for monitoring said interrupt line for an occurrence of an interrupt signal thereon and for blocking a transmission of subsequently occurring interrupt signals in response thereto, a system for enabling said I/O devices to share said common interrupt line, comprising:

a plurality of interrupt handler rountines stored as an ordered chain in said memory, each having an instruction portion containing an ordered sequence of instructions executable by said central computing means, to service interrupt demands of a respective one of said I/O device, and each interrupt handler routine having a control block portion located at a fixed relative position from a beginning instruction position of said instruction portion, for storing a pointer address to a beginning instruction position of the instruction portion for a next occuring interrupt handler routine in said chain;

said central computing means interrupting an existing execution of a main program and accessing over said bus, an interrupt vector location in said memory in response to an interrupt signal on said interrupt line, said vector location storing the address of a beginning instruction position of the instruction portion for a first occurring interrupt handler routine in said chain corresponding to a first I/O device of said plurality of I/O devices;

said central computing means executing a status determination segment of said instruction portion of said first interrupt handler routine and in response thereto, accessing over said bus, an interrupt status value stored by said first



I/O device, and determining whether said first I/O device caused said interrupt signal to be transmitted on said interrupt line;

said central computing means executing a service routine segment of said instruction portion of said first interrupt handler routine in response to a determination by said central computing means that said first I/O device caused said interrupt signal, for servicing an interrupt demand of said first I/O device;

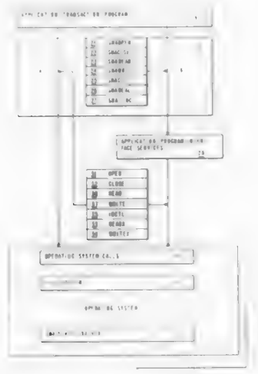
said central computing means executing a global rearm segment of said instruction portion of said first interrupt handler routine and in response thereto, transmitting a global rearm message over said bus to all of said plurality of I/O devices, for unblocking a transmission of said subsequently occurring interrupt signals from said I/O devices, prior to returning control back to said main program;

said central computing means excuting a control transfer segment of said instruction portion of said first interrupt handler rountine in response to a determination by said central computing means that said first I/O device did not cause said interrupt signal, said central computing means in response thereto, accessing over said bus, said pointer address in said control block portion of said first interrupt handler routine, for commencing execution of the instruction portion of said next occurring interrupt handler in

VOL 1093 ISS 5 AUG 30 1988 UMI

said chain to service interrupt demands in a corresponding second one of said I/O devices;
whereby a plurality of I/O devices can share said common interrupt line.

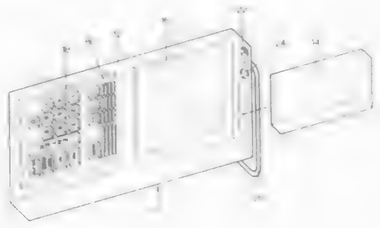
4,768,150
APPLICATION PROGRAM INTERFACE TO NETWORKING FUNCTIONS
Chij-Mehn Chang, Austin, Tex.; Thomas J. Freund, Winchester, England; Larry K. Loucks, Austin, and Robert L. Wierwille, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 17, 1986, Ser. No. 908,533
Int. Cl.[4] G06F *1/00*
U.S. Cl. 364—300 **34 Claims**



1. A method for a first processing system to communicate with a second processing system using a network architecture, said method comp.ising:
issuing, by an application program running on said first processing system, a first routine specifying a connection name identifying a network path from said application program to a resource in said second processing system;
issuing, by said application program, a second routine for accessing a networking function of said network architecture, said routine having at least one parameter; and
specifying, in the at least one parameter of said second routine, an identifier parameter correlating to said specified connection name of said first routine.

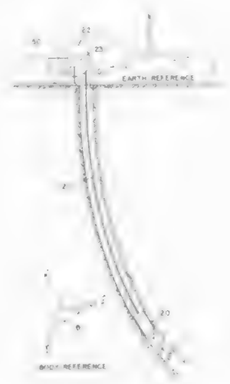
4,768,151
ELECTRONIC BINGO CARD MANAGER
Kenneth A. Birenbaum; Stephen E. Hutchison; Mark K. Virkus, and Chester F. Jankowski, all of St. Louis, Mo., assignors to Bingo Brain, St. Louis, Mo.
Filed Dec. 22, 1986, Ser. No. 944,859
Int. Cl.[4] G06F *15/44;* **A63F** *3/06*
U.S. Cl. 364—410 **19 Claims**

1. A hand held device for managing at least two bingo cards which comprises:
(a) memory means having stored number configurations that are associated with identification numbers some of which correspond to the number configurations and related identification numbers contained on at least some bingo cards;
(b) calculation means which comprise means for retrieving selected number configurations from said memory means, means for sequentially recording and comparing selected numbers with those number configurations which have been retrieved from the memory means; and means for determining whether the location of said selected numbers in said number configurations forms a selected pattern;
(c) entry means for communicating with said calculation and memory means; and



(d) communication means for providing data from said calculation means to an operator, wherein said entry means instructs the memory means and calculation means through the use of said identification numbers which number configurations are to be retrieved from the memory means into the calculation means.

4,768,152
OIL WELL BORE HOLE SURVEYING BY KINEMATIC NAVIGATION
Werner H. Egli, Minneapolis, and Lawrence C. Vallot, Shoreview, both of Minn., assignors to Honeywell, Inc., Minneapolis, Minn.
Filed Feb. 21, 1986, Ser. No. 831,982
Int. Cl.[4] E21B *47/022*
U.S. Cl. 364—422 **11 Claims**

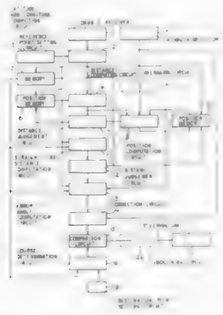


1. Bore hole survey apparatus, comprising:
an instrumentation pod adapted for travel down a bore hole to be surveyed;
said pod including a rate gyroscope for sensing rotation of the pod substantially about its longitudinal axis along which it travels in the bore hole;
said pod including accelerometer means for sensing the Earth's gravity vector with respect to a frame of reference of the pod;
means for lowering said pod in a bore hole and for measuring increments of said lowering; and
computational means connected for receiving signals from said rate gyroscope, said accelerometers and said lowering means, and for calculating therefrom the updated attitude and position of said pod as it is lowered into said bore hole, said computational means being programmed with an algorithm which calculates the updated pod location by performing the steps of:
(a) receiving said signals from said rate gyroscope and calculating therefrom an increment of rotation of the pod around its longitudinal axis ($d\theta gy$);
(b) receiving said signals from said accelerometer means and calculating therefrom an incremental tilt of the gravity vector from the pod frame of reference (dg);
(c) calculating an incremental rotation of the pod ($d\theta$) using the formula

$$d\theta = \frac{1}{K \cdot g}\,[gd\theta gy - K \times dg];$$

(d) calculating from $d\theta$ the updated attitude matrix of the pod and calculating therefrom a unit direction vector (u) which indicates the direction in inertial space of the longitudinal axis of the pod; and
(e) multiplying the unit direction vector by the measured increments of the cable received from said means for lowering and calculating therefrom the updated pod location.

4,768,153
AUTOMATIC PILOT SYSTEM
Akio Akamatsu, Ashiya, Japan, assignor to Furuno Electric Company, Limited, Nishinomiya, Japan
Filed Aug. 15, 1985, Ser. No. 765,997
Claims priority, application Japan, Aug. 30, 1984, 59-181529
Int. Cl.[4] B63H *25/04*
U.S. Cl. 364—449 **12 Claims**



1. An automatic pilot system for automatically directing a moving body to a destination point, comprising:
(i) first means for providing a signal representative of a destination point;
(ii) second means for determining a course line joining the present position of the moving body measured by an electronic navigation apparatus and the destination point and for producing a signal representative of the course line;
(iii) third means for producing a signal representative of a specific direction of the moving body;
(iv) fourth means for producing a signal representative of a difference angle of intersection formed by a first line joining the present position of the moving body and a past position thereof spaced by a first predetermined distance from the present position, with the past position being measured by the electronic navigation apparatus, and a second line joining said past position and a presumed point obtained based on the output signals from said electronic navigation apparatus and the output signals from said third means;
(v) fifth means for adding the output signal from said fourth means to the output signal from said third means representative of the specific direction of the moving body at its present position;
(vi) sixth means for producing the difference signal between the output signal from said second means and the output signal from said fifth means; and
(vii) seventh means for steering the moving body based on the output signal from said sixth means.

4,768,154
COMPUTER AIDED PRINTED CIRCUIT BOARD WIRING
Joseph Sliwkowski, Sudbury, and Robert Fisher, Chelmsford, both of Mass., assignors to Telesis Systems Corporation, Chelmsford, Mass.
Filed May 8, 1987, Ser. No. 47,986
Int. Cl.[4] G06F *15/60*
U.S. Cl. 364—468 **40 Claims**



1. A system for designing printed circuit board conductor patterns comprising:
means for identifying sets of points between which conductors are to run on said board;
means for identifying protocols for placing conductors between points of a set;
means for automatically routing conductors between points of a set;
means for maintaining a map of the automatically identified conductor routing between points of a set where said routing means is able to succeed in providing a conductor between points according to the protocol;
means for identifying the sets of points for which said automatic routing means is unsuccessful in providing a conductor between points of a set;
means for identifying regions to which conductor can be provided from each point of a set of points for which said routing means was unsuccessful in providing a conductor between those points;
means for providing operator viewable indicia representative of said regions;
means for providing operator interaction to identify a conductor route between points of a set of points for which said routing means was unsuccessful thereby to complete conductor between the points of said set;
means for adding to said map the operator identified route between points.

4,768,155
SUPERSONIC FLAW DETECTING SYSTEM
Yoshihiko Takishita; Toshio Nonaka, and Yasuo Hayakawa, all of Ibaraki, Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed Jan. 21, 1986, Ser. No. 820,607
Claims priority, application Japan, Jan. 19, 1985, 60-6702
Int. Cl.[4] G01N *9/24*
U.S. Cl. 364—507 **8 Claims**

1. A supersonic flaw detecting system having a probe that emits a supersonic wave towards an object to be inspected,

VOL 1093 ISS 5 AG 30 1988 UMI

scanning means for causing a relative movement between said probe and said object in two orthogonal directions, a pulser-receiver that supplys pulses to said probe and receive the supersonic wave from said object and produce an electric signal indicative thereof, signal processing means for converting said electric signal from said pulser-receiver into an image data signal for a C-scope display, oscilloscope means for conducting an A-scope display of said electric signal from said pulser-receiver, and a monitor T.V. having a screen for displaying the C-scope display of said image data signal from said signal processing means, said supersonic flaw detector further comprising:

image memory means connected to said monitor T.V. and having addresses corresponding to the coordinate values of a coordinate system assumed on the screen of said monitor T.V.;

operation means for being operated by an operator and including position indicating means for allowing the operator to designate a desired position on the screen of said monitor T.V.; and

control means connected to said scanning means, said signal processing means, said image memory means and said operation means, and including:

first means for writing, when said probe and object are relatively moved by said scanning means, the image data



carried by said image data signal from said signal processing means in the image memory means at a corresponding address thereof at each pitch determined such that the number of data pickups during the relative movement between said probe and object coincides with the number of the corresponding addresses in said image memory means, to thereby provide data for C-scope display of the image data to be produced on the screen of said monitor T.V.;

second means for allowing access to one of the addresses in said image memory means corresponding to said desired position on the screen designated by operation of said position indicating means, and

third means for computing, when said one of the addresses in said image memory means is accessed by the operation of said position indicating means, the amount of drive of said scanning means necessary for moving said probe relative to said object to a position corresponding to the designated position on the screen of the monitor T.V. from data on said pitch and said accessed address in said image memory means and driving said scanning means until said computed amount of drive is reached whereby said probe is automatically moved to and located at said position corresponding to the designated position on the screen of said monitor T.V. for allowing A-scope display at such a position to be successively followed.

4,768,156

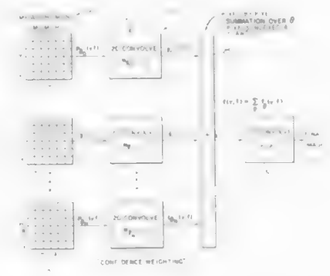
IMAGING SYSTEM

Harper J. Whitehouse, San Diego, Calif., and Donald L. Snyder, St. Louis, Mo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 6, 1986, Ser. No. 861,490

Int. Cl.[4] G06F *15/336, 15/66*

U.S. Cl. 364—521 **7 Claims**



1. An apparatus for improving the target provided by a series of discrete target image data signals parameterized by a variable such as an angle θ comprising:

means for providing a plurality of target image data input signals $p_\theta(\tau f)$ each for one of the series of discrete target image data signals;

means coupled to a separate input providing means for processing the target image data input signals in total to generate separate two-dimensional preimage functions $f(\tau,f)$;

means for summing the two-dimensional preimage functions;

means coupled to summing means for convolving the summed preimage functions with a response function to form an improved target image signal according to the equation

$$d(\tau,f)=\int\int h(\tau-\tau',f-f')p(\tau',f')d\tau df$$

that has equivalence as

$$D(u,v)=H(y.v)F)u,v)/G(u,v)$$

in Fourier transform notation where H(u,v) is the Fourier transform of $h(\tau,f)$; and

means coupled to the convolving means for controlling the display of an enhanced image in response to the improved target image signal.

4,768,157

VIDEO IMAGE PROCESSING SYSTEM

Gerard Chauvel, Cagnes/Mer, and Frederic Boutaud, St. Laurent-du-Var, both of France, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 19, 1985, Ser. No. 746,595

Claims priority, application France, Jun. 29, 1984, 84 10376

Int. Cl.[4] G06F *15/66;* **G06K** *9/42;* **G09G** *1/06*

U.S. Cl. 364—521 **5 Claims**

1. An image processing system, comprising:

a composite memory, for storing a bit-mapped representation of a displayable image; and

a video processor for performing data processing instructions, and for controlling the display of the image stored in said composite memory, said video processor comprising:

an address processor, connected to said composite memory, for addressing locations in said composite memory from which data is to be read or to which data is to be written, and for performing data processing instructions;

a memory bus, connected to said composite memory, for communicating data to and from said composite memory;

a point processor, comprising:

an array of memory cells arranged in rows and columns;

row accessing means, for accessing a row in said array responsive to a row address signal;

column accessing means, for accessing a column in said array responsive to a column address signal;

row input/output means, connected to said memory bus, for communicating data between said memory bus and a row of said array accessed by said row accessing means;

column input/output means, connected to said memory bus, for communicating data between said memory bus and a column of said array accessed by said column accessing means; and

processing memory control logic, connected to said address processor, comprising:



first and second row address limit registers for storing row address values;

first and second column address limit registers, for storing column address values; and

control logic, connected to said row and column address limit registers, to said row and column accessing means, and to said row and column input/output means, for enabling either said row accessing means or said column accessing means, and for reading and writing data between accessed rows and columns of said array and said memory bus, responsive to instructions from said address processor; and

a display processor, connected to said memory bus, for receiving image data thereupon and having an output for presenting said image data in a form displayable by a video display device.

4,768,158

APPARATUS AND METHOD FOR DIAGNOSING DETERIORATION OF SMOKESTACK

Takahito Osanai, Tokyo, Japan, assignor to Kajima Corporation, Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,123

Claims priority, application Japan, Jan. 25, 1986, 61-13001

Int. Cl.[4] G06F *15/32;* **G01N** *25/72*

U.S. Cl. 364—507 **5 Claims**

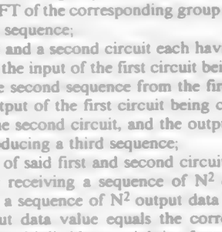
1. An apparatus for diagnosing deterioration of a steel-reinforced concrete smokestack by detecting a defect in the concrete of said smokestack, comprising:

thermal graphic means for producing a diagram of outside surface temperature distribution of said smokestack from an infrared ray photograph;

detecting means for detecting a defect as a spot in said diagram whose temperature discontinuously differs from that of area surrounding the spot;

means for calculating smoke temperature in the smokestack at the defect based upon the temperature difference between the inside and outside of the smokestack at the defect based in turn on the smoke temperature at the inlet of the smokestack and said outside surface temperature distribution;

means for calculating the depth of said defect based upon said temperature difference and the temperature gradient of the wall of said smokestack;



a means for empirically determining a concrete crack width W based on said defect depth; and

means for assessing deterioration of strength of the smokestack based on the concrete crack width W and the area of the defect as measured on said diagram.

4,768,159

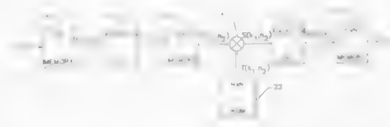
SQUARED-RADIX DISCRETE FOURIER TRANSFORM

Joseph H. Gray, Berkely, and Mark R. Greenstreet, Palo Alto, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 674,624, Nov. 26, 1984, abandoned. This application Jul. 20, 1987, Ser. No. 77,048

Int. Cl.[4] G06F *15/332*

U.S. Cl. 364—726 **7 Claims**



1. A processor for performing the radix-N^2 discrete Fourier transform (DFT) of a sequence of N^2 input data values, where N represents a predetermined integer, comprising:

means for providing a first sequence of N^2 input data values in upper/lower address reversed order;

a first radix-N DFT processor circuit for receiving said first sequence of N^2 input data values, dividing said first sequence into N groups of N values each, and producing a second sequence of N groups of N transformed data values, wherein each group of transformed data values is the radix-N DFT of the corresponding group of N data values in the first sequence;

a first circuit and a second circuit each having an input and an output, the input of the first circuit being connected to receive the second sequence from the first radix-N DFT circuit, output of the first circuit being connected to the input of the second circuit, and the output of the second circuit producing a third sequence;

wherein one of said first and second circuits is a multiplier circuit for receiving a sequence of N^2 data values and producing a sequence of N^2 output data values, wherein each output data value equals the corresponding input data value multiplied by a weighting factor whose value is a predetermined function of the position of the data value in the sequence; and

wherein the other one of said two circuits is a memory circuit for receiving a sequence of N^2 data values and outputting the N^2 data values in an upper/lower address reversed order; and

a second radix-N DFT processor circuit for receiving the third sequence of N^2 data values, dividing the third se-

VOL 1093 ISS 5 AG 30 1988 UMI

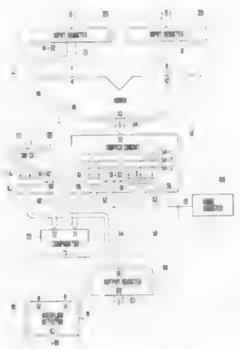
quence into N groups of N values each, and producing a fourth sequence of N^2 transformed data values having N groups of N values each, wherein each group of transformed data values is the radix-N DFT of the corresponding group of data values in the third sequence.

4,768,160

ARITHMETIC UNIT WITH SIMPLE OVERFLOW DETECTION SYSTEM

Yasushi Yokoyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1986, Ser. No. 852,278
Claims priority, application Japan, Apr. 16, 1985, 60-80817
Int. Cl.[4] G06F *7/38*
U.S. Cl. 364—745 **3 Claims**



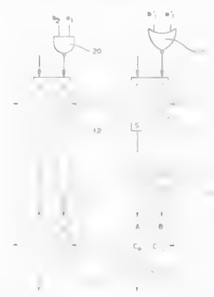
1. An arithmetic unit with an overflow detection system, said arithmetic unit being arranged to perform arithmetic operations between first and second data, the first data being exclusively divided into a fixed value portion and a variable value portion whose digit position is lower than that of the fixed value portion, a ratio of a length of the fixed value portion to that of the variable value portion in the first data being variable, the second data being made up of only the variable value portion corresponding to the variable value portion of the first data, comprising: a mode register for outputting a mode signal which represents the ratio and which is externally supplied in advance; first and second input registers for receiving and storing the first and second data; an adder for adding output data from said first and second input registers in entire lengths thereof: switch means for extracting fixed value portions of both the first data and the output data from said adder such that both fixed value portions extracted by said extracting means have the same length determined according to the mode signal; a comparator for comparing the fixed value portion of the output from said first input register with the fixed value portion of the output from said adder, and outputting aa coincidence or noncoincidence signal therefor; an output register for linking the fixed value portion of the output from said first input register with the variable portion of the output from said adder, and outputting linked data as an arithmetic operation result; and an overflow detector for detecting an overflow of a sum of the variable portions of the first and second data in response to the noncoincidence signal from said comparator.

4,768,161

DIGITAL BINARY ARRAY MULTIPLIERS USING INVERTING FULL ADDERS

Roland A. Béchade, South Burlington; William K. Hoffman, Milton, and Clarence R. Ogilvie, Huntington, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1986, Ser. No. 930,176
Int. Cl.[4] G06F *7/52*
U.S. Cl. 364—758 **37 Claims**



1. A multiplier comprising

first and second inverting full adders, each of said adders having first, second and third input terminals and first and second output terminals, at least one of said terminals of said first adder having signals thereat of a true polarity and the remaining terminals of said first adder having signals thereat of complemented polarity, corresponding terminals of said first and second adders having signals thereat of opposite polarities,

means for connecting one output terminal of said first adder to one of said input terminals of said second adder, said one output terminal of said first adder and said one input terminal of said second adder having signals thereat of similar polarities,

means including a NOR circuit for applying true binary digit signals to a true polarity input terminal of one of said adders, and

means including a NAND circuit for applying complemented binary digit signals to a complemented polarity input terminal of the other of said adders.

4,768,162

ELECTRONIC APPARATUS HAVING A POWER CONTROL CIRCUIT FOR DEVELOPING A POWER DISCONNECTION INVALIDATING INSTRUCTION IN ORDER TO PROTECT MEMORY CONTENTS

Kosuke Nishimura, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 2, 1984, Ser. No. 585,377
Claims priority, application Japan, Mar. 16, 1983, 58-45349
Int. Cl.[4] G06F *12/16*
U.S. Cl. 364—900 **6 Claims**

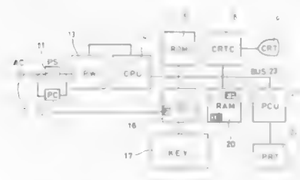
1. A power supply control system for an electronic apparatus having a memory susceptible to data loss when power is removed therefrom and a keyboard which supplies key input instructions to said memory, comprising:

a power supply supplying power to said electronic apparatus;

a power switch, connected between said apparatus and said power, selectively connecting and disconnecting said power supply with said apparatus.

switch means, connected across said power switch, for selectively supplying power to said apparatus;

means for developing an invalidating instruction commanding the invalidation of control of power disconnection of the apparatus by said power switch upon receipt of a key input instruction from said keyboard; and



control means, controlling said switch means, for controlling the supply of power to said apparatus by said switch means, said control means rendering said switch means conductive upon receipt of said invalidating instruction.

4,768,163

MAGNETIC STRIPE AND WAND READER INTERFACE EMPLOYING OFF-THE-SHELF PROGRAMMABLE COMMUNICATIONS INTERFACE

Vincent M. Clark, Kingsboro, Mass.; Dennis W. Chasse, Nashua, N.H., and David R. Bourgeois, Framingham, Mass., assignors to Honeywell Bull Inc., Minneapolis, Minn.

Filed May 7, 1984, Ser. No. 607,837
Int. Cl.[4] G06F *3/06, 13/12*
U.S. Cl. 364—900 **5 Claims**



1. An interface system for interfacing a magnetic wand type reader or magnetic swipe reader to a microprocessor via a bus system, wherein a serial data bit stream representing data characters preceded by a special character is output from said wand type reader or said magnetic swipe reader, said interface comprising:

(a) a programmable communications interface chip (PIC) for converting data in the form of said serial data bit stream to parallel format data in the form of characters, each character comprising a predetermined plurality of data bits;

(b) second means coupled to said PIC for storing data in a valid state until said PIC is ready to accept said valid data, said second means providing a timing interface permitting said PIC to accept data bit streams having data bit rates fluctuating within a range;

(c) third means coupled to said second means for selecting said serial data bit stream from either from said wand type reader or said magnetic swipe reader for application to said PIC; and

(d) fourth means coupled to said third means and receiving said serial data bit stream from either said wand type reader or said swipe reader for eliminating noise from said serial data bit stream derived from said wand type reader or magnetic card reader;

said PIC first identifying said special character and thereby being able to frame subsequent data characters into parallel format data characters.

4,768,164

WORD PROCESSOR WITH FONT EXCHANGING FONT SYNTHESIZING MODE, AND SPACING MODE OF OPERATION

Geoffrey A. Dreher, Nashua, N.H., assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 3, 1985, Ser. No. 730,336
Int. Cl.[4] G06F *3/12; B41J 5/30*
U.S. Cl. 364—900 **4 Claims**





1. A printing system for a word processor mode of operation comprising:

a display screen;

a keyboard for inputting characters to be printed onto the display screen;

a document memory for storing data content representative of the inputted characters from the keyboard;

a printer having at least a pair of exchangeable printing fonts with a plurality of different printing symbols relative to each other;

means for controlling the printing of a symbol by the printer from the stored data including data memory means for storing a list of character symbols on each printing font and determining means for comparing the stored inputted character with the stored list of characters to determine the availability of a character on a font;

exchange means for stopping the printing operation and indicating the necessity to exchange the printing font with another printing font having the desired symbol when the determining means indicates a symbol is not on the operative printing font;

synthesizing means for synthesizing the symbol that is not available on the operative printing font from a combination of other symbols that are available on the printing

VOL 1093 ISS 5 AUG 30 1988 UMI

font when the determining means indicates a symbol is not on the operative printing font;

spacing means for having the printer automatically provide a blank space when a symbol is not available on the printing font, thereby permitting the printer to continue the printing operation with the symbols available on the operative printing font;

means for displaying a selection menu to the user on the display screen to select by appropriate entry form the keyboard between the exchange means mode of printer operation, the synthesizing means mode of printer operation, and the spacing means mode of printer operation whereby the printer will respond automatically in the mode selected when a symbol is not available on the operative printing font, and

means for automatically providing a blank space when the synthesizing means has been selected and the symbol cannot be synthesized from a comparison of the data representative of the character and the stored data of the list of character symbols on the operative printing font.

4,768,165

COMPUTER INTERFACE UNIT FOR AN AUDIOMETER

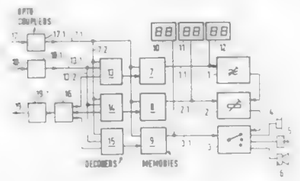
Werner H. Hohn, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 19, 1985, Ser. No. 777,664

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1984, 3436127

Int. Cl.[4] H04R 29/00; G06F 3/00

U.S. Cl. 364—900 19 Claims



1. A computer interface unit for an audiometer having a plurality of controllable audiometer modules, said interface unit permitting control of said audiometer modules by means of a computer and comprising:

(a) a plurality of first control lines, including both input and output lines, there being a plurality of input lines and at least one output line, the first lines being connectable to a computer and each first line having a d-c isolating coupler therein;

(b) a plurality of decoders connected to said first lines;

(c) a plurality of memories, each connected to one of said decoders;

(d) a plurality of second control lines connecting said memories with said audiometer modules, whereby said audiometer modules may be controlled by said computer;

(e) a NAND gate connected through inverters to individual ones of said input lines and without inverters to other individual ones of said input lines, said NAND gate having an output line connected via an integrator and at least one Schmitt trigger circuit to an associated one of said memories; and

(f) an OR gate having an input connected to the line between said Schmitt triggers and an output connected to said one output line for providing a reply signal to said computer.

4,768,166

SEMICONDUCTOR STATIC MEMORY DEVICE WITH CELL GROUNDING MEANS FOR REDUCED POWER CONSUMPTION

Kenji Anami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 728,539, Apr. 29, 1985, abandoned. This application Sep. 10, 1987, Ser. No. 97,330

Claims priority, application Japan, Apr. 28, 1984, 59-86876

Int. Cl.[4] G11C 7/00, 8/00

U.S. Cl. 365—154 1 Claim



1. A semiconductor memory device comprising:

a two-dimensional memory cell array comprising a plurality of word lines and a plurality of memory cells arranged in rows and columns, each of said memory cells comprising:

cross-coupled MOS transistor inverter means;

access transistor means having gate terminals coupled to a corresponding one of said word lines;

a first terminal for receiving a first potential;

a ground terminal for receiving a second potential; and

load means,

said memory cells being grouped in columns to form a plurality of column blocks,

said device further comprising:

means for setting a potential of each said respective ground terminal of each memory cell to at least a potential of the corresponding word line reduced by a threshold voltage of said access transistor means when the corresponding block is not selected, said means for setting said potential including a plurality of switching means each provided for a row of said memory cells arranged in a corresponding column block, an output of each of said switching means being coupled to the memory cells in the respective row and column block and having its output enabled when one of said column blocks is activated within a particular row, said switching means each having a first input terminal connected to a respective one of said word lines and a second input terminal receiving a respective column block selection signal for setting a potential of the respective ground terminal at a ground voltage when both of said respective one of said word lines and said column block selection signal are in a high state,

said means for setting a potential further comprising first means, disposed within each of said memory cells, said each of said memory cells storing information at a memory node as a first, high-state potential and a second, low-state potential, for setting said high-state potential to be higher than said first potential, said first means comprising a ring oscillator, a capacitor, a first transistor having a source connected through said capacitor to said ring oscillator, a drain connected to a voltage source, and a gate connected to said voltage source, and a second transistor having a source connected to said load means, a drain connected through said capacitor to said ring oscillator, and a gate connected to said drain of said second transistor.

4,768,167

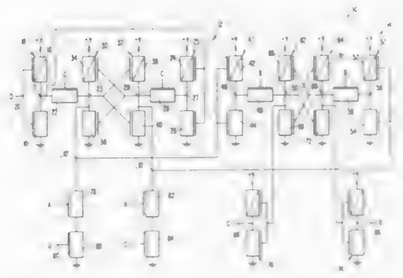
HIGH SPEED CMOS LATCH WITH ALTERNATE DATA STORAGE AND TEST FUNCTIONS

Joseph W. Yoder, Fairfax, Va., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1986, Ser. No. 913,434

Int. Cl.[4] G11C 11/00, 7/00, 29/00, 19/00

U.S. Cl. 365—156 11 Claims



1. An improved, high speed, dual input mode complementary MOS flip-flop storage cell, comprising:

a bistable circuit;

a first inverter means, responsive to a true data input signal, for generating complementary data input signals;

a first transmitting means having a first clocking potential applied thereto during a data input mode interval, for selectively connecting an output of the first inverter means to a first input of the bistable circuit;

a second inverter means having an input connected to said output of said first inverter means, for generating complementary data input signals;

a second transmitting means having said first clocking potential applied thereto for selectively connecting an output of second inverter means to a second input of the bistable circuit;

said first and second inverter means respectively applying the complement and the true form of said data input signal to said first and second inputs of said bistable circuit for high speed, dual side/push pull operations during said data input mode interval;

a first testing means coupled to the first input of the bistable circuit for transmitting a true test signal thereto;

a second testing means coupled to the second input of the bistable circuit for transmitting a complementary test input signal thereto;

a test signal gating means having a second clocking signal applied thereto during a test input mode interval, connected between said first testing means and said first input of said bistable circuit, for pull-down test operation;

said test signal gating means connected between said second testing means and said second input of said bistable circuit;

said test input mode interval being nonoverlapping with said data input mode interval;

whereby a dual input mode flip-flop storage cell is formed enabling either a data input signal for said dual side/push-pull data operations or alternately a test input signal for said pull-down test operation to be applied to the first and second inputs of the bistable circuit, thereby changing the binary storage state of the flip-flop storage cell.

4,768,168

MEMORY CIRCUIT HAVING AN IMPROVED WRITING SCHEME

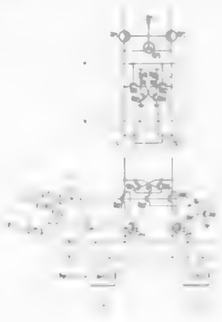
Takayuki Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 18, 1986, Ser. No. 840,827

Claims priority, application Japan, Mar. 18, 1985, 60-53662

Int. Cl.[4] G11C 11/00, 7/00, 8/00

U.S. Cl. 365—189 7 Claims



1. A memory circuit comprising a plurality of word lines, a plurality pairs of bit lines, a plurality of static memory cells each coupled to one of the word lines and a pair of bit lines, a pair of bus lines, a plurality of pairs of transfer gates, each pair of transfer gates being coupled between each pair of bit lines and said pair of bus lines, an input data buffer circuit for operatively supplying sid pair of bus lines with input data in a write mode, an output circuit coupled to said pair of bus lines for outputting a read signal in a read mode, a bit line selection circuit for operatively enabling one pair of transfer gates thereby to transfer data at said pair of bus lines to a selected pair of bit lines through the enabled pair of transfer gates in the write mode and transfer data at the selected pair of bit lines to the pair of bus lines through the enabled pair of transfer gates in the read mode, means for generating a first control signal when a first period of time has elapsed from the initiation of an access cycle in the read mode and the write mode, means for generating a second control signal when a second period of time has elapsed from said initiation of the access cycle only in the write mode, said second period being shorter than said first period, means responsive to said second control signal for enabling said input data buffer circuit, and a column control circuit for enabling said bit line selection circuit in response to said first control signal in the read mode and in response to said second control signal in the write mode, whereby the selection of the transfer gates is achieved with a shorter delay time from the initiation of access cycle in the write mode than in the read mode.

4,768,169

FAULT-TOLERANT MEMORY ARRAY

George Perlegos, Fremont, Calif., assignor to SEEQ Technology, Inc., San Jose, Calif.

Filed Oct. 28, 1983, Ser. No. 546,593

Int. Cl.[4] G11C 11/40, 8/00, 29/00

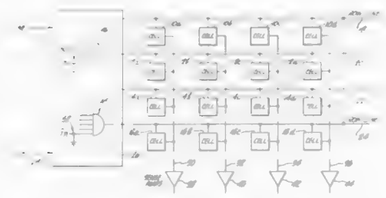
U.S. Cl. 365—200 6 Claims

1. A fault-tolerant memory array including an array of memory cells organized into bytes of at least one bit in length and arranged in rows and columns according to byte location, each of said memory cells having a configuration which conducts current while in one of two states and does not conduct current while in the other of the two states depending upon the value of data stored in said bytes and wherein memory cells which fail when in operation do not conduct current beyond a predetermined level.

VOL 1093 ISS 5 AUG 30 1988 UMI

sensing means connected to corresponding memory cells in said bytes of memory cells for sensing the presence or absence of current flow beyond said predetermined level in said corresponding memory cells; and

address means for receiving address signals indicative of byte location and for simultaneously selecting at least two



of said bytes of memory cells for each address signal so received, said address means including row lines respectively connected to said rows of memory cells for simultaneously activating at least two of said rows of memory cells in response to each address signal received by said address means such that data stored in said simultaneously selected bytes of memory cells can be logically "OR-ed".

4,768,170

MOS TEMPERATURE SENSING CIRCUIT

David L. Hoff, Fair Oaks, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 6, 1986, Ser. No. 871,330
Int. Cl.[4] G11C *7/04*
U.S. Cl. 365—212 16 Claims



1. An MOS temperature sensing circuit formed on a silicon substrate comprising:

a first and a second load;

a first and a second leakage device, coupled to said first and second loads, respectively, said loads biasing said leakage devices such that said devices each have a temperature dependent leakage current;

one of said first and second leakage devices having a greater substrate area than the other of said devices such that said one device draws more current at a higher temperature than said other device;

a differential amplifier means for detecting the difference in voltages coupled to said devices;

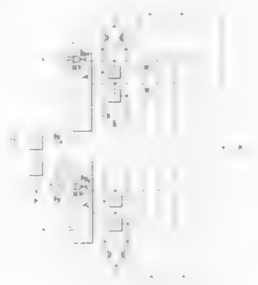
whereby a stable temperature sensing circuit is realized.

4,768,171

MEMORY CIRCUIT HAVING A PLURALITY OF CELL ARRAYS

Kazuhiro Tada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jun. 20, 1985, Ser. No. 746,699
Claims priority, application Japan, Jun. 20, 1984, 59-126792
Int. Cl.[4] G11C *11/40, 13/00*
U.S. Cl. 365—222 13 Claims



9. A semiconductor memory circuit comprising first and second memory arrays, each of said first and second arrays including a plurality of word lines, a plurality bit lines and a plurality of memory cells each coupled to each one of said word lines and each one of said bit line; means for receiving a control signal; a timing signal generator for generating a first timing signal and a second timing signal which is delayed from said first timing signal in response to said control signal; a first word line drive circuit for operatively selecting one of the word lines of said first array in accordance with address signals; a second word line drive circuit for operatively selecting one of the word lines of said second array in accordance with said address signals; means for applying said first timing signal to said first word line drive circuit thereby to enable said first word line drive circuit; and means for applying said second timing signal to said second word line drive circuit thereby to enable said second word line drive circuit; said first and second word line drive circuits including a plurality of selection units each provided for each one of the word lines of said first and second arrays, respectively, each of said selection units of said first word line drive circuit incluidng a logic gate, a source-follower transistor having a gate coupled to an output of said logic, a source coupled to one of the word lines of said first array and a drain supplied with said first timing signal, each of said selection units of said second word line drive circuit including a logic gate, a source-follower transistor having a gate coupled to an output of said logic gate, a source coupled to one of the word lines of said second array and a drain supplied with said second timing signal.

4,768,172

MEMORY CELL

Tooru Sasaki, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 23, 1986, Ser. No. 945,568
Claims priority, application Japan, Jan. 21, 1986, 61-008830
Int. Cl.[4] G11C *13/00*
U.S. Cl. 365—230 13 Claims

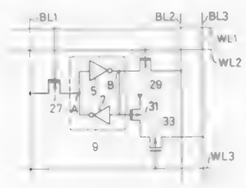
1. A memory cell comprising:

memory means for memorizing binary information in a static manner;

first delivery means for giving the binary information to first and second bit lines respectively, based on potentials of first and second word lines; and

second delivery means for giving the binary information

memorized in said memory means to a third bit line different from the first and second bit lines, based on the potential of a third word line different from the first and second word lines, without forming a current path between said memory means and the third bit line.



4,768,173

PRESSURE WAVE SENSING DEVICE OF THE PIEZOELECTRIC TYPE WITH CONTINUOUS STRUCTURE AND A METHOD OF MANUFACTURING SAME

Thierry Gautier, Melun, and Claude Beaudocel, Henonville, both of France, assignors to Institut Francais Du Petrole, Malmaison, France

Filed Jul. 2, 1987, Ser. No. 69,173
Claims priority, application France, Jul. 4, 1986, 86 09880
Int. Cl.[4] G01V *1/38*
U.S. Cl. 367—15 8 Claims



1. In a pressure wave sensor device of continuous structure of the piezoelectric type having at least two sensitive elements each of which comprises a ribbon formed of a synthetic plastic material having piezoelectric properties and two electrodes disposed on each side of the ribbon, the two sensitive elements being superimposed and disposed in two crossed helical windings, a flexible conducting ribbon, transparent to acoustical waves, wound helically and superimposed on a lower winding of the at least two sensitive elements to overlap lateral edges of all turns of said lower winding, the conducting ribbon providing contact between an external electrode of the sensitive element which the conducting ribbon covers and an internal electrode of a sensitive element which is superimposed thereon.

4,768,174

METHOD FOR GENERATING AND COLLECTING RANDOM VIBRATORY SEISMIC DATA WHEREIN A PRE-SPECIFIED WAVELET OF MINIMUM SIDE LOBE CONTENT IS ALWAYS PRODUCED IN THE FINAL CORRELATIONS BY MAINTAINING DOMAIN CONSISTENCY

Richard J. Castle, Belmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Sep. 29, 1986, Ser. No. 913,059
Int. Cl.[4] G01V *1/00*
U.S. Cl. 367—39 12 Claims

1. A method of producing and recording random non-impulsive vibrations in the earth comprising the steps of:

(i) producing over a time duration ts said non-impulsive vibrations by activating at least one vibratory source with a digital random sweep code comprising a number n_s of uniformly sampled random numbers and a sampling interval Δt, the time duration t_s, the number of n_s, and the sampling interval related by $t_s=(n_s-1)\Delta t$, said code resulting from an inverse



Fourier transformation of a sequence of complex numbers having a form:

$$a_k e^{i\phi k}$$

where e is the base of natural logrithms, i is the square root of -1, a_k is an amplitude spectrum, k is a component index, and ϕ_k is a frequency spectrum, said code controlling said vibratory source in a repetitive but random manner;

(ii) recording over a second time duration received seismic vibrations that have propogated through the earth from said vibratory source to at least one receiver;

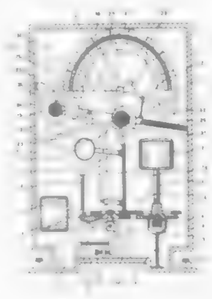
(iii) cross-correlating said received seismic vibrations with said control code such that said code maintains domain consistency during cross-correlation, said correlation corresponding to a pre-specified autocorrelation.

4,768,175

APPARATUS FOR MEASURING THE INTENSITY OF A SEISMIC SHOCK

Yoshio Hirayoshi, Sakae, Japan, assignor to Sanko Giken Co. Ltd., Tokyo, Japan

Filed Jan. 23, 1987, Ser. No. 6,143
Int. Cl.[4] G01V *1/00*
U.S. Cl. 367—178 15 Claims



1. Apparatus for measuring the intensity of mechanical shocks, comprising:

a support adapted for mounting in a stationary position for application thereto of a mechanical shock whose intensity is to be measured;

a weight system carried by said support and movable with

VOL 1093 ISS 5 AUG 30 1988 UMI

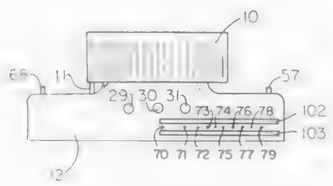
respect thereto in response to said shock when applied to said support;
a lever pivotally mounted on said support to turn angularly;
spring means connected to said lever and tending to hold the same in a static, balanced position with respect to said support;
a first cam rotatably mounted on said lever;
a transmission member movably connected to said weight system and operatively arranged to advance when said weight system moves in response to application of said shock to said support, said transmission member being disposed to contact said cam peripherally for turning said lever angularly out of said balanced position when said transmission member advances;
a second cam rotatably mounted on said lever;
a stop member fixed on said support and disposed to engage said second cam peripherally to prevent said lever from returning to said balance position after said lever is turned out of said balanced position; and
an index member operatively connected to said lever to indicate intensity of said mechanical shock applied to said support, whereby said index member is held in a fixed position to continue indicating the intensity of said shock applied to said support after said shock has terminated.

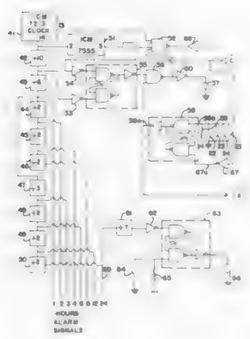
4,768,176

APPARATUS FOR ALERTING A PATIENT TO TAKE MEDICATION

Bruce A. Kehr, 9429 Holbrook La., Potomac, Md. 20854, and Albert L. Hedrich, 6804 Wemberly Way, McLean, Va. 22101

Filed Jul. 6, 1984, Ser. No. 628,420
Int. Cl.[4] G04B *47/00*; B65D *83/04*
U.S. Cl. 368—10 **10 Claims**





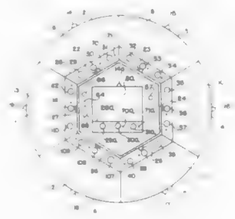
1. In a device for providing medication,
a container for storing medication,
electrical means associated with said container for indicating when medication should be taken, comprising:
(a) timing circuit means for producing equally spaced first signals that recur periodically, and for producing a plurality of take-medication signals during the period between two of said first signals,
(b) means for suspending further take-medication signals,
(c) said timing circuit means including means for resuming the take-medication signals, but no earlier than the occurrence of the next one of said first signals to follow the said suspension of said take-medication signals,
(d) said timing circuit means producing said first signals independently of the means for suspending further take-medication signals.

4,768,177

METHOD OF AND APPARATUS FOR ALERTING A PATIENT TO TAKE MEDICATION

Bruce A. Kehr, 9429 Holbrood La., Potomac, Md. 20854, and Albert L. Hedrich, 6804 Wemberly Way, McLean, Va. 22101

Continuation-in-part of Ser. No. 628,420, Jul. 6, 1984. This application Aug. 24, 1987, Ser. No. 88,262
Int. Cl.[4] G04B *47/00*; B65D *83/04*
U.S. Cl. 368—10 **31 Claims**



1. In a device for providing medication:
a first unit for providing medication including a container for medication, a timing circuit for producing timing signals, and signaling means for giving a signal capable of human detection to indicate that medication should be taken, said signaling means giving said signal that is capable of human detection in response to a start signal; said first unit including control means, controlled by at least some of said timing signals, for producing a start signal which energizes said signaling means and thereby indicates that medication should be taken, said first unit also including manually operable means for deactivating said signaling means, and
a second unit removably associated with said first unit and having a medication container independent of the container of the first unit; said second unit including (a) means for receiving timing signals from said timing circuit of said first unit, (b) means responsive to at least one of the received timing signals for sending a start signal to said signaling means to produce a signal capable of human detection, and (c) manually operable means for sending another signal to said first unit for deactivating said signaling means.

4,768,178

HIGH PRECISION RADIO SIGNAL CONTROLLED CONTINUOUSLY UPDATED DIGITAL CLOCK

Charles C. Conklin; Stephen O. Jeppson; Ronald W. Mongeon, all of Santa Clara County; David Schachter, San Francisco County; Philip M. Spira, and Paul L. Williams, both of Santa Clara County, all of Calif., assignors to Precision Standard Time, Inc., Fremont, Calif.

Filed Feb. 24, 1987, Ser. No. 17,666
Int. Cl.[4] G04C *11/02*; H04B *1/10*
U.S. Cl. 368—47 **23 Claims**

1. A clock responsive to broadcast time-based signals for keeping time in accordance therewith, said time-based signals including encoded timing information, said clock comprising
receiver means for receiving said time-based signals,
processing means coupled to said receiver means for decoding said time-based signals to derive a plurality of digits from said timing information representing actual clock time, and
digit verification means for separately verifying correctness



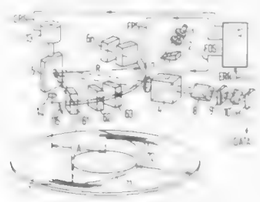
of each of said digits, including a plurality of separate digit status means for separately denoting for each digit whether said digit has been verified and the value of each verified digit, comparison means for separately comparing each said derived digit from said processing means with at least one corresponding previously decoded derived digit and for separately updating the corresponding digit status means, and means for generating a lockon signal when all of said digits have been verified.

4,768,179

OPTICAL DISC STORE SCANNING DEVICE WITH A PLURALITY OF SCANNING UNITS

Norbert Gottfried, Baldham, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 27, 1986, Ser. No. 900,800
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1985, 3530609
Int. Cl.[4] G11B *7/08*
U.S. Cl. 369—32 **9 Claims**



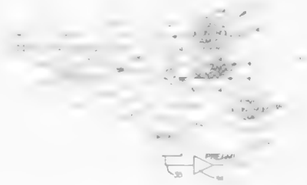
1. In a positioning device for an optical disc storage, said positioning device having a laser light source for creating a light beam, scanning means including means to focus the light beam onto a select information track of an optical storage disc having a disc axis of rotation, a control unit, means for coarse positioning the beam and means for fine positioning the beam, said means for coarse and fine positioning forming a regulating loop in cooperation with a detector arrangement to produce a track error signal and focus error signal, the improvements comprising the storage disc being divided into a plurality of concentric track zones with each zone comprising a plurality of information tracks, the scanning means being sub-divided into a plurality of scanning units with one scanning unit for each of the concentric track zones, said scanning units being arranged one next to the other on a line in a plane parallel to the storage disc, means for displacing each of the units relative to said line, said coarse positioning means comprising a rotatable reflector and means for rotating said reflector on a reflector axis being arranged at a lateral interval from the disc axis, means for directing said light beam in a path in said plane, said rotatable reflector being mounted with a center being in said plane, being aligned with said scanning units and being in the path of light to reflect the light at one of the scanning units, and said means for rotating the reflector rotating the reflector to a position to reflect light on the selected scanning unit.

4,768,180

MULTISTAGE TRACKING SYSTEM

Piet J. M. Janssen, Colorado Springs, and Ger L. M. Jansen, Widefield, both of Colo., assignors to Laser Magnetic Storage International Company, Colorado Springs, Colo.

Filed Mar. 17, 1986, Ser. No. 840,058
Int. Cl.[4] G11B *7/09*
U.S. Cl. 369—44 **18 Claims**



1. A multistage tracking system, for a rotating optical recording disk having a data recording surface for recording data in tracks, the system comprising:
a movable sled with an objective lens and fixed mirror, the sled disposed adjacent to the tracks on the disk, the sled having electrically controllable sled drive means for moving the objective lens and the fixed mirror near a desired track;
a stationary tilting mirror disposed adjacent the sled, the tilting mirror having an electrically controllable mirror drive means for tilting the mirror; and
optic means for providing a light beam directed toward the tilting mirror, the tilting mirror reflecting the light beam toward the fixed mirror, the fixed mirror reflecting the light beam to the objective leans, the objective lens focusing the light beam to a spot on the data recording surface, the optic means further providing an optically generated position signal;
means for controlling movement of said electrically controllable mirror drive means using said position signal and;
means for controlling movement of said electrically controllable sled drive means using said position signal.

4,768,181

APPARATUS FOR DETERMINING DEFECTIVE OR NON-USED SECTORS OF AN OPTICAL DISH

Makoto Ichinose, Sakai; Isao Satoh, Neyagawa; Tatuo Sugimura, Yawata, and Yuzuru Kuroki, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 21, 1984, Ser. No. 673,620
Claims priority, application Japan, Nov. 25, 1983, 58-222405; Mar. 7, 1984, 59-43415
Int. Cl.[4] G11B *7/00, 7/013*
U.S. Cl. 369—54 **2 Claims**

1. An optical information recording and reproducing apparatus, comprising:
means for rotating an optical recording disk having tracks

VOL 1093 ISS 5 AG 30 1988 UMI

divided into a plurality of sectors each comprising an address field area and an information recording area;
means for irradiating the disk with a laser beam;
address reading means for reading out address information from the address field area of a sector of said disk;
information recording means for modulating the laser beam to record an information signal having a predetermined maximum transition interval on an information recording area of said sector comprising the address information read out by said address reading means;
information reproduction means for reproducing the information signal from said sector comprising the address information read out by said address reading means;
pulse-train generation means for generating at least one pulse train comprising a plurality of pulses longer than said predetermined maximum transition period of said information signal;
pulse-train recording means, responsive to said pulse train generated by said generation means, for modulating an intensity of said laser beam to record a pulse-train signal comprising plural trains on said information recording area of said sector;
pulse-train reproducing means for reproducing said pulse-train signal recorded on said information recording area;
pulse-train detection means for detecting a coincidence



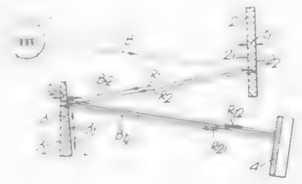
between the pulse train signal reproduced by said pulse-train reproducing means and the pulse train generated by the generation means;
said pulse-train recording means comprising means for recording the pulse-train signal on the information recording area of said sector when the information reproduction means detects the error data when the information signal is reproduced by the information reproduction means;
said pulse-train detection means comprising means for (i) checking each of said sectors in information playback mode in order to detect said coincidence and (ii) responsive to a detection of said coincidence, preventing recording and reproducing of information on said sector; and
wherein the pulse-train generation means comprises a monostable multivibrator capable of being retriggered and having a time constant longer than said predetermined maximum transition interval of the information signal to be recorded, and said pulse-train reproducing means comprises means for reproducing a binary signal from the pulse train signal recorded on one of said sectors, said monostable multivibrator receiving said binary signal and producing an output signal having a same polarity as a polarity of the binary signal reproduced by said pulse-train reproducing means; and
a logic summing means for summing the binary signal and an inverted signal of an output signal of the multivibrator.

4,768,182

APPARATUS FOR MONITORING OPTICAL PATH DIFFERENCES UTILIZING AN ETALON

James H. Hatfield, Yarm, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 5, 1986, Ser. No. 927,118
Claims priority, application United Kingdom, Nov. 5, 1985, 8527235
Int. Cl.[4] G11B *7/00*
U.S. Cl. 369—109 15 Claims



1. An apparatus for monitoring the optical path difference between two reflecting surfaces of an etalon, said apparatus comprising a light source, a stationary linear optical reference wedge, an optical system adapted to direct a beam of light from the light source onto one of two elements comprising the etalon and reference wedge, the other of these two elements being positioned to receive light reflected from the one element, and a linear array of photo-detectors positioned to receive light reflected from said other element.

4,768,183

OPTICAL REPRODUCING APPARATUS

Kunikazu Ohnishi, Yokohama; Akira Arimoto, Musashimurayama; Masayuki Inoue, Yokohama, and Yukio Fukui, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 20, 1987, Ser. No. 87,345
Claims priority, application Japan, Aug. 29, 1986, 61-201427
Int. Cl.[4] G11B *7/085*
U.S. Cl. 369—112 7 Claims



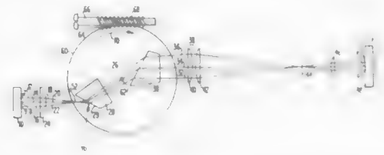
1. In an optical reproducing apparatus including:
a laser light source;
an objective lens for focusing a light beam emitted from said laser light source and applying it in a focused state to an optical information recording medium;
a diffraction grating disposed in an optical path between said laser light source and said objective lens inclinedly with respect to an optical axis, said diffraction grating functioning to reflect the light beam emitted from the laser light source, separate the emitted light beam into zero order, +1st order and −1st order diffracted light beams and conduct said diffracted light beams to said objective lens; and
a photo detector for converting light beams reflected from said optical information recording medium into electric signals,
the improvement characterized in that said diffraction grating has unequally spaced, curvilinear grooves.

4,768,184

APPARATUS AND METHOD FOR MINIMIZING MAGNIFICATION DISTORTION IN MULTI-TRACK OPTICAL RECORDING

Charles W. Reno, Cherry Hill, N.J., assignor to General Electric Company, Camden, N.J.

Filed Jan. 23, 1987, Ser. No. 6,205
Int. Cl.[4] G11B *7/14;* G02B *26/08*
U.S. Cl. 369—112 17 Claims



1. An optical system comprising:
at least three solid state elements emitting respective coherent light beams having generally elliptical cross-sectional shapes, said solid state elements being arranged in a linear array having substantially equal spacings between adjacent pairs of said elements;
a first lens for collecting said respective coherent light beams emitted by said array of said solid state elements and forming said respective coherent light beams into collimated light beams;
a beam expander for anamorphically expanding said collimated light beams to reshape the cross-sections of said collimated light beams such that the cross-sectional shape of said collimated light beams is generally circular,
said beam expander comprising a pair of prisms, said prisms distorting the spacings between adjacent pairs of said beams due to unequal transit paths of said respective beams through said pair of prisms; and
means for minimizing variations in said spacings between adjacent pairs of said beams including means for adjusting the angles of incidence of said collimated light beams formed by said first lens on said beam expander by rotating said beam expander along an axis which is intermediate said pair of prisms and normal to said collimated light beams.

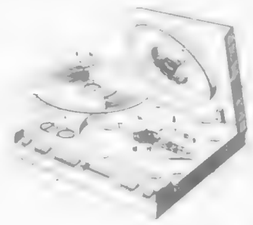
4,768,185

OPTICAL-DISC APPARATUS

Eduard Camerik, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 26, 1982, Ser. No. 401,662
Claims priority, application Netherlands, May 27, 1982, 8202163
Int. Cl.[4] G11B *25/04*
U.S. Cl. 369—270 5 Claims

1. An apparatus for playing back and/or recording information on a disc having a central hole, said apparatus comprising a housing, an elongated spindle, means mounted in said housing for rotating said spindle about the longitudinal axis thereof, an aligning member for supporting the disc in plane perpendicular to said axis, said aligning member being secured to said spindle for rotation therewith, a centering member mounted on said spindle for rotation therewith, said centering member having a plurality of radially movable resilient members disposed about said axis and defining a generally frusto-conical centering surface which extends about said axis and tapers away from said aligning member, said centering surface being configured to engage the central hole of the disc and center the disc about said axis, a disc loader having a thrust portion configured to engage the central portion of the disc during operation when the disc is supported by said aligning member, a support member secured to said housing for movement between a rest position and an operating position, said disc loader being supported by said support member for rotation and movement relative to said support member in a first direction such that when said support member is in said operating position and said thrust portion is in clamping engagement with the disc supported by said aligning member, said first direction is generally parallel to said axis and said disc loader is free to rotate with said disc, a first and second ferromagnetic member at least one of which is a magnet, a respective one of said first and second members being arranged on said disc loader and said support member, said first and second members being disposed in a position relative to each other such that when said support member moves from said rest position toward said



operating position, said first and second members are initially in contact with and stick to each other with sufficient initial magnetic force for said thrust portion to engage the disc and push the central hole over said centering member so that said resilient members engage the wall of the central hole, are moved radially towards said axis and exert a resilient force on the wall of the central hole to thereby center the disc about said axis as the disc is positioned on said aligning member, said first and second members being further arranged relative to each other such that as said support member subsequently moves into said operating position, said first and second members are pulled apart due to relative movement between said disc loader and said support member in said first direction so as to form an air gap of predetermined width therebetween such that said first and second members exert a magnetic force lower than said initial force on said disc loader so as to maintain said thrust portion in clamping engagement with the disc during operation.

4,768,186

MULTIPLEX TRANSMISSION OF ANALOG SIGNALS BY FIBER OPTIC CHANNEL

Donald H. Bodell, Trumbull, Conn., assignor to Pirelli Cable Corporation, Union, N.J.

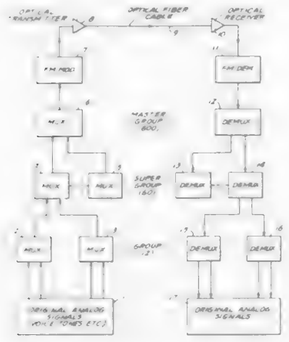
Filed Feb. 11, 1986, Ser. No. 828,293
Int. Cl.[4] H04J *1/20*
U.S. Cl. 370—3 8 Claims

1. In a multiplex transmission system having a plurality of sources of analog signals connected to multiplexing means for providing at least one group of amplitude modulated continuous signals at different frequencies, the combination therewith of:
a frequency modulator connected to said multiplexing means for converting said group of amplitude modulated continuous signals into a group of frequency modulated continuous signals;
an optical transmitter connected to said frequency modulator for intensity modulation of the optical signal output of said optical transmitter by said group of frequency modulated continuous signals;

VOL 1093 ISS 5 AG 30 1988 UMI

an optical fiber cable connected at one end to said optical transmitter for transmitting the optical signals at the output of said optical transmitter;

an optical receiver connected to said optical fiber cable for receiving optical signals from said optical transmitter; and



a frequency demodulator connected to said optical receiver for demodulating the signals at the output of said optical receiver.

4,768,187

SIGNAL TRANSMISSION SYSTEM AND A TRANSMITTER AND A RECEIVER FOR USE IN THE SYSTEM

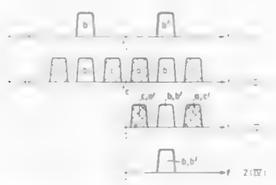
Christopher B. Marshall, Horley, England, assignor to U.S. Philips Corp., New York, N.Y.

Filed Jun. 30, 1986, Ser. No. 880,399

Claims priority, application United Kingdom, Jul. 8, 1985, 8517230

Int. Cl.[4] H04J *1/00*

U.S. Cl. 370—69.1 8 Claims



1. In a radio communication system comprising a plurality of transmitters transmitting signals to a plurality of receivers, the signals from respective transmitters being transmitted by modulating such signals on carrier waves having respective frequencies corresponding to respective message channels, each receiver receiving a signal in a message channel by direct conversion of the modulated signal in such channel to the frequency band of such signal, a method of operating of such system so as to separate the received signals from unwanted d.c. components produced by such direct conversion, such method comprising:

dividing the signal transmitted by each transmitter into complementary signals in respective frequency bands;

dividing the message channel of each transmitter into a pair of sub-channels in separate frequency bands symmetrically located above and below a carrier frequency assigned to such message channel, and modulating the respective complementary signals to translate them into the respective sub-channels;

assigning carrier frequencies to the respective transmitters in said system such that the sub-channels of any transmitter message channel are interleaved with a sub-channel of a message channel of least one of the other transmitter in said system;

tuning each receiver to the carrier frequency of a message channel to be received by such receiver;

each receiver directly recovering the complementary signals in the sub-channels of a received channel by converting the modulated signals in such sub-channels to the frequency bands of such complementary signals, and combining the frequency bands of the recovered complementary signals to derive a combined signal, the frequency band of such combined signal being separated from d.c.; and

band-pass filtering said combined signal to separate it from other signals in the received message channel, such filtering also blocking any d.c. component of said combined signal.

4,768,188

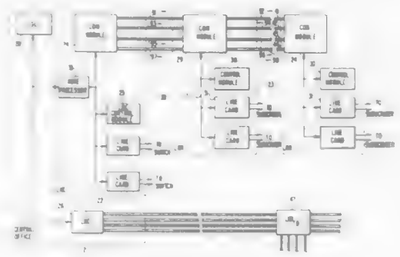
OPTICAL DEMAND ASSIGNED LOCAL LOOP COMMUNICATION SYSTEM

Andrew W. Barnhart, Gaithersburg, and Anders A. Eklof, Poolesville, both of Md., assignors to Hughes Network Systems, Inc., Germantown, Md.

Continuation of Ser. No. 380,327, May 20, 1982, abandoned. This application Feb. 3, 1986, Ser. No. 824,942

Int. Cl.[4] H04J *3/16*

U.S. Cl. 370—80 29 Claims



1. A distributed, demand access local loop telephone system interconnecting a central office with a plurality of subscriber equipments, which permits a reduction in telephone company future planning, conserves available bandwidth, and permits a range of subscriber services without additional wiring, comprising:

a plurality of remote access units located remotely from said central office near subscriber populations,

each such remote access unit including a pair of interfacing means for interfacing with a subscriber dedicated link and with a multi-channel digital communications media, respectively,

a multi-channel, digital communications media connecting said remote units to each other, and to said central office, said media including plural links, where different links directly connect adjacent remote access units to each other or connect a remote access unit and said central office, said media including an optical link extending between at least two of said remote access units,

means for assigning channels in said multi-channel digital communications media to different subscribers on a demand basis as said subscriber equipments request service, wherein said means for assigning channels in said multi-channel digital communication media includes means for assigning different numbers of said channels to different subscriber equipments, depending on the bandwidth requirements of said subscriber equipment wherein said remote access units further include:

a link interface with opto-electrical transducer means for producing first electrical signals from optical energy detected on connected optical links, said opto-electrical transducer means including, in some of said remote access units, an upstream and downstream transducer for producing upstream and downstream first electrical signals,

electro-optic transducer means for producing optical signals from electrical pulse information, in some of said remote access units said electro-optic transducer means includes an upstream and downstream electro-optic transducer for producing upstream and downstream optical signals, and

decoding means to produce data and sync pulse streams from said first electrical signals,

said remote access units further comprising:

data encoding means to encode electrical signals coupled thereto with an output coupled to upstream and downstream electro-optic transducer,

a plurality of forward bus means for distrubuting electrical signals, and coupling means for selectively associating particular forward bus means with upstream or downstream first electrical signals, and

a plurality of return bus means for coupling return electrical signals to said data encoding means,

presettable transmit frame generator means for generating clock and frame sync signals with a controllable relation between said frame sync and other frame sync signals,

frame select means responsive to output signals of said transmit frame generator means and to electrical signals provided by a receive in terminal for selectively providing one or another set of signals to said coupling means,

clock select means responsive to plural clock signals from said plurality of forward bus means for coupling a one of said clock signals to said transmit frame generator means,

delay means coupling an output of said frame select means to said encoder means, and

data selector means responsive to signals on said return bus to selectively coupling signals to said encoder means.

4,768,189

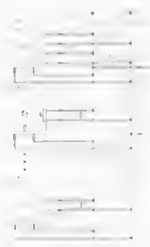
HIGH CAPACITY COMMUNICATION UTILIZING STATIC, OR-TYPE CHANNELS

Bhaskarpillai Gopinath, Berkeley Heights, and Shuo-Yen R. Li, Gillette, both of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.

Filed Jun. 17, 1987, Ser. No. 62,945

Int. Cl.[4] H04L *5/00*

U.S. Cl. 370—85 8 Claims



1. A method for transmitting at least one first message over a first bus and at least one second message over a second bus, each said bus interconnecting a plurality of synchronized stations, said method comprising the steps of

broadcasting the bits generated by each of the stations serially over said first bus and the complement of said bits serially over said second bus, and wherein the state of each said bus during each bit interval is the OR of the bits broadcast by the stations,

deactivating broadcasting over said first bus by any of the stations whenever its most recently broadcast bit differs from the state of said first bus, and

deactivating broadcasting over said second bus by any of the stations whenever its most recently broadcast complemented bit differs from the state of said second bus,

wherein each said message is comprised of the bits broadcast on its respective bus.

4,768,190

PACKET SWITCHING NETWORK

Charles H. Giancarlo, Montclair, N.J., assignor to OG Corporation, New York, N.Y.

Filed Apr. 30, 1986, Ser. No. 857,913

Int. Cl.[4] H04J *3/00, 3/24*

U.S. Cl. 370—86 8 Claims



1. In a digital communication system, a ring network for transmitting data in the form of addressed message packets comprising:

a data bus, and

a plurality of endpoints connected to said data bus,

each of said endpoints comprising:

means for establishing at each endpoint a unique address so that the addresses of the endpoints around the ring change monotonically from a first endpoint in the ring to a last endpoint in the ring,

first, second and third data buffers, said first data buffer being connected to receive addressed message packets from the preceding endpoint and to pass said addressed message packets on to the next endpoint in the ring, said second data buffer being connected to receive addressed message packets from a preceding endpoint and to pass said message packet to a using device and said third data buffer being connected to receive an addressed message packet from said using device and pass it on to the next endpoint in the ring,

means for determining if the message packet is addressed to said endpoint, for routing message packets addressed to said endpoint to said second buffer and for routing message packets addressed to other endpoints to said first buffer,

a fourth buffer connected to provide data to said third buffer,

a direct memory access circuit,

a communications bus and

a random access memory, said direct memory access circuit removing data from said random access memory and transferring the data via said communications bus to said fourth buffer at a predetermined rate, whereby data flow is determined by the direct memory access circuit and not by software flow control protocols.

VOL 1093 ISS 5 AUG 30 1988 UMI

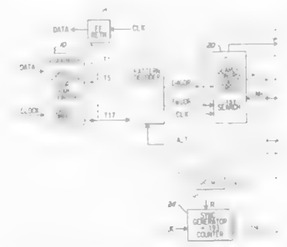
4,768,191
DIGITAL DATA AND ORDERWIRE COMBINER APPARATUS
Anton J. Polcer, Sussex, N.J., assignor to ITT Corporation, Defense Communications Division, Nutley, N.J.
Filed Oct. 1, 1986, Ser. No. 913,915
Int. Cl.[4] H04J *3/00*
U.S. Cl. 370—112 14 Claims



1. A digital data and orderwire combiner apparatus for combining a high rate digital data signal with a lower rate digital orderwire signal to provide at an output a combined signal having three distinct levels comprising:
first inverting gate amplifier means having an input adapted to receive said orderwire signal and having an output to provide an amplified version thereof, said gate having a control output terminal through which current flows,
second inverting gate amplifier means having an input adapted to receive said high rate digital data signal and having an output to provide an amplified version of said signal and having a control output terminal through which current flows,
a resistive divider including a first resistor having one terminal coupled to a point of reference potential and a second terminal coupled to both control terminals of said first and second gate amplifier means and including a second resistor coupled to said second terminal of said first resistor and having another terminal coupled to a point of potential of a given polarity, and
means coupling one of said digital signals as applied to one of said amplifier means to said other amplifier means to cause said three levels to be clearly defined one from the other according to the binary value of one of said signals with respect to the other.

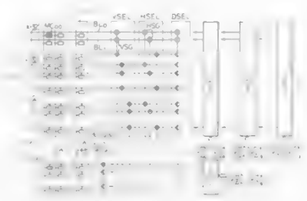
4,768,192
FRAME SYNCHRONIZATION DETECTION SYSTEM FOR TIME DIVISION MULTIPLEXED (TDM) DIGITAL SIGNALS
Jeffrey S. Pattavina, Billerica, and Jai H. Eu, Westford, both of Mass., assignors to General Signal Corp., N.Y.
Filed Apr. 1, 1987, Ser. No. 33,551
Int. Cl.[4] H04J *3/06*
U.S. Cl. 370—100 13 Claims

1. A system for detecting synchronizing signals from framing bits in any of a plurality of framing formats of time division multiplexed (TDM) digital signals which comprises means for providing from said digital signals sequences of bits which are spaced apart by a predetermined multiple of the number of bits in a frame, means operative for decoding said sequence in parallel to derive outputs simultaneously when said sequences correspond to certain framing bit patterns which correspond to



different ones of said formats, and means responsive to said outputs for providing said synchronizing signals.

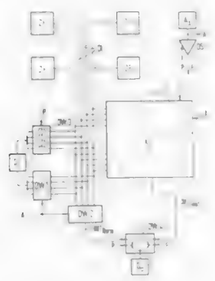
4,768,193
SEMICONDUCTOR MEMORY DEVICE HAVING ERROR CORRECTION FUNCTION AND INCORPORATING REDUNDANCY CONFIGURATION
Yoshihiro Takemae, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Filed May 15, 1986, Ser. No. 863,608
Claims priority, application Japan, May 16, 1985, 60-104632
Int. Cl.[4] G06F *11/10, 11/20*
U.S. Cl. 371—10 4 Claims



1. A semiconductor memory device comprising:
a main memory cell array including a plurality of rows of main memory cells and a plurality of columns of main memory cells;
a redundancy memory cell array including a plurality of rows of redundancy memory cells;
first selector means, operatively connected to said main memory cell array and said redundancy memory cell array, for selecting a main memory cell in said main memory cell array, and for replacing one of said main memory cells in said main memory cell array with a corresponding one of said redundancy memory cells in said redundancy memory cell array when said one of said main memory cells in said main memory array is a predetermined defective cell; and
an error checking and correcting circuit, operatively connected to said first selector means, for correcting data from said first selector means and including:
second selector means, operatively connected to said main memory cell array and said redundancy memory cell array, for selecting a horizontal group of said main memory cells and a vertical group of said main memory cells including said main memory cell selected by said first selector means, and replacing said horizontal group or said vertical group of said main memory cells with a corresponding row of said redundancy memory cell

array when said horizontal group or said vertical group of said main memory cells includes said predetermined defective cell;
a horizontal parity generator, operatively connected to said second selector means, for generating a horizontal parity from data in said horizontal group of said main memory cells;
a vertical parity generator, operatively connected to said second selector means, for generating a vertical parity from data in said vertical group of said main memory cells;
parity storing means, for storing predetermined horizontal parities and predetermined vertical parities;
a comparator circuit, operatively connected to said horizontal and vertical parity generators and to said parity storing means, for comparing said horizontal and vertical parities with corresponding ones of said predetermined horizontal and vertical parities, respectively, and outputting a signal; and
a correction circuit, operatively connected to said first selector means and said comparator, for correcting data of said first selector means in accordance with the output signal of said comparator circuit.

4,768,194
INTEGRATED SEMICONDUCTOR MEMORY
Hans P. Fuchs, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 11, 1986, Ser. No. 906,454
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1985, 3532443
Int. Cl.[4] G06F *11/10*
U.S. Cl. 371—21 14 Claims



1. Integrated semiconductor memory, comprising n identical memory cell fields each having a data width of m bits, wherein n and m represent positive integers, n data lines each having m bit lines, each data line being connected to a respective one of said memory cell fields for writing memory data into and reading memory data out of said memory cell fields, m data input terminals each receiving one bit of the memory data to be written into said semiconductor memory during writing, m first data switches each receiving one bit of the addressing data and being connected between said data lines and said data input terminals for applying the memory data bits to a respective one of said n data lines as a function of the addressing data, m second data switches each receiving one bit of the addressig data and being connected to said data lines for each selecting a respective one of said n data lines when reading out the memory data applied to said n data lines as a function of the addressing data and feeding the memory data from a selected data line to outputs thereof, m evaluation circuits, each connected to n of said n data lines in parallel to said second data switches, said evaluation circuit having a low resistance output signal containing the m memory data bits read out from said memory cell fields if none of the memory data bits are defective and having a high-resistance state if at least one of said memory data bits is defective, a control terminal for providing a control signal having a "0" or a complementary "1" state, m third data switches each connected between one of said m data input terminals and a respective bit line in each of said n data lines, parallel to said first data switches, being responsive to the state of said control signal for transferring the memory data in parallel to all of said n data lines as a function of the state of said control signal, m data output terminals, and m fourth data switches being responsive to the complementary state of the control signal and being connected between said outputs of said second data switches and said evaluation circuits and said data output terminals, for selectively feeding said memory data selected by said second data switch and the state of the output signal from said evaluation circuit to said data output terminal, said data output terminal having a high-resistance state when the output signal from said evaluation circuit has a high-resistance state.

4,768,195
CHIP TESTER
Donald W. Stoner, 6028 Harvey Way, Lakewood, Calif. 90713, and Lawrence S. Canino, 4815 Milne Dr., Torrance, Calif. 90505
Continuation of Ser. No. 751,567, Jul. 3, 1985, abandoned. This application Oct. 9, 1987, Ser. No. 91,062
Int. Cl.[4] G01R *31/26*
U.S. Cl. 371—25 3 Claims

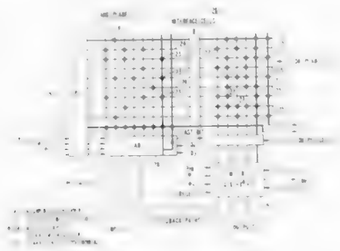


3. A chip tester for testing a variety of microelectronic chip types in a multiple-pin test socket, each chip type having input terminals, output terminals, a power supply terminal, and a ground terminal, said tester adapted for testing at least two chip family types in said multiple-pin test socket, a first family type having its ground terminal at a first pin position of said test socket, and a second type having its ground terminal at a second pin position of said test socket different from said first pin position, said tester comprising:
means for applying power to said power supply terminal of a chip under test;
means for applying ground to said ground terminal of said chip under test;
drive means for applying first and second sequences of signal patterns to said input and output terminals of a chip under test for respective first and second chip family types;
said means for applying ground comprising means for applying ground to said first pin position during the application of said sequence of signal patterns relating to said first chip family type, and for applying ground simultaneously to both said first and second pin positions during the applica-

VOL 1093 ISS 5 AG 30 1988 UMI

tion of said sequences of signal patterns relating to said second chip family type;
means for monitoring the signal pattern on said input and output terminals; and
means for indicating, for each said signal pattern applied, whether or not the chip under test is operational responsive to the existence or not, respectively, of a predetermined relationship between the signal pattern on said input and output terminals and the signal pattern established by said drive means.

4,768,196
PROGRAMMABLE LOGIC ARRAY
Jing-Yang Jou, Scotch Plains, N.J., and Christopher Rosebrugh, Belmont, Mass., assignors to Silc Technologies, Inc., Burlington, Mass.
Filed Oct. 28, 1986, Ser. No. 923,984
Int. Cl.[4] G01R *31/02, 31/28*
U.S. Cl. 371—25 4 Claims



1. A programmable logic array (PLA) having built-in self-testing capability (BIST), said BIST PLA being capable of operating in a normal mode and a test mode, said BIST PLA comprising:
(a) a plurality of PLA input lines coupled with decoding circuits, said decoding circuits being coupled via a plurality of bit lines with an AND array, said AND array being coupled via a plurality of product lines with an OR array, said OR array being coupled with a plurality of OR array output lines, the aggregate of signals across said OR array output lines at an instant of time being an output signature;
(b) control signal receiver means for receiving a plurality of control signals from an external source, said control signals including a normal mode signal, a test mode signal, and a clock signal;
(c) bit-line test-pattern generation means coupled with said bit lines and said control signal receiver means and responsive to said control signals, for generating a first predetermined sequence of test patterns across said bit lines when in said test mode in synchronization with said clock signal;
(d) product-line test-pattern generation means coupled with said product lines and said control signal receiver means and responsive to said control signals, for generating a second predetermined sequence of test patterns across said product lines when in said test mode in synchronization with said clock signal;
(e) multiple output signature compression means coupled with said OR array output lines and said control signal receiver means and responsive to said control signals, for compressing the sequence of output signatures occurring in said test mode into a single-bit test result and for passing through unaltered any output signature occurring in said normal mode, said multiple output signature compression means having X^Q+1 as its characteristic polynomial where Q is the number of said OR Array output lines and X is a dummy variable;
(f) means coupled with said multiple output signature compression means for transmitting said single-bit test result to an external receiver; and
(g) at least one PLA output line coupled with said multiple output signature compression means.

4,768,197
CACHE ERROR CODE UPDATE
Joseph A. Petolino, Palo Alto; Christopher D. Finan, Santa Clara; Jeffrey T. Isozaki, San Jose, and Nicholas Y. Pang, Sunnyvale, all of Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.
Filed Sep. 15, 1986, Ser. No. 907,665
Int. Cl.[4] G06F *11/00*
U.S. Cl. 371—38 4 Claims

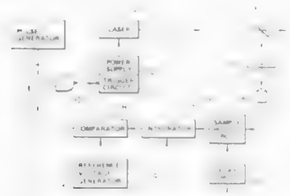


1. In a data processing machine that includes a data store storing data in addressable sections and an error code store storing error codes for corresponding sections, an apparatus for generating an updated error code for a section in response to an update including data and address information for updating a part of the section, comprising:
means, connected to receive the address information of the update, for decoding the address information to generate a first signal identifying the part of the section to be updated and to generate a second signal identifying a un-updated part of the section;
first means, connected to receive the data of the update and to receive the first signal from the means for decoding, for generating a first partial error code for the update;
means, connected to the data store and the means for decoding, for reading data from the un-updated part of the section;
second means, connected to the means for reading and the means for decoding, for generating a second partial error code for the un-updated part of the section in response to the data from the un-updated part of the section and the second signal; and
means, connected to the first means for generating and second means for generating, for combining the first and second partial error codes to generate the updated error code.

4,768,198
SYSTEM FOR CONTROLLING OUTPUT OF PULSED LASER
Kyoichi Deki, Himeji, Japan, assignor to Ushio Denki, Tokyo, Japan
Filed Jul. 9, 1986, Ser. No. 883,674
Claims priority, application Japan, Sep. 21, 1985, 60-207797
Int. Cl.[4] H01S *3/13*
U.S. Cl. 372—29 3 Claims

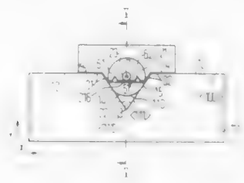
1. A device for controlling the output of a pulsed laser, comprising:
a laser oscillator outputs a laser beam in response to a repetitive pulse discharge;
a photoelectric conversion means for converting the output laser beam into a pulse signal;

a sample and integration means for sampling and integrating the laser output energy from the pulse signal of the photoelectric conversion means regardless of pulse width and height of the pulse signal;
a reference voltage generating means for generating a predetermined reference level;
a comparator compares the output of the sampling and integration means and the output from the reference voltage generating means;



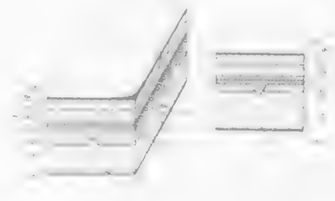
a pulse generator means for repetitionally outputting the consecutive pulses; and
a control means for controlling an opening and closing of the laser oscillator based on said consecutive pulses from said pulse generator means and an output of said comparator wherein a constant total output power of said laser oscillator is maintained at said predetermined reference level.

4,768,199
MECHANISM FOR SELF-ADJUSTING POSITIONING OF A SEMICONDUCTOR LASER RELATIVE TO AN OPTICAL FIBER TO BE COUPLED THERETO
Jochen Heinen, Haar, and Friedrich Weidinger, Taufkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Sep. 5, 1986, Ser. No. 904,191
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1985, 3531734
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—36 6 Claims



1. A mechanism for coupling a glass fiber having a core to a semiconductor laser, comprising:
a laser chip of a semiconductor material having a cubic crystal lattice structure, said laser chip being provided with a laser active zone and a semiconductor substrate member,
said substrate member including a mesa ridge at a first surface,
said mesa ridge having first and second etched lateral surfaces slanted with respect to said first surface;
an adjustment member of a semiconductor material having a cubic crystal lattice structure and a V-shaped groove in a first surface, lateral surfaces of said V-shaped groove being etched surfaces;
said mesa ridge of said laser chip being fitted into and secured to said groove of said adjustment member, said etched lateral surfaces of said mesa ridge being joined to said etched lateral surfaces of said V-shaped groove;
said V-shaped groove having a width and having side angles such that the core of said glass fiber is precisely positioned relative to the laser active zone of said laser chip; and
said glass fiber being received in said V-shaped groove with said core in registration with said laser active zone of said laser chip.

4,768,200
INTERNAL CURRENT CONFINEMENT TYPE SEMICONDUCTOR LIGHT EMISSION DEVICE
Kunihiko Isshiki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 17, 1986, Ser. No. 875,321
Claims priority, application Japan, Jun. 18, 1985, 60-132711
Int. Cl.[4] H01S *3/19*
U.S. Cl. 372—46 12 Claims



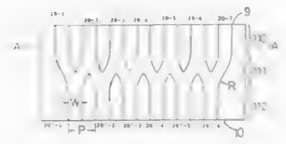
1. A semiconductor light emission device including a laser operation area which comprising:
a first conductivity type semiconductor substrate including two resonator end surfaces disposed on opposite sides thereof, wherein at least one hollow section is formed in said substrate in a direction perpendicular to the plane of an upper surface of said substrate between said resonator end surfaces;
a second conductivity type current blocking layer having a flat upper surface formed on the entire upper surface of said substrate;
a stripe groove formed in said current blocking layer in a direction perpendicular to said resonator end surfaces, said stripe groove extending only within said current blocking layer at said hollow section and extending to said substrate through said current blocking layer outside said hollow section;
a first conductivity type lower clad layer formed on the entire upper surface of said current blocking layer so as to embed said stripe groove;
a first or second conductivity type active layer formed on the entire upper surface of said lower clad layer; and
a second conductivity type upper clad layer formed on the entire upper surface of said active layer.

4,768,201
SEMICONDUCTOR LASER ARRAY
Mototaka Taneya, Sakai; Sadayoshi Matsui, Tenri; Seiki Yano, Kashihara, and Saburo Yamamoto, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 30, 1985, Ser. No. 760,538
Claims priority, application Japan, Aug. 6, 1984, 59-164679; Mar. 29, 1985, 60-67448
Int. Cl.[4] H01S *3/19, 3/098*
U.S. Cl. 372—50 22 Claims

1. A semiconductor laser array comprising:
a laser structure having oppositely disposed first and second facets which includes,
a substrate,

VOL 1093 ISS 5 AG 30 1988 UMI

a channel layer formed on said substrate, wherein said channel layer has a plurality of channels formed therein so as to penetrate into said substrate,
a first cladding layer formed on said channel layer,
an active layer formed on said first cladding layer,
a second cladding layer formed on said active layer, and
a cap layer formed on said second cladding layer,
said semiconductor laser array further comprising,
a first active wave guide corresponding to one of said channels disposed at said first facet;



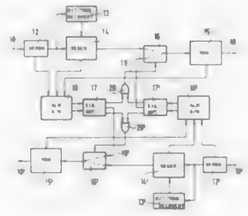
a second active wave guide corresponding to one of said channels disposed at said first facet substantially parallel to said first active wave guide; and
a third active wave guide corresponding to one of said channels disposed at said second facet,
wherein said first and second active wave guides converge into said third active wave guide and wherein said active wave guides have identical vertical modes and a phase difference of zero degrees.

4,768,202

SIGNALLING METHOD AND DEVICE FOR BIDIRECTIONAL DIGITAL TRANSMISSION LINK

Jean-Claude Lacroix, Bruyeres le Chatel; Pierre Franco, Fresnes; Stéphane Le Gall, Sceaux; Gérard Bourret, La Ville du Bois, and Jacques Pochet, Le Plessis Paté , all of France, assignors to Alcatel, Paris, France

Filed Apr. 8, 1986, Ser. No. 849,331
Claims priority, application France, Apr. 19, 1985, 85 05979
Int. Cl.[4] H04B *17/02;* **H01J** *9/38;* **G05B** *23/02*
U.S. Cl. 375—3.1 **6 Claims**



2. A device for transmitting signalling via a digital transmission system including a processing terminal linked with a relay terminal via a digital transmission link of a first and a second directional link and at least one intermediate regenerative repeater connected in said digital transmission link, data messages being transmitted between said processing and relay terminals via said digital transmission link and said at least one intermediate regenerative repeater, wherein the improvement comprises:
said intermediate regenerative repeater comprising means for temporarily substituting for at least one of said data messages signalling messages comprising a localizing part and a characterizing part, said characterizing part being transmitted on said second directional link in a direction of said processing terminal and said localizing part being transmitted on said first directional link in a direction of said relay terminal;
said relay terminal comprising means for transmitting to said processing terminal via said second directional link and said at least one intermediate regenerative repeater an acknowledgement message of different form than said characterizing part upon receipt of said localizing part of said signalling messages; and
said processing terminal comprising means for receiving on said second directional link said characterizing part of said signalling messages and said acknowledgement message, and means for determining the position of said regenerative repeater along said digital transmission link by determining a difference in arrival times between said characterizing part of said signalling messages and said acknowledgement message.

4,768,203

SIGNAL-TO-NOISE RATIO TESTING IN ADAPTIVE DIFFERENTIAL PULSE CODE MODULATION

James F. Ingle, Boro of Fair Haven, N.J., assignor to Bell Communications Research, Inc., Livingston, N.J.

Filed Sep. 18, 1987, Ser. No. 98,296
Int. Cl.[4] H04B *3/46*
U.S. Cl. 375—10 **11 Claims**



1. A method of testing the signal-to-noise ratio of a signal transmitted through a communication system which comprises:
(a) introducing as input to said system a multiple-tone signal consisting essentially of a plurality of discrete tones of narrow frequency bandwidth;
(b) sampling at a regular rate the amplitude of the system output signal comprising said multiple-tone signal after transmission through said system;
(c) computing from the resulting samples the power levels of said output signal in a multiplicity of contiguous narrow frequency bandwidths including said plurality of input tone bandwidths;
(d) recording the individual signal power levels in each respective one of said multiplicity of bandwidths;
(e) summing the recorded power levels in the plurality of bandwidths corresponding to said input multiple-tone signal bandwidths, thereby obtaining a measure of the multiple-tone signal output from said system;
(f) summing the recorded power levels in the others of said multiplicity of bandwidths not included in said plurality of input tone bandwidths, thereby obtaining a measure of noise output with said multiple-tone signal output; and

(g) calculating from said measures of multiple-tone signal and noise outputs the signal-to-noise ratio of said system output signal.

4,768,204

METHOD AND APPARATUS FOR TRANSMITTING SIGNALS BETWEEN A MASTER STATION AND A NUMBER OF TERMINALS

Willi Zeiss, Kandel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 1, 1985, Ser. No. 761,362
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1984, 3428766
Int. Cl.[4] H04B *3/04*
U.S. Cl. 375—12 **9 Claims**



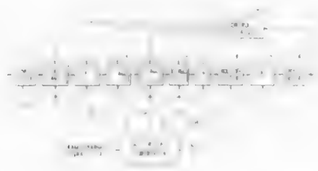
1. A method of transmitting signals between a master station and a plurality of terminal stations connected at different points of a transmission line, in which a correction of the attenuation distortion caused by the transmission line is carried out in the receiving station, comprising the steps of:
(a) transmitting a plurality of signals via the transmission line prior to the start of a desired transmission;
(b) determining the respective gains of receiving amplifiers present in the master station and in each of the terminal stations from the corresponding transmissions of the plurality of signals so that a respective signal between stations can be set at a defined level to overcome the attenuation distortion of the particular section of the transmission line in use; and
(c) storing and then setting the gains of the receiving amplifiers in the terminal stations and in the master station, in such a manner that the signal level attenuation of the section of the transmission line in use between the master station and each respective terminal station is compensated and the respective signal therebetween is set at the defined level.

4,768,205

SWITCHED CAPACITOR ADAPTIVE LINE EQUALIZER

Kenji Nakayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 28, 1986, Ser. No. 834,682
Claims priority, application Japan, Feb. 28, 1985, 60-39151
Int. Cl.[4] H04B *3/04*
U.S. Cl. 375—14 **8 Claims**



1. A switched capacitor adaptive line equalizer adapted to receive an input signal and to supply an equalized output signal, comprising:
first switched capacitor filter means responsive to said input signal for limiting a frequency band to be passed and for producing alternately first and second output signals during first and second periods respectively, said first switched capacitor filter means comprising first sampling means, having first switch means and first capacitor means comprised of a first capacitor array, for sampling said input signal at a sampling rate determined in relation to said input signal, and first integrating circuit means including at least a first operational amplifier, first integrating capacitors, and first selecting switch means responsive to said first and second periods for selecting said first integrating capacitors to provide a parallel connection with said first operational amplifier, wherein during said first period, said first capacitor array of said first sampling means is changed in its capacitance to select a low pass filter characteristic for operation for said second period, and during said second period, said first capacitor array is changed in its capacitance to select another low pass filter characteristic for operation for said first period;
a second switched capacitor filter means for providing said first and second output signals with a variable gain which increases with the square root of frequency and is variable depending upon said first and second output signals and for producing alternately third and fourth output signals during third and fourth periods respectively, said second switched capacitor filter means comprising second sampling means, having second switch means and second capacitor means comprised of a second capacitor array, for sampling said first and second output signals at a sampling rate determined in relation to said input signal, and second integrating circuit means including at least a second operational amplifier, second integrating capacitors and second selecting switch means responsive to said third and fourth periods for selecting said second integrating capacitors to provide a parallel connection with said second operational amplifier, wherein during said third period, said second filter means produces said third output signal responsive to said second output signal, the capacitance of said second capacitor array of said second sampling means being changed to select another gain for operation during said third period;
sample and hold means for sampling said third and fourth output signals outputted from said second switched capacitor filter means;
output means for shaping an output waveform of said sample and hold means to produce an output signal of said output means;
first control means responsive to said output signal of said output means for controlling the capacitance of any of said first and second capacitor arrays and said second integrating capacitors; and
second control means responsive to a signal indicating an input signal rate for controlling said first and second sampling means.

4,768,206

DATA TRANSMISSION SYSTEM

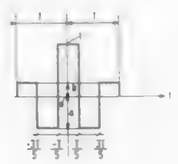
Petrus J. Van Gerwen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1987, Ser. No. 40,529
Claims priority, application Netherlands, May 1, 1986, 8601114
Int. Cl.[4] H03K *3/02;* **H03M** *5/20*
U.S. Cl. 375—17 **12 Claims**

1. A transmission system comprising:
(a) a transmitter for transmitting binary data signals via a transmission means of a high-pass nature, the transmitter comprising:

VOL 1093 ISS 5 AG 30 1988 UMI

(i) a data source for generating data bits in synchronous consecutive bit intervals having a duration T; and
(ii) a code converter for converting each data bit into a corresponding data symbol; and
(b) a receiver comprising:
(i) a receive filter; and
(ii) a data detector for detecting the transmitted data symbols;
wherein the improvement comprises that;
(c) the code-converter is arranged to convert each data bit into a corresponding data symbol having a duration 2T, the data



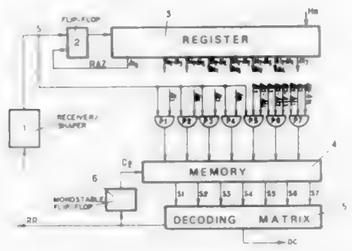
symbol being composed of five pulses spaced 2T/5 apart having alternately opposite polarities and equal durations of not more than 2T/5, amplitudes of a first pair of pulses on either side of a central pulse being equal and being a times an amplitude of the central pulse, where a is a factor $\leqq 1$, and amplitudes of a second pair of pulses on either side of the first pair of pulses being equal and being b times the amplitude of the central pulse where b is a factor $\leqq 1$;
(d) the receive filter has a cut-off frequency of approximately 2.25T; and
(e) the receiver further comprises an equalizer.

4,768,207

SYSTEMS FOR RECEIVING MESSAGES TRANSMITTED BY PULSE POSITION MODULATION (PPM)

Paul J. Sejourne, Paris, and Felix Mizzi, La Courneuve, both of France, assignors to Societe Anonyme de Telecommunications, France

Filed Mar. 10, 1986, Ser. No. 838,149
Claims priority, application France, Mar. 15, 1985, 85 03814
Int. Cl.[4] H03K 9/04
U.S. Cl. 375—23 6 Claims



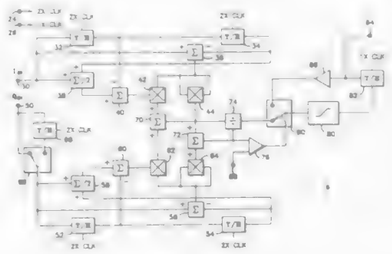
1. An arrangement for receiving messages transmitted by pulse position modulation, comprising:
receiver means for receiving messages formed of binary words, each word being formed of a plurality of sequences arranged in a rank along the respective word, each sequence being formed of a first reference pulse followed by a second present/absent pulse which is transmitted at a predetermined time after the first reference pulse;
delay means for time shifting each pulse received by the receiver means by a time equal to its respective predetermined time;
correlating means for correlating each time-shifted second present/absent pulse with the first reference pulse of each word;
means for detecting each sequence from the correlated pulses; and
means for determining each word and each message from the detected sequences.

4,768,208

MID-SYMBOL SAMPLING TIMING ESTIMATOR

Frank N. Cornett, Queen Creek, Ariz., assignor to Motorola, Inc., Schaumburg, Del.

Filed Mar. 9, 1987, Ser. No. 23,757
Int. Cl.[4] H04L 27/22
U.S. Cl. 375—95 19 Claims



1. A timing error estimator for use in synchronizing sample timing to a sequence of data symbols wherein each data symbol is delayed from an immediately previous data symbol by approximately one symbol period, said timing error estimator comprising:
means for supplying a begin-symbol sample measured at a first point in time;
means for supplying an end-symbol sample measured approximately one symbol period after the first point in time;
means for calculating an estimated mid-symbol sample so that the estimated mid-symbol sample is evaluated for a predetermined point in time between measurements of the begin-symbol and end-symbol samples, said calculating means being coupled to said begin-symbol supplying means and to said end-symbol supplying means;
means for providing an actual mid-symbol sample measured at approximately the predetermined point in time, said providing means being coupled to said end-symbol supplying means and to said begin-symbol supplying means; and
means for computing a timing error value as a function of begin-symbol, estimated mid-symbol, actual mid-symbol, and end-symbol samples, said computing means being coupled to said providing means and to said calculating means.

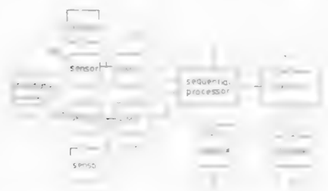
4,768,209

MAGNETIC INDUCTION COUNTING DEVICE

Ching-Yu Yu, No. 74, Lane 10, Sec. 2, Chang-Pyng Rd., Taichung, Taiwan

Filed May 28, 1987, Ser. No. 55,024
Int. Cl.[4] G06M 11/00
U.S. Cl. 377—6 3 Claims

1. A magnetic induction counting device comprising:
an inductive means having a permanent magnetic member disposed therein and formed in a structure adapted to be worn on a worker's hand during material handling and counting operations;
a plurality of sensing means made on the basis of Hall elements and adapted to be installed on a working structure for detecting a magnetic field condition of said inductive means according to a movement of the worker's hand during material handling and counting operations and outputting a voltage signal therefrom; a plurality of amplifying means respectively coupled with said sensing means for amplifying and outputting the voltage signal received from said sensing means;
a sequential processing means electrically connected to said amplifying means for receiving the amplified voltage and outputting a pulse signal under the condition that the



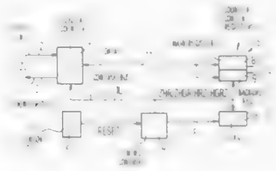
amplified voltage signal is sequentially supplied in a unilateral direction from said sensing means; and
a counting means electrically connected to said sequential processing means for performing counting operations according to the pulse signal received from said sequential processing means and displaying the counted numbers; whereby, during material handling and counting operations, automatic counting can be accurately performed in accordance with a movement of the worker's hand.

4,768,210

METHOD AND APPARATUS FOR FAILSAFE STORAGE AND READING OF A DIGITAL COUNTER IN CASE OF POWER INTERRUPTION

Wolfgang Pockrandt, Steinkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 861,568, May 9, 1986, abandoned. This application Aug. 3, 1987, Ser. No. 81,577
Claims priority, application Fed. Rep. of Germany, May 17, 1985, 3517865
Int. Cl.[4] G11C 7/00; H03K 21/40
U.S. Cl. 377—32 6 Claims



1. Method for failsafe storage of the count of a digital pulse counter having a non-volatile main and a non-volatile background register, a non-volatile flag for storing state information of a counting cycle and a sensor for sensing a power interruption, which comprises: initially marking the background register with the flag; writing the counter content into the main register; subsequently marking the main register with the flag; writing the counter content into the background register;
writing the content of the main register back into the counter if a power interruption is sensed after the counter content has been written into the background register; or
writing the present content of the background register back into the counter if a power interruption is sensed after the counter content has been written into the main register and before the counter content has been written into the background register; and subsequently incrementing the counter.

4,768,211

SOLID STATE PHOTOSENSITIVE DEVICES

Marc Arques, Grenoble, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 692,050, Jan. 16, 1985, abandoned. This application May 13, 1987, Ser. No. 51,213
Claims priority, application France, Jan. 20, 1984, 84 00887
Int. Cl.[4] G11C 19/28; H01L 29/78, 27/14, 31/00
U.S. Cl. 377—60 11 Claims



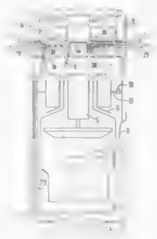
1. A solid state photosensitive device of the kind including a plurality of photodetectors
means for reading and storing the charge generated by each photodetector, said means being connected to the photodetector and including first and second storage means for storing charge, the first storage means being controlled by a potential with fixed level while the second storage means comprises a storage electrode controlled by a potential with variable high and low levels for varying its storing capacity.
means connected to the storage means for resetting to zero the storage means, and
means for converting into voltage a quantity of charge, said means being connected to the storage means for converting the charge stated therein, and
multiplexing means for switching on sequentially one of the means for converting into voltage a quantity of charge.

4,768,212

LIQUID-COOLED X-RADIATOR HAVING A CIRCULATION COOLING SYSTEM

Guenther Appelt, Erlangen, and Josef Schmitt, Neunkirchen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 13, 1987, Ser. No. 37,948
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1986, 8615918[U]
Int. Cl.[4] H01J 35/10
U.S. Cl. 378—141 13 Claims



13. An x-radiator comprising:
a housing having an x-ray tube therein and filled with electrically insulating coolant;
a heat exchanger having two non-communicating channels therein, one of said channels communicating through a pump with the interior of said housing through which said coolant is circulated to remove heat therefrom, and the

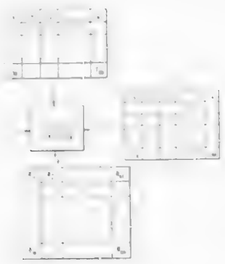
VOL 1093 ISS 5 AUG 30 1988 UMI

other of said channels having a cooling fluid circulated therethrough for assisting in removing heat from said coolant; and

means for automatically reversing the direction of operation of said pump and thereby reversing the direction of flow of said coolant in said housing dependent on the three-dimensional position of said x-radiator.

4,768,213
Patent Not Issued For This Number

4,768,214
IMAGING
Paul J. Bjorkholm, Sharon, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.
Continuation of Ser. No. 691,737, Jan. 16, 1985, abandoned, which is a continuation of Ser. No. 426,380, Sep. 29, 1982, abandoned. This application Apr. 15, 1986, Ser. No. 853,368
Int. Cl.[4] G01N *23/201*
U.S. Cl. 378—87 19 Claims



1. A projection radiographic apparatus useful in selectively imaging an object using penetrating radiant energy comprising:

source means for emitting penetrating radiant energy,

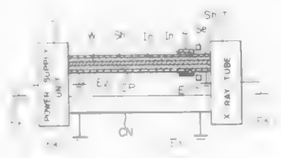
means for directing said penetrating radiant energy emitted by said source means towards a target area including scanning means for producing a flying spot of penetrating radiant energy for repeatedly sweeping a line in space at said target area,

first radiant energy detecting means located to be responsive to radiant energy from said source means passing directly through an object located in said target area for producing a first sequence of signals as said flying spot sweeps said target area, and

second radiant energy detecting means located substantially coplanar with said first radiant energy detecting means and further from said source means than said object, said second radiant energy detecting means responsive to radiant energy from said source scattered at an acute angle to a path of said radiant energy from said source means, by an object located in said target area, to produce a second sequence of signals as said flying spot sweeps said target area, said second sequence including only one single valued signal for each signal of said first sequence, and

combining means for combining said first and second sequences of signals to produce an image array as a nonlinear function of said signals from said first and second sequences.

4,768,215
X-RAY GENERATOR WITH CURRENT MEASURING DEVICE
Hisakatsu Kiwaki, Katsuta; Kayo Shimada, Hitachi; Hiroshi Okubo, Mito; Kazuo Kaneko, Omiya, and Takanobu Hatakeyama, Ryugasaki, all of Japan, assignors to Hitachi Medical Corporation and Hitachi, Ltd., both of Tokyo, Japan
Filed May 15, 1986, Ser. No. 863,501
Claims priority, application Japan, May 17, 1985, 60-103783
Int. Cl.[4] H05G *1/10*
U.S. Cl. 378—101 9 Claims



1. An X-ray generator with current measuring device comprising:

an X-ray tube;

a power supply unit for feeding high voltage to the X-ray tube;

a high voltage cable for connecting said X-ray tube and said power supply unit, said high voltage cable including a core conductor, an insulating layer surrounding the core conductor and a covered shield surrounding the insulating layer, said covered shield being separated into two portions, one of said two portions being a longer portion of first predetermined length, and another of said two portions being a shorter portion of a second predetermined length, which is shorter than said first predetermined length so that a charging current to an electrostatic capacitor existing between the core conductor and the covered shield, which is produced by the current flowing through the core conductor, is divided into two portions corresponding to said two portions of said covered shield, one charging current portion corresponding to said shorter portion of said covered shield being negligible as compared to the other charging current portion corresponding to said longer portion of said covered shield;

an insulating member for electrically insulating said two separated portions of said covered shield at the separating position thereof; and

a magnetic sensor located outside of said high voltage cable, at a position which is sensitive to a magnetic field produced by the current flowing through the core conductor and the current flowing through said shorter portion of said covered shield.

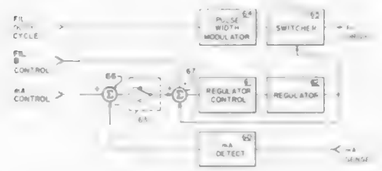
4,768,216
DYNAMIC CALIBRATION FOR AN X-RAY MACHINE
James R. Harvey, Kearns; Karen M. Biesel, Sandy, and Richard L. Anderton, West Jordan, all of Utah, assignors to Diasonics Inc., San Francisco, Calif.
Filed Aug. 7, 1987, Ser. No. 83,626
Int. Cl.[4] H05G *1/34*
U.S. Cl. 378—110 7 Claims

1. In a computer controlled X-ray machine which has a X-ray tube for emitting X-rays and a processor for determining operating parameters, a circuit for providing dynamic calibration of a X-ray tube parameter, comprising:

a sensor coupled to measure said X-ray tube parameter;

a pulse width modulator coupled to generate a drive signal, which is used to control said X-ray tube parameter, wherein said pulse width modulator determines duration of said drive signal;

an error amplifier coupled to receive a selected control signal from said processor and a sense signal from said sensor in generating an error signal which is proportional to the difference of said selected control signal and said sense signal;



said error amplifier also coupled to said pulse width modulator such that said error signal controls said duration of said drive signal;

whereby continuous dynamic adjustment of said parameter is achieved.

4,768,217
PUBLIC TELEPHONE SET
Hiroyuki Asano; Yoshiaki Takeda, and Osamu Kai, all of Tokyo, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Jun. 5, 1987, Ser. No. 58,345
Claims priority, application Japan, Jun. 16, 1986, 61-138240
Int. Cl.[4] H04M *1/24*
U.S. Cl. 379—32 8 Claims



1. A public telephone set comprising a speech circuit including transmitting and receiving amplifiers for forming a channel loop and two pairs of conductors for respectively connecting a transmitter and a receiver in a handset to said transmitting and receiving amplifiers in said speech circuit, comprising:

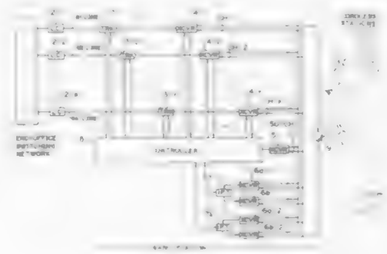
an energization circuit applied with a power source voltage;

switching means for switching at least one of said transmitter and said receiver through said conductors to said speech circuit or said energization circuit;

monitoring means for monitoring a connecting state of said handset by presence/absence of a current supplied to said energization circuit or a voltage appearing in said energization circuit when said switching means switches at least one of said transmitter and said receiver to said energization circuit; and

control means for controlling said switching means and for performing a predetermined self diagnosis of a test portion including said monitoring means in the off hook operation.

4,768,218
RADIO KEY TELEPHONE SYSTEM HAVING A COMMON SIGNALING CHANNEL
Takeo Yorita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Apr. 27, 1987, Ser. No. 43,060
Claims priority, application Japan, Apr. 26, 1986, 61-95894; May 27, 1986, 61-120226; Aug. 25, 1986, 61-198707
Int. Cl.[4] H04M *11/00*
U.S. Cl. 379—61 5 Claims



1. A radio key telephone system connected through N subscriber lines to a telecommunication switching system, comprising:

M terminal stations each comprising multiple access radio transceiver means capable of switching to one of (N+1) radio channels including N two-way communication channels and a two-way signaling channel, display means for indicating busy-idle states of said subscriber lines and control means for controlling said display means and transmitting a first call-request signal over said signaling channel and a first call-clearing signal over said communication channels, where M is greater than N;

base-station radio transceiver means for establishing said N two-way communication channels from said N subscriber lines to said terminal stations and establishing said two-way signaling channel to said terminal stations; and

base-station control means associated with said N subscriber lines for receiving a second call-request signal and a second call-clearing signal from said switching system and associated with said base-station radio transceiver means for receiving said first call-request signal and said first call-clearing signal from said terminal stations, interacting with the control means of said terminal stations through said signaling channel in response to said first and second call-request signals to cause the display means of said terminal stations to indicate a busy state of one of said subscriber lines and cause the multiple access radio transceiver means of one of said terminal stations to switch to the communication channel which is associated with said one subscriber line and interacting with the control means of said terminal stations through said one communication channel in response to said first and second call-clearing signals to cause said multiple access radio transceiver means of said one terminal station to switch to said signaling channel and cause said display means of said terminal stations to indicate an idle state of said one subscriber line.

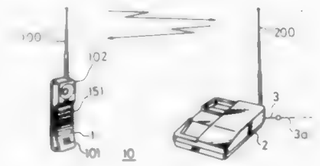
VOL 1093 ISS 5 AG 30 1988 UMI

4,768,219

CORDLESS TELEPHONE

Masato Yamagata, and Kazushi Tabe, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1987, Ser. No. 71,204
Claims priority, application Japan, Jul. 18, 1986, 61-169212
Int. Cl.[4] H04Q 7/04
U.S. Cl. 379—61 8 Claims



1. A cordless telephone having a base unit connectable to a telephone network line for receiving and transmitting signals therethrough and a handset unit selectively separable from said base unit, said base and handset units including respective means for the transmission and reception of signals therebetween over any one of a plurality of communication channels, said cordless telephone further comprising:

channel scanning means for scanning said plurality of communication channels, said channel scanning means being operative in a standby mode of said cordless telephone for detecting the ones of said communication channels on which there is interference;

memory means for recording the detected ones of said communication channels on which there is interference;

said channel scanning means further being operative in a talk mode at one of said base and handset units to scan the communication channels other than said detected ones of the communication channels recorded in said memory means to detect a vacant one of said communication channels; and

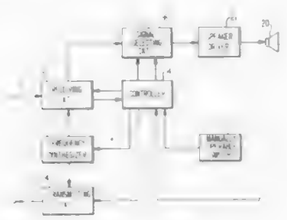
control means for establishing communication between said handset unit and said base unit in said talk mode of said cordless telephone over the detected vacant communication channel.

4,768,220

CHANNEL SELECTION IN A MULTICHANNEL ACCESS RADIO COMMUNICATION SYSTEM WITHOUT OCCURRENCE OF INTERFERENCE

Shigeo Yoshihara, and Hideo Miyashita, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 30, 1986, Ser. No. 868,453
Claims priority, application Japan, May 30, 1985, 60-117613
Int. Cl.[4] H04Q 7/04
U.S. Cl. 379—63 6 Claims



1. In a station of a multichannel access radio communication system, said system comprising said station, a plurality of other stations, a control channel and a predetermined number of communication channels, each of said communication channels having respective channel codes, said station and said other stations each comprising a personal radio transceiver, a channel selecting device comprising:

channel selecting means for selecting one of said communication channels as a selected channel on starting communication with a specific station of said other stations of said system, said communication being carried out between said station and said specific station by use of said selected channel in a simplex transmission mode;

detecting means for coupling to said control channel and for detecting the channel codes of busy channels which are rendered busy among said communication channels by at least two of said other stations, said channel codes of busy channels being transmitted through said control channel, said detecting means being operable while the first-mentioned station is in an idle state; and

storing means coupled to said detecting means for storing the channel codes of said busy channels;

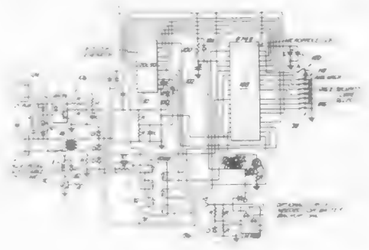
said channel selecting means being coupled to said storing means to select said selected channel from idle channels which are other than said busy channels.

4,768,221

REMOTE REPROGRAMMING SYSTEM FOR TELEPHONE CALL FORWARDING SERVICE

Dan Green, Cranford, N.J., and Sander Goldner, Brooklyn, N.Y., assignors to Planum Technology Corp., Hillside, N.J.

Filed Oct. 20, 1986, Ser. No. 920,773
Int. Cl.[4] H04M 1/65, 3/54
U.S. Cl. 379—67 30 Claims



1. A device for remotely controlling call forwarding for a given telephone line, comprising:

detecting means for detecting an incoming call to the given telephone line;

a ring counter for counting the number of rings on said incoming call;

detector circuit means producing a first output responsive to receiving no more than a fixed number of rings and a second output responsive to receiving more than the fixed number of rings;

generating means responsive only to said first output for generating a call forwarding terminate code in response to an incoming call;

sensing means for detecting a second incoming call within a preselected time of the first incoming call;

storage means for storing a desired call forwarding telephone number; and

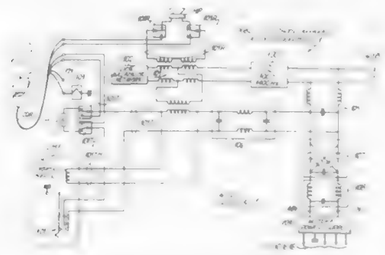
reprogramming means respectively responsive to said sensing means receiving a second incoming call and to said second output for generating a call forward initiate code and thereafter reprogramming call forwarding with said stored number.

4,768,222

CONTROL AND SURVEILLANCE SYSTEM FOR PREPAYMENT PUBLIC TELEPHONE APPARATUS

René Kalfon, 816 rue de la Haie, 76230 Bois Guillaume, France

PCT No. PCT/FR85/00331, § 371 Date Jul. 21, 1986, § 102(e) Date Jul. 21, 1986
PCT Filed Nov. 22, 1985, Ser. No. 893,291
Claims priority, application France, Nov. 22, 1984, 84 17807
Int. Cl.[4] H04M 1/57
U.S. Cl. 379—91 32 Claims



1. Control and surveillance system for a prepayment public telephone apparatus connected to a telephone central office via a telephone line, comprising:

a first equipment included in said apparatus and connected to said telephone line for transmitting signalling signals indicating particularly an energization of said apparatus, a hook-off, an insertion of a prepaid credit token having indicia representing a prepaid credit into said apparatus, a collection of a part of a prepaid credit on said prepaid credit token and apparatus operating anomalies, and receiving collection order signals carried on said telephone line and ordering a collection of a part of a prepaid credit on said prepaid credit token, and

a second equipment interconnected across said telephone line between said apparatus and said central office receiving and being responsive to said signalling signals and detecting signals transmitted from said central office to indicate (a) establishing, (b) breaking, and (c) interrupting phases of a telephone communication, as well as (d) transmitting said collection order signals on said telephone line, and (e) checking the operation of said apparatus and detecting signals,

said telephone line having between said first and second equipments a frequency transmission band wider than a conventional voice telephone frequency transmission band-width to transmit, without disturbing said telephone communication, said signalling and collection order signals by transmitting carrier frequencies higher than telephone frequencies in said conventional band.

4,768,223

PUBLIC TELEPHONE SET WITH INTERNAL CHARGE PROCESSING

Toshiharu Kinoshita; Shuji Kunii, and Yoshiki Sano, all of Kanagawa, Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan

Filed Mar. 6, 1986, Ser. No. 837,009
Claims priority, application Japan, Mar. 8, 1985, 60-44550
Int. Cl.[4] H01B 5/02
U.S. Cl. 379—143 15 Claims

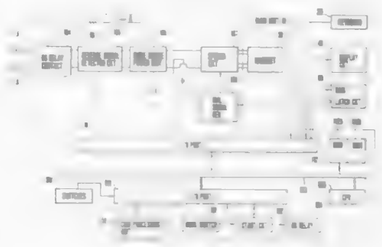
1. A public telephone set provided with dial means for dialing a telephone number to be called and initiating a charging process, the public telephone set comprising:

(a) discriminating means for monitoring the condition of a telephone line after a number has been dialed to discriminate a response of a called party.

(b) holding means for holding a predetermined number of digits of the dialed number output by the dial means, each of said digits represented by a digit code having a plurality of bits,

(c) first memory means in which dial control codes corresponding to said predetemrined number of digits of said dialed number are stored in said first memory means at addresses designated by said digit code,

(d) second memory means having addresses which are designated through the use of the dial control codes of said first memory means for storing charging information corresponding to said dial control codes,



(e) said first memory means being provided with a local call area and a toll call area which are respectively selected according to digit code data from said holding means,

(f) charging information determining means for determining charging time periods and amounts with reference to said first and second memory means, and

(g) charging operation control means activated by an output of said discriminating means to control the charging operation on the basis of a charging information from said charging information determination means.

4,768,224

SINGLE TELEPHONE LINE CALL FORWARDING DEVICE

Herbert H. Waldman, 1739 52nd St., Brooklyn, N.Y. 11204

Continuation-in-part of Ser. No. 724,065, Apr. 17, 1985, Pat. No. 4,670,900. This application Jun. 1, 1987, Ser. No. 56,457
Int. Cl.[4] H04M 3/54
U.S. Cl. 379—211 3 Claims



1. A single telephone line call forwarding device comprising

(i) a ring detector for detecting long and short ring signals,

(ii) connection means for connecting the ring detector to a phone line for which call forwarding service has been procured, the connection means having a switch for enabling seizure of that procured service phone line,

(iii) a recorder for storing information pertaining to the number to which calls are to be forwarded,

(iv) means for coupling the recorder to the procured service

VOL 1093 ISS 5 AG 30 1988 UMI

phone line for enabling the stored information to be changed over that phone line from a remote location,

(v) means for seizing the procured service phone line after detection by the ring detector of a short ring signal and thereafter causing the recorder to dial out the phone number to which calls are forwarded, and

(vi) means for detecting the presence of a busy signal and releasing the phone line upon receipt of a busy signal.

4,768,225

TELEPHONE STATION SET FOR TABLE WALL OPERATIONS

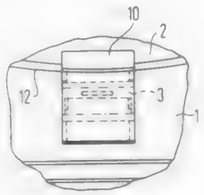
Franz Bloechl, and Juergen Ruschel, both of Bocholt, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 20, 1986, Ser. No. 865,237

Claims priority, application Fed. Rep. of Germany, May 21, 1985, 3518250

Int. Cl.⁴ H04M *1/02*

U.S. Cl. 379—435 **6 Claims**



1. A telephone set housing comprising:

a housing base defining an outer surface;

at least one handset cradle arranged on the outer surface of the housing base;

a filler body having a generally double U-shaped cross-section defining a projection, a base, a first free end and a second free end; and

at least one recess arranged on the outer surface adjacent to the handset cradle adapted to accept the first free end and the second free end, the recess and free ends cooperating to fix the filler body to the outer surface in a first position or a second position;

the projection of the filler body being engageable with an opening of a telephone handset while being in the first position.

4,768,226

LOCK FOR PUSHBUTTON PHONE

Tung-Chiang Hsieh, No. 6, Lane 210, Chung Cheng South Road, yung Kang Hsiang, Tainan Hsieh, Taiwan

Filed Mar. 31, 1987, Ser. No. 32,466

Int. Cl.⁴ H04M *1/66*

U.S. Cl. 379—445 **2 Claims**

1. A lock for a pushbutton phone comprising:

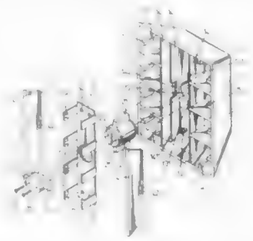
a case partitioned into a plurality of lattices adapted for receiving pushbuttons of the phone, a lattice being provided on each of two sides of the case, having a protuberance designed to set the case in a selected position when engaged with the pushbuttons, said case being provided at its center with an opening having two slots extending from upper and lower parts thereof, a middle portion of the case being separated from both side portions of the case by two partitions each having a guideway;

a cylinder disposed at the center of the case;

an actuating member, formed with two extended arms, rigidly mounted at the innermost end of the cylinder and rotatable with the cylinder;

two sliding plates, each having at an inner side four projections spaced apart by an equal distance, each of said sliding plates being separately mounted slidably in one of the corresponding guideways of the case and controlled by said actuating member; and

a confining member having vertical sides each of which has a plurality of resilient arms, each arm being provided with two teeth at a free end thereof, whereby when a correct key is inserted to rotate the cylinder, the actuating member mounted thereto will be forced to rotate therewith and hence the two arms of the actuating member will urge the



two sliding plates and the projections thereof to bear against the arms of the confining member and therefore enabling the teeth of the arms of the confining member to lock up the pushbuttons, and when the correct key is inserted to rotate the cylinder back to an original position, the projections of the sliding plates will be separated from the arms of the confining member which will then go back to their original dispositions to release the pushbuttons.

4,768,227

COIL OPERATED TELEPHONE

Lee V. Dively, and Jack M. Grubbs, both of Tulsa, Okla., assignors to Seiscor Technologies, Inc., Tulsa, Okla.

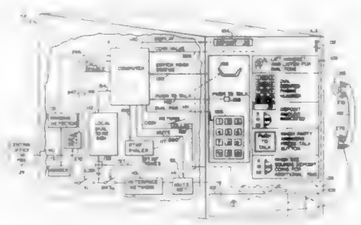
Division of Ser. No. 714,771, Mar. 22, 1985, Pat. No. 4,698,840.

This application Jun. 29, 1987, Ser. No. 67,656

The portion of the term of this patent subsequent to Oct. 6, 2004, has been disclaimed.

Int. Cl.⁴ H04M *17/06*

U.S. Cl. 379—112 **6 Claims**



1. A pay telephone comprising:

a handset having a speaker;

a switchhook for receiving a handset and for enabling removal of the handset from the switchhook;

a dial tone generator disposed within the pay telephone; and

means for coupling the dial tone generator to the speaker when the handset is removed from the switchhook.

4,768,228

DATA ACQUISITION DEVICE

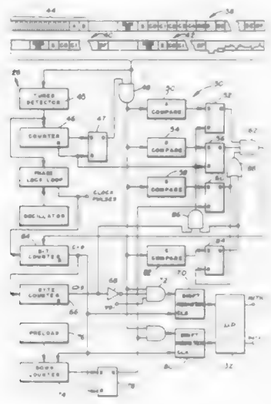
Charles B. Clupper, Cameron Park, and Robert J. Mathews, Fair Oaks, both of Calif., assignors to U.S. Computer Systems, Sacramento, Calif.

Continuation of Ser. No. 561,053, Dec. 13, 1983, abandoned.

This application Sep. 11, 1987, Ser. No. 96,343

Int. Cl.⁴ H04N *7/167, 7/04*

U.S. Cl. 380—20 **18 Claims**



16. A method of acquiring data for use in conjunction with a receiver which receives signals from a video transmitter that transmits frames of video signals without detectable horizontal and vertical synchronizing pulses and with a descrambler signal which is coded with information indicating the length of time that said descrambler signal precedes a predetermined point in said frame, the video transmitter further transmitting a plurality of successive first data patterns each first data pattern including a first synchronizing signal followed by a plurality of first data signals, the first patterns transmitted immediately following said variably coded descramble signal, the method comprising:

receiving said transmitted signals;

detecting the synchronizing signal;

detecting selectively at least one but less than the plurality of data signals at a predetermined interval "i" following the detection of the synchronizing signal, the interval "i" being less than the interval "I" between each succeeding synchronizing signal.

4,768,229

RESTRICTIVE ACCESS CONTROL SYSTEM

Lester F. Benjamin, Glenview; Gopalan Krishnamurthy, Hillside, and Jouke N. Rypkema, Lombard, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jul. 21, 1986, Ser. No. 887,311

Int. Cl.⁴ H04N *7/16*

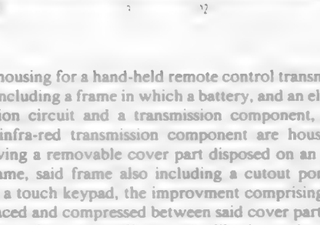
U.S. Cl. 380—20 **18 Claims**

1. In a satellite receiver having a dish-like movable antenna and including user-responsive selector means and a tuner wherein user commands to said selector means representing a plurality of site specific receiver operating parameters and selected channel number data are provided to said receiver and tuner for tuning said satellite receiver to a selected channel, a restrictive access control system for limiting signal receiver tuning to only authorized channels, said system comprising:

memory means for storing selected ones of said plurality of site specific receiver operating parameters and selected channel number data;

viewer responsive 3-state switch means characterized by a first state wherein all channels may be viewed, a second state wherein only authorized channels may be viewed, and a third state for designating authorized channels for viewing in said second state, said 3-state switch means including authorization means for preventing transition of said switch means to either said first state or said third state from said second state except when authorized by a user; and

controller means coupled to said selector means, said 3-state switch means, said memory means and to said receiver for providing said selected ones of said plurality of site specific receiver operating parameters and data representing a selected channel number to the receiver and tuner for tuning to a selected channel when said switch means is in



said first state, for providing said selected ones of said plurality of site specific receiver operating parameters and data representing an authorized channel number to said memory means for storage therein when said switch means is in said third state, and for reading from said memory means said selected ones of said plurality of site specific receiver operating parameters and authorized channel number data stored therein and for providing said selected ones of said plurality of site specific receiver operating parameters and authorized channel number data to said receiver and tuner in tuning said signal receiver to an authorized channel when said switch means is in said second state.

4,768,230

HOUSING FOR A HAND-HELD REMOTE CONTROL TRANSMITTER

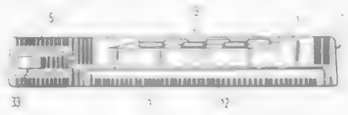
Hans-Joachim Viebrantz, Bad Neustadt/Salle, and Alfred Vogt, Salz, both of Fed. Rep. of Germany, assignors to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt/Saale, Fed. Rep. of Germany

Filed Apr. 9, 1986, Ser. No. 849,711

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1985, 3513817

Int. Cl.⁴ H04B *9/00*

U.S. Cl. 455—603 **16 Claims**



1. In a housing for a hand-held remote control transmitter, of the type including a frame in which a battery, and an electronic transmission circuit and a transmission component, particularly an infra-red transmission component are housed, said frame having a removable cover part disposed on an opening of the frame, said frame also including a cutout portion for receiving a touch keypad, the improvment comprising: gasket means placed and compressed between said cover part and the housing frame in a surrounding groove-like depression running

VOL
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around said frame for forming a water-tight seal therebetween, a surrounding sealing rim on said frame projecting inward into the housing frame on the periphery of the cutout portion and an elastic contact mat compressed against the sealing rim over the entire periphery of the sealing rim, an infra-red transparent disk placed on the housing frame in front of the transmission component covering a transmission opening in the frame and welded to the housing frame sealing said opening, and a peripheral collar, wedge-shaped in section, provided on the housing frame around the transmission opening, supporting and welded to said disk.

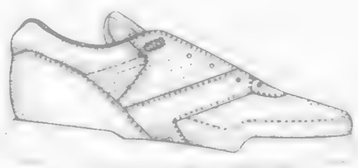
DESIGNS

AUGUST 30, 1988

297,380
TENNIS SHOE OR SIMILAR ARTICLE
Hillevi R. Schine, 626 S. Hudson Ave., Los Angeles, Calif. 90005
Filed Nov. 5, 1984, Ser. No. 668,088
The portion of the term of this patent subsequent to Jul. 5, 2002, has been disclaimed.
Term of patent 14 years
U.S. Cl. D2—309

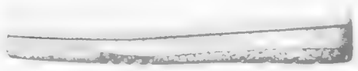


297,382
SHOE UPPER
Joan Swett, Lake Oswego, Oreg., assignor to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 16, 1988, Ser. No. 155,694
Term of patent 14 years
U.S. Cl. D2—314



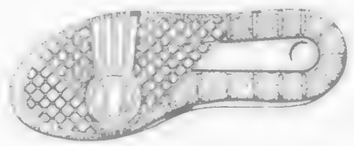


297,383
SHOE SOLE
Miza Mourad, Portland, and Marni L. Gerber, West Linn, both of Oreg., assignors to AVIA Group International, Inc., Portland, Oreg.
Filed Feb. 16, 1988, Ser. No. 155,688
Term of patent 14 years
U.S. Cl. D2—320



297,381
CUSHIONING PIECE FOR SHOE MIDSOLE
Yasunori Sugiyama, Kobe, Japan, assignor to ASICS Corporation, Japan
Filed Mar. 20, 1986, Ser. No. 845,402
Claims priority, application Japan, Dec. 25, 1985, 60-54065
Term of patent 14 years
U.S. Cl. D2—314

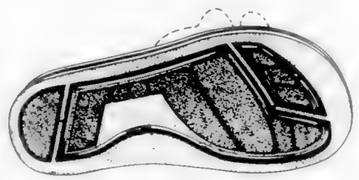




VOL 1093 ISS 5 AUG 30 1988 UMI

297,384
OUTSOLE FOR SANDAL OR SIMILAR FOOTWEAR
David E. Miller, Carver, Mass., assignor to Reebok International Ltd., Canton, Mass.
Filed Jul. 16, 1987, Ser. No. 74,473
Term of patent 14 years
U.S. Cl. D2—321





297,385
CASSETTE HOLDER
Troy B. Bennett, 2607 Spruce St., Port Huron, Mich. 48060
Filed Jul. 25, 1985, Ser. No. 758,873
Term of patent 14 years
U.S. Cl. D3—35

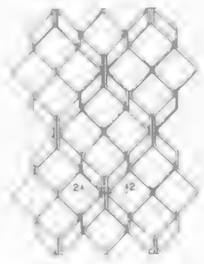




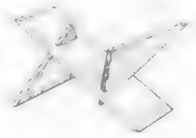
297,386
CARRY BAG FOR A PORTABLE COMPUTER
Randall W. Martin, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 17, 1984, Ser. No. 570,468
Term of patent 14 years
U.S. Cl. D3—71



297,387
PANEL
Gregory J. Barr, Para Hills, Australia, assignor to McIlwraith-Davey Pty. Ltd., Victoria, Australia
Filed Aug. 23, 1985, Ser. No. 768,962
Claims priority, application Australia, Jun. 14, 1984, 7805/84
Term of patent 14 years
U.S. Cl. D5—1



297,388
FURNITURE SUPPORT BASE OR SIMILAR ARTICLE
Scott Glendinning, 5551 Doyle St., #2, Emeryville, Calif. 94608
Filed Apr. 7, 1986, Ser. No. 850,401
Term of patent 14 years
U.S. Cl. D6—495



297,389
TANKARD
Lonny A. Demaree, 972 DePorres Ave., Lexington, Ky. 40505
Filed Jan. 3, 1986, Ser. No. 815,929
Term of patent 14 years
U.S. Cl. D7—5

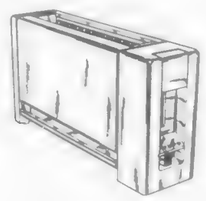


297,390
SPATULA ATTACHMENT FOR ELECTRIC KNIFE DRIVE UNIT
Stephan M. Fehrmann, 180 Elizabeth Dr., Marblehead, Ohio 43440
Filed Feb. 7, 1986, Ser. No. 827,263
Term of patent 14 years
U.S. Cl. D7—102

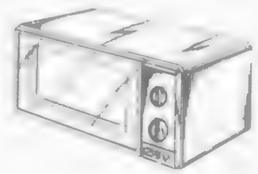




297,391
TOASTER
Pierre Ansel, Vagney, France, assignor to SEB, Selongey, France
Filed Dec. 31, 1985, Ser. No. 815,032
Claims priority, application France, Jul. 3, 1985, 85 3167
Term of patent 14 years
U.S. Cl. D7—330



297,392
MICROWAVE OVEN
Kyung H. Han, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Dec. 24, 1985, Ser. No. 813,138
Claims priority, application Rep. of Korea, Jun. 24, 1985, 85-4764
Term of patent 14 years
U.S. Cl. D7—351



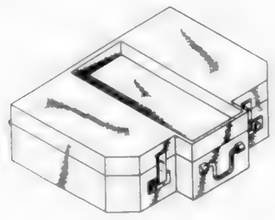


297,393
OVEN PAN OR THE LIKE
Augusto A. Picozza, Johnston, R.I., and Robert H. C. M. Deenen, Hekelgem, Belgium, assignors to Dart Industries Inc., Deerfield, Ill.
Filed Oct. 3, 1985, Ser. No. 783,975
Term of patent 14 years
U.S. Cl. D7—359

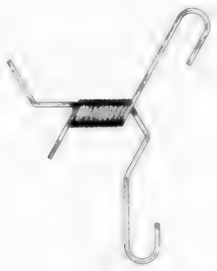


VOL 1093 ISS 5 AG 30 1988 UMI

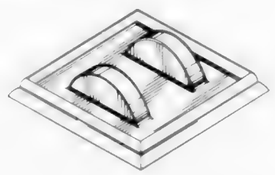
297,394
PORTABLE COOKING KIT
Joan T. Nelson, 1751 E. Reno, #127, Las Vegas, Nev. 89119
Filed Nov. 27, 1985, Ser. No. 806,924
Term of patent 14 years
U.S. Cl. D7—362



297,395
BROKEN KEY EXTRACTOR
Jeff W. Schultz, R.R. 1, Box 65, Atkins, Iowa 52206
Filed Apr. 22, 1985, Ser. No. 725,781
Term of patent 14 years
U.S. Cl. D8—14



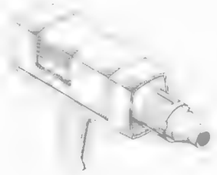
297,396
PAINT SHIELD FOR ELECTRICAL SWITCH PLATE
Willard L. Schwalbe, Anaheim, Calif., assignor to Variety International, Inc., Irvine, Calif.
Filed Jan. 27, 1986, Ser. No. 823,162
Term of patent 14 years
U.S. Cl. D8—14



297,397
HEAT GUN
David Pagani, Newport Beach, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Dec. 24, 1985, Ser. No. 813,265
Term of patent 14 years
U.S. Cl. D8—29.1



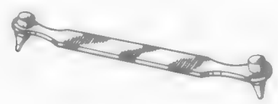
297,398
HEAT GUN
David Pagani, Newport Beach, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Dec. 24, 1985, Ser. No. 813,266
Term of patent 14 years
U.S. Cl. D8—29.1



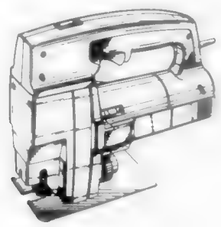
297,399
CABLE BANDING TOOL
Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.
Filed Dec. 20, 1985, Ser. No. 811,927
Claims priority, application Japan, Jun. 20, 1985, 60-25858
Term of patent 14 years
U.S. Cl. D8—44



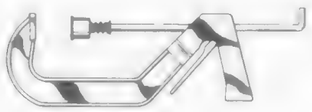
297,400
NAIL SET
Harry C. Oakes, Perry, N.Y., assignor to Harry C. Oakes, Inc., Perry, N.Y.
Filed Oct. 8, 1985, Ser. No. 785,474
Term of patent 14 years
U.S. Cl. D8—47



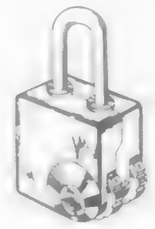
297,401
BAYONET SAW
Earl R. Clowers, Jackson, Tenn., assignor to Porter-Cable Corporation, Jackson, Tenn.
Filed Jan. 10, 1985, Ser. No. 742,987
Term of patent 14 years
U.S. Cl. D8—64



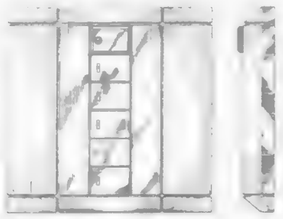
297,402
"C" CLAMP
Richard D. Williams, 28 S. 13th St., Vincennes, Ind. 47591
Filed Apr. 22, 1985, Ser. No. 725,994
Term of patent 14 years
U.S. Cl. D8—73



297,403
COMBINATION OPERATED PADLOCK
Ling Cheng-Kuan, No. 7, 3A, Lane 464, Tung-Hwa S. Road, Taipei, Taiwan
Filed May 21, 1985, Ser. No. 736,348
Term of patent 14 years
U.S. Cl. D8—334

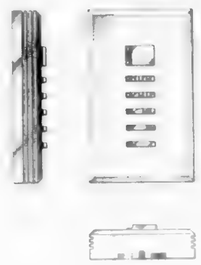


297,404
WALL MOUNTED LIGHTING CONTROLLER FACE PLATE
Edward M. Yandek, Cleveland Heights, and John A. Vlah, Middlefield, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed May 5, 1986, Ser. No. 859,764
Term of patent 14 years
U.S. Cl. D8—353

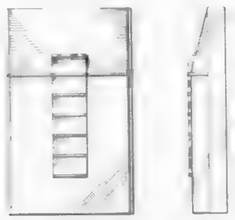


VOL 1093 ISS 5 AG 30 1988 UMI

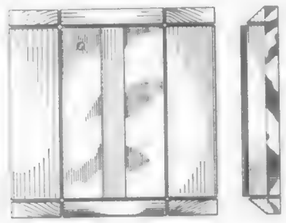
297,405
WALL MOUNTED FACE PLATE FOR SELECTABLE LEVEL LIGHTING CONTROLLER
Edward M. Yandek, Cleveland Heights, and John A. Vlah, Middlefield, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1986, Ser. No. 891,835
Term of patent 14 years
U.S. Cl. D8—353



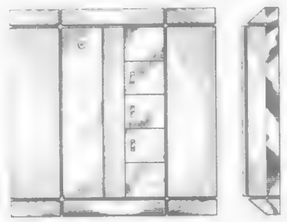
297,406
WALL MOUNTED FACE PLATE FOR SELECTABLE LEVEL LIGHTING CONTROLLER
Edward M. Yandek, Cleveland Heights, and John A. Vlah, Middlefield, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1986, Ser. No. 891,842
Term of patent 14 years
U.S. Cl. D8—353



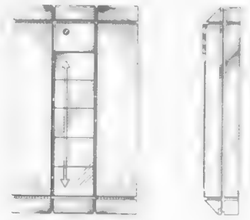
297,407
WALL MOUNTED FACE PLATE FOR LIGHTING CONTROLLER
Edward M. Yandek, Cleveland Heights, and John A. Vlah, Middlefield, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1986, Ser. No. 891,843
Term of patent 14 years
U.S. Cl. D8—353



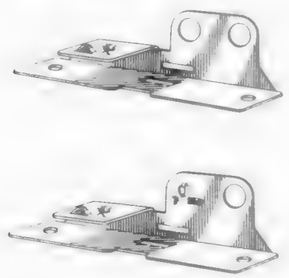
297,408
WALL MOUNTED FACE PLATE FOR SELECTABLE LEVEL LIGHTING CONTROLLER
Edward M. Yandek, Cleveland Heights, and John A. Vlah, Middlefield, both of Ohio, assignors to General Electric Company, Schenectady, N.J.
Filed Aug. 1, 1986, Ser. No. 891,916
Term of patent 14 years
U.S. Cl. D8—353



297,409
WALL MOUNTED FACE PLATE FOR SELECTABLE LEVEL LIGHTING CONTROLLER
Edward M. Yandek, Cleveland Heights, and John A. Vlah, Middlefield, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1986, Ser. No. 891,917
Term of patent 14 years
U.S. Cl. D81—353



297,410
MOUNTING GROUND BRACKET
Isaac Sachs, 1240 Ridgewood Dr., Chomedey, Laval, Quebec, Canada (H7W 1L3)
Filed Oct. 11, 1985, Ser. No. 786,485
Term of patent 14 years
U.S. Cl. D8—356



297,411
VEHICLE BUMPER BRACKET
Norman Angel, 2321 Carolton Rd., Maitland, Fla. 32751
Filed Aug. 15, 1985, Ser. No. 765,651
Term of patent 14 years
U.S. Cl. D8—373

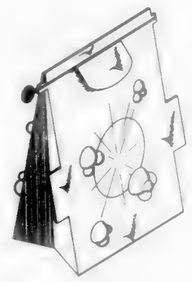


297,412
BARBED WIRE HOLDER, OR SIMILAR ARTICLE
John Allen, 5897 Avenue Juan Bautista, Riverside, Calif. 92509
Filed Feb. 2, 1987, Ser. No. 10,153
Term of patent 14 years
U.S. Cl. D8—373

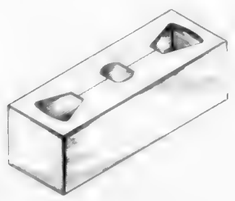


VOL 1093 ISS 5 AG 30 1988 UMI

297,413
MICRO-WAVE POPCORN BAG
Walter R. Cantrell, Sr., 275 Moss Creek Dr., Hilton Head, S.C. 29928
Filed Nov. 27, 1985, Ser. No. 806,923
Term of patent 14 years
U.S. Cl. D9—305



297,414
PACKAGING CONTAINER
Paul G. Feuerstein, Prospect Park, Pa., assignor to Scott Paper Company, Philadelphia, Pa.
Filed Aug. 13, 1985, Ser. No. 765,291
Term of patent 14 years
U.S. Cl. D9—416



297,415
PLASTIC BAG DISPENSER BOX
James R. Gavin, Pittsford, N.Y., and Nicholas Phillips, Carol Stream, Ill., assignors to Mobil Oil Corporation, New York, N.Y.
Filed Sep. 20, 1985, Ser. No. 777,995
Term of patent 14 years
U.S. Cl. D9—416



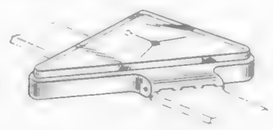
297,416
WRIST WATCH
Hiroshi Saito, Shiojiri, Japan, assignor to Shiojiri Kogyo Kabushiki Kaisha, Nagano, Japan
Filed Nov. 14, 1985, Ser. No. 805,065
Claims priority, application Japan, May 14, 1985, 60-19881
Term of patent 14 years
U.S. Cl. D10—32



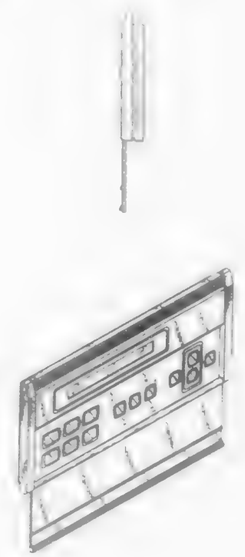
297,417
BRACELET WATCH
Toshiaki Asano, Tokyo; Kenji Tanikawa, and Chikara Shiina, both of Sawa, all of Japan, assignors to Seiko Epson Corporation, Nagano, Japan
Continuation-in-part of Ser. No. 681,479, Dec. 14, 1984, abandoned. This application Dec. 11, 1985, Ser. No. 807,637
Claims priority, application Japan, Jan. 22, 1984, 59-25769
Term of patent 14 years
U.S. Cl. D10—32



297,418
WRISTWATCH
Martin Thalgott, 2160 Leavenworth, #302, San Francisco, Calif. 94133
Filed Jan. 13, 1986, Ser. No. 818,493
Term of patent 14 years
U.S. Cl. D10—39



297,419
CONTROLLER FOR AN ENERGY MANAGEMENT SYSTEM
Robert W. Bonneau, Mound; Robert C. Knutson, Minnetonka, and Ralph E. Pasquarette, Jordan, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 10, 1985, Ser. No. 786,014
Term of patent 14 years
U.S. Cl. D10—50

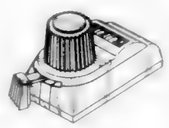


297,420
BATTERY TESTER
Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.
Filed Sep. 23, 1985, Ser. No. 777,881
The portion of the term of this patent subsequent to Aug. 16, 1997, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—77

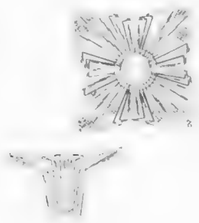


VOL 1093 ISS 5 AG 30 1988 UMI

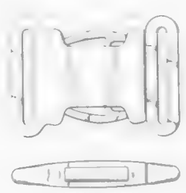
297,421
DIGITAL COUNTER FOR POTENTIOMETER
Akira Sakai, Fukuoka, Japan, assignor to Tokyo Metal Co., Ltd., Tokyo, Japan
Filed Oct. 11, 1985, Ser. No. 786,506
Term of patent 14 years
U.S. Cl. D10—97



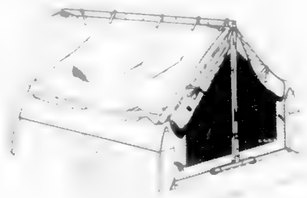
297,422
FLOWER POT COVER
Donald E. Weder; Erwin H. Weder, both of Highland, and Robert C. Abrams, Edwardsville, all of Ill., assignors to Highland Supply Corporation, Highland, Ill.
Continuation-in-part of Ser. No. 613,053, May 22, 1984, Pat. No. Des. 293,224. This application Jan. 12, 1987, Ser. No. 2,819
Term of patent 14 years
U.S. Cl. D11—164



297,423
BUCKLE OR THE LIKE
Alan Kong, Yokohama, Japan, assignor to Nifco Inc., Yokohama, Japan
Filed Dec. 10, 1985, Ser. No. 807,336
Claims priority, application Japan, Jun. 18, 1985, 60-25451
Term of patent 14 years
U.S. Cl. D11—216



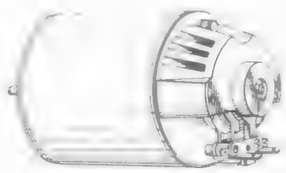
297,424
PORTABLE TRUCK TENT
Robert L. Norris, III, 4719 N. Lookout, Little Rock, Ark. 72205
Filed Jan. 11, 1985, Ser. No. 690,728
Term of patent 14 years
U.S. Cl. D12—156



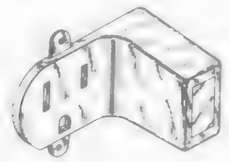
297,425
NON-PNEUMATIC WHEEL OR SIMILAR ARTICLE
Edward G. Markow, Oakdale, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.
Filed Aug. 29, 1985, Ser. No. 770,757
Term of patent 14 years
U.S. Cl. D12—211



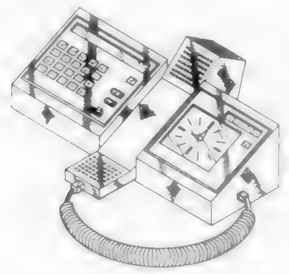
297,426
ELECTRIC MOTOR
Takaichi Mabuchi, Matsudo, Japan, assignor to Mabuchi Motor Co., Ltd., Japan
Filed May 17, 1985, Ser. No. 735,336
Term of patent 14 years
U.S. Cl. D13—1



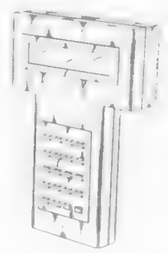
297,427
ELECTRICAL RECEPTACLE
Richard H. Johnson, 3401 White Diamond, Prior Lake, Minn. 55372
Filed Jan. 21, 1985, Ser. No. 747,264
Term of patent 14 years
U.S. Cl. D13—30



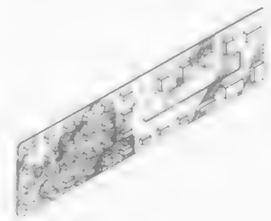
297,428
COMBINATION TELEPHONE SET AND CLOCK
Michael A. McElroy, 5313 Lee Ave., Chattanooga, Tenn. 37410
Filed Oct. 14, 1986, Ser. No. 918,796
Term of patent 14 years
U.S. Cl. D14—72



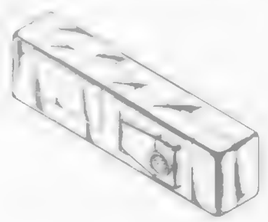
297,429
HAND HELD DATA ENTRY TERMINAL
Gilbert Pedinielli, Borron, and Daniel Richelet, St. Barnabe, both of France, assignors to International Business Machines Corp., Armonk, N.Y.
Filed Nov. 4, 1985, Ser. No. 803,766
Claims priority, application European Pat. Off., May 10, 1985, 852191
Term of patent 14 years
U.S. Cl. D14—100



297,430
FRONT OF AN INSTRUMENT PANEL FOR AN ELECTRONIC BAR CODE READER
Michael S. Beard, Pineville, N.C.; James M. DeArras, Richmond, Va.; Allen M. Grayson, Charlotte, N.C.; Vernon L. Stant, Richmond, Va., and Frederick M. Weaver, Charlotte, N.C., assignors to Hand Held Products, Charlotte, N.C.
Continuation of Ser. No. 817,908, Jan. 10, 1986, abandoned. This application Jun. 27, 1986, Ser. No. 879,911
Term of patent 14 years
U.S. Cl. D14—115

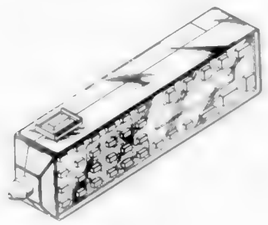


297,431
TOP, BOTTOM, BACK, AND ENDS OF A HOUSING WITH A CARRYING CLIP FOR AN ELECTRONIC BAR CODE READER
Michael S. Beard, Pineville, N.C.; James M. DeArras, Richmond, Va.; Allen M. Grayson, Charlotte, N.C.; Vernon L. Stant, Richmond, Va., and Frederick M. Weaver, Charlotte, N.C., assignors to Hand Held Products, Charlotte, N.C.
Continuation of Ser. No. 817,909, Jan. 10, 1986, abandoned. This application Jun. 27, 1986, Ser. No. 879,792
Term of patent 14 years
U.S. Cl. D14—116



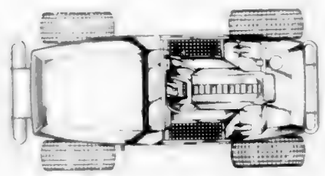
VOL 1093 ISS 5 AG 30 1988 UMI

297,432
ELECTRONIC BAR CODE READER
Vernon L. Stant, Richmond, Va.; Michael S. Beard, Pineville, N.C.; James M. DeArras, Richmond, Va.; Allen M. Grayson, and Frederick M. Weaver, both of Charlotte, N.C., assignors to Hand Held Products, Charlotte, N.C.
Continuation of Ser. No. 817,910, Jan. 10, 1986, abandoned. This application Jun. 27, 1986, Ser. No. 879,793
Term of patent 14 years
U.S. Cl. D14—116

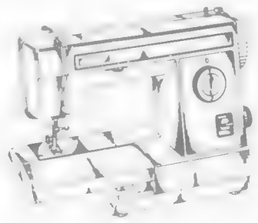


297,433
TRACTOR
Shigeaki Okuyama, Kawachinagano; Norimi Nakamura, Sakai; Osami Fujiwara, Kishiwada; Kunisuke Nakamura, Sakai, and Genichi Funabashi, Sennan, all of Japan, assignors to Kubota, Limited, Osaka, Japan
Filed Sep. 4, 1985, Ser. No. 772,529
Term of patent 14 years
U.S. Cl. D15—23

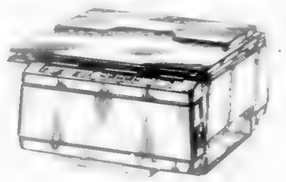




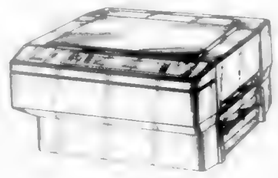
297,434
SEWING MACHINE
Yoshihide Yoneda, Osaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Japan
Division of Ser. No. 700,662, Feb. 11, 1985. This application Mar. 27, 1987, Ser. No. 30,995
Claims priority, application Japan, Sep. 28, 1984, 59-040299; Sep. 28, 1984, 59-040300
Term of patent 14 years
U.S. Cl. D15—69



297,435
ELECTRONIC COPYING MACHINE
Kunio Hara, Chiba, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 9, 1985, Ser. No. 806,411
Claims priority, application Japan, Jun. 10, 1985, 60-24010
Term of patent 14 years
U.S. Cl. D16—31



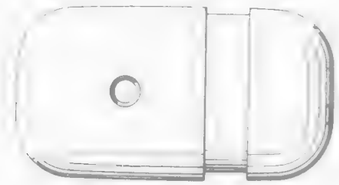
297,436
ELECTRONIC COPYING MACHINE
Tooru Okuyama, Isehara, and Kunio Hara, Chiba, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Dec. 9, 1985, Ser. No. 806,412
Claims priority, application Japan, Jun. 11, 1985, 60-24180
Term of patent 14 years
U.S. Cl. D16—31



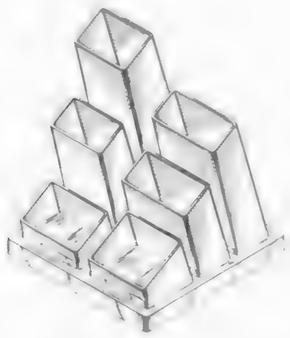
297,437
MATHEMATICS TEACHING AID
Vernon J. Mortensen, Coeur d'Alene, Id., assignor to Mortensen Educational Products, Inc., Hayden Lake, Id.
Filed Aug. 8, 1985, Ser. No. 763,671
Term of patent 14 years
U.S. Cl. D19—59



297,438
PENCIL SHARPENER
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Feb. 24, 1986, Ser. No. 834,879
Term of patent 14 years
U.S. Cl. D19—73



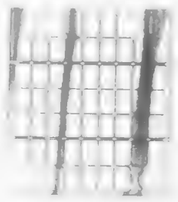
297,439
DESK TOP ORGANIZER
Donald B. Rabig, Elizabeth, N.J., assignor to Sterling Plastics Co., Mountainside, N.J.
Filed Oct. 18, 1985, Ser. No. 788,938
Term of patent 14 years
U.S. Cl. D19—85



297,440
SUN TAN LOTION DISPENSING KIOSK
Charles C. King, III, Germantown, Tenn., assignor to K-Sun Company, Inc., Memphis, Tenn.
Filed Nov. 4, 1985, Ser. No. 794,428
Term of patent 14 years
U.S. Cl. D20—4

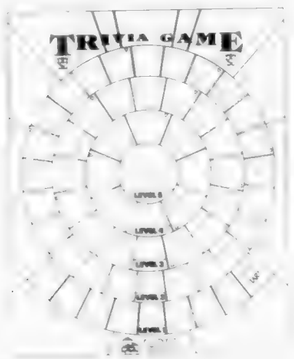


297,441
GAME BOARD
Jay Smith, III, Brentwood, and Marcus L. Landsberg, Venice, both of Calif., assignors to International Games, Joliet, Ill.
Filed Oct. 21, 1985, Ser. No. 789,705
Term of patent 14 years
U.S. Cl. D21—15



VOL 1093 ISS 5 AG 30 1988 UMI

297,442
GAME BOARD
Michael G. Kuzma, 30965 Pennsylvania, Romulus, Mich. 48174
Filed Apr. 8, 1985, Ser. No. 720,523
Term of patent 14 years
U.S. Cl. D21—35



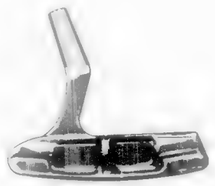
297,443
DOLL
Carolyn L. Tebeau, 29001 Norris Rd., Space 8, Bozeman, Mont. 59715
Filed Nov. 22, 1985, Ser. No. 806,224
Term of patent 14 years
U.S. Cl. D21—166



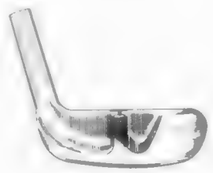
297,444
GOLF PUTTER HEAD
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Sep. 3, 1985, Ser. No. 771,826
Term of patent 14 years
U.S. Cl. D21—219



297,445
GOLF PUTTER HEAD
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Sep. 3, 1985, Ser. No. 771,831
Term of patent 14 years
U.S. Cl. D21—219



297,446
GOLF PUTTER HEAD
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Sep. 3, 1985, Ser. No. 771,832
Term of patent 14 years
U.S. Cl. D21—219



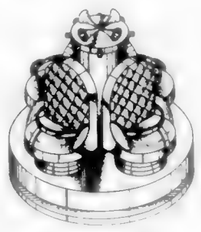
297,447
GOLF PUTTER HEAD
William B. Shearer, 2905 W. Main St., Muncie, Ind. 47305
Filed Sep. 3, 1985, Ser. No. 771,833
Term of patent 14 years
U.S. Cl. D21—219



297,448
SET OF GOLF CLUB HEAD COVERS
Willard B. Thawley, and Margaret C. Thawley, both of 5770 Winfield Blvd., No. 2, San Jose, Calif. 95123
Filed Nov. 12, 1985, Ser. No. 805,037
Term of patent 14 years
U.S. Cl. D21—221



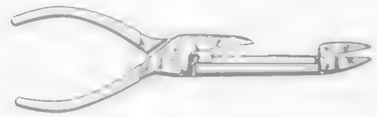
297,449
CARROUSEL AMUSEMENT DEVICE
Manuel P. Vigil, 4746 W. 5215 South Ave., Kearns, Utah 84118
Filed Aug. 30, 1985, Ser. No. 771,108
Term of patent 14 years
U.S. Cl. D21—249



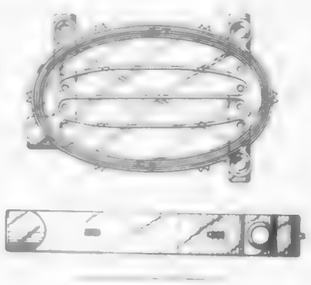
297,450
FOREND SUPPORT FOR HAND GUN
Samuel E. Florida, 1312 Porter St., Conway, Pa. 15027
Filed Sep. 13, 1985, Ser. No. 775,603
Term of patent 14 years
U.S. Cl. D22—108



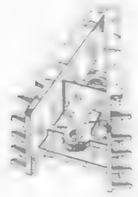
297,451
MULTI-PURPOSE FISHERMAN'S TOOL
Gary B. Ader, Spirit Lake, Iowa, assignor to Berkley, Inc., Spirit Lake, Iowa
Filed Jul. 24, 1985, Ser. No. 758,660
Term of patent 14 years
U.S. Cl. D22—150



297,452
FILTER SUPPORT PLATE
Knud V. Larsen, Maribo, Denmark, assignor to De Danske Sukkerfabrikker, Copenhagen, Denmark
Filed Jul. 17, 1986, Ser. No. 886,435
Term of patent 14 years
U.S. Cl. D23—209



297,453
DRIVE SPOON FOR A REVERSIBLE IMPULSE SPRINKLER
Larry P. Meyer, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.
Filed Apr. 23, 1985, Ser. No. 726,383
Term of patent 14 years
U.S. Cl. D23—214



VOL 1093 ISS 5 AG 30 1988 UMI

297,454
BATHTUB SHOWER CURTAIN LEAK ARRESTOR
G. Robert Walton, 5866 S. 129 West, Salt Lake City, Utah 84107
Filed Mar. 25, 1986, Ser. No. 847,034
Term of patent 14 years
U.S. Cl. D23—307



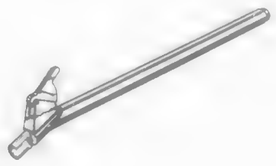
297,455
HOUSING FOR A COMPUTER FAN
Adolph E. Goldfarb, Westlake Village; Stephen C. Beck, Berkeley; William H. Spragens, El Cerrito, and Ricky D. Huntington, Canoga Park, all of Calif., assignors to Beck-Tech, Incorporated, Berkeley, Calif.
Filed Feb. 18, 1986, Ser. No. 833,788
Term of patent 14 years
U.S. Cl. D23—370



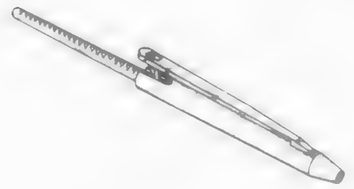
297,456
CEILING FAN
Richard A. Pearce, Memphis, Tenn., assignor to Hunter-Melnor, Inc., Memphis, Tenn.
Filed Jul. 8, 1986, Ser. No. 883,488
Term of patent 14 years
U.S. Cl. D23—385

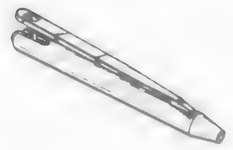


297,457
DIRECT DELIVERY UNIT FOR APPLICATION OF DENTAL MATERIALS OR THE LIKE
Robert D. Holewinski, Lakehurst; Leslie Hamilton, Trenton; William J. Blatherwick, Hamilton Square, all of N.J., and Thomas E. Wells, Sr., Richboro, Pa., assignors to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.
Filed Feb. 10, 1986, Ser. No. 827,685
Term of patent 14 years
U.S. Cl. D24—10

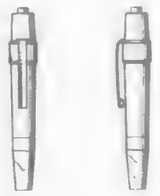


297,458
RATCHET SYRINGE FOR COMPOSITE DENTAL MATERIALS
Robert D. Holewinski, Lakehurst, N.J., assignor to Johnson & Johnson Consumer Products, Inc., New Brunswick, N.J.
Filed May 15, 1986, Ser. No. 863,553
Term of patent 14 years
U.S. Cl. D24—14

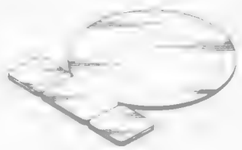




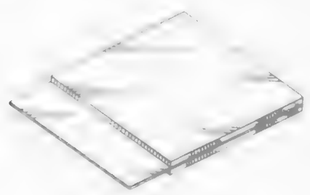
297,459
LANCET
Robert Heiland, Goshen; Mohammad Kheiri, Elkhart; Cynthia Postma, Elkhart, and Robert Terry, Elkhart, all of Ind., assignors to Miles Inc., Elkhart, Ind.
Filed Nov. 4, 1985, Ser. No. 794,281
Term of patent 14 years
U.S. Cl. D24—28



297,460
ELECTRODE PAD FOR ELECTROCARDIOGRAPH
Hirokatsu Inoue, Chiba, and Chuji Shimizu, Funabashi, both of Japan, assignors to Fukuda Denshi Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1985, Ser. No. 778,058
Term of patent 14 years
U.S. Cl. D24—29



297,461
ELECTRODE PAD FOR ELECTROCARDIOGRAPH
Hirokatsu Inoue, Chiba, and Chuji Shimizu, Funabashi, both of Japan, assignors to Fukuda Denshi Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1985, Ser. No. 778,059
Term of patent 14 years
U.S. Cl. D24—29

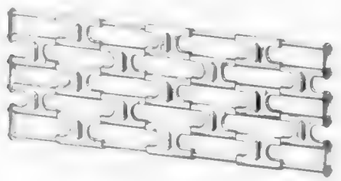


297,462
URINAL BOTTLE
Paul K. Meunchen, Cincinnati, Ohio, assignor to Jung Corporation
Filed Feb. 19, 1986, Ser. No. 834,437
Term of patent 14 years
U.S. Cl. D24—54

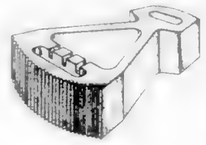


VOL 1093 ISS 5 AG 30 1988 UMI

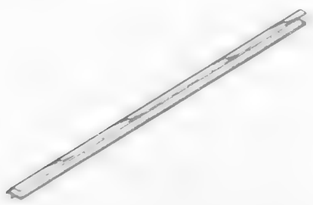
297,463
ROLLING GATE GRILLE
Vincent Greco, 195 Huntington Ave., Bronx, N.Y. 10465
Filed Sep. 16, 1985, Ser. No. 776,480
Term of patent 14 years
U.S. Cl. D25—50



297,464
WALL BLOCK
Paul J. Forsberg, Richfield, Minn., assignor to Keystone Retaining Wall Systems, Inc., Edina, Minn.
Filed Jun. 2, 1986, Ser. No. 870,860
Term of patent 14 years
U.S. Cl. D25—114



297,465
COMBINED SHEET METAL FLASHING AND BITUMEN MEMBRANE STRIP FOR ONE PLY ROOFING SYSTEM
Robert F. Nally, and Herby J. Rodgers, both of Sacramento, Calif., assignors to U.S. Intec, Inc., Port Arthur, Tex.
Filed Jun. 3, 1985, Ser. No. 740,620
Term of patent 14 years
U.S. Cl. D25—119



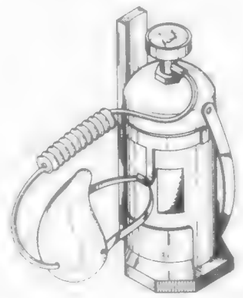
297,466
LIGHTER THUMBROLLER
Jean G. Malamoud, Saint Jorioz, France, assignor to S.T. Dupont, Paris, France
Filed May 14, 1985, Ser. No. 733,840
Claims priority, application France, Nov. 29, 1984, 845 318
Term of patent 14 years
U.S. Cl. D27—161



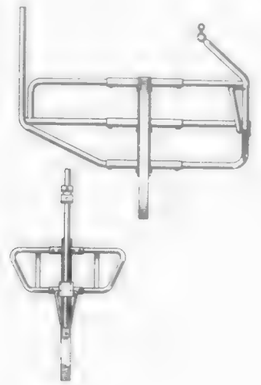
297,467
LOTION APPLICATOR
Mark W. McCann, 139 Talle Larga, Los Gatos, Calif. 95030
Filed Dec. 12, 1985, Ser. No. 808,342
Term of patent 14 years
U.S. Cl. D28—7



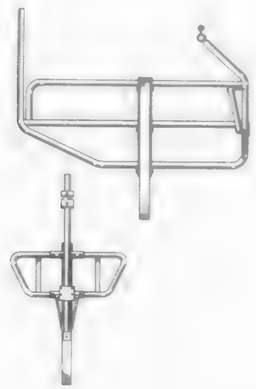
297,468
EMERGENCY AIR SUPPLY ASSEMBLY
David C. Young, Box 1550, Brodbeeks, Pa. 17329
Filed Nov. 14, 1985, Ser. No. 805,134
Term of patent 14 years
U.S. Cl. D29—7



297,469
STALL PARTITION FOR STALL BARNS
Kjell Johansson, Ökne Gård 1011, S-660 30 Värmlands Nysäter, Sweden
Filed Jul. 3, 1986, Ser. No. 881,934
Term of patent 14 years
U.S. Cl. D30—114



297,470
STALL PARTITION FOR STALL BARNS
Kjell Johansson, Ökne Gård 1011, S-660 30 Värmlands Nysäter, Sweden
Filed Jul. 3, 1986, Ser. No. 881,935
Term of patent 14 years
U.S. Cl. D30—114



297,471
ANIMAL CAGE-MOUNTED SUPPORT
Milton O. Carlin, 13111 E. 11 St., Tulsa, Okla. 74108
Filed Dec. 31, 1985, Ser. No. 815,884
Term of patent 14 years
U.S. Cl. D30—119

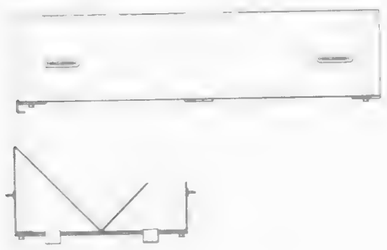


297,472
ANIMAL LEG SPLINT
Milton O. Carlin, 13111 E. 11 St., Tulsa, Okla. 74108
Filed Dec. 31, 1985, Ser. No. 815,885
Term of patent 14 years
U.S. Cl. D30—146



VOL 1093 ISS 5 AG 30 1988 UMI

297,473
ANIMAL SURGICAL SUPPORT
Milton O. Carlin, 13111 E. 11 St., Tulsa, Okla. 74108
Filed Dec. 31, 1985, Ser. No. 815,886
Term of patent 14 years
U.S. Cl. D30—151



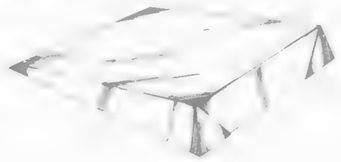
297,474
DOG LITTER BAG
David Jiracek, 5481 W. Baker Rd., Holmen, Wis. 54636
Filed Jul. 12, 1985, Ser. No. 754,078
Term of patent 14 years
U.S. Cl. D30—161



297,475
ELECTRIC VACUUM CLEANER
Nobuhiro Umehara, Tokyo; Masato Umeda, Sakado; Toshiaki Sato, Higashi-murayama, and Atsushi Shigemura, Tanashi, all of Japan, assignors to Kabushiki Kaisha Toshiba A/T/A Toshiba Corporation and Tokyo Electric Co., Ltd., both of Tokyo, Japan
Filed Oct. 16, 1985, Ser. No. 788,153
Claims priority, application Japan, Apr. 19, 1985, 60-15719
Term of patent 14 years
U.S. Cl. D32—21



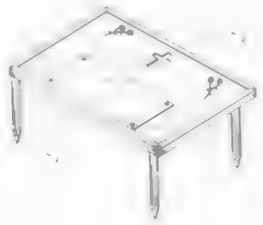
297,476
TRAY LINER
Ian W. Ross, and Robert G. Thompson, both of 1 Kent Street, Auckland, New Zealand
Filed Oct. 24, 1986, Ser. No. 923,711
Claims priority, application New Zealand, Apr. 30, 1986, 20544
Term of patent 14 years
U.S. Cl. D32—53.1



297,477
HEAT SHIELD FOR CARPET SEAMING IRONS
Earle F. Prater, Long Beach, Calif., assignor to Roofing Equipment, Inc., Denver, Colo.
Filed Oct. 24, 1985, Ser. No. 790,891
Term of patent 14 years
U.S. Cl. D32—71



297,478
GRAVE MARKER
George V. Taylor, 4158 Rainwood #3, Memphis, Tenn. 38116, assignor to George V. Taylor, Memphis, Tenn.
Filed May 31, 1985, Ser. No. 739,891
Term of patent 14 years
U.S. Cl. D99—18



297,479
KEY HOLE PLUG
Michael S. Rifkin, Wilkes-Barre, Pa., assignor to Rifkin Products Co., Wilkes-Barre, Pa.
Filed Nov. 18, 1985, Ser. No. 805,480
Term of patent 14 years
U.S. Cl. D99—43



VOL
1093
ISS
5
AG
30
1988
UMI

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See—*
Brown, Robert A.; and Clark, Daren A., 4,768,010, Cl. 337-169.000

A-Veda Corporation: *See—*
Shansky, Albert; and Purohit, Prakash C., 4,767,617, Cl. 424-71.000.

AB Volvo Penta: *See—*
Brandt, Lennart H., 4,767,269, Cl. 416-124.000

Abbott, David R.: *See—*
Barnes, Thomas C.; Abbott, David R.; and Arrao, Anthony S., 4,767,276, Cl. 416-221.000
Salt, Jonathan G. L.; Korzun, Ronald W.; and Abbott, David R., 4,767,267, Cl. 415-174.000.

Abbott Laboratories: *See—*
Chu, Daniel T., 4,767,762, Cl. 514-254.000

Abe, Koji; Fukasawa, Masao; and Okazaki, Masaki, to Shanshin Kogyo Kabushiki Kaisha. Warning system of filter binding in liquid supplying system. 4,766,860, Cl. 123-196.00A.

Abe, Michiharu: *See—*
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000

Abel, Heinz; and Topfl, Rosemarie, to Ciba-Geigy Corporation. Foam inhibitors for aqueous systems and use thereof. 4,767,568, Cl. 252-321.000

Abthoff, Joerg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, to Daimler-Benz Aktiengesellschaft. Metallic support for exhaust gas catalysts of Otto-engines and method for making the support 4,767,740, Cl. 502-439.000

Ackermann, Norbert J., Jr.; Ghorashi, Hossein M.; and Dehkordi, Peyman H., to Spinlab Partners, Ltd. Apparatus and method for measuring a property of a continuous strand of fibrous materials. 4,766,647, Cl. 19-0.220

Acravac: *See—*
Miller, Murrell T., 4,766,994, Cl. 198-711.000

Adachi, Shin: *See—*
Miyagi, Hideo; Ohya, Fumiaki; Fukushima, Koji; and Adachi, Shin, 4,766,873, Cl. 123-559.300

Adam, Norbert; Kaufung, Reinhard; and Wiedermann, Rolf, to Bayer Aktiengesellschaft. Polyol composition and a process for the preparation of flame-resistant polyurethane foams therefrom. 4,767,795, Cl 521-99.000

Adamik, Kenneth J.: *See—*
Sampson, Stephen A.; and Adamik, Kenneth J., 4,767,179, Cl. 350-96.200

Adams, Alfred A., to Group Lotus PLC. Mould for moulding an article. 4,767,308, Cl. 425-405.100

Adams, Carlton D.: *See—*
Grise, Frederick G. J.; and Adams, Carlton D., 4,766,781, Cl. 81-3.400

Adams, Garry R., to ITT Gallium Arsenide Technology Center, A Division of ITT Corporation. Testing integrated circuits. 4,768,073, Cl. 357-30.000

Adamson, Glenn W.: *See—*
Hartz, James F.; Bazilio, Rayman E.; and Adamson, Glenn W., 4,766,777, Cl. 74-606.00R.

Adeka Argus Chemical Co., Ltd.: *See—*
Leistner, William E.; Nakahara, Yutaka; Hirai, Bunji; and Kanai, Mitsuharu, 4,767,834, Cl. 526-265.000.

Adler, Bernhard; and Kieferle, Hermann, to Stierlen-Maquet AG. Switch arrangement. 4,767,943, Cl. 307-119.000.

Adler, Robert; and Prazak, Charles J., III, to Zenith Electronics Corporation. Color cathode ray tube and tensible shadow mask blank for use therein. 4,767,962, Cl. 313-402.000

Adolph Coors Company: *See—*
Cook, Harold, Jr.; and Moen, Bruce A., 4,767,016, Cl. 215-230.000

Adolphi, Heinrich: *See—*
Seppelt, Wolfgang; Neubauer, Hans-Juergen; Adolphi, Heinrich; and Hofmeister, Peter, 4,767,782, Cl. 514-543.000

Advance Systems Inc.: *See—*
Daane, Robert A., 4,767,042, Cl. 226-97.000

Advanced Moisture Technology, Inc.: *See—*
Pakulis, Ivars E., 4,767,981, Cl. 324-58.50A.

Advanced NMR Systems, Inc.: *See—*
Rzedzian, Richard R., 4,767,991, Cl. 324-312.000

Aegis, Inc.: *See—*
Scherer, Jeremy D., 4,768,077, Cl. 357-70.000

AG Fur Industrielle Elektronik AGIE: *See—*
Sciaroni, Boris, 4,767,903, Cl. 219-69.00M

Agata, Akira: *See—*
Tada, Hisashi; Agata, Akira; and Ii, Yasuaki, 4,767,805, Cl 523-468.000

Agfa-Gevaert Aktiengesellschaft: *See—*
Bergthaller, Peter; Stolzenburg, Rudolf; and Marx, Paul, 4,767,698, Cl. 430-562.000

Agism, Gary R.: *See—*
Blank, Robert G.; Mody, Dhiraj S.; Agism, Gary R.; and Kenny, Richard J., 4,767,789, Cl. 514-629.000

Agostini, Robert. Device to allow an automobile sun visor to act as an air deflector. 4,767,151, Cl. 296-97.00K.

Aharoni, Shaul M., to Allied-Signal Inc. Alternating aliphatic-aromatic poly(esteramide). 4,767,839, Cl. 528-184.000

Ahlert, Dieter; Boert, Konrad; and Maiss, Armin, to Dierks & Sohne GmbH & Co., KG. Method and apparatus for preparing dough 4,766,766, Cl. 73-169.000

Ahr, Willi: *See—*
Schiwiora, Harry; Ahr, Willi; and Schart, Alfred, 4,767,329, Cl 433-181.000.

Ai, Hideo; Koizumi, Yohsuke; and Tsuruta, Naohiro, to Asahi Kasei Kogyo Kabushiki Kaisha. Photocurable compositions of poly(ethynylphenyl)acetylene, its copolymer and composition thereof 4,767,797, Cl. 522-8.000

Air Products and Chemicals, Inc.: *See—*
Iacoviello, John G.; Hook, William J.; and Vijayendran, Bheema R., 4,767,816, Cl. 524-459.000
Petrella, Robert G.; and Scarpati, Michael, 4,767,736, Cl 502-164.000

Aisan Kogyo Kabushiki Kaisha: *See—*
Kato, Takashi; Haruta, Kazumi; and Yamada, Yutaka, 4,766,872, Cl. 123-519.000

Aisin Seiki Co., Ltd.: *See—*
Hachisuka, Hiroshi, 4,766,801, Cl. 91-371.000

Aisin Seiki Kabushiki Kaisha: *See—*
Hyodo, Hitoshi, 4,766,971, Cl. 180-178.000
Kazaoka, Kenichi; and Okazaki, Hiroshi, 4,767,157, Cl 297-322.000
Satomoto, Atsushi; Nakagawa, Takashi; Sakurai, Junichiro; and Morita, Koji, 4,767,296, Cl. 418-171.000.
Takeda, Hisanobu, 4,766,619, Cl. 4-251.000
Yamada, Yukifumi; and Terada, Takami, 4,767,156, Cl 297-313.000
Yasuda, Keiji; and Oda, Yukihisa, 4,767,898, Cl. 200-83.00R

Aisin Seiki Kabushikikaisha: *See—*
Ando, Mitsuhiro, 4,768,088, Cl. 358-93.000

Aisin-Warner Kabushiki Kaisha: *See—*
Kawamoto, Mutumi, 4,767,925, Cl. 250-231.0SF.

Ajinomoto Co., Inc.: *See—*
Iwatsuki, Makoto; Honma, Masao; and Kayama, Mikio, 4,767,827, Cl. 525-420.000

Akamatsu, Akio, to Furuno Electric Company, Limited. Automatic pilot system. 4,768,153, Cl. 364-449.000

Akimoto, Ryosaku: *See—*
Yamada, Kiichi; Senoo, Akio; Iimura, Jun; Akimoto, Ryosaku; and Kawauchi, Nakaji, 4,766,950, Cl. 165-17.000

Akita, Koji: *See—*
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; and Akita, Koji, 4,767,486, Cl. 156-244.110

Akiyama, Kazunori: *See—*
Takamatsu, Junichi; and Akiyama, Kazunori, 4,768,055, Cl. 355-3.00R

Akiyama, Yoshinori: *See—*
Kawasaki, Tomoaki; and Akiyama, Yoshinori, 4,767,153, Cl 296-194.000

Aktiebolaget Electrolux: *See—*
Lindquist, Nils T.; Hedin, Ann-Christine; Francke, Kurt O.; and Vukotic, Milos, 4,766,639, Cl. 15-339.000

Akutagawa, Hiroshi; and Takeuchi, Koji, to Minolta Camera Kabushiki Kaisha. Heat transfer recording with automatic ribbon take-up positioning/driving means. 4,768,039, Cl. 346-76.0PH.

Akzo America Inc.: *See—*
Mirviss, Stanley B., 4,767,884, Cl. 568-68.000

Akzo NV: *See—*
Hentschel, Peter; Josefiak, Christof; and Klostermeier, Werner, 4,767,535, Cl. 210-500.380

Aladdin Steel Products, Inc.: *See—*
Henry, Daniel S.; and Hoteling, G. Michael, 4,766,876, Cl 126-77.000

Albany International Corp.: *See—*
Rudt, Robert J.; and Aldrich, W. Daniel, 4,766,649, Cl. 19-98.000

Albright, Jay D.; Powell, Dennis W.; and Dusza, John P., to American Cyanamid Company. N-substituted-N-[3-(1,2,4-triazolo-[4,3-b]pyridazin-6-yl)phenyl]alkanamides, carbamates and ureas 4,767,765, Cl. 514-248.000

VOL 1093 ISS 5 AG 30 1988 UMI

Alcatel: *See—*
Lacroix, Jean-Claude; Franco, Pierre; Le Gall, Stephane; Bourret, Gerard; and Pochet, Jacques, 4,768,202, Cl. 375-3.100.
Alcatel N.V.: *See—*
Meyer, Hans P.; and Becker, Helmut, 4,767,989, Cl. 324-252.000.
Alcatel Thomson Faisceaux Hertziens: *See—*
Trift, Olivier; and Multon, Alain, 4,768,006, Cl. 333-255.000
Alcott, Charles: *See—*
Camloh, William J.; and Alcott, Charles, 4,767,246, Cl. 409-234.000
Aldrich, W. Daniel: *See—*
Rudt, Robert J.; and Aldrich, W. Daniel, 4,766,649, Cl. 19-98.000
Alfred Teves GmbH: *See—*
Burgdorf, Jochen, 4,767,165, Cl. 303-92.000.
Seibert, Wolfram, 4,766,988, Cl. 192-0.055.
Algonquin Co , Inc.: *See—*
Leas, Floyd S., Jr., 4,767,230, Cl. 403-16.000.
Aligena AG: *See—*
Linder, Charles; Nemas, Mara; Perry, Mordechai; and Kotraro, Reuven, 4,767,645, Cl. 427-386.000
Alkor GmbH Kunststoffe: *See—*
Schneider, Manfred; Heitz, Heinrich; Schlenz, Dieter; and Ewald, Egon, 4,767,667, Cl. 428-336.000.
Allec, Josiane: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,767,618, Cl 424-74.000
Allegheny Ludlum Corporation: *See—*
Salsgiver, James A.; Bartel, Eugene W.; and Rudolf, Rowland C., III, 4,767,469, Cl. 148-111.000.
Allen, Dixon L. Plunger-type paint roller cleaning device. 4,766,755, Cl. 68-213.000
Allied Corporation: *See—*
Cordova, Colleen W.; and Marshall, Robert M., 4,767,646, Cl 427-387.000
Crescentini, Lamberto; DeCaprio, Joseph D.; Fisher, William B.; and Lilley, Roy J., Jr., 4,767,503, Cl. 203-48.000.
Vary, Calvin P. H.; Diamond, Steven E.; and Wolfman, Neil M., 4,767,699, Cl. 435-6.000.
Allied-Signal Inc.: *See—*
Aharoni, Shaul M., 4,767,839, Cl. 528-184.000
Allison, Joe D., to Conoco Inc. Reducing permeability of highly permeable zones in subterranean formations. 4,766,959, Cl. 166-295.000
Aloka Co., Ltd.: *See—*
Namekawa, Kouroku, 4,766,905, Cl. 128-663.000
Alpha Industries, Inc.: *See—*
Borzym, John J.; and Borzym, Alexander, 4,766,792, Cl 83-319.000
Alpine Electronics Inc.: *See—*
Kobari, Tadaomi, 4,767,892, Cl. 174-68.500
Alps Electric Co., Ltd.: *See—*
Hatanai, Takashi, 4,768,120, Cl. 360-121.000.
Hayashi, Yuzo; and Nagura, Yoshihiro, 4,767,189, Cl. 350-334.000
Kawachi, Kazuhiko, 4,767,679, Cl. 428-690.000
Kuriyama, Toshihiro, 4,768,118, Cl. 360-121.000.
Nakashima, Keishi; Iwata, Tetsuya; Tanaka, Yasuo; and Hashidate, Toshiaki, 4,768,121, Cl. 360-125.000.
Sasaki, Hiroaki; and Miyahara, Yoshinori, 4,767,178, Cl 350-96.200
Tomoyori, Makoto; and Hatanaka, Sunao, 4,768,056, Cl. 355-3.00R.
Zama, Hiroyoshi, 4,768,042, Cl. 346-76.0PH.
Alsthom: *See—*
Ollivaud, Bernard; and Blot, Philippe, 4,766,934, Cl. 138-90.000
Alston, Julia M.: *See—*
Koenders, Antonius B. T. M.; Louwers, Theodorus P. S.; and Alston, Julia M., 4,768,061, Cl. 355-14.00D
Alt, Karl-Heinz, to Print-Collect GmbH. Sheet feeder for printing bound sheets. 4,766,810, Cl. 101-217.000.
Althaus, Hans L.: *See—*
Keil, Rudolf; Mayerhofer, Franz; Althaus, Hans L.; and Klement, Ekkehard, 4,767,171, Cl. 350-96.180
Alumax Extrusions, Inc.: *See—*
Benedyk, Joseph C., 4,766,664, Cl. 29-512.000
Aluminum Company of America: *See—*
Kinosz, Michael J.; and Mitchell, Alan P., 4,767,598, Cl. 420-528.000
Amano, Masayuki; Okawa, Seiji; and Nakano, Yoshio, to Kabushiki Kaisha Toshiba. Gas ejecting system for main condenser in geothermal steam turbine plant. 4,766,730, Cl. 60-641.500
Amano, Tatsuyuki, to NEC Corporation. A/D converter for video signal. 4,768,015, Cl. 340-347.0AD
Amdahl Corporation: *See—*
Petolino, Joseph A.; Finan, Christopher D.; Isozaki, Jeffrey T.; and Pang, Nicholas Y., 4,768,197, Cl. 371-38.000
American Cyanamid Company: *See—*
Albright, Jay D.; Powell, Dennis W.; and Dusza, John P., 4,767,765, Cl. 514-248.000
Hardy, Thomas G.; Kaganov, Alan L.; and Pace, William G., 4,766,898, Cl. 128-334.00C
Spitzer, Donald P.; and Yen, Wei S., 4,767,540, Cl. 210-728.000.
Tomcufcik, Andrew S.; Emma, John E.; Eudy, Nancy H.; Marsico, Joseph W.; and Newman, Howard, 4,767,749, Cl. 514-137.000
Vincenti, Paul J.; and Warren, James D., 4,767,875, Cl. 556-175.000
American Home Products Corporation (Del.): *See—*
Blank, Robert G.; Mody, Dhiraj S.; Agism, Gary R.; and Kenny, Richard J., 4,767,789, Cl. 514-629.000.
American Maize-Products Company: *See—*
Friedman, Robert B.; Gottneid, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., 4,767,849, Cl. 536-102.000
American National Can Company: *See—*
Starczewski, John F.; Hsu, Joseph C.; Blemberg, Robert J.; Curie, Kevin J.; and Jesse, Jerry F., 4,767,651, Cl. 428-35.000.
American Ozone Technology: *See—*
Campbell, Robert J.; and Jacobs, Peter C., 4,767,525, Cl. 210-87.000.
American Science and Engineering, Inc.: *See—*
Bjorkholm, Paul J., 4,768,214, Cl. 378-87.000
American Standard Inc.: *See—*
Davis, James A., 4,766,807, Cl. 98-121.200
American Sterilizer Company: *See—*
Geanous, Michael; Confer, Richard G.; and Bainbridge, Richard C., 4,767,968, Cl. 315-90.000
American Telephone and Telegraph Company: *See—*
McEowen, James R., 4,767,181, Cl. 350-96.210.
American Telephone & Telegraph Co., AT&T Bell Laboratories: *See—*
Fleming, James W.; and Pardenek, Sandra A., 4,767,429, Cl. 65-3.110
Jewell, Jack L., 4,767,196, Cl. 350-354.000
Ong, Edith T. T.; Tai, King L.; and Wong, Yiu-Huen, 4,767,695, Cl. 430-311.000
American Telephone and Telegraph Company, AT&T Laboratories: *See—*
Chapin, John T.; and Sabia, Raffaele A., 4,767,812, Cl. 524-144.000
Amersham International plc: *See—*
Finlan, Martin F., 4,767,719, Cl. 436-501.000
Ammendolia, Ralph E.: *See—*
Hartman, Bruce A.; Kardack, Michael R.; and Ammendolia, Ralph E., 4,767,090, Cl. 248-168.000
Amoco Corporation: *See—*
Clendinning, Robert A.; and Kwiatkowski, George T., 4,767,838, Cl. 528-125.000
Erwin, Richard E., 4,767,239, Cl. 405-217.000
Hunt, Mack W.; and Kennedy, Steven, 4,767,551, Cl. 252-32.70E.
Melquist, John L.; and Luetkens, Melvin L., Jr., 4,767,738, Cl. 502-202.000
Weber, Bruce W.; Gustafson, Caroll E.; and Bice, James A., 4,767,913, Cl. 219-130.210.
Amon, Albert: *See—*
Mehl, Wolfgang; and Amon, Albert, 4,767,420, Cl. 8-470.000
AMP Incorporated: *See—*
Bakker, Roel J., 4,767,984, Cl. 324-158.00F.
Bocchicchio, Keith A.; Hall, David L.; Jackson, Mark F.; Keller, Joseph R.; and Letsch, Karl H., 4,767,298, Cl. 425-112.000.
Cooper, Ralph M.; Hayes, Earl J.; and Denlinger, Keith R., 4,767,350, Cl. 439-271.000
Gutter, David H.; and Shatto, Walter C., Jr., 4,767,345, Cl. 439-92.000
Hughes, Donald W. K.; and Metzger, Donald L., 4,767,353, Cl. 439-398.000
Schwartzman, Benjamin, 4,766,669, Cl. 29-828.000
Ampex Corporation: *See—*
O'Gwynn, David C., 4,768,102, Cl. 358-311.000.
Rodal, David R., 4,767,970, Cl. 318-375.000
Amtech Systems, Inc.: *See—*
Whang, J. S., 4,767,251, Cl. 414-147.000.
Anami, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor static memory device with cell grounding means for reduced power consumption. 4,768,166, Cl. 365-154.000
Andeen, Bruce R.: *See—*
Bartlett, Allen J.; Andeen, Bruce R.; and Lessard, Philip A., 4,766,741, Cl. 62-514.00R
Anderson, Leonard M.; Boissevain, Mathew G.; and Norton, M. Kent, to Measurex Corporation. System and method for measurement of traveling webs. 4,767,935, Cl. 250-571.000
Anderson, Paul M.: *See—*
Phelps, Richard D.; Upham, Gerald A.; and Anderson, Paul M., 4,767,592, Cl. 376-150.000
Anderson, Stephen E.: *See—*
Lee, Leighton, III; and Anderson, Stephen E., 4,766,924, Cl. 137-536.000
Anderton, Richard L.: *See—*
Harvey, James R.; Biesel, Karen M.; and Anderton, Richard L., 4,768,216, Cl. 378-110.000
Ando, Hirohito; Takada, Zenji; Aoki, Shigeto; and Shigeta, Yuko, to Dainippon Ink and Chemicals, Inc. Azo lake pigments. 4,767,844, Cl. 534-573.000
Ando, Mitsuhiro, to Aisin Seiki Kabushikikaisha. Apparatus for commanding energization of electrical device. 4,768,088, Cl. 358-93.000
Ando, Toshio, to Chubu Industries, Inc. Domestic ice shaver. 4,767,068, Cl. 241-84.000
Andreasen, Norman H. Germination floor systems. 4,767,715, Cl. 435-302.000
Angerbauer, Rolf; Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, to Bayer Aktiengesellschaft. Cephalosporins. 4,767,754, Cl. 514-202.000
Angio-Medical Corporation: *See—*
Catsimpoolas, Nicholas; and Sinn, Robert S., 4,767,746, Cl 514-25.000
Ansaloni, Raffaele: *See—*
Dallavalle, Silvano; and Ansaloni, Raffaele, 4,767,908, Cl 219-121.500

Antonio Ferruccio: *See—*
Caradonna, Giuseppe; and Ferruccio, Antonio, 4,767,235, Cl. 405-33.000
Antonio, Jorge E. Toy windmill with convenient assembly features. 4,767,373, Cl. 446-217.000
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, to Hitachi, Ltd. Recrystallized CMOS with different crystal planes. 4,768,076, Cl. 357-42.000.
Aoki, Shigeto: *See—*
Ando, Hirohito; Takada, Zenji; Aoki, Shigeto; and Shigeta, Yuko, 4,767,844, Cl. 534-573.000
Aoki, Shinji, to Sony Corporation. Apparatus for editing a video signal. 4,768,105, Cl. 360-14.100.
Aoki, Yoshiyasu: *See—*
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl. 429-101.000
Aoyagi, Kiyoshi: *See—*
Koenig, David G.; Aoyagi, Kiyoshi; Dudley, Michael R.; and Schmidt, Susan B., 4,767,083, Cl. 244-12.300
Aoyama, Toshimi: *See—*
Shimizu, Takaaki; Ota, Katsuyuki; Aoyama, Toshimi; and Nojima, Setsuo, 4,767,642, Cl. 427-54.100.
Apffel, Fred, to Flexivol, Inc. Nitrogen removal system. 4,767,428, Cl. 62-24.000
Appelt, Guenther; and Schmitt, Josef, to Siemens Aktiengesellschaft. Liquid-cooled x-radiator having a circulation cooling system. 4,768,212, Cl. 378-141.000
Appoloner, Josef: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000.
Aquiculture Climax Concept Inc.: *See—*
Lavoie, Jean-Pierre, 4,766,846, Cl. 119-4.000.
Arago, Jose V.: *See—*
Iglesias, Manuel A.; and Arago, Jose V., 4,767,629, Cl. 426-55.000.
Aragon, Pedro J. Chlorination and pH control system. 4,767,511, Cl. 204-128.000.
Arakida, Yasuhiro; and Fukamachi, Kazuhiko, to Nippon Mining Co., Ltd. Strike plating solution useful in applying primer plating to electronic parts. 4,767,508, Cl. 204-44.500.
Aramaki, Takashi, to Nissan Motor Company, Limited. Method and apparatus for diagnosing failure in idle switch for internal combustion engines. 4,768,013, Cl. 340-52.00R.
Arbed S.A.: *See—*
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000
Archer, John Q., II: *See—*
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000.
Ardal Og Sunndal Verk A.S.: *See—*
Berg, Otto, 4,767,473, Cl. 148-159.000
Arimoto, Akira: *See—*
Ohnishi, Kunikazu; Arimoto, Akira; Inoue, Masayuki; and Fukui, Yukio, 4,768,183, Cl. 369-112.000.
Saito, Susumu; and Arimoto, Akira, 4,768,043, Cl. 346-108.000
Arito, Tatsunari: *See—*
Shiga, Koji; and Arito, Tatsunari, 4,768,067, Cl. 355-56.000.
Arnold, Rudiger: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R.
Aroues, Marc, to Thomson-CSF. Solid state photosensitive devices. 4,768,211, Cl. 377-60.000
Arrang, Jean-Michel; Garbarg, Monique; Schunack, Walter; Schwartz, Jean-Charles; and Lipp, Ralph O., to Institut National de la Sante et de la Recherche Medicale (INSERM). Pharmaceutical compositions and methods for stimulating H_3 histamine receptors. 4,767,778, Cl. 514-397.000
Arrao, Anthony S.: *See—*
Barnes, Thomas C.; Abbott, David R.; and Arrao, Anthony S., 4,767,276, Cl. 416-221.000
Asahara, Yoshiyuki: *See—*
Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130.
Asahi Glass Company Ltd.: *See—*
Iura, Jun-ichi; and Kawaguchi, Toshiyasu, 4,767,433, Cl. 65-21.100
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ai, Hideo; Koizumi, Yohsuke; and Tsuruta, Naohiro, 4,767,797, Cl. 522-8.000
Asahi Malleable Iron Co., Ltd.: *See—*
Miyajima, Hidenobu, 4,766,729, Cl. 60-598.000.
Asai, Toshinobu: *See—*
Murakami, Takatoshi; Kida, Toshio; Kon, Shiji; Asai, Toshinobu; and Nunome, Yoshiyuki, 4,766,843, Cl. 118-661.000
Asakura, Masahiko; Kawanabe, Tomohiko; and Kushida, Noritaka, to Honda Giken Kogyo Kabushiki Kaisha. Device for detecting air-fuel ratio of engine. 4,767,520, Cl. 204-406.000
Asami, Seiichi; Hamanaka, Toshiyuki; and Harada, Takashi, to NGK Insulators, Ltd. Aluminum titanate-mullite base ceramics. 4,767,731, Cl. 501-128.000
Asano, Hiroyuki; Takeda, Yoshiaki; and Kai, Osamu, to Tamura Electric Works, Ltd. Public telephone set. 4,768,217, Cl. 379-32.000
Asano, Kiyomitsu: *See—*
Sakaida, Atsuo; Kawaura, Masafumi; Chikaoka, Yasuji; Iwata, Hiroshi; and Asano, Kiyomitsu, 4,767,226, Cl. 400-124.000
Ascher, Gerd, to Biochemie. New process for producing cephalosporin antibiotics, and novel intermediates for use in such process and their production. 4,767,852, Cl. 540-222.000
Asea Stal AB: *See—*
Brannstroom, Roine, 4,767,243, Cl. 406-193.000
Asea Stal Aktiebolag: *See—*
Brannstrom, Roine; Karlsson, Lars-Erik; and Mansson, Martin, 4,767,315, Cl. 431-7.000
Ashland Oil, Inc.: *See—*
Jhaveri, Satish S.; Dunnavant, William R.; and Schneider, James T., 4,766,949, Cl. 164-526.000
Ashley Furniture Industries, Inc.: *See—*
Pauer, Jericho P.; and Janke, Harry T., 4,766,821, Cl. 108-156.000
Aspen Enterprises, Inc.: *See—*
Odekirk, W. G., 4,766,918, Cl. 135-96.000
AT&T Information Systems Inc.: *See—*
McEowen, James R., 4,767,181, Cl. 350-96.210.
Ateoq Corporation: *See—*
Borodovsky, Yan, 4,767,215, Cl. 356-124.000
Atkinson, Anthony: *See—*
Cox, Geoffrey B.; Atkinson, Anthony; Edwardson, Peter A. D.; and Scawen, Michael D., 4,767,670, Cl. 428-403.000
Atlantic Richfield Company: *See—*
Petermann, Steven G., 4,766,955, Cl. 166-167.000
Atlas Copco Aktiebolag: *See—*
Schoeps, Knut C., 4,767,379, Cl. 464-25.000
Atlas Pacific Engineering Company: *See—*
Colombo, John W., 4,766,990, Cl. 198-383.000
Autoflug GmbH & Co. Fahrzeugtechnik: *See—*
Sedlmayr, Gerhard; and Grassmuck, Jurgen, 4,767,161, Cl. 297-472.000
Automobiles Citroen. *See—*
Laine, Gabriel; and Zawadzki, Henri, 4,766,857, Cl. 123-192.00B
Le Fol, Marcel, 4,767,106, Cl. 267-140.100
Le Fol, Marcel, 4,767,107, Cl. 267-140.100
Automobiles Peugeot: *See—*
Laine, Gabriel; and Zawadzki, Henri, 4,766,857, Cl. 123-192.00B
Le Fol, Marcel, 4,767,106, Cl. 267-140.100
Le Fol, Marcel, 4,767,107, Cl. 267-140.100.
Automotive Products plc: *See—*
Barker, David C., 4,766,804, Cl. 92-23.000
Auxier, Thomas A.; Hall, Kenneth B.; and Landis, Kenneth K., to United Technologies Corporation. Triple pass cooled airfoil 4,767,268, Cl. 416-97.00R
Avery, W. Burl. Enclosed trailer for boats. 4,767,132, Cl. 280-414.100
Avon Products, Inc.: *See—*
Komor, Joseph A.; Franco, Philip; Nangle, Lorraine P.; and Kolelle, William H., 4,767,741, Cl. 512-3.000
Ax, Roy L.; and Lenz, Richard W., to Wisconsin Alumni Research Foundation. Method for assessing the fertility of male mammals 4,767,703, Cl. 435-29.000
Axelson, Per O.: *See—*
Simonson, Rune G. W.; and Axelson, Per O., 4,767,499, Cl 162-25.000
Axia Incorporated: *See—*
Mower, Morris F., and Cezana, Haim, 4,767,297, Cl. 425-87.000
Ayad, Hafez M., to Rhone-Poulenc Nederland B.V. Synergistic insecticidal compositions. 4,767,773, Cl. 514-351.000
Ayano, Shinya; and Ojiro, Yasuo, to Kabushiki Kaisha Toshiba. Liquid draining device for a steam turbine. 4,767,263, Cl. 415-121.00A
Ayotte, Renald R.; Harney, Patricia M.; and Machado, Vincent S., to University of Guelph. Production of cole crops which exhibit triazine tolerance. 4,767,888, Cl. 800-1.000
Azdel, Inc.: *See—*
Chilva, Timothy E., 4,767,321, Cl. 432-59.000
Azuma, Makoto: *See—*
Yoshida, Jiro; and Azuma, Makoto, 4,768,074, Cl. 357-34.000
B.A.T. Cigarettenfabriken GmbH: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R
B. F. Goodrich Company, The: *See—*
Lee, Biing-Lin, 4,766,761, Cl. 73-38.000
Lee, Biing-Lin, 4,767,817, Cl. 524-494.000
Parish, James M., 4,766,837, Cl. 114-311.000
Baasner, Bernd: *See—*
Elbe, Hans-Ludwig; and Baasner, Bernd, 4,767,864, Cl 546-278.000
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000
Babcock & Wilcox Company, The: *See—*
Lane, John D.; and Scheib, Thomas J., 4,768,143, Cl. 364-157.000
Bae, Dong-Hak; Sigworth, William T.; and Cummings, William, to Uniroyal Chemical Company, Inc. Moisture-curable halosilane-substituted polymer composition. 4,767,814, Cl. 524-284.000

VOL 1093 ISS 5 AG 30 1988 UMI

Bagwell, James T., to CIMCO. Nebulizer with auxilia y gas input. 4,767,576, Cl. 261-16.000
Bailey, Frank V.; and Woodward, Lee A., to Outboard Marine Corporation. Shaking apparatus. 4,766,771, Cl. 74-61.000
Bailey, Terry R.; and Haunschild, Dale H., to Minnesota Mining and Manufacturing Company. Enclosed-lens retroreflective sheeting having tough, weather-resistant, transparent cover film. 4,767,659, Cl. 428-203.000
Bainbridge, Richard C.: *See*—
Geanous, Michael; Confer, Richard G.; and Bainbridge, Richard C., 4,767,968, Cl. 315-90.000
Barsden, C. Robert. Method of detecting and quantitating cell malignancy in biological tissue. 4,767,717, Cl. 436-64.000
Baker, Bruce G.; Clark, Neville J.; McArthur, Hamish; and Summerville, Edward, to Flinders University of South Australia, The. Process for catalytically converting a carbon monoxide-and hydrogen-containing feed stream into hydrocarbons. 4,767,792, Cl. 518-721.000
Baker, Don R.; and Brownell, Keith H., to Stauffer Chemical Co Fungicidal pyridyl imidates. 4,767,771, Cl. 514-346.000
Baker, Don R.; Kezerian, Charles; and Brownell, Keith H., to Stauffer Chemical Co. Fungicidal pyridyl cyclopropane carboximides 4,767,772, Cl. 514-346.000
Baker, Donald A.: *See*—
Lemieux, Raymond U.; Ratcliffe, Robert M., and Baker, Donald A., 4,767,845, Cl. 536-18.200
Baker Perkins North America Inc.: *See*—
Fischer, Harry A.; and Grutter, William G., 4,767,214, Cl. 366-99.000
Baker, Robert K.; Rupprecht, Kathleen M.; Pessolano, Arsenio A.; and Durette, Philippe L., to Merck & Co., Inc. Derivatives of 3-hydroxyazabenzo(B)thiophene useful as 5-lipoxygenase inhibitors. 4,767,766, Cl. 514-301.000
Bakker, Roel J., to AMP Incorporated. Protective fixture for chip carrier. 4,767,984, Cl. 324-158.00F.
Ball, James H.; and Seim, William J., to Minnesota Mining and Manufacturing Company. Cable closing. 4,767,893, Cl. 174-84.00R.
Ballewski, Heinrich: *See*—
Behr, Friedrich; Ballewski, Heinrich; and Grossmann, Wolfgang, 4,766,948, Cl. 164-516.000
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumaki; and Kobashi, Mamoru, to Nippondenso Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Fuel injection control based on spill port opening timing correction. 4,766,864, Cl. 123-357.000
Band, Philip A.: *See*—
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767,463, Cl. 106-162.000
Bando, Takashi: *See*—
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000.
Bandyopadhyay, Nikhiles: *See*—
Shattes, Walter J.; Bandyopadhyay, Nikhiles; and Krueger, Paul C., 4,767,497, Cl. 156-665.000
Barabas, Joseph A.; Phillips, Norman D.; and Polscer, Joseph G., to Fuller Company. Cartridge filter mounting apparatus. 4,767,427, Cl 55-493.000
Barbone, Arminda G.: *See*—
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767,463, Cl. 106-162.000
Barker, David C., to Automotive Products plc. Retainer assembly for hydraulic actuator. 4,766,804, Cl. 92-23.000
Barlow, George J.: *See*—
Keeley, James W.; and Barlow, George J., 4,768,148, Cl 364-200.000
Barnes, Joseph: *See*—
Jones, Hwfa J., 4,767,093, Cl. 248-442.200
Barnes, Thomas C.; Abbott, David R.; and Arrao, Anthony S., to General Electric Company. Retainer ring. 4,767,276, Cl. 416-221.000
Barnett, Daniel J.: *See*—
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., 4,767,661, Cl. 428-209.000
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., 4,767,662, Cl. 428-209.000
Barnhart, Andrew W.; and Eklof, Anders A., to Hughes Network Systems, Inc. Optical demand assigned local loop communication system. 4,768,188, Cl. 370-80.000
Barrett, Edward A.; Molchen, Marion B.; and Kellner, Henry J., to United States of America, Interior. Stereoscopic camera slide bar 4,768,049, Cl. 354-294.000
Barry, Denis E.; and Miller, Jerry J., to Owens-Illinois Television Products Inc. Expansion chuck. 4,767,125, Cl. 279-2.00R
Bartel, Eugene W.: *See*—
Salsgiver, James A.; Bartel, Eugene W.; and Rudolf, Rowland C., III, 4,767,469, Cl. 148-111.000
Bartlett, Allen J.; Andeen, Bruce R.; and Lessard, Philip A., to Helix Technology Corporation. Cryogenic recondenser with remote cold box. 4,766,741, Cl. 62-514.00R
Bartlett, Digby H., to Uniroyal Chemical Limited. Synergistic fungicidal composition employing substituted carboxamidothiazoles and imidazoles. 4,767,774, Cl. 514-365.000
Bartos, Donald M.; and Gaul, John H., Jr., to Dow Corning Corporation. Process for preparing ceramic materials. 4,767,831, Cl. 525-474.000
Barwasser, Gunther: *See*—
Gottschald, Lutz; Kotting, Fritz; and Barwasser, Gunther, 4,766,699, Cl. 51-101.0LG.
BASF Aktiengesellschaft: *See*—
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich; and Vagt, Uwe, 4,767,856, Cl. 540-538.000.
Ley, Gregor; Melan, Michael; and Wistuba, Eckehardt, 4,767,457, Cl. 106-2.000
Marcinowski, Stefan; Sanner, Axel; Tschang, Chung-Ji; Ladner, Wolfgang; and Greif, Norbert, 4,767,707, Cl. 435-182.000
Merger, Franz; Priester, Claus-Ulrich; Fischer, Rolf; and Sauerwald, Manfred, 4,767,857, Cl. 540-538.000.
Nuber, Adolf; Sanner, Axel; Straub, Ferdinand; and Vogel, Friedrich, 4,767,613, Cl. 424-47.000
Seppelt, Wolfgang; Neubauer, Hans-Juergen; Adolphi, Heinrich; and Hofmeister, Peter, 4,767,782, Cl. 514-543.000
Bass, Robert J.; Cooper, Kelvin; and Richardson, Kenneth, to Pfizer Inc. Triazole antifungal agents. 4,767,777, Cl. 514-383.000.
Bates, William G., to Mroczek, Inc. Apparatus for cleaning material transporting rollers. 4,767,438, Cl. 65-168.000
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., to PSI Star Copper etching process and product. 4,767,661, Cl. 428-209.000.
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., to PSI Star Copper etching process and product. 4,767,662, Cl. 428-209.000.
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, to Iomega Corporation. Record disk cartridge with flexible pad. 4,768,124, Cl. 360-133.000
Bauer, Anton; and Hahn, Siegbert, to FAG Kugelfischer Georg Schafer (KGaA). Window cage, particularly for cylindrical roller bearings. 4,767,224, Cl. 384-572.000
Bauer, Siegfried: *See*—
Stockburger, Hermann; and Bauer, Siegfried, 4,767,919, Cl. 235-455.000
Baumgartner, Viktor: *See*—
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R.
Baungratz, Jose H.: *See*—
Maciel, Joao P.; and Baungratz, Jose H., 4,766,680, Cl. 36-87.000
Bavas, Andrew L. Cat litter pan system. 4,766,845, Cl. 119-1.000.
Baxter, Franklin, II, to Displaymor Manufacturing Company. Refrigerated storage and display device with multiple pan dissipator array. 4,766,737, Cl. 62-279.000
Baxter Travenol Laboratories, Inc.: *See*—
Fisher, Jerry D.; and Molthop, Susan C., 4,767,533, Cl. 210-321.640.
Jakubowski, George M.; Molthop, Susan C.; and Eldridge, Milo, 4,767,538, Cl. 210-636.000
Bayer Aktiengesellschaft: *See*—
Adam, Norbert; Kaufung, Reinhard; and Wiedermann, Rolf, 4,767,795, Cl. 521-99.000.
Angerbauer, Rolf; Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, 4,767,754, Cl. 514-202.000.
Daum, Werner; and Hanssler, Gerd, 4,767,757, Cl. 514-231.500
Elbe, Hans-Ludwig; and Baasner, Bernd, 4,767,864, Cl. 546-278.000
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000
Jelich, Klaus; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,767,775, Cl. 514-379.000
Lange, Peter M.; and Rauenbusch, Erich, 4,767,850, Cl 536-127.000
Lindner, Christian; Peters, Horst; and Urbanneck, Bernd, 4,767,821, Cl. 525-72.000
Bayle-Laboure, Gerard J. P.; Desaulty, Michel A. A.; Perigne, Jerome; and Sandelis, Denis J. M., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA). Enlarged bowl member for a turbojet engine combustion chamber. 4,766,722, Cl. 60-39.230.
Baylis, Alan P., to Dresser U.K. Limited, A British Company. Variable intensity rapping. 4,767,423, Cl. 55-112.000.
Bazilio, Rayman E.: *See*—
Hartz, James F.; Bazilio, Rayman E.; and Adamson, Glenn W., 4,766,777, Cl. 74-606.00R
BBC Brown, Boveri & Co., Ltd.: *See*—
Brand, Klaus-Peter; Kopainsky, Jurgen; and Wimmer, Wolfgang, 4,767,941, Cl. 307-43.000
Broich, Bruno; Gobrecht, Jens; and Roggwiller, Peter, 4,768,075, Cl. 357-38.000
Osman, Maged A.; Perkins, Roger; Schmuckle, Friedrich; and Schuler, Claus, 4,767,729, Cl. 501-94.000
Beauducel, Claude *See*—
Gautier, Thierry; and Beauducel, Claude, 4,768,173, Cl. 367-15.000
Beaver, Earl R.; Stichweh, Lawrence A.; and Thompson, Thomas J., to Monsanto Company. Method of shipping wet solids. 4,766,938, Cl 141-1.000
Bechade, Roland A.; Hoffman, William K.; and Ogilvie, Clarence R., to International Business Machines Corporation. Digital binary array multipliers using inverting full adders. 4,768,161, Cl. 364-758.000
Beckenbach, Helmuth. *See*—
Beckenbach, Ulrich; Beckenbach, Helmuth; and Hergarten, Werner, 4,767,322, Cl. 432-98.000

Beckenbach, Ulrich; Beckenbach, Helmuth; and Hergarten, Werner Apparatus for charging a shaft furnace. 4,767,322, Cl. 432-98.000.
Becker, Helmut: *See*—
Meyer, Hans P.; and Becker, Helmut, 4,767,989, Cl. 324-252.000
Becker, Rolf: *See*—
Kamp, Heinz; and Becker, Rolf, 4,767,072, Cl. 242-43.00A.
Beckley, Robert A.; and Stroder, Harold D., to World Color Press, Inc. Paper coating machine. 4,766,840, Cl. 118-46.000.
Beckman Research Institute of the City of Hope: *See*—
Wallace, R. Bruce, 4,767,700, Cl. 435-6.000
Becton, Dickinson and Company: *See*—
Williams, Joel L.; Martin, David A.; and Montgomery, David B., 4,767,414, Cl. 604-230.000
Beecham Group p.l.c.: *See*—
Davis, Adrian F., 4,767,751, Cl. 514-179.000.
Beer, Richard, to Scholler Lebensmittel GmbH & Co. KG. Apparatus for the production of spherical portions of ice-cream. 4,767,307, Cl 425-394.000
Beery, Jack, to Mead Corporation, The. Pressure development apparatus for imaging sheets employing photosensitive microcapsules 4,768,050, Cl. 354-304.000
Behar, Isaac; and Berthet, Hubert, to Institut Francais du Petrole. Modular system for the offshore production, storage and loading of hydrocarbons. 4,766,836, Cl. 114-256.000
Behr, Friedrich; Ballewski, Heinrich; and Grossmann, Wolfgang, to Thyssen Industrie AG. Process for casting aluminum alloys. 4,766,948, Cl. 164-516.000
Bethoffer, William L.; and Zellmer, Douglas C. Spring counterbalanced folding wall bed. 4,766,623, Cl. 05-164.00R.
Belger, Peter: *See*—
Strauch, Dieter; Belger, Peter; Hofer, Heiner; and Merz, Martin, 4,767,464, Cl. 106-464.000.
Bell Communications Research, Inc.: *See*—
Gopinath, Bhaskarpillai; and Li, Shuo-Yen R., 4,768,189, Cl 370-85.000
Ingle, James F., 4,768,203, Cl. 375-10.000
Bell, Donald J.: *See*—
Crane, Patrick R.; and Bell, Donald J., 4,766,631, Cl. 15-104.120
Bell Helicopter Textron Inc.: *See*—
Gaffey, Troy M.; Kidd, David L.; and Grimes, Michael L., 4,766,984, Cl. 188-380.000
Bell & Howell GmbH: *See*—
Garthe, Matthias, 4,767,115, Cl. 271-223.000
Bell, Thomas W.: *See*—
Bryant, Lynn A.; and Bell, Thomas W., 4,767,481, Cl. 156-116.000
Bender, Gerhard, to PUMA Aktiengesellschaft Rudolf Dassler Sport. Midsole for athletic shoes. 4,766,679, Cl. 36-30.00R.
Benedyk, Joseph C., to Alumax Extrusions, Inc. Process for formation of high strength aluminum ladder structures. 4,766,664, Cl 29-512.000
Benjamin, Lester F.; Krishnamurthy, Gopalan; and Rypkema, Jouke N., to Zenith Electronics Corporation. Restrictive access control system. 4,768,229, Cl. 380-20.000
Benjamin, William; Kadoo, Ricky; and Gosling, Martin. Device for indicating unauthorized use of a vehicle. 4,768,027, Cl. 340-691.000
Bennett, Douglas D.; and Francis, Earl C., to Dentsply Research & Development Corp. Cartridge container and ejector piston therefor. 4,767,326, Cl. 433-90.000
Bennett, Douglas D.: *See*—
Kopunek, Thomas V.; and Bennett, Douglas D., 4,767,325, Cl. 433-90.000
Benz & Hilgers GmbH: *See*—
Proepper, Wilhelm, 4,767,031, Cl. 222-255.000
Berg, Otto, to Ardal Og Sunndal Verk A.S. Method for improving the dynamic strength of wheel disks of vehicle wheels made of heat-treatable aluminum alloys. 4,767,473, Cl. 148-159.000
Bergen, Klaus: *See*—
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000.
Berger, Michael; Cavallaro, Robert; and Czumak, Frank M., to Polaroid Corporation. Photographic film assemblage. 4,767,691, Cl 430-210.000
Bergh, Thomas R. Radiant, linear panels. 4,766,951, Cl. 165-56.000.
Bergman, Donald G.; and Elsner, Emil A., to Doncar Incorporated Method of operating an electric arc furnace. 4,767,451, Cl. 75-10.610
Bergthaller, Peter; Stolzenburg, Rudolf; and Marx, Paul, to Agfa-Gevaert Aktiengesellschaft. Photographic material containing a pyridine azo or pyridazine azo cyan dye releasing compound. 4,767,698, Cl 430-562.000
Berman, Howard L.: *See*—
Boudreau, Jean A.; Berman, Howard L.; Chin, Jimmie; and Martorella, Romeo P., 4,767,085, Cl. 244-182.000.
Bermingham, Hubert P. M.; and Cavanna, Pietro, to Desert Systems Limited. Building element and a construction method using such an element. 4,766,711, Cl. 52-404.000
Bernard, Gilbert: *See*—
Solvi, Marc; Bernard, Gilbert; and Lonardi, Emile, 4,767,258, Cl. 414-786.000
Bernard, Gilles; Bureau, Jean-Marc; Dubois, Jean-Claude; and Zattara, Jean-Luc, to Compagnie Europeenne de Composants Electroniques Capacitor of the polymer film type with stability at high temperatures. 4,768,130, Cl. 361-323.000
Berner, Bret: *See*—
Kydonieus, Agis, Shah, Kishore R.; and Berner, Bret, 4,767,80F, Cl 524-98.000
Berol Kemi AB: *See*—
Holmberg, Krister; and Hyden, Holger, 4,767,701, Cl. 435-7.000
Berry, William J., Jr. Conductivity cell with adjustable concentric electrodes. 4,767,995, Cl. 324-447.000
Berstein, Garri; Hansen, Willi; and Winkens, Rudolf, to W. Hegenscheidt GmbH. Rolling apparatus for surface hardening or smoothing. 4,766,753, Cl. 72-110.000
Bertelli, Mariette R. Swivel curtain rod. 4,767,013, Cl. 211-96.000
Berthet, Hubert: *See*—
Behar, Isaac; and Berthet, Hubert, 4,766,836, Cl. 114-256.000
Bervig, Dale R. Fluid dynamic energy producing device. 4,767,938, Cl 290-54.000
Beta Raven Inc.: *See*—
Volk, Joseph A., Jr., 4,767,301, Cl. 425-144.000
Betterton, Joseph T.; Glover, Alfred H.; Griffin, Ranald L.; and Kerstiens, Anthony J., to Chrysler Motors Corporation. Conductor structure for transducer switch. 4,767,897, Cl. 200-83.000
Beurdeley, Dominique; and Sauthier, Lucien, to La Telemecanique Electrique. Electric apparatus with a manual control switch with indication of the "on" and "off" positions. 4,767,900, Cl. 200-308.000
Biancalani, Fiorenzo; and Marcora, Luigi, to Officina Meccanica Biancalani & C. di Biancalani Fiorenzo & C.S.n.c.; and Coramtex s.r l Machine for washing, breaking and fulling of fabrics, with pneumatic dragging. 4,766,743, Cl. 68-20.000
Bibby, Geoffrey W., to Central Electricity Generating Board. Light scattering temperature measurement. 4,767,219, Cl. 374-123.000
Bibl, Andreas; Day, Gene F.; and Higginson, John A., to Precision Image Corporation. Electrostatic color printing method. 4,767,689, Cl. 430-45.000
Bice, James A.: *See*—
Weber, Bruce W.; Gustafson, Caroll E.; and Bice, James A 4,767,913, Cl. 219-130.210
Biegon, Robert J.; Men, Grigory; Turner, Lester T.; Lindstrand, Douglas; and Cox, Albert R., to Cooper Industries, Inc. Mass terminable flat cable and cable assembly incorporating the cable. 4,767,891, Cl 174-34.000
Biek, Paul A., to Dresser Industries, Inc. Deactivating rotor vane kick-out mechanism. 4,767,295, Cl. 418-151.000
Bierlein, John D.; Brixner, Lothar H.; Ferretti, August, and Hsu, William Yang-Hsing, to Du Pont de Nemours, E. I., and Company Process for producing an optical waveguide. 4,766,954, Cl 156-624.000
Biesel, Karen M.: *See*—
Harvey, James R.; Biesel, Karen M.; and Anderton, Richard L., 4,768,216, Cl. 378-110.000
Bigbee, William L.; Fong, Stella S. N.; Jensen, Ronald H.; Vanderlaan, Martin; and Langlois, Richard G., to United States of America, Energy. Cell lines for the production of monoclonal antibodies to human glycophorin A. 4,767,710, Cl. 435-240.270
Bigelow-Sanford, Inc.: *See*—
Johnston, Jerry H.; and Lowery, Charles F., 4,766,745, Cl 68-200.000
Bikson, Benjamin; Giglia, Salvatore; and Kharas, Gregory, to Union Carbide Corporation. Composite separation membranes and the preparation and use thereof. 4,767,422, Cl. 55-16.000
Bingo Brain: *See*—
Birenbaum, Kenneth A.; Hutchison, Stephen E.; Virkus, Mark K.; and Jankowski, Chester F., 4,768,151, Cl. 364-410.000
Biochemie: *See*—
Ascher, Gerd, 4,767,852, Cl. 540-222.000
Biomeasure, Incorporated. *See*—
Kim, Sun H., 4,767,858, Cl. 544-34.000
Birch, Jorgen. Broad spectrum camouflage mat and screen. 4,767,649, Cl. 428-99.000
Bird, Graham J.: *See*—
Watson, Keith G.; Garson, Lynette A.; Bird, Graham J.; Cross, Lindsay E.; and Farquharson, Graeme J., 4,767,879, Cl 558-412.000
Birenbaum, Kenneth A.; Hutchison, Stephen E.; Virkus, Mark K.; and Jankowski, Chester F., to Bingo Brain. Electronic bingo card manager. 4,768,151, Cl. 364-410.000
Bissell Inc.: *See*—
McDowell, David E., 4,766,638, Cl. 15-329.000
Bitzer, Alan H.: *See*—
Ewen, John A.; and Bitzer, Alan H., 4,767,735, Cl. 502-109.000
Bixler, Randall L.: *See*—
Everett, William F.; Dalton, Richard L., Jr.; and Bixler, Randall L., 4,767,097, Cl. 251-129.080
Bjorkholm, Paul J., to American Science and Engineering, Inc. Imaging. 4,768,214, Cl. 378-87.000
Black, Robert R.: *See*—
Cecil, John, Jr.; and Black, Robert R., 4,766,887, Cl. 128-17.000
Blackie, Ian T. B., to Ferranti plc. Display control apparatus having a cursor. 4,768,028, Cl. 340-705.000
Blaha, Erich, to Carl-Zeiss-Stiftung. Standard slit lamp adapted for photographic documentation. 4,767,204, Cl. 351-214.000
Blain, Jeffrey W.; and Shah, Denis D., to Westinghouse Electric Corp Elevator system adaptive time-based block operation. 4,766,978, Cl 187-101.000
Blake, Robert A. Rotary saw blade. 4,766,794, Cl. 83-847.000
Blanc, Pierre, to GTM-Entrepose. Method of accurately positioning a prefabricated structure on the sea bed or on a river bed by grounding.

VOL 1093 ISS 5 AG 30 1988 UMI

and a sea or a river construction obtained by said method. 4,767,238, Cl. 405-207.000

Blanchard, Richard A., to Siliconix incorporated. Method for making planar vertical channel DMOS structures. 4,767,722, Cl. 437-41.000.

Blank, Robert G.; Mody, Dhiraj S.; Agism, Gary R.; and Kenny, Richard J., to American Home Products Corporation (Del.). Spray dried acetaminophen. 4,767,789, Cl. 514-629.000

Blankers, Petrus J.: *See*—
Gijzen, Wilhelmus A. H.; Blankers, Petrus J.; and Van Vroenhoven, Petrus A. W. H., 4,767,187, Cl. 350-247.000

Blasius, William G., Jr., to Chesebrough-Pond's Inc. Swab applicator comprising a flock swab tip. 4,767,398, Cl. 604-1.000

Blemberg, Robert J.: *See*—
Starczewski, John F.; Hsu, Joseph C.; Blemberg, Robert J.; Curie, Kevin J.; and Jesse, Jerry F., 4,767,651, Cl. 428-35.000.

Bliss, Norman S.: *See*—
Parfree, Colin S.; Smith, Colin F. G.; Worthington, Peter; Marten, Malcolm G.; and Bliss, Norman S., 4,767,182, Cl. 350-96.230

Block, Charles, to Joseph Galkin Corporation. Small part feeding and inserting system. 4,766,826, Cl. 112-265.100

Bloechl, Franz; and Ruschel, Juergen, to Siemens Aktiengesellschaft. Telephone station set for table wall operations. 4,768,225, Cl. 379-435.000

Blohm + Voss AG: *See*—
Schlichthorst, Norbert, 4,766,829, Cl. 114-61.000

Blomqvist, Mikael, to Lycab AB. Tightening device for cable bushings. 4,767,086, Cl. 248-56.000

Blot, Philippe: *See*—
Ollivaud, Bernard; and Blot, Philippe, 4,766,934, Cl. 138-90.000

Blum, Alvin S.: *See*—
Gilliam, Julius C.; and Blum, Alvin S., 4,767,530, Cl. 210-232.000

Boberg, Michael: *See*—
Angerbauer, Rolf; Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, 4,767,754, Cl. 514-202.000

BOC Group, Inc., The: *See*—
Hodge, Colin G., 4,767,403, Cl. 604-35.000.
Shattes, Walter J.; Bandyopadhyay, Nikhiles; and Krueger, Paul C., 4,767,497, Cl. 156-665.000

Bocchicchio, Keith A.; Hall, David L.; Jackson, Mark F.; Keller, Joseph R.; and Letsch, Karl H., to AMP Incorporated. Heat staking apparatus. 4,767,298, Cl. 425-112.000

Bocquet, Roger L. E. Composition for achieving tumor reversion and its use in cancerology for dogs. 4,767,763, Cl. 514-264.000.

Bodell, Donald H., to Pirelli Cable Corporation. Multiplex transmission of analog signals by fiber optic channel. 4,768,186, Cl. 370-3.000.

Boecka, Gustaaf M.; Raeymaekers, Alfons H. M.; and Sipido, Victor, to Janssen Pharmaceutica N.V. Anti-protozoal 5,6-dihydro-2-(substituted phenyl)-1,2,4-triazine-3,5(2H,4H)-dione derivatives, compositions, and method of use therefor. 4,767,760, Cl. 514-242.000

Boehringer Ingelheim KG: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,767,759, Cl. 514-235.500

Boehringer, John R.; Karpowicz, John; and Sutter, Steven T., to Boehringer Laboratories. Drainage device for collecting liquids from a body cavity. 4,767,417, Cl. 604-31.000

Boehringer Laboratories: *See*—
Boehringer, John R.; Karpowicz, John; and Sutter, Steven T., 4,767,417, Cl. 604-31.000

Boeing Company, The: *See*—
Chee, Wan T.; McLaren, Douglas; and Therrien, Keith E., 4,767,656, Cl. 428-116.000
Michael, Leroy D.; and Green, Michael W., 4,767,143, Cl. 294-65.000
Norsworthy, Keith H., 4,767,937, Cl. 250-578.000.
Seidel, Gerhard E., 4,767,270, Cl. 416-129.000

Boert, Konrad: *See*—
Ahlert, Dieter; Boert, Konrad; and Maiss, Armin, 4,766,766, Cl. 73-169.000

Bohner, Christian; Gahr, Harold; and Wohlhaupter, Gerhard, to Emil Wohlhaupter & Co. Rotary device for transmitting light signals including annular photoelectric transducers. 4,767,175, Cl. 350-96.200

Boiko, Vitaly T.: *See*—
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl. 227-109.000

Boileau, Daniel E., to United Technologies Automotive, Inc. Modular panel assembly, particularly automotive door panels, with independent coupling of modular components. 4,766,697, Cl. 49-352.000.

Bois, Wilhelm; Sterler, Georg; and Dengler, Martin. Motor vehicle with a pneumatic leveling unit. 4,767,126, Cl. 280-6.00R

Boissevain, Mathew G.: *See*—
Anderson, Leonard M.; Boissevain, Mathew G.; and Norton, M Kent, 4,767,935, Cl. 250-571.000

Boker, Samuel J., to Sani-Seat, Inc. Toilet seat covering. 4,766,618, Cl. 4-247.000

Bollish, Stephen J., to Fisher Scientific Group Inc. dba IMED Corporation. Volumetric fluid withdrawal system. 4,767,399, Cl. 604-5.000

Bolson, Steven J. Tape measure system. 4,766,673, Cl. 33-138.000

Bombardier Inc.: *See*—
Dube, Mario, 4,767,102, Cl. 266-48.000

Bonhomme, Francois R. Electric contact sockets. 4,767,360, Cl. 439-593.000

Bont, Willy S.: *See*—
Hohenberg, Rudolph; Figdor, Carl G.; and Bont, Willy S., 4,767,397, Cl. 494-85.000

Booher, Benjamin V. Vehicle suspension system with multiple overlapping composite control arm elements. 4,767,134, Cl. 280-719.000.

Boos, Karl S.; Wilmers, Bernd; Sauerbrey, Richard; and Schlimme, Eckhard, to Merck Patent Gesellschaft Mit Beschrankter Haftung. Nitro-modified chromatographic support materials. 4,767,529, Cl. 210-198.200

Boots Company PLC, The: *See*—
Hockley, Michael H.; and Titman, Roger B., 4,767,769, Cl. 514-322.000
Jeffery, James E.; Kozlik, Antonin; and Wilmshurst, Eric C., 4,767,790, Cl. 514-646.000

Borden, Inc.: *See*—
Merritt, Carleton G.; and Gillmore, Stephen R., 4,767,635, Cl. 426-272.000

Borderies, Pierre: *See*—
Chan-Son-Lint, Bernard; Borderies, Pierre; and Pouit, Christian J., 4,768,001, Cl. 333-159.000

Born, Grant R. Laser evolved models. 4,767,333, Cl. 434-262.000

Borodovsky, Yan, to Ateoq Corporation. Lens characterization apparatus and method. 4,767,215, Cl. 356-124.000

Borzym, Alexander: *See*—
Borzym, John J.; and Borzym, Alexander, 4,766,792, Cl. 83-319.000

Borzym, John J.; and Borzym, Alexander, to Alpha Industries, Inc. Cut-off die set. 4,766,792, Cl. 83-319.000

Bossert, Frank; and Hacker, Manfred, to Licentia Patent-Verwaltungs-GmbH. Process for the production of a porous pressed part. 4,767,372, Cl. 445-50.000.

Bost, John R. Bearing sorting device. 4,767,010, Cl. 209-670.000

Boston University, Trustees of: *See*—
Catsimpoolas, Nicholas; and Sinn, Robert S., 4,767,746, Cl. 514-25.000

Boudreau, Jean A.; Berman, Howard L.; Chin, Jimmie; and Martorella, Romeo P., to Grumman Aerospace Corporation. Synthetic speed stability flight control system. 4,767,085, Cl. 244-182.000.

Boulware, Richard, to Vipont Laboratories. Recovery of benzo-c-phenanthridine alkaloids. 4,767,861, Cl. 546-41.000

Bourgeois, David R.: *See*—
Clark, Vincent M.; Chasse, Dennis W.; and Bourgeois, David R., 4,768,163, Cl. 364-900.000

Bourret, Gerard: *See*—
Lacroix, Jean-Claude; Franco, Pierre; Le Gall, Stephane; Bourret, Gerard; and Pochet, Jacques, 4,768,202, Cl. 375-3.100.

Boutaud, Frederic: *See*—
Chauvel, Gerard; and Boutaud, Frederic, 4,768,157, Cl. 364-521.000

Boutni, Omar M., to General Electric Company. Low gloss, flame retardant polycarbonate compositions. 4,767,818, Cl. 524-505.000.

Bouvot, Jean-Francois, to VALEO, Societe anonyme francaise. Device for controlling displacement of a moving member, such as a flap in an installation for heating and ventilating or for air conditioning a motor vehicle. 4,767,096, Cl. 251-25.000

Bowden, Donald R. Continuous conveyor degreasing and cleaning machine. 4,766,916, Cl. 134-109.000

Bowen, James A.: *See*—
Kandpal, Pramode; Collinet, Jean C.; Ziegner, Bernhard A.; and Bowen, James A., 4,768,079, Cl. 357-74.000

Bower, Glenister B. Dispensing holder. 4,767,074, Cl. 242-55.200.

Boyhan, Arlene P. Small child's hair washing device. 4,766,620, Cl. 4-516.000

BP Chemicals Limited: *See*—
Parker, David A., 4,766,646, Cl. 17-51.000
Schombourg, Jacques, 4,767,894, Cl. 174-106.0SC.

Braden, Donald E.; Saroian, Nick T.; and Mansour, Tony L., to Edmusa, Inc. (Subsidiary of Nelson Liquid Drive). Structure and method of incremental orbital electrical discharge machining. 4,767,904, Cl. 219-69.00V.

Bradley, David J.: *See*—
Konopik, Bradly J.; Bradley, David J.; Reed, Martin A.; Tannenbaum, Alan R.; and Turner, Michael R., 4,768,149, Cl. 364-200.000

Bradley, Laurie; Lilleystone, Richard J.; and Cumner, Clive S., to Distillers Company (Carbon Dioxide) Limited, The; Bradley, Laurie, and Lilleystone, Richard J. Container for the preservation and transportation of severed limbs or other body parts. 4,766,740, Cl. 62-384.000

Bradley, Ralph H., Jr.; and Guerinot, William F., to North American Philips Consumer Electronics Corp. Front projection screen with rear light concentrating lens array. 4,767,186, Cl. 350-128.000

Bradley, William E.: *See*—
Timm, Gerald W.; and Bradley, William E., 4,766,909, Cl. 128-774.000

Bradshaw, Johnny S.; Gunter, Jonas L.; Cothran, Liggett A.; Edwards, William M.; and Henry, Pearison W., to Dayco Products, Inc. Method of protecting hose with a plastic abrasion-resistant protective sleeve. 4,766,662, Cl. 29-450.000

Braginski, Alexander I.: *See*—
Talvacchio, John J.; Braginski, Alexander I.; Janocko, Michael A.; and Gavaler, John R., 4,768,069, Cl. 357-5.000

Bramlage Gesellschaft mit beschrankter Haftung: *See*—
Hackmann, Ludger; and Wilken, Josef, 4,767,023, Cl. 221-152.000

Brand, Klaus-Peter; Kopainsky, Jurgen; and Wimmer, Wolfgang, to BBC Brown, Boveri & Co., Ltd. Method for error-protected actuation of the switching devices of a switching station and an apparatus thereof. 4,767,941, Cl. 307-43.000

Brandes, Karlheinz K.: *See*—
Kukes, Simon G.; and Brandes, Karlheinz K., 4,767,523, Cl. 208-217.000

Brandes, Wilhelm: *See*—
Jelich, Klaus; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,767,775, Cl. 514-379.000

Brandestini, Marco; and Moermann, Werner H. Method and apparatus for the custom shaping of dental inlays, onlays, crowns, bridges and parts thereof. 4,766,704, Cl. 51-327.000.

Brandt, Lennart H., to AB Volvo Penta. Rotor system, particularly a boat propeller system. 4,767,269, Cl. 416-124.000

Branemark, Per-Ingvar, to Institute for Applied Biotechnology, The. Device for securing a plurality of teeth. 4,767,328, Cl. 433-168.100

Brannstrom, Roine; Karlsson, Lars-Erik; and Mansson, Martin, to Asea Stal Aktiebolag. Method of controlling the depth of a fluidized bed in a power plant and a power plant with means for controlling the bed depth. 4,767,315, Cl. 431-7.000

Brannstroom, Roine, to Asea Stal AB. Pneumatic conveying system with directional change of a gas/particulate material stream. 4,767,243, Cl. 406-193.000

Brasswell Corporation: *See*—
Jones, Patrick T., 4,766,797, Cl. 84-453.000.

Braun, Ernst: *See*—
Braun, Gert; and Braun, Ernst, 4,766,992, Cl. 198-599.000

Braun, Gert; and Braun, Ernst, to Halbach & Braun Industrienlagen Coal conveyor construction. 4,766,992, Cl. 198-599.000.

Brazdil, James F., Jr.: *See*—
Glaeser, Linda C.; Brazdil, James F., Jr.; and Toft, Mark A., 4,767,739, Cl. 502-209.000

Break, Douglas G.; Marsh, Walter G.; and Rhoades, James J., to Tapco Products Company, Inc. Sheet bending brake. 4,766,757, Cl. 72-319.000

Breccia, Alberto; and Fini, Adamo, to Consiglio Nazionale Delle Ricerche. Pharmaceutical compositions containing thiophene compounds, and new thiophene compounds. 4,767,758, Cl. 514-231.500.

Bree, Charles E., to D. L. Auld Company, The. Decorative emblem. 4,767,647, Cl. 428-14.000.

Bremel, Robert D.: *See*—
Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D.; and Rottman, Fritz M., 4,767,711, Cl. 435-243.000.

Breneman, Bruce C.: *See*—
Purcell, John R.; Breneman, Bruce C.; and Burnett, Sibley C., 4,768,008, Cl. 335-216.000.

Brennan, Robert J.: *See*—
Phillipson, Walter M.; Brennan, Robert J.; and Meighen, Terrence, 4,767,355, Cl. 439-425.000.

Brentwood Industries, Inc.: *See*—
Rye, Palle, 4,767,149, Cl. 296-39.00R

Brewer, Troy D.; and Defibaugh, Thorner S., Jr., to Westinghouse Electric Corp. Robotic tinning station for axial lead electronic components. 4,766,844, Cl. 118-668.000.

Bridgestone Tire Company Limited: *See*—
Yokoyama, Hideki; Shimada, Tatsuro; and Nakagawa, Masao, 4,766,940, Cl. 152-541.000

Briggs, Blanca F. Hairdresser's glove. 4,766,914, Cl. 132-9.000

Brima, Thomas S.: *See*—
Hanes, Ronnie M.; and Brima, Thomas S., 4,767,574, Cl. 260-410.000

Brinkman, Robert J., to C. J. Winter Machine Works. Control mechanism for thread rolling attachment. 4,766,750, Cl. 72-30.000.

Bristol-Myers Company: *See*—
Vyas, Dolatrai M.; Doyle, Terrence W.; and Chiang, Yulin, 4,767,863, Cl. 546-178.000.

British Petroleum Company p.l.c., The: *See*—
Brophy, John H.; and Weinberg, Felix J., 4,767,569, Cl. 252-373.000

British Telecommunications plc: *See*—
Kashyap, Raman, 4,767,210, Cl. 356-345.000.

Brixner, Lothar H.: *See*—
Bierlein, John D.; Brixner, Lothar H.; Ferretti, August; and Hsu, William Yang-Hsing, 4,766,954, Cl. 156-624.000.

Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., to Union Carbide Corporation. Glycosaminoglycan and cationic polymer combinations. 4,767,463, Cl. 106-162.000

Broich, Bruno; Gobrecht, Jens; and Roggwiller, Peter, to BBC Brown, Boveri & Company, Limited. Power semiconductor module. 4,768,075, Cl. 357-38.000

Brooks, Edward F., to TRW Inc. Method for making carbonaceous materials. 4,767,737, Cl. 502-185.000.

Brooks, Frederick C., to Edward Weck Incorporated. Catheter protective shield. 4,767,409, Cl. 604-171.000

Brooks, Terrill W.; and Gerard, Donald R., to Detrex Chemical Industries, Inc. Method and apparatus for vapor phase soldering. 4,766,677, Cl. 34-78.000

Brophy, John H.; and Weinberg, Felix J., to British Petroleum Company p.l.c., The. Process for producing synthesis gas by partial combustion of hydrocarbons. 4,767,569, Cl. 252-373.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji; Watanabe, Yumiko; and Suzuki, Makoto, 4,767,170, Cl. 350-96.140.
Nomura, Etsuzo; and Suzuki, Shigeru, 4,766,828, Cl. 112-314.000

Sakaida, Atsuo; Kawaura, Masafumi; Chikaoka, Yasuji; Iwata, Hiroshi; and Asano, Kiyomitsu, 4,767,226, Cl. 400-124.000

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Mennicke, Stefan, and Reiss, Karl, 4,767,685, Cl. 429-104.000

Brown, Danny D.; Hazebrook, Daniel W.; and Fillmore, Francis L., to GKN Automotive Components Inc. Boot restraint for plunging universal joint. 4,767,381, Cl. 464-146.000

Brown, Edward M.: *See*—
Towns, Edward J.; and Brown, Edward M., 4,767,587, Cl. 264-318.000

Brown, Francis Z. Book holder. 4,767,094, Cl. 248-448.000

Brown, Richard C.; Lafler, Robert E.; Murphy, Joseph M., and Westvaco Corporation. Flexographic press applied paper color coating. 4,766,841, Cl. 118-75.000

Brown, Robert A.; and Clark, Daren A., to A. B. Chance Company. Latch and pivot mechanism for electronic sectionalizer mounting structure. 4,768,010, Cl. 337-169.000

Brown, Thomas R.: *See*—
Mickelson, Roger D.; and Brown, Thomas R., 4,767,255, Cl. 414-695.500

Brown, William E.: *See*—
Minkley, Edwin G., Jr.; and Brown, William E., 4,767,708, Cl. 435-194.000

Brown, Wilmott G., to Westinghouse Electric Corp. Locking pin system for turbine curved root side entry closing blades. 4,767,275, Cl. 416-220.00R

Brownell, Keith H.: *See*—
Baker, Don R.; and Brownell, Keith H., 4,767,771, Cl. 514-346.000
Baker, Don R.; Kezeran, Charles; and Brownell, Keith H., 4,767,772, Cl. 514-346.000

Bruckner, Hermann: *See*—
Emsperger, Werner; Bruckner, Hermann; Losel, Georg; and Pieper, Rudolf, 4,766,851, Cl. 122-4.00D

Bruer, Dirk; Garbers, Hermann; and Heidjann, Franz, to Claas OHG. Method of and agricultural machine for producing power fodder. 4,767,067, Cl. 241-81.000

Brumline USA, Inc.: *See*—
Landry, Lela C., 4,766,627, Cl. 5-446.000

Brunelle, Daniel J.: *See*—
Shannon, Thomas G.; and Brunelle, Daniel J., 4,767,840, Cl. 528-196.000
Shannon, Thomas G.; and Brunelle, Daniel J., 4,767,877, Cl. 558-281.000

Brunswick Corporation: *See*—
Lang, William P., 4,767,366, Cl. 440-76.000
Newman, Neil A., 4,766,776, Cl. 74-501.00A.
Riese, Stephen B., 4,766,854, Cl. 123-65.0PE

Brusasco, Enzo, to Roltra S.p.A. Power clutch system. 4,766,985, Cl. 192-0.02R

Bryant, Lynn A.; and Bell, Thomas W., to Firestone Tire & Rubber Company, The. Process for making a tire having decorative applique. 4,767,481, Cl. 156-116.000

Buckley, Carl W. Portable animal trap holder. 4,766,694, Cl. 43-96.000

Buckley, John D.: *See*—
Schott, Timothy D.; Fox, Robert L.; and Buckley, John D., 4,767,484, Cl. 156-233.000

Budd Company, The: *See*—
Hannum, Joseph R., 4,766,997, Cl. 198-853.000.
Stevens, Raymond R., Jr.; Gondek, Stanley E.; Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., 4,767,910, Cl. 219-125.100.

Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., to Eastman Kodak Company. Apparatus for precision volumetric control of a moldable material in an injection molding process. 4,767,300, Cl. 425-140.000

Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., to Eastman Kodak Company. Method of precision volumetric control of a moldable material in an injection molding process. 4,767,579, Cl. 264-40.500

Bullard, Roy P., to Otis Engineering Corporation. Running and pulling tool. 4,767,145, Cl. 294-86.180.

Bunch, Richard P.: *See*—
O'Rourke, John J.; and Bunch, Richard P., 4,766,681, Cl. 36-89.000

Bunshah, Rointan F.; Parsons, James D.; and Stafsudd, Oscar M., to University of California, The Regents of the. Wafer base for silicon carbide semiconductor device. 4,767,666, Cl. 428-334.000

Buravtsov, Arkady A.: *See*—
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl. 227-109.000

Bureau, Jean-Marc: *See*—
Bernard, Gilles; Bureau, Jean-Marc; Dubois, Jean-Claude; and Zattara, Jean-Luc, 4,768,130, Cl. 361-323.000

Burgdorf, Jochen, to Alfred Teves GmbH. Slip-controlled brake system. 4,767,165, Cl. 303-92.000

Burger, Bernd, to ESPE GmbH Fabrik pharmazeutischer Praparate GmbH. Apparatus for fabricating tooth arrangement models. 4,767,330, Cl. 433-213.000

Burke, Richard G.: *See*—
McKernan, Bernard J.; Burke, Richard G.; and Wurzler, Phillip D., 4,766,665, Cl. 29-557.000

Burkett, William R.: *See*—
Cantwell, Jay S.; and Burkett, William R., 4,766,614, Cl. 2-414.000

VOL 1093 ISS 5 AG 30 1988 UMI

Burlington Industries, Inc.: *See—*
Conklin, Delano M.; Hansen, John H.; Burske, Norbert W.; and Malpass, Robert C., 4,767,669, Cl. 428-394.000
Gamblin, Rodger L.; Myers, Nancy E.; and Sugg, David J., 4,767,509, Cl. 204-44.700

Burndy Corporation: *See—*
Noschese, Rocco, 4,767,344, Cl. 439-83.000

Burnett, Sibley C.: *See—*
Purcell, John R.; Breneman, Bruce C.; and Burnett, Sibley C., 4,768,008, Cl. 335-216.000

Burr-Brown Corporation: *See—*
Hickox, Robert E., 4,766,655, Cl. 29-25.350

Burrows, James E., to International Computers Limited. Video display system with graphical cursor. 4,768,029, Cl. 340-799.000.

Burske, Norbert W.: *See—*
Conklin, Delano M.; Hansen, John H.; Burske, Norbert W.; and Malpass, Robert C., 4,767,669, Cl. 428-394.000

Busch, Manfred: *See—*
Neumann, Horst; and Busch, Manfred, 4,767,310, Cl. 425-469.000

Buse, Fredric W., to Ingersoll-Rand Company. Fiber-filled polymer impeller. 4,767,277, Cl. 416-241.00A.

Bush, James W.: *See—*
Caillat, Jean-Luc M.; Weatherston, Roger C.; and Bush, James W., 4,767,293, Cl. 418-55.000

Butler, Susan M., to Johnson, Anna M.; and Johnson, Floyd T., a part interest to each. Earring holder. 4,767,011, Cl. 211-13.000

Butt, Sheldon H.; Fister, Julius C.; and Crane, Jacob, to Olin Corporation. Special surfaces for wire bonding. 4,767,049, Cl. 228-111.000

Byrd, Audis C.; and Morris, Robert J., to Halliburton Company. Pig for a fluid conducting system. 4,767,603, Cl. 422-119.000

Byrne, Timothy K. Protective device for an electric motor. 4,768,125, Cl. 361-33.000

C. A. Weidmuller GmbH & Co.: *See—*
Undin, Hans; and Wiener, Hans, 4,766,672, Cl. 30-90.100

C-I-L Inc.: *See—*
Desrochers, Louis-Georges, 4,768,127, Cl. 361-251.000

C. J. Winter Machine Works: *See—*
Brinkman, Robert J., 4,766,750, Cl. 72-30.000

Caenazzo, Alessandro; and Pasqualotto, Silvana. Small-sized engine operated by fluid. 4,766,802, Cl. 91-394.000.

Cafina AG: *See—*
Meier, Hermann, 4,767,632, Cl. 426-231.000

Caillat, Jean-Luc M.; Weatherston, Roger C.; and Bush, James W., to Copeland Corporation. Scroll-type machine with axially compliant mounting. 4,767,293, Cl. 418-55.000.

Caillot, Luc: *See—*
Legrand, Michel; Caillot, Luc; Donnola, Jean-Michel; and Siretchi, Roman, 4,766,894, Cl. 128-204.210

Cain, Gary L.; Rando, Joseph F.; Teach, Ted L.; Meyers, Lawrence J.; and Markley, Theodore J., to Spectra-Physics, Inc. Self leveling transmitter for laser alignment systems. 4,767,208, Cl. 356-138.000.

Calandro, Thomas P.; and Karwowski, Jan, to Nabisco Brands, Inc. Process for sweetening baked comestible and product produced thereby. 4,767,631, Cl. 426-103.000.

Caldwell, Larry J.; Gardner, Colin R.; and Cargill, Robyn C., to Merck & Co., Inc. Drug delivery device which can be retained in the stomach for a controlled period of time. 4,767,627, Cl. 424-426.000

Caldwell, Michael D.: *See—*
Moden, James R.; Caldwell, Michael D.; and Moden, Robert D., 4,767,410, Cl. 604-175.000

Calibron Systems, Inc.: *See—*
Cohrs, Gary D.; and Francisco, Edward E., Jr., 4,766,759, Cl. 73-3.000

California Institute of Technology: *See—*
Deininger, William D.; and Gabriel, Stephen B., 4,767,418, Cl. 623-1.000

Callaghan, Frank J., to Telectronics N.V. Rate responsive pacing system using the integrated cardiac event potential. 4,766,900, Cl. 128-419.0PG

Callaghan, Frank J., to Telectronics N.V. Rate responsive pacing system using the integrated evoked potential. 4,766,901, Cl. 128-419.0PG

Calley, David G. Wind driven electric current producer. 4,767,939, Cl. 290-55.000

Cam-Lok Inc.: *See—*
Kamp, David C.; and Newman, Albert P., 4,767,347, Cl. 439-133.000

Camerik, Eduard, to U.S. Philips Corporation. Optical-disc apparatus 4,768,185, Cl. 369-270.000

Cameron, A. Larson, and Henry J. Moore, to Mor-Flo Industries, Inc Forced draft controlled mixture heating system using a closed combustion chamber. 4,766,883, Cl. 126-351.000

Cameron Iron Works USA, Inc.: *See—*
Smith, Jerry D.; and Szymczak, Edward J., 4,766,956, Cl. 166-182.000

Camloh Industries, Inc.: *See—*
Camloh, William J.; and Alcott, Charles, 4,767,246, Cl. 409-234.000

Camloh, William J.: and Alcott, Charles, to Camloh Industries, Inc. Quick-release tool holding device. 4,767,246, Cl. 409-234.000

Campbell, Brian C. Sailboard watercraft. 4,767,370, Cl. 441-74.000

Campbell, Robert J.; and Jacobs, Peter C., to American Ozone Technology. Clean water system. 4,767,525, Cl. 210-87.000

Camplin, Harry R.; and Monson, Donald R., to United States of America, Army. Aspirator mechanism for turbine engine air cleaner 4,767,425, Cl. 55-306.000

Camps, Robert; and Moudir, Said, to Compagnie Generale D'Automatisme CGA-HBS. Surveillance device using video camera. 4,768,090, Cl. 358-108.000

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Wilson, Harold S., 4,767,988, Cl. 324-247.000

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government: *See—*
Murray, Douglas G., 4,767,619, Cl. 424-78.000.

Candor, James T. Apparatus and method for removing liquid from liquid bearing material. 4,767,514, Cl. 204-183.100.

Canino, Lawrence S.: *See—*
Stoner, Donald W.; and Canino, Lawrence S., 4,768,195, Cl. 371-25.000

Canlas, Prudencio S., Jr., to Stanley-Bostitch, Inc. Fastener driving device with improved countersink adjusting mechanism. 4,767,043, Cl. 227-8.000

Cannella, Vincent D.; and Yaniv, Zvi, to Energy Conversion Devices, Inc. Contact-type portable digitizing wand for scanning image-bearing surfaces. 4,768,096, Cl. 358-294.000.

Canon Kabushiki Kaisha: *See—*
Hashimoto, Seiji, 4,768,085, Cl. 358-48.000.
Inaba, Hiroyoshi; and Matsuda, Kazuya, 4,767,200, Cl. 350-429.000.
Ishikawa, Hisashi, 4,768,092, Cl. 358-140.000
Isohata, Junji; Nakasugi, Mikio; and Yokomatsu, Takao, 4,768,064, Cl. 355-53.000
Kadosawa, Tsuneaki, 4,767,974, Cl. 318-663.000
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,063, Cl. 355-29.000
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,100, Cl. 358-285.000
Murakami, Osamu, 4,767,348, Cl. 439-140.000.
Sato, Tadashi; and Tamura, Yasuyuki, 4,768,041, Cl. 346-76.0PH.
Yuasa, Toshiaki, 4,767,923, Cl. 250-221.000

Cantwell, Jay S.; and Burkett, William R. Ventilated protective headgear. 4,766,614, Cl. 2-414.000.

Caradonna, Giuseppe; and Ferruccio, Antonio, to Antonio Ferruccio. Prefabricated composite element for the building of a sea wall. 4,767,235, Cl. 405-33.000

Cardinal American Corporation: *See—*
Fielder, Dennis C.; Furman, Arthur J.; Miller, Paul A.; and Rogers, Blair E., 4,767,088, Cl. 248-121.000.

Carenco, Alain; and Riviere, Luc, to L'Etat Francais representé par le Ministre des P.TT. Process and device for connecting an optical fibre and an integrated optical component comprising a wave guide. 4,767,174, Cl. 350-96.200

Cargill, Robyn C.: *See—*
Caldwell, Larry J.; Gardner, Colin R.; and Cargill, Robyn C., 4,767,627, Cl. 424-426.000

Carl-Zeiss-Stiftung: *See—*
Blaha, Erich, 4,767,204, Cl. 351-214.000

Carlingswitch, Inc.: *See—*
Sorenson, Richard W.; and Ives, Milton N., 4,767,899, Cl. 200-144.00R.

Carnegie Mellon University: *See—*
Minkley, Edwin G., Jr.; and Brown, William E., 4,767,708, Cl. 435-194.000

Carpano & Pons: *See—*
Saligny, Yves, 4,767,354, Cl. 439-413.000

Carrell, William E.: *See—*
Haydu, Bartley A.; Tregilgas, Steven F.; and Carrell, William E., 4,768,134, Cl. 362-65.000

Carrier Corporation: *See—*
Gray, Kenneth P., 4,766,667, Cl. 29-727.000

Cartee, Gilbert A.; and Webster, Emmett G., to New Holland Inc. Variable stroke hydraulic cylinder control linkage. 4,766,803, Cl. 92-13.400

Carter, Garry L.: *See*
Trick, Robert E.; and Carter, Garry L., 4,766,889, Cl. 128-79.000

Cartier, Jacques, to Societe Anonyme Dite: Radiall Industrie. Method for securing an element in a body, particularly an optical fiber 4,767,177, Cl. 350-96.200

Cascione, Alexander S., to Nabisco Brands, Inc. Feeder assembly for highly viscous particulate material. 4,767,029, Cl. 222-227.000.

Caspe, Marc S. Earthquake protection system for structures. 4,766,706, Cl. 52-1.000

Caspers, Johannes, to Deutsche Thomson-Brandt GmbH. Resilient foot for consumer-electronics equipment. 4,767,105, Cl. 267-140.000.

Castle, Richard J., to Chevron Research Company. Method for generating and collecting random vibratory seismic data wherein a prespecified wavelet of minimum side lobe content is always produced in the final correlations by maintaining domain consistency. 4,768,174, Cl. 367-39.000

Caterpillar Inc.: *See—*
Martin, Dean W., 4,766,720, Cl. 59-7.000

Catlow, Ronald, to Rolls-Royce plc. Gas turbine engine power turbine 4,767,271, Cl. 416-129.000

Catsimpoolas, Nicholas; and Sinn, Robert S., to Boston University, Trustees of; and Angio-Medical Corporation. Method for enhancement of healing of epithelial wounds in mammals. 4,767,746, Cl. 514-25.000

Cavallaro, Robert. *See—*
Berger, Michael; Cavallaro, Robert; and Czumak, Frank M., 4,767,691, Cl. 430-210.000

Cavanagh, Patrick: *See—*
Wilson, Lloyd C.; and Cavanagh, Patrick, 4,766,814, Cl. 102-334.000

Cavanna, Pietro: *See—*
Bermingham, Hubert P. M.; and Cavanna, Pietro, 4,766,711, Cl. 52-404.000

Cebora S.p.A.: *See—*
Dallavalle, Silvano; and Ansaloni, Raffaele, 4,767,908, Cl. 219-121.500.

Cecil, John, Jr.; and Black, Robert R., to Welch Allyn, Inc. Disposable vaginal speculum. 4,766,887, Cl. 128-17.000.

Central Electricity Generating Board: *See—*
Bibby, Geoffrey W., 4,767,219, Cl. 374-123.000.

Central Glass Company, Limited: *See—*
Inaba, Hiroshi; Shinnai, Masao; Nishikawa, Kazuya; Saitoh, Tamotsu; and Tuskada, Tokio, 4,768,037, Cl. 343-713.000.

Centre National de la Recherche Scientifique (CNRS): *See—*
Doutheau, Alain; Gore, Jacques; Quash, Gerard A.; and Didier, Bernard, 4,767,872, Cl. 549-551.000

Cesare, Frank C.; Whelan, William P., Jr.; Petersen, Henno A.; Coolbaugh, Thomas S.; and Davis, Robert G., to Uniroyal Chemical Company, Inc. Carboxyl modified olefinic copolymer composition. 4,767,806, Cl. 523-514.000.

Cezana, Haim: *See—*
Mower, Morris F.; and Cezana, Haim, 4,767,297, Cl. 425-87.000

Cha, Edward. Drip and splatter proof paint applicator. 4,767,229, Cl. 401-208.000

Champseix, Henri; and Champseix, Serge, to Societe Anonyme Dite ABX. Two or three way microelectrovalve with twin sealing membrane. 4,766,933, Cl. 137-625.500

Champseix, Serge: *See—*
Champseix, Henri; and Champseix, Serge, 4,766,933, Cl. 137-625.500

Chan, Fred N.; and Reimche, Wallace E., to Ford Aerospace & Communications Corporation. Autonomous stationkeeping for three-axis stabilized spacecraft. 4,767,084, Cl. 244-164.000.

Chan-Son-Lint, Bernard; Borderies, Pierre; and Pouit, Christian J., to Office National d'Etudes et de Recherches Aerospatiales (ONERA) Microwave phase shifter with piezoelectric control. 4,768,001, Cl. 333-159.000

Chang, Chij-Mehn; Freund, Thomas J.; Loucks, Larry K.; and Wierwille, Robert L., to International Business Machines Corporation. Application program interface to networking functions. 4,768,150, Cl. 364-300.000.

Chang, Ifay F.; and Gordon, Eugene I., to International Business Machines Corporation. Light activated light valve with a silicon control element. 4,767,192, Cl. 350-342.000

Chapin, John T.; and Sabia, Raffaele A., to American Telephone and Telegraph Company, AT&T Laboratories. Article comprising an elastomeric controlled release insecticide. 4,767,812, Cl. 524-144.000

Chapuis, Bernard: *See—*
Pignal, Maurice; and Chapuis, Bernard, 4,767,252, Cl. 414-222.000

Charles Stark Draper Laboratory, Inc., The: *See—*
Johnson, William M., 4,767,209, Cl. 356-152.000

Chase, Brian D.; and Paton, Andrew, to International Business Machines Corporation. Shadow mask color CRT with enhanced resolution and/or brightness. 4,767,963, Cl. 313-408.000

Chasse, Dennis W.: *See—*
Clark, Vincent M.; Chasse, Dennis W.; and Bourgeois, David R., 4,768,163, Cl. 364-900.000

Chasseguet, Gustave; and Paquin, Jacques, to Valeo. Damper-type flywheel suitable for automobile transmissions. 4,767,380, Cl. 464-68.000

Chatterjee, Pronoy K.: *See—*
Makoui, Kambiz B.; and Chatterjee, Pronoy K., 4,767,848, Cl. 536-56.000

Chauvel, Gerard; and Boutaud, Frederic, to Texas Instruments Incorporated. Video image processing system. 4,768,157, Cl. 364-521.000.

Chauvier, Daniel J. V. D.; and Woodman, Peter. Submerged valve 4,766,931, Cl. 137-624.140

Chee, Wan T.; McLaren, Douglas; and Therrien, Keith E., to Boeing Company, The. Composite material structure with integral fire protection. 4,767,656, Cl. 428-116.000

Chemiomed, Ltd.: *See—*
Lemieux, Raymond U.; Ratcliffe, Robert M.; and Baker, Donald A., 4,767,845, Cl. 536-18.200

Chemical Dynamics Sweden AB: *See—*
Conway, Patricia; and Kjelleberg, Staffan, 4,767,623, Cl. 424-93.000

Chen, Bean T.: *See—*
Yeh, Hsu-Chi; Chen, Bean T.; Cheng, Yung-Sung; and Newton, George J., 4,767,524, Cl. 209-143.000

Chen, Hsi P. Pipe clamp. 4,766,785, Cl. 81-129.000

Chen, Huo M.: *See—*
Hwaw, Hong L.; Chen, Huo M.; and Chen, Tu C., 4,768,137, Cl. 362-120.000

Chen, James M.: *See—*
Feldman, Robert J.; Chen, James M.; Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., 4,767,521, Cl. 208-85.000

Chen, Sung J.: *See—*
Keller, Wilhelm A.; and Chen, Sung J., 4,767,026, Cl. 222-137.000

Chen, Timothy S.: *See—*
Riccitiello, Salvatore R.; Hsu, Ming-Ta S.; and Chen, Timothy S., 4,767,728, Cl. 501-91.000

Chen, Tu C.: *See—*
Hwaw, Hong L.; Chen, Huo M.; and Chen, Tu C., 4,768,137, Cl. 362-120.000

Chen, Wen-Chin, to Yarbrough, Paul E., Jr. Hot body intrusion activated light control unit with daylight photocell deactivation override. 4,768,020, Cl. 340-567.000

Chen, William I. H.; Dillon, Philip; and Yancey, Glenn, to Reliance Comm/Tec Corporation. Inductance multiplier circuit. 4,767,980, Cl. 323-356.000

Cheng, Theodore. Remedy for anemia and arthritis. 4,767,626, Cl. 424-195.100

Cheng, Yung-Sung: *See—*
Yeh, Hsu-Chi; Chen, Bean T.; Cheng, Yung-Sung; and Newton, George J., 4,767,524, Cl. 209-143.000

Chesebrough-Pond's Inc.: *See—*
Blasius, William G., Jr., 4,767,398, Cl. 604-1.000
LaRosa, Joseph P.; and Lombardi, Michael H., 4,767,058, Cl. 239-309.000

Chester, Arthur W.; and Kirker, Garry W., to Mobil Oil Corporation Amorphous refractory composition. 4,767,733, Cl. 502-65.000

Chevron Research Company. *See—*
Castle, Richard J., 4,768,174, Cl. 367-39.000

Chiang, Yulin: *See—*
Vyas, Dolatrai M.; Doyle, Terrence W.; and Chiang, Yulin, 4,767,863, Cl. 546-178.000

Chiappini, Giuseppe: *See—*
Vittone, Andrea; Chiappini, Giuseppe; and Di Paola, Massimo, 4,767,491, Cl. 156-500.000

Chiba, Kimio: *See—*
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi, Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000

Chicove, Etzer: *See—*
Goldstein, Henry; Ting, Patrick L.; Chicove, Etzer; Goetzke, Gary; and Cowles, John M., 4,767,640, Cl. 426-600.000

Chikaoka, Yasuji: *See—*
Sakaida, Atsuo; Kawaura, Masafumi; Chikaoka, Yasuji; Iwata, Hiroshi; and Asano, Kiyomitsu, 4,767,226, Cl. 400-124.000

Chilbert, Mary L.: *See—*
Ristic, Miodrag; and Chilbert, Mary L., 4,767,622, Cl. 424-88.000

Childers, John T.; and Fleming, Issac D., to Henkel Corporation Low-sling fiber lubricant comprising shear-reduced, high molecular weight polyisobutylene. 4,767,556, Cl. 252-8.600.

Chilva, Timothy E., to Azdel, Inc. Oven for heating and stacking thermoplastic fiber reinforced resin sheets. 4,767,321, Cl. 432-59.000

Chin, Jimmie: *See—*
Boudreau, Jean A.; Berman, Howard L.; Chin, Jimmie; and Martorella, Romeo P., 4,767,085, Cl. 244-182.000

Chizhkov, Vitaly P.: *See—*
Poshemansky, Vladimir M.; Skornyakov, Eduard P.; and Chizhkov, Vitaly P., 4,766,760, Cl. 73-23.100

Chludzinski, Andrew M.: *See—*
Scarpa, Ioannis S.; Chludzinski, Andrew M.; and Janic, Milan D., 4,767,614, Cl. 424-48.000

Chongben, Zhong; and Zhengli, Xu, to TDJ System Research Center of Haerbin Railway Bureau. Up-grade speed control system of railway marshalling yard. 4,766,815, Cl. 104-26.200.

Chornet, Esteban; and Jaulin, Line, to Universite de Sherbrooke. Oxidation of wastewaters. 4,767,543, Cl. 210-759.000

Christianson Manufacturing Corp.: *See—*
Grady, II: Clyde C., 4,766,920, Cl. 135-20.00B

Christine, William C., to Triparte Ltd. Attaching a plastic tube to a web of plastic. 4,767,478, Cl. 156-69.000

Chrysler Motors Corporation: *See—*
Betterton, Joseph T.; Glover, Alfred H.; Griffin, Ranald L.; and Kerstiens, Anthony J., 4,767,897, Cl. 200-83.00J

Chu, Daniel T., to Abbott Laboratories. Tricyclic quinoline and naphthyride antibacterials. 4,767,762, Cl. 514-254.000

Chu, Sow T.; and Rohling, Kenneth W., to General Electric Company Timing and control circuitry for flash analog to digital converters with dynamic encoders. 4,768,016, Cl. 340-347.0AD

Chubu Industries, Inc.: *See—*
Ando, Toshio, 4,767,068, Cl. 241-84.000

Chugai Ro Co., Ltd.: *See—*
Sasaki, Hirofumi; and Miyabe, Yoshinaga, 4,767,320, Cl. 432-59.000

Chung, Raymond: *See—*
Radwanski, Fred R.; and Chung, Raymond, 4,767,586, Cl. 264-113.000

Cia. Valenciana de Cementos Portland S.A.: *See—*
Pons de Vinals, Joaquin, 4,767,462, Cl. 106-101.000

Ciba-Geigy Corporation: *See—*
Abel, Heinz; and Topfl, Rosemarie, 4,767,568, Cl. 252-321.000
Karvdas, Athanasios; Cooke, Thomas W.; and Falk, Robert A., 4,767,545, Cl. 252-8.300
Muller, Rolf; and Dill, Bernd, 4,767,573, Cl. 260-380.000
Zendler, Helmut; Eckhardt, Wolfgang; and Nyfeler, Robert, 4,767,443, Cl. 71-90.000

Ciccotelli, Stephen S. Swim fin with hinged, spring-biased blade displaced from toe of foot pocket. 4,767,368, Cl. 441-64.000

Ciganek, Engelbert, to Du Pont de Nemours, E. I., and Company Alkoxyalkyl and alkylmercaptoalkyl substituted bridged benzofuroisoquinolines having opioid antagonist and/or appetite-controlling properties. 4,767,764, Cl. 514-282.000

Cimato, Thomas R., to Moog Inc. Transducer clamp. 4,767,956, Cl. 310-91.000

VOL 1093 ISS 5 AG 30 1988 UMI

CIMCO: *See*—
Bagwell, James T., 4,767,576, Cl. 261-16.000
Cimenti, Antonio. Simplified cream whipper. 4,766,739, Cl. 62-298.000.
Cincinnati Milacron Inc.: *See*—
Gibbemeyer, Joseph F., 4,767,311, Cl. 425-526.000
Cincinnati Mine Machinery Company, The: *See*—
Sterwerf, Lester J., Jr., 4,766,995, Cl. 198-733.000
Claas OHG: *See*—
Bruer, Dirk; Garbers, Hermann; and Heidjann, Franz, 4,767,067, Cl. 241-81.000
Claassen, George R.: *See*—
Lampman, DeWitt W.; Claassen, George R.; and Fecik, Michael T., 4,767,437, Cl. 65-104.000
Schwartz, James H.; Waterloo, Thomas L.; and Claassen, George R., 4,767,434, Cl. 65-29.000.
Clare, Michael: *See*—
Hansen, Donald W., Jr.; Pilipauskas, Daniel R.; and Clare, Michael, 4,767,744, Cl. 514-19.000
Clark, Daren A.: *See*—
Brown, Robert A.; and Clark, Daren A., 4,768,010, Cl. 337-169.000
Clark, Neville J.: *See*—
Baker, Bruce G.; Clark, Neville J.; McArthur, Hamish; and Summerville, Edward, 4,767,792, Cl. 518-721.000
Clark, Quentin S. Tooth and sulcus brush. 4,766,633, Cl. 15-167.100.
Clark, Vincent M.; Chasse, Dennis W.; and Bourgeois, David R., to Honeywell Bull Inc. Magnetic stripe and wand reader interface employing off-the-shelf programmable communications interface 4,768,163, Cl. 364-900.000
Claussen, Nils; and Petzow, Gunter, to Max-Planck-Gesellschaft Zur Foerderung Der Wissenschaften E.V. Fibre-strengthened ceramic formed bodies. 4,767,727, Cl. 501-87.000.
Claydon, Robert C.: *See*—
Todd, Richard I.; and Claydon, Robert C., 4,767,047, Cl. 228-6.200.
Clement, Thomas P., to Van-Tec, Inc. Aspiration syringe. 4,766,908, Cl. 128-765.000
Clendinning, Robert A.; and Kwiatkowski, George T., to Amoco Corporation. Chain-extended poly(aryl ether ketones). 4,767,838, Cl. 528-125.000
Cleveland, William L.; and Erlanger, Bernard F., to Columbia University in the City of New York. Protein-free culture medium. 4,767,704, Cl. 435-68.000
Clevenger, Douglas H.; and Deptowicz, Donald L., to United Technologies Corporation. Stator vane platform cooling means. 4,767,260, Cl. 415-115.000
Cloverline, Inc., The: *See*—
Leopoldi, Norbert; and Heinrich, William P., 4,768,138, Cl. 362-189.000
Clupper, Charles B.; and Mathews, Robert J., to U.S. Computer Systems. Data acquisition device. 4,768,228, Cl. 380-20.000
Coen Company: *See*—
Vosper, Ralph R., 4,767,319, Cl. 431-350.000.
Coffron, James W.: *See*—
Wheelwright, Lynn M.; Harmon, William B.; and Coffron, James W., 4,768,145, Cl. 364-200.000.
Cogema, Compagnie Generale des Matieres Nucleaires: *See*—
Lehmann, Jean, 4,767,136, Cl. 285-32.000
Cohenford, Menashi A. Paper strip assay for neisseria species. 4,767,702, Cl. 435-24.000
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, to Metropolitan Wire Corporation. Surgical case cart 4,767,166, Cl. 312-229.000
Cohrs, Gary D.; and Francisco, Edward E., Jr., to Calibron Systems, Inc. Apparatus and method for determining the flow characteristic of a volumetric flowmeter. 4,766,759, Cl. 73-3.000
Colby, Mark J.: *See*—
Wolters, Richard A., Jr.; Colby, Mark J.; and Elkins, Robert B., 4,767,595, Cl. 376-353.000
Cole, Eugene H.: *See*—
Fischer, Robert R.; and Cole, Eugene H., 4,766,793, Cl. 83-698.000
Cole, Jack H.; and Thomson, Richard K., to Conoco Inc. Seismic signal generator with a self-expanding vibrator support base. 4,766,974, Cl. 181-113.000
Colgate-Palmolive Company: *See*—
Gervasio, Gregorio C., 4,767,560, Cl. 252-108.000
Ouhadi, T.; and Dehan, L., 4,767,558, Cl. 252-99.000
Weinstein, Barry M., 4,767,546, Cl. 252-8.600
Collander, Paul: *See*—
Kaartinen, Niilo; Johansson, Henrik; Leinvuo, Ahti; and Collander, Paul, 4,766,922, Cl. 137-13.000
Collinet, Jean C.: *See*—
Kandpal, Pramode; Collinet, Jean C.; Ziegner, Bernhard A.; and Bowen, James A., 4,768,079, Cl. 357-74.000.
Collins, Jeffery E.: *See*—
Gaffney, Thomas E.; Weir, Alan J.; Lillesand, Brent W.; and Collins, Jeffery E., 4,766,642, Cl. 16-121.000.
Colombo, John W., to Atlas Pacific Engineering Company. Pear orienting and transfer apparatus. 4,766,990, Cl. 198-383.000
Columbia University in the City of New York: *See*—
Cleveland, William L.; and Erlanger, Bernard F., 4,767,704, Cl. 435-68.000
Katz, Thomas J.; and Sudhakar, Anantha, 4,767,873, Cl. 556-42.000
Combu, Hubert. Pipe clamp for the rocking or rigid suspension of pipes. 4,767,087, Cl. 248-62.000
Comerci, Joseph D., to Littelfuse, Inc. Modular fuseblock. 4,767,339, Cl. 439-716.000
Commissariat a l'Energie, Atomique: *See*—
Curtila, Robert; and Tollens, Daniel, 4,767,916, Cl. 219-552.000.
Compact Spindle Bearing Corporation: *See*—
Phillips, Edward H., 4,767,954, Cl. 310-12.000.
Compagnie Europeenne de Composants Electroniques: *See*—
Bernard, Gilles; Bureau, Jean-Marc; Dubois, Jean-Claude; and Zattara, Jean-Luc, 4,768,130, Cl. 361-323.000
Compagnie Generale D'Automatisme CGA-HBS: *See*—
Camps, Robert; and Moudir, Said, 4,768,090, Cl. 358-108.000
Compagnie Internationale de Participation: *See*—
Ouhadi, Trazollah; Forte, Rosalia; Jerome, Robert E.; Fayt, Roger M.; and Teyssie , Philippe J., 4,767,824, Cl. 525-343.000.
ComSonics, Inc.: *See*—
Curt, Walter M., 4,767,335, Cl. 434-352.000
Comstock, Robert: *See*—
French, Andrew J.; Ford, James; Flenner, Thomas; Kleinochnitz, Thomas; and Comstock, Robert, 4,767,933, Cl. 250-548.000
Comurhex Societe Pour la Conversion de l'Uranium en Metal et Hexafluorure: *See*—
Jourdan, Alex, 4,767,455, Cl. 75-84.400.
Conatser, Roger L., to Scott & Fetzer Company. Abrasive fluid control valve with plastic seat. 4,766,927, Cl. 137-315.000
Conax Florida Corporation: *See*—
Jankowiak, Roman; and Lutocka, John A., Jr., 4,768,128, Cl. 361-251.000
Confer, Richard G.: *See*—
Geanous, Michael; Confer, Richard G.; and Bainbridge, Richard C., 4,767,968, Cl. 315-90.000
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., to Precision Standard Time, Inc. High precision radio signal controlled continuously updated digital clock. 4,768,178, Cl. 368-47.000
Conklin, Delano M.; Hansen, John H.; Burske, Norbert W.; and Malpass, Robert C., to Burlington Industries, Inc. Melt size compositions containing surfactants. 4,767,669, Cl. 428-394.000.
Connick, William J., Jr.: *See*—
Walker, Harrell L.; Connick, William J., Jr.; and Quimby, Paul C., Jr., 4,767,441, Cl. 71-79.000
Connor, David T.; Unangst, Paul C.; and Weikert, Robert J., to Warner-Lambert Company. N-1H-tetrazol-5-yl-2-naphthalene carboxamides and their use as antiallergy and antiinflammatory agents. 4,767,776, Cl. 514-381.000
Connor, Francis I., Jr.: *See*—
Stevens, Raymond R., Jr.; Gondek, Stanley E.; Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., 4,767,910, Cl. 219-125.100.
Conoco Inc.: *See*—
Allison, Joe D., 4,766,959, Cl. 166-295.000
Cole, Jack H.; and Thomson, Richard K., 4,766,974, Cl. 181-113.000
Consiglio Nazionale Delle Ricerche: *See*—
Breccia, Alberto; and Fini, Adamo, 4,767,758, Cl. 514-231.500
Converse Inc.: *See*—
O'Rourke, John J.; and Bunch, Richard P., 4,766,681, Cl. 36-89.000
Conway, Mike: *See*—
Hanlon, David; Holtmyer, Marlin; Conway, Mike; and Hunt, Charles, 4,767,550, Cl. 252-8.551.
Conway, Patricia; and Kjelleberg, Staffan, to Chemical Dynamics Sweden AB. Method of binding microflora and preparations therefor. 4,767,623, Cl. 424-93.000.
Cook, Harold, Jr.; and Moen, Bruce A., to Adolph Coors Company. Liquor bottle capping assembly. 4,767,016, Cl. 215-230.000.
Cook, John; Soulakis, George; and Hippely, Keith, to Mattel, Inc. Multifunction toy stunt set. 4,767,053, Cl. 238-10.00R.
Cooke, Thomas W.: *See*—
Karydas, Athanasios; Cooke, Thomas W.; and Falk, Robert A., 4,767,545, Cl. 252-8.300
Coolbaugh, Thomas S.: *See*—
Cesare, Frank C.; Whelan, William P., Jr.; Petersen, Henno A.; Coolbaugh, Thomas S.; and Davis, Robert G., 4,767,806, Cl. 523-514.000
Cooper Industries, Inc.: *See*—
Biegon, Robert J.; Men, Grigory; Turner, Lester T.; Lindstrand, Douglas; and Cox, Albert R., 4,767,891, Cl. 174-34.000.
Frawley, Lanny J., 4,767,686, Cl. 429-122.000
Cooper, Kelvin: *See*—
Bass, Robert J.; Cooper, Kelvin; and Richardson, Kenneth, 4,767,777, Cl. 514-383.000
Cooper, Ralph M.; Hayes, Earl J.; and Denlinger, Keith R., to AMP Incorporated. Receptacle and plug assembly. 4,767,350, Cl. 439-271.000
Copeland Corporation: *See*—
Caillat, Jean-Luc M.; Weatherston, Roger C.; and Bush, James W., 4,767,293, Cl. 418-55.000
Coramtex s.r.l.: *See*—
Biancalani, Fiorenzo; and Marcora, Luigi, 4,766,743, Cl. 68-20.000
Cordis Corporation: *See*—
Miller, Sandra L.; and Pinchuk, Leonard, 4,767,400, Cl. 604-8.000
Cordova, Colleen W., and Marshall, Robert M., to Allied Corporation. Wet abrasion resistant yarn and cordage. 4,767,646, Cl. 427-387.000.
Cornelius, Craig J.: *See*—
Norling, Brian L.; and Cornelius, Craig J., 4,766,768, Cl. 73-497.000
Cornell Research Foundation, Inc.: *See*—
Hang, Yong D., 4,767,705, Cl. 435-144.000.

Cornett, Frank N., to Motorola, Inc. Mid-symbol sampling timing estimator. 4,768,208, Cl. 375-95.000.
Corning Glass Works: *See*—
Deneka, Charles W.; and Keck, Donald B., 4,767,430, Cl. 65-4.200
Cornish, Eldon C.; and Orgill, Rodney H., to Hewlett-Packard Company. ECL to NMOS converter. 4,767,951, Cl. 307-475.000.
Cortelek, Dolunay I.; and Pritchard, James R., to Dow Chemical Company, The. Hard segment containing prepolymers from cycloalkane diols. 4,767,796, Cl. 521-155.000
Cosden Technology, Inc.: *See*—
Ewen, John A.; and Bitzer, Alan H., 4,767,735, Cl. 502-109.000
Cosman, Armond D.; and Minarovic, Joe T., to Minnesota Mining and Manufacturing Company. Marking tape with wire conductors and methods for use. 4,767,237, Cl. 405-157.000.
Cothran, Liggett A.: *See*—
Bradshaw, Johnny S.; Gunter, Jonas L.; Cothran, Liggett A.; Edwards, William M.; and Henry, Pearson W., 4,766,662, Cl. 29-450.000
Cotignoli, Giuseppe, to Marelli Autronica S.p.A. Motor vehicle braking system with a wheel anti-locking function with vacuum sensor. 4,767,163, Cl. 303-61.000.
Coulter Stork Patents B.V.: *See*—
Koenders, Antonius B. T. M.; Louwers, Theodorus P. S.; and Alston, Julia M., 4,768,061, Cl. 355-14.00D.
Cowatch, George; and Cowatch, George, Sr. Process and apparatus for preventing oxidation of metal by capactive coupling. 4,767,512, Cl. 204-147.000
Cowatch, George, Sr.: *See*—
Cowatch, George; and Cowatch, George, Sr., 4,767,512, Cl. 204-147.000
Cowles, John M.: *See*—
Goldstein, Henry; Ting, Patrick L.; Chicove, Etzer; Goetzke, Gary; and Cowles, John M., 4,767,640, Cl. 426-600.000.
Cox, Albert R.: *See*—
Biegon, Robert J.; Men, Grigory; Turner, Lester T.; Lindstrand, Douglas; and Cox, Albert R., 4,767,891, Cl. 174-34.000.
Cox, Geoffrey B.; Atkinson, Anthony; Edwardson, Peter A. D.; and Scawen, Michael D., to Du Pont de Nemours, E. I., and Company. Chromatographic supports for separation of oligonucleotides. 4,767,670, Cl. 428-403.000
Cox, Walter H.: *See*—
Wadham, Paul; Cox, Walter H., and Lim, Ching B., 4,767,406, Cl 604-155.000
Cramer, Ronald G., to S. C. Johnson & Son, Inc. Scrubber cap closure. 4,767,034, Cl. 222-525.000.
Crane, Burhe: *See*—
Nigg, Daniel; DePoss, Robert; Sommer, Edward; Raymer, Jack D., II; and Crane, Burhe, 4,767,896, Cl. 200-67.0DA.
Crane Co.: *See*—
Yeung, Peter C., 4,767,164, Cl. 303-91.000.
Crane, Jacob: *See*—
Butt, Sheldon H.; Fister, Julius C.; and Crane, Jacob, 4,767,049, Cl 228-111.000
Crane, Patrick R.; and Bell, Donald J., to Sewer Rodding Equipment Company. Sewer pipeline hydraulic root cutter apparatus. 4,766,631, Cl. 15-104.120.
Crapser, James R.; and Wefler, Mark E., to S. C. Johnson & Son, Inc. Piston-powered dispensing system. 4,767,059, Cl. 239-314.000.
Crates, Thomas B., to Jameson Corporation. Umbrella with means for connecting to like umbrellas and method for constructing temporary shelter. 4,766,919, Cl. 135-97.000
Crescentini, Lamberto; DeCaprio, Joseph D.; Fisher, William B.; and Lilley, Roy J., Jr., to Allied Corporation. Removal of light impurities from caprolactam by distillation with water. 4,767,503, Cl 203-48.000
Cronenwett, Duane; and Gottfried, Robert W. Method of making a cartridge for use in injecting a liquid into a tree. 4,766,659, Cl. 29-401.100
Cronin, Donald L., to Triad Microsystems, Inc. Power filter resonant frequency modulation network. 4,768,002, Cl. 333-177.000
Crosfield Electronics (USA) Limited: *See*—
Webb, Graham, 4,768,101, Cl. 358-298.000
Cross, Lindsay E.: *See*—
Watson, Keith G.; Garson, Lynette A.; Bird, Graham J.; Cross, Lindsay E.; and Farquharson, Graeme J., 4,767,879, Cl. 558-412.000
Croteau, Rene , to Les Produits Duvernay, Ltee. Apparatus for applying a fabric material to a frame. 4,766,661, Cl. 29-417.000.
Crowley, Joseph: *See*—
Simmons, Harry, 4,767,012, Cl. 211-89.000
Culp, Carl H., Sr.: *See*—
Kitchens, Judith F.; Culp, Carl H., Sr.; and Shemonski, Anthony T., 4,767,564, Cl. 252-187.260.
Culver Glassware Co., Inc.: *See*—
Ho, Alexander, 4,767,015, Cl. 215-100.00R
Cummings, William: *See*—
Bae, Dong-Hak; Sigworth, William D.; and Cummings, William, 4,767,814, Cl. 524-284.000
Cummins Engine Co., Inc.: *See*—
Tozzi, Luigi, 4,766,855, Cl. 123-143.00B
Cumner, Clive S.: *See*—
Bradley, Laurie; Lilleystone, Richard J.; and Cumner, Clive S., 4,766,740, Cl. 62-384.000
Cuny, Bernard G., to G.A.M.E.S. Antifall safety device. 4,767,091, Cl. 248-228.000
Curie, Kevin J.: *See*—
Starczewski, John F.; Hsu, Joseph C.; Blemberg, Robert J.; Curie, Kevin J.; and Jesse, Jerry F., 4,767,651, Cl. 428-35.000
Curt, Walter M., to ComSonics, Inc. Computerized academic quiz controller system. 4,767,335, Cl. 434-352.000
Curtila, Robert; and Tollens, Daniel, to Commissariat a l'Energie, Atomique. Very high temperature heating element. 4,767,916, Cl 219-552.000
Cuscurida, Michael; and Texaco Inc. Storage stable polyurethane coating. 4,767,836, Cl. 528-45.000
Cush, Dennis D.: *See*—
Stevens, Raymond R., Jr.; Gondek, Stanley E.; Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., 4,767,910, Cl. 219-125.100
Cusick, Donald J.; and Cusick, Douglas T., to Infab Corporation Radiation shield garment. 4,766,608, Cl. 2-2.000
Cusick, Douglas T.: *See*—
Cusick, Donald J.; and Cusick, Douglas T., 4,766,608, Cl. 2-2.000
Cyr, Patricia A.; and Wagner, John R., Jr. Oriented opaque films containing alkenylaromatic polymers. 4,767,675, Cl. 428-515.000.
Czumak, Frank M.: *See*—
Berger, Michael; Cavallaro, Robert; and Czumak, Frank M., 4,767,691, Cl. 430-210.000
D. L. Auld Company, The: *See*—
Bree, Charles E., 4,767,647, Cl. 428-14.000
D. Swarovski & Co.: *See*—
Swarovski, Daniel; and Schwab, Kurt, 4,767,676, Cl. 428-542.200
Daane, Robert A., to Advance Systems Inc. Paper web handling apparatus having improved air bar with fine scale turbulence generators 4,767,042, Cl. 226-97.000
Dacomed Corporation: *See*—
Timm, Gerald W.; and Bradley, William E., 4,766,909, Cl. 128-774.000
Daddio, John D.: *See*—
Shay, Joseph J.; and Daddio, John D., 4,767,060, Cl. 239-401.000
Daglow, Terry D., to Whirlpool Corporation. Detent clutch for a vacuum cleaner. 4,766,641, Cl. 15-390.000
Dailey, Kevin S. Beaded-luff free flying sail for a boat. 4,766,832, Cl 114-103.000
Daimler-Benz Aktiengesellschaft: *See*—
Abthoff, Joerg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,767,740, Cl. 502-439.000
Dainichi-Nippon Cables, Ltd.: *See*—
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000
Dainichiseika Color & Chemicals Mfg. Co., Ltd.: *See*—
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M
Dainippon Ink and Chemicals, Inc.: *See*—
Ando, Hirohito; Takada, Zenji; Aoki, Shigeto; and Shigeta, Yuko, 4,767,844, Cl. 534-573.000
Dainippon Screen Mfg. Co., Ltd.: *See*—
Nishioka, Kentaro, 4,767,495, Cl. 156-626.000
Dallavalle, Silvano; and Ansaloni, Raffaele, to Cebora S.p.A. Plasma arc welding and cutting torch designed for non-transferred and transferred arc operation. 4,767,908, Cl. 219-121.500.
Dalton, Richard L., Jr.: *See*—
Everett, William F.; Dalton, Richard L., Jr.; and Bixler, Randall L., 4,767,097, Cl. 251-129.080
Daly, Robert; and Rebe, Paul E., to Whatman Reeve Angel plc. Membrane filter tube and method of preparation. 4,767,426, Cl. 55-487.000
Damon Corporation: *See*—
Hohenberg, Rudolph; Figdor, Carl G.; and Bont, Willy S., 4,767,397, Cl. 494-85.000
Dana-Farber Cancer Institute, Inc.: *See*—
Rosowsky, Andre, 4,767,761, Cl. 514-249.000
Danjell, Barbara, to Danjell Creations, Inc. Method for manufacturing "neon look" lighting. 4,767,477, Cl. 156-67.000
Danjell Creations, Inc.: *See*—
Danjell, Barbara, 4,767,477, Cl. 156-67.000
Darmenton, Patrick: *See*—
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,767,618, Cl 424-74.000
Das, Jagabandhu; and Floyd, David M., to E. R. Squibb & Sons, Inc. 3-substituted benzazepines. 4,767,756, Cl. 514-213.000
Daum, Gerald R.: *See*—
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000
Daum, Werner; and Hanssler, Gerd, to Bayer Aktiengesellschaft Acyloxythiophene-carboxamide fungicides, compositions and use 4,767,757, Cl. 514-231.500
DAVCO: *See*—
Davis, H. Forbes, 4,767,537, Cl. 210-608.000
David, Donald M.; Holmes, Melvin R.; Hoback, Larry E.; and Reiber Ronnie L., to Hornady Manufacturing Company. Shell loader 4,766,798, Cl. 86-27.000
Davis, Adrian F., to Beecham Group p.l.c. Topical drug release system 4,767,751, Cl. 514-179.000
Davis, H. Forbes, to DAVCO. Dewatering of sludge using nitrate 4,767,537, Cl. 210-608.000

VOL 1093 ISS 5 AG 30 1988 UMI

Davis, James A., to American Standard Inc. Damper blade seal 4,766,807, Cl. 98-121.200
Davis, Robert G.: *See—*
Cesare, Frank C.; Whelan, William P., Jr.; Petersen, Henno A.; Coolbaugh, Thomas S.; and Davis, Robert G., 4,767,806, Cl. 523-514.000
Davy McKee Limited: *See—*
Harrison, George E.; and Harris, Norman, 4,767,869, Cl 549-295.000
Day, Gene F.: *See—*
Bibl, Andreas; Day, Gene F.; and Higginson, John A., 4,767,689, Cl. 430-45.000
Dayco Products, Inc.: *See—*
Bradshaw, Johnny S.; Gunter, Jonas L.; Cothran, Liggett A.; Edwards, William M.; and Henry, Pearlson W., 4,766,662, Cl 29-450.000
Wilson, Leslie B., 4,767,385, Cl. 474-138.000
Dayen, Leonid; and Raines, Charles D., to Horton Manufacturing Co., Inc. Rotational control apparatus. 4,766,986, Cl. 192-18.00A.
De La Rue Giori S.A.: *See—*
Giori, Gualtiero; and Hernandez, Manuel, 4,766,809, Cl. 101-152.000
de Buzzaccarini, Francesco, to Procter & Gamble Company, The Liquid scouring cleansers containing solvent system. 4,767,563, Cl. 252-174.250
DeCaprio, Joseph D.: *See—*
Crescentini, Lamberto; DeCaprio, Joseph D.; Fisher, William B.; and Lilley, Roy J., Jr., 4,767,503, Cl. 203-48.000.
De Cicco, Steven G.; Lee, Sung K.; Novak, Rudy G.; Wass, William E.; and Mak, Kai K., to International Technology Corporation. Method and apparatus for treating waste containing organic contaminants. 4,766,822, Cl. 110-212.000
de Concini, Roberto; and Fargnoli, Gianni, to Weber S.r.l. Housing system for a central electronic processing unit of a heat engine. 4,766,869, Cl. 123-478.000
Defibaugh, Thorner S., Jr.: *See—*
Brewer, Troy D.; and Defibaugh, Thorner S., Jr., 4,766,844, Cl 118-668.000
Degli, Gerard; and Tholome , Roger, to Sames S.A. Spray nozzle 4,767,057, Cl. 239-296.000
de Groot, Joseph B.: *See—*
de Groot, William J.; de Groot, Theodore J.; and de Groot, Joseph B., 4,766,907, Cl. 128-754.000
de Groot, Theodore J.: *See—*
de Groot, William J.; de Groot, Theodore J.; and de Groot, Joseph B., 4,766,907, Cl. 128-754.000
de Groot, William J.; de Groot, Theodore J.; and de Groot, Joseph B Apparatus and method for performing a biopsy and a device for manipulating same. 4,766,907, Cl. 128-754.000
Degussa Aktiengesellschaft: *See—*
Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; Ruppert, Kurt A.; and Splett, Erich, 4,767,453, Cl. 75-66.000
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,566, Cl. 252-301.60F
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,567, Cl. 252-301.60F
Schwiora, Harry; Ahr, Willi; and Schart, Alfred, 4,767,329, Cl. 433-181.000
Degussa Aktiengesellshaft: *See—*
Kuerzinger, Karl; and Wachendoerfer, Peter, 4,767,601, Cl 422-68.000
Dehan, L.: *See—*
Ouhadi, T.; and Dehan, L., 4,767,558, Cl. 252-99.000
Dehkordi, Peyman H.: *See—*
Ackermann, Norbert J., Jr.; Ghorashi, Hossein M.; and Dehkordi, Peyman H., 4,766,647, Cl. 19-0.220.
Deininger, William D.; and Gabriel, Stephen B., to California Institute of Technology. Luminal surface fabrication for cardiovascular prostheses. 4,767,418, Cl. 623-1.000
Deki, Kyoichi, to Ushio Denki. System for controlling output of pulsed laser. 4,768,198, Cl. 372-29.000
Delagrange, Arthur D., to United States of America, Navy. Active filter using low gain amplification stages. 4,767,998, Cl. 330-107.000
Delaware Capital Formation, Inc.: *See—*
Evans, Alfred J., 4,766,713, Cl. 53-138.00A.
DeLellis, Russell. Cycle carrier. 4,767,037, Cl. 224-42.03B
Delker, Wayne L.: *See—*
Modic, Frank J.; Striker, Richard A.; Delker, Wayne L.; and Sammel, Richard K., 4,767,794, Cl. 521-82.000
Della Porta, Joseph L., to Otis Elevator Company. Method and tool for assembling power semiconductor and heat sink. 4,766,653, Cl 24-563.000
Dellas, James P.: *See—*
Wolf, Stephen J.; and Dellas, James P., 4,767,416, Cl. 604-239.000
Demetrius, Kris; and Spector, George. Spray guard. 4,767,056, Cl 239-288.000
Demoura, David N.: *See—*
Nudd, Howard W., Jr.; and Demoura, David N., 4,766,769, Cl. 73-706.000
Demus, Dietrich; Hauser, Anton; and Keil, Michael, to VEB Werk fuer Fernsehelektronik im VEB Kombinat Mikroelektronik. Switching time shortening dopants for liquid crystalline mixtures. 4,767,565, Cl. 252-299.500
Deneka, Charles W.; and Keck, Donald B., to Corning Glass Works. Optical fiber-device interconnection and method. 4,767,430, Cl. 65-4.200
Dengler, Martin: *See—*
Bois, Wilhelm; Sterler, Georg; and Dengler, Martin, 4,767,126, Cl. 280-6.00R
Denlinger, Keith R.: *See—*
Cooper, Ralph M.; Hayes, Earl J.; and Denlinger, Keith R., 4,767,350, Cl. 439-271.000
Dennis, Melburn W.; and Long, Gene A. Printed circuit board telephone interface. 4,767,338, Cl. 439-55.000
de Nora, Oronzio, to Oronzio de Nora Impianti Elettrochimici. Monopolar and bipolar electrolyzer and electrodic structures thereof. 4,767,519, Cl. 204-255.000
Dentsply Research & Development Corp.: *See—*
Bennett, Douglas D.; and Francis, Earl C., 4,767,326, Cl. 433-90.000
Kopunek, Thomas V.; and Bennett, Douglas D., 4,767,325, Cl. 433-90.000
DePoss, Robert: *See—*
Nigg, Daniel; DePoss, Robert; Sommer, Edward; Raymer, Jack D., II; and Crane, Burhe, 4,767,896, Cl. 200-67.0DA.
Deptowicz, Donald L.: *See—*
Clevenger, Douglas H.; and Deptowicz, Donald L., 4,767,260, Cl. 415-115.000
Dervan, Andrew H.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,767,829, Cl. 525-449.000
Desaulty, Michel A. A.: *See—*
Bayle-Laboure, Gerard J. P.; Desaulty, Michel A. A.; Perigne, Jerome; and Sandelis, Denis J. M., 4,766,722, Cl. 60-39.230.
Desert Systems Limited: *See—*
Bermingham, Hubert P. M.; and Cavanna, Pietro, 4,766,711, Cl. 52-404.000
Desmurs, Roland: *See—*
Zajac, Elie; Desmurs, Roland; and Pelletier, Jean L., 4,767,180, Cl. 350-96.210.
Desowag Materialschutz GmbH: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310
Desrochers, Louis-Georges, to C-I-L Inc. Ignition system. 4,768,127, Cl. 361-251.000
Detrex Chemical Industries, Inc.: *See—*
Brooks, Terrill W.; and Gerard, Donald R., 4,766,677, Cl. 34-78.000
Deutsche Thomson-Brandt GmbH. *See—*
Caspers, Johannes, 4,767,105, Cl. 267-140.000
DeVitis, Louis. Radius edger. 4,766,634, Cl. 15-235.400
DeVitis, Louis. Interior edge-edger. 4,766,635, Cl. 15-235.400
Dholakia, Anil R., to RCA Corporation. Method for polishing the end of an optical fiber. 4,766,705, Cl. 51-328.000
Diafoil Company, Limited: *See—*
Sakamoto, Seiji; and Meguro, Yoshio, 4,767,657, Cl. 428-143.000.
Diamond, Steven E.: *See—*
Vary, Calvin P. H.; Diamond, Steven E.; and Wolfman, Neil M., 4,767,699, Cl. 435-6.000
Diana, Guy D., to Sterling Drug Inc. Glutaric acid virucidal processes and compositions. 4,767,788, Cl. 514-574.000
Diasonics Inc.: *See—*
Harvey, James R.; Biesel, Karen M.; and Anderton, Richard L., 4,768,216, Cl. 378-110.000
Didier, Bernard: *See—*
Doutheau, Alain; Gore, Jacques; Quash, Gerard A.; and Didier, Bernard, 4,767,872, Cl. 549-551.000
Dierks & Sohne GmbH & Co., KG: *See—*
Ahlert, Dieter; Boert, Konrad; and Maiss, Armin, 4,766,766, Cl. 73-169.000
Diesel Kiki Co., Ltd.: *See—*
Fujimori, Kyoichi, 4,766,863, Cl. 123-357.000
Dietl, Josef: *See—*
Holm, Claus; Sirtl, Erhard; Dietl, Josef; and Holzlwimmer, Franz, 4,767,585, Cl. 264-82.000
Diez, Werner; and Gottwald, Peter, to Womako Maschinenkonstruktionen GmbH. Apparatus for severing and heat sealing sheets of thermoplastic material. 4,767,482, Cl. 156-163.000
Dill, Bernd: *See—*
Muller, Rolf; and Dill, Bernd, 4,767,573, Cl. 260-380.000
Dillon, Philip: *See—*
Chen, William I. H.; Dillon, Philip; and Yancey, Glenn, 4,767,980, Cl. 323-356.000
Dilmore, James A.; Young, William E.; Rohrer, Wesley M., Jr.; and Turner, Abner B., to Westinghouse Electric Corp. Lime kiln and method of retarding formation of slag ring therein. 4,767,323, Cl. 432-116.000
Dimur, Gerard, to SMH Alcatel. Envelope opening device. 4,766,715, Cl. 53-381.00R
Di Paola, Massimo: *See—*
Vittone, Andrea; Chiappini, Giuseppe; and Di Paola, Massimo, 4,767,491, Cl. 156-500.000
Dir, Gary A.; and Perregaux, Alain E., to Xerox Corporation. Transient state liquid crystal image bar with contrast enhancement. 4,767,190, Cl. 350-339.00R
Director-General of Agency of Industrial Science and Technology: *See—*
Kawamura, Kichinari; Kono, Yasuo; Okado, Hideo; Hagiwara, Hiroyuki; and Takaya, Haruo, 4,767,886, Cl. 585-640.000
Mino, Kazuaki, 4,767,493, Cl. 156-603.000

Displaymor Manufacturing Company: *See—*
Baxter, Franklin, II, 4,766,737, Cl. 62-279.000
Distillers Company (Carbon Dioxide) Limited, The: *See—*
Bradley, Laurie; Lilleystone, Richard J.; and Cumner, Clive S., 4,766,740, Cl. 62-384.000.
Dively, Lee V.; and Grubbs, Jack M., to Seiscor Technologies, Inc. Coil operated telephone. 4,768,227, Cl. 379-112.000.
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich; and Vagt, Uwe, to BASF Aktiengesellschaft. Preparation of caprolactam from 6-aminocaproic acid, esters and amides. 4,767,856, Cl. 540-538.000.
Dodt, Johannes; Seemuller, Ursula; Fritz, Hans; and Fink, Ernst, to Plantorgan-Werk Heinrich G. F. Christensen, KG. Hirudin-PA and its derivatives, process for manufacturing these and the use of these substances. 4,767,742, Cl. 514-12.000.
Dominguez, Ben, to Formers of Houston, Inc. Adjustable guide roller assembly for tube forming apparatus. 4,766,716, Cl. 53-551.000.
Donahue, John P. Locking safety helmet. 4,766,616, Cl. 2-422.000.
Doncar Incorporated: *See—*
Bergman, Donald G.; and Elsner, Emil A., 4,767,451, Cl. 75-10.610
Donnola, Jean-Michel: *See—*
Legrand, Michel; Caillot, Luc; Donnola, Jean-Michel; and Siretchi, Roman, 4,766,894, Cl. 128-204.210.
Dornstauder, Gregory J.: *See—*
Rosen, Meyer R.; Dornstauder, Gregory J.; and Marlin, Lawrence, 4,767,449, Cl. 75-3.000
Dorogi, Joseph D.; Pattantyus, Imre A.; and Pedicini, Christopher S., to Eveready Battery Company. Method for assembling a cell employing a coiled electrode assembly. 4,767,682, Cl. 429-94.000
Dourdeville, Theodore A.; and Trumper, David L., to Millipore Corporation. Fluid composition and volumetric delivery control 4,767,279, Cl. 417-18.000.
Doutheau, Alain; Gore, Jacques; Quash, Gerard A.; and Didier, Bernard, to Centre National de la Recherche Scientifique (CNRS); and Institut National de la Sante et de la Recherche Medicale (INSERM) Epoxide derivatives. 4,767,872, Cl. 549-551.000.
Dow Chemical Company, The: *See—*
Cortelek, Dolunay I.; and Pritchard, James R., 4,767,796, Cl 521-155.000
Dunmore, Gordon C.; Taylor, Kevin C.; and Kolthammer, Brian W. S., 4,767,860, Cl. 544-384.000
Jones, Edward; Meiske, Larry A.; and Young, Warren L., 4,767,823, Cl. 525-334.100.
Yates, Ronald L.; and Hagans, Patrick L., 4,767,678, Cl. 428-632.000
Dow Corning Corporation: *See—*
Bartos, Donald M.; and Gaul, John H., Jr., 4,767,831, Cl. 525-474.000
Kasprzak, Kenneth A.; Swihart, Terence J.; and Ward, Andrew H., 4,767,548, Cl. 252-8.800.
Dowell Schlumberger Incorporated: *See—*
Parcevaux, P.; Piot, B.; and Sault, P., 4,767,460, Cl. 106-90.000
Downey, Raymond E.: *See—*
Schisler, Robert C.; and Downey, Raymond E., 4,767,793, Cl. 521-50.500
Doyle, Terrence W.: *See—*
Vyas, Dolatrai M.; Doyle, Terrence W., and Chiang, Yulin, 4,767,863, Cl. 546-178.000
Drackett Company, The: *See—*
Gemperle, Edward C., 4,767,033, Cl. 222-383.000
Dragerwerk Aktiengesellschaft: *See—*
Drews, Wolfgang, 4,766,893, Cl. 128-201.290.
Lungu, Mihail; and Rogge, Bernd, 4,767,504, Cl. 204-1.00T
Dreher, Geoffrey A., to Minolta Camera Kabushiki Kaisha. Word processor with font exchanging font synthesizing mode, and spacing mode of operation. 4,768,164, Cl. 364-900.000.
Dresser Industries, Inc.: *See—*
Biek, Paul A., 4,767,295, Cl. 418-151.000.
Erickson, John W., 4,767,233, Cl. 403-318.000
Dresser U.K. Limited, A British Company: *See—*
Baylis, Alan P., 4,767,423, Cl. 55-112.000.
Drews, Wolfgang, to Dragerwerk Aktiengesellschaft. Emergency oxygen supply unit with a respirator. 4,766,893, Cl. 128-201.290.
Dube, Mario, to Bombardier Inc. Thermal cutting torch. 4,767,102, Cl. 266-48.000.
Dubois, Jean-Claude: *See—*
Bernard, Gilles; Bureau, Jean-Marc; Dubois, Jean-Claude; and Zattara, Jean-Luc, 4,768,130, Cl. 361-323.000
Dudley, Kevin F., to Electric Power Research Institute, Inc. Heat pump system with hot water defrost. 4,766,734, Cl. 62-160.000
Dudley, Michael R.: *See—*
Koenig, David G.; Aoyagi, Kiyoshi; Dudley, Michael R.; and Schmidt, Susan B., 4,767,083, Cl. 244-12.300.
Duffy, George J., to Institute for Industrial Research and Standards Syringe and non-linear passageway reservoir for use therewith. 4,767,415, Cl. 604-232.000
Duggan, Angelina J., to FMC Corporation. Pyrazoline-1-carboxamides, composition containing them, and insecticidal method of using them. 4,767,779, Cl. 514-403.000.
Dull, David A.; and Taden, Richard K., to Dyneer Corporation. Fluid control valve. 4,766,727, Cl. 60-427.000
Dunajtschik, Rudolf. Drum with spray fitting for the production of dragees. 4,766,839, Cl. 118-19.000.
Dunlap, Robert T.; and Lang, Richard A., to Go-Video, Inc. Video cassette recorder having dual decks for selective simultaneous functions. 4,768,110, Cl. 360-33.100
Dunmore, Gordon C.; Taylor, Kevin C.; and Kolthammer, Brian W. S., to Dow Chemical Company, The. Preparation of N-substituted piperazinones. 4,767,860, Cl. 544-384.000
Dunn, Robert E.: *See—*
Ferneau, Richard H.; and Dunn, Robert E., 4,767,148, Cl 296-20.000
Dunnavant, William R.: *See—*
Jhaveri, Satish S.; Dunnavant, William R.; and Schneider, James T., 4,766,949, Cl. 164-526.000
Du Pont de Nemours, E. I., and Company: *See—*
Bierlein, John D.; Brixner, Lothar H.; Ferretti, August; and Hsu, William Yang-Hsing, 4,766,954, Cl. 156-624.000
Ciganek, Engelbert, 4,767,764, Cl. 514-282.000
Cox, Geoffrey B.; Atkinson, Anthony; Edwardson, Peter A. D and Scawen, Michael D., 4,767,670, Cl. 428-403.000
Gorski, Robert A., 4,767,561, Cl. 252-171.000
Hasircoglu, Alexander W., 4,767,357, Cl. 439-499.000
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur Dennis J., 4,767,829, Cl. 525-449.000
Lodoen, Gary A., 4,767,828, Cl. 525-440.000
Logullo, Francis M., Sr.; Wu, Yun-Tai; and Zahr, George E., 4,767,017, Cl. 220-3.000
Shapiro, Rafael, 4,767,445, Cl. 71-93.000
Durabla Manufacturing Co.: *See—*
Yaindl, Charles, 4,766,929, Cl. 137-514.300
Durette, Philippe L.: *See—*
Baker, Robert K.; Rupprecht, Kathleen M.; Pessolano, Arsenio A and Durette, Philippe L., 4,767,766, Cl. 514-301.000
Dusza, John P.: *See—*
Albright, Jay D.; Powell, Dennis W., and Dusza, John P 4,767,765, Cl. 514-248.000
Dynagraphics Merchandising Corporation: *See—*
Glasener, Kenneth A., 4,766,686, Cl 40-602.000
Dyneer Corporation: *See—*
Dull, David A.; and Taden, Richard K., 4,766,727, Cl. 60-427.000
Dysarz, Charles R.: *See—*
Wessman, Eric J.; and Dysarz, Charles R., 4,766,942, Cl 164-34.000
Dzuong, Charles: *See—*
Weber, Peter G.; Tan, Michael K.; and Dzuong, Charles, 4,767,490, Cl. 156-499.000
E M M. S.R.L.: *See—*
Stoppazzini, Benito, 4,766,742, Cl. 66-75.100.
E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Floyd, David M., 4,767,756, Cl. 514-213.000
Eastman Kodak Company: *See—*
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,300, Cl. 425-140.000
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,579, Cl. 264-40.500
Harney, James D.; and Jensen, Thomas D., 4,768,114, Cl 360-97.000
Holzer, Joseph C., 4,767,531, Cl. 210-238.000
Kowalski, Gregory L., 4,768,058, Cl. 355-8.000
Minor, James C.; and Rodenberg, Orville C., 4,768,046, Cl 346-160.100
Molaire, Michel F., 4,767,883, Cl. 560-220.000
Easy Art, Inc.: *See—*
Hornecker, Timothy; Mustoe, Tracy J.; and Mustoe, Judy C., 4,767,009, Cl. 206-575.000
Eaton Corporation: *See—*
Frederich, William L., 4,768,030, Cl. 340-825.060
Parrish, Timothy L., 4,767,895, Cl. 200-43.040
Slicker, James M.; and Sereshteh, Ahmad, 4,766,967, Cl 180-54.100
Ebata, Yasuhiko, to Matsushita Electric Industrial Co., Ltd. Air conditioner. 4,766,738, Cl. 62-280.000
Eberle, Jurg, to Ferag AG. Page straightener. 4,767,116, Cl 271-238.000
Ebisawa, Masuo: *See—*
Sakuma, Takeshi; Takatori, Nobuaki, Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000
Eckert, Manfred: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning, Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000
Eckhardt, Wolfgang: *See—*
Zondler, Helmut; Eckhardt, Wolfgang; and Nyfeler, Robert, 4,767,443, Cl. 71-90.000
Edmunds, L. Henry. Protective catheter sleeve. 4,767,411, Cl 604-180.000
Edmusa, Inc. (Subsidiary of Nelson Liquid Drive): *See—*
Braden, Donald E.; Saroian, Nick T.; and Mansour, Tony I 4,767,904, Cl. 219-69.00V
Edward Weck Incorporated *See—*
Brooks, Frederick C., 4,767,409, Cl. 604-171.000
Edwards, William M. *See—*
Bradshaw, Johnny S.; Gunter, Jonas L.; Cothran, Liggett A.; Edwards, William M., and Henry, Pearlson W., 4,766,662, Cl 29-450.000
Edwardson, Peter A D *See—*
Cox, Geoffrey B.; Atkinson, Anthony; Edwardson, Peter A D.; and Scawen, Michael D., 4,767,670, Cl 428-403.000

VOL 1093 ISS 5 AG 30 1988 UMI

Eggert, Horst, to Th. Goldschmidt AG. Process for the preparation of finely particulate chromium metal powder having a low oxygen content. 4,767,454, Cl. 75-84.000

Egli, Werner H.; and Vallot, Lawrence C., to Honeywell, Inc. Oil well bore hole surveying by kinematic navigation. 4,768,152, Cl. 364-422.000

Ehrgott, Roland, to Siemens Aktiengesellschaft. Electrical connection pin for surface-mountable electrical coils. 4,767,343, Cl. 439-83.000.

Ek, Kurt L., to Nestec S. A. Preparation of a food coating. 4,767,637, Cl. 426-291.000

Eklof, Anders A.: *See—*
Barnhart, Andrew W.; and Eklof, Anders A., 4,768,188, Cl 370-80.000

Elbe, Hans-Ludwig; and Baasner, Bernd, to Bayer Aktiengesellschaft. Process for the preparation of nitromethylene derivatives. 4,767,864, Cl. 546-278.000

Elcock, Robin W.; and Guevara, Belen A., to Rexnord Inc. Self-broaching key. 4,767,249, Cl. 411-110.000

Eldridge, Milo: *See—*
Jakubowski, George M.; Molthop, Susan C.; and Eldridge, Milo, 4,767,538, Cl. 210-636.000

Eldridge, Richard, to ESAB Welding Products, Inc. High frequency arc stabilizer. 4,767,912, Cl. 219-130.400

Electric Power Research Institute, Inc.: *See—*
Dudley, Kevin F., 4,766,734, Cl. 62-160.000.

Eli Lilly and Company: *See—*
Hirsch, Kenneth S.; and Taylor, Harold M., 4,767,770, Cl. 514-342.000
Holmes, Richard E.; and Jungheim, Louis N., 4,767,871, Cl. 548-365.000

Elkins, Robert B.: *See—*
Wolters, Richard A., Jr.; Colby, Mark J.; and Elkins, Robert B., 4,767,595, Cl. 376-353.000

Ellner, Sidney, to Ultraviolet Purification System, Inc. Ultraviolet purification device. 4,767,932, Cl. 250-435.000

Ellrich, Klaus: *See—*
Gasser, Oswald; and Ellrich, Klaus, 4,767,798, Cl. 523-117.000.

Ellson, George A.: *See—*
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000

Elrod, David W.: *See—*
Wiley, Paul F.; and Elrod, David W., 4,767,847, Cl. 536-16.800.

Elsner, Emil A.: *See—*
Bergman, Donald G.; and Elsner, Emil A., 4,767,451, Cl. 75-10.610.

Emerson Electric Co.: *See—*
Tomiser, Frank J., Jr.; and Shawcross, James P., 4,766,806, Cl. 98-42.100
Wallick, Claude R., Jr., 4,766,976, Cl. 182-201.000

Emil Wohlhaupter & Co.: *See—*
Bohner, Christian; Gahr, Harold; and Wohlhaupter, Gerhard, 4,767,175, Cl. 350-96.200

Emma, John E.: *See—*
Tomcufcik, Andrew S.; Emma, John E.; Eudy, Nancy H.; Marsico, Joseph W.; and Newman, Howard, 4,767,749, Cl. 514-137.000

Ems-Inventa A.G.: *See—*
Torre, Hans D.; and Hoppe, Manfred, 4,767,811, Cl. 524-114.000

Emsperger, Werner; Bruckner, Hermann; Losel, Georg; and Pieper, Rudolf, to Kraftwerk Union Aktiengesellschaft. Combustion chamber for a fluidized-bed furnace. 4,766,851, Cl. 122-4.00D

Enderlein, Emmanuel X., Jr. Boat propeller. 4,767,278, Cl. 416-241.00B

Endo, Shuichi: *See—*
Tanzawa, Misao; and Endo, Shuichi, 4,768,062, Cl. 355-15.000

Energy Conversion Devices, Inc.: *See—*
Cannella, Vincent D.; and Yaniv, Zvi, 4,768,096, Cl. 358-294.000

Engelhard Corporation: *See—*
Nemeh, Saad; and Slepetys, Richard A., 4,767,466, Cl. 106-487.000
Wilkinson, Peter, 4,767,507, Cl. 204-44.300

Engineered Air Systems, Inc.: *See—*
Mutchler, Paul A., 4,767,314, Cl. 431-1.000

Engle, Thomas H., to General Signal Corporation. Rail car brake apparatus. 4,766,980, Cl. 188-52.000

Entenmann's, Inc.: *See—*
Uhrovic, Martin, 4,767,638, Cl. 426-500.000

Enzo Biochem, Inc.: *See—*
Stavrianpoulos, Jannis G., 4,767,609, Cl. 424-1.100.

Erickson, John W., to Dresser Industries, Inc. Impeller mounting apparatus. 4,767,233, Cl. 403-318.000

Erlanger, Bernard F.: *See—*
Cleveland, William L.; and Erlanger, Bernard F., 4,767,704, Cl 435-68.000

Ernest, Norman A., to Rockwell Automotive Body Components (U.K.) Limited. Vehicle door locking system. 4,766,747, Cl. 70-264.000

Erwin, Richard E., to Amoco Corporation. Method and apparatus for constructing an ice structure. 4,767,239, Cl. 405-217.000.

ESAB Welding Products, Inc.: *See—*
Eldridge, Richard, 4,767,912, Cl. 219-130.400

ESPE GmbH Fabrik pharmazeutischer Praparate GmbH: *See—*
Burger, Bernd, 4,767,330, Cl. 433-213.000

ESPE Stiftung & Co. Produktions- und Vertriebs KG: *See—*
Gasser, Oswald; and Ellrich, Klaus, 4,767,798, Cl. 523-117.000

Esper, Herbert. Apparatus for detecting of voltages or charges on the human body and for removing such stresses or charges from the human body. 4,766,903, Cl. 128-630.000

Etienne, Patrick; and Nuyen, Trong Linh, to Thomson-CSF. Ballistic transport MESFET. 4,768,071, Cl. 357-22.000

Eu, Jai H.: *See—*
Pattavina, Jeffrey S.; and Eu, Jai H., 4,768,192, Cl. 370-100.000

Eudy, Nancy H.: *See—*
Tomcufcik, Andrew S.; Emma, John E.; Eudy, Nancy H.; Marsico, Joseph W.; and Newman, Howard, 4,767,749, Cl. 514-137.000.

Evans, Alfred J., to Delaware Capital Formation, Inc. Packaging device including dual clip attachment apparatus, a casing brake mechanism and gathering mechanism. 4,766,713, Cl. 53-138.00A.

Eveready Battery Company: *See—*
Dorogi, Joseph D.; Pattantyus, Imre A.; and Pedicini, Christopher S., 4,767,682, Cl. 429-94.000

Everett, William F.; Dalton, Richard L., Jr.; and Bixler, Randall L., to Everett, William F.; Dalton, Richard L., Jr.; and Bixler, Randall L. Stacked servoid assembly. 4,767,097, Cl. 251-129.080

Evitt, William T., to Polysar Financial Services S.A. High solids PSA Compounds. 4,767,813, Cl. 524-271.000.

Ewald, Egon: *See—*
Schneider, Manfred; Heitz, Heinrich; Schlenz, Dieter; and Ewald, Egon, 4,767,667, Cl. 428-336.000

Ewen, John A.; and Bitzer, Alan H., to Cosden Technology, Inc Catalyst pretreatment process. 4,767,735, Cl. 502-109.000.

Exxon Research & Engineering Co.: *See—*
Michiels, Dirk J. M., 4,767,485, Cl. 156-244.110.

Ezaki, Norimitsu: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000

Ezekoye, L. Ike, to Westinghouse Electric Corp. Multiphase valve testing. 4,766,765, Cl. 73-168.000

Fabco Automotive Corporation: *See—*
Massy, Donald, 4,766,779, Cl. 74-733.000

Fadner, Thomas A.; and Linton, Nancy J. Peelably adhesive game board. 4,767,119, Cl. 273-148.00A.

Faecke, David C., to Mobil Oil Corporation. Method of recovering viscous oil from reservoirs with multiple horizontal zones. 4,766,958, Cl. 166-269.000

FAG Kugelfischer Georg Schafer (KGaA): *See—*
Bauer, Anton; and Hahn, Siegbert, 4,767,224, Cl. 384-572.000

Fagan, Kenneth W., Jr.: *See—*
Ramos, Hector V.; Fagan, Kenneth W., Jr.; Rothenberg, Joan R.; and Smith, David L., 4,767,636, Cl. 426-291.000.

Fahy, Jacques: *See—*
Tarroux, Roger; Fahy, Jacques; and Hatinguais, Philippe, 4,767,855, Cl. 540-478.000.

Falk, Robert A.: *See—*
Karydas, Athanasios; Cooke, Thomas W.; and Falk, Robert A., 4,767,545, Cl. 252-8.300

Falla, Gloria M., to Warnaco, Inc. Brassiere. 4,767,377, Cl. 450-65.000

Fargnoli, Gianni: *See—*
de Concini, Roberto; and Fargnoli, Gianni, 4,766,869, Cl. 123-478.000

Farley Metals, Inc.: *See—*
Page, Enno H., 4,766,943, Cl. 164-72.000

Faron, Eugene J.: *See—*
Friedman, Robert B.; Gottneid, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., 4,767,849, Cl. 536-102.000

Farquharson, Graeme J.: *See—*
Watson, Keith G.; Garson, Lynette A.; Bird, Graham J.; Cross, Lindsay E.; and Farquharson, Graeme J., 4,767,879, Cl 558-412.000

Farrish, James H., to Fhj Amino Acid Formula Trust. Disinfectant and cleansing composition. 4,767,786, Cl. 514-561.000.

Fasen, Kenneth R.; Rogers, Kim R.; and Schwartz, Lee J., to HM Electronics, Inc. Battery charger. 4,767,977, Cl. 320-20.000

Fassman, Arnold. Toy auto garage. 4,767,375, Cl. 446-423.000

Fast, Jacob. Mail bag tag. 4,766,683, Cl. 40-665.000.

Fattore, Mary E. Protective pad for crib rail. 4,767,419, Cl. 5-508.000

Fayt, Roger M.: *See—*
Ouhadi, Trazollah; Forte, Rosalia; Jerome, Robert E.; Fayt, Roger M.; and Teyssie , Philippe J., 4,767,824, Cl. 525-343.000

Fecik, Michael T.: *See—*
Lampman, DeWitt W.; Claassen, George R.; and Fecik, Michael T., 4,767,437, Cl. 65-104.000

Federal-Mogul Corporation: *See—*
Reed, Charles W., III, 4,767,162, Cl. 299-1.000

Federal Paper Board Company, Inc.: *See—*
Herring, Jack G., 4,767,390, Cl. 493-88.000

Federle, Hartmut: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R.

Fedorov, Svyatoslav N.: *See—*
Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and 1, 4,766,904, Cl. 128-652.000.

Feigelson, Robert S., to Stanford University. Endless wire saw having material recovery capability. 4,766,875, Cl. 125-21.000.

Feldman, Robert J.; Chen, James M.; Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., to Lummus Crest, Inc. Treatment of feed for high severity visbreaking. 4,767,521, Cl. 208-85.000

Ferag AG: *See—*
Eberle, Jurg, 4,767,116, Cl. 271-238.000

Ferguson, T. Arnold; and Seaver, Linda L., to United Technologies Corporation. Method for bonding ceramic casting cores. 4,767,479, Cl. 156-89.000

Ferneau, Richard H.; and Dunn, Robert E., to Ferno-Washington, Inc Multiple level roll-in cot. 4,767,148, Cl. 296-20.000

Ferno-Washington, Inc.: *See—*
Ferneau, Richard H.; and Dunn, Robert E., 4,767,148, Cl. 296-20.000

Ferranti plc: *See—*
Blackie, Ian T. B., 4,768,028, Cl. 340-705.000

Ferrara, John M.: *See—*
Malito, John T.; Wintermute, Richard D.; Ross, Scott F.; and Ferrara, John M., 4,767,554, Cl. 252-49.500

Ferraro, Michael P. Safe for loaded hand gun. 4,768,021, Cl. 340-568.000

Ferrer Internacional S.A.: *See—*
Foguet, Rafael; Forne , Ernesto; Ortiz, Jose ; A.; and Sacristan, Aurelio, 4,767,767, Cl. 514-313.000

Ferretti, August: *See—*
Bierlein, John D.; Brixner, Lothar H.; Ferretti, August; and Hsu, William Yang-Hsing, 4,766,954, Cl. 156-624.000

Ferruccio, Antonio: *See—*
Caradonna, Giuseppe; and Ferruccio, Antonio, 4,767,235, Cl 405-33.000

Fhj Amino Acid Formula Trust: *See—*
Farrish, James H., 4,767,786, Cl. 514-561.000

Ficke, Geoff, to Thermagene Limited. Facial treatment and lotion kit 4,766,915, Cl. 132-79.00F

Fielder, Dennis C.; Furman, Arthur J.; Miller, Paul A.; and Rogers, Blair E., to Cardinal American Corporation. Multistation bird feeder support. 4,767,088, Cl. 248-121.000

Figdor, Carl G.: *See—*
Hohenberg, Rudolph; Figdor, Carl G.; and Bont, Willy S., 4,767,397, Cl. 494-85.000

Fillmore, Francis L.: *See—*
Brown, Danny D.; Hazebrook, Daniel W., and Fillmore, Francis L., 4,767,381, Cl. 464-146.000

Finan, Christopher D.: *See—*
Petolino, Joseph A.; Finan, Christopher D.; Isozaki, Jeffrey T.; and Pang, Nicholas Y., 4,768,197, Cl. 371-38.000

Finbiomedica S.r.l.: *See—*
Vicario, Guido, 4,767,600, Cl. 422-65.000

Finelt, Howard I.: *See—*
Ovadia, Abraham; and Finelt, Howard I., 4,767,000, Cl. 206-45.140

Fini, Adamo: *See—*
Breccia, Alberto; and Fini, Adamo, 4,767,758, Cl. 514-231.500

Fink, Ernst: *See—*
Dodt, Johannes; Seemuller, Ursula; Fritz, Hans; and Fink, Ernst, 4,767,742, Cl. 514-12.000

Finlan, Martin F., to Amersham International plc. Assay apparatus having piezoelectric slab generating effective diffraction grating in applied analyte-specific film. 4,767,719, Cl. 436-501.000

Finney, Philip F. Thermocouple assembly. 4,767,468, Cl. 136-233.000

Finsterwalder, Gerhard, to Kloeckner-Humboldt-Deutz AG. Ignition device for air-compressing internal combustion engine. 4,766,861, Cl 123-254.000

Firequip Helmets, Inc.: *See—*
Lane, Abbott A., 4,766,609, Cl. 2-5.000

Firestone Tire & Rubber Company, The: *See—*
Bryant, Lynn A.; and Bell, Thomas W., 4,767,481, Cl. 156-116.000

First Brands Corporation: *See—*
Kamp, Ewald A., 4,767,220, Cl. 383-63.000
Mohr, Paul H.; and Pepe, Enrico J., 4,767,599, Cl. 422-13.000

Fischer, Harry A.; and Grutter, William G., to Baker Perkins North America Inc. Mixer for baking doughs and the like. 4,767,214, Cl. 366-99.000

Fischer & Porter Company: *See—*
Mannherz, Elmer D.; and Schmoock, Roy F., 4,766,770, Cl. 73-861.170.

Fischer, Robert R.; and Cole, Eugene H., to Urschel Laboratories, Inc. Knife assembly for a water gun. 4,766,793, Cl. 83-698.000

Fischer, Rolf: *See—*
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich; and Vagt, Uwe, 4,767,856, Cl. 540-538.000
Merger, Franz; Priester, Claus-Ulrich; Fischer, Rolf; and Sauerwald, Manfred, 4,767,857, Cl. 540-538.000

Fisher Controls International, Inc.: *See—*
Schafbuch, Paul J., 4,767,138, Cl. 285-368.000

Fisher, Jerry D.; and Molthop, Susan C., to Baxter Travenol Laboratories, Inc. Method of making a family of blended fiber filtration devices. 4,767,533, Cl. 210-321.640

Fisher, Robert: *See—*
Sliwkowski, Joseph; and Fisher, Robert, 4,768,154, Cl 364-468.000

Fisher Scientific Group Inc. dba IMED Corporation: *See—*
Bollish, Stephen J., 4,767,399, Cl. 604-5.000

Fisher, William B.: *See—*
Crescentini, Lamberto; DeCaprio, Joseph D.; Fisher, William B.; and Lilley, Roy J., Jr., 4,767,503, Cl. 203-48.000.

Fister, Julius C.: *See—*
Butt, Sheldon H.; Fister, Julius C.; and Crane, Jacob, 4,767,049, Cl 228-111.000

Fitzgerald, John M.; and Workman, Gary L. Concrete column form. 4,767,095, Cl. 249-48.000

Fleischer, Erwin: *See—*
Worschech, Kurt, Wedl, Peter, Fleischer, Erwin; and Loeffelholz, Frido, 4,767,575, Cl. 260-414.000

Fleissner, Gerold, to Fleissner Gmbh & Co. Process for rendering wool sliver shrinkproof, and apparatus for performing the process 4,766,744, Cl. 68-22.00R

Fleissner Gmbh & Co.: *See—*
Fleissner, Gerold, 4,766,744, Cl. 68-22.00R

Fleming, Issac D.: *See—*
Childers, John T.; and Fleming, Issac D., 4,767,556, Cl. 252-8.600

Fleming, James W.; and Pardenek, Sandra A., to American Telephone & Telegraph Co., AT&T Bell Laboratories. Glass body formed from a vapor-derived gel and process for producing same. 4,767,429, Cl 65-3.110

Flenner, Thomas: *See—*
French, Andrew J.; Ford, James; Flenner, Thomas; Kleinochnitz, Thomas; and Comstock, Robert, 4,767,933, Cl. 250-548.000

Fletcher, Grant, to Fletcher, Grant. Air fertilizer spreader. 4,767,062, Cl. 239-655.000

Flexivol, Inc.: *See—*
Apffel, Fred, 4,767,428, Cl. 62-24.000

Flinders University of South Australia, The: *See—*
Baker, Bruce G.; Clark, Neville J., McArthur, Hamish, and Summerville, Edward, 4,767,792, Cl. 518-721.000

Flood, Gary M.; and Smith, Gary W., to General Electric Company Pocketed stud for polycrystalline diamond cutting blanks and method of making same. 4,767,050, Cl. 228-122.000

Florig Equipment Company, Inc.: *See—*
Stluka, Eugene F.; and Huber, William J., 4,767,152, Cl 296-100.000

Florig, H. Keith; and Purta, David A., to Master Chemical Corporation. Concentration detection system. 4,767,982, Cl. 324-58.50A

Flow Cytometry Standards Corporation: *See—*
Schwartz, Abraham; and Woodward, Gary A., 4,767,205, Cl 356-71.000
Schwartz, Abraham, 4,767,206, Cl. 356-73.000

Floyd, David M.: *See—*
Das, Jagabandhu; and Floyd, David M., 4,767,756, Cl 514-213.000

Fluilogic Systems Oy: *See—*
Kaartinen, Niilo; Johansson, Henrik, Leinvuo, Ahti; and Collander, Paul, 4,766,922, Cl. 137-13.000

FMC Corporation: *See—*
Duggan, Angelina J., 4,767,779, Cl. 514-403.000

Fogman, C. Bertil: *See—*
Feldman, Robert J., Chen, James M., Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., 4,767,521, Cl. 208-85.000

Foguet, Rafael; Forne , Ernesto; Ortiz, Jose ; A.; and Sacristan, Aurelio, to Ferrer Internacional S.A. 2-pyrrolidinylethyl-2-(7-trifluoromethyl-4-quinolyl-aminobenzoate having analgesic, antipyretic and anti-inflammatory activities. 4,767,767, Cl. 514-313.000

Fohl, Artur, to TRW Repa GmbH Bearing for the rotatable mounting of a control disc. 4,767,078, Cl. 242-107.40R

Fong, Stella S. N.: *See—*
Bigbee, William L.; Fong, Stella S. N.; Jensen, Ronald H., Vanderlaan, Martin; and Langlois, Richard G., 4,767,710, Cl 435-240.270.

Foran, Scott J. Hypodermic needle, catheter and method. 4,767,407, Cl 604-164.000

Ford Aerospace & Communications Corporation: *See—*
Chan, Fred N.; and Reimche, Wallace E., 4,767,084, Cl 244-164.000

Ford, Douglas L., to Memtec Limited. Cleaning of hollow fiber filters utilized in lumenal gas flow. 4,767,539, Cl. 210-636.000

Ford, James. *See—*
French, Andrew J.; Ford, James; Flenner, Thomas; Kleinochnitz, Thomas, and Comstock, Robert, 4,767,933, Cl. 250-548.000

Ford Motor Company: *See—*
Halbach, Carl R., 4,767,684, Cl 429-103.000
Moan, Richard D., 4,767,384, Cl. 474-28.000
Salazar, Sumorfin, 4,766,643, Cl. 16-222.000
Wessman, Eric J.; and Dysarz, Charles R., 4,766,942, Cl 164-34.000

Formers of Houston, Inc.: *See—*
Dominguez, Ben, 4,766,716, Cl 53-551.000

Forne , Ernesto: *See—*
Foguet, Rafael, Forne , Ernesto; Ortiz, Jose ; A.; and Sacristan, Aurelio, 4,767,767, Cl. 514-313.000

Forslund, Torsten, to Osa AB Assembly for limbing tree stems. 4,766,939, Cl. 144-2.00Z.

Forsogsanlaeg Riso: *See—*
Nielsen, Henrik K., 4,767,997, Cl. 328-108.000

Forte, Rosalia: *See—*
Ouhadi, Trazollah; Forte, Rosalia, Jerome, Robert E.; Fayt, Roger M.; and Teyssie , Philippe J., 4,767,824, Cl. 525-343.000

Fortuna-Werke Maschinenfabrik Gesellschaft mit beschrankter Haftung: *See—*
Kramberg, Gerhard; and Kuhne, Horst, 4,766,700, Cl. 51-165.740

Foseco International Limited: *See—*
Neu, Max G.; and Gough, Michael J., 4,767,800, Cl 523-141.000

Foster, Clark B.: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B 4,767,413, Cl 604-198.000

VOL 1093 ISS 5 AG 30 1988 UMI

Fourcadier, Chantal: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,767,618, Cl. 424-74.000.

Fowler, David P., to Frito-Lay, Inc. Method and apparatus for handling and processing food piece slices. 4,767,633, Cl. 426-270.000.

Fox, Robert L.: *See—*
Schott, Timothy D.; Fox, Robert L.; and Buckley, John D., 4,767,484, Cl. 156-233.000.

Foxboro Company, The: *See—*
Nudd, Howard W., Jr.; and Demoura, David N., 4,766,769, Cl 73-706.000

Francis, Arthur W., Sr.: *See—*
Graczyk, Lawrence S.; and Francis, Arthur W., Sr., 4,766,731, Cl. 62-55.000

Francis, Earl C.: *See—*
Bennett, Douglas D.; and Francis, Earl C., 4,767,326, Cl 433-90.000.

Francis, Patrick A., to Superior Aluminum Products, Inc. Hinge joint for tubular rail and post members. 4,767,232, Cl. 403-91.000.

Francisco, Edward E., Jr.: *See—*
Cohrs, Gary D.; and Francisco, Edward E., Jr., 4,766,759, Cl. 73-3.000

Francke, Kurt O.: *See—*
Lindquist, Nils T.; Hedin, Ann-Christine; Francke, Kurt O.; and Vukotic, Milos, 4,766,639, Cl. 15-339.000.

Franco, Philip: *See—*
Komor, Joseph A.; Franco, Philip; Nangle, Lorraine P.; and Kolelle, William H., 4,767,741, Cl. 512-3.000

Franco, Pierre: *See—*
Lacroix, Jean-Claude; Franco, Pierre; Le Gall, Stephane; Bourret, Gerard; and Pochet, Jacques, 4,768,202, Cl. 375-3.100.

Francotyp-Postalia GmbH: *See—*
Harry, Alan, 4,767,228, Cl. 400-234.000.

Frantz, Virgil L., to Roanoke College. Dump valve assembly. 4,766,925, Cl. 137-62.000

Frase, Roland J., to J. I. Case Company. Furrow forming apparatus for attachment to a tool bar. 4,766,962, Cl. 172-624.500.

Frawley, Lanny J., to Cooper Industries, Inc. Battery cable termination. 4,767,686, Cl. 429-122.000

Frederich, William L., to Eaton Corporation. Switch interface method and apparatus. 4,768,030, Cl. 340-825.060.

Freeman, John E. Single valve pump. 4,767,291, Cl. 417-560.000.

Freeman, Robert D.: *See—*
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, 4,768,124, Cl. 360-133.000

Freese, Leo J. Fireplace cooking grill. 4,766,879, Cl. 126-137.000.

Freesemann, Enno: *See—*
Hackman, Klaus-Georg; Liebe, Reinhard; Freesemann, Enno; Thiele, Willi; and Wochnowski, Waldemar, 4,766,912, Cl. 131-296.000

French, Andrew J.; Ford, James; Flenner, Thomas; Kleinochnitz, Thomas; and Comstock, Robert, to Storage Technology Corporation. Optical ribbon edge sensor having means for adjusting the switch sensitivity to the selected ink color. 4,767,933, Cl. 250-548.000

Freund, Thomas J.: *See—*
Chang, Chij-Mehn; Freund, Thomas J.; Loucks, Larry K.; and Wierwille, Robert L., 4,768,150, Cl. 364-300.000

Fricke, Gunter, to Kali und Salz Aktiengesellschaft. Electrostatic treatment of milled crude potash salts containing kieserite. 4,767,506, Cl. 204-127.400

Friedman, Robert B.; Gottneid, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., to American Maize-Products Company. Starch of the wxh1 genotype and products produced therefrom. 4,767,849, Cl. 536-102.000

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See—*
Kostorz, Jan R.; and Kahle, Dieter, 4,767,052, Cl. 236-12.220.

Friesen, Peter. Rotational molding machine. 4,767,299, Cl. 425-135.000.

Frito-Lay, Inc.: *See—*
Fowler, David P., 4,767,633, Cl. 426-270.000
Silver, Myron E.; and Wisdom, Lawrence W., 4,767,630, Cl. 426-102.000

Fritz, Hans: *See—*
Dodt, Johannes; Seemuller, Ursula; Fritz, Hans; and Fink, Ernst, 4,767,742, Cl. 514-12.000

Frohling, Werner: *See—*
Iniotakis, Nicolaos; Frohling, Werner; Kalawrytinos, Georg; and von der Decken, Claus-Benedict, 4,767,527, Cl. 210-137.000.

Froissant, Jacques: *See—*
George, Pascal; Giron, Claudie; and Froissant, Jacques, 4,767,755, Cl. 514-212.000

Fry, Alan J., to Lever Brothers Company. Enzymatic liquid detergent composition. 4,767,562, Cl. 252-174.120

Fu-Chao, Wang. Foldable pedicab. 4,767,130, Cl. 280-202.000

Fuchs, Hans P., to Siemens Aktiengesellschaft. Integrated semiconductor memory. 4,768,194, Cl. 371-21.000

Fuji Electric Co., Ltd.: *See—*
Kita, Tadae; and Okuno, Akihiro, 4,766,993, Cl. 198-619.000.
Maruyama, Satoshi; Mukae, Kazuo; and Nagasawa, Ikuo, 4,767,582, Cl. 264-61.000
Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, 4,767,103, Cl. 266-80.000.
Seki, Yasakazu; Sato, Noritada; and Yabe, Masaya, 4,768,072, Cl. 357-29.000

Fuji Electric Corporate Research and Development Co., Ltd.: *See—*
Seki, Yasakazu; Sato, Noritada; and Yabe, Masaya, 4,768,072, Cl. 357-29.000

Fuji Electric Corporate Research and Development Ltd.: *See—*
Maruyama, Satoshi; Mukae, Kazuo; and Nagasawa, Ikuo, 4,767,582, Cl. 264-61.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Tezuka, Kazunari; and Tanaka, Hiroshi, 4,767,382, Cl. 474-28.000.

Fuji Kagakushi Kogyo Co., Ltd.: *See—*
Shimizu, Suekichi; Inaba, Masatsugu; and Ohtomo, Yasuyuki, 4,767,663, Cl. 428-212.000.

Fuji Kiko Company, Limited: *See—*
Matsuoka, Ken; and Yamazaki, Masanobu, 4,767,387, Cl. 474-168.000

Fuji Photo Film Co., Ltd.: *See—*
Inagaki, Yoshio; Yagihara, Morio; and Hirano, Shigeo, 4,767,692, Cl. 430-264.000
Mukai, Hachiro, 4,768,099, Cl. 358-257.000
Oishi, Kengo; and Suzuki, Osamu, 4,767,007, Cl. 206-387.000.
Sasaki, Hidemi, 4,767,958, Cl. 310-257.000
Shiga, Koji; and Arito, Tatsunari, 4,768,067, Cl. 355-56.000.
Sugaya, Fumio, 4,766,714, Cl. 53-242.000
Suzuki, Yoshiaki; and Hayashi, Gouichi, 4,767,571, Cl. 252-587.000.
Takahashi, Kazuo, 4,768,059, Cl. 355-10.000.
Umemoto, Makoto; Seoka, Yoshio; and Morigaki, Masakazu, 4,767,697, Cl. 430-546.000
Watanabe, Yoshiyuki, 4,768,116, Cl. 360-98.000.
Yamaguchi, Nobutaka; Fujiyama, Masaaki; and Suzuki, Masami, 4,767,644, Cl. 427-385.500.
Yamamoto, Soichiro, 4,767,690, Cl. 430-138.000.

Fuji Xerox Co., Ltd.: *See—*
Hashimoto, Ken; Maruta, Masayuki; Soyama, Hidehiko; and Ishii, Yukihiro, 4,767,688, Cl. 430-110.000.
Itami, Teruhiko; Kimoto, Toshifumi; Yamasawa, Akira; and Saitoh, Koichi, 4,767,483, Cl. 156-154.000
Murakami, Hiroki; and Ozawa, Takashi, 4,767,936, Cl. 250-578.000.

Fujii, Norihisa: *See—*
Matsumoto, Toshihiro; Umehara, Hajime; Nakajima, Junjiro; and Fujii, Norihisa, 4,766,658, Cl. 29-527.700.

Fujikawa, Iwao; Kushino, Mitsuo; and Yamamoto, Yasuhiro, to Nippon Shokubai Kagaku Kogyo Co. Ltd. Coloring agent for dope-dyeing viscose rayon. 4,767,807, Cl. 524-36.000.

Fujikawa, Keiji: *See—*
Takii, Osamu; Ukei, Hironobu; and Fujikawa, Keiji, 4,766,866, Cl. 123-432.000

Fujikura Ltd.: *See—*
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao; Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl. 264-500.000

Fujimori, Kyoichi, to Diesel Kiki Co., Ltd. Apparatus for controlling the idling operation of an internal combustion engine. 4,766,863, Cl. 123-357.000

Fujimura, Setsuo; Sagawa, Masato; and Matsuura, Yutaka, to Sumitomo Special Metals Co., Ltd. Isotropic magnets and process for producing same. 4,767,474, Cl. 148-302.000

Fujimura, Setsuo: *See—*
Ishigaki, Naoyuki; Hamada, Takaki; and Fujimura, Setsuo, 4,767,450, Cl. 75-0.5BA

Fujinaka, Hiroshi; and Terasawa, Masami, to Kyocera Corporation. Process for preparation of glazed ceramic substrate and glazing composition used therefor. 4,767,672, Cl. 428-446.000

Fujioka, Hideaki: *See—*
Takata, Koji; and Fujioka, Hideaki, 4,766,972, Cl. 180-197.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000
Ueda, Ikuo; Shiokawa, Youichi; Manabe, Takashi; and Katsura, Yousuke, 4,767,780, Cl. 514-406.000

Fujishima, Tetsuro; and Sakata, Shinji, to Yamasa Shoyu Kabushiki Kaisha. Pure culture of *Brevibacterium acetylicum* AT-6-7, ATCC 39311. 4,767,713, Cl. 435-253.000.

Fujita, Hideo: *See—*
Tamura, Kazumi; and Fujita, Hideo, 4,767,461, Cl. 106-98.000

Fujita, Hisao; Wakabayashi, Tomoko; and Yamazaki, Hiroyuki, to Konishiroku Photo Industry Co., Ltd. Wide angle lens. 4,767,201, Cl. 350-432.000

Fujita, Koreaki: *See—*
Minami, Hiroshi; and Fujita, Koreaki, 4,767,942, Cl. 307-304.000

Fujitsu Limited: *See—*
Ishihara, Michio; Oishi, Hiroshi; and Kuboyama, Makoto, 4,767,004, Cl. 206-334.000
Takemae, Yoshihiro, 4,768,193, Cl. 371-10.000

Fujiwara, Shigetaka: *See—*
Sato, Tadashi; Kurosawa, Tomoe; Fujiwara, Shigetaka; and Higaki, Masaru, 4,767,931, Cl. 250-423.00R.

Fujiwara, Toyohiro: *See—*
Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, 4,767,193, Cl. 350-345.000

Fujiwara, Yoshitaka; and Kaizu, Tetsuji, to Takeda Chemical Industries, Ltd. Method of purifying L-ascorbic acid. 4,767,870, Cl. 549-315.000

Fujiyama, Masaaki: *See—*
Yamaguchi, Nobutaka; Fujiyama, Masaaki, and Suzuki, Masami, 4,767,644, Cl. 427-385.500.

Fukada, Kouichi, to Mitsubishi Denki Kabushiki Kaisha. System for moving electrical equipment. 4,766,816, Cl. 104-172.400.

Fukamachi, Kazuhiko: *See—*
Arakida, Yasuhiro; and Fukamachi, Kazuhiko, 4,767,508, Cl. 204-44.500.

Fukasawa, Masao: *See—*
Abe, Koji; Fukasawa, Masao; and Okazaki, Masaki, 4,766,860, Cl 123-196.00A

Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio; Ueda, Masahiro; and Tanaka, Minoru, to Nippon Kokan Kabushiki Kaisha. Wear resistant rails having capability of preventing propagation of unstable rupture. 4,767,475, Cl. 148-33.000.

Fukui, Noboru: *See—*
Tamba, Shinichi; Miyake, Hitomi; and Fukui, Noboru, 4,766,983, Cl. 181-240.000

Fukui, Yukio: *See—*
Ohnishi, Kunikazu; Arimoto, Akira; Inoue, Masayuki; and Fukui, Yukio, 4,768,183, Cl. 369-112.000

Fukushima, Koji: *See—*
Miyagi, Hideo; Ohya, Fumiaki; Fukushima, Koji; and Adachi, Shin, 4,766,873, Cl. 123-559.300.

Fukusima, Syoji; Kato, Motosaburo; and Mochizuki, Takashi, to Pola Chemical Industries, Inc. Ultrasonic fuse-bonding sealing apparatus with improved contact surfaces. 4,767,492, Cl. 156-580.200.

Fuller Company: *See—*
Barabas, Joseph A.; Phillips, Norman D.; and Polscer, Joseph G., 4,767,427, Cl. 55-493.000.

Funakoshi, Hitoshi: *See—*
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000

Furman, Arthur J.: *See—*
Fielder, Dennis C.; Furman, Arthur J.; Miller, Paul A.; and Rogers, Blair E., 4,767,088, Cl. 248-121.000

Furukawa Electric Co., Ltd., The: *See—*
Onodera, Kagetoshi, 4,766,952, Cl. 165-95.000.

Furukawa, Osamu; Yoshida, Seiichi; Imai, Motomasa; and Harata, Mitsuo, to Kabushiki Kaisha Toshiba. High dielectric constant ceramic material and method of manufacturing the same. 4,767,732, Cl 501-137.000

Furukawa, Yoshimi: *See—*
Kawamoto, Yoshimichi; Furukawa, Yoshimi; Hamada, Tetsuro; and Serizawa, Mitsuya, 4,767,129, Cl. 280-91.000

Furuno Electric Company, Limited: *See—*
Akamatsu, Akio, 4,768,153, Cl. 364-449.000

Furuse, Kazumaro: *See—*
Okuyama, Shinichi; Furuse, Kazumaro; and Ohsawa, Shigemitsu, 4,767,624, Cl. 424-94.100

Furuya, Nagakazu; and Motoo, Satoshi, to Tanaka Kikinzoku Kogyo K.K.; Furuya, Nagakazu; and Motoo, Satoshi. Electrode device for electromagnetic fluid flow apparatus. 4,767,953, Cl. 310-11.000.

G.A.M.E.S.: *See—*
Cuny, Bernard G., 4,767,091, Cl. 248-228.000.

G. D. Searle & Co.: *See—*
Hansen, Donald W., Jr.; Pilipauskas, Daniel R.; and Clare, Michael, 4,767,744, Cl. 514-19.000

G & W Electric Company: *See—*
Patel, Janak R.; and Wilk, Robert J., 4,767,351, Cl. 439-363.000

Gabriel, Stephen B.: *See—*
Deininger, William D.; and Gabriel, Stephen B., 4,767,418, Cl. 623-1.000

GAF Corporation: *See—*
O'Lenick, Anthony J., Jr., 4,767,815, Cl. 524-317.000.

Gaffey, Troy M.; Kidd, David L.; and Grimes, Michael L., to Bell Helicopter Textron Inc. Nonlinear vibration absorber. 4,766,984, Cl 188-380.000

Gaffney, Thomas E.; Weir, Alan J.; Lillesand, Brent W.; and Collins, Jeffery E., to Kohler Co. Handle assembly. 4,766,642, Cl. 16-121.000

Gaggenau-Werke Haus-and Lufttechnik GmbH: *See—*
von Blanquet, Georg, 4,766,880, Cl. 126-299.00D.

Gahr, Harold: *See—*
Bohner, Christian; Gahr, Harold; and Wohlhaupter, Gerhard, 4,767,175, Cl. 350-96.200

Gaidukov, Alexandr V.: *See—*
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl. 227-109.000

Galbraith, Darrell L., to Midland Glass Company. Double-paned window securement. 4,766,709, Cl. 52-235.000

Gamblin, Rodger L.; Myers, Nancy E.; and Sugg, David J., to Burlington Industries, Inc. Nickel-phosphorus electroplating and bath therefor. 4,767,509, Cl. 204-44.700

Gamou, Shigeo: *See—*
Nakanishi, Yutaka; Yamada, Toshihiko; and Gamou, Shigeo, 4,767,318, Cl. 431-304.000

Ganguly, Ashit K.; Sarre, Olga; and Girijavallabhan, Viyyoor M., to Schering Corporation. Substituted oligosaccharide antibodies 4,767,748, Cl. 514-54.000

Gantenbine, Harvey A. Fuel supply system for internal combustion engine. 4,766,867, Cl. 123-438.000

Garbarg, Monique: *See—*
Arrang, Jean-Michel; Garbarg, Monique; Schunack, Walter; Schwartz, Jean-Charles; and Lipp, Ralph O., 4,767,778, Cl. 514-397.000

Garbers, Hermann: *See—*
Bruer, Dirk; Garbers, Hermann, and Heidjann, Franz, 4,767,067, Cl. 241-81.000

Gardner, Colin R.: *See—*
Caldwell, Larry J.; Gardner, Colin R.; and Cargill, Robyn C., 4,767,627, Cl. 424-426.000

Garlichs, Siemen, to Kolbus GmbH & Co. KG. System on a bookbinding machine, to permit actuator-effected positioning of machine elements for book block format changing. 4,767,250, Cl. 412-11.000

Garrett Aerospace: *See—*
Gibson, Christopher M., 4,766,996, Cl. 198-780.000

Garson, Lynette A.: *See—*
Watson, Keith G.; Garson, Lynette A.; Bird, Graham J.; Cross, Lindsay E.; and Farquharson, Graeme J., 4,767,879, Cl 558-412.000

Garthe, Matthias, to Bell & Howell GmbH. Adjustable accumulator for paper sheets. 4,767,115, Cl. 271-223.000

Gasser, Oswald; and Ellrich, Klaus, to ESPE Stiftung & Co Produktions- und Vertriebs KG. Polymerizable radiopaque dental composition. 4,767,798, Cl. 523-117.000

Gaul, David J., to Owens-Corning Fiberglas Corporation. Corrosion resistant cobalt-base alloy containing hafnium and a high proportion of chromium. 4,767,432, Cl. 65-8.000

Gaul, John H., Jr.: *See—*
Bartos, Donald M., and Gaul, John H., Jr., 4,767,831, Cl 525-474.000

Gautier, Thierry; and Beauducel, Claude, to Institut Francais Du Petrole. Pressure wave sensing device of the piezoelectric type with continuous structure and a method of manufacturing same. 4,768,173, Cl. 367-15.000

Gavaler, John R.: *See—*
Talvacchio, John J.; Braginski, Alexander I.; Janocko, Michael A and Gavaler, John R., 4,768,069, Cl. 357-5.000

Gavin, Bruce M.: *See—*
McMillan, Richard A.; Gavin, Bruce M.; and Senner, Edward A 4,766,791, Cl. 83-155.000

Gazdik, Charles E.; McBride, Donald G.; Seraphim, Donald P.; and Toole, Patrick A., to International Business Machines Corporation Full panel electronic packaging structure and method of making same. 4,766,670, Cl. 29-830.000

Geanous, Michael; Confer, Richard G.; and Bainbridge, Richard C., to American Sterilizer Company. System for controlling the operation of electrically powered apparatus. 4,767,968, Cl. 315-90.000

Gebauer, Hans-Jurgen, to Josef Meissner GmbH & Co. Method of and device for storing liquid explosives in the form of an emulsion in water. 4,767,476, Cl. 149-109.600

Gebauer, Ludwig; and Mauthe, Peter, to Hilti Aktiengesellschaft. Hand tool for mixing and dispensing two-component masses. 4,767,025, Cl 222-135.000

Geho, W. Blair; Jacob, Joseph; and Lau, John R., to Technology Unlimited, Inc. Dental therapy by vesicle delivery. 4,767,615, Cl 424-57.000

Geisler, Michael: *See—*
Kieser, Jorg; Sellschopp, Michael; and Geisler, Michael, 4,767,641, Cl. 427-38.000

Gema, S.A.: *See—*
Palomo-Coll, Alberto, 4,767,851, Cl. 540-218.000

Gemperle, Edward C., to Drackett Company, The. Manually operated gear pump spray head. 4,767,033, Cl. 222-383.000

General Atomics: *See—*
Purcell, John R.; Breneman, Bruce C.; and Burnett, Sibley C 4,768,008, Cl. 335-216.000

General Electric Company: *See—*
Barnes, Thomas C.; Abbott, David R.; and Arrao, Anthony S., 4,767,276, Cl. 416-221.000
Boutni, Omar M., 4,767,818, Cl. 524-505.000
Chu, Sow T.; and Rohling, Kenneth W., 4,768,016, Cl. 340-347.0AD
Flood, Gary M.; and Smith, Gary W., 4,767,050, Cl. 228-122.000
Hatch, Burton D., 4,767,957, Cl. 310-178.000
Hitch, Thomas T., 4,767,324, Cl. 432-171.000
Hunsbedt, Anstein N., 4,767,594, Cl. 376-299.000
Kim, Manjin J.; Griffing, Bruce F.; and Skelly, David W., 4,767,724, Cl. 437-194.000
Modic, Frank J.; Striker, Richard A.; Delker, Wayne L.; and Sammel, Richard K., 4,767,794, Cl. 521-82.000
Nelson, Linda H., 4,767,810, Cl. 524-56.000
Noujaim, Sharbel E., 4,768,018, Cl. 340-347.0AD
Reno, Charles W., 4,768,184, Cl. 369-112.000
Salt, Jonathan G. L.; Korzun, Ronald W.; and Abbott, David R., 4,767,267, Cl. 415-174.000
Shannon, Thomas G.; and Brunelle, Daniel J., 4,767,840, Cl 528-196.000
Shannon, Thomas G.; and Brunelle, Daniel J., 4,767,877, Cl 558-281.000
Vogelsong, Thomas L., 4,768,098, Cl. 358-213.310
Wolters, Richard A., Jr.; Colby, Mark J.; and Elkins, Robert B., 4,767,595, Cl. 376-353.000

General Electric Company, p.l.c., The: *See—*
Todd, Richard I.; and Claydon, Robert C., 4,767,047, Cl. 228-6.200

General Foods Corporation. *See—*
Kaleda, William W.; Saleeb, Fouad Z.; and Zeller, Bary I 4,767,634, Cl. 426-271.000
Ramos, Hector V.; Fagan, Kenneth W., Jr.; Rothenberg, Joan R., and Smith, David L., 4,767,636, Cl. 426-291.000

VOL 1093 ISS 5 AG 30 1988 UMI

General Mining Union Corporation Limited: *See—*
Luck, Dieter G., 4,767,253, Cl. 414-339.000
General Motors Corporation: *See—*
Haydu, Bartley A.; Tregilgas, Steven F.; and Carrell, William E., 4,768,134, Cl. 362-65.000
General Safety Corporation: *See—*
Schmidt, Timothy J.; and Heintzleman, Ronald A., 4,767,082, Cl. 242-107.40A
General Signal Corporation: *See—*
Engle, Thomas H., 4,766,980, Cl. 188-52.000.
Pattavina, Jeffrey S.; and Eu, Jai H., 4,768,192, Cl. 370-100.000.
Wells, Russell N., II, 4,768,065, Cl. 355-43.000.
George, Pascal; Giron, Claudie; and Froissant, Jacques, to Synthelabo. 3-(acylaminomethyl)imidazo[1,2-a]pyridine derivatives and pharmaceutical compositions. 4,767,755, Cl. 514-212.000
Georgieff, Michael. Hypocaloric preparation and intravenous method for hypocaloric treatment of patients. 4,767,785, Cl. 514-561.000.
Georgiev, Vassil S.; and Mullen, George B., to Pennwalt Corporation. 3-Phenyl-3-(1H-1,2,4-triazol-1-ylmethyl)-2-methyl-5-alkylisoxazolidines. 4,767,866, Cl. 548-240.000
Georgiev, Vassil S.; and Mullen, George B., to Pennwalt Corporation 5-(alkoxyalkyl)-3-phenyl-3-(1H-imidazol-1-ylmethyl)-2-methylisoxazolidines. 4,767,867, Cl. 548-240.000
Georgiev, Vassil S.; and Mullen, George B., to Pennwalt Corporation. 3-Phenyl-3-(1H-imidazol-1-ylmethyl)-2-methyl-5-[(phenylamino)methyl]isoxazolidines. 4,767,868, Cl. 548-240.000.
Gerard, Donald R.: *See—*
Brooks, Terrill W.; and Gerard, Donald R., 4,766,677, Cl. 34-78.000
Gervasio, Gregorio C., to Colgate-Palmolive Company. Toilet soap bars mae from topped, distilled coco fatty acid and processes for manufacture thereof. 4,767,560, Cl. 252-108.000
Gherardi, Gian L., to SASIB S.p.A. Device for feeding rod-like articles, particularly filter plugs for filter-tipped cigarettes. 4,766,991, Cl. 198-455.000
Ghorashi, Hossein M.: *See—*
Ackermann, Norbert J., Jr.; Ghorashi, Hossein M.; and Dehkordi, Peyman H., 4,766,647, Cl. 19-0.220.
Giancarlo, Charles H., to OG Corporation. Packet switching network. 4,768,190, Cl. 370-86.000.
Gibbemeyer, Joseph F., to Cincinnati Milacron Inc. Blow molding apparatus with resilient skirted spindle nose. 4,767,311, Cl 425-526.000
Gibson, Christopher M., to Garrett Aerospace. Rollers with oriented fiber reinforcement and method. 4,766,996, Cl. 198-780.000.
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, to B.A.T. Cigarettenfabriken GmbH. Apparatus for optical monitoring with a high pressure lamp connected to a fiber optic cable. 4,767,924, Cl. 250-223.00R.
Giebel, Wolfgang; and Kunze, Dieter, to Siemens Aktiengesellschaft. Pressure seal grounded potential bushing for cable fittings. 4,767,346, Cl. 439-95.000.
Giglia, Salvatore: *See—*
Bikson, Benjamin; Giglia, Salvatore; and Kharas, Gregory, 4,767,422, Cl. 55-16.000.
Gijzen, Wilhelmus A. H.; Blankers, Petrus J.; and Van Vroenhoven, Petrus A. W. H., to U.S. Philips Corp. Device for optically scanning an information carrier. 4,767,187, Cl. 350-247.000
Gilliam, Julius C.; and Blum, Alvin S. Quick change oil filter system 4,767,530, Cl. 210-232.000
Gillmore, Stephen R.: *See—*
Merritt, Carleton G.; and Gillmore, Stephen R., 4,767,635, Cl. 426-272.000
Giori, Gualtiero; and Hernandez, Manuel, to De La Rue Giori S.A. Multicolor perfecting press. 4,766,809, Cl. 101-152.000.
Girijavallabhan, Viyyoor M.: *See—*
Ganguly, Ashit K.; Sarre, Olga; and Girijavallabhan, Viyyoor M., 4,767,748, Cl. 514-54.000
Giron, Claudie: *See—*
George, Pascal; Giron, Claudie; and Froissant, Jacques, 4,767,755, Cl. 514-212.000
Giustina International S.P.A.: *See—*
Rattazzini, Paolo, 4,766,703, Cl. 51-289.00R
GKN Automotive Components Inc.: *See—*
Brown, Danny D.; Hazebrook, Daniel W.; and Fillmore, Francis L., 4,767,381, Cl. 464-146.000
Glaeser, Linda C.; Brazdil, James F., Jr.; and Toft, Mark A., to Standard Oil Company, The. Catalyst system for ammoxidation of paraffins. 4,767,739, Cl. 502-209.000.
Glasener, Kenneth A., to Dynagraphics Merchandising Corporation. Self-righting display device. 4,766,686, Cl. 40-602.000.
Glasner, Alfred: *See—*
Lindbauer, Ralf; and Glasner, Alfred, 4,767,605, Cl. 423-239.000
Glass Incorporated International: *See—*
Lewis, Albert; and Kottnauer, Cenek A., 4,767,431, Cl. 65-6.000.
Glomeau, J. Robert, to Rexa Corporation. Flow matching valve and hydraulic system employing same. 4,766,728, Cl. 60-476.000
Glover, Alfred H.: *See—*
Betterton, Joseph T.; Glover, Alfred H.; Griffin, Ranald L.; and Kerstiens, Anthony J., 4,767,897, Cl. 200-83.00J
Glucksman, Dov. Z. Electric hairdryer having a cage-shaped heater element. 4,767,914, Cl. 219-370.000
Glynn, Robert T.: *See—*
Jones, Hwfa J., 4,767,093, Cl. 248-442.200.
Go-Video, Inc.: *See—*
Dunlap, Robert T.; and Lang, Richard A., 4,768,110, Cl. 360-33.100
Gobrecht, Jens: *See—*
Broich, Bruno; Gobrecht, Jens; and Roggwiller, Peter, 4,768,075, Cl. 357-38.000
Goddard, Errol D.: *See—*
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767 463, Cl. 106-162.000
Godfrey, Colin; and Webster, Rodney C., to Rolls-Royce plc. Cooled vane. 4,767,261, Cl. 415-115.000
Goedert, Ferdinand: *See—*
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000.
Goedert, Jean: *See—*
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000.
Goetz, Kenneth D.; Nesheiwat, Afif M.; Senatore, Guy; Shang, Wei-Teh W.; and Phillips Petroleum Company. Arylene sulfide polymer preparation from dehydrated admixture comprising sulfur source, cyclic amide solvent and water. 4,767,841, Cl. 528-388.000.
Goetze, Horst: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310.
Goetzke, Gary: *See—*
Goldstein, Henry; Ting, Patrick L.; Chicove, Etzer; Goetzke, Gary; and Cowles, John M., 4,767,640, Cl. 426-600.000.
Goldner, Sandor: *See—*
Green, Dan; and Goldner, Sandor, 4,768,221, Cl. 379-67.000.
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., to Nauchno-Proizvodstvennoe Obiedinenie PO Mekhanizrovannomu Stroitelnomu Instrumentu I Otdelochnym Mashinam. Hand-held fastening element driving tool. 4,767,045, Cl. 227-109.000.
Goldstein, Henry; Ting, Patrick L.; Chicove, Etzer; Goetzke, Gary; and Cowles, John M., to Miller Brewing Company. Light stable hop extracts and method of preparation. 4,767,640, Cl. 426-600.000.
Goldstein, Leon C., to Long Mile Rubber Company. Cold recapping method for tires utilizing uncured rubber and sectioned mold 4,767,480, Cl. 156-96.000.
Golestaneh, Farhad, to Packaged Systems, Inc. Constant flow rate control valve. 4,766,928, Cl. 137-504.000.
Gondek, Stanley E.: *See—*
Stevens, Raymond R., Jr.; Gondek, Stanley E.; Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., 4,767,910, Cl. 219-125.100.
Goodwin, Michael J., to National Research Development Corporation. Hydrodynamic journal bearings. 4,767,223, Cl. 384-114.000.
Goodyear Tire & Rubber Company, The: *See—*
Lorenz, Harold K., 4,767,658, Cl. 428-192.000.
Peterson, Paul J., 4,767,244, Cl. 408-204.000.
Schisler, Robert C.; and Downey, Raymond E., 4,767,793, Cl. 521-50.500.
Gopinath, Bhaskarpillai; and Li, Shuo-Yen R., to Bell Communications Research, Inc. High capacity communication utilizing static, OR-type channels. 4,768,189, Cl. 370-85.000.
Gordeev, Vladimir A.: *See—*
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl. 227-109.000
Gordon, Eugene I.: *See—*
Chang, Ifay F.; and Gordon, Eugene I., 4,767,192, Cl. 350-342.000.
Gordon, James H., to Sonotek, Inc. Circuit for providing high sampling rate resolution using slow sampling rate. 4,768,017, Cl. 340-347.05H
Gordon, Robert T. Method for affecting intracellular and extracellular electric and magnetic dipoles. 4,767,611, Cl. 424-9.000
Gore, Jacques: *See—*
Doutheau, Alain; Gore, Jacques; Quash, Gerard A.; and Didier, Bernard, 4,767,872, Cl. 549-551.000
Gorski, Jack: *See—*
Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D.; and Rottman, Fritz M., 4,767,711, Cl. 435-243.000.
Gorski, Robert A., to Du Pont de Nemours, E. I., and Company Azeotrope or azeotrope-like composition of trichlorotrifluoroethane, methanol and 1,2-dichloroethylene. 4,767,561, Cl. 252-171.000.
Goshima, Toshikazu: *See—*
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; and Akita, Koji, 4,767,486, Cl. 156-244.110.
Gosling, Martin: *See—*
Benjamin, William; Kadoo, Ricky; and Gosling, Martin, 4,768,027, Cl. 340-691.000
Goto, Mikio: *See—*
Yoshidome, Toshio; Nagai, Takanori; Kono, Tadayoshi; and Goto, Mikio, 4,766,858, Cl. 123-195.00R.
Gotou, Yukifumi, to Kabushiki Kaisha Toshiba. Inverter-aided multi-system air conditioner with control functions of refrigerant distribution and superheating states. 4,766,735, Cl. 62-175.000

Gottfried, Norbert, to Siemens Aktiengesellschaft. Optical disc store scanning device with a plurality of scanning units. 4,768,179, Cl. 369-32.000
Gottfried, Robert W.: *See—*
Cronenwett, Duane; and Gottfried, Robert W., 4,766,659, Cl. 29-401.100.
Gottneid, David J.: *See—*
Friedman, Robert B.; Gottneid, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., 4,767,849, Cl. 536-102.000
Gottschald, Lutz; Kotting, Fritz; and Barwasser, Gunther, to Wernicke & Co GmbH. Apparatus for grinding the edges of lenses. 4,766,699, Cl. 51-101.0LG.
Gottwald, Peter: *See—*
Diez, Werner; and Gottwald, Peter, 4,767,482, Cl. 156-163.000
Gough, Michael J.: *See—*
Neu, Max G.; and Gough, Michael J., 4,767,800, Cl. 523-141.000
Goyarts, Wynand M., to Simmons-Rand Corporation. Process for making an enclosure outlet connection device. 4,767,901, Cl 200-306.000
Graczyk, Lawrence S.; and Francis, Arthur W., Sr., to Union Carbide Corporation. Method to deliver ultra high purity helium gas to a use point. 4,766,731, Cl. 62-55.000.
Grady, II; Clyde C., to Christianson Manufacturing Corp. Internal action improved gas powered umbrella. 4,766,920, Cl. 135-20.00B
Grandy, Mark E., to Prestolite Wire Corporation. Hybrid connector cable system. 4,767,168, Cl. 350-96.200.
Grappe, Rene , to Souriau & Cie. Electrical connectors, particularly connectors fluid-tight on immersion in a liquid. 4,767,356, Cl. 439-455.000
Grasselli, Robert K.; and Hardman, Harley F., to Standard Oil Company, The. Process for the manufacture of acrylonitrile and methacrylonitrile. 4,767,878, Cl. 558-324.000
Grassmuck, Jurgen: *See—*
Sedlmayr, Gerhard; and Grassmuck, Jurgen, 4,767,161, Cl. 297-472.000
Gravesteijn, Dirk J.: *See—*
van der Veen, Jan; Gravesteijn, Dirk J.; and Schoot, Cornelis J., 4,767,421, Cl. 8-523.000
Gray, John E.: *See—*
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000.
Gray, Joseph H.; and Greenstreet, Mark R., to TRW Inc. Squared-radix discrete Fourier transform. 4,768,159, Cl. 364-726.000
Gray, Kenneth P., to Carrier Corporation. Apparatus for tension expanding tubes. 4,766,667, Cl. 29-727.000.
Grebur, Dennis J.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,767,829, Cl. 525-449.000
Green, Dan; and Goldner, Sandor, to Planum Technology Corp. Remote reprogramming system for telephone call forwarding service. 4,768,221, Cl. 379-67.000
Green, David T., to United States Surgical Corporation. Surgical fastener applying apparatus. 4,767,044, Cl. 227-19.000.
Green, Joseph A., to Honeywell, Inc. RF emission shield for CRT displays. 4,767,969, Cl. 315-85.000
Green, Michael W.: *See—*
Michael, Leroy D.; and Green, Michael W., 4,767,143, Cl. 294-65.000
Green, Philip A. Support pad working on or about vehicle tires. 4,766,626, Cl. 5-420.000
Greene, Sharon L.: *See—*
Pazos, Jose F.; Greene, Sharon L.; and Rodriguez, Augusto, 4,767,825, Cl. 525-408.000
Greenstreet, Mark R.: *See—*
Gray, Joseph H.; and Greenstreet, Mark R., 4,768,159, Cl. 364-726.000
Greenwood, David; and Presgrave, John E., to Imperial Chemical Industries PLC. Ink. 4,767,459, Cl. 106-22.000
Greif, Norbert: *See—*
Marcinowski, Stefan; Sanner, Axel; Tschang, Chung-Ji; Ladner, Wolfgang; and Greif, Norbert, 4,767,707, Cl. 435-182.000
Grendene S.A.: *See—*
Maciel, Joao P.; and Baungratz, Jose H., 4,766,680, Cl. 36-87.000
Grenier, Gilles; Merle, Jean-Pierre; and Zribi, Robert, to Societe Nationale Industrielle et Aerospatiale. Electro-optical pick up having a charge coupled sequencer. 4,768,097, Cl. 358-213.260
Grieb, Hubert; and Schlosser, Werner, to MTU Motoren-und Turbinen-Union Munchen GmbH. Shaped tube with elliptical cross-section for tubular heat exchangers and a method for their manufacture. 4,766,953, Cl. 165-177.000
Griffin, Ranald L.: *See—*
Betterton, Joseph T.; Glover, Alfred H.; Griffin, Ranald L.; and Kerstiens, Anthony J., 4,767,897, Cl. 200-83.00J
Griffing, Bruce F.: *See—*
Kim, Manjin J.; Griffing, Bruce F.; and Skelly, David W., 4,767,724, Cl. 437-194.000
Grimes, Michael L.: *See—*
Gaffey, Troy M.; Kidd, David L.; and Grimes, Michael L., 4,766,984, Cl. 188-380.000
Grimes, Robert, Jr.: *See—*
Stevens, Raymond R., Jr.; Gondek, Stanley E.; Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., 4,767,910, Cl 219-125.100
Grise, Frederick G. J.; and Adams, Carlton D. Jar opener. 4,766,781, Cl. 81-3.400
Grobli, Kurt: *See—*
Habegger, Fernand; Polt, Niklaus, and Grobli, Kurt, 4,767,389, Cl 474-266.000
Grogan, Richard J.: *See—*
Lucas, Mark H.; Grogan, Richard J.; Wagner, Robert L.; and Wilhelm, Richard T., 4,766,758, Cl. 73-1.00B
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, to L'Oreal. Cosmetic compositions for the treatment of the hair and skin contain in the form of a powder particles resulting from the pulverization of at least one plant substance and a cohesion agent. 4,767,618, Cl. 424-74.000
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, to Man Technologie GmbH. Machine tool for the production of tubular components. 4,766,752, Cl. 72-84.000
Gros, Pierre: *See—*
Jansen, Franz; and Gros, Pierre, 4,767,621, Cl. 424-85.000
Grossmann, Wolfgang: *See—*
Behr, Friedrich; Ballewski, Heinrich; and Grossmann, Wolfgang, 4,766,948, Cl. 164-516.000
Group Lotus PLC: *See—*
Adams, Alfred A., 4,767,308, Cl. 425-405.100.
Grubbs, Jack M.: *See—*
Dively, Lee V.; and Grubbs, Jack M., 4,768,227, Cl. 379-112.000
Gruber, Robert P., to United States of America, National Aeronautics and Space Administration. Arcjet power supply and start circuit 4,766,724, Cl. 60-203.100
Grumman Aerospace Corporation: *See—*
Boudreau, Jean A.; Berman, Howard L.; Chin, Jimmie; and Martorella, Romeo P., 4,767,085, Cl. 244-182.000
Grunze, Herbert: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310.
Grutter, William G.: *See—*
Fischer, Harry A.; and Grutter, William G., 4,767,214, Cl 366-99.000
GTE Products Corporation: *See—*
McKernan, Bernard J.; Burke, Richard G.; and Wurzler, Phillip D., 4,766,665, Cl. 29-557.000
GTM-Entrepose: *See—*
Blanc, Pierre, 4,767,238, Cl. 405-207.000
GTY Industries: *See—*
Poppenheimer, Charles B., 4,768,139, Cl. 362-302.000
Guenther, Ruth P. Apparatus for framing garment portions in hoops 4,767,111, Cl. 269-303.000
Guerin, Hubert: *See—*
Mertz, Jean-Luc; Lazareth, Michel; and Guerin, Hubert, 4,768,007, Cl. 335-202.000
Guernot, William F.: *See—*
Bradley, Ralph H., Jr., and Guernot, William F., 4,767,186, Cl. 350-128.000
Guevara, Belen A.: *See—*
Elcock, Robin W.; and Guevara, Belen A., 4,767,249, Cl 411-110.000
Guindin, David. Traveling flat mounting means. 4,766,650, Cl 19-103.000
Gunter, Jonas L.: *See—*
Bradshaw, Johnny S.; Gunter, Jonas L.; Cothran, Liggett A.; Edwards, William M.; and Henry, Pearison W., 4,766,662, Cl 29-450.000
Gunzi, Katuhiko: *See—*
Kawakami, Izumi; Komazaki, Tomokazu; Gunzi, Katuhiko; and Onisi, Norio, 4,768,003, Cl. 333-202.000
Gustafson, Caroll E.: *See—*
Weber, Bruce W.; Gustafson, Caroll E.; and Bice, James A 4,767,913, Cl. 219-130.210.
Gutowski, Richard W. Apparatus for securing metal tabs to file unit bodies. 4,766,656, Cl. 29-33.00K.
Gutter, David H.; and Shatto, Walter C., Jr., to AMP Incorporated High-density, modular, electrical connector. 4,767,345, Cl 439-92.000
Gwinn, J. S.; and Miller, Michael J., to Phillips Petroleum Company Continuous mixer. 4,767,216, Cl. 366-85.000
Haase, Peter, to Schering Aktiengesellschaft. Holding tongs. 4,767,146, Cl. 294-104.000
Habasit AG: *See—*
Habegger, Fernand; Polt, Niklaus; and Grobli, Kurt, 4,767,389, Cl 474-266.000
Habegger, Fernand; Polt, Niklaus; and Grobli, Kurt, to Habasit AG Driving belt. 4,767,389, Cl. 474-266.000
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., to Habley Medical Technology Corporation. Dental syringe having an automatically retractable needle. 4,767,413, Cl. 604-198.000
Habley Medical Technology Corporation: *See—*
Haber, Terry M.; Smedley, William H.; and Foster, Clark B 4,767,413, Cl. 604-198.000
Hachiga, Katsumi: *See—*
Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, 4,767,103, Cl. 266-80.000
Hachisuka, Hiroshi, to Aisin Seiki Co., Ltd. Hydraulically operated power steering system. 4,766,801, Cl. 91-371.000

VOL 1093 ISS 5 AG 30 1988 UMI

Hacke, Heinz: *See—*
Peter, Wolfgang; and Hacke, Heinz, 4,767,020, Cl. 220-273.000

Hacker, Manfred: *See—*
Bossert, Frank; and Hacker, Manfred, 4,767,372, Cl. 445-50.000

Hackman, Klaus-Georg; Liebe, Reinhard; Freesemann, Enno; Thiele, Willi; and Wochnowski, Waldemar, to Korber AG. Method and apparatus for puffing tobacco. 4,766,912, Cl. 131-296.000

Hackmann, Ludger; and Wilken, Josef, to Bramlage Gesellschaft mit beschrankter Haftung. Dispenser for tablets. 4,767,023, Cl 221-152.000

Haemonetics Corporation: *See—*
Powers, Edward T., 4,767,396, Cl. 494-60.000.

Hagans, Patrick L.: *See—*
Yates, Ronald L.; and Hagans, Patrick L., 4,767,678, Cl 428-632.000

Hageman, Martin P.: *See—*
Kovach, Jonathan W.; and Hageman, Martin P., 4,767,254, Cl. 414-401.000

Hagen, Nicholas S.; and Lamon, Kim D., to Rorer Pharmaceutical Corporation. Triamcinolone acetonide for the treatment of allergic rhinitis. 4,767,612, Cl. 424-45.000

Hagiwara, Hiroyuki: *See—*
Kawamura, Kichinari; Kono, Yasuo; Okado, Hideo; Hagiwara, Hiroyuki; and Takaya, Haruo, 4,767,886, Cl. 585-640.000.

Hahn, Siegbert: *See—*
Bauer, Anton; and Hahn, Siegbert, 4,767,224, Cl. 384-572.000

Halbach & Braun Industrienlagen: *See—*
Braun, Gert; and Braun, Ernst, 4,766,992, Cl. 198-599.000.

Halbach, Carl R., to Ford Motor Company. Method of chargeability improvement and reduced corrosion for sodium-sulfur cells 4,767,684, Cl. 429-103.000

Halbritter, Gunter: *See—*
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,566, Cl. 252-301.60F
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,567, Cl. 252-301.60F

Hale, John R., to RCA Licensing Corporation. Apparatus and method for manufacturing a molded glass stem. 4,767,436, Cl. 65-59.270.

Hale, Whitney M. Space framing system. 4,766,712, Cl. 52-645.000

Hall, David L.: *See—*
Boechicchio, Keith A.; Hall, David L.; Jackson, Mark F.; Keller, Joseph R.; and Letsch, Karl H., 4,767,298, Cl. 425-112.000.

Hall, Kenneth B.: *See—*
Auxier, Thomas A.; Hall, Kenneth B.; and Landis, Kenneth K., 4,767,268, Cl. 416-97.00R

Hall, Peter, to Peco, Inc. Trailer and tailgate. 4,767,150, Cl. 296-50.000.

Hallam, Keith J.: *See—*
Ritter, John A.; and Hallam, Keith J., 4,766,820, Cl. 105-240.000.

Halliburton Company: *See—*
Byrd, Audis C.; and Morris, Robert J., 4,767,603, Cl. 422-119.000.
Hanlon, David; Holtmyer, Marlin; Conway, Mike; and Hunt, Charles, 4,767,550, Cl. 252-8.551.
Reid, Starlin M., 4,767,978, Cl. 323-282.000
Trevillion, William L., 4,766,764, Cl. 73-151.000

Hamada, Masataka; Karasaki, Toshihiko; Matsui, Toru; and Maekawa, Yukio, to Minolta Camera Kabushiki Kaisha. Focus detecting device 4,768,052, Cl. 354-402.000

Hamada, Masataka: *See—*
Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, 4,768,054, Cl. 354-408.000.

Hamada, Takaki: *See—*
Ishigaki, Naoyuki; Hamada, Takaki; and Fujimura, Setsuo, 4,767,450, Cl. 75-0.5BA

Hamada, Tetsuro: *See—*
Kawamoto, Yoshimichi; Furukawa, Yoshimi; Hamada, Tetsuro; and Serizawa, Mitsuya, 4,767,129, Cl. 280-91.000.

Hamamatsu Photonics K.K.: *See—*
Takiguchi, Yoshihiro, 4,767,207, Cl. 356-73.100.

Hamana Iron Works Co., Ltd.: *See—*
Ueda, Iwao; and Sukimoto Minobu, 4,766,751, Cl. 72-64.000

Hamanaka, Toshiyuki: *See—*
Asami, Seiichi; Hamanaka, Toshiyuki; and Harada, Takashi, 4,767,731, Cl. 501-128.000

Hamazaki, Yasuyuki: *See—*
Hijikata, Akemi; Matsumoto, Masaaki; Nakayama, Taesuke; Hamazaki, Yasuyuki; and Kataoka, Kenji, 4,767,680, Cl. 429-39.000

Hamblin, Michael J., to Rig Design Sevices, Limited. Orally operable water filter. 4,767,544, Cl. 210-767.000

Hames, William A.: *See—*
Tompkins, Charles A.; and Hames, William A., 4,766,710, Cl. 52-278.000

Hamilton, Harriet W.; and Steffen, Robert P., to Warner-Lambert Company. Method for treating congestive heart failure with N^6-acenaphthyl adenosine. 4,767,747, Cl. 514-46.000

Hammer, Maximilian: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000

Hammond, James C.: *See—*
Kimbrough, Andrew G.; and Hammond, James C., 4,767,048, Cl 228-29.000

Hanamura, Shoji: *See—*
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000.

Hanawa, Masatoshi, to Kabushiki Kaisha Toshiba. Coil system for magnetic resonance imaging. 4,767,993, Cl. 324-318.000

Hanes, Ronnie M.; and Brima, Thomas S., to National Distillers and Chemical Corporation. Carbonylation of allylic ethers to esters. 4,767,574, Cl. 260-410.000

Hang, Yung D., to Cornell Research Foundation, Inc. Apple pomace as substrate for microbial production of citric acid. 4,767,705, Cl. 435-144.000

Hanlon, David; Holtmyer, Marlin; Conway, Mike; and Hunt, Charles, to Halliburton Company. Vicinal diol containing monomers and polymers and methods of treating a subterranean formation. 4,767,550, Cl. 252-8.551.

Hannum, Joseph R., to Budd Company, The. Bearing for a conveyor chain. 4,766,997, Cl. 198-853.000.

Hansen, Donald W., Jr.; Pilipauskas, Daniel R.; and Clare, Michael, to G. D. Searle & Co. Substituted tyrosyl methionyl dipeptide amides. 4,767,744, Cl. 514-19.000

Hansen, John D.: *See—*
McEwen, Terence D.; and Hansen, John D., 4,767,549, Cl 252-8.514

Hansen, John H.: *See—*
Conklin, Delano M.; Hansen, John H.; Burske, Norbert W.; and Malpass, Robert C., 4,767,669, Cl. 428-394.000.

Hansen, Willi: *See—*
Berstein, Gerd; Hansen, Willi; and Winkens, Rudolf, 4,766,753, Cl. 72-110.000

Hanshin Keiran Kabushiki Kaisha: *See—*
Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, 4,766,849, Cl. 119-48.000.

Hansing, Ronald J., to Philips Industries Inc. Latch Assembly for recreational vehicle doors. 4,767,139, Cl. 292-162.000

Hanssler, Gerd: *See—*
Daum, Werner; and Hanssler, Gerd, 4,767,757, Cl. 514-231.500
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000
Jelich, Klaus; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,767,775, Cl. 514-379.000.

Hanzawa Corporation: *See—*
Hanzawa, Tsuneo, 4,767,376, Cl. 446-457.000

Hanzawa, Tsuneo, to Hanzawa Corporation. Toy vehicle. 4,767,376, Cl. 446-457.000

Hara, Kenji; and Okada, Jhoshin, to Kao Corporation. Gallstone dissolver. 4,767,783, Cl. 514-546.000

Harada, Setsuo: *See—*
Shinagawa, Susumu; Kanamaru, Tsuneo; and Harada, Setsuo, 4,767,781, Cl. 514-513.000

Harada, Takashi: *See—*
Asami, Seiichi; Hamanaka, Toshiyuki; and Harada, Takashi, 4,767,731, Cl. 501-128.000

Haraguchi, Mitsunobu: *See—*
Nagao, Takeyoshi; Kohashi, Toru; and Haraguchi, Mitsunobu, 4,766,966, Cl. 177-123.000

Harata, Mitsuo: *See—*
Furukawa, Osamu; Yoshida, Seiichi; Imai, Motomasa; and Harata, Mitsuo, 4,767,732, Cl. 501-137.000.

Hardman, Harley F.: *See—*
Grasselli, Robert K.; and Hardman, Harley F., 4,767,878, Cl. 558-324.000

Hardy, James A.: *See—*
Martin, Dean C.; Kleiss, Roderick E.; and Hardy, James A., 4,766,640, Cl. 15-340.000

Hardy, Thomas G.; Kaganov, Alan L.; and Pace, William G., to American Cyanamid Company. Anastomotic device. 4,766,898, Cl. 128-334.00C.

Harlow, David A. Tree banding article to protect against gypsy moth larvae. 4,766,695, Cl. 47-24.000

Harmon, William B.: *See—*
Wheelwright, Lynn M.; Harmon, William B.; and Coffron, James W., 4,768,145, Cl. 364-200.000.

Harney, James D.; and Jensen, Thomas D., to Eastman Kodak Company. Disk cassette loading/unloading mechanism with rigid shutter opening device. 4,768,114, Cl. 360-97.000.

Harney, Patricia M.: *See—*
Ayotte, Renald R.; Harney, Patricia M.; and Machado, Vincent S., 4,767,888, Cl. 800-1.000

Harris, Gerald R. Band saw apparatus and method. 4,766,790, Cl. 83-56.000

Harris Graphics Corporation: *See—*
Montgomery, Robert M., 4,767,987, Cl. 324-231.000

Harris, Norman: *See—*
Harrison, George E.; and Harris, Norman, 4,767,869, Cl. 549-295.000

Harrison, Anthony W., to Lucas Industries public limited company. Disc brakes. 4,766,981, Cl. 188-170.000.

Harrison, George E.; and Harris, Norman, to Davy McKee Limited. Process for the production of gamma-butyrolactone. 4,767,869, Cl. 549-295.000

Harry, Alan, to Francotyp-Postalia GmbH. Ribbon cassettes. 4,767,228, Cl. 400-234.000

Hart, William P.; Kapuscinski, Maria M.; and Liu, Christopher S., to Texaco Inc. Lubricating oil containing dispersant viscosity index improver. 4,767,553, Cl. 252-47.500.

Hartel, Gunter, to Pierburg GmbH. Device for determining the position of a crankshaft in relation to the cylinder. 4,766,865, Cl. 123-414.000.

Hartman, Bruce A.; Kardack, Michael R.; and Ammendolia, Ralph E., to Kar-Hart Productions, Inc. Tripods. 4,767,090, Cl. 248-168.000.

Hartwig, Carl S. M.; and Ragnmark, Karl G. B., to Institut Cerac S.A Hand-held hammer tool. 4,766,963, Cl. 173-109.000.

Hartz, James F.; Bazilio, Rayman E.; and Adamson, Glenn W., to United States of America, Army. Interrupted thread lock mechanism for an engine-transmission assembly. 4,766,777, Cl. 74-606.00R.

Haruta, Kazumi: *See—*
Kato, Takashi; Haruta, Kazumi; and Yamada, Yutaka, 4,766,872, Cl. 123-519.000

Harvey, James R.; Biesel, Karen M., and Anderton, Richard L., to Diasonics Inc. Dynamic calibration for an X-ray machine. 4,768,216, Cl. 378-110.000

Hase, Shinobu: *See—*
Munakata, Chusuke; Hase, Shinobu; and Kimura, Shigeharu, 4,767,211, Cl. 356-375.000

Hasegawa, Kiyoshi; and Seko, Yutaka, to Kabushiki Kaisha Toshiba. Sheet film feeder. 4,767,113, Cl. 271-3.000.

Hasegawa, Masakazu: *See—*
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao; Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl. 264-500.000.

Hasegawa, Takashi: *See—*
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumiaki; and Kobashi, Mamoru, 4,766,864, Cl. 123-357.000

Hashidate, Toshiaki: *See—*
Nakashima, Keishi; Iwata, Tetsuya; Tanaka, Yasuo; and Hashidate, Toshiaki, 4,768,121, Cl. 360-125.000

Hashimoto, Ken; Maruta, Masayuki; Soyama, Hidehiko; and Ishii, Yukihiro, to Fuji Xerox Co., Ltd. Charge controlling method and developers containing a charge-exchange control agent comprising organic boron compound. 4,767,688, Cl. 430-110.000.

Hashimoto, Kiyoshi: *See—*
Kawaguchi, Toshiro; Sonoda, Takefumi; and Hashimoto, Kiyoshi, 4,767,306, Cl. 425-382.400

Hashimoto, Seiji, to Canon Kabushiki Kaisha. Image sensing apparatus. 4,768,085, Cl. 358-48.000.

Hashimoto, Shunichi: *See—*
Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,767,446, Cl. 71-103.000.

Hasircoglu, Alexander W., to Du Pont de Nemours, E. I., and Company. Daisy chain connector. 4,767,357, Cl. 439-499.000

Hassenpflug, Wolfgang; and Schwable, Rainer, to Litef GmbH. Method for determining the horizontal airspeed of helicopters in higher speed ranges. 4,766,767, Cl. 73-181.000.

Hata, Kazuyoshi; and Takamura, Sachiko, to Minolta Camera Kabushiki Kaisha. Objective lens system for optical recording type disks. 4,767,202, Cl. 350-432.000

Hata, Yoshiaki: *See—*
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 4,768,047, Cl. 354-195.100

Hatakeyama, Takanobu: *See—*
Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, 4,768,215, Cl. 378-101.000.

Hatanai, Takashi, to Alps Electric Co., Ltd. Complex magnetic head having non-magnetic center core. 4,768,120, Cl. 360-121.000.

Hatanaka, Sunao: *See—*
Tomoyori, Makoto; and Hatanaka, Sunao, 4,768,056, Cl. 355-3.00R

Hatch, Burton D., to General Electric Company. Liquid metal collector for acyclic generator. 4,767,957, Cl. 310-178.000

Hatfield, James H., to Imperial Chemical Industries PLC. Apparatus for monitoring optical path differences utilizing an etalon. 4,768,182, Cl. 369-109.000

Hatinguais, Philippe: *See—*
Tarroux, Roger; Fahy, Jacques; and Hatinguais, Philippe, 4,767,855, Cl. 540-478.000

Hattori, Motonobu: *See—*
Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu; Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, 4,767,976, Cl. 318-808.000

Hattori, Tadashi: *See—*
Hattori, Yutaka; Ito, Novuei; Inoguchi, Kazuhiro; and Hattori, Tadashi, 4,768,011, Cl. 338-5.000

Hattori, Yutaka; Ito, Novuei; Inoguchi, Kazuhiro; and Hattori, Tadashi, to Nippon Soken, INC. Joint structure for diamond body and metallic body. 4,768,011, Cl. 338-5.000.

Hatz, Ernst, to Motorenfabrik Hatz GmbH & Co. K.G. Starting handle for internal combustion engines. 4,766,856, Cl. 123-185.00S.

Hauff, Werner. Apparatus for monitoring fire hazards in a building. 4,768,024, Cl. 340-584.000

Haunschild, Dale H.: *See—*
Bailey, Terry R.; and Haunschild, Dale H., 4,767,659, Cl. 428-203.000

Hauser, Anton: *See—*
Demus, Dietrich; Hauser, Anton; and Keil, Michael, 4,767,565, Cl. 252-299.500

Hayakawa, Tadashi: *See—*
Shinoki, Kazuaki; Naya, Koutarou; Mitsuhashi, Shinji; Hayakawa, Tadashi; and Uchida, Riichi, 4,767,284, Cl. 417-312.000

Hayakawa, Yasuo: *See—*
Takishita, Yoshihiko; Nonaka, Toshio; and Hayakawa, Yasuo, 4,768,155, Cl. 364-507.000

Hayama, Hajime: *See—*
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000

Hayama, Kazuhide: *See—*
Kubota, Ikuo; Hayama, Kazuhide; and Narazaki, Kanji, 4,767,616 Cl. 424-70.000

Hayashi, Gouichi: *See—*
Suzuki, Yoshiaki; and Hayashi, Gouichi, 4,767,571, Cl. 252-587.000

Hayashi, Hiroaki: *See—*
Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji; Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, 4,767,801, Cl. 523-145.000

Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for supporting and driving wheel angular deceleration sensor. 4,766,982, Cl. 188-181.00A.

Hayashi, Yoshinori: *See—*
Iijima, Kenzaburou; Kurahashi, Kazuo; and Hayashi, Yoshinori, 4,768,119, Cl. 360-103.000

Hayashi, Yuzo; and Nagura, Yoshihiro, to Alps Electric Co., Ltd. Terminal connection structure for a liquid crystal display device 4,767,189, Cl. 350-334.000

Haydu, Bartley A.; Tregilgas, Steven F.; and Carrell, William E., to General Motors Corporation. Actuator mechanism for a concealable headlamp asssembly. 4,768,134, Cl. 362-65.000

Hayes, Earl J.: *See—*
Cooper, Ralph M.; Hayes, Earl J.; and Denlinger, Keith R., 4,767,350, Cl. 439-271.000

Hayes, Edward C.: *See—*
Young, Robert N.; Rokach, Joshua; and Hayes, Edward C., 4,767,745, Cl. 514-21.000

Hazebrook, Daniel W.: *See—*
Brown, Danny D.; Hazebrook, Daniel W.; and Fillmore, Francis L., 4,767,381, Cl. 464-146.000

Hedin, Ann-Christine: *See—*
Lindquist, Nils T.; Hedin, Ann-Christine; Francke, Kurt O.; and Vukotic, Milos, 4,766,639, Cl. 15-339.000

Hedrich, Albert L.: *See—*
Kehr, Bruce A.; and Hedrich, Albert L., 4,768,176, Cl. 368-10.000
Kehr, Bruce A.; and Hedrich, Albert L., 4,768,177, Cl. 368-10.000

Hegemann, Kenneth J. Twin-brushes rotary toothbrush. 4,766,630, Cl 15-22.00R

Heidjann, Franz: *See—*
Bruer, Dirk; Garbers, Hermann; and Heidjann, Franz, 4,767,067, Cl 241-81.000

Heinen, Jochen; and Weidinger, Friedrich, to Siemens Aktiengesellschaft. Mechanism for self-adjusting positioning of a semiconductor laser relative to an optical fiber to be coupled thereto. 4,768,199, Cl 372-36.000

Heinold, Hans: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R

Heinrich, William P.: *See—*
Leopoldi, Norbert; and Heinrich, William P., 4,768,136, Cl 362-189.000

Heintzleman, Ronald A.: *See—*
Schmidt, Timothy J.; and Heintzleman, Ronald A., 4,767,082, Cl 242-107.40A

Heisner, Douglas: *See—*
Urness, Kevin; Liekus, Leonard J.; Heisner, Douglas; Ingwersen, Peter; and Stenstrom, Eric, 4,766,668, Cl. 29-749.000

Heitz, Heinrich: *See—*
Schneider, Manfred; Heitz, Heinrich; Schlenz, Dieter; and Ewald, Egon, 4,767,667, Cl. 428-336.000

Heliotronic GmbH *See—*
Holm, Claus; Sirtl, Erhard; Dietl, Josef; and Holzlwimmer, Franz, 4,767,585, Cl. 264-82.000

Helix Technology Corporation: *See—*
Bartlett, Allen J.; Andeen, Bruce R.; and Lessard, Philip A 4,766,741, Cl. 62-514.00R

Helm Instrument Co., Inc.: *See—*
Lucas, Mark H.; Grogan, Richard J.; Wagner, Robert L.; and Wilhelm, Richard T., 4,766,758, Cl. 73-1.00B

Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., to Supra Products, Inc. Electronic real estate lockbox system. 4,766,746, Cl 70-63.000

Henkel Corporation: *See—*
Childers, John T.; and Fleming, Issac D., 4,767,556, Cl. 252-8.600

Henkel Kommanditgesellschaft auf Aktien: *See—*
Kruse, Hans; Jacobs, Jochen; Wisotzki, Klaus-Dieter; and Thul, Jutta, 4,767,559, Cl. 252-106.000

Henrion, Romain: *See—*
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000

Henry, Daniel S.; and Hoteling, G. Michael, to Aladdin Steel Products, Inc. Wood stove. 4,766,876, Cl. 126-77.000

VOL 1093 ISS 5 AG 30 1988 UMI

Henry, Ivor C.: *See—*
Simons, Ronald H.; Wilkinson, Basil S.; and Henry, Ivor C., 4,768,133, Cl. 362-32.000.
Henry J. Moore: *See—*
Cameron, A. Larson; and Henry J. Moore, 4,766,883, Cl. 126-351.000.
Henry, Pearison W.: *See—*
Bradshaw, Johnny S.; Gunter, Jonas L.; Cothran, Liggett A.; Edwards, William M.; and Henry, Pearison W., 4,766,662, Cl. 29-450.000.
Hentschel, Peter; Josefiak, Christof; and Klostermeier, Werner, to Akzo NV. Membranes of diisocyanate addition polymers for hemodialysis and/or hemofiltration. 4,767,535, Cl. 210-500.380.
Heppke, Gerd; Oestreicher, Feodor; Kitzerow, Heinz-Siegfried; and Krumrey, Michael, to Merck Patent Gesellschaft mit Beschrankter Haftung. Blue phase liquid crystal system, method of operation and its use. 4,767,194, Cl. 350-346.000.
Hercon Laboratories Corporation: *See—*
Kydonieus, Agis; Shah, Kishore R.; and Berner, Bret, 4,767,808, Cl. 524-98.000.
Herdeman, Robert W., to Procter & Gamble Company, The. Dry bleach and stable enzyme granular composition. 4,767,557, Cl 252-91.000.
Hergarten, Werner: *See—*
Beckenbach, Ulrich; Beckenbach, Helmuth; and Hergarten, Werner, 4,767,322, Cl. 432-98.000.
Hernandez, Manuel: *See—*
Giori, Gualtiero; and Hernandez, Manuel, 4,766,809, Cl 101-152.000.
Herring, Jack G., to Federal Paper Board Company, Inc. Apparatus for and method of applying handle to carton closure flap. 4,767,390, Cl 493-88.000.
Hesse, Reiner: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310.
Hewlett-Packard Company: *See—*
Cornish, Eldon C.; and Orgill, Rodney H., 4,767,951, Cl. 307-475.000.
Lund, Mark D., 4,767,341, Cl. 439-60.000.
Wheelwright, Lynn M.; Harmon, William B.; and Coffron, James W., 4,768,145, Cl. 364-200.000.
Heymann, Frank J.; Hyde, Gilbert F.; and Schuchart, Thomas L., to Westinghouse Electric Corp. Steam control valve. 4,766,932, Cl 137-625.300.
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, to Bayer Aktiengesellschaft. Herbicidal and microbiocidal 2-trifluoromethyl-benzimidazoles. 4,767,444, Cl. 71-92.000.
Hibino, Yoshitaka; Kajita, Kogi; Kubo, Satoru; and Totsune, Atsushi, to Honda Giken Kogyo Kabushiki Kaisha. Idling speed-up control apparatus internal combustion engine. 4,766,862, Cl. 123-339.000.
Hickox, Robert E., to Burr-Brown Corporation. Method for fabricating a compensated silicon pressure sensing device. 4,766,655, Cl. 29-25.350.
Hidaka, Akio: *See—*
Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000.
Hieber, Konrad, to Siemens Aktiengesellschaft. Method for controlling and supervising etching processes. 4,767,496, Cl. 156-627.000.
Higaki, Masaru: *See—*
Sato, Tadashi; Kurosawa, Tomoe; Fujiwara, Shigetaka; and Higaki, Masaru, 4,767,931, Cl. 250-423.00R.
Higginson, John A.: *See—*
Bibl, Andreas; Day, Gene F.; and Higginson, John A., 4,767,689, Cl. 430-45.000.
Higurashi, Seiji, to Victor Company of Japan, Ltd. Magnetic recording and reproducing system. 4,768,108, Cl. 360-19.100.
Hijikata, Akemi; Matsumoto, Masaaki; Nakayama, Taesuke; Hamazaki, Yasuyuki; and Kataoka, Kenji, to Mitsubishi Denki Kabushiki Kaisha. Fuel cell. 4,767,680, Cl. 429-39.000.
Hijikata, Kenji: *See—*
Kageyama, Yukihiko; Nakane, Toshio; and Hijikata, Kenji, 4,767,830, Cl. 525-450.000.
Hiles, Richard. Strike indicator for fishing tackle. 4,766,688, Cl. 43-17.000.
Hills, Michael T.: *See—*
Taub, Jack R.; and Hills, Michael T., 4,768,087, Cl. 358-84.000.
Hilti Aktiengesellschaft: *See—*
Gebauer, Ludwig; and Mauthe, Peter, 4,767,025, Cl. 222-135.000.
Hino, Mototsugu: *See—*
Matsumoto, Seiichiro; Hino, Mototsugu; Moriyoshi, Yusuke; Nagashima, Takashi; and Tsutsumi, Masayuki, 4,767,608, Cl. 423-446.000.
Hinotani, Katsuhiro: *See—*
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000.
Hinrichs Fotowerbung GmbH + Co. KG: *See—*
Kramer, Heinz, 4,766,685, Cl. 40-574.000.
Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; Ruppert, Kurt A.; and Splett, Erich, to Degussa Aktiengesellschaft. Process for creating the flow properties to sodium-production filter residues. 4,767,453, Cl. 75-66.000.
Hinsberg, William D., III; Howard, Webster E.; and Willson, Carlton G., to International Business Machines Corporation. Process for making self-aligning thin film transistors. 4,767,723, Cl. 437-41.000.
Hinzen, Dieter: *See—*
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,767,759, Cl. 514-235.500.
Hippely, Keith: *See—*
Cook, John; Soulakis, George; and Hippely, Keith, 4,767,053, Cl. 238-10.00R.
Hirai, Bunji: *See—*
Leistner, William E.; Nakahara, Yutaka; Hirai, Bunji; and Kanai, Mitsuharu, 4,767,834, Cl. 526-265.000.
Hirai, Hayao, to Mitsubishi Denki Kabushiki Kaisha. Numerical control equipment. 4,767,972, Cl. 318-565.000.
Hirai, Kazuyasu, to Murata Kikai Kabushiki Kaisha. Method of winding yarn and device for carrying out the same. 4,767,071, Cl. 242-18.100.
Hiraki, Akio; and Miyasato, Tatsuro, to Kabushiki Kaisha Meidensha. Process of depositing diamond-like thin film by cathode sputtering. 4,767,517, Cl. 204-192.250.
Hirano, Shigeo: *See—*
Inagaki, Yoshio; Yagihara, Morio; and Hirano, Shigeo, 4,767,692, Cl. 430-264.000.
Hirano, Yoshinori; and Kubozuka, Takao, to Nissan Motor Co., Ltd. Cooling system for automotive engine or the like. 4,766,852, Cl. 123-41.210.
Hirasawa, Yoji: *See—*
Stepto, Robert F. T.; Still, Richard H.; and Hirasawa, Yoji, 4,767,846, Cl. 536-18.600.
Hiratsuka, Kazuya: *See—*
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl. 429-101.000.
Hiratsuka, Seiichiro; and Matsunawa, Masahiko, to Konishiroku Photo Industry Co., Ltd. Methods of compressing and reproducing color image data. 4,768,082, Cl. 358-13.000.
Hirayoshi, Yoshio, to Sanko Giken Co. Ltd. Apparatus for measuring the intensity of a seismic shock. 4,768,175, Cl. 367-178.000.
Hirose Electric Co., Ltd.: *See—*
Sato, Kensaku, 4,767,342, Cl. 439-78.000.
Hirose, Fumiyuki: *See—*
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230.
Hirose, Michio: *See—*
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000.
Hirota, Ryuichi; and Inoue, Shinichi, to Yamato Scale Company, Limited. Apparent density measuring device. 4,766,964, Cl. 177-25.000.
Hirsch, Kenneth S.; and Taylor, Harold M., to Eli Lilly and Company. Method of inhibiting aromatase. 4,767,770, Cl. 514-342.000.
Hisano, Katsukuni: *See—*
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230.
Hishimura, Masahiro: *See—*
Takeuchi, Hiroto; and Hishimura, Masahiro, 4,767,944, Cl. 307-132.00E.
Hitachi Construction Machinery Co., Ltd.: *See—*
Takishita, Yoshihiko; Nonaka, Toshio; and Hayakawa, Yasuo, 4,768,155, Cl. 364-507.000.
Hitachi Koki Co., Ltd.: *See—*
Saito, Susumu; and Arimoto, Akira, 4,768,043, Cl. 346-108.000.
Hitachi, Ltd.: *See—*
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000.
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230.
Jyoraku, Fumio; and Toyosima, Hisanori, 4,767,285, Cl. 417-366.000.
Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, 4,768,215, Cl. 378-101.000.
Kurosawa, Soichi; and Kumata, Kazuhiko, 4,767,259, Cl. 415-17.000.
Matsumoto, Toshihiro; Umehara, Hajime; Nakajima, Junjiro; and Fujii, Norihisa, 4,766,658, Cl. 29-527.700.
Munakata, Chusuke; Hase, Shinobu; and Kimura, Shigeharu, 4,767,211, Cl. 356-375.000.
Murakoshi, Hisaya; Ichihashi, Mikio; and Yamamoto, Kenichi, 4,767,926, Cl. 250-310.000.
Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu; Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, 4,767,976, Cl. 318-808.000.
Nagashima, Shigeo; Omoda, Koichiro; and Inagami, Yasuhiro, 4,768,146, Cl. 364-200.000.
Noda, Masaru; and Imaide, Takuya, 4,768,084, Cl. 358-44.000.

Ohnishi, Kunikazu; Arimoto, Akira; Inoue, Masayuki; and Fukui, Yukio, 4,768,183, Cl. 369-112.000.
Onozawa, Makoto; Kitou, Kouji; and Osawa, Michitaka, 4,767,971, Cl. 315-384.000.
Saito, Susumu; and Arimoto, Akira, 4,768,043, Cl. 346-108.000.
Sato, Tadashi; Kurosawa, Tomoe; Fujiwara, Shigetaka; and Higaki, Masaru, 4,767,931, Cl. 250-423.00R.
Shiinoki, Kazuaki; Naya, Koutarou; Mitsuhashi, Shinji; Hayakawa, Tadashi; and Uchida, Riichi, 4,767,284, Cl. 417-312.000.
Yashiki, Hiroshi; and Morita, Kenji, 4,766,788, Cl. 82-30.000.
Hitachi, Ltd: *See—*
Takizawa, Yasushi; Sasayama, Atsushi, Kobayashi, Yoshihiko; Takahashi, Yukio; and Kakegawa, Yuuji, 4,768,070, Cl. 357-17.000.
Hitachi Maxell, Ltd.: *See—*
Kitta, Kenichi; Shinagawa, Touru; and Takamori, You, 4,767,920, Cl. 235-492.000.
Hitachi Medical Corporation: *See—*
Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, 4,768,215, Cl. 378-101.000.
Hitachi Techno Engineering Co. Ltd.: *See—*
Nagao, Masamichi; and Nagao, Masaaki, 4,767,070, Cl 241-261.200.
Hitachi Tobu Semiconductor, Ltd.: *See—*
Takizawa, Yasushi; Sasayama, Atsushi; Kobayashi, Yoshihiko; Takahashi, Yukio; and Kakegawa, Yuuji, 4,768,070, Cl 357-17.000.
Hitch, Thomas T., to General Electric Company. Transition section for muffle furnace. 4,767,324, Cl. 432-171.000.
HM Electronics, Inc.: *See—*
Fasen, Kenneth R.; Rogers, Kim R.; and Schwartz, Lee J., 4,767,977, Cl. 320-20.000.
Ho, Alexander, to Culver Glassware Co., Inc. Anti-slip plastic glass. 4,767,015, Cl. 215-100.00R.
Ho, Thomas V. Mechanical puzzle. 4,767,120, Cl. 273-153.00S.
Hoback, Larry E.: *See—*
David, Donald M.; Holmes, Melvin R.; Hoback, Larry E.; and Reiber, Ronnie L., 4,766,798, Cl. 86-27.000.
Hockley, Michael H.; and Titman, Roger B., to Boots Company PLC, The. Antiulcer benzimidazole derivatives. 4,767,769, Cl. 514-322.000.
Hocquaux, Michel: *See—*
Jacquet, Bernard; Leveque, Jean L.; Hocquaux, Michel; and Leger, Didier S., 4,767,750, Cl. 514-159.000.
Hoda, Takeo: *See—*
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 4,768,047, Cl. 354-195.100.
Hodge, Colin G., to BOC Group, Inc., The. Positive pulse device and system. 4,767,403, Cl. 604-35.000.
Hodge, Steven W. Modular robot manipulator. 4,766,775, Cl. 74-479.000.
Hodgson, Anthony: *See—*
Partington, Albert J.; and Hodgson, Anthony, 4,767,247, Cl. 416-193.00A.
Hoe, Khin A. Dental crown manufacturing apparatus. 4,767,331, Cl 433-213.000.
Hoechst Aktiengesellschaft: *See—*
Mauz, Otto; Noetzel, Siegfried; and Sauber, Klaus, 4,767,620, Cl. 424-78.000.
Neumann, Horst; and Busch, Manfred, 4,767,310, Cl. 425-469.000.
Wullbrandt, Dieter; and Schlingmann, Merten, 4,767,880, Cl 560-061.000.
Hoechst Celanese Corporation: *See—*
Stautzenberger, A. Lee, 4,767,881, Cl. 560-86.000.
Teng, Chia-Chi; and Stuetz, Dagobert E., 4,767,169, Cl. 350-96.140.
Hofer, Heiner: *See—*
Strauch, Dieter; Belger, Peter; Hofer, Heiner; and Merz, Martin, 4,767,464, Cl. 106-464.000.
Hoff, David L., to Intel Corporation. MOS temperature sensing circuit. 4,768,170, Cl. 365-212.000.
Hoffman, William K.: *See—*
Bechade, Roland A.; Hoffman, William K.; and Ogilvie, Clarence R., 4,768,161, Cl. 364-758.000.
Hofmeister, Peter: *See—*
Seppelt, Wolfgang; Neubauer, Hans-Juergen; Adolphi, Heinrich; and Hofmeister, Peter, 4,767,782, Cl. 514-543.000.
Hohenberg, Rudolph; Figdor, Carl G.; and Bont, Willy S., to Damon Corporation. Apparatus for liquid separation. 4,767,397, Cl. 494-85.000.
Hohn, Werner H., to Siemens Aktiengesellschaft. Computer interface unit for an audiometer. 4,768,165, Cl. 364-900.000.
Hohorst, Wolfgang, to WAGO Verwaltungsgesellschaft mbH. Connecting clamp for electrical conductors. 4,767,340, Cl. 439-729.000.
Hokama, Yosh; and Romero, Luis, to Spencer R&D Inc. Method of accomplishing rapid and durable french manicure. 4,767,648, Cl. 428-15.000.
Holland, Gary V.; and Tillett, George C., Jr., to Phillips Petroleum Company. Apparatus and method for use in thermoelectric power generation. 4,767,467, Cl. 136-217.000.
Hollrah, Scott. Cast with spaced-apart ribs. 4,766,890, Cl. 128-89.00R.
Holm, Claus; Sirtl, Erhard; Dietl, Josef; and Holzlwimmer, Franz, to Heliotronic GmbH. Process for producing molded bodies from granular material of silicon, germanium or mixed crystals of these elements. 4,767,585, Cl. 264-82.000.
Holman, Neil L.: *See—*
Winter, Peter M.; Holman, Neil L.; and Kram, Anthony B., 4,768,144, Cl. 364-200.000.
Holmberg, Krister; and Hyden, Holger, to Berol Kemi AB. Poly I:C covalently bonded to polymer for diagnostic purposes. 4,767,701, Cl 435-7.000.
Holmes, Melvin R.: *See—*
David, Donald M.; Holmes, Melvin R.; Hoback, Larry E.; and Reiber, Ronnie L., 4,766,798, Cl. 86-27.000.
Holmes, Richard E.; and Jungheim, Louis N., to Eli Lilly and Company. Pyrazolidinium ylides. 4,767,871, Cl. 548-365.000.
Holtmyer, Marlin: *See—*
Hanlon, David; Holtmyer, Marlin; Conway, Mike; and Hunt, Charles, 4,767,550, Cl. 252-8.551.
Holz, Robert G.; and Karadimas, Georges, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA) Sealing ring for an axial compressor. 4,767,266, Cl. 415-172.00A.
Holzer, Joseph C., to Eastman Kodak Company. Retractor for permeator or filter module. 4,767,531, Cl. 210-238.000.
Holzlwimmer, Franz: *See—*
Holm, Claus; Sirtl, Erhard; Dietl, Josef; and Holzlwimmer, Franz, 4,767,585, Cl. 264-82.000.
Holzman, James W. *See—*
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,767,166, Cl. 312-229.000.
Holzmann, Hermann. Screw-type conduit fitting. 4,767,135, Cl 285-27.000.
Honda Giken Kogyo Kabushiki Kaisha. *See—*
Asakura, Masahiko; Kawanabe, Tomohiko, and Kushida, Noritaka, 4,767,520, Cl. 204-406.000.
Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, 4,766,982, Cl. 188-181.00A.
Hibino, Yoshitaka, Kajita, Kogi; Kubo, Satoru; and Totsune, Atsushi, 4,766,862, Cl. 123-339.000.
Hoshino, Teruaki; and Kamiji, Koichi, 4,767,361, Cl. 439-596.000.
Kawamoto, Yoshimichi; Furukawa, Yoshimi; Hamada, Tetsuro, and Serizawa, Mitsuya, 4,767,129, Cl. 280-91.000.
Kumagai, Kiyoshi; and Okuyama, Hiroshi, 4,767,046, Cl. 228-4.100.
Nakajima, Toyohei; Okada, Yasushi, Mieno, Toshiyuki; and Oono, Nobuyuki, 4,766,870, Cl. 123-489.000.
Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000.
Shimizu, Yasuo, 4,766,970, Cl. 180-79.100.
Honda, Toshikazu: *See—*
Sasaki, Toshihiko; Namba, Keisuke, Matsunaga, Naotoshi, Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000.
Honeywell Bull Inc.: *See—*
Clark, Vincent M.; Chasse, Dennis W.; and Bourgeois, David R 4,768,163, Cl. 364-900.000.
Keeley, James W.; and Barlow, George J., 4,768,148, Cl 364-200.000.
Plesinger, Boris, 4,767,104, Cl. 266-144.000.
Honeywell, Inc.: *See—*
Egli, Werner H.; and Vallot, Lawrence C., 4,768,152, Cl 364-422.000.
Green, Joseph A., 4,767,969, Cl. 315-85.000.
Linder, William J., 4,768,019, Cl. 340-347.0NT.
Stauffer, Norman L., 4,767,922, Cl. 250-221.000.
Stauffer, Norman L., 4,767,934, Cl. 250-561.000.
Honma, Masao *See—*
Iwatsuki, Makoto; Honma, Masao, and Kayama, Mikio, 4,767,827, Cl. 525-420.000.
Hook, William J.: *See—*
Iacoviello, John G.; Hook, William J.; and Vijayendran, Bheema R., 4,767,816, Cl. 524-459.000.
Hopkins, Thomas R.; and Stewart, James F., to Phillips Petroleum Company. Multi-purpose voltametric analyzer. 4,767,994, Cl 324-438.000.
Hoppe, Manfred: *See—*
Torre, Hans D.; and Hoppe, Manfred, 4,767,811, Cl. 524-114.000.
Horiguchi, Shojiro: *See—*
Nakamura, Michiei, Takeuchi, Hitoshi, Takahashi, Tetsujiro, Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M.
Horikoshi, Yoshiji: *See—*
Kobayashi, Naoki; Makimoto, Toshiki; and Horikoshi, Yoshiji, 4,767,494, Cl. 156-606.000.
Horiuchi, Tatsuo: *See—*
Kumada, Toyohiko; and Horiuchi, Tatsuo, 4,768,057, Cl 355 3.0FU.
Hornady Manufacturing Company: *See—*
David, Donald M.; Holmes, Melvin R.; Hoback, Larry E.; and Reiber, Ronnie L., 4,766,798, Cl. 86-27.000.
Hornberg, Gunnar. Hook assembly. 4,767,144, Cl. 294-82.360.
Hornecker, Timothy; Mustoe, Tracy J.; and Mustoe, Judy C., to Easy Art, Inc. Mold package with article mounting and paint means 4,767,009, Cl. 206-575.000.
Horner, Tommy D. Splash resistant cup lid. 4,767,019, Cl. 220-90.400.
Horton Manufacturing Co., Inc.: *See—*
Dayen, Leonid; and Raines, Charles D., 4,766,986, Cl. 192-18.00A.
Hoshino, Teruaki; and Kamiji, Koichi, to Japan Aviation Electronics Industry Limited; and Honda Giken Kogyo Kabushiki Kaisha Connector. 4,767,361, Cl. 439-596.000.

VOL 1093 ISS 5 AG 30 1988 UMI

Hosoda, Keiji; and Ozeki, Masaaki, to Hoya Corporation. Testing member capable of selecting a reflection factor. 4,767,660, Cl. 428-209.000

Hospal Industrie: *See*—
Vantard, Georges, 4,767,526, Cl. 210-128.000

Hoteling, G. Michael: *See*—
Henry, Daniel S.; and Hoteling, G. Michael, 4,766,876, Cl. 126-77.000

Hou, Donald, to Schering Corporation. Synthesis of 1-(allyloxycarbonyl)-methyl-3-(hydroxyethyl)-4-beta-naphthoxythiocarbonylthio-2-azetidinones and hydroxy protected analogs thereof. 4,767,853, Cl 540-357.000.

Hovestadt, Herbert: *See*—
Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; Ruppert, Kurt A.; and Splett, Erich, 4,767,453, Cl. 75-66.000.

Howard, Webster E.: *See*—
Hinsberg, William D., III; Howard, Webster E.; and Willson, Carlton G., 4,767,723, Cl. 437-41.000

Howell, James B.: *See*—
Parrott, Patti L.; and Howell, James B., 4,767,289, Cl. 417-477.000

Howes, John G. B.: *See*—
Parker, Robert S. R.; and Howes, John G. B., 4,767,671, Cl 428-412.000

Hoya Corporation: *See*—
Hosoda, Keiji; and Ozeki, Masaaki, 4,767,660, Cl. 428-209.000.
Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130

HSC Research Development Corporation: *See*—
Lingwood, Clifford A., 4,767,720, Cl. 436-536.000.

Hsieh, Tung-Chiang. Lock for pushbutton phone. 4,768,226, Cl. 379-445.000

Hsu, Joseph C.: *See*—
Starczewski, John F.; Hsu, Joseph C.; Blemberg, Robert J.; Curie, Kevin J.; and Jesse, Jerry F., 4,767,651, Cl. 428-35.000.

Hsu, Ming-Ta S.: *See*—
Riccitiello, Salvatore R.; Hsu, Ming-Ta S., and Chen, Timothy S., 4,767,728, Cl. 501-91.000

Hsu, William Yang-Hsing: *See*—
Bierlein, John D.; Brixner, Lothar H.; Ferretti, August; and Hsu, William Yang-Hsing, 4,766,954, Cl. 156-624.000

Hubble, Fred F., III: *See*—
Nichols, Virginia R.; Hubble, Fred F., III; and Martin, James P., 4,767,172, Cl. 350-96.180

Huber, William J.: *See*—
Stluka, Eugene F.; and Huber, William J., 4,767,152, Cl. 296-100.000

Huber, Willibald. *See*—
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000

Hubertus, Guido; Thomas, Freidrich-Werner; Sperzel, Wolfgang; and Sturmer, Johann. D.c.-a.c. converter having an asymmetric half-bridge circuit. 4,768,141, Cl. 363-16.000

Hughes Aircraft Company: *See*—
Liao, Kuan Y.; and Lee, William W. Y., 4,767,721, Cl. 437-34.000.
Myer, Jon H., 4,767,188, Cl. 350-320.000.
Pepper, David M., 4,767,195, Cl. 350-354.000.
Rice, Allyn B.; Johnson, Ronald L.; and Peterman, Milton J., 4,767,003, Cl. 206-328.000

Hughes, Donald W. K.; and Metzger, Donald L., to AMP Incorporated. Two part connector housings in strip form. 4,767,353, Cl. 439-398.000

Hughes Network Systems, Inc.: *See*—
Barnhart, Andrew W.; and Eklof, Anders A., 4,768,188, Cl. 370-80.000

Hulland, Burton L.: *See*—
Litchford, George B.; and Hulland, Burton L., 4,768,036, Cl. 342-455.000

Hummel, Karl, to Interlava AG. Optical indication and operation monitoring unit for vacuum cleaners. 4,767,213, Cl. 356-338.000

Hunsbedt, Anstein N., to General Electric Company. Control of reactor coolant flow path during reactor decay heat removal. 4,767,594, Cl 376-299.000

Hunt, Charles: *See*—
Hanlon, David; Holtmyer, Marlin; Conway, Mike; and Hunt, Charles, 4,767,550, Cl. 252-8.551

Hunt, Mack W.; and Kennedy, Steven, to Amoco Corporation. Metal-containing lubricant compositions. 4,767,551, Cl. 252-32.70E.

Huon de Kermadec, Jean, to SOULE. Automatic sliding door operating device for guided vehicle. 4,766,696, Cl. 49-262.000.

Hurley, James E., to Raytheon Company. Solid plate plug-in heating element. 4,767,915, Cl. 219-459.000

Hurley, Walter L.: *See*—
Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D.; and Rottman, Fritz M., 4,767,711, Cl. 435-243.000

Huron/St. Clair Company, a division of Masco Industries, Inc.: *See*—
Stapleton, Craig A., 4,767,041, Cl. 224-326.000

Hutchinson, Francis G., to Imperial Chemical Industries PLC. Continuous release pharmaceutical compositions. 4,767,628, Cl. 424-426.000.

Hutchison, Stephen E.: *See*—
Birenbaum, Kenneth A.; Hutchison, Stephen E.; Virkus, Mark K.; and Jankowski, Chester F., 4,768,151, Cl. 364-410.000

Hutmacher, Hans-Martin: *See*—
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich; and Vagt, Uwe, 4,767,856, Cl. 540-538.000

Huttner, Manfred, to Pebra GmbH Paul Braun. Arrangement for producing synthetic plastic molded parts. 4,767,312, Cl. 425-543.000.

Hwaw, Hong L.; Chen, Huo M.; and Chen, Tu C. Screwdriver structure with illuminating function. 4,768,137, Cl. 362-120.000.

Hyde, Gilbert F.: *See*—
Heymann, Frank J.; Hyde, Gilbert F.; and Schuchart, Thomas L., 4,766,932, Cl. 137-625.300.

Hyden, Holger: *See*—
Holmberg, Krister; and Hyden, Holger, 4,767,701, Cl. 435-7.000

Hymanson, Victor, to Seldoren Limited. Finger guards. 4,767,412, Cl. 604-192.000

Hyodo, Hitoshi, to Aisin Seiki Kabushiki Kaisha. Constant-speed running control device. 4,766,971, Cl. 180-178.000

Iacoviello, John G.; Hook, William J.; and Vijayendran, Bheema R., to Air Products and Chemicals, Inc. Polyvinyl alcohol-stabilized vinyl chloride-ethylene-hydroxyethyl acrylate copolymer emulsions having enhanced water and solvent resistant properties. 4,767,816, Cl. 524-459.000

Ibori, Satoshi: *See*—
Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu; Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, 4,767,976, Cl. 318-808.000

Icaro Olivier & C. S.p.A.: *See*—
Olivieri, Oliviero, 4,767,127, Cl. 280-11.330.

Ichihashi, Mikio: *See*—
Murakoshi, Hisaya; Ichihashi, Mikio; and Yamamoto, Kenichi, 4,767,926, Cl. 250-310.000

Ichinoi, Yutaka, to Victor Company of Japan, Ltd. Noise suppressing circuit with gain control. 4,768,094, Cl. 358-167.000.

Ichinose, Makoto; Satoh, Isao; Sugimura, Tatuo; and Kuroki, Yuzuru, to Matsushita Electric Industrial Co., Ltd. Apparatus for determining defective or non-used sectors of an optical dish. 4,768,181, Cl 369-54.000

ICI Australia Limited: *See*—
Watson, Keith G.; Garson, Lynette A.; Bird, Graham J.; Cross, Lindsay E.; and Farquharson, Graeme J., 4,767,879, Cl. 558-412.000

Igarashi, Tadashi; Yamaji, Mikio; and Oneyama, Naotake, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Fluid pressure booster. 4,767,282, Cl. 417-225.000

Igarashi, Yoshiaki: *See*—
Sugimoto, Tadakatsu; Igarashi, Yoshiaki; Saito, Shiro; Wada, Eiichi; and Murai, Keiji, 4,766,787, Cl. 81-463.000.

Igashira, Toshihiko: *See*—
Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, 4,767,959, Cl. 310-317.000
Tanaka, Takeshi; Yorita, Hiroshi; Tomita, Masahiro; and Igashira, Toshihiko, 4,767,967, Cl. 315-55.000

Iglesias, Manuel A.; and Arago, Jose V. Method for preparing cured sausage and ham. 4,767,629, Cl. 426-55.000.

Ii, Yasuaki: *See*—
Tada, Hisashi; Agata, Akira; and Ii, Yasuaki, 4,767,805, Cl. 523-468.000

Iijima, Kenzaburou; Kurahashi, Kazuo; and Hayashi, Yoshinori, to Nippon Gakki Seizo Kabushiki Kaisha. Non-contact head with variable clearance compensating means. 4,768,119, Cl. 360-103.000.

Iimura, Jun: *See*—
Yamada, Kiichi; Senoo, Akio; Iimura, Jun; Akimoto, Ryosaku; and Kawauchi, Nakaji, 4,766,950, Cl. 165-17.000.

Iinuma, Kazuhiro: *See*—
Ohyama, Yoshirou; and Iinuma, Kazuhiro, 4,767,927, Cl. 250-327.200

Iio, Takeshi, to Yamaha Hatsudoki Kabushiki Kaisha. Thrust bearing holding structure for outboard motors. 4,767,225, Cl. 384-616.000

Iizuka, Michio; and Shiba, Haruo, to TDK Corporation. Magnetic disk cartridge and producing method therefor. 4,768,123, Cl. 360-133.000.

Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, to Hitachi, Ltd. Combustor for gas turbine. 4,766,721, Cl. 60-39.230.

Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor. 4,767,283, Cl. 417-269.000

Ikeda, Kouichi: *See*—
Kawasaki, Nobuhiko; Ikeda, Kouichi; and Kimura, Shinichi, 4,767,337, Cl. 439-34.000.

Ikeda, Shuji: *See*—
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000

Ikeda, Takeshi: *See*—
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,063, Cl. 355-29.000
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,100, Cl. 358-285.000

Ikekawa, Nobuo: *See*—
Takematsu, Tetsuo; Ikekawa, Nobuo; and Shida, Atsuhiko, 4,767,442, Cl. 71-88.000

Imai, Motomasa: *See*—
Furukawa, Osamu; Yoshida, Seiichi; Imai, Motomasa; and Harata, Mitsuo, 4,767,732, Cl. 501-137.000

Imaide, Takuya: *See*—
Noda, Masaru; and Imaide, Takuya, 4,768,084, Cl. 358-44.000

Imanaka, Hiroshi: *See*—
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000

Imperial Chemical Industries PLC: *See*—
Greenwood, David; and Presgrave, John E., 4,767,459, Cl. 106-22.000
Hatfield, James H., 4,768,182, Cl. 369-109.000
Hutchinson, Francis G., 4,767,628, Cl. 424-426.000

Inaba, Hiroshi; Shinnai, Masao; Nishikawa, Kazuya; Saitoh, Tamotsu; and Tuskada, Tokio, to Central Glass Company, Limited. Vehicle window glass antenna using transparent conductive film. 4,768,037, Cl. 343-713.000

Inaba, Hiroyoshi; and Matsuda, Kazuya, to Canon Kabushiki Kaisha. Lens mounting. 4,767,200, Cl. 350-429.000

Inaba, Masatsugu: *See*—
Shimizu, Suekichi; Inaba, Masatsugu; and Ohtomo, Yasuyuki, 4,767,663, Cl. 428-212.000

Inagaki, Yoshio; Yagihara, Morio; and Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 4,767,692, Cl 430-264.000

Inagami, Yasuhiro: *See*—
Nagashima, Shigeo; Omoda, Koichiro; and Inagami, Yasuhiro, 4,768,146, Cl. 364-200.000

Infab Corporation: *See*—
Cusick, Donald J.; and Cusick, Douglas T., 4,766,608, Cl. 2-2.000

Ingemansson, Stig, to Ingemanssons Ingenjorsbyra AB. Blowing nozzle for a highly pressurized gaseous fluid. 4,767,061, Cl. 239-566.000

Ingemanssons Ingenjorsbyra AB: *See*—
Ingemansson, Stig, 4,767,061, Cl. 239-566.000

Ingersoll-Rand Company: *See*—
Buse, Fredric W., 4,767,277, Cl. 416-241.00A

Ingle, James F., to Bell Communications Research, Inc. Signal-to-noise ratio testing in adaptive differential pulse code modulation. 4,768,203, Cl. 375-10.000

Ingwersen, Peter: *See*—
Urness, Kevin; Lickus, Leonard J.; Heisner, Douglas; Ingwersen, Peter; and Stenstrom, Eric, 4,766,668, Cl. 29-749.000

Iniotakis, Nicolaos; Frohling, Werner; Kalawrytinos, Georg; and von der Decken, Claus-Benedict, to Kernforschungsanlage Julich GmbH; and Kalawrytinos, Georg. Apparatus for waste water purification 4,767,527, Cl. 210-137.000

Innoma Innovation-Marketing Patentverwertungs Ges.m.b.H.: *See*—
Schweinberger, Anton, 4,767,101, Cl. 254-391.000.

Inoguchi, Kazuhiro: *See*—
Hattori, Yutaka; Ito, Novuei; Inoguchi, Kazuhiro; and Hattori, Tadashi, 4,768,011, Cl. 338-5.000

Inose, Hiroshi: *See*—
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230

Inoue, Hiroshi: *See*—
Kobayakawa, Takaharu; Suehiro, Mikio; Saito, Yosuke; and Inoue, Hiroshi, 4,767,147, Cl. 296-1.00S.

Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,767,905, Cl. 219-69.00P.

Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. EDM method and apparatus with trapezoidized short-duration pulses. 4,767,905, Cl 219-69.00P

Inoue, Manabu: *See*—
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 4,768,047, Cl 354-195.100

Inoue, Masahiro: *See*—
Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000

Inoue, Masayuki: *See*—
Ohnishi, Kunikazu; Arimoto, Akira; Inoue, Masayuki; and Fukui, Yukio, 4,768,183, Cl. 369-112.000

Inoue, Satoru: *See*—
Mizuno, Hiroshige; and Inoue, Satoru, 4,767,309, Cl. 425-461.000

Inoue, Shinichi: *See*—
Hirota, Ryuichi; and Inoue, Shinichi, 4,766,964, Cl. 177-25.000

Institut Cerac S.A.: *See*—
Hartwig, Carl S. M.; and Ragnmark, Karl G. B., 4,766,963, Cl. 173-109.000

Institut Francais du Petrole: *See*—
Behar, Isaac; and Berthet, Hubert, 4,766,836, Cl. 114-256.000.
Gautier, Thierry; and Beauducel, Claude, 4,768,173, Cl. 367-15.000

Institut National de la Sante et de la Recherche Medicale (INSERM) *See*—
Arrang, Jean-Michel; Garbarg, Monique; Schunack, Walter; Schwartz, Jean-Charles; and Lipp, Ralph O., 4,767,778, Cl 514-397.000
Doutheau, Alain; Gore, Jacques; Quash, Gerard A.; and Didier, Bernard, 4,767,872, Cl. 549-551.000

Institute for Applied Biotechnology, The: *See*—
Branemark, Per-Ingvar, 4,767,328, Cl. 433-168.100.

Institute for Industrial Research and Standards: *See*—
Duffy, George J., 4,767,415, Cl. 604-232.000

Institute of Gas Technology: *See*—
Marks, David T., 4,767,287, Cl. 417-461.000

Intel Corporation: *See*—
Hoff, David L., 4,768,170, Cl. 365-212.000

Interlava AG: *See*—
Hummel, Karl, 4,767,213, Cl. 356-338.000

International Business Machines Corporation: *See*—
Bechade, Roland A.; Hoffman, William K.; and Ogilvie, Clarence R., 4,768,161, Cl. 364-758.000
Chang, Chij-Mehn; Freund, Thomas J.; Loucks, Larry K.; and Wierwille, Robert L., 4,768,150, Cl. 364-300.000
Chang, Ifay F.; and Gordon, Eugene I., 4,767,192, Cl. 350-342.000
Chase, Brian D.; and Paton, Andrew, 4,767,963, Cl. 313-408.000
Gazdik, Charles E.; McBride, Donald G.; Seraphim, Donald P., and Toole, Patrick A., 4,766,670, Cl. 29-830.000
Hinsberg, William D., III; Howard, Webster E.; and Willson, Carlton G., 4,767,723, Cl. 437-41.000
Konopik, Bradly J.; Bradley, David J.; Reed, Martin A., Tannenbaum, Alan R.; and Turner, Michael R., 4,768,149, Cl 364-200.000
Yoder, Joseph W., 4,768,167, Cl. 365-156.000

International Computers Limited: *See*—
Burrows, James E., 4,768,029, Cl. 340-799.000

International Technology Corporation: *See*—
De Cicco, Steven G.; Lee, Sung K.; Novak, Rudy G.; Wass, William E.; and Mak, Kai K., 4,766,822, Cl 110-212.000

Iomega Corporation: *See*—
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy, Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, 4,768,124, Cl 360-133.000

IPCO Corporation: *See*—
Weissman, Bernard, 4,767,332, Cl. 433-225.000

Irbit Research & Consulting AG: *See*—
Tschudin-Mahrer, Rolf, 4,767,655, Cl. 428-57.000

Irizarry, Jose F.: *See*—
Thorne, Hugh C.; Sosa, Guillermo; and Irizarry, Jose F., 4,767,334, Cl. 434-29.000

Isaka, Yoshiharu: *See*—
Miyaki, Mutsuaki; Tachibana, Yoshimi; Oguri, Kiyohiko; and Isaka, Yoshiharu, 4,766,859, Cl. 123-196.00W

Ishibashi, Hiroshi: *See*—
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi, Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl 428-461.000

Ishibashi, Yoji: *See*—
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao, Hirose, Fumiyuki, Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230

Ishida Scales Mfg. Co., Ltd.: *See*—
Kitahashi, Tadahiro; Saito, Osami; Matsuno, Tadaaki; and Nakamura, Yoshihiro, 4,767,212, Cl. 356-379.000

Ishida, Tokuji: *See*—
Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, 4,768,054, Cl. 354-408.000

Ishido, Takao: *See*—
Kojima, Shuichi; Ishido, Takao, and Sasaki, Shogo, 4,766,937, Cl 139-452.000

Ishigaki, Naoyuki; Hamada, Takaki; and Fujimura, Setsuo, to Sumitomo Special Metals Co., Ltd. Process for producing the rare earth alloy powders. 4,767,450, Cl. 75-0.5BA

Ishihara, Michio; Oishi, Hiroshi; and Kuboyama, Makoto, to Fujitsu Limited. Method of packing electronic parts and a pack produced by the method. 4,767,004, Cl. 206-334.000

Ishii, Akihiro: *See*—
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji, Ishibashi, Hiroshi, Ishii, Akihiro; Itoh, Hirotaka, Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000

Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, to S.D.S. Biotech K.K. Imidazolyl or triazolyl substituted propionate derivative and nonmedical fungicide containing the same. 4,767,752, Cl. 514-184.000

Ishii, Yoshinori: *See*—
Wada, Ryukichi; and Ishii, Yoshinori, 4,768,095, Cl. 358-183.000

Ishii, Yukihiro: *See*—
Hashimoto, Ken; Maruta, Masayuki; Soyama, Hidehiko, and Ishii, Yukihiro, 4,767,688, Cl. 430-110.000

Ishikawa Gasket Co., Ltd.: *See*—
Udagawa, Tsunekazu, 4,767,124, Cl. 277-235.00B

Ishikawa, Hidehiko: *See*—
Misaki, Hideo; Ishikawa, Hidehiko; and Matsuura, Kazuo, 4,767,712, Cl. 435-253.000

Ishikawa, Hisashi, to Canon Kabushiki Kaisha. Image signal conversion device. 4,768,092, Cl. 358-140.000

Ishimoto, Coe; Seto, Junetsu; and Tomimuro, Hiroshi, to Sony Corporation. Laser information recording medium having an improved recording layer. 4,767,696, Cl. 430-495.000

Isohata, Junji; Nakasugi, Mikio; and Yokomatsu, Takao, to Canon Kabushiki Kaisha. Conveyor device for alignment 4,768,064, Cl 355-53.000

Isomae, Seiichi: *See*—
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori, Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi, Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl 357-42.000

Isozaki, Jeffrey T.: *See*—
Petolino, Joseph A.; Finan, Christopher D.; Isozaki, Jeffrey T., and Pang, Nicholas Y., 4,768,197, Cl. 371-38.000

VOL 1093 ISS 5 AG 30 1988 UMI

Isshiki, Kunihiko, to Mitsubishi Denki Kabushiki Kaisha. Internal current confinement type semiconductor light emission device. 4,768,200, Cl. 372-46.000

Isuzu Motors Limited: *See—*
Tamai, Hidefumi, 4,766,774, Cl. 74-475.000

Itami, Teruhiko; Kimoto, Toshifumi; Yamasawa, Akira; and Saitoh, Koichi, to Fuji Xerox Co., Ltd. Method of manufacturing a magnetic recording medium. 4,767,483, Cl. 156-154.000.

ITAP S.p.A.: *See—*
Patti, Vincenzo, 4,766,930, Cl. 137-540.000.

Ito, Haruaki: *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000.

Ito, Ken, to Nissan Motor Co., Ltd. Vehicle control system for controlling side slip angle and yaw rate gain. 4,767,588, Cl. 364-424.000.

Ito, Masazumi, to Minolta Camera Kabushiki Kaisha. Copying machine. 4,768,066, Cl. 355-55.000.

Ito, Novuei: *See—*
Hattori, Yutaka; Ito, Novuei; Inoguchi, Kazuhiro; and Hattori, Tadashi, 4,768,011, Cl. 338-5.000.

Ito, Takuo: *See—*
Nishino, Kazuaki; Ito, Takuo; Kato, Satosi; and Yamaoka, Hidenori, 4,767,597, Cl. 420-443.000

Ito, Yuji; and Okada, Hiroshi, to Sony Corporation. Apparatus for recording video and PCM audio signals with insert editing using axially displaced heads. 4,768,106, Cl. 360-14.100.

Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, to Nippondenso Co., Ltd. Method for making axial-flow filters and apparatus therefor. 4,767,394, Cl. 493-409.000.

Itoh, Hirotaka: *See—*
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000

Itoh, Tadahiko: *See—*
Yumoto, Tsunemasa; Nakanishi, Yoshio; Iwai, Kazuki; and Itoh, Tadahiko, 4,767,833, Cl. 525-193.000.

ITT Corporation, Defense Communications Division: *See—*
Polcer, Anton J., 4,768,191, Cl. 370-112.000

ITT Gallium Arsenide Technology Center, A Division of ITT Corporation: *See—*
Adams, Garry R., 4,768,073, Cl. 357-30.000.

Iura, Jun-ichi; and Kawaguchi, Toshiyasu, to Asahi Glass Company Ltd. Spherical silica glass powder particles and process for their production. 4,767,433, Cl. 65-21.100.

Ives, Milton N.: *See—*
Sorenson, Richard W.; and Ives, Milton N., 4,767,899, Cl. 200-144.00R

Iwai, Kazuki: *See—*
Yumoto, Tsunemasa; Nakanishi, Yoshio; Iwai, Kazuki; and Itoh, Tadahiko, 4,767,833, Cl. 525-193.000

Iwami, Morita: *See—*
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000

Iwanami, Takeshi, to Yamaha Hatsudoki Kabushiki Kaisha. Intake passage for multi-cylinder engine. 4,766,853, Cl. 123-52.00M.

Iwata, Hiroshi: *See—*
Sakaida, Atsuo; Kawaura, Masafumi; Chikaoka, Yasuji; Iwata, Hiroshi; and Asano, Kiyomitsu, 4,767,226, Cl. 400-124.000.

Iwata, Masakatsu: *See—*
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,063, Cl. 355-29.000
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,100, Cl. 358-285.000

Iwata, Takeshi: *See—*
Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, 4,766,849, Cl. 119-48.000.

Iwata, Tetsuya: *See—*
Nakashima, Keishi; Iwata, Tetsuya; Tanaka, Yasuo; and Hashidate, Toshiaki, 4,768,121, Cl. 360-125.000

Iwatsuki, Makoto; Honma, Masao; and Kayama, Mikio, to Ajinomoto Co., Inc. Artificial hair comprising poly alpha amino acid having pendant mercapto or disulfide groups. 4,767,827, Cl. 525-420.000.

Izawa, Toichiro: *See—*
Mizutani, Toyonobu; Yoshizawa, Masao; and Izawa, Toichiro, 4,767,725, Cl. 501-3.000

Izumi Jidousha K.K.: *See—*
Oike, Takeshi, 4,767,664, Cl. 428-318.800.

Izumitani, Tetsuro: *See—*
Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130

J. C. Bamford Excavators Limited: *See—*
Knight, David J., 4,767,256, Cl. 414-708.000

J. I. Case Company: *See—*
Frase, Roland J., 4,766,962, Cl. 172-624.500
Mickelson, Roger D.; and Brown, Thomas R., 4,767,255, Cl. 414-695.500

Jackson, Mark F.: *See—*
Bocchicchio, Keith A.; Hall, David L.; Jackson, Mark F.; Keller, Joseph R.; and Letsch, Karl H., 4,767,298, Cl. 425-112.000

Jackson, Michael A. Inflatable buoyancy oilskin jacket. 4,767,371, Cl. 441-94.000

Jacob, Joseph: *See—*
Geho, W. Blair; Jacob, Joseph; and Lau, John R., 4,767,615, Cl. 424-57.000

Jacober, Jeffrey M. Backpack and insulated container. 4,767,039, Cl. 224-151.000

Jacobi, Stephen V., to Monsanto Company. Container with discharge tube. 4,767,035, Cl. 222-527.000

Jacobs, Jochen: *See—*
Kruse, Hans; Jacobs, Jochen; Wisotzki, Klaus-Dieter; and Thul, Jutta, 4,767,559, Cl. 252-106.000.

Jacobs, Peter C.: *See—*
Campbell, Robert J.; and Jacobs, Peter C., 4,767,525, Cl. 210-87.000

Jacobsen, Stephen C.; Phillips, Richard P.; and Wood, John E., to Sarcos Incorporated. Systems and methods for sensing position and movement. 4,767,973, Cl. 318-652.000

Jacquet, Bernard; Leveque, Jean L.; Hocquaux, Michel; and Leger, Didier S., to L'Oreal. Topical compositions intended for skin treatment containing salicylic acid derivatives. 4,767,750, Cl. 514-159.000.

Jakubowski, George M.; Molthop, Susan C.; and Eldridge, Milo, to Baxter Travenol Laboratories, Inc. Washing of semipermeable membrane. 4,767,538, Cl. 210-636.000

Jameson Corporation: *See—*
Crates, Thomas B., 4,766,919, Cl. 135-97.000.

Janic, Milan D.: *See—*
Scarpa, Ioannis S.; Chludzinski, Andrew M.; and Janic, Milan D., 4,767,614, Cl. 424-48.000

Janke, Harry T.: *See—*
Pauer, Jericho P.; and Janke, Harry T., 4,766,821, Cl. 108-156.000.

Jankowiak, Roman; and Lutocka, John A., Jr., to Conax Florida Corporation. Water activated pressurized gas release device. 4,768,128, Cl. 361-251.000.

Jankowski, Chester F.: *See—*
Birenbaum, Kenneth A.; Hutchison, Stephen E.; Virkus, Mark K.; and Jankowski, Chester F., 4,768,151, Cl. 364-410.000.

Janocko, Michael A.: *See—*
Talvacchio, John J.; Braginski, Alexander I.; Janocko, Michael A.; and Gavaler, John R., 4,768,069, Cl. 357-5.000.

Jansen, Franz; and Gros, Pierre, to Sanofi. Drugs comprising in association at least one immunotoxin and at least one monovalent carboxylic ionophore. 4,767,621, Cl. 424-85.000

Jansen, Ger L. M.: *See—*
Janssen, Piet J. M.; and Jansen, Ger L. M., 4,768,180, Cl. 369-44.000

Jansons, Viktors, to Raychem Corporation. Method for preparing poly(aryl ether ketones). 4,767,837, Cl. 528-125.000.

Janssen, Petrus C. H.: *See—*
van den Nieuwelaar, Josephus A.; and Janssen, Petrus C. H., 4,766,644, Cl. 17-11.000

Janssen Pharmacuetica N.V.: *See—*
Boeckx, Gustaaf M.; Raeymaekers, Alfons H. M.; and Sipido, Victor, 4,767,760, Cl. 514-242.000

Janssen, Piet J. M.; and Jansen, Ger L. M., to Laser Magnetic Storage International Company. Multistage tracking system. 4,768,180, Cl. 369-44.000.

Janusz, Edward G., to Sun Chemical Corporation. Polyamide-modified metal resinates and their use in publication gravure printing inks. 4,767,835, Cl. 527-600.000.

Japan Aviation Electronics Industry Limited: *See—*
Hoshino, Teruaki; and Kamiji, Koichi, 4,767,361, Cl. 439-596.000.

Japan Butyl Company Limited: *See—*
Shogenji, Toshihiro; and Takahashi, Kenichi, 4,766,676, Cl. 34-70.000

Japan Synthetic Rubber Co., Ltd.: *See—*
Yumoto, Tsunemasa; Nakanishi, Yoshio; Iwai, Kazuki; and Itoh, Tadahiko, 4,767,833, Cl. 525-193.000.

Japan Tobacco Inc.: *See—*
Okumoto, Yutaka, 4,766,910, Cl. 131-84.100
Okumoto, Yutaka, 4,767,909, Cl. 219-121.700.

Jaschinski, John J.: *See—*
Kohl, Vance L.; and Jaschinski, John J., 4,767,286, Cl. 417-423.00R.

Jaulin, Line: *See—*
Chornet, Esteban; and Jaulin, Line, 4,767,543, Cl. 210-759.000.

Jeffery, James E.; Kozlik, Antonin; and Wilmshurst, Eric C., to Boots Company plc, The. Therapeutic agents. 4,767,790, Cl. 514-646.000.

Jeffries, Alvin B. Rotary storage and suspension apparatus. 4,767,167, Cl. 312-268.000.

Jelich, Klaus; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, to Bayer Aktiengesellschaft. Substituted pyrazolin-5-ones, composition containing them, and method of combating fungi or bacteria. 4,767,775, Cl. 514-379.000

Jensen, Harold A. Apparatus for the manufacture of block-sealed side-gussetted bags. 4,767,391, Cl. 493-196.000

Jensen, Ronald H.: *See—*
Bigbee, William L.; Fong, Stella S. N.; Jensen, Ronald H.; Vanderlaan, Martin; and Langlois, Richard G., 4,767,710, Cl. 435-240.270.

Jensen, Thomas D.: *See—*
Harney, James D.; and Jensen, Thomas D., 4,768,114, Cl. 360-97.000

Jensen, William F., to Thermal Systems, Inc. Catalytic space heater. 4,766,877, Cl. 126-92.0AC

Jeppson, Stephen O.: *See—*
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., 4,768,178, Cl. 368-47.000

Jeremic, Miodrag. Adjustable wrench. 4,766,786, Cl. 81-129.000

Jerome, Robert E.: *See—*
Ouhadi, Trazollah; Forte, Rosalia; Jerome, Robert E.; Fayt, Roger M.; and Teyssie , Philippe J., 4,767,824, Cl. 525-343.000

Jesse, Jerry F.: *See—*
Starczewski, John F.; Hsu, Joseph C.; Blemberg, Robert J.; Curie, Kevin J.; and Jesse, Jerry F., 4,767,651, Cl. 428-35.000.

Jewell, Jack L., to American Telephone and Telegraph Company, AT&T Bell Laboratories. Asymmetric optical logic element. 4,767,196, Cl. 350-354.000.

Jhaveri, Satish S.; Dunnavant, William R.; and Schneider, James T., to Ashland Oil, Inc. Hot box process for preparing foundry shapes. 4,766,949, Cl. 164-526.000

Jinzenji, Toshimasa, to Kabushiki Kaisha Toshiba. Fault current detection device for a D.C. network. 4,767,996, Cl. 324-522.000

JJW, Inc.: *See—*
Wray, Jimmy J., 4,767,065, Cl. 241-152.00A

Johansson, Henrik: *See—*
Kaartinen, Niilo; Johansson, Henrik; Leinvuo, Ahti; and Collander, Paul, 4,766,922, Cl. 137-13.000.

Johns Hopkins University, The: *See—*
Nathans, Daniel; and Linzer, Daniel I. H., 4,767,709, Cl. 435-240.200
Thurber, Robert E.; Prengaman, Richard J.; Phipps, Joe; and Rzemien, Russell, 4,768,035, Cl. 342-194.000

Johnson, Anna M.: *See—*
Butler, Susan M., 4,767,011, Cl. 211-13.000

Johnson, David L., to Research Foundation of State University of New York, The. Apparatus for redepositing particulate matter. 4,767,602, Cl. 422-101.000

Johnson, Floyd T.: *See—*
Butler, Susan M., 4,767,011, Cl. 211-13.000

Johnson, Grady. Auxiliary boat seat. 4,766,838, Cl. 114-363.000.

Johnson & Johnson Patient Care, Inc.: *See—*
Wolf, Stephen J.; and Dellas, James P., 4,767,416, Cl. 604-239.000

Johnson, Ronald L.: *See—*
Rice, Allyn B.; Johnson, Ronald L.; and Peterman, Milton J., 4,767,003, Cl. 206-328.000

Johnson, Roy A.; and Lin, Chiu-Hong, to Upjohn Company, The. 3'-pyridinylalkylinden- and 3'-pyridinylalkylindol-2-carboxylic acids and analogs. 4,767,865, Cl. 546-342.000

Johnson, William M., to Charles Stark Draper Laboratory, Inc., The. Limited diffraction feedback laser system having a composite sensor 4,767,209, Cl. 356-152.000

Johnston, Jerry H.; and Lowery, Charles F., to Bigelow-Sanford, Inc. Apparatus for printing carpet tiles. 4,766,745, Cl. 68-200.000

Johnston, Patrick M. Rigging for a wind propelled craft. 4,766,831, Cl. 114-102.000

Jones, Edward; Meiske, Larry A.; and Young, Warren L., to Dow Chemical Company, The. Halogenated ethylene polymers with improved resistance to agglomeration. 4,767,823, Cl. 525-334.100.

Jones, Ellis O. Fluid pump. 4,767,290, Cl. 417-490.000

Jones, Hwfa J., to Jones, Hwfa John; Glynn, Robert T.; and Barnes, Joseph. Copyholder. 4,767,093, Cl. 248-442.200.

Jones, Hwfa John: *See—*
Jones, Hwfa J., 4,767,093, Cl. 248-442.200

Jones, John C.: *See—*
Kisling, Douglas L.; and Jones, John C., 4,767,264, Cl. 415-156.000.

Jones, Patrick T., to Brasswell Corporation. Moisture collection attachment for brass musical instruments. 4,766,797, Cl. 84-453.000

Josef Meissner GmbH & Co.: *See—*
Gebauer, Hans-Jurgen, 4,767,476, Cl. 149-109.600

Josefiak, Christof: *See—*
Hentschel, Peter; Josefiak, Christof; and Klostermeier, Werner, 4,767,535, Cl. 210-500.380

Joseph Galkin Corporation: *See—*
Block, Charles, 4,766,826, Cl. 112-265.100.

Jou, Jing-Yang; and Rosebrugh, Christopher, to Silc Technologies, Inc Programmable logic array. 4,768,196, Cl. 371-25.000.

Joubert, Daniel, to Rhone-Poulenc Chimie de Base. Sodium tripolyphosphate carrier particles containing a sodium hydrogen ortho on pyro-phosphate. 4,767,570, Cl. 252-540.000

Jourdan, Alex, to Comurhex Societe Pour la Conversion de l'Uranium en Metal et Hexafluorure. Process for the preparation of pure alloys based on rare earths and transition metals by metallothermy 4,767,455, Cl. 75-84.400

Joytec Ltd.: *See—*
Tonner, Peter S., 4,767,121, Cl. 273-185.00A.

Jufuku, Yasunobu: *See—*
Tatara, Yuudai; Okawa, Susumu; Okuwaki, Shigeru; and Jufuku, Yasunobu, 4,767,388, Cl. 474-245.000

Juhn, Steven K. Method and apparatus for viewing and collecting specimens. 4,766,886, Cl. 128-9.000.

Jungheim, Louis N.: *See—*
Holmes, Richard E.; and Jungheim, Louis N., 4,767,871, Cl. 548-365.000

Jyoraku, Fumio; and Toyosima, Hisanori, to Hitachi, Ltd. Electric blower. 4,767,285, Cl. 417-366.000

Kaartinen, Niilo; Johansson, Henrik; Leinvuo, Ahti; and Collander, Paul, to Fluilogic Systems Oy. Procedure for forming cocks closable by freezing, belonging to a liquid batch handling unit, and handling unit set up according to the procedure. 4,766,922, Cl. 137-13.000

Kabushiki Kaisha Daikyo: *See—*
Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, 4,766,849, Cl. 119-48.000

Kabushiki Kaisha Meidensha: *See—*
Hiraki, Akio; and Miyasato, Tatsuro, 4,767,517, Cl. 204-192.250

Kabushiki Kaisha Shinsangyokaihatsu: *See—*
Kawamoto, Mutumi, 4,767,925, Cl. 250-231.0SE

Kabushiki Kaisha Tokyo Keiki: *See—*
Miyayama, Toshio; Masuzawa, Isao; Yamamoto, Kanshi; Watanabe, Mitsuo; and Yamada, Hidemitsu, 4,766,834, Cl. 114-144.00E

Kabushiki Kaisha Toshiba: *See—*
Amano, Masayuki; Okawa, Seiji; and Nakano, Yoshio, 4,766,730, Cl. 60-641.500
Ayano, Shinya; and Ojiro, Yasuo, 4,767,263, Cl. 415-121.00A
Furukawa, Osamu; Yoshida, Seiichi; Imai, Motomasa; and Harada Mitsuo, 4,767,732, Cl. 501-137.000
Gotou, Yukifumi, 4,766,735, Cl. 62-175.000
Hanawa, Masatoshi, 4,767,993, Cl. 324-318.000
Hasegawa, Kiyoshi; and Seko, Yutaka, 4,767,113, Cl. 271-3.000
Jinzenji, Toshimasa, 4,767,996, Cl. 324-522.000
Kato, Haruo, 4,768,089, Cl. 358-98.000
Kushima, Hidekiyo; and Tanaka, Tsutomu, 4,767,918, Cl. 235-441.000
Nishimoto, Kiyoshi, 4,767,114, Cl. 271-3.000
Ohyama, Yoshirou; and Iinuma, Kazuhiro, 4,767,927, Cl. 250-327.200
Sakamaki, Takeshi; and Watanabe, Fumio, 4,767,716, Cl. 436-47.000
Sasaki, Tooru, 4,768,172, Cl. 365-230.000
Sato, Masaki, 4,768,080, Cl. 357-54.000
Shimada, Mamoru, 4,768,009, Cl. 335-299.000
Tanaka, Shigeru, 4,768,078, Cl. 357-72.000
Ueyama, Akihide, 4,767,992, Cl. 324-313.000
Yanase, Toshinobu, 4,766,678, Cl. 34-229.000
Yoshida, Jiro; and Azuma, Makoto, 4,768,074, Cl. 357-34.000

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, 4,767,283, Cl. 417-269.000
Saito, Takeshi, 4,767,018, Cl. 220-85.00S

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Nishino, Kazuaki; Ito, Takuo; Kato, Satosi; and Yamaoka, Hidenori, 4,767,597, Cl. 420-443.000
Sugiyama, Susumu; Suzuki, Takashi; and Takigawa, Mitsuharu, 4,766,666, Cl. 29-610.0SG
Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji; Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, 4,767,801, Cl. 523-145.000

Kabushikigaisha Orii: *See—*
Orii, Masaru, 4,767,639, Cl. 426-523.000

Kadoo, Ricky: *See—*
Benjamin, William; Kadoo, Ricky; and Gosling, Martin, 4,768,027, Cl. 340-691.000

Kadosawa, Tsuneaki, to Canon Kabushiki Kaisha. Automatic universal head. 4,767,974, Cl. 318-663.000

Kaganov, Alan L.: *See—*
Hardy, Thomas G.; Kaganov, Alan L.; and Pace, William G., 4,766,898, Cl. 128-334.00C

Kagawa, Hirotane: *See—*
Shima, Kazuhiro; Tsukada, Takayuki; and Kagawa, Hirotane, 4,767,874, Cl. 556-137.000

Kageyama, Yukihiko; Nakane, Toshio; and Hijikata, Kenji, to Polyplastics Co., Ltd. Process for preparation of copolyester. 4,767,830, Cl. 525-450.000

Kahle, Dieter: *See—*
Kostorz, Jan R.; and Kahle, Dieter, 4,767,052, Cl. 236-12.220

Kai, Osamu: *See—*
Asano, Hiroyuki; Takeda, Yoshiaki, and Kai, Osamu, 4,768,217, Cl. 379-32.000

Kaiho, Shigeo: *See—*
Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000

Kaiser, Carl; and Kruse, Lawrence I., to SmithKline Beckman Corporation. Substituted tetrahydro isoquinoline intermediates. 4,767,862, Cl. 546-149.000

Kaizu, Tetsuji: *See—*
Fujiwara, Yoshitaka; and Kaizu, Tetsuji, 4,767,870, Cl. 549-315.000

Kaji, Isao: *See—*
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao; Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl. 264-500.000

Kajima Corporation: *See—*
Osanai, Takahito, 4,768,158, Cl. 364-507.000

Kajita, Kogi: *See—*
Hibino, Yoshitaka, Kajita, Kogi; Kubo, Satoru; and Totsune, Atsushi, 4,766,862, Cl. 123-339.000

Kakegawa, Yuuji: *See—*
Takizawa, Yasushi; Sasayama, Atsushi; Kobayashi, Yoshihiko, Takahashi, Yukio; and Kakegawa, Yuuji, 4,768,070, Cl. 357-17.000

Kaken Pharmaceutical Co., Ltd.: *See—*
Kawata, Terushige; and Yamashita, Shinsuke, 4,767,787, Cl. 514-573.000

Kalawrytinos, Georg: *See—*
Iniotakis, Nicolaos; Frohling, Werner; Kalawrytinos, Georg; and von der Decken, Claus-Benedict, 4,767,527, Cl. 210-137.000

VOL 1093 ISS 5 AG 30 1988 UMI

Kaleda, William W.; Saleeb, Fouad Z.; and Zeller, Bary L., to General Foods Corporation. Coffee decaffeination with caffeic acid 4,767,634, Cl. 426-271.000.

Kalfon, Rene . Control and surveillance system for prepayment public telephone apparatus. 4,768,222, Cl. 379-91.000

Kali und Salz Aktiengesellschaft: *See*—
Fricke, Gunter, 4,767,506, Cl. 204-127.400

Kamada, Mamoru: *See*—
Nakano, Toshihiko; Nagase, Fumiaki; Takeuchi, Eiichi; Kamada, Mamoru; and Shigematsu, Hideyo, 4,767,673, Cl. 428-458.000

Kamigaito, Osami: *See*—
Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji; Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, 4,767,801, Cl. 523-145.000

Kamiji, Koichi: *See*—
Hoshino, Teruaki; and Kamiji, Koichi, 4,767,361, Cl. 439-596.000

Kammann, Rolf: *See*—
Peters, Rudolf; and Kammann, Rolf, 4,767,075, Cl. 242-56.00A

Kamp, David C.; and Newman, Albert P., to Cam-Lok Inc. Electrical panel assembly. 4,767,347, Cl. 439-133.000

Kamp, Ewald A., to First Brands Corporation. Interlocking closure bar for use in high temperature environment. 4,767,220, Cl. 383-63.000

Kamp, Heinz; and Becker, Rolf, to W. Schlafhorst & Co. Endless yarn traversing band for a yarn traversing device in a machine for producing cross-wound bobbins. 4,767,072, Cl. 242-43.00A

Kanai, Mitsuharu: *See*—
Leistner, William E.; Nakahara, Yutaka; Hirai, Bunji; and Kanai, Mitsuharu, 4,767,834, Cl. 526-265.000

Kanamaru, Hitoshi, to Pioneer Electronic Corporation. Video disk recorder and playback unit. 4,768,104, Cl. 358-342.000

Kanamaru, Tsuneo: *See*—
Shinagawa, Susumu; Kanamaru, Tsuneo; and Harada, Setsuo, 4,767,781, Cl. 514-513.000

Kandpal, Pramode; Collinet, Jean C.; Ziegner, Bernhard A.; and Bowen, James A., to M/A Com, Inc. Field effect transistor device 4,768,079, Cl. 357-74.000

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Yasui, Hideo; Miki, Yasuhiro; and Okada, Wataru, 4,767,803, Cl. 523-335.000

Kaneko, Kazuo: *See*—
Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, 4,768,215, Cl. 378-101.000.

Kao Corporation: *See*—
Hara, Kenji; and Okada, Jhoshin, 4,767,783, Cl. 514-546.000.
Mitsuno, Yuichiro; Nomaguchi, Keiko; and Suzuki, Toshiyuki, 4,767,625, Cl. 424-95.000

Kapuscinski, Maria M.: *See*—
Hart, William P.; Kapuscinski, Maria M.; and Liu, Christopher S., 4,767,553, Cl. 252-47.500

Kar-Hart Productions, Inc.: *See*—
Hartman, Bruce A.; Kardack, Michael R.; and Ammendolia, Ralph E., 4,767,090, Cl. 248-168.000

Karadimas, Georges: *See*—
Holz, Robert G.; and Karadimas, Georges, 4,767,266, Cl. 415-172.00A

Karasaki, Toshihiko: *See*—
Hamada, Masataka; Karasaki, Toshihiko; Matsui, Toru; and Makawa, Yukio, 4,768,052, Cl. 354-402.000
Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, 4,768,054, Cl. 354-408.000

Kardack, Michael R.: *See*—
Hartman, Bruce A.; Kardack, Michael R.; and Ammendolia, Ralph E., 4,767,090, Cl. 248-168.000

Karino, Masao: *See*—
Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, 4,767,193, Cl. 350-345.000

Karlsson, Lars-Erik: *See*—
Brannstrom, Roine; Karlsson, Lars-Erik; and Mansson, Martin, 4,767,315, Cl. 431-7.000

Karpowicz, John: *See*—
Boehringer, John R.; Karpowicz, John; and Sutter, Steven T., 4,767,417, Cl. 604-31.000

Karwowski, Jan: *See*—
Calandro, Thomas P.; and Karwowski, Jan, 4,767,631, Cl. 426-103.000

Karydas, Athanasios; Cooke, Thomas W.; and Falk, Robert A., to Ciba-Geigy Corporation. Use of organic fluorochemical compounds with oleophobic and hydrophobic groups in crude oils as antideposition agents, and compositions thereof. 4,767,545, Cl. 252-8.300

Kashihara, Yuji; and Taga, Yutaka, to Toyota Jidosha Kabushiki Kaisha. 4WD vehicle torque distribution device incorporating friction engaging device providing multi mode operation, and method for operation thereof. 4,766,973, Cl. 180-249.000.

Kashyap, Raman, to British Telecommunications plc. Optical fibre interferometer. 4,767,210, Cl. 356-345.000

Kasprzak, Kenneth A.; Swihart, Terence J.; and Ward, Andrew H., to Dow Corning Corporation. Articles for conditioning fabrics in a laundry dryer. 4,767,548, Cl. 252-8.800.

Kasuya, Michio: *See*—
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,063, Cl. 355-29.000
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,100, Cl. 358-285.000

Kataoka, Hiroshi. Support shaft for winding/unwinding sheets. 4,767,077, Cl. 242-68.200

Kataoka, Kenji: *See*—
Hijikata, Akemi; Matsumoto, Masaaki; Nakayama, Taesuke; Hamazaki, Yasuyuki; and Kataoka, Kenji, 4,767,680, Cl. 429-39.000

Katayanagi, Shinichi: *See*—
Suga, Nagaichi; and Katayanagi, Shinichi, 4,767,054, Cl. 239-14.200

Kato, Haruo, to Kabushiki Kaisha Toshiba. Endoscopic system. 4,768,089, Cl. 358-98.000

Kato, Hisao, to Mitsubishi Denki Kabushiki Kaisha. Industrial robot 4,767,257, Cl. 414-744.00A

Kato, Motosaburo: *See*—
Fukusima, Syoji; Kato, Motosaburo; and Mochizuki, Takashi, 4,767,492, Cl. 156-580.200

Kato, Osami: *See*—
Saito, Takanori; and Kato, Osami, 4,767,079, Cl. 242-197.000

Kato, Satosi: *See*—
Nishino, Kazuaki; Ito, Takuo; Kato, Satosi; and Yamaoka, Hidenori, 4,767,597, Cl. 420-443.000

Kato, Takashi; Haruta, Kazumi; and Yamada, Yutaka, to Aisan Kogyo Kabushiki Kaisha. Canister for capturing evaporated fuel. 4,766,872, Cl. 123-519.000

Katsura, Shigeo: *See*—
Onuma, Toshihide; and Katsura, Shigeo, 4,767,005, Cl. 206-334.000.

Katsura, Yousuke: *See*—
Ueda, Ikuo; Shiokawa, Youichi; Manabe, Takashi; and Katsura, Yousuke, 4,767,780, Cl. 514-406.000

Katsuyama Kinzoku Kogyo Kabushiki Kaisha: *See*—
Sugimoto, Mutsumi, 4,766,654, Cl. 24-637.000

Katz, Frances R.: *See*—
Friedman, Robert B.; Gottneid, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., 4,767,849, Cl. 536-102.000

Katz, Thomas J.; and Sudhakar, Anantha, to Columbia University in the City of New York, The Trustees of. Helical metallocene oligomers and a method for their preparation. 4,767,873, Cl. 556-42.000.

Kaufung, Reinhard: *See*—
Adam, Norbert; Kaufung, Reinhard; and Wiedermann, Rolf, 4,767,795, Cl. 521-99.000

Kaupp, Hans: *See*—
Zinner, Hans; and Kaupp, Hans, 4,767,137, Cl. 285-325.000.

Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, to Sekisui Jushi Kabushiki Kaisha; Hanshin Keiran Kabushiki Kaisha; and Kabushiki Kaisha Daikyo. Egg collection system. 4,766,849, Cl. 119-48.000

Kawachi, Kazuhiko, to Alps Electric Co., Ltd. Thin film EL panel. 4,767,679, Cl. 428-690.000

Kawada, Hideaki, to Sony Corporation. Moveable lid for tape cassette 4,768,122, Cl. 360-132.000

Kawaguchi, Takeshi: *See*—
Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, 4,766,982, Cl. 188-181.00A

Kawaguchi, Toshiro; Sonoda, Takefumi; and Hashimoto, Kiyoshi, to UBE Industries, Ltd. Injection apparatus. 4,767,306, Cl. 425-382.400

Kawaguchi, Toshiyasu: *See*—
Iura, Jun-ichi; and Kawaguchi, Toshiyasu, 4,767,433, Cl. 65-21.100

Kawai, Shigeharu: *See*—
Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, 4,767,103, Cl. 266-80.000.

Kawakami, Izumi; Komazaki, Tomokazu; Gunzi, Katuhiko; and Onisi, Norio, to OKI Electric Industry Co., Inc. Microwave filter 4,768,003, Cl. 333-202.000

Kawakami, Kenneth N., to Microwave Technology, Inc. Capacitorless DC bias lines for use with r.f. signal processing apparatus. 4,768,005, Cl. 333-246.000

Kawamori, Nobutake: *See*—
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000.

Kawamoto, Mutumi, to Aisin-Warner Kabushiki Kaisha; and Kabushiki Kaisha Shinsangyokaihatsu. Optical type relative rotation measurement apparatus. 4,767,925, Cl. 250-231.05E

Kawan oto, Yoshimichi; Furukawa, Yoshimi; Hamada, Tetsuro; and Serizawa, Mitsuya, to Honda Giken Kogyo Kabushiki Kaisha. Actuator for steering the rear wheels in front and rear wheel steering device for vehicle. 4,767,129, Cl. 280-91.000

Kawamura, Kichinari; Kono, Yasuo; Okado, Hideo; Hagiwara, Hiroyuki; and Takaya, Haruo, to Director-General of Agency of Industrial Science and Technology. Method for preparing lower olefins. 4,767,886, Cl. 585-640.000

Kawanabe, Tomohiko: *See*—
Asakura, Masahiko; Kawanabe, Tomohiko; and Kushida, Noritaka, 4,767,520, Cl. 204-406.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tamba, Shinichi; Miyake, Hitomi; and Fukui, Noboru, 4,766,983, Cl. 181-240.000

Kawasaki, Nobuhiko; Ikeda, Kouichi; and Kimura, Shinichi, to Sharp Kabushiki Kaisha. Power-connection/car-mounting device. 4,767,337, Cl. 439-34.000

Kawasaki, Ryoichi; Ooyama, Noriyoshi; Shimizu, Masami; and Suzuki, Kouzou, to Sanyo Electric Co., Ltd. Optical pickup device wherein the astigmatic converged beam spot is aligned along the dividing lines of the four-division photo-detector. 4,767,921, Cl. 250-201.000.

Kawasaki Steel Corporation: *See*—
Shibuya, Kiyoshi; Kogiku, Fumio; and Ozawa, Michiharu, 4,766,947, Cl. 164-460.000

Kawasaki, Tomoaki; and Akiyama, Yoshinori, to Nissan Motor Co., Ltd. Safety structure of vehicle body adjacent instrument panel 4,767,153, Cl. 296-194.000

Kawase, Akio: *See*—
Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000

Kawata, Terushige; and Yamashita, Shinsuke, to Kaken Pharmaceutical Co., Ltd.; Teikoku Seiyaku Kabushiki Kaisha; and Nippon Kayaku Kabushiki Kaisha. Sheet-shape adhesive preparation. 4,767,787, Cl. 514-573.000

Kawauchi, Nakaji: *See*—
Yamada, Kiichi; Senoo, Akio; Iimura, Jun; Akimoto, Ryosaku; and Kawauchi, Nakaji, 4,766,950, Cl. 165-17.000.

Kawaura, Masafumi: *See*—
Sakaida, Atsuo; Kawaura, Masafumi; Chikaoka, Yasuji; Iwata, Hiroshi; and Asano, Kiyomitsu, 4,767,226, Cl. 400-124.000

Kayama, Mikio: *See*—
Iwatsuki, Makoto; Honma, Masao; and Kayama, Mikio, 4,767,827, Cl. 525-420.000

Kaylor, William R.: *See*—
Pooler, Robert E.; and Kaylor, William R., 4,768,091, Cl. 358-139.000.

Kazaoka, Kenichi; and Okazaki, Hiroshi, to Aisin Seiki Kabushiki Kaisha. Seat lifter. 4,767,157, Cl. 297-322.000

Keck, Donald B.: *See*—
Deneka, Charles W.; and Keck, Donald B., 4,767,430, Cl. 65-4.200

Keeley, James W.; and Barlow, George J., to Honeywell Bull Inc. Read in process memory apparatus. 4,768,148, Cl. 364-200.000

Kehr, Bruce A.; and Hedrich, Albert L. Apparatus for alerting a patient to take medication. 4,768,176, Cl. 368-10.000

Kehr, Bruce A.; and Hedrich, Albert L. Method of and apparatus for alerting a patient to take medication. 4,768,177, Cl. 368-10.000

Keil, Michael: *See*—
Demus, Dietrich; Hauser, Anton; and Keil, Michael, 4,767,565, Cl. 252-299.500

Keil, Rudolf; Mayerhofer, Franz; Althaus, Hans L.; and Klement, Ekkehard, to Siemens Aktiengesellschaft. Transmission and reception module for a bidirectional communication network. 4,767,171, Cl. 350-96.180

Keller, Joseph R.: *See*—
Bocchicchio, Keith A.; Hall, David L.; Jackson, Mark F.; Keller, Joseph R.; and Letsch, Karl H., 4,767,298, Cl. 425-112.000

Keller, Wilhelm A.; and Chen, Sung J. Dispensing and mixing apparatus. 4,767,026, Cl. 222-137.000

Kelley Company Inc.: *See*—
Kovach, Jonathan W.; and Hageman, Martin P., 4,767,254, Cl. 414-401.000

Kellner, Henry J.: *See*—
Barrett, Edward A.; Molchen, Marion B.; and Kellner, Henry J., 4,768,049, Cl. 354-294.000.

Kemisk Vaerk Koge A/S: *See*—
Nielsen, Erik, 4,767,448, Cl. 71-111.000

Kennedy, Joseph P., to University of Akron. Sterically hindered bimfers telechelic polymers made therefrom. 4,767,885, Cl. 570-185.000

Kennedy, Steven: *See*—
Hunt, Mack W.; and Kennedy, Steven, 4,767,551, Cl. 252-32.70E.

Kenny, Richard J.: *See*—
Blank, Robert G.; Mody, Dhiraj S.; Agism, Gary R.; and Kenny, Richard J., 4,767,789, Cl. 514-629.000

Keogh, Michael J., to Union Carbide Corporation. Compositions of a relatively water-stable thermoplastic polymer and tetramethyl titanate dispersed in an alkylene-alkyl acrylate copolymer matrix. 4,767,820, Cl. 525-72.000.

Kera Corneal Devices, Inc.: *See*—
Reynolds, Alvin E., 4,766,895, Cl. 128-303.00R.

Kerley, Donald J. Module feeder. 4,766,648, Cl. 19-80.00R.

Kernforschungsanlage Julich GmbH: *See*—
Iniotakis, Nicolaos; Frohling, Werner; Kalawrytinos, Georg; and von der Decken, Claus-Benedict, 4,767,527, Cl. 210-137.000

Kerstiens, Anthony J.: *See*—
Betterton, Joseph T.; Glover, Alfred H.; Griffin, Ranald L.; and Kerstiens, Anthony J., 4,767,897, Cl. 200-83.00J

Keycom Electronic Publishing, Inc.: *See*—
Winter, Peter M.; Holman, Neil L.; and Kram, Anthony B., 4,768,144, Cl. 364-200.000

Kezerian, Charles: *See*—
Baker, Don R.; Kezerian, Charles; and Brownell, Keith H., 4,767,772, Cl. 514-346.000.

Kharas, Gregory: *See*—
Bikson, Benjamin; Giglia, Salvatore; and Kharas, Gregory, 4,767,422, Cl. 55-16.000

Kida, Toshio: *See*—
Murakami, Takatoshi; Kida, Toshio; Kon, Shiji; Asai, Toshinobu; and Nunome, Yoshiyuki, 4,766,843, Cl. 118-661.000

Kidd, David L.: *See*—
Gaffey, Troy M.; Kidd, David L.; and Grimes, Michael L., 4,766,984, Cl. 188-380.000

Kido, Kunio, to Tanashin Denki Co., Ltd. Interlocked reverse mode change-over mechanism for dual cassette tape recorder. 4,768,112, Cl. 360-69.000

Kieferle, Hermann: *See*—
Adler, Bernhard; and Kieferle, Hermann, 4,767,943, Cl. 307-119.000

Kiese, Gerhard, to Leybold-Heraeus GmbH. Dual ring piston-ring system with spring ring bias means. 4,767,123, Cl. 277-139.000

Kieser, Jorg; Sellschopp, Michael; and Geisler, Michael, to Leybold-Heraeus GmbH. Plasma treatment apparatus. 4,767,641, Cl. 427-38.000

Kiessling, Klaus: *See*—
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nussl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000

Kildea, Robert J., to United Technologies Corporation. Method for reducing blade tip variation of a bladed rotor. 4,767,272, Cl. 416-144.000

Kim, Chong S. Multipurpose pulverizer device. 4,767,069, Cl. 241-152.00A

Kim, Manjin J.; Griffing, Bruce F.; and Skelly, David W., to General Electric Company. Unframed via interconnection with dielectric etch stop. 4,767,724, Cl. 437-194.000

Kim, Sun H., to Biomeasure, Incorporated. Anti-arthritic pyrazolo-triazine derivatives. 4,767,858, Cl. 544-34.000

Kim, Young S. Glove and watch. 4,766,611, Cl. 2-160.000

Kim, Young S. Golf bag. 4,767,001, Cl. 206-315.300.

Kimberly-Clark Corporation: *See*—
Pazos, Jose F.; Greene, Sharon L.; and Rodriguez, Augusto, 4,767,825, Cl. 525-408.000
Radwanski, Fred R.; and Chung, Raymond, 4,767,586, Cl. 264-113.000
Tomsovic, James E., Jr., 4,767,487, Cl. 156-256.000

Kimbrough, Andrew G.; and Hammond, James C., to Kinetic Energy Corp. Mobile robotic platform. 4,767,048, Cl. 228-29.000

Kimoto, Toshifumi: *See*—
Itami, Teruhiko; Kimoto, Toshifumi; Yamasawa, Akira; and Saitoh, Koichi, 4,767,483, Cl. 156-154.000

Kimura, Shigeharu: *See*—
Munakata, Chusuke; Hase, Shinobu; and Kimura, Shigeharu, 4,767,211, Cl. 356-375.000

Kimura, Shinichi: *See*—
Kawasaki, Nobuhiko; Ikeda, Kouichi; and Kimura, Shinichi, 4,767,337, Cl. 439-34.000

Kin-Shon, Lu. Library case for the diskettes. 4,766,999, Cl. 206-45.130

Kinder, Mark R., to TRW Inc. Electrical commutation apparatus. 4,767,292, Cl. 418-2.000

Kinetic Energy Corp.: *See*—
Kimbrough, Andrew G.; and Hammond, James C., 4,767,048, Cl. 228-29.000

Kinner, James. Disk brake grinder. 4,766,702, Cl. 51-281.05F

Kinoshita, Toshiharu; Kunii, Shuji; and Sano, Yoshiki, to Tamura Electric Works, Ltd. Public telephone set with internal charge processing. 4,768,223, Cl. 379-143.000

Kinosz, Michael J.; and Mitchell, Alan P., to Aluminum Company of America. Injection apparatus for introduction of a fluid material into a molten metal bath and associated method. 4,767,598, Cl. 420-528.000

Kinkami, Senchi: *See*—
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki, Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kinkami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230

Kirk Horst: *See*—
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk Horst; Hesse, Reiner; Goetze, Horst, and Unger, Wibke, 4,767,458, Cl. 106-18.310

Kirker, Garry W.: *See*—
Chester, Arthur W.; and Kirker, Garry W., 4,767,733, Cl. 502-65.000

Kishimoto, Daisuke: *See*—
Nakatsuka, Yoshio; Kume, Minoru; and Kishimoto, Daisuke, 4,767,516, Cl. 204-192.140

Kishimoto, Shunichi: *See*—
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000

Kisling, Douglas L.; and Jones, John C., to United Technologies Corporation. Vane lever arm construction. 4,767,264, Cl. 415-156.000

Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, to Degussa Aktiengesellschaft. Process for producing luminous material based on manganese activated cadmium borate. 4,767,566, Cl. 252-301.60F

Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, to Degussa Aktiengesellschaft. Process for producing luminous material based on manganese activated zinc silicate. 4,767,567, Cl. 252-301.60F

Kita, Tadae; and Okuno, Akihiro, to Fuji Electric Co., Ltd. Conveying apparatus. 4,766,993, Cl. 198-619.000

Kitagawa Industries Co., Ltd.: *See*—
Sugiura, Haruyuki, 4,766,652, Cl. 24-453.000

Kitahama, Satoshi: *See*—
Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, 4,767,283, Cl. 417-269.000

Kitahashi, Tadahiro; Saito, Osami; Matsuno, Tadaaki, and Nakamura, Yoshihiro, to Ishida Scales Mfg. Co., Ltd. Volume determination process. 4,767,212, Cl. 356-379.000

Kitchens, Judith F.; Culp, Carl H., Sr.; and Shemonski, Anthony T., to United States of America, Air Force. Chemical composition for the destruction of microfilm products. 4,767,564, Cl. 252-187.260

VOL 1093 ISS 5 AG 30 1988 UMI

Kitou, Kouji: *See—*
Onozawa, Makoto; Kitou, Kouji; and Osawa, Michitaka, 4,767,971, Cl. 315-384.000.

Kitta, Kenichi; Shinagawa, Touru; and Takamori, You, to Hitachi Maxell, Ltd. Reader and writer for an IC card. 4,767,920, Cl. 235-492.000

Kitzerow, Heinz-Siegfried: *See—*
Heppke, Gerd; Oestreicher, Feodor; Kitzerow, Heinz-Siegfried; and Krumrey, Michael, 4,767,194, Cl. 350-346.000.

Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, to Hitachi Medical Corporation; and Hitachi, Ltd. X-ray generator with current measuring device. 4,768,215, Cl. 378-101.000.

Kjelleberg, Staffan: *See—*
Conway, Patricia; and Kjelleberg, Staffan, 4,767,623, Cl. 424-93.000

Kleczkowski, Peter: *See—*
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, 4,768,124, Cl. 360-133.000.

Klein, Gustave J., to Revlon, Inc. Microprocessor controlled hair treatment appliance. 4,766,913, Cl. 132-9.000.

Klein, Henri: *See—*
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000.

Kleinochnitz, Thomas: *See—*
French, Andrew J.; Ford, James; Flenner, Thomas; Kleinochnitz, Thomas; and Comstock, Robert, 4,767,933, Cl. 250-548.000.

Kleinschmit, Peter: *See—*
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,566, Cl. 252-301.60F
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,567, Cl. 252-301.60F.

Kleiss, Roderick E.: *See—*
Martin, Dean C.; Kleiss, Roderick E.; and Hardy, James A., 4,766,640, Cl. 15-340.000.

Klement, Ekkehard: *See—*
Keil, Rudolf; Mayerhofer, Franz; Althaus, Hans L.; and Klement, Ekkehard, 4,767,171, Cl. 350-96.180.

Klockner-Humboldt-Deutz AG: *See—*
Thomann, Hans, 4,766,717, Cl. 56-341.000.

Kloeckner-Humboldt-Deutz AG: *See—*
Finsterwalder, Gerhard, 4,766,861, Cl. 123-254.000.

Klostermeier, Werner: *See—*
Hentschel, Peter; Josefiak, Christof; and Klostermeier, Werner, 4,767,535, Cl. 210-500.380.

Knight, David J., to J. C. Bamford Excavators Limited. Method of operating a boom. 4,767,256, Cl. 414-708.000

Knoos, Stellan P. Steering gear for a yacht. 4,766,833, Cl. 114-144.00C

Knudson, Gary A. Strip of loosely connected hold down clips. 4,766,707, Cl. 52-98.000.

Knurr-Mechanik Fur Die Elektronik Aktiengesellschaft: *See—*
Simon, Peter, 4,767,262, Cl. 415-119.000

Kobari, Tadaomi, to Alpine Electronics Inc. Printed-wiring board 4,767,892, Cl. 174-68.500

Kobashi, Mamoru: *See—*
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumiaki; and Kobashi, Mamoru, 4,766,864, Cl. 123-357.000.

Kobayakawa, Takaharu; Suehiro, Mikio; Saito, Yosuke; and Inoue, Hiroshi, to Mazda Motor Corporation. Open-top vehicle body. 4,767,147, Cl. 296-1.00S.

Kobayashi, Fumiaki: *See—*
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumiaki; and Kobashi, Mamoru, 4,766,864, Cl. 123-357.000.

Kobayashi, Naoki; Makimoto, Toshiki; and Horikoshi, Yoshiji, to Nippon Telegraph & Telephone Corporation. Preparation process of compound semiconductor. 4,767,494, Cl. 156-606.000

Kobayashi, Seiko: *See—*
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000.

Kobayashi, Shigehiko; and Ono, Mamoru, to Yazaki Corporation. Band clamp. 4,766,651, Cl. 24-16.0PB

Kobayashi, Toshiharu; Okaue, Takumi; and Shirai, Toshio, to Sony Corporation. High-speed contact printing system with control signal waveform refinement. 4,768,107, Cl. 360-17.000.

Kobayashi, Yoshihiko: *See—*
Takizawa, Yasushi; Sasayama, Atsushi; Kobayashi, Yoshihiko; Takahashi, Yukio; and Kakegawa, Yuuji, 4,768,070, Cl 357-17.000

Kobler, Ingo, to M.A.N. Roland Druckmaschinen. Folded copy product transfer and transport apparatus. 4,767,112, Cl. 270-54.000

Koelle, William H.: *See—*
Komor, Joseph A.; Franco, Philip; Nangle, Lorraine P.; and Koelle, William H., 4,767,741, Cl. 512-3.000.

Koenders, Antonius B. T. M.; Louwers, Theodorus P. S.; and Alston, Julia M., to Coulter Stork Patents B.V. Device for the development of a latent electrostatic image, apparatus for producing prints by electrophotographic means and method for developing a latent electrostatic image. 4,768,061, Cl. 355-14.00D

Koenig, David G.; Aoyagi, Kiyoshi; Dudley, Michael R.; and Schmidt, Susan B., to United States of America, National Aeronautics and Space Administration. High performance forward swept wing aircraft. 4,767,083, Cl. 244-12.300.

Koganebuchi, Mutsuo: *See—*
Sasaki, Setsuo; Koganebuchi, Mutsuo; and Taguchi, Teruo, 4,768,129, Cl. 361-302.000.

Kogiku, Fumio: *See—*
Shibuya, Kiyoshi; Kogiku, Fumio; and Ozawa, Michiharu, 4,766,947, Cl. 164-460.000.

Kohashi, Toru: *See—*
Nagao, Takeyoshi; Kohashi, Toru; and Haraguchi, Mitsunobu, 4,766,966, Cl. 177-123.000

Kohl, Vance L.; and Jaschinski, John J., to Manitowoc Company, Inc., The. Ice machine pump assembly. 4,767,286, Cl. 417-423.00R.

Kohler Co.: *See—*
Gaffney, Thomas E.; Weir, Alan J.; Lillesand, Brent W.; and Collins, Jeffery E., 4,766,642, Cl. 16-121.000.

Kohsaka, Masanobu: *See—*
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000.

Koizumi, Yohsuke: *See—*
Ai, Hideo; Koizumi, Yohsuke; and Tsuruta, Naohiro, 4,767,797, Cl. 522-8.000

Kojima, Shuichi; Ishido, Takao; and Sasaki, Shogo, to Nissan Motor Co., Ltd. Weft storage device. 4,766,937, Cl. 139-452.000.

Kolbus GmbH & Co. KG: *See—*
Garlichs, Siemen, 4,767,250, Cl. 412-11.000.

Kolditz, Lothar: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310

Koller, Thomas J.; and Weaver, John D., Sr., to Machlett Laboratories, Inc., The. X-ray generator cooling system. 4,767,961, Cl. 313-12.000.

Kolthammer, Brian W. S.: *See—*
Dunmore, Gordon C.; Taylor, Kevin C.; and Kolthammer, Brian W. S., 4,767,860, Cl. 544-384.000.

Komazaki, Tomokazu: *See—*
Kawakami, Izumi; Komazaki, Tomokazu; Gunzi, Katuhiko; and Onisi, Norio, 4,768,003, Cl. 333-202.000.

Komor, Joseph A.; Franco, Philip; Nangle, Lorraine P.; and Koelle, William H., to Avon Products, Inc. Two-phase liquid cosmetic and method of preparing same. 4,767,741, Cl. 512-3.000.

Kon, Shiji: *See—*
Murakami, Takatoshi; Kida, Toshio; Kon, Shiji; Asai, Toshinobu; and Nunome, Yoshiyuki, 4,766,843, Cl. 118-661.000.

Kondo, Naohiko: *See—*
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, 4,767,394, Cl. 493-409.000.

Konig, Axel: *See—*
Straathof, Theodericus J.; and Konig, Axel, 4,767,547, Cl. 252-8.800.

Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. Trifluoromethanesulfonanilides, and their production and use. 4,767,446, Cl. 71-103.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Fujita, Hisao; Wakabayashi, Tomoko; and Yamazaki, Hiroyuki, 4,767,201, Cl. 350-432.000.
Hiratsuka, Seiichiro; and Matsunawa, Masahiko, 4,768,082, Cl. 358-13.000
Shibata, Takuji, 4,768,038, Cl. 346-76.0PH

Kono, Kazuhiro: *See—*
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000.

Kono, Tadayoshi: *See—*
Yoshidome, Toshio; Nagai, Takanori; Kono, Tadayoshi; and Goto, Mikio, 4,766,858, Cl. 123-195.00R.

Kono, Yasuo: *See—*
Kawamura, Kichinari; Kono, Yasuo; Okado, Hideo; Hagiwara, Hiroyuki; and Takaya, Haruo, 4,767,886, Cl. 585-640.000

Konopik, Bradly J.; Bradley, David J.; Reed, Martin A.; Tannenbaum, Alan R.; and Turner, Michael R., to International Business Machines Corporation. System for managing a plurality of shared interrupt handlers in a linked-list data structure. 4,768,149, Cl. 364-200.000.

Koopman, Henricus G.: *See—*
Van Sprang, Hendrik A.; Koopman, Henricus G.; and Wortel, Franciscus J. M., 4,767,191, Cl. 350-341.000.

Kopainsky, Jurgen: *See—*
Brand, Klaus-Peter; Kopainsky, Jurgen; and Wimmer, Wolfgang, 4,767,941, Cl. 307-43.000.

Kopunek, Thomas V.; and Bennett, Douglas D., to Dentsply Research & Development Corp. Dental composite carrier and composite package. 4,767,325, Cl. 433-90.000.

Körber AG: *See—*
Hackman, Klaus-Georg; Liebe, Reinhard; Freesemann, Enno; Thiele, Willi; and Wochnowski, Waldemar, 4,766,912, Cl. 131-296.000.

Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Du Pont de Nemours, E. I., and Company. Thermosetting coating composition comprising a hydroxy-functional epoxy-polyester graft copolymer. 4,767,829, Cl. 525-449.000.

Kordsachia, Othar: *See—*
Patt, Rudolf; and Kordsachia, Othar, 4,767,500, Cl. 162-32.000.

Kori, Yoshitake: *See—*
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M.

Korzun, Ronald W.: *See—*
Salt, Jonathan G. L.; Korzun, Ronald W.; and Abbott, David R., 4,767,267, Cl. 415-174.000.

Kost, Joseph; Levy, Drora; and Langer, Robert S., to Massachusetts Institute of Technology. Ultrasound enhancement of transdermal drug delivery. 4,767,402, Cl. 604-22.000

Kostorz, Jan R.; and Kahle, Dieter, to Friedrich Grohe Armaturenfabrik GmbH & Co. Thermostatically self-regulating mixing valve 4,767,052, Cl. 236-12.220.

Koto, Haruhiko, to Seiko Epson Corporation. Ink droplet detecting apparatus. 4,768,045, Cl. 346-140.00R

Kotraro, Reuven: *See—*
Linder, Charles; Nemas, Mara; Perry, Mordechai; and Kotraro, Reuven, 4,767,645, Cl. 427-386.000

Kotting, Fritz: *See—*
Gottschald, Lutz; Kotting, Fritz; and Barwasser, Gunther, 4,766,699, Cl. 51-101.0LG.

Kottnauer, Cenek A.: *See—*
Lewis, Albert; and Kottnauer, Cenek A., 4,767,431, Cl. 65-6.000.

Kousaka, Takayuki; and Yoshizawa, Toshio, to Tachikawa Spring Co., LTD. Seat for vehicles providing with a thigh supporting device 4,767,155, Cl. 297-219.000

Kovach, Jonathan W.; and Hageman, Martin P., to Kelley Company Inc. Vehicle restraint having an upwardly biased restraining member 4,767,254, Cl. 414-401.000.

Kovalenko, Valery I.: *See—*
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl 227-109.000

Kowalski, Gregory L., to Eastman Kodak Company. Reproduction apparatus with everting bellows. 4,768,058, Cl. 355-8.000.

Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and 1, to Kuibyshevsky Politeknichesky Institute; and Moskovsky Nauchno-Issledovatelsky Institute Mikrohirurgii Glaza. Applanation tonometer. 4,766,904, Cl. 128-652.000.

Kozlik, Antonin: *See—*
Jeffery, James E.; Kozlik, Antonin; and Wilmshurst, Eric C., 4,767,790, Cl. 514-646.000

Kraftanlagen Aktiengesellschaft: *See—*
Patt, Rudolf; and Kordsachia, Othar, 4,767,500, Cl. 162-32.000.

Kraftwerk Union Aktiengesellschaft: *See—*
Emsperger, Werner; Bruckner, Hermann; Losel, Georg; and Pieper, Rudolf, 4,766,851, Cl. 122-4.00D.

Kram, Anthony B.: *See—*
Winter, Peter M.; Holman, Neil L.; and Kram, Anthony B., 4,768,144, Cl. 364-200.000

Kramberg, Gerhard; and Kuhne, Horst, to Fortuna-Werke Maschinenfabrik Gesellschaft mit beschrankter Haftung. Method and apparatus for determining the position of a workpiece in an NC-controlled machine. 4,766,700, Cl. 51-165.740

Kramer, Carl. Apparatus for mixing a gas main flow with at least one gas subflow. 4,767,317, Cl. 431-173.000.

Kramer, Heinz, to Hinrichs Fotowerbung GmbH + Co. KG. Light box. 4,766,685, Cl. 40-574.000.

Kranabetter, Johann, to Siemens Aktiengesellschaft. Circuit arrangement for shaping an analog read output signal in a rotating mass memory. 4,768,111, Cl. 360-62.000

Krause, James N., to Seagate Technology. Stepper motor magnetic hysteresis correction using a stepping algorithm. 4,768,115, Cl. 360-78.000

Kreisler, Lawrence M. Method of reducing waste volume and an apparatus therefor. 4,767,498, Cl. 159-47.300.

Kreitman, Gary. Limb restraint. 4,766,892, Cl. 128-134.000.

Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, to Robert Bosch GmbH. Headlight arrangement for vehicles. 4,768,135, Cl. 362-66.000

Krishnamurthy, Gopalan: *See—*
Benjamin, Lester F.; Krishnamurthy, Gopalan; and Rypkema, Jouke N., 4,768,229, Cl. 380-20.000

Krispel, Franz: *See—*
Stieber, Volker; and Krispel, Franz, 4,767,930, Cl. 250-396.0ML

Krueger, Paul C.: *See—*
Shattes, Walter J.; Bandyopadhyay, Nikhiles; and Krueger, Paul C., 4,767,497, Cl. 156-665.000

Krumberg, Yakov: *See—*
Landa, Benzion; and Krumberg, Yakov, 4,768,060, Cl. 355-10.000

Krumrey, Michael: *See—*
Heppke, Gerd; Oestreicher, Feodor; Kitzerow, Heinz-Siegfried; and Krumrey, Michael, 4,767,194, Cl. 350-346.000.

Kruse, Hans; Jacobs, Jochen; Wisotzki, Klaus-Dieter; and Thul, Jutta, to Henkel Kommanditgesellschaft auf Aktien. Process for producing contact lens cleaning tablets with a disinfecting action for one-step cleaning. 4,767,559, Cl. 252-106.000.

Kruse, Lawrence I.: *See—*
Kaiser, Carl; and Kruse, Lawrence I., 4,767,862, Cl. 546-149.000.

Kubo, Satoru: *See—*
Hibino, Yoshitaka; Kajita, Kogi; Kubo, Satoru; and Totsune, Atsushi, 4,766,862, Cl. 123-339.000.

Kubota, Ikuo; Hayama, Kazuhide; and Narazaki, Kanji, to Mitsubishi Yuka Fine Chemicals Co., Ltd. Resin compositions having hair-conditioning property. 4,767,616, Cl. 424-70.000.

Kuboyama, Makoto: *See—*
Ishihara, Michio; Oishi, Hiroshi; and Kuboyama, Makoto, 4,767,004, Cl. 206-334.000.

Kubozuka, Takao: *See—*
Hirano, Yoshinori; and Kubozuka, Takao, 4,766,852, Cl 123-41.210.

Kudashov, Nikolai V.: *See—*
Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and 1, 4,766,904, Cl. 128-652.000

Kudo, Kazunori: *See—*
Sakai, Shigeru; and Kudo, Kazunori, 4,768,033, Cl. 340-825.440

Kudo, Yoshinobu: *See—*
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 4,768,047, Cl 354-195.100

Kuerzinger, Karl; and Wachendoerfer, Peter, to Degussa Aktiengesellshaft. Apparatus for the monitoring and regulation of material concentrations in chemical processes (I). 4,767,601, Cl. 422-68.000

Kuhn, Franz J.: *See—*
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,767,759, Cl. 514-235.500

Kühn, Michael H.; and Kunz, Dietmar W., to U.S. Philips Corporation Nuclear magnetic resonance examination method. 4,767,990, Cl. 324-309.000

Kuhne, Horst: *See—*
Kramberg, Gerhard; and Kuhne, Horst, 4,766,700, Cl. 51-165.740

Kuhne, Manfred: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R

Kuibyshevsky Politeknichesky Institute: *See—*
Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and 1, 4,766,904, Cl. 128-652.000

Kukes, Simon G.; and Brandes, Karlheinz K., to Phillips Petroleum Company. Treated alumina material for fixed hydrofining beds 4,767,523, Cl. 208-217.000

Kulite Semiconductor Products, Inc.: *See—*
Kurtz, Anthony D., 4,766,763, Cl. 73-49.200

Kumada, Toyohiko; and Horiuchi, Tatsuo, to Ushio Denki Kabushiki Kaisha. Flash fixing apparatus. 4,768,057, Cl. 355-3.0FU.

Kumagai, Kiyoshi; and Okuyama, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Assembly apparatus for motorcar vehicle body 4,767,046, Cl. 228-4.100

Kumata, Kazuhiko: *See—*
Kurosawa, Soichi; and Kumata, Kazuhiko, 4,767,259, Cl 415-17.000

Kume, Minoru: *See—*
Nakatsuka, Yoshio; Kume, Minoru; and Kishimoto, Daisuke, 4,767,516, Cl. 204-192.140.

Kunii, Shuji: *See—*
Kinoshita, Toshiharu; Kunii, Shuji; and Sano, Yoshiki, 4,768,223, Cl. 379-143.000

Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, to Canon Kabushiki Kaisha. Sheet material receiving device. 4,768,063, Cl. 355-29.000

Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, to Canon Kabushiki Kaisha. Image processing apparatus. 4,768,100, Cl. 358-285.000

Kunz, Daniel. Boat, especially a catamaran, with large deck space and collapsible frame. 4,766,830, Cl. 114-61.000

Kunz, Dietmar W.: *See—*
Kuhn, Michael H.; and Kunz, Dietmar W., 4,767,990, Cl. 324-309.000

Kunze, Dieter: *See—*
Giebel, Wolfgang; and Kunze, Dieter, 4,767,346, Cl. 439-95.000

Kuragaki, Naoyoshi: *See—*
Nakahama, Ryoji; and Kuragaki, Naoyoshi, 4,767,365, Cl 440-75.000

Kurahashi, Kazuo: *See—*
Iijima, Kenzaburou; Kurahashi, Kazuo; and Hayashi, Yoshinori, 4,768,119, Cl. 360-103.000

Kurata, Masaru: *See—*
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao, Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl. 264-500.000

Kuriyama, Toshihiro, to Alps Electric Co., Ltd. Floating-type magnetic head. 4,768,118, Cl. 360-121.000

Kuroda, Michio: *See—*
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki, Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230

Kuroki, Yuzuru: *See—*
Ichinose, Makoto; Satoh, Isao; Sugimura, Tatuo; and Kuroki, Yuzuru, 4,768,181, Cl. 369-54.000

Kurosawa, Soichi; and Kumata, Kazuhiko, to Hitachi, Ltd. Cooling air flow controlling apparatus for gas turbine. 4,767,259, Cl. 415-17.000

Kurosawa, Tomoe: *See—*
Sato, Tadashi; Kurosawa, Tomoe; Fujiwara, Shigetaka; and Higaki, Masaru, 4,767,931, Cl. 250-423.00R

Kurtz, Anthony D., to Kulite Semiconductor Products, Inc. Gas leak detection apparatus and methods. 4,766,763, Cl. 73-49.200

Kushida, Noritaka: *See—*
Asakura, Masahiko; Kawanabe, Tomohiko; and Kushida, Noritaka, 4,767,520, Cl. 204-406.000

Kushima, Hidekiyo; and Tanaka, Tsutomu, to Kabushiki Kaisha Toshiba. Reading and writing apparatus for portable recording medium 4,767,918, Cl. 235-441.000

VOL 1093 ISS 5 AG 30 1988 UMI

Kushino, Mitsuo: *See*—
Fujikawa, Iwao; Kushino, Mitsuo; and Yamamoto, Yasuhiro, 4,767,807, Cl. 524-36.000

Kuwayama, Yukio, to NDC Co., Ltd. Multi-layer cylindrical bearing. 4,767,677, Cl. 428-551.000

Kuzushita, Hirokazu: *See*—
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000

Kwiatkowski, George T.: *See*—
Clendinning, Robert A.; and Kwiatkowski, George T., 4,767,838, Cl. 528-125.000.

Kydonieus, Agis; Shah, Kishore R.; and Berner, Bret, to Hercon Laboratories Corporation. Article useful for administration of pharmacologically-active substances transdermally, orally, or by means of implant. 4,767,808, Cl. 524-98.000

Kyocera Corporation: *See*—
Fujinaka, Hiroshi; and Terasawa, Masami, 4,767,672, Cl 428-446.000.

Kysela, Ernst: *See*—
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000

L. Perrigo Company: *See*—
Smith, Eugene W., 4,767,032, Cl. 222-319.000.

La Telemecanique Electrique: *See*—
Beurdeley, Dominique; and Sauthier, Lucien, 4,767,900, Cl. 200-308.000

Laapotti, Jorma, to Valmet Oy. Method for equalizing compression pressure in a press nip of a paper machine. 4,767,501, Cl. 162-205.000.

LaBonte, Robert J., to Lydall, Inc. Battery separator. 4,767,687, Cl. 429-206.000.

Labrum, Joseph H.: *See*—
Solie, Leland P.; and Labrum, Joseph H., 4,767,198, Cl. 350-358.000

Lacroix, Jean-Claude; Franco, Pierre; Le Gall, Stephane; Bourret, Gerard; and Pochet, Jacques, to Alcatel. Signalling method and device for bidirectional digital transmission link. 4,768,202, Cl. 375-3.100

Ladner, Wolfgang: *See*—
Marcinowski, Stefan; Sanner, Axel; Tschang, Chung-Ji; Ladner, Wolfgang; and Greif, Norbert, 4,767,707, Cl. 435-182.000.

Lafler, Robert E.: *See*—
Brown, Richard C.; Lafler, Robert E.; Murphy, Joseph M.; and Westvaco Corporation, 4,766,841, Cl. 118-75.000

Lahoda, Edward J.: *See*—
Peterson, Steven H.; and Lahoda, Edward J., 4,767,513, Cl 204-157.210

Lai, Ban. Pneumatic tool with a replaceable tool bit turning screws and nuts. 4,766,784, Cl. 81-57.390

Laine, Gabriel; and Zawadzki, Henri, to Automobiles Peugeot; and Automobiles Citroen. Balancing device for a reciprocating piston engine. 4,766,857, Cl. 123-192.00B

Laird, Ronald H.: *See*—
Springer, Thomas W.; Slavinski, Raymond L.; and Laird, Ronald H., 4,767,131, Cl. 280-289.0WC

Laitram Corporation, The: *See*—
Weber, Peter G.; Tan, Michael K.; and Dzuong, Charles, 4,767,490, Cl. 156-499.000

Lamartino, Salvatore P.; Stansbeary, Jack L.; and Saville, Charles R., to Viskase Corporation. Size control system for stuffing machine. 4,766,645, Cl. 17-49.000

Lamiaux, Sylves, to Societe d'Applications Generales D'Electricite. Electric power supply device for microprocessors. 4,768,147, Cl. 364-200.000

Lamon, Kim D.: *See*—
Hagen, Nicholas S.; and Lamon, Kim D., 4,767,612, Cl. 424-45.000.

Lampman, DeWitt W.; Claassen, George R.; and Fecik, Michael T., to PPG Industries, Inc. Horizontal press bending using a splitting vacuum/pressure pickup. 4,767,437, Cl. 65-104.000.

Landa, Benzion; and Krumberg, Yakov, to Savin Corporation. Push-pull liquid development method and apparatus. 4,768,060, Cl. 355-10.000

Landis, Kenneth K.: *See*—
Auxier, Thomas A.; Hall, Kenneth B.; and Landis, Kenneth K., 4,767,268, Cl. 416-97.00R

Landry, Lela C., to Brumline USA, Inc. Bed pad support for an invalid. 4,766,627, Cl. 5-446.000

Lane, Abbott A., to Firequip Helmets, Inc. Fire fighter helmet and face shield. 4,766,609, Cl. 2-5.000

Lane, John D.; and Scheib, Thomas J., to Babcock & Wilcox Company, The. Apparatus and method using adaptive gain scheduling algorithm. 4,768,143, Cl. 364-157.000

Lang, Richard A.: *See*—
Dunlap, Robert T.; and Lang, Richard A., 4,768,110, Cl. 360-33.100

Lang, William P., to Brunswick Corporation. Water ram scoop for cooling water intake. 4,767,366, Cl. 440-76.000

Lange, Ludwig: *See*—
Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; Ruppert, Kurt A.; and Splett, Erich, 4,767,453, Cl. 75-66.000

Lange, Peter M.; and Rauenbusch, Erich, to Bayer Aktiengesellschaft. Process for the purification of acarbose with polymers. 4,767,850, Cl. 536-127.000

Langer, Robert S.: *See*—
Kost, Joseph; Levy, Drora; and Langer, Robert S., 4,767,402, Cl. 604-22.000

Langlois, Richard G.: *See*—
Bigbee, William L.; Fong, Stella S. N.; Jensen, Ronald H.; Vanderlaan, Martin; and Langlois, Richard G., 4,767,710, Cl. 435-240.270.

Langowski, Laurence A. Universal mute for vertical pianos. 4,766,796, Cl. 84-220.000

LaRosa, Joseph P.; and Lombardi, Michael H., to Chesebrough-Pond's Inc. Spray head comprising cap member with rotatable/depressible valve held by frangible locking collar. 4,767,058, Cl. 239-309.000.

La Rose, Keith M. Process for elongating vehicle doors. 4,766,660, Cl. 29-401.100

Larson, James A., to Pillsbury Company, The. Particulate food depositor. 4,767,030, Cl. 222-238.000

Larson, Wayne F.: *See*—
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Seansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000.

Laser Magnetic Storage International Company: *See*—
Janssen, Piet J. M.; and Jansen, Ger L. M., 4,768,180, Cl. 369-44.000

Lau, Boon W. Conversion of motor vehicle wheels. 4,767,081, Cl. 242-95.000

Lau, John R.: *See*—
Geho, W. Blair; Jacob, Joseph; and Lau, John R., 4,767,615, Cl. 424-57.000

Lavoie, Jean-Pierre, to Aquiculture Climax Concept Inc. System and method for the culture of mollusks. 4,766,846, Cl. 119-4.000

Lazareth, Michel: *See*—
Mertz, Jean-Luc; Lazareth, Michel; and Guerin, Hubert, 4,768,007, Cl. 335-202.000

Lear Siegler, Inc.: *See*—
Sailer, Thomas, 4,767,281, Cl. 417-83.000

Leas, Floyd S., Jr., to Algonquin Co., Inc. Shaft coupling. 4,767,230, Cl. 403-16.000

Lee, Biing-Lin, to B. F. Goodrich Company, The. Method of determining the internal porosity of powders. 4,766,761, Cl. 73-38.000.

Lee, Biing-Lin, to B. F. Goodrich Company, The. Mechanically compatible, polyphase blend of poly(vinyl chloride), chlorinated polyolefin, polyolefin, and graft copolymer of polyolefin, and rigid fiber-reinforced composite thereof. 4,767,817, Cl. 524-494.000.

Lee Company, The: *See*—
Lee, Leighton, III; and Anderson, Stephen E., 4,766,924, Cl. 137-536.000

Lee, David L.; and Michaely, William J., to Stauffer Chemical Company. Certain 2-(substituted benzoyl)-5-(substituted or unsubstituted phenyl)-1,3-cyclohexanediones. 4,767,447, Cl. 71-103.000.

Lee, Leighton, III; and Anderson, Stephen E., to Lee Company, The. Pressure relief valve. 4,766,924, Cl. 137-536.000

Lee, Sung K.: *See*—
De Cicco, Steven G.; Lee, Sung K.; Novak, Rudy G.; Wass, William E.; and Mak, Kai K., 4,766,822, Cl. 110-212.000.

Lee, William W. Y.: *See*—
Liao, Kuan Y.; and Lee, William W. Y., 4,767,721, Cl. 437-34.000.

Leemker, Koos: *See*—
Van den Brink, Gilbert J. J.; and Leemker, Koos, 4,767,217, Cl. 366-168.000

Lefevre, Remi; and Prampolini, Francis, to Regie Nationale Des Usines Renault. Process and system of electronic injection with regulation by probe λ for internal combustion engine. 4,766,871, Cl. 123-489.000.

Le Fol, Marcel, to Automobiles Peugeot; and Automobiles Citroen Hydroelastic support, in particular for a vehicle engine. 4,767,106, Cl. 267-140.100

Le Fol, Marcel, to Automobiles Peugeot; and Automobiles Citroen. Central suspension hydroelastic mount, in particular for the suspension of a motor-vehicle motor-drive unit. 4,767,107, Cl. 267-140.100.

Le Gall, Stephane: *See*—
Lacroix, Jean-Claude; Franco, Pierre; Le Gall, Stephane; Bourret, Gerard; and Pochet, Jacques, 4,768,202, Cl. 375-3.100.

Leger, Didier S.: *See*—
Jacquet, Bernard; Leveque, Jean L.; Hocquaux, Michel; and Leger, Didier S., 4,767,750, Cl. 514-159.000.

Leggett & Platt, Incorporated: *See*—
Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., 4,766,624, Cl. 5-248.000
Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., 4,766,625, Cl. 5-248.000

Legrand, Michel; Caillot, Luc; Donnola, Jean-Michel; and Siretchi, Roman, to Societe Anonyme: M.M.S. s.a. a french corporation. Process and device for signaling malfunctions of a respirator 4,766,894, Cl. 128-204.210.

Lehmann, Jean, to Cogema, Compagnie Generale des Matieres Nucleaires. Tight coupling device for two rigid, fixed pipes. 4,767,136, Cl. 285-32.000

Lehr, Erich: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,767,759, Cl. 514-235.500

Leinvuo, Ahti: *See*—
Kaartinen, Niilo; Johansson, Henrik; Leinvuo, Ahti; and Collander, Paul, 4,766,922, Cl. 137-13.000

Leistner, William E.; Nakahara, Yutaka; Hirai, Bunji; and Kanai, Mitsuharu, to Adeka Argus Chemical Co., Ltd. Vinyl benzyl 2,2,6,6-tetramethyl piperidines. 4,767,834, Cl. 526-265.000

Lemieux, Raymond U.; Ratcliffe, Robert M.; and Baker, Donald A., to Chembiomed, Ltd. Synthesis of tumor antigenic determinant. 4,767,845, Cl. 536-18.200

Lenz, Erwin. Advanced steering and propulsion system for ships. 4,767,364, Cl. 440-38.000

Lenz, Richard W.: *See*—
Ax, Roy L.; and Lenz, Richard W., 4,767,703, Cl. 435-29.000

Leopoldi, Norbert; and Heinrich, William P., to Cloverline, Inc., The. Flashlight. 4,768,138, Cl. 362-189.000

Les Produits Duvernay, Ltee: *See*—
Croteau, Rene , 4,766,661, Cl. 29-417.000

Leshchiner, Adolf: *See*—
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767,463, Cl. 106-162.000

Lessard, Philip A.: *See*—
Bartlett, Allen J.; Andeen, Bruce R.; and Lessard, Philip A., 4,766,741, Cl. 62-514.00R

L'Etat Francais represente par le Delegue Ministeriel pour l'Armement: *See*—
Sauvestre, Gerard D., 4,766,812, Cl. 102-290.000

L'Etat Francais represente par le Ministre des P.TT.: *See*—
Carenco, Alain; and Riviere, Luc, 4,767,174, Cl. 350-96.200

Letsch, Karl H.: *See*—
Bocchicchio, Keith A.; Hall, David L.; Jackson, Mark F.; Keller, Joseph R.; and Letsch, Karl H., 4,767,298, Cl. 425-112.000

Leung, Pak S.: *See*—
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767,463, Cl. 106-162.000

Le Vantine, Allan D. Self-contained device for removing static charge, dust and lint from surfaces. 4,768,126, Cl. 361-213.000

Leveque, Jean L.: *See*—
Jacquet, Bernard; Leveque, Jean L.; Hocquaux, Michel; and Leger, Didier S., 4,767,750, Cl. 514-159.000

Lever Brothers Company: *See*—
Fry, Alan J., 4,767,562, Cl. 252-174.120.

Levesque, Guy; and Seris, Jean-Louis, to Societe Nationale Elf Aquitaine. Fixation of enzymes with bis-dithioesters. 4,767,706, Cl. 435-176.000

Levy, Drora: *See*—
Kost, Joseph; Levy, Drora; and Langer, Robert S., 4,767,402, Cl. 604-22.000

Lewicki, Jerry W., to United States of America, Army. Separation of RDX and HMX. 4,767,854, Cl. 540-475.000

Lewinter, Barbara: *See*—
Lewinter, Orest; and Lewinter, Barbara, 4,767,027, Cl. 222-158.000

Lewinter, Orest; and Lewinter, Barbara. Multi-function spout. 4,767,027, Cl. 222-158.000

Lewis, Albert; and Kottnauer, Cenek A., to Glass Incorporated International. Production of micro glass fibers. 4,767,431, Cl. 65-6.000

Ley, Gregor; Melan, Michael; and Wistuba, Eckehardt, to BASF Aktiengesellschaft. Plaster, renders, masonry paints, interior paints and glazes containing an aqueous distearyldiketene emulsion as a water repellent. 4,767,457, Cl. 106-2.000.

Leybold-Heraeus GmbH: *See*—
Kiese, Gerhard, 4,767,123, Cl. 277-139.000
Kieser, Jorg; Sellschopp, Michael; and Geisler, Michael, 4,767,641, Cl. 427-38.000
Stenzel, Otto, 4,767,452, Cl. 75-63.000.

Li, Shuo-Yen R.: *See*—
Gopinath, Bhaskarpillai; and Li, Shuo-Yen R., 4,768,189, Cl. 370-85.000

Liang, Rong-Chang; Narang, Subhash; and Reiser, Arnost, to Polytechnic Institute of New York. Radiation-sensitive polymers. 4,767,826, Cl. 525-421.000

Liao, Kuan Y.; and Lee, William W. Y., to Hughes Aircraft Company. Double layer photoresist process for well self-align and ion implantation masking. 4,767,721, Cl. 437-34.000

Libelo, E. Laurence: *See*—
Palaith, David E.; and Libelo, E. Laurence, 4,767,902, Cl. 219-10.55M

Licentia Patent-Verwaltungs-GmbH: *See*—
Bossert, Frank; and Hacker, Manfred, 4,767,372, Cl. 445-50.000

Lickus, Leonard J.: *See*—
Urness, Kevin; Lickus, Leonard J.; Heisner, Douglas; Ingwersen, Peter; and Stenstrom, Eric, 4,766,668, Cl. 29-749.000

Liebe, Reinhard: *See*—
Hackman, Klaus-Georg; Liebe, Reinhard; Freesemann, Enno; Thiele, Willi; and Wochnowski, Waldemar, 4,766,912, Cl. 131-296.000

Liesch, Jean-Francois: *See*—
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000

Lietar, Christian: *See*—
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000.

Lillesand, Brent W.: *See*—
Gaffney, Thomas E.; Weir, Alan J.; Lillesand, Brent W.; and Collins, Jeffery E., 4,766,642, Cl. 16-121.000.

Lilley, Roy J., Jr.: *See*—
Crescentini, Lamberto, DeCaprio, Joseph D.; Fisher, William B.; and Lilley, Roy J., Jr., 4,767,503, Cl. 203-48.000

Lilleystone, Richard J.: *See*—
Bradley, Laurie; Lilleystone, Richard J.; and Cumner, Clive S., 4,766,740, Cl. 62-384.000

Lim, Ching B.: *See*—
Wadham, Paul; Cox, Walter H.; and Lim, Ching B., 4,767,406, Cl 604-155.000

Lin, Chiu-Hong: *See*—
Johnson, Roy A.; and Lin, Chiu-Hong, 4,767,865, Cl. 546-342.000

Lin, Jui C. Tubular lock with an adjustable device for two-size setting 4,767,140, Cl. 292-337.000

Lindae, Gerhard: *See*—
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000

Lindbauer, Ralf; and Glasner, Alfred, to Waagner-Biro Aktiengesellschaft. Method for separation of acid pollution gas. 4,767,605, Cl 423-239.000

Linder, Charles; Nemas, Mara; Perry, Mordechai; and Kotraro, Reuven, to Aligena AG. Composite membranes useful for the separation of organic compounds of low molecular weight from aqueous inorganic salts containing solutions. 4,767,645, Cl. 427-386.000.

Linder, William J., to Honeywell Inc. Analog-to-digital converter 4,768,019, Cl. 340-347.0NT

Lindner, Christian; Peters, Horst; and Urbanneck, Bernd, to Bayer Aktiengesellschaft. Polymer powder compositions containing tetrafluoroethylene polymers. 4,767,821, Cl. 525-72.000

Lindner, Frederick H., to PC Proto, Inc. Computer aided printer-etcher. 4,767,489, Cl. 156-345.000.

Lindquist, Nils T.; Hedin, Ann-Christine; Francke, Kurt O.; and Vukotic, Milos, to Aktiebolaget Electrolux. Blocking device for a vacuum cleaner. 4,766,639, Cl. 15-339.000

Lindstrand, Douglas: *See*—
Biegon, Robert J.; Men, Grigory; Turner, Lester T.; Lindstrand, Douglas; and Cox, Albert R., 4,767,891, Cl. 174-34.000

Lingwood, Clifford A., to HSC Research Development Corporation Antidigoxin antibodies. 4,767,720, Cl. 436-536.000

Linska, Rudolf, to M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft. Apparatus for and method of protecting the circumferential surface of a printing cylinder and protective cylinder. 4,766,811, Cl. 101-415.100.

Linton, Nancy J.: *See*—
Fadner, Thomas A.; and Linton, Nancy J., 4,767,119, Cl. 273-148.00A.

Linzer, Daniel I. H.: *See*—
Nathans, Daniel; and Linzer, Daniel I. H., 4,767,709, Cl. 435-240.200

Lipp, Ralph O.: *See*—
Arrang, Jean-Michel; Garbarg, Monique; Schunack, Walter; Schwartz, Jean-Charles; and Lipp, Ralph O., 4,767,778, Cl. 514-397.000

Lipsztajn, Marek, to Tenneco Canada Inc. Electrolytic protection of chlorine dioxide. 4,767,510, Cl. 204-101.000

Liptak, Bela G.: *See*—
Venczel, John; and Liptak, Bela G., 4,766,847, Cl. 119-29.000

Litchford, George B.; and Hulland, Burton L., to Litchstreet Co. Collision avoidance system. 4,768,036, Cl. 342-455.000

Litchstreet Co.: *See*—
Litchford, George B.; and Hulland, Burton L., 4,768,036, Cl 342-455.000

Litef GmbH: *See*—
Hassenpflug, Wolfgang; and Schwable, Rainer, 4,766,767, Cl. 73-181.000

Littelfuse, Inc.: *See*—
Comerci, Joseph D., 4,767,339, Cl. 439-716.000

Little, John D.; Little, Lorianne C.; and Wood, John, to Little, John Douglas; and Little, Lorianne Clark. Fabric roses and method for the production thereof. 4,767,650, Cl. 428-26.000

Little, John Douglas: *See*—
Little, John D.; Little, Lorianne C.; and Wood, John, 4,767,650, Cl 428-26.000

Little, Lorianne C.: *See*—
Little, John D.; Little, Lorianne C.; and Wood, John, 4,767,650, Cl. 428-26.000

Little, Lorianne Clark: *See*—
Little, John D.; Little, Lorianne C.; and Wood, John, 4,767,650, Cl. 428-26.000

Liu, Bao-Shen. Angle measuring instrument. 4,766,675, Cl. 33-529.000

Liu, Christopher S.: *See*—
Hart, William P.; Kapuscinski, Maria M.; and Liu, Christopher S., 4,767,553, Cl. 252-47.500

Lockwood, Hanford N., Jr., to NEA Technologies, Inc. Pulse combustion energy system. 4,767,313, Cl. 431-1.000

Lodoen, Gary A., to Du Pont de Nemours, E. I., and Company. Polyester-based spandex filament. 4,767,828, Cl. 525-440.000

Loeffelholz, Frido: *See*—
Worschech, Kurt, Wedl, Peter; Fleischer, Erwin; and Loeffelholz, Frido, 4,767,575, Cl. 260-414.000

Loewe, Richard: *See*—
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000

VOL 1093 ISS 5 AG 30 1988 UMI

Logullo, Francis M., Sr.; Wu, Yun-Tai; and Zahr, George E., to Du Pont de Nemours, E. I., and Company. Filament-wound pressure vessel. 4,767,017, Cl. 220-3.000.

Lohikoski, Timo, to Vertic Oy. Combination of casting nozzles for casting bar and tubular products vertically upwards. 4,766,946, Cl 164-421.000

Loirat, Jean-Yves: *See—*
Maloeuvre, Robert; and Loirat, Jean-Yves, 4,766,989, Cl. 194-257.000

Lokken, Oddvin. Sterile cassette. 4,767,405, Cl. 604-51.000.

Lombardi, Michael H.: *See—*
LaRosa, Joseph P.; and Lombardi, Michael H., 4,767,058, Cl 239-309.000

Lonardi, Emile: *See—*
Solvi, Marc; Bernard, Gilbert; and Lonardi, Emile, 4,767,258, Cl. 414-786.000

Long, David M., to University of California, The Regents of the. Method for detecting abnormal cell masses in animals. 4,767,610, Cl. 424-5.000

Long, Gene A.: *See—*
Dennis, Melburn W.; and Long, Gene A., 4,767,338, Cl. 439-55.000

Long, Jon; and LSI Logic Corporation. Method and means for wave soldering of leads of an integrated circuit package. 4,766,842, Cl 118-409.000

Long Mile Rubber Company: *See—*
Goldstein, Leon C., 4,767,480, Cl. 156-96.000.

Longchamp, Jean-Francois: *See—*
Kretschmer, Heinz: Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000.

L'Oreal: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,767,618, Cl. 424-74.000
Jacquet, Bernard; Leveque, Jean L.; Hocquaux, Michel; and Leger, Didier S., 4,767,750, Cl. 514-159.000.

Lorenz, Harold K., to Goodyear Tire & Rubber Company, The. Rubber sheeting with integral adhesive edge. 4,767,658, Cl. 428-192.000.

Losee, Paul D.: *See—*
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, 4,768,124, Cl. 360-133.000

Losel, Georg: *See—*
Emsperger, Werner; Bruckner, Hermann; Losel, Georg; and Pieper, Rudolf, 4,766,851, Cl. 122-4.00D

Loucks, Larry K.: *See—*
Chang, Chij-Mehn; Freund, Thomas J.; Loucks, Larry K.; and Wierwille, Robert L., 4,768,150, Cl. 364-300.000

Louwers, Theodorus P. S.: *See—*
Koenders, Antonius B. T. M.; Louwers, Theodorus P. S.; and Alston, Julia M., 4,768,061, Cl. 355-14.00D.

Lovelace Medical Foundation: *See—*
Yeh, Hsu-Chi; Chen, Bean T.; Cheng, Yung-Sung; and Newton, George J., 4,767,524, Cl. 209-143.000

Lowery, Charles F.: *See—*
Johnston, Jerry H.; and Lowery, Charles F., 4,766,745, Cl. 68-200.000

LSI Logic Corporation: *See—*
Long, Jon; and LSI Logic Corporation, 4,766,842, Cl. 118-409.000

Lubrizol Corporation, The: *See—*
Sowerby, Roger L., 4,767,552, Cl. 252-46.300.

Lucas Industries public limited company: *See—*
Harrison, Anthony W., 4,766,981, Cl. 188-170.000.

Lucas, Mark H.; Grogan, Richard J.; Wagner, Robert L.; and Wilhelm, Richard T., to Helm Instrument Co., Inc. Method of measuring strain forces in a press. 4,766,758, Cl. 73-1.00B

Luchinger, Paul, to Mettler Instrumente AG. Apparatus for depositing and lifting off of a reference weight in an electronic scale. 4,766,965, Cl. 177-50.000

Luck, Dieter G., to General Mining Union Corporation Limited. Tunnel cleaning tram. 4,767,253, Cl. 414-339.000.

Luetkens, Melvin L., Jr.: *See—*
Melquist, John L.; and Luetkens, Melvin L., Jr., 4,767,738, Cl 502-202.000

Luminescent Electronics, Inc.: *See—*
Simopoulos, Nicholas T.; Simopoulos, George N.; and Simopoulos, Gregory N., 4,767,966, Cl. 313-509.000.

Lummus Crest, Inc.: *See—*
Feldman, Robert J.; Chen, James M.; Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., 4,767,521, Cl. 208-85.000

Lund, Mark D., to Hewlett-Packard Company. Printed circuit card reset switch. 4,767,341, Cl. 439-60.000

Lungu, Mihail; and Rogge, Bernd, to Dragerwerk Aktiengesellschaft Method for conditioning a gas sensor. 4,767,504, Cl. 204-1.00T

Lutocka, John A., Jr.: *See—*
Jankowiak, Roman; and Lutocka, John A., Jr., 4,768,128, Cl. 361-251.000

Lycab AB: *See—*
Blomqvist, Mikael, 4,767,086, Cl. 248-56.000.

Lydall, Inc.: *See—*
LaBonte, Robert J., 4,767,687, Cl. 429-206.000

Lynn, Donald. Bait well replenisher. 4,766,691, Cl. 43-55.000

Lyon, Michael: *See—*
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, 4,768,124, Cl. 360-133.000

Lyons, Terry B. Rotating multicolored air driven reflector. 4,767,185, Cl. 350-99.000

M/A Com, Inc.: *See—*
Kandpal, Pramode; Collinet, Jean C.; Ziegner, Bernhard A.; and Bowen, James A., 4,768,079, Cl. 357-74.000

M.A.N. Roland Druckmaschinen: *See—*
Kobler, Ingo, 4,767,112, Cl. 270-54.000.

M.A.N.-ROLAND Druckmaschinen Aktiengesellschaft: *See—*
Linska, Rudolf, 4,766,811, Cl. 101-415.100.
Schubert, Johannes M., 4,767,694, Cl. 430-300.000

Maamiehen Sahko Oy: *See—*
Tenhunen, Erkki, 4,766,824, Cl. 110-256.000

Machado, Vincent S.: *See—*
Ayotte, Renald R.; Harney, Patricia M.; and Machado, Vincent S., 4,767,888, Cl. 800-1.000.

Machlett Laboratories, Inc., The: *See—*
Koller, Thomas J.; and Weaver, John D., Sr., 4,767,961, Cl 313-12.000

Macie, Walter R., to Reliable Automatic Sprinkler Co., Inc., The. Decorative quick response sprinkler. 4,766,961, Cl. 169-38.000.

Maciel, Joao P.; and Baungratz, Jose H., to Grendene S.A. Shoe with transparent sole and scuff pads. 4,766,680, Cl. 36-87.000.

Maekawa, Yukio: *See—*
Hamada, Masataka; Karasaki, Toshihiko; Matsui, Toru; and Maekawa, Yukio, 4,768,052, Cl. 354-402.000.

Magnan, David L. High fidelity audio cable. 4,767,890, Cl. 174-28.000

Maio, Anthony M. Amusement ride and game. 4,767,117, Cl. 272-28.00R

Maiss, Armin: *See—*
Ahlert, Dieter; Boert, Konrad; and Maiss, Armin, 4,766,766, Cl. 73-169.000

Mak, Kai K.: *See—*
De Cicco, Steven G.; Lee, Sung K.; Novak, Rudy G.; Wass, William E.; and Mak, Kai K., 4,766,822, Cl. 110-212.000

Makihara, Hiroshi: *See—*
Nakajima, Yoshimitsu; Niwa, Kensuke; Morita, Kazuhiro; and Makihara, Hiroshi, 4,767,791, Cl. 518-712.000

Makimoto, Toshiki: *See—*
Kobayashi, Naoki; Makimoto, Toshiki; and Horikoshi, Yoshiji, 4,767,494, Cl. 156-606.000

Makino, Syozaburo. Yarn break detector for spinning and weaving machines. 4,768,026, Cl. 340-677.000.

Makoui, Kambiz B.; and Chatterjee, Pronoy K., to Personal Products Company. Cross-linked microfibrillated cellulose prepared from pore generating particles. 4,767,848, Cl. 536-56.000.

Malcolm, Donald A., to W. R. Grace & Co. Multiple circuit board carrier/shipper. 4,767,002, Cl. 206-328.000

Malito, John T.; Wintermute, Richard D.; Ross, Scott F.; and Ferrara, John M., to Nalco Chemical Company. Polycarboxylic acid ester drawing and ironing lubricant emulsions and concentrates. 4,767,554, Cl. 252-49.500

Maljukyavichus, Antanas-Sharunas A.: *See—*
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl. 227-109.000

Malloy, J. Michael, III. Removable lace cover strap. 4,766,682, Cl. 36-132.000

Maloeuvre, Robert; and Loirat, Jean-Yves. Removable attachment device for shopping carts and the like. 4,766,989, Cl. 194-257.000.

Malpass, Robert C.: *See—*
Conklin, Delano M.; Hansen, John H.; Burske, Norbert W.; and Malpass, Robert C., 4,767,669, Cl. 428-394.000.

Malzacher, Fred H. Cable spooling system. 4,767,073, Cl. 242-54.00R.

Man Technologie GmbH: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000.

Manabe, Takashi: *See—*
Ueda, Ikuo; Shiokawa, Youichi; Manabe, Takashi; and Katsura, Yousuke, 4,767,780, Cl. 514-406.000

Manitowoc Company, Inc., The: *See—*
Kohl, Vance L.; and Jaschinski, John J., 4,767,286, Cl. 417-423.00R.

Mannherz, Elmer D.; and Schmoock, Roy F., to Fischer & Porter Company. Low duty cycle electromagnetic flowmeter. 4,766,770, Cl. 73-861.170.

Mansour, Tony L.: *See—*
Braden, Donald E.; Saroian, Nick T.; and Mansour, Tony L., 4,767,904, Cl. 219-69.00V

Mansson, Martin: *See—*
Brannstrom, Roine; Karlsson, Lars-Erik; and Mansson, Martin, 4,767,315, Cl. 431-7.000

Maram, Jonathan M.; and Smith, Matthew A., to Rockwell International Corporation. Optical weld contour monitor for penetration control. 4,767,911, Cl. 219-130.010.

Marcinowski, Stefan; Sanner, Axel; Tschang, Chung-Ji; Ladner, Wolfgang; and Greif, Norbert, to BASF Aktiengesellschaft. Immobilization of enzymes with a water-soluble glycidyl ether. 4,767,707, Cl 435-182.000

Marcora, Luigi: *See—*
Biancalani, Fiorenzo; and Marcora, Luigi, 4,766,743, Cl. 68-20.000.

Marelli Autronica S.p.A.: *See—*
Cotignoli, Giuseppe, 4,767,163, Cl. 303-61.000

Marhold, Albrecht: *See—*
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000

Markley, Theodore J.: *See—*
Cain, Gary L.; Rando, Joseph F.; Teach, Ted L.; Meyers, Lawrence J.; and Markley, Theodore J., 4,767,208, Cl. 356-138.000.

Marks, David T., to Institute of Gas Technology. Reciprocating piston mechanism. 4,767,287, Cl. 417-461.000

Markuson, Neil D.; and Wiens, Tim A. Computerized controller with service display panel for an oil well pumping motor. 4,767,280, Cl. 417-44.000

Marlin, Lawrence: *See—*
Rosen, Meyer R.; Dornstauder, Gregory J.; and Marlin, Lawrence, 4,767,449, Cl. 75-3.000

Marquardt, Rainer, to Siemens Aktiengesellschaft. Method and device for driving semiconductor power components. 4,767,948, Cl. 307-270.000

Marsh, Walter G.: *See—*
Break, Douglas G.; Marsh, Walter G.; and Rhoades, James J., 4,766,757, Cl. 72-319.000.

Marshall, Christopher B., to U.S. Philips Corp. Signal transmission system and a transmitter and a receiver for use in the system 4,768,187, Cl. 370-69.100.

Marshall, Harry J., to Minnesota Mining and Manufacturing Company Glass microbubbles. 4,767,726, Cl. 501-33.000

Marshall, Robert M.: *See—*
Cordova, Colleen W.; and Marshall, Robert M., 4,767,646, Cl. 427-387.000

Marsico, Joseph W.: *See—*
Tomcufcik, Andrew S.; Emma, John E.; Eudy, Nancy H.; Marsico, Joseph W.; and Newman, Howard, 4,767,749, Cl. 514-137.000.

Martell, Gregg. Safety electrical wall outlet. 4,767,359, Cl. 439-535.000.

Marten, Malcolm G.: *See—*
Parfree, Colin S.; Smith, Colin F. G.; Worthington, Peter; Marten, Malcolm G.; and Bliss, Norman S., 4,767,182, Cl. 350-96.230.

Martin, Arthur T. Crumb shovel. 4,767,141, Cl. 294-50.000

Martin, David A.: *See—*
Williams, Joel L.; Martin, David A.; and Montgomery, David B., 4,767,414, Cl. 604-230.000

Martin, Dean C.; Kleiss, Roderick E.; and Hardy, James A., to Whirlpool Corporation. Self-propelled upright vacuum cleaner having a remotely disposed transmission and a positive locking mechanism. 4,766,640, Cl. 15-340.000.

Martin, Dean W., to Caterpillar Inc. Press with self aligning tooling. 4,766,720, Cl. 59-7.000

Martin, Frank E., to Westinghouse Electric Corp. High strength, heavy walled cable construction. 4,767,183, Cl. 350-96.230

Martin, James P.: *See—*
Nichols, Virginia R.; Hubble, Fred F., III; and Martin, James P., 4,767,172, Cl. 350-96.180

Martorella, Romeo P.: *See—*
Boudreau, Jean A.; Berman, Howard L.; Chin, Jimmie; and Martorella, Romeo P., 4,767,085, Cl. 244-182.000

Maruko, Saburo, to Nippon Chemical Plant Consultant Co., Ltd. Far-infrared radiating system. 4,766,878, Cl. 126-116.00R.

Maruta, Masayuki: *See—*
Hashimoto, Ken; Maruta, Masayuki; Soyama, Hidehiko; and Ishii, Yukihiro, 4,767,688, Cl. 430-110.000

Maruyama, Kenji: *See—*
Tsunoda, Kikuo; and Maruyama, Kenji, 4,767,080, Cl. 242-84.20G.

Maruyama, Satoshi; Mukae, Kazuo; and Nagasawa, Ikuo, to Fuji Electric Co., Ltd.; and Fuji Electric Corporate Research and Development Ltd. Method of manufacturing voltage nonlinear resistance elements. 4,767,582, Cl. 264-61.000

Marx, Edward J., to Shell Oil Company. Phenolic curing agents for epoxy resins. 4,767,832, Cl. 525-523.000

Marx, Paul: *See—*
Bergthaller, Peter; Stolzenburg, Rudolf; and Marx, Paul, 4,767,698, Cl. 430-562.000

Marzich, John S.: *See—*
Pipkin, David J.; and Marzich, John S., 4,768,040, Cl. 346-14.00R

Maskalick, Nicholas J., to Westinghouse Electric Corp. Cermet electrode. 4,767,518, Cl. 204-242.000

Massachusetts Institute of Technology: *See—*
Kost, Joseph; Levy, Drora; and Langer, Robert S., 4,767,402, Cl. 604-22.000
Seyferth, Dietmar; Schwark, Joanne M.; and Yu, Yuan-Fu, 4,767,876, Cl. 556-410.000
Siler, Todd L., 4,767,584, Cl. 264-78.000

Massey-Ferguson Services N.V.: *See—*
Smith, Derek J., 4,766,926, Cl. 137-115.000

Massy, Donald, to Fabco Automotive Corporation. Hydrostatic transmission assembly and method of increasing the torque and speed range thereof. 4,766,779, Cl. 74-733.000

Master Chemical Corporation: *See—*
Florig, H. Keith; and Purta, David A., 4,767,982, Cl. 324-58.50A

Masuhara, Toshiaki: *See—*
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000

Masuzawa, Isao: *See—*
Miyayama, Toshio; Masuzawa, Isao; Yamamoto, Kanshi; Watanabe, Mitsuo; and Yamada, Hidemitsu, 4,766,834, Cl. 114-144.00E

Mathews, Robert J.: *See—*
Clupper, Charles B.; and Mathews, Robert J., 4,768,228, Cl 380-20.000

Matsubara, Toru. Thread measuring and feeding apparatus for a sewing machine. 4,766,827, Cl. 112-278.000

Matsuda, Kazuya: *See—*
Inaba, Hiroyoshi; and Matsuda, Kazuya, 4,767,200, Cl. 350-429.000

Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, to Minolta Camera Kabushiki Kaisha. Distance measuring apparatus. 4,768,053, Cl. 354-403.000

Matsuda, Takashi: *See—*
Mishio, Yasuhiko; Shimizu, Hidetoshi; Matsuda, Takashi; and Takeda, Masaru, 4,766,969, Cl. 180-75.200

Matsui, Minoru: *See—*
Soma, Takao; and Matsui, Minoru, 4,767,730, Cl. 501-103.000

Matsui, Sadayoshi: *See—*
Taneya, Mototaka, Matsui, Sadayoshi; Yano, Seiki; and Yamamoto, Saburo, 4,768,201, Cl. 372-50.000

Matsui, Toru: *See—*
Hamada, Masataka; Karasaki, Toshihiko; Matsui, Toru; and Maekawa, Yukio, 4,768,052, Cl. 354-402.000

Matsumoto, Hiroaki: *See—*
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,063, Cl. 355-29.000
Kunishima, Toshiaki; Ikeda, Takeshi; Kasuya, Michio; Matsumoto, Hiroaki; and Iwata, Masakatsu, 4,768,100, Cl. 358-285.000

Matsumoto, Masaaki: *See—*
Hijikata, Akemi; Matsumoto, Masaaki; Nakayama, Taesuke, Hamazaki, Yasuyuki; and Kataoka, Kenji, 4,767,680, Cl. 429-39.000

Matsumoto, Motoki: *See—*
Nakamura, Kazuharu; Matsumoto, Motoki; Niwa, Osamu; and Tsuboi, Yoshimasa, 4,767,316, Cl. 431-121.000

Matsumoto, Seiichiro; Hino, Mototsugu; Moriyoshi, Yusuke; Nagashima, Takashi; and Tsutsumi, Masayuki, to National Institute for Research in Inorganic Materials. Method for synthesizing diamond by using plasma. 4,767,608, Cl. 423-446.000

Matsumoto, Toshihiro; Umehara, Hajime; Nakajima, Junjiro; and Fujii, Norihisa, to Hitachi, Ltd. Method of producing composite nuclear fuel cladding. 4,766,658, Cl. 29-527.700

Matsunaga, Naotoshi: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi, Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000

Matsunaga, Yukihiro, to Nissan Motor Co., Ltd. Mount for automobile radiator. 4,766,968, Cl. 180-68.400

Matsunawa, Masahiko: *See—*
Hiratsuka, Seiichiro; and Matsunawa, Masahiko, 4,768,082, Cl. 358-13.000

Matsuno, Tadaaki: *See—*
Kitahashi, Tadahiro; Saito, Osami; Matsuno, Tadaaki; and Nakamura, Yoshihiro, 4,767,212, Cl. 356-379.000

Matsuo, Yasutoshi, to Victor Company of Japan, Ltd. Video signal recording and/or reproducing apparatus. 4,768,109, Cl. 360-33.100

Matsuoka, Ken; and Yamazaki, Masanobu, to Fuji Kiko Company, Limited. Grooved pulley and manufacturing method therefor 4,767,387, Cl. 474-168.000

Matsushita Electric Industrial Co., Ltd.: *See—*
Ebata, Yasuhiko, 4,766,738, Cl. 62-280.000
Ichinose, Makoto; Satoh, Isao; Sugimura, Tatuo; and Kuroki, Yuzuru, 4,768,181, Cl. 369-54.000
Yamamoto, Yoshiharu; Nakajima, Yasuo, and Ono, Shusuke, 4,767,199, Cl. 350-412.000

Matsuura, Kazuo: *See—*
Misaki, Hideo; Ishikawa, Hidehiko, and Matsuura, Kazuo, 4,767,712, Cl. 435-253.000
Yokoyama, Shigeki; Torii, Michiaki; Matsuura, Kazuo, and Sano, Akira, 4,767,819, Cl. 524-587.000

Matsuura, Yutaka: *See—*
Fujimura, Setsuo; Sagawa, Masato; and Matsuura, Yutaka, 4,767,474, Cl. 148-302.000

Mattel, Inc.: *See—*
Cook, John, Soulakis, George; and Hippely, Keith, 4,767,053, Cl 238-10.00R

Mattes, Paul B., to Varo, Inc. Replaceable cushion liner for military headgear. 4,766,610, Cl. 2-6.000

Matuyama, Harukazu: *See—*
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio, Kondo, Naohiko; and Matuyama, Harukazu, 4,767,394, Cl 493-409.000

Mauser-Werke GmbH: *See—*
Pies, Gunther, 4,767,021, Cl. 220-465.000

Mauthe, Peter: *See—*
Gebauer, Ludwig; and Mauthe, Peter, 4,767,025, Cl. 222-135.000

Mauz, Otto; Noetzel, Siegfried; and Sauber, Klaus, to Hoechst Aktiengesellschaft. Crosslinked polymers with carbonate ester groups, and a process for their preparation. 4,767,620, Cl. 424-78.000

Max-Planck-Gesellschaft Zur Foerderung Der Wissenschaften E.V *See—*
Claussen, Nils, and Petzow, Gunter, 4,767,727, Cl. 501-87.000

VOL 1093 ISS 5 AG 30 1988 UMI

Mayerhofer, Franz: *See—*
Keil, Rudolf; Mayerhofer, Franz; Althaus, Hans L.; and Klement, Ekkehard, 4,767,171, Cl. 350-96.180

Mayweather, William T., III, to RCA Licensing Corporation. Multibit digital threshold comparator. 4,767,949, Cl. 307-362.000

Mazda Motor Corporation: *See—*
Kobayakawa, Takaharu; Suehiro, Mikio; Saito, Yosuke; and Inoue, Hiroshi, 4,767,147, Cl. 296-1.00S
Sato, Yuzo; Saito, Hiroshi; and Sakamoto, Toshinori, 4,766,805, Cl 98-2.070.
Yamaguchi, Touhei; Moriyama, Kazuhiko; and Shira, Ethuo, 4,766,773, Cl. 74-467.000

McArthur, Hamish: *See—*
Baker, Bruce G.; Clark, Neville J.; McArthur, Hamish; and Summerville, Edward, 4,767,792, Cl. 518-721.000.

McBride, Donald G.: *See—*
Gazdik, Charles E.; McBride, Donald G.; Seraphim, Donald P.; and Toole, Patrick A., 4,766,670, Cl. 29-830.000

McDaniel, Michael A., to Precise Flight, Inc. Linear actuator motor. 4,767,955, Cl. 310-20.000

McDowell, David E., to Bissell Inc. Four-way vacuum cleaner. 4,766,638, Cl. 15-329.000

McEowen, James R., to American Telephone and Telegraph Company; and AT&T Information Systems Inc. Electrical/lightwave connection arrangement. 4,767,181, Cl. 350-96.210.

McEwan, Malcolm W., to Shell Oil Company. Column for removing liquid from a gas. 4,767,424, Cl. 55-184.000

McEwen, Terence D.; and Hansen, John D., to USG Interiors, Inc Dispersant coated mineral fiber in a drilling fluid. 4,767,549, Cl. 252-8.514.

McFarlane, Richard H., to Taut, Inc. Flashback structure. 4,767,408, Cl. 604-168.000

McGeehin, Peter: *See—*
Williams, David E.; and McGeehin, Peter, 4,768,012, Cl 338-34.000

McGlothlan, J. Kirk, to Tektronix, Inc. Improved mesh for CRT scan expansion lens and lens fabricated therefrom. 4,767,964, Cl. 313-421.000

McIntyre, Jack W. Method and apparatus for removing excess water from subterranean wells. 4,766,957, Cl. 166-265.000

McKernan, Bernard J.; Burke, Richard G.; and Wurzler, Phillip D., to GTE Products Corporation. Method for machining parts made of tungsten and of tungsten with thoria. 4,766,665, Cl. 29-557.000.

McLaren, Douglas: *See—*
Chee, Wan T.; McLaren, Douglas; and Therrien, Keith E., 4,767,656, Cl. 428-116.000

McLaren, Raymond J., to Zamel, Gary I., a part interest. Roof truss sling. 4,767,242, Cl. 405-288.000

McLellan, Neil R., to Texas Instruments Incorporated. Delayed reflow alloy mix solder paste. 4,767,471, Cl. 148-24.000

McMillan, Richard A.; Gavin, Bruce M.; and Senner, Edward A., to Southland Frozen Meat Limited. Slicing apparatus. 4,766,791, Cl 83-155.000

McPherson, Andrew D.: *See—*
Sharpe, Anthony K.; and McPherson, Andrew D., 4,768,032, Cl 340-825.470.

McVicar, Cameron C. Support for a spare wheel of a motor vehicle. 4,767,038, Cl. 224-42.060

Mead Corporation, The: *See—*
Beery, Jack, 4,768,050, Cl. 354-304.000

Measurex Corporation: *See—*
Anderson, Leonard M.; Boissevain, Mathew G.; and Norton, M. Kent, 4,767,935, Cl. 250-571.000

Medical Engineering Corporation: *See—*
Trick, Robert E.; and Carter, Garry L., 4,766,889, Cl. 128-79.000

Megapulse, Inc.: *See—*
VerPlanck, Peter, 4,767,999, Cl. 331-166.000.

Meguro, Satoshi: *See—*
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000

Meguro, Yoshio: *See—*
Sakamoto, Seiji; and Meguro, Yoshio, 4,767,657, Cl. 428-143.000

Mehl, Wolfgang; and Amon, Albert, to Sicpa Holding S.A. Transfer printing sheet with impregnating agents and two-component electrophotographic toner and transfer printing of textile materials of cotton. 4,767,420, Cl. 8-470.000

Meier, Hermann, to Cafina AG. Method for the preparation of coffee. 4,767,632, Cl. 426-231.000

Meighen, Terrence: *See—*
Phillipson, Walter M.; Brennan, Robert J.; and Meighen, Terrence, 4,767,355, Cl. 439-425.000

Meisel, Manfred: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310

Meiske, Larry A.: *See—*
Jones, Edward; Meiske, Larry A.; and Young, Warren L., 4,767,823, Cl. 525-334.100

Melan, Michael: *See—*
Ley, Gregor; Melan, Michael; and Wistuba, Eckehardt, 4,767,457, Cl. 106-2.000

Mellert, Richard G. Centrifugal grease remover/absorber for foods. 4,767,395, Cl. 494-13.000

Melquist, John L.; and Luetkens, Melvin L., Jr., to Amoco Corporation. Lead aluminum borate. 4,767,738, Cl. 502-202.000

Memtec Limited: *See—*
Ford, Douglas L., 4,767,539, Cl. 210-636.000.

Men, Grigory: *See—*
Biegon, Robert J.; Men, Grigory; Turner, Lester T.; Lindstrand, Douglas; and Cox, Albert R., 4,767,891, Cl. 174-34.000.

Mengshoel, Hans C.; and Opsvik, Peter. Device for use in a kneeling-like sitting position. 4,767,160, Cl. 297-423.000.

Mennicke, Stefan; and Reiss, Karl, to Brown, Boveri & Cie Aktiengesellschaft. Electrochemical storage cell. 4,767,685, Cl. 429-104.000

Merck & Co., Inc.: *See—*
Baker, Robert K.; Rupprecht, Kathleen M.; Pessolano, Arsenio A.; and Durette, Philippe L., 4,767,766, Cl. 514-301.000.
Caldwell, Larry J.; Gardner, Colin R.; and Cargill, Robyn C., 4,767,627, Cl. 424-426.000
Young, Robert N.; Rokach, Joshua; and Hayes, Edward C., 4,767,745, Cl. 514-21.000

Merck Frosst Canada, Inc.: *See—*
Young, Robert N.; Rokach, Joshua; and Hayes, Edward C., 4,767,745, Cl. 514-21.000.

Merck Patent Gesellschaft Mit Beschrankter Haftung: *See—*
Boos, Karl S.; Wilmers, Bernd; Sauerbrey, Richard; and Schlimme, Eckhard, 4,767,529, Cl. 210-198.200.
Heppke, Gerd; Oestreicher, Feodor; Kitzerow, Heinz-Siegfried; and Krumrey, Michael, 4,767,194, Cl. 350-346.000.

Merger, Franz; Priester, Claus-Ulrich; Fischer, Rolf; and Sauerwald, Manfred, to BASF Aktiengesellschaft. Preparation of caprolactam. 4,767,857, Cl. 540-538.000.

Merle, Jean-Pierre: *See—*
Grenier, Gilles; Merle, Jean-Pierre; and Zribi, Robert, 4,768,097, Cl. 358-213.260.

Merlin Gerin: *See—*
Mertz, Jean-Luc; Lazareth, Michel; and Guerin, Hubert, 4,768,007, Cl. 335-202.000

Merrild, Bente: *See—*
Thygesen, Eskild G.; and Merrild, Bente, 4,766,617, Cl. 4-243.000

Merritt, Carleton G.; and Gillmore, Stephen R., to Borden, Inc. Method for the preparation of flavored popping corn. 4,767,635, Cl. 426-272.000

Mertz, Jean-Luc; Lazareth, Michel; and Guerin, Hubert, to Merlin Gerin. Current breaking device with solid-state switch and built-in protective circuit breaker. 4,768,007, Cl. 335-202.000.

Merz, Martin: *See—*
Strauch, Dieter; Belger, Peter; Hofer, Heiner; and Merz, Martin, 4,767,464, Cl. 106-464.000

Message, Olivier, to SKF Compagnie d'Applications Mechaniques. Spring for a free-wheel device and assembly comprising such a spring. 4,766,987, Cl. 192-41.00A.

Messerschmitt-Boelkow-Blohm GmbH: *See—*
Moeller, Werner, 4,768,081, Cl. 357-72.000

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Resch, Heribert, 4,767,064, Cl. 241-21.000

Metropolitan Wire Corporation: *See—*
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,767,166, Cl. 312-229.000

Mettler Instrumente AG: *See—*
Luchinger, Paul, 4,766,965, Cl. 177-50.000

Metz, Carl W.: *See—*
Warnecke, Armand E.; and Metz, Carl W., 4,767,008, Cl. 206-570.000

Metzger, Donald L.: *See—*
Hughes, Donald W. K.; and Metzger, Donald L., 4,767,353, Cl 439-398.000

Metzger, Karl G.: *See—*
Angerbauer, Rolf; Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, 4,767,754, Cl. 514-202.000

Meyer, Hans P.; and Becker, Helmut, to Alcatel N.V. Mounting arrangement for magnetic field detector. 4,767,989, Cl. 324-252.000.

Meyers, Lawrence J.: *See—*
Cain, Gary L.; Rando, Joseph F.; Teach, Ted L.; Meyers, Lawrence J.; and Markley, Theodore J., 4,767,208, Cl. 356-138.000.

Meyers, Vera K., to Southern Illinois University Foundation. Fluorescent opioid reagents and methods of use thereof in the detection of opioid receptors. 4,767,718, Cl. 436-501.000.

Michael, Leroy D.; and Green, Michael W., to Boeing Company, The. Robot hand. 4,767,143, Cl. 294-65.000

Michaely, William J.: *See—*
Lee, David L.; and Michaely, William J., 4,767,447, Cl. 71-103.000.

Michiels, Dirk J. M., to Exxon Research & Engineering Co. High speed extrusion coating with ethylene copolymers. 4,767,485, Cl. 156-244.110

Mickelson, Roger D.; and Brown, Thomas R., to J.I. Case Company. Backhoe boom cylinder bleed circuit. 4,767,255, Cl. 414-695.500

Microwave Technology, Inc.: *See—*
Kawakami, Kenneth N., 4,768,005, Cl. 333-246.000

Midland Glass Company: *See—*
Galbraith, Darrell L., 4,766,709, Cl. 52-235.000

Mieno, Toshiyuki: *See—*
Nakajima, Toyohei; Okada, Yasushi; Mieno, Toshiyuki; and Oono, Nobuyuki, 4,766,870, Cl. 123-489.000

Mihara, Masato, to Victor Company of Japan, Ltd. Tape guide drum apparatus having magnetic heads mounted at different height positions. 4,768,117, Cl. 360-109.000

Mikajiri, Naomichi: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000

Miki, Yasuhiro: *See—*
Yasui, Hideo; Miki, Yasuhiro; and Okada, Wataru, 4,767,803, Cl 523-335.000

Mikiya, Toshio: *See—*
Shoji, Michihiro; and Mikiya, Toshio, 4,767,245, Cl. 408-204.000.

Milam, Jack J. Method of attaching member to a tubular string 4,766,663, Cl. 29-455.100.

Miles Laboratories, Inc.: *See—*
Wisdom, Leonard A., 4,767,541, Cl. 210-749.000

Miller, Alan B.: *See—*
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,300, Cl. 425-140.000
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,579, Cl. 264-40.500

Miller Brewing Company: *See—*
Goldstein, Henry; Ting, Patrick L.; Chicove, Etzer; Goetzke, Gary; and Cowles, John M., 4,767,640, Cl. 426-600.000

Miller, Dennis J.; and Tylenda, Leon W. Snap-in end cap for article carriers. 4,767,040, Cl. 224-326.000

Miller, Jerry J.: *See—*
Barry, Denis E.; and Miller, Jerry J., 4,767,125, Cl. 279-2.00R

Miller, Michael J.: *See—*
Gwinn, J. S.; and Miller, Michael J., 4,767,216, Cl. 366-85.000

Miller, Michael K.; and Stockton, Warren D. Gun and magazine system. 4,766,800, Cl. 89-33.020

Miller, Murrell T., to Acravac. Conveyor system and method for transporting materials. 4,766,994, Cl. 198-711.000

Miller, Paul A.: *See—*
Fielder, Dennis C.; Furman, Arthur J.; Miller, Paul A.; and Rogers, Blair E., 4,767,088, Cl. 248-121.000

Miller, Sandra L.; and Pinchuk, Leonard, to Cordis Corporation. Porous ventricular catheter. 4,767,400, Cl. 604-8.000

Milliken Research Corporation: *See—*
Murray, John H., 4,766,632, Cl. 15-147.00R.

Millipore Corporation: *See—*
Dourdeville, Theodore A.; and Trumper, David L., 4,767,279, Cl. 417-18.000

Minami, Hiroshi; and Fujita, Koreaki, to Mitsubishi Denki Kabushiki Kaisha. Current mirror amplifier circuit. 4,767,942, Cl. 307-304.000

Minarovic, Joe T.: *See—*
Cosman, Armond D.; and Minarovic, Joe T., 4,767,237, Cl. 405-157.000

Minkley, Edwin G., Jr.; and Brown, William E., to Carnegie Mellon University. Enzyme amplification and purification. 4,767,708, Cl. 435-194.000

Minnesota Mining and Manufacturing Company: *See—*
Bailey, Terry R.; and Haunschild, Dale H., 4,767,659, Cl. 428-203.000
Ball, James H.; and Seim, William J., 4,767,893, Cl. 174-84.00R
Cosman, Armond D.; and Minarovic, Joe T., 4,767,237, Cl. 405-157.000
Marshall, Harry J., 4,767,726, Cl. 501-33.000
Parrott, Patti L.; and Howell, James B., 4,767,289, Cl. 417-477.000
Pretchel, David A., 4,767,352, Cl. 439-395.000
Renstrom, Richard L., 4,767,653, Cl. 428-40.000

Mino, Kazuaki, to Director General of Agency of Industrial Science and Technology. Method for heat-treating metal. 4,767,493, Cl. 156-603.000

Minolta Camera Kabushiki Kaisha: *See—*
Akutagawa, Hiroshi; and Takeuchi, Koji, 4,768,039, Cl. 346-76.0PH
Dreher, Geoffrey A., 4,768,164, Cl. 364-900.000.
Hamada, Masataka; Karasaki, Toshihiko; Matsui, Toru; and Makawa, Yukio, 4,768,052, Cl. 354-402.000
Hata, Kazuyoshi; and Takamura, Sachiko, 4,767,202, Cl. 350-432.000
Ito, Masazumi, 4,768,066, Cl. 355-55.000
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,768,053, Cl. 354-403.000
Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, 4,768,054, Cl. 354-408.000
Saito, Takanori; and Kato, Osami, 4,767,079, Cl. 242-197.000
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 4,768,047, Cl. 354-195.100.

Minor, James C.; and Rodenberg, Orville C., to Eastman Kodak Company. Dot printer with toner characteristic compensation means 4,768,046, Cl. 346-160.100

Mirviss, Stanley B., to Akzo America Inc. Reduction of sulfonic acid to thiol. 4,767,884, Cl. 568-68.000

Misaki, Hideo; Ishikawa, Hidehiko; and Matsuura, Kazuo, to Toyo Jozo Kabushiki Kaisha. Assay method using nad synthetase and a process for production of the enzyme. 4,767,712, Cl. 435-253.000.

Mishio, Yasuhiko; Shimizu, Hidetoshi; Matsuda, Takashi; and Takeda, Masaru, to Toyota Jidosha Kabushiki Kaisha. Three part propeller shaft assembly incorporating four hooke joints having opposed phases. 4,766,969, Cl. 180-75.200

Mita Industrial Co., Ltd.: *See—*
Takamatsu, Junichi; and Akiyama, Kazunori, 4,768,055, Cl. 355-3.00R

Mitchell, Alan P.: *See—*
Kinosz, Michael J.; and Mitchell, Alan P., 4,767,598, Cl 420-528.000

Mitsubishi Denki K.K.: *See—*
Wada, Ryukichi; and Ishii, Yoshinori, 4,768,095, Cl. 358-183.000

Mitsubishi Denki Kabushiki Kaisha: *See—*
Anami, Kenji, 4,768,166, Cl. 365-154.000
Fukada, Kouichi, 4,766,816, Cl. 104-172.400
Hijikata, Akemi; Matsumoto, Masaaki; Nakayama, Taesuke; Hamazaki, Yasuyuki; and Kataoka, Kenji, 4,767,680, Cl 429-39.000
Hirai, Hayao, 4,767,972, Cl. 318-565.000
Isshiki, Kunihiko, 4,768,200, Cl. 372-46.000
Kato, Hisao, 4,767,257, Cl. 414-744.00A
Minami, Hiroshi; and Fujita, Koreaki, 4,767,942, Cl. 307-304.000
Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, 4,767,193, Cl. 350-345.000
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000
Yamasaki, Shinji, 4,766,977, Cl. 187-20.000

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Nakajima, Yoshimitsu; Niwa, Kensuke; Morita, Kazuhiro; and Makihara, Hiroshi, 4,767,791, Cl. 518-712.000
Tamura, Kazumi; and Fujita, Hideo, 4,767,461, Cl. 106-98.000
Yamada, Kiichi; Senoo, Akio; Iimura, Jun; Akimoto, Ryosaku, and Kawauchi, Nakaji, 4,766,950, Cl. 165-17.000

Mitsubishi Rayon Co., Ltd.: *See—*
Tada, Hisashi; Agata, Akira; and Ii, Yasuaki, 4,767,805, Cl 523-468.000

Mitsubishi Yuka Fine Chemicals Co., Ltd.: *See—*
Kubota, Ikuo; Hayama, Kazuhide; and Narazaki, Kanji, 4,767,616, Cl. 424-70.000

Mitsuhashi, Shinji: *See—*
Shimoki, Kazuaki; Naya, Koutarou; Mitsuhashi, Shinji; Hayakawa, Tadashi; and Uchida, Riichi, 4,767,284, Cl. 417-312.000

Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See—*
Satoh, Seiki, 4,767,158, Cl. 297-367.000

Mitsuishi, Akio; Nakazawa, Yasuhiko; and Sato, Takumi, to Seiko Epson Corporation. Print wire driving device for wire type dot printer. 4,757,227, Cl. 400-124.000.

Mitsuno, Yuichiro; Nomaguchi, Keiko; and Suzuki, Toshiyuki, to Kao Corporation. Lamella type single phase liquid crystal composition and oil-base cosmetic compositions using the same. 4,767,625, Cl. 424-95.000

Mitsuyasu, Kiyoshi: *See—*
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi, Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl. 429-101.000

Miyabe, Yoshinaga: *See—*
Sasaki, Hirofumi; and Miyabe, Yoshinaga, 4,767,320, Cl 432-59.000

Miyagi, Hideo; Ohya, Fumiaki; Fukushima, Koji; and Adachi, Shin, to Toyota Jidosha Kabushiki Kaisha. System for controlling intake pressure in a supercharged internal combustion engine. 4,766,873, Cl. 123-559.300

Miyahara, Yoshinori: *See—*
Sasaki, Hiroaki; and Miyahara, Yoshinori, 4,767,178, Cl 350-96.200

Miyajima, Hidenobu, to Asahi Malleable Iron Co., Ltd. Apparatus for transmitting power obtained by converting the exhaust energy of an engine. 4,766,729, Cl. 60-598.000

Miyake, Hitomi: *See—*
Tamba, Shinichi; Miyake, Hitomi, and Fukui, Noboru, 4,766,983, Cl. 181-240.000

Miyaki, Masahiko: *See—*
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumiaki; and Kobashi, Mamoru, 4,766,864, Cl. 123-357.000

Miyaki, Mutsuaki; Tachibana, Yoshimi; Oguri, Kiyohiko; and Isaka, Yoshiharu, to Yamaha Hatsudoki Kabushiki Kaisha. Lubricating system for vertical shaft engine. 4,766,859, Cl. 123-196.00W

Miyasato, Tatsuro: *See—*
Hiraki, Akio; and Miyasato, Tatsuro, 4,767,517, Cl. 204-192.250

Miyashita, Hideo: *See—*
Yoshihara, Shigeo; and Miyashita, Hideo, 4,768,220, Cl. 379-63.000

Miyashita, Shoji: *See—*
Tachikawa, Kyoji, Sekine, Hisashi, and Miyashita, Shoji, 4,767,470, Cl. 148-11.50F

Miyayama, Toshio; Masuzawa, Isao; Yamamoto, Kanshi, Watanabe, Mitsuo; and Yamada, Hidemitsu, to Kabushiki Kaisha Tokyo Keiki Marine automatic steering apparatus. 4,766,834, Cl. 114-144.00E

Mizuno, Hiroshige; and Inoue, Satoru, to NGK Insulators, Ltd. Extruding die for forming finned ceramic honeycomb structures. 4,767,309, Cl. 425-461.000

Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji, Watanabe, Yumiko; and Suzuki, Makoto, to Brother Kogyo Kabushiki Kaisha. Optical deflector device. 4,767,170, Cl. 350-96.140

Mizutani, Toyonobu; Yoshizawa, Masao; and Izawa, Toichiro, to Yoshizawa, Masao. Crystallized glass-ceramic molded product and method of manufacturing 4,767,725, Cl. 501-3.000

Mizzi, Felix: *See—*
Sejourne, Paul J.; and Mizzi, Felix, 4,768,207, Cl. 375-23.000

Moan, Richard D., to Ford Motor Company. Fluid pressure amplifier for an infinitely variable drive 4,767,384, Cl. 474-28.000

VOL 1093 ISS 5 AG 30 1988 UMI

Mobil Oil Corporation: *See—*
Chester, Arthur W.; and Kirker, Garry W., 4,767,733, Cl. 502-65.000
Faecke, David C., 4,766,958, Cl. 166-269.000
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., 4,767,604, Cl. 422-190.000
Yen, Jeffrey H., 4,767,522, Cl. 208-111.000.

Mochizuki, Takashi: *See—*
Fukusima, Syoji; Kato, Motosaburo; and Mochizuki, Takashi, 4,767,492, Cl. 156-580.200.

Moden, James R.; Caldwell, Michael D.; and Moden, Robert D., to Surgical Engineering Associates, Inc. Implantable infusion port 4,767,410, Cl. 604-175.000.

Moden, Robert D.: *See—*
Moden, James R.; Caldwell, Michael D.; and Moden, Robert D., 4,767,410, Cl. 604-175.000.

Modic, Frank J.; Striker, Richard A.; Delker, Wayne L.; and Sammel, Richard K., to General Electric Company. Low density silicone foam. 4,767,794, Cl. 521-82.000.

Mody, Dhiraj S.: *See—*
Blank, Robert G.; Mody, Dhiraj S.; Agism, Gary R.; and Kenny, Richard J., 4,767,789, Cl. 514-629.000.

Moeller, Werner, to Messerschmitt-Boelkow-Blohm GmbH. Process for encapsulating microelectronic circuits with organic components. 4,768,081, Cl. 357-72.000

Moen, Bruce A.: *See—*
Cook, Harold, Jr.; and Moen, Bruce A., 4,767,016, Cl. 215-230.000.

Moermann, Werner H.: *See—*
Brandestini, Marco; and Moermann, Werner H., 4,766,704, Cl. 51-327.000

Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, to Desowag Materialschutz GmbH. Wood preservative composition and use thereof. 4,767,458, Cl. 106-18.310.

Mohr, Henry G.: *See—*
Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., 4,766,624. Cl. 5-248.000
Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., 4,766,625, Cl. 5-248.000.

Mohr, Paul H.; and Pepe, Enrico J., to First Brands Corporation. Silicate-containing antifreeze with carboxy-substituted organosilicon stabilizer. 4,767,599, Cl. 422-13.000

Moji, Eirou. Electromagnetic wave interference prevention device for multielectrode connector. 4,767,362, Cl. 439-610.000

Molaire, Michel F., to Eastman Kodak Company. Polymerizable cyclohexyleneoxyalkyl acrylates. 4,767,883, Cl. 560-220.000.

Molchen, Marion B.: *See—*
Barrett, Edward A.; Molchen, Marion B.; and Kellner, Henry J., 4,768,049, Cl. 354-294.000

Molex Incorporated: *See—*
Nigg, Daniel; DePoss, Robert; Sommer, Edward; Raymer, Jack D., II; and Crane, Burhe, 4,767,896, Cl. 200-67.0DA.
Sampson, Stephen A.; and Adamik, Kenneth J., 4,767,179, Cl. 350-96.200
Urness, Kevin; Lickus, Leonard J.; Heisner, Douglas; Ingwersen, Peter; and Stenstrom, Eric, 4,766,668, Cl. 29-749.000

Moll, Richard J. Universal roller for glue applying folding machines. 4,767,392, Cl. 493-331.000

Molthop, Susan C.: *See—*
Fisher, Jerry D.; and Molthop, Susan C., 4,767,533, Cl. 210-321.640.
Jakubowski, George M.; Molthop, Susan C.; and Eldridge, Milo, 4,767,538, Cl. 210-636.000

Mongeon, Ronald W.: *See—*
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., 4,768,178, Cl. 368-47.000

Monogram Industries, Inc.: *See—*
Pratt, John D., 4,767,248, Cl. 411-45.000

Monsanto Company: *See—*
Beaver, Earl R.; Stichweh, Lawrence A.; and Thompson, Thomas J., 4,766,938, Cl. 141-1.000
Jacobi, Stephen V., 4,767,035, Cl. 222-527.000.

Monson, Donald R.: *See—*
Camplin, Harry R.; and Monson, Donald R., 4,767,425, Cl 55-306.000

Montgomery, David B.: *See—*
Williams, Joel L.; Martin, David A.; and Montgomery, David B., 4,767,414, Cl. 604-230.000

Montgomery, Robert M., to Harris Graphics Corporation. Method and apparatus for monitoring film thicknesses by sensing magnetic interaction between members movable to a film thickness distance 4,767,987, Cl. 324-231.000

Moog Inc.: *See—*
Cimato, Thomas R., 4,767,956, Cl. 310-91.000
Williams, Leonard J., 4,766,921, Cl. 137-1.000

Moplefan S.p.A.: *See—*
Vittone, Andrea; Chiappini, Giuseppe; and Di Paola, Massimo, 4,767,491, Cl. 156-500.000

Mor-Flo Industries, Inc.: *See—*
Cameron, A. Larson; and Henry J. Moore, 4,766,883, Cl 126-351.000

Mori, Kei. Accumulator arrangement for the sunlight energy. 4,766,884, Cl. 126-419.000

Mori, Kei. Solar ray energy radiation device for use in medical treatment. 4,766,899, Cl. 128-397.000

Mori, Shigeo: *See—*
Takahashi, Nobuyuki; and Mori, Shigeo, 4,767,906, Cl. 219-69.00D

Mori, Toshihiro; and Umetsu, Shinjiro, to NEC Corporation. Radio paging receiver having a message protection capability. 4,768,031, Cl. 340-825.440.

Morigaki, Masakazu: *See—*
Umemoto, Makoto; Seoka, Yoshio; and Morigaki, Masakazu, 4,767,697, Cl. 430-546.000

Morimoto Mfg. Co., Ltd.: *See—*
Yamamoto, Masaya, 4,766,825, Cl. 112-146.000

Morin, Claude; and T.A.C. (Tongerese Automaten Centrale). Safety helmet. 4,766,615, Cl. 2-421.000

Morita, Kazuhiro: *See—*
Nakajima, Yoshimitsu; Niwa, Kensuke; Morita, Kazuhiro; and Makihara, Hiroshi, 4,767,791, Cl. 518-712.000

Morita, Kenji: *See—*
Yashiki, Hiroshi; and Morita, Kenji, 4,766,788, Cl. 82-30.000.

Morita, Koji: *See—*
Satomoto, Atsushi; Nakagawa, Takashi; Sakurai, Junichiro; and Morita, Koji, 4,767,296, Cl. 418-171.000.

Moriyama, Kazuhiko: *See—*
Yamaguchi, Touhei; Moriyama, Kazuhiko; and Shira, Ethuo, 4,766,773, Cl. 74-467.000

Moriyoshi, Yusuke: *See—*
Matsumoto, Seiichiro; Hino, Mototsugu; Moriyoshi, Yusuke; Nagashima, Takashi; and Tsutsumi, Masayuki, 4,767,608, Cl. 423-446.000

Morris, Robert J.: *See—*
Byrd, Audis C.; and Morris, Robert J., 4,767,603, Cl. 422-119.000.

Morton Thiokol, Inc.: *See—*
Olliff, Martin T., 4,766,799, Cl. 86-45.000
Singer, Victor, 4,766,657, Cl. 29-157.00C
Tackett, E. Wayne; Smith, Bradley W.; and Voris, Charles R., 4,766,726, Cl. 60-255.000

Moskovsky Nauchno-Issledovatelsky Institute Mikrohirurgii Glaza: *See—*
Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and 1, 4,766,904, Cl. 128-652.000.

Motai, Tsuneaki: *See—*
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao; Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl. 264-500.000

Motoo, Satoshi: *See—*
Furuya, Nagakazu; and Motoo, Satoshi, 4,767,953, Cl. 310-11.000.

Motooka, Hideo: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000

Motorenfabrik Hatz GmbH & Co. KG: *See—*
Hatz, Ernst, 4,766,856, Cl. 123-185.00S.

Motorola, Inc.: *See—*
Cornett, Frank N., 4,768,208, Cl. 375-95.000

Motoyoshi, Masatoshi: *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000

Moudir, Said: *See—*
Camps, Robert; and Moudir, Said, 4,768,090, Cl. 358-108.000

Mower, Morris F.; and Cezana, Haim, to Axia Incorporated. Corner finishing tool. 4,767,297, Cl. 425-87.000.

MRC Bearings Incorporated: *See—*
Spitzer, Ronald F., 4,767,456, Cl. 75-246.000.

Mroczek, Inc.: *See—*
Bates, William G., 4,767,438, Cl. 65-168.000

MTU Motoren-und Turbinen-Union Munchen GmbH: *See—*
Grieb, Hubert; and Schlosser, Werner, 4,766,953, Cl. 165-177.000.
Zinner, Hans; and Kaupp, Hans, 4,767,137, Cl. 285-325.000.

Mukae, Kazuo: *See—*
Maruyama, Satoshi; Mukae, Kazuo; and Nagasawa, Ikuo, 4,767,582, Cl. 264-61.000

Mukai, Hachiro, to Fuji Photo Film Co., Ltd. Method of storing and reproducing a medical image in which image data is stored with corresponding information representing image processing conditions. 4,768,099, Cl. 358-257.000

Mullen, George B.: *See—*
Georgiev, Vassil S.; and Mullen, George B., 4,767,866, Cl. 548-240.000
Georgiev, Vassil S.; and Mullen, George B., 4,767,867, Cl 548-240.000
Georgiev, Vassil S.; and Mullen, George B., 4,767,868, Cl 548-240.000

Muller, Dietmar; and Stewart, John E. Process and apparatus for producing plastic-bound propellant powders and explosives. 4,767,577, Cl. 264-3.300

Muller, Rolf; and Dill, Bernd, to Ciba-Geigy Corporation. Process for the preparation of a mixture of 1-amino-2-chloro-4-hydroxyanthraquinone and 1-amino-2-bromo-4-hydroxyanthraquinone 4,767,573, Cl. 260-380.000

Multon, Alain: *See—*
Trift, Olivier; and Multon, Alain, 4,768,006, Cl. 333-255.000

Munakata, Chusuke; Hase, Shinobu; and Kimura, Shigeharu, to Hitachi, Ltd. Apparatus for and method of measuring boundary surface. 4,767,211, Cl. 356-375.000

Munich, Johann: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000

Munks, R. Leonard. Hoist system. 4,767,099, Cl. 254-336.000

Munt, Dean J., III, to Pacific Power Systems, Inc. Power conversion device. 4,767,294, Cl. 91-173.000

Murai, Keiji: *See—*
Sugimoto, Tadakatsu; Igarashi, Yoshiaki; Saito, Shiro; Wada, Eiichi; and Murai, Keiji, 4,766,787, Cl. 81-463.000.

Murakami, Hiroki; and Ozawa, Takashi, to Fuji-Xerox Company Ltd. Electronic device of element row type and wiring method of its electrode pattern. 4,767,936, Cl. 250-578.000

Murakami, Osamu, to Canon Kabushiki Kaisha. External memory pack having an opening and a slideable shutter. 4,767,348, Cl. 439-140.000

Murakami, Takatoshi; Kida, Toshio; Kon, Shiji; Asai, Toshinobu; and Nunome, Yoshiyuki, to Showa Electric Wire & Cable Co, Ltd. Rubber or plastic-coated roller, method and apparatus for production thereof. 4,766,843, Cl. 118-661.000.

Murakoshi, Hisaya; Ichihashi, Mikio; and Yamamoto, Kenichi, to Hitachi, Ltd. Electron beam metrology system. 4,767,926, Cl. 250-310.000

Muramatsu, Toshiaki, to Showa Aluminum Corporation. Solar water heater. 4,766,885, Cl. 126-433.000.

Murata Kikai Kabushiki Kaisha: *See—*
Hirai, Kazuyasu, 4,767,071, Cl. 242-18.100.
Takada, Hiroshi, 4,766,936, Cl. 139-324.000
Tanaka, Tadashi; and Sekitani, Noboru, 4,766,935, Cl. 139-55.100.

Murphy, Joseph M.: *See—*
Brown, Richard C.; Lafler, Robert E.; Murphy, Joseph M.; and Westvaco Corporation, 4,766,841, Cl. 118-75.000.

Murray, Douglas G., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence of Her Majesty's Canadian Government. Burn wound dressing material. 4,767,619, Cl 424-78.000

Murray, John H., to Milliken Research Corporation. Expandable mop frame. 4,766,632, Cl. 15-147.00R.

Mustoe, Judy C.: *See—*
Hornecker, Timothy; Mustoe, Tracy J.; and Mustoe, Judy C., 4,767,009, Cl. 206-575.000

Mustoe, Tracy J.: *See—*
Hornecker, Timothy; Mustoe, Tracy J.; and Mustoe, Judy C., 4,767,009, Cl. 206-575.000

Mutchler, Paul A., to Engineered Air Systems, Inc. Pulse jet engine assembly. 4,767,314, Cl. 431-1.000.

Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu; Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, to Hitachi, Ltd. Control system for PWM inverter. 4,767,976, Cl. 318-808.000.

Myer, Jimmy: *See—*
Randall, Richard C.; Myer, Jimmy; and Sanford, William R., 4,766,835, Cl. 114-218.000

Myer, Jon H., to Hughes Aircraft Company. Multi-dimensional nanometric displacement positioner. 4,767,188, Cl. 350-320.000

Myers, Nancy E.: *See—*
Gamblin, Rodger L.; Myers, Nancy E.; and Sugg, David J., 4,767,509, Cl. 204-44.700

Myodo, Osamu: *See—*
Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, 4,767,193, Cl. 350-345.000

N. V. Bekaert S.A.: *See—*
Vanneste, Golfried, 4,767,472, Cl. 148-156.000

Nabisco Brands, Inc.: *See—*
Calandro, Thomas P.; and Karwowski, Jan, 4,767,631, Cl. 426-103.000
Cascione, Alexander S., 4,767,029, Cl. 222-227.000

Nagahashi, Shinichi: *See—*
Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio; Ueda, Masahiro; and Tanaka, Minoru, 4,767,475, Cl. 148-33.000

Nagai, Takanori: *See—*
Yoshidome, Toshio; Nagai, Takanori; Kono, Tadayoshi; and Goto, Mikio, 4,766,858, Cl. 123-195.00R

Nagano, Masashi, to Shimano Industrial Company Limited. Caliper brake. 4,766,979, Cl. 188-24.120

Nagao, Masaaki: *See—*
Nagao, Masamichi; and Nagao, Masaaki, 4,767,070, Cl. 241-261.200

Nagao, Masamichi; and Nagao, Masaaki, to Nagao, Masamichi; Nagao, Masaaki; and Hitachi Techno Engineering Co. Ltd. Grinder for use in grinding apparatus. 4,767,070, Cl. 241-261.200

Nagao, Takeyoshi; Kohashi, Toru; and Haraguchi, Mitsunobu, to Yamato Scale Company, Limited. Apparatus and method of controlling rate of feeding product to weigher. 4,766,966, Cl. 177-123.000.

Nagasawa, Ikuo: *See—*
Maruyama, Satoshi; Mukae, Kazuo; and Nagasawa, Ikuo, 4,767,582, Cl. 264-61.000

Nagase, Fumiaki: *See—*
Nakano, Toshihiko; Nagase, Fumiaki; Takeuchi, Eiichi; Kamada, Mamoru; and Shigematsu, Hideyo, 4,767,673, Cl. 428-458.000

Nagashima, Shigeo; Omoda, Koichiro; and Inagami, Yasuhiro, to Hitachi, Ltd. Vector data refer circuit with a preceding paging control for a vector processor apparatus therefor. 4,768,146, Cl. 364-200.000

Nagashima, Takashi: *See—*
Matsumoto, Seiichiro; Hino, Mototsugu; Moriyoshi, Yusuke; Nagashima, Takashi; and Tsutsumi, Masayuki, 4,767,608, Cl 423-446.000

Nagura, Yoshihiro: *See—*
Hayashi, Yuzo; and Nagura, Yoshihiro, 4,767,189, Cl 350-334.000

Nakagawa, Kenji: *See—*
Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130

Nakagawa, Masao: *See—*
Yokoyama, Hideki; Shimada, Tatsuro; and Nakagawa, Masao, 4,766,940, Cl. 152-541.000

Nakagawa, Takashi: *See—*
Satomoto, Atsushi; Nakagawa, Takashi; Sakurai, Junichiro; and Morita, Koji, 4,767,296, Cl. 418-171.000

Nakahama, Ryoji; and Kuragaki, Naoyoshi, to Shanshin Kogyo Kabushiki Kaisha. Shifting device for inboard-outboard drive. 4,767,365, Cl. 440-75.000

Nakahara, Yutaka: *See—*
Leistner, William E.; Nakahara, Yutaka; Hirai, Bunji; and Kanai, Mitsuharu, 4,767,834, Cl. 526-265.000

Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; and Akita, Koji, to Victor Company of Japan, Ltd. Method of manufacturing an electrostatic capacitance type information signal recording medium. 4,767,486, Cl. 156-244.110.

Nakajima, Junjiro: *See—*
Matsumoto, Toshihiro; Umehara, Hajime; Nakajima, Junjiro; and Fujii, Norihisa, 4,766,658, Cl. 29-527.700.

Nakajima, Toyohei; Okada, Yasushi; Mieno, Toshiyuki; and Oono, Nobuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Method of air/fuel ratio control for internal combustion engine. 4,766,870, Cl 123-489.000

Nakajima, Yasuo: *See—*
Yamamoto, Yoshiharu; Nakajima, Yasuo; and Ono, Shusuke, 4,767,199, Cl. 350-412.000

Nakajima, Yoshimitsu; Niwa, Kensuke; Morita, Kazuhiro; and Makihara, Hiroshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Process for synthesizing methanol with an optimal temperature profile using a concentric pipe reactor. 4,767,791, Cl. 518-712.000

Nakamura, Kazuharu; Matsumoto, Motoki; Niwa, Osamu; and Tsuboi, Yoshimasa, to Toyotomi Kogyo Co., Ltd. Fuel supply system for oil burner. 4,767,316, Cl. 431-121.000.

Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, to Dainichiseika Color & Chemicals Mfg. Co., Ltd. Pigment composition. 4,767,465, Cl. 106-308.00M

Nakamura, Shunichi: *See—*
Shingo, Kaneko; Nakamura, Shunichi; and Nakanishi, Hisashi, 4,767,580, Cl. 264-41.000

Nakamura, Taizo: *See—*
Otani, Tadayuki; Nakamura, Taizo; and Saito, Tohru, 4,767,907, Cl 219-121.560

Nakamura, Yoshihiro: *See—*
Kitahashi, Tadahiro; Saito, Osami; Matsuno, Tadaaki; and Nakamura, Yoshihiro, 4,767,212, Cl. 356-379.000

Nakamura, Yoshiyuki; and Takamori, Tsutomu, to Sony Corporation. Write clock generator for time base corrector including frequency fluctuation and write clock difference signal reduction. 4,768,103, Cl 358-337.000

Nakane, Toshio: *See—*
Kageyama, Yukihiko; Nakane, Toshio; and Hijikata, Kenji, 4,767,830, Cl. 525-450.000

Nakane, Yoshihito: *See—*
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; and Akita, Koji, 4,767,486, Cl. 156-244.110

Nakanishi, Hisashi: *See—*
Shingo, Kaneko; Nakamura, Shunichi; and Nakanishi, Hisashi, 4,767,580, Cl. 264-41.000

Nakanishi, Motohiro: *See—*
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro, Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,768,053, Cl 354-403.000

Nakanishi, Yoshio: *See—*
Yumoto, Tsunemasa; Nakanishi, Yoshio; Iwai, Kazuki; and Itoh, Tadahiko, 4,767,833, Cl. 525-193.000

Nakanishi, Yutaka; Yamada, Toshihiko; and Gamou, Shigeo, to Toyotomi Kogyo Co., Ltd. Catalyst moving structure for oil burner 4,767,318, Cl. 431-304.000

Nakano, Toshihiko; Nagase, Fumiaki; Takeuchi, Eiichi; Kamada, Mamoru; and Shigematsu, Hideyo, to Toyo Aluminium Kabushiki Kaisha. Laminates and formings made from the same. 4,767,673, Cl 428-458.000

Nakano, Yoshio: *See—*
Amano, Masayuki; Okawa, Seiji; and Nakano, Yoshio, 4,766,730, Cl. 60-641.500

Nakashima, Keishi; Iwata, Tetsuya; Tanaka, Yasuo; and Hashidate, Toshiaki, to Alps Electric Co., Ltd. Magnetic head formed by composite main pole film and winding core for perpendicular magnetic recording. 4,768,121, Cl. 360-125.000

Nakasugi, Mikio: *See—*
Isohata, Junji; Nakasugi, Mikio; and Yokomatsu, Takao, 4,768,064, Cl. 355-53.000

Nakatsuka, Yoshio; Kume, Minoru; and Kishimoto, Daisuke, to Sanyo Electric Co., Ltd. Method for making magnetic recording media 4,767,516, Cl. 204-192.140

VOL 1093 ISS 5 AG 30 1988 UMI

Nakayama, Kenji, to NEC Corporation. Switched capacitor adaptive line equalizer. 4,768,205, Cl. 375-14.000

Nakayama, Shin: *See—*
Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130

Nakayama, Taesuke: *See—*
Hijikata, Akemi; Matsumoto, Masaaki; Nakayama, Taesuke; Hamazaki, Yasuyuki; and Kataoka, Kenji, 4,767,680, Cl. 429-39.000

Nakazawa, Yasuhiko: *See—*
Mitsuishi, Akio; Nakazawa, Yasuhiko; and Sato, Takumi, 4,767,227, Cl. 400-124.000

Nalco Chemical Company: *See—*
Malito, John T.; Wintermute, Richard D.; Ross, Scott F.; and Ferrara, John M., 4,767,554, Cl. 252-49.500.

Namba, Keisuke: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000

Namekawa, Kouroku, to Aloka Co., Ltd. Ultrasonic transmitter/-receiver. 4,766,905, Cl. 128-663.000

Nandoh, Kenji: *See—*
Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu; Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, 4,767,976, Cl 318-808.000

Nangle, Lorraine P.: *See—*
Komor, Joseph A.; Franco, Philip; Nangle, Lorraine P.; and Koelle, William H., 4,767,741, Cl. 512-3.000

Narang, Subhash: *See—*
Liang, Rong-Chang; Narang, Subhash; and Reiser, Arnost, 4,767,826, Cl. 525-421.000

Narazaki, Kanji: *See—*
Kubota, Ikuo; Hayama, Kazuhide; and Narazaki, Kanji, 4,767,616, Cl. 424-70.000

Narita, Osamu: *See—*
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; and Akita, Koji, 4,767,486, Cl. 156-244.110.

Nathans, Daniel; and Linzer, Daniel I. H., to Johns Hopkins University, The. Growth-related hormones. 4,767,709, Cl. 435-240.200.

National Castings, Inc.: *See—*
Weber, Hans B., 4,766,819, Cl. 105-157.100.

National Distillers and Chemical Corporation: *See—*
Hanes, Ronnie M.; and Brima, Thomas S., 4,767,574, Cl. 260-410.000

National Information Utilities Corporation: *See—*
Taub, Jack R.; and Hills, Michael T., 4,768,087, Cl. 358-84.000.

National Institute for Research in Inorganic Materials: *See—*
Matsumoto, Seiichiro; Hino, Mototsugu; Moriyoshi, Yusuke; Nagashima, Takashi; and Tsutsumi, Masayuki, 4,767,608, Cl 423-446.000

National Research Development Corporation: *See—*
Goodwin, Michael J., 4,767,223, Cl. 384-114.000
Patterson, Roy D., 4,768,022, Cl. 340-384.00E.
Unsworth, Peter J., 4,767,975, Cl. 318-729.000

National Research Institute for Metals: *See—*
Tachikawa, Kyoji; Sekine, Hisashi; and Miyashita, Shoji, 4,767,470, Cl. 148-11.50F

Natsume, Yoshimi: *See—*
Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, 4,767,959, Cl 310-317.000

Nauchno-Proizvodstvennoe Obiedinenie PO Mekhanizrovannomu Stroitelnomu Instrumentu I Otdelochynym Mashinam: *See—*
Goldshtein, Boris G.; Boiko, Vitaly T.; Maljukyavichus, Antanas-Sharunas A.; Gaidukov, Alexandr V.; Kovalenko, Valery I.; Buravtsov, Arkady A.; and Gordeev, Vladimir A., 4,767,045, Cl 227-109.000

Naya, Koutarou: *See—*
Shinoki, Kazuaki; Naya, Koutarou; Mitsuhashi, Shinji; Hayakawa, Tadashi; and Uchida, Ruchi, 4,767,284, Cl. 417-312.000

NDC Co., Ltd.: *See—*
Kuwayama, Yukio, 4,767,677, Cl. 428-551.000

NEA Technologies, Inc.: *See—*
Lockwood, Hanford N., Jr., 4,767,313, Cl. 431-1.000

NEC Corporation: *See—*
Amano, Tatsuyuki, 4,768,015, Cl. 340-347.0AD.
Mori, Toshihiro; and Umetsu, Shinjiro, 4,768,031, Cl. 340-825.440.
Nakayama, Kenji, 4,768,205, Cl. 375-14.000
Tada, Kazuhiro, 4,768,171, Cl. 365-222.000
Utsumi, Kazuaki; Takamizawa, Hideo; Tsuzuki, Mitsuo; Suga, Michihisa; and Takahashi, Sadayuki, 4,766,671, Cl. 29-848.000
Watanabe, Takayuki, 4,768,168, Cl. 365-189.000
Yokoyama, Yasushi, 4,768,160, Cl. 364-745.000
Yorita, Takeo, 4,768,218, Cl. 379-61.000
Yoshihara, Shigeo; and Miyashita, Hideo, 4,768,220, Cl. 379-63.000

Nelson, Linda H., to General Electric Company. Blends of copolyestercarbonate and polyester resins exhibiting improved color properties. 4,767,810, Cl. 524-56.000

Nelson, Norvell J.: *See—*
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., 4,767,661, Cl. 428-209.000
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., 4,767,662, Cl. 428-209.000

Nelson, Robert S.; and Zach, Reuven D. High resolution breast imaging device utilizing non-ionizing radiation of narrow spectral bandwidth. 4,767,928, Cl. 250-341.000

Nemas, Mara: *See—*
Linder, Charles; Nemas, Mara; Perry, Mordechai; and Kotraro, Reuven, 4,767,645, Cl. 427-386.000.

Nemeh, Saad; and Slepetys, Richard A., to Engelhard Corporation. Bulking pigments. 4,767,466, Cl. 106-487.000

Nesheiwat, Afif M.: *See—*
Goetz, Kenneth D.; Nesheiwat, Afif M.; Senatore, Guy; Shang, Wei-Teh W.; and Phillips Petroleum Company, 4,767,841, Cl. 528-388.000

Nestec S. A.: *See—*
Ek, Kurt L., 4,767,637, Cl. 426-291.000.

Neu, Max G.; and Gough, Michael J., to Foseco International Limited. Exothermic compositions. 4,767,800, Cl. 523-141.000

Neubauer, Hans-Juergen: *See—*
Seppelt, Wolfgang; Neubauer, Hans-Juergen; Adolphi, Heinrich; and Hofmeister, Peter, 4,767,782, Cl. 514-543.000.

Neumann, Horst; and Busch, Manfred, to Hoechst Aktiengesellschaft. Blow mandrel for extrusion blow molding with agressive blow media. 4,767,310, Cl. 425-469.000

Neumann, Rainer: *See—*
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000.

New Holland Inc.: *See—*
Cartee, Gilbert A.; and Webster, Emmett G., 4,766,803, Cl. 92-13.400

Newman, Albert P.: *See—*
Kamp, David C.; and Newman, Albert P., 4,767,347, Cl. 439-133.000

Newman, Howard: *See—*
Tomcufcik, Andrew S.; Emma, John E.; Eudy, Nancy H.; Marsico, Joseph W.; and Newman, Howard, 4,767,749, Cl. 514-137.000.

Newman, Neil A., to Brunswick Corporation. Single cable shift assembly. 4,766,776, Cl. 74-501.00A

Newtec International: *See—*
Thimon, Hubert A., 4,767,578, Cl. 264-40.100.

Newton, Arnold C., to Rolls-Royce plc. Turbofan gas turbine engine and mountings therefore. 4,766,723, Cl. 60-39.310

Newton, George J.: *See—*
Yeh, Hsu-Chi; Chen, Bean T.; Cheng, Yung-Sung; and Newton, George J., 4,767,524, Cl. 209-143.000.

Neynaber Chemie GmbH: *See—*
Worschech, Kurt; Wedl, Peter; Fleischer, Erwin; and Loeffelholz, Frido, 4,767,575, Cl. 260-414.000

NGK Insulators, Ltd.: *See—*
Asami, Seiichi; Hamanaka, Toshiyuki; and Harada, Takashi, 4,767,731, Cl. 501-128.000
Mizuno, Hiroshige; and Inoue, Satoru, 4,767,309, Cl. 425-461.000.
Soma, Takao; and Matsui, Minoru, 4,767,730, Cl. 501-103.000

Nichols, Virginia R.; Hubble, Fred F., III; and Martin, James P., to Xerox Corporation. Collector for an LED array. 4,767,172, Cl. 350-96.180

Nieh, Edward C. Y., to Texaco Inc. Hydrophobic epoxide modified polyoxyalkylene diamines and thickened aqueous fluids. 4,767,555, Cl. 252-73.000

Nielsen, Erik, to Kemisk Vaerk Koge A/S. Herbicidal compositions comprising phenyl carbamates and other herbicides. 4,767,448, Cl. 71-111.000

Nielsen, Henrik K., to Forsogsanlaeg Riso. Circuit arrangement for processing signals from a nuclear detector. 4,767,997, Cl. 328-108.000.

Nigg, Daniel; DePoss, Robert; Sommer, Edward; Raymer, Jack D., II; and Crane, Burhe, to Molex Incorporated. Stamped circuitry assembly. 4,767,896, Cl. 200-67.0DA.

Niner, Roberts L.: *See—*
Stevens, Raymond R., Jr.; Gondek, Stanley E., Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., 4,767,910, Cl. 219-125.100.

Nippon Chemical Plant Consultant Co., Ltd.: *See—*
Maruko, Saburo, 4,766,878, Cl. 126-116.00R.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Iijima, Kenzaburou; Kurahashi, Kazuo; and Hayashi, Yoshinori, 4,768,119, Cl. 360-103.000
Takeuchi, Chifumi, 4,766,795, Cl. 84-1.010.

Nippon Kayaku Kabushiki Kaisha: *See—*
Kawata, Terushige; and Yamashita, Shinsuke, 4,767,787, Cl. 514-573.000
Takematsu, Tetsuo; Ikekawa, Nobuo; and Shida, Atsuhiko, 4,767,442, Cl. 71-88.000

Nippon Kogaku K. K.: *See—*
Wakabayashi, Hiroshi, 4,768,048, Cl. 354-195.120

Nippon Kokan Kabushiki Kaisha: *See—*
Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio; Ueda, Masahiro; and Tanaka, Minoru, 4,767,475, Cl. 148-33.000

Nippon Mining Co., Ltd.: *See—*
Arakida, Yasuhiro; and Fukamachi, Kazuhiko, 4,767,508, Cl. 204-44.500
Onuma, Toshihide; and Katsura, Shigeo, 4,767,005, Cl. 206-334.000.

Nippon Paint Company Limited: *See—*
Stepto, Robert F. T.; Still, Richard H.; and Hirasawa, Yoji, 4,767,846, Cl. 536-18.600

Nippon Petrochemicals Co., Ltd.: *See—*
Yokoyama, Shigeki; Torii, Michiaki; Matsuura, Kazuo; and Sano, Akira, 4,767,819, Cl. 524-587.000

Nippon Shokubai Kagaku Kogyo Co. Ltd.: *See—*
Fujikawa, Iwao; Kushino, Mitsuo; and Yamamoto, Yasuhiro, 4,767,807, Cl. 524-36.000.

Nippon Soken, INC.: *See—*
Hattori, Yutaka; Ito, Novuei; Inoguchi, Kazuhiro; and Hattori, Tadashi, 4,768,011, Cl. 338-5.000
Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, 4,767,959, Cl. 310-317.000
Tanaka, Takeshi; Yorita, Hiroshi; Tomita, Masahiro; and Igashira, Toshihiko, 4,767,967, Cl. 315-55.000

Nippon Steel Corporation: *See—*
Otani, Tadayuki; Nakamura, Taizo; and Saito, Tohru, 4,767,907, Cl 219-121.560.
Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, 4,767,103, Cl. 266-80.000.

Nippon Telegraph & Telephone Corporation: *See—*
Kobayashi, Naoki; Makimoto, Toshiki; and Horikoshi, Yoshiji, 4,767,494, Cl. 156-606.000.

Nippondenso Co., Ltd.: *See—*
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumiaki; and Kobashi, Mamoru, 4,766,864, Cl. 123-357.000
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, 4,767,394, Cl. 493-409.000
Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, 4,767,959, Cl 310-317.000

Nirasawa, Nobumasa: *See—*
Ogasawara, Ichiro; Nirasawa, Nobumasa; and Nishimura, Akira, 4,767,184, Cl. 350-96.230.

Nishikawa, Kazuya: *See—*
Inaba, Hiroshi; Shinnai, Masao; Nishikawa, Kazuya; Saitoh, Tamotsu; and Tuskada, Tokio, 4,768,037, Cl. 343-713.000

Nishimoto, Kiyoshi, to Kabushiki Kaisha Toshiba. Sheet feeder. 4,767,114, Cl. 271-3.000

Nishimura, Akira: *See—*
Ogasawara, Ichiro; Nirasawa, Nobumasa; and Nishimura, Akira, 4,767,184, Cl. 350-96.230.

Nishimura, Kosuke, to Sharp Kabushiki Kaisha. Electronic apparatus having a power control circuit for developing a power disconnection invalidating instruction in order to protect memory contents 4,768,162, Cl. 364-900.000.

Nishino, Kazuaki; Ito, Takuo; Kato, Satosi; and Yamaoka, Hidenori, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Heat-resistant alloy 4,767,597, Cl. 420-443.000

Nishioka, Jim Z. Shooting crossbow. 4,766,874, Cl. 124-25.000.

Nishioka, Kentaro, to Dainippon Screen Mfg. Co., Ltd. Method for detecting time for termination of surface layer removal processing. 4,767,495, Cl. 156-626.000

Nissan Motor Company, Limited: *See—*
Aramaki, Takashi, 4,768,013, Cl. 340-52.00R
Hirano, Yoshinori; and Kubozuka, Takao, 4,766,852, Cl. 123-41.210.
Ito, Ken, 4,767,588, Cl. 364-424.000
Kawasaki, Tomoaki; and Akiyama, Yoshinori, 4,767,153, Cl. 296-194.000
Kojima, Shuichi; Ishido, Takao; and Sasaki, Shogo, 4,766,937, Cl. 139-452.000
Matsunaga, Yukihiro, 4,766,968, Cl. 180-68.400.
Shinpo, Yuji, 4,766,636, Cl. 15-250.420.

Nitto Kohki Co., Ltd.: *See—*
Shoji, Michihiro; and Mikiya, Toshio, 4,767,245, Cl. 408-204.000.

Niwa, Kensuke: *See—*
Nakajima, Yoshimitsu; Niwa, Kensuke; Morita, Kazuhiro; and Makihara, Hiroshi, 4,767,791, Cl. 518-712.000

Niwa, Osamu: *See—*
Nakamura, Kazuharu; Matsumoto, Motoki; Niwa, Osamu; and Tsuboi, Yoshimasa, 4,767,316, Cl. 431-121.000

Noda, Masaru; and Imaide, Takuya, to Hitachi, Ltd. Solid-state imaging device with two-row mixing gates. 4,768,084, Cl. 358-44.000

Noelte, Eckhard: *See—*
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000

Noetzel, Siegfried: *See—*
Mauz, Otto; Noetzel, Siegfried; and Sauber, Klaus, 4,767,620, Cl 424-78.000

Nojima, Setsuo: *See—*
Shimizu, Takaaki; Ota, Katsuyuki; Aoyama, Toshimi; and Nojima, Setsuo, 4,767,642, Cl. 427-54.100.

Nollet, Michel, to Thomson-Lgt Laboratoire General des Telecommunications. High speed control circuit for power field effect transistors. 4,767,952, Cl. 307-571.000

Nomaguchi, Keiko: *See—*
Mitsuno, Yuichiro; Nomaguchi, Keiko; and Suzuki, Toshiyuki, 4,767,625, Cl. 424-95.000

Nomura, Etsuzo; and Suzuki, Shigeru, to Brother Kogyo Kabushiki Kaisha. Pattern sensor for sewing machine feed adusting system. 4,766,828, Cl. 112-314.000

Nonaka, Toshio: *See—*
Takishita, Yoshihiko; Nonaka, Toshio; and Hayakawa, Yasuo, 4,768,155, Cl. 364-507.000

Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, to Minolta Camera Kabushiki Kaisha. Focus condition detecting device. 4,768,054, Cl. 354-408.000

Norling, Brian L.; and Cornelius, Craig J., to Sundstrand Data Control, Inc. Accelerometer with isolator for common mode inputs. 4,766,768, Cl. 73-497.000

Norsworthy, Keith H., to Boeing Company, The. Scanning system with low scan rate and high effective frame rate. 4,767,937, Cl 250-578.000

North American Philips Consumer Electronics Corp.: *See—*
Bradley, Ralph H., Jr.; and Guerinot, William F., 4,767,186, Cl 350-128.000

North American Philips Corp.: *See—*
Pooler, Robert E.; and Kaylor, William R., 4,768,091, Cl. 358-139.000
Prodan, Richard S., 4,768,093, Cl. 358-160.000

Norton, M. Kent: *See—*
Anderson, Leonard M.; Boissevain, Mathew G.; and Norton, M Kent, 4,767,935, Cl. 250-571.000

Norwood, Donald D.: *See—*
Rohlfing, Raymond G.; and Norwood, Donald D., 4,767,028, Cl. 222-219.000

Noschese, Rocco, to Burndy Corporation. Solder mounting of electrical contacts. 4,767,344, Cl. 439-83.000

Noujaim, Sharbel E., to General Electric Company. Analog to digital converter for an electronic circuit breaker with out-of-supply-range input signals. 4,768,018, Cl. 340-347.0AD

Novak, Rudy G.: *See—*
De Cicco, Steven G.; Lee, Sung K.; Novak, Rudy G.; Wass, William E.; and Mak, Kai K., 4,766,822, Cl. 110-212.000

Nuber, Adolf; Sanner, Axel; Straub, Ferdinand; and Vogel, Friedrich, to BASF Aktiengesellschaft. Terpolymers, their use in hair treatment agents and hair treatment agents containing these terpolymers 4,767,613, Cl. 424-47.000

Nudd, Howard W., Jr.; and Demoura, David N., to Foxboro Company, The. Differential-pressure measuring apparatus with improved arrangement for coupling pressures to a semiconductor sensor. 4,766,769, Cl. 73-706.000

Nuissl, Gunther: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000

Nullmeyer, John: *See—*
Nullmeyer, Richard; and Nullmeyer, John, 4,767,358, Cl 439-500.000

Nullmeyer, Richard; and Nullmeyer, John. Battery adapter for C and D size applications. 4,767,358, Cl. 439-500.000

Nunome, Yoshiyuki: *See—*
Murakami, Takatoshi; Kida, Toshio; Kon, Shiji, Asai, Toshinobu, and Nunome, Yoshiyuki, 4,766,843, Cl. 118-661.000

Nuyen, Trong Linh: *See—*
Etienne, Patrick; and Nuyen, Trong Linh, 4,768,071, Cl 357-22.000

Nyfeler, Robert: *See—*
Zondler, Helmut; Eckhardt, Wolfgang; and Nyfeler, Robert, 4,767,443, Cl. 71-90.000

O/Y Kyro A/B Tamglass: *See—*
Reunamaki, Pauli, 4,767,439, Cl. 65-351.000

Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi, and Kobayashi, Seiko, to Ricoh Co., Ltd. Optical information recording medium. 4,767,693, Cl. 430-270.000

Obermann, Peter, to Siemens Aktiengesellschaft. Frontal magnet coupling with integrated magnetic bearing load relief. 4,767,378, Cl 464-29.000

Oda, Yukihisa: *See—*
Yasuda, Keiji; and Oda, Yukihisa, 4,767,898, Cl. 200-83.00R

Odekirk, W. G., to Aspen Enterprises, Inc. Convertible, inflatable shelter apparatus. 4,766,918, Cl. 135-96.000

Oese, Walfried: *See—*
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar, Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310

Oestreicher, Feodor: *See—*
Heppke, Gerd; Oestreicher, Feodor; Kitzerow, Heinz-Siegfried, and Krumrey, Michael, 4,767,194, Cl 350-346.000

Office National d'Etudes et de Recherches Aerospatiales (ONERA) *See—*
Chan-Son-Lint, Bernard; Borderies, Pierre; and Pouit, Christian J., 4,768,001, Cl. 333-159.000

Officina Meccanica Biancalani & C. di Biancalani Fiorenzo & C S.n.c.: *See—*
Biancalani, Fiorenzo; and Marcora, Luigi, 4,766,743, Cl 68-20.000

OG Corporation: *See—*
Giancarlo, Charles H., 4,768,190, Cl. 370-86.000

Ogasawara, Ichiro; Nirasawa, Nobumasa; and Nishimura, Akira, to Sumitomo Electric Industries, Ltd. Waterproof optical cable 4,767,184, Cl. 350-96.230

Ogilvie, Clarence R.: *See—*
Bechade, Roland A.; Hoffman, William K.; and Ogilvie, Clarence R., 4,768,161, Cl. 364-758.000

Oglesby, Robert L., to R. J. Reynolds Tobacco Company. Method for tracing smoking articles. 4,766,911, Cl. 131-281.000

Oguri, Kiyohiko: *See—*
Miyaki, Mutsuaki; Tachibana, Yoshimi; Oguri, Kiyohiko, and Isaka, Yoshiharu, 4,766,859, Cl. 123-196.00W

VOL 1093 ISS 5 AG 30 1988 UMI

O'Gwynn, David C., to Ampex Corporation. Method and apparatus for synchronizing a controller to a VTR for editing purposes. 4,768,102, Cl. 358-311.000

Ohhashi, Hiroshi: *See*—
Okamoto, Kazuo; Ohhashi, Hiroshi; and Tatsumoto, Tokuichi, 4,767,154, Cl. 296-218.000.

Ohio State University, The: *See*—
Stevens, Vernon C., 4,767,842, Cl. 530-324.000.

Ohkawara, Shigeaki; and Oka, Yukio, to Tobishima Corporation. Pile-framed structure. 4,767,240, Cl. 405-225.000

Ohnishi, Kunikazu; Arimoto, Akira; Inoue, Masayuki; and Fukui, Yukio, to Hitachi, Ltd. Optical reproducing apparatus. 4,768,183, Cl. 369-112.000

Ohsaki, Takahisa: *See*—
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl. 429-101.000

Ohsawa, Shigemitsu: *See*—
Okuyama, Shinichi; Furuse, Kazumaro; and Ohsawa, Shigemitsu, 4,767,624, Cl. 424-94.100.

Ohtomo, Yasuyuki: *See*—
Shimizu, Suekichi; Inaba, Masatsugu; and Ohtomo, Yasuyuki, 4,767,663, Cl. 428-212.000

Ohya, Fumiaki: *See*—
Miyagi, Hideo; Ohya, Fumiaki; Fukushima, Koji; and Adachi, Shin, 4,766,873, Cl. 123-559.300.

Ohyama, Yoshirou; and Iinuma, Kazuhiro, to Kabushiki Kaisha Toshiba. Apparatus for reading radiation image information stored in imaging plate. 4,767,927, Cl. 250-327.200.

Oike, Takeshi, to Izumi Jidousha K.K. Process for preparation of polyurethane foam handle having woodgrain finish. 4,767,664, Cl. 428-318.800

Oishi, Hiroshi: *See*—
Ishihara, Michio; Oishi, Hiroshi; and Kuboyama, Makoto, 4,767,004, Cl. 206-334.000

Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 4,767,007, Cl. 206-387.000.

Ojiro, Yasuo: *See*—
Ayano, Shinya; and Ojiro, Yasuo, 4,767,263, Cl. 415-121.00A

Oka, Yukio: *See*—
Ohkawara, Shigeaki; and Oka, Yukio, 4,767,240, Cl. 405-225.000.

Okada, Hiroshi: *See*—
Ito, Yuji; and Okada, Hiroshi, 4,768,106, Cl. 360-14.100.

Okada, Jhoshin: *See*—
Hara, Kenji; and Okada, Jhoshin, 4,767,783, Cl. 514-546.000.

Okada, Wataru: *See*—
Yasui, Hideo; Miki, Yasuhiro; and Okada, Wataru, 4,767,803, Cl 523-335.000

Okada, Yasushi: *See*—
Nakajima, Toyohei; Okada, Yasushi; Mieno, Toshiyuki; and Oono, Nobuyuki, 4,766,870, Cl. 123-489.000.

Okado, Hideo: *See*—
Kawamura, Kichinari; Kono, Yasuo; Okado, Hideo; Hagiwara, Hiroyuki; and Takaya, Haruo, 4,767,886, Cl. 585-640.000.

Okamoto, Hiroyuki; Sagawa, Takao; and Shibata, Yukio, to Yazaki Corporation. Exchangeable multiplunger transfer molding die apparatus. 4,767,302, Cl. 425-190.000

Okamoto, Kazuo; Ohhashi, Hiroshi; and Tatsumoto, Tokuichi, to Toyota Jidosha Kabushiki Kaisha. Automobile roof structure 4,767,154, Cl. 296-218.000

Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. Nitro aliphatic compounds, process for preparation thereof and use thereof. 4,767,768, Cl 514-315.000

Okaue, Takumi: *See*—
Kobayashi, Toshiharu; Okaue, Takumi; and Shirai, Toshio, 4,768,107, Cl. 360-17.000

Okawa, Koji: *See*—
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000

Okawa, Seiji: *See*—
Amano, Masayuki; Okawa, Seiji; and Nakano, Yoshio, 4,766,730, Cl. 60-641.500.

Okawa, Susumu: *See*—
Tatara, Yuudai; Okawa, Susumu; Okuwaki, Shigeru; and Jufuku, Yasunobu, 4,767,388, Cl. 474-245.000

Okazaki, Hiroshi: *See*—
Kazaoka, Kenichi; and Okazaki, Hiroshi, 4,767,157, Cl. 297-322.000

Okazaki, Masaki: *See*—
Abe, Koji; Fukasawa, Masao; and Okazaki, Masaki, 4,766,860, Cl 123-196.00A

OKI Electric Industry Co., Inc.: *See*—
Kawakami, Izumi; Komazaki, Tomokazu; Gunzi, Katuhiko; and Onisi, Norio, 4,768,003, Cl. 333-202.000

Okubo, Hiroshi: *See*—
Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, 4,768,215, Cl. 378-101.000

Okumoto, Yutaka, to Japan Tobacco Inc. Content tobacco amount controlling device for a cigarette making machine. 4,766,910, Cl. 131-84.100

Okumoto, Yutaka, to Japan Tobacco Inc. Method for perforating a sheet-shaped material and perforating apparatus utilizing pulsed laser beams. 4,767,909, Cl. 219-121.700.

Okuno, Akihiro: *See*—
Kita, Tadae; and Okuno, Akihiro, 4,766,993, Cl. 198-619.000.

Okuno, Shigeru: *See*—
Shimosato, Masashi; and Okuno, Shigeru, 4,768,044, Cl. 346-140.00R

Okuwaki, Shigeru: *See*—
Tatara, Yuudai; Okawa, Susumu; Okuwaki, Shigeru; and Jufuku, Yasunobu, 4,767,388, Cl. 474-245.000.

Okuyama, Hiroshi: *See*—
Kumagai, Kiyoshi; and Okuyama, Hiroshi, 4,767,046, Cl. 228-4.100

Okuyama, Shinichi; Furuse, Kazumaro; and Ohsawa, Shigemitsu Decobital remedy. 4,767,624, Cl. 424-94.100.

Oldorf, Dennis. Packet dispenser. 4,767,022, Cl. 221-92.000.

Olds, Rockne M.: *See*—
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000.

O'Lenick, Anthony J., Jr., to GAF Corporation. Guerbet alcohol esters. 4,767,815, Cl. 524-317.000.

Olin Corporation: *See*—
Butt, Sheldon H.; Fister, Julius C.; and Crane, Jacob, 4,767,049, Cl. 228-111.000
Winter, Joseph; and Tyler, Derek E., 4,766,813, Cl. 102-307.000.

Olivieri, Oliviero, to Icaro Olivier & C. S.p.A. Roller skate with a binding strap fitting from the rear. 4,767,127, Cl. 280-11.330.

Olliff, Martin T., to Morton Thiokol, Inc. Method of and apparatus for fabricating a tool to form an asymmetrical constant cross section bore in the propellant in a solid rocket motor. 4,766,799, Cl. 86-45.000.

Ollivaud, Bernard; and Blot, Philippe, to Alsthom. Closure head for a hydraulic tube-testing bench. 4,766,934, Cl. 138-90.000.

Olsson, Frank C.: *See*—
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,767,166, Cl. 312-229.000.

Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, to Hoya Corporation. Process for producing transparent glass product having refractive index gradient. 4,767,435, Cl. 65-30.130

Omoda, Koichiro: *See*—
Nagashima, Shigeo; Omoda, Koichiro; and Inagami, Yasuhiro, 4,768,146, Cl. 364-200.000

1: *See*—
Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and 1, 4,766,904, Cl. 128-652.000.

O'Neill, James J., to Tamnaharry Developments Limited. Method and apparatus for collecting and conveying objects from a surface 4,766,850, Cl. 119-82.000

Oneyama, Naotake: *See*—
Igarashi, Tadashi; Yamaji, Mikio; and Oneyama, Naotake, 4,767,282, Cl. 417-225.000.

Ong, Edith T. T.; Tai, King L.; and Wong, Yiu-Huen, to American Telephone and Telegraph Company, AT&T Bell Laboratories. Nonplanar lithography and devices formed thereby. 4,767,695, Cl. 430-311.000

Onisi, Norio: *See*—
Kawakami, Izumi; Komazaki, Tomokazu; Gunzi, Katuhiko; and Onisi, Norio, 4,768,003, Cl. 333-202.000

Ono, Mamoru: *See*—
Kobayashi, Shigehiko; and Ono, Mamoru, 4,766,651, Cl. 24-16.0PB.

Ono, Masayuki: *See*—
Stix, Thomas H.; and Ono, Masayuki, 4,767,590, Cl. 376-133.000.

Ono, Motoyuki: *See*—
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao; Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl. 264-500.000

Ono, Shusuke: *See*—
Yamamoto, Yoshiharu; Nakajima, Yasuo; and Ono, Shusuke, 4,767,199, Cl. 350-412.000

Onodera, Kagetoshi, to Furukawa Electric Co., Ltd., The. Waste heat recovery apparatus. 4,766,952, Cl. 165-95.000.

Onomura, Hiroshi: *See*—
Ikeda, Hayato; Onomura, Hiroshi; and Kitahama, Satoshi, 4,767,283, Cl. 417-269.000

Onozawa, Makoto; Kitou, Kouji; and Osawa, Michitaka, to Hitachi, Ltd. Horizontal blanking pulse generation circuit used for display unit with cathode-ray tube. 4,767,971, Cl. 315-384.000

Onuma, Toshihide; and Katsura, Shigeo, to Nippon Mining Co., Ltd. Packaging container. 4,767,005, Cl. 206-334.000.

Oono, Nobuyuki: *See*—
Nakajima, Toyohei; Okada, Yasushi; Mieno, Toshiyuki; and Oono, Nobuyuki, 4,766,870, Cl. 123-489.000

Ootsuka, Hiroshi: *See*—
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,768,053, Cl. 354-403.000.

Ooyama, Noriyoshi: *See*—
Kawasaki, Ryoichi; Ooyama, Noriyoshi; Shimizu, Masami; and Suzuki, Kouzou, 4,767,921, Cl. 250-201.000.

Oppelt, Sylvester, to Siemens Aktiengesellschaft. Shock wave generator for an apparatus for non-contacting disintegration of calculi in the body of a life form. 4,766,888, Cl. 128-24.00A

Opsvik, Peter. Chair having supporting member for the posterior and the shins, respectively, of a chair occupant. 4,767,159, Cl 297-423.000.

Opsvik, Peter: *See*—
Mengshoel, Hans C.; and Opsvik, Peter, 4,767,160, Cl. 297-423.000.

Orgill, Rodney H.: *See*—
Cornish, Eldon C.; and Orgill, Rodney H., 4,767,951, Cl. 307-475.000.

Orii, Masaru, to Kabushikigaisha Orii. Baking apparatus and process. 4,767,639, Cl. 426-523.000

Oronzio de Nora Impianti Elettrochimici: *See*—
de Nora, Oronzio, 4,767,519, Cl. 204-255.000

O'Rourke, John J.; and Bunch, Richard P., to Converse Inc. Athletic shoe with Y support. 4,766,681, Cl. 36-89.000.

Ortiz, Jose ; A.: *See*—
Foguet, Rafael; Forne , Ernesto; Ortiz, Jose ; A.; and Sacristan, Aurelio, 4,767,767, Cl. 514-313.000

Osa AB: *See*—
Forslund, Torsten, 4,766,939, Cl. 144-2.00Z

Osanai, Takahito, to Kajima Corporation. Apparatus and method for diagnosing deterioration of smokestack. 4,768,158, Cl. 364-507.000

Osawa, Michitaka: *See*—
Onozawa, Makoto; Kitou, Kouji; and Osawa, Michitaka, 4,767,971, Cl. 315-384.000.

Oshio, Hiromichi: *See*—
Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,767,446, Cl. 71-103.000.

Osman, Maged A.; Perkins, Roger; Schmuckle, Friedrich; and Schuler, Claus, to BBC Brown, Boveri & Company, Limited. Process for the preparation of a voltage-dependent ceramic resistance based on ZnO, and a resistance produced by the process. 4,767,729, Cl. 501-94.000

Ostergard, Doak. Ankle exercising device. 4,767,118, Cl. 272-96.000.

Osterstom, Gordon E., to Sargent-Welch Scientific Co. Turbomolecular pump with improved bearing assembly. 4,767,265, Cl. 415-170.00R

Ota, Katsuyuki: *See*—
Shimizu, Takaaki; Ota, Katsuyuki; Aoyama, Toshimi; and Nojima, Setsuo, 4,767,642, Cl. 427-54.100.

Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, to Mitsubishi Denki Kabushiki Kaisha. Display unit with bent fluorescent lamp. 4,767,193, Cl. 350-345.000

Ota, Yukio: *See*—
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, 4,767,394, Cl. 493-409.000

Otani, Tadayuki; Nakamura, Taizo; and Saito, Tohru, to Nippon Steel Corporation. Method of igniting arcs by projection of ignition-plasma to the cathode. 4,767,907, Cl. 219-121.560

Otis Elevator Company: *See*—
Della Porta, Joseph L., 4,766,653, Cl. 24-563.000.

Otis Engineering Corporation: *See*—
Bullard, Roy P., 4,767,145, Cl. 294-86.180
Williamson, Jimmie R., Jr., 4,766,960, Cl. 166-321.000

Ouhadi, T.; and Dehan, L., to Colgate-Palmolive Company. Low phosphate or phosphate free nonaqueous liquid nonionic laundry detergent composition and method of use. 4,767,558, Cl. 252-99.000

Ouhadi, Trazollah; Forte, Rosalia; Jerome, Robert E.; Fayt, Roger M.; and Teyssie , Philippe J., to Compagnie Internationale de Participation. Process for polymerizing acrylic monomers and possibly non-acrylic co-monomers. 4,767,824, Cl. 525-343.000.

Outboard Marine Corporation: *See*—
Bailey, Frank V.; and Woodward, Lee A., 4,766,771, Cl. 74-61.000.

Ovadia, Abraham; and Finelt, Howard I., to Ovadia Corporation. Jewelry display and packaging box and blank therefor. 4,767,000, Cl. 206-45.140

Ovadia Corporation: *See*—
Ovadia, Abraham; and Finelt, Howard I., 4,767,000, Cl. 206-45.140

Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., to Mobil Oil Corporation. Integrated reactor system for converting oxygenates to alkylated liquid hydrocarbons. 4,767,604, Cl. 422-190.000

Owens-Corning Fiberglas Corporation: *See*—
Gaul, David J., 4,767,432, Cl. 65-8.000

Owens-Illinois Television Products Inc.: *See*—
Barry, Denis E.; and Miller, Jerry J., 4,767,125, Cl. 279-2.00R.

Oy Santasalo-Sohlberg AB: *See*—
Santasalo, Lauri; and Santasalo, Esko, 4,767,502, Cl. 202-174.000

Ozawa, Michiharu: *See*—
Shibuya, Kiyoshi; Kogiku, Fumio; and Ozawa, Michiharu, 4,766,947, Cl. 164-460.000

Ozawa, Takashi: *See*—
Murakami, Hiroki; and Ozawa, Takashi, 4,767,936, Cl. 250-578.000

Ozeki, Masaaki: *See*—
Hosoda, Keiji; and Ozeki, Masaaki, 4,767,660, Cl. 428-209.000.

P. F. Medicament: *See*—
Tarroux, Roger; Fahy, Jacques; and Hatinguais, Philippe, 4,767,855, Cl. 540-478.000

Pace, William G.: *See*—
Hardy, Thomas G.; Kaganov, Alan L.; and Pace, William G., 4,766,898, Cl. 128-334.00C

Pacelli, Alphonso. Peritoneal waste discharge systems. 4,766,622, Cl 4-661.000

Pacific Power Systems, Inc.: *See*—
Munt, Dean J., III, 4,767,294, Cl. 91-173.000

Packaged Systems, Inc.: *See*—
Golestaneh, Farhad, 4,766,928, Cl. 137-504.000

Page, Enno H., to Farley Metals, Inc. Expendable die casting sand core. 4,766,943, Cl. 164-72.000

Paist, Roger M. Color display apparatus for displaying a multi-color visual pattern derived from two audio signals. 4,768,086, Cl 358-81.000

Pakulis, Ivars E., to Advanced Moisture Technology, Inc. Moisture content detector. 4,767,981, Cl. 324-58.50A

Palath, David E.; and Libelo, E. Laurence, to QuesTech Inc. Method and apparatus for the microwave joining of ceramic items. 4,767,902, Cl. 219-10.55M

Paletta, Angelo D., legal representative: *See*—
Paletta, Guisuppe, deceased; and Paletta, Angelo D., legal representative, 4,767,221, Cl. 384-105.000
Paletta, Guisuppe, deceased; and Paletta, Angelo D., legal representative, 4,767,222, Cl. 384-106.000

Paletta, Guisuppe, deceased; and Paletta, Angelo D., legal representative, to Williams International Corporation. Compliant hydrodynamic gas lubricated thrust bearing. 4,767,221, Cl. 384-105.000

Paletta, Guisuppe, deceased; and Paletta, Angelo D., legal representative, to Williams International Corporation. Compliant hydrodynamic gas lubricated bearing. 4,767,222, Cl. 384-106.000

Palomo-Coll, Alberto, to Gema, S.A. Process for the preparation of 7-amino and 7-substituted amino-desacetoxycephalosporins 4,767,851, Cl. 540-218.000

Palus, Joseph J.; and Williams, Robert E., to Stoeltng, Inc. Mixing paddle assembly. 4,767,218, Cl. 366-261.000

Pang, Nicholas Y.: *See*—
Petolino, Joseph A.; Finan, Christopher D.; Isozaki, Jeffrey T.; and Pang, Nicholas Y., 4,768,197, Cl. 371-38.000

Pao, David S. C. Anterior capsulotomy procedures. 4,766,896, Cl. 128-305.000

Paquin, Jacques: *See*—
Chasseguet, Gustave; and Paquin, Jacques, 4,767,380, Cl. 464-68.000

Parcevaux, P.; Piot, B.; and Sault, P., to Dowell Schlumberger Incorporated. Cement compositions for cementing of wells enabling gas channelling in the cemented annulus to be inhibited by right-angle setting. 4,767,460, Cl. 106-90.000

Pardenek, Sandra A.: *See*—
Fleming, James W.; and Pardenek, Sandra A., 4,767,429, Cl. 65-3.110.

Parfree, Colin S.; Smith, Colin F. G.; Worthington, Peter; Marten, Malcolm G.; and Bliss, Norman S., to Standard Telephones & Cables, Public Limited Company. Submarine cable. 4,767,182, Cl. 350-96.220

Parish, James M., to B. F. Goodrich Company, The. Recoverable sea anchor. 4,766,837, Cl. 114-311.000

Parker, David A., to BP Chemicals Limited. Poultry processing. 4,766,646, Cl. 17-51.000

Parker, Robert S. R.; and Howes, John G. B., to Smith and Nephew Associated Companies, P.L.C. Coated articles and methods for the preparation thereof. 4,767,671, Cl. 428-412.000

Parrish, Timothy L., to Eaton Corporation. Removable key off-lock switch having improved locking actuator. 4,767,895, Cl. 200-43.040

Parrott, Patti L.; and Howell, James B., to Minnesota Mining and Manufacturing Company. Peristaltic pump header. 4,767,289, Cl. 417-477.000

Parsons, James D.: *See*—
Bunshah, Rointan F.; Parsons, James D.; and Stafsudd, Oscar M., 4,767,666, Cl. 428-334.000

Partain, Emmett M., III: *See*—
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767,463, Cl. 106-162.000

Partilla, Stephen R., to Xerox Corporation. Document feeder and flattener for moving platen copiers. 4,768,068, Cl. 355-75.000

Partington, Albert J.; and Hodgson, Anthony, to Westinghouse Electric Corp. Apparatus and method for preventing relative blade motion in steam turbine 4,767,247, Cl. 416-193.00A

Partington, Albert J., to Westinghouse Electric Corp. Apparatus and method for reducing blade flop in steam turbine. 4,767,273, Cl. 416-191.000

Pasma, Andries C., to U.S. Philips Corporation. Power-supply circuit. 4,768,142, Cl. 363-89.000

Pasqualotto, Silvana: *See*—
Caenazzo, Alessandro; and Pasqualotto, Silvana, 4,766,802, Cl. 91-394.000

Patel, Janak R.; and Wilk, Robert J., to G & W Electric Company. High voltage externally-separable bushing. 4,767,351, Cl. 439-363.000

Paton, Andrew: *See*—
Chase, Brian D.; and Paton, Andrew, 4,767,963, Cl. 313-408.000

Patt, Rudolf; and Kordsachia, Othar, to Kraftanlagen Aktiengesellschaft. Sulfite cooking method for the production of cellulose from materials containing lignocellulose with recovery of the cooking chemicals. 4,767,500, Cl. 162-32.000

Pattantyus, Imre A.: *See*—
Dorogi, Joseph D.; Pattantyus, Imre A.; and Pedicini, Christopher S., 4,767,682, Cl. 429-94.000

Pattavina, Jeffrey S.; and Eu, Jai H., to General Signal Corp. Frame synchronization detection system for time division multiplexed (TDM) digital signals. 4,768,192, Cl. 370-100.000

Patterson, Roy D., to National Research Development Corporation Apparatus for generating auditory indicators. 4,768,022, Cl. 340-384.00E.

Patti, Vincenzo, to ITAP S.p.A. Check valve with self-guided shutter in the valve body. 4,766,930, Cl. 137-540.000

Patton, Edward E., Sr. Protective work glove. 4,766,612, Cl. 2-161.00R

Pauer, Jericho P.; and Janke, Harry T., to Ashley Furniture Industries, Inc. Table leg securement device. 4,766,821, Cl. 108-156.000

Paulus, Wilfried: *See*—
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried.

VOL 1093 ISS 5 AG 30 1988 UMI

Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000

Pavio, Anthony M., Jr.; and Thompson, Scott D., to Texas Instruments Incorporated. Monolithic double balanced single sideband modulator. 4,768,000, Cl. 332-31.00T.

Pavlichko, Joseph P.: *See*—
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leung, Pak S., 4,767,463, Cl. 106-162.000.

Pax, Henry A. Range hood device. 4,766,881, Cl. 126-299.00R

Pazos, Jose F.; Greene, Sharon L.; and Rodriguez, Augusto, to Kimberly-Clark Corporation. Superabsorbent thermoplastic compositions and nonwoven webs prepared therefrom. 4,767,825, Cl. 525-408.000

PC Proto, Inc.: *See*—
Lindner, Frederick H., 4,767,489, Cl. 156-345.000.

Peachtree Patient Center, Inc.: *See*—
Tuttle, William C., 4,767,940, Cl. 307-116.000.

Pebra GmbH Paul Braun: *See*—
Huttner, Manfred, 4,767,312, Cl. 425-543.000

Peco, Inc.: *See*—
Hall, Peter, 4,767,150, Cl. 296-50.000

Pedicini, Christopher S.: *See*—
Dorogi, Joseph D.; Pattantyus, Imre A.; and Pedicini, Christopher S., 4,767,682, Cl. 429-94.000

Pelletier, Jean L.: *See*—
Zajac, Elie; Desmurs, Roland; and Pelletier, Jean L., 4,767,180, Cl. 350-96.210

Pennwalt Corporation: *See*—
Georgiev, Vassil S.; and Mullen, George B., 4,767,866, Cl. 548-240.000
Georgiev, Vassil S.; and Mullen, George B., 4,767,867, Cl. 548-240.000
Georgiev, Vassil S.; and Mullen, George B., 4,767,868, Cl. 548-240.000

Pepe, Enrico J.: *See*—
Mohr, Paul H.; and Pepe, Enrico J., 4,767,599, Cl. 422-13.000.

Pepper, David M., to Hughes Aircraft Company. System and method for encoding information onto an optical beam. 4,767,195, Cl. 350-354.000

Perigne, Jerome: *See*—
Bayle-Laboure, Gerard J. P.; Desaulty, Michel A. A.; Perigne, Jerome; and Sandelis, Denis J. M., 4,766,722, Cl. 60-39.230.

Perkins, Roger: *See*—
Osman, Maged A.; Perkins, Roger; Schmuckle, Friedrich; and Schuler, Claus, 4,767,729, Cl. 501-94.000

Perlegos, George, to SEEQ Technology, Inc. Fault-tolerant memory array. 4,768,169, Cl. 365-200.000

Perregaux, Alain E.: *See*—
Dir, Gary A.; and Perregaux, Alain E., 4,767,190, Cl. 350-339.00R

Perry, Mordechai: *See*—
Linder, Charles; Nemas, Mara; Perry, Mordechai; and Kotraro, Reuven, 4,767,645, Cl. 427-386.000

Personal Products Company: *See*—
Makoui, Kambiz B.; and Chatterjee, Pronoy K., 4,767,848, Cl. 536-56.000

Perthus, Peter: *See*—
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000

Pessolano, Arsenio A.: *See*—
Baker, Robert K.; Rupprecht, Kathleen M.; Pessolano, Arsenio A.; and Durette, Philippe L., 4,767,766, Cl. 514-301.000

Peter, Wolfgang; and Hacke, Heinz, to Schmalbach-Lubeca AG. Metal tear-open lid for cans. 4,767,020, Cl. 220-273.000.

Peterman, Milton J.: *See*—
Rice, Allyn B.; Johnson, Ronald L.; and Peterman, Milton J., 4,767,003, Cl. 206-328.000

Petermann, Steven G., to Atlantic Richfield Company. Wellbore fluid sampling apparatus. 4,766,955, Cl. 166-167.000.

Peters, Horst: *See*—
Lindner, Christian; Peters, Horst; and Urbanneck, Bernd, 4,767,821, Cl. 525-72.000

Peters, Rudolf; and Kammann, Rolf, to Windmoller & Hoscher. Apparatus for forming a plurality of supply rolls consisting of respective wound strips formed from a wide web by slitting. 4,767,075, Cl 242-56.00A

Petersen, Henno A.: *See*—
Cesare, Frank C.; Whelan, William P., Jr.; Petersen, Henno A.; Coolbaugh, Thomas S.; and Davis, Robert G., 4,767,806, Cl. 523-514.000

Peterson, Paul J., to Goodyear Tire & Rubber Company, The. Method and apparatus for belt splice preparation. 4,767,244, Cl. 408-204.000.

Peterson, Steven H.; and Lahoda, Edward J., to Westinghouse Electric Corp. Zirconium isotope separation process. 4,767,513, Cl. 204-157.210

Petolino, Joseph A.; Finan, Christopher D.; Isozaki, Jeffrey T.; and Pang, Nicholas Y., to Amdahl Corporation. Cache error code update. 4,768,197, Cl. 371-38.000

Petrella, Robert G.; and Scarpati, Michael, to Air Products and Chemicals, Inc. Polyurethane foam catalysts that eliminate polyurea-containing polyol based masterbatch cure drift. 4,767,736, Cl 502-164.000

Pettit, Michael C., to Westinghouse Electric Corp. Non-verbal communication system for work stations. 4,768,014, Cl. 340-332.000

Petzow, Gunter: *See*—
Claussen, Nils; and Petzow, Gunter, 4,767,727, Cl. 501-87.000.

Pfaff, Wayne K. Test fixture for electronic device packages. 4,767,983, Cl. 324-158.00F

Pfarrhofer, Gerhard: *See*—
Zolss, Gerhard; and Pfarrhofer, Gerhard, 4,767,784, Cl 514-554.000

Pfeil, Anton: *See*—
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000.

Pfizer Inc.: *See*—
Bass, Robert J.; Cooper. Kelvin; and Richardson, Kenneth, 4,767,777, Cl. 514-383.000.
Rizzi, James P., 4,767,743, Cl. 514-18.000

Phaneuf, Sylvio T.: *See*—
Shearer, Joseph W., Jr.; and Phaneuf, Sylvio T., 4,767,985, Cl. 324-158.00P

Phelps, Richard D.; Upham, Gerald A.; and Anderson, Paul M., to United States of America, Energy. Protective interior wall and attach8ing means for a fusion reactor vacuum vessel. 4,767,592, Cl 376-150.000

Philips Industries Inc.: *See*—
Hansing, Ronald J., 4,767,139, Cl. 292-162.000.

Phillips, Edward H., to Compact Spindle Bearing Corporation. Solid state commutated linear motor with an ironless multiphase armature. 4,767,954, Cl. 310-12.000.

Phillips, Norman D.: *See*—
Barabas, Joseph A.; Phillips, Norman D.; and Polscer, Joseph G., 4,767,427, Cl. 55-493.000.

Phillips Petroleum Company: *See*—
Goetz, Kenneth D.; Nesheiwat, Afif M.; Senatore, Guy; Shang, Wei-Teh W.; and Phillips Petroleum Company, 4,767,841, Cl. 528-388.000
Gwinn, J. S.; and Miller, Michael J., 4,767,216, Cl. 366-85.000.
Holland, Gary V.; and Tillett, George C., Jr., 4,767,467, Cl. 136-217.000
Hopkins, Thomas R.; and Stewart, James F., 4,767,994, Cl. 324-438.000
Kukes, Simon G.; and Brandes, Karlheinz K., 4,767,523, Cl. 208-217.000
Rohlfing, Raymond G.; and Norwood, Donald D., 4,767,028, Cl. 222-219.000
Thorsrud, Agmund K., 4,767,799, Cl. 523-137.000.

Phillips, Richard P.: *See*—
Jacobsen, Stephen C.; Phillips, Richard P.; and Wood, John E., 4,767,973, Cl. 318-652.000

Phillipson, Walter M.; Brennan, Robert J.; and Meighen, Terrence, to Stewart Stamping Corp. Jack and connector. 4,767,355, Cl. 439-425.000

Philpot, Gearld. Drilling rig with hoist transportable by a vehicle. 4,767,100, Cl. 254-386.000.

Phipps, Joe: *See*—
Thurber, Robert E.; Prengaman, Richard J.; Phipps, Joe; and Rzemien, Russell, 4,768,035, Cl. 342-194.000.

Photopoly Ohka Co., Ltd.: *See*—
Shimizu, Takaaki; Ota, Katsuyuki; Aoyama, Toshimi; and Nojima, Setsuo, 4,767,642, Cl. 427-54.100.

Pickart, Loren R., to ProCyte Corporation. Methods and compositions for preventing ulcers. 4,767,753, Cl. 514-18.000.

Pieper, Rudolf: *See*—
Emsperger, Werner; Bruckner, Hermann; Losel, Georg; and Pieper, Rudolf, 4,766,851, Cl. 122-4.00D.

Pierburg GmbH: *See*—
Hartel, Gunter, 4,766,865, Cl. 123-414.000

Pies, Gunther, to Mauser-Werke GmbH. Container. 4,767,021, Cl 220-465.000

Pignal, Maurice; and Chapuis, Bernard, to Robatel SLPI. Manipulator for automatically supplying machines for the centrifugation of bobbins of yarns. 4,767,252, Cl. 414-222.000.

Pilipauskas, Daniel R.: *See*—
Hansen, Donald W., Jr.; Pilipauskas, Daniel R.; and Clare, Michael, 4,767,744, Cl. 514-19.000.

Pillsbury Company, The: *See*—
Larson, James A., 4,767,030, Cl. 222-238.000.

Pinchuk, Leonard: *See*—
Miller, Sandra L.; and Pinchuk, Leonard, 4,767,400, Cl. 604-8.000.

Pioneer Electronic Corporation: *See*—
Kanamaru, Hitoshi, 4,768,104, Cl. 358-342.000.

Piot, B.: *See*—
Parcevaux, P.; Piot, B.; and Sault, P., 4,767,460, Cl. 106-90.000.

Pipkin, David J.; and Marzich, John S. Hand-held marking device in combination with a counter. 4,768,040, Cl. 346-14.00R.

Pirelli Cable Corporation: *See*—
Bodell, Donald H., 4,768,186, Cl. 370-3.000.

Placo Co., Ltd.: *See*—
Sakakura, Kazuaki; and Takahashi, Minoru, 4,767,303, Cl. 425-203.000

Plantorgan-Werk Heinrich G. F. Christensen, KG: *See*—
Dodt, Johannes; Seemuller, Ursula; Fritz, Hans; and Fink, Ernst, 4,767,742, Cl. 514-12.000.

Planum Technology Corp.: *See*—
Green, Dan; and Goldner, Sandor, 4,768,221, Cl. 379-67.000.

Plesinger, Boris, to Honeywell Bull Inc. Non-precious metal furnace with inert gas firing. 4,767,104, Cl. 266-144.000.

Pluss-Staufer AG: *See*—
Strauch, Dieter; Belger, Peter; Hofer, Heiner; and Merz, Martin, 4,767,464, Cl. 106-464.000

Pochet, Jacques: *See*—
Lacroix, Jean-Claude; Franco, Pierre; Le Gall, Stephane; Bourret, Gerard; and Pochet, Jacques, 4,768,202, Cl. 375-3.100.

Pockrandt, Wolfgang, to Siemens Aktiengesellschaft. Method and apparatus for failsafe storage and reading of a digital counter in case of power interruption. 4,768,210, Cl. 377-32.000.

Pohl, Peter, to Siemens Aktiengesellschaft. Device for fixing fiber-shaped light waveguides in a plug housing. 4,767,176, Cl. 350-96.200.

Pola Chemical Industries, Inc.: *See*—
Fukusima, Syoji; Kato, Motosaburo; and Mochizuki, Takashi, 4,767,492, Cl. 156-580.200.

Polaroid Corporation: *See*—
Berger, Michael; Cavallaro, Robert; and Czumak, Frank M., 4,767,691, Cl. 430-210.000

Polcer, Anton J., to ITT Corporation, Defense Communications Division. Digital data and orderwire combiner apparatus. 4,768,191, Cl. 370-112.000

Polscer, Joseph G.: *See*—
Barabas, Joseph A.; Phillips, Norman D.; and Polscer, Joseph G., 4,767,427, Cl. 55-493.000

Polt, Niklaus: *See*—
Habegger, Fernand; Polt, Niklaus; and Grobli, Kurt, 4,767,389, Cl. 474-266.000

Polyplastics Co., Ltd.: *See*—
Kageyama, Yukihiko; Nakane, Toshio; and Hijikata, Kenji, 4,767,830, Cl. 525-450.000

Polysar Financial Services S.A.: *See*—
Evitt, William T., 4,767,813, Cl. 524-271.000

Polytechnic Institute of New York: *See*—
Liang, Rong-Chang; Narang, Subhash; and Reiser, Arnost, 4,767,826, Cl. 525-421.000

Polytechnic University, The: *See*—
Schleich, Donald M., 4,767,607, Cl. 423-412.000

Pons de Vinals, Joaquin, to Cia. Valenciana de Cementos Portland S.A. Method and apparatus for cooling and for further treatment of hot white cement clinker. 4,767,462, Cl. 106-101.000

Pooler, Robert E.; and Kaylor, William R., to North American Philips Corp. Testing apparatus for displaying scanning beam spot size and line focus on a CRT video screen. 4,768,091, Cl. 358-139.000.

Poppenheimer, Charles B., to GTY Industries. Lighting fixture. 4,768,139, Cl. 362-302.000.

Poshemansky, Vladimir M.; Skornyakov, Eduard P.; and Chizhkov, Vitaly P., to Vsesojuzny Nauchno-issledovatelsky i Konstruktorsky istitute Khromatografii. Method of chromatographic analysis of a mixture of liquid substances and a gas chromatograph for carrying out the method. 4,766,760, Cl. 73-23.100.

Pottier, Alain P.; Walulik, James J.; and Simmons, Ralph L., to Schlumberger Technology Corporation. Wet electrical connector. 4,767,349, Cl. 439-191.000

Pouit, Christian J.: *See*—
Chan-Son-Lint, Bernard; Borderies, Pierre; and Pouit, Christian J., 4,768,001, Cl. 333-159.000

Powell, Dennis W.: *See*—
Albright, Jay D.; Powell, Dennis W., and Dusza, John P., 4,767,765, Cl. 514-248.000

Powers, Edward T., to Haemonetics Corporation. Method and apparatus for processing biological fluids. 4,767,396, Cl. 494-60.000

PPG Industries, Inc.: *See*—
Lampman, DeWitt W.; Claassen, George R.; and Fecik, Michael T., 4,767,437, Cl. 65-104.000
Schwartz, James H.; Waterloo, Thomas L.; and Claassen, George R., 4,767,434, Cl. 65-29.000.
Worley, Shelby D., 4,767,542, Cl. 210-755.000.

Prampolini, Francis: *See*—
Lefevre, Remi; and Prampolini, Francis, 4,766,871, Cl. 123-489.000

Pratt, John D., to Monogram Industries, Inc. Fastener for securing panels of composite materials. 4,767,248, Cl. 411-45.000

Prazak, Charles J., III: *See*—
Adler, Robert; and Prazak, Charles J., III, 4,767,962, Cl 313-402.000

Precise Flight, Inc.: *See*—
McDaniel, Michael A., 4,767,955, Cl. 310-20.000

Precision Image Corporation: *See*—
Bibl, Andreas; Day, Gene F.; and Higginson, John A., 4,767,689, Cl. 430-45.000

Precision Standard Time, Inc.: *See*—
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., 4,768,178, Cl. 368-47.000

Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co.: *See*—
Viebrantz, Hans-Joachim; and Vogt, Alfred, 4,768,230, Cl 455-603.000

Preikschat, Ekhard: *See*—
Preikschat, Fritz K.; and Preikschat, Ekhard, 4,768,034, Cl 342-80.000.

Preikschat, Fritz K.; and Preikschat, Ekhard. Radar system for multiple object tracking and discrimination. 4,768,034, Cl. 342-80.000

Prengaman, Richard J.: *See*—
Thurber, Robert E.; Prengaman, Richard J.; Phipps, Joe; and Rzemien, Russell, 4,768,035, Cl. 342-194.000

Presgrave, John E.: *See*—
Greenwood, David; and Presgrave, John E., 4,767,459, Cl 106-22.000

Prestolite Wire Corporation: *See*—
Grandy, Mark E., 4,767,168, Cl. 350-96.200

Pretchel, David A., to Minnesota Mining and Manufacturing Company Integrally molded cable termination assembly, contact and method 4,767,352, Cl. 439-395.000

Priaroggia, Paolo G., to Societa' Cavi Pirelli S.p.A. Submarine telecommunication line with optical fibers. 4,767,173, Cl. 350-96.200

Priester, Claus-Ulrich: *See*—
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich; and Vagt, Uwe, 4,767,856, Cl. 540-538.000
Merger, Franz; Priester, Claus-Ulrich; Fischer, Rolf; and Sauerwald, Manfred, 4,767,857, Cl. 540-538.000

Prietzel, Gunter; and Schultz, Rosemarie, to Siemens Aktiengesellschaft. Disconnect contact arrangement for switchgear movably arranged at guides. 4,768,132, Cl. 361-342.000

Print-Collect GmbH: *See*—
Alt, Karl-Heinz, 4,766,810, Cl. 101-217.000

Pritchard, James R.: *See*—
Cortelek, Dolunay I.; and Pritchard, James R., 4,767,796, Cl 521-155.000

Procter & Gamble Company, The: *See*—
de Buzzaccarini, Francesco, 4,767,563, Cl. 252-174.250
Herdeman, Robert W., 4,767,557, Cl. 252-91.000
Straathof, Theodericus J.; and Konig, Axel, 4,767,547, Cl 252-8.800

ProCyte Corporation: *See*—
Pickart, Loren R., 4,767,753, Cl. 514-18.000

Prodan, Richard S., to North American Philips Corporation. Vertical pre-filter for pip television receivers. 4,768,093, Cl. 358-160.000

Proepper, Wilhelm, to Benz & Hilgers GmbH. Dosing and filling of fluid or pasty masses, in particular nutrient materials which are to be kept free of contaminants, such as milk, yogurt, pudding, dessert or the like into containers. 4,767,031, Cl. 222-255.000

PSI Star: *See*—
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., 4,767,661, Cl. 428-209.000
Battey, James F.; Nelson, Norvell J.; and Barnett, Daniel J., 4,767,662, Cl. 428-209.000

PUMA Aktiengesellschaft Rudolf Dassler Sport: *See*—
Bender, Gerhard, 4,766,679, Cl. 36-30.00R

Purcell, John R.; Breneman, Bruce C.; and Burnett, Sibley C., to General Atomics. MRI magnet system with vessel having composite first wall. 4,768,008, Cl. 335-216.000

Purohit, Prakash C.: *See*—
Shansky, Albert; and Purohit, Prakash C., 4,767,617, Cl. 424-71.000

Purta, David A.: *See*—
Florig, H. Keith, and Purta, David A., 4,767,982, Cl. 324-58.50A

Pustek, Frank J.: *See*—
Friedman, Robert B.; Gottnesd, David J.; Faron, Eugene J.; Pustek, Frank J.; and Katz, Frances R., 4,767,849, Cl. 536-102.000

Quash, Gerard A.: *See*—
Doutheau, Alain; Gore, Jacques; Quash, Gerard A.; and Didier, Bernard, 4,767,872, Cl. 549-551.000

QuesTech Inc.: *See*—
Palaith, David E.; and Libelo, E. Laurence, 4,767,902, Cl. 219-10.55M

Quigley, Vincent P.: *See*—
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,767,822, Cl. 525-99.000

Quimby, Paul C., Jr.: *See*—
Walker, Harrell L.; Connick, William J., Jr.; and Quimby, Paul C., Jr., 4,767,441, Cl. 71-79.000

Quinn, Patrick A., to Tektronix, Inc. Analog signal multiplexer. 4,767,945, Cl. 307-241.000

R. J. Reynolds Tobacco Company: *See*—
Oglesby, Robert L., 4,766,911, Cl. 131-281.000

R & S Associates Co.: *See*—
Renton, Dernic, 4,767,404, Cl. 604-48.000

Radiall Industrie. *See*—
Zajac, Elie; Desmurs, Roland; and Pelletier, Jean L., 4,767,180, Cl 350-96.210.

Radman, Anton J.: *See*—
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D., and Lyon, Michael, 4,768,124, Cl. 360-133.000

Radwanski, Fred R.; and Chung, Raymond, to Kimberly-Clark Corporation. Apparatus and method for forming a multicomponent integral laid fibrous web with discrete homogeneous compositional zones, and fibrous web produced thereby. 4,767,586, Cl. 264-113.000

Raeymaekers, Alfons H. M.: *See*—
Boeckx, Gustaaf M.; Raeymaekers, Alfons H. M.; and Sipido, Victor, 4,767,760, Cl. 514-242.000

Ragnmark, Karl G. B.: *See*—
Hartwig, Carl S. M.; and Ragnmark, Karl G. B., 4,766,963, Cl 173-109.000

Railmaster System, Inc.: *See*—
Wicks, Harry O.; and Riefler, Monte P., 4,766,818, Cl. 105-4.300

Raines, Charles D.: *See*—
Dayen, Leonid; and Raines, Charles D., 4,766,986, Cl. 192-18.00A

Raketich, Milton F. Positioning apparatus. 4,767,109, Cl 269-61.000

VOL 1093 ISS 5 AG 30 1988 UMI

Ramos, Hector V.; Fagan, Kenneth W., Jr.; Rothenberg, Joan R.; and Smith, David L., to General Foods Corporation. Method for adhering spices on the surface of rice. 4,767,636, Cl. 426-291.000

Randall, Richard C.; Myer, Jimmy; and Sanford, William R., to Randall, Richard C. Rope cleat. 4,766,835, Cl. 114-218.000.

Rando, Joseph F.: *See—*
Cain, Gary L.; Rando, Joseph F.; Teach, Ted L.; Meyers, Lawrence J.; and Markley, Theodore J., 4,767,208, Cl. 356-138.000.

Rappen, Albert, to VSR Engineering GmbH Fordertechnik. Blowing device for elimination of compactions in bulk material storage silos. 4,767,024, Cl. 222-3.000

Rasmussen, Ole-Bendt. Method and apparatus for the manufacture and stretching of a laminate. 4,767,488, Cl. 156-344.000.

Rasor, Cecil E. Fisherman's portable sink. 4,766,621, Cl. 4-643.000.

Ratcliffe, Robert M.: *See—*
Lemieux, Raymond U.; Ratcliffe, Robert M.; and Baker, Donald A., 4,767,845, Cl. 536-18.200.

Rattazzini, Paolo, to Giustina International S.P.A. Adjustable support rest for a cylinder grinding machines or the like. 4,766,703, Cl. 51-289.00R.

Rauenbusch, Erich: *See—*
Lange, Peter M.; and Rauenbusch, Erich, 4,767,850, Cl. 536-127.000.

Raychem Corporation: *See—*
Jansons, Viktors, 4,767,837, Cl. 528-125.000.
Willie, Marc; Verhoeven, Rik; and Van Emelen, Rik, 4,767,652, Cl. 428-36.000

Raychem Limited: *See—*
Smith, Timothy S.; and Thornley, David W. M., 4,767,668, Cl. 428-379.000

Raymer, Jack D., II: *See—*
Nigg, Daniel; DePoss, Robert; Sommer, Edward; Raymer, Jack D., II; and Crane, Burhe, 4,767,896, Cl. 200-67.0DA

Raytheon Company: *See—*
Hurley, James E., 4,767,915, Cl. 219-459.000

RCA Corporation: *See—*
Dholakia, Anil R., 4,766,705, Cl. 51-328.000

RCA Licensing Corporation: *See—*
Hale, John R., 4,767,436, Cl. 65-59.270.
Mayweather, William T., III, 4,767,949, Cl. 307-362.000.
Romesburg, Eric D., 4,768,083, Cl. 358-22.000.

Rebe, Paul E.: *See—*
Daly, Robert; and Rebe, Paul E., 4,767,426, Cl. 55-487.000

Rech, Werner: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kuhne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R.

Reed, Charles W., III, to Federal-Mogul Corporation. Blade control system for concrete cutting apparatus. 4,767,162, Cl. 299-1.000

Reed, Martin A.: *See—*
Konopik, Bradly J.; Bradley, David J.; Reed, Martin A.; Tannenbaum, Alan R.; and Turner, Michael R., 4,768,149, Cl. 364-200.000

Regie Nationale Des Usines Renault: *See—*
Lefevre, Remi; and Prampolini, Francis, 4,766,871, Cl. 123-489.000

Reiber, Ronnie L.: *See—*
David, Donald M.; Holmes, Melvin R.; Hoback, Larry E.; and Reiber, Ronnie L., 4,766,798, Cl. 86-27.000

Reid, Starlin M., to Halliburton Company. Hybrid switching circuit in a DC to DC converter. 4,767,978, Cl. 323-282.000

Reimche, Wallace E.: *See—*
Chan, Fred N.; and Reimche, Wallace E., 4,767,084, Cl. 244-164.000

Reinecke, Paul: *See—*
Jelich, Klaus; Brandes, Wilhelm; Hanssler, Gerd; and Reinecke, Paul, 4,767,775, Cl. 514-379.000.

Reiser, Arnost: *See—*
Liang, Rong-Chang; Narang, Subhash; and Reiser, Arnost, 4,767,826, Cl. 525-421.000.

Reiss, Karl: *See—*
Mennicke, Stefan; and Reiss, Karl, 4,767,685, Cl. 429-104.000.

Reliable Automatic Sprinkler Co., Inc., The: *See—*
Macie, Walter R., 4,766,961, Cl. 169-38.000

Reliance Comm/Tec Corporation: *See—*
Chen, William I. H.; Dillon, Philip; and Yancey, Glenn, 4,767,980, Cl. 323-356.000

Reno, Charles W., to General Electric Company. Apparatus and method for minimizing magnification distortion in multi-track optical recording. 4,768,184, Cl. 369-112.000

Renstrom, Richard L., to Minnesota Mining and Manufacturing Company. Spliceable sheet material. 4,767,653, Cl. 428-40.000.

Renton, Derric, to R & S Associates Co. Surgical suction device having a perforated sleeve. 4,767,404, Cl. 604-48.000

Resch, Heribert, to Messerschmitt-Bolkow-Blohm GmbH. Method and apparatus for the grinding of explosives. 4,767,064, Cl. 241-21.000.

Research Foundation of State University of New York, The: *See—*
Johnson, David L., 4,767,602, Cl. 422-101.000

Reunamaki, Pauli, to O/Y Kyro A/B Tamglass. Flow barrier in the annealing section of a glass tempering apparatus. 4,767,439, Cl. 65-351.000

Revlon, Inc.: *See—*
Klein, Gustave J., 4,766,913, Cl. 132-9.000.

Rexa Corporation: *See—*
Glomeau, J. Robert, 4,766,728, Cl. 60-476.000.

Rexnord Inc.: *See—*
Elcock, Robin W.; and Guevara, Belen A., 4,767,249, Cl. 411-110.000

Reynolds, Alvin E., to Kera Corneal Devices, Inc. Apparatus for corneal curvature adjustment. 4,766,895, Cl. 128-303.00R

Rheon Automatic Machinery Co., Ltd.: *See—*
Tashiro, Yasunori, 4,767,304, Cl. 425-308.000
Tashiro, Yasunori, 4,767,305, Cl. 425-308.000

Rhoades, James J.: *See—*
Break, Douglas G.; Marsh, Walter G.; and Rhoades, James J., 4,766,757, Cl. 72-319.000

Rhoe, Andrei: *See—*
Feldman, Robert J.; Chen, James M.; Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., 4,767,521, Cl. 208-85.000

Rhone-Poulenc Chimie de Base: *See—*
Joubert, Daniel, 4,767,570, Cl. 252-540.000.

Rhone-Poulenc Nederland B.V.: *See—*
Ayad, Hafez M., 4,767,773, Cl. 514-351.000

Rhone-Poulenc Sante: *See—*
Zimmermann, Pierre, 4,767,859, Cl. 544-258.000

Riccitiello, Salvatore R.; Hsu, Ming-Ta S.; and Chen, Timothy S., to United States of America, National Aeronautics and Space Administration. Boron-containing organosilane polymers and ceramic materials thereof. 4,767,728, Cl. 501-91.000.

Rice, Allyn B.; Johnson, Ronald L.; and Peterman, Milton J., to Hughes Aircraft Company. Transparent, electrostatic protective container with readily accessible identification means. 4,767,003, Cl. 206-328.000

Rice, Nigel. Sewer renovation by expanding a liner within the sewer and placing a new pipe within the expanded liner. 4,767,236, Cl. 405-154.000.

Richardson, Kenneth: *See—*
Bass, Robert J.; Cooper, Kelvin; and Richardson, Kenneth, 4,767,777, Cl. 514-383.000.

Ricoh Co., Ltd.: *See—*
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000.
Sasaki, Saburo, 4,768,051, Cl. 354-400.000.
Tanzawa, Misao; and Endo, Shuichi, 4,768,062, Cl. 355-15.000.

Riefler, Monte P.: *See—*
Wicks, Harry O.; and Riefler, Monte P., 4,766,818, Cl. 105-4.300

Riese, Stephen B., to Brunswick Corporation. Exhaust valve throttling mechanism for two-stroke engine. 4,766,854, Cl. 123-65.0PE

Rig Design Sevices, Limited: *See—*
Hamblin, Michael J., 4,767,544, Cl. 210-767.000

Riggsbee, James H., to United Merchants & Manufacturers, Inc. Detachable coupon label. 4,767,654, Cl. 428-40.000.

Righi, Ivo, to Zinser Textilmaschinen GmbH. Positioning mechanism for a traveling automatic maintenance unit for a textile ring spinning machine or the like. 4,766,718, Cl. 57-1.00R

Ristic, Miodrag; and Chilbert, Mary L., to University of Illinois. Method and materials for development of immunological responses protective against malarial infection. 4,767,622, Cl. 424-88.000.

Ritter, John A.; and Hallam, Keith J., to Thrall Car Manufacturing Company. Hopper car with automatic discharge door mechanism. 4,766,820, Cl. 105-240.000

Riviere, Luc: *See—*
Carenco, Alain; and Riviere, Luc, 4,767,174, Cl. 350-96.200.

Rizzi, James P., to Pfizer Inc. Peptide immunostimulants. 4,767,743, Cl. 514-18.000

Rizzo, Rudolph R. Highway sealant applicator system. 4,767,234, Cl. 404-111.000

Roanoke College: *See—*
Frantz, Virgil L., 4,766,925, Cl. 137-62.000.

Robatel SLPI: *See—*
Pignal, Maurice; and Chapuis, Bernard, 4,767,252, Cl. 414-222.000.

Robert Bosch GmbH: *See—*
Kretschmer, Heinz; Lietar, Christian; Lindae, Gerhard; Loewe, Richard; Longchamp, Jean-Francois; Neumann, Rainer; Noelte, Eckhard; and Perthus, Peter, 4,768,135, Cl. 362-66.000.
Straubel, Max, 4,767,288, Cl. 417-462.000.

Rocco, Lucille M.; and Wild, Francine A. Portable conditioning and exercising device for animals. 4,766,848, Cl. 119-29.000.

Rockwell Automotive Body Components (U.K.) Limited: *See—*
Ernest, Norman A., 4,766,747, Cl. 70-264.000

Rockwell International Corporation: *See—*
Maram, Jonathan M.; and Smith, Matthew A., 4,767,911, Cl. 219-130.010.
Yeh, Pochi A., 4,767,197, Cl. 350-354.000.

Rodal, David R., to Ampex Corporation. Dynamic brake control for a tape drive system. 4,767,970, Cl. 318-375.000.

Rodenberg, Orville C.: *See—*
Minor, James C.; and Rodenberg, Orville C., 4,768,046, Cl. 346-160.100

Rodriguez, Augusto: *See—*
Pazos, Jose F.; Greene, Sharon L.; and Rodriguez, Augusto, 4,767,825, Cl. 525-408.000

Roestenberg, Jerome R. Vacuum rasp. 4,766,701, Cl. 51-170.00R.

Rogers, Blair E.: *See—*
Fielder, Dennis C.; Furman, Arthur J.; Miller, Paul A.; and Rogers, Blair E., 4,767,088, Cl. 248-121.000

Rogers, Kim R.: *See—*
Fasen, Kenneth R.; Rogers, Kim R.; and Schwartz, Lee J., 4,767,977, Cl. 320-20.000

Rogge, Bernd: *See—*
Lungu, Mihail; and Rogge, Bernd, 4,767,504, Cl. 204-1.00T.

Roggwiller, Peter: *See—*
Broich, Bruno; Gobrecht, Jens; and Roggwiller, Peter, 4,768,075, Cl. 357-38.000

Rohlfing, Raymond G.; and Norwood, Donald D., to Phillips Petroleum Company. Rotary valve. 4,767,028, Cl. 222-219.000

Rohling, Kenneth W.: *See—*
Chu, Sow T.; and Rohling, Kenneth W., 4,768,016, Cl. 340-347.0AD.

Rohrer, Wesley M., Jr.: *See—*
Dilmore, James A.; Young, William E.; Rohrer, Wesley M., Jr.; and Turner, Abner B., 4,767,323, Cl. 432-116.000

Rokach, Joshua: *See—*
Young, Robert N.; Rokach, Joshua; and Hayes, Edward C., 4,767,745, Cl. 514-21.000

Roley, John, to Warminster Fiberglass Company. Gas extraction outlet for wastewater settling tank. 4,767,536, Cl. 210-532.100.

Rolls-Royce plc: *See—*
Catlow, Ronald, 4,767,271, Cl. 416-129.000
Godfrey, Colin; and Webster, Rodney C., 4,767,261, Cl. 415-115.000
Newton, Arnold C., 4,766,723, Cl. 60-39.310.

Roltra S.p.A.: *See—*
Brusasco, Enzo, 4,766,985, Cl. 192-0.02R.

Romero, Luis: *See—*
Hokama, Yosh; and Romero, Luis, 4,767,648, Cl. 428-15.000

Romesburg, Eric D., to RCA Licensing Corporation. Digital TV having on-screen display feature. 4,768,083, Cl. 358-22.000

Roper, Bernarr G. Freeze safe valve. 4,766,923, Cl. 137-15.000

Rorer Pharmaceutical Corporation: *See—*
Hagen, Nicholas S.; and Lamon, Kim D., 4,767,612, Cl. 424-45.000

Rosebrugh, Christopher: *See—*
Jou, Jing-Yang; and Rosebrugh, Christopher, 4,768,196, Cl. 371-25.000

Rosen, Meyer R.; Dornstauder, Gregory J.; and Marlin, Lawrence, to Union Carbide Corporation. Process for agglomerating ore concentrate utilizing clay and dispersions of polymer binders or dry polymer binders. 4,767,449, Cl. 75-3.000

Rosenbaum, Georges: *See—*
Grollier, Jean-Francois; Allec, Josiane; Fourcadier, Chantal; Rosenbaum, Georges; and Darmenton, Patrick, 4,767,618, Cl 424-74.000

Rosowsky, Andre, to Dana-Farber Cancer Institute, Inc. Ornithine derivatives and their use as methotrexate-resistant cell inhibitors. 4,767,761, Cl. 514-249.000.

Ross, Scott F.: *See—*
Malito, John T.; Wintermute, Richard D.; Ross, Scott F.; and Ferrara, John M., 4,767,554, Cl. 252-49.500.

Rothenberg, Joan R.: *See—*
Ramos, Hector V.; Fagan, Kenneth W., Jr.; Rothenberg, Joan R.; and Smith, David L., 4,767,636, Cl. 426-291.000

Rottman, Fritz M.: *See—*
Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D.; and Rottman, Fritz M., 4,767,711, Cl. 435-243.000

Rubber Bands and Plastic Research Association of Great Britain: *See—*
Willoughby, Bryan G., 4,767,804, Cl. 523-351.000.

Rubin, Julius. Chamber refrigerated by solid carbon dioxide. 4,766,732, Cl. 62-62.000

Rudolf, Rowland C., III: *See—*
Salsgiver, James A.; Bartel, Eugene W.; and Rudolf, Rowland C., III, 4,767,469, Cl. 148-111.000

Rudt, Robert J.; and Aldrich, W. Daniel, to Albany International Corp. Papermaker's felt utilizing special web-making techniques to avoid vibration. 4,766,649, Cl. 19-98.000

Ruger, William B., to Sturm, Ruger & Company, Inc. Trigger and trigger guard spring system. 4,766,687, Cl. 42-65.000

Ruppert, Kurt A.: *See—*
Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; Ruppert, Kurt A.; and Splett, Erich, 4,767,453, Cl. 75-66.000

Rupprecht, Kathleen M.: *See—*
Baker, Robert K.; Rupprecht, Kathleen M.; Pessolano, Arsenio A.; and Durette, Philippe L., 4,767,766, Cl. 514-301.000.

Rusche, Gerald A., to United States of America, Army. Three-dimensional thermal target simulator and method of making same 4,767,122, Cl. 273-348.100

Ruschel, Juergen: *See—*
Bloechl, Franz; and Ruschel, Juergen, 4,768,225, Cl. 379-435.000

Russell, Carl D. Inexpensive variable torque transmission with overdrive and method. 4,766,778, Cl. 74-687.000.

Russell, Ronald E. Storage and display structure. 4,766,998, Cl. 206-45.000

Rye, Palle, to Brentwood Industries, Inc. Pickup truck bed liner. 4,767,149, Cl. 296-39.00R

Ryobi, Ltd.: *See—*
Tsunoda, Kikuo; and Maruyama, Kenji, 4,767,080, Cl. 242-84.20G.

Rypkema, Jouke N.: *See—*
Benjamin, Lester F.; Krishnamurthy, Gopalan; and Rypkema, Jouke N., 4,768,229, Cl. 380-20.000

Rzedzian, Richard R., to Advanced NMR Systems, Inc. Method of high speed imaging with improved spatial resolution using partial k-space acquisitions. 4,767,991, Cl. 324-312.000.

Rzemien, Russell: *See—*
Thurber, Robert E.; Prengaman, Richard J.; Phipps, Joe; and Rzemien, Russell, 4,768,035, Cl. 342-194.000

S. C. Johnson & Son, Inc.: *See—*
Cramer, Ronald G., 4,767,034, Cl. 222-525.000
Crapser, James R.; and Wefler, Mark E., 4,767,059, Cl. 239-314.000

S.D.S. Biotech K.K.: *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro, Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000

Sabia, Raffaele A.: *See—*
Chapin, John T.; and Sabia, Raffaele A., 4,767,812, Cl. 524-144.000

Sacristan, Aurelio: *See—*
Foguet, Rafael; Forne , Ernesto; Ortiz, Jose ; A.; and Sacristan, Aurelio, 4,767,767, Cl. 514-313.000

Sagawa, Masato: *See—*
Fujimura, Setsuo; Sagawa, Masato; and Matsuura, Yutaka, 4,767,474, Cl. 148-302.000

Sagawa, Takao: *See—*
Okamoto, Hiroyuki; Sagawa, Takao; and Shibata, Yukio, 4,767,302, Cl. 425-190.000

Sailer, Thomas, to Lear Siegler, Inc. Centrifugal pump system with inlet reservoir. 4,767,281, Cl. 417-83.000

St. John, Richard C. Adjustable tensioner for belt and chain drives. 4,767,383, Cl. 474-133.000

Saito, Hiroshi: *See—*
Sato, Yuzo; Saito, Hiroshi; and Sakamoto, Toshinori, 4,766,805, Cl 98-2.070

Saito, Nobuko: *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000

Saito, Osami: *See—*
Kitahashi, Tadahiro; Saito, Osami; Matsuno, Tadaaki; and Nakamura, Yoshihiro, 4,767,212, Cl. 356-379.000

Saito, Shiro: *See—*
Sugimoto, Tadakatsu; Igarashi, Yoshiaki; Saito, Shiro, Wada, Eiichi; and Murai, Keiji, 4,766,787, Cl. 81-463.000

Saito, Susumu; and Arimoto, Akira, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Optical system for changing laser beam spot size during scanning of scanning line. 4,768,043, Cl. 346-108.000

Saito, Takanori; and Kato, Osami, to Minolta Camera Kabushiki Kaisha. Roll film carrier for reader or reader printer. 4,767,079, Cl 242-197.000

Saito, Takeshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Air breather device for a tank. 4,767,018, Cl. 220-85.00S

Saito, Tohru: *See—*
Otani, Tadayuki; Nakamura, Taizo; and Saito, Tohru, 4,767,907, Cl. 219-121.560

Saito, Yoshio: *See—*
Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio, Ueda, Masahiro; and Tanaka, Minoru, 4,767,475, Cl. 148-33.000

Saito, Yosuke: *See—*
Kobayakawa, Takaharu; Suehiro, Mikio; Saito, Yosuke; and Inoue, Hiroshi, 4,767,147, Cl. 296-1.00S

Saitoh, Koichi: *See—*
Itami, Teruhiko; Kimoto, Toshifumi; Yamasawa, Akira; and Saitoh, Koichi, 4,767,483, Cl. 156-154.000

Saitoh, Tamotsu: *See—*
Inaba, Hiroshi; Shinnai, Masao; Nishikawa, Kazuya; Saitoh, Tamotsu; and Tuskada, Tokio, 4,768,037, Cl. 343-713.000

Sakai, Hiroyuki: *See—*
Omi, Shigeaki; Asahara, Yoshiyuki, Shingaki, Seiichi; Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130

Sakai, Masahiko: *See—*
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, 4,767,394, Cl. 493-409.000

Sakai, Shigeru; and Kudo, Kazunori, to Trio Kabushiki Kaisha. Callsign display for transceiver. 4,768,033, Cl. 340-825.440

Sakai, Yoshio: *See—*
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000

Sakaida, Atsuo; Kawaura, Masafumi; Chikaoka, Yasuji; Iwata, Hiroshi; and Asano, Kiyomitsu, to Brother Kogyo Kabushiki Kaisha. Print head with wires which continuously contact the tip guide. 4,767,226, Cl. 400-124.000

Sakakibara, Toshimori; and Tomoyasu, Hirohide, to Sunstar Giken Kabushiki Kaisha. Epoxy resin composition. 4,767,802, Cl. 523-204.000

Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method and apparatus for driving capacitive-type load. 4,767,959, Cl. 310-317.000

Sakakibara, Yuji: *See—*
Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji, Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, 4,767,801, Cl. 523-145.000

Sakakura, Kazuaki; and Takahashi, Minoru, to Sumitomo Chemical Company, Ltd.; and Placo Co., Ltd. Extruding apparatus for extruding synthetic resin. 4,767,303, Cl. 425-203.000

Sakamaki, Takeshi; and Watanabe, Fumio, to Kabushiki Kaisha Toshiba. Method of performing automatic chemical analysis. 4,767,716, Cl. 436-47.000

Sakamoto, Seiji; and Meguro, Yoshio, to Diafoil Company, Limited. Polyester films suitable for use in magnetic tapes. 4,767,657, Cl 428-143.000

VOL 1093 ISS 5 AG 30 1988 UMI

Sakamoto, Seizo: *See*—
Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, 4,766,849, Cl. 119-48.000.

Sakamoto, Toshinori: *See*—
Sato, Yuzo; Saito, Hiroshi; and Sakamoto, Toshinori, 4,766,805, Cl. 98-2.070

Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, to Nippon Steel Corporation; and Fuji Electric Co., Ltd. Convertor pressure control device in a convertor waste gas disposing device. 4,767,103, Cl. 266-80.000.

Sakata, Shinji: *See*—
Fujishima, Tetsuro; and Sakata, Shinji, 4,767,713, Cl. 435-253.000.

Sakharov, Jury I.: *See*—
Kozin, Mikhail P.; Kudashov, Nikolai V.; Sakharov, Jury I.; Fedorov, Svyatoslav N.; and I, 4,766,904, Cl. 128-652.000

Sakito, Yoji: *See*—
Suzukamo, Gohfu; and Sakito, Yoji, 4,767,882, Cl. 560-100.000.

Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, to Honda Giken Kogyo Kabushiki Kaisha. Process for casting fiber-reinforced metal body. 4,766,944, Cl. 164-97.000.

Sakurai, Junichiro: *See*—
Satomoto, Atsushi; Nakagawa, Takashi; Sakurai, Junichiro; and Morita, Koji, 4,767,296, Cl. 418-171.000

Salac, Sotero S., to University of Nebraska, The Board of Regents of the. Potting media. 4,767,440, Cl. 71-23.000.

Salazar, Sumorfin, to Ford Motor Company. Vehicle door hinge having vertically separable pivotal connections. 4,766,643, Cl. 16-222.000

Saleeb, Fouad Z.: *See*—
Kaleda, William W.; Saleeb, Fouad Z.; and Zeller, Bary L., 4,767,634, Cl. 426-271.000

Saligny, Yves, to Carpano & Pons. Self-stripping electrical connector. 4,767,354, Cl. 439-413.000

Salsgiver, James A.; Bartel, Eugene W.; and Rudolf, Rowland C., III, to Allegheny Ludlum Corporation. Electrical discharge scribing for improving core loss of grain-oriented silicon steel. 4,767,469, Cl. 148-111.000

Salt, Jonathan G. L.; Korzun, Ronald W.; and Abbott, David R., to General Electric Company. Seal assembly. 4,767,267, Cl 415-174.000

Salt Weeds: *See*—
Yensen, Nicholas P., 4,767,887, Cl. 800-1.000.
Yensen, Nicholas P., 4,767,889, Cl. 800-1.000.

Sames S.A.: *See*—
Degli, Gerard; and Tholome , Roger, 4,767,057, Cl. 239-296.000.

Sammel, Richard K.: *See*—
Modic, Frank J.; Striker, Richard A.; Delker, Wayne L.; and Sammel, Richard K., 4,767,794, Cl. 521-82.000.

Sampson, Stephen A.; and Adamik, Kenneth J., to Molex Incorporated. Fiber optic connector assembly. 4,767,179, Cl. 350-96.200.

Sandelis, Denis J. M.: *See*—
Bayle-Laboure, Gerard J. P.; Desaulty, Michel A. A.; Perigne, Jerome; and Sandelis, Denis J. M., 4,766,722, Cl. 60-39.230.

Sanden Corporation: *See*—
Ushikubo, Kohei, 4,767,917, Cl. 235-381.000

Sanders Associates, Inc.: *See*—
Wilson, William J., 4,768,004, Cl. 333-246.000

Sanford, William R.: *See*—
Randall, Richard C.; Myer, Jimmy; and Sanford, William R., 4,766,835, Cl. 114-218.000.

Sani-Seat, Inc.: *See*—
Boker, Samuel J., 4,766,618, Cl. 4-247.000.

Sanko Giken Co. Ltd.: *See*—
Hirayoshi, Yoshio, 4,768,175, Cl. 367-178.000.

Sanner, Axel: *See*—
Marcinowski, Stefan; Sanner, Axel; Tschang, Chung-Ji; Ladner, Wolfgang; and Greif, Norbert, 4,767,707, Cl. 435-182.000.
Nuber, Adolf; Sanner, Axel; Straub, Ferdinand; and Vogel, Friedrich, 4,767,613, Cl. 424-47.000

Sano, Akira: *See*—
Yokoyama, Shigeki; Torii, Michiaki; Matsuura, Kazuo; and Sano, Akira, 4,767,819, Cl. 524-587.000.

Sano, Yoshiki: *See*—
Kinoshita, Toshiharu; Kunii, Shuji; and Sano, Yoshiki, 4,768,223, Cl. 379-143.000

Sanofi: *See*—
Jansen, Franz; and Gros, Pierre, 4,767,621, Cl. 424-85.000.

Sanshin Koygo Kabushiki Kaisha: *See*—
Uchida, Tatsuki; and Torigai, Katsumi, 4,767,363, Cl. 440-1.000.

Santarelli, Paul: *See*—
Cohn, Robert J.; Olsson, Frank C.; Holzman, James W.; and Santarelli, Paul, 4,767,166, Cl. 312-229.000.

Santasalo, Esko: *See*—
Santasalo, Lauri; and Santasalo, Esko, 4,767,502, Cl. 202-174.000.

Santasalo, Lauri; and Santasalo, Esko, to Oy Santasalo-Sohlberg AB. Steam generator in a multi-stage distilling apparatus. 4,767,502, Cl. 202-174.000

Santel, Hans-Joachim: *See*—
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000.

Sanyo Electric Co., Ltd.: *See*—
Kawasaki, Ryoichi; Ooyama, Noriyoshi; Shimizu, Masami; and Suzuki, Kouzou, 4,767,921, Cl. 250-201.000.

Nakatsuka, Yoshio; Kume, Minoru; and Kishimoto, Daisuke, 4,767,516, Cl. 204-192.140.
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000.

Sappok, Manfred, to Siempelkamp Giesserei GmbH & Co. Method of making radiation shielding elements for use in nuclear technology. 4,767,572, Cl. 252-628.000

Sarcos Incorporated: *See*—
Jacobsen, Stephen C.; Phillips, Richard P.; and Wood, John E., 4,767,973, Cl. 318-652.000

Sargent-Welch Scientific Co.: *See*—
Osterstom, Gordon E., 4,767,265, Cl. 415-170.00R.

Saroian, Nick T.: *See*—
Braden, Donald E.; Saroian, Nick T.; and Mansour, Tony L., 4,767,904, Cl. 219-69.00V.

Sarre, Olga: *See*—
Ganguly, Ashit K.; Sarre, Olga; and Girijavallabhan, Viyyoor M., 4,767,748, Cl. 514-54.000

Sasaki, Hidemi, to Fuji Photo Film Co., Ltd. Stepping motor actuator with two interposed pole tooth pairs. 4,767,958, Cl. 310-257.000.

Sasaki, Hiroaki; and Miyahara, Yoshinori, to Alps Electric Co., Ltd. Optical fiber connector having structure for ensuring predetermined spacing of optical elements. 4,767,178, Cl. 350-96.200.

Sasaki, Hirofumi; and Miyabe, Yoshinaga, to Chugai Ro Co., Ltd. Automatically flow controlled continuous heat treating furnace. 4,767,320, Cl. 432-59.000

Sasaki, Saburo, to Ricoh Company, Ltd. Electric driving device. 4,768,051, Cl. 354-400.000.

Sasaki, Setsuo; Koganebuchi, Mutsuo; and Taguchi, Teruo, to TDK Corporation. Through type twin capacitor. 4,768,129, Cl. 361-302.000

Sasaki, Shogo: *See*—
Kojima, Shuichi; Ishido, Takao; and Sasaki, Shogo, 4,766,937, Cl. 139-452.000

Sasaki, Tooru, to Kabushiki Kaisha Toshiba. Memory cell. 4,768,172, Cl. 365-230.000

Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, to Mitsubishi Denki Kabushiki Kaisha. Drinking water purifying apparatus. 4,767,528, Cl. 210-177.000

Sasayama, Atsushi: *See*—
Takizawa, Yasushi; Sasayama, Atsushi; Kobayashi, Yoshihiko; Takahashi, Yukio; and Kakegawa, Yuuji, 4,768,070, Cl. 357-17.000

SASIB S.p.A.: *See*—
Gherardi, Gian L., 4,766,991, Cl. 198-455.000.

Satchell, Donald P.: *See*—
Feldman, Robert J.; Chen, James M.; Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., 4,767,521, Cl. 208-85.000

Sato, Isao: *See*—
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230.

Sato, Kensaku, to Hirose Electric Co., Ltd. Electrical connector for printed circuit board. 4,767,342, Cl. 439-78.000.

Sato, Manabu, to Victor Company of Japan, Ltd. Tape cassette loading and unloading apparatus having a lock mechanism for locking a tape cassette in a loading position. 4,768,113, Cl. 360-96.500.

Sato, Masaki, to Kabushiki Kaisha Toshiba. Semiconductor device having floating and control gates. 4,768,080, Cl. 357-54.000.

Sato, Noritada: *See*—
Seki, Yasakazu; Sato, Noritada; and Yabe, Masaya, 4,768,072, Cl. 357-29.000

Sato, Tadashi; Kurosawa, Tomoe; Fujiwara, Shigetaka; and Higaki, Masaru, to Hitachi, Ltd. Ion beam apparatus. 4,767,931, Cl. 250-423.00R.

Sato, Tadashi; and Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Recording apparatus. 4,768,041, Cl. 346-76.0PH.

Sato, Takumi: *See*—
Mitsuishi, Akio; Nakazawa, Yasuhiko; and Sato, Takumi, 4,767,227, Cl. 400-124.000

Sato, Tsutomu: *See*—
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000.

Sato, Yuichi: *See*—
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl. 429-101.000

Sato, Yuzo; Saito, Hiroshi; and Sakamoto, Toshinori, to Mazda Motor Corporation. Windshield defroster system for vehicle. 4,766,805, Cl. 98-2.070

Satoh, Isao: *See*—
Ichinose, Makoto; Satoh, Isao; Sugimura, Tatuo; and Kuroki, Yuzuru, 4,768,181, Cl. 369-54.000.

Satoh, Seiki, to Mitsui Kinzoku Kogyo Kabushiki Kaisha. Reclining mechanism. 4,767,158, Cl. 297-367.000

Satoh, Yasuta; Tsuchihashi, Hiroshi; and Tani, Saburo, to Takara Co., Ltd. Method of rotationally molding a synthetic resin doll. 4,767,505, Cl. 264-39.000

Satomoto, Atsushi; Nakagawa, Takashi; Sakurai, Junichiro; and Morita, Koji, to Aisin Seiki Kabushiki Kaisha. Trochoidal toothed oil pump

with thin discharge channel communicating with discharge chamber. 4,767,296, Cl. 418-171.000

Sauber, Klaus: *See*—
Mauz, Otto; Noetzel, Siegfried; and Sauber, Klaus, 4,767,620, Cl. 424-78.000

Sauerbrey, Richard: *See*—
Boos, Karl S.; Wilmers, Bernd; Sauerbrey, Richard; and Schlimme, Eckhard, 4,767,529, Cl. 210-198.200

Sauerwald, Manfred: *See*—
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich; and Vagt, Uwe, 4,767,856, Cl. 540-538.000
Merger, Franz; Priester, Claus-Ulrich; Fischer, Rolf; and Sauerwald, Manfred, 4,767,857, Cl. 540-538.000.

Sault, P.: *See*—
Parcevaux, P.; Piot, B.; and Sault, P., 4,767,460, Cl. 106-90.000

Sauthier, Lucien: *See*—
Beurdeley, Dominique; and Sauthier, Lucien, 4,767,900, Cl. 200-308.000

Sauvestre, Gerard D., to L'Etat Francais represente par le Delegue Ministeriel pour l'Armement. Varnish protecting a caseless or combustible-case round of ammunition against thermoinitiation. 4,766,812, Cl. 102-290.000

Saville, Charles R.: *See*—
Lamartino, Salvatore P.; Stansbeary, Jack L.; and Saville, Charles R., 4,766,645, Cl. 17-49.000

Savin Corporation: *See*—
Landa, Benzion; and Krumberg, Yakov, 4,768,060, Cl. 355-10.000

Sawada, Koji: *See*—
Tanaka, Toru; Sawada, Koji; and Shinohara, Koji, 4,767,108, Cl. 267-140.100.

Sawamura, Hiroshi: *See*—
Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, 4,767,193, Cl. 350-345.000

Sayer, Gerald E., to Xerox Corporation. Apparatus and process for preparing belts. 4,766,789, Cl. 82-47.000

Scansen, Jerry P.: *See*—
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000

Scarpa, Ioannis S.; Chludzinski, Andrew M.; and Janic, Milan D., to Wm. Wrigley Jr. Company. Modified dextrans in a dental health method deactivating glucosyltransferase enzymes. 4,767,614, Cl. 424-48.000

Scarpati, Michael: *See*—
Petrella, Robert G.; and Scarpati, Michael, 4,767,736, Cl. 502-164.000

Scawen, Michael D.: *See*—
Cox, Geoffrey B.; Atkinson, Anthony; Edwardson, Peter A. D.; and Scawen, Michael D., 4,767,670, Cl. 428-403.000

Schachter, David: *See*—
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., 4,768,178, Cl. 368-47.000

Schafbuch, Paul J., to Fisher Controls International, Inc. Hubless Flange. 4,767,138, Cl. 285-368.000.

Schart, Alfred: *See*—
Schiwiora, Harry; Ahr, Willi; and Schart, Alfred, 4,767,329, Cl 433-181.000

Scheib, Thomas J.: *See*—
Lane, John D.; and Scheib, Thomas J., 4,768,143, Cl. 364-157.000

Schenk Filterbau Gesellschaft mit beschrankter Haftung: *See*—
Ziller, Josef, 4,767,534, Cl. 210-331.000.

Scherer, Jeremy D., to Aegis, Inc. Lead frame having non-conductive tie-bar for use in integrated circuit packages. 4,768,077, Cl. 357-70.000

Schering Aktiengesellschaft: *See*—
Haase, Peter, 4,767,146, Cl. 294-104.000

Schering Corporation: *See*—
Ganguly, Ashit K.; Sarre, Olga; and Girijavallabhan, Viyyoor M., 4,767,748, Cl. 514-54.000.
Hou, Donald, 4,767,853, Cl. 540-357.000

Schinbeckler, Steven E., to Wright-Bachman, Inc. Poured flue adapter. 4,766,882, Cl. 126-315.000

Schisler, Robert C.; and Downey, Raymond E., to Goodyear Tire & Rubber Company, The. Method of producing a foam from a radiation-curable composition. 4,767,793, Cl. 521-50.500.

Schiwiora, Harry; Ahr, Willi; and Schart, Alfred, to Degussa Aktiengesellschaft. T-attachment for the detachable fastening of dental prostheses. 4,767,329, Cl. 433-181.000.

Schleich, Donald M., to Polytechnic University, The. Method for production of high purity aluminum nitrides. 4,767,607, Cl. 423-412.000

Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, to Arbed S.A. Apparatus and method for emptying metallurgical vessels containing metal and slag. 4,767,036, Cl. 222-590.000

Schlenz, Dieter: *See*—
Schneider, Manfred; Heitz, Heinrich; Schlenz, Dieter; and Ewald, Egon, 4,767,667, Cl. 428-336.000.

Schlichthorst, Norbert, to Blohm + Voss AG. Catamaran-type marine craft. 4,766,829, Cl. 114-61.000

Schlimme, Eckhard: *See*—
Boos, Karl S.; Wilmers, Bernd; Sauerbrey, Richard; and Schlimme, Eckhard, 4,767,529, Cl. 210-198.200

Schlingmann, Merten: *See*—
Wullbrandt, Dieter; and Schlingmann, Merten, 4,767,880, Cl. 560-061.000

Schlosser, Werner: *See*—
Grieb, Hubert; and Schlosser, Werner, 4,766,953, Cl. 165-177.000

Schlumberger Technology Corporation: *See*—
Pottier, Alain P.; Walulik, James J.; and Simmons, Ralph L., 4,767,349, Cl. 439-191.000

Schmalbach-Lubeca AG: *See*—
Peter, Wolfgang; and Hacke, Heinz, 4,767,020, Cl. 220-273.000

Schmidt, Karlwalter: *See*—
Abthoff, Joerg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,767,740, Cl. 502-439.000

Schmidt, Robert R.: *See*—
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000

Schmidt, Susan B.: *See*—
Koenig, David G.; Aoyagi, Kiyoshi; Dudley, Michael R.; and Schmidt, Susan B., 4,767,083, Cl. 244-12.300

Schmidt, Timothy J.; and Heintzleman, Ronald A., to General Safety Corporation. Dual mode seat belt retractor assembly. 4,767,082, Cl 242-107.40A

Schmitt, Hans-Georg: *See*—
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000

Schmitt, Josef: *See*—
Appelt, Guenther; and Schmitt, Josef, 4,768,212, Cl. 378-141.000

Schmoock, Roy F.: *See*—
Mannherz, Elmer D.; and Schmoock, Roy F., 4,766,770, Cl 73-861.170

Schmuckle, Friedrich: *See*—
Osman, Maged A.; Perkins, Roger; Schmuckle, Friedrich; and Schuler, Claus, 4,767,729, Cl. 501-94.000

Schneider, Claus: *See*—
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus, Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,767,759, Cl 514-235.500

Schneider, James T.: *See*—
Jhaveri, Satish S.; Dunnavant, William R.; and Schneider, James T., 4,766,949, Cl. 164-526.000

Schneider, Manfred; Heitz, Heinrich; Schlenz, Dieter; and Ewald, Egon, to Alkor GmbH Kunststoffe. Furniture laminate sheet or web 4,767,667, Cl. 428-336.000

Schoeps, Knut C., to Atlas Copco Aktiebolag. Hydraulic torque impulse generator. 4,767,379, Cl. 464-25.000

Scholler Lebensmittel GmbH & Co. KG: *See*—
Beer, Richard, 4,767,307, Cl. 425-394.000

Schombourg, Jacques, to BP Chemicals Limited. Laminated insulated cable having strippable layers. 4,767,894, Cl. 174-106.0SC

Schoot, Cornelis J.: *See*—
van der Veen, Jan; Gravesteijn, Dirk J.; and Schoot, Cornelis J., 4,767,421, Cl. 8-523.000

Schott, Timothy D.; Fox, Robert L.; and Buckley, John D., to United States of America, National Aeronautics and Space Administration Method of attaching strain gauges to various materials. 4,767,484, Cl. 156-233.000

Schrenk, Hartmut, to Siemens Aktiengesellschaft. MOS inverter circuit having two different supply voltages. 4,767,950, Cl. 307-450.000

Schrock, Peter, to Uniflex-Hydraulic GmbH. Radial press with v-shaped press jaws. 4,766,808, Cl. 100-232.000.

Schroeppel, Edward A., to Telectronics N.V. Automatic sensitivity control for cardiac pacer. 4,766,902, Cl. 128-419.0PG.

Schubert, Johannes M., to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Method of preparing a blanket with reserved spaces utilizing photocopying procedure. 4,767,694, Cl. 430-300.000

Schuchart, Thomas L.: *See*—
Heymann, Frank J.; Hyde, Gilbert F.; and Schuchart, Thomas L., 4,766,932, Cl. 137-625.300

Schueler, Tyler E. Ventilated flotation mattress 4,766,629, Cl 5-451.000

Schugi: *See*—
Van den Brink, Gilbert J. J.; and Leemker, Koos, 4,767,217, Cl 366-168.000

Schuler, Claus: *See*—
Osman, Maged A.; Perkins, Roger; Schmuckle, Friedrich; and Schuler, Claus, 4,767,729, Cl. 501-94.000

Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D., and Rottman, Fritz M., to Wisconsin Alumni Research Foundation Bovine placental lactogen gene. 4,767,711, Cl. 435-243.000

Schultz, James E. Arthroscopic leg holder. 4,766,891, Cl. 128-133.000

Schultz, Rosemarie; and Sinnig, Fred, to Siemens Aktiengesellschaft Pull-out frame with a guide rail for electric switchgear. 4,768,131, Cl 361-338.000

Schultz, Rosemarie: *See*—
Pretzel, Gunter; and Schultz, Rosemarie, 4,768,132, Cl 361-342.000

VOL 1093 ISS 5 AG 30 1988 UMI

Schunack, Walter: *See—*
Arrang, Jean-Michel; Garbarg, Monique; Schunack, Walter; Schwartz, Jean-Charles; and Lipp, Ralph O., 4,767,778, Cl 514-397.000.
Schuster, Hans-Dieter: *See—*
Abthoff, Joerg; Schuster, Hans-Dieter; and Schmidt, Karlwalter, 4,767,740, Cl. 502-439.000.
Schwab, Kurt: *See—*
Swarovski, Daniel; and Schwab, Kurt, 4,767,676, Cl. 428-542.200.
Schwable, Rainer: *See—*
Hassenpflug, Wolfgang; and Schwable, Rainer, 4,766,767, Cl. 73-181.000.
Schwamborn, Michael: *See—*
Heywang, Gerhard; Baasner, Bernd; Marhold, Albrecht; Kysela, Ernst; Schwamborn, Michael; Hanssler, Gerd; Paulus, Wilfried; Santel, Hans-Joachim; Schmidt, Robert R.; and Schmitt, Hans-Georg, 4,767,444, Cl. 71-92.000.
Schwark, Joanne M.: *See—*
Seyferth, Dietmar; Schwark, Joanne M.; and Yu, Yuan-Fu, 4,767,876, Cl. 556-410.000.
Schwartz, Abraham; and Woodward, Gary A., to Flow Cytometry Standards Corporation. Composition and method for hidden identification. 4,767,205, Cl. 356-71.000.
Schwartz, Abraham, to Flow Cytometry Standards Corporation. Calibration method for flow cytometry using fluorescent microbeads and synthesis thereof. 4,767,206, Cl. 356-73.000.
Schwartz, James H.; Waterloo, Thomas L.; and Claassen, George R., to PPG Industries, Inc. Horizontal press bending pickup and delivery system. 4,767,434, Cl. 65-29.000.
Schwartz, Jean-Charles: *See—*
Arrang, Jean-Michel; Garbarg, Monique; Schunack, Walter; Schwartz, Jean-Charles; and Lipp, Ralph O., 4,767,778, Cl. 514-397.000.
Schwartz, Lee J.: *See—*
Fasen, Kenneth R.; Rogers, Kim R.; and Schwartz, Lee J., 4,767,977, Cl. 320-20.000.
Schwartzman, Benjamin, to AMP Incorporated. Stripping method and apparatus for coaxial cable. 4,766,669, Cl. 29-828.000.
Schweinberger, Anton, to Innoma Innovation-Marketing Patentverwertungs Ges.m.b.H. Cable pulley. 4,767,101, Cl. 254-391.000.
Sciaroni, Boris, to AG Fur Industrielle Elektronik AGIE. Process and apparatus for determining the electroerosive completion of a starting hole. 4,767,903, Cl. 219-69.00M.
Scipar, Inc.: *See—*
Singh, Surjit, 4,766,725, Cl. 60-204.000
Scott & Fetzer Company: *See—*
Conatser, Roger L., 4,766,927, Cl. 137-315.000
Scott, Timothy C.; and Wham, Robert M., to United States of America, Energy. Surface area generation and droplet size control in solvent extraction systems utilizing high intensity electric fields. 4,767,515, Cl. 204-186.000
Scuderi, Carmelo J. Refrigerant reclamation and charging unit. 4,766,733, Cl. 62-77.000
Seabury, Samuel W. System for and method of producing a beneficiated fuel. 4,766,823, Cl. 110-226.000.
Seagate Technology: *See—*
Krause, James N., 4,768,115, Cl. 360-78.000.
Seaver, Linda L.: *See—*
Ferguson, T. Arnold; and Seaver, Linda L., 4,767,479, Cl. 156-89.000
Sechen, Frank. Automatic corkscrew. 4,766,780, Cl. 81-3.200.
Sedlmayr, Gerhard; and Grassmuck, Jurgen, to Autoflug GmbH & Co. Fahrzeugtechnik. Safety belt arrangement. 4,767,161, Cl. 297-472.000
Seeger, Richard E. Article formed by electroless plating. 4,767,665, Cl. 428-328.000
Seemuller, Ursula: *See—*
Dodt, Johannes; Seemuller, Ursula; Fritz, Hans; and Fink, Ernst, 4,767,742, Cl. 514-12.000
SEEQ Technology, Inc.: *See—*
Perlegos, George, 4,768,169, Cl. 365-200.000
Seibert, Wolfram, to Alfred Teves GmbH. Circuit arrangement for controlling the engagement and disengagement of a clutch. 4,766,988, Cl. 192-0.055
Seidel, Gerhard E., to Boeing Company, The. Hoop fan jet engine. 4,767,270, Cl. 416-129.000
Seiderman, Maurice. Iontophoretic administration of ionizable or polar medicaments to a mammalian body. 4,767,401, Cl. 604-20.000.
Seiko Epson Corporation: *See—*
Koto, Haruhiko, 4,768,045, Cl. 346-140.00R
Mitsuishi, Akio; Nakazawa, Yasuhiko; and Sato, Takumi, 4,767,227, Cl. 400-124.000
Seim, William J.: *See—*
Ball, James H.; and Seim, William J., 4,767,893, Cl. 174-84.00R.
Seiscor Technologies, Inc.: *See—*
Dively, Lee V.; and Grubbs, Jack M., 4,768,227, Cl. 379-112.000
Sejourne, Paul J.; and Mizzi, Felix, to Societe Anonyme de Telecommunications. Systems for receiving messages transmitted by pulse position modulation (PPM). 4,768,207, Cl. 375-23.000
Seki, Yasakazu; Sato, Noritada; and Yabe, Masaya, to Fuji Electric Corporate Research and Development Co., Ltd.; and Fuji Electric Co. Ltd. Multilayer semiconductor device having an amorphous carbon and silicon layer. 4,768,072, Cl. 357-29.000.
Sekiguchi, Kiyonori: *See—*
Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, 4,767,959, Cl. 310-317.000
Sekine, Hisashi: *See—*
Tachikawa, Kyoji; Sekine, Hisashi; and Miyashita, Shoji, 4,767,470, Cl. 148-11.50F
Sekisui Jushi Kabushiki Kaisha: *See—*
Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, 4,766,849, Cl. 119-48.000.
Sekitani, Noboru: *See—*
Tanaka, Tadashi; and Sekitani, Noboru, 4,766,935, Cl. 139-55.100.
Seko, Yutaka: *See—*
Hasegawa, Kiyoshi; and Seko, Yutaka, 4,767,113, Cl. 271-3.000.
Seldoren Limited: *See—*
Hymanson, Victor, 4,767,412, Cl. 604-192.000.
Self, Carlin S. Vessel stabilizer. 4,767,089, Cl. 248-152.000.
Sellschopp, Michael: *See—*
Kieser, Jorg; Sellschopp, Michael; and Geisler, Michael, 4,767,641, Cl. 427-38.000.
Selzer, Marvin D.: *See—*
Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., 4,766,624, Cl. 5-248.000
Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., 4,766,625, Cl. 5-248.000
Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei, 4,767,336, Cl. 437-2.000
Senatore, Guy: *See—*
Goetz, Kenneth D.; Nesheiwat, Afif M.; Senatore, Guy; Shang, Wei-Teh W.; and Phillips Petroleum Company, 4,767,841, Cl. 528-388.000
Senner, Edward A.: *See—*
McMillan, Richard A.; Gavin, Bruce M.; and Senner, Edward A., 4,766,791, Cl. 83-155.000
Senoo, Akio: *See—*
Yamada, Kiichi; Senoo, Akio; Iimura, Jun; Akimoto, Ryosaku; and Kawauchi, Nakaji, 4,766,950, Cl. 165-17.000.
Seoka, Yoshio: *See—*
Umemoto, Makoto; Seoka, Yoshio; and Morigaki, Masakazu, 4,767,697, Cl. 430-546.000.
Seppelt, Wolfgang; Neubauer, Hans-Juergen; Adolphi, Heinrich; and Hofmeister, Peter, to Basf Aktiengesellschaft. Propargyl cinnamates, their preparation and their use for controlling pests. 4,767,782, Cl. 514-543.000.
Seraphim, Donald P.: *See—*
Gazdik, Charles E.; McBride, Donald G.; Seraphim, Donald P.; and Toole, Patrick A., 4,766,670, Cl. 29-830.000
Sereshteh, Ahmad: *See—*
Slicker, James M.; and Sereshteh, Ahmad, 4,766,967, Cl. 180-54.100.
Seris, Jean-Louis: *See—*
Levesque, Guy; and Seris, Jean-Louis, 4,767,706, Cl. 435-176.000.
Serizawa, Mitsuya: *See—*
Kawamoto, Yoshimichi; Furukawa, Yoshimi; Hamada, Tetsuro; and Serizawa, Mitsuya, 4,767,129, Cl. 280-91.000
Sermet Oy: *See—*
Tenhunen, Erkki, 4,766,824, Cl. 110-256.000.
Seto, Junetsu: *See—*
Ishimoto, Coe; Seto, Junetsu; and Tomimuro, Hiroshi, 4,767,696, Cl. 430-495.000
Sewer Rodding Equipment Company: *See—*
Crane, Patrick R.; and Bell, Donald J., 4,766,631, Cl. 15-104.120.
Seyferth, Dietmar; Schwark, Joanne M.; and Yu, Yuan-Fu, to Massachusetts Institute of Technology. Method for converting organosilicon polymers containing SIH repeat units and organopolysilazane precursors to new and useful preceramic polymers and silicon nitride enriched ceramic materials. 4,767,876, Cl. 556-410.000
Shah, Ashwin H., to Texas Instruments Incorporated. Constant pulse width generator. 4,767,947, Cl. 307-265.000.
Shah, Denis D.: *See—*
Blain, Jeffrey W.; and Shah, Denis D., 4,766,978, Cl. 187-101.000
Shah, Kishore R.: *See—*
Kydonieus, Agis; Shah, Kishore R.; and Berner, Bret, 4,767,808, Cl. 524-98.000
Shalitin, Channa, to Technion Research & Development Foundation Ltd. Method for the preparation of yeast chromatin for isolation of p20 polypeptide. 4,767,714, Cl. 435-272.000.
Shang, Wei-Teh W.: *See—*
Goetz, Kenneth D.; Nesheiwat, Afif M.; Senatore, Guy; Shang, Wei-Teh W.; and Phillips Petroleum Company, 4,767,841, Cl 528-388.000
Shannon, Thomas G.; and Brunelle, Daniel J., to General Electric Company. Cyclic monocarbonate bishaloformates, method for their preparation, and uses thereof. 4,767,840, Cl. 528-196.000.
Shannon, Thomas G.; and Brunelle, Daniel J., to General Electric Company. Nitrogen-containing bisphenol compositions. 4,767,877, Cl. 558-281.000
Shanshin Kogyo Kabushiki Kaisha: *See—*
Abe, Koji; Fukasawa, Masao; and Okazaki, Masaki, 4,766,860, Cl 123-196.00A.
Nakahama, Ryoji; and Kuragaki, Naoyoshi, 4,767,365, Cl 440-75.000
Shansky, Albert; and Purohit, Prakash C., to A-Veda Corporation. Opacifying composition and hair treating composition with process of using same. 4,767,617, Cl. 424-71.000.

Shapiro, Rafael, to Du Pont de Nemours, E. I., and Company. Herbicidal ortho-(azinyl)-benzenesulfonamides. 4,767,445, Cl. 71-93.000
Sharp Kabushiki Kaisha: *See—*
Kawasaki, Nobuhiko; Ikeda, Kouichi; and Kimura, Shinichi, 4,767,337, Cl. 439-34.000
Nishimura, Kosuke, 4,768,162, Cl. 364-900.000
Taneya, Mototaka; Matsui, Sadayoshi; Yano, Seiki; and Yamamoto, Saburo, 4,768,201, Cl. 372-50.000
Sharpe, Anthony K.; and McPherson, Andrew D., to U.S. Philips Corp. Pager decoding system. 4,768,032, Cl. 340-825.470.
Shattes, Walter J.; Bandyopadhyay, Nikhiles; and Krueger, Paul C., to BOC Group, Inc., The. Process of forming enhanced heat transfer surfaces. 4,767,497, Cl. 156-665.000
Shatto, Walter C., Jr.: *See—*
Gutter, David H.; and Shatto, Walter C., Jr., 4,767,345, Cl. 439-92.000
Shawcross, James P.: *See—*
Tomiser, Frank J., Jr.; and Shawcross, James P., 4,766,806, Cl. 98-42.100
Shay, Joseph J.; and Daddio, John D., to Specialty Packaging Licensing Company. Nozzle. 4,767,060, Cl. 239-401.000.
Shearer, Joseph W., Jr.; and Phaneuf, Sylvio T., to United States of America, Air Force. Claw grip contact probe for flat packs. 4,767,985, Cl. 324-158.00P.
Shell Oil Company: *See—*
Marx, Edward J., 4,767,832, Cl. 525-523.000.
McEwan, Malcolm W., 4,767,424, Cl. 55-184.000
Shemonski, Anthony T.: *See—*
Kitchens, Judith F.; Culp, Carl H., Sr.; and Shemonski, Anthony T., 4,767,564, Cl. 252-187.260.
Sherman, John W.: *See—*
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000.
Sherwood, William H.: *See—*
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,300, Cl. 425-140.000
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,579, Cl. 264-40.500
Shiba, Haruo: *See—*
Iizuka, Michio; and Shiba, Haruo, 4,768,123, Cl. 360-133.000
Shibata, Norio, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling air-fuel ratio in internal combustion engine. 4,766,868, Cl. 123-440.000
Shibata, Tadahiko: *See—*
Ito, Yuuji; Shibata, Tadahiko; Sakai, Masahiko; Ota, Yukio; Kondo, Naohiko; and Matuyama, Harukazu, 4,767,394, Cl. 493-409.000.
Shibata, Takuji, to Konishiroku Photo Industry Co., Ltd. Thermal printhead integrated circuit device. 4,768,038, Cl. 346-76.0PH.
Shibata, Yukio: *See—*
Okamoto, Hiroyuki; Sagawa, Takao; and Shibata, Yukio, 4,767,302, Cl. 425-190.000
Shibuya, Kiyoshi; Kogiku, Fumio; and Ozawa, Michiharu, to Kawasaki Steel Corporation. Method and apparatus for producing rapidly solidified microcrystalline metallic tapes. 4,766,947, Cl. 164-460.000
Shida, Atsuhiko: *See—*
Takematsu, Tetsuo; Ikekawa, Nobuo; and Shida, Atsuhiko, 4,767,442, Cl. 71-88.000
Shiga, Koji; and Arito, Tatsunari, to Fuji Photo Film Co., Ltd. Reproducing camera focus control method. 4,768,067, Cl. 355-56.000
Shigematsu, Hideyo: *See—*
Nakano, Toshihiko; Nagase, Fumiaki; Takeuchi, Eiichi; Kamada, Mamoru; and Shigematsu, Hideyo, 4,767,673, Cl. 428-458.000
Shigeta, Yuko: *See—*
Ando, Hirohito; Takada, Zenji; Aoki, Shigeto; and Shigeta, Yuko, 4,767,844, Cl. 534-573.000
Shinoki, Kazuaki; Naya, Koutarou; Mitsuhashi, Shinji; Hayakawa, Tadashi; and Uchida, Riichi, to Hitachi, Ltd. Screw vacuum pump unit. 4,767,284, Cl. 417-312.000
Shima, Kazuhiro; Tsukada, Takayuki; and Kagawa, Hirotane, to Shionogi & Co., Ltd. Stable freeze-dried preparations of an anticancer platinum complex. 4,767,874, Cl. 556-137.000
Shimada, Kayo: *See—*
Kiwaki, Hisakatsu; Shimada, Kayo; Okubo, Hiroshi; Kaneko, Kazuo; and Hatakeyama, Takanobu, 4,768,215, Cl. 378-101.000
Shimada, Mamoru, to Kabushiki Kaisha Toshiba. Coil arrangement for correction of magnetic field. 4,768,009, Cl. 335-299.000.
Shimada, Tatsuro: *See—*
Yokoyama, Hideki; Shimada, Tatsuro; and Nakagawa, Masao, 4,766,940, Cl. 152-541.000.
Shimano Industrial Company Limited: *See—*
Nagano, Masashi, 4,766,979, Cl. 188-24.120.
Shimizu, Hidetoshi: *See—*
Mishio, Yasuhiko; Shimizu, Hidetoshi; Matsuda, Takashi; and Takeda, Masaru, 4,766,969, Cl. 180-75.200
Shimizu, Masami: *See—*
Kawasaki, Ryoichi; Ooyama, Noriyoshi; Shimizu, Masami; and Suzuki, Kouzou, 4,767,921, Cl. 250-201.000
Shimizu, Suekichi; Inaba, Masatsugu; and Ohtomo, Yasuyuki, to Fuji Kagakushi Kogyo Co., Ltd. Heat-meltable transfer recording medium. 4,767,663, Cl. 428-212.000
Shimizu, Takaaki; Ota, Katsuyuki; Aoyama, Toshimi; and Nojima, Setsuo, to Photopoly Ohka Co., Ltd. Method for prevention of resin plate surface sticking. 4,767,642, Cl. 427-54.100
Shimizu, Yasuo, to Honda Giken Kogyo Kabushiki Kaisha. Motor-operated power steering apparatus with rack and pinion mechanism 4,766,970, Cl. 180-79.100
Shimonabe, Hideyuki: *See—*
Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu, Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, 4,767,976, Cl. 318-808.000
Shimosato, Masashi; and Okuno, Shigeru, to Tokyo Electric Co., Ltd Printing device. 4,768,044, Cl. 346-140.00R
Shinagawa, Susumu; Kanamaru, Tsuneo; and Harada, Setsuo, to Takeda Chemical Industries, Ltd. Derivatives of beta-amino-gamma-trimethylammonio-butyrate and their production and use. 4,767,781, Cl. 514-513.000
Shinagawa, Touru: *See—*
Kitta, Kenichi; Shinagawa, Touru; and Takamori, You, 4,767,920, Cl. 235-492.000
Shingaki, Seiichi: *See—*
Omi, Shigeaki; Asahara, Yoshiyuki; Shingaki, Seiichi, Nakayama, Shin; Nakagawa, Kenji; Izumitani, Tetsuro; and Sakai, Hiroyuki, 4,767,435, Cl. 65-30.130
Shingo, Kaneko; Nakamura, Shunichi; and Nakanishi, Hisashi, to Tokuyama Soda Kabushiki Kaisha. Process for preparation of porous sheets. 4,767,580, Cl. 264-41.000
Shinnai, Masao: *See—*
Inaba, Hiroshi; Shinnai, Masao; Nishikawa, Kazuya; Saitoh, Tamotsu; and Tuskada, Tokio, 4,768,037, Cl. 343-713.000
Shinoda, Takamitsu: *See—*
Nakamura, Michie; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M
Shinohara, Koji: *See—*
Tanaka, Toru; Sawada, Koji; and Shinohara, Koji, 4,767,108, Cl. 267-140.100
Shinpo, Yuji, to Nissan Motor Co., Ltd. Wiper blade having floating suppressing structure. 4,766,636, Cl. 15-250.420
Shiokawa, Youichi: *See—*
Ueda, Ikuo; Shiokawa, Youichi; Manabe, Takashi; and Katsura, Yousuke, 4,767,780, Cl. 514-406.000
Shionogi & Co., Ltd.: *See—*
Shima, Kazuhiro; Tsukada, Takayuki; and Kagawa, Hirotane, 4,767,874, Cl. 556-137.000
Shira, Ethuo: *See—*
Yamaguchi, Touhei; Moriyama, Kazuhiko; and Shira, Ethuo, 4,766,773, Cl. 74-467.000
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka, Kuzushita, Hirokazu; Yoshioka, Michihiko, and Hirose, Michio, to Dainichi-Nippon Cables, Ltd. Metal cored board and method for manufacturing same. 4,767,674, Cl 428-461.000
Shirai, Toshio: *See—*
Kobayashi, Toshiharu; Okaue, Takumi; and Shirai, Toshio, 4,768,107, Cl. 360-17.000
Shiue, Sang R., to Yang, Watt, a part interest. Continuous process for bending long rods or tubes. 4,766,754, Cl. 72-294.000
Shiue, Sang R., to Yang, Watt, a part interest. Continuous processing machine assembly for bending long rods or tubes. 4,766,756, Cl 72-294.000
Shogenji, Toshihiro; and Takahashi, Kenichi, to Japan Butyl Company Limited. Dryer for drying extrudable materials 4,766,676, Cl 34-70.000
Shoji, Michihiro; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Annular hole cutter. 4,767,245, Cl. 408-204.000
Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Igarashi, Tadashi; Yamaji, Mikio; and Oneyama, Naotake, 4,767,282, Cl. 417-225.000
Showa Aluminum Corporation: *See—*
Muramatsu, Toshiaki, 4,766,885, Cl. 126-433.000
Showa Electric Wire & Cable Co, Ltd.: *See—*
Murakami, Takatoshi; Kida, Toshio; Kon, Shiji; Asai, Toshinobu, and Nunome, Yoshiyuki, 4,766,843, Cl. 118-661.000
Shurden, Charles H. Animal trap. 4,766,692, Cl. 43-78.000
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., to Standard Oil Company, The. Method of forming a nonaqueous stable emulsion of rubber in polymerizable monomer, and the polymerization process and thermoplastic copolymers produced thereby 4,767,822, Cl. 525-99.000
Sicpa Holding S.A.: *See—*
Mehl, Wolfgang; and Amon, Albert, 4,767,420, Cl. 8-470.000
Siemens Aktiengesellschaft: *See—*
Appelt, Guenther; and Schmitt, Josef, 4,768,212, Cl. 378-141.000
Bloechl, Franz; and Ruschel, Juergen, 4,768,225, Cl. 379-435.000
Ehrgott, Roland, 4,767,343, Cl. 439-83.000
Fuchs, Hans P., 4,768,194, Cl. 371-21.000
Giebel, Wolfgang; and Kunze, Dieter, 4,767,346, Cl. 439-95.000
Gottfried, Norbert, 4,768,179, Cl. 369-32.000
Heinen, Jochen; and Weidinger, Friedrich, 4,768,199, Cl 372-36.000
Hieber, Konrad, 4,767,496, Cl. 156-627.000
Hohn, Werner H., 4,768,165, Cl. 364-900.000
Keil, Rudolf; Mayerhofer, Franz; Althaus, Hans L.; and Klement, Ekkehard, 4,767,171, Cl. 350-96.180
Kranabetter, Johann, 4,768,111, Cl. 360-62.000
Marquardt, Rainer, 4,767,948, Cl. 307-270.000
Obermann, Peter, 4,767,378, Cl. 464-29.000
Oppelt, Sylvester, 4,766,888, Cl. 128-24.00A
Pockrandt, Wolfgang, 4,768,210, Cl. 377-32.000

VOL 1093 ISS 5 AG 30 1988 UMI

Pohl, Peter, 4,767,176, Cl. 350-96.200.
Pretzel, Gunter; and Schultz, Rosemarie, 4,768,132, Cl. 361-342.000
Schrenk, Hartmut, 4,767,950, Cl. 307-450.000.
Schultz, Rosemarie; and Sinnig, Fred, 4,768,131, Cl. 361-338.000.
Zeiss, Willi, 4,768,204, Cl. 375-12.000
Siemens Medical Laboratories, Inc.: *See*—
Stieber, Volker; and Krispel, Franz, 4,767,930, Cl. 250-396.0ML.
Siempelkamp Giesserei GmbH & Co.: *See*—
Sappok, Manfred, 4,767,572, Cl. 252-628.000.
Sigworth, William D.: *See*—
Bae, Dong-Hak; Sigworth, William D.; and Cummings, William, 4,767,814, Cl. 524-284.000
Silc Technologies, Inc.: *See*—
Jou, Jing-Yang; and Rosebrugh, Christopher, 4,768,196, Cl 371-25.000
Siler, Todd L., to Massachusetts Institute of Technology. Process of and apparatus for producing design patterns in materials. 4,767,584, Cl. 264-78.000
Siliconix incorporated: *See*—
Blanchard, Richard A., 4,767,722, Cl. 437-41.000
Silver, Myron E.; and Wisdom, Lawrence W., to Frito-Lay, Inc. Fruit chip product and process for making same. 4,767,630, Cl. 426-102.000
Simmons, Harry, to Crowley, Joseph. Strip hanger. 4,767,012, Cl. 211-89.000
Simmons, Ralph L.: *See*—
Pottier, Alain P.; Walulik, James J.; and Simmons, Ralph L., 4,767,349, Cl. 439-191.000.
Simmons-Rand Corporation: *See*—
Goyarts, Wynand M., 4,767,901, Cl. 200-306.000.
Simon, Peter, to Knurr-Mechanik Fur Die Elektronik Aktiengesellschaft. Fan slide-in unit. 4,767,262, Cl. 415-119.000
Simons, Ronald H.; Wilkinson, Basil S.; and Henry, Ivor C., to Thorn EMI plc. Lighting device. 4,768,133, Cl. 362-32.000
Simonson, Rune G. W.; and Axelson, Per O. Method for the production of fiber pulp by impregnating lignocellulosic with a sulphonating agent prior to refining. 4,767,499, Cl. 162-25.000.
Simopoulos, George N.: *See*—
Simopoulos, Nicholas T.; Simopoulos, George N.; and Simopoulos, Gregory N., 4,767,966, Cl. 313-509.000.
Simopoulos, Gregory N.: *See*—
Simopoulos, Nicholas T.; Simopoulos, George N.; and Simopoulos, Gregory N., 4,767,966, Cl. 313-509.000.
Simopoulos, Nicholas T.; Simopoulos, George N.; and Simopoulos, Gregory N., to Luminescent Electronics, Inc. Electroluminescent panels. 4,767,966, Cl. 313-509.000
Sing, Peter. Shock and vibration resistant structures. 4,766,708, Cl. 52-167.000
Singer, Victor, to Morton Thiokol, Inc. Rocket motor extendible nozzle exit cone. 4,766,657, Cl. 29-157.00C
Singh, Surjit, to Scipar, Inc. Method of suppressing formation of contrails and solution therefor. 4,766,725, Cl. 60-204.000
Single, Michael R., to Willamette Industries, Inc. Knockdown carton with pre-glued bottom. 4,767,051, Cl. 229-41.00R
Sinn, Robert S.: *See*—
Catsimpoolas, Nicholas; and Sinn, Robert S., 4,767,746, Cl. 514-25.000
Sinnig, Fred: *See*—
Schultz, Rosemarie; and Sinnig, Fred, 4,768,131, Cl. 361-338.000
Sipido, Victor: *See*—
Boeckx, Gustaaf M.; Raeymaekers, Alfons H. M.; and Sipido, Victor, 4,767,760, Cl. 514-242.000
Siretchi, Roman: *See*—
Legrand, Michel; Caillot, Luc; Donnola, Jean-Michel; and Siretchi, Roman, 4,766,894, Cl. 128-204.210.
Sirtl, Erhard: *See*—
Holm, Claus; Sirtl, Erhard; Dietl, Josef; and Holzlwimmer, Franz, 4,767,585, Cl. 264-82.000
Skelly, David W.: *See*—
Kim, Manjin J.; Griffing, Bruce F.; and Skelly, David W., 4,767,724, Cl. 437-194.000
SKF Compagnie d'Applications Mechaniques: *See*—
Message, Olivier, 4,766,987, Cl. 192-41.00A.
Skornyakov, Eduard P.: *See*—
Poshemansky, Vladimir M.; Skornyakov, Eduard P.; and Chizhkov, Vitaly P., 4,766,760, Cl. 73-23.100.
Slavinski, Raymond L.: *See*—
Springer, Thomas W.; Slavinski, Raymond L.; and Laird, Ronald H., 4,767,131, Cl. 280-289.0WC
Slepetys, Richard A.: *See*—
Nemeh, Saad; and Slepetys, Richard A., 4,767,466, Cl. 106-487.000
Slicker, James M.; and Sereshteh, Ahmad, to Eaton Corporation. Oscillation control system for electric motor drive. 4,766,967, Cl. 180-54.100
Sliwkowski, Joseph; and Fisher, Robert, to Telesis Systems Corporation. Computer aided printed circuit board wiring. 4,768,154, Cl. 364-468.000
Sloop, David J.; and Yu, Hsiang-Lin, to Sytron Corporation. Window shade with selectively variable shading characteristics. 4,766,941, Cl 160-241.000
SLS Products, Inc.: *See*—
Springer, Thomas W.; Slavinski, Raymond L.; and Laird, Ronald H., 4,767,131, Cl. 280-289.0WC
Smedley, William H.: *See*—
Haber, Terry M.; Smedley, William H.; and Foster, Clark B., 4,767,413, Cl. 604-198.000
SMH Alcatel: *See*—
Dimur, Gerard, 4,766,715, Cl. 53-381.00R
Smirmaul, Heinz. Capsulectomy surgical instrument. 4,766,897, Cl. 128-305.000
Smith, Bradley W.: *See*—
Tackett, E. Wayne; Smith, Bradley W.; and Voris, Charles R., 4,766,726, Cl. 60-255.000
Smith, Colin F. G.: *See*—
Parfree, Colin S.; Smith, Colin F. G.; Worthington, Peter; Marten, Malcolm G.; and Bliss, Norman S., 4,767,182, Cl. 350-96.230.
Smith, David L.: *See*—
Ramos, Hector V.; Fagan, Kenneth W., Jr.; Rothenberg, Joan R.; and Smith, David L., 4,767,636, Cl. 426-291.000
Smith, Derek J., to Massey-Ferguson Services N.V. Hydraulic unloading valves. 4,766,926, Cl. 137-115.000.
Smith, Edwin K. High speed platen-type die cutter. 4,767,393, Cl. 493-342.000
Smith, Eugene W., to L. Perrigo Company. Paste dispenser. 4,767,032, Cl. 222-319.000
Smith, Gary W.: *See*—
Flood, Gary M.; and Smith, Gary W., 4,767,050, Cl. 228-122.000
Smith, Jerry D.; and Szymczak, Edward J., to Cameron Iron Works USA, Inc. Wellhead annular seal. 4,766,956, Cl. 166-182.000
Smith & Loveless, Inc.: *See*—
Weis, Frank G., 4,767,532, Cl. 210-257.100.
Smith, Matthew A.: *See*—
Maram, Jonathan M.; and Smith, Matthew A., 4,767,911, Cl. 219-130.010
Smith and Nephew Associated Companies, P.L.C.: *See*—
Parker, Robert S. R.; and Howes, John G. B., 4,767,671, Cl. 428-412.000
Smith, Timothy S.; and Thornley, David W. M., to Raychem Limited. Electric wire and cable. 4,767,668, Cl. 428-379.000
SmithKline Beckman Corporation: *See*—
Kaiser, Carl; and Kruse, Lawrence I., 4,767,862, Cl. 546-149.000
Smithwick, Richard J.; and Spector, George. Dental patient control mechanism. 4,767,327, Cl. 433-98.000
Snyder, Donald L.: *See*—
Whitehouse, Harper J.; and Snyder, Donald L., 4,768,156, Cl. 364-521.000
Snyder, Howard E. Water ski. 4,767,369, Cl. 441-68.000.
Socapex: *See*—
Zajac, Elie; Desmurs, Roland; and Pelletier, Jean L., 4,767,180, Cl. 350-96.210
Societa' Cavi Pirelli S.p.A.: *See*—
Priaroggia, Paolo G., 4,767,173, Cl. 350-96.200
Societe Anonyme de Telecommunications: *See*—
Sejourne, Paul J.; and Mizzi, Felix, 4,768,207, Cl. 375-23.000
Societe Anonyme Dite: ABX: *See*—
Champseix, Henri; and Champseix, Serge, 4,766,933, Cl. 137-625.500
Societe Anonyme Dite: Radiall Industrie: *See*—
Cartier, Jacques, 4,767,177, Cl. 350-96.200.
Societe Anonyme: M.M.S. s.a. a french corporation: *See*—
Legrand, Michel; Caillot, Luc; Donnola, Jean-Michel; and Siretchi, Roman, 4,766,894, Cl. 128-204.210.
Societe d'Applications Generales D'Electricite: *See*—
Lamiaux, Sylves, 4,768,147, Cl. 364-200.000.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation (SNECMA): *See*—
Bayle-Laboure, Gerard J. P.; Desaulty, Michel A. A.; Perigne, Jerome; and Sandelis, Denis J. M., 4,766,722, Cl. 60-39.230
Holz, Robert G.; and Karadimas, Georges, 4,767,266, Cl. 415-172.00A
Societe Nationale Elf Aquitaine: *See*—
Levesque, Guy; and Seris, Jean-Louis, 4,767,706, Cl. 435-176.000
Societe Nationale Industrielle et Aerospatiale: *See*—
Grenier, Gilles; Merle, Jean-Pierre; and Zribi, Robert, 4,768,097, Cl. 358-213.260
Sodick Co., Ltd.: *See*—
Takahashi, Nobuyuki; and Mori, Shigeo, 4,767,906, Cl. 219-69.00D
Solie, Leland P.; and Labrum, Joseph H., to Unisys Corporation. SAW/BAW Bragg cell. 4,767,198, Cl. 350-358.000
Solomko, Alexander. Apparatus for finishing the face of the head of a golf club wood. 4,766,698, Cl. 51-96.000.
Solvi, Marc; Bernard, Gilbert; and Lonardi, Emile. Process and apparatus for charging a shaft furnace. 4,767,258, Cl. 414-786.000.
Soma, Takao; and Matsui, Minoru, to NGK Insulators, Ltd. Ceramic shape memory element. 4,767,730, Cl. 501-103.000.
Sommer, Edward: *See*—
Nigg, Daniel; DePoss, Robert; Sommer, Edward; Raymer, Jack D., II; and Crane, Burhe, 4,767,896, Cl. 200-67.0DA
Sonoda, Takefumi: *See*—
Kawaguchi, Toshiro; Sonoda, Takefumi; and Hashimoto, Kiyoshi, 4,767,306, Cl. 425-382.400
Sonotek, Inc.: *See*—
Gordon, James H., 4,768,017, Cl. 340-347.0SH
Sony Corporation: *See*—
Aoki, Shinji, 4,768,105, Cl. 360-14.100.
Ishimoto, Coe; Seto, Junetsu; and Tommuro, Hiroshi, 4,767,696, Cl. 430-495.000
Ito, Yuji; and Okada, Hiroshi, 4,768,106, Cl. 360-14.100.
Kawada, Hideaki, 4,768,122, Cl. 360-132.000

Kobayashi, Toshiharu; Okaue, Takumi; and Shirai, Toshio, 4,768,107, Cl. 360-17.000.
Nakamura, Yoshiyuki; and Takamori, Tsutomu, 4,768,103, Cl 358-337.000
Yamagata, Masato; and Tabe, Kazushi, 4,768,219, Cl. 379-61.000
Sorenson, Richard W.; and Ives, Milton N., to Carlingswitch, Inc Make before break electrical switch. 4,767,899, Cl. 200-144.00R.
Sosa, Guillermo: *See*—
Thorne, Hugh C.; Sosa, Guillermo; and Irizarry, Jose F., 4,767,334, Cl. 434-29.000
Soulakis, George: *See*—
Cook, John; Soulakis, George; and Hippely, Keith, 4,767,053, Cl. 238-10.00R
SOULE: *See*—
Huon de Kermadec, Jean, 4,766,696, Cl. 49-262.000
Souriau & Cie: *See*—
Grappe, Rene , 4,767,356, Cl. 439-455.000.
Zajac, Elie; Desmurs, Roland; and Pelletier, Jean L., 4,767,180, Cl 350-96.210.
Southern Illinois University Foundation: *See*—
Meyers, Vera K., 4,767,718, Cl. 436-501.000.
Southland Frozen Meat Limited: *See*—
McMillan, Richard A.; Gavin, Bruce M.; and Senner, Edward A., 4,766,791, Cl. 83-155.000
Sowerby, Roger L., to Lubrizol Corporation, The. Urazole compositions useful as additives for functional fluids. 4,767,552, Cl. 252-46.300.
Soyama, Hidehiko: *See*—
Hashimoto, Ken; Maruta, Masayuki; Soyama, Hidehiko; and Ishii, Yukihiro, 4,767,688, Cl. 430-110.000
Spaggiari, Alessandro, to SPAL S.r.l. Flexible-element transmission unit for driving rotary members in general. 4,767,386, Cl. 474-148.000
SPAL S.r.l.: *See*—
Spaggiari, Alessandro, 4,767,386, Cl. 474-148.000.
Specialty Packaging Licensing Company: *See*—
Shay, Joseph J.; and Daddio, John D., 4,767,060, Cl. 239-401.000.
Spector, George: *See*—
Demetrius, Kris; and Spector, George, 4,767,056, Cl. 239-288.000.
Smithwick, Richard J.; and Spector, George, 4,767,327, Cl. 433-98.000.
Spectra-Physics, Inc.: *See*—
Cain, Gary L.; Rando, Joseph F.; Teach, Ted L.; Meyers, Lawrence J.; and Markley, Theodore J., 4,767,208, Cl. 356-138.000
Spencer R&D Inc.: *See*—
Hokama, Yosh; and Romero, Luis, 4,767,648, Cl. 428-15.000
Sperber, Alfred. Locking device. 4,766,749, Cl. 70-491.000.
Sperzel, Wolfgang: *See*—
Hubertus, Guido; Thomas, Freidrich-Werner; Sperzel, Wolfgang; and Sturmer, Johann, 4,768,141, Cl. 363-16.000
Spinlab Partners, Ltd.: *See*—
Ackermann, Norbert J., Jr.; Ghorashi, Hossein M.; and Dehkordi, Peyman H., 4,766,647, Cl. 19-0.220.
Spira, Philip M.: *See*—
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., 4,768,178, Cl. 368-47.000
Spitzer, Donald P.; and Yen, Wei S., to American Cyanamid Company Polymers containing hydroxamic acid groups for reduction of suspended solids in bayer process streams. 4,767,540, Cl. 210-728.000.
Spitzer, Ronald F., to MRC Bearings Incorporated. Corrosion and wear resistant metal alloy having high hot hardness and toughness. 4,767,456, Cl. 75-246.000.
Splawinski, Thaddeus M. Humane animal and fowl trap. 4,766,693, Cl. 43-88.000
Splett, Erich: *See*—
Hinrichs, Walter; Hovestadt, Herbert; Lange, Ludwig; Ruppert, Kurt A.; and Splett, Erich, 4,767,453, Cl. 75-66.000.
Springer, Thomas W.; Slavinski, Raymond L.; and Laird, Ronald H., to SLS Products, Inc. Utility clamp. 4,767,131, Cl. 280-289.0WC.
Stafsudd, Oscar M.: *See*—
Bunshah, Rointan F.; Parsons, James D.; and Stafsudd, Oscar M., 4,767,666, Cl. 428-334.000.
Standard Oil Company, The: *See*—
Glaeser, Linda C.; Brazdil, James F., Jr.; and Toft, Mark A., 4,767,739, Cl. 502-209.000
Grasselli, Robert K.; and Hardman, Harley F., 4,767,878, Cl. 558-324.000
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,767,822, Cl. 525-99.000.
Standard Telephones & Cables, Public Limited Company: *See*—
Parfree, Colin S.; Smith, Colin F. G.; Worthington, Peter; Marten, Malcolm G.; and Bliss, Norman S., 4,767,182, Cl. 350-96.230.
Standfuss, Dietmar: *See*—
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk, Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310.
Stanford University: *See*—
Feigelson, Robert S., 4,766,875, Cl. 125-21.000.
Stanich, Louis; and Sweeny, Henry D. Extension device for power screwdriver. 4,766,783, Cl. 81-54.000
Stanley-Bostitch, Inc.: *See*—
Canlas, Prudencio S., Jr., 4,767,043, Cl. 227-8.000
Stansbeary, Jack L.: *See*—
Lamartino, Salvatore P.; Stansbeary, Jack L.; and Saville, Charles R., 4,766,645, Cl. 17-49.000
Stapleton, Craig A., to Huron/St. Clair Company, a division of Masco Industries, Inc. Luggage carrier with detachable suspended load-bearing rack. 4,767,041, Cl. 224-326.000
Starczewski, John F.; Hsu, Joseph C.; Blemberg, Robert J.; Curie, Kevin J.; and Jesse, Jerry F., to American National Can Company Multiple layer film and containers made therefrom. 4,767,651, Cl 428-35.000
Stauffer Chemical Co.: *See*—
Baker, Don R.; and Brownell, Keith H., 4,767,771, Cl. 514-346.000
Baker, Don R.; Kezeran, Charles; and Brownell, Keith H., 4,767,772, Cl. 514-346.000
Lee, David L.; and Michaely, William J., 4,767,447, Cl. 71-103.000
Stauffer, Norman L., to Honeywell Inc. Hand presence activated water faucet controller. 4,767,922, Cl. 250-221.000
Stauffer, Norman L., to Honeywell Inc. Active ranging system. 4,767,934, Cl. 250-561.000.
Stautzenberger, A. Lee, to Hoechst Celanese Corporation. Synthesis of diphenyl phthlates. 4,767,881, Cl. 560-86.000
Stavrianpoulos, Jannis G., to Enzo Biochem, Inc. Therapeutic and diagnostic processes using isotope transfer to chelator-target recognition molecule conjugate. 4,767,609, Cl. 424-1.100
Steffen, Robert P.: *See*—
Hamilton, Harriet W.; and Steffen, Robert P., 4,767,747, Cl 514-46.000
Stenstrom, Eric: *See*—
Urness, Kevin; Lickus, Leonard J.; Heisner, Douglas; Ingwersen, Peter; and Stenstrom, Eric, 4,766,668, Cl. 29-749.000
Stenzel, Otto, to Leybold-Heraeus GmbH. Process for separating metals by distillation and condensation. 4,767,452, Cl. 75-63.000
Stepto, Robert F. T.; Still, Richard H.; and Hirasawa, Yoji, to Nippon Paint Company Limited; and University of Manchester Institute of Science and Technology, The. Production of polymeric polyols 4,767,846, Cl. 536-18.600
Sterler, Georg: *See*—
Bois, Wilhelm; Sterler, Georg; and Dengler, Martin, 4,767,126, Cl 280-6.00R
Sterling Drug Inc.: *See*—
Diana, Guy D., 4,767,788, Cl. 514-574.000
Sterwerf, Lester J., Jr., to Cincinnati Mine Machinery Company, The Pusher-type conveyor chain. 4,766,995, Cl. 198-733.000.
Stevens, Raymond R., Jr.; Gondek, Stanley E.; Cush, Dennis D.; Grimes, Robert, Jr.; Niner, Roberts L.; and Connor, Francis I., Jr., to Budd Company, The. Rapid robotic assembly change system 4,767,910, Cl. 219-125.100
Stevens, Vernon C., to Ohio State University, The. Antigenic modification of polypeptides. 4,767,842, Cl. 530-324.000
Stewart, James F.: *See*—
Hopkins, Thomas R.; and Stewart, James F., 4,767,994, Cl. 324-438.000
Stewart, John E.: *See*—
Muller, Dietmar; and Stewart, John E., 4,767,577, Cl. 264-3.300
Stewart Stamping Corp.: *See*—
Phillipson, Walter M.; Brennan, Robert J.; and Meighen, Terrence, 4,767,355, Cl. 439-425.000
Stichweh, Lawrence A.: *See*—
Beaver, Earl R.; Stichweh, Lawrence A.; and Thompson, Thomas J., 4,766,938, Cl. 141-1.000
Stieber, Volker; and Krispel, Franz, to Siemens Medical Laboratories, Inc. Method and apparatus for enlarging a charged particle beam 4,767,930, Cl. 250-396.0ML.
Stierlen-Maquet AG: *See*—
Adler, Bernhard; and Kieferle, Hermann, 4,767,943, Cl. 307-119.000
Still, Richard H.: *See*—
Stepto, Robert F. T.; Still, Richard H.; and Hirasawa, Yoji, 4,767,846, Cl. 536-18.600
Stinar, Winfred A., Jr.: *See*—
Stinar, Winfred A., Sr.; and Stinar, Winfred A., Jr., 4,766,689, Cl 43-17.200
Stinar, Winfred A., Sr.; and Stinar, Winfred A., Jr. Fish hook unsnagger and method. 4,766,689, Cl. 43-17.200
Stinson Containermate Mfg. Inc.: *See*—
Stinson, Douglas W., 4,767,098, Cl. 254-45.000
Stinson, Douglas W., to Stinson Containermate Mfg. Inc. Container lift assembly. 4,767,098, Cl. 254-45.000
Stix, Thomas H.; and Ono, Masayuki, to United States of America, Energy. Anomalous - viscosity current drive. 4,767,590, Cl 376-133.000
Stluka, Eugene F.; and Huber, William J., to Florig Equipment Company, Inc. Trailer door actuating mechanism. 4,767,152, Cl. 296-100.000
Stockburger, Hermann; and Bauer, Siegfried. Method for the detection of authenticity in a data carrier and apparatus for applying said method. 4,767,919, Cl. 235-455.000
Stockton, Warren D.: *See*—
Miller, Michael K.; and Stockton, Warren D., 4,766,800, Cl 89-33.020
Stoelting, Inc.: *See*—
Palus, Joseph J.; and Williams, Robert E., 4,767,218, Cl 366-261.000
Stolzenburg, Rudolf: *See*—
Bergthaller, Peter; Stolzenburg, Rudolf; and Marx, Paul, 4,767,698, Cl 430-562.000

VOL 1093 ISS 5 AG 30 1988 UMI

Stoner, Donald W.; and Canino, Lawrence S. Chip tester. 4,768,195, Cl 371-25.000

Stoppazzini, Benito, to E.M.M. S.R.L. Perfected automatic flat knitting machine. 4,766,742, Cl. 66-75.100.

Storage Technology Corporation: *See*—
French, Andrew J.; Ford, James; Flenner, Thomas; Kleinochnitz, Thomas; and Comstock, Robert, 4,767,933, Cl. 250-548.000

Stork PMT B.V.: *See*—
van den Nieuwelaar, Josephus A.; and Janssen, Petrus C. H., 4,766,644, Cl. 17-11.000

Straathof, Theodericus J.; and Konig, Axel, to Procter & Gamble Company, The. Biodegradable fabric softeners. 4,767,547, Cl. 252-8.800

Straub, Ferdinand: *See*—
Nuber, Adolf; Sanner, Axel; Straub, Ferdinand; and Vogel, Friedrich, 4,767,613, Cl. 424-47.000

Straubel, Max, to Robert Bosch GmbH. Fuel injection pump. 4,767,288, Cl. 417-462.000

Strauch, Dieter; Belger, Peter; Hofer, Heiner; and Merz, Martin, to Pluss-Staufer AG. Carbonate-containing mineral fillers, pigments and similar materials. 4,767,464, Cl. 106-464.000

Striker, Richard A.: *See*—
Modic, Frank J.; Striker, Richard A.; Delker, Wayne L.; and Sammel, Richard K., 4,767,794, Cl. 521-82.000

Stringer, Robert A., to Textron Inc. Integrated combination propeller drive shaft fairing and water intake sea chest arrangement, for high speed operating marine craft. 4,767,367, Cl. 440-88.000

Strobel, Stephen J., to Texas Instruments Incorporated. Cylinder pressure transmitter for an internal combustion engine. 4,767,960, Cl 310-338.000

Stroder, Harold D.: *See*—
Beckley, Robert A.; and Stroder, Harold D., 4,766,840, Cl. 118-46.000

Stuetz, Dagobert E.: *See*—
Teng, Chia-Chi; and Stuetz, Dagobert E., 4,767,169, Cl. 350-96.140.

Sturm, Ruger & Company, Inc.: *See*—
Ruger, William B., 4,766,687, Cl. 42-65.000.

Sturmer, Johann: *See*—
Hubertus, Guido; Thomas, Freidrich-Werner; Sperzel, Wolfgang; and Sturmer, Johann, 4,768,141, Cl. 363-16.000

Su, Wei-Fang A.: *See*—
Westervelt, Dean C.; and Su, Wei-Fang A., 4,767,643, Cl 427-54.100

Sudhakar, Anantha: *See*—
Katz, Thomas J.; and Sudhakar, Anantha, 4,767,873, Cl. 556-42.000

Suehiro, Mikio: *See*—
Kobayakawa, Takaharu; Suehiro, Mikio; Saito, Yosuke; and Inoue, Hiroshi, 4,767,147, Cl. 296-1.00S.

Suga, Michihisa: *See*—
Utsumi, Kazuaki; Takamizawa, Hideo; Tsuzuki, Mitsuo; Suga, Michihisa; and Takahashi, Sadayuki, 4,766,671, Cl. 29-848.000.

Suga, Nagaichi; and Katayanagi, Shinichi, to Suga Test Instruments Co., Ltd. Apparatus for changing artificial snow to wet snow 4,767,054, Cl. 239-14.200.

Suga Test Instruments Co., Ltd.: *See*—
Suga, Nagaichi; and Katayanagi, Shinichi, 4,767,054, Cl 239-14.200

Sugaya, Fumio, to Fuji Photo Film Co., Ltd. Apparatus for loading analytical slides in cartridge. 4,766,714, Cl. 53-242.000.

Sugg, David J.: *See*—
Gamblin, Rodger L.; Myers, Nancy E.; and Sugg, David J., 4,767,509, Cl. 204-44.700

Sugi, Masahito: *See*—
Yazaki, Yoshio; and Sugi, Masahito, 4,767,843, Cl. 530-387.000

Sugimoto, Mutsumi, to Katsuyama Kinzoku Kogyo Kabushiki Kaisha. Push button buckle assembly for a seat belt. 4,766,654, Cl. 24-637.000

Sugimoto, Tadakatsu; Igarashi, Yoshiaki; Saito, Shiro; Wada, Eiichi; and Murai, Keiji, to Yokota Industrial Co., Ltd. Two-blade type impulse wrench. 4,766,787, Cl. 81-463.000

Sugimura, Tatuo: *See*—
Ichinose, Makoto; Satoh, Isao; Sugimura, Tatuo; and Kuroki, Yuzuru, 4,768,181, Cl. 369-54.000.

Sugiura, Haruyuki, to Kitagawa Industries Co., Ltd. Board fastener 4,766,652, Cl. 24-453.000

Sugiura, Masahiro: *See*—
Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji; Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, 4,767,801, Cl. 523-145.000

Sugiyama, Susumu; Suzuki, Takashi; and Takigawa, Mitsuharu, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Semiconductor pressure sensor and method of manufacturing the same. 4,766,666, Cl. 29-610.0SG.

Sukimoto Minobu: *See*—
Ueda, Iwao; and Sukimoto Minobu, 4,766,751, Cl. 72-64.000

Sumitomo Chemical Company, Limited: *See*—
Konishi, Hiroyuki; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,767,446, Cl. 71-103.000
Sakakura, Kazuaki; and Takahashi, Minoru, 4,767,303, Cl 425-203.000
Suzukamo, Gohfu; and Sakito, Yoji, 4,767,882, Cl. 560-100.000

Sumitomo Electric Industries, Ltd.: *See*—
Ogasawara, Ichiro; Nirasawa, Nobumasa; and Nishimura, Akira, 4,767,184, Cl. 350-96.230
Takata, Koji; and Fujioka, Hideaki, 4,766,972, Cl. 180-197.000.

Sumitomo Special Metals Co., Ltd.: *See*—
Fujimura, Setsuo; Sagawa, Masato; and Matsuura, Yutaka, 4,767,474, Cl. 148-302.000
Ishigaki, Naoyuki; Hamada, Takaki; and Fujimura, Setsuo, 4,767,450, Cl. 75-0 5BA

Summerville, Edward: *See*—
Baker, Bruce G.; Clark, Neville J.; McArthur, Hamish; and Summerville, Edward, 4,767,792, Cl. 518-721.000.

Sun Chemical Corporation: *See*—
Janusz, Edward G., 4,767,835, Cl. 527-600.000.

Sundstrand Data Control, Inc.: *See*—
Norling, Brian L.; and Cornelius, Craig J., 4,766,768, Cl. 73-497.000

Sunstar Giken Kabushiki Kaisha: *See*—
Sakakibara, Toshimori; and Tomoyasu, Hirohide, 4,767,802, Cl. 523-204.000

Superior Aluminum Products, Inc.: *See*—
Francis, Patrick A., 4,767,232, Cl. 403-91.000

Supra Products, Inc.: *See*—
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000.

Surgical Engineering Associates, Inc.: *See*—
Moden, James R.; Caldwell, Michael D.; and Moden, Robert D., 4,767,410, Cl. 604-175.000

Sutter, Steven T.: *See*—
Boehringer, John R.; Karpowicz, John; and Sutter, Steven T., 4,767,417, Cl. 604-31.000

Suzukamo, Gohfu; and Sakito, Yoji, to Sumitomo Chemical Company, Limited. Tetrahydronaphthalene derivatives and their production. 4,767,882, Cl. 560-100.000

Suzuki, Akihiro: *See*—
Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji; Watanabe, Yumiko; and Suzuki, Makoto, 4,767,170, Cl. 350-96.140

Suzuki, Kouzou: *See*—
Kawasaki, Ryoichi; Ooyama, Noriyoshi; Shimizu, Masami; and Suzuki, Kouzou, 4,767,921, Cl. 250-201.000.

Suzuki, Makoto: *See*—
Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji; Watanabe, Yumiko; and Suzuki, Makoto, 4,767,170, Cl. 350-96.140.

Suzuki, Masami: *See*—
Yamaguchi, Nobutaka; Fujiyama, Masaaki; and Suzuki, Masami, 4,767,644, Cl. 427-385.500.

Suzuki, Osamu: *See*—
Oishi, Kengo; and Suzuki, Osamu, 4,767,007, Cl. 206-387.000.

Suzuki, Shigeru: *See*—
Nomura, Etsuzo; and Suzuki, Shigeru, 4,766,828, Cl. 112-314.000.

Suzuki, Takashi: *See*—
Sugiyama, Susumu; Suzuki, Takashi; and Takigawa, Mitsuharu, 4,766,666, Cl. 29-610.0SG

Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji; Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Molding material and mold. 4,767,801, Cl. 523-145.000

Suzuki, Toshiyuki: *See*—
Mitsuno, Yuichiro; Nomaguchi, Keiko; and Suzuki, Toshiyuki, 4,767,625, Cl. 424-95.000

Suzuki, Yoshiaki; and Hayashi, Gouichi, to Fuji Photo Film Co., Ltd. Infrared absorbent. 4,767,571, Cl. 252-587.000

Swaanen, Petrus H.: *See*—
van der Meer, Aant B. D.; and Swaanen, Petrus H., 4,767,583, Cl. 264-63.000

Swarovski, Daniel; and Schwab, Kurt, to D. Swarovski & Co. Decorative body made of glass. 4,767,676, Cl. 428-542.200.

Sweeny, Henry D.: *See*—
Stanich, Louis; and Sweeny, Henry D., 4,766,783, Cl. 81-54.000

Swihart, Terence J.: *See*—
Kasprzak, Kenneth A.; Swihart, Terence J.; and Ward, Andrew H., 4,767,548, Cl. 252-8.800.

Sylvester, Edmund Q. Process and apparatus for casting rounds, slabs, and the like. 4,766,945, Cl. 164-136.000.

Synthelabo: *See*—
George, Pascal; Giron, Claudie; and Froissant, Jacques, 4,767,755, Cl. 514-212.000

Sytron Corporation: *See*—
Sloop, David J.; and Yu, Hsiang-Lin, 4,766,941, Cl. 160-241.000

Szpur, Roman. Indoor light fixture for high intensity lamp. 4,768,140, Cl. 362-342.000

Szymczak, Edward J.: *See*—
Smith, Jerry D.; and Szymczak, Edward J., 4,766,956, Cl. 166-182.000

T.A.C. (Tongerese Automaten Centrale): *See*—
Morin, Claude; and T.A.C. (Tongerese Automaten Centrale), 4,766,615, Cl. 2-421.000

T. Entrepreneur, Inc.: *See*—
Terhune, John J., 4,767,128, Cl. 280-47.200

Tabak, Samuel A.: *See*—
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., 4,767,604, Cl. 422-190.000

Tabe, Kazushi: *See*—
Yamagata, Masato; and Tabe, Kazushi, 4,768,219, Cl 379-61.000.

Tachibana, Yoshimi: *See*—
Miyaki, Mutsuaki; Tachibana, Yoshimi; Oguri, Kiyohiko; and Isaka, Yoshiharu, 4,766,859, Cl. 123-196.00W.

Tachikawa, Kyoji; Sekine, Hisashi; and Miyashita, Shoji, to National Research Institute for Metals. Process for producing Ti-containing Nb_3Sn composite superconductor. 4,767,470, Cl. 148-11.50F.

Tachikawa Spring Co., LTD. *See*—
Kousaka, Takayuki; and Yoshizawa, Toshio, 4,767,155, Cl. 297-219.000

Tackett, E. Wayne; Smith, Bradley W.; and Voris, Charles R., to Morton Thiokol, Inc. Segmented case rocket motor. 4,766,726, Cl. 60-255.000

Tada, Hisashi; Agata, Akira; and Ii, Yasuaki, to Mitsubishi Rayon Co., Ltd. Intermediate for composite materials. 4,767,805, Cl. 523-468.000.

Tada, Kazuhiro, to NEC Corporation. Memory circuit having a plurality of cell arrays. 4,768,171, Cl. 365-222.000.

Taden, Richard K.: *See*—
Dull, David A.; and Taden, Richard K., 4,766,727, Cl. 60-427.000.

Taga, Yutaka: *See*—
Kashihara, Yuji; and Taga, Yutaka, 4,766,973, Cl. 180-249.000

Tagawa, Keiko. Mechanism for automatically feeding collecting elongated core of fabrics. 4,767,076, Cl. 242-58.600.

Taguchi, Teruo: *See*—
Sasaki, Setsuo; Koganebuchi, Mutsuo; and Taguchi, Teruo, 4,768,129, Cl. 361-302.000

Tai, King L.: *See*—
Ong, Edith T. T.; Tai, King L.; and Wong, Yiu-Huen, 4,767,695, Cl 430-311.000

Takada, Hiroshi, to Murata Kikai Kabushiki Kaisha. Card switching apparatus for dobby. 4,766,936, Cl. 139-324.000.

Takada, Yasuo: *See*—
Suzuki, Takatoshi; Takada, Yasuo; Sakakibara, Yuji; Sugiura, Masahiro; Hayashi, Hiroaki; and Kamigaito, Osami, 4,767,801, Cl. 523-145.000

Takada, Zenji: *See*—
Ando, Hirohito; Takada, Zenji; Aoki, Shigeto; and Shigeta, Yuko, 4,767,844, Cl. 534-573.000

Takahashi, Kazuo, to Fuji Photo Film Co., Ltd. Developing method for electrophotographic apparatus. 4,768,059, Cl. 355-10.000.

Takahashi, Kazuo: *See*—
Takahashi, Kiyoshi; and Takahashi, Kazuo, 4,767,142, Cl 294-64.100.

Takahashi, Kenichi: *See*—
Shogenji, Toshihiro; and Takahashi, Kenichi, 4,766,676, Cl. 34-70.000

Takahashi, Kiyoshi; and Takahashi, Kazuo. Forceps for semiconductor silicon wafer. 4,767,142, Cl. 294-64.100.

Takahashi, Minoru: *See*—
Sakakura, Kazuaki; and Takahashi, Minoru, 4,767,303, Cl. 425-203.000.

Takahashi, Nobuyuki; and Mori, Shigeo, to Sodick Co., Ltd. EDM water-based dielectric fluid. 4,767,906, Cl. 219-69.00D.

Takahashi, Sadayuki: *See*—
Utsumi, Kazuaki; Takamizawa, Hideo; Tsuzuki, Mitsuo; Suga, Michihisa; and Takahashi, Sadayuki, 4,766,671, Cl. 29-848.000.

Takahashi, Tetsujiro: *See*—
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M.

Takahashi, Yukio: *See*—
Takizawa, Yasushi; Sasayama, Atsushi; Kobayashi, Yoshihiko; Takahashi, Yukio; and Kakegawa, Yuuji, 4,768,070, Cl. 357-17.000

Takamatsu, Junichi; and Akiyama, Kazunori, to Mita Industrial Co., Ltd. Image forming machine having a toner recycling unit. 4,768,055, Cl. 355-3.00R.

Takamisawa Electric Co., Ltd.: *See*—
Takeuchi, Hiroto; and Hishimura, Masahiro, 4,767,944, Cl. 307-132.00E

Takamizawa, Hideo: *See*—
Utsumi, Kazuaki; Takamizawa, Hideo; Tsuzuki, Mitsuo; Suga, Michihisa; and Takahashi, Sadayuki, 4,766,671, Cl. 29-848.000.

Takamori, Tsutomu: *See*—
Nakamura, Yoshiyuki; and Takamori, Tsutomu, 4,768,103, Cl. 358-337.000

Takamori, You: *See*—
Kitta, Kenichi; Shinagawa, Touru; and Takamori, You, 4,767,920, Cl. 235-492.000

Takamura, Sachiko: *See*—
Hata, Kazuyoshi; and Takamura, Sachiko, 4,767,202, Cl 350-342.000

Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao; Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, to Fujikura Ltd. Method for jointing CV cables. 4,767,589, Cl. 264-500.000

Takara Co., Ltd.: *See*—
Satoh, Yasuta; Tsuchihashi, Hiroshi; and Tani, Saburo, 4,767,505, Cl. 264-39.000

Takase, Shigehiro: *See*—
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000

Takata, Koji; and Fujioka, Hideaki, to Sumitomo Electric Industries, Ltd. Wheel spin control apparatus for use in an automobile. 4,766,972, Cl. 180-197.000

Takatori, Nobuaki: *See*—
Sakuma, Takeshi; Takatori, Nobuaki; Ebisawa, Masuo; Hidaka, Akio; Kaiho, Shigeo; Kawase, Akio; and Inoue, Masahiro, 4,766,944, Cl. 164-97.000

Takaya, Haruo: *See*—
Kawamura, Kichinari; Kono, Yasuo; Okado, Hideo; Hagiwara, Hiroyuki; and Takaya, Haruo, 4,767,886, Cl. 585-640.000

Takeda Chemical Industries, Ltd.: *See*—
Fujiwara, Yoshitaka; and Kaizu, Tetsuji, 4,767,870, Cl. 549-315.000
Shinagawa, Susumu; Kanamaru, Tsuneo; and Harada, Setsuo, 4,767,781, Cl. 514-513.000

Takeda, Hisanobu, to Aisin Seiki Kabushiki Kaisha. Sanitary device 4,766,619, Cl. 4-251.000

Takeda, Masaru: *See*—
Mishio, Yasuhiko; Shimizu, Hidetoshi; Matsuda, Takashi, and Takeda, Masaru, 4,766,969, Cl. 180-75.200.

Takeda, Yoshiaki: *See*—
Asano, Hiroyuki; Takeda, Yoshiaki; and Kai, Osamu, 4,768,217, Cl. 379-32.000

Takemae, Yoshihiro, to Fujitsu Limited. Semiconductor memory device having error correction function and incorporating redundancy configuration. 4,768,193, Cl. 371-10.000.

Takematsu, Tetsuo; Ikekawa, Nobuo; and Shida, Atsuhiko, to Nippon Kayaku Kabushiki Kaisha. Increasing the yield of cereals by means of brassinolide derivatives. 4,767,442, Cl. 71-88.000

Takeuchi, Chifumi, to Nippon Gakki Seizo Kabushiki Kaisha. Tone synthesis method using modulation operation for an electronic musical instrument. 4,766,795, Cl. 84-1.010

Takeuchi, Enchi: *See*—
Nakano, Toshihiko; Nagase, Fumiaki; Takeuchi, Enchi; Kamada, Mamoru; and Shigematsu, Hideyo, 4,767,673, Cl. 428-458.000

Takeuchi, Hiroto; and Hishimura, Masahiro, to Takamisawa Electric Co., Ltd. Hybrid relay circuit having electromagnetic relay for switching AC power supply. 4,767,944, Cl. 307-132.00E.

Takeuchi, Hitoshi: *See*—
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M.

Takeuchi, Koji: *See*—
Akutagawa, Hiroshi; and Takeuchi, Koji, 4,768,039, Cl. 346-76.0PH.

Taki, Kazunari: *See*—
Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji; Watanabe, Yumiko; and Suzuki, Makoto, 4,767,170, Cl 350-96.140

Takigawa, Masahiro: *See*—
Sakakibara, Yasuyuki; Igashira, Toshihiko; Sekiguchi, Kiyonori; Takigawa, Masahiro; and Natsume, Yoshimi, 4,767,959, Cl. 310-317.000

Takigawa, Mitsuharu: *See*—
Sugiyama, Susumu; Suzuki, Takashi, and Takigawa, Mitsuharu, 4,766,666, Cl. 29-610.0SG

Takiguchi, Yoshihiro, to Hamamatsu Photonics K.K. Apparatus for measuring transmission characteristics of an optical fiber. 4,767,207, Cl. 356-73.100

Taki, Osamu; Ukei, Hironobu; and Fujikawa, Keiji, to Yamaha Hatsudoki Kabushiki Kaisha. Intake system for engine. 4,766,866, Cl 123-432.000

Takishita, Yoshihiko; Nonaka, Toshio; and Hayakawa, Yasuo, to Hitachi Construction Machinery Co., Ltd. Supersonic flaw detecting system. 4,768,155, Cl. 364-507.000

Takizawa, Minoru: *See*—
Nakamura, Michiei; Takeuchi, Hitoshi; Takahashi, Tetsujiro; Kori, Yoshitake; Takizawa, Minoru; Shinoda, Takamitsu; and Horiguchi, Shojiro, 4,767,465, Cl. 106-308.00M

Takizawa, Yasushi; Sasayama, Atsushi; Kobayashi, Yoshihiko; Takahashi, Yukio; and Kakegawa, Yuuji, to Hitachi, Ltd; and Hitachi Tobu Semiconductor, Ltd. Optoelectronics device. 4,768,070, Cl. 357-17.000

Talvacchio, John J.; Braginski, Alexander I.; Janocko, Michael A.; and Gavaler, John R., to Westinghouse Electric Corp. Superconducting Josephson junctions. 4,768,069, Cl. 357-5.000

Tamai, Hidefumi, to Isuzu Motors Limited. Shift control method and apparatus for automatic transmissions used in automotive vehicles 4,766,774, Cl. 74-475.000

Tamba, Shinichi; Miyake, Hitomi; and Fukui, Noboru, to Kawasaki Jukogyo Kabushiki Kaisha. Muffler for V-type engine. 4,766,983, Cl 181-240.000

Tamnaharry Developments Limited: *See*—
O'Neill, James J., 4,766,850, Cl. 119-82.000

Tamura Electric Works, Ltd.: *See*—
Asano, Hiroyuki; Takeda, Yoshiaki; and Kai, Osamu, 4,768,217, Cl 379-32.000
Kinoshita, Toshiharu, Kunii, Shuji; and Sano, Yoshiki, 4,768,223, Cl. 379-143.000

Tamura, Kazumi; and Fujita, Hideo, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for manufacturing concrete. 4,767,461, Cl 106-98.000

Tamura, Yasuyuki: *See*—
Sato, Tadashi; and Tamura, Yasuyuki, 4,768,041, Cl. 346-76.0PH

Tan, Masayuki: *See*—
Takaoka, Michio; Motai, Tsuneaki; Ono, Motoyuki; Kaji, Isao, Hasegawa, Masakazu; Tan, Masayuki; and Kurata, Masaru, 4,767,589, Cl 264-500.000

VOL 1093 ISS 5 AG 30 1988 UMI

Tan, Michael K.: *See—*
Weber, Peter G.; Tan, Michael K.; and Dzuong, Charles, 4,767,490, Cl. 156-499.000
Tanaka, Hiroshi: *See—*
Tezuka, Kazunari; and Tanaka, Hiroshi, 4,767,382, Cl. 474-28.000.
Tanaka Kikinzoku Kogyo K.K.: *See—*
Furuya, Nagakazu; and Motoo, Satoshi, 4,767,953, Cl. 310-11.000
Tanaka, Masaru: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000
Tanaka, Masayuki: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000.
Tanaka, Minoru: *See—*
Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio; Ueda, Masahiro; and Tanaka, Minoru, 4,767,475, Cl. 148-33.000
Tanaka, Shigeru, to Kabushiki Kaisha Toshiba. Plastic-molded semiconductor device. 4,768,078, Cl. 357-72.000.
Tanaka, Tadashi; and Sekitani, Noboru, to Murata Kikai Kabushiki Kaisha. Positive dobby. 4,766,935, Cl. 139-55.100
Tanaka, Takeshi; Yorita, Hiroshi; Tomita, Masahiro; and Igashira, Toshihiko, to Nippon Soken, Inc. High voltage generating device 4,767,967, Cl. 315-55.000.
Tanaka, Toru; Sawada, Koji; and Shinohara, Koji, to Toyota Jidosha Kabushiki Kaisha; and Tokai Rubber Industries, Ltd. Elastic bushing assembly. 4,767,108, Cl. 267-140.100.
Tanaka, Tsutomu: *See—*
Kushima, Hidekiyo; and Tanaka, Tsutomu, 4,767,918, Cl. 235-441.000
Tanaka, Yasuo: *See—*
Nakashima, Keishi; Iwata, Tetsuya; Tanaka, Yasuo; and Hashidate, Toshiaki, 4,768,121, Cl. 360-125.000
Tanaka, Yoshihiro: *See—*
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,768,053, Cl. 354-403.000
Tanashin Denki Co., Ltd.: *See—*
Kido, Kunio, 4,768,112, Cl. 360-69.000.
Taneya, Mototaka; Matsui, Sadayoshi; Yano, Seiki; and Yamamoto, Saburo, to Sharp Kabushiki Kaisha. Semiconductor laser array. 4,768,201, Cl. 372-50.000
Tani, Saburo: *See—*
Satoh, Yasuta; Tsuchihashi, Hiroshi; and Tani, Saburo, 4,767,505, Cl. 264-39.000
Tanigawa, Hiroshi, to Toko, Inc. Switching circuit device using current mirror circuits. 4,767,979, Cl. 323-316.000.
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, to Minolta Camera Kabushiki Kaisha. Photographic camera. 4,768,047, Cl. 354-195.100.
Taniguchi, Nobuyuki: *See—*
Matsuda, Motonobu; Tanaka, Yoshihiro; Nakanishi, Motohiro; Taniguchi, Nobuyuki; and Ootsuka, Hiroshi, 4,768,053, Cl. 354-403.000.
Norita, Toshio; Ishida, Tokuji; Hamada, Masataka; Karasaki, Toshihiko; and Taniguchi, Nobuyuki, 4,768,054, Cl. 354-408.000
Tannenbaum, Alan R.: *See—*
Konopik, Bradly J.; Bradley, David J.; Reed, Martin A.; Tannenbaum, Alan R.; and Turner, Michael R., 4,768,149, Cl. 364-200.000
Tanner, Bernard C. Screw and nail guide. 4,766,782, Cl. 81-44.000.
Tanzawa, Misao; and Endo, Shuichi, to Ricoh Company, Ltd. Cleaning device. 4,768,062, Cl. 355-15.000.
Tapco Products Company, Inc.: *See—*
Break, Douglas G.; Marsh, Walter G.; and Rhoades, James J., 4,766,757, Cl. 72-319.000.
Tarroux, Roger; Fahy, Jacques; and Hatinguais, Philippe, to P. F. Medicament. Process for the preparation of vincristine. 4,767,855, Cl 540-478.000
Tashiro, Yasunori, to Rheon Automatic Machinery Co., Ltd. Apparatus for shaping a spherical body. 4,767,304, Cl. 425-308.000.
Tashiro, Yasunori, to Rheon Automatic Machinery Co., Ltd. Apparatus for shaping a spherical body. 4,767,305, Cl. 425-308.000.
Tashjian, William. Aircraft landing zone marker. 4,768,136, Cl. 362-84.000
Tatara, Yuudai; Okawa, Susumu; Okuwaki, Shigeru; and Jufuku, Yasunobu, to Toyota Jidosha Kabushiki Kaisha. Chain belt 4,767,388, Cl. 474-245.000
Tatsumoto, Tokuichi: *See—*
Okamoto, Kazuo; Ohhashi, Hiroshi; and Tatsumoto, Tokuichi, 4,767,154, Cl. 296-218.000
Taub, Jack R.; and Hills, Michael T., to National Information Utilities Corporation. Education utility. 4,768,087, Cl. 358-84.000.
Taut, Inc.: *See—*
McFarlane, Richard H., 4,767,408, Cl. 604-168.000.
Taylor, Harold M.: *See—*
Hirsch, Kenneth S.; and Taylor, Harold M., 4,767,770, Cl. 514-342.000
Taylor, Kevin C.: *See—*
Dunmore, Gordon C.; Taylor, Kevin C.; and Kolthammer, Brian W. S., 4,767,860, Cl. 544-384.000.
Taylor, Stewart S., to Tektronix, Inc. High-speed supply independent level shifter. 4,767,946, Cl. 307-264.000.
TBL Development Corporation: *See—*
Towns, Edward J.; and Brown, Edward M., 4,767,587, Cl 264-318.000
TDJ System Research Center of Haerbin Railway Bureau: *See—*
Chongben, Zhong; and Zhengli, Xu, 4,766,815, Cl. 104-26.200
TDK Corporation: *See—*
Iizuka, Michio; and Shiba, Haruo, 4,768,123, Cl. 360-133.000.
Sasaki, Setsuo; Koganebuchi, Mutsuo; and Taguchi, Teruo, 4,768,129, Cl. 361-302.000
Teach, Ted L.: *See—*
Cain, Gary L.; Rando, Joseph F.; Teach, Ted L.; Meyers, Lawrence J.; and Markley, Theodore J., 4,767,208, Cl. 356-138.000.
Technion Research & Development Foundation Ltd.: *See—*
Shalitin, Channa, 4,767,714, Cl. 435-272.000.
Technology Unlimited, Inc.: *See—*
Geho, W. Blair; Jacob, Joseph; and Lau, John R., 4,767,615, Cl. 424-57.000
Teikoku Seiyaku Kabushiki Kaisha: *See—*
Kawata, Terushige; and Yamashita, Shinsuke, 4,767,787, Cl. 514-573.000.
Tektronix, Inc.: *See—*
McGlothlan, J. Kirk, 4,767,964, Cl. 313-421.000
Quinn, Patrick A., 4,767,945, Cl. 307-241.000.
Taylor, Stewart S., 4,767,946, Cl. 307-264.000
Telectronics N.V.: *See—*
Callaghan, Frank J., 4,766,900, Cl. 128-419.0PG.
Callaghan, Frank J., 4,766,901, Cl. 128-419.0PG.
Schroeppel, Edward A., 4,766,902, Cl. 128-419.0PG.
Telesis Systems Corporation: *See—*
Sliwkowski, Joseph; and Fisher, Robert, 4,768,154, Cl. 364-468.000.
Teng, Chia-Chi; and Stuetz, Dagobert E., to Hoechst Celanese Corporation. Thin film waveguide electrooptic modulator. 4,767,169, Cl. 350-96.140.
Tenhunen, Erkki, to Sermet Oy; and Maamiehen Sahko Oy. Burner especially for burning biomass. 4,766,824, Cl. 110-256.000.
Tenneco Canada Inc.: *See—*
Lipsztajn, Marek, 4,767,510, Cl. 204-101.000.
Terada, Katsumi: *See—*
Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, 4,767,965, Cl. 313-491.000.
Terada, Takami: *See—*
Yamada, Yukifumi; and Terada, Takami, 4,767,156, Cl. 297-313.000
Terasawa, Masami: *See—*
Fujinaka, Hiroshi; and Terasawa, Masami, 4,767,672, Cl. 428-446.000
Terhune, John J., to T. Entrepreneur, Inc. Wheelbarrow construction. 4,767,128, Cl. 280-47.200.
Tesa A.A.: *See—*
Zanier, Adriano; and Zufferey, Charles-Henri, 4,766,674, Cl. 33-503.000
Texaco Inc.: *See—*
Cuscurida, Michael; and Texaco Inc., 4,767,836, Cl. 528-45.000
Hart, William P.; Kapuscinski, Maria M.; and Liu, Christopher S., 4,767,553, Cl. 252-47.500.
Nieh, Edward C. Y., 4,767,555, Cl. 252-73.000
Texas Instruments Incorporated: *See—*
Chauvel, Gerard; and Boutaud, Frederic, 4,768,157, Cl. 364-521.000
McLellan, Neil R., 4,767,471, Cl. 148-24.000.
Pavio, Anthony M., Jr.; and Thompson, Scott D., 4,768,000, Cl. 332-31.00T
Shah, Ashwin H., 4,767,947, Cl. 307-265.000
Strobel, Stephen J., 4,767,960, Cl. 310-338.000.
Textron Inc.: *See—*
Stringer, Robert A., 4,767,367, Cl. 440-88.000.
Teyssie , Philippe J.: *See—*
Ouhadi, Trazollah; Forte, Rosalia; Jerome, Robert E.; Fayt, Roger M.; and Teyssie , Philippe J., 4,767,824, Cl. 525-343.000.
Tezuka, Kazunari; and Tanaka, Hiroshi, to Fuji Jukogyo Kabushiki Kaisha. Transmission ratio control system for a continuously variable transmission. 4,767,382, Cl. 474-28.000
Th. Goldschmidt AG: *See—*
Eggert, Horst, 4,767,454, Cl. 75-84.000.
Thermagene Limited: *See—*
Ficke, Geoff, 4,766,915, Cl. 132-79.00F.
Thermal King Corporation: *See—*
Waldschmidt, William L., 4,766,736, Cl. 62-275.000
Thermal Systems, Inc.: *See—*
Jensen, William F., 4,766,877, Cl. 126-92.0AC.
Therrien, Keith E.: *See—*
Chee, Wan T.; McLaren, Douglas; and Therrien, Keith E., 4,767,656, Cl. 428-116.000
Thiele, Willi: *See—*
Hackman, Klaus-Georg; Liebe, Reinhard; Freesemann, Enno; Thiele, Willi; and Wochnowski, Waldemar, 4,766,912, Cl. 131-296.000
Thill, Fernand: *See—*
Schleimer, Francois; Goedert, Jean; Goedert, Ferdinand; Henrion, Romain; Thill, Fernand; Klein, Henri; and Liesch, Jean-Francois, 4,767,036, Cl. 222-590.000
Thimon, Hubert A., to Newtec International. Method and device for the continuous stretching of a plastics material film. 4,767,578, Cl. 264-40.100

Tholome , Roger: *See—*
Degli, Gerard; and Tholome , Roger, 4,767,057, Cl. 239-296.000
Thomann, Hans, to Klockner-Humboldt-Deutz AG. Agricultural apparatus for making round bales. 4,766,717, Cl. 56-341.000.
Thomas, Freidrich-Werner: *See—*
Hubertus, Guido; Thomas, Freidrich-Werner; Sperzel, Wolfgang; and Sturmer, Johann, 4,768,141, Cl. 363-16.000
Thompson, Scott D.: *See—*
Pavio, Anthony M., Jr.; and Thompson, Scott D., 4,768,000, Cl. 332-31.00T.
Thompson, Thomas J.: *See—*
Beaver, Earl R.; Stichweh, Lawrence A.; and Thompson, Thomas J., 4,766,938, Cl. 141-1.000
Thomson-CSF: *See—*
Aroues, Marc, 4,768,211, Cl. 377-60.000
Etienne, Patrick; and Nuyen, Trong Linh, 4,768,071, Cl. 357-22.000
Thomson-Lgt Laboratoire General des Telecommunications: *See—*
Nollet, Michel, 4,767,952, Cl. 307-571.000.
Thomson, Richard K.: *See—*
Cole, Jack H.; and Thomson, Richard K., 4,766,974, Cl 181-113.000
Thorn EMI plc: *See—*
Simons, Ronald H.; Wilkinson, Basil S.; and Henry, Ivor C., 4,768,133, Cl. 362-32.000
Thorne, Hugh C.; Sosa, Guillermo; and Irizarry, Jose F. Educational and recreational toy vehicle. 4,767,334, Cl. 434-29.000
Thornley, David W. M.: *See—*
Smith, Timothy S.; and Thornley, David W. M., 4,767,668, Cl 428-379.000
Thornock, Roy: *See—*
Bauck, Randall C.; Radman, Anton J.; Thornock, Roy; Freeman, Robert D.; Kleczkowski, Peter; Losee, Paul D.; and Lyon, Michael, 4,768,124, Cl. 360-133.000
Thorsrud, Agmund K., to Phillips Petroleum Company. Radio frequency energy sensitized compositions and method for sensitizing compositions to radio frequency energy. 4,767,799, Cl. 523-137.000
Thrall Car Manufacturing Company: *See—*
Ritter, John A.; and Hallam, Keith J., 4,766,820, Cl. 105-240.000
Thul, Jutta: *See—*
Kruse, Hans; Jacobs, Jochen; Wisotzki, Klaus-Dieter; and Thul, Jutta, 4,767,559, Cl. 252-106.000
Thurber, Robert E.; Prengaman, Richard J.; Phipps, Joe; and Rzemien, Russell, to Johns Hopkins University, The. Coherent radar digital data collector and sampling technique for noncoherent transmitter radars. 4,768,035, Cl. 342-194.000
Thygesen, Eskild G.; and Merrild, Bente. Disposable sanitary toilet seat cover. 4,766,617, Cl. 4-243.000
Thyssen Industrie AG: *See—*
Behr, Friedrich; Ballewski, Heinrich; and Grossmann, Wolfgang, 4,766,948, Cl. 164-516.000.
Tilgner, Ralf-Dietrich: *See—*
Giebel, Hayo; Baumgartner, Viktor; Tilgner, Ralf-Dietrich; Heinold, Hans; Kühne, Manfred; Federle, Hartmut; Arnold, Rudiger; and Rech, Werner, 4,767,924, Cl. 250-223.00R
Tillett, George C., Jr.: *See—*
Holland, Gary V.; and Tillett, George C., Jr., 4,767,467, Cl. 136-217.000
Timm, Gerald W.; and Bradley, William E., to Dacomed Corporation. Threshold penile rigidity measuring device. 4,766,909, Cl. 128-774.000
Ting, Patrick L.: *See—*
Goldstein, Henry; Ting, Patrick L.; Chicove, Elzer; Goetzke, Gary; and Cowles, John M., 4,767,640, Cl. 426-600.000.
Tippmann, Eugene R. Building construction element and the machine and method for its manufacture. 4,767,581, Cl. 264-46.400.
Titman, Roger B.: *See—*
Hockley, Michael H.; and Titman, Roger B., 4,767,769, Cl. 514-322.000
Tobishima Corporation: *See—*
Ohkawara, Shigeaki; and Oka, Yukio, 4,767,240, Cl. 405-225.000
Todd, Richard I.; and Claydon, Robert C., to General Electric Company, p.l.c., The. Desoldering device. 4,767,047, Cl. 228-6.200
Toft, Mark A.: *See—*
Glaeser, Linda C.; Brazdil, James F., Jr.; and Toft, Mark A., 4,767,739, Cl. 502-209.000
Tokai Rubber Industries, Ltd.: *See—*
Tanaka, Toru; Sawada, Koji; and Shinohara, Koji, 4,767,108, Cl. 267-140.100
Toko, Inc.: *See—*
Tanigawa, Hiroshi, 4,767,979, Cl. 323-316.000
Tokuyama Soda Kabushiki Kaisha: *See—*
Shingo, Kaneko; Nakamura, Shunichi; and Nakanishi, Hisashi, 4,767,580, Cl. 264-41.000
Tokyo Electric Co., Ltd.: *See—*
Shimosato, Masashi; and Okuno, Shigeru, 4,768,044, Cl. 346-140.00R
Tokyo Shibaura Denki Kabushiki Kaisha. *See—*
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl. 429-101.000
Tollens, Daniel: *See—*
Curtila, Robert; and Tollens, Daniel, 4,767,916, Cl. 219-552.000
Tomcufcik, Andrew S.; Emma, John E.; Eudy, Nancy H.; Marsico, Joseph W.; and Newman, Howard, to American Cyanamid Company. Ester of (triarylphosphoranylidene)carbamic acid having diuretic and ability to lower plasma renin properties. 4,767,749, Cl. 514-137.000
Tomimuro, Hiroshi: *See—*
Ishimoto, Coe; Seto, Junetsu; and Tomimuro, Hiroshi, 4,767,696, Cl. 430-495.000
Tomiser, Frank J., Jr.; and Shawcross, James P., to Emerson Electric Co. Flush mount whole house fan shutter. 4,766,806, Cl. 98-42.100
Tomita, Masahiro: *See—*
Tanaka, Takeshi; Yorita, Hiroshi; Tomita, Masahiro; and Igashira, Toshihiko, 4,767,967, Cl. 315-55.000
Tomoyasu, Hirohide: *See—*
Sakakibara, Toshimori; and Tomoyasu, Hirohide, 4,767,802, Cl 523-204.000
Tomoyori, Makoto; and Hatanaka, Sunao, to Alps Electric Co., Ltd. Impact printer and copier. 4,768,056, Cl. 355-3.00R
Tompkins, Charles A.; and Hames, William A. Column support for drywall panel. 4,766,710, Cl. 52-278.000
Tomsovic, James E., Jr., to Kimberly-Clark Corporation. Method for repositioning discrete articles. 4,767,487, Cl. 156-256.000
Tonegawa, Hisashi: *See—*
Sasaki, Toshihiko; Namba, Keisuke; Matsunaga, Naotoshi; Tanaka, Masayuki; Ezaki, Norimitsu; Tanaka, Masaru; Tonegawa, Hisashi; Mikajiri, Naomichi; Motooka, Hideo; and Honda, Toshikazu, 4,767,528, Cl. 210-177.000
Tonner, Peter S., to Joytec Ltd. Apparatus for simulating play on a golf course or driving range. 4,767,121, Cl. 273-185.00A.
Toole, Patrick A.: *See—*
Gazdik, Charles E.; McBride, Donald G.; Seraphim, Donald P., and Toole, Patrick A., 4,766,670, Cl. 29-830.000
Topfl, Rosemarie: *See—*
Abel, Heinz; and Topfl, Rosemarie, 4,767,568, Cl. 252-321.000
Torigai, Katsumi: *See—*
Uchida, Tatsuki; and Torigai, Katsumi, 4,767,363, Cl. 440-1.000
Torii, Michiaki: *See—*
Yokoyama, Shigeki; Torii, Michiaki; Matsuura, Kazuo, and Sano, Akira, 4,767,819, Cl. 524-587.000
Tornblom, Bengt H. Oscillating transducers for monitoring the surface of elongated objects. 4,767,986, Cl. 324-227.000
Torre, Hans D.; and Hoppe, Manfred, to Ems-Inventa A.G. Thermoplastic polyamide moulding material having reduced water uptake containing epoxy compound. 4,767,811, Cl. 524-114.000
Toshiba Battery Co., Ltd.: *See—*
Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, 4,767,683, Cl 429-101.000
Totsune, Atsushi: *See—*
Hibino, Yoshitaka, Kajita, Kogi; Kubo, Satoru; and Totsune, Atsushi, 4,766,862, Cl. 123-339.000
Towns, Edward J.; and Brown, Edward M., to TBL Development Corporation. Method for making a break-away container closure 4,767,587, Cl. 264-318.000
Toyo Aluminium Kabushiki Kaisha: *See—*
Nakano, Toshihiko; Nagase, Fumiaki; Takeuchi, Eiichi; Kamada, Mamoru; and Shigematsu, Hideyo, 4,767,673, Cl. 428-458.000
Toyo Jozo Kabushiki Kaisha: *See—*
Misaki, Hideo; Ishikawa, Hidehiko; and Matsuura, Kazuo, 4,767,712, Cl 435-253.000
Toyosima, Hisanori: *See—*
Jyoraku, Fumio; and Toyosima, Hisanori, 4,767,285, Cl. 417-366.000
Toyota Jidosha Kabushiki Kaisha: *See—*
Ban, Mitsuru; Miyaki, Masahiko; Hasegawa, Takashi; Kobayashi, Fumiaki; and Kobashi, Mamoru, 4,766,864, Cl. 123-357.000
Kashihara, Yuji; and Taga, Yutaka, 4,766,973, Cl. 180-249.000
Mishio, Yasuhiko; Shimizu, Hidetoshi; Matsuda, Takashi; and Takeda, Masaru, 4,766,969, Cl. 180-75.200
Miyagi, Hideo; Ohya, Fumiaki; Fukushima, Koji; and Adachi, Shin, 4,766,873, Cl. 123-559.300
Okamoto, Kazuo; Ohhashi, Hiroshi; and Tatsumoto, Tokuichi, 4,767,154, Cl. 296-218.000
Shibata, Norio, 4,766,868, Cl. 123-440.000
Tanaka, Toru; Sawada, Koji; and Shinohara, Koji, 4,767,108, Cl. 267-140.100
Tatara, Yuudai; Okawa, Susumu; Okuwaki, Shigeru; and Jufuku, Yasunobu, 4,767,388, Cl. 474-245.000
Yoshidome, Toshio; Nagai, Takanori; Kono, Tadayoshi; and Goto, Mikio, 4,766,858, Cl. 123-195.00R
Toyotomi Kogyo Co., Ltd.: *See—*
Nakamura, Kazuharu; Matsumoto, Motoki; Niwa, Osamu, and Tsuboi, Yoshimasa, 4,767,316, Cl. 431-121.000
Nakanishi, Yutaka; Yamada, Toshihiko; and Gamou, Shigeo, 4,767,318, Cl. 431-304.000
Tozzi, Luigi, to Cummins Engine Co., Inc. Plasma jet ignition apparatus. 4,766,855, Cl. 123-143.00B
Transport Systems Engineering Co., Ltd.: *See—*
Uozumi, Yukio, 4,766,817, Cl. 104-299.000
Tregilgas, Steven F.: *See—*
Haydu, Bartley A.; Tregilgas, Steven F.; and Carrell, William E., 4,768,134, Cl. 362-65.000
Trevillion, William L., to Halliburton Company. Magnetic freepoint sensor utilizing spaced hall effect devices. 4,766,764, Cl. 73-151.000
Triad Microsystems, Inc.: *See—*
Cronin, Donald L., 4,768,002, Cl. 333-177.000
Trick, Robert E.; and Carter, Garry L., to Medical Engineering Corporation. Infusion erectile system 4,766,889, Cl. 128-79.000

VOL 1093 ISS 5 AG 30 1988 UMI

Trift, Olivier; and Multon, Alain, to Alcatel Thomson Faisceaux Hertziens. Electrical and mechanical coupling for coupling a microwave case both to its source and to its support, and a method of using such a coupling. 4,768,006, Cl. 333-255.000.

Trio Kabushiki Kaisha: *See*—
Sakai, Shigeru; and Kudo, Kazunori, 4,768,033, Cl. 340-825.440.

Triparte Ltd.: *See*—
Christine, William C., 4,767,478, Cl. 156-69.000.

Trocciola, John C.; and VanDine, Leslie L., to United Technologies Corporation. Process and apparatus for producing nitrogen 4,767,606, Cl. 423-351.000.

Troha, Louis J. Fishing rod marking buoy. 4,766,690, Cl. 43-25.000

Trumper, David L.: *See*—
Dourdeville, Theodore A.; and Trumper, David L., 4,767,279, Cl. 417-18.000.

TRW Inc.: *See*—
Brooks, Edward F., 4,767,737, Cl. 502-185.000.
Gray, Joseph H.; and Greenstreet, Mark R., 4,768,159, Cl 364-726.000.
Kinder, Mark R., 4,767,292, Cl. 418-2.000

TRW Repa GmbH: *See*—
Fohl, Artur, 4,767,078, Cl. 242-107.40R.

Tsan, Su-Li. Gas regulator with leakage-detecting device. 4,766,762, Cl. 73-40.000.

Tschang, Chung-Ji: *See*—
Marcinowski, Stefan; Sanner, Axel; Tschang, Chung-Ji; Ladner, Wolfgang; and Greif, Norbert, 4,767,707, Cl. 435-182.000

Tschudin-Mahrer, Rolf, to Irbit Research & Consulting AG. Sealing strip. 4,767,655, Cl. 428-57.000.

Tsuboi, Yoshimasa: *See*—
Nakamura, Kazuharu; Matsumoto, Motoki; Niwa, Osamu; and Tsuboi, Yoshimasa, 4,767,316, Cl. 431-121.000.

Tsuchida, Tetsuo: *See*—
Hayashi, Tsutomu; Kawaguchi, Takeshi; and Tsuchida, Tetsuo, 4,766,982, Cl. 188-181.00A.

Tsuchie, Kimihiro. Hub mechanism for self-propelling type light vehicle. 4,766,772, Cl. 74-126.000.

Tsuchihashi, Hiroshi: *See*—
Satoh, Yasuta; Tsuchihashi, Hiroshi; and Tani, Saburo, 4,767,505, Cl. 264-39.000

Tsukada, Takayuki: *See*—
Shima, Kazuhiro; Tsukada, Takayuki; and Kagawa, Hirotane, 4,767,874, Cl. 556-137.000.

Tsunoda, Kikuo; and Maruyama, Kenji, to Ryobi, Ltd. Angle adjustment mechanism for fishline guide roller of a spinning reel. 4,767,080, Cl. 242-84.20G.

Tsuruta, Naohiro: *See*—
Ai, Hideo; Koizumi, Yohsuke; and Tsuruta, Naohiro, 4,767,797, Cl. 522-8.000

Tsutsumi, Masayuki: *See*—
Matsumoto, Seiichiro; Hino, Mototsugu; Moriyoshi, Yusuke; Nagashima, Takashi; and Tsutsumi, Masayuki, 4,767,608, Cl 423-446.000

Tsuzuki, Mitsuo: *See*—
Utsumi, Kazuaki; Takamizawa, Hideo; Tsuzuki, Mitsuo; Suga, Michihisa; and Takahashi, Sadayuki, 4,766,671, Cl. 29-848.000

Turner, Abner B.: *See*—
Dilmore, James A.; Young, William E.; Rohrer, Wesley M., Jr.; and Turner, Abner B., 4,767,323, Cl. 432-116.000

Turner, Lester T.: *See*—
Biegon, Robert J.; Men, Grigory; Turner, Lester T.; Lindstrand, Douglas; and Cox, Albert R., 4,767,891, Cl. 174-34.000.

Turner, Michael R.: *See*—
Konopik, Bradly J.; Bradley, David J.; Reed, Martin A.; Tannenbaum, Alan R.; and Turner, Michael R., 4,768,149, Cl. 364-200.000

Tuskada, Tokio: *See*—
Inaba, Hiroshi; Shinnai, Masao; Nishikawa, Kazuya; Saitoh, Tamotsu; and Tuskada, Tokio, 4,768,037, Cl. 343-713.000

Tuttle, William C., to Peachtree Patient Center, Inc. Electronic sensing and control circuit. 4,767,940, Cl. 307-116.000

Tylenda, Leon W.: *See*—
Miller, Dennis J.; and Tylenda, Leon W., 4,767,040, Cl. 224-326.000

Tyler, Derek E.: *See*—
Winter, Joseph; and Tyler, Derek E., 4,766,813, Cl. 102-307.000.

UBE Industries, Ltd.: *See*—
Kawaguchi, Toshiro; Sonoda, Takefumi; and Hashimoto, Kiyoshi, 4,767,306, Cl. 425-382.400

Uchida, Itsuo: *See*—
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000

Uchida, Riichi: *See*—
Shinoki, Kazuaki; Naya, Koutarou; Mitsuhashi, Shinji; Hayakawa, Tadashi; and Uchida, Riichi, 4,767,284, Cl. 417-312.000.

Uchida, Tatsuki; and Torigai, Katsumi, to Sanshin Koygo Kabushiki Kaisha. Control device for marine engine. 4,767,363, Cl. 440-1.000.

Uchiyama, Yoshihiro: *See*—
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230

Udagawa, Tsunekazu, to Ishikawa Gasket Co., Ltd. Gasket for an internal combustion engine. 4,767,124, Cl. 277-235.00B.

Ueda, Akiteru: *See*—
Mutoh, Nobuyoshi; Ueda, Akiteru; Hattori, Motonobu; Ibori, Satoshi; Shimonabe, Hideyuki; and Nandoh, Kenji, 4,767,976, Cl. 318-808.000

Ueda, Hiroshi: *See*—
Taniguchi, Nobuyuki; Hoda, Takeo; Hata, Yoshiaki; Inoue, Manabu; Kudo, Yoshinobu; and Ueda, Hiroshi, 4,768,047, Cl 354-195.100.

Ueda, Ikuo; Shiokawa, Youichi; Manabe, Takashi; and Katsura, Yousuke, to Fujisawa Pharmaceutical Co., Ltd. Benzene-fused heterocyclic compound and their use as diuretics. 4,767,780, Cl. 514-406.000.

Ueda, Iwao; and Sukimoto Minobu, to Hamana Iron Works Co., Ltd. Apparatus for continuously producing tube having helical grooves in its inner surface. 4,766,751, Cl. 72-64.000.

Ueda, Masahiro: *See*—
Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio; Ueda, Masahiro; and Tanaka, Minoru, 4,767,475, Cl. 148-33.000

Ueda, Yujiro: *See*—
Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, 4,767,103, Cl. 266-80.000.

Ueda, Yutaka: *See*—
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000.

Ueyama, Akihide, to Kabushiki Kaisha Toshiba. Magnetic resonance imaging system. 4,767,992, Cl. 324-313.000.

Uhrovic, Martin, to Entenmann's, Inc. Apparatus and method for twisting pastry dough and the like. 4,767,638, Cl. 426-500.000.

Ukei, Hironobu: *See*—
Takii, Osamu; Ukei, Hironobu; and Fujikawa, Keiji, 4,766,866, Cl. 123-432.000

Ultraviolet Purification System, Inc.: *See*—
Ellner, Sidney, 4,767,932, Cl. 250-435.000.

Umehara, Hajime: *See*—
Matsumoto, Toshihiro; Umehara, Hajime; Nakajima, Junjiro; and Fujii, Norihisa, 4,766,658, Cl. 29-527.700.

Umehara, Kazuyoshi: *See*—
Okamoto, Masanori; Iwami, Morita; Takase, Shigehiro; Uchida, Itsuo; Umehara, Kazuyoshi; Kohsaka, Masanobu; and Imanaka, Hiroshi, 4,767,768, Cl. 514-315.000

Umehara, Masaakira: *See*—
Oba, Hideaki; Ueda, Yutaka; Sato, Tsutomu; Umehara, Masaakira; Abe, Michiharu; Funakoshi, Hitoshi; and Kobayashi, Seiko, 4,767,693, Cl. 430-270.000.

Umemoto, Makoto; Seoka, Yoshio; and Morigaki, Masakazu, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 4,767,697, Cl. 430-546.000

Umetsu, Shinjiro: *See*—
Mori, Toshihiro; and Umetsu, Shinjiro, 4,768,031, Cl. 340-825.440.

Unangst, Paul C.: *See*—
Connor, David T.; Unangst, Paul C.; and Weikert, Robert J., 4,767,776, Cl. 514-381.000.

Undin, Hans; and Wiener, Hans, to C. A. Weidmuller GmbH & Co. Stripping tool. 4,766,672, Cl. 30-90.100.

Unger, Wibke: *See*—
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Keiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310.

Uniflex-Hydraulic GmbH: *See*—
Schrock, Peter, 4,766,808, Cl. 100-232.000.

Union Carbide Corporation: *See*—
Bikson, Benjamin; Giglia, Salvatore; and Kharas, Gregory, 4,767,422, Cl. 55-16.000.
Brode, George L.; Band, Philip A.; Goddard, Errol D.; Barbone, Arminda G.; Leshchiner, Adolf; Pavlichko, Joseph P.; Partain, Emmett M., III; and Leurg, Pak S., 4,767,463, Cl. 106-162.000.
Graczyk, Lawrence S.; and Francis, Arthur W., Sr., 4,766,731, Cl. 62-55.000.
Keogh, Michael J., 4,767,820, Cl. 525-72.000.
Rosen, Meyer R.; Dornstauder, Gregory J.; and Marlin, Lawrence, 4,767,449, Cl. 75-3.000.

Union Oil Company of California: *See*—
Ward, John W., 4,767,734, Cl. 502-66.000.

Uniroyal Chemical Company, Inc.: *See*—
Bae, Dong-Hak; Sigworth, William D.; and Cummings, William, 4,767,814, Cl. 524-284.000.
Cesare, Frank C.; Whelan, William P., Jr.; Petersen, Henno A.; Coolbaugh, Thomas S.; and Davis, Robert G., 4,767,806, Cl. 523-514.000
Wingrove, Donald E., 4,767,809, Cl. 524-255.000

Uniroyal Chemical Limited: *See*—
Bartlett, Digby H., 4,767,774, Cl. 514-365.000.

Unisys Corporation: *See*—
Solie, Leland P.; and Labrum, Joseph H., 4,767,198, Cl. 350-358.000

United Kingdom Atomic Energy Authority: *See*—
Williams, David E.; and McGeehin, Peter, 4,768,012, Cl. 338-34.000

United Merchants & Manufacturers, Inc.: *See*—
Riggsbee, James H., 4,767,654, Cl. 428-40.000.

U.S. Computer Systems: *See*—
Clupper, Charles B.; and Mathews, Robert J., 4,768,228, Cl. 380-20.000

United States of America
Agriculture: *See*—

Walker, Harrell L.; Connick, William J., Jr.; and Quimby, Paul C., Jr., 4,767,441, Cl. 71-79.000

Air Force: *See*—
Kitchens, Judith F.; Culp, Carl H., Sr.; and Shemonski, Anthony T., 4,767,564, Cl. 252-187.260.
Shearer, Joseph W., Jr.; and Phaneuf, Sylvio T., 4,767,985, Cl. 324-158.00P

Army: *See*—
Camplin, Harry R.; and Monson, Donald R., 4,767,425, Cl. 55-306.000
Hartz, James F.; Bazilio, Rayman E.; and Adamson, Glenn W., 4,766,777, Cl. 74-606.00R
Lewicki, Jerry W., 4,767,854, Cl. 540-475.000.
Rusche, Gerald A., 4,767,122, Cl. 273-348.100.

Energy: *See*—
Bigbee, William L.; Fong, Stella S. N.; Jensen, Ronald H.; Vanderlaan, Martin; and Langlois, Richard G., 4,767,710, Cl. 435-240.270.
Phelps, Richard D.; Upham, Gerald A.; and Anderson, Paul M., 4,767,592, Cl. 376-150.000.
Scott, Timothy C.; and Wham, Robert M., 4,767,515, Cl. 204-186.000
Stix, Thomas H.; and Ono, Masayuki, 4,767,590, Cl. 376-133.000.
Valentine, Kenneth H., 4,767,929, Cl. 250-370.070
Wampler, William R., 4,767,591, Cl. 376-143.000.

Interior: *See*—
Barrett, Edward A.; Molchen, Marion B.; and Kellner, Henry J., 4,768,049, Cl. 354-294.000.

National Aeronautics and Space Administration: *See*—
Gruber, Robert P., 4,766,724, Cl. 60-203.100.
Koenig, David G.; Aoyagi, Kiyoshi; Dudley, Michael R.; and Schmidt, Susan B., 4,767,083, Cl. 244-12.300
Riccitiello, Salvatore R.; Hsu, Ming-Ta S.; and Chen, Timothy S., 4,767,728,-Cl. 501-91.000

National Aeronautics and Space Administration: *See*—
Schott, Timothy D.; Fox, Robert L.; and Buckley, John D., 4,767,484, Cl. 156-233.000

Navy: *See*—
Delagrange, Arthur D., 4,767,998, Cl. 330-107.000
Whitehouse, Harper J.; and Snyder, Donald L., 4,768,156, Cl. 364-521.000

U.S. Philips Corporation: *See*—
Camerik, Eduard, 4,768,185, Cl. 369-270.000
Gijzen, Wilhelmus A. H.; Blankers, Petrus J.; and Van Vroenhoven, Petrus A. W. H., 4,767,187, Cl. 350-247.000
Kuhn, Michael H.; and Kunz, Dietmar W., 4,767,990, Cl 324-309.000
Marshall, Christopher B., 4,768,187, Cl. 370-69.100.
Pasma, Andries C., 4,768,142, Cl. 363-89.000
Sharpe, Anthony K.; and McPherson, Andrew D., 4,768,032, Cl. 340-825.470.
van der Meer, Aant B. D.; and Swaanen, Petrus H., 4,767,583, Cl 264-63.000
van der Veen, Jan; Gravesteijn, Dirk J.; and Schoot, Cornelis J., 4,767,421, Cl. 8-523.000.
Van Gerwen, Petrus J., 4,768,206, Cl. 375-17.000
Van Sprang, Hendrik A.; Koopman, Henricus G.; and Wortel, Franciscus J. M., 4,767,191, Cl. 350-341.000

United States Surgical Corporation: *See*—
Green, David T., 4,767,044, Cl. 227-19.000

United Technologies Automotive, Inc.: *See*—
Boileau, Daniel E., 4,766,697, Cl. 49-352.000

United Technologies Corporation: *See*—
Auxier, Thomas A.; Hall, Kenneth B.; and Landis, Kenneth K., 4,767,268, Cl. 416-97.00R.
Clevenger, Douglas H.; and Deptowicz, Donald L., 4,767,260, Cl. 415-115.000
Ferguson, T. Arnold; and Seaver, Linda L., 4,767,479, Cl 156-89.000
Kildea, Robert J., 4,767,272, Cl. 416-144.000
Kisling, Douglas L.; and Jones, John C., 4,767,264, Cl. 415-156.000
Trocciola, John C.; and VanDine, Leslie L., 4,767,606, Cl 423-351.000
Walter, Jerry D., 4,767,274, Cl. 416-193.00A.
Ward, Eric J., 4,767,055, Cl. 239-265.290.

Universite de Sherbrooke: *See*—
Chornet, Esteban; and Jaulin, Line, 4,767,543, Cl. 210-759.000

University of Akron: *See*—
Kennedy, Joseph P., 4,767,885, Cl. 570-185.000.

University of California, The Regents of the: *See*—
Bunshah, Rointan F.; Parsons, James D.; and Stafsudd, Oscar M., 4,767,666, Cl. 428-334.000
Long, David M., 4,767,610, Cl. 424-5.000

University of Guelph: *See*—
Ayotte, Renald R.; Harney, Patricia M.; and Machado, Vincent S., 4,767,888, Cl. 800-1.000

University of Illinois: *See*—
Ristic, Miodrag; and Chilbert, Mary L., 4,767,622, Cl. 424-88.000.

University of Manchester Institute of Science and Technology, The: *See*—
Stepto, Robert F. T.; Still, Richard H.; and Hirasawa, Yoji, 4,767,846, Cl. 536-18.600.

University of Nebraska, The Board of Regents of the: *See*—
Salac, Sotero S., 4,767,440, Cl. 71-23.000

Unrein, Edgar J.: *See*—
Henderson, Walter G.; Archer, John Q., II; Daum, Gerald R.; Ellson, George A.; Gray, John E.; Larson, Wayne F.; Olds, Rockne M.; Scansen, Jerry P.; Sherman, John W.; and Unrein, Edgar J., 4,766,746, Cl. 70-63.000

Unsworth, Peter J., to National Research Development Corporation Controller for induction motors. 4,767,975, Cl. 318-729.000

Uozumi, Yukio, to Transport Systems Engineering Co., Ltd. Electric power supply system for railway train. 4,766,817, Cl. 104-299.000

Upham, Gerald A.: *See*—
Phelps, Richard D.; Upham, Gerald A.; and Anderson, Paul M., 4,767,592, Cl. 376-150.000

Upjohn Company, The: *See*—
Johnson, Roy A.; and Lin, Chiu-Hong, 4,767,865, Cl. 546-342.000
Wiley, Paul F.; and Elrod, David W., 4,767,847, Cl. 536-16.800

Urbanneck, Bernd. *See*—
Lindner, Christian; Peters, Horst; and Urbanneck, Bernd, 4,767,821, Cl. 525-72.000

Urness, Kevin; Lickus, Leonard J.; Heisner, Douglas; Ingwersen, Peter; and Stenstrom, Eric, to Molex Incorporated. Pitch transition wire guide apparatus. 4,766,668, Cl. 29-749.000

Urschel Laboratories, Inc.: *See*—
Fischer, Robert R.; and Cole, Eugene H., 4,766,793, Cl. 83-698.000

USG Interiors, Inc.: *See*—
McEwen, Terence D.; and Hansen, John D., 4,767,549, Cl 252-8.514

Ushikubo, Kohei, to Sanden Corporation. Automatic vending machine 4,767,917, Cl. 235-381.000

Ushio Denki: *See*—
Deki, Kyoichi, 4,768,198, Cl. 372-29.000

Ushio Denki Kabushiki Kaisha. *See*—
Kumada, Toyohiko; and Horiuchi, Tatsuo, 4,768,057, Cl. 355-3.0FU

Utsumi, Kazuaki; Takamizawa, Hideo; Tsuzuki, Mitsuo; Suga, Michihisa; and Takahashi, Sadayuki, to NEC Corporation. Method of manufacturing ceramic electronic device. 4,766,671, Cl. 29-848.000

Vagt, Uwe: *See*—
Dockner, Toni; Sauerwald, Manfred; Fischer, Rolf; Hutmacher, Hans-Martin; Priester, Claus-Ulrich, and Vagt, Uwe, 4,767,856, Cl. 540-538.000

Vail, Kenneth E., Jr.: *See*—
Vail, Kenneth E., Sr.; and Vail, Kenneth E., Jr., 4,767,014, Cl 211-207.000

Vail, Kenneth E., Sr.; and Vail, Kenneth E., Jr. Sleeve and bottom-cover for in a modular display rack with painted arms and painted bottom. 4,767,014, Cl. 211-207.000

Valentine, Kenneth H., to United States of America, Energy. Extended range radiation dose-rate monitor. 4,767,929, Cl. 250-370.070

Valeo: *See*—
Chasseguet, Gustave; and Paquin, Jacques, 4,767,380, Cl. 464-68.000

VALEO, Societe anonyme francaise: *See*—
Bouvot, Jean-Francois, 4,767,096, Cl. 251-25.000

Vallot, Lawrence C.: *See*—
Egli, Werner H.; and Vallot, Lawrence C., 4,768,152, Cl 364-422.000

Valmet Oy: *See*—
Laapotti, Jorma, 4,767,501, Cl. 162-205.000

Van-Tec, Inc.: *See*—
Clement, Thomas P., 4,766,908, Cl. 128-765.000

Van den Brink, Gilbert J. J.; and Leemker, Koos, to Schugi. Mixer apparatus and method for sanitary mixing of solids with other solids and/or liquids. 4,767,217, Cl. 366-168.000

van den Nieuwelaar, Josephus A.; and Janssen, Petrus C. H., to Stork PMT B.V. Mounting support. 4,766,644, Cl. 17-11.000

Vanderlaan, Martin: *See*—
Bigbee, William L.; Fong, Stella S. N.; Jensen, Ronald H.; Vanderlaan, Martin; and Langlois, Richard G., 4,767,710, Cl 435-240.270.

van der Meer, Aant B. D.; and Swaanen, Petrus H., to U.S. Philips Corporation. Method of manufacturing molded bodies from hydroxyphosphate. 4,767,583, Cl. 264-63.000.

van der Veen, Jan; Gravesteijn, Dirk J.; and Schoot, Cornelis J., to U.S Philips Corp. Method of manufacturing a water-insoluble dye layer on a substrate and substrate comprising a dye layer of a cationic dye or an anionic dye ion exchanged with an opposite ion. 4,767,421, Cl. 8-523.000

VanDine, Leslie L.: *See*—
Trocciola, John C.; and VanDine, Leslie L., 4,767,606, Cl 423-351.000

Van Driesen, Roger P.: *See*—
Feldman, Robert J.; Chen, James M.; Rhoe, Andrei; Van Driesen, Roger P.; Fogman, C. Bertil; and Satchell, Donald P., 4,767,521, Cl. 208-85.000

Van Emelen, Rik: *See*—
Willie, Marc; Verhoeven, Rik, and Van Emelen, Rik, 4,767,652, Cl 428-36.000

Van Gerwen, Petrus J., to U.S. Philips Corporation. Data transmission system. 4,768,206, Cl. 375-17.000

Vanneste, Golfried, to N. V. Bekaert S.A. Method for the treatment of steel wires. 4,767,472, Cl. 148-156.000

Van Sprang, Hendrik A.; Koopman, Henricus G.; and Wortel, Franciscus J. M., to U.S. Philips Corporation. Display cell 4,767,191, Cl 350-341.000

Vantard, Georges, to Hospal Industrie. Artificial kidney with automatic regulation of the pressure of the dialysate as a function of withdrawal of ultrafiltrate 4,767,526, Cl. 210-128.000

VOL 1093 ISS 5 AG 30 1988 UMI

Van Vroenhoven, Petrus A. W. H.: *See—*
Gijzen, Wilhelmus A. H.; Blankers, Petrus J.; and Van Vroenhoven, Petrus A. W. H., 4,767,187, Cl. 350-247.000

Varo, Inc.: *See—*
Mattes, Paul B., 4,766,610, Cl. 2-6.000

Vary, Calvin P. H.; Diamond, Steven E.; and Wolfman, Neil M., to Allied Corporation. Diagnostic reagent, kit and method employing polynucleotide displacement, separation, enzymatic cleavage and adenosine phosphate detection. 4,767,699, Cl. 435-6.000

VEB Werk fuer Fernsehelektronik im VEB Kombinat Mikroelektronik: *See—*
Demus, Dietrich; Hauser, Anton; and Keil, Michael, 4,767,565, Cl. 252-299.500

Venczel, John; and Liptak, Bela G. Apparatus and system for animal training. 4,766,847, Cl. 119-29.000

Verhoeven, Rik: *See—*
Willie, Marc; Verhoeven, Rik; and Van Emelen, Rik, 4,767,652, Cl 428-36.000

VerPlanck, Peter, to Megapulse, Inc. Method of and apparatus for radio-frequency generation in resonator tank circuits excited by sequential pulses of alternately opposite polarity. 4,767,999, Cl. 331-166.000

Vertic Oy: *See—*
Lohikoski, Timo, 4,766,946, Cl. 164-421.000

Vicario, Guido, to Finbiomedica S.r.l. Equipment for rapid, automatic chemical-clinical analysis. 4,767,600, Cl. 422-65.000.

Vickers Plc.: *See—*
Wadham, Paul; Cox, Walter H.; and Lim, Ching B., 4,767,406, Cl. 604-155.000

Victor Company of Japan, Ltd.: *See—*
Higurashi, Seiji, 4,768,108, Cl. 360-19.100.
Ichinoi, Yutaka, 4,768,094, Cl. 358-167.000
Matsuo, Yasutoshi, 4,768,109, Cl. 360-33.100.
Mihara, Masato, 4,768,117, Cl. 360-109.000
Nakajima, Hiroshi; Nakane, Yoshihito; Goshima, Toshikazu; Narita, Osamu; and Akita, Koji, 4,767,486, Cl. 156-244.110.
Sato, Manabu, 4,768,113, Cl. 360-96.500

Viebrantz, Hans-Joachim; and Vogt, Alfred, to Preh Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Housing for a hand-held remote control transmitter. 4,768,230, Cl. 455-603.000

Vijayendran, Bheema R.: *See—*
Iacoviello, John G.; Hook, William J.; and Vijayendran, Bheema R., 4,767,816, Cl. 524-459.000

Vila-Masot, Oscar. Circuit breaker indicator. 4,768,025, Cl. 340-638.000

Vincenti, Paul J.; and Warren, James D., to American Cyanamid Company. Process for synthesis of aluminum coordinations compounds. 4,767,875, Cl. 556-175.000

Vipont Laboratories: *See—*
Boulware, Richard, 4,767,861, Cl. 546-41.000

Virkus, Mark K.: *See—*
Birenbaum, Kenneth A.; Hutchison, Stephen E.; Virkus, Mark K.; and Jankowski, Chester F., 4,768,151, Cl. 364-410.000

Viskase Corporation: *See—*
Lamartino, Salvatore P.; Stansbeary, Jack L.; and Saville, Charles R., 4,766,645, Cl. 17-49.000

Vittone, Andrea; Chiappini, Giuseppe; and Di Paola, Massimo, to Moplefan S.p.A. Device for the continuous production of manufactured articles reinforced with mixtures of hydraulic binders 4,767,491, Cl. 156-500.000

Vogel, Friedrich: *See—*
Nuber, Adolf; Sanner, Axel; Straub, Ferdinand; and Vogel, Friedrich, 4,767,613, Cl. 424-47.000

Vogelsong, Thomas L., to General Electric Company. CID imager with reduced crosstalk and method for operation thereof. 4,768,098, Cl. 358-213.310

Vogt, Alfred: *See—*
Viebrantz, Hans-Joachim; and Vogt, Alfred, 4,768,230, Cl 455-603.000

Volk, Joseph A., Jr., to Beta Raven Inc. Automatic control for an extruder. 4,767,301, Cl. 425-144.000

Volker, Werner: *See—*
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,566, Cl. 252-301.60F.
Kiss, Akos; Kleinschmit, Peter; Volker, Werner; and Halbritter, Gunter, 4,767,567, Cl. 252-301.60F

von Blanquet, Georg, to Gaggenau-Werke Haus-and Lufttechnik GmbH. Apparatus for drawing off vapors from kitchen equipment. 4,766,880, Cl. 126-299.00D

von der Decken, Claus-Benedict: *See—*
Iniotakis, Nicolaos; Frohling, Werner; Kalawrytinos, Georg; and von der Decken, Claus-Benedict, 4,767,527, Cl. 210-137.000

von Petersdorff, Henning: *See—*
Gronert, Heinz; Eckert, Manfred; von Petersdorff, Henning; Munich, Johann; Hammer, Maximilian; Nuissl, Gunther; Bergen, Klaus; Appoloner, Josef; Pfeil, Anton; Huber, Willibald; and Kiessling, Klaus, 4,766,752, Cl. 72-84.000

Voris, Charles R.: *See—*
Tackett, E. Wayne; Smith, Bradley W.; and Voris, Charles R., 4,766,726, Cl. 60-255.000

Vosper, Ralph R., to Coen Company. Duct burner. 4,767,319, Cl 431-350.000

Vsesojuzny Nauchno-issledovatelsky i Konstruktorsky istitute Khromatografii: *See—*
Poshemansky, Vladimir M.; Skornyakov, Eduard P.; and Chizhkov, Vitaly P., 4,766,760, Cl. 73-23.100

VSR Engineering GmbH Fordertechnik: *See—*
Rappen, Albert, 4,767,024, Cl. 222-3.000.

Vukotic, Milos: *See—*
Lindquist, Nils T.; Hedin, Ann-Christine; Francke, Kurt O.; and Vukotic, Milos, 4,766,639, Cl. 15-339.000

Vyas, Dolatrai M.; Doyle, Terrence W.; and Chiang, Yulin, to Bristol-Myers Company. Isoxazoline intermediates. 4,767,863, Cl. 546-178.000

W. Hegenscheidt GmbH: *See—*
Berstein, Garri; Hansen, Willi; and Winkens, Rudolf, 4,766,753, Cl. 72-110.000

W. R. Grace & Co.: *See—*
Malcolm, Donald A., 4,767,002, Cl. 206-328.000

W. Schlafhorst & Co.: *See—*
Kamp, Heinz; and Becker, Rolf, 4,767,072, Cl. 242-43.00A.

Waagner-Biro Aktiengesellschaft: *See—*
Lindbauer, Ralf; and Glasner, Alfred, 4,767,605, Cl. 423-239.000

Wachendoerfer, Peter: *See—*
Kuerzinger, Karl; and Wachendoerfer, Peter, 4,767,601, Cl. 422-68.000

Wada, Eiichi: *See—*
Sugimoto, Tadakatsu; Igarashi, Yoshiaki; Saito, Shiro; Wada, Eiichi; and Murai, Keiji, 4,766,787, Cl. 81-463.000

Wada, Katsuo: *See—*
Iizuka, Nobuyuki; Ishibashi, Yoji; Sato, Isao; Hirose, Fumiyuki; Inose, Hiroshi; Hisano, Katsukuni; Wada, Katsuo; Kirikami, Seiichi; Kuroda, Michio; and Uchiyama, Yoshihiro, 4,766,721, Cl. 60-39.230.

Wada, Ryukichi; and Ishii, Yoshinori, to Mitsubishi Denki K.K. Apparatus for processing image. 4,768,095, Cl. 358-183.000.

Wada, Tsunemi: *See—*
Fukuda, Kozo; Wada, Tsunemi; Nagahashi, Shinichi; Saito, Yoshio; Ueda, Masahiro; and Tanaka, Minoru, 4,767,475, Cl. 148-33.000

Wadham, Paul; Cox, Walter H.; and Lim, Ching B., to Vickers Plc. Syringe pumps. 4,767,406, Cl. 604-155.000

Wagner, John R., Jr.: *See—*
Cyr, Patricia A.; and Wagner, John R., Jr., 4,767,675, Cl. 428-515.000

Wagner, Robert L.: *See—*
Lucas, Mark H.; Grogan, Richard J.; Wagner, Robert L.; and Wilhelm, Richard T., 4,766,758, Cl. 73-1.00B

WAGO Verwaltungsgesellschaft mbH: *See—*
Hohorst, Wolfgang, 4,767,340, Cl. 439-729.000

Wah Lo, Allen K. Lenticular screen for outdoor display. 4,766,684, Cl. 40-454.000

Wakabayashi, Hiroshi, to Nippon Kogaku K. K. Camera having partially retractable taking optical system. 4,768,048, Cl. 354-195.120.

Wakabayashi, Tomoko: *See—*
Fujita, Hisao; Wakabayashi, Tomoko; and Yamazaki, Hiroyuki, 4,767,201, Cl. 350-432.000

Wakatsuki, Yutaka: *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000.

Waldman, Herbert H. Single telephone line call forwarding device. 4,768,224, Cl. 379-211.000

Waldschmidt, William L., to Thermal King Corporation. Evaporator coil heat exchanger assembly. 4,766,736, Cl. 62-275.000.

Walker, Harrell L.; Connick, William J., Jr.; and Quimby, Paul C., Jr., to United States of America, Agriculture. Method for the preparation of mycoherbicide-containing pellets. 4,767,441, Cl. 71-79.000.

Walker, Robert A. Air mattress with filler check valve and cap therefor. 4,766,628, Cl. 5-449.000

Wall, Albert J.; and Wall, James T., to Wall, James T. Adaptable material spreading vehicle. 4,767,063, Cl. 239-672.000

Wall, James T.: *See—*
Wall, Albert J.; and Wall, James T., 4,767,063, Cl. 239-672.000.

Wallace, R. Bruce, to Beckman Research Institute of the City of Hope. Detection of particular nucleotide sequences. 4,767,700, Cl. 435-6.000

Wallick, Claude R., Jr., to Emerson Electric Co. Ladder leg extender and leveler. 4,766,976, Cl. 182-201.000.

Wallis, Frederick A. Adjustable arm. 4,767,231, Cl. 403-56.000.

Walter, Jerry D., to United Technologies Corporation. Multiple lug blade to disk attachment. 4,767,274, Cl. 416-193.00A

Walther, Gerhard: *See—*
Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, 4,767,759, Cl 514-235.500

Walulik, James J.: *See—*
Pottier, Alain P.; Walulik, James J.; and Simmons, Ralph L., 4,767,349, Cl. 439-191.000

Wampler, William R., to United States of America, Energy. Resistance probe for energetic particle dosimetry. 4,767,591, Cl. 376-143.000.

Wang, Ko Pen. Bronchoscopic needle assembly. 4,766,906, Cl. 128-753.000

Warabisako, Terunori: *See—*
Aoki, Masaaki; Masuhara, Toshiaki; Warabisako, Terunori; Hanamura, Shoji; Sakai, Yoshio; Isomae, Seiichi; Meguro, Satoshi; and Ikeda, Shuji, 4,768,076, Cl. 357-42.000

Ward, Andrew H.: *See—*
Kasprzak, Kenneth A.; Swihart, Terence J.; and Ward, Andrew H., 4,767,548, Cl. 252-8.800

Ward, Eric J., to United Technologies Corporation. Method and linkage for positioning a convergent flap and coaxial arc valve. 4,767,055, Cl. 239-265.290

Ward, John W., to Union Oil Company of California. Hydrocarbon conversion process and catalyst for selectively making middle distillates. 4,767,734, Cl. 502-66.000

Warminster Fiberglass Company: *See—*
Roley, John, 4,767,536, Cl. 210-532.100.

Warnaco, Inc.: *See—*
Falla, Gloria M., 4,767,377, Cl. 450-65.000.

Warnecke, Armand E.; and Metz, Carl W. Injection monitor appliance 4,767,008, Cl. 206-570.000

Warner-Lambert Company: *See—*
Connor, David T.; Unangst, Paul C.; and Weikert, Robert J., 4,767,776, Cl. 514-381.000
Hamilton, Harriet W.; and Steffen, Robert P., 4,767,747, Cl. 514-46.000

Warren, James D.: *See—*
Vincenti, Paul J.; and Warren, James D., 4,767,875, Cl. 556-175.000

Wasem, Keith. Holder for allen wrenches. 4,767,006, Cl. 206-377.000

Wass, William E.: *See—*
De Cicco, Steven G.; Lee, Sung K.; Novak, Rudy G.; Wass, William E.; and Mak, Kai K., 4,766,822, Cl. 110-212.000

Watanabe, Fumio: *See—*
Sakamaki, Takeshi; and Watanabe, Fumio, 4,767,716, Cl. 436-47.000.

Watanabe, Mitsuo: *See—*
Miyayama, Toshio; Masuzawa, Isao; Yamamoto, Kanshi; Watanabe, Mitsuo; and Yamada, Hidemitsu, 4,766,834, Cl. 114-144.00E.

Watanabe, Takayuki, to NEC Corporation. Memory circuit having an improved writing scheme. 4,768,168, Cl. 365-189.000.

Watanabe, Yoshiyuki, to Fuji Photo Film Co., Ltd. Device for automatically changing magnetic disc pack. 4,768,116, Cl. 360-98.000.

Watanabe, Yumiko: *See—*
Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji; Watanabe, Yumiko; and Suzuki, Makoto, 4,767,170, Cl. 350-96.140.

Watanabe, Zenjiro: *See—*
Kawabata, Kenji; Iwata, Takeshi; Sakamoto, Seizo; and Watanabe, Zenjiro, 4,766,849, Cl. 119-48.000

Waterloo, Thomas L.: *See—*
Schwartz, James H.; Waterloo, Thomas L.; and Claassen, George R., 4,767,434, Cl. 65-29.000

Watson, Keith G.; Garson, Lynette A.; Bird, Graham J.; Cross, Lindsay E.; and Farquharson, Graeme J., to ICI Australia Limited. Compounds and compositions. 4,767,879, Cl. 558-412.000.

Weatherly, Jerry E. Cup retention apparatus. 4,767,092, Cl. 248-311.200

Weatherston, Roger C.: *See—*
Caillat, Jean-Luc M.; Weatherston, Roger C.; and Bush, James W., 4,767,293, Cl. 418-55.000

Weaver, John D., Sr.: *See—*
Koller, Thomas J.; and Weaver, John D., Sr., 4,767,961, Cl 313-12.000

Webb, Graham, to Crosfield Electronics (USA) Limited. Half-tone reproduction method employing overlapping scan lines. 4,768,101, Cl. 358-298.000

Weber, Bruce W.; Gustafson, Caroll E.; and Bice, James A., to Amoco Corporation. Automatic gas detector for arc welder. 4,767,913, Cl. 219-130.210.

Weber, Hans B., to National Castings, Inc. Saddle frame for passive steering single-axle truck for a railway freight car. 4,766,819, Cl. 105-157.100.

Weber, Karl-Heinz; Walther, Gerhard; Schneider, Claus; Hinzen, Dieter; Kuhn, Franz J.; and Lehr, Erich, to Boehringer Ingelheim KG. Piperazinyl and morpholinyl substituted 1-(benzyl or pyridylmethyl)-4-or-5-aminomethyl-pyrrolidin-2-ones and their nootropic use. 4,767,759, Cl. 514-235.500

Weber, Peter G.; Tan, Michael K.; and Dzuong, Charles, to Laitram Corporation, The. Apparatus and method for permanently joining screw conveyor modules. 4,767,490, Cl. 156-499.000

Weber S.r.l.: *See—*
de Concini, Roberto; and Fargnoli, Gianni, 4,766,869, Cl. 123-478.000

Webster, Emmett G.: *See—*
Cartee, Gilbert A.; and Webster, Emmett G., 4,766,803, Cl. 92-13.400

Webster, Rodney C.: *See—*
Godfrey, Colin; and Webster, Rodney C., 4,767,261, Cl. 415-115.000

Wedellsborg, Bendt W. Multiple shell pressure vessel. 4,767,593, Cl 376-294.000

Wedl, Peter: *See—*
Worschech, Kurt; Wedl, Peter; Fleischer, Erwin; and Loeffelholz, Frido, 4,767,575, Cl. 260-414.000

Wefler, Mark E.: *See—*
Crapser, James R.; and Wefler, Mark E., 4,767,059, Cl. 239-314.000

Weidinger, Friedrich: *See—*
Heinen, Jochen; and Weidinger, Friedrich, 4,768,199, Cl. 372-36.000

Weikert, Robert J.: *See—*
Connor, David T.; Unangst, Paul C.; and Weikert, Robert J., 4,767,776, Cl. 514-381.000

Weinberg, Felix J.: *See—*
Brophy, John H.; and Weinberg, Felix J., 4,767,569, Cl. 252-373.000

Weinstein, Barry M., to Colgate-Palmolive Co. Fabric softening bentonite agglomerates for use in laundry detergents. 4,767,546, Cl 252-8.600

Weir, Alan J.: *See—*
Gaffney, Thomas E.; Weir, Alan J.; Lillesand, Brent W.; and Collins, Jeffery E., 4,766,642, Cl. 16-121.000

Weis, Frank G., to Smith & Loveless, Inc. Apparatus for removing grit. 4,767,532, Cl. 210-257.100

Weissman, Bernard, to IPCO Corporation. Threaded dental anchor 4,767,332, Cl. 433-225.000

Welch Allyn, Inc.: *See—*
Cecil, John, Jr.; and Black, Robert R., 4,766,887, Cl. 128-17.000

Wells, Brian K., to Wells, David F. Convertible pants. 4,766,611, Cl 2-227.000

Wells, David F.: *See—*
Wells, Brian K., 4,766,613, Cl. 2-227.000

Wells, Gordon T. Method for simultaneous forming of concrete footings and piers. 4,767,241, Cl. 405-239.000

Wells, Russell N., II, to General Signal Corp. Table stabilization assembly. 4,768,065, Cl. 355-43.000

Wenskus, James J., Jr.: *See—*
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H., and Wenskus, James J., Jr., 4,767,300, Cl 425-140.000
Buja, Frederick J.; Miller, Alan B.; Sherwood, William H.; and Wenskus, James J., Jr., 4,767,579, Cl. 264-40.500.

Wernicke & Co GmbH: *See—*
Gottschald, Lutz; Kotting, Fritz; and Barwasser, Gunther, 4,766,699, Cl. 51-101.0LG

Wessman, Eric J.; and Dysarz, Charles R., to Ford Motor Company. Evaporative pattern assembly and method of making. 4,766,942, Cl. 164-34.000

Westervelt, Dean C.; and Su, Wei-Fang A., to Westinghouse Electric Corp. Method of continuously vacuum impregnating fibrous sheet material. 4,767,643, Cl. 427-54.100

Westinghouse Electric Corp.: *See—*
Blain, Jeffrey W.; and Shah, Denis D., 4,766,978, Cl. 187-101.000
Brewer, Troy D.; and Defibaugh, Thorner S., Jr., 4,766,844, Cl 118-668.000
Brown, Wilmott G., 4,767,275, Cl. 416-220.00R
Dilmore, James A.; Young, William E.; Rohrer, Wesley M., Jr.; and Turner, Abner B., 4,767,323, Cl. 432-116.000
Ezekoye, L. Ike, 4,766,765, Cl. 73-168.000
Heymann, Frank J.; Hyde, Gilbert F.; and Schuchart, Thomas L., 4,766,932, Cl. 137-625.300
Martin, Frank E., 4,767,183, Cl. 350-96.230.
Maskalick, Nicholas J., 4,767,518, Cl. 204-242.000
Partington, Albert J.; and Hodgson, Anthony, 4,767,247, Cl. 416-193.00A
Partington, Albert J., 4,767,273, Cl. 416-191.000
Peterson, Steven H.; and Lahoda, Edward J., 4,767,513, Cl 204-157.210
Pettit, Michael C., 4,768,014, Cl. 340-332.000
Talvacchio, John J.; Braginski, Alexander I.; Janocko, Michael A.; and Gavaler, John R., 4,768,069, Cl. 357-5.000
Westervelt, Dean C.; and Su, Wei-Fang A., 4,767,643, Cl 427-54.100

Westvaco Corporation: *See—*
Brown, Richard C.; Lafler, Robert E.; Murphy, Joseph M.; and Westvaco Corporation, 4,766,841, Cl. 118-75.000

Wham, Robert M.: *See—*
Scott, Timothy C.; and Wham, Robert M., 4,767,515, Cl 204-186.000

Whang, J. S., to Amtech Systems, Inc. Cantilever apparatus and method for loading wafer boats into cantilever diffusion tubes. 4,767,251, Cl. 414-147.000

Whatman Reeve Angel plc: *See—*
Daly, Robert; and Rebe, Paul E., 4,767,426, Cl. 55-487.000

Wheelwright, Lynn M.; Harmon, William B.; and Coffron, James W., to Hewlett-Packard Company. Bus system. 4,768,145, Cl 364-200.000

Whelan, William P., Jr.: *See—*
Cesare, Frank C.; Whelan, William P., Jr.; Petersen, Henno A.; Coolbaugh, Thomas S.; and Davis, Robert G., 4,767,806, Cl. 523-514.000

Whirlpool Corporation: *See—*
Daglow, Terry D., 4,766,641, Cl. 15-390.000
Martin, Dean C.; Kleiss, Roderick E.; and Hardy, James A., 4,766,640, Cl. 15-340.000

Whitehouse, Harper J.; and Snyder, Donald L., to United States of America, Navy. Imaging system. 4,768,156, Cl. 364-521.000

Whitson, Frederick A. Collapsible scaffolding. 4,766,975, Cl. 182-150.000

Wicks, Harry O.; and Riefler, Monte P., to Railmaster System, Inc. Train of highway trailers and method of making. 4,766,818, Cl. 105-4.300

Wiedermann, Rolf: *See—*
Adam, Norbert; Kaufung, Reinhard; and Wiedermann, Rolf, 4,767,795, Cl. 521-99.000

Wiener, Hans: *See—*
Undin, Hans; and Wiener, Hans, 4,766,672, Cl. 30-90.100

Wiens, Tim A.: *See—*
Markuson, Neil D.; and Wiens, Tim A., 4,767,280, Cl 417-44.000

Wierwille, Robert L.: *See—*
Chang, Chu-Mehn; Freund, Thomas J.; Loucks, Larry K.; and Wierwille, Robert L., 4,768,150, Cl. 364-300.000

VOL 1093 ISS 5 AG 30 1988 UMI

Wild, Francine A.: *See—*
Rocco, Lucille M.; and Wild, Francine A., 4,766,848, Cl. 119-29.000

Wiley, Paul F.; and Elrod, David W., to Upjohn Company, The. Nobamycin its analogs and process therefore. 4,767,847, Cl. 536-16.800

Wilhelm, Richard T.: *See—*
Lucas, Mark H.; Grogan, Richard J.; Wagner, Robert L.; and Wilhelm, Richard T., 4,766,758, Cl. 73-1.00B

Wilk, Robert J.: *See—*
Patel, Janak R.; and Wilk, Robert J., 4,767,351, Cl. 439-363.000

Wilken, Josef: *See—*
Hackmann, Ludger; and Wilken, Josef, 4,767,023, Cl. 221-152.000

Wilkinson, Basil S.: *See—*
Simons, Ronald H.; Wilkinson, Basil S.; and Henry, Ivor C., 4,768,133, Cl. 362-32.000

Wilkinson, Peter, to Engelhard Corporation. Gold electroplating bath 4,767,507, Cl. 204-44.300.

Willamette Industries, Inc.: *See—*
Single, Michael R., 4,767,051, Cl. 229-41.00R.

Wm. Wrigley Jr. Company: *See—*
Scarpa, Ioannis S.; Chludzinski, Andrew M.; and Janic, Milan D., 4,767,614, Cl. 424-48.000

Williams, David E.; and McGeehin, Peter, to United Kingdom Atomic Energy Authority. Sensors. 4,768,012, Cl. 338-34.000

Williams International Corporation: *See—*
Paletta, Guisuppe, deceased; and Paletta, Angelo D., legal representative, 4,767,221, Cl. 384-105.000
Paletta, Guisuppe, deceased; and Paletta, Angelo D., legal representative, 4,767,222, Cl. 384-106.000

Williams, Joel L.; Martin, David A.; and Montgomery, David B., to Becton, Dickinson and Company. Ionizing plasma lubricant method. 4,767,414, Cl. 604-230.000

Williams, Leonard J., to Moog Inc. Method of operating a PWM solenoid valve. 4,766,921, Cl. 137-1.000

Williams Patent Crusher and Pulverizer Company: *See—*
Williams, Robert M., 4,767,066, Cl. 241-27.000

Williams, Paul L.: *See—*
Conklin, Charles C.; Jeppson, Stephen O.; Mongeon, Ronald W.; Schachter, David; Spira, Philip M.; and Williams, Paul L., 4,768,178, Cl. 368-47.000

Williams, Robert E.: *See—*
Palus, Joseph J.; and Williams, Robert E., 4,767,218, Cl. 366-261.000

Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Downdraft reversible hammer mill. 4,767,066, Cl. 241-27.000

Williamson, Jimmie R., Jr., to Otis Engineering Corporation. Standing and injection valve. 4,766,960, Cl. 166-321.000

Willie, Marc; Verhoeven, Rik; and Van Emelen, Rik, to Raychem Corporation. Pressure retaining enclosure. 4,767,652, Cl. 428-36.000.

Willoughby, Bryan G., to Rubber Bands and Plastic Research Association of Great Britain. Control of transformations within polymers and products thereof. 4,767,804, Cl. 523-351.000

Willson, Carlton G.: *See—*
Hinsberg, William D., III; Howard, Webster E.; and Willson, Carlton G., 4,767,723, Cl. 437-41.000

Wilmers, Bernd: *See—*
Boos, Karl S.; Wilmers, Bernd; Sauerbrey, Richard; and Schlimme, Eckhard, 4,767,529, Cl. 210-198.200.

Wilmshurst, Eric C.: *See—*
Jeffery, James E.; Kozlik, Antonin; and Wilmshurst, Eric C., 4,767,790, Cl. 514-646.000

Wilson, Harold S., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Precision magnetometer orientation device. 4,767,988, Cl. 324-247.000

Wilson, Leslie B., to Dayco Products, Inc. Belt tensioning means. 4,767,385, Cl. 474-138.000

Wilson, Lloyd C.; and Cavanagh, Patrick. Materials for thermal protection by rapid smoke production. 4,766,814, Cl. 102-334.000.

Wilson, William J., to Sanders Associates, Inc. Electrical circuit interconnect system. 4,768,004, Cl. 333-246.000

Wimmer, Wolfgang: *See—*
Brand, Klaus-Peter; Kopainsky, Jurgen; and Wimmer, Wolfgang, 4,767,941, Cl. 307-43.000

Windmoller & Hoscher: *See—*
Peters, Rudolf; and Kammann, Rolf, 4,767,075, Cl. 242-56.00A

Wingrove, Donald E., to Uniroyal Chemical Company, Inc. Elastomeric composition having improved cut growth resistance. 4,767,809, Cl. 524-255.000

Winkens, Rudolf: *See—*
Berstein, Garri; Hansen, Willi; and Winkens, Rudolf, 4,766,753, Cl 72-110.000

Winnicki, James. Wet vacuum apparatus. 4,766,637, Cl. 15-314.000

Winter, Joseph; and Tyler, Derek E., to Olin Corporation. Metal shaped charge liner with isotropic coating. 4,766,813, Cl. 102-307.000

Winter, Peter M.; Holman, Neil L.; and Kram, Anthony B., to Keycom Electronic Publishing, Inc. Method and apparatus for retrieving information distributed over nonconsecutive pages. 4,768,144, Cl. 364-200.000

Wintermute, Richard D.: *See—*
Malito, John T.; Wintermute, Richard D.; Ross, Scott F.; and Ferrara, John M., 4,767,554, Cl. 252-49.500

Wisconsin Alumni Research Foundation: *See—*
Ax, Roy L.; and Lenz, Richard W., 4,767,703, Cl. 435-29.000
Schuler, Linda A.; Gorski, Jack; Hurley, Walter L.; Bremel, Robert D.; and Rottman, Fritz M., 4,767,711, Cl. 435-243.000

Wisdom, Lawrence W.: *See—*
Silver, Myron E.; and Wisdom, Lawrence W., 4,767,630, Cl. 426-102.000

Wisdom, Leonard A., to Miles Laboratories, Inc. Method of removing platelets and white cells from a red cell concentrate. 4,767,541, Cl. 210-749.000

Wisotzki, Klaus-Dieter: *See—*
Kruse, Hans; Jacobs, Jochen; Wisotzki, Klaus-Dieter; and Thul, Jutta, 4,767,559, Cl. 252-106.000

Wistuba, Eckehardt: *See—*
Ley, Gregor; Melan, Michael; and Wistuba, Eckehardt, 4,767,457, Cl. 106-2.000

Wochnowski, Waldemar: *See—*
Hackman, Klaus-Georg; Liebe, Reinhard; Freesemann, Enno; Thiele, Willi; and Wochnowski, Waldemar, 4,766,912, Cl. 131-296.000

Wohlhaupter, Gerhard: *See—*
Bohner, Christian; Gahr, Harold; and Wohlhaupter, Gerhard, 4,767,175, Cl. 350-96.200.

Wolf, Stephen J.; and Dellas, James P., to Johnson & Johnson Patient Care, Inc. Spray nozzle for syringe. 4,767,416, Cl. 604-239.000.

Wolfman, Neil M.: *See—*
Vary, Calvin P. H.; Diamond, Steven E.; and Wolfman, Neil M., 4,767,699, Cl. 435-6.000

Wolters, Richard A., Jr.; Colby, Mark J.; and Elkins, Robert B., to General Electric Company. Repositioned fuel assembly. 4,767,595, Cl. 376-353.000

Womako Maschinenkonstruktionen GmbH. *See—*
Diez, Werner; and Gottwald, Peter, 4,767,482, Cl. 156-163.000

Wong, Yiu-Huen: *See—*
Ong, Edith T. T.; Tai, King L.; and Wong, Yiu-Huen, 4,767,695, Cl. 430-311.000

Wood, John: *See—*
Little, John D.; Little, Lorianne C.; and Wood, John, 4,767,650, Cl. 428-26.000

Wood, John E.: *See—*
Jacobsen, Stephen C.; Phillips, Richard P.; and Wood, John E., 4,767,973, Cl. 318-652.000

Woodhead, David A.: *See—*
Shyu, Wen B.; Woodhead, David A.; and Quigley, Vincent P., 4,767,822, Cl. 525-99.000

Woodman, Peter: *See—*
Chauvier, Daniel J. V. D.; and Woodman, Peter, 4,766,931, Cl 137-624.140.

Woodward, Gary A.: *See—*
Schwartz, Abraham; and Woodward, Gary A., 4,767,205, Cl. 356-71.000

Woodward, Lee A.: *See—*
Bailey, Frank V.; and Woodward, Lee A., 4,766,771, Cl. 74-61.000

Workman, Gary L.: *See—*
Fitzgerald, John M.; and Workman, Gary L., 4,767,095, Cl 249-48.000

World Color Press, Inc.: *See—*
Beckley, Robert A.; and Stroder, Harold D., 4,766,840, Cl. 118-46.000

Worley, Shelby D., to PPG Industries, Inc. Method for disinfecting aqueous medium with N,N'-dihalo-2-imidazolidinones. 4,767,542, Cl 210-755.000

Worschech, Kurt; Wedl, Peter; Fleischer, Erwin; and Loeffelholz, Frido, to Neynaber Chemie GmbH. Melt-phase synthesis of dibasic organo-lead compounds. 4,767,575, Cl. 260-414.000

Wortel, Franciscus J. M.: *See—*
Van Sprang, Hendrik A.; Koopman, Henricus G.; and Wortel, Franciscus J. M., 4,767,191, Cl. 350-341.000

Worthington, Peter: *See—*
Parfree, Colin S.; Smith, Colin F. G.; Worthington, Peter; Marten, Malcolm G.; and Bliss, Norman S., 4,767,182, Cl. 350-96.230.

Wray, Jimmy J., to JJW, Inc. Material pulverizing apparatus. 4,767,065, Cl. 241-152.00A.

Wright-Bachman, Inc.: *See—*
Schinbeckler, Steven E., 4,766,882, Cl. 126-315.000

Wright, Bernard S.: *See—*
Owen, Hartley; Tabak, Samuel A.; and Wright, Bernard S., 4,767,604, Cl. 422-190.000

Wu, Yun-Tai: *See—*
Logullo, Francis M., Sr.; Wu, Yun-Tai; and Zahr, George E., 4,767,017, Cl. 220-3.000

Wullbrandt, Dieter; and Schlingmann, Merten, to Hoechst Aktiengesellschaft. Process for racemizing optically active alpha-phenoxypropionic acid and derivatives thereof. 4,767,880, Cl. 560-061.000.

Wurzler, Phillip D.: *See—*
McKernan, Bernard J.; Burke, Richard G.; and Wurzler, Phillip D., 4,766,665, Cl. 29-557.000

Xerox Corporation: *See—*
Dir, Gary A.; and Perregaux, Alain E., 4,767,190, Cl. 350-339.00R.
Nichols, Virginia R.; Hubble, Fred F., III; and Martin, James P., 4,767,172, Cl. 350-96.180.
Partilla, Stephen R., 4,768,068, Cl. 355-75.000
Sayer, Gerald E., 4,766,789, Cl. 82-47.000.

Xie, Alex J. Diaper wetness signalling system. 4,768,023, Cl. 340-573.000

Yabe, Masaya: *See—*
Seki, Yasakazu; Sato, Noritada; and Yabe, Masaya, 4,768,072, Cl. 357-29.000

Yagihara, Morio: *See—*
Inagaki, Yoshio; Yagihara, Morio; and Hirano, Shigeo, 4,767,692, Cl. 430-264.000

Yaindl, Charles, to Durabla Manufacturing Co. Check valve. 4,766,929, Cl. 137-514.300

Yamada, Hidemitsu: *See—*
Miyayama, Toshio; Masuzawa, Isao; Yamamoto, Kanshi; Watanabe, Mitsuo; and Yamada, Hidemitsu, 4,766,834, Cl. 114-144.00E

Yamada, Kiichi; Senoo, Akio; Iimura, Jun; Akimoto, Ryosaku; and Kawauchi, Nakaji, to Mitsubishi Jukogyo Kabushiki Kaisha. Controller for an air conditioner of vehicles. 4,766,950, Cl. 165-17.000.

Yamada, Shoji: *See—*
Mizutani, Shuzo; Taki, Kazunari; Suzuki, Akihiro; Yamada, Shoji; Watanabe, Yumiko; and Suzuki, Makoto, 4,767,170, Cl. 350-96.140

Yamada, Shuji; Ohsaki, Takahisa; Mitsuyasu, Kiyoshi; Sato, Yuichi; Aoki, Yoshiyasu; and Hiratsuka, Kazuya, to Tokyo Shibaura Denki Kabushiki Kaisha; and Toshiba Battery Co., Ltd. Non-aqueous electrochemical cell. 4,767,683, Cl. 429-101.000

Yamada, Toshihiko: *See—*
Nakanishi, Yutaka; Yamada, Toshihiko; and Gamou, Shigeo, 4,767,318, Cl. 431-304.000

Yamada, Yoshitake, to Yamaha Hatsudoki Kabushiki Kaisha. Suspension means for small vehicles. 4,767,133, Cl. 280-716.000.

Yamada, Yukifumi; and Terada, Takami, to Aisin Seiki Kabushiki Kaisha. Vehicle seat height and inclination control apparatus 4,767,156, Cl. 297-313.000

Yamada, Yutaka: *See—*
Kato, Takashi; Haruta, Kazumi; and Yamada, Yutaka, 4,766,872, Cl. 123-519.000

Yamagata, Masato; and Tabe, Kazushi, to Sony Corporation. Cordless telephone. 4,768,219, Cl. 379-61.000

Yamaguchi, Matsutaro: *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000

Yamaguchi, Nobutaka; Fujiyama, Masaaki; and Suzuki, Masami, to Fuji Photo Film Co., Ltd. Method of making abrasive tape. 4,767,644, Cl. 427-385.500

Yamaguchi, Touhei; Moriyama, Kazuhiko; and Shira, Ethuo, to Mazda Motor Corporation. Gear type transmission unit. 4,766,773, Cl. 74-467.000

Yamaha Hatsudoki Kabushiki Kaisha: *See—*
Iio, Takeshi, 4,767,225, Cl. 384-616.000
Iwanami, Takeshi, 4,766,853, Cl. 123-52.00M
Miyaki, Mutsuaki; Tachibana, Yoshimi; Oguri, Kiyohiko; and Isaka, Yoshiharu, 4,766,859, Cl. 123-196.00W
Takii, Osamu; Ukei, Hironobu; and Fujikawa, Keiji, 4,766,866, Cl. 123-432.000
Yamada, Yoshitake, 4,767,133, Cl. 280-716.000.

Yamaji, Mikio: *See—*
Igarashi, Tadashi; Yamaji, Mikio; and Oneyama, Naotake, 4,767,282, Cl. 417-225.000

Yamamoto, Kanshi: *See—*
Miyayama, Toshio; Masuzawa, Isao; Yamamoto, Kanshi; Watanabe, Mitsuo; and Yamada, Hidemitsu, 4,766,834, Cl. 114-144.00E

Yamamoto, Kenichi: *See—*
Murakoshi, Hisaya; Ichihashi, Mikio; and Yamamoto, Kenichi, 4,767,926, Cl. 250-310.000

Yamamoto, Masaya, to Morimoto Mfg. Co., Ltd. Pin-tucking device in pin tuck sewing machine. 4,766,825, Cl. 112-146.000

Yamamoto, Saburo: *See—*
Taneya, Mototaka; Matsui, Sadayoshi; Yano, Seiki; and Yamamoto, Saburo, 4,768,201, Cl. 372-50.000

Yamamoto, Soichiro, to Fuji Photo Film Co., Ltd. Light-sensitive material containing silver halide, reducing agent and polymerizable compound. 4,767,690, Cl. 430-138.000

Yamamoto, Yasuhiro: *See—*
Fujikawa, Iwao; Kushino, Mitsuo; and Yamamoto, Yasuhiro, 4,767,807, Cl. 524-36.000

Yamamoto, Yoshiharu; Nakajima, Yasuo; and Ono, Shusuke, to Matsushita Electric Industrial Co., Ltd. Projection lens. 4,767,199, Cl. 350-412.000

Yamano, Masaru; Hinotani, Katsuhiro; Hayama, Hajime; Kishimoto, Shunichi; Kawamori, Nobutake; Terada, Katsumi; and Kono, Kazuhiro, to Sanyo Electric Co., Ltd. Flat luminescent lamp for liquid crystalline display. 4,767,965, Cl. 313-491.000

Yamanoshita, Makoto: *See—*
Ota, Makoto; Sawamura, Hiroshi; Karino, Masao; Myodo, Osamu; Yamanoshita, Makoto; and Fujiwara, Toyohiro, 4,767,193, Cl 350-345.000

Yamaoka, Hidenori: *See—*
Nishino, Kazuaki; Ito, Takuo; Kato, Satosi; and Yamaoka, Hidenori, 4,767,597, Cl. 420-443.000

Yamasa Shoyu Kabushiki Kaisha: *See—*
Fujishima, Tetsuro; and Sakata, Shinji, 4,767,713, Cl. 435-253.000
Yazaki, Yoshio; and Sugi, Masahito, 4,767,843, Cl. 530-387.000

Yamasaki, Shinji, to Mitsubishi Denki Kabushiki Kaisha. Load detecting apparatus for elevator. 4,766,977, Cl. 187-20.000

Yamasawa, Akira: *See—*
Itami, Teruhiko; Kimoto, Toshifumi; Yamasawa, Akira; and Saitoh, Koichi, 4,767,483, Cl. 156-154.000

Yamashita, Shinsuke: *See—*
Kawata, Terushige; and Yamashita, Shinsuke, 4,767,787, Cl 514-573.000

Yamato Scale Company, Limited: *See—*
Hirota, Ryuichi; and Inoue, Shinichi, 4,766,964, Cl. 177-25.000
Nagao, Takeyoshi; Kohashi, Toru; and Haraguchi, Mitsunobu, 4,766,966, Cl. 177-123.000

Yamazaki, Hiroyuki: *See—*
Fujita, Hisao; Wakabayashi, Tomoko; and Yamazaki, Hiroyuki, 4,767,201, Cl. 350-432.000

Yamazaki, Masanobu: *See—*
Matsuoka, Ken; and Yamazaki, Masanobu, 4,767,387, Cl 474-168.000

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd Method of making semiconductor photoelectric conversion device 4,767,336, Cl. 437-2.000

Yanase, Toshinobu, to Kabushiki Kaisha Toshiba. Vertical apparatus for heat treating a semiconductor substrate. 4,766,678, Cl. 34-229.000

Yancey, Glenn: *See—*
Chen, William I. H.; Dillon, Philip; and Yancey, Glenn, 4,767,980, Cl. 323-356.000

Yang, Chi-Kuo. Easily-folded link means of multiple-fold umbrella 4,766,917, Cl. 135-25.00R

Yang, Tai-Cheng. Synchronized drive device for the mouth of a doll 4,767,374, Cl. 446-301.000

Yang, Tai Her. Servo-clamping device. 4,767,110, Cl. 269-258.000

Yang, Watt: *See—*
Shiue, Sang R., 4,766,754, Cl. 72-294.000
Shiue, Sang R., 4,766,756, Cl. 72-294.000

Yang, Yaw K. Knockdown type combination locking device for suitcases. 4,766,748, Cl. 70-312.000

Yaniv, Zvi: *See—*
Cannella, Vincent D.; and Yaniv, Zvi, 4,768,096, Cl. 358-294.000

Yano, Seiki: *See—*
Taneya, Mototaka; Matsui, Sadayoshi; Yano, Seiki; and Yamamoto, Saburo, 4,768,201, Cl. 372-50.000

Yarbrough, Paul E., Jr.: *See—*
Chen, Wen-Chin, 4,768,020, Cl. 340-567.000

Yashiki, Hiroshi; and Morita, Kenji, to Hitachi, Ltd. Superprecision lathe. 4,766,788, Cl. 82-30.000

Yasuda, Keiji; and Oda, Yukihisa, to Aisin Seiki Kabushiki Kaisha Pressure responsive switch with an air filter. 4,767,898, Cl. 200-83.00R

Yasue, Toshiro. *See—*
Ishii, Teruhiko; Ito, Haruaki; Bando, Takashi; Yasue, Toshiro; Motoyoshi, Masatoshi; Yamaguchi, Matsutaro; Wakatsuki, Yutaka; and Saito, Nobuko, 4,767,752, Cl. 514-184.000

Yasui, Hideo; Miki, Yasuhiro; and Okada, Wataru, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of producing coagulated colloidal particles. 4,767,803, Cl. 523-335.000

Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., to Leggett & Platt, Incorporated. Mattress assembly having rows of coil springs formed from a single continuous length of wire. 4,766,624, Cl 5-248.000

Yates, Chester R.; Selzer, Marvin D.; and Mohr, Henry G., to Leggett & Platt, Incorporated. Box spring having rows of coil springs formed from a single length of wire. 4,766,625, Cl. 5-248.000

Yates, Ronald L.; and Hagans, Patrick L., to Dow Chemical Company, The. Corrosion resistant magnesium and aluminum oxalloys 4,767,678, Cl. 428-632.000

Yazaki Corporation: *See—*
Kobayashi, Shigehiko; and Ono, Mamoru, 4,766,651, Cl 24-16.0PB
Okamoto, Hiroyuki; Sagawa, Takao; and Shibata, Yukio, 4,767,302, Cl. 425-190.000

Yazaki, Yoshio; and Sugi, Masahito, to Yamasa Shoyu Kabushiki Kaisha. Monoclonal antibody to cardiac myosin heavy chain. 4,767,843, Cl. 530-387.000

Yeh, Hsu-Chi; Chen, Bean T.; Cheng, Yung-Sung; and Newton, George J., to Lovelace Medical Foundation. Virtual impactor. 4,767,524, Cl 209-143.000

Yeh, Pochi A., to Rockwell International Corporation. Nonlinear optical matrix manipulation. 4,767,197, Cl. 350-354.000

Yen, Jeffrey H., to Mobil Oil Corporation. Distillate dewaxing process with mixed zeolites. 4,767,522, Cl. 208-111.000

Yen, Wei S.: *See—*
Spitzer, Donald P.; and Yen, Wei S., 4,767,540, Cl. 210-728.000

Yensen, Nicholas P., to Salt Weeds. Yensen 1a. 4,767,887, Cl. 800-1.000

Yensen, Nicholas P., to Salt Weeds. Yensen 2a. 4,767,889, Cl. 800-1.000

Yeung, Peter C., to Crane Co. Fiber optic rotation rate encoder 4,767,164, Cl. 303-91.000

Yoder, Joseph W., to International Business Machines Corporation High speed CMOS latch with alternate data storage and test functions. 4,768,167, Cl. 365-156.000

Yokomatsu, Takao: *See—*
Isohata, Junji; Nakasugi, Mikio, and Yokomatsu, Takao, 4,768,064, Cl. 355-53.000

Yokota Industrial Co., Ltd.: *See—*
Sugimoto, Tadakatsu; Igarashi, Yoshiaki; Saito, Shiro; Wada, Eiichi; and Murai, Keiji, 4,766,787, Cl. 81-463.000

Yokoyama, Hideki; Shimada, Tatsuro; and Nakagawa, Masao, to Bridgestone Tire Company Limited. Pneumatic radial tire having an excellent steering stability. 4,766,940, Cl. 152-541.000

Yokoyama, Shigeki; Torii, Michiaki; Matsuura, Kazuo; and Sano, Akira, to Nippon Petrochemicals Co., Ltd. Ultra-high-molecular-weight polyethylene solution. 4,767,819, Cl. 524-587.000

VOL 1093 ISS 5 AG 30 1988 UMI

Yokoyama, Yasushi, to NEC Corporation. Arithmetic unit with simple overflow detection system. 4,768,160, Cl. 364-745.000.
Yorita, Hiroshi: *See*—
Tanaka, Takeshi; Yorita, Hiroshi; Tomita, Masahiro; and Igashira, Toshihiko, 4,767,967, Cl. 315-55.000
Yorita, Takeo, to NEC Corporation. Radio key telephone system having a common signaling channel. 4,768,218, Cl. 379-61.000.
Yoshida, Jiro; and Azuma, Makoto, to Kabushiki Kaisha Toshiba. Heterojunction bipolar transistor having an emitter region with a band gap greater than that of a base region. 4,768,074, Cl. 357-34.000.
Yoshida, Seiichi: *See*—
Furukawa, Osamu; Yoshida, Seiichi; Imai, Motomasa; and Harata, Mitsuo, 4,767,732, Cl. 501-137.000.
Yoshida, Toru: *See*—
Sakanashi, Nobuhiro; Yoshida, Toru; Ueda, Yujiro; Hachiga, Katsumi; and Kawai, Shigeharu, 4,767,103, Cl. 266-80.000.
Yoshidome, Toshio; Nagai, Takanori; Kono, Tadayoshi; and Goto, Mikio, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine. 4,766,858, Cl. 123-195.00R.
Yoshihara, Shigeo; and Miyashita, Hideo, to NEC Corporation. Channel selection in a multichannel access radio communication system without occurrence of interference. 4,768,220, Cl. 379-63.000.
Yoshioka, Michihiko: *See*—
Shirai, Hideaki; Chiba, Kimio; Okawa, Koji; Ishibashi, Hiroshi; Ishii, Akihiro; Itoh, Hirotaka; Kuzushita, Hirokazu; Yoshioka, Michihiko; and Hirose, Michio, 4,767,674, Cl. 428-461.000
Yoshizawa, Masao: *See*—
Mizutani, Toyonobu; Yoshizawa, Masao; and Izawa, Toichiro, 4,767,725, Cl. 501-3.000
Yoshizawa, Toshio: *See*—
Kousaka, Takayuki; and Yoshizawa, Toshio, 4,767,155, Cl. 297-219.000
Young Engineering, Inc.: *See*—
Young, William O., Jr., 4,766,719, Cl. 57-1.0UN.
Young, Robert N.; Rokach, Joshua; and Hayes, Edward C., to Merck Frosst Canada, Inc.; and Merck & Co., Inc. Conjugates of leukotrienes with proteins. 4,767,745, Cl. 514-21.000.
Young, Warren L.: *See*—
Jones, Edward; Meiske, Larry A.; and Young, Warren L., 4,767,823, Cl. 525-334.100.
Young, William E.: *See*—
Dilmore, James A.; Young, William E.; Rohrer, Wesley M., Jr.; and Turner, Abner B., 4,767,323, Cl. 432-116.000
Young, William O., Jr., to Young Engineering, Inc. Apparatus and method for detwisting a moving fabric. 4,766,719, Cl. 57-1.0UN.
Yu, Ching-Yu. Magnetic induction counting device. 4,768,209, Cl. 377-6.000
Yu, Hsiang-Lin: *See*—
Sloop, David J.; and Yu, Hsiang-Lin, 4,766,941, Cl. 160-241.000.
Yu, Yuan-Fu: *See*—
Seyferth, Dietmar; Schwark, Joanne M.; and Yu, Yuan-Fu, 4,767,876, Cl. 556-410.000
Yuasa, Toshiaki, to Canon Kabushiki Kaisha. Hand-held image reading apparatus with position tracker. 4,767,923, Cl. 250-221.000.
Yumoto, Tsunemasa; Nakanishi, Yoshio; Iwai, Kazuki; and Itoh, Tadahiko, to Japan Synthetic Rubber Co., Ltd. Transparent, impact-resistant, thermoplastic resin composition having excellent chemical resistance and process for producing same. 4,767,833, Cl. 525-193.000
Zach, Reuven D.: *See*—
Nelson, Robert S.; and Zach, Reuven D., 4,767,928, Cl. 250-341.000
Zahir, Anvar. Eyeglasses and binoculars combination. 4,767,203, Cl. 351-158.000
Zahr, George E.: *See*—
Logullo, Francis M., Sr.; Wu, Yun-Tai; and Zahr, George E., 4,767,017, Cl. 220-3.000
Zajac, Elie; Desmurs, Roland; and Pelletier, Jean L., to Radiall Industrie; Socapex; and Souriau & Cie. Device for making a non-permanent connection between two optical fibers, mobile plug members and holding device for same, and appropriate method of preparing an optical fiber termination. 4,767,180, Cl. 350-96.210.
Zama, Hiroyoshi, to Alps Electric Co., Ltd. Thermosensitive gradation printer. 4,768,042, Cl. 346-76.0PH.
Zamel, Gary I.: *See*—
McLaren, Raymond J., 4,767,242, Cl. 405-288.000.
Zanier, Adriano; and Zufferey, Charles-Henri, to Tesa A.A. Sensing device for an independent linear-magnitude measurement apparatus. 4,766,674, Cl. 33-503.000.
Zattara, Jean-Luc: *See*—
Bernard, Gilles; Bureau, Jean-Marc; Dubois, Jean-Claude; and Zattara, Jean-Luc, 4,768,130, Cl. 361-323.000.
Zawadzki, Henri: *See*—
Laine, Gabriel; and Zawadzki, Henri, 4,766,857, Cl. 123-192.00B.
Zeibig, Marina: *See*—
Moewius, Frank; Meisel, Manfred; Grunze, Herbert; Kolditz, Lothar; Zeibig, Marina; Oese, Walfried; Standfuss, Dietmar; Kirk: Horst; Hesse, Reiner; Goetze, Horst; and Unger, Wibke, 4,767,458, Cl. 106-18.310.
Zeiler, Hans-Joachim: *See*—
Angerbauer, Rolf; Boberg, Michael; Metzger, Karl G.; and Zeiler, Hans-Joachim, 4,767,754, Cl. 514-202.000.
Zeiss, Willi, to Siemens Aktiengesellschaft. Method and apparatus for transmitting signals between a master station and a number of terminals. 4,768,204, Cl. 375-12.000
Zeller, Bary L.: *See*—
Kaleda, William W.; Saleeb, Fouad Z.; and Zeller, Bary L., 4,767,634, Cl. 426-271.000
Zellmer, Douglas C.: *See*—
Beihoffer, William L.; and Zellmer, Douglas C., 4,766,623, Cl. 05-164.00R
Zenith Electronics Corporation: *See*—
Adler, Robert; and Prazak, Charles J., III, 4,767,962, Cl. 313-402.000
Benjamin, Lester F.; Krishnamurthy, Gopalan; and Rypkema, Jouke N., 4,768,229, Cl. 380-20.000
Zhengli, Xu: *See*—
Chongben, Zhong; and Zhengli, Xu, 4,766,815, Cl. 104-26.200
Ziegner, Bernhard A.: *See*—
Kandpal, Pramode; Collinet, Jean C.; Ziegner, Bernhard A.; and Bowen, James A., 4,768,079, Cl. 357-74.000.
Ziller, Josef, to Schenk Filterbau Gesellschaft mit beschrankter Haftung. Plate filter for filtering liquids. 4,767,534, Cl. 210-331.000.
Zimmermann, Pierre, to Rhone-Poulenc Sante. Process for the preparation of pteridine derivatives. 4,767,859, Cl. 544-258.000.
Zinner, Hans; and Kaupp, Hans, to MTU MOTOREN-und Turbinen Union Munchen GmbH. Tube connecting device. 4,767,137, Cl. 285-325.000
Zinser Textilmaschinen GmbH: *See*—
Righi, Ivo, 4,766,718, Cl. 57-1.00R.
Zolss, Gerhard; and Pfarrhofer, Gerhard. Novel crystalline salts of aryloxy-propanolamines, a process for their preparation and their use. 4,767,784, Cl. 514-554.000.
Zondler, Helmut; Eckhardt, Wolfgang; and Nyfeler, Robert, to Ciba-Geigy Corporation. Antifungal and antibacterial diazine derivatives compositions, intermediates, and method of use therefor. 4,767,443, Cl. 71-90.000
Zribi, Robert: *See*—
Grenier, Gilles; Merle, Jean-Pierre; and Zribi, Robert, 4,768,097, Cl. 358-213.260.
Zufferey, Charles-Henri: *See*—
Zanier, Adriano; and Zufferey, Charles-Henri, 4,766,674, Cl. 33-503.000

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF AUGUST, 1988

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Ackeret, Peter, to Licinvest AG. Picture viewer. Re. 32,738, Cl. 40-513.000
Coleman Company, Inc., The: *See*—
Steffes, William J., Re. 32,740, Cl. 312-351.000
Licinvest AG: *See*—
Ackeret, Peter, Re. 32,738, Cl. 40-513.000
Matsumoto, Tadayuki: *See*—
Miyoshi, Takehiko; Matsumoto, Tadayuki; and Sano, Keizo, Re. 32,741, Cl. 528-295.000.
Miyoshi, Takehiko; Matsumoto, Tadayuki; and Sano, Keizo, to Toray Industries, Inc. Polyester fiber and method for the production thereof. Re. 32,741, Cl. 528-295.000
Sano, Keizo: *See*—
Miyoshi, Takehiko; Matsumoto, Tadayuki; and Sano, Keizo, Re. 32,741, Cl. 528-295.000
Steffes, William J., to Coleman Company, Inc., The. Multiple use shelf for cooler. Re. 32,740, Cl. 312-351.000
Stouffer Corporation, The: *See*—
Terauds, Oskar R., Re. 32,739, Cl. 220-306.000
Terauds, Oskar R., to Stouffer Corporation, The. Frozen food package and cover lid. Re. 32,739, Cl. 220-306.000
Toray Industries, Inc.: *See*—
Miyoshi, Takehiko; Matsumoto, Tadayuki; and Sano, Keizo Re. 32,741, Cl. 528-295.000

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Frederick, Stanley H., to International Telephone and Telegraph Corporation. Swimming pool filtering system. B1 4,545,906, 8-30-88, Cl 210-138.000
Gawron, Alex F.: *See*—
Vassos, Louis J.; and Gawron, Alex F., B1 3,633,070, Cl 361-45.000
International Telephone and Telegraph Corporation: *See*—
Frederick, Stanley H., B1 4,545,906, Cl. 210-138.000
Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Color cath ode ray tube including Nd_2O_3 and Cr_2O_3 in face glass. B1 4,405,881, 8-30-88, Cl. 313-480.000
Leviton Manufacturing Co.: *See*—
Vassos, Louis J.; and Gawron, Alex F., B1 3,633,070, Cl 361-45.000
Mitsubishi Denki Kabushiki Kaisha: *See*—
Kobayashi, Hiroo, B1 4,405,881, Cl. 313-480.000
Vassos, Louis J.; and Gawron, Alex F., to Leviton Manufacturing Co. Ground fault current interrupter. B1 3,633,070, 8-30-88, Cl 361-45.000
Wikdahl, Nils A. L. Cyclone separator to be built in a casing or similar B1 3,613,887, 8-30-88, Cl. 209-211.000

LIST OF DESIGN PATENTEES

Abrams, Robert C.: *See*—
Weder, Donald E.; Weder, Erwin H.; and Abrams, Robert C., 297,422, Cl. D11-164.000
Ader, Gary B., to Berkley, Inc. Multi-purpose fisherman's tool. 297,451, 8-30-88, Cl. D22-150.000
Allen, John. Barbed wire holder, or similar article. 297,412, 8-30-88, Cl D8-373.000
Angel, Norman. Vehicle bumper bracket. 297,411, 8-30-88, Cl. D8-373.000
Ansel, Pierre, to SEB. Toaster. 297,391, 8-30-88, Cl. D7-330.000
Asano, Toshiaki; Tanikawa, Kenji; and Shiina, Chikara, to Seiko Epson Corporation. Bracelet watch. 297,417, 8-30-88, Cl. D10-32.000
ASICS Corporation: *See*—
Sugiyama, Yasunori, 297,381, Cl. D2-314.000
AVIA Group International, Inc.: *See*—
Mourad, Miza; and Gerber, Marni L., 297,383, Cl. D2-320.000
Swett, Joan, 297,382, Cl. D2-314.000
Barr, Gregory J., to McIlwraith-Davey Pty. Ltd. Panel. 297,387 8-30-88, Cl. D5-1.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., to Hand Held Products. Front of an instrument panel for an electronic bar code reader. 297,430, 8-30-88, Cl. D14-115.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., to Hand Held Products. Top, bottom, back, and ends of a housing with a carrying clip for an electronic bar code reader. 297,431, 8-30-88, Cl. D14-116.000
Beard, Michael S.: *See*—
Stant, Vernon L.; Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; and Weaver, Frederick M., 297,432, Cl. D14-116.000
Beck, Stephen C.: *See*—
Goldfarb, Adolph E.; Beck, Stephen C.; Spragens, William H.; and Huntington, Ricky D., 297,455, Cl. D23-370.000
Beck-Tech, Incorporated: *See*—
Goldfarb, Adolph E.; Beck, Stephen C.; Spragens, William H., and Huntington, Ricky D., 297,455, Cl. D23-370.000
Ben Clements & Sons, Inc.: *See*—
Furutsu, Akira, 297,399, Cl. D8-44.000
Bennett, Troy B. Cassette holder. 297,385, 8-30-88, Cl. D3-35.000
Berkley, Inc.: *See*—
Ader, Gary B., 297,451, Cl. D22-150.000
Blatherwick, William J.: *See*—
Holewinski, Robert D.; Hamilton, Leslie; Blatherwick, William J.; and Wells, Thomas E., Sr., 297,457, Cl. D24-10.000
Bonnema, Robert W.; Knutson, Robert C.; and Pasquarette, Ralph E., to Honeywell Inc. Controller for an energy management system 297,419, 8-30-88, Cl. D10-50.000
Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 297,420, Cl. D10-77.000
Cantrell, Walter R., Sr. Micro-wave popcorn bag. 297,413, 8-30-88, Cl D9-305.000
Carlin, Milton O. Animal cage-mounted support. 297,471, 8-30-88, Cl D30-119.000
Carlin, Milton O. Animal leg splint. 297,472, 8-30-88, Cl. D30-146.000
Carlin, Milton O. Animal surgical support. 297,473, 8-30-88, Cl. D30-151.000
Chong-Kuan, Ling. Combination operated padlock. 297,403, 8-30-88 Cl. D8-334.000
Clowers, Earl R., to Porter-Cable Corporation. Bayonet saw. 297,401 8-30-88, Cl. D8-64.000

VOL 1093 ISS 5 AG 30 1988 UMI

Daenen, Robert H. C. M.: *See—*
Picozza, Augusto A.; and Daenen, Robert H. C. M., 297,393, Cl. D7-359.000
Dart Industries Inc.: *See—*
Picozza, Augusto A.; and Daenen, Robert H. C. M., 297,393, Cl. D7-359.000
De Danske Sukkerfabrikker: *See—*
Larsen, Knud V., 297,452, Cl. D23-209.000.
DeArras, James M.: *See—*
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,430, Cl. D14-115.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,431, Cl. D14-116.000
Stant, Vernon L.; Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; and Weaver, Frederick M., 297,432, Cl. D14-116.000
Demaree, Lonny A. Tankard. 297,389, 8-30-88, Cl. D7-5.000.
Eldon Industries, Inc.: *See—*
Evenson, Mel, 297,438, Cl. D19-73.000.
Pagani, David, 297,397, Cl. D8-29.100.
Pagani, David, 297,398, Cl. D8-29.100.
Evenson, Mel, to Eldon Industries, Inc. Pencil sharpener. 297,438, 8-30-88, Cl. D19-73.000.
Fehrmann, Stephan M. Spatula attachment for electric knife drive unit. 297,390, 8-30-88, Cl. D7-102.000
Feuerstein, Paul G., to Scott Paper Company. Packaging container. 297,414, 8-30-88, Cl. D9-416.000
Florida, Samuel E. Forend support for hand gun. 297,450, 8-30-88, Cl. D22-108.000.
Forsberg, Paul J., to Keystone Retaining Wall Systems, Inc. Wall block 297,464, 8-30-88, Cl. D25-114.000.
Fujiwara, Osami: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; Fujiwara, Osami; Nakamura, Kunisuke; and Funabashi, Genichi, 297,433, Cl. D15-23.000
Fukuda Denshi Co., Ltd.: *See—*
Inoue, Hirokatsu; and Shimizu, Chuji, 297,460, Cl. D24-29.000
Inoue, Hirokatsu; and Shimizu, Chuji, 297,461, Cl. D24-29.000
Funabashi, Genichi: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; Fujiwara, Osami; Nakamura, Kunisuke; and Funabashi, Genichi, 297,433, Cl. D15-23.000
Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Cable banding tool. 297,399, 8-30-88, Cl. D8-44.000.
Gavin, James R.; and Phillips, Nicholas, to Mobil Oil Corporation. Plastic bag dispenser box. 297,415, 8-30-88, Cl. D9-416.000.
General Electric Company: *See—*
Yandek, Edward M.; and Vlah, John A., 297,404, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,405, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,406, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,407, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,408, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,409, Cl. D81-353.000
Gerber, Marni L.: *See—*
Mourad, Miza; and Gerber, Marni L., 297,383, Cl. D2-320.000
Glendinning, Scott. Furniture support base or similar article. 297,388, 8-30-88, Cl. D6-495.000
Gold Star Co., Ltd.: *See—*
Han, Kyung H., 297,392, Cl. D7-351.000.
Goldfarb, Adolph E.; Beck, Stephen C.; Spragens, William H.; and Huntington, Ricky D., to Beck-Tech, Incorporated. Housing for a computer fan. 297,455, 8-30-88, Cl. D23-370.000
Grayson, Allen M.: *See—*
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,430, Cl. D14-115.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,431, Cl. D14-116.000.
Stant, Vernon L.; Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; and Weaver, Frederick M., 297,432, Cl. D14-116.000
Greco, Vincent. Rolling gate grille. 297,463, 8-30-88, Cl. D25-50.000.
Grumman Aerospace Corporation: *See—*
Markow, Edward G., 297,425, Cl. D12-211.000
Hamilton, Leslie: *See—*
Holewinski, Robert D.; Hamilton, Leslie; Blatherwick, William J.; and Wells, Thomas E., Sr., 297,457, Cl. D24-10.000
Han, Kyung H., to Gold Star Co., Ltd. Microwave oven. 297,392, 8-30-88, Cl. D7-351.000
Hand Held Products: *See—*
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,430, Cl. D14-115.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,431, Cl. D14-116.000.
Stant, Vernon L.; Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; and Weaver, Frederick M., 297,432, Cl. D14-116.000
Hara, Kunio, to Kabushiki Kaisha Toshiba. Electronic copying machine. 297,435, 8-30-88, Cl. D16-31.000.
Hara, Kunio: *See—*
Okuyama, Tooru; and Hara, Kunio, 297,436, Cl. D16-31.000.
Harry C. Oakes, Inc.: *See—*
Oakes, Harry C., 297,400, Cl. D8-47.000.
Heiland, Robert; Kheiri, Mohammad; Postma, Cynthia; and Terry, Robert, to Miles Inc. Lancet. 297,459, 8-30-88, Cl. D24-28.000.
Highland Supply Corporation: *See—*
Weder, Donald E.; Weder, Erwin H.; and Abrams, Robert C., 297,422, Cl. D11-164.000
Holewinski, Robert D.; Hamilton, Leslie; Blatherwick, William J.; and Wells, Thomas E., Sr., to Johnson & Johnson Consumer Products, Inc. Direct delivery unit for application of dental materials or the like. 297,457, 8-30-88, Cl. D24-10.000.
Holewinski, Robert D., to Johnson & Johnson Consumer Products, Inc. Ratchet syringe for composite dental materials. 297,458, 8-30-88, Cl. D24-14.000
Honeywell Inc.: *See—*
Bonnema, Robert W.; Knutson, Robert C.; and Pasquarette, Ralph E., 297,419, Cl. D10-50.000.
Hunter-Melnor, Inc.: *See—*
Pearce, Richard A., 297,456, Cl. D23-385.000.
Huntington, Ricky D.: *See—*
Goldfarb, Adolph E.; Beck, Stephen C.; Spragens, William H.; and Huntington, Ricky D., 297,455, Cl. D23-370.000.
Inoue, Hirokatsu; and Shimizu, Chuji, to Fukuda Denshi Co., Ltd. Electrode pad for electrocardiograph. 297,460, 8-30-88, Cl. D24-29.000.
Inoue, Hirokatsu; and Shimizu, Chuji, to Fukuda Denshi Co., Ltd. Electrode pad for electrocardiograph. 297,461, 8-30-88, Cl. D24-29.000
International Business Machines Corporation: *See—*
Martin, Randall W., 297,386, Cl. D3-71.000
Pedinielli, Gilbert; and Richelet, Daniel, 297,429, Cl. D14-100.000.
International Games: *See—*
Smith, Jay, III; and Landsberg, Marcus L., 297,441, Cl. D21-15.000.
Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 297,399, Cl. D8-44.000
Jiracek, David. Dog litter bag. 297,474, 8-30-88, Cl. D30-161.000
Johansson, Kjell. Stall partition for stall barns. 297,469, 8-30-88, Cl. D30-114.000.
Johansson, Kjell. Stall partition for stall barns. 297,470, 8-30-88, Cl. D30-114.000
Johnson & Johnson Consumer Products, Inc.: *See—*
Holewinski, Robert D.; Hamilton, Leslie; Blatherwick, William J.; and Wells, Thomas E., Sr., 297,457, Cl. D24-10.000.
Holewinski, Robert D., 297,458, Cl. D24-14.000.
Johnson, Richard H. Electrical receptacle. 297,427, 8-30-88, Cl. D13-30.000
Jung Corporation: *See—*
Meunchen, Paul K., 297,462, Cl. D24-54.000.
K-Sun Company, Inc.: *See—*
King, Charles C., III, 297,440, Cl. D20-4.000.
Kabushiki Kaisha Toshiba: *See—*
Hara, Kunio, 297,435, Cl. D16-31.000
Okuyama, Tooru; and Hara, Kunio, 297,436, Cl. D16-31.000.
Kabushiki Kaisha Toshiba A/T/A Toshiba Corporation: *See—*
Umehara, Nobuhiro; Umeda, Masato; Sato, Toshiaki; and Shigemura, Atsushi, 297,475, Cl. D32-21.000.
Keystone Retaining Wall Systems, Inc.: *See—*
Forsberg, Paul J., 297,464, Cl. D25-114.000.
Kheiri, Mohammad: *See—*
Heiland, Robert; Kheiri, Mohammad; Postma, Cynthia; and Terry, Robert, 297,459, Cl. D24-28.000.
King, Charles C., III, to K-Sun Company, Inc. Sun tan lotion dispensing kiosk. 297,440, 8-30-88, Cl. D20-4.000.
Knutson, Robert C.: *See—*
Bonnema, Robert W.; Knutson, Robert C.; and Pasquarette, Ralph E., 297,419, Cl. D10-50.000.
Kong, Alan, to Nifco Inc. Buckle or the like. 297,423, 8-30-88, Cl. D11-216.000
Kubota, Limited: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; Fujiwara, Osami; Nakamura, Kunisuke; and Funabashi, Genichi, 297,433, Cl. D15-23.000
Kuzma, Michael G. Game board. 297,442, 8-30-88, Cl. D21-35.000
Landsberg, Marcus L.: *See—*
Smith, Jay, III; and Landsberg, Marcus L., 297,441, Cl. D21-15.000.
Larsen, Knud V., to De Danske Sukkerfabrikker. Filter support plate. 297,452, 8-30-88, Cl. D23-209.000
Mabuchi Motor Co., Ltd.: *See—*
Mabuchi, Takaichi, 297,426, Cl. D13-1.000.
Mabuchi, Takaichi, to Mabuchi Motor Co., Ltd. Electric motor. 297,426, 8-30-88, Cl. D13-1.000.
Malamoud, Jean G., to S.T. Dupont. Lighter thumbroller. 297,466, 8-30-88, Cl. D27-161.000.
Markow, Edward G., to Grumman Aerospace Corporation. Non-pneumatic wheel or similar article. 297,425, 8-30-88, Cl. D12-211.000.
Martin, Randall W., to International Business Machines Corporation. Carry bag for a portable computer. 297,386, 8-30-88, Cl. D3-71.000.
Maruzen Sewing Machine Co., Ltd.: *See—*
Yoneda, Yoshihide, 297,434, Cl. D15-69.000.
McCann, Mark W. Lotion applicator. 297,467, 8-30-88, Cl. D28-7.000
McElroy, Michael A. Combination telephone set and clock. 297,428, 8-30-88, Cl. D14-72.000
McIlwraith-Davey Pty. Ltd.: *See—*
Barr, Gregory J., 297,387, Cl. D5-1.000.
Meunchen, Paul K., to Jung Corporation. Urinal bottle. 297,462, 8-30-88, Cl. D24-54.000
Meyer, Larry P., to Nelson Irrigation Corporation. Drive spoon for a reversible impulse sprinkler. 297,453, 8-30-88, Cl. D23-214.000
Miles Inc.: *See—*
Heiland, Robert; Kheiri, Mohammad; Postma, Cynthia; and Terry, Robert, 297,459, Cl. D24-28.000
Miller, David E., to Reebok International Ltd. Outsole for sandal or similar footwear. 297,384, 8-30-88, Cl. D2-321.000
Mobil Oil Corporation: *See—*
Gavin, James R.; and Phillips, Nicholas, 297,415, Cl. D9-416.000.

Mortensen Educational Products, Inc.: *See—*
Mortensen, Vernon J., 297,437, Cl. D19-59.000.
Mortensen, Vernon J., to Mortensen Educational Products, Inc. Mathematics teaching aid. 297,437, 8-30-88, Cl. D19-59.000.
Mourad, Miza; and Gerber, Marni L., to AVIA Group International, Inc. Shoe sole. 297,383, 8-30-88, Cl. D2-320.000.
Nakamura, Kunisuke: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; Fujiwara, Osami; Nakamura, Kunisuke; and Funabashi, Genichi, 297,433, Cl. D15-23.000.
Nakamura, Norimi: *See—*
Okuyama, Shigeaki; Nakamura, Norimi; Fujiwara, Osami; Nakamura, Kunisuke; and Funabashi, Genichi, 297,433, Cl. D15-23.000.
Nally, Robert F.; and Rodgers, Herby J., to U.S. Intec, Inc. Combined sheet metal flashing and bitumen membrane strip for one ply roofing system. 297,465, 8-30-88, Cl. D25-119.000.
Nelson Irrigation Corporation: *See—*
Meyer, Larry P., 297,453, Cl. D23-214.000.
Nelson, Joan T. Portable cooking kit. 297,394, 8-30-88, Cl. D7-362.000.
Nifco Inc.: *See—*
Kong, Alan, 297,423, Cl. D11-216.000
Norris, Robert L., III. Portable truck tent. 297,424, 8-30-88, Cl. D12-156.000
Oakes, Harry C., to Harry C. Oakes, Inc. Nail set. 297,400, 8-30-88, Cl. D8-47.000
Okuyama, Shigeaki; Nakamura, Norimi; Fujiwara, Osami; Nakamura, Kunisuke; and Funabashi, Genichi, to Kubota, Limited. Tractor 297,433, 8-30-88, Cl. D15-23.000
Okuyama, Tooru; and Hara, Kunio, to Kabushiki Kaisha Toshiba. Electronic copying machine. 297,436, 8-30-88, Cl. D16-31.000.
Pagani, David, to Eldon Industries, Inc. Heat gun. 297,397, 8-30-88, Cl. D8-29.100.
Pagani, David, to Eldon Industries, Inc. Heat gun. 297,398, 8-30-88, Cl. D8-29.100.
Pasquarette, Ralph E.: *See—*
Bonnema, Robert W.; Knutson, Robert C.; and Pasquarette, Ralph E., 297,419, Cl. D10-50.000.
Pearce, Richard A., to Hunter-Melnor, Inc. Ceiling fan. 297,456, 8-30-88, Cl. D23-385.000
Pedinielli, Gilbert; and Richelet, Daniel, to International Business Machines Corp. Hand held data entry terminal. 297,429, 8-30-88, Cl. D14-100.000
Phillips, Nicholas: *See—*
Gavin, James R.; and Phillips, Nicholas, 297,415, Cl. D9-416.000
Picozza, Augusto A.; and Daenen, Robert H. C. M., to Dart Industries Inc. Oven pan or the like. 297,393, 8-30-88, Cl. D7-359.000.
Porter-Cable Corporation: *See—*
Clowers, Earl R., 297,401, Cl. D8-64.000
Postma, Cynthia: *See—*
Heiland, Robert; Kheiri, Mohammad; Postma, Cynthia; and Terry, Robert, 297,459, Cl. D24-28.000
Prater, Earle F., to Roofing Equipment, Inc. Heat shield for carpet seaming irons. 297,477, 8-30-88, Cl. D32-71.000.
Rabig, Donald B., to Sterling Plastics Co. Desk top organizer. 297,439, 8-30-88, Cl. D19-85.000
Reebok International Ltd.: *See—*
Miller, David E., 297,384, Cl. D2-321.000
Richelet, Daniel: *See—*
Pedinielli, Gilbert; and Richelet, Daniel, 297,429, Cl. D14-100.000
Rifkin, Michael S., to Rifkin Products Co. Key hole plug. 297,479, 8-30-88, Cl. D99-43.000
Rifkin Products Co.: *See—*
Rifkin, Michael S., 297,479, Cl. D99-43.000
Rodgers, Herby J.: *See—*
Nally, Robert F.; and Rodgers, Herby J., 297,465, Cl. D25-119.000.
Roofing Equipment, Inc.: *See—*
Prater, Earle F., 297,477, Cl. D32-71.000
Ross, Ian W.; and Thompson, Robert G. Tray liner. 297,476, 8-30-88, Cl. D32-53.100
S.T. Dupont: *See—*
Malamoud, Jean G., 297,466, Cl. D27-161.000.
Sachs, Isaac. Mounting ground bracket. 297,410, 8-30-88, Cl. D8-356.000
Saito, Hiroshi, to Shiojiri Kogyo Kabushiki Kaisha. Wrist watch. 297,416, 8-30-88, Cl. D10-32.000
Sakai, Akira, to Tokyo Metal Co., Ltd. Digital counter for potentiometer. 297,421, 8-30-88, Cl. D10-97.000
Sato, Toshiaki: *See—*
Umehara, Nobuhiro; Umeda, Masato; Sato, Toshiaki; and Shigemura, Atsushi, 297,475, Cl. D32-21.000
Schine, Hillevi R. Tennis shoe or similar article. 297,380, 8-30-88, Cl. D2-309.000
Schultz, Jeff W. Broken key extractor. 297,395, 8-30-88, Cl. D8-14.000.
Schwalbe, Willard L., to Variety International, Inc. Paint shield for electrical switch plate. 297,396, 8-30-88, Cl. D8-14.000
Schwartz, Frederic W., to Cable Electric Products, Inc. Battery tester. 297,420, 8-30-88, Cl. D10-77.000
Scott Paper Company: *See—*
Feuerstein, Paul G., 297,414, Cl. D9-416.000
SEB: *See—*
Ansel, Pierre, 297,391, Cl. D7-330.000
Seiko Epson Corporation: *See—*
Asano, Toshiaki; Tanikawa, Kenji; and Shiina, Chikara, 297,417, Cl. D10-32.000
Shearer, William B. Golf putter head. 297,444, 8-30-88, Cl. D21-219.000
Shearer, William B. Golf putter head. 297,445, 8-30-88, Cl. D21-219.000
Shearer, William B. Golf putter head. 297,446, 8-30-88, Cl. D21-219.000
Shearer, William B. Golf putter head. 297,447, 8-30-88, Cl. D21-219.000
Shigemura, Atsushi: *See—*
Umehara, Nobuhiro; Umeda, Masato; Sato, Toshiaki; and Shigemura, Atsushi, 297,475, Cl. D32-21.000
Shiina, Chikara: *See—*
Asano, Toshiaki; Tanikawa, Kenji; and Shiina, Chikara, 297,417, Cl. D10-32.000
Shimizu, Chuji: *See—*
Inoue, Hirokatsu; and Shimizu, Chuji, 297,460, Cl. D24-29.000
Inoue, Hirokatsu; and Shimizu, Chuji, 297,461, Cl. D24-29.000.
Shojiri Kogyo Kabushiki Kaisha: *See—*
Saito, Hiroshi, 297,416, Cl. D10-32.000
Smith, Jay, III; and Landsberg, Marcus L., to International Games Game board. 297,441, 8-30-88, Cl. D21-15.000
Spragens, William H.: *See—*
Goldfarb, Adolph E.; Beck, Stephen C.; Spragens, William H.; and Huntington, Ricky D., 297,455, Cl. D23-370.000
Stant, Vernon L.; Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; and Weaver, Frederick M., to Hand Held Products. Electronic bar code reader. 297,432, 8-30-88, Cl. D14-116.000.
Stant, Vernon L.: *See—*
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,430, Cl. D14-115.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,431, Cl. D14-116.000
Sterling Plastics Co.: *See—*
Rabig, Donald B., 297,439, Cl. D19-85.000
Sugiyama, Yasunori, to ASICS Corporation. Cushioning piece for shoe midsole. 297,381, 8-30-88, Cl. D2-314.000
Swett, Joan, to AVIA Group International, Inc. Shoe upper. 297,382, 8-30-88, Cl. D2-314.000
Tanikawa, Kenji: *See—*
Asano, Toshiaki; Tanikawa, Kenji; and Shiina, Chikara, 297,417, Cl. D10-32.000
Taylor, George V., to Taylor, George V. Grave marker. 297,478, 8-30-88, Cl. D99-18.000
Tebeau, Carolyn L. Doll. 297,443, 8-30-88, Cl. D21-166.000
Terry, Robert: *See—*
Heiland, Robert; Kheiri, Mohammad; Postma, Cynthia; and Terry, Robert, 297,459, Cl. D24-28.000
Thalgott, Martin. Wristwatch. 297,418, 8-30-88, Cl. D10-39.000
Thawley, Margaret C.: *See—*
Thawley, Willard B.; and Thawley, Margaret C., 297,448, Cl. D21-221.000
Thawley, Willard B.; and Thawley, Margaret C. Set of golf club head covers. 297,448, 8-30-88, Cl. D21-221.000
Thompson, Robert G.: *See—*
Ross, Ian W.; and Thompson, Robert G., 297,476, Cl. D32-53.100
Tokyo Electric Co., Ltd.: *See—*
Umehara, Nobuhiro; Umeda, Masato; Sato, Toshiaki; and Shigemura, Atsushi, 297,475, Cl. D32-21.000
Tokyo Metal Co., Ltd.: *See—*
Sakai, Akira, 297,421, Cl. D10-97.000
Umeda, Masato: *See—*
Umehara, Nobuhiro; Umeda, Masato; Sato, Toshiaki; and Shigemura, Atsushi, 297,475, Cl. D32-21.000.
Umehara, Nobuhiro; Umeda, Masato; Sato, Toshiaki; and Shigemura, Atsushi, to Kabushiki Kaisha Toshiba A/T/A Toshiba Corporation; and Tokyo Electric Co., Ltd. Electric vacuum cleaner. 297,475, 8-30-88, Cl. D32-21.000
U.S. Intec, Inc.: *See—*
Nally, Robert F.; and Rodgers, Herby J., 297,465, Cl. D25-119.000
Variety International, Inc.: *See—*
Schwalbe, Willard L., 297,396, Cl. D8-14.000
Vigil, Manuel P. Carrousel amusement device. 297,449, 8-30-88, Cl. D21-249.000
Vlah, John A.: *See—*
Yandek, Edward M.; and Vlah, John A., 297,404, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,405, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,406, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,407, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,408, Cl. D8-353.000
Yandek, Edward M.; and Vlah, John A., 297,409, Cl. D81-353.000
Walton, G. Robert. Bathtub shower curtain leak arrestor. 297,454, 8-30-88, Cl. D23-307.000
Weaver, Frederick M.: *See—*
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,430, Cl. D14-115.000
Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; Stant, Vernon L.; and Weaver, Frederick M., 297,431, Cl. D14-116.000
Stant, Vernon L.; Beard, Michael S.; DeArras, James M.; Grayson, Allen M.; and Weaver, Frederick M., 297,432, Cl. D14-116.000
Weder, Donald E.; Weder, Erwin H.; and Abrams, Robert C., to Highland Supply Corporation. Flower pot cover 297,422, 8-30-88, Cl. D11-164.000
Weder, Erwin H.: *See—*
Weder, Donald E.; Weder, Erwin H.; and Abrams, Robert C., 297,422, Cl. D11-164.000

VOL 1093 ISS 5 AG 30 1988 UMI

Wells, Thomas E., Sr.: *See*—
Holewinski, Robert D.; Hamilton, Leslie; Blatherwick, William J. and Wells, Thomas E., Sr., 297,457, Cl. D24-10.000.
Williams, Richard D. "C" clamp. 297,402, 8-30-88, Cl. D8-73.000.
Yandek, Edward M.; and Vlah, John A., to General Electric Company Wall mounted lighting controller face plate. 297,404, 8-30-88, Cl D8-353.000.
Yandek, Edward M.; and Vlah, John A., to General Electric Company Wall mounted face plate for selectable level lighting controller 297,405, 8-30-88, Cl. D8-353.000.
Yandek, Edward M.; and Vlah, John A., to General Electric Company Wall mounted face plate for selectable level lighting controller 297,406, 8-30-88, Cl. D8-353.000.
Yandek, Edward M.; and Vlah, John A., to General Electric Company. Wall mounted face plate for lighting controller. 297,407, 8-30-88, Cl. D8-353.000.
Yandek, Edward M.; and Vlah, John A., to General Electric Company. Wall mounted face plate for selectable level lighting controller. 297,408, 8-30-88, Cl. D8-353.000.
Yandek, Edward M.; and Vlah, John A., to General Electric Company. Wall mounted face plate for selectable level lighting controller. 297,409, 8-30-88, Cl. D81-353.000.
Yoneda, Yoshihide, to Maruzen Sewing Machine Co., Ltd. Sewing machine. 297,434, 8-30-88, Cl. D15-69.000.
Young, David C. Emergency air supply assembly. 297,468, 8-30-88, Cl. D29-7.000

LIST OF PLANT PATENTEES

Adams County Nursery, Inc.: *See*—
Haines, Charles W., 6,267, Cl. 43.000
Haines, Charles W., to Adams County Nursery, Inc. Peach tree 'Salem'. 6,267, 8-30-88, Cl. 43.000.
McGredy, Samuel D. Rose plant named MacDeepo. 6,263, 8-30-88, Cl. 15.000.
Monrovia Nursery Company: *See*—
Zylstra, Dick, 6,266, Cl. 33.000.
Olesen, Mogens N.: *See*—
Olesen, Pernille; and Olesen, Mogens N., 6,261, Cl. 8.000
Olesen, Pernille; and Olesen, Mogens N., 6,264, Cl. 20.000
Olesen, Pernille; and Olesen, Mogens N., 6,265, Cl. 28.000
Olesen, Pernille; and Olesen, Mogens N. Rose plant named Poultex. 6,261, 8-30-88, Cl. 8.000.
Olesen, Pernille; and Olesen, Mogens N. Rose plant named Poulman. 6,264, 8-30-88, Cl. 20.000.
Olesen, Pernille; and Olesen, Mogens N. Rose plant named Poulander. 6,265, 8-30-88, Cl. 28.000.
Stephens, Patricia I. J., legal representative: *See*—
Stephens, Patrick N., deceased; and Stephens, Patricia I. J., legal representative, 6,262, Cl. 19.000.
Stephens, Patrick N., deceased; and by Stephens, Patricia I. J., legal representative. Rose plant named Stebigpu. 6,262, 8-30-88, Cl. 19.000.
Zylstra, Dick, to Monrovia Nursery Company. *Olea europaea* cv. Montra. 6,266, 8-30-88, Cl. 33.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 30, 1988

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 4,766,608
5 4,766,609
6 4,766,610
160 4,766,611
161 R 4,766,612
227 4,766,613
414 4,766,614
421 4,766,615
422 4,766,616

CLASS 4
243 4,766,617
247 4,766,618
251 4,766,619
516 4,766,620
643 4,766,621
661 4,766,622

CLASS 5
248 4,766,624
4,766,625
420 4,766,626
446 4,766,627
449 4,766,628
451 4,766,629
508 4,767,419

CLASS 8
470 4,767,420
523 4,767,421

CLASS 05
164 R 4,766,623

CLASS 15
22 R 4,766,630
104.12 4,766,631
147 R 4,766,632
167.1 4,766,633
235.4 4,766,634
4,766,635
250.42 4,766,636
314 4,766,637
329 4,766,638
339 4,766,639
340 4,766,640
390 4,766,641

CLASS 16
121 4,766,642
222 4,766,643

CLASS 17
11 4,766,644
49 4,766,645
51 4,766,646

CLASS 19
0.22 4,766,647
80 R 4,766,648
98 4,766,649
103 4,766,650

CLASS 24
16 PB 4,766,651
453 4,766,652
563 4,766,653
637 4,766,654

CLASS 29
25.35 4,766,655
33 K 4,766,656
157 C 4,766,657
401.1 4,766,659
4,766,660
417 4,766,661
450 4,766,662
455.1 4,766,663
512 4,766,664
527.7 4,766,658
557 4,766,665
610 SG 4,766,666
727 4,766,667
749 4,766,668
828 4,766,669
830 4,766,670
848 4,766,671

CLASS 30
90.1 4,766,672

CLASS 33
138 4,766,673
503 4,766,674
529 4,766,675

CLASS 34
70 4,766,676
78 4,766,677
229 4,766,678

CLASS 36
30 R 4,766,679
87 4,766,680
89 4,766,681
132 4,766,682

CLASS 40
454 4,766,684
513 Re 32,738
574 4,766,685
602 4,766,686
665 4,766,683

CLASS 42
65 4,766,687

CLASS 43
17 4,766,688
17.2 4,766,689
25 4,766,690
55 4,766,691
78 4,766,692
88 4,766,693
96 4,766,694

CLASS 47
24 4,766,695

CLASS 49
262 4,766,696
352 4,766,697

CLASS 51
96 4,766,698
101 LG 4,766,699
165.74 4,766,700
170 R 4,766,701
281 SF 4,766,702
289 R 4,766,703
327 4,766,704
328 4,766,705

CLASS 52
1 4,766,706
98 4,766,707
167 4,766,708
235 4,766,709
278 4,766,710
404 4,766,711
645 4,766,712

CLASS 53
138 A 4,766,713
242 4,766,714
381 R 4,766,715
551 4,766,716

CLASS 55
16 4,767,422
112 4,767,423
184 4,767,424
306 4,767,425
487 4,767,426
493 4,767,427

CLASS 56
341 4,766,717

CLASS 57
1 R 4,766,718
1 UN 4,766,719

CLASS 59
7 4,766,720

CLASS 60
39.23 4,766,721
4,766,722
39.31 4,766,723
203.1 4,766,724
204 4,766,725
255 4,766,726
427 4,766,727
476 4,766,728
598 4,766,729
641.5 4,766,730

CLASS 62
24 4,767,428
55 4,766,731
62 4,766,732
77 4,766,733
160 4,766,734
175 4,766,735
275 4,766,736
279 4,766,737
280 4,766,738
298 4,766,739
384 4,766,740
514 R 4,766,741

CLASS 65
3.11 4,767,429
4.2 4,767,430
6 4,767,431
8 4,767,432
21.1 4,767,433
29 4,767,434
30.13 4,767,435
59.27 4,767,436
104 4,767,437
168 4,767,438
351 4,767,439

CLASS 66
75.1 4,766,742

CLASS 68
20 4,766,743
22 R 4,766,744
200 4,766,745
213 4,766,755

CLASS 70
63 4,766,746
264 4,766,747
312 4,766,748
491 4,766,749

CLASS 71
23 4,767,440
79 4,767,441
88 4,767,442
90 4,767,443
92 4,767,444
93 4,767,445
103 4,767,446
4,767,447
111 4,767,448

CLASS 72
30 4,766,750
64 4,766,751
84 4,766,752
110 4,766,753
294 4,766,754
4,766,756
319 4,766,757

CLASS 73
1 B 4,766,758
3 4,766,759
23.1 4,766,760
38 4,766,761
40 4,766,762
49.2 4,766,763
151 4,766,764
168 4,766,765
169 4,766,766
181 4,766,767
497 4,766,768
706 4,766,769
861 17 4,766,770

CLASS 74
61 4,766,771
126 4,766,772
467 4,766,773
475 4,766,774
479 4,766,775
501 A 4,766,776
606 R 4,766,777
687 4,766,778
733 4,766,779

CLASS 75
0.5 BA 4,767,450
3 4,767,449
10 61 4,767,451
63 4,767,452
66 4,767,453
84 4,767,454
84 4 4,767,455
246 4,767,456

CLASS 81
3.2 4,766,780
3.4 4,766,781
44 4,766,782
54 4,766,783
57.39 4,766,784
129 4,766,785
4,766,786
463 4,766,787

CLASS 82
30 4,766,788
47 4,766,789

CLASS 83
56 4,766,790
155 4,766,791
319 4,766,792
698 4,766,793
847 4,766,794

CLASS 84
1.01 4,766,795
220 4,766,796
453 4,766,797

CLASS 86
27 4,766,798
45 4,766,799

CLASS 89
33.02 4,766,800

CLASS 91
173 4,767,294
371 4,766,801
394 4,766,802

CLASS 92
13.4 4,766,803
23 4,766,804

CLASS 98
2 07 4,766,805
42.1 4,766,806
121.2 4,766,807

CLASS 100
232 4,766,808

CLASS 101
152 4,766,809
217 4,766,810
415.1 4,766,811

CLASS 102
290 4,766,812
307 4,766,813
334 4,766,814

CLASS 104
26.2 4,766,815
172.4 4,766,816
299 4,766,817

CLASS 105
4.3 4,766,818
157.1 4,766,819
240 4,766,820

CLASS 106
2 4,767,457
18.31 4,767,458
22 4,767,459
90 4,767,460
98 4,767,461
101 4,767,462
162 4,767,463
308 M 4,767,465
464 4,767,464
487 4,767,466

CLASS 108
156 4,766,821

CLASS 110
212 4,766,822
226 4,766,823
256 4,766,824

CLASS 112
146 4,766,825
265 1 4,766,826
278 4,766,827
314 4,766,828

CLASS 114
61 4,766,829
4,766,830
102 4,766,831
103 4,766,832
144 C 4,766,833
144 E 4,766,834
218 4,766,835
256 4,766,836
311 4,766,837
363 4,766,838

CLASS 118
19 4,766,839
46 4,766,840
75 4,766,841
409 4,766,842
661 4,766,843
668 4,766,844

CLASS 119
1 4,766,845
4 4,766,846
29 4,766,847
4,766,848
48 4,766,849
82 4,766,850

CLASS 122
4 D 4,766,851

CLASS 123
41 21 4,766,852
52 M 4,766,853
65 PE 4,766,854
143 B 4,766,855
185 S 4,766,856
192 B 4,766,857
195 R 4,766,858
196 A 4,766,860
196 W 4,766,859
254 4,766,861
339 4,766,862
357 4,766,863
4,766,864
414 4,766,865
432 4,766,866
438 4,766,867
440 4,766,868
478 4,766,869
489 4,766,870
4,766,871
519 4,766,872
559 3 4,766,873

CLASS 124
25 4,766,874

CLASS 125
21 4,766,875

CLASS 126
77 4,766,876
92 AC 4,766,877
116 R 4,766,878
137 4,766,879
299 D 4,766,880
299 R 4,766,881
315 4,766,882
351 4,766,883
419 4,766,884
433 4,766,885

CLASS 128
9 4,766,886
17 4,766,887
24 A 4,766,888
79 4,766,889
89 R 4,766,890
133 4,766,891
134 4,766,892
201 29 4,766,893
204 21 4,766,894
363 R 4,766,895
305 4,766,896
4,766,897
334 C 4,766,898
397 4,766,899
419 PG 4,766,900
4,766,901
4,766,902
630 4,766,903
652 4,766,904
663 4,766,905
753 4,766,906
754 4,766,907
765 4,766,908
774 4,766,909

CLASS 131
84.1 4,766,910
281 4,766,911
296 4,766,912

CLASS 132
9 4,766,913
4,766,914
79 F 4,766,915

CLASS 134
109 4,766,916

CLASS 135
20 B 4,766,920
25 R 4,766,917
96 4,766,918
97 4,766,919

CLASS 136
217 4,767,467
233 4,767,468

CLASS 137
1 4,766,921
13 4,766,922
15 4,766,923
62 4,766,925
115 4,766,926
315 4,766,927
504 4,766,928
514.3 4,766,929
536 4,766,924
540 4,766,930
624 14 4,766,931
625.3 4,766,932
625.5 4,766,933

CLASS 138
90 4,766,934

CLASS 139
55.1 4,766,935
324 4,766,936
452 4,766,937

CLASS 141
1 4,766,938

CLASS 144
2 Z 4,766,939

CLASS 148
11 5 F 4,767,470
24 4,767,471
33 4,767,475
111 4,767,469
156 4,767,472
159 4,767,473
302 4,767,474

CLASS 149
109 6 4,767,476

CLASS 152
541 4,766,940

CLASS 156
67 4,767,477
69 4,767,478
89 4,767,479
96 4,767,480
116 4,767,481
154 4,767,483
163 4,767,482
233 4,767,484
244 11 4,767,485
4,767,486
256 4,767,487
344 4,767,488
345 4,767,489
499 4,767,490
500 4,767,491
580 2 4,767,492

VOL 1093 ISS 5 AG 30 1988 UMI

603 4,767,493
606 4,767,494
624 4,766,954
626 4,767,495
627 4,767,496
665 4,767,497

CLASS 159

47 3 4,767,498

CLASS 160

241 4,766,941

CLASS 162

25 4,767,499
32 4,767,500
205 4,767,501

CLASS 164

34 4,766,942
72 4,766,943
97 4,766,944
136 4,766,945
421 4,766,946
460 4,766,947
516 4,766,948
526 4,766,949

CLASS 165

17 4,766,950
56 4,766,951
95 4,766,952
177 4,766,953

CLASS 166

167 4,766,955
182 4,766,956
265 4,766,957
269 4,766,958
295 4,766,959
321 4,766,960

CLASS 169

38 4,766,961

CLASS 172

624.5 4,766,962

CLASS 173

109 4,766,963

CLASS 174

28 4,767,890
34 4,767,891
68.5 4,767,892
84 R 4,767,893
106 SC 4,767,894

CLASS 177

25 4,766,964
50 4,766,965
123 4,766,966

CLASS 180

54.1 4,766,967
68.4 4,766,968
75.2 4,766,969
79.1 4,766,970
178 4,766,971
197 4,766,972
249 4,766,973

CLASS 181

113 4,766,974
240 4,766,983

CLASS 182

150 4,766,975
201 4,766,976

CLASS 187

20 4,766,977
101 4,766,978

CLASS 188

24.12 4,766,979
52 4,766,980
170 4,766,981
181 A 4,766,982
380 4,766,984

CLASS 192

0.02 R 4,766,985
0.055 4,766,988
18 A 4,766,986
41 A 4,766,987

CLASS 194

257 4,766,989

CLASS 198

383 4,766,990
455 4,766,991
599 4,766,992
619 4,766,993
711 4,766,994
733 4,766,995
780 4,766,996
853 4,766,997

CLASS 200

43.04 4,767,895
67 DA 4,767,896
83 J 4,767,897
83 R 4,767,898
144 R 4,767,899
306 4,767,901
408 4,767,900

CLASS 202

174 4,767,502

CLASS 203

48 4,767,503

CLASS 204

1 T 4,767,504
44.3 4,767,507
44.5 4,767,508
44.7 4,767,509
101 4,767,510
127.4 4,767,506
128 4,767,511
147 4,767,512
157.21 4,767,513
183.1 4,767,514
186 4,767,515
192.14 4,767,516
192.25 4,767,517
242 4,767,518
255 4,767,519
406 4,767,520

CLASS 206

45 4,766,998
45.13 4,766,999
45.14 4,767,000
315.3 4,767,001
328 4,767,002
4,767,003
334 4,767,004
4,767,005
377 4,767,006
387 4,767,007
570 4,767,008
575 4,767,009

CLASS 208

85 4,767,521
111 4,767,522
217 4,767,523

CLASS 209

143 4,767,524
211 B1 3,613,887
670 4,767,010

CLASS 210

87 4,767,525
128 4,767,526
137 4,767,527
138 B1 4,545,906
177 4,767,528
198.2 4,767,529
232 4,767,530
238 4,767,531
257.1 4,767,532
321.64 4,767,533
331 4,767,534
500.38 4,767,535
532.1 4,767,536
608 4,767,537
636 4,767,538
4,767,539
728 4,767,540
749 4,767,541
755 4,767,542
759 4,767,543
767 4,767,544

CLASS 211

13 4,767,011
89 4,767,012
96 4,767,013
207 4,767,014

CLASS 215

100 R 4,767,015
230 4,767,016

CLASS 219

10.55 M 4,767,902
69 D 4,767,906
69 M 4,767,903
69 P 4,767,905
69 V 4,767,904
121.5 4,767,908
121.56 4,767,907
121.7 4,767,909
125.1 4,767,910
130.01 4,767,911
130.21 4,767,913
130.4 4,767,912
370 4,767,914
459 4,767,915
552 4,767,916

CLASS 220

3 4,767,017
85.5 4,767,018
90.4 4,767,019
273 4,767,020
306 Re 32,739
465 4,767,021

CLASS 221

92 4,767,022
152 4,767,023

CLASS 222

3 4,767,024
135 4,767,025
137 4,767,026
158 4,767,027
219 4,767,028
227 4,767,029
238 4,767,030
255 4,767,031
319 4,767,032
383 4,767,033
525 4,767,034
527 4,767,035
590 4,767,036

CLASS 224

42.03 B 4,767,037
42.06 4,767,038
151 4,767,039
326 4,767,040
4,767,041

CLASS 226

97 4,767,042

CLASS 227

8 4,767,043
19 4,767,044
109 4,767,045

CLASS 228

4.1 4,767,046
6.2 4,767,047
29 4,767,048
95 4,767,049
111 4,767,050
122 4,767,050

CLASS 229

41 R 4,767,051

CLASS 235

381 4,767,917
441 4,767,918
455 4,767,919
492 4,767,920

CLASS 236

12.22 4,767,052

CLASS 238

10 R 4,767,053

CLASS 239

14.2 4,767,054
265.29 4,767,055
288 4,767,056
296 4,767,057
309 4,767,058
314 4,767,059
401 4,767,060
566 4,767,061
655 4,767,062
672 4,767,063

CLASS 241

21 4,767,064
27 4,767,066
81 4,767,067
84 4,767,068
152 A 4,767,065
4,767,069
261.2 4,767,070

CLASS 242

18.1 4,767,071
43 A 4,767,072
54 R 4,767,073
55.2 4,767,074
56 A 4,767,075
58.6 4,767,076
68.2 4,767,077
84.2 G 4,767,080
95 4,767,081
107.4 A 4,767,082
107.4 R 4,767,078
197 4,767,079

CLASS 244

12.3 4,767,083
164 4,767,084
182 4,767,085

CLASS 248

56 4,767,086
62 4,767,087
121 4,767,088
152 4,767,089
168 4,767,090
228 4,767,091
311.2 4,767,092
442.2 4,767,093
448 4,767,094

CLASS 249

48 4,767,095

CLASS 250

201 4,767,921
221 4,767,922
4,767,923
223 R 4,767,924
231 SE 4,767,925
310 4,767,926
327.2 4,767,927
341 4,767,928
370.07 4,767,929
396 ML 4,767,930
423 R 4,767,931
435 4,767,932
548 4,767,933
561 4,767,934
571 4,767,935
578 4,767,936
4,767,937

CLASS 251

25 4,767,096
129.08 4,767,097

CLASS 252

8.3 4,767,545
8.514 4,767,549
8.551 4,767,550
8.6 4,767,546
4,767,556
8.8 4,767,547
4,767,548
32.7 E 4,767,551
46.3 4,767,552
47.5 4,767,553
49.5 4,767,554
71 4,767,555
91 4,767,557
99 4,767,558
106 4,767,559
108 4,767,560
171 4,767,561
174.12 4,767,562
174.25 4,767,563
187.26 4,767,564
299.5 4,767,565
301.6 F 4,767,566
4,767,567
321 4,767,568
373 4,767,569
540 4,767,570
587 4,767,571
628 4,767,572

CLASS 254

45 4,767,098
336 4,767,099
386 4,767,100
391 4,767,101

CLASS 260

380 4,767,573
410 4,767,574
414 4,767,575

CLASS 261

16 4,767,576

CLASS 264

3.3 4,767,577
39 4,767,505
40.1 4,767,578
40.5 4,767,579
41 4,767,580
46.4 4,767,581
61 4,767,582
63 4,767,583
78 4,767,584
82 4,767,585
113 4,767,586
318 4,767,587
500 4,767,589

CLASS 266

48 4,767,102
80 4,767,103
144 4,767,104

CLASS 267

140 4,767,105
140.1 4,767,106
4,767,107
4,767,108

CLASS 269

61 4,767,109
258 4,767,110
303 4,767,111

CLASS 270

54 4,767,112

CLASS 271

3 4,767,113
4,767,114
4,767,115
223 4,767,116
238

CLASS 272

28 R 4,767,117
96 4,767,118

CLASS 273

148 A 4,767,119
153 S 4,767,120
185 A 4,767,121
348.1 4,767,122

CLASS 277

139 4,767,123
235 B 4,767,124

CLASS 279

2 R 4,767,125

CLASS 280

6 R 4,767,126
11.33 4,767,127
47.2 4,767,128
91 4,767,129
202 4,767,130
289 WC 4,767,131
414.1 4,767,132
716 4,767,133
719 4,767,134

CLASS 285

4,767,135
4,767,136
4,767,137
4,767,138

CLASS 290

4,767,938
4,767,939

CLASS 292

162 4,767,139
337 4,767,140

CLASS 294

50 4,767,141
64.1 4,767,142
65 4,767,143
82.36 4,767,144
86.18 4,767,145
104 4,767,146

CLASS 296

1 S 4,767,147
20 4,767,148
39 R 4,767,149
50 4,767,150
97 K 4,767,151
100 4,767,152
194 4,767,153
218 4,767,154

CLASS 297

219 4,767,155
313 4,767,156
322 4,767,157
367 4,767,158
423 4,767,159
4,767,160
472 4,767,161

CLASS 299

1 4,767,162

CLASS 303

61 4,767,163
91 4,767,164
92 4,767,165

CLASS 307

43 4,767,941
116 4,767,940
119 4,767,943
132 E 4,767,944
241 4,767,945
264 4,767,946
265 4,767,947
270 4,767,948
304 4,767,942
362 4,767,949
450 4,767,950
475 4,767,951
571 4,767,952

CLASS 310

11 4,767,953
12 4,767,954
20 4,767,955
91 4,767,956
178 4,767,957
257 4,767,958
317 4,767,959
338 4,767,960

CLASS 312

229 4,767,166
268 4,767,167
351 Re 32,740

CLASS 313

12 4,767,961
402 4,767,962
408 4,767,963
421 4,767,964
480 B1 4,405,881
491 4,767,965
509 4,767,966

CLASS 315

4,767,967
4,767,969
4,767,968
4,767,971

CLASS 318

4,767,970
4,767,972
4,767,973
4,767,974
4,767,975
4,767,976

CLASS 320

20 4,767,977

CLASS 323

282 4,767,978
316 4,767,979
356 4,767,980

CLASS 324

58.5 A 4,767,981
4,767,982
158 F 4,767,983
4,767,984
158 P 4,767,985
227 4,767,986
231 4,767,987
247 4,767,988
252 4,767,989
309 4,767,990
312 4,767,991
313 4,767,992
318 4,767,993
438 4,767,994
447 4,767,995
522 4,767,996

CLASS 328

108 4,767,997

CLASS 330

107 4,767,998

CLASS 331

166 4,767,999

CLASS 332

31 T 4,768,000

CLASS 333

159 4,768,001
177 4,768,002
202 4,768,003
246 4,768,004
4,768,005
255 4,768,006

CLASS 335

202 4,768,007
216 4,768,008
299 4,768,009

CLASS 337

169 4,768,010

CLASS 338

5 4,768,011
34 4,768,012

CLASS 340

52 R 4,768,013
332 4,768,014
347 AD 4,768,015
4,768,016
4,768,018
347 NT 4,768,019
347 SH 4,768,017
384 E 4,768,022
567 4,768,020
568 4,768,021
573 4,768,023
584 4,768,024
638 4,768,025
677 4,768,026
691 4,768,027
705 4,768,028
799 4,768,029
825.06 4,768,030

825.44 4,768,031
825.440 4,768,033
825.47 4,768,032

CLASS 342

80 4,768,034
194 4,768,035
455 4,768,036

CLASS 343

713 4,768,037

CLASS 346

14 R 4,768,040
76 PH 4,768,038
4,768,039
4,768,041
4,768,042
108 4,768,043
140 R 4,768,044
4,768,045
160.1 4,768,046

CLASS 350

96.14 4,767,169
4,767,170
96.18 4,767,171
4,767,172
96.2 4,767,168
96.20 4,767,173
4,767,174
4,767,175
4,767,176
4,767,177
4,767,178
96.21 4,767,179
4,767,180
96.23 4,767,181
4,767,182
4,767,183
4,767,184
99 4,767,185
128 4,767,186
247 4,767,187
320 4,767,188
334 4,767,189
339 R 4,767,190
341 4,767,191
342 4,767,192
345 4,767,193
346 4,767,194
354 4,767,195
4,767,196
4,767,197
358 4,767,198
412 4,767,199
429 4,767,200
432 4,767,201
4,767,202

CLASS 351

158 4,767,203
214 4,767,204

CLASS 354

195.1 4,768,047
195.12 4,768,048
294 4,768,049
304 4,768,050
400 4,768,051
402 4,768,052
403 4,768,053
408 4,768,054

CLASS 355

3 FU 4,768,057
3 R 4,768,055
4,768,056
8 4,768,058
10 4,768,059
4,768,060
14 D 4,768,061
15 4,768,062
29 4,768,063
43 4,768,065
53 4,768,064
55 4,768,066
56 4,768,067
75 4,768,068

CLASS 356

71 4,767,205
73 4,767,206
73.1 4,767,207
124 4,767,215
138 4,767,208
152 4,767,209
338 4,767,213
345 4,767,210
375 4,767,211
379 4,767,212

CLASS 357

5 4,768,069
17 4,768,070
22 4,768,071
29 4,768,072
30 4,768,073
34 4,768,074
38 4,768,075
42 4,768,076
54 4,768,080
70 4,768,077
72 4,768,078
4,768,081
74 4,768,079

CLASS 358

13 4,768,082
22 4,768,083
44 4,768,084
48 4,768,085
81 4,768,086
84 4,768,087
93 4,768,088
98 4,768,089
108 4,768,090
139 4,768,091
140 4,768,092
160 4,768,093
167 4,768,094
183 4,768,095
213.26 4,768,097
213.31 4,768,098
257 4,768,099
285 4,768,100
294 4,768,096
298 4,768,101
311 4,768,102
337 4,768,103
342 4,768,104

CLASS 360

14.1 4,768,105
4,768,106
17 4,768,107
19.1 4,768,108
33.1 4,768,109
4,768,110
62 4,768,111
69 4,768,112
78 4,768,115
96.5 4,768,113
97 4,768,114
98 4,768,116
103 4,768,119
109 4,768,117
121 4,768,118
4,768,120
125 4,768,121
132 4,768,122
133 4,768,123
4,768,124

CLASS 361

33 4,768,125
45 B1 3,633,070
213 4,768,126
251 4,768,127
4,768,128
302 4,768,129
323 4,768,130
338 4,768,131
342 4,768,132

CLASS 362

32 4,768,133
65 4,768,134
66 4,768,135
84 4,768,136
120 4,768,137
189 4,768,138
302 4,768,139
342 4,768,140

CLASS 363

16 4,768,141
89 4,768,142

CLASS 364

157 4,768,143
200 4,768,144
4,768,145
4,768,146
4,768,147
4,768,148
4,768,149
300 4,768,150
410 4,768,151
422 4,768,152
424 4,767,588
449 4,768,153
468 4,768,154
507 4,768,155
4,768,158
521 4,768,156
4,768,157
726 4,768,159
745 4,768,160
758 4,768,161
900 4,768,162
4,768,163
4,768,164
4,768,165

CLASS 365

154 4,768,166
156 4,768,167
189 4,768,168
200 4,768,169
212 4,768,170
222 4,768,171
230 4,768,172

CLASS 366

85 4,767,216
99 4,767,214
168 4,767,217
261 4,767,218

CLASS 367

15 4,768,173
39 4,768,174
178 4,768,175

CLASS 368

10 4,768,176
4,768,177
47 4,768,178

CLASS 369

32 4,768,179
44 4,768,180
54 4,768,181
109 4,768,182
112 4,768,183
4,768,184
270 4,768,185

CLASS 370

3 4,768,186
69 4,768,187
80 4,768,188
85 4,768,189
86 4,768,190
100 4,768,192
112 4,768,191

CLASS 371

10 4,768,193
21 4,768,194
25 4,768,195
4,768,196
38 4,768,197

CLASS 372

29 4,768,198
36 4,768,199
46 4,768,200
50 4,768,201

CLASS 374

123 4,767,219

CLASS 375

3.1 4,768,202
10 4,768,203
12 4,768,204
14 4,768,205
17 4,768,206
23 4,768,207
95 4,768,208

CLASS 376

133 4,767,590
143 4,767,591
150 4,767,592
294 4,767,593
299 4,767,594
353 4,767,595

CLASS 377

6 4,768,209
32 4,768,210
60 4,768,211

CLASS 378

87 4,768,214
101 4,768,215
110 4,768,216
141 4,768,212

CLASS 379

32 4,768,217
61 4,768,218
4,768,219
63 4,768,220
67 4,768,221
91 4,768,222
112 4,768,227
143 4,768,223
211 4,768,224
435 4,768,225
445 4,768,226

CLASS 380

20 4,768,228
4,768,229

CLASS 383

63 4,767,220

CLASS 384

105 4,767,221
106 4,767,222
114 4,767,223
572 4,767,224
616 4,767,225

CLASS 400

124 4,767,226
4,767,227
234 4,767,228

CLASS 401

208 4,768,229

CLASS 403

16 4,767,230
56 4,767,231
91 4,767,232
318 4,767,233

CLASS 404

111 4,767,234

CLASS 405

33 4,767,235
154 4,767,236
157 4,767,237
207 4,767,238
217 4,767,239
225 4,767,240
239 4,767,241
288 4,767,242

CLASS 406

193 4,767,243

CLASS 408

204 4,767,244
4,767,245

CLASS 409

234 4,767,246

CLASS 411

45 4,767,248
110 4,767,249

CLASS 412

11 4,767,250

CLASS 414

147 4,767,251
222 4,767,252
339 4,767,253
401 4,767,254
695.5 4,767,255
708 4,767,256
744 A 4,767,257
786 4,767,258

CLASS 415

17 4,767,259
115 4,767,260
4,767,261
119 4,767,262
121 A 4,767,263
156 4,767,264
170 R 4,767,265
172 A 4,767,266
174 4,767,267

CLASS 416

97 R 4,767,268
124 4,767,269
129 4,767,270
4,767,271
144 4,767,272
191 4,767,273
193 A 4,767,247
4,767,274
220 R 4,767,275
221 4,767,276
241 A 4,767,277
241 B 4,767,278

CLASS 417

18 4,767,279
44 4,767,280
83 4,767,281
225 4,767,282
269 4,767,283
312 4,767,284
366 4,767,285
423 R 4,767,286
461 4,767,287
462 4,767,288
477 4,767,289
490 4,767,290
560 4,767,291

CLASS 418

2 4,767,292
55 4,767,293
151 4,767,295
171 4,767,296

CLASS 420

443 4,767,597
528 4,767,598

CLASS 422

13 4,767,599
65 4,767,600
68 4,767,601
101 4,767,602
119 4,767,603
190 4,767,604

CLASS 423

239 4,767,605
351 4,767,606
412 4,767,607
446 4,767,608

CLASS 424

1.1 4,767,609
4,767,610
4,767,611
45 4,767,612
47 4,767,613
48 4,767,614
57 4,767,615
70 4,767,616
71 4,767,617
74 4,767,618
78 4,767,619
4,767,620
85 4,767,621
88 4,767,622
93 4,767,623
94.1 4,767,624
95 4,767,625
195.1 4,767,626
426 4,767,627
4,767,628

CLASS 425

87 4,767,297
112 4,767,298
135 4,767,299
140 4,767,300
144 4,767,301
190 4,767,302
203 4,767,303
308 4,767,304
4,767,305
382.4 4,767,306
394 4,767,307
405.1 4,767,308
461 4,767,309
469 4,767,310
526 4,767,311
543 4,767,312

CLASS 426

55 4,767,629
102 4,767,630
103 4,767,631
231 4,767,632
270 4,767,633
271 4,767,634
272 4,767,635
291 4,767,636
4,767,637
505 4,767,638
523 4,767,639
600 4,767,640

CLASS 427

38 4,767,641
54.1 4,767,642
4,767,643
385.5 4,767,644
386 4,767,645
387 4,767,646

CLASS 428

14 4,767,647
15 4,767,648
26 4,767,650
35 4,767,651
36 4,767,652
40 4,767,653
4,767,654
57 4,767,655
99 4,767,649
116 4,767,656
143 4,767,657
192 4,767,658
203 4,767,659
269 4,767,660
4,767,661
4,767,662
212 4,767,663
318.8 4,767,664
328 4,767,665
334 4,767,666
336 4,767,667
379 4,767,668
394 4,767,669
403 4,767,670
412 4,767,671
446 4,767,672
458 4,767,673
461 4,767,674
515 4,767,675
542.2 4,767,676
551 4,767,677
632 4,767,678
690 4,767,679

CLASS 429

30 4,767,680
94 4,767,682
101 4,767,683
103 4,767,684
104 4,767,685
122 4,767,686
206 4,767,687

CLASS 430

45 4,767,689
110 4,767,688
138 4,767,690
210 4,767,691
264 4,767,692
270 4,767,693
308 4,767,694
311 4,767,695
495 4,767,696
546 4,767,697
562 4,767,698

CLASS 431

4,767,313
4,767,314
4,767,315
121 4,767,316
173 4,767,317
304 4,767,318
350 4,767,319

CLASS 432

59 4,767,320
4,767,321
98 4,767,322
116 4,767,323
171 4,767,324

CLASS 433

90 4,767,325
4,767,326
4,767,327
168.1 4,767,328
181 4,767,329
213 4,767,330
4,767,331
225 4,767,332

CLASS 434

29 4,767,334
262 4,767,333
352 4,767,335

CLASS 435

6 4,767,699
4,767,700
7 4,767,701
24 4,767,702
29 4,767,703
68 4,767,704
144 4,767,705
176 4,767,706
182 4,767,707
194 4,767,708
240.2 4,767,709
240.27 4,767,710
243 4,767,711
253 4,767,712
4,767,713
272 4,767,714
302 4,767,715

CLASS 436

47 4,767,716
64 4,767,717
501 4,767,718
4,767,719
536 4,767,720

CLASS 437

2 4,767,336
34 4,767,721
41 4,767,722
4,767,723
194 4,767,724

CLASS 439

34 4,767,337
55 4,767,338
60 4,767,341
78 4,767,342
83 4,767,343
4,767,344
92 4,767,345
95 4,767,346
133 4,767,347
140 4,767,348
191 4,767,349
271 4,767,350
363 4,767,351
395 4,767,352

VOL 1093 ISS 5 AUG 30 1988 UMI

398 4,767,353
413 4,767,354
425 4,767,355
455 4,767,356
499 4,767,357
500 4,767,358
535 4,767,359
593 4,767,360
596 4,767,361
610 4,767,362
716 4,767,339
729 4,767,340

CLASS 440

1 4,767,363
18 4,767,364
75 4,767,365
76 4,767,366
88 4,767,367

CLASS 441

64 4,767,368
68 4,767,369
74 4,767,370
94 4,767,371

CLASS 445

5 4,767,372

CLASS 446

217 4,767,373
301 4,767,374
423 4,767,375
457 4,767,376

CLASS 450

4,767,377

CLASS 455

603 4,768,230

CLASS 464

25 4,767,379
29 4,767,378
68 4,767,380
146 4,767,381

CLASS 474

28 4,767,382
4,767,384
133 4,767,383
138 4,767,385
148 4,767,386
168 4,767,387
245 4,767,388
266 4,767,389

CLASS 493

88 4,767,390
196 4,767,391
331 4,767,392
342 4,767,393
409 4,767,394

CLASS 494

13 4,767,395
60 4,767,396
85 4,767,397

CLASS 501

3 4,767,725
33 4,767,726
87 4,767,727
91 4,767,728
94 4,767,729
103 4,767,730
128 4,767,731
137 4,767,732

CLASS 502

65 4,767,733
66 4,767,734
109 4,767,735
164 4,767,736
185 4,767,737
202 4,767,738
209 4,767,739
439 4,767,740

CLASS 512

3 4,767,741

CLASS 514

12 4,767,742
18 4,767,743
4,767,753
19 4,767,744
21 4,767,745
25 4,767,746
46 4,767,747
54 4,767,748
137 4,767,749
159 4,767,750
179 4,767,751
184 4,767,752
202 4,767,754
212 4,767,755
213 4,767,756
231.5 4,767,757
4,767,758
235.5 4,767,759
242 4,767,760
248 4,767,765
249 4,767,761
254 4,767,762
264 4,767,763
282 4,767,764
301 4,767,766
313 4,767,767
315 4,767,768
322 4,767,769
342 4,767,770
346 4,767,771
4,767,772
351 4,767,773
365 4,767,774
379 4,767,775
381 4,767,776
383 4,767,777
397 4,767,778
403 4,767,779
406 4,767,780
513 4,767,781
543 4,767,782
546 4,767,783
554 4,767,784
561 4,767,785
4,767,786
573 4,767,787
574 4,767,788
629 4,767,789
646 4,767,790

CLASS 518

712 4,767,791
721 4,767,792

CLASS 521

50.5 4,767,793
82 4,767,794
99 4,767,795
155 4,767,796

CLASS 522

8 4,767,797

CLASS 523

117 4,767,798
137 4,767,799
141 4,767,800
145 4,767,801
204 4,767,802
335 4,767,803
351 4,767,804
468 4,767,805
514 4,767,806

CLASS 524

36 4,767,807
56 4,767,810
98 4,767,808
114 4,767,811
144 4,767,812
255 4,767,809
271 4,767,813
284 4,767,814
317 4,767,815
459 4,767,816
494 4,767,817
505 4,767,818
587 4,767,819

CLASS 525

72 4,767,820
4,767,821
99 4,767,822
193 4,767,833
334.1 4,767,823
343 4,767,824
408 4,767,825
420 4,767,827
421 4,767,826
440 4,767,828
449 4,767,829
450 4,767,830
474 4,767,831
523 4,767,832

CLASS 526

265 4,767,834

CLASS 527

600 4,767,835

CLASS 528

4,767,836
4,767,837
4,767,838
184 4,767,839
196 4,767,840
295 Re.32,741
388 4,767,841

CLASS 530

324 4,767,842
387 4,767,843

CLASS 534

573 4,767,844

CLASS 536

16.8 4,767,847
18.2 4,767,845
18.6 4,767,846
56 4,767,848
102 4,767,849
127 4,767,850

CLASS 540

218 4,767,851
222 4,767,852
357 4,767,853
475 4,767,854
478 4,767,855
538 4,767,856
4,767,857

CLASS 544

34 4,767,858
258 4,767,859
384 4,767,860

CLASS 546

41 4,767,861
149 4,767,862
178 4,767,863
278 4,767,864
342 4,767,865

CLASS 548

240 4,767,866
4,767,867
4,767,868
365 4,767,871

CLASS 549

295 4,767,869
315 4,767,870
551 4,767,872

CLASS 556

42 4,767,873
137 4,767,874
175 4,767,875
410 4,767,876

CLASS 558

281 4,767,877
324 4,767,878
412 4,767,879

CLASS 560

86 4,767,881
061 4,767,880
100 4,767,882
220 4,767,883

CLASS 568

68 4,767,884

CLASS 570

185 4,767,885

CLASS 585

640 4,767,886

CLASS 604

1 4,767,398
5 4,767,399
8 4,767,400
20 4,767,401
22 4,767,402
31 4,767,417
35 4,767,403
48 4,767,404
51 4,767,405
155 4,767,406
164 4,767,407
168 4,767,408
171 4,767,409
175 4,767,410
180 4,767,411
192 4,767,412
198 4,767,413
230 4,767,414
232 4,767,415
239 4,767,416

CLASS 623

1 4,767,418

CLASS 800

4,767,887
4,767,888
4,767,889

CLASSIFICATION OF DESIGNS

D1— 486 297,380
4 297,381
5 297,382
26 297,383
28 297,384
D2— 73 297,385
71 297,386
D3— 1 297,387
D6— 425 297,388
D13 5 297,389
192 297,390
350 297,391
454 297,392
389 297,393
667 297,394
D9— 4 297,395
297,396
291 297,397
297,398
44 297,399
47 297,400
64 297,401
73 297,402
134 297,403
353 297,404
297,405
297,406
297,407
297,408
356 297,410
373 297,411
297,412
D9— 305 297,413
416 297,414
D10— 32 297,415
297,416
297,417
39 297,418
50 297,419
77 297,420
97 297,421
D11— 164 297,422
216 297,423
D12— 156 297,424
211 297,425
D13— 1 297,426
30 297,427
D14— 72 297,428
100 297,429
315 297,430
116 297,431
D15— 23 297,433
69 297,434
D16— 31 297,435
297,436
D19— 59 297,437
73 297,438
85 297,439
D20— 4 297,440
D21— 15 297,441
35 297,442
66 297,443
219 297,444
297,445
297,446
221 297,448
249 297,449
D22— 108 297,450
150 297,451
D23— 209 297,452
214 297,453
307 297,454
370 297,455
385 297,456
D24— 10 297,457
14 297,458
28 297,459
29 297,460
297,461
54 297,462
D25— 50 297,463
114 297,464
119 297,465
D27— 161 297,466
D28— 7 297,467
D29— 297,468
D30— 114 297,469
297,470
119 297,471
146 297,472
151 297,473
161 297,474
D32— 21 297,475
53.1 297,476
71 297,477
D81— 353 297,409
D99— 18 297,478
43 297,479

CLASSIFICATION OF PLANTS

P1— 6,261
5 6,263
19 6,262
20 6,264
13 6,265
13 6,266
4— 6,267

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama 1
Alaska 2
American Samoa 3
Arizona 4
Arkansas 5
California 6
Canal Zone 7
Colorado 8
Connecticut 9
Delaware 10
District of Columbia 11
Florida 12
Georgia 13
Guam 14
Hawaii 15
Idaho 16
Illinois 17
Indiana 18
Iowa 19
Kansas 20
Kentucky 21
Louisiana 22
Maine 23
Maryland 24
Massachusetts 25
Michigan 26
Minnesota 27
Mississippi 28
Missouri 29
Montana 30
Nebraska 31
Nevada 32
New Hampshire 33
New Jersey 34
New Mexico 35
New York 36
North Carolina 37
North Dakota 38
Ohio 39
Oklahoma 40
Oregon 41
Pennsylvania 42
Puerto Rico 43
Rhode Island 44
South Carolina 45
South Dakota 46
Tennessee 47
Texas 48
Utah 49
Vermont 50
Virginia 51
Virgin Islands 52
Washington 53
West Virginia 54
Wisconsin 55
Wyoming 56
U.S. Air Force 57
U.S. Army 58
U.S. Navy 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

4,766,799
4,766,916
4,767,542
4,767,897
4,766,655
4,766,712
4,766,759
4,767,092
4,767,104
4,767,128
4,767,251
4,767,887
4,767,889
4,767,939
4,768,110
4,768,208
05 4,766,838
06 4,766,608
4,766,611
4,766,613
4,766,626
4,766,631
4,766,633
4,766,637
4,766,673
4,766,702
4,766,706
4,766,737
4,766,779
4,766,780
4,766,800
4,766,803
4,766,833
4,766,835
4,766,842
4,766,867
4,766,875
4,766,883
4,766,891
4,766,915
4,766,943
4,766,975
4,766,990
4,766,996
4,767,001
4,767,003
4,767,012
4,767,014
4,767,048
4,767,051
4,767,053
4,767,056
4,767,073
4,767,083
4,767,084
4,767,085
4,767,089
4,767,094
4,767,134
4,767,141
4,767,164
4,767,188
4,767,195
4,767,197
4,767,203
4,767,233
4,767,248
4,767,249
4,767,294
4,767,297
4,767,313
4,767,319
4,767,358
4,767,359
4,767,390
4,767,399
4,767,401
4,767,413
4,767,418
4,767,431
4,767,447
4,767,576
4,767,593
4,767,594
4,767,595
4,767,610
4,767,648
4,767,649
4,767,650
4,767,661
4,767,662
4,767,666
4,767,684
4,767,689
4,767,710
4,767,721
4,767,722
4,767,723
4,767,728
4,767,734
4,767,737
4,767,771
4,767,772
4,767,837
4,767,890
4,767,911
4,767,928
4,767,930
4,767,935
4,767,954
4,767,970
4,767,977
10 : 4,768,002
4,768,005
4,768,008
4,768,040
4,768,065
4,768,115
4,768,126
4,768,139
4,768,145
11 : 4,767,902
12 : 4,766,612
4,766,659
4,766,683
4,766,691
4,766,819
4,766,892
4,766,900
4,766,901
4,766,902
4,766,914
4,766,932
4,766,938
4,767,011
4,767,037
4,767,055
4,767,247
4,767,260
4,767,264
4,767,268
4,767,272
4,767,273
4,767,274
4,767,275
4,767,331
4,767,369
4,767,400
4,767,530
4,767,537
4,767,933
4,767,987
4,768,086
13 : 4,766,632
4,766,684
4,766,745
4,767,065
4,767,480
4,767,796
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VOL 1093 ISS 5 AG 30 1988 UMI

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28 : 4,766,692
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31 : 4,766,630
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32 : 4,766,918
33 : 4,766,687
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4,768,164
34 : 4,766,622
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4,767,368
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36 : 4,766,618
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4,768,224
37 : 4,766,662
4,766,713
4,766,911
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4,767,002
4,767,150
4,767,205
4,767,206
4,767,350
4,767,414
4,767,556
4,767,669
4,767,773
4,767,895
4,767,995
4,768,014
38 : 4,767,280
39 : Re.32,739
4,766,609
4,766,643
4,766,688
4,766,695
4,766,724
4,766,758
4,766,761
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4,767,817
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4,767,842
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4,768,050
4,768,140
40 : 4,766,621
4,766,663
4,766,778
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4,766,895
4,766,959
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4,767,028
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4,767,216
4,767,467
4,767,523
4,767,550
4,767,603
4,767,799
4,767,841
4,767,994
4,768,227
41 : 4,766,746
4,766,874
4,766,994
4,767,009
4,767,167
4,767,185

4,767,215
4,767,945
4,767,946
4,767,955
4,767,964
42 : 4,766,665
4,766,698
4,766,765
4,766,770
4,766,896
4,766,929
4,766,997
4,767,006
4,767,131
4,767,149
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4,767,152
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4,767,230
4,767,277
4,767,298
4,767,323
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4,767,411
4,767,417
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4,767,512
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4,767,816
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4,767,968
4,767,982
4,767,984
4,768,049
4,768,069
43 : 4,767,334
44 : 4,767,039
4,767,043
4,767,410
4,767,702
4,767,960
45 : 4,766,628
4,766,719
4,767,010
4,767,654
47 : 4,766,647
4,766,807
4,766,822
4,766,927
4,767,186
4,767,515
4,767,813
4,767,854
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4,768,091
48 : 4,766,610
4,766,648
4,766,710
4,766,716
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4,766,823
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49 : 4,766,726
4,766,755
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4,768,124
4,768,216
50 : 4,767,241
4,768,161
51 : 4,766,830
4,766,925
4,767,122
4,767,335
4,767,484
4,767,503
4,767,564
4,767,646
4,767,828
4,767,901
4,768,017
4,768,087
4,768,143
4,768,167
53 : 4,766,768
4,766,876
4,766,877
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4,767,120
4,767,143
4,767,270
4,767,341
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4,768,034
55 : 4,766,642
4,766,656
4,766,771
4,766,776
4,766,821
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05 : 297,424
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297,388
297,394
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12 : 297,386
297,411
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297,444
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19 : 297,395
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297,427
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297,457
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37 : 297,430
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297,404
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40 : 297,471
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41 : 297,382
297,383
297,414
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44 : 297,393

297,420
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297,456
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51 : 297,432
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55 : 297,474

PLANT PATENTS

06 : 6,266
34 : 6,267

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1093

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